PROPOSED RESIDENTIAL DEVELOPMENT
41 SALEM STREET
PORTSMOUTH, NEW HAMPSHIRE
PERMIT PLANS

OWNER:

BONZA BUILDERS, LLC.
79 EXETER ROAD
NORTH HAMPTON, N.H. 03862
TEL. (603) 770-5630

CIVIL ENGINEER & LAND SURVEYOR:

AMBIT ENGINEERING, INC.
200 GRIFFIN ROAD, UNIT 3
PORTSMOUTH, N.H. 03801
TEL. (603) 430-9282
FAX (603) 436-2315

ARCHITECT:

ART FORM ARCHITECTURE
44 LAFAYETTE ROAD
NORTH HAMPTON, N.H. 03862
TEL. (603) 431-9559

PORTSMOUTH ZONING MAP

Residential Districts
- R Rural
- SRA Single Residence A
- SRB Single Residence B
- GRA General Residence A
- GRB General Residence B
- GRC General Residence C
- GA/MH Garden Apartment/Mobile Home Park

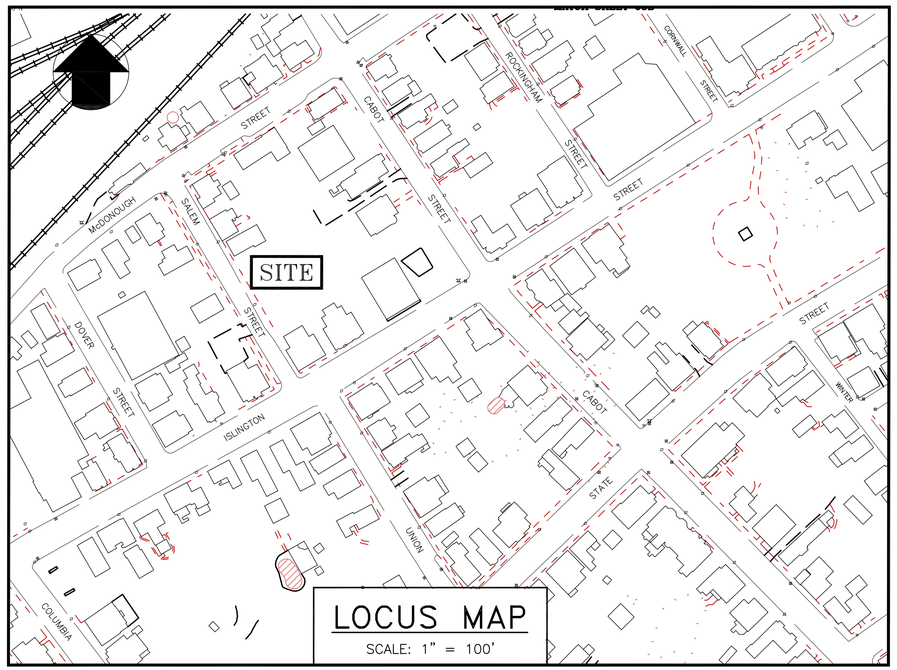
Mixed Residential Districts
- MRO Mixed Residential Office
- MRB Mixed Residential Business
- G1 Gateway Corridor
- G2 Gateway Center

Business Districts
- GB General Business
- B Business
- WB Waterfront Business

Industrial Districts
- OR Office Research
- I Industrial
- WI Waterfront Industrial

Airport Districts
- AIR Airport
- AI Airport Industrial
- PI Pease Industrial
- ABC Airport Business Commercial

Conservation Districts
- M Municipal
- NRP Natural Resource Protection



LOCUS MAP
SCALE: 1" = 100'

INDEX OF SHEETS

UTILITY CONTACTS

ELECTRIC:
EVERSOURCE
1700 LAFAYETTE ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 436-7708, Ext. 555.5678
ATTN: MICHAEL BUSBY, P.E. (MANAGER)

NATURAL GAS:
UNITIL
325 WEST ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 294-5144
ATTN: DAVE BEAULIEU

CABLE:
COMCAST
155 COMMERCE WAY
PORTSMOUTH, N.H. 03801
Tel. (603) 679-5695 (X1037)
ATTN: MIKE COLLINS

SEWER & WATER:
PORTSMOUTH DEPARTMENT OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 427-1530
ATTN: JIM TOW

COMMUNICATIONS:
CONSOLIDATED COMMUNICATIONS
JOE CONSIDINE
1575 GREENLAND ROAD
GREENLAND, N.H. 03840
Tel. (603) 427-5525

PORTSMOUTH APPROVAL CONDITIONS NOTE:
ALL CONDITIONS ON THIS PLAN SET SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE CITY OF PORTSMOUTH SITE PLAN REVIEW REGULATIONS.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____

LEGEND:

EXISTING	PROPOSED	
		PROPERTY LINE
		SETBACK
S	S	SEWER PIPE
SL	SL	SEWER LATERAL
G	G	GAS LINE
D	D	STORM DRAIN
W	W	WATER LINE
WS	WS	WATER SERVICE
UGE	UGE	UNDERGROUND ELECTRIC
OHW	OHW	OVERHEAD ELECTRIC/WIRES
	UD	FOUNDATION DRAIN
		EDGE OF PAVEMENT (EP)
100	100	CONTOUR
97x3	98x0	SPOT ELEVATION
		UTILITY POLE
		WALL MOUNTED EXTERIOR LIGHTS
		TRANSFORMER ON CONCRETE PAD
		ELECTRIC HANDHOLD
WS GS	WS GS	SHUT OFFS (WATER/GAS)
	GV	GATE VALVE
	HYD	HYDRANT
CB	CB	CATCH BASIN
S	SMH	SEWER MANHOLE
D	DMH	DRAIN MANHOLE
T	TMH	TELEPHONE MANHOLE
14	14	PARKING SPACE COUNT
PM		PARKING METER
LSA		LANDSCAPED AREA
TBD	TBD	TO BE DETERMINED
CI	CI	CAST IRON PIPE
COP	COP	COPPER PIPE
DI	DI	DUCTILE IRON PIPE
PVC	PVC	POLYVINYL CHLORIDE PIPE
RCP	RCP	REINFORCED CONCRETE PIPE
AC	–	ASBESTOS CEMENT PIPE
VC	VC	VITRIFIED CLAY PIPE
EP	EP	EDGE OF PAVEMENT
EL.	EL.	ELEVATION
FF	FF	FINISHED FLOOR
INV	INV	INVERT
S =	S =	SLOPE FT/FT
TBM	TBM	TEMPORARY BENCH MARK
TYP	TYP	TYPICAL
W.W.	W.W	WINDOW WELL

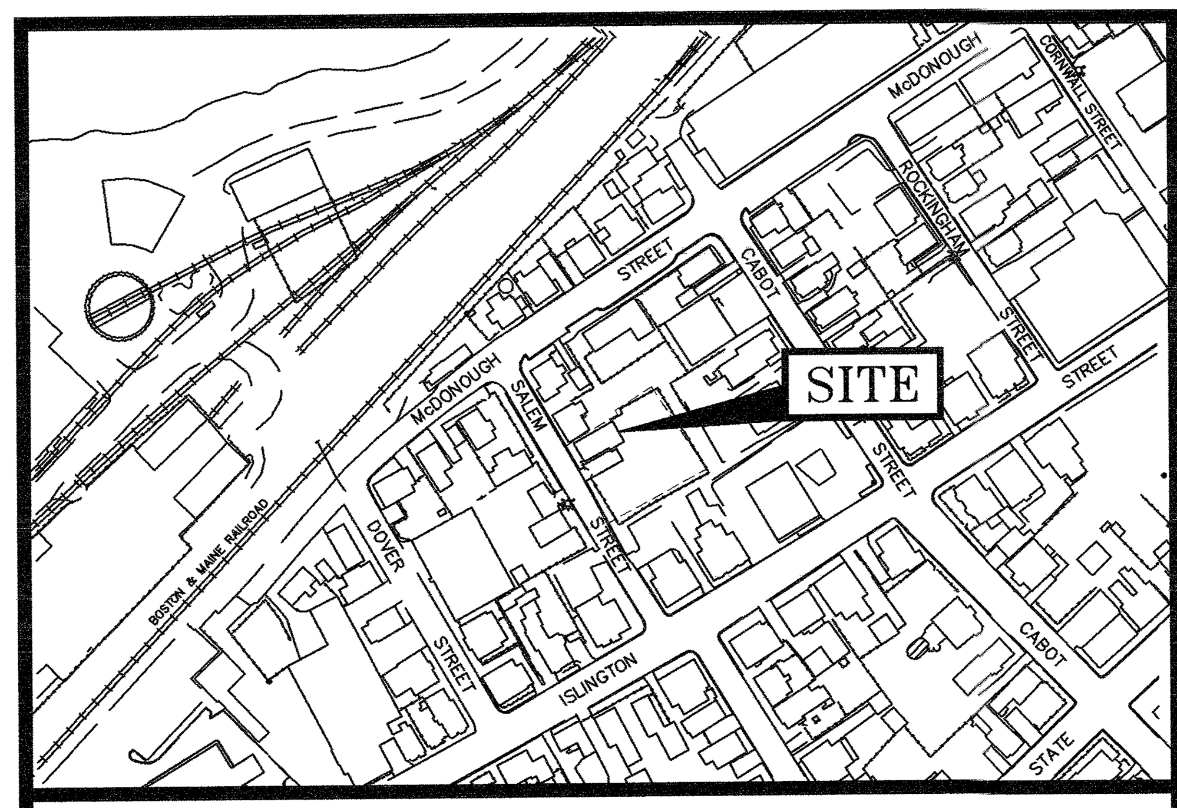
DIG SAFE
MA – ME – NH – RI – VT
1-888-344-7233
CALL TOLL FREE

PROPOSED RESIDENTIAL DEVELOPMENT
41 SALEM STREET
PORTSMOUTH, N.H.

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

PLAN SET SUBMITTAL DATE: 18 MARCH 2020

J:\JOBS3\JN 3000's\JN 3080's\JN 3082\2019 Site Development\Plans & Specs\Site\3082 COVER 2020.dwg, COVER SHEET - PERMIT



LOCATION MAP SCALE 1"=200'

LEGEND:

N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
RR SPK	RAILROAD SPIKE
(11/21)	MAP 11/LOT 21
IR FND	IRON ROD FOUND
IP FND	IRON PIPE FOUND
IR SET	IRON ROD SET
DH FND	DRILL HOLE FOUND
DH SET	DRILL HOLE SET
NHHB	NHDOT BOUND FOUND
TB	TOWN BOUND
BND w/DH	BOUND WITH DRILL HOLE
ST BND w/DH	STONE BOUND WITH DRILL HOLE
LSA	LANDSCAPED AREA

PLAN REFERENCES:

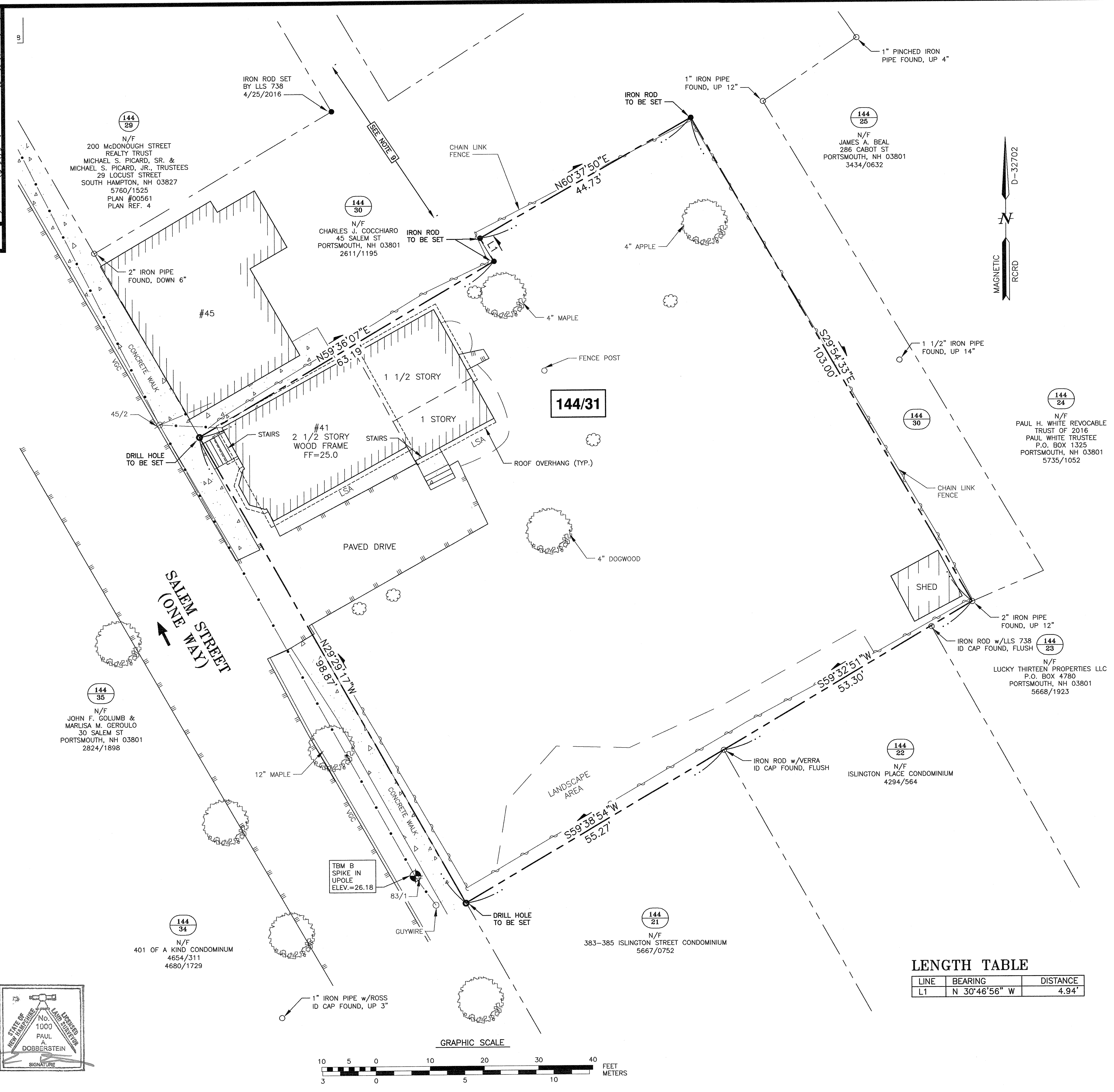
1) PLAN OF TRACT OF LAND IN THE TOWN OF PORTSMOUTH; BELONGING TO A.W. HAVEN G.W. HAVEN & BENJ. CHEEVER ESQ.S AS LAID OUT INTO HOUSE LOTS. PREPARED BY BENJAMIN AKERMAN. DATED JULY 1846. R.C.R.D. PLAN #00561.

2) PLAN OF LAND CONVEYED TO ALFRED W. HAVEN AND GEORGE W. HAVEN BY SAMUEL HALE JUNE 1, 1846. R.C.R.D. 323/81.

3) AMENDED CONDOMINIUM SITE PLAN 383-385 ISLINGTON STREET CONDOMINIUM TAX SHEET & LOT 141-021-000 PORTSMOUTH, NH OWNER: GREENWAY MANAGEMENT NORTH, LLC. PREPARED BY JAMES VERRA AND ASSOCIATES, INC. DATED NOVEMBER 30, 2005. R.C.R.D. PLAN D-33370.

4) VARIANCE APPLICATION PLAN 200 MCDONOUGH STREET PORTSMOUTH, N.H. PREPARED BY AMBIT ENGINEERING, INC. DATED APRIL 2016, FINAL REVISION DATE JUNE 1, 2016. NOT RECORDED.

5) LOT 45 SALEM ST. PORTSMOUTH, N.H. PREPARED BY JOHN W. DURGIN. DATED DECEMBER 1938. R.C.R.D. PLAN #0889.



LENGTH TABLE

LINE	BEARING	DISTANCE
L1	N 30°46'56" W	4.94'

I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000.

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.

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 1000 PAUL A. DOBBERSTEIN SIGNATURE

PAUL A. DOBBERSTEIN, LLS #1000

3/18/2020 DATE

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 144 AS LOT 31.

2) OWNER OF RECORD:
BONZA BUILDERS, LLC
79 EXETER ROAD
NORTH HAMPTON, NH 03862
6056/205
R.C.R.D. PLAN #0889

3) PARCEL IS NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE DATE MAY 17, 2005.

4) EXISTING LOT AREA:
10,903 S.F.
0.2503 ACRES

5) PARCEL IS LOCATED IN THE GENERAL RESIDENCE C (GRC) ZONING DISTRICT.

6) DIMENSIONAL REQUIREMENTS:

MIN. LOT AREA:		3,500 S.F.
FRONTAGE:		70 FEET
DEPTH:	50 FEET	
SETBACKS:	FRONT	5 FEET
	SIDE	10 FEET
	REAR	20 FEET
MAXIMUM STRUCTURE HEIGHT:		35 FEET
MAXIMUM BUILDING COVERAGE:		35%
MINIMUM OPEN SPACE:		20%

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE RESULT OF A STANDARD BOUNDARY SURVEY OF TAX MAP 144 LOT 31 IN THE CITY OF PORTSMOUTH.

8) VERTICAL DATUM IS MEAN SEA LEVEL NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS.

9) PARCEL BENEFITS FROM A RIGHT-OF-WAY OVER ASSESSOR'S MAP 144 LOT 30 FROM McDONOUGH STREET TO "THE GARAGES ON THE PREMISES HEREIN CONVEYED". SAID GARAGES ARE NO LONGER PRESENT ON THE SUBJECT PARCEL.

NO.	DESCRIPTION	DATE
1	ISSUED FOR TAC SUBMISSION	3/18/20
0	ISSUED FOR COMMENT	12/2/19

REVISIONS

STANDARD BOUNDARY SURVEY
TAX MAP 144 - LOT 31

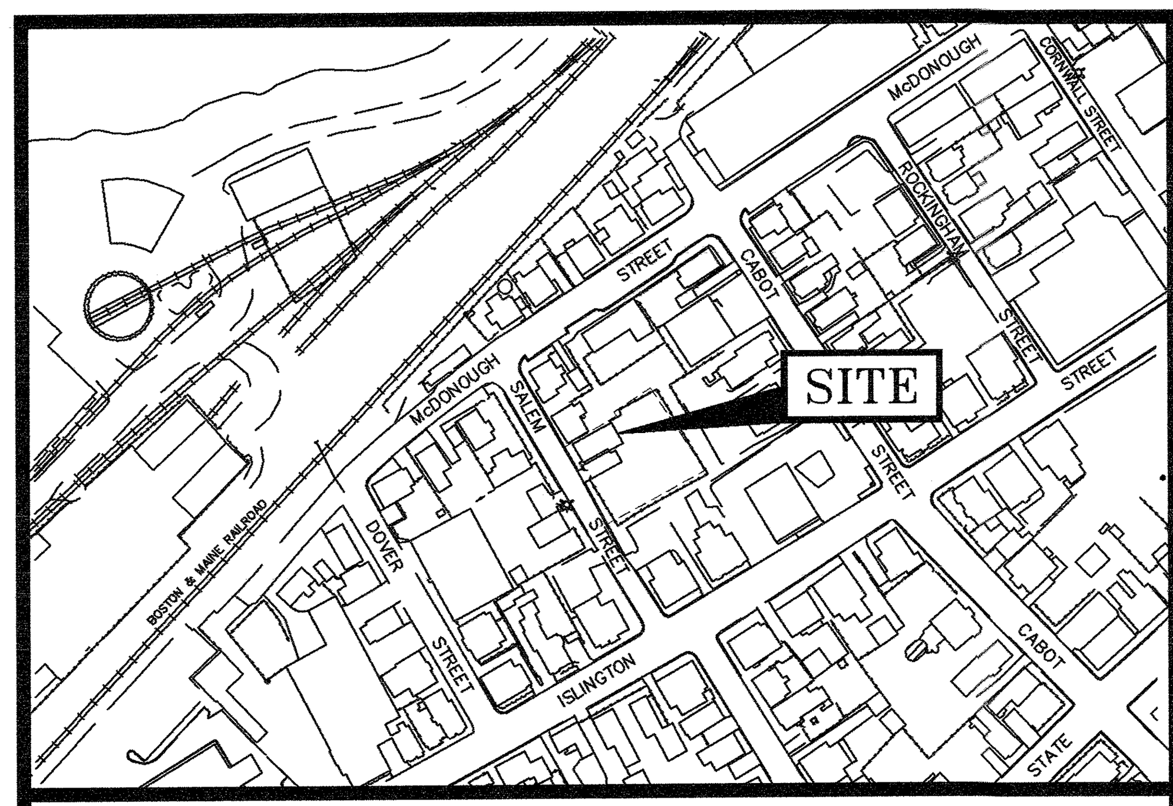
OWNER

BONZA BUILDERS, LLC

41 SALEM STREET
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE 1"=10' DECEMBER 2019

FB 330 PG 41 3082.01



LOCATION MAP SCALE 1"=200'

LEGEND:

N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
RR SPK	RAILROAD SPIKE
11/21	MAP 11/LOT 21
IR FND	IRON ROD FOUND
IP FND	IRON PIPE FOUND
IR SET	IRON ROD SET
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LSA	LANDSCAPED AREA

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2) PLAN OF LAND CONVEYED TO ALFRED W. HAVEN AND GEORGE W. HAVEN BY SAMUEL HALE JUNE 1, 1846. R.C.R.D. 323/81.

3) STATION MAP-LANDS BOSTON AND MAINE R.R. OPERATED BY THE BOSTON AND MAINE R.R. STATION 2966+20 TO STATION 3019+0. PREPARED BY OFFICE OF THE VALUATION ENGINEER BOSTON, MASS. DATED JUNE 30, 1914, REVISED THROUGH AUGUST 2004. NOT RECORDED.

