Tighe&Bond

Q-5004-0001
May 6, 2025

Mr. Peter Britz, Director of Planning & Sustainability
City of Portsmouth Planning & Sustainability Department
1 Junkins Avenue
Portsmouth, New Hampshire 03801

Re: **Request for TAC Work Session**
1465 Woodbury Avenue – Proposed Bank Pad

Dear Peter:

On behalf of Bromley-Portsmouth LLC & RCQ-Portsmouth LLC c/o Quincy & Company, Inc. (owner/applicant) we are pleased to submit one (1) set of hard copies and one electronic file (.pdf) of the following information to support a request to meet with the Technical Advisory Committee (TAC) at their next scheduled Work Session for the above referenced project:

- Site Plan Set, dated May 6, 2025;
- Conceptual Landscaping Exhibit
- Owners Authorization, dated May 6, 2025

The proposed project is located at 1465 Woodbury Avenue which is identified as Map 216 Lot 3 on the City of Portsmouth Tax Maps. The lot is currently home to various grocery & shopping stores. The property is a 19.3-acre parcel of land that is located in the Gateway District (G1). The property is bound to the south & west by Woodbury Avenue, and to the north and east by Commerce Way and the office developments on Commerce Way.

The proposed project consists of developing a bank pad on an undeveloped portion of the lot with frontage along Woodbury Avenue. This will include a roughly ±2,800 square foot bank. The project will also include associated site improvements such as parking, pedestrian access, utilities, stormwater management, lighting, and landscaping. The site will be accessed via the existing internal driveway.

The proposed project will require the following site related approvals from the Planning Board:

- Site Plan Review Permit
- Conditional Use Permit for a Drive-Through Facility

The applicant respectfully requests to meet with TAC at their next scheduled Work Session on May 13, 2025. If you have any questions or need any additional information, please contact me by phone at (603) 433-8818 or by email at NAHansen@tighebond.com.

Sincerely,

TIGHE & BOND, INC.

Neil A. Hansen, PE
Project Manager

Copy: Bromley Portsmouth, LLC

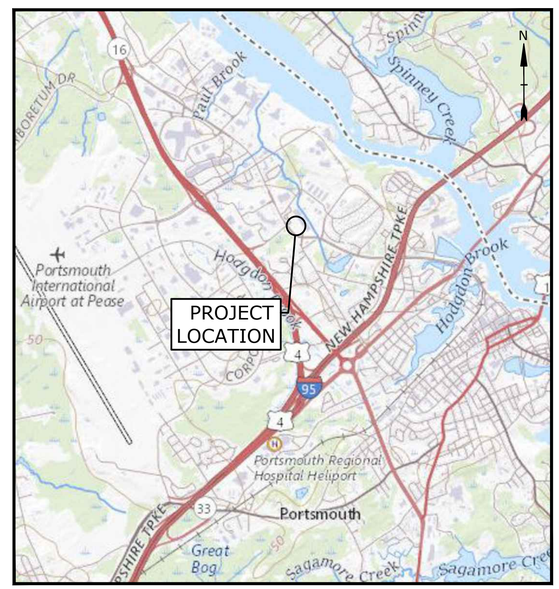
Owner Letter of Authorization

This letter is to authorize Tighe & Bond, Inc. (Civil Engineer), to represent and submit on behalf of Bromley-Portsmouth LLC & RCO-Portsmouth LLC c/o Quincy & Company, Inc. (Owner/Applicant), applications and materials in all site design and permitting matters for the proposed development project located at 1465 Woodbury Avenue in Portsmouth, New Hampshire on parcel of land identified as Map 216 Lot 3. This project includes the construction of a bank pad and associated on-site improvements. This authorization shall relate to those activities that are required for local, state and federal permitting for the above project and include any required signatures for those applications.

Signature	Print Name	Date
	Chris Quincy	5/5/2025

1465 WOODBURY AVENUE
PROPOSED BANK PAD
PORTSMOUTH, NEW HAMPSHIRE
MAY 6, 2025

LIST OF DRAWINGS		
SHEET NO.	SHEET TITLE	LAST REVISED
	COVER SHEET	5/6/2025
1 OF 1	EXISTING CONDITIONS PLAN	4/16/2025
C-101	EXISTING CONDITIONS & DEMOLITION PLAN	5/6/2025
C-102	SITE PLAN	5/6/2025
C-103	GRADING, DRAINAGE, AND EROSION CONTROL PLAN	5/6/2025
C-104	UTILITY PLAN	5/6/2025
C-501	EROSION CONTROL NOTES AND DETAILS SHEET	5/6/2025
C-502	DETAILS SHEET	5/6/2025
C-503	DETAILS SHEET	5/6/2025
C-504	DETAILS SHEET	5/6/2025
C-505	DETAILS SHEET	5/6/2025
C-506	DETAILS SHEET	5/6/2025



LOCATION MAP
SCALE: 1" = 3000'

PREPARED BY:

Tighe&Bond
177 CORPORATE DRIVE
PORTSMOUTH, NH 03801
603-433-8818

OWNER:
BROMLEY-PORTSMOUTH LLC &
RCQ-PORTSMOUTH LLC
c/o QUINCY & COMPANY, INC.
57 Dedham Avenue
Needham, MA 02492

SURVEYOR:
GREENMAN-PEDERSEN, INC.
44 Stiles Road, Suite One
Salem, NH 03079

ARCHITECT:
BISBANO + ASSOCIATES, INC.
188 Valley Street, Suite 100
Providence, RI 02909

TAC WORK SESSION SUBMISSION
COMPLETE SET 12 SHEETS

Last Save Date: May 5, 2025 3:27 PM By: NWILCOX
Plot Date: Tuesday, May 06, 2025 Plotted By: Noah Wilcox
T&B File Location: J:\Q\Q5904 Quincy & Company, Inc\0001_1465 Woodbury Avenue\Drawings\AutoCAD\Sheet\Q-5904-0001-CS.dwg Layout Tab: CS

LEGEND

- SGC — SLOPED GRANITE CURB
- VGC — VERTICAL GRANITE CURB
- SSLW — SINGLE SOLID LINE WHITE
- 90 — CONTOUR ELEVATION
- TREE
- UTILITY POLE
- GUY WIRE
- OVERHEAD WIRE
- PB — PULL BOX
- SIGN
- +48.49 — SPOT ELEVATION
- DRAIN MANHOLE
- CATCH BASIN
- SEWER MANHOLE
- TELEPHONE MANHOLE
- LIGHT POLE
- EASEMENT LINE
- PROPERTY LINE
- ABUTTER PROPERTY LINE

NOTES:

1) ZONE: GATEWAY NEIGHBORHOOD MIXED USE CORRIDOR DISTRICT (G1)

   REFER TO THE CITY OF PORTSMOUTH ZONING ORDINANCE FOR VERIFICATION, ADDITIONAL RESTRICTIONS AND PERMITTED USES. THE ZONING INFORMATION SHOWN HEREON IS BASED ON A REVIEW OF THE PORTSMOUTH ZONING ORDINANCE.

2) THIS PLAN IS THE RESULT OF AN ON-THE-GROUND FIELD SURVEY PERFORMED BY THIS OFFICE BETWEEN DECEMBER 12 AND DECEMBER 13, 2024.

3) BEARINGS SHOWN HEREON ARE BASED ON NAD83 PER GPS OBSERVATIONS PERFORMED BY THIS OFFICE ON DECEMBER 12, 2024.

4) ELEVATIONS SHOWN HEREON ARE BASED ON NAVD88 PER GPS OBSERVATIONS PERFORMED BY THIS OFFICE ON DECEMBER 12, 2024.

5) THIS SURVEY IS NOT A CERTIFICATION TO OWNERSHIP OF OR TITLE TO LANDS SHOWN HEREON. OWNERSHIP AND ENCUMBRANCES ARE MATTERS OF TITLE EXAMINATION AND NOT THOSE OF A BOUNDARY SURVEY.

NOTES (CONTINUED):

6) EASEMENTS SHOWN HEREON WERE IDENTIFIED THROUGH A SEARCH OF PUBLIC RECORDS. OTHER EASEMENTS MAY EXIST OTHER THAN THOSE SHOWN THAT WOULD BE IDENTIFIED THROUGH A TITLE EXAMINATION. NO TITLE EXAMINATION WAS PROVIDED TO THE SURVEYOR DURING THE PREPARATION OF THIS PLAN.

7) LOCATION OF UNDERGROUND UTILITIES IS APPROXIMATE ONLY. ADDITIONAL UNDERGROUND UTILITIES OTHER THAN THOSE SHOWN MAY BE ENCOUNTERED.

8) THE SURVEY TRACT IS NOT LOCATED IN A SPECIAL FLOOD HAZARD AREA (100 YEAR FLOOD) PER FLOOD INSURANCE RATE MAP NUMBER 33015C0260F, WITH AN EFFECTIVE DATE OF JANUARY 29, 2021.

UTILITY NOTES:

WATER SERVICE – PUBLIC WATER – CITY OF PORTSMOUTH

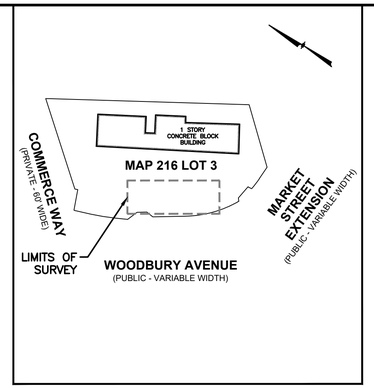
SEWER SERVICE – PUBLIC SEWER – CITY OF PORTSMOUTH

GAS SERVICE – NATURAL GAS – UNITIL

ELECTRICAL SERVICE – EVERSOURCE

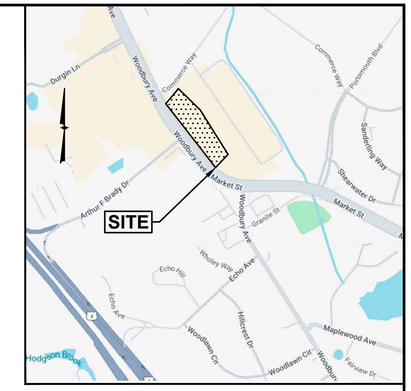
OWNER OF RECORD:

MAP 216 LOT 3
BROMLEY PORTSMOUTH LLC
144 GOULD ST SUITE 152
NEEDHAM, MA 02494
BOOK 4486 PAGE 2167



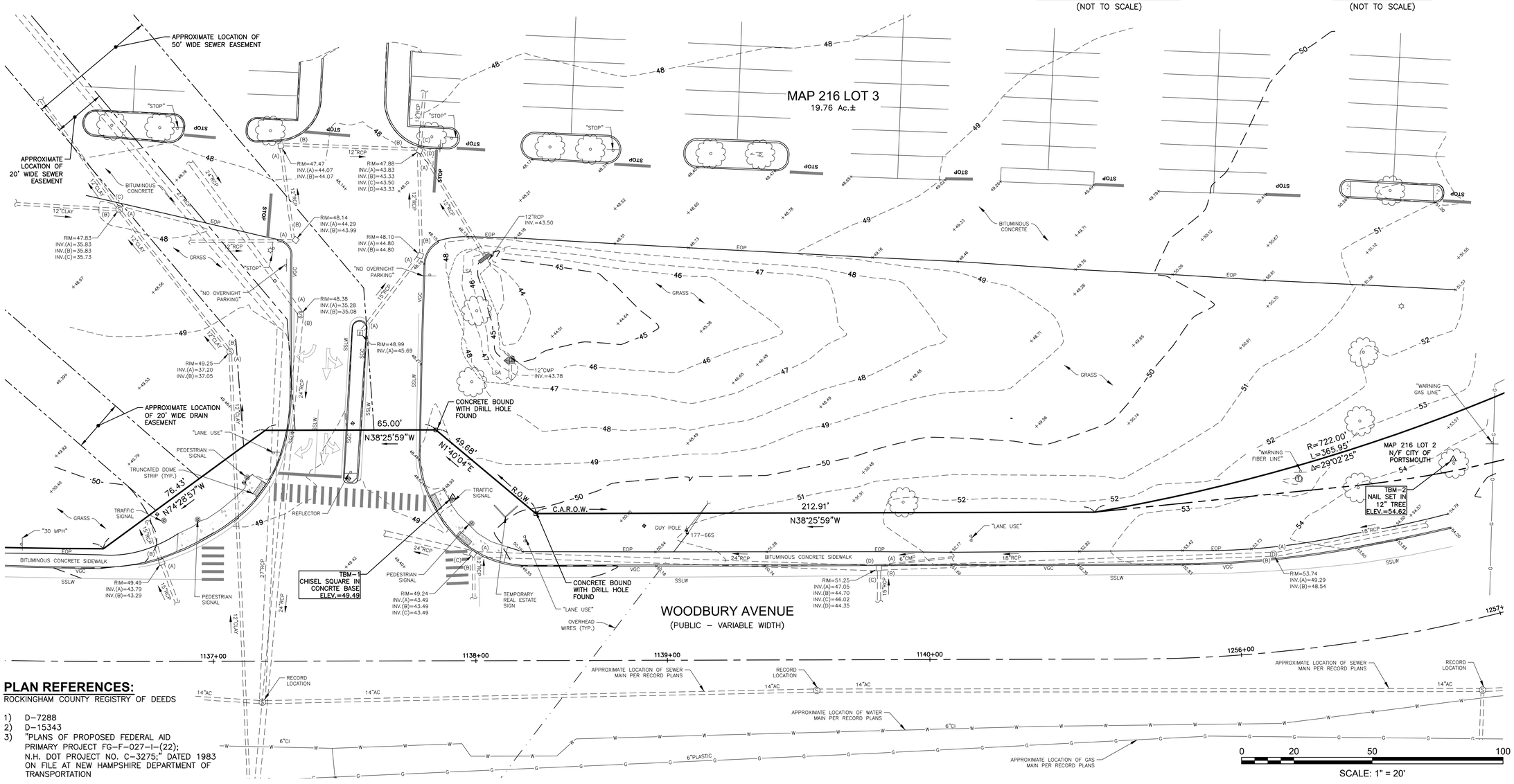
PROPERTY OVERVIEW

(NOT TO SCALE)



LOCATION MAP

(NOT TO SCALE)



PLAN REFERENCES:

ROCKINGHAM COUNTY REGISTRY OF DEEDS

1) D-7288
2) D-15343
3) "PLANS OF PROPOSED FEDERAL AID PRIMARY PROJECT FG-F-027-I-(22); N.H. DOT PROJECT NO. C-3275;" DATED 1983 ON FILE AT NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

0 20 50 100

SCALE: 1" = 20'

GPI Engineering Design Planning Construction Inspection
603.893.0720 GPINET.COM
Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR
TIGHE & BOND, INC.
177 CORPORATE DRIVE
PORTSMOUTH, NH 03801

ASSESSOR MAP 216 LOT 3

1465 WOODBURY AVENUE PORTSMOUTH, NEW HAMPSHIRE

STATE OF NEW HAMPSHIRE — No. 1019 — SCOTT M. L'ITALIEN — LICENSED LAND SURVEYOR
4/16/2025

NO.	REVISION	DATE

APRIL 16, 2025

DRAWN BY	CHECKED BY
KAC	SML

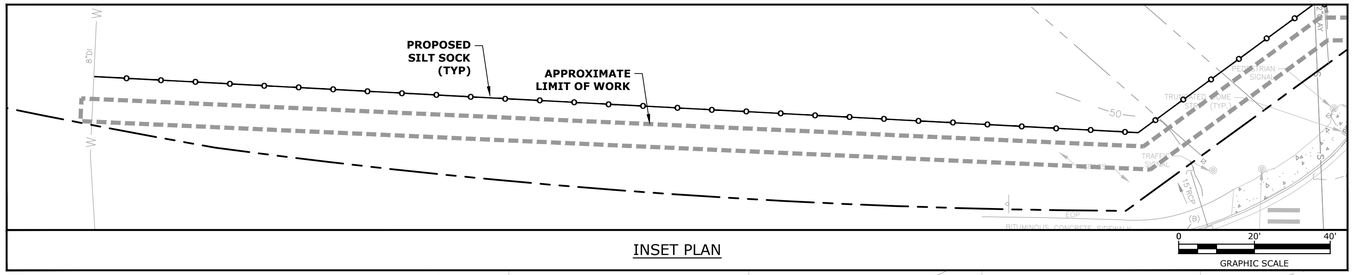
EXISTING CONDITIONS PLAN

SCALE: 1"=20'

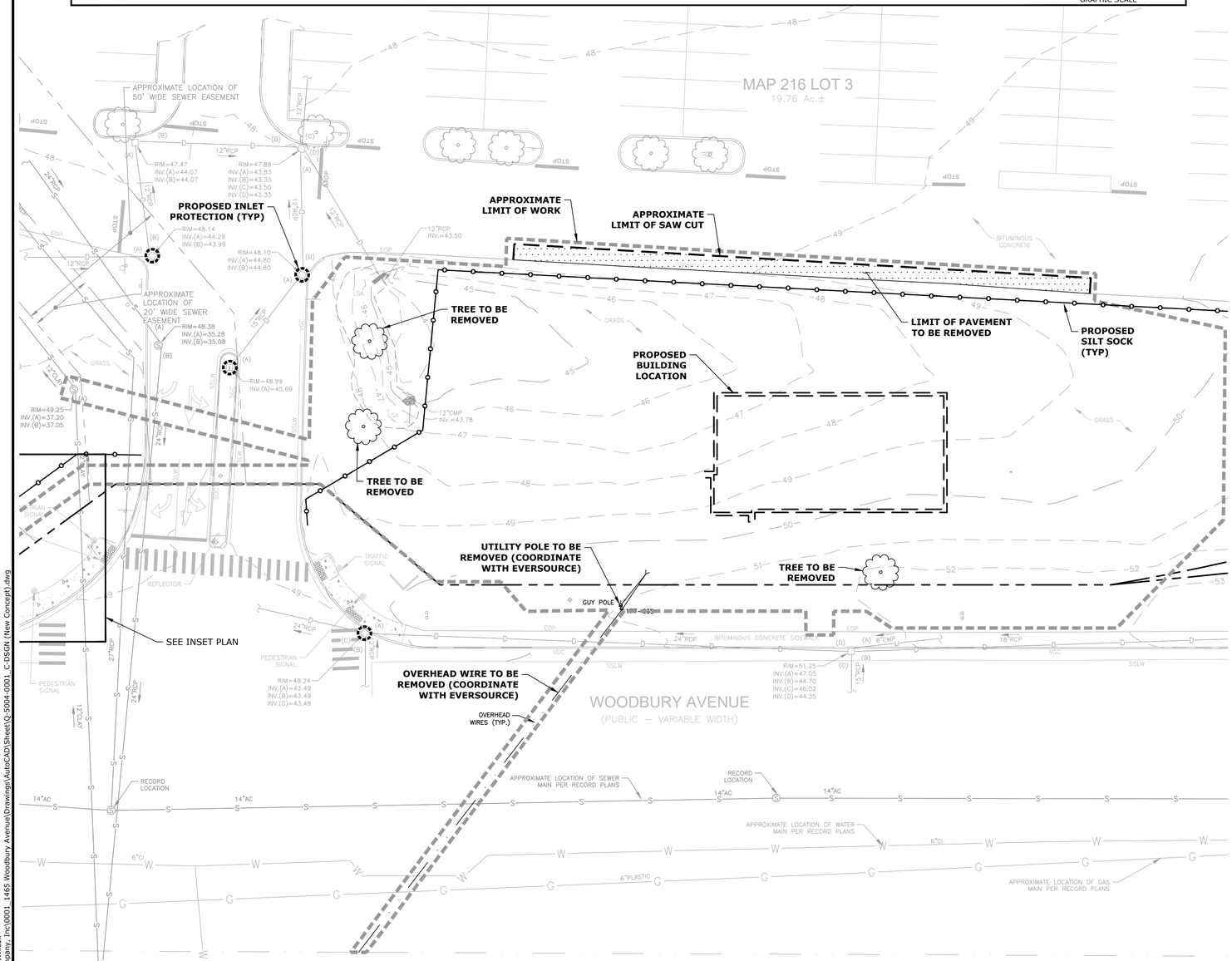
NEX-2200150.43

1 OF 1

F:\Projects\NEX-2200150 – Tighe & Bond MSA\43 – Portsmouth, NH – Woodbury\CAD Files\2200150.43_SV.dwg ECP 4/16/25 12:38pm silitalien



INSET PLAN



EXISTING CONDITIONS PLAN NOTES:

1. EXISTING CONDITIONS ARE BASED ON A FIELD SURVEY BY GREENMAN-PEDERSEN, INC. DATED 1/10/2025.

DEMOLITION NOTES:

1. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH THE CONDITIONS OF ALL OF THE PERMIT APPROVALS.
3. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES, AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
4. THE CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES. CALL DIG SAFE AT LEAST 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITIES.
5. THE ACCURACY AND COMPLETENESS OF SUBSURFACE INFORMATION (E.G., EXISTING UTILITIES) SHOWN ON THESE DRAWINGS IS NOT GUARANTEED AND SOME SUBSURFACE INFORMATION MAY NOT BE SHOWN. DETERMINE THE LOCATIONS AND ELEVATIONS OF ALL SUBSURFACE FEATURES WHICH MAY AFFECT CONSTRUCTION OPERATIONS BY TEST PIT OR OTHER METHODS, AS NECESSARY TO PREVENT DAMAGE TO UTILITIES AND OTHER SUBSURFACE FEATURES, AND/OR INTERRUPTIONS IN UTILITY SERVICE. PROVIDE DATA COLLECTED THROUGH THESE INVESTIGATIONS TO THE ENGINEER PRIOR TO CONSTRUCTING THE PROPOSED IMPROVEMENTS.
6. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY UTILITIES IDENTIFIED DURING CONSTRUCTION THAT ARE NOT SHOWN ON THE DRAWINGS OR THAT DIFFER IN SIZE OR MATERIAL.
7. THE CONTRACTOR IS RESPONSIBLE FOR SUPPORT OF EXISTING UTILITIES AND REPAIR OR REPLACEMENT COSTS OF UTILITIES DAMAGED DURING CONSTRUCTION, WHETHER ABOVE OR BELOW GRADE. REPLACE DAMAGED UTILITIES IMMEDIATELY AT NO ADDITIONAL COST TO THE OWNER AND AT NO COST TO THE PROPERTY OWNER.
8. ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/ DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO MATCH ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
9. THE CONTRACTOR IS RESPONSIBLE FOR SITE SAFETY; COORDINATION WITH THE OWNER, ALL SUBCONTRACTORS, AND WITH OTHER CONTRACTORS WORKING WITHIN THE LIMITS OF WORK, THE MEANS AND METHODS OF CONSTRUCTING THE PROPOSED WORK.
10. THE CONTRACTOR SHALL VERIFY ORIGIN OF ALL DRAINS AND UTILITIES PRIOR TO REMOVAL/TERMINATION TO DETERMINE IF DRAINS OR UTILITY ARE ACTIVE, AND SERVICES ANY ON OR OFF-SITE STRUCTURE TO REMAIN. THE CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY OF ANY SUCH UTILITY FOUND AND SHALL MAINTAIN THESE UTILITIES UNTIL PERMANENT SOLUTION IS IN PLACE.
11. ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES AND CODES.
12. REMOVE TREES AND BRUSH AS REQUIRED FOR COMPLETION OF WORK. CONTRACTOR SHALL GRUB AND REMOVE ALL STUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF-SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEMOLITION AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK, EXCEPT FOR WORK NOTED TO BE COMPLETED BY OTHERS.
14. THE CONTRACTOR SHALL COORDINATE REMOVAL, RELOCATION, DISPOSAL OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.
15. UTILITIES SHALL BE TERMINATED AT THE MAIN LINE PER UTILITY COMPANY STANDARDS. THE CONTRACTOR SHALL REMOVE ALL ABANDONED UTILITIES LOCATED WITHIN THE LIMITS OF WORK.
16. SAW CUT AND REMOVE PAVEMENT ONE (1) FOOT OFF PROPOSED EDGE OF PAVEMENT OR EXISTING CURB LINE IN ALL AREAS WHERE PAVEMENT TO BE REMOVED ABUTS EXISTING PAVEMENT OR CONCRETE TO REMAIN.
17. PAVEMENT REMOVAL LIMITS ARE SHOWN FOR CONTRACTOR'S CONVENIENCE. ADDITIONAL PAVEMENT REMOVAL MAY BE REQUIRED DEPENDING ON THE CONTRACTOR'S OPERATION. CONTRACTOR TO VERIFY FULL LIMITS OF PAVEMENT REMOVAL PRIOR TO BID.
18. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL UTILITIES TO BE REMOVED AND PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
19. THE CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY TRAFFIC CONTROL/SAFETY DEVICES TO ENSURE SAFE VEHICULAR AND PEDESTRIAN ACCESS THROUGH THE WORK AREA, OR FOR SAFELY IMPLEMENTING DETOURS AROUND THE WORK AREA. PERFORM TRAFFIC CONTROL IN ACCORDANCE WITH THE CONTRACTOR'S APPROVED TRAFFIC CONTROL PLAN.
20. THE CONTRACTOR SHALL MAINTAIN EMERGENCY ACCESS TO ALL PROPERTIES WITHIN THE PROJECT AREA AT ALL TIMES DURING CONSTRUCTION.
21. THE CONTRACTOR SHALL PHASE DEMOLITION AND CONSTRUCTION AS REQUIRED TO PROVIDE CONTINUOUS SERVICE TO EXISTING BUSINESSES THROUGHOUT THE CONSTRUCTION PERIOD. EXISTING BUSINESS SERVICES INCLUDE, BUT ARE NOT LIMITED TO ELECTRICAL, COMMUNICATION, FIRE PROTECTION, DOMESTIC WATER AND SEWER SERVICES. TEMPORARY SERVICES, IF REQUIRED, SHALL COMPLY WITH ALL FEDERAL, STATE, LOCAL AND UTILITY COMPANY STANDARDS. CONTRACTOR SHALL PROVIDE DETAILED CONSTRUCTION SCHEDULE TO OWNER PRIOR TO ANY DEMOLITION/CONSTRUCTION ACTIVITIES AND SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH THE UTILITY COMPANY AND AFFECTED ABUTTER.
22. THE CONTRACTOR SHALL PROTECT ALL PROPERTY MONUMENTATION THROUGHOUT DEMOLITION AND CONSTRUCTION OPERATIONS. SHOULD ANY MONUMENTATION BE DISTURBED BY THE CONTRACTOR, THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED SURVEYOR TO REPLACE DISTURBED MONUMENTS.
23. THE CONTRACTOR SHALL PAY ALL COSTS NECESSARY FOR TEMPORARY PARTITIONING, BARRICADING, FENCING, SECURITY AND SAFETY DEVICES REQUIRED FOR THE MAINTENANCE OF A CLEAN AND SAFE CONSTRUCTION SITE.
24. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ADDITIONAL PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR NECESSARY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION.
25. THE CONTRACTOR SHALL COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAY WITH THE CITY OF PORTSMOUTH.
26. ALL WORK SHALL CONFORM TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS, STANDARD SPECIFICATIONS AND WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", CURRENT EDITION.
27. BEFORE ANY DEWATERING IS PERFORMED A TEMPORARY DISCHARGE PERMIT FROM THE NHDES IS REQUIRED.
28. NOTIFY THE ENGINEER IN WRITING OF ANY CONFLICT, ERROR, AMBIGUITY, OR DISCREPANCY WITH THE PLANS OR BETWEEN THE PLANS AND ANY APPLICABLE LAW, REGULATION, CODE, STANDARD SPECIFICATION, OR MANUFACTURER'S INSTRUCTIONS.
29. TIGHE & BOND ASSUMES NO RESPONSIBILITY FOR ANY ISSUES, LEGAL OR OTHERWISE, RESULTING FROM CHANGES MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM TIGHE & BOND.

LEGEND

	APPROXIMATE LIMIT OF PAVEMENT TO BE REMOVED
	APPROXIMATE LIMIT OF WORK
	PROPOSED LIMIT OF SAW CUT
	PROPOSED SILT SOCK
	PROPOSED BUILDING FOOTPRINT
D	EXISTING DRAIN LINE
S	EXISTING SEWER LINE
G	EXISTING GAS LINE
W	EXISTING WATER LINE
	EXISTING CATCH BASIN
D	EXISTING DRAIN MANHOLE
	EXISTING LIGHT POLE
	EXISTING SIGN
S	EXISTING SEWER MANHOLE
	UTILITY POLE
	EXISTING HYDRANT
TYP	TYPICAL
COORD	COORDINATE

Tighe&Bond

THIS DOCUMENT IS RELEASED FOR PERMITTING REVIEW ONLY. IT IS NOT INTENDED FOR BIDDING OR CONSTRUCTION PURPOSES.

0 20' 40'
GRAPHIC SCALE

PROPOSED BANK PAD

BROMLEY-PORTSMOUTH, LLC &
RCQ-PORTSMOUTH, LLC
c/o QUINCY & COMPANY, INC.

1465 WOODBURY AVE
PORTSMOUTH, NH

MARK	DATE	DESCRIPTION

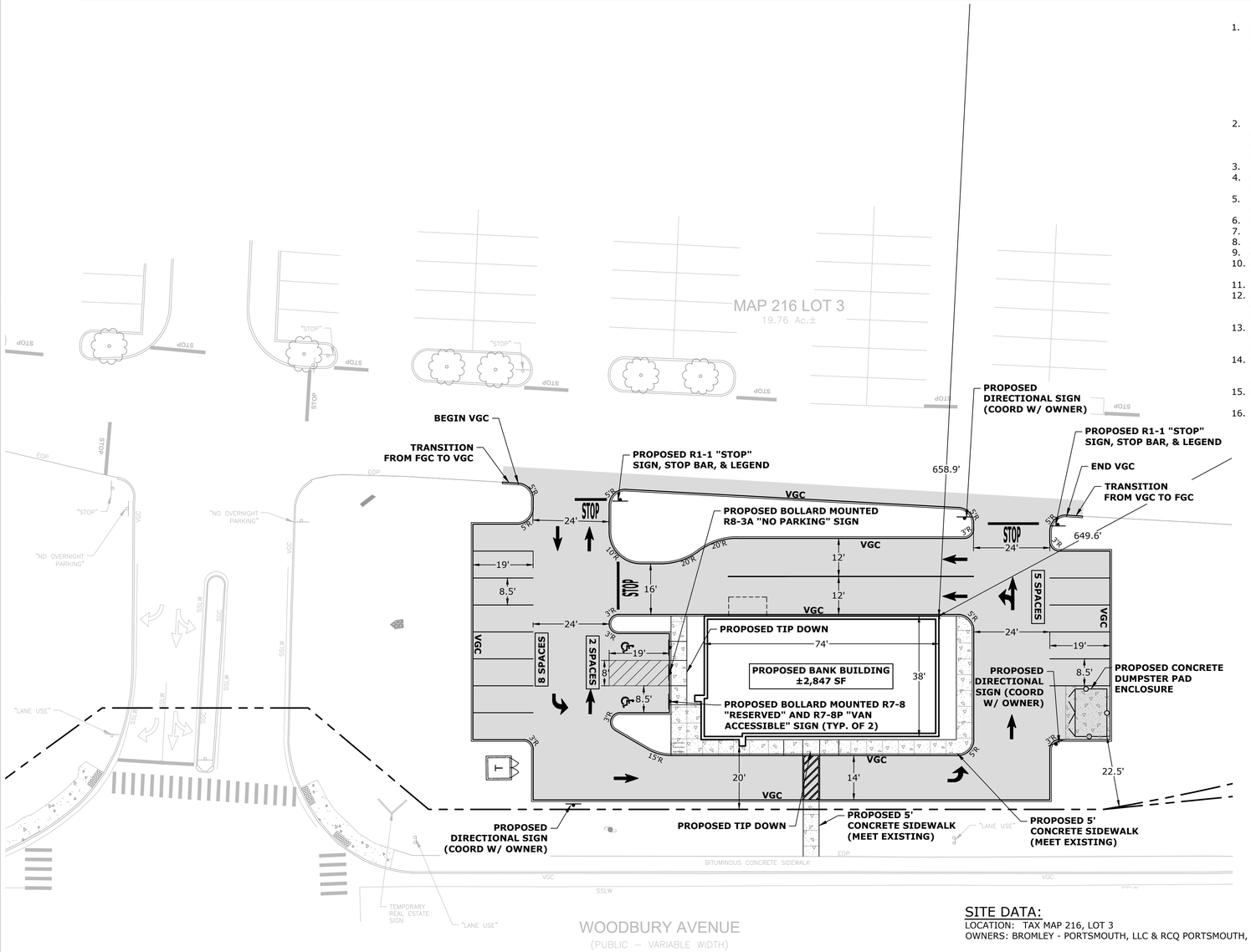
PROJECT NO:	Q5004-0001
DATE:	5/6/2025
FILE:	Q-5004-0001_C-DSGN (New Concept).dwg
DRAWN BY:	NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

EXISTING CONDITIONS & DEMOLITION PLAN

SCALE: AS SHOWN

C-101

Last Saved: 5/5/2025
Plotted On:May 06, 2025-10:27am By: NWilcox
Tighe & Bond:J:\Q\Q5004 Quincy & Company, Inc\0001_1465 Woodbury Avenue\Drawings\AutoCAD\Sheet\Q-5004-0001_C-DSGN (New Concept).dwg



SITE NOTES:

1. PAVEMENT MARKINGS, INCLUDING BUT NOT LIMITED TO; PARKING SPACES, STOP BARS, ADA SYMBOLS, PAINTED ISLANDS, CROSS WALKS, ARROWS, LEGENDS, AND CENTERLINES, SHALL BE CONSTRUCTED AS SHOWN ON THE DRAWINGS AND DETAILS, AND SHALL MEET THE FOLLOWING REQUIREMENTS:
   - ALL ON-SITE PAVEMENT MARKINGS EXCEPT CENTERLINES & MEDIAN ISLANDS SHALL BE CONSTRUCTED USING WHITE TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248 TYPE "F".
   - ALL ON-SITE CENTERLINES AND MEDIAN ISLANDS SHALL BE CONSTRUCTED USING YELLOW TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248 TYPE "F".
   - ALL PAVEMENT MARKINGS WITHIN PUBLIC RIGHT OF WAY SHALL CONFORM TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS, AND APPLICABLE DEPARTMENT OF TRANSPORTATION (DOT), STANDARD SPECIFICATIONS.
2. ALL PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" CURRENT EDITION, "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS" CURRENT EDITION, AND THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (ADA), THE ARCHITECTURAL BARRIERS ACT (ABA), AND THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD (AAB), AS APPLICABLE.
3. THE CONTRACTOR SHALL EMPLOY A NEW HAMPSHIRE LICENSED LAND SURVEYOR TO DETERMINE ALL LINES AND GRADES.
4. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAW CUT LINE WITH RS-1 EMULSION IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.
5. THE CONTRACTOR TO PROVIDE BACKFILL AND COMPACTION AT CURB LINE AFTER CONCRETE FORMS FOR SIDEWALKS AND PADS HAVE BEEN STRIPPED.
6. COORDINATE ALL WORK ADJACENT TO BUILDINGS WITH BUILDING DRAWINGS/CONTRACTOR.
7. SEE ARCHITECTURAL/BUILDING DRAWINGS FOR ALL CONCRETE PADS & SIDEWALKS ADJACENT TO BUILDING.
8. ALL LIGHT POLE BASES NOT PROTECTED BY A RAISED CURB SHALL BE PAINTED YELLOW.
9. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
10. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE, AND LOCAL CODES & SPECIFICATIONS.
11. THE CONTRACTOR SHALL COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAY WITH THE CITY OF PORTSMOUTH.
12. ALL WORK SHALL CONFORM TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS, STANDARD SPECIFICATIONS AND WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", CURRENT EDITION.
13. THE CONTRACTOR TO SUBMIT AS-BUILT PLANS IN DIGITAL FORMAT (.DWG AND .PDF FILES) TO THE OWNER AND ENGINEER UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR.
14. PROPERTY MANAGER WILL BE RESPONSIBLE FOR TIMELY SNOW REMOVAL FROM ALL PUBLIC WALKS, DRIVES, AND PARKING AREAS ON-SITE. SNOW SHALL BE HAULED OFF-SITE AND LEGALLY DISPOSED OF, WHEN NECESSARY, WHEN SNOW STORAGE AREAS HAVE REACHED CAPACITY.
15. NOTIFY THE ENGINEER IN WRITING OF ANY CONFLICT, ERROR, AMBIGUITY, OR DISCREPANCY WITH THE PLANS OR BETWEEN THE PLANS AND ANY APPLICABLE LAW, REGULATION, CODE, STANDARD SPECIFICATION, OR MANUFACTURER'S INSTRUCTIONS.
16. TIGHE & BOND ASSUMES NO RESPONSIBILITY FOR ANY ISSUES, LEGAL OR OTHERWISE, RESULTING FROM CHANGES MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM TIGHE & BOND.

LEGEND

	PROPOSED BUILDING
	PROPOSED PACEMENT SECTION
	PROPOSED CONCRETE SECTION
	PROPERTY LINE
	PROPOSED EDGE OF PAVEMENT
	PROPOSED CURB
	PROPOSED SIGN
	PROPOSED BOLLARD
TYP	TYPICAL
BLDG	BUILDING
COORD	COORDINATE
VGC	VERTICAL GRANITE CURB
SGC	SLOPED GRANITE CURB

SITE DATA:

LOCATION: TAX MAP 216, LOT 3
OWNERS: BROMLEY - PORTSMOUTH, LLC & RCQ PORTSMOUTH, LLC

ZONING DISTRICT: GATEWAY NEIGHBORHOOD MIXED USE CORRIDOR (G1)

PROPOSED USE: SMALL COMMERCIAL BUILDING (RETAIL BANK)
EXISTING LOT SIZE: ±838,965 SF / 19.26 ACRES

DEVELOPMENT STANDARDS

SMALL COMMERCIAL BUILDING (10.5B34.60)	REQUIRED	PROPOSED
MINIMUM LOT DEPTH:	NR	-
MINIMUM STREET FRONTAGE:	50 FT	2220.2 FT
FRONT YARD SETBACK:	0-20 FT	19.5 FT
MIN. SIDE YARD SETBACK	10 FT	649.6 FT
MIN. REAR YARD SETBACK	15 FT	658.9 FT
MAXIMUM DWELLING UNITS PER BUILDING	NR	-
MAXIMUM DWELLING UNIT SIZE	NR	-
MAXIMUM BUILDING HEIGHT	3 STORIES OR 40 FT	<40 FT
MINIMUM STREET-FACING FACADE HEIGHT	18 FT	
MAX. FINISH FLOOR ABOVE SIDEWALK	24"	
MAXIMUM BUILDING COVERAGE	70%	<1%
MAXIMUM BUILDING FOOTPRINT	10,000 SF	2,847 SF
MAXIMUM FACADE MODULATION LENGTH	50 FT	<100 FT
MINIMUM STREET FACING FACADE GLAZING	50% GROUND FLOOR	
MAXIMUM STREET FACING ENTRANCE SPACING	NR	-
ALLOWED ROOF TYPES	ALL	
ALLOWED FACADE TYPES: FORECOURT, RECESSED ENTRY, PORCH, OFFICEFRONT, SHOPFRONT, TERRACE, GALLERY, ARCADE		

COMMUNITY SPACE:	REQUIRED	PROPOSED
	10%	
	83,897 SF	

PARKING REQUIREMENTS

FINANCIAL SERVICES
(1 PER 350 SF)

PARKING SPACES	REQUIRED	PROPOSED
	9 SPACES	15 SPACES

ADA PARKING SPACES	REQUIRED(2)	PROPOSED
	1 SPACES	2 SPACES

(2) - PER THE AMERICANS WITH DISABILITIES ACT (ADA) STANDARDS, LATEST EDITION.

PARKING SPACE DIMENSIONAL REQUIREMENTS:		
STANDARD 90° STALL :		
WIDTH	8.5 FT MIN	8.5 FT
LENGTH	19 FT MIN	19 FT
DRIVE AISLE WIDTH:		
90° (2-WAY TRAFFIC)	24 FT	24 FT

BICYCLE SPACES	REQUIRED	PROPOSED
1 BICYCLE SPACE / 10 PARKING SPACES:	2 SPACES	3 SPACES

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0 20' 40'
GRAPHIC SCALE

PROPOSED BANK PAD

BROMLEY-PORTSMOUTH, LLC &
RCQ-PORTSMOUTH, LLC
c/o QUINCY & COMPANY, INC.

1465 WOODBURY AVE
PORTSMOUTH, NH

MARK	DATE	DESCRIPTION

PROJECT NO:	Q5004-0001
DATE:	5/6/2025
FILE:	Q-5004-0001_C-DSGN (New Concept).dwg
DRAWN BY:	NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

SITE PLAN

SCALE: AS SHOWN

C-102

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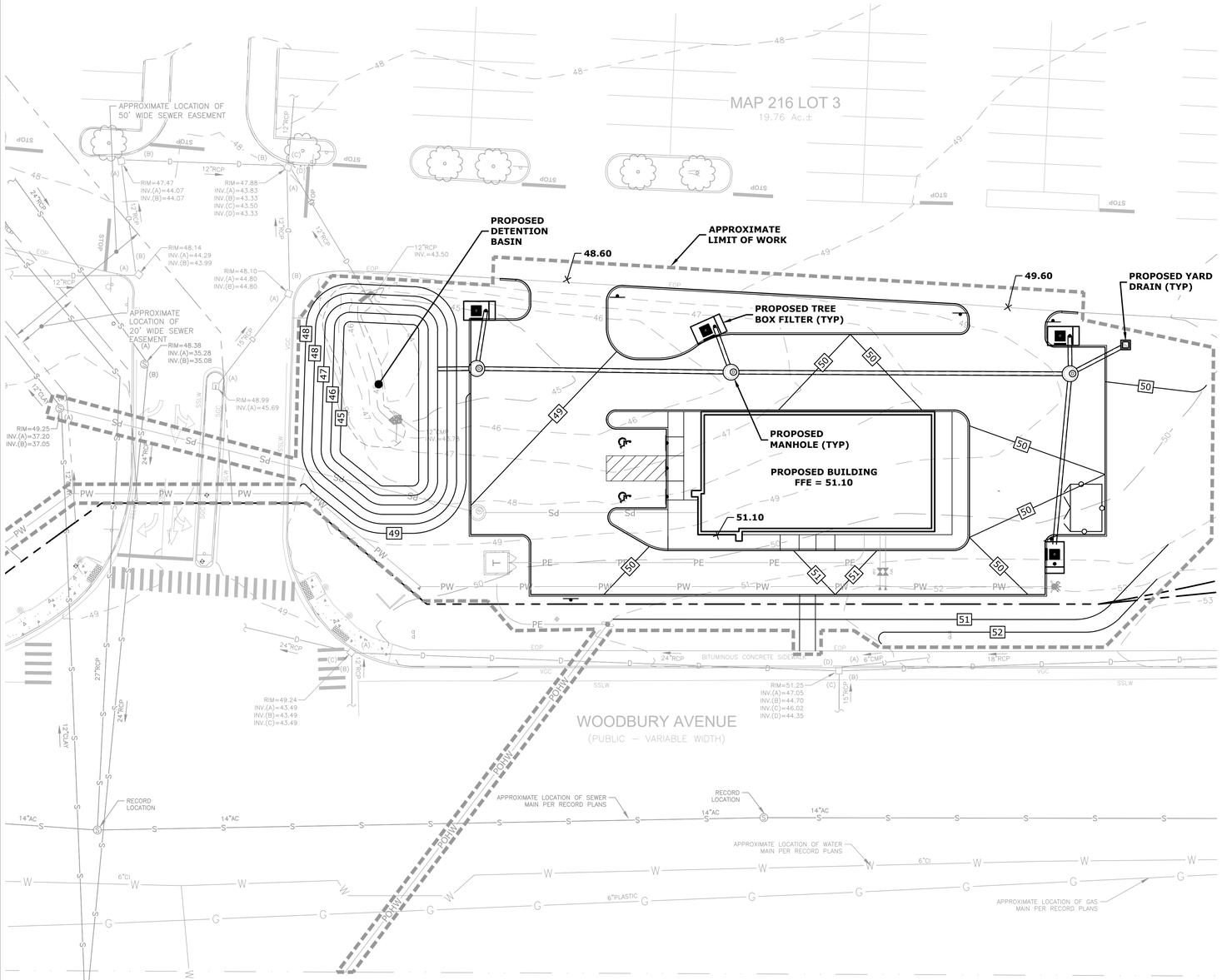
Plotted On:May 06, 2025-10:26am By: NWilcox
Tighe & Bond:J:\Q\Q5004 Quincy & Company, Inc\0001_1465 Woodbury Avenue\Drawings\AutoCAD\Sheet\Q-5004-0001_C-DSGN (New Concept).dwg



GRADING AND DRAINAGE NOTES:

1. GENERAL COMPACTION REQUIREMENTS:
   - BELOW PAVED OR CONCRETE AREAS: 95%
   - TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL: 95%
   - BELOW LOAM AND SEED AREAS: 90%

   * ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT AS DETERMINED AND CONTROLLED IN ACCORDANCE WITH ASTM D-1557, METHOD C FIELD DENSITY TESTS SHALL BE MADE IN ACCORDANCE WITH ASTM D-1556 OR ASTM-2922.
2. ALL STORM DRAINAGE PIPES SHALL BE HIGH DENSITY POLYETHYLENE (HANCOR HI-Q, ADS N-12 OR EQUAL) OR RCP CLASS IV, UNLESS OTHERWISE SPECIFIED.
3. SEE UTILITY PLAN FOR ALL SITE UTILITY INFORMATION.
4. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
5. THE CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE AND LAWN AREAS FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCES, EXITS, RAMPS AND LOADING DOCK AREAS ADJACENT TO THE BUILDING.
6. PROVIDE SITE GRADING AT ACCESSIBLE SIDEWALK RAMPS, SIDEWALKS, AND BUILDING ENTRANCES THAT IS CONSISTENT WITH THE RELEVANT ACCESS REQUIREMENTS OF THE ARCHITECTURAL BARRIERS ACT (ABA), THE AMERICANS WITH DISABILITIES ACT (ADA), AND MA ARCHITECTURAL ACCESS BOARD REQUIREMENTS (AAB). SMALL CHANGES IN GRADE OVER RELATIVELY SHORT DISTANCES (E.G. AT PARKING SPACES, ACCESSIBLE ROUTES, AND RAMPS) MIGHT NOT BE CLEARLY DEPICTED WITHIN THE CONTOUR INTERVAL SHOWN. COMPLY WITH THE CRITERIA IN THESE STANDARDS. SELECT MAXIMUM SLOPE CRITERIA ARE REPRODUCED BELOW:
   - ACCESSIBLE PARKING STALLS AND PASSENGER LOADING ZONES (IN ANY DIRECTION) SHALL BE < 2.0%
   - LONGITUDINAL SLOPE ALONG ACCESSIBLE ROUTES SHALL BE < 5.0%
   - CROSS SLOPE ALONG ACCESSIBLE ROUTES SHALL BE < 2.0%
7. THE CONTRACTOR SHALL THOROUGHLY CLEAN ALL CATCH BASINS AND DRAIN LINES, WITHIN THE LIMIT OF WORK, OF SEDIMENT IMMEDIATELY UPON COMPLETION OF CONSTRUCTION.
8. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES.
9. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED FERTILIZER AND MULCH.
10. ALL PROPOSED CATCH BASINS SHALL BE EQUIPPED WITH OIL/GAS SEPARATOR HOODS AND 4' SUMPS.
11. ALL WORK AND STORM DRAIN CONSTRUCTION SHALL CONFORM TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS, STANDARD SPECIFICATIONS AND WITH THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION, "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", CURRENT EDITION.
12. THE CONTRACTOR TO SUBMIT AS-BUILT PLANS IN DIGITAL FORMAT (.DWG AND .PDF FILES) TO THE OWNER AND ENGINEER UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR.
13. SEE EXISTING CONDITIONS PLAN(S) FOR BENCH MARK INFORMATION.
14. THE CONTRACTOR SHALL VERIFY INVERTS OF EXISTING DRAIN LINES AND STRUCTURES AT PROPOSED DRAINAGE CONNECTION LOCATIONS PRIOR TO CONSTRUCTION AND IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES.
15. NOTIFY THE ENGINEER IN WRITING OF ANY CONFLICT, ERROR, AMBIGUITY, OR DISCREPANCY WITH THE PLANS OR BETWEEN THE PLANS AND ANY APPLICABLE LAW, REGULATION, CODE, STANDARD SPECIFICATION, OR MANUFACTURER'S INSTRUCTIONS.
16. TIGHE & BOND ASSUMES NO RESPONSIBILITY FOR ANY ISSUES, LEGAL OR OTHERWISE, RESULTING FROM CHANGES MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM TIGHE & BOND.

GENERAL EROSION CONTROL NOTES:

1. ALL EROSION CONTROL MEASURES AND PRACTICES SHALL CONFORM TO THE "NEW HAMPSHIRE STORMWATER MANUAL VOLUME 3: EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION", PREPARED BY NHDES.
2. SEE SHEET C-501 AND C-502 FOR ADDITIONAL EROSION CONTROL REQUIREMENTS AND DETAILS.
3. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL EROSION AND SEDIMENT CONTROL MEASURES FOR APPROVAL.
4. AS THE FIRST ORDER OF WORK, PRIOR TO ANY EARTH DISTURBANCE, THE CONTRACTOR SHALL INSTALL ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES INCLUDING BUT NOT LIMITED TO; INLET PROTECTION BARRIERS, SILT SOCKS, SILT FENCES, MULCH BERMS, AND STABILIZED CONSTRUCTION EXITS AS SHOWN ON THE DRAWINGS, AND AS REQUIRED BY ALL STATE AND LOCAL PERMITS AND APPROVALS.
5. INLET PROTECTION BARRIERS SHALL BE INSTALLED AT ALL EXISTING AND PROPOSED CATCH BASINS/CURB INLETS AND YARD DRAINS WITHIN THE LIMITS OF WORK AS WELL AS ANY CATCH BASINS/CURB INLETS AND YARD DRAINS THAT RECEIVE RUNOFF FROM ANY CONSTRUCTION ACTIVITIES. THESE MEASURES SHALL BE FULLY MAINTAINED FOR THE DURATION OF THE PROJECT.
6. PERIMETER CONTROLS INCLUDING SILT FENCES, MULCH BERM, SILT SOCK, AND/OR HAY BALE BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT UNTIL ALL NON-PAVED AREAS HAVE BEEN STABILIZED.
7. THE CONTRACTOR SHALL INSTALL EROSION CONTROL BLANKETS ON ALL STEEP SLOPE AREA (3:1 OR GREATER).
8. DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLING DUST AND WIND EROSION THROUGHOUT THE CONSTRUCTION PERIOD. DUST CONTROL MEASURES INCLUDE, BUT NOT LIMITED TO; MOISTEN EXPOSED SOIL SURFACES PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST, MECHANICAL SWEEPERS ON PAVED SURFACES, AND COVERING SURFACES WITH CRUSHED STONE OR COARSE GRAVEL.
9. THE CONTRACTOR SHALL HAVE ALL EROSION AND SEDIMENT CONTROL MEASURES INCLUDING, BUT NOT LIMITED TO, INLET PROTECTION BARRIERS, PERIMETER SEDIMENT CONTROLS, AND STEEP SLOPE EROSION CONTROL BLANKETS INSPECTED BY A QUALIFIED PERSON AT LEAST ONCE A WEEK OR WITHIN 24 HOURS AFTER A RAIN EVENT OF 0.25 INCHES OR GREATER. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE ADJUSTED, REPAIRED, MODIFIED, OR ADDITIONAL MEASURES INSTALLED AS NECESSARY TO ADDRESS EVOLVING CONDITIONS DURING CONSTRUCTION.
10. SEDIMENT CONTROL FILTER MEASURES SHALL BE REPLACED WHEN SEDIMENT REACHES 1/3 THE HEIGHT OF THE FILTER.
11. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF CONSTRUCTION.
12. ALL DISTURBED AREAS NOT OTHERWISE BEING TREATED SHALL RECEIVE 6" LOAM, SEED AND FERTILIZER.
13. ALL CATCH BASIN SUMPS AND PIPING SHALL BE THOROUGHLY CLEANED TO REMOVE ALL SEDIMENT AND DEBRIS AFTER THE PROJECT HAS BEEN FULLY STABILIZED.
14. TEMPORARY SOIL STOCKPILE SHALL BE SURROUNDED WITH SEDIMENT CONTROLS AND SHALL BE STABILIZED BY TEMPORARY EROSION CONTROL SEEDING. STOCKPILE AREAS TO BE LOCATED AS FAR AS POSSIBLE FROM THE DELINEATED EDGE OF WETLANDS. STOCKPILES OVER 10 FEET SHALL HAVE SAFETY FENCING PROVIDED AROUND THE STOCKPILES.
15. IF NECESSARY CONCRETE TRUCKS WILL BE REQUIRED TO WASHOUT THE SHOOTS. THIS ACTIVITY SHALL ONLY BE DONE WITHIN A DESIGNATED CONCRETE WASHOUT FACILITY ON-SITE.
16. IF NECESSARY TEMPORARY SEDIMENT TRAPS SHALL BE PROVIDED FOR GENERAL EXCAVATION DEWATERING PRACTICES PRIOR TO DIRECTING FLOW TO ANY OTHER EROSION AND SEDIMENT CONTROL MEASURES.
17. THE CONTRACTOR SHALL BE FAMILIAR WITH SPILL PREVENTION MEASURES REQUIRED BY ALL LOCAL, STATE, AND FEDERAL REGULATIONS.

LEGEND

50	PROPOSED MAJOR CONTOURS
49	PROPOSED MINOR CONTOURS
	APPROXIMATE LIMIT OF WORK
	PROPOSED DRAINLINE
	PROPOSED DRAIN MANHOLE
	PROPOSED CATCH BASIN
	PROPOSED INLET PROTECTION
	EXISTING CATCH BASIN
	EXISTING DRAIN MANHOLE
D	EXISTING DRAIN LINE
S	EXISTING SEWER LINE
G	EXISTING GAS LINE
W	EXISTING WATER LINE
TYP	TYPICAL
COORD	COORDINATE

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0 20' 40'
GRAPHIC SCALE

PROPOSED BANK PAD

BROMLEY-PORTSMOUTH, LLC &
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1465 WOODBURY AVE
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DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

GRADING, DRAINAGE, & EROSION CONTROL PLAN

SCALE: AS SHOWN

C-103

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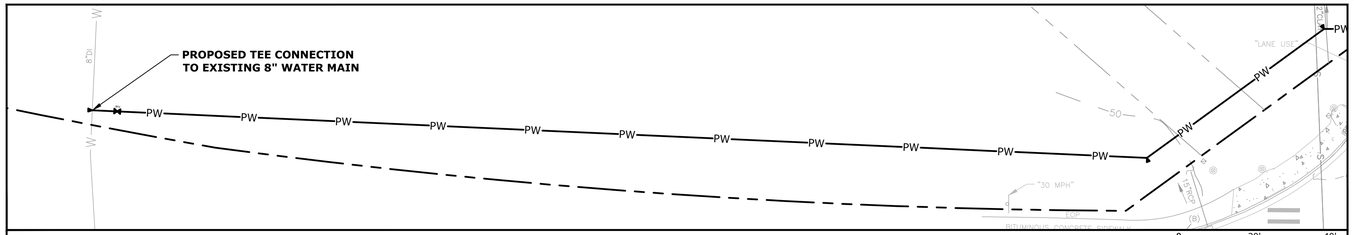
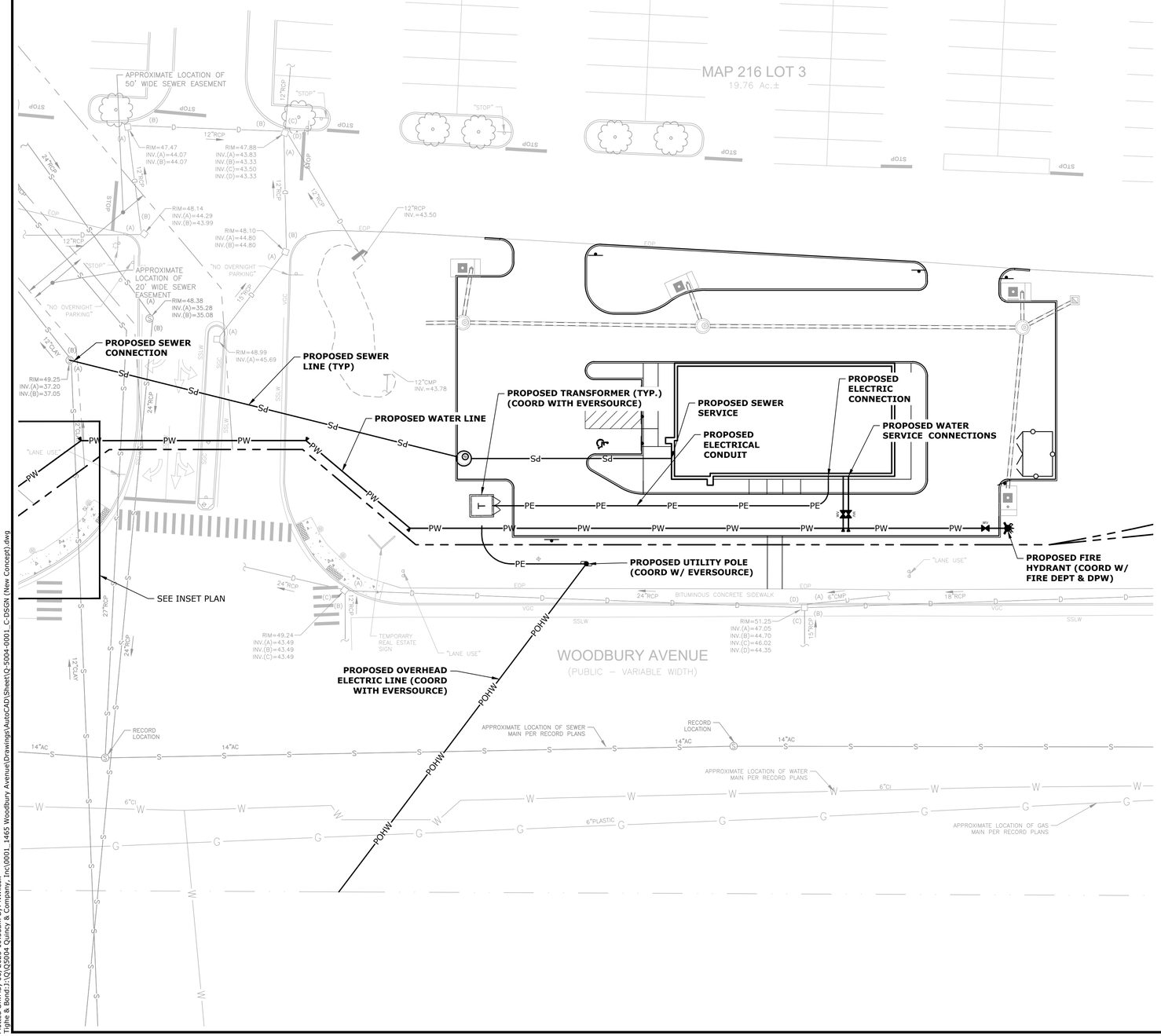
Tighe & Bond:J:\Q\Q5004 Quincy & Company, Inc\0001_1465 Woodbury Avenue\Drawings\AutoCAD\Sheet\Q-5004-0001_C-DSGN (New Concept).dwg



INSET PLAN



UTILITY NOTES:

1. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR ENGINEER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES, ANTICIPATE CONFLICTS, REPAIR EXISTING UTILITIES, AND RELOCATE EXISTING UTILITIES REQUIRED TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
2. THE ACCURACY AND COMPLETENESS OF SUBSURFACE INFORMATION (E.G., EXISTING UTILITIES) SHOWN ON THESE DRAWINGS IS NOT GUARANTEED AND SOME SUBSURFACE INFORMATION MAY NOT BE SHOWN. DETERMINE THE LOCATIONS AND ELEVATIONS OF ALL SUBSURFACE FEATURES WHICH MAY AFFECT CONSTRUCTION OPERATIONS BY TEST PIT OR OTHER METHODS, AS NECESSARY TO PREVENT DAMAGE TO UTILITIES AND OTHER SUBSURFACE FEATURES, AND/OR INTERRUPTIONS IN UTILITY SERVICE. PROVIDE DATA COLLECTED THROUGH THESE INVESTIGATIONS TO THE ENGINEER PRIOR TO CONSTRUCTING THE PROPOSED IMPROVEMENTS.
3. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY UTILITIES IDENTIFIED DURING CONSTRUCTION THAT ARE NOT SHOWN ON THE DRAWINGS OR THAT DIFFER IN SIZE OR MATERIAL.
4. COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY COMPANY.
   - NATURAL GAS - UNITIL
   - WATER - CITY OF PORTSMOUTH
   - SEWER - CITY OF PORTSMOUTH
   - ELECTRIC - EVERSOURCE
   - COMMUNICATIONS - CONSOLIDATED COMM/FAIRPOINT/COMCAST
3. SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.
4. SEE GRADING, DRAINAGE & EROSION CONTROL PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
5. ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, CEMENT LINED DUCTILE IRON PIPE.
6. ALL WATER MAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION PRIOR TO ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE CHLORINATION AND TESTING WITH THE CITY OF PORTSMOUTH WATER DEPARTMENT.
7. ALL BELOW GRADE WATER VALVES AND FITTINGS SHALL HAVE MECHANICAL JOINT (MJ) ENDS. RESTRAIN ALL WATER VALVES AND FITTINGS JOINTS WITH RETAINER GLANDS, OR AS REQUIRED BY THE CITY OF PORTSMOUTH WATER DEPARTMENT STANDARDS.
8. CONNECTION TO EXISTING WATER MAIN SHALL BE CONSTRUCTED TO THE CITY OF PORTSMOUTH WATER DEPARTMENT STANDARDS.
9. HYDRANTS, GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF PORTSMOUTH FIRE AND/OR WATER DEPARTMENT.
10. ALL SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE STATED.
11. COORDINATE ALL WORK WITHIN PUBLIC RIGHT OF WAYS WITH THE CITY OF PORTSMOUTH.
12. THE CONTRACTOR SHALL MAINTAIN UTILITY SERVICES TO ABUTTING PROPERTIES THROUGHOUT CONSTRUCTION.
13. EXISTING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE DEPARTMENT OF PUBLIC WORKS STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES.
14. ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, CURRENT EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
15. THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH THE BUILDING DRAWINGS AND THE APPLICABLE UTILITY COMPANIES. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
16. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
17. THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATES TO THE OWNER PRIOR TO THE COMPLETION OF THIS PROJECT.
18. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
19. THE CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES.
20. A 10-FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS.
21. THE CONTRACTOR SHALL CONTACT "DIG SAFE" 72 HOURS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL HAVE THE "DIG-SAFE" NUMBER ON-SITE AT ALL TIMES.
22. THE CONTRACTOR TO SUBMIT AS-BUILT PLANS IN DIGITAL FORMAT (.DWG AND .PDF FILES) ON DISK TO THE OWNER AND ENGINEER UPON COMPLETION OF THE PROJECT. AS-BUILTS SHALL BE PREPARED AND CERTIFIED BY A NEW HAMPSHIRE LICENSED LAND SURVEYOR.
23. SAW CUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN
24. COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF PORTSMOUTH SEWER DEPARTMENT.
25. ALL SEWER PIPE WITH LESS THAN 6' OF COVER IN PAVED AREAS OR LESS THAT 4' OF COVER IN UNPAVED AREAS SHALL BE INSULATED.
26. CONTRACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY.
27. THE CONTRACTOR SHALL PHASE UTILITY CONSTRUCTION, PARTICULARLY WATER MAIN AND GAS MAIN CONSTRUCTION AS TO MAINTAIN CONTINUOUS SERVICE TO ABUTTING PROPERTIES. CONTRACTOR SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH THE UTILITY COMPANY AND AFFECTED ABUTTER.
28. SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PROVIDED BY THE PROJECT ELECTRICAL ENGINEER.
29. THE CONTRACTOR SHALL CONSTRUCT ALL UTILITIES AND DRAINS TO WITHIN 10' OF THE FOUNDATION WALLS AND CONNECT THESE TO SERVICE STUBS FROM THE BUILDING.
30. FINAL LOCATION OF ALL WATER METER AND VALVE SHALL BE COORDINATED WITH THE CITY OF PORTSMOUTH WATER DEPARTMENT PRIOR TO CONSTRUCTION.
31. THE CONTRACTOR SHALL VERIFY INVERTS OF EXISTING SEWER LINES AND STRUCTURES AT PROPOSED SEWER CONNECTION LOCATIONS PRIOR TO CONSTRUCTION AND IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES.
32. NOTIFY THE ENGINEER IN WRITING OF ANY CONFLICT, ERROR, AMBIGUITY, OR DISCREPANCY WITH THE PLANS OR BETWEEN THE PLANS AND ANY APPLICABLE LAW, REGULATION, CODE, STANDARD SPECIFICATION, OR MANUFACTURER'S INSTRUCTIONS.
33. TIGHE & BOND ASSUMES NO RESPONSIBILITY FOR ANY ISSUES, LEGAL OR OTHERWISE, RESULTING FROM CHANGES MADE TO THESE DRAWINGS WITHOUT WRITTEN AUTHORIZATION FROM TIGHE & BOND.

LEGEND

PS	PROPOSED SEWER LINE
PW	PROPOSED WATER LINE
PE	PROPOSED UNDERGROUND ELECTRIC LINE
	PROPOSED SANITARY MANHOLE
T	PROPOSED TRANSFORMER
	PROPOSED WATER VALVE
	PROPOSED THRUST BLOCK
D	EXISTING DRAIN LINE
S	EXISTING SEWER LINE
G	EXISTING GAS LINE
W	EXISTING WATER LINE
	PROPOSED DRAINLINE
	PROPOSED DRAIN MANHOLE
	PROPOSED CATCH BASIN
	EXISTING CATCH BASIN
D	EXISTING DRAIN MANHOLE
TYP	TYPICAL
COORD	COORDINATE

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UTILITY PLAN

SCALE: AS SHOWN

C-104

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GENERAL PROJECT INFORMATION
PROJECT APPLICANT: BROMLEY-PORTSMOUTH, LLC

PROJECT NAME: PROPOSED BANK PAD
PROJECT MAP / LOT: MAP 216 / LOT 3

PROJECT ADDRESS: 1465 WOODNURY AVENUE
PORTSMOUTH, NH 03801
PROJECT LATITUDE: 43°-05'-15" N
PROJECT LONGITUDE: 70°-47'-20" W

PROJECT DESCRIPTION
THE PROJECT CONSISTS OF THE CONSTRUCTION OF A BANK PAD ALONG THE PARCEL FRONTAGE THAT CONSISTS OF A 2,500 SF BANK WITH A DRIVE-THROUGH AND ASSOCIATED SITE IMPROVEMENTS.

DISTURBED AREA
THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 0.78 ACRES.

SOIL CHARACTERISTICS
BASED ON THE NRCS WEB SOIL SURVEY FOR ROCKINGHAM COUNTY, NEW HAMPSHIRE, THE SOILS ON SITE PRIMARILY CONSIST OF URBAN LAND SOILS.

NAME OF RECEIVING WATERS
THE STORMWATER RUNOFF FROM THE SITE WILL BE DISCHARGED VIA A CLOSED DRAINAGE SYSTEM TO A DETENTION BASIN ON SITE, THAT WILL ULTIMATELY DISCHARGE INTO THE EXISTING CLOSED DRAINAGE SYSTEM WITHIN THE PROPERTY.

CONSTRUCTION SEQUENCE OF MAJOR ACTIVITIES:
1. CUT AND CLEAR TREES ACROSS SITE.
2. CONSTRUCT TEMPORARY AND PERMANENT SEDIMENT, EROSION AND DETENTION CONTROL FACILITIES. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATIONS THAT WILL INFLUENCE STORMWATER RUNOFF SUCH AS:
   2.1. DISPOSAL OF SEDIMENT SPOIL, STUMP, AND OTHER SOLID WASTE
   2.2. CONSTRUCTION OF PARKING AREAS
   2.3. CONTROL OF DUST
   2.4. INSTALLATION OF UTILITIES AND BUILDING CONSTRUCTION
   2.5. CONSTRUCTION DURING LATE WINTER AND EARLY SPRING
3. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES THROUGHOUT THE ENTIRETY OF CONSTRUCTION. REMOVE TRAPPED SEDIMENTS FROM COLLECTOR DEVICES AS NEEDED IN ACCORDANCE WITH THE PROJECT SWPPP AND DIRECTION OF THE ENVIRONMENTAL MONITOR.
4. NOTE THAT ALL PERMANENT DITCHES, SWALES, DETENTION, RETENTION AND SEDIMENTATION BASINS SHALL BE STABILIZED USING THE VEGETATIVE AND NON-STRUCTURAL BMPS PRIOR TO DIRECTING RUNOFF TO THEM.
5. DEMOLISH ALL SITE FEATURES AS DIRECTED ON THE DRAWINGS. CLEAR AND DISPOSE OF DEBRIS IN ACCORDANCE WITH ALL STATE AND LOCAL REGULATIONS.
6. CONSTRUCT TEMPORARY CULVERTS, DIVERSION CHANNELS, AND/OR BASINS AS REQUIRED. SEDIMENT TRAPS AND/OR BASINS SHALL BE USED AS NECESSARY TO CONTAIN RUNOFF UNTIL SOILS ARE STABILIZED.
7. COMPLETE MASS GRADING AND EARTHWORK IN ORDER TO ESTABLISH SITE SUBGRADE ELEVATIONS, AS WELL AS EXCAVATION NECESSARY TO CONSTRUCT FOUNDATIONS FOR PROPOSED STRUCTURES.
8. CONSTRUCT UNDERGROUND DRAINAGE, UTILITY AND LIGHTING INFRASTRUCTURE NECESSARY TO SUPPORT TEMPORARY AND PERMANENT CONDITIONS. ALL TRENCHES TO BE BACKFILLED IN ACCORDANCE WITH PROJECT DRAWINGS AND SPECIFICATIONS.
9. ALL AREAS OF UNSTABILIZED SOIL SHALL BE TEMPORARILY STABILIZED AS SOON AS PRACTICABLE, BUT IN ALL CASES WITHIN 45 DAYS OF INITIAL DISTURBANCE, UNLESS A SHORTER TIME IS SPECIFIED BY LOCAL AUTHORITIES, THE CONSTRUCTION SEQUENCE APPROVED AS PART OF THE ISSUED PERMIT, OR AN INDEPENDENT MONITOR. ALL AREAS OF TEMPORARILY STABILIZED SOIL SHALL PERMANENTLY STABILIZED AS SOON AS PRACTICABLE BUT IN ALL CASES WITHIN 3 DAYS OF FINAL GRADING.
10. CONSTRUCT BASE COURSE GRAVELS FOR ALL ROADWAYS AND PARKING AREAS. ALL ROADS AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
11. BEGIN PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES THAT HAVE NOT BEEN OTHERWISE STABILIZED BY GRAVELS SHALL BE SEEDED AND MULCHED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
12. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, PERIMETER EROSION CONTROL MEASURES, SEDIMENT TRAPS, ETC., MULCH AND SEED AS REQUIRED.
13. FINISH PAVING ALL ROADWAYS AND PARKING LOTS. CONSTRUCT ALL HARDSCAPE AND SITE AMENITIES/FEATURES.
14. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
15. REMOVE TRAPPED SEDIMENTS FROM ALL EROSION CONTROL MEASURES AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES.

SPECIAL CONSTRUCTION NOTES:
1. THE CONSTRUCTION SEQUENCE MUST LIMIT THE DURATION AND AREA OF DISTURBANCE.
2. THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

EROSION CONTROL NOTES:
1. ALL EROSION CONTROL MEASURES AND PRACTICES SHALL CONFORM TO THE "NEW HAMPSHIRE STORMWATER MANUAL VOLUME 3: EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION" PREPARED BY THE NHDES.
2. PRIOR TO ANY WORK OR SOIL DISTURBANCE, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR EROSION CONTROL MEASURES AS REQUIRED IN THE PROJECT MANUAL.
3. CONTRACTOR SHALL INSTALL TEMPORARY EROSION CONTROL BARRIERS, INCLUDING HAY BALES, SILT FENCES, MULCH BERMS, SILT SACKS AND SILT SOCKS AS SHOWN IN THESE DRAWINGS AS THE FIRST ORDER OF WORK.
4. SILT SACK INLET PROTECTION SHALL BE INSTALLED IN ALL EXISTING AND PROPOSED CATCH BASIN INLETS WITHIN THE WORK LIMITS AND BE MAINTAINED FOR THE DURATION OF THE PROJECT.
5. TEMPORARY WATER DIVERSION AND PERIMETER CONTROLS INCLUDING SILT FENCES, MULCH BERM, SILT SOCK, AND/OR HAY BALE BARRIERS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT UNTIL NON-PAVED AREAS HAVE BEEN STABILIZED.
6. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION CONTROL DEVICES UPON COMPLETION OF CONSTRUCTION.
7. ALL DISTURBED AREAS NOT OTHERWISE BEING TREATED SHALL RECEIVE 6" LOAM, SEED AND FERTILIZER.
8. INSPECT ALL INLET PROTECTION AND PERIMETER CONTROLS WEEKLY AND AFTER EACH RAIN STORM OF 0.25 INCH OR GREATER. REPAIR/MODIFY PROTECTION AS NECESSARY TO MAXIMIZE EFFICIENCY OF FILTER. REPLACE ALL FILTERS WHEN SEDIMENT IS 1/3 THE FILTER HEIGHT.
9. CONSTRUCT EROSION CONTROL BLANKETS ON ALL SLOPES STEEPER THAN 3:1.

STABILIZATION:
1. AN AREA SHALL BE CONSIDERED STABLE WHEN ONE OF THE FOLLOWING HAS OCCURRED:
   A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
   B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED;
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.;
   E. IN AREAS TO BE PAVED, "STABLE" MEANS THAT BASE COURSE GRAVELS MEETING THE REQUIREMENTS OF NHDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM 304.2 HAVE BEEN INSTALLED.
2. WINTER STABILIZATION PRACTICES:
   A. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS;
   B. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS;
   C. AFTER OCTOBER 15, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOW AFTER EACH STORM EVENT;
3. STABILIZATION SHALL BE INITIATED ON ALL LOAM STOCKPILES, AND DISTURBED AREAS, WHERE CONSTRUCTION ACTIVITY SHALL NOT OCCUR FOR MORE THAN TWENTY-ONE (21) CALENDAR DAYS BY THE FOURTEENTH (14TH) DAY AFTER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED IN THAT AREA. STABILIZATION MEASURES TO BE USED INCLUDE:
   A. TEMPORARY SEEDING;
   B. MULCHING.
4. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
5. WHEN CONSTRUCTION ACTIVITY PERMANENTLY OR TEMPORARILY CEASES WITHIN 100 FEET OF NEARBY SURFACE WATERS OR DELINEATED WETLANDS, THE AREA SHALL BE STABILIZED WITHIN SEVEN (7) DAYS OR PRIOR TO A RAIN EVENT. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN THESE AREAS, SILT FENCES, MULCH BERMS, HAY BALE BARRIERS AND ANY EARTH/DIKES SHALL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED.
6. DURING CONSTRUCTION, RUNOFF WILL BE DIVERTED AROUND THE SITE WITH EARTH DIKES, PIPING OR STABILIZED CHANNELS WHERE POSSIBLE. SHEET RUNOFF FROM THE SITE WILL BE FILTERED THROUGH SILT FENCES, MULCH BERMS, HAY BALE BARRIERS, OR SILT SOCKS. ALL STORM DRAIN BASIN INLETS SHALL BE PROVIDED WITH FLARED END SECTIONS AND TRASH RACKS. THE SITE SHALL BE STABILIZED FOR THE WINTER BY OCTOBER 15.

DUST CONTROL:
1. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL DUST THROUGHOUT THE CONSTRUCTION PERIOD.
2. DUST CONTROL METHODS SHALL INCLUDE, BUT BE NOT LIMITED TO SPRINKLING WATER ON EXPOSED AREAS, COVERING LOADED DUMP TRUCKS LEAVING THE SITE, AND TEMPORARY MULCHING.
3. DUST CONTROL MEASURES SHALL BE UTILIZED SO AS TO PREVENT THE MIGRATION OF DUST FROM THE SITE TO ABUTTING AREAS.

STOCKPILES:
1. LOCATE STOCKPILES A MINIMUM OF 50 FEET AWAY FROM CATCH BASINS, SWALES, AND CULVERTS.
2. ALL STOCKPILES SHOULD BE SURROUNDED WITH TEMPORARY EROSION CONTROL MEASURES PRIOR TO THE ONSET OF PRECIPITATION.
3. PERIMETER BARRIERS SHOULD BE MAINTAINED AT ALL TIMES, AND ADJUSTED AS NEEDED TO ACCOMMODATE THE DELIVERY AND REMOVAL OF MATERIALS FROM THE STOCKPILE. THE INTEGRITY OF THE BARRIER SHOULD BE INSPECTED AT THE END OF EACH WORKING DAY.
4. PROTECT ALL STOCKPILES FROM STORMWATER RUN-OFF USING TEMPORARY EROSION CONTROL MEASURES SUCH AS BERMS, SILT SOCK, OR OTHER APPROVED PRACTICE TO PREVENT MIGRATION OF MATERIAL BEYOND THE IMMEDIATE CONFINES OF THE STOCKPILES.

OFF SITE VEHICLE TRACKING:
1. THE CONTRACTOR SHALL CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE(S) PRIOR TO ANY EXCAVATION ACTIVITIES.

VEGETATION:
1. TEMPORARY GRASS COVER:
   A. SEEDBED PREPARATION:
      a. APPLY FERTILIZER AT THE RATE OF 600 POUNDS PER ACRE OF 10-10-10. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF THREE (3) TONS PER ACRE;
   B. SEEDING:
      a. UTILIZE ANNUAL RYE GRASS AT A RATE OF 40 LBS/ACRE;
      b. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF TWO (2) INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED;
      c. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). HYDROSEEDINGS, WHICH INCLUDE MULCH, MAY BE LEFT ON SOIL SURFACE. SEEDING RATES MUST BE INCREASED 10% WHEN HYDROSEEDING;
   C. MAINTENANCE:
      a. TEMPORARY SEEDING SHALL BE PERIODICALLY INSPECTED. AT A MINIMUM, 95% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHALL BE MADE AND OTHER TEMPORARY MEASURES USED IN THE INTERIM (MULCH, FILTER BARRIERS, CHECK DAMS, ETC.).
2. VEGETATIVE PRACTICE:
   A. FOR PERMANENT MEASURES AND PLANTINGS:
      a. LIMESTONE SHALL BE THOROUGHLY INCORPORATED INTO THE LOAM LAYER AT A RATE OF THREE (3) TONS PER ACRE IN ORDER TO PROVIDE A PH VALUE OF 5.5 TO 6.5;
      b. FERTILIZER SHALL BE SPREAD ON THE TOP LAYER OF LOAM AND WORKED INTO THE SURFACE. FERTILIZER APPLICATION RATE SHALL BE 800 POUNDS PER ACRE OF 10-20-20 FERTILIZER;
      c. SOIL CONDITIONERS AND FERTILIZER SHALL BE APPLIED AT THE RECOMMENDED RATES AND SHALL BE THOROUGHLY WORKED INTO THE LOAM. LOAM SHALL BE RAKED UNTIL THE SURFACE IS FINELY PULVERIZED, SMOOTH AND EVEN, AND THEN COMPACTED TO AN EVEN SURFACE CONFORMING TO THE REQUIRED LINES AND GRADES WITH APPROVED ROLLERS WEIGHING BETWEEN 4-1/2 POUNDS AND 5-1/2 POUNDS PER INCH OF WIDTH;
      d. SEED SHALL BE SOWN AT THE RATE SHOWN BELOW. SOWING SHALL BE DONE ON A CALM, DRY DAY, PREFERABLY BY MACHINE, BUT IF BY HAND, ONLY BY EXPERIENCED WORKMEN. IMMEDIATELY BEFORE SEEDING, THE SOIL SHALL BE LIGHTLY RAKED. ONE HALF THE SEED SHALL BE SOWN IN ONE DIRECTION AND THE OTHER HALF AT RIGHT ANGLES TO THE ORIGINAL DIRECTION. IT SHALL BE LIGHTLY RAKED INTO THE SOIL TO A DEPTH NOT OVER 1/4 INCH AND ROLLED WITH A HAND ROLLER WEIGHING NOT OVER 100 POUNDS PER LINEAR FOOT OF WIDTH;
      e. HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AS INDICATED ABOVE;
      f. THE SURFACE SHALL BE WATERED AND KEPT MOIST WITH A FINE SPRAY AS REQUIRED, WITHOUT WASHING AWAY THE SOIL, UNTIL THE GRASS IS WELL ESTABLISHED. ANY AREAS WHICH ARE NOT SATISFACTORILY COVERED WITH GRASS SHALL BE RESEEDED, AND ALL NOXIOUS WEEDS REMOVED;
      g. THE CONTRACTOR SHALL PROTECT AND MAINTAIN THE SEEDED AREAS UNTIL ACCEPTED;
      h. A GRASS SEED MIXTURE CONTAINING THE FOLLOWING SEED REQUIREMENTS SHALL BE APPLIED AT THE INDICATED RATE:

SEED MIX	APPLICATION RATE
CREEPING RED FESCUE	20 LBS/ACRE
TALL FESCUE	20 LBS/ACRE
REDTOP	2 LBS/ACRE

IN NO CASE SHALL THE WEED CONTENT EXCEED ONE (1) PERCENT BY WEIGHT. ALL SEED SHALL COMPLY WITH STATE AND FEDERAL SEED LAWS. SEEDING SHALL BE DONE NO LATER THAN SEPTEMBER 15. IN NO CASE SHALL SEEDING TAKE PLACE OVER SNOW.
3. DORMANT SEEDING (SEPTEMBER 15 TO FIRST SNOWFALL):
   A. FOLLOW PERMANENT MEASURES SLOPE, LIME, FERTILIZER AND GRADING REQUIREMENTS. APPLY SEED MIXTURE AT TWICE THE INDICATED RATE. APPLY MULCH AS INDICATED FOR PERMANENT MEASURES.

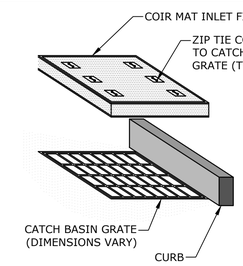
CONCRETE WASHOUT AREA:
   A. THE CONCRETE DELIVERY TRUCKS SHALL, WHENEVER POSSIBLE, USE WASHOUT FACILITIES AT THEIR OWN PLANT OR DISPATCH FACILITY;
   B. IF IT IS NECESSARY, SITE CONTRACTOR SHALL DESIGNATE SPECIFIC WASHOUT AREAS AND DESIGN FACILITIES TO HANDLE ANTICIPATED WASHOUT WATER;
   C. CONTRACTOR SHALL LOCATE WASHOUT AREAS AT LEAST 150 FEET AWAY FROM STORM DRAINS, SWALES AND SURFACE WATERS OR DELINEATED WETLANDS;
   D. INSPECT WASHOUT FACILITIES DAILY TO DETECT LEAKS OR TEARS AND TO IDENTIFY WHEN MATERIALS NEED TO BE REMOVED.

ALLOWABLE NON-STORMWATER DISCHARGES:
1. THE FOLLOWING ARE THE ONLY NON-STORMWATER DISCHARGES ALLOWED. ALL OTHER NON-STORMWATER DISCHARGES ARE PROHIBITED ON SITE:
   1.1. FIRE-FIGHTING ACTIVITIES;
   1.2. FIRE HYDRANT FLUSHING;
   1.3. WATERS USED TO WASH VEHICLES WHERE DETERGENTS ARE NOT USED;
   1.4. WATER USED TO CONTROL DUST;
   1.5. POTABLE WATER INCLUDING UNCONTAMINATED WATER LINE FLUSHING;
   1.6. ROUTINE EXTERNAL BUILDING WASH DOWN WHERE DETERGENTS ARE NOT USED;
   1.7. PAVEMENT WASH WATERS WHERE DETERGENTS ARE NOT USED;
   1.8. UNCONTAMINATED AIR CONDITIONING/COMPRESSOR CONDENSATION;
   1.9. UNCONTAMINATED GROUND WATER OR SPRING WATER;
   1.10. FOUNDATION OR FOOTING DRAINS WHICH ARE UNCONTAMINATED;
   1.11. UNCONTAMINATED EXCAVATION DEWATERING;
   1.12. LANDSCAPE IRRIGATION.

WASTE DISPOSAL:
1. WASTE MATERIAL:
   A. ALL WASTE MATERIALS SHALL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE SHALL BE DEPOSITED IN A DUMPSTER;
   B. NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE;
   C. ALL PERSONNEL SHALL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
2. HAZARDOUS WASTE:
   A. ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER;
   B. SITE PERSONNEL SHALL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
3. SANITARY WASTE:
   A. ALL SANITARY WASTE SHALL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

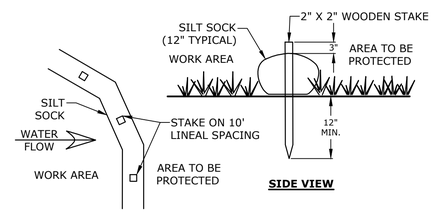
SPILL PREVENTION:
1. CONTRACTOR SHALL BE FAMILIAR WITH SPILL PREVENTION MEASURES REQUIRED BY LOCAL, STATE AND FEDERAL AGENCIES. AT A MINIMUM, CONTRACTOR SHALL FOLLOW THE BEST MANAGEMENT SPILL PREVENTION PRACTICES OUTLINED BELOW.
2. THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT SHALL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:
   A. GOOD HOUSEKEEPING - THE FOLLOWING GOOD HOUSEKEEPING PRACTICE SHALL BE FOLLOWED ON SITE DURING CONSTRUCTION:
      a. ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB SHALL BE STORED ON SITE;
      b. ALL REGULATED MATERIALS STORED ON SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE, ON AN IMPERVIOUS SURFACE;
      c. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED;
      d. THE SITE SUPERINTENDENT SHALL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS;
      e. SUBSTANCES SHALL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER;
      f. WHENEVER POSSIBLE ALL OF A PRODUCT SHALL BE USED UP BEFORE DISPOSING OF THE CONTAINER.
      g. THE TRAINING OF ON-SITE EMPLOYEES AND THE ON-SITE POSTING OF RELEASE RESPONSE INFORMATION DESCRIBING WHAT TO DO IN THE EVENT OF A SPILL OF REGULATED SUBSTANCES.
   B. HAZARDOUS PRODUCTS - THE FOLLOWING PRACTICES SHALL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:
      a. PRODUCTS SHALL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE;
      b. ORIGINAL LABELS AND MATERIAL SAFETY DATA SHALL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION;
      c. SURPLUS PRODUCT THAT MUST BE DISPOSED OF SHALL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.
   C. PRODUCT SPECIFIC PRACTICES - THE FOLLOWING PRODUCT SPECIFIC PRACTICES SHALL BE FOLLOWED ON SITE:
      a. PETROLEUM PRODUCTS:
      i. ALL ON SITE VEHICLES SHALL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE LEAKAGE;
      ii. PETROLEUM PRODUCTS SHALL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT BASED SUBSTANCES USED ON SITE SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
      iii. SECURE FUEL STORAGE AREAS AGAINST UNAUTHORIZED ENTRY;
      iv. INSPECT FUEL STORAGE AREAS WEEKLY;
      v. WHEREVER POSSIBLE, KEEP REGULATED CONTAINERS THAT ARE STORED OUTSIDE MORE THAN 50 FEET FROM SURFACE WATER AND STORM DRAINS, 75 FEET FROM PRIVATE WELLS, AND 400 FEET FROM PUBLIC WELLS;
      vi. COVER REGULATED CONTAINERS IN OUTSIDE STORAGE AREAS;
      vii. SECONDARY CONTAINMENT IS REQUIRED FOR CONTAINERS CONTAINING REGULATED SUBSTANCES STORED OUTSIDE, EXCEPT FOR ON PREMISE USE HEATING FUEL TANKS, OR ABOVEGROUND OR UNDERGROUND STORAGE TANKS OTHERWISE REGULATED.
      viii. THE FUEL HANDLING REQUIREMENTS SHALL INCLUDE:
         (1) EXCEPT WHEN IN USE, KEEP CONTAINERS CONTAINING REGULATED SUBSTANCES CLOSED AND SEALED;
         (2) PLACE DRIP PANS UNDER SPIGOTS, VALVES, AND PUMPS;
         (3) HAVE SPILL CONTROL AND CONTAINMENT EQUIPMENT READILY AVAILABLE IN ALL WORK AREAS;
         (4) USE FUNNELS AND DRIP PANS WHEN TRANSFERRING REGULATED SUBSTANCES;
         (5) PERFORM TRANSFERS OF REGULATED SUBSTANCES OVER AN IMPERVIOUS SURFACE.
      ix. FUELING AND MAINTENANCE OF EXCAVATION, EARTHMOVING AND OTHER CONSTRUCTION RELATED EQUIPMENT SHALL COMPLY WITH THE REGULATIONS OF THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES THESE REQUIREMENTS ARE SUMMARIZED IN WD-DWGB-22-6 BEST MANAGEMENT PRACTICES FOR FUELING AND MAINTENANCE OF EXCAVATION AND EARTHMOVING EQUIPMENT, OR ITS SUCCESSOR DOCUMENT.
      HTTPS://WWW.DES.NH.GOV/ORGANIZATION/COMMISSIONER/PIP/FACTSHEETS/DWGB/DOCUMENTS/DWGB-22-6.PDF
      b. FERTILIZERS:
      i. FERTILIZERS USED SHALL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS;
      ii. ONCE APPLIED FERTILIZER SHALL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER;
      iii. STORAGE SHALL BE IN A COVERED SHED OR ENCLOSED TRAILERS. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER SHALL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.
      c. PAINTS:
      i. ALL CONTAINERS SHALL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE;
      ii. EXCESS PAINT SHALL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM;
      iii. EXCESS PAINT SHALL BE DISPOSED OF PROPERLY ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.
   D. SPILL CONTROL PRACTICES - IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION, THE FOLLOWING PRACTICES SHALL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:
      a. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP SHALL BE CLEARLY POSTED AND SITE PERSONNEL SHALL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES;
      b. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP SHALL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS SHALL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE;
      c. ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY;
      d. THE SPILL AREA SHALL BE KEPT WELL VENTILATED AND PERSONNEL SHALL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE;
      e. SPILLS OF TOXIC OR HAZARDOUS MATERIAL SHALL BE REPORTED TO THE APPROPRIATE LOCAL, STATE OR FEDERAL AGENCIES AS REQUIRED;
      f. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS SHALL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.
   E. VEHICLE FUELING AND MAINTENANCE PRACTICE:
      a. CONTRACTOR SHALL MAKE AN EFFORT TO PERFORM EQUIPMENT/VEHICLE FUELING AND MAINTENANCE AT AN OFF-SITE FACILITY;
      b. CONTRACTOR SHALL PROVIDE AN ON-SITE FUELING AND MAINTENANCE AREA THAT IS CLEAN AND DRY;
      c. IF POSSIBLE THE CONTRACTOR SHALL KEEP AREA COVERED;
      d. CONTRACTOR SHALL KEEP A SPILL KIT AT THE FUELING AND MAINTENANCE AREA;
      e. CONTRACTOR SHALL REGULARLY INSPECT VEHICLES FOR LEAKS AND DAMAGE;
      f. CONTRACTOR SHALL USE DRIP PANS, DRIP CLOTHS, OR ABSORBENT PADS WHEN REPLACING SPENT FLUID.

EROSION CONTROL OBSERVATIONS AND MAINTENANCE PRACTICES
   A. THIS PROJECT DOES NOT EXCEED ONE (1) ACRE OF DISTURBANCE AND THUS DOES NOT REQUIRES A SWPPP.



NOTES:
1. COIR MAT INLET FILTER SHALL BE STORM WATER INLET FILTER BY BLOCKSOM & CO. OR APPROVED EQUAL.
2. INSTALL AND MAINTAIN INLET PROTECTION IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

INLET PROTECTION BARRIER
NO SCALE



NOTES:
1. SILT SOCK SHALL BE SILT SOXX BY FILTREXX OR APPROVED EQUAL.
2. INSTALL SILT SOCK IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

SILT SOCK
NO SCALE

Tighe&Bond

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PROPOSED BANK PAD

BROMLEY-PORTSMOUTH, LLC & RCQ-PORTSMOUTH, LLC
c/o QUINCY & COMPANY, INC.

1465 WOODBURY AVE
PORTSMOUTH, NH

MARK	DATE	DESCRIPTION

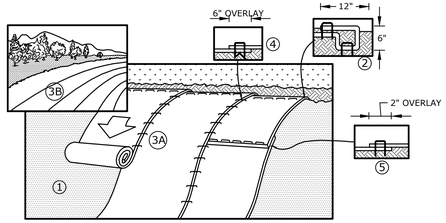
PROJECT NO:	Q5004-0001
DATE:	5/6/2025
FILE:	Q-5004-0001-C-DTLS.dwg
DRAWN BY:	NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

EROSION CONTROL NOTES AND DETAILS SHEET

SCALE: AS SHOWN

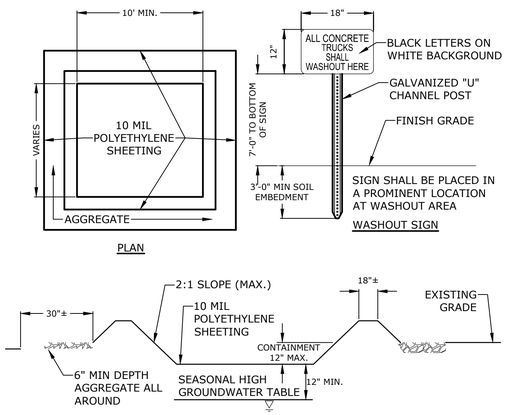
C-501

Last Saved: 5/5/2025
Plotted On:May 06, 2025-10:20am By: NWilcox
Tighe & Bond:J:\Q\Q5004 Quincy & Company, Inc\0001_1465 Woodbury Avenue\Drawings\AutoCAD\Sheet\Q-5004-0001-C-DTLS.dwg



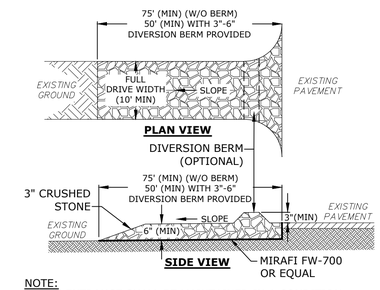
NOTES:
1. EROSION CONTROL BLANKET SHALL BE AN ALL NATURAL PRODUCT WITH NO PHOTO DEGRADABLE COMPONENTS, NORTH AMERICAN GREEN SC150BN OR APPROVED EQUAL.
2. STAKES SHALL BE BIODEGRADABLE BIOSTAKES OR ALL NATURAL WOOD ECOSTAKES OR APPROVED EQUAL. THE LENGTH OF STAKES SHALL BE BASED OFF OF THE MANUFACTURERS RECOMMENDATION.
3. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, COMPOST AND SEED.
4. BEGIN AT THE TOP OF THE SLOPE, 36" OVER THE GRADE BREAK, BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UPSLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAKES IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAKING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAKES ACROSS THE WIDTH OF THE BLANKET.
5. ROLL THE BLANKETS DOWN THE SLOPE. ALL BLANKETS MUST BE SECURELY FASTENED TO THE SOIL SURFACE BY PLACING STAKES IN APPROPRIATE LOCATIONS AS SHOWN ON THE MANUFACTURERS PATTERN GUIDE.
6. THERE SHALL BE NO PLASTIC, OR MULTI-FILAMENT OR MONOFILAMENT POLYPROPYLENE NETTING OR MESH WITH AN OPENING SIZE OF GREATER THAN 1/8 INCHES MATERIAL UTILIZED.

EROSION CONTROL BLANKET
NO SCALE



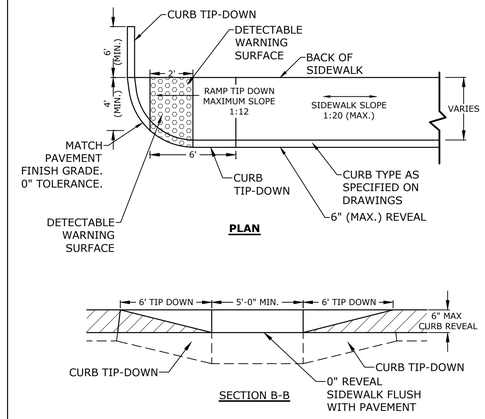
NOTES:
1. CONTAINMENT MUST BE STRUCTURALLY SOUND AND LEAK FREE AND CONTAIN ALL LIQUID WASTES.
2. CONTAINMENT DEVICES MUST BE OF SUFFICIENT QUANTITY OR VOLUME TO COMPLETELY CONTAIN THE LIQUID WASTES GENERATED.
3. WASHOUT MUST BE CLEANED OR NEW FACILITIES CONSTRUCTED AND READY TO USE ONCE WASHOUT IS 75% FULL.
4. WASHOUT AREA(S) SHALL BE INSTALLED IN A LOCATION EASILY ACCESSIBLE BY CONCRETE TRUCKS.
5. ONE OR MORE AREAS MAY BE INSTALLED ON THE CONSTRUCTION SITE AND MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.
6. AT LEAST WEEKLY REMOVE ACCUMULATION OF SAND AND AGGREGATE AND DISPOSE OF PROPERLY.

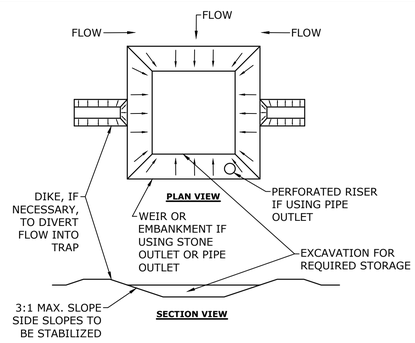
CONCRETE WASHOUT AREA
NO SCALE



NOTE:
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OF SEDIMENT FROM THE SITE. WHEN WASHING IS REQUIRED, IT SHALL BE DONE SO RUNOFF DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS

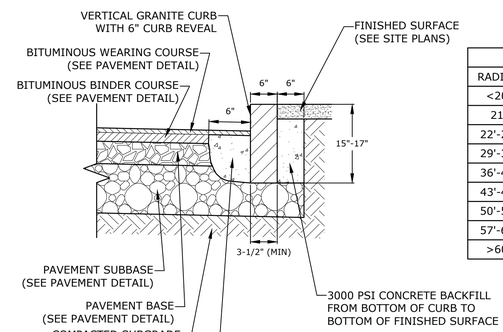
STABILIZED CONSTRUCTION EXIT
NO SCALE





NOTES:
1. THE TRAP SHALL BE INSTALLED AS CLOSE TO THE DISTURBED AREA AS POSSIBLE.
2. THE MAXIMUM CONTRIBUTING AREA TO A SINGLE TRAP SHALL BE LESS THAN 5 ACRES.
3. THE MINIMUM VOLUME OF THE TRAP SHALL BE 3,600 CUBIC FEET OF STORAGE FOR EACH ACRE OF DRAINAGE AREA.
4. TRAP OUTLET SHALL BE MINIMUM OF ONE FOOT BELOW THE CREST OF THE TRAP.
5. TRAP SHALL DISCHARGE TO A STABILIZED AREA.
6. TRAP SHALL BE CLEANED WHEN 50 PERCENT OF THE ORIGINAL VOLUME IS FILLED.
7. MATERIALS REMOVED FROM THE TRAP SHALL BE PROPERLY DISPOSED OF AND STABILIZED.
8. SEDIMENT TRAPS MUST BE USED AS NEEDED TO CONTAIN RUNOFF UNTIL SOILS ARE STABILIZED.

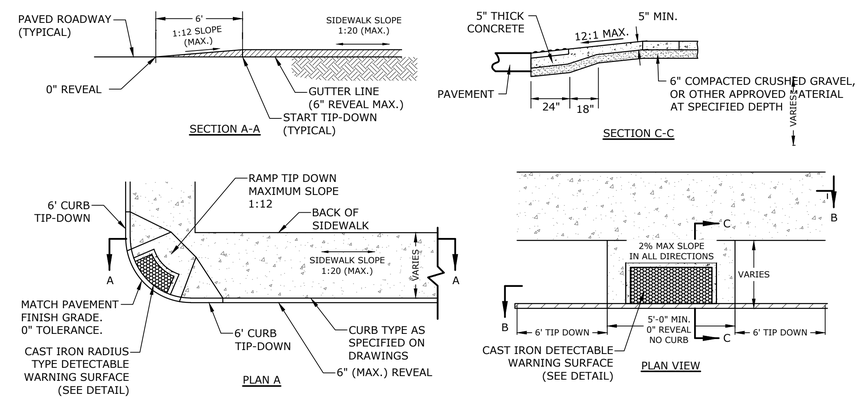
SEDIMENT TRAP
NO SCALE



CURB RADIUS TABLE	
RADIUS	MAX. LENGTH
<20'	USE CURVED CURB
21'	3'
22'-28'	4'
29'-35'	5'
36'-42'	6'
43'-49'	7'
50'-56'	8'
57'-60'	9'
>60'	10'

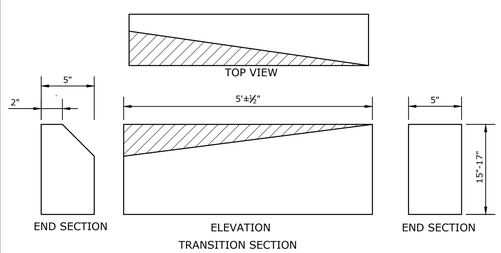
NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF VERTICAL GRANITE CURB (VGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 3'
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 10'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
6. ALL RADII 20 FEET AND SMALLER SHALL BE CONSTRUCTED USING CURVED SECTIONS.
7. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

VERTICAL GRANITE CURB
NO SCALE



NOTES:
1. RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.
2. A 6" COMPACTED CRUSHED GRAVEL BASE (NHDOT ITEM No. 304.3) SHALL BE PROVIDED BENEATH RAMPS.
3. DETECTABLE WARNING PANEL SHALL BE CAST IRON SET IN CONCRETE (SEE DETAIL.)
4. LOCATE THE DETECTABLE WARNING SURFACES AT THE BACK OF THE CURB ALONG THE EDGE OF THE LANDING.
5. THE MAXIMUM RUNNING SLOPE OF ANY SIDEWALK CURB RAMP IS 12:1, THE MAXIMUM CROSS SLOPE IS 2%. THE SLOPE OF THE LANDING SHALL NOT EXCEED 2% IN ANY DIRECTION.
6. TRANSITIONS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES. ROADWAY SHOULDER SLOPES ADJOINING SIDEWALK CURB RAMPS SHALL BE A MAXIMUM OF 5% (FULL WIDTH) FOR A DISTANCE OF 2 FT. FROM THE ROADWAY CURBLINE.
7. THE BOTTOM OF THE SIDEWALK CURB RAMP OR LANDING, EXCLUSIVE OF THE FLARED SIDES, SHALL BE WHOLLY CONTAINED WITHIN THE CROSSWALK MARKINGS.
8. DETECTABLE WARNING PANELS SHALL BE A MINIMUM OF 2 FEET IN DEPTH. THE ROWS OF TRUNCATED DOMES SHALL BE ALIGNED PERPENDICULAR TO THE GRADE BREAK BETWEEN THE RAMP, BLENDED TRANSITION, OR LANDING AND THE STREET.
9. THE TEXTURE OF THE DETECTABLE WARNING FEATURE MUST CONTRAST VISUALLY WITH THE SURROUNDING SURFACES (EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT).

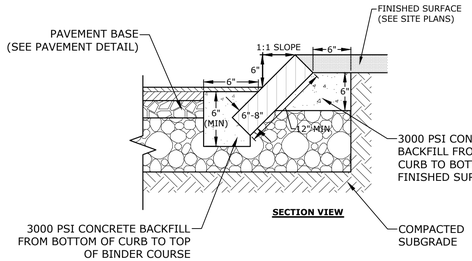
CONCRETE WHEELCHAIR ACCESSIBLE RAMP
NO SCALE



MOUNTABLE VERTICAL GRANITE CURB TO VERTICAL GRANITE CURB

NOTES:
1. THE INTENT OF THIS ITEM IS TO PROVIDE A SMOOTH TRANSITION BETWEEN VERTICAL GRANITE CURB AND MOUNTABLE VERTICAL GRANITE CURB WITHOUT REQUIRING FIELD CHIPPING DURING INSTALLATION. THE MOUNTABLE VERTICAL GRANITE CURB MAY REQUIRE ADJUSTMENTS TO MEET THE TRANSITION PIECE HEIGHT. TRANSITION SLOPE CURB TO STANDARD REVEAL AS QUICKLY AS POSSIBLE TO PROVIDE FOR THIS SMOOTH TRANSITION.

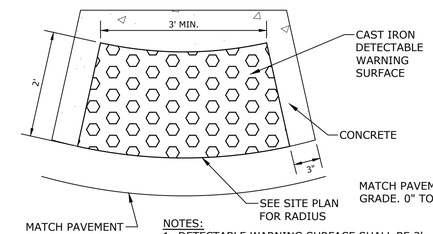
CURB TRANSITION
NO SCALE



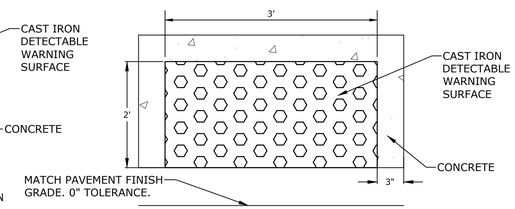
CURB RADIUS TABLE	
RADIUS	MAX LENGTH
<2'	USE CURVED CURB
2'-15'	USE RADIAL JOINTS
16'-28'	1'-6"
29'-41'	2'
42'-55'	3'
56'-68'	4'
69'-82'	5'
83'-96'	6'
97'-110'	7'
>110'	8'

NOTES:
1. SEE SITE PLAN(S) FOR LIMITS OF SLOPED GRANITE CURB (SGC).
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 18"
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 8'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES (SEE TABLE).
6. JOINTS BETWEEN STONES SHALL HAVE A MAXIMUM SPACING OF 1/2" AND SHALL BE MORTARED.

SLOPED GRANITE CURB
NO SCALE



NOTES:
1. DETECTABLE WARNING SURFACE SHALL BE 2' X 3' CAST IRON PANEL SET IN CONCRETE.
2. DETECTABLE WARNING SURFACE SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.



CAST IRON DETECTABLE WARNING SURFACE
NO SCALE

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PROPOSED BANK PAD

BROMLEY-PORTSMOUTH, LLC & RCQ-PORTSMOUTH, LLC
c/o QUINCY & COMPANY, INC.

1465 WOODBURY AVE
PORTSMOUTH, NH

MARK	DATE	DESCRIPTION

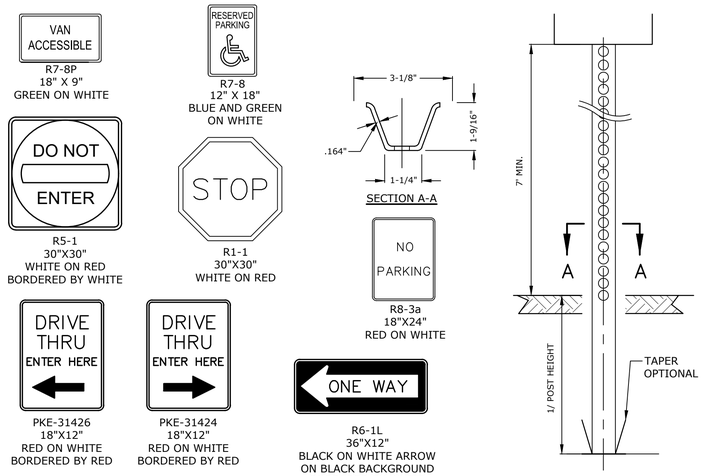
PROJECT NO:	Q5004-0001
DATE:	5/6/2025
FILE:	Q-5004-0001-C-DTLS.dwg
DRAWN BY:	NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

DETAILS SHEET

SCALE: AS SHOWN

C-502

Last Saved: 5/5/2025
Plotted On:May 06, 2025-10:19am By: NWilcox
Tighe & Bond:J:\Q\Q5004 Quincy & Company, Inc\0001_1465 Woodbury Avenue\Drawings\AutoCAD\Sheet\Q-5004-0001-C-DTLS.dwg



* IN LEDGE DRILL & GROUT TO A MIN OF 2'

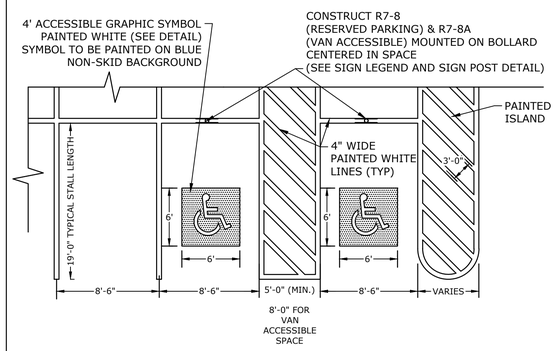
LENGTH: AS REQUIRED
WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)
HOLES: 3/8" DIAMETER, 1" C-C FULL LENGTH
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASSTM A-576 (GRADE 1070 - 1080)

FINISH: SHALL BE PAINTED WITH TWO COATS OF AN APPROVED BLACK BAKED ON OR DRIED, PAINT OF WEATHER RESISTANT QUALITY. ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.

NOTE:
ALL SIGNS TO BE INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.

SIGN LEGEND AND SIGN POST

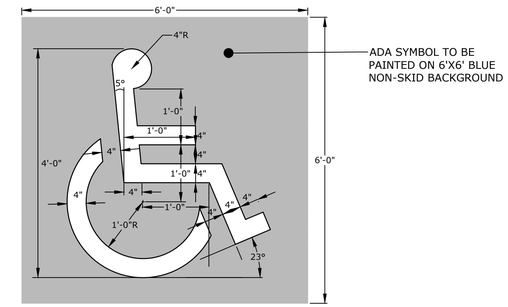
NO SCALE



NOTES:
1. ALL PAINT SHALL BE FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.
2. SYMBOLS & PARKING STALLS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT AND LOCAL AND STATE REQUIREMENTS.
3. FINISH PAVEMENT GRADES AT ALL HANDICAP ACCESSIBLE STALLS AND PAINTED ACCESS AISLES SHALL NOT EXCEED 2% IN ANY DIRECTION.

PARKING STALL/PAINTED ISLAND STRIPING

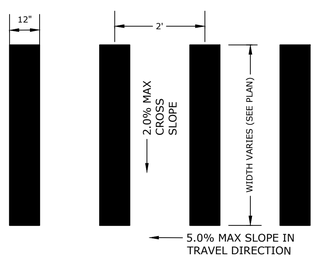
NO SCALE



NOTES:
1. SYMBOL SHALL BE CONSTRUCTED IN ALL ACCESSIBLE SPACES USING FAST DRYING TRAFFIC PAINT, MEETING THE REQUIREMENTS OF AASHTO M248-TYPE F. PAINT SHALL BE APPLIED AS SPECIFIED BY MANUFACTURER.
2. SYMBOL SHALL BE CONSTRUCTED TO THE LATEST ADA, STATE AND LOCAL REQUIREMENTS.

ACCESSIBLE SYMBOL

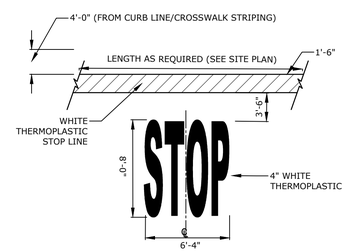
NO SCALE



NOTE:
1. STRIPING SHALL BE CONSTRUCTED USING WHITE THERMO PLASTIC, REFLECTERIZED PAVEMENT MARKING MATERIAL MEETING THE REQUIREMENTS OF ASTM D 4505

CROSSWALK STRIPING

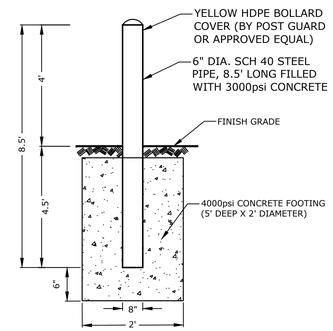
NO SCALE



NOTE:
1. PAVEMENT MARKINGS TO BE INSTALLED IN LOCATIONS AS SHOWN ON SITE PLAN.
2. STRIPING SHALL BE CONSTRUCTED USING WHITE THERMO PLASTIC, REFLECTERIZED PAVEMENT MARKING MATERIAL MEETING THE REQUIREMENTS OF ASTM D 4505

STOP BAR AND LEGEND

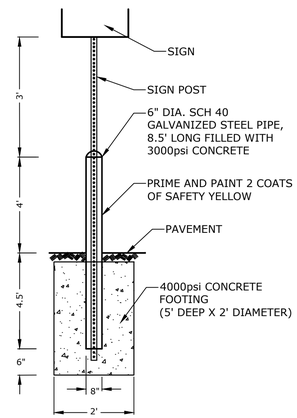
NO SCALE



NOTE:
1. COORDINATE WITH EVERSOURCE TO VERIFY THAT BOLLARD, FOOTING, AND BOLLARD COVER MEET EVERSOURCE REQUIREMENTS.

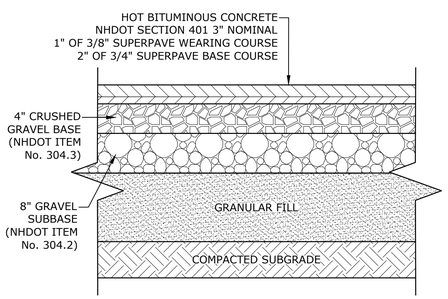
BOLLARD DETAIL

NO SCALE



BOLLARD MOUNTED SIGN DETAIL

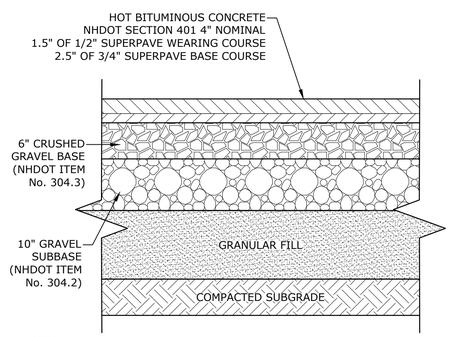
NO SCALE



NOTES:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE PAVEMENT PRIOR TO PLACING WEARING COURSE.

ON-SITE PAVEMENT SECTION

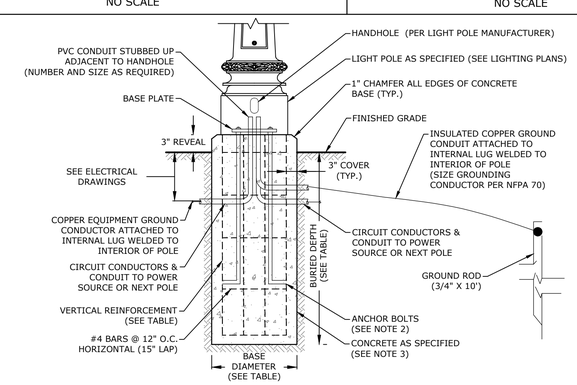
NO SCALE



NOTES:
1. SEE SITE PLAN FOR PAVEMENT WIDTH AND LOCATION.
2. SEE GRADING, DRAINAGE AND EROSION CONTROL PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
3. A TACK COAT SHALL BE PLACED ON TOP OF BINDER COURSE PAVEMENT PRIOR TO PLACING WEARING COURSE.

OFF-SITE PAVEMENT SECTION

NO SCALE



POLE HEIGHT	DEPTH (BURIED)	BASE DIAMETER	VERTICAL REINFORCEMENT
<16'	72" (MIN.)	18"	6 - #6
>16'	72" (MIN.)	24"	6 - #8

NOTES:
1. ALL LIGHT POLES, LUMINARIES AND WIRE TO BE FURNISHED BY THE CONTRACTOR UNLESS OTHERWISE DIRECTED.
2. CONTRACTOR SHALL VERIFY BOLT TEMPLATE AND ANCHOR BOLT SIZE WITH POLE MANUFACTURER PRIOR TO CONSTRUCTION.
3. CONCRETE SHALL BE 4,000 PSI CLASS A, PRE-CAST CONCRETE.
4. REINFORCEMENT SHALL BE ASTM A615, GRADE 60.
5. FOR LIGHT POLES GREATER THAN 20' IN HEIGHT, THE LIGHT POLE BASE SHALL BE DESIGNED AND STAMPED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE.

TYPICAL LIGHT POLE BASE

NO SCALE

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PROPOSED BANK PAD

BROMLEY-PORTSMOUTH, LLC &
RCQ-PORTSMOUTH, LLC
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1465 WOODBURY AVE
PORTSMOUTH, NH

MARK	DATE	DESCRIPTION

PROJECT NO:	Q5004-0001
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DRAWN BY:	NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

DETAILS SHEET

SCALE: AS SHOWN

C-503

Last Saved: 5/6/2025
Plotted On:May 06, 2025-10:19am By: NWilcox
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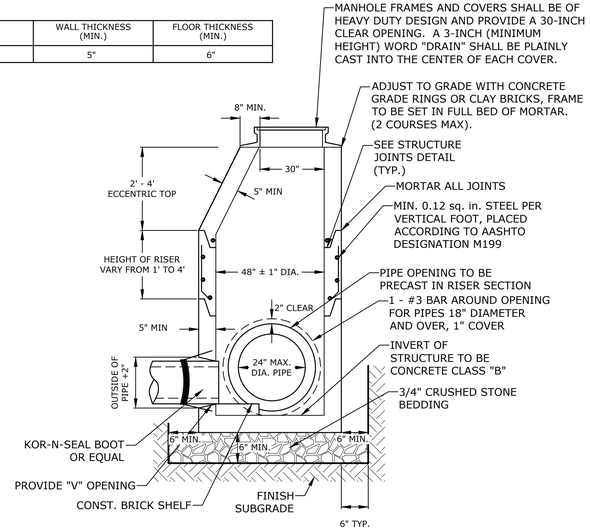
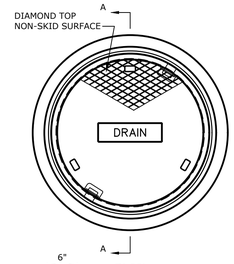
DIAMETER	WALL THICKNESS (MIN.)	FLOOR THICKNESS (MIN.)
4'	5"	6"



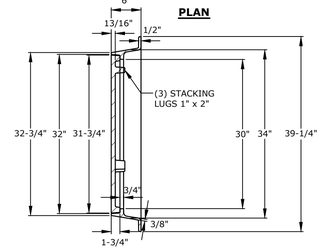
4' DIAMETER DRAIN MANHOLE

NOTES:
1. ALL SECTIONS SHALL BE 4,000 PSI CONCRETE.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCHES PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCHES PER LINEAR FOOT.
4. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
5. CONSTRUCT CRUSHED STONE BEDDING AND BACKFILL UNDER (6" MINIMUM THICKNESS)
6. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
7. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
8. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
9. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
10. ALL STRUCTURES WITH MULTIPLE PIPES SHALL HAVE A MINIMUM OF 12" OF INSIDE SURFACE BETWEEN HOLES, NO MORE THAN 75% OF A HORIZNTAL CROSS SECTION SHALL BE HOLES, AND THERE SHALL BE NO HOLES CLOSER THAN 3" TO JOINTS.

DRAIN MANHOLES
NO SCALE



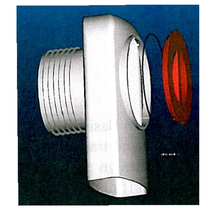
PLAN



SECTION A-A

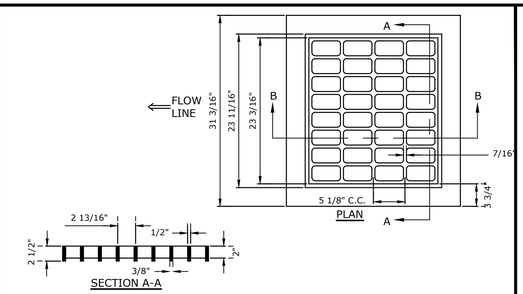
NOTES:
1. ALL DIMENSIONS ARE NOMINAL.
2. FRAMES USING NARROWER DIMENSIONS FOR THICKNESS ARE ALLOWED PROVIDED:
   A. THE FRAMES MEET OR EXCEED THE SPECIFIED LOAD RATING.
   B. THE INTERIOR PERIMETER (SEAT AREA) DIMENSIONS OF THE FRAMES REMAIN THE SAME TO ALLOW CONTINUED USE OF EXISTING GRATES/COVERS AS THE EXISTING FRAMES ALLOW, WITHOUT SHIMS OR OTHER MODIFICATIONS OR ACCOMMODATIONS.
   C. ALL OTHER PERTINENT REQUIREMENTS OF THE SPECIFICATIONS ARE MET.
3. LABEL TYPE OF MANHOLE WITH 3" HIGH LETTERS IN THE CENTER OF THE COVER.

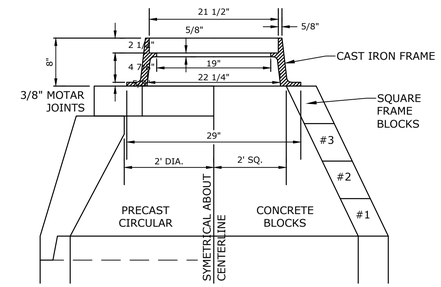
DRAIN MANHOLE FRAME & COVER
NO SCALE



NOTES:
1. ALL CATCH BASIN OUTLETS TO HAVE "ELIMINATOR" OIL AND FLOATING DEBRIS TRAP MANUFACTURED BY KLEANSTREAM (NO EQUAL)
2. INSTALL DEBRIS TRAP TIGHT TO INSIDE OF STRUCTURE.
3. 1/4" HOLE SHALL BE DRILLED IN TOP OF DEBRIS TRAP

"ELIMINATOR" OIL FLOATING DEBRIS TRAP

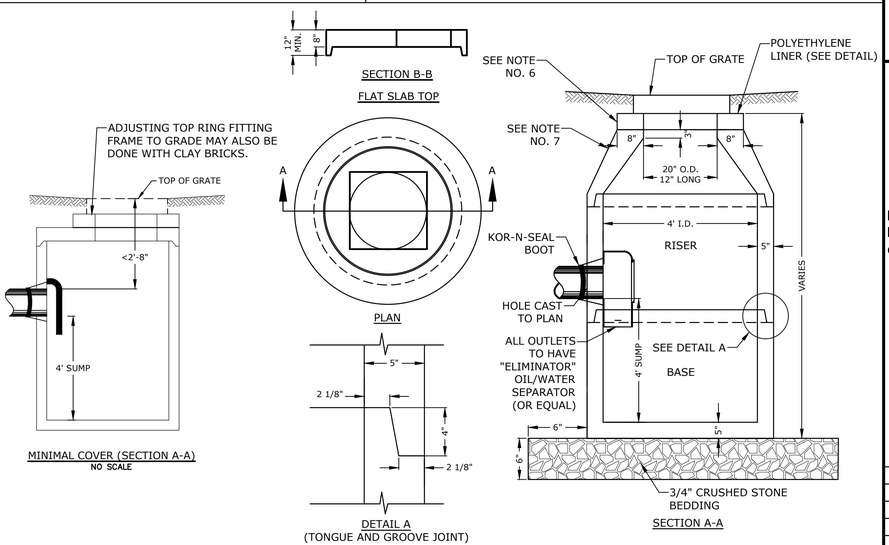




SECTION B-B
GRATE & FRAME DETAIL

NOTE:
1. GRATE TO BE CAST IRON (NHDOT TYPE B ALTERNATE 1)
2. FRAME AND GRATE TO BE MANUFACTURED IN THE USA

CATCH BASIN FRAME & GRATE
NO SCALE



NOTES:
1. ALL SECTIONS SHALL BE CONCRETE CLASS AA(4000 psi).
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ.IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE AND GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
4. RISERS OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
5. THE STRUCTURES SHALL BE DESIGNED FOR H20 LOADING.
6. FITTING FRAME TO GRADE MAY BE DONE WITH PREFABRICATED ADJUSTMENT RINGS OR CLAY BRICKS (2 COURSES MAX.).
7. CONE SECTIONS MAY BE EITHER CONCENTRIC OR ECCENTRIC, OR FLAT SLAB TOPS MAY BE USED WHERE PIPE WOULD OTHERWISE ENTER INTO THE CONE SECTION OF THE STRUCTURE AND WHERE PERMITTED.
8. PIPE ELEVATIONS SHOWN ON PLANS SHALL BE FIELD VERIFIED PRIOR TO PRECASTING.
9. OUTSIDE EDGES OF PIPES SHALL PROJECT NO MORE THAN 3" BEYOND INSIDE WALL OF STRUCTURE.
10. PRECAST SECTIONS SHALL HAVE A TONGUE AND GROOVE JOINT 4" HIGH AT AN 11° ANGLE CENTERED IN THE WIDTH OF THE WALL AND SHALL BE ASSEMBLED USING AN APPROVED FLEXIBLE SEALANT IN JOINTS.
11. THE TONGUE AND GROOVE JOINT SHALL BE SEALED WITH ONE STRIP OF BUTYL RUBBER SEALANT.
12. "ELIMINATOR" OIL/WATER SEPARATOR SHALL BE INSTALLED TIGHT TO INSIDE OF CATCHBASIN.

4' DIAMETER CATCHBASIN
NO SCALE

Tighe&Bond

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PROPOSED BANK PAD

BROMLEY-PORTSMOUTH, LLC &
RCQ-PORTSMOUTH, LLC
c/o QUINCY & COMPANY, INC.

1465 WOODBURY AVE
PORTSMOUTH, NH

MARK	DATE	DESCRIPTION

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FILE:	Q-5004-0001-C-DTLS.dwg
DRAWN BY:	NHW
DESIGNED/CHECKED BY:	NAH
APPROVED BY:	PMC

DETAILS SHEET

SCALE: AS SHOWN

C-504

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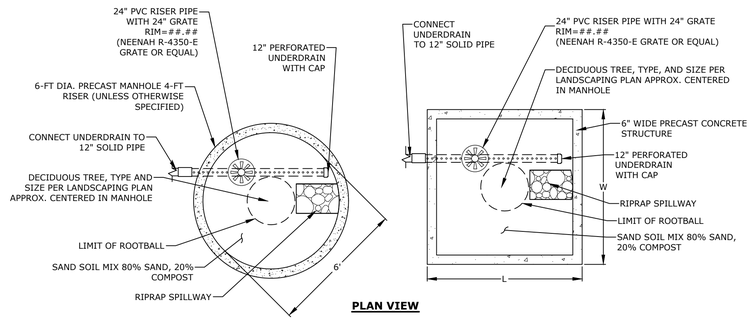
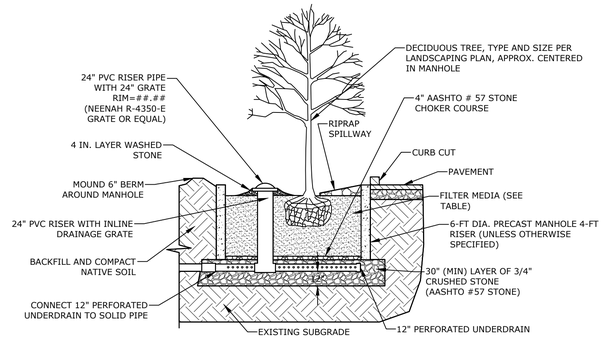


PLAN VIEW

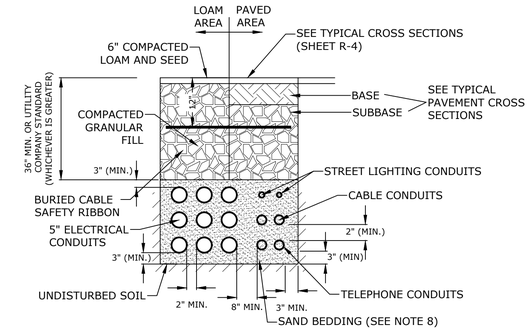


ELEVATION VIEW

NOTES:
1. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO THE TREE BOX FILTER DURING ANY STAGE OF CONSTRUCTION.
2. DO NOT TRAFFIC OR COMPACT EXPOSED SOIL SURFACE WITHIN THE AREA OF THE FILTER WITH CONSTRUCTION EQUIPMENT. PERFORM EXCAVATION FOR THE CONSTRUCTION OF THIS BMP WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE SYSTEM.

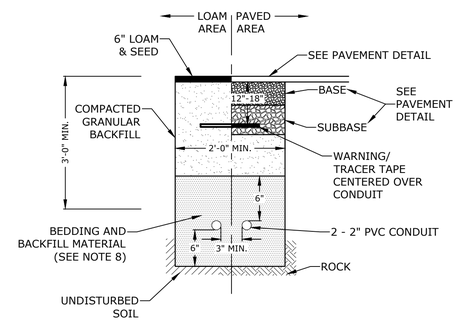
TREE BOX FILTER MEDIA		
COMPONENT MATERIAL	PERCENT OF MIXTURE BY VOLUME	REQUIRED MATERIAL CHARACTERISTICS
SAND	80	ASTM C-33 CONCRETE SAND
ORGANIC MATERIAL, COMPOSTED BARK MULCH RECOMMENDED	20	< 5% PASSING #200 SIEVE
GENERAL REQUIREMENTS APPLICABLE TO THE MIXTURE	1. SOIL MIX SHOULD BE UNIFORM, FREE OF STONES, STUMPS, ROOTS, OR SILILAR MATERIALS LARGER THAN 2 INCHES. 2. SOIL pH SHOULD BE BETWEEN 5.5 AND 6.5	

TREE BOX FILTER
NO SCALE



NOTES:
1. NUMBER, MATERIAL, AND SIZE OF UTILITY CONDUITS TO BE DETERMINED BY LOCAL UTILITY OR AS SHOWN ON ELECTRICAL DRAWINGS. CONTRACTOR TO PROVIDE ONE SPARE CONDUIT FOR EACH UTILITY TO BUILDING.
2. DIMENSIONS SHOWN REPRESENT OWNERS MINIMUM REQUIREMENTS. ACTUAL DIMENSIONS MAY BE GREATER BASED ON UTILITY COMPANY STANDARDS, BUT SHALL NOT BE LESS THAN THOSE SHOWN.
3. NO CONDUIT RUN SHALL EXCEED 360 DEGREES IN TOTAL BENDS.
4. A SUITABLE PULLING STRING, CAPABLE OF 200 POUNDS OF PULL, MUST BE INSTALLED IN THE CONDUIT BEFORE UTILITY COMPANY IS NOTIFIED TO INSTALL CABLE. THE STRING SHOULD BE BLOWN INTO THE CONDUIT AFTER THE RUN IS ASSEMBLED TO AVOID BONDING THE STRING TO THE CONDUIT.
5. UTILITY COMPANY MUST BE GIVEN THE OPPORTUNITY TO INSPECT THE CONDUIT PRIOR TO BACKFILL. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS SHOULD THE UTILITY COMPANY BE UNABLE TO INSTALL ITS CABLE IN A SUITABLE MANNER.
6. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND, WHERE APPLICABLE, THE NATIONAL ELECTRIC CODE.
7. ALL 90° SWEEPS WILL BE MADE USING RIGID GALVANIZED STEEL. SWEEPS WITH A 36 TO 48 INCH RADIUS.
8. SAND BEDDING TO BE REPLACED WITH CONCRETE ENCASEMENT WHERE COVER IS LESS THAN 3 FEET, WHEN LOCATED BELOW PAVEMENT, OR WHERE SHOWN ON THE UTILITIES PLAN.

ELECTRICAL AND COMMUNICATION CONDUIT
NO SCALE



NOTES:
1. NUMBER, MATERIAL, AND SIZE OF UTILITY CONDUITS TO BE DETERMINED AS SHOWN ON ELECTRICAL DRAWINGS. CONTRACTOR TO PROVIDE ONE SPARE CONDUIT FOR EACH UTILITY TO BUILDING.
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5. UTILITY COMPANY MUST BE GIVEN THE OPPORTUNITY TO INSPECT THE CONDUIT PRIOR TO BACKFILL. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS SHOULD THE UTILITY COMPANY BE UNABLE TO INSTALL ITS CABLE IN A SUITABLE MANNER.
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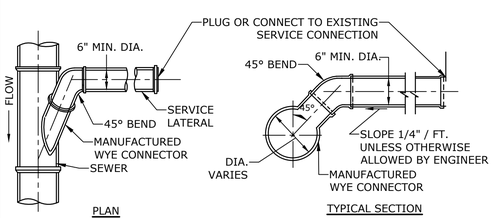
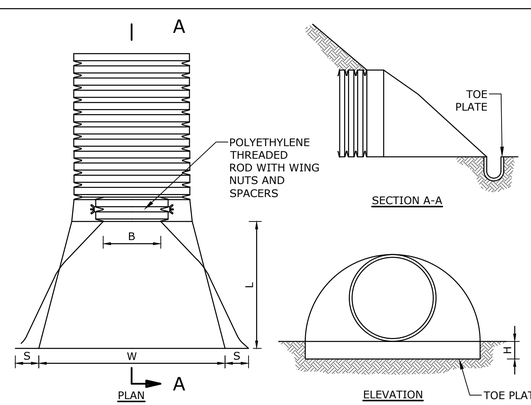
7. ALL 90° SWEEPS WILL BE MADE USING RIGID GALVANIZED STEEL. SWEEPS WITH A 36 TO 48 INCH RADIUS.
8. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW CONDUIT UP TO 6" ABOVE TOP OF CONDUIT.

LIGHTING CONDUIT TRENCH
NO SCALE



STANDARD SERVICE LATERAL CONNECTION
NO SCALE



PIPE DIA.	S	B	H	L	W
12"	6.5"	10"	6.5"	25"	29"
15"	6.5"	10"	6.5"	25"	29"
18"	7.5"	15"	6.5"	32"	35"
24"	7.5"	18"	6.5"	36"	45"
30"	7.5"	12"	8.6"	58"	63"
36"	7.5"	25"	8.6"	58"	63"

NOTE:
1. END SECTIONS MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS, COLUMBUS, OHIO. END SECTIONS TO BE WELDED TO PIPE AS PER MANUFACTURER'S RECOMMENDATIONS.

HDPE FLARED END SECTION
NO SCALE

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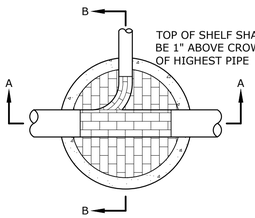
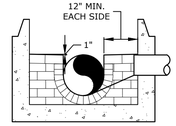
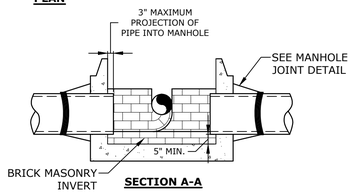


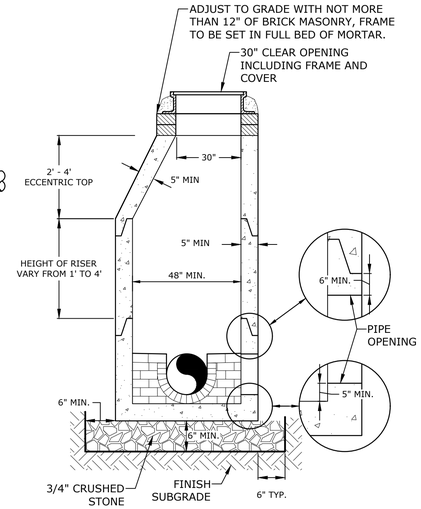
PLAN



SECTION B-B



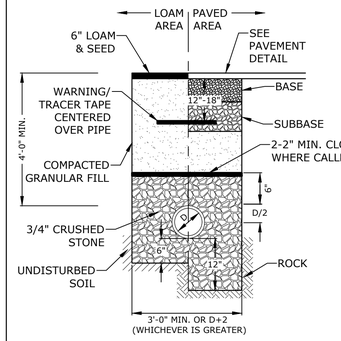
SECTION A-A



TYPICAL SECTION

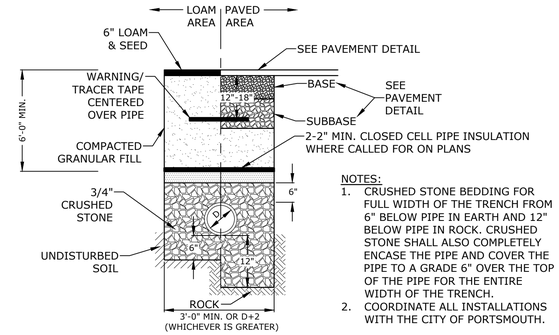
NOTES:
1. ALL SEWER MANHOLES SHALL BE CONSTRUCTED TO CITY AND STATE STANDARDS.
2. INVERT AND SHELF TO BE PLACED AFTER EACH LEAKAGE TEST.
3. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT.
4. INVERT BRICKS SHALL BE LAID ON EDGE.
5. TWO (2) COATS OF BITUMINOUS WATERPROOF COATING SHALL BE APPLIED TO ENTIRE EXTERIOR OF MANHOLE.
6. FRAMES AND COVERS: MANHOLE FRAMES AND COVERS WITHIN CITY RIGHT OF WAY SHALL BE CITY STANDARD HINGE COVERS MANUFACTURED BY EJ. FRAMES AND COVERS WILL BE PURCHASED FROM THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS. ALL OTHER MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. A 3-INCH (MINIMUM HEIGHT) WORD "SEWER" SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.
7. HORIZONTAL JOINTS SHALL BE SEALED FOR WATER TIGHTNESS USING A DOUBLE ROW OF ELASTOMERIC OR MASTIC-LIKE SEALANT.
8. BARREL AND CONE SECTIONS SHALL BE PRECAST REINFORCED CONCRETE DESIGNED FOR H20 LOADING, AND CONFORMING TO ASTM C478-06.

SEWER MANHOLE
NO SCALE



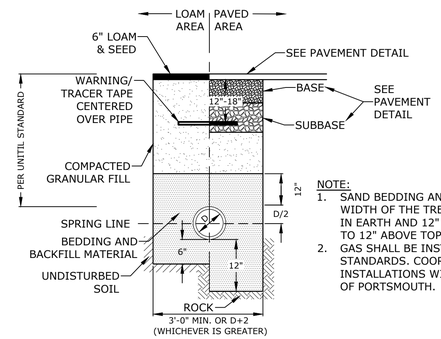
NOTES:
1. CRUSHED STONE BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 6" ABOVE TOP OF PIPE.
2. ALL UTILITIES SHALL BE INSTALLED PER THE INDIVIDUAL UTILITY COMPANY STANDARDS. COORDINATE ALL INSTALLATIONS WITH INDIVIDUAL UTILITY COMPANIES AND THE CITY OF PORTSMOUTH.

STORM DRAIN TRENCH
NO SCALE



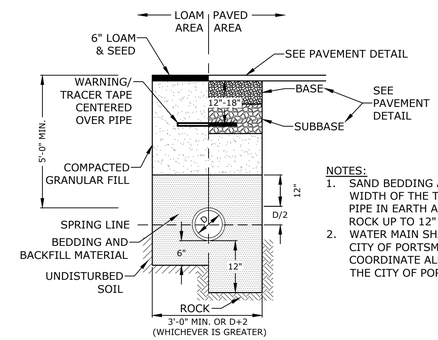
NOTES:
1. CRUSHED STONE BEDDING FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK. CRUSHED STONE SHALL ALSO COMPLETELY ENCASE THE PIPE AND COVER THE PIPE TO A GRADE 6" OVER THE TOP OF THE PIPE FOR THE ENTIRE WIDTH OF THE TRENCH.
2. COORDINATE ALL INSTALLATIONS WITH THE CITY OF PORTSMOUTH.

SEWER SERVICE TRENCH
NO SCALE



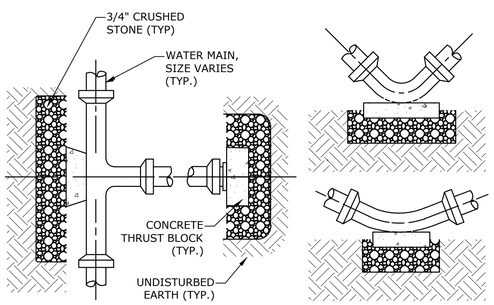
NOTE:
1. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.
2. GAS SHALL BE INSTALLED PER UNITIL STANDARDS. COORDINATE ALL INSTALLATIONS WITH UNITIL AND THE CITY OF PORTSMOUTH.

GAS TRENCH
NO SCALE



NOTES:
1. SAND BEDDING AND BACKFILL FOR FULL WIDTH OF THE TRENCH FROM 6" BELOW PIPE IN EARTH AND 12" BELOW PIPE IN ROCK UP TO 12" ABOVE TOP OF PIPE.
2. WATER MAIN SHALL BE INSTALLED PER CITY OF PORTSMOUTH STANDARDS. COORDINATE ALL INSTALLATIONS WITH THE CITY OF PORTSMOUTH.

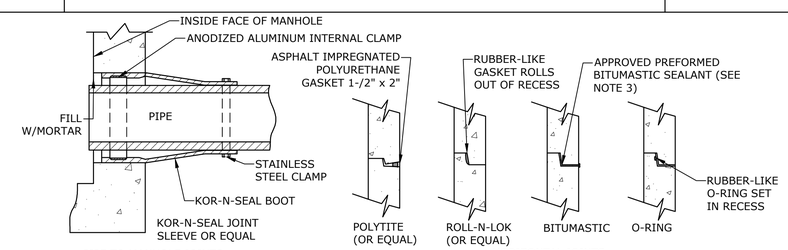
WATER TRENCH
NO SCALE



SQUARE FEET OF MINIMUM BEARING AREA						
NOMINAL DIA. (in)	PIPE SIZE					
	4"	6"	8"	10"	12"	16"
PIPE FITTINGS	*	*	5.18	7.96	11.43	20.29
A 90°	*	4.11	7.33	11.26	16.17	28.69
C 45°	*	*	*	6.10	8.75	15.53
D 22-1/2°	*	*	*	*	4.46	7.92
E 11-1/4°	*	*	*	*	*	*
*SEE NOTE 2	SYSTEM PRESSURE: 125 psi SAFETY FACTOR: 1.5 SOIL BEARING CAPACITY: 2,000 psf					

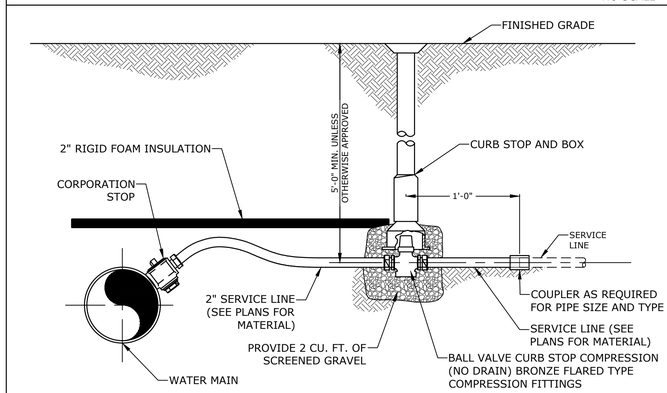
NOTES:
1. ALL THRUST BLOCKS SHALL BE PRE-CAST CONCRETE UNLESS APPROVED BY THE CITY ENGINEER.
2. 2'X2'X2' MINIMUM THRUST BLOCK REQUIRED, ANY BEARING AREA OVER 4 SF REQUIRES THRUST BLOCKS, RESTRAINED JOINTS AND CALCULATIONS ASSOCIATED WITH THE JOINT.
4. FOR MINIMUM BEARING AREAS OVER 4 SF, THE LENGTH (L) OF THE BLOCK IS APPROXIMATELY TWICE AS LONG AS THE HEIGHT (H).
5. THE MINIMUM BEARING AREAS SHOWN IN THE THRUST BLOCK SCHEDULE ARE BASED ON A SYSTEM PRESSURE OF 125 PSI. IF THE SYSTEM PRESSURE IS ABOVE 125 PSI, INCREASE THE NOTED AREAS PROPORTIONALLY TO THE ACTUAL SYSTEM PRESSURE.
6. PLACE CRUSHED STONE BEHIND THRUST BLOCK AGAINST UNDISTURBED SOIL.
7. PLACE THRUST BLOCK ALONG MAXIMUM LENGTH OF THE FITTING TO MAXIMIZE BEARING AREA.
8. CONCRETE COMPRESSIVE STRENGTH: 2,000 PSI MINIMUM.
9. WHERE M.J. PIPE IS USED, M.J. PLUG WITH RETAINER GLAND MAY BE SUBSTITUTED FOR END BLOCKINGS.
10. INSTALLATION AND STANDARD DIMENSIONAL REQUIREMENTS SHALL BE WITH CITY OF PORTSMOUTH WATER DEPARTMENT STANDARDS.

THRUST BLOCKING DETAIL
NO SCALE



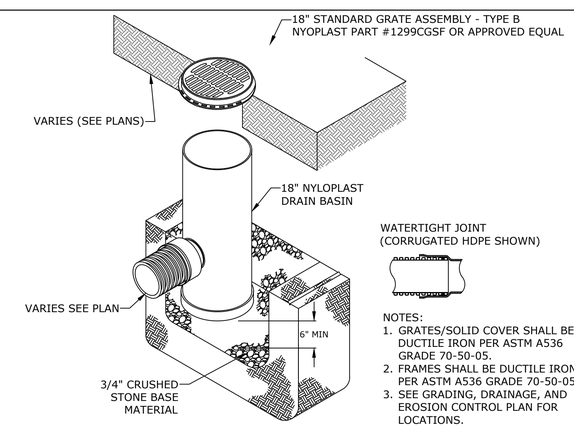
NOTES:
1. HORIZONTAL JOINTS BETWEEN THE SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE PER CITY OF PORTSMOUTH DPW STANDARD AND SHALL BE SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW ELASTOMERIC OR MASTIC-LIKE GASKET.
2. PIPE TO MANHOLE JOINTS SHALL BE PER CITY OF PORTSMOUTH STANDARD.
3. FOR BITUMASTIC TYPE JOINTS THE AMOUNT OF SEALANT SHALL BE SUFFICIENT TO FILL AT LEAST 75% OF THE JOINT CAVITY.
4. ALL GASKETS, SEALANTS, MORTAR, ETC. SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

MANHOLE JOINTS
NO SCALE



NOTE: ALL WATER SERVICE CONNECTIONS SHALL CONFORM TO CITY OF PORTSMOUTH STANDARDS.

WATER SERVICE CONNECTION
NO SCALE



NOTES:
1. GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2. FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. SEE GRADING, DRAINAGE, AND EROSION CONTROL PLAN FOR LOCATIONS.

YARD DRAIN
NO SCALE

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LANDSCAPING KEYNOTES

L01 PROVIDE NEW 1-1/2" - 3" RIVERJACK RIVERSTONE.

L02 PROVIDE NEW PINE BARK MULCH.

LEGEND

PERMEABLE SURFACE

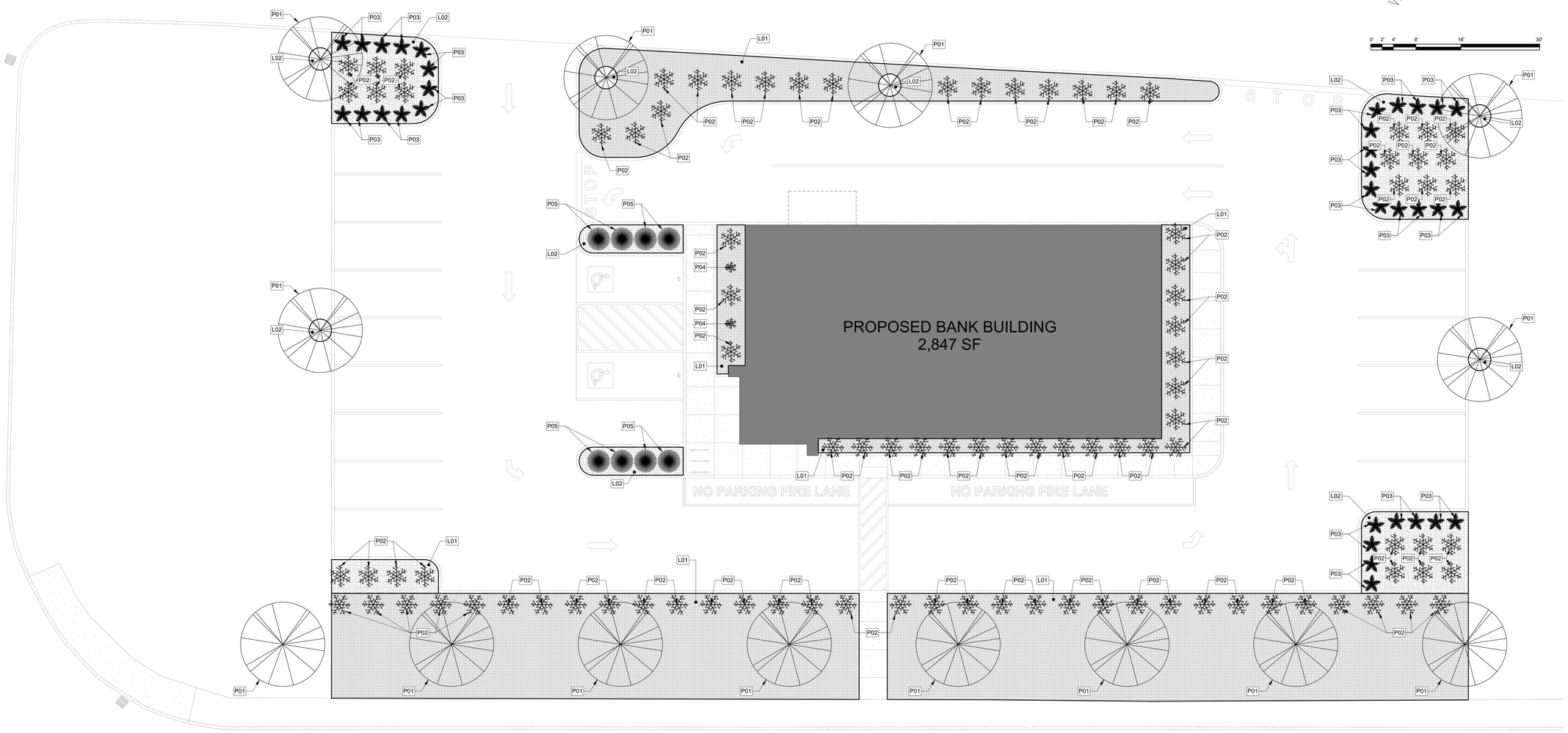
NEW CONCRETE SIDEWALK/CURBING

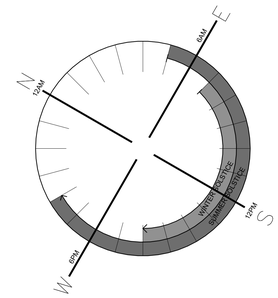
NEW 1 1/2" - 3" RIVERJACK RIVERSTONE

BUILDING FOOTPRINT

PLANTING SCHEDULE

NUMBER	COMMON NAME (BOTANICAL)	MATURE PLANT SIZE	QTY
PLANTINGS			
P01	KOUSA DOGWOOD (CORNUS KOUSA)	HEIGHT: 15'-30' SPREAD: 15'-30'	14
P02	GREEN VELVET BOXWOOD (BUXUS x 'GREEN VELVET')	HEIGHT: 3'-4' SPREAD: 3'-4'	99
P03	HOSTA (HOSTA PLANTAGINEA)	HEIGHT: 1'-3' SPREAD: 1'-3'	34
P04	THREADLEAF TICKSEED (COREOPSIS VERTICILLATA)	HEIGHT: 1'-2' SPREAD: 1'-2'	2
P05	BLACK-EYED SUSAN (RUDBECKIA HIRTA)	HEIGHT: 2'-4' SPREAD: 1'-2'	8





0' 2' 4' 8' 16' 30'

ARCHITECTURE
INTERIOR ARCHITECTURE
SPACE PLANNING
FACILITIES MANAGEMENT
PROJECT MANAGEMENT

BISBANO + ASSOCIATES, INC
RISING SUN MILLS | 188 VALLEY STREET | PROVIDENCE, RI | 02906
VOICE 401.404.8310 FAX 401.404.8311 WWW.BISBANO.COM

PORTSMOUTH PLAZA
EXTERIOR SHELL

1465 Woodbury Avenue
Portsmouth, NH
03801

SITE LANDSCAPING PLAN

ISSUE TYPE:
SCHEMATIC DESIGN

ISSUE DATE:
02/24/2025

DRAWN BY:
TJ | JC

REVISED:

SCALE
1/8" = 1'-0"

B+A PROJECT NO.:
2024.103

A01.04

SITE LANDSCAPING PLAN

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

May 6, 2025

Peter Britz
Director of Planning
Portsmouth Planning Department
1 Junkins Ave, 3rd Floor
Portsmouth, NH 03801

Re: TAC Work Session for Sherburne Workforce Housing Development,
35 Sherburne Road – Portsmouth, NH
TFMoran Project: 47528.00

Dear Peter:

On behalf of our client, PHA Housing Development LTD, we are submitting the following plans and material for review by the Technical Advisory Committee (TAC). Included are the following materials:

- Drainage-Memo, dated May 6, 2025
- Letter of Authorization, dated May 6, 2025
- Green-Statement, Memo dated May 6, 2025
- Traffic Impact and Access Study by TFMoran, Inc., dated May 5, 2025
- Noise Assessment Report by SRW Environmental Consulting, LLC, dated April 15, 2025
- Environmental Review Assessment Report by SRW Environmental Consulting, LLC, dated April 16, 2025
- Existing Sewer Flow Assessment Report by Flow Assessment Services, dated April 15, 2025
- Geotechnical Report by Geotechnical Services, Inc. dated April 8, 2025
- NHB DataCheck Result Letter, New Hampshire Natural Heritage Bureau, Date January 31, 2025
- Preliminary Structural Review by TFMoran, Inc. date March 20, 2025
- Water Hydrant Flow Test, by Testing and Coring Company (Compiled by TFMoran), dated March 19, 2025
- Site Development Plan, Tax Map 259, Lot 10, Proposed Housing Development, 35 Sherburne Road, Portsmouth, New Hampshire, Owned by the City of Portsmouth, Prepared for PHA Housing Development LTD, dated January 29, 2025
- Floor Plan and elevations for PHA Sherburne School, Existing, 35 Sherburne Road, Portsmouth, NH, dated May 6, 2025
- Floor Plan for PHA Sherburne Small Building, 35 Sherburne Road, Portsmouth, NH, dated March 31, 2025
- Floor Plan for PHA Sherburne 90 Unit Building, 35 Sherburne Road, Portsmouth, NH, dated May 6, 2025
- Site Layout Plan Color-up, dated January 29, 2025
- Open Space Plan, dated January 29, 2025

The project entails the creation of a 127-unit Workforce Housing Development. Part of this includes the revitalization of the front section of the existing school to create 8 units (5 One-Bedroom Units and 3 Two-Bedroom Units). The project proposes two additional buildings; a three-story 29-unit building, mid-property (13 One-Bedroom Units, 11 Two-Bedroom Units and 5 Three-Bedroom Units) and a four-story 90- unit building in the back of the property (51 One-Bedroom Units, 31 Two-Bedroom Units, and 8 Three-Bedroom Units).

We look forward to discussing this project with you.

Sincerely,
TFMoran, Inc.

Jack McTigue, PE, CPESC
Project Manager

cc: Craig Welch, Mark Lentz, Robert Harbeson

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

Letter of Authorization

I, Craig Welch of PHA Housing Development LTD hereby authorize TFMoran, Inc., 170 Commerce Way, Suite 102, Portsmouth, NH, to act on my behalf concerning property owned by the City of Portsmouth and being developed by PHA Housing Development LTD, 245 Middle Street, Portsmouth, NH, known as Tax Map 259, Lot 10.

I hereby appoint TFMoran, Inc. as my agent to act on my behalf in the review process, to include any required signatures.

Craig W. Welch — 5/6/2025

Client Name — Date

Mary H. Bartlett — 5/6/2025

Witness — Date

TFMoran, Inc.
48 Constitution Drive, Bedford, NH 03110
T(603) 472-4488 www.tfmoran.com

TFMoran, Inc. Seacoast Division
170 Commerce Way–Suite 102, Portsmouth, NH 03801
T(603) 431-2222

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

Since 1968

NEW HAMPSHIRE 200

Letter of Authorization

I, Karen Conard, City Manager of the City of Portsmouth, 1 Junkins Avenue, Portsmouth, NH 03801, hereby authorize PHA Housing Development LTD, 245 Middle Street, Portsmouth, NH, and TFMoran, Inc., 170 Commerce Way, Suite 102, Portsmouth, NH, to develop plans and work on the property owned by The City of Portsmouth, at 35 Sherburne Road, Portsmouth, New Hampshire, known as Tax Map 259, Lot 10.

I hereby authorize PHA Housing Development LTD and TFMoran, Inc. to develop and submit plans for development of the above named property throughout the land use review and construction process.

Client Name	5/7/2025 Date
Witness	5/7/2025 Date

TFMoran, Inc.
48 Constitution Drive, Bedford, NH 03110
T(603) 472-4488 www.tfmoran.com

TFMoran, Inc. Seacoast Division
170 Commerce Way–Suite 102, Portsmouth, NH 03801
T(603) 431-2222

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD
PORTSMOUTH, NEW HAMPSHIRE

OWNER
MAP 259 LOT 10
CITY OF PORTSMOUTH
PO BOX 628
PORTSMOUTH, NH 03801
000–000–0000

APPLICANT
PHA HOUSING DEVELOPMENT LTD.
MARK LENTZ
245 MIDDLE STREET
PORTSMOUTH, NH 03801
000–000–0000

RESOURCE LIST

PLANNING/ZONING DEPARTMENT
1JUNKINS AVE, 3RD FLOOR
PORTSMOUTH, NH 03801
603–610–7216
PETER BRITZ, DIRECTOR

CONSERVATION COMMISSION
1JUNKINS AVE, 3RD FLOOR
PORTSMOUTH, NH 03801
603–610–7216
SAMANTHA COLLINS, CHAIR

BUILDING DEPARTMENT
1JUNKINS AVE
PORTSMOUTH, NH 03801
603–610–7243
SHANTI WOLPH, CHAIR

PUBLIC WORKS
680 PEVERLY HILL RD,
PORTSMOUTH, NH 03801
603–427–1530
PETER RICE, DIRECTOR

POLICE DEPARTMENT
3JUNKINS AVE, STE 1
PORTSMOUTH, NH 03801
603–427–1500
MARK NEWPORT, CHIEF

FIRE DEPARTMENT
170 COURT ST
PORTSMOUTH, NH 03801
603–427–1515
WILLIAM MCQUILLEN

NHDES AOT
29 HAZEN DR
CONCORD, NH 03302–0095
603–271–3503

ASSOCIATED PROFESSIONALS

ARCHITECT
MARKET SQUARE ARCHITECTS
104 CONGRESS STREET, SUITE 203
PORTSMOUTH, NH 03801
603–330–3537
ROBERT HARBESON, AIA, PRINCIPAL

ENVIRONMENTAL SERVICES
SRW ENVIRONMENTAL CONSULTING, LLC
143 ROCHESTER HILL ROAD
ROCHESTER, NH 03867
TODD SCHEFFER, P.G., PRINCIPAL
603–330–3537

GEOTECHNICAL SERVICES
GEOTECHNICAL SERVICES, INC.
55 NORTH STARK HIGHWAY
WEARE, NH 03281
HARRY K. WETHERBEE, PE, PRINCIPAL
603–529–7766

TRAFFIC ENGINEER
TFMORAN, INC
48 CONSTITUTION DRIVE
BEDFORD, NH 03110
603–472–4488
JENNIFER PORTER, TRAFFIC ENGINEER

LIGHTING DESIGN
EXPOSURE
501 ISLINGTON ST., UNIT 1A
PORTSMOUTH, NH 03801
603 759–1043
KEN SWEENEY, APPLICATION ENGINEER

ABUTTERS
MAP 259 LOT 10
CITY OF PORTSMOUTH
PO BOX 628
PORTSMOUTH, NH 03802
RCRD BK# 2389 PG# 1272

MAP 259 LOT 11
MILLS MAUREEN & SN ZOLDAK
911 GREENLAND RD
PORTSMOUTH, NH 03801
RCRD BK# 2956 PG# 2909

MAP 259 LOT 14
HIGH LINER FOODS INC
1 HIGH LINER AVE
PORTSMOUTH NH, 03801
RCRD BK# 2434 PG# 112

MAP 259 LOT 9
DOUGLAS H. CROSSMAN
52 SHERBURNE RD
PORTSMOUTH, NH 03801
RCRD BK# 5183 PG# 1329

MAP 259 LOT 8
THOMAS M. PUIIA
38 SHERBURNE RD #1
PORTSMOUTH NH, 03801
RCRD BK# 6295 PG# 208

MAP 259 LOT 7
PETER JONES & KARLA LEMOS–JONES
917 GREENLAND RD
PORTSMOUTH, NH 03801
RCRD BK# 6163 PG# 2559

MAP 259 LOT 12
ORCHARD PARK CONDOMINIUMS
BORTHWICK AVENUE
PORTSMOUTH, NH 03801
RCRD BK# 2541 PG# 106

HORIZONTAL SCALE 1"=500'
500 250 0 500

INDEX OF SHEETS

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REFERENCE PLANS BY ASSOCIATED PROFESSIONALS	
–	LIGHTING PLAN
–	ARCHITECTURAL ELEVATION PLAN

PERMITS/APPROVALS

	NUMBER	APPROVED	EXPIRES
PORTSMOUTH PLANNING BOARD SITE PLAN REVIEW APPROVAL	–	–	–
NHDES AOT PERMIT	–	–	–
NHDES SEWER CONNECTION PERMIT	–	–	–
EPA NPDES ENOI CGP & SWPPP	–	m	–

APPROVED BY THE CITY/TOWN OF XXX PLANNING BOARD

ON _____

BOARD MEMBER _____ *AND*

BOARD MEMBER _____

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

COVER

PROPOSED HOUSING DEVELOPMENT
35 SHERBURNE ROAD
PORTSMOUTH, NEW HAMPSHIRE
OWNED BY
CITY OF PORTSMOUTH
PREPARED FOR
PHA HOUSING DEVELOPMENT LTD.

SCALE: NTS **JANUARY 29, 2025**

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

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48 Constitution Drive, Bedford, N.H. 03110

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This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

THESE PLANS ARE PERMIT DRAWINGS ONLY AND HAVE NOT BEEN DETAILED FOR CONSTRUCTION OR BIDDING.

REV	DATE	DESCRIPTION	DR	CK

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

48 Constitution Drive
Bedford, NH 03110
Phone (603) 472–4488
Fax (603) 472–9747
www.tfmoran.com

FILE	DR	JKC	FB		
47528.00	CK	JJM	CADFILE	~~47528–00_COVER~~	C–00

May 06, 2025 - 2:36pm
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LEGEND

PROPOSED	
	PROPERTY LINE
	ZONING LINE
	EASEMENT
	BASELINE
	FLOODPLAIN
	EDGE OF WATERBODY
	EDGE OF WETLAND
	SETBACK (WETLAND)
	SETBACK (STRUCTURE)
	SETBACK (PARKING)
	SETBACK (LANDSCAPE)
	GRAVEL ROAD
EOP	EDGE OF PAVEMENT
VGC	VERTICAL GRANITE CURB
SGC	SLOPED GRANITE CURB
CC	CONCRETE CURB
ICC	INTEGRATED CONCRETE CURB
BIT	BITUMINOUS ASPHALT CURB
CCB	CAPE COD BERM
	SAWCUT
	BUILDING
	BUILDING ROOF OVERHANG
	BUILDING FOUNDATION
	BUILDING ENTRANCE
	OVERHEAD DOOR
	TREE LINE
O O O	FENCE (CHAIN LINK)
X X	FENCE (WIRE)
	FENCE (STOCKADE)
	GUARDRAIL
	STONE WALL
	RETAINING WALL
SF SF SF	SILT FENCE
SS SS SS	SILT SOCK
	SOIL BOUNDARY
	LIMIT OF GRADING
100	CONTOUR
TC100.50 BC100.00 OR 100.00	SPOT GRADE
##	PARKING COUNT
DSLY	YELLOW DOUBLE SOLID LINE
SSLY	YELLOW SINGLE SOLID LINE
SSLW	WHITE SINGLE SOLID LINE
SBLW	WHITE SINGLE BROKEN LINE
STOP	STOP BAR
	CROSSWALK
	ACCESSIBLE PARKING SYMBOL
	PAVEMENT ARROW
	TRAFFIC FLOW ARROW (NOT PAINTED)
	SIGN (SINGLE POST)
	SIGN (DOUBLE POST)
	SIGN (PYLON)
	SIGN (MONUMENT)
	BOLLARD
D	DUMPSTER PAD

PROPOSED	
	CONCRETE
	GRAVEL
	HEAVY DUTY PAVEMENT
	CONSTRUCTION ENTRANCE
	SNOW STORAGE
	RIPRAP
	INLET PROTECTION
	FLOW ARROW
D	DRAIN LINE
	DRAINAGE SWALE
	STORMWATER BMP
S	SEWER LINE
FM	SEWER FORCE MAIN LINE
W	WATER LINE
G	GAS LINE
OHE	OVERHEAD UTILITY LINE
UGE	UNDERGROUND UTILITY LINE
	CATCH BASIN
	DRAIN INLET
	OUTLET CONTROL STRUCTURE
	ROOF DRAIN
	DRAIN CLEANOUT
	DRAIN MANHOLE
	FARED END SECTION
	SEWER CLEAN OUT
S	SEWER MANHOLE
	SEWER VENT
	DRAIN/SEWER/WATER PLUG OR CAP
	HYDRANT
	FIRE DEPARTMENT CONNECTION
	WATER GATE VALVE
	WATER SHUTOFF
	THRUST BLOCK
W	WATER METER
W	WATER MANHOLE
W	WELL
	GAS GATE VALVE
	GAS SHUT OFF
G	GAS METER
T	TELEPHONE MANHOLE
E	ELECTRIC MANHOLE
	TRAFFIC CONTROL CABINET
	ELECTRIC HANDHOLE
	ELECTRIC PULL BOX
E	ELECTRIC METER
	FLOOD LIGHT
	LIGHT POLE
	UTILITY POLE
	GUY POLE
T	TRANSFORMER PAD
B-#	BORING LOCATION
TP-#	TEST PIT LOCATION
IT-#	INFILTRATION TEST LOCATION
MW-#	MONITORING WELL

ABBREVIATIONS

GENERAL

ABAN	ABANDON
AC	ACRES
ADJ	ADJUST
APPROX	APPROXIMATE
BC	BOTTOM OF CURB
BIT	BITUMINOUS
BK/PG	BOOK & PAGE
BLDG	BUILDING
BMP	BEST MANAGEMENT PRACTICE
BS	BOTTOM OF SLOPE
BW	BOTTOM OF WALL
CONC	CONCRETE
COORD	COORDINATE
DIA	DIAMETER
ELEV	ELEVATION
EP	EDGE OF PAVEMENT
EXIST	EXISTING
FFE	FINISHED FLOOR ELEVATION
FND	FOUNDATION
HP	HIGH POINT
INV	INVERT ELEVATION
IT	INFILTRATION TEST
L	LENGTH
LF	LINEAR FEET
LSA	LANDSCAPE AREA
MAX	MAXIMUM
MIN	MINIMUM
N/F	NOW OR FORMERLY
NHFG	NEW HAMPSHIRE FISH & GAME
NTS	NOT TO SCALE
OC	ON CENTER
PAVE	PAVEMENT
PERF	PERFORATED
PROP	PROPOSED
R	RADIUS
R&D	REMOVE AND DISPOSE
R&R	REMOVE AND RESET
REM	REMOVE
RET	RETAIN
RIM	RIM ELEVATION
ROW	RIGHT OF WAY
S	SLOPE
SF	SQUARE FEET
SW	SIDEWALK
TBM	TEMPORARY BENCHMARK
TC	TOP OF CURB
TP	TEST PIT
TW	TOP OF WALL
TYP	TYPICAL
UG	UNDERGROUND
WCR	ACCESSIBLE WHEELCHAIR RAMP
W/	WITH

UTILITIES

CB	CATCH BASIN
CIP	CAST IRON PIPE
CMP	CORRUGATED METAL PIPE
CO	CLEANOUT
COND	CONDUIT
DCB	DOUBLE CATCH BASIN
DIP	DUCTILE IRON PIPE
DMH	DRAIN MANHOLE
F&C	FRAME AND COVER
F&G	FRAME AND GRATE
FES	FLARED END SECTION
GT	GREASE TRAP
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HH	HANDHOLE
HW	HEADWALL
HYD	HYDRANT
LP	LIGHT POLE
OCS	OUTLET CONTROL STRUCTURE
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
SMH	SEWER MANHOLE
SOS	SEDIMENT OIL SEPARATOR
TSV	TAPPING SLEEVE, VALVE, AND BOX
UP	UTILITY POLE

GENERAL NOTES

1. THESE PLANS WERE PREPARED UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER. TFMORAN, INC. ASSUMES NO LIABILITY AS A RESULT OF ANY CHANGES OR NON-CONFORMANCE WITH THESE PLANS EXCEPT UPON THE WRITTEN APPROVAL OF THE ENGINEER OF RECORD.
2. THE SITE CONTRACTOR SHALL NOTIFY THE ENGINEER ONE WEEK IN ADVANCE OF CONSTRUCTION OF EACH STORMWATER FACILITY TO COORDINATE REQUIRED INSPECTIONS. THE CONTRACTOR SHALL TAKE PROGRESS PHOTOS DURING CONSTRUCTION OF ALL STORMWATER DRAINAGE COMPONENTS AND SEND TO THE ENGINEER.
3. SEE EXISTING CONDITIONS PLAN FOR THE HORIZONTAL AND VERTICAL DATUM. VERIFY TBM ELEVATIONS PRIOR TO CONSTRUCTION.
4. CONTACT EASEMENT OWNERS PRIOR TO COMMENCING ANY WORK WITHIN EASEMENTS.
5. PRIOR TO COMMENCING ANY SITE WORK, ALL LIMITS OF WORK SHALL BE CLEARLY MARKED IN THE FIELD.
6. SITE WORK SHALL BE CONSTRUCTED FROM A COMPLETE SET OF PLANS, NOT ALL FEATURES ARE DETAILED ON EVERY PLAN. THE ENGINEER IS TO BE NOTIFIED OF ANY CONFLICT WITHIN THIS PLAN SET.
7. TFMORAN, INC. ASSUMES NO LIABILITY FOR WORK PERFORMED WITHOUT AN ACCEPTABLE PROGRAM OF TESTING AND INSPECTION AS APPROVED BY THE ENGINEER OF RECORD.
8. PRIOR WRITTEN PERMISSION FROM THE LOCAL PERMITTING AUTHORITY IS REQUIRED IF CLOSURE/OBSTRUCTIONS TO ROADS, STREET, WALKWAYS, AND OTHERS IS DEEMED NECESSARY. CONTRACTOR TO PROVIDE ALTERNATE ROUTES AROUND CLOSURES/OBSTRUCTIONS PER LOCAL/STATE/FEDERAL REGULATIONS.
9. REFER TO ARCHITECTURAL PLANS FOR LAYOUT OF BUILDING FOUNDATIONS AND CONCRETE ELEMENTS WHICH ABUT THE BUILDING SUCH AS STAIRS, SIDEWALKS, LOADING DOCK RAMPS, PADS, AND COMPACTOR PADS. DO NOT USE SITE PLANS FOR LAYOUT OF FOUNDATIONS.
10. IN THE EVENT OF A CONFLICT BETWEEN PLANS, SPECIFICATIONS, AND DETAILS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATION.
11. IF CONDITIONS AT THE SITE ARE DIFFERENT THAN SHOWN ON THE PLANS, THE ENGINEER SHALL BE NOTIFIED PRIOR TO PROCEEDING WITH THE AFFECTED WORK.
12. CONTRACTOR'S GENERAL RESPONSIBILITIES:
    A. BID AND PERFORM THE WORK IN ACCORDANCE WITH ALL LOCAL, STATE, AND NATIONAL CODES, SPECIFICATIONS, REGULATIONS, AND STANDARDS AND CONDITIONS OF ALL PROJECT-SPECIFIC PERMITS AND APPROVALS AS LISTED ON THE COVER SHEET TO THESE PLANS OR OTHERWISE REQUIRED.
    B. NOTIFY ENGINEER IN WRITING OF ANY DISCREPANCIES IN PROPOSED LAYOUT AND IN EXISTING FEATURES.
    C. EMPLOY A LICENSED SURVEYOR TO DETERMINE ALL LINES AND GRADES AND LAYOUT OF SITE ELEMENTS AND BUILDINGS.
    D. THE CONTRACTOR SHALL BE RESPONSIBLE TO BECOME FAMILIAR WITH THE SITE AND ALL SURROUNDING CONDITIONS. NOTIFY ALL APPROPRIATE AUTHORITY OF CONSTRUCTION ACTIVITIES REQUIRING TESTS OR INSPECTIONS IN ADVANCE.
    E. TAKE APPROPRIATE MEASURES TO MINIMIZE NOISE, DUST, AND DEBRIS. CONSTRUCTION ACTIVITIES SHALL BE CARRIED OUT BETWEEN THE HOURS OF 7:00 AM AND 9:00 PM, MONDAY THROUGH FRIDAY IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, PORTSMOUTH, NEW HAMPSHIRE.
    F. MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY WORK AT ALL TIMES.
    G. IN ACCORDANCE WITH RSA 430:53 AND AGR 3800, THE CONTRACTOR SHALL NOT TRANSPORT INVASIVE SPECIES OFF THE PROPERTY, AND SHALL DISPOSE OF INVASIVE SPECIES ON-SITE IN A LEGAL MANNER.
    H. COORDINATE WITH ALL UTILITY COMPANIES AND CONTACT DIGSAFE (811 OR 888-344-7233) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION.
    I. PROTECT NEW AND EXISTING BURIED UTILITIES DURING ALL SITE WORK. DAMAGED UTILITIES SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.
    J. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY TFMORAN, INC., DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS, OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR OR ENGINEER HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE US OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REGULATIONS.
    K. WRITTEN DIMENSIONS HAVE PRECEDENCE OVER SCALED OR COORDINATE DIMENSIONS. IN CASE OF CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWING AND/OR SPECIFICATION, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATIONS.
    L. PROVIDE AN AS-BUILT PLAN AT THE COMPLETION OF THE PROJECT AS REQUIRED BY CITY REGULATIONS.
    M. IF ANY DEVIATIONS FROM THE APPROVED PLANS AND SPECIFICATIONS HAVE BEEN MADE, THE SITE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS STAMPED BY A LICENSED SURVEYOR OR QUALIFIED ENGINEER ALONG WITH A LETTER STAMPED BY A QUALIFIED ENGINEER DESCRIBING ALL SUCH DEVIATIONS, AND BEAR ALL COSTS FOR PREPARING AND FILING ANY NEW PERMITS OR PERMIT AMENDMENTS THAT MAY BE REQUIRED.
    N. THE CONTRACTOR SHALL PROVIDE THE FOLLOWING DOCUMENTATION TO OWNER AND ENGINEER:
        1) ADVANCE WRITTEN NOTICE AT LEAST ONE WEEK PRIOR TO COMMENCING ANY WORK UNDER THE PERMIT AND NOTIFICATION TO AOT VIA THE START OF CONSTRUCTION FORM.
        2) IF ANY UNDERGROUND DETENTION SYSTEMS, INFILTRATION SYSTEMS, OR FILTERING SYSTEMS WERE INSTALLED, FOR EACH SUCH SYSTEM:
            A) REPRESENTATIVE PHOTOGRAPHS OF THE SYSTEM AFTER COMPLETION BUT PRIOR TO BACKFILLING; AND
            B) A LETTER SIGNED BY THE ENGINEER WHO OBSERVED THE SYSTEM PRIOR TO BACKFILLING, THAT THE SYSTEM CONFORMS TO THE APPROVED PLANS AND SPECIFICATIONS.
        3) UPON COMPLETION OF CONSTRUCTION, WRITTEN CERTIFICATION THAT:
            A) ALL WORK HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS.
            B) IF ANY DEVIATIONS FROM THE APPROVED PLANS WERE MADE, WRITTEN DESCRIPTIONS AND AS-BUILT DRAWINGS OF ALL SUCH DEVIATIONS, STAMPED BY A QUALIFIED ENGINEER, SHALL BE PROVIDED.

GRADING & DRAINAGE NOTES

1. THE CONTRACTOR SHALL ENSURE THAT ALL WORK INCLUDING INSPECTIONS AND TESTS IS PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF NHDES ENV-WQ 1500 AS APPLICABLE.
2. THE CONTRACTOR SHALL PREPARE, MAINTAIN, AND EXECUTE A S.W.P.P.P. IN ACCORDANCE WITH EPA REGULATIONS AND THE CONSTRUCTION GENERAL PERMIT.
3. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER TO SUBMIT AN eNOI AT LEAST 14 DAYS IN ADVANCE OF ANY EARTHWORK ACTIVITIES AT THE SITE.
4. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CHECK THE ACCURACY OF THE TOPOGRAPHY AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO ANY EARTHWORK BEING PERFORMED ON THE SITE. NO CLAIM FOR EXTRA WORK WILL BE CONSIDERED FOR PAYMENT AFTER EARTHWORK HAS COMMENCED.
5. THE CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT FOR INFORMATION ABOUT SOIL AND GROUNDWATER CONDITIONS. THE CONTRACTOR SHALL FOLLOW THE GEOTECHNICAL ENGINEER'S RECOMMENDED METHODS TO ADDRESS ANY SOIL AND GROUNDWATER ISSUES THAT ARE FOUND ON SITE, INCLUDING AND NOT LIMITED TO DEWATERING METHODS, PERIMETER DRAINS AND TIE INTO STORMWATER MANAGEMENT SYSTEM, ETC.
6. COORDINATE WITH GEOTECHNICAL/STRUCTURAL PLANS FOR SITE PREPARATION AND OTHER BUILDING INFORMATION.
7. COORDINATE WITH ARCHITECTURAL PLANS FOR DETAILED LAYOUT AND GRADING AT BUILDING, AND SIZE AND LOCATION OF ALL BUILDING SERVICES, FOOTING DRAINS, AND ROOF DRAIN INFORMATION.
8. LIMITS OF WORK ARE SHOWN AS APPROXIMATE. THE CONTRACTOR SHALL COORDINATE ALL WORK TO PROVIDE SMOOTH TRANSITIONS. THIS INCLUDES GRADING, PAVEMENT, CURBING, SIDEWALKS, AND ALIGNMENTS.
9. THE CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE FREE OF LOW SPOTS AND PONDING AREAS. CRITICAL AREAS INCLUDE BUILDING ENTRANCE, RAMPS, AND LOADING AREAS.
10. THE SITE SHALL BE GRADED SO ALL FINISHED PAVEMENT HAS POSITIVE DRAINAGE AND SHALL NOT POND WATER.
11. ALL ELEVATIONS SHOWN AT CURB ARE TO THE BOTTOM OF CURB UNLESS OTHERWISE NOTED. CURBS HAVE A 6" REVEAL UNLESS OTHERWISE NOTED.
12. ALL SIDEWALK AND OTHER CURB REVEALS SHALL BE 6" WITH A TOLERANCE OF PLUS OR MINUS 3/8". WHERE SIDEWALK IS TO BE FLUSH, THE PAVEMENT REVEAL SHALL BE WITHIN 1/4".
13. THE FINISHED GRADE AT BOTTOM OF ALL ACCESSIBLE RAMPS SHALL BE FLUSH WITH PAVEMENT WITH A TOLERANCE OF PLUS OR MINUS 1/4".
14. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE PRIOR TO INSTALLATION OF FINISHED PAVEMENT.
15. ROAD AND DRAINAGE CONSTRUCTION SHALL CONFORM TO THE TYPICAL SECTIONS AND DETAILS SHOWN ON THE PLANS AND SHALL MEET LOCAL STANDARDS AND THE REQUIREMENTS OF THE LATEST NHDOT STANDARD SPECIFICATIONS FOR ROADS AND BRIDGE CONSTRUCTION AND THE NHDOT STANDARD STRUCTURE DRAWINGS UNLESS OTHERWISE NOTED.
16. STORMWATER DRAINAGE SYSTEM SHALL BE CONSTRUCTED TO LINE AND GRADE AS SHOWN ON THE PLANS. CONSTRUCTION METHODS SHALL CONFORM TO NHDOT STANDARD SPECIFICATIONS, SECTION 603. CATCH BASINS AND DRAIN MANHOLES SHALL CONFORM TO SECTION 604. ALL CATCH BASIN GRATES SHALL BE TYPE B AND CONFORM TO NHDOT STANDARDS AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
17. NO FILL SHALL BE PLACED IN ANY WETLAND AREA WITHOUT A WETLANDS PERMIT.
18. ALL EXCAVATIONS SHALL BE THOROUGHLY SECURED ON A DAILY BASIS BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION OPERATIONS IN THE IMMEDIATE AREA.
19. ALL DISTURBED AREAS NOT TO BE PAVED OR OTHERWISE TREATED SHALL RECEIVE 6" LOAM, SEED, FERTILIZER, AND MULCH.
20. DENSITY REQUIREMENTS:

MINIMUM DENSITY*	LOCATION
95%*	BELOW PAVED OR CONCRETE AREAS
95%**	TRENCH BEDDING MATERIAL AND SAND BLANKET BACKFILL
90%**	BELOW LOAM AND SEED AREAS

ALL PERCENTAGES OF COMPACTION SHALL BE OF THE MAXIMUM DRY DENSITY AT THE OPTIMUM MOISTURE CONTENT.
* ASTM D-1557
** ASTM D-698.

UTILITY NOTES

1. LENGTH OF PIPE IS FOR CONVENIENCE ONLY. ACTUAL PIPE LENGTH SHALL BE DETERMINED IN THE FIELD.
2. ALL PROPOSED UTILITY WORK, INCLUDING MATERIAL, INSTALLATION, TERMINATION, EXCAVATION, BEDDING, BACKFILL, COMPACTION, TESTING, CONNECTIONS, AND CONSTRUCTION SHALL BE COORDINATED WITH AND COMPLETED IN ACCORDANCE WITH THE APPROPRIATE REQUIREMENTS, CODES, AND STANDARDS OF ALL CORRESPONDING UTILITY ENTITIES AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE, AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION BE AGREED TO BY THE ENGINEER BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT "DIGSAFE" (811) AT LEAST 72 HOURS BEFORE DIGGING.
4. COORDINATE ALL WORK ADJACENT TO PROPOSED BUILDINGS WITH ARCHITECTURAL BUILDING DRAWINGS. CONFIRM UTILITY PENETRATIONS AND INVERT ELEVATIONS ARE COORDINATED PRIOR TO INSTALLATION.
5. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES OWNING UTILITIES, EITHER OVERHEAD OR UNDERGROUND, WITHIN THE CONSTRUCTION AREA AND SHALL COORDINATE AS NECESSARY WITH THE UTILITY COMPANIES OF SAID UTILITIES. THE PROTECTION OR RELOCATION OF UTILITIES IS ULTIMATELY THE RESPONSIBILITY OF THE CONTRACTOR.
6. THE EXACT LOCATION OF NEW UTILITY CONNECTIONS SHALL BE DETERMINED BY THE CONTRACTOR IN COORDINATION WITH UTILITY COMPANY, COUNTY AGENCY, AND/OR PRIVATE UTILITY COMPANY.
7. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES, AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THESE DRAWINGS TO RENDER THE UTILITY INSTALLATION COMPLETE AND OPERATIONAL.
8. ALL UTILITY COMPANIES REQUIRE INDIVIDUAL CONDUITS. CONTRACTOR TO COORDINATE WITH TELEPHONE, CABLE, AND ELECTRIC COMPANIES REGARDING NUMBER, SIZE, AND TYPE OF CONDUITS REQUIRED PRIOR TO INSTALLATION OF ANY CONDUIT.
9. SANITARY SEWER SHALL BE CONSTRUCTED TO THE STANDARDS AND SPECIFICATIONS AS SHOWN ON THESE PLANS. ALL SEWER MAINS AND FITTINGS SHALL BE PVC AND SHALL CONFORM TO ASTM F 679 (SDR 35 MINIMUM). FORCE MAINS AND FITTINGS SHALL CONFORM TO NH CODE OF ADMINISTRATIVE RULES ENV-WQ 700. ALL SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH NH CODE OF ADMINISTRATIVE RULES ENV-WQ 700. SANITARY MANHOLES SHALL CONFORM TO NHDES WATER DIVISION WASTEWATER ENGINEERING BUREAU STANDARDS AND SPECIFICATIONS SHOWN HEREON.
10. THE ISDS (SEPTIC SYSTEM) SHALL RECEIVE ISDS APPROVAL FROM NHDES SUBSURFACE SYSTEMS BUREAU. PRIOR TO CONSTRUCTION AND PRIOR TO OPERATION OF THE ISDS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING CONSTRUCTION APPROVAL AND APPROVAL TO OPERATE FROM NHDES SUBSYSTEMS BUREAU, AND ANY OTHER STATE AND LOCAL PERMITS AND APPROVALS.
11. ON-SITE WATER DISTRIBUTION SHALL BE TO CITY OF PORTSMOUTH STANDARDS AND SPECIFICATIONS. WATER MAINS SHALL HAVE A MINIMUM OF 5.5' COVER. WHERE WATER PIPES CROSS SEWER LINES A MINIMUM OF 18" VERTICAL SEPARATION BETWEEN THE TWO OUTSIDE PIPE WALLS SHALL BE OBSERVED. HORIZONTAL SEPARATION BETWEEN WATER AND SEWER SHALL BE 10' MINIMUM. WHERE A SANITARY LINE CROSSES A WATER LINE, SEWER LINE MUST BE CONSTRUCTED OF FORCE MAIN MATERIALS (PER ENV-WQ 704.08) FROM BUILDING OR MANHOLE TO MANHOLE, OR SUBSTITUTE RUBBER-GASKETED PRESSURE PIPE FOR THE SAME DISTANCE. WHEN SANITARY LINES PASS BELOW WATER LINES, LAY PIPE SO THAT NO JOINT IN THE SANITARY LINE WILL BE CLOSER THAN 6' HORIZONTALLY TO THE WATER LINE.
12. THRUST BLOCKS SHALL BE PROVIDED AT ALL LOCATIONS WHERE WATER LINE CHANGES DIRECTIONS OR CONNECTS TO ANOTHER WATER LINE.
13. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR CONDUIT AND WIRING TO ALL SIGNS AND LIGHTS. CONDUIT TO BE A MINIMUM OF 24" BELOW FINISH GRADE.
14. ALL PROPOSED UTILITIES SHALL BE UNDERGROUND. ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES.
15. THE CONTRACTOR SHALL ARRANGE AND PAY FOR ALL INSPECTIONS, TESTING, AND RELATED SERVICES AND SUBMIT COPIES OF ACCEPTANCE TO THE OWNER, UNLESS OTHERWISE INDICATED.
16. PROVIDE PERMANENT PAVEMENT REPAIR FOR ALL UTILITY TRENCHES IN EXISTING ROAD OR PAVEMENT TO REMAIN. SAW CUT TRENCH, PAVEMENT, AND GRANULAR BASE THICKNESS TO MATCH EXISTING PAVEMENT. OBTAIN ALL PERMITS REQUIRED FOR TRENCHING.
17. UNLESS OTHERWISE SPECIFIED, ALL UNDERGROUND STRUCTURES, PIPES, CHAMBERS, ETC. SHALL BE COVERED WITH A MINIMUM OF 18" OF COMPACTED SOIL BEFORE EXPOSURE TO VEHICLE LOADS.
18. THE PROPERTY WILL BE SERVICED BY THE FOLLOWING:

DRAINAGE	MUNICIPAL
SEWER	MUNICIPAL
WATER	MUNICIPAL
GAS	UNITIL
ELECTRIC	EVERSOURCE
TELEPHONE	CONSOLIDATED COMMUNICATIONS FKA FAIRPOINT COMMUNICATIONS
CABLE	COMCAST XFINITY

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

NOTES & LEGEND

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD
PORTSMOUTH, NEW HAMPSHIRE

OWNED BY
CITY OF PORTSMOUTH
PREPARED FOR
PHA HOUSING DEVELOPMENT LTD.

SCALE: NTS **JANUARY 29, 2025**

REV	DATE	DESCRIPTION	DR	CK

TFM®
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FILE	DR	JKC	FB		
47528.00	CK	JJM	CADFILE	47528-00_COVER	C-01

May 06, 2025 - 2:36pm
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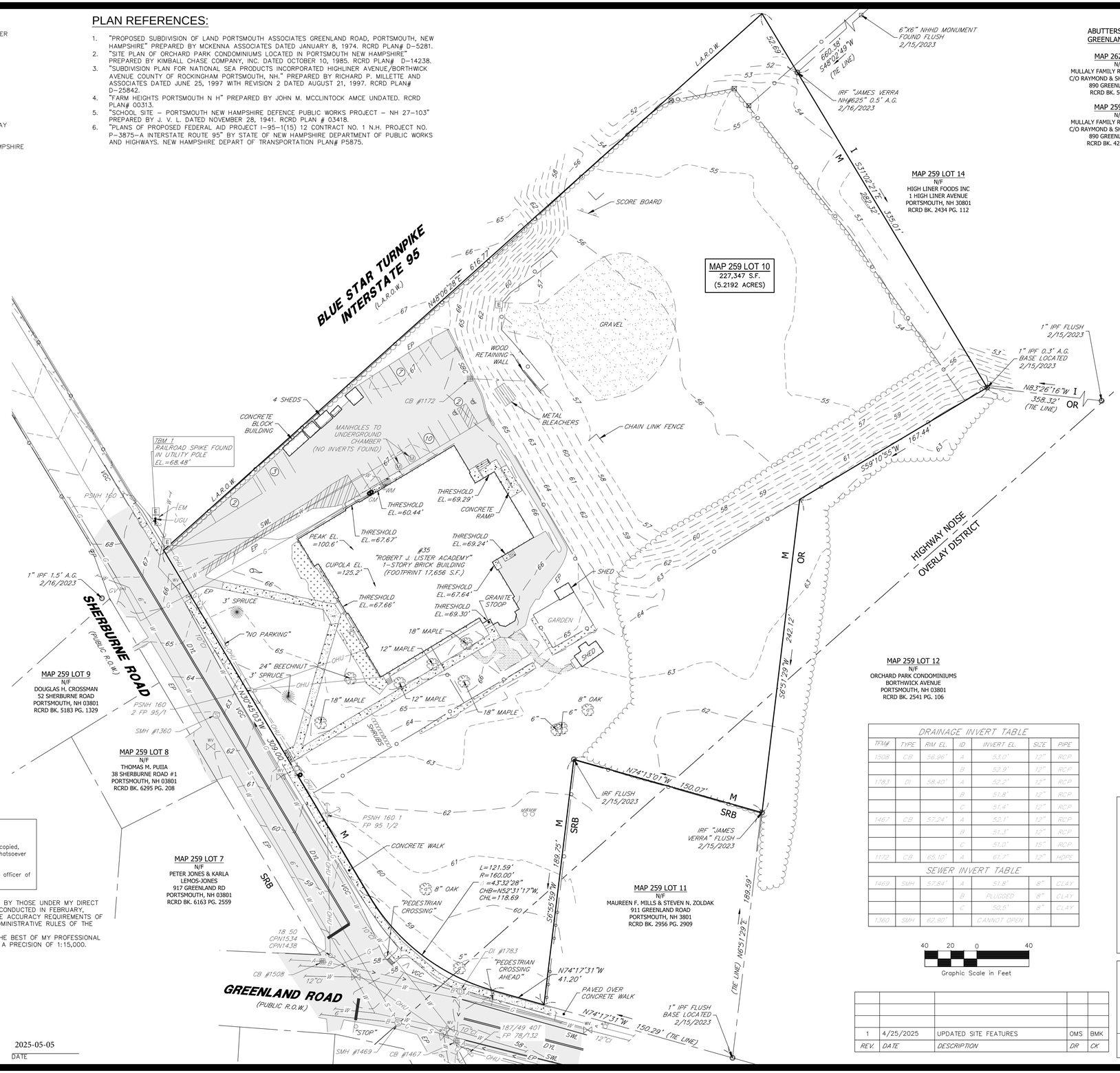
LEGEND:

MAP 259 LOT 10	ASSESSORS MAP/ LOT NUMBER
A.G.	ABOVE GRADE
BK. PG.	BOOK/PAGE
CI	CAST IRON
DI	DROP INLET
DYL	DOUBLE YELLOW LINE
EL.	ELEVATION
EM	ELECTRIC METER
EP	EDGE OF PAVEMENT
FP	FAIR POINT
GM	GAS METER
IPF	IRON PIPE FOUND
IRF	IRON ROD FOUND
L.A.R.O.W.	LIMITED ACCESS RIGHT OF WAY
MW	MONITORING WELL
N/F	NOW OR FORMERLY
PSNH	PUBLIC SERVICE OF NEW HAMPSHIRE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
R.O.W.	RIGHT OF WAY
S.F.	SQUARE FEET
SBC	SLOPED BITUMINOUS CURB
SMH	SEWER MANHOLE
SWL	SINGLE WHITE LINE
TBM	TEMPORARY BENCHMARK
VGC	VERTICAL GRANITE CURB
VCC	VERTICAL CONCRETE CURB
WM	WATER METER
I	INDUSTRIAL
M	MUNICIPAL
OR	OFFICE RESEARCH
SRB	SINGLE RESIDENCE B
	BOLLARD
	CATCH BASIN
	DROP INLET
	ELECTRIC BOX
	GUY WIRE
	IRON PIPE/ROD FOUND
	UTILITY POLE
	POST
	FLAG POLE
	CONIFEROUS TREE
	DECIDUOUS TREE
	CLEAN OUT
	SEWER MANHOLE
GV	GAS VALVE
	HANDICAP PARKING
MW	MONITORING WELL
	HYDRANT
WV	WATER GATE VALVE
	SIGN
3	PARKING COUNT
	BOUNDARY LINE
	APPROX. ABUTTERS LINE
	ZONE LINE
	CHAINLINK FENCE
	TREE LINE
S	SEWER LINE
G	GAS LINE
W	WATER LINE
OHU	OVERHEAD UTILITIES
	DRAINAGE LINE
100	EXISTING CONTOUR
	CONCRETE
	CRUSHED STONE
	GRAVEL
	PAVEMENT
	LANDSCAPED AREA
	TRACTION MAT

PLAN REFERENCES:

1. "PROPOSED SUBDIVISION OF LAND PORTSMOUTH ASSOCIATES GREENLAND ROAD, PORTSMOUTH, NEW HAMPSHIRE" PREPARED BY MCKENNA ASSOCIATES DATED JANUARY 8, 1974. RCRD PLAN# D–5281.
2. "SITE PLAN OF ORCHARD PARK CONDOMINIUMS LOCATED IN PORTSMOUTH NEW HAMPSHIRE" PREPARED BY KIMBALL CHASE COMPANY, INC. DATED OCTOBER 10, 1985. RCRD PLAN# D–14238.
3. "SUBDIVISION PLAN FOR NATIONAL SEA PRODUCTS INCORPORATED HIGHLINER AVENUE/BORTHWICK AVENUE COUNTY OF ROCKINGHAM PORTSMOUTH, NH." PREPARED BY RICHARD P. MILLETTE AND ASSOCIATES DATED JUNE 25, 1997 WITH REVISION 2 DATED AUGUST 21, 1997. RCRD PLAN# D–25842.
4. "FARM HEIGHTS PORTSMOUTH N H" PREPARED BY JOHN M. MCCLINTOCK AMCE UNDATED. RCRD PLAN# 00313.
5. "SCHOOL SITE – PORTSMOUTH NEW HAMPSHIRE DEFENCE PUBLIC WORKS PROJECT – NH 27–103" PREPARED BY J. V. L. DATED NOVEMBER 28, 1941. RCRD PLAN # 03418.
6. "PLANS OF PROPOSED FEDERAL AID PROJECT I–95–1(15) 12 CONTRACT NO. 1 N.H. PROJECT NO. P–3875–A INTERSTATE ROUTE 95" BY STATE OF NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS. NEW HAMPSHIRE DEPART OF TRANSPORTATION PLAN# P5875.

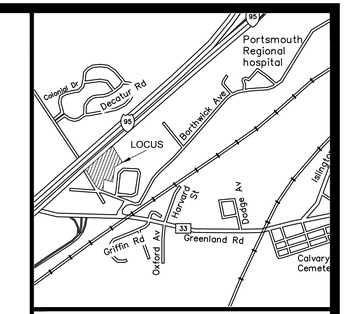


ABUTTERS ACROSS GREENLAND ROAD:

MAP 262 LOT 1
N/F
MULLALY FAMILY REVOCABLE TRUST
C/O RAYMOND & SHIRLEY J. MULLALY
890 GREENLAND ROAD
RCRD BK. 5461 PG. 47

MAP 259 LOT 4
N/F
MULLALY FAMILY REVOCABLE TRUST
C/O RAYMOND & SHIRLEY J. MULLALY
890 GREENLAND ROAD
RCRD BK. 4252 PG. 2877

N
NAD83(2011)



LOCATION PLAN

NOTES:

1. THE PARCEL IS LOCATED IN THE MUNICIPAL (M) ZONING DISTRICT AND THE HIGHWAY NOISE OVERLAY DISTRICT.
2. THE PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 259 AS LOT 10.
3. THE PARCEL IS LOCATED IN FLOOD ZONE X, AS SHOWN ON NATIONAL FLOOD INSURANCE PROGRAM (NFIP), FLOOD INSURANCE RATE MAP (FIRM) ROCKINGHAM COUNTY, NEW HAMPSHIRE, PANEL 270 OF 681, MAP NUMBER 33015C0270F, MAP REVISED JANUARY 21, 2021.
4. PER THE CITY OF PORTSMOUTH ZONING ORDINANCE ARTICLE 5 SECTION 10.560 LOTS AND BUILDINGS IN THE MUNICIPAL DISTRICT ARE EXEMPT FROM ALL DIMENSIONAL AND INTENSITY REGULATIONS.
5. OWNER OF RECORD:
   MAP 259 LOT 10:
   CITY OF PORTSMOUTH
   PO BOX 628
   PORTSMOUTH, NH 03802
   RCRD BK#2389 PG#1272
6. PARCEL AREA:
   MAP 259 LOT 10:
   227,347 S.F.
   (5.2192 ACRES)
7. THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION OF BOUNDARIES IN ACCORDANCE WITH THE CURRENT LEGAL DESCRIPTIONS. IT IS NOT AN ATTEMPT TO DEFINE THE EXTENT OF OWNERSHIP OR DEFINE THE LIMITS OF TITLE.
8. THE PURPOSE OF THIS PLAN IS TO SHOW THE BOUNDARY LINES, TOPOGRAPHY AND CURRENT SITE CONDITIONS OF MAP 259 LOT 10.
9. FIELD SURVEY COMPLETED BY TCE & RJB IN FEBRUARY, 2023 & APRIL 24, 2025 USING A LEICA TS–16, A TOPCON HIPER–V AND CARLSON DATA COLLECTION SOFTWARE.
10. HORIZONTAL DATUM IS NAD83 (2011) PER NETWORK RTK GPS OBSERVATIONS. THE VERTICAL DATUM IS NAVD88 PER NETWORK RTK GPS OBSERVATIONS. THE CONTOUR INTERVAL IS 1 FOOT.
11. EASEMENTS, RIGHTS, AND RESTRICTIONS SHOWN OR IDENTIFIED ARE THOSE WHICH WERE FOUND DURING RESEARCH PERFORMED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS. OTHER RIGHTS, EASEMENTS, OR RESTRICTIONS MAY EXIST WHICH A TITLE EXAMINATION OF SUBJECT PARCEL(S) WOULD DETERMINE.
12. THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. TFMORAN, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UNDERGROUND UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE.

DIG SAFE
MA ME NH RI VT
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM
CALL 811 TOLL FREE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

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This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY THOSE UNDER MY DIRECT SUPERVISION AND ARE THE RESULT OF A FIELD SURVEY CONDUCTED IN FEBRUARY, 2023 & APRIL 24, 2025. THIS SURVEY CONFORMS TO THE ACCURACY REQUIREMENTS OF AN URBAN SURVEY OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS.
I FURTHER CERTIFY THAT THIS SURVEY IS CORRECT TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, AND THE FIELD TRAVERSE SURVEY EXCEEDS A PRECISION OF 1:15,000.

STATE OF NEW HAMPSHIRE
NO. 01037
BRENDA M. KOLBOW
LICENSED LAND SURVEYOR
SIGNATURE

LICENSED LAND SURVEYOR

2025-05-05
DATE

DRAINAGE INVERT TABLE						
TFM#	TYPE	RIM EL.	ID	INVERT EL.	SIZE	PIPE
1508	CB	56.96'	A	53.0'	12"	RCP
			B	52.9'	12"	RCP
1783	DI	58.40'	A	52.2'	12"	RCP
			B	51.8'	12"	RCP
			C	51.4'	12"	RCP
1467	CB	57.24'	A	52.1'	12"	RCP
			B	51.3'	12"	RCP
			C	51.0'	15"	RCP
1172	CB	65.10'	A	61.7'	12"	HDPE
SEWER INVERT TABLE						
1469	SMH	57.84'	A	51.8'	8"	CLAY
			B	PLUGGED	8"	CLAY
			C	50.5'	8"	CLAY
1360	SMH	62.90'		CANNOT OPEN		

40 20 0 40
Graphic Scale in Feet

REV.	DATE	DESCRIPTION	DR	CK
1	4/25/2025	UPDATED SITE FEATURES	OMS	BMK

TAX MAP 259 LOT 10
EXISTING CONDITIONS PLAN
PORTSMOUTH HOUSING AUTHORITY
35 SHERBURNE ROAD
PORTSMOUTH, NEW HAMPSHIRE
COUNTY OF ROCKINGHAM
OWNED BY
CITY OF PORTSMOUTH

SCALE: 1" = 40' (22x34)
1" = 80' (11x17)
March 10, 2023

Seacoast Division
TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Phone (603) 431–2222
Fax (603) 431–0910
www.tfmoran.com

FILE	DR	RJB	FB	593	
47528-00	CK	BMK	CADFILE		S-1

May 05, 2025 - 11:11am
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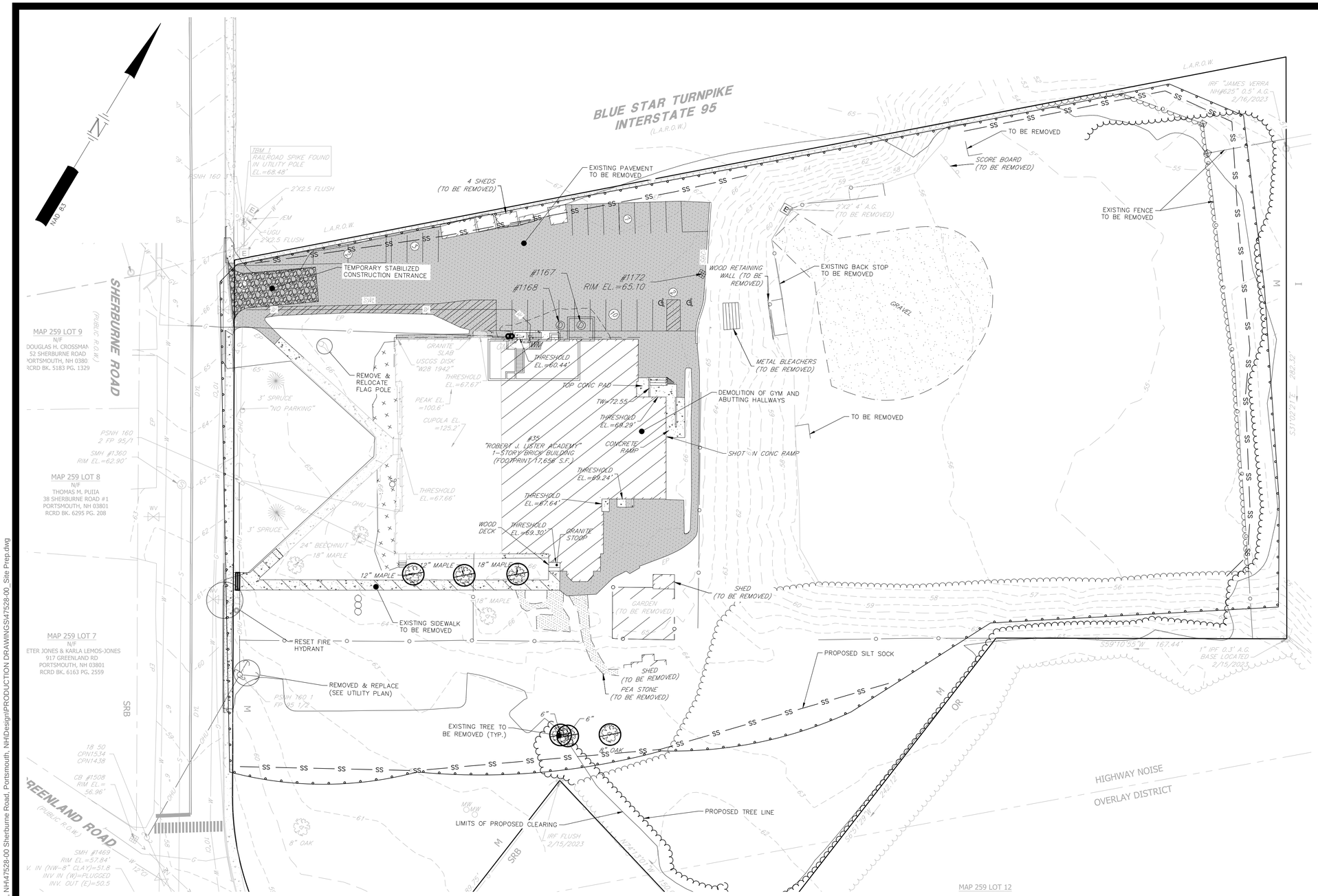

NOTES

1. SEE NOTES ON SHEET C–02.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATIONS, SIZE, AND ELEVATIONS OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS PRIOR TO THE START OF ANY DEMOLITION. THE LOCATIONS SHOWN ON THESE PLANS ARE NOT GUARANTEED BY THE OWNER OR THE ENGINEER. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED DEMOLITION TO DETERMINE APPROPRIATE ACTION TO BE TAKEN BEFORE PROCEEDING WITH THE WORK. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO ANTICIPATE CONFLICTS AND REPAIR EXISTING UTILITIES AS NECESSARY TO COMPLETE THE WORK AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL MAINTAIN EMERGENCY ACCESS TO ALL AREAS AFFECTED BY WORK AT ALL TIMES.
4. THE CONTRACTOR SHALL VERIFY ALL SURVEY INFORMATION IN THE FIELD AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO THE START OF CONSTRUCTION.
5. EXISTING UTILITY SERVICES TO BE DISCONTINUED ARE TO BE CAPPED AS REQUIRED BY THE RESPECTIVE UTILITY COMPANIES.
6. CONSTRUCTION DEBRIS AND INVASIVE SPECIES SHALL BE REMOVED FROM SITE AND DISPOSED OF IN A LEGAL MANNER.
7. PRIOR TO THE START OF WORK, THE CONTRACTOR SHALL PLACE ORANGE CONSTRUCTION FENCING AROUND EACH TREE TO BE RETAINED THROUGHOUT CONSTRUCTION. NO STOCKPILES OF MATERIAL ARE PERMITTED WITHIN THE DRIP LINE OF THE TREES TO BE SAVED.
8. CONTACT THE LANDSCAPE ARCHITECT IMMEDIATELY IF ANY TREES ARE DAMAGED DURING CONSTRUCTION.

CONSTRUCTION SEQUENCE NOTES

TO MINIMIZE EROSION AND SEDIMENTATION DUE TO CONSTRUCTION, CONSTRUCTION SHALL FOLLOW THIS GENERAL CONSTRUCTION SEQUENCE.

MODIFICATIONS TO THE SEQUENCE NECESSARY DUE TO THE CONTRACTOR'S SCHEDULE SHALL INCLUDE APPROPRIATE TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL MEASURES.

THE CONTRACTOR SHALL SCHEDULE WORK SUCH THAT ANY CONSTRUCTION AREA IS STABILIZED WITHIN 45 DAYS OF INIAL DISTURBANCE EXCEPT AS NOTED BELOW. NO MORE THAN 5 ACRES OF DISTURBED LAND SHALL BE UNSTABILIZED AT ANY ONE TIME.

THE PROJECT SHALL BE MANAGED SO THAT IT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER ARG 3800 RELATIVE TO INVASIVE SPECIES.

DO NOT TRAFFIC EXPOSED SOIL SURFACE OF INFILTRATION SYSTEMS WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

DO NOT DISCHARGE SEDIMENT–LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO STORMWATER BMP'S. STORMWATER RUNOFF MUST BE DIRECTED TO TEMPORARY PRACTICES UNTIL STORMWATER BMP'S ARE STABILIZED.

DO NOT PLACE STORMWATER BMP'S INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.

AFTER THE INFILTRATION SYSTEM IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE THE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.

1. NOTIFY EASEMENT OWNERS PRIOR TO COMMENCEMENT OF WORK.
2. INSTALL ALL PERIMETER EROSION PROTECTION MEASURES AS INDICATED ON THE PLANS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
3. STORMWATER TREATMENT PONDS AND SWALES SHALL BE INSTALLED BEFORE ROUGH GRADING THE SITE.
4. DURING CONSTRUCTION EVERY EFFORT SHALL BE MADE TO MANAGE SURFACE RUNOFF QUALITY.
5. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT BARRIERS, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED. (TEMPORARY SEED MIXTURE OF WINTER RYE APPLIED AT A RATE OF 2.5 LBS/1000 SF SHALL BE USED).
6. CONDUCT MAJOR EARTHWORK, INCLUDING CLEARING AND GRUBBING, WITHIN THE LIMITS OF WORK. ALL CUT AND FILL SLOPES SHALL BE SEEDED WITHIN 72 HOURS AFTER GRADING.
7. ALL STRIPPED TOPSOIL AND OTHER EARTH MATERIALS SHALL BE STOCKPILED OUTSIDE THE IMMEDIATE WORK AND WETLAND AREAS. A SILT BARRIER SHALL BE CONSTRUCTED AROUND THESE PILES IN A MANNER TO PROVIDE ACCESS AND AVOID SEDIMENT OUTSIDE OF THE WORK AREA.
8. CONSTRUCT BUILDING PAD AND COMMENCE NEW BUILDING CONSTRUCTION.
9. CONSTRUCT TEMPORARY CULVERTS AND DIVERSIONS AS REQUIRED.
10. BEGIN PERMANENT AND TEMPORARY INSTALLATION OF SEED AND MULCH.
11. PERFORM EARTHWORK NECESSARY TO ESTABLISH ROUGH GRADING AROUND PARKING FIELDS AND ACCESS DRIVES. MANAGE EXPOSED SOIL SURFACES TO AVOID TRANSPORTING SEDIMENTS INTO WETLANDS. PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
12. INSTALL SUBSURFACE UTILITIES (WATER, SEWER, GAS, ELECTRIC, COMMUNICATIONS, DRAINAGE, DRAINAGE FACILITIES, ETC.).
13. CONSTRUCT PROPOSED ROADWAY, RAIN GARDENS, GRAVEL WETLANDS AND DRAINAGE SWALES. ALL DITCHES, SWALES, AND GRAVEL WETLANDS SHALL BE FULLY STABILIZED PRIOR TO DIRECTING FLOW TO THEM.
14. COMPLETE BUILDING AND ALL OFF–SITE IMPROVEMENTS.
15. COMPLETE SEEDING AND MULCHING. SEED TO BE APPLIED WITH BROADCAST SPREADER OR BY HYDRO–SEEDING, THEN ROLLED, RAKED, OR DRAGGED TO ASSURE SEED/SOIL CONTACT.
16. REMOVE TEMPORARY EROSION CONTROL MEASURES AFTER SEEDED AREAS HAVE BECOME FIRMLY ESTABLISHED AND SITE IMPROVEMENTS ARE COMPLETE.
17. DURING THE COURSE OF THE WORK AND UPON COMPLETION, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT DEPOSITS, EITHER ON OR OFF SITE, INCLUDING CATCH BASINS, AND SUMPS, DRAIN PIPES AND DITCHES, CURB LINES, ALONG SILT BARRIERS, ETC. RESULTING FROM SOIL AND/OR CONSTRUCTION OPERATIONS.
18. SEE WINTER CONSTRUCTION SEQUENCE FOR WORK CONDUCTED AFTER OCTOBER 15TH.

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

SITE PREPARATION & DEMOLITION PLAN

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

CITY OF PORTSMOUTH

PREPARED FOR

PHA HOUSING DEVELOPMENT LTD.

1"=60' (11"X17")

SCALE: 1"=30' (22"X34") **JANUARY 29, 2025**

CONSTRUCTION SEQUENCE NOTES (FOR ALTERATION OF TERRAIN)

1. DO NOT DISCHARGE SEDIMENT–LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO BMP'S DURING ANY STAGE OF CONSTRUCTION.
2. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.
3. AFTER INFILTRATION SYSTEMS ARE EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.
4. DO NOT PLACE STORMWATER BMP'S INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
5. DO NOT PLACE STORMWATER BMP'S INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED, IF NECESSARY, AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.

HORIZONTAL SCALE 1"=20'

20 10 0 20

REV	DATE	DESCRIPTION	DR	CK

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Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
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Fax (603) 472–9747
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DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

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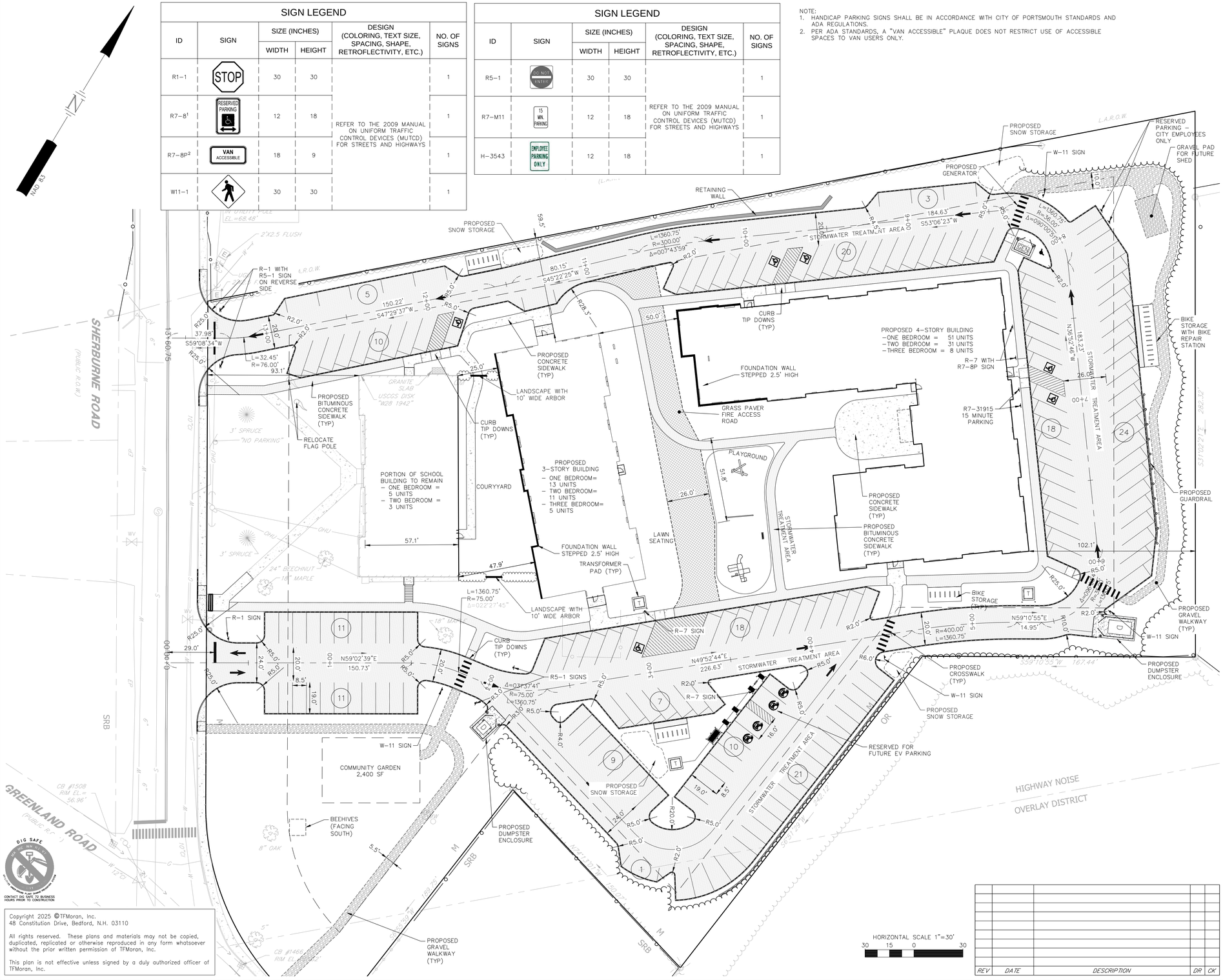
SIGN LEGEND

ID	SIGN	SIZE (INCHES) WIDTH	SIZE (INCHES) HEIGHT	DESIGN (COLORING, TEXT SIZE, SPACING, SHAPE, RETROFLECTIVITY, ETC.)	NO. OF SIGNS
R1-1	STOP	30	30	REFER TO THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS	1
R7-8[1]	RESERVED PARKING	12	18		1
R7-8P[2]	VAN ACCESSIBLE	18	9		1
W11-1		30	30		1

SIGN LEGEND

ID	SIGN	SIZE (INCHES) WIDTH	SIZE (INCHES) HEIGHT	DESIGN (COLORING, TEXT SIZE, SPACING, SHAPE, RETROFLECTIVITY, ETC.)	NO. OF SIGNS
R5-1	DO NOT ENTER	30	30	REFER TO THE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) FOR STREETS AND HIGHWAYS	1
R7-M11	15 MIN. PARKING	12	18		1
H-3543	EMPLOYEE PARKING ONLY	12	18		1

NOTE:
1. HANDICAP PARKING SIGNS SHALL BE IN ACCORDANCE WITH CITY OF PORTSMOUTH STANDARDS AND ADA REGULATIONS.
2. PER ADA STANDARDS, A "VAN ACCESSIBLE" PLAQUE DOES NOT RESTRICT USE OF ACCESSIBLE SPACES TO VAN USERS ONLY.



SITE DATA

OWNER OF RECORD OF MAP 259 LOT 10: CITY OF PORTSMOUTH SCHOOLS, PO BOX 628, PORTSMOUTH, NH 03802
DEED REFERENCE TO PARCEL IS BK 2389 PG 1272
AREA OF PARCEL = 232,175± SF OR 5.33± ACRES

ZONED: MUNICIPAL
EXISTING USE: SCHOOL
PROPOSED USE: MIXED USE

THE PURPOSE OF THIS PLAN IS TO CONSTRUCT WORK FORCE HOUSING. ASSOCIATED IMPROVEMENTS INCLUDE AND ARE NOT LIMITED TO ACCESS, GRADING, STORMWATER MANAGEMENT SYSTEMS, UTILITIES, LIGHTING, AND LANDSCAPING.

DIMENSIONAL REQUIREMENTS (CURRENT ZONING)

	REQUIRED:	PROVIDED:
MINIMUM LOT DIMENSIONS:		
LOT AREA	NA SF	232,175± SF (5.33± AC)
LOT FRONTAGE	NA FT	471.79 FT
DEPTH	NA FT	606 FT
MAXIMUM STRUCTURE DIMENSIONS:		
STRUCTURE HEIGHT	NA	38.8 FEET
STRUCTURE STORIES	NA	4 STORIES
ROOF APPURTENANCE HEIGHT	NA	44.1 FT
LOT COVERAGE	NA	54%
MINIMUM SETBACKS/BUFFER:		
BUILDING FRONT	NA FT	93.1 FT
BUILDING SIDE	NA FT	48.8 FT
BUILDING REAR	NA FT	89.5 FT
MINIMUM OPEN SPACE	NA	41.7%

PARKING REQUIREMENTS

RESIDENTIAL		
PARKING SPACES (SEE CALCULATION)	165 SPACES	165 RESIDENTIAL SPACES
OFFICE		
OFFICE	1 SPACES	1 SPACES
	166	168
TOTAL		
ACCESSIBLE SPACES (REQ'D BY ADA)	6 SPACES	6 SPACES
PARKING SPACE SIZE	8.5 FT X 19 FT	8.5 FT X 19 FT
AISLE WIDTH	18-24 FT	18-24 FT

PARKING CALCULATIONS

REQUIRED PARKING RATIO:
RESIDENTIAL: 1.3 SPACES PER UNIT > 750 SF
1 SPACE PER UNIT 600-750 SF
1 VISITOR SPACE PER 5 UNITS OR PORTION THEREOF
OFFICE: 1 SPACES PER UNIT > 350 SF

TOTAL REQUIRED =	53 UNITS * 1.3 SPACES/UNIT	= 74.0 SPACES
	74 UNITS * 1 SPACE	= 65.9 SPACES
	127 UNITS * 1 SPACE/5 UNITS	= 25.4 SPACES
	1 OFFICE * 1 SPACE/OFFICE	= 1.0 SPACES
TOTAL		= 166.3 SPACES

NOTES

1. SEE NOTES ON SHEET C-01.
2. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS NOTED OTHERWISE.
3. LIGHTING, SIGNAGE, LANDSCAPING, AND SCREENING SHALL MEET THE REQUIREMENTS OF THE PORTSMOUTH, NH ZONING ORDINANCE AND SITE PLAN REVIEW REGULATIONS.
4. SNOW SHALL NOT BE STOCKPILED IN STORMWATER BMP'S, WETLAND BUFFERS, OR WETLANDS. SEE SNOW STORAGE LOCATIONS. IN THE EVENT THAT THE SNOW STORAGE AREAS PROVIDED ON THE SITE ARE COMPLETELY UTILIZED, EXCESS SNOW SHALL BE TRANSPORTED OFF SITE FOR DISPOSAL IN ACCORDANCE WITH NHDES REGULATION. IF SNOW IS STORED WITHIN PARKING AREA, KEEP CATCH BASINS CLEAR.
5. THE 3' PANEL ALONG THE PARKING LOT EDGE & DRIVE SHALL BE USED FOR SNOW STORAGE
6. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
7. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
8. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.

CITY OF PORTSMOUTH PLANNING BOARD

CHAIRPERSON *DATE*

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

SITE LAYOUT PLAN

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD
PORTSMOUTH, NEW HAMPSHIRE

OWNED BY
CITY OF PORTSMOUTH
PREPARED FOR
PHA HOUSING DEVELOPMENT LTD.

1"=60' (11"X17")
SCALE: 1"=30' (22"X34") **JANUARY 29, 2025**

REV	DATE	DESCRIPTION	DR	CK

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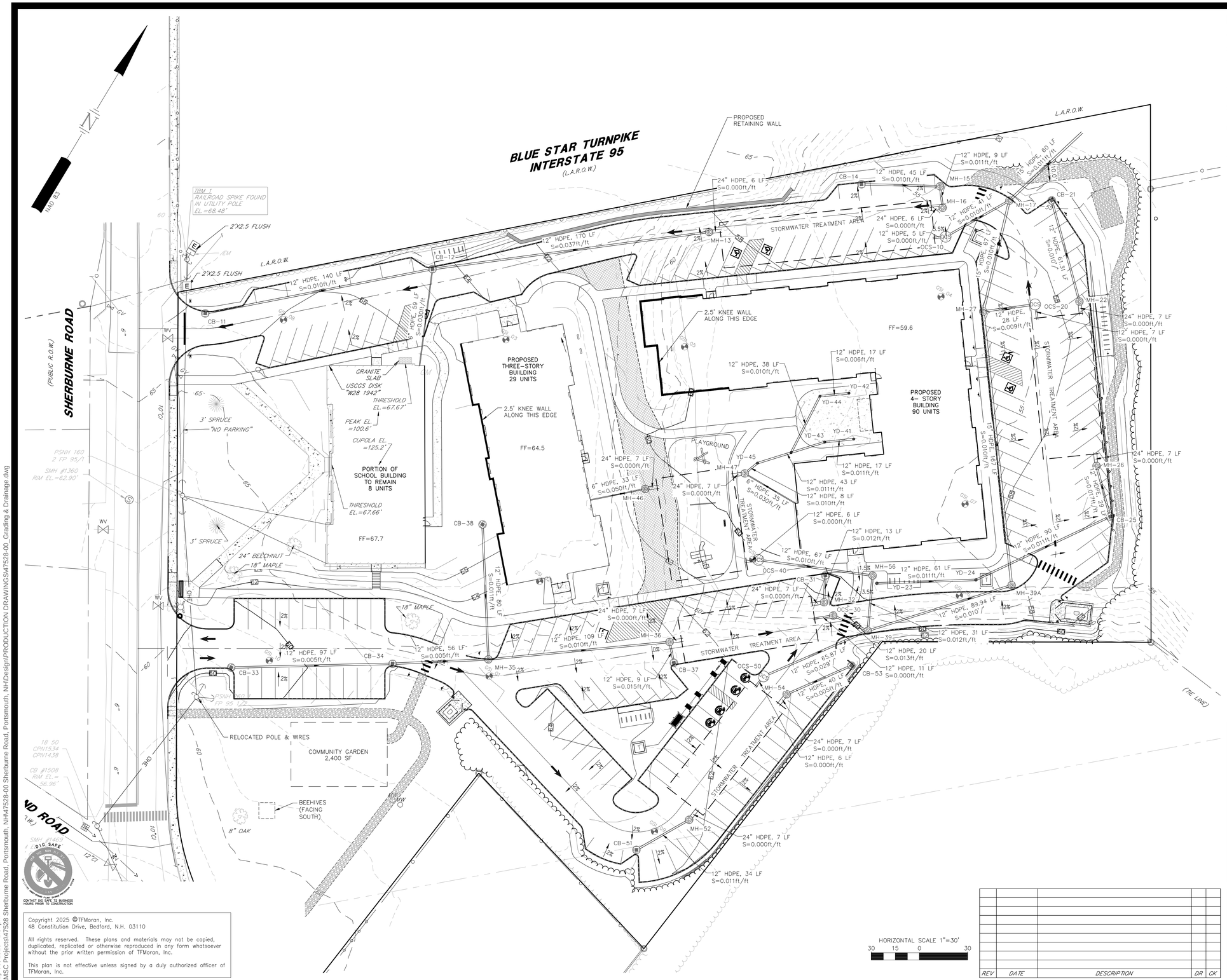

NOTES

1. SEE NOTES ON SHEET C-01.
2. ALL DOORS AND ENTRANCES SHALL BE AT FINISHED FLOOR ELEVATION UNLESS OTHERWISE NOTED.
3. PROPOSED SPOT GRADES ARE PROVIDED TO THE NEAREST 0.05. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE FINISHED GRADES MEET ADA STANDARDS FOR WHEEL CHAIR RAMPS, HANDICAP SPACES AND ACCESS AISLES, CROSSWALKS, SIDEWALKS, ETC.
4. ALL ELEVATIONS SHOWN AT CURB ARE TO THE BOTTOM OF CURB UNLESS OTHERWISE NOTED. CURBS HAVE A 6" REVEAL UNLESS OTHERWISE NOTED.
5. LENGTH OF PIPE IS FOR CONVENIENCE ONLY. ACTUAL PIPE LENGTH SHALL BE DETERMINED IN THE FIELD.
6. DRAINAGE PIPES WITH LESS THAN 3' COVER SHALL BE INSULATED (SEE UTILITY TRENCH DETAIL) AND DRAINAGE CATCH BASINS WITH LESS THAN 3.5' OF COVER OVER INVERTS SHALL USE SLAB TOP CATCH BASIN (SEE DETAILS).
7. THE CONTRACTOR SHALL REFER TO THE GEOTECHNICAL REPORT AND ARCHITECTURAL PLANS FOR SUBDRAINAGE SYSTEMS FOR THE BUILDING FOUNDATION. SUBDRAINAGE MUST DAYLIGHT OR TIE INTO THE STORMWATER MANAGEMENT SYSTEM.

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

GRADING & DRAINAGE PLAN

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

CITY OF PORTSMOUTH

PREPARED FOR

PHA HOUSING DEVELOPMENT LTD.

1"=60' (11"X17")

SCALE: 1"=30' (22"X34") **JANUARY 29, 2025**

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NOTES

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6. DRAINAGE PIPES WITH LESS THAN 3' COVER SHALL BE INSULATED (SEE UTILITY TRENCH DETAIL) AND DRAINAGE CATCH BASINS WITH LESS THAN 3.5' OF COVER OVER INVERTS SHALL USE SLAB TOP CATCH BASIN (SEE DETAILS).
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STRUCTURE TABLE	
STRUCTURE NAME	STRUCTURE DETAILS
CB-11	RIM = 65.12 CB-11 INV OUT = 61.07
CB-12	RIM = 64.44 CB-11 INV IN = 59.65 RL-39 INV IN = 59.65 CB-12 INV OUT = 59.55
CB-14	RIM = 56.45 CB-14 INV OUT = 52.40
CB-21	RIM = 57.08 CB-21 INV OUT = 53.00
CB-25	RIM = 56.98 YD-24 INV IN = 52.90 CB-25 INV OUT = 52.90
CB-31	RIM = 59.59 CB-31 INV OUT = 55.45
CB-33	RIM = 59.10 CB-33 INV OUT = 55.00
CB-34	RIM = 61.34 CB-33 INV IN = 54.45 CB-34 INV OUT = 54.35
CB-37	RIM = 62.75 CB-37 INV OUT = 58.65
CB-38	RIM = 67.13 CB-38 INV OUT = 61.65
CB-51	RIM = 62.44 CB-51 INV OUT = 58.30
CB-53	RIM = 60.04 CB-53 INV OUT = 55.90
MH-13	RIM = 58.32 CB-12 INV IN = 53.15 MH-13 INV OUT = 49.55
MH-15	RIM = 57.02 CB-14 INV IN = 51.90 MH-15 INV OUT = 51.80

STRUCTURE TABLE	
STRUCTURE NAME	STRUCTURE DETAILS
MH-16	RIM = 57.29 MH-15 INV IN = 51.65 MH-16 INV OUT = 49.55
MH-17	RIM = 57.51 OCS-10 INV IN = 53.15 MH-27 INV IN = 50.60 MH-17 INV OUT = 50.70
MH-22	RIM = 57.73 CB-21 INV IN = 52.35 MH-22 INV OUT = 50.10
MH-26	RIM = 57.06 CB-25 INV IN = 52.35 MH-26 INV OUT = 50.10
MH-27	RIM = 58.94 OCS-20 INV IN = 53.95 MH-49 INV IN = 51.40 MH-27 INV OUT = 51.30
MH-32	RIM = 60.00 CB-31 INV IN = 55.25 MH-32 INV OUT = 52.50
MH-35	RIM = 63.22 CB-34 INV IN = 54.05 CB-38 INV IN = 60.75 MH-35 INV OUT = 53.95
MH-36	RIM = 62.65 CB-37 INV IN = 58.45 MH-35 INV IN = 52.80 MH-36 INV OUT = 52.50
MH-39	RIM = 59.94 OCS-50 INV IN = 55.25 MH-48 INV IN = 55.50 Pipe - (58) INV IN = 54.50 MH-55 INV OUT = 54.40
MH-39A	RIM = 58.55 MH-55 INV IN = 53.45 MH-49 INV OUT = 53.15
MH-46	RIM = 61.07 RL-48 INV IN = 57.00 MH-46 INV OUT = 51.50
MH-47	RIM = 58.55 YD-45 INV IN = 53.60 RL-47 INV IN = 53.80 MH-47 INV OUT = 51.50
MH-52	RIM = 62.22 CB-51 INV IN = 57.90 MH-52 INV OUT = 54.10
MH-54	RIM = 61.06 CB-53 INV IN = 55.68 MH-54 INV OUT = 54.10

STRUCTURE TABLE	
STRUCTURE NAME	STRUCTURE DETAILS
MH-56	RIM = 59.11 OCS-40 INV IN = 55.00 Pipe - (58) INV OUT = 54.90
OCS-10	RIM = 57.66 ST-10 INV IN = 49.55 OCS-10 INV OUT = 53.60
OCS-20	RIM = 58.28 ST-20 INV IN = 50.10 OCS-20 INV OUT = 54.25
OCS-30	RIM = 60.08 ST-30 INV IN = 52.50 MH-48 INV OUT = 55.80
OCS-40	RIM = 60.82 ST-40 INV IN = 51.50 OCS-40 INV OUT = 55.75
OCS-50	RIM = 61.41 ST-50 INV IN = 54.10 OCS-50 INV OUT = 57.30
Y-1	RIM = 58.91 YD-44 INV IN = 54.56
YD-23	RIM = 58.84 YD-23 INV OUT = 54.75
YD-24	RIM = 58.10 YD-23 INV IN = 54.05 YD-24 INV OUT = 53.95
YD-41	RIM = 58.88 YD-41 INV OUT = 55.25
YD-42	RIM = 58.88 YD-42 INV OUT = 55.15
YD-43	RIM = 58.99 YD-41 INV IN = 55.05 YD-43 INV OUT = 54.80
YD-44	RIM = 59.02 YD-42 INV IN = 55.05 YD-44 INV OUT = 54.95
YD-45	RIM = 58.10 YD-43 INV IN = 54.30 YD-45 INV OUT = 53.70

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

DRAINAGE STRUCTURE TABLE

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

CITY OF PORTSMOUTH

PREPARED FOR

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1"=60' (11"X17")

SCALE: 1"=30' (22"X34") **JANUARY 29, 2025**

HORIZONTAL SCALE 1"=30'

30 15 0 30

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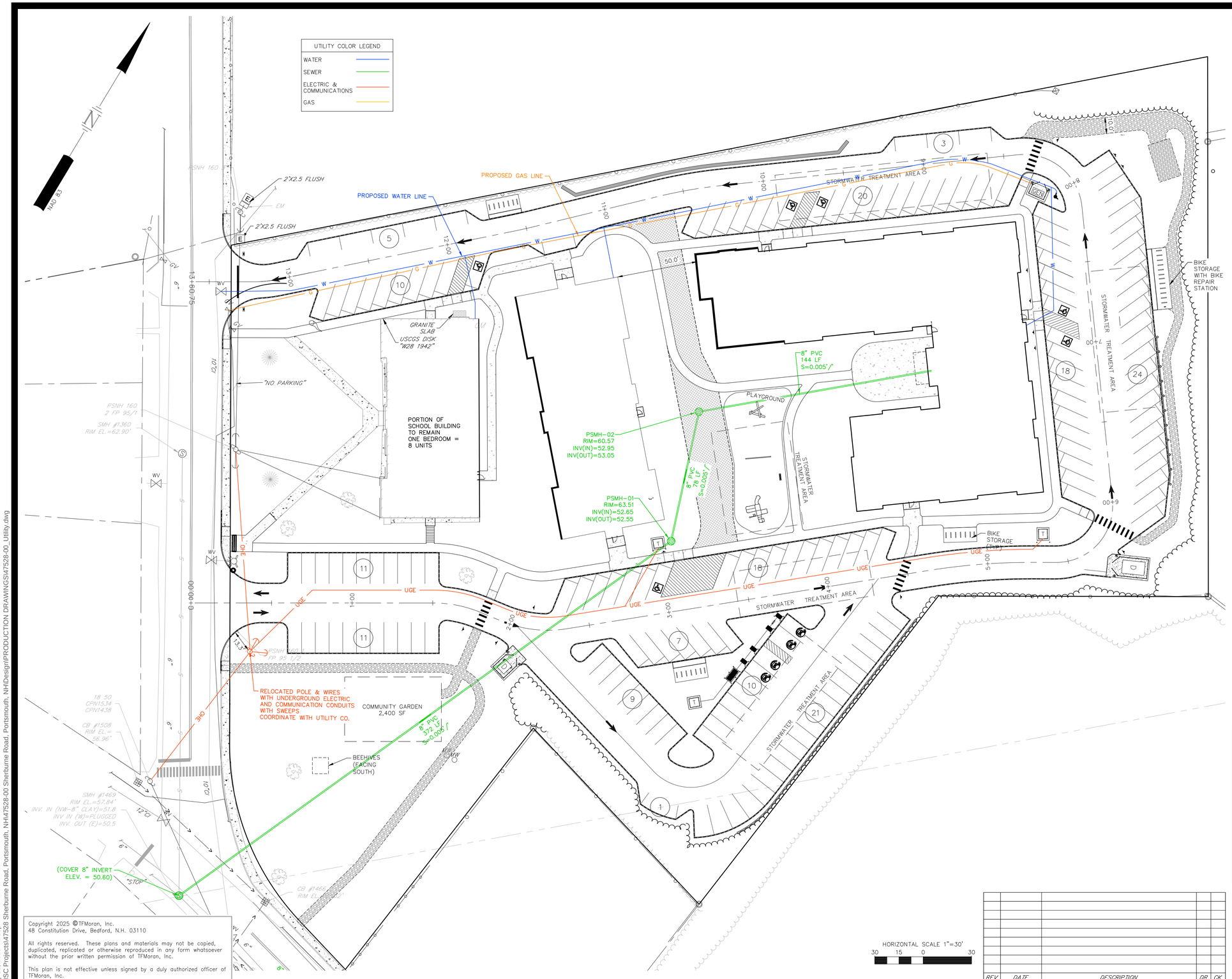

NOTES

1. SEE NOTES ON SHEET C-01.
2. THE PROPERTY WILL BE SERVICED BY THE FOLLOWING:

DRAINAGE	MUNICIPAL
SEWER	MUNICIPAL
WATER	MUNICIPAL
GAS	UNITIL
ELECTRIC	EVERSOURCE
TELEPHONE	CONSOLIDATED COMMUNICATIONS FKA FAIRPOINT COMMUNICATIONS
CABLE	COMCAST

3. THIRD PARTY INSPECTOR SHALL BE ON SITE TO INSPECT THE INSTALLATION OF UTILITIES.
4. SDR-35 SHALL BE USED FOR ALL GRAVITY SEWER LINES.
5. CONTRACTOR SHALL PROVIDE 18" MINIMUM VERTICAL CLEARANCE BETWEEN WATER MAIN/SERVICES AND SEWER MAIN/SERVICES AT CROSSINGS, WATER OVER SEWER (UNLESS OTHERWISE NOTED) WHERE 18" VERTICAL CLEARANCE CANNOT BE ACHIEVED, CONTRACTOR SHALL PROVIDE SDR-21 PVC PIPE FOR SEWER MAIN PIPE BETWEEN STRUCTURES.
6. CONTRACTOR SHALL PROVIDE 24" MINIMUM VERTICAL CLEARANCE BETWEEN SEWER MAIN/SERVICES AND STORM DRAIN LINES. WHERE 24" VERTICAL CLEARANCE CANNOT BE ACHIEVED, CONTRACTOR SHALL PROVIDE INSULATION PER DETAIL ON SHEET C-76.
7. CONTRACTOR SHALL PROVIDE 24" MINIMUM VERTICAL CLEARANCE BETWEEN WATER MAIN/SERVICES AND STORM DRAIN LINES. WHERE 24" VERTICAL CLEARANCE CANNOT BE ACHIEVED, CONTRACTOR SHALL PROVIDE INSULATION PER DETAIL ON SHEET C-76.
8. CONTRACTOR SHALL PROVIDE 5' MINIMUM COVER OVER WATER MAIN/SERVICES. WHERE 5' COVER CANNOT BE ACHIEVED, CONTRACTOR SHALL PROVIDE INSULATION.
9. CONTRACTOR SHALL PROVIDE 2' MINIMUM HORIZONTAL CLEARANCE BETWEEN UTILITY MAIN/SERVICES AND STRUCTURES.

DIG SAFE
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SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

UTILITY PLAN

PROPOSED HOUSING DEVELOPMENT

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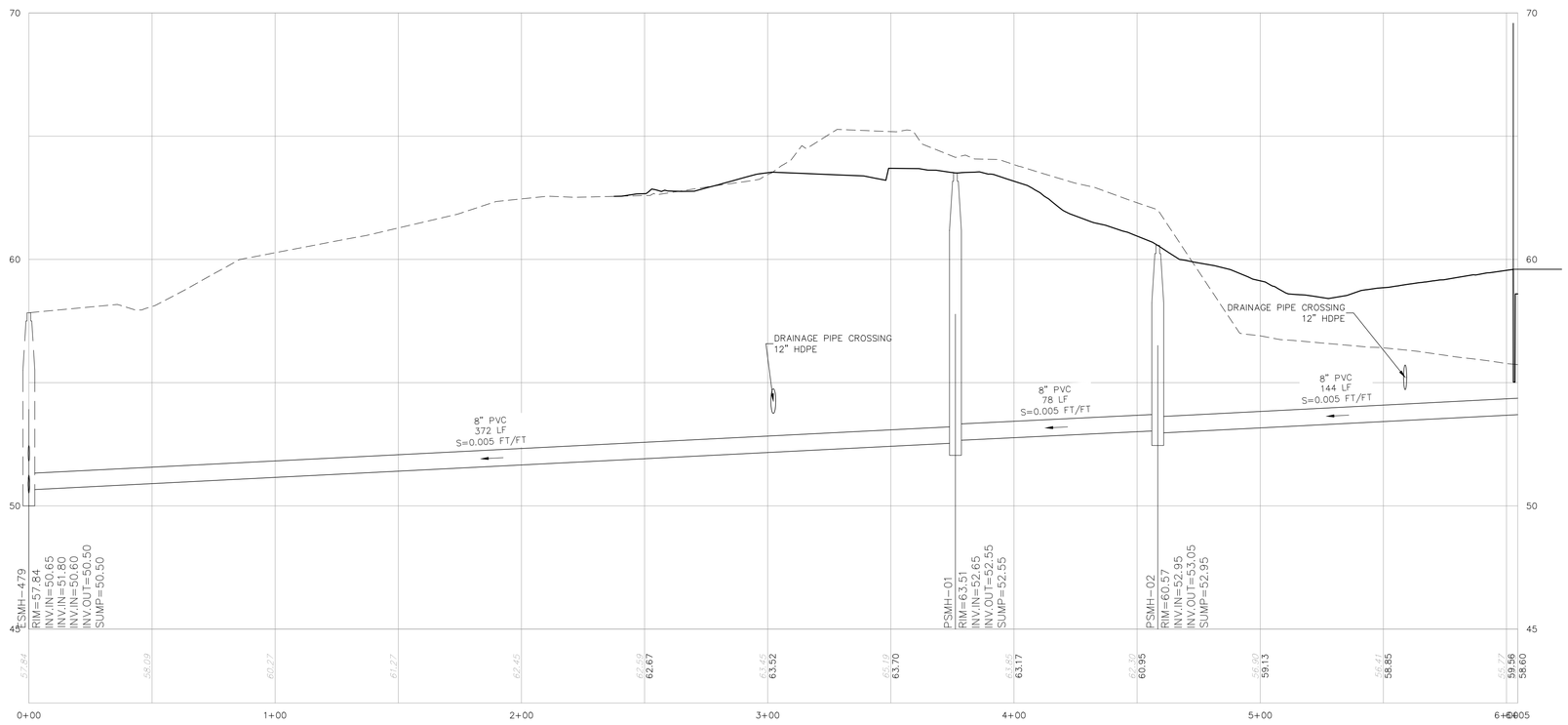
NOTES

1. CONTRACTOR SHALL PROVIDE 18" MINIMUM VERTICAL CLEARANCE BETWEEN WATER MAIN/SERVICES AND SEWER MAIN/SERVICES AT CROSSINGS, WATER OVER SEWER (UNLESS OTHERWISE NOTED) WHERE 18" VERTICAL CLEARANCE CANNOT BE ACHIEVED, CONTRACTOR SHALL PROVIDE SDR-21 PVC PIPE FOR SEWER MAIN PIPE BETWEEN STRUCTURES.
2. CONTRACTOR SHALL PROVIDE 24" MINIMUM VERTICAL CLEARANCE BETWEEN SEWER MAIN/SERVICES AND STORM DRAIN LINES. WHERE 24" VERTICAL CLEARANCE CANNOT BE ACHIEVED, CONTRACTOR SHALL PROVIDE INSULATION PER DETAIL ON SHEET C-76.
3. CONTRACTOR SHALL PROVIDE 24" MINIMUM VERTICAL CLEARANCE BETWEEN WATER MAIN/SERVICES AND STORM DRAIN LINES. WHERE 24" VERTICAL CLEARANCE CANNOT BE ACHIEVED, CONTRACTOR SHALL PROVIDE INSULATION PER DETAIL ON SHEET C-76.
4. CONTRACTOR SHALL PROVIDE 5' MINIMUM COVER OVER WATER MAIN/SERVICES. WHERE 5' COVER CANNOT BE ACHIEVED, CONTRACTOR SHALL PROVIDE INSULATION.
5. CONTRACTOR SHALL PROVIDE 2' MINIMUM HORIZONTAL CLEARANCE BETWEEN UTILITY MAIN/SERVICES AND STRUCTURES.
6. SDR-35 PIPE SHALL BE USED FOR GRAVITY SEWER LINES.



P-SEWER

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

SEWER PROFILE

PROPOSED HOUSING DEVELOPMENT

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HORIZONTAL SCALE 1"=30'
30 15 0 30

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47528.00	CK	JJM	CADFILE	47528-00_SEWER-PROFILE	C-07

Luminaire Schedule						
Symbol	Qty	Label	Arrangement	Description	Tag	[MANUFAC]
	11	S3	Single	VALS-09L-3W-UNV-30K8-IS-CXX / 4SQ B3 S11G20 S AB 4BC	20' POLE	LSI INDUSTRIES, INC.
	7	S4	Single	VALS-09L-4F-UNV-30K8-IS-CXX / 4SQ B3 S11G20 S AB 4BC	20' POLE	LSI INDUSTRIES, INC.
	1	S5-2	Back-Back	VALS-06L-5M-UNV-30K8-CXX / 4SQ B3 S11G20 D180 CXX AB 4BC	20' POLE	LSI INDUSTRIES, INC.
	11	W	Single	XWS-LED-02L-SIL-3-UNV-DIM-30-70CRI-CXX	WALL MOUNTED 12' AFG	LSI INDUSTRIES, INC.

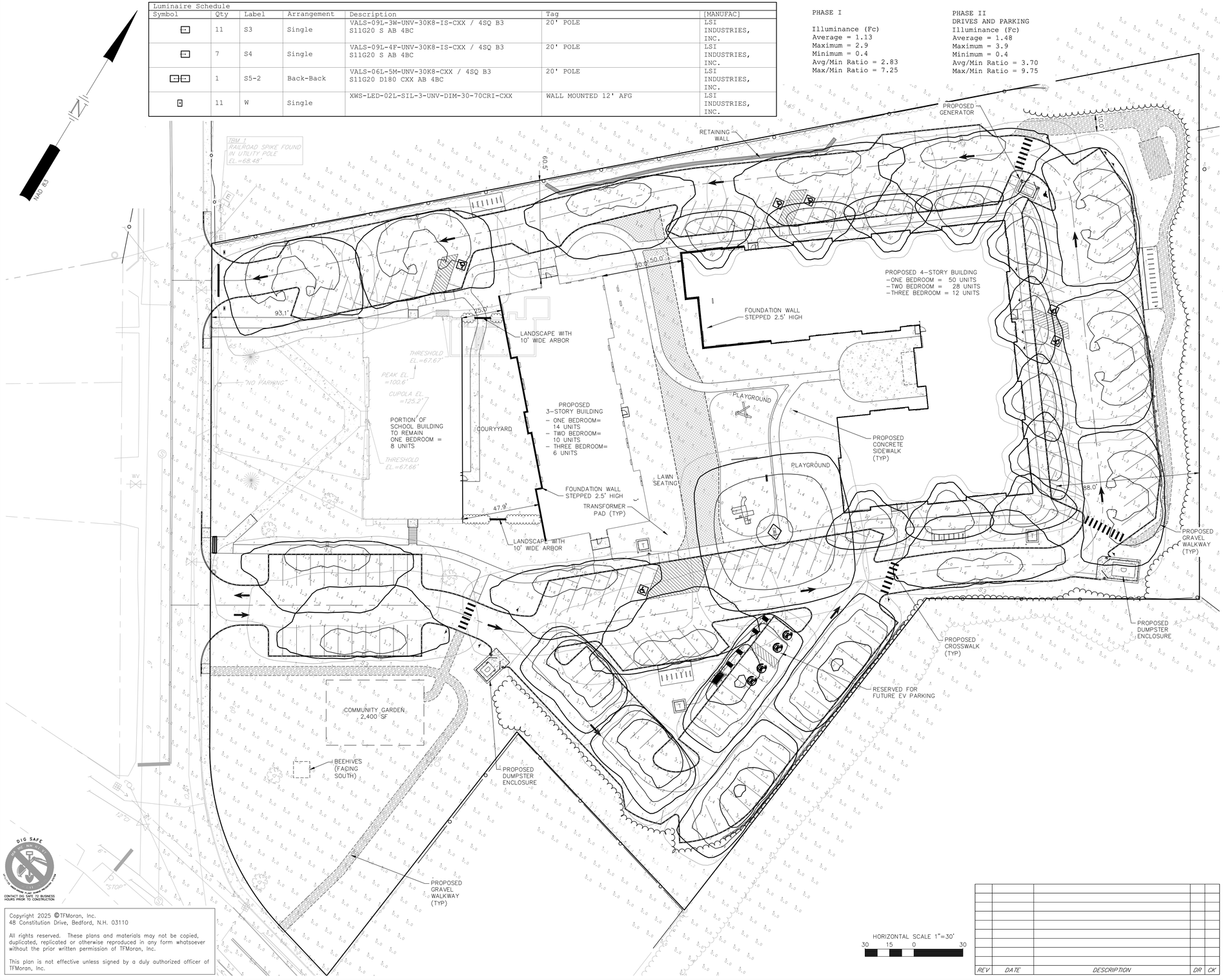
PHASE I

Illuminance (Fc)
Average = 1.13
Maximum = 2.9
Minimum = 0.4
Avg/Min Ratio = 2.83
Max/Min Ratio = 7.25

PHASE II
DRIVES AND PARKING
Illuminance (Fc)
Average = 1.48
Maximum = 3.9
Minimum = 0.4
Avg/Min Ratio = 3.70
Max/Min Ratio = 9.75

WALL MOUNTED – XWS-LED

POLE MOUNTED – VALS



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REV	DATE	DESCRIPTION	DR	CK

CITY OF PORTMOUTH PLANNING BOARD

CHAIRPERSON *DATE*

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

LIGHTING PLAN

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD
PORTSMOUTH, NEW HAMPSHIRE

OWNED BY
CITY OF PORTSMOUTH

PREPARED FOR
PHA HOUSING DEVELOPMENT LTD.

1"=60' (11"X17")
SCALE: 1"=30' (22"X34") **JANUARY 29, 2025**

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SITE LAYOUT PLAN

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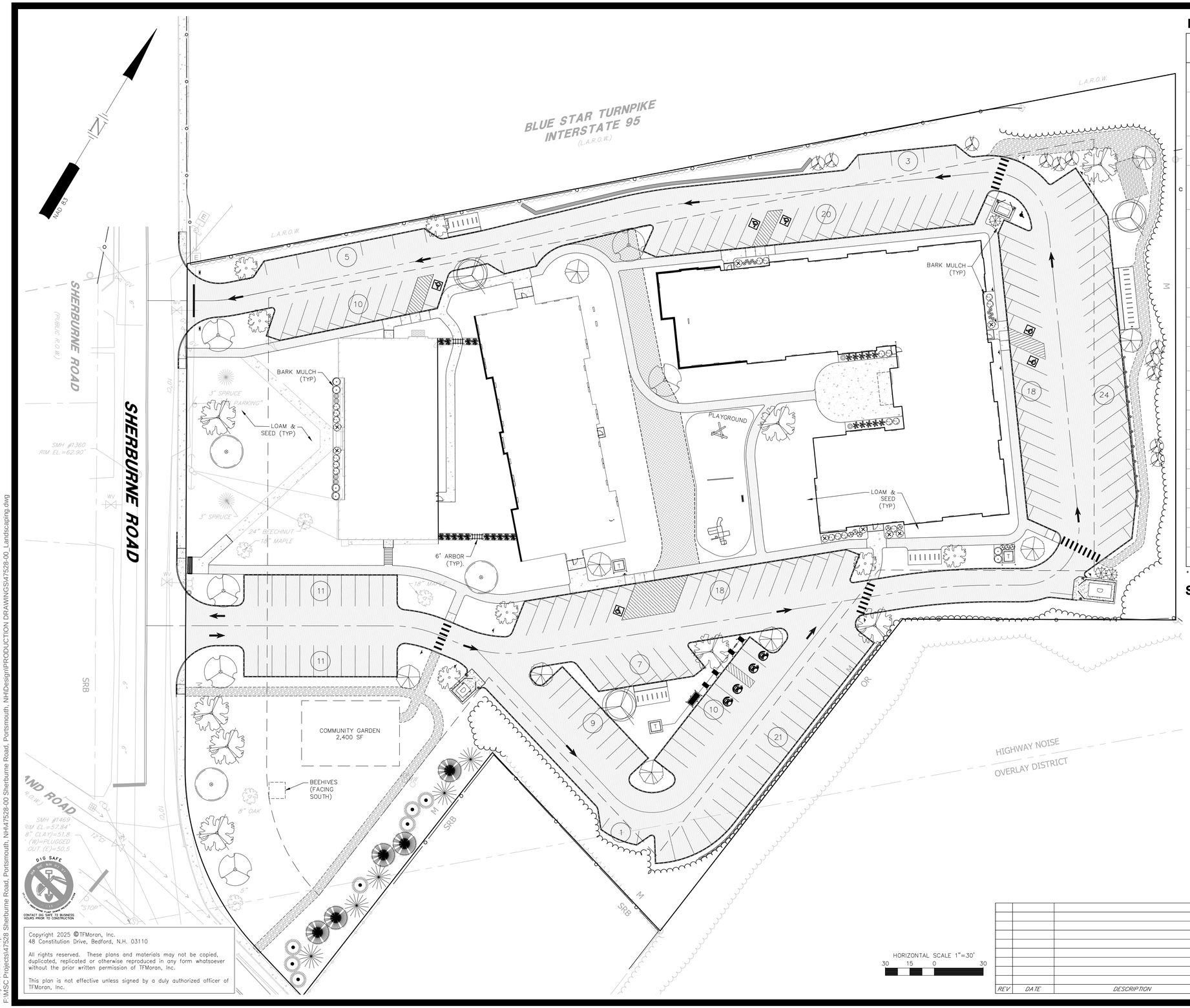

LANDSCAPE LEGEND

SYMBOL	QTY	BOTANICAL NAME COMMON NAME	SIZE	REMARKS	MATURE HEIGHT/ SPREAD	GROWTH HABIT
	7	ACER RUBRUM 'BOWHALL' BOWHALL RED MAPLE	2" TO 2 1/2" CAL.	B&B	40' TO 60' 10' TO 15'	UPRIGHT
	8	ACER RUBRUM 'OCTOBER GLORY' OCTOBER GLORY RED MAPLE	2" TO 2 1/2" CAL.	B&B	40' TO 60' 30' TO 40'	OVAL
	9	AMELANCHIER X GRANDIFLORA 'ROBIN HILL' ROBIN HILL SERVICEBERRY	2" TO 2 1/2" CAL.	B&B	15' TO 20' 10' TO 15'	UPRIGHT
	3	BETULA NIGRA 'DURA HEAT' DURA HEAT RIVER BIRCH	8' TO 10' CLUMP	B&B	40' TO 60' 20' TO 30'	PYRAMIDAL
	6	PLATANUS X ACERIFOLIA 'BLOODGOOD' BLOODGOOD LONDON PLANETREE	2" TO 2 1/2" CAL.	B&B	60' + 60' +	ROUNDED
	3	QUERCUS ALBA WHITE OAK	2" TO 2 1/2" CAL.	B&B	60' + 60' +	BROAD
	5	JUNIPERUS VIRGINIANA EASTERN RED CEDAR	6' TO 7'	B&B	30' TO 40' 15' TO 20'	UPRIGHT
	5	PICEA GLAUCA WHITE SPRUCE	6' TO 7'	B&B	40' TO 60' 15' TO 20'	PYRAMIDAL
	7	THUJA OCCIDENTALIS 'NIGRA' DARK AMERICAN ARBORVITAE	6' TO 7'	B&B	20' TO 30' 10' TO 15'	PYRAMIDAL
	10	ASTILBE 'MONTGOMERY' MONTGOMERY ASTILBE	1 GAL	CONT.	18" TO 24" 18" TO 24"	MOUNDED
	8	CLETHRA ALNIFOLIA 'SIXTEEN CANDLES' SIXTEEN CANDLES SUMMERSWEET	3 GAL.	CONT.	4' TO 5' 2' TO 3'	COMPACT
	11	FORSYTHIA 'LYNWOOD GOLD' LYNWOOD GOLD FORSYTHIA	3 GAL.	CONT.	6' TO 8' 6' TO 8'	ROUNDED
	18	HYDRANGEA ENDLESS SUMMER 'B.B.' BLUSHING BRIDE HYDRANGEA	3 GAL.	CONT.	3' TO 4' 3' TO 4'	MOUNDED
	14	ILEX CRENATA 'CHESAPEAKE' CHESAPEAKE JAPANESE HOLLY	3 GAL.	CONT.	6' TO 8' 3' TO 4'	PYRAMIDAL
	6	ILEX GLABRA 'DENSA' DENSA INKBERRY	3 GAL.	CONT.	5–6' 4–5'	ROUNDED
	8	JUNIPERUS H. 'PLUMOSA COMPACTA' YOUNGSTOWN JUNIPER	3 GAL.	CONT.	12" TO 24" 6' TO 8'	SPREADING
	10	PANICUM VIRGATUM 'SHENANDOAH' SHENANDOAH SWITCH GRASS	1 GAL.	CONT.	3' TO 4' 3' TO 4'	CLUMPING
	3	THUJA OCCIDENTALIS 'TECHNY' MISSION ARBORVITAE	4' TO 5'	B&B	10' TO 15' 6' TO 8'	PYRAMIDAL
	6	SALVIA 'BLUE HILL' BLUE HILL SAGE	1 GAL.	CONT.	12" TO 24" 2' TO 3'	COMPACT

* ALL PLANTS CONTAINED IN LEGEND HAVE BEEN SELECTED FOR URBAN GROWING CONDITIONS.

SEE DETAILS FOR LANDSCAPE NOTES

CITY OF PORTMOUTH PLANNING BOARD

CHAIRPERSON *DATE*

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

LANDSCAPE PLAN

PROPOSED HOUSING DEVELOPMENT

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SITE LAYOUT PLAN

LANDSCAPE NOTES

GENERAL

1. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE RULES, REGULATIONS, LAWS, AND ORDINANCES HAVING JURISDICTION OVER THIS PROJECT SITE.
2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES AND NOTIFY OWNER'S REPRESENTATIVE OF CONFLICTS.
3. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL QUANTITIES SHOWN ON PLANS BEFORE PRICING THE WORK. ANY DIFFERENCE IN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR CLARIFICATION. LANDSCAPE QUANTITIES SHOWN ON THE PLAN SHALL SUPERCEDE QUANTITIES LISTED IN LANDSCAPE LEGEND.
4. THE CONTRACTOR SHALL CONTACT THE LANDSCAPE ARCHITECT PRIOR TO STARTING WORK AND VERIFY THAT THE PLANS IN THE CONTRACTOR'S POSSESSION ARE THE MOST CURRENT PLANS AVAILABLE AND ARE THE APPROVED PLAN SET FOR USE IN CONSTRUCTION.
5. ALL PLANT MATERIALS INSTALLED SHALL MEET OR EXCEED THE SPECIFICATIONS OF THE "AMERICAN STANDARDS FOR NURSERY STOCK" AS PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
6. ALL PLANTS SHALL BE FIRST CLASS AND SHALL BE REPRESENTATIVE OF THEIR NORMAL SPECIES AND/OR VARIETIES. ALL PLANTS MUST HAVE GOOD, HEALTHY, WELL-FORMED UPPER GROWTH AND A LARGE, FIBEROUS, COMPACT ROOT SYSTEM.
7. ALL PLANTS SHALL BE FREE FROM DISEASE AND INSECT PESTS AND SHALL COMPLY WITH ALL APPLICABLE STATE AND FEDERAL LAWS PERTAINING TO PLANT DISEASES AND INFESTATIONS.
8. ALL TREES SHALL BE BALLED AND BURLAPPED (B & B) UNLESS OTHERWISE NOTED OR APPROVED BY LANDSCAPE ARCHITECT.
9. IF APPLICABLE, THE CONTRACTOR SHALL HAVE ALL FALL TRANSPLANTING HAZARD PLANTS DUG IN THE SPRING AND STORED FOR FALL PLANTING.
10. ALL INVASIVE PLANT SPECIES FROM THE "NEW HAMPSHIRE PROHIBITED INVASIVE PLANT SPECIES LIST", TO BE REMOVED SHALL BE DONE SO IN ACCORDANCE WITH THE "INVASIVE SPECIES ACT, HB 1258-FN."

GUARANTEE

THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL LANDSCAPE WORK FOR A PERIOD OF ONE YEAR, BEGINNING AT THE START OF THE MAINTENANCE PERIOD.

LANDSCAPE SPECIFICATIONS

SITE AND SOIL PREPARATION

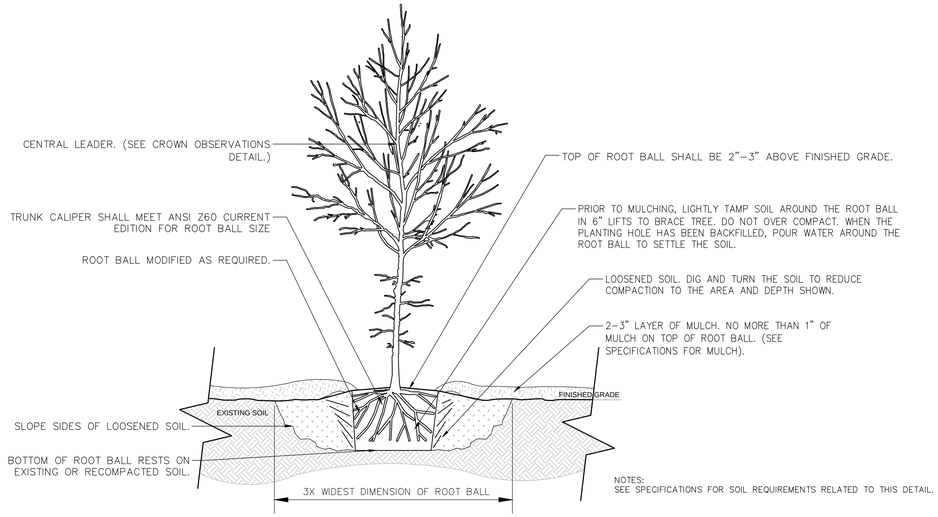
1. WHEN CONDITIONS DETRIMENTAL TO PLANT GROWTH ARE ENCOUNTERED, SUCH AS RUBBLE FILL, ADVERSE DRAINAGE CONDITIONS, OR LEDGE, NOTIFY LANDSCAPE ARCHITECT/ENGINEER BEFORE PLANTING.
2. ALL DISTURBED AREAS & PLANTING AREAS, INCLUDING AREAS TO BE SODDED, SHALL RECEIVE THE FOLLOWING SOIL PREPARATION PRIOR TO PLANTING: A MINIMUM OF 6 INCHES OF LIGHTLY COMPACTED TOPSOIL SHALL BE INSTALLED OVER THE SUBSOIL IF TOPSOIL HAS BEEN REMOVED OR IS NOT PRESENT.
3. LOAM SHALL CONSIST OF LOOSE FRIABLE TOPSOIL WITH NO ADMIXTURE OF REFUSE OR MATERIAL TOXIC TO PLANT GROWTH. LOAM SHALL BE FREE FROM STONES, LUMPS, STUMPS, OR SIMILAR OBJECTS LARGER THAN TWO INCHES (2") IN GREATEST DIAMETER, SUBSOIL, ROOTS, AND WEEDS. THE MINIMUM AND MAXIMUM PH VALUE SHALL BE FROM 5.5 TO 7.6. LOAM SHALL CONTAIN A MINIMUM OF THREE PERCENT (3%) AND A MAXIMUM OF TWENTY PERCENT (20%) ORGANIC MATTER AS DETERMINED BY LOSS BY IGNITION. NOT MORE THAN SIXTY-FIVE PERCENT (65%) SHALL PASS A NO. 200 SIEVE AS DETERMINED BY THE WASH TEST IN ACCORDANCE WITH ASTM D1140. IN NO INSTANCE SHALL MORE THAN 20% OF THAT MATERIAL PASSING THE #4 SIEVE CONSIST OF CLAY SIZE PARTICLES.
4. NATURAL TOPSOIL NOT CONFORMING TO THE PARAGRAPH ABOVE OR CONTAINING EXCESSIVE AMOUNTS OF CLAY OR SAND SHALL BE TREATED BY THE CONTRACTOR TO MEET THOSE REQUIREMENTS.
5. SUBMIT TEST RESULTS OBTAINED FROM SOURCE TO ENGINEER/LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL, PRIOR TO SPREADING OPERATIONS.
6. APPROVAL BY THE ENGINEER/LANDSCAPE ARCHITECT TO USE THE TOPSOIL WILL DEPEND UPON THE RESULTS OF THE SOIL TESTS.
7. THE BURDEN OF PROOF OF SOIL AMENDMENT INSTALLATION RESTS WITH THE CONTRACTOR. SOIL TESTS MAY BE REQUIRED AT THE CONTRACTOR'S EXPENSE IN ORDER TO CONFIRM AMENDMENT INSTALLATION.

PLANTING

1. EXCAVATE PITS, PLANTERS, BEDS AND TRENCHES WITH VERTICAL SIDES AND WITH BOTTOM OF EXCAVATION SLIGHTLY RAISED AT CENTER TO PROVIDE PROPER DRAINAGE. LOOSEN HARD SUBSOIL IN BOTTOM OF EXCAVATION.
2. ANY LEDGE OR RUBBLE MATERIAL SHALL BE FRACTURED TO A DEPTH OF 3 FEET AND EXCAVATED TO A DEPTH OF 30 INCHES FOR TREE POCKETS AND 18 INCHES FOR SHRUB BEDS. THIS PROCEDURE SHALL BE HANDLED BY THE SITE CONTRACTOR. SITE TOPSOIL SHALL BE DEPOSITED IN ALL EXCAVATED POCKETS.
3. DISPOSE OF SUBSOIL REMOVED FROM PLANTING EXCAVATIONS. DO NOT MIX WITH PLANTING SOIL OR USE AS BACKFILL.
4. FILL EXCAVATIONS FOR TREES AND SHRUBS WITH WATER AND ALLOW TO PERCOLATE OUT BEFORE PLANTING.
5. DISH TOP OF BACKFILL TO ALLOW FOR MULCH – PLANT SAUCERS SHALL BE AS SHOWN ON DETAIL SHEETS; 6' DIAMETER FOR ALL DECIDUOUS TREES, AND FOR EVERGREEN TREES A RADIUS 2' BEYOND THE OUTER MOST BRANCHES.
6. MULCH TREES, SHRUBS, PLANTERS AND BEDS. PROVIDE NOT LESS THAN 3" THICKNESS OF BARK MULCH, 3/8"-2" OF WIDTH, AND WORK INTO TOP OF BACKFILL. FINISH LEVEL WITH ADJACENT FINISH GRADES AS DIRECTED IN THE FIELD.
7. STAKE AND GUY TREES IMMEDIATELY AFTER PLANTING (TREE SUPPORT STAKES SHALL BE 2" X 3" X 8', WOOD STAKES. GUYING WIRE SHALL BE NO. 12 GAUGE GALVANIZED SOFT STEEL WIRE. HOSE FOR COVERING WIRE SHALL BE NEW OR USED TWO PLY RUBBER HOSE NOT LESS THAN 1/2 INCH INSIDE DIAMETER. (PLASTIC "CINCH-TIES" OR EQUIVALENT FASTENING DEVICE MAY BE AN ACCEPTABLE GUY WIRE AND HOSE PROTECTOR SUBSTITUTE.)
8. TREEGATOR WATERING SYSTEM OR APPROVED EQUAL SHALL BE INSTALLED FOR ALL DECIDUOUS TREES AT TIME OF PLANTING AND REMOVED BEFORE FROST. WATERING RATE TO BE APPLIED PER MANUFACTURER'S SPECIFICATIONS.
9. ALL PLANT MATERIALS SHALL HAVE DEAD OR DAMAGED BRANCHES REMOVED AT TIME OF PLANTING. ALL TAGS AND RIBBONS SHALL BE REMOVED AT THIS TIME.
10. TREES TO REMAIN STAKED FOR 1 FULL GROWING SEASON.
11. THE CONTRACTOR SHALL REQUEST A FINAL OBSERVATION BY THE OWNER'S REPRESENTATIVE UPON COMPLETION OF INSTALLATION.

SEEDING

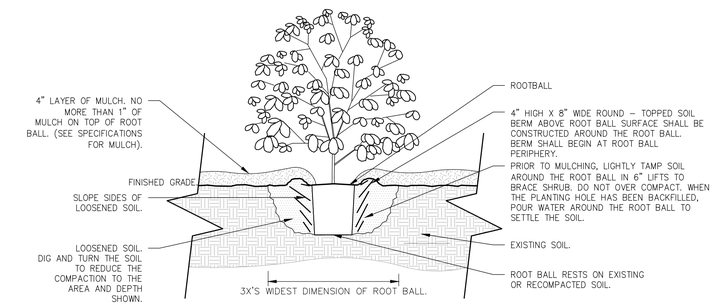
1. SLOPES UP TO AND INCLUDING 3:1 GRADE, SEED WILL BE NEW ENGLAND EROSION CONTROL & RESTORATION MIX PER NEW ENGLAND WETLANDS PLANTS INC., AMHERST, MA.
2. SLOPES STEEPER THAN 3:1 GRADE, SEED WILL BE NEW ENGLAND EROSION CONTROL & RESTORATION MIX PER NEW ENGLAND WETLANDS PLANTS INC., AMHERST, MA. SEE CIVIL FOR ADDITIONAL EROSION CONTROL MEASURES.
3. GENERAL SEED WILL BE NHDOT SPECIFICATION SECTION 644, TABLE 644-1-PARK SEED TYPE 15, INCLUDING NOTES TO TABLE 1, 2 & 3.



SECTION VIEW

TREE WITH BERM

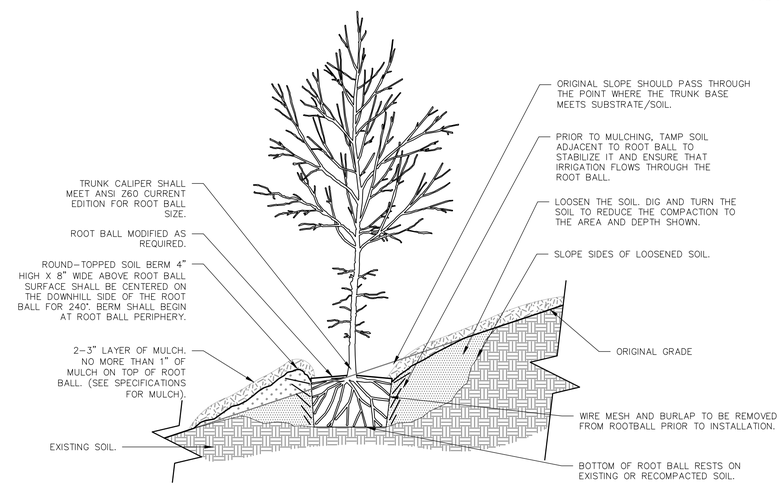
NOT TO SCALE



SECTION VIEW

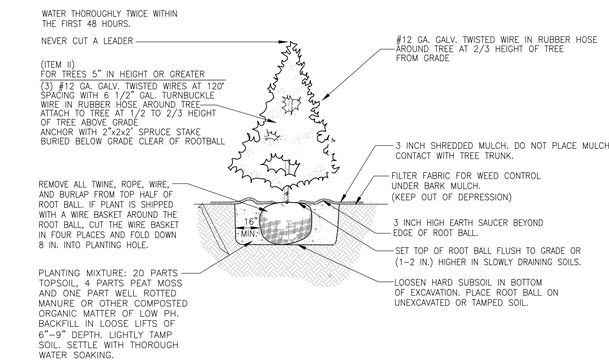
SHRUB PLANTING

NOT TO SCALE



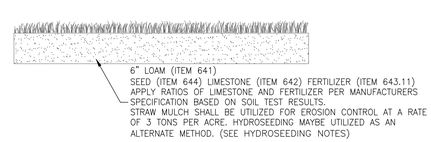
TREE ON SLOPE 5% (20:1) TO 50% (2:1)

NOT TO SCALE



EVERGREEN PLANTING

NOT TO SCALE



LOAM & SEED

NOT TO SCALE

HORIZONTAL SCALE 1"=30'

30 15 0 30

REV	DATE	DESCRIPTION	DR	CK

CITY OF PORTMOUTH PLANNING BOARD

CHAIRPERSON *DATE*

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

LANDSCAPE DETAILS

PROPOSED HOUSING DEVELOPMENT

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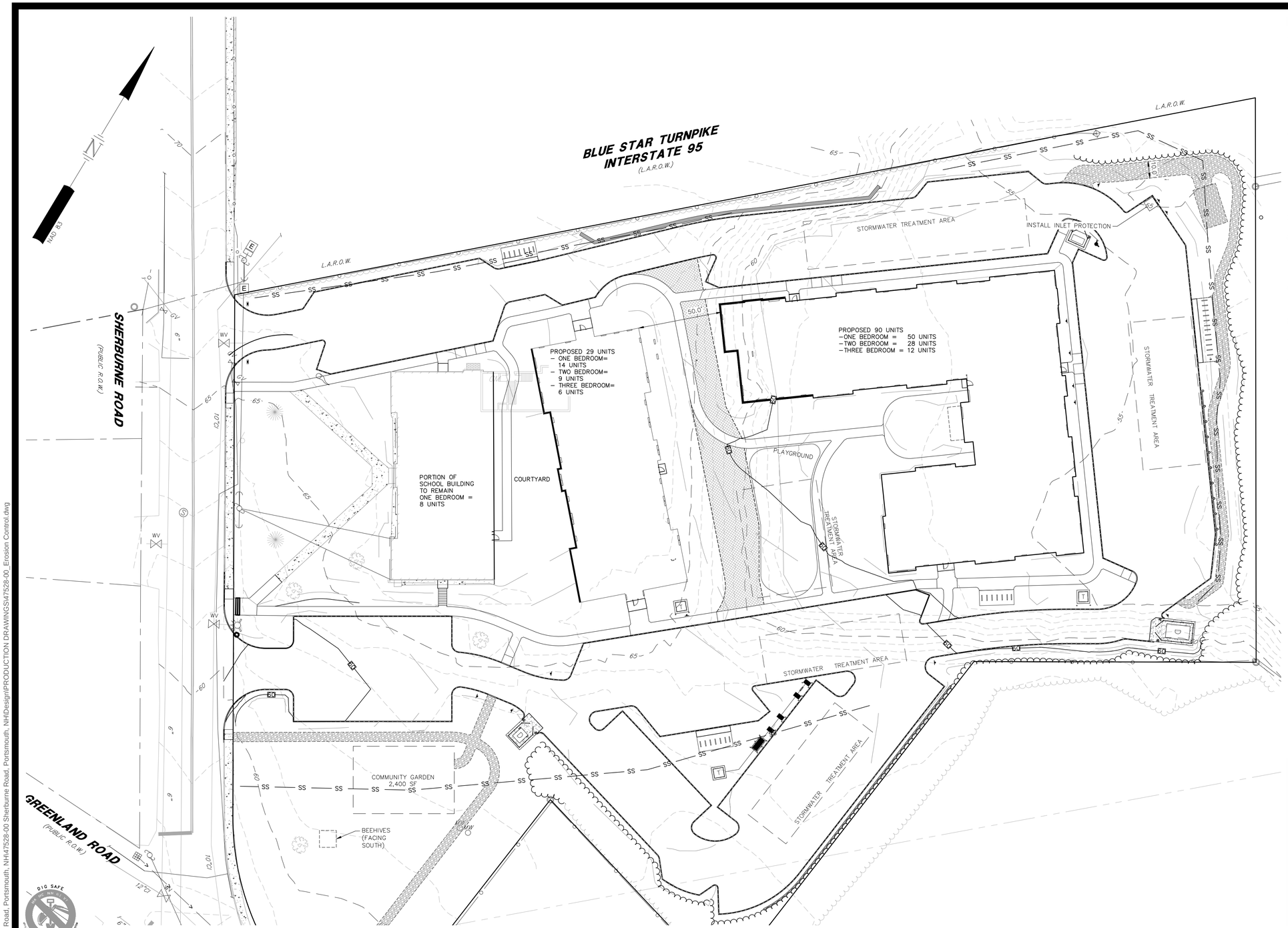

NOTES

1. INSTALL SILT BARRIER ALONG THE PERIMETER OF THE AREA TO BE DISTURBED AS FIRST ORDER OF WORK.
2. PROVIDE INLET PROTECTION BARRIERS AROUND ALL EXISTING AND PROPOSED STORM DRAINAGE INLETS WITHIN THE WORK LIMITS AND MAINTAIN FOR THE DURATION OF THE PROJECT UNTIL PAVEMENT HAS BEEN INSTALLED. INLET PROTECTION BARRIERS SHALL BE IN PLACE AT ALL CATCH BASINS PRIOR TO THE DISTURBANCE OF SOIL.
3. DUST CONTROL SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. IT SHALL BE ACCOMPLISHED BY THE UNIFORM APPLICATION OF CALCIUM CHLORIDE AT THE RATE OF 1-1/2 POUNDS PER SQUARE YARD BY MEANS OF A LIME SPREADER OR OTHER APPROVED METHOD. WATER MAY ALSO BE USED FOR DUST CONTROL, AND APPLIED BY SPRINKLING WITH WATER TRUCK DISTRIBUTORS, AS REQUIRED.
4. THE SITE WILL REQUIRE A USEPA NPDES PERMIT FOR STORMWATER DISCHARGE FOR THE SITE CONSTRUCTION IF THE DISTURBANCE EXCEEDS ONE ACRE. THE CONSTRUCTION SITE OPERATOR SHALL DEVELOP AND IMPLEMENT A CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN (SWPPP) IN ACCORDANCE WITH EPA REGULATIONS AND THE CONSTRUCTION GENERAL PERMIT WHICH SHALL REMAIN ON SITE AND MADE ACCESSIBLE TO THE PUBLIC. THE SITE CONTRACTOR SHALL COORDINATE WITH THE OWNER TO SUBMIT AN eNOI AT LEAST 14 DAYS IN ADVANCE OF ANY EARTHWORK ACTIVITIES AT THE SITE. A COMPLETED NOTICE OF TERMINATION (NOT) SHALL BE SUBMITTED TO NPDES PERMITTING AUTHORITY WITHIN 30 DAYS AFTER EITHER OF THE FOLLOWING CONDITIONS HAVE BEEN MET: FINAL STABILIZATION HAS BEEN ACHIEVED ON ALL PORTIONS OF THE SITE FOR WHICH THE PERMITTEE IS RESPONSIBLE FOR, OR ANOTHER OPERATOR/PERMITTEE HAS ASSUMED CONTROL OVER ALL AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
5. SILT PROTECTION MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS CONTAINED IN THIS PLAN SET.
6. CONSTRUCT JUTE MATTING ON ALL SLOPES STEEPER THAN 3:1, DISTURBED AREAS SLOPING TOWARDS WETLANDS AND ALL LOCATIONS SHOWN ON PLAN.
7. INSPECT EROSION CONTROL MEASURES WEEKLY AND AFTER EACH RAIN STORM OF 0.10" OR GREATER. REPAIR/MODIFY SILT BARRIER AS NECESSARY TO MAXIMIZE FILTER EFFICIENCY. REMOVE SEDIMENT WHEN SEDIMENT IS 1/3 THE STRUCTURE HEIGHT.
8. PROVIDE SILT BARRIERS AT THE BASE OF CUT AND FILL SLOPES UNTIL COMPLETION OF THE PROJECT OR UNTIL VEGETATION BECOMES ESTABLISHED ON SLOPES. EROSION PROTECTION BELOW FILL SLOPES SHALL BE PLACED IMMEDIATELY AFTER CLEARING, PRIOR TO EMBANKMENT CONSTRUCTION.
9. ALL DISTURBED AREAS SHALL BE REVEGETATED AS QUICKLY AS POSSIBLE. ALL CUT AND FILL SLOPES SHALL BE SEEDED WITHIN 72 HOURS AFTER GRADING.
10. ALL WORK AREAS TO BE STABILIZED AT THE END OF EACH WORK DAY AND PRIOR TO ANY PREDICTED SIGNIFICANT RAIN EVENT.
11. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
    A. BASE COURSE GRAVELS, WHICH MEET THE REQUIREMENTS OF NHDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM 304.2, ARE INSTALLED IN AREAS TO BE PAVED
    B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
    C. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED
    D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED
13. ALL CATCH BASINS, MANHOLES, AND DRAIN LINES SHALL BE THOROUGHLY CLEANED OF ALL SEDIMENT AND DEBRIS AFTER ALL AREAS HAVE BEEN STABILIZED.
14. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING SLOPE STABILITY DURING CONSTRUCTION.
15. THE EROSION CONTROL PRACTICES SHOWN ON THESE PLANS ARE ILLUSTRATIVE ONLY AND SHALL BE SUPPLEMENTED BY THE SITE CONTRACTOR AS NEEDED.
16. SEE ADDITIONAL NOTES NEXT SHEET.

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

EROSION CONTROL PLAN

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

CITY OF PORTSMOUTH

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1"=60' (11"X17")

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HORIZONTAL SCALE 1"=30'
30 15 0 30

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SOIL CHARACTERISTICS

THE SOIL IN THE VICINITY OF THE SITE CONSIST OF XXX, THE MAJORITY OF THE SOIL IS HSG TYPE B.

DISTURBED AREA

THE TOTAL AREA TO BE DISTURBED IS APPROXIMATELY 183,500 SQUARE FEET (4.21 ACRES). CONSTRUCTION SHALL BE PHASED TO LIMIT DISTURBED AREAS TO LESS THAN 5 ACRES.

CRITICAL NOTE: THIS DRAWING IS PROVIDED FOR GENERAL GUIDANCE. ALL SPECIAL EROSION CONTROL MEASURES MUST BE EXECUTED IN ACCORDANCE WITH APPLICABLE CURRENT STATE AND LOCAL REGULATIONS, APPROVED SWPPP, AND PERMIT REQUIREMENTS.

SEQUENCE OF MAJOR ACTIVITIES

1. INSTALL PERIMETER CONTROLS, STABILIZED CONSTRUCTION ENTRANCE, AND TEMPORARY EROSION CONTROL MEASURES PER APPROVED SITE DEVELOPMENT PLANS, PERMITS, OR SWPPP IF REQUIRED, PRIOR TO EARTH MOVING OPERATIONS.
2. DEMOLISH EXISTING SITE WORK DESIGNATED FOR REMOVAL.
3. INSTALL STORMWATER TREATMENT PONDS AND SWALES BEFORE ROUGH GRADING THE SITE.
4. COMPLETE MAJOR GRADING OF SITE.
5. CONSTRUCT BUILDING PAD, STORMWATER SYSTEM, AND SITE UTILITIES.
6. CONSTRUCT PARKING AREAS.
7. WHEN ALL CONSTRUCTION ACTIVITY IS COMPLETE AND SITE IS STABILIZED, REMOVE ALL INLET PROTECTION, SILT BARRIERS, AND SEDIMENT THAT HAS BEEN TRAPPED BY THESE DEVICES.
8. CONSULT APPLICABLE REGULATIONS, PERMITS, CONDITIONS, AND APPROVED SWPPP FOR CONDITIONS RELATED TO NOTICE OF TERMINATION, IF REQUIRED.

EROSION AND SEDIMENT CONTROLS AND STABILIZATION PRACTICES

STABILIZATION SHALL BE INITIATED ON ALL LOAM STOCKPILES AND DISTURBED AREAS WHERE CONSTRUCTION ACTIVITY WILL NOT OCCUR FOR MORE THAN TWENTY ONE (21) CALENDAR DAYS BY THE FOURTEENTH (14TH) DAY AFTER CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED IN THAT AREA. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:

1. BASE COURSE GRAVELS, WHICH MEET THE REQUIREMENTS OF NHDOT STANDARD FOR ROAD AND BRIDGE CONSTRUCTION, 2016, ITEM 304.2, HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
2. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
3. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED; OR
4. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

DURING CONSTRUCTION, RUNOFF WILL BE DIVERTED AROUND THE SITE WITH EARTH DIKES, PIPING OR STABILIZED CHANNELS WHERE POSSIBLE. SHEET RUNOFF FROM THE SITE WILL BE FILTERED THROUGH SILT BARRIERS. ALL STORM DRAIN INLETS SHALL BE PROVIDED WITH BARRIER FILTERS. STONE RIPRAP SHALL BE PROVIDED AT THE OUTLETS OF DRAINAGE PIPES WHERE EROSIVE VELOCITIES ARE ENCOUNTERED.

OFF SITE VEHICLE TRACKING

STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED.

INSTALLATION, MAINTENANCE, AND INSPECTION OF EROSION AND SEDIMENT CONTROLS

A. GENERAL

THESE ARE THE GENERAL INSPECTION AND MAINTENANCE PRACTICES THAT WILL BE USED TO IMPLEMENT THE PLAN.

1. STABILIZATION OF ALL SWALES, DITCHES, AND PONDS IS REQUIRED PRIOR TO DIRECTING FLOW TO THEM.
2. THE SMALLEST PRACTICAL PORTION OF THE SITE WILL BE DENUDED AT ONE TIME. (5 AC MAX)
3. ALL CONTROL MEASURES WILL BE INSPECTED IN ACCORDANCE WITH APPLICABLE REGULATIONS, PERMITS, AND CONDITIONS AND AT LEAST EVERY 7 DAYS AND AFTER A 0.5 INCH RAIN EVENT OR GREATER, AND INSPECTIONS SHALL BE CONDUCTED BY THE ENVIRONMENTAL MONITOR IF ONE IS REQUIRED, PURSUANT TO ENV-WQ 1505.03(B).
4. ALL MEASURES WILL BE MAINTAINED IN GOOD WORKING ORDER. IF A REPAIR IS NECESSARY, IT WILL BE INITIATED WITHIN 24 HOURS OF REPORT.
5. BUILT UP SEDIMENT WILL BE REMOVED FROM SILT BARRIER WHEN IT HAS REACHED ONE THIRD THE HEIGHT OF THE BARRIER.
6. ALL DIVERSION DIKES WILL BE INSPECTED AND ANY BREACHES PROMPTLY REPAIRED.
7. TEMPORARY SEEDING AND PLANTING WILL BE INSPECTED FOR BARE SPOTS, WASHOUTS, AND UNHEALTHY GROWTH.
8. A MAINTENANCE INSPECTION REPORT WILL BE MADE AFTER EACH INSPECTION.
9. THE CONTRACTOR WILL BE RESPONSIBLE FOR ENSURING AN ENVIRONMENTAL MONITOR, IF ONE IS REQUIRED, PURSUANT TO ENV-WQ 1505.03(B), IS CONTRACTED.

B. FILTERS / BARRIERS

1. SILT SOCKS

   A. KNOTTED MESH NETTING MATERIAL SHALL BE DELIVERED TO SITE IN A 5 MIL CONTINUOUS, TUBULAR, HDPE 3/8" MATERIAL, FILLED WITH COMPOST CONFORMING TO THE FOLLOWING REQUIREMENTS:

PHYSICAL PROPERTY	TEST	REQUIREMENTS
PH	TMECC 04.11-A	5.0 TO 8.0
PARTICLE SIZE	TMECC 02.02-B	2" SIEVE AND MIN. 60% GREATER THAN THE 3/8" SIEVE
MOISTURE CONTENT		STND TESTING < 60%

   MATERIAL SHALL BE RELATIVELY FREE OF INERT OR FOREIGN MAN-MADE MATERIALS

   MATERIAL SHALL BE WEED FREE AND DERIVED FROM A WELL-DECOMPOSED SOURCE OF ORGANIC MATTER, FREE FROM ANY REFUSE, CONTAMINANTS OR OTHER MATERIALS TOXIC TO PLANT GROWTH.

   B. SEDIMENT COLLECTED AT THE BASE OF THE SILT SOCK SHALL BE REMOVED ONCE IT HAS REACHED 1/3 OF THE EXPOSED HEIGHT OF THE SILT SOCK.

   C. SILT BARRIER SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UPSLOPE AREAS HAS BEEN PERMANENTLY STABILIZED.

2. SEQUENCE OF INSTALLATION

   SEDIMENT BARRIERS SHALL BE INSTALLED PRIOR TO ANY SOIL DISTURBANCE OF THE CONTRIBUTING DRAINAGE AREA ABOVE THEM.

3. MAINTENANCE

   A. SILT BARRIERS SHALL BE INSPECTED WEEKLY AND IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. THEY SHALL BE REPAIRED IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SEDIMENT BARRIERS SHALL BE REPLACED WITH A TEMPORARY CHECK DAM.

   B. SHOULD THE FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER STILL IS NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.

   C. SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE THIRD (1/3) THE HEIGHT OF THE BARRIER.

   D. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFIRM WITH THE EXISTING GRADE, PREPARED AND SEEDED.

C. MULCHING

1. TIMING

   IN ORDER FOR MULCH TO BE EFFECTIVE, IT MUST BE IN PLACE PRIOR TO MAJOR STORM EVENTS. THERE ARE TWO (2) TYPES OF STANDARDS WHICH SHALL BE USED TO ASSURE THIS:

   A. APPLY MULCH PRIOR TO ANY STORM EVENT.

   THIS IS APPLICABLE WHEN WORKING WITHIN 100' OF WETLANDS. IT WILL BE NECESSARY TO CLOSELY MONITOR WEATHER PREDICTIONS, USUALLY BY CONTACTING THE NATIONAL WEATHER SERVICE, TO HAVE ADEQUATE WARNING OF SIGNIFICANT STORMS.

   B. REQUIRED MULCHING WITHIN A SPECIFIED TIME PERIOD.

   THE TIME PERIOD CAN RANGE FROM 14 TO 21 DAYS OF INACTIVITY ON AN AREA, WHERE THE LENGTH OF TIME VARIES WITH SITE CONDITIONS. PROFESSIONAL JUDGMENT SHALL BE USED TO EVALUATE THE INTERACTION OF SITE CONDITIONS (SOIL ERODIBILITY, SEASON OF YEAR, EXTENT OF DISTURBANCE, PROXIMITY TO SENSITIVE RESOURCES, ETC.) AND THE POTENTIAL IMPACT OF EROSION ON ADJACENT AREAS TO CHOOSE AN APPROPRIATE TIME RESTRICTION.

2. GUIDELINES FOR WINTER MULCH APPLICATION.

   WHEN MULCH IS APPLIED TO PROVIDE PROTECTION OVER WINTER (PAST THE GROWING SEASON) IT SHALL BE AT A RATE OF 6,000 POUNDS OF HAY OR STRAW PER ACRE. A TACKIFIER MAY BE ADDED TO THE MULCH.

3. MAINTENANCE

   ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS, TO CHECK FOR RILL EROSION. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED.

D. VEGETATIVE PRACTICE

1. AFTER ROUGH GRADING OF THE SUBGRADE HAS BEEN COMPLETED AND APPROVED, THE SUB GRADE SURFACE SHALL BE SCARIFIED TO A DEPTH OF 4". THEN, FURNISH AND INSTALL A LAYER OF LOAM PROVIDING A ROLLED THICKNESS AS SPECIFIED IN THESE PLANS. ANY DEPRESSIONS WHICH MAY OCCUR DURING ROLLING SHALL BE FILLED WITH ADDITIONAL LOAM, REGRADED AND REROLLED UNTIL THE SURFACE IS TRUE TO THE FINISHED LINES AND GRADES. ALL LOAM NECESSARY TO COMPLETE THE WORK UNDER THIS SECTION SHALL BE SUPPLIED BY THE SITE SUBCONTRACTOR.
2. ALL LARGE STIFF CLODS, LUMPS, BRUSH, ROOTS, DEBRIS, GLASS, STUMPS, LITTER, AND OTHER FOREIGN MATERIAL, AS WELL AS STONES OVER 1" IN DIAMETER, SHALL BE REMOVED FROM THE LOAM AND DISPOSED OF OFF SITE. THE LOAM SHALL BE RAKED SMOOTH AND EVEN.
3. THE LOAM SHALL BE PREPARED TO RECEIVE SEED BY REMOVING STONES, FOREIGN OBJECTS AND GRADING TO ELIMINATE WATER POCKETS AND IRREGULARITIES PRIOR TO PLACING SEED. FINISH GRADING SHALL RESULT IN STRAIGHT UNIFORM GRADES AND SMOOTH, EVEN SURFACES WITHOUT IRREGULARITIES TO LOW POINTS.
4. SHAPE THE AREAS TO THE LINES AND GRADES REQUIRED. THE SITE SUBCONTRACTOR'S ATTENTION IS DIRECTED TO THE SCHEDULING OF LOAMING AND SEEDING OF GRADED AREAS TO PERMIT SUFFICIENT TIME FOR THE STABILIZATION OF THESE AREAS. IT SHALL BE THE SITE SUBCONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE AREAS DURING THE CONSTRUCTION PERIOD AND REGRADE, LOAM AND RESEED ANY DAMAGED AREAS.
5. ALL AREAS DISTURBED BY CONSTRUCTION WITHIN THE PROPERTY LINES AND NOT COVERED BY STRUCTURES, PAVEMENT, OR MULCH SHALL BE LOAMED AND SEEDED.
6. LIMESTONE SHALL BE THOROUGHLY INCORPORATED INTO THE LOAM LAYER AT A RATE OF 2 TONS PER ACRE IN ORDER TO PROVIDE A PH VALUE OF 5.5 TO 6.5.
7. FERTILIZER SHALL BE SPREAD ON THE TOP LAYER OF LOAM AND WORKED INTO THE SURFACE. FERTILIZER APPLICATION RATE SHALL BE 500 POUNDS PER ACRE OF 10-20-20 FERTILIZER.
8. SOIL CONDITIONERS AND FERTILIZER SHALL BE APPLIED AT THE RECOMMENDED RATES AND SHALL BE THOROUGHLY WORKED INTO THE LOAM. LOAM SHALL BE RAKED UNTIL THE SURFACE IS FINELY PULVERIZED, SMOOTH AND EVEN, AND THEN COMPACTED TO AN EVEN SURFACE CONFORMING TO THE REQUIRED LINES AND GRADES WITH APPROVED ROLLERS WEIGHING BETWEEN 4 1/2 POUNDS AND 5 1/2 POUNDS PER INCH OF WIDTH.
9. SEED SHALL BE SOWN AT THE RATE SHOWN BELOW. SOWING SHALL BE DONE ON A CALM, DRY DAY, PREFERABLY BY MACHINE, BUT IF BY HAND, ONLY BY EXPERIENCED WORKMEN. IMMEDIATELY BEFORE SEEDING, THE SOIL SHALL BE LIGHTLY RAKED. ONE HALF THE SEED SHALL BE SOWN IN ONE DIRECTION AND THE OTHER HALF AT RIGHT ANGLES TO THE ORIGINAL DIRECTION. IT SHALL BE LIGHTLY RAKED INTO THE SOIL TO A DEPTH NOT OVER 1/4" AND ROLLED WITH A HAND ROLLER WEIGHING NOT OVER 100 POUNDS PER LINEAR FOOT OF WIDTH.
10. HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AT A RATE OF 1.5 TO 2 TONS PER ACRE. MULCH THAT BLOWS OR WASHES AWAY SHALL BE REPLACED IMMEDIATELY AND ANCHORED USING APPROPRIATE TECHNIQUES FROM THE EROSION AND SEDIMENT CONTROL HANDBOOK.
11. THE SURFACE SHALL BE WATERED AND KEPT MOIST WITH A FINE SPRAY AS REQUIRED, WITHOUT WASHING AWAY THE SOIL, UNTIL THE GRASS IS WELL ESTABLISHED. ANY AREAS WHICH ARE NOT SATISFACTORILY COVERED WITH GRASS SHALL BE RESEEDED, AND ALL NOXIOUS WEEDS REMOVED.
12. THE SITE SUBCONTRACTOR SHALL PROTECT AND MAINTAIN THE SEEDED AREAS UNTIL ACCEPTED, INCLUDING CUTTING, AS SPECIFIED HEREIN AFTER UNDER MAINTENANCE AND PROTECTION.
13. UNLESS OTHERWISE APPROVED, SEEDING SHALL BE DONE DURING THE APPROXIMATE PERIODS OF EARLY SPRING TO SEPTEMBER 30, WHEN SOIL CONDITIONS AND WEATHER ARE SUITABLE FOR SUCH WORK. IN NO CASE SHALL THE WEED CONTENT EXCEED 1 PERCENT BY WEIGHT. ALL SEED SHALL COMPLY WITH STATE AND FEDERAL SEED LAWS. FOR TEMPORARY PLANTINGS AFTER SEPTEMBER 30, TO EARLY SPRING AND FOR TEMPORARY PROTECTION OF DISTURBED AREAS:

    A. FOLLOW ABOVE SLOPE, LOAM DEPTH AND GRADING REQUIREMENTS.
    B. FERTILIZER SHALL BE SPREAD AND WORKED INTO THE SURFACE AT A RATE OF 500 POUNDS PER ACRE.

    MULCHING AND SEEDING SHALL BE APPLIED AT THE FOLLOWING RATES:

WINTER RYE (FALL SEEDING)	2.5 LBS/1,000 SF
OATS (SPRING SEEDING)	2.0 LBS/1,000 SF
MULCH	1.5 TONS/ACRE

E. CATCH BASIN INLET PROTECTION

1. INLET BASKET STRUCTURE

   A. INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY PRIOR TO DISTURBING PAVEMENT AND SHALL REMAIN IN PLACE AND MAINTAINED UNTIL PAVEMENT BINDER COURSE IS COMPLETE.

   B. MOLD 6X6, 42 LB. WIRE SUPPORT AROUND INLET FRAME AND GRATE AND EXTEND 6" BEYOND SIDES. SECURE FILTER FABRIC TO WIRE SUPPORT.

   C. THE FILTER FABRIC SHALL BE A GEOTEXTILE FABRIC; POLYESTER, POLYPROPYLENE, STABILIZED NYLON, POLYETHYLENE OR POLYVINYLIDENE CHLORIDE MEETING THE FOLLOWING SPECIFICATIONS:

      GRAB STRENGTH: 45 LB. MINIMUM IN ANY PRINCIPAL DIRECTION (ASTM D16B2)
      MULLEN BURST STRENGTH: MIN. 60PSI (ASTM D774)

   D. THE FABRIC SHALL HAVE AN OPENING NO GREATER THAN A NUMBER 20 U.S. STANDARD SIEVE AND A MINIMUM PERMEABILITY OF 120 GPM.

   E. THE INLET PROTECTION SHALL BE INSPECTED WITHIN 24 HOURS AFTER EACH RAINFALL OR DAILY DURING EXTENDED PERIODS OF PRECIPITATION. REPAIRS SHALL BE MADE IMMEDIATELY, AS NECESSARY, TO PREVENT PARTICLES FROM REACHING THE DRAINAGE SYSTEM AND/OR CAUSING SURFACE FLOODING.

   F. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT, OR MORE OFTEN IF THE FABRIC BECOMES CLOGGED.

F. WINTER CONSTRUCTION SEQUENCE

1. ALL PROPOSED POST-DEVELOPMENT LANDSCAPED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1 AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE PLACEMENT OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENT.
2. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
3. AFTER OCTOBER 15TH, INCOMPLETE PARKING AREAS WHERE ACTIVE CONSTRUCTION HAS STOPPED FOR THE WINTER ALL TRAVEL SURFACES SHALL BE PROTECTED WITH A MINIMUM OF 3" OF CRUSHED GRAVEL PER NHDOT ITEM 304.3, OR IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER SEASON BE CLEARED OF ANY ACCUMULATED SNOWFALL AFTER EACH STORM EVENT.

TIMING OF CONTROLS/MEASURES

AS INDICATED IN THE SEQUENCE OF MAJOR ACTIVITIES, SILT BARRIERS SHALL BE INSTALLED PRIOR TO COMMENCING ANY CLEARING OR GRADING OF THE SITE. STRUCTURAL CONTROLS SHALL BE INSTALLED CONCURRENTLY WITH THE APPLICABLE ACTIVITY. AREAS WHERE CONSTRUCTION ACTIVITY TEMPORARILY CEASES FOR MORE THAN TWENTY ONE (21) DAYS WILL BE STABILIZED WITH A TEMPORARY SEED AND MULCH WITHIN FOURTEEN (14) DAYS OF THE LAST DISTURBANCE. ONCE CONSTRUCTION ACTIVITY CEASES PERMANENTLY IN AN AREA, SILT BARRIERS AND ANY EARTH/DIKES WILL BE REMOVED ONCE PERMANENT MEASURES ARE ESTABLISHED.

FOR SINGLE/DUPLEX FAMILY SUBDIVISIONS, WHEN LOT DEVELOPMENT IS NOT PART OF THE PERMIT, THEN LOT DISTURBANCE, OTHER THAN THAT SHOWN ON THE APPROVED PLANS, SHALL NOT COMMENCE UNTIL AFTER THE ROADWAY HAS THE BASE COURSE TO DESIGN ELEVATION AND THE ASSOCIATED DRAINAGE IS COMPLETE AND STABLE.

WASTE DISPOSAL

1. WASTE MATERIALS
   ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN SECURELY LIDDED RECEPTACLES. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN A DUMPSTER. NO CONSTRUCTION WASTE MATERIALS WILL BE BURIED ON SITE. ALL PERSONNEL WILL BE INSTRUCTED REGARDING THE CORRECT PROCEDURE FOR WASTE DISPOSAL BY THE SUPERINTENDENT.
2. HAZARDOUS WASTE
   ALL HAZARDOUS WASTE MATERIALS WILL BE DISPOSED OF IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATION OR BY THE MANUFACTURER. SITE PERSONNEL WILL BE INSTRUCTED IN THESE PRACTICES BY THE SUPERINTENDENT.
3. SANITARY WASTE
   ALL SANITARY WASTE WILL BE COLLECTED FROM THE PORTABLE UNITS A MINIMUM OF ONCE PER WEEK BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR.

SPILL PREVENTION

1. MATERIAL MANAGEMENT PRACTICES
   THE FOLLOWING ARE THE MATERIAL MANAGEMENT PRACTICES THAT WILL BE USED TO REDUCE THE RISK OF SPILLS OR OTHER ACCIDENTAL EXPOSURE OF MATERIALS AND SUBSTANCES DURING CONSTRUCTION TO STORMWATER RUNOFF:

   GOOD HOUSEKEEPING:
   THE FOLLOWING GOOD HOUSEKEEPING PRACTICES WILL BE FOLLOWED ON SITE DURING THE CONSTRUCTION PROJECT:

   A. AN EFFORT WILL BE MADE TO STORE ONLY SUFFICIENT AMOUNTS OF PRODUCTS TO DO THE JOB.

   B. ALL MATERIALS STORED ON SITE WILL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINERS AND, IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE.

   C. MANUFACTURER'S RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED.

   D. THE SITE SUPERINTENDENT WILL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS.

   E. SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.

   F. WHENEVER POSSIBLE ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER.

   HAZARDOUS PRODUCTS:
   THE FOLLOWING PRACTICES WILL BE USED TO REDUCE THE RISKS ASSOCIATED WITH HAZARDOUS MATERIALS:

   A. PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS UNLESS THEY ARE NOT RESEALABLE.

   B. ORIGINAL LABELS AND MATERIAL SAFETY DATA WILL BE RETAINED FOR IMPORTANT PRODUCT INFORMATION.

   C. SURPLUS PRODUCT THAT MUST BE DISPOSED OF WILL BE DISCARDED ACCORDING TO THE MANUFACTURER'S RECOMMENDED METHODS OF DISPOSAL.

2. PRODUCT SPECIFICATION PRACTICES
   THE FOLLOWING PRODUCT SPECIFIC PRACTICES WILL BE FOLLOWED ON SITE:

   PETROLEUM PRODUCTS:
   ALL ON SITE VEHICLES WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE LEAKAGE. PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS WHICH ARE CLEARLY LABELED. ANY ASPHALT BASED SUBSTANCES USED ON SITE WILL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

   FERTILIZERS:
   FERTILIZERS USED WILL BE APPLIED ONLY IN THE MINIMUM AMOUNTS DIRECTED BY THE SPECIFICATIONS. ONCE APPLIED, FERTILIZER WILL BE WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER. STORAGE WILL BE IN A COVERED SHED OR ENCLOSED TRAILERS. THE CONTENTS OF ANY PARTIALLY USED BAGS OF FERTILIZER WILL BE TRANSFERRED TO A SEALABLE PLASTIC BIN TO AVOID SPILLS.

   PAINTS:
   ALL CONTAINERS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT WILL NOT BE DISCHARGED TO THE STORM SEWER SYSTEM BUT WILL BE DISPOSED OF PROPERLY ACCORDING TO MANUFACTURER'S INSTRUCTIONS OR STATE AND LOCAL REGULATIONS.

   CONCRETE TRUCKS:
   CONCRETE TRUCKS WILL DISCHARGE AND WASH OUT SURPLUS CONCRETE OR DRUM WASH WATER IN A CONTAINED AREA DESIGNATED ON SITE.

SPILL CONTROL PRACTICES

IN ADDITION TO GOOD HOUSEKEEPING AND MATERIAL MANAGEMENT PRACTICES DISCUSSED IN THE PREVIOUS SECTION THE FOLLOWING PRACTICES WILL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP:

A. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP WILL BE CLEARLY POSTED AND SITE PERSONNEL WILL BE MADE AWARE OF THE PROCEDURES AND THE LOCATION OF THE INFORMATION AND CLEANUP SUPPLIES.

B. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE MATERIAL STORAGE AREA ON SITE. EQUIPMENT AND MATERIALS WILL INCLUDE BUT NOT BE LIMITED TO BROOMS, DUSTPANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST, AND PLASTIC OR METAL TRASH CONTAINERS SPECIFICALLY FOR THIS PURPOSE.

C. ALL SPILLS WILL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY.

D. THE SPILL AREA WILL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.

E. SPILLS OF TOXIC OR HAZARDOUS MATERIAL WILL BE REPORTED TO THE APPROPRIATE STATE OR LOCAL GOVERNMENT AGENCY, REGARDLESS OF THE SIZE.

F. THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM RECURRING AND HOW TO CLEANUP THE SPILL IF IT RECURS. A DESCRIPTION OF THE SPILL, ITS CAUSE, AND THE CLEANUP MEASURES WILL BE INCLUDED.

G. THE SITE SUPERINTENDENT RESPONSIBLE FOR DAY-TO-DAY SITE OPERATIONS WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR.

DUST CONTROL

THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTROL DUST THROUGHOUT THE CONSTRUCTION PERIOD. DUST CONTROL METHODS SHALL INCLUDE, BUT NOT LIMITED TO SPRINKLING WATER ON EXPOSED AREAS, COVERING LOADED DUMP TRUCKS LEAVING THE SITE, AND TEMPORARY MULCHING. DUST CONTROL MEASURES SHALL BE UTILIZED SO AS TO PREVENT THE MIGRATION OF DUST FROM THE SITE TO ABUTTING AREAS.

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

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REV	DATE	DESCRIPTION	DR	CK

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

EROSION CONTROL NOTES

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD
PORTSMOUTH, NEW HAMPSHIRE

OWNED BY
CITY OF PORTSMOUTH

PREPARED FOR
PHA HOUSING DEVELOPMENT LTD.

1"=60' (11"X17")
SCALE: 1"=30' (22"X34") **JANUARY 29, 2025**

TFM®
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
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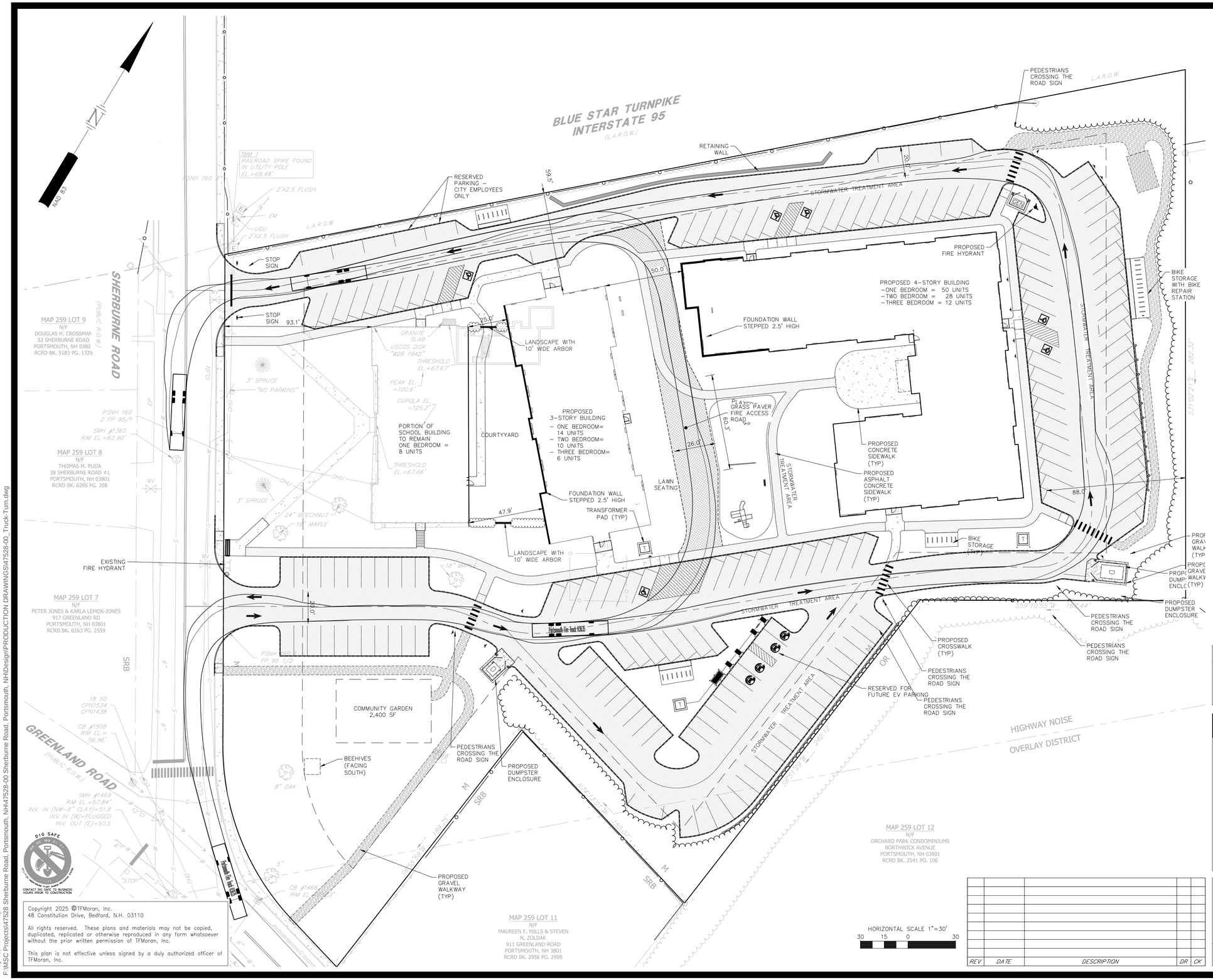

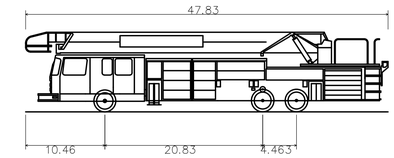

Portsmouth Fire Truck H3635	
Overall Length	47.830ft
Overall Width	8.500ft
Overall Body Height	10.505ft
Min Body Ground Clearance	0.935ft
Max Track Width	8.500ft
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	38.00°

CITY OF PORTMOUTH PLANNING BOARD

CHAIRPERSON DATE

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

TRUCK TURN - FIRE

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

CITY OF PORTSMOUTH

PREPARED FOR

PHA HOUSING DEVELOPMENT LTD.

1"=60' (11"X17")

SCALE: 1"=30' (22"X34") **JANUARY 29, 2025**

REV	DATE	DESCRIPTION	DR	CK

TFM
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Structural Engineers
Traffic Engineers
Land Surveyors
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SITE LAYOUT PLAN

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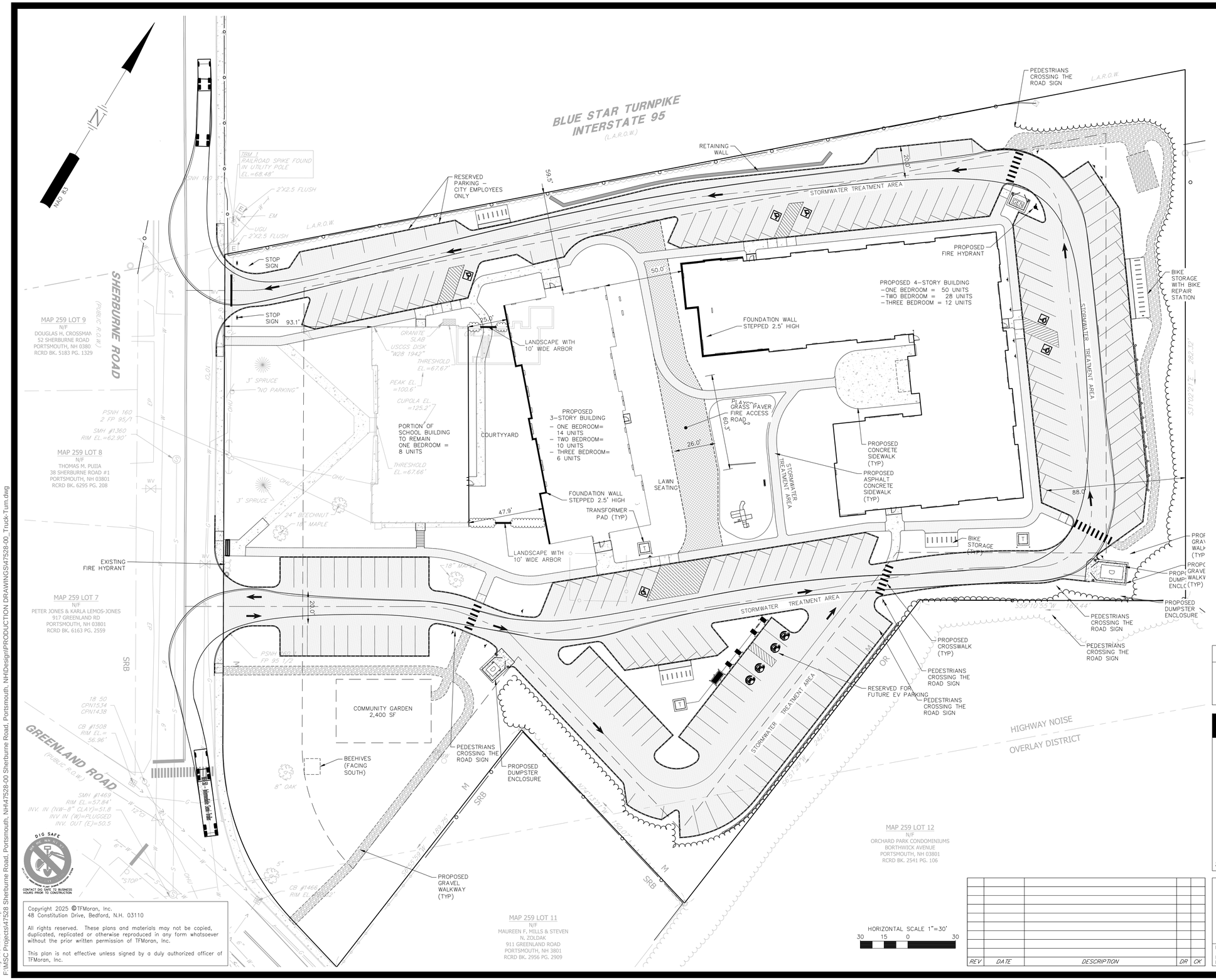

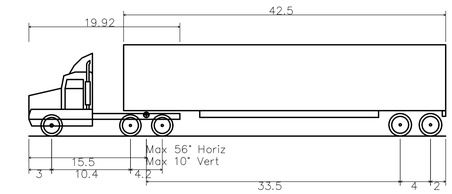

WB–50 – Intermediate Semi–Trailer

Overall Length	55.000ft
Overall Width	8.500ft
Overall Body Height	12.052ft
Min Body Ground Clearance	1.334ft
Max Track Width	8.500ft
Lock–to–lock time	6.00s
Max Steering Angle (Virtual)	17.90°

CITY OF PORTMOUTH PLANNING BOARD

CHAIRPERSON *DATE*

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

TRUCK TURN - WB-50

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

CITY OF PORTSMOUTH

PREPARED FOR

PHA HOUSING DEVELOPMENT LTD.

1"=60' (11"X17")

SCALE: 1"=30' (22"X34") **JANUARY 29, 2025**

REV	DATE	DESCRIPTION	DR	CK

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472–4488
Fax (603) 472–9747
www.tfmoran.com

47528.00	DR JKC	FB		C–14
	CK JJM	CADFILE	47528–00_TRUCK–TURN	

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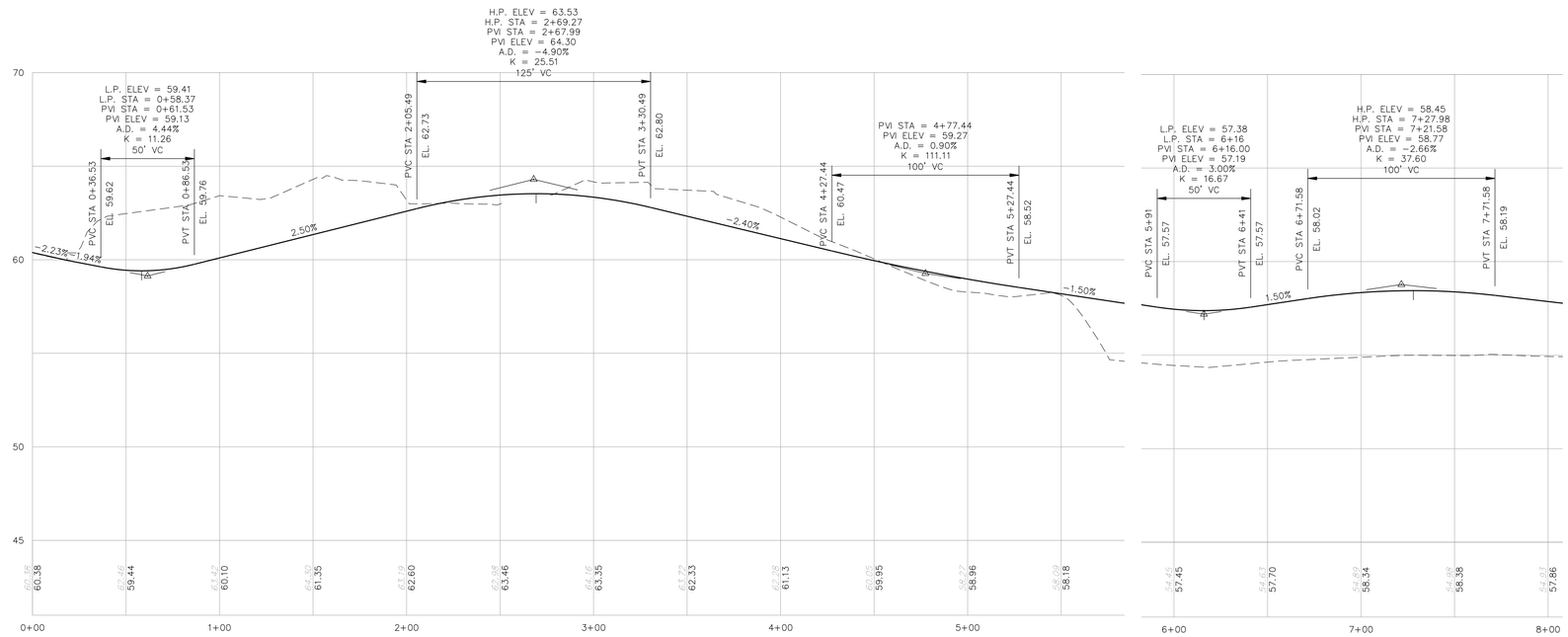
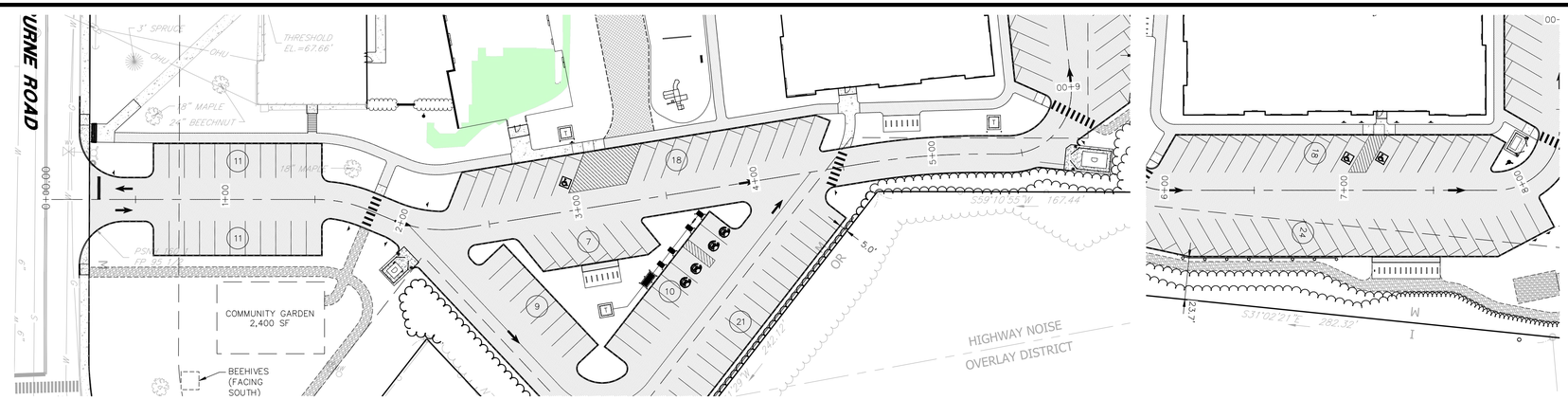
SITE LAYOUT PLAN





HORIZONTAL SCALE 1"=40'

40 20 0 40

4 0 4

VERTICAL SCALE 1"=4'

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

DRIVE PROFILE A

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD

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REV	DATE	DESCRIPTION	DR	CK

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47528.00	CK	JJM	CADFILE	47528-00_DRIVE PROFILE	C-15

DIG SAFE
CONTACT DIG SAFE 72 BUSINESS HOURS PRIOR TO CONSTRUCTION

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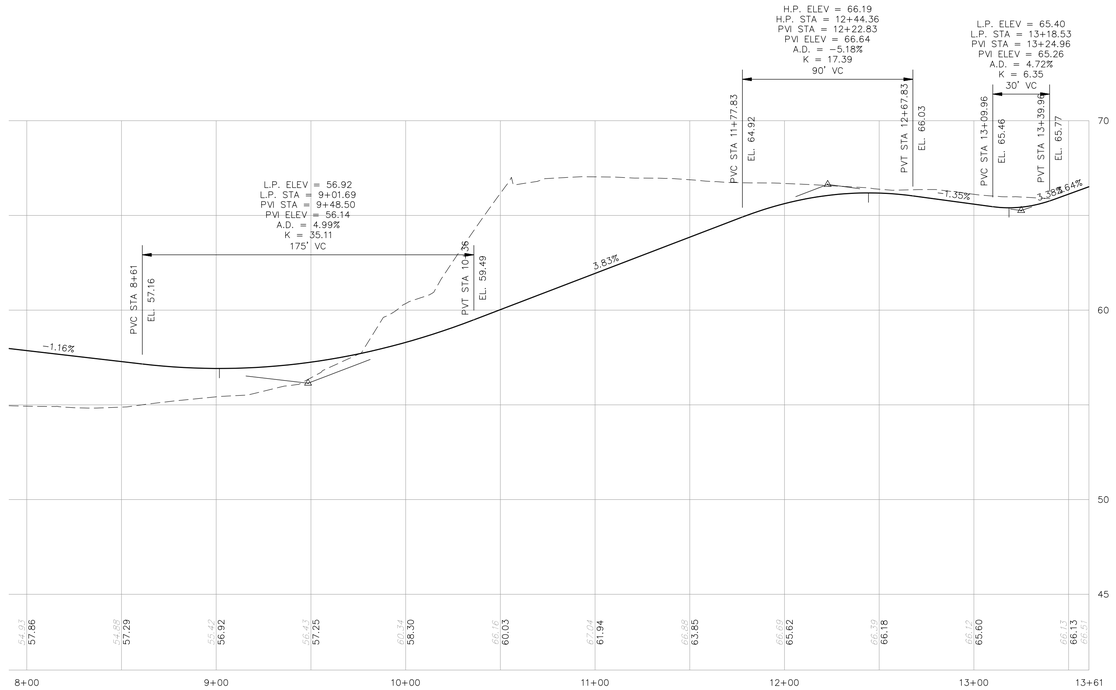

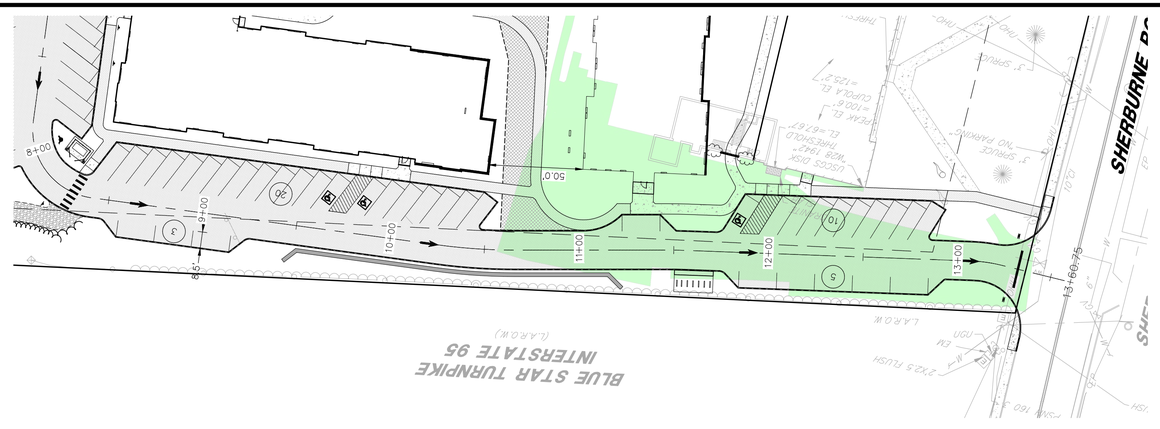

HORIZONTAL SCALE 1"=40'
40 20 0 40
4 0 4
VERTICAL SCALE 1"=4'

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

DRIVE PROFILE B

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD
PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

CITY OF PORTSMOUTH

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1"=80' (11"X17")

SCALE: 1"=40' (22"X34") **JANUARY 29, 2025**

REV	DATE	DESCRIPTION	DR.	CK.

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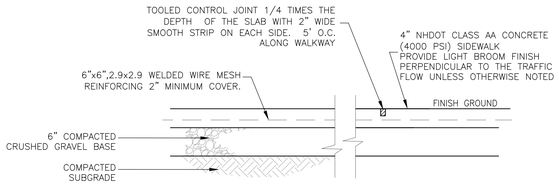
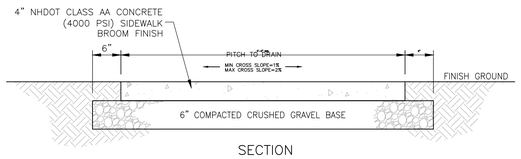
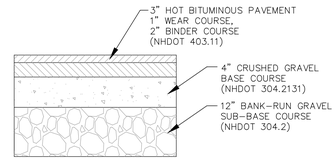




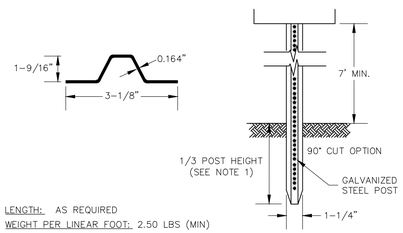
CONCRETE SIDEWALK (WITHOUT CURB)

NOT TO SCALE



TYPICAL SECTION PAVEMENT ON-SITE

NOT TO SCALE



LENGTH: AS REQUIRED

WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN)

HOLES: 3/8" DIAMETER, 1" C-C FULL LENGTH

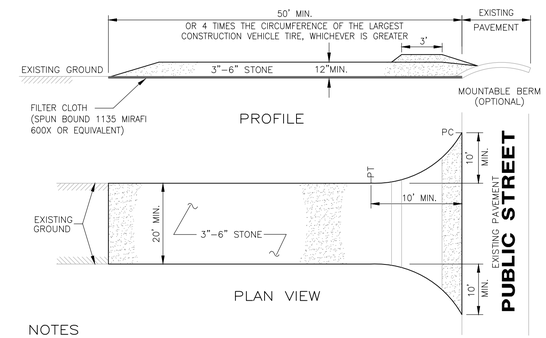
STEEL: SHALL CONFORM TO ASTM A-499 (GRADE 60) OR ASTM A-576 (GRADE 1070 – 1080)

FINISH: SHALL BE PAINTED WITH 2 COATS OF AN APPROVED MEDIUM GREEN BAKED-ON OR AIR-DRIED PAINT OF WEATHER RESISTANT QUALITY. ALL FABRICATION SHALL BE COMPLETE BEFORE PAINTING.

NOTE:
1. WHERE LEDGE APPLICATION EXISTS, DRILL & GROUT TO A MINIMUM OF 2'.
2. ALL SIGNAGE SHALL FOLLOW THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES STANDARDS AND NHDOT STANDARDS.
3. SIGN, HARDWARE, AND INSTALLATION SHALL CONFORM TO THE LATEST NHDOT STANDARD SPECIFICATIONS.

SIGN POST

NOT TO SCALE

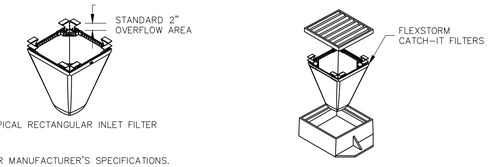


NOTES

1. FILTER CLOTH – WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE SURFACE.
2. WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
3. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
4. WASHING – WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
5. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN STORM EVENT.

USDA - SCS STABILIZED CONSTRUCTION ENTRANCE

SEE PLAN FOR PROPOSED LOCATION NOT TO SCALE



TYPICAL RECTANGULAR INLET FILTER

NOTES:

1. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
2. INSPECTION SHOULD OCCUR FOLLOWING ANY RAIN EVENT > ½".
3. EMPTY THE SEDIMENT BAG PER MANUFACTURER'S SPECIFICATIONS.
4. REMOVED CAKED ON SILT FROM SEDIMENT BAG AND FLUSH WITH MEDIUM SPRAY WITH OPTIMAL FILTRATION.
5. REPLACE BAG IF TORN OR PUNCTURED TO > ½" DIAMETER ON LOWER HALF OF BAG.
6. REFER TO EROSION AND SEDIMENT CONTROL NOTES ON SHEET C-00 REGARDING PROHIBITED MATERIALS.

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A DIVISION OF ADS, INC.
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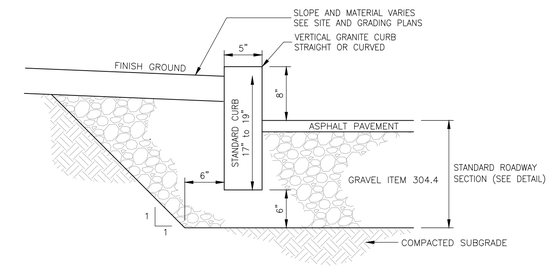
(866) 287-8655
INFO@INLETFILTERS.COM

INLET PROTECTION

NOT TO SCALE

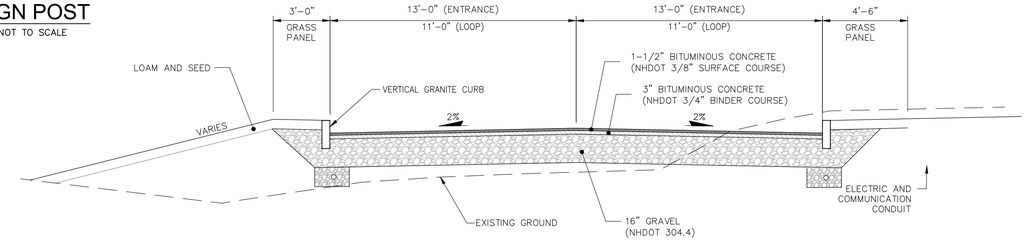


NOTES

1. MORTAR JOINTS AND OTHER INSTALLATION TO BE AS SPECIFIED IN NHDOT SECTION 609.
2. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
3. PROVIDE TRANSITIONS & RAMPS PER A.D.A.

VERTICAL GRANITE CURB

NOT TO SCALE

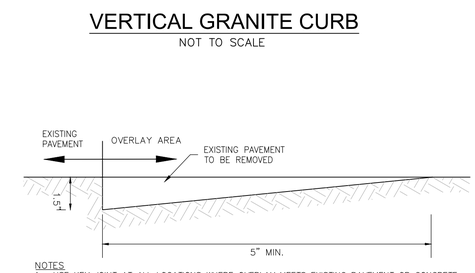


DRIVE TYPICAL SECTION

NOT TO SCALE

NOTES:

1. SEE GRADING & DRAINAGE PLAN FOR PAVEMENT SLOPE AND CROSS-SLOPE.
2. PROVIDE CLEAN BUTT TO EXISTING PAVEMENT– USE TACK COAT. SPECIFICALLY, A TACK COAT SHALL BE PLACED ATOP THE BINDER COURSE PAVEMENT PRIOR TO PLACING THE WEARING COURSE.
3. REMOVE ALL LOAM AND/OR YIELDING MATERIAL BELOW PAVEMENT.
4. ALL ROADWAY TO CONFORM TO THE STREET DESIGN AND CONSTRUCTION REQUIREMENTS IN THE TOWN OF PORTSMOUTH, NH SUBDIVISION REGULATIONS.
5. BITUMINOUS CONCRETE SHALL BE COMPACTED TO AT LEAST 92.5% OF THEORETICAL MAXIMUM DENSITY AS DETERMINED BY ASTM D2041 OR AASHTO T209. PLACEMENT TEMPERATURES OF BITUMINOUS CONCRETE MIXES, IN GENERAL, RANGE BETWEEN 270 AND 310 DEGREES FAHRENHEIT.
6. PAVEMENT BASE COURSE AGGREGATE SHALL CONFORM TO NHDOT SPECIFICATION SECTION 304, ITEM 304.4 AND COMPACTED TO A MINIMUM OF 95% OF MODIFIED PROCTOR MAXIMUM DRY DENSITY.
7. PAVEMENT SUBBASE COURSE AGGREGATE AND AGGREGATE FOR SUBGRADE REPAIR AREAS SHALL BE SUITABLE FOR USE AS STRUCTURAL FILL AND BE PROOF ROLLED AND COMPACTED TO 95% MODIFIED PROCTOR MAXIMUM DRY DENSITY.
8. THE EXPOSED SOIL SUBGRADE SHOULD BE PROOF ROLLED PRIOR TO THE PLACEMENT OF SUBBASE GRAVEL, AND SOFT AREAS SHOULD BE REPAIRED AND REPLACED.

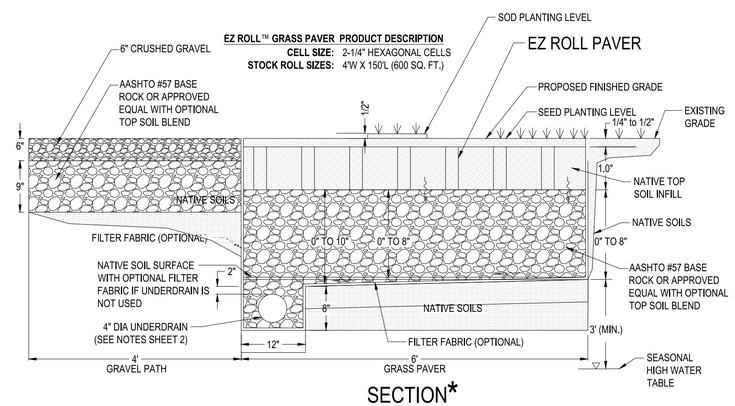


NOTES

1. USE KEY JOINT AT ALL LOCATIONS WHERE OVERLAY MEETS EXISTING PAVEMENT OR CONCRETE.
2. NEW PAVEMENT SHALL BE FLUSH WITH EXISTING PAVEMENT AND SHALL MEET OVERLAY GRADE WHERE IT ABUTS EXISTING PAVEMENT TO BE OVERLAYED.

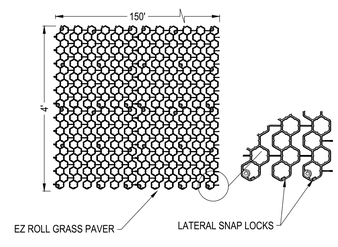
KEY JOINT

NOT TO SCALE



SECTION*

*SEE NOTES SHEET 2



PLAN VIEW

GRASS PAVER PATH

NOT TO SCALE

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

DETAILS

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD

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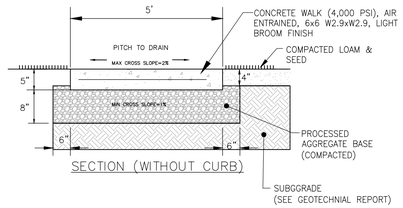
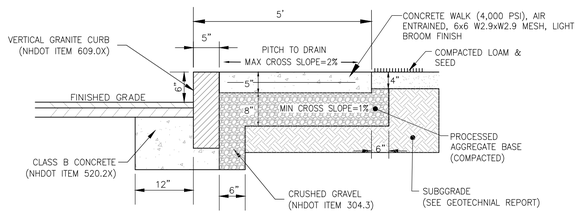
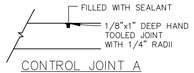


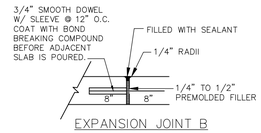
SECTION (WITHOUT CURB)



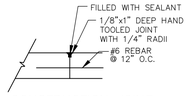
SECTION (WITH GRANITE CURB)



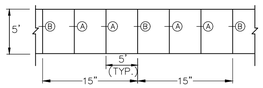
CONTROL JOINT A



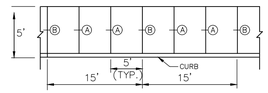
EXPANSION JOINT B



CONSTRUCTION JOINT



PLAN (5' WALK W/OUT CURB)



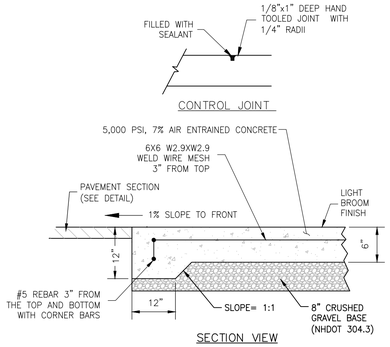
PLAN (5' WALK W/CURB)

CONCRETE SIDEWALK

NOT TO SCALE

NOTE:

1. COORDINATE SIDEWALK DETAILS WITH STRUCTURAL



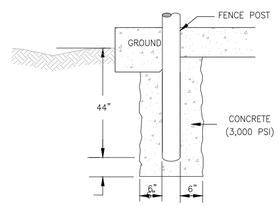
SECTION VIEW

CONCRETE PAD

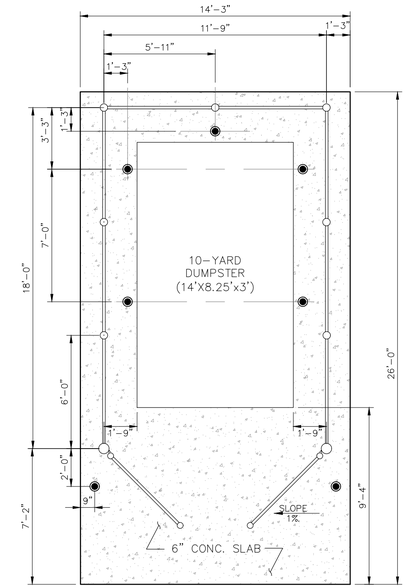
NOT TO SCALE

NOTES

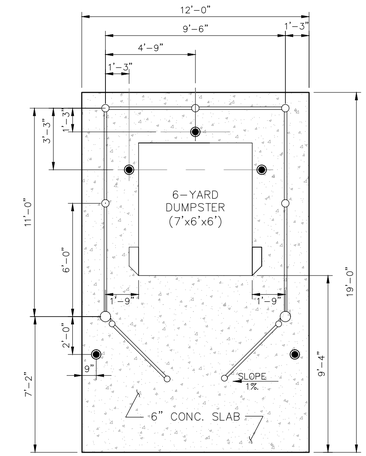
1. PROVIDE CLEAN BUTT TO EXISTING PAVEMENT – USE TACK COAT.
2. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.



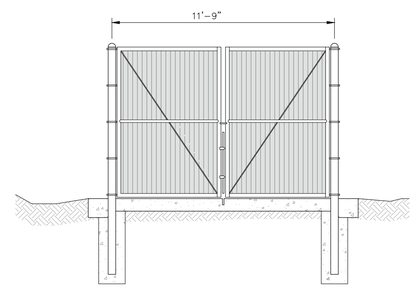
FENCE POST FOOTING DETAIL



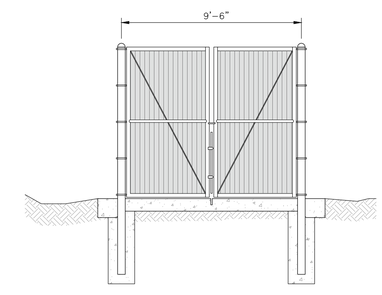
10-YARD DUMPSTER PLAN DETAIL



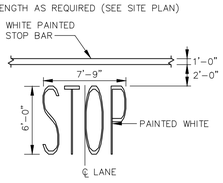
8-YARD DUMPSTER PLAN DETAIL



10-YARD DUMPSTER GATE DETAIL



8-YARD DUMPSTER GATE DETAIL

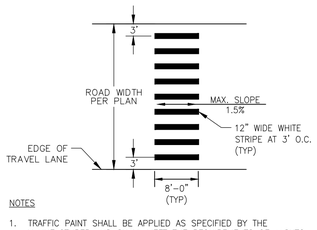


STOP BAR & LEGEND

NOT TO SCALE

NOTES

1. TRAFFIC PAINT SHALL BE APPLIED AS SPECIFIED BY THE MANUFACTURER AND SHALL MEET THE REQUIREMENTS OF AASHTO M248 TYPE "F". APPLY TWO COATS.
2. SYMBOLS AND PARKING STALLS SHALL CONFORM TO THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT, LATEST EDITION.

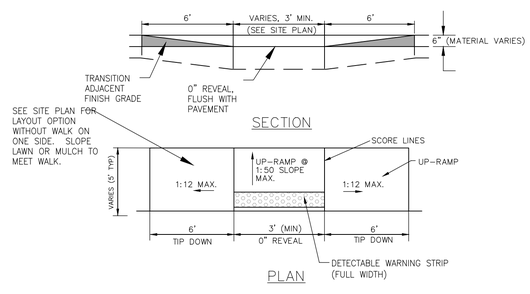


NOTES

1. TRAFFIC PAINT SHALL BE APPLIED AS SPECIFIED BY THE MANUFACTURER AND SHALL MEET THE REQUIREMENTS OF AASHTO M248 TYPE "F". APPLY TWO COATS.
2. 12" LINES SHALL BE APPLIED IN ONE APPLICATION. NO COMBINATION OF LINES (E.G., 2 – 6" LINES) WILL BE ACCEPTED.
3. CROSS WALK SIDESLOPE SHALL NOT EXCEED 1.5% IN ANY DIRECTION.

PAINTED CROSSWALK

NOT TO SCALE



SECTION

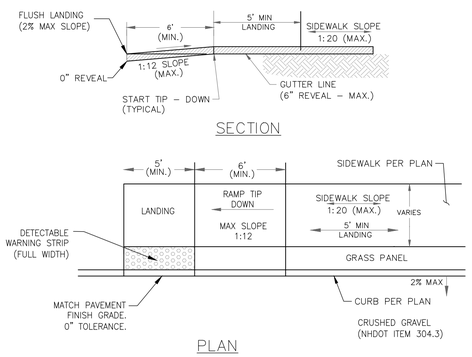
PLAN

NOTE

1. RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE AMERICAN WITH DISABILITIES ACT, LATEST EDITION.

SIDEWALK TIP DOWN RAMP (TYPE D)

NOT TO SCALE



SECTION

PLAN

SIDEWALK TIP DOWN RAMP (TYPE E)

NOT TO SCALE

DUMPSTER ENCLOSURE

NOT TO SCALE

NOTE:

1. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
2. CHAIN LINK FENCE TO BE COMMERCIAL "BEST" GRADE. 2" MESH MADE OF 8 GAUGE OR 6 GAUGE WIRE. 1-5/8" O.D. TOP AND BOTTOM RAILS, SCHEDULE 40. SEE DETAIL FOR POST SIZES.
3. POSTS, GATES, WIRE MESH AND HARDWARE TO BE VINYL COATED TO MATCH THE GATE METAL SIDING COATING.
4. SEE CONCRETE PAD DETAIL FOR SPECIFICATION ON THE PAD.

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

DETAILS

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

CITY OF PORTSMOUTH

PREPARED FOR

PHA HOUSING DEVELOPMENT LTD.

1"=60' (11"X17")

SCALE: 1"=30' (22"X34") **JANUARY 29, 2025**

REV	DATE	DESCRIPTION	DR	CK

TFM®
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

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May 06, 2025 - 2:41pm
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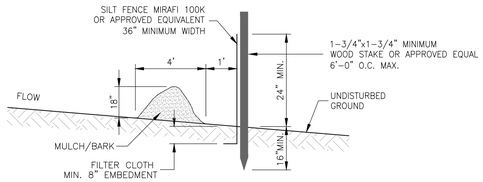


NOTE
WOOD WASTE COMPOST/BARK FILTER BERMS MAY BE USED IN COMBINATION WITH SILT FENCE TO IMPROVE SEDIMENT REMOVAL AND PREVENT CLOGGING OF THE WOOD WASTE COMPOST/BARK BERM BY LARGER SEDIMENT PARTICLES. (SILT FENCE PLACED TO FILTER RUNOFF BEFORE WOOD WASTE COMPOST/BARK). STUMP GRINDINGS MAY BE SUBSTITUTED FOR MULCH.

WOOD WASTE COMPOST/BARK FILTER BERMS
THE FILTER BERM SHALL CONSIST OF A WOOD WASTE COMPOST/BARK MULCH MIX OR RECYCLED COMPOSTED BARK FLUME GRIT AND FRAGMENTED WOOD GENERATED FROM WATER-FLUME LOG HANDLING SYSTEMS. COMPARABLE COMPOSTED MIXES CAN BE USED UPON APPROVAL OF THE ENVIRONMENTAL OFFICE LANDSCAPE UNIT.

THE MIX SHALL CONFORM TO THE FOLLOWING STANDARDS:
(A) MOISTURE CONTENT – 30–60%
(B) pH=5.0 – 8.0.
(C) SCREEN SIZE – 100% LESS THAN 75 mm, MAXIMUM 70% LESS THAN 25 mm.
(D) NO LESS THAN 40% ORGANIC MATERIAL (DRY WEIGHT) BY LOSS OF IGNITION.
(E) NO STONES LARGER THAN 50 mm IN DIAMETER.
(F) SEE WOOD WASTE COMPOST BERM STANDARD DETAIL 800(43) FOR WIDTH AND HEIGHT SPECIFICATIONS. THE COMPOSTED BERM SHALL BE PLACED, UNCOMPACTED, ALONG A RELATIVELY LEVEL CONTOUR.

MAINTENANCE/PERFORMANCE OF SEDIMENT BARRIERS

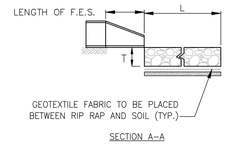
ALL SEDIMENT BARRIERS REQUIRE FREQUENT INSPECTION AND MAINTENANCE TO BE EFFECTIVE. THEY MUST BE INSPECTED BEFORE, DURING AND AFTER EACH RAINFALL, AND AT LEAST DAILY DURING EXTENDED PERIODS OF RAIN. SHOULD THE BARRIER BECOME INEFFECTIVE AS EVIDENCED BY DECOMPOSITION OF THE FILTER FABRIC ON SILT FENCE, BREAKAGE OF THE BALES OR BINDINGS ON HAY BALES, OR OBSERVANCE OF FLOW ESCAPING UNDERNEATH ANY TYPE OF BARRIER, IMMEDIATE REPAIRS MUST BE MADE. RESHAPE BERMS AS NEEDED. SEDIMENT MUST BE REMOVED WHEN DEPOSITS REACH 1/2 THE HEIGHT OF THE BARRIER. SEDIMENTS REMOVED MUST BE PLACED IN AN APPROVED SITE AND STABILIZED.

MULCH BERM WITH SILT FENCE

NOT TO SCALE

MAINTENANCE:

THE OUTLET PROTECTION SHOULD BE CHECKED AT LEAST ANNUALLY AND AFTER EVERY MAJOR STORM. IF THE RIP RAP HAS BEEN DISPLACED, UNDERMINED OR DAMAGED, IT SHOULD BE CHECKED TO SEE THAT EROSION IS NOT OCCURRING. THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO THE OUTLET PROTECTION APRON.

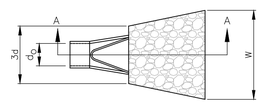


SECTION A–A

CONSTRUCTION SPECIFICATIONS:

1. THE SUBGRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC, AND RIP RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE ROCK OR GRAVEL USED FOR FILTER OR RIP RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP RAP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12".
4. STONE FOR THE RIP RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.
5. ADD ANIMAL SCREEN TO FLARED END SECTION OUTLET.

% OF WEIGHT SMALLER FOR d50=6" THAN THE GIVEN SIZE	SIZE OF STONE (INCHES)
100	9.00 TO 12.00
85	7.80 TO 10.80
50	6.00 TO 9.00
15	1.80 TO 30



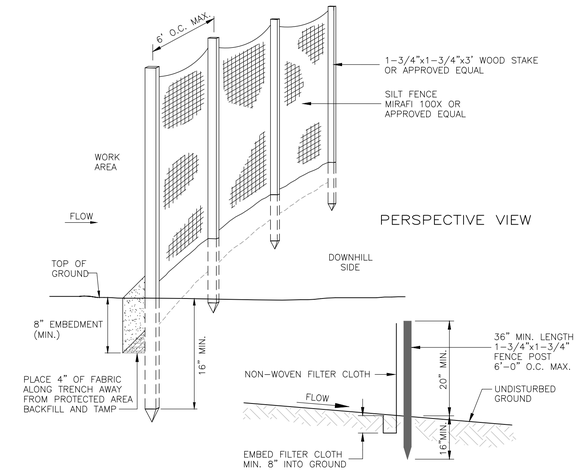
RIPRAP DIMENSIONS

LOCATION	FES01	FES02	FES03*	FES04*	FES05	FES06	FES07	FES08*	FES09
d50 STONE SIZE (IN)	6	6	6	6	6	6	6	6	6
L– LENGTH OF APRON (FT)	5	24	21	20	14	17	16	35	8
W–WIDTH OF APRON (FT)	5	13	15	11	12	13	12	22	8
T–DEPTH OF APRON (IN)	9	9	9	9	9	9	9	9	9

NOTE: * RIPRAP COMPLETE FOREBAY FROM BOTTOM TO TOP OF FOREBAY SPILLWAY.

RIP RAP AND FLARED END SECTION WITH OUTLET PROTECTION

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

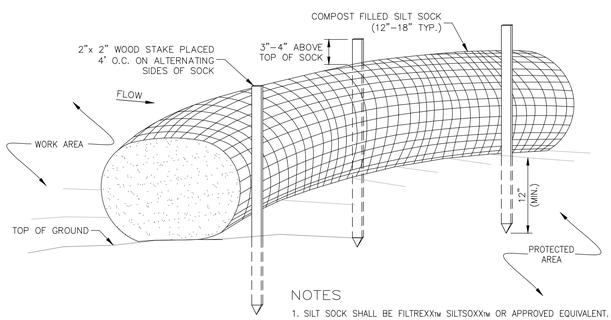
1. THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR ALL SILT FENCES.
2. THE FABRIC SHALL BE EMBEDDED A MINIMUM OF 8 INCHES INTO THE GROUND AND SOIL COMPACTED OVER THE EMBEDDED FABRIC.
3. THE GEOTEXTILE FABRIC SHALL BE FASTENED SECURLY TO THE FENCE POSTS WITH STAPLES.
4. WHEN TWO SECTIONS OF GEOTEXTILE FABRIC ADJION EACH OTHER, THEY SHOULD BE OVERLAPPED BY SIX INCHES, FOLDED AND STAPLED.
5. FENCE POSTS SHALL BE A MINIMUM OF 36 INCHES LONG AND DRIVEN A MINIMUM OF 16 INCHES INTO THE GROUND. WOOD POSTS SHALL BE OF SOUND QUALITY HARDWOOD AND SHALL HAVE A CROSS SECTIONAL AREA OF 3.0 SQUARE INCHES.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED TO PREVENT BULGES IN THE SILT FENCE DUE TO DEPOSITION OF SEDIMENT.

MAINTENANCE NOTES

1. SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EVERY RAIN STORM AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
2. IF THE FABRIC ON THE SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3. SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH A MAXIMUM OF ONE HALF THE DEPTH OF THE BARRIER.
4. SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

SILT FENCE DETAIL

NOT TO SCALE



NOTES

1. SILT SOCK SHALL BE FILTREXXtw SILTSOXXtw OR APPROVED EQUIVALENT.
2. SEE SPECIFICATIONS FOR SOCK SIZE AND COMPOST FILL REQUIREMENTS.
3. SILT SOCK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS, AND REPAIR OR REPLACEMENT SHALL BE PERFORMED AS NEEDED.
4. COMPOST MATERIAL SHALL BE DISPERSED ON SITE, AS DETERMINED BY THE ENGINEER.

SILT SOCK

NOT TO SCALE

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

DETAILS

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

CITY OF PORTSMOUTH

PREPARED FOR

PHA HOUSING DEVELOPMENT LTD.

1"=60' (11"X17")

SCALE: 1"=30' (22"X34") **JANUARY 29, 2025**

REV	DATE	DESCRIPTION	DR	CK

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Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

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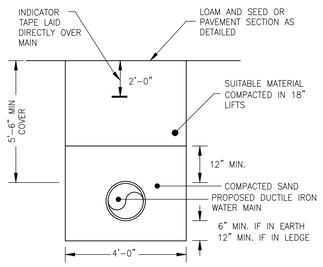
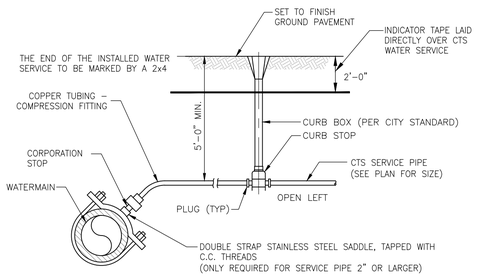


WATER MAIN TRENCH

NOT TO SCALE

NOTE:

1. WATER MAIN SHALL BE CLASS 52 DUCTILE IRON PIPE WRAPPED IN POLYETHYLENE WITH CONTINUITY WEDGES AS PER CITY STANDARDS.

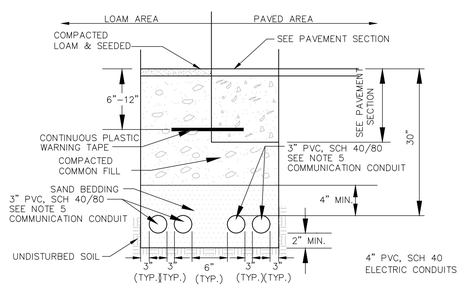


WATER SERVICE CONNECTION

NOT TO SCALE

NOTES

1. CURB STOPS TO OPEN TO THE RICHT.



NOTES

1. ELECTRIC SERVICE INSTALLATION AND STANDARD DIMENSIONAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL CODES.
2. COMMUNICATION SERVICE INSTALLATION SHALL MEET ALL CONSTRUCTION REQUIREMENTS.
3. ACTUAL NUMBER OF CONDUITS TO BE DETERMINED BY RESPECTIVE COMPANIES.
4. VERIFY INSTALLATION REQUIREMENTS WITH RESPECTIVE COMPANIES.
5. SCHEDULE 80 CONDUIT TO BE USED UNDER TRAFFIC SITUATIONS (PRIMARY AND SECONDARY LINES).
6. ALL 90 DEGREE SWEEPS MUST BE STEEL AND THE FIRST 10' STICK OUT OF THE 90 MUST BE STEEL ON ALL PRIMARY CONDUIT RUNS

ELECTRIC/COMMUNICATIONS CONDUIT

NOT TO SCALE

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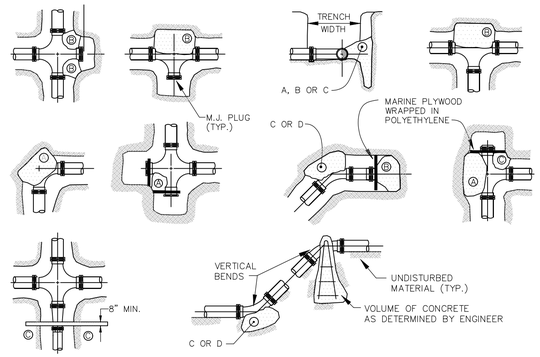


NOTES

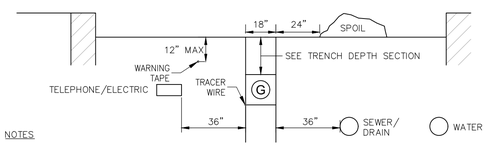
1. POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL, WHERE TRENCH WALL HAS BEEN DISTURBED. EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO PIPE JOINTS SHALL BE COVERED WITH CONCRETE.
2. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
3. PLACE BOARD IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCKS.
4. WHERE MECHANICAL JOINT PIPE IS USED, MECHANICAL JOINT PLUG WITH RETAINER GLAND MAY BE SUBSTITUTED FOR END BLOCKINGS.
5. INSTALLATION AND STANDARD DIMENSIONAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE CITY/TOWN ESTABLISHED RULES AND PROCEDURES.

TEST PRESSURE = 200psi

SQUARE FEET OF CONCRETE THRUST BLOCKING BEARING ON UNDISTURBED MATERIAL					
REACTION TYPE	PIPE SIZE				
	4"	6"	8"	10"	12"
A 90°	0.89	2.19	3.82	11.14	17.24
B 180°	0.65	1.55	2.78	8.38	12.00
C 45°	0.48	1.19	2.12	6.02	9.32
D 22–1/2°	0.25	0.60	1.06	3.08	4.74
E 11–1/4°	0.13	0.30	0.54	1.54	2.38

THRUST BLOCKS

NOT TO SCALE

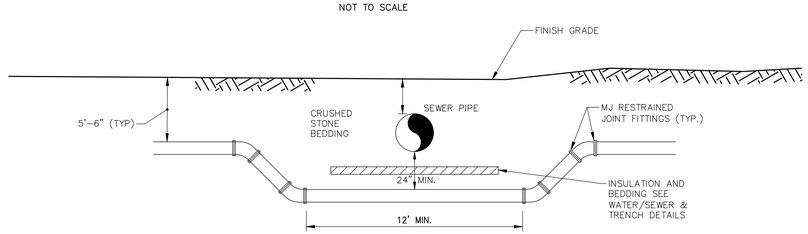


NOTES

1. MAINS–THE TRENCH SHALL BE DEEP ENOUGH TO PROVIDE 36" OF COVER FROM FINISHED GRADE TO TOP OF MAIN. FOR ALL SERVICES AND GAS MAINS, ON PRIVATE PROPERTY, 24" OF COVER IS REQUIRED.
2. THE TRENCH SHALL BE AT LEAST 18" WIDE. THE SPOIL SHOULD BE AT LEAST 24" FROM EDGE OF TRENCH.
3. THE TRENCH SHALL BE LAID OUT SO AS TO PROVIDE A MINIMUM OFFSET OF 36" FROM OTHER UTILITIES. WHERE PRACTICAL, GAS MAINS SHOULD BE ON THE OPPOSITE SIDE OF THE STREET FROM THE WATER MAIN.
4. THE NATURAL BOTTOM OF THE TRENCH SHALL BE PADDED WITH 4" OF SAND ON BOTTOM AND 6" OF SAND ON TOP. ALSO, SUFFICIENT SAND MUST BE PROVIDED FOR A MINIMUM OF 6" OF COVER ABOVE THE MAIN. SAND SHALL BE PROVIDED BY EXCAVATOR AND MUST BE ON SITE PRIOR TO INSTALLATION OF PIPE.
5. NO TRENCHING SHALL BE STARTED UNTIL AN ON SITE MEETING HAS BEEN HELD BETWEEN EXCAVATING CONTRACTOR AND UNITIL PERSONNEL. PRIOR TO THE MEETING, THE CONTRACTOR MUST NOTIFY DIG SAFE OF THE PROPOSED WORK. THE ROUTE OF TRENCH AND TENTATIVE START DATE SHALL BE CONFIRMED AT THE MEETING.
6. IF WORK TAKES PLACE OUTSIDE OF APRIL THROUGH NOVEMBER OFF SITE TIE–INS ON CITY STREETS SHALL BE DONE SUBJECT TO UNITIL CREW AVAILABILITY AND ISSUANCE OF REQUIRED PERMITS
7. ONCE UNITIL HAS INSTALLED THE MAIN AND SERVICES, CONTRACTOR WILL COVER THE PIPE WITH 6" OF SAND AND INSTALL THE TRACING WIRE AND WARNING TAPE PRIOR TO BACKFILLING. THE EXCAVATING CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER COMPACTING OF THE TRENCH AND MAINTAINING ALL SURFACE (VALVE) BOXES PRIOR TO AND DURING ON–SITE PAVING.

UNITIL GAS MAIN

NOT TO SCALE

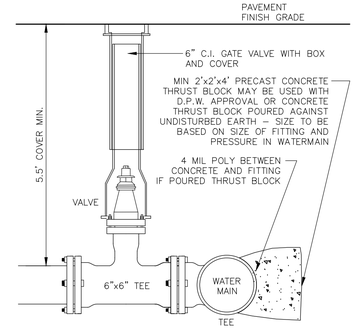


NOTE:

1. INSTALL (4) FOUR 45° MJ BENDS WITH RESTRAINED JOINT FITTINGS.
2. ALL WATER MAINS (DUCTILE IRON) AND SERVICES SHALL HAVE POLYETHYLENE WRAP.

WATER/SEWER CROSSING DETAIL

NOT TO SCALE

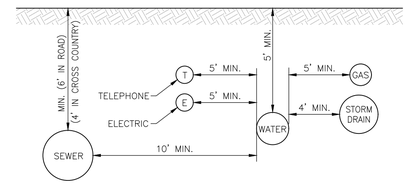


NOTES:

1. VALVE TO OPEN RIGHT.

BURIED GATE VALVE

NOT TO SCALE

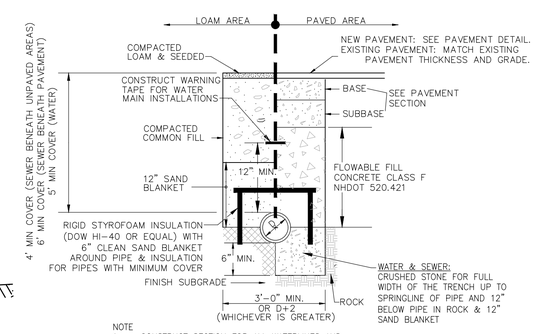


NOTES:

1. ALL MATERIALS AND INSTALLATION PROCEDURES WILL CONFORM TO EXETER DPW TECHNICAL SPECIFICATIONS.
2. ALL WATER MAIN SHOULD HAVE A MINIMUM DEPTH OF 5' FROM TOP OF PIPE TO FINISH GRADE.
3. GAS MAIN SHALL HAVE A TYPICAL DEPTH OF 3' FROM THE TOP OF PIPE TO FINISH GRADE
4. DETAIL REPRESENTS LATERAL SEPARATION ONLY UNLESS OTHERWISE NOTED. CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANY FOR DEPTHS FOR GAS, TELEPHONE, AND ELECTRIC.

TYPICAL UTILITY LATERAL SEPARATION

NOT TO SCALE



NOTE

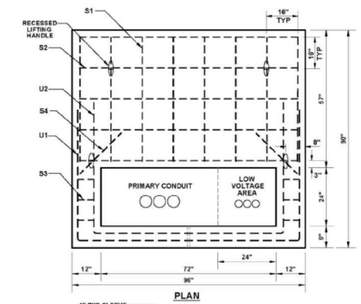
1. CONSTRUCT SECTION FOR ALL WATERLINES AND SANITARY SEWERS.

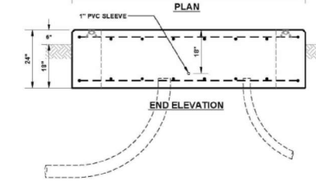
UTILITY TRENCH

NOT TO SCALE

REV	DATE	DESCRIPTION	DR	CK

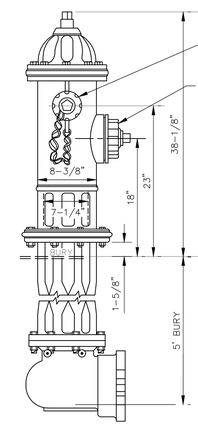
3 Phase Padmounted Transformer Slab 15KV 750-2500 KVA Dead Front 34KV 75-2500 KVA Dead Front





REINFORCING SCHEDULE (#6 BAR)			
Type	Qty	Length	Diagram
S1	16	51"	Straight
S2	10	90"	Straight
S3	12	7"	Straight
S4	4	24"	Straight
U1	2	198"	S4 90 S4
U2	2	186"	S4 78 S4

Total Foundation Weight, 14,200 lbs.



THREE–WAY HYDRANT KENNEDY K–81A GUARDIAN ELMIRA, N.Y.

SPECIFICATIONS

1. 150 PSI WORKING PRESSURE
2. 300 PSI TEST PRESSURE
3. HYDRANT DRAIN SHALL BE PLUGGED
4. DRY TOP DESIGN VALVE SHALL OPEN WHEN OPERATING NUT IS TURNED CLOCKWISE AND BE SO INDICATED ON HYDRANT
5. OPERATING NUT SHALL BE STANDARD AWWA PENTAGON OPERATING NUT WITH 1 1/2" POINT TO FLAT DIMENSION
6. THREADS SHALL BE NATIONAL STANDARD HOSE THREAD NOZZLES
7. HYDRANT TO OPEN RIGHT.

PORTSMOUTH FIRE HYDRANT

NOT TO SCALE

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

DETAILS

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD
PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

CITY OF PORTSMOUTH

PREPARED FOR

PHA HOUSING DEVELOPMENT LTD.

1"=60' (11"X17")

SCALE: 1"=30' (22"X34") **JANUARY 29, 2025**

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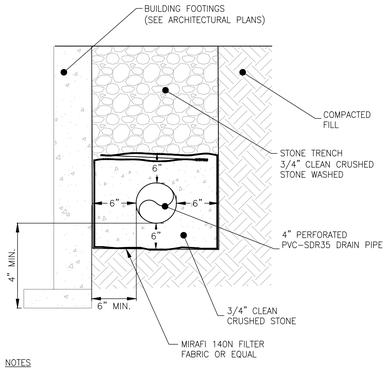
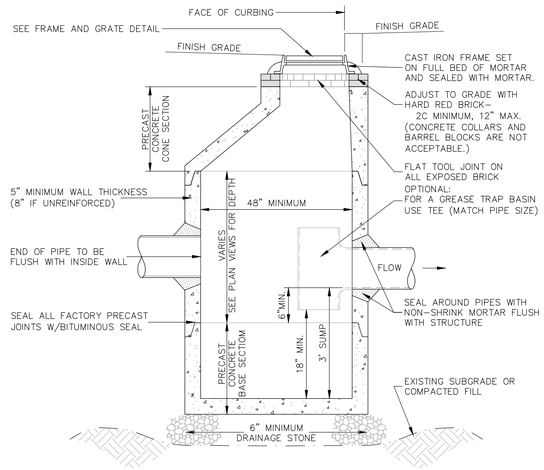


NOTES

1. FOR MINIMUM DIMENSIONAL REQUIREMENT REFER TO THE GEOTECHNICAL REPORT PREPARED BY JOHN TURNER COUNSULTING, INC. ON JULY 3, 2013.

FOUNDATION DRAIN LINES

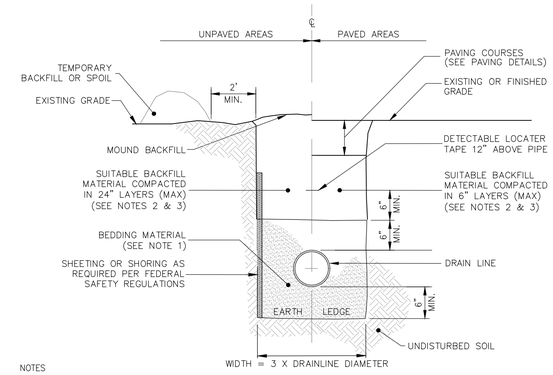
NOT TO SCALE



NOTE: ALL PRECAST SECTIONS SHALL CONFORM TO ASTM C-478

CATCH BASIN

ECCENTRIC CONE (FOR USE IN CURBED AREAS) NOT TO SCALE

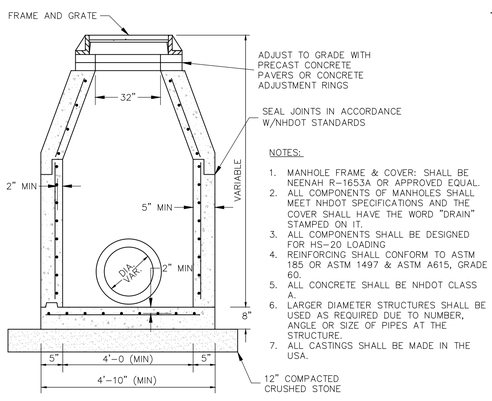


NOTES

1. BEDDING – BEDDING FOR PIPES SHALL CONSIST OF PREPARING THE BOTTOM OF THE TRENCH TO SUPPORT THE ENTIRE LENGTH OF THE PIPE AT A UNIFORM SLOPE AND ALIGNMENT. CRUSHED STONE SHALL BE USED TO BED THE PIPE TO THE ELEVATION SHOWN ON THE DRAWINGS. NORMAL PIPE BEDDING IS CRUSHED STONE TO THE HAUNCH OF THE PIPE AND SAND BEDDING 6" ABOVE THE CROWN. IF THE TOP OF THE PIPE IS LESS THAN 30" FROM FINISH GRADE, BED PIPE COMPLETELY IN STONE UP TO 6" ABOVE PIPE CROWN. UNDERDRAIN TO HAVE 4" MINIMUM OF STONE OVER PIPE OR AS NECESSARY TO BE IN CONTACT WITH GRAVEL LAYER OF SELECTS ABOVE.
2. COMPACTION – ALL BACKFILL SHALL BE COMPACTED AT OR NEAR OPTIMUM MOISTURE CONTENT BY PNEUMATIC TAMPERS, VIBRATORY COMPACTORS OR OTHER APPROVED MEANS. BACKFILL BENEATH PAVED SURFACES SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T99, METHOD C.
3. SUITABLE MATERIAL – IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR CLAY; ALL EXCAVATED LEDGE MATERIAL; ROCKS OVER 6" IN LARGEST DIMENSION; FROZEN EARTH AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.
4. BASE COURSE AND PAVEMENT – SHALL MEET THE REQUIREMENT OF THE NHDOT LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES DIVISION 300 AND 400 RESPECTIVELY.

TRENCH FOR DRAIN LINE

NOT TO SCALE

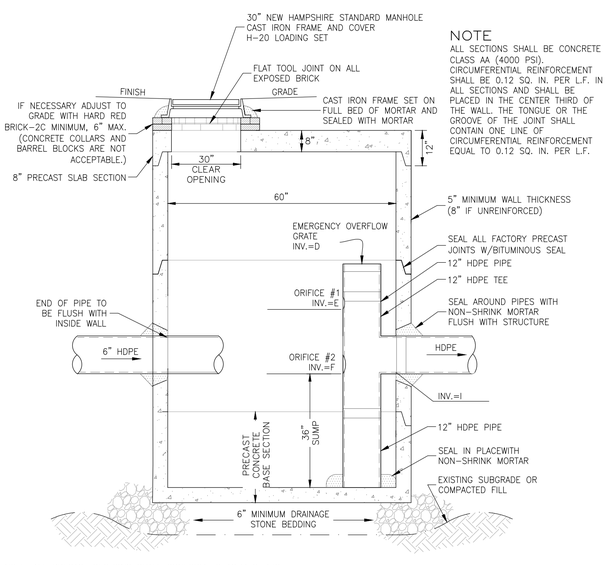


NOTES:

1. MANHOLE FRAME & COVER: SHALL BE NEENAH R-1653A OR APPROVED EQUAL.
2. ALL COMPONENTS OF MANHOLES SHALL MEET NHDOT SPECIFICATIONS AND THE COVER SHALL HAVE THE WORD "DRAIN" STAMPED ON IT.
3. ALL COMPONENTS SHALL BE DESIGNED FOR HS-20 LOADING
4. REINFORCING SHALL CONFORM TO ASTM 185 OR ASTM 1497 & ASTM A615, GRADE 60.
5. ALL CONCRETE SHALL BE NHDOT CLASS A.
6. LARGER DIAMETER STRUCTURES SHALL BE USED AS REQUIRED DUE TO NUMBER, ANGLE OR SIZE OF PIPES AT THE STRUCTURE.
7. ALL CASTINGS SHALL BE MADE IN THE USA.

DRAIN MANHOLE

NOT TO SCALE



NOTE

ALL SECTIONS SHALL BE CONCRETE CLASS AA (4000 PSI). CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER L.F. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER L.F.

NOTE: ALL PRECAST SECTIONS SHALL CONFORM TO ASTM C-478

OUTLET CONTROL STRUCTURE

FOR BIORETENTION SYSTEMS NOT TO SCALE

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

DETAILS

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD

PORTSMOUTH, NEW HAMPSHIRE

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SEWER SERVICE NOTES

1. MINIMUM SIZE PIPE FOR SEWER SERVICE SHALL BE FOUR INCHES.

2. PIPE AND JOINT MATERIALS:
   A. PLASTIC SEWER PIPE
      1. PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING ASTM STANDARDS:

ASTM STANDARDS	GENERIC PIPE MATERIAL	SIZES APPROVED
D3034	*PVC (SOLID WALL)	8" THROUGH 15" (SDR 35)
F679	PVC (SOLID WALL)	18" THROUGH 27" (T-1 & T-2)
F789	PVC (SOLID WALL)	4" THROUGH 18" (T-1 TO T-3)
F794	PVC (RIBBED WALL)	8" THROUGH 36"
D2680	*ABS (COMPOSITES WALL)	8" THROUGH 15"

*PVC: POLY VINYL CHLORIDE
*ABS: ACRYLONITRILE-BUTADIENE-STYRENE

      2. JOINTS SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D-3212 AND SHALL BE PUSH-ON, BELL AND SPIGOT TYPE.

      ABS TRUSS PIPE AND FITTINGS SHALL CONFORM TO ASTM D-2680, POLYMER COMPOUNDING SHALL BE TO ASTM D-1788 (CLASS 322).

      JOINTS FOR ABS TRUSS PIPE SHALL BE CHEMICAL WELDED COUPLINGS TYPE SC IN ACCORDANCE WITH ASTM D-2680, FORMING A CHEMICAL WELDED JOINT.

   B. DUCTILE-IRON PIPE, FITTINGS AND JOINTS.
      1. DUCTILE IRON PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE UNITED STATES OF AMERICA STANDARDS INSTITUTE:
         A21.50 THICKNESS DESIGN OF DUCTILE IRON PIPE AND WITH ASTM A-536 DUCTILE IRON CASTINGS.
         A21.51 DUCTILE IRON PIPE, CENTRIFUGALLY CAST IN METAL MOLDS OR SAND-LINED MOLDS FOR WATER OR OTHER LIQUIDS.
      2. JOINTS SHALL BE OF THE MECHANICAL OR PUSH-ON TYPE. JOINTS AND GASKETS SHALL CONFORM TO:
         A21.11 RUBBER GASKETS JOINTS FOR CAST IRON PRESSURE PIPE & FITTINGS

3. DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE.

4. JOINTS SHALL BE DEPENDENT UPON A NEOPRENE OR ELASTOMERIC GASKET FOR WATER-TIGHTNESS. ALL JOINTS SHALL BE PROPERLY MATCHED WITH THE PIPE MATERIALS USED. WHERE DIFFERING MATERIALS ARE TO BE CONNECTED, AS AT THE STREET SEWER WYE OR AT THE FOUNDATION WALL, APPROPRIATE MANUFACTURED ADAPTERS SHALL BE USED.

5. TEES AND WYES: WHERE A TEE OR WYE IS NOT AVAILABLE IN THE EXISTING STREET SEWER, AN APPROPRIATE CONNECTION SHALL BE MADE, FOLLOWING MANUFACTURERS' INSTRUCTIONS USING A BOLTED, CLAMPED OR EPOXY-CEMENTED SADDLE TAPPED INTO A SMOOTHLY DRILLED OR SAWN OPENING IN THE SEWER. THE PRACTICE OF BREAKING AN OPENING WITH A SLEDGE HAMMER, STUFFING CLOTH OR OTHER SUCH MATERIAL AROUND THE JOINT, OR APPLYING MORTAR TO HOLD THE CONNECTION, AND ANY OTHER SIMILAR CRUDE PRACTICES OR INEPT OR HASTY IMPROVISATIONS WILL NOT BE PERMITTED. THE CONNECTION SHALL BE CONCRETE ENCASED AS SHOWN IN THE DETAIL UP TO AND INCLUDING 15" DIAMETER.

6. SEWER SERVICE INSTALLATION: THE PIPE SHALL BE HANDLED, PLACED AND JOINTED IN ACCORDANCE WITH INSTALLATION GUIDES OF THE APPROPRIATE MANUFACTURER. IT SHALL BE CAREFULLY BEDDED ON A 6 INCH LAYER OF CRUSHED STONE AND/OR GRAVEL AS SPECIFIED IN NOTE 10. BEDDING AND RE-FILL FOR DEPTH OF 12 INCHES ABOVE THE TOP OF THE PIPE SHALL BE CAREFULLY AND THOROUGHLY TAMPED BY HAND OR WITH APPROPRIATE MECHANICAL DEVICES.

   THE PIPE SHALL BE LAID AT A CONTINUOUS AND CONSTANT GRADE FROM THE STREET SEWER CONNECTION TO THE FOUNDATION AT A GRADE OF NOT LESS THAN 1/4" INCH PER FOOT. PIPE JOINTS MUST BE MADE UNDER DRY CONDITIONS. IF WATER IS PRESENT, ALL NECESSARY STEPS SHALL BE TAKEN TO DEWATER THE TRENCH.

7. TESTING: THE COMPLETED SEWER SERVICE SHALL BE SUBJECTED TO A THIRD PARTY LEAKAGE TEST IN ANY OF THE FOLLOWING MANNERS: (PRIOR TO BACKFILLING)

   A. AN OBSERVATION TEE SHALL BE INSTALLED AS SHOWN AND WHEN READY FOR TESTING, AN INFLATABLE BLADDER OR PLUG SHALL BE INSERTED JUST UPSTREAM FROM THE OPENING IN THE TEE. AFTER INFLATION, WATER SHALL BE INTRODUCED INTO THE SYSTEM ABOVE THE PLUG TO A HEIGHT OF 5 FEET ABOVE THE LEVEL OF THE PLUG.

   B. THE PIPE SHALL BE LEFT EXPOSED AND LIBERALLY HOSED WITH WATER, TO SIMULATE, AS NEARLY AS POSSIBLE, WET TRENCH CONDITIONS OR, IF TRENCH IS WET, THE GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. INSPECTIONS FOR LEAKS SHALL BE MADE THROUGH THE CLEANOUT WITH A FLASHLIGHT.

   C. DRY FLUORESCENE DYE SHALL BE SPRINKLED INTO THE TRENCH OVER THE PIPE. IF THE TRENCH IS DRY, THE PIPE SHALL BE LIBERALLY HOSED WITH WATER, OR IF THE TRENCH IS WET, GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. OBSERVATION FOR LEAKS SHALL BE MADE IN THE FIRST DOWN-STREAM MANHOLE.

   LEAKAGE OBSERVED IN ANY ONE OF THE ABOVE ALTERNATE TESTS SHALL BE CAUSE FOR NON-ACCEPTANCE AND THE PIPE SHALL BE DUG-UP IF NECESSARY AND RE-LAID SO AS TO ASSURE WATER TIGHTNESS.

8. ILLEGAL CONNECTIONS: NOTHING BUT SANITARY WASTE FLOW FROM TOILETS, SINKS, LAUNDRY ETC. SHALL BE PERMITTED. ROOF LEADERS, FOOTING DRAINS, SUMP PUMPS OR OTHER SIMILAR CONNECTIONS CARRYING RAIN WATER, DRAINAGE OR GROUND WATER SHALL NOT BE PERMITTED.

9. WATER SERVICE SHALL NOT BE LAID IN SAME TRENCH AS SEWER SERVICE.

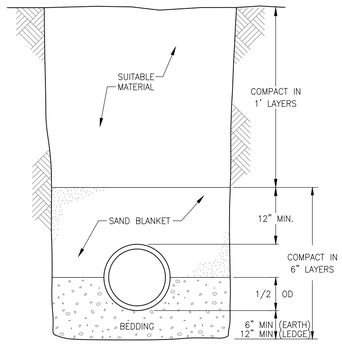
10. BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATERIAL AND MEETING ASTM C33-67.

100% PASSING	1 INCH SCREEN
90%-100% PASSING	3/4 INCH SCREEN
20%-55% PASSING	3/8 INCH SCREEN
0%-10% PASSING	#4 SIEVE
0%-5% PASSING	#8 SIEVE

   WHERE ORDERED BY THE ENGINEER TO STABILIZE THE TRENCH BASE, SCREENED GRAVEL OR CRUSHED STONE 1/2 INCH TO 1 1/2 INCH SHALL BE USED.

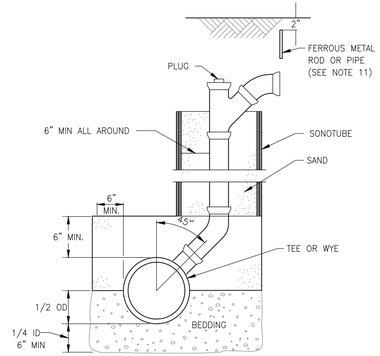
11. LOCATION: THE LOCATION OF THE TEE OR WYE SHALL BE RECORDED AND FILED IN THE MUNICIPAL RECORDS. IN ADDITION, A FERROUS METAL ROD OR PIPE SHALL BE PLACED OVER THE TEE OR WYE AS DESCRIBED IN THE TYPICAL "CHIMNEY" DETAIL, TO AID IN LOCATING THE BURIED PIPE WITH A DIP NEEDLE OR PIPEFINDER.

12. CHIMNEYS: IF VERTICAL DROP INTO SEWER IS GREATER THAN 4 FEET, A CHIMNEY SHALL BE CONSTRUCTED FOR THE SEWER CONNECTION. CHIMNEY INSTALLATION AS RECOMMENDED BY THE PIPE MANUFACTURER MAY BE USED IF APPROVED BY THE ENGINEER.



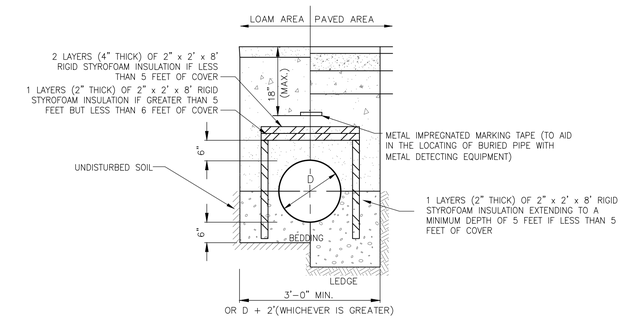
BEDDING TO BE THOROUGHLY COMPACTED (SEE NOTE 10)

TRENCH CROSS-SECTION
NOT TO SCALE



BACKFILLING TO BE BROUGHT UP EVENLY ON ALL SIDES.

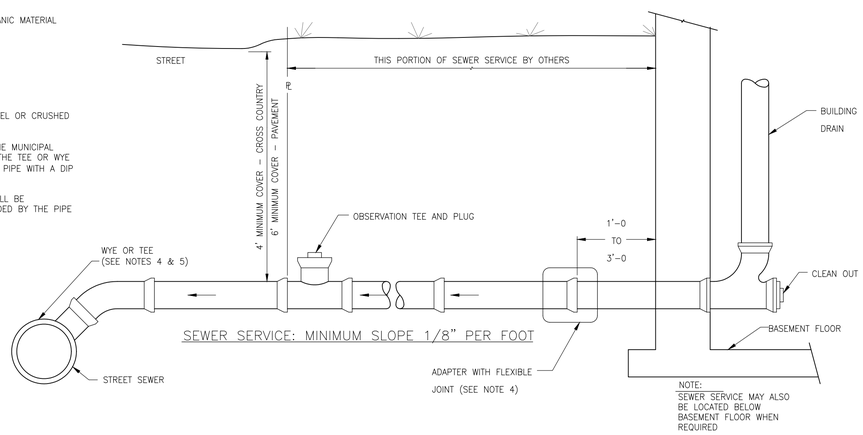
CHIMNEY (SEE NOTE 12)
NOT TO SCALE



NOTES

1. GAPS BETWEEN SECTIONS OF INSULATION TO BE COVERED WITH 2" x 2' x 2' PIECE OF INSULATION CENTERED OVER GAP.

SEWER TRENCH WITH INSULATION
NOT TO SCALE



SEWER SERVICE DETAILS
NOT TO SCALE

GRAVITY SEWER NOTES

1. MINIMUM SIZE PIPE FOR GRAVITY SEWER SHALL BE 8-INCHES.

2. PIPE AND JOINT MATERIALS FOR PLASTIC SEWER PIPE SHALL CONFORM TO THE FOLLOWING ASTM STANDARDS:

ASTM STANDARDS	GENERIC PIPE MATERIAL	SIZES APPROVED
D3034-04a	* PVC (SOLID WALL)	8" THROUGH 15" (SDR 35)
F679-03	PVC (SOLID WALL)	18" THROUGH 27" (T-1 & T-2)
F794-03	PVC (RIBBED WALL)	8" THROUGH 36"
F1760-01(2005)e1	PVC, RECYCLED	ALL DIAMETERS

*PVC: POLY VINYL CHLORIDE

3. PLASTIC SEWER PIPE SHALL HAVE A PIPE STIFFNESS RATING OF AT LEAST 46 POUNDS PER SQUARE INCH AT 5 PERCENT PIPE DIAMETER DEFLECTION, AS MEASURED IN ACCORDANCE WITH ASTM D2412-02 DURING MANUFACTURE.

4. JOINTS SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D-3212-96(a)(2003)e1 AND SHALL BE PUSH-ON, BELL AND SPIGOT TYPE.

5. DUCTILE-IRON PIPE, FITTINGS AND JOINTS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE AMERICAN WATER WORKS ASSOCIATION (AWWA).

   AWWA C151/A21.51-02 THICKNESS DESIGN OF DUCTILE IRON PIPE AND WITH ASTM A-536-84 (2004) DUCTILE IRON CASTINGS.

   AWWA C151/A21.51-02 DUCTILE IRON PIPE, CENTRIFUGALLY CAST IN METAL MOLDS OR SAND-LINED MOLDS FOR WATER OR OTHER LIQUIDS.

   JOINTS SHALL BE OF THE MECHANICAL OR PUSH-ON TYPE. JOINTS AND GASKETS SHALL CONFORM TO AWWA C151/A21.11 RUBBER GASKETS JOINTS FOR CAST IRON PRESSURE PIPE & FITTINGS.

6. CONCRETE PIPE SHALL CONFORM TO AWWA C302-04.

7. PRESTRESSED CONCRETE CYLINDER PIPE AND FITTINGS SHALL CONFORM TO AWWA C301-99.

   JOINTS SEALS FOR CONCRETE CYLINDER PIPE SHALL BE OIL RESISTANT ELASTOMERIC MATERIAL CONFORMING TO ASWWA C301-99 SPECIFICATIONS.

8. DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE.

9. GRAVITY SEWER PIPE TESTING SHALL BE AS FOLLOWS:

   ALL NEW GRAVITY SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY THE USE OF LOW-PRESSURE AIR TESTS.

   LOW PRESSURE AIR TESTING SHALL BE IN CONFORMANCE WITH:

   ASTM F1417-92(2005) "STANDARD TEST METHOD FOR INSTALLATION ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW PRESSURE AIR".

   UNI-BELL PVC PIPE ASSOCIATION UNI-B-6, "LOW PRESSURE AIR TESTING OF INSTALLED SEWER PIPE".

10. ALL NEW GRAVITY SEWERS SHALL BE CLEANED AND VISUALLY INSPECTED AND SHALL BE TRUE TO LINE AND GRADE FOLLOWING INSTALLATION AND PRIOR TO USE AND VISUALLY INSPECT USING LAMP TEST.

11. ALL PLASTIC SEWER PIPE SHALL BE DEFLECTION TESTED NOT LESS THAN 30 DAYS AND NO MORE THAN 90 DAYS FOLLOWING INSTALLATION.

12. THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 5 PERCENT OF THE AVERAGE INSIDE DIAMETER.

13. TRENCH CONSTUCTION SHALL CONFORM TO THE FOLLOWING:

   SEWERS SHALL BE BURIED TO A MINIMUM DEPTH OF 6' BELOW GRADE IN ALL ROADWAY LOCATIONS AND TO A MINIMUM DEPTH OF 4 FEET BELOW GRADE IN ALL CROSS COUNTRY LOCATIONS.

   WHERE SEWER LINES CROSS WATER PIPES, A MINIMUM OF 18" VERTICAL SEPARATION BETWEEN THE TWO OUTSIDE PIPE WALLS SHALL BE OBSERVED. AT SEWER/WATER INTERSECTIONS, A MINIMUM OF 6 FEET SHALL BE PROVIDED FROM THE WATER LINE TO THE SEWER PIPE JOINT. 12" SEPARATION BETWEEN THE TWO OUTSIDE PIPE WALLS SHALL BE REQUIRED BETWEEN SEWER LINES AND ALL OTHER PIPES.

   TRENCH DIMENSIONS FOR SEWER PIPE LESS THAN 15 INCHES IN DIAMETER, THE ALLOWABLE TRENCH WIDTH AT A PLANE 12 INCHES ABOVE THE PIPE SHALL BE NO MORE THAN 36 INCHES AND FOR PIPE 15 INCHES AND LARGER, THE ALLOWABLE WIDTH SHALL BE EQUAL TO THE PIPES OUTSIDE DIAMETER PLUS 24 INCHES.

PIPE TRENCH BEDDING MATERIAL AND FILL MATERIAL FOR EXCAVATION BELOW GRADE SHALL BE SCREENED GRAVEL OR CRUSHED STONE TO ASTM C33-03 STONE SIZE NO. 67. THE PIPE SAND BLANKET MATERIAL SHALL BE GRADED SAND FREE FROM ANY ORGANIC MATERIALS, GRADED SUCH THAT 100 PERCENT PASSED THE 1/2-INCH SIEVE AND A MAXIMUM OF 15 PERCENT PASSES A #200 SIEVE. IN LIEU OF A SAND BLANKET, A STONE ENVELOPE 6 INCHES THICK COMPLETELY AROUND THE PIPE USING 3/4-INCH STONE MAY BE USED.

PIPE BEDDING MATERIAL SHALL EXTEND FROM A HORIZONTAL PLANE THROUGH THE PIPE AXIS TO 6-INCHES BELOW THE BOTTOM OF THE OUTSIDE SURFACE OF THE PIPE.

PIPE SAND BLANKET MATERIAL SHALL COVER THE PIPE A MINIMUM OF 12 INCHES ABOVE THE CROWN OF THE OUTSIDE SURFACE.

COMPACTION SHALL BE IN 12-INCH LAYERS FOR BEDDING AND BLANKET MATERIALS.

BACKFILL MATERIAL SHALL BE IN 3-FOOT LAYERS TO THE GROUND SURFACE EXCEPT FOR ROAD CONSTRUCTION WHERE THE FINAL 3-FEET SHALL BE COMPACTED IN 12-INCH LAYERS TO THE ROAD BASE SURFACE.

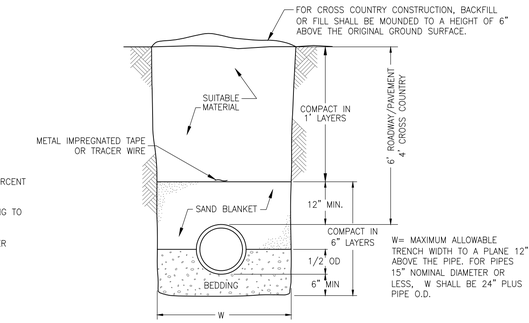
TRENCH BACKFILL MATERIAL IN ROADWAY LOCATIONS SHALL BE NATURAL MATERIALS EXCAVATED FROM THE TRENCH DURING CONSTRUCTION, EXCLUDING DEBRIS, PAVEMENT PIECES, ORGANIC MATTER, TOP SOIL, WET OR SOFT MUCK, PEAT, CLAY, EXCAVATED LEDGE, ROCKS OVER 6 INCHES IN THE LARGEST DIMENSION, OR ANY OTHER UNSUITABLE MATERIAL NOT APPROVED BY THE ENGINEER.

TRENCH BACKFILL AT CROSS-COUNTRY LOCATIONS SHALL BE AS DESCRIBED ABOVE EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK OR PEAT, IF HE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER FOR MAINTENANCE AND POSSIBLE RECONSTRUCTION, WHEN NECESSARY WILL BE PRESERVED. BACKFILL SHALL BE MOUNDED 6-INCHES ABOVE ORIGINAL GROUND.

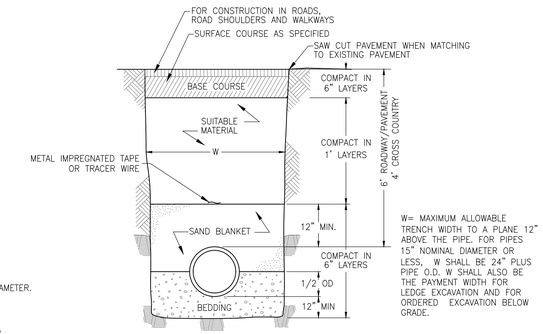
BASE COURSE MATERIALS FOR TRENCH REPAIRS SHALL MEET THE REQUIREMENTS OF DIVISION 300 OF THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION.

WHERE SHEETING IS PLACED ALONG SIDE OF THE PIPE AND EXTENDS BELOW MID-DIAMETER, THE SHEETING SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION NOT LESS THAN ONE FOOT ABOVE THE TOP OF THE PIPE AND AT LEAST 3 FEET BELOW FINISH GRADE.

TRENCHES FOR SEWER PIPES WITH SLOPES OVER 0.08 FEET PER FOOT AND TRENCHES FOR SEWER PIPES BELOW THE SEASONAL HIGH GROUND WATER LEVEL SHALL HAVE IMPERVIOUS TRENCH DAMS CONSTRUCTED EVERY 300 FEET TO PREVENT POTENTIAL DISTURBANCE TO PIPE BEDDING AND BLANKET MATERIALS.



EARTH CONSTRUCTION
NOT TO SCALE



LEDGE CONSTRUCTION
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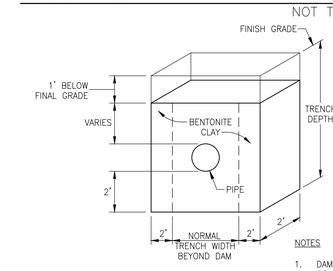

NOTES

1. DAM SHALL BE LOCATED EVERY 300' OF SEWER PIPE RUN.
2. NO FITTING SHALL BE LOCATED WITHIN 4' OF DAM.

SEWER TRENCH DAM
NOT TO SCALE

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

DETAILS

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

CITY OF PORTSMOUTH

PREPARED FOR

PHA HOUSING DEVELOPMENT LTD.

1"=60' (11"X17")

SCALE: 1"=30' (22"X34") **JANUARY 29, 2025**

REV	DATE	DESCRIPTION	DR	CK

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

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Bedford, NH 03110
Phone (603) 472-4488
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FILE	DR	JKC	FB		
47528.00	CK	JJM	CADFILE	47528-00_DETAILS	C-22

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GENERAL NOTES

1. IT IS THE INTENTION THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAKPROOF QUALITIES CONSIDERED NECESSARY FOR THE INTENDED SERVICE. SPACE REQUIREMENTS AND CONFIGURATIONS, SHALL BE AS SHOWN ON THE DRAWING. MANHOLES SHALL BE AN ASSEMBLY OF PRECAST SECTIONS, WITH STEEL REINFORCEMENT, WITH ADEQUATE JOINTING, OR CONCRETE CAST MONOLITHICALLY IN PLACE WITH REINFORCEMENT. IN ANY APPROVED MANHOLE, THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H-20 LOADING) WITHOUT FAILURE AND PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MANHOLE, CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE. A PERIOD GENERALLY IN EXCESS OF 25 YEARS IS TO BE UNDERSTOOD IN BOTH CASES.
2. BARRELS, CONE SECTIONS AND CONCRETE GRADE RINGS SHALL BE PRECAST REINFORCED CONCRETE AND SHALL CONFORM ENV-WQ 704.12 & 704.13.
3. PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C478-06.
4. BASE SECTIONS SHALL BE OF MONOLITHIC CONSTRUCTION TO A POINT AT LEAST 6 INCHES ABOVE THE CROWN OF THE INCOMING PIPE.
5. MANHOLE CONE SECTIONS SHALL BE ECCENTRIC IN SHAPE.
6. ALL PRECAST SECTIONS AND BASES SHALL HAVE THE DATE OF MANUFACTURE AND THE NAME OR TRADEMARK OF THE MANUFACTURER IMPRESSED OR INDELIBLY MARKED ON THE INSIDE WALL.
7. ALL PRECAST SECTIONS AND BASES SHALL BE COATED ON THE EXTERIOR WITH A BITUMINOUS DAMP-PROOFING COATING.
8. SHALLOW MANHOLE: IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H-20 LOADS.
9. HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF AN OVERLAPPING TYPE, SEALED FOR WATERTIGHTNESS USING A DOUBLE ROW OF AN ELASTOMERIC OR MASTIC-LIKE SEALANT. APPROVED ELASTOMERIC SEALANTS ARE:
   - SIKAFLEX-12-SL
   - SONNEBORN BUILING PRODUCTS-SONOLASTIC SL-1
10. THE MINIMUM INTERNAL DIAMETER OF MANHOLES SHALL BE 48 INCHES. FOR SEWERS LARGER THAN 24-INCH DIAMETER. MANHOLE DIAMETERS SHALL BE INCREASED SO AS TO PROVIDE AT LEAST 12-INCHES OF SHELF ON EACH SIDE OF THE SEWER.
11. LEAKAGE TEST SHALL BE PERFORMED IN ACCORDANCE TO ENV-WQ 704.17.
    (a) ALL MANHOLES SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST IN ACCORDANCE WITH THE ASTM C1244 STARNDARD IN EFFECT WHEN THE TESTING IS PERFORMED.
    (b) THE MANHOLE VACUUM TEST SHALL CONFORM TO THE FOLLOWING:
        1. THE INITIAL VACUUM GUAGE TEST PRESSURE SHALL BE 10 INCHES Hg.
        2. THE MINIMUM ACCEPTABLE TEST HOLD TIME FOR 1-INCH Hg PRESSURE DROP TO 9 INCHES SHALL BE:
           A. NOT LESS THAN 2 MINUTES FOR MANHOLES LESS THAN 10 FEET DEEP.
           B. NOT LESS THAN 2.5 MINUTES FOR MANHOLES 10 TO 15 FEET DEEP.
           C. NOT LESS THAN 3 MINUTES FOR MANHOLES MORE THAN 15 FEET DEEP.
    (c) THE MANHOLE SHALL BE REPAIRED AND RETESTED IF THE TEST HOLD TIMES FAIL TO ACHIEVE THE ACCEPTANCE LIMITS SPECIFIED IN (b) ABOVE.
    (d) INVERTS AND SHELVES SHALL NOT BE INSTALLED UNTIL AFTER SUCCESSFUL TESTING IS COMPLETE.
    (e) FOLLOWING COMPLETION OF THE LEAKAGE TEST, THE FRAME AND COVER SHALL BE PLACED ON TOP OF THE MANHOLE OR SOME OTHER MEANS USED TO PREVENT ACCIDENTAL ENTRY BY UNAUTHORIZED PERSONS, CHILDREN OR ANIMALS, UNTIL THE CONTRACTOR IS READY TO MAKE FINAL ADJUSTMENT TO GRADE.
12. BRICK MASONRY FOR SHELF, INVERT AND GRADE ADJUSTMENT SHALL COMPLY WITH ASTM C32-05, CLAY OR SHALE, FOR GRADE SS HARD BRICK.
13. MORTAR SHALL BE COMPOSED OF PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION. PROPORTIONS IN MORTAR OF PARTS BY VOLUMES SHALL BE:
    (a) 4.5 PARTS SAND AND 1.5 PARTS CEMENT; OR
    (b) 4.5 PARTS SAND, 1 PART CEMENT AND 0.5 PART HYDRATED LIME

    CEMENT SHALL BE TYPE II PORTLAND CEMENT CONFORMING TO ASTM C150-05. HYDRATED LIME SHALL BE TYPE S CONFORMING TO ASTM C207-06 "STANDARD SPECIFICATIONS FOR HYDRATED LIME FOR MASONRY PURPOSES". SAND SHALL CONSIST OF INERT NATURAL SAND CONFORMING TO ASTM C33-03 "STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES".
14. INVERTS AND SHELVES: MANHOLES SHALL HAVE A BRICK PAVED OR PRECAST CONCRETE SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF THE PIPE AND FLOW. AT CHANGES IN DIRECTIONS, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY.
15. FRAMES AND COVERS: FRAMES AND COVERS: SEWER MANHOLE FRAMES AND COVERS SHALL BE CITY OF PORTSMOUTH STANDARD, AND SHALL BE PURCHASED AND PICKED UP AT PORTSMOUTH DEPARTMENT OF PUBLIC WORKS WATER DEPARTMENT. THEY SHALL BE OF HEAVY DUTY DESIGN, CLASS 30, CONFORMING TO ASTM A48/48M AND PROVIDE A 30-INCH CLEAR OPENING. THE CASTING SHALL BE OF EVEN GRAINED CAST IRON, SMOOTH, AND FREE FROM SCALE, LUMPS, BLISTERS, SAND HOLES AND DEFECTS. CONTACT SURFACES OF COVERS AND FRAMES SHALL BE MACHINED AT THE FOUNDRY TO PREVENT ROCKING OF COVERS IN ANY ORIENTATION.
16. BEDDING: PRECAST BASES SHALL BE PLACED ON A 6-INCH LAYER OF COMPACTED BEDDING MATERIAL THAT CONFORMS TO ASTM C33-03 NO. 67 STONE AND FREE FROM CLAY, LOAM AND ORGANNIC MATTER. THE EXCAVATION SHALL BE PROPERLY DEWATERED WHILE PLACING BEDDING MATERIAL AND SETTING OF THE BASE OR POURING CONCRETE. WATER-STOPS SHALL BE USED AT THE HORIZONTAL JOINT OF THE CAST-IN-PLACE MANHOLES.

100% PASSING	1" SCREEN
90-100% PASSING	3/4" SCREEN
20-55% PASSING	3/8" SCREEN
0-10% PASSING	#4 SIEVE
0-5% PASSING	#8 SIEVE

17. FLEXIBLE JOINT: A FLEXIBLE JOINT SHALL BE PROVIDED WIbHIN THE FOLLOWING DISTANCES FROM ANY MANHOLE CONNECTION: (a) WITHIN 48 INCHES FOR REINFORCED CONCRETE PIPE (RCP). (b) WITHIN 60 INCHES FOR PVC PIPE LARGER THAN 15" DIAMETER.
18. NO FLEXIBLE JOINT SHALL BE REQUIRED FOR DUCTILE IRON PIPE OR PVC PIPE UP THROUGH 15-INCH DIAMETER.
19. INTERNAL STEPS ARE PROHIBITED PER CITY OF PORTSMOUTH DPW STANDARDS.
20. REFERENCE NHDES ENV-WQ 700 IN PLACE OF ASTM STANDARDS.
21. PIPE TO MANHOLE JOINTS SHALL BE ONLY AS FOLLOWS:
    A. ELASTOMERIC, RUBBER SLEEVE WITH WATERTIGHT JOINTS AT THE MANHOLE OPENING AND PIPE SURFACES.
    B. CAST INTO WALL OR SECUREED WITH STAINLESS STEEL CLAMPS.
    C. ELASTOMERIC SEALING RING CAST IN THE MANHOLE OPENING WITH THE SEAL FORMED ON THE SURFACE OF THE PIPE BY COMPRESSION OF THE RING.
    D. NON-SHRINK GROUTED JOINTS WHERE WATERTIGHT BONDING TO THE MANHOLE AND PIPE CAN BE OBTAINED.
22. THE INVERT OF THE INCOMING PIPE SHALL BE NO MORE THAN 6 INCHES ABOVE THE OUTGOING PIPE UNLESS A DROP ENTRY IS USED.

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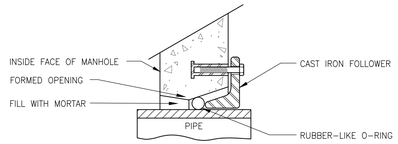

RES-SEAL
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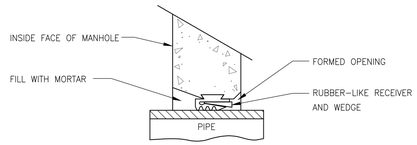

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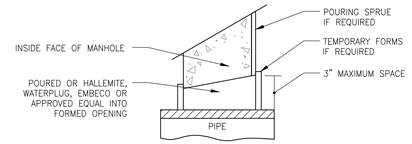

MORTARED JOINT
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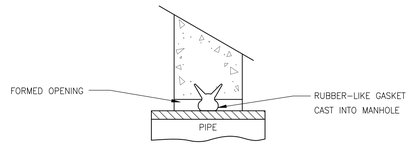

A-LOK
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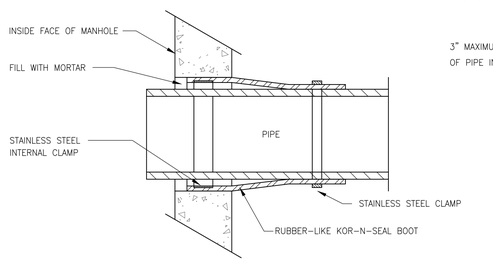
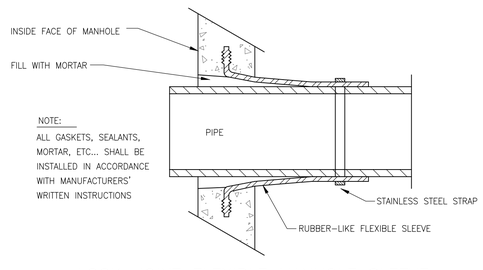


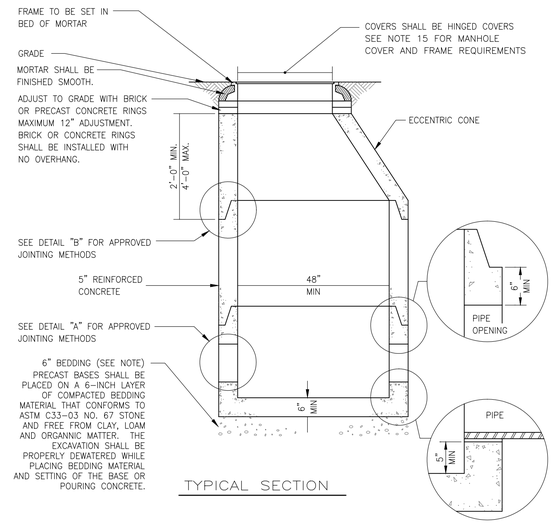
KOR-N-SEAL JOINT SLEEVE
(OR ACCEPTABLE SUBSTITUTE)



NOTE:
ALL GASKETS, SEALANTS, MORTAR, ETC... SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS

LOCK-JOINT FLEXIBLE MANHOLE SLEEVE
(OR ACCEPTABLE SUBSTITUTE)

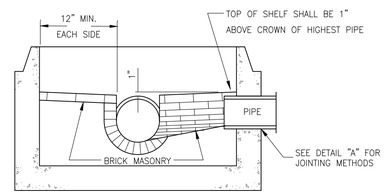
DETAIL "A" – PIPE TO MANHOLE JOINTS



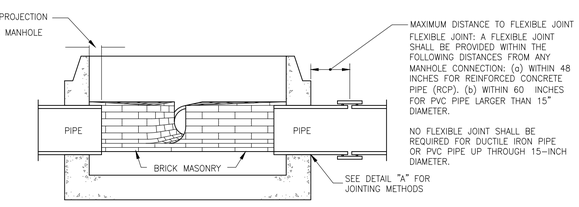
TYPICAL SECTION

NOTES:

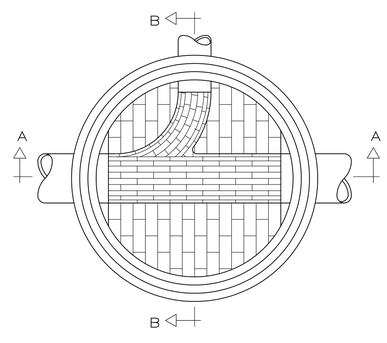
1. INVERT AND SHELF TO BE PLACED AFTER LEAKAGE TEST.
2. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE.
3. BASE SECTION TO BE FULL WALL THICKNESS AND MONOLITHIC TO A POINT 6" ABOVE THE PIPE CROWN.
4. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY.
5. NO STEPS ARE ALLOWED PER EXETER DPW STANDARDS.
6. BITUMINOUS COATING.



SECTION "B-B"

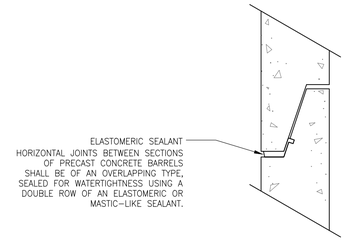


SECTION "A-A"



TYPICAL MANHOLE – PLAN VIEW

STANDARD MANHOLE

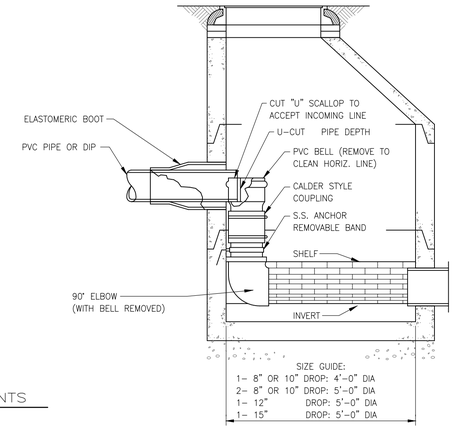


ELASTOMERIC SEALANT

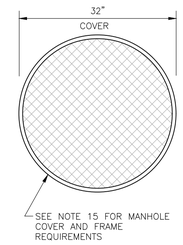
NOTES:
ALL GASKETS AND SEALANTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS.

STATE OF NEW HAMPSHIRE APPROVED PRODUCTS
A) SIKAFLEX-12-SL
B) SONNEBORN BUILDING PRODUCTS SONOLASTIC SL-1

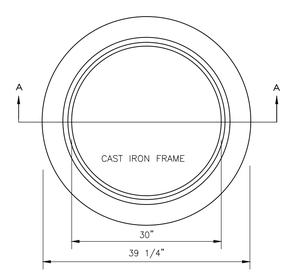
DETAIL "B" – HORIZONTAL JOINTS



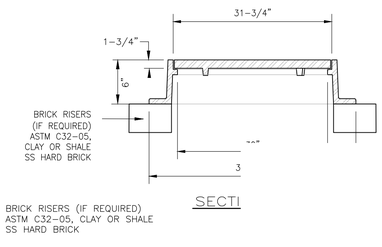
INSIDE DROP MANHOLE



COVER



PLAN VIEW



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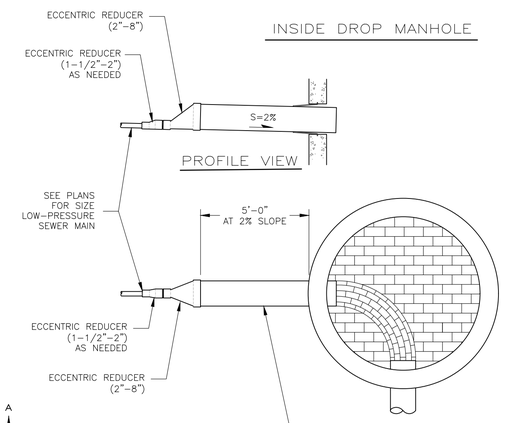
MANHOLE FR



NOTES:
1. CONTRACTOR TO COORDINATE WITH CITY OF PORTSMOUTH DPW FOR REDUCER TYPE REQUIREMENTS.

PLAN VIEW

PRESSURE TO GRAVITY SEWER DETAIL
SCALE: N.T.S

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

DETAILS

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD
PORTSMOUTH, NEW HAMPSHIRE

OWNED BY
CITY OF PORTSMOUTH
PREPARED FOR
PHA HOUSING DEVELOPMENT LTD.

1"=60' (11"X17")
SCALE: 1"=30' (22"X34") **JANUARY 29, 2025**

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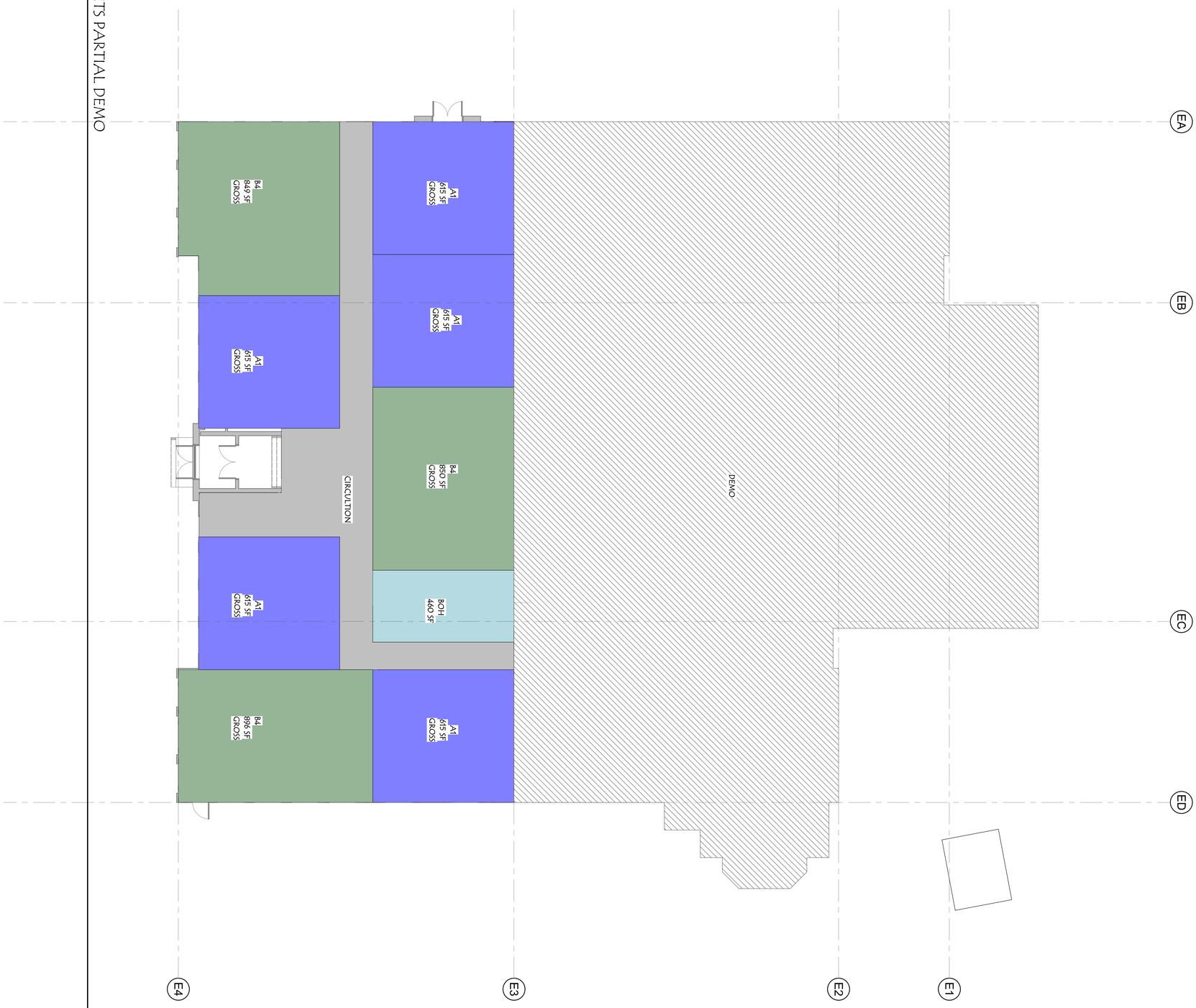

1 OPTION 1 - 8 UNITS PARTIAL DEMO

SCALE: 1/8" = 1'-0"

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	Drawn By: MK	# Description Date	NOT FOR CONSTRUCTION	35 Sherburne Road, Portsmouth, NH		104 Congress St., STE 203 Portsmouth, NH 03801 PH: 603.501.0202
	Checked By: Checker					
A0.1	Project No.: 2023002					
	EXISTING CONDITION					
	Date: 05/06/2025					

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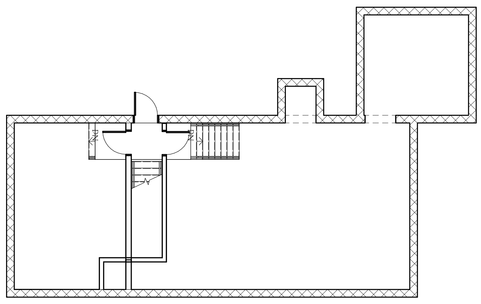

2 SCHOOL BASEMENT
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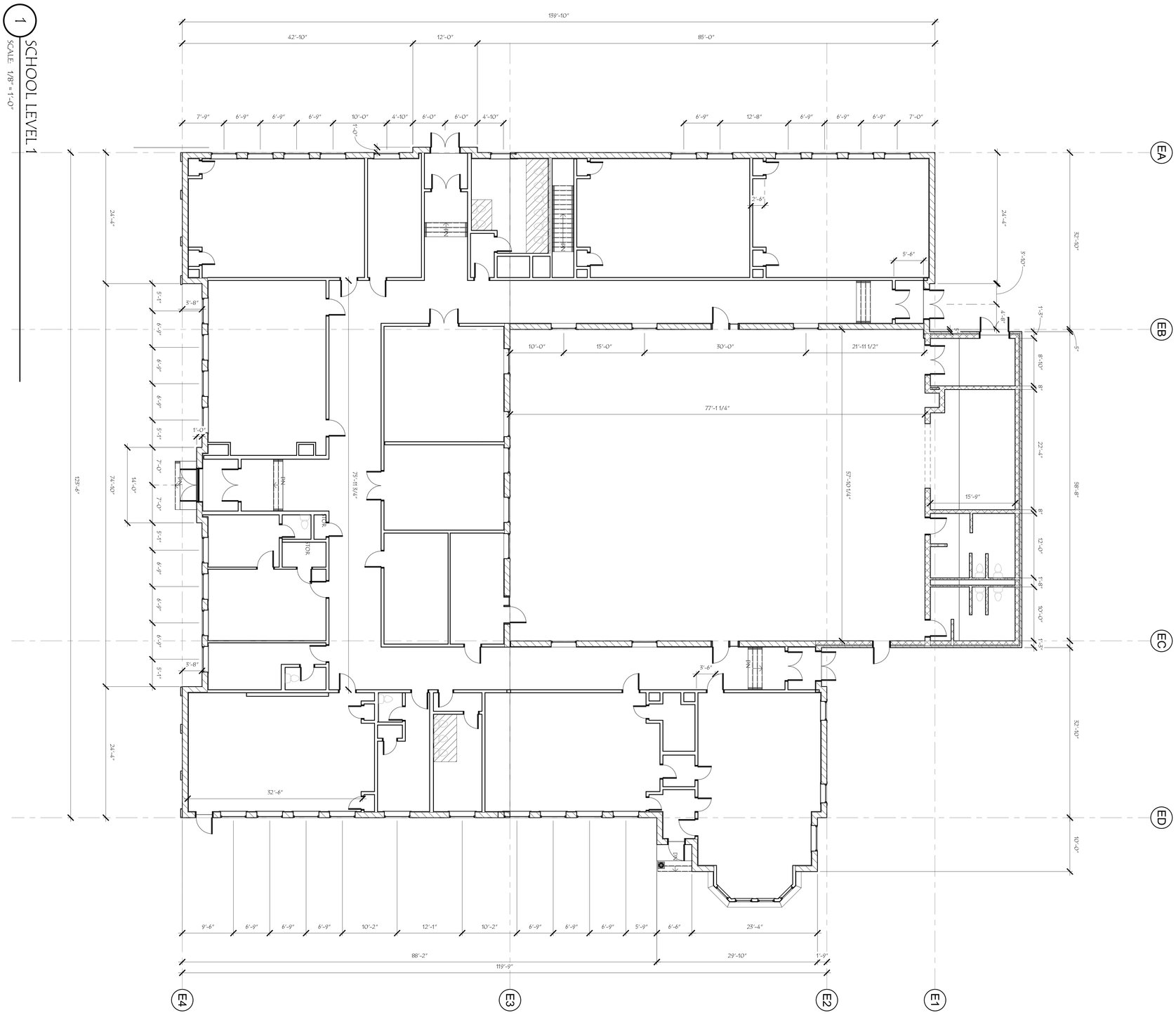

1 SCHOOL LEVEL 1
SCALE: 1/8" = 1'-0"

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	Drawn By: Author				
	Checked By: Checker				
	Project No.: 2023002				
AD1.1	EXISTING CONDITION				
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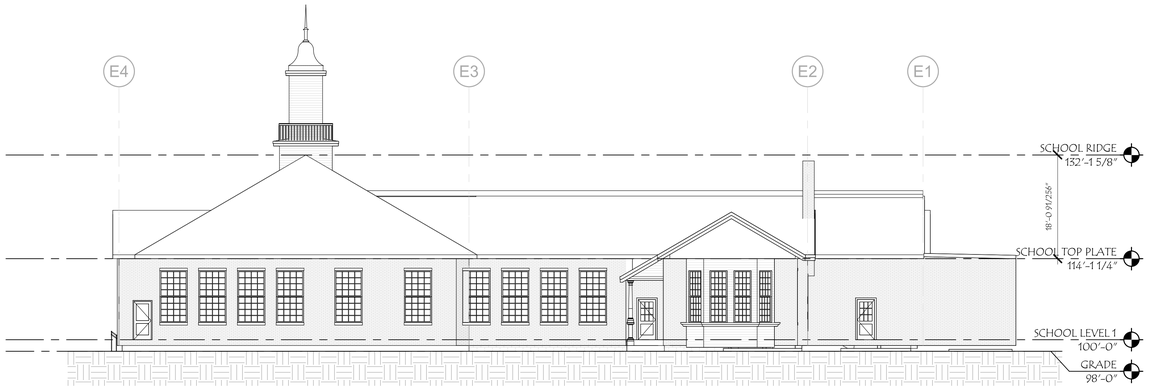
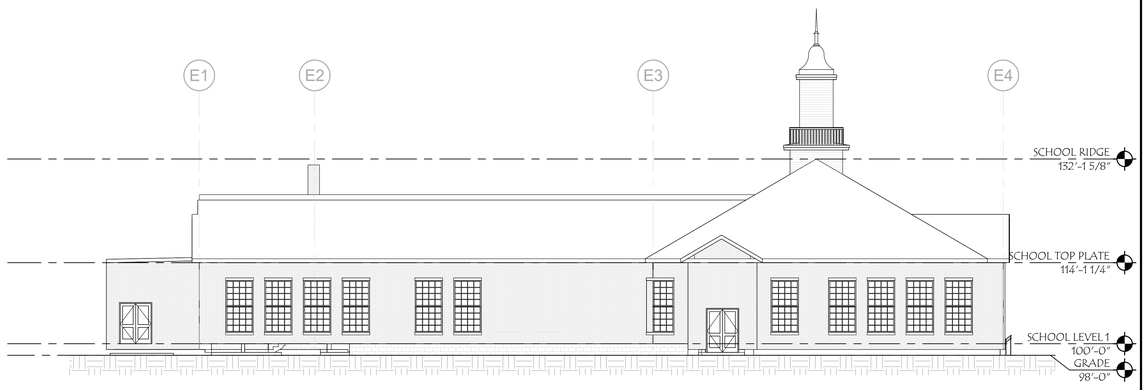


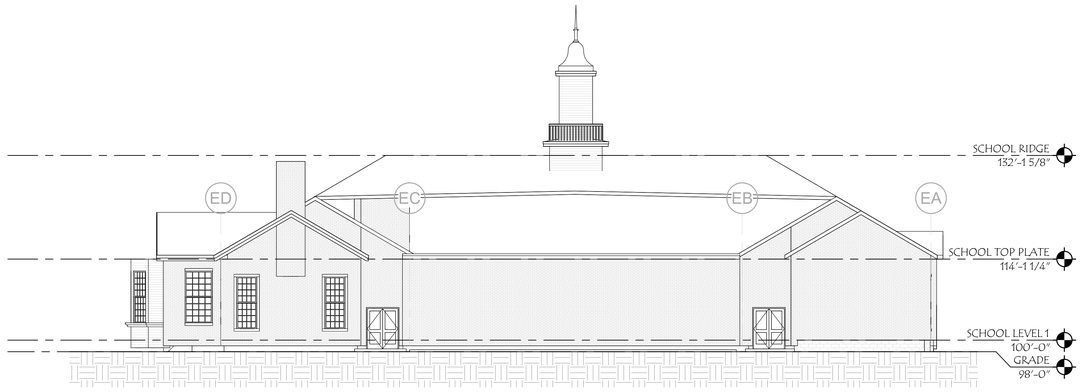
4 EXISTING ELEVATION - SOUTH

SCALE: 3/32" = 1'-0"



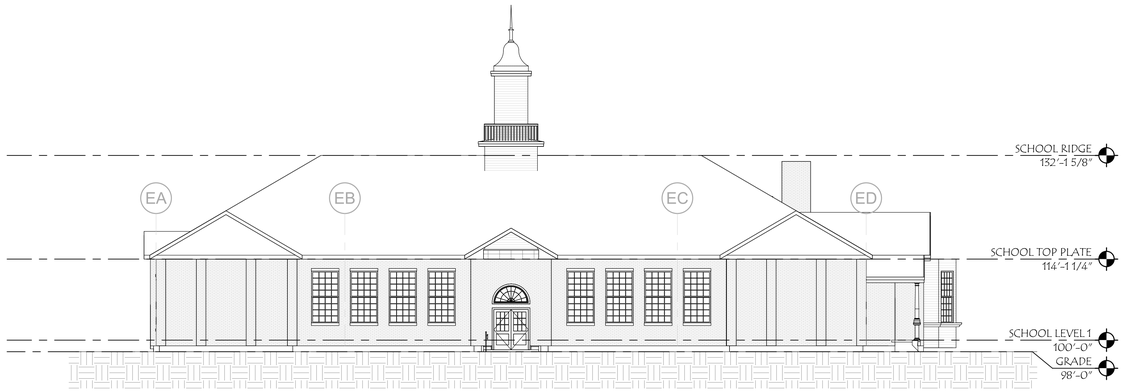
2 EXISTING ELEVATION - NORTH

SCALE: 3/32" = 1'-0"



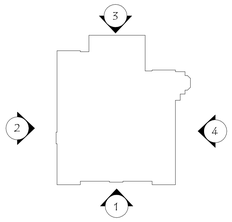
3 EXISTING ELEVATION - EAST

SCALE: 3/32" = 1'-0"



1 EXISTING ELEVATION - ENTRY

SCALE: 3/32" = 1'-0"



MARKET SQUARE ARCHITECTS
104 Congress St., STE 203B
Portsmouth, NH 03801
PH: 603-501-0032

PHA SHERBURNE SCHOOL - EXISTING

35 Sherburne Road, Portsmouth, NH

NOT FOR CONSTRUCTION

#	REVISIONS Description	Date

Scale: As indicated
Drawn By: MK
Checked By: Checker
Project No.: 2023002
EXISTING CONDITION
Date: 05/06/2025

Title: EXISTING CONDITIONS - ELEVATIONS

AD1.2

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2 LEVEL 2 - FLOOR PLAN (LEVEL 3 SIM)

SCALE: 1/8" = 1'-0"

1 LEVEL 1

SCALE: 1/8" = 1'-0"

COLOR KEY

ONE - BEDROOM
= 554-580 SF

TWO - BEDROOM
= 771-806 SF

THREE - BEDROOM
= 928-1071 SF

BACK OF HOUSE
(BOH)

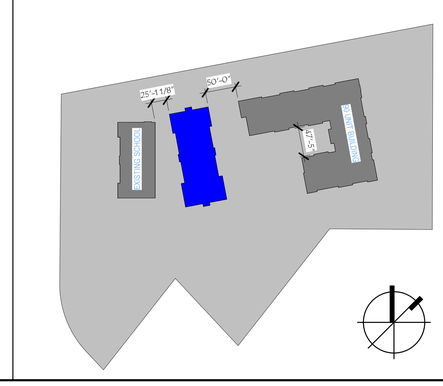
FIRST FLOOR
A (1Bedroom) = 5
B (2Bedrooms) = 2
C (3Bedrooms) = 2

SECOND FLOOR
A (1Bedroom) = 4
B (2Bedrooms) = 4
C (3Bedrooms) = 2

THIRD FLOOR
A (1Bedroom) = 4
B (2Bedrooms) = 4
C (3Bedrooms) = 2

TOTAL 29 UNITS:
A (1Bedroom) = 13 (45%)
B (2Bedrooms) = 10 (34%)
C (3Bedrooms) = 6 (21%)

SITE PLAN KEY



MARKET SQUARE ARCHITECTS
104 Congress St., STE 202S
Portsmouth, NH 03801
PH: 603-501-0202

SHERBURNE - SMALL BUILDING

35 Sherburne Road, Portsmouth, NH

NOT FOR CONSTRUCTION

REVISIONS

#	Description	Date

Scale: As indicated
Drawn By: WA
Checked By: SC
Project No.: 2025002
CONCEPT DESIGN
Date: 03/31/2025

Title: OVERALL LEVEL 1 FLOOR PLAN

A1.01

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1 EXT ELEVATION - EAST1

SCALE: 1/8" = 1'-0"

2 EXT ELEVATION - NORTH1

SCALE: 1/8" = 1'-0"

4 EXT ELEVATION - WEST1

SCALE: 1/8" = 1'-0"

3 EXT ELEVATION - SOUTH1

SCALE: 1/8" = 1'-0"

MARKET SQUARE ARCHITECTS
104 Congress St., STE 203
Portsmouth, NH 03801
PH: 603-501-0202

SHERBURNE - SMALL BUILDING

35 Sherburne Road, Portsmouth, NH

NOT FOR CONSTRUCTION

REVISIONS		
#	Description	Date

Scale: 1/8" = 1'-0"
Drawn By: WAC
Checked By: Checker
Project No.: 2023002
CONCEPT DESIGN
Date: 03/31/2025

Title: EXTERIOR ELEVATIONS

A2.00

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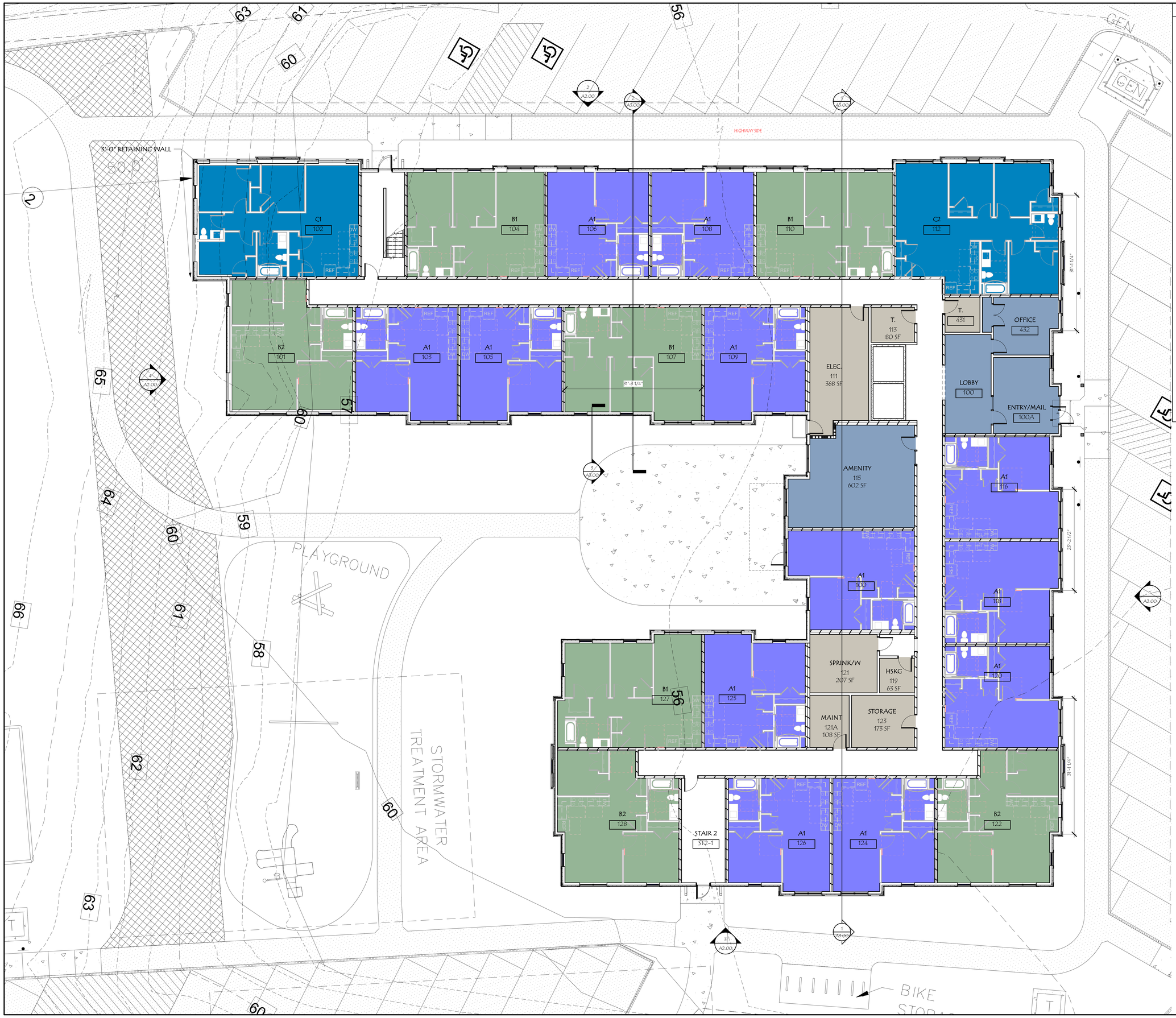

COLOR KEY

ONE - BEDROOM = 580 SF

TWO - BEDROOM = 771-806 SF

THREE - BEDROOM = 928-1071 SF

BACK OF HOUSE (BOH)

FIRST FLOOR
A (1Bedroom) = 12
B (2Bedrooms) = 7
C (3Bedrooms) = 2

SECOND FLOOR
A (1Bedroom) = 13
B (2Bedrooms) = 8
C (3Bedrooms) = 2

THIRD FLOOR
A (1Bedroom) = 13
B (2Bedrooms) = 8
C (3Bedrooms) = 2

FOURTH FLOOR
A (1Bedroom) = 13
B (2Bedrooms) = 8
C (3Bedrooms) = 2

TOTAL 90 UNITS:
A (1Bedroom) = 51 (57%)
B (2Bedrooms) = 31 (34%)
C (3Bedrooms) = 8 (9%)

MARKET SQUARE ARCHITECTS
104 Congress St., STE 202B
Portsmouth, NH 03801
PH: 603-501-0202

PHA SHERBURNE 90 UNIT BUILDING

35 Sherburne Road, Portsmouth, NH

NOT FOR CONSTRUCTION

REVISIONS		
#	Description	Date:

Scale: 1/8" = 1'-0"
Drawn By: SC,WA
Checked By: Checker
Project No.: 2025002
CONCEPT DESIGN
Date: 05/06/2025

Title: OVERALL - LEVEL 1

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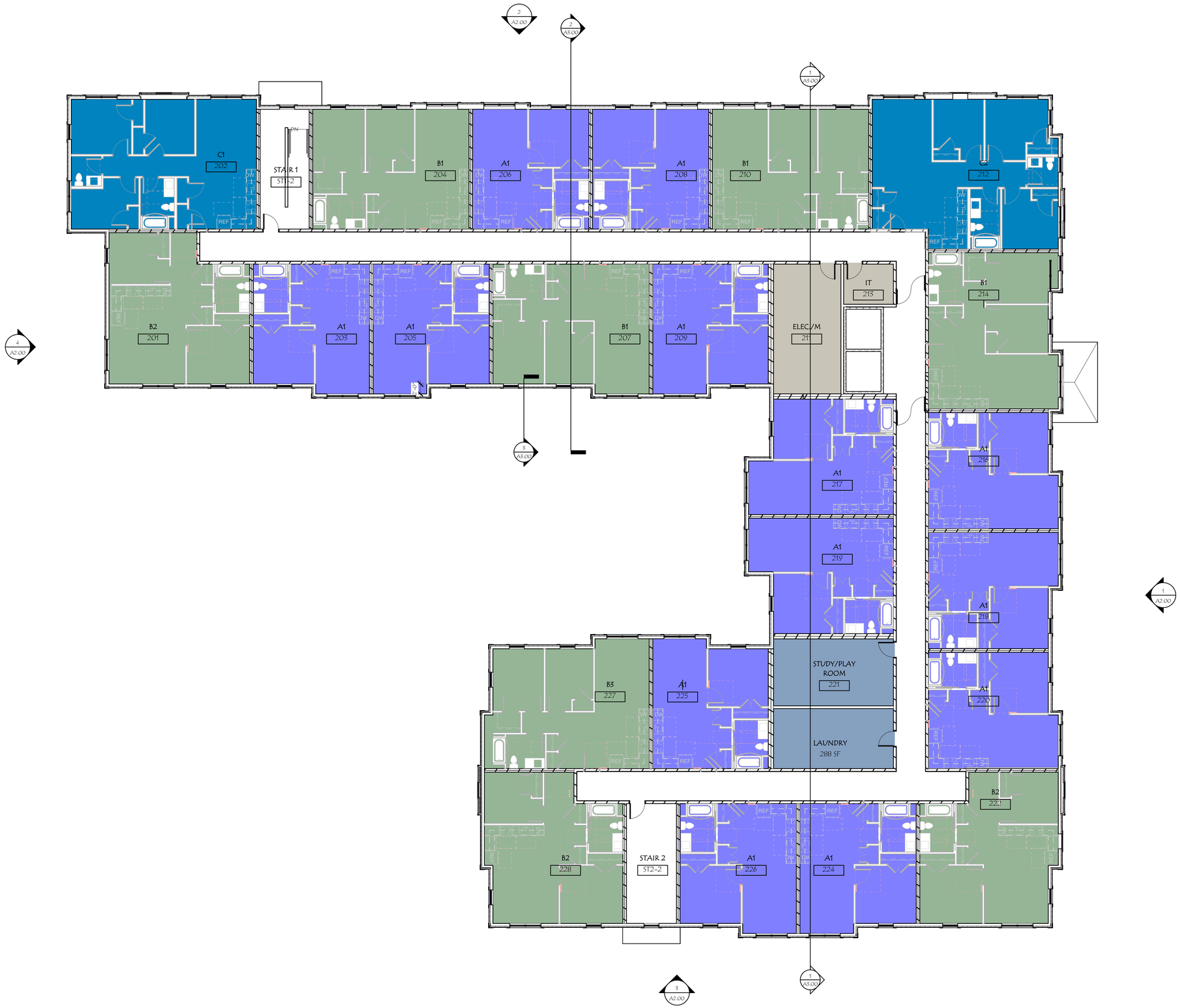

COLOR KEY

ONE - BEDROOM
= 580 SF

TWO - BEDROOM
= 771-806 SF

THREE - BEDROOM
= 928-1071 SF

BACK OF HOUSE
(BOH)

FIRST FLOOR
A (1Bedroom) = 12
B (2Bedrooms) = 7
C (3Bedrooms) = 2

SECOND FLOOR
A (1Bedroom) = 13
B (2Bedrooms) = 8
C (3Bedrooms) = 2

THIRD FLOOR
A (1Bedroom) = 13
B (2Bedrooms) = 8
C (3Bedrooms) = 2

FOURTH FLOOR
A (1Bedroom) = 13
B (2Bedrooms) = 8
C (3Bedrooms) = 2

TOTAL 90 UNITS:
A (1Bedroom) = 51 (57%)
B (2Bedrooms) = 31 (34%)
C (3Bedrooms) = 8 (9%)

90 UNITS
1B = 50 (56%)
2B = 28 (31%)
3B = 12 (13%)

MARKET SQUARE ARCHITECTS
104 Congress St., STE 203
Portsmouth, NH 03801
PH: 603-501-0202

PHA SHERBURNE 90 UNIT BUILDING

35 Sherburne Road, Portsmouth, NH

NOT FOR CONSTRUCTION

REVISIONS

#	Description	Date:

Scale: 1/8" = 1'-0"
Drawn By: SCWA
Checked By: Checker
Project No.: 2023002
CONCEPT DESIGN
Date: 05/06/2025

Title: OVERALL - LEVEL 2

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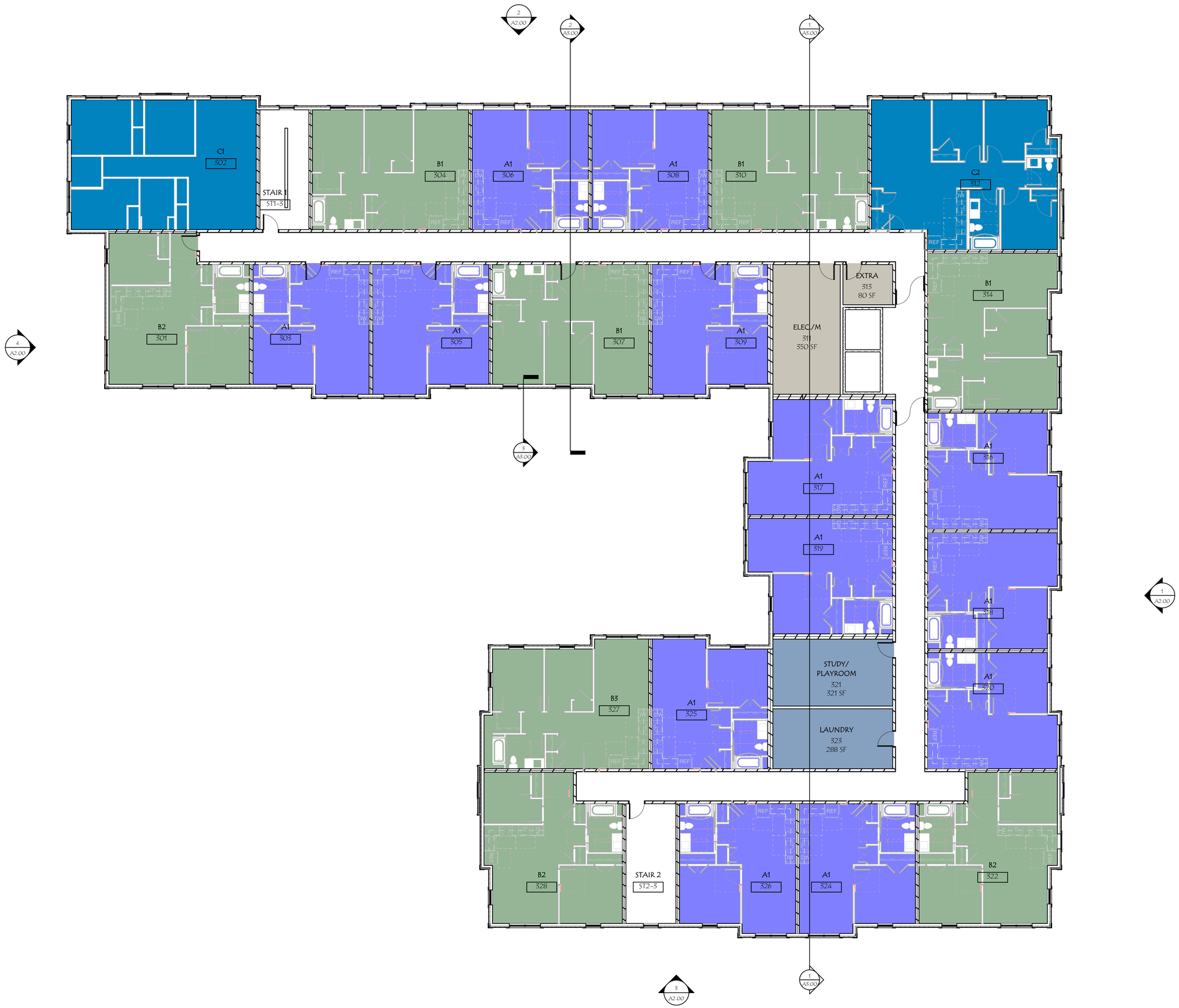

COLOR KEY

ONE - BEDROOM
= 580 SF

TWO - BEDROOM
= 771-806 SF

THREE - BEDROOM
= 928-1071 SF

BACK OF HOUSE
(BOH)

FIRST FLOOR
A (1Bedroom) = 12
B (2Bedrooms) = 7
C (3Bedrooms) = 2

SECOND FLOOR
A (1Bedroom) = 13
B (2Bedrooms) = 8
C (3Bedrooms) = 2

THIRD FLOOR
A (1Bedroom) = 13
B (2Bedrooms) = 8
C (3Bedrooms) = 2

FOURTH FLOOR
A (1Bedroom) = 13
B (2Bedrooms) = 8
C (3Bedrooms) = 2

TOTAL 90 UNITS:
A (1Bedroom) = 51 (57%)
B (2Bedrooms) = 31 (34%)
C (3Bedrooms) = 8 (9%)

MARKET SQUARE ARCHITECTS
104 Congress St., STE 203
Portsmouth, NH 03801
PH: 603-501-0202

PHA SHERBURNE 90 UNIT BUILDING

35 Sherburne Road, Portsmouth, NH

NOT FOR CONSTRUCTION

REVISIONS

#	Description	Date:

Scale: 1/8" = 1'-0"
Drawn By: SCWA
Checked By: Checker
Project No.: 2023002
CONCEPT DESIGN
Date: 05/06/2025

Title: OVERALL - LEVEL 3

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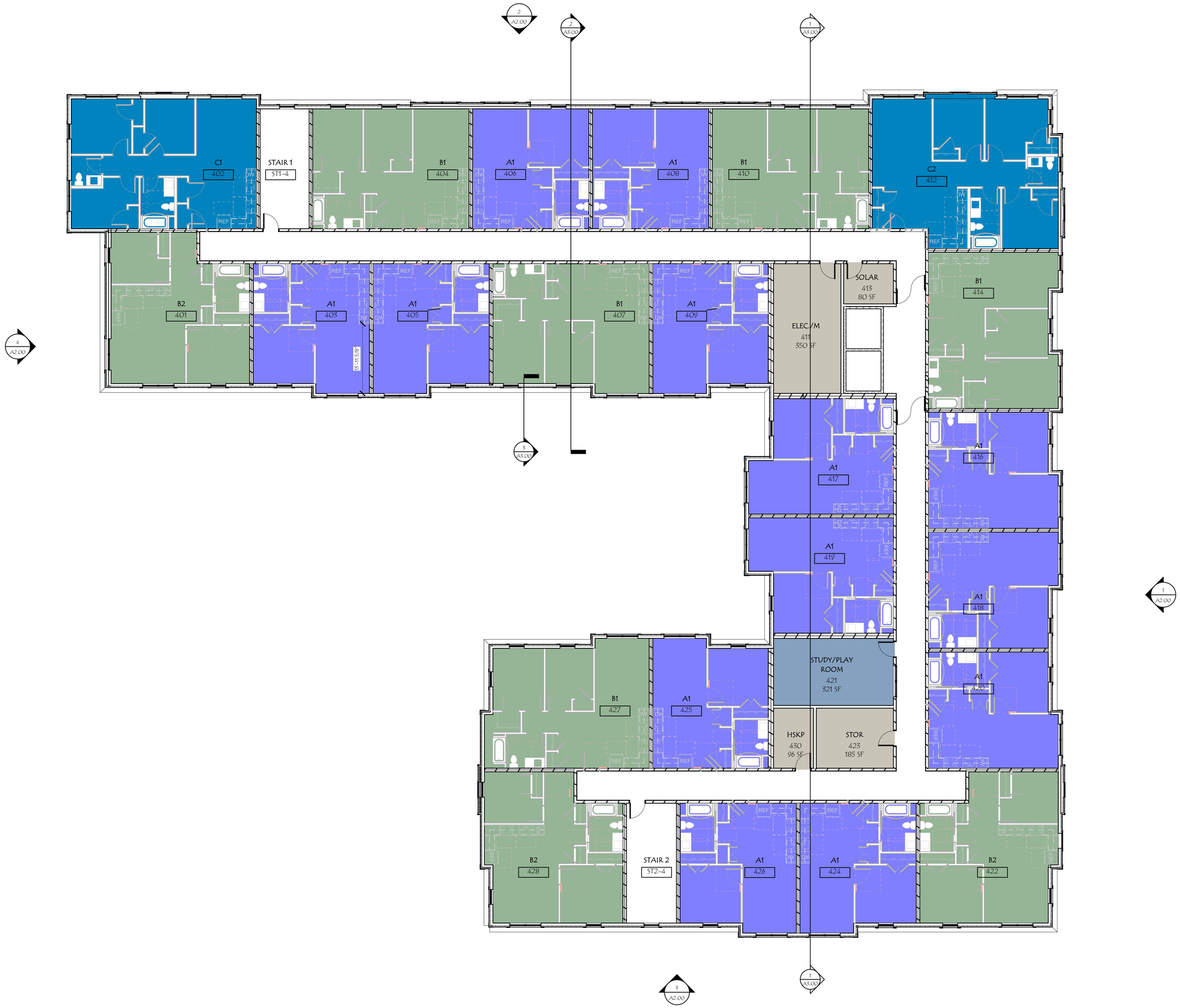

COLOR KEY

ONE - BEDROOM
= 580 SF

TWO - BEDROOM
= 771-806 SF

THREE - BEDROOM
= 928-1071 SF

BACK OF HOUSE
(BOH)

FIRST FLOOR
A (1Bedroom) = 12
B (2Bedrooms) = 7
C (3Bedrooms) = 2

SECOND FLOOR
A (1Bedroom) = 13
B (2Bedrooms) = 8
C (3Bedrooms) = 2

THIRD FLOOR
A (1Bedroom) = 13
B (2Bedrooms) = 8
C (3Bedrooms) = 2

FOURTH FLOOR
A (1Bedroom) = 13
B (2Bedrooms) = 8
C (3Bedrooms) = 2

TOTAL 90 UNITS:
A (1Bedroom) = 51 (57%)
B (2Bedrooms) = 31 (34%)
C (3Bedrooms) = 8 (9%)

MARKET SQUARE ARCHITECTS
104 Congress St., STE 202S
Portsmouth, NH 03801
PH: 603-501-0202

PHA SHERBURNE 90 UNIT BUILDING

35 Sherburne Road, Portsmouth, NH

NOT FOR CONSTRUCTION

REVISIONS		
#	Description	Date

Scale: 1/8" = 1'-0"
Drawn By: SC,WA
Checked By: Checker
Project No.: 2025002
CONCEPT DESIGN
Date: 05/06/2025

Title: OVERALL - LEVEL 4

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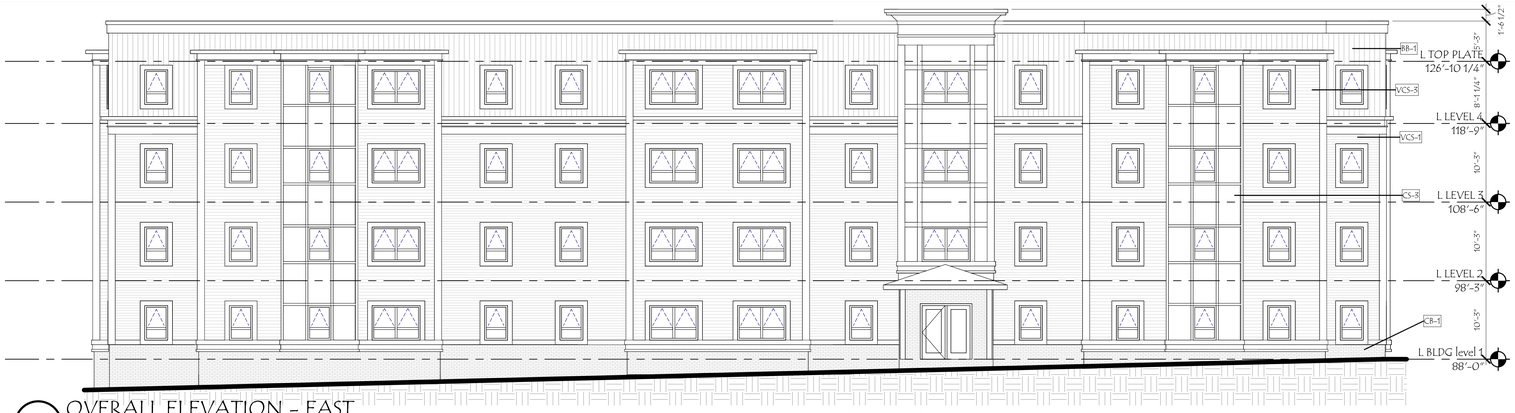
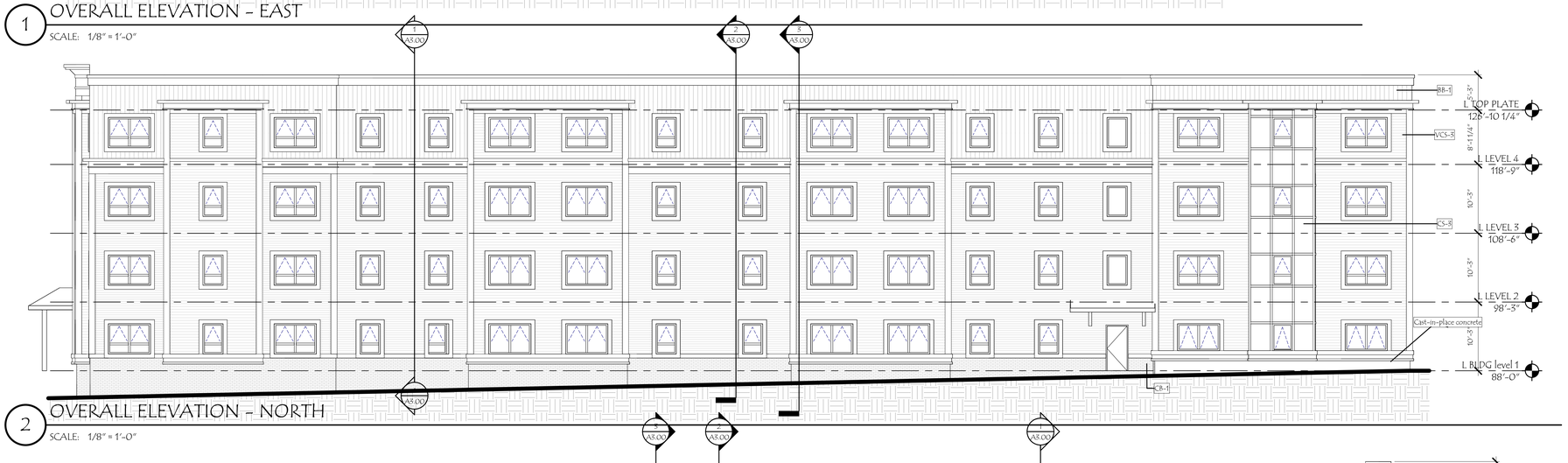


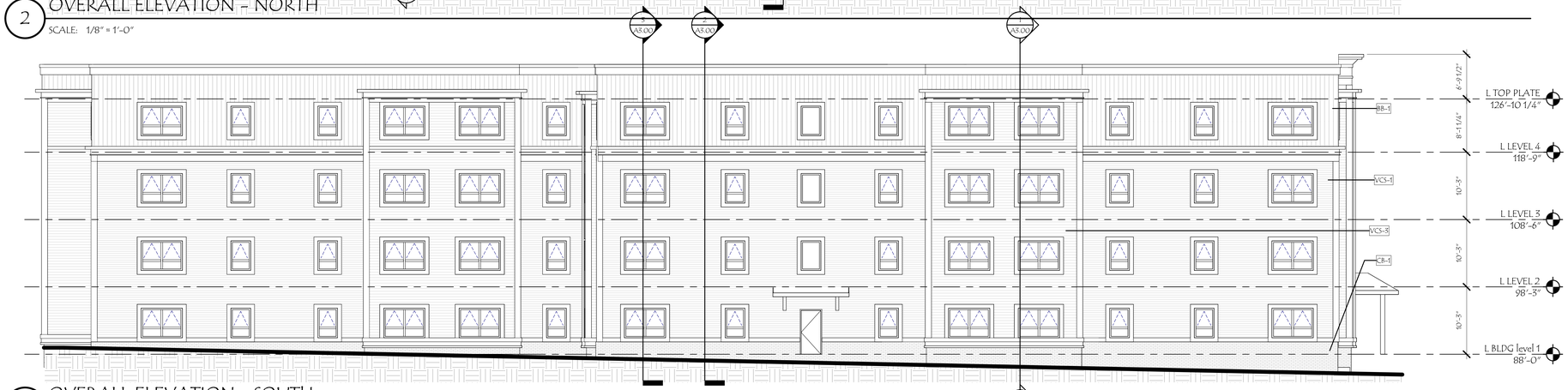
1 OVERALL ELEVATION - EAST

SCALE: 1/8" = 1'-0"



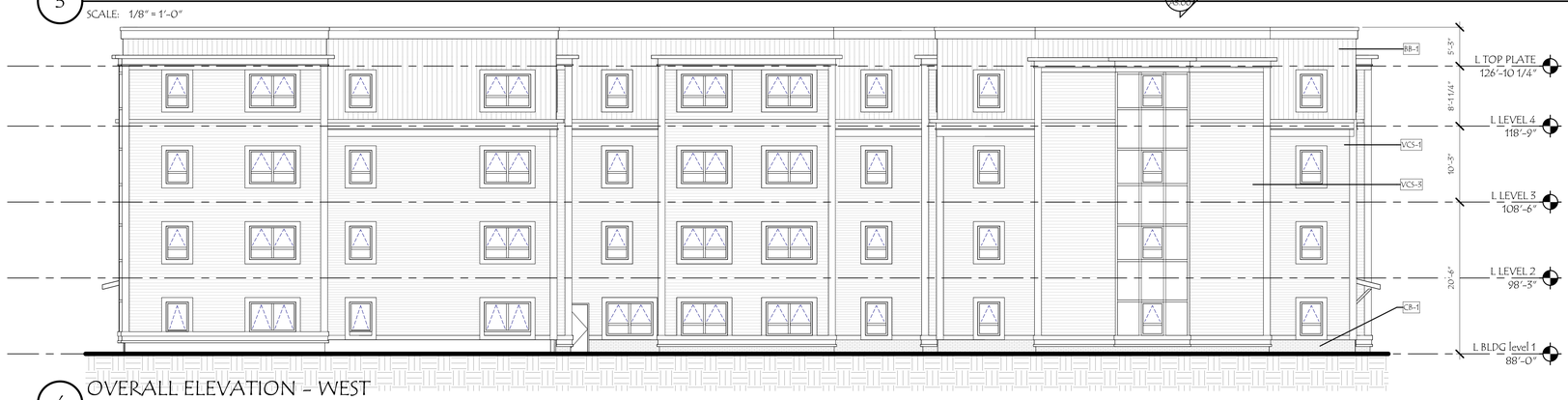
2 OVERALL ELEVATION - NORTH

SCALE: 1/8" = 1'-0"



3 OVERALL ELEVATION - SOUTH

SCALE: 1/8" = 1'-0"



4 OVERALL ELEVATION - WEST

SCALE: 1/8" = 1'-0"

MARKET SQUARE ARCHITECTS
104 Congress St., STE 203
Portsmouth, NH 03801
PH: 603-501-0202

PHA SHERBURNE 90 UNIT BUILDING

35 Sherburne Road, Portsmouth, NH

NOT FOR CONSTRUCTION

REVISIONS		
#	Description	Date

Scale: 1/8" = 1'-0"
Drawn By: WA
Checked By: Checker
Project No.: 2025002
CONCEPT DESIGN
Date: 05/06/2025

Title: EXTERIOR ELEVATIONS

A2.00

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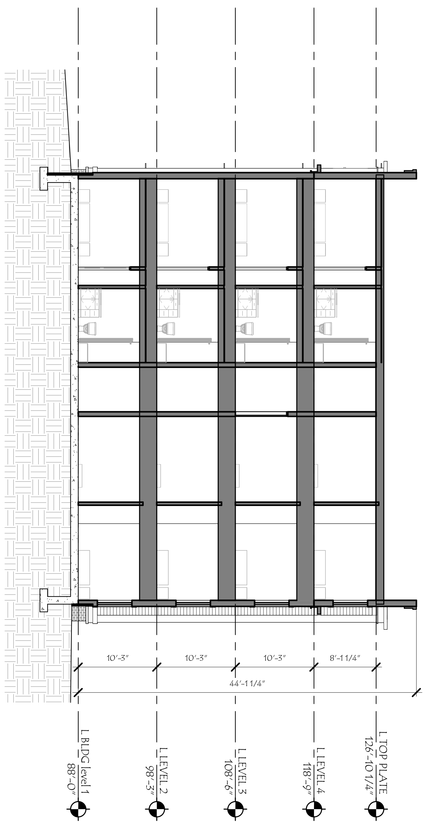

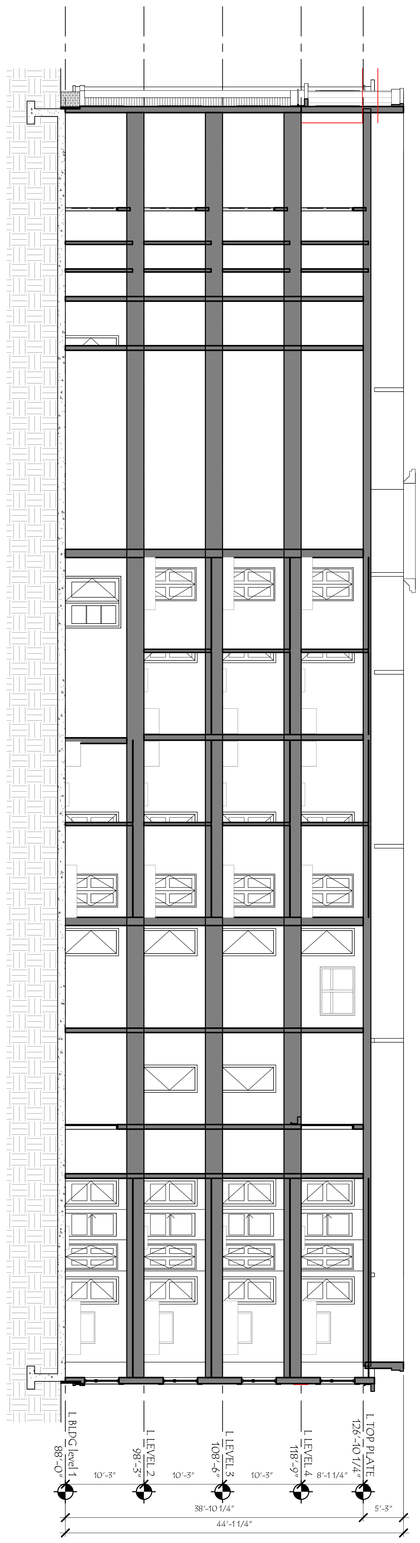

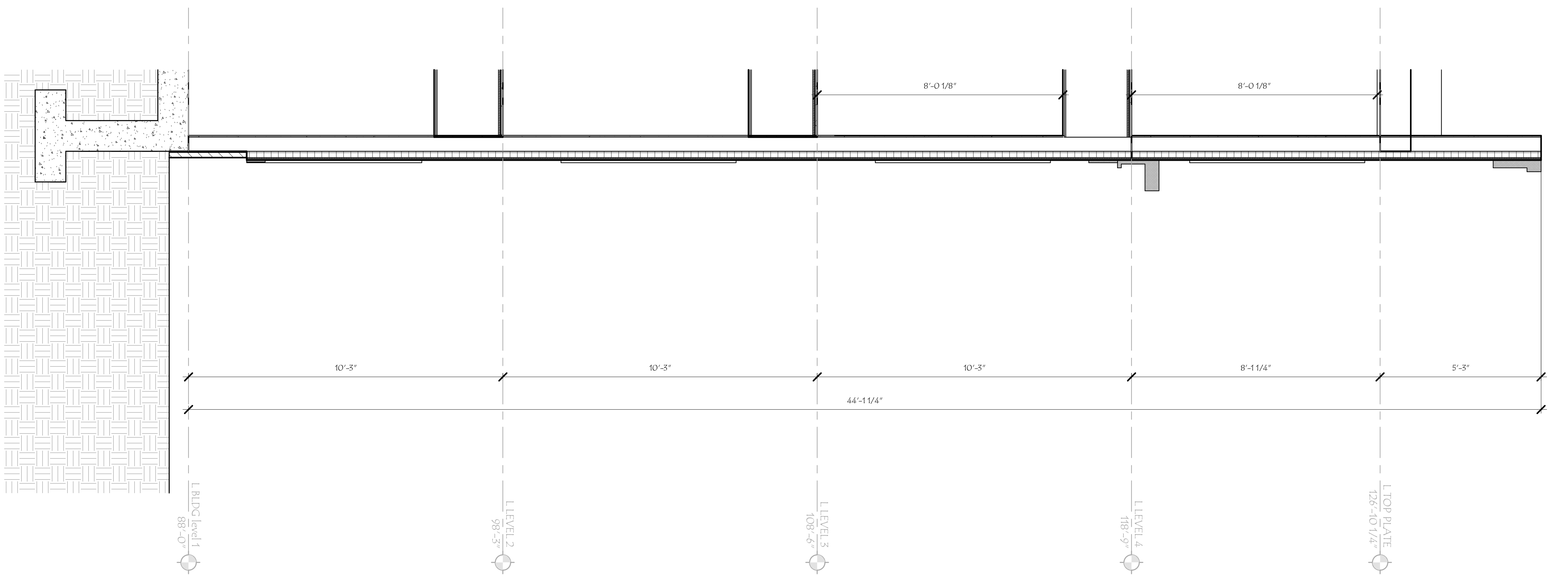

Title: BUILDING SECTIONS	Scale: As indicated	REVISIONS # Description Date	NOT FOR CONSTRUCTION	PHA SHERBURNE 90 UNIT BUILDING 35 Sherburne Road, Portsmouth, NH	MARKET SQUARE ARCHITECTS 104 Congress St., STE 205 Portsmouth, NH 03801 PH: 603.501.0202
	Drawn By: SC				
	Checked By: Checker				
	Project No.: 2023002				
A3.00	CONCEPT DESIGN				
	Date: 05/06/2025				

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LANDSCAPE LEGEND

SYMBOL	QTY	BOTANICAL NAME / COMMON NAME	SIZE	REMARKS	MATURE HEIGHT/ SPREAD	GROWTH HABIT
	7	ACER RUBRUM 'BOWHALL' BOWHALL RED MAPLE	2" TO 2 1/2" CAL.	B&B	40' TO 60' 10' TO 15'	UPRIGHT
	8	ACER RUBRUM 'OCTOBER GLORY' OCTOBER GLORY RED MAPLE	2" TO 2 1/2" CAL.	B&B	40' TO 60' 30' TO 40'	OVAL
	9	AMELANCHIER X GRANDIFLORA 'ROBIN HILL' ROBIN HILL SERVICEBERRY	2" TO 2 1/2" CAL.	B&B	15' TO 20' 10' TO 15'	UPRIGHT*
	3	BETULA NIGRA 'DURA HEAT' DURA HEAT RIVER BIRCH	8' TO 10' CLUMP	B&B	40' TO 60' 20' TO 30'	PYRAMIDAL
	6	PLATANUS X ACERIFOLIA 'BLOODGOOD' BLOODGOOD LONDON PLANETREE	2" TO 2 1/2" CAL.	B&B	60' + 60' +	ROUNDED
	3	QUERCUS ALBA WHITE OAK	2" TO 2 1/2" CAL.	B&B	60' + 60' +	BROAD
	5	JUNIPERUS VIRGINIANA EASTERN RED CEDAR	6' TO 7'	B&B	30' TO 40' 15' TO 20'	UPRIGHT
	5	PICEA GLAUCA WHITE SPRUCE	6' TO 7'	B&B	40' TO 60' 15' TO 20'	PYRAMIDAL
	7	THUJA OCCIDENTALIS 'NIGRA' DARK AMERICAN ARBORVITAE	6' TO 7'	B&B	20' TO 30' 10' TO 15'	PYRAMIDAL
	10	ASTILBE 'MONTGOMERY' MONTGOMERY ASTILBE	1 GAL.	CONT.	18" TO 24" 18" TO 24"	MOUNDED
	8	CLETHRA ALNIFOLIA 'SIXTEEN CANDLES' SIXTEEN CANDLES SUMMERSWEET	3 GAL.	CONT.	4' TO 5' 2' TO 3'	COMPACT
	11	FORSYTHIA 'LYNWOOD GOLD' LYNWOOD GOLD FORSYTHIA	3 GAL.	CONT.	6' TO 8' 6' TO 8'	ROUNDED
	18	HYDRANGEA ENDLESS SUMMER 'B.B.' BLUSHING BRIDE HYDRANGEA	3 GAL.	CONT.	3' TO 4' 3' TO 4'	MOUNDED
	14	ILEX CRENATA 'CHESAPEAKE' CHESAPEAKE JAPANESE HOLLY	3 GAL.	CONT.	6' TO 8' 3' TO 4'	PYRAMIDAL
	6	ILEX GLABRA 'DENSA' DENSA INKBERRY	3 GAL.	CONT.	5-6' 4-5'	ROUNDED
	8	JUNIPERUS H. 'PLUMOSA COMPACTA' YOUNGSTOWN JUNIPER	3 GAL.	CONT.	12" TO 24" 6' TO 8'	SPREADING
	10	PANICUM VIRGATUM 'SHENANDOAH' SHENANDOAH SWITCH GRASS	1 GAL.	CONT.	3' TO 4' 3' TO 4'	CLUMPING
	3	THUJA OCCIDENTALIS 'TECHNY' MISSION ARBORVITAE	4' TO 5'	B&B	10' TO 15' 6' TO 8'	PYRAMIDAL
	6	SALVIA 'BLUE HILL' BLUE HILL SAGE	1 GAL.	CONT.	12" TO 24" 2' TO 3'	COMPACT

* ALL PLANTS CONTAINED IN LEGEND HAVE BEEN SELECTED FOR URBAN GROWING CONDITIONS.

SEE DETAILS FOR LANDSCAPE NOTES

CITY OF PORTMOUTH PLANNING BOARD

CHAIRPERSON *DATE*

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

LANDSCAPE PLAN

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD

PORTSMOUTH, NEW HAMPSHIRE

OWNED BY

CITY OF PORTSMOUTH SCHOOLS

PREPARED FOR

PORTSMOUTH HOUSING AUTHORITY

1"=60' (11"X17")

SCALE: 1"=30' (22"X34") **JANUARY 29, 2025**

REV	DATE	DESCRIPTION	DR	CK

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE	47528.00	DR	JKC	FB		C-09
		CK	JJM	CADFILE	47528-00_LANDSCAPING	

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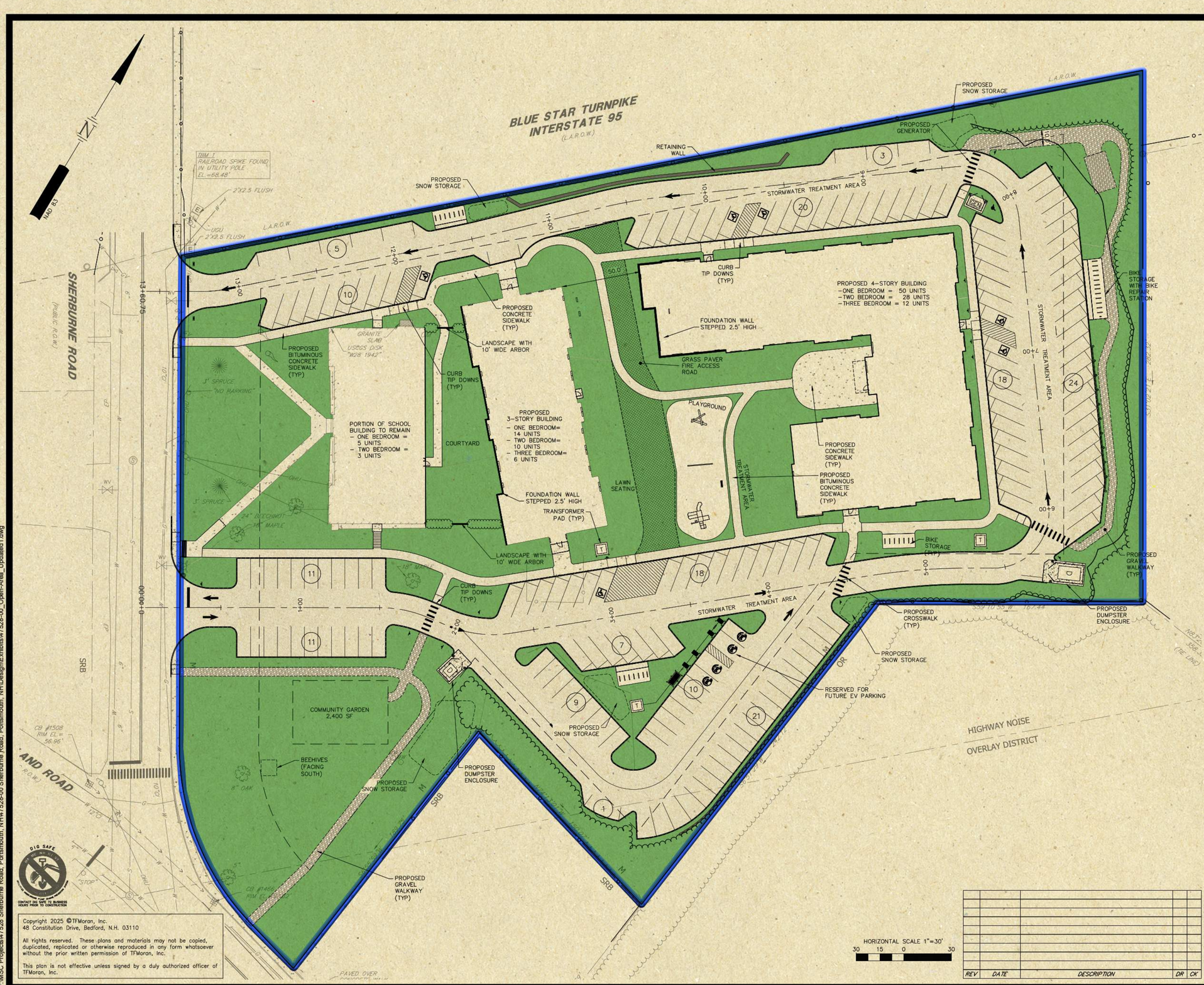
May 06, 2025 - 9:19am
F:\MSC Projects\47528 Sherburne Road, Portsmouth, NH\47528-00 Sherburne Road, Portsmouth, NH\Design\PRODUCTION DRAWINGS\47528-00_Landscaping.dwg

SITE LAYOUT PLAN



HORIZONTAL SCALE 1"=30'
30 15 0 30

REV	DATE	DESCRIPTION	DR	CK

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May 05, 2025 - 10:57am
F:\MSC Projects\47528 Sherburne Road, Portsmouth, NH\47528-00 Sherburne Road, Portsmouth, NH\Design\Exhibits\47528-00_Open-Area_Updated1.dwg

SITE DATA

OWNER OF RECORD OF MAP 259 LOT 10: CITY OF PORTSMOUTH SCHOOLS, PO BOX 628, PORTSMOUTH, NH 03802
DEED REFERENCE TO PARCEL IS BK 2389 PG 1272
AREA OF PARCEL = 232,175± SF OR 5.33± ACRES

ZONED: MUNICIPAL
EXISTING USE: SCHOOL
PROPOSED USE: MIXED USE

THE PURPOSE OF THIS PLAN IS TO CONSTRUCT WORK FORCE HOUSING. ASSOCIATED IMPROVEMENTS INCLUDE, AND ARE NOT LIMITED TO ACCESS, GRADING, STORMWATER MANAGEMENT SYSTEMS, UTILITIES, LIGHTING, AND LANDSCAPING.

DIMENSIONAL REQUIREMENTS (CURRENT ZONING)

	REQUIRED:	PROVIDED:
MINIMUM LOT DIMENSIONS:		
LOT AREA	NA SF (X.XXX± AC)	232,175± SF (5.33± AC)
LOT FRONTAGE	NA FT	471.79 FT
DEPTH	NA FT	606 FT
MAXIMUM STRUCTURE DIMENSIONS:		
STRUCTURE HEIGHT	NA	38.8 FEET
STRUCTURE STORIES	NA	4 STORIES
ROOF APPURTENANCE HEIGHT	NA	44.1 FT
LOT COVERAGE	NA	54%
MINIMUM SETBACKS/BUFFER:		
BUILDING FRONT	NA FT	93.1 FT
BUILDING SIDE	NA FT	48.8 FT
BUILDING REAR	NA FT	89.5 FT
MINIMUM OPEN SPACE	**NA**	**41.0%**

OPEN SPACE AREA CALCULATION:

GRASS AREA = 95,272 SF
LOT AREA = 232,175 SF
OPEN SPACE = (95,272 SF / 232,175 SF) X 100% = 41.0%

PARKING REQUIREMENTS

RESIDENTIAL		
PARKING SPACES (SEE CALCULATION)	165 SPACES	165 RESIDENTIAL SPACES
OFFICE		
OFFICE	1 SPACES	1 SPACES
	166	168
TOTAL		
ACCESSIBLE SPACES (REQ'D BY ADA)	6 SPACES	6 SPACES
PARKING SPACE SIZE	8.5 FT X 19 FT	8.5 FT X 19 FT
AISLE WIDTH	18-24 FT	18-24 FT

PARKING CALCULATIONS

REQUIRED PARKING RATIO:
RESIDENTIAL: 1.3 SPACES PER UNIT > 750 SF
1 SPACE PER UNIT 600-750 SF
1 VISITOR SPACE PER 5 UNITS OR PORTION THEREOF
OFFICE:
1 SPACES PER UNIT > 350 SF

TOTAL REQUIRED =	53 UNITS * 1.3 SPACES/UNIT	= 74.0 SPACES
	74 UNITS * 1 SPACE	= 65.9 SPACES
	127 UNITS * 1 SPACE/5 UNITS	= 25.4 SPACES
	1 OFFICE * 1 SPACE/OFFICE	= 1.0 SPACES
TOTAL		= 166.3 SPACES

NOTES

1. SEE NOTES ON SHEET C-01.
2. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS NOTED OTHERWISE.
3. LIGHTING, SIGNAGE, LANDSCAPING, AND SCREENING SHALL MEET THE REQUIREMENTS OF THE PORTSMOUTH, NH ZONING ORDINANCE AND SITE PLAN REVIEW REGULATIONS.
4. SNOW SHALL NOT BE STOCKPILED IN STORMWATER BMP'S, WETLAND BUFFERS, OR WETLANDS. SEE SNOW STORAGE LOCATIONS. IN THE EVENT THAT THE SNOW STORAGE AREAS PROVIDED ON THE SITE ARE COMPLETELY UTILIZED, EXCESS SNOW SHALL BE TRANSPORTED OFF SITE FOR DISPOSAL IN ACCORDANCE WITH NHDES REGULATION. IF SNOW IS STORED WITHIN PARKING AREA, KEEP CATCH BASINS CLEAR.
5. THE 3' PANEL ALONG THE PARKING LOT EDGE & DRIVE SHALL BE USED FOR SNOW STORAGE.
6. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
7. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
8. ALL CONDITIONS ON THIS PLAN SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.

CITY OF PORTSMOUTH PLANNING BOARD

CHAIRPERSON *DATE*

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

SITE LAYOUT PLAN

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD
PORTSMOUTH, NEW HAMPSHIRE
OWNED BY
CITY OF PORTSMOUTH SCHOOLS
PREPARED FOR
PORTSMOUTH HOUSING AUTHORITY

1"=60' (11"X17")
SCALE: 1"=30' (22"X34") **JANUARY 29, 2025**

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

48 Constitution Drive
Bedford, NH 03110
Phone (603) 472-4488
Fax (603) 472-9747
www.tfmoran.com

FILE	DR	JKC	FB	
47528.00	CK	JJM	CADFILE 528-00_OPEN-AREA_UPDATED1	C-03

SITE LAYOUT PLAN

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Project #47528.00

DRAINAGE ANALYSIS MEMO

F O R

Sherburne Road Development

35 Sherburne Road
Portsmouth, New Hampshire
Somewhere County

Tax Map 259, Lot 10

Owned by City of Portsmouth
Prepared for PHA Housing Development LTD

May 6, 2022

Prepared By:

TFM Since 1968

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

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1.0 - SUMMARY & PROJECT DESCRIPTION

The project includes the development of a 127-unit workforce housing project on 35 Sherburne Road, Portsmouth, NH. The existing Tax Map 259 Lot 10 is approximately 5.2 acres and currently contains an existing school building. The site is within the Municipal Zone and Highway Noise Overlay District and is adjacent to commercial and residential uses.

The proposed project is to construct the front portion of the existing school building, a 3-story building, and a 4-story building. Associated improvements include and are not limited to access, grading, utilities, stormwater management system, lighting, and landscaping. The project proposes a reduction of the school footprint from 17,650 SF to 7,280 SF building footprint, proposed 3-story building with a 9,424 SF footprint and a 4-story building with a 21,100 SF footprint. Including all the impervious on the site, there is a total of 114,840 SF of effective impervious area (49% EIC) within the property lines and approximately 108,000 SF of disturbance to facilitate the development.

This analysis verifies the project will not pose adverse stormwater effects on-site and off-site. Compared to the pre-development conditions, the post-development stormwater management system has been designed to reduce peak runoff rates, reduce the runoff volume, reduce the risk of erosion and sedimentation, and improve stormwater runoff quality. In addition, Best Management Practices are employed to formulate a plan that assures stormwater quality both during and after construction. The following summarizes the findings from the study.

2.0 - CALCULATION METHODS

The design storms analyzed in this study are the 2-year, 10-year, and 50-year 24-hour storm events. The software program, HydroCAD version 10.00[1] was utilized to calculate the peak runoff rates from these storm events. The program estimates the peak rates using the TR-20 method. A Type III storm pattern was used in the model. Rainfall frequencies for the analyzed region were also incorporated into the model. Rainfall frequencies from the higher of the Extreme Precipitation Rates from Cornell University's Northeast Regional Climate Center (see Appendix A) and City Site Plan Review Regulations were used to determine the storm-event intensities, see Table 1. Due to the project's location within the Coastal/Great Bay Region community, the design rainfall increases the Cornell rates by 15% to address projected storm surge, sea level rise, and precipitation events per Env-Wq 1503.08(l). Design standards were taken from the New Hampshire Stormwater Manual, December 2008[2].

Storm-Event (year)	Northeast Regional Climate Center Extreme Precipitation (in)	Design Rainfall (in)
2	3.22	3.70
10	4.88	5.61
50	7.41	8.52

Table 1 – 24-Hour Rainfall Rates

[1] HydroCAD version 10.00, HydroCAD Software Solutions LLC, Chocorua, NH, 2013.
[2] New Hampshire Stormwater Manual: Volume One - Stormwater and Antidegradation, December 2008; Volume Two - Post-Construction Best Management Practices Selection and Design, December 2008; Volume Three - Erosion and Sediment Controls During Construction, December 2008.

Time of Concentration is the time it takes for water to flow from the hydraulically most remote point in the watershed (with the longest travel time) to the watershed outlet. This time is determined by calculating the time it takes runoff to travel this route under one of three hydrologic conditions: sheet flow, shallow concentrated flow, or channel flow. Because the Intensity-Duration-Frequency (IDF) curve is steep with short TC's, estimating the actual intensity is subject to error and overestimates actual runoff. Due to this, the TC's are adjusted to a minimum of 6 minutes.