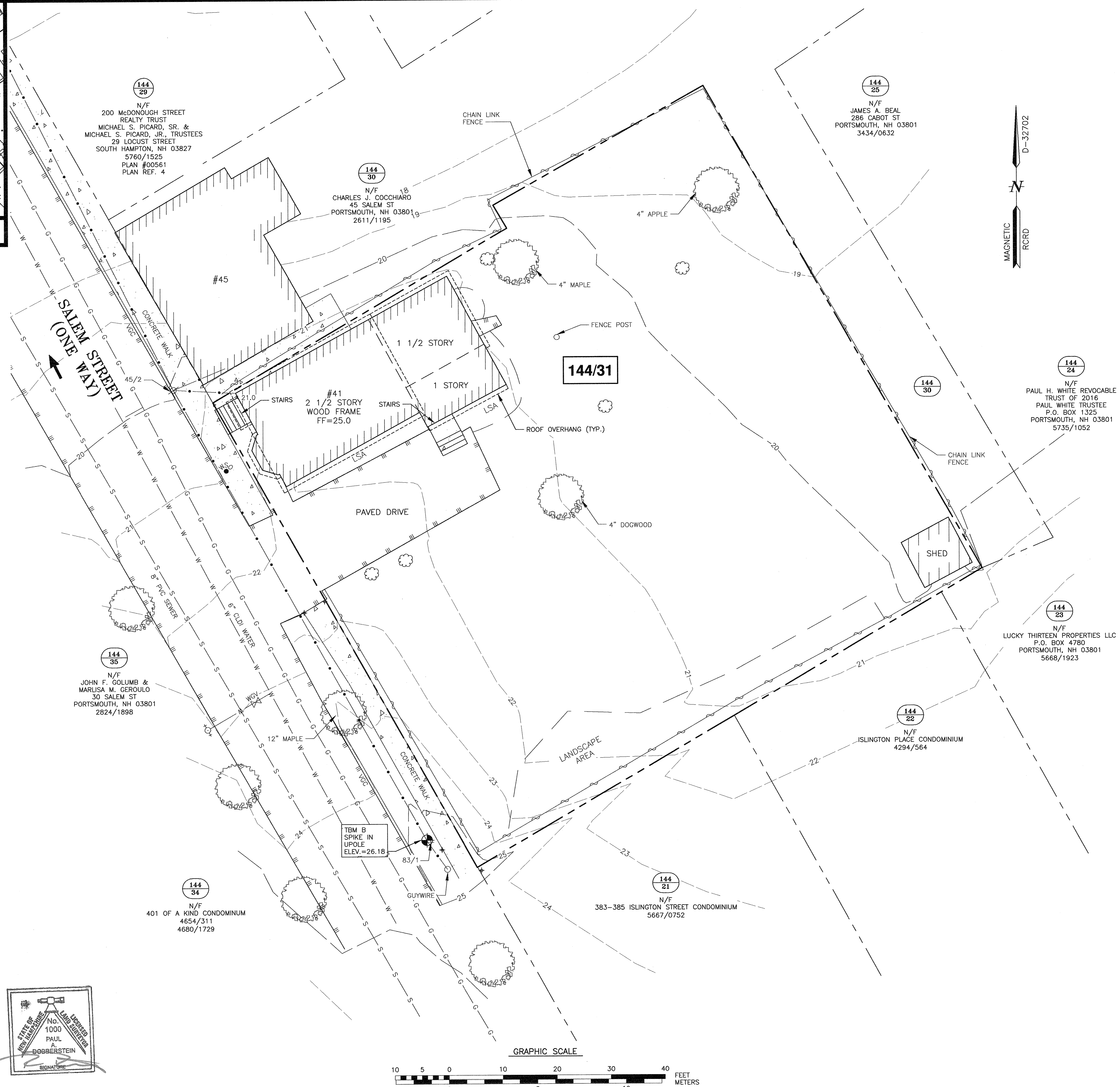
4) VARIANCE APPLICATION PLAN 200 MCDONOUGH STREET PORTSMOUTH, N.H. PREPARED BY AMBIT ENGINEERING, INC. DATED APRIL 2016, FINAL REVISION DATE JUNE 1, 2016. NOT RECORDED.

I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000.

PAUL A. DOBBERSTEIN, LLS #1000

3/18/2020
DATE

STATE OF NEW HAMPSHIRE PAUL A. DOBBERSTEIN No. 1000 LICENSED LAND SURVEYOR



AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 144 AS LOT 31.

2) OWNER OF RECORD:
BONZA BUILDERS, LLC
79 EXETER ROAD
NORTH HAMPTON, NH 03862
6056/205

3) PARCEL IS NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE DATE MAY 17, 2005.

4) EXISTING LOT AREA:
10,903 S.F.
0.2503 ACRES

5) PARCEL IS LOCATED IN THE GENERAL RESIDENCE C (GRC) ZONING DISTRICT.

6) DIMENSIONAL REQUIREMENTS:

MIN. LOT AREA:		3,500 S.F.
FRONTAGE:		70 FEET
DEPTH:		50 FEET
SETBACKS:	FRONT	5 FEET
	SIDE	10 FEET
	REAR	20 FEET
MAXIMUM STRUCTURE HEIGHT:		35 FEET
MAXIMUM BUILDING COVERAGE:		35%
MINIMUM OPEN SPACE:		20%

7) THE PURPOSE OF THIS PLAN IS TO SHOW EXISTING CONDITIONS ON TAX MAP 144 LOT 31 IN THE CITY OF PORTSMOUTH.

8) THERE ARE NO WETLANDS ON THE SUBJECT PROPERTY.

SITE DEVELOPMENT 41 SALEM STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	ISSUED FOR TAC	3/18/20
0	ISSUED FOR COMMENT	11/18/19

REVISIONS

SCALE: 1"=10' NOVEMBER 2019

EXISTING CONDITIONS PLAN

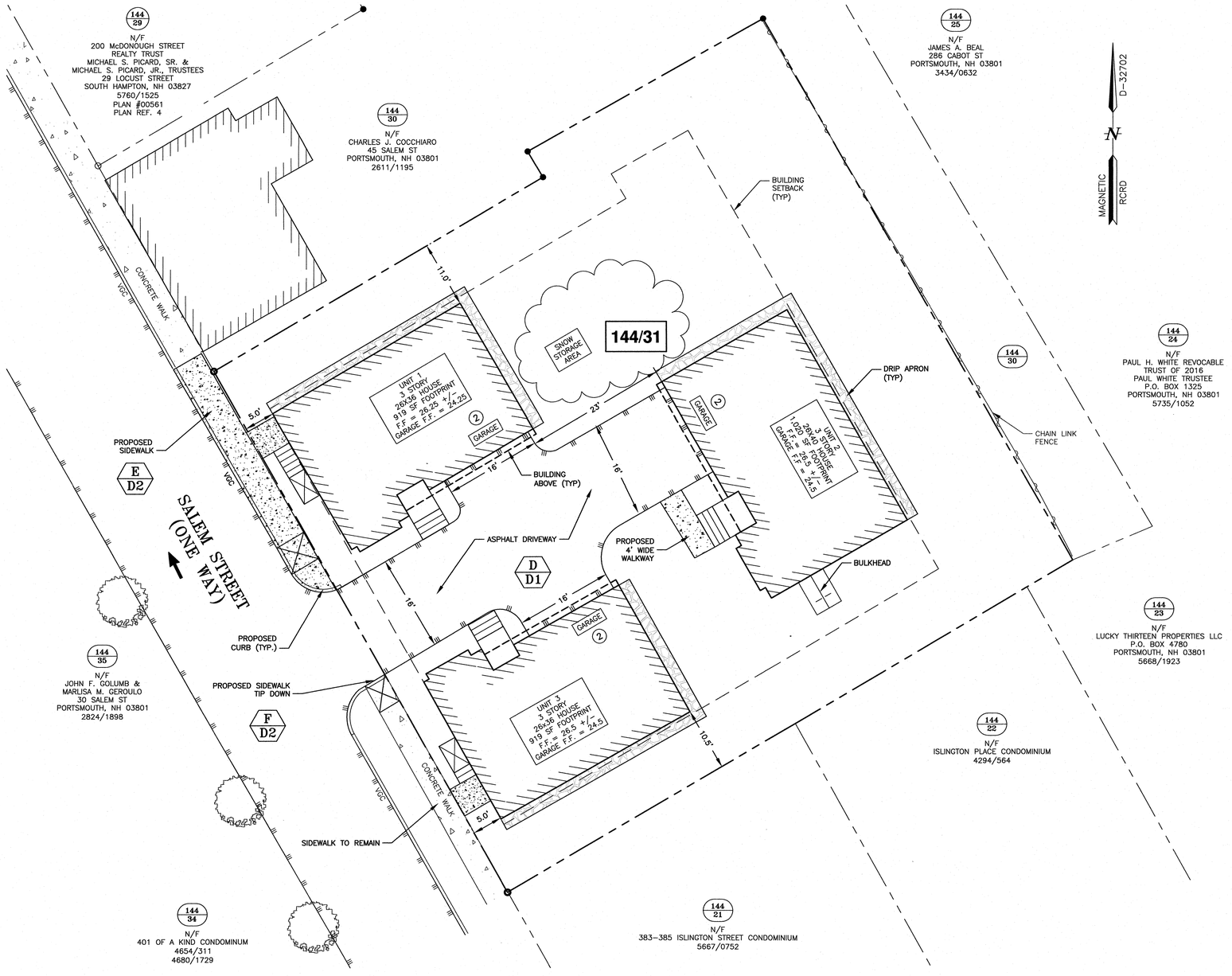
C1

FB 330 PG 41

3082.01

IMPERVIOUS SURFACE AREAS
(TO PROPERTY LINE)

STRUCTURE	PRE-CONSTRUCTION IMPERVIOUS (S.F.)	POST-CONSTRUCTION IMPERVIOUS (S.F.)
MAIN STRUCTURE	1,134	2,858
BULKHEAD	0	28
CONCRETE	14	68
STAIRS/PORCH	47	146
PAVEMENT	650	1,207
TOTAL	1,845	4,307
LOT SIZE	10,903	10,903
% LOT COVERAGE	16.9%	39.5%



GRAPHIC SCALE

10 5 0 10 20 30 40 FEET
3 0 5 10 METERS

PORTSMOUTH APPROVAL CONDITIONS NOTE:
ALL CONDITIONS ON THIS PLAN SET SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE CITY OF PORTSMOUTH SITE PLAN REVIEW REGULATIONS.

A. THIS SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.

B. 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.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:
1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 144 AS LOT 31.

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BONZA BUILDERS, LLC
79 EXETER ROAD
NORTH HAMPTON, NH 03862
6056/205

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MAXIMUM STRUCTURE HEIGHT:		35 FEET
MAXIMUM BUILDING COVERAGE:		35%
MINIMUM OPEN SPACE:		20%

7) THE PURPOSE OF THIS PLAN IS TO SHOW PROPOSED DEVELOPMENT ON TAX MAP 144 LOT 31 IN THE CITY OF PORTSMOUTH.

8) PROPOSED BUILDING COVERAGE:
STRUCTURES: 2,858 SF
STAIRS/STOOP: 117 SF
TOTAL: 2,975 SF

2,975 SF / 10,903 SF = 27%

9) REQUIRED PARKING:
3 UNITS x 1.3 SPACES PER UNIT = 4 SPACES
PROVIDED PARKING: 6 SPACES (ALL IN GARAGES)

10) ARCHITECTURAL PLANS BY ART FORM ARCHITECTURE "CLARA"

SITE DEVELOPMENT
41 SALEM STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	ISSUED TO TAC	3/18/20
0	ISSUED FOR COMMENT	12/30/19

REVISIONS

STATE OF NEW HAMPSHIRE — No. 738 JOHN R. CHAGNON — APPROVED LAND SURVEYOR

SCALE: 1" = 10' DECEMBER 2019

SITE LAYOUT PLAN

C2

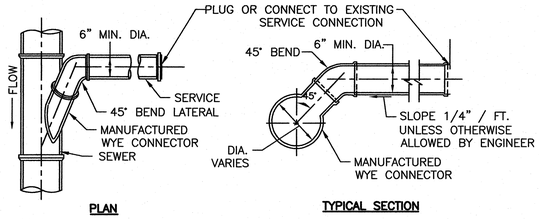
FB. 330, PG 41

3082.01

J:\JOBS3\JN 3000's\JN 3080's\JN 3082\2019 Site Development\Plans & Specs\Site\3082 SITE 2019.dwg, C2 (SITE LAYOUT)

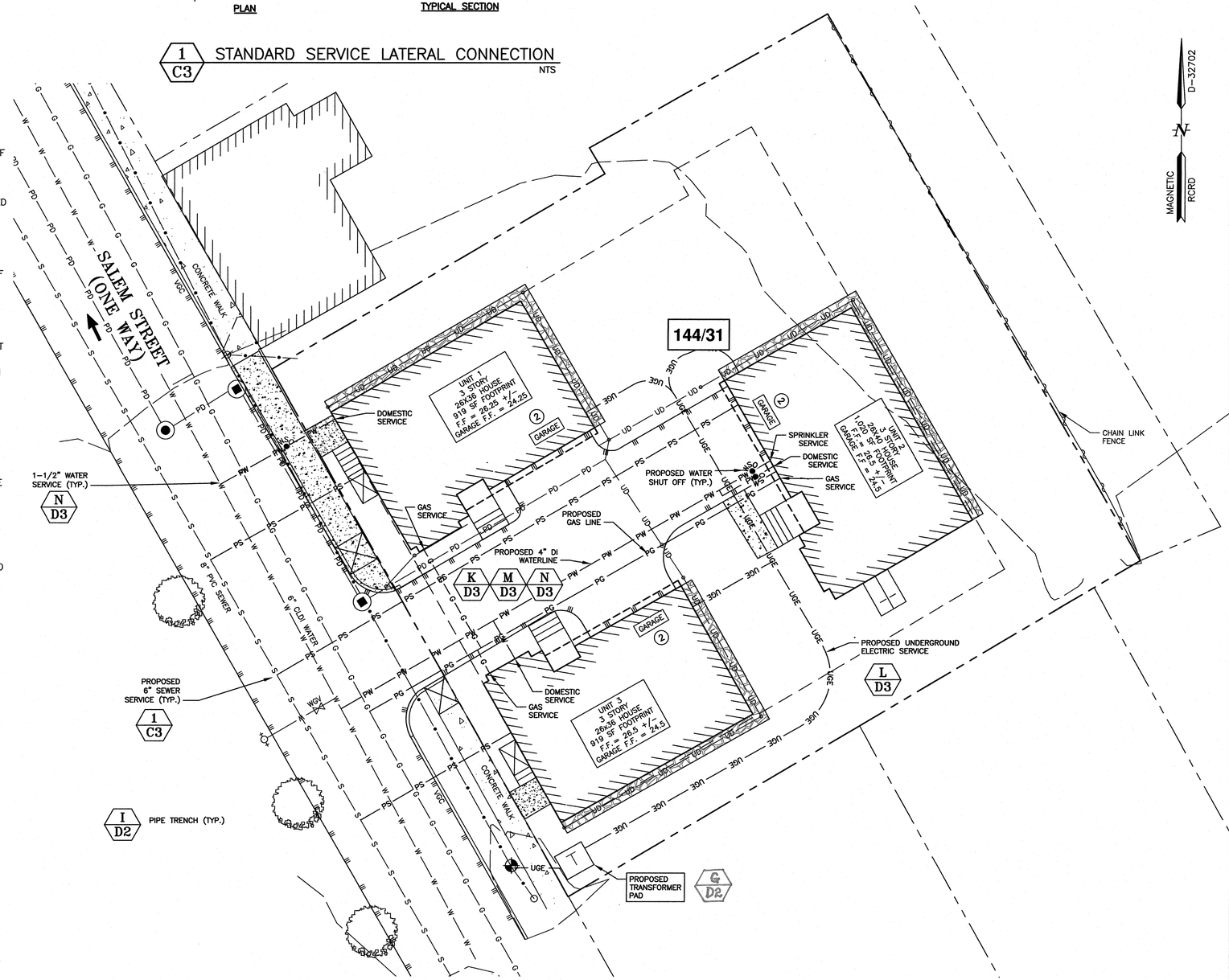
UTILITY NOTES:

1) SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.
2) COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY.
3) SEE GRADING AND DRAINAGE PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.
4) ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, POLYWRAPPED, CEMENT LINED DUCTILE IRON PIPE.
5) ALL WATERMAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION AND BEFORE ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE WITH THE CITY OF PORTSMOUTH.
6) ALL SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE STATED.
7) ALL WORK WITHIN CITY R.O.W. SHALL BE COORDINATED WITH CITY OF PORTSMOUTH
8) CONTRACTOR SHALL MAINTAIN UTILITY SERVICES TO ABUTTING PROPERTIES THROUGHOUT CONSTRUCTION.
9) ANY CONNECTION TO EXISTING WATERMAIN SHALL BE CONSTRUCTED BY THE CITY OF PORTSMOUTH.
10) 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.
11) ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.
12) THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH BUILDING DRAWINGS AND UTILITY COMPANIES.
13) ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
14) ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
15) THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATED TO THE OWNER PRIOR TO THE COMPLETION OF PROJECT.
16) THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED IN THESE DRAWING TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.
17) CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES.
18) 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 WATER ABOVE SEWER.
19) SAWCUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.
20) GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF PORTSMOUTH.
21) COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF PORTSMOUTH.
22) ALL SEWER PIPES WITH LESS THAN 6' COVER SHALL BE INSULATED.
23) 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.
24) 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 UTILITY COMPANY AND AFFECTED ABUTTER.
25) ALL WORK PERFORMED IN THE PUBLIC RIGHT-OF-WAY SHALL BE BUILD TO DEPARTMENT OF PUBLIC WATER WORKS STANDARDS.
26) WATER, SEWER, AND DRAIN LINES SHALL BE PRIVATE. CONDOMINIUM DOCUMENTS SHALL REFLECT MAINTENANCE OF PRIVATE UTILITIES.
27) THIRD PARTY UTILITY INSTALLATION INSPECTIONS SHALL BE REQUIRED ON WATER MAIN, SEWER, AND DRAINAGE SYSTEM.
28) A WATER UTILITY ACCESS EASEMENT SHALL BE PROVIDED TO THE CITY OF PORTSMOUTH FOR ACCESS TO WATER METERS, SHUT OFF VALVES & PIPING.



PLAN — TYPICAL SECTION

1 / C3 STANDARD SERVICE LATERAL CONNECTION NTS



GRAPHIC SCALE
10 5 0 10 20 30 40 FEET
3 0 5 10 METERS

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008)".

4) INSTALL CATCH BASIN INLET PROTECTION ON ALL EXISTING AND INSTALLED CATCH BASINS UNTIL CONSTRUCTION IS COMPLETED AND THE SITE IS STABILIZED.

5) ALL WATER MAIN AND SANITARY SEWER WORK SHALL MEET THE STANDARDS OF THE NEW HAMPSHIRE STATE PLUMBING CODE AND CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS.

6) UTILITY AS-BUILTS SHALL BE SUBMITTED TO THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS UPON COMPLETION OF THE PROJECT.

7) PROPOSED SEWER FLOW
3 UNITS X 2.33 RESIDENTS/UNIT = 7 RESIDENTS
7 RESIDENTS X 70 GPD/RESIDENT = 490 GPD
TOTAL PROPOSED FLOW = 490 GPD
NHDES SEWER DISCHARGE PERMIT NOT REQUIRED.

SITE DEVELOPMENT
41 SALEM STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	TAC SUBMISSION	3/18/20
1	TAC WORKSHOP	12/2/19
0	ISSUED FOR COMMENT	11/18/19
	REVISIONS	

JOHN R. CHAGNON No. 7851 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SCALE: 1" = 10' NOVEMBER 2019

UTILITY PLAN

C3

FB. 330, PG 41

3082.01

J:\JOBS\JN 3000's\JN 3080's\JN 3082\2019 Site Development\Plans & Specs\Site\3082 SITE 2019.dwg, C3 (UTILITY)

TEST PIT #1, ELEV.

Date: 11/7/19
Logged by: JOE MULLEDY
ESHWT: –
Observed Water: 64"
REFUSAL: NONE
Roots: 12"

DEPTH	DESCRIPTION
0" – 12"	10YR 3/3 DARK BROWN, FINE SANDY LOAM
12" – 18"	10YR 4/3 BROWN, LOAMY FINE SAND
18" – 64"	2.5Y 6/4 GRAY, SILTY FINE SAND

TEST PIT #2, ELEV.

Date: 11/7/19
Logged by: JOE MULLEDY
ESHWT: –
Observed Water: 66"
REFUSAL: NONE
Roots: 14" MANY FINE

DEPTH	DESCRIPTION
0" – 14"	10YR 3/3 DARK BROWN, FINE SANDY LOAM
14" – 20"	10YR 4/3 BROWN, LOAMY FINE SAND
20" – 66"	2.5Y 5/2 GRAY, SILTY FINE SAND

TEST PIT #3, ELEV.

Date: 11/7/19
Logged by: JOE MULLEDY
ESHWT: –
Observed Water: 62"
REFUSAL: NONE
Roots: 16"

DEPTH	DESCRIPTION
0" – 16"	10YR 3/3 DARK BROWN, FINE SANDY LOAM
16" – 40"	10YR 4/3 BROWN, LOAMY FINE SAND
40" – 62"	2.5Y 4/2 GRAY, CLAYEY FINE SAND

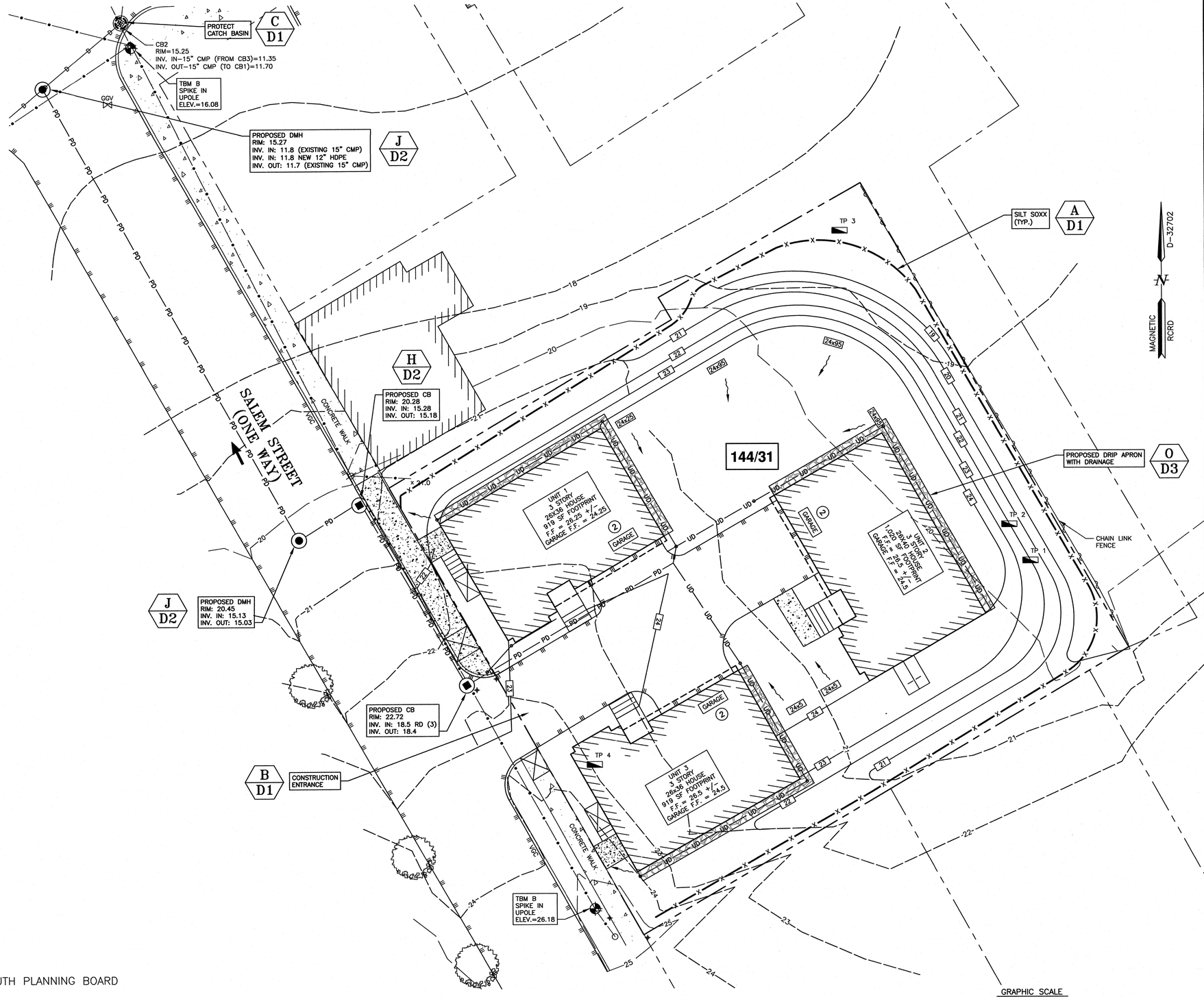
TEST PIT #4, ELEV.

Date: 11/7/19
Logged by: JOE MULLEDY
ESHWT: –
Observed Water: 62"
REFUSAL: NONE
Roots: 6"

DEPTH	DESCRIPTION
0" – 8"	10YR 3/3 DARK BROWN, FINE SANDY LOAM
8" – 24"	10YR 4/3 BROWN, LOAMY FINE SAND
24" – 34"	2.5Y 4/4 GRAY, LOAMY FINE SAND

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____



AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801–7114
Tel (603) 430–9282
Fax (603) 436–2315

NOTES:

1) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1–888–DIG–SAFE (1–888–344–7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

2) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

SITE DEVELOPMENT
41 SALEM STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	TAC SUBMISSION	3/18/19
1	TAC WORKSHOP	12/2/19
0	ISSUED FOR COMMENT	11/18/19

REVISIONS

STATE OF NEW HAMPSHIRE
JOHN R. CHAGNON
No. 7951
LICENSED PROFESSIONAL ENGINEER

SCALE: 1" = 10' NOVEMBER 2019

GRADING, DRAINAGE AND EROSION CONTROL PLAN

C4

FB.330, PG 41

3082.01

GENERAL NOTES

1. The Contractor shall contact DigSafe prior to the installation of plant materials.

2. Planting methods and overall care and maintenance of all planting stock shall meet the standards contained in The American National Institute A300 (Part 6) - 2012.

3.All plant materials grown in containers shall have the containers removed prior to installation.

4. All balled and burlapped ("b&b") plant materials shall have the burlapp (and twine or rope) cut and pulled open to expose the full plant ball prior to backfilling the planting hole.

5. All deciduous tres shall be staked and guyed with two (2) upright metal or wood stakes and flexible ties upon planting. Stakes and guys shall remain in place and be maintained for the duration of the first year after planting.

6. All disturbed areas shall be treated with 3" topsoil and seed unless otherwise indicated.
7. Finish grade of all lawn areas shall be a minimum of one (1) inch below adjacent curb or pavement.

8. The surface of all planting beds shall be treated with three (3) inch (minimum) of bark mulch.

9. All plant materials are selected for hardiness to the temperature zone of the proposed project.

~~10. This Site Plan shall be recorded in the Rockingham Registry of Deeds.~~

11. All improvements shown on this Site Plan shal be constructed and maintained in accordance with the plan by the Property Owners and all future property owners. No changes shall be made to this Site Plan without the expressed approval of the Portsmouth Planning Board.

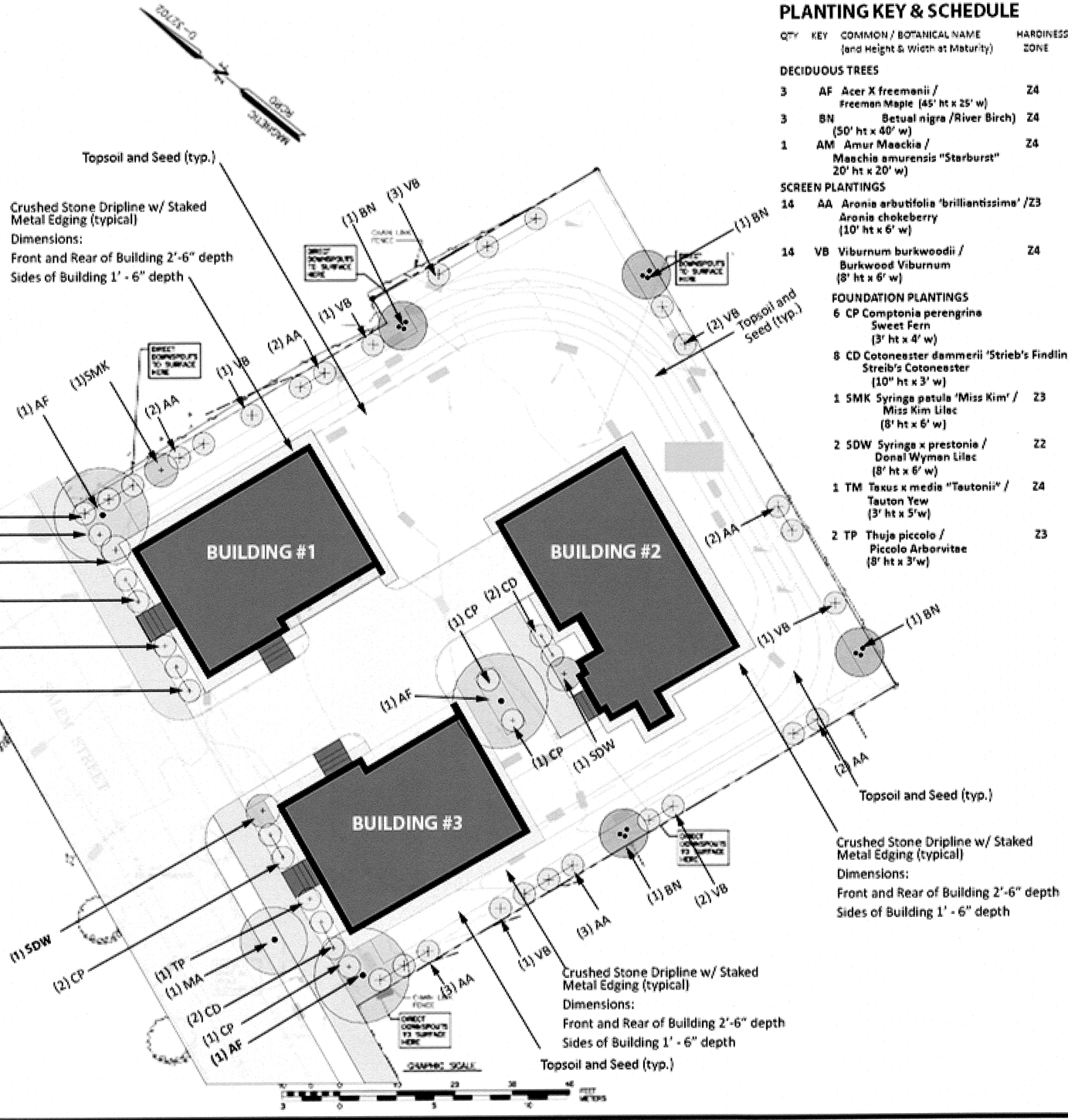
12. The Property Owner and all future property owners shall be responsible for the maintenance,repair and replacement of all required screening and landscape materials.

13. All plant materials shall be tended and maintained in a healthy growing condition, replaced when necessary, and kept free of refuse and debris.

14. The Propery Owner shall be responsible for the removal and repalcement of all dead plant material immediately with the same type, size, and quantity of plant materials as originally installed, unless alternative plantings are requested, justified and approved by the Planning Board or Planning Director.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____



PLANTING KEY & SCHEDULE

QTY	KEY	COMMON / BOTANICAL NAME (and Height & Width at Maturity)	HARDINESS ZONE	DESCRIPTION
DECIDUOUS TREES				
3	AF	Acer X freemanii / Freeman Maple (45' ht x 25' w)	Z4	2" caliper (min) b&b
3	BN	Betual nigra /River Birch) (50' ht x 40' w)	Z4	8' - 10' ht., b7b, clump
1	AM	Amur Maackia / Maackia amurensis "Starburst" 20' ht x 20' w)	Z4	6' - 8' ht. b&b
SCREEN PLANTINGS				
14	AA	Aronia arbutifolia 'brilliantissima' / Aronia chokeberry (10' ht x 6' w)	Z3	3' - 4' ht., #3 container (min.), Plant 5' o.c. (typ.)
14	VB	Viburnum burkwoodii / Burkwood Viburnum (8' ht x 6' w)	Z4	3' - 4' ht., #3 container (min.), Plant 5' o.c. (typ.)
FOUNDATION PLANTINGS				
6	CP	Comptonia perengrina Sweet Fern (3' ht x 4' w)	Z2	#2 cont, Plant 3' o.c. (typ.)
8	CD	Cotoneaster dammerii 'Strieb's Findling' / Streib's Cotoneaster (10" ht x 3' w)	Z2	#2 cont, Plant 3' o.c. (typ.)
1	SMK	Syringa patula 'Miss Kim' / Miss Kim Lilac (8' ht x 6' w)	Z3	2.5' - 3' ht., b&b or #3 cont(min.)
2	SDW	Syringa x prestonia / Donal Wyman Lilac (8' ht x 6' w)	Z2	4' - 5' ht., b&b
1	TM	Taxus x media "Tautonii" / Tauton Yew (3' ht x 5'w)	Z4	18" - 24 " spread, b&b
2	TP	Thuje piccolo / Piccolo Arborvitae (8' ht x 3'w)	Z3	2' - 3' ht., #3 cont.

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NOTES:

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3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION, (REVISED DECEMBER 2008).

Landscape Plan prepared by
Scott N Collard MLLA

Scott N Collard Landscape Architecture LLC
P O Box 356
Parsonsfield, Maine 04047

scott@snodesignpresence.com
207.756.5636

SITE DEVELOPMENT
41 SALEM STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	TAC WORKSHOP	12/2/19
0	ISSUED FOR COMMENT	11/18/19
	REVISIONS	

SCALE: 1" = 10' February 27, 2020

LANDSCAPE PLAN C5

DEMOLITION NOTES

a) THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE AND THE LOCATIONS ARE NOT GUARANTEED BY THE OWNER OR THE DESIGNER. IT IS THE CONTRACTORS' RESPONSIBILITY TO LOCATE UTILITIES AND ANTICIPATE CONFLICTS. CONTRACTOR SHALL REPAIR EXISTING UTILITIES DAMAGED BY THEIR WORK AND RELOCATE EXISTING UTILITIES THAT ARE REQUIRED TO BE RELOCATED PRIOR TO COMMENCING ANY WORK IN THE IMPACTED AREA OF THE PROJECT.

b) ALL MATERIALS SCHEDULED TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTORS UNLESS OTHERWISE SPECIFIED. THE CONTRACTOR SHALL DISPOSE OF ALL MATERIALS OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES AND CODES. THE CONTRACTOR SHALL COORDINATE REMOVAL, RELOCATION, DISPOSAL, OR SALVAGE OF UTILITIES WITH THE OWNER AND APPROPRIATE UTILITY COMPANY.

c) ANY EXISTING WORK OR PROPERTY DAMAGED OR DISRUPTED BY CONSTRUCTION/ DEMOLITION ACTIVITIES SHALL BE REPLACED OR REPAIRED TO THE ORIGINAL EXISTING CONDITIONS BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

d) THE CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES AND CALL DIG SAFE AT LEAST 72 HOURS PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION/CONSTRUCTION ACTIVITIES.

e) SAWCUT AND REMOVE PAVEMENT ONE FOOT OFF PROPOSED EDGE OF PAVEMENT OR EXISTING CURB LINE IN AREAS WHERE PAVEMENT TO BE REMOVED ABUTS EXISTING PAVEMENT OR CONCRETE TO REMAIN.

f) IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE THEMSELVES WITH THE CONDITIONS OF ALL THE PERMIT APPROVALS.

g) THE CONTRACTOR SHALL OBTAIN AND PAY FOR ADDITIONAL CONSTRUCTION PERMITS, NOTICES AND FEES NECESSARY TO COMPLETE THE WORK AND ARRANGE FOR AND PAY FOR ANY INSPECTIONS AND APPROVALS FROM THE AUTHORITIES HAVING JURISDICTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY ADDITIONAL AND OFF-SITE DISPOSAL OF MATERIALS REQUIRED TO COMPLETE THE WORK.

h) THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL EXISTING STRUCTURES, CONCRETE, UTILITIES, VEGETATION, PAVEMENT, AND CONTAMINATED SOIL WITHIN THE WORK LIMITS SHOWN UNLESS SPECIFICALLY IDENTIFIED TO REMAIN. ANY EXISTING DOMESTIC / IRRIGATION SERVICE WELLS IN THE PROJECT AREA IDENTIFIED DURING THE CONSTRUCTION AND NOT CALLED OUT ON THE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER FOR PROPER CAPPING / RE-USE. ANY EXISTING MONITORING WELLS IN THE PROJECT AREA IDENTIFIED DURING THE CONSTRUCTION AND NOT CALLED OUT ON THE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER TO COORDINATE MONITORING WELL REMOVAL AND/OR RELOCATION WITH NHDES AND OTHER AUTHORITY WITH JURISDICTION PRIOR TO CONSTRUCTION.

i) ALL WORK WITHIN THE CITY OF PORTSMOUTH RIGHT OF WAY SHALL BE COORDINATED WITH THE CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS (DPW).

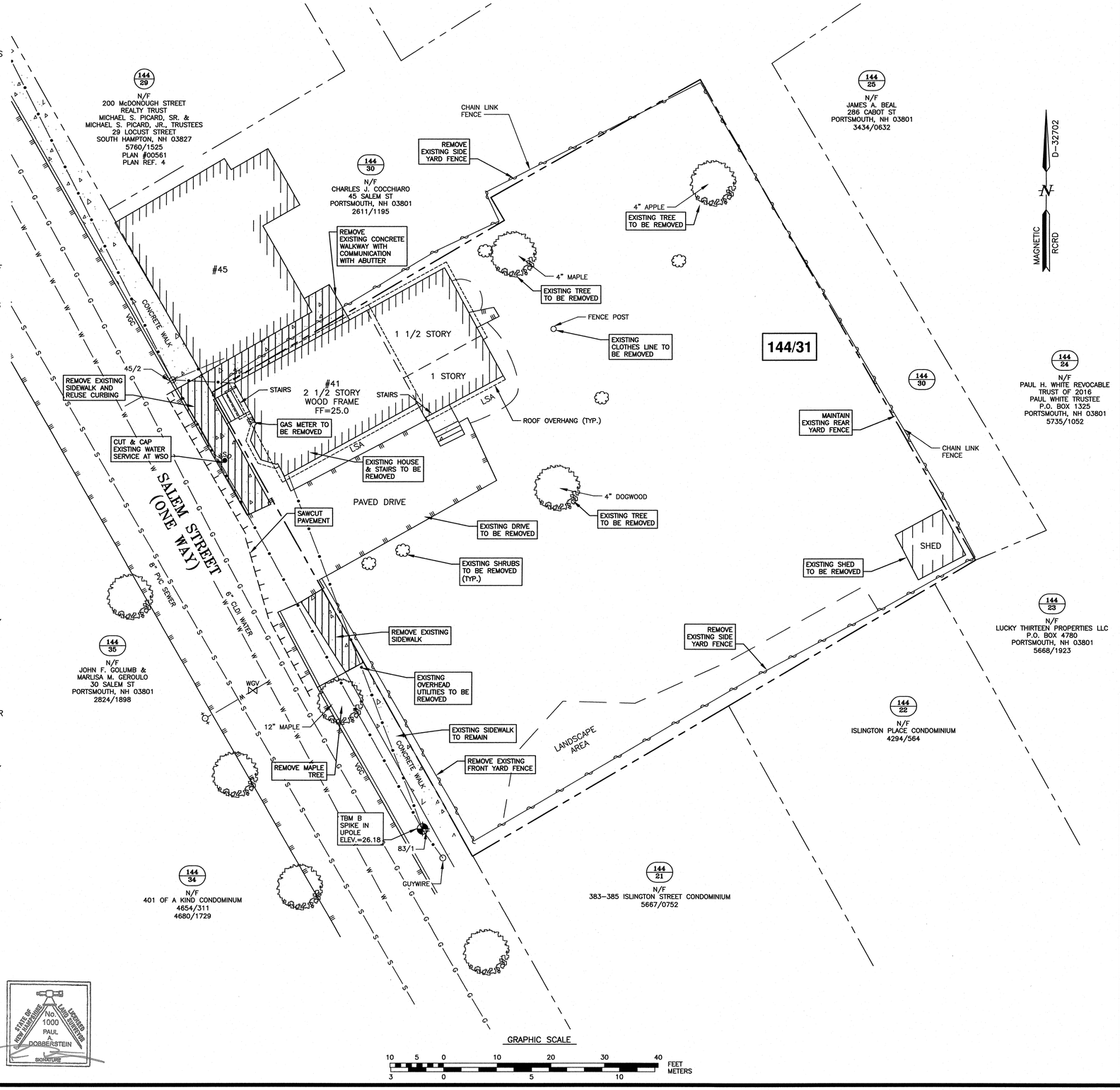
j) REMOVE TREES AND BRUSH AS REQUIRED FOR COMPLETION OF WORK. CONTRACTOR SHALL GRUB AND REMOVE ALL SLUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF-SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.

k) CONTRACTOR SHALL PROTECT ALL PROPERTY MONUMENTATION THROUGHOUT DEMOLITION AND CONSTRUCTION OPERATIONS. SHOULD ANY MONUMENTATION BE DISTURBED, THE CONTRACTOR SHALL EMPLOY A NH LICENSED LAND SURVEYOR TO REPLACE THEM.

l) PROVIDE INLET PROTECTION BARRIERS AT ALL CATCH BASINS WITHIN CONSTRUCTION LIMITS AND MAINTAIN FOR THE DURATION OF THE PROJECT. INLET PROTECTION BARRIERS SHALL BE HIGH FLOW SILT SACK BY ACF ENVIRONMENTAL OR APPROVED EQUAL. INSPECT BARRIERS WEEKLY AND AFTER EACH RAIN OF 0.25 INCHES OR GREATER. CONTRACTOR SHALL COMPLETE A MAINTENANCE INSPECTION REPORT AFTER EACH INSPECTION. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT OR MORE OFTEN IF WARRANTED OR FABRIC BECOMES CLOGGED. EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CLEARING OR DEMOLITION ACTIVITIES.

m) THE CONTRACTOR SHALL PAY ALL COSTS NECESSARY FOR TEMPORARY PARTITIONING, BARRICADING, FENCING, SECURITY AND SAFELY DEVICES REQUIRED FOR THE MAINTENANCE OF A CLEAN AND SAFE CONSTRUCTION SITE.

n) ANY CONTAMINATED MATERIAL REMOVED DURING THE COURSE OF THE WORK WILL REQUIRE HANDLING IN ACCORDANCE WITH NHDES REGULATIONS. CONTRACTOR SHALL HAVE A HEALTH AND SAFETY PLAN IN PLACE, AND COMPLY WITH ALL APPLICABLE PERMITS, APPROVALS, AUTHORIZATIONS, AND REGULATIONS



I CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN ACCURACY OF THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000.

PAUL A. DOBBERSTEIN, LLS #1000

3/18/2020
DATE

STATE OF NEW HAMPSHIRE No. 1000 PAUL A. DOBBERSTEIN LICENSED LAND SURVEYOR SIGNATURE

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
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NOTES:

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4) EXISTING UTILITY CONNECTIONS SHALL BE ABANDONED IN ACCORDANCE WITH UTILITY COMPANY REQUIREMENTS. UTILITIES THAT ARE TO BE REUSED SHALL BE CUT & CAPPED.

5) CONTRACTOR WILL COORDINATE STREET CLOSINGS, IF ANY, WITH CITY OF PORTSMOUTH.

6) DURING CONSTRUCTION, TEMPORARY FENCING SHALL BE INSTALLED, AS REQUIRED, TO PROTECT THE SITE FROM THE PUBLIC.

7) COORDINATE DEMOLITION WITH CITY OF PORTSMOUTH, PERMITS REQUIRED. PROVIDE TEMPORARY DRAINAGE STRUCTURES, AS REQUIRED, TO KEEP SITE FROM FLOODING DURING CONSTRUCTION.

8) REMOVAL OF MAPLE TREE IN SALEM STREET RIGHT OF WAY APPROVED BY THE TREES AND GREENERY COMMITTEE 2/12/2020.