3.0 – EXISTING SITE CONDITIONS

The soils within the proposed area of disturbance are identified in accordance with the Natural Recourses Conservation Service, NRCS (see Appendix B for detail and soil locations). The NRCS soil identifies the soils within the disturbed project somewhat excessively drained soils.

See Geotechnical Report for the associated Infiltration testing and boring data. 11 boring tests and 9 infiltration tests were conducted. In nearly all test pit locations, fine to medium sands were discovered.

4.0 - PRE-DEVELOPMENT CONDITIONS

The pre-development condition is characterized by five subcatchments composing four watersheds, which flow towards the rear of the property and easterly along a swale paralleling the I-95 Corridor. It ultimately discharges to North Mill Pond.

Stormwater runoff from the site primarily infiltrates into the somewhat excessively drained soils on-site. The remaining stormwater runoff discharges swale along the I-95 corridor.

In the pre-development conditions, the total impervious area, including offsite impervious, is 50,720 SF over a total drainage analysis area of 227,310 SF.

5.0 - POST-DEVELOPMENT CONDITIONS

The post-development condition is characterized by four watersheds divided into many subcatchment areas.

In the post-development condition, the total impervious area is 22,780 SF over a total drainage analysis area of 227,310 SF. Five subsurface infiltration basins (Stormtech Systems) are proposed to treat and mitigate the stormwater runoff from the impact of the new impervious area from the proposed development.

See Geotechnical Report for the associated Infiltration testing and boring data. 11 boring tests and 9 infiltration tests were conducted. In nearly all test pit locations, fine to medium sands were discovered. Infiltration tests were determined per Ksat testing using bore hole permeability test per Env-Wq 1504.14(e)(4). The highest Estimated Seasonal High-Water Table (ESWT) observed were elevation 37.9 at Subsurface Infiltration Basin #1, elevation 37.9 at Subsurface Infiltration Basin #2, elevation 46.5 at Subsurface Infiltration Basin #3, elevation 46.5 at Subsurface Infiltration Basin #4, and elevation 41.2 at Subsurface Infiltration Basin #5.

Table 2 summarizes the pre- and post-development peak runoff rates for the 2-year, 10-year, and 50-year 24-hour Type III storm events for all discharge. Table 3 summarizes the pre- and post-development peak runoff volumes for the 2-year 24-hour Type III storm events for all discharge.

TABLE 2 – SURFACE WATER PEAK RUNOFF RATE COMPARISON (CF)				
POINT OF INTEREST		DESIGN STORM		
		2-year	10-year	50-year
POI-1	Pre	1.4	3.0	6.5
	Post	0.0	.1	1.0
POI-2	Pre	0.0	0.1	0.8
	Post	0.0	0.0	0.1
POI-3	Pre	0.0	0.5	2.8
	Post	0.0	0.0	0.3
POI-4	Pre	0.2	1.1	3.0
	Post	0.0	0.0	0.5

Table 2 - Pre and Post- Development Peak Runoff Rate Comparison

TABLE 3 – SURFACE WATER PEAK RUNOFF VOLUME COMPARISON (CF)		
POINT OF INTEREST		DESIGN STORM
		2-year
POI-1	Pre	6,768
	Post	125
POI-2	Pre	143
	Post	7
POI-3	Pre	587
	Post	45
POI-4	Pre	1,439
	Post	11

Table 3 - Pre and Post- Development Peak Runoff Volume Comparison

The proposed project reduces peak rates of runoff compared to existing conditions for all storm events, in accordance with AoT regulations and City stormwater regulations. Additionally per NHDES, the 2-year 24-hour storm does not result in an increased peak flow rate and reduces or increases volume within the limits of Env-Wq 1507.05(b)(1) from the pre-development to post-development condition. There will be no adverse effects on the abutting properties from the proposed stormwater management system.

6.0 – REGULATORY COMPLIANCE

The project meets the stricter of the stormwater standards identified in the New Hampshire Department of Environmental Services (DES) Env-Wq 1500 Alteration of Terrain Regulations and City stormwater management regulations.

7.0 – BEST MANAGEMENT PRACTICES

Best Management Practices will be developed in accordance with the New Hampshire Stormwater Manual, Volumes Two and Three, December 2008[3] to formulate a plan that assures stormwater quality both during and after construction. The intent of the outlined measures is to minimize erosion and sedimentation during construction, stabilize and protect the site from erosion after construction is complete and mitigate any adverse impacts to stormwater quality resulting from development. Best Management Practices for this project include:

- Temporary practices to be implemented during construction.

- Permanent practices to be implemented after construction.

7.1 – TEMPORARY PRACTICES

1. Erosion, sediment, and stormwater detention measures must be installed as directed by the engineer.
2. All disturbed areas, as well as loam stockpiles, shall be seeded and contained by a silt barrier.
3. Silt barriers must be installed prior to any construction commencing. All erosion control devices including silt barriers and storm drain inlet filters shall be inspected at least once per week and following any rainfall. All necessary maintenance shall be completed within twenty-four (24) hours.
4. Any silt barriers found to be failing must be replaced immediately. Sediment is to be removed from behind the silt fence if found to be one-third the height of the silt barrier or greater.
5. Any area of the site, which has been disturbed and where construction activity will not occur for more than twenty-one (21) days, shall be temporarily stabilized by mulching and seeding.
6. No construction materials shall be buried on-site.
7. After all areas have been stabilized, temporary practices are to be removed, and the area they are removed from must be smoothed and revegetated.
8. Areas must be temporarily stabilized within 14 days of disturbance or seeded and mulched within 3 days of final stabilization.
9. After November 15th, incomplete driveways or parking areas must be protected with a minimum of 3” of crushed gravel, meeting the standards of NHDOT item 304.3.
10. An area shall be considered stable if one of the following has occurred:
    a) Base course gravels are installed in areas to be paved.
    b) A minimum of 85% vegetated growth has been established.
    c) A minimum of 3" of non-erosive material such as stone or rip rap has been installed.
    d) Erosion control blankets have been properly installed.

[3] New Hampshire Stormwater Manual: Volume One - Stormwater and Antidegradation, December 2008; Volume Two - Post-Construction Best Management Practices Selection and Design, December 2008; Volume Three - Erosion and Sediment Controls During Construction, December 2008.

7.2 – PERMANENT PRACTICES

The objectives for developing permanent Best Management Practices for this site include the following:

1. Maintain existing runoff flow characteristics.
    a) Drainage is structured to minimize any offsite increase in runoff

2. Treatment BMP's are established to ensure the water quality.

3. Maintenance schedules are set to safeguard the long term working of the stormwater BMP's.

7.3 – BEST MANAGEMENT PRACTICE EFFICIENCIES

Appendix E of Volume 2 of the New Hampshire Stormwater [4] lists the pollutant removal efficiencies of various BMP's. All proposed BMP's meet all state and City requirements for total suspended solids (TSS) and pollutant removal, Total Nitrogen (TN), and Total Phosphorous (TP).

In-Ground and Subsurface Infiltration Basins (greater than 75 FT from surface water) have a 90% TSS removal efficiency, 60% TN removal efficiency, and 65% TP efficiency.

All the stormwater entering the Subsurface Infiltration Basins are pretreated with deep sump catch basins and StormTech Isolator rows prior to entering the primary stormwater treatment areas. The pretreatment areas help to settle sediment and prevent clogging of treatment areas.

8.0 – CONCLUSION

The proposed stormwater management system will treat, infiltrate, and mitigate the runoff generated from the proposed development and provide protection of groundwater and surface waters as required through the Alteration of Terrain Bureau and City stormwater management regulations. The project has been designed in accordance with NHDES and City regulations. There is little change in the flow characteristics of the site. The proposed project has been designed to pose no adverse effects on surrounding properties.

Respectfully,
TFMoran, Inc. Seacoast Division

Jack McTigue, PE, CPESC
Project Manager

[4] New Hampshire Stormwater Manual: Volume One - Stormwater and Antidegradation, December 2008; Volume Two - Post-Construction Best Management Practices Selection and Design, December 2008; Volume Three - Erosion and Sediment Controls During Construction, December 2008.

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APPENDIX A – EXTREME PRECIPITATION RATES

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Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.800 degrees West
Latitude	43.060 degrees North
Elevation	0 feet
Date/Time	Mon, 23 Jan 2023 11:23:31 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.82	1.04	**1yr**	0.70	0.98	1.21	1.56	2.03	2.67	2.93	**1yr**	2.36	2.81	3.22	3.94	4.56	**1yr**
2yr	0.32	0.50	0.62	0.81	1.02	1.30	**2yr**	0.88	1.18	1.52	1.94	2.49	3.22	3.57	**2yr**	2.85	3.44	3.94	4.69	5.33	**2yr**
5yr	0.37	0.58	0.73	0.97	1.24	1.60	**5yr**	1.07	1.46	1.88	2.43	3.14	4.08	4.59	**5yr**	3.61	4.41	5.05	5.94	6.71	**5yr**
10yr	0.41	0.65	0.82	1.11	1.45	1.89	**10yr**	1.25	1.72	2.23	2.89	3.75	4.88	5.54	**10yr**	4.32	5.33	6.09	7.12	8.00	**10yr**
25yr	0.48	0.76	0.96	1.33	1.77	2.33	**25yr**	1.52	2.14	2.77	3.62	4.74	6.19	7.11	**25yr**	5.48	6.84	7.81	9.04	10.08	**25yr**
50yr	0.53	0.85	1.09	1.53	2.06	2.75	**50yr**	1.78	2.52	3.28	4.32	5.67	7.41	8.60	**50yr**	6.56	8.27	9.44	10.84	12.01	**50yr**
100yr	0.59	0.96	1.24	1.76	2.40	3.24	**100yr**	2.07	2.97	3.89	5.15	6.77	8.88	10.40	**100yr**	7.86	10.00	11.40	13.00	14.33	**100yr**
200yr	0.67	1.09	1.42	2.03	2.81	3.82	**200yr**	2.42	3.50	4.60	6.12	8.09	10.65	12.58	**200yr**	9.42	12.10	13.77	15.59	17.09	**200yr**
500yr	0.79	1.30	1.70	2.46	3.45	4.74	**500yr**	2.98	4.36	5.74	7.69	10.22	13.53	16.19	**500yr**	11.98	15.57	17.70	19.84	21.59	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.73	0.89	**1yr**	0.63	0.87	0.92	1.32	1.66	2.22	2.53	**1yr**	1.97	2.44	2.86	3.15	3.88	**1yr**
2yr	0.32	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.34	3.06	3.47	**2yr**	2.71	3.33	3.83	4.56	5.08	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.12	2.74	3.80	4.22	**5yr**	3.37	4.06	4.73	5.56	6.27	**5yr**
10yr	0.39	0.59	0.74	1.03	1.33	1.60	**10yr**	1.15	1.57	1.81	2.40	3.07	4.39	4.90	**10yr**	3.89	4.71	5.48	6.45	7.24	**10yr**
25yr	0.44	0.67	0.83	1.19	1.56	1.90	**25yr**	1.35	1.86	2.10	2.77	3.55	4.70	5.96	**25yr**	4.16	5.73	6.72	7.86	8.75	**25yr**
50yr	0.48	0.74	0.92	1.32	1.77	2.17	**50yr**	1.53	2.12	2.35	3.09	3.95	5.30	6.90	**50yr**	4.69	6.63	7.83	9.14	10.11	**50yr**
100yr	0.54	0.81	1.02	1.47	2.02	2.48	**100yr**	1.74	2.42	2.63	3.44	4.38	5.95	7.98	**100yr**	5.27	7.67	9.13	10.64	11.67	**100yr**
200yr	0.60	0.90	1.14	1.65	2.29	2.82	**200yr**	1.98	2.76	2.94	3.81	4.84	6.66	9.23	**200yr**	5.90	8.88	10.65	12.39	13.50	**200yr**
500yr	0.69	1.03	1.33	1.93	2.74	3.38	**500yr**	2.36	3.30	3.41	4.36	5.53	7.74	11.19	**500yr**	6.85	10.76	13.05	15.19	16.35	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	**1yr**	0.77	1.06	1.26	1.74	2.21	3.00	3.15	**1yr**	2.66	3.03	3.59	4.38	5.06	**1yr**
2yr	0.34	0.52	0.64	0.86	1.06	1.27	**2yr**	0.92	1.24	1.48	1.96	2.51	3.44	3.70	**2yr**	3.04	3.55	4.08	4.84	5.65	**2yr**
5yr	0.40	0.61	0.76	1.05	1.33	1.62	**5yr**	1.15	1.58	1.88	2.53	3.24	4.34	4.95	**5yr**	3.84	4.76	5.38	6.36	7.14	**5yr**
10yr	0.47	0.72	0.89	1.24	1.60	1.97	**10yr**	1.38	1.93	2.27	3.10	3.93	5.35	6.17	**10yr**	4.73	5.94	6.77	7.82	8.73	**10yr**
25yr	0.57	0.87	1.08	1.55	2.04	2.56	**25yr**	1.76	2.50	2.94	4.05	5.11	7.84	8.28	**25yr**	6.94	7.97	9.05	10.30	11.37	**25yr**
50yr	0.67	1.01	1.26	1.82	2.44	3.11	**50yr**	2.11	3.04	3.58	4.97	6.26	9.83	10.37	**50yr**	8.70	9.97	11.29	12.67	13.91	**50yr**
100yr	0.78	1.18	1.48	2.14	2.94	3.78	**100yr**	2.53	3.70	4.35	6.12	7.67	12.31	12.97	**100yr**	10.90	12.47	14.08	15.61	17.02	**100yr**
200yr	0.91	1.38	1.74	2.52	3.52	4.61	**200yr**	3.04	4.51	5.30	7.53	9.41	15.47	16.25	**200yr**	13.69	15.63	17.57	19.22	20.83	**200yr**
500yr	1.13	1.68	2.17	3.15	4.48	5.98	**500yr**	3.86	5.85	6.88	9.94	12.35	20.92	21.89	**500yr**	18.51	21.05	23.56	25.32	27.23	**500yr**

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Northeast Regional Climate Center

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APPENDIX B – NRCS WEB SOIL REPORT

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United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Rockingham County, New Hampshire

35 Sherburne Road

January 23, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 25, Sep 12, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
599	Urban land-Hoosic complex, 3 to 15 percent slopes	7.8	100.0%
Totals for Area of Interest		**7.8**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Rockingham County, New Hampshire

599—Urban land-Hoosic complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9cpg
Elevation: 90 to 1,100 feet
Mean annual precipitation: 30 to 55 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 120 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 55 percent
Hoosic and similar soils: 25 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hoosic

Setting

Parent material: Outwash

Typical profile

H1 - 0 to 8 inches: gravelly fine sandy loam
H2 - 8 to 15 inches: very gravelly fine sandy loam
H3 - 15 to 60 inches: very gravelly coarse sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (2.00 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

Udorthents

Percent of map unit: 4 percent
Hydric soil rating: No

Eldridge

Percent of map unit: 4 percent
Hydric soil rating: No

Scitico

Percent of map unit: 4 percent
Landform: Marine terraces
Hydric soil rating: Yes

Newfields

Percent of map unit: 4 percent
Hydric soil rating: No

Squamscott

Percent of map unit: 4 percent
Landform: Marine terraces
Hydric soil rating: Yes

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Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

May 6, 2025

Peter Britz
Director of Planning
Portsmouth Planning Department
1 Junkins Ave, 3rd Floor
Portsmouth, NH 03801

Re: Statement of Green Building Components, Sherburne Workforce Housing Development, 35 Sherburne Road – Portsmouth, NH
TFMoran Project: 47528.00

Dear Peter:

The architectural strategy of this development will be to maximize efficiency and scale, reduce overall utility burden and create safe and comfortable living spaces for both tenants and the neighborhood beyond. Emphasis will be placed on tightness of building envelope, efficiency of selected mechanical and electrical systems, designing a solar-ready building and systems, using low flow fixtures as well as installing EV charging stations and low maintenance plantings.

Sincerely,
TFMoran, Inc.

Jack McTigue, PE, CPESC
Project Manager

cc: Craig Welch, Mark Lentz, Robert Harbeson

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Traffic Report

STATE OF NEW HAMPSHIRE
ROBERT E. DUVAL
No. 7105
LICENSED
PROFESSIONAL ENGINEER
06 May 2025

Traffic Impact and Access Study

Proposed Affordable Housing
35 Sherburne Road
Portsmouth, New Hampshire

TFM Project #47528.00

May 5, 2025

Prepared for:
Portsmouth Housing Authority

Submitted to:
City of Portsmouth

Prepared by:

TFM®

Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

48 Constitution Drive, Bedford, NH 03110
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APPENDICES

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- Distribution

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Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists

Traffic Impact and Access Study

Proposed Affordable Housing
35 Sherburne Road
Portsmouth, New Hampshire
May 5, 2025

1. Introduction

TFMoran Inc. has completed this traffic impact and access study on behalf Portsmouth Housing Authority to determine traffic impacts associated with a 128 unit affordable housing development. The objectives of the study are:

- To estimate trip generation and distribution for the proposed use to perform capacity analysis for the project study area
- To determine potential traffic impacts of the proposed development use
- To provide recommendations for operational improvements within the study area to mitigate the proposed development's traffic impacts

Portsmouth Housing Authority is proposing an affordable housing development at 35 Sherburne Road in Portsmouth. The project includes a 30-unit 3-story apartment building, a 90-unit 4-story apartment building and converting the existing school building on site into 8 apartment units. The site will have a playground, community garden, picnic area and dog walk for residents.

The site will have two driveways, the new driveway to the south will be full access to allow vehicles to use the first 22 space parking lot to enter and exit. Beyond that front lot will be one way counterclockwise around the site and the existing driveway will be converted to exit only. This will allow one-way circulation around the site. There are 173 total parking spaces proposed.

The existing site is currently an "alternative high school" for approximately 30 students which will be moving to a new location on the nearby community college campus at Pease.

Scope of Study

At the traffic scoping meeting held via Zoom on February 17th, 2023 with City Engineering, TFMoran, and the PHA. It was agreed that this study would consider the following conditions. The same criteria was followed for the 2025 update.

Analysis Periods:

- Weekday AM and PM roadway peak hours
- No Saturday

Covid/Stay-at-Home Volume Adjustments:

- Volumes will be adjusted by a Covid/Stay-at-Home factor.
    - review data from City and NHDOT MS2

Background growth:

- 1% seems to high for this area, review data from City and check MS2 data

Seasonal Adjustment:

- NHDOT Group 4 data for seasonal adjustment

Opening Year/Future Year:

- 2026/2036 – **Updated to 2027/2037**

Other Developments:

- Two other projects in area – Liberty Mutual Building (consolidating office into the Greenland Road location), and Hospital expansion project.

Site Trip Generation/Composition:

- Trip Generation and Composition is based on the current ITE Trip Generation 11th Edition
    - LUC 223 Affordable Housing
    - AI trips Primary

Site Trip Distribution

- Distribution prorata based on the counts

Study Area Intersections:

1) Site Driveway
2) Greenland Road at Borthwick Ave [stop controlled]
3) Greenland Road at NH Route 33 [signal]

2. Existing Conditions

Description of Roadways and Intersections:

Roadways

NH Route 33 (Greenland Road)

- Classification. NH33 is a State-maintained highway in the Seacoast Region that provides east-west travel connecting Stratham with Portsmouth. The following descriptions apply within the study area.
- Lane widths and usage. In the project vicinity, the roadway generally provides two 12' travel lanes in each direction, with left turn lanes at major intersections, and 5-6' wide paved shoulders.
- Pedestrian facilities. Pedestrians are not permitted.
- Signage. The speed limit is posted at 35 mph. There are lane use signs, roadway directional signs, overhead lane designations signs and blue hospital & interstate signs. Pavement markings consist of double-yellow centerline, dashed white lines dividing lanes and white shoulder markings, in generally good condition.
- Lighting. Cobra-head roadway lighting is provided in the study area intersections.
- Road conditions. The roadway is fairly level, open drainage with guardrails and normal crown along straights. The pavement is in fair to good condition.

Greenland Road (City portion)

- Classification. Greenland Road is a short local roadway that connects to NH33 and is dead-ended.
- Lane widths and usage. The roadway generally provides two way travel with 12' lanes in each direction and varying widths of paved shoulder.
- Pedestrian facilities. There are sidewalks along the residential portion of the roadway.
- Signage. The speed limit is 30 mph. There are roadway signs, a stop sign, a "Dead End" sign. There is no striping along the roadway.
- Lighting. A cobra-head roadway light is provided at the intersection of Sherburne Road.
- Road conditions. The roadway is generally flat and straight, open drainage, and normal crown throughout. The pavement is in fair condition with cracking, rutting and pavement patches.
- Adjacent uses and driveways. Other than Orchard Park business park near the intersection of Greenland Road and Borthwick Avenue, the remaining area is residential homes.

Borthwick Avenue

- Classification. Borthwick Avenue is a local roadway that connects NH33 with Bypass US1.
- Lane widths and usage. The roadway generally provides two way travel with 12' lanes in each direction and 2-6' wide paved shoulders.
- Pedestrian facilities. There are sidewalks along the east side of the roadway.
- Signage. The speed limit is 25 mph in the study area. There are crosswalk signs, a warning chevron arrow at the corner approaching Greenland Road, "No Parking This Side of Street" signs on the east side of the roadway and a stop sign. Pavement markings consist of double-yellow centerline and white shoulder markings.

- Lighting. Cobra-head roadway lighting is generally provided throughout.
- Road conditions. The roadway is generally flat with curves, open drainage and normal crown throughout. The pavement is in fair to good condition. .
- Adjacent uses and driveways. The Borthwick Park is located along the roadway including Portsmouth Hospital, Liberty Mutual, High Liner Foods, Fairfield Inn and other Office/industrial/Service companies.

Sherburne Road

- Classification. Sherburne Road is a local roadway that is primarily a residential area. The far end of the roadway is gated and does not allow access onto Grafton Road.
- Lane widths and usage. The roadway generally provides two way travel with 12' lanes in each direction, no painted shoulder.
- Pedestrian facilities. Sidewalks are provided on the east side of the roadway.
- Signage. Posted speed limit is 20 mph. There is a "No Parking" sign in front of the school, but no other signs in the area. Pavement markings consist of double yellow centerline in fair condition.
- Sight Distance. Sight distance along the roadway is adequate for the posted speed.
- Lighting. Cobra-head roadway lighting is provided at the southern end of the I95 overpass.
- Road conditions. The roadway is curbed where there is sidewalk and open drainage on the opposite side. The pavement is in fair condition. There is minor crack-sealing, and cracking at the edges of the non-curbed roadway.
- Adjacent uses and driveways: school, and residential.

Intersections

NH Route 33 at Greenland Road

- Traffic Control. This is an existing 3-way signalized intersection. NH Route 33 forms the eastbound and westbound approaches and Greenland Road forms the southbound approach.
- Pedestrian facilities. No sidewalks at intersection.
- Approaches. The EB and WB approaches consist of two 12' lanes. The EB approach has an exclusive left turn lane, and the WB approach has a right turn slip lane onto Greenland Road. The SB approach consists of two lanes, a right-turn lane and a left-turn lane.
- Signage. "Keep Right", "No Turns on Right Arrow" and NH33 signs are present at the intersection.
- Sight Distance. Intersection sight distance appears adequate in all directions for the posted speed.
- Lighting. Cobra-head style lighting is provided at the SB approach and the center of the intersection on the south side of NH33.
- Roadway condition. Existing roadway is in good condition through the intersection.
- Signal Timing. Existing data provided by NHDOT, Coordinated system with ramps, but likely running free..

Greenland Road at Borthwick Avenue

- Traffic Control. This is an existing 3-way stop controlled unsignalized intersection. Greenland Road forms the EB and NB approaches. Borthwick Ave forms the WB approach.
- Pedestrian facilities. There is an existing sidewalk along the north end of the intersection along Borthwick and Greenland Road. A City Neighborhood Sidewalk Improvement project installed an extension of the sidewalk along the south side of Borthwick Avenue and a new pedestrian crossing at the 3-way intersection and reroute the sidewalk along Greenland Road west.
- Approaches. Each approach accommodates two way traffic. The EB and WB approaches consist of one lane each for through movements and turns. The NB approach provides a left only lane and a right slip lane for turns heading onto Borthwick Ave. The NB approach is divided by concrete median at the center line and grass island between the NB lanes.
- Signage. The 2023 Sidewalk project will propose a stop sign at all three legs of the intersection. A yield sign will remain at the northbound left turn lane onto Borthwick Ave. There are also road identification signs, “stay right” signs at medians, blue informational signs (parking bans and hospital), a Borthwick Park directional sign and a “No Outlet” sign on Greenland Road heading west.
- Sight Distance. Intersection sight distance appears adequate in all directions for the posted speed.
- Lighting. Cobra head lighting is provided in the grass island between the NBL and NBR lanes.
- Roadway condition. Existing roadways in good condition.

Sherburne Road at Site Driveway (Existing)

- Traffic Control. This is an existing driveway. Sherburne Road forms the NB and SB approaches. The driveway forms the WB approach.
- Pedestrian facilities. A sidewalk is located on the east side of Sherburne Road.
- Approaches. All approaches each consist of a single lane for both through movements and turns.
- Signage. There is a “No Parking” sign in front of the school, but no other signs in the area.
- Sight Distance. Intersection sight distance appears adequate in all directions for the posted speed.
- Lighting. Cobra-head style lighting is provided at the bridge just north of the driveway.
- Roadway condition. Existing roadways in fair condition.

3. Background Volumes:

To quantify existing peak hour traffic volumes within the study area, turning movement counts were taken at the study intersections. These counts are tabulated in Appendix I.

Counts were taken at all study intersections on Thursday March 9, 2023 – 7AM to 9AM and 2PM to 6PM.

Seasonal Adjustment.
To account for seasonal variations, the data was seasonally adjusted upward by a factor of 15% to reflect the estimated peak month traffic volume. See Appendix C.

COVID/Stay-at Home Adjustment.
Data was provided by the City at a local signalized intersection where data is collected daily. At the intersection of Lafayette Road and South Street, the City has been collecting data since before the pandemic.

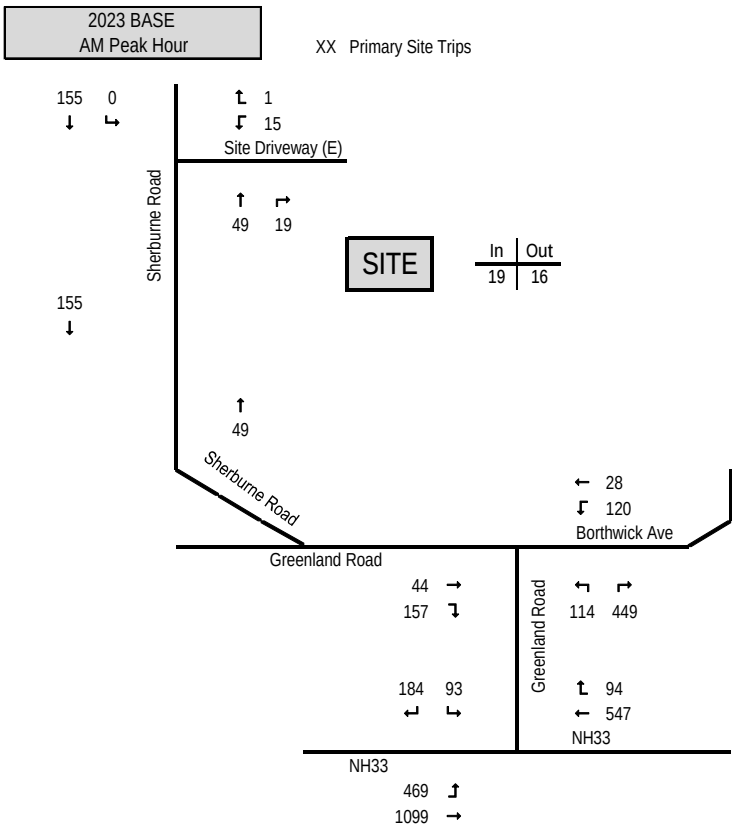
Comparing the data for mid-week (Tuesday – Thursday) for the months of January and February of 2019 vs 2023, shows that the daily volumes are still down by about 13%. The March 2023 counts were adjusted up by 13% to account for traffic that has not returned to pre-pandemic volumes. See calculations in Appendix C.

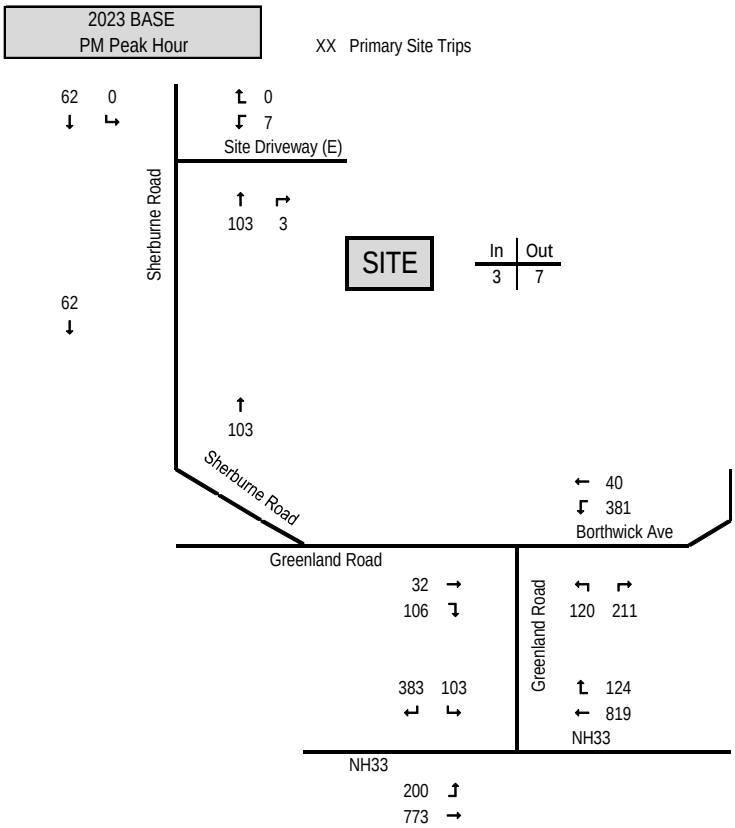
Volumes adjusted as necessary are shown in the following Base condition figures.

Signal Timings
Existing signal timing at the NH33 and Greenland Road intersection is based on current NHDOT timings received by TFM on April 16, 2025. NHDOT noted that it is likely the signal is running Free. The timings are attached in Appendix J.

Balance
Volumes were balanced between the Greenland/Borthwick intersection and the signal at NH33.

The existing volumes are shown in the following figures:


2023 BASE
AM Peak Hour
XX Primary Site Trips
155 0
1
15
Site Driveway (E)
Sherburne Road
49 19
SITE
In Out
19 16
155
49
Sherburne Road
28
120
Borthwick Ave
Greenland Road
44
157
114 449
Greenland Road
184 93
94
547
NH33
NH33
469
1099


2023 BASE
PM Peak Hour
XX Primary Site Trips
62 0
0
7
Site Driveway (E)
Sherburne Road
103 3
SITE
In Out
3 7
62
103
Sherburne Road
40
381
Borthwick Ave
Greenland Road
32
106
120 211
Greenland Road
383 103
124
819
NH33
NH33
200
773

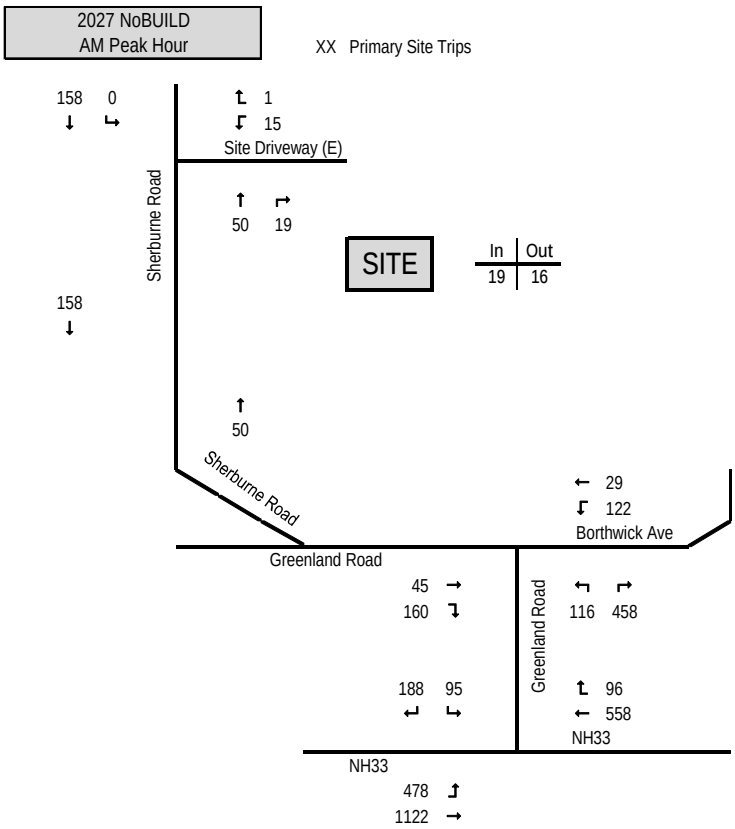
4. No-Build Volumes:

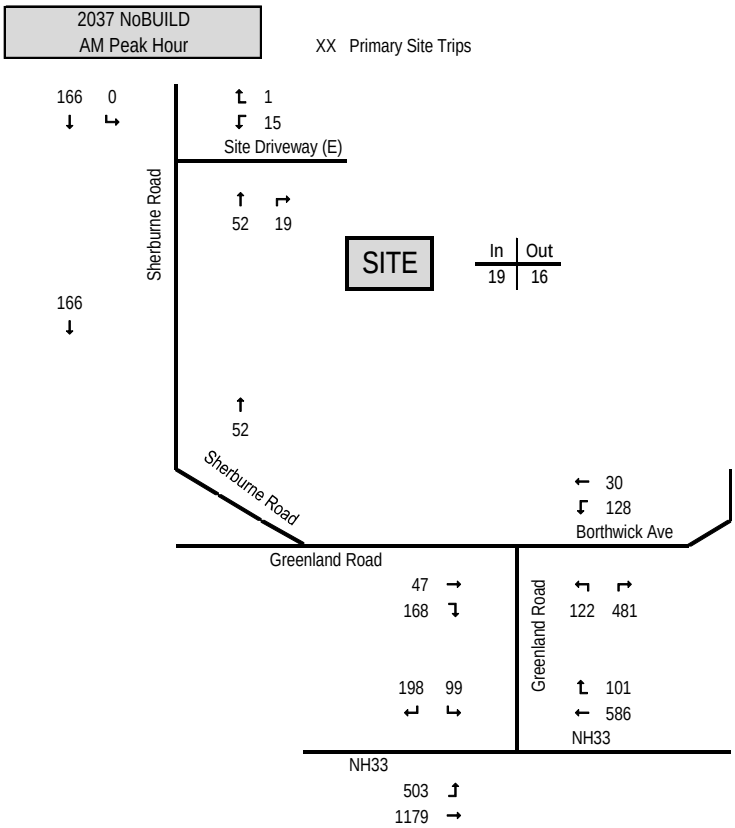
To establish No-Build traffic volumes for this study, the following adjustments were made to the Covid- and seasonally adjusted 2023 Base volumes:

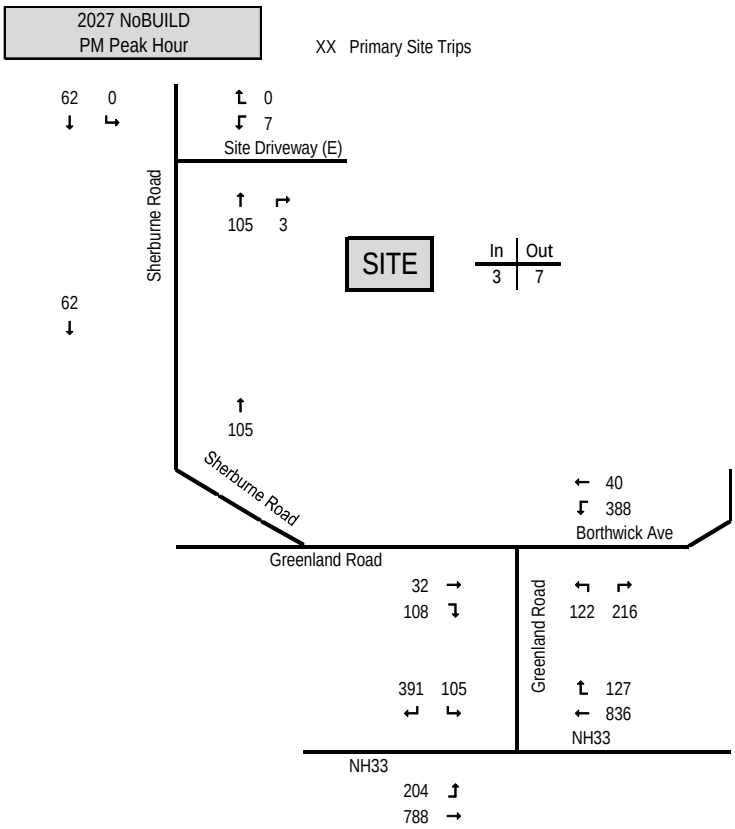
Growth Factor.
NHDOT Historical Annual Growth Data from 2006 to 2019 was reviewed at two stations in Portsmouth: NH33 west of Griffin Road and Borthwick Avenue east of Highliner Avenue. Calculations show that NH33 calculated a plus 0.31% growth rate and Borthwick Ave a minus 0.62% growth rate. The average of the two results in a nearly zero rate of growth for the area, minus 0.16%. See the data and calculations in Appendix C. For the volume calculations, a plus 0.50% growth rate was used as a conservative assumption to account for small local development and in keeping with other studies done in the area.

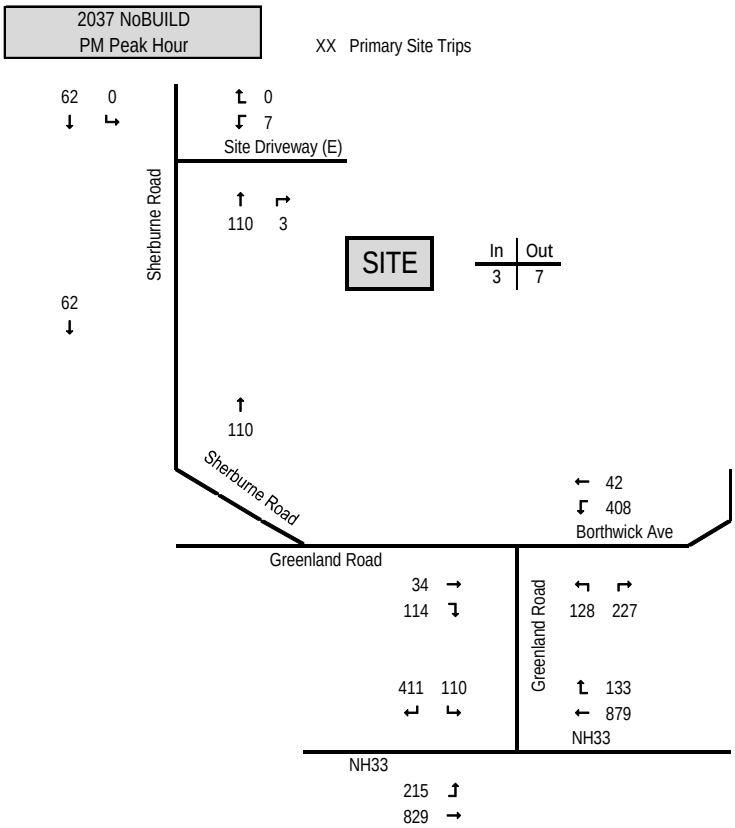
Other Developments.
Per the scoping meeting, two nearby projects were mentioned that would not be included in the count data: a Hospital Expansion and Liberty Mutual reoccupying their existing building. Correspondence with the City (Appendix D) noted that the hospital project only provided a trip memo as it was generating less than a dozen trips during peak hours. Liberty Mutual is just reoccupying their existing building which had been partially vacant during the pandemic and no traffic study was required. Both occurrences can be accounted for within the background growth rate or daily fluctuations of traffic and no additional trips were added to the No-Build volumes.

The total no-build volumes for the opening (2027) and future (2037) years are presented in the figures below.


2027 NoBUILD
AM Peak Hour
XX Primary Site Trips
158 0
1
15
Site Driveway (E)
Sherburne Road
50 19
SITE
In Out
19 16
158
50
Sherburne Road
29
122
Borthwick Ave
Greenland Road
45
160
116 458
Greenland Road
188 95
96
558
NH33
NH33
478
1122


2037 NoBUILD
AM Peak Hour
XX Primary Site Trips
166 0
1
15
Site Driveway (E)
Sherburne Road
52 19
SITE
In Out
19 16
166
52
Sherburne Road
30
128
Borthwick Ave
Greenland Road
47
168
122 481
Greenland Road
198 99
101
586
NH33
NH33
503
1179


2027 NoBUILD
PM Peak Hour
XX Primary Site Trips
62
0
0
7
Site Driveway (E)
Sherburne Road
105
3
SITE
In
Out
3
7
62
105
Sherburne Road
40
388
Borthwick Ave
Greenland Road
32
108
122
216
Greenland Road
391
105
127
836
NH33
NH33
204
788


2037 NoBUILD
PM Peak Hour
XX Primary Site Trips
62
0
0
7
Site Driveway (E)
Sherburne Road
110
3
SITE
In
Out
3
7
62
110
Sherburne Road
42
408
Borthwick Ave
Greenland Road
34
114
128
227
Greenland Road
411
110
133
879
NH33
NH33
215
829

5. Trip Generation:

Proposed Trips

Standard trip generation rates published by the ITE[1] (11th Edition), were used to calculate the vehicle trips for the proposed development. LUC 223, Affordable Housing was used to calculate the trips for the apartment buildings and converted school apartments. Existing school trips were counted at the site driveway. See the table below.

Table 1a – Proposed Trip Generation

Land Use	In	Out	Total
Affordable Housing (LUC 223): 111 Units			
Weekday AM Peak Hour Adjacent Street	13	33	46
Weekday PM Peak Hour Adjacent Street	35	24	59

Table 1b – Existing Trip Generation

Land Use School (based on counts)	In	Out	Total
Existing School			
Weekday AM Peak Hour Adjacent Street	17	14	31
Weekday PM Peak Hour Adjacent Street	3	6	9

Table 1c – New Trips

	In	Out	Total
Weekday AM Peak Hour Adjacent Street	(4)	19	15
Weekday PM Peak Hour Adjacent Street	32	18	50

6. Trip Composition, Distribution and Assignment:

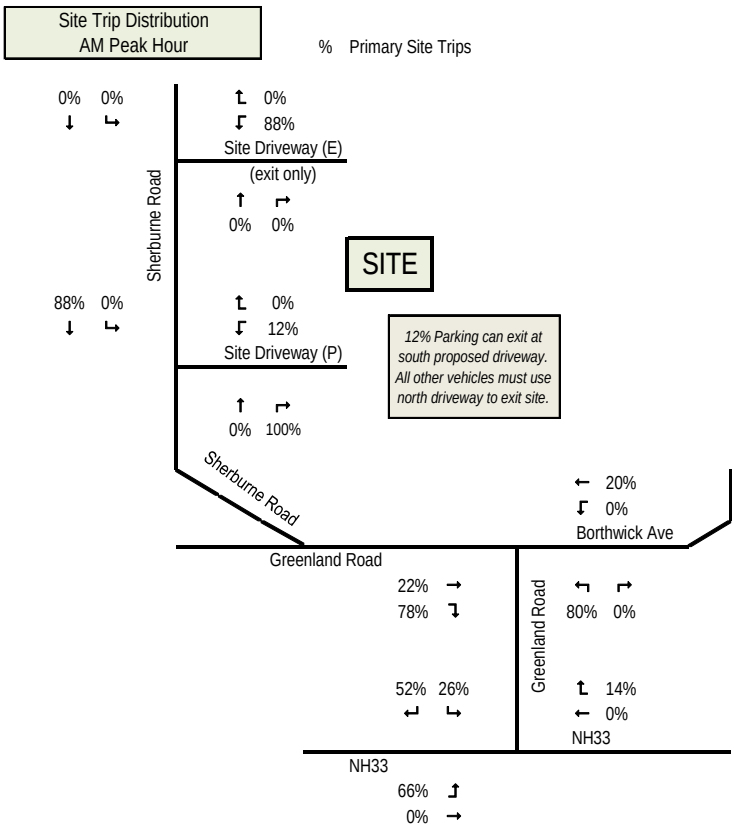
Composition

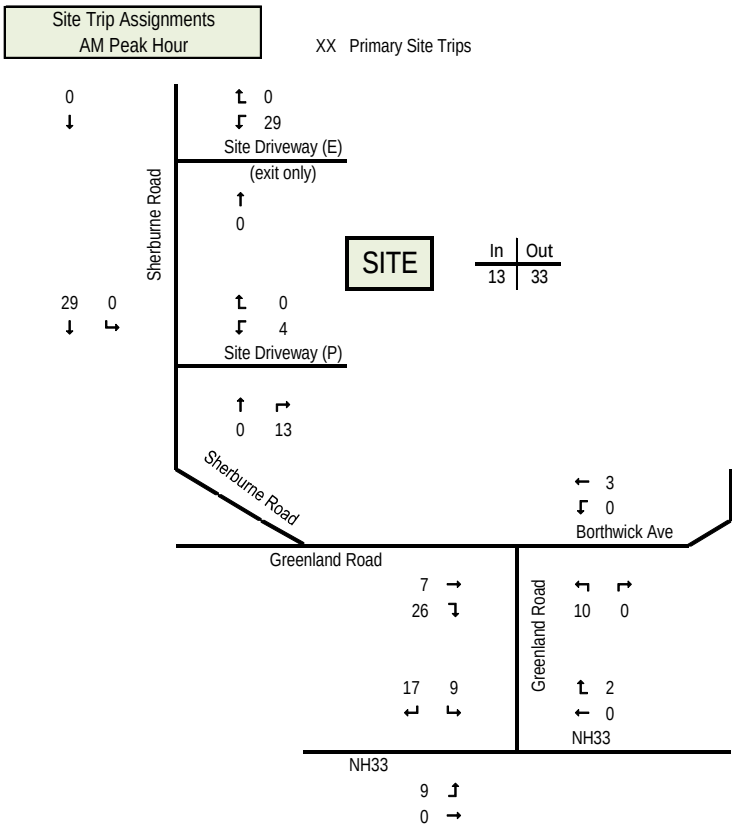
For this project, all trips are considered primary trips. Primary trips go directly from origin to generator and return to origin.

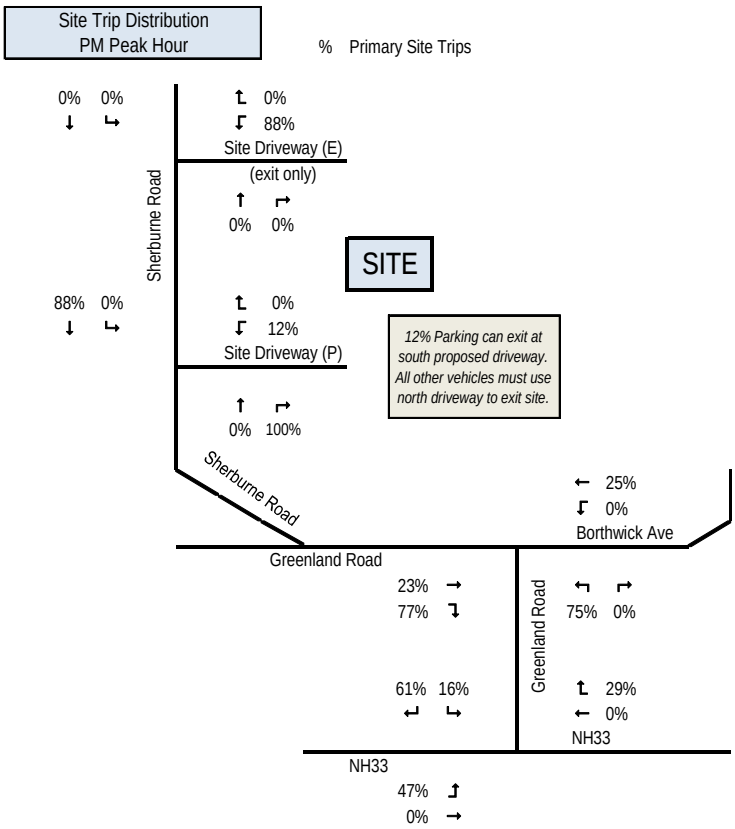
Distribution

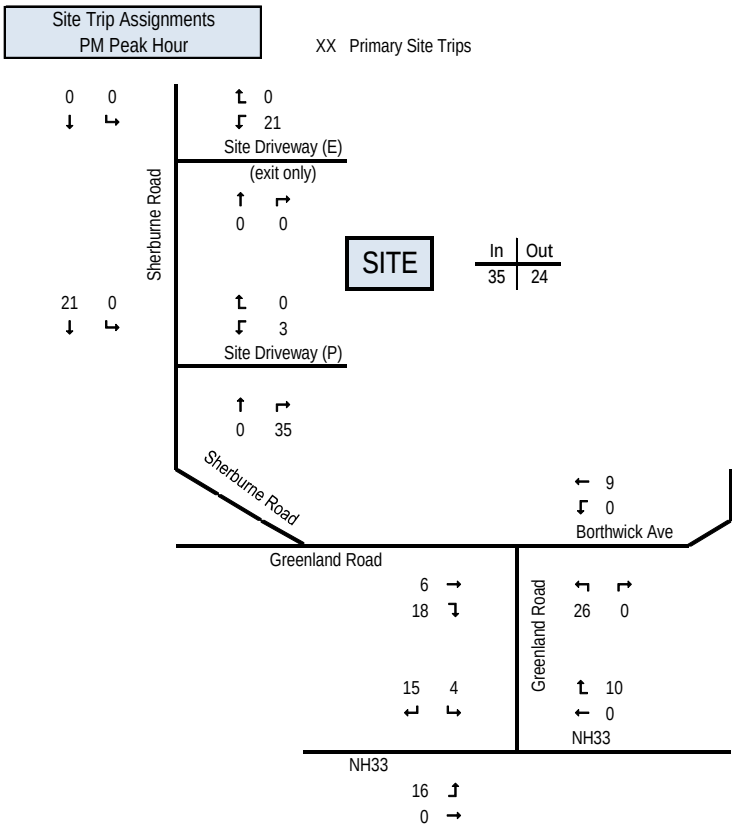
We used prorata distribution based on the new counts in the study area. Sherburne Road is a dead-end roadway, so the existing intersection distributions would represent where residential trips are going to and arriving from. The site trip distributions are shown in the diagrams below.

[1] *Trip Generation Manual*, Institute of Transportation Engineers (ITE), 11th Edition.


Site Trip Distribution
AM Peak Hour
% Primary Site Trips
0% 0%
0%
88%
Site Driveway (E)
(exit only)
0% 0%
SITE
88% 0%
0%
12%
Site Driveway (P)
0% 100%
12% Parking can exit at south proposed driveway. All other vehicles must use north driveway to exit site.
Sherburne Road
Sherburne Road
20%
0%
Borthwick Ave
Greenland Road
22%
78%
80% 0%
Greenland Road
52% 26%
14%
0%
NH33
NH33
66%
0%


Site Trip Assignments
AM Peak Hour
XX Primary Site Trips
0
0
29
Site Driveway (E)
(exit only)
0
SITE
In Out
13 33
29 0
0
4
Site Driveway (P)
0 13
Sherburne Road
Sherburne Road
3
0
Borthwick Ave
Greenland Road
7
26
10 0
Greenland Road
17 9
2
0
NH33
NH33
9
0

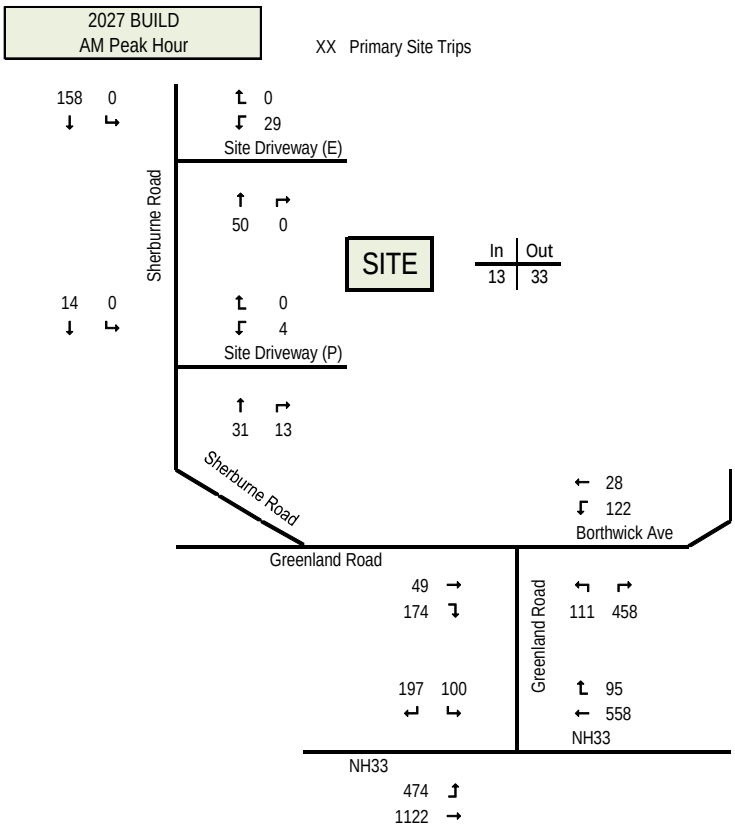

Site Trip Distribution
PM Peak Hour
% Primary Site Trips
0% 0%
0%
88%
Site Driveway (E)
(exit only)
0% 0%
SITE
88% 0%
0%
12%
Site Driveway (P)
0% 100%
12% Parking can exit at south proposed driveway. All other vehicles must use north driveway to exit site.
Sherburne Road
Sherburne Road
25%
0%
Borthwick Ave
Greenland Road
23%
77%
Greenland Road
75% 0%
61% 16%
29%
0%
NH33
NH33
47%
0%

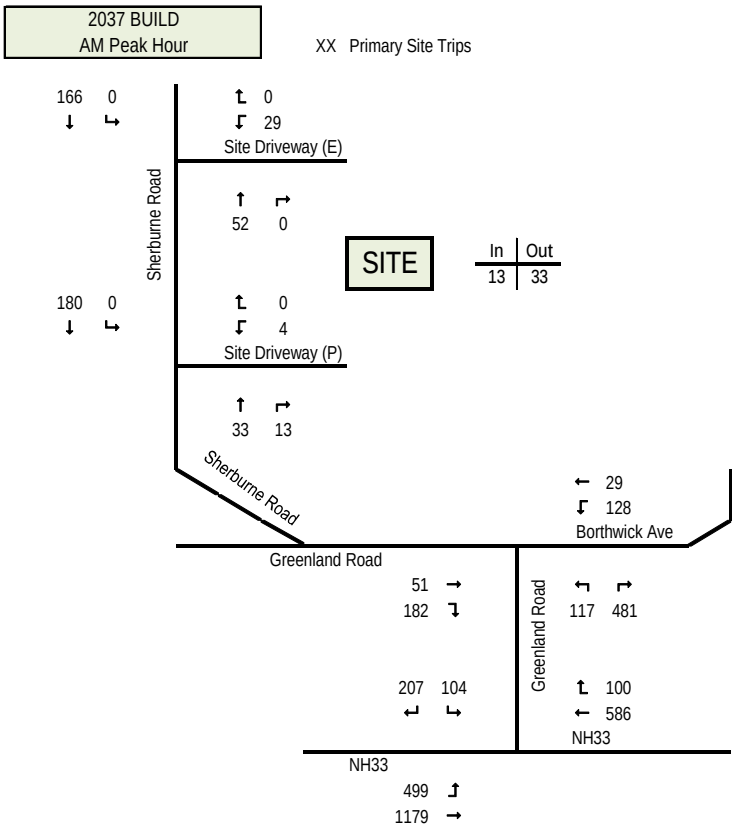

Site Trip Assignments
PM Peak Hour
XX Primary Site Trips
0 0
0
21
Site Driveway (E)
(exit only)
0 0
SITE
In Out
35 24
21 0
0
3
Site Driveway (P)
0 35
Sherburne Road
Sherburne Road
9
0
Borthwick Ave
Greenland Road
6
18
Greenland Road
26 0
15 4
10
0
NH33
NH33
16
0

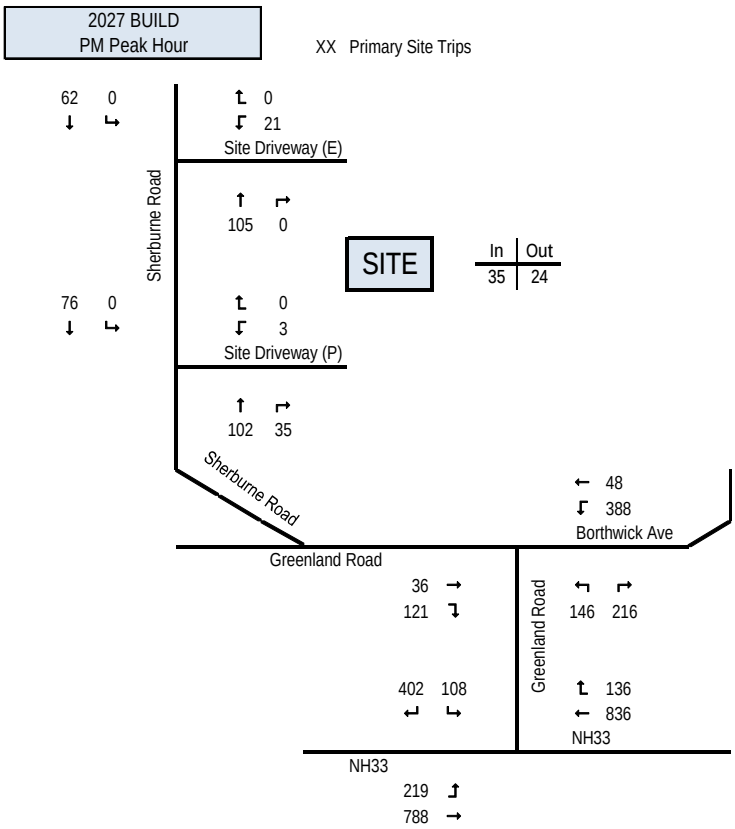
7. Build Volumes:

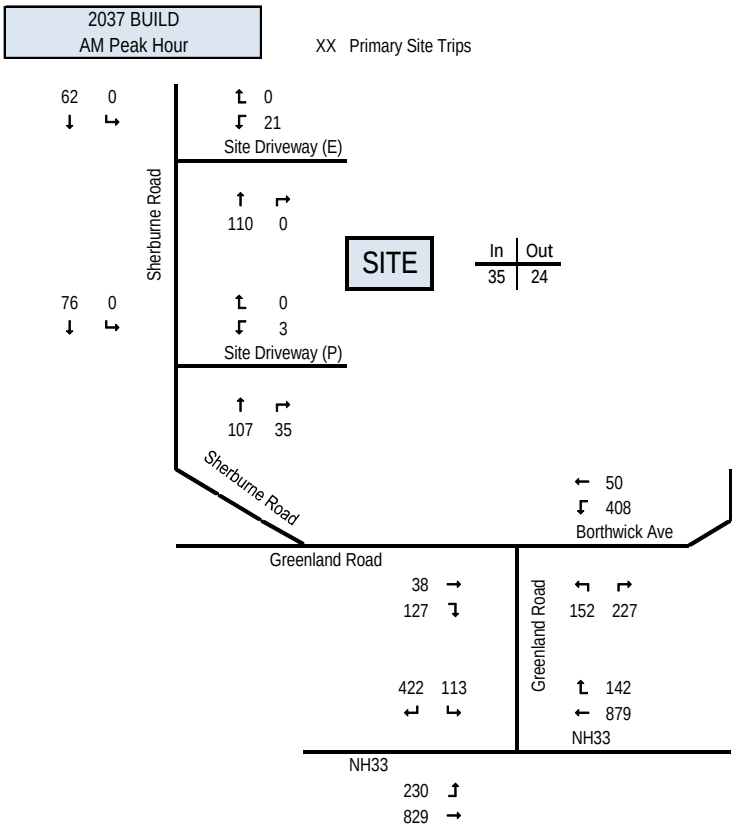
The existing school volumes are deducted from the NoBuild Volumes, and then the site trips generated by the development were added to No-Build traffic volumes throughout the study area to produce Build diagrams for the project.

2027 and 2037 diagrams are shown on the following pages for each peak hour:


2027 BUILD
AM Peak Hour
XX Primary Site Trips
158 0
0
29
Site Driveway (E)
Sherburne Road
50 0
SITE
In Out
13 33
14 0
0
4
Site Driveway (P)
31 13
Sherburne Road
28
122
Borthwick Ave
Greenland Road
49
174
Greenland Road
111 458
197 100
95
558
NH33
NH33
474
1122


2037 BUILD
AM Peak Hour
XX Primary Site Trips
166 0
0
29
Site Driveway (E)
Sherburne Road
52 0
SITE
In Out
13 33
180 0
0
4
Site Driveway (P)
33 13
Sherburne Road
29
128
Borthwick Ave
Greenland Road
51
182
Greenland Road
117 481
207 104
100
586
NH33
NH33
499
1179


2027 BUILD
PM Peak Hour
XX Primary Site Trips
62 0
0
21
Site Driveway (E)
Sherburne Road
105 0
SITE
In Out
35 24
76 0
0
3
Site Driveway (P)
102 35
Sherburne Road
48
388
Borthwick Ave
Greenland Road
36
121
Greenland Road
146 216
402 108
136
836
NH33
NH33
219
788


2037 BUILD
AM Peak Hour
XX Primary Site Trips
62 0
0
21
Site Driveway (E)
Sherburne Road
110 0
SITE
In Out
35 24
76 0
0
3
Site Driveway (P)
107 35
Sherburne Road
50
408
Borthwick Ave
Greenland Road
38
127
Greenland Road
152 227
422 113
142
879
NH33
NH33
230
829

8. Level of Service Analysis:

Level of Service Analysis:
Level of service (LOS) is a qualitative description of operational conditions within a traffic stream measured in terms of control delay, a function of capacity, degree of saturation, and delay associated with traffic signals and "STOP" signs. Control delay includes initial deceleration, delay approaching a control device, stopped delay, queue move-up time, and acceleration delay from a stopped condition. The relationship between control delay and LOS is shown in the following table.

Level of Service (LOS)	Signalized Control Delay (sec)	Unsignalized Control Delay (sec)
A	≤10.0	≤10.0
B	10.1 to 20.0	10.1 to 15.0
C	20.1 to 35.0	15.1 to 25.0
D	35.1 to 55.0	25.1 to 35.0
E	55.1 to 80.0	35.1 to 50.0
F	Over 80.0	Over 50.0

Study Area.
Analyses were performed for the study area intersections previously described, that is:

1. Sherburne Road at Site Driveway (exit only)
2. Sherburne Road at Site Driveway (full access)
3. Greenland Road at Borthwick Avenue
4. NH33 at Greenland Road

Queue Analysis.
Vehicle queue lengths are determined by the capacity of the movement under study and the volume of traffic processed by the intersection during the analysis period. It is standard practice to report the 95th percentile queue, that is, the queue that will be exceeded no more than 5% of the time during the peak periods.

Methodology.
Trafficware "Synchro" v11 software was used to analyze signalized and unsignalized intersections (based on HCM 2000 for the signal and HCM 6th for stop controlled) within the study area intersections during the weekday PM and Saturday peak hours.

Signal Timing.
Signal timing for the NH33 signal is modeled based on data provided by the NHDOT in the Appendix.

Volume to capacity (v/c) ratios, Level of Service (LOS), delays and queue results are summarized in the following tables:

Table 2 Level of Service Analysis Summary (2023/2027)

Location/ *Peak Hour*	2023 BASE				2027 NoBuild				2027 Build			
Movement	v/c[a]	Del.[b]	LOS[c]	Q[d]	v/c[a]	Del.[b]	LOS[c]	Q[d]	v/c[a]	Del.[b]	LOS[c]	Q[d]
1: Sherburne Road at Site Driveway (Existing) - [exit only Build Case]												
AM Peak OVERALL	---	1.3	A	---	---	1.3	A	---	---	1.1	A	---
WB L/R	0.06	10.5	B	5	0.06	10.5	B	5	0.05	10.2	B	3
SB L/T [T]	-	0.0	A	0	-	0.0	A	0	-	-	-	-
PM Peak OVERALL	---	0.7	A	---	---	0.7	A	---	---	0.9	A	---
WB L/R	0.02	9.8	A	3	0.02	9.8	A	3	0.03	9.9	A	3
SB L/T [T]	-	0.0	A	0	-	0.0	A	0	-	-	-	-
2: Sherburne Road at Site Driveway (Proposed) - [full access]												
AM Peak OVERALL	---	---	---	---	---	---	---	---	---	0.2	A	---
WB L/R	-	-	-	--	-	-	-	-	0.01	9.8	A	0
SB L/T [T]	-	-	-	-	-	-	-	-	-	-	-	-
PM Peak OVERALL	---	---	---	---	---	---	---	---	---	0.1	A	---
WB L/R	-	-	-	-	-	-	-	-	0.00	9.7	A	0
SB L/T [T]	-	-	-	-	-	-	-	-	-	-	-	-
4: Greenland Road at Borthwick Avenue												
AM Peak OVERALL	---	20.1	C	---	---	21.4	C	---	---	22.2	C	---
EB All	0.37	11.7	B	43	0.38	11.9	B	43	0.41	12.4	B	50
WB All	0.30	12.0	B	33	0.31	12.2	B	33	0.31	12.3	B	33
NB L	0.27	11.3	B	28	0.27	11.4	B	28	0.26	11.4	B	25
NB R	0.83	28.0	D	233	0.86	30.5	D	253	0.86	31.9	D	260
PM Peak OVERALL	---	15.0	B	---	---	15.4	C	---	---	16.4	C	---
EB All	0.23	9.8	A	23	0.24	9.9	A	23	0.27	10.4	B	28
WB All	0.69	19.5	C	138	0.70	20.3	C	145	0.73	22.2	C	160
NB L	0.25	11.8	B	25	0.26	11.9	B	25	0.32	12.7	B	33
NB R	0.37	11.5	B	43	0.38	11.7	B	45	0.39	11.9	B	45
5: NH33 at Greenland Road (signalized)												
AM Peak OVERALL	0.74	22.2	C	---	0.76	22.7	C	---	0.76	22.8	C	---
EB L	0.88	40.3	D	442	0.88	40.0	D	465	0.89	40.7	D	459
EB T	0.52	5.9	A	192	0.53	6.2	A	205	0.54	6.3	A	205
WB TT/R	0.69	31.7	C	253	0.73	33.6	C	259	0.72	3312	C	258
SB L	0.48	38.3	D	97	0.49	38.0	D	97	0.50	38.0	D	102
SB R	0.15	34.9	C	44	0.15	34.7	C	43	0.16	34.6	C	44
PM Peak OVERALL	0.63	19.4	B	---	0.64	19.8	B	---	0.66	20.4	C	---
EB L	0.62	33.2	C	154	0.63	33.4	C	158	0.65	34.1	C	170
EB T	0.33	5.3	A	133	0.34	5.3	A	137	0.34	5.4	A	138
WB TT/R	0.72	22.1	C	433	0.74	22.8	C	447	0.76	23.8	C	453
SB L	0.42	31.9	C	88	0.42	31.9	C	89	0.43	31.8	C	91
SB R	0.26	30.4	C	68	0.26	30.4	C	68	0.27	30.3	C	69

[a] Volume-to-capacity ratio - [b] Average control delay (sec/veh) - [c] Level of service - [d] 95th percentile queue in feet

Table 3 Level of Service Analysis Summary (2037)

Location/ *Peak Hour*	2037 NoBuild				2037 Build			
Movement	v/c[a]	Del.[b]	LOS[c]	Q[d]	v/c[a]	Del.[b]	LOS[c]	Q[d]
1: Sherburne Road at Site Driveway (Existing) - [exit only Build Case]								
AM Peak OVERALL	---	0.6	A	---	---	1.2	A	---
WB L/R	0.03	10.1	B	3	0.04	10.0	B	3
SB L/T [T]	-	0.0	A	0	-	-	-	-
PM Peak OVERALL	---	0.4	A	---	---	1.0	A	---
WB L/R	0.01	9.5	A	0	0.03	9.6	A	3
SB L/T [T]	-	0.0	A	0	-	-	-	-
2: Sherburne Road at Site Driveway (Proposed) - [full access]								
AM Peak OVERALL	---	---	---	---	---	0.2	A	---
WB L/R	-	-	-	--	0.01	9.8	A	0
SB L/T [T]	-	-	-	-	-	-	-	-
PM Peak OVERALL	---	---	---	---	---	0.1	A	---
WB L/R	-	-	-	--	0.00	9.7	A	0
SB L/T [T]	-	-	-	-	-	-	-	-
4: Greenland Road at Borthwick Avenue								
AM Peak OVERALL	---	16.1	C	---	---	16.4	C	---
EB All	0.36	11.3	B	40	0.39	11.7	B	45
WB All	0.30	11.8	B	30	0.30	11.8	B	33
NB L	0.24	11.0	B	23	0.23	11.0	B	28
NB R	0.74	20.9	C	168	0.75	21.5	C	173
PM Peak OVERALL	---	16.8	C	---	---	17.9	C	---
EB All	0.24	10.1	B	25	0.28	10.6	B	28
WB All	0.74	22.8	C	168	0.77	25.1	D	185
NB L	0.27	12.1	B	28	0.33	13.0	B	35
NB R	0.40	12.0	B	48	0.40	12.3	B	48
5: NH33 at Greenland Road								
AM Peak OVERALL	0.75	22.4	C	---	0.80	24.2	C	---
EB L	0.88	40.3	D	502	0.90	41.0	D	496
EB T	0.51	5.8	A	215	0.57	6.7	A	221
WB TT/R	0.72	31.9	C	275	0.81	37.8	D	274
SB L	0.48	38.3	D	105	0.51	38.2	D	105
SB R	0.14	35.0	C	60	0.16	34.5	C	44
PM Peak OVERALL	0.67	20.6	C	---	0.69	21.3	C	---
EB L	0.65	33.9	C	167	0.67	34.5	C	179
EB T	0.36	5.6	A	149	0.36	5.7	A	149
WB TT/R	0.78	24.7	C	481	0.80	26.0	C	486
SB L	0.43	31.6	C	92	0.44	31.6	C	95
SB R	0.28	30.2	C	70	0.28	30.2	C	71

[a] Volume-to-capacity ratio - [b] Average control delay (sec/veh) - [c] Level of service - [d] 95th percentile queue in feet

9. Sight Distance:

The proposed driveways have adequate sight distance based on grade and distance to adjacent intersections. The existing site driveway on Sherburne Road has a clear sight distance of 350' looking left and 380' looking right. The proposed driveway has 280' looking left over the lawn area and 380' looking right. At 20 mph, the required AASHTO intersection sight distance for a left turn is 225'. The required sight distance for 32 mph (85th percentile per Section 10) is 353'.

10. Speed Study

A speed study was measured along Sherburne Road adjacent to the existing school driveway. The travel times were recorded using ATRs over a 24-hour period which recorded travel speeds. The results of the speed measurements are summarized in the table below.

Table 4 – Observed Travel Speeds

Sherburne Road at existing school driveway	Posted Speed Limit	Average Speed	85th Percentile Speed
Northbound	20	28.2	32.0
Southbound	20	24.6	28.0

As shown in Table 3, the observed speeds along Sherburne Road were found to exceed the posted school zone speed limit of 20 mph. The school zone designation will need to be removed as part of this project; however, the adjacent neighborhood on the north side of the I95 overpass is also posted at 20 mph.

11. Accident Evaluation:

Crash data requested for the study intersections was received from the Portsmouth Police Department for the years 2019-2022 and from NHDOT for years 2021-2023. Three is provided in Appendix H. A summary of the crash data in provided in Table 4.

Table 5 – Crash Data Summary

	Greenland Rd at Borthwick Ave **(Unsignalized)**	NH33 at Greenland Rd **(Signal)**
CRASH FREQUENCY		
Total Crashes	7	6
Crashes per Year (Ave)	1.4	1.2
CRASH SEVERITY		
Property Damage Only	6	5
Injury	1	1
Fatalities	0	0
CRASH TYPE		
Angle/Cross Movement	3	0
Rear End	3	1
Side-Swipe	0	1
ADVERSE CONDITIONS		
Sun Glare	1	0
Snow	1	0
WEEKDAY COMMUTER PEAK		
Weekday AM (7-9am)	2	1
Weekday PM (3-6pm)	0	3
Non-Commuter Peak	5	2

Greenland Road at Borthwick Avenue (3-leg unsignalized intersection)
Seven crashes occurred in the vicinity of the Greenland Road/Borthwick Ave intersection and with only one resulting in injury. All crashes involved two vehicles, three of which were rear end occurrences and three from crossing the intersection, one unknown. Two were the result of adverse conditions (sun glare or snow) with only one accident occurring during the weekday peak hours of the roadway. Based on this data, there does not appear to be any safety concerns at this intersection, however, the City has updated this intersection, by making all three legs stop controlled.

NH33 at Greenland Road (3-leg signalized intersection)
Two crashes occurred in the vicinity of the NH33/Greenland Road intersection, with only one incident resulting in injury. All crashes involved two vehicles, one was a side-swipe from changing lanes and one rear end collision, the others are unknown. Both accidents occurred during the weekday peak PM hours of the roadway. Based on this data, there does not appear to be any elevated safety concerns at this intersection.

12. Conclusions:

This study shows that traffic from this redevelopment housing proposal is all primary trips and adds 15 new trips in the AM Peak Hour and 50 new trips during the PM Peak Hour. That is less than one new trip per minute during peak hours. Therefore, only minor changes occur at the study area intersections.

- Queues and delays at the study intersections are essentially unchanged (overall LOS C or better) in all scenarios.
- At the site driveways, traffic operates favorably (B or better) in all scenarios, with 95th pctl queues of less than one car length for entering and exiting traffic.
- School zone signs should be removed upon closure of the school.

We therefore conclude that this new proposal will have no significant negative impact on the adjacent roadway network. The existing intersections will operate acceptably in opening and future years.

Respectfully Submitted,
TFMORAN, INC.

Robert Duval, PE
Chief Engineer

APPENDIX A

Proposed Trip Generation

Based on ITE Trip Generation 11th Edition

ITE LUC 223 - Affordable Housing - Income Limits
Use Includes: 128 Dwelling Units (30 apartment units, 90 apartment units, 8 units in existing building)

Time Period	Rate/Equn		Rate/ Eq	Trip Ends	Directional Split		Directional Distribution	
	X	Rate	Used		In	Out	In	Out
Weekday AM Peak Hour Adjacent Street	128	0.36	Rate	46	29%	71%	13	33
Weekday PM Peak Hour Adjacent Street	128	0.46	Rate	59	59%	41%	35	24
Weekday Daily	128	4.81	Rate	616	50%	50%	308	308

Description of LUC 223:
Affordable housing includes all multifamily housing that is rented at below market rate to households that include at least one employed member. Eligibility to live in affordable housing can be a function of limited household income and resident age.

Site Trip Distribution

Primary

	In	Out
AM Totals	13	33

Sherburne Road at Site Driveway (Existing)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
WBL		88%	0	29
WLR			0	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0

Sherburne Road at Site Driveway (Proposed)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
WBL		12%	0	4
WLR			0	0
NBT			0	0
NBR	100%		13	0
SBL			0	0
SBT		88%	0	29

Greenland at Borthwick

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		22%	0	7
EBR		78%	0	26
WBL			0	0
WBT	20%		3	0
NBL	80%		10	0
NBR			0	0

NH33 at Greenland

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL	66%		9	0
EBT			0	0
WBT			0	0
WBR	14%		2	0
SBL		26%	0	9
SBR		52%	0	17

TOTAL: Site Trip Assignment

TOTAL

	AM TOTAL
	46

Sherburne Road at Site Driveway (Existing)

Movement	
WBL	29
WLR	0
NBT	0
NBR	0
SBL	0
SBT	0

Sherburne Road at Site Driveway (Proposed)

Movement	
WBL	4
WLR	0
NBT	0
NBR	13
SBL	0
SBT	29

Greenland at Borthwick

Movement	
EBT	7
EBR	26
WBL	0
WBT	3
NBL	10
NBR	0

NH33 at Greenland

Movement	
EBL	9
EBT	0
WBT	0
WBR	2
SBL	9
SBR	17

Site Trip Distribution

Primary

	In	Out
PM Totals	35	24

Sherburne Road at Site Driveway (Existing)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
WBL		88%	0	21
WLR			0	0
NBT			0	0
NBR			0	0
SBL			0	0
SBT			0	0

Sherburne Road at Site Driveway (Proposed)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
WBL		12%	0	3
WLR			0	0
NBT			0	0
NBR	100%		35	0
SBL			0	0
SBT		88%	0	21

Greenland at Borthwick

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		23%	0	6
EBR		77%	0	18
WBL			0	0
WBT	25%		9	0
NBL	75%		26	0
NBR			0	0

NH33 at Greenland

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL	47%		16	0
EBT			0	0
WBT			0	0
WBR	29%		10	0
SBL		16%	0	4
SBR		61%	0	15

TOTAL: Site Trip Assignment

TOTAL

	PM TOTAL
	59

Sherburne Road at Site Driveway (Existing)

Movement	
WBL	21
WLR	0
NBT	0
NBR	0
SBL	0
SBT	0

Sherburne Road at Site Driveway (Proposed)

Movement	
WBL	3
WLR	0
NBT	0
NBR	35
SBL	0
SBT	21

Greenland at Borthwick

Movement	
EBT	6
EBR	18
WBL	0
WBT	9
NBL	26
NBR	0

NH33 at Greenland

Movement	
EBL	16
EBT	0
WBT	0
WBR	10
SBL	4
SBR	15

APPENDIX B

Site Trip Distribution

Primary

	In	Out
AM Totals	19	16

Sherburne Road at Site Driveway (Existing)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
WBL		**95%**	0	15
WBR		**5%**	0	1
NBT			0	0
NBR	**100%**		19	0
SBL			0	0
SBT			0	0

Sherburne Road at Site Driveway (Proposed)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
WBL			0	0
WLR			0	0
NBT	100%		19	0
NBR			0	0
SBL			0	0
SBT		95%	0	15

Greenland at Borthwick

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		21%	0	3
EBR		74%	0	12
WBL			0	0
WBT	20%		4	0
NBL	80%		15	0
NBR			0	0

NH33 at Greenland

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL	66%		13	0
EBT			0	0
WBT			0	0
WBR	14%		3	0
SBL		24%	0	4
SBR		50%	0	8

TOTAL: Site Trip Assignment

TOTAL

	AM TOTAL
	35

Sherburne Road at Site Driveway (Existing)

Movement	
WBL	-15
WBR	-1
NBT	0
NBR	-19
SBL	0
SBT	0

Sherburne Road at Site Driveway (Proposed)

Movement	
WBL	0
WLR	0
NBT	-19
NBR	0
SBL	0
SBT	-15

Greenland at Borthwick

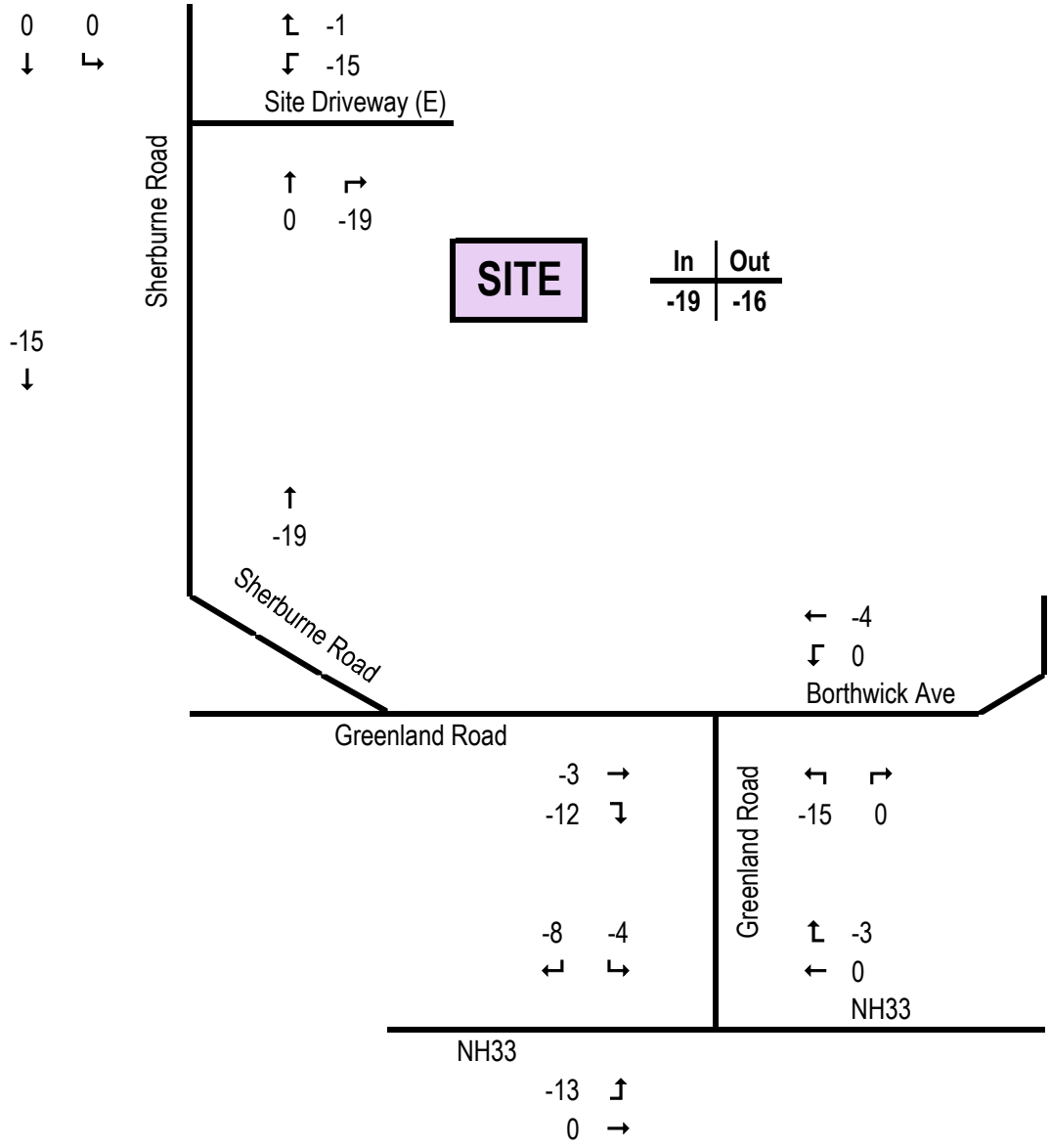
Movement	
EBT	-3
EBR	-12
WBL	0
WBT	-4
NBL	-15
NBR	0

NH33 at Greenland

Movement	
EBL	-13
EBT	0
WBT	0
WBR	-3
SBL	-4
SBR	-8

Existing Site Trip Deductions
2023 BASE
AM Peak Hour

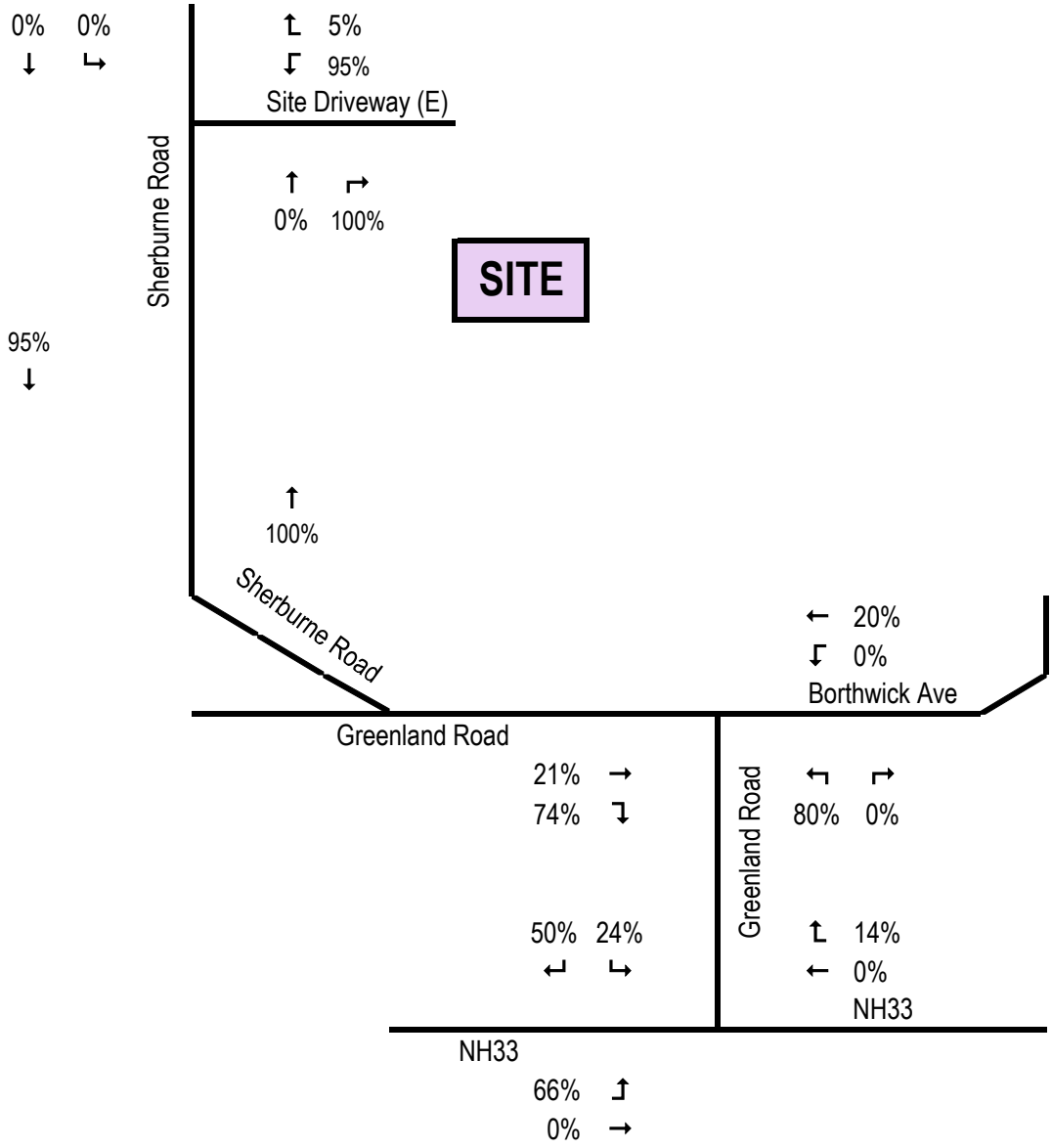
XX Primary Site Trips



Existing Site Trip Deduction %

AM Peak Hour

% Primary Site Trips



Site Trip Distribution

Primary

	In	Out
PM Totals	3	7

Sherburne Road at Site Driveway (Existing)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
WBL		**100%**	0	7
WBR			0	0
NBT			0	0
NBR	**100%**		3	0
SBL			0	0
SBT			0	0

Sherburne Road at Site Driveway (Proposed)

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
WBL			0	0
WLR			0	0
NBT	100%		3	0
NBR			0	0
SBL			0	0
SBT		100%	0	7

Greenland at Borthwick

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBT		23%	0	2
EBR		77%	0	5
WBL			0	0
WBT	25%		1	0
NBL	75%		2	0
NBR			0	0

NH33 at Greenland

Movement	PERCENTAGES In	PERCENTAGES Out	TRIPS In	TRIPS Out
EBL	47%		1	0
EBT			0	0
WBT			0	0
WBR	*28%*		1	0
SBL		16%	0	1
SBR		61%	0	4

TOTAL: Site Trip Assignment

TOTAL

	PM TOTAL
	10

Sherburne Road at Site Driveway (Existing)

Movement	
WBL	-7
WBR	0
NBT	0
NBR	-3
SBL	0
SBT	0

Sherburne Road at Site Driveway (Proposed)

Movement	
WBL	0
WLR	0
NBT	-3
NBR	0
SBL	0
SBT	-7

Greenland at Borthwick

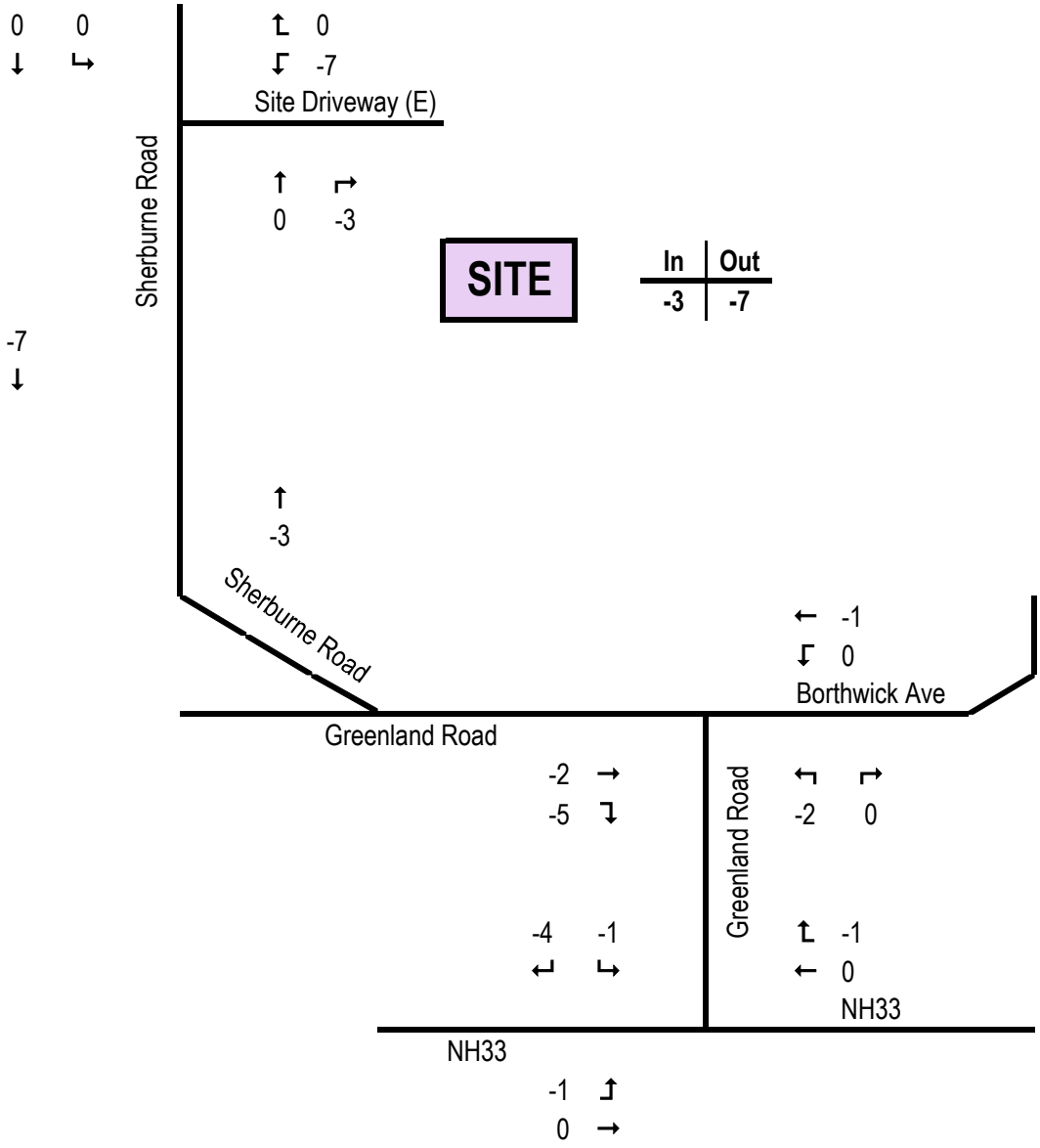
Movement	
EBT	-2
EBR	-5
WBL	0
WBT	-1
NBL	-2
NBR	0

NH33 at Greenland

Movement	
EBL	-1
EBT	0
WBT	0
WBR	-1
SBL	-1
SBR	-4

Existing Site Trip Deductions
2023 BASE
PM Peak Hour

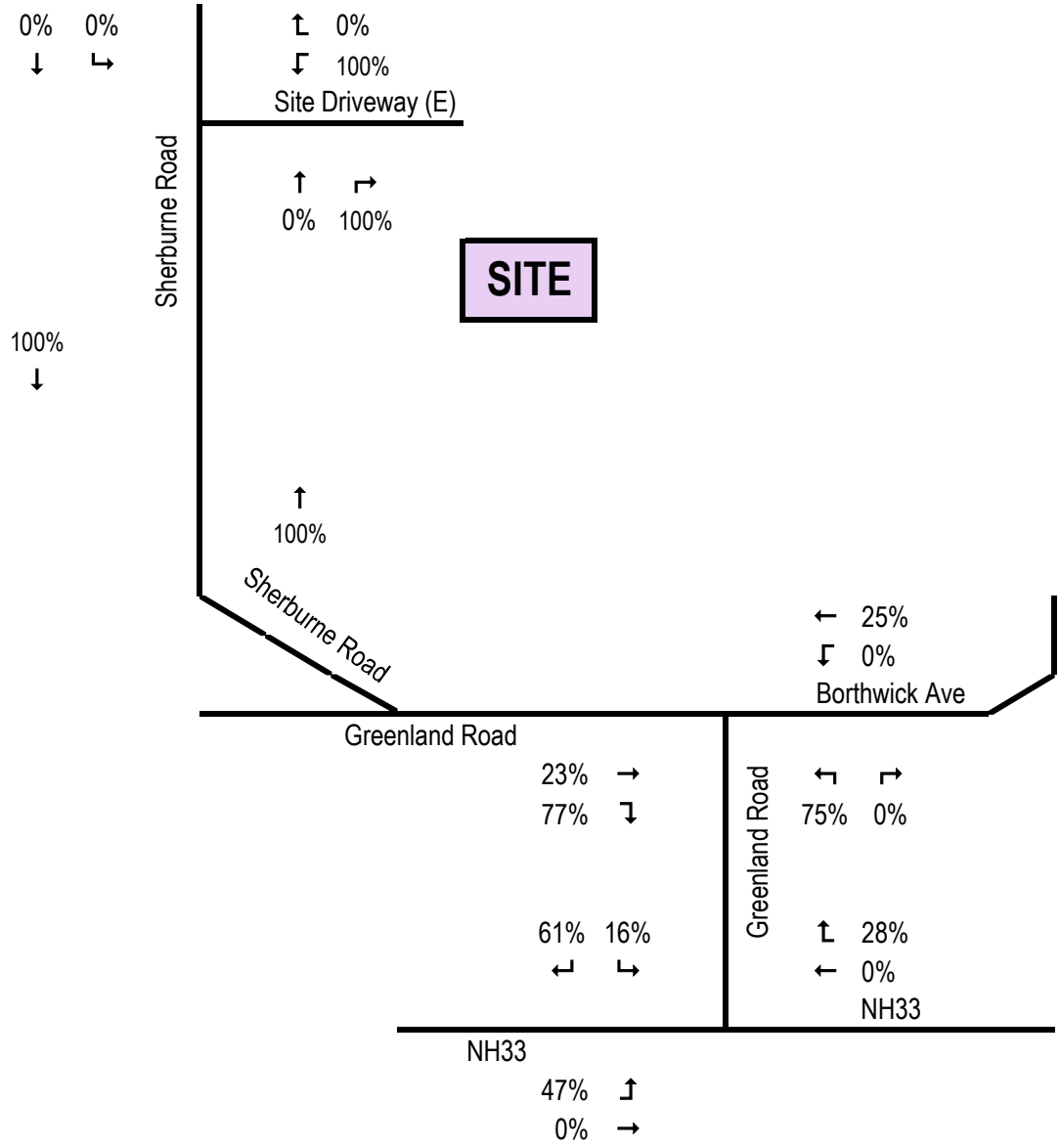
XX Primary Site Trips



Existing Site Trip Deduction %

PM Peak Hour

% Primary Site Trips



APPENDIX C

Year 2019 Monthly Data

Group 4 Averages: Urban Highways

Month	ADT	For WARRANTS Adjustment to Average	For Traffic Adjustment to Peak
January	11,431	1.12	1.23
February	11,848	1.08	1.18
March	12,141	1.06	1.15
April	12,860	1.00	1.09
May	13,551	0.95	1.03
June	13,785	0.93	1.02
July	13,942	0.92	1.01
August	14,016	0.92	1.00
September	13,379	0.96	1.05
October	13,339	0.96	1.05
November	12,265	1.05	1.14
December	11,496	1.12	1.22

Average ADT: 12,838
Peak ADT: 14,016

PM Peak Hour at South and Lafayette (Data from City)

2019 PM Peak Hr			2023 PM Peak Hr			% Change	
DATE	**WEEKDAY**	**VOLUME**	**DATE**	**WEEKDAY**	**VOLUME**		
	2019 PM Peak Hr						
1/1/2019	Tuesday	1016	~~1/3/2023~~	~~Tuesday~~	~~1214~~	~~19%~~	Remove Highest
1/2/2019	Wednesday	1550	1/4/2023	Wednesday	1286	-17%	
1/3/2019	Thursday	1532	1/5/2023	Thursday	1357	-11%	
1/8/2019	Tuesday	1411	1/10/2023	Tuesday	1327	-6%	
1/9/2019	Wednesday	1457	1/11/2023	Wednesday	1378	-5%	
1/10/2019	Thursday	1571	~~1/12/2023~~	~~Thursday~~	~~1158~~	~~-26%~~	Remove Lowest
1/15/2019	Tuesday	1498	1/17/2023	Tuesday	1330	-11%	
1/16/2019	Wednesday	1480	1/18/2023	Wednesday	1274	-14%	
1/17/2019	Thursday	1529	1/19/2023	Thursday	1402	-8%	
1/22/2019	Tuesday	1316	1/24/2023	Tuesday	1185	-10%	
1/23/2019	Wednesday	1295	1/25/2023	Wednesday	1033	-20%	
1/24/2019	Thursday	1440	1/26/2023	Thursday	1279	-11%	
1/29/2019	Tuesday	1388	1/31/2023	Tuesday	1257	-9%	
1/30/2019	Wednesday	1454	2/1/2023	Wednesday	1309	-10%	
1/31/2019	Thursday	1525	2/2/2023	Thursday	1274	-16%	
2/5/2019	Tuesday	1473	2/7/2023	Tuesday	1262	-14%	
2/6/2019	Wednesday	1415	2/8/2023	Wednesday	1137	-20%	
2/7/2019	Thursday	1407	2/9/2023	Thursday	1304	-7%	
2/12/2019	Tuesday	1468	2/14/2023	Tuesday	1244	-15%	
2/13/2019	Wednesday	1237	2/15/2023	Wednesday	1281	4%	
2/14/2019	Thursday	1480	2/16/2023	Thursday	1310	-11%	
2/19/2019	Tuesday	1538	2/21/2023	Tuesday	1267	-18%	
2/20/2019	Wednesday	1473	2/22/2023	Wednesday	1384	-6%	
2/21/2019	Thursday	1474	2/23/2023	Thursday	786	-47%	
2/26/2019	Tuesday	1132	~~2/28/2023~~	~~Tuesday~~	~~686~~	~~-39%~~	2023
2/27/2019	Wednesday	1123	~~3/1/2023~~	~~Wednesday~~	~~1030~~	~~-8%~~	School
2/28/2019	Thursday	1074	~~3/2/2023~~	~~Thursday~~	~~979~~	~~-9%~~	Vacation

Average Weekday Change -13%

NHDOT Historical Traffic Growth Rate
MS2 Data

Station	Location	Year											Average Annual Rate
		2006	2009	2010	2012	2015	2016	2017	2018	2019	2020*	2021*	
82379074	NH33 (Middle Road) West of Griffin Rd	-2%		-3%	21%	-6%	2%	2%	-11%	1%	-16%	-5%	0.31%
82379094	Borthwick Ave East of Highliner Ave	-4%	4%	0%	-1%	-1%	2%	2%	-5%	1%	-16%	-1%	-0.62%

* Years not included in calculcation due to ongoing covid recovery

Average Annula Growth Rate = -0.16%

Record 1 of 1 Goto Record go

Location ID	82379074	MPO ID	
Type	SPOT	HPMS ID	
On NHS	No	On HPMS	Yes
LRS ID	S0000033__	LRS Loc Pt.	
SF Group	04	Route Type	
AF Group	04	Route	NH 33
GF Group	E	Active	Yes
Class Dist Grp	Default	Category	3
Seas Clss Grp	Default		
WIM Group	Default		
QC Group	Default		
Fnct'l Class	Minor Arterial	Milepost	
Located On	Greenland Rd		
Loc On Alias	NH 33 (MIDDLE RD) WEST OF GRIFFIN RD		

More Detail

STATION DATA

Directions: 2-WAY

AADT

	Year	AADT	DHV-30	K %	D %	PA	BC	Src
	2021	13,525	1,278	9		12,294 (91%)	1,231 (9%)	
	2020	14,279[3]		8		12,993 (91%)	1,286 (9%)	Grown from 2019
	2019	16,918[3]		8		15,496 (92%)	1,422 (8%)	Grown from 2018
	2018	16,717	1,397	8		15,414 (92%)	1,303 (8%)	
	2017	18,727[3]				17,378 (93%)	1,349 (7%)	Grown from 2016

1-5 of 16

Travel Demand Model

Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

VOLUME COUNT

Date	Int	Total
Thu 8/26/2021	60	16,027
Wed 8/25/2021	60	15,524
Tue 8/24/2021	60	15,707
Thu 8/2/2018	60	19,188
Wed 8/1/2018	60	19,399
Tue 7/31/2018	60	19,284
Fri 8/28/2015	60	20,117
Thu 8/27/2015	60	20,744
Wed 8/26/2015	60	20,538
Tue 8/25/2015	60	19,782

1-10 of 61

mm/dd/yyyy To Date

VOLUME TREND

Year	Annual Growth
2021	-5%
2020	-16%
2019	1%
2018	-11%
2017	2%
2016	2%
2015	-6%
2012	21%
2010	-3%
2006	-2%

1-10 of 15

Record 1 of 1 Goto Record go

Location ID	82379094	MPO ID	
Type	SPOT	HPMS ID	
On NHS	No	On HPMS	No
LRS ID	L3790517__	LRS Loc Pt.	
SF Group	04	Route Type	
AF Group	04	Route	
GF Group	E	Active	Yes
Class Dist Grp	Default	Category	3
Seas Clss Grp	Default		
WIM Group	Default		
QC Group	Default		
Fnct'l Class	Major Collector	Milepost	
Located On	Borthwick Ave		
Loc On Alias	BORTHWICK AVE EAST OF HIGHLINER AVE		

More Detail

STATION DATA

Directions: 2-WAY

AADT

	Year	AADT	DHV-30	K %	D %	PA	BC	Src
	2021	4,409	450	10		4,007 (91%)	402 (9%)	
	2020	4,453[3]		11		4,051 (91%)	402 (9%)	Grown from 2019
	2019	5,276[3]		11		4,831 (92%)	445 (8%)	Grown from 2018
	2018	5,213	578	11		4,807 (92%)	406 (8%)	
	2017	5,514[3]				5,114 (93%)	400 (7%)	Grown from 2016

1-5 of 13

Travel Demand Model

Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

VOLUME COUNT

Date	Int	Total
Thu 8/12/2021	60	4,895
Wed 8/11/2021	60	5,351
Tue 8/10/2021	60	5,162
Thu 6/21/2018	60	6,170
Wed 6/20/2018	60	6,115
Tue 6/19/2018	60	5,791
Fri 8/28/2015	60	5,646
Thu 8/27/2015	60	6,114
Wed 8/26/2015	60	6,083
Tue 8/25/2015	60	6,018

1-10 of 56

mm/dd/yyyy To Date

VOLUME TREND

Year	Annual Growth
2021	-1%
2020	-16%
2019	1%
2018	-5%
2017	2%
2016	2%
2015	-1%
2012	-1%
2009	4%
2006	-4%

1-10 of 12

APPENDIX D

From: Eric B. Eby <ebeby@cityofportsmouth.com>
Sent: Thursday, March 30, 2023 5:19 PM
To: Jack McTigue <jmctigue@tfmoran.com>
Subject: RE: Sherburne Traffic Study

Jack
The hospital expansion only provided a brief trip generation memo, as it was generating less than a dozen trips during the peak hours. That amount of traffic can be accounted for in any background growth rate or daily fluctuations of traffic.
Liberty Mutual is not expanding, just reoccupying their existing building which had been mostly vacant since the pandemic. So no traffic study was required.
Eric

Eric B. Eby, P.E.
City Engineer – Parking, Transportation, and Planning
Department of Public Works
City of Portsmouth
680 Peverly Hill Road
Portsmouth, NH 03801
(603) 766-1415
Cell (603)-815-1761

From: Jack McTigue <jmctigue@tfmoran.com>
Sent: Thursday, March 30, 2023 4:47 PM
To: Eric B. Eby <ebeby@cityofportsmouth.com>
Subject: Sherburne Traffic Study

Eric,

Do you have the traffic studies for the hospital expansion or Liberty Mutual? Do you know if they were done yet?

Our traffic engineer would like to include them in our report.

Sincerely,

Jack McTigue, PE, CPESC
Project Manager

TFMoran Seacoast Division
170 Commerce Way - Suite 102, Portsmouth, NH 03801
E-Mail: jmctigue@tfmoran.com
Tel: (603) 431-2222 Fax: (603) 431-0910
Cell: (603) 315-3078

APPENDIX E

Background Traffic Volumes
AM Peak data

Assumed growth rate	0.005	
MARCH 2019 Seasonal	1.15	NHDOT Group 4 Averages
Covid/Stay-home factor	1.130	NHDOT Methodology

Site Trips are not Seasonally Adjusted or Grown.

ALL TRIPS ARE COVID ADJUSTED

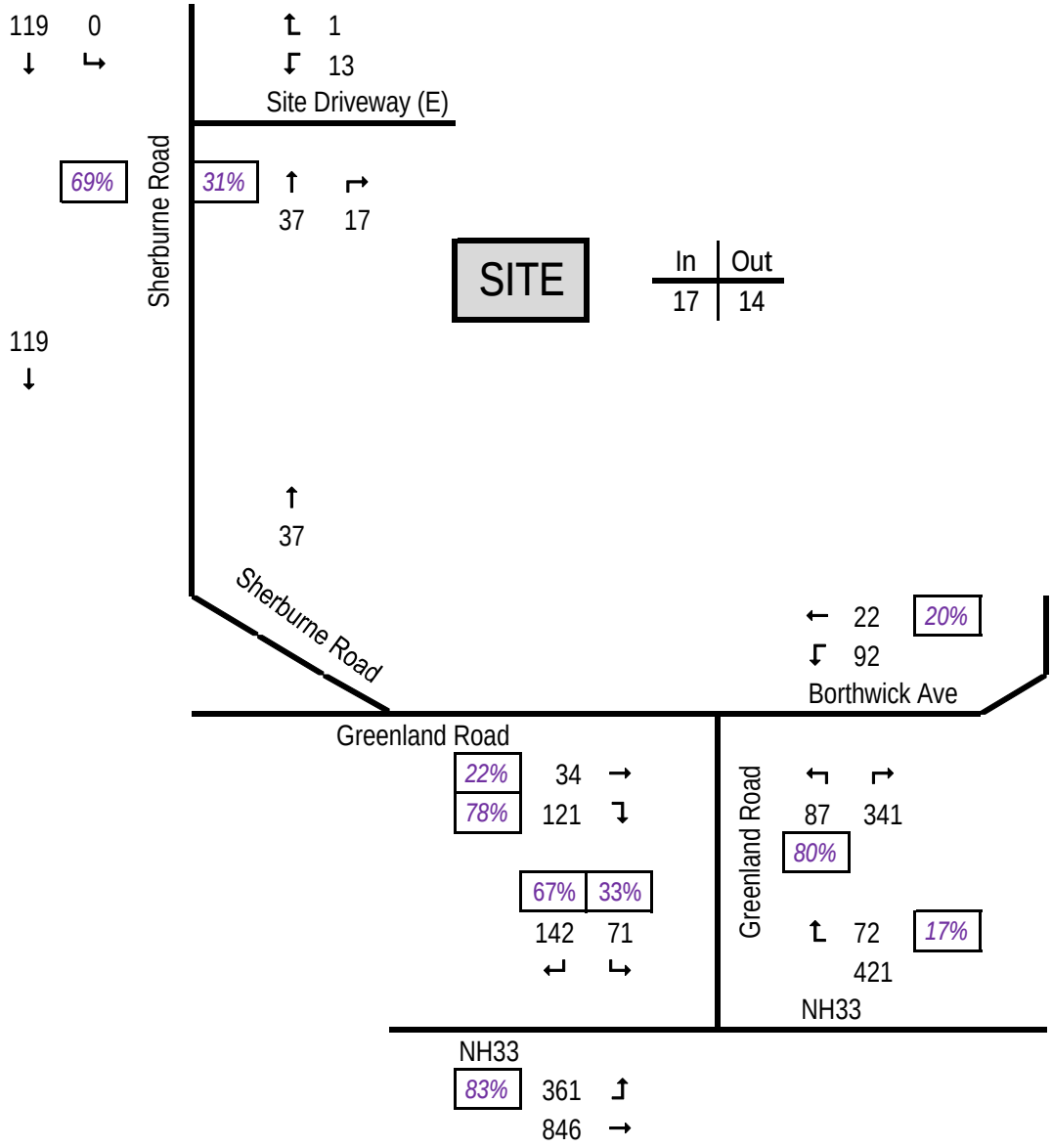
AM Peak Hour	Existing 2023 (Raw data) [03/09/2023]	Existing 2023 w/ Seasonal Adjustment	Covid/Stay Home Adjustment	2023 ADJUSTED	Balance	2023 BASE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
1: Sherburne Road at Site Driveway (E)	7:30 AM per video obs																			
Movement	[A]																			
WBL	13	*13*	1.130	*14.69*		14.69	*14.69*	*14.69*	*14.69*	*14.69*	*14.69*	*14.69*	*14.69*	*14.69*	*14.69*	*14.69*	*14.69*	*14.69*	*14.69*	*14.69*
WBR	1	*1*	1.130	*1.13*		1.13	*1.13*	*1.13*	*1.13*	*1.13*	*1.13*	*1.13*	*1.13*	*1.13*	*1.13*	*1.13*	*1.13*	*1.13*	*1.13*	*1.13*
NBT	37	43	1.130	48.59		48.59	48.83	49.07	49.32	49.57	49.82	50.07	50.32	50.57	50.82	51.07	51.33	51.59	51.85	52.11
NBR	17	*17*	1.130	*19.21*		19.21	*19.21*	*19.21*	*19.21*	*19.21*	*19.21*	*19.21*	*19.21*	*19.21*	*19.21*	*19.21*	*19.21*	*19.21*	*19.21*	*19.21*
SBL	0	*0*	1.130	*0.00*		0.00	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
SBT	119	137	1.130	154.81		154.81	155.58	156.36	157.14	157.93	158.72	159.51	160.31	161.11	161.92	162.73	163.54	164.36	165.18	166.01
2: Sherburne Road at Site Driveway (P)	calculated from above																			
Movement																				
WBL		*0*	1.130	*0.00*		0.00	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
WBR		*0*	1.130	0.00		0.00	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
NBT	37	43	1.130	48.59		48.59	48.83	49.07	49.32	49.57	49.82	50.07	50.32	50.57	50.82	51.07	51.33	51.59	51.85	52.11
NBR		*0*	1.130	*0.00*		0.00	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
SBL		*0*	1.130	*0.00*		0.00	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
SBT	119	137	1.130	*154.81*		154.81	155.58	156.36	157.14	157.93	158.72	159.51	160.31	161.11	161.92	162.73	163.54	164.36	165.18	166.01
4: Greenland Road at Borthwick Ave	7:30 AM																			
Movement	(B)																			
EBT	34	39	1.130	44.07		44.07	44.29	44.51	44.73	44.95	45.17	45.40	45.63	45.86	46.09	46.32	46.55	46.78	47.01	47.25
EBR	121	139	1.130	157.07		157.07	157.86	158.65	159.44	160.24	161.04	161.85	162.66	163.47	164.29	165.11	165.94	166.77	167.60	168.44
WBL	92	106	1.130	119.78		119.78	120.38	120.98	121.58	122.19	122.80	123.41	124.03	124.65	125.27	125.90	126.53	127.16	127.80	128.44
WBT	22	25	1.130	28.25		28.25	28.39	28.53	28.67	28.81	28.95	29.09	29.24	29.39	29.54	29.69	29.84	29.99	30.14	30.29
NBL	87	100	1.130	113.00	+1	114.00	114.57	115.14	115.72	116.30	116.88	117.46	118.05	118.64	119.23	119.83	120.43	121.03	121.64	122.25
NBR	341	392	1.130	442.96	+6	448.96	451.20	453.46	455.73	458.01	460.30	462.60	464.91	467.23	469.57	471.92	474.28	476.65	479.03	481.43
5: NH33 at Greenland Road	7:30 AM																			
Movement	(A)																			
EBL	361	415	1.130	468.95		468.95	471.29	473.65	476.02	478.40	480.79	483.19	485.61	488.04	490.48	492.93	495.39	497.87	500.36	502.86
EBT	846	973	1.130	1099.49		1099.49	1104.99	1110.51	1116.06	1121.64	1127.25	1132.89	1138.55	1144.24	1149.96	1155.71	1161.49	1167.30	1173.14	1179.01
WBT	421	484	1.130	546.92		546.92	549.65	552.40	555.16	557.94	560.73	563.53	566.35	569.18	572.03	574.89	577.76	580.65	583.55	586.47
WBR	72	83	1.130	93.79		93.79	94.26	94.73	95.20	95.68	96.16	96.64	97.12	97.61	98.10	98.59	99.08	99.58	100.08	100.58
SBL	71	82	1.130	92.66		92.66	93.12	93.59	94.06	94.53	95.00	95.48	95.96	96.44	96.92	97.40	97.89	98.38	98.87	99.36
SBR	142	163	1.130	184.19		184.19	185.11	186.04	186.97	187.90	188.84	189.78	190.73	191.68	192.64	193.60	194.57	195.54	196.52	197.50

AM PHF	% Heavy	Counted Heavy	AM Peak Hour	2023 BASE	2027 No-Build	EXISTING TRIP DEDUCTION	Site Trip Distribution	2027 Build	Build PHF	Build HV	Build HV
			1: Sherburne Road at Site Driveway								
			Movement								
0.39	14%	2	WBL	15	15	-15	29	29	0.90	0%	0
	0%	0	WBR	1	1	-1	0	0		0%	0
0.79	6%	3	NBT	49	50	0	0	50	0.79	6%	3
	10%	2	NBR	19	19	-19	0	0		0%	0
0.76	0%	0	SBL	0	0	0	0	0	0.76	0%	0
	2%	3	SBT	155	158	0	0	158		2%	3
			2: Sherburne Road at Site Driveway								
			Movement								
0.90	0%		WBL	0	0	0	4	4	0.90	0%	
	0%		WBR	0	0	0	0	0		0%	
0.90	10%	5	NBT	49	50	-19	0	31	0.90	6%	3
	0%		NBR	0	0	0	13	13		0%	
0.90	0%		SBL	0	0	0	0	0	0.90	0%	
	3%	5	SBT	155	158	-15	29	172		2%	3
			4: Greenland Road at Borthwick Ave								
			Movement								
0.84	2%	1	EBT	44	45	-3	7	49	0.84	2%	
	3%	4	EBR	157	160	-12	26	174		3%	
0.86	6%	7	WBL	120	122	0	0	122	0.86	6%	
	0%	0	WBT	28	29	-4	3	28		0%	
0.75	6%	7	NBL	114	116	-15	10	111	0.75	6%	
	2%	11	NBR	449	458	0	0	458		2%	
			5: NH33 at Greenland Road								
			Movement								
0.82	2%	11	EBL	469	478	-13	9	474	0.82	2%	
	3%	33	EBT	1099	1122	0	0	1122		3%	
0.89	4%	22	WBT	547	558	0	0	558	0.89	4%	
	4%	4	WBR	94	96	-3	2	95		4%	
0.82	3%	3	SBL	93	95	-4	9	100	0.82	3%	
	5%	9	SBR	184	188	-8	17	197		5%	

AM Peak Hour	2037 No-Build	EXISTING TRIP DEDUCTION	Site Trip Distribution	2037 Build	Future PHF
1: Sherburne Road at Site Driveway					
Movement					
WBL	15	-15	29	29	0.90
WBR	1	-1	0	0	
NBT	52	0	0	52	0.90
NBR	19	-19	0	0	
SBL	0	0	0	0	0.90
SBT	166	0	0	166	
2: Sherburne Road at Site Driveway					
Movement					
WBL	0	0	4	4	0.90
WBR	0	0	0	0	
NBT	52	-19	0	33	0.90
NBR	0	0	13	13	
SBL	0	0	0	0	0.90
SBT	166	-15	29	180	
4: Greenland Road at Borthwick Ave					
Movement					
EBT	47	-3	7	51	0.90
EBR	168	-12	26	182	
WBL	128	0	0	128	0.90
WBT	30	-4	3	29	
NBL	122	-15	10	117	0.90
NBR	481	0	0	481	
5: NH33 at Greenland Road					
Movement					
EBL	503	-13	9	499	0.90
EBT	1179	0	0	1179	
WBT	586	0	0	586	0.90
WBR	101	-3	2	100	
SBL	99	-4	9	104	0.90
SBR	198	-8	17	207	

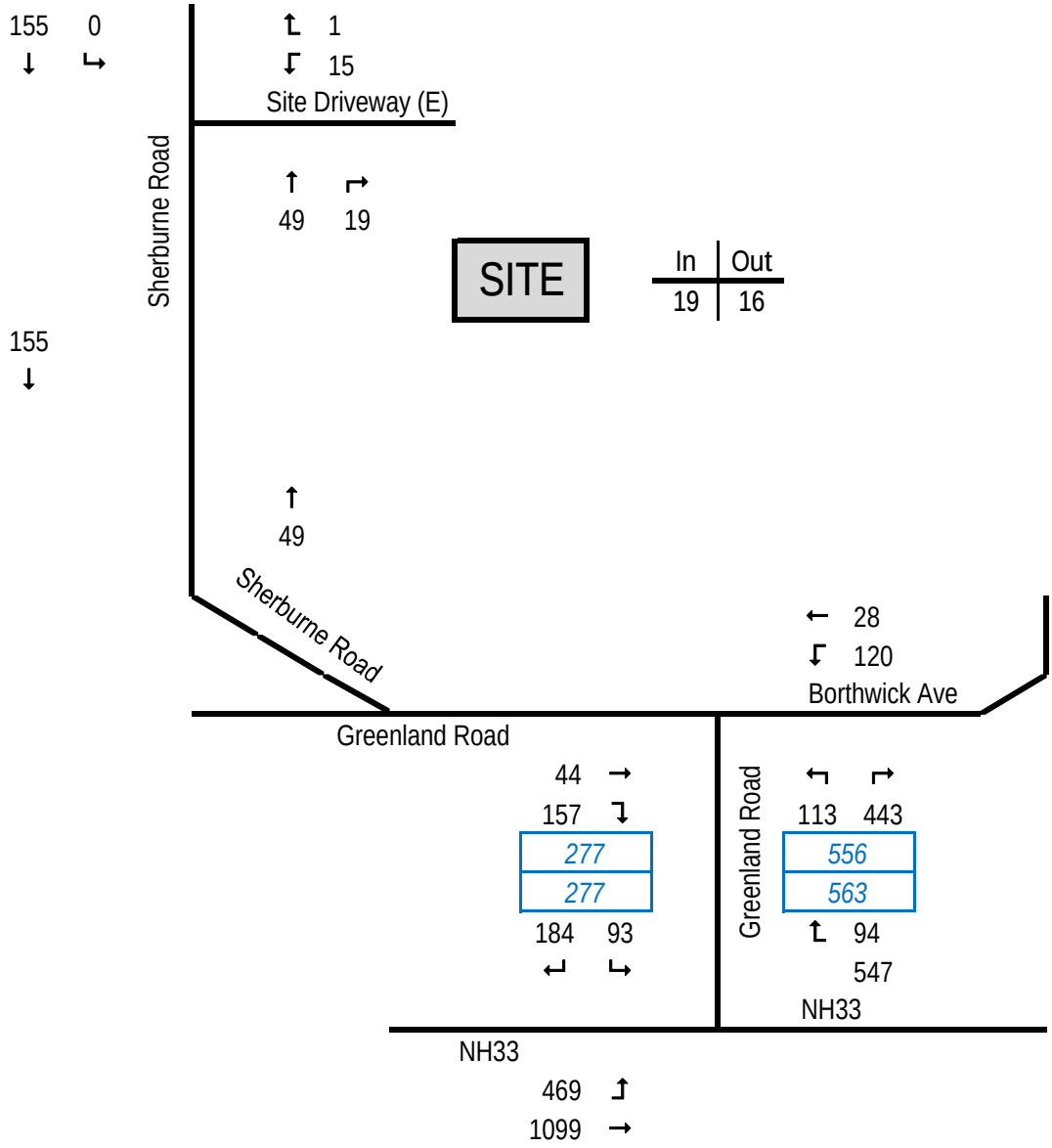
2023 RAW DATA
PRORATA
AM Peak Hour

XX Primary Site Trips



2023 ADJUSTED
BALANCE
AM Peak Hour

XX Primary Site Trips



Background Traffic Volumes
PM Peak data

Assumed growth rate	0.005	
MARCH 2019 Seasonal	1.15	NHDOT Group 4 Averages
Covid/Stay-home factor	1.130	NHDOT Methodology

Site Trips are not Seasonally Adjusted or Grown.

ALL TRIPS ARE COVID ADJUSTED

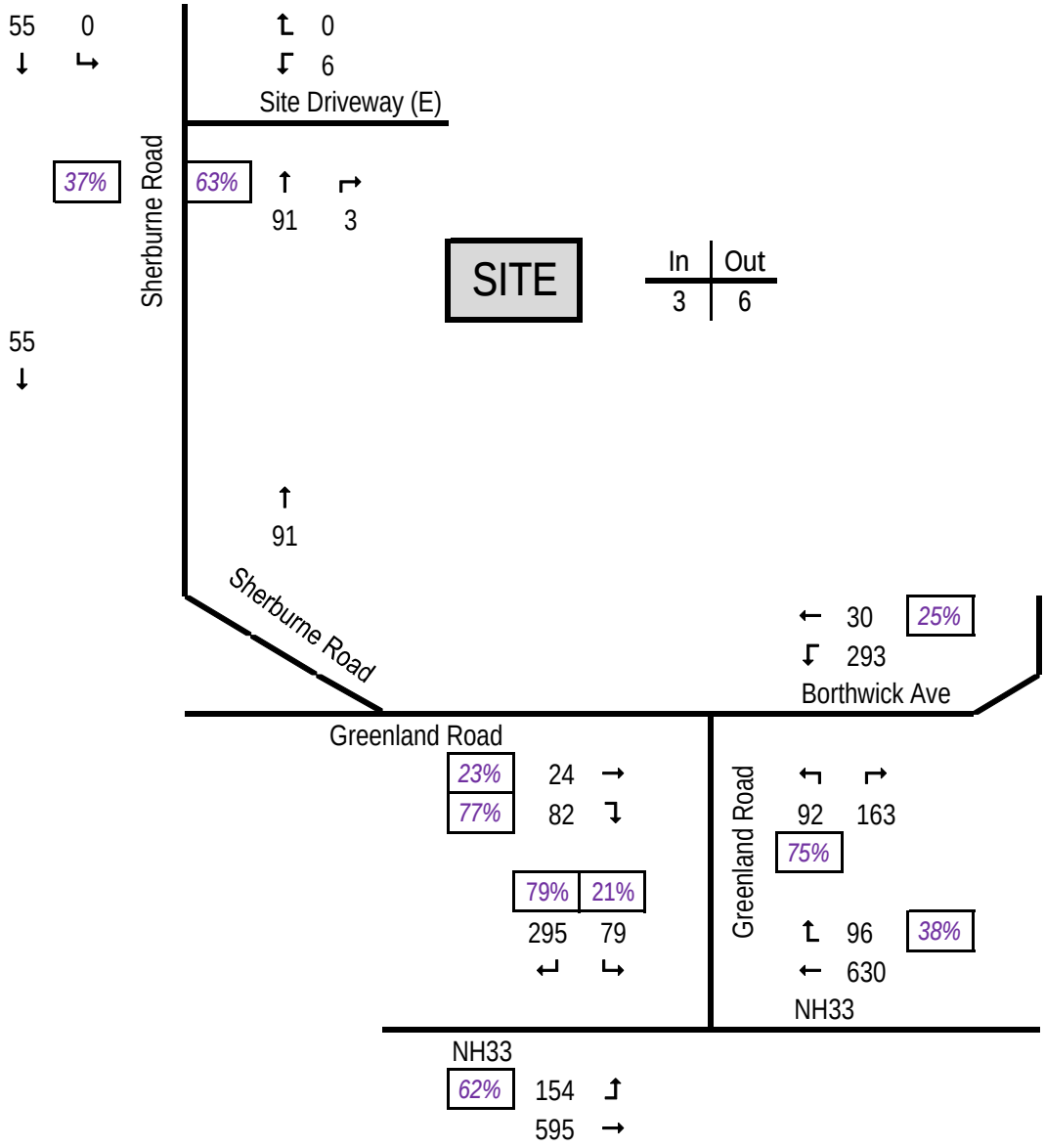
PM Peak Hour	Existing 2023 (Raw data) [03/09/2023]	Existing 2023 w/ Seasonal Adjustment	Covid/Stay Home Adjustment	2023 ADJUSTED	BALANCE	2023 BASE	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
1: Sherburne Road at Site Driveway (E)	3:30 PM per video obs																			
Movement	[A]																			
WBL	6	*6*	1.130	*6.78*		6.78	*6.78*	*6.78*	*6.78*	*6.78*	*6.78*	*6.78*	*6.78*	*6.78*	*6.78*	*6.78*	*6.78*	*6.78*	*6.78*	*6.78*
WBR	0	0	1.130	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NBT	91	*91*	1.130	102.83		102.83	103.34	103.86	104.38	104.90	105.42	105.95	106.48	107.01	107.55	108.09	108.63	109.17	109.72	110.27
NBR	3	*3*	1.130	*3.39*		3.39	*3.39*	*3.39*	*3.39*	*3.39*	*3.39*	*3.39*	*3.39*	*3.39*	*3.39*	*3.39*	*3.39*	*3.39*	*3.39*	*3.39*
SBL	0	*0*	1.130	*0.00*		0.00	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
SBT	55	*55*	1.130	*62.15*		62.15	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*
2: Sherburne Road at Site Driveway (P)	calculated from above																			
Movement																				
WBL		0	1.130	*0.00*		0.00	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
WBR		0	1.130	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NBT	91	*91*	1.130	102.83		102.83	103.34	103.86	104.38	104.90	105.42	105.95	106.48	107.01	107.55	108.09	108.63	109.17	109.72	110.27
NBR		*0*	1.130	*0.00*		0.00	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
SBL		0	1.130	*0.00*		0.00	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*
SBT	55	55	1.130	*62.15*		62.15	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*	*62.15*
4: Greenland Road at Borthwick Ave	3:00 PM																			
Movement	(B)																			
EBT	24	28	1.130	31.64		31.64	31.80	31.96	32.12	32.28	32.44	32.60	32.76	32.92	33.08	33.25	33.42	33.59	33.76	33.93
EBR	82	94	1.130	106.22		106.22	106.75	107.28	107.82	108.36	108.90	109.44	109.99	110.54	111.09	111.65	112.21	112.77	113.33	113.90
WBL	293	337	1.130	380.81		380.81	382.71	384.62	386.54	388.47	390.41	392.36	394.32	396.29	398.27	400.26	402.26	404.27	406.29	408.32
WBT	30	35	1.130	39.55		39.55	39.75	39.95	40.15	40.35	40.55	40.75	40.95	41.15	41.36	41.57	41.78	41.99	42.20	42.41
NBL	92	106	1.130	119.78		119.78	120.38	120.98	121.58	122.19	122.80	123.41	124.03	124.65	125.27	125.90	126.53	127.16	127.80	128.44
NBR	163	187	1.130	211.31		211.31	212.37	213.43	214.50	215.57	216.65	217.73	218.82	219.91	221.01	222.12	223.23	224.35	225.47	226.60
5: NH33 at Greenland Road	3:15 PM																			
Movement	(A)																			
EBL	154	177	1.130	200.01		200.01	201.01	202.02	203.03	204.05	205.07	206.10	207.13	208.17	209.21	210.26	211.31	212.37	213.43	214.50
EBT	595	684	1.130	772.92		772.92	776.78	780.66	784.56	788.48	792.42	796.38	800.36	804.36	808.38	812.42	816.48	820.56	824.66	828.78
WBT	630	725	1.130	819.25		819.25	823.35	827.47	831.61	835.77	839.95	844.15	848.37	852.61	856.87	861.15	865.46	869.79	874.14	878.51
WBR	96	110	1.130	124.30		124.30	124.92	125.54	126.17	126.80	127.43	128.07	128.71	129.35	130.00	130.65	131.30	131.96	132.62	133.28
SBL	79	91	1.130	102.83		102.83	103.34	103.86	104.38	104.90	105.42	105.95	106.48	107.01	107.55	108.09	108.63	109.17	109.72	110.27
SBR	295	339	1.130	383.07		383.07	384.99	386.91	388.84	390.78	392.73	394.69	396.66	398.64	400.63	402.63	404.64	406.66	408.69	410.73

PM PHF	% Heavy	Counted Heavy	PM Peak Hour	2023 BASE	2027 No-Build	EXISTING TRIP DEDUCTION	Site Trip Distribution	2027 Build	Build PHF	Build HV	Build HV
			1: Sherburne Road at Site Driveway								
			Movement								
0.38	0%	0	WBL	7	7	-7	21	21	0.90	0%	0
	0%	0	WBR	0	0	0	0	0		0%	0
0.69	1%	1	NBT	103	105	0	0	105	0.69	1%	1
	0%	0	NBR	3	3	-3	0	0		0%	0
0.81	0%	0	SBL	0	0	0	0	0	0.81	0%	0
	2%	1	SBT	62	62	0	0	62		2%	1
			2: Sherburne Road at Site Driveway								
			Movement								
0.90	0%		WBL	0	0	0	3	3	0.90	0%	
	0%		WBR	0	0	0	0	0		0%	
0.90	1%	1	NBT	103	105	-3	0	102	0.90	1%	1
	0%		NBR	0	0	0	35	35		0%	
0.90	0%		SBL	0	0	0	0	0	0.90	0%	
	2%	1	SBT	62	62	-7	21	76		2%	1
			4: Greenland Road at Borthwick Ave								
			Movement								
0.86	3%	1	EBT	32	32	-2	6	36	0.86	3%	
	3%	3	EBR	106	108	-5	18	121		3%	
0.91	2%	8	WBL	381	388	0	0	388	0.91	2%	
	3%	1	WBT	40	40	-1	9	48		3%	
0.88	3%	3	NBL	120	122	-2	26	146	0.88	3%	
	4%	9	NBR	211	216	0	0	216		4%	
			5: NH33 at Greenland Road								
			Movement								
0.94	2%	5	EBL	200	204	-1	16	219	0.94	2%	
	2%	15	EBT	773	788	0	0	788		2%	
0.89	2%	14	WBT	819	836	0	0	836	0.89	2%	
	6%	7	WBR	124	127	-1	10	136		6%	
0.93	6%	6	SBL	103	105	-1	4	108	0.93	6%	
	1%	5	SBR	383	391	-4	15	402		1%	

PM Peak Hour	2037 No-Build	EXISTING TRIP DEDUCTION	Site Trip Distribution	2037 Build	Future PHF
1: Sherburne Road at Site Driveway					
Movement					
WBL	7	-7	21	21	0.90
WBR	0	0	0	0	
NBT	110	0	0	110	0.90
NBR	3	-3	0	0	
SBL	0	0	0	0	0.90
SBT	62	0	0	62	
2: Sherburne Road at Site Driveway					
Movement					
WBL	0	0	3	3	0.90
WBR	0	0	0	0	
NBT	110	-3	0	107	0.90
NBR	0	0	35	35	
SBL	0	0	0	0	0.90
SBT	62	-7	21	76	
4: Greenland Road at Borthwick Ave					
Movement					
EBT	34	-2	6	38	0.90
EBR	114	-5	18	127	
WBL	408	0	0	408	0.91
WBT	42	-1	9	50	
NBL	128	-2	26	152	0.90
NBR	227	0	0	227	
5: NH33 at Greenland Road					
Movement					
EBL	215	-1	16	230	0.94
EBT	829	0	0	829	
WBT	879	0	0	879	0.90
WBR	133	-1	10	142	
SBL	110	-1	4	113	0.93
SBR	411	-4	15	422	

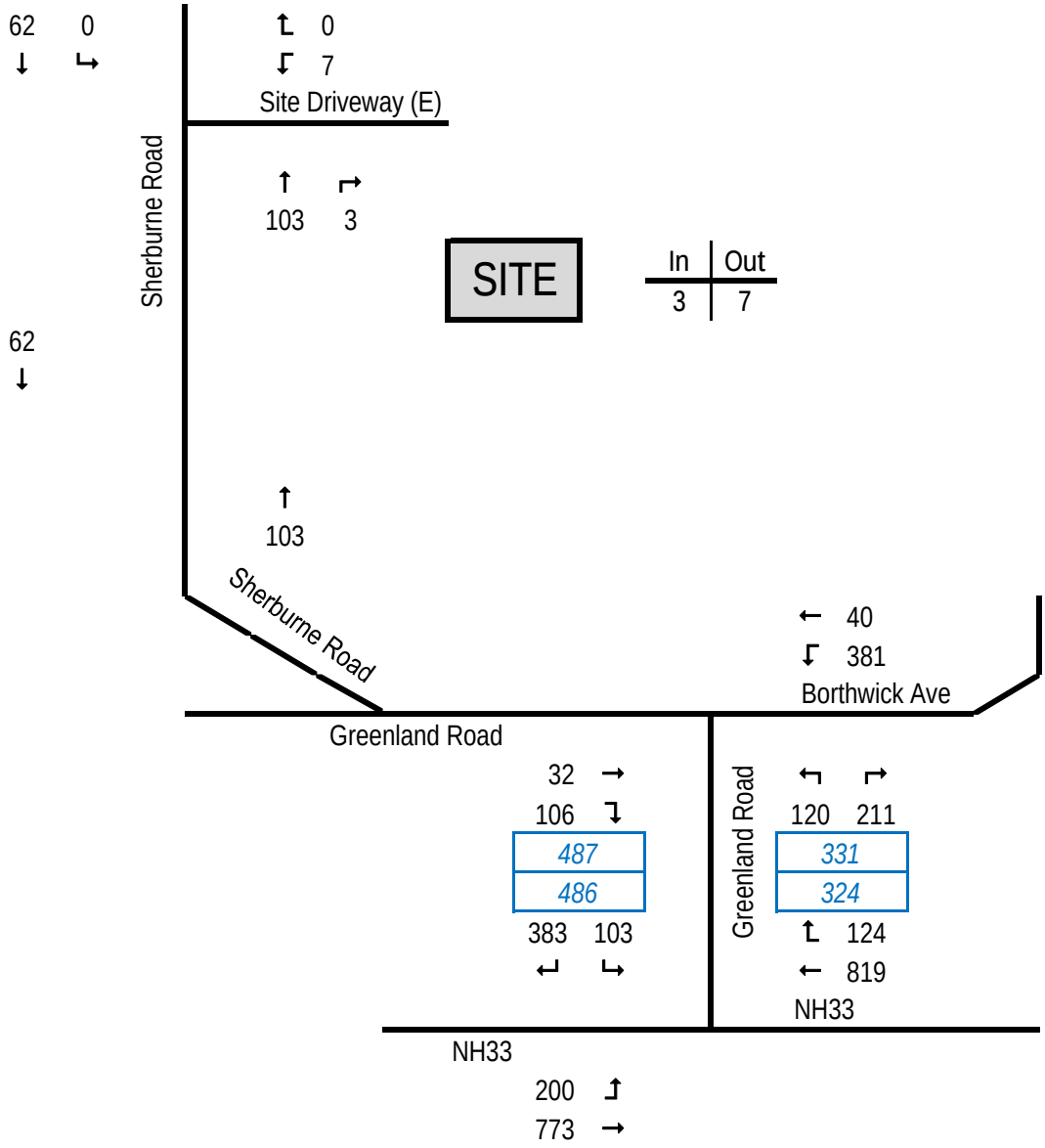
2023 RAW DATA
PRORATA
PM Peak Hour

XX Primary Site Trips



2023 ADJUSTED
BALANCE
PM Peak Hour

XX Primary Site Trips



APPENDIX F

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	1	49	19	0	155
Future Vol, veh/h	15	1	49	19	0	155
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	39	39	79	79	76	76
Heavy Vehicles, %	14	0	6	10	0	2
Mvmt Flow	38	3	62	24	0	204

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	278	74	0	0	86	0
Stage 1	74	-	-	-	-	-
Stage 2	204	-	-	-	-	-
Critical Hdwy	6.54	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	687	993	-	-	1523	-
Stage 1	919	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	687	993	-	-	1523	-
Mov Cap-2 Maneuver	687	-	-	-	-	-
Stage 1	919	-	-	-	-	-
Stage 2	802	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	700	1523	-
HCM Lane V/C Ratio	-	-	0.059	-	-
HCM Control Delay (s)	-	-	10.5	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Intersection Delay, s/veh	20.1
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	44	157	120	28	114	449
Future Vol, veh/h	44	157	120	28	114	449
Peak Hour Factor	0.84	0.84	0.86	0.86	0.75	0.75
Heavy Vehicles, %	2	3	6	0	6	2
Mvmt Flow	52	187	140	33	152	599
Number of Lanes	1	0	0	1	1	1

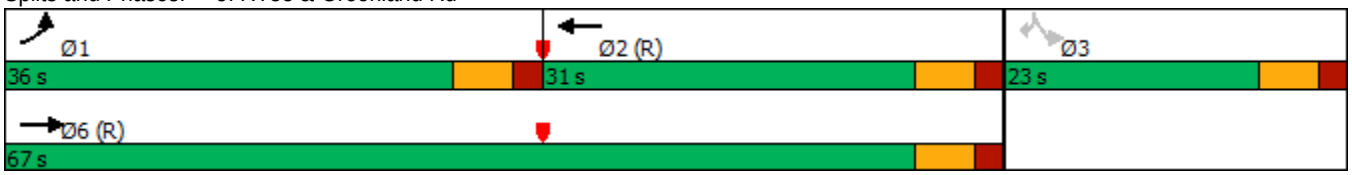
Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	11.7	12	24.6
HCM LOS	B	B	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	81%
Vol Thru, %	0%	0%	22%	19%
Vol Right, %	0%	100%	78%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	114	449	201	148
LT Vol	114	0	0	120
Through Vol	0	0	44	28
RT Vol	0	449	157	0
Lane Flow Rate	152	599	239	172
Geometry Grp	7	7	2	2
Degree of Util (X)	0.266	0.836	0.366	0.301
Departure Headway (Hd)	6.31	5.03	5.502	6.291
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	570	718	653	571
Service Time	4.042	2.761	3.541	4.333
HCM Lane V/C Ratio	0.267	0.834	0.366	0.301
HCM Control Delay	11.3	28	11.7	12
HCM Lane LOS	B	D	B	B
HCM 95th-tile Q	1.1	9.3	1.7	1.3

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	469	1099	547	93	184
Future Volume (vph)	469	1099	547	93	184
Turn Type	Prot	NA	NA	Perm	Perm
Protected Phases	1	6	2		
Permitted Phases				3	3
Detector Phase	1	6	2	3	3
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	14.0	24.0	24.0	23.0	23.0
Total Split (s)	36.0	67.0	31.0	23.0	23.0
Total Split (%)	40.0%	74.4%	34.4%	25.6%	25.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Min	C-Min	Min	Min
Act Effct Green (s)	33.0	66.0	26.9	12.0	12.0
Actuated g/C Ratio	0.37	0.73	0.30	0.13	0.13
v/c Ratio	0.88	0.52	0.70	0.48	0.56
Control Delay	44.1	6.5	32.0	42.4	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	6.5	32.0	42.4	10.7
LOS	D	A	C	D	B
Approach Delay		17.7	32.0	21.3	
Approach LOS		B	C	C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 51 (57%), Referenced to phase 2:WBT and 6:EBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 21.6	Intersection LOS: C
Intersection Capacity Utilization 65.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: RT33 & Greenland Rd



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	572	1340	721	113	224
v/c Ratio	0.88	0.52	0.70	0.48	0.56
Control Delay	44.1	6.5	32.0	42.4	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	6.5	32.0	42.4	10.7
Queue Length 50th (ft)	288	143	190	60	0
Queue Length 95th (ft)	#442	192	253	97	44
Internal Link Dist (ft)		520	520	270	
Turn Bay Length (ft)	200			100	
Base Capacity (vph)	649	2568	1030	330	472
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.88	0.52	0.70	0.34	0.47

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	469	1099	547	94	93	184
Future Volume (vph)	469	1099	547	94	93	184
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3505	3395		1752	1538
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	3505	3395		1752	1538
Peak-hour factor, PHF	0.82	0.82	0.89	0.89	0.82	0.82
Adj. Flow (vph)	572	1340	615	106	113	224
RTOR Reduction (vph)	0	0	15	0	0	194
Lane Group Flow (vph)	572	1340	706	0	113	30
Heavy Vehicles (%)	2%	3%	4%	4%	3%	5%
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					3	3
Actuated Green, G (s)	33.0	66.0	27.0		12.0	12.0
Effective Green, g (s)	33.0	66.0	27.0		12.0	12.0
Actuated g/C Ratio	0.37	0.73	0.30		0.13	0.13
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	649	2570	1018		233	205
v/s Ratio Prot	c0.32	0.38	c0.21			
v/s Ratio Perm					c0.06	0.02
v/c Ratio	0.88	0.52	0.69		0.48	0.15
Uniform Delay, d1	26.7	5.2	27.8		36.1	34.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	13.7	0.8	3.9		2.2	0.4
Delay (s)	40.3	5.9	31.7		38.3	34.9
Level of Service	D	A	C		D	C
Approach Delay (s)		16.2	31.7		36.1	
Approach LOS		B	C		D	

Intersection Summary			
HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	1	50	19	0	158
Future Vol, veh/h	15	1	50	19	0	158
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	39	39	79	79	76	76
Heavy Vehicles, %	14	0	6	10	0	2
Mvmt Flow	38	3	63	24	0	208

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	283	75	0	0	87	0
Stage 1	75	-	-	-	-	-
Stage 2	208	-	-	-	-	-
Critical Hdwy	6.54	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	682	992	-	-	1522	-
Stage 1	918	-	-	-	-	-
Stage 2	799	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	682	992	-	-	1522	-
Mov Cap-2 Maneuver	682	-	-	-	-	-
Stage 1	918	-	-	-	-	-
Stage 2	799	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	696	1522	-
HCM Lane V/C Ratio	-	-	0.059	-	-
HCM Control Delay (s)	-	-	10.5	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0	-

Intersection	
Intersection Delay, s/veh	21.4
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	45	160	122	29	116	458
Future Vol, veh/h	45	160	122	29	116	458
Peak Hour Factor	0.84	0.84	0.86	0.86	0.75	0.75
Heavy Vehicles, %	2	3	6	0	6	2
Mvmt Flow	54	190	142	34	155	611
Number of Lanes	1	0	0	1	1	1

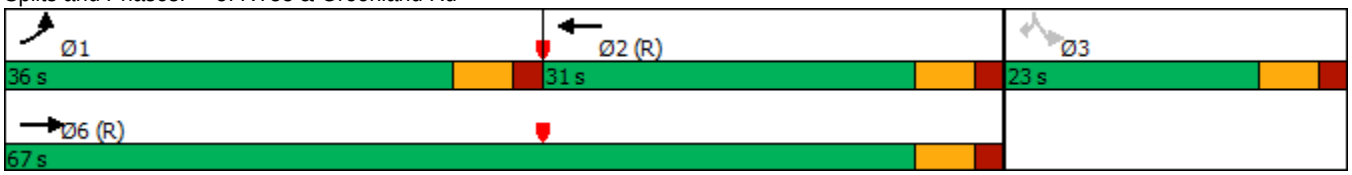
Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	11.9	12.2	26.6
HCM LOS	B	B	D

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	81%
Vol Thru, %	0%	0%	22%	19%
Vol Right, %	0%	100%	78%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	116	458	205	151
LT Vol	116	0	0	122
Through Vol	0	0	45	29
RT Vol	0	458	160	0
Lane Flow Rate	155	611	244	176
Geometry Grp	7	7	2	2
Degree of Util (X)	0.272	0.858	0.376	0.309
Departure Headway (Hd)	6.342	5.061	5.545	6.336
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	568	714	649	567
Service Time	4.073	2.792	3.587	4.381
HCM Lane V/C Ratio	0.273	0.856	0.376	0.31
HCM Control Delay	11.4	30.5	11.9	12.2
HCM Lane LOS	B	D	B	B
HCM 95th-tile Q	1.1	10.1	1.7	1.3

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	478	1122	558	95	188
Future Volume (vph)	478	1122	558	95	188
Turn Type	Prot	NA	NA	Perm	Perm
Protected Phases	1	6	2		
Permitted Phases				3	3
Detector Phase	1	6	2	3	3
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	14.0	24.0	24.0	23.0	23.0
Total Split (s)	36.0	67.0	31.0	23.0	23.0
Total Split (%)	40.0%	74.4%	34.4%	25.6%	25.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Min	C-Min	Min	Min
Act Effct Green (s)	33.6	65.7	26.1	12.3	12.3
Actuated g/C Ratio	0.37	0.73	0.29	0.14	0.14
v/c Ratio	0.88	0.53	0.74	0.49	0.56
Control Delay	44.1	6.7	33.6	42.0	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	6.7	33.6	42.0	10.5
LOS	D	A	C	D	B
Approach Delay		17.9	33.6	21.1	
Approach LOS		B	C	C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 51 (57%), Referenced to phase 2:WBT and 6:EBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 22.1	Intersection LOS: C
Intersection Capacity Utilization 66.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: RT33 & Greenland Rd



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	583	1368	735	116	229
v/c Ratio	0.88	0.53	0.74	0.49	0.56
Control Delay	44.1	6.7	33.6	42.0	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	6.7	33.6	42.0	10.5
Queue Length 50th (ft)	297	149	196	62	0
Queue Length 95th (ft)	#465	205	259	97	43
Internal Link Dist (ft)		520	520	270	
Turn Bay Length (ft)	200			100	
Base Capacity (vph)	661	2558	999	330	476
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.88	0.53	0.74	0.35	0.48

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	478	1122	558	96	95	188
Future Volume (vph)	478	1122	558	96	95	188
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3505	3395		1752	1538
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	3505	3395		1752	1538
Peak-hour factor, PHF	0.82	0.82	0.89	0.89	0.82	0.82
Adj. Flow (vph)	583	1368	627	108	116	229
RTOR Reduction (vph)	0	0	15	0	0	198
Lane Group Flow (vph)	583	1368	720	0	116	31
Heavy Vehicles (%)	2%	3%	4%	4%	3%	5%
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					3	3
Actuated Green, G (s)	33.6	65.7	26.1		12.3	12.3
Effective Green, g (s)	33.6	65.7	26.1		12.3	12.3
Actuated g/C Ratio	0.37	0.73	0.29		0.14	0.14
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	660	2558	984		239	210
v/s Ratio Prot	c0.33	0.39	c0.21			
v/s Ratio Perm					c0.07	0.02
v/c Ratio	0.88	0.53	0.73		0.49	0.15
Uniform Delay, d1	26.4	5.4	28.8		35.9	34.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	13.6	0.8	4.8		2.1	0.4
Delay (s)	40.0	6.2	33.6		38.0	34.7
Level of Service	D	A	C		D	C
Approach Delay (s)		16.3	33.6		35.8	
Approach LOS		B	C		D	

Intersection Summary			
HCM 2000 Control Delay	22.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	1	52	19	0	166
Future Vol, veh/h	15	1	52	19	0	166
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	14	0	6	10	0	2
Mvmt Flow	17	1	58	21	0	184

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	253	69	0	0	79	0
Stage 1	69	-	-	-	-	-
Stage 2	184	-	-	-	-	-
Critical Hdwy	6.54	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	710	1000	-	-	1532	-
Stage 1	924	-	-	-	-	-
Stage 2	819	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	710	1000	-	-	1532	-
Mov Cap-2 Maneuver	710	-	-	-	-	-
Stage 1	924	-	-	-	-	-
Stage 2	819	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	723	1532	-
HCM Lane V/C Ratio	-	-	0.025	-	-
HCM Control Delay (s)	-	-	10.1	0	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Intersection Delay, s/veh	16.1
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	47	168	128	30	122	481
Future Vol, veh/h	47	168	128	30	122	481
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	3	6	0	6	2
Mvmt Flow	52	187	142	33	136	534
Number of Lanes	1	0	0	1	1	1

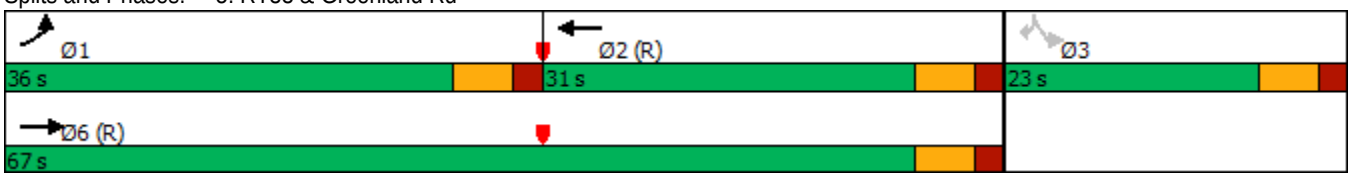
Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	11.3	11.8	18.9
HCM LOS	B	B	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	81%
Vol Thru, %	0%	0%	22%	19%
Vol Right, %	0%	100%	78%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	122	481	215	158
LT Vol	122	0	0	128
Through Vol	0	0	47	30
RT Vol	0	481	168	0
Lane Flow Rate	136	534	239	176
Geometry Grp	7	7	2	2
Degree of Util (X)	0.237	0.744	0.355	0.298
Departure Headway (Hd)	6.291	5.01	5.346	6.121
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	572	721	674	586
Service Time	4.017	2.736	3.382	4.161
HCM Lane V/C Ratio	0.238	0.741	0.355	0.3
HCM Control Delay	11	20.9	11.3	11.8
HCM Lane LOS	B	C	B	B
HCM 95th-tile Q	0.9	6.7	1.6	1.2

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	503	1179	586	99	198
Future Volume (vph)	503	1179	586	99	198
Turn Type	Prot	NA	NA	Perm	Perm
Protected Phases	1	6	2		
Permitted Phases				3	3
Detector Phase	1	6	2	3	3
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	14.0	24.0	24.0	23.0	23.0
Total Split (s)	36.0	67.0	31.0	23.0	23.0
Total Split (%)	40.0%	74.4%	34.4%	25.6%	25.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Min	C-Min	Min	Min
Act Effct Green (s)	32.4	66.1	27.7	11.9	11.9
Actuated g/C Ratio	0.36	0.73	0.31	0.13	0.13
v/c Ratio	0.88	0.51	0.72	0.48	0.56
Control Delay	44.0	6.3	32.5	42.3	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	44.0	6.3	32.5	42.3	10.8
LOS	D	A	C	D	B
Approach Delay		17.6	32.5	21.3	
Approach LOS		B	C	C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 51 (57%), Referenced to phase 2:WBT and 6:EBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 21.8	Intersection LOS: C
Intersection Capacity Utilization 69.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: RT33 & Greenland Rd



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	559	1310	763	110	220
v/c Ratio	0.88	0.51	0.72	0.48	0.56
Control Delay	44.0	6.3	32.5	42.3	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	44.0	6.3	32.5	42.3	10.8
Queue Length 50th (ft)	278	137	205	59	0
Queue Length 95th (ft)	#502	215	275	105	60
Internal Link Dist (ft)		520	520	270	
Turn Bay Length (ft)	200			100	
Base Capacity (vph)	641	2573	1058	330	468
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.87	0.51	0.72	0.33	0.47

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	503	1179	586	101	99	198
Future Volume (vph)	503	1179	586	101	99	198
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3505	3395		1752	1538
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	3505	3395		1752	1538
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	559	1310	651	112	110	220
RTOR Reduction (vph)	0	0	15	0	0	191
Lane Group Flow (vph)	559	1310	748	0	110	29
Heavy Vehicles (%)	2%	3%	4%	4%	3%	5%
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					3	3
Actuated Green, G (s)	32.4	66.1	27.7		11.9	11.9
Effective Green, g (s)	32.4	66.1	27.7		11.9	11.9
Actuated g/C Ratio	0.36	0.73	0.31		0.13	0.13
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	637	2574	1044		231	203
v/s Ratio Prot	c0.32	0.37	c0.22			
v/s Ratio Perm					c0.06	0.02
v/c Ratio	0.88	0.51	0.72		0.48	0.14
Uniform Delay, d1	26.9	5.1	27.7		36.2	34.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	13.3	0.7	4.2		2.1	0.4
Delay (s)	40.3	5.8	31.9		38.3	35.0
Level of Service	D	A	C		D	C
Approach Delay (s)		16.1	31.9		36.1	
Approach LOS		B	C		D	

Intersection Summary			
HCM 2000 Control Delay	22.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	0	50	0	0	158
Future Vol, veh/h	29	0	50	0	0	158
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	79	79	76	76
Heavy Vehicles, %	0	0	6	0	0	2
Mvmt Flow	32	0	63	0	0	208

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	271	63	0	-	-	-
Stage 1	63	-	-	-	-	-
Stage 2	208	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	-	-
Pot Cap-1 Maneuver	723	1007	-	0	0	-
Stage 1	965	-	-	0	0	-
Stage 2	832	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	723	1007	-	-	-	-
Mov Cap-2 Maneuver	723	-	-	-	-	-
Stage 1	965	-	-	-	-	-
Stage 2	832	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	723	-
HCM Lane V/C Ratio	-	0.045	-
HCM Control Delay (s)	-	10.2	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	0	31	13	0	172
Future Vol, veh/h	4	0	31	13	0	172
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	6	0	0	2
Mvmt Flow	4	0	34	14	0	191

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	232	41	0	0	48	0
Stage 1	41	-	-	-	-	-
Stage 2	191	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	761	1036	-	-	1572	-
Stage 1	987	-	-	-	-	-
Stage 2	846	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	761	1036	-	-	1572	-
Mov Cap-2 Maneuver	761	-	-	-	-	-
Stage 1	987	-	-	-	-	-
Stage 2	846	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	761	1572	-
HCM Lane V/C Ratio	-	-	0.006	-	-
HCM Control Delay (s)	-	-	9.8	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Intersection Delay, s/veh	22.2
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	49	174	122	28	111	458
Future Vol, veh/h	49	174	122	28	111	458
Peak Hour Factor	0.84	0.84	0.86	0.86	0.75	0.75
Heavy Vehicles, %	2	3	6	0	6	2
Mvmt Flow	58	207	142	33	148	611
Number of Lanes	1	0	0	1	1	1

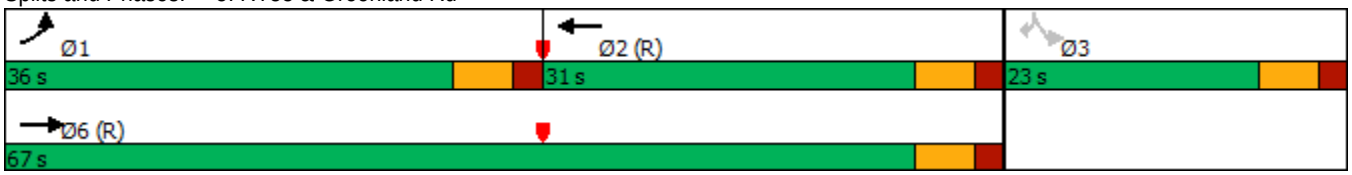
Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	12.4	12.3	27.9
HCM LOS	B	B	D

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	81%
Vol Thru, %	0%	0%	22%	19%
Vol Right, %	0%	100%	78%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	111	458	223	150
LT Vol	111	0	0	122
Through Vol	0	0	49	28
RT Vol	0	458	174	0
Lane Flow Rate	148	611	265	174
Geometry Grp	7	7	2	2
Degree of Util (X)	0.263	0.868	0.41	0.309
Departure Headway (Hd)	6.398	5.117	5.554	6.386
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	562	708	648	562
Service Time	4.133	2.851	3.6	4.438
HCM Lane V/C Ratio	0.263	0.863	0.409	0.31
HCM Control Delay	11.4	31.9	12.4	12.3
HCM Lane LOS	B	D	B	B
HCM 95th-tile Q	1	10.4	2	1.3

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	474	1122	558	100	197
Future Volume (vph)	474	1122	558	100	197
Turn Type	Prot	NA	NA	Perm	Perm
Protected Phases	1	6	2		
Permitted Phases				3	3
Detector Phase	1	6	2	3	3
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	14.0	24.0	24.0	23.0	23.0
Total Split (s)	36.0	67.0	31.0	23.0	23.0
Total Split (%)	40.0%	74.4%	34.4%	25.6%	25.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Min	C-Min	Min	Min
Act Effct Green (s)	33.2	65.5	26.3	12.5	12.5
Actuated g/C Ratio	0.37	0.73	0.29	0.14	0.14
v/c Ratio	0.89	0.54	0.73	0.50	0.57
Control Delay	44.7	6.8	33.3	42.4	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	44.7	6.8	33.3	42.4	10.4
LOS	D	A	C	D	B
Approach Delay		18.1	33.3	21.2	
Approach LOS		B	C	C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 51 (57%), Referenced to phase 2:WBT and 6:EBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 22.1	Intersection LOS: C
Intersection Capacity Utilization 66.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: RT33 & Greenland Rd



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	578	1368	734	122	240
v/c Ratio	0.89	0.54	0.73	0.50	0.57
Control Delay	44.7	6.8	33.3	42.4	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	44.7	6.8	33.3	42.4	10.4
Queue Length 50th (ft)	295	151	195	65	0
Queue Length 95th (ft)	#459	205	258	102	44
Internal Link Dist (ft)		520	520	270	
Turn Bay Length (ft)	200			100	
Base Capacity (vph)	653	2551	1007	330	485
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.89	0.54	0.73	0.37	0.49

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	474	1122	558	95	100	197
Future Volume (vph)	474	1122	558	95	100	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3505	3395		1752	1538
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	3505	3395		1752	1538
Peak-hour factor, PHF	0.82	0.82	0.89	0.89	0.82	0.82
Adj. Flow (vph)	578	1368	627	107	122	240
RTOR Reduction (vph)	0	0	15	0	0	207
Lane Group Flow (vph)	578	1368	719	0	122	33
Heavy Vehicles (%)	2%	3%	4%	4%	3%	5%
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					3	3
Actuated Green, G (s)	33.2	65.5	26.3		12.5	12.5
Effective Green, g (s)	33.2	65.5	26.3		12.5	12.5
Actuated g/C Ratio	0.37	0.73	0.29		0.14	0.14
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	652	2550	992		243	213
v/s Ratio Prot	c0.33	0.39	c0.21			
v/s Ratio Perm					c0.07	0.02
v/c Ratio	0.89	0.54	0.72		0.50	0.16
Uniform Delay, d1	26.6	5.5	28.6		35.9	34.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	14.1	0.8	4.6		2.2	0.5
Delay (s)	40.7	6.3	33.2		38.1	34.6
Level of Service	D	A	C		D	C
Approach Delay (s)		16.5	33.2		35.8	
Approach LOS		B	C		D	

Intersection Summary			
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	66.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	29	0	52	0	0	166
Future Vol, veh/h	29	0	52	0	0	166
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	6	0	0	2
Mvmt Flow	32	0	58	0	0	184

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	242	58	0	-	-	-
Stage 1	58	-	-	-	-	-
Stage 2	184	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	-	-
Pot Cap-1 Maneuver	751	1014	-	0	0	-
Stage 1	970	-	-	0	0	-
Stage 2	852	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	751	1014	-	-	-	-
Mov Cap-2 Maneuver	751	-	-	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	852	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	751	-
HCM Lane V/C Ratio	-	0.043	-
HCM Control Delay (s)	-	10	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	0	33	13	0	180
Future Vol, veh/h	4	0	33	13	0	180
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	6	0	0	2
Mvmt Flow	4	0	37	14	0	200

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	244	44	0	0	51	0
Stage 1	44	-	-	-	-	-
Stage 2	200	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	749	1032	-	-	1568	-
Stage 1	984	-	-	-	-	-
Stage 2	838	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	749	1032	-	-	1568	-
Mov Cap-2 Maneuver	749	-	-	-	-	-
Stage 1	984	-	-	-	-	-
Stage 2	838	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	749	1568	-
HCM Lane V/C Ratio	-	-	0.006	-	-
HCM Control Delay (s)	-	-	9.8	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Intersection Delay, s/veh	16.4
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	51	182	128	29	117	481
Future Vol, veh/h	51	182	128	29	117	481
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	3	6	0	6	2
Mvmt Flow	57	202	142	32	130	534
Number of Lanes	1	0	0	1	1	1

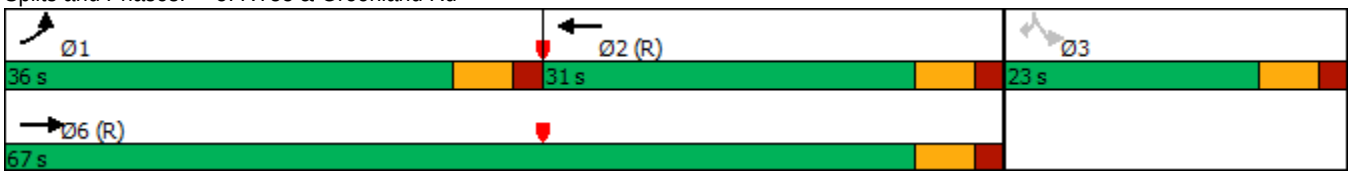
Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	11.7	11.8	19.4
HCM LOS	B	B	C

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	82%
Vol Thru, %	0%	0%	22%	18%
Vol Right, %	0%	100%	78%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	117	481	233	157
LT Vol	117	0	0	128
Through Vol	0	0	51	29
RT Vol	0	481	182	0
Lane Flow Rate	130	534	259	174
Geometry Grp	7	7	2	2
Degree of Util (X)	0.229	0.751	0.385	0.299
Departure Headway (Hd)	6.341	5.059	5.351	6.163
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	567	716	671	583
Service Time	4.072	2.791	3.39	4.205
HCM Lane V/C Ratio	0.229	0.746	0.386	0.298
HCM Control Delay	11	21.5	11.7	11.8
HCM Lane LOS	B	C	B	B
HCM 95th-tile Q	0.9	6.9	1.8	1.2

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	499	1179	586	104	207
Future Volume (vph)	499	1179	586	104	207
Turn Type	Prot	NA	NA	Perm	Perm
Protected Phases	1	6	2		
Permitted Phases				3	3
Detector Phase	1	6	2	3	3
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	14.0	24.0	24.0	23.0	23.0
Total Split (s)	36.0	67.0	31.0	23.0	23.0
Total Split (%)	40.0%	74.4%	34.4%	25.6%	25.6%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Min	C-Min	Min	Min
Act Effct Green (s)	34.5	65.3	24.8	12.7	12.7
Actuated g/C Ratio	0.38	0.73	0.28	0.14	0.14
v/c Ratio	0.90	0.57	0.81	0.52	0.58
Control Delay	45.9	7.2	37.4	42.7	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	45.9	7.2	37.4	42.7	10.4
LOS	D	A	D	D	B
Approach Delay		18.7	37.4	21.2	
Approach LOS		B	D	C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 51 (57%), Referenced to phase 2:WBT and 6:EBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 23.5	Intersection LOS: C
Intersection Capacity Utilization 68.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: RT33 & Greenland Rd



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	609	1438	770	127	252
v/c Ratio	0.90	0.57	0.81	0.52	0.58
Control Delay	45.9	7.2	37.4	42.7	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	45.9	7.2	37.4	42.7	10.4
Queue Length 50th (ft)	321	166	208	68	0
Queue Length 95th (ft)	#496	221	274	105	44
Internal Link Dist (ft)		520	520	270	
Turn Bay Length (ft)	200			100	
Base Capacity (vph)	678	2544	958	330	494
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.90	0.57	0.80	0.38	0.51

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	499	1179	586	100	104	207
Future Volume (vph)	499	1179	586	100	104	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3505	3395		1752	1538
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	3505	3395		1752	1538
Peak-hour factor, PHF	0.82	0.82	0.89	0.89	0.82	0.82
Adj. Flow (vph)	609	1438	658	112	127	252
RTOR Reduction (vph)	0	0	15	0	0	216
Lane Group Flow (vph)	609	1438	755	0	127	36
Heavy Vehicles (%)	2%	3%	4%	4%	3%	5%
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					3	3
Actuated Green, G (s)	34.5	65.3	24.8		12.7	12.7
Effective Green, g (s)	34.5	65.3	24.8		12.7	12.7
Actuated g/C Ratio	0.38	0.73	0.28		0.14	0.14
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	678	2543	935		247	217
v/s Ratio Prot	c0.34	0.41	c0.22			
v/s Ratio Perm					c0.07	0.02
v/c Ratio	0.90	0.57	0.81		0.51	0.16
Uniform Delay, d1	26.1	5.7	30.4		35.8	34.0
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	14.9	0.9	7.4		2.4	0.5
Delay (s)	41.0	6.7	37.8		38.2	34.5
Level of Service	D	A	D		D	C
Approach Delay (s)		16.9	37.8		35.7	
Approach LOS		B	D		D	

Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	68.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX G

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	0	103	3	0	62
Future Vol, veh/h	7	0	103	3	0	62
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	38	69	69	81	81
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	18	0	149	4	0	77

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	228	151	0	0	153	0
Stage 1	151	-	-	-	-	-
Stage 2	77	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	765	901	-	-	1440	-
Stage 1	882	-	-	-	-	-
Stage 2	951	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	765	901	-	-	1440	-
Mov Cap-2 Maneuver	765	-	-	-	-	-
Stage 1	882	-	-	-	-	-
Stage 2	951	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	765	1440	-
HCM Lane V/C Ratio	-	-	0.024	-	-
HCM Control Delay (s)	-	-	9.8	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Intersection Delay, s/veh	15
Intersection LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	32	106	381	40	120	211
Future Vol, veh/h	32	106	381	40	120	211
Peak Hour Factor	0.86	0.86	0.91	0.91	0.88	0.88
Heavy Vehicles, %	3	3	2	3	3	4
Mvmt Flow	37	123	419	44	136	240
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	9.8	19.5	11.6
HCM LOS	A	C	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	90%
Vol Thru, %	0%	0%	23%	10%
Vol Right, %	0%	100%	77%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	120	211	138	421
LT Vol	120	0	0	381
Through Vol	0	0	32	40
RT Vol	0	211	106	0
Lane Flow Rate	136	240	160	463
Geometry Grp	7	7	2	2
Degree of Util (X)	0.255	0.368	0.233	0.69
Departure Headway (Hd)	6.726	5.527	5.218	5.37
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	535	652	688	675
Service Time	4.46	3.26	3.254	3.398
HCM Lane V/C Ratio	0.254	0.368	0.233	0.686
HCM Control Delay	11.8	11.5	9.8	19.5
HCM Lane LOS	B	B	A	C
HCM 95th-tile Q	1	1.7	0.9	5.5

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	200	773	819	103	383
Future Volume (vph)	200	773	819	103	383
Turn Type	Prot	NA	NA	Perm	Perm
Protected Phases	1	6	2		
Permitted Phases				3	3
Detector Phase	1	6	2	3	3
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	14.0	24.0	24.0	23.0	23.0
Total Split (s)	26.0	54.0	28.0	26.0	26.0
Total Split (%)	32.5%	67.5%	35.0%	32.5%	32.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Min	C-Min	Min	Min
Act Effct Green (s)	15.6	55.5	33.9	12.5	12.5
Actuated g/C Ratio	0.20	0.69	0.42	0.16	0.16
v/c Ratio	0.62	0.33	0.72	0.42	0.69
Control Delay	36.9	5.9	25.2	33.9	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	36.9	5.9	25.2	33.9	9.7
LOS	D	A	C	C	A
Approach Delay		12.3	25.2	14.8	
Approach LOS		B	C	B	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 75 (94%), Referenced to phase 2:WBT and 6:EBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 18.0	Intersection LOS: B
Intersection Capacity Utilization 60.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 5: RT33 & Greenland Rd

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	213	822	1059	111	412
v/c Ratio	0.62	0.33	0.72	0.42	0.69
Control Delay	36.9	5.9	25.2	33.9	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	36.9	5.9	25.2	33.9	9.7
Queue Length 50th (ft)	98	67	213	52	0
Queue Length 95th (ft)	154	133	#433	88	68
Internal Link Dist (ft)		520	520	270	
Turn Bay Length (ft)	200			100	
Base Capacity (vph)	445	2454	1474	425	708
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.48	0.33	0.72	0.26	0.58

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	200	773	819	124	103	383
Future Volume (vph)	200	773	819	124	103	383
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3539	3452		1703	1599
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	3539	3452		1703	1599
Peak-hour factor, PHF	0.94	0.94	0.89	0.89	0.93	0.93
Adj. Flow (vph)	213	822	920	139	111	412
RTOR Reduction (vph)	0	0	12	0	0	348
Lane Group Flow (vph)	213	822	1047	0	111	64
Heavy Vehicles (%)	2%	2%	2%	6%	6%	1%
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					3	3
Actuated Green, G (s)	15.6	55.5	33.9		12.5	12.5
Effective Green, g (s)	15.6	55.5	33.9		12.5	12.5
Actuated g/C Ratio	0.19	0.69	0.42		0.16	0.16
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	345	2455	1462		266	249
v/s Ratio Prot	c0.12	0.23	c0.30			
v/s Ratio Perm					c0.07	0.04
v/c Ratio	0.62	0.33	0.72		0.42	0.26
Uniform Delay, d1	29.5	4.9	19.1		30.5	29.7
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	3.7	0.4	3.0		1.4	0.8
Delay (s)	33.2	5.3	22.1		31.9	30.4
Level of Service	C	A	C		C	C
Approach Delay (s)		11.0	22.1		30.7	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay	19.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	0	105	3	0	62
Future Vol, veh/h	7	0	105	3	0	62
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	38	38	69	69	81	81
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	18	0	152	4	0	77

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	231	154	0	0	156	0
Stage 1	154	-	-	-	-	-
Stage 2	77	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	762	897	-	-	1436	-
Stage 1	879	-	-	-	-	-
Stage 2	951	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	762	897	-	-	1436	-
Mov Cap-2 Maneuver	762	-	-	-	-	-
Stage 1	879	-	-	-	-	-
Stage 2	951	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	762	1436	-
HCM Lane V/C Ratio	-	-	0.024	-	-
HCM Control Delay (s)	-	-	9.8	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Intersection Delay, s/veh	15.4
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	32	108	388	40	122	216
Future Vol, veh/h	32	108	388	40	122	216
Peak Hour Factor	0.86	0.86	0.91	0.91	0.88	0.88
Heavy Vehicles, %	3	3	2	3	3	4
Mvmt Flow	37	126	426	44	139	245
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	9.9	20.3	11.8
HCM LOS	A	C	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	91%
Vol Thru, %	0%	0%	23%	9%
Vol Right, %	0%	100%	77%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	122	216	140	428
LT Vol	122	0	0	388
Through Vol	0	0	32	40
RT Vol	0	216	108	0
Lane Flow Rate	139	245	163	470
Geometry Grp	7	7	2	2
Degree of Util (X)	0.26	0.379	0.238	0.705
Departure Headway (Hd)	6.759	5.559	5.254	5.398
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	532	648	682	673
Service Time	4.495	3.295	3.293	3.427
HCM Lane V/C Ratio	0.261	0.378	0.239	0.698
HCM Control Delay	11.9	11.7	9.9	20.3
HCM Lane LOS	B	B	A	C
HCM 95th-tile Q	1	1.8	0.9	5.8

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	204	788	836	105	391
Future Volume (vph)	204	788	836	105	391
Turn Type	Prot	NA	NA	Perm	Perm
Protected Phases	1	6	2		
Permitted Phases				3	3
Detector Phase	1	6	2	3	3
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	14.0	24.0	24.0	23.0	23.0
Total Split (s)	26.0	54.0	28.0	26.0	26.0
Total Split (%)	32.5%	67.5%	35.0%	32.5%	32.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Min	C-Min	Min	Min
Act Effct Green (s)	15.7	55.4	33.7	12.6	12.6
Actuated g/C Ratio	0.20	0.69	0.42	0.16	0.16
v/c Ratio	0.63	0.34	0.74	0.42	0.69
Control Delay	37.1	6.0	25.9	34.0	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	37.1	6.0	25.9	34.0	9.7
LOS	D	A	C	C	A
Approach Delay		12.4	25.9	14.8	
Approach LOS		B	C	B	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 75 (94%), Referenced to phase 2:WBT and 6:EBT, Start of Green	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 18.3	Intersection LOS: B
Intersection Capacity Utilization 61.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 5: RT33 & Greenland Rd

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	217	838	1082	113	420
v/c Ratio	0.63	0.34	0.74	0.42	0.69
Control Delay	37.1	6.0	25.9	34.0	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	37.1	6.0	25.9	34.0	9.7
Queue Length 50th (ft)	100	70	222	53	0
Queue Length 95th (ft)	158	137	#447	89	68
Internal Link Dist (ft)		520	520	270	
Turn Bay Length (ft)	200			100	
Base Capacity (vph)	444	2450	1466	425	714
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.49	0.34	0.74	0.27	0.59

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	204	788	836	127	105	391
Future Volume (vph)	204	788	836	127	105	391
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3539	3451		1703	1599
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	3539	3451		1703	1599
Peak-hour factor, PHF	0.94	0.94	0.89	0.89	0.93	0.93
Adj. Flow (vph)	217	838	939	143	113	420
RTOR Reduction (vph)	0	0	12	0	0	354
Lane Group Flow (vph)	217	838	1070	0	113	66
Heavy Vehicles (%)	2%	2%	2%	6%	6%	1%
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					3	3
Actuated Green, G (s)	15.7	55.4	33.7		12.6	12.6
Effective Green, g (s)	15.7	55.4	33.7		12.6	12.6
Actuated g/C Ratio	0.20	0.69	0.42		0.16	0.16
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	347	2450	1453		268	251
v/s Ratio Prot	c0.12	0.24	c0.31			
v/s Ratio Perm					c0.07	0.04
v/c Ratio	0.63	0.34	0.74		0.42	0.26
Uniform Delay, d1	29.5	5.0	19.4		30.4	29.6
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.0	0.4	3.4		1.5	0.8
Delay (s)	33.4	5.3	22.8		31.9	30.4
Level of Service	C	A	C		C	C
Approach Delay (s)		11.1	22.8		30.7	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	61.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	7	0	110	3	0	62
Future Vol, veh/h	7	0	110	3	0	62
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	8	0	122	3	0	69

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	193	124	0	0	125	0
Stage 1	124	-	-	-	-	-
Stage 2	69	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	800	932	-	-	1474	-
Stage 1	907	-	-	-	-	-
Stage 2	959	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	800	932	-	-	1474	-
Mov Cap-2 Maneuver	800	-	-	-	-	-
Stage 1	907	-	-	-	-	-
Stage 2	959	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	800	1474	-
HCM Lane V/C Ratio	-	-	0.01	-	-
HCM Control Delay (s)	-	-	9.5	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Intersection Delay, s/veh	16.8
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	34	114	408	42	128	227
Future Vol, veh/h	34	114	408	42	128	227
Peak Hour Factor	0.90	0.90	0.91	0.91	0.90	0.90
Heavy Vehicles, %	3	3	2	3	3	4
Mvmt Flow	38	127	448	46	142	252
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	10.1	22.8	12
HCM LOS	B	C	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	91%
Vol Thru, %	0%	0%	23%	9%
Vol Right, %	0%	100%	77%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	128	227	148	450
LT Vol	128	0	0	408
Through Vol	0	0	34	42
RT Vol	0	227	114	0
Lane Flow Rate	142	252	164	495
Geometry Grp	7	7	2	2
Degree of Util (X)	0.27	0.395	0.244	0.747
Departure Headway (Hd)	6.841	5.64	5.336	5.438
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	525	638	671	668
Service Time	4.58	3.378	3.38	3.47
HCM Lane V/C Ratio	0.27	0.395	0.244	0.741
HCM Control Delay	12.1	12	10.1	22.8
HCM Lane LOS	B	B	B	C
HCM 95th-tile Q	1.1	1.9	1	6.7

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	215	829	879	110	411
Future Volume (vph)	215	829	879	110	411
Turn Type	Prot	NA	NA	Perm	Perm
Protected Phases	1	6	2		
Permitted Phases				3	3
Detector Phase	1	6	2	3	3
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	14.0	24.0	24.0	23.0	23.0
Total Split (s)	26.0	54.0	28.0	26.0	26.0
Total Split (%)	32.5%	67.5%	35.0%	32.5%	32.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Min	C-Min	Min	Min
Act Effct Green (s)	16.0	55.0	33.0	13.0	13.0
Actuated g/C Ratio	0.20	0.69	0.41	0.16	0.16
v/c Ratio	0.65	0.36	0.78	0.43	0.70
Control Delay	37.9	6.3	27.8	33.6	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	37.9	6.3	27.8	33.6	9.6
LOS	D	A	C	C	A
Approach Delay		12.8	27.8	14.6	
Approach LOS		B	C	B	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 75 (94%), Referenced to phase 2:WBT and 6:EBT, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 19.2	Intersection LOS: B
Intersection Capacity Utilization 64.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 5: RT33 & Greenland Rd

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	229	882	1125	118	442
v/c Ratio	0.65	0.36	0.78	0.43	0.70
Control Delay	37.9	6.3	27.8	33.6	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	37.9	6.3	27.8	33.6	9.6
Queue Length 50th (ft)	105	80	245	54	0
Queue Length 95th (ft)	167	149	#481	92	70
Internal Link Dist (ft)		520	520	270	
Turn Bay Length (ft)	200			100	
Base Capacity (vph)	442	2432	1436	425	731
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.52	0.36	0.78	0.28	0.60

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	215	829	879	133	110	411
Future Volume (vph)	215	829	879	133	110	411
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3539	3452		1703	1599
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	3539	3452		1703	1599
Peak-hour factor, PHF	0.94	0.94	0.90	0.90	0.93	0.93
Adj. Flow (vph)	229	882	977	148	118	442
RTOR Reduction (vph)	0	0	12	0	0	370
Lane Group Flow (vph)	229	882	1113	0	118	72
Heavy Vehicles (%)	2%	2%	2%	6%	6%	1%
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					3	3
Actuated Green, G (s)	16.0	55.0	33.0		13.0	13.0
Effective Green, g (s)	16.0	55.0	33.0		13.0	13.0
Actuated g/C Ratio	0.20	0.69	0.41		0.16	0.16
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	354	2433	1423		276	259
v/s Ratio Prot	c0.13	0.25	c0.32			
v/s Ratio Perm					c0.07	0.04
v/c Ratio	0.65	0.36	0.78		0.43	0.28
Uniform Delay, d1	29.4	5.2	20.4		30.2	29.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.5	0.4	4.3		1.5	0.8
Delay (s)	33.9	5.6	24.7		31.6	30.2
Level of Service	C	A	C		C	C
Approach Delay (s)		11.5	24.7		30.5	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	64.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	0	105	0	0	62
Future Vol, veh/h	21	0	105	0	0	62
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	69	69	81	81
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	23	0	152	0	0	77

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	229	152	0	-	-	-
Stage 1	152	-	-	-	-	-
Stage 2	77	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	-	-
Pot Cap-1 Maneuver	764	900	-	0	0	-
Stage 1	881	-	-	0	0	-
Stage 2	951	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	764	900	-	-	-	-
Mov Cap-2 Maneuver	764	-	-	-	-	-
Stage 1	881	-	-	-	-	-
Stage 2	951	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	764	-
HCM Lane V/C Ratio	-	0.031	-
HCM Control Delay (s)	-	9.9	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	0	102	35	0	76
Future Vol, veh/h	3	0	102	35	0	76
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	3	0	113	39	0	84

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	217	133	0	0	152	0
Stage 1	133	-	-	-	-	-
Stage 2	84	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	776	922	-	-	1441	-
Stage 1	898	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	776	922	-	-	1441	-
Mov Cap-2 Maneuver	776	-	-	-	-	-
Stage 1	898	-	-	-	-	-
Stage 2	944	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	776	1441	-
HCM Lane V/C Ratio	-	-	0.004	-	-
HCM Control Delay (s)	-	-	9.7	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Intersection Delay, s/veh	16.4
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	36	121	388	48	146	216
Future Vol, veh/h	36	121	388	48	146	216
Peak Hour Factor	0.86	0.86	0.91	0.91	0.88	0.88
Heavy Vehicles, %	3	3	2	3	3	4
Mvmt Flow	42	141	426	53	166	245
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	10.4	22.2	12.2
HCM LOS	B	C	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	89%
Vol Thru, %	0%	0%	23%	11%
Vol Right, %	0%	100%	77%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	146	216	157	436
LT Vol	146	0	0	388
Through Vol	0	0	36	48
RT Vol	0	216	121	0
Lane Flow Rate	166	245	183	479
Geometry Grp	7	7	2	2
Degree of Util (X)	0.316	0.386	0.272	0.733
Departure Headway (Hd)	6.855	5.654	5.368	5.508
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	524	636	668	656
Service Time	4.596	3.394	3.414	3.542
HCM Lane V/C Ratio	0.317	0.385	0.274	0.73
HCM Control Delay	12.7	11.9	10.4	22.2
HCM Lane LOS	B	B	B	C
HCM 95th-tile Q	1.3	1.8	1.1	6.4

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	219	788	836	108	402
Future Volume (vph)	219	788	836	108	402
Turn Type	Prot	NA	NA	Perm	Perm
Protected Phases	1	6	2		
Permitted Phases				3	3
Detector Phase	1	6	2	3	3
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	14.0	24.0	24.0	23.0	23.0
Total Split (s)	26.0	54.0	28.0	26.0	26.0
Total Split (%)	32.5%	67.5%	35.0%	32.5%	32.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Min	C-Min	Min	Min
Act Effct Green (s)	16.1	55.2	33.1	12.8	12.8
Actuated g/C Ratio	0.20	0.69	0.41	0.16	0.16
v/c Ratio	0.65	0.34	0.76	0.43	0.70
Control Delay	37.9	6.1	26.8	33.9	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	37.9	6.1	26.8	33.9	9.7
LOS	D	A	C	C	A
Approach Delay		13.0	26.8	14.8	
Approach LOS		B	C	B	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 75 (94%), Referenced to phase 2:WBT and 6:EBT, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 18.9	Intersection LOS: B
Intersection Capacity Utilization 62.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 5: RT33 & Greenland Rd

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	233	838	1092	116	432
v/c Ratio	0.65	0.34	0.76	0.43	0.70
Control Delay	37.9	6.1	26.8	33.9	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	37.9	6.1	26.8	33.9	9.7
Queue Length 50th (ft)	107	71	229	54	0
Queue Length 95th (ft)	170	138	#453	91	69
Internal Link Dist (ft)		520	520	270	
Turn Bay Length (ft)	200			100	
Base Capacity (vph)	443	2443	1440	425	723
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.53	0.34	0.76	0.27	0.60

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	219	788	836	136	108	402
Future Volume (vph)	219	788	836	136	108	402
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3539	3446		1703	1599
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	3539	3446		1703	1599
Peak-hour factor, PHF	0.94	0.94	0.89	0.89	0.93	0.93
Adj. Flow (vph)	233	838	939	153	116	432
RTOR Reduction (vph)	0	0	13	0	0	363
Lane Group Flow (vph)	233	838	1079	0	116	69
Heavy Vehicles (%)	2%	2%	2%	6%	6%	1%
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					3	3
Actuated Green, G (s)	16.1	55.2	33.1		12.8	12.8
Effective Green, g (s)	16.1	55.2	33.1		12.8	12.8
Actuated g/C Ratio	0.20	0.69	0.41		0.16	0.16
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	356	2441	1425		272	255
v/s Ratio Prot	c0.13	0.24	c0.31			
v/s Ratio Perm					c0.07	0.04
v/c Ratio	0.65	0.34	0.76		0.43	0.27
Uniform Delay, d1	29.4	5.0	20.0		30.3	29.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.7	0.4	3.8		1.5	0.8
Delay (s)	34.1	5.4	23.8		31.8	30.3
Level of Service	C	A	C		C	C
Approach Delay (s)		11.7	23.8		30.6	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay	20.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	0	110	0	0	62
Future Vol, veh/h	21	0	110	0	0	62
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	23	0	122	0	0	69

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	191	122	0	-	-	-
Stage 1	122	-	-	-	-	-
Stage 2	69	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	-	-
Pot Cap-1 Maneuver	803	935	-	0	0	-
Stage 1	908	-	-	0	0	-
Stage 2	959	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	803	935	-	-	-	-
Mov Cap-2 Maneuver	803	-	-	-	-	-
Stage 1	908	-	-	-	-	-
Stage 2	959	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	803	-
HCM Lane V/C Ratio	-	0.029	-
HCM Control Delay (s)	-	9.6	-
HCM Lane LOS	-	A	-
HCM 95th %tile Q(veh)	-	0.1	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	3	0	107	35	0	76
Future Vol, veh/h	3	0	107	35	0	76
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	3	0	119	39	0	84

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	223	139	0	0	158	0
Stage 1	139	-	-	-	-	-
Stage 2	84	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	770	915	-	-	1434	-
Stage 1	893	-	-	-	-	-
Stage 2	944	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	770	915	-	-	1434	-
Mov Cap-2 Maneuver	770	-	-	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	944	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.7	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	770	1434	-
HCM Lane V/C Ratio	-	-	0.004	-	-
HCM Control Delay (s)	-	-	9.7	0	-
HCM Lane LOS	-	-	A	A	-
HCM 95th %tile Q(veh)	-	-	0	0	-

Intersection	
Intersection Delay, s/veh	17.9
Intersection LOS	C

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	38	127	408	50	152	227
Future Vol, veh/h	38	127	408	50	152	227
Peak Hour Factor	0.90	0.90	0.91	0.91	0.90	0.90
Heavy Vehicles, %	3	3	2	3	3	4
Mvmt Flow	42	141	448	55	169	252
Number of Lanes	1	0	0	1	1	1

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	1	1	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	2	1
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	2	0	1
HCM Control Delay	10.6	25.1	12.6
HCM LOS	B	D	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1
Vol Left, %	100%	0%	0%	89%
Vol Thru, %	0%	0%	23%	11%
Vol Right, %	0%	100%	77%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	152	227	165	458
LT Vol	152	0	0	408
Through Vol	0	0	38	50
RT Vol	0	227	127	0
Lane Flow Rate	169	252	183	503
Geometry Grp	7	7	2	2
Degree of Util (X)	0.325	0.402	0.277	0.775
Departure Headway (Hd)	6.934	5.732	5.448	5.546
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	518	628	658	654
Service Time	4.678	3.475	3.497	3.582
HCM Lane V/C Ratio	0.326	0.401	0.278	0.769
HCM Control Delay	13	12.3	10.6	25.1
HCM Lane LOS	B	B	B	D
HCM 95th-tile Q	1.4	1.9	1.1	7.4

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	230	829	879	113	422
Future Volume (vph)	230	829	879	113	422
Turn Type	Prot	NA	NA	Perm	Perm
Protected Phases	1	6	2		
Permitted Phases				3	3
Detector Phase	1	6	2	3	3
Switch Phase					
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	14.0	24.0	24.0	23.0	23.0
Total Split (s)	26.0	54.0	28.0	26.0	26.0
Total Split (%)	32.5%	67.5%	35.0%	32.5%	32.5%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead		Lag		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	None	C-Min	C-Min	Min	Min
Act Effct Green (s)	16.5	54.9	32.4	13.1	13.1
Actuated g/C Ratio	0.21	0.69	0.40	0.16	0.16
v/c Ratio	0.67	0.36	0.81	0.44	0.71
Control Delay	38.4	6.4	29.2	33.7	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	6.4	29.2	33.7	9.6
LOS	D	A	C	C	A
Approach Delay		13.3	29.2	14.7	
Approach LOS		B	C	B	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 75 (94%), Referenced to phase 2:WBT and 6:EBT, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 20.0	Intersection LOS: B
Intersection Capacity Utilization 65.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: RT33 & Greenland Rd

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	245	882	1135	122	454
v/c Ratio	0.67	0.36	0.81	0.44	0.71
Control Delay	38.4	6.4	29.2	33.7	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	38.4	6.4	29.2	33.7	9.6
Queue Length 50th (ft)	112	81	254	56	0
Queue Length 95th (ft)	179	149	#486	95	71
Internal Link Dist (ft)		520	520	270	
Turn Bay Length (ft)	200			100	
Base Capacity (vph)	442	2426	1407	425	740
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.55	0.36	0.81	0.29	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	230	829	879	142	113	422
Future Volume (vph)	230	829	879	142	113	422
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.0	6.0
Lane Util. Factor	1.00	0.95	0.95		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	3539	3446		1703	1599
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1770	3539	3446		1703	1599
Peak-hour factor, PHF	0.94	0.94	0.90	0.90	0.93	0.93
Adj. Flow (vph)	245	882	977	158	122	454
RTOR Reduction (vph)	0	0	13	0	0	380
Lane Group Flow (vph)	245	882	1122	0	122	74
Heavy Vehicles (%)	2%	2%	2%	6%	6%	1%
Turn Type	Prot	NA	NA		Perm	Perm
Protected Phases	1	6	2			
Permitted Phases					3	3
Actuated Green, G (s)	16.5	54.9	32.4		13.1	13.1
Effective Green, g (s)	16.5	54.9	32.4		13.1	13.1
Actuated g/C Ratio	0.21	0.69	0.40		0.16	0.16
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0
Vehicle Extension (s)	4.0	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	365	2428	1395		278	261
v/s Ratio Prot	c0.14	0.25	c0.33			
v/s Ratio Perm					c0.07	0.05
v/c Ratio	0.67	0.36	0.80		0.44	0.28
Uniform Delay, d1	29.3	5.2	21.0		30.1	29.3
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	5.2	0.4	5.0		1.5	0.8
Delay (s)	34.5	5.7	26.0		31.6	30.2
Level of Service	C	A	C		C	C
Approach Delay (s)		11.9	26.0		30.5	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX H

J. PORTER & JJM

#47528.00

Please Print or Type (Single Space) **TO BE COMPLETED AND FILED WITHIN 15 DAYS** Sheet 1 of 1 Sheets(s) 1 12

LOCAL USE	STATE OF NEW HAMPSHIRE UNIFORM POLICE TRAFFIC ACCIDENT REPORT	M.V. USE ONLY
19-6887-AC	DSMV159 (Rev.04/00)	No. Date Rec'd

Amended Report ☐ Hit and Run ☐ School Bus ☐ Driver Ed. ☐ NR ☐ Supplemental Report ☐ Motor Carrier Report ☐ 1 13 1 14

	DATE OF ACCIDENT	DAY OF WEEK	TIME (Military) OF ACCIDENT	CITY/TOWN	
1 1	02/19/2019	Tuesday	1415	PORTSMOUTH	1 15

TOTAL KILLED	TOTAL INJURED	TOTAL VEHICLES	POLICE NOTIFIED	POLICE ARRIVED	AMBULANCE ARRIVED	DEPARTMENT	
0	0	2	1415	1431		Portsmouth	13 16

2 ACCIDENT OCCURRED ON: ____ ☐ MILES ☐ FEET N ☐ S ☐ E ☐ W ☐ OF ☒ AT INTERSECTION WITH

875 GREENLAND RD — ROUTE NO. AND/OR STREET NAME

INTERSECTING ROAD, BRIDGE, TOWN LINE (not telephone pole, house): BORTHWICK AVE — ROUTE NO. AND/OR STREET NAME

POSTED SPEED: 30 8 17

3 1 Complete first node for accidents at node, complete both for accidents between nodes.

FIRST NODE: MAP ____ 10 ZONE ____ / NODE ____ SUF ____

DISTANCE FROM FIRST NODE TOWARD SECOND: ____ FEET

SECOND NODE: MAP ____ 10 ZONE ____ / NODE ____ SUF ____

MILE-MARKER ON INTERSTATE ONLY: ____ FEET N ☐ E ☐ S ☐ W ☐ MILE ____ 20 18

4 4	UNIT NO.: 1 INFORMATION	UNIT NO.: 2 INFORMATION
	BICYCLE ☐ PEDESTRIAN ☐ SUMMONED ☐ ARRESTED ☐ CHARGE: M.V.R. YES ☐ RECOM ☐	BICYCLE ☐ PEDESTRIAN ☐ SUMMONED ☐ ARRESTED ☐ CHARGE: M.V.R. YES ☐ RECOM ☐ 18 19
5 5	DRIVER LICENSE NO. [redacted] STATE [redacted] CLASSIFICATION [redacted]	DRIVER LICENSE NO. [redacted] STATE [redacted] CLASSIFICATION 9 20
	DRIVER'S NAME LAST, FIRST, MIDDLE [redacted]	DRIVER'S NAME LAST, FIRST, MIDDLE [redacted] 9 21
6 4	D.O.B. [redacted] SEX [redacted] RESTRICTIONS / ENDORSEMENTS COMPLIED WITH YES ☐	D.O.B. [redacted] SEX [redacted] RESTRICTIONS / ENDORSEMENTS COMPLIED WITH YES ☐ 14 22
7 4	CURRENT ADDRESS, NUMBER, AND STREET [redacted] PHONE NO. [redacted]	CURRENT ADDRESS, NUMBER, AND STREET [redacted] PHONE NO. [redacted] 10 23
	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]
8 1	PLATE NUMBER [redacted] PLATE TYPE [redacted] STATE [redacted] TRAILER PLATE STATE	PLATE NUMBER [redacted] PLATE TYPE [redacted] STATE [redacted] TRAILER PLATE STATE 10 24
9 1	MAKE YEAR [redacted] COMMERCIAL VEHICLE ACCIDENT ☐ HAZARDOUS MATERIALS ☐	MAKE [redacted] YEAR [redacted] COMMERCIAL VEHICLE ACCIDENT ☐ HAZARDOUS MATERIALS ☐ 10 25
10 1	V.I.N. [redacted]	V.I.N. [redacted]
11 1	SAME AS DRIVER ☒ OWNER NAME LAST, FIRST MIDDLE	SAME AS DRIVER ☐ OWNER NAME LAST, FIRST MIDDLE [redacted]
	CURRENT ADDRESS, NUMBER AND STREET PHONE NO.	CURRENT ADDRESS, NUMBER AND STREET [redacted] PHONE NO.
	CITY / TOWN STATE ZIP CODE	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]
	INSURANCE CO. & POLICY # [redacted] OR DSMV 385 ISSUED ☐	INSURANCE CO. & POLICY # [redacted] OR DSMV 385 ISSUED ☐
	VEHICLE TOWED ☐ BY: TO:	VEHICLE TOWED ☐ BY: TO:

REF.	26	27	28	29	NAME(S) OF OCCUPANTS OR WITNESSES	ADDRESS / PHONE	30	31	32	33
1	1	N	4	[redacted]	[redacted]	[redacted]	1	1	8	F
2	2	N	4	[redacted]	[redacted]	[redacted]	1	1	8	M
3	1	N	1	[redacted]	[redacted]	[redacted]	17	1	8	M
4										
5										
6										

UNIT NO: 1

7 INDICATE PROBABLE POINT OF IMPACT

1 | 2 | 3 | 4 | 5 | 6
13 Front | 14 | Rear 15
12 | 11 | 10 | 9 | 8 | 7

16. Undercarriage
17. Rollover
18. Fire/Explosion
19. Total

Circle numbers indicating areas damaged.

Rear	Passing	Lt. Turn	Intersection
1	2	3	4
Rt. Turn	Rt. Turn	Head-On	Sideswipe
5	6	7	8

Indicate Vehicle Numbers on Arrows Above

UNIT NO: 2

1 | 2 | 3 | 4 | 5 | 6
13 Front | 14 | Rear 15
12 | 11 | 10 | 9 | 8 | 7

INDICATE PROBABLE POINT OF IMPACT 12

18. Undercarriage
17. Rollover
18. Fire/Explosion
19. Total

Circle numbers indicating areas damaged.

ACCIDENT SKETCH

Indicate North

By Arrow

Moved prior to my arrival.

N

GIST OF ACCIDENT

Vehicle #1 was stopped (N/B) at the yield sign, yielding for traffic, on Borthwick Ave at Greenland Road. While waiting to enter traffic Vehicle #1 was struck by Vehicle #2. Vehicle #1 sustained damage to the left rear corner. The driver of Vehicle #1 did not complain of injury.

Vehicle #2 was traveling on Borthwick Ave (N/B). The driver of Vehicle # 2 stated that as he approached the intersection he did not see Vehicle #1 due to the glare of the sun obstructing his view. Vehicle #2 struck the rear of Vehicle #1. Vehicle #2 sustained damage to the right front corner. The driver of Vehicle #2 admitted fault for the collision. The Driver of Vehicle #2 did not complain of injury.

There were no witnesses on scene. Officer did not observe collision. Both vehicles were removed from the scene by their original drivers without further issue.

End report.

Officer Seth Chavez
Portsmouth Police Department.

SIGNATURE OF INVESTIGATING OFFICER	DATE OF REPORT 02/20/2019	REVIEWED BY
DEPARTMENT / DIVISION / TROOP Portsmouth Police Department	PHOTOS TAKEN YES ☒ NO ☐ BY:	

Please Print or Type (Single Space) **TO BE COMPLETED AND FILED WITHIN 15 DAYS** Sheet 1 of 1 Sheets(s) 1 12

LOCAL USE
19-11167-AC

STATE OF NEW HAMPSHIRE UNIFORM POLICE TRAFFIC ACCIDENT REPORT

DSMV159 (Rev.04/00)

M.V. USE ONLY
No.
Date Rec'd

1 13

Amended Report ☐ | Hit and Run ☐ | School Bus ☐ | Driver Ed. ☐ | NR ☐ | Supplemental Report ☐ | Motor Carrier Report ☐ 99 14

	DATE OF ACCIDENT	DAY OF WEEK	TIME (Military) OF ACCIDENT	CITY/TOWN	
1 1	03/20/2019	Wednesday	0837	PORTSMOUTH	99 15

TOTAL KILLED	TOTAL INJURED	TOTAL VEHICLES	POLICE NOTIFIED	POLICE ARRIVED	AMBULANCE ARRIVED	DEPARTMENT	
0	1	2	0837	0902		Portsmouth	16 16

2 — ACCIDENT OCCURRED ON: _____ ☐ MILES ☐ FEET ☐ AT INTERSECTION WITH — N ☐ E ☐ S ☐ W ☐ OF — INTERSECTING ROAD, BRIDGE, TOWN LINE (not telephone pole, house) — POSTED SPEED 1 17

875 GREENLAND RD
ROUTE NO. AND/OR STREET NAME — ROUTE NO. AND/OR STREET NAME

3 10 — Complete first node for accidents at node, complete both for accidents between nodes.

FIRST NODE	DISTANCE FROM FIRST NODE TOWARD SECOND	SECOND NODE	MILE-MARKER ON INTERSTATE ONLY	MILE
MAP ___ 10 ZONE ___ NODE ___ / SUF	FEET	MAP ___ 10 ZONE ___ NODE ___ / SUF	___ FEET N ☐ E ☐ S ☐ W ☐	1 18

	UNIT NO.: 1 INFORMATION	UNIT NO.: 2 INFORMATION	
4 1	BICYCLE ☐ PEDESTRIAN ☐ SUMMONED ☐ CHARGE: ARRESTED ☐ M.V.R. YES RECOM ☐	BICYCLE ☐ PEDESTRIAN ☐ SUMMONED ☐ CHARGE: ARRESTED ☐ M.V.R. YES RECOM ☐	99 19
5 98	DRIVER LICENSE NO. [redacted] STATE [redacted] CLASSIFICATION [redacted]	DRIVER LICENSE NO. [redacted] STATE [redacted] CLASSIFICATION [redacted]	9 20
	DRIVER'S NAME LAST, FIRST, MIDDLE [redacted]	DRIVER'S NAME LAST, FIRST, MIDDLE [redacted]	9 21
6 4	D.O.B. [redacted] SEX [redacted] RESTRICTIONS / ENDORSEMENTS COMPLIED WITH YES ☐	D.O.B. [redacted] SEX [redacted] RESTRICTIONS / ENDORSEMENTS COMPLIED WITH YES ☐	3 22
7 98	CURRENT ADDRESS, NUMBER, AND STREET [redacted] PHONE NO. [redacted]	CURRENT ADDRESS, NUMBER, AND STREET [redacted] PHONE NO.	14 23
	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]	
8 1	PLATE NUMBER [redacted] PLATE TYPE [redacted] STATE [redacted] TRAILER PLATE STATE	PLATE NUMBER [redacted] PLATE TYPE [redacted] STATE [redacted] TRAILER PLATE STATE	10 24
9 1	MAKE YEAR [redacted] COMMERCIAL VEHICLE ACCIDENT ☐ HAZARDOUS MATERIALS ☐	MAKE [redacted] YEAR [redacted] COMMERCIAL VEHICLE ACCIDENT ☐ HAZARDOUS MATERIALS ☐	10 25
10 1	V.I.N. [redacted]	V.I.N. [redacted]	
11 1	SAME AS DRIVER ☒ OWNER NAME LAST, FIRST MIDDLE	SAME AS DRIVER ☒ OWNER NAME LAST, FIRST MIDDLE	
	CURRENT ADDRESS, NUMBER AND STREET PHONE NO.	CURRENT ADDRESS, NUMBER AND STREET PHONE NO.	
	CITY / TOWN STATE ZIP CODE	CITY / TOWN STATE ZIP CODE	
	INSURANCE CO. & POLICY # [redacted] OR DSMV 385 ISSUED ☐	INSURANCE CO. & POLICY # [redacted] OR DSMV 385 ISSUED ☐	
	VEHICLE TOWED ☐ BY: TO:	VEHICLE TOWED ☐ BY: TO:	

REF.	26	27	28	29	NAME(S) OF OCCUPANTS OR WITNESSES	ADDRESS / PHONE	30	31	32	33
1	1	U	4	[redacted]	[redacted]	[redacted]	1	1	2	F
2	2	N	4	[redacted]	[redacted]	[redacted]	1	1	8	M
3										
4										
5										
6										

UNIT NO: 1

6 INDICATE PROBABLE POINT OF IMPACT

1 | 2 | 3 | 4 | 5 | 6
13 Front | 14 | Rear 15
12 | 11 | 10 | 9 | 8 | 7

16. Undercarriage
17. Rollover
18. Fire/Explosion
19. Total

Circle numbers indicating areas damaged.

Rear	Passing	Lt. Turn	Intersection
1	2	3	4
Rt. Turn	Rt. Turn	Head-On	Sideswipe
5	6	7	8

Indicate Vehicle Numbers on Arrows Above

UNIT NO: 2

1 | 2 | 3 | 4 | 5 | 6
13 Front | 14 | Rear 15
12 | 11 | 10 | 9 | 8 | 7

INDICATE PROBABLE POINT OF IMPACT 1

16. Undercarriage
17. Rollover
18. Fire/Explosion
19. Total

Circle numbers indicating areas damaged.

ACCIDENT SKETCH

Indicate North

By Arrow

NO DIAGRAM

N

GIST OF ACCIDENT

On Wednesday March 20, 2019 at approximately 8:37 AM I was dispatched to a two (2) car accident in the private parking lot of Orchard Park, 875 Greenland Road. The Emergency Communication Center (ECC) advised of no known personal injuries.

[redacted] was operating a 2013 GMC Terrain, bearing New [redacted]. [redacted] was backing out of a parking spot when she collided with another vehicle traveling through said private lot on the main access/thru. There was damage to the rear passenger corner of [redacted] SUV. Photographs were taken of said damage. I asked [redacted] if she required any medical attention, she claimed her neck was sore. I asked her if she required any medical attention from the City of Portsmouth FD, she declined.

[redacted] was operating said grey Toyota Tacoma, bearing [redacted], that [redacted] collided with. There was damage to the front passenger corner of said truck. Photographs were taken of said damage. I asked [redacted] if he required any medical attention, he stated no. [redacted] commented to me that [redacted] appeared to back out of said parking space rather quickly. [redacted] was advised that he could not drive his truck from said private lot due to the damage and was advised he would need to have the vehicle removed from the parking lot.

SIGNATURE OF INVESTIGATING OFFICER	DATE OF REPORT 03/20/2019	REVIEWED BY
DEPARTMENT / DIVISION / TROOP Portsmouth Police Department	PHOTOS TAKEN YES ☐ NO ☒ BY:	

Please Print or Type (Single Space) **TO BE COMPLETED AND FILED WITHIN 15 DAYS** Sheet 1 of 1 Sheets(s)

LOCAL USE
19-20502-AC

Amended Report ☐ Hit and Run ☐ School Bus ☐ Driver Ed. ☐

STATE OF NEW HAMPSHIRE UNIFORM POLICE TRAFFIC ACCIDENT REPORT

DSMV159 (Rev.04/00)

M.V. USE ONLY
No.
Date Rec'd
NR ☐ Supplemental Report ☐ Motor Carrier Report ☐

DATE OF ACCIDENT	DAY OF WEEK	TIME (Military) OF ACCIDENT	CITY/TOWN
05/21/2019	Tuesday	1208	PORTSMOUTH

TOTAL KILLED	TOTAL INJURED	TOTAL VEHICLES	POLICE NOTIFIED	POLICE ARRIVED	AMBULANCE ARRIVED	DEPARTMENT
0	0	2	1208	1227		Portsmouth

ACCIDENT OCCURRED ON: ____ ☐ MILES ☐ FEET N ☐ S ☐ E ☐ W OF ☒ AT INTERSECTING ROAD, BRIDGE, TOWN LINE (not telephone pole, house)

2 BORTHWICK AVE — ROUTE NO. AND/OR STREET NAME

719 GREENLAND RD — ROUTE NO. AND/OR STREET NAME

POSTED SPEED: 30

Complete first node for accidents at node, complete both for accidents between nodes.

FIRST NODE: MAP ____ ZONE 10 ____ NODE ____ / SUF ____

DISTANCE FROM FIRST NODE TOWARD SECOND: ____ FEET

SECOND NODE: MAP ____ ZONE 10 ____ NODE ____ / SUF ____

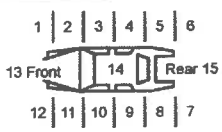
MILE-MARKER ON INTERSTATE ONLY: ____ FEET N ☐ E ☐ S ☐ W ☐ MILE ____

UNIT NO.: 1 INFORMATION	UNIT NO.: 2 INFORMATION
BICYCLE ☐ PEDESTRIAN ☐ SUMMONED ☐ ARRESTED ☐ CHARGE: M.V.R. YES RECOM ☐	BICYCLE ☐ PEDESTRIAN ☐ SUMMONED ☐ ARRESTED ☐ CHARGE: M.V.R. YES RECOM ☐
DRIVER LICENSE NO. [redacted] STATE [redacted] CLASSIFICATION [redacted]	DRIVER LICENSE NO. [redacted] STATE [redacted] CLASSIFICATION [redacted]
DRIVER'S NAME [redacted] LAST, FIRST, MIDDLE	DRIVER'S NAME [redacted] LAST, FIRST, MIDDLE
D.O.B. [redacted] SEX [redacted] RESTRICTIONS / ENDORSEMENTS COMPLIED WITH YES ☐	D.O.B. [redacted] SEX [redacted] RESTRICTIONS / ENDORSEMENTS COMPLIED WITH YES ☐
CURRENT ADDRESS, NUMBER, AND STREET [redacted] PHONE NO. [redacted]	CURRENT ADDRESS, NUMBER, AND STREET [redacted] PHONE NO. [redacted]
CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]
PLATE NUMBER [redacted] PLATE TYPE [redacted] STATE [redacted] TRAILER PLATE STATE	PLATE NUMBER [redacted] PLATE TYPE [redacted] STATE [redacted] TRAILER PLATE STATE
MAKE [redacted] YEAR [redacted] COMMERCIAL VEHICLE ACCIDENT ☐ HAZARDOUS MATERIALS ☐	MAKE [redacted] YEAR [redacted] COMMERCIAL VEHICLE ACCIDENT ☐ HAZARDOUS MATERIALS ☐
V.I.N. [redacted]	V.I.N. [redacted]
SAME AS DRIVER ☒ OWNER NAME LAST, FIRST MIDDLE	SAME AS DRIVER ☒ OWNER NAME LAST, FIRST MIDDLE
CURRENT ADDRESS, NUMBER AND STREET PHONE NO.	CURRENT ADDRESS, NUMBER AND STREET PHONE NO.
CITY / TOWN STATE ZIP CODE	CITY / TOWN STATE ZIP CODE
INSURANCE CO. & POLICY # [redacted] OR DSMV 385 ISSUED ☐	INSURANCE CO. & POLICY # [redacted] OR DSMV 385 ISSUED ☐
VEHICLE TOWED ☐ BY: TO:	VEHICLE TOWED ☐ BY: TO:

REF.	26	27	28	29	NAME(S) OF OCCUPANTS OR WITNESSES	ADDRESS / PHONE	30	31	32	33
1	1	N	4	[redacted]	[redacted]	[redacted]		1	8	F
2	2	N	4	[redacted]	[redacted]	[redacted]		1	8	M
3	1	N	4	[redacted]	[redacted]	[redacted]		1	8	M
4	1	N	1	[redacted]	[redacted]	[redacted]		1	8	M
5										
6										

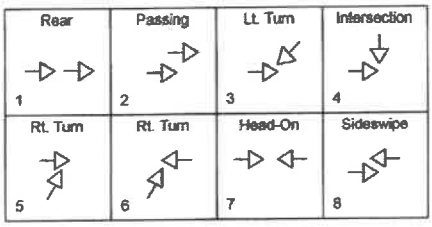
UNIT NO: 1

6 INDICATE PROBABLE POINT OF IMPACT



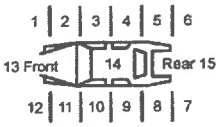
16. Undercarriage
17. Rollover
18. Fire/Explosion
19. Total

Circle numbers indicating areas damaged.



Indicate Vehicle Numbers on Arrows Above

UNIT NO: 2



INDICATE PROBABLE POINT OF IMPACT 12

16. Undercarriage
17. Rollover
18. Fire/Explosion
19. Total

Circle numbers indicating areas damaged.

ACCIDENT SKETCH

Indicate North

By Arrow

GIST OF ACCIDENT

Gist: Vehicle 1 was starting from stopped at the yield sign from Greenland Road onto Borthwick Avenue but then stopped again for oncoming traffic. Vehicle 2 was stopped directly behind Vehicle 1 and started to proceed after seeing Vehicle 1 start to do the same but looked toward oncoming traffic for a second and did not see Vehicle 1 stop again, crashing into the rear of Vehicle 1. Damages were documented with photographs. Vehicles were moved prior to police arrival so there is no diagram. No injuries were reported on scene.

Master Patrol Officer Christina J. Meyer
Uniformed Patrol Division
Portsmouth Police Department

SIGNATURE OF INVESTIGATING OFFICER	DATE OF REPORT 05/30/2019	REVIEWED BY
DEPARTMENT / DIVISION / TROOP Portsmouth Police Department	PHOTOS TAKEN YES ☐ NO ☒ BY:	

Please Print or Type (Single Space) **TO BE COMPLETED AND FILED WITHIN 15 DAYS** Sheet 1 of 1 Sheets(s) 12

LOCAL USE	STATE OF NEW HAMPSHIRE UNIFORM POLICE TRAFFIC ACCIDENT REPORT	M.V. USE ONLY
19-28481-AC	DSMV159 (Rev.04/00)	No. 1
Amended Report ☐ Hit and Run ☐ School Bus ☐ Driver Ed. ☐		Date Rec'd NR ☐ Supplemental Report ☐ Motor Carrier Report ☐

	DATE OF ACCIDENT	DAY OF WEEK	TIME (Military) OF ACCIDENT	CITY/TOWN
1	07/11/2019	Thursday	1412	PORTSMOUTH

TOTAL KILLED	TOTAL INJURED	TOTAL VEHICLES	POLICE NOTIFIED	POLICE ARRIVED	AMBULANCE ARRIVED	DEPARTMENT
0	0	2	1412	1428		Portsmouth

ACCIDENT OCCURRED ON: ☐ MILES ☐ FEET N ☐ S ☐ E ☐ W OF

2 BORTHWICK AVE — ROUTE NO. AND/OR STREET NAME

☒ AT INTERSECTING WITH

INTERSECTING ROAD, BRIDGE, TOWN LINE (not telephone pole, house): 719 GREENLAND RD — ROUTE NO. AND/OR STREET NAME

POSTED SPEED: 30

Complete first node for accidents at node, complete both for accidents between nodes.

	FIRST NODE	DISTANCE FROM FIRST NODE TOWARD SECOND	SECOND NODE
3	MAP ___ ZONE 10 ___ NODE ___ / SUF ___	FEET	MAP ___ ZONE 10 ___ NODE ___ / SUF ___

MILE-MARKER ON INTERSTATE ONLY: ___ FEET N ☐ E ☐ S ☐ W ☐ MILE ___

	UNIT NO.: 1 INFORMATION	UNIT NO.: 2 INFORMATION
4	BICYCLE ☐ PEDESTRIAN ☐ SUMMONED ☐ ARRESTED ☐ CHARGE: M.V.R. YES RECOM ☐	BICYCLE ☐ PEDESTRIAN ☐ SUMMONED ☐ ARRESTED ☐ CHARGE: M.V.R. YES RECOM ☐
5	DRIVER LICENSE NO. [redacted] STATE [redacted] CLASSIFICATION [redacted]	DRIVER LICENSE NO. [redacted] STATE [redacted] CLASSIFICATION [redacted]
	DRIVER'S NAME LAST, FIRST, MIDDLE [redacted]	DRIVER'S NAME LAST, FIRST, MIDDLE [redacted]
6	D.O.B. [redacted] SEX [redacted] RESTRICTIONS / ENDORSEMENTS COMPLIED WITH YES ☐	D.O.B. [redacted] SEX [redacted] RESTRICTIONS / ENDORSEMENTS COMPLIED WITH YES ☐
7	CURRENT ADDRESS, NUMBER, AND STREET [redacted] PHONE NO. [redacted]	CURRENT ADDRESS, NUMBER, AND STREET [redacted] PHONE NO. [redacted]
	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]
8	PLATE NUMBER [redacted] PLATE TYPE [redacted] STATE [redacted] TRAILER PLATE STATE	PLATE NUMBER [redacted] PLATE TYPE [redacted] STATE [redacted] TRAILER PLATE STATE
9	MAKE [redacted] YEAR [redacted] COMMERCIAL VEHICLE ACCIDENT ☐ HAZARDOUS MATERIALS ☐	MAKE [redacted] YEAR [redacted] COMMERCIAL VEHICLE ACCIDENT ☐ HAZARDOUS MATERIALS ☐
10	V.I.N. [redacted]	V.I.N. [redacted]
11	SAME AS DRIVER ☒ OWNER NAME LAST, FIRST MIDDLE	SAME AS DRIVER ☐ OWNER NAME [redacted] LAST, FIRST MIDDLE
	CURRENT ADDRESS, NUMBER AND STREET PHONE NO.	CURRENT ADDRESS, NUMBER AND STREET [redacted] PHONE NO. 603-834-6451
	CITY / TOWN STATE ZIP CODE	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]
	INSURANCE CO. & POLICY # OR DSMV 385 ISSUED ☒	INSURANCE CO. & POLICY # [redacted] OR DSMV 385 ISSUED ☐
	VEHICLE TOWED ☐ BY: TO:	VEHICLE TOWED ☐ BY: TO:

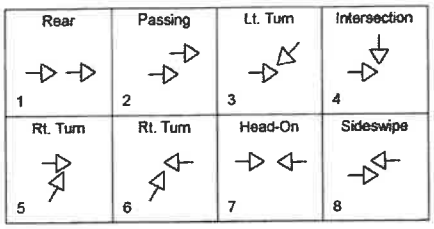
REF.	26	27	28	29	NAME(S) OF OCCUPANTS OR WITNESSES	ADDRESS / PHONE	30	31	32	33
1	1	N	4	[redacted]	[redacted]	[redacted]	1	1	8	M
2	2	N	4	[redacted]	[redacted]	[redacted]	1	1	8	M
3	1	N	4	[redacted]	[redacted]	[redacted]	12	1	8	F
4										
5										
6										

UNIT NO: 1

12 INDICATE PROBABLE POINT OF IMPACT

16. Undercarriage
17. Rollover
18. Fire/Explosion
19. Total

Circle numbers indicating areas damaged.



Indicate Vehicle Numbers on Arrows Above

UNIT NO: 2

INDICATE PROBABLE POINT OF IMPACT 21

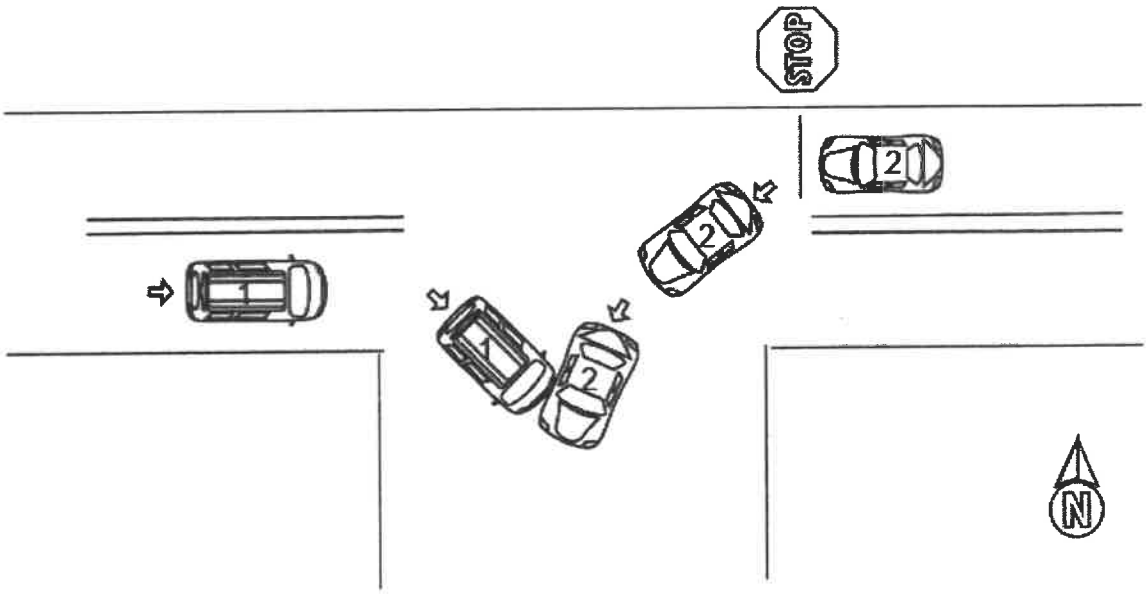
16. Undercarriage
17. Rollover
18. Fire/Explosion
19. Total

Circle numbers indicating areas damaged.

ACCIDENT SKETCH

Indicate North

By Arrow



GIST OF ACCIDENT

07/12/2019

VEH 1 WAS MAKING RIGHT TURN WHILE TRAVELING ON GREENLAND RD. VEH 2 WAS MAKING LEFT TURN FROM BORTHWICK AVE ONTO GREENLAND RD. OPERATOR OF VEH 2 ADVISED HE BELIEVED HE HAD TIME TO MAKE TURN IN FRONT OF VEH 1. VEH 1 AND VEH 2 COLLIDED AS BOTH VEHICLES ENTERED INTERSECTION AT SAME TIME.

END REPORT.

PATROL OFFICER CHARLES A RAIZES
PORTSMOUTH POLICE DEPARTMENT

SIGNATURE OF INVESTIGATING OFFICER	DATE OF REPORT 07/16/2019	REVIEWED BY
DEPARTMENT / DIVISION / TROOP Portsmouth Police Department	PHOTOS TAKEN YES ☒ NO ☐ BY:	

Please Print or Type (Single Space) **TO BE COMPLETED AND FILED WITHIN 15 DAYS** Sheet 1 of 1 Sheets(s) 1 12

LOCAL USE
21-7344-AC

Amended Report ☐ Hit and Run ☐ School Bus ☐ Driver Ed. ☐

STATE OF NEW HAMPSHIRE UNIFORM POLICE TRAFFIC ACCIDENT REPORT

DSMV159 (Rev.04/00)

M.V. USE ONLY
No. 1 13
Date Rec'd
NR ☐ Supplemental Report ☐ Motor Carrier Report ☐ 2 14

3 15

	DATE OF ACCIDENT	DAY OF WEEK	TIME (Military) OF ACCIDENT	CITY/TOWN
1 1	03/06/2021	Saturday	1038	PORTSMOUTH

TOTAL KILLED	TOTAL INJURED	TOTAL VEHICLES	POLICE NOTIFIED	POLICE ARRIVED	AMBULANCE ARRIVED	DEPARTMENT	
0	0	2	1038	1038		Portsmouth	4 16

2 2 ACCIDENT OCCURRED ON: ☐ MILES ☐ FEET N ☐ S ☐ E ☐ W ☐ OF ☒ AT INTERSECTION WITH

719 GREENLAND RD
ROUTE NO. AND/OR STREET NAME

INTERSECTING ROAD, BRIDGE, TOWN LINE (not telephone pole, house)
2 BORTHWICK AVE
ROUTE NO. AND/OR STREET NAME

POSTED SPEED: 30 1 17

3 1 Complete first node for accidents at node, complete both for accidents between nodes.

FIRST NODE: MAP ___ 10 ZONE ___ NODE ___ / SUF ___
DISTANCE FROM FIRST NODE TOWARD SECOND: ___ FEET
SECOND NODE: MAP ___ 10 ZONE ___ NODE ___ / SUF ___

MILE-MARKER ON INTERSTATE ONLY: ___ FEET N ☐ E ☐ S ☐ W ☐ MILE ___ 14 18

	UNIT NO.: 1 INFORMATION	UNIT NO.: 2 INFORMATION	
4 3	BICYCLE ☐ PEDESTRIAN ☐ SUMMONED ☐ ARRESTED ☐ CHARGE: M.V.R. YES RECOM ☐	BICYCLE ☐ PEDESTRIAN ☐ SUMMONED ☐ ARRESTED ☐ CHARGE: M.V.R. YES RECOM ☐	20 19
	DRIVER LICENSE NO. [redacted] STATE [redacted] CLASSIFICATION [redacted]	DRIVER LICENSE NO. [redacted] STATE [redacted] CLASSIFICATION [redacted]	9 20
5 3	DRIVER'S NAME LAST, FIRST, MIDDLE [redacted]	DRIVER'S NAME LAST, FIRST, MIDDLE [redacted]	9 21
6 4	D.O.B. [redacted] SEX [redacted] RESTRICTIONS / ENDORSEMENTS COMPLIED WITH YES ☐	D.O.B. [redacted] SEX [redacted] RESTRICTIONS / ENDORSEMENTS COMPLIED WITH YES ☐	14 22
7 1	CURRENT ADDRESS, NUMBER, AND STREET [redacted] PHONE NO. [redacted]	CURRENT ADDRESS, NUMBER, AND STREET [redacted] PHONE NO. [redacted]	14 23
	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]	
8 1	PLATE NUMBER [redacted] PLATE TYPE [redacted] STATE [redacted] TRAILER PLATE STATE	PLATE NUMBER [redacted] PLATE TYPE [redacted] STATE [redacted] TRAILER PLATE STATE	10 24
9 9	MAKE [redacted] YEAR [redacted] COMMERCIAL VEHICLE ACCIDENT ☐ HAZARDOUS MATERIALS ☐	MAKE [redacted] YEAR [redacted] COMMERCIAL VEHICLE ACCIDENT ☐ HAZARDOUS MATERIALS ☐	10 25
10 1	V.I.N. [redacted]	V.I.N. [redacted]	
11 1	SAME AS DRIVER ☒ OWNER NAME LAST, FIRST MIDDLE	SAME AS DRIVER ☒ OWNER NAME LAST, FIRST MIDDLE	
	CURRENT ADDRESS, NUMBER AND STREET PHONE NO.	CURRENT ADDRESS, NUMBER AND STREET PHONE NO.	
	CITY / TOWN STATE ZIP CODE	CITY / TOWN STATE ZIP CODE	
	INSURANCE CO. & POLICY # [redacted] OR DSMV 385 ISSUED ☐	INSURANCE CO. & POLICY # [redacted] OR DSMV 385 ISSUED ☐	
	VEHICLE TOWED ☐ BY: TO:	VEHICLE TOWED ☐ BY: TO:	

REF.	26	27	28	29	NAME(S) OF OCCUPANTS OR WITNESSES	ADDRESS / PHONE	30	31	32	33
1	1	N	4	[redacted]	[redacted]	[redacted]	1	1	8	F
2	2	N	4	[redacted]	[redacted]	[redacted]	1	1	8	M
3										
4										
5										
6										

UNIT NO: 1

13 INDICATE PROBABLE POINT OF IMPACT

1 | 2 | 3 | 4 | 5 | 6
13 Front | 14 | Rear 15
12 | 11 | 10 | 9 | 8 | 7

16. Undercarriage
17. Rollover
18. Fire/Explosion
19. Total

Circle numbers indicating areas damaged.

Rear	Passing	Lt. Turn	Intersection
1	2	3	4
Rt. Turn	Rt. Turn	Head-On	Sideswipe
5	6	7	8

Indicate Vehicle Numbers on Arrows Above

UNIT NO: 2

1 | 2 | 3 | 4 | 5 | 6
13 Front | 14 | Rear 15
12 | 11 | 10 | 9 | 8 | 7

INDICATE PROBABLE POINT OF IMPACT 4

16. Undercarriage
17. Rollover
18. Fire/Explosion
19. Total

Circle numbers indicating areas damaged.

ACCIDENT SKETCH

Indicate North

By Arrow

Vehicles moved prior to arrival.

GIST OF ACCIDENT

Around 1038 hours on 03/03/2021 I came across a two car motor vehicle accident at the intersection of Greenland Road at Borthwick Avenue. The operator and sole occupant of unit one identified herself with a [redacted] driver's license as [redacted] The operator and sole occupant of unit two identified himself with a [redacted] driver's license as [redacted] Both operators described the following.

Unit one came to a complete stop at the stop sign of Greenland Road and Borthwick Avenue. Unit one went to execute a left turn to remain on Greenland Road. Unit one did not see unit two who was driving south on Greenland Road heading straight onto Borthwick Avenue. Unit two did not have a stop sign and had the right of way. Unit one subsequently struck the right side of unit two cause a moderate dent and scratch to the rear right door. Unit one sustained moderate dents and scratches to the front center of the bumper.

Both drivers were not injured and there were no air bags deployed.

End of report.

Officer Denman
Patrolman
Portsmouth, NH Police Department

SIGNATURE OF INVESTIGATING OFFICER	DATE OF REPORT 03/09/2021	REVIEWED BY
DEPARTMENT / DIVISION / TROOP Portsmouth Police Department	PHOTOS TAKEN YES ☒ NO ☐ BY:	

Please Print or Type (Single Space) **TO BE COMPLETED AND FILED WITHIN 15 DAYS** Sheet 1 of 1 Sheets(s) 1 12

LOCAL USE
22-800-AC

Amended Report ☐ Hit and Run ☐ School Bus ☐ Driver Ed. ☐

STATE OF NEW HAMPSHIRE UNIFORM POLICE TRAFFIC ACCIDENT REPORT

DSMV159 (Rev.04/00)

M.V. USE ONLY
No. 2 13
Date Rec'd 2 14
NR ☐ Supplemental Report ☐ Motor Carrier Report ☐

	DATE OF ACCIDENT	DAY OF WEEK	TIME (Military) OF ACCIDENT	CITY/TOWN	
1 1	01/07/2022	Friday	0830	PORTSMOUTH	2 15

TOTAL KILLED	TOTAL INJURED	TOTAL VEHICLES	POLICE NOTIFIED	POLICE ARRIVED	AMBULANCE ARRIVED	DEPARTMENT	
0	0	2	0830	0854		Portsmouth	9 16

ACCIDENT OCCURRED ON: ☐ MILES N ☐ E ☐ ☐ FEET S ☐ W ☐ OF ☒ AT INTERSECTING WITH

2 719 GREENLAND RD — ROUTE NO. AND/OR STREET NAME

INTERSECTING ROAD, BRIDGE, TOWN LINE (not telephone pole, house): 2 BORTHWICK AVE — ROUTE NO. AND/OR STREET NAME

POSTED SPEED: 35 — 8 17

Complete first node for accidents at node, complete both for accidents between nodes.

3 3 FIRST NODE: MAP ___ 10 ZONE ___ NODE ___ / SUF ___ — DISTANCE FROM FIRST NODE TOWARD SECOND: ___ FEET — SECOND NODE: MAP ___ 10 ZONE ___ NODE ___ / SUF ___

MILE-MARKER ON INTERSTATE ONLY: ___ FEET N ☐ E ☐ S ☐ W ☐ — MILE ___ — 20 18

	UNIT NO.: 1 INFORMATION	UNIT NO.: 2 INFORMATION	
4 2	BICYCLE ☐ PEDESTRIAN ☐ SUMMONED ☐ CHARGE: ARRESTED ☐ M.V.R. YES RECOM ☐	BICYCLE ☐ PEDESTRIAN ☐ SUMMONED ☐ CHARGE: ARRESTED ☐ M.V.R. YES RECOM ☐	98 19
5 2	DRIVER LICENSE NO. [redacted] STATE [redacted] CLASSIFICATION [redacted]	DRIVER LICENSE NO. [redacted] STATE [redacted] CLASSIFICATION [redacted]	9 20
	DRIVER'S NAME LAST, FIRST, MIDDLE [redacted]	DRIVER'S NAME LAST, FIRST, MIDDLE [redacted]	9 21
6 4	D.O.B. [redacted] SEX [redacted] RESTRICTIONS / ENDORSEMENTS COMPLIED WITH YES ☐	D.O.B. [redacted] SEX [redacted] RESTRICTIONS / ENDORSEMENTS COMPLIED WITH YES ☐	14 22
7 1	CURRENT ADDRESS, NUMBER, AND STREET [redacted] PHONE NO. [redacted]	CURRENT ADDRESS, NUMBER, AND STREET [redacted] PHONE NO. [redacted]	14 23
	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]	
8 1	PLATE NUMBER [redacted] PLATE TYPE [redacted] STATE [redacted] TRAILER PLATE STATE	PLATE NUMBER [redacted] PLATE TYPE [redacted] STATE [redacted] TRAILER PLATE STATE	10 24
9 3	MAKE YEAR [redacted] COMMERCIAL VEHICLE ACCIDENT ☐ HAZARDOUS MATERIALS ☐	MAKE [redacted] YEAR [redacted] COMMERCIAL VEHICLE ACCIDENT ☐ HAZARDOUS MATERIALS ☐	10 25
10 1	V.I.N. [redacted]	V.I.N. [redacted]	
11 4	SAME AS DRIVER ☐ OWNER NAME LAST, FIRST MIDDLE [redacted]	SAME AS DRIVER ☒ OWNER NAME LAST, FIRST MIDDLE	
	CURRENT ADDRESS, NUMBER AND STREET [redacted] PHONE NO. 603-661-9034	CURRENT ADDRESS, NUMBER AND STREET PHONE NO.	
	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]	CITY / TOWN STATE ZIP CODE	
	INSURANCE CO. & POLICY # [redacted] OR DSMV 385 ISSUED ☐	INSURANCE CO. & POLICY # [redacted] OR DSMV 385 ISSUED ☐	
	VEHICLE TOWED ☐ BY: TO:	VEHICLE TOWED ☐ BY: TO:	

REF.	26	27	28	29	NAME(S) OF OCCUPANTS OR WITNESSES	ADDRESS / PHONE	30	31	32	33
1	1	N	4	[redacted]	[redacted]	[redacted]	1	1	8	F
2	2	N	4	[redacted]	[redacted]	[redacted]	1	1	8	M
3										
4										
5										
6										

UNIT NO: 1

15 INDICATE PROBABLE POINT OF IMPACT

1 | 2 | 3 | 4 | 5 | 6
13 Front | 14 | Rear 15
12 | 11 | 10 | 9 | 8 | 7

16. Undercarriage
17. Rollover
18. Fire/Explosion
19. Total

Circle numbers indicating areas damaged.

Rear	Passing	Lt. Turn	Intersection
1	2	3	4
Rt. Turn	Rt. Turn	Head-On	Sideswipe
5	6	7	8

Indicate Vehicle Numbers on Arrows Above

UNIT NO: 2

1 | 2 | 3 | 4 | 5 | 6
13 Front | 14 | Rear 15
12 | 11 | 10 | 9 | 8 | 7

INDICATE PROBABLE POINT OF IMPACT 13

16. Undercarriage
17. Rollover
18. Fire/Explosion
19. Total

Circle numbers indicating areas damaged.

ACCIDENT SKETCH

Indicate North

By Arrow

VEHICLES MOVED PRIOR TO POLICE ARRIVAL.

GIST OF ACCIDENT

I WAS DISPATCHED TO 875 GREENLAND RD IN PORTSMOUTH, NH FOR A 2 CAR MVA. UPON ARRIVAL, I IDENTIFIED UNIT 1 AS A BLUE 2008 SUBA OUTBACK. UNIT 1 IS REGISTERED TO [redacted] AND OPERATED BY [redacted] I IDENTIFIED UNIT 2 AS A BLUE 2011 CHEV COLORADO. UNIT 2 IS REGISTERED TO AND OPERATED BY [redacted] UNIT 1 OPERATOR REPORTED SHE WAS AT GREENLAND ROAD STOPPED AT A TRAFFIC CONTROL LIGHT WHEN UNIT 2 HIT THE REAR OF HER VEHICLE. UNIT 2 OPERATOR REPORTED HE WAS ATTEMPTING TO STOP PRIOR TO UNIT 1 BUT SLID ON THE SNOW AND COLLIDED WITH THE REAR OF UNIT 1.

THE WEATHER CONDITIONS WERE WINTER WEATHER, SNOW. THE ROADWAY CONDITIONS WERE SLIPPERY WITH SNOW AND SLUSH. THERE WERE NO INJURIES REPORTED. UNIT 1 DROVE FROM THE SCENE. UNIT 2 PARKED AND WAITED FOR AAA. UNIT 2 SUSTAINED HEAVY DAMAGE TO THE FRONT OF THE VEHICLE. VEHICLES MOVED INTO THE PARKING LOT OF ORCHARD PARK, 875 GREENLAND ROAD IN PORTSMOUTH, NH. INFORMATION WAS EXCHANGED.

END OF REPORT.
PATROL OFFICER JOSEPH I. MELANSON
PORTSMOUTH POLICE DEPARTMENT
PATROL DIVISION

SIGNATURE OF INVESTIGATING OFFICER	DATE OF REPORT 01/07/2022	REVIEWED BY
DEPARTMENT / DIVISION / TROOP Portsmouth Police Department	PHOTOS TAKEN YES ☒ NO ☐ BY:	

Please Print or Type (Single Space) **TO BE COMPLETED AND FILED WITHIN 15 DAYS** Sheet 1 of 1 Sheets(s) 1 12

LOCAL USE
22-31336-AC

Amended Report ☐ Hit and Run ☐ School Bus ☐ Driver Ed. ☐

STATE OF NEW HAMPSHIRE
UNIFORM POLICE TRAFFIC ACCIDENT REPORT
DSMV159 (Rev.04/00)

M.V. USE ONLY
No. 1 13
Date Rec'd
NR ☐ Supplemental Report ☐ Motor Carrier Report ☐ 4 14

	DATE OF ACCIDENT	DAY OF WEEK	TIME (Military) OF ACCIDENT	CITY/TOWN	
1 1	08/17/2022	Wednesday	1715	PORTSMOUTH	4 15

TOTAL KILLED	TOTAL INJURED	TOTAL VEHICLES	POLICE NOTIFIED	POLICE ARRIVED	AMBULANCE ARRIVED	DEPARTMENT	
0	0	2	1715	1734		Portsmouth	1 16

2 1 ACCIDENT OCCURRED ON: ____ ☐ MILES ☐ FEET ☒ AT INTERSECTION WITH N ☐ S ☐ E ☐ W ☐ OF

719 GREENLAND RD
ROUTE NO. AND/OR STREET NAME

INTERSECTING ROAD, BRIDGE, TOWN LINE (not telephone pole, house): 2 BORTHWICK AVE
ROUTE NO. AND/OR STREET NAME

POSTED SPEED 7 17

3 3 Complete first node for accidents at node, complete both for accidents between nodes.

FIRST NODE: MAP ____ ZONE 10 ____ NODE ____ / SUF ____

DISTANCE FROM FIRST NODE TOWARD SECOND: ____ FEET

SECOND NODE: MAP ____ ZONE 10 ____ NODE ____ / SUF ____

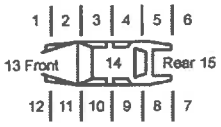
MILE-MARKER ON INTERSTATE ONLY: ____ FEET N ☐ E ☐ S ☐ W ☐ MILE ____ 14 18

	UNIT NO.: 1 INFORMATION	UNIT NO.: 2 INFORMATION	
4 2	BICYCLE ☐ PEDESTRIAN ☐ SUMMONED ☐ ARRESTED ☐ CHARGE: M.V.R. YES RECOM ☐	BICYCLE ☐ PEDESTRIAN ☐ SUMMONED ☐ ARRESTED ☐ CHARGE: M.V.R. YES RECOM ☐	20 19
5 3	DRIVER LICENSE NO. [redacted] STATE [redacted] CLASSIFICATION [redacted]	DRIVER LICENSE NO. [redacted] STATE [redacted] CLASSIFICATION [redacted]	9 20
	DRIVER'S NAME LAST, FIRST, MIDDLE [redacted]	DRIVER'S NAME LAST, FIRST, MIDDLE [redacted]	9 21
6 4	D.O.B. [redacted] SEX [redacted] RESTRICTIONS / ENDORSEMENTS COMPLIED WITH YES ☐	D.O.B. [redacted] SEX [redacted] RESTRICTIONS / ENDORSEMENTS COMPLIED WITH YES ☐	14 22
7 1	CURRENT ADDRESS, NUMBER, AND STREET [redacted] PHONE NO. [redacted]	CURRENT ADDRESS, NUMBER, AND STREET [redacted] PHONE NO. [redacted]	14 23
	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]	
8 1	PLATE NUMBER [redacted] PLATE TYPE [redacted] STATE [redacted] TRAILER PLATE STATE	PLATE NUMBER [redacted] PLATE TYPE [redacted] STATE [redacted] TRAILER PLATE STATE	10 24
9 2	MAKE [redacted] YEAR [redacted] COMMERCIAL VEHICLE ACCIDENT ☐ HAZARDOUS MATERIALS ☐	MAKE [redacted] YEAR [redacted] COMMERCIAL VEHICLE ACCIDENT ☐ HAZARDOUS MATERIALS ☐	10 25
10 1	V.I.N. [redacted]	V.I.N. [redacted]	
11 3	SAME AS DRIVER ☐ OWNER NAME LAST, FIRST MIDDLE [redacted]	SAME AS DRIVER ☐ OWNER NAME LAST, FIRST MIDDLE [redacted]	
	CURRENT ADDRESS, NUMBER AND STREET [redacted] PHONE NO. [redacted]	CURRENT ADDRESS, NUMBER AND STREET [redacted] PHONE NO. [redacted]	
	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]	
	INSURANCE CO. & POLICY # [redacted] OR DSMV 385 ISSUED ☐	INSURANCE CO. & POLICY # [redacted] OR DSMV 385 ISSUED ☒	
	VEHICLE TOWED ☐ BY: TO:	VEHICLE TOWED ☐ BY: TO:	

REF.	26	27	28	29	NAME(S) OF OCCUPANTS OR WITNESSES	ADDRESS / PHONE	30	31	32	33
1	1	N	4	[redacted]	[redacted]	[redacted]	1	1	8	F
2	2	N	4	[redacted]	[redacted]	[redacted]	1	1	8	M
3	2	N	4	[redacted]	[redacted]	[redacted]	12	1	8	F
4										
5										
6										

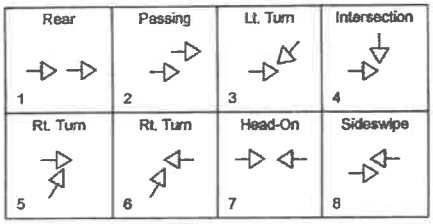
UNIT NO: 1

13 INDICATE PROBABLE POINT OF IMPACT



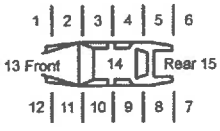
16. Undercarriage
17. Rollover
18. Fire/Explosion
19. Total

Circle numbers indicating areas damaged.



Indicate Vehicle Numbers on Arrows Above

UNIT NO: 2



INDICATE PROBABLE POINT OF IMPACT 15

16. Undercarriage
17. Rollover
18. Fire/Explosion
19. Total

Circle numbers indicating areas damaged.

ACCIDENT SKETCH

Indicate North

By Arrow

Vehicles were moved prior to arrival

GIST OF ACCIDENT

08/17/2022

Unit One was traveling westbound on Greenland Rd in the area of Borthwick and made contact with Unit Two's rear, causing moderate damage. Unit One received minor damage to the center front. Driver of Unit One stated she did not realize Unit Two was sitting at the light when she made contact. Driver of Unit One had no injuries and did not need a tow.

Unit Two was stopped at a red light on Borthwick Ave to travel Westbound on Greenland Rd and when the light just turned green, Unit One made contact with Unit Two. Unit Two had a passenger in the passenger's seat. Unit Two had a passenger in the passenger's seat. The Unit Two driver and passenger had no injuries. Unit Two did not need a tow.

SIGNATURE OF INVESTIGATING OFFICER	DATE OF REPORT 08/18/2022	REVIEWED BY
DEPARTMENT / DIVISION / TROOP Portsmouth Police Department	PHOTOS TAKEN YES ☐ NO ☒ BY:	

Please Print or Type (Single Space) **TO BE COMPLETED AND FILED WITHIN 15 DAYS** Sheet 1 of 1 Sheets(s)

LOCAL USE	STATE OF NEW HAMPSHIRE UNIFORM POLICE TRAFFIC ACCIDENT REPORT	M.V. USE ONLY
22-36395-AC	DSMV159 (Rev.04/00)	No. / Date Rec'd

Amended Report ☐ | Hit and Run ☐ | School Bus ☐ | Driver Ed. ☐ | NR ☐ | Supplemental Report ☐ | Motor Carrier Report ☐

DATE OF ACCIDENT	DAY OF WEEK	TIME (Military) OF ACCIDENT	CITY/TOWN
09/22/2022	Thursday	1607	PORTSMOUTH

TOTAL KILLED	TOTAL INJURED	TOTAL VEHICLES	POLICE NOTIFIED	POLICE ARRIVED	AMBULANCE ARRIVED	DEPARTMENT
0	0	2	1607	1613		Portsmouth

ACCIDENT OCCURRED ON: ____ ☐ MILES ☐ FEET N ☐ S ☐ E ☐ W OF ☒ AT INTERSECTION WITH

2 BORTHWICK AVE — ROUTE NO. AND/OR STREET NAME

INTERSECTING ROAD, BRIDGE, TOWN LINE (not telephone pole, house): 719 GREENLAND RD — ROUTE NO. AND/OR STREET NAME

POSTED SPEED: 35

Complete first node for accidents at node, complete both for accidents between nodes.