SITE DEVELOPMENT
41 SALEM STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	TAC SUBMISSION	3/18/20
1	TAC WORKSHOP	12/2/19
0	ISSUED FOR COMMENT	11/18/19

REVISIONS

STATE OF NEW HAMPSHIRE JOHN R. CHAGNON No. 9651 LICENSED PROFESSIONAL ENGINEER

SCALE: 1"=10' NOVEMBER 2019

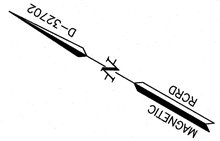
DEMOLITION PLAN

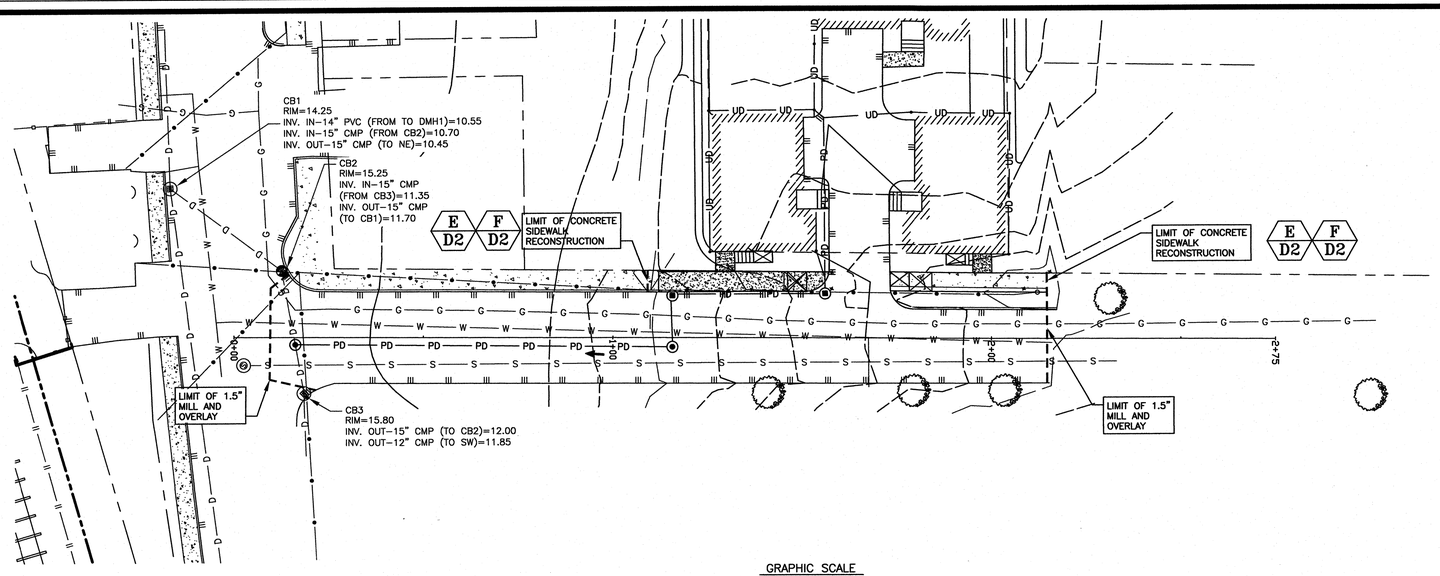
C6

FB 330 PG 41

3082.01

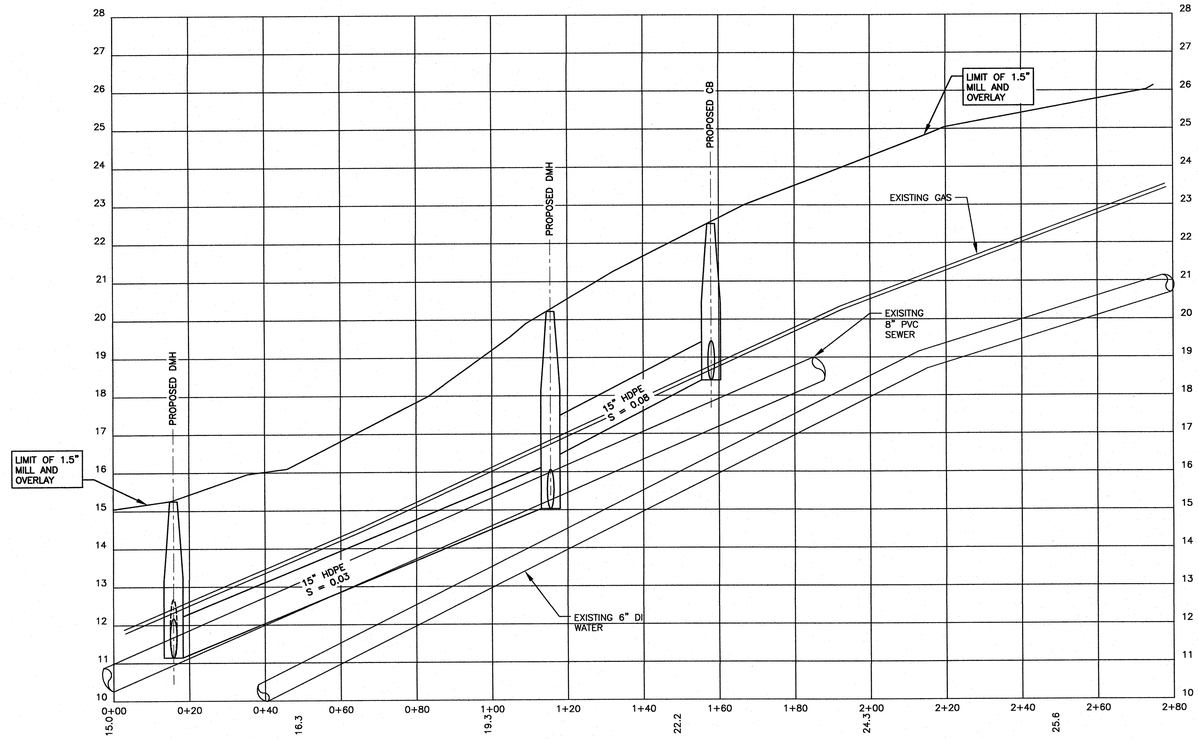
J:\08S3\JN 3000's\JN 3080's\JN 3082\2019 Site Development\Plans & Specs\Site\3082 SITE 2019.dwg, C6 DEMOLITION





GRAPHIC SCALE

10 0 20 40 60 80 FEET
5 0 5 10 15 20 25 METERS



GRAPHIC SCALE

10 0 20 40 60 80 FEET
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APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN

DATE

AMBIT ENGINEERING, INC.
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SITE DEVELOPMENT
41 SALEM STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	3/18/20

REVISIONS

STATE OF NEW HAMPSHIRE
JOHN R CHAGNON
No. 9851
LICENSED PROFESSIONAL ENGINEER

SCALE: 1" = 20' NOVEMBER 2019

SALEM STREET PLAN AND PROFILE

P1

FB. 229, PG 45

3082.01

J:\0883\JN 3000's\JN 3080's\JN 3082\2019 Site Development\Plans & Specs\Site\3082 SITE 2019.dwg, P1(SALEM ST PROFILE)

EROSION CONTROL NOTES

CONSTRUCTION SEQUENCE

DO NOT BEGIN CONSTRUCTION UNTIL ALL LOCAL, STATE AND FEDERAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.

INSTALL PERIMETER CONTROLS AROUND THE LIMITS OF DISTURBANCE BEFORE ANY EARTH MOVING OPERATIONS. THE USE OF HAYBALES IS NOT ALLOWED.

CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE.

PERFORM DEMOLITION.

CUT AND GRUB ALL TREES, SHRUBS, SAPLINGS, BRUSH, VINES AND REMOVE OTHER DEBRIS AND RUBBISH AS REQUIRED.

BULLDOZE TOPSOIL INTO STOCKPILES, AND CIRCLE WITH SILT FENCING OR SILTSOXX. IF EROSION IS EXCESSIVE, THEN COVER WITH MULCH.

CONSTRUCT FOUNDATIONS.

LAYOUT AND INSTALL ALL BURIED UTILITIES AND SERVICES TO THE PROPOSED BUILDING FOUNDATIONS. CAP AND MARK TERMINATIONS OR LOG SWING TIES.

FINISH GRADE SITE, BACKFILL DRIVEWAY SUBBASE GRAVEL IN TWO, COMPACTED LIFTS. PROVIDE TEMPORARY EROSION PROTECTION TO SITE IN THE FORM OF MULCHING, JUTE MESH OR DITCH DAMS.

PLACE BINDER LAYER OF PAVEMENT

PLANT LANDSCAPING IN AREAS OUT OF WAY OF BUILDING CONSTRUCTION. PREPARE AND STABILIZE FINAL SITE GRADING BY ADDING TOPSOIL, SEED, MULCH AND FERTILIZER.

AFTER BUILDINGS ARE COMPLETED, FINISH ALL REMAINING LANDSCAPED WORK.

CONSTRUCT ASPHALT WEARING COURSE.

REMOVE TRAPPED SEDIMENTS FROM COLLECTION DEVICES AS APPROPRIATE, AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES UPON COMPLETION OF FINAL STABILIZATION OF THE SITE.

GENERAL CONSTRUCTION NOTES

THE EROSION CONTROL PROCEDURES SHALL CONFORM TO SECTION 645 OF THE "STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION" OF THE NHDOT, AND "STORM WATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE". 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.

DURING CONSTRUCTION AND THEREAFTER, EROSION CONTROL MEASURES ARE TO BE IMPLEMENTED AS NOTED. THE SMALLEST PRACTICAL AREA OF LAND SHOULD BE EXPOSED AT ANY ONE TIME DURING DEVELOPMENT. NO DISTURBED AREA SHALL BE LEFT UNSTABILIZED FOR MORE THAN 45 DAYS.

ANY DISTURBED AREAS WHICH ARE TO BE LEFT TEMPORARILY, AND WHICH WILL BE REGRADED LATER DURING CONSTRUCTION SHALL BE MACHINE HAY MULCHED AND SEEDED WITH RYE GRASS TO PREVENT EROSION.

DUST CONTROL: IF TEMPORARY STABILIZATION PRACTICES, SUCH AS TEMPORARY VEGETATION AND MULCHING, DO NOT ADEQUATELY REDUCE DUST GENERATION, APPLICATION OF WATER OR CALCIUM CHLORIDE SHALL BE APPLIED IN ACCORDANCE WITH BEST MANAGEMENT PRACTICES.

SILT FENCES AND SILTSOXX SHALL BE PERIODICALLY INSPECTED DURING THE LIFE OF THE PROJECT AND AFTER EACH STORM. ALL DAMAGED SILT FENCES AND SILTSOXX SHALL BE REPAIRED. SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED IN A SECURED LOCATION.

AVOID THE USE OF FUTURE OPEN SPACES (LOAM AND SEED AREAS) WHEREVER POSSIBLE DURING CONSTRUCTION. CONSTRUCTION TRAFFIC SHALL USE THE ROADBEDS OF FUTURE ACCESS DRIVES AND PARKING AREAS.

ADDITIONAL TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED IN AMOUNTS NECESSARY TO COMPLETE FINISHED GRADING OF ALL EXPOSED AREAS--CONSTRUCT SILT FENCE OR SILTSOXX AROUND TOPSOIL STOCKPILE.

AREAS TO BE FILLED SHALL BE CLEARED, GRUBBED AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIAL. STUMPS SHALL BE DISPOSED OF IN AN APPROVED FACILITY.

ALL FILLS SHALL BE PLACED AND COMPACTED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS.

ALL NON-STRUCTURAL, SITE-FILL SHALL BE PLACED AND COMPACTED TO 90% MODIFIED PROCTOR DENSITY IN LAYERS NOT EXCEEDING 18 INCHES IN THICKNESS UNLESS OTHERWISE NOTED.

FROZEN MATERIAL OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIAL, TRASH, WOODY DEBRIS, LEAVES, BRUSH OR ANY DELETERIOUS MATTER SHALL NOT BE INCORPORATED INTO FILLS.

FILL MATERIAL SHALL NOT BE PLACED ON FROZEN FOUNDATION SUBGRADE.

DURING CONSTRUCTION AND UNTIL ALL DEVELOPED AREAS ARE FULLY STABILIZED, ALL EROSION CONTROL MEASURES SHALL BE INSPECTED WEEKLY AND AFTER EACH ONE HALF INCH OF RAINFALL.

THE CONTRACTOR SHALL MODIFY OR ADD EROSION CONTROL MEASURES AS NECESSARY TO ACCOMMODATE PROJECT CONSTRUCTION.

ALL ROADWAYS AND PARKING AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.

AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
- BASE COURSE GRAVELS HAVE BEEN INSTALLED ON AREAS TO BE PAVED
- A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED
- A MINIMUM OF 3 INCHES OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED
- EROSION CONTROL BLANKETS HAVE BEEN INSTALLED

VEGETATIVE PRACTICE

FOR PERMANENT MEASURES AND PLANTINGS:

LIMESTONE SHALL BE THOROUGHLY INCORPORATED INTO THE LOAM LAYER AT A RATE OF 2 TONS PER ACRE.

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.

SEED SHALL BE SOWN AT THE RATES SHOWN IN THE TABLE BELOW. 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. HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AT A RATE OF 1.5 TO 2 TONS PER ACRE, AND SHALL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE EROSION AND SEDIMENT CONTROL HANDBOOK.

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 SHALL BE RESEEDED, AND ALL NOXIOUS WEEDS REMOVED.

A GRASS SEED MIXTURE CONTAINING THE FOLLOWING SEED REQUIREMENTS SHALL BE:

GENERAL COVER	PROPORTION	SEEDING RATE
CREEPING RED FESCUE	50%	100 LBS/ACRE
KENTUCKY BLUEGRASS	50%	

SLOPE SEED (USED ON ALL SLOPES GREATER THAN OR EQUAL TO 3:1)

CREEPING RED FESCUE	42%	
TALL FESCUE	42%	48 LBS/ACRE
BIRDSFOOT TREFOIL	16%	

IN NO CASE SHALL THE WEED CONTENT EXCEED ONE PERCENT BY WEIGHT. ALL SEED SHALL COMPLY WITH APPLICABLE STATE AND FEDERAL SEED LAWS.

FOR TEMPORARY PROTECTION OF DISTURBED AREAS:
MULCHING AND SEEDING SHALL BE APPLIED AT THE FOLLOWING RATES:
PERENNIAL RYE: 0.7 LBS/1,000 S.F.
MULCH: 1.5 TONS/ACRE

MAINTENANCE AND PROTECTION

THE CONTRACTOR SHALL MAINTAIN ALL LOAM & SEED AREAS UNTIL FINAL ACCEPTANCE AT THE COMPLETION OF THE CONTRACT. MAINTENANCE SHALL INCLUDE WATERING, WEEDING, REMOVAL OF STONES AND OTHER FOREIGN OBJECTS OVER 1/2 INCHES IN DIAMETER WHICH MAY APPEAR AND THE FIRST TWO (2) CUTTINGS OF GRASS NO CLOSER THEN TEN (10) DAYS APART. THE FIRST CUTTING SHALL BE ACCOMPLISHED WHEN THE GRASS IS FROM 2 1/2 TO 3 INCHES HIGH. ALL BARE AND DEAD SPOTS WHICH BECOME APPARENT SHALL BE PROPERLY PREPARED, LIMED AND FERTILIZED, AND RESEEDED BY THE CONTRACTOR AT HIS EXPENSE AS MANY TIMES AS NECESSARY TO SECURE GOOD GROWTH. THE ENTIRE AREA SHALL BE MAINTAINED, WATERED AND CUT UNTIL ACCEPTANCE OF THE LAWN BY THE OWNER'S REPRESENTATIVE.

THE CONTRACTOR SHALL TAKE WHATEVER MEASURES ARE NECESSARY TO PROTECT THE GRASS WHILE IT IS DEVELOPING.

TO BE ACCEPTABLE, SEEDED AREAS SHALL CONSIST OF A UNIFORM STAND OF AT LEAST 90 PERCENT ESTABLISHED PERMANENT GRASS SPECIES, WITH UNIFORM COUNT OF AT LEAST 100 PLANTS PER SQUARE FOOT.

SEEDED AREAS WILL BE FERTILIZED AND RESEEDED AS NECESSARY TO INSURE VEGETATIVE ESTABLISHMENT.

THE SWALES WILL BE CHECKED WEEKLY AND REPAIRED WHEN NECESSARY UNTIL ADEQUATE VEGETATION IS ESTABLISHED.

THE SILT FENCE OR SILTSOXX BARRIER SHALL BE CHECKED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.

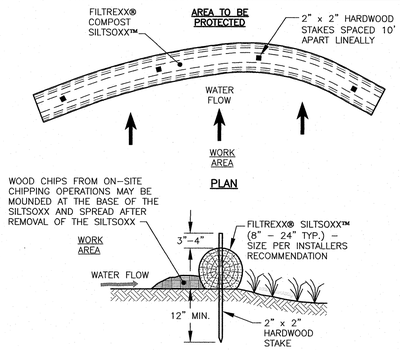
SILT FENCING AND SILTSOXX SHALL BE REMOVED ONCE VEGETATION IS ESTABLISHED, AND DISTURBED AREAS RESULTING FROM SILT FENCE AND SILTSOXX REMOVAL SHALL BE PERMANENTLY SEEDED.

WINTER NOTES

ALL PROPOSED VEGETATED 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 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.

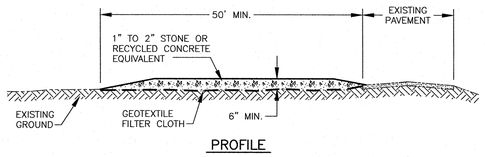
ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.

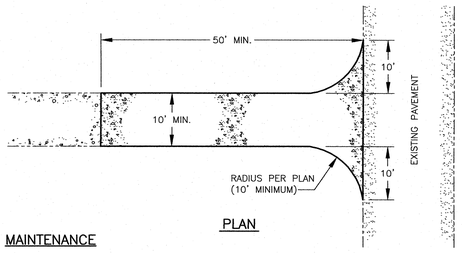
AFTER NOVEMBER 15TH, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.



NOTES:
1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
2. FILLTREXX SYSTEM SHALL BE INSTALLED BY A CERTIFIED FILTREXX INSTALLER.
3. THE CONTRACTOR SHALL MAINTAIN THE COMPOST FILTRATION SYSTEM IN A FUNCTIONAL CONDITION AT ALL TIMES. IT WILL BE ROUTINELY INSPECTED AND REPAIRED WHEN REQUIRED.
4. SILTSOXX DEPICTED IS FOR MINIMUM SLOPES, GREATER SLOPES MAY REQUIRE ADDITIONAL PLACEMENTS.
5. THE COMPOST FILTER MATERIAL WILL BE DISPERSED ON SITE WHEN NO LONGER REQUIRED, AS DETERMINED BY THE ENGINEER.

A / C4 FILTREXX® SILTSOXX™ FILTRATION SYSTEM
NTS





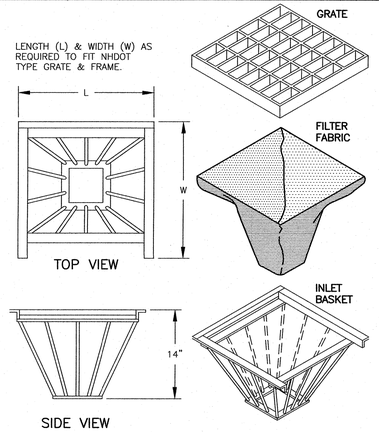
MAINTENANCE

1) MUD AND SOIL PARTICLES WILL EVENTUALLY CLOG THE VOIDS IN THE GRAVEL AND THE EFFECTIVENESS OF THE GRAVEL PAD WILL NOT BE SATISFACTORY. WHEN THIS OCCURS, THE PAD SHOULD BE TOP DRESSED WITH NEW STONE. COMPLETE REPLACEMENT OF THE PAD MAY BE NECESSARY WHEN THE PAD BECOMES COMPLETELY CLOGGED.
2) IF WASHING FACILITIES ARE USED, THE SEDIMENT TRAPS SHOULD BE CLEANED OUT AS OFTEN AS NECESSARY TO ASSURE THAT ADEQUATE TRAPPING EFFICIENCY AND STORAGE VOLUME IS AVAILABLE. VEGETATIVE FILTER STRIPS SHOULD BE MAINTAINED TO INSURE A VIGOROUS STAND OF VEGETATION AT ALL TIMES.

CONSTRUCTION SPECIFICATIONS

1) STONE FOR A STABILIZED CONSTRUCTION ENTRANCE SHALL BE 1 TO 2 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2) THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 50 FEET, EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3) THE THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4) THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICHEVER IS GREATER.
5) GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER CLOTH IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENCE LOT.
6) ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7) THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT 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, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.
8) WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY, WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

B / C4 STABILIZED CONSTRUCTION ENTRANCE
SUBSTITUTE FODS IF DESIRED
NTS



1) INLET BASKETS SHALL BE INSTALLED IMMEDIATELY AFTER CATCH BASIN CONSTRUCTION IS COMPLETE AND SHALL REMAIN IN PLACE AND BE MAINTAINED UNTIL PAVEMENT BINDER COURSE IS COMPLETE.

2) FILTER FABRIC SHALL BE PUSHED DOWN AND FORMED TO THE SHAPE OF THE BASKET. THE SHEET OF FABRIC SHALL BE LARGE ENOUGH TO BE SUPPORTED BY THE BASKET FRAME WHEN HOLDING SEDIMENT AND, SHALL EXTEND AT LEAST 6" PAST THE FRAME. THE INLET GRATE SHALL BE PLACED OVER THE BASKET/FRAME AND WILL SERVE AS THE FABRIC ANCHOR.

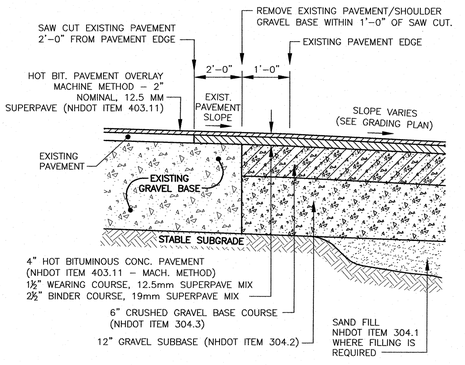
3) THE FILTER FABRIC SHALL BE A GEOTEXTILE FABRIC; POLYESTER, POLYPROPYLENE, STABILIZED NYLON, POLYETHYLENE, OR POLYVINYLIDENE CHLORIDE MEETING THE FOLLOWING SPECIFICATIONS:
- RAB STRENGTH: 45 LB. MIN. IN ANY PRINCIPAL DIRECTION (ASTM D1682)
- MULLEN BURST STRENGTH: MIN. 60 psi (ASTM D774)

4) THE FABRIC SHALL HAVE AN OPENING NO GREATER THAN A NUMBER 20 U.S. STANDARD SIEVE AND A MINIMUM PERMEABILITY OF 120 gpm/s.f. (MULTIPLY THE PERMITTIVITY IN SEC.-1 FROM ASTM 54491-85 CONSTANT HEAD TEST USING THE CONVERSION FACTOR OF 74.)

5) THE INLET BASKET 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.