FIRST NODE: MAP ____ ZONE 10 ____ NODE ____ / SUF ____

DISTANCE FROM FIRST NODE TOWARD SECOND: ____ FEET

SECOND NODE: MAP ____ ZONE 10 ____ NODE ____ / SUF ____

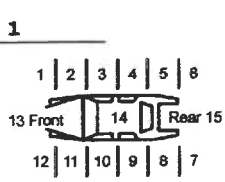
MILE-MARKER ON INTERSTATE ONLY: ____ FEET N ☐ E ☐ S ☐ W ☐ — MILE ____

UNIT NO.: 1 INFORMATION	UNIT NO.: 2 INFORMATION
BICYCLE ☐ PEDESTRIAN ☐ SUMMONED ☐ ARRESTED ☐ CHARGE: M.V.R. YES RECOM ☐	BICYCLE ☐ PEDESTRIAN ☐ SUMMONED ☐ ARRESTED ☐ CHARGE: M.V.R. YES RECOM ☐
DRIVER LICENSE NO. [redacted] STATE [redacted] CLASSIFICATION [redacted]	DRIVER LICENSE NO. [redacted] STATE [redacted] CLASSIFICATION [redacted]
DRIVER'S NAME LAST, FIRST, MIDDLE [redacted]	DRIVER'S NAME LAST, FIRST, MIDDLE [redacted]
D.O.B. [redacted] SEX [redacted] RESTRICTIONS / ENDORSEMENTS COMPLIED WITH YES ☐	D.O.B. [redacted] SEX [redacted] RESTRICTIONS / ENDORSEMENTS COMPLIED WITH YES ☐
CURRENT ADDRESS, NUMBER, AND STREET [redacted] PHONE NO. [redacted]	CURRENT ADDRESS, NUMBER, AND STREET [redacted] PHONE NO. [redacted]
CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]
PLATE NUMBER [redacted] PLATE TYPE [redacted] STATE [redacted] TRAILER PLATE [redacted] STATE [redacted]	PLATE NUMBER [redacted] PLATE TYPE [redacted] STATE [redacted] TRAILER PLATE STATE
MAKE [redacted] YEAR [redacted] COMMERCIAL VEHICLE ACCIDENT ☐ HAZARDOUS MATERIALS ☐	MAKE [redacted] YEAR [redacted] COMMERCIAL VEHICLE ACCIDENT ☐ HAZARDOUS MATERIALS ☐
V.I.N. [redacted]	V.I.N. [redacted]
SAME AS DRIVER ☐ OWNER NAME LAST, FIRST MIDDLE [redacted]	SAME AS DRIVER ☒ OWNER NAME LAST, FIRST MIDDLE
CURRENT ADDRESS, NUMBER AND STREET [redacted] PHONE NO. [redacted]	CURRENT ADDRESS, NUMBER AND STREET PHONE NO.
CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]	CITY / TOWN STATE ZIP CODE
INSURANCE CO. & POLICY # [redacted] OR DSMV 385 ISSUED ☒	INSURANCE CO. & POLICY # [redacted] OR DSMV 385 ISSUED ☐
VEHICLE TOWED ☐ BY: TO:	VEHICLE TOWED ☐ BY: TO:

REF.	26	27	28	29	NAME(S) OF OCCUPANTS OR WITNESSES	ADDRESS / PHONE	30	31	32	33
1	1	N	4	[redacted]	[redacted]	[redacted]		1	8	M
2	2	N	4	[redacted]	[redacted]	[redacted]		1	8	M
3										
4										
5										
6										

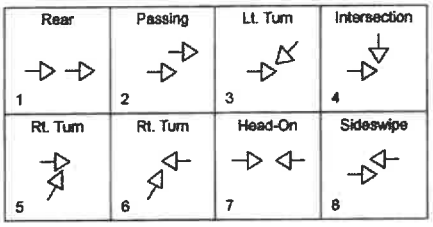
UNIT NO: 1

5 INDICATE PROBABLE POINT OF IMPACT



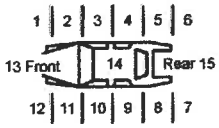
16. Undercarriage
17. Rollover
18. Fire/Explosion
19. Total

Circle numbers indicating areas damaged.



Indicate Vehicle Numbers on Arrows Above

UNIT NO: 2



INDICATE PROBABLE POINT OF IMPACT 12

16. Undercarriage
17. Rollover
18. Fire/Explosion
19. Total

Circle numbers indicating areas damaged.

ACCIDENT SKETCH

Indicate North

By Arrow

Vehicles moved prior to Police arrival

GIST OF ACCIDENT

Unit 1 was in the left turning lane on Rt. 33 at Borthwick Avenue. Unit 2 was in the lane to the right of Unit 1. Unit 1 attempted to change lanes and cut in front of Unit 2. In doing so, the trailer being pulled by Unit 1 struck Unit 2 on the front left corner. Unit 2 sustained damage to its front bumper. It was unclear if Unit 1 sustained any damage.

The driver of Unit 1 said he was attempted to switch lanes. He didn't account for the extra length of the trailer being towed by his vehicle. The driver of Unit 2 said they were following the road when Unit 1 pulled in front of them.

There were no injuries as a result of the accident.

END OF NARRATIVE

Patrol Officer Roland J. Dupuis
Uniformed Patrol Division
Portsmouth Police Department

SIGNATURE OF INVESTIGATING OFFICER	DATE OF REPORT 09/30/2022	REVIEWED BY
DEPARTMENT / DIVISION / TROOP Portsmouth Police Department	PHOTOS TAKEN YES ☒ NO ☐ BY:	

Please Print or Type (Single Space) **TO BE COMPLETED AND FILED WITHIN 15 DAYS** Sheet 1 of 1 Sheets(s) 1 12

LOCAL USE
22-44491-AC

Amended Report ☐ Hit and Run ☐ School Bus ☐ Driver Ed. ☐

STATE OF NEW HAMPSHIRE UNIFORM POLICE TRAFFIC ACCIDENT REPORT

DSMV159 (Rev.04/00)

M.V. USE ONLY
No.
Date Rec'd
NR ☐ Supplemental Report ☐ Motor Carrier Report ☐

9 13 14 15

1 1	DATE OF ACCIDENT	DAY OF WEEK	TIME (Military) OF ACCIDENT	CITY/TOWN
	11/16/2022	Wednesday	1354	PORTSMOUTH

TOTAL KILLED	TOTAL INJURED	TOTAL VEHICLES	POLICE NOTIFIED	POLICE ARRIVED	AMBULANCE ARRIVED	DEPARTMENT
0	1	2	1354	1403		Portsmouth

8 16

2 ACCIDENT OCCURRED ON: ____ ☐ MILES ☐ FEET N ☐ S ☐ E ☐ W ☐ OF ☒ AT INTERSECTION WITH

875 GREENLAND RD
ROUTE NO. AND/OR STREET NAME

INTERSECTING ROAD, BRIDGE, TOWN LINE (not telephone pole, house): BORTHWICK AVE
ROUTE NO. AND/OR STREET NAME

POSTED SPEED: 30

1 17

3 1 Complete first node for accidents at node, complete both for accidents between nodes.

FIRST NODE: MAP ____ 10 ZONE ____ NODE ____ / SUF ____
DISTANCE FROM FIRST NODE TOWARD SECOND: ____ FEET
SECOND NODE: MAP ____ 10 ZONE ____ NODE ____ / SUF ____

MILE-MARKER ON INTERSTATE ONLY: ____ FEET N ☐ E ☐ S ☐ W ☐
MILE ____

14 18

	UNIT NO.: 1 INFORMATION	UNIT NO.: 2 INFORMATION
4 3	BICYCLE ☐ PEDESTRIAN ☐ SUMMONED ☒ ARRESTED ☐ CHARGE: Mobile Device Use M.V.R. YES RECOM ☐	BICYCLE ☐ PEDESTRIAN ☐ SUMMONED ☐ ARRESTED ☐ CHARGE: M.V.R. YES RECOM ☐
5 3	DRIVER LICENSE NO. [redacted] STATE [redacted] CLASSIFICATION	DRIVER LICENSE NO. [redacted] STATE [redacted] CLASSIFICATION
	DRIVER'S NAME LAST, FIRST, MIDDLE [redacted]	DRIVER'S NAME LAST, FIRST, MIDDLE [redacted]
6 4	D.O.B. [redacted] SEX [redacted] RESTRICTIONS / ENDORSEMENTS COMPLIED WITH YES ☐	D.O.B. [redacted] SEX [redacted] RESTRICTIONS / ENDORSEMENTS COMPLIED WITH YES ☐
7 1	CURRENT ADDRESS, NUMBER, AND STREET [redacted] PHONE NO. [redacted]	CURRENT ADDRESS, NUMBER, AND STREET [redacted] PHONE NO. [redacted]
	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]	CITY / TOWN [redacted] STATE [redacted] ZIP CODE [redacted]
8 1	PLATE NUMBER [redacted] PLATE TYPE [redacted] STATE [redacted] TRAILER PLATE STATE	PLATE NUMBER [redacted] PLATE TYPE [redacted] STATE [redacted] TRAILER PLATE STATE
9 1	MAKE [redacted] YEAR [redacted] COMMERCIAL VEHICLE ACCIDENT ☐ HAZARDOUS MATERIALS ☐	MAKE [redacted] YEAR [redacted] COMMERCIAL VEHICLE ACCIDENT ☐ HAZARDOUS MATERIALS ☐
10 1	V.I.N. [redacted]	V.I.N. [redacted]
11 3	SAME AS DRIVER ☒ OWNER NAME LAST, FIRST MIDDLE	SAME AS DRIVER ☒ OWNER NAME LAST, FIRST MIDDLE
	CURRENT ADDRESS, NUMBER AND STREET PHONE NO.	CURRENT ADDRESS, NUMBER AND STREET PHONE NO.
	CITY / TOWN STATE ZIP CODE	CITY / TOWN STATE ZIP CODE
	INSURANCE CO. & POLICY # [redacted] OR DSMV 385 ISSUED ☒	INSURANCE CO. & POLICY # OR DSMV 385 ISSUED ☒
	VEHICLE TOWED ☐ BY: TO:	VEHICLE TOWED ☐ BY: TO:

20 19 9 20 9 21 14 22 14 23 10 24 10 25

REF.	26	27	28	29	NAME(S) OF OCCUPANTS OR WITNESSES	ADDRESS / PHONE	30	31	32	33
1	1	N	4	[redacted]	[redacted]	[redacted]	1	1	8	M
2	2	B	6	[redacted]	[redacted]	[redacted]	1	1	4	M
3										
4										
5										
6										

UNIT NO: 1

10 INDICATE PROBABLE POINT OF IMPACT

1 | 2 | 3 | 4 | 5 | 6
13 Front | 14 | Rear 15
12 | 11 | 10 | 9 | 8 | 7

16. Undercarriage
17. Rollover
18. Fire/Explosion
19. Total

Circle numbers indicating areas damaged.

Rear	Passing	Lt. Turn	Intersection
1	2	3	4
Rt. Turn	Rt. Turn	Head-On	Sideswipe
5	6	7	8

Indicate Vehicle Numbers on Arrows Above

UNIT NO: 2

1 | 2 | 3 | 4 | 5 | 6
13 Front | 14 | Rear 15
12 | 11 | 10 | 9 | 8 | 7

INDICATE PROBABLE POINT OF IMPACT 6

16. Undercarriage
17. Rollover
18. Fire/Explosion
19. Total

Circle numbers indicating areas damaged.

ACCIDENT SKETCH

Indicate North

By Arrow

Vehicles Moved PTA of PPD

N

GIST OF ACCIDENT

On November 16th, 2022 I was dispatched to a motor vehicle collision at the intersection of Greenland Rd and Borthwick Ave. Upon my arrival I met with both involved parties.

V1 is a 2019 Silver Nissan Rogue operated by [redacted] and V2 is a 2007 Yamaha Moped operated by [redacted]. [redacted] is reporting an injury to his right arm/shoulder, Portsmouth Fire Paramedics evaluated [redacted] and he refused transport to the hospital.

[redacted] reported that he was coming off greenland rd and taking a left, when [redacted] went through the stop sign and struck him in the intersection. [redacted] is reporting that he was at Borthwick heading straight and [redacted] is the one that went through the stop sign. [redacted] told me that he was looking at his phone for directions prior to the collision.

[redacted] was issued NH DOS citation [redacted] for mobile electronic use while driving. Both vehicles were driven from the scene.

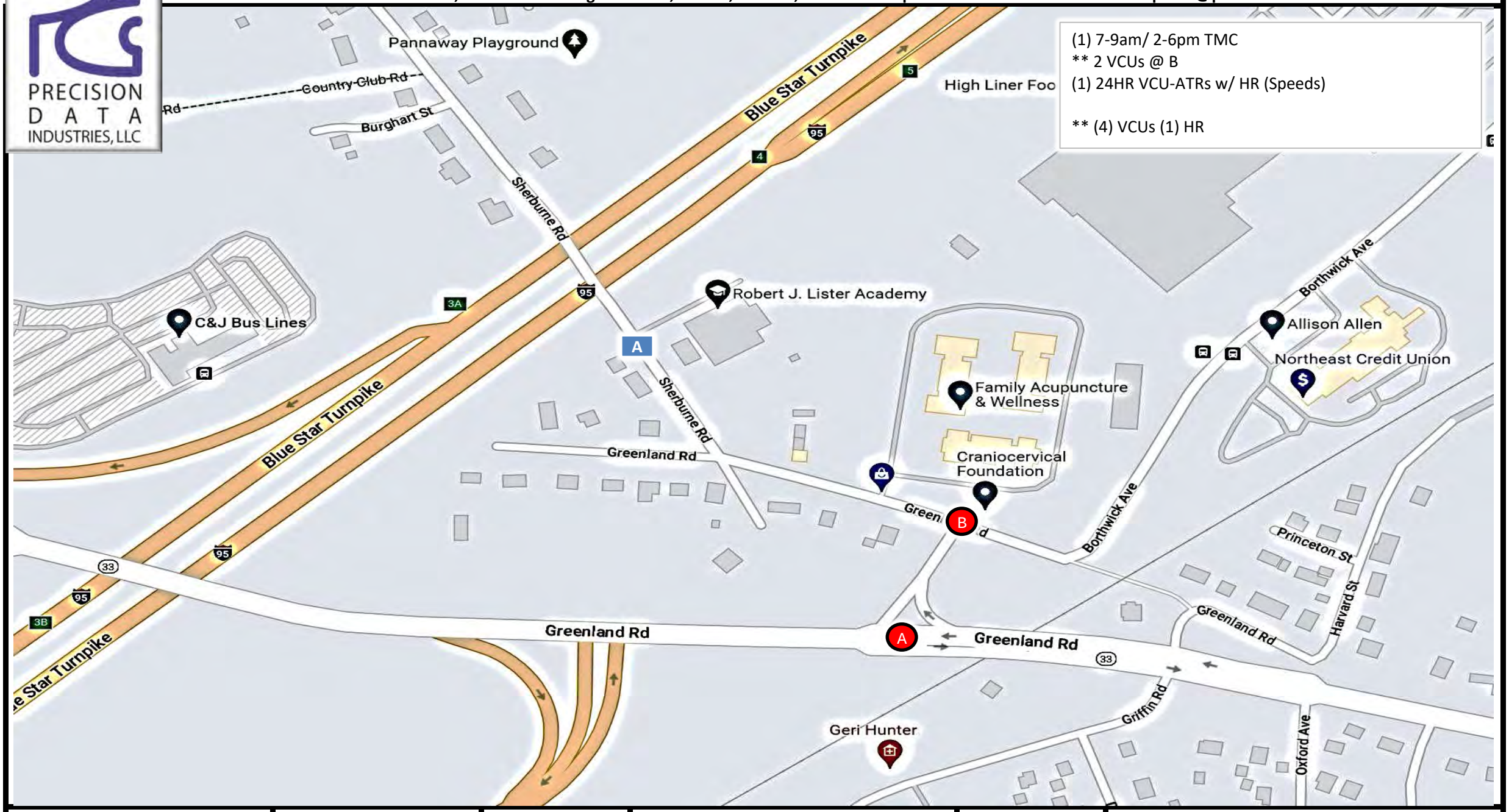
Officer Michael Nicoli
Patrol Division
Portsmouth NH Police

SIGNATURE OF INVESTIGATING OFFICER	DATE OF REPORT 11/24/2022	REVIEWED BY
DEPARTMENT / DIVISION / TROOP Portsmouth Police Department	PHOTOS TAKEN YES ☒ NO ☐ BY:	

APPENDIX I

Location Map: 239200 Portsmouth, NH

Precision Data Industries, LLC 157 Washington Street, Suite 2, Hudson, MA 01749 ph: 508-875-0100 email: datarequests@pdillc.com



Client:	Engineer:	Site Code:	Date:	PDI Job #	City, State:
TFMoran	J. Porter	47528.00	Thurs 3/9/2023	239200	Portsmouth, NH

PDI File #: **239200 A**
Location: **N: Borthwick Avenue**
Location: **E: Greenland Road (Route 33) W: Greenland Road (Route 33)**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:00 AM	21	8	0	29	5	68	0	73	108	60	0	168	270
7:15 AM	40	11	0	51	13	53	0	66	125	60	0	185	302
7:30 AM	34	11	0	45	11	96	0	107	185	76	0	261	413
7:45 AM	43	22	0	65	19	106	0	125	237	129	0	366	556
Total	138	52	0	190	48	323	0	371	655	325	0	980	1541
8:00 AM	28	23	0	51	18	104	0	122	230	73	0	303	476
8:15 AM	37	15	0	52	24	115	0	139	194	83	0	277	468
8:30 AM	28	15	0	43	21	94	0	115	165	58	0	223	381
8:45 AM	33	13	0	46	23	91	0	114	159	63	0	222	382
Total	126	66	0	192	86	404	0	490	748	277	0	1025	1707
Grand Total	264	118	0	382	134	727	0	861	1403	602	0	2005	3248
Approach %	69.1	30.9	0.0		15.6	84.4	0.0		70.0	30.0	0.0		
Total %	8.1	3.6	0.0	11.8	4.1	22.4	0.0	26.5	43.2	18.5	0.0	61.7	
Exiting Leg Total				736				1521				991	3248
Cars	243	113	0	356	126	691	0	817	1345	579	0	1924	3097
% Cars	92.0	95.8	0.0	93.2	94.0	95.0	0.0	94.9	95.9	96.2	0.0	96.0	95.4
Exiting Leg Total				705				1458				934	3097
Heavy Vehicles	21	5	0	26	8	36	0	44	58	23	0	81	151
% Heavy Vehicles	8.0	4.2	0.0	6.8	6.0	5.0	0.0	5.1	4.1	3.8	0.0	4.0	4.6
Exiting Leg Total				31				63				57	151

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:30 AM	34	11	0	45	11	96	0	107	185	76	0	261	413
7:45 AM	43	22	0	65	19	106	0	125	237	129	0	366	556
8:00 AM	28	23	0	51	18	104	0	122	230	73	0	303	476
8:15 AM	37	15	0	52	24	115	0	139	194	83	0	277	468
Total Volume	142	71	0	213	72	421	0	493	846	361	0	1207	1913
% Approach Total	66.7	33.3	0.0		14.6	85.4	0.0		70.1	29.9	0.0		
PHF	0.826	0.772	0.000	0.819	0.750	0.915	0.000	0.887	0.892	0.700	0.000	0.824	0.860
Cars	133	68	0	201	68	399	0	467	813	350	0	1163	1831
Cars %	93.7	95.8	0.0	94.4	94.4	94.8	0.0	94.7	96.1	97.0	0.0	96.4	95.7
Heavy Vehicles	9	3	0	12	4	22	0	26	33	11	0	44	82
Heavy Vehicles %	6.3	4.2	0.0	5.6	5.6	5.2	0.0	5.3	3.9	3.0	0.0	3.6	4.3
Cars Enter Leg	133	68	0	201	68	399	0	467	813	350	0	1163	1831
Heavy Enter Leg	9	3	0	12	4	22	0	26	33	11	0	44	82
Total Entering Leg	142	71	0	213	72	421	0	493	846	361	0	1207	1913
Cars Exiting Leg				418				881				532	1831
Heavy Exiting Leg				15				36				31	82
Total Exiting Leg				433				917				563	1913

PDI File #: **239200 A**
Location: **N: Borthwick Avenue**
Location: **E: Greenland Road (Route 33) W: Greenland Road (Route 33)**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Cars

	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:00 AM	20	8	0	28	5	65	0	70	99	58	0	157	255
7:15 AM	36	10	0	46	12	51	0	63	121	57	0	178	287
7:30 AM	31	10	0	41	10	92	0	102	178	75	0	253	396
7:45 AM	39	22	0	61	18	98	0	116	229	126	0	355	532
Total	126	50	0	176	45	306	0	351	627	316	0	943	1470
8:00 AM	28	22	0	50	17	101	0	118	219	73	0	292	460
8:15 AM	35	14	0	49	23	108	0	131	187	76	0	263	443
8:30 AM	27	15	0	42	18	88	0	106	158	55	0	213	361
8:45 AM	27	12	0	39	23	88	0	111	154	59	0	213	363
Total	117	63	0	180	81	385	0	466	718	263	0	981	1627
Grand Total	243	113	0	356	126	691	0	817	1345	579	0	1924	3097
Approach %	68.3	31.7	0.0		15.4	84.6	0.0		69.9	30.1	0.0		
Total %	7.8	3.6	0.0	11.5	4.1	22.3	0.0	26.4	43.4	18.7	0.0	62.1	
Exiting Leg Total				705				1458				934	3097

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:30 AM	31	10	0	41	10	92	0	102	178	75	0	253	396
7:45 AM	39	22	0	61	18	98	0	116	229	126	0	355	532
8:00 AM	28	22	0	50	17	101	0	118	219	73	0	292	460
8:15 AM	35	14	0	49	23	108	0	131	187	76	0	263	443
Total Volume	133	68	0	201	68	399	0	467	813	350	0	1163	1831
% Approach Total	66.2	33.8	0.0		14.6	85.4	0.0		69.9	30.1	0.0		
PHF	0.853	0.773	0.000	0.824	0.739	0.924	0.000	0.891	0.888	0.694	0.000	0.819	0.860
Entering Leg	133	68	0	201	68	399	0	467	813	350	0	1163	1831
Exiting Leg				418				881				532	1831
Total				619				1348				1695	3662

PDI File #: **239200 A**
Location: **N: Borthwick Avenue**
Location: **E: Greenland Road (Route 33) W: Greenland Road (Route 33)**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:00 AM	1	0	0	1	0	3	0	3	9	2	0	11	15
7:15 AM	4	1	0	5	1	2	0	3	4	3	0	7	15
7:30 AM	3	1	0	4	1	4	0	5	7	1	0	8	17
7:45 AM	4	0	0	4	1	8	0	9	8	3	0	11	24
Total	12	2	0	14	3	17	0	20	28	9	0	37	71
8:00 AM	0	1	0	1	1	3	0	4	11	0	0	11	16
8:15 AM	2	1	0	3	1	7	0	8	7	7	0	14	25
8:30 AM	1	0	0	1	3	6	0	9	7	3	0	10	20
8:45 AM	6	1	0	7	0	3	0	3	5	4	0	9	19
Total	9	3	0	12	5	19	0	24	30	14	0	44	80
Grand Total	21	5	0	26	8	36	0	44	58	23	0	81	151
Approach %	80.8	19.2	0.0		18.2	81.8	0.0		71.6	28.4	0.0		
Total %	13.9	3.3	0.0	17.2	5.3	23.8	0.0	29.1	38.4	15.2	0.0	53.6	
Exiting Leg Total				31				63				57	151
Buses	5	3	0	8	4	3	0	7	7	4	0	11	26
% Buses	23.8	60.0	0.0	30.8	50.0	8.3	0.0	15.9	12.1	17.4	0.0	13.6	17.2
Exiting Leg Total				8				10				8	26
Single-Unit Trucks	13	2	0	15	4	25	0	29	42	17	0	59	103
% Single-Unit	61.9	40.0	0.0	57.7	50.0	69.4	0.0	65.9	72.4	73.9	0.0	72.8	68.2
Exiting Leg Total				21				44				38	103
Articulated Trucks	3	0	0	3	0	8	0	8	9	2	0	11	22
% Articulated	14.3	0.0	0.0	11.5	0.0	22.2	0.0	18.2	15.5	8.7	0.0	13.6	14.6
Exiting Leg Total				2				9				11	22

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:45 AM	4	0	0	4	1	8	0	9	8	3	0	11	24
8:00 AM	0	1	0	1	1	3	0	4	11	0	0	11	16
8:15 AM	2	1	0	3	1	7	0	8	7	7	0	14	25
8:30 AM	1	0	0	1	3	6	0	9	7	3	0	10	20
Total Volume	7	2	0	9	6	24	0	30	33	13	0	46	85
% Approach Total	77.8	22.2	0.0		20.0	80.0	0.0		71.7	28.3	0.0		
PHF	0.438	0.500	0.000	0.563	0.500	0.750	0.000	0.833	0.750	0.464	0.000	0.821	0.850
Buses	2	1	0	3	3	2	0	5	3	2	0	5	13
Buses %	28.6	50.0	0.0	33.3	50.0	8.3	0.0	16.7	9.1	15.4	0.0	10.9	15.3
Single-Unit Trucks	5	1	0	6	3	16	0	19	26	10	0	36	61
Single-Unit %	71.4	50.0	0.0	66.7	50.0	66.7	0.0	63.3	78.8	76.9	0.0	78.3	71.8
Articulated Trucks	0	0	0	0	0	6	0	6	4	1	0	5	11
Articulated %	0.0	0.0	0.0	0.0	0.0	25.0	0.0	20.0	12.1	7.7	0.0	10.9	12.9
Buses	2	1	0	3	3	2	0	5	3	2	0	5	13
Single-Unit Trucks	5	1	0	6	3	16	0	19	26	10	0	36	61
Articulated Trucks	0	0	0	0	0	6	0	6	4	1	0	5	11
Total Entering Leg	7	2	0	9	6	24	0	30	33	13	0	46	85
Buses				5				4				4	13
Single-Unit Trucks				13				27				21	61
Articulated Trucks				1				4				6	11
Total Exiting Leg				19				35				31	85

PDI File #: **239200 A**
Location: **N: Borthwick Avenue**
Location: **E: Greenland Road (Route 33) W: Greenland Road (Route 33)**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Buses

	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	1	0	0	1	1
7:15 AM	2	1	0	3	1	0	0	1	0	2	0	2	6
7:30 AM	0	0	0	0	0	0	0	0	2	0	0	2	2
7:45 AM	1	0	0	1	1	0	0	1	0	0	0	0	2
Total	3	1	0	4	2	0	0	2	3	2	0	5	11
8:00 AM	0	1	0	1	1	1	0	2	3	0	0	3	6
8:15 AM	1	0	0	1	0	1	0	1	0	1	0	1	3
8:30 AM	0	0	0	0	1	0	0	1	0	1	0	1	2
8:45 AM	1	1	0	2	0	1	0	1	1	0	0	1	4
Total	2	2	0	4	2	3	0	5	4	2	0	6	15
Grand Total	5	3	0	8	4	3	0	7	7	4	0	11	26
Approach %	62.5	37.5	0.0		57.1	42.9	0.0		63.6	36.4	0.0		
Total %	19.2	11.5	0.0	30.8	15.4	11.5	0.0	26.9	26.9	15.4	0.0	42.3	
Exiting Leg Total				8				10				8	26

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:15 AM	2	1	0	3	1	0	0	1	0	2	0	2	6
7:30 AM	0	0	0	0	0	0	0	0	2	0	0	2	2
7:45 AM	1	0	0	1	1	0	0	1	0	0	0	0	2
8:00 AM	0	1	0	1	1	1	0	2	3	0	0	3	6
Total Volume	3	2	0	5	3	1	0	4	5	2	0	7	16
% Approach Total	60.0	40.0	0.0		75.0	25.0	0.0		71.4	28.6	0.0		
PHF	0.375	0.500	0.000	0.417	0.750	0.250	0.000	0.500	0.417	0.250	0.000	0.583	0.667
Entering Leg	3	2	0	5	3	1	0	4	5	2	0	7	16
Exiting Leg				5				7				4	16
Total				10				11				11	32

PDI File #: **239200 A**
Location: **N: Borthwick Avenue**
Location: **E: Greenland Road (Route 33) W: Greenland Road (Route 33)**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Single-Unit Trucks

	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	2	0	2	6	2	0	8	10
7:15 AM	2	0	0	2	0	2	0	2	3	1	0	4	8
7:30 AM	2	1	0	3	1	3	0	4	3	1	0	4	11
7:45 AM	3	0	0	3	0	5	0	5	8	2	0	10	18
Total	7	1	0	8	1	12	0	13	20	6	0	26	47
8:00 AM	0	0	0	0	0	2	0	2	6	0	0	6	8
8:15 AM	1	1	0	2	1	5	0	6	5	6	0	11	19
8:30 AM	1	0	0	1	2	4	0	6	7	2	0	9	16
8:45 AM	4	0	0	4	0	2	0	2	4	3	0	7	13
Total	6	1	0	7	3	13	0	16	22	11	0	33	56
Grand Total	13	2	0	15	4	25	0	29	42	17	0	59	103
Approach %	86.7	13.3	0.0		13.8	86.2	0.0		71.2	28.8	0.0		
Total %	12.6	1.9	0.0	14.6	3.9	24.3	0.0	28.2	40.8	16.5	0.0	57.3	
Exiting Leg Total				21				44				38	103

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:45 AM	3	0	0	3	0	5	0	5	8	2	0	10	18
8:00 AM	0	0	0	0	0	2	0	2	6	0	0	6	8
8:15 AM	1	1	0	2	1	5	0	6	5	6	0	11	19
8:30 AM	1	0	0	1	2	4	0	6	7	2	0	9	16
Total Volume	5	1	0	6	3	16	0	19	26	10	0	36	61
% Approach Total	83.3	16.7	0.0		15.8	84.2	0.0		72.2	27.8	0.0		
PHF	0.417	0.250	0.000	0.500	0.375	0.800	0.000	0.792	0.813	0.417	0.000	0.818	0.803
Entering Leg	5	1	0	6	3	16	0	19	26	10	0	36	61
Exiting Leg				13				27				21	61
Total				19				46				57	122

PDI File #: **239200 A**
Location: **N: Borthwick Avenue**
Location: **E: Greenland Road (Route 33) W: Greenland Road (Route 33)**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Articulated Trucks

	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:00 AM	1	0	0	1	0	1	0	1	2	0	0	2	4
7:15 AM	0	0	0	0	0	0	0	0	1	0	0	1	1
7:30 AM	1	0	0	1	0	1	0	1	2	0	0	2	4
7:45 AM	0	0	0	0	0	3	0	3	0	1	0	1	4
Total	2	0	0	2	0	5	0	5	5	1	0	6	13
8:00 AM	0	0	0	0	0	0	0	0	2	0	0	2	2
8:15 AM	0	0	0	0	0	1	0	1	2	0	0	2	3
8:30 AM	0	0	0	0	0	2	0	2	0	0	0	0	2
8:45 AM	1	0	0	1	0	0	0	0	0	1	0	1	2
Total	1	0	0	1	0	3	0	3	4	1	0	5	9
Grand Total	3	0	0	3	0	8	0	8	9	2	0	11	22
Approach %	100.0	0.0	0.0		0.0	100.0	0.0		81.8	18.2	0.0		
Total %	13.6	0.0	0.0	13.6	0.0	36.4	0.0	36.4	40.9	9.1	0.0	50.0	
Exiting Leg Total				2				9				11	22

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
7:00 AM	1	0	0	1	0	1	0	1	2	0	0	2	4
7:15 AM	0	0	0	0	0	0	0	0	1	0	0	1	1
7:30 AM	1	0	0	1	0	1	0	1	2	0	0	2	4
7:45 AM	0	0	0	0	0	3	0	3	0	1	0	1	4
Total Volume	2	0	0	2	0	5	0	5	5	1	0	6	13
% Approach Total	100.0	0.0	0.0		0.0	100.0	0.0		83.3	16.7	0.0		
PHF	0.500	0.000	0.000	0.500	0.000	0.417	0.000	0.417	0.625	0.250	0.000	0.750	0.813
Entering Leg	2	0	0	2	0	5	0	5	5	1	0	6	13
Exiting Leg				1				5				7	13
Total				3				10				13	26

PDI File #: **239200 A**
Location: **N: Borthwick Avenue**
Location: **E: Greenland Road (Route 33) W: Greenland Road (Route 33)**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Borthwick Avenue						Greenland Road (Route 33)						Greenland Road (Route 33)						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						0						0						0	0

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Borthwick Avenue						Greenland Road (Route 33)						Greenland Road (Route 33)						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg						0						0						0	0
Total						0						0						0	0

PDI File #: **239200 A**
Location: **N: Borthwick Avenue**
Location: **E: Greenland Road (Route 33) W: Greenland Road (Route 33)**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Pedestrians

	Borthwick Avenue						Greenland Road (Route 33)						Greenland Road (Route 33)						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total						0						0						0	0

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Borthwick Avenue						Greenland Road (Route 33)						Greenland Road (Route 33)						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg						0						0						0	0
Total						0						0						0	0

PDI File #: **239200 A**
Location: **N: Borthwick Avenue**
Location: **E: Greenland Road (Route 33) W: Greenland Road (Route 33)**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **2:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
2:00 PM	45	14	0	59	21	122	0	143	109	40	0	149	351
2:15 PM	39	23	0	62	29	108	0	137	128	55	0	183	382
2:30 PM	61	26	0	87	19	130	0	149	108	42	0	150	386
2:45 PM	56	26	0	82	25	111	0	136	160	36	0	196	414
Total	201	89	0	290	94	471	0	565	505	173	0	678	1533
3:00 PM	80	19	0	99	21	133	0	154	134	41	0	175	428
3:15 PM	79	20	0	99	33	153	0	186	144	39	0	183	468
3:30 PM	57	20	0	77	29	174	0	203	154	42	0	196	476
3:45 PM	76	21	0	97	15	156	0	171	134	37	0	171	439
Total	292	80	0	372	98	616	0	714	566	159	0	725	1811
4:00 PM	83	18	0	101	19	147	0	166	163	36	0	199	466
4:15 PM	58	15	0	73	21	133	0	154	151	36	0	187	414
4:30 PM	65	24	0	89	13	158	0	171	154	21	0	175	435
4:45 PM	58	17	0	75	16	160	0	176	154	23	0	177	428
Total	264	74	0	338	69	598	0	667	622	116	0	738	1743
5:00 PM	127	23	0	150	22	181	0	203	172	27	0	199	552
5:15 PM	78	14	0	92	17	149	0	166	134	22	0	156	414
5:30 PM	50	13	0	63	10	124	0	134	133	32	0	165	362
5:45 PM	39	8	0	47	21	110	0	131	160	26	0	186	364
Total	294	58	0	352	70	564	0	634	599	107	0	706	1692
Grand Total	1051	301	0	1352	331	2249	0	2580	2292	555	0	2847	6779
Approach %	77.7	22.3	0.0		12.8	87.2	0.0		80.5	19.5	0.0		
Total %	15.5	4.4	0.0	19.9	4.9	33.2	0.0	38.1	33.8	8.2	0.0	42.0	
Exiting Leg Total				886				2593				3300	6779
Cars	1031	281	0	1312	312	2208	0	2520	2233	540	0	2773	6605
% Cars	98.1	93.4	0.0	97.0	94.3	98.2	0.0	97.7	97.4	97.3	0.0	97.4	97.4
Exiting Leg Total				852				2514				3239	6605
Heavy Vehicles	20	20	0	40	19	41	0	60	59	15	0	74	174
% Heavy Vehicles	1.9	6.6	0.0	3.0	5.7	1.8	0.0	2.3	2.6	2.7	0.0	2.6	2.6
Exiting Leg Total				34				79				61	174

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

3:15 PM	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
3:15 PM	79	20	0	99	33	153	0	186	144	39	0	183	468
3:30 PM	57	20	0	77	29	174	0	203	154	42	0	196	476
3:45 PM	76	21	0	97	15	156	0	171	134	37	0	171	439
4:00 PM	83	18	0	101	19	147	0	166	163	36	0	199	466
Total Volume	295	79	0	374	96	630	0	726	595	154	0	749	1849
% Approach Total	78.9	21.1	0.0		13.2	86.8	0.0		79.4	20.6	0.0		
PHF	0.889	0.940	0.000	0.926	0.727	0.905	0.000	0.894	0.913	0.917	0.000	0.941	0.971
Cars	290	73	0	363	89	616	0	705	580	149	0	729	1797
Cars %	98.3	92.4	0.0	97.1	92.7	97.8	0.0	97.1	97.5	96.8	0.0	97.3	97.2
Heavy Vehicles	5	6	0	11	7	14	0	21	15	5	0	20	52
Heavy Vehicles %	1.7	7.6	0.0	2.9	7.3	2.2	0.0	2.9	2.5	3.2	0.0	2.7	2.8
Cars Enter Leg	290	73	0	363	89	616	0	705	580	149	0	729	1797
Heavy Enter Leg	5	6	0	11	7	14	0	21	15	5	0	20	52
Total Entering Leg	295	79	0	374	96	630	0	726	595	154	0	749	1849
Cars Exiting Leg				238				653				906	1797
Heavy Exiting Leg				12				21				19	52
Total Exiting Leg				250				674				925	1849

PDI File #: **239200 A**
Location: **N: Borthwick Avenue**
Location: **E: Greenland Road (Route 33) W: Greenland Road (Route 33)**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **2:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Cars

	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
2:00 PM	44	14	0	58	21	120	0	141	101	40	0	141	340
2:15 PM	39	21	0	60	25	102	0	127	125	51	0	176	363
2:30 PM	58	21	0	79	17	127	0	144	102	42	0	144	367
2:45 PM	55	23	0	78	23	104	0	127	157	36	0	193	398
Total	196	79	0	275	86	453	0	539	485	169	0	654	1468
3:00 PM	80	17	0	97	19	131	0	150	131	39	0	170	417
3:15 PM	78	20	0	98	30	150	0	180	140	38	0	178	456
3:30 PM	54	17	0	71	27	167	0	194	151	42	0	193	458
3:45 PM	76	19	0	95	15	154	0	169	129	35	0	164	428
Total	288	73	0	361	91	602	0	693	551	154	0	705	1759
4:00 PM	82	17	0	99	17	145	0	162	160	34	0	194	455
4:15 PM	53	15	0	68	20	133	0	153	150	36	0	186	407
4:30 PM	64	24	0	88	12	155	0	167	148	20	0	168	423
4:45 PM	57	17	0	74	16	160	0	176	151	22	0	173	423
Total	256	73	0	329	65	593	0	658	609	112	0	721	1708
5:00 PM	126	22	0	148	22	181	0	203	170	26	0	196	547
5:15 PM	76	14	0	90	17	147	0	164	133	22	0	155	409
5:30 PM	50	12	0	62	10	123	0	133	131	31	0	162	357
5:45 PM	39	8	0	47	21	109	0	130	154	26	0	180	357
Total	291	56	0	347	70	560	0	630	588	105	0	693	1670
Grand Total	1031	281	0	1312	312	2208	0	2520	2233	540	0	2773	6605
Approach %	78.6	21.4	0.0		12.4	87.6	0.0		80.5	19.5	0.0		
Total %	15.6	4.3	0.0	19.9	4.7	33.4	0.0	38.2	33.8	8.2	0.0	42.0	
Exiting Leg Total				852				2514				3239	6605

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

4:30 PM	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
4:30 PM	64	24	0	88	12	155	0	167	148	20	0	168	423
4:45 PM	57	17	0	74	16	160	0	176	151	22	0	173	423
5:00 PM	126	22	0	148	22	181	0	203	170	26	0	196	547
5:15 PM	76	14	0	90	17	147	0	164	133	22	0	155	409
Total Volume	323	77	0	400	67	643	0	710	602	90	0	692	1802
% Approach Total	80.8	19.3	0.0		9.4	90.6	0.0		87.0	13.0	0.0		
PHF	0.641	0.802	0.000	0.676	0.761	0.888	0.000	0.874	0.885	0.865	0.000	0.883	0.824
Entering Leg	323	77	0	400	67	643	0	710	602	90	0	692	1802
Exiting Leg				157				679				966	1802
Total				557				1389				1658	3604

PDI File #: **239200 A**
Location: **N: Borthwick Avenue**
Location: **E: Greenland Road (Route 33) W: Greenland Road (Route 33)**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **2:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
2:00 PM	1	0	0	1	0	2	0	2	8	0	0	8	11
2:15 PM	0	2	0	2	4	6	0	10	3	4	0	7	19
2:30 PM	3	5	0	8	2	3	0	5	6	0	0	6	19
2:45 PM	1	3	0	4	2	7	0	9	3	0	0	3	16
Total	5	10	0	15	8	18	0	26	20	4	0	24	65
3:00 PM	0	2	0	2	2	2	0	4	3	2	0	5	11
3:15 PM	1	0	0	1	3	3	0	6	4	1	0	5	12
3:30 PM	3	3	0	6	2	7	0	9	3	0	0	3	18
3:45 PM	0	2	0	2	0	2	0	2	5	2	0	7	11
Total	4	7	0	11	7	14	0	21	15	5	0	20	52
4:00 PM	1	1	0	2	2	2	0	4	3	2	0	5	11
4:15 PM	5	0	0	5	1	0	0	1	1	0	0	1	7
4:30 PM	1	0	0	1	1	3	0	4	6	1	0	7	12
4:45 PM	1	0	0	1	0	0	0	0	3	1	0	4	5
Total	8	1	0	9	4	5	0	9	13	4	0	17	35
5:00 PM	1	1	0	2	0	0	0	0	2	1	0	3	5
5:15 PM	2	0	0	2	0	2	0	2	1	0	0	1	5
5:30 PM	0	1	0	1	0	1	0	1	2	1	0	3	5
5:45 PM	0	0	0	0	0	1	0	1	6	0	0	6	7
Total	3	2	0	5	0	4	0	4	11	2	0	13	22
Grand Total	20	20	0	40	19	41	0	60	59	15	0	74	174
Approach %	50.0	50.0	0.0		31.7	68.3	0.0		79.7	20.3	0.0		
Total %	11.5	11.5	0.0	23.0	10.9	23.6	0.0	34.5	33.9	8.6	0.0	42.5	
Exiting Leg Total				34				79				61	174
Buses	5	3	0	8	4	1	0	5	4	4	0	8	21
% Buses	25.0	15.0	0.0	20.0	21.1	2.4	0.0	8.3	6.8	26.7	0.0	10.8	12.1
Exiting Leg Total				8				7				6	21
Single-Unit Trucks	12	16	0	28	14	38	0	52	50	7	0	57	137
% Single-Unit	60.0	80.0	0.0	70.0	73.7	92.7	0.0	86.7	84.7	46.7	0.0	77.0	78.7
Exiting Leg Total				21				66				50	137
Articulated Trucks	3	1	0	4	1	2	0	3	5	4	0	9	16
% Articulated	15.0	5.0	0.0	10.0	5.3	4.9	0.0	5.0	8.5	26.7	0.0	12.2	9.2
Exiting Leg Total				5				6				5	16

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:00 PM	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
2:00 PM	1	0	0	1	0	2	0	2	8	0	0	8	11
2:15 PM	0	2	0	2	4	6	0	10	3	4	0	7	19
2:30 PM	3	5	0	8	2	3	0	5	6	0	0	6	19
2:45 PM	1	3	0	4	2	7	0	9	3	0	0	3	16
Total Volume	5	10	0	15	8	18	0	26	20	4	0	24	65
% Approach Total	33.3	66.7	0.0		30.8	69.2	0.0		83.3	16.7	0.0		
PHF	0.417	0.500	0.000	0.469	0.500	0.643	0.000	0.650	0.625	0.250	0.000	0.750	0.855
Buses	2	2	0	4	2	0	0	2	3	1	0	4	10
Buses %	40.0	20.0	0.0	26.7	25.0	0.0	0.0	7.7	15.0	25.0	0.0	16.7	15.4
Single-Unit Trucks	3	7	0	10	6	17	0	23	14	0	0	14	47
Single-Unit %	60.0	70.0	0.0	66.7	75.0	94.4	0.0	88.5	70.0	0.0	0.0	58.3	72.3
Articulated Trucks	0	1	0	1	0	1	0	1	3	3	0	6	8
Articulated %	0.0	10.0	0.0	6.7	0.0	5.6	0.0	3.8	15.0	75.0	0.0	25.0	12.3
Buses	2	2	0	4	2	0	0	2	3	1	0	4	10
Single-Unit Trucks	3	7	0	10	6	17	0	23	14	0	0	14	47
Articulated Trucks	0	1	0	1	0	1	0	1	3	3	0	6	8
Total Entering Leg	5	10	0	15	8	18	0	26	20	4	0	24	65
Buses				3				5				2	10
Single-Unit Trucks				6				21				20	47
Articulated Trucks				3				4				1	8
Total Exiting Leg				12				30				23	65

PDI File #: **239200 A**
Location: **N: Borthwick Avenue**
Location: **E: Greenland Road (Route 33) W: Greenland Road (Route 33)**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **2:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Buses

	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	1	0	0	1	0	1	0	1	2
2:30 PM	1	1	0	2	1	0	0	1	3	0	0	3	6
2:45 PM	1	1	0	2	0	0	0	0	0	0	0	0	2
Total	2	2	0	4	2	0	0	2	3	1	0	4	10
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	1	0	0	1	0	1	0	1	0	1	0	1	3
3:30 PM	0	1	0	1	1	0	0	1	0	0	0	0	2
3:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	1	1	0	2	1	1	0	2	1	1	0	2	6
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	0	0	1	1	0	0	1	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	1	1	0	0	1	0	1	0	1	3
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	1	0	0	0	0	0	1	0	1	2
Grand Total	5	3	0	8	4	1	0	5	4	4	0	8	21
Approach %	62.5	37.5	0.0		80.0	20.0	0.0		50.0	50.0	0.0		
Total %	23.8	14.3	0.0	38.1	19.0	4.8	0.0	23.8	19.0	19.0	0.0	38.1	
Exiting Leg Total				8				7				6	21

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:30 PM	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
2:30 PM	1	1	0	2	1	0	0	1	3	0	0	3	6
2:45 PM	1	1	0	2	0	0	0	0	0	0	0	0	2
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	1	0	0	1	0	1	0	1	0	1	0	1	3
Total Volume	3	2	0	5	1	1	0	2	3	1	0	4	11
% Approach Total	60.0	40.0	0.0		50.0	50.0	0.0		75.0	25.0	0.0		
PHF	0.750	0.500	0.000	0.625	0.250	0.250	0.000	0.500	0.250	0.250	0.000	0.333	0.458
Entering Leg	3	2	0	5	1	1	0	2	3	1	0	4	11
Exiting Leg				2				5				4	11
Total				7				7				8	22

PDI File #: **239200 A**
Location: **N: Borthwick Avenue**
Location: **E: Greenland Road (Route 33) W: Greenland Road (Route 33)**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **2:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class:

Single-Unit Trucks

	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
2:00 PM	1	0	0	1	0	2	0	2	7	0	0	7	10
2:15 PM	0	2	0	2	3	6	0	9	2	0	0	2	13
2:30 PM	2	3	0	5	1	3	0	4	2	0	0	2	11
2:45 PM	0	2	0	2	2	6	0	8	3	0	0	3	13
Total	3	7	0	10	6	17	0	23	14	0	0	14	47
3:00 PM	0	2	0	2	2	2	0	4	2	2	0	4	10
3:15 PM	0	0	0	0	3	2	0	5	4	0	0	4	9
3:30 PM	1	2	0	3	0	7	0	7	3	0	0	3	13
3:45 PM	0	2	0	2	0	2	0	2	4	2	0	6	10
Total	1	6	0	7	5	13	0	18	13	4	0	17	42
4:00 PM	1	1	0	2	2	2	0	4	3	2	0	5	11
4:15 PM	3	0	0	3	0	0	0	0	1	0	0	1	4
4:30 PM	1	0	0	1	1	3	0	4	5	0	0	5	10
4:45 PM	1	0	0	1	0	0	0	0	3	1	0	4	5
Total	6	1	0	7	3	5	0	8	12	3	0	15	30
5:00 PM	1	1	0	2	0	0	0	0	2	0	0	2	4
5:15 PM	1	0	0	1	0	1	0	1	1	0	0	1	3
5:30 PM	0	1	0	1	0	1	0	1	2	0	0	2	4
5:45 PM	0	0	0	0	0	1	0	1	6	0	0	6	7
Total	2	2	0	4	0	3	0	3	11	0	0	11	18
Grand Total	12	16	0	28	14	38	0	52	50	7	0	57	137
Approach %	42.9	57.1	0.0		26.9	73.1	0.0		87.7	12.3	0.0		
Total %	8.8	11.7	0.0	20.4	10.2	27.7	0.0	38.0	36.5	5.1	0.0	41.6	
Exiting Leg Total				21				66				50	137

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:00 PM	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
2:00 PM	1	0	0	1	0	2	0	2	7	0	0	7	10
2:15 PM	0	2	0	2	3	6	0	9	2	0	0	2	13
2:30 PM	2	3	0	5	1	3	0	4	2	0	0	2	11
2:45 PM	0	2	0	2	2	6	0	8	3	0	0	3	13
Total Volume	3	7	0	10	6	17	0	23	14	0	0	14	47
% Approach Total	30.0	70.0	0.0		26.1	73.9	0.0		100.0	0.0	0.0		
PHF	0.375	0.583	0.000	0.500	0.500	0.708	0.000	0.639	0.500	0.000	0.000	0.500	0.904
Entering Leg	3	7	0	10	6	17	0	23	14	0	0	14	47
Exiting Leg				6				21				20	47
Total				16				44				34	94

PDI File #: **239200 A**
Location: **N: Borthwick Avenue**
Location: **E: Greenland Road (Route 33) W: Greenland Road (Route 33)**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **2:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Articulated Trucks

	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
2:00 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
2:15 PM	0	0	0	0	0	0	0	0	1	3	0	4	4
2:30 PM	0	1	0	1	0	0	0	0	1	0	0	1	2
2:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
Total	0	1	0	1	0	1	0	1	3	3	0	6	8
3:00 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	2	0	0	2	1	0	0	1	0	0	0	0	3
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	0	0	2	1	0	0	1	1	0	0	1	4
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	1	0	0	0	0	1	0	0	1	2
5:00 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
5:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	1	0	1	0	1	2
Grand Total	3	1	0	4	1	2	0	3	5	4	0	9	16
Approach %	75.0	25.0	0.0		33.3	66.7	0.0		55.6	44.4	0.0		
Total %	18.8	6.3	0.0	25.0	6.3	12.5	0.0	18.8	31.3	25.0	0.0	56.3	
Exiting Leg Total				5				6				5	16

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:00 PM	Borthwick Avenue				Greenland Road (Route 33)				Greenland Road (Route 33)				
	from North				from East				from West				
	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Thru	Left	U-Turn	Total	Total
2:00 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
2:15 PM	0	0	0	0	0	0	0	0	1	3	0	4	4
2:30 PM	0	1	0	1	0	0	0	0	1	0	0	1	2
2:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
Total Volume	0	1	0	1	0	1	0	1	3	3	0	6	8
% Approach Total	0.0	100.0	0.0		0.0	100.0	0.0		50.0	50.0	0.0		
PHF	0.000	0.250	0.000	0.250	0.000	0.250	0.000	0.250	0.750	0.250	0.000	0.375	0.500
Entering Leg	0	1	0	1	0	1	0	1	3	3	0	6	8
Exiting Leg				3				4				1	8
Total				4				5				7	16

PDI File #: **239200 A**
Location: **N: Borthwick Avenue**
Location: **E: Greenland Road (Route 33) W: Greenland Road (Route 33)**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **2:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Borthwick Avenue						Greenland Road (Route 33)						Greenland Road (Route 33)						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1
Total	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1
Approach %	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						0						0						1	1

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

4:00 PM	Borthwick Avenue						Greenland Road (Route 33)						Greenland Road (Route 33)						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.250
Entering Leg	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1
Exiting Leg						0						0						1	1
Total						0						1						1	2

PDI File #: **239200 A**
Location: **N: Borthwick Avenue**
Location: **E: Greenland Road (Route 33) W: Greenland Road (Route 33)**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **2:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Pedestrians

	Borthwick Avenue						Greenland Road (Route 33)						Greenland Road (Route 33)						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total						0						0						0	0

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:00 PM	Borthwick Avenue						Greenland Road (Route 33)						Greenland Road (Route 33)						
	from North						from East						from West						
	Right	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	U-Turn	CW-SB	CW-NB	Total	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg						0						0						0	0
Total						0						0						0	0

PDI File #: **239200 B**
Location: **S: Borthwick Avenue**
Location: **E: Borthwick Avenue W: Greenland Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:00 AM	5	15	0	20	57	8	0	65	15	3	0	18	103
7:15 AM	5	22	0	27	60	12	0	72	28	2	0	30	129
7:30 AM	5	21	0	26	70	16	0	86	30	6	0	36	148
7:45 AM	3	27	0	30	122	21	0	143	36	10	0	46	219
Total	18	85	0	103	309	57	0	366	109	21	0	130	599
8:00 AM	7	18	0	25	76	20	0	96	33	8	0	41	162
8:15 AM	7	26	0	33	73	30	0	103	22	10	0	32	168
8:30 AM	4	27	0	31	69	13	0	82	18	5	0	23	136
8:45 AM	4	31	0	35	65	20	0	85	13	5	0	18	138
Total	22	102	0	124	283	83	0	366	86	28	0	114	604
Grand Total	40	187	0	227	592	140	0	732	195	49	0	244	1203
Approach %	17.6	82.4	0.0		80.9	19.1	0.0		79.9	20.1	0.0		
Total %	3.3	15.5	0.0	18.9	49.2	11.6	0.0	60.8	16.2	4.1	0.0	20.3	
Exiting Leg Total				641				382				180	1203
Cars	39	170	0	209	570	128	0	698	188	47	0	235	1142
% Cars	97.5	90.9	0.0	92.1	96.3	91.4	0.0	95.4	96.4	95.9	0.0	96.3	94.9
Exiting Leg Total				617				358				167	1142
Heavy Vehicles	1	17	0	18	22	12	0	34	7	2	0	9	61
% Heavy Vehicles	2.5	9.1	0.0	7.9	3.7	8.6	0.0	4.6	3.6	4.1	0.0	3.7	5.1
Exiting Leg Total				24				24				13	61

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:30 AM	5	21	0	26	70	16	0	86	30	6	0	36	148
7:45 AM	3	27	0	30	122	21	0	143	36	10	0	46	219
8:00 AM	7	18	0	25	76	20	0	96	33	8	0	41	162
8:15 AM	7	26	0	33	73	30	0	103	22	10	0	32	168
Total Volume	22	92	0	114	341	87	0	428	121	34	0	155	697
% Approach Total	19.3	80.7	0.0		79.7	20.3	0.0		78.1	21.9	0.0		
PHF	0.786	0.852	0.000	0.864	0.699	0.725	0.000	0.748	0.840	0.850	0.000	0.842	0.796
Cars	22	85	0	107	330	80	0	410	117	33	0	150	667
Cars %	100.0	92.4	0.0	93.9	96.8	92.0	0.0	95.8	96.7	97.1	0.0	96.8	95.7
Heavy Vehicles	0	7	0	7	11	7	0	18	4	1	0	5	30
Heavy Vehicles %	0.0	7.6	0.0	6.1	3.2	8.0	0.0	4.2	3.3	2.9	0.0	3.2	4.3
Cars Enter Leg	22	85	0	107	330	80	0	410	117	33	0	150	667
Heavy Enter Leg	0	7	0	7	11	7	0	18	4	1	0	5	30
Total Entering Leg	22	92	0	114	341	87	0	428	121	34	0	155	697
Cars Exiting Leg				363				202				102	667
Heavy Exiting Leg				12				11				7	30
Total Exiting Leg				375				213				109	697

PDI File #: **239200 B**
Location: **S: Borthwick Avenue**
Location: **E: Borthwick Avenue W: Greenland Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Cars

	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:00 AM	5	14	0	19	55	8	0	63	15	3	0	18	100
7:15 AM	5	19	0	24	58	10	0	68	26	2	0	28	120
7:30 AM	5	18	0	23	69	15	0	84	29	6	0	35	142
7:45 AM	3	25	0	28	119	18	0	137	34	10	0	44	209
Total	18	76	0	94	301	51	0	352	104	21	0	125	571
8:00 AM	7	17	0	24	76	18	0	94	32	7	0	39	157
8:15 AM	7	25	0	32	66	29	0	95	22	10	0	32	159
8:30 AM	4	26	0	30	66	11	0	77	18	5	0	23	130
8:45 AM	3	26	0	29	61	19	0	80	12	4	0	16	125
Total	21	94	0	115	269	77	0	346	84	26	0	110	571
Grand Total	39	170	0	209	570	128	0	698	188	47	0	235	1142
Approach %	18.7	81.3	0.0		81.7	18.3	0.0		80.0	20.0	0.0		
Total %	3.4	14.9	0.0	18.3	49.9	11.2	0.0	61.1	16.5	4.1	0.0	20.6	
Exiting Leg Total				617				358				167	1142

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:30 AM	5	18	0	23	69	15	0	84	29	6	0	35	142
7:45 AM	3	25	0	28	119	18	0	137	34	10	0	44	209
8:00 AM	7	17	0	24	76	18	0	94	32	7	0	39	157
8:15 AM	7	25	0	32	66	29	0	95	22	10	0	32	159
Total Volume	22	85	0	107	330	80	0	410	117	33	0	150	667
% Approach Total	20.6	79.4	0.0		80.5	19.5	0.0		78.0	22.0	0.0		
PHF	0.786	0.850	0.000	0.836	0.693	0.690	0.000	0.748	0.860	0.825	0.000	0.852	0.798
Entering Leg	22	85	0	107	330	80	0	410	117	33	0	150	667
Exiting Leg				363				202				102	667
Total				470				612				252	1334

PDI File #: **239200 B**
Location: **S: Borthwick Avenue**
Location: **E: Borthwick Avenue W: Greenland Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:00 AM	0	1	0	1	2	0	0	2	0	0	0	0	3
7:15 AM	0	3	0	3	2	2	0	4	2	0	0	2	9
7:30 AM	0	3	0	3	1	1	0	2	1	0	0	1	6
7:45 AM	0	2	0	2	3	3	0	6	2	0	0	2	10
Total	0	9	0	9	8	6	0	14	5	0	0	5	28
8:00 AM	0	1	0	1	0	2	0	2	1	1	0	2	5
8:15 AM	0	1	0	1	7	1	0	8	0	0	0	0	9
8:30 AM	0	1	0	1	3	2	0	5	0	0	0	0	6
8:45 AM	1	5	0	6	4	1	0	5	1	1	0	2	13
Total	1	8	0	9	14	6	0	20	2	2	0	4	33
Grand Total	1	17	0	18	22	12	0	34	7	2	0	9	61
Approach %	5.6	94.4	0.0		64.7	35.3	0.0		77.8	22.2	0.0		
Total %	1.6	27.9	0.0	29.5	36.1	19.7	0.0	55.7	11.5	3.3	0.0	14.8	
Exiting Leg Total				24				24				13	61
Buses	0	3	0	3	3	7	0	10	5	1	0	6	19
% Buses	0.0	17.6	0.0	16.7	13.6	58.3	0.0	29.4	71.4	50.0	0.0	66.7	31.1
Exiting Leg Total				4				8				7	19
Single-Unit Trucks	1	11	0	12	17	5	0	22	2	1	0	3	37
% Single-Unit	100.0	64.7	0.0	66.7	77.3	41.7	0.0	64.7	28.6	50.0	0.0	33.3	60.7
Exiting Leg Total				18				13				6	37
Articulated Trucks	0	3	0	3	2	0	0	2	0	0	0	0	5
% Articulated	0.0	17.6	0.0	16.7	9.1	0.0	0.0	5.9	0.0	0.0	0.0	0.0	8.2
Exiting Leg Total				2				3				0	5

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
8:00 AM	0	1	0	1	0	2	0	2	1	1	0	2	5
8:15 AM	0	1	0	1	7	1	0	8	0	0	0	0	9
8:30 AM	0	1	0	1	3	2	0	5	0	0	0	0	6
8:45 AM	1	5	0	6	4	1	0	5	1	1	0	2	13
Total Volume	1	8	0	9	14	6	0	20	2	2	0	4	33
% Approach Total	11.1	88.9	0.0		70.0	30.0	0.0		50.0	50.0	0.0		
PHF	0.250	0.400	0.000	0.375	0.500	0.750	0.000	0.625	0.500	0.500	0.000	0.500	0.635
Buses	0	2	0	2	2	3	0	5	2	1	0	3	10
Buses %	0.0	25.0	0.0	22.2	14.3	50.0	0.0	25.0	100.0	50.0	0.0	75.0	30.3
Single-Unit Trucks	1	5	0	6	10	3	0	13	0	1	0	1	20
Single-Unit %	100.0	62.5	0.0	66.7	71.4	50.0	0.0	65.0	0.0	50.0	0.0	25.0	60.6
Articulated Trucks	0	1	0	1	2	0	0	2	0	0	0	0	3
Articulated %	0.0	12.5	0.0	11.1	14.3	0.0	0.0	10.0	0.0	0.0	0.0	0.0	9.1
Buses	0	2	0	2	2	3	0	5	2	1	0	3	10
Single-Unit Trucks	1	5	0	6	10	3	0	13	0	1	0	1	20
Articulated Trucks	0	1	0	1	2	0	0	2	0	0	0	0	3
Total Entering Leg	1	8	0	9	14	6	0	20	2	2	0	4	33
Buses				3				4				3	10
Single-Unit Trucks				11				5				4	20
Articulated Trucks				2				1				0	3
Total Exiting Leg				16				10				7	33

PDI File #: **239200 B**
Location: **S: Borthwick Avenue**
Location: **E: Borthwick Avenue W: Greenland Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Buses

	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	1	0	1	1	2	0	3	2	0	0	2	6
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	2	0	2	1	0	0	1	3
Total	0	1	0	1	1	4	0	5	3	0	0	3	9
8:00 AM	0	0	0	0	0	1	0	1	1	1	0	2	3
8:15 AM	0	1	0	1	1	0	0	1	0	0	0	0	2
8:30 AM	0	0	0	0	1	1	0	2	0	0	0	0	2
8:45 AM	0	1	0	1	0	1	0	1	1	0	0	1	3
Total	0	2	0	2	2	3	0	5	2	1	0	3	10
Grand Total	0	3	0	3	3	7	0	10	5	1	0	6	19
Approach %	0.0	100.0	0.0		30.0	70.0	0.0		83.3	16.7	0.0		
Total %	0.0	15.8	0.0	15.8	15.8	36.8	0.0	52.6	26.3	5.3	0.0	31.6	
Exiting Leg Total				4				8				7	19

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:15 AM	0	1	0	1	1	2	0	3	2	0	0	2	6
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	2	0	2	1	0	0	1	3
8:00 AM	0	0	0	0	0	1	0	1	1	1	0	2	3
Total Volume	0	1	0	1	1	5	0	6	4	1	0	5	12
% Approach Total	0.0	100.0	0.0		16.7	83.3	0.0		80.0	20.0	0.0		
PHF	0.000	0.250	0.000	0.250	0.250	0.625	0.000	0.500	0.500	0.250	0.000	0.625	0.500
Entering Leg	0	1	0	1	1	5	0	6	4	1	0	5	12
Exiting Leg				2				5				5	12
Total				3				11				10	24

PDI File #: **239200 B**
Location: **S: Borthwick Avenue**
Location: **E: Borthwick Avenue W: Greenland Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Single-Unit Trucks

	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:00 AM	0	0	0	0	2	0	0	2	0	0	0	0	2
7:15 AM	0	2	0	2	1	0	0	1	0	0	0	0	3
7:30 AM	0	2	0	2	1	1	0	2	1	0	0	1	5
7:45 AM	0	2	0	2	3	1	0	4	1	0	0	1	7
Total	0	6	0	6	7	2	0	9	2	0	0	2	17
8:00 AM	0	1	0	1	0	1	0	1	0	0	0	0	2
8:15 AM	0	0	0	0	5	1	0	6	0	0	0	0	6
8:30 AM	0	1	0	1	2	1	0	3	0	0	0	0	4
8:45 AM	1	3	0	4	3	0	0	3	0	1	0	1	8
Total	1	5	0	6	10	3	0	13	0	1	0	1	20
Grand Total	1	11	0	12	17	5	0	22	2	1	0	3	37
Approach %	8.3	91.7	0.0		77.3	22.7	0.0		66.7	33.3	0.0		
Total %	2.7	29.7	0.0	32.4	45.9	13.5	0.0	59.5	5.4	2.7	0.0	8.1	
Exiting Leg Total				18				13				6	37

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:30 AM	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:30 AM	0	2	0	2	1	1	0	2	1	0	0	1	5
7:45 AM	0	2	0	2	3	1	0	4	1	0	0	1	7
8:00 AM	0	1	0	1	0	1	0	1	0	0	0	0	2
8:15 AM	0	0	0	0	5	1	0	6	0	0	0	0	6
Total Volume	0	5	0	5	9	4	0	13	2	0	0	2	20
% Approach Total	0.0	100.0	0.0		69.2	30.8	0.0		100.0	0.0	0.0		
PHF	0.000	0.625	0.000	0.625	0.450	1.000	0.000	0.542	0.500	0.000	0.000	0.500	0.714
Entering Leg	0	5	0	5	9	4	0	13	2	0	0	2	20
Exiting Leg				9				7				4	20
Total				14				20				6	40

PDI File #: **239200 B**
Location: **S: Borthwick Avenue**
Location: **E: Borthwick Avenue W: Greenland Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Articulated Trucks

	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
7:00 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	1	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	0	2	0	0	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	1	0	1	1	0	0	1	0	0	0	0	2
Total	0	1	0	1	2	0	0	2	0	0	0	0	3
Grand Total	0	3	0	3	2	0	0	2	0	0	0	0	5
Approach %	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
Total %	0.0	60.0	0.0	60.0	40.0	0.0	0.0	40.0	0.0	0.0	0.0	0.0	
Exiting Leg Total				2				3				0	5

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	1	0	0	1	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	1	0	1	1	0	0	1	0	0	0	0	2
Total Volume	0	1	0	1	2	0	0	2	0	0	0	0	3
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.250	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.375
Entering Leg	0	1	0	1	2	0	0	2	0	0	0	0	3
Exiting Leg				2				1				0	3
Total				3				3				0	6

PDI File #: **239200 B**
Location: **S: Borthwick Avenue**
Location: **E: Borthwick Avenue W: Greenland Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Borthwick Avenue from East						Borthwick Avenue from South						Greenland Road from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						0						0						0	0

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Borthwick Avenue from East						Borthwick Avenue from South						Greenland Road from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg						0						0						0	0
Total						0						0						0	0

PDI File #: **239200 B**
Location: **S: Borthwick Avenue**
Location: **E: Borthwick Avenue W: Greenland Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Pedestrians

	Borthwick Avenue						Borthwick Avenue						Greenland Road						
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total						0						0						0	0

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Borthwick Avenue						Borthwick Avenue						Greenland Road						
	from East						from South						from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg						0						0						0	0
Total						0						0						0	0

PDI File #: **239200 B**
Location: **S: Borthwick Avenue**
Location: **E: Borthwick Avenue W: Greenland Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **2:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Cars and Heavy Vehicles (Combined)

	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
2:00 PM	4	43	0	47	41	21	0	62	14	6	0	20	129
2:15 PM	3	45	0	48	53	27	0	80	15	11	0	26	154
2:30 PM	9	68	0	77	44	20	0	64	23	7	0	30	171
2:45 PM	5	59	0	64	43	23	0	66	16	8	0	24	154
Total	21	215	0	236	181	91	0	272	68	32	0	100	608
3:00 PM	4	81	0	85	46	16	0	62	22	1	0	23	170
3:15 PM	9	80	0	89	41	31	1	73	18	4	0	22	184
3:30 PM	8	63	0	71	46	24	0	70	18	12	0	30	171
3:45 PM	9	69	0	78	30	21	0	51	24	7	0	31	160
Total	30	293	0	323	163	92	1	256	82	24	0	106	685
4:00 PM	6	82	0	88	33	22	0	55	23	3	0	26	169
4:15 PM	4	59	0	63	24	36	0	60	21	3	0	24	147
4:30 PM	8	59	0	67	20	13	0	33	24	7	0	31	131
4:45 PM	10	51	0	61	17	23	0	40	27	7	0	34	135
Total	28	251	0	279	94	94	0	188	95	20	0	115	582
5:00 PM	6	119	0	125	28	20	0	48	29	10	0	39	212
5:15 PM	2	68	0	70	19	21	0	40	25	2	0	27	137
5:30 PM	5	37	0	42	19	22	1	42	23	5	0	28	112
5:45 PM	4	33	0	37	27	19	0	46	18	6	0	24	107
Total	17	257	0	274	93	82	1	176	95	23	0	118	568
Grand Total	96	1016	0	1112	531	359	2	892	340	99	0	439	2443
Approach %	8.6	91.4	0.0		59.5	40.2	0.2		77.4	22.6	0.0		
Total %	3.9	41.6	0.0	45.5	21.7	14.7	0.1	36.5	13.9	4.1	0.0	18.0	
Exiting Leg Total				630				1358				455	2443
Cars	92	993	0	1085	506	349	2	857	329	96	0	425	2367
% Cars	95.8	97.7	0.0	97.6	95.3	97.2	100.0	96.1	96.8	97.0	0.0	96.8	96.9
Exiting Leg Total				602				1324				441	2367
Heavy Vehicles	4	23	0	27	25	10	0	35	11	3	0	14	76
% Heavy Vehicles	4.2	2.3	0.0	2.4	4.7	2.8	0.0	3.9	3.2	3.0	0.0	3.2	3.1
Exiting Leg Total				28				34				14	76

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

3:00 PM	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
3:00 PM	4	81	0	85	46	16	0	62	22	1	0	23	170
3:15 PM	9	80	0	89	41	31	1	73	18	4	0	22	184
3:30 PM	8	63	0	71	46	24	0	70	18	12	0	30	171
3:45 PM	9	69	0	78	30	21	0	51	24	7	0	31	160
Total Volume	30	293	0	323	163	92	1	256	82	24	0	106	685
% Approach Total	9.3	90.7	0.0		63.7	35.9	0.4		77.4	22.6	0.0		
PHF	0.833	0.904	0.000	0.907	0.886	0.742	0.250	0.877	0.854	0.500	0.000	0.855	0.931
Cars	29	285	0	314	154	89	1	244	79	23	0	102	660
Cars %	96.7	97.3	0.0	97.2	94.5	96.7	100.0	95.3	96.3	95.8	0.0	96.2	96.4
Heavy Vehicles	1	8	0	9	9	3	0	12	3	1	0	4	25
Heavy Vehicles %	3.3	2.7	0.0	2.8	5.5	3.3	0.0	4.7	3.7	4.2	0.0	3.8	3.6
Cars Enter Leg	29	285	0	314	154	89	1	244	79	23	0	102	660
Heavy Enter Leg	1	8	0	9	9	3	0	12	3	1	0	4	25
Total Entering Leg	30	293	0	323	163	92	1	256	82	24	0	106	685
Cars Exiting Leg				177				365				118	660
Heavy Exiting Leg				10				11				4	25
Total Exiting Leg				187				376				122	685

PDI File #: **239200 B**
Location: **S: Borthwick Avenue**
Location: **E: Borthwick Avenue W: Greenland Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **2:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Cars

	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
2:00 PM	4	42	0	46	40	21	0	61	14	6	0	20	127
2:15 PM	3	43	0	46	48	25	0	73	15	11	0	26	145
2:30 PM	9	63	0	72	43	19	0	62	21	6	0	27	161
2:45 PM	5	57	0	62	41	23	0	64	15	8	0	23	149
Total	21	205	0	226	172	88	0	260	65	31	0	96	582
3:00 PM	4	79	0	83	42	16	0	58	22	1	0	23	164
3:15 PM	9	80	0	89	38	30	1	69	17	4	0	21	179
3:30 PM	8	59	0	67	45	22	0	67	16	11	0	27	161
3:45 PM	8	67	0	75	29	21	0	50	24	7	0	31	156
Total	29	285	0	314	154	89	1	244	79	23	0	102	660
4:00 PM	6	82	0	88	31	20	0	51	22	3	0	25	164
4:15 PM	3	57	0	60	24	35	0	59	20	2	0	22	141
4:30 PM	8	59	0	67	18	13	0	31	24	7	0	31	129
4:45 PM	8	51	0	59	16	23	0	39	26	7	0	33	131
Total	25	249	0	274	89	91	0	180	92	19	0	111	565
5:00 PM	6	118	0	124	27	20	0	47	28	10	0	38	209
5:15 PM	2	66	0	68	19	20	0	39	25	2	0	27	134
5:30 PM	5	37	0	42	18	22	1	41	22	5	0	27	110
5:45 PM	4	33	0	37	27	19	0	46	18	6	0	24	107
Total	17	254	0	271	91	81	1	173	93	23	0	116	560
Grand Total	92	993	0	1085	506	349	2	857	329	96	0	425	2367
Approach %	8.5	91.5	0.0		59.0	40.7	0.2		77.4	22.6	0.0		
Total %	3.9	42.0	0.0	45.8	21.4	14.7	0.1	36.2	13.9	4.1	0.0	18.0	
Exiting Leg Total				602				1324				441	2367

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

3:00 PM	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
3:00 PM	4	79	0	83	42	16	0	58	22	1	0	23	164
3:15 PM	9	80	0	89	38	30	1	69	17	4	0	21	179
3:30 PM	8	59	0	67	45	22	0	67	16	11	0	27	161
3:45 PM	8	67	0	75	29	21	0	50	24	7	0	31	156
Total Volume	29	285	0	314	154	89	1	244	79	23	0	102	660
% Approach Total	9.2	90.8	0.0		63.1	36.5	0.4		77.5	22.5	0.0		
PHF	0.806	0.891	0.000	0.882	0.856	0.742	0.250	0.884	0.823	0.523	0.000	0.823	0.922
Entering Leg	29	285	0	314	154	89	1	244	79	23	0	102	660
Exiting Leg				177				365				118	660
Total				491				609				220	1320

PDI File #: **239200 B**
Location: **S: Borthwick Avenue**
Location: **E: Borthwick Avenue W: Greenland Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **2:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**

	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
2:00 PM	0	1	0	1	1	0	0	1	0	0	0	0	2
2:15 PM	0	2	0	2	5	2	0	7	0	0	0	0	9
2:30 PM	0	5	0	5	1	1	0	2	2	1	0	3	10
2:45 PM	0	2	0	2	2	0	0	2	1	0	0	1	5
Total	0	10	0	10	9	3	0	12	3	1	0	4	26
3:00 PM	0	2	0	2	4	0	0	4	0	0	0	0	6
3:15 PM	0	0	0	0	3	1	0	4	1	0	0	1	5
3:30 PM	0	4	0	4	1	2	0	3	2	1	0	3	10
3:45 PM	1	2	0	3	1	0	0	1	0	0	0	0	4
Total	1	8	0	9	9	3	0	12	3	1	0	4	25
4:00 PM	0	0	0	0	2	2	0	4	1	0	0	1	5
4:15 PM	1	2	0	3	0	1	0	1	1	1	0	2	6
4:30 PM	0	0	0	0	2	0	0	2	0	0	0	0	2
4:45 PM	2	0	0	2	1	0	0	1	1	0	0	1	4
Total	3	2	0	5	5	3	0	8	3	1	0	4	17
5:00 PM	0	1	0	1	1	0	0	1	1	0	0	1	3
5:15 PM	0	2	0	2	0	1	0	1	0	0	0	0	3
5:30 PM	0	0	0	0	1	0	0	1	1	0	0	1	2
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	3	0	3	2	1	0	3	2	0	0	2	8
Grand Total	4	23	0	27	25	10	0	35	11	3	0	14	76
Approach %	14.8	85.2	0.0		71.4	28.6	0.0		78.6	21.4	0.0		
Total %	5.3	30.3	0.0	35.5	32.9	13.2	0.0	46.1	14.5	3.9	0.0	18.4	
Exiting Leg Total				28				34				14	76
Buses	0	3	0	3	2	6	0	8	5	2	0	7	18
% Buses	0.0	13.0	0.0	11.1	8.0	60.0	0.0	22.9	45.5	66.7	0.0	50.0	23.7
Exiting Leg Total				4				8				6	18
Single-Unit Trucks	4	17	0	21	17	2	0	19	5	1	0	6	46
% Single-Unit	100.0	73.9	0.0	77.8	68.0	20.0	0.0	54.3	45.5	33.3	0.0	42.9	60.5
Exiting Leg Total				18				22				6	46
Articulated Trucks	0	3	0	3	6	2	0	8	1	0	0	1	12
% Articulated	0.0	13.0	0.0	11.1	24.0	20.0	0.0	22.9	9.1	0.0	0.0	7.1	15.8
Exiting Leg Total				6				4				2	12

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:15 PM	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
2:15 PM	0	2	0	2	5	2	0	7	0	0	0	0	9
2:30 PM	0	5	0	5	1	1	0	2	2	1	0	3	10
2:45 PM	0	2	0	2	2	0	0	2	1	0	0	1	5
3:00 PM	0	2	0	2	4	0	0	4	0	0	0	0	6
Total Volume	0	11	0	11	12	3	0	15	3	1	0	4	30
% Approach Total	0.0	100.0	0.0		80.0	20.0	0.0		75.0	25.0	0.0		
PHF	0.000	0.550	0.000	0.550	0.600	0.375	0.000	0.536	0.375	0.250	0.000	0.333	0.750
Buses	0	1	0	1	0	3	0	3	3	1	0	4	8
Buses %	0.0	9.1	0.0	9.1	0.0	100.0	0.0	20.0	100.0	100.0	0.0	100.0	26.7
Single-Unit Trucks	0	8	0	8	8	0	0	8	0	0	0	0	16
Single-Unit %	0.0	72.7	0.0	72.7	66.7	0.0	0.0	53.3	0.0	0.0	0.0	0.0	53.3
Articulated Trucks	0	2	0	2	4	0	0	4	0	0	0	0	6
Articulated %	0.0	18.2	0.0	18.2	33.3	0.0	0.0	26.7	0.0	0.0	0.0	0.0	20.0
Buses	0	1	0	1	0	3	0	3	3	1	0	4	8
Single-Unit Trucks	0	8	0	8	8	0	0	8	0	0	0	0	16
Articulated Trucks	0	2	0	2	4	0	0	4	0	0	0	0	6
Total Entering Leg	0	11	0	11	12	3	0	15	3	1	0	4	30
Buses				1				4				3	8
Single-Unit Trucks				8				8				0	16
Articulated Trucks				4				2				0	6
Total Exiting Leg				13				14				3	30

PDI File #: **239200 B**
Location: **S: Borthwick Avenue**
Location: **E: Borthwick Avenue W: Greenland Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **2:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Buses

	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	2
2:30 PM	0	1	0	1	0	1	0	1	2	1	0	3	5
2:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	1	0	1	0	3	0	3	3	1	0	4	8
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
3:30 PM	0	0	0	0	0	1	0	1	1	0	0	1	2
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	2	0	2	2	0	0	2	4
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	0	1	0	1	0	1	0	1	0	1	3
4:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	1	1	0	2	0	1	0	1	4
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	1	0	0	1	0	0	0	0	2
Grand Total	0	3	0	3	2	6	0	8	5	2	0	7	18
Approach %	0.0	100.0	0.0		25.0	75.0	0.0		71.4	28.6	0.0		
Total %	0.0	16.7	0.0	16.7	11.1	33.3	0.0	44.4	27.8	11.1	0.0	38.9	
Exiting Leg Total				4				8				6	18

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:00 PM	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	2
2:30 PM	0	1	0	1	0	1	0	1	2	1	0	3	5
2:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
Total Volume	0	1	0	1	0	3	0	3	3	1	0	4	8
% Approach Total	0.0	100.0	0.0		0.0	100.0	0.0		75.0	25.0	0.0		
PHF	0.000	0.250	0.000	0.250	0.000	0.375	0.000	0.375	0.375	0.250	0.000	0.333	0.400
Entering Leg	0	1	0	1	0	3	0	3	3	1	0	4	8
Exiting Leg				1				4				3	8
Total				2				7				7	16

PDI File #: **239200 B**
Location: **S: Borthwick Avenue**
Location: **E: Borthwick Avenue W: Greenland Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **2:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Single-Unit Trucks

	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
2:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
2:15 PM	0	2	0	2	2	0	0	2	0	0	0	0	4
2:30 PM	0	2	0	2	1	0	0	1	0	0	0	0	3
2:45 PM	0	2	0	2	2	0	0	2	0	0	0	0	4
Total	0	7	0	7	5	0	0	5	0	0	0	0	12
3:00 PM	0	2	0	2	3	0	0	3	0	0	0	0	5
3:15 PM	0	0	0	0	3	0	0	3	0	0	0	0	3
3:30 PM	0	3	0	3	1	0	0	1	0	1	0	1	5
3:45 PM	1	2	0	3	1	0	0	1	0	0	0	0	4
Total	1	7	0	8	8	0	0	8	0	1	0	1	17
4:00 PM	0	0	0	0	2	1	0	3	1	0	0	1	4
4:15 PM	1	1	0	2	0	0	0	0	1	0	0	1	3
4:30 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
4:45 PM	2	0	0	2	1	0	0	1	1	0	0	1	4
Total	3	1	0	4	4	1	0	5	3	0	0	3	12
5:00 PM	0	1	0	1	0	0	0	0	1	0	0	1	2
5:15 PM	0	1	0	1	0	1	0	1	0	0	0	0	2
5:30 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	0	2	0	1	0	1	2	0	0	2	5
Grand Total	4	17	0	21	17	2	0	19	5	1	0	6	46
Approach %	19.0	81.0	0.0		89.5	10.5	0.0		83.3	16.7	0.0		
Total %	8.7	37.0	0.0	45.7	37.0	4.3	0.0	41.3	10.9	2.2	0.0	13.0	
Exiting Leg Total				18				22				6	46

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:45 PM	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
2:45 PM	0	2	0	2	2	0	0	2	0	0	0	0	4
3:00 PM	0	2	0	2	3	0	0	3	0	0	0	0	5
3:15 PM	0	0	0	0	3	0	0	3	0	0	0	0	3
3:30 PM	0	3	0	3	1	0	0	1	0	1	0	1	5
Total Volume	0	7	0	7	9	0	0	9	0	1	0	1	17
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	100.0	0.0		
PHF	0.000	0.583	0.000	0.583	0.750	0.000	0.000	0.750	0.000	0.250	0.000	0.250	0.850
Entering Leg	0	7	0	7	9	0	0	9	0	1	0	1	17
Exiting Leg				10				7				0	17
Total				17				16				1	34

PDI File #: **239200 B**
Location: **S: Borthwick Avenue**
Location: **E: Borthwick Avenue W: Greenland Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **2:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Articulated Trucks

	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
2:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
2:15 PM	0	0	0	0	3	0	0	3	0	0	0	0	3
2:30 PM	0	2	0	2	0	0	0	0	0	0	0	0	2
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	0	2	4	0	0	4	0	0	0	0	6
3:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	1	0	1	0	1	0	1	1	0	0	1	3
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	1	1	0	2	1	0	0	1	4
4:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	1	0	0	0	0	1
5:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	0	1	0	0	0	0	1
Grand Total	0	3	0	3	6	2	0	8	1	0	0	1	12
Approach %	0.0	100.0	0.0		75.0	25.0	0.0		100.0	0.0	0.0		
Total %	0.0	25.0	0.0	25.0	50.0	16.7	0.0	66.7	8.3	0.0	0.0	8.3	
Exiting Leg Total				6				4				2	12

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:00 PM	Borthwick Avenue from East				Borthwick Avenue from South				Greenland Road from West				
	Thru	Left	U-Turn	Total	Right	Left	U-Turn	Total	Right	Thru	U-Turn	Total	Total
2:00 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
2:15 PM	0	0	0	0	3	0	0	3	0	0	0	0	3
2:30 PM	0	2	0	2	0	0	0	0	0	0	0	0	2
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	2	0	2	4	0	0	4	0	0	0	0	6
% Approach Total	0.0	100.0	0.0		100.0	0.0	0.0		0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.250	0.333	0.000	0.000	0.333	0.000	0.000	0.000	0.000	0.500
Entering Leg	0	2	0	2	4	0	0	4	0	0	0	0	6
Exiting Leg				4				2				0	6
Total				6				6				0	12

PDI File #: **239200 B**
Location: **S: Borthwick Avenue**
Location: **E: Borthwick Avenue W: Greenland Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **2:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Borthwick Avenue from East						Borthwick Avenue from South						Greenland Road from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	Total
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total						0						0						0	0

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:00 PM	Borthwick Avenue from East						Borthwick Avenue from South						Greenland Road from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	Total
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg						0						0						0	0
Total						0						0						0	0

PDI File #: **239200 B**
Location: **S: Borthwick Avenue**
Location: **E: Borthwick Avenue W: Greenland Road**
City, State: **Portsmouth, NH**
Client: **TFMoran/ J. Porter**
Site Code: **47528.00**
Count Date: **Thursday, March 9, 2023**
Start Time: **2:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

Pedestrians

	Borthwick Avenue from East						Borthwick Avenue from South						Greenland Road from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	Total
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Exiting Leg Total						0						0						0	0

Peak Hour Analysis from 02:00 PM to 06:00 PM begins at:

2:00 PM	Borthwick Avenue from East						Borthwick Avenue from South						Greenland Road from West						
	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	U-Turn	CW-NB	CW-SB	Total	Total
2:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Approach Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Exiting Leg						0						0						0	0
Total						0						0						0	0

Sherburne Road
south of School Driveway
City, State: Portsmouth, NH
Client: TF Moran/ J. Porter
Site Code: 47528

Count Date: Thursday, March 9, 2023
Direction: NB

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

PDI File #: 239200 ATR-A

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	5	0	0	0	5
12:15 AM	0	0	1	0	0	0	1
12:30 AM	0	0	1	0	0	0	1
12:45 AM	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0
2:00 AM	0	0	3	0	0	0	3
2:15 AM	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0
2:45 AM	0	0	2	0	0	0	2
3:00 AM	0	0	1	0	0	0	1
3:15 AM	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	1	0	1
4:30 AM	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0
5:00 AM	0	0	2	0	0	0	2
5:15 AM	0	0	1	0	0	0	1
5:30 AM	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0
6:00 AM	0	0	3	0	0	0	3
6:15 AM	0	0	2	0	0	0	2
6:30 AM	0	0	4	0	0	0	4
6:45 AM	0	0	5	0	0	0	5
7:00 AM	0	0	7	0	0	0	7
7:15 AM	0	0	9	2	0	0	11
7:30 AM	0	0	12	0	1	0	13
7:45 AM	0	0	11	2	0	0	13
8:00 AM	0	0	10	1	0	0	11
8:15 AM	0	0	16	0	1	0	17
8:30 AM	0	0	7	1	1	0	9
8:45 AM	0	0	6	0	0	0	6
9:00 AM	0	0	13	0	1	0	14
9:15 AM	0	0	9	0	0	0	9
9:30 AM	0	0	5	0	0	0	5
9:45 AM	0	0	7	1	0	0	8
10:00 AM	0	0	8	0	3	0	11
10:15 AM	0	0	10	0	0	0	10
10:30 AM	0	0	9	0	0	0	9
10:45 AM	0	0	8	1	1	0	10
11:00 AM	0	0	5	0	2	0	7
11:15 AM	0	0	13	1	0	0	14
11:30 AM	0	0	6	1	0	0	7
11:45 AM	0	0	11	0	0	0	11
AM Total	**0**	**0**	**212**	**10**	**11**	**0**	**233**
Percentage	**0.00%**	**0.00%**	**90.99%**	**4.29%**	**4.72%**	**0.00%**	
AM Peak	**12:00 AM**	**12:00 AM**	**7:30 AM**	**7:15 AM**	**10:00 AM**	**12:00 AM**	**7:30 AM**
Volume	**0**	**0**	**49**	**5**	**4**	**0**	**54**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	0	13	0	0	0	13
12:15 PM	0	0	19	0	0	0	19
12:30 PM	0	0	16	0	0	0	16
12:45 PM	0	0	22	1	0	0	23
1:00 PM	0	0	18	0	0	0	18
1:15 PM	0	0	10	0	0	0	10
1:30 PM	0	0	15	0	1	0	16
1:45 PM	0	0	14	0	0	0	14
2:00 PM	0	0	17	0	0	0	17
2:15 PM	0	0	20	2	1	0	23
2:30 PM	0	0	18	1	0	0	19
2:45 PM	0	0	16	0	0	0	16
3:00 PM	0	0	13	0	0	0	13
3:15 PM	0	0	25	1	0	0	26
3:30 PM	0	0	21	1	0	1	23
3:45 PM	0	0	20	0	1	0	21
4:00 PM	0	0	15	0	1	0	16
4:15 PM	0	0	33	1	0	0	34
4:30 PM	0	0	14	0	0	0	14
4:45 PM	0	0	22	0	0	0	22
5:00 PM	0	0	19	0	0	0	19
5:15 PM	0	0	17	0	0	0	17
5:30 PM	0	0	24	0	0	0	24
5:45 PM	0	0	17	0	0	0	17
6:00 PM	0	0	18	0	0	0	18
6:15 PM	0	0	20	0	0	0	20
6:30 PM	0	0	15	0	0	0	15
6:45 PM	0	0	17	0	0	0	17
7:00 PM	1	0	17	0	0	0	18
7:15 PM	0	0	7	0	0	0	7
7:30 PM	0	0	13	0	0	0	13
7:45 PM	0	0	8	0	0	0	8
8:00 PM	0	0	10	0	0	0	10
8:15 PM	0	0	11	0	0	0	11
8:30 PM	0	0	7	0	0	0	7
8:45 PM	0	0	7	0	0	0	7
9:00 PM	0	0	7	0	0	0	7
9:15 PM	0	0	5	0	0	0	5
9:30 PM	0	0	4	0	0	0	4
9:45 PM	0	0	9	0	0	0	9
10:00 PM	0	0	6	0	0	0	6
10:15 PM	0	0	4	0	0	0	4
10:30 PM	0	0	1	0	0	0	1
10:45 PM	0	0	2	0	0	0	2
11:00 PM	0	0	3	0	0	0	3
11:15 PM	0	0	0	0	0	0	0
11:30 PM	0	0	1	0	0	0	1
11:45 PM	0	0	1	0	0	0	1
PM Total	**1**	**0**	**631**	**7**	**4**	**1**	**644**
Percentage	**0.16%**	**0.00%**	**97.98%**	**1.09%**	**0.62%**	**0.16%**	
PM Peak	**6:15 PM**	**12:00 PM**	**3:30 PM**	**1:45 PM**	**1:30 PM**	**2:45 PM**	**3:30 PM**
Volume	**1**	**0**	**89**	**3**	**2**	**1**	**94**
Day Total	**1**	**0**	**843**	**17**	**15**	**1**	**877**
Percentage	**0.11%**	**0.00%**	**96.12%**	**1.94%**	**1.71%**	**0.11%**	

Sherburne Road
south of School Driveway
City, State: Portsmouth, NH
Client: TF Moran/ J. Porter
Site Code: 47528

Count Date: Thursday, March 9, 2023
Direction: SB

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

PDI File #: 239200 ATR-A

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0
12:30 AM	0	0	1	0	0	0	1
12:45 AM	0	0	1	0	0	0	1
1:00 AM	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0
1:30 AM	0	0	1	0	0	0	1
1:45 AM	0	0	0	0	0	0	0
2:00 AM	0	0	1	0	0	0	1
2:15 AM	0	0	1	0	0	0	1
2:30 AM	0	0	1	0	0	0	1
2:45 AM	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0
3:15 AM	0	0	2	0	0	0	2
3:30 AM	0	0	0	0	0	0	0
3:45 AM	0	0	1	0	0	0	1
4:00 AM	0	0	1	0	0	0	1
4:15 AM	0	0	0	0	1	0	1
4:30 AM	0	0	3	0	0	0	3
4:45 AM	0	0	3	0	0	0	3
5:00 AM	0	0	4	0	0	0	4
5:15 AM	0	0	5	0	0	0	5
5:30 AM	0	0	3	0	0	0	3
5:45 AM	0	0	14	0	0	0	14
6:00 AM	0	0	3	0	0	0	3
6:15 AM	0	0	12	0	0	0	12
6:30 AM	0	0	9	0	0	0	9
6:45 AM	0	0	10	0	0	0	10
7:00 AM	0	0	16	0	0	0	16
7:15 AM	0	0	24	2	0	0	26
7:30 AM	0	0	29	0	1	0	30
7:45 AM	0	0	38	1	1	0	40
8:00 AM	0	0	31	2	0	0	33
8:15 AM	0	0	29	0	0	0	29
8:30 AM	0	0	16	0	1	0	17
8:45 AM	0	0	14	1	1	0	16
9:00 AM	0	0	11	0	0	0	11
9:15 AM	0	0	14	0	0	0	14
9:30 AM	0	0	13	0	0	0	13
9:45 AM	0	0	13	1	0	0	14
10:00 AM	0	0	9	0	0	0	9
10:15 AM	0	0	4	0	0	0	4
10:30 AM	0	0	13	0	0	0	13
10:45 AM	0	0	17	1	0	0	18
11:00 AM	0	0	4	0	1	0	5
11:15 AM	0	0	12	1	2	0	15
11:30 AM	0	0	14	1	0	0	15
11:45 AM	0	0	9	0	0	0	9
AM Total	**0**	**0**	**406**	**10**	**8**	**0**	**424**
Percentage	**0.00%**	**0.00%**	**95.75%**	**2.36%**	**1.89%**	**0.00%**	
AM Peak	**12:00 AM**	**12:00 AM**	**7:30 AM**	**7:15 AM**	**10:30 AM**	**12:00 AM**	**7:30 AM**
Volume	**0**	**0**	**127**	**5**	**3**	**0**	**132**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	0	13	0	0	0	13
12:15 PM	0	0	9	0	0	0	9
12:30 PM	0	0	13	0	0	0	13
12:45 PM	0	0	14	0	3	0	17
1:00 PM	0	0	17	0	0	0	17
1:15 PM	0	0	11	0	0	0	11
1:30 PM	0	0	13	0	0	0	13
1:45 PM	0	0	14	0	1	0	15
2:00 PM	0	0	15	0	0	0	15
2:15 PM	0	0	18	0	0	0	18
2:30 PM	0	0	16	2	0	0	18
2:45 PM	0	0	9	1	0	0	10
3:00 PM	0	0	10	0	0	0	10
3:15 PM	0	0	15	1	0	0	16
3:30 PM	0	0	17	1	0	1	19
3:45 PM	0	0	17	0	0	0	17
4:00 PM	0	0	14	0	1	0	15
4:15 PM	0	0	9	1	0	0	10
4:30 PM	0	0	19	0	0	0	19
4:45 PM	0	0	15	0	0	0	15
5:00 PM	0	0	16	0	0	0	16
5:15 PM	0	0	17	0	0	0	17
5:30 PM	0	0	14	0	0	0	14
5:45 PM	0	0	12	0	0	0	12
6:00 PM	0	0	5	0	0	0	5
6:15 PM	0	0	12	0	0	0	12
6:30 PM	0	0	12	0	0	0	12
6:45 PM	0	0	12	0	0	0	12
7:00 PM	0	0	9	0	0	0	9
7:15 PM	0	0	11	0	0	0	11
7:30 PM	0	0	8	0	0	0	8
7:45 PM	0	0	5	0	0	0	5
8:00 PM	0	0	4	0	0	0	4
8:15 PM	0	0	3	0	0	0	3
8:30 PM	0	0	2	0	0	0	2
8:45 PM	0	0	2	0	0	0	2
9:00 PM	0	0	2	0	0	0	2
9:15 PM	0	0	5	0	0	0	5
9:30 PM	0	0	3	0	0	0	3
9:45 PM	0	0	1	0	0	0	1
10:00 PM	0	0	3	0	0	0	3
10:15 PM	0	0	0	0	0	0	0
10:30 PM	0	0	1	0	0	0	1
10:45 PM	0	0	0	0	0	0	0
11:00 PM	0	0	2	0	0	0	2
11:15 PM	0	0	0	0	0	0	0
11:30 PM	0	0	3	0	0	0	3
11:45 PM	0	0	1	0	0	0	1
PM Total	**0**	**0**	**443**	**6**	**5**	**1**	**455**
Percentage	**0.00%**	**0.00%**	**97.36%**	**1.32%**	**1.10%**	**0.22%**	
PM Peak	**12:00 PM**	**12:00 PM**	**4:30 PM**	**2:30 PM**	**12:00 PM**	**2:45 PM**	**3:15 PM**
Volume	**0**	**0**	**67**	**4**	**3**	**1**	**67**
Day Total	**0**	**0**	**849**	**16**	**13**	**1**	**879**
Percentage	**0.00%**	**0.00%**	**96.59%**	**1.82%**	**1.48%**	**0.11%**	

Sherburne Road
just south of School Driveway
City, State: Portsmouth, NH
Client: TF Moran/ J. Porter
Site Code: 47528.00

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com
Email: datarequests@pdillc.com

PDI File #: 239200 ATR-A (Speed)

Count Date
Thursday, March 9, 2023

Speed (60-minute)

NB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	1	1	3	2	0	0	0	0	0	0	0	7	35.1	30.0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
2:00 AM	1	0	1	4	0	0	0	0	0	0	0	0	0	6	28.3	23.3
3:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	1	29.0	29.0
4:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	1	22.0	22.0
5:00 AM	0	0	1	1	1	0	0	0	0	0	0	0	0	3	29.2	25.3
6:00 AM	0	0	1	5	7	1	0	0	0	0	0	0	0	14	34.0	30.1
7:00 AM	0	0	9	21	10	1	0	0	0	0	0	0	0	41	31.0	27.7
8:00 AM	0	0	12	23	8	0	0	0	0	0	0	0	0	43	30.0	26.5
9:00 AM	0	0	4	19	14	0	0	0	0	0	0	0	0	37	32.0	28.5
10:00 AM	0	1	6	23	8	1	1	0	0	0	0	0	0	40	30.2	27.1
11:00 AM	1	0	5	15	15	1	0	0	0	0	0	0	0	37	32.6	27.9
12:00 PM	0	1	14	28	25	1	0	0	0	0	0	0	0	69	32.0	27.9
1:00 PM	0	1	6	19	25	3	0	0	0	0	0	0	0	54	33.0	29.4
2:00 PM	0	1	10	38	22	1	0	0	0	0	0	0	0	72	33.0	27.9
3:00 PM	0	1	7	37	33	3	0	0	0	0	0	0	0	81	32.0	28.8
4:00 PM	0	0	12	39	24	3	1	0	0	0	0	0	0	79	32.0	28.4
5:00 PM	0	0	12	26	33	4	0	0	0	0	0	0	0	75	32.9	29.0
6:00 PM	0	0	8	34	19	5	0	0	0	0	0	0	0	66	32.0	28.7
7:00 PM	0	0	5	25	15	0	0	0	0	0	0	0	0	45	31.4	28.1
8:00 PM	1	0	8	16	7	1	1	0	0	0	0	0	0	34	31.0	27.2
9:00 PM	0	0	6	11	6	1	0	0	0	0	0	0	0	24	31.6	27.1
10:00 PM	0	0	0	8	4	1	0	0	0	0	0	0	0	13	31.2	29.2
11:00 PM	0	0	2	2	0	1	0	0	0	0	0	0	0	5	33.0	27.8
Total	3	5	131	396	279	30	3	0	0	0	0	0	0	847	32.0	28.2
Percent	0.35%	0.59%	15.47%	46.75%	32.94%	3.54%	0.35%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			
AM Peak	2:00 AM	10:00 AM	8:00 AM	8:00 AM	11:00 AM	12:00 AM	10:00 AM							8:00 AM		
Volume	1	1	12	23	15	2	1	0	0	0	0	0	0	43		
PM Peak	8:00 PM	12:00 PM	12:00 PM	4:00 PM	3:00 PM	6:00 PM	4:00 PM							3:00 PM		
Volume	1	1	14	39	33	5	1	0	0	0	0	0	0	81		

15th Percentile:	24.0 MPH	Average Speed:	28.2 MPH	Posted Speed Limit:	25 MPH
50th Percentile:	28.0 MPH	10 MPH Pace:	24 to 33 MPH	Number of Vehicles > 25 MPH:	649
85th Percentile:	32.0 MPH	Number in Pace:	696	Percent of Vehicles > 25 MPH:	76.6%
95th Percentile:	34.0 MPH	Percent in Pace:	82.2%		

Sherburne Road
just south of School Driveway
City, State: Portsmouth, NH
Client: TF Moran/ J. Porter
Site Code: 47528.00

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: 239200 ATR-A (Speed)

Count Date
Thursday, March 9, 2023

Speed (60-minute)

SB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	2	26.6	25.5
1:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	1	25.0	25.0
2:00 AM	0	0	2	1	0	0	0	0	0	0	0	0	0	3	24.7	23.3
3:00 AM	0	0	2	0	1	0	0	0	0	0	0	0	0	3	28.2	25.3
4:00 AM	0	1	3	3	0	0	0	0	0	0	0	0	0	7	28.0	24.3
5:00 AM	0	3	10	9	4	1	0	0	0	0	0	0	0	27	30.0	25.0
6:00 AM	0	1	13	17	3	1	0	0	0	0	0	0	0	35	29.0	25.8
7:00 AM	2	5	45	48	9	2	0	0	1	0	0	0	0	112	28.0	25.2
8:00 AM	2	6	38	38	6	3	0	0	0	0	0	0	0	93	28.2	24.9
9:00 AM	0	2	24	21	4	0	0	0	0	0	0	0	0	51	28.0	24.9
10:00 AM	0	2	18	18	5	1	0	0	0	0	0	0	0	44	29.0	25.2
11:00 AM	2	6	16	17	4	0	0	1	0	0	0	0	0	46	29.0	24.5
12:00 PM	0	8	24	22	2	2	0	0	0	0	0	0	0	58	28.0	24.4
1:00 PM	0	2	30	18	4	2	0	0	0	0	0	0	0	56	29.0	25.1
2:00 PM	1	9	28	13	10	0	0	0	0	0	0	0	0	61	30.0	23.9
3:00 PM	2	7	27	17	2	0	0	0	0	0	0	0	0	55	26.0	22.6
4:00 PM	1	3	29	20	7	0	0	0	0	0	0	0	0	60	29.0	24.5
5:00 PM	0	2	32	22	1	4	0	0	0	0	0	0	0	61	28.0	24.9
6:00 PM	1	6	20	11	3	1	0	0	0	0	0	0	0	42	27.0	23.3
7:00 PM	0	0	17	14	2	0	0	0	0	0	0	0	0	33	28.0	25.2
8:00 PM	0	2	5	4	1	0	0	0	0	0	0	0	0	12	27.0	23.6
9:00 PM	0	0	7	4	0	0	0	0	0	0	0	0	0	11	26.5	24.3
10:00 PM	0	0	2	2	0	0	0	0	0	0	0	0	0	4	26.6	25.0
11:00 PM	0	0	4	2	0	0	0	0	0	0	0	0	0	6	27.3	24.8
Total	11	65	397	323	68	17	0	1	1	0	0	0	0	883	28.0	24.6
Percent	1.25%	7.36%	44.96%	36.58%	7.70%	1.93%	0.00%	0.11%	0.11%	0.00%	0.00%	0.00%	0.00%			
AM Peak	7:00 AM	8:00 AM	7:00 AM	7:00 AM	7:00 AM	8:00 AM		11:00 AM	7:00 AM					7:00 AM		
Volume	2	6	45	48	9	3	0	1	1	0	0	0	0	112		
PM Peak	3:00 PM	2:00 PM	5:00 PM	12:00 PM	2:00 PM	5:00 PM								2:00 PM		
Volume	2	9	32	22	10	4	0	0	0	0	0	0	0	61		

15th Percentile:	21.0 MPH	Average Speed:	24.6 MPH	Posted Speed Limit:	25 MPH
50th Percentile:	24.0 MPH	10 MPH Pace:	20 to 29 MPH	Number of Vehicles > 25 MPH:	341
85th Percentile:	28.0 MPH	Number in Pace:	720	Percent of Vehicles > 25 MPH:	38.6%
95th Percentile:	32.0 MPH	Percent in Pace:	81.5%		

Sherburne Road
just south of School Driveway
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Client: TF Moran/ J. Porter
Site Code: 47528.00

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: 239200 ATR-A (Speed)

Count Date
Thursday, March 9, 2023

Speed (60-minute)

Combined NB and SB

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	2	2	3	2	0	0	0	0	0	0	0	9	34.2	29.0
1:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	1	25.0	25.0
2:00 AM	1	0	3	5	0	0	0	0	0	0	0	0	0	9	27.6	23.3
3:00 AM	0	0	2	1	1	0	0	0	0	0	0	0	0	4	29.6	26.3
4:00 AM	0	1	4	3	0	0	0	0	0	0	0	0	0	8	28.0	24.0
5:00 AM	0	3	11	10	5	1	0	0	0	0	0	0	0	30	30.0	25.1
6:00 AM	0	1	14	22	10	2	0	0	0	0	0	0	0	49	31.0	27.0
7:00 AM	2	5	54	69	19	3	0	0	1	0	0	0	0	153	29.2	25.8
8:00 AM	2	6	50	61	14	3	0	0	0	0	0	0	0	136	29.0	25.4
9:00 AM	0	2	28	40	18	0	0	0	0	0	0	0	0	88	31.0	26.4
10:00 AM	0	3	24	41	13	2	1	0	0	0	0	0	0	84	30.0	26.1
11:00 AM	3	6	21	32	19	1	0	1	0	0	0	0	0	83	31.0	26.0
12:00 PM	0	9	38	50	27	3	0	0	0	0	0	0	0	127	31.0	26.3
1:00 PM	0	3	36	37	29	5	0	0	0	0	0	0	0	110	32.0	27.2
2:00 PM	1	10	38	51	32	1	0	0	0	0	0	0	0	133	31.0	26.0
3:00 PM	2	8	34	54	35	3	0	0	0	0	0	0	0	136	31.0	26.3
4:00 PM	1	3	41	59	31	3	1	0	0	0	0	0	0	139	31.0	26.7
5:00 PM	0	2	44	48	34	8	0	0	0	0	0	0	0	136	31.0	27.1
6:00 PM	1	6	28	45	22	6	0	0	0	0	0	0	0	108	31.0	26.6
7:00 PM	0	0	22	39	17	0	0	0	0	0	0	0	0	78	30.5	26.9
8:00 PM	1	2	13	20	8	1	1	0	0	0	0	0	0	46	31.0	26.3
9:00 PM	0	0	13	15	6	1	0	0	0	0	0	0	0	35	30.0	26.2
10:00 PM	0	0	2	10	4	1	0	0	0	0	0	0	0	17	31.0	28.2
11:00 PM	0	0	6	4	0	1	0	0	0	0	0	0	0	11	28.5	26.2
Total	14	70	528	719	347	47	3	1	1	0	0	0	0	1730	31.0	26.3
Percent	0.81%	4.05%	30.52%	41.56%	20.06%	2.72%	0.17%	0.06%	0.06%	0.00%	0.00%	0.00%	0.00%			
AM Peak	11:00 AM	8:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	10:00 AM	11:00 AM	7:00 AM					7:00 AM		
Volume	3	6	54	69	19	3	1	1	1	0	0	0	0	153		
PM Peak	3:00 PM	2:00 PM	5:00 PM	4:00 PM	3:00 PM	5:00 PM	4:00 PM							4:00 PM		
Volume	2	10	44	59	35	8	1	0	0	0	0	0	0	139		

15th Percentile:	22.0 MPH	Average Speed:	26.3 MPH	Posted Speed Limit:	25 MPH
50th Percentile:	26.0 MPH	10 MPH Pace:	22 to 31 MPH	Number of Vehicles > 25 MPH:	990
85th Percentile:	31.0 MPH	Number in Pace:	1327	Percent of Vehicles > 25 MPH:	57.2%
95th Percentile:	33.0 MPH	Percent in Pace:	76.7%		

Sherburne Road
south of School Driveway
City, State: Portsmouth, NH
Client: TF Moran/ J. Porter
Site Code: 47528
Count Date: Thursday, March 9, 2023

TURNS COUNTED BY VIDEO OBSERVATION

	EXISTING SCHOOL DRIVEWAY					
AM	**WBL**	**WBR**	**NBT**	**NBR**	**SBL**	**SBT**
7:30 AM	1,		11	1, 1,		29
7:45 AM	1 (LBus),	-	9	1, 1, 1, 1(LBus),	-	39
8:00 AM	1, 1, 1(BBus),	-	7	1, 1(BBus), 1, 1,	-	30
8:15 AM	1, 1, 1, 1, 1, 1, 1, 1,	1,	10	1, 1, 1, 1, 1, 1, 1,	-	21
AM Total	**13**	**1**	**37**	**17**	**0**	**119**
PM	**WBL**	**WBR**	**NBT**	**NBR**	**SBL**	**SBT**
3:30 PM	1, 1,	-	22	1,	-	17
3:45 PM	1, 1, 1, 1,	-	20	1,	-	13
4:00 PM	-	-	16	-	-	15
4:15 PM	-	-	33	1,	-	10
PM Total	**6**	**0**	**91**	**3**	**0**	**55**

NB							
AM	**Bicycles**	**Motorcycle**	**Cars & Light Goods**	**Buses**	**Single Unit Heavy**	**Multi Unit Heavy**	**Total**
7:30 AM	0	0	12	0	1	0	13
7:45 AM	0	0	11	2	0	0	13
8:00 AM	0	0	10	1	0	0	11
8:15 AM	0	0	16	0	1	0	17
AM Total	**0**	**0**	**49**	**3**	**2**	**0**	**54**
PM	**Bicycles**	**Motorcycle**	**Cars & Light Goods**	**Buses**	**Single Unit Heavy**	**Multi Unit Heavy**	**Total**
3:30 PM	0	0	21	1	0	1	23
3:45 PM	0	0	20	0	1	0	21
4:00 PM	0	0	15	0	1	0	16
4:15 PM	0	0	33	1	0	0	34
PM Total	**0**	**0**	**89**	**2**	**2**	**1**	**94**

SB							
AM	**Bicycles**	**Motorcycle**	**Cars & Light Goods**	**Buses**	**Single Unit Heavy**	**Multi Unit Heavy**	**Total**
7:30 AM	0	0	29	0	1	0	30
7:45 AM	0	0	38	1	1	0	40
8:00 AM	0	0	31	2	0	0	33
8:15 AM	0	0	29	0	0	0	29
AM Total	**0**	**0**	**127**	**3**	**2**	**0**	**132**
PM	**Bicycles**	**Motorcycle**	**Cars & Light Goods**	**Buses**	**Single Unit Heavy**	**Multi Unit Heavy**	**Total**
3:30 PM	0	0	17	1	0	1	19
3:45 PM	0	0	17	0	0	0	17
4:00 PM	0	0	14	0	1	0	15
4:15 PM	0	0	9	1	0	0	10
PM Total	**0**	**0**	**57**	**2**	**1**	**1**	**61**

Intersection of Sherburne Road and School Driveway in Portsmouth, NH

Date of Observation: 9-Mar-23 TFM Job # 47258.00

Sherburne Road Peak Hour: 7:45 AM & 4:15 PM

	Cars and Heavy Vehicles (Combined)									
	SB			WB			NB			
Time	Right	Through	Left	Right	Through	Left	Right	Through	Left	Right
7:30 AM		29	0	0		1	2	11		
7:45 AM		39	0	0		1	4	9		
8:00 AM		30	0	0		3	4	7		
8:15 AM		21	0	1		8	7	10		
Sum=	0	119	0	1	0	13	17	37	0	0

AM PEAK HOUR	**0**	**119**	**0**	**1**	**0**	**13**	**17**	**37**	**0**	**0**

	SB			WB			NB			
Time	Right	Through	Left	Right	Through	Left	Right	Through	Left	Right
3:30 PM		17	0	0		2	1	22		
3:45 PM		13	0	0		4	1	20		
4:00 PM		15	0	0		0	0	16		
4:15 PM		10	0	0		0	1	33		
Sum=	0	55	0	0	0	6	3	91	0	0

PM PEAK HOUR	**0**	**55**	**0**	**0**	**0**	**6**	**3**	**91**	**0**	**0**

Intersection of Sherburne Roac

Date of Observation: 9-Mar-23
Sherburne Road Peak Hour: 7:45 AM & 4:15 F

EB		Totals
Through	Left	Sum
		43
		53
		44
		47
0	0	187
0	**0**	**187**

AM ROADWAY PEAK					
	SB			App TTI	
TIME	Right	Through	Left	APPR.	Right
7:30 AM	0	29	0	29	0
7:45 AM	0	39	0	39	0
8:00 AM	0	30	0	30	0
8:15 AM	0	21	0	21	1
AVE. 15 MIN	0	29.75	0	29.75	0.25
Peak 15 Min	0	39	0	39	1
APPROACH PHF				0.763	

EB		Totals
Through	Left	Sum
		42
		38
		31
		44
0	0	155
0	**0**	**155**

PM ROADWAY PEAK					
	SB			App TTI	
TIME	Right	Through	Left	APPR.	Right
3:30 PM	0	17	0	17	0
3:45 PM	0	13	0	13	0
4:00 PM	0	15	0	15	0
4:15 PM	0	10	0	10	0
AVE. 15 MIN	0	13.75	0	13.75	0
Peak 15 Min	0	17	0	17	0
APPROACH PHF				0.809	

d and School Driveway in Portsmouth, NH

TFM Job # 47258.00

PM

WB		App TTI	NB			App TTI	EB			App TTI
Through	Left	APPR.	Right	Through	Left	APPR.	Right	Through	Left	APPR.
0	1	1	2	11	0	13	0	0	0	0
0	1	1	4	9	0	13	0	0	0	0
0	3	3	4	7	0	11	0	0	0	0
0	8	9	7	10	0	17	0	0	0	0
0	3.25	3.5	4.25	9.25	0	13.5	0	0	0	0
0	8	9	7	11	0	17	0	0	0	0
		0.389				0.794				#DIV/0!

WB		App TTI	NB			App TTI	EB			App TTI
Through	Left	APPR.	Right	Through	Left	APPR.	Right	Through	Left	APPR.
0	2	2	1	22	0	23	0	0	0	0
0	4	4	1	20	0	21	0	0	0	0
0	0	0	0	16	0	16	0	0	0	0
0	0	0	1	33	0	34	0	0	0	0
0	1.5	1.5	0.75	22.75	0	23.5	0	0	0	0
0	4	4	1	33	0	34	0	0	0	0
		0.375				0.691				#DIV/0!

APPENDIX J

NH DOT - SEQUENCE AND TIMING CHART

4/16/2025 1:02:46 PM

CITY/TOWN: PORTSMOUTH **SIGNAL ID#:** S-379-14

LOCATION: NH 33

INTERSECT: BORTHWICK AVE

CABINET TYPE: P TYPE-1 Peek **METER NUMBER and MFR:** 27 415 153 ES

CONTROLLER INFO PEEK 3000E

INSTALL DATE: 10/14/1963 **FIRE PREEMPT** 3M Opticom Model 754

*****CONTROLLER TIMINGS*****

	PH 1	PH 2	PH 3	PH 6
INITIAL	8	8	8	8
PASSAGE	4	4	4	4
YELLOW	4	4	4	4
ALL RED	2	2	2	2
MAXIMUM 1	15	25	50	25
MAXIMUM 2	30	40	30	40
MAXIMUM 3				
MAXIMUM EXT				
RECALL	NL	MIN	NL	MIN
WALK				
DON'T WALK				
FL YEL ARROW				
MOVEMENT	ELT	33W	BORTH	33E
TIME TO REDUCE				
REDUCE BY				
MIN GAP				
DYN MAX LIMI				
DYN MAX STEP				

NOTES:

PRE-EMPT 3M 760 OPTI-COM
PEEK CLP SYSTEM
SYS LOCAL ID 5

M - F 06:00 1/1/1
07:00 2/1/1
09:00 3/1/1
16:00 4/1/1
18:00 1/1/1

1/1/1 80 OFF = 72
24s 28s 28s; 52s 28s

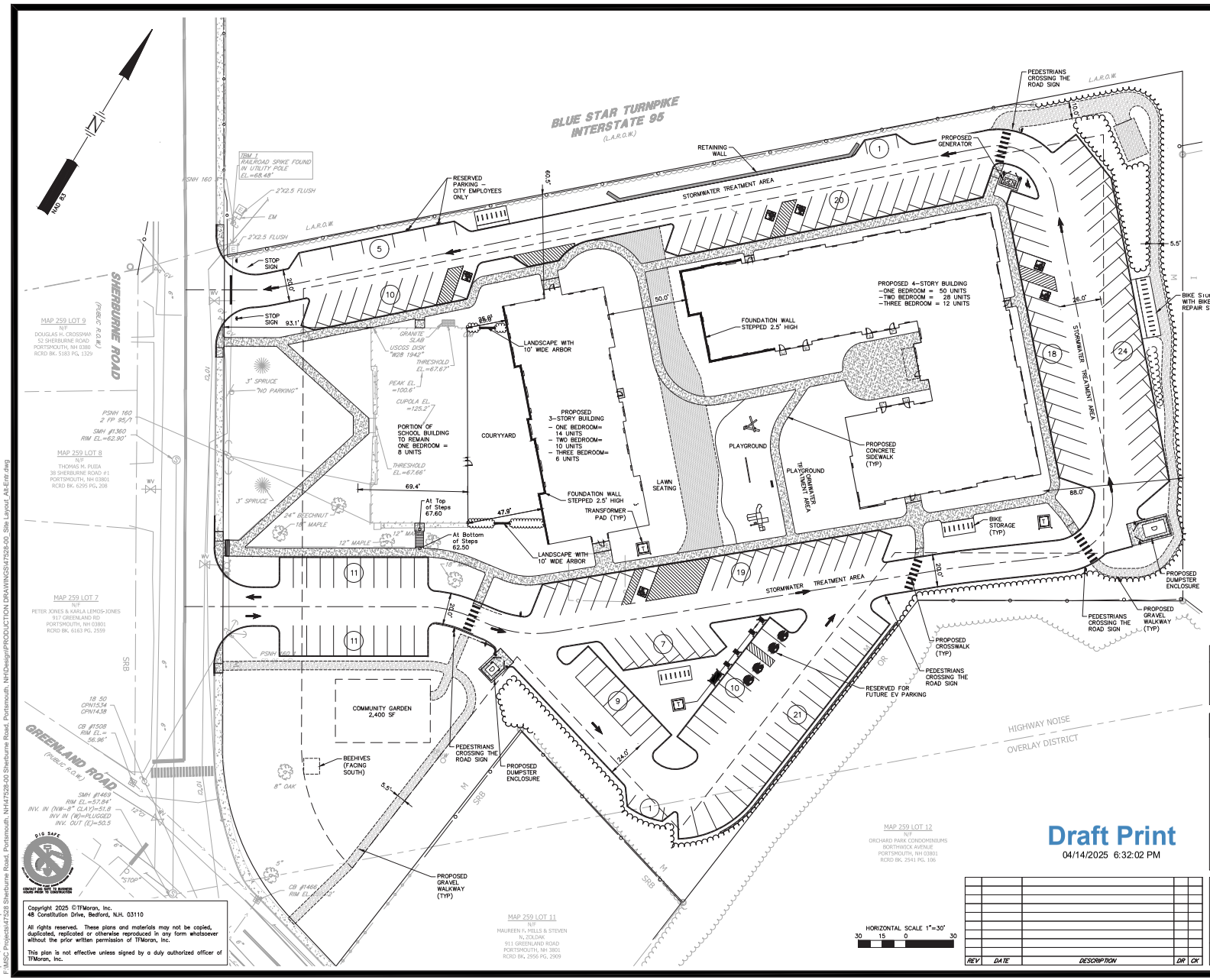
2/1/1 90 OFF = 51
36, 31, 23, 67, 23

SAT 10:00 3/1/1

3/1/1 80 OFF = 75
26s 28s 26s; 54s 26s

SUN 11:00 3/1/1

APPENDIX K



SITE DATA

OWNER OF RECORD OF MAP 259 LOT 10: CITY OF PORTSMOUTH SCHOOLS, PO BOX 628, PORTSMOUTH, NH 03802
DEED REFERENCE TO PARCEL IS BK 2389 PG 1272
AREA OF PARCEL = 232,175± SF OR 5.33± ACRES

ZONED: MUNICIPAL
EXISTING USE: SCHOOL
PROPOSED USE: MIXED USE

THE PURPOSE OF THIS PLAN IS TO CONSTRUCT WORK FORCE HOUSING. ASSOCIATED IMPROVEMENTS INCLUDE AND ARE NOT LIMITED TO ACCESS, GRADING, STORMWATER MANAGEMENT SYSTEMS, UTILITIES, LIGHTING, AND LANDSCAPING.

DIMENSIONAL REQUIREMENTS (CURRENT ZONING)

	REQUIRED:	PROVIDED:
MINIMUM LOT DIMENSIONS:		
LOT AREA	XXX,XXX SF (X.XXX± AC)	232,175± SF (5.33± AC)
LOT FRONTAGE	XXX FT	471.79 FT
DEPTH	XXX FT	606 FT
MINIMUM YARD DIMENSIONS:		
FRONT	NA	XXX FT
SIDE	NA	XXX FT
REAR	NA	XXX FT
MAXIMUM STRUCTURE DIMENSIONS:		
STRUCTURE HEIGHT	NA	38.8 FEET
STRUCTURE STORIES	NA	4 STORIES
ROOF APPURTENANCE HEIGHT	NA	44.1 FT
LOT COVERAGE	NA	54%
MINIMUM SETBACKS/BUFFER:		
BUILDING FRONT	XXX FT	93.1 FT
BUILDING SIDE	XXX FT	48.8 FT
BUILDING REAR	XXX FT	89.5 FT
MINIMUM OPEN SPACE	XXX%	XXX%

PARKING REQUIREMENTS

RESIDENTIAL		
PARKING SPACES (SEE CALCULATION)	170 SPACES	170 RESIDENTIASPACES
OFFICE		
OFFICE	1 SPACES	1 SPACES
MUNICIPAL		
FOR CITY EMPLOYEES	NA	2 SPACE
TOTAL		173 SPACES
ACCESSIBLE SPACES (REQ'D BY ADA)	6 SPACES	6 SPACES
PARKING SPACE SIZE	8.5 FT X 19 FT	8.5 FT X 19 FT
AISLE WIDTH	18–24 FT	18–24 FT

PARKING CALCULATIONS

REQUIRED PARKING RATIO:
RESIDENTIAL: 1.3 SPACES PER UNIT > 750 SF
1 SPACE PER UNIT 600–750 SF
1 VISITOR SPACE PER 5 UNITS OR PORTION THEREOF
OFFICE: 1 SPACES PER UNIT > 350 SF

TOTAL REQUIRED =	59 UNITS * 1.3 SPACES/UNIT	= 69.0 SPACES
	69 UNITS * 1 SPACE	= 53.3 SPACES
	128 UNITS * 1 SPACE/5 UNITS	= 26.0 SPACES
	1 OFFICE * 1 SPACE/OFFICE	= 1.0 SPACES
TOTAL		= 171.3 SPACES

NOTES

1. SEE NOTES ON SHEET C–02.
2. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS NOTED OTHERWISE.
3. LIGHTING, SIGNAGE, LANDSCAPING, AND SCREENING SHALL MEET THE REQUIREMENTS OF THE PORTSMOUTH, NH ZONING ORDINANCE AND SITE PLAN REVIEW REGULATIONS.
4. SNOW SHALL NOT BE STOCKPILED IN STORMWATER BMP'S, WETLAND BUFFERS, OR WETLANDS. SEE SNOW STORAGE LOCATIONS. IN THE EVENT THAT THE SNOW STORAGE AREAS PROVIDED ON THE SITE ARE COMPLETELY UTILIZED, EXCESS SNOW SHALL BE TRANSPORTED OFF SITE FOR DISPOSAL IN ACCORDANCE WITH NHDES REGULATION. IF SNOW IS STORED WITHIN PARKING AREA, KEEP CATCH BASINS CLEAR.

CITY OF PORTMOUTH PLANNING BOARD

CHAIRPERSON *DATE*

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

SITE LAYOUT PLAN

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD
PORTSMOUTH, NEW HAMPSHIRE

OWNED BY
CITY OF PORTSMOUTH SCHOOLS
PREPARED FOR
PORTSMOUTH HOUSING AUTHORITY

1"=60' (11"X17")
SCALE: 1"=30' (22"X34") **JANUARY 29, 2025**

Draft Print
04/14/2025 6:32:02 PM

REV	DATE	DESCRIPTION	DR	CK

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
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Phone (603) 472–4488
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www.tfmoran.com

FILE	DR	JKC	FB	
47528.00	CK	JJM	CAD/REF: 28-00_SITE LAYOUT_ALT-ENTR	C–03

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48 Constitution Drive, Bedford, N.H. 03110

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This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

Noise Assessment

Date: April 15, 2025

Subject Property: Sherburne School Property Redevelopment, Sherburne Road, Portsmouth< NH

Proposed Development: The proposed project at the Sherburne School property includes three distinct areas of development, including the construction of a new four story 90 unit affordable housing apartment building on the eastern end of the property, demolition of a portion of the existing school building and redevelopment with 8 units of housing, and the construction of a new 3-story building with 30 units of affordable housing between the existing school and proposed 4 story building. The project is expected to use funding from the US Department of Housing and Urban Development (HUD) among other sources.

Regulatory Requirements: The property is located on the southeast side of Interstate 95, and within the Portsmouth Highway Noise Overlay District. Standards used by Portsmouth include an interior noise level of 45 decibels for dwellings, and a 65 decibel requirement for outdoor activities, measured at the edge of the active use area closest to the highway. Portsmouth's noise requirements match those of HUD when considered during the completion of an Environmental Review. Note that while HUD requires indoor noise levels of 45 decibels, it also includes a 3 decibel buffer when *assessing* for future for interior noise levels, so that calculated indoor noise levels must be at or less than 42 decibels. Aside from indoor and outdoor noise level requirements, HUD also has Site Acceptability Standards which includes the following categories.

1. **Acceptable:** Site Noise Levels not exceeding 65 decibels. No special approvals or requirements are required.

2. **Normally Unacceptable:** Noise levels between 65 decibels and 75 decibels. Environmental Assessment (EA) level Environmental Review and attenuation required for new construction and strongly recommended for major rehabilitation.

3. **Unacceptable:** Noise levels above 75 decibels. Environmental Impact Statement (EIS) level Environmental Review or EIS waiver and EA level Environmental Review. Attenuation required for new construction.

Portsmouth building regulations require a noise analysis by a registered engineer or qualified analysis, and HUD requires noise analysis using their DNL calculator and documented traffic data.

In fact, HUD prefers calculations over an actual sound measurement assessment. Regarding it's calculator, HUD makes the following statement:

> *The Office of Environmental and Energy (OEE) has developed an electronic assessment tool that calculates the Day/Night Noise Level (DNL) site exposure. This is a web-based application of the existing Noise Assessment Guidelines (NAG). It is the basic noise assessment tool; most assessments start here. The DNL Calculator calculates noise from road and railway activity levels. It then combines the noise with airport projections and incorporates the effects of loud, impulsive sound for a site exposure at any Noise Assessment Location. The user-friendly DNL Calculator can document compliance or aid in site planning.*

SRW has assessed noise at hundreds of locations funded via HUD, and in fact, performed the noise analysis at a property in Bellows Falls, Vermont, that HUD uses for training purposes. This HUD Noise Assessment is considered to be a qualified analysis.

Selection of Noise Assessment Locations (NALs):

The topography at the southwestern side of the property where the current building exists includes a berm which blocks the direct line of sight of the highway from a 6 foot tall observer, and acts as a natural noise buffer. The northeastern side of the property, where the four story building is proposed is more level and the highway can be seen by a 6 foot tall observer. SRW has selected the western wall of the proposed 4 story building as NAL #1 as it is the closest to Interstate I-95 and is not blocked by local topography. NAL #2 is the proposed location of the outdoor activity area (playground).

Noise Sources:

Four major noise sources are considered in the typical HUD Noise Assessment including rail traffic, airport noise, road traffic and loud impulsive sounds. Only road traffic is a major noise source at the subject property, as described below.

Rail traffic is assessed if the active railway is located within 3,000 feet of the subject property. The CSX railway tracks are located approximately 3,000 feet from the eastern edge of the subject property and include only a single daily train. The property is not within the train whistle zone, and there are many natural and manmade buffers to any rail noise between the tracks and subject property. A USDOT Crossing Inventory report for the rail line, which shows the average daily train counts, rail speed, etc., is attached.

Airport noise is assessed based on the noise contours of civil airports. The nearest end of the Pease International Tradeport is runway is located approximately 3,400 feet to the northwest of the subject property. The subject property is located well outside the 60 decibel contour. A

conservative estimated noise contour at the subject property, by extrapolation, would be 55 decibels. SRW has used 55 decibels as a noise level in the HUD noise assessment.

Road noise is assessed based on recorded annual average daily traffic AADT, defined as the mean traffic volume across all days for a year for a given location along a roadway. The most current AADT for Interstate Highway close to the subject property has been computed by the NH Department of Transportation (NHDOT) to be 103,079 in 2024. For the purposes of this assessment, the AADT has been increased by 10% to estimate future noise levels. The 2024 data does not include classification counts which are needed for the HUD DNL calculator. When vehicle classifications are not available, general functional class averages are used to determine the percentage of cars, medium truck and heavy trucks. For the purposes of this assessment 2022 Functional Class Averages were used to determine vehicle classifications for an interstate highway. This data, and the data from the airport, was fed into HUD's DNL Calculator to determine the estimated DNL at both NALs. Note that nighttime traffic is estimated to be 15%, which is HUD's default value. The road grade is estimated to be "0" (using the USGS National Map the average grade of I95 adjacent to the subject property is 0.2-0.3 percent). Results of the DNL calculation are as follows:

NAL #1, Proposed New Building: The computed DNL is 75 decibels from traffic, 33 decibels from rail and 55 decibels from airport noise, for a combined DNL of 75 decibels. The building location is within HUD's Normally Unacceptable Zone. The results indicate that the building must achieve a noise reduction of 30 decibel to meet Portsmouth's Highway Noise Overley District requirements, and 33 decibel to meet HUD's noise assessment requirements.

NAL #2, Proposed Outdoor Activity Area (Playground): The computed DNL is 73 decibels from traffic, 33 decibels from rail and 55 decibels from airport noise, for a combined DNL of 73 decibels. The Outdoor Activity Area is within HUD's Normally Unacceptable Zone. The results indicate that the site's natural and man-made barriers (new buildings) must achieve a noise reduction of 8 decibels to meet Portsmouth's Highway Noise Overley District and HUD's noise requirements.

SRW notes that noise levels at similar frequencies and decibel levels when combined, amplify noise levels to the receiver much more so than the same noises at much different decibel levels. HUD's DNL calculator considers the individual decibel levels in their calculations and automatically adds corrections when needed.

Loud impulse sounds when assessed in accordance with 24 CFR Part 51.103 require that "On an interim basis, when loud impulsive sounds, <u>such as explosions or sonic booms</u>, are experienced at a site, the day-night average sound level produced by the loud impulsive sounds alone shall have 8 decibels added to it in assessing the acceptability of the site." The subject is not subject to loud impulsive sounds.

Copies of the HUD DNL calculations are attached.

Anticipated Indoor Noise Levels :

The worst case noise level at the building exterior has been calculated to be 75 decibels, and this data was used in HUD's Sound Transmission Classification Assessment Tool (STraCAT). STraCAT is used to document sound attenuation performance of wall systems. Based on wall, window. and door Sound Transmission Classification (STC values, the STraCAT generates a composite STC value for the wall assembly as a whole). Variables for our STraCAT analysis include the lowest STC values for standard construction materials to be ultra conservative, but actual building materials may have higher, sometimes significantly higher, STC values. Thus, the results of the STraCAT analysis is considered to be the minimal requirements to meet Portsmouth and HUD regulations. For the proposed 4 story building, construction materials considered include a standard 2 x 6 wood construction with fiberglass insulation for exterior walls (STC of 38), and fifty-six (56) 4' x 3' windows facing the noise source (using an STC of 27). Results of the STraCAT analysis indicates an attenuation of approximately 33.1 decibels, which would result in an interior noise level of approximately 41.9 decibels. Any materials with higher STC ratings will increase the total STC of the wall unit. For example, in general, replacing fiberglass bats with dense cellulose results in an increase of approximately 5 STC points for wall consrtuction.

Note that the STCs of the wall unit components are estimated using information from the National Gypsum Acoustical Assembly Guide. STCs of window and door units were provided by one vendor (Marvin Industries), which are representative STC ratings throughout the window and door industry.

The purpose of the STraCAT analysis is to show what sound reduction is possible using readily available materials, and that interior noise levels of 45 decibels is easily achievable. It does not represent what materials are actually being considered for the project. Additional noise mitigation is possible if choosing higher noise reducing materials. Given the easily achievable interior noise level of 45 decibels, the project will meet the indoor noise requirements of the City of Portsmouth and HUD.

A copy of HUD's STraCAT analysis is attached.

Anticipated Outdoor Activity Area Noise Levels:

Since calculated outdoor noise levels at the Outdoor Activity Area is expected to be 73 decibels, the HUD barrier module was completed. This module provides a measure on the barrier's effectiveness on noise reduction. The purpose of the noise barrier is to provide mitigation to the noise observer, which in this case is considered a 6 foot person standing at the edge of the outdoor activity area closest to Interstate 95. The barrier heigh input is based on the natural berm on the northwestern side of the property, which provides much lower noise attenuation than the buildings will. For the purposes of worst case calculations, the same barrier height (the height of the berm) is assumed along the entire length of the western side of the property, even though a

large portion of the property will have a much higher barrier height from the buildings. The barrier module, using only the berm height and no buildings, calculates the noise exposure at the Outdoor Activity Area to be approximately 64 decibels. In reality, given the increased height of the barrier, the new buildings will provide additional *significant* attenuation, up to another 5 decibels, which will result in a much lower noise exposure after completion of all phases of the project.

Given the easily achievable exterior noise level of 65 decibels at Outdoor Activity Areas, the project will meet the outdoor noise requirements of the City of Portsmouth and HUD.

A copy of the barrier module calculations is attached.

Summary: The proposed project is within the Portsmouth Highway Noise Overlay District and with HUD's Normally Unacceptable zone. However, it has been shown that interior noise levels will meet the 45 decibel standard, and that outdoor Areas of Activities will meet the 65 decibel standards of both the City of Portsmouth and HUD upon completion. Details of actual construction and site layout will be required to use building materials with at least the STC ratings of the materials used when completing this assessment.

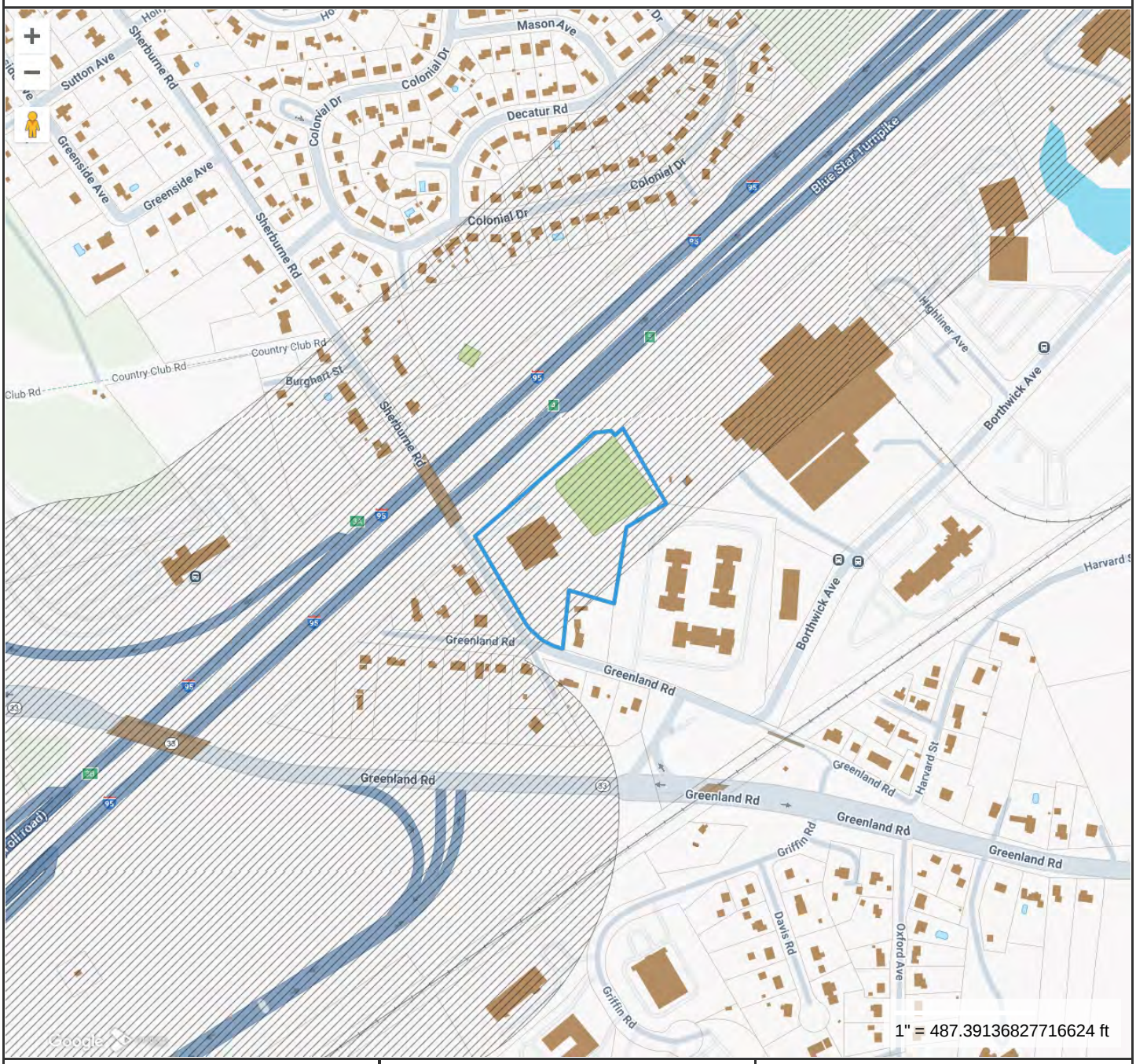
SRW Environmental Consulting, LLC

Todd Scheffer

Todd Scheffer, P.G.
Principal

Property Location within Highway Noise District Overlay

Highway Noise Overlay



Property Information

Property ID	0259-0010-0000
Location	35 SHERBURNE RD
Owner	CITY OF PORTSMOUTH

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

City of Portsmouth, NH makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated 09/26/2024

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

Portsmouth and HUD Noise Requirements

Standards

Structures and Uses	Loudest Traffic Hour Sound Level
Interior of dwelling, institutional residence or care facility, hospital or lodging establishment	45 dBA
Interior of other noise sensitive use	55 dBA
Uses with outdoor activities, measured at edge of the active use area closest to the highway	65 dBA

Requirements

- Conditional use permit required for all noise sensitive uses
  - Exceptions: addition to or expansion of a single-family or two-family dwelling that does not increase the footprint by more than 25% (similar to existing exception for conditional uses in wetland buffers)
- Noise analysis by registered engineer or qualified analysis
- Mitigation where necessary to achieve noise level standards

Noise Abatement and Control

Introduction

HUD's noise standards may be found in 24 CFR Part 51, Subpart B. For proposed new construction in high noise areas, the project must incorporate noise mitigation features. Consideration of noise applies to the acquisition of undeveloped land and existing development as well.

All sites whose environmental or community noise exposure exceeds the day night average sound level (DNL) of 65 decibels (dB) are considered noise-impacted areas. For new construction that is proposed in high noise areas, grantees shall incorporate noise attenuation features to the extent required by HUD environmental criteria and standards contained in Subpart B (Noise Abatement and Control) of 24 CFR Part 51. The interior standard is 45dB.

The "Normally Unacceptable" noise zone includes community noise levels from above 65 decibels to 75 decibels. Approvals in this noise zone require a minimum of 5 dB additional sound attenuation for buildings having noise-sensitive uses if the day-night average sound level is greater than 65 dB but does not exceed 70 dB, or a minimum of 10 decibels of additional sound attenuation if the day-night average sound level is greater than 70 dB but does not exceed 75 dB.

Locations with day-night average noise levels above 75 dB have "Unacceptable" noise exposure. For new construction, noise attenuation measures in these locations require the approval of the Assistant Secretary for Community Planning and Development (for projects reviewed under Part 50) or the Responsible Entity's Certifying Officer (for projects reviewed under Part 58). The acceptance of such locations normally requires an environmental impact statement.

In "Unacceptable" noise zones, HUD strongly encourages conversion of noise-exposed sites to land uses compatible with the high noise levels.

HUD Guidance

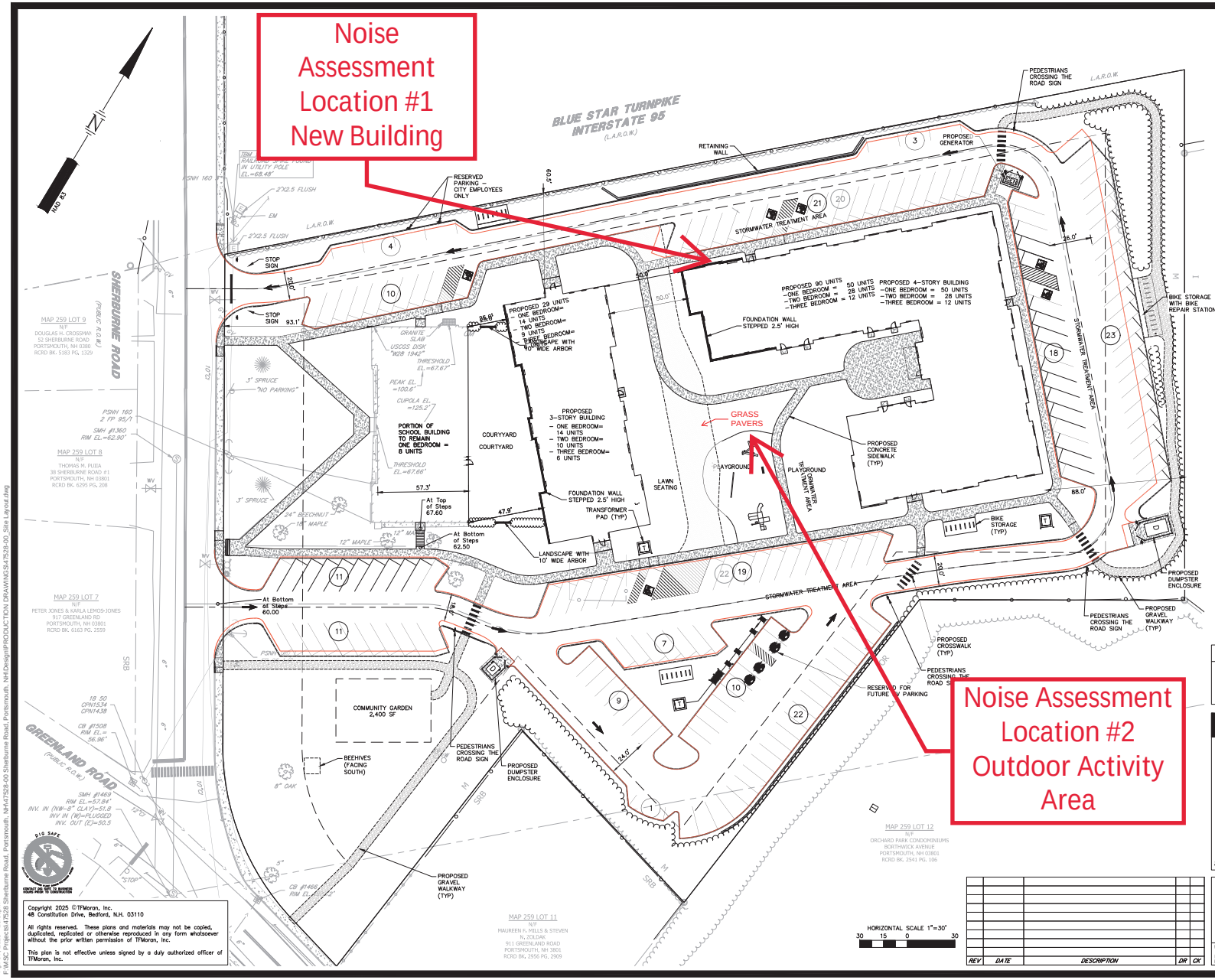
Are there potential noise generators in the vicinity of the project? Review general location maps and/or conduct a field review to screen for major roadways (within 1,000 feet), railroads (within 3,000 feet), and military or FAA-regulated airfields (with 15 miles) in the vicinity of the project.

If a noise assessment was performed, was the noise found to be Acceptable, Normally Unacceptable, or Unacceptable?

Site Acceptability Standards

Noise Zone	Day-Night Average Sound Level (in Decibels)	Special Approvals and Requirements
Acceptable	Not exceeding 65 dB	None
Normally Unacceptable	Above 65 dB but not exceeding 75 dB	• Environmental assessment and attenuation required for new construction • Attenuation strongly encouraged for major rehabilitation Note: An environmental impact statement is required if the project site is largely undeveloped or will encourage incompatible development.
Unacceptable	Above 75 dB	• Environmental impact statement required • Attenuation required for new construction with approval by the Assistant Secretary of CPD or Certifying Officer

Noise Assessment Location Map



SITE DATA

OWNER OF RECORD OF MAP 259 LOT 10: CITY OF PORTSMOUTH SCHOOLS, PO BOX 628, PORTSMOUTH, NH 03802
DEED REFERENCE TO PARCEL IS BK 2389 PG 1272
AREA OF PARCEL = 232,175± SF OR 5.33± ACRES

ZONED: MUNICIPAL
EXISTING USE: SCHOOL
PROPOSED USE: MIXED USE

THE PURPOSE OF THIS PLAN IS TO CONSTRUCT WORK FORCE HOUSING. ASSOCIATED IMPROVEMENTS INCLUDE AND ARE NOT LIMITED TO ACCESS, GRADING, STORMWATER MANAGEMENT SYSTEMS, UTILITIES, LIGHTING, AND LANDSCAPING.

DIMENSIONAL REQUIREMENTS (CURRENT ZONING)

	REQUIRED:	PROVIDED:
MINIMUM LOT DIMENSIONS:		
LOT AREA	XXX,XXX SF (X.XXX± AC)	232,175± SF (5.33± AC)
LOT FRONTAGE	XXX FT	471.79 FT
DEPTH	XXX FT	606 FT
MINIMUM YARD DIMENSIONS:		
FRONT	NA	XXX FT
SIDE	NA	XXX FT
REAR	NA	XXX FT
MAXIMUM STRUCTURE DIMENSIONS:		
STRUCTURE HEIGHT	NA	38.8 FEET
STRUCTURE STORIES	NA	4 STORIES
ROOF APPURTENANCE HEIGHT	NA	44.1 FT
LOT COVERAGE	NA	54%
MINIMUM SETBACKS/BUFFER:		
BUILDING FRONT	XXX FT	93.1 FT
BUILDING SIDE	XXX FT	48.8 FT
BUILDING REAR	XXX FT	89.5 FT
MINIMUM OPEN SPACE	XXX%	XXX%

PARKING REQUIREMENTS

RESIDENTIAL		
PARKING SPACES (SEE CALCULATION)	170 SPACES	170 RESIDENTIASPACES
OFFICE		
OFFICE	1 SPACES	1 SPACES
MUNICIPAL		
FOR CITY EMPLOYEES	NA	2 SPACE
TOTAL		173 SPACES
ACCESSIBLE SPACES (REQ'D BY ADA)	6 SPACES	6 SPACES
PARKING SPACE SIZE	8.5 FT X 19 FT	8.5 FT X 19 FT
AISLE WIDTH	18–24 FT	18–24 FT

PARKING CALCULATIONS

REQUIRED PARKING RATIO:
RESIDENTIAL: 1.3 SPACES PER UNIT > 750 SF
1 SPACE PER UNIT 600–750 SF
1 VISITOR SPACE PER 5 UNITS OR PORTION THEREOF
OFFICE: 1 SPACES PER UNIT > 350 SF

TOTAL REQUIRED =	59 UNITS * 1.3 SPACES/UNIT	=	69.0 SPACES
	69 UNITS * 1 SPACE	=	53.3 SPACES
	128 UNITS * 1 SPACE/5 UNITS	=	26.0 SPACES
	1 OFFICE * 1 SPACE/OFFICE	=	1.0 SPACES
TOTAL		=	171.3 SPACES

NOTES

1. SEE NOTES ON SHEET C–02.
2. ALL DIMENSIONS ARE TO THE FACE OF CURB UNLESS NOTED OTHERWISE.
3. LIGHTING, SIGNAGE, LANDSCAPING, AND SCREENING SHALL MEET THE REQUIREMENTS OF THE PORTSMOUTH, NH ZONING ORDINANCE AND SITE PLAN REVIEW REGULATIONS.
4. SNOW SHALL NOT BE STOCKPILED IN STORMWATER BMP'S, WETLAND BUFFERS, OR WETLANDS. SEE SNOW STORAGE LOCATIONS. IN THE EVENT THAT THE SNOW STORAGE AREAS PROVIDED ON THE SITE ARE COMPLETELY UTILIZED, EXCESS SNOW SHALL BE TRANSPORTED OFF SITE FOR DISPOSAL IN ACCORDANCE WITH NHDES REGULATION. IF SNOW IS STORED WITHIN PARKING AREA, KEEP CATCH BASINS CLEAR.

CITY OF PORTSMOUTH PLANNING BOARD

CHAIRPERSON DATE

SITE DEVELOPMENT PLANS

TAX MAP 259 LOT 10

SITE LAYOUT PLAN

PROPOSED HOUSING DEVELOPMENT

35 SHERBURNE ROAD
PORTSMOUTH, NEW HAMPSHIRE

OWNED BY
CITY OF PORTSMOUTH SCHOOLS
PREPARED FOR
PORTSMOUTH HOUSING AUTHORITY

1"=60' (11"X17")
SCALE: 1"=30' (22"X34") JANUARY 29, 2025

REV	DATE	DESCRIPTION	DR	CK

TFM
Civil Engineers
Structural Engineers
Traffic Engineers
Land Surveyors
Landscape Architects
Scientists
48 Constitution Drive
Bedford, NH 03110
Phone (603) 472–4488
Fax (603) 472–9747
www.tfmoran.com

FILE	DR	JKC	FB		
47528.00	CK	JJM	CADFILE	47528–00_SITE LAYOUT	C–03

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48 Constitution Drive, Bedford, N.H. 03110

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This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.

Apr 07, 2025 - 10:30am
P:\MSC Projects\47528 Sherburne Road, Portsmouth, NH\47528-00 Sherburne Road, Portsmouth, NH\Design\PRODUCTION DRAWINGS\47528-00_Site Layout.dwg

SITE LAYOUT PLAN

HUD DNL Calculator Results

Noise Assessment Location #1 New Building

Site ID	Sherburne School
Record Date	04/14/2025
User's Name	TAS

Road # 1 Name:	**Interstate I95**

Road #1

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☑
Effective Distance	216	216	216
Distance to Stop Sign			
Average Speed	55	55	55
Average Daily Trips (ADT)	96560	8312	7790
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	68	67	73
Calculate Road #1 DNL	75	Reset	

Railroad #1 Track Identifier:	**CSX Transportation**

Rail # 1

Train Type	**Electric** ☐	**Diesel** ☑

Effective Distance		3000
Average Train Speed		10
Engines per Train		2
Railway cars per Train		50
Average Train Operations (ATO)		1
Night Fraction of ATO		0
Railway whistles or horns?	Yes: ☐ No: ☐	Yes: ☐ No: ☑
Bolted Tracks?	Yes: ☐ No: ☐	Yes: ☑ No: ☐
Train DNL	0	33
Calculate Rail #1 DNL	33	Reset

Add Road Source | Add Rail Source

Airport Noise Level	55
Loud Impulse Sounds?	○ **Yes** ◉ **No**
Combined DNL for all Road and Rail sources	**75**
Combined DNL including Airport	**75**
Site DNL with Loud Impulse Sound	

Calculate | Reset

Noise Assessment Location #2 Playground

Site ID	Sherburne School
Record Date	04/14/2025
User's Name	TAS

Road # 1 Name:	**Interstate I95**

Road #1

Vehicle Type	**Cars** ☑	**Medium Trucks** ☑	**Heavy Trucks** ☑
Effective Distance	316	316	316
Distance to Stop Sign			
Average Speed	55	55	55
Average Daily Trips (ADT)	96560	8312	7790
Night Fraction of ADT	15	15	15
Road Gradient (%)			0
Vehicle DNL	66	65	71
Calculate Road #1 DNL	73	Reset	

Railroad #1 Track Identifier:	**CSX Transportation**

Rail # 1

Train Type	**Electric** ☐	**Diesel** ☑

Effective Distance		3000
Average Train Speed		10
Engines per Train		2
Railway cars per Train		50
Average Train Operations (ATO)		1
Night Fraction of ATO		0
Railway whistles or horns?	Yes: ☐ No: ☐	Yes: ☐ No: ☑
Bolted Tracks?	Yes: ☐ No: ☐	Yes: ☑ No: ☐
Train DNL	0	33
Calculate Rail #1 DNL	33	Reset

Add Road Source | Add Rail Source

Airport Noise Level	55
Loud Impulse Sounds?	○ **Yes** ◉ **No**
Combined DNL for all Road and Rail sources	**73**
Combined DNL including Airport	**73**
Site DNL with Loud Impulse Sound	

Calculate | Reset

USDOT Railroad Crossing Inventory

U. S. DOT CROSSING INVENTORY FORM

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

OMB No. 2130-0017

Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For Private pathway grade crossings, complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I, and the Submission Information section. For changes to existing data, complete the Header, Part I Items 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I Item 20 and Part III Item 2.K. are required unless otherwise noted. An asterisk * denotes an optional field.

A. Revision Date *(MM/DD/YYYY)*: 10 / 24 / 2023

B. Reporting Agency: ☒ Railroad ☐ Transit ☐ State ☐ Other

C. Reason for Update *(Select only one)*: ☒ Change in Data ☐ New Crossing ☐ Closed ☐ No Train Traffic ☐ Quiet Zone Update ☐ Re-Open ☐ Date Change Only ☐ Change in Primary Operating RR ☐ Admin. Correction

D. DOT Crossing Inventory Number: 054410Y

Part I: Location and Classification Information

1. Primary Operating Railroad: CSX Transportation [CSX]

2. State: NEW HAMPSHIRE

3. County: ROCKINGHAM

4. City / Municipality: ☒ In ☐ Near PORTSMOUTH

5. Street/Road Name & Block Number: BARBERRY LN *(Street/Road Name)* | * *(Block Number)*

6. Highway Type & No.: LS-258

7. Do Other Railroads Operate a Separate Track at Crossing? ☐ Yes ☒ No
If Yes, Specify RR

8. Do Other Railroads Operate Over Your Track at Crossing? ☐ Yes ☒ No
If Yes, Specify RR

9. Railroad Division or Region: ☐ None NEW ENGLAND

10. Railroad Subdivision or District: ☐ None PORTLAND

11. Branch or Line Name: ☐ None PORTSMOUTH BR

12. RR Milepost: PMT *(prefix)* | 0004.923 *(nnnn.nnn)* | *(suffix)*

13. Line Segment *

14. Nearest RR Timetable Station *: EMERY

15. Parent RR *(if applicable)*: ☒ N/A

16. Crossing Owner *(if applicable)*: ☒ N/A

17. Crossing Type: ☒ Public ☐ Private

18. Crossing Purpose: ☒ Highway ☐ Pathway, Ped. ☐ Station, Ped.

19. Crossing Position: ☒ At Grade ☐ RR Under ☐ RR Over

20. Public Access *(if Private Crossing)*: ☐ Yes ☐ No

21. Type of Train: ☒ Freight ☐ Transit ☐ Intercity Passenger ☐ Shared Use Transit ☐ Commuter ☐ Tourist/Other

22. Average Passenger Train Count Per Day: ☐ Less Than One Per Day ☐ Number Per Day 0

23. Type of Land Use: ☐ Open Space ☐ Farm ☒ Residential ☐ Commercial ☐ Industrial ☐ Institutional ☐ Recreational ☐ RR Yard

24. Is there an Adjacent Crossing with a Separate Number? ☐ Yes ☒ No If Yes, Provide Crossing Number

25. Quiet Zone *(FRA provided)*: ☒ No ☐ 24 Hr ☐ Partial ☐ Chicago Excused Date Established

26. HSR Corridor ID: ☒ N/A

27. Latitude in decimal degrees *(WGS84 std: nn.nnnnnnn)*: 43.0657219

28. Longitude in decimal degrees *(WGS84 std: -nnn.nnnnnnn)*: -70.7793485

29. Lat/Long Source: ☒ Actual ☐ Estimated

30.A. Railroad Use *

31.A. State Use *: AADT ESTIMATED

30.B. Railroad Use *

31.B. State Use *

30.C. Railroad Use *

31.C. State Use *

30.D. Railroad Use *: Original MP: P 9.0766

31.D. State Use *

32.A. Narrative *(Railroad Use)* *

32.B. Narrative *(State Use)* *: VERIFIED

33. Emergency Notification Telephone No. *(posted)*: 800-232-0144

34. Railroad Contact *(Telephone No.)*: 904-366-3051

35. State Contact *(Telephone No.)*: 603-271-2468

Part II: Railroad Information

1. Estimated Number of Daily Train Movements

1.A. Total Day Thru Trains *(6 AM to 6 PM)*: 1

1.B. Total Night Thru Trains *(6 PM to 6 AM)*: 0

1.C. Total Switching Trains: 0

1.D. Total Transit Trains: 0

1.E. Check if Less Than One Movement Per Day ☐
How many trains per week?

2. Year of Train Count Data *(YYYY)*: 2023

3. Speed of Train at Crossing
3.A. Maximum Timetable Speed *(mph)*: 10
3.B. Typical Speed Range Over Crossing *(mph)* From 10 to 10

4. Type and Count of Tracks
Main 1 Siding 0 Yard 0 Transit 0 Industry 0

5. Train Detection *(Main Track only)*
☐ Constant Warning Time ☐ Motion Detection ☐ AFO ☐ PTC ☐ DC ☐ Other ☒ None

6. Is Track Signaled? ☐ Yes ☒ No

7.A. Event Recorder ☐ Yes ☒ No

7.B. Remote Health Monitoring ☐ Yes ☒ No

U. S. DOT CROSSING INVENTORY FORM

A. Revision Date *(MM/DD/YYYY)* 10/24/2023	PAGE 2	D. Crossing Inventory Number *(7 char.)* 054410Y

Part III: Highway or Pathway Traffic Control Device Information

1. Are there Signs or Signals? ☒ Yes ☐ No

2. Types of Passive Traffic Control Devices associated with the Crossing

2.A. Crossbuck Assemblies *(count)* 2

2.B. STOP Signs *(R1-1) (count)* 2

2.C. YIELD Signs *(R1-2) (count)* 0

2.D. Advance Warning Signs *(Check all that apply; include count)* ☒ None
☐ W10-1 _____ ☐ W10-3 _____ ☐ W10-11 _____
☐ W10-2 _____ ☐ W10-4 _____ ☐ W10-12 _____

2.E. Low Ground Clearance Sign *(W10-5)*
☐ Yes *(count_____)*
☒ No

2.F. Pavement Markings
☐ Stop Lines ☐ Dynamic Envelope
☐ RR Xing Symbols ☒ None

2.G. Channelization Devices/Medians
☐ All Approaches ☐ Median
☐ One Approach ☒ None

2.H. EXEMPT Sign *(R15-3)*
☐ Yes
☒ No

2.I. ENS Sign *(I-13)* Displayed
☒ Yes
☐ No

2.J. Other MUTCD Signs ☐ Yes ☒ No
Specify Type _____ Count _____
Specify Type _____ Count _____
Specify Type _____ Count _____

2.K. Private Crossing Signs *(if private)*
☐ Yes ☐ No

2.L. LED Enhanced Signs *(List types)*

3. Types of Train Activated Warning Devices at the Grade Crossing *(specify count of each device for all that apply)*

3.A. Gate Arms *(count)*
Roadway 0
Pedestrian 0

3.B. Gate Configuration
☐ 2 Quad ☐ Full *(Barrier)* Resistance
☐ 3 Quad
☐ 4 Quad ☐ Median Gates

3.C. Cantilevered *(or Bridged)* Flashing Light Structures *(count)*
Over Traffic Lane 0 ☐ Incandescent
Not Over Traffic Lane 0 ☐ LED

3.D. Mast Mounted Flashing Lights *(count of masts)* 0
☐ Incandescent ☐ LED
☐ Back Lights Included ☐ Side Lights Included

3.E. Total Count of Flashing Light Pairs 0

3.F. Installation Date of Current Active Warning Devices: *(MM/YYYY)*
_____/_____ ☒ Not Required

3.G. Wayside Horn
☐ Yes Installed on *(MM/YYYY)* _____/_____
☒ No

3.H. Highway Traffic Signals Controlling Crossing
☐ Yes ☒ No

3.I. Bells *(count)* 0

3.J. Non-Train Active Warning
☐ Flagging/Flagman ☐ Manually Operated Signals ☐ Watchman ☐ Floodlighting ☒ None

3.K. Other Flashing Lights or Warning Devices
Count 0 Specify type _____

4.A. Does nearby Hwy Intersection have Traffic Signals?
☐ Yes ☒ No

4.B. Hwy Traffic Signal Interconnection
☒ Not Interconnected
☐ For Traffic Signals
☐ For Warning Signs

4.C. Hwy Traffic Signal Preemption
☐ Simultaneous
☐ Advance

5. Highway Traffic Pre-Signals
☐ Yes ☒ No
Storage Distance * _____
Stop Line Distance * _____

6. Highway Monitoring Devices *(Check all that apply)*
☐ Yes - Photo/Video Recording
☐ Yes – Vehicle Presence Detection
☒ None

Part IV: Physical Characteristics

1. Traffic Lanes Crossing Railroad
☐ One-way Traffic
☒ Two-way Traffic
☐ Divided Traffic
Number of Lanes 1

2. Is Roadway/Pathway Paved?
☒ Yes ☐ No

3. Does Track Run Down a Street?
☐ Yes ☒ No

4. Is Crossing Illuminated? *(Street lights within approx. 50 feet from nearest rail)* ☐ Yes ☒ No

5. Crossing Surface *(on Main Track, multiple types allowed)* Installation Date * *(MM/YYYY)* _____/_____ Width * _____ Length * _____
☐ 1 Timber ☒ 2 Asphalt ☐ 3 Asphalt and Timber ☐ 4 Concrete ☐ 5 Concrete and Rubber ☐ 6 Rubber ☐ 7 Metal
☐ 8 Unconsolidated ☐ 9 Composite ☐ 10 Other *(specify)* _____

6. Intersecting Roadway within 500 feet?
☐ Yes ☒ No If Yes, Approximate Distance *(feet)* _____

7. Smallest Crossing Angle
☐ 0° – 29° ☒ 30° – 59° ☐ 60° - 90°

8. Is Commercial Power Available? *
☒ Yes ☐ No

Part V: Public Highway Information

1. Highway System
☐ (01) Interstate Highway System
☐ (02) Other Nat Hwy System (NHS)
☐ (03) Federal AID, Not NHS
☒ (08) Non-Federal Aid

2. Functional Classification of Road at Crossing
☐ (0) Rural ☒ (1) Urban
☐ (1) Interstate ☐ (5) Major Collector
☐ (2) Other Freeways and Expressways
☐ (3) Other Principal Arterial ☐ (6) Minor Collector
☐ (4) Minor Arterial ☒ (7) Local

3. Is Crossing on State Highway System?
☐ Yes ☒ No

4. Highway Speed Limit 30 MPH
☒ Posted ☐ Statutory

5. Linear Referencing System *(LRS Route ID)* *

6. LRS Milepost *

7. Annual Average Daily Traffic *(AADT)*
Year 2009 AADT 000560

8. Estimated Percent Trucks 00 %

9. Regularly Used by School Buses?
☐ Yes ☒ No Average Number per Day _____

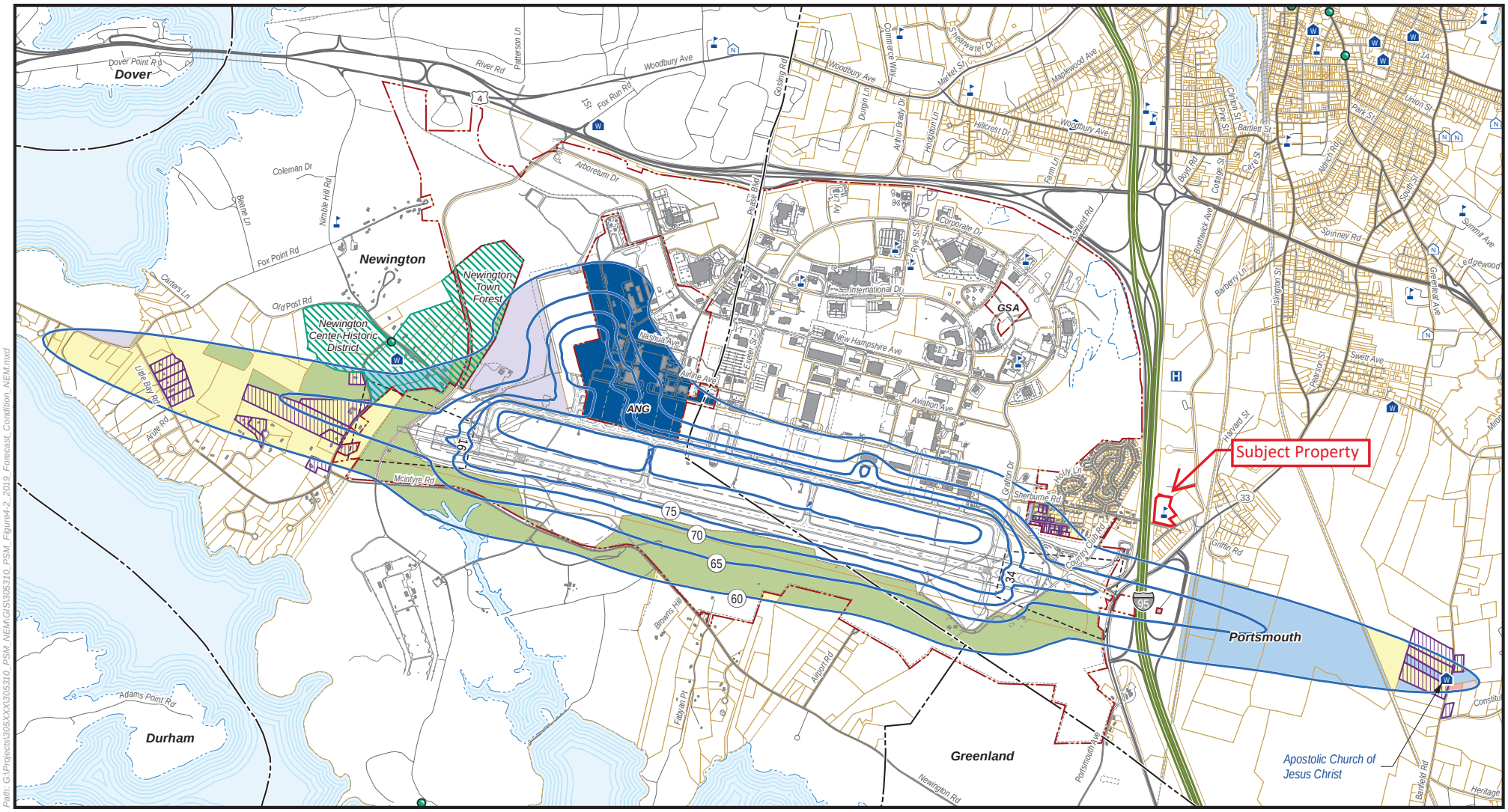
10. Emergency Services Route
☐ Yes ☐ No

Submission Information - *This information is used for administrative purposes and is not available on the public website.*

Submitted by _____ Organization _____ Phone _____ Date _____

Public reporting burden for this information collection is estimated to average 30 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed and completing and reviewing the collection of information. According to the Paperwork Reduction Act of 1995, a federal agency may not conduct or sponsor, and a person is not required to, nor shall a person be subject to a penalty for failure to comply with, a collection of information unless it displays a currently valid OMB control number. The valid OMB control number for information collection is 2130-0017. Send comments regarding this burden estimate or any other aspect of this collection, including for reducing this burden to: Information Collection Officer, Federal Railroad Administration, 1200 New Jersey Ave. SE, MS-25 Washington, DC 20590.

DNL Map Pease International Tradeport



2019 DNL Contour

Airport Boundary (Approximate)

Municipal Boundary

Water

Highway

Major Roads

Local Roads

Railroad

School

Place of Worship

Hospital

Nursing Home/Assisted Living

Residential Use

Public Use

Commercial Use

Manufacturing and Production

Recreational / Open Space

Air National Guard

Sound Insulated

Parcel Boundary

National Register Historic Place

National Register Historic District

Note: Land uses within the 65 dB DNL contour marked as "Sound Insulated" are compatible.

0 2,000 4,000 Feet

PORTSMOUTH INTERNATIONAL AIRPORT

Portsmouth, New Hampshire

2019 Five-Year Forecast Conditions Noise Exposure Map

Figure 4-2

HARRIS MILLER MILLER & HANSON INC.

Data for Road Noise Calculations
NHDOT AADT Data, 2022 Vehicle Classification Averages
Road Grade (USGS National Map)

Traffic Count (TCDS)

Home | Locate | Locate All | Email This | Auto-Locate:

List View | All DIRs

Record 1 of 1 Goto Record go

Fnct'l Class	Interstate	Milepost	
Located On	Interstate 95 S		
Loc On Alias	I-95 BETWEEN EXITS 3-4 (SB-NB) (81379062-81379061)		

More Detail

STATION DATA

Directions: 2-WAY NB SB

AADT

	Year	AADT	DHV-30	K %	D %	PA	BC	Src
	2024	53,441[3]				49,487 (93%)	3,954 (7%)	Grown from 2023
	2023	52,393[3]				48,673 (93%)	3,720 (7%)	Grown from 2022
	2022	51,215[3]				47,989 (94%)	3,226 (6%)	Grown from 2021
	2021	50,260[3]						Grown from 2020
	2020	45,320[3]						Grown from 2019

|<< < > >>| 1-5 of 13

VOLUME COUNT

	Date	Int	Total
	Wed 6/2/1993	60	34,334
	Tue 6/1/1993	60	41,589
	Mon 5/31/1993	60	61,980
	Sun 5/30/1993	60	38,984
	Sat 5/29/1993	60	31,537
	Fri 5/28/1993	60	37,629
	Thu 5/27/1993	60	35,951
	Wed 5/26/1993	60	34,946
	Tue 5/25/1993	60	33,443
-	Mon 5/24/1993	-	

|<< < > >>| 1-10 of 12

mm / dd / yyyy To Date

VOLUME TREND

Year	Annual Growth
2024	2%
2023	2%
2022	2%
2021	11%
2020	-16%
2019	1%
2018	2%
2017	2%
2016	2%
2015	0%

|<< < > >>| 1-10 of 12

SPEED

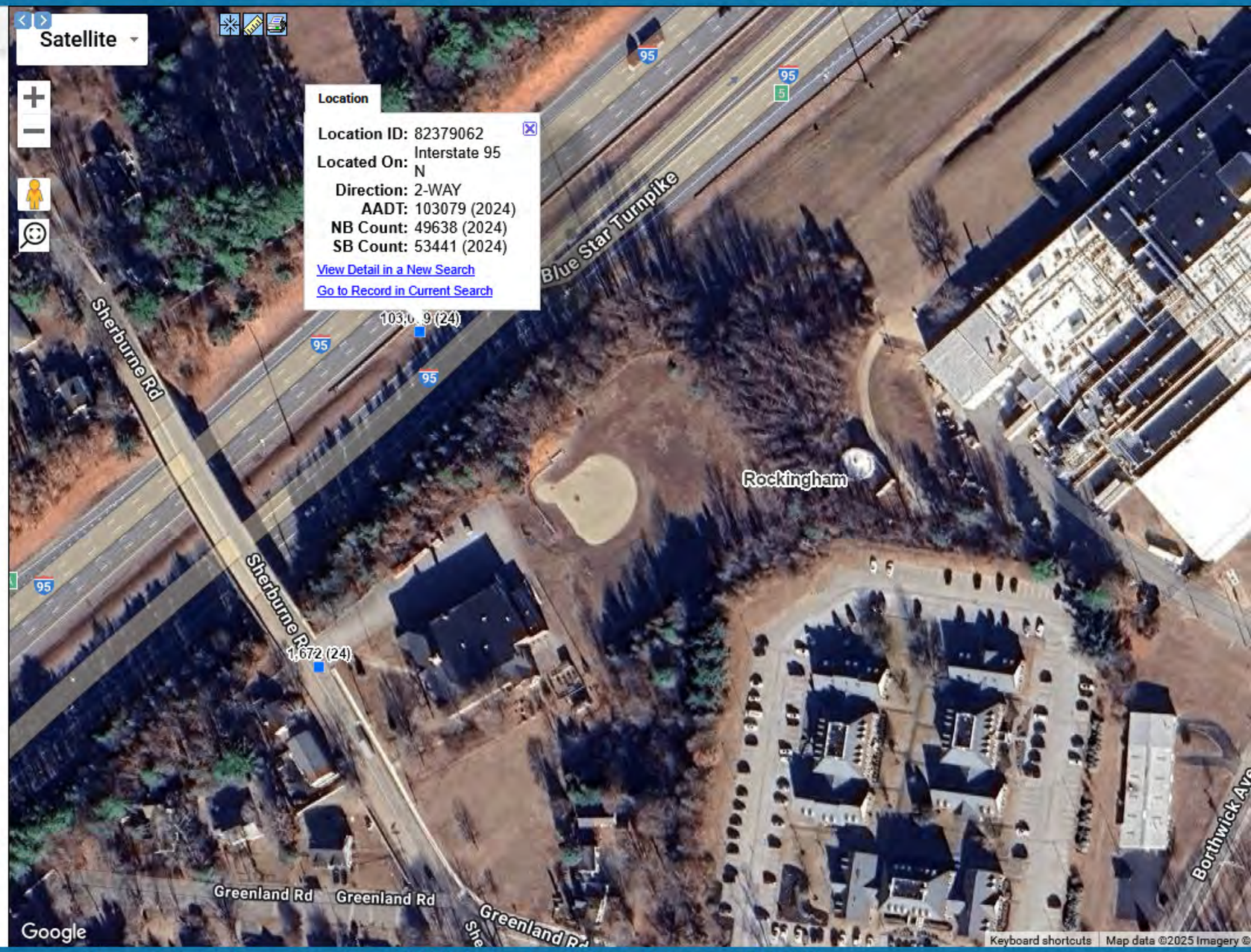
Date	Int	Pace	85th	Total
No Data				

CLASSIFICATION

Date	Int	Total
No Data		

WEIGH-IN-MOTION

PER VEHICLE



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Definitions

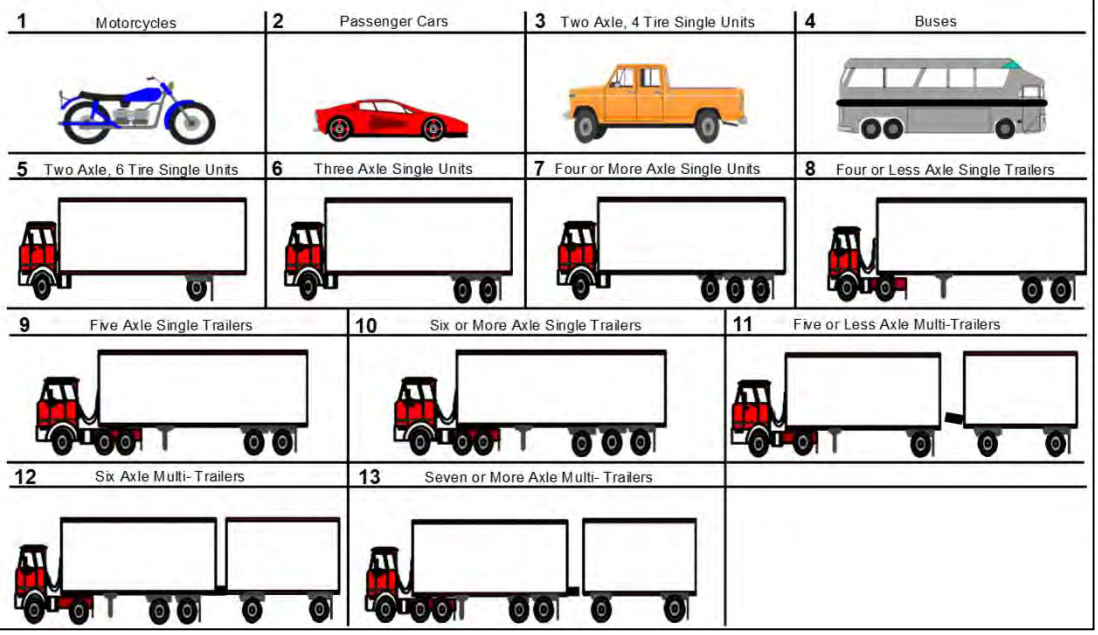
Location: Automatic Traffic Recorder Station ID assigned by VTrans
FC: Functional Classification (designates road use characteristics)
1 = Interstate
2 = Principal Arterial - Other Freeways & Expressways
3 = Principal Arterial - Other
4 = Minor Arterial
5 = Major Collector
6 = Minor Collector
7 = Local
MM: Mile Marker
R/U: U (urban) designates a location within the Federal Aid Urban Area Boundary
R (rural) designates a location outside the Federal Aid Urban Area Boundary
AADT: Annual Average Daily Traffic for the Year shown

FHWA Vehicle Classes

Class	Heading	Description
1	MC	Motorcycle
2	Car	Passenger car
3	Pickup	Pickup truck/sports utility
4	Bus	Full size school and transit busses
5	2A SU	2 axle six tire, delivery type van or heavy duty pick up
6	3A SU	3 axle single unit, short haul delivery truck, dump truck
7	>3A SU	4 axle single unit, short haul delivery truck, concrete truck
8	<5A 2U	<5 axle tractor/single trailer, medium haul delivery
9	5A 2U	5 axle tractor/single trailer, "18 Wheeler"
10	>5A 2U	> 5 axle tractor/single trailer, tanker truck, logging truck
11	<6A >2U	<6 axle multi trailer truck
12	6A >2U	6 axle multi trailer truck
13	>6A >2U	>6 axle multi trailer truck

TRUCK: FHWA Vehicle Class 4-13
MED: Single Unit truck (FHWA Vehicle Class 4-7)
HEAVY: Tractor-trailer truck (FHWA Vehicle Class 8-13)

FHWA VEHICLE CLASSIFICATIONS



Total Cars			Cars													Trucks	

2022 FUNCTIONAL CLASS AVERAGES

DAILY

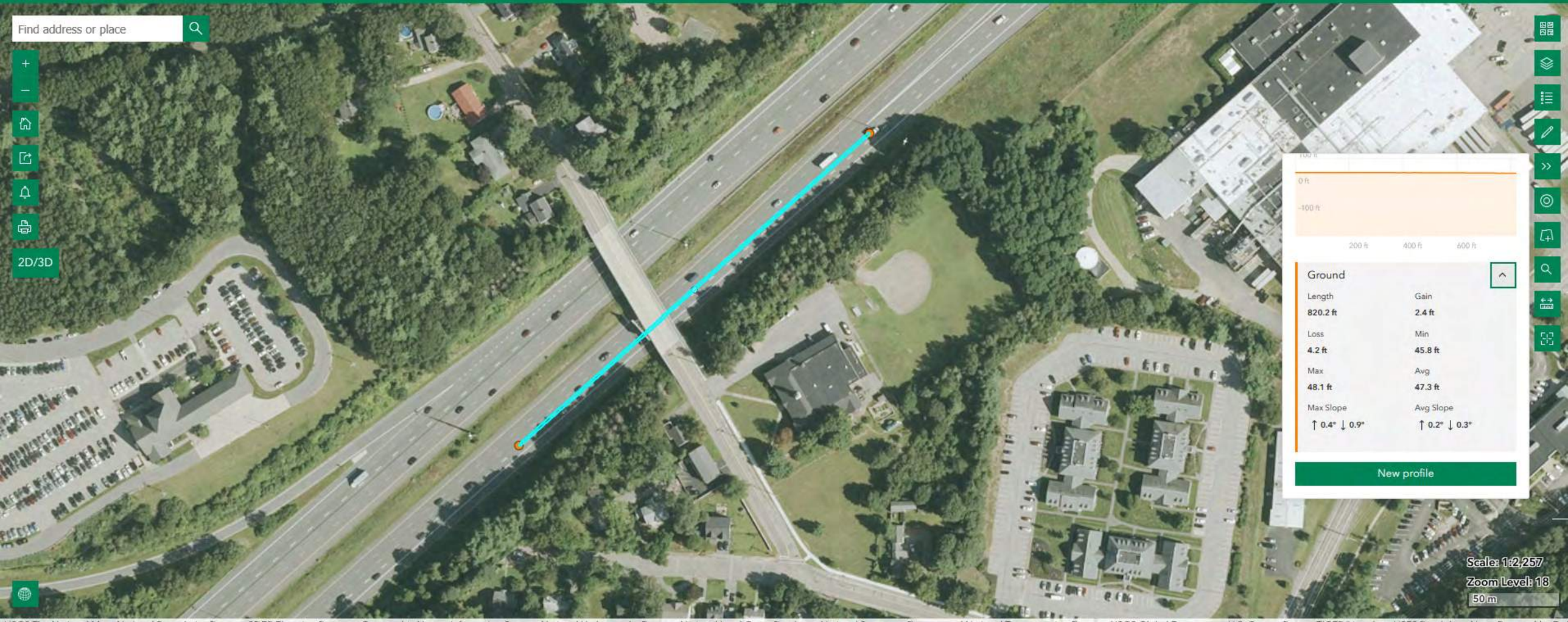
	RURAL	Class 1 MC	Class 2 Car	Class 3 Pickup	Class 4 Bus	Class 5 2A SU	Class 6 3A SU	Class 7 >3A SU	Class 8 <5A 2U	Class 9 5A 2U	Class 10 >5A 2U	Class 11 <6A >2U	Class 12 6A >2U	Class 13 >6A >2U	TOTAL	TRUCKS MED	TRUCKS HEAVY
1	FC1 AVG	0.64%	67.54%	17.62%	1.46%	4.09%	1.23%	0.55%	1.72%	3.44%	1.54%	0.05%	0.01%	0.12%	14.20%	7.33%	6.87%
	FC2 AVG																
	FC3 AVG	1.55%	70.53%	19.21%	0.99%	3.56%	0.80%	0.16%	1.15%	1.56%	0.46%	0.01%	0.00%	0.01%	8.71%	5.51%	3.20%
	FC4 AVG	2.45%	68.70%	21.32%	0.79%	3.53%	0.84%	0.12%	1.06%	0.81%	0.37%	0.00%	0.00%	0.01%	7.53%	5.28%	2.25%
	FC5 AVG	2.45%	68.24%	22.49%	0.68%	3.69%	0.76%	0.11%	0.85%	0.46%	0.27%	0.00%	0.00%	0.01%	6.82%	5.23%	1.59%
	FC6 AVG	1.63%	67.39%	24.40%	0.26%	3.85%	1.44%	0.20%	0.57%	0.19%	0.07%	0.00%	0.00%	0.00%	6.58%	5.76%	0.83%
	FC7 AVG	1.11%	69.03%	23.96%	0.51%	4.18%	0.61%	0.04%	0.43%	0.08%	0.04%	0.00%	0.00%	0.00%	5.89%	5.33%	0.56%

	URBAN	Class 1 MC	Class 2 Car	Class 3 Pickup	Class 4 Bus	Class 5 2A SU	Class 6 3A SU	Class 7 >3A SU	Class 8 <5A 2U	Class 9 5A 2U	Class 10 >5A 2U	Class 11 <6A >2U	Class 12 6A >2U	Class 13 >6A >2U	TOTAL	TRUCKS MED	TRUCKS HEAVY
	FC1 AVG	0.68%	73.61%	17.09%	0.91%	3.64%	0.67%	0.19%	1.24%	1.55%	0.31%	0.06%	0.03%	0.04%	8.62%	5.40%	3.22%
	FC2 AVG																
	FC3 AVG	1.40%	73.63%	18.27%	0.77%	3.72%	0.48%	0.07%	0.82%	0.67%	0.16%	0.00%	0.00%	0.01%	6.70%	5.03%	1.67%
	FC4 AVG	1.42%	73.14%	19.49%	0.61%	3.16%	0.79%	0.15%	0.49%	0.48%	0.26%	0.00%	0.00%	0.00%	5.94%	4.71%	1.24%
	FC5 AVG	1.22%	72.91%	19.66%	0.62%	3.66%	0.88%	0.11%	0.38%	0.37%	0.20%	0.00%	0.00%	0.01%	6.22%	5.27%	0.95%
	FC6 AVG	1.60%	70.18%	23.30%	0.18%	3.06%	0.57%	0.17%	0.91%	0.05%	0.00%	0.00%	0.00%	0.00%	4.92%	3.97%	0.95%
	FC7 AVG	0.81%	70.66%	24.53%	0.39%	2.98%	0.29%	0.05%	0.24%	0.04%	0.00%	0.00%	0.00%	0.01%	4.00%	3.70%	0.29%

PEAK HOUR

RURAL	Class 1 MC	Class 2 Car	Class 3 Pickup	Class 4 Bus	Class 5 2A SU	Class 6 3A SU	Class 7 >3A SU	Class 8 <5A 2U	Class 9 5A 2U	Class 10 >5A 2U	Class 11 <6A >2U	Class 12 6A >2U	Class 13 >6A >2U	TOTAL	TRUCKS MED	TRUCKS HEAVY
FC1 AVG	0.17%	70.87%	15.64%	1.93%	3.33%	0.69%	0.12%	1.69%	4.19%	1.30%	0.06%	0.00%	0.02%	13.32%	6.06%	7.26%
FC2 AVG																
FC3 AVG	1.11%	68.33%	22.06%	0.93%	3.99%	0.63%	0.09%	1.20%	1.24%	0.34%	0.01%	0.01%	0.06%	8.51%	5.65%	2.86%
FC4 AVG	2.28%	65.81%	23.15%	0.80%	4.64%	0.96%	0.08%	1.32%	0.70%	0.24%	0.02%	0.00%	0.01%	8.77%	6.48%	2.29%
FC5 AVG	2.22%	67.32%	22.76%	0.87%	4.87%	0.63%	0.03%	0.79%	0.37%	0.15%	0.00%	0.00%	0.00%	7.71%	6.40%	1.30%
FC6 AVG	0.74%	69.82%	24.00%	0.29%	4.32%	0.51%	0.00%	0.30%	0.01%	0.00%	0.00%	0.00%	0.01%	5.44%	5.11%	0.33%
FC7 AVG	1.39%	68.43%	24.34%	0.53%	4.05%	0.33%	0.16%	0.55%	0.14%	0.07%	0.00%	0.00%	0.00%	5.84%	5.08%	0.76%

URBAN	Class 1 MC	Class 2 Car	Class 3 Pickup	Class 4 Bus	Class 5 2A SU	Class 6 3A SU	Class 7 >3A SU	Class 8 <5A 2U	Class 9 5A 2U	Class 10 >5A 2U	Class 11 <6A >2U	Class 12 6A >2U	Class 13 >6A >2U	TOTAL	TRUCKS MED	TRUCKS HEAVY
FC1 AVG	2.85%	72.84%	16.91%	0.72%	3.16%	0.49%	0.19%	1.43%	1.06%	0.29%	0.02%	0.01%	0.04%	7.40%	4.56%	2.84%
FC2 AVG																
FC3 AVG	1.13%	74.37%	17.91%	1.23%	3.67%	0.44%	0.06%	0.71%	0.34%	0.13%	0.00%	0.00%	0.01%	6.60%	5.40%	1.19%
FC4 AVG	1.47%	72.39%	18.72%	0.99%	4.68%	0.52%	0.07%	0.54%	0.56%	0.06%	0.00%	0.00%	0.00%	7.42%	6.26%	1.16%
FC5 AVG	1.36%	72.69%	18.81%	0.38%	4.97%	0.58%	0.11%	0.63%	0.25%	0.21%	0.00%	0.00%	0.00%	7.14%	6.05%	1.09%
FC6 AVG	2.04%	69.82%	24.45%	0.06%	2.41%	0.24%	0.00%	0.98%	0.00%	0.00%	0.00%	0.00%	0.00%	3.69%	2.71%	0.98%
FC7 AVG	1.04%	69.26%	25.15%	0.05%	3.88%	0.05%	0.05%	0.52%	0.01%	0.00%	0.00%	0.00%	0.00%	4.55%	4.01%	0.53%


Find address or place
2D/3D
0 ft
-100 ft
200 ft
400 ft
600 ft
Ground
Length
820.2 ft
Gain
2.4 ft
Loss
4.2 ft
Min
45.8 ft
Max
48.1 ft
Avg
47.3 ft
Max Slope
↑ 0.4° ↓ 0.9°
Avg Slope
↑ 0.2° ↓ 0.3°
New profile
Scale: 1:2,257
Zoom Level: 18
50 m

Indoor Noise Level Calculations
HUD Sound Transmission Classification Assessment Tool
Calculations and General STC Ratings from
"The Sound Book" and Marvin INdustries

(STraCAT)

Overview

The Sound Transmission Classification Assessment Tool (STraCAT) is an electronic version of Figures 17 and 19 in The HUD Noise Guidebook. The purpose of this tool is to document sound attenuation performance of wall systems. Based on wall, window, and door Sound Transmission Classification (STC) values, the STraCAT generates a composite STC value for the wall assembly as a whole. Users can enter the calculated noise level related to a specific Noise Assessment Location in front of a building façade and STraCAT will generate a target required attenuation value for the wall assembly in STC. Based on wall materials, the tool will state whether the composite wall assembly STC meets the required attenuation value.

How to Use This Tool

Location, Noise Level and Wall Configuration to Be Analyzed
STraCAT is designed to calculate the attenuation provided by the wall assembly for one wall of one unit. If unit exterior square footage and window/door configuration is identical around the structure, a single STraCAT may be sufficient. If units vary, at least one STraCAT should be completed for each different exterior unit wall configuration to document that all will achieve the required attenuation. Additionally, if attenuation is not based on a single worst-case NAL, but there are multiple NALs which require different levels of attenuation around the structure, a STraCAT should be completed for each differing exterior wall configuration associated with each NAL.

Exterior wall configurations associated with an NAL include those with parallel (facing) or near-parallel exposure as well as those with perpendicular exposure. When a façade has parallel or perpendicular exposure to two or more NALs, you should base the required attenuation on the NAL with the highest calculated noise level. For corner units where the unit interior receives exterior noise through two facades, the STraCAT calculation should incorporate the area of wall, window and door materials pertaining to the corner unit's total exterior wall area (i.e., from both walls).

Information to Be Entered
Users first enter basic project information and the NAL noise level that will be used as the basis for required attenuation. This noise level must be entered in whole numbers. STraCAT users then enter information on wall, window and door component type and area. Again, as noted above, the wall, window and door entries are based on one unit, and one wall (except for corner units as discussed above). The tool sums total wall square footage based on the combined area of walls, doors and windows for the façade being evaluated.

Users may input STC values for materials in one of two ways. The tool includes a dropdown menu of common construction materials with STC values prefilled. If selected construction materials are not included in this dropdown menu, the user may also enter the STC for a given component manually. Verification of the component STC must be included in the ERR. Documentation includes the architect or construction manager's project plans showing wall material specifications. For new construction or for components that will be newly installed in an existing wall, documentation also includes the manufacturer's product specification sheet (cut sheet) documenting the STC rating of selected doors and windows.

Required STC Rating and Determination of Compliance
Finally, based on project information entered the tool will indicate the required STC rating for the wall assembly being evaluated and whether or not the materials specified will produce a combined rating that meets this requirement. Note that for noise levels above 75 dB DNL, either HUD (for 24 CFR Part 50 reviews) or the Responsible Entity (for 24 CFR Part 58 reviews) must approve the level and type of attenuation, among other processing requirements. Required attenuation values generated by STraCAT for NALs above 75 dB DNL should therefore be considered tentative pending approval by HUD or the RE.

Part I - Description

Project
Sherburne School

Sponsor/Developer
Portsmouth Housing Auth

Location
Sherburne Street

Prepared by
Todd Scheffer

Noise Level
75

Date
4/14/2025

Primary Source(s)
Interstate 95

Part II - Wall Components

Wall Construction Detail	Area	STC
2x6 wood with fiberglass	4050	38
	4,050 Sq. Feet	**38**

Add new wall

Window Construction Detail	Quantity	Sq Ft/Unit	STC
4 x 3 two pane double hung (Marvin)	56	12	27

Add new window

Door Construction Detail	Quantity	Sq Ft/Unit	STC
Lowest rated french doors	8	21	31

Add new door

Part III - Results

Wall Statistics

Stat	Value
Area:	4050 ft^2
Wall STC:	38

Aperture Statistics

Aperture	Count	Area	% of wall
Windows:	56	**672 ft^2**	**16.59%**
Doors:	8	**168 ft^2**	**4.15%**

Evaluation Criteria

Criteria	Value
Noise source sound level (dB):	**75**
Combined STC for wall assembly:	**33.1**
Required STC rating:	**33**
Does wall assembly meet requirements?	**Yes**

Acoustical Assembly Guide

National Gypsum®

The SoundDB™ Book

Acoustical Terms and Concepts

Transmission of Airborne Sound

Airborne sound is acoustical energy generated by a source and transmitted by vibration through the air. The vibrations create sound pressure fluctuations that are detected by a receiver. Sound is characterized by its frequency, which determines the pitch of the sound, and by the intensity of the pressure fluctuations, which determines how loud the sound is perceived to be.

Sound Transmission		
Energy Generated by a Source	► Transmitted Through a Medium	► Detected by a Receiver
Drumstick strikes drumhead creating vibrations	► Vibrations transmitted through the air as pressure fluctuations	► Ear receives pressure fluctuations and perceives them as sound

The frequency of sound refers to the number of sound pressure fluctuations or cycles that occur at a fixed point in one second. The unit of measure for frequency is the hertz (Hz), which is one cycle per second. The human auditory system is capable of detecting sound frequencies between 20 Hz and 20,000 Hz, but humans are typically most sensitive to sounds within the range of 500 Hz and 4,000 Hz. Sound frequency is perceived by humans as pitch. The lowest note on a piano has a frequency of 27.5 Hz, while the highest note on the piano is 4,186 Hz.

The intensity of sound, or loudness, is measured in decibels (dB). A quiet whisper might register at 20 dB, compared to about 60 dB for normal conversation, and 75 dB for loud singing. The decibel scale is logarithmic, not linear. A sound level change of 1 to 2 dB will be difficult to perceive while a change of 5 dB will be clearly noticeable. Sound is perceived to double in intensity for every 10 dB increase and quadruple for every 20 dB increase.

Human Sensitivity to Changes in Sound Intensity Levels	
1 dB	Generally not perceptible
3 dB	Just perceptible
5 dB	Clearly noticeable
10 dB	Twice as loud
20 dB	Four times as loud

Rating	Activity	Sound Level (dB)
Painful	Jet Engine	120+
Very Loud	Industrial Machinery	100
Loud	Stock Trading Floor	80
Moderate	Normal Speech	65
Quiet	Suburban Home	45
Very Quiet	Barely Audible	25

Sound Transmission Class

The Sound Transmission Class (STC) is a single number rating of the effectiveness of a material or construction assembly to retard the transmission of airborne sound. The STC provides an indication of how loud transmitted sound is perceived to be by the listener. Partitions with higher STC values are more effective at reducing sound transmission.

STC values are derived by conducting a test in accordance with ASTM E90, *Standard Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions*. The test data collected is analyzed using ASTM E413, *Classification for Rating Sound Insulation,* and results in a single-number acoustical rating. The rating assesses the airborne sound transmission performance at a range of frequencies from 125 Hz to 4000 Hz, which is consistent with the frequency range of the human ear. An STC rating of 50 has been designated as the minimum allowable design rating for unit-to-unit multifamily construction in the International Building Code.

Design Considerations for Acoustical Partitions

The goal of a high STC rated partition is to decrease the amount of sound transmission through the partition. The following five variables can have an impact on the ability of the partition to retard the sound transmission.

Mass
Increasing the mass of a partition increases the amount of material airborne sound waves must penetrate to reach the adjoining room and can be accomplished by installing multiple layers of gypsum board.

Stiffness
Decreasing the stiffness of a partition will increase the amount of sound transmission loss. For this reason metal studs outperform wood studs, and framing that is 24" o.c. outperforms framing that is 16" o.c.

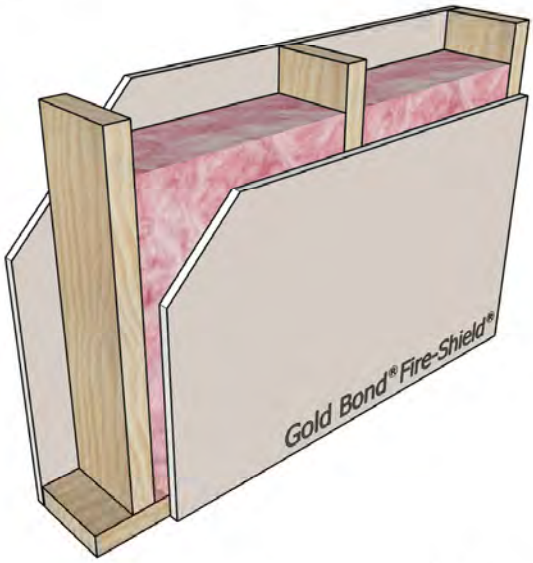
Damping
Damping, or the ability to dissipate the vibrational energy produced by sound waves, reduces the amount of energy to pass through the partition.

Cavity Depth
Increasing the depth of the cavity of the partition can increase the amount of sound transmission loss, especially when the cavity is filled with acoustical insulation.

Cavity Absorption
Increasing the thickness of sound-absorbing material such as fiberglass or mineral fiber insulation in the cavity of a partition will increase the amount of sound transmission loss. The thickness of the insulation has a greater effect on sound transmission loss than the density.

Wood Stud Partitions with Framing 16" o.c.

Figure 114

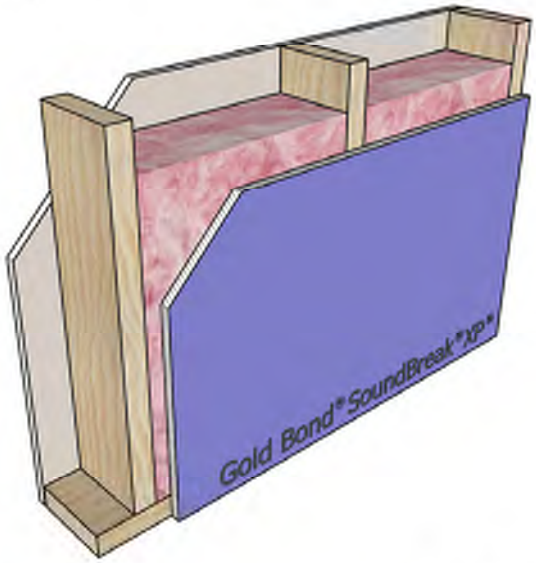


STC-38 **NGC 2008032**

Framing: 2x6 wood studs, 16" o.c.
Insulation: 5-1/2" glass fiber
Side 1: 5/8" Fire-Shield Gypsum Board
Side 2: 5/8" Fire-Shield Gypsum Board

UL Design: U305 - 1 hour

Figure 115

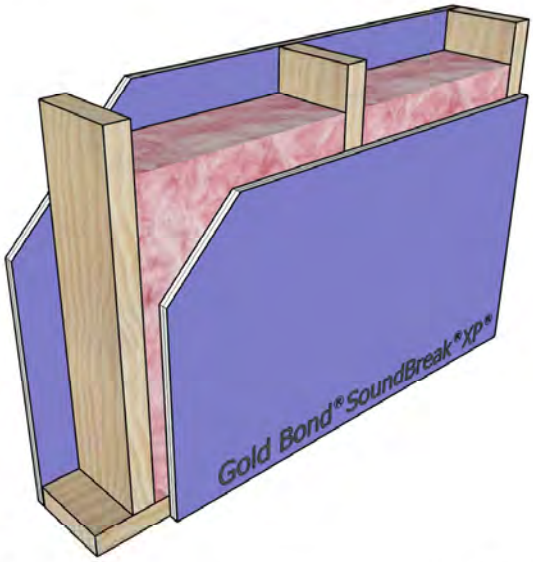


STC-42 **NGC 2009008**

Framing: 2x6 wood studs, 16" o.c.
Insulation: 5-1/2" glass fiber
Side 1: 5/8" Fire-Shield Gypsum Board
Side 2: 5/8" SoundBreak XP Gypsum Board

UL Design: U305 - 1 hour

Figure 116

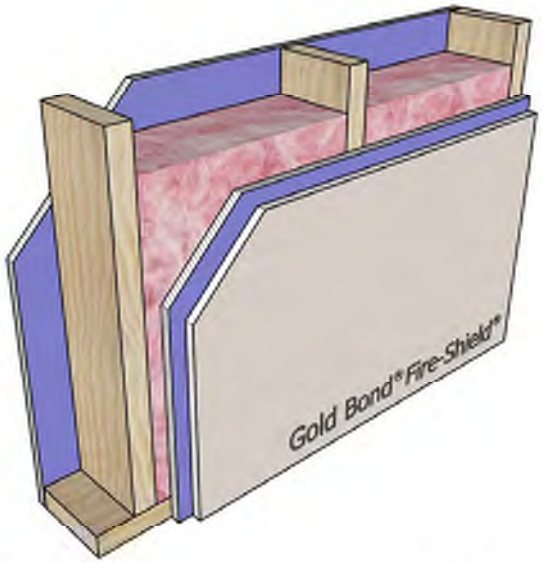


STC-44 **NGC 2009012**

Framing: 2x6 wood studs, 16" o.c.
Insulation: 5-1/2" glass fiber
Side 1: 5/8" SoundBreak XP Gypsum Board
Side 2: 5/8" SoundBreak XP Gypsum Board

UL Design: U305 - 1 hour

Figure 117



STC-46 **NGC 2009010**

Framing: 2x6 wood studs, 16" o.c.
Insulation: 5-1/2" glass fiber
Side 1: 5/8" SoundBreak XP Gypsum Board
Side 2: 5/8" Fire-Shield Gypsum Board on 5/8" SoundBreak XP Gypsum Board

UL Design: U305 - 1 hour

STC and OITC Class Values

Marvin Sound Transmission Class and Outdoor - Indoor Transmission Class Values							
Product Type	Exterior Glazing	Airspace	Interior Glazing	STC	OITC	Additional Information	STC Report #
Clad Ultimate Double Hung - NG							
CUDH-NG (47 3/16 x 59 1/8)	1/8" (3.1) Annealed	5/8" (16.0)	1/8" (3.1) Annealed	27	23		ESP018375P-2
CUDH-NG (47 3/16 x 59 1/8)	1/8" (3.1) Annealed	1/4" (6.5)	1/8" (3.1) Annealed	28	24	Tri-pane: two 1/4" air spaces with 1/8" center pane	ESP016170P-2
CUDH-NG (47 3/16 x 59 1/8)	1/8" (3.1) Annealed	19/32" (14.5)	3/16" (4.7) Annealed	30	26		ESP020753P-2
CUDH-NG (47 3/16 x 59 1/8)	1/4" (5.7) Annealed	3/8" (9.8)	1/4" (6.0) Lami	30	27		ESP016170P-4
CUDH-NG (47 3/16 x 59 1/8)	1/4" (6.0) Lami	3/8" (9.8)	1/4" (6.0) Lami	31	27		ESP016170P-5
CUDH-NG (47 3/16 x 59 1/8)	1/8" (3.1) Annealed	7/16" (11.5)	5/16" (7.8) Lami	31	26	CE	ESP020753P-1
CUDH-NG (47 3/16 x 59 1/8)	9/32" (7.0) Lami	5/16" (8.0)	9/32" (7.0) Lami	31	27	CE	ESP016170P-7
CUDH-NG (47 3/16 x 59 1/8)	1/8" (3.1) Annealed	7/16" (11.5)	11/32" (8.6) Lami	31	27	IZ3	ESP018375P-5
CUDH-NG (47 3/16 x 59 1/8)	3/16" (4.7) Annealed	7/16" (11.5)	1/4" (6.0) Lami	31	28		ESP018375P-3
CUDH-NG (47 3/16 x 59 1/8)	1/4" (5.9) Annealed	5/16" (8.0)	5/16" (7.8) Lami	31	29	CE	ESP016170P-6
CUDH-NG (47 3/16 x 59 1/8)	3/16" (4.7) Annealed	5/16" (8.0)	11/32" (8.6) Lami	32	29	IZ3	ESP018375P-7
CUDH-NG (47 3/16 x 59 1/8)	1/8" (3.1) Annealed	5/8" (16.0)	1/8" (3.1) Annealed	35	28	1/8" Clad Storm Combination	ESP016170P-14
CUDH-NG (47 3/16 x 59 1/8)	1/8" (3.1) Annealed	1/4" (6.5)	1/8" (3.1) Annealed	36	30	Tri-pane: two 1/4" air spaces w/ 1/8" center pane, 1/8" Clad Storm Comb	ESP016170P-15
CUDH-NG (47 3/16 x 59 1/8)	1/4" (5.7) Annealed	3/8" (9.8)	1/4" (6.0) Lami	39	32	1/8" Clad Storm Combination	ESP016170P-19
CUDH-NG (47 3/16 x 59 1/8)	1/4" (6.0) Lami	3/8" (9.8)	1/4" (6.0) Lami	40	33	1/8" Clad Storm Combination	ESP016170P-17
CUDH-NG (47 3/16 x 59 1/8)	3/16" (4.7) Annealed	7/16" (11.5)	1/4" (6.0) Lami	40	33	1/8" Clad Storm Combination	ESP016170P-18
CUDH-NG (47 3/16 x 59 1/8)	9/32" (7.0) Lami	5/16" (8.0)	9/32" (7.0) Lami	40	33	1/8" Clad Storm Combination CE	ESP016170P-12
CUDH-NG (47 3/16 x 59 1/8)	1/4" (5.9) Annealed	5/16" (8.0)	5/16" (7.8) Lami	41	35	1/8" Clad Storm Combination CE	ESP016170P-16
CUDHP-NG (47 3/16 x 59 1/8)	1/8" (3.1) Annealed	5/8" (16.0)	1/8" (3.1) Annealed	29	23		ESP016170P-21
CUDHP-NG (47 3/16 x 59 1/8)	1/8" (3.1) Annealed	1/4" (6.5)	1/8" (3.1) Annealed	30	25	Tri-pane: two 1/4" air spaces with 1/8" center pane	ESP016170P-24
CUDHP-NG (47 3/16 x 59 1/8)	1/4" (5.7) Annealed	3/8" (9.8)	1/4" (6.0) Lami	34	29		ESP016170P-26
CUDHP-NG (47 3/16 x 59 1/8)	1/4" (6.0) Lami	3/8" (9.8)	1/4" (6.0) Lami	35	30		ESP016170P-25
CUDHP-NG (47 3/16 x 59 1/8)	3/16" (4.7) Annealed	7/16" (11.5)	1/4" (6.0) Lami	35	29		ESP016170P-23
CUDHP-NG (47 3/16 x 59 1/8)	1/4" (5.9) Annealed	5/16" (8.0)	5/16" (7.8) Lami	35	31	CE	ESP016170P-22
CUDHP-NG (47 3/16 x 59 1/8)	9/32" (7.0) Lami	5/16" (8.0)	9/32" (7.0) Lami	35	30	CE	ESP016170P-27
CUDHP-NG (47 3/16 x 59 1/8)	1/8" (3.1) Annealed	1/4" (6.5)	9/16" (13.6) Lami	35	31		ESP016170P-29
Ultimate Double Hung							
WUDH 3026	1/8″ (3.1) Annealed	7/16″ (11.5)	1/8″ (3.1) Annealed	35	26	3/32″ (2) Wood Storm Comb	66263-4
WUDH 3026	3/16″ (4.7) Annealed	3/8″ (9.8)	1/8″ (3.1) Annealed	36	27	3/32″ (2) Wood Storm Comb	66263-5
WUDH 3026	5/32″ (3.9) Annealed	3/8″ (9.8)	1/4″ (6) Lami	37	28	3/32″ (2) Wood Storm Comb	66263-6
WUDHP 6878	1/4″ (5.7) Annealed	9/16″ (14.5)	1/4″ (6) Lami	34	27	2″ (51) Sash	66263-7
Ultimate Double Hung Magnum							
CUDHM FS 48″(1219) X 60″(1524) (7/8)	1/4″ (6) LAMI	3/8″ (9.8)	1/4″ (6) LAMI	33	28		ESP-015798P-3
CUDHM FS 48″(1219) X 60″(1524) (7/8)	1/4″ (6) LAMI	5/16″ (8)	5/16″ (8.6) LAMI	34	29		ESP-015798P-2
CUDHM FS 48″(1219) X 60″(1524) (7/8)	1/8″ (3.1) Annealed	1/4″ (6.5)	1/8″ (3.1) Annealed	28	24	Tri-pane: two 1/4" air spaces with 1/8" center pane	ESP-015798P-1
CUDHM FS 47 7/8 X 88 (11/16)	1/8″ (3.1) Annealed	7/16″ (11.5)	1/8″ (3.1) Annealed	27	22		76430
CUDHM FS 47 7/8 X 88 (11/16)	3/16″ (4.7) Annealed	3/8″ (9.8)	1/8″ (3.1) Annealed	30	25		
CUDHM FS 47 7/8 X 88 (11/16)	1/4″ (5.7) Annealed	5/16″ (8)	5/32" (3.9) Annealed	31	26		
CUDHM FS 47 7/8 X 88 (11/16)	1/4″ (6) LAMI	9/32″ (7)	3/16″ (4.7) Annealed	31	26		
WUDHM FS 48″ (1219) X 60″(1524)	1/4″ (6) LAMI	3/8″ (9.8)	1/4″ (6) LAMI	33	27		ESP-015798P-6
WUDHM FS 48″ (1219) X 60″(1524)	1/4″ (6) LAMI	5/16″ (8)	5/16″ (8.6) LAMI	34	29		ESP-015798P-5
WUDHM FS 48″ (1219) X 60″(1524)	1/8″ (3.1) Annealed	1/4″ (6.5)	1/8″ (3.1) Annealed	28	24	Tri-pane: two 1/4" air spaces with 1/8" center pane	ESP-015798P-4

STC and OITC Class Values

Marvin Sound Transmission Class and Outdoor - Indoor Transmission Class Values							
Product Type	Exterior Glazing	Airspace	Interior Glazing	STC	OITC	Additional Information	STC Report #
Ultimate Casement							
Values for wood and clad product UCA, UCART, UPCA, UCAP, UCARTP, UPCAP							
UCA 2460 3/4″ (19)	1/8″ (3.1) Annealed	1/2″ (13)	1/8″ (3.1) Annealed	29	23		TCT005872P-1
UCA 2460 3/4″ (19)	1/4″ (5.7) Annealed	5/16″ (8)	1/4″ (6) LAMI	34	29		ESP016574P-2
UCA 2460 3/4″ (19)	1/4″ (6) LAMI	9/32″ (7)	1/4″ (6) LAMI	35	30		ESP016574P-3
UCA 2460 3/4″ (19)	1/8″ (3.1) Annealed	5/16" (8)	11/32" (8.6) PVB	35	31	IZ3	ESP017287P-4
UCA 2460 3/4″ (19)	3/16″ (4.7) Annealed	5/16" (8)	1/4″ (6) LAMI	35	30		ESP016574P-4
UCA 2460 3/4″ (19)	3/16″ (4.7) Annealed	1/4″ (6.5)	11/32" (8.6) PVB	37	31	IZ3	ESP017287P-1
UCA 2460 3/4″ (19)	1/8″ (3.1) Annealed	1/2″ (13)	1/8″ (3.1) Annealed	46	34	interior sash 1/8″ glass, 4 1/4″ airspace	TCT005872P-1
UCA 2460 1″ (25)	1/8″ (3.1) Annealed	5/16″ (8)	1/8″ (3.1) Annealed	30	25	Tri-pane: two 5/16 air spaces, with 1/8" center	ESP016574P-5
UCA 2460 1″ (25)	1/4" (5.7) Annealed	1/2″ (13)	1/4″ (6) LAMI	34	28		ESP016574P-10
UCA 2460 1″ (25)	3/16″ (4.7) Annealed	9/16″ (14.5)	1/4″ (5.7) Annealed	34	27		TCT005872P-1
UCA 2460 1″ (25)	1/4″ (6) LAMI	1/2″ (13)	1/4″ (6) LAMI	35	28		ESP016574P-11
UCA 2460 1″ (25)	9/32" (7) Lami	7/16″ (11.5)	9/32" (7) Lami	35	29	CE	ESP016574P-13
UCA 2460 1″ (25)	1/4" (5.9) Annealed	7/16″ (11.5)	5/16" (7.8) Lami	37	32	CE	ESP017287P-3
UCA 2460 1″ (25)	3/16″ (4.7) Annealed	9/32″ (7)	17/32" (13.6) Lami	37	34		ESP016574P-9
UCA 2460 1″ (25)	3/16″ (4.7) Annealed	9/16″ (14.5)	1/4″ (6) LAMI	37	30		ESP016574P-12
UCA 2460 1″ (25)	3/16″ (4.7) Annealed	7/16″ (11.5)	11/32" (8.6) PVB	37	31	IZ3	ESP017287P-2
UCA 2460 1″ (25)	3/16″ (4.7) Annealed	3/8" (9.8)	13/32" (10.1) PVB	38	33	IZ3	ESP017287P-6
UCA 2460 1″ (25)	3/16″ (4.7) Annealed	9/16″ (14.5)	1/4″ (5.7) Annealed	47	36	interior sash 1/8″ glass, 4 1/4″ airspace	TCT005872P-1
UCAP 4860 1″ (25)	3/16″ (4.7) Annealed	9/16″ (14.5)	1/4″ (6) LAMI	36	30		ESP016574P-15
UCAP 4860 1″ (25)	1/4" (5.7) Annealed	1/2″ (13.0)	1/4″ (6) LAMI	34	29		ESP016574P-16
UCAP 4860 1″ (25)	1/4″ (6) LAMI	1/2″ (13.0)	1/4″ (6) LAMI	35	29		ESP016574P-17
UCAP 4860 1″ (25)	3/16″ (4.7) Annealed	9/32″ (7)	17/32" (13.6) Lami	36	33		ESP016574P-18
UCAP 4860 1″ (25)	1/8″ (3.1) Annealed	5/16″ (8)	1/8″ (3.1) Annealed	29	24	Tri-pane: two 5/16" air spaces, with 1/8" center	ESP016574P-19
UCAP 4860 1″ (25)	9/32" (7) Lami	7/16″ (11.5)	9/32" (7) Lami	36	32	CE	ESP016574P-23
UCAP 4860 1″ (25)	1/4" (5.9) Annealed	7/16″ (11.5)	5/16" (7.8) Lami	36	30	CE	ESP016574P-22
UCAP 4860 1″ (25)	3/16″ (4.7) Annealed	5/8″ (16)	3/16″ (4.7) Annealed	31	25		TCT005872P-2
UCAP 4860 1″ (25)	3/16″ (4.7) Annealed	9/16″ (14)	1/4″ (5.7) Annealed	34	28		
CUGL 5040	1/8″ (3.1) Annealed	7/16″ (11.5)	1/8″ (3.1) Annealed	27	22		
CUGL 5040	1/8″ (3.1) Annealed	3/8″ (10)	3/16″ (4.7) Annealed	32	26		TCT006299P-CUGL
CUGL 5040	1/8″ (3.1) Annealed	7/16″ (11.5)	1/8″ (3.1) Annealed	33	25	1/8″ Combination to the exterior	
CUGL 5040	1/8″ (3.1) Annealed	3/8″ (10)	3/16″ (4.7) Annealed	37	27	1/8″ Combination to the exterior	
CUGL 5040	3/16″ (4.7) Annealed	9/32" (7.0)	1/4" (6.0) Lami	32	29		ESP020754P-4rev1
CUGL 5040	5/32" (3.9)	9/32" (7.0)	9/32" (7.0) Lami	30	27	CE	ESP020754P-5
CUGL 5040	3/16″ (4.7) Annealed	9/32" (7.0)	1/4" (6.0) Lami	37	31	1/8″ Combination to the exterior	ESP020754P-2rev1
CUGL 5040	5/32" (3.9)	9/32" (7.0)	9/32" (7.0) Lami	37	30	CE 1/8″ Combination to the exterior	ESP020754P-3
CUGLP 4050	3/16″ (4.7) Annealed	5/16″ (8)	3/16″ (4.7) Annealed	31	26		TCT006299P-CUGLP
CUGLP 4050	1/8″ (3.1) Annealed	3/8″ (10)	3/16″ (4.7) Annealed	31	26		
CUGLP 4050	3/16″ (4.7) Annealed	9/32″ (7)	1/4" (6.0) Lami	34	30		ESP020754P-1
Direct Glaze							
CDG Rect FS 47 3/16″ x 59 3/32″	5/32″ (3.9) Annealed	7/16″ (11.5)	5/32″ (3.9) Annealed	28	24		ESP014020-2
CDG Rect FS 47 3/16″ x 59 3/32″	1/4″ (5.7) Annealed	7/16″ (11.5)	1/4″ (6.0) Lami	33	27		ESP014020-3
CDG Rect FS 47.2 x 59.1	1/8" (3.1) Annealed	7/16" (11.5)	1/8" (3.1) Annealed	27	23		ESP019269P-4
CDG Rect FS 47.2 x 59.1	3/16" (4.7) Annealed	7/16" (11.5)	3/16" (4.7) Annealed	29	26		ESP019269P-9
CDG Rect FS 47.2 x 59.1	1/4" (5.7) Annealed	7/16" (11.5)	1/4" (5.7) Annealed	30	26		ESP019269P-8
CDG Rect FS 47.2 x 59.1	5/32" (3.9)Annealed	7/16" (11.5)	3/16" (4.7) Annealed	32	28		ESP019269P-5
CDG Rect FS 47.2 x 59.1	3/16" (4.7) Annealed	7/16" (11.5)	1/4" (6.0) Lami	34	29		ESP019269P-2
CDG Rect FS 47.2 x 59.1	1/4" (6.0) Lami	7/16" (11.5)	1/4" (6.0) Lami	33	28		ESP019269P-11
CDG Rect FS 47.2 x 59.1	1/8" (3.1) Annealed	5/16" (8.0)	1/8" (3.1) Annealed	27	23	tripane- two 5/16" airspaces with 1/8" center	ESP019269P-7
CDG Rect FS 47.2 x 59.1	1/8" (3.1) Annealed	5/16" (8.0)	1/4" (6.0) Lami	33	27	tripane- two 5/16" airspaces with 1/8" center	ESP019269P-6
CDG Rect FS 47.2 x 59.1	3/16" (4.7) Annealed	3/8" (9.8)	13/32" (10.1) SGP	34	30	IZ3	ESP019269P-3
CDG Rect FS 47.2 x 59.1	9/32" (7.0) Lami	7/16" (11.5)	9/32" (7.0) Lami	36	30	CE	ESP019269P-1
CDG Rect FS 47.2 x 59.1	15/64" (5.9) Annealed	7/16" (11.5)	5/16" (7.8) Lami	36	31	CE	ESP019269P-10
Magnum Tilt Turn							
CMTT FS 48″ (1219) x 72″ (1829)	1/8″ (3) Annealed	5/8″ (16)	1/8″ (3) Annealed	31	25		66263-24
CMTT FS 48″ (1219) x 72″ (1829)	3/16″ (5) Annealed	15/32″ (12)	1/4″ (6) Lami	36	29		66263-25

STC and OITC Class Values

Marvin Sound Transmission Class and Outdoor - Indoor Transmission Class Values							
Product Type	Exterior Glazing	Airspace	Interior Glazing	STC	OITC	Additional Information	STC Report #
Sliding Patio Door							
CSPD 6068	1/8″ (3.1) Tempered	1/2" (12.7)	1/8″ (3.1) Tempered	29	24		ESP023470P-12
CSPD 6068	1/8″ (3.1) Tempered	7/16" (11.0)	3/16" (4.7) Tempered	31	26		ESP023470P-20
CSPD 6068	1/8″ (3.1) Tempered	3/8″ (9.3)	1/4″ (5.7) Tempered	31	27		ESP023470P-14
CSPD 6068	5/32" (3.9) Tempered	7/16" (11.0)	5/32" (3.9) Tempered	30	25		ESP023470P-18
CSPD 6068	1/4″ (5.7) Tempered	5/16″ (8.1)	1/4″ (5.7) Tempered	31	28		ESP023470P-19
CSPD 6068	1/8″ (3.1) Tempered	3/8″ (9.8)	1/4″ (6) Lami	31	27		ESP023470P-15
CSPD 6068	3/16″ (4.7) Tempered	5/16″ (8.0)	1/4″ (6) Lami	31	28		ESP023470P-17
CSPD 6068	1/4″ (5.7) Tempered	5/16″ (8.0)	1/4″ (6) Lami	31	28		ESP023470P-13
CSPD 6068	1/4″ (6) Lami	9/32″ (7.0)	1/4″ (6) Lami	32	29		ESP023470P-16
CSPD 6068	1/8″ (3.1) Tempered	5/16″ (8.0)	5/16″ (7.8) Lami	31	28	CE	ESP023470P-22
CSPD 6068	5/32" (3.9) Tempered	5/16″ (8.0)	5/16″ (7.8) Lami	31	28	CE	ESP023470P-21
Ultimate Sliding French Door							
WSFD 6068	1/4″ (6) Lami	3/8″ (10)	1/8″ (3.1)″ Tempered	32	28		66263-9
CUSFD 6068	1/8″ (3.1) Tempered	1/2" (12.7)	1/8″ (3.1) Tempered	30	26		ESP023470P-1
CUSFD 6068	1/8″ (3.1) Tempered	7/16" (11.0)	3/16" (4.7) Tempered	31	27		ESP023470P-10
CUSFD 6068	1/8″ (3.1) Tempered	3/8″ (9.3)	1/4″ (5.7) Tempered	31	28		ESP023470P-5
CUSFD 6068	5/32" (3.9) Tempered	7/16" (11.0)	5/32" (3.9) Tempered	30	27		ESP023470P-7
CUSFD 6068	1/4″ (5.7) Tempered	5/16″ (8.1)	1/4″ (5.7) Tempered	31	28		ESP023470P-11
CUSFD 6068	1/8″ (3.1) Tempered	3/8″ (9.8)	1/4″ (6) Lami	32	28		ESP023470P-3
CUSFD 6068	3/16″ (4.7) Tempered	5/16″ (8.0)	1/4″ (6) Lami	32	29		ESP023470P-8
CUSFD 6068	1/4″ (5.7) Tempered	5/16″ (8.0)	1/4″ (6) Lami	32	29		ESP023470P-9
CUSFD 6068	1/4″ (6) Lami	9/32″ (7.0)	1/4″ (6) Lami	31	29		ESP023470P-2
CUSFD 6068	1/8″ (3.1) Tempered	5/16″ (8.0)	5/16″ (7.8) Lami	32	29	CE	ESP023470P-4
CUSFD 6068	5/32" (3.9) Tempered	5/16″ (8.0)	5/16″ (7.8) Lami	32	29	CE	ESP023470P-6
Clad Ultimate Sliding French Door IZ3							
CUSFD 6068	5/32" (3.9) Tempered	5/16″ (8.0)	9/32″ (6.9) SGP LAMI	32	29	IZ	ESP023470P-23
CUSFD 6068	3/16" (4.7) Tempered	9/32" (7.0)	9/32″ (6.9) SGP LAMI	32	29	IZ	ESP023470P-24
Clad Ultimate Inswing French Door IZ3							
CUIFD 6068 IZ3	1/8″ (3.1) Tempered	9/32″ (7)	11/32" (8.6) SGP	33	30		ESP018204P-1
CUIFD 6068 IZ3	3/16″ (4.7) Tempered	1/4" (6.5)	11/32" (8.6) SGP	34	31		ESP018204P-2
Clad Ultimate Inswing French Door							
CUIFD 6068	1/8″ (3.1) Tempered	1/2" (13)	1/8″ (3.1) Tempered	31	26		ESP018204P-6
CUIFD 6068	1/8″ (3.1) Tempered	7/16" (11.5)	5/32" (3.9) Tempered	33	28		ESP018204P-8
CUIFD 6068	1/8″ (3.1) Tempered	3/8″ (9.8)	1/4″ (5.7) Tempered	34	30		ESP018204P-10
CUIFD 6068	1/4″ (5.7) Tempered	5/16″ (8)	1/4″ (5.7) Tempered	34	29		ESP018204P-12
CUIFD 6068	1/8″ (3.1) Tempered	3/8″ (9.8)	1/4″ (6) Lami	35	30		ESP018204P-14
CUIFD 6068	3/16″ (4.7) Tempered	5/16″ (8)	1/4″ (6) Lami	35	30		ESP018204P-18
CUIFD 6068	1/4″ (5.7) Tempered	5/16″ (8)	1/4″ (6) Lami	35	30		ESP018204P-16
CUIFD 6068	1/4″ (6) Lami	9/32″ (7)	1/4″ (6) Lami	35	30		ESP018634P-1
CUIFD 6068 3/4 lite stmpd rsd pnls	1/8″ (3.1) Tempered	1/2" (13)	1/8″ (3.1) Tempered	32	26	3/4 lite stamped raised panels	ESP018204P-22
CUIFD 6068 3/4 lite stmpd rsd pnls	3/16″ (4.7) Tempered	5/16″ (8)	1/4″ (6) Lami	34	30	3/4 lite stamped raised panels	ESP018204P-24
CUIFD 6068	1/8″ (3.1) Tempered	1/2" (13)	1/8″ (3.1) Tempered	40	30	1/8" storm combination on exterior	ESP018204P-7
CUIFD 6068	1/8″ (3.1) Tempered	7/16" (11.5)	5/32" (3.9) Tempered	42	32	1/8" storm combination on exterior	ESP018204P-9
CUIFD 6068	1/8″ (3.1) Tempered	3/8″ (9.8)	1/4″ (5.7) Tempered	43	33	1/8" storm combination on exterior	ESP018204P-11
CUIFD 6068	1/4″ (5.7) Tempered	5/16″ (8)	1/4″ (5.7) Tempered	42	34	1/8" storm combination on exterior	ESP018204P-13
CUIFD 6068	1/8″ (3.1) Tempered	3/8″ (9.8)	1/4″ (6) Lami	44	33	1/8" storm combination on exterior	ESP018204P-15
CUIFD 6068	3/16″ (4.7) Tempered	5/16″ (8)	1/4″ (6) Lami	43	34	1/8" storm combination on exterior	ESP018204P-19
CUIFD 6068	1/4″ (5.7) Tempered	5/16″ (8)	1/4″ (6) Lami	43	35	1/8" storm combination on exterior	ESP018204P-17
CUIFD 6068	1/4″ (6) Lami	9/32″ (7)	1/4″ (6) Lami	44	33	1/8" storm combination on exterior	ESP018634P-2
CUIFD 6068 3/4 lite stmpd rsd pnls	1/8″ (3.1) Tempered	1/2" (13)	1/8″ (3.1) Tempered	41	31	1/8" storm combination on exterior	ESP018204P-23
CUIFD 6068 3/4 lite stmpd rsd pnls	3/16″ (4.7) Tempered	5/16″ (8)	1/4″ (6) Lami	43	34	1/8" storm combination on exterior	ESP018204P-25

STC and OITC Class Values

Marvin Sound Transmission Class and Outdoor - Indoor Transmission Class Values							
Product Type	Exterior Glazing	Airspace	Interior Glazing	STC	OITC	Additional Information	STC Report #
Clad Ultimate Outswing French Door							
CUOFD 6068	1/8″ (3.1) Tempered	1/2" (13)	1/8″ (3.1) Tempered	31	26		ESP018204P-26
CUOFD 6068	1/8″ (3.1) Tempered	7/16" (11.5)	5/32" (3.9) Tem-pered	33	28		ESP018204P-27
CUOFD 6068	1/8″ (3.1) Tempered	3/8″ (9.8)	1/4″ (5.7) Tempered	35	30		ESP018204P-28
CUOFD 6068	1/4″ (5.7) Tempered	5/16″ (8)	1/4″ (5.7) Tempered	34	29		ESP018204P-29
CUOFD 6068	1/8″ (3.1) Tempered	3/8″ (9.8)	1/4″ (6) Lami	36	30		ESP018204P-30
CUOFD 6068	3/16″ (4.7) Tempered	5/16″ (8)	1/4″ (6) Lami	36	30		ESP018204P-32
CUOFD 6068	1/4″ (5.7) Tempered	5/16″ (8)	1/4″ (6) Lami	35	30		ESP018204P-33
CUOFD 6068	1/4″ (6) Lami	9/32″ (7)	1/4″ (6) Lami	36	31		ESP018204P-31
Clad Ultimate Outswing French Door IZ3							
COFD 6068 IZ3	1/8″ (3.1) Tempered	9/32″ (7)	11/32" (8.6) SGP	33	29	IZ3	ESP018204P-3
COFD 6068 IZ3	3/16″ (4.7) Tempered	1/4" (6.5)	11/32" (8.6) SGP	34	31	IZ3	ESP018204P-4
Clad Ultimate Marvin Multi Slide Door / Stacked							
Multi Panel Sliding Door CN6070 OX	3/16″ (4.7) Tempered	9/16" (14.5)	3/16″ (4.7) Tem-pered	30	27		ESP021984P-1
Multi Panel Sliding Door CN6070 OX	3/16″ (4.7) Tempered	1/2" (13.0)	1/4″ (5.7) Tempered	32	29		ESP021984P-3
Multi Panel Sliding Door CN6070 OX	1/4″ (5.7) Tempered	7/16″ (11.5)	1/4″ (5.7) Tempered	31	28		ESP021984P-4
Multi Panel Sliding Door CN6070 OX	3/16″ (4.7) Tempered	1/2" (13.0)	1/4″ (6.0) Lami	33	30		ESP021984P-5
Multi Panel Sliding Door CN6070 OX	1/4″ (6.0) Lami	9/32″ (7)	1/4″ (6.0) Lami	33	30		ESP021984P-2
Multi Panel Sliding Door CN6070 OX	3/16″ (4.7) Tempered	1/4" (11.5)	11/32" (8.6) SGP	31	29	IZ3	ESP021984P-7
Multi Panel Sliding Door CN6070 OX	1/4″ (5.7) Tempered	1/2" (13.0)	15/32" (11.7) SGP	32	30	IZ3	ESP021984P-6
Clad Simulated Double Hung Hopper							
CSDHHOP (1") FS 40 X 59.1"	3/16″ (4.7) Annealed	5/8″ (16)	3/16″ (4.7) Annealed	33	28		ESP017948P-1
CSDHHOP (1") FS 40 X 59.1"	1/8″ (3.1) Annealed	5/16″ (8)	1/8″ (3.1) Annealed	32	28	Tri-pane: two 5/16" air space with 1/8" center	ESP017948P-3
CSDHHOP (1") FS 40 X 59.1"	3/16″ (4.7) Annealed	9/16″ (14.5)	1/4″ (6) LAMI	36	32		ESP017948P-7
CSDHHOP (1") FS 40 X 59.1"	1/4" (5.7) Annealed	1/2″ (13)	1/4″ (6) LAMI	36	32		ESP017948P-5
CSDHHOP (1") FS 40 X 59.1"	1/4″ (6) LAMI	1/2″ (13)	1/4″ (6) LAMI	37	32		ESP017948P-17

Outdoor Areas of Activity Noise Level Calculations
HUD Barrier Performance Module
and Elevation Data from USGS National Map

Barrier Performance Module (BPM) Calculator

This module provides to the user a measure on the barrier's effectiveness on noise reduction. A list of the input/output variables and their definitions, as well as illustrations of different scenarios are provided.

Calculator

View Day/Night Noise Level Calculator (/programs/environmental-review/dnl-calculator/)

View Descriptions of the Input/Output variables.

Note: Tool tips, containing field specific information, have been added in this tool and may be accessed by hovering over the Input and Output variables with the mouse.

WARNING: If there is direct line-of-sight between the Source and the Observer, the module will report erroneous attenuation. "Direct line-of-sight" means if the 5' tall Observer can see the noise Source (cars, trucks, trains, etc.) over the Barrier (wall, hill/excavation, building, etc.), the current version of Barrier Performance Module will not accurately calculate the attenuation provided. In this instance, there is unlikely to be any appreciable attenuation.

Note: Barrier height must block the line of sight

Input Data

H	20	**R**[1]	126
S	10	**D**[1]	165
O	16	**α**	180

Calculate Output

Output Data

h	7	**R**	126
D	165	**FS**	9.2043

Reduction From Barrier (dB):

-9.2043

Note: If you have separate Road and Rail DNL values, please enter the values below to calculate the new combined Road/Rail DNL :

Road DNL:

73

Rail DNL:

Calculate

Combined Road/Rail DNL with Barrier Reduction:

63.7957

Input/Output Variables

Input Variables

The following variables and definitions from the barrier being assessed are the input required for the web-based barrier performance module:

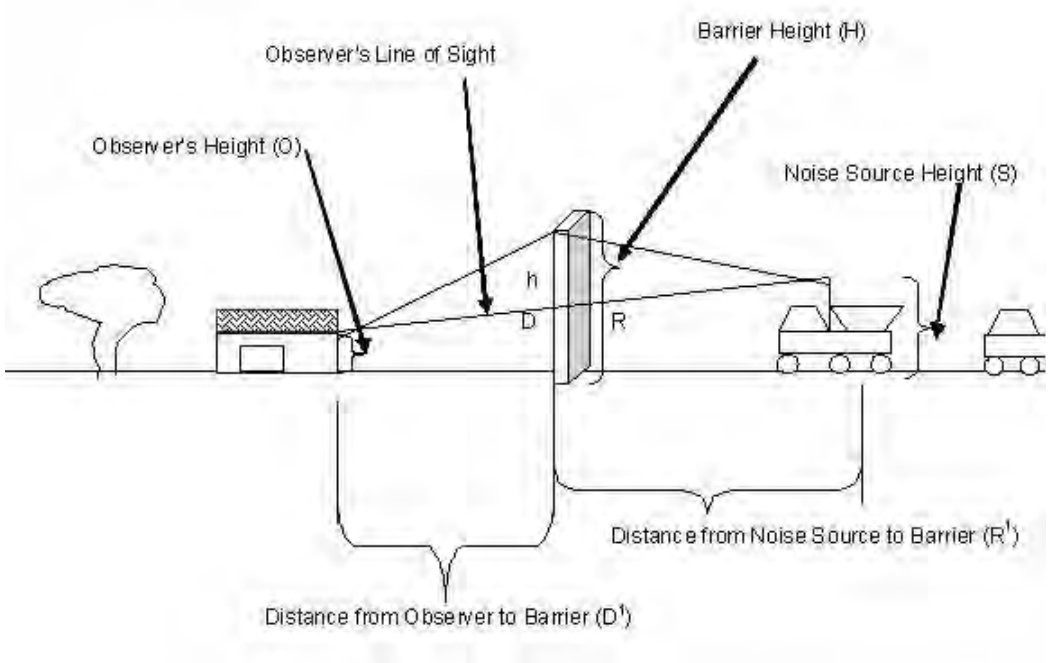
- H = Barrier Height
- S = Noise Source Height
- O = Observer Height (known as the receiver)
- R^1 = Distance from Noise Source to Barrier
- D^1 = Distance from the Observer to the Barrier
- α = Line of sight angle between the Observer and the Noise Source, subtended by the barrier at observer's location

Output Variables

Definitions of the output variables from the mitigation module of the Day/Night Noise Level Assessment Tools as part of the Assessment Tools for Environmental Compliance:

- h = The shortest distance from the barrier top to the line of sight from the Noise source to the Observer.
- R = Slant distance along the line of sight from the Barrier to the Noise Source
- D = Slant distance along the line of sight from the Barrier to the Observer

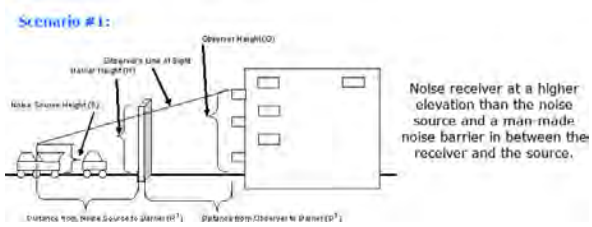
The “actual barrier performance for barriers of finite length” is noted on the worksheets(in the Guidebook) as **FS**.



Barrier Implementation Scenarios

Locate the cursor on the following thumbnails to enlarge the respective scenario as implementation examples of the barrier performance module.

Scenario #1:

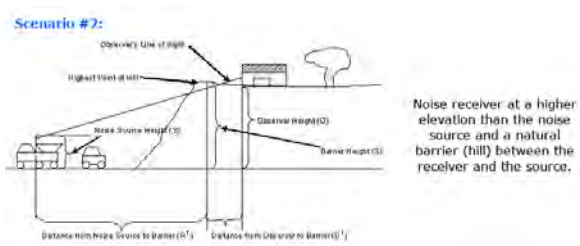


(https://www.hudexchange.info/resources/documents/Barrier-Performance-Module-Barrier-Implementation-Scenario-1.gif)

view larger version of image (/resource/3841/barrier-performance-module-bpm-barrier-implementation-scenarios/)

Noise receiver at a higher elevation than the noise source and a man-made noise barrier in between the receiver and the source.

Scenario #2:

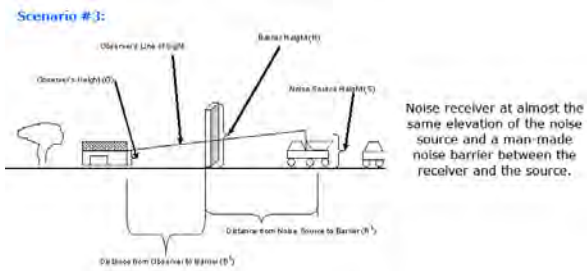


Noise receiver at a higher elevation than the noise source and a natural barrier (hill) between the receiver and the source.

documents/Barrier-Performance-Module-Barrier-Implementation-Scenario-2.gif)

view larger version of image (/resource/3841/barrier-performance-module-bpm-barrier-implementation-scenarios/)

Scenario #3:

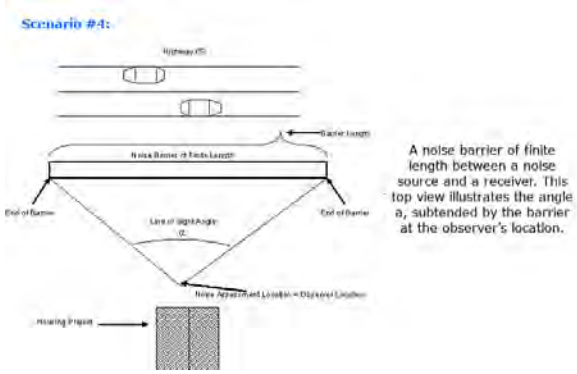


(https://www.hudexchange.info/resources/documents/Barrier-Performance-Module-Barrier-Implementation-Scenario-3.gif)

view larger version of image (/resource/3841/barrier-performance-module-bpm-barrier-implementation-scenarios/)

Noise receiver at almost the same elevation of the noise source and a man-made noise barrier between the receiver and the source.

Scenario #4:



(https://www.hudexchange.info/resources/documents/Barrier-Performance-Module-Barrier-Implementation-Scenario-4.gif)

view larger version of image (/resource/3841/barrier-performance-module-bpm-barrier-implementation-scenarios/)

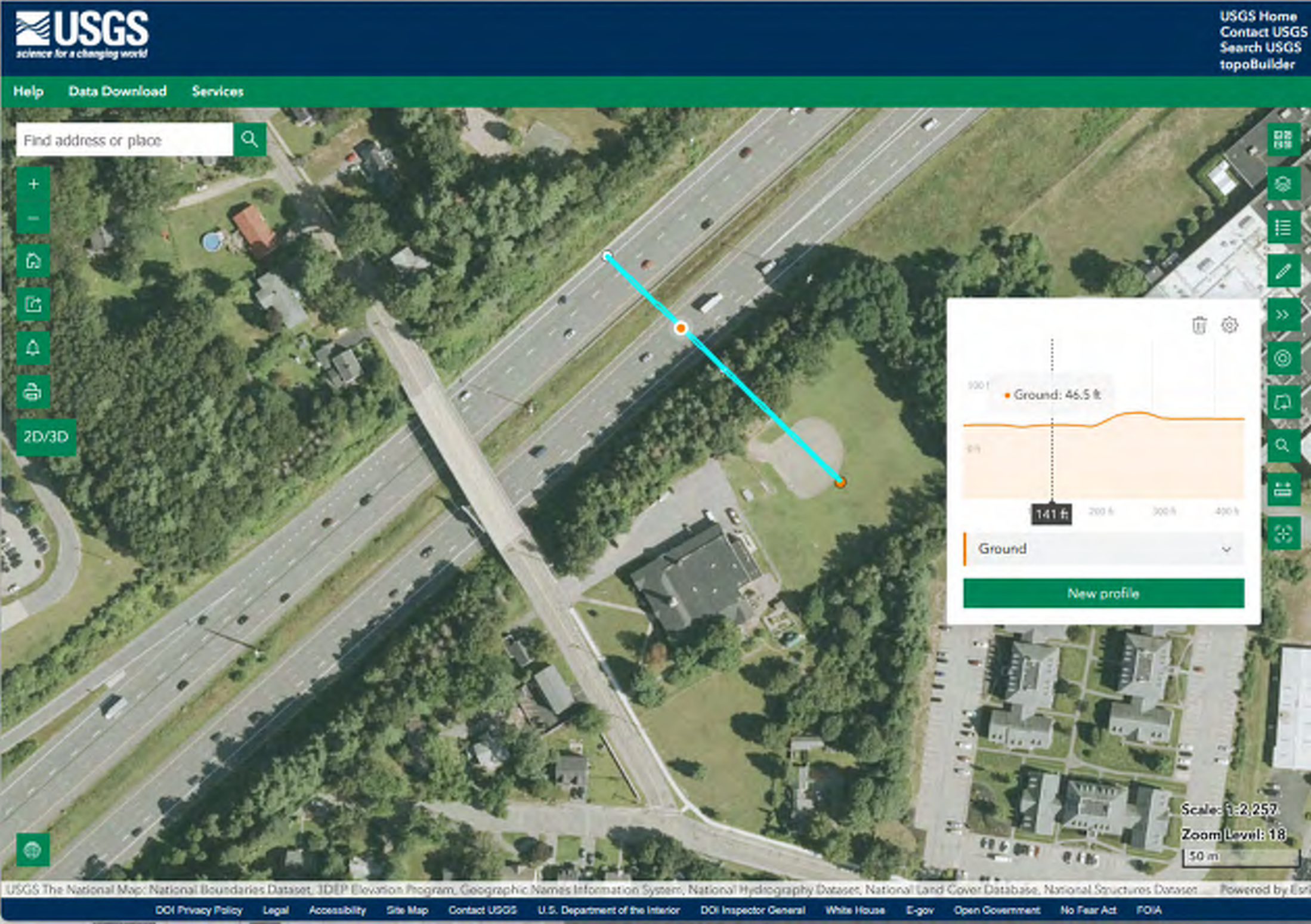
A noise barrier of finite length between a noise source and a receiver. This top view illustrates the angle α, subtended by the barrier at the observer's location.

Contents

Calculator

Input/Output Variables

Barrier Implementation Scenarios


USGS
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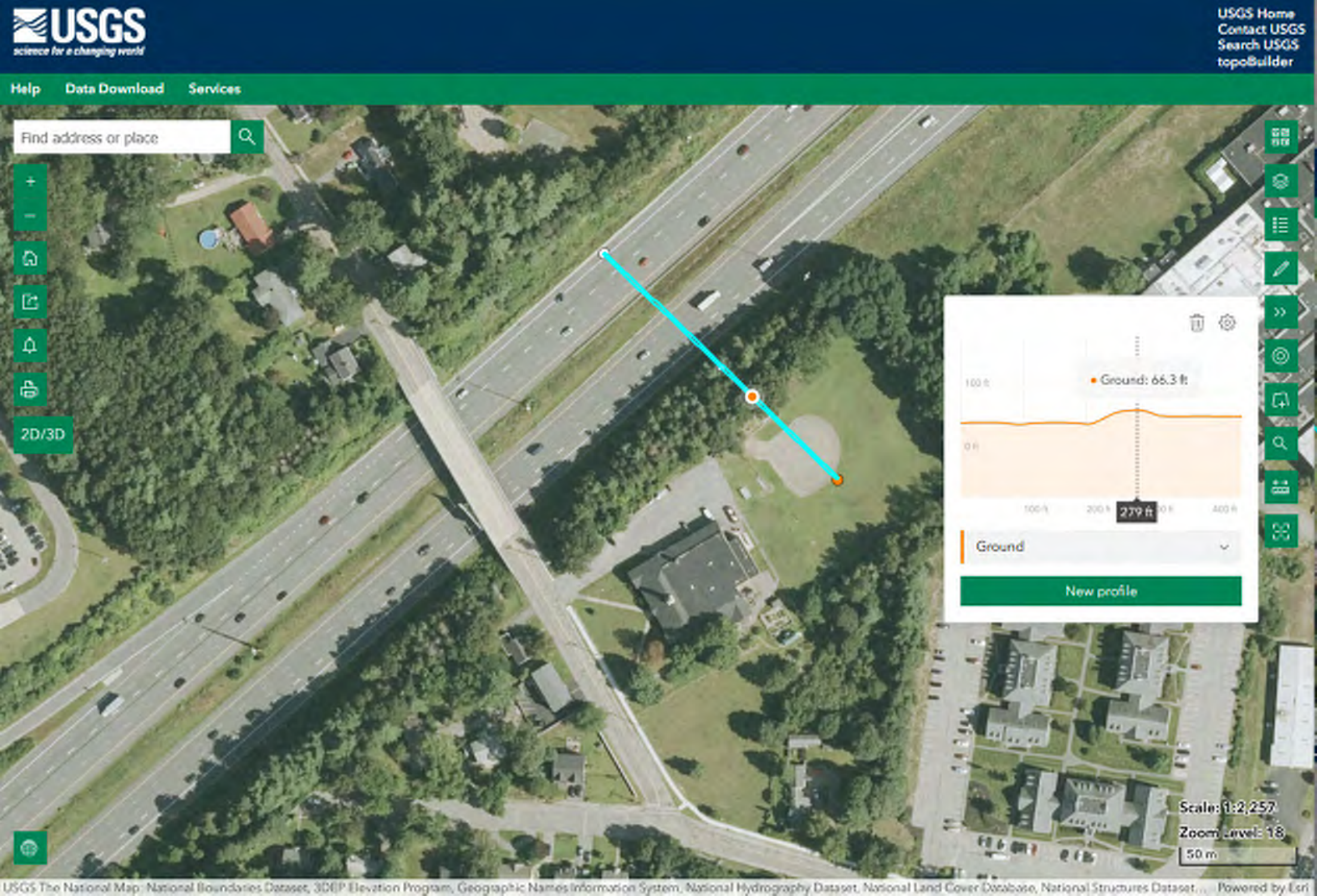
Help
Data Download
Services
Find address or place
2D/3D
Ground: 46.5 ft
141 ft
Ground
New profile
Scale: 1:2,257
Zoom Level: 18
50 m
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset
Powered by Esri
DOI Privacy Policy
Legal
Accessibility
Site Map
Contact USGS
U.S. Department of the Interior
DOI Inspector General
White House
E-gov
Open Government
No Fear Act
FOIA


USGS
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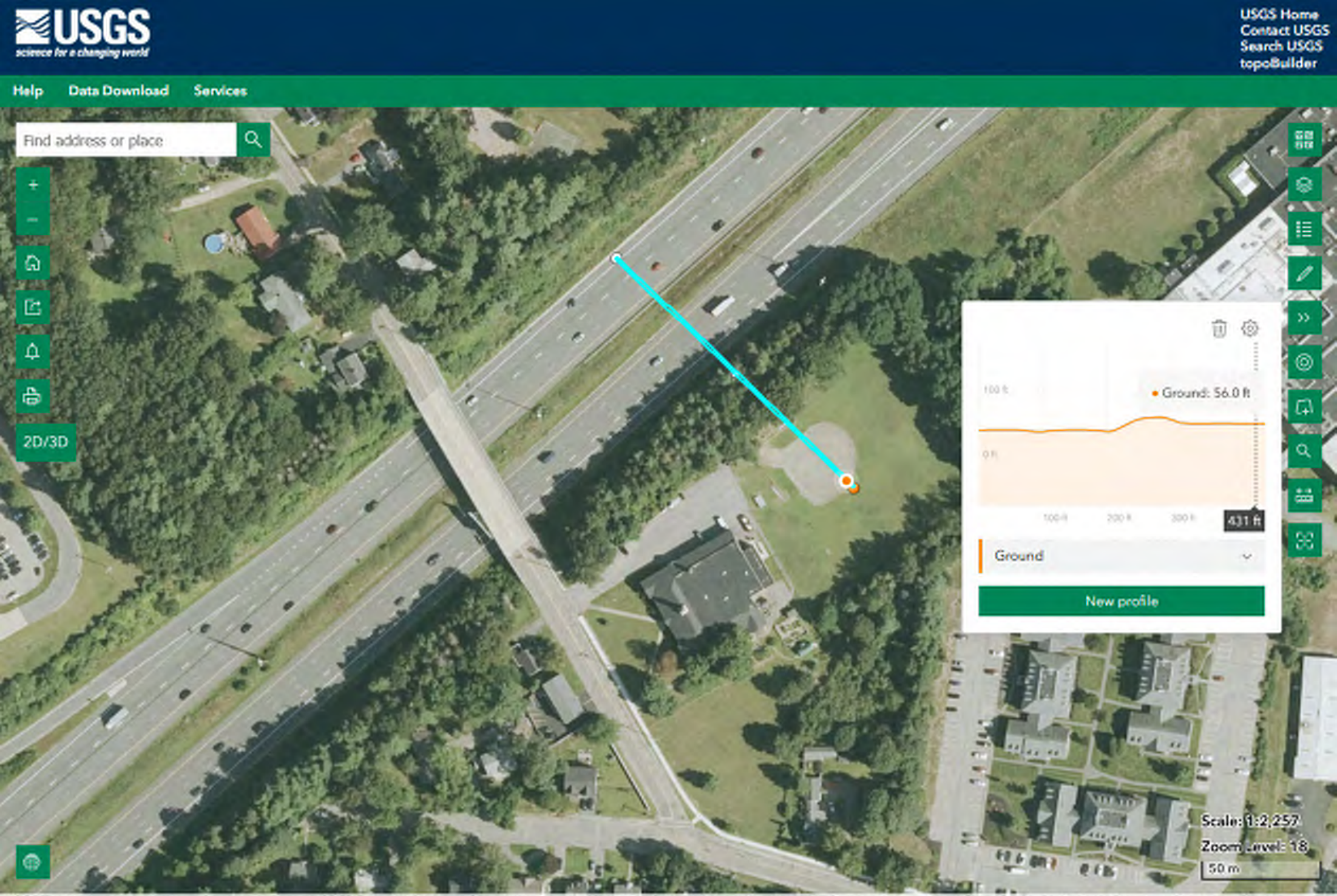
topoBuilder
Help
Data Download
Services
Find address or place
2D/3D
Ground: 66.3 ft
279 ft
Ground
New profile
Scale: 1:2,257
Zoom Level: 18
50 m
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, ... Powered by Esri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2D/3D
Ground: 56.0 ft
431 ft
Ground
New profile
Scale: 1:2,257
Zoom Level: 18
50 m
USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, ...
Powered by Esri

SRW
Environmental Consulting, LLC

April 16, 2025

Mark Lentz
Facilities Director
Portsmouth Housing Authority
245 Middle Street
Portsmouth, NH 03801

Re: Sherburne School, 35 Sherburne Street, Portsmouth, New Hampshire

Dear Mr. Lentz:

SRW is currently completing research and preparing documentation for above referenced property as part of an upcoming Environmental Review assessment. This letter is to provide you with an up dated review of the subject property for the "Site Contamination" resource of the environmental review. As you recall, we completed a Phase I Environmental Site Assessment of the property on January 4, 2023, in which we identified the following recognized environmental condition (REC):

** Potential bedrock aquifer impacts under the subject property from PFOA (perfluorooctanoic acid), PFOS (perfluorooctane sulfonate), PFHxS (perfluorohexanesulfonic acid) and PFNA (perfluorononanoic acid), a group of regulated substances commonly associated with fire fighting foam, from the nearby Pease Air Force Base National Priorities List property. Currently, it does not appear that there is, in fact, an impact, and the bedrock contamination plume appears to be essentially confined to the Pease Air Force Base site itself. However, a bedrock monitoring well was installed at the subject property at the end of 2022 and laboratory analysis results from groundwater collected from that well have not been released.*

SRW has updated our review of site files, NHDES and EPA lists and databases, and has conducted an updated site inspection. During this update, SRW has not identified any additional RECs.

Regarding the REC identified during the 2023 Phase I ESA, additional information was available for review, including test results of the monitoring well at the subject property. According to the most recent AIMS Optimization, Maintenance, and Monitoring Report, low levels of PFOS, PFNA and PFHxS have been observed in the monitoring well at the subject property (well # PSW-1). Since 2019, concentrations of PFHxS and PFOS have shown a slightly increasing concentration trend, while PFOA has shown no trend. Even so, concentrations of each compound is generally an order of magnitude lower than NH Department of Environmental Services (NHDES) ambient groundwater quality standards (AGQS).

A treatment system to intercept the most highly contaminated PFHxS, PFOS and PFOA plume at the Pease International Tradeport property has been installed. The system includes groundwater extraction wells on the southern, hydraulically downgradient side of the most highly contaminated plume, and injection wells (of treated groundwater) on the northernmost, hydraulically upgradient side of the plume. However, contaminated groundwater which has already migrated beyond the extraction wells will continue to migrate to the south and toward the subject property. As a result, there has been and may continue to be a slightly increasing trend of contamination levels at the subject property, until the contamination plume passes by the subject property.

SRW concludes that the REC that was identified in the 2023 Phase I ESA still remains and will remain for the foreseeable future. However, since groundwater is not used at the site, the contamination plume should continue to pose no significant risk of impact to current and future site users.

Select pages from NHDES documents including the current groundwater contamination plume maps, historic groundwater analysis results table and trend analysis table are attached.

Please let me know if you have any questions.

Sincerely,
SRW Environmental Consulting, LLC

Todd Scheffer

Todd Scheffer, P.G.
Principal

SYMBOL KEY

Composite PFAS in Bedrock Groundwater:

- Non-Detect
- Detected Below RSL or AGQS
- Detected Above RSL or AGQS
- Detected Above 10x RSL or AGQS
- Detected Above 100x RSL or AGQS
- Detected Above 1000x RSL or AGQS
- PMP Well with Recent (2022 or newer) PFAS Data

Screened Lithology

- Deep Bedrock Monitoring Well

08-5157 Additional Sampling Location Not Previously Sampled for PFAS

08-50570 Non-Validated Data

Composite PFAS in Bedrock Groundwater Above RSL or AGQS (dashed where inferred)

Surface Water Bodies

Great Bay National Wildlife Refuge (NWR)

Interpreted Bedrock Trough

Pease Development Authority (PDA) Property Boundary

Note:

AGQS: New Hampshire Department of Environmental Services Ambient Groundwater Quality Standards

PMP: Performance Monitoring Program

RSL: United States Environmental Protection Agency Tapwater Regional Screening Level for exposure to HFPO-DA, PFOS, PFOA, PFNA, PFHxA, PFHxS, PFBA, and PFBS from ingestion and dermal contact with potable water (USEPA, November 2023). USEPA toxicity values and the associated RSLs were adopted by the Department of Defense in August 2023 with a March 2024 addendum.

RES47 is an irrigation well on the Pease Golf Course property

Air Force Civil Engineer Center
2261 Hughes Ave., Suite 163
JBSA Lackland, TX 78236

N

0 125 250 500 750 1,000 Meters
0 500 1,000 2,000 3,000 4,000 Feet

NOTES:
Aerial Imagery obtained through ESRI Online Services

Figure 2
Deep Bedrock
Groundwater Boundary Sampling Locations
Remedial Investigation Plume Boundary Groundwater Sampling Technical Memorandum
Former Pease Air Force Base, Portsmouth, New Hampshire

11/20/2024	Boundary_GW_WP	
Drawn: JSW	Chk: FMD	PROJ: 775361602

Note:

AGQS: New Hampshire Department of Environmental Services Ambient Groundwater Quality Standards

PMP: Performance Monitoring Program

RSL: United States Environmental Protection Agency Tapwater Regional Screening Level for exposure to HFPO-DA, PFOS, PFOA, PFNA, PFHxA, PFHxS, PFBA, and PFBS from ingestion and dermal contact with potable water (USEPA, November 2023). USEPA toxicity values and the associated RSLs were adopted by the Department of Defense in August 2023 with a March 2024 addendum.

SYMBOL KEY

Composite PFAS in Overburden Groundwater:
- Non-Detect
- Detected Below RSL or AGQS
- Detected Above RSL or AGQS
- Detected Above 10x RSL or AGQS
- Detected Above 100x RSL or AGQS
- Detected Above 1000x RSL or AGQS
- PMP Well with Recent (2022 or newer) PFAS Data

Composite PFAS in Seep Groundwater:
- Non-Detect
- Detected Below RSL or AGQS
- Detected Above RSL or AGQS
- Detected Above 10x RSL or AGQS
- Detected Above 100x RSL or AGQS
- Detected Above 1000x RSL or AGQS

Screened Lithology
- Upper Sand Monitoring Well
- Lower Sand Monitoring Well
- Overburden Monitoring Well
- Hybrid Monitoring Well
- Fractured Bedrock Monitoring Well

08-5157 Additional Sampling Location Not Previously Sampled for PFAS
08-50570 Non-Validated Data

Composite PFAS in Overburden Groundwater Above RSL or AGQS (dashed where inferred)
Surface Water Bodies
Great Bay National Wildlife Refuge (NWR)
Interpreted Bedrock Trough
Pease Development Authority (PDA) Property Boundary

Air Force Civil Engineer Center
2261 Hughes Ave., Suite 163
JBSA Lackland, TX 78236

N

0 125 250 500 750 1,000 Meters
0 500 1,000 2,000 3,000 4,000 Feet

NOTES:
Aerial imagery obtained through ESRI Online Services

Figure 1
Overburden/Fractured Bedrock Groundwater Boundary Sampling Locations
Remedial Investigation Plume Boundary Groundwater Sampling Technical Memorandum
Former Pease Air Force Base, Portsmouth, New Hampshire

11/20/2024	Boundary_GW_WP	
Drawn: JSW	Chk: FMD	PROJ: 775361602

Table 5-1
Performance Monitoring Sampling Plan and Well Construction Details

Optimization, Maintenance, and Monitoring Report July - December 2022
Former Pease Air Force Base
Portsmouth, New Hampshire

Location Details						Lithologic Unit						Sampling Frequency				
Location Identification	Latitude	Longitude	Well Diameter (inches)	Total depth (feet bgs)	Screened Interval (feet bgs)	US	LS	OB	HYB	FBR	DBR	Baseline Groundwater Sampling	Monthly	Quarterly	Semi-Annually	Annually
TAXIWAY B AREA																
34-5021	43.07522925	-70.81151546	4	20	9-19	■						P, B			P, B	P, B
34-6020	43.07511836	-70.81145023	4	49.6	39.6-49.6					■		P, B			P, B	P, B
34-6010	43.07507866	-70.81139573	6	63	50-63						■	P, B			P, B	P, B
HY3-5312	43.07391044	-70.81429912	2	38.61	4.22-14.22		■					P, WC, B			P, WC, B	P, WC, B
15-5557	43.07153198	-70.82025642	2	31.39	7.8-22.8			■				P, WC			P	P, WC
177-6024	43.07153198	-70.82025642	2	74	64-74					■		P, WC			P	P, WC
HY1-8887	43.07045363	-70.80919003	1	15.5	5.5-15.5	■						P, WC, B			P, WC, B	P, WC, B
PH2-5627	43.07027754	-70.81295959	2	41	35-40		■					P, B			P, B	P, B
PH2-6627	43.07028628	-70.81296463	2	67	56-66					■		P, B			P, B	P, B
PH1-5321	43.06958692	-70.81474076	2	32	22-32		■					P, WC, B			P, WC, B	P, WC, B
PH1-6507	43.06957841	-70.81470345	4	79.1	69-79					■		P, WC, B			P, WC, B	P, WC, B
FLPZ-06	43.06957178	-70.81483722	2	51.43	UNK	■						P, WC, B			P, WC, B	P, WC, B
OUTSIDE OF AIMS INFLUENCE AND SOUTHERN WELL FIELD AREA																
177-3016	43.0590849	-70.80893887	1	28.04	17.9-27.9	■						P			P	P
177-5008	43.06565355	-70.80812013	2	79	30-40		■					P, V		P	P, B	P, B
177-5009	43.068323	-70.80675318	2	12.6	6.6-11.6		■					P, V			P, B	P, B
177-5010	43.07078701	-70.80489753	2	45	8-18		■					P			P	P
177-5011	43.06152155	-70.80875459	2	57	47-57		■					P			P	P
177-5016	43.0590849	-70.80893887	2	105.5	66-76		■					P				P
177-5025	43.06617716	-70.80466532	2	83.5	30-40		■					P		P	P	P
177-5026	43.06131355	-70.80509152	2	97	59-69		■					P		P	P	P
177-6008	43.06565355	-70.80812013	2	79	66-76					■		P, V		P	P, B	P, B
177-6009	43.068323	-70.80675318	2	45	24-44					■		P, V			P, B	P, B
177-6010	43.07078701	-70.80489753	2	45	33-43					■		P			P	P
177-6011	43.06152155	-70.80875459	2	84	62-82					■		P			P	P
177-6016	43.0590849	-70.80893887	2	105.5	93-103					■		P				P
177-6025	43.06617716	-70.80466532	2	83.5	63-83					■		P		P	P	P
OUTSIDE OF AIMS INFLUENCE AND SOUTHERN WELL FIELD AREA (Continued)																
177-6026	43.06131355	-70.80509152	2	100	80-100		■					P		P	P	P
177-7008D	43.06565355	-70.80812013	2	272.5	257-267						■	P		P	P	P
177-7008S	43.06565355	-70.80812013	2	132.5	107-117						■	P		P	P	P
177-7009S	43.068323	-70.80675318	2	128.2	111-121						■	P			P	P
177-7009D	43.068323	-70.80675318	2	272.5	242-252						■	P				P
177-7025D	43.06617716	-70.80466532	2	257	237-247						■	P		P	P	P
177-7025S	43.06617716	-70.80466532	2	116.5	104-114						■	P		P	P	P
177-7026D	43.06131355	-70.80509152	2	340	238-248						■	P		P	P	P
177-7026S	43.06131355	-70.80509152	2	155	140-150						■	P		P	P	P
CSW-1D	43.06361383	-70.79052035	2				■							P	P	P
CSW-1S	43.06361383	-70.79052035	2			■								P	P	P
CSW-2R	43.05992296	-70.79100183	2	30	23-28		■					P		P	P	P
CSW-3S[2]	43.05920752	-70.8037279	2	46.4	36.1 - 46.1		■					P		P	P	P
CSW-3D[2]	43.05920752	-70.8037279	2	65.5	55.2-65.2					■		P		P	P	P
HMW-14	43.06320639	-70.8085705	2	44	37-47		■					P, WC, V			P, WC, B	P, WC, B
HMW-15	43.06648449	-70.80732126	2	46	23-28		■					P, WC, V		P	P, WC, B	P, WC, B
HMW-16	43.06648449	-70.80732126	2	68.3	58.1-68.1					■		P, WC, V		P	P, WC, B	P, WC, B
HMW-8R	43.06735269	-70.8057214	2	34	26-33		■					P, WC, V		P	P, WC, B	P, WC, B
PSW-1	43.05922277	-70.79938219	2	56	35-55		■					P		P	P	P
PSW-2	43.05885832	-70.79620537	2				■							P	P	P
PSW-3S[2]	43.05920752	-70.8037279	2	39.9	29.5 - 39.5		■					P		P	P	P
PSW-3D[2]	43.05920752	-70.8037279	2	60.9	50.5 - 60.5					■		P		P	P	P
SMW-1	43.06151066	-70.80634721	2	34	27-37		■					P		P	P	P
SMW-13	43.0627085	-70.80460761	1	31	29.5-34.5		■					P		P	P	P
PSW-4S[2]	43.05904317	-70.80144553	2	35	35-25			■				P		P	P	P
PSW-4D[2]	43.05904317	-70.80144553	2	58	55-45					■		P		P	P	P
PSW-5US[2]	43.05858763	-70.79952711	2	17.35	17.4-7.4	■						P		P	P	P
PSW-5S[2]	43.05815273	-70.7992747	2	50.8	50.8-40.8		■					P		P	P	P
PSW-5D[2]	43.05815249	-70.79927549	2	84.5	84.5-74.5					■		P		P	P	P

Created by: LJD 09/03/2021
Checked by: AMC 01/04/2022
Revised by: JW 1/12/24

Appendix J
Historical Performance Monitoring PFAS Analytical Results

AIMS Optimization, Maintenance, and Monitoring Report
July - December 2022
Former Pease Air Force Base
Portsmouth, New Hampshire

					Analyte:	6:2 Fluorotelomer sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonate (8:2 FTS)	Hexafluoropropylene oxide dimer acid (HFPO-DA)	Perfluorobutanesulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluoroheptanesulfonic (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanesulfonic acid (PFHxS)	Perfluorohexanoic acid (PFHxA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonamide (PFOSA)	Perfluorooctanesulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluoropentanoic acid (PFPeA)
					NH AGQS:	NA	NA	NA	NA	NA	NA	NA	0.018	NA	0.011	NA	0.015	0.012	NA
Location	Latitude	Longitude	Sample ID	Sample Date	Sample Type	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
HMW-8R	43.06735269	-70.8057214	HMW-8R-GW_20190404	4/4/2019	N	0.0084 J	0.015 U	NA	0.015 U	0.010 J	0.01 U	0.011 J	0.065	0.023	0.01 U	0.015 U	0.020 J	0.020 J	0.024
			HMW-8R-GW_20190612	6/12/2019	N	0.0089 J	0.015 U	NA	0.0065 J	0.012 J	0.0072 J	0.013 J	0.074	0.026	0.010 U	0.015 U	0.027	0.024	0.027
			DUP-32-GW_20190612	6/12/2019	FD	0.0076 J	0.015 U	NA	0.0061 J	0.012 J	0.0073 J	0.012 J	0.072	0.026	0.010 U	0.015 U	0.026	0.023	0.026
			HMW-8R-GW_20190918	9/18/2019	N	0.031 J	0.015 UJ	NA	0.0075 J	0.015 J	0.010 UJ	0.016 J	0.070 J	0.028 J	0.010 U	0.015 UJ	0.027 J	0.024 J	0.030 J
			HMW-8R-GW_20191204	12/4/2019	N	0.0060 J	0.015 U	NA	0.015 U	0.0092 J	0.010 U	0.0099 J	0.075	0.026	0.010 U	0.015 U	0.026	0.024	0.028
			DUP-53-GW_20191204	12/4/2019	FD	0.0085 J	0.015 U	NA	0.015 U	0.0095 J	0.010 U	0.011 J	0.076	0.026	0.010 U	0.015 U	0.028	0.024	0.028
			HMW-8R-GW_20200325	3/25/2020	N	0.0143 J	0.0083 U	NA	0.0037 J	0.0104 J	0.0042 U	0.0104	0.0605	0.0225	0.0042 U	0.0042 U	0.0345	0.0214	0.0231
			HMW-8R-GW_20200624	6/24/2020	N	0.0108 J	0.0077 U	NA	0.0051 J	0.0105 J	0.0025 J	0.0101	0.0681	0.0237	0.0038 U	0.0038 U	0.0361	0.0231	0.0262
			HMW-8R-GW_20200930	9/30/2020	N	0.0050 J	0.0083 U	NA	0.0046 J	0.0107 J	0.0032 J	0.0125	0.0885	0.0283	0.0042 U	0.0042 U	0.0518	0.0247	0.0321
			HMW-8R-GW_20201215	12/15/2020	N	0.0218	0.008 U	NA	0.0056 J	0.0135 J	0.0042 J	0.0126	0.084	0.0287	0.004 U	0.004 U	0.0486	0.027	0.0333
			DUP-53-GW_20201215	12/15/2020	FD	0.0221	0.008 U	NA	0.0057 J	0.0129 J	0.0034 J	0.0118	0.0787	0.0275	0.004 U	0.004 U	0.0463	0.0256	0.0319
			HMW-8R-GW_20210325	3/25/2021	N	0.0333	0.0080 U	NA	0.0029 J	0.0111 J	0.0033 J	0.0089	0.0500	0.0164	0.0040 U	0.0040 U	0.0455	0.0167	0.0185
			HMW-8R-GW_20210921	9/21/2021	N	0.0140	0.0040 U	NA	0.0041	0.0100	0.0026 J	0.0120	0.0820	0.0260	0.00091 J	0.0040 UJ	0.0450	0.0250	0.0270
			HMW-8R-GW_20211215	12/15/2021	N	0.0242	0.0083 U	NA	0.0030 J	0.0091 J	0.0025 J	0.0085	0.0552	0.0166	0.0042 U	0.0042 U	0.0435	0.0183	0.0210
			DUP45-GW_20211215	12/15/2021	FD	0.0239	0.0083 U	NA	0.0037 J	0.0087 J	0.0027 J	0.0088	0.0531	0.0169	0.0042 U	0.0042 U	0.0424	0.0184	0.0213
			HMW-8R-GW_20220324	3/24/2022	N	0.0020 J	0.0016 U	NA	0.0010 J	0.0032	0.00069 J	0.0027	0.0160	0.0059	0.0016 U	0 R	0.0100	0.0048	0.0066
			HMW-8R-GW_20220622	6/22/2022	N	0.0062	0.0016 U	0.0020 U	0.0023	0.0055	0.0010 J	0.0062	0.0390	0.0130	0.0016 U	0.0020 U	0.0270	0.0120	0.0150
			HMW-8R-GW_20220923	9/23/2022	N	0.0041	0.0014 U	0.0014 U	0.0028	0.0062	0.0014 J	0.0072	0.0420	0.0140	0.00081 J	0.0014 U	0.0320	0.0130	0.0160
			HMW-8R-GW_20221221	12/21/2022	N	0.0180	0.0015 U	NA	0.0027	0.0076	0.0016 J	0.0083	0.0490	0.0150	0.00091 J	0.0015 U	0.0400	0.0140	0.0200
			DUP49-GW_20221221	12/21/2022	FD	0.0180	0.0014 U	NA	0.0029	0.0080	0.0016 J	0.0083	0.0480	0.0150	0.0010 J	0.0014 U	0.0410	0.0150	0.0190
OUTSIDE OF DIRECT AIMS INFLUENCE AND SOUTHERN WELL FIELD AREA																			
PSW-1	43.05922277	-70.79938219	PSW-1-GW_20190404	4/4/2019	N	0.015 U	0.015 U	NA	0.015 U	0.015 U	0.01 U	0.015 U	0.015 U	0.015 U	0.01 U	0.015 U	0.015 U	0.015 U	0.01 U
			PSW-1-GW_20190917	9/17/2019	N	0.015 U	0.015 U	NA	0.013 J	0.0076 J	0.010 U	0.0073 J	0.015 U	0.0084 J	0.010 U	0.015 U	0.015 U	0.0079 J	0.0074 J
			DUP-49-GW_20190917	9/17/2019	FD	0.015 U	0.015 U	NA	0.013 J	0.0073 J	0.010 U	0.015 U	0.015 U	0.0079 J	0.010 U	0.015 U	0.015 U	0.0080 J	0.0069 J
			PSW-1-GW_20200325	3/25/2020	N	0.0091 U	0.0091 U	NA	0.0045 U	0.0091 U	0.0045 U	0.0045 U	0.0032 J	0.0027 J	0.0045 U	0.0045 U	0.0045 U	0.0044 J	0.0045 U
			PSW-1-GW_20200929	9/29/2020	N	0.0080 U	0.0080 U	NA	0.0040 U	0.0080 U	0.0040 U	0.0040 U	0.0040 U	0.0040 U	0.0040 U	0.0040 U	0.0022 J	0.0022 J	0.0022 J
			DUP85-GW_20200929	9/29/2020	FD	0.0080 U	0.0080 U	NA	0.0040 U	0.0080 U	0.0040 U	0.0040 U	0.0040 U	0.0040 U	0.0040 U	0.0040 U	0.0040 U	0.0040 U	0.0023 J
			PSW-1-GW_20210204	2/4/2021	N	0.008 U	0.008 U	NA	0.004 U	0.008 U	0.004 U	0.004 U	0.0032 J	0.0025 J	0.004 U	0.004 U	0.004 U	0.0031 J	0.0025 J
			PSW-1-GW_20210325	3/25/2021	N	0.0080 U	0.0080 U	NA	0.0035 J	0.0080 U	0.0040 U	0.0040 U	0.0022 J	0.0020 J	0.0040 U	0.0040 U	0.0030 J	0.0028 J	0.0020 J
			PSW-1-GW_20210921	9/21/2021	N	0.0040 U	0.0040 U	NA	0.0014 J	0.0020 U	0.0040 U	0.0014 J	0.0032 J	0.0021 J	0.0040 U	0.0040 U	0.0011 J	0.0027 J	0.0024 J
			PSW-1-GW_20211214	12/14/2021	N	0.0430 U	0.0086 U	NA	0.0043 U	0.0086 U	0.0220 U	0.0220 U	0.0220 U	0.0220 U	0.0043 U	0.0220 U	0.0043 U	0.0031 J	0.0043 U
			PSW-1-GW_20220324	3/24/2022	N	0.0016 U	0.0018 U	NA	0.0015 J	0.0021 J	0.0013 U	0.0012 J	0.0028	0.0019 J	0.0018 U	0.0022 U	0.00095 J	0.0022	0.0022 J
			PSW-1-GW_20220621	6/21/2022	N	0.0016 U	0.0016 U	0.0020 U	0.0018 J	0.0014 J	0.0012 U	0.0012 J	0.0030	0.0015 J	0.0016 U	0.0020 UJ	0.00070 J	0.0025	0.0015 J
			DUP27-GW_20220621	6/21/2022	FD	0.0016 U	0.0016 U	0.0020 U	0.00099 J	0.0013 J	0.0012 U	0.00091 J	0.0025	0.0012 J	0.0016 U	0.0020 UJ	0.00045 J	0.0020	0.0013 J
			PSW-1-GW_20220921	9/21/2022	N	0.0015 U	0.0015 U	0.0015 U	0.0013 J	0.0015 J	0.0011 U	0.0015 J	0.0033	0.0014 J	0.0011 U	0.0015 U	0.0025	0.0036	0.00097 J
			DUP45-GW_20220921	9/21/2022	FD	0.0015 U	0.0015 U	0.0015 U	0.00059 J	0.00093 J	0.0011 U	0.00080 J	0.0025	0.0012 J	0.0011 U	0.0015 U	0.00085 J	0.0029	0.00046 J
			PSW-1-GW_20221220	12/20/2022	N	0.00078 J	0.0016 U	NA	0.0016 J	0.0018 J	0.0012 U	0.0014 J	0.0028	0.002 U	0.0012 U	0.0016 U	0.0017 J	0.0028	0.0019 J

Prepared By: AKN, 04/18/2023
QA/QC By: MG 04/18/2023
Reviewed by: JW 1/12/24

Appendix J
Historical Performance Monitoring PFAS Analytical Results

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					Analyte:	6:2 Fluorotelomer sulfonate (6:2 FTS)	8:2 Fluorotelomer sulfonate (8:2 FTS)	Hexafluoropropylene oxide dimer acid (HFPO-DA)	Perfluorobutanesulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluoroheptanesulfonic (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexanesulfonic acid (PFHxS)	Perfluorohexanoic acid (PFHxA)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonamide (PFOSA)	Perfluorooctanesulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluoropentanoic acid (PFPeA)
					NH AGQS:	NA	NA	NA	NA	NA	NA	NA	0.018	NA	0.011	NA	0.015	0.012	NA
Location	Latitude	Longitude	Sample ID	Sample Date	Sample Type	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
PSW-5US	43.05858763	-70.79952711	PSW-5US-GW_20210519	5/19/2021	N	0.0080 U	0.0080 U	NA	0.0155	0.0080 U	0.0040 U	0.0040 U	0.0023 J	0.0040 U	0.0040 U	0.0040 U	0.0037 J	0.0032 J	0.0040 U
			PSW-5US-GW_20210923	9/23/2021	N	0.0040 U	0.0040 U	NA	0.0110	0.0011 U	0.0040 U	0.00080 J	0.0024 J	0.0040 U	0.0040 U	0.0040 UJ	0.0024 J	0.0026 J	0.00072 J
			PSW-5US-GW_20211215	12/15/2021	N	0.0100 U	0.0100 U	NA	0.0104	0.0100 U	0.0050 U	0.0050 U	0.0027 J	0.0050 U	0.0050 U	0.0050 U	0.0027 J	0.0031 J	0.0050 U
			PSW-5US-GW_20220323	3/23/2022	N	0.0016 U	0.0016 U	NA	0.0100	0.0010 J	0.0012 U	0.00052 J	0.0013 J	0.0014 U	0.0016 U	0.0020 U	0.0024	0.0023	0.0012 U
			PSW-5US-GW_20220621	6/21/2022	N	0.0016 U	0.0016 U	0.0020 U	0.0130	0.0016 J	0.0012 U	0.00096 J	0.0017 J	0.00097 J	0.0016 U	0.0020 U	0.0024	0.0032	0.00091 J
			PSW-5US-GW_20220922	9/22/2022	N	0.0015 U	0.0015 U	0.0015 U	0.0110	0.0013 J	0.0011 U	0.00099 J	0.0017 J	0.00093 J	0.00056 J	0.0015 U	0.0032	0.0021 J	0.00092 J
			PSW-5US-GW_20221220	12/20/2022	N	0.0015 U	0.0015 U	NA	0.0110	0.0013 J	0.0011 U	0.00064 J	0.0014 J	0.00057 J	0.0011 U	0.0015 U	0.0042	0.0019 J	0.00054 J
PSW-5S	43.05815273	-70.7992747	PSW-5S-GW_20210519	5/19/2021	N	0.0080 U	0.0080 U	NA	0.0040 U	0.0080 U	0.0040 U	0.0035 J	0.0021 J	0.0029 J	0.0040 U	0.0040 U	0.0040 U	0.0040 U	0.0058 J
			PSW-5S-GW_20210923	9/23/2021	N	0.0040 U	0.0040 U	NA	0.0011 J	0.0018 U	0.0040 U	0.0036 J	0.0020 J	0.0022 J	0.0040 U	0.0040 UJ	0.0040 U	0.0012 J	0.0034 J
			PSW-5S-GW_20211215	12/15/2021	N	0.0100 U	0.0100 U	NA	0.0050 U	0.0100 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0030 J
			PSW-5S-GW_20220323	3/23/2022	N	0.0016 U	0.0016 U	NA	0.0013 J	0.0011 J	0.0012 U	0.0011 J	0.0020	0.0011 J	0.0016 U	0.0020 U	0.0012 U	0.00077 J	0.0015 J
			PSW-5S-GW_20220621	6/21/2022	N	0.0016 U	0.0016 U	0.0020 U	0.0011 J	0.0017 J	0.0012 U	0.0035	0.0017 J	0.0029	0.0016 U	0.0020 U	0.0012 U	0.00092 J	0.0039
			PSW-5S-GW_20220922	9/22/2022	N	0.0015 U	0.0015 U	0.0015 U	0.0011 J	0.0024	0.0011 U	0.0057	0.0021 J	0.0042	0.0011 U	0.0015 U	0.0011 U	0.0016 J	0.0062
			PSW-5S-GW_20221220	12/20/2022	N	0.0015 U	0.0015 U	NA	0.0014 J	0.0024	0.0011 U	0.0048	0.0025	0.0039	0.0011 U	0.0015 U	0.00067 J	0.0019 J	0.0058
PSW-5D	43.05815249	-70.79927549	PSW-5D-GW_20210520	5/20/2021	N	0.0080 U	0.0080 U	NA	0.0022 J	0.0080 U	0.0040 U	0.0040 U	0.0028 J	0.0040 U	0.0040 U	0.0040 U	0.0035 J	0.0027 J	0.0059 J
			PSW-5D-GW_20210923	9/23/2021	N	0.0021 J	0.0040 U	NA	0.0010 J	0.00092 U	0.0040 U	0.0011 J	0.0028 J	0.0018 J	0.0040 U	0.0040 U	0.0022 J	0.0025 J	0.0022 J
			PSW-5D-GW_20211215	12/15/2021	N	0.0091 U	0.0091 U	NA	0.0039 J	0.0049 J	0.0045 U	0.0045 U	0.0045 U	0.0045 U	0.0045 U	0.0045 U	0.0045 U	0.0023 J	0.0045 U
			PSW-5D-GW_20220323	3/23/2022	N	0.0016 U	0.0016 U	NA	0.00072 J	0.0015 J	0.0012 U	0.0012 U	0.0020	0.00082 J	0.0016 U	0.0020 U	0.00077 J	0.0015 J	0.0011 J
			PSW-5D-GW_20220621	6/21/2022	N	0.0069	0.0016 U	0.0020 U	0.0018 J	0.0027	0.0012 U	0.0038	0.0026	0.0051	0.0016 U	0.0020 U	0.0012 U	0.0034	0.0065
			PSW-5D-GW_20220922	9/22/2022	N	0.0010 J	0.0014 U	0.0014 U	0.00096 J	0.0017 J	0.0010 U	0.0012 J	0.0026	0.0018 J	0.0010 U	0.0014 U	0.0014 J	0.0024	0.0023
			PSW-5D-GW_20221220	12/20/2022	N	0.0015 U	0.0015 U	NA	0.0012 J	0.0015 J	0.0011 U	0.00090 J	0.0027	0.0015 U	0.0011 U	0.0015 U	0.0042	0.0026	0.0020 J
STORMWATER OUTFALL																			
McIntyre Brook Outfall (177-1002)	43.0738845	-70.82375323	177-1002-ST_20190401	4/1/2019	N	0.013 J	0.015 U	NA	0.0084 J	0.012 J	0.01 U	0.012 J	0.28	0.05	0.01 U	0.015 U	0.25	0.035	0.017 J
			177-1002-ST_20190917	9/17/2019	N	0.015 UJ	0.015 UJ	NA	0.0088 J	0.011 J	0.0071 J	0.011 J	0.27 J	0.034 J	0.0062 J	0.015 UJ	0.30 J	0.034 J	0.014 J
			177-1002-ST_20200324	3/24/2020	N	0.0119 J	0.0077 U	NA	0.0059 J	0.0093 J	0.0048 J	0.0107	0.145	0.0322	0.0038 U	0.0038 U	0.206	0.0292	0.0179
			177-1002-ST_20200925	9/25/2020	N	0.0080 U	0.0080 U	NA	0.0090	0.0083 J	0.0072 J	0.0104	0.388	0.0534	0.0035 J	0.0040 U	0.454	0.0418	0.0169
			177-1002-ST_20210325	3/25/2021	N	0.0080 U	0.0080 U	NA	0.0086	0.0082 J	0.0067 J	0.0083	0.336	0.0397	0.0023 J	0.0040 U	0.375	0.0316	0.0100
			177-1002-ST_20210923	9/23/2021	N	0.0011 J	0.0040 U	NA	0.0079	0.0100	0.0058	0.0110	0.300	0.0430	0.0044	0.0040 UJ	0.500	0.0360	0.0180
			177-1002-GW_20220421	4/21/2022	N	0.0710	0.0350 J	NA	0.0087 J	0.0270	0.0110 J	0.0250	0.200	0.0740	0.0160 U	0.0200 U	1.30	0.0580	0.0710
			[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Notes:
All concentrations in micrograms per liter (µg/L)
NH AGQS - New Hamphsire Ambient Groundwater Quality Standards (July 2020)
NH AGQS for groundwater only and therefore not compared to stormwater samples collected from the McIntyre Brook Outfall
Grey text indicates the parameter was not detected.
= concentration exceeds the applicable NH AGQS
FD = duplicate sample
ID = Identification
J = The result is an estimated value.
N = parent sample
NA = Not Applicable
ND = Not Detected
R = Sample is considered unusable due to QC failures
U = The analyte was analyzed for, but was not detected above the reported limit of detection (LOD).
UJ = Analyte was not detected above the LOD and the result is an estimated value
Due to inconsistencies between December 2019 results and historical results, HMW-15 and HMW-16 were resampled in January 2020.

Prepared By: AKN, 04/18/2023
QA/QC By: MG 04/18/2023
Reviewed by: JW 1/12/24

Table 5-2
PFOS, PFOA, PFNA and PFHxS Trend Analysis

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					PFHxS	PFNA	PFOS	PFOA
TAXIWAY H AREA								
39-MWE-1S	43.07774648	-70.81269852	OB	Monitoring Well	S	NT	S	NT
39-MWE-1D	43.07774648	-70.81269852	DBR	Monitoring Well	NT	NT	NT	NT
39-MW18S	43.07919984	-70.81307291	OB	Monitoring Well	S	NT	NT	S
39-MW18D	43.07919984	-70.81307291	FBR	Monitoring Well	I	PI	I	NT
39-6084	43.0760241	-70.81517186	FBR	Monitoring Well	NT	NT	NT	NT
39-5102	43.0760431	-70.8151454	LS	Monitoring Well	S	ND	I	S
39-5081	43.07802237	-70.81676484	OB	Monitoring Well	NT	NT	NT	NT
34-6011	43.07674065	-70.81255548	DBR	Monitoring Well	S	NT	NT	D
33-750	43.08038561	-70.81430672	US	Monitoring Well	NT	S	S	NT
32-4254	43.07684827	-70.80980076	LS	Monitoring Well	D	S	S	PD
IMW/HAVEN WELL AREA								
39-5082	43.07803362	-70.81680211	LS	Monitoring Well	S	ND	NT	NT
PH5-6506	43.07746301	-70.82125646	FBR	Monitoring Well	PI	NT	NT	NT
PH5-5345	43.07713689	-70.81945317	LS	Monitoring Well	I	I	I	I
PH5-5333	43.0771148	-70.81943476	US	Monitoring Well	S	ND	NT	I
PH5-5319	43.07749316	-70.8212523	LS	Monitoring Well	NT	ND	NT	ND
PH4-4779	43.07584593	-70.81814978	US	Monitoring Well	D	ND	NT	I
IMW	43.07631233	-70.81861259	EXTRACTION	Monitoring Well	D	D	D	D
HY4-5355	43.0771912	-70.81678752	LS	Monitoring Well	D	NT	PD	PD
15-7535	43.07668539	-70.81887552	US	Monitoring Well	PD	NT	D	PD
15-7533	43.07580132	-70.81916467	LS	Monitoring Well	D	D	D	D
15-7532	43.07671025	-70.81889764	LS	Monitoring Well	S	S	PD	S
15-6522	43.07573563	-70.81807641	FBR	Monitoring Well	S	S	S	D
15-6144	43.07577726	-70.81813946	DBR	Monitoring Well	NT	I	NT	S
TAXIWAY B AREA								
15-5557	43.07153198	-70.82025642	OB	Monitoring Well	S	PI	PI	S
177-6024	43.07153198	-70.82025642	FBR	Monitoring Well	NT	NT	NT	NT
34-5021	43.07522925	-70.81151546	US	Monitoring Well	D	I	S	D
34-6010	43.07507866	-70.81139573	DBR	Monitoring Well	I	ND	I	I
34-6020	43.07511836	-70.81145023	FBR	Monitoring Well	I	NT	NT	NT
FLPZ-06	43.06957178	-70.81483722	US	Monitoring Well	D	D	D	D
HY1-8887	43.07045363	-70.80919003	US	Monitoring Well	D	NT	NT	D
HY3-5312	43.07391044	-70.81429912	LS	Monitoring Well	D	D	D	D
PH1-5321	43.06958692	-70.81474076	LS	Monitoring Well	NT	ND	PI	NT
PH1-6507	43.06957841	-70.81470345	FBR	Monitoring Well	D	I	PD	D
PH2-5627	43.07027754	-70.81295959	LS	Monitoring Well	S	ND	PI	S
PH2-6627	43.07028628	-70.81296463	LS	Monitoring Well	S	PI	NT	PI
SOUTHERN WELL FIELD AREA								
HMW-14	43.06320639	-70.8085705	LS	Monitoring Well	S	ND	NT	NT
HMW-15	43.06648449	-70.80732126	LS	Monitoring Well	S	I	NT	S
HMW-8R	43.06735269	-70.8057214	LS	Monitoring Well	S	PI	NT	S
SMW-1	43.06151066	-70.80634721	LS	Monitoring Well	S	NT	PI	S
SMW-13	43.0627085	-70.80460761	LS	Monitoring Well	I	I	I	NT
177-3016	43.0590849	-70.80893887	OB	Monitoring Well	NT	ND	NT	NT
177-5008	43.06565355	-70.80812013	OB	Monitoring Well	D	I	PI	D
177-5009	43.068323	-70.80675318	OB	Monitoring Well	NT	NT	NT	NT
177-5010	43.07078701	-70.80489753	OB	Monitoring Well	NT	ND	NT	NT
177-5011	43.06152155	-70.80875459	OB	Monitoring Well	PD	NT	ND	NT
177-5025	43.06617716	-70.80466532	OB	Monitoring Well	S	NT	PI	S
177-5026	43.06131355	-70.80509152	OB	Monitoring Well	S	ND	NT	NT
177-6008	43.06565355	-70.80812013	FBR	Monitoring Well	NT	I	I	PD
177-6009	43.068323	-70.80675318	FBR	Monitoring Well	S	NT	NT	D
177-6010	43.07078701	-70.80489753	FBR	Monitoring Well	S	NT	NT	S
177-6011	43.06152155	-70.80875459	FBR	Monitoring Well	I	ND	PI	I
177-6025	43.06617716	-70.80466532	LS	Monitoring Well	I	NT	PI	NT
177-6026	43.06131355	-70.80509152	OB	Monitoring Well	NT	ND	ND	ND
177-7008D	43.06565355	-70.80812013	DBR	Monitoring Well	S	ND	S	NT
177-7008S	43.06565355	-70.80812013	DBR	Monitoring Well	I	NT	PI	I
177-7009D	43.068323	-70.80675318	DBR	Monitoring Well	PI	ND	NT	PI
177-7009S	43.068323	-70.80675318	DBR	Monitoring Well	S	ND	NT	D
177-7025D	43.06617716	-70.80466532	DBR	Monitoring Well	NT	NT	PI	I
177-7025S	43.06617716	-70.80466532	DBR	Monitoring Well	NT	NT	NT	S
177-7026D	43.06131355	-70.80509152	DBR	Monitoring Well	S	NT	NT	PI
177-7026S	43.06131355	-70.80509152	DBR	Monitoring Well	I	NT	I	I
CSW-1S	43.06361383	-70.79052035	US	Monitoring Well	NT	I	S	I
CSW-2R	43.05992296	-70.79100183	LS	Monitoring Well	NT	ND	ND	ND
CSW-3D	43.06223429	-70.79877172	FBR	Monitoring Well	I	NT	S	PI
CSW-3S	43.06223429	-70.79877172	OB	Monitoring Well	I	NT	NT	I
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
PSW-1	43.05922277	-70.79938219	LS	Monitoring Well	I	ND	I	NT
PSW-2	43.05885832	-70.79820537	LS	Monitoring Well	NT	ND	NT	S
PSW-3D	43.05920752	-70.8037279	FBR	Monitoring Well	I	NT	S	S
PSW-3S	43.05920752	-70.8037279	OB	Monitoring Well	PI	S	PD	S
PSW-4D	43.05904317	-70.80144553	FBR	Monitoring Well	D	ND	PD	NT
PSW-4S	43.05904317	-70.80144553	OB	Monitoring Well	NT	ND	S	S
PSW-5D	43.05815249	-70.79927549	FBR	Monitoring Well	S	ND	S	NT
PSW-5S	43.05815273	-70.7992747	OB	Monitoring Well	PI	ND	NT	I

Created By: AMC 2/23/2023
QC/QC:MASV 3/16/2023
Revised: AMC 6/12/2023

Table 5-2
PFOS, PFOA, PFNA and PFHxS Trend Analysis

AIMS Optimization, Maintenance, and Monitoring Report
July - December 2022
Former Pease Air Force Base
Portsmouth, New Hampshire

					PFHxS	PFNA	PFOS	PFOA
MUNICIPAL SUPPLY WELLS								
Collins Well	43.05951437	-70.7891811	LS	Municipal Supply Well	I	NT	I	NT
Harrison Well	43.06588655	-70.80443948	LS	Municipal Supply Well	I	I	I	I
Portsmouth Well	43.05723381	-70.79765888	LS	Municipal Supply Well	I	PI	I	I
Smith Well	43.06105354	-70.80493321	LS	Municipal Supply Well	I	PI	I	I
TAXIWAY E AREA								
15-7506	43.08256789	-70.82073334	LS	Monitoring Well	NT	S	NT	NT
177-4035	43.08260154	-70.82086438	FBR	Monitoring Well	NT	NT	NT	NT
177-4162	43.08389694	-70.81754831	US	Monitoring Well	NT	I	S	S
177-5039	43.083206	-70.819644	LS	Monitoring Well	NT	S	I	NT
177-5042	43.08322289	-70.81849779	LS	Monitoring Well	NT	S	S	S
177-6035	43.08260154	-70.82086438	US	Monitoring Well	PD	S	S	PD
177-6039	43.08321457	-70.81964432	LS	Monitoring Well	PI	NT	I	D
177-6042	43.08322289	-70.81849779	LS	Monitoring Well	S	S	S	PD
31-546	43.08494599	-70.81865425	OB	Monitoring Well	NT	I	NT	S
31-547	43.08477734	-70.81961366	LS	Monitoring Well	PD	S	S	PD
76-5508	43.08658412	-70.81742292	OB	Monitoring Well	D	ND	NT	PI
81-5530	43.08246775	-70.81510014	LS	Monitoring Well	S	PI	PI	S
HY7-4976	43.08259082	-70.82197945	US	Monitoring Well	S	PI	S	S
HY7-5375	43.08254511	-70.82220665	OB	Monitoring Well	NT	NT	NT	NT
HY8-4974	43.08358096	-70.82342194	US	Monitoring Well	I	I	I	I
HY8-5382	43.08494665	-70.82333213	US	Monitoring Well	D	S	PD	D
PH8-5376	43.08303686	-70.8236802	US	Monitoring Well	NT	NT	NT	NT

Notes:

Mann Kendall Trends:
D = Decreasing
I = Increasing
ND = Non-Detect
NR= No Mann Kendall results for this analyte
NT = No Trend
PD = Probably Decreasing
PFHxS= Perfluorohexanesulphonic acid
PFNA= Perfluorononanoic acid
PFOA= Perfluorooctanoic acid
PFOS = Perfluorooctanesulfonic acid
PI = Probably Increasing
S = Stable

Lithological Units:
DBR - Deep Bedrock
FBR - Fractured bedrock
LS - Lower sand
OB - Overburden
US - Upper Sand
Trend analysis confidence levels are presented in Appendix H

Created By: AMC 2/23/2023
QC/QC:MASV 3/16/2023
Revised: AMC 6/12/2023

6.0 CONCLUSIONS AND RECOMMENDATIONS

During the July to December 2022 reporting period, AIMS experienced minimal down time and offtime. Offtime reported 27 August 2022 to 01 September 2022 was due to the ion exchange resin replacement in vessels T-3205, T-3405, and T-3605. Downtime during the reporting period was due to shutdowns caused by severe weather.

Waste generated onsite during the reporting period consisted of PFAS waste including bag filters, PPE, and spent ion exchange resin. Waste was transported by ACV Environmental Services to Emelle, AL for disposal.

The frequency of process monitoring samples for PFAS compounds was changed to be collected monthly beginning in November 2022. The system has been operating predictably for greater than three years generating an extensive PFAS data set. The existing data set provides a basis to run AIMS predictably, sampling monthly, while discharging water with PFAS concentrations below the NHDES AGQSs. Ion exchange resin breakthrough occurs gradually and can take more than one year at full system capacity. Sampling PFAS compounds monthly is sufficient to track effluent compliance, removal performance, and process unit breakthrough for the treatment system.

The AIMS MMF Testing Plan was finalized on 23 September 2022. MMF performance sampling demonstrated that the MMF effectively decreases turbidity, iron concentration, and manganese concentration.

On 21 December 2022, a low-pressure leak test was performed on the four Bravo injection lines from the IMW building to the injection wells to determine if the source of the sand in these wells is due to a line breakage. The test concluded that there were no issues with the injection lines. Further investigation is ongoing.

Control modifications completed during the reporting period were made to allow the IMW water level to be “averaged”. This will smooth out IMW pump operation and reduce flow surges. These changes will be tested when the IMW is turned on in January 2023. Changes were also made to the IX resin booster pump operations. The booster pumps were changed from flow-based pump control to pressure differential-based control to smooth out surges and to improve operability when the IMW is operating. Changes also included adding operator adjustable flow cut in setpoints and establishing a target pressure differential for the booster pump operation.

Groundwater contour maps are consistent with the initial hydraulic models created for the AIMS system. The contour maps show that the AIMS is functioning as designed and has been effective at intercepting PFOS, PFOA, PFHxS, and PFNA contaminated groundwater. However, there is an increasing trend in PFAS in the Southern Wellfield area as contaminated groundwater that was already downgradient of the extraction system continues a southerly migration.

TF Moran
170 Commerce Way, Suite 102
Portsmouth, NH 03801
Attn: Jack McTigue, PE, CPESC

April 15, 2025

Re: Portsmouth, NH
Flow Monitoring
March – April 2025

Dear Mr. McTigue,

This letter is written to present the flow monitoring data collected in Portsmouth, NH. The meters were installed on 03/07/25. This letter presents the data from 03/07/25 to 04/10/25. The meters were removed 04/10/25.

Site configuration information:

Site	Location	Meter
1	Borthwick Avenue at Greenland Road	Level Meter installed with a 6" Palmer- Bowlus Flume in an existing 8" diameter line.
2	1 Highliner Avenue	Level Meter installed with a 6" Palmer- Bowlus Flume in an existing 8" diameter line.
3	155 Borthwick Avenue	Level Meter installed with a 6" Palmer- Bowlus Flume in an existing 8" diameter line.

The Level Meter senses depth. This depth information is stored in the meter's memory. The recorded data is uploaded from the flow meters with a laptop computer. During the installation, maintenance visits and removal, the depth and velocity information is confirmed, and calibration measurements are noted.

This report contains a summary flow report and flow analysis graph for each meter site. The summary flow report presents minimum, peak, and total daily flow based on the recorded 5-minute interval readings. The flow analysis graph data is presented averaged hourly to make it easier to visualize the overall flow pattern during the monitoring period.

Additionally, this report contains meter site investigation sketches for each meter site.

The final data is also included in Excel format in its recorded 5-minute intervals. All data is recorded and presented in Eastern Standard Time.

The rainfall data presented in the summary flow reports and flow analysis graphs was collected by a tipping bucket type rain gauge installed at Lafayette Road Pump Station in Portsmouth, NH.

Site & Data Observations

Site 1	The ultrasonic level sensor failed from 3/24 @ 16:00 to 3/26 @ 19:10 and again from 4/1 @ 00:05 to 4/5 @ 06:20. To compensate for the loss of data, the metering was extended a few days.

If you have any questions or require anything additional, please feel free to contact me via email or phone.

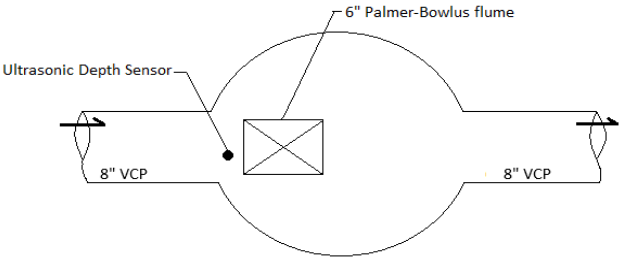
Sincerely,

John Sokol
Data Manager

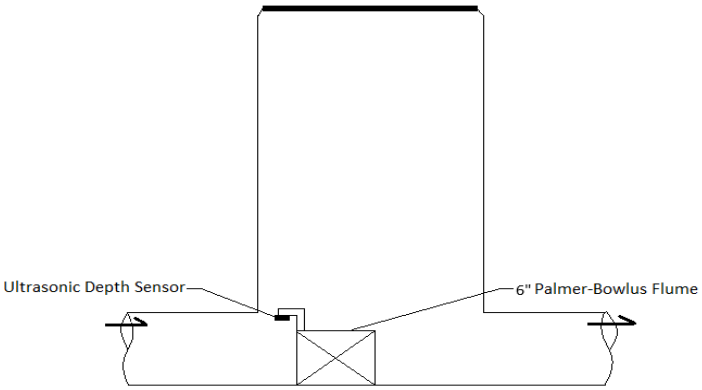
METER SITE INFORMATION FIELD LOG

PROJECT: Portsmouth, NH	**DATE:** March 7, 2025	**JOB#:** 25022
LOCATION: 1 Highliner Ave., adjacent to Borthwick Ave.	**MH#:** SMH 484	**METER SITE:** 2
GPS/COMMENTS: 43.0603932, -70.7951186		

	Size (")	Material	Flow Depth (")	Debris	Shape	MH Depth
Incoming	8	VCP	0.3	0	Circular	05' 08"
Incoming						
Incoming						
Outgoing	8	VCP	0.3	0	Circular	05' 09"



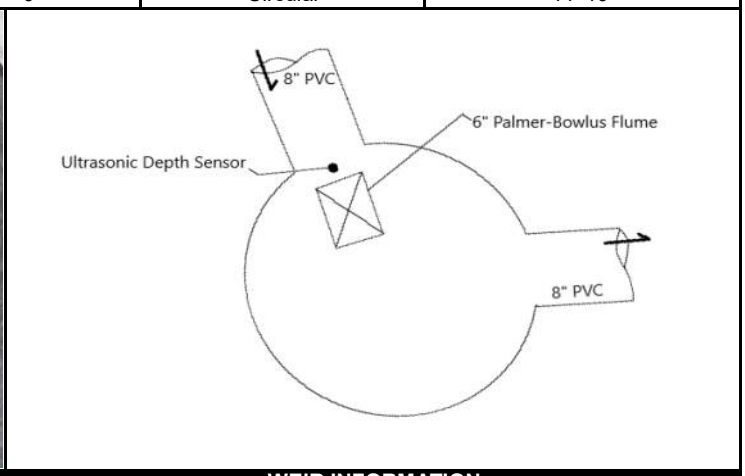
SURCHARGE INFORMATION	WEIR INFORMATION	
SURCHARGE NONE EVIDENT: X	**LENGTH:**	**HEIGHT ABOVE WEIR:**
SURCHARGED MARKS TO:	**BREADTH:**	**OVERFLOW OCCURS AT:**
SURCHARGE CURRENTLY TO:	**LEVEL:**	



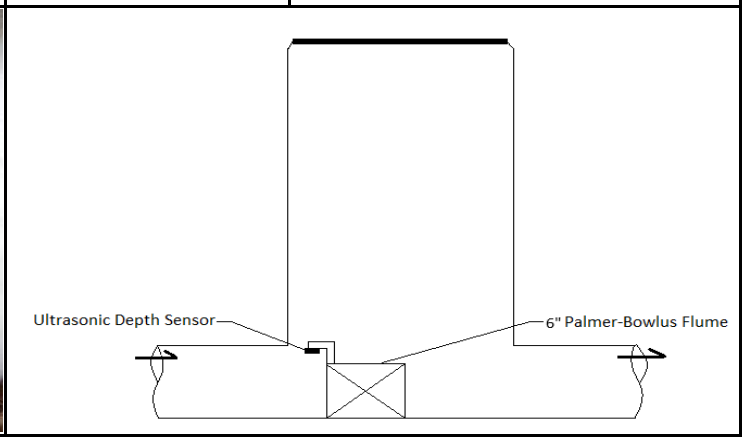
METER SITE INFORMATION FIELD LOG

PROJECT: Portsmouth, NH	**DATE:** March 7, 2025	**JOB#:** 25022
LOCATION: 155 Borthwick Avenue	**MH#:** SMH	**METER SITE:** 3
GPS/COMMENTS: 43.0611823, -70.7939116		

	Size (")	Material	Flow Depth (")	Debris	Shape	MH Depth
Incoming	8	PVC	0.9	0	Circular	11' 09"
Incoming						
Incoming						
Outgoing	8	PVC	0.9	0	Circular	11' 10"



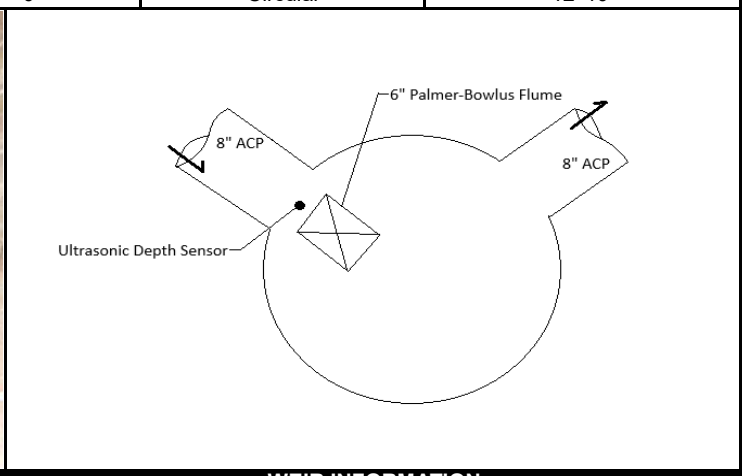
SURCHARGE INFORMATION	WEIR INFORMATION	
SURCHARGE NONE EVIDENT: X	**LENGTH:**	**HEIGHT ABOVE WEIR:**
SURCHARGED MARKS TO:	**BREADTH:**	**OVERFLOW OCCURS AT:**
SURCHARGE CURRENTLY TO:	**LEVEL:**	



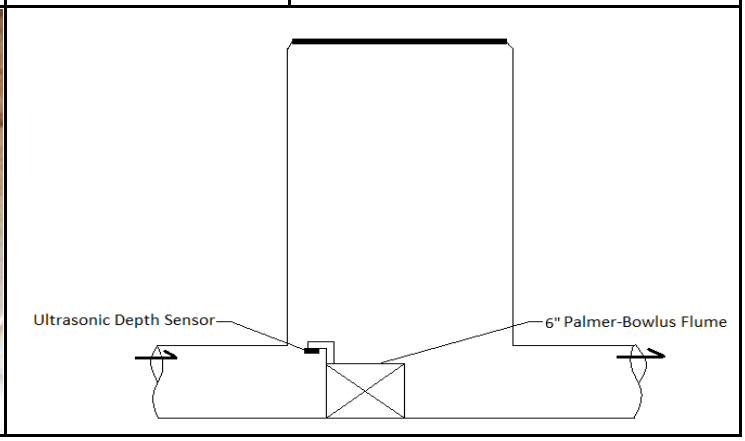
METER SITE INFORMATION FIELD LOG

PROJECT: Portsmouth, NH	**DATE:** March 7, 2025	**JOB#:** 25022
LOCATION: Borthwick Avenue/Greenland Rd.(on sidewalk)	**MH#:** SMH 480	**METER SITE:** 1
GPS/COMMENTS: 43.0581025, -70.7970501		

	Size (")	Material	Flow Depth (")	Debris	Shape	MH Depth
Incoming	8	ACP	0.9	0	Circular	12' 09"
Incoming						
Incoming						
Outgoing	8	ACP	0.9	0	Circular	12' 10"



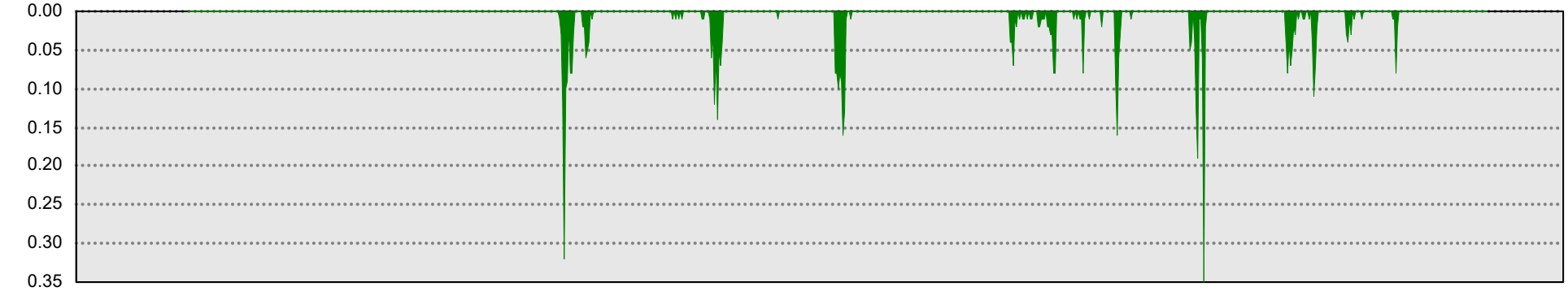
SURCHARGE INFORMATION	WEIR INFORMATION	
SURCHARGE NONE EVIDENT: X	**LENGTH:**	**HEIGHT ABOVE WEIR:**
SURCHARGED MARKS TO:	**BREADTH:**	**OVERFLOW OCCURS AT:**
SURCHARGE CURRENTLY TO:	**LEVEL:**	



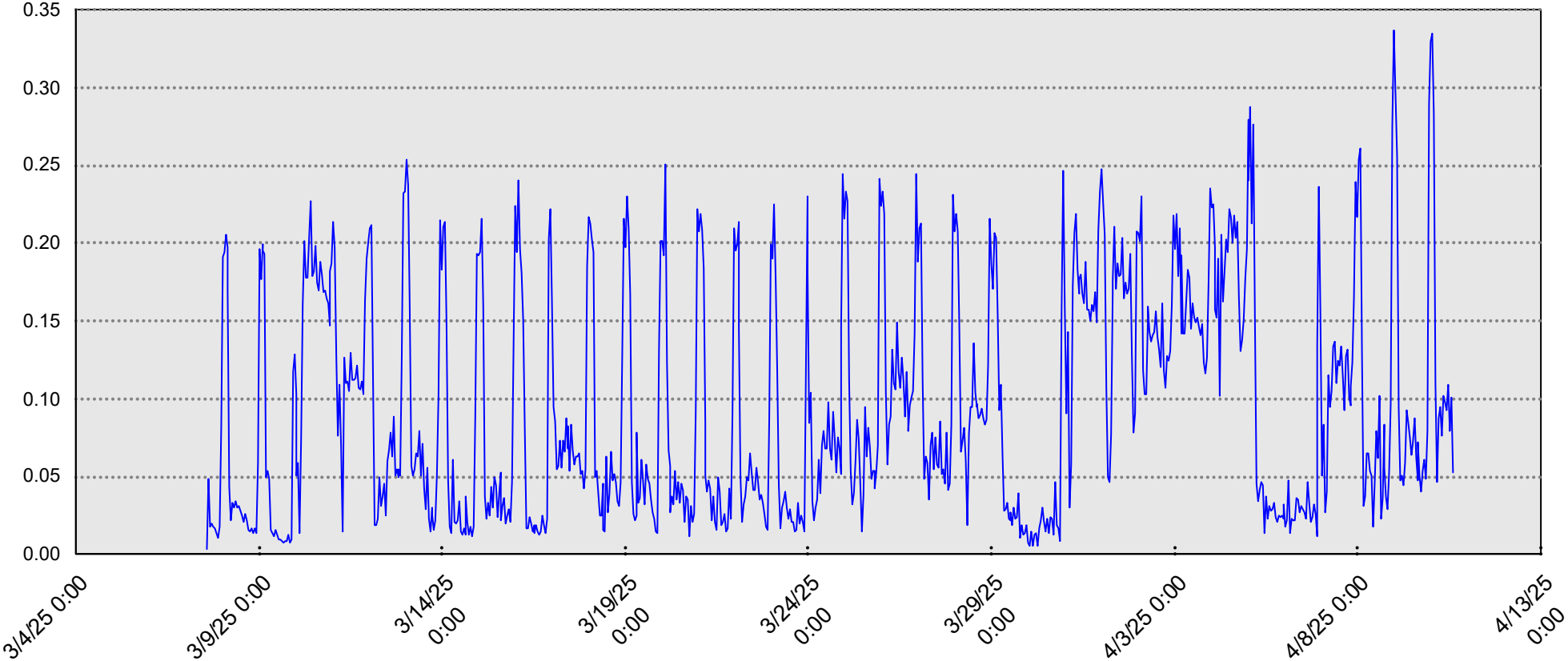
Flow Analysis Graph

Site:
Site 3
155 Borthwick Ave. Portsmouth, NH 6" Parlmer Bowlus Flume in a 8" line

Rain (in) **Printed on:** 4/15/2025 **Period Covered:** 03/07/2025 - 04/11/2025 **Every** 1 Hour



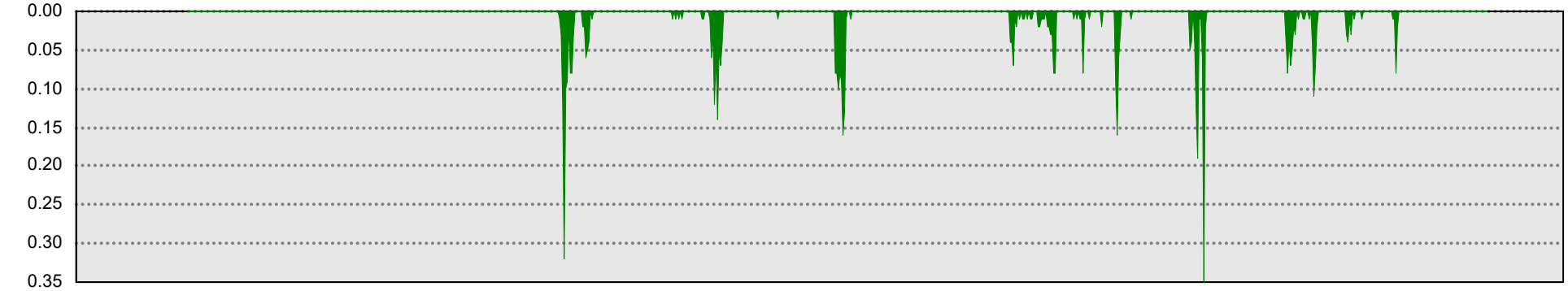
Flow (mgd)



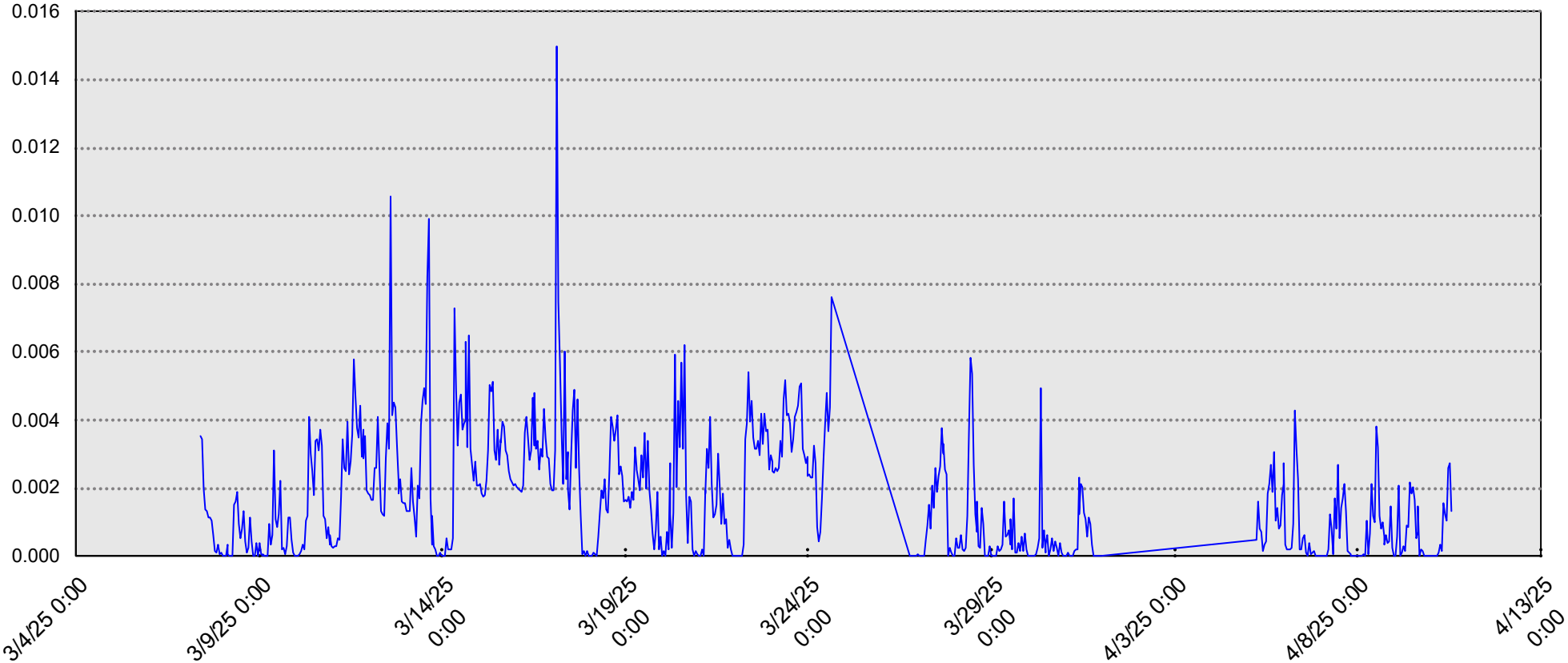
Flow Analysis Graph

Site:
Site 1
Borthwick Ave. Portsmouth, NH 6" Parlmer Bowlus Flume in a 8" line

Rain (in) **Printed on:** 4/15/2025 **Period Covered:** 03/07/2025 - 04/11/2025 **Every** 1 Hour



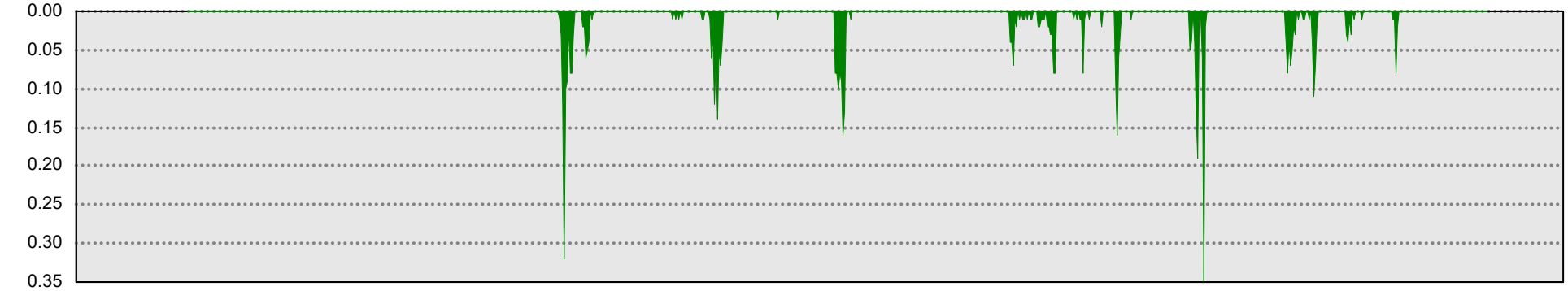
Flow (mgd)



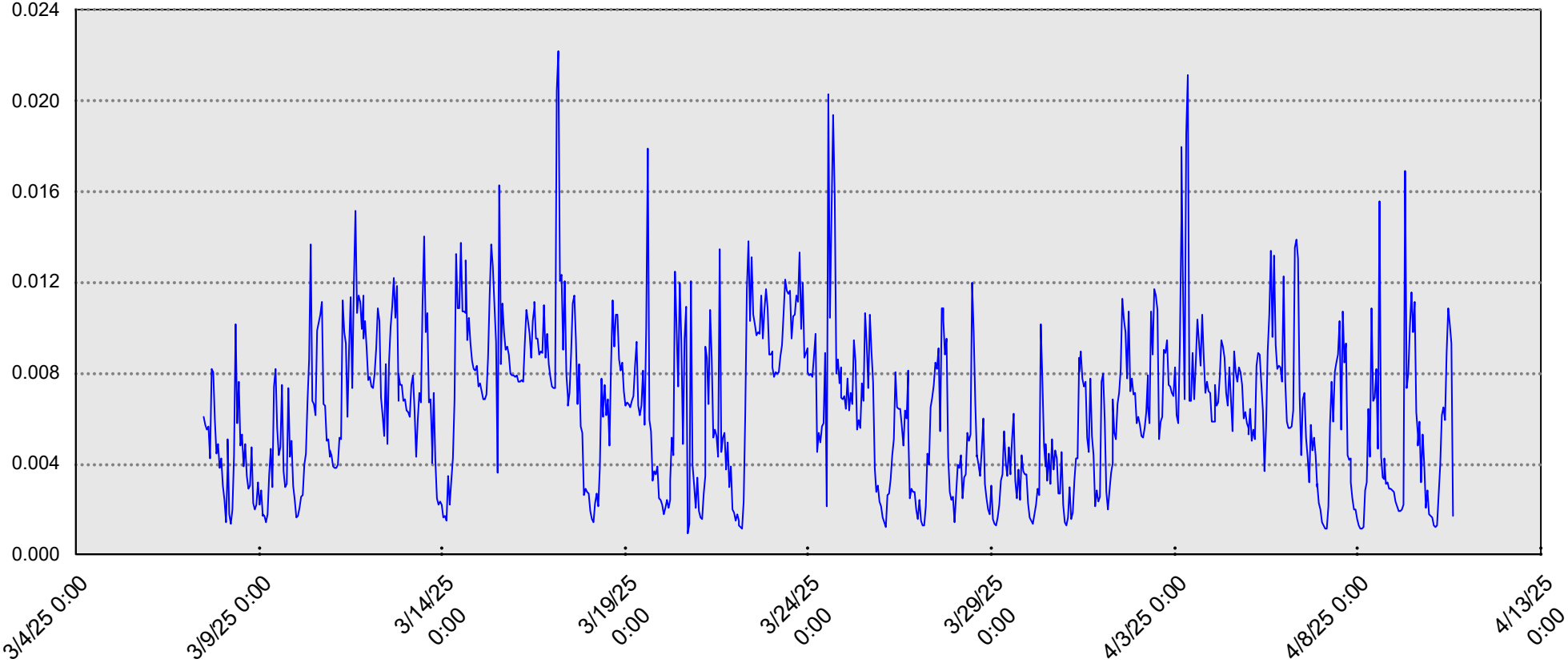
Flow Analysis Graph

Site:
Site 2
1 Highliner Ave. Portsmouth, NH 6" Parlmer Bowlus Flume in a 8" line

Rain (in) **Printed on:** 4/15/2025 **Period Covered:** 03/07/2025 - 04/11/2025 **Every** 1 Hour



Flow (mgd)



Summary Flow Report

Site:
Site 1
Borthwick Ave. Portsmouth, NH 6" Parlmer Bowlus Flume in a 8" line

Date	Minimum Flow (mgd)	Peak Flow (mgd)	Total Daily Flow (mg)	Total Rain (in)	Peak Hourly Rain (in)	Peak Interval Rain (in)
3/7/2025 (Fri)	**0.000**	0.013	0.001	0.00	0.00	0.00
3/8/2025 (Sat)	**0.000**	0.009	0.000	0.00	0.00	0.00
3/9/2025 (Sun)	**0.000**	0.013	0.001	0.00	0.00	0.00
3/10/2025 (Mon)	**0.000**	0.011	0.002	0.00	0.00	0.00
3/11/2025 (Tue)	0.000	0.012	0.003	0.00	0.00	0.00
3/12/2025 (Wed)	0.000	0.041	0.003	0.00	0.00	0.00
3/13/2025 (Thu)	**0.000**	0.039	0.002	0.00	0.00	0.00
3/14/2025 (Fri)	**0.000**	**0.046**	0.003	0.00	0.00	0.00
3/15/2025 (Sat)	0.002	0.010	0.003	0.00	0.00	0.00
3/16/2025 (Sun)	0.002	0.009	0.003	0.00	0.00	0.00
3/17/2025 (Mon)	**0.000**	0.030	0.003	**1.08**	0.32	**0.05**
3/18/2025 (Tue)	**0.000**	0.010	0.002	0.00	0.00	0.00
3/19/2025 (Wed)	**0.000**	0.013	0.002	0.00	0.00	0.00
3/20/2025 (Thu)	**0.000**	0.024	0.002	0.06	0.01	0.01
3/21/2025 (Fri)	**0.000**	0.012	0.001	0.58	0.17	0.03
3/22/2025 (Sat)	**0.000**	0.012	0.003	0.01	0.01	0.01
3/23/2025 (Sun)	0.002	0.013	**0.004**	0.00	0.00	0.00
3/24/2025 (Mon)	**0.000**	0.012	0.002	0.74	0.17	0.02
3/25/2025 (Tue)				0.00	0.00	0.00
3/26/2025 (Wed)	**0.000**	0.000	0.000	0.00	0.00	0.00
3/27/2025 (Thu)	**0.000**	0.010	0.001	0.00	0.00	0.00
3/28/2025 (Fri)	**0.000**	0.023	0.001	0.00	0.00	0.00
3/29/2025 (Sat)	**0.000**	0.007	0.000	0.29	0.09	0.02
3/30/2025 (Sun)	**0.000**	0.014	0.000	0.30	0.11	0.02
3/31/2025 (Mon)	**0.000**	0.011	0.001	0.23	0.09	0.02
4/1/2025 (Tue)	**0.000**	0.000	0.000	0.26	0.16	0.03
4/2/2025 (Wed)				0.05	0.05	0.01
4/3/2025 (Thu)				0.85	**0.35**	**0.05**
4/4/2025 (Fri)				0.00	0.00	0.00
4/5/2025 (Sat)	**0.000**	0.007	0.001	0.34	0.09	0.02
4/6/2025 (Sun)	**0.000**	0.010	0.001	0.27	0.13	0.02
4/7/2025 (Mon)	**0.000**	0.008	0.001	0.13	0.04	0.01
4/8/2025 (Tue)	**0.000**	0.009	0.001	0.12	0.08	0.02
4/9/2025 (Wed)	**0.000**	0.010	0.001	0.00	0.00	0.00
4/10/2025 (Thu)	**0.000**	0.010	0.000	0.00	0.00	0.00
		Total for period	0.046	5.31		
		Min:	0.000			
		Avg:	0.001			
		Max:	0.046			

Summary Flow Report

Site:
Site 2
1 Highliner Ave. Portsmouth, NH 6" Parlmer Bowlus Flume in a 8" line

Date	Minimum Flow (mgd)	Peak Flow (mgd)	Total Daily Flow (mg)	Total Rain (in)	Peak Hourly Rain (in)	Peak Interval Rain (in)
3/7/2025 (Fri)	0.001	0.038	0.003	0.00	0.00	0.00
3/8/2025 (Sat)	**0.000**	0.026	0.004	0.00	0.00	0.00
3/9/2025 (Sun)	0.001	0.024	0.004	0.00	0.00	0.00
3/10/2025 (Mon)	0.001	0.028	0.006	0.00	0.00	0.00
3/11/2025 (Tue)	0.003	0.023	0.009	0.00	0.00	0.00
3/12/2025 (Wed)	0.001	0.039	0.008	0.00	0.00	0.00
3/13/2025 (Thu)	0.002	0.022	0.007	0.00	0.00	0.00
3/14/2025 (Fri)	0.001	0.058	0.008	0.00	0.00	0.00
3/15/2025 (Sat)	0.001	0.056	0.009	0.00	0.00	0.00
3/16/2025 (Sun)	0.007	0.015	0.009	0.00	0.00	0.00
3/17/2025 (Mon)	0.001	0.036	0.009	**1.08**	0.32	**0.05**
3/18/2025 (Tue)	0.001	0.024	0.006	0.00	0.00	0.00
3/19/2025 (Wed)	0.001	0.047	0.007	0.00	0.00	0.00
3/20/2025 (Thu)	0.001	0.057	0.005	0.06	0.01	0.01
3/21/2025 (Fri)	0.001	0.042	0.005	0.58	0.17	0.03
3/22/2025 (Sat)	0.001	0.017	0.008	0.01	0.01	0.01
3/23/2025 (Sun)	0.007	0.017	**0.010**	0.00	0.00	0.00
3/24/2025 (Mon)	0.001	0.070	0.009	0.74	0.17	0.02
3/25/2025 (Tue)	0.002	0.017	0.007	0.00	0.00	0.00
3/26/2025 (Wed)	0.001	0.021	0.004	0.00	0.00	0.00
3/27/2025 (Thu)	0.001	0.019	0.006	0.00	0.00	0.00
3/28/2025 (Fri)	0.001	0.021	0.004	0.00	0.00	0.00
3/29/2025 (Sat)	0.001	0.022	0.003	0.29	0.09	0.02
3/30/2025 (Sun)	0.001	0.024	0.004	0.30	0.11	0.02
3/31/2025 (Mon)	0.001	0.015	0.005	0.23	0.09	0.02
4/1/2025 (Tue)	0.002	0.021	0.007	0.26	0.16	0.03
4/2/2025 (Wed)	0.001	0.029	0.008	0.05	0.05	0.01
4/3/2025 (Thu)	0.004	0.032	0.010	0.85	**0.35**	**0.05**
4/4/2025 (Fri)	0.004	0.020	0.007	0.00	0.00	0.00
4/5/2025 (Sat)	0.003	0.028	0.008	0.34	0.09	0.02
4/6/2025 (Sun)	0.002	0.021	0.006	0.27	0.13	0.02
4/7/2025 (Mon)	0.001	0.035	0.005	0.13	0.04	0.01
4/8/2025 (Tue)	0.001	0.054	0.004	0.12	0.08	0.02
4/9/2025 (Wed)	0.001	**0.075**	0.005	0.00	0.00	0.00
4/10/2025 (Thu)	0.001	0.041	0.003	0.00	0.00	0.00
		Total for period	0.221	5.31		
		Min:	0.000			
		Avg:	0.006			
		Max:	0.075			

Summary Flow Report

Site:
Site 3
155 Borthwick Ave. Portsmouth, NH 6" Parlmer Bowlus Flume in a 8" line

Date	Minimum Flow (mgd)	Peak Flow (mgd)	Total Daily Flow (mg)	Total Rain (in)	Peak Hourly Rain (in)	Peak Interval Rain (in)
3/7/2025 (Fri)	0.009	0.259	0.010	0.00	0.00	0.00
3/8/2025 (Sat)	0.012	0.246	0.061	0.00	0.00	0.00
3/9/2025 (Sun)	**0.002**	0.305	0.063	0.00	0.00	0.00
3/10/2025 (Mon)	0.008	0.309	0.155	0.00	0.00	0.00
3/11/2025 (Tue)	0.007	0.256	0.122	0.00	0.00	0.00
3/12/2025 (Wed)	0.013	0.264	0.082	0.00	0.00	0.00
3/13/2025 (Thu)	0.009	0.264	0.083	0.00	0.00	0.00
3/14/2025 (Fri)	0.003	0.252	0.060	0.00	0.00	0.00
3/15/2025 (Sat)	0.015	0.236	0.064	0.00	0.00	0.00
3/16/2025 (Sun)	0.010	0.325	0.082	0.00	0.00	0.00
3/17/2025 (Mon)	0.034	0.238	0.075	**1.08**	0.32	**0.05**
3/18/2025 (Tue)	0.011	0.275	0.079	0.00	0.00	0.00
3/19/2025 (Wed)	0.008	0.270	0.076	0.00	0.00	0.00
3/20/2025 (Thu)	0.009	0.289	0.073	0.06	0.01	0.01
3/21/2025 (Fri)	0.008	0.275	0.072	0.58	0.17	0.03
3/22/2025 (Sat)	0.014	0.269	0.073	0.01	0.01	0.01
3/23/2025 (Sun)	0.012	0.276	0.071	0.00	0.00	0.00
3/24/2025 (Mon)	0.014	0.290	0.080	0.74	0.17	0.02
3/25/2025 (Tue)	0.006	0.274	0.088	0.00	0.00	0.00
3/26/2025 (Wed)	0.024	0.279	0.126	0.00	0.00	0.00
3/27/2025 (Thu)	0.020	0.281	0.087	0.00	0.00	0.00
3/28/2025 (Fri)	0.008	0.275	0.110	0.00	0.00	0.00
3/29/2025 (Sat)	0.007	0.307	0.065	0.29	0.09	0.02
3/30/2025 (Sun)	0.004	0.286	0.032	0.30	0.11	0.02
3/31/2025 (Mon)	0.015	0.293	0.160	0.23	0.09	0.02
4/1/2025 (Tue)	0.004	0.281	0.159	0.26	0.16	0.03
4/2/2025 (Wed)	0.040	0.297	0.147	0.05	0.05	0.01
4/3/2025 (Thu)	0.099	0.270	0.163	0.85	**0.35**	**0.05**
4/4/2025 (Fri)	0.018	0.295	**0.184**	0.00	0.00	0.00
4/5/2025 (Sat)	0.011	**0.370**	0.083	0.34	0.09	0.02
4/6/2025 (Sun)	0.006	0.305	0.041	0.27	0.13	0.02
4/7/2025 (Mon)	0.010	0.277	0.114	0.13	0.04	0.01
4/8/2025 (Tue)	0.013	0.323	0.090	0.12	0.08	0.02
4/9/2025 (Wed)	0.020	0.364	0.103	0.00	0.00	0.00
4/10/2025 (Thu)	0.023	0.359	0.083	0.00	0.00	0.00
		Total for period	3.217	5.31		
		Min:	0.002			
		Avg:	0.092			
		Max:	0.370			

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GEOTECHNICAL REPORT

SHERBURNE ROAD HOUSING DEVELOPMENT
35 SHERBURNE ROAD
PORTSMOUTH, NEW HAMPSHIRE

April 8, 2025

GSI Project No. 225144

Prepared for:

Jack McTigue, PE, CPESC
Project Manager
TF Moran, Inc.
170 Commerce Way, Ste 102
Portsmouth, NH 03801

Prepared by:

Geotechnical Services, Inc.
55 North Stark Highway
Weare, NH 03281

Geotechnical Services Inc.
Geotechnical Engineering ◣ Environmental Studies ◣ Materials Testing ◣ Construction Monitoring

April 8, 2025

Jack McTigue, PE, CPESC
TF Moran, Inc.
170 Commerce Way, Ste 102
Portsmouth, NH 03801
Email: jmctigue@tfmoran.com

RE: Geotechnical Report
Sherburne Rd Housing Development
35 Sherburne Road,
Portsmouth, NH 03801

GSI Project No. 225144

Dear Mr. McTigue:

This report presents the results of a geotechnical investigation completed by Geotechnical Services, Inc. (GSI) for the construction of the proposed Housing Development in Portsmouth, New Hampshire. The objective of the geotechnical investigation was to explore subsurface conditions within the proposed development area and formulate geotechnical engineering recommendations for the design and construction of foundations, and floor slabs. Included are the findings of our subsurface exploration program and an engineering evaluation of the subsurface conditions encountered. The contents of this report are subject to the Limitations included in Appendix A.

PURPOSE AND SCOPE

The scope of services performed by GSI to meet the above-stated objectives for geotechnical engineering services included the following:

1. Coordination and observation of eleven (11) test borings at the locations illustrated on the attached Figure 2;

2. Performance of nine (9) borehole permeability tests at the locations illustrated on the attached Figure 2;

3. Evaluation of appropriate foundation systems based on subsurface conditions encountered. Formulation of design parameters for spread footing foundation and slab on-grade construction, including allowable bearing pressure and prediction of long-term settlement values;

4. Formulation of earthwork and foundation construction procedures to be followed during the construction phase of this project;

5. Establishment of seismic design parameters and liquefaction potential based on the subsurface profile and the proposed structure;

6. Preparation of this geotechnical engineering report which summarizes our findings and recommendations.

SITE AND PROJECT INFORMATION

The project involves the construction of a proposed housing development at 35 Sherburne Road in Portsmouth, New Hampshire. The development will consist of two separate apartment buildings and the surrounding parking areas. Currently, a single-story school occupies the site, which consists of the brick school building, parking areas and a ball field. The site is relatively level, with the existing building and parking areas at an approximate elevation of 66 feet. The site then slopes down approximately 10 feet to the ball field to an elevation of about 56 feet. The site is abutted by I-95 to the northwest, commercial properties to the northeast and east, Sherburne Road to the southwest, and Greenland Road to the south. Project information was provided on TF Moran's test pit and boring layout plan, dated January 29, 2025, as well as draft site and grading plans, dated April 2, 2025.

SUBSURFACE INVESTIGATION

GSI observed a series of eleven (11) test borings located within the proposed building area designated GSI-1 through GSI-11. The borings were advanced to depths of 10 to 30 feet below ground surface. The subsurface explorations classified the on-site soils according to their color, grain size, and other material properties. The test boring program was conducted by Miller Engineering and Testing, Inc. of Manchester, New Hampshire.

Soil explorations were performed in accordance with methods prescribed by ASTM D1586. Soil samples were obtained at the surface and at five-foot intervals with a 1⅜ inch diameter split-spoon sampler. Standard Penetration Tests (SPTs) were performed at the sampling intervals in accordance with ASTM D1586. Field descriptions of the soils encountered, observed depth to groundwater while drilling when observed, and other pertinent observations are contained in the attached test boring logs. The test boring locations are illustrated on Figure 2 of this report. GSI test boring logs are presented in Appendix B.

SUBSURFACE CONDITIONS

Topsoil/ Subsoil

The majority of the test borings were advanced within grassy areas. At ground surface, approximately 4 to 12 inches of topsoil was observed, which was visually classified as dark brown, fine to medium Sand, little Silt, with various grass and plant roots. The topsoil and organic materials will be removed prior to development.

Bituminous Concrete

GSI-3 and GSI-8 were advanced within paved areas. At ground surface, approximately 4 inches of bituminous asphalt concrete was observed. This material will be removed prior to development.

Silty Sand

Test borings GSI-1, GSI-9, and GSI-10 encountered a Silty Sand, which was visually classified as Medium Dense to Very Dense, fine to medium Sand, little to some Silt. This material was observed at depths of 2 to 4 feet and extended to termination depths of 20 feet. N-Values within the silty sand ranged from 28 to over 50 blows per foot.

Sand and Gravel

The predominant soil encountered during the test borings was sand and gravel. The sand and gravel was present from depths of 2 to 4 feet and continued to test boring termination depth of approximately 31-feet. The soil was visually classified as medium dense to very dense, fine to coarse Sand, some Gravel, little Silt. SPT “N” values varied from 15 to over 50 blows per foot.

Groundwater

Groundwater was observed at GSI-4, GSI-5 and GSI-7 following the completion of the test borings at depths ranging from 17.5 to 23 feet below ground surface. Redox activity appears present at 5 feet in B-11, but it is believed to be “relic mottling” as groundwater was not encountered at 10 feet and other borings encountered groundwater at 17 to 23 feet. The ESHWT descends deeper than the infiltration test depths.

Groundwater observations should not be considered long-term, equilibrated groundwater levels, but rather an approximate indication of the likely groundwater elevation during construction. Groundwater levels should be anticipated to fluctuate from those measured during drilling operations in response to differences in equilibrated time, rainfall, snowmelt, and seasonal changes.

LABORATORY RESULTS

A total of five soil samples, one from GSI-2, GSI-3, GSI-4, GSI-5, and GSI-7, were submitted to GSI’s laboratory for sieve analysis testing (ASTM D422), to determine the particle size distribution. This test involves passing a sample through a series of standardized sieves with progressively smaller openings. The amount of material retained on each sieve is weighed, and the results are used to calculate the percentage of material in each size range, providing a detailed particle size distribution curve. The laboratory test results indicate that the soils are typically classified as SP (poorly graded sand) based on the Unified Soil Classification System (USCS). Detailed laboratory results are provided in Appendix D.

FOUNDATION DESIGN RECOMMENDATIONS

GSI recommends that building walls, columns and other structural elements be supported by reinforced concrete spread or strip footings bearing directly upon the native soils described above or structural fill. An allowable bearing pressure of 2 tons per square foot (4,000psf) may then be assumed for design. With regards to footing geometry, the minimum footing width of column and strip footings should be 4 feet and 2 feet, respectively. The spread footings should be founded at least 4 feet below exterior grade to obviate frost action in the bearing strata. If the construction occurs during the winter months, it will be necessary to provide temporary insulation and/or heat application to the foundations.

At the recommended bearing pressures, we anticipate that the total settlement of individual footings under static loading conditions and constructed as recommended herein, will not exceed 1 in., with differential settlements between adjacent footings not exceeding ¾ in. Most of the settlement will likely occur elastically during construction as structure dead loads are placed on the foundations. The live load contribution to foundation settlement is expected to be less than 50% of the dead load thus post construction settlements are not expected to be problematic

ENGINEERING PARAMETER OF ON-SITE SOILS

Based on results of our subsurface exploration program, the following engineering properties of soils that will be supporting foundation elements are estimated as follows:

On-Site Soil Engineering Design Parameters (TABLE 1)				
Soil Type	Friction Angle φ (Degrees)	Cohesion c (psf)	Unit Weight γ (pcf)	Coeff. Of Sliding Friction Soil to Concrete (tan δ)
Silty Sand	32	0	115	0.40
Sand and Gravel	34	0	125	0.45

SEISMIC DESIGN PARAMETERS

Seismic design parameters have been reviewed with respect to the 2021 Edition of the International Building Code. Upon review of the subsurface soils data, the site is to be associated with Site Class “D” and the design of structural elements should reflect this distinction. The subsurface conditions are also not deemed susceptible to earthquake induced “liquefaction.” A Summary of USGS Design Maps is included as Appendix E.

CONCRETE FLOOR SLAB

We recommend that ground floor slabs be designed as slabs-on-grade designed in accordance with ACI 360R-10. The slab should bear directly upon an 8-inch (minimum) layer of compacted Base Course Soil. The subgrade will consist of compacted structural fill or proof-compacted undisturbed soil. The floor slab may thus be designed following the ACI “elastic support” approach, using a modulus of subgrade reaction value, k = 250 pci.

Slabs should be designed to act independently of foundation walls and column footings with isolation joints. Shrinkage cracking may be controlled with welded wire fabric, reinforcing steel, or contraction joints. Contraction joints in plain concrete should not be spaced a distance greater than 30 times the slab thickness. Saw cuts should be made within 12 hours of slab finishing and penetrate at least ¼ the slab thickness or a minimum of 1 inch. Welded wire fabric or reinforcing steel may also be used to widen the control joint spacing.

For moisture sensitive environments, ACI indicates that a sub-slab vapor retarder may be used beneath the concrete slab. The vapor retarder should be at a minimum; 10-mil polyethylene with joints lapped at a minimum of 12 inches. It is emphasized that these are recommendations and that the final decision on the use and location of the sub-slab vapor retarder whether in direct contact with the slab or beneath the layer of compacted Structural Fill should be made considering specific conditions for the project. Factors which may affect this decision include moisture sensitivity of the planned floor finishes, anticipated moisture conditions, including precipitation and exposure before the slab is constructed, and the potential effects of slab curling and cracking. Design guidance is provided in ACI 360R-10, Design of Slabs on Grade, Figure 3-7.

FOUNDATION DRAINAGE, ROOF DRAINAGE, AND SLAB-ON-GRADE DAMP PROOFING RECOMMENDATIONS

Foundation drains are not required as below grade space is not expected to be incorporated into the existing structure. The ground surface immediately adjacent to the foundation should be sloped away from the building to allow for positive drainage. It is recommended that the surficial materials adjacent to the building be relatively impermeable to reduce the volume of precipitation infiltrating into the subsurface. Such impermeable materials may include Portland cement concrete, bituminous concrete, or vegetated silty topsoil. Roof drainage is recommended for the collection of run off because of stormwater. It is recommended that roof drainage and stormwater feature not discharge into foundation drains as applicable.

CONCRETE SIDEWALKS

Where concrete exterior sidewalks are provided, they shall be formed upon a minimum of 12 inches of slab base course or structural fill, which shall be increased to a minimum of 18 inches in the vicinity of exterior doorways, ramps, or other openings for frost protection at building entry points.

BOREHOLE PERMEABILITY TESTING

To evaluate the in-situ hydraulic conductivity of the existing soils in the area of the proposed stormwater systems, borehole permeability testing was performed in accordance with the NHDES Stormwater Manual, Volume Two. For each test, a 4-inch diameter solid pipe was installed to a depth of 6 feet below ground surface at nine locations. After installation, 24 inches of water was added to each pipe and allowed to pre-soak for 24 hours. The following day, each pipe was refilled with 24 inches of water and the drop in water level was measured after one hour (measured from the top of the casing). This process was repeated four times, and the results were averaged. The results of the borehole permeability tests are presented in the table below. Testing locations are outline in Figure 2.

Borehole Permeability Test Results (TABLE 2)

Location	K_{sf} (in/hr)
INF-1	1.3
INF-2	1.4
INF-3	0.8
INF-4	1.1
INF-5	3.0
INF-6	3.5
INF-7	1.6
INF-8	8.4
INF-9	2.6
AVERAGE	**2.6**

Borehole permeability tests were considered appropriate for this project as the area under investigation is an active softball field. Visual examination of the subsurface profile with excavated test pits was therefore precluded due to safety considerations. In the event that NHDES requires test pits be performed, this effort would require that the softball field be abandoned. Test pits result in destruction of the existing landscaping and GSI cannot be held responsible for complete repair.

EARTHWORK RECOMMENDATIONS

Foundation Subgrade Preparation

Prior to foundation construction, any topsoil, subsoil, or loose-fill soils encountered within the building footprint and foundation zone of influence should be removed. Foundation and floor slab subgrades should be proof compacted using a heavy vibratory plate or drum roller prior to foundation construction or placing additional fill in order to densify disturbed soils resulting from excavation and preload the subgrade.

Recommended proof compaction should include 4 passes with a minimum of a 10-ton vibratory roller. During the proof rolling process, the subgrade should be observed by a qualified Geotechnical Engineer to identify areas exhibiting weaving or excessive reaction. Any soils exhibiting excessive reaction should be locally excavated and replaced with free draining structural fill or crushed stone. The foundation subgrade should be observed by a qualified Geotechnical Engineer to verify competency.

Protection of Foundation Subgrades

The contractor must maintain stable, dewatered subgrades for foundations, pavement areas, and utility trenches. Subgrades may be disturbed by improper excavation methods, moisture, precipitation, groundwater control, and construction activities. The contractor should take precautions to protect the bearing subgrade against disturbance from construction traffic and weathering. If necessary, dewatering can be accomplished via open pumping utilizing submersible pumps and temporary stone lined sump pits.

A lift of compacted crushed stone is recommended to protect the subgrade surface from wear and disturbance should water be present within the excavation. The subgrade must still be verified for competency prior to the placement of concrete or backfill materials within the building footprint. If construction activities are to take place during winter months, the contractor should protect the work area from freezing, which may necessitate the use of soil blankets or tents and heaters to protect the subgrade surface.

Construction Dewatering

The site contractor should be prepared to remove any standing water from foundation excavations. If the sumps are unable to control the development of groundwater within the excavation, supplemental dewatering in the form of deep wells or wellpoints may be required. Stormwater runoff developed from storm events should be diverted away from excavation areas to minimize any impoundment in the excavation or disturbance to the foundation subgrades. It is anticipated that groundwater and stormwater may be controlled by localized dewatering efforts employing sumps and pumps.

The groundwater elevation should be maintained at least 12 inches below the foundation grade until backfilling is complete. A lift of crushed stone or free draining structural fill at foundation grade may be utilized if required to facilitate dewatering and provide a dry and stable subgrade during construction.

Backfilling

Backfill in the building area should be placed and compacted in lifts immediately after final excavation to limit disturbance to the subgrade surface. Except for zones requiring special backfill such as directly beneath pavements or exterior slabs, the exterior of foundation walls and other site areas may be backfilled with Common Fill. Placement of compacted fills should not be conducted when air temperatures are low enough (approximately 30ºF, or below) to cause freezing of the moisture in the fill during or before placement. Fill materials should not be placed on snow, ice, or uncompacted frozen soil. Compacted fill should not be placed on frozen soil.

No fill should be allowed to freeze prior to compaction. At the end of each day's operations, the last lift of fill, after compaction, should be rolled by a smooth-wheeled roller to eliminate ridges of uncompacted soil.

Minimum compaction requirements for all fill materials are as follows:

Minimum Compaction Requirements (TABLE 2)			
Location or Area	Standard Proctor Density (ASTM D698)	Modified Proctor Density (ASTM D1557)	Testing Frequency One Test Per Lift Per
Building and Slab Subgrades	100%	95%	1,000 ft^2 or 100 lineal feet
Retaining Walls	95%	92%	1,000 ft^2
Pavements (up to 3-ft below finished grade)	95%	92%	2,000 ft^2 or 50 lineal feet
Pavements (in the upper 3-ft)	100%	95%	2,000 ft^2 or 50 lineal feet
Trenches	95%	92%	150 lineal feet
Structures and Walkways	95%	92%	2,000 ft^2
Lawns and Unimproved Areas	92%	90%	20,000 ft^2

Structural Fill

Structural Fill, if required, should consist of clean sand and gravel free of organic material, snow, ice, or other objectionable materials and should be well-graded within the following limits:

Sieve Size	Percent Finer by Weight
4 in.	100
No. 4	30-70
No. 40	10-50
No. 200	0-12.

Other materials could be acceptable for Structural Fill and should be evaluated by the Geotechnical Engineer on a case-by-case basis if proposed by the Contractor.

Structural Fill should be placed in lift thickness not exceeding 12 in. loose measure. Cobbles and boulders having a size exceeding 2/3 of the loose lift thickness should be removed prior to compaction. Compaction in open areas should consist of self-propelled vibratory rollers such as a BoMag BW-60S or equivalent.

In confined areas, hand guided equipment such as a large vibratory plate compactor, should be used and the loose lift thickness should not exceed 6 in. A minimum of four systematic passes of the compaction equipment should be used to compact each lift. Compaction effort should be verified by field density testing.

Common Fill

Common fill may be used to raise grades in paved and landscaped areas, subject to pavement design criteria and landscape planting or drainage requirements. Common fill should be granular mineral soil free from organic materials, loam, wood, trash, snow, ice, frozen soil, and other compressible materials. Common fill should not contain stones larger than 2/3 of the placement lift thickness, and have a maximum 80 percent passing the No. 40 sieve, and a maximum of 30 percent passing the No. 200 sieve. These soils typically would require moisture control during placement and compaction.

Slab Base Course

Slab Base Course beneath building slabs should consist of bank-run sand and gravel, free of organic material, snow, ice, or other unsuitable materials and should be well-graded within the following limits:

Sieve Size	Percent Finer by Weight
2 in.	100
No. 4	40-70
No. 40	25-45
No. 200	0-10

Other materials could be acceptable for compacted Slab Base Course and should be evaluated by the Geotechnical Engineer on a case-by-case basis if proposed by the Contractor.

Slab Base Course should be placed in lift thicknesses not exceeding 8-inches loose measure. In confined areas, hand-guided equipment such as a vibratory plate compactor should be used, and the loose lift thickness should not exceed 6 inches. A minimum of four systematic passes of the compaction equipment should be used to compact each lift.

CONSTRUCTION MONITORING

It is strongly recommended that GSI be retained to provide construction monitoring and testing services in conformance with the requirements of the International Building Code. GSI has the Geotechnical Engineers and Technicians trained and experienced in all facets of monitoring earthwork excavation and construction materials testing, as well as a full-service soils and materials laboratory. As a guide, we have enclosed a Recommended Program for Structural Tests and Inspections for Soils and Foundations, attached as Appendix F of this report.

These services may include:

- Construction Materials Testing of Soils, Aggregates, Concrete, Steel, and Asphalt.
- Design Phase engineering services including preparation of final earthwork specifications, review of contractor submittals, and plan review.
- Construction Phase engineering services on Geotechnical issues and/or differing conditions encountered during construction.

CLOSURE

We trust that you find this report consistent with your needs. Should you have any questions with regard to this report, please do not hesitate to contact our office.

Very truly yours,

GEOTECHNICAL SERVICES, INC.

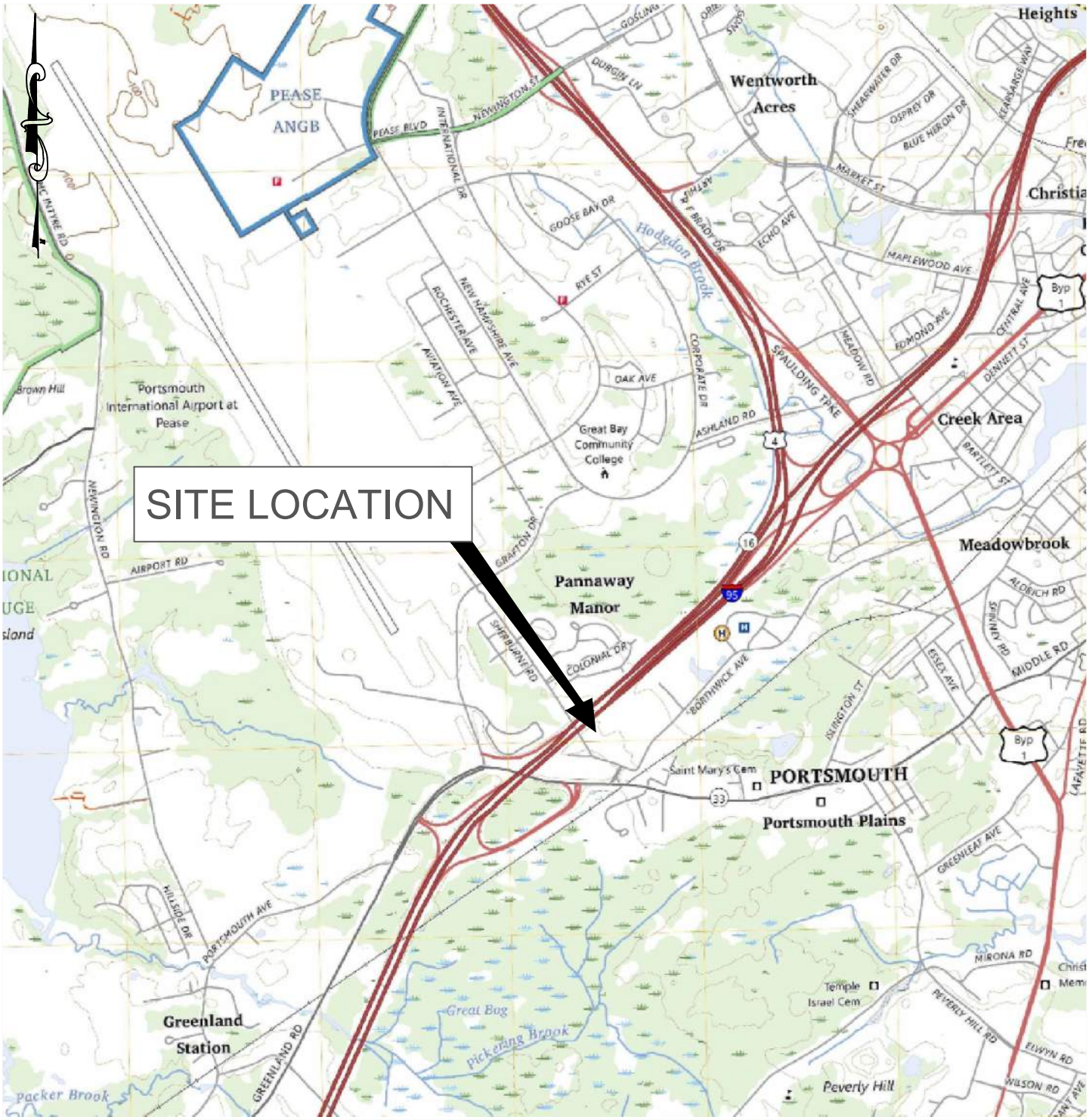
Charles A. Wetherbee, EIT
Staff Engineer

Harry K. Wetherbee, P.E.
Principal Engineer

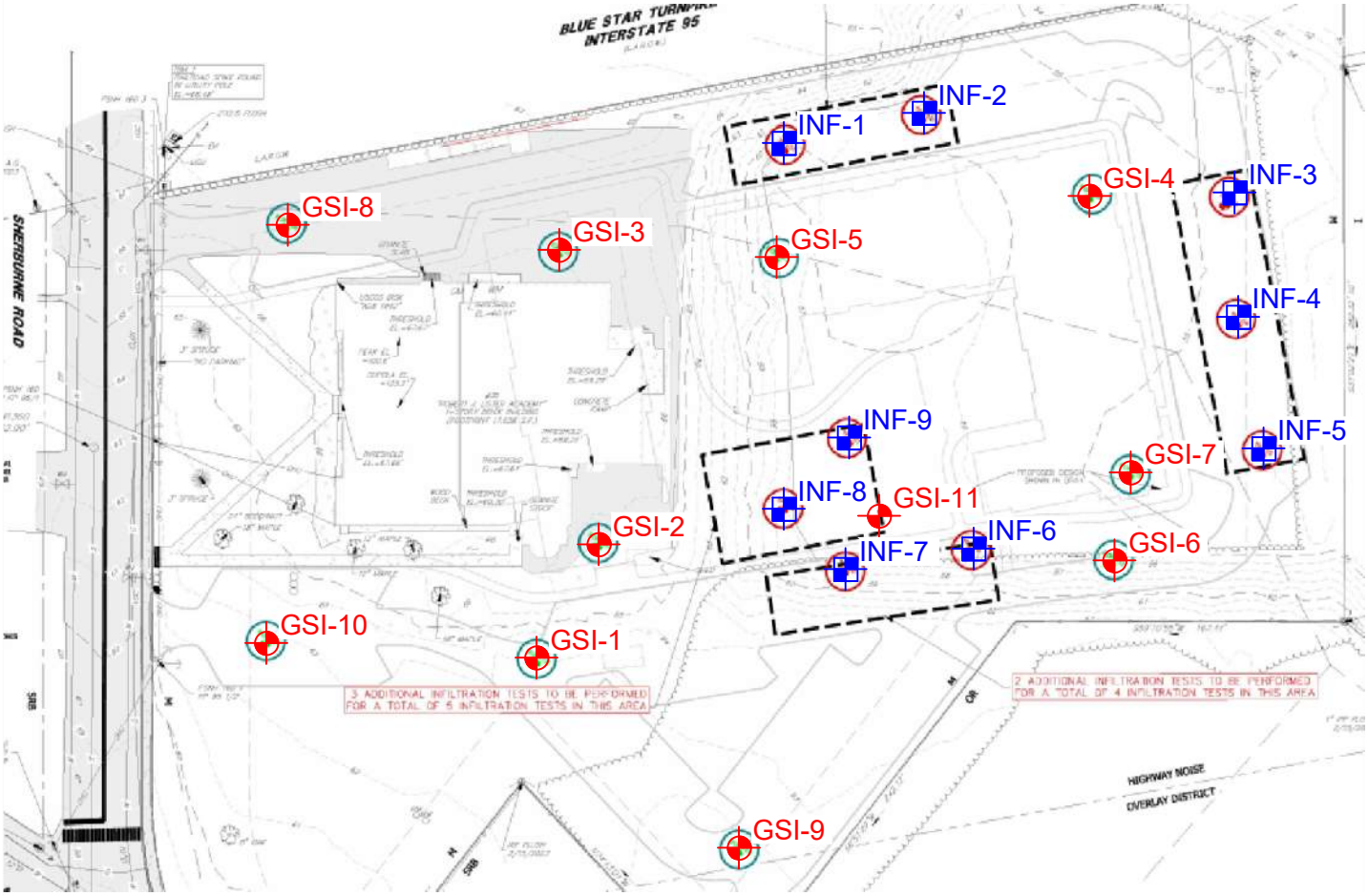
Attachments:

Figure 1: Locus Map
Figure 2: Exploration Location Plan

Appendix A: Limitations
Appendix B: Exploration Logs
Appendix C: Subsurface Exploration Key
Appendix D: Laboratory Results
Appendix E: USGS Seismic Design Maps
Appendix F: Draft Earthwork Specifications



LOCUS MAP	GEOTECHNICAL SERVICES INC. 55 NORTH STARK HIGHWAY, WEARE, NH 03281 TEL. (603) 529-7766 FAX. (603) 529-7780		
Sherburne Housing Development Portsmouth, New Hampshire	DRAWN BY: CAW	DATE: April 2025	FIGURE NO. 1
	CHECKED BY: HKW	SCALE: NTS	
	FILE NAME: Sherburne Housing.dwg	PROJECT NO.: 225147	



GSI-1 Test Boring Location (Approximate)

INF-1 Borehole Permeability Test Location (Approximate)

EXPLORATION LOCATION PLAN	GEOTECHNICAL SERVICES INC. 55 NORTH STARK HIGHWAY, WEARE, NH 03281 TEL. (603) 529-7766 FAX. (603) 529-7780		
Sherburne Housing Development Portsmouth, New Hampshire	DRAWN BY: CAW	DATE: April 2025	FIGURE NO. 2
	CHECKED BY: HKW	SCALE: NTS	
	FILE NAME: Sherburne Housing.dwg	PROJECT NO.: 225147	

APPENDIX A

LIMITATIONS

LIMITATIONS

Explorations

1. The analyses, recommendations, and designs submitted in this report are based in part upon the data obtained from preliminary subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

2. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretation of widely spaced explorations and samples; actual soil transitions are probably more gradual. For specific information, refer to the individual test pit and/or boring logs.

3. Water level readings have been made in the test pits and/or test borings under conditions stated on the logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, and other factors differing from the time the measurements were made.

Review

4. It is recommended that this firm be given the opportunity to review final design drawings and specifications to evaluate the appropriate implementation of the recommendations provided herein.

5. In the event that any changes in the nature, design, or location of the proposed areas are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of the report modified or verified in writing by Geotechnical Services, Inc.

Construction

6. It is recommended that this firm be retained to provide geotechnical engineering services during the earthwork phases of the work. This is to observe compliance with the design concepts, specifications, and recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.

Use of Report

7. This report has been prepared for the exclusive use of the above and their assigns, in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made.

8. This report has been prepared for this project by Geotechnical Services, Inc. This report was completed for preliminary design purposes and may be limited in its scope to complete an accurate bid. Contractors wishing a copy of the report may secure it with the understanding that its scope is limited to evaluation considerations only.

APPENDIX B

EXPLORATION LOGS

Geotechnical Services, Inc. 55 North Stark Highway, Weare, NH 03281 Phone 603/529-7766 Fax 603/5297080 - 30 Newbury St. 3rd Floor, Boston, MA 02116 Phone 617/455-4248 Fax 617/745-4308

TEST BORING LOG

Boring No. GSI-1

Project	Sherburne Housing	GSI Project No.	225144	Elevation	Existing Grade
Location	Portsmouth, NH	Project Mgr.	Charles Wetherbee	Datum	-
Client	TF Moran, Inc.	Inspector	Charles Wetherbee	Date Started	3/25/2025
Contractor	Miller Engineering and Testing	Checked By	Harry Wetherbee	Date Finished	3/25/2025
Driller	Bob Marcoux	Rig Make & Model	Diedrich	Rig Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	HS Aug		SS	
Inside Diameter (in.)	2.25"		1-3/8"	
Hammer Weight (lb)			140	
Hammer Fall (in.)			30"	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geoprobe ☐ Tripod ☐ Other ☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

Depth (ft)	Casing (Blows/ft)	Sample No.	Sample Depth (ft)	Rec (in.)	SPT (Bl./ 6-in.)	"N" Value	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		S-1	0-2	20	4 5 7 7	12			Topsoil Tan, fine to medium Sand, some Gravel
5		S-2	4-6	22	9 23 30 30	53			Very Dense, Tan, fine to medium Sand, some Silt
10		S-3	9-11	22	22 24 34 29	58			Very Dense, Tan, fine to medium Sand, little Silt **Test Boring Terminated at 11 feet**
15									
20									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
3/25	E.O.D.	11'	11'	N/E

Sample Identification
O = Open Ended Rod
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:
E.O.D. = End Of Drilling
N/E = None Encountered

GSI-1

Geotechnical Services, Inc. 55 North Stark Highway, Weare, NH 03281 Phone 603/529-7766 Fax 603/5297080 - 30 Newbury St. 3rd Floor, Boston, MA 02116 Phone 617/455-4248 Fax 617/745-4308

TEST BORING LOG

Boring No. GSI-2

Project	Sherburne Housing	GSI Project No.	225144	Elevation	Existing Grade
Location	Portsmouth, NH	Project Mgr.	Charles Wetherbee	Datum	-
Client	TF Moran, Inc.	Inspector	Charles Wetherbee	Date Started	3/25/2025
Contractor	Miller Engineering and Testing	Checked By	Harry Wetherbee	Date Finished	3/25/2025
Driller	Bob Marcoux	Rig Make & Model	Diedrich	Rig Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	HS Aug		SS	
Inside Diameter (in.)	2.25"		1-3/8"	
Hammer Weight (lb)			140	
Hammer Fall (in.)			30"	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geoprobe ☐ Tripod ☐ Other ☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

Depth (ft)	Casing (Blows/ft)	Sample No.	Sample Depth (ft)	Rec (in.)	SPT (Bl./ 6-in.)	"N" Value	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		S-1	0-2	16	4 8 11 9	19			4" Topsoil Brown, fine to coarse Sand, and Gravel
5		S-2	4-6	18	2 4 3 4	7			Loose, Tan/ Orange, fine to medium Sand, some to little Silt (Appear to be a Subsoil)
10		S-3	9-11	22	7 12 13 13	25			Medium Dense, light Tan, fine to medium Sand, trace Silt
15		S-4	14-16	24	8 12 17 17	29			Medium Dense, Tan, medium to fine Sand, little to trace Silt
20		S-5	19-21	16	2 28 21 23	49			Dense, Tan, fine to coarse Sand, little to trace Gravel, trace Silt

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
3/25	E.O.D.	31'	31'	N/E

Sample Identification
O = Open Ended Rod
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:
E.O.D. = End Of Drilling
N/E = None Encountered

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TEST BORING LOG

Boring No. **GSI-2**

Project	Sherburne Housing	GSI Project No.	225144	Elevation	Existing Grade
Location	Portsmouth, NH	Project Mgr.	Charles Wetherbee	Datum	-
Client	TF Moran, Inc.	Inspector	Charles Wetherbee	Date Started	3/25/2025
Contractor	Miller Engineering and Testing	Checked By	Harry Wetherbee	Date Finished	3/25/2025
Driller	Bob Marcoux	Rig Make & Model	Diedrich	Rig Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	HS Aug		SS	
Inside Diameter (in.)	2.25"		1-3/8"	
Hammer Weight (lb)			140	
Hammer Fall (in.)			30"	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geoprobe ☐ Tripod ☐ Other ☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

Depth (ft)	Casing (Blows/ft)	Sample No.	Sample Depth (ft)	Rec (in.)	SPT (Bl./ 6-in.)	"N" Value	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
25		S-6	24-26	16	11 20 23 34	43			Dense, Tan, fine to coarse Sand, little Gravel, trace Silt
30		S-7	29-31	16	5 21 40 50	61			Dense, Tan, fine to coarse Sand, little Gravel, trace Silt Sampler Refusal at 31 feet **Test Boring Terminated at 31 feet**
35									
40									
45									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
3/25	E.O.D.	31'	31'	N/E

Sample Identification
O = Open Ended Rod
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:
E.O.D. = End Of Drilling
N/E = None Encountered

GSI-2

Geotechnical Services, Inc. 55 North Stark Highway, Weare, NH 03281 Phone 603/529-7766 Fax 603/5297080 - 30 Newbury St. 3rd Floor, Boston, MA 02116 Phone 617/455-4248 Fax 617/745-4308

TEST BORING LOG

Boring No. GSI-3

Project	Sherburne Housing	GSI Project No.	225144	Elevation	Existing Grade
Location	Portsmouth, NH	Project Mgr.	Charles Wetherbee	Datum	-
Client	TF Moran, Inc.	Inspector	Charles Wetherbee	Date Started	3/25/2025
Contractor	Miller Engineering and Testing	Checked By	Harry Wetherbee	Date Finished	3/25/2025
Driller	Bob Marcoux	Rig Make & Model	Diedrich	Rig Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	HS Aug		SS	
Inside Diameter (in.)	2.25"		1-3/8"	
Hammer Weight (lb)			140	
Hammer Fall (in.)			30"	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geoprobe ☐ Tripod ☐ Other ☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

Depth (ft)	Casing (Blows/ft)	Sample No.	Sample Depth (ft)	Rec (in.)	SPT (Bl./ 6-in.)	"N" Value	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		S-1	0-2	12	- 14 14 13	28			4" Asphalt Black/ Brown, fine to coarse Sand, some Gravel, Brick
5		S-2	4-6	14	3 6 4 2	10			Loose, Brown/Black, Sand and Asphalt
10		S-3	9-11	12	2 2 1 1	3			Very Loose, Tan, fine to coarse Sand, and Gravel, little Silt
15		S-4	14-16	18	6 21 35 55	56			Very Dense, Tan, fine to coarse Sand, little Gravel, trace Silt
20		S-5	19-21	20	30 32 25 25	57			Very Dense, Tan, fine to coarse Sand, little to trace Gravel, trace Silt

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
3/25	E.O.D.	31'	31'	N/E

Sample Identification
O = Open Ended Rod
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:
E.O.D. = End Of Drilling
N/E = None Encountered

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TEST BORING LOG

Boring No. **GSI-3**

Project	Sherburne Housing	GSI Project No.	225144	Elevation	Existing Grade
Location	Portsmouth, NH	Project Mgr.	Charles Wetherbee	Datum	-
Client	TF Moran, Inc.	Inspector	Charles Wetherbee	Date Started	3/25/2025
Contractor	Miller Engineering and Testing	Checked By	Harry Wetherbee	Date Finished	3/25/2025
Driller	Bob Marcoux	Rig Make & Model	Diedrich	Rig Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	HS Aug		SS	
Inside Diameter (in.)	2.25"		1-3/8"	
Hammer Weight (lb)			140	
Hammer Fall (in.)			30"	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geoprobe ☐ Tripod ☐ Other ☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

Depth (ft)	Casing (Blows/ft)	Sample No.	Sample Depth (ft)	Rec (in.)	SPT (Bl./ 6-in.)	"N" Value	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
25		S-6	24-26	18	7 13 20 24	33			Medium Dense, Tan, fine to coarse d Sand, trace Gravel, trace Silt
30		S-7	29-31	18	5 22 23 25	45			Medium Dense, Tan, fine to coarse d Sand, trace Gravel, trace Silt
									Test Boring Terminated at 31 feet
35									
40									
45									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
3/25	E.O.D.	31'	31'	N/E

Sample Identification
O = Open Ended Rod
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:
E.O.D. = End Of Drilling
N/E = None Encountered

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TEST BORING LOG

Boring No. GSI-4

Project	Sherburne Housing	GSI Project No.	225144	Elevation	Existing Grade
Location	Portsmouth, NH	Project Mgr.	Charles Wetherbee	Datum	-
Client	TF Moran, Inc.	Inspector	Charles Wetherbee	Date Started	3/25/2025
Contractor	Miller Engineering and Testing	Checked By	Harry Wetherbee	Date Finished	3/25/2025
Driller	Bob Marcoux	Rig Make & Model	Diedrich	Rig Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	HS Aug		SS	
Inside Diameter (in.)	2.25"		1-3/8"	
Hammer Weight (lb)			140	
Hammer Fall (in.)			30"	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geoprobe ☐ Tripod ☐ Other ☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

Depth (ft)	Casing (Blows/ft)	Sample No.	Sample Depth (ft)	Rec (in.)	SPT (Bl./ 6-in.)	"N" Value	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		S-1	0-2	14	1 4 5 5	9			10" Topsoil 10" Tan, Sand and Gravel, little Silt
5		S-2	4-6	16	1 2	3			Very Loose, Dark Tan, fine to medium Sand, little to some Silt, little Gravel
10		S-3	9-11	12	1 2 3 3	10			Loose, Dark Tan, fine to medium Sand, little to some Silt, little Gravel
15		S-4	14-16	12	7 6 39 25	65			Very Dense, Tan, fine to coarse Sand, some Gravel, trace Silt
20		S-5	19-21	18	40 22 11 16 18 19	34			Dense, Tan, fine to coarse Sand, some Gravel, trace Silt

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
3/25	E.O.D.	25.5'	25.5'	17.5'

Sample Identification
O = Open Ended Rod
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:
E.O.D. = End Of Drilling
N/E = None Encountered

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TEST BORING LOG

Boring No. **GSI-4**

Project	Sherburne Housing	GSI Project No.	225144	Elevation	Existing Grade
Location	Portsmouth, NH	Project Mgr.	Charles Wetherbee	Datum	-
Client	TF Moran, Inc.	Inspector	Charles Wetherbee	Date Started	3/25/2025
Contractor	Miller Engineering and Testing	Checked By	Harry Wetherbee	Date Finished	3/25/2025
Driller	Bob Marcoux	Rig Make & Model	Diedrich	Rig Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	HS Aug		SS	
Inside Diameter (in.)	2.25"		1-3/8"	
Hammer Weight (lb)			140	
Hammer Fall (in.)			30"	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geoprobe ☐ Tripod ☐ Other ☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

Depth (ft)	Casing (Blows/ft)	Sample No.	Sample Depth (ft)	Rec (in.)	SPT (Bl./ 6-in.)	"N" Value	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
25		S-6	24-26	20	14 30 56 -	86			Very Dense, Brown/ Tan, fine to coarse d Sand, little Gravel, little to trace Silt, Rock, WET Sampler Refusal at 25.5 feet **Test Boring Refusal at 25.5 feet**
30									
35									
40									
45									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
3/25	E.O.D.	25.5'	25.5'	17.5'

Sample Identification
O = Open Ended Rod
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:
E.O.D. = End Of Drilling
N/E = None Encountered

GSI-4

Geotechnical Services, Inc. 55 North Stark Highway, Weare, NH 03281 Phone 603/529-7766 Fax 603/5297080 - 30 Newbury St. 3rd Floor, Boston, MA 02116 Phone 617/455-4248 Fax 617/745-4308

TEST BORING LOG

Boring No. GSI-5

Project	Sherburne Housing	GSI Project No.	225144	Elevation	Existing Grade
Location	Portsmouth, NH	Project Mgr.	Charles Wetherbee	Datum	-
Client	TF Moran, Inc.	Inspector	Charles Wetherbee	Date Started	3/25/2025
Contractor	Miller Engineering and Testing	Checked By	Harry Wetherbee	Date Finished	3/26/2025
Driller	Bob Marcoux	Rig Make & Model	Diedrich	Rig Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	HS Aug		SS	
Inside Diameter (in.)	2.25"		1-3/8"	
Hammer Weight (lb)			140	
Hammer Fall (in.)			30"	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geoprobe ☐ Tripod ☐ Other ☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

Depth (ft)	Casing (Blows/ft)	Sample No.	Sample Depth (ft)	Rec (in.)	SPT (Bl./ 6-in.)	"N" Value	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		S-1	0-2	16	1 3 5 12	8			12" Topsoil 4" Tan, fine to coarse Sand, some Gravel, little Silt
5		S-2	4-6	18	4 7 8 9	15			Medium Dense, Tan, fine to coarse Sand, trace Gravel, trace Silt
10		S-3	9-11	1	20 22 25 25	47			Sand (Spoon Pushed Rock)
15		S-4	14-16	18	4 18 20 26	38			Dense, Tan, fine to coarse Sand, little Gravel, trace Silt
20		S-5	19-21	22	14 25 39 67	64			Very Dense, Tan, fine to coarse Sand, little Gravel, trace Silt

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
3/26	E.O.D.	31'	31'	23.5'

Sample Identification
O = Open Ended Rod
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:
E.O.D. = End Of Drilling
N/E = None Encountered

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TEST BORING LOG

Boring No. **GSI-5**

Project	Sherburne Housing	GSI Project No.	225144	Elevation	Existing Grade
Location	Portsmouth, NH	Project Mgr.	Charles Wetherbee	Datum	-
Client	TF Moran, Inc.	Inspector	Charles Wetherbee	Date Started	3/25/2025
Contractor	Miller Engineering and Testing	Checked By	Harry Wetherbee	Date Finished	3/26/2025
Driller	Bob Marcoux	Rig Make & Model	Diedrich	Rig Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	HS Aug		SS	
Inside Diameter (in.)	2.25"		1-3/8"	
Hammer Weight (lb)			140	
Hammer Fall (in.)			30"	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geoprobe ☐ Tripod ☐ Other ☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

Depth (ft)	Casing (Blows/ft)	Sample No.	Sample Depth (ft)	Rec (in.)	SPT (Bl./ 6-in.)	"N" Value	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
25		S-6	24-26	14	8 29 41 64	70			Very Dense, Tan/Brown, fine to coarse Sand, little Gravel, little to trace Silt, WET
30		S-7	29-31	18	9 21 22 27	43			Dense, Brown, fine to coarse Sand, little Gravel, little to trace Silt, WET
									Test Boring Terminated at 31 feet
35									
40									
45									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
3/26	E.O.D.	31'	31'	23.5'

Sample Identification
O = Open Ended Rod
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:
E.O.D. = End Of Drilling
N/E = None Encountered

GSI-5

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TEST BORING LOG

Boring No. GSI-6

Project	Sherburne Housing	GSI Project No.	225144	Elevation	Existing Grade
Location	Portsmouth, NH	Project Mgr.	Charles Wetherbee	Datum	-
Client	TF Moran, Inc.	Inspector	Charles Wetherbee	Date Started	3/26/2025
Contractor	Miller Engineering and Testing	Checked By	Harry Wetherbee	Date Finished	3/26/2025
Driller	Bob Marcoux	Rig Make & Model	Diedrich	Rig Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	HS Aug		SS	
Inside Diameter (in.)	2.25"		1-3/8"	
Hammer Weight (lb)			140	
Hammer Fall (in.)			30"	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geoprobe ☐ Tripod ☐ Other ☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

Depth (ft)	Casing (Blows/ft)	Sample No.	Sample Depth (ft)	Rec (in.)	SPT (Bl./ 6-in.)	"N" Value	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		S-1	0-2	10	1 14 17 16	31			6" Topsoil Gravel
5		S-2	4-6	12	5 10 12 14	22			Medium Dense, Brown/ Tan, fine to coarse Sand, some Gravel, trace Silt
10		S-3	9-11	6	15 17 15 16	32			Medium Dense, Tan/Brown, fine to coarse Sand, little Gravel, little Silt
15		S-4	14-16	12	6 10 10 10	20			Tan, Gravel, some fine to coarse Sand, little to trace Silt
20		S-5	19-21	12	5 8 9 10	17			Tan, Gravel, some fine to coarse Sand, little to trace Silt

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
3/26	E.O.D.	21'	21'	N/E

Sample Identification
O = Open Ended Rod
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:
E.O.D. = End Of Drilling
N/E = None Encountered

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TEST BORING LOG

Boring No. GSI-7

Project	Sherburne Housing	GSI Project No.	225144	Elevation	Existing Grade
Location	Portsmouth, NH	Project Mgr.	Charles Wetherbee	Datum	-
Client	TF Moran, Inc.	Inspector	Charles Wetherbee	Date Started	3/26/2025
Contractor	Miller Engineering and Testing	Checked By	Harry Wetherbee	Date Finished	3/26/2025
Driller	Bob Marcoux	Rig Make & Model	Diedrich	Rig Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	HS Aug		SS	
Inside Diameter (in.)	2.25"		1-3/8"	
Hammer Weight (lb)			140	
Hammer Fall (in.)			30"	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geoprobe ☐ Tripod ☐ Other ☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

Depth (ft)	Casing (Blows/ft)	Sample No.	Sample Depth (ft)	Rec (in.)	SPT (Bl./ 6-in.)	"N" Value	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		S-1	0-2	14	1 6 6 5	12			Topsoil Brown, Sand and Gravel
5		S-2	4-6	12	1 2 1 1	3			Very Loose, Brown, fine to coarse Sand, little Gravel, little Silt
10		S-3	9-11	12	3 9 17 17	26			Medium Dense, Brown, fine to coarse Sand, some Gravel, little Silt
15		S-4	14-16	16	4 6 79 -	85			Very Dense, Tan, fine to coarse Sand, little Gravel, little to trace Silt
20		S-5	19-21	12	5 9 15 14	24			Medium Dense, Brown/Gray, Gravel and Crushed Rock, little Sand, trace Silt

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
3/26	E.O.D.	31'	31'	23'

Sample Identification
O = Open Ended Rod
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:
E.O.D. = End Of Drilling
N/E = None Encountered

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TEST BORING LOG

Boring No. **GSI-7**

Project	Sherburne Housing	GSI Project No.	225144	Elevation	Existing Grade
Location	Portsmouth, NH	Project Mgr.	Charles Wetherbee	Datum	-
Client	TF Moran, Inc.	Inspector	Charles Wetherbee	Date Started	3/26/2025
Contractor	Miller Engineering and Testing	Checked By	Harry Wetherbee	Date Finished	3/26/2025
Driller	Bob Marcoux	Rig Make & Model	Diedrich	Rig Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	HS Aug		SS	
Inside Diameter (in.)	2.25"		1-3/8"	
Hammer Weight (lb)			140	
Hammer Fall (in.)			30"	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geoprobe ☐ Tripod ☐ Other ☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

Depth (ft)	Casing (Blows/ft)	Sample No.	Sample Depth (ft)	Rec (in.)	SPT (Bl./ 6-in.)	"N" Value	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
25		S-6	24-26	14	18 21 17 21	38			Very Dense, Brown, Gravel and Rock, little Sand, little Silt, WET
30		S-7	29-31	20	6 15 11 14	26			Very Dense, Brown, Gravel and Rock, little Sand, little Silt, WET
									Test Boring Terminated at 31 feet
35									
40									
45									

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
3/26	E.O.D.	31'	31'	23'

Sample Identification
O = Open Ended Rod
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:
E.O.D. = End Of Drilling
N/E = None Encountered

GSI-7

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TEST BORING LOG

Boring No. GSI-8

Project	Sherburne Housing	GSI Project No.	225144	Elevation	Existing Grade
Location	Portsmouth, NH	Project Mgr.	Charles Wetherbee	Datum	-
Client	TF Moran, Inc.	Inspector	Charles Wetherbee	Date Started	3/26/2025
Contractor	Miller Engineering and Testing	Checked By	Harry Wetherbee	Date Finished	3/26/2025
Driller	Bob Marcoux	Rig Make & Model	Diedrich	Rig Model	D-50

Item:	Auger	Casing	Sampler	Core Barrel
Type	HS Aug		SS	
Inside Diameter (in.)	2.25"		1-3/8"	
Hammer Weight (lb)			140	
Hammer Fall (in.)			30"	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geoprobe ☐ Tripod ☐ Other ☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

Depth (ft)	Casing (Blows/ft)	Sample No.	Sample Depth (ft)	Rec (in.)	SPT (Bl./ 6-in.)	"N" Value	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		S-1	0-2	18	- 10 8 17	18			Asphalt Black to Brown, fine to coarse Sand, little Gravel, little to trace Silt
5		S-2	4-6	18	2 3 3 10	6			Loose, Tan, fine to coarse Sand, trace Silt
10		S-3	9-11	18	10 17 20 24	37			Dense, Tan, fine to medium Sand, trace Silt
15		S-4	14-16	22	5 9 15 18	24			Medium Dense, Tan, fine to medium Sand, trace Silt
20		S-5	19-21	20	7 20 25 36	45			Dense, Tan, fine to medium Sand, trace Silt **Test Boring Terminated at 21 feet**

Water Level Data				
Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
3/26	E.O.D.	21'	21'	N/E

Sample Identification
O = Open Ended Rod
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:
E.O.D. = End Of Drilling
N/E = None Encountered

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TEST BORING LOG

Boring No. GSI-9

Project	Sherburne Housing	GSI Project No.	225144	Elevation	Existing Grade
Location	Portsmouth, NH	Project Mgr.	Charles Wetherbee	Datum	-
Client	TF Moran, Inc.	Inspector	Charles Wetherbee	Date Started	3/26/2025
Contractor	Miller Engineering and Testing	Checked By	Harry Wetherbee	Date Finished	3/26/2025
Driller	Bob Marcoux	Rig Make & Model	CME	Rig Model	45C

Item:	Auger	Casing	Sampler	Core Barrel
Type	HS Aug		SS	
Inside Diameter (in.)	2.25"		1-3/8"	
Hammer Weight (lb)			140	
Hammer Fall (in.)			30"	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geoprobe ☐ Tripod ☐ Other

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Depth (ft)	Casing (Blows/ft)	Sample No.	Sample Depth (ft)	Rec (in.)	SPT (Bl./ 6-in.)	"N" Value	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		S-1	0-2	6	2 2 3 3	5			6" Topsoil Gravel and Rock
5		S-2	4-6	18	4 13 15 17	28			Medium Dense, Tan, fine to medium Sand, little Silt
10		S-3	9-11	22	8 23 31 39	54			Very Dense, Tan, fine to medium Sand, little Silt
15		S-4	14-16	20	7 23 36 39	59			Very Dense, Tan, fine to medium Sand, little Silt
20		S-5	19-21	20	12 42 70 -	112			Very Dense, Tan, fine to medium Sand, little Silt Sampler Refusal at 20.5' **Test Boring Terminated at 20.5 feet**

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
3/26	E.O.D.	20.5'	20.5'	N/E

Sample Identification
O = Open Ended Rod
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:
E.O.D. = End Of Drilling
N/E = None Encountered

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TEST BORING LOG

Boring No. GSI-10

Project	Sherburne Housing	GSI Project No.	225144	Elevation	Existing Grade
Location	Portsmouth, NH	Project Mgr.	Charles Wetherbee	Datum	-
Client	TF Moran, Inc.	Inspector	Charles Wetherbee	Date Started	3/26/2025
Contractor	Miller Engineering and Testing	Checked By	Harry Wetherbee	Date Finished	3/26/2025
Driller	Bob Marcoux	Rig Make & Model	CME	Rig Model	45C

Item:	Auger	Casing	Sampler	Core Barrel
Type	HS Aug		SS	
Inside Diameter (in.)	2.25"		1-3/8"	
Hammer Weight (lb)			140	
Hammer Fall (in.)			30"	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geoprobe ☐ Tripod ☐ Other ☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

Depth (ft)	Casing (Blows/ft)	Sample No.	Depth (ft)	Rec (in.)	SPT (Bl./ 6-in.)	"N" Value	PID Rdg. (ppm)	Stratum Change (ft)	Soil-Rock Visual Classification and Description (Soils - Burmister System) (Rock - U.S. Corps of Engineers System)
0		S-1	0-2	16	2 3 4 6	7			Topsoil Tan, fine to medium Sand, little to trace Silt
5		S-2	4-6	16	7 23 28 19	51			Very Dense, Tan, fine to medium Sand, little to trace Silt
10		S-3	9-11	8	15 52 50/0" -	-			Very Dense, Tan, fine to coarse Sand, little to trace Silt
15		S-4	14-16	20	12 31 47 19	78			Very Dense, Tan, fine to medium Sand, little Silt
20		S-5	19-21	20	8 30 24 22	54			Very Dense, Tan, fine to medium Sand, little Silt **Test Boring Terminated at 21 feet**

Water Level Data

Date	Time	Depth (ft) to: Bott. of Casing	Bott. of Hole	Water
3/26	E.O.D.	21'	21'	N/E

Sample Identification
O = Open Ended Rod
U = Undisturbed
S = Split Spoon
C = Rock Core
G = Geoprobe

Cohesive Soils N-Value
0 to 2: Very Soft
2 to 4: Soft
4 to 8: Medium Stiff
8 to 15: Stiff
15 to 30 Very Stiff
Over 30: Hard

Granular Soils N- Value
0 to 4: Very Loose
4 to 10: Loose
11 to 30: Medium Dense
31 to 50: Dense
Over 50: Very Dense

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:
E.O.D. = End Of Drilling
N/E = None Encountered

GSI-10

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TEST BORING LOG

Boring No. GSI-11

Project	Sherburne Housing	GSI Project No.	225144	Elevation	Existing Grade
Location	Portsmouth, NH	Project Mgr.	Charles Wetherbee	Datum	-
Client	TF Moran, Inc.	Inspector	Charles Wetherbee	Date Started	3/26/2025
Contractor	Miller Engineering and Testing	Checked By	Harry Wetherbee	Date Finished	3/26/2025
Driller	Bob Marcoux	Rig Make & Model	Diedrich	Rig Model	D-50

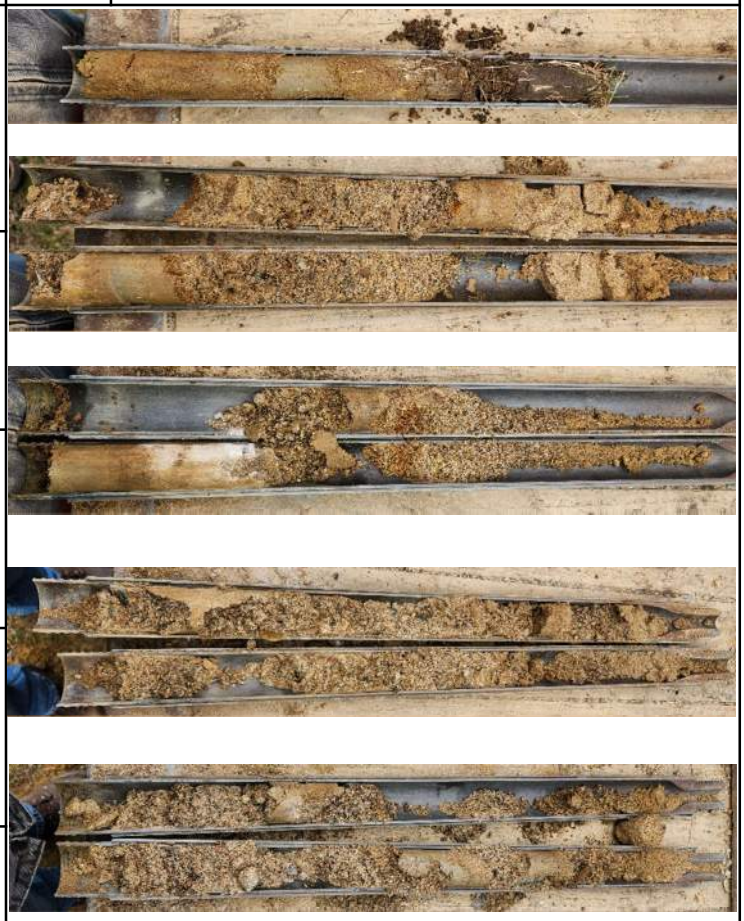
Item:	Auger	Casing	Sampler	Core Barrel
Type	HS Aug		SS	
Inside Diameter (in.)	2.25"		1-3/8"	
Hammer Weight (lb)			140	
Hammer Fall (in.)			30"	

☑ Truck ☐ Skid ☐ Track ☐ ATV ☐ Bomb. ☐ Geoprobe ☐ Tripod ☐ Other ☐ Winch ☑ Cat Head ☐ Roller Bit ☑ Cutting Head

Hammer Type: ☑ Safety Hammer ☐ Doughnut ☐ Automatic

Depth (ft)	Casing (Blows/ft)	Sample No.	Depth (ft)	Rec (in.)	SPT (Bl./ 6-in.)	"N" Value	PID Rdg. (ppm)	Stratum Change (ft)
0		S-1	0-2	20	1 4 4 6	8		
3		S-2	2-4	20	11 14 16 25	30		
5		S-3	4-6	18	4 13 17 10	-		
7		S-4	6-8	10	18 19 17 12	36		
9		S-5	8-10	22	15 14 16 17	30		

Soil-Rock Visual Classification and Description
(Soils - Burmister System)
(Rock - U.S. Corps of Engineers System)



Water Level Data				
		Depth (ft) to:		
Date	Time	Bott. of Casing	Bott. of Hole	Water
3/26	E.O.D.	10'	10'	N/E

Sample Identification	Cohesive Soils N-Value	Granular Soils N- Value
O = Open Ended Rod	0 to 2: Very Soft	0 to 4: Very Loose
U = Undisturbed	2 to 4: Soft	4 to 10: Loose
S = Split Spoon	4 to 8: Medium Stiff	11 to 30: Medium Dense
C = Rock Core	8 to 15: Stiff	31 to 50: Dense
G = Geoprobe	15 to 30 Very Stiff	Over 50: Very Dense
	Over 30: Hard	

Trace (0 to 5%), Little (10 to 20%), Some (20 to 35%), And (35 to 50%)

Notes:
E.O.D. = End Of Drilling
N/E = None Encountered

APPENDIX C

SUBSURFACE EXPLORATION KEY

FIELD DESCRIPTION AND CLASSIFICATION OF SOIL - Burmister System

Soil descriptions indicated on the test boring logs are based on Standard Penetration Test (SPT) results and observation of the soil samples obtained. Soil samples generally described and classified as illustrated in the following example:

Density or consistently | Color | Major Component | Minor Components | Moisture Content

Dense, brown, f-m SAND, some Gravel, trace Silt, moist.

1.0 DENSITY OR CONSISTENCY – The density or consistency is determined from the Standard Penetration Test (ASTM 1586), which corresponds to the number of blows required to drive a standard 2-inch outside diameter split-spoon sampler from the 6 to 18-inch depth of a 24-inch sample using a 140-pound weight falling freely for 30 inches.

Density of Granular Soil	Penetration Resistance (N-blows/ft)		Consistency of Composite Clay Soil
Very Loose	0 - 4	< 2	Very soft
Loose	4 - 10	2 - 4	Soft
Medium Dense	10 - 30	4 - 8	Medium soft
Dense	30 - 50	8 - 15	Stiff
Very Dense	> 50	15 - 30	Very stiff
		> 30	Hard

2.0 COLOR – Visual

3.0 SOIL COMPONENTS – The description and classification is based on the following criteria.

3.1 DESCRIPTION – The components of a soil sample are described by visually estimating the percentage of each component by weight of the total sample.

Major Component – The major component (>50%) is written with upper case letters for granular soil (SAND, GRAVEL), and a combination of upper and lower case letters for composite soil (Silty CLAY, Clayey SILT).

Minor Component – The minor soil components (≤50%) are written with the first letter of each material in upper case, and the remaining letters in lower case (Gravel, Silt). The minor components are identified and prefaced in the description based on the following percentages:

Description	Percentage
and	35 - 50%
some	20 - 35%
little	10 - 20%
trace	0 - 10%

Other Components – The other components within the soil which may be encountered include glass, bricks, trash, etc. The other components are identified and follow the major and minor soil components.

3.2 CLASSIFICATION

Granular Soil by Sieve Size – A granular soil sample is classified by visually estimating the particle size as referenced to a Standard Sieve.

Material*		Standard Sieve Limit Upper	Lower
GRAVEL	- coarse	3-inch	3/4-inch
	- fine	3/4-inch	No. 4
SAND	- coarse	No. 4	No. 10
	- medium	No. 10	No. 40
	- fine	No. 40	No. 200
SILT		No. 200	

Granular Soil by Visual Identification

Material	Visual ID
Silts and Clays	Too small to see.
Fine Sand	Finest visible grain.
Medium Sand	1/64” to 1/16”
Coarse Sand	1/16” to 1/4”
Fine Gravel	1/4" to 3/4"
Coarse Gravel	3/4" to 3”
Cobbles	3” to 6”
Boulders	Greater than 6”

*The Gravel/Sand portions of a granular soil are further divided based on the following proportions:

Gravel/Sand	Proportion
fine to coarse	> 10% all factions
coarse	< 10% fine and medium
medium to coarse	< 10% fine
medium	< 10% fine and coarse
fine to medium	< 10% coarse
fine	< 10% medium and coarse

Composite Clay Soil – A composite clay soil sample is classified by determining the smallest diameter thread that can be rolled manually.

Material	Smallest Thread Diameter	Degree of Plasticity
SILT	None	Nonplastic
Clayey SILT	1/4-inch	Slight
SILT & CLAY	1/8-inch	Low
CLAY & SILT	1/16-inch	Medium
Silty CLAY	1/32-inch	High
CLAY	1/64-inch	Very High

Organic Soil – An organic soil sample is classified by observation of the sample structure.

Material		
Topsoil	-	surficial soils that support plant life and which contain a high percentage of organic matter.
Fibrous Peat	-	deposits of plant remains in which the original plant fibers are still visible.
Amorphous Peat	-	deposits of plant remains in which the original plant fibers have been destroyed. Usually found underlying fibrous peat.
Organic Silt	-	fine grained marine soils which have been transported due to erosion and deposited in still water below the zone of wave action. May contain shell fragments, organic odor, high sand content, nonplastic.
Clayey Organic Silt	-	similar to Organic Silt, low sand content, plastic.

4.0 ADDITIONAL DETAILS AND DISCRIPTIVE TERMS

SOIL STRUCTURE – produced by deposition of sediments.

Stratified	-	random soil deposits of varying components or color.
Varved	-	alternating soil deposits of varying thickness (i.e. clays or silts).
Stratum	-	soil deposit greater than 12 inches thick.
Layer	-	soil deposit 3 inches to 12 inches thick.
Seam	-	soil deposit 1/8 inch to 3 inches thick.
Parting/lens	-	soil deposit less than 1/8 inch thick.

MOISTURE CONTENT

Dry	-	moisture not apparent, dusty, dry to the touch.
Moist	-	damp, but no visible water.
Wet	-	visible free water.

5.0 UNIFIED SOIL CLASSIFICATION SYMBOL AND DISCRIPTION

CL	Lean Clay	GW	Well Graded Gravel
ML	Silt	GP	Poorly Graded Gravel
OL	Organic Silt/ Clay Low Plasticity	GM	Silty Gravel
CH	Fat Clay	GC	Clayey Gravel
MH	Plastic Silt	SW	Well Graded Sand
OH	Organic Silt/Clay High Plasticity	SP	Poorly Graded Sand
PT	Peat	SM	Silty Sand
		SC	Clayey Sand

GUIDELINES TO CLASSIFICATION AND IDENTIFICATION OF ROCK

A. WEATHERING

Fresh	Fresh rock, crystals bright, few joints, may show slight staining. Rock rings under hammer if crystalline.
Slightly Weathered	Rock generally fresh, joints stained and discoloration extends into rock up to 1 inch. Joints may contain clay or gouge. In granitoid rocks some occasional feldspar crystals are dull and discolored. Crystalline rocks ring under hammer.
Moderately Weathered	Significant portions of rock show discoloration and weathering effects. In granitoid rocks, most feldspars are dull and discolored; some look clayey. Rock has dull sound under hammer and shows significant loss of strength as compared with fresh rock.
Highly Weathered	All rock is discolored or stained. In granitoid rocks all feldspars are dull and discolored and majority shows kaolinization. Rock shows severe loss of strength and can be excavated with a geologists pick. A clunking sound when struck with a hammer.
Disintegrate Rock	Rock texture clear and evident, but reduced in strength to strong soil. Some fragments of strong rock usually left.

B. FRACTURING AND BEDDING

Spacing	Fracturing	Bedding and Foliation
More than 3 feet	Massive	Thick
1 foot – 3 feet	Slightly Fractured	Medium
2 inches – 1 foot	Moderately Fractured	Thin
Less than 2 inches	Highly fractured	Very Thin

C. GRAIN SIZE

Fine	Visible to naked eye to 1/16-inch diameter.
Medium	1/16-inch to 1/4-inch diameter.
Coarse	Greater than 1/4-inch diameter.

D. HARDNESS

Very Hard	Cannot be scratched with a knife or sharp pick. Breaking of hand specimens requires several hard blows with a geologists pick.
Hard	Can be scratched with a knife or pick only with difficulty. Hard blow of hammer required to detach hand specimen.
Moderately Hard	Can be scratched with a knife or pick. Gouges or grooves to ¼ inch deep can be excavated with hard blows of a geologists pick. Hand specimens can be detached by a moderate blow.
Medium	Can be grooved to a 1/16-inch deep by firm pressure on a knife or pick point. Can be excavated in small chips to pieces approximately 1-inch maximum size by hard blows of the point of a geologists pick.
Soft	Can be gouged or grooved easily with a knife or pick point. Can be excavated in chips to pieces several inches in size. Small thin pieces can be broken by finger pressure.
Very Soft	Can be carved with a knife. Can be excavated easily with the point of a pick. Pieces 1 inch or more in thickness can be broken with finger pressure.

E. ROCK QUALITY DESIGNATION (RQD)

RQD (Percent)	Diagnostic Description
Exceeding 90	Excellent
75 – 90	Good
50 – 75	Fair
25 – 50	Poor
0 – 25	Very Poor

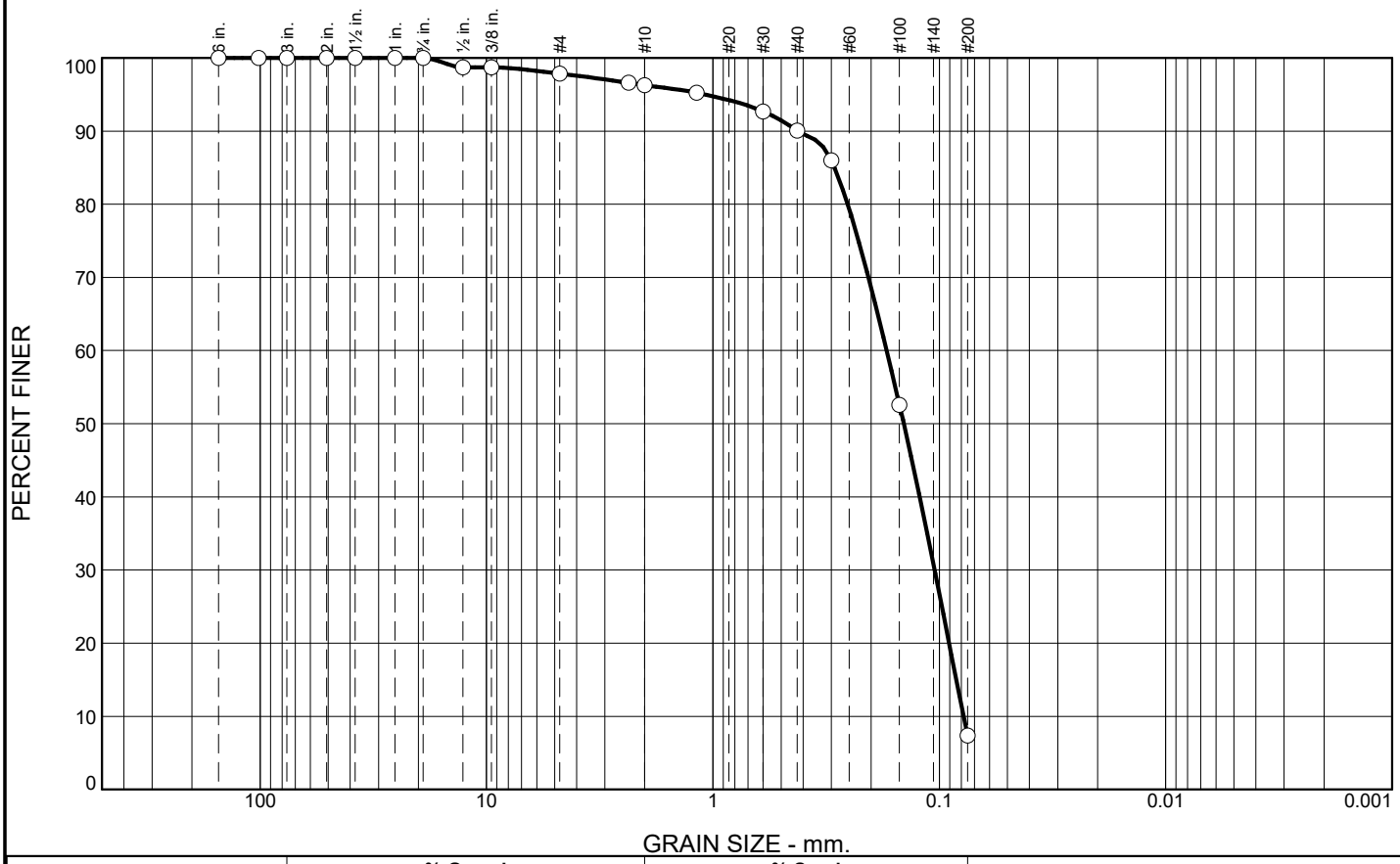
Comments: RQD is applicable to NX core only. The diameter of an NX core is 2.16 inches. RQD is expressed as a percentage and is determined by dividing the length of the run by the total length of the recovered cores pieces measuring 4-inches or greater. Core recovery is reported as a percentage and is determined by dividing the length of the core recovered (all pieces) by the length of the run.

APPENDIX D

LABORATORY TEST RESULTS

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel			% Sand			% Fines
	Coarse	Medium	Fine	Coarse	Medium	Fine	
0.0	0.0	1.3	2.4	3.6	13.4	71.9	7.4

Test Results (ASTM D422)

Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
6"	100.0			
4"	100.0			
3"	100.0			
2"	100.0			
1.5"	100.0			
1"	100.0			
0.75"	100.0			
0.5"	98.7			
0.375"	98.7			
#4	97.9			
#8	96.6			
#10	96.3			
#16	95.2			
#30	92.7			
#40	90.1			
#50	86.0			
#100	52.6			
#200	7.4			

* (no specification provided)

Material Description

med to fine SAND, trace Silt, trace med to fine Gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4222 D_{85}= 0.2906 D_{60}= 0.1710
D_{50}= 0.1434 D_{30}= 0.1049 D_{15}= 0.0841
D_{10}= 0.0781 C_u= 2.19 C_c= 0.83

Classification

USCS= AASHTO=

Test Remarks

Location: GSI-2; S-2
Sample Number: L-185-25 **Depth:** 4' to 6' **Sample Date:** 3/25/2025

GEOTECHNICAL SERVICES, INC.

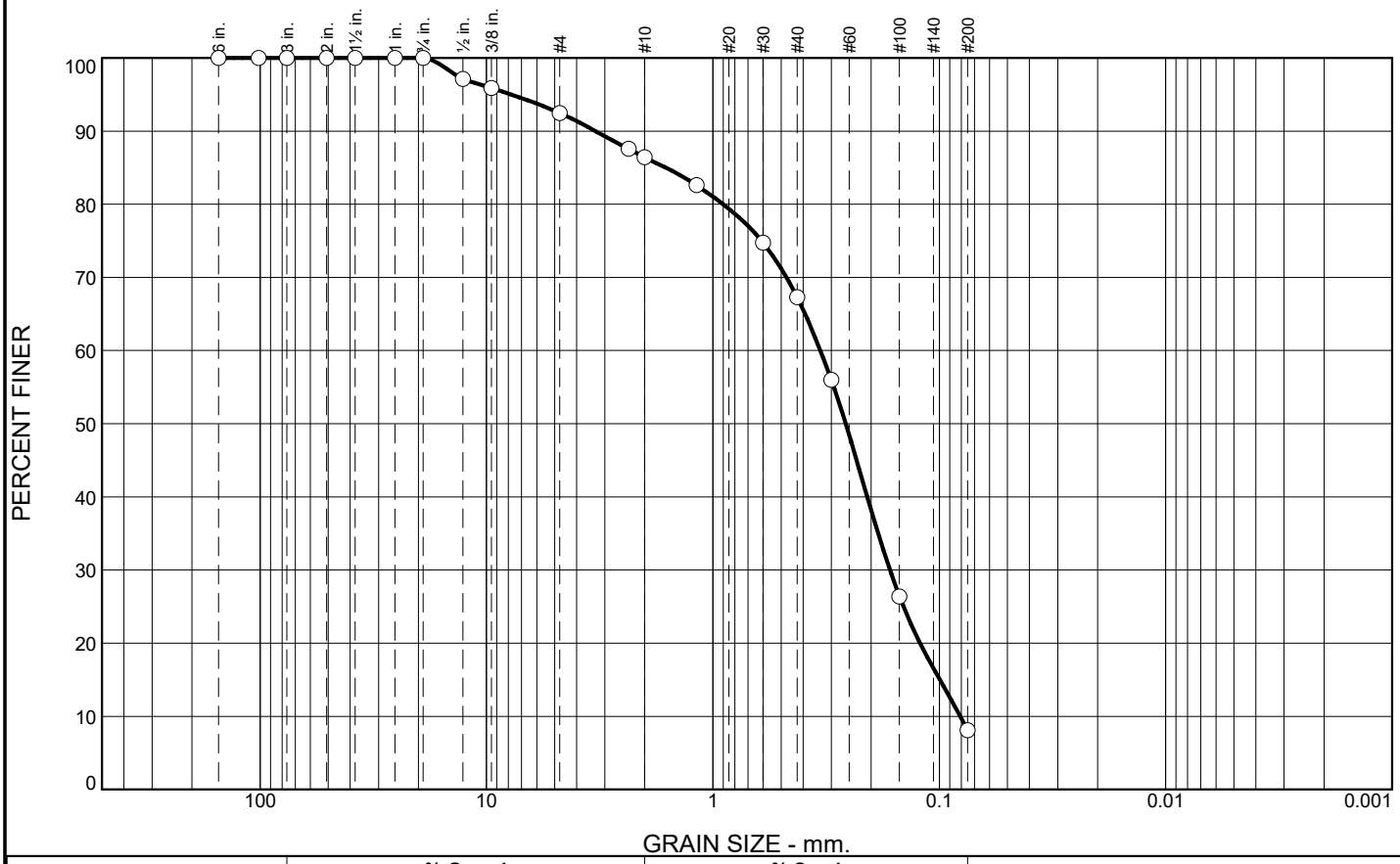
Weare, New Hampshire

Client: TF Moran, Inc.
Project: Sherburn Road Housing Development
Portsmouth, New Hampshire
Project No: 225144 **Figure**

Tested By: S.Andrews

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel			% Sand			% Fines
	Coarse	Medium	Fine	Coarse	Medium	Fine	
0.0	0.0	4.1	9.5	11.7	26.3	40.3	8.1

Test Results (ASTM D422)

Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
6"	100.0			
4"	100.0			
3"	100.0			
2"	100.0			
1.5"	100.0			
1"	100.0			
0.75"	100.0			
0.5"	97.1			
0.375"	95.9			
#4	92.5			
#8	87.6			
#10	86.4			
#16	82.6			
#30	74.7			
#40	67.3			
#50	56.0			
#100	26.4			
#200	8.1			

* (no specification provided)

Material Description

coarse to fine SAND, little med to fine Gravel, trace Silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 3.2976 D_{85}= 1.6155 D_{60}= 0.3354
D_{50}= 0.2592 D_{30}= 0.1653 D_{15}= 0.0995
D_{10}= 0.0807 C_u= 4.15 C_c= 1.01

Classification

USCS= AASHTO=

Test Remarks

Location: GSI-3; S-3
Sample Number: L-186-25 **Depth:** 9' to 11' **Sample Date:** 3/25/2025

GEOTECHNICAL SERVICES, INC.

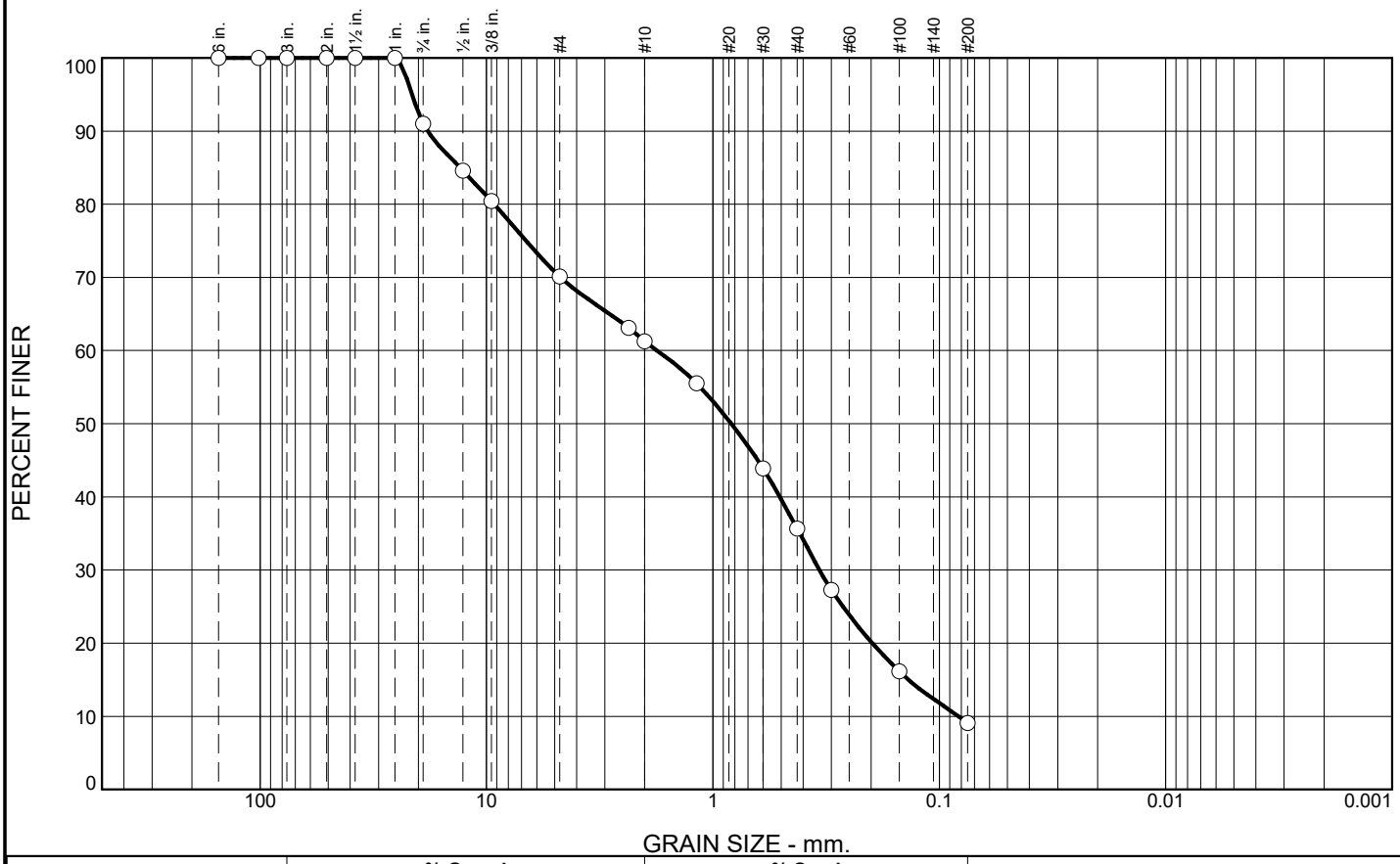
Weare, New Hampshire

Client: TF Moran, Inc.
Project: Sherburn Road Housing Development
Portsmouth, New Hampshire
Project No: 225144 **Figure**

Tested By: S.Andrews

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel			% Sand			% Fines
	Coarse	Medium	Fine	Coarse	Medium	Fine	
0.0	0.0	19.5	19.2	17.4	20.0	14.8	9.1

Test Results (ASTM D422)

Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
6"	100.0			
4"	100.0			
3"	100.0			
2"	100.0			
1.5"	100.0			
1"	100.0			
0.75"	91.0			
0.5"	84.6			
0.375"	80.5			
#4	70.1			
#8	63.1			
#10	61.3			
#16	55.5			
#30	43.9			
#40	35.7			
#50	27.3			
#100	16.1			
#200	9.1			

* (no specification provided)

Material Description

coarse to fine SAND, and med to fine Gravel, trace Silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 18.1854 D_{85}= 13.0641 D_{60}= 1.7690
D_{50}= 0.8298 D_{30}= 0.3386 D_{15}= 0.1369
D_{10}= 0.0822 C_u= 21.52 C_c= 0.79

Classification

USCS= AASHTO=

Test Remarks

Location: GSI-4; S-2
Sample Number: L-187-25 **Depth:** 4' to 6' **Sample Date:** 3/25/2025

GEOTECHNICAL SERVICES, INC.

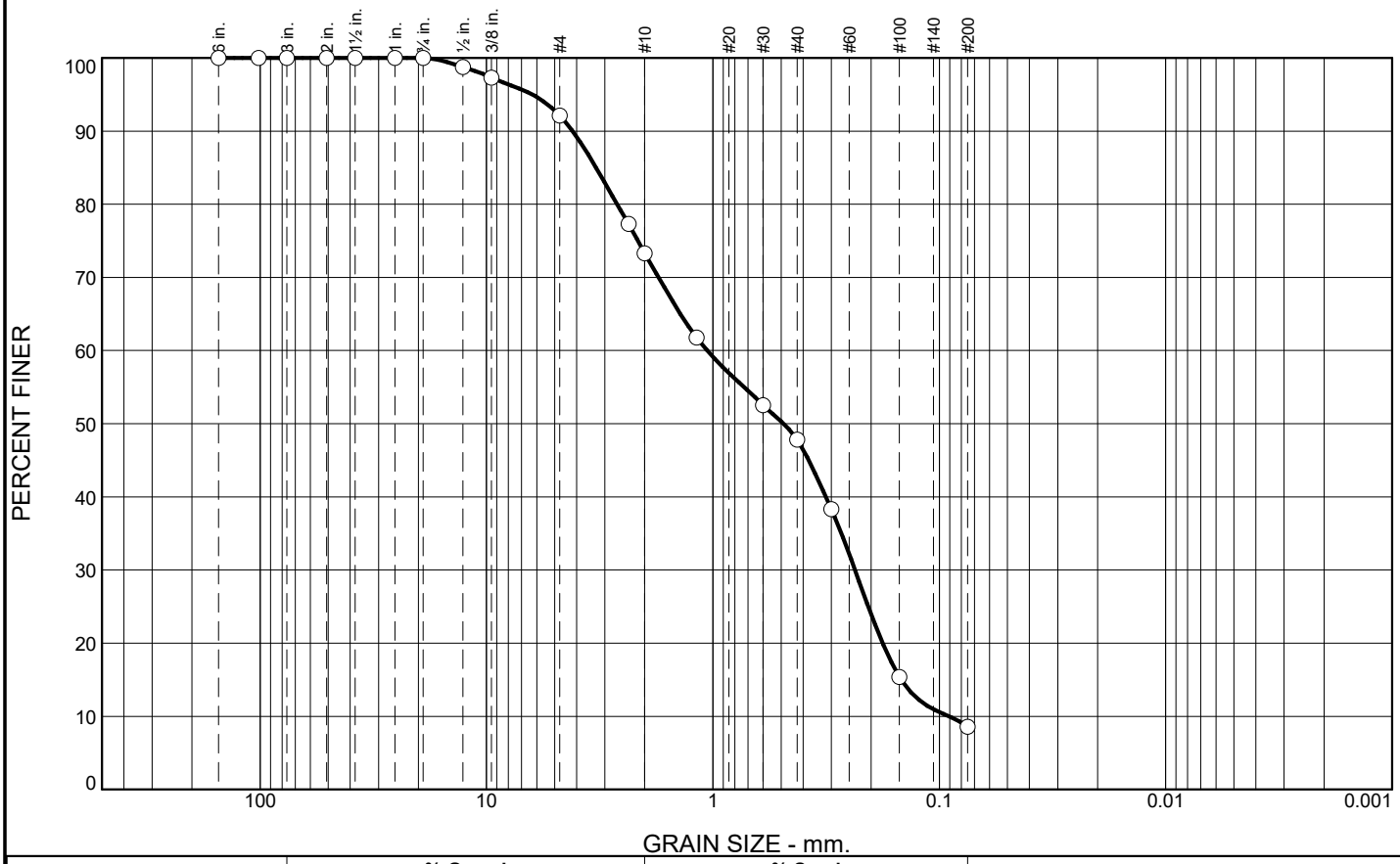
Weare, New Hampshire

Client: TF Moran, Inc.
Project: Sherburn Road Housing Development
Portsmouth, New Hampshire
Project No: 225144 **Figure**

Tested By: S.Andrews

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel			% Sand			% Fines
	Coarse	Medium	Fine	Coarse	Medium	Fine	
0.0	0.0	2.7	24.0	20.8	20.3	23.6	8.6

Test Results (ASTM D422)

Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
6"	100.0			
4"	100.0			
3"	100.0			
2"	100.0			
1.5"	100.0			
1"	100.0			
0.75"	100.0			
0.5"	98.8			
0.375"	97.3			
#4	92.1			
#8	77.3			
#10	73.3			
#16	61.8			
#30	52.5			
#40	47.8			
#50	38.3			
#100	15.4			
#200	8.6			

* (no specification provided)

Material Description

coarse to fine SAND, some med to fine Gravel, trace Silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 4.1690 D_{85}= 3.2812 D_{60}= 1.0607
D_{50}= 0.4868 D_{30}= 0.2357 D_{15}= 0.1473
D_{10}= 0.0906 C_u= 11.71 C_c= 0.58

Classification

USCS= AASHTO=

Test Remarks

Location: GSI-5; S-4
Sample Number: L-188-25 **Depth:** 14' to 16' **Sample Date:** 3/26/2025

GEOTECHNICAL SERVICES, INC.

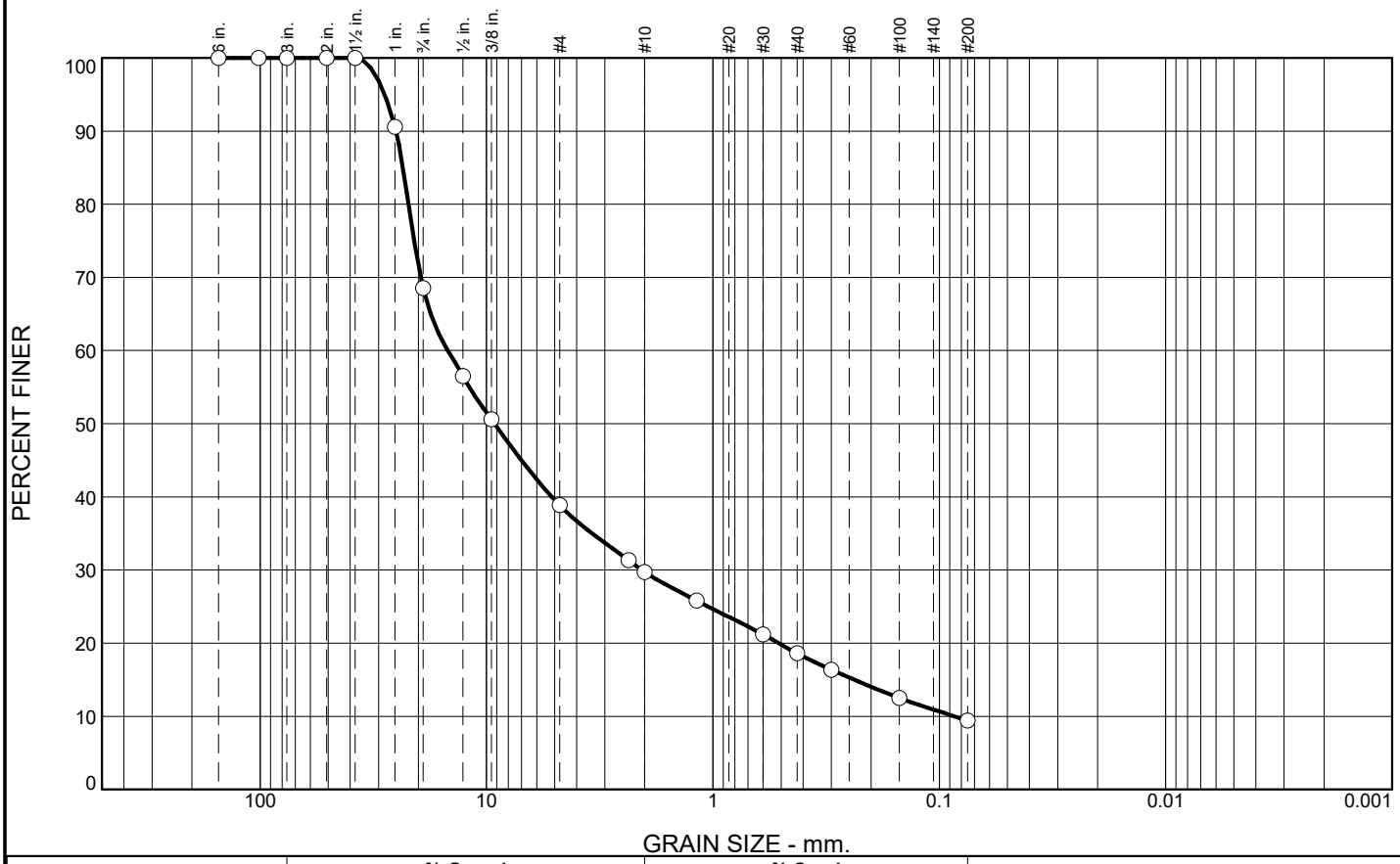
Weare, New Hampshire

Client: TF Moran, Inc.
Project: Sherburn Road Housing Development
Portsmouth, New Hampshire
Project No: 225144 **Figure**

Tested By: S.Andrews

Particle Size Distribution Report

ASTM D422



% +3"	% Gravel			% Sand			% Fines
	Coarse	Medium	Fine	Coarse	Medium	Fine	
0.0	9.4	40.0	20.9	8.5	5.9	5.9	9.4

Test Results (ASTM D422)

Sieve Size or Diam. (mm.)	Finer (%)	Spec.* (%)	Out of Spec. (%)	Pct. of Fines
6"	100.0			
4"	100.0			
3"	100.0			
2"	100.0			
1.5"	100.0			
1"	90.6			
0.75"	68.5			
0.5"	56.5			
0.375"	50.6			
#4	38.9			
#8	31.3			
#10	29.7			
#16	25.8			
#30	21.2			
#40	18.6			
#50	16.4			
#100	12.5			
#200	9.4			

* (no specification provided)

Material Description

coarse to fine GRAVEL some, coarse to fine Sand, trace Silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 25.1170 D_{85}= 23.3900 D_{60}= 14.8389
D_{50}= 9.2228 D_{30}= 2.0666 D_{15}= 0.2377
D_{10}= 0.0858 C_u= 173.03 C_c= 3.36

Classification

USCS= AASHTO=

Test Remarks

Location: GSI-7; S-3
Sample Number: L-189-25 **Depth:** 9' to 11' **Sample Date:** 3/26/2025

GEOTECHNICAL SERVICES, INC.

Weare, New Hampshire

Client: TF Moran, Inc.
Project: Sherburn Road Housing Development
Portsmouth, New Hampshire
Project No: 225144 **Figure**

Tested By: S.Andrews

APPENDIX E

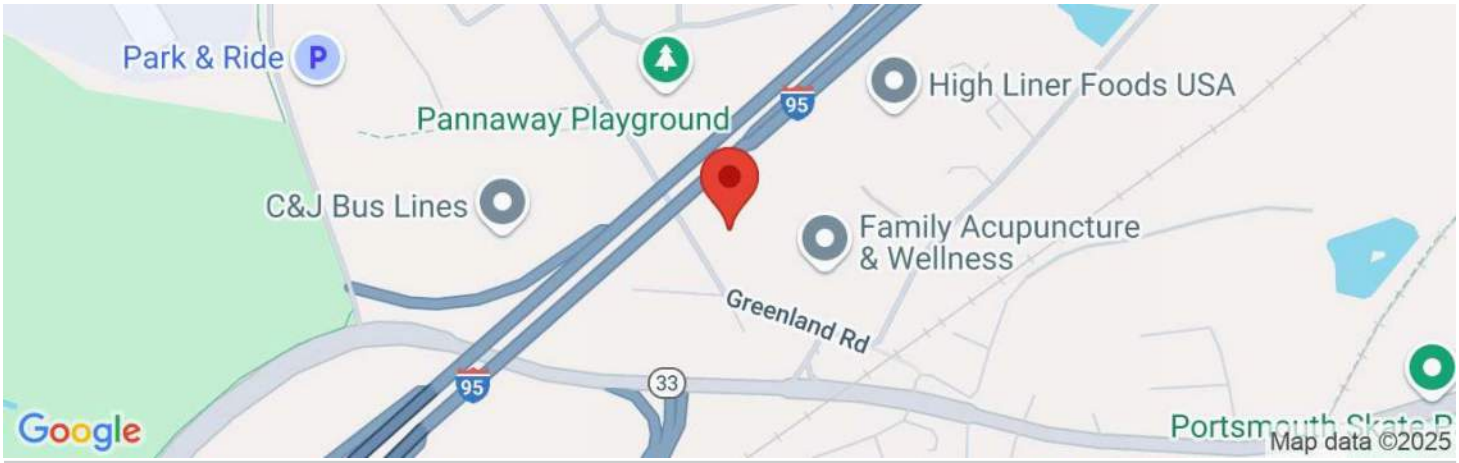
USGS SEISMIC DESIGN MAPS

USGS web services were down for some period of time and as a result this tool wasn't operational, resulting in *timeout* error.
USGS web services are now operational so this tool should work as expected.

Sherburne Housing Development

35 Sherburne Rd, Portsmouth, NH 03801, USA

Latitude, Longitude: 43.0597624, -70.799723



Date	4/1/2025, 1:42:48 PM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Default (See Section 11.4.3)

Type	Value	Description
S_S	0.331	MCE_R ground motion. (for 0.2 second period)
S_1	0.075	MCE_R ground motion. (for 1.0s period)
S_{MS}	0.508	Site-modified spectral acceleration value
S_{M1}	0.18	Site-modified spectral acceleration value
S_{DS}	0.339	Numeric seismic design value at 0.2 second SA
S_{D1}	0.12	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	C	Seismic design category
F_a	1.535	Site amplification factor at 0.2 second
F_v	2.4	Site amplification factor at 1.0 second
PGA	0.205	MCE_G peak ground acceleration
F_{PGA}	1.395	Site amplification factor at PGA
PGA_M	0.286	Site modified peak ground acceleration
T_L	6	Long-period transition period in seconds
SsRT	0.331	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	0.357	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.075	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.081	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)

Type	Value	Description
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)
PGA_{UH}	0.205	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration
C_{RS}	0.928	Mapped value of the risk coefficient at short periods
C_{R1}	0.932	Mapped value of the risk coefficient at a period of 1 s
C_V	0.921	Vertical coefficient

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APPENDIX F

DRAFT EARTHWORK SPECIFICATIONS

SECTION 02200
EARTHWORK

DRAFT

PART I- GENERAL

1.01 GENERAL REQUIREMENTS

1. Include GENERAL CONDITIONS and SUPPLEMENTARY CONDITIONS as part of this Section.

2. Examine all other Sections of the Specifications for requirements, which affect work of this Section whether or not such work is specifically mentioned in this Section.

3. Coordinate work with trades affecting, or affected by, work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 WORK INCLUDED

1. Perform all work required to complete the work of the Section, as indicated. Such work includes, but is not limited to, the following:

    1. Excavation, filling, grading and compaction
    2. Supplying of fill materials
    3. Construction Dewatering
    4. Sheeting, shoring and bracing
    5. Rock excavation/blasting

1.03 RELATED WORK UNDER OTHER SECTIONS

1. Erosion And Sediment Control
2. Site Preparation
3. Bituminous Concrete Paving
4. Site Water Lines
5. Storm Drainage System
6. Sanitary Sewer System
7. Site Furnishings
8. Site Irrigation
9. Lawns
10. Planting

1.04 SUBMITTALS

1. Issue submittals in accordance with Division 1. Submittals under this Section shall include manufacturer's specifications and installation instructions.

1.05 SAMPLES AND TESTING

1. A 50 lb. sample of each off-site material proposed for use, and of any on-site material when so requested by the Architect or Geotechnical Engineer, shall be submitted for

approval.

1. Samples shall be delivered to office of the Geotechnical Engineer, as directed.
2. Samples required in connection with compaction tests will be taken and transported by the Geotechnical Engineer.
3. Product Data: Submit location of pits for all borrow material.

1.06 COORDINATION

1. The work of this Section shall be coordinated with that of other trades affecting, or affected by, this work, as necessary to assure the steady progress of all work of the Contract.

2. Prior to the start of earthwork, the Contractor shall arrange an on-site meeting with the Architect and Geotechnical Engineer for the purpose of establishing Contractor's schedule of operations and scheduling inspection procedures and requirements.

3. As construction proceeds, the Contractor shall be responsible for notifying the Architect prior to start of earthwork operations requiring inspection and/or testing.

1.09 INFORMATION

1. It is hereby understood that the Contractor has carefully examined the site and all conditions affecting work under this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions.

2. Plans, surveys, measurements and dimensions under which the work is to be performed are believed to be correct to the best of the Architect's knowledge, but the Contractor shall have examined them for himself during the bidding period, as no allowance will be made for any errors or inaccuracies that may be found herein.

3. Information on the Drawings, Reference Drawings, and in the Specifications relating to subsurface conditions, natural phenomena, and existing utilities and structures is from the best sources presently available. Such information is furnished only for the information and convenience of the Contractor, and the accuracy or completeness of this information is not guaranteed.

1.10 EXISTING CONDITIONS

1. The Contractor shall become thoroughly familiar with the site, consult records and drawings of adjacent structures and of existing utilities, and note all conditions, which may influence the work of this Section.

2. By submitting a bid, the Contractor affirms that he has carefully examined the site and all conditions affecting work under this Section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions.

3. The Contractor may, at his own expense, conduct additional subsurface testing as required for his own information after approval by the Owner.

1.11 SUBSURFACE CONDITIONS AND SPECIAL SITE CONSIDERATIONS

1. Soil borings have been made by a qualified Contractor prior to this Contract. This information shall be made available to bidders as specified under other Sections. The final results of these subsurface explorations were prepared by Geotechnical Services, Inc., consulting geotechnical engineers, and are hereby attached to this specification for

information only. Procedures for dewatering, areas to receive special fill and other methods and procedures specified herein shall be supplemented by this information. For purposes of this specification, this information will be referred to as the report. Where procedures within the report vary from procedures as specified herein, this specification shall override. The results and recommendations are available in the geotechnical report prepared by Geotechnical Services. Copies of this report are available from the Architect. Soil samples may be examined at the office of the Geotechnical Engineer.

2. It is the responsibility of the Contractor under this Contract to do the excavation, filling, grading and rough grading to bring the existing grades to subgrade and parallel to finished grades as specified herein and as shown on the Drawings for this Work. The Contractor shall visit the site prior to submitting a bid to become familiar with the extent of the work to be done under this Contract. The Contractor shall be responsible for determining the quantities of earth materials necessary to complete the work under this Section. All earth materials shall be included in the Contractor's base bid.

3. Site Information - data on indicated subsurface conditions are not representations or warrants of continuity of such conditions between subsurface explorations. It is expressly understood that the Owner will not be responsible for interpretations or conclusions drawn there from by the Contractor. Data are made available for the convenience of the Contractor. Neither the Owner nor the Geotechnical Engineer assumes responsibility for accuracy of the data other than at the particular locations and at the time the explorations were made.

4. The subsurface data was gathered and report prepared by Geotechnical Services, Inc. The elevations indicated on the drill holes, borings and test pits refer to existing conditions. A copy of this report may be seen at the office of the Architect during normal working hours.

1.12 QUALITY ASSURANCE

1. The Owner will retain a Geotechnical Engineer to perform on-site observations and testing during the following phases of the construction operations. The services of the Geotechnical Engineer may include, but not be limited to the following:

    1. Observation during excavation and dewatering of building areas, parking areas and controlled fill areas.
    2. Observation and testing during placement and compaction of fills within the building area, parking area, and controlled fill areas.
    3. Laboratory testing and analysis of fill and bedding materials specified, as required.
    4. Observation, construction and performance of water content, gradation, and compaction tests at a frequency and at locations to assure conformance of this Specification. The results of these tests will be submitted to the Architect; copy to the Contractor, on a timely basis so that the Contractor can take such action as is required to remedy indicated deficiencies. During the course of construction, the Geotechnical Engineer will advise the Architect, in writing, with copy to Contractor if, at any time, in his opinion, the work is not in substantial conformity with the Contract Documents.

2. The Geotechnical Engineer's presence does not include supervision or direction of the actual work by the Contractor, his employees or agents. Neither the presence of the Geotechnical Engineer, nor any observations and testing performed by him, nor any notice or failure to give notice shall excuse the Contractor from defects discovered in his work.

3. The Owner reserves the right to modify or waive Geotechnical Engineer services.

1.13 PERMITS, CODES AND SAFETY REQUIREMENTS

1. All work shall conform to the Drawings and Specifications and shall comply with applicable codes and regulations.

2. Comply with the rules, regulations, laws and ordinances of town and state agencies and all other authorities having jurisdiction. Coordinate all work done within town and State rights of way with the appropriate agencies. Provide all required traffic control and safety measures, including uniformed police officers per town and State requirements. All labor, materials, equipment and services necessary to make the work comply with such requirements shall be provided without additional cost to the Owner.

3. Comply with the provisions of the Manual of Accident Prevention in Construction of the Associated General Contractors of America, Inc. and the requirements of the Occupational Safety and Health Administration (OSHA), United States Department of Labor.

4. The Contractor shall procure and pay for all permits and licenses required for the complete work specified herein and shown on the Drawings.

5. The Contractor shall not close or obstruct any street, sidewalk, or passageway unless authorized in writing by the Architect. The Contractor shall so conduct his operations as to interfere as little as possible with the use ordinarily made of roads, driveways, sidewalks or other facilities near enough to the work to be affected hereby. The Contractor shall comply with the time limits established by the terms for trucking onto and off of the site.

6. Any apparent conflict between the Drawings and Specifications and the applicable codes and regulations shall be referred to the Architect in writing, for resolution before the work is started.

1.14 LAYOUTS AND GRADES

1. All line and grade work not presently established at the site shall be laid out by a survey team under the supervision of a Registered Land Surveyor or Professional Engineer employed by the Contractor in accordance with Drawings and Specifications. The Contractor shall establish permanent benchmarks and replace as directed any which are destroyed or disturbed.

2. The words "finished grades" as used herein shall mean final grade elevations indicated on the Drawings. Spot elevations shall govern over proposed contours. Where not otherwise indicated, project site areas outside of the building shall be given uniform slopes between points for which finished grades are indicated or between such points and existing grades.

3. The word "subgrade" as used herein, means the required surface of excavated area, subsoil, borrow fill or compacted fill. This surface is immediately beneath the site improvements; fill materials as dimensioned on the Drawings, or other proposed surface material.

1.15 DISPOSITION OF EXISTING UTILITIES

1. Active utilities existing on the site and work areas shall be carefully protected from damage and relocated or removed as required by the work. When an active utility line is

exposed during construction, its location and elevation shall be plotted on the record drawings as described in this Section and both Architect and Utility Owner notified in writing.

2. Inactive or abandoned utilities encountered during construction shall be removed if within the building area or grouted, plugged or capped. The location of such utilities shall be noted on the record drawings and reported in writing to the Architect.

3. The Contractor shall notify "Dig Safe" and local utility companies prior to the start of construction. The "Dig Safe" number shall be submitted by the Contractor in writing to the Architect prior to construction.

1.16 SHORING, SHEETING, AND BRACING

1. Provide shoring, sheeting, and/or bracing at excavations, as required, to ensure complete safety against collapse of earth at sides of excavations.

2. If, at any place, sufficient or proper supports have not been provided, additional supports shall be placed at the expense of the Contractor. Care shall be taken to prevent voids outside of the sheeting, but if voids are formed, they shall be immediately filled and compacted.

3. All sheeting and bracing not ordered left in place shall be carefully removed in such a manner as not to endanger the construction of other structures, utilities or property whether public or private. All voids left after withdrawal of sheeting shall be immediately refilled with sand and rammed with tools adapted to that purpose or otherwise compacted as directed to achieve the required density.

4. Shoring or sheeting shall not constitute a condition for which an increase may be made in the contract price with the exception that if the Architect directs in writing that certain shoring or sheeting shall be left in place, the contract price will be adjusted in accordance with General Conditions.

5. Excavation support systems shall be designed to support the earth pressures, hydrostatic pressures, surcharge loads and other forces from existing site conditions, stored material and construction equipment.

6. Shoring and bracing of trenches and other excavations shall, at a minimum, be in accordance with the latest requirements of the Department of Labor and Industries Bulletin No. 12, Section 10, and all subsequent amendments.

7. Shoring and sheeting shall be designed by a Registered Professional Engineer and paid for by the Contractor. The contractor shall submit an earth shoring and bracing plan to the Architect for review by the Geotechnical Engineer at least 2 weeks prior to installation. The submittal shall include calculations and plans drawn to scale.

1.17 DRAINAGE

1. The Contractor shall control the grading in areas under construction on the site so that the surface of the ground will properly slope to prevent accumulation of water in excavated areas and adjacent properties.

2. The Contractor shall excavate interceptor swales and ditches where shown on the Drawings and as otherwise necessary prior to the start of major earthmoving operations to insure minimal erosion and to keep areas as free from surface water as possible.

3. Should surface, rain or ground water be encountered during the operations, the Contractor shall furnish and operate pumps or other equipment and provide all necessary piping to keep all excavations clear of water at all times and shall be responsible for any damage to work or adjacent properties for such water. All piping exposed above surface for this use, shall be properly covered to allow foot traffic and vehicles to pass without obstruction.

4. Presence of ground water in soil will not constitute a condition for which an increase in the contract price may be made. Under no circumstances place concrete fill, soil fill, lay piping or install appurtenances in excavation containing free water. Keep utility trenches free of water until pipe joint material has hardened and backfilled to prevent flotation.

1.18 FROST PROTECTION

1. Do not excavate to full-indicated depth when freezing temperatures may be expected, unless work can be completed to subgrade or piping can be installed and backfilled the same day. Protect the excavation from frost if placing of concrete or piping is delayed.

2. The Contractor shall keep the operations under this Contract clear and free of accumulation of snow within the limits of Contract Lines as required to carry out the work.

3. No work shall be installed on frozen ground.

4. Provide heat and/or insulation to slab, footings, foundation walls, and other elements during freezing conditions to prevent damage from frost heaving.

1.19 DISTURBANCE OF EXCAVATED AND FILLED AREAS DURING CONSTRUCTION

1. The Contractor shall take the necessary steps to avoid disturbance of subgrade and underlying natural soils/compacted fill during excavation and filling operations. Methods of excavation and filling operations shall be revised as necessary to avoid disturbance of the subgrade and underlying natural soils/compacted fill, including restricting the use of certain types of construction equipment and their movement over sensitive or unstable materials. The Contractor shall coordinate with the Architect or Geotechnical Engineer to modify his operations as necessary to minimize disturbance and protect bearing soils.

2. All excavated or filled areas disturbed during construction, all loose or saturated soil, and other areas that will not meet compaction requirements as specified herein shall be removed and replaced with compacted structural fill or crushed stone. Fill that cannot be compacted within 48 hours because of excess moisture shall be removed and replaced with compacted structural fill or crushed stone. Costs of removal of disturbed material and replacement with gravel fill or crushed stone shall be borne by the Contractor.

3. If requested by the Geotechnical Engineer, the Contractor shall place a six-inch layer of crushed stone or 4-inch concrete mud mat over natural underlying soil to stabilize the disturbed areas during construction. The placement of crushed stone layer or mud mat as well as material costs shall be borne by the Contractor.

1.20 PROTECTION OF BEARING SUBGRADES

1. The Contractor shall be required to maintain stable, dewatered, and frost fee subgrades for foundations, pavement areas, utility trenches, and other areas as directed by the Architect or Geotechnical Engineer.

2. The Contractor shall take precautions to reduce subgrade disturbance. Such precautions may include diverting storm water runoff away from construction areas, reducing traffic in

sensitive areas, thermal protection during cold weather periods, and maintaining an effective dewatering operation.

3. Soils exhibiting weaving/instability or which become frozen, as determined by the Geotechnical Engineer, shall be over-excavated (removed) to competent bearing material and replaced with compacted gravel fill or lean concrete at no additional cost to the Owner.

1.21 DEWATERING

1. Based on subsurface investigations conducted prior to this Contract, it is anticipated that excavation may be carried out below existing groundwater levels. The Contractor shall be required to implement ground water control measures to maintain the ground water level a minimum of one foot below all final excavation levels or to propose alternative methods for placement of fill over existing undisturbed material with ground water at or near the surface in such a manner that the existing materials will not be disturbed. The Contractor will be required to implement ground water control measures adequate to maintain the excavation sufficiently dry to allow efficient use of normal excavation equipment and to provide a borrow material suitable for placement and compaction as specified or as directed by the Geotechnical Engineer. The moisture content shall not exceed 3% above the optimum moisture content as determined by modified Proctor test (ASTM DI557). The Contractor shall furnish all labor, equipment and materials in connection with handling ground water and surface water encountered during construction and placement of compacted granular fill or other material as specified.

2. Not less than 14 days prior to the scheduled start of work, the Contractor shall submit his proposed method of dewatering and maintaining dry conditions to the Geotechnical Engineer for review. The submittal shall include calculations, plans, sketches, pump curves, method of sediment control, and disposal. The dewatering plan shall be prepared by a licensed Civil Engineer. Review by the Architect of the Contractor's proposed method of dewatering shall not relieve the Contractor of responsibility for the satisfactory performance of the dewatering system. The Contractor is responsible for correcting any disturbance of natural bearing soils or damage to structures caused by an inadequate dewatering system or by interruption of the continuous operation of the system as specified.

3. The Contractor shall make the entire excavation for this work in the dry. The water level is to be maintained continuously one foot below bottom of excavation for the length of time to complete the work. The Contractor shall place all fill materials and proposed improvements in the dry.

4. The Contractor shall, at all times during construction, provide and maintain proper equipment and facilities to remove promptly and dispose of properly, all water entering excavations and keep such excavations dry so as to obtain a satisfactory undisturbed bottom of excavation or subgrade condition. Dewatering shall be in operation until the fill, or the proposed surface condition has been completed to such extent that it will not be floated or otherwise damaged by allowing water levels to return to natural elevations.

5. In excavations below the ground water level, it is expected that dewatering trenches or deep sumps will be required for pre-drainage of the soils prior to final excavation, and for maintaining the lowered groundwater level until construction has been completed to such an extent that floating, slumping or damage to excavations or materials placed does not occur. Monitoring of adjacent ground water levels by observation wells or other satisfactory means may be required.

6. The Contractor shall discharge all pumped water away from the work area, and in

accordance with all applicable local codes and laws. Requirements specified herein for Erosion and Siltation Control shall be met during this process.

7. All fill material shall be placed and compacted in the dry. The Contractor shall dewater excavated areas as required to perform the work and in such a manner as to preserve the undisturbed Commonwealth of the natural inorganic or other subgrade soils.

8. The Contractor shall verify that the construction and/or operation of his dewatering system will not adversely affect any well, pond, stream structure, utility, etc., on or adjacent to the area being dewatered.

PART 2 - PRODUCTS

2.01 MATERIALS

1. Fill material shall be obtained from required on-site cut to the extent suitable material is available and off-site to the extent suitable material is not available from on-site cuts.

2. On-site material for use in compacted fill shall be natural inorganic granular soil taken from areas of cut after removal of pavement, topsoil, or other unsuitable materials.

3. Fill materials shall be well-graded within specified gradation limits. Gradation of backfill materials shall be determined in accordance with ASTM D-422.

4. Crushed Stone: Crushed stone processed from a stone quarry, washed, graded, free of organic materials. Gradation is as follows:

1. 1/2" Crushed Stone

U. S. SIEVE NO.	% PASSING BY WEIGHT
2"	100
1/2"	85-100
3/8"	15-45
#4	0-15
#8	0-5

2. 3/4" Crushed Stone

U.S. SIEVE NO.	% PASSING BY WEIGHT
1"	100
3/4"	90-100
1/2"	10-50
3/8"	0-20
# 4	0-5

3. 1-1/2" Crushed Stone

U.S. SIEVE NO.	% PASSING BY WEIGHT
2"	100
1-1/2"	95-100
1”	35-70
3/4"	0-25

4. Structural Fill: Well-graded, hard, durable, natural sand and gravel, free from ice and snow, roots, sod, rubbish, and other deleterious or organic matter. Material shall conform to the following gradation requirements:

U.S. SIEVE NO.	% PASSING BY WEIGHT
4"	100
#4	40-70
#40	25-45
#200	0-12

6. Ordinary/Common Fill: Well-graded, natural, inorganic soil approved by the Architect and meeting the following requirements:

    1. It shall have less than 3% organic matter, free from weak, compressible, or frozen materials, and of stones larger than eight inches in dimension. It shall not contain granite block, concrete, masonry rubble, roots, stumps or other similar materials.

    2. It shall be of such nature and character that it can be compacted to the specified densities.

    3. Topsoil and the zone directly below the topsoil indicated on the borings as "subsoil" shall not be considered Ordinary Fill nor shall topsoil, or subsoil stockpiled on the site. Where subsoil is encountered, it shall be stripped separately from the topsoil and the granular material directly beneath the subsoil. This excavated material shall only be utilized in lawn areas, playfield areas or other non-structural areas, and shall be placed in these areas at distances away from adjacent site improvements as specified herein or as directed by the Architect.

    4. Material from excavations on the site may be used as Ordinary Fill if it is deemed acceptable by the Geotechnical Engineer.

7. Unsuitable Material which is classified as "unsuitable" shall be material having at least one of the following properties:

    1. Material with a maximum unit dry weight per cubic foot less than 90 lbs., as determined by ASTM D1557.
    2. Material containing greater than 3% organic matter by weight, organic silt, peat, construction debris, roots and stumps.
    3. Material deemed unsuitable by the Geotechnical Engineer based on its inherent inability to perform satisfactorily as a bearing stratum.
    4. Soil, which is allowed to become frozen, saturated, or unstable because of the contractor’s failure to employ appropriate dewatering, excavation methods, or weather protection is not deemed unsuitable soil but rather represents a condition in which the subgrade was not adequately prepared and/or protected.

8. Blast Rock Fill: Shall be broadly graded blasted rock with a maximum size of 12 inches, 25% smaller than six inches and 10% finer than 3/4 inch. Occasional boulders up to 18 inches will be permitted near the base of the fill.

    1. General site rock fill (outside the building area) may be placed up to within 42 inches of finish grade in pavement areas and to within 18 inches of inverts of utility lines. First lift over the top of rock fill shall be a choke stone layer 18 inches thick. Compaction shall be by minimum of four coverages of a self-propelled vibratory drum roller in each direction (i.e. north-south and east-west). The minimum weight of the drum shall be 10,000 lbs. Compaction may also be by four coverages of heavy track equipment such as a CAT D8 Bulldozer or other heavy track equipment approved by the Geotechnical Engineer.
    2. Rock shall not be placed within a five-foot horizontal distance on either side of

any proposed utility line. The intent is to leave a zone of granular fill that can later be excavated for installation of utilities. Also, large rock fragments shall be kept away from utility pipes.

9. Choke Stone: Shall have a maximum rock size of nine inches and shall have 50% finer than 1-1/2 inch and 25% finer than 3/4 inch.

10. Sand Fill: Shall consist of well-graded natural sand, free from organic, other weak or compressible materials, or frozen materials, Conforming to the following gradation:

U.S. SIEVE NO.	% PASSING BY WEIGHT
#4	100
#50	15-40
#100	2-10
#200	0-5

11. Slab Base Course : Shall be hard, durable, natural sand and gravel, free from ice and snow, roots, sod, rubbish, or organic matter. Material shall conform to the following gradation requirements:

U.S. SIEVE NO.	% PASSING BY WEIGHT
2"	100
#4	40-70
#40	25-45
#200	0-10

PART 3 - EXECUTION

3.01 GENERAL EXCAVATION

1. Excavate all materials encountered to allow construction of the proposed building and structures, utilities and site work as shown on the Drawings and as hereinafter specified.

2. Excavate to levels shown for footings and structures, as required to provide working clearance and to allow adequate inspection and to subgrades outside of buildings and structures as specified herein and as shown on Drawings.

3. In planted areas, remove ledge, boulders and other obstructions to a depth of at least two feet below finished grade.

4. Remove from the site and legally dispose of all debris and other excavated material not needed for, or suitable for, fill except as otherwise specified herein. Remove all materials subject to rot or attack by termites.

5. In general, the Contractor will be permitted to use machine excavation to the bottom of fill under concrete slabs on grade. The final three inches under footings and foundations shall be excavated using a straight blade bucket. If the final three inches cannot be satisfactorily excavated using a straight blade bucket without disturbing subgrades, the Contractor shall use alternative methods, including hand excavations. Alternative methods shall be subject to approval by the Architect or Geotechnical Engineer.

6. Unsuitable Soil Conditions:

   a. If unsuitable bearing materials are encountered at the specified subgrade depths, the Contractor shall notify the Architect. The Contractor shall carry excavation

deeper and replace the excavated material with compacted fill or concrete as directed by the Architect or Geotechnical Engineer. Soil subgrades, which are unstable due to inadequate construction dewatering or excessive subgrade disturbance, are not deemed unsuitable soils.

b. Removal of such material and its replacement as directed will be paid for as extra compensation in quantity approved by the Architect. Only changes in the work authorized in advance by the Architect in writing shall constitute an adjustment in the Contract Price.

c. Material that is not within +\- 3% optimum moisture for compaction of the particular material in place as determined by the Architect or the Geotechnical Engineer and is disturbed by the Contractor during construction operations so that proper compaction cannot be reached shall not be construed as unsuitable bearing materials. This material shall be removed and replaced with lean concrete or structural fill as directed by the Architect or Geotechnical Engineer at no additional cost to the Owner.

d. The Contractor shall follow a construction procedure, which permits visual identification of firm natural ground.

e. The volume of unsuitable material shall be measured by profiling the in-place topography and calculation by the average-end-area method or other method deemed acceptable by the Geotechnical Engineer. The contractor's Licensed Surveyor or Professional Engineer shall prepare the calculations. Payment limits shall be for rock excavation.

7. Excessive Excavation: If any part of the general or trench excavation is carried, through error, beyond the depth and the dimensions indicated on the Drawings or called for in the Specifications, the Contractor at his own expense, shall furnish and install compacted gravel fill, concrete, or take other remedial measures as directed by the Architect to bring fill material up to the required level.

3.02 TRENCH EXCAVATION

1. Excavate as necessary for all footings, structures, pipes, storm and sanitary drainage, electrical, gas, water, related structures and appurtenances, and for any other trenching necessary to complete the work. Unless otherwise indicated, provide separate trench for each utility.

2. Definitions:

   1. "Trench excavation" shall be defined as an excavation in which the bottom width does not exceed seven feet, and the top width does not exceed twice the depth or where footings are excavated by backhoe. Refer to Drawings for any special trenching conditions for utilities, structures, etc.

   2. The words "invert" or "invert elevation" as used herein mean the elevation at the inside bottom of pipe or channel.

   3. The words "bottom of the pipe" as used herein means the elevation at the base of the pipe at its outer surface.

3. In general, machine excavation of trenches will be permitted with the exception of preparation of pipe beds, which will be handwork. Excavate by hand or machine methods at least six inches below the bottom of all utilities.

4. Trench excavation shall include the removal of all materials encountered. During excavation, materials determined to be suitable for backfilling shall be piled in an orderly manner a sufficient distance from the banks of the trench to avoid overloading and to prevent slides or cave-ins. All excavated materials not required or unsuitable for backfill

shall be removed and legally disposed of off the site. The banks of trenches shall be cut as near vertical as practicable to the extent allowed by OSHA.

5. The Contractor shall provide, at his own expense, suitable bridges over trenches where required for accommodation and safety of the traveling public and as necessary to satisfy the required permits and codes.

6. Trenches shall be excavated to the necessary width and depth for proper laying of pipe or other utility and shall have vertical sides or slopes as required by codes. Minimum width of trenches shall provide clearance between the sides of the trench and the outside face of the utility. Maximum trench sizes are as shown on the Drawings or as specified herein. The depth of the trench shall be six inches below the bottom of the pipe barrel or respective utility. If the existing soil is not suitable, the Architect or Geotechnical Engineer may approve removal and replacement of material. Costs for removal and replacement materials will be based on Unit Prices.

7. Coordinate all utility and trench backfilling with the trades involved.

3.03 ROCK EXCAVATION

1. Definitions and Classifications: The following classifications of excavation will be made only when rock excavation is required.

    1. "Earth Excavation" consists of removal and disposal of pavement and other obstructions visible on ground surface; underground structures and utilities indicated to be demolished and removed; material of any classification indicated in data on subsurface conditions; and other materials encountered that are not classified as rock excavation.
    2. "Rock Excavation" consists of removal and disposal of materials encountered that cannot be excavated without continuous and systematic drilling and blasting or continuous use of a ripper or other special equipment, except such materials that are classed as earth excavation. Typical of materials classified as rock excavation are as follows:

        1. Consolidated Bedrock.

        2. Boulders on site, outside trench limits, exceeding two cubic yards in volume.
        3. Boulders within trench limits, exceeding one cubic yard in volume.

    3. Should highly fractured or weathered bedrock be encountered during excavation, the following shall apply:

        1. When the material is encountered in trenching operations or under footings, it shall be excavated or ripped with a hydraulic backhoe equal to or larger than a Caterpillar 235 excavator and will be classified as Earth Excavation. When it is demonstrated to the satisfaction of the Architect and the Geotechnical Engineer that this material can no longer be removed with a hydraulic backhoe and requires drilling and blasting, this material shall be classified as Rock Excavation. - For excavation procedures when this material is encountered under footings, refer to paragraph below.

    4. Intermittent drilling and ripping performed to increase production and not necessary to permit excavation of material encountered will be classified as Earth Excavation.

5. Allowance for Rock Excavation: The Contractor shall carry in the Base Bid an allowance for xxx cubic yards of rock encountered in trench excavation removed from the site. The Contractor shall also carry in the Base Bid an allowance of xxx cubic yards of open rock excavation removed from the site. The Base Bid shall cover all costs relating to such rock excavation, including blasting, removal and placement of the excavated material, overhead and profit. The Owner for excavation herein defined will pay no amount other than that herein specified.

    1. If the total quantity of Rock Excavation, open and/or trench, exceeds the amount of Rock Excavation included in the Contract as listed above, the Owner shall pay the excess excavation at the unit prices as indicated in the contract.
    2. If the total quantity of Rock Excavation, open and/or trench, is less than the amount of Rock Excavation included in the Contract as listed above, the Contract sum will be decreased by the difference in Rock Excavation multiplied by the unit prices listed in the contract.

2. Measurements:

    1. When, during the process of excavation, rock is encountered, such material shall be uncovered and exposed in such a manner that the unbroken ledge surface is clearly visible, and the Contractor shall notify the Architect, before proceeding further. The areas in question shall then be cross sectioned as hereinafter specified.
    2. Failure on the part of the Contractor to uncover such material and to notify the Architect and proceeding by the Contractor with the rock excavation before cross-sections are taken, will forfeit the Contractor's right of claim towards the stated allowance or additional payment over and above the stated allowance at the quoted unit price.
    3. The Contractor shall employ and pay for a licensed Registered Civil Engineer or Land Surveyor to take cross-sections of rock before removal and to make computations of volume of rock encountered within the Payment Lines. Cross-sections shall be taken in the presence of the Geotechnical Engineer and the computations approved by the Architect. The volume calculations shall be by the average end area method. The Owner has the option to perform independent cross-sections and computations of rock quantities.
    4. Where removal of boulder or ledge is required outside the established payment lines, the Architect shall determine the extent of this removal and basis of payment.

3. Blasting: Obtain written permission and approval of method from local authorities before proceeding with rock excavation. Explosives shall be stored, handled, and employed in accordance with state and local regulations or, in the absence of such, in accordance with the provisions of the "Manual of Accident Prevention of Construction" of the Associated General Contractors of America, Inc.

    1. Notify the Architect at least 48 hours before any intended blasting and do no blasting without his specific approval of each blasting operation.
    2. Contractor shall present evidence that his insurance includes coverage for blasting operations before doing any blasting work. A pre-blast survey shall be performed for all buildings and utilities within a radius of 150 feet from the blasting zone or conforming to the ordinance governing blasting and the Fire Department regulations.
    3. All rock blasting shall be well covered with heavy mats or timbers chained together and the Contractor shall take great care to do no damage to existing structures, utility lines and trees to remain.

4. Any damage caused by the work of this Contractor shall be repaired to the full satisfaction of the Architect at no additional cost to the Owner.
5. Any rock fragments or loose material from blasting operations shall be removed. All voids shall be filled with a leveling mat of structural fill or lean concrete as directed by the Geotechnical Engineer.
6. At least 2 weeks prior to blasting the contractor shall submit a blasting plan indicating blasting agents to be used, drill hole depths and spacing, powder factors, personnel, vibration limits and method of measurement, for review by the Geotechnical Engineer.

4. Complaints:

1. Report all blasting complaints to the Architect within 24 hours of receipt thereof. Include the name, address, date, time received, date and time of blast complained about, and a brief description of the alleged damages or other circumstances upon which the complaint is predicated. Assign each complaint a number, and number all complaints consecutively in order of receipt.
2. Submit a summary report to the Architect each month which indicates the date, time and name of person investigating the complaint, and the amount of settlement, if any.
3. When settlement of a claim is made, furnish the Architect with a copy of the release of claim by the claimant.
4. Immediately notify the Architect, throughout the statutory period of liability, of any formal claim or demands made by attorneys on behalf of claimants, or of serving of any notice, summons, subpoena, or other legal documents incidental to litigation, and of any out-of- court settlement or court verdict resulting from litigation.
5. Immediately notify the Architect of any investigations, hearings, or orders received from any governmental agency, board or body claiming to have authority to regulate blasting operations.

5. If ledge is encountered within the limits of the Proposed Building Area, the Contractor shall excavate this material 18 inches below subgrade of footings and 12 inches below subgrade of slabs unless otherwise directed by the Architect or Geotechnical Engineer. All loose or shaken rock shall be removed and replaced with compacted gravel fill or lean concrete as specified herein.

6. Rock excavation for foundations outside of the Building Area: Remove rock to foundation or footing subgrade. All rock bottoms for foundations shall be carefully examined. Loose or shaken rock shall be removed to solid bearing, and the rock surface leveled, or shelved to a slope not exceeding one inch per two feet, or as directed.

7. Excavate rock encountered in grading under paved areas, lawns and plant beds to subgrade as specified herein and shown on the Drawings. All boulders or protruding rock outcrops shall remain undisturbed at lawns and plant beds when so directed by the Architect. Rock shall be fractured six inches below subgrade of paved areas, but this six-inch layer shall remain in place.

8. If any part of the rock excavation at footings be carried beyond the depth and the dimensions indicated on the Drawings or called for in the Specifications, the Contractor shall, at his own expense, furnish and install concrete of same strength as footings to the required subgrade level of the footings as shown on the Drawings. Doweling or other corrective structural measures as directed by the Architect may also be required to properly anchor or reinforce the concrete. If rock excavation is carried beyond the depth and dimensions to subgrade in other areas, the Contractor shall, at his own expense, furnish and install compacted gravel fill to subgrade as directed by the Architect.

9. Basis of Payment: The total amount of rock excavation will be based upon the volume of rock excavated within and/or above the lines referred to in the next paragraph as "Payment Lines". The payment lines are only to be used as a basis of payment and are not to be used as limits of excavation. Limits of excavation area as shown on the Drawings and as specified herein.

10. Payment Lines for Rock Excavation:

    1. Payment lines for columns and footings within the building shall be a vertical line one foot from the toe of the footings; the depth shall be measured at 24 inches below the bottom elevations shown on the Drawings. If rock is to remain directly below the bottom of the footings within the Building Area, payment lines shall be six inches below the bottom elevation of the footing as shown on the Drawings. Payment lines for walls to be damp- proofed shall be a vertical line two feet outside the walls. Payment lines for footings outside of the building shall be six inches below the bottom of footings. Vertical payment lines shall be as specified hereinafter.
    2. Payment lines for manholes and catch basins shall be one foot outside of the outer wall and six inches below subgrade beneath the structure.
    3. Payment lines for rock excavation under slabs on grade shall be six inches below the bottom elevation of the specified gravel base course outside of the building and 12 inches below subgrade for slabs within the building.
    4. Payment lines for rock excavation at paved areas and lawns shall be six inches below respective subgrades.
    5. Payment lines for rock excavation under pipes within the building and for utility trenches outside the building lines shall in no case be calculated as greater in width than the outside diameter of the pipe plus two feet for pipes up to 18 inches. For pipes 18 inches and larger payment lines shall in no case be calculated as greater in width than the outside diameter of the pipe plus three feet. Payment lines at bottom of all pipe and utility trenches shall be six inches below subgrade.

3.04 PROOF-ROLLING

1. Contractor shall be required to proof roll foundation and pavement subgrades prior to foundation construction or the placement and compaction of fill materials.

2. Proof rolling of foundation subgrades shall include at least ten passes of a small vibratory plate compactor for trench excavations or six passes of a heavy vibratory roller for open areas.

3. Proof rolling of pavement subgrades shall include four passes of a heavy vibratory roller.

4. If groundwater is located within two feet of foundation or pavement subgrade, proof rolling may be eliminated. However, the Contractor shall demonstrate care during excavation so as to minimize subgrade disturbance.

5. The Geotechnical Engineer shall visually observe Proof rolling. Foundation construction or replacement of fill materials shall not commence until the Geotechnical Engineer has witnessed subgrade conditions and proof rolling operations.

6. Soils which exhibit weaving or instability during the proof rolling operations as determined by the Geotechnical Engineer shall be removed and replaced with compacted Structural Fill or Crushed Stone at no additional cost to the Owner.

3.05 FILLING AND GRADING

1. Samples and Testing:

1. All fill materials, and their placement shall be subject to quality control testing. The Owner shall pay for all testing except that the Contractor will bear cost of testing materials, which fail to conform to Specifications. Test results and laboratory recommendations will be available to Contractor. All sieve analyses for conformance of on-site and off-site fill materials to be used in the work shall be done by means of a mechanical wet sieve analysis and in accordance with ASTM D-422.
2. The Owner will retain a Geotechnical Engineer to provide personnel, qualified by training and experience, to be at the site to observe preparation for the placement of compacted fills, to observe excavation and dewatering required for the work, and to observe earthwork operations and report on the conformity of operations with these Specifications. All service and approvals given by the Geotechnical Engineer shall not relieve the Contractor of his responsibility for performing the work in accordance with these Specifications. The Contractor agrees to accept as final the results of field and laboratory tests performed by the above representatives. As stated hereinbefore, the Owner reserves the right to modify or waive Geotechnical Engineer's services.
3. Excavated material taken directly from on-site cuts that will meet these Specifications may be used as Ordinary Fill or Structural Fill provided the Contractor obtains written approval from the Architect. No such fill material shall be put in place until approved for use by the Architect in writing.
4. Field density tests will be made by the Geotechnical Engineer in accordance with the Method of Test for ASTM Designation D1556 or D2944, to determine the adequacy of compaction; the location and frequency of such field tests shall be at the Geotechnical Engineer's discretion.
5. The Contractor shall notify the Architect or the Geotechnical Engineer when an area is ready for compaction testing. This notification shall be 48 hours in advance of placing or final compaction so that the Geotechnical Engineer has adequate time to take compaction tests.
6. The Architect or his designated representative shall have the right to observe the installation of all controlled compacted fills.
7. Testing of materials as delivered may be made from time to time. Materials in question may not be used, pending test results. Tests of compacted materials will be made regularly. Remove rejected materials and replace them with new, whether in stockpiles or in place.
8. Cooperate with the Geotechnical Engineer in obtaining field samples of in-place materials after compaction. Furnish incidental field labor in connection with these tests. The Contractor will be informed by the Geotechnical Engineer of areas of unsatisfactory density which may require improvement by removal and replacement, or by scarifying, aerating, sprinkling (as needed), and re-compaction prior to the placement of the new lift. No additional compensation shall be paid for work required to achieve proper compaction.
9. The Geotechnical Engineer's presence does not include supervision or direction of the actual work by the Contractor, his employees, or agents. Neither the presence of the Geotechnical Engineer nor any observations and testing performed by him shall excuse the Contractor from defects discovered in his work.
10. In no case will frozen material be allowed for use in fill, backfill, or rough grading material.
11. Stones or rock fragments larger than four inches in their greatest dimension shall not be permitted within the top six inches of subgrade of any fills or embankments.

2. Placing, Spreading and Compacting Fill Material:

1. Fill materials are to be placed as designated herein and as indicated on the Contract Drawings.

1. Crushed Stone shall be placed as follows and compacted as specified herein:

1.) Under and around utility structures and around foundation drains and underdrains.
2.) Behind retaining walls, and under rip rap.
3.) Where otherwise shown on Drawings or as directed by the Architect.

2. Structural Fill shall be placed as follows and compacted in lifts to a minimum of 95% maximum dry density per the Modified Proctor Test (ASTM D 1557) as specified herein: (Refer to table specified herein for compaction methods and lift requirements.)

1.) Within building pad areas.
2.) As a subgrade fill for all material to be placed controlled compacted fills under exterior concrete slabs, foundations, on grade stairs, and other soil bearing situations.
3.) Wherever a structural fill is called for or shown on the Drawings.

3. Ordinary Fill shall be placed as follows and compacted as specified herein:
1.) In general, areas such as lawn or parking islands except where Structural Fill is shown.
2.) Wherever Ordinary Fill is called for and as specified hereinbefore.
3.) Wherever Structural Fill, Crushed Stone, Sand Fill or Topsoil is not required herein or on the Drawings.

4. Blast Rock Fill may be placed up to within three feet of finish grade in pavement areas and within two feet of finish grade in lawns, and to within 30 inches of inverts of utility lines and proposed utility routes. First lift over the top of rock fill shall be choked stone layer 18 inches thick which shall be a well-graded mixture of sand, gravel, and blasted rock with maximum stone size less than nine inches. Compaction shall be by minimum of six coverages of a self-propelled vibratory drum roller in each direction (i.e. north-south and east-west). The minimum weight of the drum shall be 1 0,000 lbs. Compaction may also be by four coverages of heavy track machinery such as a Caterpillar D8 or other track machinery approved by the Geotechnical Engineer.

1.) Blast Rock Fill shall not be placed within 30 inches vertically of exterior concrete slabs (i.e. sidewalks, loading docks, etc.
2.) Rock shall not be placed within a five-foot horizontal distance on either side of any proposed utility line. The intent is to leave a zone of granular fill that can later be excavated for installation of utilities. Also keep large rock fragments away from any utility lines.
3.) Place woven filter fabric (Mirafi 500X or equivalent) over Blast Rock Fill.

5. Sand Fill shall be placed as follows and compacted as specified for the particular item:

    1.) As a bedding material for PVC electrical conduit where concrete is not required, telephone-cable, primary electric service and gas pipe.
    2.) Where otherwise specified or shown on the Drawings.

6. Slab Base Fill shall be placed in minimum 6-inch lift under concrete floor slabs.

7. Subsoil shall be used only under lawn areas and athletic fields. This material shall not be placed closer to areas being otherwise prepared than a 1:1 angle of repose x depth of fill for the particular area. For instance, if a fill is four feet deep, subsoil may not be placed closer than four feet to the area being otherwise prepared.

    1.) Unsuitable Earth Materials shall be removed from the site.
    2.) The fill material shall be placed in uniform horizontal layers and compacted as specified herein.

8. Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to obtain uniformity of material in each layer. So far as practicable, each layer of material shall extend the entire length and width of the area being filled plus two additional feet horizontally along each side for every one foot of fill required.

3. All fill material shall be placed and compacted in the dry. The Contractor shall dewater excavated areas as required to perform the work, and in such a manner as to preserve the undisturbed bearing capacity of the subgrade soils. In freezing weather, a layer of fill shall not be left in an uncompacted state at the close of a day's operation. Prior to terminating operations for the day, the final layer of fill, after compaction, shall be rolled with a smooth-wheeled roller to eliminate ridges of soil left by tractors, trucks and compaction equipment.
4. The Contractor shall not place a layer of compacted fill on soil that was permitted to freeze prior to compaction or on snow or ice. Removal of these unsatisfactory materials will be required as directed by the Owner.
5. When the moisture content of the fill material is below optimal moisture necessary for compaction as specified herein, water shall be added until the moisture content is as specified.
6. When the moisture content of the fill material is above the optimal moisture necessary for compaction as specified herein, the fill material shall be aerated by blending, mixing, or other satisfactory methods until the moisture content is as specified.
7. After each layer has been placed, mixed and spread evenly, it shall be thoroughly compacted to the specified density. Compaction shall be continuous over the entire area and the equipment shall make sufficient passes to ensure that the desired density is obtained. A minimum of four coverages with acceptable compaction equipment described hereinafter is a requirement. These coverages are to be provided as systematic compactive effort; incidental coverages due to construction vehicle traffic through the area will not be included.

3. Structural Fill: All fills within the building area shall be made with Structural Fill as defined herein and shown on the Footing Zone of Influence detail included herein. No excavated

on-site material will be acceptable as Structural Fill unless specifically approved by testing as specified herein.

4. Allowance for Unsuitable Materials and replacement with Structural Fill: The Contractor shall include in his base bid xxx cubic yards for the removal of Unsuitable Materials and Structural Fill in place and graded as specified herein to be used as directed by the Architect or the Geotechnical Engineer. This quantity of Structural Fill is in addition to the requirements for Structural Fill in areas as specified herein and as shown on the Contract Documents and is to be used at the discretion of the Architect or the Geotechnical Engineer.

5. Backfilling of Trenches, Structures and Foundations:

    1. Areas to be backfilled shall be free of construction debris, refuse, compressible or decayable materials and standing water. Do not place fill when temperature is below 30 degrees F and when fill materials or layers below it are frozen unless specifically approved by the Geotechnical Engineer.
    2. Requirement of description, placement, compaction and spreading of fill materials as specified herein shall be applicable to backfilling operations.
    3. Structural Fill shall be used as Backfill around manholes and other structures. Excavated material may be used if approved by the Architect or Geotechnical Engineer.
    4. Backfilling of foundations, structures and retaining walls shall not commence until construction finish grade has been approved, forms removed, and the excavation cleaned of trash and debris. Backfill shall not be placed against walls until they are braced or cured sufficiently to develop the strength necessary to withstand, without damage, the pressure that will result from backfilling and compacting operations. If fill is required on both sides of a wall, it shall be brought up simultaneously and evenly on both sides. Avoid damage to the walls and to damp-proofing and waterproofing and other work in place. Allow seven days from the date of application of waterproofing before backfilling. Stones larger than four inches maximum dimension shall not be permitted in the upper six inches of fill or horizontally within 12 inches of walls.
    5. Do not commence backfilling operations of utility trenches until all piping, conduits, etc. have been installed, tested and approved and the locations of all pipe and appurtenances have been recorded. Backfill carefully by hand around pipe to depth of one foot above top of pipe using material specified herein and tamping firmly in layers not exceeding six-inch layers, compacting by hand rammers or mechanical tampers. When a manufacturer of utility line materials suggests backfill materials and methods other than those specified herein, such requirements shall govern providing the finished work equals or exceeds the result obtained by the materials and methods specified herein. Water mains shall be hand backfilled to a minimum cover of 18 inches before mechanical equipment can be used to backfill trench.
    6. Sand Bedding will be required below all pipe unless otherwise shown on the Drawings or specified herein. Crushed Stone is required under utility structures where shown on the Drawings. Gravel Bedding, Sand Bedding or Crushed Stone shall be placed to the full width of the trench and under utility structure foundations as indicated on the Drawings. After a pipe is bedded, the trench shall be filled to the centerline of the pipe with Gravel Fill or Sand Bedding except at the joint. After the joint is inspected, that portion shall be filled in with Sand Bedding. Material under and around the pipe shall be carefully and thoroughly tamped.
    7. From the centerline of the pipe to a point 12 inches above the top of the pipe the backfill shall be Structural Fill or Sand Fill placed by hand and hand tamped. Above this point, backfill shall be placed in layers six inches deep and each layer

shall be compacted with mechanical tampers to not less than 95% of maximum density at optimum moisture of the material. This backfill shall be carried up to the bottom of materials specified to be placed for surfacing requirements.

8. Utilities shall not be laid directly on ledge, boulders or other hard material. This material shall be removed as specified herein within trench limits, and within vertical planes one foot outside of structure walls. Backfill will be placed in eight-inch lifts and thoroughly compacted. If hand guided compaction equipment is used, fill shall be placed in six-inch lifts. All rock excavation shall be considered unsuitable for backfill around utilities. Ordinary fill may be used as backfill in areas specified herein.
9. Coordinate all utility and trench backfilling with the trades involved.

6. Compaction Equipment:

   1. Compaction shall be accomplished by vibratory rollers, multiple wheel pneumatic tired rollers or other types of approved compacting equipment. Loaded trucks, low beds, water wagons and the like shall not be considered as acceptable compaction equipment unless specifically approved by the Architect or Geotechnical Engineer for a particular location. Equipment shall be of any such design that it will be able to compact the fill to the specified density in a reasonable length of time. All compaction equipment shall be subject to the approval of the Geotechnical Engineer.

7. Compaction Requirements:

   1. The following table lists minimum compactive efforts and lift weights which are required for all fill materials. Compaction of each lift shall be completed before compaction of the next lift is started. The compaction equipment shall make an equal number of transverse and longitudinal coverages of each lift. Allow the Geotechnical Engineer sufficient time to make necessary observations and tests. The degree of compaction for fill placed in various areas shall be as follows:

      <u>Relative Compaction</u>

      1. Within buildings and structures:
         -Under footings 95%
         -under slab 95%

      2. Outside building areas:
         -within paved areas 95%
         -within lawn areas and playing fields 85%

   - Percent of maximum dry density of the material at optimum moisture content as determined by methods or tests for ASTM designation D 1557.

8. Methods: The compaction alternatives given below are stated to provide minimum compaction standards only and in no way relieves the Contractor of his obligation to achieve the specified degree of compaction by whatever additional effort is necessary.

   1. All fill to be placed "in-the-dry" with the exception specified hereinafter. If, in the opinion of the Architect or the Geotechnical Engineer, the Contractor has followed a logical sequence of construction procedures, has employed the proper and necessary equipment, and has otherwise conducted himself in a workmanlike manner, but still cannot effectively dewater the excavation, the Architect or the Geotechnical Engineer may permit the Contractor to place a first

lift of Gravel or Crushed Stone fill "in-the-wet". Fill placed in-the-wet must meet the gradation and placement requirements specified herein. The quantity of fill placed in-the-wet must be no greater than deemed necessary by the Architect and must be limited to the lowermost lift.

9. Moisture Control:

1. Variation of moisture content in fill and backfill materials shall be limited to Optimum Moisture (-l% to +2%). Moisture content shall be as uniformly distributed as practicable within each lift and shall be adjusted as necessary to obtain the specified compaction.
2. Material which does not contain sufficient moisture to be compacted to the specified densities shall be moisture conditioned by sprinkling, discing, windrowing, or other method approved by the Geotechnical Engineer.

1. Material conditioned by sprinkling shall have water added before compaction. Uniformly apply water to surface of subgrade or layer of soil material to obtain sufficient moisture content. The Contractor shall maintain sufficient hoses and/or water distributing equipment at the site for this purpose.

3. Material containing excess moisture shall be dried to required Optimum Moisture before it is placed and compacted. Excessively moist soils shall be removed and replaced and shall be scarified by use of plows, discs, or other approved methods, and air-dried to meet the above requirements.
4. Materials, which are within the moisture requirements specified above, but which display pronounced elasticity or deformation under the action of earthmoving and compaction equipment, shall be reduced to Optimum Moisture Content, or below, to secure stability.
5. In the event of sudden downpours or other inclement weather, exposed subgrades and fills which, in the opinion of the Geotechnical Engineer, become inundated or excessively moistened shall have excess water removed and soil dried as specified above.

3.06 ROUGH GRADING

1. Rough grading shall include the shaping, trimming, rolling and finishing the surface of the sub- base, shoulders, and earth slopes, and the preparation of the sub-base for loam, seeding and paved surfaces. The grading of shoulders and sloped areas may be done by machine methods. Up to two inches in 100" tolerance will be permitted on slopes and one inch in 100" on lawn areas provided the slopes are uniform in appearance and without abrupt changes. All ruts shall be eliminated. Grading of subgrades for paved areas shall be finished at the required depth below and parallel to the proposed surface within 3/8 inch in 100" tolerance.

2. If, during the progress of rough grading work, water pipe, sewer conduit, drain, or other construction is damaged due to operations under this Contract, the Contractor shall repair all such damage at no additional cost to the Owner and restore damaged areas to their original condition.

3. Do all other cutting, filling and rough grading to the lines and grades indicated on the Drawings. Grade evenly to within the dimensions required for finished grades shown on the Drawings. No stone larger than three inches in largest dimension shall be placed in upper 12 inches of fill.

4. Grades shall be brought below finished grades in accordance with the various depths specified below:

1. Under slabs-on-grade, as specified herein and as shown on the Drawings.
2. Under paved areas, bottom of base course as shown on Drawings.
3. Under seeded areas, six inches.
4. Under cattail marsh area and pond bottom, 12 inches.

5. No rubbish of any description shall be allowed to enter fill material. Such material shall be removed from the site.

6. Complete the grading operations after the building has been finished, the utilities installed, site improvements constructed, and all materials, rubbish and debris removed from the site. Leave subgrade for lawns clean at required grades. There must be sufficient grade staking to provide correct lines and grades.

3.07 DEFICIENCY OF FILL MATERIAL

1. Provide required additional fill material from offsite sources to complete the work if a sufficient quantity of suitable material is not available from the required excavation on the project site.

3.08 SURPLUS OF FILL MATERIAL

1. Surplus fill which is not required to fulfill the requirements of the Contract shall be removed from the site and legally disposed of.

3.09 DUST AND EROSION CONTROL

1. The Contractor shall take all necessary measures and provide equipment and/or materials to minimize dust from rising and blowing across the site and also to control surface water throughout the operation so that it does not run onto paved ways without being filtered. In addition, the Contractor shall control all dust created by construction operations and movement of construction vehicles, both on the site and on paved ways. Provide additional crushed stone where necessary to provide traps or pads for construction vehicles carrying sediment. Provide temporary swales and interceptor ditches to control surface runoff water where necessary.

2. If dust control is required off-site due to work under this Contract, in addition to watering, sweeping and other methods, the Contractor shall apply calcium chloride in the required amounts to properly control dust. These amounts shall be approved by the City Engineer prior to application.

3.10 RESTORATION OF SITE ITEMS

1. Wherever streets, lawns or other items within the Contract Limit Lines have been excavated in fulfilling the work required under the Contract, the Contractor shall furnish and install all material at no cost to the Owner to bring finish surface level with the existing adjacent conditions. All work shall be installed to match the existing conditions.

END OF SECTION 02200

New Hampshire Natural Heritage Bureau
NHB DataCheck Results Letter

To: Irina Donskaia, MSC a division of TFMoran, Inc.
170 Commerce Way, Suite 102

Portsmouth, NH 03801

From: NH Natural Heritage Bureau
Date: 1/31/2023 (valid until 1/31/2024)
Re: Review by NH Natural Heritage Bureau of request submitted 1/23/2023
Permits: USEPA - Stormwater Pollution Prevention

NHB ID: **NHB23-0240** **Applicant:** Irina Donskaia

Location: Portsmouth
35 Sherburne Road

Project Description: Redevelopment of a School and associated property. To become multifamily unit workforce housing.

The NH Natural Heritage database has been checked by staff of the NH Natural Heritage Bureau and/or the NH Nongame and Endangered Species Program for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government.

It was determined that, although there was a NHB record (e.g., rare wildlife, plant, and/or natural community) present in the vicinity, we do not expect that it will be impacted by the proposed project. This determination was made based on the project information submitted via the NHB Datacheck Tool on 1/23/2023 10:59:32 AM, and cannot be used for any other project.

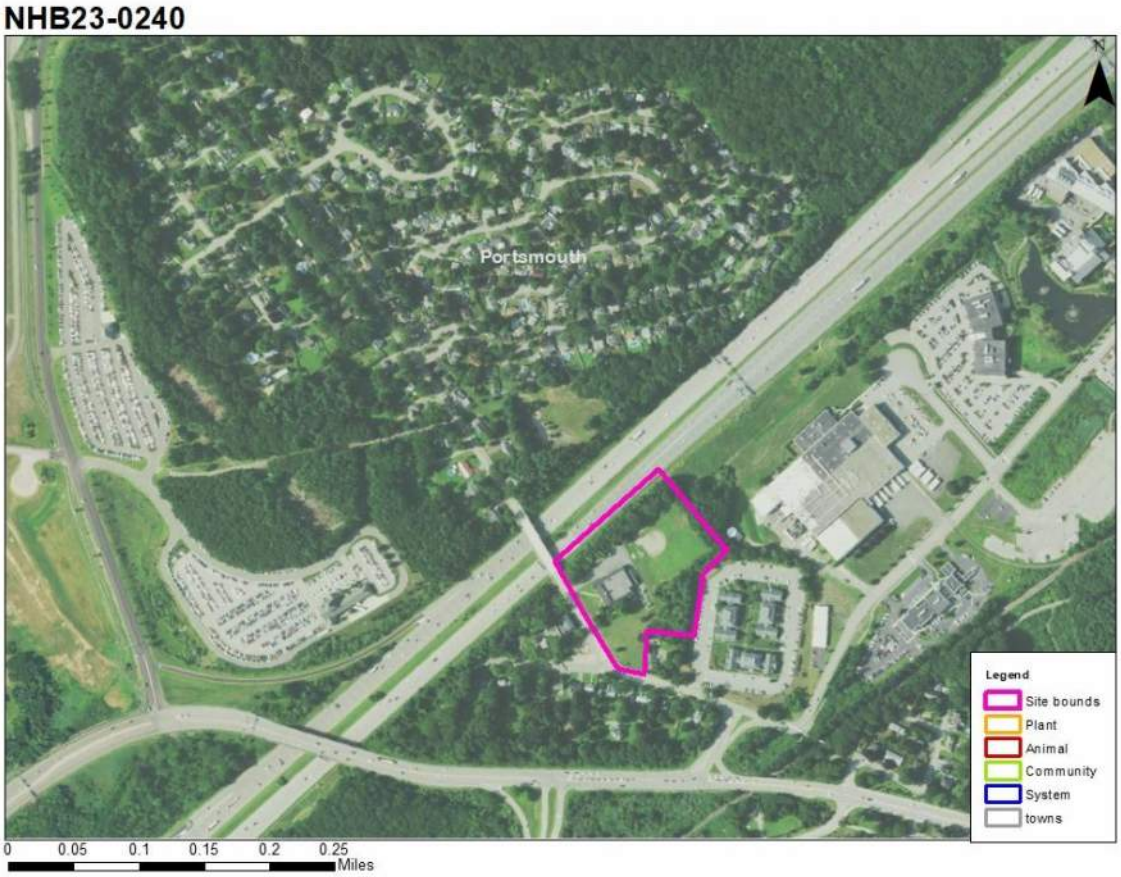
Based on the information submitted, no further consultation with the NH Fish and Game Department pursuant to Fis 1004 is required.