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

C / C4 CATCH BASIN INLET BASKET
NTS



D / C2 FULL DEPTH PAVEMENT SECTION AND PAVEMENT JOINT DETAIL
NTS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

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2) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

SITE DEVELOPMENT
41 SALEM STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	3/18/20

REVISIONS

STATE OF NEW HAMPSHIRE - JOHN R. CHAGNON No. 7651 - LICENSED PROFESSIONAL ENGINEER

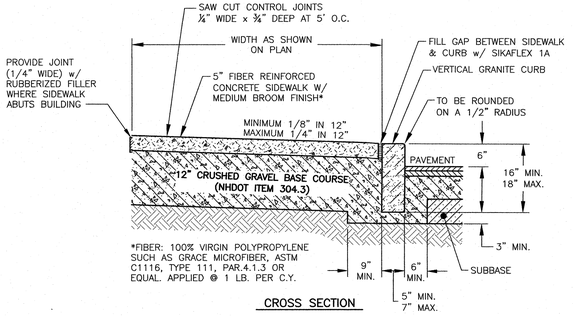
AS NOTED — MARCH 2020

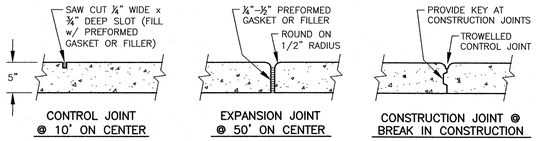
EROSION CONTROL NOTES & DETAILS

D1

3082.01

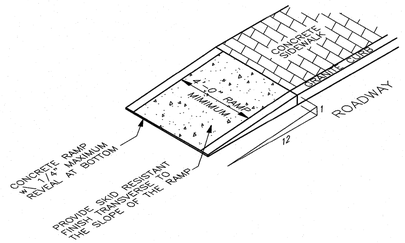
J:\JOBS3\JN 3000's\JN 3080's\JN 3082\2019 Site Development\Plans & Specs\Site\3082 DETAILS 2019.dwg, D1 EROSION





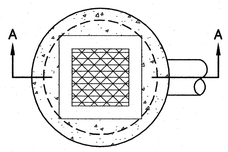
E / C2 PORTLAND CEMENT CONCRETE SIDEWALK (WITH VERTICAL GRANITE CURB)

NTS

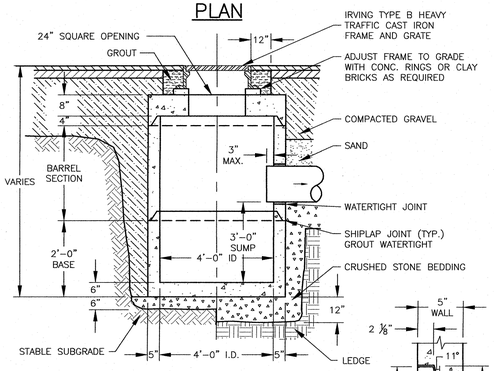


F / C2 SIDEWALK TIP DOWN

NTS

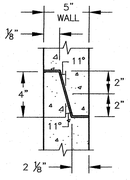


PLAN



SECTION A – A

NOTES:
1. CONCRETE SHALL BE 4,000 P.S.I. AFTER 28 DAYS.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER LINEAR FT. IN ALL SECTIONS & SHALL BE PLACED IN THE CENTER THIRD OF WALL.
3. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
4. EACH CASTING TO HAVE LIFTING HOLES CAST IN.



DETAIL OF SHIPLAP JOINT

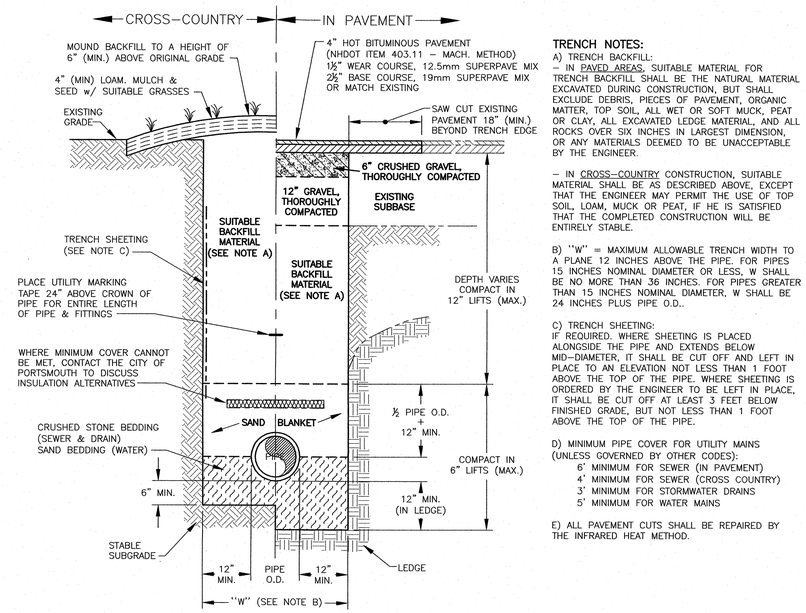
H / C4 CATCH BASIN

NTS

NOTES
1. SEE SHEET "REQUIREMENTS FOR PAD MOUNTED TRANSFORMER SLAB DETAILS", EVERSOURCE SPECIFICATIONS.
2. SEE DTR 56.223 FOR GROUNDING GRID.
3. 1" PVC CONDUIT SLEEVE FOR GROUND GRID LEADS.
4. ALL REBAR TO BE #6.
5. CONDUITS CUT 4" ABOVE SLAB BASE.

G / C3 TRANSFORMER FOUNDATION SINGLE PHASE

EVERSOURCE NTS



I / C3 TYPICAL PIPE TRENCH

NTS

TRENCH NOTES:

A) TRENCH BACKFILL:
– IN PAVED AREAS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT OR CLAY, ALL EXCAVATED LEDGE MATERIAL, AND ALL ROCKS OVER SIX INCHES IN LARGEST DIMENSION, OR ANY MATERIALS DEEMED TO BE UNACCEPTABLE BY THE ENGINEER.

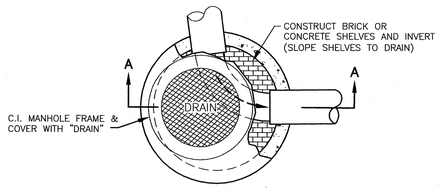
– IN CROSS-COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK OR PEAT, IF HE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE.

B) "W" = MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE O.D..

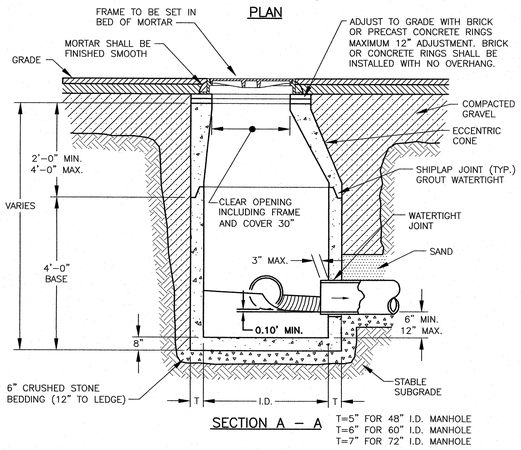
C) TRENCH SHEETING:
IF REQUIRED. WHERE SHEETING IS PLACED ALONGSIDE THE PIPE AND EXTENDS BELOW MID-DIAMETER, IT SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE. WHERE SHEETING IS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE, IT SHALL BE CUT OFF AT LEAST 3 FEET BELOW FINISHED GRADE, BUT NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE.

D) MINIMUM PIPE COVER FOR UTILITY MAINS (UNLESS GOVERNED BY OTHER CODES):
- 6' MINIMUM FOR SEWER (IN PAVEMENT)
- 4' MINIMUM FOR SEWER (CROSS COUNTRY)
- 3' MINIMUM FOR STORMWATER DRAINS
- 5' MINIMUM FOR WATER MAINS

E) ALL PAVEMENT CUTS SHALL BE REPAIRED BY THE INFRARED HEAT METHOD.



PLAN



SECTION A – A

T=5" FOR 48" I.D. MANHOLE
T=6" FOR 60" I.D. MANHOLE
T=7" FOR 72" I.D. MANHOLE

NOTES:
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2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FOOT.
4. EACH CASTING TO HAVE LIFTING HOLES CAST IN.
5. ALL MANHOLES SHALL BE 48" I.D. UNLESS SPECIFIED OTHERWISE ON THE PLANS.
6. MANHOLE SHALL BE DESIGNED AND CONSTRUCTED TO WITHSTAND H-20 LOADING.

J / C4 DRAIN MANHOLE DETAIL

NTS

AMBIT ENGINEERING, INC.
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200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
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REVISIONS

JOHN R. CHAGNON No. 7851 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

AS NOTED — MARCH 2020

DETAILS — **D2**

3082.01

J:\JOBS3\JN 3000's\JN 3080's\JN 3082\2019 Site Development\Plans & Specs\Site\3082 DETAILS 2019.dwg, D2 DETAILS

HORIZONTAL ANCHOR DIMENSIONS FOR PIPE INSTALLATION IN ROCK

UP TO 150 P.S.I. WORKING PRESSURE

PIPE SIZE	TEE OR TAP SLEEVE		90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND	
	H	L	H	L	H	L	H	L	H	L
* 4"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"
6"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"
8"	1'-2"	1'-2"	1'-2"	1'-2"	1'-0"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0"
10"	1'-4"	1'-4"	1'-4"	1'-4"	1'-0"	1'-0"	0'-9"	1'-0"	0'-9"	1'-0'
12"	1'-8"	1'-8"	1'-8"	1'-8"	1'-3"	1'-3"	1'-0"	1'-0"	0'-9"	1'-0"

* – FOR 3" AND SMALLER PIPES

HORIZONTAL ANCHOR DIMENSIONS FOR AVERAGE SOIL CONDITIONS

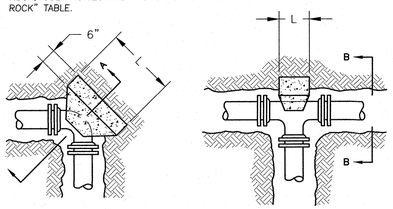
UP TO 150 P.S.I. WORKING PRESSURE

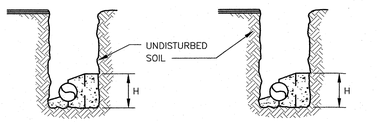
PIPE SIZE	TEE OR TAP SLEEVE		90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND	
	H	L	H	L	H	L	H	L	H	L
* 4"	1'-0"	2'-0"	1'-0"	2'-0"	1'-0"	1'-4"	0'-9"	1'-0"	0'-6"	1'-0"
6"	1'-0"	2'-0"	1'-0"	2'-0"	1'-0"	1'-4"	0'-9"	1'-0"	0'-6"	1'-0"
8"	1'-4"	2'-8"	1'-4"	2'-8"	1'-4"	1'-6"	1'-0"	1'-0"	0'-9"	1'-0"
10"	1'-8"	3'-4"	1'-8"	3'-4"	1'-8"	2'-0"	1'-3"	1'-3"	1'-0"	1'-0'
12"	2'-0"	4'-0"	2'-0"	4'-0"	2'-0"	2'-2"	1'-6"	1'-6"	1'-3"	1'-3"

* – FOR 3" AND SMALLER PIPES

NOTES:
1) TABLES ARE BASED ON AN ALLOWABLE SOIL PRESSURE OF 3000 PSF ON UNDISTURBED EARTH BEHIND THE ANCHOR BLOCK. WHERE SOIL HAS BEEN DISTURBED BY ADJACENT EXCAVATIONS OR WHERE SOIL CANNOT WITHSTAND SUCH A PRESSURE, THE TABLE DOES NOT APPLY.

2) WHERE ENTIRE DEPTH OF PIPE IS BELOW THE TOP SURFACE OF SOUND ROCK, USE "HORIZONTAL ANCHOR DIMENSIONS FOR PIPE INSTALLATION IN ROCK" TABLE.



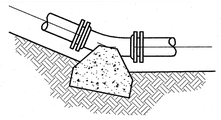


HORIZONTAL ANCHORING

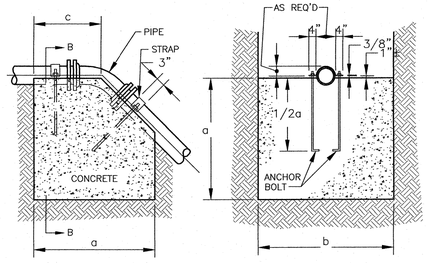
VERTICAL ANCHOR DIMENSIONS

UP TO 150 P.S.I. WORKING PRESSURE

PIPE SIZE	45° BEND				22 1/2° BEND				11 1/4° BEND			
	DIMENSION			ROD DIA.	DIMENSION			ROD DIA.	DIMENSION			ROD DIA.
	a	b	c		a	b	c		a	b	c	
4"	3'-0"	3'-0"	2'-0"	3/4"	2'-6"	2'-3"	1'-6"	3/4"	2'-0"	2'-0"	1'-6"	3/4"
6"	3'-0"	3'-0"	2'-0"	3/4"	2'-6"	2'-3"	1'-6"	3/4"	2'-0"	2'-0"	1'-6"	3/4"
8"	3'-6"	3'-6"	2'-6"	3/4"	3'-0"	3'-0"	1'-9"	3/4"	2'-6"	2'-6"	1'-3"	3/4"
10"	4'-3"	4'-0"	3'-0"	3/4"	3'-6"	3'-3"	2'-0"	3/4"	2'-9"	2'-9"	1'-6"	3/4"
12"	4'-9"	4'-6"	3'-3"	3/4"	4'-0"	3'-9"	2'-6"	3/4"	3'-3"	3'-3"	1'-9"	3/4"

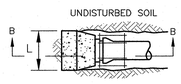


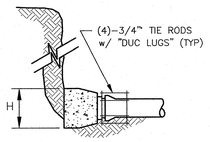
USE SAME DIMENSIONS AS FOR HORIZONTAL BEND ANCHORS



VERTICAL BEND

ALL EXPOSED PORTIONS OF ANCHOR STRAPS TO RECEIVE TWO FIELD COATS (MIN.) OF BITUMASTIC MATERIAL

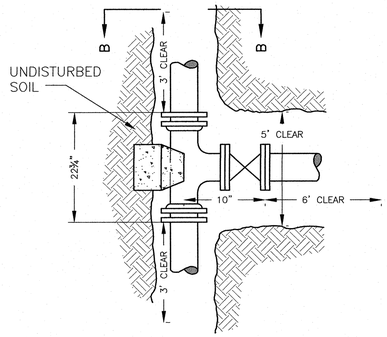


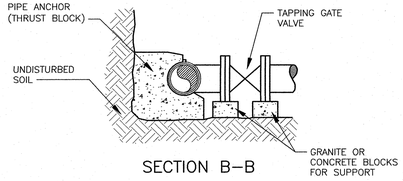


RESTRAINED PLUG OR CAP

NOTE: SEE CHART "HORIZONTAL ANCHOR DIMENSIONS" TIE RODS TO BE PROVIDED IN LIEU OF THRUST BLOCK

VERTICAL ANCHORING





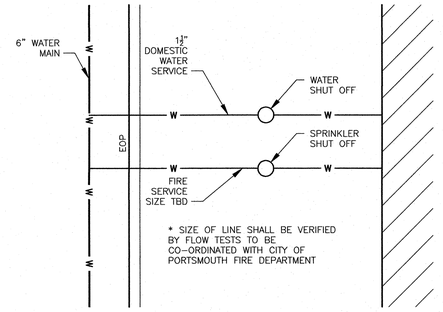
NOTES:
1) ALL MATERIALS SHALL BE APPROVED BY THE PORTSMOUTH WATER DEPARTMENT PRIOR TO INSTALLATION AND USE.

2) ALL JOINTS SHALL BE MECHANICAL.

3) "CLEAR" DIMENSIONS SHOWN ATE REQUIRED FOR WORKSPACE. NO JOINTS ON PIPE BEING TAPPED WITHIN "CLEAR" AREA.

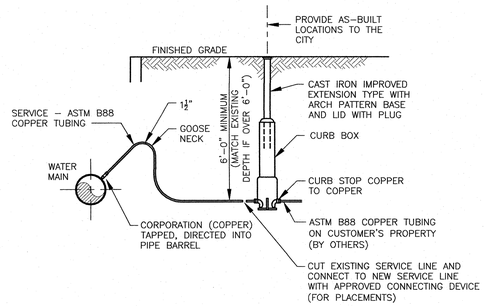
4) FORD TYPE STAINLESS STEEL TAPPING SADDLES OR APPROVED EQUAL ARE ALSO ACCEPTABLE.

M C3 TAPPING SLEEVE AND GATE
INSTALL PER PORTSMOUTH REQUIREMENTS NTS



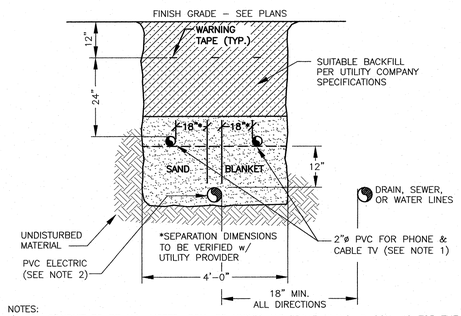
NOTES:
1) SIZE OF SPRINKLER LINE SHALL BE VERIFIED BY FLOW TESTS TO BE CO–ORDINATED WITH CITY OF PORTSMOUTH FIRE DEPARTMENT.

2) SPRINKLER SERVICE REQUIRED FOR UNIT 2 ONLY.



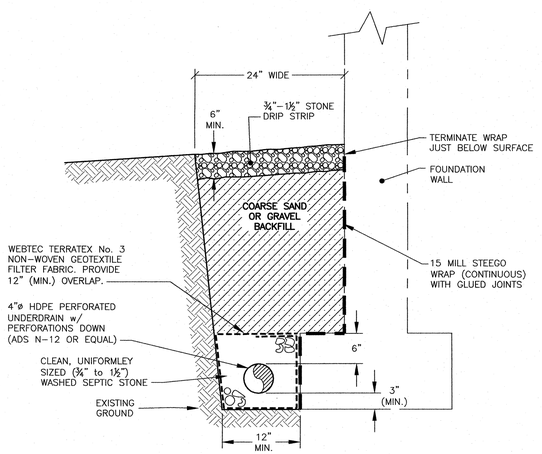
N C3 TYPICAL WATER SERVICE CONNECTION
NTS

K C3 PRESSURE PIPE ANCHORING DETAILS
INSTALL PER PORTSMOUTH REQUIREMENTS NTS



NOTES:
1) ALL CONDUIT TO BE U.L. LISTED, SCH. 80 UNDER ALL TRAVEL WAYS, & SCH. 40 FOR THE REMAINDER.
2) NORMAL CONDUIT SIZES FOR PSNH ARE 3 INCH FOR SINGLE PHASE PRIMARY AND SECONDARY VOLTAGE CABLES, 4 INCH FOR THREE PHASE SECONDARY, AND 5 INCH FOR THREE PHASE PRIMARY.
3) ALL WORK TO CONFORM TO THE NATIONAL ELECTRICAL CODE (LATEST REVISION)
4) INSTALL A 200# PULL ROPE FOR EACH CONDUIT
5) VERIFY ALL CONDUIT SPECIFICATIONS WITH UTILITY COMPANIES PRIOR TO ANY CONSTRUCTION.

L C3 UTILITY TRENCH
ELECTRIC/PHONE/CABLE NTS



O C4 STONE DRIP APRON
(UNDER BUILDING DRIP LINE) NTS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801–7114
Tel (603) 430–9282
Fax (603) 436–2315

NOTES:

1) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

2) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1–888–DIG–SAFE (1–888–344–7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

4) ALL WATER LINE INSTALLATION WORK SHALL BE TO CITY OF PORTSMOUTH WATER DEPARTMENT STANDARDS. DETAILS MAY OR MAY NOT BE UP–TO–DATE.

SITE DEVELOPMENT
41 SALEM STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	3/18/20

REVISIONS

AS NOTED MARCH 2020

DETAILS D3

3082.01

AMBIT ENGINEERING, INC. CIVIL ENGINEERS AND LAND SURVEYORS

200 Griffin Road, Unit 3, Portsmouth, NH 03801
Phone (603) 430-9282 Fax 436-2315

18 March 2020

Juliet Walker, Planning Director
City of Portsmouth
1 Junkins Avenue
Portsmouth, NH 03801

RE: Request for TAC Site Plan Approval at 41 Salem Street, Tax Map 144 / Lot 31

Dear Ms. Walker:

On behalf of Bonza Builders, LLC we hereby submit the attached and enclosed Site Plans for TAC Approval for a Residential Development at 41 Salem Street. The project proposes the construction of three new single family homes with the associated and required site improvements. The site is currently a single family home which will be demolished.

The following plans are included in our submission:

- Cover Sheet – This shows the Development Team, Legend, Site Location, and Site Zoning.
- Standard Boundary Survey – This plans show the property boundary lines and areas.
- Existing Conditions Plan C1 – This plan shows the existing features on the property.
- Site Layout Plan C2 – This plan shows the proposed site layout.
- Utility Plan C3 – This plan shows the proposed utilities including individual service connections.
- Grading and Erosion Control Plan C4 – This plan shows the proposed grading and erosion control. The project proposes off-site drainage improvements as project mitigation.
- Landscape Plan C5 – This plan shows the proposed landscaping at the site.
- Demolition Plan C6 – This plan shows site demolition. The existing single family residence will be removed from the property.
- Detail Sheets D1 to D3 – These plans show the associated construction details.

Also included herewith is the following Supplemental Information to assist in the review of the project: Site Plan Application Checklist, Site Cost Estimate, Trip Generation, and Architectural Plans. We look forward to the TAC Committee's review of this submission. If there are any questions or comments please feel free to reach out to me.

Sincerely,

John Chagnon

John R. Chagnon, PE
CC: Bonza Builders, LLC

Construction Cost Estimate

Bonza Builders, Inc.

Date: March 18, 2020

Project: Residential Development Job No: 3082.01

Location: 41 Salem Street, Portsmouth, NH

Scope: **Site Cost Estimate**

ITEM NO	DESCRIPTION	UNIT	AMOUNT	UNIT COST	TOTAL
1	6" PVC Sewer	LF	145	$80.00	$11,600.00
2	15" HDPE Drainage Pipe	LF	146	$120.00	$17,520.00
3	Underdrains	LF	290	$38.00	$11,020.00
4	Catch basin	EA	2	$4,000.00	$8,000.00
5	4' DMH	EA	2	$4,000.00	$8,000.00
6	Crushed Gravel / Base Preparation	CY	88	$50.00	$4,400.00
7	Sidewalk	SY	38	$96.00	$3,648.00
8	Landscape Plantings	LS	1	$15,000.00	$15,000.00
9	Re-Set Curb	LF	65	$45.00	$2,925.00
10	Underground Electric / Conduit	LF	130	$55.00	$7,150.00
11	Transformer	EA	1	$10,000.00	$10,000.00
12	Water Services	LF	100	$80.00	$8,000.00
13	Erosion Control	LS	1	$1,000.00	$1,000.00
14	Paving	TON	22	$210.00	$4,620.00
15	Gas Service	LF	110	$85.00	$9,350.00
16	Demolition	LS	1	$5,000.00	$5,000.00
17	Drip Apron	LF	180	$35.00	$6,300.00
	TOTAL				**$133,533**

Note: This is an estimate of construction costs based upon various sources

APPLICATION FEE:

$500 + ($ 133533/1000 x $5) + (10,000 / 1,000 x $10)= $ 1,267.67

AMBIT ENGINEERING, INC. CIVIL ENGINEERS AND LAND SURVEYORS

200 Griffin Road, Unit 3, Portsmouth, NH 03801
Phone (603) 430-9282 Fax 436-2315

18 March, 2020

Trip Generation Calculation
Site Redevelopment
41 Salem Street
Portsmouth, NH

The purpose of this calculation is to identify the net change in vehicle trips expected to be generated by the site development at 41 Salem Street. Currently the lot has a single family residence. The plan is to remove the existing single family residence and construct three residential units on the lot.