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

New Hampshire Natural Heritage Bureau
NHB DataCheck Results Letter

MAP OF PROJECT BOUNDARIES FOR: **NHB23-0240**



Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

Robert J. Harbeson, AIA
Market Square Architects, LLC
104 Congress Street, Suite 203
Portsmouth, NH 03801
VIA EMAIL: rharbeson@markesquarearchitects.com

March 20, 2025

Re: Preliminary Structural Review
35 Sherburne Road, Portsmouth, NH 03801
TFM Project #: 47528.01

Dear Mr. Harbeson:

On February 27, 2025 and March 3, 2015, personnel from TFMoran Inc. (TFM) visited the property at the above referenced address to review, observe, and document the visible existing conditions of the structural components at the vacant school building. The purpose of the review is to help the design and development team assess whether the building could be repurposed for new multi-tenant residential use.

GENERAL DESCRIPTION

The school building was constructed around 1941 with a gym addition later constructed around 1980. The original school building (hereinafter referred to as "the school") is one-story with a partial basement area containing the boiler equipment room, coal storage bin, and a storage room. The remainder of the school footprint has a crawl space below the floor level. The school has a "U" shaped footprint with a total floor area of approximately 14,500 square feet (including the basement). For this assessment, the school is subdivided and referred to herein as the north, south and west wings. The north and south wings represent both parallel legs of the "U" shape. The north wing has a length of approximately 139'-10". The south wing has a length of approximately 119'-9". The west wing represents the base of the "U" shape. This wing has a length of approximately 123'-6". The west wing is also the original main entrance to the school building aligned parallel with Sherburne Road. [Appendix B]

The gym addition (hereinafter referred to as "the gym") is a one-story clear span structure of approximately 5,500 square feet with no crawl space or basement. The gym was constructed to the east of the west wing and encloses the previously undeveloped area between the north and south wings of the school. The gym has a length of approximately 76'-8". There is a shorter kitchen area along the full width of the east end of the gym for a length of approximately 17'-0". [Appendix B]

It is understood the school and gym were until recently inhabited by the Robert J. Lister Academy in an institutional capacity. The building was vacated over the summer of 2024 and is currently being conditioned and used as temporary light storage for the City of Portsmouth.

Existing design drawings of both the school building and gym addition are available and were referenced during our review. The school building architectural and structural drawings were prepared by Wells, Hudson & Granger Architects dated October 1941. The gym building architectural and structural design drawings were prepared by Philip Schuyler Tambling, AIA Architect and Swift Engineering dated October 10, 1980.

Reference Appendices A & B for photographs and a project locus plan SK-1.

STRUCTURAL SYSTEMS

School Building:

The framing for the school building is a combination of conventional timber and heavy timber framing, with masonry veneer and exterior wood stud load bearing walls with punched window openings.

1. Roofs: The roofs are asphalt shingles on a 7:12 pitched gable with a centered symmetrical ridge and corresponding hips and valleys at the intersecting lower north and south wing roofs. There is an open-air cupola and widow's walk centered on the west wing roof. Typical roof construction is 1x6 plank with the board dimension laid perpendicular to the 2x of varying depth (10", 12", & 14") roof rafters spaced 16" center to center typical. The roof rafters have at least one row of diagonal cross bridging at rafter mid-span. The ridge is a typical 2x of varying depth (8", 10", 12", & 14") with rafters aligned each side of the ridge pole. The north and south wing rafter framing spans from the exterior wall to the ridge to the opposite exterior wall. The South wing has an additional heavy timber header truss and valley beams to frame a perpendicular gable classroom extension to the southeast. The west wing framing is divided into three bays across the width. Typical rafter framing spans from the exterior walls to an interior heavy timber beams, purlins, and post framing bay centered in the roof above the corridor walls below. No rafter collar ties were observed.

2. Attic/Ceilings: The attic space above the ceiling is accessible through a scuttle in the former nurse's office adjacent to the bathroom. The ceilings are plaster and lathe supported by 2x6 ceiling joists spaced at 16" center to center typical. A second dropped acoustic tile ceiling was added below the original. The original ceiling joists are supported by the exterior walls and interior corridor walls as well as from the roof rafters above with 1x6 hangers. Not every ceiling joist has a hanger. The ceiling is insulated with two different layers of insulation. There is one layer of loose laid insulation as well as a newer top layer of batt insulation. No vapor barrier was observed. Attic ventilation appeared to be at the exterior wall soffits and gable ends only.

3. Walls: Exterior walls and framing could only be observed outside, in the attic above the ceiling, and below the first floor in the crawl space. The exterior walls are clay masonry veneer with an unknown sheathing on 2x6 studs spaced 16" center to center. Headers at windows achieved with 2x6 diagonals cut into the studs above the window opening. The existing wall framing differs greatly and is likely a value-based change from the existing construction drawings. The construction documents specify load- bearing masonry walls.

4. Floors: The typical first floor framing is elevated and can only be observed from below in the crawl space. Typical floor construction is 1x6 plank with the board dimension laid diagonally to the 2x of varying depth (10", 12", & 14") floor joists with various spacing of 12" to 16" center to center typical. No vapor barrier observed. The floor joists have at least one row of diagonal cross bridging at the joist mid-span. Floor joists are supported by the exterior foundation wall and interior multi-ply 2x wood beams on concrete piers. The north and south wing floor framing is divided into three bays across the width. The west wing framing is

divided into five bays. The typical floor joist span averages approximately 10'-6". The typical floor beam span averages approximately 11'-0".

The basement level boiler and storage room floors are cast-in place concrete slab on grade. The elevated classroom and bathroom floor framing above the boiler and storage rooms consists of more fire-resistive construction. The floor construction in this area is a 4" cast-in-place elevated concrete slab supported by single span concrete ribs space at approximately 24" center to center. The concrete rib clear span from the exterior to the interior concrete foundation walls with a span of approximately 22'-6".

5. Foundations: Foundations are conventional cast-in-place concrete frost walls and retaining walls. The exterior concrete foundation walls could only be observed from the boiler and storage rooms as well as the crawl space areas. Wall footings could not be observed but assumed to be continuous concrete strip footings as detailed. Interior foundations supporting floor beams are isolated 12"x12" concrete piers. Pier footings could not be observed, but it is assumed the concrete piers are supported by concrete spread footings as detailed at frost depth.

6. Lateral Resisting Elements: Light-framed wood stud exterior walls and corridor walls with 2x6 diagonal bracing cut into the studs.

Gym Building:

1. Roofs: Flat roof pitched to drain at perimeter scuppers to ground or the adjacent north and south wing school roofs. Typical roof construction is gravel ballast on membrane, rigid insulation, over 1 ½" steel roof decking. Steel decking at the gym is supported by pre-engineered open web steel joists spaced at 5'-0" center to center. Roof deck bearing elevation is approximately 24'-3" above the gym floor. The roof joists span approximately 15'-4" between cold rolled wide flange W27x84 steel girders. The typical girder clear spans the gym width of 58'-8" and cantilevers over both the school building north and south wings approximately 14'-0" to each existing ridge, respectively. The steel girders are supported near each end by TS7x7x1/4 tube steel columns adjacent to the original school building exterior walls. The westerly portion of the gym flat roof is plywood on 2x8's spaced at 16" center to center supported on a 2x4 bearing walls bearing at mid-span on the existing west wing roof rafters. Steel decking at the kitchen low roof is supported by pre-engineered open web steel joists spaced at 3'-0" center to center. Kitchen roof deck bearing elevation is approximately 12'-4" above the gym floor. The joists span approximately 17'-0" between load bearing cmu walls.

2. Walls: The west, north, and south side of the gym is surrounded by the original school building exterior walls. The east wall of the gym is 12" cmu and the walls at the kitchen 8" and 12" load bearing cmu with clay masonry exterior veneer.

3. Floors: Gym and kitchen area floor are concrete slab on grade.

4. Foundations: Foundations are conventional cast-in-place concrete frost walls and retaining walls. The concrete foundation walls could only be observed from exterior above grade. Wall footings could not be observed but assumed to be continuous concrete strip footings as detailed. Steel columns are supported by the existing school buildings' north and south wing concrete foundation walls.

5. Lateral Resisting Elements: Partial ordinary cmu shear walls for the gym area. Ordinary cmu shear walls at the low roof kitchen area.

OBSERVATIONS AND ISSUES

School Building:

1. Lumber species and Gradation

The existing lumber species and grades are unknown. Retention of a wood scientist should be considered to provide additional wood testing for rafters, joists, and beams in the building if this project moves forward with preservation and renovations. Testing will help to positively identify the wood species and provide an estimate of the wood's ultimate flexural/tensile strength. This information is required to accurately determine the floor and roof load capacities. For the purposes of this preliminary review, calculations have been performed on specific repetitive roof rafter and floor joists members of the school framing. The calculations are based on the timbers assumed to be Douglas Fir-Larch, No. 1, or better based on notes on the original drawings and experience. Species identification and grading will provide for a more accurate analysis of the floor and roof load capacities and may provide justification for the use of higher allowable stresses for timber species other than the assumed Douglas Fir-Larch, No. 1.

2. Lumber Condition – Rot, Checking and Splitting

The majority of the existing floor and roof framing are in good condition. There is light water staining at various locations on several roof rafters, beams, and posts as well as floor joists along exterior walls. There is also at least one area in the south wing that water intrusion has made it through the roof to the ceiling level and failed the plaster ceiling. There are several contributing factors to the water intrusion including: open air cupola, missing roof shingles, open windows, unpainted wood surfaces, voids and rotted exterior wood surfaces and trim, voids in unsealed masonry and mortar. Wood rot was not observed at many structural components but should be evaluated further especially at the higher roof levels of the cupola tower area, as this area was not safely accessible. [Figures 1, 2 , & 3]

Common checking and splitting of wood framing components were observed throughout the building. Most of the conditions seen are typical and should be expected of a building this age. The checking observed is minor in nature and not something that requires additional reinforcement. A few first-floor joists were split at the end connections to the supporting walls/beams. The splitting at these members was severe enough to negatively impact the performance of the joists. It is recommended that these joists be reinforced by sistering a new 2x along the full length of the affected joists. [Figures 4 & 5]

3. Fire damage

Fire damage was observed localized to one area in the north wing directly below the cupola at the ceiling level. Several ceiling joists are severely damaged to the point of total section loss and failure. These joists should be temporary shored and will require replacement during renovations. One of the four cupola heavy timber framing posts is also damaged. This damage has reduced the structural integrity of the heavy timber framing post below the cupola tower and should be temporarily shored and repaired/replaced during renovations. [Figures 6 & 7]

4. Exterior Envelope/Masonry Condition

The exterior envelope has not been maintained for a prolonged period and is in poor condition. This is evident by the peeling paint, and bare and rotted condition of the wood trim and siding. A wood post at the exterior door canopy on the south wing appears to be missing. The decorative exterior finials and railing for the widow's walk at the cupola have broken off and are missing. A few pre-cast concrete windowsills were noted in poor condition with spalling and exposed rebar. The exterior masonry walls are in fair to poor condition. There are some stepped cracks in the masonry at the east end of the south wing above the window and at the exterior corner. There may be some minor shifting due to water intrusion from the roof valley above as well as mortar softening or loss. On both the north and south wings there are localized areas of water intrusion at the roof fascia, and again at the base of the wall due to water runoff from the gym roof scuppers. The masonry defects could be alleviated by collecting and redirecting the roof water runoff water intrusion and repairing cracks, repointing, and sealing the masonry. Repointing around the exterior perimeter should also be considered during renovation. [Figures 8, 9, 10, 11, 12, 13, 14, 15, & 16]

5. Foundations and Concrete Condition

The foundations are in good condition with minor exceptions. There are a couple minor exterior wall cracks under 1/8" in width that can be sealed and made watertight. There is at least one concrete pier in the crawl space that was constructed with a significant notch. The notch reduces the strength of the pier by at least 50%. Recommend this notch be grouted solid with a 5,000 psi non-shrink grout. At the north wing main entrance, the entry vestibule shows evidence of excessive deflection. The entrance landing wood floor framing has deflected approximately ½" and there is subsequent cracking to the interior finish of both exterior walls of the vestibule. At the east end of the south wing there is some evidence of slight settlement and concrete spalling at an exterior foundation corner. This area is subject to excessive roof water running off, and it is assumed that the roof drainage is slowly undermining the soil below the foundation in this area. Further foundation undermining and settlement could be alleviated by collecting and redirecting the roof water runoff and pressure injecting or underpinning the foundations. [Figures 17, 18, 19, 20, & 21]

The exterior concrete slabs, retaining walls, and stairs at the north wing boiler room exterior entrance are in poor condition. The concrete aggregate is exposed due to wear, slabs and stair treads concrete are spalling, and there are cracks in the retaining walls, especially at the steel handrails embedded into the top of the wall. The exterior basement wall between the boiler room and the coal chute has efflorescence and water staining. There are voids in the curb on the hoist way to the coal chute. The concrete damage is likely due to water exposure and infiltration over an extended period. The joints between the exterior slabs and wall cracks should be repaired and sealed. Slabs, stairways, and retaining wall surfaces should be patched, repaired, and sealed. [Figures 22, 23, 24 & 25]

6. Roof Load Capacity

Our office performed preliminary calculations of a typical roof rafter to estimate the available roof snow load capacity. This calculation is dependent on our existing lumber species and grade assumptions previously noted. The existing roof rafters have capacity for 35 psf roof snow loading which is appropriate for this project location. It is fortunate the original slate roof appears to have previously been removed and replaced with lighter asphalt shingles. Based on our calculations, the existing rafters would not have the required snow live load capacity in combination with a real slate roof.

Approximately 75% of the roof rafters have hangers that support the 2x6 ceiling below. These rafters are approximately 10% overstressed. This is due to the previous modifications and addition of the acoustic ceiling and second layer of insulation. Removal of redundant ceiling finishes will help to return the roof rafters to their original capacity. Otherwise, roof rafter reinforcement should be considered during renovation. [Figure 26]

The west wing roof rafters under the gym flat roof are 40% overstressed. The weight of the additional gym flat roof construction and concentrated roof snow loading at the rafter mid-span far exceeds its original design capacity. The rafters in this area will need to be reinforced to meet the minimum roof snow and live load requirements during renovation. [Figure 27]

The north and south wing roof snow loading was modified with the gym addition. The new gym flat roof supports the snow loading above the existing roof. This created an unbalanced snow loading on the existing school roof rafters. This creates a horizontal thrust force at the base of the rafter/top of the stud wall. There are no rafter-to-rafter collar ties or horizontal ties at the base of the rafters/top of load bearing wall to resist the horizontal thrust created under an unbalanced snow loading. This will have to be analyzed further prior to renovation and may identify the need for new horizontal ties to resist the horizontal thrust forces from the unbalanced snow loading condition.

7. Ceiling Dead Load Capacity

Our office performed preliminary calculations of a typical ceiling joist to estimate the available attic capacity. This calculation is dependent on our existing lumber species and grade assumptions previously noted. The existing ceiling joists have a dead load capacity for 15 psf and no attic live load capacity. Previous modifications to the ceiling include adding a second dropped acoustical tile ceiling and a second layer of batt insulation. The self-weight of these additional ceiling materials exceeds the capacity of the roof rafters supporting them as noted above. Recommend removal of redundant ceiling finishes during the renovation. [Figure 28]

8. Floor Live Load Capacity

Our office performed preliminary calculations of typical floor joists and beams. These calculations are dependent on our existing lumber species and grade assumptions previously noted. Minimum live load requirements for the proposed residential occupancy live loading are 40 psf for the units and 100 psf for the corridors. Since institutional and residential occupancy live load requirements are similar, all the minimum live load requirements for the existing floor framing components are met with one exception. The west wing corridor joists only have an available live load capacity of 80 psf. The joists in this corridor area will need to be reinforced to meet the minimum live load requirements during renovation.

9. Seismic Load Capacity – Wood Floor/Roof diagrams and light framed shear walls

Renovation of the existing school building is anticipated to meet the renovation classification as a Level III Alteration under the 2021 International Existing Building Code (IEBC) and NH State Building Code. The introduction of residential apartments would be classified as a Change of Occupancy from Institutional Group I to Residential Group R-2. This represents a reduction in the occupancy risk; however, the alteration classification may require compliance with the current building code depending on any proposed changes to the existing lateral resisting systems that result in the removal of existing lateral systems or an increase in greater than 10 percent of the lateral stresses. Anticipated seismic design category C, depending on the existing geotechnical soils classification.

Based on the construction era, the existing school building was designed or constructed with the current building code requirements in mind. Therefore, there are existing weaknesses relative to the building's ability to resist seismic forces that may need to be addressed during the renovation or alterations. These items include:

a. Roof, floor, and wall diaphragms. The existing 1x6 wood plank is not effective as a diaphragm. A likely solution would be to add a layer of plywood over the existing plank to create shear transfer elements in selective areas only where needed.

If the school building is considered eligible for listing on the National Historic Registry, then a historical exception to seismic upgrades in the IEBC may be applicable.

Gym Building:

1. Lumber species and Gradation

The existing lumber species and grades are unknown. Retention of a wood scientist should be considered to provide additional wood testing for rafters, joists, and beams in the building. Testing will help to positively identify the wood species and provide an estimate of the ultimate flexural/tensile strength. This information required to accurately determine the floor and roof load capacities. For the purposes of this preliminary review, calculations have been performed on specific repetitive roof rafter and floor joists members of the school framing. The calculations are based on the lumber assumed to be available at the time of construction such as Spruce-Pine-Fir, No. 1/2, or better. Species identification and grading will provide for a more accurate analysis of the floor and roof load capacities and may provide justification for the use of higher allowable stresses for timber species other than the assumed SPF, No. 1/2.

2. Lumber Condition – Rot, Checking and Splitting

The wood framing components for the newer flat gym roofs are in a concealed space above the existing school roofs and cannot be observed. It is recommended that temporary access be provided and this area observed during the renovation design period prior to construction.

3. Exterior Envelope/Masonry Condition

The exterior envelope is in fair/poor condition. The wood siding is in poor condition. This is evident by the peeling paint, and bare and rotted condition of the wood trim and siding. The exterior masonry walls are in fair condition. There is one stepped crack in the masonry at the southeast end of the gym above the kitchen area. There may be some minor shifting due to deflection of the header beam below. The masonry cracks should be repaired and the masonry sealed during renovation. The roof of the gym was not accessed during our observations. Drainage from the gym roof was observed flowing onto the school roof in unintended areas. The drainage of the gym roof should be further evaluated prior to renovation to ensure there is no improper ponding on the roof and excessive runoff on adjacent low roofs. [Figure 29]

4. Foundations and Concrete Condition

The foundations are in good condition. The concrete slab on grade surface could not be observed due to floor finishes in the gym, kitchen, and bathroom areas. No cracking was observed through the finishes, therefore, the concrete slab on grade is assumed to be in good condition as well. There was no settlement issue observed.

5. Roof Load Capacity

The original drawings specify a design live load of 40 psf plus drifting snow. Our office performed preliminary calculations of a typical wood roof joist to confirm the available roof snow load capacity. This calculation is dependent on our existing lumber species and grade assumptions previously noted. The existing roof rafters have capacity for 40 psf roof snow loading which is appropriate for this project location. We also performed preliminary calculations for the steel wide flange girders and open web steel joists. The joist chord yield strength is based on 50 ksi and the web yield strength is based on 36 ksi for all "H" series joists. The W27x84 girders and the 14H3 roof joist live load capacity in the gym exceeds the 40 psf minimum snow loading specification. Design of both elements is controlled by deflection limitations. The 16H4 joists in the kitchen are also designed for a uniform snow load exceeding 40 psf plus the drifted snow due to the gym's high roof.

6. Seismic Resistance

The existing gym building was constructed prior to the inclusion of earthquake design requirements in the building code. And it was not constructed with the current building code requirements in mind. Therefore, there are concerns related to the building's ability to resist seismic forces that may need to be addressed during the renovation or alterations. These items include:

a. Foundations

The gym addition steel column foundation support is a concern for stability. The steel columns are supported by the existing school perimeter frost wall foundations. No extra support, such as pier reinforcement or spread footings, was added at the time of the gym construction to accommodate these columns. The original foundation system was designed to support load-bearing stud walls, not the long clear span concentrated roof loading reactions at the steel columns. While the exact reinforcement details of the existing wall and footings are unknown, it is expected that they do not provide sufficient shear strength to properly support the full-service column loads. This issue will require further structural review during design. It is expected that additional structural foundation elements will need to be added to reinforce the existing conditions.

b. Lateral resistance systems

The kitchen area's current lateral support system consists of a steel roof deck diaphragm and standard perimeter cmu shear wall. However, it is unclear whether these CMU walls are grouted and reinforced. Depending on the scope of the proposed renovations, additional lateral reinforcement may be necessary, which could involve adding grout and reinforcement to the existing CMU walls.

The main gym's existing lateral system is incomplete. The roof consists of a steel deck diaphragm, but lateral support and connection to the roof diaphragm is limited. The southeast corner of the gym has ordinary cmu shear walls along the east elevation and a short section along the south elevation. However, the north, west, and parts of the south elevations are constructed above the original school building's exterior walls. These added sections are constructed with light-framed wood stud walls and homasote sheathing, which do not contribute to the lateral structural integrity. It is expected that additional lateral framing components will need to be added to if the proposed renovations require compliance with the current building code requirements.

If the gym building is considered eligible for listing on the National Historic Registry, then a historical exception to seismic upgrades in the IEBC may be applicable.

SUMMARY

Based on our preliminary observations, the existing structure is a fair candidate for adaptive re-use as a multi-tenant residential structure, but the costs associated with additional repairs, and reinforcing will certainly need to be evaluated against other alternatives during the design phase.

The design and development team should further assess the following key findings to inform future capital project planning for any residential occupancy renovations to this structure:

1. The school building has limited floor live load, ceiling dead load, and roof snow load capacity. Framing upgrades or a combination of upgrades plus the removal of additional ceiling materials will be required to meet roof snow and ceiling dead load requirements. Additional floor framing or reinforcing will be required to meet the corridor live load requirement associated with a Multi-family residential occupancy.

2. Several existing roof, ceiling, and floor members are damaged with reduced structural capacity. The damage varies from wood shrinkage checking and splitting, to broken floor joists, water damage, and fire damage. Further investigation is necessary to confirm that framing members that show evidence of water staining do not have a reduction in structural capacity due to rot or fungal growth. Fire damaged areas will need to be fully defined and evaluated. All these areas will require further analysis and reinforcement to return them to service.

3. Areas of the exterior wall masonry, siding, and trim need repairs and replacement due to their poor condition. Full depth masonry repair will be necessary to address cracked bricks and mortar joints. Partial depth repointing is anticipated for approximately 10% of the exterior perimeter. Much of the wooden trim and siding is rotted and will require replacement.

4. Foundation concrete is in good condition with minor exceptions. There are a couple of minor exterior foundation wall cracks that require repair and sealing. One concrete pier in the crawl space will require reinforcement. The school entry will require further evaluation due to undermining and settlement. This area may require pressure injection or underpinning to true the slab on grade and foundation walls. The exterior concrete slabs, retaining walls, and stairs at the school north wing surfaces are in poor condition and will require crack repair and the surfaces will need to be patched, repaired, and sealed.

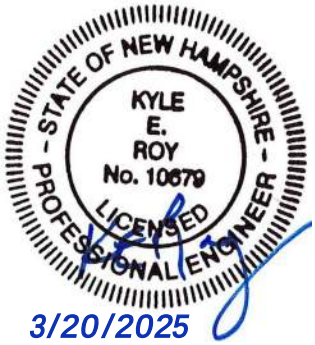
5. The gym addition steel column foundation support is a concern for vertical stability. This issue will require further structural review during design. It is expected that additional structural foundation elements will need to be added to reinforce the existing conditions.

6. Both school and gym buildings predate requirements for seismic design. The school building has a limited capacity for lateral forces and is not anticipated to meet the requirements of the current building code. Should the proposed renovations trigger requirements for seismic compliance with the current building code additional lateral resisting elements will need to be added. The gym addition's lateral system is incomplete as well as built upon the lateral weaknesses of the school building. It is expected that additional lateral framing components will need to be added to both buildings if the proposed renovations require compliance with the current building code requirements. Application for a historic exception should also be considered.

Please feel free to contact us with any questions or concerns you may have regarding this summary.

Sincerely,
TFMoran, Inc.

Kyle E. Roy, PE
Principal/Senior Structural Engineer



Limitations

Observations are based solely on visible conditions at the time of the visit, without removing finishes or soil. This evaluation does not include a comprehensive analysis or structural calculations for all structural elements. It is assumed that all original structural systems were designed by a qualified professional in accordance with the building codes and requirements applicable at the time of original construction.

APPENDIX A

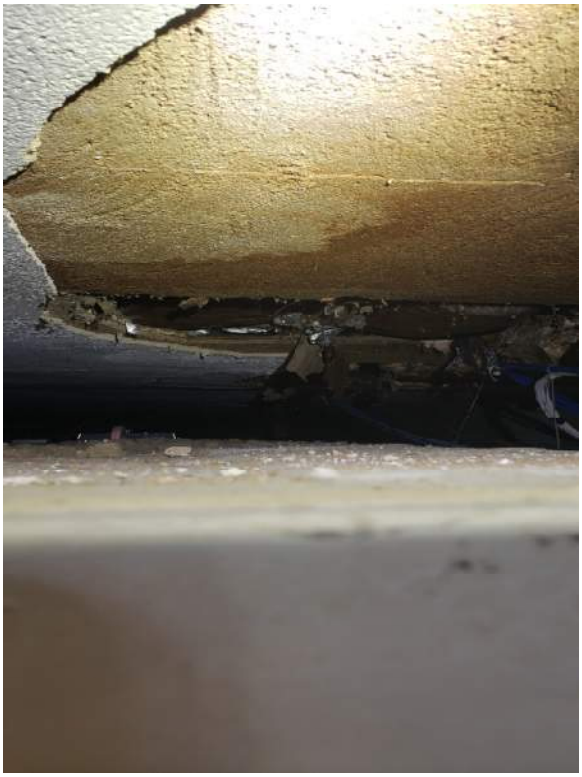


Figure 1 – Water damage ceiling

Figure 2 - Missing roof shingles

Figure 3 – Water-stained cupola tower framing

Figure 4 - Floor joist split end

Figure 5 – Floor joist split end

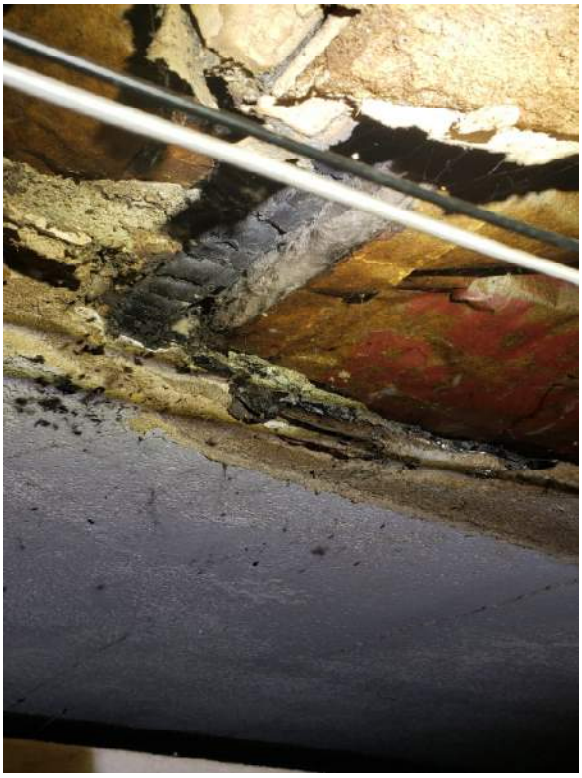


Figure 6 -Ceiling joist fire damage

Figure 7 – Cupola tower and ceiling joists fire damage

Figure 8 – Exterior wood siding and trim rot

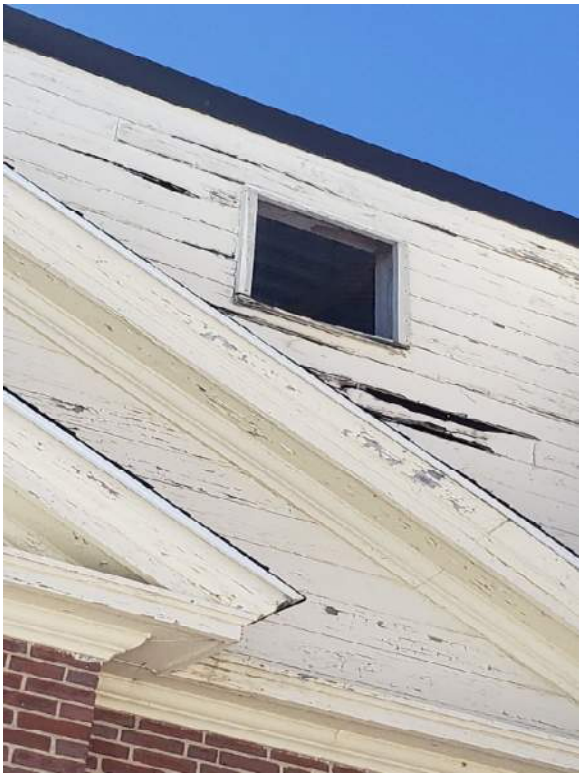


Figure 9 – Exterior wood siding and trim rot

Figure 10 – Exterior masonry mortar loss and water damage

Figure 11 – Exterior masonry vertical stepped crack

Figure 12 – Missing wood post at corner

Figure 13 – Exterior eave trim wood rot and water damage

Figure 14 – Exterior concrete sill damage and broken window

Figure 15 – Cupola railing and finials missing

Figure 16 – Roof drainage away from scuppers

Figure 17 – Vestibule floor gap below baseboard

Figure 18 – Vestibule wall vertical stepped cracks

Figure 19 – Crawl space pier notch

Figure 20 – Exterior foundation and masonry vertical crack

Figure 21 – Exterior foundation vertical crack below spigot

Figure 22 – Basement concrete wall efflorescence

Figure 23 – Exterior Basement concrete stairs

Figure 24 – Exterior stairway vertical wall crack and tread damage

Figure 25 – Exterior coal chute failed concrete

Figure 26 – Ceiling joist hangars at roof rafters

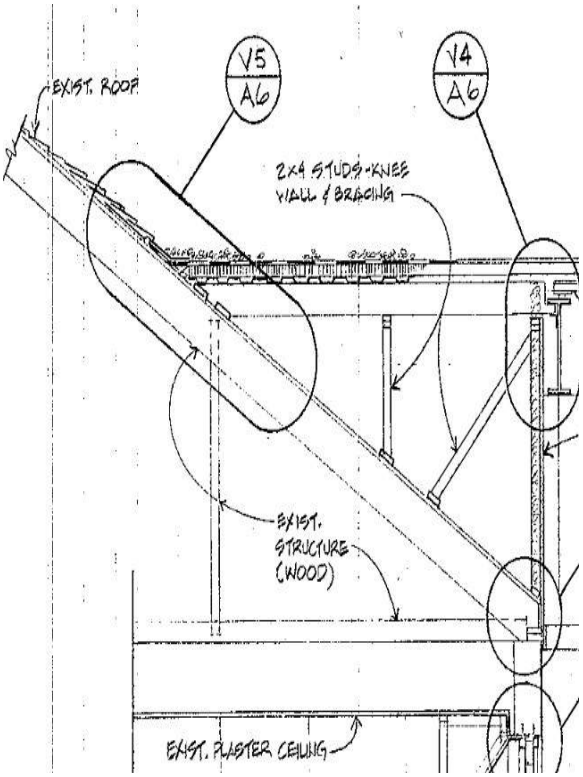
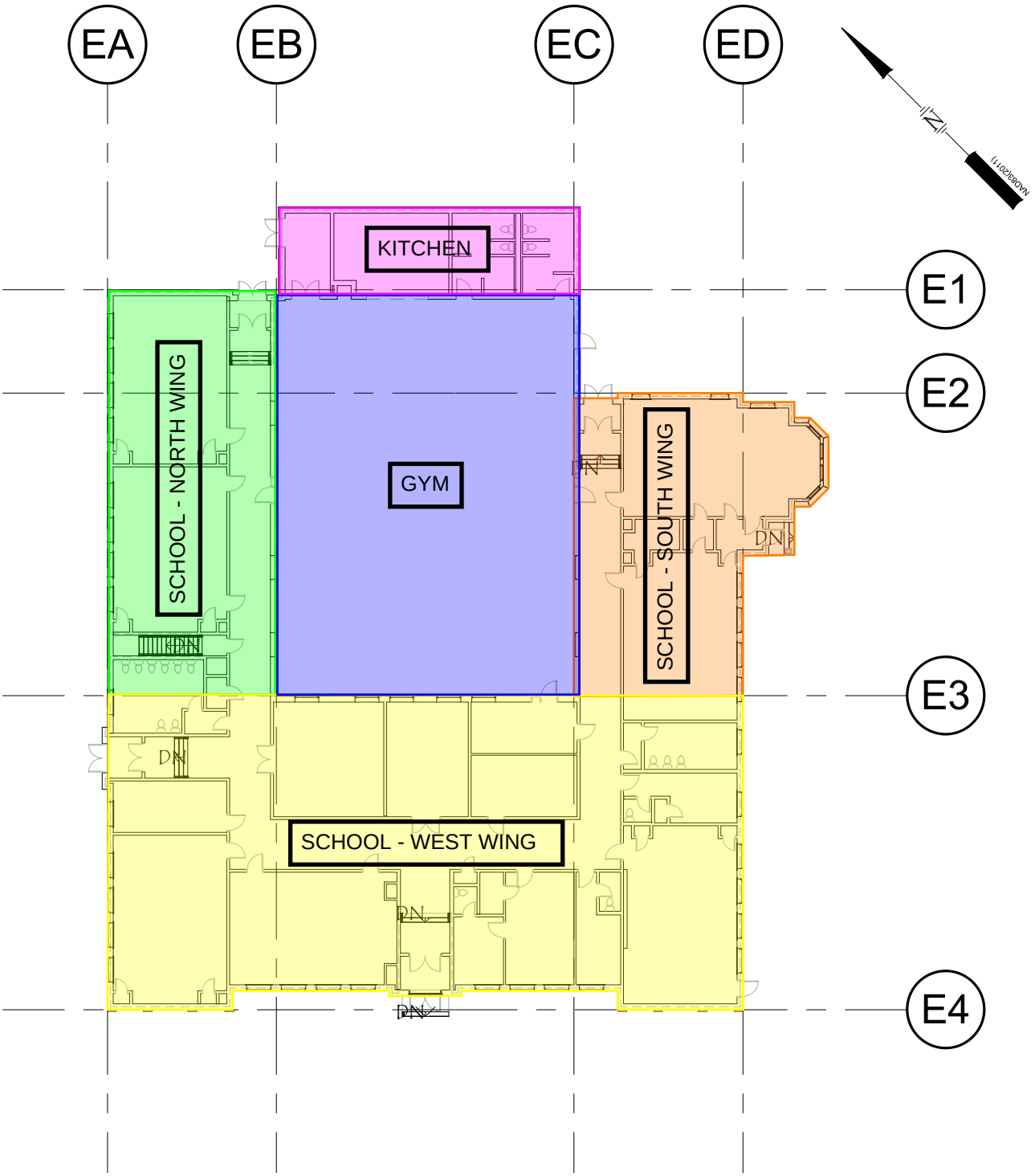


Figure 27 – Gym roof overbuild detail

Figure 28 – Exterior vertical stepped masonry crack at gym

Figure 29 – Gym exterior masonry vertical stepped crack



TFM Structural Engineers

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PHA SHERBURNE SCHOOL - EXISTING

35 Sherburne Road, Portsmouth, NH

PREPARED FOR

MARKET SQUARE ARCHITECTS

LOCUS PLAN - APPENDIX B

REF. DWG.:	SCALE:	PROJECT #:	
	1" = 30'-0"	47528.01	SK-1
DATE:	CHK. BY:	DR. BY:	
03/20/25	KER	AMG	

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Date of Test:	March 19. 2025
Time:	9:30 AM
Project:	Sherburne School
Project ID:	47528.00

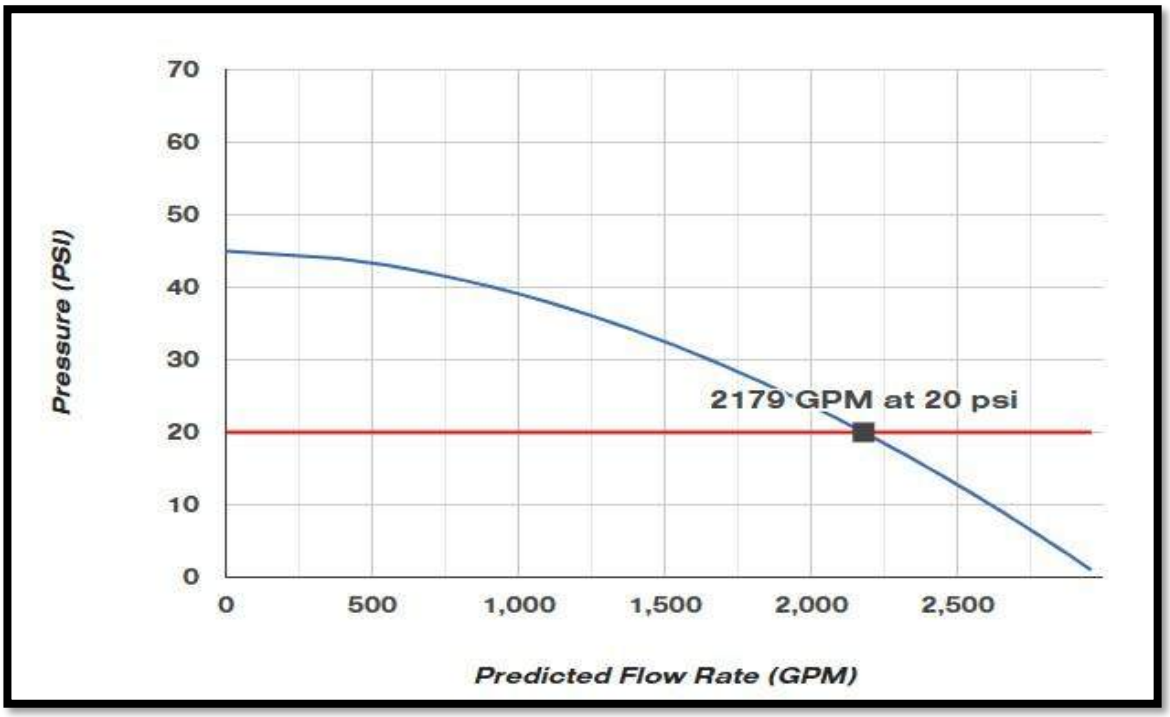
Fire Hydrant Information Sheet

Hydrant A ID:	**342**		Manufactuer:	Kennedy	
Address:	35		Model:	Guardian	
Street:	Sherburne Road		Year:	-	
Cross Street:	Greenland Rd		Installation Date:	-	
Town/City:	Portsmouth, NH		Installed By:	City of Portsmouth	
Main Diameter:	10	in	Static Pressure:	45	
Depth	5'±	ft	Ownership:	City of Portsmouth	
Number of Nozzles	3				
Nozzle Diameter	2.5				
Cofficient of Disch (c)	0.9				

Fire Flow Data

Pilot Pressure:	23.5	psi	Hydrant B ID:	---	
Measured Flow	810	gpm	Static Pressure:	45	psi
20 psi Residual Flow	2,179	gpm	Residual Pressure:	41	psi
			Tester:	Ben Shibley	

$$Q_{20} = Q_t \times (P_s - P_{20})^{0.54} / (P_s - P_t)^{0.54}$$



"CALCULATE RATED CAPACITY AT 20 PSI." *HoseMonster* , hosemonster.com/hydrant-flow-test-calculator-calculate-rated-capacity-at-20-psi/.

Fire Hydrant - 35 Sherburne Rd

Fire Hydrant - Fire Hydrant - 200 Sherburne Rd

Imate Capture: September 2019 @2020 Google United States

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May 6, 2025

Peter Stith, AICP, Planning Manager
Portsmouth Planning & Sustainability Department
City of Portsmouth
1 Junkins Avenue
Portsmouth, NH 03801

SUBJECT: TAC Workshop
Proposed Workforce Housing Development
126 Lang Road (Tax Map 291 Lot 1-1)

Dear Mr. Stith,

On behalf of Service Credit Union (SCU), the owner, and Preservation of Affordable Housing (POAH), the developer of Phase 1, McClure has applied for the May 15th TAC Workshop for Phase 1 only of the Workforce Housing Development for 126 Lang Road.

SCU and POAH's vision is to create affordable, desirable housing to serve the community as the cost of living continues to rise. The wish is to provide housing opportunities for members of the workforce including our teachers, firefighters, police officers, small business owners, artists, chefs, caregivers, and bankers to name a few. A master plan of the site has been created which includes approximately 170 workforce housing units, 30 workforce/veteran housing units, a potential non-profit daycare facility, and 35 market rate townhouses which will be used to subsidize the affordability of the entire development.

The development will be separated into two applications, which will be described as "phases" below. For the first phase, POAH is proposing two, 70-unit workforce housing apartment buildings with associated utilities and parking. Special attention has been given to providing community space with a shared concrete courtyard at the building entrances, smaller concrete patio areas for smaller gatherings adjacent to the buildings, and a common green area for more gathering and recreational activities. Stone dust paths will connect the buildings with natural walking paths that are proposed to be constructed in the initial stages of phase 2. A Conditional Use Permit will be required to allow more than 24 units within an apartment building and modifications will need to be provided for building length and setbacks per building height. The Conditional Use and modifications will be required to make the cost of the workforce housing feasible.

The second phase will consist of a 30-unit workforce housing building to the north; a 30-unit workforce/veteran housing building to the south with a potential first floor, non-profit, daycare facility; and 35 market rate townhouses along a private road from Longmeadow to Lang Road. A new sidewalk will be constructed along the new private road that will connect each of the residential areas. A Conditional Use Permit will be required to allow disturbances within the Wetland Protection Area.

McCLURE™

The intent is to apply for this year's Low-Income Housing Credit (LIHTC) for Phase 1; therefore, we are requesting to separate the timelines of the two applications. The LIHTC application process requires obtaining state and local planning permits by the end of September. Since no Wetland Protection area disturbances are requested in phase 2, we are hoping to permit Phase 1 with the site plan application submission for phase 2 following shortly after.

If you have any questions or comments, please feel free to contact me by email at nduquette@mcclurevision.com or by phone at 207-370-0948.

Sincerely,

Nicole Duquette

Nicole Duquette, P.E., LEED AP
Senior Project Manager

25 New Hampshire Ave, Suite 255, Portsmouth, New Hampshire 03801
P 603.766.0435 | **mcclurevision.com**

Docusign Envelope ID: ECCCC2FB-E4FC-4AD0-AAC4-7D3CDBFD8A14

AUTHORIZATION OF THE SERVICE CREDIT UNION
126 LAND ROAD

I, David Weed, duly authorized vice president of Service Credit Union, applicant, hereby authorize representatives of Donahue, Tucker & Ciandella, PLLC, McClure Engineering, Inc., and the Preservation of Affordable Housing to represent the company's interests before the Portsmouth land use boards and to submit any and all applications and materials related thereto on its behalf.

Date: 5/2/2025 | 5:16 AM PDT

David Weed

David Weed, Asst. Vice President
Service Credit Union

LONGMEADOW COMMONS
SITE DEVELOPMENT PLANS
LOCATED IN:

126 LANG ROAD
PORTSMOUTH, ROCKINGHAM COUNTY, NEW HAMPSHIRE

PREPARED FOR:
PRESERVATION OF AFFORDABLE HOUSING
2 OLIVER STREET
BOSTON, MASSACHUSETTS 02109

UTILITY CONTACTS

EVERSOURCE
1700 LAFAYETTE ROAD
PORTSMOUTH, NH 03801
PHONE: (800) 662-7764

UNITIL
325 WEST ROAD
PORTSMOUTH, NH 03801
PHONE: (888) 301-7700

CITY OF PORTSMOUTH WATER DIVISION
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
PHONE: (603) 427-1530

CITY OF PORTSMOUTH SEWER DIVISION
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
PHONE: (603) 427-1530

CITY OF PORTSMOUTH PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, NH 03801
PHONE: (603) 427-1530

CONTACTS

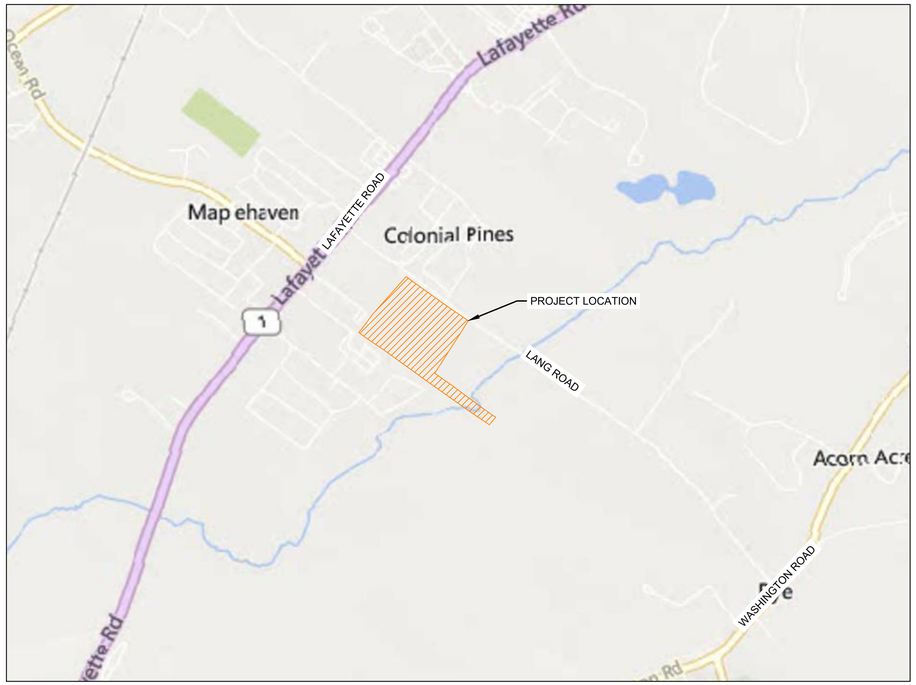
OWNER:
SERVICE CREDIT UNION
3003 LAFAYETTE RD
PORTSMOUTH, NH 03801

DEVELOPER:
PRESERVATION OF AFFORDABLE HOUSING
(POAH)
2 OLIVER STREET, SUITE 500
BOSTON, MA 03106

ENGINEER:
MCCLURE
25 NEW HAMPSHIRE AVENUE, SUITE 255
PORTSMOUTH, NH 03801
PHONE: 603-766-0435
CONTACT: NICOLE DUQUETTE

SURVEYOR:
MCCLURE
25 NEW HAMPSHIRE AVENUE, SUITE 255
PORTSMOUTH, NH 03801
PHONE: 603-766-0435

ARCHITECT:
PROCON
1359 HOOKSETT ROAD
HOOKSETT, NH 03106



SITE LOCATION MAP
SCALE: 1" = 1000'

SHEET LIST TABLE	
Sheet Number	Sheet Title
C001	COVER SHEET
C002	GENERAL NOTES
C003	EXISTING CONDITIONS PLAN
C004	EXISTING CONDITIONS PLAN
C101	OVERALL SITE PLAN
C102	SITE PLAN
C103	GRADING AND DRAINAGE PLAN
C104	UTILITY PLAN
C106	EROSION CONTROL PLAN
C107	LANDSCAPE PLAN
C108	ENLARGED LANDSCAPE PLAN
C109	LIGHTING PLAN
C501	EROSION CONTROL DETAILS
C502	EROSION CONTROL DETAILS
C503	CONSTRUCTION DETAILS
C504	CONSTRUCTION DETAILS
C505	CONSTRUCTION DETAILS
C506	CONSTRUCTION DETAILS
C507	CONSTRUCTION DETAILS
C508	CONSTRUCTION DETAILS
C509	CONSTRUCTION DETAILS
C601	TURNING MOVEMENT PLAN

811 DigSafe MA-ME-NH-RI-VT

McCLURE™
25 New Hampshire Avenue
Suite 255
Portsmouth, NH 03801
P 603-766-0435

Ankeny,IA | Carroll,IA
Cedar Rapids,IA | Clive,IA
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Fort Dodge,IA | Sioux City,IA
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North Kansas City,MO
Lenexa, KS
Portsmouth, NH | Boston, MA

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McClure Engineering Co. is not responsible or liable for any issues, claims, damages, or losses (collectively, "Losses") which arise from failure to follow these Plans, Specifications, and the engineering intent they convey, or for Losses which arise from failure to obtain and/or follow the engineers' or surveyors' guidance with respect to any alleged errors, omissions, inconsistences, ambiguities, or conflicts contained within the Plans and Specifications.

STATE OF NEW HAMPSHIRE
NICOLE J. DUQUETTE
No.17179
LICENSED
PROFESSIONAL ENGINEER

REVISIONS

PROJECT INFO
2024002213
MAY 6, 2025

ENGINEER	DRAWN BY	CHECKED BY
N. DUQUETTE	B. RICHARDS	N. DUQUETTE

LONGMEADOW COMMONS
126 LANG ROAD
PORTSMOUTH, NH 03801

COVER SHEET

P:\2024001787\04-DRAWINGS\DWG\PLANS\24-1787_COVER SHEET.DWG

DRAWING NO.
C001

GENERAL NOTES:

1. ALL CONSTRUCTION OPERATIONS MUST BE ACCOMPLISHED IN ACCORDANCE WITH THE APPLICABLE REGULATIONS FOR THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
2. THE CONTRACTOR SHALL COORDINATE WITH APPROPRIATE UTILITY COMPANIES PRIOR TO CONSTRUCTION ADJUSTMENTS OR RELOCATION OF EXISTING UTILITIES.
3. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRS OF DAMAGE TO ANY EXISTING SITE FEATURES DURING CONSTRUCTION, SUCH AS, BUT NOT LIMITED TO DRAINAGE STRUCTURES, UTILITIES, PAVEMENT, STRIPING, CURB, ETC. REPAIRS SHALL BE EQUAL TO OR BETTER THAN EXISTING CONDITIONS.
4. THE CONTRACTOR SHALL PROTECT ALL BENCHMARKS AND PROPERTY MONUMENTATION AND SHALL REPLACE OR REPAIR, AT HIS/HER OWN EXPENSE. BENCHMARKS AND MONUMENTATION DISTURBED DURING CONSTRUCTION.
5. IF THE CONTRACTOR RELOCATES OR SETS NEW BENCHMARKS, THE VERTICAL ELEVATION OF THE BENCHMARKS SHALL BE SET WITHIN A TOLERANCE OF 0.010 FEET.
6. ALL STRIPING, PAVEMENT MARKINGS, AND TRAFFIC SIGNAGE SHALL BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, UNLESS OTHERWISE NOTED ON THE PLANS.
7. THE CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH OCCUR DUE TO HIS/HER FAILURE TO LOCATE AND PRESERVE ANY AND ALL UTILITIES. CONTRACTOR SHALL LOCATE ALL UTILITIES, PUBLIC AND PRIVATE, PRIOR TO COMMENCING ANY WORK.

SITE PLAN NOTES:

1. TAX MAP 291 LOT 1-1
2. ZONING DISTRICT: GATEWAY NEIGHBORHOOD MIXED USE DISTRICT (G1)
3. LOT AREA = 26.71 ACRES
4. EXISTING USE: VACANT, FORMERLY RALPH'S TRUCKING
   PROPOSED USE: 140 WORKFORCE HOUSING UNITS
5. ALL BUILDING AND SITE CONSTRUCTION SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE AMERICANS WITH DISABILITIES ACT (ADA).
6. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN THE EVENT OF A CONFLICT BETWEEN PLANS AND ANY OTHER DRAWINGS AND/OR SPECIFICATIONS, THE ENGINEER SHALL BE NOTIFIED BY THE CONTRACTOR.
7. THE CONTRACTOR SHALL HAVE A VALID DIGSAFE TICKET FOR THE DURATION OF CONSTRUCTION.
8. ALL CONSTRUCTION SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE CITY OF PORTSMOUTH AND THE STATE OF NEW HAMPSHIRE.
9. THE DEVELOPMENT AREA OF THE SITE IS NOT LOCATED WITHIN A SPECIAL FLOOD HAZARD AREA (100 YEAR FLOOD) PER FLOOD INSURANCE RATE MAP NUMBER 33015C0270F, WITH AN EFFECTIVE DATE OF X1/29/2021.
10. ALL CONSTRUCTION SHALL CONFORM TO THESE PLANS AND THE STANDARD CONSTRUCTION DRAWINGS AS SUPPLIED BY THE DEVELOPER
11. A SIGN PERMIT SHALL BE OBTAINED PRIOR TO INSTULATION.
12. PROPOSED SNOW STORAGE AREAS AS SHOWN. ANY EXCESS SNOW SHALL BE TRUCKED OFF-SITE.
13. THE CONTRACOTR IS SOLELY RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THE PLANS DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING THE SAFETY OF THE CONSTRUCTION, CONTRACOTR OR THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF WORK. THE SEAL OF THE SURVEYOR AND/OR ENGINEER AS INCLUDED IN THE PLAN SET DOES NOT EXTEND TO ANY SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE AND/OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REGULATIONS.
14. APPROPRIATE EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE INITIATION OF ANY SITE WORK & SHALL BE MAINTAINED BY THE DEVELOPER UNTIL ADEQUATE VEGETATIVE COVER IS ESTABLISHED ON ALL GRADED AREAS. SEE EROSION CONTROL PLAN.
15. A CONDITIONAL USE PERMIT IS REQUIRED FROM THE PORTSMOUTH PLANNING BOARD TO ALLOW A BUILDING WITH GREATER THAN 24 UBNITS. THE FOLLOWING MODIFICATIONS ARE REQUESTED AS PART OF THE CUP:
    - BUILDING LENGTH INCREASE
    - BUILDING SETBACK REDUCTION FOR A 50 FT BUILDING
16. ALL CONDITIONS OF THIS PLANSHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
17. STATE PERMITS REQUIRED:
    - NHDES ALTERATION OF TERRAIN PERMIT
    - USEPA NPDES CONSTRUCTION GENERAL PERMIT

DEMOLITION NOTES:

1. PRIOR TO COMMENCING ANY WORK, SECURE THE NECESSARY DEMOLITION PERMIT FROM THE CITY OF PORTSMOUTH.
2. ALL DEMOLITION ACTIVITIES MUST STRICTLY COMPLY WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
3. CLEARLY MARK THE BOUNDARIES OF THE WORK AREA IN THE FIELD BEFORE STARTING CONSTRUCTION OR SITE CLEARING.
4. CONDUCT ALL DEMOLITION OPERATIONS IN A WAY THAT PREVENTS HARM TO INDIVIDUALS, DAMAGE TO STRUCTURES, AND ADJACENT PROPERTIES. THE USE OF EXPLOSIVES IS PROHIBITED WITHOUT THE PRIOR WRITTEN CONSENT OF BOTH THE DEVELOPER AND RELEVANT GOVERNMENTAL AUTHORITIES.
5. PERFORM THE DEMOLITION WORK IN A MANAGER THAT CONSISTENTLY PREVENTS UNAUTHORIZED ACCESS TO THE SITE.
6. ALL WORK PERFORMED WITHIN PUBLIC ROADWAY RIGHT-OF-WAY MUST ADHERE TO CITY STANDARDS.
7. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING DIG SAFE (811) AT LEAST 72 HOURS BEFORE ANY EXCAVATION ON SITE. THE LOCAL WATER DEPARTMENT MUST ALSO BE NOTIFIED TO MARK THEIR UTILITIES.
8. COORDINATE ALL EXISTING UTILITY DISCONNECTIONS WITH THE RESPECTIVE UTILITY COMPANIES BEFORE STARTING WORK.
9. BEFORE DEMOLITION BEGINS, DISCONNECT, SHUT OFF, AND PROPERLY SEAL ALL UTILITIES SERVING THE STRUCTURE(S).
10. CLEARLY MARK THE POSITION OF ALL UTILITY DRAINAGE AND SANITARY LINES, AND ENSURE ALL ACTIVE LINES ARE PROTECTED.
11. IDENTIFY ALL REQUIRED INTERRUPTIONS OF ACTIVE UTILITY SYSTEMS THAT MAY AFFECT OTHERS BEFORE DEMOLITION AND NOTIFY ALL RELEVANT UTILITY COMPANIES TO MAINTAIN CONTINUOUS SERVICE WHERE NEEDED.
12. COMPLETELY FILL ALL BELOW-GRADE AREAS AND VOIDS RESULTING FROM DEMOLITION WITH SUITABLE SOIL MATERIALS (STONE, GRAVEL, SANDS) THAT ARE FREE OF DEBRIS, TRASH, FROZEN MATERIALS, ROOTS, AND OTHER ORGANIC MATTER.. STONES USED AS FILL SHALL NOT EXCEED 6 INCHES IN ANY DIMENSION. MATERIAL FROM THE DEMOLISHED STRUCTURE IS NOT PERMITTED FOR USE AS FILL. ENSURE FILL AREAS ARE FREE OF STANDING WATER, FROZEN MATERIAL, TRASH, AND DEBRIS BEFORE PLACING FILL. PLACE FILL IN LAYERS NO THICKER THAN 6 INCHES (LOOSE) AND COMPACT EACH LAYER TO AT LEAST 95% OPTIMUM DENSITY. GRADE THE FINAL SURFACE TO MATCH ADJACENT CONTOURS AND ENSURE PROPER SURFACE DRAINAGE.
13. IMPLEMENT EROSION CONTROL DEVICES ACCORDING TO THE APPROVED EROSION AND SEDIMENT CONTROL PLAN BEFORE ANY DEMOLITION WORK BEGINS. EMPLOY WATERING, TEMPORARY ENCLOSURE, AND OTHER SUITABLE METHODS TO MINIMIZE DUST AND DIRT GENERATION AND DISPERSAL. CLEAN ANY DUST AND DEBRIS CAUSED BY DEMOLITION FROM ADJACENT STRUCTURES AND IMPROVEMENTS. RESTORE ALL ADJACENT AREAS TO THEIR PRE-WORK CONDITIONS.

GRADING & DRAINAGE NOTES:

1. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL DRAINAGE STRUCTURES, INCLUDING NYLOPLAST DRAIN BASINS (OR APPROVED EQUAL), TO THE CIVIL ENGINEER FOR REVIEW PRIOR TO ORDERING.
2. ALL SITE DRAINAGE PIPE SHALL BE CORRUGATED HIGH-DENSITY DUAL-WALL, SMOOTH INTERIOR POLYETHYLENE PIPE WITH STANDARD JOINTS, AS MANUFACTURED BY ADS, INC., OR APPROVED EQUAL.
3. ALL PROPOSED CATCH BASINS SHALL HAVE 4' SUMPS AND OUTLETS FITTED WITH "ELIMINATOR" HOODS, OR APPROVED EQUAL.
4. THE NORTHING AND EASTING COORDINATES ON THE PLANS INDICATE THE CENTER POINT OF A STRUCTURE OR CLEANOUT RISER, OR THE POINT ON A FITTING WHERE THE PIPE CENTERLINES INTERSECT. THE COORDINATE FOR A FLARED END SECTION IS AT THE MIDPOINT OF THE OUTFLOW END.

UTILITY NOTES:

1. CONTRACTOR SHALL CALL, NOTIFY, AND COORDINATE WITH DIG-SAFE (1-888-344-7233) PRIOR TO COMMENCING ANY EXCAVATION.
2. AN ATTEMPT HAS BEEN MADE TO LOCATE ALL UTILITY MANHOLES, METER COVERS, AND OTHER SUCH UTILITY ITEMS FROM SURVEY INFORMATION. UNDERGROUND UTILITY LINES AND STRUCTURES SHOWN ARE PER RECORDS MADE AVAILABLE BY THE OWNER, UTILITY COMPANY OR MUNICIPALITY, AND BY FIELD OBSERVATION WHERE POSSIBLE. ALL MUNICIPALITIES AND UTILITY COMPANIES SHOULD BE NOTIFIED BY CONTRACTOR FOR FIELD LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES, INCLUDING SERVICE LINES PRIOR TO CONSTRUCTION.
3. LOCATION OF UTILITIES IS NOT GUARANTEED AND THE CONTRACTOR SHALL USE EXTREME CAUTION DURING EXCAVATION, USING HAND EXCAVATION AS NECESSARY TO LOCATE AND PROTECT UTILITY LINES. CONTRACTOR TO NOTIFY THE DESIGN ENGINEER OF ANY DISCREPANCIES IN UTILITIES OR THEIR LOCATIONS.
4. THE CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF THE UTILITY COVERS WITHIN THE PROJECT LIMITS AND ADJUST THOSE ITEMS TO BE AT THE FINISHED GRADES IN EITHER THE SIDEWALK OR PAVEMENT AREAS WITHOUT ADDITIONAL COST TO THE OWNER. THE RELOCATION OF SUCH ITEMS SHALL BE INCLUDED IN THE CONTRACTOR'S BID.
5. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFICATION OF ALL INFORMATION SHOWN ON PLANS.
6. REPAIR OF UTILITY LINES DAMAGED BY THE CONTRACTOR SHALL BE AT THE CONTRACTOR'S EXPENSE.
7. PROPER COORDINATION WITH THE RESPECTIVE UTILITY COMPANIES SHALL BE PERFORMED BY THE CONTRACTOR TO INSURE THAT ALL UTILITY COMPANY, LOCAL MUNICIPALITY AND LOCAL COUNTY STANDARDS FOR MATERIALS AND CONSTRUCTION METHODS ARE MET.
8. THE CONTRACTOR SHALL ARRANGE FOR AND COORDINATE WITH THE RESPECTIVE UTILITY COMPANIES FOR SERVICE INSTALLATIONS AND CONNECTIONS AND MAIN SERVICE RELOCATIONS. THE CONTRACTOR SHALL COORDINATE THE WORK TO BE PERFORMED BY THE VARIOUS UTILITY COMPANIES AND SECURE ALL PERMITS AND PAY ALL FEES FOR CONNECTIONS, DISCONNECTIONS, RELOCATIONS, INSPECTIONS AND DEMOLITION AS NECESSARY
9. ALL UTILITY CONSTRUCTION IS SUBJECT TO INSPECTION PRIOR TO APPROVAL FOR BACKFILL IN ACCORDANCE WITH THE APPROPRIATE UTILITY COMPANY, LOCAL MUNICIPALITY AND/OR LOCAL COUNTY REQUIREMENTS.
10. IN THE EVENT OF CONFLICT OF ANY REQUIREMENTS OR PROVISIONS OF THE WORK INDICATED HEREIN, MCCLURE SHALL BE NOTIFIED IMMEDIATELY FOR A DETERMINATION OF THE PLAN REQUIREMENTS AND INTENT THEREOF.
11. SEE THE MECHANICAL, ELECTRICAL AND PLUMBING SITE PLAN(S) FOR ADDITIONAL SITE UTILITIES AND SITE LIGHTNING.

McCLURE™

25 New Hampshire Avenue
Suite 255
Portsmouth, NH 03801
P 603-766-0435

Ankeny,IA | Carroll,IA
Cedar Rapids,IA | Clive,IA
Coralville,IA | Council Bluffs,IA
Fort Dodge,IA | Sioux City,IA
Columbia,MO | Macon,MO
North Kansas City,MO
Lenexa, KS
Portsmouth, NH | Boston, MA

NOTICE:
McClure Engineering Co. is not responsible or liable for any issues, claims, damages, or losses (collectively, "Losses") which arise from failure to follow these Plans, Specifications, and the engineering intent they convey, or for Losses which arise from failure to obtain and/or follow the engineers' or surveyors' guidance with respect to any alleged errors, omissions, inconsistences, ambiguities, or conflicts contained within the Plans and Specifications.

STATE OF NEW HAMPSHIRE
NICOLE L DUQUETTE
No.17179
LICENSED
PROFESSIONAL ENGINEER

REVISIONS

PROJECT INFO
2024002213
MAY 6, 2025

ENGINEER	DRAWN BY	CHECKED BY
N. DUQUETTE	B. RICHARDS	N. DUQUETTE

LONGMEADOW COMMONS
126 LANG ROAD
PORTSMOUTH, NH 03801

GENERAL NOTES

P:\2024001787\04-DRAWINGS\DWG\PLANS\24-1787_PHASE-1\24-1787 GENERAL NOTES.DWG

DRAWING NO.
C002

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3. WETLANDS SHOWN HEREON WERE DELINEATED BY GOVE ENVIRONMENTAL SERVICES NOVEMBER 2024 AND LOCATED BY MCCLURE ENGINEERING CO. NOVEMBER 2024. TAX MAP 291, LOT 1-2 WAS NOT DELINEATED AT THE TIME OF THIS SURVEY.
4. UTILITIES SHOWN HEREON ARE BASED ON ABOVE GROUND EVIDENCE AND PLANS REFERENCED. MCCLURE TAKES NO RESPONSIBILITY FOR THE LOCATION OF SAID UTILITIES, AS SHOWN HEREON.
5. BY GRAPHIC PLOTTING ONLY, THE PARCEL SHOWN HEREON LIES WITHIN ZONE X AND ZONE A FLOOD HAZARD AREAS, AS SHOWN ON THE (F.E.M.A.)FEDERAL EMERGENCY MANAGEMENT AGENCY) (F.I.R.M.)FLOOD INSURANCE RATE MAP 33015C0270F, WITH AN EFFECTIVE DATE OF JANUARY 29, 2021.

BENCHMARK NOTES:

1. MAGNAIL SET IN PAVEMENT AT INTERSECTION OF LANG ROAD & LONGMEADOW ROAD, AS SHOWN HEREON. ELEVATION = 67.01
2. MAGNAIL SET IN PAVEMENT AT 90 DEGREE TURN OF LONGMEADOW ROAD, AS SHOWN HEREON. ELEVATION = 58.17

PLAN REFERENCES

1. "LOT LINE RELOCATION PLAN" BY MILLETTE, SPRAGUE & COLWELL, INC., DATED 9/02/99, AND RECORDED IN ROCKINGHAM COUNTY REGISTRY OF DEEDS PLAN D-27623.
2. "TOPOGRAPHIC PLAN OF TAX MAP 291, LOT 1-1, LANG ROAD, PORTSMOUTH, NH" BY DOUCET SURVEY INC., DATED DECEMBER 22, 2015, UNRECORDED.
3. "AS-BUILT PLAN FOR CITY OF PORTSMOUTH OF LONGMEADOW ROAD & LANG ROAD, PORTSMOUTH, NH" BY DOUCET SURVEY LLC DATED DECEMBER 20, 2020.
4. "SUBDIVISION PLAN OF SERVICE FEDERAL CREDIT UNION" BY DOUCET SURVEY LLC DATED 02/11/21, AND RECORDED IN ROCKINGHAM COUNTY REGISTRY OF DEEDS PLAN D-42707.

EXISTING SURVEY LEGEND

LINEWORK

- DRAINAGE
- WATER
- UNDERGROUND ELECTRIC
- OVERHEAD ELECTRIC
- INTERMEDIATE CONTOUR (2')
- INDEX CONTOUR (10')
- PROPERTY LINE
- RIGHT OF WAY
- SECTION LINE
- EASEMENT
- GUARD RAIL
- FIELD FENCE
- CHAIN LINK FENCE
- WOODEN FENCE

TYPICAL HATCHING

- WETLANDS
- LEDGE

ABBREVIATIONS

BM	BENCHMARK
RIM	ELEVATION AT RIM
W/	WITH
TYP	TYPICAL
CB	CATCH BASIN
SMH	SEWER MANHOLE
DMH	DRAINAGE MANHOLE
CI	CAST IRON PIPE
DI	DUCTILE IRON PIPE
CMP	CORRUGATED METAL PIPE
HDPE	HIGH-DENSITY POLYETHYLENE PIPE
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PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
UTM	UNABLE TO MEASURE
IP	IRON PIN OR PIPE
IR	IRON ROD
DH	DRILL HOLE
F	FOUND
TBS	TO BE SET

GENERAL SITE FEATURES

- BOLLARD
- FLAGPOLE
- FLOOD LIGHT
- GUY WIRE
- MB MAILBOX
- SIGN- DOUBLE POST
- SIGN- SINGLE POST
- SOILBORE
- WETLAND FLAG
- STREET LIGHT
- UTILITY POLE
- UTILITY POLE W/STREET LIGHT
- UNKNOWN MANHOLE

MONUMENTS

- BENCHMARK
- IRON PIPE, IRON ROD OR DRILL HOLE, AS NOTED

STORM SEWER

- BEEHIVE INTAKE (SIZE VARIES)
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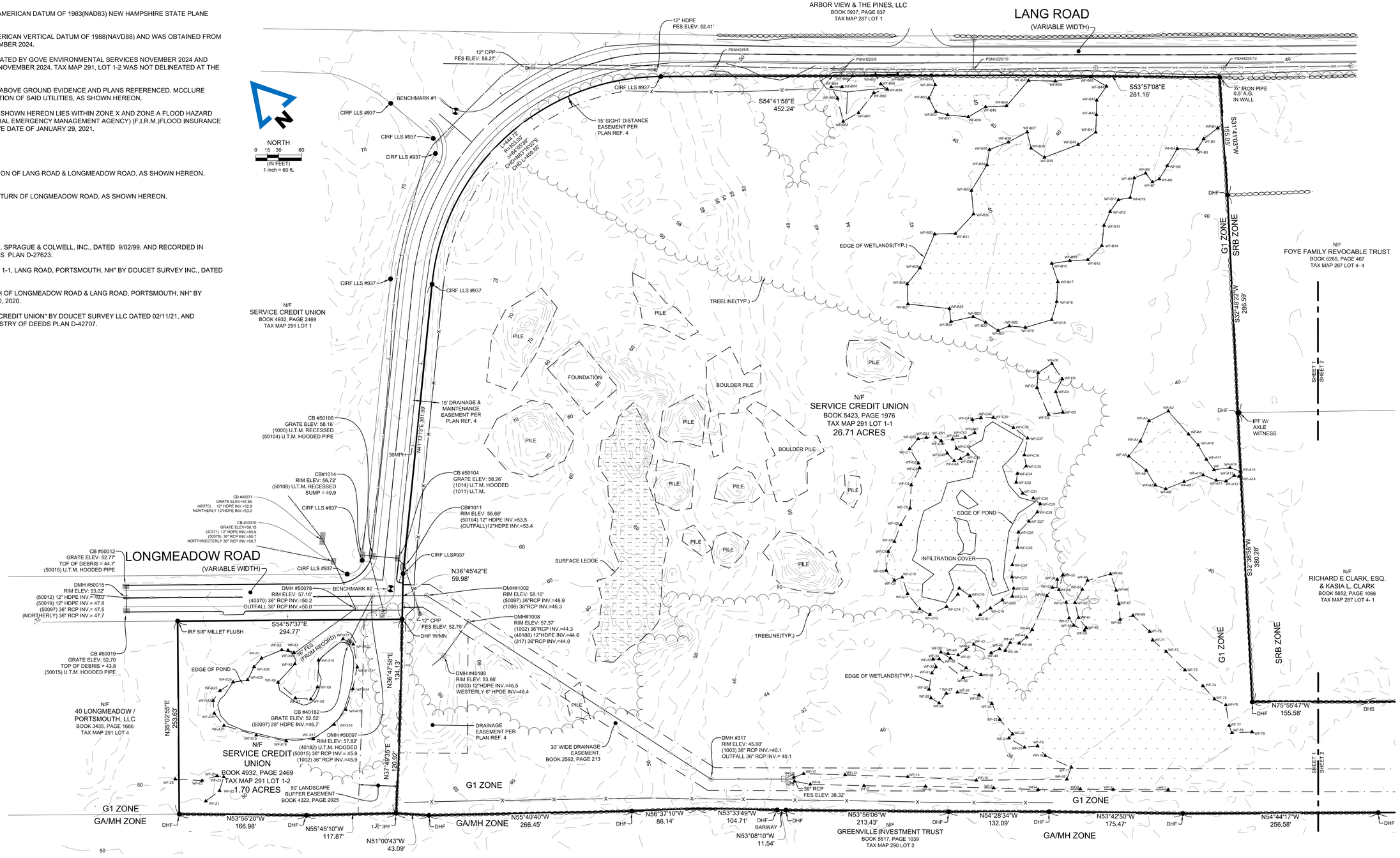
- CATCH BASIN
- STAND PIPE
- DRAINAGE CLEANOUT
- DRAINAGE MANHOLE
- OPEN SIDED AREA INTAKE (SIZE VARIES)

WATER

- CURB STOP
- FIRE HYDRANT
- IRRIGATION VALVE
- MONITORING WELL
- POST INDICATOR VALVE
- WATER MANHOLE
- WATER VALVE
- WATER VALVE MANHOLE



ZONING INFORMATION

1. THE SUBJECT PARCEL LIES WITHIN THE CITY OF PORTSMOUTH G1(GATEWAY CORRIDOR) ZONING DISTRICT.
2. MINIMUM LOT SIZE : 10,000 SQUARE FEET
3. SETBACKS:
   FRONT: VARIES PER USE
   SIDE: VARIES PER USE
   REAR: VARIES PER USE

STATE OF NEW HAMPSHIRE
No. 953
JOHN D. GATCHELL JR.
LICENSED LAND SURVEYOR
SIGNATURE

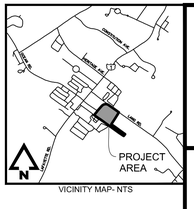
SURVEYOR'S CERTIFICATIONS:

LAN 503.04
I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY ME OR BY THOSE UNDER MY DIRECT SUPERVISION AND FALLS UNDER THE URBAN SURVEY CLASSIFICATION OF THE NH CODE OF ADMINISTRATIVE RULES OF THE BOARD OF LICENSURE FOR LAND SURVEYORS. I CERTIFY THAT THIS SURVEY WAS MADE ON THE GROUND AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THE SURVEY WAS COMPLETED WITH A TRIMBLE RTK GPS (R12I AND R10) WITH A 95% CONFIDENCE LEVEL OF 0.05' + 1:10,000 OR GREATER.

RSA 676:16
"I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN."

DATE: 5/5/2025

JOHN D. GATHCHELL, JR, LLS #953



VICINITY MAP- NTS

EXISTING CONDITIONS PLAN

OF

126 LANG ROAD, PORTSMOUTH, NH

PREPARED FOR SERVICE CREDIT UNION

ENGINEER	DRAWN BY	REVISIONS
	DMS	-
SURVEYOR	CREW CHIEF	-
JDG	DMS	-
SHEET NO.		-
C003		-

2024006643
DECEMBER 2, 2024

McCLURE
making lives better.
25 New Hampshire Avenue
Portsmouth, NH
603-766-0435

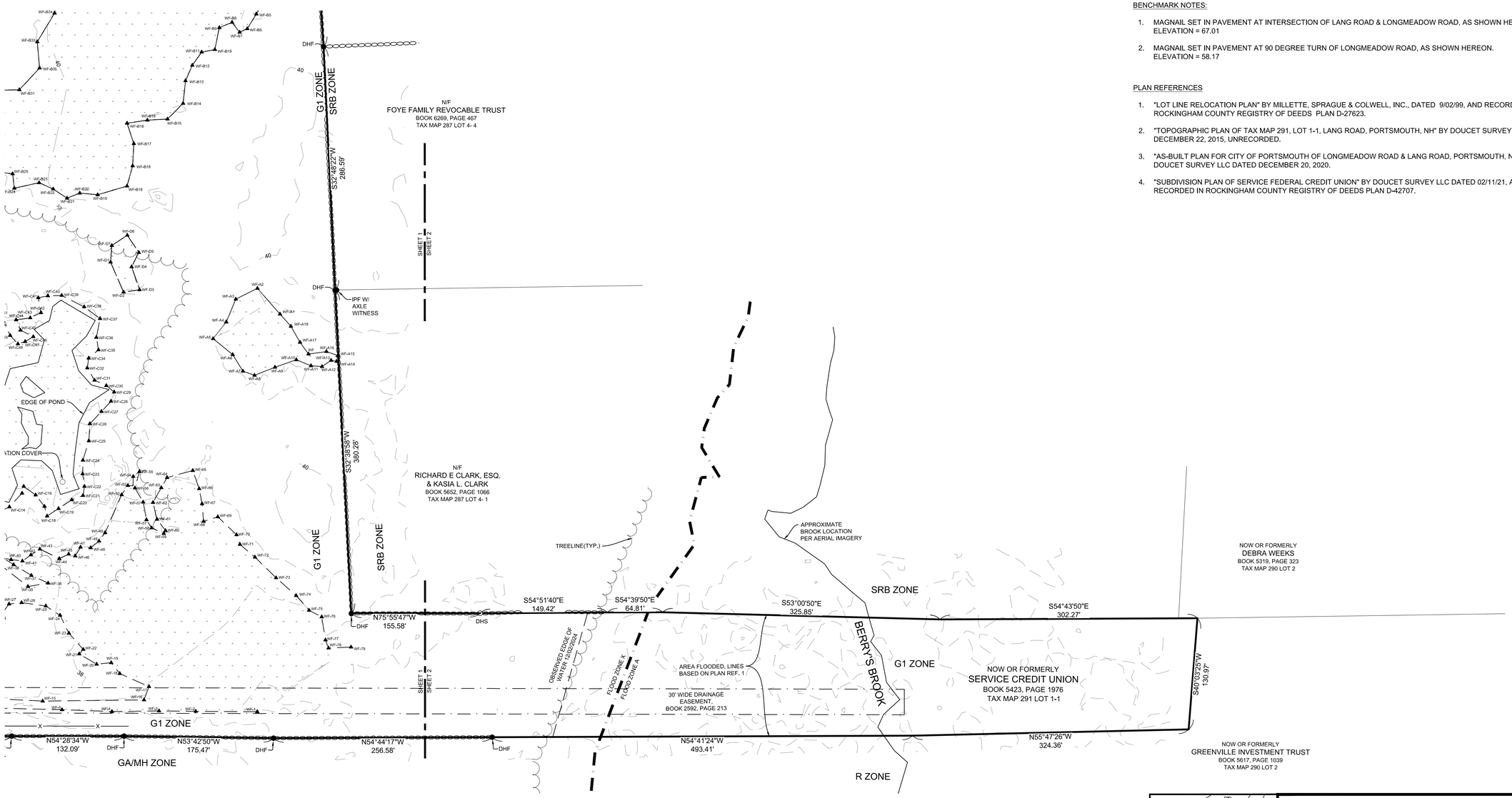
DRAWING PATH: P:\2024006643\DWG\ - EC- 126 Lang Road, Portsmouth, NH\04-Drawings\Survey\2024006643_ETECH3.dwg PLOT DATE: 05/02/2025 10:00 AM PLOTTED BY: DAVE SHERMAN

NORTH

0 15 30 60

(IN FEET)

1 inch = 60 ft.



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- WATER
- UNDERGROUND ELECTRIC
- OVERHEAD ELECTRIC
- INTERMEDIATE CONTOUR (2')
- 950 INDEX CONTOUR (10')
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- RIGHT OF WAY
- SECTION LINE
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- FIELD FENCE
- CHAIN LINK FENCE
- WOODEN FENCE

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- WETLANDS
- LEDGE

ABBREVIATIONS

BM	BENCHMARK
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DATE: 5/5/2025

JOHN D. GATHCHELL, JR, LLS #953

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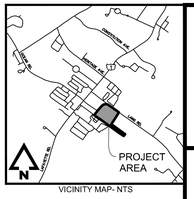
3. "AS-BUILT PLAN FOR CITY OF PORTSMOUTH OF LONGMEADOW ROAD & LANG ROAD, PORTSMOUTH, NH" BY DOUCET SURVEY LLC DATED DECEMBER 20, 2020.
4. "SUBDIVISION PLAN OF SERVICE FEDERAL CREDIT UNION" BY DOUCET SURVEY LLC DATED 02/11/21, AND RECORDED IN ROCKINGHAM COUNTY REGISTRY OF DEEDS PLAN D-42707.



VICINITY MAP- NTS

EXISTING CONDITIONS PLAN

OF

126 LANG ROAD, PORTSMOUTH, NH

PREPARED FOR SERVICE CREDIT UNION

ENGINEER	DRAWN BY	REVISIONS
	DMS	-
SURVEYOR	CREW CHIEF	-
JDG	DMS	-
SHEET NO.		-
C004		-

2024006643
DECEMBER 2, 2024

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DRAWING PATH: P:\2024006643-LEC- 126 Lang Road, Portsmouth, NH\04-Drawings\Survey\2024006643_TEDOC.dwg PLOT DATE: 05/05/2025 09:09 AM PLOTTED BY: DANE SHERMAN

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STATE OF NEW HAMPSHIRE
NICOLE L DUQUETTE
No.17179
LICENSED
PROFESSIONAL ENGINEER

REVISIONS

PROJECT INFO
2024002213

ENGINEER	DRAWN BY	CHECKED BY
N. DUQUETTE	B. RICHARDS	N. DUQUETTE

LONGMEADOW COMMONS
126 LANG ROAD
PORTSMOUTH, NH 03801

EXISTING CONDITIONS PLAN

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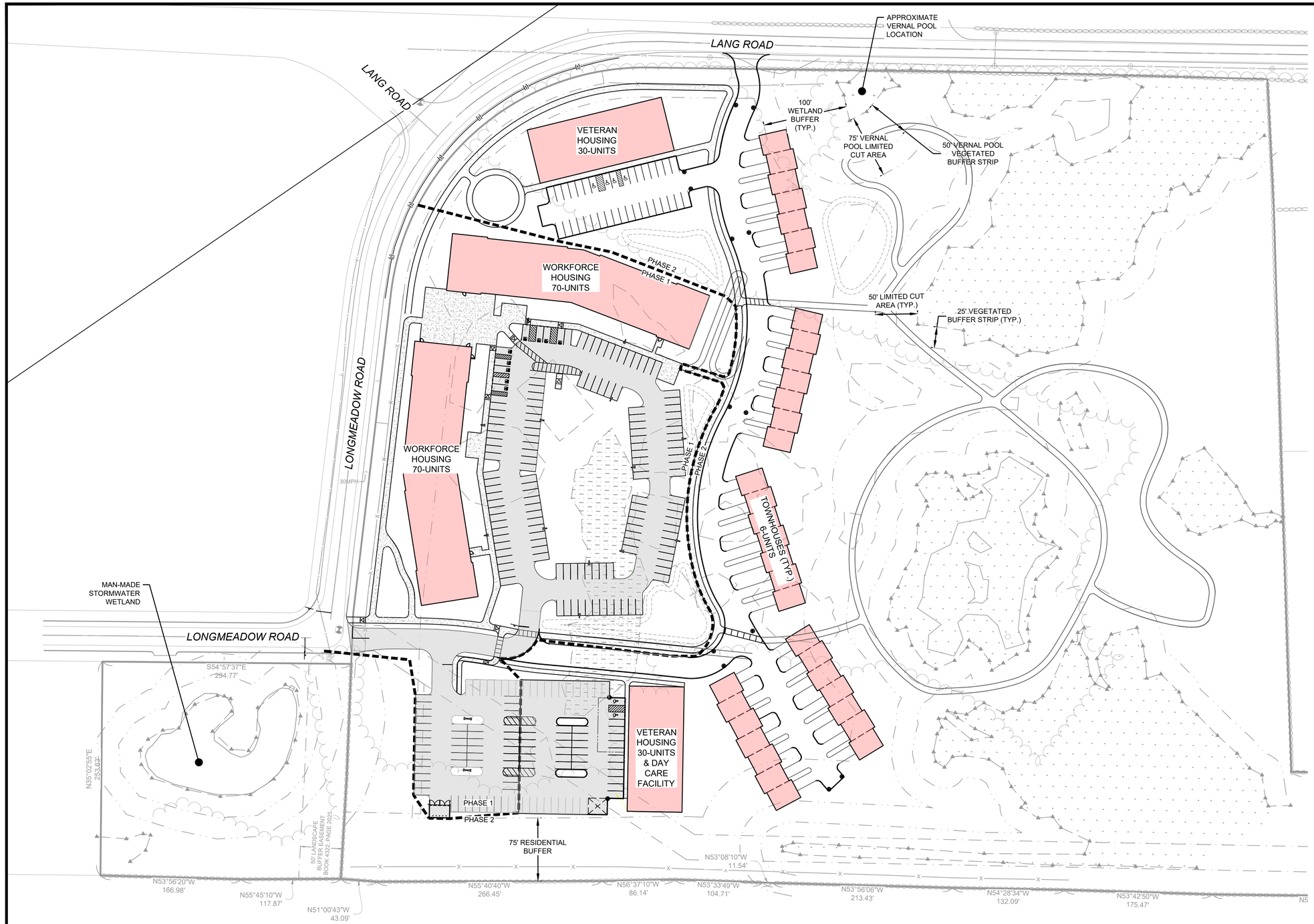

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MAY 6, 2025

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OVERALL SITE PLAN

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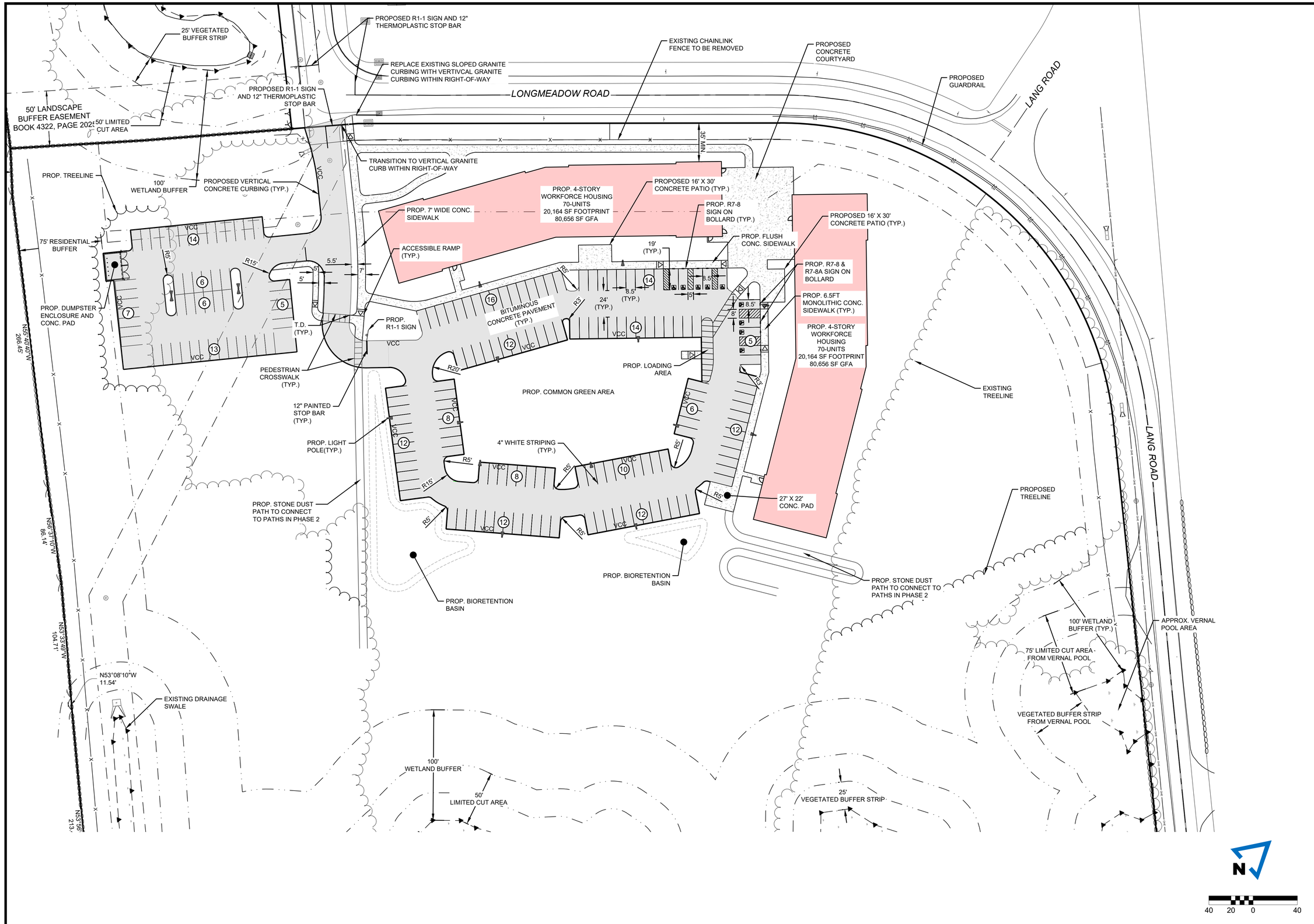
C101



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SITE PLAN

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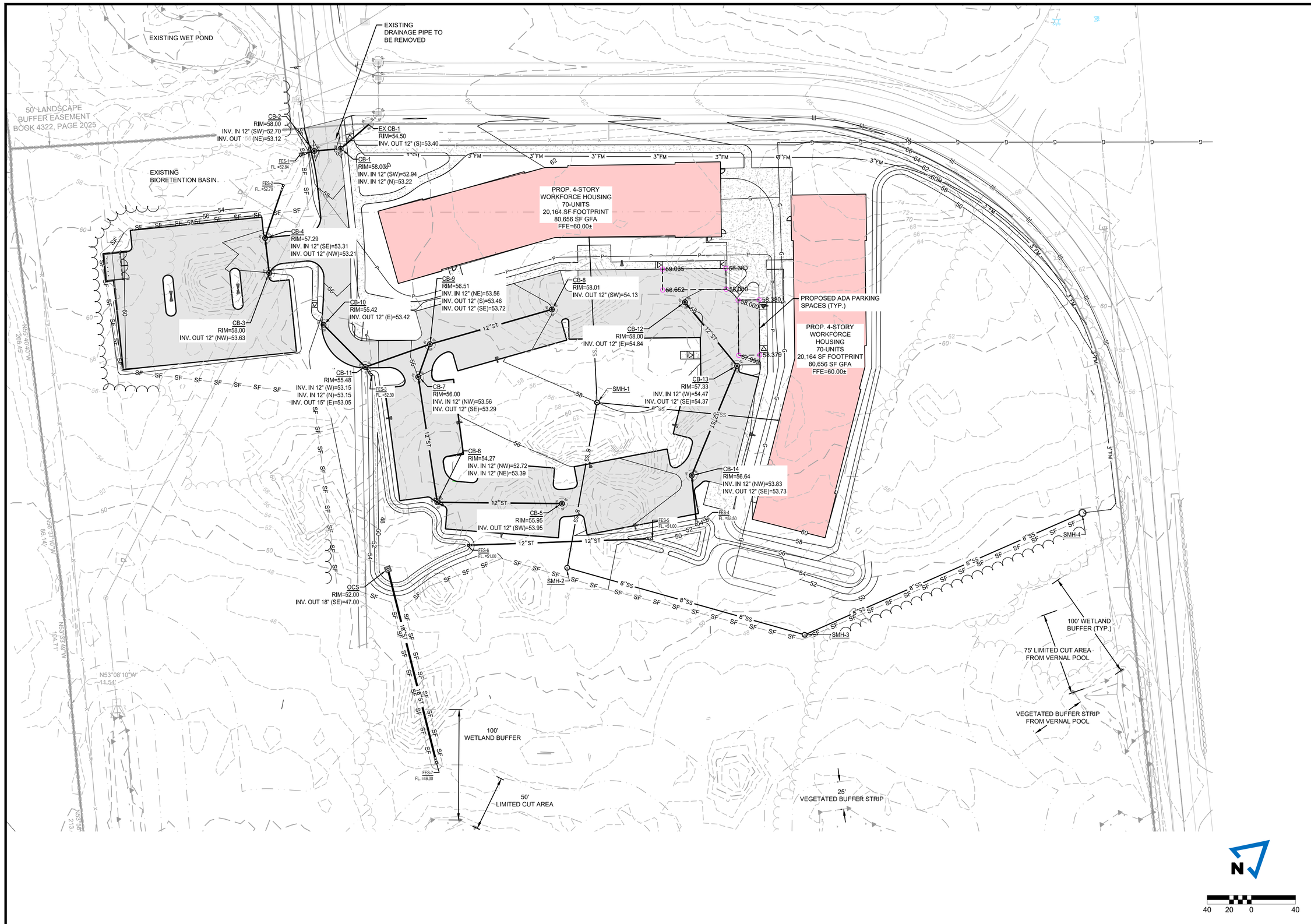
C102



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GRADING AND DRAINAGE PLAN

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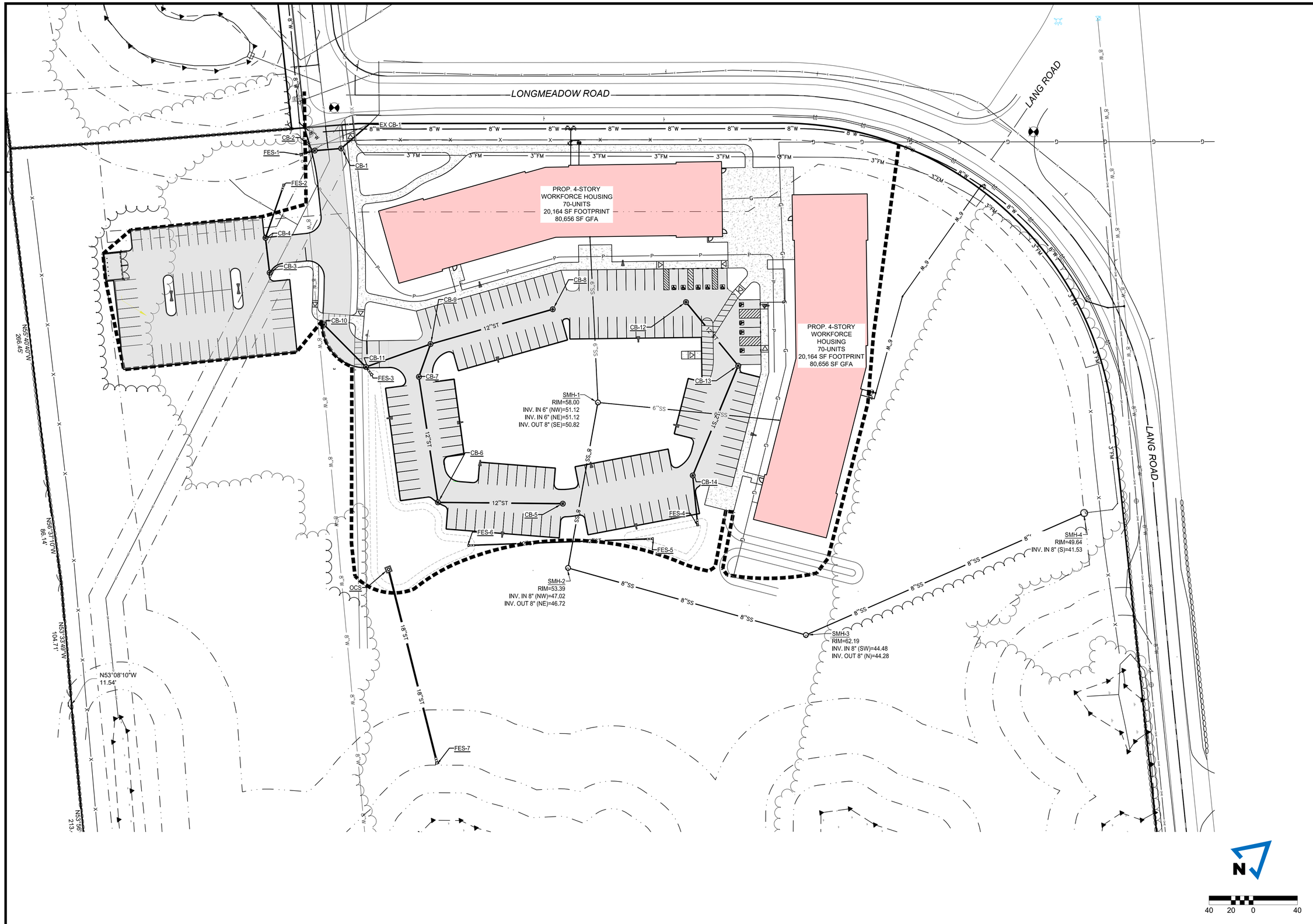
C103



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UTILITY PLAN

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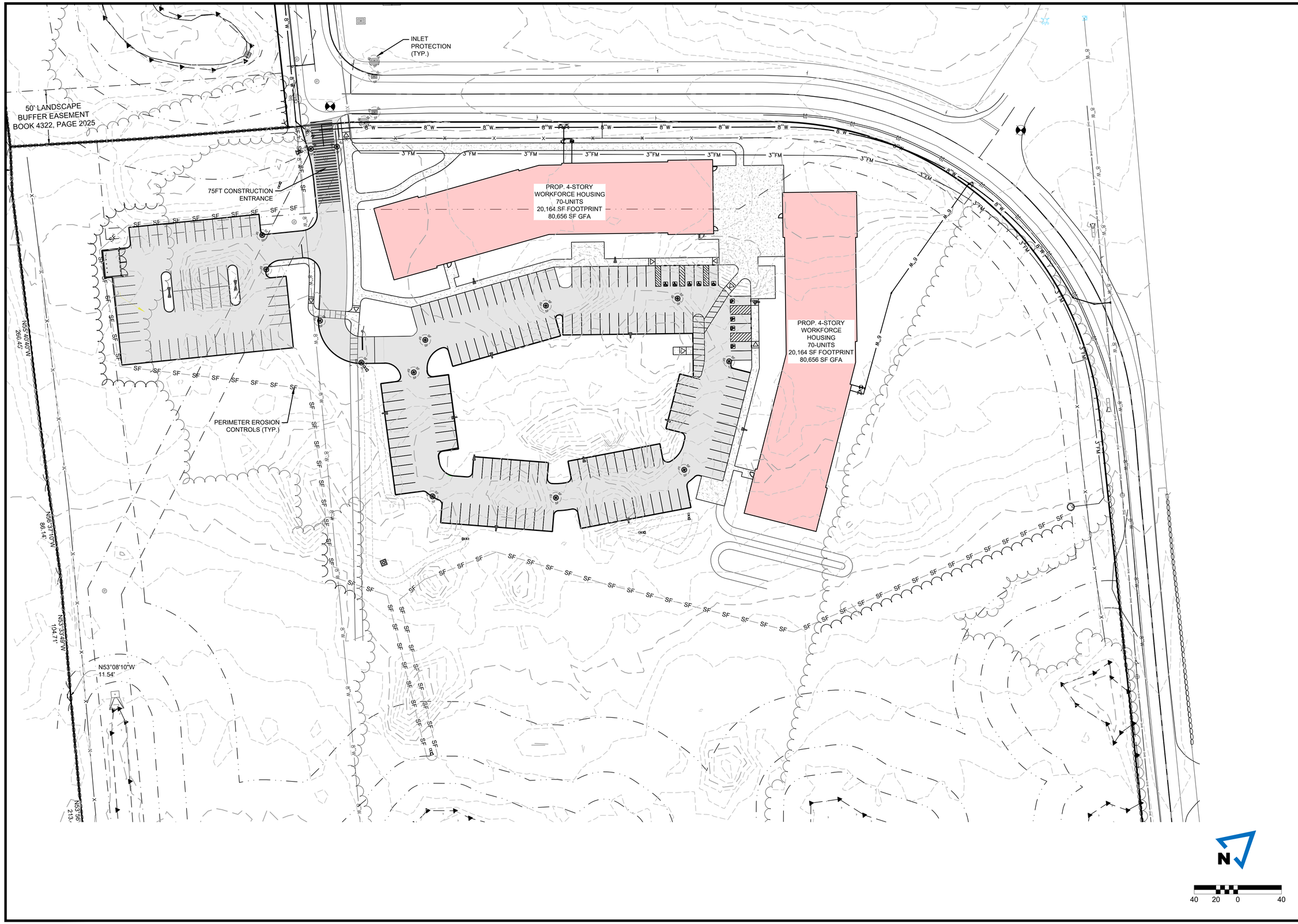
DRAWING NO.
C104



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EROSION CONTROL PLAN

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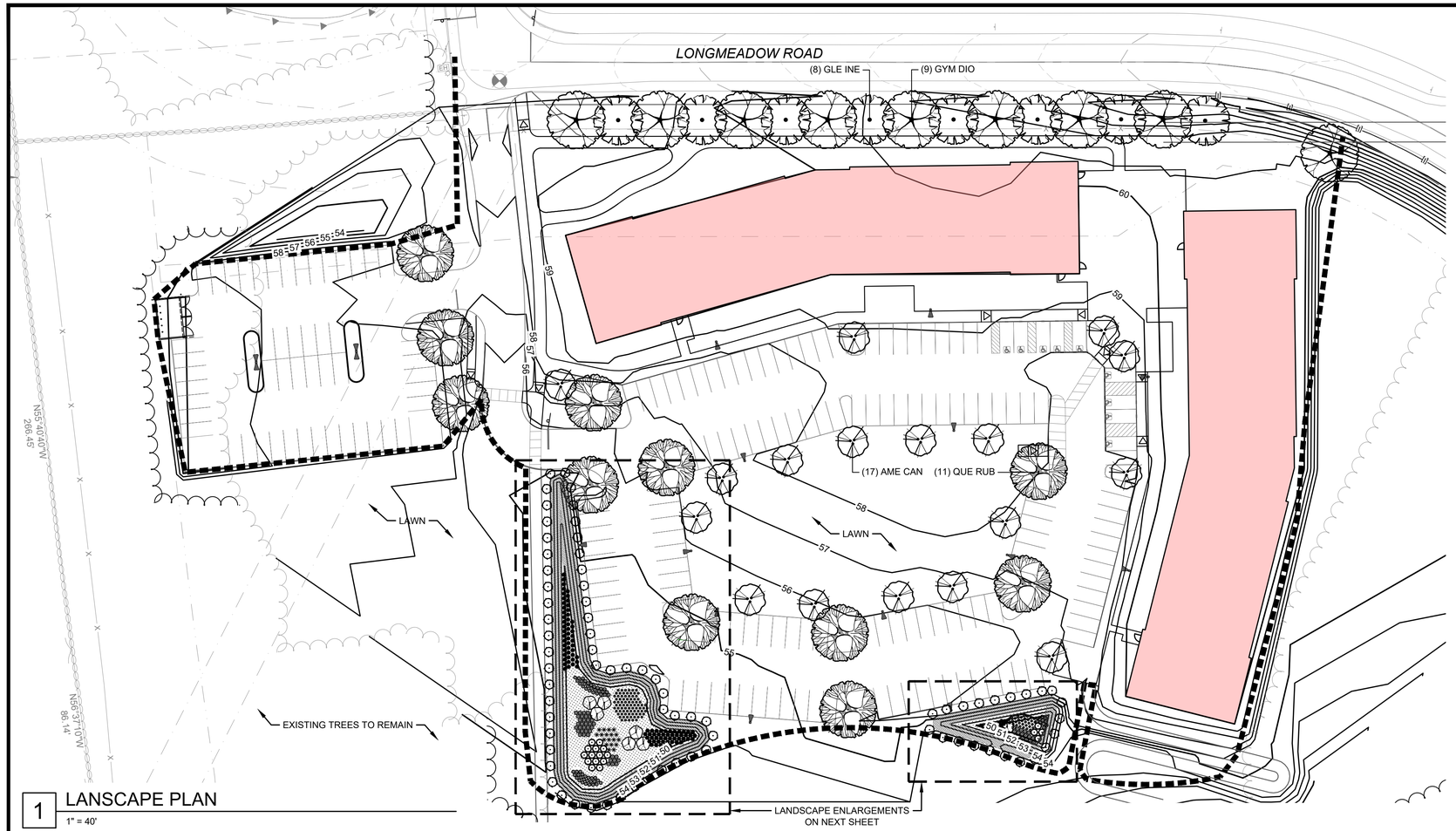
C106



1 LANSCAPE PLAN
1" = 40'

LANDSCAPE NOTES:

1. FIELD VERIFY UTILITIES SHOWN ON PLANS PRIOR TO WORK COMMENCEMENT. INFORMATION SHOWN ON PLAN IS FROM AVAILABLE INFORMATION AND ALL LOCATIONS SHOWN SHOULD BE CONSIDERED APPROXIMATE. THE CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE TO UTILITIES MADE FROM CONSTRUCTION ACTIVITY. IMMEDIATELY NOTIFY PROJECT LANDSCAPE ARCHITECT AND ENGINEER IF DISCREPANCIES ARISE.
2. COMPLETE REQUIRED LANDSCAPING FOR THE ENTIRE SITE IN CONFORMANCE TO THE PLANS AND SPECIFICATIONS, INCLUDING BUT NOT LIMITED TO: SEEDED AREAS, SODDED AREAS, SHRUB BEDS, AND SITE CLEAN-UP.
3. VERIFY QUANTITIES PRIOR TO COMMENCING WORK. REPORT DISCREPANCIES TO THE LANDSCAPE ARCHITECT. PLANT MATERIAL TO BE SPACED AS SHOWN, UNLESS OTHERWISE NOTED.
4. PLANT MATERIAL SHALL COMPLY WITH ALL SIZING AND GRADING STANDARDS OF LATEST EDITION OF AMERICAN STANDARD FOR NUSERY STOCK (A.S.N.S.) LATEST EDITION PUBLISHED BY (ANLA) ANSI 260.1. THIS IS A REPRESENTATIVE GUIDELINE SPECIFICATION ONLY AND WILL CONSTITUTE MINIMUM QUALITY REQUIREMENTS FOR THE PLANT MATERIAL.
5. THE OWNER RESERVES THE RIGHT TO SUBSTITUTE PLANT MATERIAL, TYPE, SIZE AND/OR QUANTITY. LARGER SIZED PLANT MATERIALS OF THE SPECIES LISTED MAY BE USED IF THE STOCK CONFORMS TO A.S.N.S. VEGETATION SUBSTITUTIONS SHALL BE APPROVED BY PROJECT LANDSCAPE ARCHITECT. SUBSTITUTIONS MADE WITHOUT WRITTEN APPROVAL WILL BE REPLACED WITH APPROVED SELECTIONS AT CONTRACTOR'S COST.
6. DISTURBED AREAS DUE TO CONSTRUCTION ACTIVITIES NOT IDENTIFIED ON THESE PLANS SHALL RECEIVE 6" OF LOAM AND SEEDED. NO FILL SHALL BE PLACED IN ANY WETLAND AREA.
7. CONTRACTOR SHALL COMPLY WITH APPLICABLE CODES AND ORDINANCES REGARDING LANDSCAPING. REFER TO SPECIFICATIONS FOR PLANT MATERIAL, SOILS, AND INSTALLATION METHODS.
8. INSTALL PLANT MATERIAL IN ACCORDANCE WITH A.S.N.S. STANDARDS.
9. INSTALL FINISHED GRADES OF SOD, LANDSCAPE BEDS, AND MULCH 1" BELOW ABUTTING PAVEMENT SURFACES TO ALLOW UNINHIBITED DRAINAGE TO NON-PAVEMENT SURFACES.
10. REMOVE ALL TWINE, WIRE, AND BURLAP FROM TREE AND SHRUB ROOT BALLS. REMOVE ALL PLASTIC WRAP, FABRIC ROPE, ROT PROOF WRAP, AND PLANT IDENTIFICATION TAGS.
11. TREES SHALL NOT BE PLANTED CLOSER THAN EIGHT HORIZONTAL FEET OF UNDERGROUND UTILITIES UNLESS OTHERWISE NOTED OR PER PLANS. MODIFICATIONS TO TREE PLACEMENT SHALL BE COORDINATED WITH THE LANDSCAPE ARCHITECT AND CAN BE SUBJECT TO CITY REVIEW AND APPROVAL. CONTRACTOR IS RESPONSIBLE FOR UNAPPROVED RELOCATION(S) OR MODIFICATION(S) TO TREE LOCATIONS.
12. PROVIDE NATURAL TOPSOIL THAT IS FERTILE, FRIABLE, WITHOUT MIXTURE OF SUBSOIL MATERIALS, AND OBTAINED FROM A WELL DRAINED, AVAILABLE SITE. IT SHALL NOT CONTAIN SUBSTANCES WHICH MAY BE HARMFUL TO PLANT GROWTH. TOPSOIL SHALL BE SCREENED AND FREE FROM CLAY, LUMPS, STONES, ROOTS, PLANTS, OR SIMILAR SUBSTANCES 1" OR MORE IN DIAMETER, DEBRIS, OR OTHER OBJECTS WHICH MIGHT BE A HINDRANCE TO PLANTING OPERATIONS. TOPSOIL SHALL CONTAIN AT LEAST 4-6% ORGANIC MATTER BY WEIGHT AND HAVE A PH RANGE OF 5.5 TO 7.0.
13. PLANT MATERIAL TO BE GUARANTEED FOR ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION AND ACCEPTANCE. PLANT MATERIALS SHALL BE A ONE-TIME-REPLACEMENT AND RECORDS KEPT BY THE LANDSCAPE CONTRACTOR FOR ALL REPLACEMENTS.
14. PLANT MATERIAL SHALL BE OF EXCELLENT QUALITY, FREE OF DISEASE & INFESTATION-TRUE TO TYPE, VARIETY, SIZE SPECIFIED, & FORM PER ANSI STANDARDS.
15. WATER-IN EACH PLANT IMMEDIATELY FOLLOWING INSTALLATION AND CONTINUE WATERING ROUTINE UNTIL SUBSTANTIAL PROJECT COMPLETION. CONTRACTOR IS REQUIRED TO COORDINATE WATERING REQUIREMENTS TO THE OWNER THEREAFTER.
16. ALL PLANT STOCK SHALL BE LOCALLY GROWN OR WITHIN HARDINESS ZONES 4-7, ESTABLISHED BY THE USDA PLANT HARDINESS ZONE MAP
17. PLANTING SHALL BE COMPLETED FROM APRIL 15TH THROUGH OCTOBER 1ST. NO PLANTING DURING JULY AND AUGUST UNLESS SPECIAL PROVISION ARE MADE FOR DROUGHT AND ARE APPROVED BY THE ENGINEER AND LANDSCAPE ARCHITECT.
18. ALL LAWN AREAS TO BE GRASS COMMON TO REGION. SPECIES TO BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO PLANTING

PLANT SCHEDULE

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	CONT	HEIGHT	WIDTH	GROWTH HABITS	TOLERANCES (RGZ = RAIN GARDEN ZONE)
TREES								
	AME CAN	17	Amelanchier canadensis / Canadian Serviceberry	B&B, 1.5" Cal.	25-30' H	15-20' W	SPREADING CROWN	CLAY SOILS
	GLE INE	8	Gleditsia triacanthos inermis 'Skycole' / Skyline® Honey Locust	B&B, 2.5" Cal.	35-45' H	25-35' W	PYRAMIDAL, THORNLESS	DEER, DROUGHT, CLAY SOILS, BLACK WALNUT, AIR POLLUTION
	GYM DIO	9	Gymnocladus dioicus 'Espresso' / Kentucky Coffeetree	B&B, 2.5" Cal.	50-75' H	40-50' W	OVAL TO VASE, SEEDLESS	ALKALINE SOILS, DROUGHT, SALT, WET SOILS
	QUE RUB	11	Quercus rubra / Northern Red Oak	B&B, 2.5" Cal.	50-75' H	50-75' W	OVAL SPREADING CROWN	DROUGHT, DRY SOILS, BLACK WALNUT, AIR POLLUTION
SHRUBS								
	ARO ABR	18	Aronia arbutifolia 'Brilliantissima' / Brilliant Red Chokeberry	5 gal	6-8' H	3-4' W	VASE SHAPE	EROSION, CLAY SOILS, DRY SOILS, WET SOILS, RGZ: BOTTOM/SLOPE
	ILE WI3	7	Ilex verticillata / Winterberry	5 gal	4-12' H	4-12' W	UPRIGHT-ROUNDED	EROSION, CLAY SOILS, WET SOILS, AIR POLLUTION, RGZ: BOTTOM
	RHU GRO	75	Rhus aromatica 'Gro-Low' / Gro-Low Fragrant Sumac	5 gal	2-6' H	6-10' W	DENSE LOW GROWING	RABBIT, DROUGHT, EROSION, CLAY SOILS, DRY SOILS, SHALLOW-ROCKY SOILS, RGZ: SLOPE/BERM
PERENNIALS								
	ASC INC	115	Asclepias incarnata / Swamp Milkweed	1 gal	3-6' H	2' W	ERECT, CLUMP FORMING	DEER, CLAY SOILS, WET SOILS; ATTRACTS HUMMINGBIRDS, BEES, BUTTERFLIES; MONARCH LARVAL HOST. RGZ: BOTTOM
	EUT PUR	54	Eutrochium purpureum / Joe Pye Weed	1 gal	3-6' H	3' W	ERECT, CLUMP FORMING	DEER CLAY SOILS, WET SOILS, ATTRACTS BIRDS, BUTTERFLIES. RGZ: BOTTOM
	IRI VER	115	Iris versicolor / Blue Flag	1 gal	2-3' H	2-3' W	STURDY CLUMP FORMING	DEER, WET SOILS, ATTRACTS BIRDS, HUMMINGBIRDS. RGZ: BOTTOM
	LOB CAR	62	Lobelia cardinalis / Cardinal Flower	1 gal	2-4' H	2' W	ERECT, CLUMP FORMING	RABBIT, DEER, WET SOILS, ATTRACTS BUTTERFLIES, BIRDS, HUMMINGBIRDS, RGZ: BOTTOM
	SYM NOV	18	Symphyotrichum novae-angliae / New England Aster	1 gal	2.5-6' H	2-3' W	ROBUST, UPRIGHT	CLAY SOILS, ATTRACTS BEES, BUTTERFLIES. NECTOR SOURCE FOR MONARCHS, IMPORTANT POLLINATOR PLANT IN FALL
GROUND COVERS								
	CAR VUL	1,139	Carex vulpinoidea / Fox Sedge	plugs - 18" o.c.	1-3' H	1.5' W	UPRIGHT, SLENDER	DEER, WET SOILS, ATTRACTS BIRDS, RGZ: BOTTOM
	SCH LIT	1,877	Schizachyrium scoparium / Little Bluestem	plugs - 18" o.c.	2-3' H	1' W	UPRIGHT, SLENDER	DEER, DROUGHT, EROSION, DRY SOILS, SHALLOW-ROCKY SOILS, BLACK WALNUT, AIR POLLUTION, ATTRACTS BUTTERFLIES, BIRDS. RGZ: BERM

N

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NICOLE J. DUQUETTE
No. 17179
LICENSED
PROFESSIONAL ENGINEER

REVISIONS

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MAY 6, 2025

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N. DUQUETTE	B. RICHARDS	N. DUQUETTE

LONGMEADOW COMMONS
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PORTSMOUTH, NH 03801

LANDSCAPE PLAN

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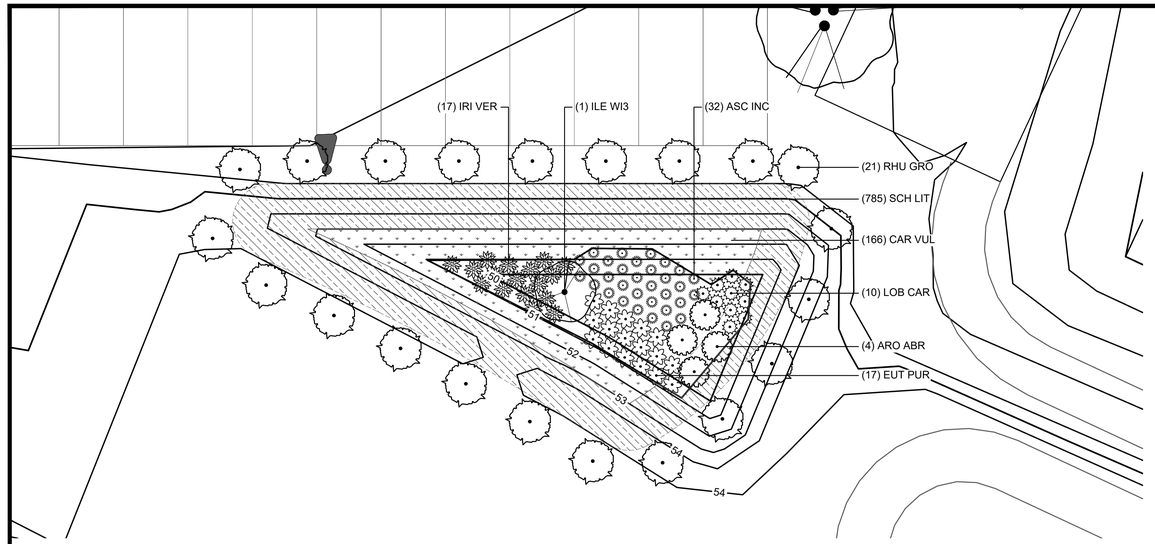
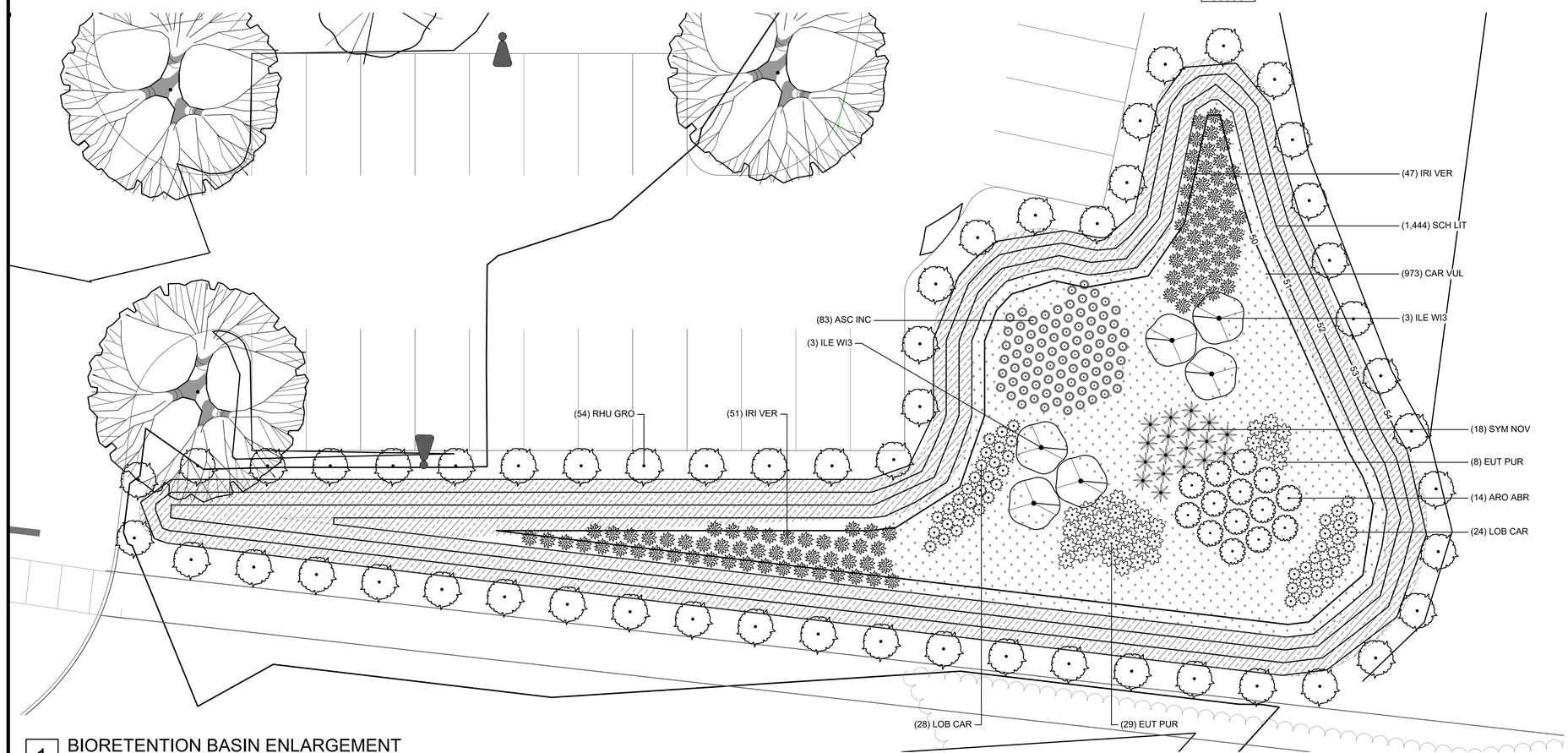
DRAWING NO.
C107



2 BIORETENTION BASIN ENLARGEMENT

1" = 20'



1 BIORETENTION BASIN ENLARGEMENT

1" = 20'

PLANT LEGEND (FULL SCHEDULE ON C107)

SYMBOL	CODE	BOTANICAL / COMMON NAME
TREES		
	AME CAN	Amelanchier canadensis / Canadian Serviceberry
	GLE INE	Gleditsia triacanthos inermis 'Skycole' / Skyline® Honey Locust
	GYM DIO	Gymnocladus dioicus 'Espresso' / Kentucky Coffeetree
	QUE RUB	Quercus rubra / Northern Red Oak
SHRUBS		
	ARO ABR	Aronia arbutifolia 'Brilliantissima' / Brilliant Red Chokeberry
	ILE WI3	Ilex verticillata / Winterberry
	RHU GRO	Rhus aromatica 'Gro-Low' / Gro-Low Fragrant Sumac
PERENNIALS		
	ASC INC	Asclepias incarnata / Swamp Milkweed
	EUT PUR	Eutrochium purpureum / Joe Pye Weed
	IRI VER	Iris versicolor / Blue Flag
	LOB CAR	Lobelia cardinalis / Cardinal Flower
	SYM NOV	Symphyotrichum novae-angliae / New England Aster

SYMBOL	BOTANICAL / COMMON NAME
GROUND COVERS	
	Carex vulpinoidea / Fox Sedge
	Schizachyrium scoparium / Little Bluestem

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STATE OF NEW HAMPSHIRE
NICOLE L DUQUETTE
No.17179
LICENSED
PROFESSIONAL ENGINEER

REVISIONS

PROJECT INFO
2024002213
MAY 6, 2025

ENGINEER	DRAWN BY	CHECKED BY
N. DUQUETTE	B. RICHARDS	N. DUQUETTE

LONGMEADOW COMMONS
126 LANG ROAD
PORTSMOUTH, NH 03801

LANDSCAPE ENLARGEMENTS

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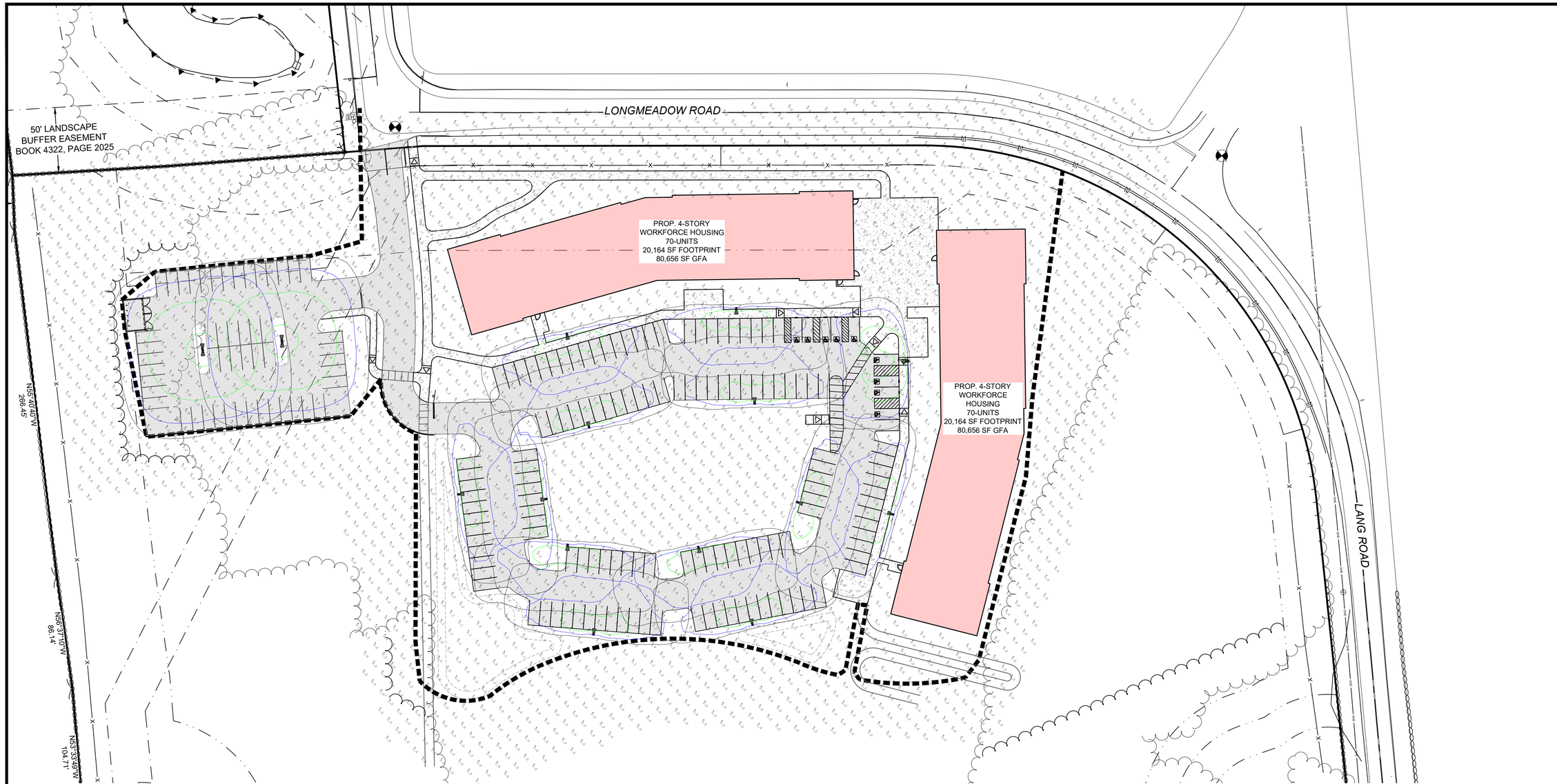

Luminaire Schedule						
Symbol	Qty	Label	Arrangement	Description	Tag	[MANUFAC]
	12	P1-3	Single	VALS-09L-3W-UNV-30K8-CXX-SA-IS / 4SQ B3 S11G20 S AB 4BC	20' POLE	LSI INDUSTRIES, INC.
	1	P1-4	Single	VALS-09L-4F-UNV-30K8-CXX-SA-IS / 4SQ B3 S11G20 S AB 4BC	20' POLE	LSI INDUSTRIES, INC.
	2	P1-5	Back-Back	VALS-09L-5QW-UNV-30K8-SA / 4SQ B3 S11G20 D180 AB 4BC	20' POLE	LSI INDUSTRIES, INC.

6 PARKING LOTS
PHASE 1
Illuminance (Fc)
Average = 1.20
Maximum = 2.1
Minimum = 0.5
Avg/Min Ratio = 2.40
Max/Min Ratio = 4.20

SINGULAR SOUTHERN PARKING LOT

Illuminance (Fc)
Average = 1.32
Maximum = 2.8
Minimum = 0.4
Avg/Min Ratio = 3.30
Max/Min Ratio = 7.00

N

40 20 0 40

McCLURE™
25 New Hampshire Avenue
Suite 255
Portsmouth, NH 03801
P 603-766-0435

Ankeny,IA | Carroll,IA
Cedar Rapids,IA | Clive,IA
Coralville,IA | Council Bluffs,IA
Fort Dodge,IA | Sioux City,IA
Columbia,MO | Macon,MO
North Kansas City,MO
Lenexa, KS
Portsmouth, NH | Boston, MA

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126 LANG ROAD
PORTSMOUTH, NH 03801

LIGHTING PLAN

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DRAWING NO.
C109

1. PRIOR TO STARTING ANY WORK ON THE SITE THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES.

2. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH STANDARDS AND SPECIFICATIONS THEREOF IN NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICE STORM WATER MANUALS, VOLUME 1–3, LATEST EDITION.

3. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED PER PLANS AND DETAILS. PERIMETER CONTROLS SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF EARTH DISTURBING ACTIVITIES.

4. INSTALL INLET PROTECTION AROUND ALL STORM DRAIN STRUCTURES. INLET PROTECTION BMP'S SHALL REMAIN UNTIL THE SITE IS STABILIZED. CONSTRUCTION OF STORMWATER BASINS AND TREATMENT SWALES SHALL OCCUR PRIOR TO AND EARTH MOVING OPERATION THAT WILL INFLUENCE STORM WATER RUNOFF.

5. THE WORK AREA SHALL BE GRADED, SHAPED AND OTHERWISE DRAINED IN SUCH A MANNER AS TO MINIMIZE SOIL EROSION, SILTATION OF DRAINAGE CHANNELS, DAMAGE TO EXISTING VEGETATION, AND DAMAGE TO PROPERTY OUTSIDE THE LIMITS OF THE WORK AREA.

6. EXISTING VEGETATION IS TO REMAIN UNDISTURBED WHEN POSSIBLE.

7. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE KEPT CLEAN DURING CONSTRUCTION. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE A WEEK AND AFTER EVERY 0.25–INCH OR GREATER RAINFALL. SEDIMENTS SHALL BE DISPOSED OF IN AN UPLAND AREA THAT WILL NOT CONTRIBUTE TO SEDIMENT OFF–SITE AND BE PERMANENTLY STABILIZED.

8. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION. AT NO TIME SHALL THE TOTAL UNSTABILIZED DISTURBED AREA, INCLUDING LOT DISTURBANCES, BE GREATER THAN FIVE (5) ACRES.

9. THE LAND AREA EXPOSED SHALL BE KEPT TO THE SHORTEST PRACTICAL PERIOD OF TIME. ALL NON–ACTIVE DISTURBED AREAS SHALL BE STABILIZED WITHIN 30 DAYS OF THE DISTURBANCE. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF FINAL GRADING.

10. DITCHES, SWALES AND DRAINAGE BASINS SHALL BE CONSTRUCTED DURING THE INITIAL PHASE OF CONSTRUCTION AND STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.

11. AN AREA SHALL BE CONSIDERED STABILIZED IF ONE OF THE FOLLOWING HAS OCCURRED:
   A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
   B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C. A MINIMUM OF 3–INCHES OF NON–EROSIVE MATERIAL, SUCH AS STONE OR RIPRAP, HAS BEEN INSTALLED; OR
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

12. EROSION CONTROL BLANKETS SHALL BE INSTALLED ON ALL SLOPES THAT ARE STEEPER THAN 3:1 (HORIZONTAL / VERTICAL). UNLESS OTHERWISE SPECIFIED THE CONTRACTOR SHALL USE NORTH AMERICAN GREEN SC150, OR APPROVED EQUAL.

13. ALL AREAS RECEIVING EROSION CONTROL STONE OR RIPRAP SHALL HAVE A GEOTEXTILE MATERIAL INSTALLED BELOW THE STONE (SEE APPROPRIATE DETAILS).

14. ALL DISTURBED AREAS TO TURF FINISHED SHALL BE COVERED WITH A MINIMUM THICKNESS OF 6 INCHES OF COMPACTED LOAM. LOAM SHALL BE COVERED WITH THE APPROPRIATE SEED MIXTURE AS INDICATED BELOW:

PERMANENT SEED (LAWN AREAS)	LBS / 1,000 SQ. FT.
CREEPING RED FESCUE	0.92 LBS
PERENNIAL RYEGRASS	1.15 LBS
KENTUCKY BLUEGRASS	0.58 LBS
REDTOP	0.12 LBS
APPLICATION RATE TOTALS 2.8 LBS PER 1,000 SF	

PERMANENT SLOPE SEED MIX	LBS / 1,000 SQ. FT.
CREEPING RED FESCUE	0.80 LBS
PERENNIAL RYEGRASS	0.69 LBS
REDTOP	0.12 LBS
ALSIKE CLOVER	0.12 LBS
BIRDSFOOT TREFOIL	
APPLICATION RATE TOTALS *1.85 LBS PER 1,000 SF	

15. TEMPORARY STABILIZATION OF DISTURBED AREAS:
STRIPPED SOIL SHALL BE STOCKPILED UNCOMPACTED, AND STABILIZED AGAINST EROSION AS OUTLINED BELOW:
SEED BED PREPARATION: 10–10–10 FERTILIZATION TO BE SPREAD AT THE RATE OF 7 LBS. PER 100 SF AND AGRICULTURAL LIMESTONE AT A RATE OF 90 LBS PER 1000 SF AND INCORPORATED INTO THE SOIL. THE SOIL, FERTILIZER AND LIMESTONE SHALL BE TILLED TO PREPARE FOR SEEDING.

A. SEED MIXTURE: USE ANY OF THE FOLLOWING:

SPECIES	RATE PER 1,000 SF	DEPTH	SEEDING DATES
WINTER RYE	2.5 LBS	1 INCH	8/15 TO 9/15
OATS	2.5 LBS	1 INCH	4/15 TO 10/15
ANNUAL RYEGRASS	1.0 LBS	0.25 INCH	8/15 TO 9/15

B. MULCHING: MULCH SHOULD BE USED ON HIGHLY ERODIBLE AREAS, AND WHERE CONSERVATION OF MOISTURE WILL FACILITATE PLANT ESTABLISHMENT AS FOLLOWS:

TYPE	RATE PER 1,000 SF	USE AND COMMENTS
STRAW	70 TO 90 LBS	MAY BE USED WITH PLANTINGS, MUST BE ANCHORED TO BE USED ALONE
WOOD CHIPS OR BARK MULCH	460 TO 920 LBS	USED WITH TREE AND SHRUB PLANTINGS
FIBROUS MATTING	AS RECOMMENDED BY MANUFACTURER	MUST BE BIODEGRADABLE. USE IN SLOPE AREAS AND AREAS DIFFICULT TO VEGETATE
CRUSHED STONE 1/4" TO 1-1/2" DIA.	SPREAD TO GREATER THAN 1/2" THICKNESS	USE IN SPECIFIC AREAS AS SHOWN ON PLAN OR AS NEEDED

16. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS. IF SOIL TESTING IS NOT FEASIBLE (CRITICAL TIME FRAMES OR VARIABLE SITES) THEN APPLY FERTILIZER AT A RATE OF 11 POUNDS PER 1,000 SF AND LIMESTONE AT A RATE OF 90 POUNDS PER 1,000 SF. FERTILIZER SHALL BE LOW PHOSPHATE (LESS THAN 2% PHOSPHORUS).

17. CAUTION SHOULD BE TAKE WHEN THE PROPERTY IS LOCATED WITHIN 250 FEET OF A WATER BODY. IN THIS CASE ALL FERTILIZERS SHALL BE RESTRICTED TO A LOW PHOSPHATE, SLOW RELEASE NITROGEN FERTILIZER. SLOW RELEASE FERTILIZERS MUST BE AT LEAST 50% SLOW RELEASE NITROGEN COMPONENT. NO FERTILIZER EXCEPT LIMESTONE SHALL BE APPLIED WITHIN 25 FEET OF THE SURFACE WATER. THESE ARE REGULATED LIMITATIONS.

18. PERMANENT OR TEMPORARY COVER MUST BE IN PLACE BEFORE THE GROWING SEASON ENDS (SEE WINTER CONSTRUCTION NOTES). NO DISTURBED AREAS SHALL BE LEFT EXPOSED DURING THE WINTER MONTHS.

19. A VIGOROUS DUST CONTROL PROGRAM SHALL BE APPLIED BY THE SITE CONTRACTOR. DUST SHALL BE MANAGED THROUGH THE USE OF WATER AND/OR CALCIUM CHLORIDE.

20. IN NO WAY ARE THE MEASURES INDICATED ON THE PLANS OR IN THESE NOTES TO BE CONSIDERED ALL INCLUSIVE. THE CONTRACTOR SHALL USE JUDGMENT TO INSTALL ADDITIONAL EROSION CONTROL MEASURES AS SITE CONDITIONS, WEATHER OR CONSTRUCTION METHODS WARRANT.

21. FOLLOWING PERMANENT STABILIZATION, TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED AND ACCUMULATED SEDIMENTATION IS TO BE DISPOSED OF IN AN APPROVED LOCATION, OUTSIDE OF JURISDICTIONAL WETLANDS.

22. LOT DISTURBANCE OTHER THAN SHOWN ON THE APPROVED PLANS, SHALL NOT COMMENCE UNTIL AFTER THE ROADWAY HAS THE BASE COURSE TO DESIGN ELEVATION AND THE ASSOCIATED DRAINAGE IS COMPLETE AND STABLE.

23. THE CONTRACTOR AND OWNER ARE RESPONSIBLE FOR OBSERVING AND MANAGING THE PROJECT PER RSA 430:53 AND AGR 3800 REGARDING INVASIVE SPECIES (PLANTS AND INSECTS). NO INVASIVE SPECIES PLANT OR INSECT SHALL BE INTRODUCED ONTO THE SITE.

EROSION CONTROL NOTES (1)

NOT TO SCALE

1. ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATED GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED. STABILIZATION METHODS SHALL INCLUDE SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.

2. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATED GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.

3. AFTER NOVEMBER 15TH, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL OR PROPERLY INSTALLED EROSION CONTROL BLANKETS COVERED WITH HAY. OTHER STABILIZATION OPTIONS ARE TO BE APPROVED BY THE APPROPRIATE AGENCIES AND THE DESIGN ENGINEER. IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER MONTHS THEN THE ROAD SHOULD BE CLEARED OF ACCUMULATED SNOW AFTER EACH STORM EVENT.

WINTER CONSTRUCTION NOTES (2)

NOT TO SCALE

1. INSTALL SILTATION CONTROL FENCES IN LOCATIONS SHOWN HEREON. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATION.

2. INSTALL STABILIZED CONSTRUCTION EXIT(S).

3. CUT AND CLEAR TREES; DISPOSE OF DEBRIS. STUMPS ARE TO BE REMOVED FROM THE SITE AND DISPOSED OF PROPERLY.

4. REMOVE TOPSOIL AND STOCKPILE AWAY FROM ANY WETLAND. STABILIZE STOCKPILE IMMEDIATELY BY SEEDING. PLACE SILT FENCE AROUND THE DOWN SLOPE SIDE OF EARTH STOCKPILES.

5. ROUGH GRADE SITE - CONSTRUCT DRAINAGE BASINS AND DRAINAGE SWALES DURING INITIAL PORTION OF CONSTRUCTION. STABILIZE IMMEDIATELY PER THE CONSTRUCTION AND EROSION CONTROL DETAILS. DO NOT DIRECT STORM WATER RUNOFF TO THESE STRUCTURES UNTIL A HEALTHY VEGETATIVE COVER IS ESTABLISHED.

6. BEGIN BUILDING CONSTRUCTION.

7. CONSTRUCT GRAVEL PARKING AREA (PAVEMENT OPTIONAL) AND BUILDING PAD. INSTALL UTILITIES AND STRUCTURES. ALL CUT AND FILL SLOPES SHALL BE STABILIZED UPON COMPLETION OF ROUGH GRADING PER THE THE EROSION CONTROL NOTES.

8. INSPECT AND MAINTAIN EROSION CONTROL MEASURES ON A WEEKLY BASIS AND AFTER EVERY 0.25" OR GREATER RAINFALL.

9. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, CULVERTS, DITCHES, SILTATION FENCES, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED.

10. FINISH GRADING TO PREPARE FOR PAVING (IF ANY) AND LOAMING. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 72 HOURS AFTER FINAL GRADING.

11. FINISH PAVING (IF ANY). PERMANENT SEEDING SHALL BE PERFORMED UPON COMPLETION OF PARKING AREA (SEE EROSION CONTROL NOTES).

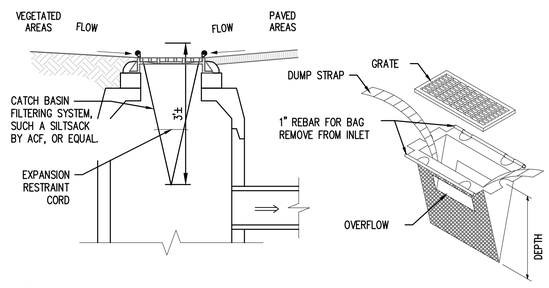
12. COMPLETE PERMANENT SEEDING AND LANDSCAPING.

13. TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED WHEN ALL DISTURBED AREAS HAVE BEEN STABILIZED.

14. ALL STRUCTURES SHALL BE CLEANED OF SEDIMENTS ONCE CONSTRUCTION IS COMPLETE.

CONSTRUCTION SEQUENCE (3)

NOT TO SCALE



NOTES:

1. INSTALL AND MAINTAIN SACKS IN ALL CATCH BASINS.

2. TO INSTALL SACK, REMOVE CATCH BASIN GRATE AND PLACE SACK IN OPENING. HOLD OUT APPROXIMATELY SIX INCHES OF THE SACK OUTSIDE THE FRAME FOR THE LIFTING STRAPS. REPLACE THE GRATE TO HOLD THE SACK IN PLACE.

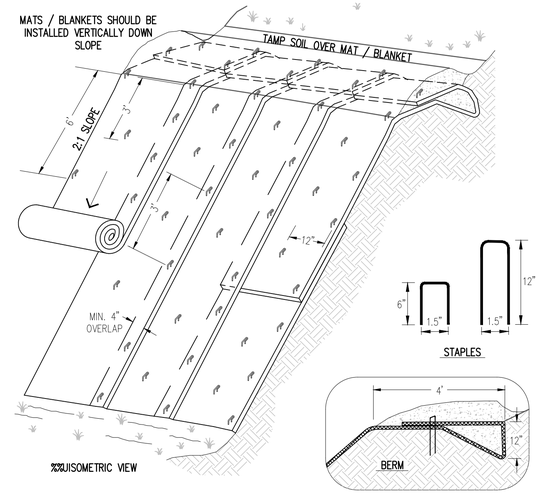
3. THE SACK SHOULD BE INSPECTED AFTER EVERY STORM, OR ONCE EVERY TWO WEEKS, WHICH EVER OCCURS FIRST.

4. THE RESTRAINT CORD SHOULD BE VISIBLE AT ALL TIMES. IF THE CORD IS COVERED WITH SEDIMENT, THE SACK SHOULD BE EMPTIED. EMPTY THE SACK AWAY FROM THE CATCH BASIN TO PREVENT SEDIMENT FROM RE-ENTERING THE CATCH BASIN. EMPTY THE SACK PER THE MANUFACTURES RECOMMENDATIONS.

5. REPLACE THE SACK IN THE CATCH BASIN AFTER THE SACK HAS BEEN EMPTIED. ONCE CONSTRUCTION IS COMPLETE AND ALL DISTURBED AREAS HAVE BEEN STABILIZED BY PAVING OR A HEALTHY VEGETATIVE COVER, REMOVE THE SACK FROM THE CATCH BASINS.

SILT SACK SEDIMENT FILTER (4)

NOT TO SCALE



NOTES:

1. DIMENSIONS GIVEN IN THIS DETAIL ARE EXAMPLES: DEVICE SHOULD BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.

2. INSTALL STRAW/COCONUT FIBER EROSION CONTROL MAT SUCH AS NORTH AMERICAN GREEN SC150 OR EQUAL ON ALL SLOPES EXCEEDING 3' HORZ : 1' VERT.

3. THE EROSION CONTROL MATERIAL(S) SHALL BE ANCHORED WITH "U" SHAPED 11 GAUGE WIRE STAPLES OR WOODEN STAKES WITH A MINIMUM TOP WIDTH OF 1 INCH AND LENGTH OF 6 INCH.

4. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS / BLANKETS SHALL HAVE GOOD SOIL CONTACT.

5. APPLY LIME, FERTILIZER AND PERMANENT SEEDING BEFORE PLACING BLANKETS.

6. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET AS SHOWN. ROLL THE BLANKETS DOWN THE SLOPE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES OR STAKES IN APPROPRIATE LOCATIONS. REFER TO MANUFACTURERS STAPLE GUIDE FOR CORRECT STAPLE PATTERN.

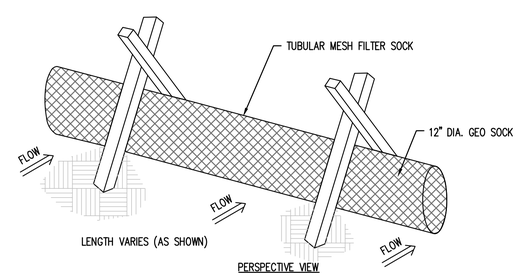
7. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.

8. IN LOOSE SOIL CONDITIONS THE USE OF STAPLES OR STAKE LENGTHS GREATER THAN 6 INCHES MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

9. THE CONTRACTOR SHALL MAINTAIN THE BLANKET UNTIL ALL WORK ON THE CONTRACT HAS BEEN COMPLETED AND ACCEPTED. MAINTENANCE SHALL CONSIST OF THE REPAIR OF AREAS WHERE DAMAGED BY ANY CAUSE. ALL DAMAGED AREAS SHALL BE REPAIRED TO REESTABLISH THE CONDITIONS AND GRADE OF THE SOIL PRIOR TO APPLICATION OF THE COVERING AND SHALL BE REFERTILIZED, RESEEDED AND REMULCHED AS DIRECTED.

EROSION BLANKETS (5)

NOT TO SCALE



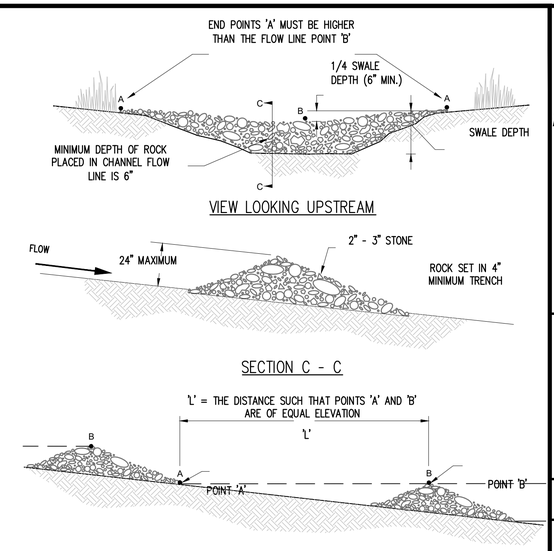
1. FILTER SOCK SHALL BE A MESH TUBE FILLED WITH COMPOSTED MATERIAL.

2. MINIMAL CLEARING MAY BE REQUIRED TO INSTALL FILTER SOCKS.

3. INSTALL FILTER SOCKS PRIOR TO ANY CLEARING OR GRUBBING.

SILT SOCK (6)

NOT TO SCALE



PROFILE - CHECK DAM SPACING

NOTES:

1. STONE CHECK DAMS SHOULD BE INSTALLED BEFORE RUNOFF IS DIRECTED TO THE SWALE OR DRAINAGE DITCH.

2. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE CHECK DAM SHOULD BE LESS THAN ONE ACRE.

3. STONE CHECK DAMS SHOULD NOT BE USED IN A FLOWING STREAM.

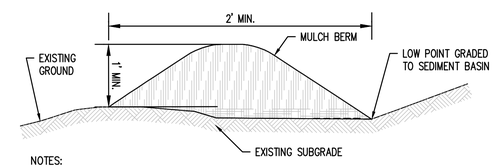
4. STONE CHECK DAMS SHOULD BE CONSTRUCTED OF WELL-GRADED ANGULAR 2 TO 3 INCH STONE. THE INSTALLATION OF 3/4-INCH STONE ON THE UPGRADIENT FACE IS RECOMMENDED FOR BETTER FILTERING.

5. WHEN INSTALLING STONE CHECK DAMS THE CONTRACTOR SHALL KEY THE STONE INTO THE CHANNEL BANKS AND EXTEND THE STONE BEYOND THE ABUTMENTS A MINIMUM OF 18-INCHES TO PREVENT FLOW AROUND THE DAM.

6. STONE CHECK DAMS SHOULD BE REMOVED ONCE THE SWALE OR DITCH HAS BEEN STABILIZED UNLESS OTHERWISE SPECIFIED.

STONE CHECK DAM (7)

NOT TO SCALE



NOTES:

1. EROSION CONTROL MIX SHOULD CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4" DIAMETER.

2. THE ORGANIC MATTER CONTENT SHOULD BE BETWEEN 25% AND 65% ON A DRY WEIGHT BASIS THAT IS:

   2.1. FIBROUS AND ELONGATED SUCH AS FROM SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, AND OR EQUIVALENT MANUFACTURED PRODUCTS.

   2.2. NOT COMPROMISED OF WOOD CHIPS, BARK CHIPS, GROUND CONSTRUCTION DEBRIS, OR REPROCESSED WOOD PRODUCTS.

3. THE MIX SHOULD NOT CONTAIN SILTS, CLAYS, AND SANDS.

4. HAVE A PARTICLE SIZE BY WEIGHT OF 100% PASSING A 3-INCH SCREE, 90% TO 100% PASSING A 1-INCH SCREEN, 70% TO 100% PASSING A 0.75-INCH SCREEN, AND 30% TO 75% PASSING A 0.25-INCH SCREEN

5. HAVE A PH BETWEEN 5.0 AND 8.0

6. REFER TO THE NEW HAMPSHIRE STORMWATER MANAGEMENT MANUAL, VOL. 3 SECTION 4.2 FOR COMPLETE DETAILS.

TYPICAL MULCH BERM (8)

NOT TO SCALE

McCLURE™
25 New Hampshire Avenue
Suite 255
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Ankeny,IA | Carroll,IA
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LONGMEADOW COMMONS
126 LANG ROAD
PORTSMOUTH, NH 03801

EROSION CONTROL DETAILS

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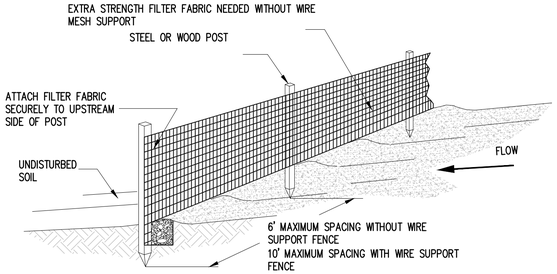
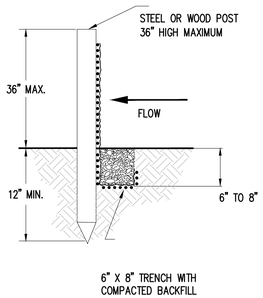
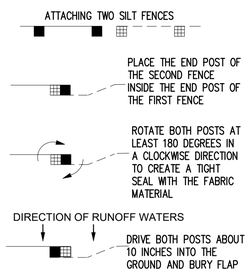


PERSPECTIVE VIEW



SECTION VIEW



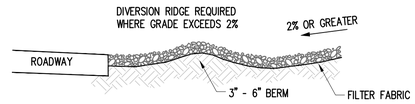
ATTACHING TWO SILT FENCES

NOTES:

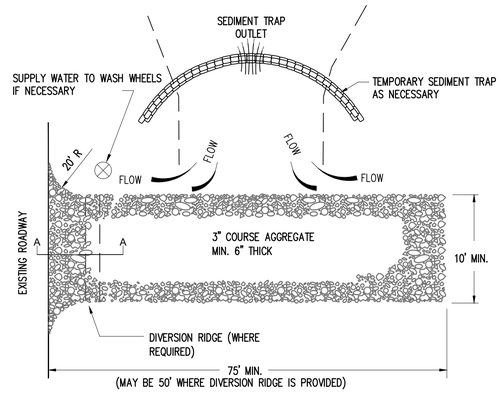
1. SILT FENCES SHOULD NOT BE USED ACROSS STREAMS, CHANNELS, SWALES, DITCHES OR OTHER DRAINAGE WAYS.
2. SILT FENCE SHOULD BE INSTALLED FOLLOWING THE CONTOUR OF THE LAND AS CLOSELY AS POSSIBLE AND THE ENDS OF THE SILT FENCE SHOULD BE FLARED UPSLOPE.
3. IF THE SITE CONDITIONS INCLUDE FROZEN GROUND, LEDGE OR THE PRESENCE OF HEAVY ROOTS THE BASE OF THE FABRIC SHOULD BE EMBEDDED WITH A MINIMUM THICKNESS OF 8 INCHES OF 3/4-INCH STONE.
4. SILT FENCES PLACED AT THE TOE OF SLOPES SHOULD BE INSTALLED AT LEAST 6 FEET FROM THE TOE TO ALLOW SPACE FOR SHALLOW PONDING AND ACCESS FOR MAINTENANCE.
5. THE MAXIMUM SLOPE ABOVE THE FENCE SHOULD BE 2:1 AND THE MAXIMUM LENGTH OF SLOPE ABOVE THE FENCE SHOULD BE 100 FEET.
6. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE TO SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
7. SILT FENCES SHOULD BE REMOVED WHEN THE UPSLOPE AREAS HAVE BEEN PERMANENTLY STABILIZED.

SILT FENCE (1)

NOT TO SCALE



SECTION A-A



PLAN VIEW

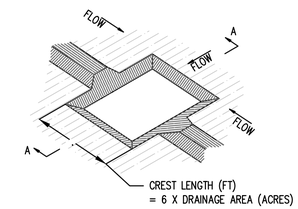
NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. THE MINIMUM STONE USED SHOULD BE 3-INCH CRUSHED STONE.
3. THE MINIMUM LENGTH OF THE PAD SHOULD BE 75 FEET, EXCEPT THAT THE MINIMUM LENGTH MAY BE REDUCED TO 50 FEET IF A 3-INCH TO 6-INCH HIGH BERM IS INSTALLED AT THE ENTRANCE OF THE PROJECT SITE.
4. THE PAD SHOULD EXTEND THE FULL WIDTH OF THE CONSTRUCTION ACCESS ROAD OR 10 FEET, WHICHEVER IS GREATER.
5. THE PAD SHOULD SLOPE AWAY FROM THE EXISTING ROADWAY.
6. THE PAD SHOULD BE AT LEAST 6-INCHES THICK.
7. THE GEOTEXTILE FILTER FABRIC SHOULD BE PLACED BETWEEN THE STONE PAD AND THE EARTH SURFACE BELOW THE PAD.
8. THE PAD SHALL BE MAINTAINED OR REPLACED WHEN MUD AND SOIL PARTICLES CLOG THE VOIDS IN THE STONE SUCH THAT MUD AND SOIL PARTICLES ARE TRACKED OFF-SITE.
9. NATURAL DRAINAGE THAT CROSSES THE LOCATION OF THE STONE PAD SHOULD BE INTERCEPTED AND PIPED BENEATH THE PAD, AS NECESSARY, WITH SUITABLE OUTLET PROTECTION.
10. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
11. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

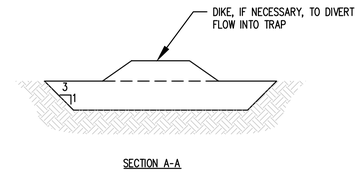
SCALE: N.T.S.

STABILIZED CONSTRUCTION EXIT (2)

NOT TO SCALE



ISOMETRIC VIEW

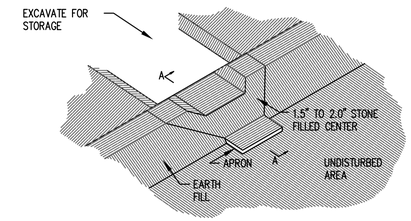


SECTION A-A

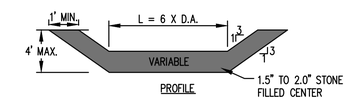
EXCAVATED

EARTH OUTLET SEDIMENT TRAP (3)

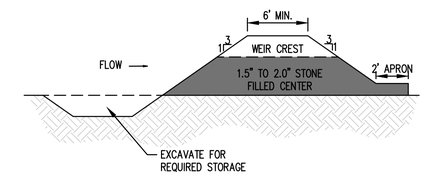
NOT TO SCALE



ISOMETRIC VIEW



PROFILE



SECTION A-A

STONE OUTLET SEDIMENT TRAP (4)

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STATE OF NEW HAMPSHIRE
NICOLE J. DUQUETTE
No. 17179
LICENSED PROFESSIONAL ENGINEER

REVISIONS

PROJECT INFO
2024002213
MAY 6, 2025

ENGINEER	DRAWN BY	CHECKED BY
N. DUQUETTE	B. RICHARDS	N. DUQUETTE

LONGMEADOW COMMONS
126 LANG ROAD
PORTSMOUTH, NH 03801

EROSION CONTROL DETAILS

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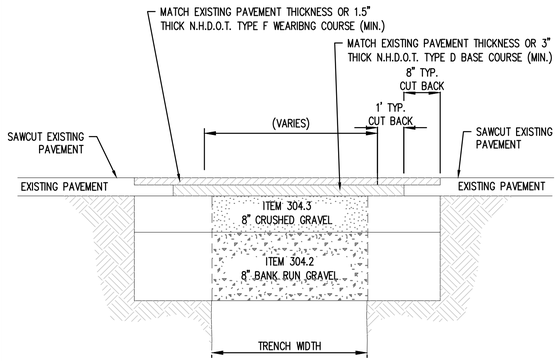
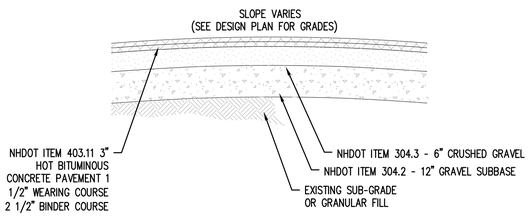
DRAWING NO.
C502



PAVEMENT TRENCH PATCH

NOT TO SCALE

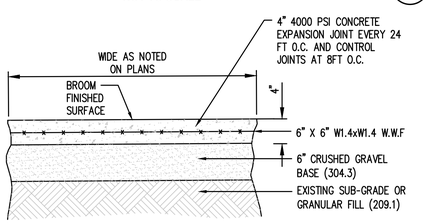
1



PAVEMENT SECTION

NOT TO SCALE

2

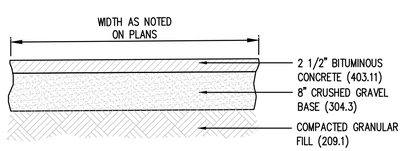


NOTE:
BROOM FINISH WITH TWO COATS SEALING/CURING COMPOUND

SIDEWALK - CONCRETE

NOT TO SCALE

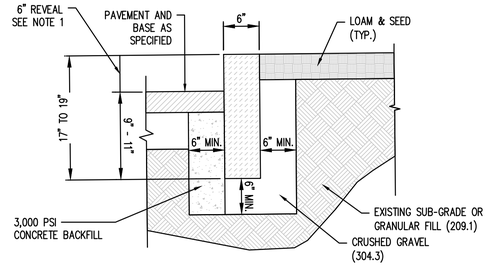
3



SIDEWALK - ASPHALT

NOT TO SCALE

4



NOTES:
1. CURB REVEAL SHALL BE AS FOLLOWS:
   A. FULL REVEAL: 6"-7"
   B. AT ACCESSIBLE CURB RAMPS: 0"
2. LENGTH OF STRAIGHT CURB STONES SHALL BE AS FOLLOWS:
   A. MINIMUM LENGTH: 3'
   B. MAXIMUM LENGTH: 10'
   C. LENGTH OF STONES ON CURVES: SEE CHART
3. ADJOINING STONES SHALL HAVE THE SAME OF APPROXIMATE LENGTH.

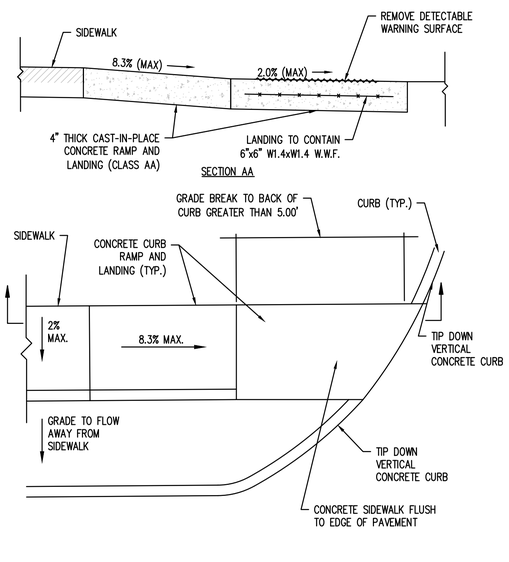
MAX LENGTH OF STRAIGHT CURB STONES LAID ON CURVES

RADIUS (FT)	MAXIMUM LENGTH (FT)
<21'	USE CURVED CURB
21'	3'
22' - 28'	4'
29' - 35'	5'
36' - 42'	6'
43' - 49'	7'
50' - 56'	8'
57' - 60'	9'
>60'	10'

VERTICAL GRANITE CURB (NHDOT)

NOT TO SCALE

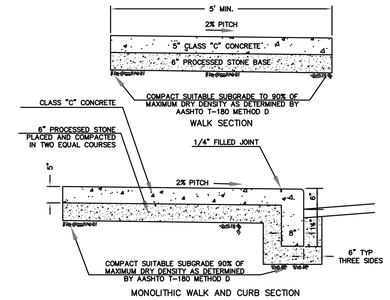
5



ACCESSIBLE CURB RAMP

NOT TO SCALE

6



MONOLITHIC CONCRETE SIDEWALK

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7

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STATE OF NEW HAMPSHIRE
NICOLE J. DUQUETTE
No.17179
LICENSED
PROFESSIONAL ENGINEER

REVISIONS

PROJECT INFO
2024002213
MAY 6, 2025

ENGINEER	DRAWN BY	CHECKED BY
N. DUQUETTE	B. RICHARDS	N. DUQUETTE

LONGMEADOW COMMONS
126 LANG ROAD
PORTSMOUTH, NH 03801

CONSTRUCTION DETAILS

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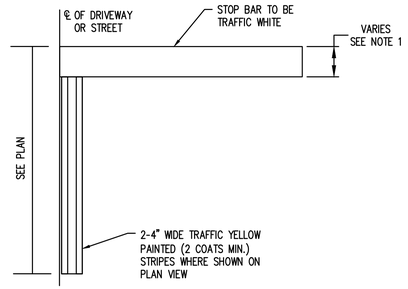
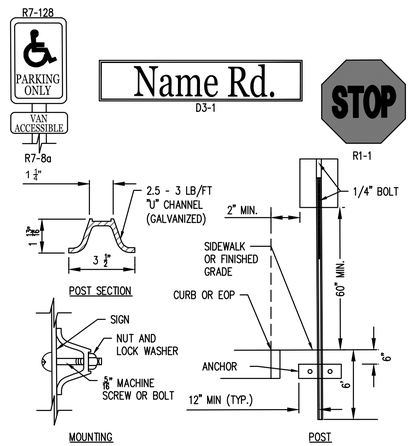
DRAWING NO.
C503



STOP BAR DETAIL

NOT TO SCALE

1



GENERAL NOTES:

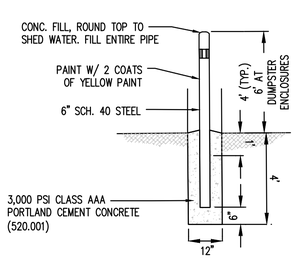
1. ALL SIGNING AND PAVEMENT MARKINGS SHALL CONFORM TO "NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION", SECTIONS 615 AND 632, AS AMENDED, AND THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
2. THE CONTRACTOR IS RESPONSIBLE FOR THE LAYOUT OF ALL SIGNING AND PAVEMENT MARKINGS.

TRAFFIC SIGNS

NOT TO SCALE

2

FINAL AESTHETIC ELEMENTS INCLUDING COLOR, HEAD STYLE, FINISHING ETC. TO BE APPROVED BY OWNER OR ARCHITECT.

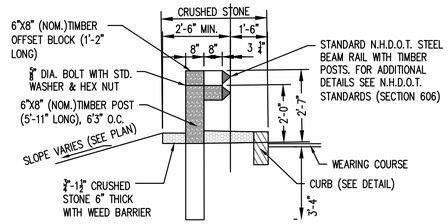


BOLLARDS TO BE COVERED WITH A UV LIGHTED BOLLARD OR HARDWIRED LIGHTED BOLLARD FROM IDEALSHIELD (OR EQUAL).

FIXED BOLLARD & BASE

NOT TO SCALE

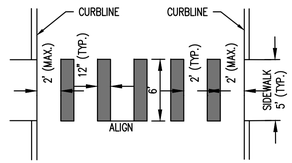
3



GUARD RAIL DETAIL

NOT TO SCALE

4



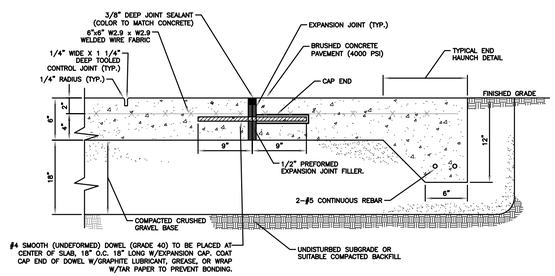
NOTES:

1. TWELVE INCH (12") WHITE THERMOPLASTIC LINES SHALL BE APPLIED IN ONE APPLICATION, NO COMBINATION OF LINES (TWO - 6 INCH LINES) WILL BE ACCEPTED.
2. LONGITUDINAL CROSSWALK LINES TO BE PARALLEL TO CURBLINE.
3. ALL LONGITUDINAL CROSSWALK LINES TO BE THE SAME LENGTH AND PROPERLY ALIGNED.

CROSSWALK

NOT TO SCALE

5



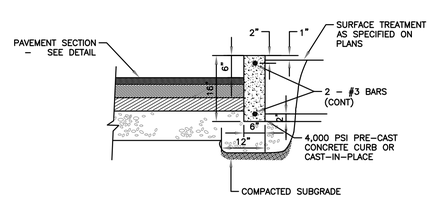
NOTES:

1. MAINTAIN 2" CLEARANCE (TYP) BETWEEN ALL CONCRETE EDGES AND WIRE FABRIC, DOWEL, OR REBAR.
2. CONTROL JOINTS TO BE LOCATED 5 FT. ON CENTER OR AS SHOWN ON ARCHITECTURAL PLANS.
3. EXPANSION JOINTS TO BE LOCATED 25 FT. ON CENTER.
4. WELDED WIRE FABRIC SHALL BE LAPSED A MINIMUM OF 2 WIRE SPACES.

6" HEAVY DUTY CONCRETE PAD

NOT TO SCALE

6



CONCRETE CURB SECTION

NOT TO SCALE

7

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CONSTRUCTION DETAILS

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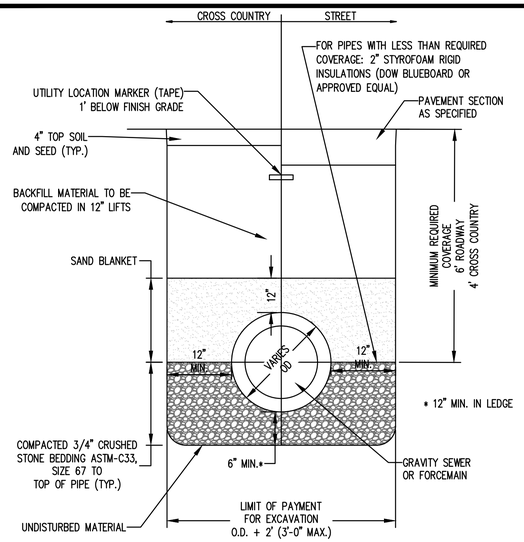
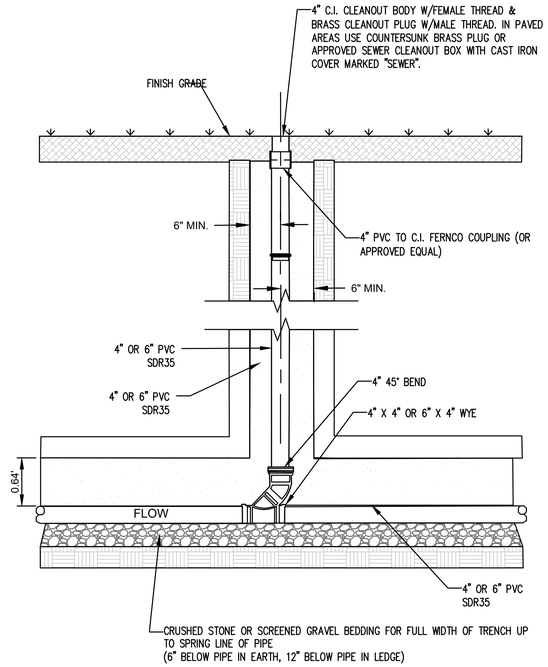
DRAWING NO.
C504

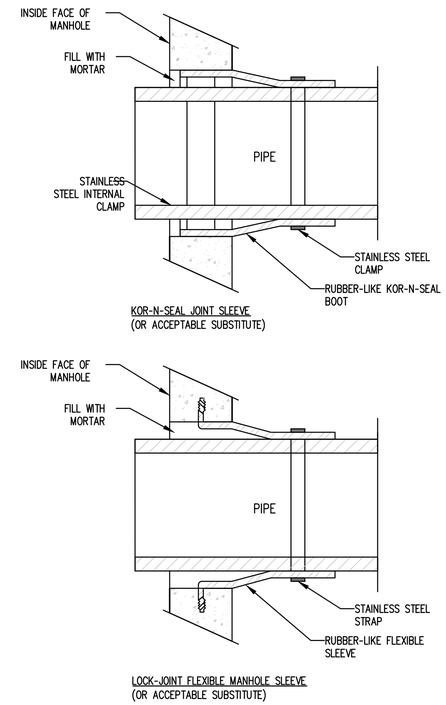


NOTE:
FOR CONSTRUCTION RELATIVE TO UNSUITABLE MATERIALS ENCOUNTERED DURING EXCAVATION, THE ENGINEER SHALL BE CONTACTED IMMEDIATELY UPON ENCOUNTERING UNSUITABLE MATERIAL PRIOR TO EXCAVATION TO VERIFY THE WORK. THE CONTRACTOR SHALL EXCAVATE THE UNSUITABLE MATERIAL AND REPLACE WITH SELECT FILL AS DIRECTED BY THE ENGINEER.

TYPICAL SEWER PIPE TRENCH (1)
NOT TO SCALE



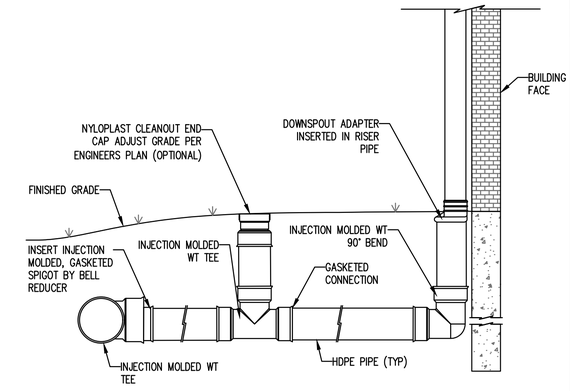
TYPICAL SEWER SERVICE CLEANOUT (3)
NOT TO SCALE



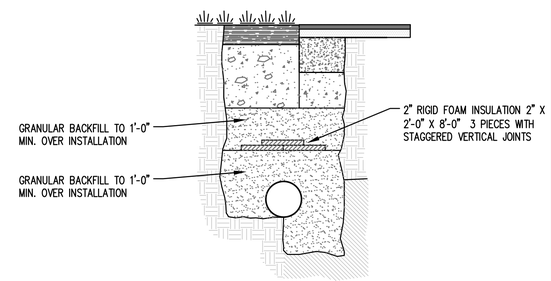
NOTE:

ALL GASKETS, SEALANTS, MORTAR, ETC ... SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS

PIPE TO SEWER MANHOLE JOINTS (5)
NOT TO SCALE

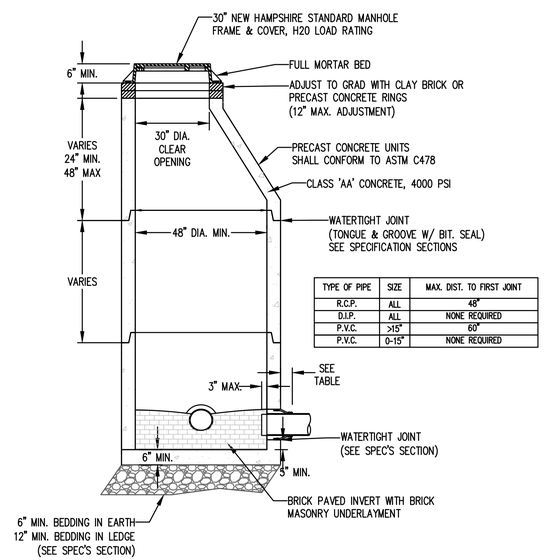


ROOF DRAIN (7)
NOT TO SCALE



1. PIPE SHALL BE POLY WRAPPED IN ACCORDANCE WITH AWWA SPEC C105
2. MAIN INSTALLATIONS OF LESS THAN 5'-6" OF COVER SHALL BE ALLOWED ONLY AT THE DISCRETION OF THE ENGINEER. ALL INSTALLATIONS OF LESS 5'-6" OF COVER SHALL BE INSULATED AS SHOWN.

INSULATED WATER MAIN (8)
NOT TO SCALE

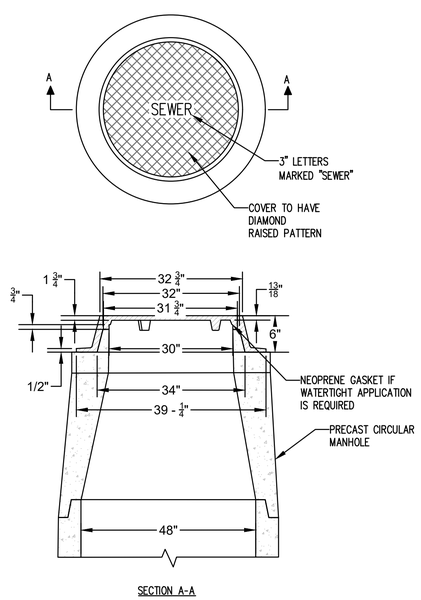


TYPE OF PIPE	SIZE	MAX. DIST. TO FIRST JOINT
R.C.P.	ALL	48"
D.I.P.	ALL	NONE REQUIRED
P.V.C.	>15"	60"
P.V.C.	0-15"	NONE REQUIRED

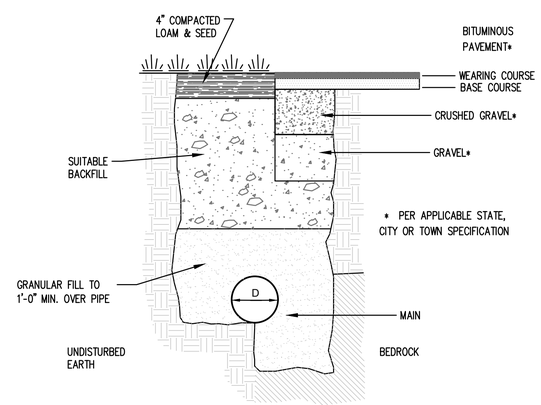
NOTE:

ALL SECTIONS SHALL BE CONCRETE CLASS 'AA' (4,000 PSI). CIRCUMFERENTIAL REINFORCEMENT SHALL NE 0.12 SQ.IN./LF IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ON LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ.IN./LF.

PRE-CAST REINFORCED SANITARY SEWER MANHOLE (2)
NOT TO SCALE

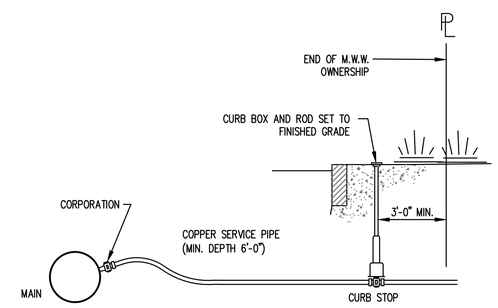


TYPICAL SEWER MANHOLE COVER (4)
NOT TO SCALE



1. PIPE SHALL BE BURIED AT A MINIMUM DEPTH OF 5'-6"
2. PIPE SHALL HAVE A MINIMUM CLEARANCE OF 1'-0" TO BEDROCK
3. TRENCH WIDTH FOR ROCK EXCAVATION = D + 2'-0"
4. PIPE SHALL BE POLY WRAPPED IN ACCORDANCE WITH AWWA SPEC C105

TYPICAL TRENCH DETAIL (6)
NOT TO SCALE



CORPORATIONS SHALL BE TAPPED DIRECTLY TO THE MAIN IN SIZES UP TO 1" ø (INCLUSIVE).

TYPICAL SERVICE CONNECTION (9)
NOT TO SCALE

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STATE OF NEW HAMPSHIRE
NICOLE J. DUQUETTE
No. 17179
LICENSED
PROFESSIONAL ENGINEER

REVISIONS

PROJECT INFO
2024002213
MAY 6, 2025

ENGINEER	DRAWN BY	CHECKED BY
N. DUQUETTE	B. RICHARDS	N. DUQUETTE

LONGMEADOW COMMONS
126 LANG ROAD
PORTSMOUTH, NH 03801

CONSTRUCTION DETAILS

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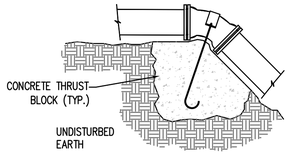
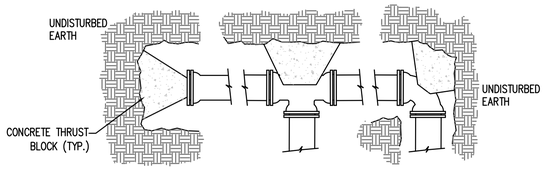


ELEVATION - VERTICAL BENDS



PLAN - HORIZONTAL BENDS, TEES AND PLUGS

1. THRUST BLOCK DIMENSIONS TO BE DETERMINED IN FIELD BY ENGINEER BASED ON PIPE SIZE, WATER PRESSURE AND SOIL TYPE.
2. STONE BACKING MAY BE SUBSTITUTED FOR CONCRETE THRUST BLOCKS PROVIDED THE STONE(S) ARE OF EQUAL SIZE AND BEAR ON UNDISTURBED
3. USE OF JOINT RESTRAINT SYSTEMS SHALL NOT ELIMINATE THRUST BLOCK REQUIREMENTS (WHERE POSSIBLE).

TYPICAL THRUST BLOCKS

NOT TO SCALE

1

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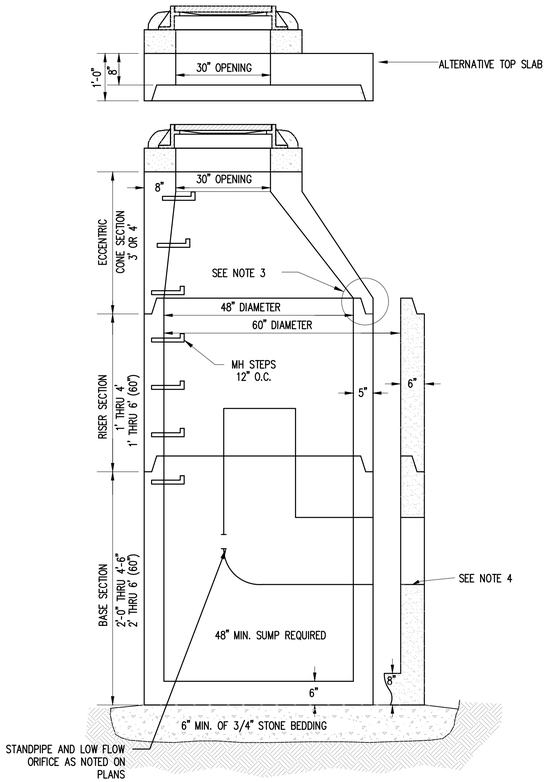
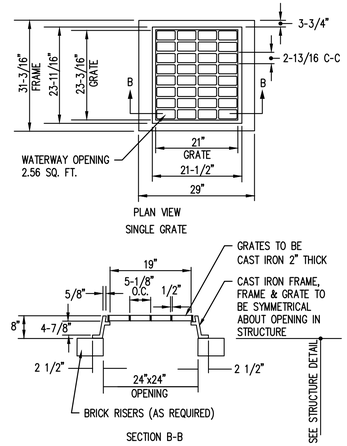


Notes:
1. CONCRETE COMPRESSIVE STRENGTH SHALL BE 4000 PSI MINIMUM.
2. ALTERNATIVE TOP SLAB SHALL BE STEEL REINFORCED TO MEET H-20 LOADING.
3. SECTION JOINTS SHALL BE SEALED WITH BUTYL RUBBER AND SHALL CONFORM TO ASTM C443 SPEC. AND FED SPEC. SS-S-210A.
4. ALL PIPING SHALL BE SEALED WITH NON SHRINK GROUT.
5. INLET FRAME SHALL BE ADJUSTED TO GRADE WITH A N=MINIMUM OF TWO (2) COURSES OF BRICK OR ONE SOLID CONCRETE RING AND GROUT. SEALED IN PLACE WITH NON SHRINK GROUT.
6. FRAME AND COVER SHALL BE HEAVY DUTY WITH A MINIMUM INSIDE CLEARANCE OF 30", SUCH AS THE NEENAH R-1754-A OR EQUAL.
7. THE 48" DIAMETER MANHOLE SHALL BE RESTRICTED TO PIPES OF 24" IN DIAMETER OR LESS. THE 60" DIAMETER MANHOLE SHALL BE RESTRICTED TO PIPES OF 36" IN DIAMETER OR LESS.

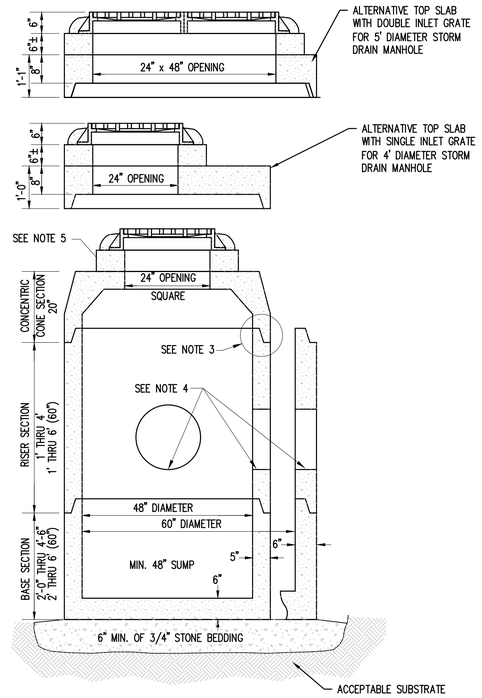
4' DIA. MANHOLE - STORM DRAIN (DMH) — 1

NOT TO SCALE



FRAME AND GRATE - NHDOT TYPE B — 3

NOT TO SCALE



Notes:
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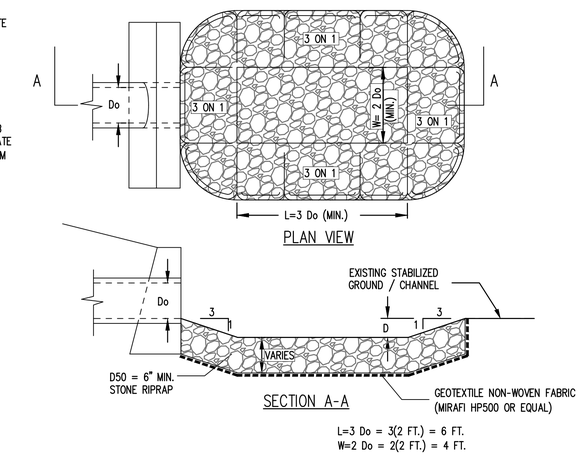
2. ALTERNATIVE TOP SLAB SHALL BE STEEL REINFORCED TO MEET H-20 LOADING.
3. SECTION JOINTS SHALL BE SEALED WITH BUTYL RUBBER AND SHALL CONFORM TO ASTM C443 SPEC. AND FED SPEC. SS-S-210A.
4. ALL PIPING SHALL BE SEALED WITH NON SHRINK GROUT.
5. INLET FRAME SHALL BE ADJUSTED TO GRADE WITH BRICK AND MORTAR (8" MIN - 12" MAX) OR ONE SOLID CONCRETE RING AND GROUT. SEALED IN PLACE WITH NON SHRINK GROUT.
6. INLET GRATE AND FRAME IS TO BE NEENAH MODEL R-3570 FOR SINGLE GRATE AND MODEL R-3571 FOR A DOUBLE GATE STRUCTURE OR EQUAL.
7. THE 48" DIAMETER MANHOLE SHALL BE RESTRICTED TO PIPES OF 24" IN DIAMETER OR LESS. THE 60" DIAMETER MANHOLE SHALL BE RESTRICTED TO PIPES OF 36" IN DIAMETER OR LESS.

CATCH BASIN (CB) — 6

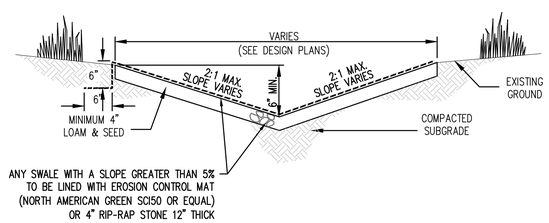
NOT TO SCALE



LOCATION	D(in)	Do(IN)	L (FT)*	W (FT)*	D_{50} (IN.)	THICKNESS (IN.)
HW-1						

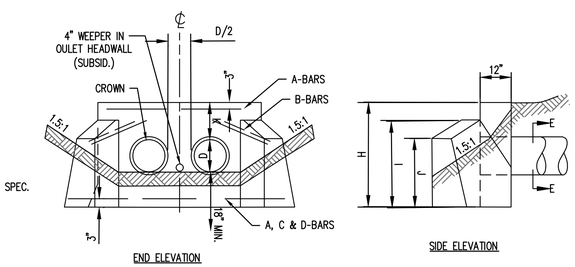
PREFORMED SCOUR HOLE — 8

NOT TO SCALE



TYPICAL SWALE DETAIL — 4

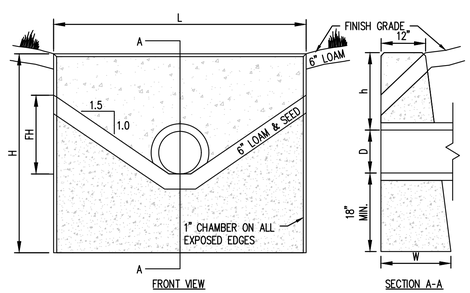
NOT TO SCALE



CULVERT DIAM.	HEADWALL LENGTH	HEADWALL HEIGHT	TOP HEIGHT
D	C	H	K
INCHES	FEET & INCHES		
24	10'-0"	5'-0"	1'-6"
30	11'-9"	5'-6"	1'-6"
36	13'-7"	6'-0"	1'-6"

DUAL PIPE CONCRETE HEADWALL — 9

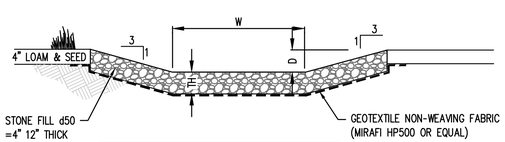
NOT TO SCALE



CULVERT DIAM.	HEADWALL LENGTH	HEADWALL HEIGHT	FILL HEIGHT	TOP HEIGHT	HEADWALL BOTTOM
D	L	H	FH	h	WIDTH W
INCHES	FEET & INCHES				
12	4'-3"	3'-9"	1'-1"	1'-3"	1'-11.25"
15	6'-0"	4'-3"	1'-7"	1'-6"	2'-0.75"
18	7'-0"	4'-6"	1'-10"	1'-6"	2'-1.50"
24	9'-0"	5'-0"	2'-4"	1'-6"	2'-3.00"

HEADWALL - PRECAST CONCRETE — 5

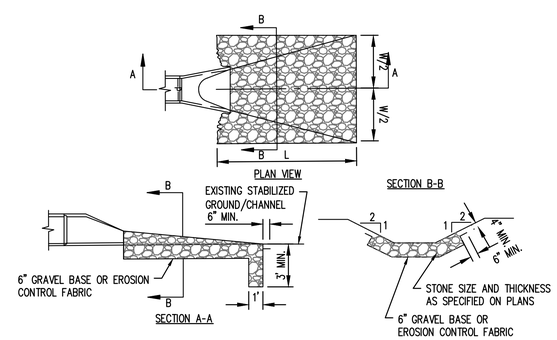
NOT TO SCALE



STRUCTURE	W	D	TH	d50
RAIN GARDEN				

EMERGENCY SPILLWAY DETAIL — 2

NOT TO SCALE



FLARED END SECTION (FES) — 7

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STATE OF NEW HAMPSHIRE — NICOLE J. DUQUETTE No.17179 — LICENSED PROFESSIONAL ENGINEER

REVISIONS

PROJECT INFO
2024002213
MAY 6, 2025

ENGINEER	DRAWN BY	CHECKED BY
N. DUQUETTE	B. RICHARDS	N. DUQUETTE

LONGMEADOW COMMONS
126 LANG ROAD
PORTSMOUTH, NH 03801

CONSTRUCTION DETAILS

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C507

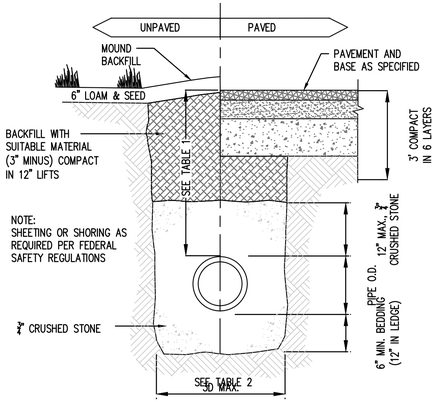


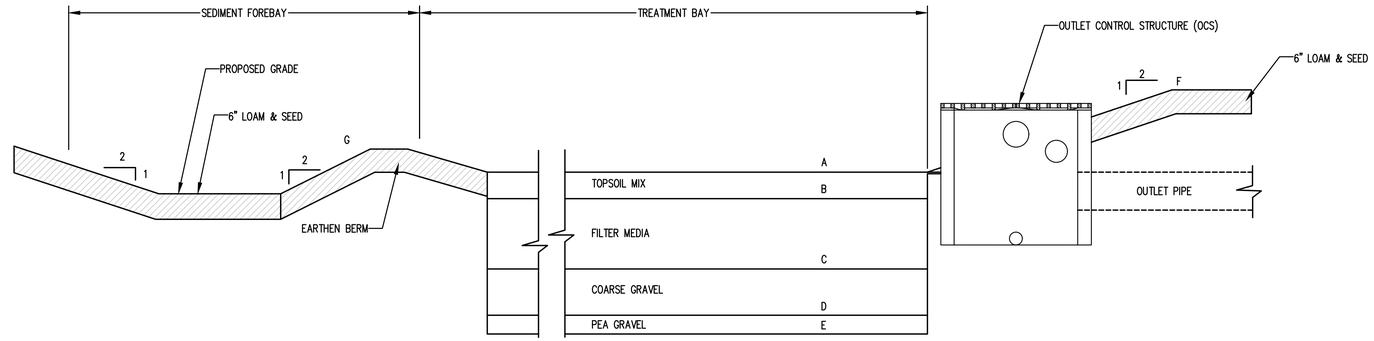
TABLE 1 (RECOMMENDED COVER)		
LOCATION	PIPE MATERIAL	MINIMUM COVER
PAVED ROADS	ALL	3 FT.
GRAVEL ROADS	ALL	2 FT.
DRIVEWAYS	ALL	1 FT.
UNPAVED AREAS	ALL	2 FT.

TABLE 2 (RECOMMENDED TRENCH WIDTH)	
INSIDE DIAMETER	TOTAL WIDTH
12" TO 24" OVER 24"	I.D. + 24" 2 X I.D.

DRAINAGE TRENCH (TYPICAL)

NOT TO SCALE

1

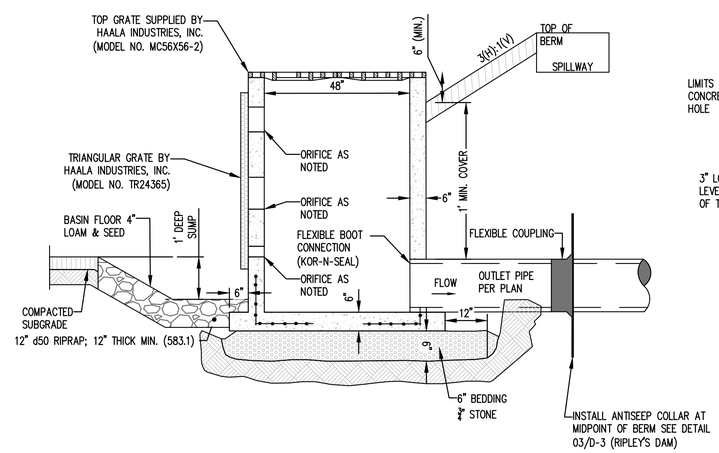


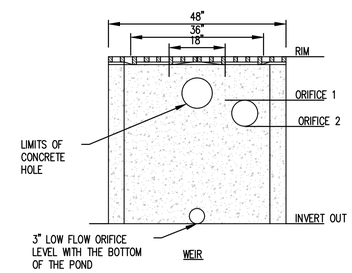
LOCATION	ELEV. (FT)
BOTTOM OF STORAGE (A)	
TOPSOIL MIX (B)	
FILTER MEDIA (C)	
COARSE GRAVEL (D)	
PEA GRAVEL (E)	
TOP OF BERM (F)	
FOREBAY BERM (G)	

BIO-RETENTION BASIN

NOT TO SCALE

2





OUTLET STRUCTURE NOTES:

1. OUTLET CONTROL STRUCTURE SHALL CONFORM TO SECTION 604 FOR THE NHDOT STANDARD SPECIFICATIONS.

2. ALL HARDWARE SHALL BE HOT-DIPPED GALVINZED PER ASTM A123/123M AND/OR ASTM A153/153M.

3. ALL HARDWARE SHALL TO CONFORM TO SECTION 550, AND AS FOLLOWS;
A. BOLTS: ASTM A325;
B. NUTS: GRADE DH;
C. WASHERS: ASTM F436;
D. STRUCTURAL STEEL: ASTM A6 AND/OR AASHTO M270 (ASTM A709); GRADE 36;

LOCATION	DIM	ELEV. (FT)
RIM		
ORIFICE 1		
ORIFICE 2		
SUMP	---	
INVERT OUT		

OUTLET CONTROL STRUCTURE (OCS)

NOT TO SCALE

3

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STATE OF NEW HAMPSHIRE
NICOLE L DUQUETTE
No.17179
LICENSED
PROFESSIONAL ENGINEER

REVISIONS

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2024002213
MAY 6, 2025

ENGINEER	DRAWN BY	CHECKED BY
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LONGMEADOW COMMONS
126 LANG ROAD
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CONSTRUCTION DETAILS

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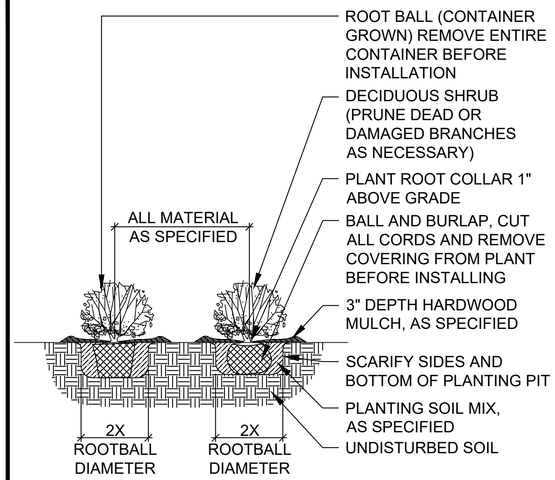
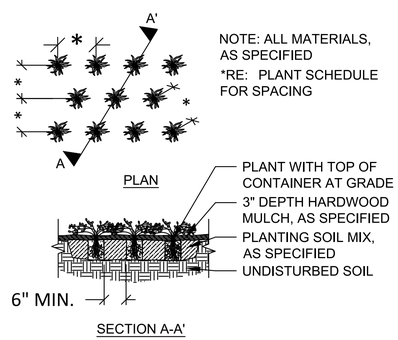


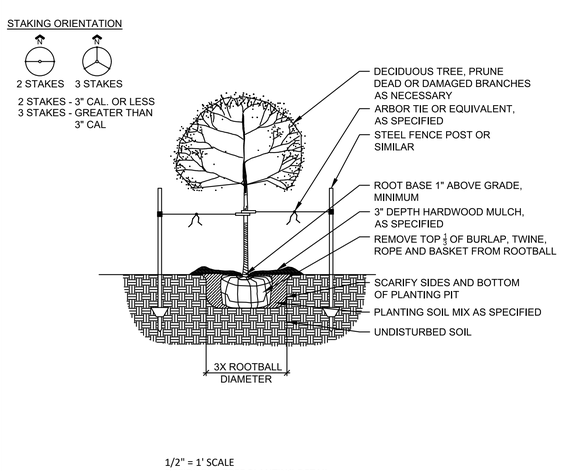
SHRUB PERENNIAL PLANTING (1)

NOT TO SCALE



GROUNDCOVER PLANTING (2)

NOT TO SCALE



DECIDUOUS TREE PLANTING (3)

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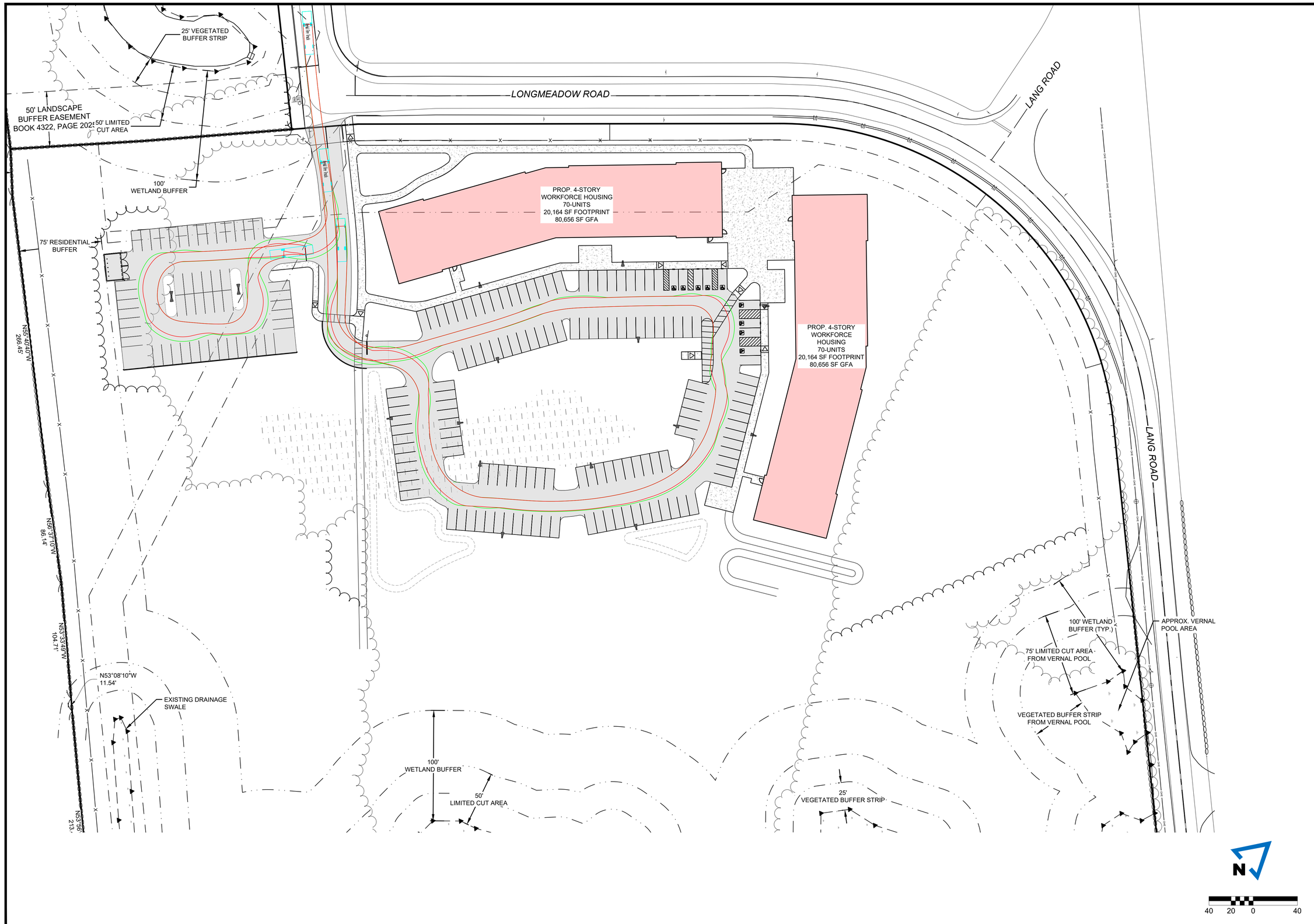

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PORTSMOUTH, NH 03801

TURNING MOVEMENT PLAN

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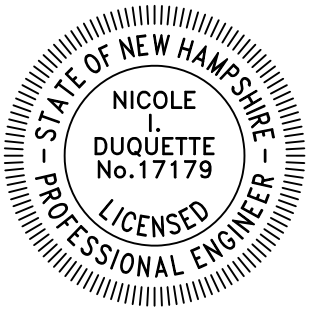
DRAWING NO.
C601

Stormwater Management Report

126 Lang Road Portsmouth, NH 03801

Submitted: 05/06/2025

Prepared For: Preservation of Affordable Housing (POAH)
2 Oliver Street, Suite 500
Boston, MA 02109



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Section 1.2..... Pre-Developed Conditions – 10 Year Storm Full Summary

Section 2.1..... Developed Conditions – 2, 10, 25, & 50 Year Storm Nodes

Section 2.2..... Developed Conditions – 10 Year Storm Full Summary

Supplemental Data & Reports:

Section 3.1..... Inspection & Maintenance Manual

Section 3.2..... Site Specific Soil Report & Test Pits

Section 3.3..... Drainage Area Plans

Stormwater Management Report
Tax Map 291 Lot 1-1
Proposed Workforce Housing Development – Phase 1
Portsmouth, New Hampshire

Prepared for:
Preservation of Affordable Housing

I. INTRODUCTION

McClure Engineering Company (McClure) has prepared storm water drainage calculations for the proposed development at 126 Lang Road in Portsmouth, New Hampshire. The calculations are associated with a proposed residential development and associated site improvements. The applicant is proposing the construction of two (2) workforce housing buildings (20,164 S.F. ±), parking and access, as well as associated stormwater improvements. The project will require an Alteration of Terrain Permit from the State of New Hampshire Department of Environmental Services (NHDES). The site will be serviced by municipal sewer, water, gas, electric, and communications.

The purpose of this report is to analyze the qualitative and quantitative impacts of the proposed development. The objective of the proposed stormwater management system is to mitigate any runoff volume or rate increases resulting from the proposed development and to meet the drainage guidelines set forth in the City of Portsmouth Site Plan Regulations as well as Env-Wq 1500: Alteration of Terrain.

II. SITE DESCRIPTION (EXISTING)

The project location consists a vacant lot which has been disturbed in the past as part of the construction of Longmeadow Road extension and associated drainage improvements as well as previous clearing and disturbance on-site. Currently the site consists of wooded areas, existing stockpiles, a single existing foundation, and wetlands. Access to the site is located along Longmeadow Road approximately 600 L.F. ± west of the intersection of Longmeadow Road and Lang Road. The property consists of previously disturbed lands which ultimately slope back toward the wetlands on the rear of the site, however the existing stockpiles have created many steep slopes within the middle of the site. A Site-Specific Soil Survey was conducted on-site and indicated that Hydrologic Soil Group's (HSG) "B & C" exist in the vicinity of the project.

III. METHODOLOGY:

The quantity of runoff and the conveyance of that flow through the site are determined using the software package HydroCAD 10.20-2h by HydroCAD Software Solution, LLC. HydroCAD is a design program for modeling stormwater hydrology based on the Soil Conservation Service (SCS) TR-20 method combined with standard hydraulic calculations used to model detention basins and culverts.

Stormwater management systems and erosion control measures are designed in accordance with the methodology for the "Best Management Practices" (BMP's) as outlined in the New Hampshire Stormwater Manual, Volume 2.

IV. SITE DESCRIPTION (EXISTING)

Section 7.6 of The City of Portsmouth Site Plan Regulations requires that the two (2), ten (10), twenty-five (25), and fifty (50) year storm events must be evaluated. These design standards have been utilized for the analysis to compare the pre- and post-development peak flow rates for the site. Reference Table 1.1 and 1.2 below.

Pre-Development Drainage Conditions:

As can be seen on the Pre-Developed Drainage Plans (Section 3.6), the property consists of ten (10) subcatchments with one (1) observation point. Observation Point OP-1 drains to the wetlands located in the rear of the subject parcel.

Post-Development Drainage Conditions:

The applicant is proposing to construct two residential apartment buildings (20,164 S.F. ±) along with parking and associated stormwater improvements. Proposed pavement and roof area will be captured in bio-retention basins and the existing bio-retention basin located on-site, which will treat and mitigate stormwater runoff from a section of parking as well as maintaining the existing areas that were originally designed to be conveyed to this system.

V. SUMMARY:

The intent of the stormwater management system for this project is to address the qualitative and quantitative aspects of the stormwater runoff so that there are no adverse impacts downstream of the proposed project. The proposed development will result in an equal amount or decrease in stormwater flow to the observation points due to the site improvements.

The net result is that new paved areas will receive qualitative treatment and the proposed stormwater BMPs will mitigate runoff rates and volumes leaving the site.

The following table is a summary of the attached calculations and provides a comparison of the peak flow rates and volumes at the observation points for the site. The values presented are based on pre- and post-development conditions.

Table 1.1: Peak Flow Rates (CFS) to Observation Points

Location	Q2-YR (CFS)			Q10-YR (CFS)			Q25-YR (CFS)			Q50-YR (CFS)		
	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ
OP-1	18.07	16.65	-1.42	31.65	30.68	-0.97	62.49	60.97	-1.52	82.63	75.92	-6.71

Table 1.2: Peak Volume (AF) to Observation Points

Location	V2-YR (AF)			V10-YR (AF)			V25-YR (AF)			V50-YR (AF)		
	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ
OP-1	3.465	3.041	-0.424	5.601	5.010	-0.591	10.781	9.897	-0.884	14.234	13.193	-1.041

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point

Smoothing	Yes
State	New Hampshire
Location	New Hampshire, United States
Latitude	43.024 degrees North
Longitude	70.79 degrees West
Elevation	10 feet
Date/Time	Thu Mar 20 2025 10:28:19 GMT-0400 (Eastern Daylight Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.66	0.82	1.04	**1yr**	0.71	0.98	1.22	1.57	2.05	2.69	2.96	**1yr**	2.38	2.85	3.26	3.98	4.61	**1yr**
2yr	0.32	0.50	0.62	0.82	1.03	1.31	**2yr**	0.89	1.19	1.52	1.95	2.51	3.25	3.61	**2yr**	2.87	3.47	3.98	4.73	5.39	**2yr**
5yr	0.37	0.58	0.73	0.98	1.25	1.62	**5yr**	1.08	1.47	1.90	2.45	3.17	4.12	4.64	**5yr**	3.64	4.46	5.11	6.01	6.78	**5yr**
10yr	0.41	0.65	0.83	1.12	1.46	1.90	**10yr**	1.26	1.74	2.25	2.92	3.79	4.93	5.60	**10yr**	4.36	5.39	6.17	7.21	8.08	**10yr**
25yr	0.48	0.77	0.98	1.35	1.79	2.36	**25yr**	1.54	2.16	2.80	3.67	4.80	6.25	7.20	**25yr**	5.53	6.92	7.93	9.16	10.18	**25yr**
50yr	0.54	0.87	1.11	1.55	2.09	2.79	**50yr**	1.81	2.55	3.33	4.37	5.73	7.49	8.70	**50yr**	6.63	8.37	9.59	10.99	12.14	**50yr**
100yr	0.60	0.98	1.26	1.79	2.45	3.30	**100yr**	2.11	3.01	3.95	5.22	6.86	8.98	10.53	**100yr**	7.95	10.12	11.61	13.19	14.48	**100yr**
200yr	0.68	1.12	1.45	2.07	2.86	3.89	**200yr**	2.47	3.55	4.68	6.21	8.20	10.77	12.73	**200yr**	9.53	12.24	14.04	15.83	17.27	**200yr**
500yr	0.81	1.34	1.74	2.52	3.53	4.84	**500yr**	3.05	4.43	5.85	7.82	10.38	13.69	16.39	**500yr**	12.12	15.76	18.08	20.16	21.82	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.72	0.89	**1yr**	0.62	0.87	0.92	1.33	1.67	2.27	2.59	**1yr**	2.01	2.49	2.90	3.18	3.95	**1yr**
2yr	0.32	0.49	0.60	0.81	1.00	1.19	**2yr**	0.87	1.17	1.37	1.82	2.33	3.10	3.51	**2yr**	2.74	3.37	3.88	4.61	5.14	**2yr**
5yr	0.35	0.54	0.68	0.93	1.18	1.41	**5yr**	1.02	1.38	1.61	2.12	2.73	3.85	4.28	**5yr**	3.40	4.11	4.80	5.64	6.35	**5yr**
10yr	0.39	0.60	0.74	1.04	1.34	1.61	**10yr**	1.16	1.57	1.81	2.38	3.05	4.45	4.98	**10yr**	3.94	4.79	5.58	6.56	7.34	**10yr**
25yr	0.45	0.68	0.84	1.20	1.58	1.91	**25yr**	1.37	1.87	2.11	2.75	3.53	4.81	6.07	**25yr**	4.25	5.84	6.88	8.02	8.89	**25yr**
50yr	0.49	0.75	0.93	1.33	1.80	2.18	**50yr**	1.55	2.14	2.36	3.06	3.93	5.44	7.04	**50yr**	4.82	6.77	8.05	9.35	10.28	**50yr**
100yr	0.55	0.83	1.04	1.50	2.05	2.49	**100yr**	1.77	2.44	2.64	3.40	4.35	6.14	8.16	**100yr**	5.43	7.85	9.43	10.91	11.89	**100yr**
200yr	0.61	0.91	1.16	1.68	2.34	2.84	**200yr**	2.02	2.78	2.95	3.76	4.79	6.90	9.47	**200yr**	6.11	9.10	11.05	12.74	13.78	**200yr**
500yr	0.71	1.05	1.35	1.97	2.80	3.40	**500yr**	2.41	3.33	3.43	4.28	5.46	8.07	11.51	**500yr**	7.14	11.07	13.65	15.68	16.72	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.44	0.54	0.73	0.89	1.09	**1yr**	0.77	1.06	1.27	1.74	2.20	3.02	3.18	**1yr**	2.67	3.05	3.63	4.41	5.11	**1yr**
2yr	0.34	0.52	0.64	0.87	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.51	3.46	3.73	**2yr**	3.06	3.59	4.11	4.88	5.69	**2yr**
5yr	0.40	0.62	0.77	1.05	1.34	1.63	**5yr**	1.16	1.59	1.89	2.53	3.24	4.38	4.98	**5yr**	3.88	4.79	5.43	6.41	7.20	**5yr**
10yr	0.47	0.72	0.90	1.25	1.62	1.99	**10yr**	1.40	1.94	2.29	3.10	3.94	5.39	6.21	**10yr**	4.77	5.98	6.82	7.88	8.79	**10yr**
25yr	0.58	0.88	1.10	1.57	2.06	2.59	**25yr**	1.78	2.53	2.96	4.07	5.14	7.84	8.33	**25yr**	6.94	8.01	9.11	10.37	11.44	**25yr**
50yr	0.68	1.03	1.28	1.84	2.48	3.15	**50yr**	2.14	3.08	3.60	4.99	6.30	9.81	10.40	**50yr**	8.69	10.00	11.34	12.75	13.98	**50yr**
100yr	0.80	1.20	1.51	2.18	2.99	3.84	**100yr**	2.58	3.75	4.38	6.15	7.73	12.27	13.00	**100yr**	10.86	12.50	14.12	15.70	17.09	**100yr**
200yr	0.93	1.40	1.78	2.57	3.59	4.69	**200yr**	3.10	4.59	5.34	7.58	9.50	15.38	16.26	**200yr**	13.61	15.64	17.60	19.32	20.90	**200yr**
500yr	1.16	1.72	2.21	3.22	4.58	6.10	**500yr**	3.95	5.96	6.93	10.02	12.49	20.76	21.86	**500yr**	18.37	21.02	23.54	25.43	27.27	**500yr**

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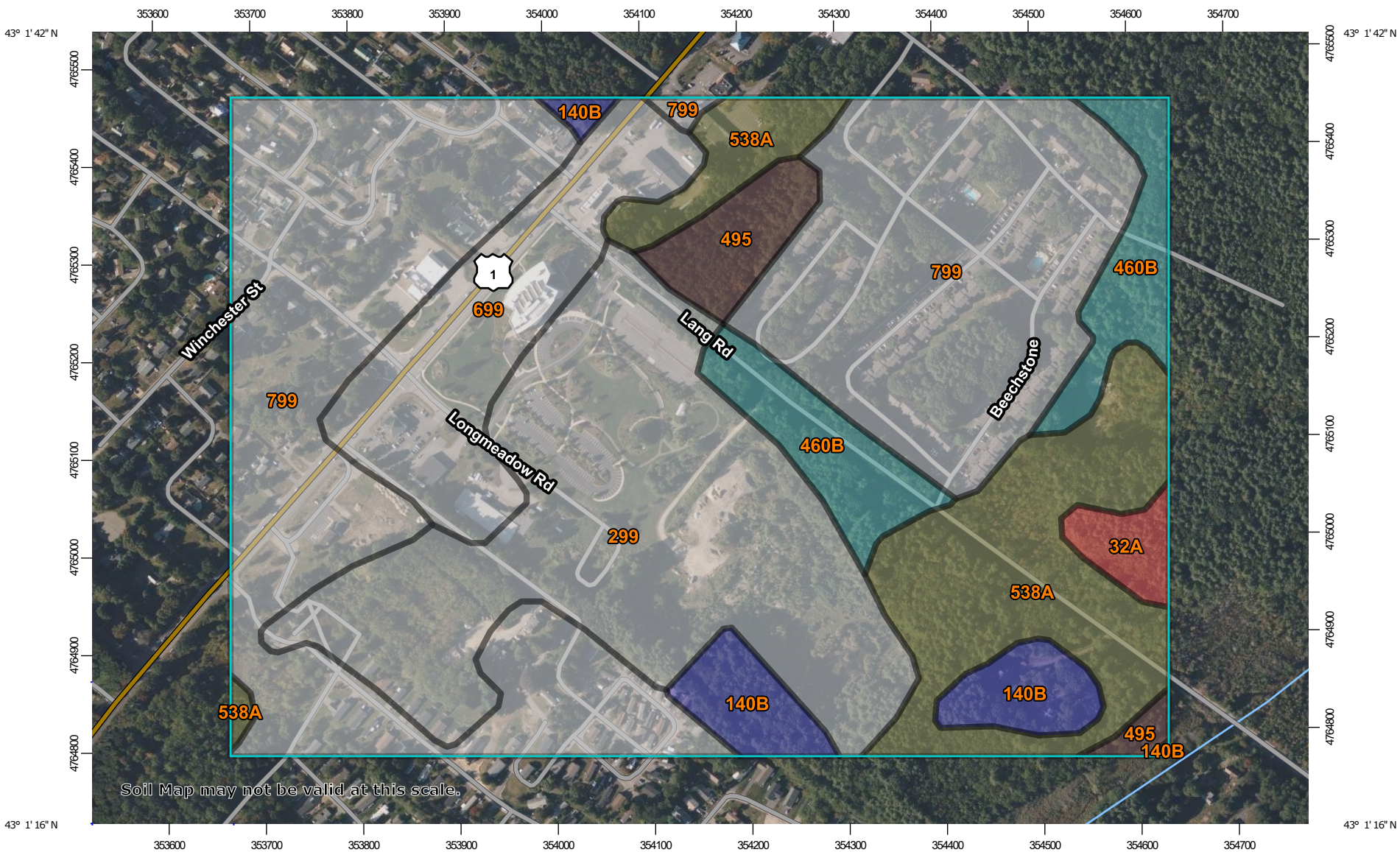
Northeast Regional Climate Center

Hydrologic Soil Group—Rockingham County, New Hampshire



Map Scale: 1:5,710 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 27, Sep 3, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 19, 2020—Sep 20, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
32A	Boxford silt loam, 0 to 3 percent slopes	D	2.0	1.2%
140B	Chatfield-Hollis-Canton complex, 0 to 8 percent slopes, rocky	B	6.5	4.0%
299	Udorthents, smoothed		37.0	22.9%
460B	Pennichuck channery very fine sandy loam, 3 to 8 percent slopes	C	9.9	6.2%
495	Natchaug mucky peat, 0 to 2 percent slopes	B/D	4.4	2.7%
538A	Squamscott fine sandy loam, 0 to 5 percent slopes	C/D	21.2	13.2%
699	Urban land		14.8	9.2%
799	Urban land-Canton complex, 3 to 15 percent slopes		65.5	40.6%
Totals for Area of Interest			**161.4**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Section 1.1: Pre-Developed Conditions

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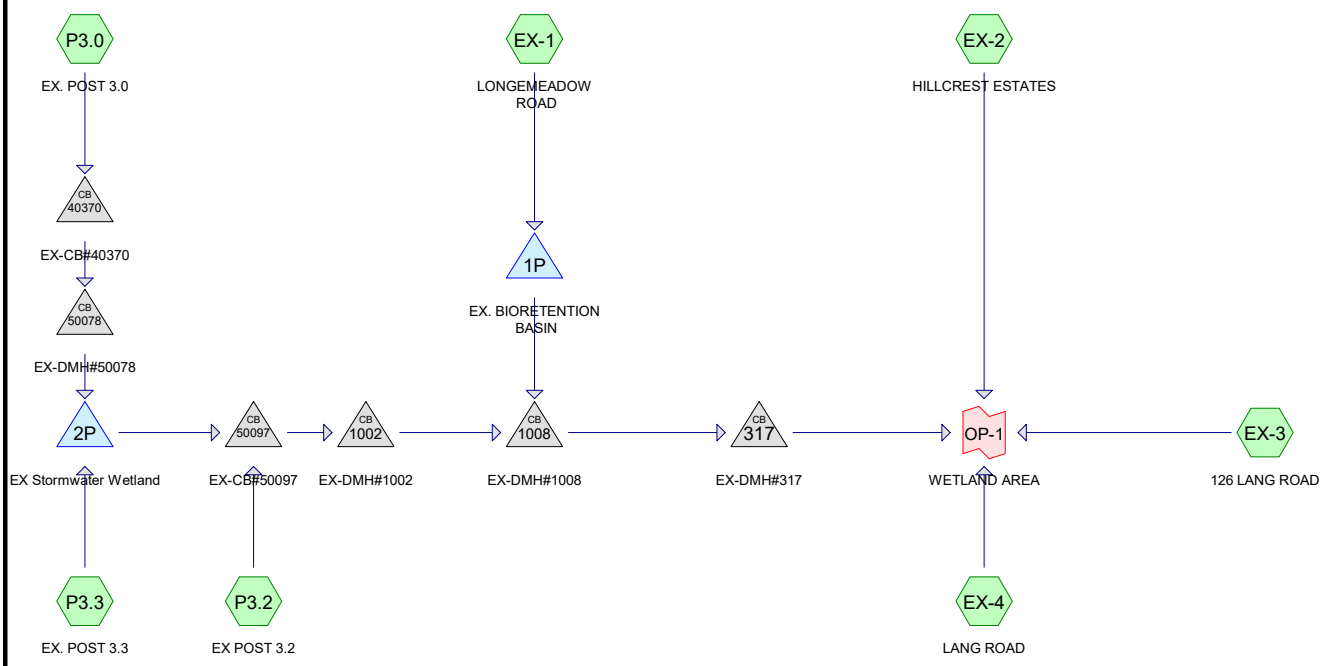

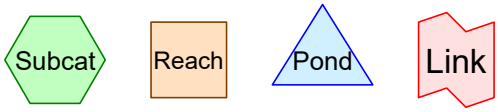

Routing Diagram for 24-1787EX00
Prepared by McClure, Printed 5/4/2025
HydroCAD® 10.20-2h s/n 12811 © 2024 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
13.459	61	>75% Grass cover, Good, HSG B (EX-1, EX-3, EX-4, P3.0, P3.2, P3.3)
7.257	74	>75% Grass cover, Good, HSG C (EX-1, EX-3, EX-4)
7.305	98	Paved parking, HSG B (EX-1, EX-4, P3.0, P3.2, P3.3)
0.994	98	Roofs, HSG B (EX-3, P3.0, P3.2, P3.3)
0.476	98	Unconnected pavement, HSG B (EX-3)
4.387	55	Woods, Good, HSG B (EX-1, EX-2, EX-3, EX-4, P3.0)
1.275	70	Woods, Good, HSG C (EX-1, EX-2, EX-3, EX-4)
35.153	**72**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
26.621	HSG B	EX-1, EX-2, EX-3, EX-4, P3.0, P3.2, P3.3
8.532	HSG C	EX-1, EX-2, EX-3, EX-4
0.000	HSG D	
0.000	Other	
35.153		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	13.459	7.257	0.000	0.000	20.715	>75% Grass cover, Good	EX-1, EX-3, EX-4, P3.0, P3.2, P3.3
0.000	7.305	0.000	0.000	0.000	7.305	Paved parking	EX-1, EX-4, P3.0, P3.2, P3.3
0.000	0.994	0.000	0.000	0.000	0.994	Roofs	EX-3, P3.0, P3.2, P3.3
0.000	0.476	0.000	0.000	0.000	0.476	Unconnected pavement	EX-3
0.000	4.387	1.275	0.000	0.000	5.663	Woods, Good	EX-1, EX-2, EX-3, EX-4, P3.0
0.000	**26.621**	**8.532**	**0.000**	**0.000**	**35.153**	**TOTAL AREA**	

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EX-1: LONGEMEADOW Runoff Area=178,391 sf 12.81% Impervious Runoff Depth=1.22"
Flow Length=771' Slope=0.0185 '/' Tc=24.6 min CN=71 Runoff=3.41 cfs 0.416 af

Subcatchment EX-2: HILLCREST ESTATES Runoff Area=34,020 sf 0.00% Impervious Runoff Depth=0.47"
Flow Length=524' Slope=0.0419 '/' Tc=17.7 min CN=56 Runoff=0.18 cfs 0.031 af

Subcatchment EX-3: 126 LANG ROAD Runoff Area=412,632 sf 6.08% Impervious Runoff Depth=1.16"
Flow Length=636' Slope=0.3303 '/' Tc=6.0 min CN=70 Runoff=12.09 cfs 0.915 af

Subcatchment EX-4: LANG ROAD Runoff Area=65,097 sf 25.09% Impervious Runoff Depth=1.10"
Flow Length=606' Slope=0.0412 '/' Tc=14.4 min CN=69 Runoff=1.36 cfs 0.137 af

Subcatchment P3.0: EX. POST 3.0 Runoff Area=599,696 sf 38.08% Impervious Runoff Depth=1.47"
Flow Length=735' Slope=0.0050 '/' Tc=40.8 min CN=75 Runoff=11.30 cfs 1.691 af

Subcatchment P3.2: EX POST 3.2 Runoff Area=158,779 sf 54.40% Impervious Runoff Depth=1.90"
Flow Length=1,000' Slope=0.0147 '/' Tc=25.4 min CN=81 Runoff=4.94 cfs 0.579 af

Subcatchment P3.3: EX. POST 3.3 Runoff Area=82,637 sf 3.87% Impervious Runoff Depth=0.73"
Flow Length=456' Slope=0.1316 '/' Tc=7.7 min CN=62 Runoff=1.22 cfs 0.116 af

Pond 1P: EX. BIORETENTION BASIN Peak Elev=51.57' Storage=9,808 cf Inflow=3.41 cfs 0.416 af
Discarded=0.35 cfs 0.328 af Primary=0.00 cfs 0.000 af Outflow=0.35 cfs 0.328 af

Pond 2P: EX Stormwater Wetland Peak Elev=48.27' Storage=6,537 cf Inflow=11.69 cfs 1.807 af
Outflow=10.26 cfs 1.804 af

Pond 317: EX-DMH#317 Peak Elev=41.50' Inflow=13.01 cfs 2.383 af
36.0" Round Culvert n=0.011 L=108.7' S=0.0164 '/' Outflow=13.01 cfs 2.383 af

Pond 1002: EX-DMH#1002 Peak Elev=47.70' Inflow=13.01 cfs 2.383 af
36.0" Round Culvert n=0.011 L=64.8' S=0.0309 '/' Outflow=13.01 cfs 2.383 af

Pond 1008: EX-DMH#1008 Peak Elev=45.40' Inflow=13.01 cfs 2.383 af
36.0" Round Culvert n=0.011 L=379.8' S=0.0103 '/' Outflow=13.01 cfs 2.383 af

Pond 40370: EX-CB#40370 Peak Elev=52.08' Inflow=11.30 cfs 1.691 af
36.0" Round Culvert n=0.011 L=68.4' S=0.0073 '/' Outflow=11.30 cfs 1.691 af

Pond 50078: EX-DMH#50078 Peak Elev=51.51' Inflow=11.30 cfs 1.691 af
36.0" Round Culvert n=0.011 L=101.4' S=0.0035 '/' Outflow=11.30 cfs 1.691 af

Pond 50097: EX-CB#50097 Peak Elev=48.30' Inflow=13.01 cfs 2.383 af
36.0" Round Culvert n=0.011 L=71.2' S=-0.0140 '/' Outflow=13.01 cfs 2.383 af

Link OP-1: WETLAND AREA Inflow=18.07 cfs 3.465 af
Primary=18.07 cfs 3.465 af

Total Runoff Area = 35.153 ac Runoff Volume = 3.885 af Average Runoff Depth = 1.33"
75.04% Pervious = 26.378 ac 24.96% Impervious = 8.775 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EX-1: LONGEMEADOW Runoff Area=178,391 sf 12.81% Impervious Runoff Depth=2.02"
Flow Length=771' Slope=0.0185 '/' Tc=24.6 min CN=71 Runoff=5.86 cfs 0.689 af

Subcatchment EX-2: HILLCREST ESTATES Runoff Area=34,020 sf 0.00% Impervious Runoff Depth=0.98"
Flow Length=524' Slope=0.0419 '/' Tc=17.7 min CN=56 Runoff=0.51 cfs 0.063 af

Subcatchment EX-3: 126 LANG ROAD Runoff Area=412,632 sf 6.08% Impervious Runoff Depth=1.94"
Flow Length=636' Slope=0.3303 '/' Tc=6.0 min CN=70 Runoff=21.12 cfs 1.532 af

Subcatchment EX-4: LANG ROAD Runoff Area=65,097 sf 25.09% Impervious Runoff Depth=1.86"
Flow Length=606' Slope=0.0412 '/' Tc=14.4 min CN=69 Runoff=2.43 cfs 0.232 af

Subcatchment P3.0: EX. POST 3.0 Runoff Area=599,696 sf 38.08% Impervious Runoff Depth=2.34"
Flow Length=735' Slope=0.0050 '/' Tc=40.8 min CN=75 Runoff=18.36 cfs 2.689 af

Subcatchment P3.2: EX POST 3.2 Runoff Area=158,779 sf 54.40% Impervious Runoff Depth=2.87"
Flow Length=1,000' Slope=0.0147 '/' Tc=25.4 min CN=81 Runoff=7.47 cfs 0.872 af

Subcatchment P3.3: EX. POST 3.3 Runoff Area=82,637 sf 3.87% Impervious Runoff Depth=1.36"
Flow Length=456' Slope=0.1316 '/' Tc=7.7 min CN=62 Runoff=2.60 cfs 0.215 af

Pond 1P: EX. BIORETENTION BASIN Peak Elev=52.83' Storage=16,059 cf Inflow=5.86 cfs 0.689 af
Discarded=0.64 cfs 0.600 af Primary=0.00 cfs 0.000 af Outflow=0.64 cfs 0.600 af

Pond 2P: EX Stormwater Wetland Peak Elev=48.84' Storage=12,226 cf Inflow=19.08 cfs 2.904 af
Outflow=16.15 cfs 2.901 af

Pond 317: EX-DMH#317 Peak Elev=41.90' Inflow=20.24 cfs 3.773 af
36.0" Round Culvert n=0.011 L=108.7' S=0.0164 '/' Outflow=20.24 cfs 3.773 af

Pond 1002: EX-DMH#1002 Peak Elev=48.10' Inflow=20.24 cfs 3.773 af
36.0" Round Culvert n=0.011 L=64.8' S=0.0309 '/' Outflow=20.24 cfs 3.773 af

Pond 1008: EX-DMH#1008 Peak Elev=45.80' Inflow=20.24 cfs 3.773 af
36.0" Round Culvert n=0.011 L=379.8' S=0.0103 '/' Outflow=20.24 cfs 3.773 af

Pond 40370: EX-CB#40370 Peak Elev=52.55' Inflow=18.36 cfs 2.689 af
36.0" Round Culvert n=0.011 L=68.4' S=0.0073 '/' Outflow=18.36 cfs 2.689 af

Pond 50078: EX-DMH#50078 Peak Elev=52.00' Inflow=18.36 cfs 2.689 af
36.0" Round Culvert n=0.011 L=101.4' S=0.0035 '/' Outflow=18.36 cfs 2.689 af

Pond 50097: EX-CB#50097 Peak Elev=48.70' Inflow=20.24 cfs 3.773 af
36.0" Round Culvert n=0.011 L=71.2' S=-0.0140 '/' Outflow=20.24 cfs 3.773 af

Link OP-1: WETLAND AREA Inflow=31.65 cfs 5.601 af
Primary=31.65 cfs 5.601 af

Total Runoff Area = 35.153 ac Runoff Volume = 6.293 af Average Runoff Depth = 2.15"
75.04% Pervious = 26.378 ac 24.96% Impervious = 8.775 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EX-1: LONGEMEADOW Runoff Area=178,391 sf 12.81% Impervious Runoff Depth=3.88"
Flow Length=771' Slope=0.0185 '/' Tc=24.6 min CN=71 Runoff=11.52 cfs 1.325 af

Subcatchment EX-2: HILLCREST ESTATES Runoff Area=34,020 sf 0.00% Impervious Runoff Depth=2.34"
Flow Length=524' Slope=0.0419 '/' Tc=17.7 min CN=56 Runoff=1.43 cfs 0.152 af

Subcatchment EX-3: 126 LANG ROAD Runoff Area=412,632 sf 6.08% Impervious Runoff Depth=3.78"
Flow Length=636' Slope=0.3303 '/' Tc=6.0 min CN=70 Runoff=41.95 cfs 2.981 af

Subcatchment EX-4: LANG ROAD Runoff Area=65,097 sf 25.09% Impervious Runoff Depth=3.67"
Flow Length=606' Slope=0.0412 '/' Tc=14.4 min CN=69 Runoff=4.93 cfs 0.457 af

Subcatchment P3.0: EX. POST 3.0 Runoff Area=599,696 sf 38.08% Impervious Runoff Depth=4.32"
Flow Length=735' Slope=0.0050 '/' Tc=40.8 min CN=75 Runoff=34.04 cfs 4.953 af

Subcatchment P3.2: EX POST 3.2 Runoff Area=158,779 sf 54.40% Impervious Runoff Depth=4.98"
Flow Length=1,000' Slope=0.0147 '/' Tc=25.4 min CN=81 Runoff=12.85 cfs 1.513 af

Subcatchment P3.3: EX. POST 3.3 Runoff Area=82,637 sf 3.87% Impervious Runoff Depth=2.94"
Flow Length=456' Slope=0.1316 '/' Tc=7.7 min CN=62 Runoff=6.06 cfs 0.465 af

Pond 1P: EX. BIORETENTION BASIN Peak Elev=54.83' Storage=28,789 cf Inflow=11.52 cfs 1.325 af
Discarded=1.09 cfs 0.975 af Primary=1.02 cfs 0.262 af Outflow=2.11 cfs 1.237 af

Pond 2P: EX Stormwater Wetland Peak Elev=50.31' Storage=32,034 cf Inflow=35.51 cfs 5.418 af
Outflow=25.40 cfs 5.415 af

Pond 317: EX-DMH#317 Peak Elev=42.54' Inflow=32.78 cfs 7.190 af
36.0" Round Culvert n=0.011 L=108.7' S=0.0164 '/' Outflow=32.78 cfs 7.190 af

Pond 1002: EX-DMH#1002 Peak Elev=48.71' Inflow=32.24 cfs 6.928 af
36.0" Round Culvert n=0.011 L=64.8' S=0.0309 '/' Outflow=32.24 cfs 6.928 af

Pond 1008: EX-DMH#1008 Peak Elev=46.44' Inflow=32.78 cfs 7.190 af
36.0" Round Culvert n=0.011 L=379.8' S=0.0103 '/' Outflow=32.78 cfs 7.190 af

Pond 40370: EX-CB#40370 Peak Elev=53.46' Inflow=34.04 cfs 4.953 af
36.0" Round Culvert n=0.011 L=68.4' S=0.0073 '/' Outflow=34.04 cfs 4.953 af

Pond 50078: EX-DMH#50078 Peak Elev=52.96' Inflow=34.04 cfs 4.953 af
36.0" Round Culvert n=0.011 L=101.4' S=0.0035 '/' Outflow=34.04 cfs 4.953 af

Pond 50097: EX-CB#50097 Peak Elev=49.31' Inflow=32.24 cfs 6.928 af
36.0" Round Culvert n=0.011 L=71.2' S=-0.0140 '/' Outflow=32.24 cfs 6.928 af

Link OP-1: WETLAND AREA Inflow=62.49 cfs 10.781 af
Primary=62.49 cfs 10.781 af

Total Runoff Area = 35.153 ac Runoff Volume = 11.848 af Average Runoff Depth = 4.04"
75.04% Pervious = 26.378 ac 24.96% Impervious = 8.775 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EX-1: LONGEMEADOW Runoff Area=178,391 sf 12.81% Impervious Runoff Depth=5.11"
Flow Length=771' Slope=0.0185 '/' Tc=24.6 min CN=71 Runoff=15.18 cfs 1.745 af

Subcatchment EX-2: HILLCREST ESTATES Runoff Area=34,020 sf 0.00% Impervious Runoff Depth=3.33"
Flow Length=524' Slope=0.0419 '/' Tc=17.7 min CN=56 Runoff=2.10 cfs 0.216 af

Subcatchment EX-3: 126 LANG ROAD Runoff Area=412,632 sf 6.08% Impervious Runoff Depth=4.99"
Flow Length=636' Slope=0.3303 '/' Tc=6.0 min CN=70 Runoff=55.45 cfs 3.941 af

Subcatchment EX-4: LANG ROAD Runoff Area=65,097 sf 25.09% Impervious Runoff Depth=4.87"
Flow Length=606' Slope=0.0412 '/' Tc=14.4 min CN=69 Runoff=6.56 cfs 0.607 af

Subcatchment P3.0: EX. POST 3.0 Runoff Area=599,696 sf 38.08% Impervious Runoff Depth=5.60"
Flow Length=735' Slope=0.0050 '/' Tc=40.8 min CN=75 Runoff=43.97 cfs 6.419 af

Subcatchment P3.2: EX POST 3.2 Runoff Area=158,779 sf 54.40% Impervious Runoff Depth=6.32"
Flow Length=1,000' Slope=0.0147 '/' Tc=25.4 min CN=81 Runoff=16.18 cfs 1.920 af

Subcatchment P3.3: EX. POST 3.3 Runoff Area=82,637 sf 3.87% Impervious Runoff Depth=4.04"
Flow Length=456' Slope=0.1316 '/' Tc=7.7 min CN=62 Runoff=8.41 cfs 0.638 af

Pond 1P: EX. BIORETENTION BASIN Peak Elev=55.99' Storage=37,991 cf Inflow=15.18 cfs 1.745 af
Discarded=1.38 cfs 1.161 af Primary=1.44 cfs 0.496 af Outflow=2.82 cfs 1.656 af

Pond 2P: EX Stormwater Wetland Peak Elev=51.29' Storage=48,723 cf Inflow=45.94 cfs 7.057 af
Outflow=30.08 cfs 7.054 af

Pond 317: EX-DMH#317 Peak Elev=42.94' Inflow=39.71 cfs 9.470 af
36.0" Round Culvert n=0.011 L=108.7' S=0.0164 '/' Outflow=39.71 cfs 9.470 af

Pond 1002: EX-DMH#1002 Peak Elev=49.07' Inflow=38.69 cfs 8.974 af
36.0" Round Culvert n=0.011 L=64.8' S=0.0309 '/' Outflow=38.69 cfs 8.974 af

Pond 1008: EX-DMH#1008 Peak Elev=46.84' Inflow=39.71 cfs 9.470 af
36.0" Round Culvert n=0.011 L=379.8' S=0.0103 '/' Outflow=39.71 cfs 9.470 af

Pond 40370: EX-CB#40370 Peak Elev=54.05' Inflow=43.97 cfs 6.419 af
36.0" Round Culvert n=0.011 L=68.4' S=0.0073 '/' Outflow=43.97 cfs 6.419 af

Pond 50078: EX-DMH#50078 Peak Elev=53.65' Inflow=43.97 cfs 6.419 af
36.0" Round Culvert n=0.011 L=101.4' S=0.0035 '/' Outflow=43.97 cfs 6.419 af

Pond 50097: EX-CB#50097 Peak Elev=49.67' Inflow=38.69 cfs 8.974 af
36.0" Round Culvert n=0.011 L=71.2' S=-0.0140 '/' Outflow=38.69 cfs 8.974 af

Link OP-1: WETLAND AREA Inflow=82.63 cfs 14.234 af
Primary=82.63 cfs 14.234 af

Total Runoff Area = 35.153 ac Runoff Volume = 15.486 af Average Runoff Depth = 5.29"
75.04% Pervious = 26.378 ac 24.96% Impervious = 8.775 ac

Section 1.2: Pre-Developed Conditions
10-year Storm – Full Summary

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Summary for Subcatchment EX-1: LONGEMEADOW ROAD

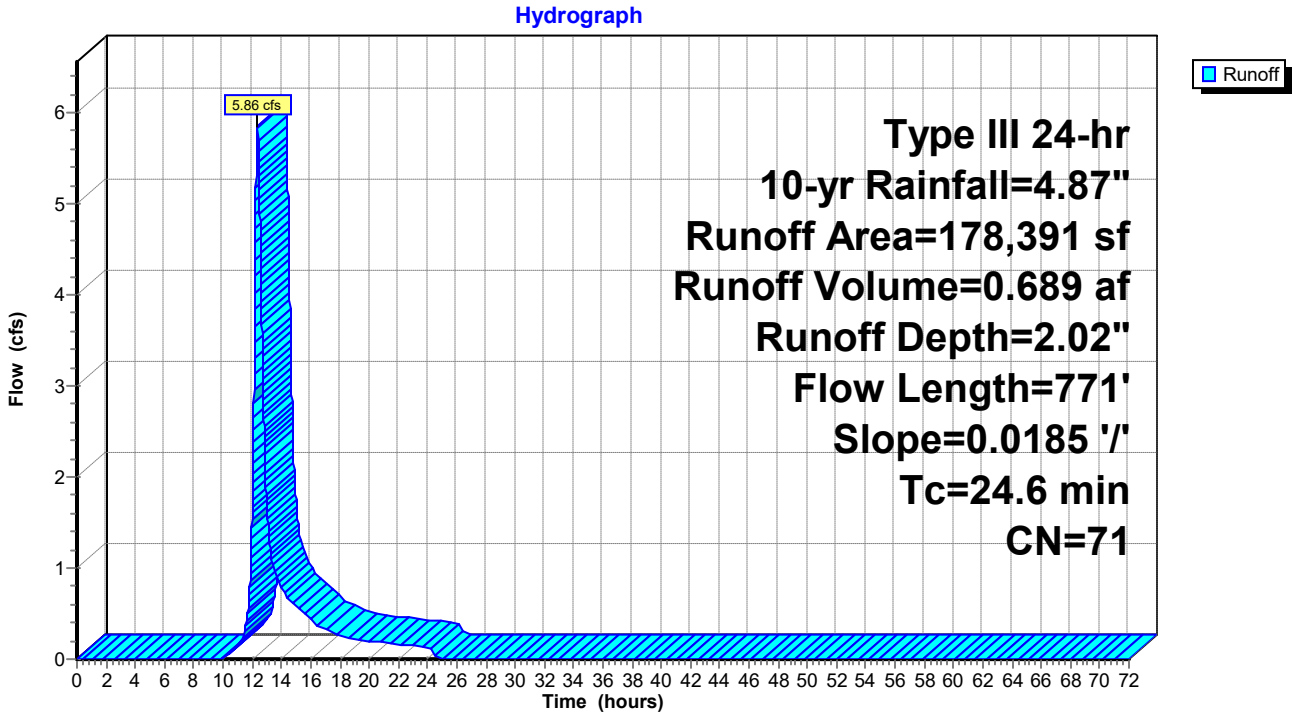
Runoff = 5.86 cfs @ 12.36 hrs, Volume= 0.689 af, Depth= 2.02"
Routed to Pond 1P : EX. BIORETENTION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.87"

Area (sf)	CN	Description
52,671	61	>75% Grass cover, Good, HSG B
77,369	74	>75% Grass cover, Good, HSG C
19,605	55	Woods, Good, HSG B
5,895	70	Woods, Good, HSG C
22,851	98	Paved parking, HSG B
178,391	71	Weighted Average
155,540		87.19% Pervious Area
22,851		12.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.6	771	0.0185	0.52		**Lag/CN Method,**

Subcatchment EX-1: LONGEMEADOW ROAD



Summary for Subcatchment EX-2: HILLCREST ESTATES

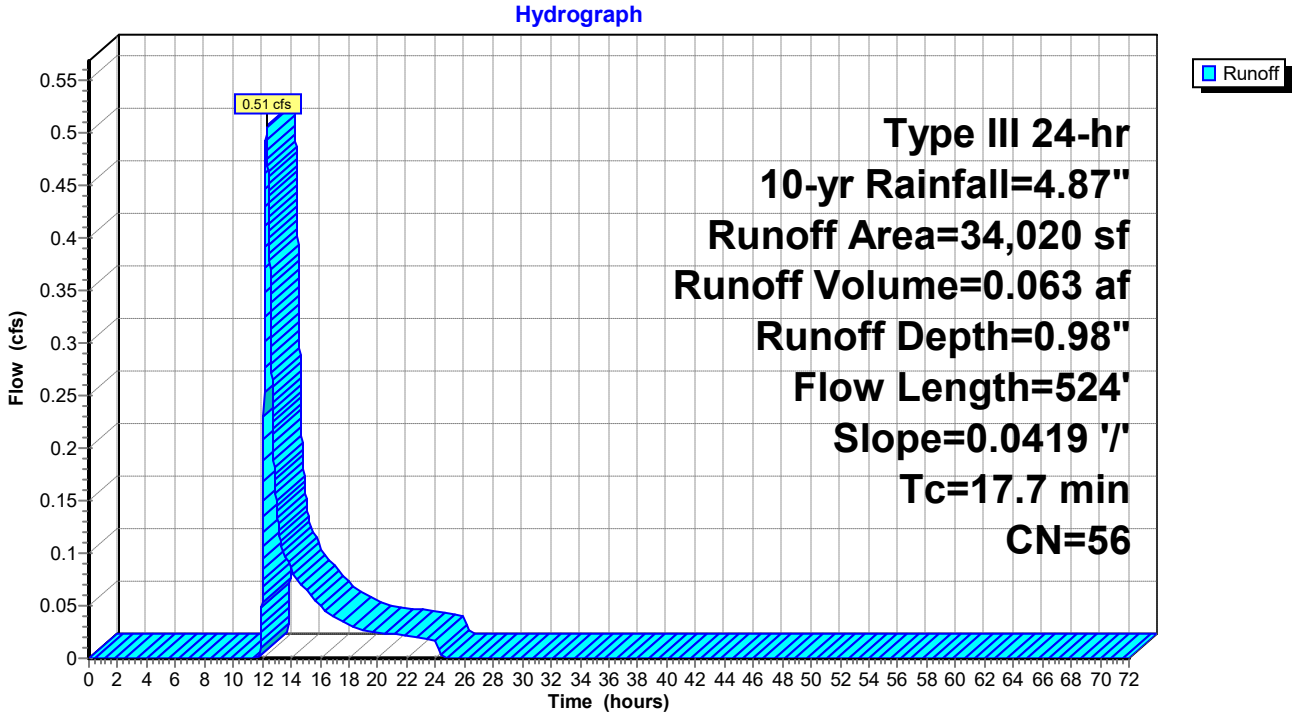
Runoff = 0.51 cfs @ 12.29 hrs, Volume= 0.063 af, Depth= 0.98"
Routed to Link OP-1 : WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.87"

Area (sf)	CN	Description
30,638	55	Woods, Good, HSG B
3,382	70	Woods, Good, HSG C
34,020	56	Weighted Average
34,020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.7	524	0.0419	0.49		**Lag/CN Method,**

Subcatchment EX-2: HILLCREST ESTATES



Summary for Subcatchment EX-3: 126 LANG ROAD

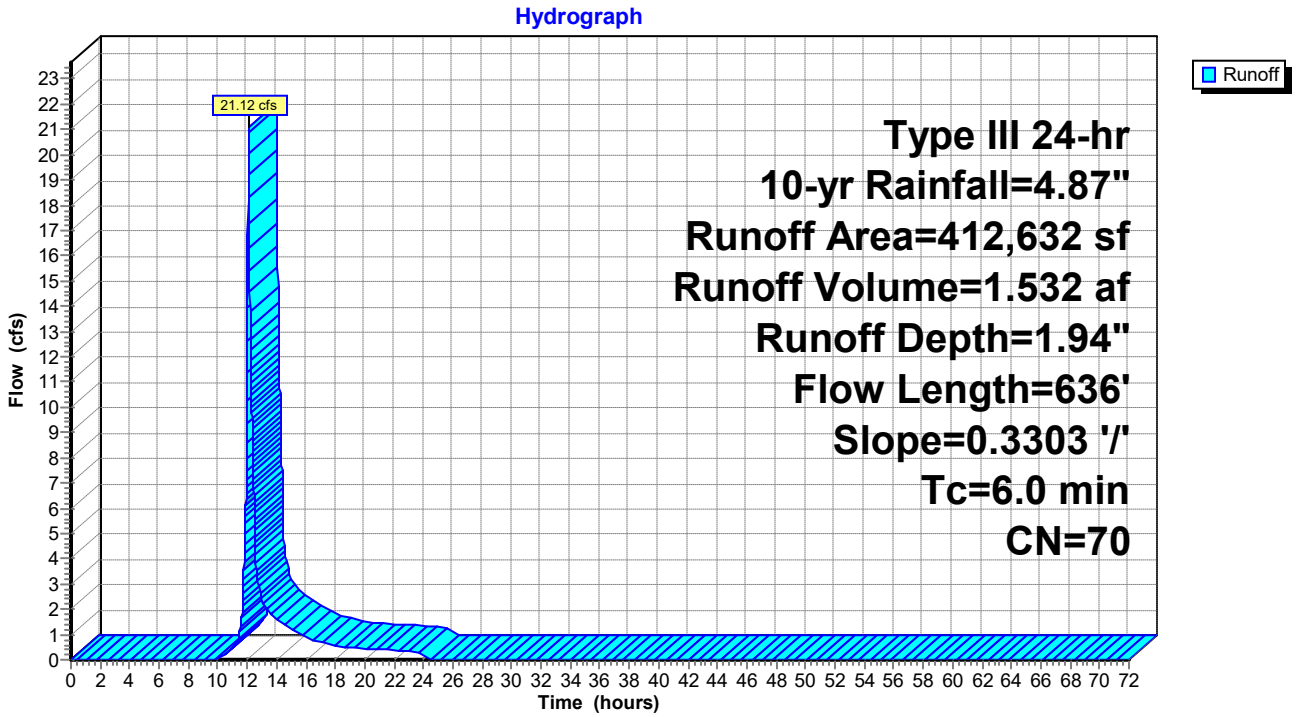
Runoff = 21.12 cfs @ 12.09 hrs, Volume= 1.532 af, Depth= 1.94"
Routed to Link OP-1 : WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.87"

Area (sf)	CN	Description
13,344	61	>75% Grass cover, Good, HSG B
235,383	74	>75% Grass cover, Good, HSG C
93,517	55	Woods, Good, HSG B
45,283	70	Woods, Good, HSG C
20,732	98	Unconnected pavement, HSG B
4,373	98	Roofs, HSG B
412,632	70	Weighted Average
387,527		93.92% Pervious Area
25,105		6.08% Impervious Area
20,732		82.58% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	636	0.3303	2.06		**Lag/CN Method,**
5.1	636	Total, Increased to minimum Tc = 6.0 min			

Subcatchment EX-3: 126 LANG ROAD



Summary for Subcatchment EX-4: LANG ROAD

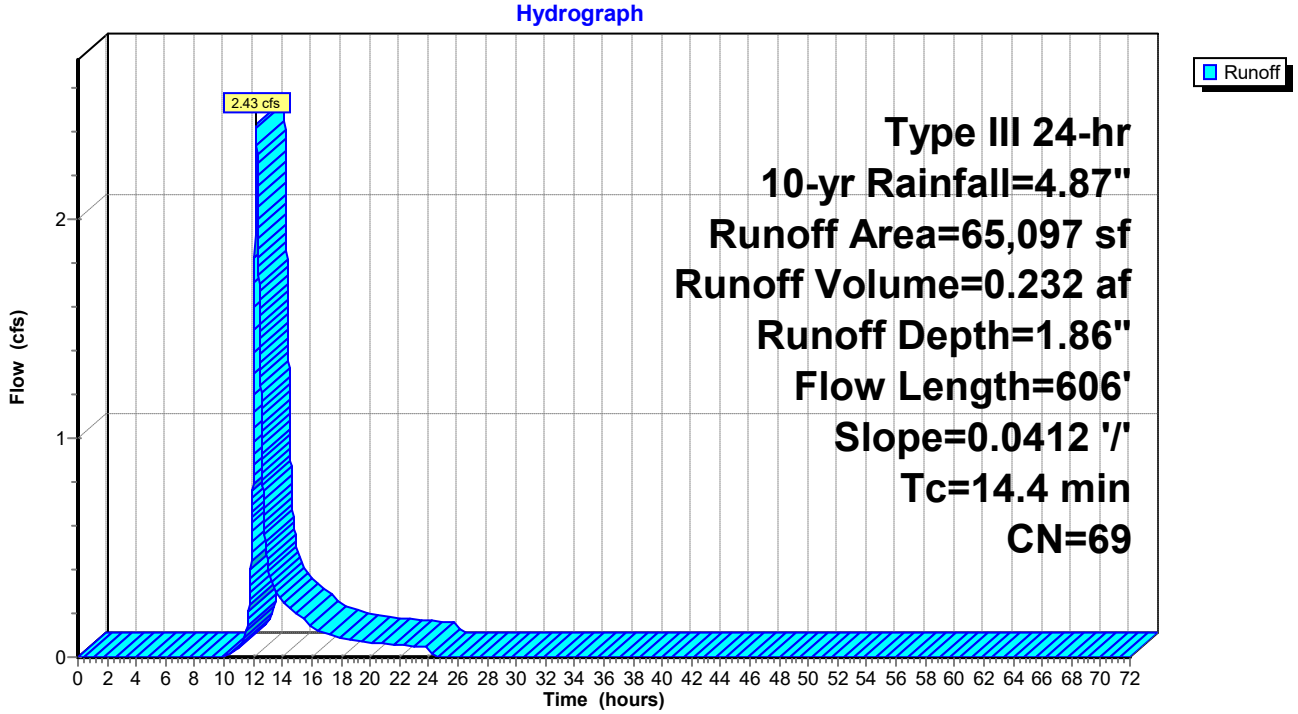
Runoff = 2.43 cfs @ 12.21 hrs, Volume= 0.232 af, Depth= 1.86"
Routed to Link OP-1 : WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.87"

Area (sf)	CN	Description
25,410	61	>75% Grass cover, Good, HSG B
3,343	74	>75% Grass cover, Good, HSG C
19,014	55	Woods, Good, HSG B
998	70	Woods, Good, HSG C
16,332	98	Paved parking, HSG B
65,097	69	Weighted Average
48,765		74.91% Pervious Area
16,332		25.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.4	606	0.0412	0.70		**Lag/CN Method,**

Subcatchment EX-4: LANG ROAD



Summary for Subcatchment P3.0: EX. POST 3.0

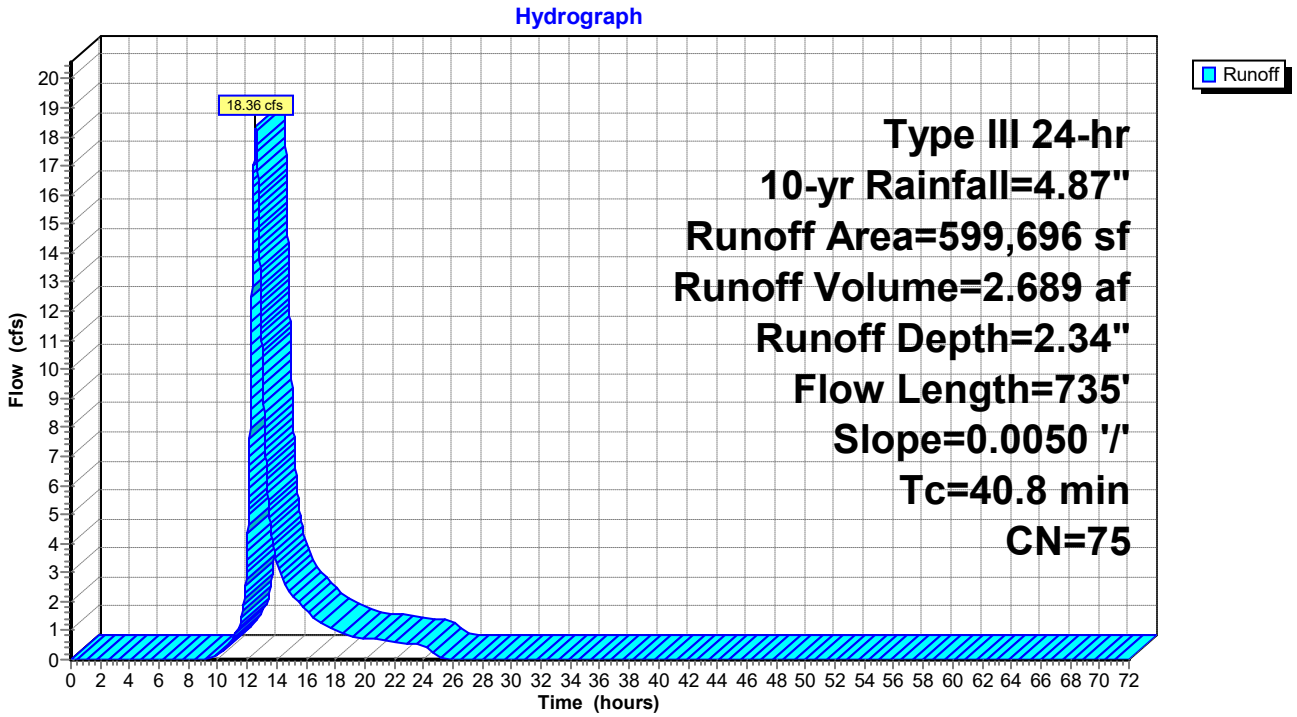
Runoff = 18.36 cfs @ 12.56 hrs, Volume= 2.689 af, Depth= 2.34"
Routed to Pond 40370 : EX-CB#40370

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.87"

Area (sf)	CN	Description
342,999	61	>75% Grass cover, Good, HSG B
195,405	98	Paved parking, HSG B
28,340	55	Woods, Good, HSG B
32,952	98	Roofs, HSG B
599,696	75	Weighted Average
371,339		61.92% Pervious Area
228,357		38.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.8	735	0.0050	0.30		**Lag/CN Method,**

Subcatchment P3.0: EX. POST 3.0



Summary for Subcatchment P3.2: EX POST 3.2

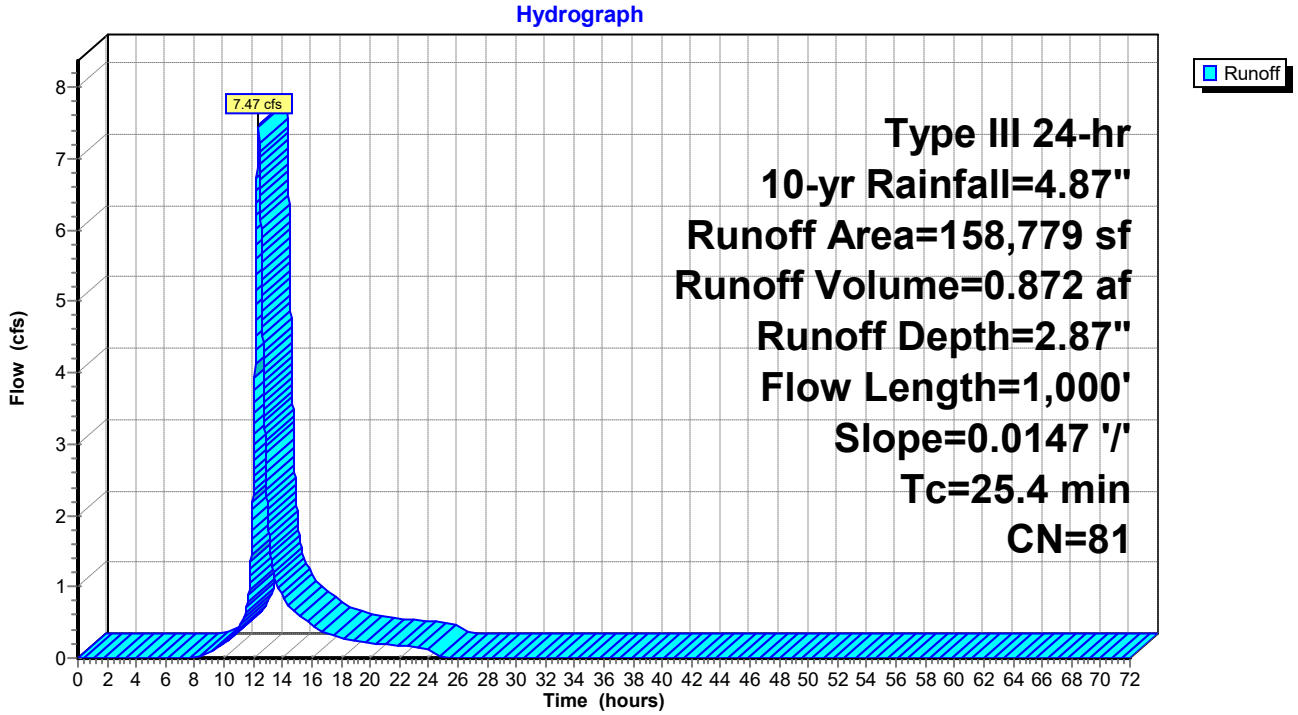
Runoff = 7.47 cfs @ 12.34 hrs, Volume= 0.872 af, Depth= 2.87"
Routed to Pond 50097 : EX-CB#50097

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.87"

Area (sf)	CN	Description
72,397	61	>75% Grass cover, Good, HSG B
81,496	98	Paved parking, HSG B
4,886	98	Roofs, HSG B
158,779	81	Weighted Average
72,397		45.60% Pervious Area
86,382		54.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.4	1,000	0.0147	0.66		**Lag/CN Method,**

Subcatchment P3.2: EX POST 3.2



Summary for Subcatchment P3.3: EX. POST 3.3

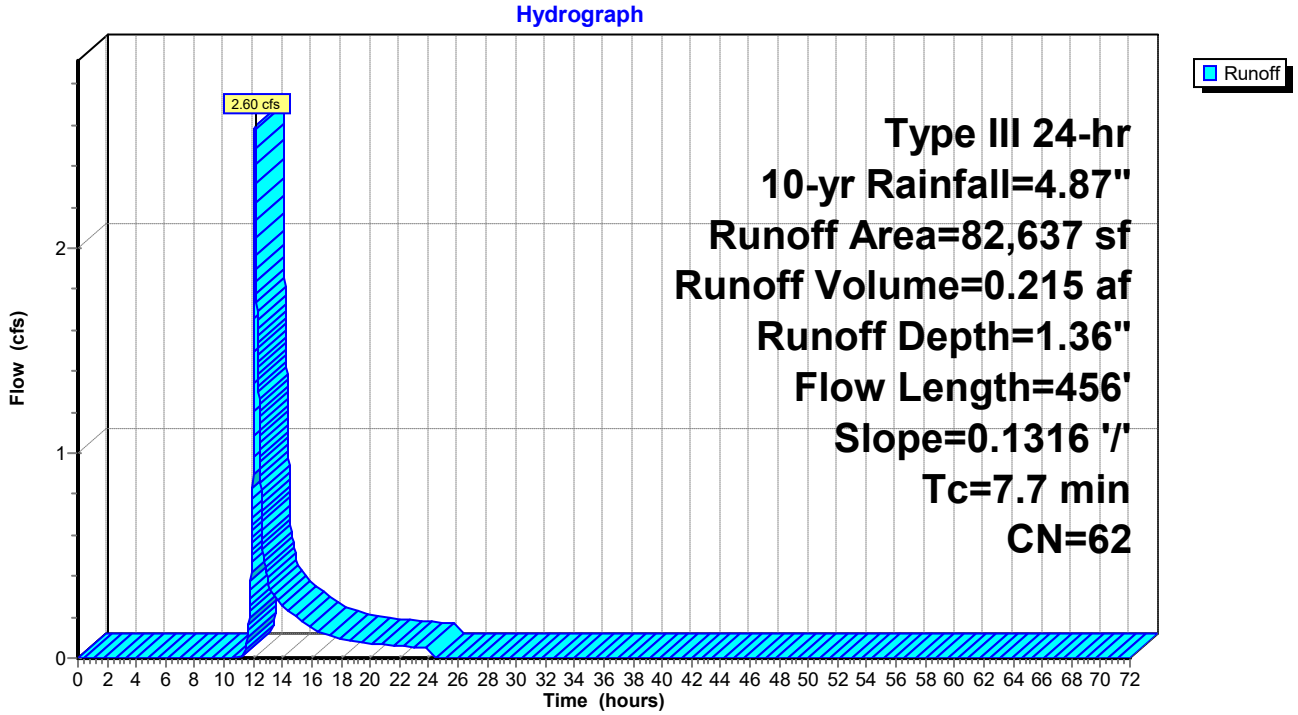
Runoff = 2.60 cfs @ 12.12 hrs, Volume= 0.215 af, Depth= 1.36"
Routed to Pond 2P : EX Stormwater Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.87"

Area (sf)	CN	Description
79,438	61	>75% Grass cover, Good, HSG B
2,132	98	Paved parking, HSG B
1,067	98	Roofs, HSG B
82,637	62	Weighted Average
79,438		96.13% Pervious Area
3,199		3.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	456	0.1316	0.99		**Lag/CN Method,**

Subcatchment P3.3: EX. POST 3.3



Summary for Pond 1P: EX. BIORETENTION BASIN

Inflow Area = 4.095 ac, 12.81% Impervious, Inflow Depth = 2.02" for 10-yr event
Inflow = 5.86 cfs @ 12.36 hrs, Volume= 0.689 af
Outflow = 0.64 cfs @ 14.62 hrs, Volume= 0.600 af, Atten= 89%, Lag= 136.0 min
Discarded = 0.64 cfs @ 14.62 hrs, Volume= 0.600 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 1008 : EX-DMH#1008

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 52.83' @ 14.62 hrs Surf.Area= 8,858 sf Storage= 16,059 cf
Flood Elev= 55.00' Surf.Area= 10,982 sf Storage= 30,024 cf

Plug-Flow detention time= 376.1 min calculated for 0.600 af (87% of inflow)
Center-of-Mass det. time= 317.3 min (1,181.0 - 863.7)

Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	413 cf	**FOREBAY (Irregular)** Listed below (Recalc)
#2	50.00'	33,799 cf	**ABOVE GROUND STORAGE (Irregular)** Listed below (Recalc)
#3	46.83'	3,837 cf	**TREATMENT BAY (Irregular)** Listed below (Recalc) 9,611 cf Overall - 18 cf Embedded = 9,593 cf x 40.0% Voids
#4	47.17'	18 cf	**6.0" Round UNDERDRAIN** Inside #3 L= 92.5'
		38,067 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
50.00	34	23.9	0	0	34
50.50	105	40.2	33	33	119
51.00	192	53.8	73	106	223
51.50	302	66.6	122	229	349
52.00	438	80.6	184	413	517

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
50.00	3,032	247.0	0	0	3,032
52.00	4,660	290.0	7,634	7,634	4,946
54.00	6,509	327.0	11,118	18,752	6,865
56.00	8,586	364.0	15,047	33,799	9,014

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
46.83	3,032	247.0	0	0	3,032
50.00	3,032	247.0	9,611	9,611	3,815

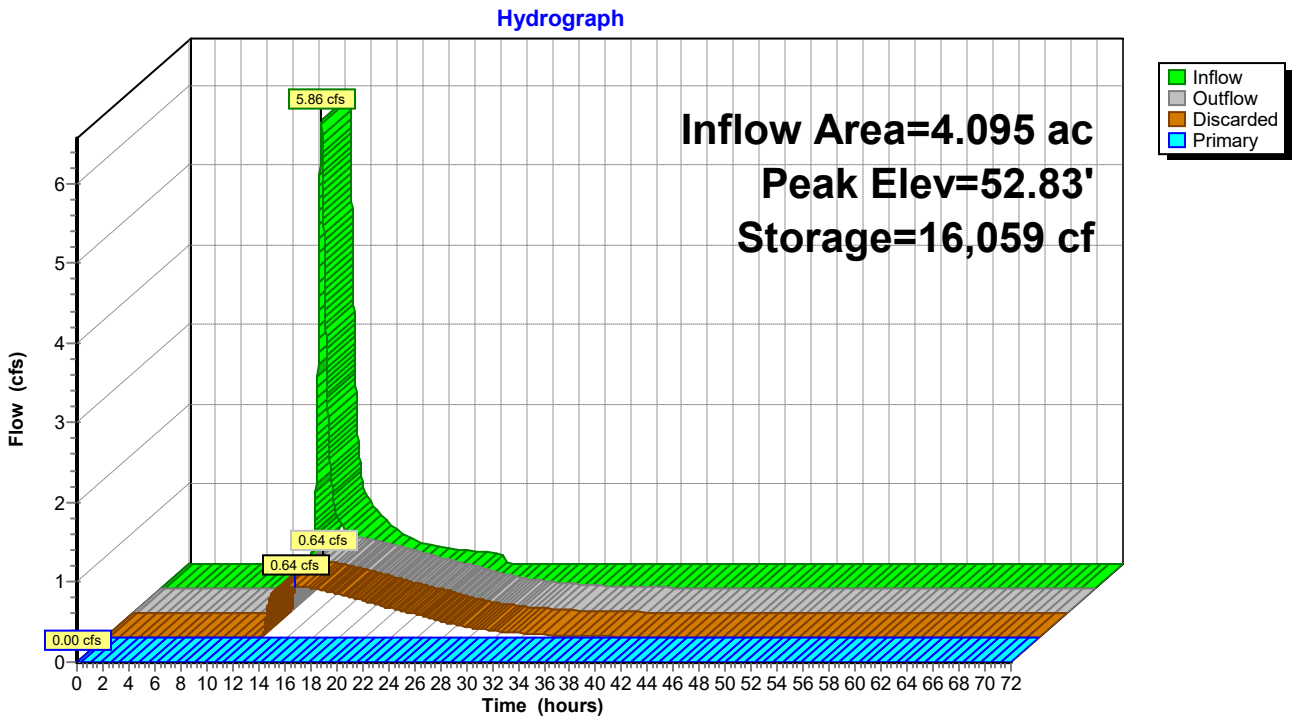
Device	Routing	Invert	Outlet Devices
#1	Primary	46.50'	**12.0" Round Culvert** L= 55.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.50' / 44.60' S= 0.0345 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

#2	Device 1	53.66'	**14.2" x 14.2" Horiz. OCS-(DMH#40188)** C= 0.600 Limited to weir flow at low heads
#3	Device 2	47.17'	**6.0" Vert. UNDERDRAIN** C= 0.600 Limited to weir flow at low heads
#4	Discarded	50.00'	**10.000 in/hr Exfiltration over Surface area above 50.00'** Excluded Surface area = 6,098 sf Phase-In= 0.01'

Discarded OutFlow Max=0.64 cfs @ 14.62 hrs HW=52.83' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.64 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=46.83' (Free Discharge)
└─**1=Culvert** (Passes 0.00 cfs of 0.35 cfs potential flow)
  └─**2=OCS-(DMH#40188)** (Controls 0.00 cfs)
    └─**3=UNDERDRAIN** (Controls 0.00 cfs)

Pond 1P: EX. BIORETENTION BASIN



Summary for Pond 2P: EX Stormwater Wetland

Inflow Area = 15.664 ac, 33.94% Impervious, Inflow Depth = 2.22" for 10-yr event
Inflow = 19.08 cfs @ 12.56 hrs, Volume= 2.904 af
Outflow = 16.15 cfs @ 12.78 hrs, Volume= 2.901 af, Atten= 15%, Lag= 13.1 min
Primary = 16.15 cfs @ 12.78 hrs, Volume= 2.901 af
Routed to Pond 50097 : EX-CB#50097

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 48.84' @ 12.78 hrs Surf.Area= 10,868 sf Storage= 12,226 cf

Plug-Flow detention time= 10.4 min calculated for 2.901 af (100% of inflow)
Center-of-Mass det. time= 9.8 min (878.5 - 868.7)

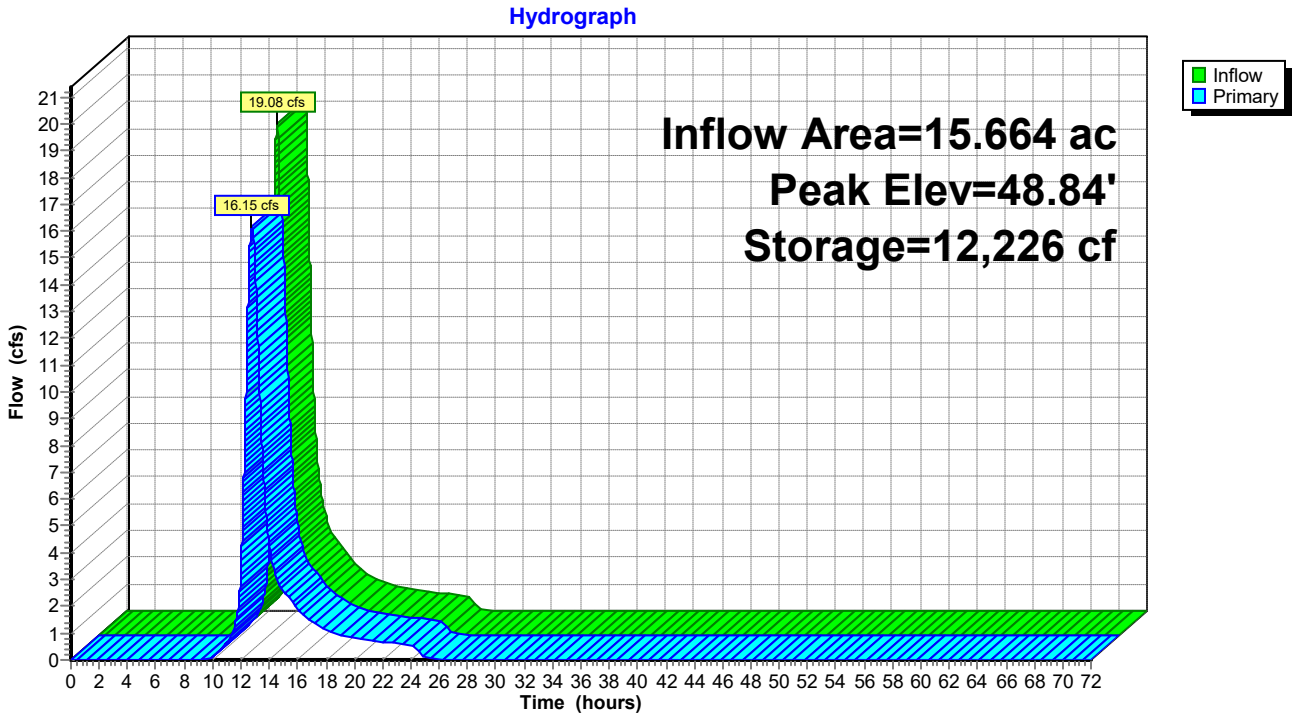
Volume	Invert	Avail.Storage	Storage Description
#1	46.50'	95,891 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
46.50	562	178.0	0	0	562
47.00	1,100	219.0	408	408	1,861
47.50	3,348	456.0	1,061	1,469	14,593
48.00	8,162	675.0	2,790	4,259	34,305
49.00	11,426	714.0	9,748	14,007	38,671
49.50	12,989	745.0	6,100	20,107	42,289
50.00	15,390	697.0	7,086	27,193	47,809
52.00	19,514	680.0	34,823	62,016	50,125
53.60	22,875	700.0	33,876	95,891	52,584

Device	Routing	Invert	Outlet Devices
#1	Primary	46.70'	**28.0" Round Culvert** L= 68.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.70' / 45.90' S= 0.0118 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 4.28 sf
#2	Device 1	49.50'	**6.0" Vert. 6" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	51.00'	**36.0" W x 8.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.50'	**4.0" W x 4.0" H Vert. Grate X 11.00 columns** X 11 rows with 5.0" cc spacing C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.15 cfs @ 12.78 hrs HW=48.84' (Free Discharge)
└─**1=Culvert** (Inlet Controls 16.15 cfs @ 3.93 fps)
  ├─**2=6" Orifice** (Controls 0.00 cfs)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**4=Grate** (Passes 16.15 cfs of 34.51 cfs potential flow)

Pond 2P: EX Stormwater Wetland



Summary for Pond 317: EX-DMH#317

[79] Warning: Submerged Pond 1008 Primary device # 1 OUTLET by 1.80'

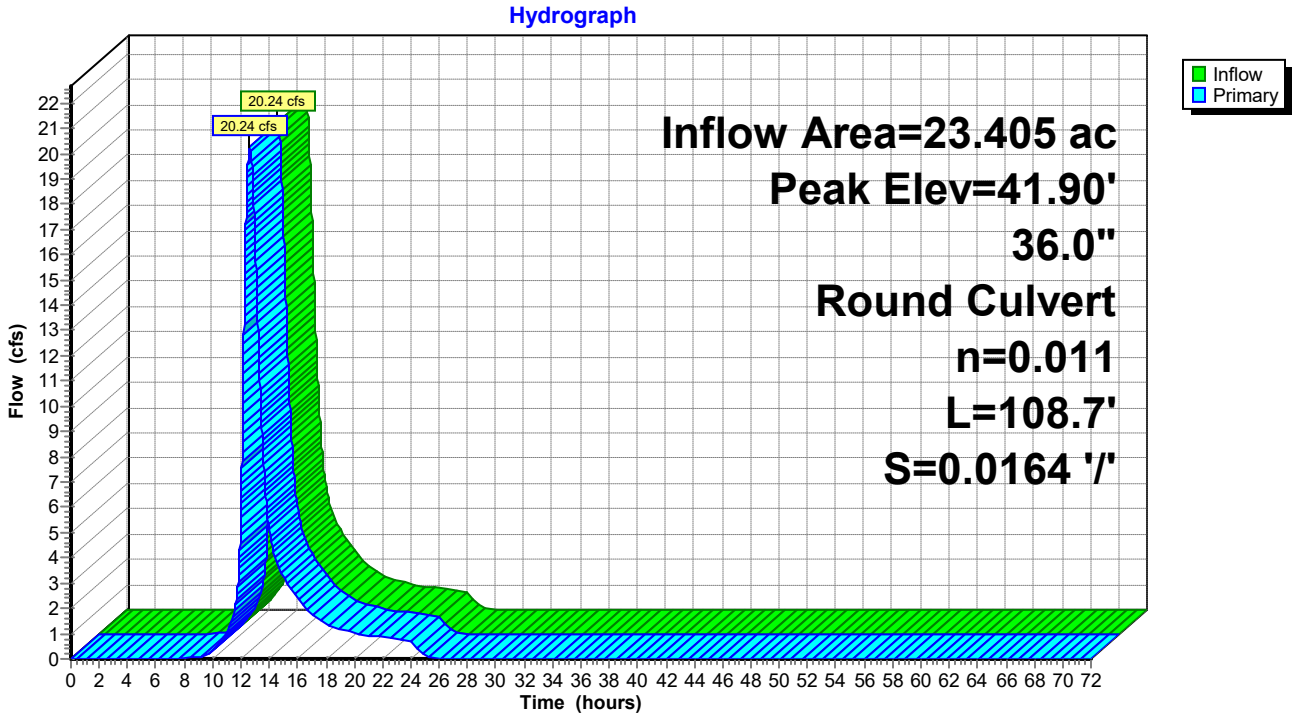
Inflow Area = 23.405 ac, 33.43% Impervious, Inflow Depth = 1.93" for 10-yr event
Inflow = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af
Outflow = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af, Atten= 0%, Lag= 0.0 min
Primary = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af
Routed to Link OP-1 : WETLAND AREA

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 41.90' @ 12.62 hrs
Flood Elev= 45.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	40.10'	**36.0" Round Culvert** L= 108.7' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 40.10' / 38.32' S= 0.0164 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf

Primary OutFlow Max=20.24 cfs @ 12.62 hrs HW=41.90' (Free Discharge)
└**1=Culvert** (Inlet Controls 20.24 cfs @ 4.57 fps)

Pond 317: EX-DMH#317



Summary for Pond 1002: EX-DMH#1002

[79] Warning: Submerged Pond 50097 Primary device # 1 by 1.20'

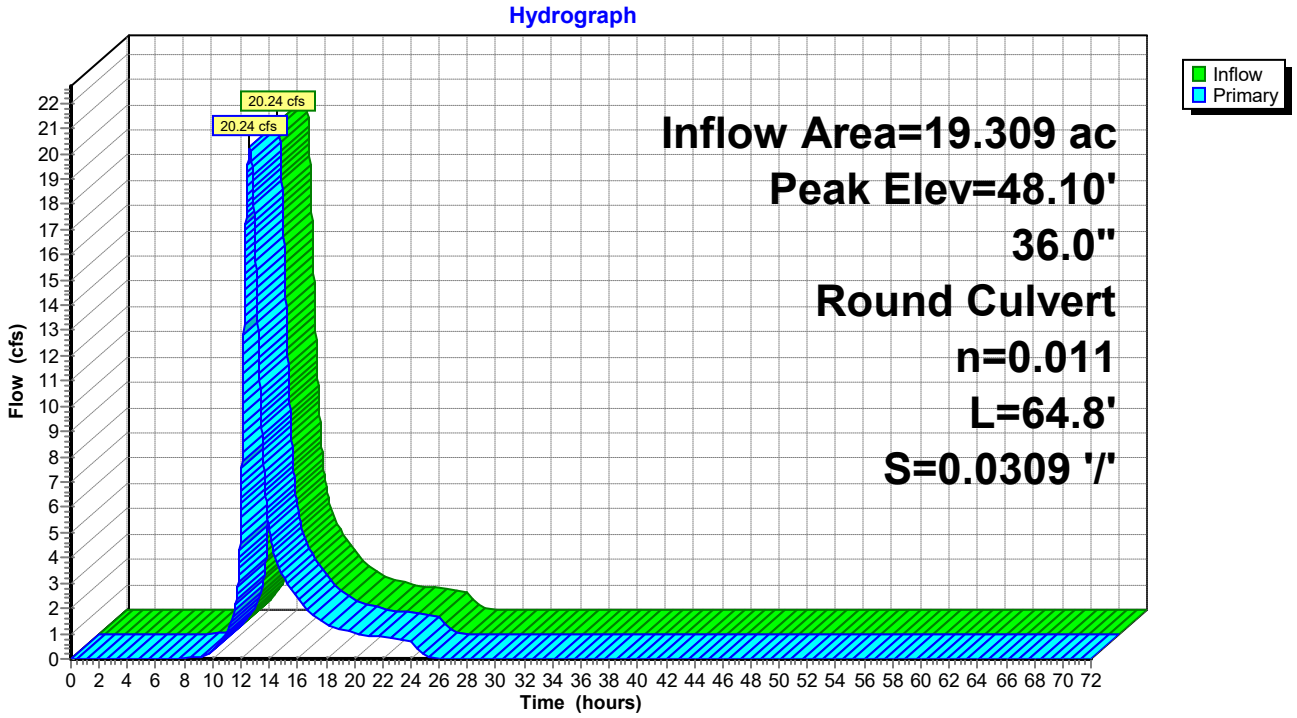
Inflow Area = 19.309 ac, 37.80% Impervious, Inflow Depth = 2.34" for 10-yr event
Inflow = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af
Outflow = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af, Atten= 0%, Lag= 0.0 min
Primary = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af
Routed to Pond 1008 : EX-DMH#1008

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 48.10' @ 12.62 hrs
Flood Elev= 58.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	46.30'	**36.0" Round Culvert** L= 64.8' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 46.30' / 44.30' S= 0.0309 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf

Primary OutFlow Max=20.23 cfs @ 12.62 hrs HW=48.10' (Free Discharge)
└**1=Culvert** (Inlet Controls 20.23 cfs @ 4.57 fps)

Pond 1002: EX-DMH#1002



Summary for Pond 1008: EX-DMH#1008

[79] Warning: Submerged Pond 1P Primary device # 1 OUTLET by 1.20'
[79] Warning: Submerged Pond 1002 Primary device # 1 OUTLET by 1.50'

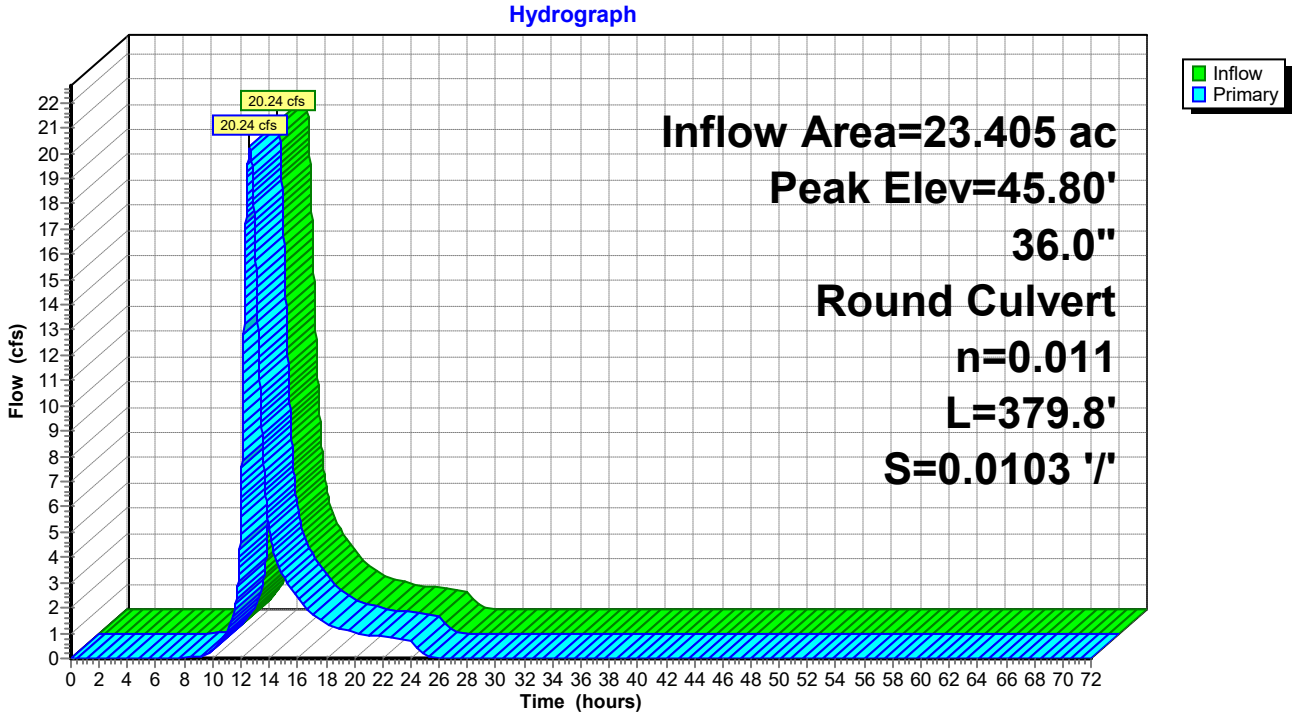
Inflow Area = 23.405 ac, 33.43% Impervious, Inflow Depth = 1.93" for 10-yr event
Inflow = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af
Outflow = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af, Atten= 0%, Lag= 0.0 min
Primary = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af
Routed to Pond 317 : EX-DMH#317

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 45.80' @ 12.62 hrs
Flood Elev= 57.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**36.0" Round Culvert** L= 379.8' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 44.00' / 40.10' S= 0.0103 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf

Primary OutFlow Max=20.23 cfs @ 12.62 hrs HW=45.80' (Free Discharge)
└**1=Culvert** (Inlet Controls 20.23 cfs @ 4.57 fps)

Pond 1008: EX-DMH#1008



Summary for Pond 40370: EX-CB#40370

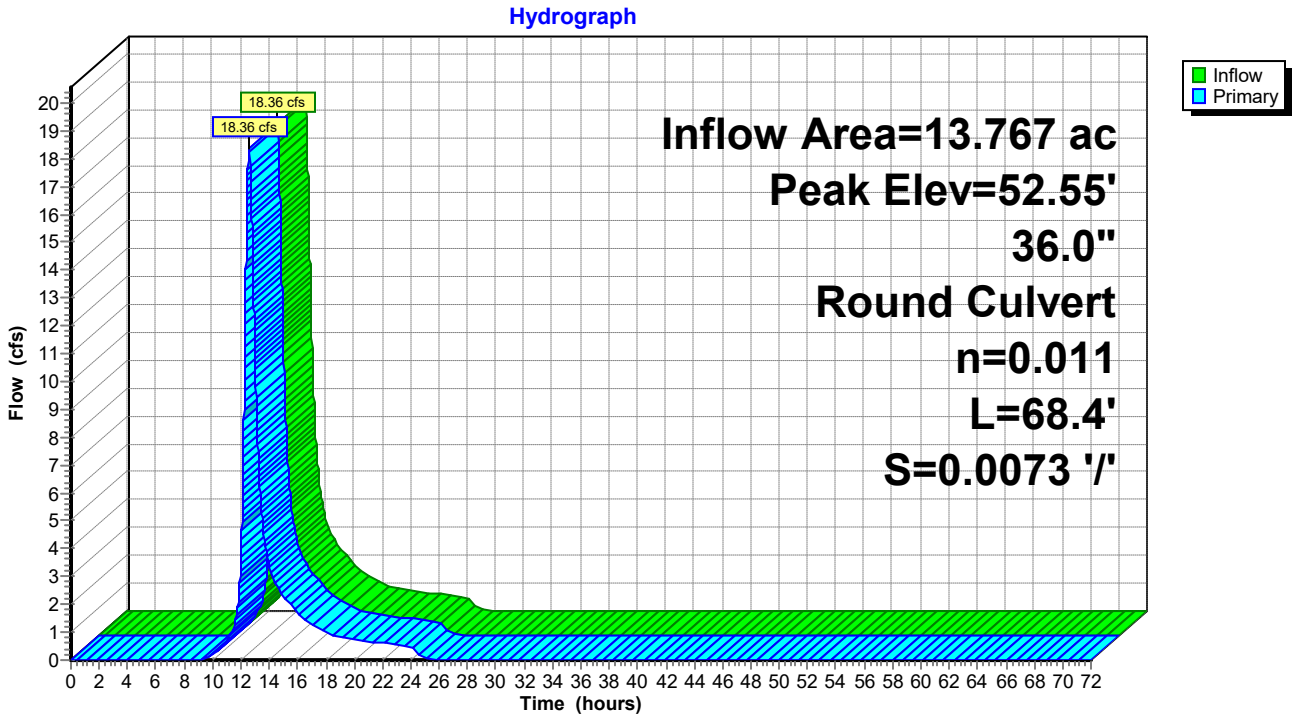
Inflow Area = 13.767 ac, 38.08% Impervious, Inflow Depth = 2.34" for 10-yr event
Inflow = 18.36 cfs @ 12.56 hrs, Volume= 2.689 af
Outflow = 18.36 cfs @ 12.56 hrs, Volume= 2.689 af, Atten= 0%, Lag= 0.0 min
Primary = 18.36 cfs @ 12.56 hrs, Volume= 2.689 af
Routed to Pond 50078 : EX-DMH#50078

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 52.55' @ 12.56 hrs
Flood Elev= 58.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	50.70'	**36.0" Round Culvert** L= 68.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 50.70' / 50.20' S= 0.0073 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf

Primary OutFlow Max=18.35 cfs @ 12.56 hrs HW=52.55' (Free Discharge)
└**1=Culvert** (Barrel Controls 18.35 cfs @ 5.74 fps)

Pond 40370: EX-CB#40370



Summary for Pond 50078: EX-DMH#50078

[79] Warning: Submerged Pond 40370 Primary device # 1 INLET by 1.30'

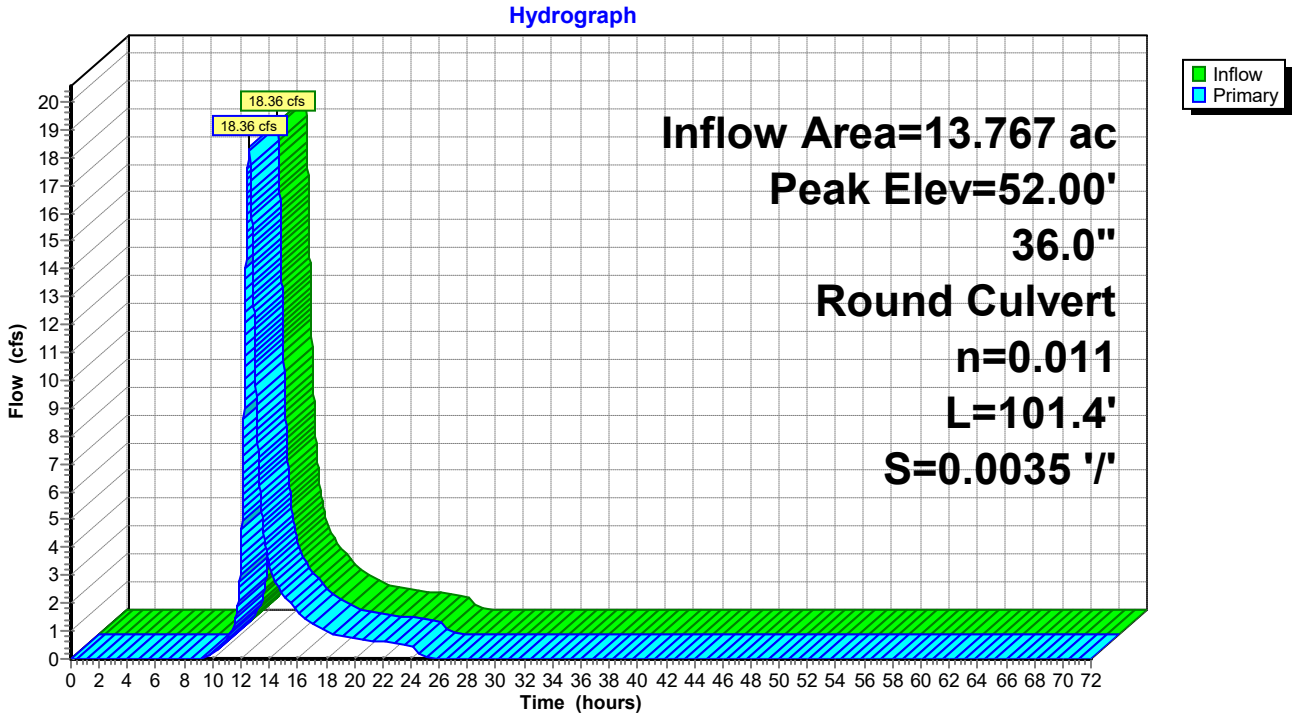
Inflow Area = 13.767 ac, 38.08% Impervious, Inflow Depth = 2.34" for 10-yr event
Inflow = 18.36 cfs @ 12.56 hrs, Volume= 2.689 af
Outflow = 18.36 cfs @ 12.56 hrs, Volume= 2.689 af, Atten= 0%, Lag= 0.0 min
Primary = 18.36 cfs @ 12.56 hrs, Volume= 2.689 af
Routed to Pond 2P : EX Stormwater Wetland

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 52.00' @ 12.56 hrs
Flood Elev= 57.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**36.0" Round Culvert** L= 101.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 50.00' / 49.65' S= 0.0035 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf

Primary OutFlow Max=18.35 cfs @ 12.56 hrs HW=52.00' (Free Discharge)
└**1=Culvert** (Barrel Controls 18.35 cfs @ 5.20 fps)

Pond 50078: EX-DMH#50078



Summary for Pond 50097: EX-CB#50097

[81] Warning: Exceeded Pond 2P by 0.51' @ 9.17 hrs

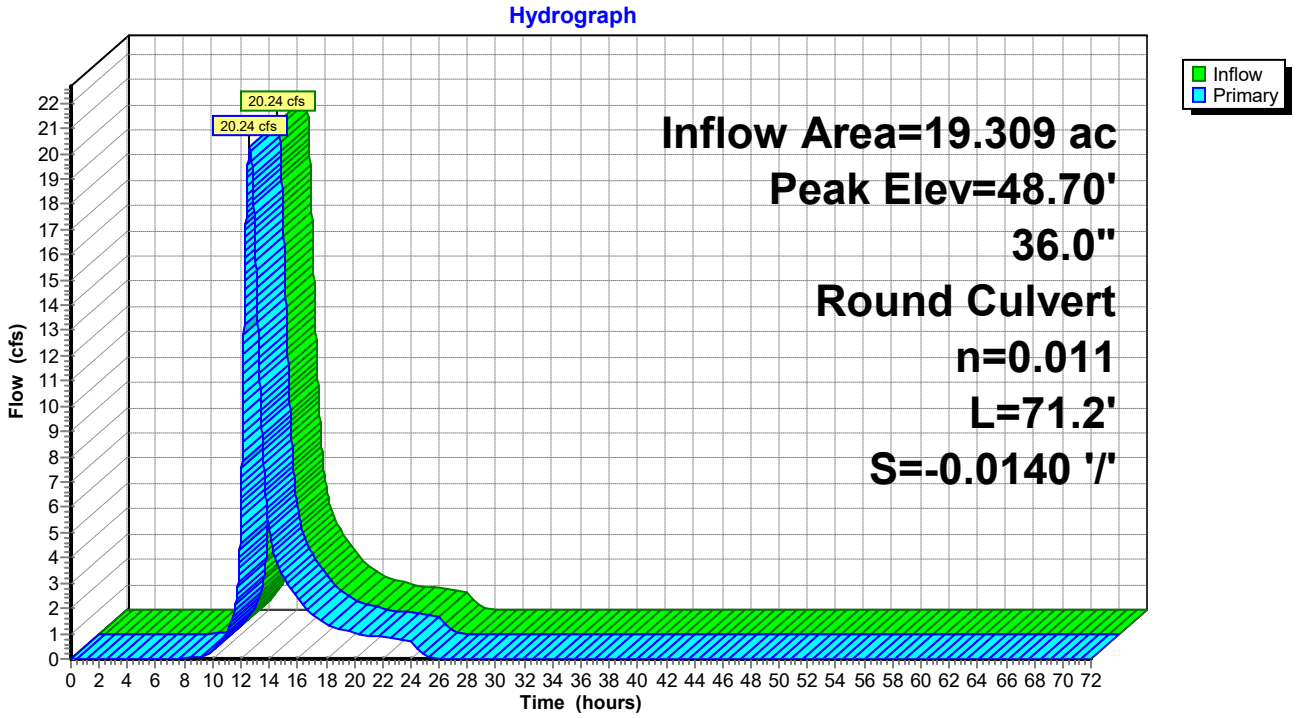
Inflow Area = 19.309 ac, 37.80% Impervious, Inflow Depth = 2.34" for 10-yr event
Inflow = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af
Outflow = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af, Atten= 0%, Lag= 0.0 min
Primary = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af
Routed to Pond 1002 : EX-DMH#1002

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 48.70' @ 12.62 hrs
Flood Elev= 57.82'

Device	Routing	Invert	Outlet Devices
#1	Primary	46.90'	**36.0" Round Culvert** L= 71.2' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 45.90' / 46.90' S= -0.0140 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf

Primary OutFlow Max=20.23 cfs @ 12.62 hrs HW=48.70' (Free Discharge)
└**1=Culvert** (Inlet Controls 20.23 cfs @ 4.57 fps)

Pond 50097: EX-CB#50097



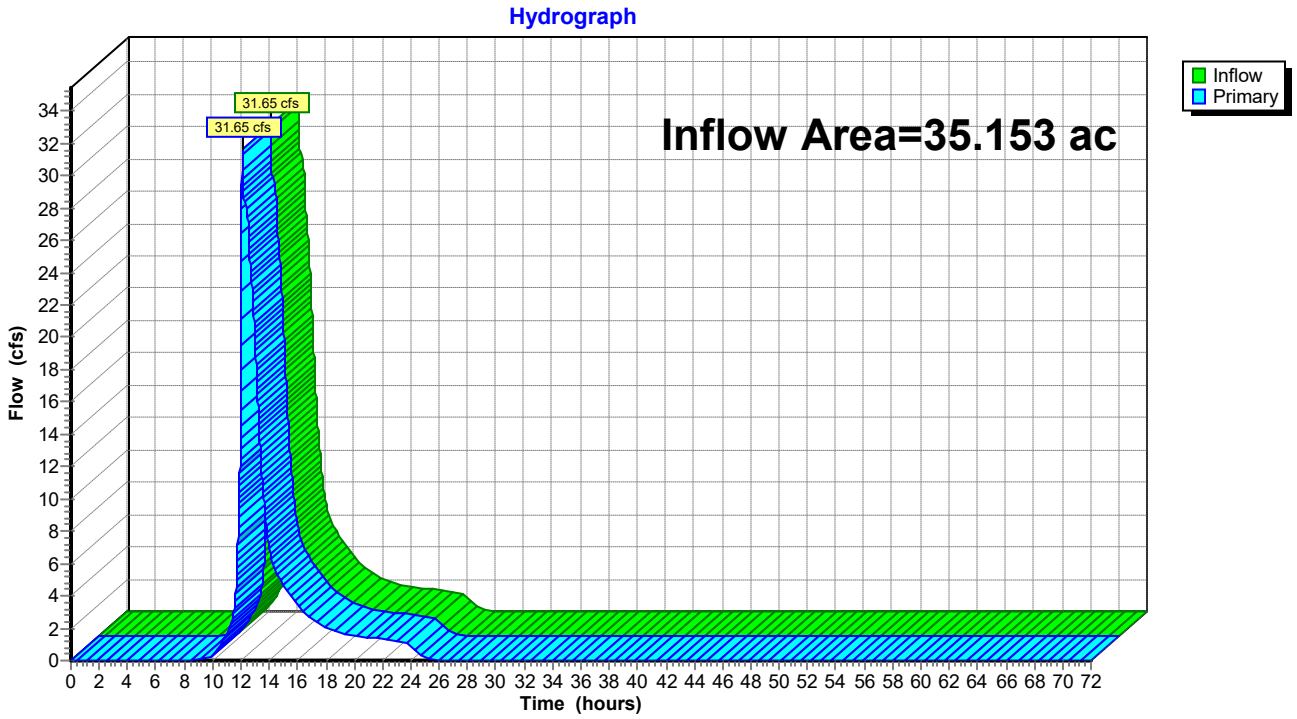
Summary for Link OP-1: WETLAND AREA

AREA IS COMPOSED OF THE ENTIRE EASTERN END OF THE PARCEL THAT IS MADE UP BY WETLANDS AND WOODED AREA

Inflow Area = 35.153 ac, 24.96% Impervious, Inflow Depth = 1.91" for 10-yr event
Inflow = 31.65 cfs @ 12.11 hrs, Volume= 5.601 af
Primary = 31.65 cfs @ 12.11 hrs, Volume= 5.601 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link OP-1: WETLAND AREA



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Section 2.1: Developed Conditions

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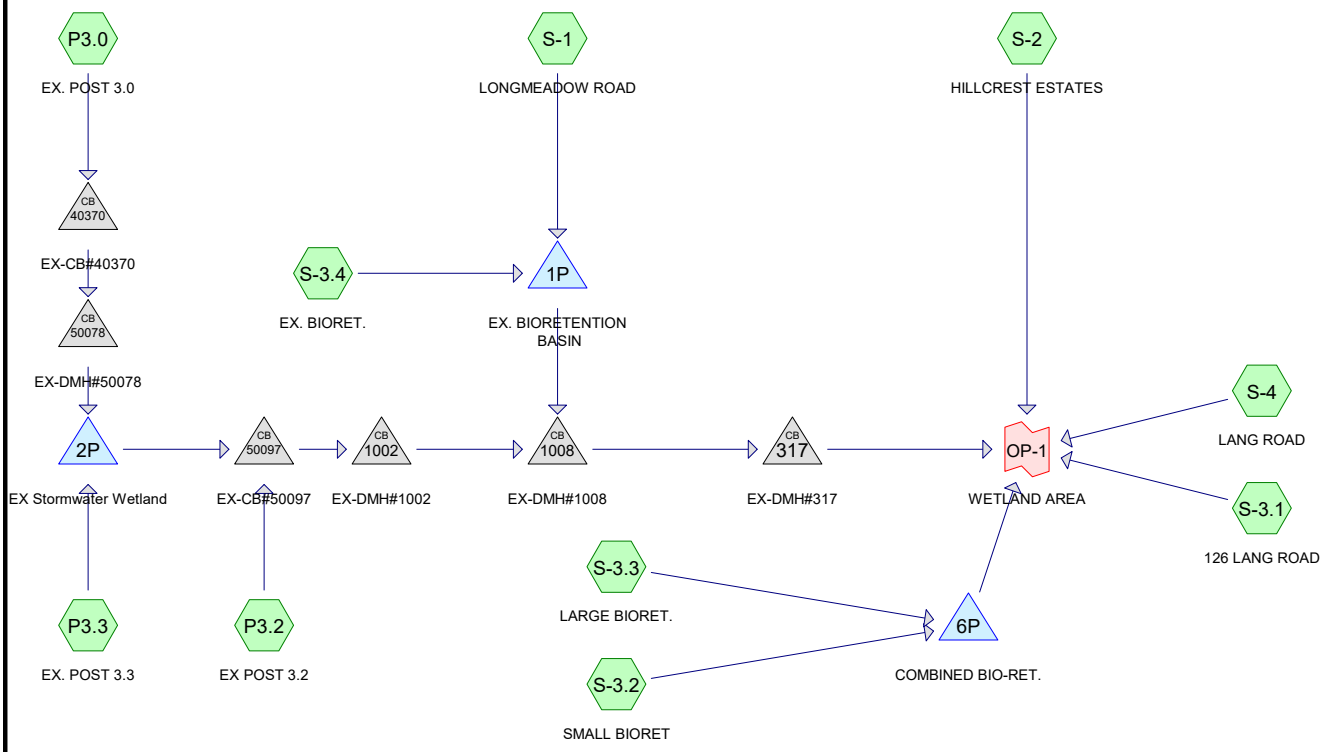

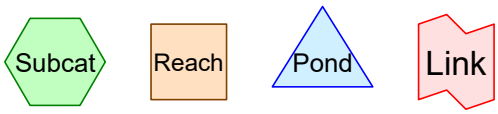

Routing Diagram for 24-1787DV00
Prepared by McClure, Printed 5/4/2025
HydroCAD® 10.20-2h s/n 12811 © 2024 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-yr	Type III 24-hr		Default	24.00	1	3.74	2
2	10-yr	Type III 24-hr		Default	24.00	1	4.87	2
3	25-yr	Type III 24-hr		Default	24.00	1	7.19	2
4	50-yr	Type III 24-hr		Default	24.00	1	8.61	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
14.688	61	>75% Grass cover, Good, HSG B (P3.0, P3.2, P3.3, S-1, S-3.1, S-4)
2.560	74	>75% Grass cover, Good, HSG C (S-3.1, S-3.2, S-3.3, S-3.4)
7.501	98	Paved parking, HSG B (P3.0, P3.2, P3.3, S-1, S-3.4, S-4)
1.776	98	Paved parking, HSG C (S-3.2, S-3.3, S-3.4)
0.893	98	Roofs, HSG B (P3.0, P3.2, P3.3)
0.926	98	Roofs, HSG C (S-3.2, S-3.3)
0.022	98	Unconnected pavement, HSG C (S-3.1)
3.754	55	Woods, Good, HSG B (P3.0, S-1, S-2, S-3.1, S-4)
3.032	70	Woods, Good, HSG C (S-2, S-3.1)
35.153	**74**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
26.837	HSG B	P3.0, P3.2, P3.3, S-1, S-2, S-3.1, S-3.4, S-4
8.316	HSG C	S-2, S-3.1, S-3.2, S-3.3, S-3.4
0.000	HSG D	
0.000	Other	
35.153		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	14.688	2.560	0.000	0.000	17.248	>75% Grass cover, Good	P3.0, P3.2, P3.3, S-1, S-3.1, S-3.2, S-3.3, S-3.4, S-4
0.000	7.501	1.776	0.000	0.000	9.278	Paved parking	P3.0, P3.2, P3.3, S-1, S-3.2, S-3.3, S-3.4, S-4
0.000	0.893	0.926	0.000	0.000	1.819	Roofs	P3.0, P3.2, P3.3, S-3.2, S-3.3
0.000	0.000	0.022	0.000	0.000	0.022	Unconnected pavement	S-3.1
0.000	3.754	3.032	0.000	0.000	6.787	Woods, Good	P3.0, S-1, S-2, S-3.1, S-4
0.000	**26.837**	**8.316**	**0.000**	**0.000**	**35.153**	**TOTAL AREA**	

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment P3.0: EX. POST 3.0 Runoff Area=599,696 sf 38.08% Impervious Runoff Depth=1.47"
Flow Length=735' Slope=0.0050 '/' Tc=40.8 min CN=75 Runoff=11.30 cfs 1.691 af

Subcatchment P3.2: EX POST 3.2 Runoff Area=158,779 sf 54.40% Impervious Runoff Depth=1.90"
Flow Length=1,000' Slope=0.0147 '/' Tc=25.4 min CN=81 Runoff=4.94 cfs 0.579 af

Subcatchment P3.3: EX. POST 3.3 Runoff Area=82,637 sf 3.87% Impervious Runoff Depth=0.73"
Flow Length=456' Slope=0.1316 '/' Tc=7.7 min CN=62 Runoff=1.22 cfs 0.116 af

Subcatchment S-1: LONGMEADOW ROAD Runoff Area=129,521 sf 22.62% Impervious Runoff Depth=1.04"
Flow Length=1,018' Slope=0.0196 '/' Tc=32.4 min CN=68 Runoff=1.82 cfs 0.259 af

Subcatchment S-2: HILLCREST ESTATES Runoff Area=34,020 sf 0.00% Impervious Runoff Depth=0.47"
Flow Length=524' Slope=0.0419 '/' Tc=17.7 min CN=56 Runoff=0.18 cfs 0.031 af

Subcatchment S-3.1: 126 LANG ROAD Runoff Area=310,246 sf 0.31% Impervious Runoff Depth=0.88"
Flow Length=597' Slope=0.0301 '/' Tc=18.5 min CN=65 Runoff=4.39 cfs 0.523 af

Subcatchment S-3.2: SMALL BIORET Runoff Area=55,893 sf 76.86% Impervious Runoff Depth=2.87"
Flow Length=357' Slope=0.0336 '/' Tc=6.0 min CN=92 Runoff=4.17 cfs 0.307 af

Subcatchment S-3.3: LARGE BIORET. Runoff Area=105,742 sf 56.96% Impervious Runoff Depth=2.49"
Flow Length=565' Slope=0.0248 '/' Tc=9.7 min CN=88 Runoff=6.20 cfs 0.503 af

Subcatchment S-3.4: EX. BIORET. Runoff Area=19,256 sf 94.71% Impervious Runoff Depth=3.39"
Flow Length=215' Slope=0.0093 '/' Tc=6.0 min CN=97 Runoff=1.59 cfs 0.125 af

Subcatchment S-4: LANG ROAD Runoff Area=35,463 sf 41.45% Impervious Runoff Depth=1.54"
Flow Length=606' Slope=0.0404 '/' Tc=11.9 min CN=76 Runoff=1.19 cfs 0.105 af

Pond 1P: EX. BIORETENTION BASIN Peak Elev=51.47' Storage=9,347 cf Inflow=2.19 cfs 0.384 af
Discarded=0.33 cfs 0.295 af Primary=0.00 cfs 0.000 af Outflow=0.33 cfs 0.295 af

Pond 2P: EX Stormwater Wetland Peak Elev=48.27' Storage=6,537 cf Inflow=11.69 cfs 1.807 af
Outflow=10.26 cfs 1.804 af

Pond 6P: COMBINED BIO-RET. Peak Elev=51.52' Storage=11,217 cf Inflow=10.01 cfs 0.810 af
Discarded=2.09 cfs 0.810 af Primary=0.00 cfs 0.000 af Outflow=2.09 cfs 0.810 af

Pond 317: EX-DMH#317 Peak Elev=41.50' Inflow=13.01 cfs 2.383 af
36.0" Round Culvert n=0.011 L=108.7' S=0.0164 '/' Outflow=13.01 cfs 2.383 af

Pond 1002: EX-DMH#1002 Peak Elev=47.70' Inflow=13.01 cfs 2.383 af
36.0" Round Culvert n=0.011 L=64.8' S=0.0309 '/' Outflow=13.01 cfs 2.383 af

Pond 1008: EX-DMH#1008 Peak Elev=45.40' Inflow=13.01 cfs 2.383 af
36.0" Round Culvert n=0.011 L=379.8' S=0.0103 '/' Outflow=13.01 cfs 2.383 af

Pond 40370: EX-CB#40370 Peak Elev=52.08' Inflow=11.30 cfs 1.691 af
36.0" Round Culvert n=0.011 L=68.4' S=0.0073 '/' Outflow=11.30 cfs 1.691 af

Pond 50078: EX-DMH#50078 Peak Elev=51.51' Inflow=11.30 cfs 1.691 af
36.0" Round Culvert n=0.011 L=101.4' S=0.0035 '/' Outflow=11.30 cfs 1.691 af

Pond 50097: EX-CB#50097 Peak Elev=48.30' Inflow=13.01 cfs 2.383 af
36.0" Round Culvert n=0.011 L=71.2' S=-0.0140 '/' Outflow=13.01 cfs 2.383 af

Link OP-1: WETLAND AREA Inflow=16.65 cfs 3.041 af
Primary=16.65 cfs 3.041 af

Total Runoff Area = 35.153 ac Runoff Volume = 4.237 af Average Runoff Depth = 1.45"
68.37% Pervious = 24.034 ac 31.63% Impervious = 11.118 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment P3.0: EX. POST 3.0 Runoff Area=599,696 sf 38.08% Impervious Runoff Depth=2.34"
Flow Length=735' Slope=0.0050 '/' Tc=40.8 min CN=75 Runoff=18.36 cfs 2.689 af

Subcatchment P3.2: EX POST 3.2 Runoff Area=158,779 sf 54.40% Impervious Runoff Depth=2.87"
Flow Length=1,000' Slope=0.0147 '/' Tc=25.4 min CN=81 Runoff=7.47 cfs 0.872 af

Subcatchment P3.3: EX. POST 3.3 Runoff Area=82,637 sf 3.87% Impervious Runoff Depth=1.36"
Flow Length=456' Slope=0.1316 '/' Tc=7.7 min CN=62 Runoff=2.60 cfs 0.215 af

Subcatchment S-1: LONGMEADOW ROAD Runoff Area=129,521 sf 22.62% Impervious Runoff Depth=1.79"
Flow Length=1,018' Slope=0.0196 '/' Tc=32.4 min CN=68 Runoff=3.29 cfs 0.443 af

Subcatchment S-2: HILLCREST ESTATES Runoff Area=34,020 sf 0.00% Impervious Runoff Depth=0.98"
Flow Length=524' Slope=0.0419 '/' Tc=17.7 min CN=56 Runoff=0.51 cfs 0.063 af

Subcatchment S-3.1: 126 LANG ROAD Runoff Area=310,246 sf 0.31% Impervious Runoff Depth=1.57"
Flow Length=597' Slope=0.0301 '/' Tc=18.5 min CN=65 Runoff=8.56 cfs 0.930 af

Subcatchment S-3.2: SMALL BIORET Runoff Area=55,893 sf 76.86% Impervious Runoff Depth=3.96"
Flow Length=357' Slope=0.0336 '/' Tc=6.0 min CN=92 Runoff=5.67 cfs 0.424 af

Subcatchment S-3.3: LARGE BIORET. Runoff Area=105,742 sf 56.96% Impervious Runoff Depth=3.55"
Flow Length=565' Slope=0.0248 '/' Tc=9.7 min CN=88 Runoff=8.73 cfs 0.717 af

Subcatchment S-3.4: EX. BIORET. Runoff Area=19,256 sf 94.71% Impervious Runoff Depth=4.52"
Flow Length=215' Slope=0.0093 '/' Tc=6.0 min CN=97 Runoff=2.09 cfs 0.166 af

Subcatchment S-4: LANG ROAD Runoff Area=35,463 sf 41.45% Impervious Runoff Depth=2.43"
Flow Length=606' Slope=0.0404 '/' Tc=11.9 min CN=76 Runoff=1.90 cfs 0.165 af

Pond 1P: EX. BIORETENTION BASIN Peak Elev=52.53' Storage=14,497 cf Inflow=3.80 cfs 0.609 af
Discarded=0.58 cfs 0.521 af Primary=0.00 cfs 0.000 af Outflow=0.58 cfs 0.521 af

Pond 2P: EX Stormwater Wetland Peak Elev=48.84' Storage=12,226 cf Inflow=19.08 cfs 2.904 af
Outflow=16.15 cfs 2.901 af

Pond 6P: COMBINED BIO-RET. Peak Elev=52.17' Storage=14,946 cf Inflow=13.91 cfs 1.141 af
Discarded=2.30 cfs 1.063 af Primary=3.55 cfs 0.078 af Outflow=5.86 cfs 1.141 af

Pond 317: EX-DMH#317 Peak Elev=41.90' Inflow=20.24 cfs 3.773 af
36.0" Round Culvert n=0.011 L=108.7' S=0.0164 '/' Outflow=20.24 cfs 3.773 af

Pond 1002: EX-DMH#1002 Peak Elev=48.10' Inflow=20.24 cfs 3.773 af
36.0" Round Culvert n=0.011 L=64.8' S=0.0309 '/' Outflow=20.24 cfs 3.773 af

Pond 1008: EX-DMH#1008 Peak Elev=45.80' Inflow=20.24 cfs 3.773 af
36.0" Round Culvert n=0.011 L=379.8' S=0.0103 '/' Outflow=20.24 cfs 3.773 af

Pond 40370: EX-CB#40370 Peak Elev=52.55' Inflow=18.36 cfs 2.689 af
36.0" Round Culvert n=0.011 L=68.4' S=0.0073 '/' Outflow=18.36 cfs 2.689 af

Pond 50078: EX-DMH#50078 Peak Elev=52.00' Inflow=18.36 cfs 2.689 af
36.0" Round Culvert n=0.011 L=101.4' S=0.0035 '/' Outflow=18.36 cfs 2.689 af

Pond 50097: EX-CB#50097 Peak Elev=48.70' Inflow=20.24 cfs 3.773 af
36.0" Round Culvert n=0.011 L=71.2' S=-0.0140 '/' Outflow=20.24 cfs 3.773 af

Link OP-1: WETLAND AREA Inflow=30.68 cfs 5.010 af
Primary=30.68 cfs 5.010 af

Total Runoff Area = 35.153 ac Runoff Volume = 6.685 af Average Runoff Depth = 2.28"
68.37% Pervious = 24.034 ac 31.63% Impervious = 11.118 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment P3.0: EX. POST 3.0 Runoff Area=599,696 sf 38.08% Impervious Runoff Depth=4.32"
Flow Length=735' Slope=0.0050 '/' Tc=40.8 min CN=75 Runoff=34.04 cfs 4.953 af

Subcatchment P3.2: EX POST 3.2 Runoff Area=158,779 sf 54.40% Impervious Runoff Depth=4.98"
Flow Length=1,000' Slope=0.0147 '/' Tc=25.4 min CN=81 Runoff=12.85 cfs 1.513 af

Subcatchment P3.3: EX. POST 3.3 Runoff Area=82,637 sf 3.87% Impervious Runoff Depth=2.94"
Flow Length=456' Slope=0.1316 '/' Tc=7.7 min CN=62 Runoff=6.06 cfs 0.465 af

Subcatchment S-1: LONGMEADOW ROAD Runoff Area=129,521 sf 22.62% Impervious Runoff Depth=3.56"
Flow Length=1,018' Slope=0.0196 '/' Tc=32.4 min CN=68 Runoff=6.75 cfs 0.883 af

Subcatchment S-2: HILLCREST ESTATES Runoff Area=34,020 sf 0.00% Impervious Runoff Depth=2.34"
Flow Length=524' Slope=0.0419 '/' Tc=17.7 min CN=56 Runoff=1.43 cfs 0.152 af

Subcatchment S-3.1: 126 LANG ROAD Runoff Area=310,246 sf 0.31% Impervious Runoff Depth=3.25"
Flow Length=597' Slope=0.0301 '/' Tc=18.5 min CN=65 Runoff=18.69 cfs 1.929 af

Subcatchment S-3.2: SMALL BIORET Runoff Area=55,893 sf 76.86% Impervious Runoff Depth=6.24"
Flow Length=357' Slope=0.0336 '/' Tc=6.0 min CN=92 Runoff=8.70 cfs 0.667 af

Subcatchment S-3.3: LARGE BIORET. Runoff Area=105,742 sf 56.96% Impervious Runoff Depth=5.78"
Flow Length=565' Slope=0.0248 '/' Tc=9.7 min CN=88 Runoff=13.89 cfs 1.169 af

Subcatchment S-3.4: EX. BIORET. Runoff Area=19,256 sf 94.71% Impervious Runoff Depth=6.83"
Flow Length=215' Slope=0.0093 '/' Tc=6.0 min CN=97 Runoff=3.11 cfs 0.252 af

Subcatchment S-4: LANG ROAD Runoff Area=35,463 sf 41.45% Impervious Runoff Depth=4.43"
Flow Length=606' Slope=0.0404 '/' Tc=11.9 min CN=76 Runoff=3.48 cfs 0.300 af

Pond 1P: EX. BIORETENTION BASIN Peak Elev=54.34' Storage=25,297 cf Inflow=7.57 cfs 1.135 af
Discarded=0.98 cfs 0.892 af Primary=0.78 cfs 0.155 af Outflow=1.76 cfs 1.046 af

Pond 2P: EX Stormwater Wetland Peak Elev=50.31' Storage=32,034 cf Inflow=35.51 cfs 5.418 af
Outflow=25.40 cfs 5.415 af

Pond 6P: COMBINED BIO-RET. Peak Elev=52.79' Storage=19,141 cf Inflow=21.86 cfs 1.836 af
Discarded=2.50 cfs 1.405 af Primary=9.98 cfs 0.432 af Outflow=12.48 cfs 1.836 af

Pond 317: EX-DMH#317 Peak Elev=42.51' Inflow=32.24 cfs 7.083 af
36.0" Round Culvert n=0.011 L=108.7' S=0.0164 '/' Outflow=32.24 cfs 7.083 af

Pond 1002: EX-DMH#1002 Peak Elev=48.71' Inflow=32.24 cfs 6.928 af
36.0" Round Culvert n=0.011 L=64.8' S=0.0309 '/' Outflow=32.24 cfs 6.928 af

Pond 1008: EX-DMH#1008 Peak Elev=46.41' Inflow=32.24 cfs 7.083 af
36.0" Round Culvert n=0.011 L=379.8' S=0.0103 '/' Outflow=32.24 cfs 7.083 af

Pond 40370: EX-CB#40370 Peak Elev=53.46' Inflow=34.04 cfs 4.953 af
36.0" Round Culvert n=0.011 L=68.4' S=0.0073 '/' Outflow=34.04 cfs 4.953 af

Pond 50078: EX-DMH#50078 Peak Elev=52.96' Inflow=34.04 cfs 4.953 af
36.0" Round Culvert n=0.011 L=101.4' S=0.0035 '/' Outflow=34.04 cfs 4.953 af

Pond 50097: EX-CB#50097 Peak Elev=49.31' Inflow=32.24 cfs 6.928 af
36.0" Round Culvert n=0.011 L=71.2' S=-0.0140 '/' Outflow=32.24 cfs 6.928 af

Link OP-1: WETLAND AREA Inflow=60.97 cfs 9.897 af
Primary=60.97 cfs 9.897 af

Total Runoff Area = 35.153 ac Runoff Volume = 12.284 af Average Runoff Depth = 4.19"
68.37% Pervious = 24.034 ac 31.63% Impervious = 11.118 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment P3.0: EX. POST 3.0 Runoff Area=599,696 sf 38.08% Impervious Runoff Depth=5.60"
Flow Length=735' Slope=0.0050 '/' Tc=40.8 min CN=75 Runoff=43.97 cfs 6.419 af

Subcatchment P3.2: EX POST 3.2 Runoff Area=158,779 sf 54.40% Impervious Runoff Depth=6.32"
Flow Length=1,000' Slope=0.0147 '/' Tc=25.4 min CN=81 Runoff=16.18 cfs 1.920 af

Subcatchment P3.3: EX. POST 3.3 Runoff Area=82,637 sf 3.87% Impervious Runoff Depth=4.04"
Flow Length=456' Slope=0.1316 '/' Tc=7.7 min CN=62 Runoff=8.41 cfs 0.638 af

Subcatchment S-1: LONGMEADOW ROAD Runoff Area=129,521 sf 22.62% Impervious Runoff Depth=4.75"
Flow Length=1,018' Slope=0.0196 '/' Tc=32.4 min CN=68 Runoff=9.03 cfs 1.178 af

Subcatchment S-2: HILLCREST ESTATES Runoff Area=34,020 sf 0.00% Impervious Runoff Depth=3.33"
Flow Length=524' Slope=0.0419 '/' Tc=17.7 min CN=56 Runoff=2.10 cfs 0.216 af

Subcatchment S-3.1: 126 LANG ROAD Runoff Area=310,246 sf 0.31% Impervious Runoff Depth=4.39"
Flow Length=597' Slope=0.0301 '/' Tc=18.5 min CN=65 Runoff=25.45 cfs 2.607 af

Subcatchment S-3.2: SMALL BIORET Runoff Area=55,893 sf 76.86% Impervious Runoff Depth=7.65"
Flow Length=357' Slope=0.0336 '/' Tc=6.0 min CN=92 Runoff=10.54 cfs 0.818 af

Subcatchment S-3.3: LARGE BIORET. Runoff Area=105,742 sf 56.96% Impervious Runoff Depth=7.17"
Flow Length=565' Slope=0.0248 '/' Tc=9.7 min CN=88 Runoff=17.02 cfs 1.449 af

Subcatchment S-3.4: EX. BIORET. Runoff Area=19,256 sf 94.71% Impervious Runoff Depth=8.25"
Flow Length=215' Slope=0.0093 '/' Tc=6.0 min CN=97 Runoff=3.73 cfs 0.304 af

Subcatchment S-4: LANG ROAD Runoff Area=35,463 sf 41.45% Impervious Runoff Depth=5.72"
Flow Length=606' Slope=0.0404 '/' Tc=11.9 min CN=76 Runoff=4.46 cfs 0.388 af

Pond 1P: EX. BIORETENTION BASIN Peak Elev=55.30' Storage=32,357 cf Inflow=10.04 cfs 1.481 af
Discarded=1.20 cfs 1.045 af Primary=1.21 cfs 0.348 af Outflow=2.42 cfs 1.393 af

Pond 2P: EX Stormwater Wetland Peak Elev=51.29' Storage=48,723 cf Inflow=45.94 cfs 7.057 af
Outflow=30.08 cfs 7.054 af

Pond 6P: COMBINED BIO-RET. Peak Elev=53.43' Storage=23,929 cf Inflow=26.68 cfs 2.267 af
Discarded=2.66 cfs 1.608 af Primary=10.54 cfs 0.659 af Outflow=13.20 cfs 2.267 af

Pond 317: EX-DMH#317 Peak Elev=42.91' Inflow=39.28 cfs 9.322 af
36.0" Round Culvert n=0.011 L=108.7' S=0.0164 '/' Outflow=39.28 cfs 9.322 af

Pond 1002: EX-DMH#1002 Peak Elev=49.07' Inflow=38.69 cfs 8.974 af
36.0" Round Culvert n=0.011 L=64.8' S=0.0309 '/' Outflow=38.69 cfs 8.974 af

Pond 1008: EX-DMH#1008 Peak Elev=46.81' Inflow=39.28 cfs 9.322 af
36.0" Round Culvert n=0.011 L=379.8' S=0.0103 '/' Outflow=39.28 cfs 9.322 af

Pond 40370: EX-CB#40370 Peak Elev=54.05' Inflow=43.97 cfs 6.419 af
36.0" Round Culvert n=0.011 L=68.4' S=0.0073 '/' Outflow=43.97 cfs 6.419 af

Pond 50078: EX-DMH#50078 Peak Elev=53.65' Inflow=43.97 cfs 6.419 af
36.0" Round Culvert n=0.011 L=101.4' S=0.0035 '/' Outflow=43.97 cfs 6.419 af

Pond 50097: EX-CB#50097 Peak Elev=49.67' Inflow=38.69 cfs 8.974 af
36.0" Round Culvert n=0.011 L=71.2' S=-0.0140 '/' Outflow=38.69 cfs 8.974 af

Link OP-1: WETLAND AREA Inflow=75.92 cfs 13.193 af
Primary=75.92 cfs 13.193 af

Total Runoff Area = 35.153 ac Runoff Volume = 15.937 af Average Runoff Depth = 5.44"
68.37% Pervious = 24.034 ac 31.63% Impervious = 11.118 ac

McCLURE™

Section 2.2: Developed Conditions
10-year Storm – Full Summary

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Summary for Subcatchment P3.0: EX. POST 3.0

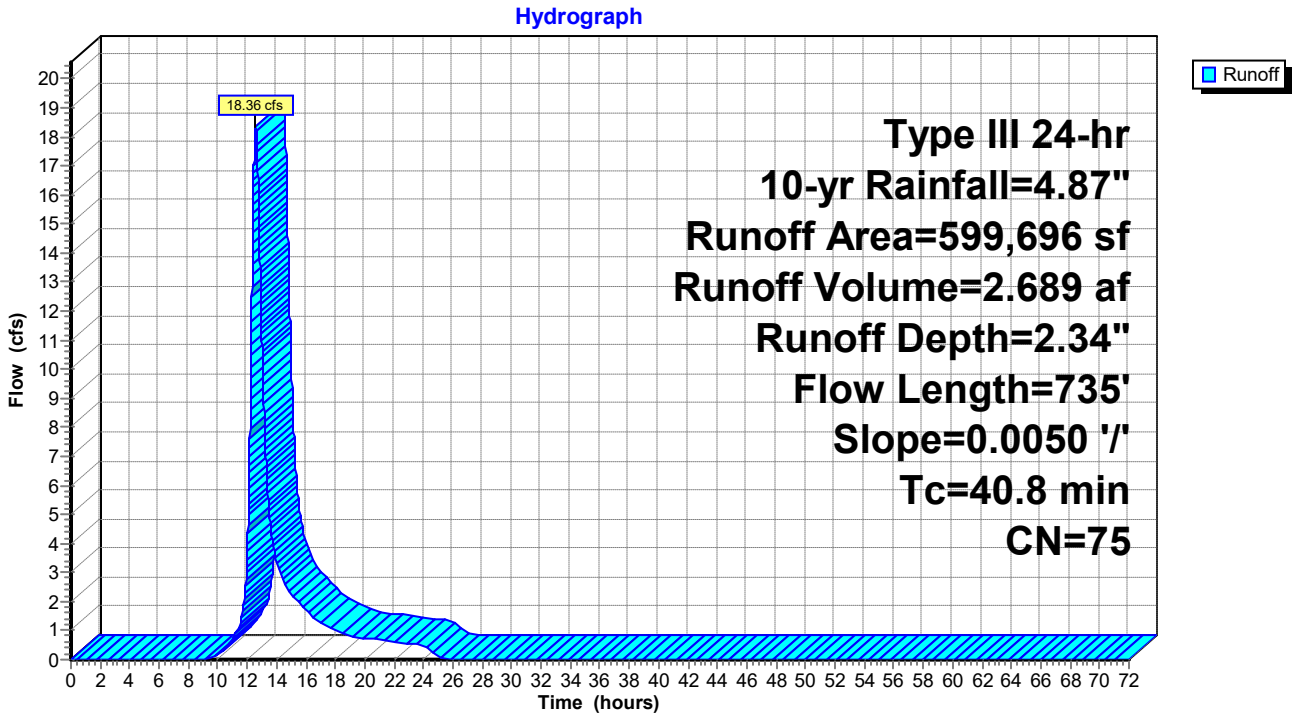
Runoff = 18.36 cfs @ 12.56 hrs, Volume= 2.689 af, Depth= 2.34"
Routed to Pond 40370 : EX-CB#40370

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.87"

Area (sf)	CN	Description
342,999	61	>75% Grass cover, Good, HSG B
195,405	98	Paved parking, HSG B
28,340	55	Woods, Good, HSG B
32,952	98	Roofs, HSG B
599,696	75	Weighted Average
371,339		61.92% Pervious Area
228,357		38.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.8	735	0.0050	0.30		**Lag/CN Method,**

Subcatchment P3.0: EX. POST 3.0



Summary for Subcatchment P3.2: EX POST 3.2

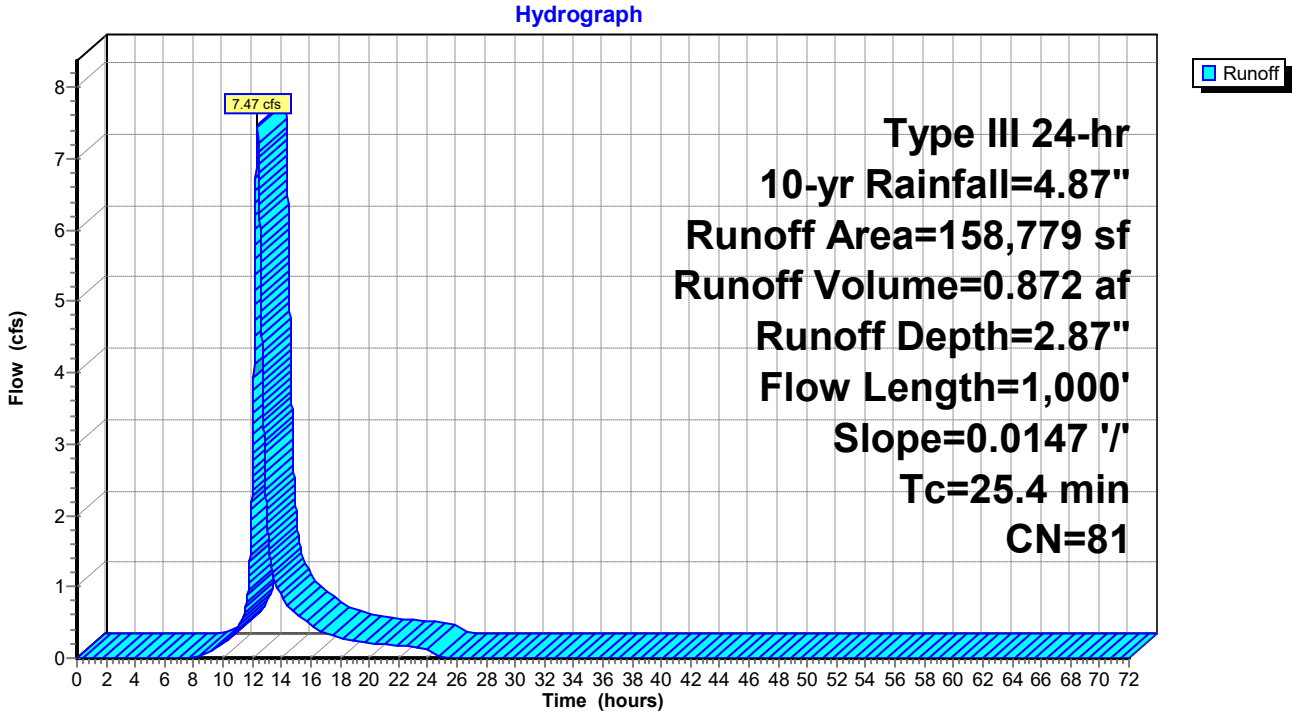
Runoff = 7.47 cfs @ 12.34 hrs, Volume= 0.872 af, Depth= 2.87"
Routed to Pond 50097 : EX-CB#50097

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.87"

Area (sf)	CN	Description
72,397	61	>75% Grass cover, Good, HSG B
81,496	98	Paved parking, HSG B
4,886	98	Roofs, HSG B
158,779	81	Weighted Average
72,397		45.60% Pervious Area
86,382		54.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.4	1,000	0.0147	0.66		**Lag/CN Method,**

Subcatchment P3.2: EX POST 3.2



Summary for Subcatchment P3.3: EX. POST 3.3

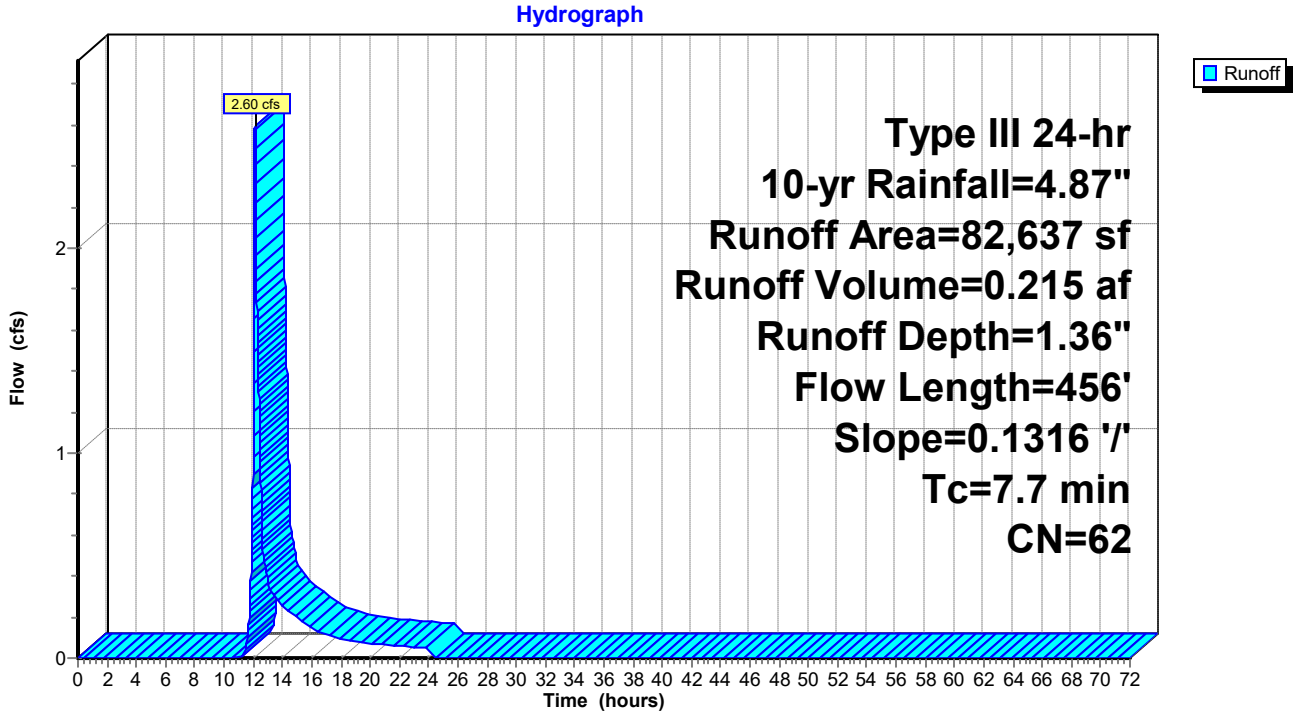
Runoff = 2.60 cfs @ 12.12 hrs, Volume= 0.215 af, Depth= 1.36"
Routed to Pond 2P : EX Stormwater Wetland

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.87"

Area (sf)	CN	Description
79,438	61	>75% Grass cover, Good, HSG B
2,132	98	Paved parking, HSG B
1,067	98	Roofs, HSG B
82,637	62	Weighted Average
79,438		96.13% Pervious Area
3,199		3.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	456	0.1316	0.99		**Lag/CN Method,**

Subcatchment P3.3: EX. POST 3.3



Summary for Subcatchment S-1: LONGMEADOW ROAD

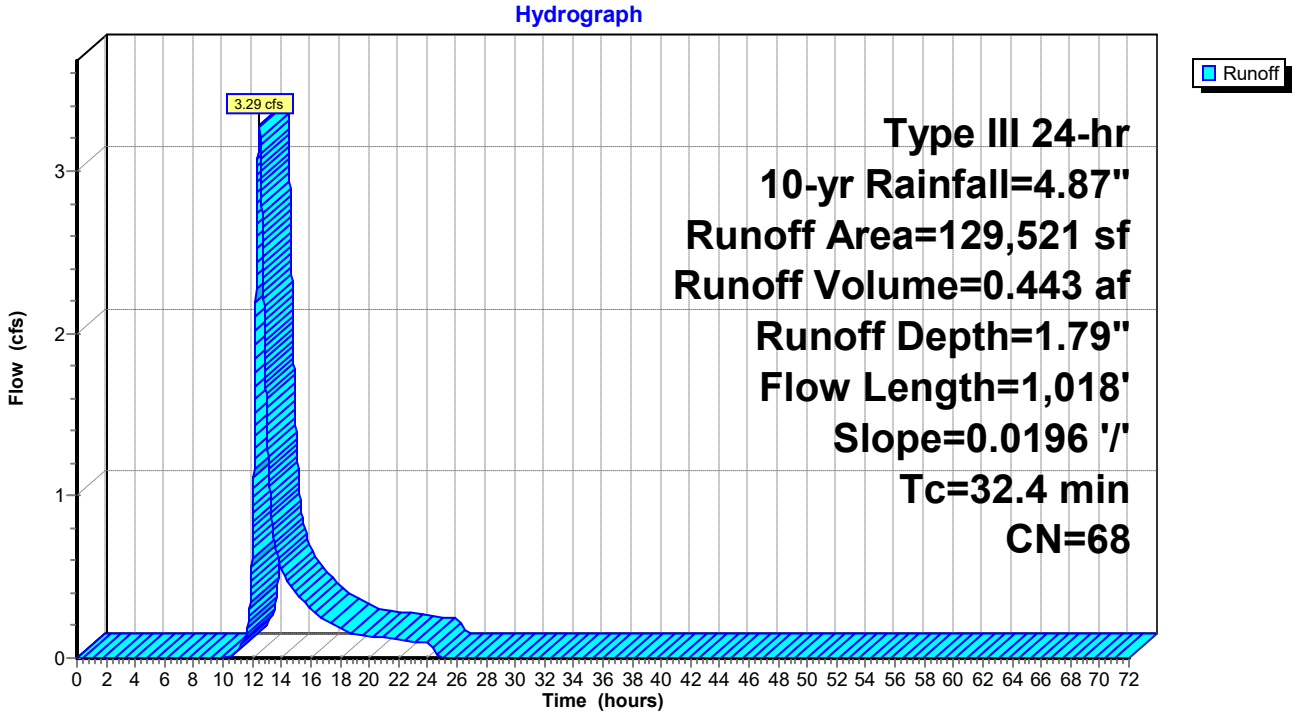
Runoff = 3.29 cfs @ 12.49 hrs, Volume= 0.443 af, Depth= 1.79"
Routed to Pond 1P : EX. BIORETENTION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.87"

Area (sf)	CN	Description
79,288	61	>75% Grass cover, Good, HSG B
20,938	55	Woods, Good, HSG B
29,295	98	Paved parking, HSG B
129,521	68	Weighted Average
100,226		77.38% Pervious Area
29,295		22.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
32.4	1,018	0.0196	0.52		**Lag/CN Method,**

Subcatchment S-1: LONGMEADOW ROAD



Summary for Subcatchment S-2: HILLCREST ESTATES

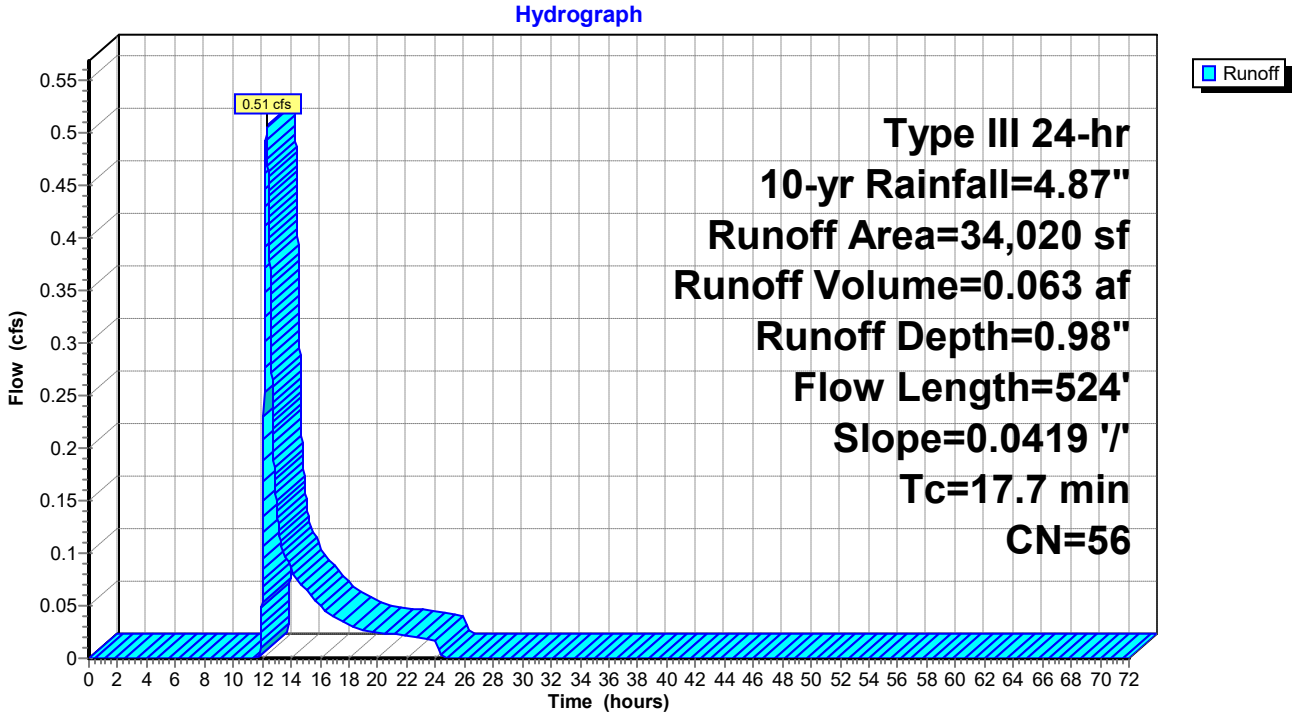
Runoff = 0.51 cfs @ 12.29 hrs, Volume= 0.063 af, Depth= 0.98"
Routed to Link OP-1 : WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.87"

Area (sf)	CN	Description
30,638	55	Woods, Good, HSG B
3,382	70	Woods, Good, HSG C
34,020	56	Weighted Average
34,020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.7	524	0.0419	0.49		**Lag/CN Method,**

Subcatchment S-2: HILLCREST ESTATES



Summary for Subcatchment S-3.1: 126 LANG ROAD

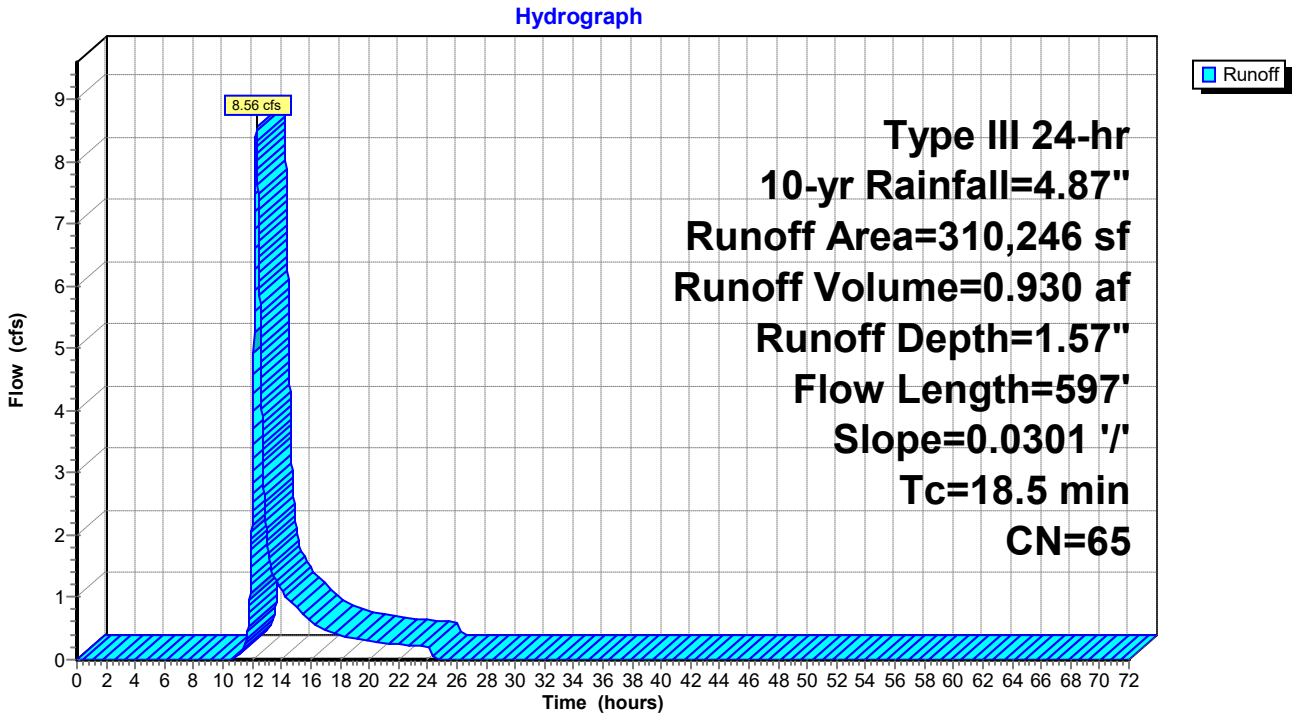
Runoff = 8.56 cfs @ 12.27 hrs, Volume= 0.930 af, Depth= 1.57"
Routed to Link OP-1 : WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.87"

Area (sf)	CN	Description
45,528	61	>75% Grass cover, Good, HSG B
52,032	74	>75% Grass cover, Good, HSG C
83,030	55	Woods, Good, HSG B
128,700	70	Woods, Good, HSG C
956	98	Unconnected pavement, HSG C
310,246	65	Weighted Average
309,290		99.69% Pervious Area
956		0.31% Impervious Area
956		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5	597	0.0301	0.54		**Lag/CN Method,**

Subcatchment S-3.1: 126 LANG ROAD



Summary for Subcatchment S-3.2: SMALL BIORET

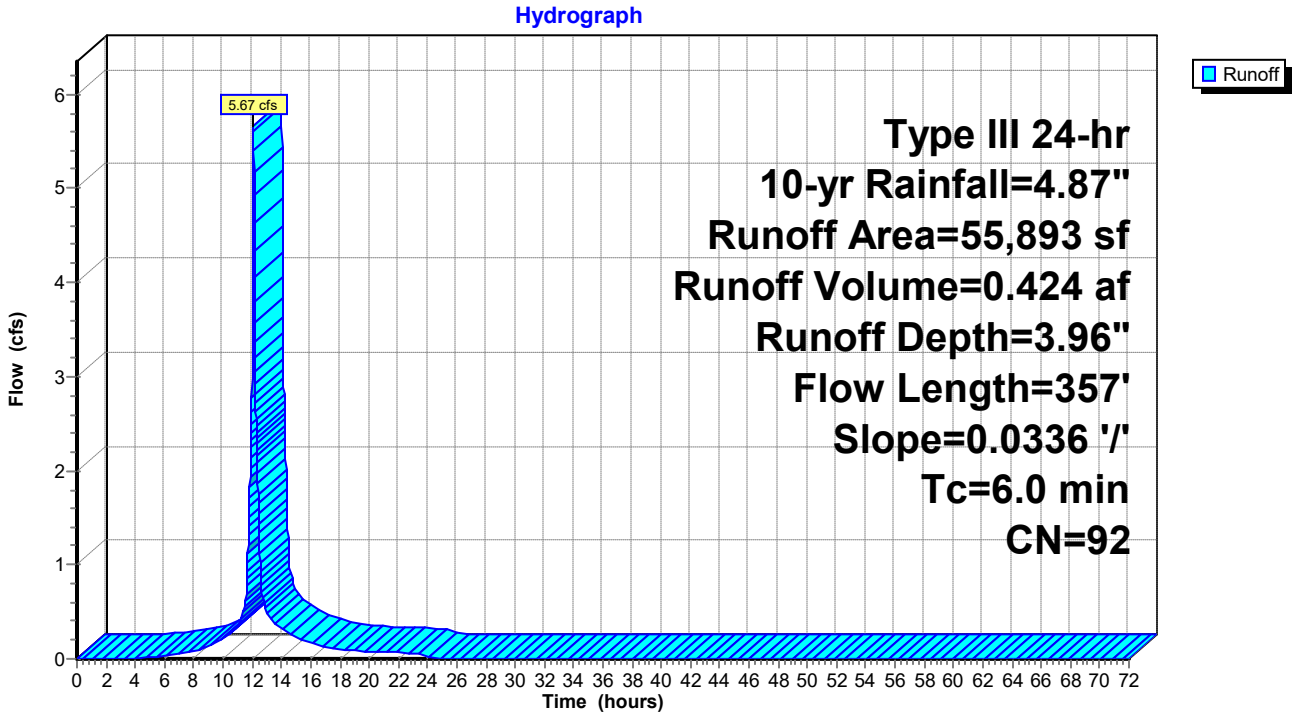
Runoff = 5.67 cfs @ 12.08 hrs, Volume= 0.424 af, Depth= 3.96"
Routed to Pond 6P : COMBINED BIO-RET.

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.87"

Area (sf)	CN	Description
12,933	74	>75% Grass cover, Good, HSG C
22,796	98	Paved parking, HSG C
20,164	98	Roofs, HSG C
55,893	92	Weighted Average
12,933		23.14% Pervious Area
42,960		76.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	357	0.0336	1.21		**Lag/CN Method,**
4.9	357	Total, Increased to minimum Tc = 6.0 min			

Subcatchment S-3.2: SMALL BIORET



Summary for Subcatchment S-3.3: LARGE BIORET.

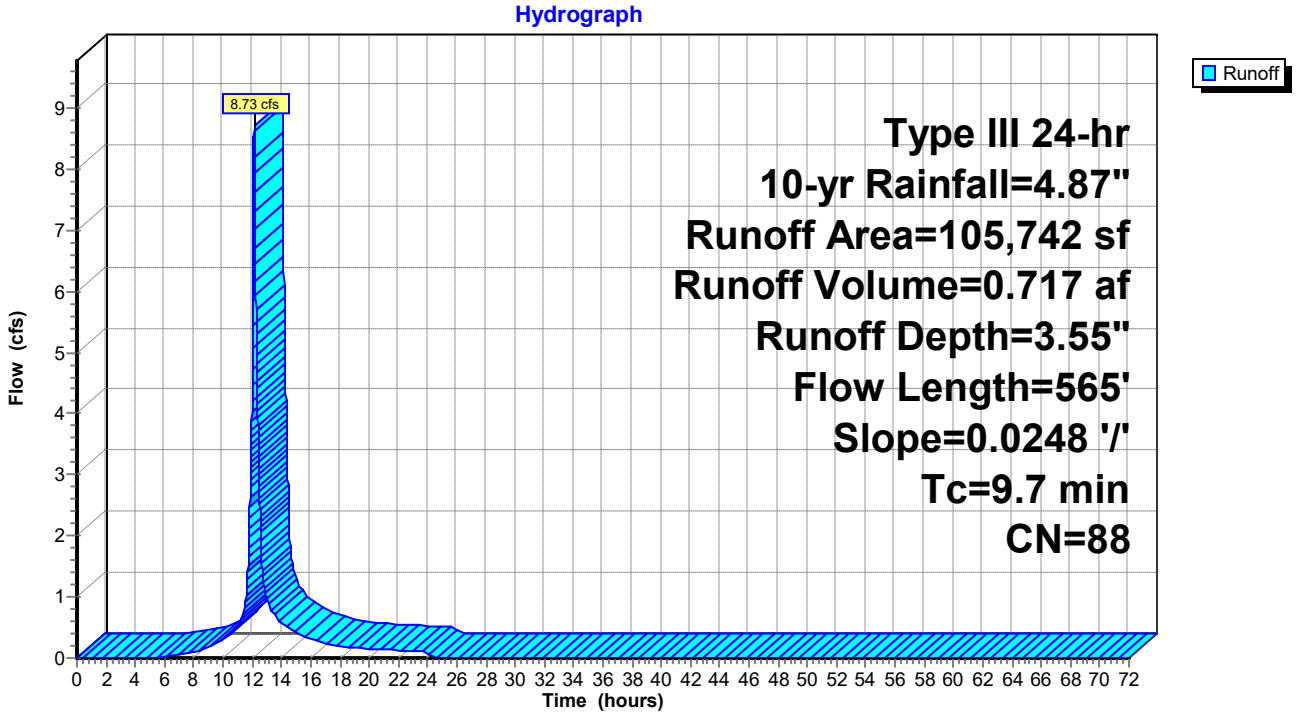
Runoff = 8.73 cfs @ 12.13 hrs, Volume= 0.717 af, Depth= 3.55"
Routed to Pond 6P : COMBINED BIO-RET.

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.87"

Area (sf)	CN	Description
45,511	74	>75% Grass cover, Good, HSG C
40,068	98	Paved parking, HSG C
20,163	98	Roofs, HSG C
105,742	88	Weighted Average
45,511		43.04% Pervious Area
60,231		56.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	565	0.0248	0.97		**Lag/CN Method,**

Subcatchment S-3.3: LARGE BIORET.



Summary for Subcatchment S-3.4: EX. BIORET.

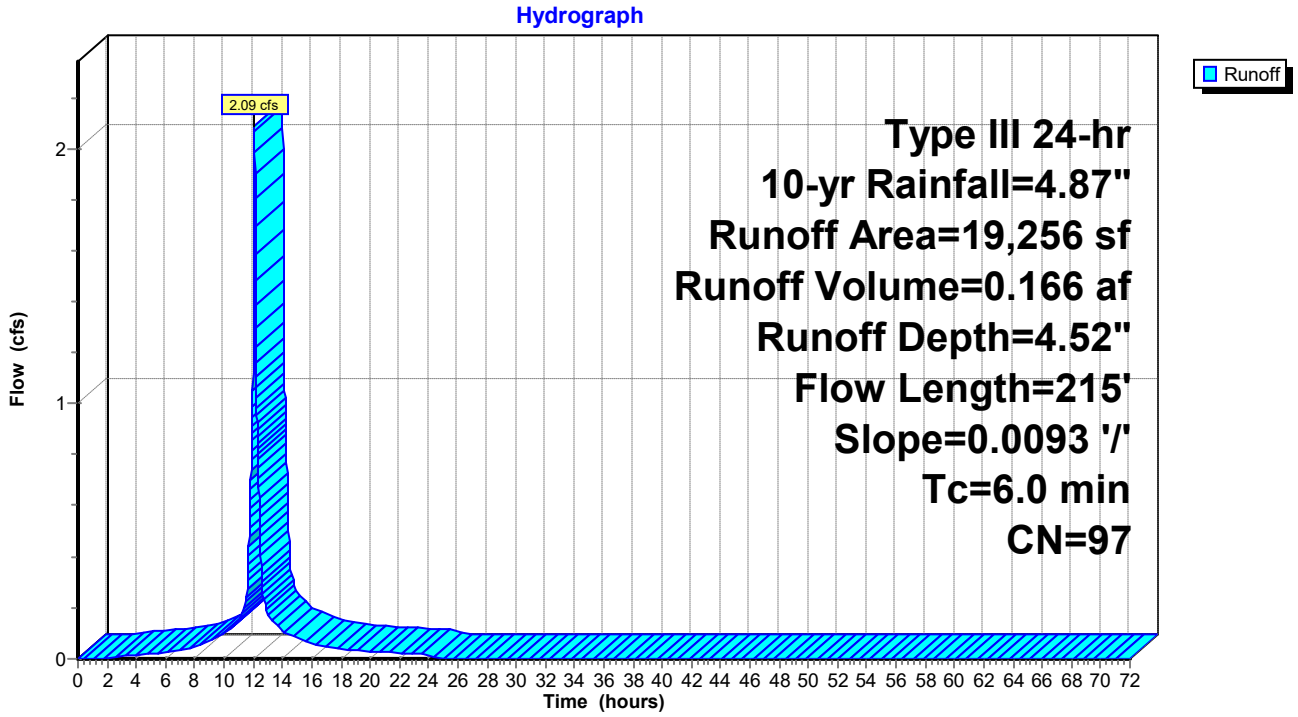
Runoff = 2.09 cfs @ 12.08 hrs, Volume= 0.166 af, Depth= 4.52"
Routed to Pond 1P : EX. BIORETENTION BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.87"

Area (sf)	CN	Description
1,018	74	>75% Grass cover, Good, HSG C
3,719	98	Paved parking, HSG B
14,519	98	Paved parking, HSG C
19,256	97	Weighted Average
1,018		5.29% Pervious Area
18,238		94.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	215	0.0093	0.74		**Lag/CN Method,**
4.8	215	Total, Increased to minimum Tc = 6.0 min			

Subcatchment S-3.4: EX. BIORET.



Summary for Subcatchment S-4: LANG ROAD

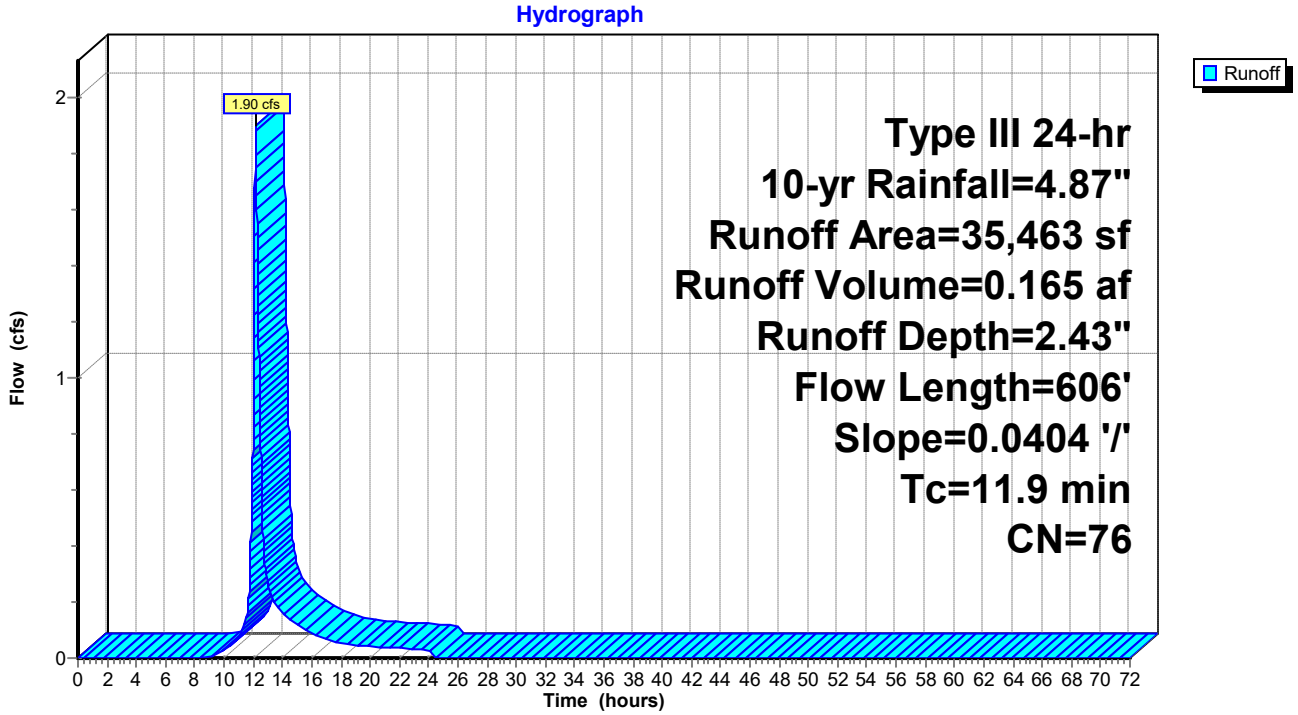
Runoff = 1.90 cfs @ 12.17 hrs, Volume= 0.165 af, Depth= 2.43"
Routed to Link OP-1 : WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.87"

Area (sf)	CN	Description
20,165	61	>75% Grass cover, Good, HSG B
599	55	Woods, Good, HSG B
14,699	98	Paved parking, HSG B
35,463	76	Weighted Average
20,764		58.55% Pervious Area
14,699		41.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.9	606	0.0404	0.85		**Lag/CN Method,**

Subcatchment S-4: LANG ROAD



Summary for Pond 1P: EX. BIORETENTION BASIN

Inflow Area = 3.415 ac, 31.95% Impervious, Inflow Depth = 2.14" for 10-yr event
Inflow = 3.80 cfs @ 12.42 hrs, Volume= 0.609 af
Outflow = 0.58 cfs @ 14.38 hrs, Volume= 0.521 af, Atten= 85%, Lag= 117.1 min
Discarded = 0.58 cfs @ 14.38 hrs, Volume= 0.521 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 1008 : EX-DMH#1008

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 52.53' @ 14.38 hrs Surf.Area= 8,591 sf Storage= 14,497 cf
Flood Elev= 55.00' Surf.Area= 10,982 sf Storage= 30,024 cf

Plug-Flow detention time= 390.0 min calculated for 0.521 af (85% of inflow)
Center-of-Mass det. time= 323.8 min (1,169.1 - 845.4)

Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	413 cf	**FOREBAY (Irregular)** Listed below (Recalc)
#2	50.00'	33,799 cf	**ABOVE GROUND STORAGE (Irregular)** Listed below (Recalc)
#3	46.83'	3,837 cf	**TREATMENT BAY (Irregular)** Listed below (Recalc) 9,611 cf Overall - 18 cf Embedded = 9,593 cf x 40.0% Voids
#4	47.17'	18 cf	**6.0" Round UNDERDRAIN** Inside #3 L= 92.5'
		38,067 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
50.00	34	23.9	0	0	34
50.50	105	40.2	33	33	119
51.00	192	53.8	73	106	223
51.50	302	66.6	122	229	349
52.00	438	80.6	184	413	517

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
50.00	3,032	247.0	0	0	3,032
52.00	4,660	290.0	7,634	7,634	4,946
54.00	6,509	327.0	11,118	18,752	6,865
56.00	8,586	364.0	15,047	33,799	9,014

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
46.83	3,032	247.0	0	0	3,032
50.00	3,032	247.0	9,611	9,611	3,815

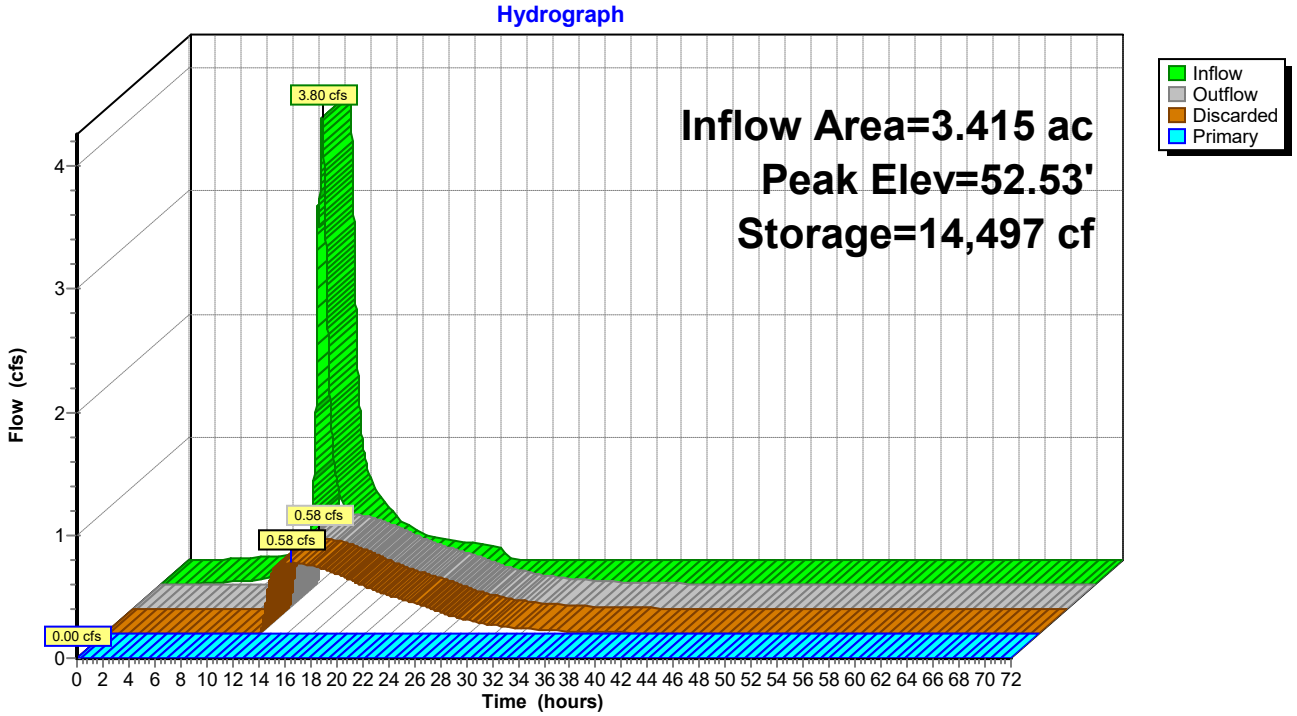
Device	Routing	Invert	Outlet Devices
#1	Primary	46.50'	**12.0" Round Culvert** L= 55.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.50' / 44.60' S= 0.0345 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.79 sf

#2	Device 1	53.66'	**14.2" x 14.2" Horiz. OCS-(DMH#40188)** C= 0.600 Limited to weir flow at low heads
#3	Device 2	47.17'	**6.0" Vert. UNDERDRAIN** C= 0.600 Limited to weir flow at low heads
#4	Discarded	50.00'	**10.000 in/hr Exfiltration over Surface area above 50.00'** Excluded Surface area = 6,098 sf Phase-In= 0.01'

Discarded OutFlow Max=0.58 cfs @ 14.38 hrs HW=52.53' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.58 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=46.83' (Free Discharge)
└─**1=Culvert** (Passes 0.00 cfs of 0.35 cfs potential flow)
└─**2=OCS-(DMH#40188)** (Controls 0.00 cfs)
└─**3=UNDERDRAIN** (Controls 0.00 cfs)

Pond 1P: EX. BIORETENTION BASIN



Summary for Pond 2P: EX Stormwater Wetland

Inflow Area = 15.664 ac, 33.94% Impervious, Inflow Depth = 2.22" for 10-yr event
Inflow = 19.08 cfs @ 12.56 hrs, Volume= 2.904 af
Outflow = 16.15 cfs @ 12.78 hrs, Volume= 2.901 af, Atten= 15%, Lag= 13.1 min
Primary = 16.15 cfs @ 12.78 hrs, Volume= 2.901 af
Routed to Pond 50097 : EX-CB#50097

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 48.84' @ 12.78 hrs Surf.Area= 10,868 sf Storage= 12,226 cf

Plug-Flow detention time= 10.4 min calculated for 2.901 af (100% of inflow)
Center-of-Mass det. time= 9.8 min (878.5 - 868.7)

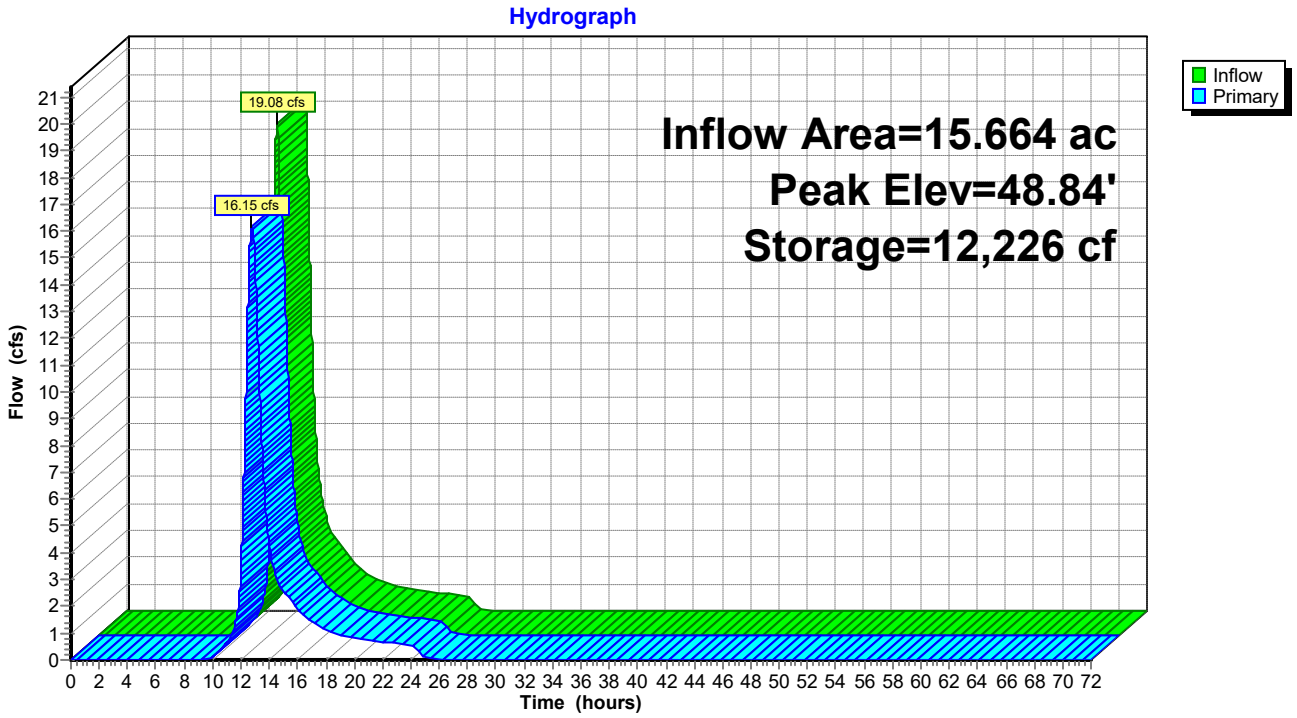
Volume	Invert	Avail.Storage	Storage Description
#1	46.50'	95,891 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
46.50	562	178.0	0	0	562
47.00	1,100	219.0	408	408	1,861
47.50	3,348	456.0	1,061	1,469	14,593
48.00	8,162	675.0	2,790	4,259	34,305
49.00	11,426	714.0	9,748	14,007	38,671
49.50	12,989	745.0	6,100	20,107	42,289
50.00	15,390	697.0	7,086	27,193	47,809
52.00	19,514	680.0	34,823	62,016	50,125
53.60	22,875	700.0	33,876	95,891	52,584

Device	Routing	Invert	Outlet Devices
#1	Primary	46.70'	**28.0" Round Culvert** L= 68.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.70' / 45.90' S= 0.0118 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 4.28 sf
#2	Device 1	49.50'	**6.0" Vert. 6" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	51.00'	**36.0" W x 8.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	46.50'	**4.0" W x 4.0" H Vert. Grate X 11.00 columns** X 11 rows with 5.0" cc spacing C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.15 cfs @ 12.78 hrs HW=48.84' (Free Discharge)
└─**1=Culvert** (Inlet Controls 16.15 cfs @ 3.93 fps)
  ├─**2=6" Orifice** (Controls 0.00 cfs)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**4=Grate** (Passes 16.15 cfs of 34.51 cfs potential flow)

Pond 2P: EX Stormwater Wetland



Summary for Pond 6P: COMBINED BIO-RET.

Inflow Area = 3.711 ac, 63.84% Impervious, Inflow Depth = 3.69" for 10-yr event
Inflow = 13.91 cfs @ 12.11 hrs, Volume= 1.141 af
Outflow = 5.86 cfs @ 12.38 hrs, Volume= 1.141 af, Atten= 58%, Lag= 15.9 min
Discarded = 2.30 cfs @ 12.38 hrs, Volume= 1.063 af
Primary = 3.55 cfs @ 12.38 hrs, Volume= 0.078 af
Routed to Link OP-1 : WETLAND AREA

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 52.17' @ 12.38 hrs Surf.Area= 9,945 sf Storage= 14,946 cf

Plug-Flow detention time= 51.5 min calculated for 1.141 af (100% of inflow)
Center-of-Mass det. time= 51.5 min (846.8 - 795.3)

Volume	Invert	Avail.Storage	Storage Description
#1	50.00'	20,838 cf	**ABOVE GROUND STORAGE (Irregular)** Listed below (Recalc)
#2	47.00'	4,073 cf	**Custom Stage Data (Irregular)** Listed below (Recalc) 10,182 cf Overall x 40.0% Voids
#3	50.00'	3,110 cf	**ABOVE GROUND STORAGE-SMALL (Irregular)** Listed below (Recalc)
#4	47.00'	349 cf	**TREATMENT-SMALL (Irregular)** Listed below (Recalc) 873 cf Overall x 40.0% Voids
#5	52.00'	194 cf	**15.0" Round Pipe Storage** L= 158.0'
		28,563 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
50.00	3,394	375.9	0	0	3,394
52.00	5,179	493.6	8,510	8,510	11,584
54.00	7,204	519.0	12,327	20,838	13,868

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
47.00	3,394	376.0	0	0	3,394
50.00	3,394	376.0	10,182	10,182	4,522

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
50.00	291	88.0	0	0	291
52.00	747	138.0	1,003	1,003	1,218
54.00	1,393	180.3	2,107	3,110	2,336

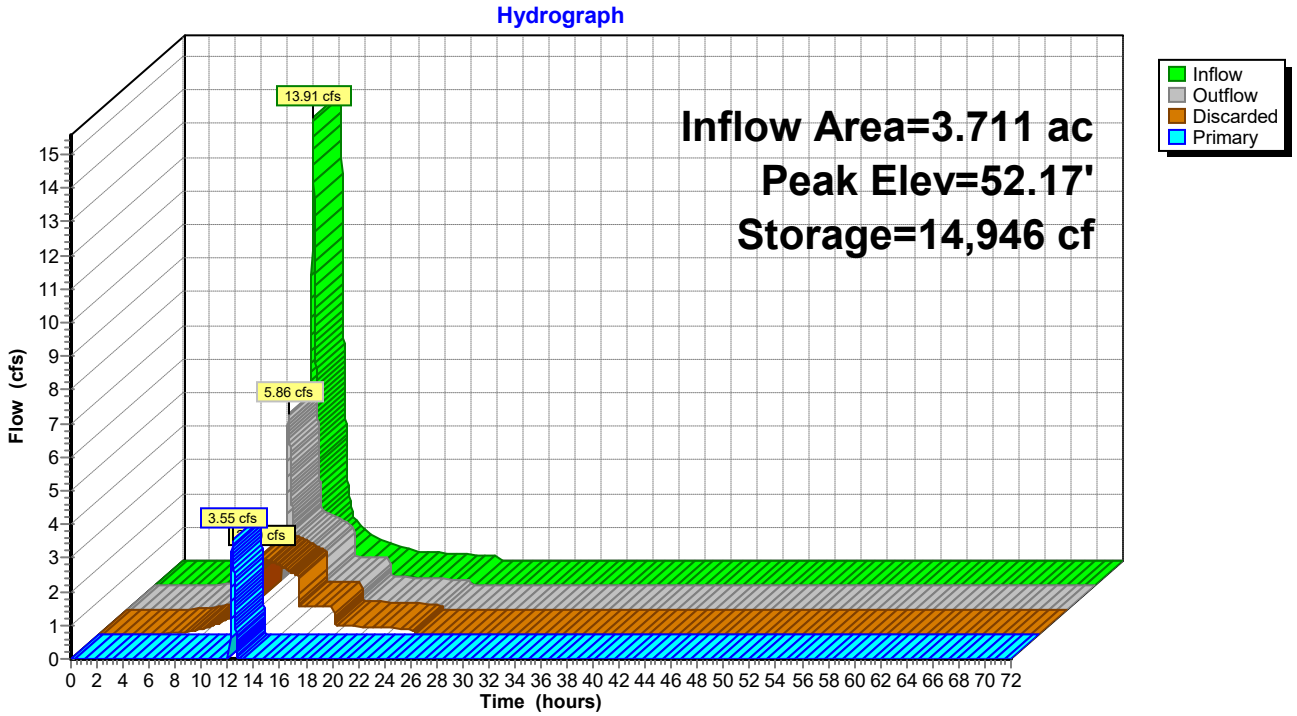
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
47.00	291	88.0	0	0	291
50.00	291	88.0	873	873	555

Device	Routing	Invert	Outlet Devices
#1	Discarded	47.00'	**10.000 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	47.00'	**15.0" Round Culvert** L= 176.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 47.00' / 46.00' S= 0.0057 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#3	Device 2	52.00'	**48.0" x 48.0" Horiz. OCS** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=2.30 cfs @ 12.38 hrs HW=52.17' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 2.30 cfs)

Primary OutFlow Max=3.51 cfs @ 12.38 hrs HW=52.17' (Free Discharge)
└─**2=Culvert** (Passes 3.51 cfs of 9.40 cfs potential flow)
  └─**3=OCS** (Weir Controls 3.51 cfs @ 1.33 fps)

Pond 6P: COMBINED BIO-RET.



Summary for Pond 317: EX-DMH#317

[79] Warning: Submerged Pond 1008 Primary device # 1 OUTLET by 1.80'

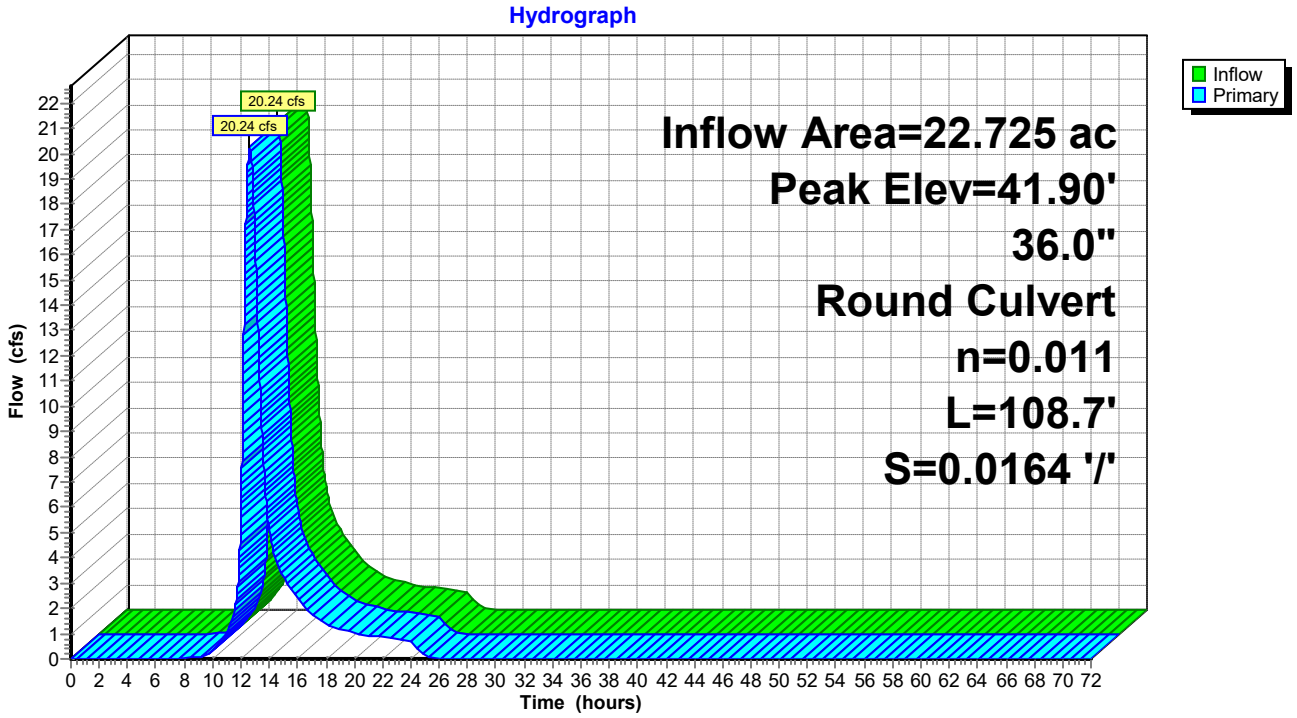
Inflow Area = 22.725 ac, 36.92% Impervious, Inflow Depth = 1.99" for 10-yr event
Inflow = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af
Outflow = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af, Atten= 0%, Lag= 0.0 min
Primary = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af
Routed to Link OP-1 : WETLAND AREA

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 41.90' @ 12.62 hrs
Flood Elev= 45.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	40.10'	**36.0" Round Culvert** L= 108.7' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 40.10' / 38.32' S= 0.0164 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf

Primary OutFlow Max=20.24 cfs @ 12.62 hrs HW=41.90' (Free Discharge)
└**1=Culvert** (Inlet Controls 20.24 cfs @ 4.57 fps)

Pond 317: EX-DMH#317



Summary for Pond 1002: EX-DMH#1002

[79] Warning: Submerged Pond 50097 Primary device # 1 by 1.20'

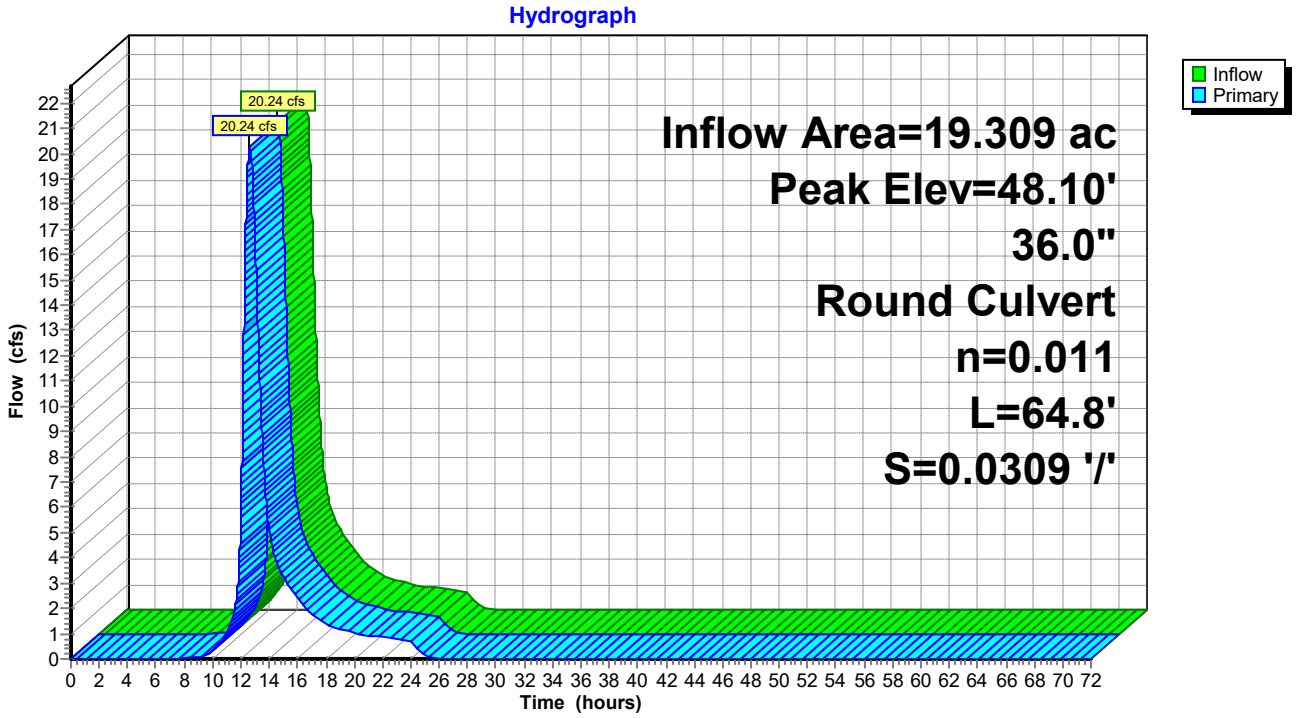
Inflow Area = 19.309 ac, 37.80% Impervious, Inflow Depth = 2.34" for 10-yr event
Inflow = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af
Outflow = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af, Atten= 0%, Lag= 0.0 min
Primary = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af
Routed to Pond 1008 : EX-DMH#1008

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 48.10' @ 12.62 hrs
Flood Elev= 58.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	46.30'	**36.0" Round Culvert** L= 64.8' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 46.30' / 44.30' S= 0.0309 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf

Primary OutFlow Max=20.23 cfs @ 12.62 hrs HW=48.10' (Free Discharge)
└**1=Culvert** (Inlet Controls 20.23 cfs @ 4.57 fps)

Pond 1002: EX-DMH#1002



Summary for Pond 1008: EX-DMH#1008

[79] Warning: Submerged Pond 1P Primary device # 1 OUTLET by 1.20'
[79] Warning: Submerged Pond 1002 Primary device # 1 OUTLET by 1.50'

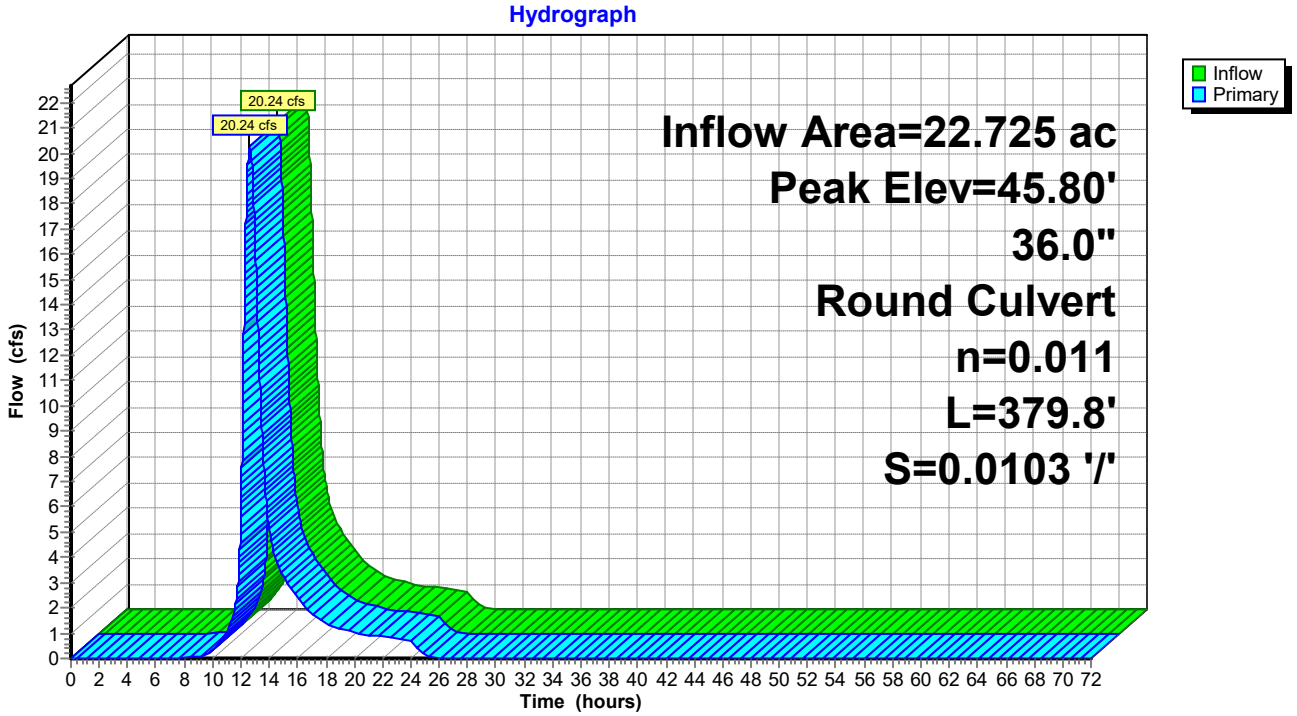
Inflow Area = 22.725 ac, 36.92% Impervious, Inflow Depth = 1.99" for 10-yr event
Inflow = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af
Outflow = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af, Atten= 0%, Lag= 0.0 min
Primary = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af
Routed to Pond 317 : EX-DMH#317

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 45.80' @ 12.62 hrs
Flood Elev= 57.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	44.00'	**36.0" Round Culvert** L= 379.8' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 44.00' / 40.10' S= 0.0103 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf

Primary OutFlow Max=20.23 cfs @ 12.62 hrs HW=45.80' (Free Discharge)
└**1=Culvert** (Inlet Controls 20.23 cfs @ 4.57 fps)

Pond 1008: EX-DMH#1008



Summary for Pond 40370: EX-CB#40370

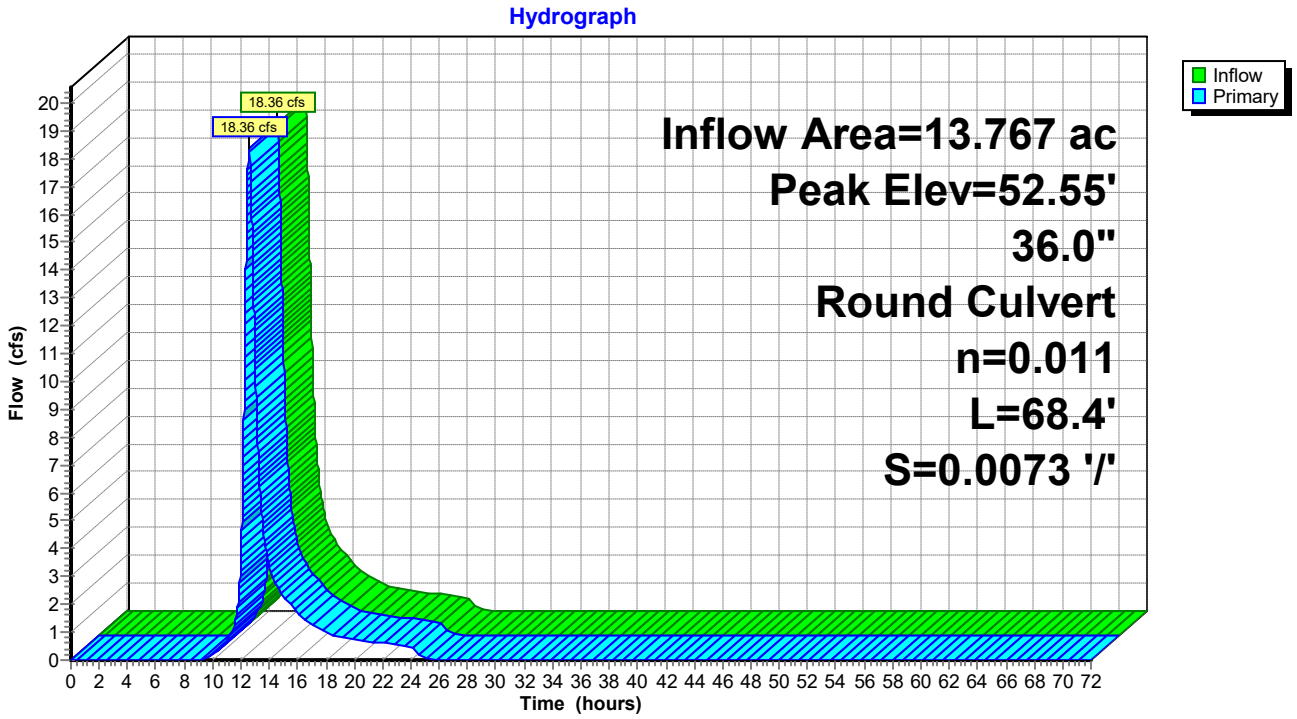
Inflow Area = 13.767 ac, 38.08% Impervious, Inflow Depth = 2.34" for 10-yr event
Inflow = 18.36 cfs @ 12.56 hrs, Volume= 2.689 af
Outflow = 18.36 cfs @ 12.56 hrs, Volume= 2.689 af, Atten= 0%, Lag= 0.0 min
Primary = 18.36 cfs @ 12.56 hrs, Volume= 2.689 af
Routed to Pond 50078 : EX-DMH#50078

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 52.55' @ 12.56 hrs
Flood Elev= 58.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	50.70'	**36.0" Round Culvert** L= 68.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 50.70' / 50.20' S= 0.0073 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf

Primary OutFlow Max=18.35 cfs @ 12.56 hrs HW=52.55' (Free Discharge)
└**1=Culvert** (Barrel Controls 18.35 cfs @ 5.74 fps)

Pond 40370: EX-CB#40370



Summary for Pond 50078: EX-DMH#50078

[79] Warning: Submerged Pond 40370 Primary device # 1 INLET by 1.30'

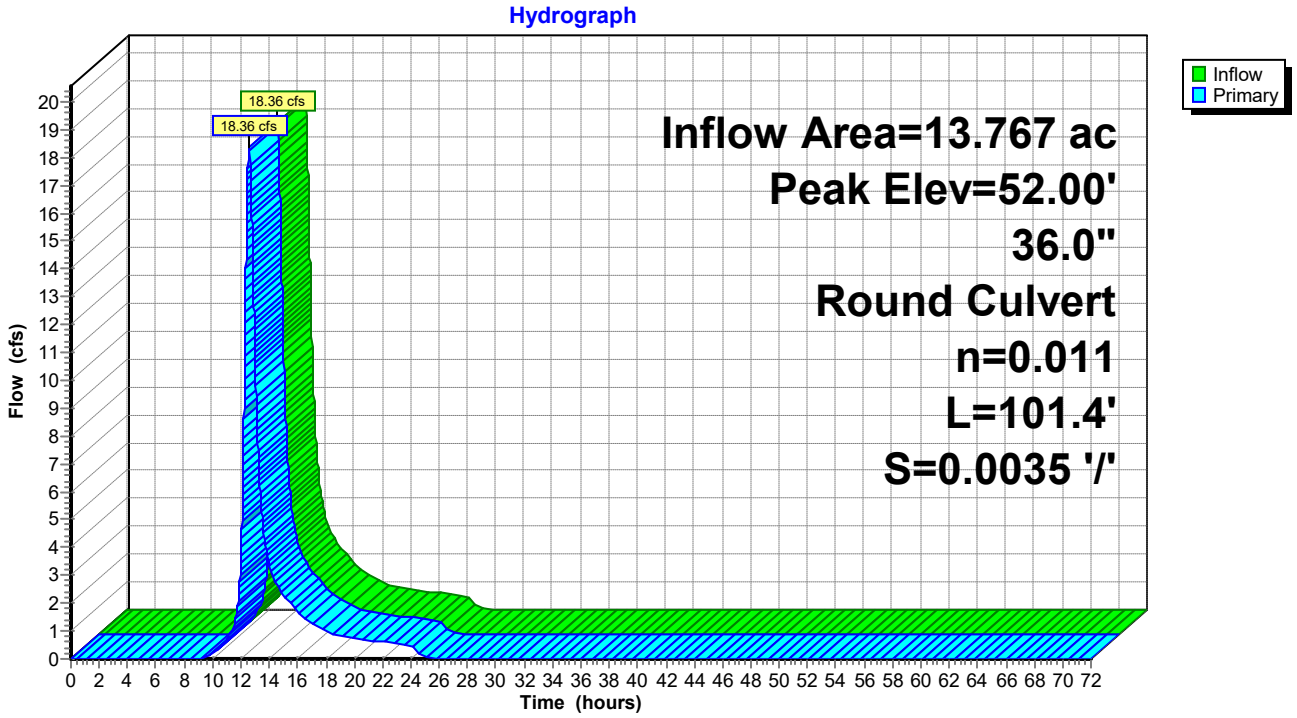
Inflow Area = 13.767 ac, 38.08% Impervious, Inflow Depth = 2.34" for 10-yr event
Inflow = 18.36 cfs @ 12.56 hrs, Volume= 2.689 af
Outflow = 18.36 cfs @ 12.56 hrs, Volume= 2.689 af, Atten= 0%, Lag= 0.0 min
Primary = 18.36 cfs @ 12.56 hrs, Volume= 2.689 af
Routed to Pond 2P : EX Stormwater Wetland

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 52.00' @ 12.56 hrs
Flood Elev= 57.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	50.00'	**36.0" Round Culvert** L= 101.4' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 50.00' / 49.65' S= 0.0035 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf

Primary OutFlow Max=18.35 cfs @ 12.56 hrs HW=52.00' (Free Discharge)
└**1=Culvert** (Barrel Controls 18.35 cfs @ 5.20 fps)

Pond 50078: EX-DMH#50078



Summary for Pond 50097: EX-CB#50097

[81] Warning: Exceeded Pond 2P by 0.51' @ 9.17 hrs

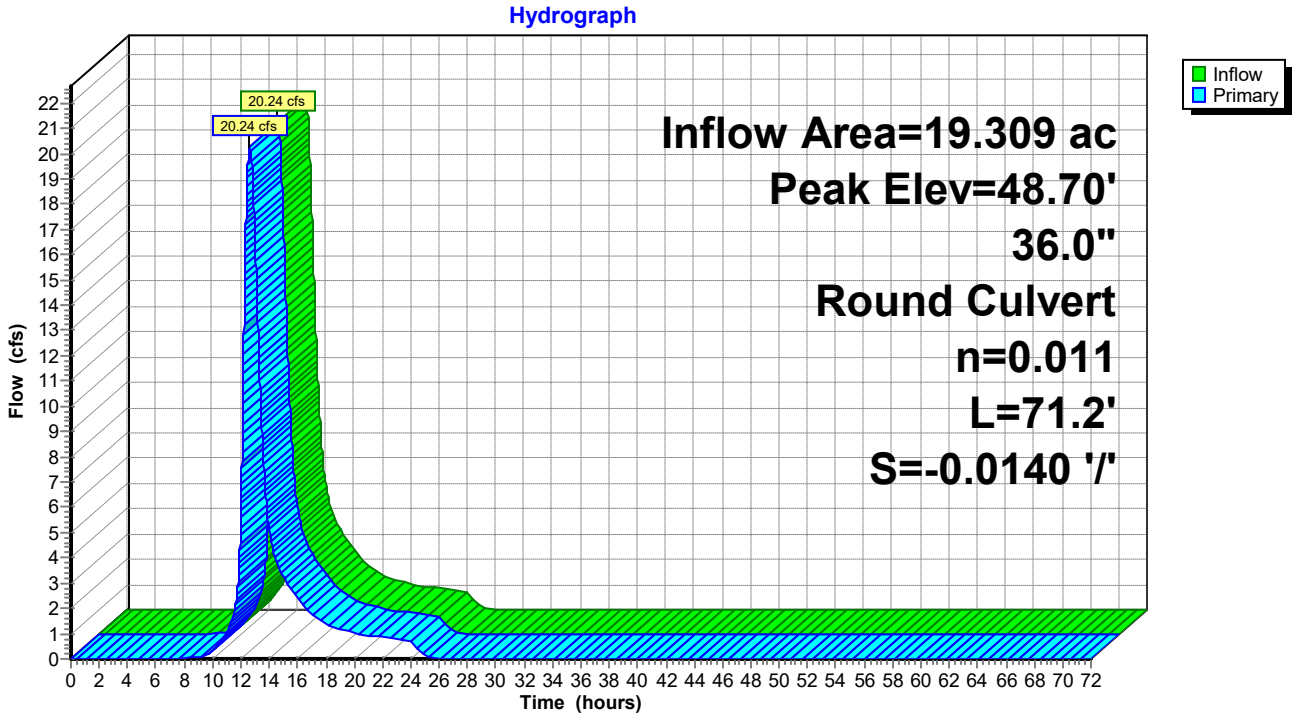
Inflow Area = 19.309 ac, 37.80% Impervious, Inflow Depth = 2.34" for 10-yr event
Inflow = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af
Outflow = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af, Atten= 0%, Lag= 0.0 min
Primary = 20.24 cfs @ 12.62 hrs, Volume= 3.773 af
Routed to Pond 1002 : EX-DMH#1002

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 48.70' @ 12.62 hrs
Flood Elev= 57.82'

Device	Routing	Invert	Outlet Devices
#1	Primary	46.90'	**36.0" Round Culvert** L= 71.2' RCP, sq.cut end projecting, Ke= 0.500 Inlet / Outlet Invert= 45.90' / 46.90' S= -0.0140 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 7.07 sf

Primary OutFlow Max=20.23 cfs @ 12.62 hrs HW=48.70' (Free Discharge)
└**1=Culvert** (Inlet Controls 20.23 cfs @ 4.57 fps)

Pond 50097: EX-CB#50097



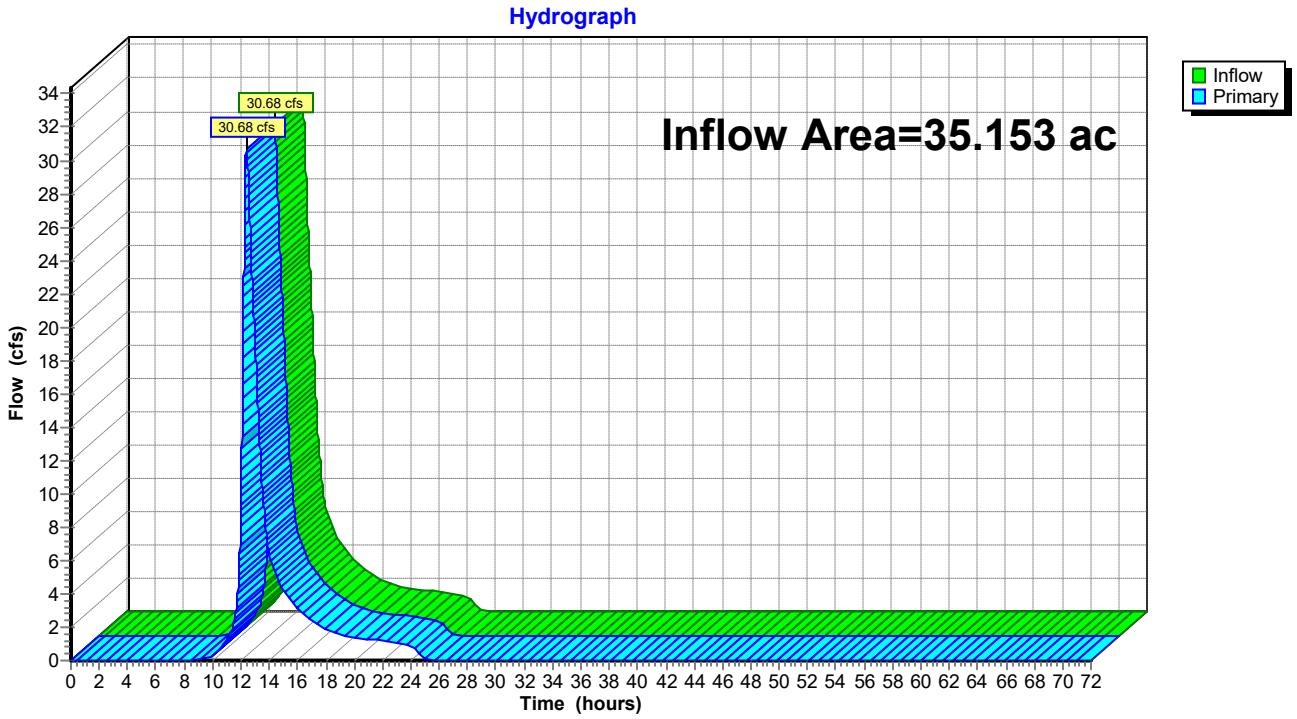
Summary for Link OP-1: WETLAND AREA

AREA IS COMPOSED OF THE ENTIRE EASTERN END OF THE PARCEL THAT IS MADE UP BY WETLANDS AND WOODED AREA

Inflow Area = 35.153 ac, 31.63% Impervious, Inflow Depth = 1.71" for 10-yr event
Inflow = 30.68 cfs @ 12.39 hrs, Volume= 5.010 af
Primary = 30.68 cfs @ 12.39 hrs, Volume= 5.010 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link OP-1: WETLAND AREA



Section 3.1: Inspection & Maintenance Manual

25 New Hampshire Ave, Suite 255, Portsmouth, New Hampshire 03801
P 603.766.0435 | mcclurevision.com

Proposed Workforce Housing Development – Phase 1

Preservation of Affordable Housing
Map 291 Lot 1-1
Portsmouth, New Hampshire
Storm Water Management System
Inspection and Maintenance Manual

Introduction:

The operation and maintenance of a storm water management system and its individual components is as critical to system performance as the design. Without proper maintenance, best management practices (BMPs) are likely to become functionally impaired or to fail, providing reduced or no treatment of storm water. Proper operation and maintenance will ensure that the storm water system and individual BMPs will remain effective at removing pollutants as designed and meeting New Hampshire's water quality objectives. Proper maintenance will:

- Maintain the volume of storm water treated over the long term;
- Sustain the pollutant removal efficiency of the BMP;
- Reduce the risk of re-suspending sediment and other pollutants captured by the BMP;
- Prevent structural deterioration of the BMP and minimize the need for expensive repairs;
- Decrease the potential for failure of the BMP.

The NH Department of Environmental Services Alteration of Terrain (AoT) regulations (Env-Wq 1500) require the long-term maintenance of storm water practices and stipulate the establishment of a mechanism to provide for ongoing inspections and maintenance.

25 New Hampshire Ave, Suite 255, Portsmouth, New Hampshire 03801
P 603.766.0435 | **mcclurevision.com**

Facilities Information:

Owner of Record: Service Credit Union
3003 Lafayette Road
Portsmouth, NH 03801

Report Information:

- Every effort has been made to provide a comprehensive operation and maintenance plan for this project. All measures and guidelines presented within this plan are the minimum efforts required to achieve the intent of the erosion and sedimentation control program and minimize off site impacts.
- Should any omissions or inconsistencies arise in the plan, the owner, and governing officials are expected to use reasonable and experienced judgment in the field relative to evaluation and implementing measures based on the intent of this plan.
- This manual does not preclude any requirements for additional controls identified in the approved plan set or support documents or any other appropriate techniques to limit erosion and sedimentation of the site.
- Any measures deemed necessary by the town planning board, conservation commission, zoning board, or the town's representative shall become part of this inspection and maintenance plan.
- Preservation of Affordable Housing (POAH) will be responsible for implementing the required reporting, inspection, and maintenance activities identified in this Inspection and Maintenance (I&M) manual.
- Preservation of Affordable Housing (POAH) shall maintain all record keeping required by the I&M manual. Any transfer of responsibility for I&M activities or transfer in ownership shall be documented to the DES in writing.
- Inspection and maintenance reports shall be completed after each inspection. Copies of the report forms to be completed by the inspector are attached at the end of this manual, including:
    - Inspection checklist to be used during each inspection;
    - Inspection and maintenance logs to document each inspection and maintenance activity;
- A plan showing the locations of all the storm water practices described in the I&M manual is attached at the end of this manual.
- Inspection and maintenance records must be provided to DES upon request.

Storm water management systems present at Proposed Workforce Housing Development – Phase 1

Description:

The on-site stormwater management system includes an existing Bio-Retention Basin as well as two (2) additional Bio-Retention Basins, which will be interconnected, designed to capture stormwater runoff from resulting from Longmeadow Road as well as the new impervious areas on-site.

Maintenance:

1. Regular inspection and routine maintenance are necessary to ensure that the storm water management system continues to control and treat runoff.
2. Structural components of the site's drainage system must be inspected and maintained on an annual basis (minimum).
3. The outlets of the storm water management system must be inspected bi-annually.
4. All outfalls shall be cleaned of all siltation and debris at the completion of the construction process when the site has been stabilized with loam, seed, and landscaping.
5. Any evidence of erosion, structural damage to the outlet, or other damage must be reported to the appropriate on-site representative and repaired as soon as possible.
6. Any sediment and/or trash should be removed from the outlet structures and pipes cleaned of all silt.
7. Subsurface pipe detention systems must be inspected and maintained on an annual basis (minimum).

Bioretention System

Description:

A bioretention system (sometimes referred to as a "rain garden") is a type of filtration BMP designed to collect and filter moderate amounts of stormwater runoff using conditioned planting soil beds, gravel beds and vegetation within shallow depressions. The bioretention system may be designed with an underdrain, to collect treated water and convey it to discharge, or it may be designed to infiltrate the treated water directly to the subsoil. Bioretention cells can reduce sediment, nutrients, oil and grease, and trace metals. Bioretention systems should be sited near the origin of the stormwater runoff to be treated.

The major difference between bioretention systems and other filtration systems is the use of vegetation. A typical surface sand filter is designed to be maintained with no vegetation, whereas a bioretention cell is planted with a variety of shrubs and perennials whose roots assist with pollutant uptake. The use of vegetation allows these systems to blend in with other landscaping features.

Maintenance:

1. Systems should be inspected at least twice annually and following any rainfall event exceeding 2.5 inches in a 24 hour period, with maintenance or rehabilitation conducted as warranted by such inspection.
2. Pretreatment measures should be inspected at least twice annually, and cleaned of accumulated sediment as warranted by inspection, but no less than once annually.
3. Trash and debris should be removed at each inspection.
4. At least once annually, system should be inspected for drawdown time. If bioretention system does not drain within 72-hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to restore filtration function or infiltration function (as applicable), including but not limited to removal of accumulated sediments or reconstruction of the filter media.
5. Vegetation should be inspected at least annually, and maintained in healthy condition, including pruning, removal and replacement of dead or diseased vegetation, and removal of invasive species.

Inspection Checklist and Maintenance Report
Bioretention system

Practice Location: _____

Date: _____

Performed By: _____ Signature _____

Inspection Checklist		
Presence of trash or debris	❑ Yes	❒ No
Presence of accumulated sediment	❑ Yes	❒ No
Structural damage at inlet or outlet	❑ Yes	❒ No
Drains with 72 hours of rainfall	❑ Yes	❒ No
Presence of invasive species	❑ Yes	❒ No

Maintenance Performed

Sediment Forebay

Description:

A sediment forebay is an impoundment, basin, or other storage structure designed to dissipate the energy of incoming runoff and allow for initial settling of coarse sediments. Forebays are used for pretreatment of runoff prior to discharge into the primary water quality treatment BMP. In some cases, forebays may be constructed as separate structures but often, they are integrated into the design of larger stormwater management structures.

Maintenance:

1. Forebays help reduce the sediment load to downstream BMPs and will therefore require more frequent cleaning.
2. Inspect at least annually;
3. Conduct periodic mowing of embankments (generally two times per year) to control growth of woody vegetation on embankments;
4. Remove debris from outlet structures at least once annually;
5. Remove and dispose of accumulated sediment based on inspection;
6. Install and maintain a staff gage or other measuring device, to indicate depth of sediment accumulation and level at which clean-out is required.

Inspection Checklist and Maintenance Report
Sediment Forebay

Practice Location: _____

Date: _____

Performed By: _____ Signature _____

Inspection Checklist		
Presence of erosion or vegetation loss	❑ Yes	❒ No
Presence of accumulated sediment	❑ Yes	❒ No
Presence of trash or debris	❑ Yes	❒ No

Maintenance Performed

Conveyance Swales

Description:

Conveyance swales are stabilized channels designed to convey runoff at non-erosive velocities. They may be stabilized using vegetation, riprap, or a combination, or with an alternative lining designed to accommodate design flows while protecting the integrity of the sides and bottom of the channel. Conveyance channels may provide incidental water quality benefits but are not specifically designed to provide treatment. Conveyance swales are not considered a Treatment or Pretreatment Practice under the AoT regulations, unless they are also designed to meet the requirements of an acceptable Treatment/Pretreatment Practice as described elsewhere in this Chapter.

Maintenance:

1. Grassed channels should be inspected periodically (at least annually) for sediment accumulation, erosion, and condition of surface lining (vegetation or riprap).
2. Repairs, including stone or vegetation replacement, should be made based on this inspection.
3. Remove sediment and debris annually, or more frequently as warranted by inspection.
4. Mow vegetated channels based on frequency specified by design. Mowing at least once per year is required to control establishment of woody vegetation. It is recommended to cut grass no shorter than 4 inches.

Inspection Checklist and Maintenance Report
Conveyance Swales

Practice Location: _____

Date: _____

Performed By: _____ Signature _____

Inspection Checklist		
Presence of erosion or vegetation loss	❑ Yes	❒ No
Presence of accumulated sediment	❑ Yes	❒ No
Presence of trash or debris	❑ Yes	❒ No

Maintenance Performed

Permanent Outlet Protection

Description:

Outlet protection is typically provided at stormwater discharge conduits from structural best management practices to reduce the velocity of concentrated stormwater flows to prevent scour and minimize the potential for downstream erosion. Outlet protection is also provided where conduits discharge runoff into an in-ground stormwater management practice (e.g., pond or swale) to prevent scour where flow enters the BMP.

Standard engineering practices allow for many different types of outlet protection which provide energy dissipation. Common outlet protection measures include:

- Riprap aprons, the design of which is covered within this section;
- Riprap lined scour holes, stilling basins or plunge pools. Design references for stilling basins are provided under 'Design References'.

Maintenance:

1. Inspect the outlet protection annually for damage and deterioration. Repair damages immediately.

Inspection Checklist and Maintenance Report
Permanent Outlet Protection

Practice Location: _____

Date: _____

Performed By: _____ Signature _____

Inspection Checklist		
Presence of accumulated sediment	❑ Yes	❒ No
Damage to outlet	❑ Yes	❒ No
Presence of trash or debris	❑ Yes	❒ No

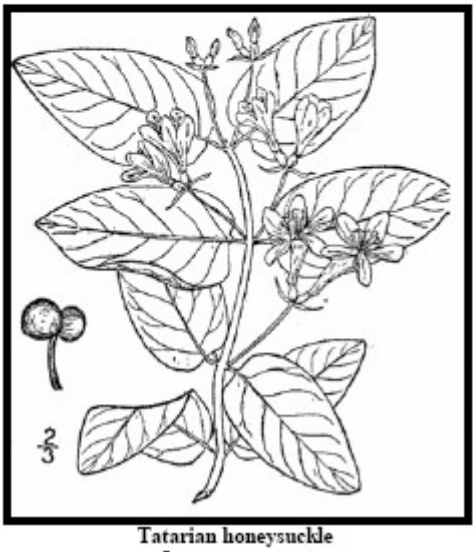
Maintenance Performed

Invasive Species Information:

UNIVERSITY of NEW HAMPSHIRE
COOPERATIVE EXTENSION

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.



Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions.* Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.

Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let it dry for several weeks.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants non-viable before composting. Closely examine the plant before composting and avoid composting seeds.

Finally, *be diligent* looking for seedlings for *years* in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

Plant Name	Method of Reproducing	Time of Year To Dispose	Methods of Disposal
Woody Plants*	**Fruit/Seeds**		
Norway Maple *(Acer platanoides)* European Barberry *(Berberis vulgaris)* Japanese Barberry *(Berberis thunbergii)* Autumn Olive *(Elaeagnus umbellata)* Burning Bush *(Euonymus alatus)*		Prior to fruit/seed ripening	Seedlings and small plants. ▪ Pull or cut and leave on site with roots up. No special care needed. Larger plants ▪ Use as firewood. ▪ Make a brush pile. ▪ Chip. ▪ Burn.
Morrow's Honeysuckle *(Lonicera morrowii)* Tatarian Honeysuckle *(Lonicera tatarica)* Showy Bush Honeysuckle *(Lonicera x bella)* Common Buckthorn *(Rhamnus cathartica)* Glossy Buckthorn *(Frangula alnus)*		After fruit/seed is ripe	Don't remove from site. ▪ Burn. ▪ Make a covered brush pile. ▪ Chip once all fruit has dropped from branches. ▪ Leave resulting chips on site and monitor.
Woody Plants*	**Fruits/Seeds/Plant Fragments**		
Oriental Bittersweet *(Celastrus orbiculatus)* Multiflora Rose *(Rosa multiflora)*		Prior to fruit/seed ripening	Seedlings and small plants. ▪ Pull or cut and leave on site with roots up. No special care needed. Larger plants ▪ Make a brush pile. ▪ Burn.
		After fruit/seed is ripe	Don't remove from site. ▪ Burn. ▪ Make a covered brush pile. ▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.

Plant Name	Method of Reproducing	Time of Year To Dispose	Methods of Disposal
Non-woody plants	**Fruits/Seeds**		
Garlic Mustard *(Alliaria petiolata)* Spotted Knapweed *(Centaurea maculosa)* ▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling. Black Swallow-wort *(Cynanchum nigrum)* ▪ May cause skin rash. Wear gloves and long sleeves when handling. Pale swallow-wort *(Cynanchum rossicum)* Giant Hogweed *(Heracleum mantegazzianum)* ▪ Can cause major skin rash. Wear gloves and long sleeves when handling. Dame's Rocket *(Hesperis matronalis)* Perennial Pepperweed *(Lepidium latifolium)* Purple loosestrife *(Lythrum salicaria)* Japanese Stilt Grass *(Microstegium vimineum)* Mile-a-Minute Weed *(Polygonum perfoliatum)*		Prior to flowering	Depends on scale of infestation Small infestation: ▪ Remove and scatter Large infestation: ▪ Remove and pile. (You can pile on or cover with plastic sheeting) ▪ Monitor. Remove any re-sprouting material
		During and following flowering	Do nothing until the following year; Or Remove flowering heads and bag and let rot. Small infestation: ▪ Remove and scatter remaining material Large infestation: ▪ Remove and pile remaining material. (You can pile on or cover with plastic sheeting) ▪ Monitor. Remove any re-sprouting material
Non-woody plants *	**Fruits/seeds/plant parts**		
Common Reed (*Phragmites australis*) Japanese Knotweed *(Polygonum cuspidatum)* Bohemian Knotweed *(Polygonum x bohemicum)*	Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.		Small infestation: ▪ Bag all plant material and let rot. ▪ Never pile and use resulting material as compost. ▪ Burn Large infestation: ▪ Remove material to unsuitable habitat (dry, hot sunny or dry shaded location) and scatter or pile. • Monitor and remove any sprouting material. • Pile, let dry, and burn.

October, 2009

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Deicing Log
Access Drives & Parking Areas

Do Not Apply Sand To Permeable Pavements

Date: _____

Performed By: _____ Signature _____

Maintenance Performed:

Air Temperature	Pavement Temperature	Relative Humidity	Dew Point	Sky

Reason for applying:

Chemical:

Application Time:

Application Amount:

Observation (first day):

Observation (after event):

Observation (before next application):

Inspection and Maintenance Log					
	BMP	Inspection Date	Inspected By	Maintenance Required?	Maintenance Performed
1				❑Yes ❑No	
2				❑Yes ❑No	
3				❑Yes ❑No	
4				❑Yes ❑No	
5				❑Yes ❑No	
6				❑Yes ❑No	
7				❑Yes ❑No	
8				❑Yes ❑No	
9				❑Yes ❑No	

Section 3.2: Site Specific Soil Report & Test Pits

25 New Hampshire Ave, Suite 255, Portsmouth, New Hampshire 03801
P 603.766.0435 | mcclurevision.com

GOVE ENVIRONMENTAL SERVICES, INC

SITE-SPECIFIC SOIL SURVEY REPORT
For
126 Lang Road, Portsmouth, NH
By
GES, Inc.
Project # 2024112
Date: 04-24-2025

1. MAPPING STANDARDS

Site-Specific Soil Mapping Standards for New Hampshire and Vermont. SSSNNE Special Publication No. 3, Version 7.0, July, 2021.

This map product is within the technical standards of the National Cooperative Soil Survey. It is a special purpose product, intended for infiltration requirements by the NH DES Alteration of Terrain Bureau. The soil map was produced by a professional soil scientist and is not a product of the USDA Natural Resources Conservation Service. This report accompanies the soil map.

The site-specific soil map (SSSM) was produced 04-24-2025; prepared by JP Gove, CSS #004, GES, Inc.

Soils were identified with the New Hampshire State-wide Numerical Soils Legend, USDA NRCS, Durham, NH. Issue # 10, January 2011.

Hydrologic Soil Group was determined using SSSNNE Special Publication No. 5, Ksat Values for New Hampshire Soils, September 2009.

High Intensity Soil Map symbols, based upon SSSNNE Special Publication 1, December 2017, were added to the Soil Legend.

Scale of soil map: Approximately 1" = 40"

Contours Interval: 2 feet

2. LANDFORMS & EXISTING CONDITIONS:

The site is located on a sloping hillside that is shallow to bedrock. The central portion of the site has been used as both borrow, dumping and material storage. As expected, soil profiles are inconsistent. However, virtually all encountered bedrock. The remaining forested portions of the site are natural soils, but also have bedrock within 60" of the soil surface.

3. DATE SOIL MAP PRODUCED

Date(s) of on-site field work: 04-16-2025 (Wetlands flagged earlier in 2024).

Date(s) of test pits: 04-16-2025

Test pits recorded by: James Gove, CSS # 004

4. GEOGRAPHIC LOCATION AND SIZE OF SITE

City or town where soil mapping was conducted: Portsmouth

Location: 126 Lang Road

Size of area: Approximately 18 acres

Was the map for the entire lot? No

If no, where was the mapping conducted on the parcel: In the uplands to the west of the flagged wetlands.

5. PURPOSE OF THE SOIL MAP

Was the map prepared to meet the requirement of Alteration of Terrain? Yes

If no, what was the purpose of the map? n/a

Who was the map prepared for? McClure Engineering Company

6. SOIL IDENTIFICATION LEGEND

Map Unit Symbol	Map Unit Name	HISS Symbol	Hydrologic Soil Group
87	Chatfield very stony	227	B
129	Woodbridge very stony	323	C
500/caecc	Udorthents, loamy	263	C
600/eaecc	Endoaquents, loamy	563	C
727	Rubble land	n/a	n/a

Supplemental Symbols Legend

Well drained, no natural soil, bedrock within 60", low Ksat, HSG C --------caecc

Somewhat poorly drained, no natural soil, bedrock within 60", low Ksat, HSG C --------- eaecc

SLOPE PHASE:

0-8%	B	8-15%	C	15-25%	D
25%-50%	E	50%+	F		

7. NARRATIVE MAP UNIT DESCRIPTIONS

SITE-SPECIFIC MAP UNIT: 87

CORRELATED SOIL SERIES: Chatfield very stony

LANDSCAPE SETTING: Forested hill

CHARACTERISTIC SURFACE FEATURES: Many exposed rock

DRAINAGE CLASS: Well Drained

PARENT MATERIAL: Glacial till/bedrock

NATURE OF DISSIMILAR INCLUSIONS: Hollis, Rock Outcrop, Canton

ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: 15%

SOIL PROFILE DESCRIPTIONS- horizon designation, depth, soil texture, Munsell color notation, Munsell color of redox features, soil structure, soil consistence, estimated coarse fragments, estimated seasonal high water table (ESHWT), observed water table (OBSWT), kind of water table (perched, apparent, or both), depth to lithic or paralithic contact:

Test Pit No.	**1**	Soils Series:	Chatfield, fsl
ESHWT::	none	Landscape:	Forested hill
Termination @	24"	Slope:	B slope
Refusal:	24"	Parent Material:	Glacial till/bedrock
Obs. Water:	0'	Hydrologic Soil Group:	B

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
A O to 10"	10YR3/2	fine sandy loam	granular -friable- none
B 10 to 24"	10YR4/6	fine sandy loam	granular -friable-none
R 24" (slopes to surface)			

SITE-SPECIFIC MAP UNIT: 129

CORRELATED SOIL SERIES: Woodbridge very stony

LANDSCAPE SETTING: Forested lower slopes

CHARACTERISTIC SURFACE FEATURES: Numerous surface stones

DRAINAGE CLASS: Moderately well drained

PARENT MATERIAL: Dense Glacial Till/Bedrock

NATURE OF DISSIMILAR INCLUSIONS: Chatfield, Newfields

ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: 15%

SOIL PROFILE DESCRIPTIONS- horizon designation, depth, soil texture , Munsell color notation, Munsell color of redox features, soil structure, soil consistence, estimated coarse fragments, estimated seasonal high water table (ESHWT), observed water table (OBSWT), kind of water table (perched, apparent, or both), depth to lithic or paralithic contact:

ESHWT::	36"	Landscape:	Forested plain
Termination @	48"	Slope:	B slope
Refusal:	48"	Parent Material:	Dense glacial till
Obs. Water:	0'	Hydrologic Soil Group:	C

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
A 0 to 5"	10YR3/2	fie sandy loam	granular -friable- none
B 5 to 36"	10YR4/6	fine sandy loam	granular -friable-none
Cd 36 to 48"	10YR4/6	fine sandy loam	platy-firm- 5YR5/6

R 48" (sloping toward surface)

8 Continental Dr Unit H, Exeter, NH 03833-7507
Ph (603) 778 0644 / *Fax* (603) 778 0654
www.gesinc.biz
info@gesinc.biz

SITE-SPECIFIC MAP UNIT: 500/caecc

CORRELATED SOIL SERIES: Udorthents, loamy

LANDSCAPE SETTING: Graded hillside

CHARACTERISTIC SURFACE FEATURES: Surface rocks common

DRAINAGE CLASS: Well drained

PARENT MATERIAL: Fill

NATURE OF DISSIMILAR INCLUSIONS: Chatfield

ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: 5%

SOIL PROFILE DESCRIPTIONS- horizon designation, depth, soil texture, Munsell color notation, Munsell color of redox features, soil structure, soil consistence, estimated coarse fragments, estimated seasonal high water table (ESHWT), observed water table (OBSWT), kind of water table (perched, apparent, or both), depth to lithic or paralithic contact:

ESHWT::	50"	Landscape:	Graded area
Termination @	66"	Slope:	D slope
Refusal:	66"	Parent Material:	Fill over soft bedrock
Obs. Water:	none	Hydrologic Soil Group:	B

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
^ A 0 to 50"	10YR4/6	gravelly fine sandy loam	granular -friable- none
R1 50-66"	2.5Y5/3	very gravelly sandy loam	massive -firm- 10YR5/6
R2 66" (hard bedrock)			

SITE-SPECIFIC MAP UNIT: 600/eaccc

CORRELATED SOIL SERIES: Endoaquents, loamy

LANDSCAPE SETTING: Graded flats near wetlands

CHARACTERISTIC SURFACE FEATURES: Surface stones, seepage

DRAINAGE CLASS: Somewhat poorly drained

PARENT MATERIAL: Silt/clay fill

NATURE OF DISSIMILAR INCLUSIONS: Woodbridge

ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: 10%

SOIL PROFILE DESCRIPTIONS- horizon designation, depth, soil texture, Munsell color notation, Munsell color of redox features, soil structure, soil consistence, estimated coarse fragments, estimated seasonal high water table (ESHWT), observed water table (OBSWT), kind of water table (perched, apparent, or both), depth to lithic or paralithic contact:

ESHWT::	0"	Landscape:	Graded area
Termination @	50"	Slope:	B slope
Refusal:	50"	Parent Material:	Clayey fill
Obs. Water:	0"	Hydrologic Soil Group:	D

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
^A 0 to 42"	2.5Y5/2	silty clay loam	massive-firm-5YR5/6
B 42 to 50"	10YR5/6	fine sandy loam	massive-friable-none
R 50"			

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www.gesinc.biz
info@gesinc.biz

SITE-SPECIFIC MAP UNIT: 727

CORRELATED SOIL SERIES: Rubble land

LANDSCAPE SETTING: Piles of broken bedrock

CHARACTERISTIC SURFACE FEATURES: Steep to very steep

DRAINAGE CLASS: N/A

PARENT MATERIAL: Blasted bedrock

NATURE OF DISSIMILAR INCLUSIONS: N/A

ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: N/A

SOIL PROFILE DESCRIPTIONS- horizon designation, depth, soil texture, Munsell color notation, Munsell color of redox features, soil structure, soil consistence, estimated coarse fragments, estimated seasonal high water table (ESHWT), observed water table (OBSWT), kind of water table (perched, apparent, or both), depth to lithic or paralithic contact:

ESHWT::	none	Landscape:	Blasted bedrock
Termination @	42"	Slope:	B slope
Refusal:	42"	Parent Material:	Bedrock
Obs. Water:	None	Hydrologic Soil Group:	none

Horizon	Color (Munsell)	Texture	Structure-Consistence-Redox
0 to 42"	10Ur4/4	gravelly rock	none

8. RESPONSIBLE SOIL SCIENTIST

Name: James Gove

Certified Soil Scientist Number: 004

9. CERTIFIED SOIL SCIENTIST STAMP

8 Continental Dr Unit H, Exeter, NH 03833-7507
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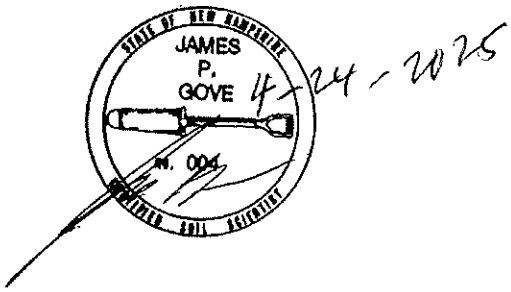
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GOVE
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4-24-2025

Section 3.3: Drainage Area Plans

25 New Hampshire Ave, Suite 255, Portsmouth, New Hampshire 03801
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LEGEND: EXISTING CONDITIONS

EX 1R	REACH		Tc - TIME OF CONCENTRATION PATH
EX 1S	SUBCATCHMENT		EXISTING 2' CONTOUR INTERVAL
EX 1P	POND		EXISTING 10' CONTOUR INTERVAL
OP-1	OBSERVATION POINT		NRCS SOIL DELINEATION
	SUB-CATCHMENT DELINEATION		EXISTING TREELINE
			SOILS LABEL

SOIL IDENTIFICATION LEGEND

MAP UNIT SYMBOL	MAP UNIT NAME	HISS SYMBOL	HYDROLOGIC SOIL GROUP (HSG)
87	CHATFIELD VERY STONY	227	B
129	WOODBRIDGE VERY STONY	323	C
500/caecc	UDORTHENS, LOAMY	263	C
600/caecc	ENDOAQUENTS, LOAMY	563	C
727	RUBBLY LAND	N/A	N/A

N

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REVISIONS

PROJECT INFO
2024002213

ENGINEER	DRAWN BY	CHECKED BY
N. DUQUETTE	B. RICHARDS	N. DUQUETTE

PROPOSED WORKFORCE HOUSING DEVELOPMENT
126 LANG ROAD
PORTSMOUTH, NH 03801

PRE-DEVELOPED DRAINAGE

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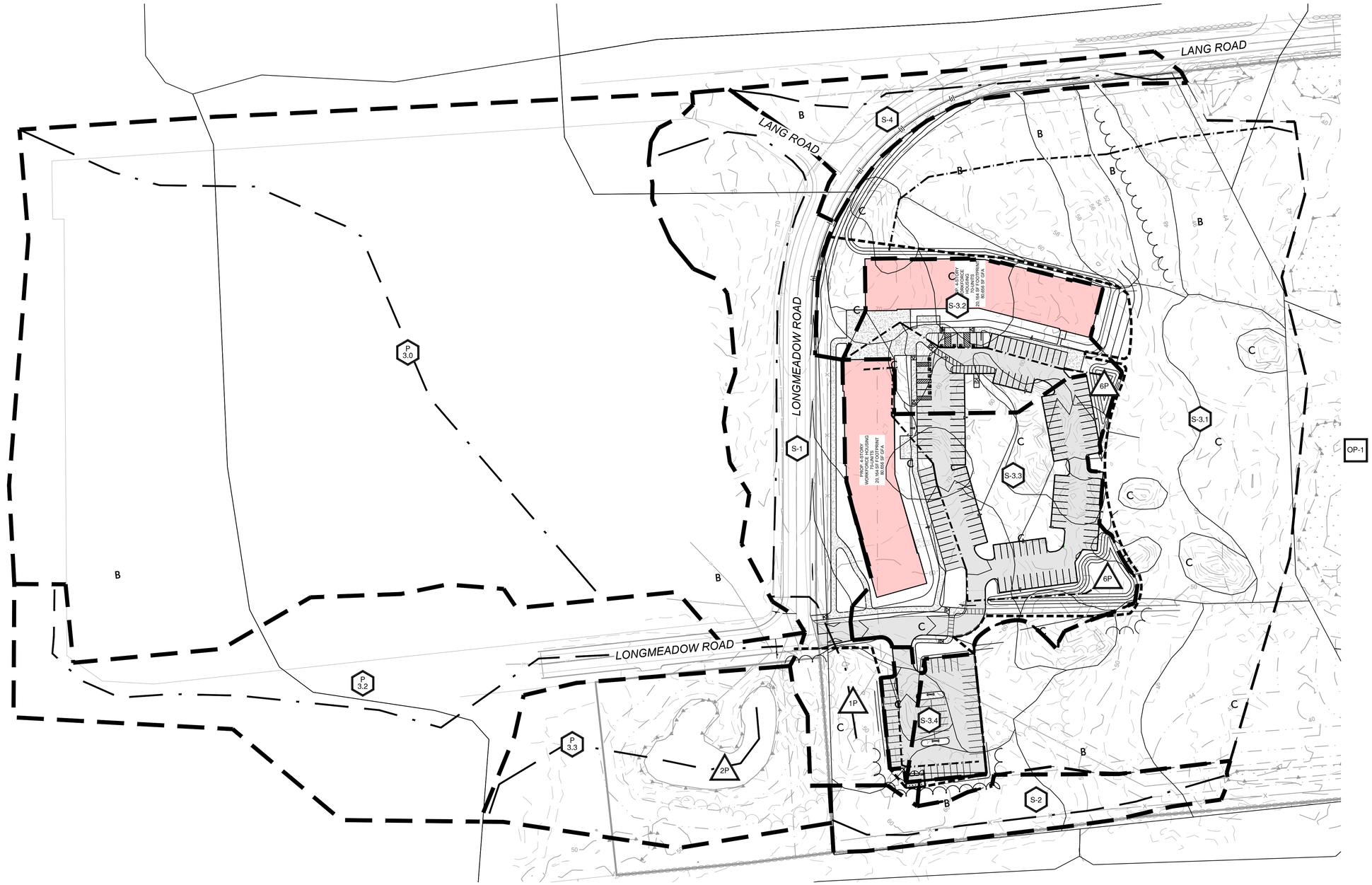
DRAWING NO.
C701



LEGEND: EXISTING CONDITIONS

EX 1R	REACH		Tc - TIME OF CONCENTRATION PATH
			EXISTING 2' CONTOUR INTERVAL
EX 1S	SUBCATCHMENT		EXISTING 10' CONTOUR INTERVAL
			NRCS SOIL DELINEATION
			EXISTING TREELINE
EX 1P	POND	XXX	SOILS LABEL
OP-1	OBSERVATION POINT		
	SUB-CATCHMENT DELINEATION		

SOIL IDENTIFICATION LEGEND

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500/caecc	UDORTHENS, LOAMY	263	C
600/caecc	ENDOAQUENTS, LOAMY	563	C
727	RUBBLY LAND	N/A	N/A

N

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REVISIONS

PROJECT INFO
2024002213

ENGINEER	DRAWN BY	CHECKED BY
N. DUQUETTE	B. RICHARDS	N. DUQUETTE

PROPOSED WORKFORCE HOUSING DEVELOPMENT
126 LANG ROAD
PORTSMOUTH, NH 03801

DEVELOPED DRAINAGE

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DRAWING NO.
C702

TRAFFIC IMPACT STUDY

SERVICE CREDIT UNION MIXED-USE DEVELOPMENT

126 LANG ROAD, PORTSMOUTH, NH

May 5, 2025

STATE OF NEW HAMPSHIRE
DIANE W. MORABITO
No. 9585
LICENSED
PROFESSIONAL ENGINEER

Prepared for:

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Prepared by:

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INTRODUCTION

The purpose of this report is to summarize a traffic impact study conducted for a proposed mixed-use development at 126 Lang Road in Portsmouth, NH. The site location is shown in the map in Figure 1. The proposed development consists of:

- 240 apartment dwelling units for work force and veteran's housing
- 30 attached townhomes
- 75-student daycare facility

Access to the site will be proved by two drives. One drive will be to Longmeadow Road, at the southern portion of the site, creating a T-intersection at the existing bend in Longmeadow Road. The second access drive will be to Lang Road, east of the intersection of Longmeadow Road. Lang Road is a two-lane road with a 30-mph speed limit as is Longmeadow Road. Currently, the southbound Longmeadow Road approach at the bend south of Lang Road is under stop control. Consistent with that stop control, the development proposes that the intersection of Longmeadow Road and the site drive be an all-way stop condition to improve safety.

The development is expected to be occupied in 2027. As a result, 2027 and 2037 were selected as the analysis years for occupancy and the 10-year post occupancy horizon.

TRIP GENERATION ANALYSIS

The number of trips to be generated by the proposed mixed-use development was estimated utilizing the latest Institute of Transportation Engineers (ITE) "Trip Generation, 11th edition". Land use code (LUC) 223 – Affordable Housing was utilized on the basis of 240 Dwelling Units (DUs) for the workforce and veteran's housing. The attached townhomes were estimated using LUC 215 – Single-Family Attached Housing based on 30 Dwelling Units. The Daycare facility was estimated using LUC 565 – Day Care Center based on 75 students. The results are summarized in the following table:

	EXPECTED TRIP GENERATION (One-Way Trip-Ends)			
Time Period	Affordable Housing	Townhomes	Daycare	Total Trips
Weekday	1036	216	314	1566
AM Peak Hour – Adjacent Street	120	14	59	193
Entering	35	4	31	70
Exiting	85	10	28	123

Time Period	Affordable Housing	Townhomes	Daycare	Total Trips
PM Peak Hour – Adjacent Street	110	17	59	186
Entering	65	10	28	103
Exiting	45	7	31	83
AM Peak Hour – Generator	120	18	59	197
Entering	31	4	31	66
Exiting	89	14	28	131
PM Peak Hour – Generator	120	21	61	202
Entering	70	13	29	112
Exiting	50	8	32	90

As seen above, the mixed-use development at completion and full occupancy is expected to generate 1,566 one-way trips, or 783 roundtrips, daily. Peak hour trips are estimated to range from 186 to 202. Residential trips are primary (or new) with no-pass by components. While day care facilities would be expected to generate some pass-by trips, there is no ITE pass-by data for this land use code, so all trips were assumed to be primary. These estimates are expected to be conservative since some residents would be expected to utilize the on-site day care facility thus reducing off-site trips.

OTHER DEVELOPMENT

The City of Portsmouth Planning & Sustainability Department was contacted to determine if there are any other approved (but unbuilt) developments, expected to significantly impact future traffic volumes in the vicinity of the site, which should be considered in the traffic analysis. No other approved developments were identified in the area.

TRAFFIC VOLUMES

Turning movement counts were conducted by NDS (National Data & Surveying Services) during peak hours at the following intersections as detailed below:

Intersection	Count Date	Count Period	Peak Hour
Longmeadow Road & Lang Road	4/15/2025	6:00 – 9:00 AM	7:30 – 8:30
Longmeadow Road & Lang Road	4/15/2025	3:00 – 6:00 PM	3:30 – 4:30
US 1 & Longmeadow Road	4/15/2025	6:00 – 9:00 AM	7:30 – 8:30
US 1 & Longmeadow Road	4/15/2025	3:00 – 6:00 PM	4:00 – 5:00
US 1 & Lang Road	4/15/2025	6:00 – 9:00 AM	7:30 – 8:30
US 1 & Lang Road	4/15/2025	3:00 – 6:00 PM	3:30 – 4:30

The count records are included in the appendix. The counts were seasonally adjusted to peak summer conditions using NHDOT Group 4 factors. The April counts were increased by 9.0 % to obtain peak summer volumes. These results are summarized in Figure 2.

Average annual daily traffic (AADT) data for the area was obtained from NHDOT's Traffic Data Management System. The historical AADT data in the vicinity of the site is compiled in the following tables:

	Average Annual Daily Traffic				
Location Description	2011	2014	2017	2020	2023
US 1 (LAFAYETTE RD) AT RYE TL	17,000	21,000	17,725	15,268	14,814
US 1 BYPASS NORTH OF COTTAGE ST	--	22,000	20,090	17,391	17,876
Location Description	2010	2013	2016	2019	2022
US 1 (LAFAYETTE RD) NORTH OF OCEAN RD	21,000	17,000	19,093	18,484	15,546
US 1 BYPASS SOUTH OF GREENLEAF AVENUE	19,000	11,000	11,155	17,176	9,859
Location Description	2012	2015	2018	2021	2024
US 1 BYPASS UNDER B&M RAILROAD	37,000	21,000	18,997	16,080	16,239

As seen above, traffic volumes on Route 1/Route 1 Bypass have declined at the site, as well as north and south of the site, during the long-term period 2010 to 2024. However, the NHDOT projected traffic growth rate for this Region is 0.88%. Given this, to be conservative, a 1 % annual traffic growth rate was utilized to project the 2025 volumes to No Build 2027 and 2037 conditions. These projected No Build volumes are shown in Figures 3 and 4.

The trip assignments were based upon the travel patterns recorded during the counts. These patterns are summarized below:

To and from via	Percentage
North via Route 1	40 %
South via Route 1	28 %
West via Ocean Road	20 %
East via Lang Road	12 %

The resulting trip assignments are shown in Figure 5 for the AM and PM peak hours. Based upon the trip assignments, the study area was defined as extending from the site through the Route 1 intersections of Longmeadow Road and Lang Road.

CAPACITY ANALYSES

Traffic operations are evaluated in terms of level of service (LOS). Level of service is a qualitative measure that describes operations by letter designation. The levels range from A - very little delay to F - extreme delays. Level of service "D" is generally considered acceptable in urban locations while LOS "E" is generally considered the capacity of a facility and the minimum tolerable level. The level of service for signalized intersections is based upon the average control or signal delay per vehicle. These criteria are defined in the following table excerpted from the "Highway Capacity Manual":

Signalized Intersection Level of Service

LOS	Delay Range
A	< = 10.0 seconds
B	> 10.0 and <= 20.0
C	> 20.0 and <= 35.0
D	> 35.0 and <= 55.0
E	> 55.0 and <= 80.0
F	> 80.0

The level of service for unsignalized intersections is based upon average control delay per vehicle for each minor, opposed movement, as defined in the following table:

Unsignalized Intersection Level of Service

LOS	Delay Range
A	< = 10.0 seconds
B	> 10.0 and <= 15.0
C	> 15.0 and <= 25.0
D	> 25.0 and <= 35.0
E	> 35.0 and <= 50.0
F	> 50.0

SIGNALIZED INTERSECTION ANALYSIS

The level of service (LOS) was calculated for the signalized intersection of Route 1, Longmeadow Road and Ocean Road for existing 2025 and projected 2027 and 2037 No Build and Build conditions using Synchro/ SimTraffic, the average of ten (10) runs. Given that NHDOT is currently in the design process for improvements to Route 1, an alternative scenario was also run for the future volumes reflecting those planned improvements, which will add an additional through lane to Route 1 in the southbound direction and require traffic signal timing changes. The results are summarized in the following tables:

Route 1, Ocean Road & Longmeadow Road
AM Peak Hour Level of Service

Approach/Lane	2025 Existing	2027 No Build	2027 Build	2027 Build Alt
Eastbound Ocean Road Lefts/Throughs	D (39.6)	D (40.0)	D (41.2)	D (40.0)
Eastbound Ocean Road Rights	A (7.4)	A (7.5)	A (8.7)	A (3.5)
Eastbound Ocean Road Overall	C (26.3)	C (26.7)	C (28.5)	C (25.8)
Westbound Longmeadow Road	C (29.4)	C (30.0)	D (36.2)	C (28.0)
Northbound Route 1 Lefts	D (40.2)	D (41.4)	D (52.9)	D (38.3)
Northbound Route 1 Throughs/Rights	C (21.5)	C (23.6)	C (34.4)	C (31.9)
Northbound Route 1 Overall	C (24.4)	C (26.4)	D (37.2)	C (32.9)
Southbound Route 1 Lefts	D (43.8)	D (49.0)	E (55.9)	D (45.5)
Southbound Route 1 Throughs	--	--	--	B (17.5)
Southbound Route 1 Throughs/Rights	C (22.7)	C (24.0)	C (27.7)	B (17.0)
Southbound Route 1 Overall	C (23.5)	C (24.9)	C (29.0)	B (18.5)
Intersection Overall	C (24.9)	C (26.3)	C (33.1)	C (27.3)

As seen above, the SimTraffic analysis shows that all lanes operate acceptably under existing 2025 volumes during the AM peak hour, with the overall intersection operating at LOS “C”. Similar lane operations are projected under 2027 No Build volumes with the same LOS “C” overall. Under 2027 Build volumes, with the proposed housing development and daycare facility full occupied, the southbound Route 1 left turn drops to an “E”, but this is a minor movement with a low volume. The intersection will continue to operate at LOS C” overall with all other lanes at LOS “D” or better, indicating no significant constraints. With the planned Route 1 improvements all lanes would operate at LOS “D” or better in the AM peak hour.

Route 1, Ocean Road & Longmeadow Road
PM Peak Hour Level of Service

Approach/Lane	2025 Existing	2027 No Build	2027 Build	2027 Build Alt
Eastbound Ocean Road Lefts/Throughs	E (63.5)	E (62.6)	E (66.3)	D (40.0)
Eastbound Ocean Road Rights	B (17.3)	B (18.1)	B (18.6)	A (5.0)
Eastbound Ocean Road Overall	D (41.0)	D (41.7)	D (44.8)	C (24.0)
Westbound Longmeadow Road	D (53.2)	D (51.1)	E (79.0)	C (29.1)
Northbound Route 1 Lefts	D (52.3)	D (51.7)	E (64.5)	D (37.1)
Northbound Route 1 Throughs/Rights	B (17.4)	B (17.8)	C (22.8)	C (22.9)
Northbound Route 1 Overall	C (23.9)	C (24.4)	C (30.5)	C (25.6)

Approach/Lane	2025 Existing	2027 No Build	2027 Build	2027 Build Alt
Southbound Route 1 Lefts	D (51.4)	D (53.6)	D (54.6)	D (43.5)
Southbound Route 1 Throughs	--	--	--	B (18.9)
Southbound Route 1 Throughs/Rights	D (41.5)	D (40.7)	D (53.3)	C (20.1)
Southbound Route 1 Overall	D (41.8)	D (41.1)	D (53.4)	C (20.4)
Intersection Overall	D (36.3)	D (36.0)	D (46.3)	C (23.8)

As seen above, the are some minor lane constraints during the PM peak hour under existing, No Build and Build 2027 volumes, for lefts/throughs off Ocean Road. All other lanes operate at LOS "D" or better as well as the intersection overall. With the Planned Route 1 improvement project, all lanes would operate at LOS "D" or better, and the overall intersection would improve to a "C" under 2027 Build volumes.

It is common practice in New Hampshire to also assesses traffic operations ten (10) years post-occupancy to assure acceptable operations longer term. Hence, the SimTraffic analysis was repeated for the projected 2037 No Build and Build volumes. Build conditions were also assessed with the planned Route 1 improvement project, which adds an additional southbound through lane to Route 1.

Route 1, Ocean Road & Longmeadow Road
AM Peak Hour Level of Service

Approach/Lane	2037 No Build	2037 Build	2037 Build Alt
Eastbound Ocean Road Lefts/Throughs	D (51.3)	D (51.2)	E (57.7)
Eastbound Ocean Road Rights	A (8.4)	B (10.2)	A (4.0)
Eastbound Ocean Road Overall	C (34.6)	D (35.5)	D (37.2)
Westbound Longmeadow Road	C (32.9)	D (42.7)	C (31.6)
Northbound Route 1 Lefts	D (46.7)	E (63.4)	D (41.1)
Northbound Route 1 Throughs/Rights	C (33.9)	E (59.1)	D (47.7)
Northbound Route 1 Overall	D (35.8)	E (59.7)	D (46.6)
Southbound Route 1 Lefts	D (48.8)	E (63.1)	D (47.0)
Southbound Route 1 Throughs	--	--	B (18.5)
Southbound Route 1 Throughs/Rights	C (26.4)	D (36.5)	B (19.0)
Southbound Route 1 Overall	C (27.3)	D (37.7)	B (19.9)
Intersection Overall	C (33.2)	D (47.1)	D (36.5)

	Route 1, Ocean Road & Longmeadow Road PM Peak Hour Level of Service		
Approach/Lane	2037 No Build	2037 Build	2037 Build Alt
Eastbound Ocean Road Lefts/Throughs	F (107.1)	F (105.6)	D (50.1)
Eastbound Ocean Road Rights	B (18.6)	B (19.6)	A (6.3)
Eastbound Ocean Road Overall	E (64.8)	E (65.6)	C (29.7)
Westbound Longmeadow Road	F (87.5)	F (104.7)	C (31.7)
Northbound Route 1 Lefts	D (54.1)	E (64.1)	D (37.8)
Northbound Route 1 Throughs/Rights	B (20.0)	C (27.0)	C (34.1)
Northbound Route 1 Overall	C (26.4)	C (34.1)	C (34.8)
Southbound Route 1 Lefts	D (54.1)	E (56.0)	D (42.9)
Southbound Route 1 Throughs	--	--	C (20.4)
Southbound Route 1 Throughs/Rights	E (71.4)	F (87.2)	C (21.9)
Southbound Route 1 Overall	E (70.9)	F (86.2)	C (22.0)
Intersection Overall	D (55.0)	E (65.1)	C (29.0)

As seen above, by 2037 there will be several LOS “E” and “F” lanes under both No Build and Build volumes during the AM and PM peak hours. With the planned Route 1 improvements, all lanes will operate at levels of service “D” or better with one exception, lefts/throughs off Ocean Road. The signalized intersection will operate at LOS “C” overall in the PM peak hour indicating no significant concerns or constraints with the planned Route 1 project.

Additional analysis by Sewall indicates that under the planned Route 1 improvements, the intersection will function better with a change in lane uses eastbound on Ocean Road. Currently, this approach contains a left-through lane and a right turn lane. Operations would be further improved if the NHDOT altered these lanes to left and through-right. Under the altered lanes, no lanes would be below LOS “D” in either the AM or PM peak hour under 2037 Build volumes.

UNSIGNALIZED INTERSECTION ANALYSIS

The level of service (LOS) was similarly calculated for the unsignalized study area intersections for existing 2025 and projected 2027 and 2037 conditions using Synchro/ SimTraffic. The results are summarized in the following tables:

Route 1 and Lang Road
AM Peak Hour Level of Service

Approach/Lane	2025 Existing	2027 No Build	2027 Build	2027 Build Alt
Westbound Lang Road Rights	B (12.4)	B (13.8)	C (17.7)	B (14.4)
Northbound Route 1 Throughs/Rights	A (5.1)	A (5.2)	A (5.9)	A (5.8)
Southbound Route 1 Lefts	A (9.1)	A (9.9)	B (11.8)	B (10.2)
Southbound Route 1 Throughs	A (2.3)	A (2.4)	A (2.8)	A (1.8)

Route 1 & Lang Road
PM Peak Hour Level of Service

Approach/Lane	2025 Existing	2027 No Build	2027 Build	2027 Build Alt
Westbound Lang Road Rights	B (12.8)	B (14.3)	C (15.9)	B (14.4)
Northbound Route 1 Throughs/Rights	A (4.3)	A (4.4)	A (4.9)	A (5.1)
Southbound Route 1 Lefts	A (8.1)	A (8.7)	A (9.9)	A (8.7)
Southbound Route 1 Throughs	A (6.9)	A (6.2)	B (12.9)	A (3.7)

Longmeadow Road & Lang Road
AM Peak Hour Level of Service

Approach/Lane	2025 Existing	2027 No Build	2027 Build	2027 Build Alt
Eastbound Longmeadow Road	A (0.4)	A (0.5)	A (1.5)	A (1.4)
Westbound Lang Road	A (1.0)	A (1.1)	A (1.1)	A (1.2)
Southbound Lang Road	A (6.6)	A (6.5)	A (6.8)	A (6.7)

Longmeadow Road & Lang Road
PM Peak Hour Level of Service

Approach/Lane	2025 Existing	2027 No Build	2027 Build	2027 Build Alt
Eastbound Longmeadow Road	A (0.7)	A (0.7)	A (1.6)	A (1.5)
Westbound Lang Road	A (0.9)	A (0.9)	A (0.9)	A (1.0)
Southbound Lang Road	A (7.3)	A (7.4)	A (8.1)	A (8.0)

Longmeadow Road & Site Drive
AM Peak Hour Level of Service

Approach/Lane	2025 Existing	2027 No Build	2027 Build	2027 Build Alt
Eastbound Longmeadow Road	A (1.8)	A (1.9)	A (3.7)	A (3.7)
Westbound Site Drive	--	--	A (5.0)	A (4.8)
Southbound Longmeadow Road	A (3.3)	A (3.4)	A (3.7)	A (3.8)

Longmeadow Road & Site Drive
PM Peak Hour Level of Service

Approach/Lane	2025 Existing	2027 No Build	2027 Build	2027 Build Alt
Eastbound Longmeadow Road	A (2.7)	A (2.5)	A (6.1)	A (5.7)
Westbound Site Drive	--	--	A (4.8)	A (4.8)
Southbound Longmeadow Road	A (3.1)	A (3.1)	A (3.7)	A (3.7)

As seen in the preceding tables, there are no capacity concerns at any of the unsignalized study area intersections during either the AM or PM peak hour under 2027 Build volumes. All lanes will function at LOS “B” or better. The analyses were repeated for the 2037 horizon year with the results summarized in the following tables:

Route 1 and Lang Road
AM Peak Hour Level of Service

Approach/Lane	2037 No Build	2037 Build	2037 Build Alt
Westbound Lang Road Rights	C (18.6)	C (24.1)	C (20.9)
Northbound Route 1 Throughs/Rights	A (5.8)	A (6.4)	A (6.3)
Southbound Route 1 Lefts	B (12.8)	B (14.6)	B (13.0)
Southbound Route 1 Throughs	A (2.7)	A (3.4)	A (2.0)

Route 1 and Lang Road
PM Peak Hour Level of Service

Approach/Lane	2037 No Build	2037 Build	2037 Build Alt
Westbound Lang Road Rights	C (19.4)	C (24.3)	C (22.5)
Northbound Route 1 Throughs/Rights	A (4.8)	A (5.5)	A (5.9)
Southbound Route 1 Lefts	B (10.6)	B (11.3)	B (12.7)
Southbound Route 1 Throughs	F (70.2)	F (117.4)	A (4.7)

Longmeadow Road & Lang Road
AM Peak Hour Level of Service

Approach/Lane	2037 No Build	2037 Build	2037 Build Alt
Eastbound Longmeadow Road	A (0.5)	A (1.5)	A (1.5)
Westbound Lang Road	A (1.2)	A (1.3)	A (1.3)
Southbound Lang Road	A (7.0)	A (7.4)	A (7.4)

Longmeadow Road & Lang Road
PM Peak Hour Level of Service

Approach/Lane	2037 No Build	2037 Build	2037 Build Alt
Eastbound Longmeadow Road	A (0.9)	A (1.9)	A (1.6)
Westbound Lang Road	A (1.0)	A (1.0)	A (1.1)
Southbound Lang Road	A (8.6)	A (9.9)	A (9.4)

Longmeadow Road & Site Drive
AM Peak Hour Level of Service

Approach/Lane	2037 No Build	2037 Build	2037 Build Alt
Eastbound Longmeadow Road	A (1.9)	A (3.8)	A (3.8)
Westbound Site Drive	--	A (5.1)	A (5.0)
Southbound Longmeadow Road	A (3.5)	A (3.9)	A (4.0)

Longmeadow Road & Site Drive
PM Peak Hour Level of Service

Approach/Lane	2037 No Build	2037 Build	2037 Build Alt
Eastbound Longmeadow Road	A (2.8)	A (6.0)	A (5.8)
Westbound Site Drive	--	A (4.8)	A (4.7)
Southbound Longmeadow Road	A (3.2)	A (3.7)	A (3.7)

As seen in the preceding tables, the only constraint in 2037 at the unsignalized intersections is southbound Route 1 throughs at Lang Road during the PM peak hour. This is due to queuing from the signal at Longmeadow and Ocean Roads. With the planned Route 1 improvements implemented, the LOS improves to an “A” with no capacity constraints.

QUEUE ANALYSIS

In addition to level of service, queues were also evaluated using SimTraffic for the signalized intersection of Route 1, Longmeadow Road and Ocean Road to evaluate the adequacy of existing turn lane lengths. The results are summarized below:

	AM Peak Hour – 95th Percentile Queues				
Approach/Lane	Available Storage	2025 Existing	2027 No Build	2027 Build	2027 Build Alt
Eastbound Ocean Road Lefts/Thrus	--	283’	290’	307’	306’
Eastbound Ocean Road Rights	200’	179’	194’	210’	179’
Westbound Longmeadow Road	--	143’	136’	203’	176’
Northbound Route 1 Lefts	350’	203’	221’	322’	280’
Northbound Route 1 Thrus/Rights	--	380’	419’	601’	543’
Southbound Route 1 Lefts	225’	81’	89’	126’	54’
Southbound Route 1 Thrus	--	--	--	--	149’
Southbound Route 1 Thrus/Rights	--	325’	338’	373’	169’

	PM Peak Hour – 95th Percentile Queues				
Approach/Lane	Available Storage	2025 Existing	2027 No Build	2027 Build	2027 Build Alt
Eastbound Ocean Road Lefts/Thrus	--	370’	319’	395’	228’
Eastbound Ocean Road Rights	200’	212’	217’	239’	144’
Westbound Longmeadow Road	--	250’	238’	389’	205’
Northbound Route 1 Lefts	350’	193’	205’	250’	190’
Northbound Route 1 Thrus/Rights	--	314’	306’	368’	331’
Southbound Route 1 Lefts	225’	125’	149’	163’	62’
Southbound Route 1 Thrus	--	--	--	--	188’
Southbound Route 1 Thrus/Rights	--	661’	634’	750’	203’

As seen above, based upon the SimTraffic results, the existing left-turn lanes are adequate to store the queues. Under the planned NHDOT Route 1 improvements project, the queues at the intersection are significantly reduced.

AM Peak Hour – 95th Percentile Queues

Approach/Lane	Available Storage	2037 No Build	2037 Build	2037 Build Alt
Eastbound Ocean Road Lefts/Thrus	--	424’	439’	456’
Eastbound Ocean Road Rights	200’	251’	267’	257’
Westbound Longmeadow Road	--	162’	255’	202’
Northbound Route 1 Lefts	350’	315’	414’	391’
Northbound Route 1 Thrus/Rights	--	640’	1049’	806’
Southbound Route 1 Lefts	225’	66’	162’	57’
Southbound Route 1 Thrus	--	--	--	166’
Southbound Route 1 Thrus/Rights	--	366’	488’	185’

PM Peak Hour – 95th Percentile Queues

Approach/Lane	Available Storage	2037 No Build	2037 Build	2037 Build Alt
Eastbound Ocean Road Lefts/Thrus	--	609’	616’	317’
Eastbound Ocean Road Rights	200’	265’	271’	191’
Westbound Longmeadow Road	--	389’	519’	217’
Northbound Route 1 Lefts	350’	219’	289’	315’
Northbound Route 1 Thrus/Rights	--	351’	467’	526’
Southbound Route 1 Lefts	225’	166’	180’	76’
Southbound Route 1 Thrus	--	--	--	214’
Southbound Route 1 Thrus/Rights	--	816’	786’	233’

Under the projected 2037 volumes, some of the left-turn lanes are inadequate to store the projected queues. With the planned Route 1 project, and some timing changes and recommended lane use changes on Ocean Road, no significant queue issues are expected.

DRIVEWAY SIGHT DISTANCE

One of the most important safety factors to consider for a project is sight distance from the access drives. The City of Portsmouth’s Site Plan Review Regulations require that driveway sight distance meet AASTHO standards, which is generally considered to be 10’ per mph. The posted speed limit is 30 mph on both Lang Road and Longmeadow Road. Hence, 300’ of sight distance is recommended. Sewall measured sight distance from the two proposed site drive locations. The results are summarized I the following table:

Drive Description	Available Sight Distance To Left	Available Sight Distance To Right
Proposed Lang Road Drive	287'*	500'+
Proposed Longmeadow Drive	500'+ to Route 1	500'+ to Lang Road

*Sight distance to left can be improved to 300' by removal of a clump of trees growing along property line

Since sight distances will meet or exceed the standard with removal of some trees, there are no sight distance concerns. It is important that no signage or landscaping be located in the driveway sight triangles which could obscure or limit the driveway sight distances in the future and that the sight lines are maintained.

SUMMARY AND RECOMMENDATIONS

The proposed mixed-use development with up to 240 apartment homes, 30 townhomes and a day care facility for 75 students is expected to generate 1,566 one-way trips daily or 783 roundtrips. The overall development will generate from 186 to 202 one-way trips in peak hours. These estimates are expected to be conservative since some of the day care users would be expected to be from the on-site residences.

The NHDOT is in the process of designing improvements to Route 1 in this area so future conditions were evaluated with and without these planned improvements. There are some minor capacity constraints for some lanes at the signalized intersection of Route 1, Ocean Road and Longmeadow Road in 2027 without the Route 1 improvement project. However, the intersection will function at LOS "C" overall in the AM peak hour and at LOS "D" in the PM peak hour.

There are greater lane constraints in the horizon year 2037 with the intersection functioning at LOS "D" during the AM peak hour and at capacity at LOS "E" in the PM Peak hour. With the Route 1 improvement project implemented, all levels of service will be acceptable under Build volumes during both the AM and PM peak hour.

In terms of safety, adequate sight distance can be obtained from the two proposed site drives with some clearing on Lang Road. It is important that no signage or landscaping be located in the driveway sight triangles which could obscure or limit the driveway sight distances in the future, and that the sight lines are maintained. Control at the intersection of Longmeadow Road and the site drive, a new T-intersection, is proposed to be all-way stop for improved safety and given the existing southbound stop condition.