In developing the expected trips Ambit Engineering considered the standard trip generation rates and equations published in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition (2012). The land use category that best correlates with the existing use is Single Family Home (ITE Land Use Code 220). The land use category that best correlates with the proposed use is "Residential Condominium / Townhouse" (ITE Land Use Code 230). The trip rates, based upon the number of dwelling units in the buildings are summarized below for the **Weekday AM and PM Peak Hour**:

Trip Generation Summary

Existing – AM Peak Hour	
Single Family Home (0.75 trips per dwelling unit)	0.75 x 1 units = 1 trip
Total	1 trip
Proposed – AM Peak Hour	
Condominium/Townhouse (0.44 trips per dwelling unit)	0.44 x 3 units = 2 trips
Total	2 trips
Existing – PM Peak Hour	
Single Family Home (0.75 trips per dwelling unit)	0.75 x 1 units = 1 trip
Total	1 trip
Proposed – PM Peak Hour	
Condominium/Townhouse (0.52trips per dwelling unit)	0.52 x 3 units = 2 trips
Total	2 trips

Trip Generation Impact

The increase anticipated with this project is 1 additional trip in the AM and 1 additional trip in the PM peak hours. The anticipated increase in traffic is negligible and does not substantially alter the traffic conditions. Salem Street is designed for uses such as the proposed project.

Please feel free to call if you have any questions or comments.

Sincerely,

John Chagnon

John R. Chagnon, PE

Clara

1011.500.v2 - 41 Salem St

Art Form Architecture, Inc.

Prelim / Work in Progress 603-431-9559

Clara

1011.500.v2 - 41 Salem St

Art Form Architecture, Inc.

Prelim / Work in Progress 603-431-9559

11/25/2019

Clara

1011.500.v2 - 41 Salem St

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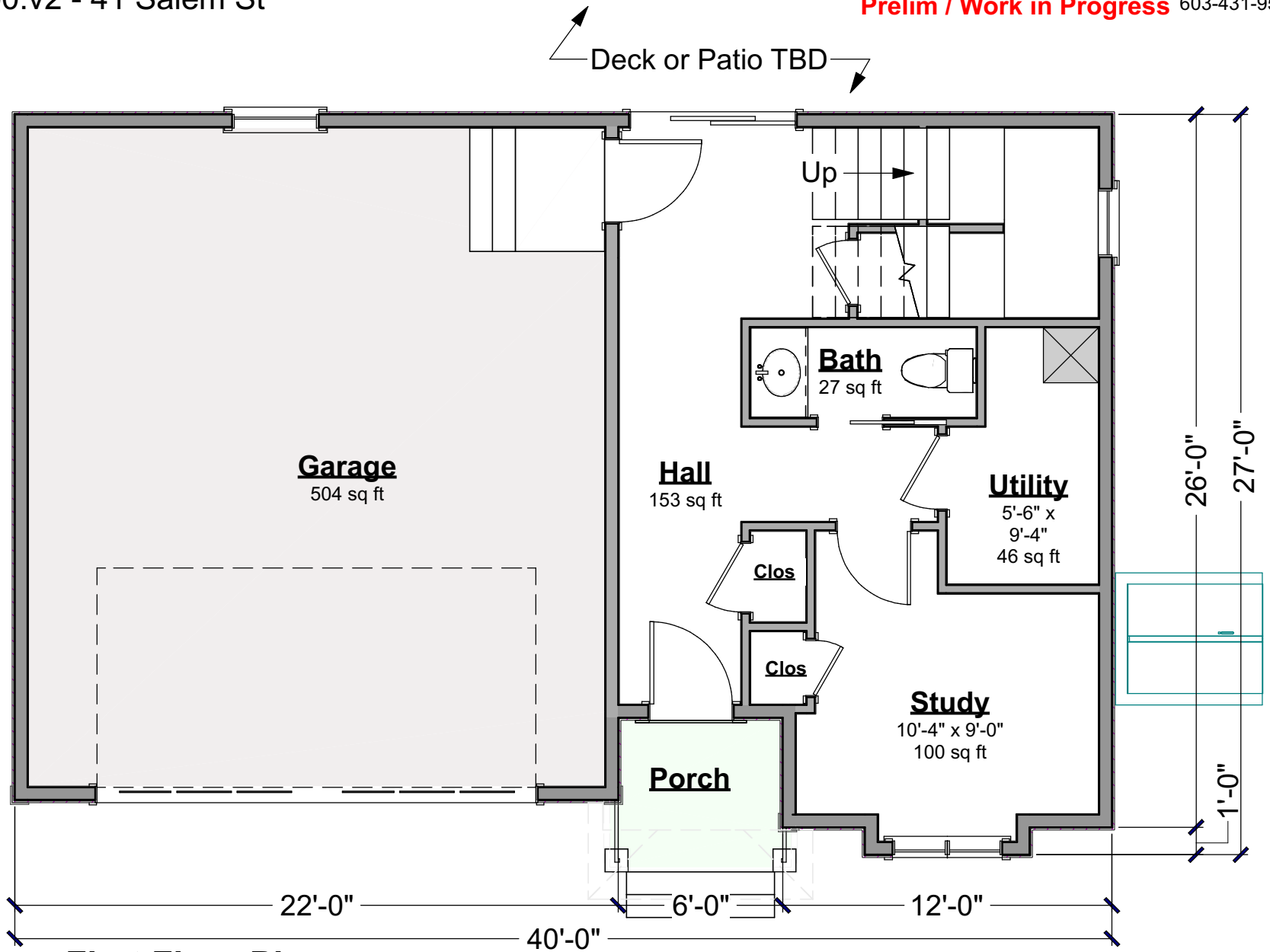


First Floor Plan

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

Living Area this Floor: 460 sq ft
8ft Finished Ceiling Height

11/25/2019

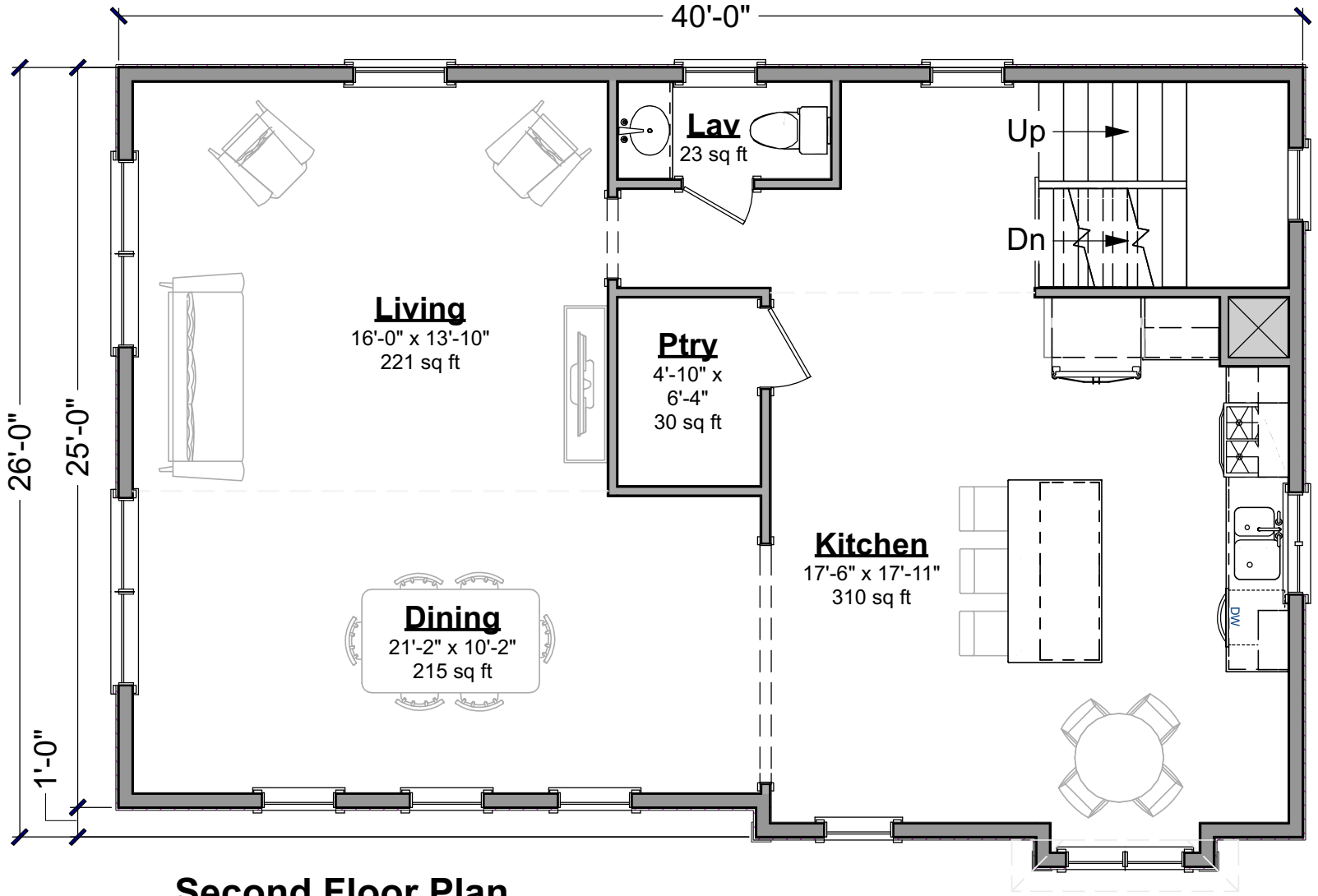
Clara

1011.500.v2 - 41 Salem St

Art Form Architecture, Inc.

Prelim / Work in Progress 603-431-9559

NOTE; Front Buildings are 36 feet wide



Second Floor Plan

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

Living Area this Floor: 1024 sq ft
8ft Finished Ceiling Height

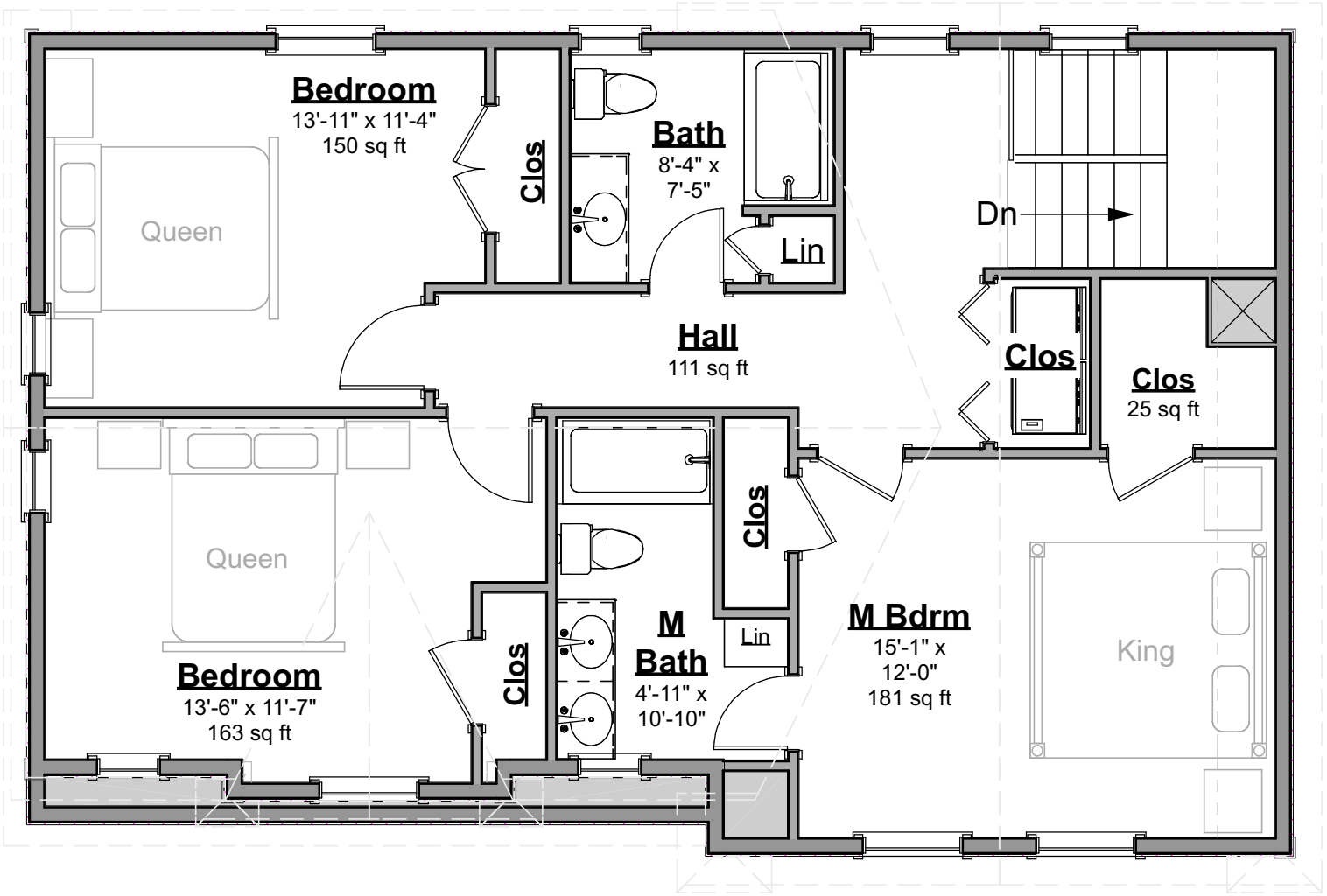
11/25/2019

Clara

1011.500.v2 - 41 Salem St

Art Form Architecture, Inc.

Prelim / Work in Progress 603-431-9559



Third Floor Plan

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

Living Area this Floor: 986 sq ft
8ft Finished Ceiling Height

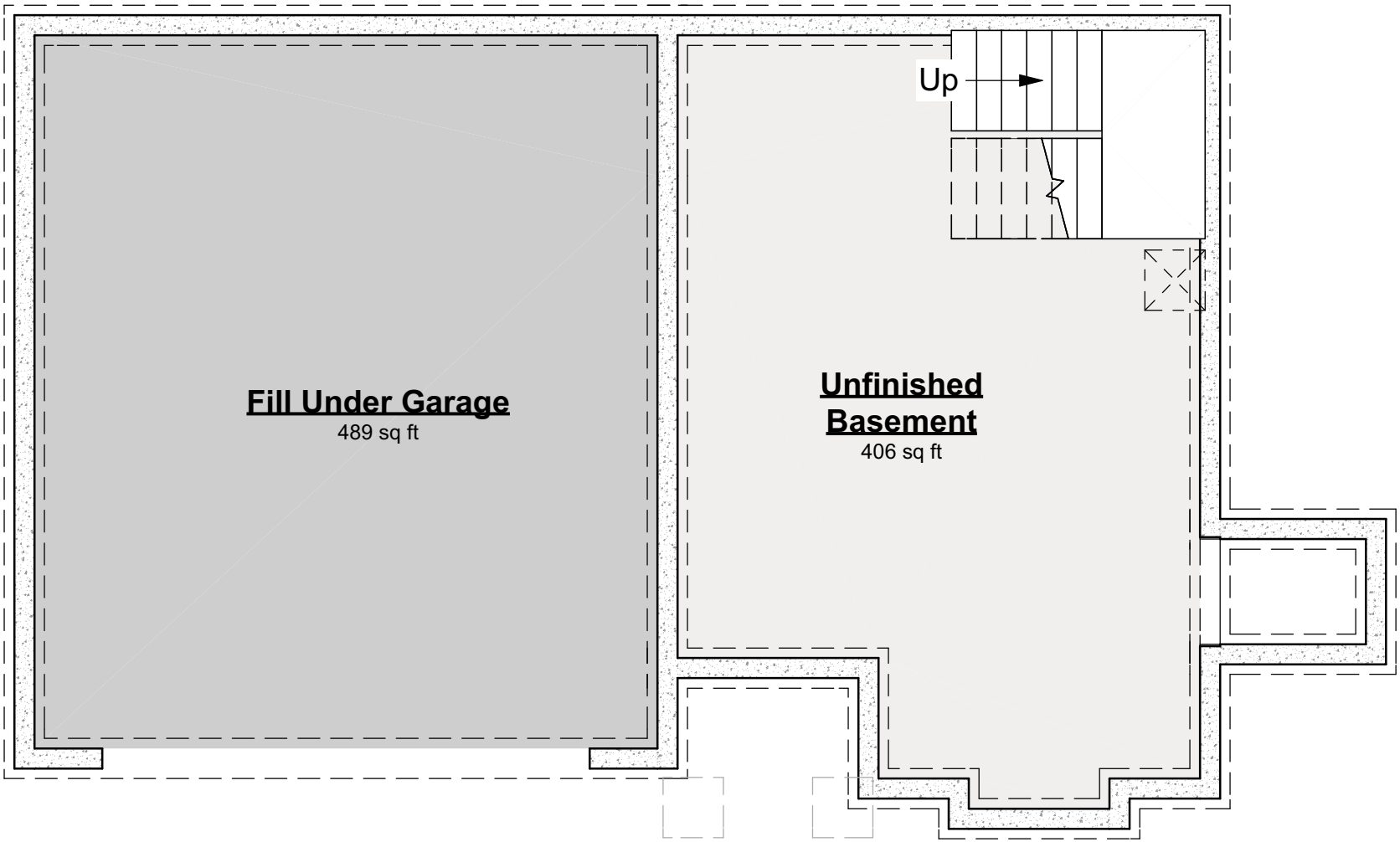
11/25/2019

Clara

1011.500.v2 - 41 Salem St

Art Form Architecture, Inc.

Prelim / Work in Progress 603-431-9559



IMPORTANT:

- Unless an area is specifically designed as "no posts", additional posts may be required.
- Unless specifically noted otherwise, basement beams will be framed below the floor joists.
- Basement spaces accommodate utilities, mechanical equipment and the horizontal movement of plumbing pipes, electrical wires and heating ducts. Both as part of any Construction Drawings produced based on this design and as future decisions made by the builder, changes to accommodate these items must be expected.
- Basement window locations are dependent on site conditions and utility locations. Clarify number and location with your builder.

Clara

1011.500.v2 - 41 Salem St

Art Form Architecture, Inc.

Prelim / Work in Progress 603-431-9559

Front Elevation

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Prelim / Work in Progress 603-431-9559

Rear Elevation

Deck or
Patio TBD

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1011.500.v2 - 41 Salem St

Art Form Architecture, Inc.

Prelim / Work in Progress 603-431-9559

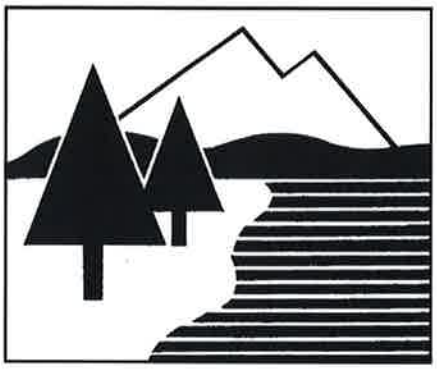
Right Elevation

Left Elevation

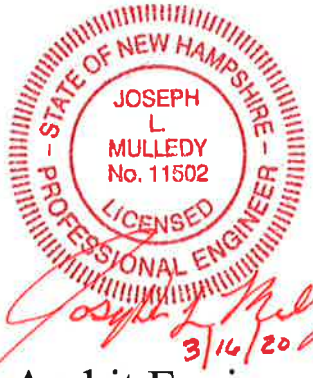
DRAINAGE ANALYSIS

PROPOSED RESIDENTIAL REDEVELOPMENT

41 Salem Street
PORTSMOUTH, NH



March 18, 2020



Ambit Engineering, Inc.

Civil Engineers and Land Surveyors
200 Griffin Road, Unit 3
Portsmouth, NH 03801
Phone: 603.430.9282; Fax: 603.436.2315
E-mail: jlm@ambitengineering.com
(Ambit Job Number3082.01)

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The hydrologic modeling for this project considers the “Extreme Precipitation” values from The Northeast Regional Climate Center (Cornell University). For modeling purposes, these values have been used and are included in this report.

This drainage analysis examines the pre-development (existing) and post-development (proposed) stormwater drainage patterns for the proposed redevelopment of a residential lot with an existing single family home and construction of three single family homes and associated site improvements at 41 Salem Street in Portsmouth, NH. The site is shown on the City of Portsmouth Assessor’s Tax Map 144 as Lot 31. The total lot size is 10,903 square-feet (0.2503 acres).

The new buildings will be serviced by public water and sewer. The development has the potential to increase stormwater runoff to adjacent properties, and therefore must be designed in a manner to prevent that occurrence. This will be done primarily by capturing stormwater runoff and routing it through appropriate stormwater facilities, designed to ensure that there will be no increase in peak runoff from the site as a result of this project.

PROPOSED RESIDENTIAL

REDEVELOPMENT

41 Salem Street

PORTSMOUTH, NH

INTRODUCTION / PROJECT DESCRIPTION

This drainage report is designed to assist the owner, planning board, contractor, regulatory reviewer, and others in understanding the impact of the proposed development project on local surface water runoff and quality. The project site is shown on the City of Portsmouth, NH Assessor's Tax Map 144 as Lot 31.

Bounding the site to the east, south and west are single and multi-family residential properties. Bounding the site to the west is Salem Street and beyond are residential properties. The property is situated in the General Residence C (GRC) Zoning District. A vicinity map is included in the Appendix to this report.

The proposed development will demolish an existing residential structure and construct three new single family units, new driveway and other associated improvements such as a utilities and landscaping. The project is anticipated to begin construction in the spring of 2020 and be substantially completed by the fall of 2020.

This report includes information about the existing site and the proposed development necessary to analyze stormwater runoff and to design any required mitigation. The report includes maps of pre-development and post-development watersheds, sub-catchment areas and calculations of runoff. The report will provide a narrative of the stormwater runoff and describe numerically and graphically the surface water runoff patterns for this site. Proposed stormwater management and treatment structures and methods will also be described, as well as erosion and sediment control practices. To fully understand the proposed site development the reader should also review a complete site plan set in addition to this report.

METHODOLOGY

This report uses the US Soil Conservation Service (SCS) Method for estimating stormwater runoff. The SCS method is published in The National Engineering Handbook (NEH), Section 4 "Hydrology" and includes the Technical Release No. 20, (TR-20) "Computer Program for Project Formulation Hydrology", and Technical Release No. 55 (TR-55) "Urban Hydrology for

Small Watersheds" methods. This report uses the HydroCAD version 10.0 program, written by HydroCAD Software Solutions LLC, Chocorua, N.H., to apply these methods for the calculation of runoff and for pond modeling. The hydrologic modeling considers the "Extreme Precipitation" values from The Northeast Regional Climate Center (Cornell University).These values have been used and are included in this report.