Figure 1

Site Location Map

Lang Road Development

Portsmouth, New Hampshire

Sewall
The evolution of expertise
A TFIC Company

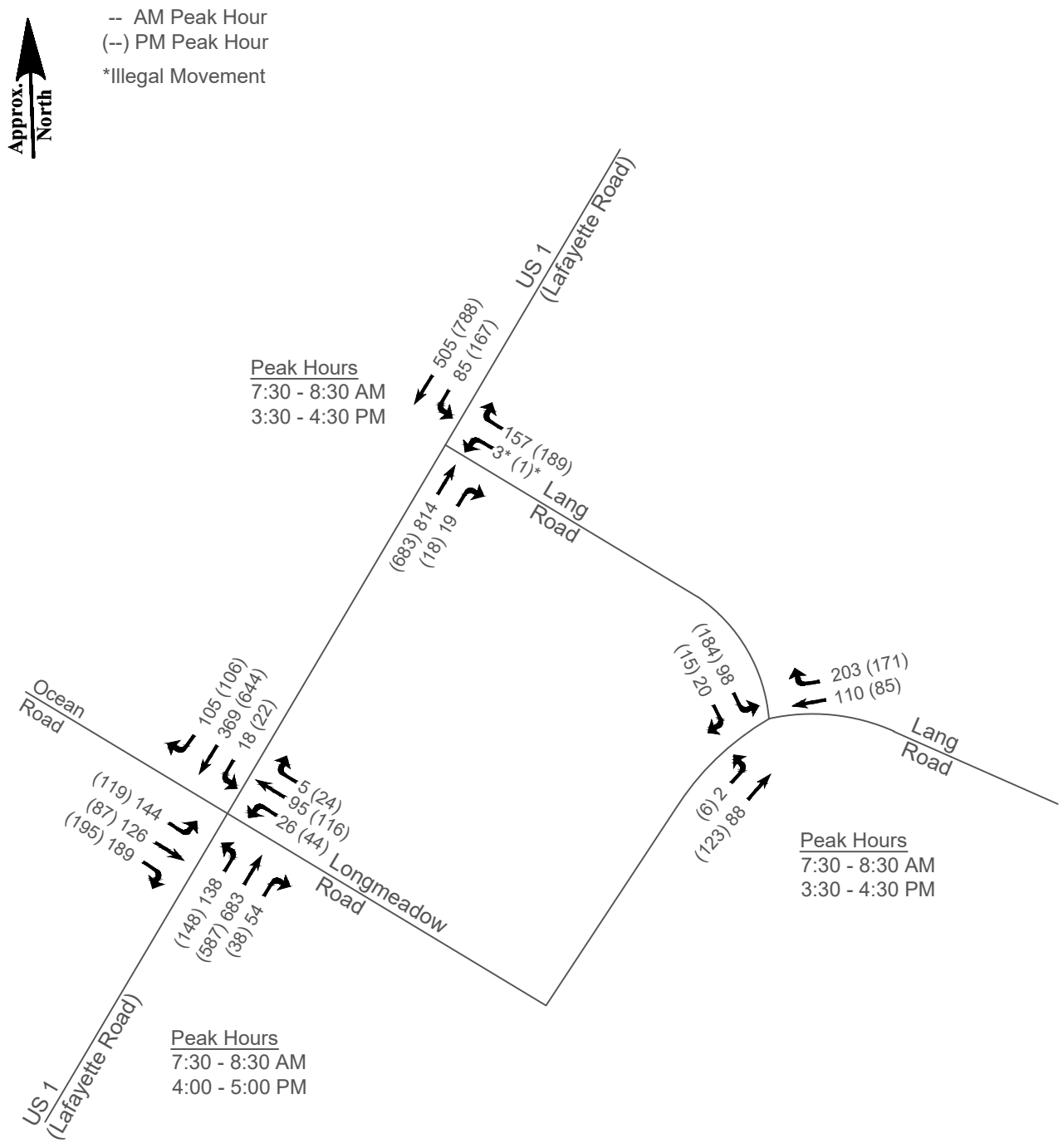


Figure 2

2025 Existing Volumes

Lang Road Development

Portsmouth, New Hampshire

Sewall
The evolution of expertise
A TFC Company

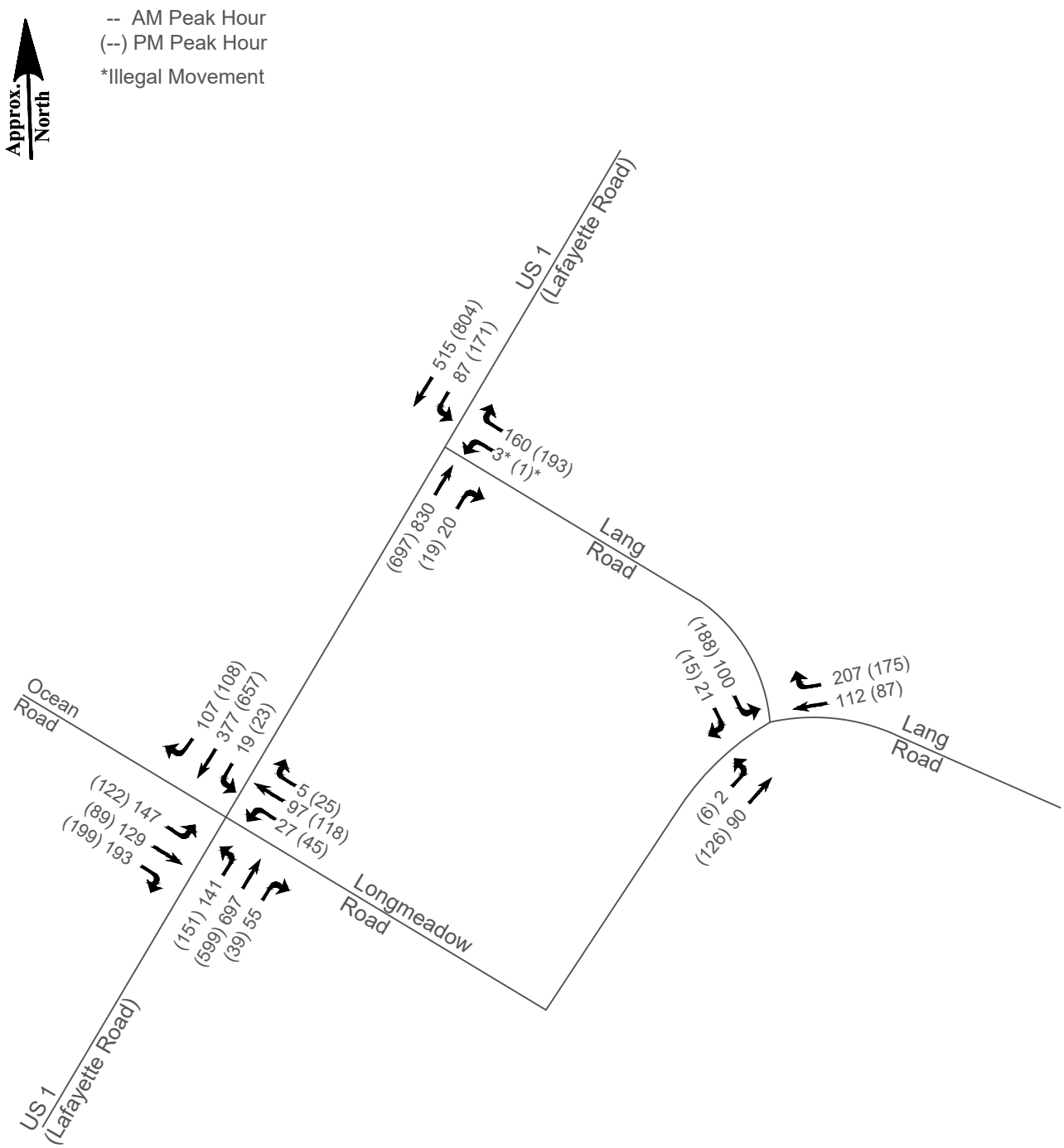


Figure 3

2027 No Build Volumes

Lang Road Development

Portsmouth, New Hampshire

Sewall
The evolution of expertise
A TRC Company

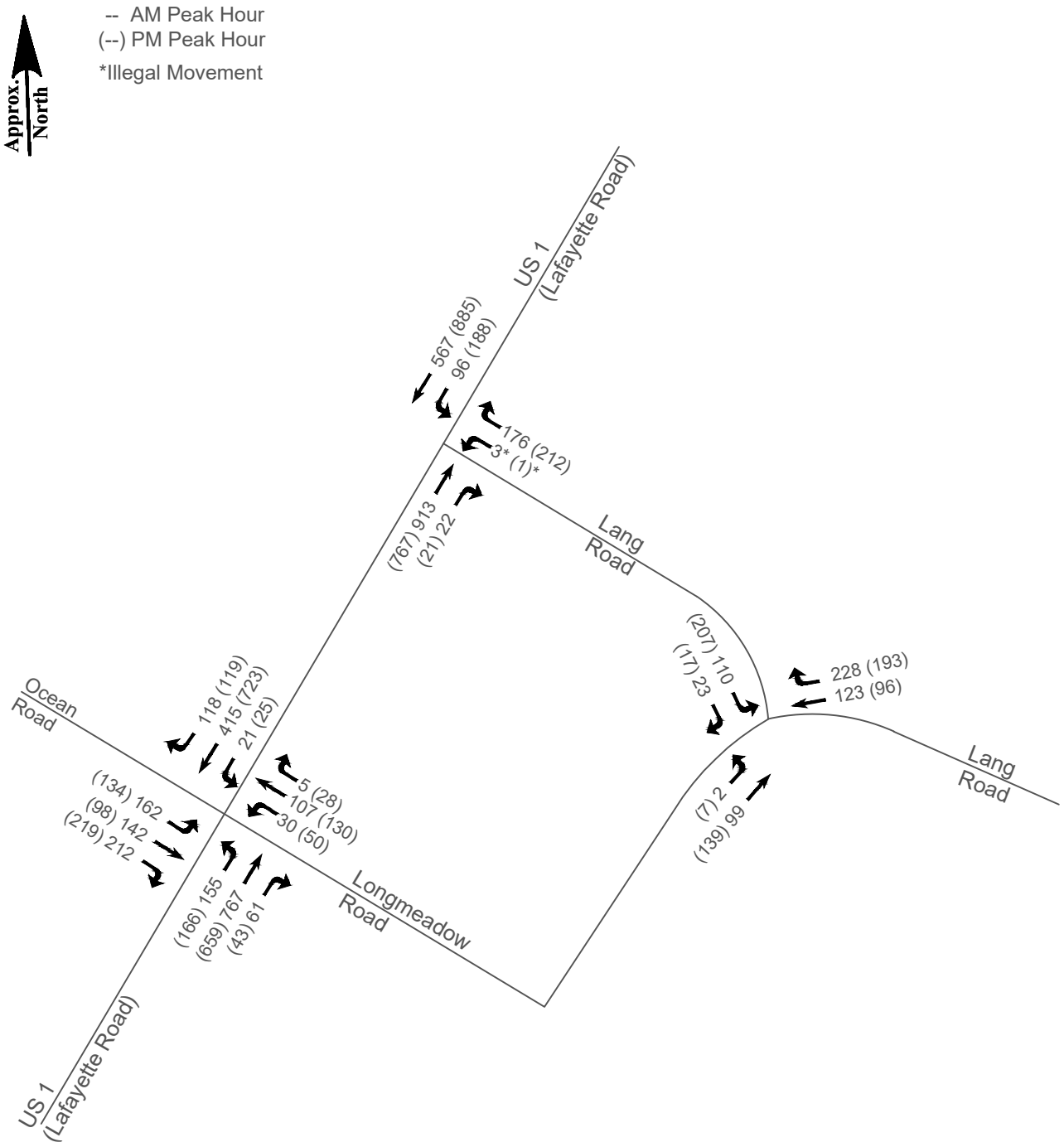


Figure 4

2037 No Build Volumes

Lang Road Development

Portsmouth, New Hampshire

Sewall
The evolution of expertise
A TRC Company

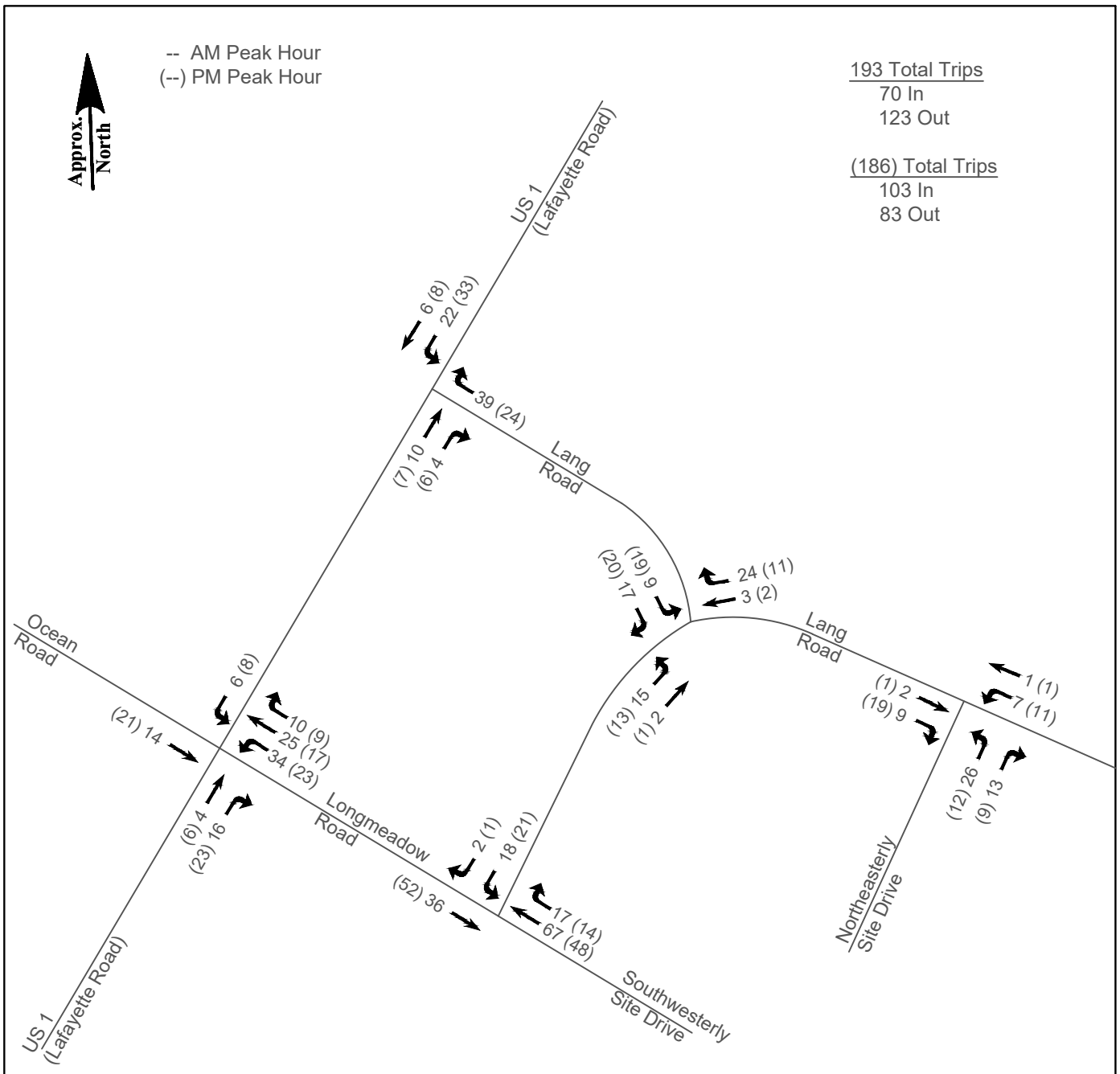


Figure 5

AM & PM Peak Hour Trip Assignments

Lang Road Development

Portsmouth, New Hampshire

Sewall
The evolution of expertise
A TRC Company

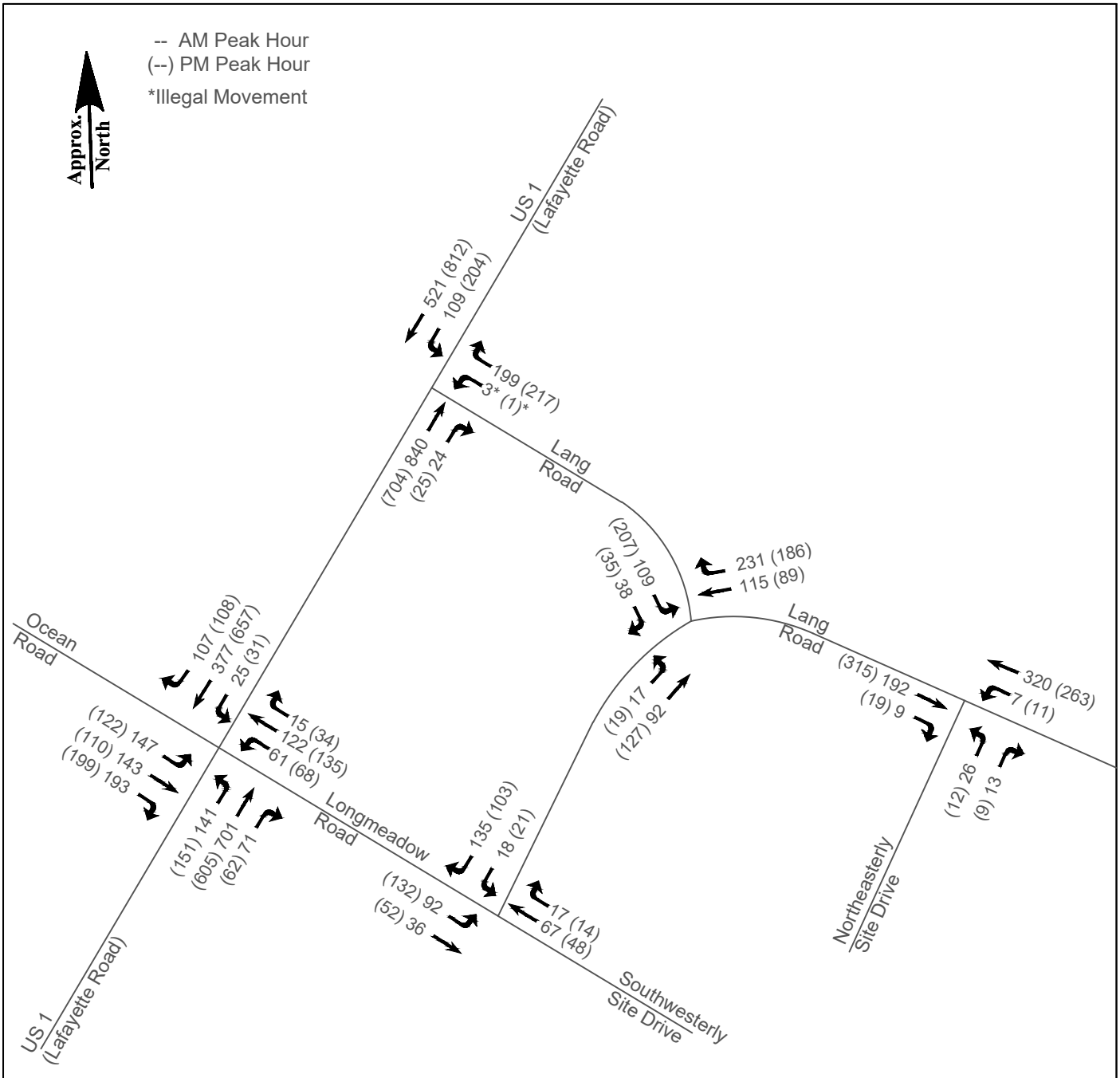


Figure 6

2027 Build Volumes

Lang Road Development

Portsmouth, New Hampshire

Sewall
The evolution of expertise
A TFC Company

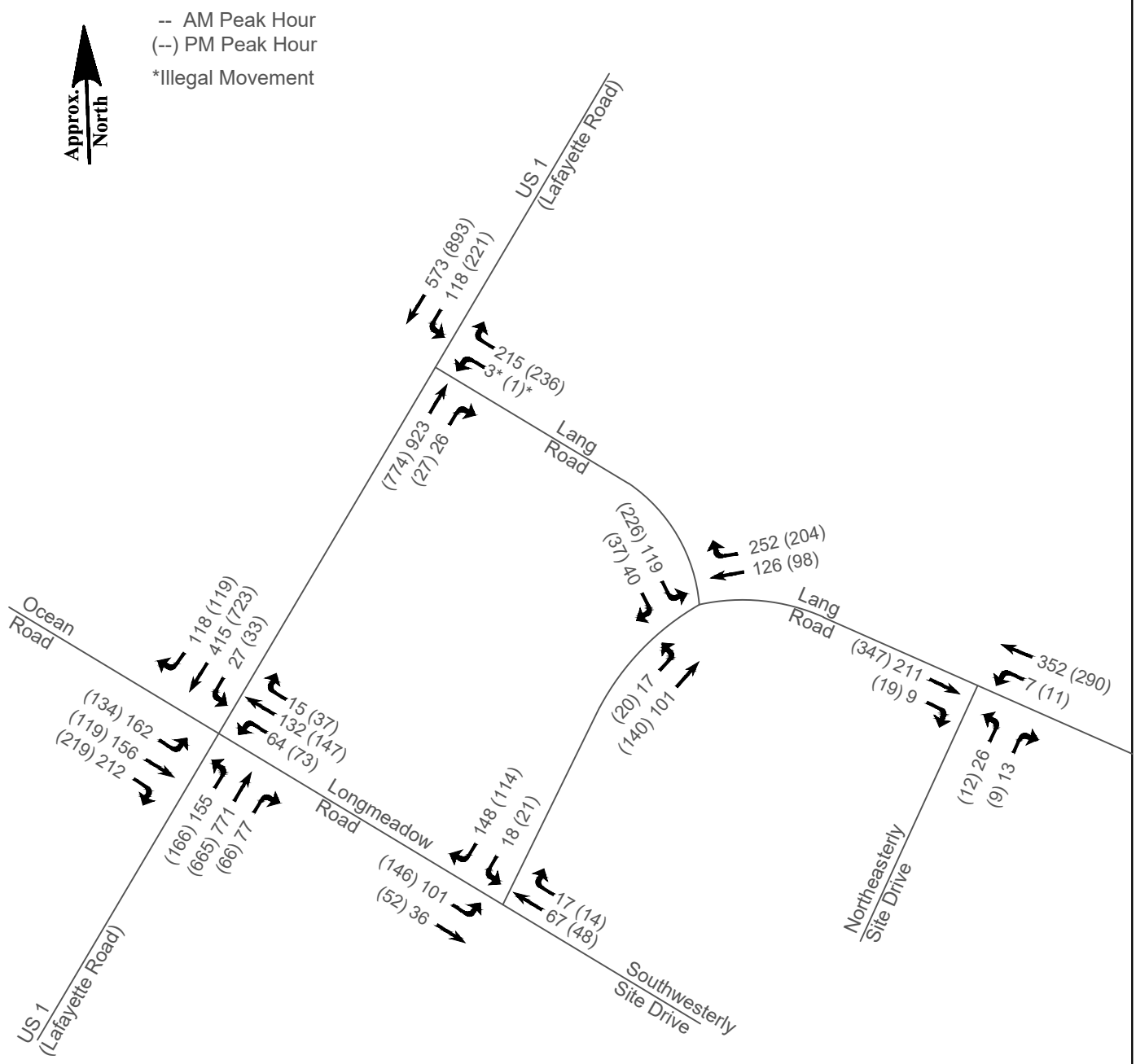


Figure 7

2037 Build Volumes

Lang Road Development

Portsmouth, New Hampshire

Sewall
The evolution of expertise
A TFIC company

APPENDIX

Turning Movement Counts

Capacity Analysis

Preliminary Site Plan

Prepared by National Data & Surveying Services

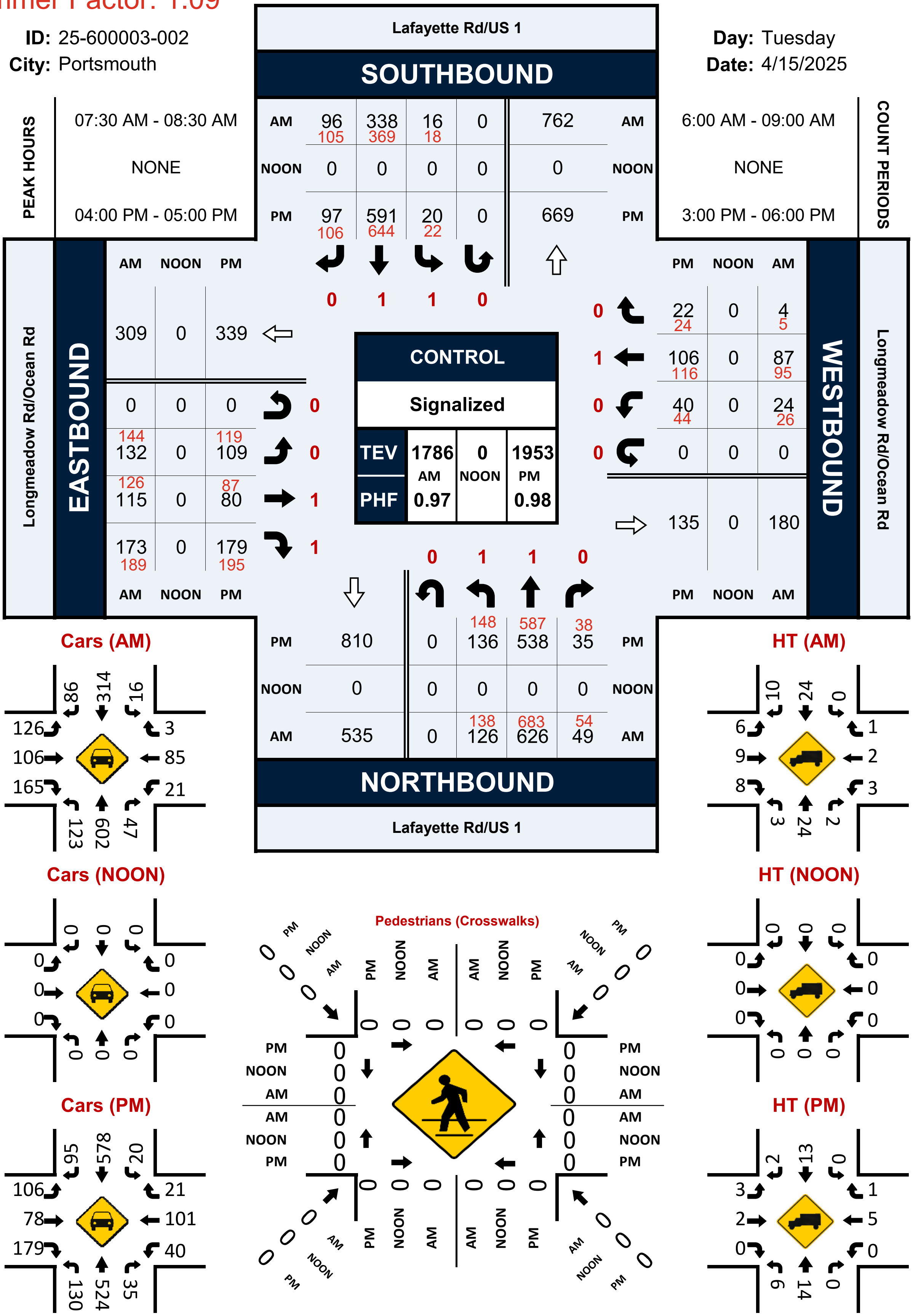
Lafayette Rd/US 1 & Longmeadow Rd/Ocean Rd

-All Group 4
-Peak summer Factor: 1.09

Peak Hour Turning Movement Count

ID: 25-600003-002
City: Portsmouth

Day: Tuesday
Date: 4/15/2025



Prepared by National Data & Surveying Services

Lafayette Rd/US 1 & Lang Rd

Peak Hour Turning Movement Count

-All Group 4
-Peak summer Factor: 1.09

ID: 25-600003-003
City: Portsmouth

Day: Tuesday
Date: 4/15/2025

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	6:00 AM - 09:00 AM
NONE	NONE
03:30 PM - 04:30 PM	3:00 PM - 06:00 PM

SOUTHBOUND (Lafayette Rd/US 1)

AM	0	463 (505)	78 (85)	0	920	AM
NOON	0	0	0	0	0	NOON
PM	0	723 (788)	153 (167)	0	770	PM

EASTBOUND (Lang Rd)

AM	NOON	PM
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0

WESTBOUND (Lang Rd)

PM	NOON	AM
144 (157)	0	173 (189)
0	0	0
1 (1)	0	3 (3)
0	0	0
169	0	95

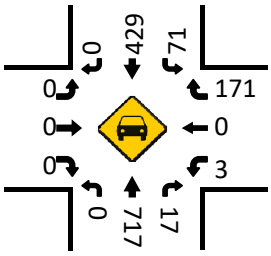
NORTHBOUND (Lafayette Rd/US 1)

PM	724	0	0	626 (683)	16 (18)	PM
NOON	0	0	0	0	0	NOON
AM	466	0	0	747 (814)	17 (19)	AM

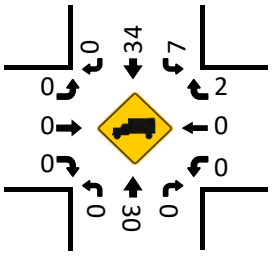
0	1	1	0
1	0	0	0
0	0	0	0
0	0	0	0
0	0	1	0

CONTROL			
1-Way Stop(WB)			
TEV	1481 AM	0 NOON	1663 PM
PHF	0.95		0.95

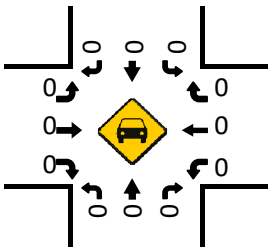
Cars (AM)



HT (AM)



Cars (NOON)



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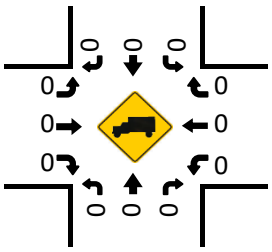
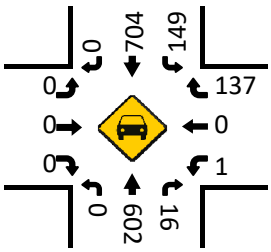
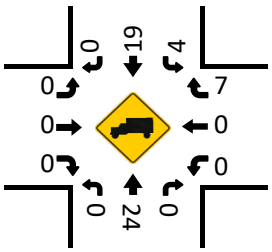


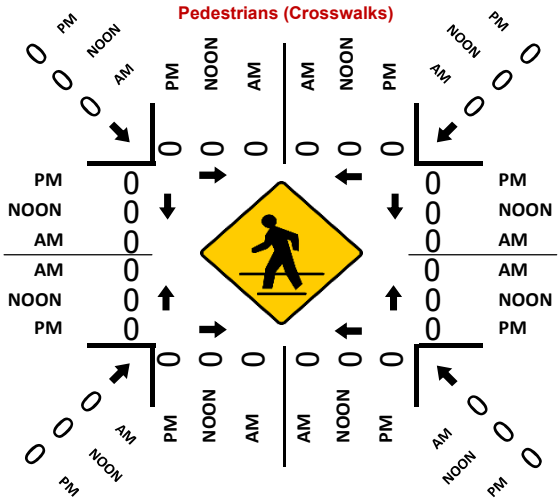
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Longmeadow Rd & Lang Rd

Peak Hour Turning Movement Count

-All Group 4
-Peak summer Factor: 1.09

ID: 25-600003-001
City: Portsmouth

Day: Tuesday
Date: 4/15/2025

PEAK HOURS	COUNT PERIODS
07:30 AM - 08:30 AM	6:00 AM - 09:00 AM
NONE	NONE
03:30 PM - 04:30 PM	3:00 PM - 06:00 PM

SOUTHBOUND (Longmeadow Rd)

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND (Lang Rd)

AM	NOON	PM	
188	0	162	⇦
0	0	0	↶ 0
0	0	0	↱ 0
98 / 90	0	184 / 169	→ 1
18 / 20	0	14 / 15	↷ 0
AM	NOON	PM	

WESTBOUND (Lang Rd)

PM	NOON	AM	
0	0	0	0 ↰
171 / 157	0	203 / 186	1 ←
78 / 85	0	101 / 110	0 ↶
1 / 1	0	0	0 ↷
283	0	171	⇨
PM	NOON	AM	

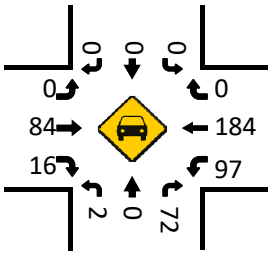
NORTHBOUND (Longmeadow Rd)

PM	92	0	6 / 5	0	123 / 113	PM
NOON	0	0	0	0	0	NOON
AM	119	0	2 / 2	0	88 / 81	AM

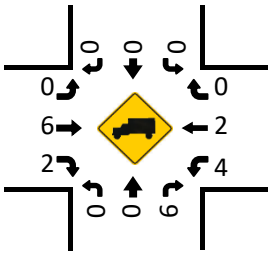
	↶	↰	↑	↱
	0	0	1	0

CONTROL			
1-Way Stop(EB)			
TEV	478 AM	0 NOON	537 PM
PHF	0.85		0.88

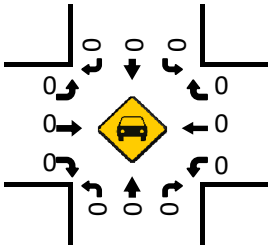
Cars (AM)



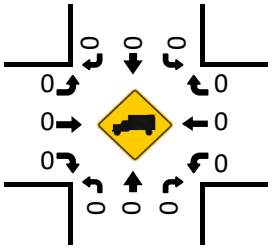
HT (AM)



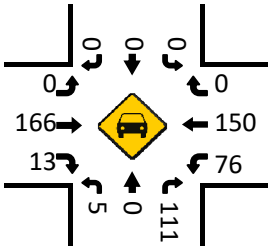
Cars (NOON)



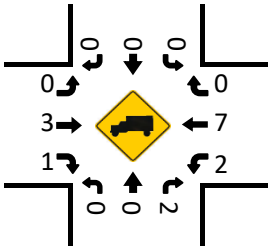
HT (NOON)



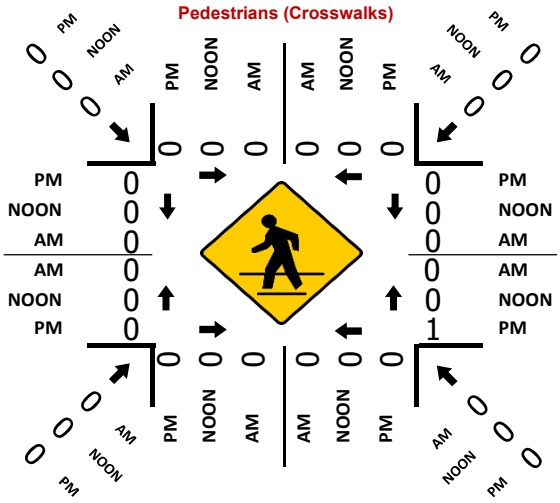
Cars (PM)



HT (PM)



Pedestrians (Crosswalks)



Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:55	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2214	2318	2221	2217	2214	2238	2321
Vehs Exited	2225	2310	2221	2212	2216	2228	2329
Starting Vehs	74	69	66	70	61	59	79
Ending Vehs	63	77	66	75	59	69	71
Travel Distance (mi)	1772	1867	1764	1763	1768	1781	1835
Travel Time (hr)	66.1	71.5	66.2	64.0	65.5	66.7	69.7
Total Delay (hr)	18.6	21.8	18.7	16.9	18.2	18.9	20.4
Total Stops	1628	1788	1661	1553	1594	1637	1753
Fuel Used (gal)	59.0	62.1	57.9	58.0	58.1	58.9	61.0

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2225	2247	2263	2248
Vehs Exited	2220	2265	2256	2248
Starting Vehs	73	85	61	68
Ending Vehs	78	67	68	68
Travel Distance (mi)	1778	1800	1798	1793
Travel Time (hr)	67.1	67.2	67.7	67.2
Total Delay (hr)	19.4	19.0	19.5	19.1
Total Stops	1689	1606	1676	1660
Fuel Used (gal)	58.8	60.2	59.6	59.4

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2214	2318	2221	2217	2214	2238	2321
Vehs Exited	2225	2310	2221	2212	2216	2228	2329
Starting Vehs	74	69	66	70	61	59	79
Ending Vehs	63	77	66	75	59	69	71
Travel Distance (mi)	1772	1867	1764	1763	1768	1781	1835
Travel Time (hr)	66.1	71.5	66.2	64.0	65.5	66.7	69.7
Total Delay (hr)	18.6	21.8	18.7	16.9	18.2	18.9	20.4
Total Stops	1628	1788	1661	1553	1594	1637	1753
Fuel Used (gal)	59.0	62.1	57.9	58.0	58.1	58.9	61.0

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2225	2247	2263	2248
Vehs Exited	2220	2265	2256	2248
Starting Vehs	73	85	61	68
Ending Vehs	78	67	68	68
Travel Distance (mi)	1778	1800	1798	1793
Travel Time (hr)	67.1	67.2	67.7	67.2
Total Delay (hr)	19.4	19.0	19.5	19.1
Total Stops	1689	1606	1676	1660
Fuel Used (gal)	58.8	60.2	59.6	59.4

5: Route 1 & Lang Road Performance by lane

Lane	WB	NB	SB	SB	All
Movements Served	R	TR	L	T	
Denied Del/Veh (s)					0.3
Total Del/Veh (s)	12.4	5.1	9.1	2.3	5.3

8: Longmeadow Road & Lang Road Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	0.4	1.0	6.6	2.2

10: Longmeadow Road & Southwesterly Site Drive Performance by lane

Lane	EB	SB	All
Movements Served	LT	LR	
Denied Del/Veh (s)			0.0
Total Del/Veh (s)	1.8	3.3	2.4

11: Route 1 & Ocean Road/Longmeadow Road Performance by lane

Lane	EB	EB	WB	NB	NB	SB	SB	All
Movements Served	LT	R	LTR	L	TR	L	TR	
Denied Del/Veh (s)								1.0
Total Del/Veh (s)	39.6	7.4	29.4	40.2	21.5	43.8	22.7	24.9

13: Northeasterly Site Drive & Lang Road Performance by lane

Lane	EB	WB	All
Movements Served	TR	LT	
Denied Del/Veh (s)			0.2
Total Del/Veh (s)	0.6	0.6	0.6

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	28.7

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB
Directions Served	R	TR	L
Maximum Queue (ft)	143	13	93
Average Queue (ft)	61	1	36
95th Queue (ft)	115	9	72
Link Distance (ft)	1032	682	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			150
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	32	92
Average Queue (ft)	1	44
95th Queue (ft)	13	74
Link Distance (ft)	582	1032
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	SB
Directions Served	LR
Maximum Queue (ft)	77
Average Queue (ft)	38
95th Queue (ft)	61
Link Distance (ft)	582
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	348	214	180	298	436	132	377
Average Queue (ft)	161	77	77	96	212	22	192
95th Queue (ft)	283	179	143	203	380	81	325
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	5	0		0	2	0	5
Queuing Penalty (veh)	10	0		0	2	0	1

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 13

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	15.0	50.0	30.0	15.0	50.0	30.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	12.0	39.5	23.1	7.2	52.4	23.1
g/C Ratio	-0.01	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	5	0	0	68	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	33	23	28	0	69	28
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:55	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2214	2318	2221	2217	2214	2238	2321
Vehs Exited	2225	2310	2221	2212	2216	2228	2329
Starting Vehs	74	69	66	70	61	59	79
Ending Vehs	63	77	66	75	59	69	71
Travel Distance (mi)	1772	1867	1764	1763	1768	1781	1835
Travel Time (hr)	66.1	71.5	66.2	64.0	65.5	66.7	69.7
Total Delay (hr)	18.6	21.8	18.7	16.9	18.2	18.9	20.4
Total Stops	1628	1788	1661	1553	1594	1637	1753
Fuel Used (gal)	59.0	62.1	57.9	58.0	58.1	58.9	61.0

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2225	2247	2263	2248
Vehs Exited	2220	2265	2256	2248
Starting Vehs	73	85	61	68
Ending Vehs	78	67	68	68
Travel Distance (mi)	1778	1800	1798	1793
Travel Time (hr)	67.1	67.2	67.7	67.2
Total Delay (hr)	19.4	19.0	19.5	19.1
Total Stops	1689	1606	1676	1660
Fuel Used (gal)	58.8	60.2	59.6	59.4

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2214	2318	2221	2217	2214	2238	2321
Vehs Exited	2225	2310	2221	2212	2216	2228	2329
Starting Vehs	74	69	66	70	61	59	79
Ending Vehs	63	77	66	75	59	69	71
Travel Distance (mi)	1772	1867	1764	1763	1768	1781	1835
Travel Time (hr)	66.1	71.5	66.2	64.0	65.5	66.7	69.7
Total Delay (hr)	18.6	21.8	18.7	16.9	18.2	18.9	20.4
Total Stops	1628	1788	1661	1553	1594	1637	1753
Fuel Used (gal)	59.0	62.1	57.9	58.0	58.1	58.9	61.0

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2225	2247	2263	2248
Vehs Exited	2220	2265	2256	2248
Starting Vehs	73	85	61	68
Ending Vehs	78	67	68	68
Travel Distance (mi)	1778	1800	1798	1793
Travel Time (hr)	67.1	67.2	67.7	67.2
Total Delay (hr)	19.4	19.0	19.5	19.1
Total Stops	1689	1606	1676	1660
Fuel Used (gal)	58.8	60.2	59.6	59.4

5: Route 1 & Lang Road Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.8	0.3
Total Del/Veh (s)	12.4	5.1	3.3	5.3

8: Longmeadow Road & Lang Road Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.4	1.0	6.6	2.2

10: Longmeadow Road & Southwesterly Site Drive Performance by approach

Approach	EB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	1.8	3.3	2.4

11: Route 1 & Ocean Road/Longmeadow Road Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	1.9	0.0	1.2	0.0	1.0
Total Del/Veh (s)	26.3	29.2	24.4	23.5	24.9

13: Northeasterly Site Drive & Lang Road Performance by approach

Approach	EB	WB	All
Denied Del/Veh (s)	0.0	0.2	0.2
Total Del/Veh (s)	0.6	0.6	0.6

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	28.7

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB
Directions Served	R	TR	L
Maximum Queue (ft)	143	13	93
Average Queue (ft)	61	1	36
95th Queue (ft)	115	9	72
Link Distance (ft)	1032	682	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			150
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	32	92
Average Queue (ft)	1	44
95th Queue (ft)	13	74
Link Distance (ft)	582	1032
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	SB
Directions Served	LR
Maximum Queue (ft)	77
Average Queue (ft)	38
95th Queue (ft)	61
Link Distance (ft)	582
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	348	214	180	298	436	132	377
Average Queue (ft)	161	77	77	96	212	22	192
95th Queue (ft)	283	179	143	203	380	81	325
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	5	0		0	2	0	5
Queuing Penalty (veh)	10	0		0	2	0	1

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 13

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	15.0	50.0	30.0	15.0	50.0	30.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	12.0	39.5	23.1	7.2	52.4	23.1
g/C Ratio	-0.01	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	5	0	0	68	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	33	23	28	0	69	28
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	3:55	3:55	3:55	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2484	2490	2471	2484	2457	2570	2545
Vehs Exited	2477	2475	2470	2477	2460	2525	2518
Starting Vehs	75	69	69	63	87	73	78
Ending Vehs	82	84	70	70	84	118	105
Travel Distance (mi)	2029	2035	2013	2042	1999	2083	2069
Travel Time (hr)	78.3	81.9	79.5	81.7	81.3	90.0	84.6
Total Delay (hr)	24.8	27.8	26.3	26.9	27.9	34.7	29.6
Total Stops	1812	2038	1976	2062	1963	2217	2100
Fuel Used (gal)	67.2	68.9	68.1	68.8	67.6	71.3	70.2

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2540	2556	2470	2506
Vehs Exited	2558	2554	2476	2500
Starting Vehs	97	84	67	77
Ending Vehs	79	86	61	82
Travel Distance (mi)	2083	2104	2013	2047
Travel Time (hr)	88.3	92.7	80.0	83.8
Total Delay (hr)	33.2	36.8	26.2	29.4
Total Stops	2251	2479	1939	2085
Fuel Used (gal)	71.6	72.9	67.9	69.5

Interval #0 Information Seeding

Start Time	3:55
End Time	4:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2484	2490	2471	2484	2457	2570	2545
Vehs Exited	2477	2475	2470	2477	2460	2525	2518
Starting Vehs	75	69	69	63	87	73	78
Ending Vehs	82	84	70	70	84	118	105
Travel Distance (mi)	2029	2035	2013	2042	1999	2083	2069
Travel Time (hr)	78.3	81.9	79.5	81.7	81.3	90.0	84.6
Total Delay (hr)	24.8	27.8	26.3	26.9	27.9	34.7	29.6
Total Stops	1812	2038	1976	2062	1963	2217	2100
Fuel Used (gal)	67.2	68.9	68.1	68.8	67.6	71.3	70.2

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2540	2556	2470	2506
Vehs Exited	2558	2554	2476	2500
Starting Vehs	97	84	67	77
Ending Vehs	79	86	61	82
Travel Distance (mi)	2083	2104	2013	2047
Travel Time (hr)	88.3	92.7	80.0	83.8
Total Delay (hr)	33.2	36.8	26.2	29.4
Total Stops	2251	2479	1939	2085
Fuel Used (gal)	71.6	72.9	67.9	69.5

5: Route 1 & Lang Road Performance by lane

Lane	WB	NB	SB	SB	All
Movements Served	R	TR	L	T	
Denied Del/Veh (s)					0.7
Total Del/Veh (s)	12.8	4.3	8.1	6.9	6.6

8: Longmeadow Road & Lang Road Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	0.7	0.9	7.3	3.0

10: Longmeadow Road & Southwesterly Site Drive Performance by lane

Lane	EB	SB	All
Movements Served	LT	LR	
Denied Del/Veh (s)			0.0
Total Del/Veh (s)	2.7	3.1	2.9

11: Route 1 & Ocean Road/Longmeadow Road Performance by lane

Lane	EB	EB	WB	NB	NB	SB	SB	All
Movements Served	LT	R	LTR	L	TR	L	TR	
Denied Del/Veh (s)								0.8
Total Del/Veh (s)	63.5	17.3	53.2	52.3	17.4	51.4	41.5	36.3

13: Northeasterly Site Drive & Lang Road Performance by lane

Lane	EB	WB	All
Movements Served	TR	LT	
Denied Del/Veh (s)			0.1
Total Del/Veh (s)	0.6	0.5	0.6

Total Network Performance

Denied Del/Veh (s)	1.2
Total Del/Veh (s)	39.8

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB	SB
Directions Served	R	TR	L	T
Maximum Queue (ft)	155	6	127	99
Average Queue (ft)	68	0	53	22
95th Queue (ft)	120	5	108	150
Link Distance (ft)	1032	682		2056
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			150	
Storage Blk Time (%)			0	2
Queuing Penalty (veh)			0	3

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	28	118
Average Queue (ft)	2	51
95th Queue (ft)	15	89
Link Distance (ft)	582	1032
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	SB
Directions Served	LR
Maximum Queue (ft)	70
Average Queue (ft)	35
95th Queue (ft)	57
Link Distance (ft)	582
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	422	218	296	234	351	179	637
Average Queue (ft)	171	105	137	107	175	34	399
95th Queue (ft)	370	212	250	193	314	125	661
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)	0						2
Queuing Penalty (veh)	0						14
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	8	0			0		27
Queuing Penalty (veh)	16	0			1		6

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 40

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	20.0	62.0	30.0	20.0	62.0	30.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	15.2	58.6	27.4	6.8	74.5	27.4
g/C Ratio	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	48	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	24	70	60	0	86	60
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	3:55	3:55	3:55	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2484	2490	2471	2484	2457	2570	2545
Vehs Exited	2477	2475	2470	2477	2460	2525	2518
Starting Vehs	75	69	69	63	87	73	78
Ending Vehs	82	84	70	70	84	118	105
Travel Distance (mi)	2029	2035	2013	2042	1999	2083	2069
Travel Time (hr)	78.3	81.9	79.5	81.7	81.3	90.0	84.6
Total Delay (hr)	24.8	27.8	26.3	26.9	27.9	34.7	29.6
Total Stops	1812	2038	1976	2062	1963	2217	2100
Fuel Used (gal)	67.2	68.9	68.1	68.8	67.6	71.3	70.2

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2540	2556	2470	2506
Vehs Exited	2558	2554	2476	2500
Starting Vehs	97	84	67	77
Ending Vehs	79	86	61	82
Travel Distance (mi)	2083	2104	2013	2047
Travel Time (hr)	88.3	92.7	80.0	83.8
Total Delay (hr)	33.2	36.8	26.2	29.4
Total Stops	2251	2479	1939	2085
Fuel Used (gal)	71.6	72.9	67.9	69.5

Interval #0 Information Seeding

Start Time	3:55
End Time	4:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2484	2490	2471	2484	2457	2570	2545
Vehs Exited	2477	2475	2470	2477	2460	2525	2518
Starting Vehs	75	69	69	63	87	73	78
Ending Vehs	82	84	70	70	84	118	105
Travel Distance (mi)	2029	2035	2013	2042	1999	2083	2069
Travel Time (hr)	78.3	81.9	79.5	81.7	81.3	90.0	84.6
Total Delay (hr)	24.8	27.8	26.3	26.9	27.9	34.7	29.6
Total Stops	1812	2038	1976	2062	1963	2217	2100
Fuel Used (gal)	67.2	68.9	68.1	68.8	67.6	71.3	70.2

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2540	2556	2470	2506
Vehs Exited	2558	2554	2476	2500
Starting Vehs	97	84	67	77
Ending Vehs	79	86	61	82
Travel Distance (mi)	2083	2104	2013	2047
Travel Time (hr)	88.3	92.7	80.0	83.8
Total Delay (hr)	33.2	36.8	26.2	29.4
Total Stops	2251	2479	1939	2085
Fuel Used (gal)	71.6	72.9	67.9	69.5

5: Route 1 & Lang Road Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	1.3	0.7
Total Del/Veh (s)	12.7	4.3	7.1	6.6

8: Longmeadow Road & Lang Road Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.7	0.9	7.3	3.0

10: Longmeadow Road & Southwesterly Site Drive Performance by approach

Approach	EB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	2.7	3.1	2.9

11: Route 1 & Ocean Road/Longmeadow Road Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	2.1	0.1	1.1	0.0	0.8
Total Del/Veh (s)	41.0	53.2	23.9	41.8	36.3

13: Northeasterly Site Drive & Lang Road Performance by approach

Approach	EB	WB	All
Denied Del/Veh (s)	0.0	0.2	0.1
Total Del/Veh (s)	0.6	0.5	0.6

Total Network Performance

Denied Del/Veh (s)	1.2
Total Del/Veh (s)	39.8

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB	SB
Directions Served	R	TR	L	T
Maximum Queue (ft)	155	6	127	99
Average Queue (ft)	68	0	53	22
95th Queue (ft)	120	5	108	150
Link Distance (ft)	1032	682		2056
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			150	
Storage Blk Time (%)			0	2
Queuing Penalty (veh)			0	3

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	28	118
Average Queue (ft)	2	51
95th Queue (ft)	15	89
Link Distance (ft)	582	1032
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	SB
Directions Served	LR
Maximum Queue (ft)	70
Average Queue (ft)	35
95th Queue (ft)	57
Link Distance (ft)	582
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	422	218	296	234	351	179	637
Average Queue (ft)	171	105	137	107	175	34	399
95th Queue (ft)	370	212	250	193	314	125	661
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)	0						2
Queuing Penalty (veh)	0						14
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	8	0			0		27
Queuing Penalty (veh)	16	0			1		6

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 40

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	20.0	62.0	30.0	20.0	62.0	30.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	15.2	58.6	27.4	6.8	74.5	27.4
g/C Ratio	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	48	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	24	70	60	0	86	60
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:55	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2228	2394	2264	2233	2266	2273	2338
Vehs Exited	2239	2377	2260	2238	2270	2263	2361
Starting Vehs	77	70	71	80	68	65	87
Ending Vehs	66	87	75	75	64	75	64
Travel Distance (mi)	1786	1905	1804	1780	1816	1814	1853
Travel Time (hr)	66.5	76.3	67.9	65.5	68.5	67.9	70.8
Total Delay (hr)	18.6	25.2	19.6	18.0	19.9	19.2	21.0
Total Stops	1609	1927	1642	1624	1655	1651	1783
Fuel Used (gal)	59.6	63.9	59.2	58.6	60.1	60.4	61.9

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2276	2306	2305	2290
Vehs Exited	2271	2325	2297	2292
Starting Vehs	75	94	65	74
Ending Vehs	80	75	73	74
Travel Distance (mi)	1819	1851	1831	1826
Travel Time (hr)	69.0	71.3	70.4	69.4
Total Delay (hr)	20.1	21.9	21.3	20.5
Total Stops	1724	1802	1772	1720
Fuel Used (gal)	60.1	62.1	61.1	60.7

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2228	2394	2264	2233	2266	2273	2338
Vehs Exited	2239	2377	2260	2238	2270	2263	2361
Starting Vehs	77	70	71	80	68	65	87
Ending Vehs	66	87	75	75	64	75	64
Travel Distance (mi)	1786	1905	1804	1780	1816	1814	1853
Travel Time (hr)	66.5	76.3	67.9	65.5	68.5	67.9	70.8
Total Delay (hr)	18.6	25.2	19.6	18.0	19.9	19.2	21.0
Total Stops	1609	1927	1642	1624	1655	1651	1783
Fuel Used (gal)	59.6	63.9	59.2	58.6	60.1	60.4	61.9

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2276	2306	2305	2290
Vehs Exited	2271	2325	2297	2292
Starting Vehs	75	94	65	74
Ending Vehs	80	75	73	74
Travel Distance (mi)	1819	1851	1831	1826
Travel Time (hr)	69.0	71.3	70.4	69.4
Total Delay (hr)	20.1	21.9	21.3	20.5
Total Stops	1724	1802	1772	1720
Fuel Used (gal)	60.1	62.1	61.1	60.7

5: Route 1 & Lang Road Performance by lane

Lane	WB	NB	SB	SB	All
Movements Served	R	TR	L	T	
Denied Del/Veh (s)					0.3
Total Del/Veh (s)	13.8	5.2	9.9	2.4	5.7

8: Longmeadow Road & Lang Road Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	0.5	1.1	6.5	2.2

10: Longmeadow Road & Southwesterly Site Drive Performance by lane

Lane	EB	SB	All
Movements Served	LT	LR	
Denied Del/Veh (s)			0.0
Total Del/Veh (s)	1.9	3.4	2.5

11: Route 1 & Ocean Road/Longmeadow Road Performance by lane

Lane	EB	EB	WB	NB	NB	SB	SB	All
Movements Served	LT	R	LTR	L	TR	L	TR	
Denied Del/Veh (s)								1.0
Total Del/Veh (s)	40.0	7.5	29.8	41.4	23.6	49.0	24.0	26.3

13: Northeasterly Site Drive & Lang Road Performance by lane

Lane	EB	WB	All
Movements Served	TR	LT	
Denied Del/Veh (s)			0.2
Total Del/Veh (s)	0.6	0.6	0.6

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	30.1

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB
Directions Served	R	TR	L
Maximum Queue (ft)	178	26	98
Average Queue (ft)	66	1	37
95th Queue (ft)	127	12	77
Link Distance (ft)	1032	682	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			150
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	22	94
Average Queue (ft)	1	45
95th Queue (ft)	11	75
Link Distance (ft)	582	1032
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	SB
Directions Served	LR
Maximum Queue (ft)	76
Average Queue (ft)	39
95th Queue (ft)	63
Link Distance (ft)	582
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	362	224	167	290	475	161	394
Average Queue (ft)	165	84	76	103	230	22	201
95th Queue (ft)	290	194	136	221	419	89	338
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	5	0		0	3	0	6
Queuing Penalty (veh)	11	0		0	4	0	1

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 16

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	15.0	50.0	30.0	15.0	50.0	30.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	12.1	40.1	24.2	7.0	53.0	24.2
g/C Ratio	-0.01	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	3	0	0	68	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	34	26	34	0	74	34
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:55	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2228	2394	2264	2233	2266	2273	2338
Vehs Exited	2239	2377	2260	2238	2270	2263	2361
Starting Vehs	77	70	71	80	68	65	87
Ending Vehs	66	87	75	75	64	75	64
Travel Distance (mi)	1786	1905	1804	1780	1816	1814	1853
Travel Time (hr)	66.5	76.3	67.9	65.5	68.5	67.9	70.8
Total Delay (hr)	18.6	25.2	19.6	18.0	19.9	19.2	21.0
Total Stops	1609	1927	1642	1624	1655	1651	1783
Fuel Used (gal)	59.6	63.9	59.2	58.6	60.1	60.4	61.9

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2276	2306	2305	2290
Vehs Exited	2271	2325	2297	2292
Starting Vehs	75	94	65	74
Ending Vehs	80	75	73	74
Travel Distance (mi)	1819	1851	1831	1826
Travel Time (hr)	69.0	71.3	70.4	69.4
Total Delay (hr)	20.1	21.9	21.3	20.5
Total Stops	1724	1802	1772	1720
Fuel Used (gal)	60.1	62.1	61.1	60.7

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2228	2394	2264	2233	2266	2273	2338
Vehs Exited	2239	2377	2260	2238	2270	2263	2361
Starting Vehs	77	70	71	80	68	65	87
Ending Vehs	66	87	75	75	64	75	64
Travel Distance (mi)	1786	1905	1804	1780	1816	1814	1853
Travel Time (hr)	66.5	76.3	67.9	65.5	68.5	67.9	70.8
Total Delay (hr)	18.6	25.2	19.6	18.0	19.9	19.2	21.0
Total Stops	1609	1927	1642	1624	1655	1651	1783
Fuel Used (gal)	59.6	63.9	59.2	58.6	60.1	60.4	61.9

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2276	2306	2305	2290
Vehs Exited	2271	2325	2297	2292
Starting Vehs	75	94	65	74
Ending Vehs	80	75	73	74
Travel Distance (mi)	1819	1851	1831	1826
Travel Time (hr)	69.0	71.3	70.4	69.4
Total Delay (hr)	20.1	21.9	21.3	20.5
Total Stops	1724	1802	1772	1720
Fuel Used (gal)	60.1	62.1	61.1	60.7

5: Route 1 & Lang Road Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.8	0.3
Total Del/Veh (s)	13.8	5.3	3.5	5.7

8: Longmeadow Road & Lang Road Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.5	1.1	6.4	2.2

10: Longmeadow Road & Southwesterly Site Drive Performance by approach

Approach	EB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	1.9	3.4	2.5

11: Route 1 & Ocean Road/Longmeadow Road Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	1.9	0.0	1.2	0.0	1.0
Total Del/Veh (s)	26.7	30.0	26.4	24.9	26.3

13: Northeasterly Site Drive & Lang Road Performance by approach

Approach	EB	WB	All
Denied Del/Veh (s)	0.0	0.2	0.2
Total Del/Veh (s)	0.6	0.6	0.6

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	30.1

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB
Directions Served	R	TR	L
Maximum Queue (ft)	178	26	98
Average Queue (ft)	66	1	37
95th Queue (ft)	127	12	77
Link Distance (ft)	1032	682	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			150
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	22	94
Average Queue (ft)	1	45
95th Queue (ft)	11	75
Link Distance (ft)	582	1032
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	SB
Directions Served	LR
Maximum Queue (ft)	76
Average Queue (ft)	39
95th Queue (ft)	63
Link Distance (ft)	582
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	362	224	167	290	475	161	394
Average Queue (ft)	165	84	76	103	230	22	201
95th Queue (ft)	290	194	136	221	419	89	338
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	5	0		0	3	0	6
Queuing Penalty (veh)	11	0		0	4	0	1

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 16

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	15.0	50.0	30.0	15.0	50.0	30.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	12.1	40.1	24.2	7.0	53.0	24.2
g/C Ratio	-0.01	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	3	0	0	68	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	34	26	34	0	74	34
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	3:55	3:55	3:55	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2587	2423	2545	2503	2529	2650	2552
Vehs Exited	2610	2419	2554	2495	2520	2618	2541
Starting Vehs	96	82	93	77	78	70	69
Ending Vehs	73	86	84	85	87	102	80
Travel Distance (mi)	2134	1974	2112	2042	2066	2134	2079
Travel Time (hr)	86.9	76.4	85.4	81.2	84.3	90.3	84.5
Total Delay (hr)	30.1	23.9	29.5	26.9	29.5	33.3	29.2
Total Stops	2140	1848	2093	2024	2067	2323	2044
Fuel Used (gal)	72.5	66.0	71.2	68.0	69.6	72.9	70.3

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2487	2553	2617	2545
Vehs Exited	2485	2559	2593	2539
Starting Vehs	86	79	79	79
Ending Vehs	88	73	103	85
Travel Distance (mi)	2025	2098	2125	2079
Travel Time (hr)	81.6	87.1	93.0	85.1
Total Delay (hr)	27.7	31.2	36.2	29.7
Total Stops	1979	2156	2419	2109
Fuel Used (gal)	68.2	70.9	73.3	70.3

Interval #0 Information Seeding

Start Time	3:55
End Time	4:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2587	2423	2545	2503	2529	2650	2552
Vehs Exited	2610	2419	2554	2495	2520	2618	2541
Starting Vehs	96	82	93	77	78	70	69
Ending Vehs	73	86	84	85	87	102	80
Travel Distance (mi)	2134	1974	2112	2042	2066	2134	2079
Travel Time (hr)	86.9	76.4	85.4	81.2	84.3	90.3	84.5
Total Delay (hr)	30.1	23.9	29.5	26.9	29.5	33.3	29.2
Total Stops	2140	1848	2093	2024	2067	2323	2044
Fuel Used (gal)	72.5	66.0	71.2	68.0	69.6	72.9	70.3

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2487	2553	2617	2545
Vehs Exited	2485	2559	2593	2539
Starting Vehs	86	79	79	79
Ending Vehs	88	73	103	85
Travel Distance (mi)	2025	2098	2125	2079
Travel Time (hr)	81.6	87.1	93.0	85.1
Total Delay (hr)	27.7	31.2	36.2	29.7
Total Stops	1979	2156	2419	2109
Fuel Used (gal)	68.2	70.9	73.3	70.3

5: Route 1 & Lang Road Performance by lane

Lane	WB	NB	SB	SB	All
Movements Served	R	TR	L	T	
Denied Del/Veh (s)					0.7
Total Del/Veh (s)	14.3	4.4	8.7	6.2	6.5

8: Longmeadow Road & Lang Road Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	0.7	0.9	7.4	3.1

10: Longmeadow Road & Southwesterly Site Drive Performance by lane

Lane	EB	SB	All
Movements Served	LT	LR	
Denied Del/Veh (s)			0.0
Total Del/Veh (s)	2.5	3.1	2.8

11: Route 1 & Ocean Road/Longmeadow Road Performance by lane

Lane	EB	EB	WB	NB	NB	SB	SB	All
Movements Served	LT	R	LTR	L	TR	L	TR	
Denied Del/Veh (s)								0.8
Total Del/Veh (s)	62.6	18.1	51.1	51.7	17.8	53.6	40.7	36.0

13: Northeasterly Site Drive & Lang Road Performance by lane

Lane	EB	WB	All
Movements Served	TR	LT	
Denied Del/Veh (s)			0.1
Total Del/Veh (s)	0.6	0.5	0.6

Total Network Performance

Denied Del/Veh (s)	1.2
Total Del/Veh (s)	39.6

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB	SB
Directions Served	R	TR	L	T
Maximum Queue (ft)	167	30	127	112
Average Queue (ft)	68	1	53	13
95th Queue (ft)	125	13	101	107
Link Distance (ft)	1032	682		2056
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			150	
Storage Blk Time (%)			0	1
Queuing Penalty (veh)			0	1

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	33	2	102
Average Queue (ft)	2	0	52
95th Queue (ft)	15	2	85
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	SB
Directions Served	LR
Maximum Queue (ft)	67
Average Queue (ft)	33
95th Queue (ft)	54
Link Distance (ft)	582
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	390	225	271	253	346	230	656
Average Queue (ft)	173	108	138	115	179	40	400
95th Queue (ft)	319	217	238	205	306	149	634
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)							1
Queuing Penalty (veh)							8
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	8	0			0		28
Queuing Penalty (veh)	17	0			0		6

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 34

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	20.0	62.0	30.0	20.0	62.0	30.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	15.7	60.2	28.5	7.4	74.9	28.5
g/C Ratio	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	50	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	28	76	66	0	86	66
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	3:55	3:55	3:55	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2587	2423	2545	2503	2529	2650	2552
Vehs Exited	2610	2419	2554	2495	2520	2618	2541
Starting Vehs	96	82	93	77	78	70	69
Ending Vehs	73	86	84	85	87	102	80
Travel Distance (mi)	2134	1974	2112	2042	2066	2134	2079
Travel Time (hr)	86.9	76.4	85.4	81.2	84.3	90.3	84.5
Total Delay (hr)	30.1	23.9	29.5	26.9	29.5	33.3	29.2
Total Stops	2140	1848	2093	2024	2067	2323	2044
Fuel Used (gal)	72.5	66.0	71.2	68.0	69.6	72.9	70.3

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2487	2553	2617	2545
Vehs Exited	2485	2559	2593	2539
Starting Vehs	86	79	79	79
Ending Vehs	88	73	103	85
Travel Distance (mi)	2025	2098	2125	2079
Travel Time (hr)	81.6	87.1	93.0	85.1
Total Delay (hr)	27.7	31.2	36.2	29.7
Total Stops	1979	2156	2419	2109
Fuel Used (gal)	68.2	70.9	73.3	70.3

Interval #0 Information Seeding

Start Time	3:55
End Time	4:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2587	2423	2545	2503	2529	2650	2552
Vehs Exited	2610	2419	2554	2495	2520	2618	2541
Starting Vehs	96	82	93	77	78	70	69
Ending Vehs	73	86	84	85	87	102	80
Travel Distance (mi)	2134	1974	2112	2042	2066	2134	2079
Travel Time (hr)	86.9	76.4	85.4	81.2	84.3	90.3	84.5
Total Delay (hr)	30.1	23.9	29.5	26.9	29.5	33.3	29.2
Total Stops	2140	1848	2093	2024	2067	2323	2044
Fuel Used (gal)	72.5	66.0	71.2	68.0	69.6	72.9	70.3

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2487	2553	2617	2545
Vehs Exited	2485	2559	2593	2539
Starting Vehs	86	79	79	79
Ending Vehs	88	73	103	85
Travel Distance (mi)	2025	2098	2125	2079
Travel Time (hr)	81.6	87.1	93.0	85.1
Total Delay (hr)	27.7	31.2	36.2	29.7
Total Stops	1979	2156	2419	2109
Fuel Used (gal)	68.2	70.9	73.3	70.3

5: Route 1 & Lang Road Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	1.3	0.7
Total Del/Veh (s)	14.3	4.4	6.7	6.5

8: Longmeadow Road & Lang Road Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.7	0.9	7.5	3.1

10: Longmeadow Road & Southwesterly Site Drive Performance by approach

Approach	EB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	2.5	3.1	2.8

11: Route 1 & Ocean Road/Longmeadow Road Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	2.0	0.1	1.2	0.0	0.8
Total Del/Veh (s)	41.7	51.1	24.4	41.1	36.0

13: Northeasterly Site Drive & Lang Road Performance by approach

Approach	EB	WB	All
Denied Del/Veh (s)	0.0	0.2	0.1
Total Del/Veh (s)	0.6	0.5	0.6

Total Network Performance

Denied Del/Veh (s)	1.2
Total Del/Veh (s)	39.6

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB	SB
Directions Served	R	TR	L	T
Maximum Queue (ft)	167	30	127	112
Average Queue (ft)	68	1	53	13
95th Queue (ft)	125	13	101	107
Link Distance (ft)	1032	682		2056
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			150	
Storage Blk Time (%)			0	1
Queuing Penalty (veh)			0	1

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	33	2	102
Average Queue (ft)	2	0	52
95th Queue (ft)	15	2	85
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	SB
Directions Served	LR
Maximum Queue (ft)	67
Average Queue (ft)	33
95th Queue (ft)	54
Link Distance (ft)	582
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	390	225	271	253	346	230	656
Average Queue (ft)	173	108	138	115	179	40	400
95th Queue (ft)	319	217	238	205	306	149	634
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)							1
Queuing Penalty (veh)							8
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	8	0			0		28
Queuing Penalty (veh)	17	0			0		6

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 34

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	20.0	62.0	30.0	20.0	62.0	30.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	15.7	60.2	28.5	7.4	74.9	28.5
g/C Ratio	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	50	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	28	76	66	0	86	66
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:55	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2542	2519	2437	2507	2501	2561	2574
Vehs Exited	2525	2519	2438	2495	2483	2565	2561
Starting Vehs	84	77	91	85	68	73	65
Ending Vehs	101	77	90	97	86	69	78
Travel Distance (mi)	1976	1982	1901	1945	1966	2012	2010
Travel Time (hr)	81.3	79.1	77.5	79.6	81.1	81.8	85.1
Total Delay (hr)	27.2	25.3	25.5	26.8	27.8	27.3	30.7
Total Stops	2371	2172	2252	2236	2293	2277	2490
Fuel Used (gal)	67.8	67.1	64.9	66.5	67.8	68.4	69.4

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2474	2505	2531	2518
Vehs Exited	2464	2490	2512	2504
Starting Vehs	71	81	81	74
Ending Vehs	81	96	100	82
Travel Distance (mi)	1925	1963	1971	1965
Travel Time (hr)	80.3	79.5	80.0	80.5
Total Delay (hr)	28.2	25.9	26.5	27.1
Total Stops	2293	2327	2306	2302
Fuel Used (gal)	66.3	67.0	67.4	67.3

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2542	2519	2437	2507	2501	2561	2574
Vehs Exited	2525	2519	2438	2495	2483	2565	2561
Starting Vehs	84	77	91	85	68	73	65
Ending Vehs	101	77	90	97	86	69	78
Travel Distance (mi)	1976	1982	1901	1945	1966	2012	2010
Travel Time (hr)	81.3	79.1	77.5	79.6	81.1	81.8	85.1
Total Delay (hr)	27.2	25.3	25.5	26.8	27.8	27.3	30.7
Total Stops	2371	2172	2252	2236	2293	2277	2490
Fuel Used (gal)	67.8	67.1	64.9	66.5	67.8	68.4	69.4

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2474	2505	2531	2518
Vehs Exited	2464	2490	2512	2504
Starting Vehs	71	81	81	74
Ending Vehs	81	96	100	82
Travel Distance (mi)	1925	1963	1971	1965
Travel Time (hr)	80.3	79.5	80.0	80.5
Total Delay (hr)	28.2	25.9	26.5	27.1
Total Stops	2293	2327	2306	2302
Fuel Used (gal)	66.3	67.0	67.4	67.3

5: Route 1 & Lang Road Performance by lane

Lane	WB	NB	SB	SB	All
Movements Served	R	TR	L	T	
Denied Del/Veh (s)					0.3
Total Del/Veh (s)	17.7	5.9	11.8	2.8	7.0

8: Longmeadow Road & Lang Road Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	1.5	1.1	6.8	2.6

10: Longmeadow Road & Southwesterly Site Drive Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	3.7	5.0	3.7	3.9

11: Route 1 & Ocean Road/Longmeadow Road Performance by lane

Lane	EB	EB	WB	NB	NB	SB	SB	All
Movements Served	LT	R	LTR	L	TR	L	TR	
Denied Del/Veh (s)								0.9
Total Del/Veh (s)	41.2	8.7	36.0	52.9	34.4	55.9	27.7	33.1

13: Northeasterly Site Drive & Lang Road Performance by lane

Lane	EB	WB	NB	All
Movements Served	TR	LT	LR	
Denied Del/Veh (s)				0.2
Total Del/Veh (s)	0.6	0.6	5.3	0.9

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	36.7

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB	SB
Directions Served	R	TR	L	T
Maximum Queue (ft)	196	18	112	22
Average Queue (ft)	83	1	46	1
95th Queue (ft)	155	9	90	21
Link Distance (ft)	1032	682		2056
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			150	
Storage Blk Time (%)			0	
Queuing Penalty (veh)			0	

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	49	104
Average Queue (ft)	7	48
95th Queue (ft)	32	81
Link Distance (ft)	582	1032
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	92	63	70
Average Queue (ft)	44	33	41
95th Queue (ft)	72	53	63
Link Distance (ft)	955	352	582
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	366	225	231	374	672	232	424
Average Queue (ft)	182	92	122	145	335	37	230
95th Queue (ft)	307	210	203	322	601	126	373
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	8	0		0	8		10
Queuing Penalty (veh)	15	0		0	11		2

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	29	42
Average Queue (ft)	2	21
95th Queue (ft)	15	43
Link Distance (ft)	1111	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 28

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	15.0	52.0	45.0	5.0	62.0	45.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	13.1	48.6	34.7	5.3	61.9	34.7
g/C Ratio	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	52	0	0
Cycles @ Minimum (%)	0	0	0	48	0	0
Cycles Maxed Out (%)	45	52	23	48	71	23
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:55	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2542	2519	2437	2507	2501	2561	2574
Vehs Exited	2525	2519	2438	2495	2483	2565	2561
Starting Vehs	84	77	91	85	68	73	65
Ending Vehs	101	77	90	97	86	69	78
Travel Distance (mi)	1976	1982	1901	1945	1966	2012	2010
Travel Time (hr)	81.3	79.1	77.5	79.6	81.1	81.8	85.1
Total Delay (hr)	27.2	25.3	25.5	26.8	27.8	27.3	30.7
Total Stops	2371	2172	2252	2236	2293	2277	2490
Fuel Used (gal)	67.8	67.1	64.9	66.5	67.8	68.4	69.4

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2474	2505	2531	2518
Vehs Exited	2464	2490	2512	2504
Starting Vehs	71	81	81	74
Ending Vehs	81	96	100	82
Travel Distance (mi)	1925	1963	1971	1965
Travel Time (hr)	80.3	79.5	80.0	80.5
Total Delay (hr)	28.2	25.9	26.5	27.1
Total Stops	2293	2327	2306	2302
Fuel Used (gal)	66.3	67.0	67.4	67.3

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2542	2519	2437	2507	2501	2561	2574
Vehs Exited	2525	2519	2438	2495	2483	2565	2561
Starting Vehs	84	77	91	85	68	73	65
Ending Vehs	101	77	90	97	86	69	78
Travel Distance (mi)	1976	1982	1901	1945	1966	2012	2010
Travel Time (hr)	81.3	79.1	77.5	79.6	81.1	81.8	85.1
Total Delay (hr)	27.2	25.3	25.5	26.8	27.8	27.3	30.7
Total Stops	2371	2172	2252	2236	2293	2277	2490
Fuel Used (gal)	67.8	67.1	64.9	66.5	67.8	68.4	69.4

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2474	2505	2531	2518
Vehs Exited	2464	2490	2512	2504
Starting Vehs	71	81	81	74
Ending Vehs	81	96	100	82
Travel Distance (mi)	1925	1963	1971	1965
Travel Time (hr)	80.3	79.5	80.0	80.5
Total Delay (hr)	28.2	25.9	26.5	27.1
Total Stops	2293	2327	2306	2302
Fuel Used (gal)	66.3	67.0	67.4	67.3

5: Route 1 & Lang Road Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.9	0.3
Total Del/Veh (s)	17.8	5.9	4.4	7.0

8: Longmeadow Road & Lang Road Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	1.5	1.1	6.8	2.6

10: Longmeadow Road & Southwesterly Site Drive Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.1	0.0	0.0
Total Del/Veh (s)	3.7	5.0	3.8	3.9

11: Route 1 & Ocean Road/Longmeadow Road Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	1.8	0.0	1.2	0.0	0.9
Total Del/Veh (s)	28.5	36.2	37.2	29.0	33.1

13: Northeasterly Site Drive & Lang Road Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.3	0.1	0.2
Total Del/Veh (s)	0.6	0.6	5.3	0.9

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	36.7

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB	SB
Directions Served	R	TR	L	T
Maximum Queue (ft)	196	18	112	22
Average Queue (ft)	83	1	46	1
95th Queue (ft)	155	9	90	21
Link Distance (ft)	1032	682		2056
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			150	
Storage Blk Time (%)			0	
Queuing Penalty (veh)			0	

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	49	104
Average Queue (ft)	7	48
95th Queue (ft)	32	81
Link Distance (ft)	582	1032
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	92	63	70
Average Queue (ft)	44	33	41
95th Queue (ft)	72	53	63
Link Distance (ft)	955	352	582
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	366	225	231	374	672	232	424
Average Queue (ft)	182	92	122	145	335	37	230
95th Queue (ft)	307	210	203	322	601	126	373
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	8	0		0	8		10
Queuing Penalty (veh)	15	0		0	11		2

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	29	42
Average Queue (ft)	2	21
95th Queue (ft)	15	43
Link Distance (ft)	1111	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 28

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	15.0	52.0	45.0	5.0	62.0	45.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	13.1	48.6	34.7	5.3	61.9	34.7
g/C Ratio	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	52	0	0
Cycles @ Minimum (%)	0	0	0	48	0	0
Cycles Maxed Out (%)	45	52	23	48	71	23
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	3:55	3:55	3:55	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2723	2786	2744	2686	2680	2715	2781
Vehs Exited	2726	2776	2696	2690	2665	2713	2777
Starting Vehs	76	89	81	78	93	91	95
Ending Vehs	73	99	129	74	108	93	99
Travel Distance (mi)	2202	2236	2160	2162	2156	2193	2232
Travel Time (hr)	92.8	103.4	100.2	91.6	98.1	96.8	107.8
Total Delay (hr)	33.6	42.9	41.8	33.0	39.8	37.5	47.8
Total Stops	2603	2920	2849	2570	2868	2733	3069
Fuel Used (gal)	75.2	78.8	76.4	73.9	75.3	75.8	79.3

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2753	2765	2785	2739
Vehs Exited	2759	2762	2770	2732
Starting Vehs	90	100	91	88
Ending Vehs	84	103	106	97
Travel Distance (mi)	2207	2211	2224	2198
Travel Time (hr)	105.3	107.0	94.8	99.8
Total Delay (hr)	45.8	47.2	34.4	40.4
Total Stops	3100	3126	2743	2858
Fuel Used (gal)	78.3	78.7	77.0	76.9

Interval #0 Information Seeding

Start Time	3:55
End Time	4:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2723	2786	2744	2686	2680	2715	2781
Vehs Exited	2726	2776	2696	2690	2665	2713	2777
Starting Vehs	76	89	81	78	93	91	95
Ending Vehs	73	99	129	74	108	93	99
Travel Distance (mi)	2202	2236	2160	2162	2156	2193	2232
Travel Time (hr)	92.8	103.4	100.2	91.6	98.1	96.8	107.8
Total Delay (hr)	33.6	42.9	41.8	33.0	39.8	37.5	47.8
Total Stops	2603	2920	2849	2570	2868	2733	3069
Fuel Used (gal)	75.2	78.8	76.4	73.9	75.3	75.8	79.3

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2753	2765	2785	2739
Vehs Exited	2759	2762	2770	2732
Starting Vehs	90	100	91	88
Ending Vehs	84	103	106	97
Travel Distance (mi)	2207	2211	2224	2198
Travel Time (hr)	105.3	107.0	94.8	99.8
Total Delay (hr)	45.8	47.2	34.4	40.4
Total Stops	3100	3126	2743	2858
Fuel Used (gal)	78.3	78.7	77.0	76.9

5: Route 1 & Lang Road Performance by lane

Lane	WB	NB	SB	SB	All
Movements Served	R	TR	L	T	
Denied Del/Veh (s)					0.7
Total Del/Veh (s)	15.9	4.9	9.9	12.9	9.9

8: Longmeadow Road & Lang Road Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	1.6	0.9	8.1	3.7

10: Longmeadow Road & Southwesterly Site Drive Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	6.1	4.8	3.7	5.1

11: Route 1 & Ocean Road/Longmeadow Road Performance by lane

Lane	EB	EB	WB	NB	NB	SB	SB	All
Movements Served	LT	R	LTR	L	TR	L	TR	
Denied Del/Veh (s)								0.8
Total Del/Veh (s)	66.3	18.6	79.0	64.5	22.8	54.6	53.3	46.3

13: Northeasterly Site Drive & Lang Road Performance by lane

Lane	EB	WB	NB	All
Movements Served	TR	LT	LR	
Denied Del/Veh (s)				0.1
Total Del/Veh (s)	0.8	0.7	6.3	0.9

Total Network Performance

Denied Del/Veh (s)	1.2
Total Del/Veh (s)	50.2

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB	SB
Directions Served	R	TR	L	T
Maximum Queue (ft)	191	21	159	419
Average Queue (ft)	83	1	75	76
95th Queue (ft)	157	10	153	348
Link Distance (ft)	1032	682		2056
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			150	
Storage Blk Time (%)			0	5
Queuing Penalty (veh)			3	10

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	50	2	123
Average Queue (ft)	8	0	57
95th Queue (ft)	33	2	95
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	107	70	66
Average Queue (ft)	52	32	36
95th Queue (ft)	86	58	55
Link Distance (ft)	955	352	582
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	461	224	426	330	400	232	690
Average Queue (ft)	201	120	216	132	221	52	476
95th Queue (ft)	395	239	389	250	368	163	750
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)							5
Queuing Penalty (veh)							39
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	13	0			1		35
Queuing Penalty (veh)	26	1			2		11

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	44	35
Average Queue (ft)	4	15
95th Queue (ft)	24	39
Link Distance (ft)	1111	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 91

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	15.0	63.0	34.0	15.0	63.0	34.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	13.9	62.2	32.8	7.6	72.7	32.8
g/C Ratio	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	32	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	61	82	79	0	93	79
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	3:55	3:55	3:55	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2723	2786	2744	2686	2680	2715	2781
Vehs Exited	2726	2776	2696	2690	2665	2713	2777
Starting Vehs	76	89	81	78	93	91	95
Ending Vehs	73	99	129	74	108	93	99
Travel Distance (mi)	2202	2236	2160	2162	2156	2193	2232
Travel Time (hr)	92.8	103.4	100.2	91.6	98.1	96.8	107.8
Total Delay (hr)	33.6	42.9	41.8	33.0	39.8	37.5	47.8
Total Stops	2603	2920	2849	2570	2868	2733	3069
Fuel Used (gal)	75.2	78.8	76.4	73.9	75.3	75.8	79.3

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2753	2765	2785	2739
Vehs Exited	2759	2762	2770	2732
Starting Vehs	90	100	91	88
Ending Vehs	84	103	106	97
Travel Distance (mi)	2207	2211	2224	2198
Travel Time (hr)	105.3	107.0	94.8	99.8
Total Delay (hr)	45.8	47.2	34.4	40.4
Total Stops	3100	3126	2743	2858
Fuel Used (gal)	78.3	78.7	77.0	76.9

Interval #0 Information Seeding

Start Time	3:55
End Time	4:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2723	2786	2744	2686	2680	2715	2781
Vehs Exited	2726	2776	2696	2690	2665	2713	2777
Starting Vehs	76	89	81	78	93	91	95
Ending Vehs	73	99	129	74	108	93	99
Travel Distance (mi)	2202	2236	2160	2162	2156	2193	2232
Travel Time (hr)	92.8	103.4	100.2	91.6	98.1	96.8	107.8
Total Delay (hr)	33.6	42.9	41.8	33.0	39.8	37.5	47.8
Total Stops	2603	2920	2849	2570	2868	2733	3069
Fuel Used (gal)	75.2	78.8	76.4	73.9	75.3	75.8	79.3

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2753	2765	2785	2739
Vehs Exited	2759	2762	2770	2732
Starting Vehs	90	100	91	88
Ending Vehs	84	103	106	97
Travel Distance (mi)	2207	2211	2224	2198
Travel Time (hr)	105.3	107.0	94.8	99.8
Total Delay (hr)	45.8	47.2	34.4	40.4
Total Stops	3100	3126	2743	2858
Fuel Used (gal)	78.3	78.7	77.0	76.9

5: Route 1 & Lang Road Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	1.4	0.7
Total Del/Veh (s)	15.9	4.9	12.3	9.9

8: Longmeadow Road & Lang Road Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	1.6	0.9	8.2	3.7

10: Longmeadow Road & Southwesterly Site Drive Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.1	0.0	0.0
Total Del/Veh (s)	6.1	4.8	3.7	5.1

11: Route 1 & Ocean Road/Longmeadow Road Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	2.0	0.3	1.2	0.0	0.8
Total Del/Veh (s)	44.8	78.6	30.5	53.4	46.3

13: Northeasterly Site Drive & Lang Road Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.2	0.1	0.1
Total Del/Veh (s)	0.8	0.7	6.3	0.9

Total Network Performance

Denied Del/Veh (s)	1.2
Total Del/Veh (s)	50.2

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB	SB
Directions Served	R	TR	L	T
Maximum Queue (ft)	191	21	159	419
Average Queue (ft)	83	1	75	76
95th Queue (ft)	157	10	153	348
Link Distance (ft)	1032	682		2056
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			150	
Storage Blk Time (%)			0	5
Queuing Penalty (veh)			3	10

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	50	2	123
Average Queue (ft)	8	0	57
95th Queue (ft)	33	2	95
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	107	70	66
Average Queue (ft)	52	32	36
95th Queue (ft)	86	58	55
Link Distance (ft)	955	352	582
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	461	224	426	330	400	232	690
Average Queue (ft)	201	120	216	132	221	52	476
95th Queue (ft)	395	239	389	250	368	163	750
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)							5
Queuing Penalty (veh)							39
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	13	0			1		35
Queuing Penalty (veh)	26	1			2		11

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	44	35
Average Queue (ft)	4	15
95th Queue (ft)	24	39
Link Distance (ft)	1111	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 91

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	15.0	63.0	34.0	15.0	63.0	34.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	13.9	62.2	32.8	7.6	72.7	32.8
g/C Ratio	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	32	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	61	82	79	0	93	79
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:55	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2481	2504	2466	2443	2474	2498	2550
Vehs Exited	2469	2480	2462	2450	2441	2487	2539
Starting Vehs	79	80	71	80	58	64	73
Ending Vehs	91	104	75	73	91	75	84
Travel Distance (mi)	1935	1964	1930	1911	1945	1952	1986
Travel Time (hr)	76.6	75.5	73.8	74.0	77.6	74.3	77.3
Total Delay (hr)	23.7	22.3	21.3	22.0	25.2	21.3	23.2
Total Stops	2366	2233	2187	2257	2362	2166	2312
Fuel Used (gal)	66.1	66.6	64.9	65.2	66.2	65.2	67.7

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2482	2477	2561	2493
Vehs Exited	2480	2449	2533	2478
Starting Vehs	75	67	72	69
Ending Vehs	77	95	100	82
Travel Distance (mi)	1933	1920	2008	1948
Travel Time (hr)	74.1	73.1	78.7	75.5
Total Delay (hr)	21.5	20.7	24.2	22.5
Total Stops	2205	2202	2344	2261
Fuel Used (gal)	65.5	64.8	68.4	66.1

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2481	2504	2466	2443	2474	2498	2550
Vehs Exited	2469	2480	2462	2450	2441	2487	2539
Starting Vehs	79	80	71	80	58	64	73
Ending Vehs	91	104	75	73	91	75	84
Travel Distance (mi)	1935	1964	1930	1911	1945	1952	1986
Travel Time (hr)	76.6	75.5	73.8	74.0	77.6	74.3	77.3
Total Delay (hr)	23.7	22.3	21.3	22.0	25.2	21.3	23.2
Total Stops	2366	2233	2187	2257	2362	2166	2312
Fuel Used (gal)	66.1	66.6	64.9	65.2	66.2	65.2	67.7

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2482	2477	2561	2493
Vehs Exited	2480	2449	2533	2478
Starting Vehs	75	67	72	69
Ending Vehs	77	95	100	82
Travel Distance (mi)	1933	1920	2008	1948
Travel Time (hr)	74.1	73.1	78.7	75.5
Total Delay (hr)	21.5	20.7	24.2	22.5
Total Stops	2205	2202	2344	2261
Fuel Used (gal)	65.5	64.8	68.4	66.1

5: Route 1 & Lang Road Performance by lane

Lane	WB	NB	SB	SB	SB	All
Movements Served	R	TR	L	T	T	
Denied Del/Veh (s)						0.2
Total Del/Veh (s)	14.4	5.8	10.2	1.8	0.5	5.9

8: Longmeadow Road & Lang Road Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	1.4	1.2	6.7	2.6

10: Longmeadow Road & Southwesterly Site Drive Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	3.7	4.8	3.8	3.9

11: Route 1 & Ocean Road/Longmeadow Road Performance by lane

Lane	EB	EB	WB	NB	NB	SB	SB	SB	All
Movements Served	LT	R	LTR	L	TR	L	T	TR	
Denied Del/Veh (s)									0.9
Total Del/Veh (s)	40.0	3.5	28.0	38.3	31.9	45.5	17.5	17.0	27.3

13: Northeasterly Site Drive & Lang Road Performance by lane

Lane	EB	WB	NB	All
Movements Served	TR	LT	LR	
Denied Del/Veh (s)				0.2
Total Del/Veh (s)	0.6	0.6	5.7	0.9

Total Network Performance

Denied Del/Veh (s)	1.0
Total Del/Veh (s)	30.8

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB
Directions Served	R	TR	L
Maximum Queue (ft)	147	30	104
Average Queue (ft)	74	1	42
95th Queue (ft)	130	16	84
Link Distance (ft)	1032	681	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			150
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	55	10	92
Average Queue (ft)	6	1	48
95th Queue (ft)	31	7	79
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	82	58	73
Average Queue (ft)	43	33	41
95th Queue (ft)	68	51	64
Link Distance (ft)	955	352	582
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	T	TR
Maximum Queue (ft)	397	224	205	357	650	70	179	205
Average Queue (ft)	170	68	105	118	300	21	87	100
95th Queue (ft)	306	179	176	280	543	54	149	169
Link Distance (ft)	849		955		2095		681	681
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		200		350		225		
Storage Blk Time (%)	6	0		0	6		0	
Queuing Penalty (veh)	12	0		0	8		0	

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	24	42
Average Queue (ft)	1	21
95th Queue (ft)	12	44
Link Distance (ft)	1111	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 21

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	18.0	35.0	29.0	5.0	48.0	29.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	12.6	33.9	25.4	6.1	46.3	25.4
g/C Ratio	-0.01	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	5	0	0	58	0	0
Cycles @ Minimum (%)	0	0	0	38	0	0
Cycles Maxed Out (%)	15	45	48	43	73	48
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:55	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2481	2504	2466	2443	2474	2498	2550
Vehs Exited	2469	2480	2462	2450	2441	2487	2539
Starting Vehs	79	80	71	80	58	64	73
Ending Vehs	91	104	75	73	91	75	84
Travel Distance (mi)	1935	1964	1930	1911	1945	1952	1986
Travel Time (hr)	76.6	75.5	73.8	74.0	77.6	74.3	77.3
Total Delay (hr)	23.7	22.3	21.3	22.0	25.2	21.3	23.2
Total Stops	2366	2233	2187	2257	2362	2166	2312
Fuel Used (gal)	66.1	66.6	64.9	65.2	66.2	65.2	67.7

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2482	2477	2561	2493
Vehs Exited	2480	2449	2533	2478
Starting Vehs	75	67	72	69
Ending Vehs	77	95	100	82
Travel Distance (mi)	1933	1920	2008	1948
Travel Time (hr)	74.1	73.1	78.7	75.5
Total Delay (hr)	21.5	20.7	24.2	22.5
Total Stops	2205	2202	2344	2261
Fuel Used (gal)	65.5	64.8	68.4	66.1

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2481	2504	2466	2443	2474	2498	2550
Vehs Exited	2469	2480	2462	2450	2441	2487	2539
Starting Vehs	79	80	71	80	58	64	73
Ending Vehs	91	104	75	73	91	75	84
Travel Distance (mi)	1935	1964	1930	1911	1945	1952	1986
Travel Time (hr)	76.6	75.5	73.8	74.0	77.6	74.3	77.3
Total Delay (hr)	23.7	22.3	21.3	22.0	25.2	21.3	23.2
Total Stops	2366	2233	2187	2257	2362	2166	2312
Fuel Used (gal)	66.1	66.6	64.9	65.2	66.2	65.2	67.7

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2482	2477	2561	2493
Vehs Exited	2480	2449	2533	2478
Starting Vehs	75	67	72	69
Ending Vehs	77	95	100	82
Travel Distance (mi)	1933	1920	2008	1948
Travel Time (hr)	74.1	73.1	78.7	75.5
Total Delay (hr)	21.5	20.7	24.2	22.5
Total Stops	2205	2202	2344	2261
Fuel Used (gal)	65.5	64.8	68.4	66.1

5: Route 1 & Lang Road Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.5	0.2
Total Del/Veh (s)	14.5	5.8	2.8	5.9

8: Longmeadow Road & Lang Road Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	1.5	1.2	6.7	2.6

10: Longmeadow Road & Southwesterly Site Drive Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.1	0.0	0.0
Total Del/Veh (s)	3.7	4.8	3.8	3.9

11: Route 1 & Ocean Road/Longmeadow Road Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	1.8	0.0	1.2	0.0	0.9
Total Del/Veh (s)	25.8	28.0	32.9	18.5	27.3

13: Northeasterly Site Drive & Lang Road Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.3	0.1	0.2
Total Del/Veh (s)	0.6	0.6	5.7	0.9

Total Network Performance

Denied Del/Veh (s)	1.0
Total Del/Veh (s)	30.8

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB
Directions Served	R	TR	L
Maximum Queue (ft)	147	30	104
Average Queue (ft)	74	1	42
95th Queue (ft)	130	16	84
Link Distance (ft)	1032	681	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			150
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	55	10	92
Average Queue (ft)	6	1	48
95th Queue (ft)	31	7	79
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	82	58	73
Average Queue (ft)	43	33	41
95th Queue (ft)	68	51	64
Link Distance (ft)	955	352	582
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	T	TR
Maximum Queue (ft)	397	224	205	357	650	70	179	205
Average Queue (ft)	170	68	105	118	300	21	87	100
95th Queue (ft)	306	179	176	280	543	54	149	169
Link Distance (ft)	849		955		2095		681	681
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		200		350		225		
Storage Blk Time (%)	6	0		0	6		0	
Queuing Penalty (veh)	12	0		0	8		0	

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	24	42
Average Queue (ft)	1	21
95th Queue (ft)	12	44
Link Distance (ft)	1111	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 21

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	18.0	35.0	29.0	5.0	48.0	29.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	12.6	33.9	25.4	6.1	46.3	25.4
g/C Ratio	-0.01	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	5	0	0	58	0	0
Cycles @ Minimum (%)	0	0	0	38	0	0
Cycles Maxed Out (%)	15	45	48	43	73	48
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	3:55	3:55	3:55	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2709	2787	2686	2715	2694	2670	2744
Vehs Exited	2736	2799	2685	2726	2692	2675	2734
Starting Vehs	91	90	76	75	79	87	61
Ending Vehs	64	78	77	64	81	82	71
Travel Distance (mi)	2207	2226	2134	2180	2182	2158	2200
Travel Time (hr)	80.6	83.2	77.9	81.9	80.8	81.1	81.5
Total Delay (hr)	21.3	22.9	20.3	22.9	21.6	23.0	22.3
Total Stops	2430	2504	2349	2441	2443	2457	2430
Fuel Used (gal)	73.8	74.6	71.7	73.0	73.3	72.6	73.6

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2790	2762	2766	2731
Vehs Exited	2779	2745	2771	2734
Starting Vehs	73	84	89	77
Ending Vehs	84	101	84	74
Travel Distance (mi)	2222	2219	2206	2193
Travel Time (hr)	83.6	82.8	83.6	81.7
Total Delay (hr)	23.3	22.9	23.6	22.4
Total Stops	2529	2505	2582	2466
Fuel Used (gal)	74.7	75.2	74.9	73.7

Interval #0 Information Seeding

Start Time	3:55
End Time	4:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2709	2787	2686	2715	2694	2670	2744
Vehs Exited	2736	2799	2685	2726	2692	2675	2734
Starting Vehs	91	90	76	75	79	87	61
Ending Vehs	64	78	77	64	81	82	71
Travel Distance (mi)	2207	2226	2134	2180	2182	2158	2200
Travel Time (hr)	80.6	83.2	77.9	81.9	80.8	81.1	81.5
Total Delay (hr)	21.3	22.9	20.3	22.9	21.6	23.0	22.3
Total Stops	2430	2504	2349	2441	2443	2457	2430
Fuel Used (gal)	73.8	74.6	71.7	73.0	73.3	72.6	73.6

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2790	2762	2766	2731
Vehs Exited	2779	2745	2771	2734
Starting Vehs	73	84	89	77
Ending Vehs	84	101	84	74
Travel Distance (mi)	2222	2219	2206	2193
Travel Time (hr)	83.6	82.8	83.6	81.7
Total Delay (hr)	23.3	22.9	23.6	22.4
Total Stops	2529	2505	2582	2466
Fuel Used (gal)	74.7	75.2	74.9	73.7

5: Route 1 & Lang Road Performance by lane

Lane	WB	NB	SB	SB	SB	All
Movements Served	R	TR	L	T	T	
Denied Del/Veh (s)						0.3
Total Del/Veh (s)	14.4	5.1	8.7	3.7	0.9	5.4

8: Longmeadow Road & Lang Road Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	1.5	1.0	8.0	3.7

10: Longmeadow Road & Southwesterly Site Drive Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	5.7	4.8	3.7	4.9

11: Route 1 & Ocean Road/Longmeadow Road Performance by lane

Lane	EB	EB	WB	NB	NB	SB	SB	SB	All
Movements Served	LT	R	LTR	L	TR	L	T	TR	
Denied Del/Veh (s)									0.8
Total Del/Veh (s)	40.0	5.0	28.9	37.1	22.9	43.5	18.9	20.1	23.8

13: Northeasterly Site Drive & Lang Road Performance by lane

Lane	EB	WB	NB	All
Movements Served	TR	LT	LR	
Denied Del/Veh (s)				0.1
Total Del/Veh (s)	0.8	0.7	5.7	0.9

Total Network Performance

Denied Del/Veh (s)	0.9
Total Del/Veh (s)	27.9

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB
Directions Served	R	TR	L
Maximum Queue (ft)	180	15	147
Average Queue (ft)	78	1	58
95th Queue (ft)	146	7	108
Link Distance (ft)	1032	681	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			150
Storage Blk Time (%)			0
Queuing Penalty (veh)			1

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	48	2	119
Average Queue (ft)	7	0	60
95th Queue (ft)	31	3	98
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	86	68	70
Average Queue (ft)	48	32	37
95th Queue (ft)	74	58	59
Link Distance (ft)	955	352	582
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	T	TR
Maximum Queue (ft)	270	180	233	288	411	72	218	224
Average Queue (ft)	130	59	120	98	197	28	122	136
95th Queue (ft)	228	144	205	190	331	62	188	203
Link Distance (ft)	849		955		2095		681	681
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		200		350		225		
Storage Blk Time (%)	2	0			1		0	
Queuing Penalty (veh)	5	0			1		0	

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	42	37
Average Queue (ft)	4	15
95th Queue (ft)	24	39
Link Distance (ft)	1111	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 7

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	14.0	32.0	26.0	6.0	40.0	26.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	11.6	31.2	22.7	5.8	42.0	22.7
g/C Ratio	-0.01	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	2	0	0	47	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	40	60	51	21	77	51
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	3:55	3:55	3:55	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2709	2787	2686	2715	2694	2670	2744
Vehs Exited	2736	2799	2685	2726	2692	2675	2734
Starting Vehs	91	90	76	75	79	87	61
Ending Vehs	64	78	77	64	81	82	71
Travel Distance (mi)	2207	2226	2134	2180	2182	2158	2200
Travel Time (hr)	80.6	83.2	77.9	81.9	80.8	81.1	81.5
Total Delay (hr)	21.3	22.9	20.3	22.9	21.6	23.0	22.3
Total Stops	2430	2504	2349	2441	2443	2457	2430
Fuel Used (gal)	73.8	74.6	71.7	73.0	73.3	72.6	73.6

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2790	2762	2766	2731
Vehs Exited	2779	2745	2771	2734
Starting Vehs	73	84	89	77
Ending Vehs	84	101	84	74
Travel Distance (mi)	2222	2219	2206	2193
Travel Time (hr)	83.6	82.8	83.6	81.7
Total Delay (hr)	23.3	22.9	23.6	22.4
Total Stops	2529	2505	2582	2466
Fuel Used (gal)	74.7	75.2	74.9	73.7

Interval #0 Information Seeding

Start Time	3:55
End Time	4:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2709	2787	2686	2715	2694	2670	2744
Vehs Exited	2736	2799	2685	2726	2692	2675	2734
Starting Vehs	91	90	76	75	79	87	61
Ending Vehs	64	78	77	64	81	82	71
Travel Distance (mi)	2207	2226	2134	2180	2182	2158	2200
Travel Time (hr)	80.6	83.2	77.9	81.9	80.8	81.1	81.5
Total Delay (hr)	21.3	22.9	20.3	22.9	21.6	23.0	22.3
Total Stops	2430	2504	2349	2441	2443	2457	2430
Fuel Used (gal)	73.8	74.6	71.7	73.0	73.3	72.6	73.6

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2790	2762	2766	2731
Vehs Exited	2779	2745	2771	2734
Starting Vehs	73	84	89	77
Ending Vehs	84	101	84	74
Travel Distance (mi)	2222	2219	2206	2193
Travel Time (hr)	83.6	82.8	83.6	81.7
Total Delay (hr)	23.3	22.9	23.6	22.4
Total Stops	2529	2505	2582	2466
Fuel Used (gal)	74.7	75.2	74.9	73.7

5: Route 1 & Lang Road Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.5	0.3
Total Del/Veh (s)	14.4	5.1	3.6	5.4

8: Longmeadow Road & Lang Road Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	1.5	1.0	8.1	3.7

10: Longmeadow Road & Southwesterly Site Drive Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.1	0.0	0.0
Total Del/Veh (s)	5.7	4.8	3.7	4.9

11: Route 1 & Ocean Road/Longmeadow Road Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	2.0	0.1	1.1	0.0	0.8
Total Del/Veh (s)	24.0	29.1	25.6	20.4	23.8

13: Northeasterly Site Drive & Lang Road Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.2	0.1	0.1
Total Del/Veh (s)	0.8	0.7	6.0	0.9

Total Network Performance

Denied Del/Veh (s)	0.9
Total Del/Veh (s)	27.9

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB
Directions Served	R	TR	L
Maximum Queue (ft)	180	15	147
Average Queue (ft)	78	1	58
95th Queue (ft)	146	7	108
Link Distance (ft)	1032	681	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			150
Storage Blk Time (%)			0
Queuing Penalty (veh)			1

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	48	2	119
Average Queue (ft)	7	0	60
95th Queue (ft)	31	3	98
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	86	68	70
Average Queue (ft)	48	32	37
95th Queue (ft)	74	58	59
Link Distance (ft)	955	352	582
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	T	TR
Maximum Queue (ft)	270	180	233	288	411	72	218	224
Average Queue (ft)	130	59	120	98	197	28	122	136
95th Queue (ft)	228	144	205	190	331	62	188	203
Link Distance (ft)	849		955		2095		681	681
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		200		350		225		
Storage Blk Time (%)	2	0			1		0	
Queuing Penalty (veh)	5	0			1		0	

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	42	37
Average Queue (ft)	4	15
95th Queue (ft)	24	39
Link Distance (ft)	1111	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 7

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	14.0	32.0	26.0	6.0	40.0	26.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	11.6	31.2	22.7	5.8	42.0	22.7
g/C Ratio	-0.01	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	2	0	0	47	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	40	60	51	21	77	51
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:55	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2492	2583	2442	2539	2514	2579	2601
Vehs Exited	2490	2590	2441	2542	2514	2567	2582
Starting Vehs	79	100	82	80	83	71	71
Ending Vehs	81	93	83	77	83	83	90
Travel Distance (mi)	1965	2067	1947	2030	2004	2040	2043
Travel Time (hr)	78.0	85.1	77.6	79.7	78.7	87.2	86.7
Total Delay (hr)	25.3	29.8	25.5	25.6	25.4	32.3	31.5
Total Stops	1944	2227	2018	1970	1903	2351	2234
Fuel Used (gal)	66.4	70.2	65.4	67.7	67.1	70.2	69.5

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2547	2495	2493	2527
Vehs Exited	2534	2519	2484	2526
Starting Vehs	85	103	71	82
Ending Vehs	98	79	80	84
Travel Distance (mi)	2034	1986	1994	2011
Travel Time (hr)	81.5	78.6	82.2	81.5
Total Delay (hr)	27.0	25.1	28.9	27.6
Total Stops	2041	1968	2197	2082
Fuel Used (gal)	68.2	67.4	68.0	68.0

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2492	2583	2442	2539	2514	2579	2601
Vehs Exited	2490	2590	2441	2542	2514	2567	2582
Starting Vehs	79	100	82	80	83	71	71
Ending Vehs	81	93	83	77	83	83	90
Travel Distance (mi)	1965	2067	1947	2030	2004	2040	2043
Travel Time (hr)	78.0	85.1	77.6	79.7	78.7	87.2	86.7
Total Delay (hr)	25.3	29.8	25.5	25.6	25.4	32.3	31.5
Total Stops	1944	2227	2018	1970	1903	2351	2234
Fuel Used (gal)	66.4	70.2	65.4	67.7	67.1	70.2	69.5

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2547	2495	2493	2527
Vehs Exited	2534	2519	2484	2526
Starting Vehs	85	103	71	82
Ending Vehs	98	79	80	84
Travel Distance (mi)	2034	1986	1994	2011
Travel Time (hr)	81.5	78.6	82.2	81.5
Total Delay (hr)	27.0	25.1	28.9	27.6
Total Stops	2041	1968	2197	2082
Fuel Used (gal)	68.2	67.4	68.0	68.0

5: Route 1 & Lang Road Performance by lane

Lane	WB	NB	SB	SB	All
Movements Served	R	TR	L	T	
Denied Del/Veh (s)					0.3
Total Del/Veh (s)	18.6	5.8	12.8	2.7	6.8

8: Longmeadow Road & Lang Road Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	0.5	1.2	7.0	2.4

10: Longmeadow Road & Southwesterly Site Drive Performance by lane

Lane	EB	SB	All
Movements Served	LT	LR	
Denied Del/Veh (s)			0.0
Total Del/Veh (s)	1.9	3.5	2.5

11: Route 1 & Ocean Road/Longmeadow Road Performance by lane

Lane	EB	EB	WB	NB	NB	SB	SB	All
Movements Served	LT	R	LTR	L	TR	L	TR	
Denied Del/Veh (s)								1.0
Total Del/Veh (s)	51.3	8.4	32.7	46.7	33.9	48.8	26.4	33.2

13: Northeasterly Site Drive & Lang Road Performance by lane

Lane	EB	WB	All
Movements Served	TR	LT	
Denied Del/Veh (s)			0.2
Total Del/Veh (s)	0.6	0.7	0.6

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	37.0

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB
Directions Served	R	TR	L
Maximum Queue (ft)	186	23	111
Average Queue (ft)	80	1	43
95th Queue (ft)	150	10	86
Link Distance (ft)	1032	682	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			150
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	20	4	113
Average Queue (ft)	1	0	45
95th Queue (ft)	11	3	81
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	SB
Directions Served	LR
Maximum Queue (ft)	80
Average Queue (ft)	41
95th Queue (ft)	65
Link Distance (ft)	582
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	494	225	192	374	692	106	419
Average Queue (ft)	222	115	88	141	328	21	229
95th Queue (ft)	424	251	162	315	640	66	366
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	13	0		0	8		10
Queuing Penalty (veh)	28	0		0	13		2

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 43

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	15.0	50.0	30.0	15.0	50.0	30.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	12.8	43.7	27.2	6.9	56.5	27.2
g/C Ratio	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	60	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	49	37	60	0	89	60
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:55	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2492	2583	2442	2539	2514	2579	2601
Vehs Exited	2490	2590	2441	2542	2514	2567	2582
Starting Vehs	79	100	82	80	83	71	71
Ending Vehs	81	93	83	77	83	83	90
Travel Distance (mi)	1965	2067	1947	2030	2004	2040	2043
Travel Time (hr)	78.0	85.1	77.6	79.7	78.7	87.2	86.7
Total Delay (hr)	25.3	29.8	25.5	25.6	25.4	32.3	31.5
Total Stops	1944	2227	2018	1970	1903	2351	2234
Fuel Used (gal)	66.4	70.2	65.4	67.7	67.1	70.2	69.5

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2547	2495	2493	2527
Vehs Exited	2534	2519	2484	2526
Starting Vehs	85	103	71	82
Ending Vehs	98	79	80	84
Travel Distance (mi)	2034	1986	1994	2011
Travel Time (hr)	81.5	78.6	82.2	81.5
Total Delay (hr)	27.0	25.1	28.9	27.6
Total Stops	2041	1968	2197	2082
Fuel Used (gal)	68.2	67.4	68.0	68.0

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2492	2583	2442	2539	2514	2579	2601
Vehs Exited	2490	2590	2441	2542	2514	2567	2582
Starting Vehs	79	100	82	80	83	71	71
Ending Vehs	81	93	83	77	83	83	90
Travel Distance (mi)	1965	2067	1947	2030	2004	2040	2043
Travel Time (hr)	78.0	85.1	77.6	79.7	78.7	87.2	86.7
Total Delay (hr)	25.3	29.8	25.5	25.6	25.4	32.3	31.5
Total Stops	1944	2227	2018	1970	1903	2351	2234
Fuel Used (gal)	66.4	70.2	65.4	67.7	67.1	70.2	69.5

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2547	2495	2493	2527
Vehs Exited	2534	2519	2484	2526
Starting Vehs	85	103	71	82
Ending Vehs	98	79	80	84
Travel Distance (mi)	2034	1986	1994	2011
Travel Time (hr)	81.5	78.6	82.2	81.5
Total Delay (hr)	27.0	25.1	28.9	27.6
Total Stops	2041	1968	2197	2082
Fuel Used (gal)	68.2	67.4	68.0	68.0

5: Route 1 & Lang Road Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.8	0.3
Total Del/Veh (s)	18.6	5.8	4.1	6.8

8: Longmeadow Road & Lang Road Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.5	1.2	7.1	2.4

10: Longmeadow Road & Southwesterly Site Drive Performance by approach

Approach	EB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	1.9	3.5	2.5

11: Route 1 & Ocean Road/Longmeadow Road Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	1.9	0.0	1.3	0.0	1.0
Total Del/Veh (s)	34.6	32.9	35.8	27.3	33.2

13: Northeasterly Site Drive & Lang Road Performance by approach

Approach	EB	WB	All
Denied Del/Veh (s)	0.0	0.3	0.2
Total Del/Veh (s)	0.6	0.7	0.6

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	37.0

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB
Directions Served	R	TR	L
Maximum Queue (ft)	186	23	111
Average Queue (ft)	80	1	43
95th Queue (ft)	150	10	86
Link Distance (ft)	1032	682	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			150
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	20	4	113
Average Queue (ft)	1	0	45
95th Queue (ft)	11	3	81
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	SB
Directions Served	LR
Maximum Queue (ft)	80
Average Queue (ft)	41
95th Queue (ft)	65
Link Distance (ft)	582
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	494	225	192	374	692	106	419
Average Queue (ft)	222	115	88	141	328	21	229
95th Queue (ft)	424	251	162	315	640	66	366
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	13	0		0	8		10
Queuing Penalty (veh)	28	0		0	13		2

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 43

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	15.0	50.0	30.0	15.0	50.0	30.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	12.8	43.7	27.2	6.9	56.5	27.2
g/C Ratio	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	60	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	49	37	60	0	89	60
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	3:55	3:55	3:55	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2723	2807	2783	2788	2754	2768	2821
Vehs Exited	2727	2730	2766	2695	2735	2718	2772
Starting Vehs	94	90	97	88	101	78	93
Ending Vehs	90	167	114	181	120	128	142
Travel Distance (mi)	2220	2257	2273	2219	2244	2244	2262
Travel Time (hr)	91.8	139.0	100.0	134.2	102.3	117.8	137.1
Total Delay (hr)	32.8	78.9	39.7	74.7	42.7	58.0	76.7
Total Stops	2225	4136	2496	3588	2516	3194	3949
Fuel Used (gal)	75.3	87.2	77.8	84.9	78.2	81.5	87.4

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2768	2744	2861	2781
Vehs Exited	2702	2682	2799	2734
Starting Vehs	85	110	107	91
Ending Vehs	151	172	169	146
Travel Distance (mi)	2247	2183	2312	2246
Travel Time (hr)	114.9	147.1	133.0	121.7
Total Delay (hr)	55.1	88.7	71.3	61.9
Total Stops	3140	4183	3890	3333
Fuel Used (gal)	80.2	87.7	87.0	82.7

Interval #0 Information Seeding

Start Time	3:55
End Time	4:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2723	2807	2783	2788	2754	2768	2821
Vehs Exited	2727	2730	2766	2695	2735	2718	2772
Starting Vehs	94	90	97	88	101	78	93
Ending Vehs	90	167	114	181	120	128	142
Travel Distance (mi)	2220	2257	2273	2219	2244	2244	2262
Travel Time (hr)	91.8	139.0	100.0	134.2	102.3	117.8	137.1
Total Delay (hr)	32.8	78.9	39.7	74.7	42.7	58.0	76.7
Total Stops	2225	4136	2496	3588	2516	3194	3949
Fuel Used (gal)	75.3	87.2	77.8	84.9	78.2	81.5	87.4

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2768	2744	2861	2781
Vehs Exited	2702	2682	2799	2734
Starting Vehs	85	110	107	91
Ending Vehs	151	172	169	146
Travel Distance (mi)	2247	2183	2312	2246
Travel Time (hr)	114.9	147.1	133.0	121.7
Total Delay (hr)	55.1	88.7	71.3	61.9
Total Stops	3140	4183	3890	3333
Fuel Used (gal)	80.2	87.7	87.0	82.7

5: Route 1 & Lang Road Performance by lane

Lane	WB	NB	SB	SB	All
Movements Served	R	TR	L	T	
Denied Del/Veh (s)					1.0
Total Del/Veh (s)	19.4	4.8	10.6	70.2	34.6

8: Longmeadow Road & Lang Road Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	0.9	1.0	8.6	3.5

10: Longmeadow Road & Southwesterly Site Drive Performance by lane

Lane	EB	SB	All
Movements Served	LT	LR	
Denied Del/Veh (s)			0.0
Total Del/Veh (s)	2.8	3.2	3.0

11: Route 1 & Ocean Road/Longmeadow Road Performance by lane

Lane	EB	EB	WB	NB	NB	SB	SB	All
Movements Served	LT	R	LTR	L	TR	L	TR	
Denied Del/Veh (s)								1.3
Total Del/Veh (s)	107.1	18.6	87.5	54.1	20.0	54.1	71.4	55.0

13: Northeasterly Site Drive & Lang Road Performance by lane

Lane	EB	WB	All
Movements Served	TR	LT	
Denied Del/Veh (s)			0.1
Total Del/Veh (s)	0.7	0.6	0.6

Total Network Performance

Denied Del/Veh (s)	1.9
Total Del/Veh (s)	75.5

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB	SB
Directions Served	R	TR	L	T
Maximum Queue (ft)	192	14	173	1283
Average Queue (ft)	89	1	102	570
95th Queue (ft)	159	8	202	1664
Link Distance (ft)	1032	682		2056
Upstream Blk Time (%)				2
Queuing Penalty (veh)				0
Storage Bay Dist (ft)			150	
Storage Blk Time (%)			0	23
Queuing Penalty (veh)			2	43

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	42	2	134
Average Queue (ft)	3	0	59
95th Queue (ft)	20	2	100
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	SB
Directions Served	LR
Maximum Queue (ft)	63
Average Queue (ft)	35
95th Queue (ft)	56
Link Distance (ft)	582
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	678	225	424	286	412	234	688
Average Queue (ft)	275	143	195	124	206	47	588
95th Queue (ft)	609	265	389	219	351	166	816
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)	2						16
Queuing Penalty (veh)	0						144
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	23	1			1	0	45
Queuing Penalty (veh)	50	1			1	0	11

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 252

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	20.0	62.0	30.0	20.0	62.0	30.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	17.1	61.8	29.9	7.5	77.2	29.9
g/C Ratio	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	46	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	43	93	89	0	96	89
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	3:55	3:55	3:55	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2723	2807	2783	2788	2754	2768	2821
Vehs Exited	2727	2730	2766	2695	2735	2718	2772
Starting Vehs	94	90	97	88	101	78	93
Ending Vehs	90	167	114	181	120	128	142
Travel Distance (mi)	2220	2257	2273	2219	2244	2244	2262
Travel Time (hr)	91.8	139.0	100.0	134.2	102.3	117.8	137.1
Total Delay (hr)	32.8	78.9	39.7	74.7	42.7	58.0	76.7
Total Stops	2225	4136	2496	3588	2516	3194	3949
Fuel Used (gal)	75.3	87.2	77.8	84.9	78.2	81.5	87.4

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2768	2744	2861	2781
Vehs Exited	2702	2682	2799	2734
Starting Vehs	85	110	107	91
Ending Vehs	151	172	169	146
Travel Distance (mi)	2247	2183	2312	2246
Travel Time (hr)	114.9	147.1	133.0	121.7
Total Delay (hr)	55.1	88.7	71.3	61.9
Total Stops	3140	4183	3890	3333
Fuel Used (gal)	80.2	87.7	87.0	82.7

Interval #0 Information Seeding

Start Time	3:55
End Time	4:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2723	2807	2783	2788	2754	2768	2821
Vehs Exited	2727	2730	2766	2695	2735	2718	2772
Starting Vehs	94	90	97	88	101	78	93
Ending Vehs	90	167	114	181	120	128	142
Travel Distance (mi)	2220	2257	2273	2219	2244	2244	2262
Travel Time (hr)	91.8	139.0	100.0	134.2	102.3	117.8	137.1
Total Delay (hr)	32.8	78.9	39.7	74.7	42.7	58.0	76.7
Total Stops	2225	4136	2496	3588	2516	3194	3949
Fuel Used (gal)	75.3	87.2	77.8	84.9	78.2	81.5	87.4

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2768	2744	2861	2781
Vehs Exited	2702	2682	2799	2734
Starting Vehs	85	110	107	91
Ending Vehs	151	172	169	146
Travel Distance (mi)	2247	2183	2312	2246
Travel Time (hr)	114.9	147.1	133.0	121.7
Total Delay (hr)	55.1	88.7	71.3	61.9
Total Stops	3140	4183	3890	3333
Fuel Used (gal)	80.2	87.7	87.0	82.7

5: Route 1 & Lang Road Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	1.9	1.0
Total Del/Veh (s)	19.4	4.8	60.3	34.6

8: Longmeadow Road & Lang Road Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	0.9	1.0	8.6	3.5

10: Longmeadow Road & Southwesterly Site Drive Performance by approach

Approach	EB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0
Total Del/Veh (s)	2.8	3.2	3.0

11: Route 1 & Ocean Road/Longmeadow Road Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	4.2	0.8	1.2	0.0	1.3
Total Del/Veh (s)	64.8	87.5	26.4	70.9	55.0

13: Northeasterly Site Drive & Lang Road Performance by approach

Approach	EB	WB	All
Denied Del/Veh (s)	0.0	0.3	0.1
Total Del/Veh (s)	0.7	0.6	0.6

Total Network Performance

Denied Del/Veh (s)	1.9
Total Del/Veh (s)	75.5

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB	SB
Directions Served	R	TR	L	T
Maximum Queue (ft)	192	14	173	1283
Average Queue (ft)	89	1	102	570
95th Queue (ft)	159	8	202	1664
Link Distance (ft)	1032	682		2056
Upstream Blk Time (%)				2
Queuing Penalty (veh)				0
Storage Bay Dist (ft)			150	
Storage Blk Time (%)			0	23
Queuing Penalty (veh)			2	43

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	42	2	134
Average Queue (ft)	3	0	59
95th Queue (ft)	20	2	100
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	SB
Directions Served	LR
Maximum Queue (ft)	63
Average Queue (ft)	35
95th Queue (ft)	56
Link Distance (ft)	582
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	678	225	424	286	412	234	688
Average Queue (ft)	275	143	195	124	206	47	588
95th Queue (ft)	609	265	389	219	351	166	816
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)	2						16
Queuing Penalty (veh)	0						144
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	23	1			1	0	45
Queuing Penalty (veh)	50	1			1	0	11

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 252

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	20.0	62.0	30.0	20.0	62.0	30.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	17.1	61.8	29.9	7.5	77.2	29.9
g/C Ratio	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	46	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	43	93	89	0	96	89
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:55	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2751	2781	2686	2687	2699	2803	2742
Vehs Exited	2742	2761	2662	2650	2652	2779	2732
Starting Vehs	103	87	80	87	84	82	89
Ending Vehs	112	107	104	124	131	106	99
Travel Distance (mi)	2139	2178	2087	2077	2082	2195	2143
Travel Time (hr)	97.0	99.0	91.8	94.3	93.2	101.5	107.4
Total Delay (hr)	38.6	39.8	34.3	37.7	36.2	41.7	49.2
Total Stops	2877	2856	2630	2722	2798	2966	3244
Fuel Used (gal)	75.4	76.8	72.6	73.2	72.7	77.2	78.6

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2755	2748	2710	2735
Vehs Exited	2742	2714	2705	2714
Starting Vehs	95	78	87	84
Ending Vehs	108	112	92	108
Travel Distance (mi)	2156	2143	2104	2130
Travel Time (hr)	99.7	101.7	92.2	97.8
Total Delay (hr)	41.2	43.1	35.1	39.7
Total Stops	2856	3031	2566	2852
Fuel Used (gal)	76.5	76.9	72.6	75.3

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2751	2781	2686	2687	2699	2803	2742
Vehs Exited	2742	2761	2662	2650	2652	2779	2732
Starting Vehs	103	87	80	87	84	82	89
Ending Vehs	112	107	104	124	131	106	99
Travel Distance (mi)	2139	2178	2087	2077	2082	2195	2143
Travel Time (hr)	97.0	99.0	91.8	94.3	93.2	101.5	107.4
Total Delay (hr)	38.6	39.8	34.3	37.7	36.2	41.7	49.2
Total Stops	2877	2856	2630	2722	2798	2966	3244
Fuel Used (gal)	75.4	76.8	72.6	73.2	72.7	77.2	78.6

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2755	2748	2710	2735
Vehs Exited	2742	2714	2705	2714
Starting Vehs	95	78	87	84
Ending Vehs	108	112	92	108
Travel Distance (mi)	2156	2143	2104	2130
Travel Time (hr)	99.7	101.7	92.2	97.8
Total Delay (hr)	41.2	43.1	35.1	39.7
Total Stops	2856	3031	2566	2852
Fuel Used (gal)	76.5	76.9	72.6	75.3

5: Route 1 & Lang Road Performance by lane

Lane	WB	NB	SB	SB	All
Movements Served	R	TR	L	T	
Denied Del/Veh (s)					0.3
Total Del/Veh (s)	24.1	6.4	14.6	3.4	8.6

8: Longmeadow Road & Lang Road Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	1.5	1.3	7.4	2.8

10: Longmeadow Road & Southwesterly Site Drive Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	3.8	5.1	3.9	4.0

11: Route 1 & Ocean Road/Longmeadow Road Performance by lane

Lane	EB	EB	WB	NB	NB	SB	SB	All
Movements Served	LT	R	LTR	L	TR	L	TR	
Denied Del/Veh (s)								1.0
Total Del/Veh (s)	51.2	10.2	42.7	63.4	59.1	63.1	36.5	47.1

13: Northeasterly Site Drive & Lang Road Performance by lane

Lane	EB	WB	NB	All
Movements Served	TR	LT	LR	
Denied Del/Veh (s)				0.2
Total Del/Veh (s)	0.7	0.7	5.7	1.0

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	49.6

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB	SB
Directions Served	R	TR	L	T
Maximum Queue (ft)	215	29	129	47
Average Queue (ft)	104	1	53	2
95th Queue (ft)	189	15	103	33
Link Distance (ft)	1032	682		2056
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			150	
Storage Blk Time (%)			0	0
Queuing Penalty (veh)			1	0

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	66	4	113
Average Queue (ft)	9	0	53
95th Queue (ft)	39	3	91
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	94	63	84
Average Queue (ft)	45	32	42
95th Queue (ft)	73	55	68
Link Distance (ft)	955	352	582
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	554	225	298	375	1067	249	555
Average Queue (ft)	246	131	148	205	541	49	297
95th Queue (ft)	439	267	255	414	1049	162	488
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)							0
Queuing Penalty (veh)							0
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	15	0		0	22		18
Queuing Penalty (veh)	33	1		1	34		5

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	30	48
Average Queue (ft)	2	22
95th Queue (ft)	16	44
Link Distance (ft)	1111	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 74

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	15.0	52.0	45.0	5.0	62.0	45.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	13.9	51.1	39.5	5.2	63.9	39.5
g/C Ratio	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	41	0	0
Cycles @ Minimum (%)	0	0	0	59	0	0
Cycles Maxed Out (%)	62	72	45	59	93	45
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:55	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2751	2781	2686	2687	2699	2803	2742
Vehs Exited	2742	2761	2662	2650	2652	2779	2732
Starting Vehs	103	87	80	87	84	82	89
Ending Vehs	112	107	104	124	131	106	99
Travel Distance (mi)	2139	2178	2087	2077	2082	2195	2143
Travel Time (hr)	97.0	99.0	91.8	94.3	93.2	101.5	107.4
Total Delay (hr)	38.6	39.8	34.3	37.7	36.2	41.7	49.2
Total Stops	2877	2856	2630	2722	2798	2966	3244
Fuel Used (gal)	75.4	76.8	72.6	73.2	72.7	77.2	78.6

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2755	2748	2710	2735
Vehs Exited	2742	2714	2705	2714
Starting Vehs	95	78	87	84
Ending Vehs	108	112	92	108
Travel Distance (mi)	2156	2143	2104	2130
Travel Time (hr)	99.7	101.7	92.2	97.8
Total Delay (hr)	41.2	43.1	35.1	39.7
Total Stops	2856	3031	2566	2852
Fuel Used (gal)	76.5	76.9	72.6	75.3

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2751	2781	2686	2687	2699	2803	2742
Vehs Exited	2742	2761	2662	2650	2652	2779	2732
Starting Vehs	103	87	80	87	84	82	89
Ending Vehs	112	107	104	124	131	106	99
Travel Distance (mi)	2139	2178	2087	2077	2082	2195	2143
Travel Time (hr)	97.0	99.0	91.8	94.3	93.2	101.5	107.4
Total Delay (hr)	38.6	39.8	34.3	37.7	36.2	41.7	49.2
Total Stops	2877	2856	2630	2722	2798	2966	3244
Fuel Used (gal)	75.4	76.8	72.6	73.2	72.7	77.2	78.6

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2755	2748	2710	2735
Vehs Exited	2742	2714	2705	2714
Starting Vehs	95	78	87	84
Ending Vehs	108	112	92	108
Travel Distance (mi)	2156	2143	2104	2130
Travel Time (hr)	99.7	101.7	92.2	97.8
Total Delay (hr)	41.2	43.1	35.1	39.7
Total Stops	2856	3031	2566	2852
Fuel Used (gal)	76.5	76.9	72.6	75.3

5: Route 1 & Lang Road Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.9	0.3
Total Del/Veh (s)	24.1	6.4	5.2	8.6

8: Longmeadow Road & Lang Road Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	1.5	1.3	7.4	2.8

10: Longmeadow Road & Southwesterly Site Drive Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.2	0.0	0.0
Total Del/Veh (s)	3.8	5.1	3.9	4.0

11: Route 1 & Ocean Road/Longmeadow Road Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	1.9	0.0	1.3	0.0	1.0
Total Del/Veh (s)	35.5	42.7	59.7	37.7	47.1

13: Northeasterly Site Drive & Lang Road Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.3	0.1	0.2
Total Del/Veh (s)	0.7	0.7	5.9	1.0

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	49.6

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB	SB
Directions Served	R	TR	L	T
Maximum Queue (ft)	215	29	129	47
Average Queue (ft)	104	1	53	2
95th Queue (ft)	189	15	103	33
Link Distance (ft)	1032	682		2056
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			150	
Storage Blk Time (%)			0	0
Queuing Penalty (veh)			1	0

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	66	4	113
Average Queue (ft)	9	0	53
95th Queue (ft)	39	3	91
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	94	63	84
Average Queue (ft)	45	32	42
95th Queue (ft)	73	55	68
Link Distance (ft)	955	352	582
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	554	225	298	375	1067	249	555
Average Queue (ft)	246	131	148	205	541	49	297
95th Queue (ft)	439	267	255	414	1049	162	488
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)							0
Queuing Penalty (veh)							0
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	15	0		0	22		18
Queuing Penalty (veh)	33	1		1	34		5

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	30	48
Average Queue (ft)	2	22
95th Queue (ft)	16	44
Link Distance (ft)	1111	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 74

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	15.0	52.0	45.0	5.0	62.0	45.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	13.9	51.1	39.5	5.2	63.9	39.5
g/C Ratio	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	41	0	0
Cycles @ Minimum (%)	0	0	0	59	0	0
Cycles Maxed Out (%)	62	72	45	59	93	45
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	3:55	3:55	3:55	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2987	2963	2893	3020	2996	2992	3041
Vehs Exited	2917	2892	2855	2916	2903	2914	2958
Starting Vehs	95	108	86	86	83	90	114
Ending Vehs	165	179	124	190	176	168	197
Travel Distance (mi)	2389	2337	2299	2366	2351	2357	2389
Travel Time (hr)	139.8	161.8	112.4	138.4	161.5	157.7	164.0
Total Delay (hr)	75.1	99.3	50.7	74.6	98.0	93.9	99.6
Total Stops	4313	4456	3226	4268	4271	4753	4808
Fuel Used (gal)	90.3	95.1	82.1	89.8	95.0	94.5	97.3

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3024	2957	2987	2987
Vehs Exited	2939	2901	2912	2912
Starting Vehs	114	93	106	93
Ending Vehs	199	149	181	169
Travel Distance (mi)	2375	2353	2354	2357
Travel Time (hr)	187.8	138.7	160.6	152.3
Total Delay (hr)	123.2	75.0	97.3	88.7
Total Stops	5070	4424	4402	4398
Fuel Used (gal)	102.5	89.2	95.0	93.1

Interval #0 Information Seeding

Start Time	3:55
End Time	4:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2987	2963	2893	3020	2996	2992	3041
Vehs Exited	2917	2892	2855	2916	2903	2914	2958
Starting Vehs	95	108	86	86	83	90	114
Ending Vehs	165	179	124	190	176	168	197
Travel Distance (mi)	2389	2337	2299	2366	2351	2357	2389
Travel Time (hr)	139.8	161.8	112.4	138.4	161.5	157.7	164.0
Total Delay (hr)	75.1	99.3	50.7	74.6	98.0	93.9	99.6
Total Stops	4313	4456	3226	4268	4271	4753	4808
Fuel Used (gal)	90.3	95.1	82.1	89.8	95.0	94.5	97.3

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3024	2957	2987	2987
Vehs Exited	2939	2901	2912	2912
Starting Vehs	114	93	106	93
Ending Vehs	199	149	181	169
Travel Distance (mi)	2375	2353	2354	2357
Travel Time (hr)	187.8	138.7	160.6	152.3
Total Delay (hr)	123.2	75.0	97.3	88.7
Total Stops	5070	4424	4402	4398
Fuel Used (gal)	102.5	89.2	95.0	93.1

5: Route 1 & Lang Road Performance by lane

Lane	WB	NB	SB	SB	All
Movements Served	R	TR	L	T	
Denied Del/Veh (s)					8.1
Total Del/Veh (s)	24.3	5.5	11.3	117.4	54.2

8: Longmeadow Road & Lang Road Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	1.9	1.0	9.9	4.4

10: Longmeadow Road & Southwesterly Site Drive Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	6.0	4.8	3.7	5.1

11: Route 1 & Ocean Road/Longmeadow Road Performance by lane

Lane	EB	EB	WB	NB	NB	SB	SB	All
Movements Served	LT	R	LTR	L	TR	L	TR	
Denied Del/Veh (s)								1.4
Total Del/Veh (s)	105.6	19.6	104.3	64.1	27.0	56.0	87.2	65.1

13: Northeasterly Site Drive & Lang Road Performance by lane

Lane	EB	WB	NB	All
Movements Served	TR	LT	LR	
Denied Del/Veh (s)				0.1
Total Del/Veh (s)	0.8	0.7	5.9	0.9

Total Network Performance

Denied Del/Veh (s)	7.1
Total Del/Veh (s)	96.7

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB	SB
Directions Served	R	TR	L	T
Maximum Queue (ft)	250	23	175	1824
Average Queue (ft)	104	1	132	991
95th Queue (ft)	200	12	225	2279
Link Distance (ft)	1032	682		2056
Upstream Blk Time (%)				14
Queuing Penalty (veh)				0
Storage Bay Dist (ft)			150	
Storage Blk Time (%)			1	34
Queuing Penalty (veh)			5	74

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	67	10	149
Average Queue (ft)	10	1	70
95th Queue (ft)	41	6	124
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	100	66	70
Average Queue (ft)	51	31	38
95th Queue (ft)	83	56	59
Link Distance (ft)	955	352	582
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	680	225	517	343	553	250	700
Average Queue (ft)	294	152	268	159	272	56	663
95th Queue (ft)	616	271	519	289	467	180	786
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)	1						24
Queuing Penalty (veh)	0						216
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	27	1			3	0	52
Queuing Penalty (veh)	58	2			6	0	17

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	53	38
Average Queue (ft)	4	14
95th Queue (ft)	25	38
Link Distance (ft)	1111	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 379

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	17.0	61.0	34.0	12.0	66.0	34.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	16.4	62.4	34.2	7.6	75.4	34.2
g/C Ratio	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	33	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	70	100	93	0	96	93
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	3:55	3:55	3:55	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2987	2963	2893	3020	2996	2992	3041
Vehs Exited	2917	2892	2855	2916	2903	2914	2958
Starting Vehs	95	108	86	86	83	90	114
Ending Vehs	165	179	124	190	176	168	197
Travel Distance (mi)	2389	2337	2299	2366	2351	2357	2389
Travel Time (hr)	139.8	161.8	112.4	138.4	161.5	157.7	164.0
Total Delay (hr)	75.1	99.3	50.7	74.6	98.0	93.9	99.6
Total Stops	4313	4456	3226	4268	4271	4753	4808
Fuel Used (gal)	90.3	95.1	82.1	89.8	95.0	94.5	97.3

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3024	2957	2987	2987
Vehs Exited	2939	2901	2912	2912
Starting Vehs	114	93	106	93
Ending Vehs	199	149	181	169
Travel Distance (mi)	2375	2353	2354	2357
Travel Time (hr)	187.8	138.7	160.6	152.3
Total Delay (hr)	123.2	75.0	97.3	88.7
Total Stops	5070	4424	4402	4398
Fuel Used (gal)	102.5	89.2	95.0	93.1

Interval #0 Information Seeding

Start Time	3:55
End Time	4:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2987	2963	2893	3020	2996	2992	3041
Vehs Exited	2917	2892	2855	2916	2903	2914	2958
Starting Vehs	95	108	86	86	83	90	114
Ending Vehs	165	179	124	190	176	168	197
Travel Distance (mi)	2389	2337	2299	2366	2351	2357	2389
Travel Time (hr)	139.8	161.8	112.4	138.4	161.5	157.7	164.0
Total Delay (hr)	75.1	99.3	50.7	74.6	98.0	93.9	99.6
Total Stops	4313	4456	3226	4268	4271	4753	4808
Fuel Used (gal)	90.3	95.1	82.1	89.8	95.0	94.5	97.3

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3024	2957	2987	2987
Vehs Exited	2939	2901	2912	2912
Starting Vehs	114	93	106	93
Ending Vehs	199	149	181	169
Travel Distance (mi)	2375	2353	2354	2357
Travel Time (hr)	187.8	138.7	160.6	152.3
Total Delay (hr)	123.2	75.0	97.3	88.7
Total Stops	5070	4424	4402	4398
Fuel Used (gal)	102.5	89.2	95.0	93.1

5: Route 1 & Lang Road Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	15.9	8.1
Total Del/Veh (s)	24.3	5.5	97.5	54.2

8: Longmeadow Road & Lang Road Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	1.9	1.0	9.9	4.4

10: Longmeadow Road & Southwesterly Site Drive Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.1	0.0	0.0
Total Del/Veh (s)	6.0	4.8	3.8	5.1

11: Route 1 & Ocean Road/Longmeadow Road Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	2.3	4.3	1.3	0.0	1.4
Total Del/Veh (s)	65.6	104.7	34.1	86.2	65.1

13: Northeasterly Site Drive & Lang Road Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.2	0.1	0.1
Total Del/Veh (s)	0.8	0.7	6.1	0.9

Total Network Performance

Denied Del/Veh (s)	7.1
Total Del/Veh (s)	96.7

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB	SB
Directions Served	R	TR	L	T
Maximum Queue (ft)	250	23	175	1824
Average Queue (ft)	104	1	132	991
95th Queue (ft)	200	12	225	2279
Link Distance (ft)	1032	682		2056
Upstream Blk Time (%)				14
Queuing Penalty (veh)				0
Storage Bay Dist (ft)			150	
Storage Blk Time (%)			1	34
Queuing Penalty (veh)			5	74

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	67	10	149
Average Queue (ft)	10	1	70
95th Queue (ft)	41	6	124
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	100	66	70
Average Queue (ft)	51	31	38
95th Queue (ft)	83	56	59
Link Distance (ft)	955	352	582
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	TR
Maximum Queue (ft)	680	225	517	343	553	250	700
Average Queue (ft)	294	152	268	159	272	56	663
95th Queue (ft)	616	271	519	289	467	180	786
Link Distance (ft)	861		955		2094		682
Upstream Blk Time (%)	1						24
Queuing Penalty (veh)	0						216
Storage Bay Dist (ft)		200		350		225	
Storage Blk Time (%)	27	1			3	0	52
Queuing Penalty (veh)	58	2			6	0	17

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	53	38
Average Queue (ft)	4	14
95th Queue (ft)	25	38
Link Distance (ft)	1111	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 379

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	17.0	61.0	34.0	12.0	66.0	34.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	16.4	62.4	34.2	7.6	75.4	34.2
g/C Ratio	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	33	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	70	100	93	0	96	93
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:55	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2765	2800	2666	2715	2702	2731	2675
Vehs Exited	2768	2770	2664	2673	2626	2710	2664
Starting Vehs	98	80	96	70	68	67	74
Ending Vehs	95	110	98	112	144	88	85
Travel Distance (mi)	2156	2174	2081	2103	2086	2117	2082
Travel Time (hr)	93.1	88.7	88.0	88.8	86.7	89.2	86.2
Total Delay (hr)	34.4	29.5	31.1	31.5	29.9	31.7	29.7
Total Stops	2956	2612	2643	2766	2726	2757	2613
Fuel Used (gal)	75.2	74.2	71.5	73.1	71.3	72.8	71.9

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2684	2722	2717	2718
Vehs Exited	2682	2705	2696	2698
Starting Vehs	84	91	68	77
Ending Vehs	86	108	89	97
Travel Distance (mi)	2125	2134	2103	2116
Travel Time (hr)	89.9	92.9	87.3	89.1
Total Delay (hr)	32.2	34.8	30.5	31.5
Total Stops	2805	2950	2648	2746
Fuel Used (gal)	73.9	74.8	72.0	73.1

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2765	2800	2666	2715	2702	2731	2675
Vehs Exited	2768	2770	2664	2673	2626	2710	2664
Starting Vehs	98	80	96	70	68	67	74
Ending Vehs	95	110	98	112	144	88	85
Travel Distance (mi)	2156	2174	2081	2103	2086	2117	2082
Travel Time (hr)	93.1	88.7	88.0	88.8	86.7	89.2	86.2
Total Delay (hr)	34.4	29.5	31.1	31.5	29.9	31.7	29.7
Total Stops	2956	2612	2643	2766	2726	2757	2613
Fuel Used (gal)	75.2	74.2	71.5	73.1	71.3	72.8	71.9

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2684	2722	2717	2718
Vehs Exited	2682	2705	2696	2698
Starting Vehs	84	91	68	77
Ending Vehs	86	108	89	97
Travel Distance (mi)	2125	2134	2103	2116
Travel Time (hr)	89.9	92.9	87.3	89.1
Total Delay (hr)	32.2	34.8	30.5	31.5
Total Stops	2805	2950	2648	2746
Fuel Used (gal)	73.9	74.8	72.0	73.1

5: Route 1 & Lang Road Performance by lane

Lane	WB	NB	SB	SB	SB	All
Movements Served	R	TR	L	T	T	
Denied Del/Veh (s)						0.2
Total Del/Veh (s)	20.9	6.3	13.0	2.0	0.6	7.3

8: Longmeadow Road & Lang Road Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	1.5	1.3	7.4	2.7

10: Longmeadow Road & Southwesterly Site Drive Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	3.8	5.0	4.0	4.1

11: Route 1 & Ocean Road/Longmeadow Road Performance by lane

Lane	EB	EB	WB	NB	NB	SB	SB	SB	All
Movements Served	LT	R	LTR	L	TR	L	T	TR	
Denied Del/Veh (s)									1.0
Total Del/Veh (s)	57.7	4.0	31.4	41.1	47.7	47.0	18.5	19.0	36.5

13: Northeasterly Site Drive & Lang Road Performance by lane

Lane	EB	WB	NB	All
Movements Served	TR	LT	LR	
Denied Del/Veh (s)				0.2
Total Del/Veh (s)	0.7	0.7	5.7	1.0

Total Network Performance

Denied Del/Veh (s)	1.0
Total Del/Veh (s)	39.6

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB
Directions Served	R	TR	L
Maximum Queue (ft)	201	37	115
Average Queue (ft)	95	2	50
95th Queue (ft)	170	17	96
Link Distance (ft)	1032	681	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			150
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	54	6	104
Average Queue (ft)	8	0	51
95th Queue (ft)	35	3	87
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	88	67	84
Average Queue (ft)	46	33	43
95th Queue (ft)	73	55	68
Link Distance (ft)	955	352	582
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	T	TR
Maximum Queue (ft)	573	225	235	374	968	77	204	209
Average Queue (ft)	241	111	117	178	434	23	99	114
95th Queue (ft)	456	257	202	391	806	57	166	185
Link Distance (ft)	849		955		2095		681	681
Upstream Blk Time (%)	0							
Queuing Penalty (veh)	0							
Storage Bay Dist (ft)		200		350		225		
Storage Blk Time (%)	19	0		0	17		0	
Queuing Penalty (veh)	40	1		0	26		0	

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	31	48
Average Queue (ft)	2	22
95th Queue (ft)	14	46
Link Distance (ft)	1111	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 67

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	18.0	35.0	29.0	5.0	48.0	29.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	13.7	34.5	27.4	5.5	48.6	27.4
g/C Ratio	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	54	0	0
Cycles @ Minimum (%)	0	0	0	43	0	0
Cycles Maxed Out (%)	26	55	74	46	92	74
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:55	6:55	6:55	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2765	2800	2666	2715	2702	2731	2675
Vehs Exited	2768	2770	2664	2673	2626	2710	2664
Starting Vehs	98	80	96	70	68	67	74
Ending Vehs	95	110	98	112	144	88	85
Travel Distance (mi)	2156	2174	2081	2103	2086	2117	2082
Travel Time (hr)	93.1	88.7	88.0	88.8	86.7	89.2	86.2
Total Delay (hr)	34.4	29.5	31.1	31.5	29.9	31.7	29.7
Total Stops	2956	2612	2643	2766	2726	2757	2613
Fuel Used (gal)	75.2	74.2	71.5	73.1	71.3	72.8	71.9

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:55	6:55	6:55	6:55
End Time	8:00	8:00	8:00	8:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	2684	2722	2717	2718
Vehs Exited	2682	2705	2696	2698
Starting Vehs	84	91	68	77
Ending Vehs	86	108	89	97
Travel Distance (mi)	2125	2134	2103	2116
Travel Time (hr)	89.9	92.9	87.3	89.1
Total Delay (hr)	32.2	34.8	30.5	31.5
Total Stops	2805	2950	2648	2746
Fuel Used (gal)	73.9	74.8	72.0	73.1

Interval #0 Information Seeding

Start Time	6:55
End Time	7:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2765	2800	2666	2715	2702	2731	2675
Vehs Exited	2768	2770	2664	2673	2626	2710	2664
Starting Vehs	98	80	96	70	68	67	74
Ending Vehs	95	110	98	112	144	88	85
Travel Distance (mi)	2156	2174	2081	2103	2086	2117	2082
Travel Time (hr)	93.1	88.7	88.0	88.8	86.7	89.2	86.2
Total Delay (hr)	34.4	29.5	31.1	31.5	29.9	31.7	29.7
Total Stops	2956	2612	2643	2766	2726	2757	2613
Fuel Used (gal)	75.2	74.2	71.5	73.1	71.3	72.8	71.9

Interval #1 Information Recording

Start Time	7:00
End Time	8:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	2684	2722	2717	2718
Vehs Exited	2682	2705	2696	2698
Starting Vehs	84	91	68	77
Ending Vehs	86	108	89	97
Travel Distance (mi)	2125	2134	2103	2116
Travel Time (hr)	89.9	92.9	87.3	89.1
Total Delay (hr)	32.2	34.8	30.5	31.5
Total Stops	2805	2950	2648	2746
Fuel Used (gal)	73.9	74.8	72.0	73.1

5: Route 1 & Lang Road Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.4	0.2
Total Del/Veh (s)	20.8	6.3	3.3	7.3

8: Longmeadow Road & Lang Road Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	1.5	1.3	7.3	2.7

10: Longmeadow Road & Southwesterly Site Drive Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.2	0.0	0.0
Total Del/Veh (s)	3.8	5.0	4.0	4.1

11: Route 1 & Ocean Road/Longmeadow Road Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	1.8	0.0	1.4	0.0	1.0
Total Del/Veh (s)	37.2	31.6	46.6	19.9	36.5

13: Northeasterly Site Drive & Lang Road Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.3	0.1	0.2
Total Del/Veh (s)	0.7	0.7	5.8	1.0

Total Network Performance

Denied Del/Veh (s)	1.0
Total Del/Veh (s)	39.6

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB
Directions Served	R	TR	L
Maximum Queue (ft)	201	37	115
Average Queue (ft)	95	2	50
95th Queue (ft)	170	17	96
Link Distance (ft)	1032	681	
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			150
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	54	6	104
Average Queue (ft)	8	0	51
95th Queue (ft)	35	3	87
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	88	67	84
Average Queue (ft)	46	33	43
95th Queue (ft)	73	55	68
Link Distance (ft)	955	352	582
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	T	TR
Maximum Queue (ft)	573	225	235	374	968	77	204	209
Average Queue (ft)	241	111	117	178	434	23	99	114
95th Queue (ft)	456	257	202	391	806	57	166	185
Link Distance (ft)	849		955		2095		681	681
Upstream Blk Time (%)	0							
Queuing Penalty (veh)	0							
Storage Bay Dist (ft)		200		350		225		
Storage Blk Time (%)	19	0		0	17		0	
Queuing Penalty (veh)	40	1		0	26		0	

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	31	48
Average Queue (ft)	2	22
95th Queue (ft)	14	46
Link Distance (ft)	1111	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 67

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	18.0	35.0	29.0	5.0	48.0	29.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	13.7	34.5	27.4	5.5	48.6	27.4
g/C Ratio	NA	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	0	0	0	54	0	0
Cycles @ Minimum (%)	0	0	0	43	0	0
Cycles Maxed Out (%)	26	55	74	46	92	74
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	3:55	3:55	3:55	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2982	3081	3005	3001	3010	2944	3078
Vehs Exited	2971	3078	2985	2982	3014	2964	3089
Starting Vehs	93	89	71	86	72	93	98
Ending Vehs	104	92	91	105	68	73	87
Travel Distance (mi)	2413	2500	2404	2409	2423	2389	2481
Travel Time (hr)	98.4	96.8	94.0	94.2	94.1	92.7	98.2
Total Delay (hr)	33.2	29.8	29.5	29.0	28.9	28.1	31.6
Total Stops	3105	2890	2949	2847	2805	2805	2915
Fuel Used (gal)	82.9	84.9	82.1	81.9	82.4	81.3	84.7

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3017	2905	2966	2999
Vehs Exited	3008	2910	2961	2995
Starting Vehs	105	101	97	92
Ending Vehs	114	96	102	92
Travel Distance (mi)	2416	2341	2408	2419
Travel Time (hr)	96.6	89.4	96.4	95.1
Total Delay (hr)	31.5	25.9	31.2	29.9
Total Stops	2942	2680	3020	2895
Fuel Used (gal)	82.7	79.6	82.5	82.5

Interval #0 Information Seeding

Start Time	3:55
End Time	4:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2982	3081	3005	3001	3010	2944	3078
Vehs Exited	2971	3078	2985	2982	3014	2964	3089
Starting Vehs	93	89	71	86	72	93	98
Ending Vehs	104	92	91	105	68	73	87
Travel Distance (mi)	2413	2500	2404	2409	2423	2389	2481
Travel Time (hr)	98.4	96.8	94.0	94.2	94.1	92.7	98.2
Total Delay (hr)	33.2	29.8	29.5	29.0	28.9	28.1	31.6
Total Stops	3105	2890	2949	2847	2805	2805	2915
Fuel Used (gal)	82.9	84.9	82.1	81.9	82.4	81.3	84.7

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3017	2905	2966	2999
Vehs Exited	3008	2910	2961	2995
Starting Vehs	105	101	97	92
Ending Vehs	114	96	102	92
Travel Distance (mi)	2416	2341	2408	2419
Travel Time (hr)	96.6	89.4	96.4	95.1
Total Delay (hr)	31.5	25.9	31.2	29.9
Total Stops	2942	2680	3020	2895
Fuel Used (gal)	82.7	79.6	82.5	82.5

5: Route 1 & Lang Road Performance by lane

Lane	WB	NB	SB	SB	SB	All
Movements Served	R	TR	L	T	T	
Denied Del/Veh (s)						0.3
Total Del/Veh (s)	22.5	5.9	12.7	4.7	1.1	7.2

8: Longmeadow Road & Lang Road Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	1.6	1.1	9.4	4.3

10: Longmeadow Road & Southwesterly Site Drive Performance by lane

Lane	EB	WB	SB	All
Movements Served	LT	TR	LR	
Denied Del/Veh (s)				0.0
Total Del/Veh (s)	5.8	4.7	3.7	5.0

11: Route 1 & Ocean Road/Longmeadow Road Performance by lane

Lane	EB	EB	WB	NB	NB	SB	SB	SB	All
Movements Served	LT	R	LTR	L	TR	L	T	TR	
Denied Del/Veh (s)									0.9
Total Del/Veh (s)	50.1	6.3	31.7	37.8	34.1	42.9	20.4	21.9	29.0

13: Northeasterly Site Drive & Lang Road Performance by lane

Lane	EB	WB	NB	All
Movements Served	TR	LT	LR	
Denied Del/Veh (s)				0.1
Total Del/Veh (s)	0.8	0.8	6.4	1.0

Total Network Performance

Denied Del/Veh (s)	1.0
Total Del/Veh (s)	33.9

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB	SB	SB
Directions Served	R	TR	L	T	T
Maximum Queue (ft)	213	26	162	44	30
Average Queue (ft)	100	1	73	2	2
95th Queue (ft)	181	12	130	45	39
Link Distance (ft)	1032	681		2056	2056
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			150		
Storage Blk Time (%)			1		
Queuing Penalty (veh)			4		

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	46	6	148
Average Queue (ft)	8	0	67
95th Queue (ft)	33	3	115
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	90	66	70
Average Queue (ft)	49	30	37
95th Queue (ft)	76	54	59
Link Distance (ft)	955	352	582
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	T	TR
Maximum Queue (ft)	405	218	249	356	556	116	242	263
Average Queue (ft)	163	79	131	143	288	30	142	159
95th Queue (ft)	317	191	217	315	526	76	214	233
Link Distance (ft)	849		955		2095		681	681
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		200		350		225		
Storage Blk Time (%)	7	0		0	7	0	0	
Queuing Penalty (veh)	15	0		0	11	0	0	

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	55	38
Average Queue (ft)	5	14
95th Queue (ft)	27	38
Link Distance (ft)	1111	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 31

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	14.0	32.0	26.0	6.0	40.0	26.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	12.2	32.1	24.3	6.0	44.2	24.3
g/C Ratio	-0.01	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	2	0	0	48	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	51	74	66	30	95	66
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	3:55	3:55	3:55	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	2982	3081	3005	3001	3010	2944	3078
Vehs Exited	2971	3078	2985	2982	3014	2964	3089
Starting Vehs	93	89	71	86	72	93	98
Ending Vehs	104	92	91	105	68	73	87
Travel Distance (mi)	2413	2500	2404	2409	2423	2389	2481
Travel Time (hr)	98.4	96.8	94.0	94.2	94.1	92.7	98.2
Total Delay (hr)	33.2	29.8	29.5	29.0	28.9	28.1	31.6
Total Stops	3105	2890	2949	2847	2805	2805	2915
Fuel Used (gal)	82.9	84.9	82.1	81.9	82.4	81.3	84.7

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	3:55	3:55	3:55	3:55
End Time	5:00	5:00	5:00	5:00
Total Time (min)	65	65	65	65
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3017	2905	2966	2999
Vehs Exited	3008	2910	2961	2995
Starting Vehs	105	101	97	92
Ending Vehs	114	96	102	92
Travel Distance (mi)	2416	2341	2408	2419
Travel Time (hr)	96.6	89.4	96.4	95.1
Total Delay (hr)	31.5	25.9	31.2	29.9
Total Stops	2942	2680	3020	2895
Fuel Used (gal)	82.7	79.6	82.5	82.5

Interval #0 Information Seeding

Start Time	3:55
End Time	4:00
Total Time (min)	5

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	2982	3081	3005	3001	3010	2944	3078
Vehs Exited	2971	3078	2985	2982	3014	2964	3089
Starting Vehs	93	89	71	86	72	93	98
Ending Vehs	104	92	91	105	68	73	87
Travel Distance (mi)	2413	2500	2404	2409	2423	2389	2481
Travel Time (hr)	98.4	96.8	94.0	94.2	94.1	92.7	98.2
Total Delay (hr)	33.2	29.8	29.5	29.0	28.9	28.1	31.6
Total Stops	3105	2890	2949	2847	2805	2805	2915
Fuel Used (gal)	82.9	84.9	82.1	81.9	82.4	81.3	84.7

Interval #1 Information Recording

Start Time	4:00
End Time	5:00
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3017	2905	2966	2999
Vehs Exited	3008	2910	2961	2995
Starting Vehs	105	101	97	92
Ending Vehs	114	96	102	92
Travel Distance (mi)	2416	2341	2408	2419
Travel Time (hr)	96.6	89.4	96.4	95.1
Total Delay (hr)	31.5	25.9	31.2	29.9
Total Stops	2942	2680	3020	2895
Fuel Used (gal)	82.7	79.6	82.5	82.5

5: Route 1 & Lang Road Performance by approach

Approach	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.5	0.3
Total Del/Veh (s)	22.5	5.9	4.8	7.2

8: Longmeadow Road & Lang Road Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0	0.0
Total Del/Veh (s)	1.6	1.1	9.5	4.3

10: Longmeadow Road & Southwesterly Site Drive Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.1	0.0	0.0
Total Del/Veh (s)	5.8	4.7	3.7	5.0

11: Route 1 & Ocean Road/Longmeadow Road Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	2.1	0.1	1.3	0.0	0.9
Total Del/Veh (s)	29.7	31.5	34.8	22.0	29.0

13: Northeasterly Site Drive & Lang Road Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.0	0.3	0.1	0.1
Total Del/Veh (s)	0.8	0.8	6.4	1.0

Total Network Performance

Denied Del/Veh (s)	1.0
Total Del/Veh (s)	33.9

Intersection: 5: Route 1 & Lang Road

Movement	WB	NB	SB	SB	SB
Directions Served	R	TR	L	T	T
Maximum Queue (ft)	213	26	162	44	30
Average Queue (ft)	100	1	73	2	2
95th Queue (ft)	181	12	130	45	39
Link Distance (ft)	1032	681		2056	2056
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)			150		
Storage Blk Time (%)			1		
Queuing Penalty (veh)			4		

Intersection: 8: Longmeadow Road & Lang Road

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	46	6	148
Average Queue (ft)	8	0	67
95th Queue (ft)	33	3	115
Link Distance (ft)	582	328	1032
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 10: Longmeadow Road & Southwesterly Site Drive

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	90	66	70
Average Queue (ft)	49	30	37
95th Queue (ft)	76	54	59
Link Distance (ft)	955	352	582
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Movement	EB	EB	WB	NB	NB	SB	SB	SB
Directions Served	LT	R	LTR	L	TR	L	T	TR
Maximum Queue (ft)	405	218	249	356	556	116	242	263
Average Queue (ft)	163	79	131	143	288	30	142	159
95th Queue (ft)	317	191	217	315	526	76	214	233
Link Distance (ft)	849		955		2095		681	681
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)		200		350		225		
Storage Blk Time (%)	7	0		0	7	0	0	
Queuing Penalty (veh)	15	0		0	11	0	0	

Intersection: 13: Northeasterly Site Drive & Lang Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	55	38
Average Queue (ft)	5	14
95th Queue (ft)	27	38
Link Distance (ft)	1111	303
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 31

Intersection: 11: Route 1 & Ocean Road/Longmeadow Road

Phase	1	2	4	5	6	8
Movement(s) Served	NBL	SBT	WBTL	SBL	NBT	EBTL
Maximum Green (s)	14.0	32.0	26.0	6.0	40.0	26.0
Minimum Green (s)	5.0	10.0	8.0	5.0	10.0	6.0
Recall	None	Min	None	None	Min	None
Avg. Green (s)	12.2	32.1	24.3	6.0	44.2	24.3
g/C Ratio	-0.01	NA	NA	-0.01	NA	NA
Cycles Skipped (%)	2	0	0	48	0	0
Cycles @ Minimum (%)	0	0	0	0	0	0
Cycles Maxed Out (%)	51	74	66	30	95	66
Cycles with Peds (%)	0	0	0	0	0	0

Controller Summary

Average Cycle Length (s): NA

Number of Complete Cycles : 0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	157	814	19	85	505
Future Volume (vph)	0	157	814	19	85	505
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.997			
Flt Protected					0.950	
Satd. Flow (prot)	0	1627	1821	0	1671	1759
Flt Permitted					0.950	
Satd. Flow (perm)	0	1627	1821	0	1671	1759
Link Speed (mph)	30		45			45
Link Distance (ft)	1094		740			2085
Travel Time (s)	24.9		11.2			31.6
Peak Hour Factor	0.72	0.72	0.98	0.98	0.88	0.88
Heavy Vehicles (%)	1%	1%	4%	4%	8%	8%
Adj. Flow (vph)	0	218	831	19	97	574
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	218	850	0	97	574
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.4%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	88	110	203	98	20
Future Volume (vph)	2	88	110	203	98	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.912		0.977	
Flt Protected		0.999			0.960	
Satd. Flow (prot)	0	1710	1699	0	1650	0
Flt Permitted		0.999			0.960	
Satd. Flow (perm)	0	1710	1699	0	1650	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		631	397		1094	
Travel Time (s)		14.3	9.0		24.9	
Peak Hour Factor	0.83	0.83	0.77	0.77	0.90	0.90
Heavy Vehicles (%)	11%	11%	2%	2%	8%	8%
Adj. Flow (vph)	2	106	143	264	109	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	108	407	0	131	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 31.6%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	90	0	0	0	0	130
Future Volume (vph)	90	0	0	0	0	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.950				
Satd. Flow (prot)	0	1703	1881	0	1550	0
Flt Permitted		0.950				
Satd. Flow (perm)	0	1703	1881	0	1550	0
Link Speed (mph)		25	25		30	
Link Distance (ft)		1011	387		631	
Travel Time (s)		27.6	10.6		14.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	6%	1%	1%	6%	6%
Adj. Flow (vph)	98	0	0	0	0	141
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	98	0	0	141	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 19.7%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	126	189	26	95	5	138	683	54	18	369	105
Future Volume (vph)	144	126	189	26	95	5	138	683	54	18	369	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	0		0	350		0	225		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.987			0.989			0.967	
Flt Protected		0.974			0.990		0.950			0.950		
Satd. Flow (prot)	0	1746	1524	0	1751	0	1736	1807	0	1671	1701	0
Flt Permitted		0.678			0.763		0.950			0.950		
Satd. Flow (perm)	0	1215	1524	0	1350	0	1736	1807	0	1671	1701	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			225		5			5			16	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		897			1011			2133			740	
Travel Time (s)		20.4			23.0			32.3			11.2	
Peak Hour Factor	0.84	0.84	0.84	0.67	0.67	0.25	0.89	0.89	0.89	0.88	0.88	0.88
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	4%	4%	4%	8%	8%	8%
Adj. Flow (vph)	171	150	225	39	142	20	155	767	61	20	419	119
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	321	225	0	201	0	155	828	0	20	538	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	

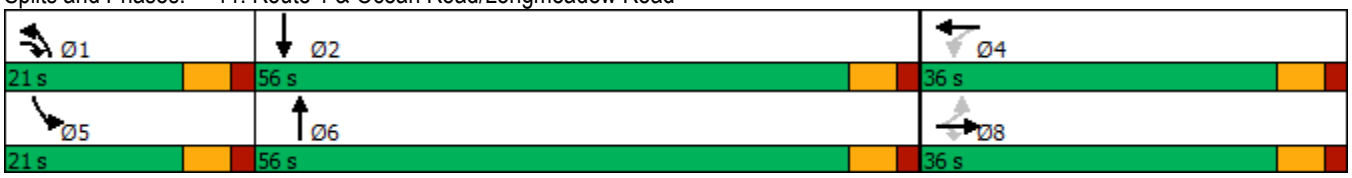
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8		8	4								
Detector Phase	8	8	1	4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0	5.0	8.0	8.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	12.0	11.0	14.0	14.0		11.0	16.0		11.0	32.0	
Total Split (s)	36.0	36.0	21.0	36.0	36.0		21.0	56.0		21.0	56.0	
Total Split (%)	31.9%	31.9%	18.6%	31.9%	31.9%		18.6%	49.6%		18.6%	49.6%	
Maximum Green (s)	30.0	30.0	15.0	30.0	30.0		15.0	50.0		15.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.0		3.0	4.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)											4.0	
Flash Dont Walk (s)											22.0	
Pedestrian Calls (#/hr)											0	
Act Effct Green (s)		30.2	49.2		30.2		12.9	52.9		6.8	39.2	
Actuated g/C Ratio		0.30	0.49		0.30		0.13	0.53		0.07	0.39	
v/c Ratio		0.88	0.26		0.49		0.70	0.87		0.18	0.80	
Control Delay		61.2	3.2		34.9		60.0	33.5		50.6	36.5	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		61.2	3.2		34.9		60.0	33.5		50.6	36.5	
LOS		E	A		C		E	C		D	D	
Approach Delay		37.3			34.9			37.6			37.0	
Approach LOS		D			C			D			D	
90th %ile Green (s)	30.0	30.0	15.0	30.0	30.0		15.0	56.1		8.9	50.0	
90th %ile Term Code	Max	Max	Max	Max	Max		Max	Hold		Gap	Max	
70th %ile Green (s)	30.0	30.0	15.0	30.0	30.0		15.0	50.3		7.5	42.8	
70th %ile Term Code	Max	Max	Max	Hold	Hold		Max	Hold		Gap	Gap	
50th %ile Green (s)	30.0	30.0	14.3	30.0	30.0		14.3	57.1		0.0	36.8	
50th %ile Term Code	Max	Max	Gap	Hold	Hold		Gap	Hold		Skip	Gap	
30th %ile Green (s)	30.0	30.0	11.7	30.0	30.0		11.7	50.0		0.0	32.3	
30th %ile Term Code	Max	Max	Gap	Hold	Hold		Gap	Max		Skip	Hold	
10th %ile Green (s)	30.0	30.0	9.0	30.0	30.0		9.0	50.0		0.0	35.0	
10th %ile Term Code	Max	Max	Gap	Hold	Hold		Gap	Max		Skip	Hold	
Queue Length 50th (ft)		191	0		101		93	380		12	297	
Queue Length 95th (ft)		#375	33		139		#191	#796		39	419	
Internal Link Dist (ft)		817			931			2053			660	
Turn Bay Length (ft)			200				350			225		
Base Capacity (vph)		365	889		409		261	954		251	860	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.88	0.25		0.49		0.59	0.87		0.08	0.63	

Intersection Summary

Area Type: Other	
Cycle Length: 113	
Actuated Cycle Length: 100.4	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 37.2	Intersection LOS: D
Intersection Capacity Utilization 84.7%	ICU Level of Service E
Analysis Period (min) 15	
90th %ile Actuated Cycle: 113	
70th %ile Actuated Cycle: 105.8	
50th %ile Actuated Cycle: 99.1	
30th %ile Actuated Cycle: 92	
10th %ile Actuated Cycle: 92	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 11: Route 1 & Ocean Road/Longmeadow Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	186	0	0	313	0	0
Future Volume (vph)	186	0	0	313	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1712	0	0	1863	1881	0
Flt Permitted						
Satd. Flow (perm)	1712	0	0	1863	1881	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	397			1132	335	
Travel Time (s)	9.0			25.7	9.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	11%	11%	2%	2%	1%	1%
Adj. Flow (vph)	202	0	0	340	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	202	0	0	340	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 19.8%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	189	683	18	167	788
Future Volume (vph)	0	189	683	18	167	788
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.997			
Flt Protected					0.950	
Satd. Flow (prot)	0	1565	1821	0	1752	1845
Flt Permitted					0.950	
Satd. Flow (perm)	0	1565	1821	0	1752	1845
Link Speed (mph)	30		45			45
Link Distance (ft)	1094		740			2085
Travel Time (s)	24.9		11.2			31.6
Peak Hour Factor	0.77	0.77	0.90	0.90	0.94	0.94
Heavy Vehicles (%)	5%	5%	4%	4%	3%	3%
Adj. Flow (vph)	0	245	759	20	178	838
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	245	779	0	178	838
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.4%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	123	85	171	184	15
Future Volume (vph)	6	123	85	171	184	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.910		0.990	
Flt Protected		0.998			0.956	
Satd. Flow (prot)	0	1859	1662	0	1746	0
Flt Permitted		0.998			0.956	
Satd. Flow (perm)	0	1859	1662	0	1746	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		631	397		1094	
Travel Time (s)		14.3	9.0		24.9	
Peak Hour Factor	0.80	0.80	0.77	0.77	0.88	0.88
Heavy Vehicles (%)	2%	2%	4%	4%	3%	3%
Adj. Flow (vph)	8	154	110	222	209	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	162	332	0	226	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 32.7%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	129	0	0	0	0	100
Future Volume (vph)	129	0	0	0	0	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.950				
Satd. Flow (prot)	0	1770	1827	0	1580	0
Flt Permitted		0.950				
Satd. Flow (perm)	0	1770	1827	0	1580	0
Link Speed (mph)		25	25		30	
Link Distance (ft)		1011	387		631	
Travel Time (s)		27.6	10.6		14.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	4%	4%	4%
Adj. Flow (vph)	140	0	0	0	0	109
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	140	0	0	109	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 20.0%	ICU Level of Service A
Analysis Period (min) 15	

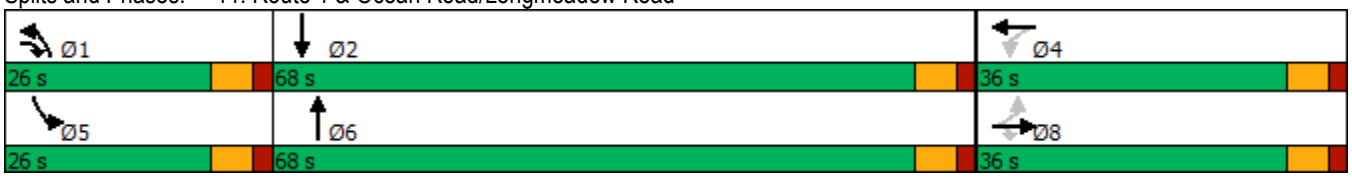
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	87	195	44	116	24	148	587	38	22	644	106
Future Volume (vph)	119	87	195	44	116	24	148	587	38	22	644	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	0		100	350		0	225		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.982			0.991			0.979	
Flt Protected		0.972			0.988		0.950			0.950		
Satd. Flow (prot)	0	1811	1583	0	1773	0	1752	1828	0	1770	1824	0
Flt Permitted		0.599			0.722		0.950			0.950		
Satd. Flow (perm)	0	1116	1583	0	1295	0	1752	1828	0	1770	1824	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			179		5			3			9	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		897			1011			2133			740	
Travel Time (s)		20.4			23.0			32.3			11.2	
Peak Hour Factor	0.93	0.93	0.93	0.84	0.84	0.84	0.90	0.90	0.90	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	3%	3%	3%	2%	2%	2%
Adj. Flow (vph)	128	94	210	52	138	29	164	652	42	22	657	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	222	210	0	219	0	164	694	0	22	765	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8		8	4								
Detector Phase	8	8	1	4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0	5.0	8.0	8.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	12.0	11.0	14.0	14.0		11.0	16.0		11.0	32.0	
Total Split (s)	36.0	36.0	26.0	36.0	36.0		26.0	68.0		26.0	68.0	
Total Split (%)	27.7%	27.7%	20.0%	27.7%	27.7%		20.0%	52.3%		20.0%	52.3%	
Maximum Green (s)	30.0	30.0	20.0	30.0	30.0		20.0	62.0		20.0	62.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.0		3.0	4.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)											4.0	
Flash Dont Walk (s)											22.0	
Pedestrian Calls (#/hr)											0	
Act Effct Green (s)		26.9	48.9		26.9		15.8	67.4		7.2	53.0	
Actuated g/C Ratio		0.24	0.43		0.24		0.14	0.59		0.06	0.46	
v/c Ratio		0.85	0.27		0.71		0.68	0.64		0.20	0.90	
Control Delay		72.5	6.0		55.8		64.6	20.6		61.0	43.5	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		72.5	6.0		55.8		64.6	20.6		61.0	43.5	
LOS		E	A		E		E	C		E	D	
Approach Delay		40.1			55.8			29.0			44.0	
Approach LOS		D			E			C			D	
90th %ile Green (s)	30.0	30.0	20.0	30.0	30.0		20.0	72.7		9.3	62.0	
90th %ile Term Code	Max	Max	Max	Max	Max		Max	Hold		Gap	Max	
70th %ile Green (s)	30.0	30.0	19.9	30.0	30.0		19.9	73.9		8.0	62.0	
70th %ile Term Code	Max	Max	Gap	Max	Max		Gap	Hold		Gap	Max	
50th %ile Green (s)	30.0	30.0	17.1	30.0	30.0		17.1	70.2		7.0	60.1	
50th %ile Term Code	Max	Max	Gap	Hold	Hold		Gap	Hold		Gap	Gap	
30th %ile Green (s)	26.6	26.6	13.6	26.6	26.6		13.6	68.9		0.0	49.3	
30th %ile Term Code	Gap	Gap	Gap	Hold	Hold		Gap	Hold		Skip	Gap	
10th %ile Green (s)	18.0	18.0	9.4	18.0	18.0		9.4	49.0		0.0	33.6	
10th %ile Term Code	Gap	Gap	Gap	Hold	Hold		Gap	Hold		Skip	Gap	
Queue Length 50th (ft)		172	15		159		128	379		17	534	
Queue Length 95th (ft)		#328	63		241		209	540		47	#814	
Internal Link Dist (ft)		817			931			2053			660	
Turn Bay Length (ft)			200				350			225		
Base Capacity (vph)		303	840		355		317	1139		321	1029	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.73	0.25		0.62		0.52	0.61		0.07	0.74	

Intersection Summary

Area Type: Other	
Cycle Length: 130	
Actuated Cycle Length: 114.3	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 38.8	Intersection LOS: D
Intersection Capacity Utilization 87.3%	ICU Level of Service E
Analysis Period (min) 15	
90th %ile Actuated Cycle: 130	
70th %ile Actuated Cycle: 129.9	
50th %ile Actuated Cycle: 125.2	
30th %ile Actuated Cycle: 107.5	
10th %ile Actuated Cycle: 79	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 11: Route 1 & Ocean Road/Longmeadow Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	307	0	0	256	0	0
Future Volume (vph)	307	0	0	256	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1845	0	0	1827	1881	0
Flt Permitted						
Satd. Flow (perm)	1845	0	0	1827	1881	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	397			1132	335	
Travel Time (s)	9.0			25.7	9.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	4%	4%	1%	1%
Adj. Flow (vph)	334	0	0	278	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	334	0	0	278	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 19.5%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	160	830	20	87	515
Future Volume (vph)	0	160	830	20	87	515
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.997			
Flt Protected					0.950	
Satd. Flow (prot)	0	1627	1821	0	1671	1759
Flt Permitted					0.950	
Satd. Flow (perm)	0	1627	1821	0	1671	1759
Link Speed (mph)	30		45			45
Link Distance (ft)	1094		740			2085
Travel Time (s)	24.9		11.2			31.6
Peak Hour Factor	0.72	0.72	0.98	0.98	0.88	0.88
Heavy Vehicles (%)	1%	1%	4%	4%	8%	8%
Adj. Flow (vph)	0	222	847	20	99	585
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	222	867	0	99	585
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	90	112	207	100	21
Future Volume (vph)	2	90	112	207	100	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.912		0.977	
Flt Protected		0.999			0.960	
Satd. Flow (prot)	0	1710	1699	0	1650	0
Flt Permitted		0.999			0.960	
Satd. Flow (perm)	0	1710	1699	0	1650	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		631	397		1094	
Travel Time (s)		14.3	9.0		24.9	
Peak Hour Factor	0.83	0.83	0.77	0.77	0.90	0.90
Heavy Vehicles (%)	11%	11%	2%	2%	8%	8%
Adj. Flow (vph)	2	108	145	269	111	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	110	414	0	134	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 32.1%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	92	0	0	0	0	133
Future Volume (vph)	92	0	0	0	0	133
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.950				
Satd. Flow (prot)	0	1703	1881	0	1550	0
Flt Permitted		0.950				
Satd. Flow (perm)	0	1703	1881	0	1550	0
Link Speed (mph)		25	25		30	
Link Distance (ft)		1011	387		631	
Travel Time (s)		27.6	10.6		14.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	6%	1%	1%	6%	6%
Adj. Flow (vph)	100	0	0	0	0	145
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	100	0	0	145	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 20.0%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	129	193	27	97	5	141	697	55	19	377	107
Future Volume (vph)	147	129	193	27	97	5	141	697	55	19	377	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	0		0	350		0	225		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.987			0.989			0.967	
Flt Protected		0.974			0.990		0.950			0.950		
Satd. Flow (prot)	0	1746	1524	0	1751	0	1736	1807	0	1671	1701	0
Flt Permitted		0.672			0.736		0.950			0.950		
Satd. Flow (perm)	0	1205	1524	0	1302	0	1736	1807	0	1671	1701	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			230		5			5			16	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		897			1011			2133			740	
Travel Time (s)		20.4			23.0			32.3			11.2	
Peak Hour Factor	0.84	0.84	0.84	0.67	0.67	0.25	0.89	0.89	0.89	0.88	0.88	0.88
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	4%	4%	4%	8%	8%	8%
Adj. Flow (vph)	175	154	230	40	145	20	158	783	62	22	428	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	329	230	0	205	0	158	845	0	22	550	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	

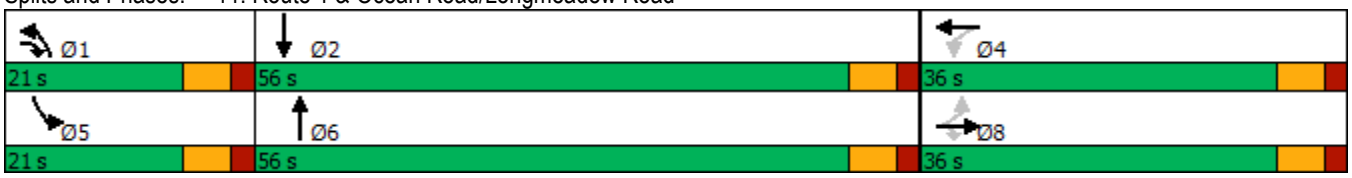
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8		8	4								
Detector Phase	8	8	1	4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0	5.0	8.0	8.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	12.0	11.0	14.0	14.0		11.0	16.0		11.0	32.0	
Total Split (s)	36.0	36.0	21.0	36.0	36.0		21.0	56.0		21.0	56.0	
Total Split (%)	31.9%	31.9%	18.6%	31.9%	31.9%		18.6%	49.6%		18.6%	49.6%	
Maximum Green (s)	30.0	30.0	15.0	30.0	30.0		15.0	50.0		15.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.0		3.0	4.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)											4.0	
Flash Dont Walk (s)											22.0	
Pedestrian Calls (#/hr)											0	
Act Effct Green (s)		30.2	49.3		30.2		13.1	53.5		6.9	39.7	
Actuated g/C Ratio		0.30	0.49		0.30		0.13	0.53		0.07	0.39	
v/c Ratio		0.92	0.27		0.52		0.71	0.88		0.19	0.81	
Control Delay		67.5	3.2		36.5		60.9	34.7		51.2	37.4	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		67.5	3.2		36.5		60.9	34.7		51.2	37.4	
LOS		E	A		D		E	C		D	D	
Approach Delay		41.0			36.5			38.8			37.9	
Approach LOS		D			D			D			D	
90th %ile Green (s)	30.0	30.0	15.0	30.0	30.0		15.0	55.9		9.1	50.0	
90th %ile Term Code	Max	Max	Max	Max	Max		Max	Hold		Gap	Max	
70th %ile Green (s)	30.0	30.0	15.0	30.0	30.0		15.0	52.3		7.7	45.0	
70th %ile Term Code	Max	Max	Max	Hold	Hold		Max	Hold		Gap	Gap	
50th %ile Green (s)	30.0	30.0	14.6	30.0	30.0		14.6	58.4		0.0	37.8	
50th %ile Term Code	Max	Max	Gap	Hold	Hold		Gap	Hold		Skip	Gap	
30th %ile Green (s)	30.0	30.0	12.0	30.0	30.0		12.0	50.0		0.0	32.0	
30th %ile Term Code	Max	Max	Gap	Hold	Hold		Gap	Max		Skip	Hold	
10th %ile Green (s)	30.0	30.0	9.2	30.0	30.0		9.2	50.0		0.0	34.8	
10th %ile Term Code	Max	Max	Gap	Hold	Hold		Gap	Max		Skip	Hold	
Queue Length 50th (ft)		203	0		106		96	394		14	310	
Queue Length 95th (ft)		#389	34		143		#197	#824		41	433	
Internal Link Dist (ft)		817			931			2053			660	
Turn Bay Length (ft)			200				350			225		
Base Capacity (vph)		359	887		392		259	959		249	855	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.92	0.26		0.52		0.61	0.88		0.09	0.64	

Intersection Summary

Area Type: Other	
Cycle Length: 113	
Actuated Cycle Length: 101.1	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 38.9	Intersection LOS: D
Intersection Capacity Utilization 86.0%	ICU Level of Service E
Analysis Period (min) 15	
90th %ile Actuated Cycle: 113	
70th %ile Actuated Cycle: 108	
50th %ile Actuated Cycle: 100.4	
30th %ile Actuated Cycle: 92	
10th %ile Actuated Cycle: 92	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 11: Route 1 & Ocean Road/Longmeadow Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	190	0	0	319	0	0
Future Volume (vph)	190	0	0	319	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1712	0	0	1863	1881	0
Flt Permitted						
Satd. Flow (perm)	1712	0	0	1863	1881	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	397			1132	335	
Travel Time (s)	9.0			25.7	9.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	11%	11%	2%	2%	1%	1%
Adj. Flow (vph)	207	0	0	347	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	207	0	0	347	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 20.1%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	193	697	19	171	804
Future Volume (vph)	0	193	697	19	171	804
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.996			
Flt Protected					0.950	
Satd. Flow (prot)	0	1565	1820	0	1752	1845
Flt Permitted					0.950	
Satd. Flow (perm)	0	1565	1820	0	1752	1845
Link Speed (mph)	30		45			45
Link Distance (ft)	1094		740			2085
Travel Time (s)	24.9		11.2			31.6
Peak Hour Factor	0.77	0.77	0.90	0.90	0.94	0.94
Heavy Vehicles (%)	5%	5%	4%	4%	3%	3%
Adj. Flow (vph)	0	251	774	21	182	855
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	251	795	0	182	855
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.5%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	126	87	175	188	15
Future Volume (vph)	6	126	87	175	188	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.910		0.990	
Flt Protected		0.998			0.956	
Satd. Flow (prot)	0	1859	1662	0	1746	0
Flt Permitted		0.998			0.956	
Satd. Flow (perm)	0	1859	1662	0	1746	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		631	397		1094	
Travel Time (s)		14.3	9.0		24.9	
Peak Hour Factor	0.80	0.80	0.77	0.77	0.88	0.88
Heavy Vehicles (%)	2%	2%	4%	4%	3%	3%
Adj. Flow (vph)	8	158	113	227	214	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	166	340	0	231	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 33.3%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	0	0	0	0	102
Future Volume (vph)	132	0	0	0	0	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.950				
Satd. Flow (prot)	0	1770	1827	0	1580	0
Flt Permitted		0.950				
Satd. Flow (perm)	0	1770	1827	0	1580	0
Link Speed (mph)		25	25		30	
Link Distance (ft)		1011	387		631	
Travel Time (s)		27.6	10.6		14.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	4%	4%	4%
Adj. Flow (vph)	143	0	0	0	0	111
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	143	0	0	111	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 20.3%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	89	199	45	118	25	151	599	39	23	657	108
Future Volume (vph)	122	89	199	45	118	25	151	599	39	23	657	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	0		100	350		0	225		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.982			0.991			0.979	
Flt Protected		0.972			0.988		0.950			0.950		
Satd. Flow (prot)	0	1811	1583	0	1773	0	1752	1828	0	1770	1824	0
Flt Permitted		0.594			0.704		0.950			0.950		
Satd. Flow (perm)	0	1106	1583	0	1263	0	1752	1828	0	1770	1824	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			172		6			3			9	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		897			1011			2133			740	
Travel Time (s)		20.4			23.0			32.3			11.2	
Peak Hour Factor	0.93	0.93	0.93	0.84	0.84	0.84	0.90	0.90	0.90	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	3%	3%	3%	2%	2%	2%
Adj. Flow (vph)	131	96	214	54	140	30	168	666	43	23	670	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	227	214	0	224	0	168	709	0	23	780	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	

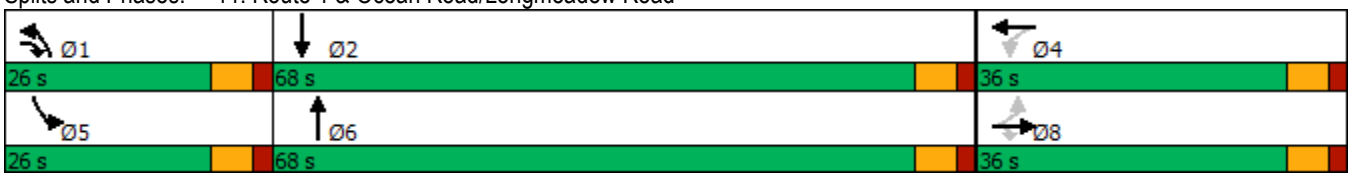
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8		8	4								
Detector Phase	8	8	1	4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0	5.0	8.0	8.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	12.0	11.0	14.0	14.0		11.0	16.0		11.0	32.0	
Total Split (s)	36.0	36.0	26.0	36.0	36.0		26.0	68.0		26.0	68.0	
Total Split (%)	27.7%	27.7%	20.0%	27.7%	27.7%		20.0%	52.3%		20.0%	52.3%	
Maximum Green (s)	30.0	30.0	20.0	30.0	30.0		20.0	62.0		20.0	62.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.0		3.0	4.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)											4.0	
Flash Dont Walk (s)											22.0	
Pedestrian Calls (#/hr)											0	
Act Effct Green (s)		27.9	50.0		27.9		16.0	68.9		7.2	54.4	
Actuated g/C Ratio		0.24	0.43		0.24		0.14	0.59		0.06	0.47	
v/c Ratio		0.86	0.28		0.73		0.70	0.66		0.21	0.91	
Control Delay		74.9	6.7		57.8		66.7	21.2		61.7	45.5	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		74.9	6.7		57.8		66.7	21.2		61.7	45.5	
LOS		E	A		E		E	C		E	D	
Approach Delay		41.8			57.8			29.9			46.0	
Approach LOS		D			E			C			D	
90th %ile Green (s)	30.0	30.0	20.0	30.0	30.0		20.0	72.6		9.4	62.0	
90th %ile Term Code	Max	Max	Max	Max	Max		Max	Hold		Gap	Max	
70th %ile Green (s)	30.0	30.0	20.0	30.0	30.0		20.0	74.0		8.0	62.0	
70th %ile Term Code	Max	Max	Max	Max	Max		Max	Hold		Gap	Max	
50th %ile Green (s)	30.0	30.0	17.4	30.0	30.0		17.4	72.3		7.1	62.0	
50th %ile Term Code	Max	Max	Gap	Hold	Hold		Gap	Hold		Gap	Max	
30th %ile Green (s)	29.1	29.1	14.1	29.1	29.1		14.1	71.8		0.0	51.7	
30th %ile Term Code	Gap	Gap	Gap	Hold	Hold		Gap	Hold		Skip	Gap	
10th %ile Green (s)	20.0	20.0	9.7	20.0	20.0		9.7	51.9		0.0	36.2	
10th %ile Term Code	Gap	Gap	Gap	Hold	Hold		Gap	Hold		Skip	Gap	
Queue Length 50th (ft)		181	20		168		134	393		19	555	
Queue Length 95th (ft)		#339	70		#249		213	559		49	#842	
Internal Link Dist (ft)		817			931			2053			660	
Turn Bay Length (ft)			200				350			225		
Base Capacity (vph)		292	831		338		308	1123		311	999	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.78	0.26		0.66		0.55	0.63		0.07	0.78	

Intersection Summary

Area Type: Other	
Cycle Length: 130	
Actuated Cycle Length: 116.8	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 40.3	Intersection LOS: D
Intersection Capacity Utilization 88.9%	ICU Level of Service E
Analysis Period (min) 15	
90th %ile Actuated Cycle: 130	
70th %ile Actuated Cycle: 130	
50th %ile Actuated Cycle: 127.4	
30th %ile Actuated Cycle: 112.9	
10th %ile Actuated Cycle: 83.9	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 11: Route 1 & Ocean Road/Longmeadow Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	314	0	0	262	0	0
Future Volume (vph)	314	0	0	262	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1845	0	0	1827	1881	0
Flt Permitted						
Satd. Flow (perm)	1845	0	0	1827	1881	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	397			1132	335	
Travel Time (s)	9.0			25.7	9.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	4%	4%	1%	1%
Adj. Flow (vph)	341	0	0	285	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	341	0	0	285	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 19.9%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	199	840	24	109	521
Future Volume (vph)	0	199	840	24	109	521
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.996			
Flt Protected					0.950	
Satd. Flow (prot)	0	1627	1820	0	1671	1759
Flt Permitted					0.950	
Satd. Flow (perm)	0	1627	1820	0	1671	1759
Link Speed (mph)	30		45			45
Link Distance (ft)	1094		740			2085
Travel Time (s)	24.9		11.2			31.6
Peak Hour Factor	0.72	0.72	0.98	0.98	0.88	0.88
Heavy Vehicles (%)	1%	1%	4%	4%	8%	8%
Adj. Flow (vph)	0	276	857	24	124	592
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	276	881	0	124	592
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.7%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	17	92	115	231	109	38
Future Volume (vph)	17	92	115	231	109	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.910		0.965	
Flt Protected		0.992			0.964	
Satd. Flow (prot)	0	1698	1695	0	1637	0
Flt Permitted		0.992			0.964	
Satd. Flow (perm)	0	1698	1695	0	1637	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		631	397		1094	
Travel Time (s)		14.3	9.0		24.9	
Peak Hour Factor	0.83	0.83	0.77	0.77	0.90	0.90
Heavy Vehicles (%)	11%	11%	2%	2%	8%	8%
Adj. Flow (vph)	20	111	149	300	121	42
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	131	449	0	163	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 35.3%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	92	36	67	17	18	135
Future Volume (vph)	92	36	67	17	18	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.973		0.881	
Flt Protected		0.965			0.994	
Satd. Flow (prot)	0	1730	1830	0	1570	0
Flt Permitted		0.965			0.994	
Satd. Flow (perm)	0	1730	1830	0	1570	0
Link Speed (mph)		25	25		30	
Link Distance (ft)		1011	387		631	
Travel Time (s)		27.6	10.6		14.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	6%	1%	1%	6%	6%
Adj. Flow (vph)	100	39	73	18	20	147
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	139	91	0	167	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.7%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	143	193	61	122	15	141	701	71	25	377	107
Future Volume (vph)	147	143	193	61	122	15	141	701	71	25	377	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	0		0	350		0	225		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.976			0.986			0.967	
Flt Protected		0.975			0.987		0.950			0.950		
Satd. Flow (prot)	0	1748	1524	0	1727	0	1736	1801	0	1671	1701	0
Flt Permitted		0.602			0.566		0.950			0.950		
Satd. Flow (perm)	0	1079	1524	0	990	0	1736	1801	0	1671	1701	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			230		9			5			13	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		897			1011			2133			740	
Travel Time (s)		20.4			23.0			32.3			11.2	
Peak Hour Factor	0.84	0.84	0.84	0.67	0.67	0.25	0.89	0.89	0.89	0.88	0.88	0.88
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	4%	4%	4%	8%	8%	8%
Adj. Flow (vph)	175	170	230	91	182	60	158	788	80	28	428	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	345	230	0	333	0	158	868	0	28	550	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8		8	4								
Detector Phase	8	8	1	4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0	5.0	8.0	8.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	12.0	11.0	14.0	14.0		11.0	16.0		11.0	32.0	
Total Split (s)	51.0	51.0	21.0	51.0	51.0		21.0	68.0		11.0	58.0	
Total Split (%)	39.2%	39.2%	16.2%	39.2%	39.2%		16.2%	52.3%		8.5%	44.6%	
Maximum Green (s)	45.0	45.0	15.0	45.0	45.0		15.0	62.0		5.0	52.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.0		3.0	4.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)											4.0	
Flash Dont Walk (s)											22.0	
Pedestrian Calls (#/hr)											0	
Act Effct Green (s)		42.9	62.9		42.9		14.0	62.3		5.0	48.5	
Actuated g/C Ratio		0.35	0.51		0.35		0.11	0.50		0.04	0.39	
v/c Ratio		0.92	0.26		0.95		0.80	0.95		0.41	0.81	
Control Delay		70.6	2.8		77.4		83.1	51.5		79.0	44.4	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		70.6	2.8		77.4		83.1	51.5		79.0	44.4	
LOS		E	A		E		F	D		E	D	
Approach Delay		43.5			77.4			56.4			46.0	
Approach LOS		D			E			E			D	
90th %ile Green (s)	45.0	45.0	15.0	45.0	45.0		15.0	62.0		5.0	52.0	
90th %ile Term Code	Max	Max	Max	Max	Max		Max	Max		Max	Max	
70th %ile Green (s)	45.0	45.0	15.0	45.0	45.0		15.0	62.0		5.0	52.0	
70th %ile Term Code	Max	Max	Max	Max	Max		Max	Max		Max	Max	
50th %ile Green (s)	45.0	45.0	15.0	45.0	45.0		15.0	62.0		5.0	52.0	
50th %ile Term Code	Max	Max	Max	Max	Max		Max	Max		Max	Hold	
30th %ile Green (s)	45.0	45.0	14.5	45.0	45.0		14.5	62.0		0.0	41.5	
30th %ile Term Code	Hold	Hold	Gap	Max	Max		Gap	Max		Skip	Hold	
10th %ile Green (s)	34.7	34.7	10.9	34.7	34.7		10.9	62.0		0.0	45.1	
10th %ile Term Code	Hold	Hold	Gap	Gap	Gap		Gap	Max		Skip	Hold	
Queue Length 50th (ft)		278	0		267		132	~729		24	396	
Queue Length 95th (ft)		#417	31		263		#241	#996		#57	532	
Internal Link Dist (ft)		817			931			2053			660	
Turn Bay Length (ft)			200				350			225		
Base Capacity (vph)		395	900		368		211	910		68	727	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.87	0.26		0.90		0.75	0.95		0.41	0.76	

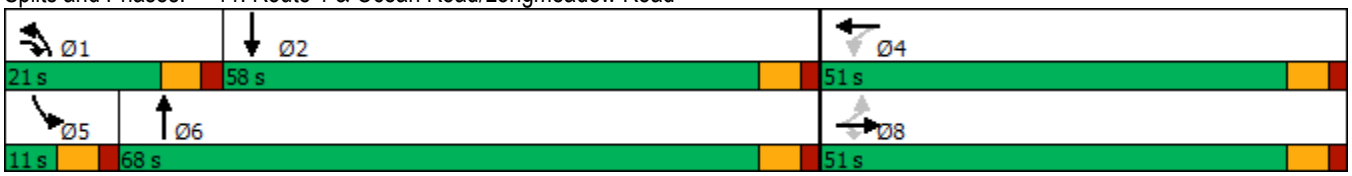
Intersection Summary

Area Type: Other	
Cycle Length: 130	
Actuated Cycle Length: 123.5	
Natural Cycle: 110	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 53.8	Intersection LOS: D
Intersection Capacity Utilization 91.7%	ICU Level of Service F
Analysis Period (min) 15	
90th %ile Actuated Cycle: 130	
70th %ile Actuated Cycle: 130	
50th %ile Actuated Cycle: 130	
30th %ile Actuated Cycle: 119	
10th %ile Actuated Cycle: 108.7	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 11: Route 1 & Ocean Road/Longmeadow Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	192	9	7	320	26	13
Future Volume (vph)	192	9	7	320	26	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.994				0.955	
Flt Protected				0.999	0.968	
Satd. Flow (prot)	1701	0	0	1861	1739	0
Flt Permitted				0.999	0.968	
Satd. Flow (perm)	1701	0	0	1861	1739	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	397			1132	335	
Travel Time (s)	9.0			25.7	9.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	11%	11%	2%	2%	1%	1%
Adj. Flow (vph)	209	10	8	348	28	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	219	0	0	356	42	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.5%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	217	704	25	204	812
Future Volume (vph)	0	217	704	25	204	812
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.995			
Flt Protected					0.950	
Satd. Flow (prot)	0	1565	1818	0	1752	1845
Flt Permitted					0.950	
Satd. Flow (perm)	0	1565	1818	0	1752	1845
Link Speed (mph)	30		45			45
Link Distance (ft)	1094		740			2085
Travel Time (s)	24.9		11.2			31.6
Peak Hour Factor	0.77	0.77	0.90	0.90	0.94	0.94
Heavy Vehicles (%)	5%	5%	4%	4%	3%	3%
Adj. Flow (vph)	0	282	782	28	217	864
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	282	810	0	217	864
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.7%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	19	127	89	186	207	35
Future Volume (vph)	19	127	89	186	207	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.909		0.980	
Flt Protected		0.993			0.959	
Satd. Flow (prot)	0	1850	1661	0	1734	0
Flt Permitted		0.993			0.959	
Satd. Flow (perm)	0	1850	1661	0	1734	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		631	397		1094	
Travel Time (s)		14.3	9.0		24.9	
Peak Hour Factor	0.80	0.80	0.77	0.77	0.88	0.88
Heavy Vehicles (%)	2%	2%	4%	4%	3%	3%
Adj. Flow (vph)	24	159	116	242	235	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	183	358	0	275	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.0%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	52	48	14	21	103
Future Volume (vph)	132	52	48	14	21	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.970		0.888	
Flt Protected		0.965			0.992	
Satd. Flow (prot)	0	1798	1772	0	1609	0
Flt Permitted		0.965			0.992	
Satd. Flow (perm)	0	1798	1772	0	1609	0
Link Speed (mph)		25	25		30	
Link Distance (ft)		1011	387		631	
Travel Time (s)		27.6	10.6		14.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	4%	4%	4%
Adj. Flow (vph)	143	57	52	15	23	112
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	200	67	0	135	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Stop	Stop		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 30.9%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	110	199	68	135	34	151	605	62	31	657	108
Future Volume (vph)	122	110	199	68	135	34	151	605	62	31	657	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	0		100	350		0	225		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.981			0.986			0.979	
Flt Protected		0.974			0.986		0.950			0.950		
Satd. Flow (prot)	0	1814	1583	0	1767	0	1752	1819	0	1770	1824	0
Flt Permitted		0.599			0.625		0.950			0.950		
Satd. Flow (perm)	0	1116	1583	0	1120	0	1752	1819	0	1770	1824	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			178		6			6			9	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		897			1011			2133			740	
Travel Time (s)		20.4			23.0			32.3			11.2	
Peak Hour Factor	0.93	0.93	0.93	0.84	0.84	0.84	0.90	0.90	0.90	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	3%	3%	3%	2%	2%	2%
Adj. Flow (vph)	131	118	214	81	161	40	168	672	69	32	670	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	249	214	0	282	0	168	741	0	32	780	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	

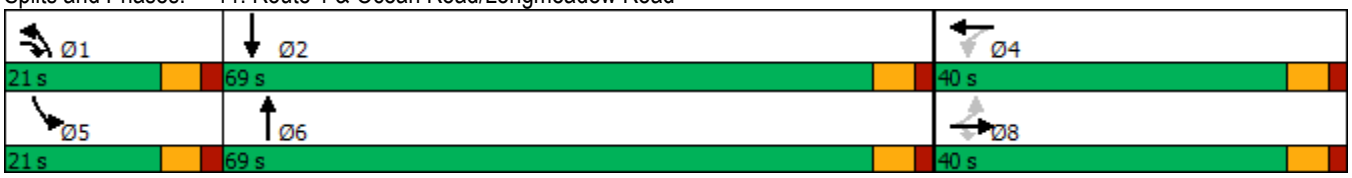
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8		8	4								
Detector Phase	8	8	1	4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0	5.0	8.0	8.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	12.0	11.0	14.0	14.0		11.0	16.0		11.0	32.0	
Total Split (s)	40.0	40.0	21.0	40.0	40.0		21.0	69.0		21.0	69.0	
Total Split (%)	30.8%	30.8%	16.2%	30.8%	30.8%		16.2%	53.1%		16.2%	53.1%	
Maximum Green (s)	34.0	34.0	15.0	34.0	34.0		15.0	63.0		15.0	63.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.0		3.0	4.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)											4.0	
Flash Dont Walk (s)											22.0	
Pedestrian Calls (#/hr)											0	
Act Effct Green (s)		34.2	54.6		34.2		14.3	68.3		7.7	56.5	
Actuated g/C Ratio		0.28	0.44		0.28		0.12	0.55		0.06	0.46	
v/c Ratio		0.80	0.27		0.90		0.83	0.73		0.29	0.93	
Control Delay		63.8	6.3		73.9		85.4	27.1		63.9	49.0	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		63.8	6.3		73.9		85.4	27.1		63.9	49.0	
LOS		E	A		E		F	C		E	D	
Approach Delay		37.2			73.9			37.9			49.6	
Approach LOS		D			E			D			D	
90th %ile Green (s)	34.0	34.0	15.0	34.0	34.0		15.0	67.5		10.5	63.0	
90th %ile Term Code	Max	Max	Max	Max	Max		Max	Hold		Gap	Max	
70th %ile Green (s)	34.0	34.0	15.0	34.0	34.0		15.0	69.1		8.9	63.0	
70th %ile Term Code	Max	Max	Max	Max	Max		Max	Hold		Gap	Max	
50th %ile Green (s)	34.0	34.0	15.0	34.0	34.0		15.0	70.3		7.7	63.0	
50th %ile Term Code	Max	Max	Max	Max	Max		Max	Hold		Gap	Max	
30th %ile Green (s)	34.0	34.0	15.0	34.0	34.0		15.0	74.8		0.0	53.8	
30th %ile Term Code	Hold	Hold	Max	Max	Max		Max	Hold		Skip	Gap	
10th %ile Green (s)	34.0	34.0	11.6	34.0	34.0		11.6	58.9		0.0	41.3	
10th %ile Term Code	Hold	Hold	Gap	Max	Max		Gap	Hold		Skip	Gap	
Queue Length 50th (ft)		200	18		230		141	462		26	570	
Queue Length 95th (ft)		#352	68		#366		#264	662		60	#830	
Internal Link Dist (ft)		817			931			2053			660	
Turn Bay Length (ft)			200				350			225		
Base Capacity (vph)		310	809		315		215	1025		217	944	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.80	0.26		0.90		0.78	0.72		0.15	0.83	

Intersection Summary

Area Type: Other	
Cycle Length: 130	
Actuated Cycle Length: 123.1	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 45.7	Intersection LOS: D
Intersection Capacity Utilization 86.8%	ICU Level of Service E
Analysis Period (min) 15	
90th %ile Actuated Cycle: 130	
70th %ile Actuated Cycle: 130	
50th %ile Actuated Cycle: 130	
30th %ile Actuated Cycle: 120.8	
10th %ile Actuated Cycle: 104.9	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 11: Route 1 & Ocean Road/Longmeadow Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	315	19	11	263	12	9
Future Volume (vph)	315	19	11	263	12	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992				0.941	
Flt Protected				0.998	0.973	
Satd. Flow (prot)	1830	0	0	1823	1722	0
Flt Permitted				0.998	0.973	
Satd. Flow (perm)	1830	0	0	1823	1722	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	397			1132	335	
Travel Time (s)	9.0			25.7	9.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	4%	4%	1%	1%
Adj. Flow (vph)	342	21	12	286	13	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	363	0	0	298	23	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.8%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	199	840	24	109	521
Future Volume (vph)	0	199	840	24	109	521
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt		0.865	0.996			
Flt Protected					0.950	
Satd. Flow (prot)	0	1627	1820	0	1671	3343
Flt Permitted					0.950	
Satd. Flow (perm)	0	1627	1820	0	1671	3343
Link Speed (mph)	30		45			45
Link Distance (ft)	1094		740			2085
Travel Time (s)	24.9		11.2			31.6
Peak Hour Factor	0.72	0.72	0.98	0.98	0.88	0.88
Heavy Vehicles (%)	1%	1%	4%	4%	8%	8%
Adj. Flow (vph)	0	276	857	24	124	592
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	276	881	0	124	592
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.7%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	17	92	115	231	109	38
Future Volume (vph)	17	92	115	231	109	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.910		0.965	
Flt Protected		0.992			0.964	
Satd. Flow (prot)	0	1698	1695	0	1637	0
Flt Permitted		0.992			0.964	
Satd. Flow (perm)	0	1698	1695	0	1637	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		631	397		1094	
Travel Time (s)		14.3	9.0		24.9	
Peak Hour Factor	0.83	0.83	0.77	0.77	0.90	0.90
Heavy Vehicles (%)	11%	11%	2%	2%	8%	8%
Adj. Flow (vph)	20	111	149	300	121	42
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	131	449	0	163	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 35.3%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	92	36	67	17	18	135
Future Volume (vph)	92	36	67	17	18	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.973		0.881	
Flt Protected		0.965			0.994	
Satd. Flow (prot)	0	1730	1830	0	1570	0
Flt Permitted		0.965			0.994	
Satd. Flow (perm)	0	1730	1830	0	1570	0
Link Speed (mph)		25	25		30	
Link Distance (ft)		1011	387		631	
Travel Time (s)		27.6	10.6		14.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	6%	1%	1%	6%	6%
Adj. Flow (vph)	100	39	73	18	20	147
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	139	91	0	167	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Stop	Stop		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 29.7%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	143	193	61	122	15	141	701	71	25	377	107
Future Volume (vph)	147	143	193	61	122	15	141	701	71	25	377	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	0		0	350		0	225		0
Storage Lanes	1		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Frt		0.914			0.976			0.986			0.967	
Flt Protected	0.950				0.987		0.950			0.950		
Satd. Flow (prot)	1703	1638	0	0	1727	0	1736	1801	0	1671	3232	0
Flt Permitted	0.458				0.419		0.950			0.950		
Satd. Flow (perm)	821	1638	0	0	733	0	1736	1801	0	1671	3232	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		69			11			7			40	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		897			1011			2133			740	
Travel Time (s)		20.4			23.0			32.3			11.2	
Peak Hour Factor	0.84	0.84	0.84	0.67	0.67	0.25	0.89	0.89	0.89	0.88	0.88	0.88
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	4%	4%	4%	8%	8%	8%
Adj. Flow (vph)	175	170	230	91	182	60	158	788	80	28	428	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	175	400	0	0	333	0	158	868	0	28	550	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8			4								
Detector Phase	8	8		4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0		8.0	8.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	12.0		14.0	14.0		11.0	16.0		11.0	32.0	
Total Split (s)	35.0	35.0		35.0	35.0		24.0	54.0		11.0	41.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		24.0%	54.0%		11.0%	41.0%	
Maximum Green (s)	29.0	29.0		29.0	29.0		18.0	48.0		5.0	35.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.0	6.0			6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	4.0		3.0	4.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)											4.0	
Flash Dont Walk (s)											22.0	
Pedestrian Calls (#/hr)											0	
Act Effct Green (s)	29.1	29.1			29.1		13.6	48.2		5.0	34.9	
Actuated g/C Ratio	0.30	0.30			0.30		0.14	0.50		0.05	0.37	
v/c Ratio	0.70	0.73			1.45		0.64	0.95		0.32	0.46	
Control Delay	48.0	34.6			251.5		51.2	45.4		55.7	23.2	
Queue Delay	0.0	0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay	48.0	34.6			251.5		51.2	45.4		55.7	23.2	
LOS	D	C			F		D	D		E	C	
Approach Delay		38.7			251.5			46.3			24.8	
Approach LOS		D			F			D			C	
90th %ile Green (s)	29.0	29.0		29.0	29.0		18.0	48.0		5.0	35.0	
90th %ile Term Code	Max	Max		Max	Max		Max	Max		Max	Hold	
70th %ile Green (s)	29.0	29.0		29.0	29.0		16.5	48.0		5.0	36.5	
70th %ile Term Code	Max	Max		Max	Max		Gap	Max		Max	Hold	
50th %ile Green (s)	29.0	29.0		29.0	29.0		14.3	48.0		5.0	38.7	
50th %ile Term Code	Hold	Hold		Max	Max		Gap	Max		Max	Hold	
30th %ile Green (s)	29.0	29.0		29.0	29.0		11.3	48.0		0.0	30.7	
30th %ile Term Code	Hold	Hold		Max	Max		Gap	Max		Skip	Hold	
10th %ile Green (s)	29.0	29.0		29.0	29.0		8.5	48.0		0.0	33.5	
10th %ile Term Code	Hold	Hold		Max	Max		Gap	Max		Skip	Hold	
Queue Length 50th (ft)	100	194			~295		96	531		18	123	
Queue Length 95th (ft)	#184	277			#310		155	#800		45	176	
Internal Link Dist (ft)		817			931			2053			660	
Turn Bay Length (ft)							350			225		
Base Capacity (vph)	250	546			230		328	910		87	1245	
Starvation Cap Reductn	0	0			0		0	0		0	0	
Spillback Cap Reductn	0	0			0		0	0		0	0	
Storage Cap Reductn	0	0			0		0	0		0	0	
Reduced v/c Ratio	0.70	0.73			1.45		0.48	0.95		0.32	0.44	

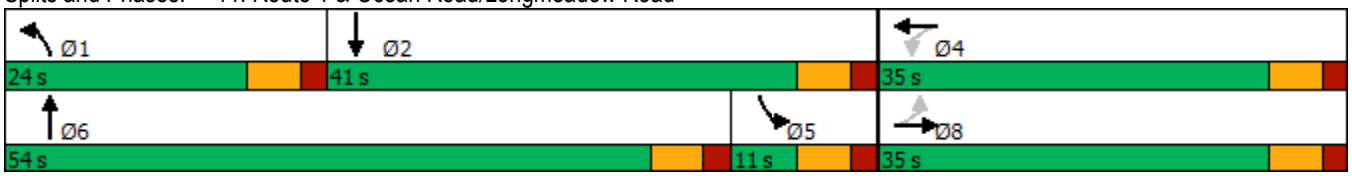
Intersection Summary

Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 95.6	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.45	
Intersection Signal Delay: 66.8	Intersection LOS: E
Intersection Capacity Utilization 95.4%	ICU Level of Service F
Analysis Period (min) 15	
90th %ile Actuated Cycle: 100	
70th %ile Actuated Cycle: 100	
50th %ile Actuated Cycle: 100	
30th %ile Actuated Cycle: 89	
10th %ile Actuated Cycle: 89	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 11: Route 1 & Ocean Road/Longmeadow Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	192	9	7	320	26	13
Future Volume (vph)	192	9	7	320	26	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.994				0.955	
Flt Protected				0.999	0.968	
Satd. Flow (prot)	1701	0	0	1861	1739	0
Flt Permitted				0.999	0.968	
Satd. Flow (perm)	1701	0	0	1861	1739	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	397			1132	335	
Travel Time (s)	9.0			25.7	9.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	11%	11%	2%	2%	1%	1%
Adj. Flow (vph)	209	10	8	348	28	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	219	0	0	356	42	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.5%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	217	704	25	204	812
Future Volume (vph)	0	217	704	25	204	812
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt		0.865	0.995			
Flt Protected					0.950	
Satd. Flow (prot)	0	1565	1818	0	1752	3505
Flt Permitted					0.950	
Satd. Flow (perm)	0	1565	1818	0	1752	3505
Link Speed (mph)	30		45			45
Link Distance (ft)	1094		740			2085
Travel Time (s)	24.9		11.2			31.6
Peak Hour Factor	0.77	0.77	0.90	0.90	0.94	0.94
Heavy Vehicles (%)	5%	5%	4%	4%	3%	3%
Adj. Flow (vph)	0	282	782	28	217	864
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	282	810	0	217	864
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.7%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	19	127	89	186	207	35
Future Volume (vph)	19	127	89	186	207	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.909		0.980	
Flt Protected		0.993			0.959	
Satd. Flow (prot)	0	1850	1661	0	1734	0
Flt Permitted		0.993			0.959	
Satd. Flow (perm)	0	1850	1661	0	1734	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		631	397		1094	
Travel Time (s)		14.3	9.0		24.9	
Peak Hour Factor	0.80	0.80	0.77	0.77	0.88	0.88
Heavy Vehicles (%)	2%	2%	4%	4%	3%	3%
Adj. Flow (vph)	24	159	116	242	235	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	183	358	0	275	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.0%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	132	52	48	14	21	103
Future Volume (vph)	132	52	48	14	21	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.970		0.888	
Flt Protected		0.965			0.992	
Satd. Flow (prot)	0	1798	1772	0	1609	0
Flt Permitted		0.965			0.992	
Satd. Flow (perm)	0	1798	1772	0	1609	0
Link Speed (mph)		25	25		30	
Link Distance (ft)		1011	387		631	
Travel Time (s)		27.6	10.6		14.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	4%	4%	4%
Adj. Flow (vph)	143	57	52	15	23	112
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	200	67	0	135	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Stop	Stop		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 30.9%	ICU Level of Service A
Analysis Period (min) 15	

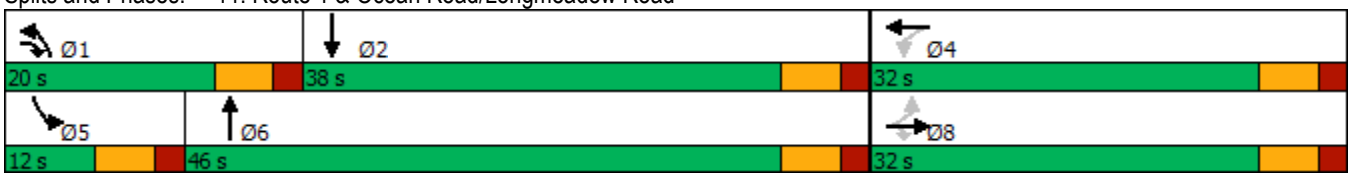
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	122	110	199	68	135	34	151	605	62	31	657	108
Future Volume (vph)	122	110	199	68	135	34	151	605	62	31	657	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	0		100	350		0	225		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Frt			0.850		0.981			0.986			0.979	
Flt Protected		0.974			0.986		0.950			0.950		
Satd. Flow (prot)	0	1814	1583	0	1767	0	1752	1819	0	1770	3465	0
Flt Permitted		0.628			0.681		0.950			0.950		
Satd. Flow (perm)	0	1170	1583	0	1220	0	1752	1819	0	1770	3465	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			89		9			7			23	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		897			1011			2133			740	
Travel Time (s)		20.4			23.0			32.3			11.2	
Peak Hour Factor	0.93	0.93	0.93	0.84	0.84	0.84	0.90	0.90	0.90	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	3%	3%	3%	2%	2%	2%
Adj. Flow (vph)	131	118	214	81	161	40	168	672	69	32	670	110
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	249	214	0	282	0	168	741	0	32	780	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8		8	4								
Detector Phase	8	8	1	4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0	5.0	8.0	8.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	12.0	11.0	14.0	14.0		11.0	16.0		11.0	32.0	
Total Split (s)	32.0	32.0	20.0	32.0	32.0		20.0	46.0		12.0	38.0	
Total Split (%)	35.6%	35.6%	22.2%	35.6%	35.6%		22.2%	51.1%		13.3%	42.2%	
Maximum Green (s)	26.0	26.0	14.0	26.0	26.0		14.0	40.0		6.0	32.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.0		3.0	4.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)											4.0	
Flash Dont Walk (s)											22.0	
Pedestrian Calls (#/hr)											0	
Act Effct Green (s)		20.9	39.1		20.9		11.8	37.9		6.1	26.1	
Actuated g/C Ratio		0.27	0.50		0.27		0.15	0.49		0.08	0.34	
v/c Ratio		0.79	0.25		0.84		0.63	0.83		0.23	0.66	
Control Delay		47.5	7.9		50.9		45.3	30.0		43.5	24.9	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		47.5	7.9		50.9		45.3	30.0		43.5	24.9	
LOS		D	A		D		D	C		D	C	
Approach Delay		29.2			50.9			32.8			25.6	
Approach LOS		C			D			C			C	
90th %ile Green (s)	26.0	26.0	14.0	26.0	26.0		14.0	40.0		6.0	32.0	
90th %ile Term Code	Max	Max	Max	Max	Max		Max	Max		Max	Max	
70th %ile Green (s)	26.0	26.0	14.0	26.0	26.0		14.0	40.0		6.0	32.0	
70th %ile Term Code	Max	Max	Max	Max	Max		Max	Max		Max	Hold	
50th %ile Green (s)	24.6	24.6	13.7	24.6	24.6		13.7	40.0		6.0	32.3	
50th %ile Term Code	Hold	Hold	Gap	Gap	Gap		Gap	Max		Max	Hold	
30th %ile Green (s)	17.7	17.7	10.3	17.7	17.7		10.3	37.2		0.0	20.9	
30th %ile Term Code	Hold	Hold	Gap	Gap	Gap		Gap	Hold		Skip	Gap	
10th %ile Green (s)	12.0	12.0	7.5	12.0	12.0		7.5	28.8		0.0	15.3	
10th %ile Term Code	Hold	Hold	Gap	Gap	Gap		Gap	Hold		Skip	Gap	
Queue Length 50th (ft)		128	36		143		89	366		17	178	
Queue Length 95th (ft)		#243	75		#241		#158	#617		47	247	
Internal Link Dist (ft)		817			931			2053			660	
Turn Bay Length (ft)			200				350			225		
Base Capacity (vph)		410	894		433		330	984		143	1509	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.61	0.24		0.65		0.51	0.75		0.22	0.52	

Intersection Summary

Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 77.7	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 31.8	Intersection LOS: C
Intersection Capacity Utilization 77.1%	ICU Level of Service D
Analysis Period (min) 15	
90th %ile Actuated Cycle: 90	
70th %ile Actuated Cycle: 90	
50th %ile Actuated Cycle: 88.6	
30th %ile Actuated Cycle: 66.9	
10th %ile Actuated Cycle: 52.8	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

Splits and Phases: 11: Route 1 & Ocean Road/Longmeadow Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	315	19	11	263	12	9
Future Volume (vph)	315	19	11	263	12	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992				0.941	
Flt Protected				0.998	0.973	
Satd. Flow (prot)	1830	0	0	1823	1722	0
Flt Permitted				0.998	0.973	
Satd. Flow (perm)	1830	0	0	1823	1722	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	397			1132	335	
Travel Time (s)	9.0			25.7	9.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	4%	4%	1%	1%
Adj. Flow (vph)	342	21	12	286	13	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	363	0	0	298	23	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.8%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	176	913	22	96	567
Future Volume (vph)	0	176	913	22	96	567
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.997			
Flt Protected					0.950	
Satd. Flow (prot)	0	1627	1821	0	1671	1759
Flt Permitted					0.950	
Satd. Flow (perm)	0	1627	1821	0	1671	1759
Link Speed (mph)	30		45			45
Link Distance (ft)	1094		740			2085
Travel Time (s)	24.9		11.2			31.6
Peak Hour Factor	0.72	0.72	0.98	0.98	0.88	0.88
Heavy Vehicles (%)	1%	1%	4%	4%	8%	8%
Adj. Flow (vph)	0	244	932	22	109	644
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	244	954	0	109	644
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.9%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	99	123	228	110	23
Future Volume (vph)	2	99	123	228	110	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.912		0.976	
Flt Protected		0.999			0.960	
Satd. Flow (prot)	0	1710	1699	0	1648	0
Flt Permitted		0.999			0.960	
Satd. Flow (perm)	0	1710	1699	0	1648	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		631	397		1094	
Travel Time (s)		14.3	9.0		24.9	
Peak Hour Factor	0.83	0.83	0.77	0.77	0.90	0.90
Heavy Vehicles (%)	11%	11%	2%	2%	8%	8%
Adj. Flow (vph)	2	119	160	296	122	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	121	456	0	148	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 34.6%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	101	0	0	0	0	146
Future Volume (vph)	101	0	0	0	0	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.950				
Satd. Flow (prot)	0	1703	1881	0	1550	0
Flt Permitted		0.950				
Satd. Flow (perm)	0	1703	1881	0	1550	0
Link Speed (mph)		25	25		30	
Link Distance (ft)		1011	387		631	
Travel Time (s)		27.6	10.6		14.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	6%	1%	1%	6%	6%
Adj. Flow (vph)	110	0	0	0	0	159
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	110	0	0	159	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 21.3%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	142	212	30	107	5	155	767	61	21	415	118
Future Volume (vph)	162	142	212	30	107	5	155	767	61	21	415	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	0		0	350		0	225		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.988			0.989			0.967	
Flt Protected		0.974			0.990		0.950			0.950		
Satd. Flow (prot)	0	1746	1524	0	1753	0	1736	1807	0	1671	1701	0
Flt Permitted		0.641			0.612		0.950			0.950		
Satd. Flow (perm)	0	1149	1524	0	1084	0	1736	1807	0	1671	1701	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			252		4			5			16	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		897			1011			2133			740	
Travel Time (s)		20.4			23.0			32.3			11.2	
Peak Hour Factor	0.84	0.84	0.84	0.67	0.67	0.25	0.89	0.89	0.89	0.88	0.88	0.88
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	4%	4%	4%	8%	8%	8%
Adj. Flow (vph)	193	169	252	45	160	20	174	862	69	24	472	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	362	252	0	225	0	174	931	0	24	606	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8		8	4								
Detector Phase	8	8	1	4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0	5.0	8.0	8.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	12.0	11.0	14.0	14.0		11.0	16.0		11.0	32.0	
Total Split (s)	36.0	36.0	21.0	36.0	36.0		21.0	56.0		21.0	56.0	
Total Split (%)	31.9%	31.9%	18.6%	31.9%	31.9%		18.6%	49.6%		18.6%	49.6%	
Maximum Green (s)	30.0	30.0	15.0	30.0	30.0		15.0	50.0		15.0	50.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.0		3.0	4.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)											4.0	
Flash Dont Walk (s)											22.0	
Pedestrian Calls (#/hr)											0	
Act Effct Green (s)		30.2	49.9		30.2		13.7	56.8		7.1	42.5	
Actuated g/C Ratio		0.29	0.48		0.29		0.13	0.54		0.07	0.41	
v/c Ratio		1.09	0.29		0.71		0.77	0.95		0.21	0.86	
Control Delay		113.8	3.3		49.0		67.7	42.7		53.0	41.5	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		113.8	3.3		49.0		67.7	42.7		53.0	41.5	
LOS		F	A		D		E	D		D	D	
Approach Delay		68.4			49.0			46.6			41.9	
Approach LOS		E			D			D			D	
90th %ile Green (s)	30.0	30.0	15.0	30.0	30.0		15.0	55.7		9.3	50.0	
90th %ile Term Code	Max	Max	Max	Max	Max		Max	Hold		Gap	Max	
70th %ile Green (s)	30.0	30.0	15.0	30.0	30.0		15.0	57.0		8.0	50.0	
70th %ile Term Code	Max	Max	Max	Max	Max		Max	Hold		Gap	Max	
50th %ile Green (s)	30.0	30.0	15.0	30.0	30.0		15.0	64.3		0.0	43.3	
50th %ile Term Code	Max	Max	Max	Max	Max		Max	Hold		Skip	Gap	
30th %ile Green (s)	30.0	30.0	13.5	30.0	30.0		13.5	56.3		0.0	36.8	
30th %ile Term Code	Max	Max	Gap	Hold	Hold		Gap	Hold		Skip	Gap	
10th %ile Green (s)	30.0	30.0	10.1	30.0	30.0		10.1	50.0		0.0	33.9	
10th %ile Term Code	Max	Max	Gap	Hold	Hold		Gap	Max		Skip	Hold	
Queue Length 50th (ft)		~284	0		136		115	477		16	362	
Queue Length 95th (ft)		#455	34		166		#224	#962		43	500	
Internal Link Dist (ft)		817			931			2053			660	
Turn Bay Length (ft)			200				350			225		
Base Capacity (vph)		332	876		315		250	984		241	827	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		1.09	0.29		0.71		0.70	0.95		0.10	0.73	

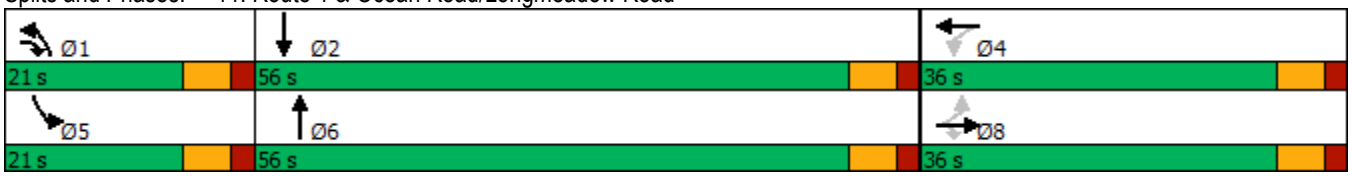
Intersection Summary

Area Type: Other	
Cycle Length: 113	
Actuated Cycle Length: 104.5	
Natural Cycle: 120	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.09	
Intersection Signal Delay: 50.9	Intersection LOS: D
Intersection Capacity Utilization 92.3%	ICU Level of Service F
Analysis Period (min) 15	
90th %ile Actuated Cycle: 113	
70th %ile Actuated Cycle: 113	
50th %ile Actuated Cycle: 106.3	
30th %ile Actuated Cycle: 98.3	
10th %ile Actuated Cycle: 92	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 11: Route 1 & Ocean Road/Longmeadow Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	209	0	0	351	0	0
Future Volume (vph)	209	0	0	351	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1712	0	0	1863	1881	0
Flt Permitted						
Satd. Flow (perm)	1712	0	0	1863	1881	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	397			1132	335	
Travel Time (s)	9.0			25.7	9.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	11%	11%	2%	2%	1%	1%
Adj. Flow (vph)	227	0	0	382	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	227	0	0	382	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.8%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	212	767	21	188	885
Future Volume (vph)	0	212	767	21	188	885
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.996			
Flt Protected					0.950	
Satd. Flow (prot)	0	1565	1820	0	1752	1845
Flt Permitted					0.950	
Satd. Flow (perm)	0	1565	1820	0	1752	1845
Link Speed (mph)	30		45			45
Link Distance (ft)	1094		740			2085
Travel Time (s)	24.9		11.2			31.6
Peak Hour Factor	0.77	0.77	0.90	0.90	0.94	0.94
Heavy Vehicles (%)	5%	5%	4%	4%	3%	3%
Adj. Flow (vph)	0	275	852	23	200	941
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	275	875	0	200	941
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.4%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	7	139	96	193	207	17
Future Volume (vph)	7	139	96	193	207	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.910		0.990	
Flt Protected		0.998			0.956	
Satd. Flow (prot)	0	1859	1662	0	1746	0
Flt Permitted		0.998			0.956	
Satd. Flow (perm)	0	1859	1662	0	1746	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		631	397		1094	
Travel Time (s)		14.3	9.0		24.9	
Peak Hour Factor	0.80	0.80	0.77	0.77	0.88	0.88
Heavy Vehicles (%)	2%	2%	4%	4%	3%	3%
Adj. Flow (vph)	9	174	125	251	235	19
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	183	376	0	254	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 36.1%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	146	0	0	0	0	113
Future Volume (vph)	146	0	0	0	0	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.865	
Flt Protected		0.950				
Satd. Flow (prot)	0	1770	1827	0	1580	0
Flt Permitted		0.950				
Satd. Flow (perm)	0	1770	1827	0	1580	0
Link Speed (mph)		25	25		30	
Link Distance (ft)		1011	387		631	
Travel Time (s)		27.6	10.6		14.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	4%	4%	4%
Adj. Flow (vph)	159	0	0	0	0	123
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	159	0	0	123	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 21.8%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	98	219	50	130	28	166	659	43	25	723	119
Future Volume (vph)	134	98	219	50	130	28	166	659	43	25	723	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	0		100	350		0	225		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.982			0.991			0.979	
Flt Protected		0.972			0.988		0.950			0.950		
Satd. Flow (prot)	0	1811	1583	0	1773	0	1752	1828	0	1770	1824	0
Flt Permitted		0.559			0.611		0.950			0.950		
Satd. Flow (perm)	0	1041	1583	0	1096	0	1752	1828	0	1770	1824	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			142		6			3			9	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		897			1011			2133			740	
Travel Time (s)		20.4			23.0			32.3			11.2	
Peak Hour Factor	0.93	0.93	0.93	0.84	0.84	0.84	0.90	0.90	0.90	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	3%	3%	3%	2%	2%	2%
Adj. Flow (vph)	144	105	235	60	155	33	184	732	48	26	738	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	249	235	0	248	0	184	780	0	26	859	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8		8	4								
Detector Phase	8	8	1	4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0	5.0	8.0	8.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	12.0	11.0	14.0	14.0		11.0	16.0		11.0	32.0	
Total Split (s)	36.0	36.0	26.0	36.0	36.0		26.0	68.0		26.0	68.0	
Total Split (%)	27.7%	27.7%	20.0%	27.7%	27.7%		20.0%	52.3%		20.0%	52.3%	
Maximum Green (s)	30.0	30.0	20.0	30.0	30.0		20.0	62.0		20.0	62.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.0		3.0	4.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)											4.0	
Flash Dont Walk (s)											22.0	
Pedestrian Calls (#/hr)											0	
Act Effct Green (s)		30.0	53.3		30.0		17.2	76.2		7.4	61.4	
Actuated g/C Ratio		0.24	0.42		0.24		0.14	0.60		0.06	0.48	
v/c Ratio		1.01	0.31		0.94		0.77	0.71		0.25	0.97	
Control Delay		108.6	10.6		89.3		74.7	23.5		63.6	55.5	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		108.6	10.6		89.3		74.7	23.5		63.6	55.5	
LOS		F	B		F		E	C		E	E	
Approach Delay		61.0			89.3			33.2			55.7	
Approach LOS		E			F			C			E	
90th %ile Green (s)	30.0	30.0	20.0	30.0	30.0		20.0	72.2		9.8	62.0	
90th %ile Term Code	Max	Max	Max	Max	Max		Max	Hold		Gap	Max	
70th %ile Green (s)	30.0	30.0	20.0	30.0	30.0		20.0	73.7		8.3	62.0	
70th %ile Term Code	Max	Max	Max	Max	Max		Max	Hold		Gap	Max	
50th %ile Green (s)	30.0	30.0	18.8	30.0	30.0		18.8	73.5		7.3	62.0	
50th %ile Term Code	Max	Max	Gap	Max	Max		Gap	Hold		Gap	Max	
30th %ile Green (s)	30.0	30.0	15.9	30.0	30.0		15.9	83.9		0.0	62.0	
30th %ile Term Code	Max	Max	Gap	Max	Max		Gap	Hold		Skip	Max	
10th %ile Green (s)	30.0	30.0	11.8	30.0	30.0		11.8	76.6		0.0	58.8	
10th %ile Term Code	Max	Max	Gap	Hold	Hold		Gap	Hold		Skip	Gap	
Queue Length 50th (ft)		~222	47		201		149	464		21	678	
Queue Length 95th (ft)		#397	105		#338		#233	664		52	#988	
Internal Link Dist (ft)		817			931			2053			660	
Turn Bay Length (ft)			200				350			225		
Base Capacity (vph)		247	779		264		277	1099		279	898	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		1.01	0.30		0.94		0.66	0.71		0.09	0.96	

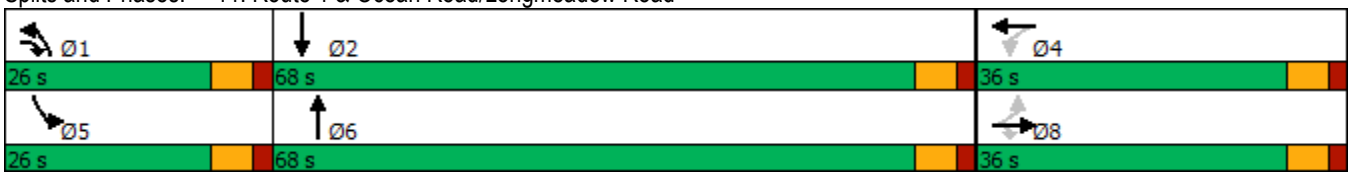
Intersection Summary

Area Type: Other	
Cycle Length: 130	
Actuated Cycle Length: 126.7	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.01	
Intersection Signal Delay: 51.5	Intersection LOS: D
Intersection Capacity Utilization 96.2%	ICU Level of Service F
Analysis Period (min) 15	
90th %ile Actuated Cycle: 130	
70th %ile Actuated Cycle: 130	
50th %ile Actuated Cycle: 128.8	
30th %ile Actuated Cycle: 125.9	
10th %ile Actuated Cycle: 118.6	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 11: Route 1 & Ocean Road/Longmeadow Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	346	0	0	289	0	0
Future Volume (vph)	346	0	0	289	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1845	0	0	1827	1881	0
Flt Permitted						
Satd. Flow (perm)	1845	0	0	1827	1881	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	397			1132	335	
Travel Time (s)	9.0			25.7	9.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	4%	4%	1%	1%
Adj. Flow (vph)	376	0	0	314	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	376	0	0	314	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 21.5%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	215	923	26	118	573
Future Volume (vph)	0	215	923	26	118	573
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.996			
Flt Protected					0.950	
Satd. Flow (prot)	0	1627	1820	0	1671	1759
Flt Permitted					0.950	
Satd. Flow (perm)	0	1627	1820	0	1671	1759
Link Speed (mph)	30		45			45
Link Distance (ft)	1094		740			2085
Travel Time (s)	24.9		11.2			31.6
Peak Hour Factor	0.72	0.72	0.98	0.98	0.88	0.88
Heavy Vehicles (%)	1%	1%	4%	4%	8%	8%
Adj. Flow (vph)	0	299	942	27	134	651
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	299	969	0	134	651
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 70.1%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	17	101	126	252	119	40
Future Volume (vph)	17	101	126	252	119	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.910		0.966	
Flt Protected		0.993			0.964	
Satd. Flow (prot)	0	1700	1695	0	1638	0
Flt Permitted		0.993			0.964	
Satd. Flow (perm)	0	1700	1695	0	1638	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		631	397		1094	
Travel Time (s)		14.3	9.0		24.9	
Peak Hour Factor	0.83	0.83	0.77	0.77	0.90	0.90
Heavy Vehicles (%)	11%	11%	2%	2%	8%	8%
Adj. Flow (vph)	20	122	164	327	132	44
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	142	491	0	176	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 37.8%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	101	36	67	17	18	148
Future Volume (vph)	101	36	67	17	18	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.973		0.880	
Flt Protected		0.964			0.995	
Satd. Flow (prot)	0	1728	1830	0	1569	0
Flt Permitted		0.964			0.995	
Satd. Flow (perm)	0	1728	1830	0	1569	0
Link Speed (mph)		25	25		30	
Link Distance (ft)		1011	387		631	
Travel Time (s)		27.6	10.6		14.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	6%	1%	1%	6%	6%
Adj. Flow (vph)	110	39	73	18	20	161
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	149	91	0	181	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 31.0%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	156	212	64	132	15	155	771	77	27	415	118
Future Volume (vph)	162	156	212	64	132	15	155	771	77	27	415	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	0		0	350		0	225		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.977			0.986			0.967	
Flt Protected		0.975			0.987		0.950			0.950		
Satd. Flow (prot)	0	1748	1524	0	1728	0	1736	1801	0	1671	1701	0
Flt Permitted		0.592			0.516		0.950			0.950		
Satd. Flow (perm)	0	1061	1524	0	904	0	1736	1801	0	1671	1701	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			234		9			5			13	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		897			1011			2133			740	
Travel Time (s)		20.4			23.0			32.3			11.2	
Peak Hour Factor	0.84	0.84	0.84	0.67	0.67	0.25	0.89	0.89	0.89	0.88	0.88	0.88
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	4%	4%	4%	8%	8%	8%
Adj. Flow (vph)	193	186	252	96	197	60	174	866	87	31	472	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	379	252	0	353	0	174	953	0	31	606	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8		8	4								
Detector Phase	8	8	1	4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0	5.0	8.0	8.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	12.0	11.0	14.0	14.0		11.0	16.0		11.0	32.0	
Total Split (s)	51.0	51.0	21.0	51.0	51.0		21.0	68.0		11.0	58.0	
Total Split (%)	39.2%	39.2%	16.2%	39.2%	39.2%		16.2%	52.3%		8.5%	44.6%	
Maximum Green (s)	45.0	45.0	15.0	45.0	45.0		15.0	62.0		5.0	52.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.0		3.0	4.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)											4.0	
Flash Dont Walk (s)											22.0	
Pedestrian Calls (#/hr)											0	
Act Effct Green (s)		45.1	65.6		45.1		14.6	63.2		5.0	49.0	
Actuated g/C Ratio		0.36	0.52		0.36		0.12	0.50		0.04	0.39	
v/c Ratio		1.01	0.28		1.08		0.87	1.06		0.47	0.91	
Control Delay		89.3	3.6		111.8		93.3	78.5		83.8	55.2	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		89.3	3.6		111.8		93.3	78.5		83.8	55.2	
LOS		F	A		F		F	E		F	E	
Approach Delay		55.1			111.8			80.8			56.6	
Approach LOS		E			F			F			E	
90th %ile Green (s)	45.0	45.0	15.0	45.0	45.0		15.0	62.0		5.0	52.0	
90th %ile Term Code	Max	Max	Max	Max	Max		Max	Max		Max	Max	
70th %ile Green (s)	45.0	45.0	15.0	45.0	45.0		15.0	62.0		5.0	52.0	
70th %ile Term Code	Max	Max	Max	Max	Max		Max	Max		Max	Max	
50th %ile Green (s)	45.0	45.0	15.0	45.0	45.0		15.0	62.0		5.0	52.0	
50th %ile Term Code	Max	Max	Max	Max	Max		Max	Max		Max	Max	
30th %ile Green (s)	45.0	45.0	15.0	45.0	45.0		15.0	67.4		0.0	46.4	
30th %ile Term Code	Max	Max	Max	Max	Max		Max	Hold		Skip	Gap	
10th %ile Green (s)	45.0	45.0	12.9	45.0	45.0		12.9	62.0		0.0	43.1	
10th %ile Term Code	Max	Max	Gap	Max	Max		Gap	Max		Skip	Hold	
Queue Length 50th (ft)		~342	7		~335		146	~914		26	460	
Queue Length 95th (ft)		#484	40		#322		#273	#1151		#66	#654	
Internal Link Dist (ft)		817			931			2053			660	
Turn Bay Length (ft)			200				350			225		
Base Capacity (vph)		377	906		327		205	900		66	706	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		1.01	0.28		1.08		0.85	1.06		0.47	0.86	

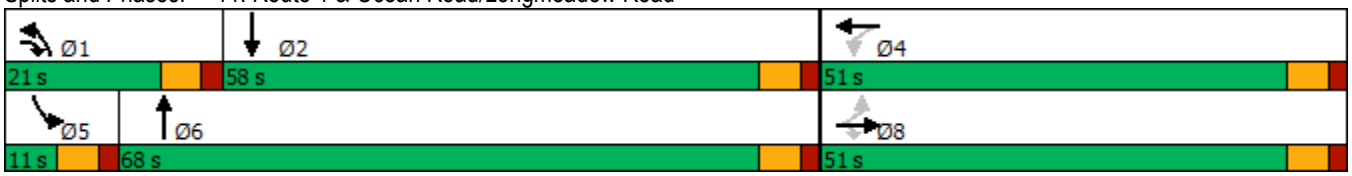
Intersection Summary

Area Type: Other	
Cycle Length: 130	
Actuated Cycle Length: 126.7	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.08	
Intersection Signal Delay: 73.3	Intersection LOS: E
Intersection Capacity Utilization 98.0%	ICU Level of Service F
Analysis Period (min) 15	
90th %ile Actuated Cycle: 130	
70th %ile Actuated Cycle: 130	
50th %ile Actuated Cycle: 130	
30th %ile Actuated Cycle: 124.4	
10th %ile Actuated Cycle: 119	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 11: Route 1 & Ocean Road/Longmeadow Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	211	9	7	352	26	13
Future Volume (vph)	211	9	7	352	26	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.994				0.955	
Flt Protected				0.999	0.968	
Satd. Flow (prot)	1701	0	0	1861	1739	0
Flt Permitted				0.999	0.968	
Satd. Flow (perm)	1701	0	0	1861	1739	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	397			1132	335	
Travel Time (s)	9.0			25.7	9.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	11%	11%	2%	2%	1%	1%
Adj. Flow (vph)	229	10	8	383	28	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	239	0	0	391	42	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.1%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	236	774	27	221	893
Future Volume (vph)	0	236	774	27	221	893
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.865	0.995			
Flt Protected					0.950	
Satd. Flow (prot)	0	1565	1818	0	1752	1845
Flt Permitted					0.950	
Satd. Flow (perm)	0	1565	1818	0	1752	1845
Link Speed (mph)	30		45			45
Link Distance (ft)	1094		740			2085
Travel Time (s)	24.9		11.2			31.6
Peak Hour Factor	0.77	0.77	0.90	0.90	0.94	0.94
Heavy Vehicles (%)	5%	5%	4%	4%	3%	3%
Adj. Flow (vph)	0	306	860	30	235	950
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	306	890	0	235	950
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.7%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	140	98	204	226	37
Future Volume (vph)	20	140	98	204	226	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.909		0.981	
Flt Protected		0.994			0.959	
Satd. Flow (prot)	0	1852	1661	0	1735	0
Flt Permitted		0.994			0.959	
Satd. Flow (perm)	0	1852	1661	0	1735	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		631	397		1094	
Travel Time (s)		14.3	9.0		24.9	
Peak Hour Factor	0.80	0.80	0.77	0.77	0.88	0.88
Heavy Vehicles (%)	2%	2%	4%	4%	3%	3%
Adj. Flow (vph)	25	175	127	265	257	42
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	200	392	0	299	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.7%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	146	52	48	14	21	114
Future Volume (vph)	146	52	48	14	21	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.970		0.886	
Flt Protected		0.965			0.992	
Satd. Flow (prot)	0	1798	1772	0	1606	0
Flt Permitted		0.965			0.992	
Satd. Flow (perm)	0	1798	1772	0	1606	0
Link Speed (mph)		25	25		30	
Link Distance (ft)		1011	387		631	
Travel Time (s)		27.6	10.6		14.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	4%	4%	4%
Adj. Flow (vph)	159	57	52	15	23	124
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	216	67	0	147	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Stop	Stop		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 32.4%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	119	219	73	147	37	166	665	66	33	723	119
Future Volume (vph)	134	119	219	73	147	37	166	665	66	33	723	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	0		100	350		0	225		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.981			0.987			0.979	
Flt Protected		0.974			0.986		0.950			0.950		
Satd. Flow (prot)	0	1814	1583	0	1767	0	1752	1821	0	1770	1824	0
Flt Permitted		0.567			0.539		0.950			0.950		
Satd. Flow (perm)	0	1056	1583	0	966	0	1752	1821	0	1770	1824	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			137		6			6			9	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		897			1011			2133			740	
Travel Time (s)		20.4			23.0			32.3			11.2	
Peak Hour Factor	0.93	0.93	0.93	0.84	0.84	0.84	0.90	0.90	0.90	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	3%	3%	3%	2%	2%	2%
Adj. Flow (vph)	144	128	235	87	175	44	184	739	73	34	738	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	272	235	0	306	0	184	812	0	34	859	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8		8	4								
Detector Phase	8	8	1	4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0	5.0	8.0	8.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	12.0	11.0	14.0	14.0		11.0	16.0		11.0	32.0	
Total Split (s)	40.0	40.0	23.0	40.0	40.0		23.0	72.0		18.0	67.0	
Total Split (%)	30.8%	30.8%	17.7%	30.8%	30.8%		17.7%	55.4%		13.8%	51.5%	
Maximum Green (s)	34.0	34.0	17.0	34.0	34.0		17.0	66.0		12.0	61.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.0		3.0	4.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)											4.0	
Flash Dont Walk (s)											22.0	
Pedestrian Calls (#/hr)											0	
Act Effct Green (s)		34.0	56.2		34.0		16.2	74.1		7.9	61.0	
Actuated g/C Ratio		0.26	0.43		0.26		0.13	0.57		0.06	0.47	
v/c Ratio		0.98	0.31		1.18		0.84	0.78		0.31	0.99	
Control Delay		96.7	10.7		155.9		85.9	29.1		65.2	62.8	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		96.7	10.7		155.9		85.9	29.1		65.2	62.8	
LOS		F	B		F		F	C		E	E	
Approach Delay		56.8			155.9			39.6			62.9	
Approach LOS		E			F			D			E	
90th %ile Green (s)	34.0	34.0	17.0	34.0	34.0		17.0	67.3		10.7	61.0	
90th %ile Term Code	Max	Max	Max	Max	Max		Max	Hold		Gap	Max	
70th %ile Green (s)	34.0	34.0	17.0	34.0	34.0		17.0	69.0		9.0	61.0	
70th %ile Term Code	Max	Max	Max	Max	Max		Max	Hold		Gap	Max	
50th %ile Green (s)	34.0	34.0	17.0	34.0	34.0		17.0	70.1		7.9	61.0	
50th %ile Term Code	Max	Max	Max	Max	Max		Max	Hold		Gap	Max	
30th %ile Green (s)	34.0	34.0	17.0	34.0	34.0		17.0	84.0		0.0	61.0	
30th %ile Term Code	Max	Max	Max	Max	Max		Max	Hold		Skip	Max	
10th %ile Green (s)	34.0	34.0	12.9	34.0	34.0		12.9	79.9		0.0	61.0	
10th %ile Term Code	Max	Max	Gap	Max	Max		Gap	Hold		Skip	Max	
Queue Length 50th (ft)		229	49		~308		153	545		28	702	
Queue Length 95th (ft)		#413	107		#447		#274	#797		62	#1000	
Internal Link Dist (ft)		817			931			2053			660	
Turn Bay Length (ft)			200				350			225		
Base Capacity (vph)		278	775		259		230	1047		164	866	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.98	0.30		1.18		0.80	0.78		0.21	0.99	

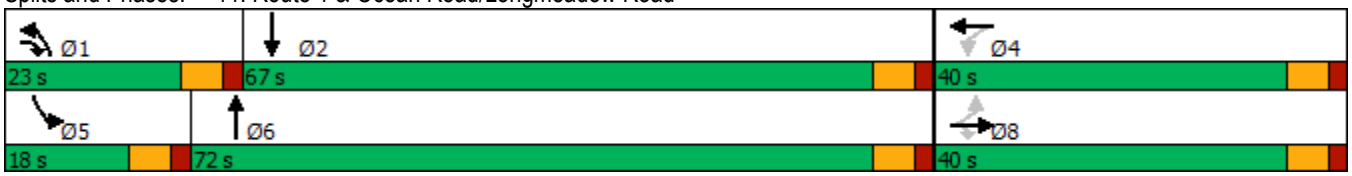
Intersection Summary

Area Type: Other	
Cycle Length: 130	
Actuated Cycle Length: 129.2	
Natural Cycle: 120	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.18	
Intersection Signal Delay: 63.7	Intersection LOS: E
Intersection Capacity Utilization 94.1%	ICU Level of Service F
Analysis Period (min) 15	
90th %ile Actuated Cycle: 130	
70th %ile Actuated Cycle: 130	
50th %ile Actuated Cycle: 130	
30th %ile Actuated Cycle: 130	
10th %ile Actuated Cycle: 125.9	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 11: Route 1 & Ocean Road/Longmeadow Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	347	19	11	290	12	9
Future Volume (vph)	347	19	11	290	12	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.993				0.941	
Flt Protected				0.998	0.973	
Satd. Flow (prot)	1832	0	0	1823	1722	0
Flt Permitted				0.998	0.973	
Satd. Flow (perm)	1832	0	0	1823	1722	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	397			1132	335	
Travel Time (s)	9.0			25.7	9.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	4%	4%	1%	1%
Adj. Flow (vph)	377	21	12	315	13	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	398	0	0	327	23	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.2%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	215	923	26	118	573
Future Volume (vph)	0	215	923	26	118	573
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt		0.865	0.996			
Flt Protected					0.950	
Satd. Flow (prot)	0	1627	1820	0	1671	3343
Flt Permitted					0.950	
Satd. Flow (perm)	0	1627	1820	0	1671	3343
Link Speed (mph)	30		45			45
Link Distance (ft)	1094		740			2085
Travel Time (s)	24.9		11.2			31.6
Peak Hour Factor	0.72	0.72	0.98	0.98	0.88	0.88
Heavy Vehicles (%)	1%	1%	4%	4%	8%	8%
Adj. Flow (vph)	0	299	942	27	134	651
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	299	969	0	134	651
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 70.1%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	17	101	126	252	119	40
Future Volume (vph)	17	101	126	252	119	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.910		0.966	
Flt Protected		0.993			0.964	
Satd. Flow (prot)	0	1700	1695	0	1638	0
Flt Permitted		0.993			0.964	
Satd. Flow (perm)	0	1700	1695	0	1638	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		631	397		1094	
Travel Time (s)		14.3	9.0		24.9	
Peak Hour Factor	0.83	0.83	0.77	0.77	0.90	0.90
Heavy Vehicles (%)	11%	11%	2%	2%	8%	8%
Adj. Flow (vph)	20	122	164	327	132	44
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	142	491	0	176	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 37.8%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	101	36	67	17	18	148
Future Volume (vph)	101	36	67	17	18	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.973		0.880	
Flt Protected		0.964			0.995	
Satd. Flow (prot)	0	1728	1830	0	1569	0
Flt Permitted		0.964			0.995	
Satd. Flow (perm)	0	1728	1830	0	1569	0
Link Speed (mph)		25	25		30	
Link Distance (ft)		1011	387		631	
Travel Time (s)		27.6	10.6		14.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	6%	1%	1%	6%	6%
Adj. Flow (vph)	110	39	73	18	20	161
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	149	91	0	181	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Stop	Stop		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 31.0%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	156	212	64	132	15	155	771	77	27	415	118
Future Volume (vph)	162	156	212	64	132	15	155	771	77	27	415	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	0		0	350		0	225		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Frt			0.850		0.977			0.986			0.967	
Flt Protected		0.975			0.987		0.950			0.950		
Satd. Flow (prot)	0	1748	1524	0	1728	0	1736	1801	0	1671	3232	0
Flt Permitted		0.577			0.447		0.950			0.950		
Satd. Flow (perm)	0	1034	1524	0	783	0	1736	1801	0	1671	3232	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			252		10			7			40	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		897			1011			2133			740	
Travel Time (s)		20.4			23.0			32.3			11.2	
Peak Hour Factor	0.84	0.84	0.84	0.67	0.67	0.25	0.89	0.89	0.89	0.88	0.88	0.88
Heavy Vehicles (%)	6%	6%	6%	6%	6%	6%	4%	4%	4%	8%	8%	8%
Adj. Flow (vph)	193	186	252	96	197	60	174	866	87	31	472	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	379	252	0	353	0	174	953	0	31	606	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8			4		1	6		5	2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8		8	4								
Detector Phase	8	8	8	4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	8.0	8.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	12.0	12.0	14.0	14.0		11.0	16.0		11.0	32.0	
Total Split (s)	35.0	35.0	35.0	35.0	35.0		24.0	54.0		11.0	41.0	
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%		24.0%	54.0%		11.0%	41.0%	
Maximum Green (s)	29.0	29.0	29.0	29.0	29.0		18.0	48.0		5.0	35.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.0		3.0	4.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)											4.0	
Flash Dont Walk (s)											22.0	
Pedestrian Calls (#/hr)											0	
Act Effct Green (s)		29.1	29.1		29.1		14.2	48.2		5.0	34.2	
Actuated g/C Ratio		0.30	0.30		0.30		0.15	0.50		0.05	0.36	
v/c Ratio		1.21	0.39		1.44		0.67	1.05		0.36	0.51	
Control Delay		152.0	5.6		249.0		52.2	68.6		57.3	24.6	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		152.0	5.6		249.0		52.2	68.6		57.3	24.6	
LOS		F	A		F		D	E		E	C	
Approach Delay		93.5			249.0			66.1			26.2	
Approach LOS		F			F			E			C	
90th %ile Green (s)	29.0	29.0	29.0	29.0	29.0		18.0	48.0		5.0	35.0	
90th %ile Term Code	Max	Max	Max	Max	Max		Max	Max		Max	Hold	
70th %ile Green (s)	29.0	29.0	29.0	29.0	29.0		17.5	48.0		5.0	35.5	
70th %ile Term Code	Max	Max	Max	Max	Max		Gap	Max		Max	Hold	
50th %ile Green (s)	29.0	29.0	29.0	29.0	29.0		15.2	48.0		5.0	37.8	
50th %ile Term Code	Max	Max	Max	Max	Max		Gap	Max		Max	Hold	
30th %ile Green (s)	29.0	29.0	29.0	29.0	29.0		12.0	48.0		0.0	30.0	
30th %ile Term Code	Max	Max	Max	Max	Max		Gap	Max		Skip	Hold	
10th %ile Green (s)	29.0	29.0	29.0	29.0	29.0		9.1	48.0		0.0	32.9	
10th %ile Term Code	Max	Max	Max	Max	Max		Gap	Max		Skip	Hold	
Queue Length 50th (ft)		~306	0		~313		106	~692		20	142	
Queue Length 95th (ft)		#440	44		#323		169	#919		49	196	
Internal Link Dist (ft)		817			931			2053			660	
Turn Bay Length (ft)			200				350			225		
Base Capacity (vph)		314	638		245		328	910		87	1233	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		1.21	0.39		1.44		0.53	1.05		0.36	0.49	

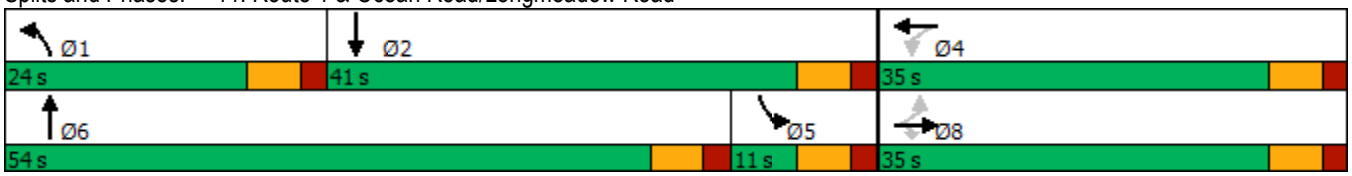
Intersection Summary

Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 95.6	
Natural Cycle: 150	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.44	
Intersection Signal Delay: 86.6	Intersection LOS: F
Intersection Capacity Utilization 98.0%	ICU Level of Service F
Analysis Period (min) 15	
90th %ile Actuated Cycle: 100	
70th %ile Actuated Cycle: 100	
50th %ile Actuated Cycle: 100	
30th %ile Actuated Cycle: 89	
10th %ile Actuated Cycle: 89	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 11: Route 1 & Ocean Road/Longmeadow Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	211	9	7	352	26	13
Future Volume (vph)	211	9	7	352	26	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.994				0.955	
Flt Protected				0.999	0.968	
Satd. Flow (prot)	1701	0	0	1861	1739	0
Flt Permitted				0.999	0.968	
Satd. Flow (perm)	1701	0	0	1861	1739	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	397			1132	335	
Travel Time (s)	9.0			25.7	9.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	11%	11%	2%	2%	1%	1%
Adj. Flow (vph)	229	10	8	383	28	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	239	0	0	391	42	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.1%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	236	774	27	221	893
Future Volume (vph)	0	236	774	27	221	893
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		0	150	
Storage Lanes	0	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.95
Frt		0.865	0.995			
Flt Protected					0.950	
Satd. Flow (prot)	0	1565	1818	0	1752	3505
Flt Permitted					0.950	
Satd. Flow (perm)	0	1565	1818	0	1752	3505
Link Speed (mph)	30		45			45
Link Distance (ft)	1094		740			2085
Travel Time (s)	24.9		11.2			31.6
Peak Hour Factor	0.77	0.77	0.90	0.90	0.94	0.94
Heavy Vehicles (%)	5%	5%	4%	4%	3%	3%
Adj. Flow (vph)	0	306	860	30	235	950
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	306	890	0	235	950
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	0		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.7%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	140	98	204	226	37
Future Volume (vph)	20	140	98	204	226	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.909		0.981	
Flt Protected		0.994			0.959	
Satd. Flow (prot)	0	1852	1661	0	1735	0
Flt Permitted		0.994			0.959	
Satd. Flow (perm)	0	1852	1661	0	1735	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		631	397		1094	
Travel Time (s)		14.3	9.0		24.9	
Peak Hour Factor	0.80	0.80	0.77	0.77	0.88	0.88
Heavy Vehicles (%)	2%	2%	4%	4%	3%	3%
Adj. Flow (vph)	25	175	127	265	257	42
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	200	392	0	299	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.7%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	146	52	48	14	21	114
Future Volume (vph)	146	52	48	14	21	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.970		0.886	
Flt Protected		0.965			0.992	
Satd. Flow (prot)	0	1798	1772	0	1606	0
Flt Permitted		0.965			0.992	
Satd. Flow (perm)	0	1798	1772	0	1606	0
Link Speed (mph)		25	25		30	
Link Distance (ft)		1011	387		631	
Travel Time (s)		27.6	10.6		14.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	4%	4%	4%	4%
Adj. Flow (vph)	159	57	52	15	23	124
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	216	67	0	147	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Stop	Stop		Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 32.4%	ICU Level of Service A
Analysis Period (min) 15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	119	219	73	147	37	166	665	66	33	723	119
Future Volume (vph)	134	119	219	73	147	37	166	665	66	33	723	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		200	0		100	350		0	225		0
Storage Lanes	0		1	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95
Frt			0.850		0.981			0.987			0.979	
Flt Protected		0.974			0.986		0.950			0.950		
Satd. Flow (prot)	0	1814	1583	0	1767	0	1752	1821	0	1770	3465	0
Flt Permitted		0.606			0.640		0.950			0.950		
Satd. Flow (perm)	0	1129	1583	0	1147	0	1752	1821	0	1770	3465	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			68		9			7			23	
Link Speed (mph)		30			30			45			45	
Link Distance (ft)		897			1011			2133			740	
Travel Time (s)		20.4			23.0			32.3			11.2	
Peak Hour Factor	0.93	0.93	0.93	0.84	0.84	0.84	0.90	0.90	0.90	0.98	0.98	0.98
Heavy Vehicles (%)	2%	2%	2%	4%	4%	4%	3%	3%	3%	2%	2%	2%
Adj. Flow (vph)	144	128	235	87	175	44	184	739	73	34	738	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	272	235	0	306	0	184	812	0	34	859	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		8	1		4		1	6		5	2	

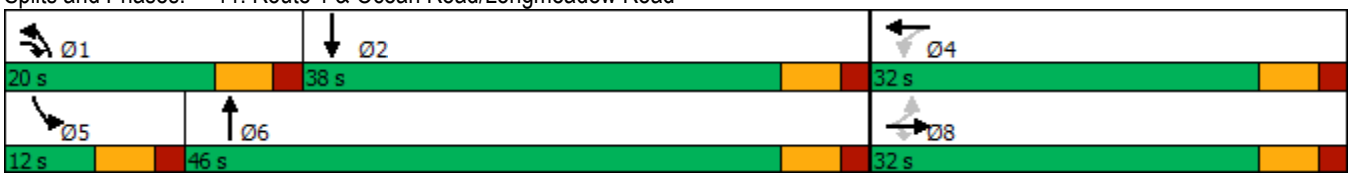
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8		8	4								
Detector Phase	8	8	1	4	4		1	6		5	2	
Switch Phase												
Minimum Initial (s)	6.0	6.0	5.0	8.0	8.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	12.0	12.0	11.0	14.0	14.0		11.0	16.0		11.0	32.0	
Total Split (s)	32.0	32.0	20.0	32.0	32.0		20.0	46.0		12.0	38.0	
Total Split (%)	35.6%	35.6%	22.2%	35.6%	35.6%		22.2%	51.1%		13.3%	42.2%	
Maximum Green (s)	26.0	26.0	14.0	26.0	26.0		14.0	40.0		6.0	32.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	6.0		6.0		6.0	6.0		6.0	6.0	
Lead/Lag			Lead				Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.0		3.0	4.0	
Recall Mode	None	None	None	None	None		None	Min		None	Min	
Walk Time (s)											4.0	
Flash Dont Walk (s)											22.0	
Pedestrian Calls (#/hr)											0	
Act Effct Green (s)		23.9	42.4		23.9		12.4	41.1		5.9	29.3	
Actuated g/C Ratio		0.29	0.51		0.29		0.15	0.49		0.07	0.35	
v/c Ratio		0.85	0.28		0.92		0.71	0.91		0.27	0.70	
Control Delay		54.2	9.5		63.9		51.3	37.9		45.4	27.0	
Queue Delay		0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Delay		54.2	9.5		63.9		51.3	37.9		45.4	27.0	
LOS		D	A		E		D	D		D	C	
Approach Delay		33.5			63.9			40.3			27.7	
Approach LOS		C			E			D			C	
90th %ile Green (s)	26.0	26.0	14.0	26.0	26.0		14.0	40.0		6.0	32.0	
90th %ile Term Code	Max	Max	Max	Max	Max		Max	Max		Max	Max	
70th %ile Green (s)	26.0	26.0	14.0	26.0	26.0		14.0	40.0		6.0	32.0	
70th %ile Term Code	Max	Max	Max	Max	Max		Max	Max		Max	Max	
50th %ile Green (s)	26.0	26.0	14.0	26.0	26.0		14.0	40.0		6.0	32.0	
50th %ile Term Code	Max	Max	Max	Max	Max		Max	Max		Max	Hold	
30th %ile Green (s)	24.5	24.5	12.0	24.5	24.5		12.0	43.6		0.0	25.6	
30th %ile Term Code	Hold	Hold	Gap	Gap	Gap		Gap	Hold		Skip	Gap	
10th %ile Green (s)	17.3	17.3	8.6	17.3	17.3		8.6	39.5		0.0	24.9	
10th %ile Term Code	Hold	Hold	Gap	Gap	Gap		Gap	Gap		Skip	Hold	
Queue Length 50th (ft)		144	49		163		100	444		19	210	
Queue Length 95th (ft)		#283	94		#286		#187	#708		49	278	
Internal Link Dist (ft)		817			931			2053			660	
Turn Bay Length (ft)			200				350			225		
Base Capacity (vph)		354	865		366		296	899		128	1352	
Starvation Cap Reductn		0	0		0		0	0		0	0	
Spillback Cap Reductn		0	0		0		0	0		0	0	
Storage Cap Reductn		0	0		0		0	0		0	0	
Reduced v/c Ratio		0.77	0.27		0.84		0.62	0.90		0.27	0.64	

Intersection Summary

Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 83.8	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 37.5	Intersection LOS: D
Intersection Capacity Utilization 82.8%	ICU Level of Service E
Analysis Period (min) 15	
90th %ile Actuated Cycle: 90	
70th %ile Actuated Cycle: 90	
50th %ile Actuated Cycle: 90	
30th %ile Actuated Cycle: 80.1	
10th %ile Actuated Cycle: 68.8	

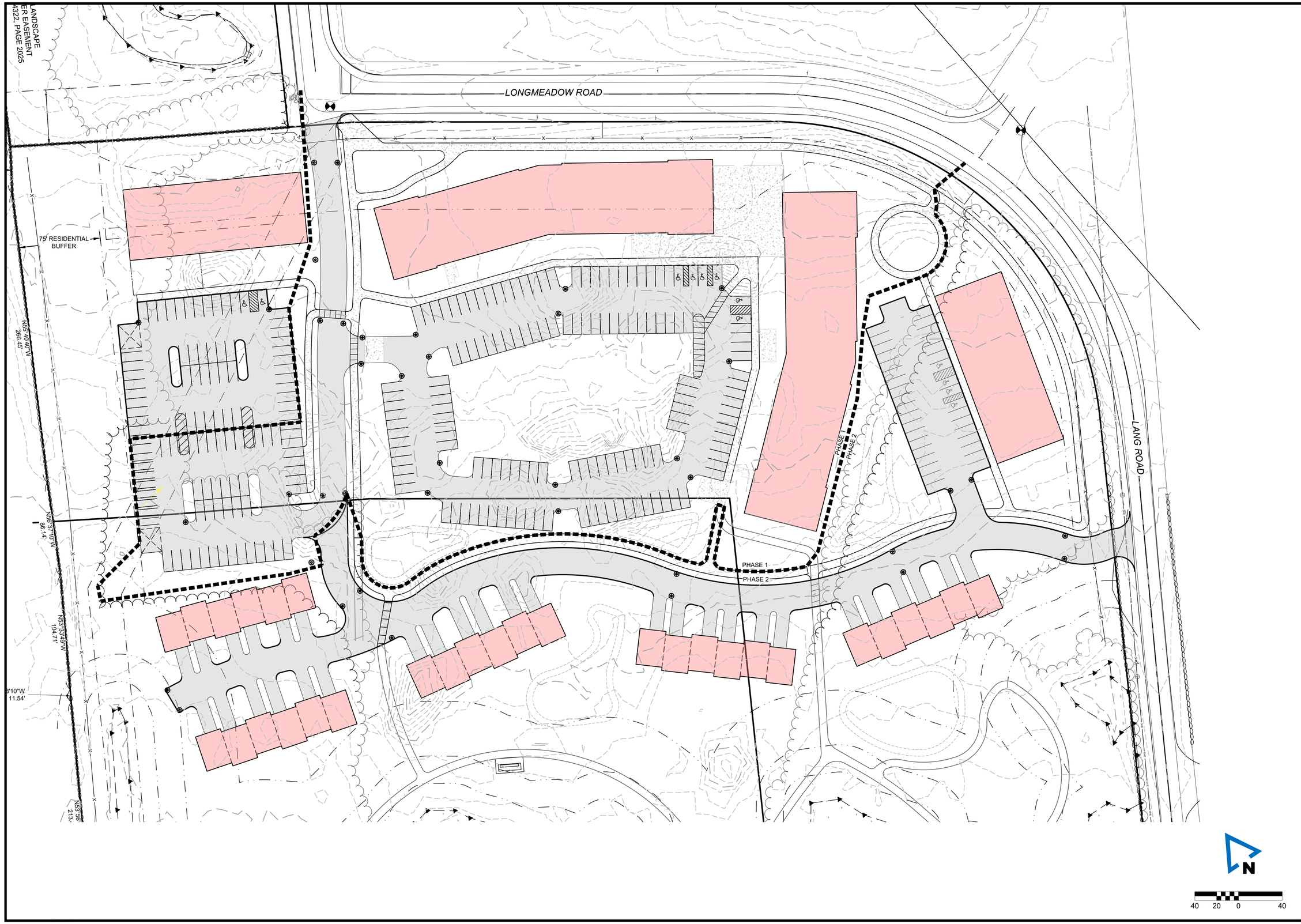
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 11: Route 1 & Ocean Road/Longmeadow Road



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	347	19	11	290	12	9
Future Volume (vph)	347	19	11	290	12	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.993				0.941	
Flt Protected				0.998	0.973	
Satd. Flow (prot)	1832	0	0	1823	1722	0
Flt Permitted				0.998	0.973	
Satd. Flow (perm)	1832	0	0	1823	1722	0
Link Speed (mph)	30			30	25	
Link Distance (ft)	397			1132	335	
Travel Time (s)	9.0			25.7	9.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	4%	4%	1%	1%
Adj. Flow (vph)	377	21	12	315	13	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	398	0	0	327	23	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	12	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.2%		ICU Level of Service A	
Analysis Period (min) 15			



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REVISIONS

PROJECT INFO
2024002213

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SITE PLAN-PH. 2

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DRAWING NO.
C200