Time of Concentration (Tc) is calculated by entering measured flow path data such as flow path type, length, slope and surface characteristics into the HydroCAD program. For the purposes of this report, a minimum time of concentration of 5 minutes is used.

The storm events used for the calculations in this report are the 10-year and 50-year (24-hour) storms. Watershed basin boundaries have been delineated using topographic maps prepared by Ambit Engineering and field observations to confirm.

SITE SPECIFIC INFORMATION

Based on the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), Soil Survey of Rockingham County, New Hampshire, and confirmed by field exploration conducted by Ambit Engineering, Inc., the site is made up of one soil type:

699 – Urban land – This soil does not have a Hydrologic Soil Group (HSG) classification. Four test pits were conducted to a depth of about 60" and found to have fairly consistent soil types across all four. Soils were found to be generally fine sandy loam over fine loamy sand and silty or clayey soils to greater depths. The test pit locations and logs can be reviewed on Sheet C4.

The physical characteristics of the site consist of (1-5%) grades that generally slope downward from the west (front along Salem Street) to the east (back). Elevations on the site range from 24 to 19 feet above sea level. The existing site is partially developed and includes an existing building located at the front of the lot, with an asphalt driveway. Vegetation around the developed portion of the lot consists of established grasses, shrubs and trees.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) number 33015C0259E (effective date May 17, 2005), the project site is located in Zone X and is determined to be outside of the 0.2% annual chance floodplain. A copy of the FIRM map is included in the Appendix.

PRE-DEVELOPMENT DRAINAGE

The existing site drains via overland flow from the front of the lot at Salem Street towards the rear of the site. There is no existing stormwater detention or treatment on the site.

In the pre-development condition, the site has been analyzed as one single watershed basin (ES1) based on localized topography and discharge location. Additionally, there is runoff entering the

lot from Off Site. This off site area has been analyzed as a singl watershed basin (OS1). ES1 and OS1 flow overland directly to the northeast corner of the lot to Discharge Point 1 (DP1) and further at Discharge Point 2 (DP2) which is a catch basin located at the corner of McDonough and Cabot Street. The majority of the lot is previously developed consisting of a single family home, paved driveway and grassed / landscaped yard. The runoff curve number (CN) for Subcatchment ES1 is calculated to be 67 with impervious coverage of 15.13%. The CN value for Subcatchment OS1 is calculated to be 89 with 74.45% impervious coverage. The Time of Concentration in all subcatchments accounts for the flow paths that are not modeled as ponds (catch basins). This produces an accurate analysis of the timing of the peak at Discharge Point 2.

Table 1: Pre-Development Watershed Basin Summary

Watershed Basin ID	Basin Area (SF)	Tc (MIN)	CN	10-Year Runoff (CFS)	50-Year Runoff (CFS)	Design Point
ES1	10.903	5.5	67	0.63	1.31	DP1/DP2
OS1	18,588	10.6	89	1.78	2.86	DP1/DP2

POST-DEVELOPMENT DRAINAGE

The proposed development has been designed to match the pre-development drainage patterns to the greatest extent feasible. In the post-development condition, the site has been analyzed as five separate watersheds (PS1, PS1a, PS2, PS3 and OS 1) based on localized topography and discharge locations. Subcatchments PS1 and PS2 are primarily site runoff (grass and asphalt driveway pavement) that flow overland to a proposed catch basin located on site near the driveway entrance along Salem Street and further down Salem Street within a proposed closed drainage system which will tie into the existing closed drainage in McDonough Street. Subcatchment PS1a is runoff from the roofs of all three homes that is filtered through Drip Edge Filter Strips located at each home. This treated runoff discharges to the catch basin located at the corner of the driveway entrance along Salem Street. Subcathment PS3 is the remainder of the lot which is not directed to Salem Street. This runoff flows via a grassed pathway through adjacent lots to McDonough Street. Subcatchment OS 1 is the same area of off site runoff as in the existing conditions which combines with the runoff from PS3 and discharges via the same grassed pathway to McDonough Street and further to the catch basin located at the corner of McDonough and Cabot Streets. This allows for a detailed review of Design Points to show the comparison of runoff from the site in the pre-development and post-development conditions as well as off site points of interest. The Time of Concentration in all subcatchments accounts for

the flow paths that are not modeled as ponds (catch basins). This produces an accurate analysis of the timing of the peak at Discharge Point 2.

The runoff curve number (CN) for basin PS1 is calculated to be 79 with impervious coverage of 48.83%. The runoff curve number (CN) for basin PS1a is calculated to be 98 with impervious coverage of 100.00%. The runoff curve number (CN) for basin PS2 is calculated to be 79 with impervious coverage of 47.84%. The runoff curve number (CN) for basin PS3 is calculated to be 61 with impervious coverage of 0.00%. The runoff curve number (CN) for basin OS 1 is unchanged compared to the existing conditions.

Table 2: Post-Development Watershed Basin Summary

Watershed Basin ID	Basin Area (SF)	Tc (MIN)	CN	10-Year Runoff (CFS)	50-Year Runoff (CFS)	Design Point
PS1	2,893	0.8	79	0.29	0.51	DP1/DP2
PS1a	2,717	10.0	98	0.30	0.45	DP1/DP2
PS2	1,411	1.1	79	0.14	0.24	DP1/DP2
PS3	3,882	6.3	61	0.16	0.38	DP1/DP2
OS 1	18,588	10.6	89	1.78	2.86	DP1/DP2

The overall impervious coverage of the area analyzed in this report for all basins **increases** from 15,489 square feet (52.52%) in the pre-development condition to 18,641 square feet (63.21%) in the post-development condition. Since the site represents an increase in impervious area, the project proposes the construction of Drip Edge Soil Filters along the rooflines of each home to filter and slow the rate of runoff from the site. Since no treatment systems currently exist for the site, providing this proposed treatment is a vast improvement on the water quality of the runoff.

Table 3 shows a summary of the comparison between pre-developed flows and post-developed flows for the design point.

Table 3: Pre-Development to Post-Development Peak Flow Comparison

	Q2 (CFS)		Q10 (CFS)		Q25 (CFS)		Q50 (CFS)	
Design Point	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
DP 1	1.29	1.12	2.34	1.94	3.20	2.61	4.02	3.23
DP 2	1.29	1.41	2.34	2.44	3.20	3.25	4.02	4.02

Table 4 shows a summary of the comparison between the timing of pre-developed flows and the timing of post-developed flows for the design point. The goal here was to match those peaks as close as possible.

Table 3: Pre-Development to Post-Development Timing of Peak Flow Comparison

	Q2 (hrs)		Q10 (hrs)		Q25 (hrs)		Q50 (hrs)	
Design Point	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
DP 1	12.15	12.14	12.14	12.14	12.13	12.14	12.12	12.14
DP 2	12.14	12.14	12.14	12.13	12.13	12.13	12.12	12.13

EROSION AND SEDIMENT CONTROL PRACTICES

The erosion potential for this site as it exists is low due to the existing vegetation and the built-up nature of the surrounding sites. During construction, the major potential for erosion is wind and stormwater runoff. The contractor will be required to inspect and maintain all necessary erosion control measures, as well as installing any additional measures as required. All erosion control practices shall conform to “The Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire.” Some examples of erosion and sediment control measures to be utilized for this project during construction may include:

- Silt Soxx (or approved alternative) located at the toe of disturbed slopes
- Stabilized construction entrance at access point to the site
- Temporary mulching and seeding for disturbed areas
- Spraying water over disturbed areas to minimize wind erosion

After construction, permanent stabilization will be accomplished by permanent seeding, landscaping and surfacing the access drives and parking areas with either compacted gravel or asphalt paving.

CONCLUSION

The proposed development has been designed to be low impact in terms of stormwater quality and quantity. With the design of a much needed closed drainage system within Salem Street and on Site Stormwater Controls such as the Drip Edge Soil Filters, Stormwater runoff is managed to mitigate impacts to neighboring properties. Erosion and sediment control practices will be implemented for both the temporary condition during construction and for final stabilization after construction. Therefore, there are no negative impacts to downstream receptors or adjacent properties anticipated as a result of this project. There is also no negative impact to the City of Portsmouth storm drainage system.

REFERENCES

1. City of Portsmouth, NH. Site Plan Review Regulations amended December 18, 2014.

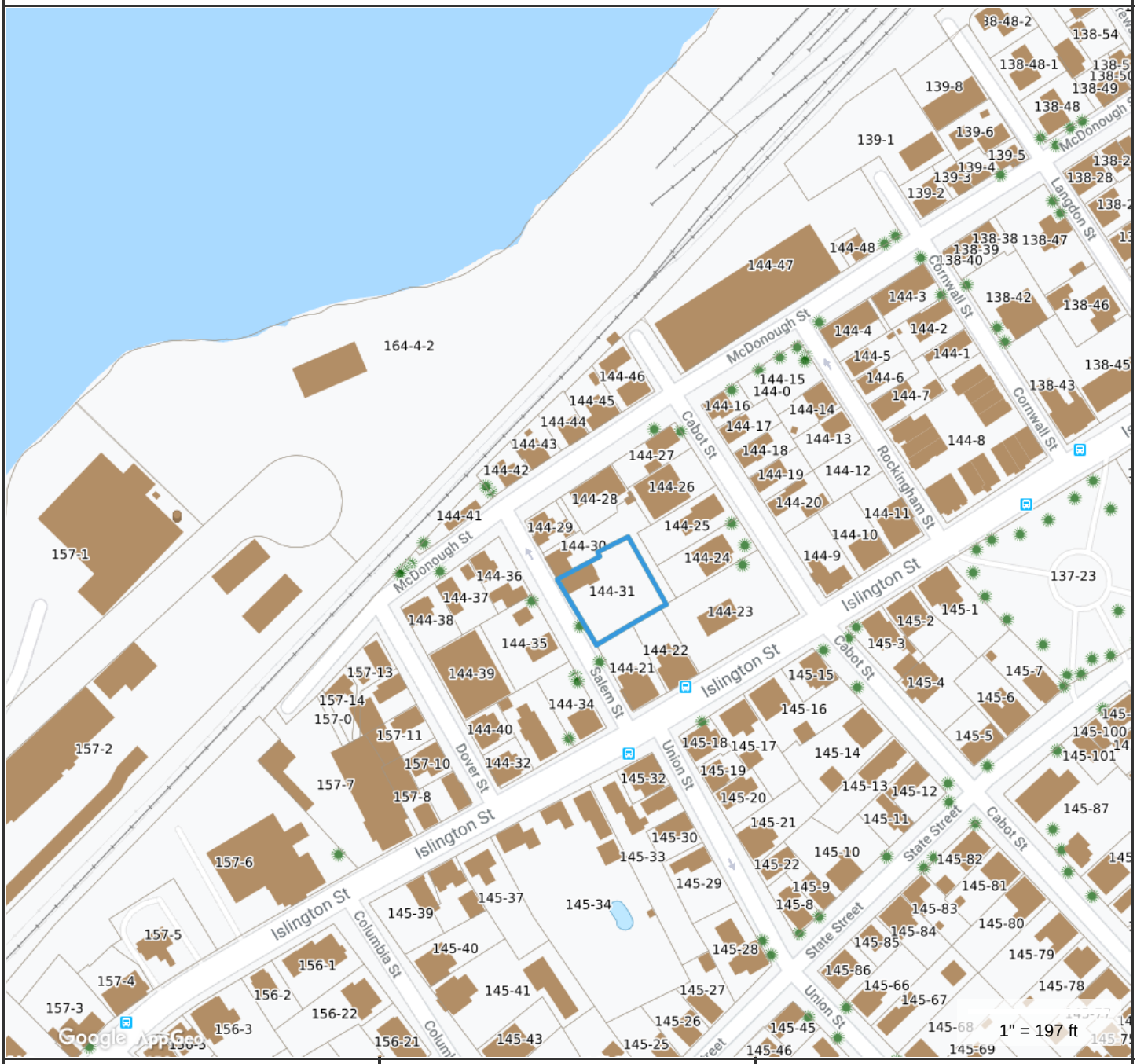
2. Comprehensive Environmental Inc. and New Hampshire Department of Environmental Services. *New Hampshire Stormwater Manual (Volumes 1, 2 and 3)*, December 2008 (Revision 1.0).

3. Minnick, E.L. and H.T. Marshall. *Stormwater Management and Erosion and Sediment Control Handbook for Urban and Developing Areas in New Hampshire*, prepared by Rockingham County Conservation District, prepared for New Hampshire Department of Environmental Services, in cooperation with USDA Soil Conservation Service, August 1992.

4. HydroCAD Software Solution, LLC. *HydroCAD Stormwater Modeling System Version 10.0* copyright 2013.

APPENDIX A

VICINITY (TAX) MAP



Property Information

Property ID	0144-0031-0000
Location	41 SALEM ST
Owner	BONZA BUILDERS LLC

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 4/1/2019
Data updated 7/17/2019

APPENDIX B

TABLES, CHARTS, ETC.

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	No
State	New Hampshire
Location	
Longitude	70.770 degrees West
Latitude	43.069 degrees North
Elevation	0 feet
Date/Time	Tue, 17 Apr 2018 15:07:43 -0400

Inches of Rain - 24 HR Event

2 YR = 3.21 x 15% = 3.69

10 YR = 4.87 x 15% = 5.60

25 YR = 6.17 x 15% = 7.10

50 Yr = 7.39 x 15% = 8.50

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	0.49	0.66	0.81	1.00	**1yr**	0.70	0.98	1.14	1.57	2.01	2.66	2.92	**1yr**	2.35	2.81	3.22	3.94	4.55	**1yr**
2yr	0.32	0.50	0.61	0.83	1.02	1.21	**2yr**	0.88	1.18	1.40	1.87	2.40	3.21	3.57	**2yr**	2.84	3.43	3.94	4.68	5.33	**2yr**
5yr	0.37	0.58	0.71	0.98	1.25	1.50	**5yr**	1.08	1.47	1.73	2.32	2.96	4.07	4.58	**5yr**	3.60	4.40	5.04	5.94	6.70	**5yr**
10yr	0.42	0.65	0.80	1.12	1.45	1.76	**10yr**	1.25	1.72	2.04	2.72	3.47	4.87	5.53	**10yr**	4.31	5.32	6.08	7.11	7.98	**10yr**
25yr	0.50	0.76	0.94	1.35	1.77	2.19	**25yr**	1.53	2.14	2.53	3.38	4.28	6.17	7.10	**25yr**	5.46	6.83	7.80	9.02	10.05	**25yr**
50yr	0.56	0.86	1.07	1.54	2.07	2.58	**50yr**	1.78	2.52	2.98	3.99	5.02	7.39	8.58	**50yr**	6.54	8.25	9.42	10.81	11.98	**50yr**
100yr	0.64	0.97	1.22	1.76	2.41	3.04	**100yr**	2.08	2.97	3.51	4.70	5.89	8.85	10.38	**100yr**	7.84	9.98	11.38	12.96	14.28	**100yr**
200yr	0.73	1.10	1.40	2.02	2.82	3.59	**200yr**	2.43	3.51	4.14	5.55	6.91	10.61	12.55	**200yr**	9.39	12.07	13.75	15.55	17.03	**200yr**
500yr	0.88	1.30	1.68	2.44	3.47	4.47	**500yr**	2.99	4.37	5.14	6.90	8.55	13.49	16.15	**500yr**	11.93	15.53	17.67	19.78	21.50	**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	0.88	**1yr**	0.63	0.86	0.92	1.33	1.68	2.23	2.50	**1yr**	1.98	2.40	2.86	3.17	3.89	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.34	3.06	3.45	**2yr**	2.71	3.32	3.82	4.55	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	2.73	3.79	4.19	**5yr**	3.35	4.03	4.72	5.54	6.24	**5yr**
10yr	0.39	0.59	0.73	1.03	1.32	1.60	**10yr**	1.14	1.56	1.81	2.39	3.06	4.37	4.87	**10yr**	3.87	4.68	5.45	6.42	7.20	**10yr**
25yr	0.44	0.67	0.83	1.19	1.56	1.90	**25yr**	1.35	1.86	2.10	2.76	3.54	4.71	5.90	**25yr**	4.17	5.68	6.66	7.80	8.69	**25yr**
50yr	0.48	0.73	0.91	1.31	1.77	2.17	**50yr**	1.52	2.12	2.35	3.08	3.94	5.32	6.82	**50yr**	4.71	6.56	7.74	9.06	10.03	**50yr**
100yr	0.54	0.81	1.01	1.47	2.01	2.47	**100yr**	1.74	2.41	2.63	3.42	4.36	5.98	7.87	**100yr**	5.29	7.57	9.00	10.53	11.58	**100yr**
200yr	0.59	0.89	1.13	1.63	2.28	2.82	**200yr**	1.97	2.75	2.93	3.79	4.80	6.70	9.09	**200yr**	5.93	8.74	10.46	12.25	13.39	**200yr**
500yr	0.69	1.02	1.31	1.91	2.71	3.37	**500yr**	2.34	3.29	3.41	4.33	5.47	7.79	10.98	**500yr**	6.89	10.56	12.75	14.99	16.21	**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	2.99	3.16	**1yr**	2.64	3.04	3.58	4.38	5.05	**1yr**
2yr	0.34	0.52	0.64	0.86	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.51	3.43	3.70	**2yr**	3.03	3.56	4.09	4.84	5.63	**2yr**
5yr	0.40	0.62	0.76	1.05	1.34	1.62	**5yr**	1.15	1.58	1.88	2.53	3.25	4.34	4.96	**5yr**	3.84	4.77	5.38	6.37	7.15	**5yr**
10yr	0.47	0.72	0.89	1.24	1.61	1.97	**10yr**	1.39	1.93	2.28	3.10	3.95	5.34	6.19	**10yr**	4.72	5.96	6.81	7.83	8.74	**10yr**
25yr	0.57	0.87	1.09	1.55	2.04	2.56	**25yr**	1.76	2.51	2.95	4.07	5.14	7.79	8.33	**25yr**	6.90	8.01	9.13	10.33	11.40	**25yr**
50yr	0.67	1.02	1.27	1.82	2.45	3.12	**50yr**	2.12	3.05	3.59	4.99	6.30	9.76	10.44	**50yr**	8.64	10.03	11.41	12.71	13.95	**50yr**
100yr	0.79	1.19	1.49	2.15	2.95	3.80	**100yr**	2.55	3.72	4.37	6.15	7.74	12.22	13.07	**100yr**	10.81	12.57	14.25	15.67	17.07	**100yr**
200yr	0.92	1.39	1.76	2.54	3.55	4.64	**200yr**	3.06	4.54	5.33	7.57	9.50	15.33	16.40	**200yr**	13.57	15.77	17.84	19.31	20.90	**200yr**
500yr	1.14	1.70	2.19	3.18	4.52	6.02	**500yr**	3.90	5.88	6.91	10.00	12.50	20.72	22.13	**500yr**	18.34	21.28	24.00	25.46	27.31	**500yr**

SCS METHODS

Technical Release - 55 Urban Hydrology for Small Watersheds

TR-55 presents simplified procedures to calculate storm runoff volume, peak rate of discharge, partial hydrographs and storage volumes for water control structures. The procedures are applicable to small watersheds, especially urbanizing watersheds with time of concentration between 0.1 hours and 10.0 hours. TR-55 is an approximation of the more detailed TR-20 method and does not have TR-20's capability to flood route. The user should examine the sensitivity of the analysis being conducted to ensure that the degree of error is tolerable. TR-55 contains two methods, the Tabular Hydrograph method and the Graphical Peak Discharge method. The accuracy of both methods is comparable; they differ only in their output. Both methods are based on open and unconfined flow over land and in channels.

The TR-55 Tabular Method can develop partial composite flood hydrographs at any point in a watershed by dividing the watershed into homogeneous subareas. By doing this, the method can estimate runoff from a larger nonhomogeneous watershed. The method is especially applicable for estimating the effects of land use change in a portion of a watershed. It can also be used to estimate the effects of proposed structures. The TR-55 Graphical Peak Discharge method calculates peak discharge using an assumed unit hydrograph and a thorough, but rapid, evaluation of the soils, slope, and surface cover characteristics of the watershed. This method is recommended for use in the design of all erosion and sediment control measures and simple stormwater management practices. When more detail and accuracy are required or when an accurate simulation of natural conditions is required, one of the other appropriate methods should be used. The TR-55 Graphical Peak Discharge method is the method that is discussed in this manual.

SCS TR-55 Graphical Peak Discharge Method

The peak discharge equation used in this method is:

$$q_p = q_u A_m Q F_p$$

where:

q_p is the peak discharge in cubic feet per second (cfs).

q_u is the unit peak discharge in cubic feet per second per square mile per inch of runoff (csm/in).

A_m is the drainage area in square miles.

Q is the runoff from the watershed in inches.

F_p is a pond and swamp adjustment factor that can be applied for ponds or swamps that are spread throughout the watershed and not in the time of concentration flow path.

Technical Release-20 Computer Program for Project Formulation Hydrology

The TR-20 computer program assists the engineer in hydrologic evaluation of flood events for use in analysis of water resource projects. The program is a single event model which computes direct runoff resulting from any natural or synthetic rainstorm. It develops flood hydrographs from runoff and routes the flow through stream channels and reservoirs. It combines the routed hydrograph with those from tributaries and computes the peak discharges, their times of occurrence and the water surface elevations at any desired cross section or structure. The program provides for the analysis of up to nine different rainstorm distributions over a watershed under various combinations of land treatment. The analysis can be performed on as many as 200 reaches and 99 structures in any one continuous run. The procedure should probably not be used for subarea drainage areas less than 5 acres nor more than 20 square miles.

Input Data Required

The following information is required to use TR-20:

Drainage Area - The drainage area of each subwatershed in square miles.

Runoff Curve Number - A factor that relates mass rainfall to mass runoff. It is based on soil characteristics, cover type, and land treatment. Tables 6-4.1 - 6-4.3 provides runoff curve numbers for urban areas and agricultural areas.

Time of Concentration - The time which would be required for the surface runoff from the hydraulically most remote part of the drainage area to reach the point being evaluated. A more detailed discussion of time of concentration is found later in this chapter.

Reach Length - The length of the stream or valley in feet selected for generally constant hydraulic characteristics for use in the study. A watershed may have several reaches in the flow path.

Cross Section Information - This information consists of either surveyed valley and channel sections with appropriate Manning's "n" values or "x" and "m" discharge coefficient values obtained from nomographs in the TR-20 documentation for the valley and channel reach.

Rainfall Data - The average depth, in inches, of rainfall occurring over a watershed or subwatershed for a given design frequency and duration storm event.

Structural Data - Information on any culverts, bridges, or reservoirs in the watershed that includes elevations, discharges, and storage behind the structures.

Output Data

The type and amount of output can be controlled by options within the program. In general the output data will provide estimates of peak flow, hydrographs, peak times, runoff volumes, and water surface elevations at any location within the watershed.

Runoff Curve Number (RCN)

The runoff curve number is a factor that relates mass rainfall to mass runoff. It is based on soil characteristics, cover type, hydrologic condition, and land treatment. Tables 6-4.1 through 6-4.3 provide runoff curve numbers for urban areas, cultivated agricultural areas, and other agricultural areas for various hydrologic conditions

Cover type relates to the kind of cover found on the soil such as vegetation, bare soil, and impervious surfaces such as parking areas, roofs, streets, and roads.

Hydrologic condition indicates the effects of cover type and treatment on infiltration and runoff rates. It is generally estimated from the density of plant and crop residue on the area. Good hydrologic condition indicates that the soil usually has low runoff potential for that specific hydrologic soil group, cover type and treatment. Some factors to consider in estimating the effect of cover on infiltration and runoff are: canopy or density of leaves, amount of year-round cover, amount of grass or close-seeded legumes in a rotation, percent of residue cover, and the degree of surface roughness.

Treatment is a cover type modifier used to describe the management of cultivated agricultural lands. It includes mechanical practices such as contouring and terracing, and management practices, such as crop rotations and reduced or no tillage.

TABLE 6-4.1 -- RUNOFF CURVE NUMBERS (Average Watershed Condition)

COVER DESCRIPTION Cover type and hydrologic condition	Average percent impervious area[2]	CURVE NUMBERS FOR HYDROLOGIC SOIL GROUP A	B	C	D
FULLY DEVELOPED URBAN AREAS[1] (Vegetation Established)					
Lawns, open spaces, parks, golf courses, cemeteries, etc.					
good condition; grass cover on 75% or more of the area		39	61	74	80
fair condition; grass cover on 50% to 75% of the area		49	69	79	84
poor condition; grass cover on 50% or less of the area		68	79	86	89
Paved parking lots, roofs, driveways, etc.		98	98	98	98
Streets and roads;					
paved with curbs and storm sewers		98	98	98	98
gravel		76	85	89	91
dirt		72	82	87	89
paved with open ditches		83	89	92	93
Commercial and business areas	85	89	92	94	95
Industrial districts	72	81	88	91	93
Row houses, town houses, and residential with lot sizes 1/8 acre or less	65	77	85	90	92
Residential					
Average lot size					
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acre	12	46	65	77	82
DEVELOPING URBAN AREAS[3] (No vegetation Established)					
Newly graded area		77	86	91	94

1. For land uses with impervious areas, curve numbers are computed assuming that 100% of runoff from impervious areas is directly connected to the drainage system. Pervious areas (lawn) are considered to be equivalent to lawns in good condition and the impervious areas have an RCN of 98.

2. Includes paved streets.

3. Use for the design of temporary measures during grading and construction. Impervious area percent for urban areas under development vary considerably. The user will determine the percent impervious. Then using the newly graded area RCN and Table 6-4, the composite RCN can be computed for any degree of development.

Source: USDA Soil Conservation Service

TABLE 6-4.2 -- RUNOFF CURVE NUMBERS (Average Watershed Condition)

COVER DESCRIPTION		Hydrologic condition[4]	CURVE NUMBERS FOR HYDROLOGIC SOIL GROUP			
Cover type and hydrologic condition			A	B	C	D
CULTIVATED AGRICULTURAL LAND						
Fallow	Bare soil		77	86	91	94
	Crop residue cover (CR)	poor	76	85	90	93
	CR	good	74	83	88	90
Row crops	Straight row (SR)	poor	72	81	88	91
	SR	good	67	78	85	89
	SR & CR	poor	71	80	87	90
	SR & CR	good	64	75	82	85
	Contoured (C)	poor	70	79	84	88
	C	good	65	75	82	86
	C & CR	poor	69	78	83	87
	C & CR	good	64	74	81	85
	Contoured & Terraces (C&T)	poor	66	74	80	82
	C&T	good	62	71	78	81
	C&T & CR	poor	65	73	79	81
	C&T & CR	good	61	70	77	80
Small grain	SR	poor	65	76	84	88
	SR	good	63	75	83	87
	SR & CR	poor	64	75	83	86
	SR & CR	good	60	72	80	84
	C	poor	63	74	82	85
	C	good	61	73	81	84
	C & CR	poor	62	73	81	84
	C & CR	good	60	72	80	83
	C&T	poor	61	72	79	82
	C&T	good	59	70	78	81
	C&T & CR	poor	60	71	78	81
	C&T & CR	good	58	69	77	80
Close-seeded Legumes or Rotation Meadow[5]	SR	poor	66	77	85	89
	SR	good	58	72	81	85
	C	poor	64	75	83	85
	C	good	55	69	78	83
	C&T	poor	63	73	80	83
	C&T	good	51	67	76	80

4. For conservation tillage poor hydrologic condition, 5 to 20 percent of the surface is covered with residue (less than 750 #/acre row crops or 300#/acre small grain).
   For conservation tillage good hydrologic condition, more than 20 percent of the surface is covered with residue (greater than 750 #/acre row crops or 300 #/acre small grain).
5. Close-drilled or broadcast.

Source: USDA Soil Conservation Service

TABLE 6-4.3 -- RUNOFF CURVE NUMBERS (Average Watershed Condition)

COVER DESCRIPTION Cover type and hydrologic condition	Hydrologic condition[6]	CURVE NUMBERS FOR HYDROLOGIC SOIL GROUP A	B	C	D
NON-CULTIVATED AGRICULTURAL LAND					
Pasture, grassland, or range - continuous forage for grazing	poor	68	79	86	89
	fair	49	69	79	84
	good	39	61	74	80
Meadow - continuous grass, protected from grazing and generally mowed for hay	---	30	58	71	78
Woods-grass combination (orchard or tree farm)	poor	57	73	82	86
	fair	43	65	76	82
	good	32	58	72	79
Brush - brush-weed-grass mixture with brush the major element	poor	48	67	77	83
	fair	35	56	70	77
	good	30	48	65	73
Woods	poor	45	66	77	83
	fair	36	60	73	79
	good	30	55	70	77
Farmsteads - buildings, lanes, driveways, and surrounding lots	---	59	74	82	86

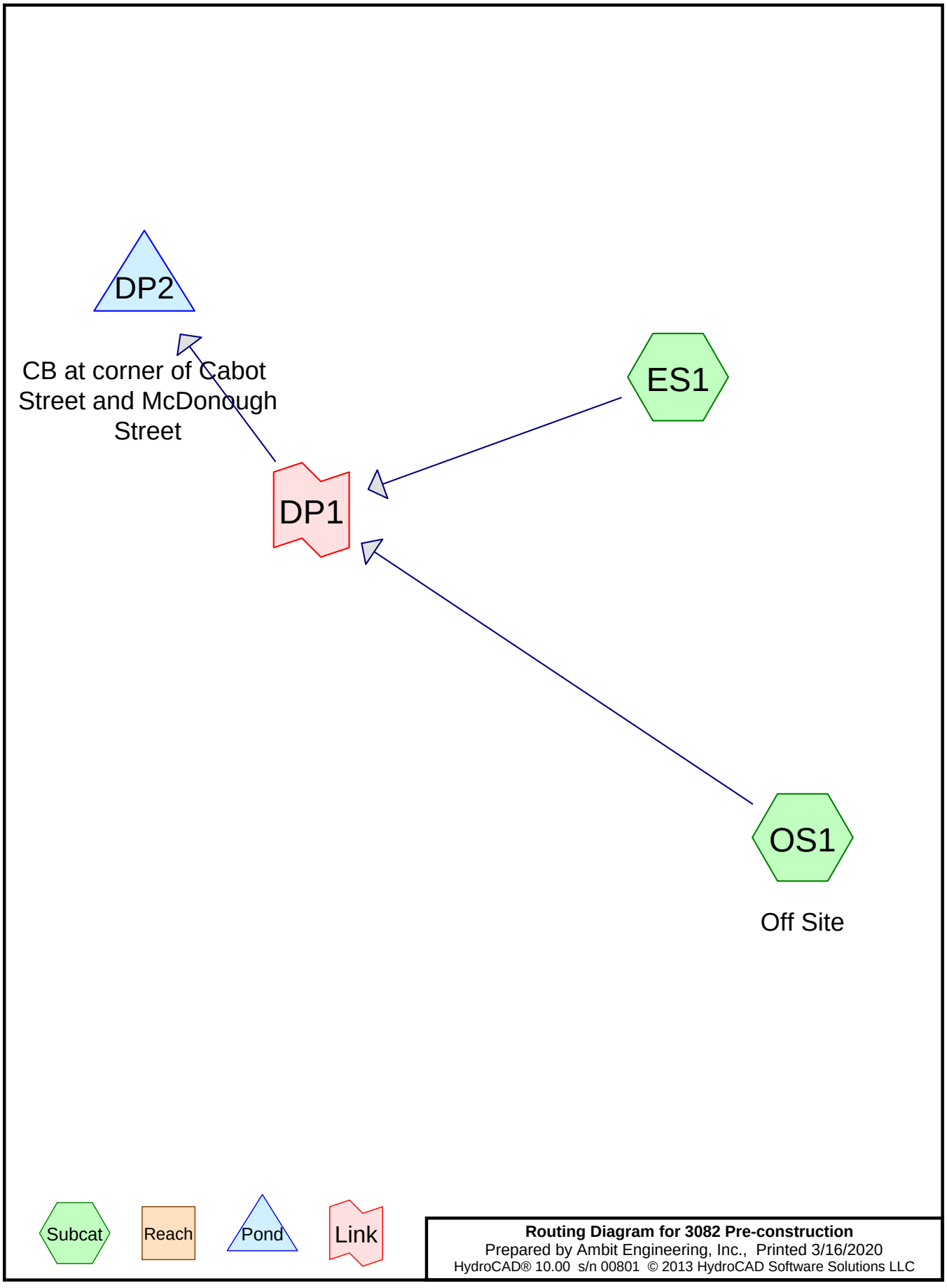
6. Poor hydrologic condition has less than 50 percent ground cover density.
Fair hydrologic condition has between 50 and 75 percent ground cover density.
Good hydrologic condition has more than 75 percent ground cover density.

Source: USDA Soil Conservation Service

APPENDIX C

HYDROCAD DRAINAGE

ANALYSIS CALCULATIONS



Routing Diagram for 3082 Pre-construction
Prepared by Ambit Engineering, Inc., Printed 3/16/2020

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
14,003	61	>75% Grass cover, Good, HSG B (ES1, OS1)
650	98	Paved parking, HSG B (ES1)
1,000	98	Roofs, HSG B (ES1)
13,838	98	Unconnected roofs, HSG B (OS1)
29,491	**80**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
29,491	HSG B	ES1, OS1
0	HSG C	
0	HSG D	
0	Other	
29,491		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
0	14,003	0	0	0	14,003	>75% Grass cover, Good	
0	650	0	0	0	650	Paved parking	
0	1,000	0	0	0	1,000	Roofs	
0	13,838	0	0	0	13,838	Unconnected roofs	
0	**29,491**	**0**	**0**	**0**	**29,491**	**TOTAL AREA**	

Time span=0.00-30.00 hrs, dt=0.06 hrs, 501 points x 5
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment ES1: Runoff Area=10,903 sf 15.13% Impervious Runoff Depth=0.96"
Flow Length=515' Tc=5.5 min CN=67 Runoff=0.24 cfs 871 cf

Subcatchment OS1: Off Site Runoff Area=18,588 sf 74.45% Impervious Runoff Depth=2.53"
Flow Length=722' Tc=10.6 min CN=89 Runoff=1.06 cfs 3,924 cf

Pond DP2: CB at corner of Cabot Street and McDonough Street Inflow=1.29 cfs 4,795 cf
Primary=1.29 cfs 4,795 cf

Link DP1: Inflow=1.29 cfs 4,795 cf
Primary=1.29 cfs 4,795 cf

Total Runoff Area = 29,491 sf Runoff Volume = 4,795 cf Average Runoff Depth = 1.95"
47.48% Pervious = 14,003 sf 52.52% Impervious = 15,488 sf

Summary for Subcatchment ES1:

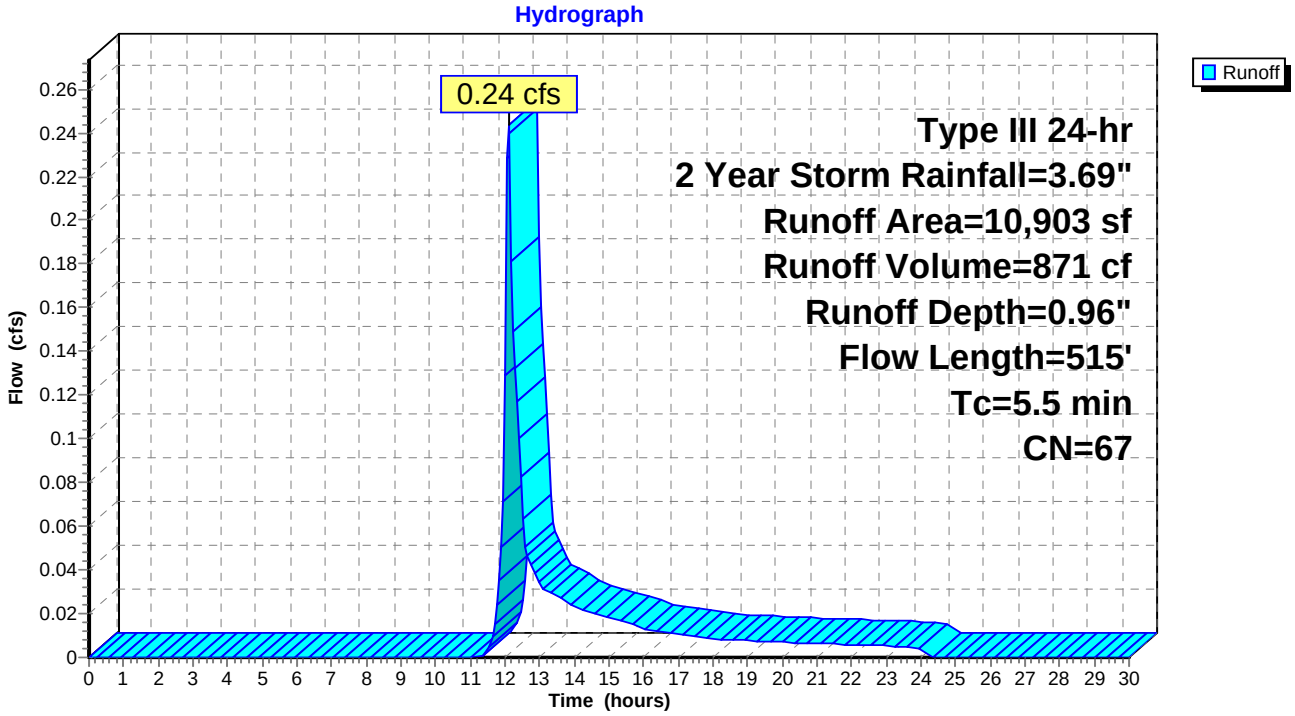
Runoff = 0.24 cfs @ 12.10 hrs, Volume= 871 cf, Depth= 0.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.06 hrs
Type III 24-hr 2 Year Storm Rainfall=3.69"

Area (sf)	CN	Description
9,253	61	>75% Grass cover, Good, HSG B
1,000	98	Roofs, HSG B
650	98	Paved parking, HSG B
10,903	67	Weighted Average
9,253	61	84.87% Pervious Area
1,650	98	15.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	305	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	210	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.5	515	Total			

Subcatchment ES1:



Summary for Subcatchment OS1: Off Site

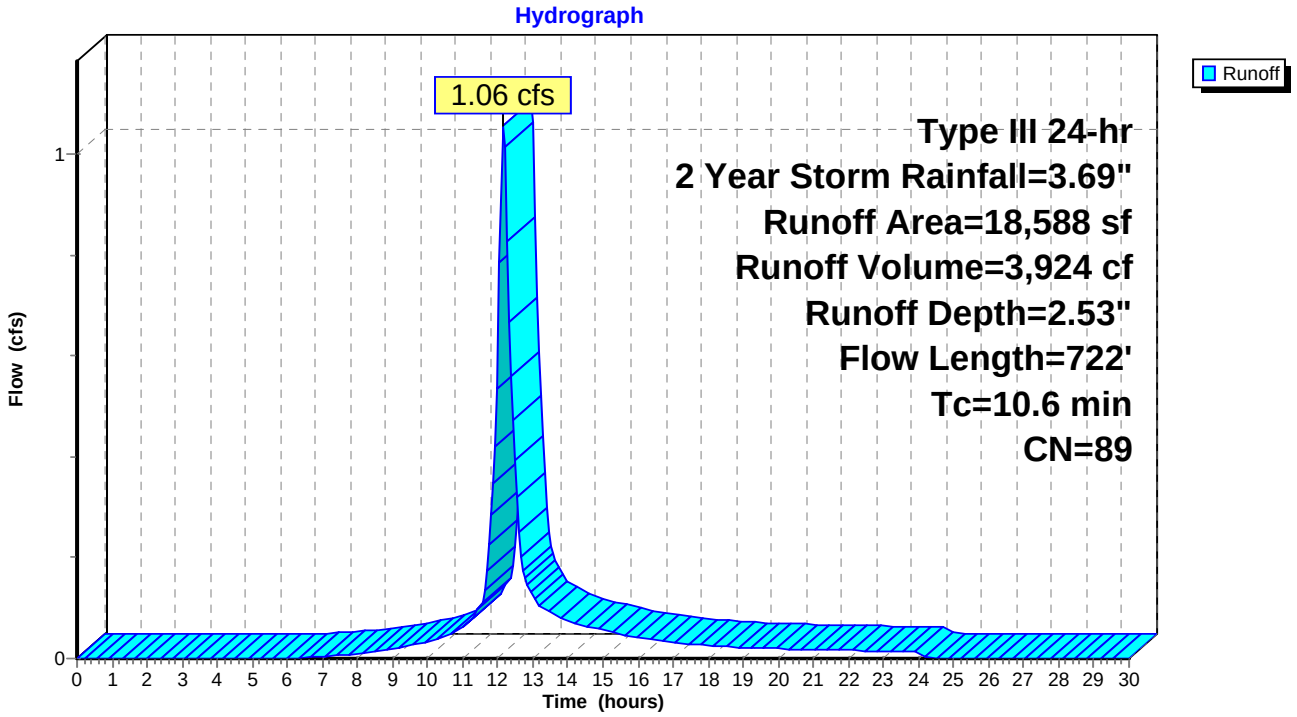
Runoff = 1.06 cfs @ 12.15 hrs, Volume= 3,924 cf, Depth= 2.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.06 hrs
Type III 24-hr 2 Year Storm Rainfall=3.69"

Area (sf)	CN	Description
13,838	98	Unconnected roofs, HSG B
4,750	61	>75% Grass cover, Good, HSG B
18,588	89	Weighted Average
4,750	61	25.55% Pervious Area
13,838	98	74.45% Impervious Area
13,838		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	119	0.0252	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	42	0.0833	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.5	46	0.0326	1.43		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.21"
4.0	305	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	210	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.6	722	Total			

Subcatchment OS1: Off Site

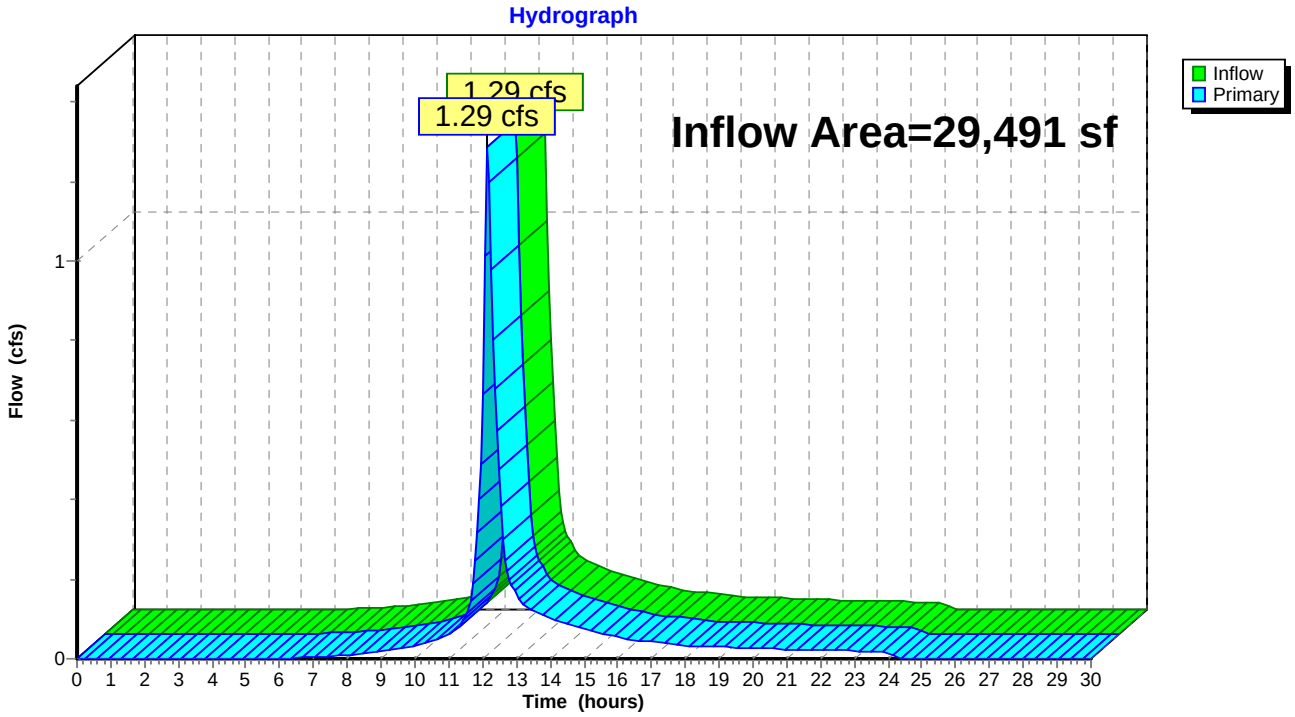


Summary for Pond DP2: CB at corner of Cabot Street and McDonough Street

Inflow Area = 29,491 sf, 52.52% Impervious, Inflow Depth = 1.95" for 2 Year Storm event
Inflow = 1.29 cfs @ 12.14 hrs, Volume= 4,795 cf
Primary = 1.29 cfs @ 12.14 hrs, Volume= 4,795 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.06 hrs / 5

Pond DP2: CB at corner of Cabot Street and McDonough Street

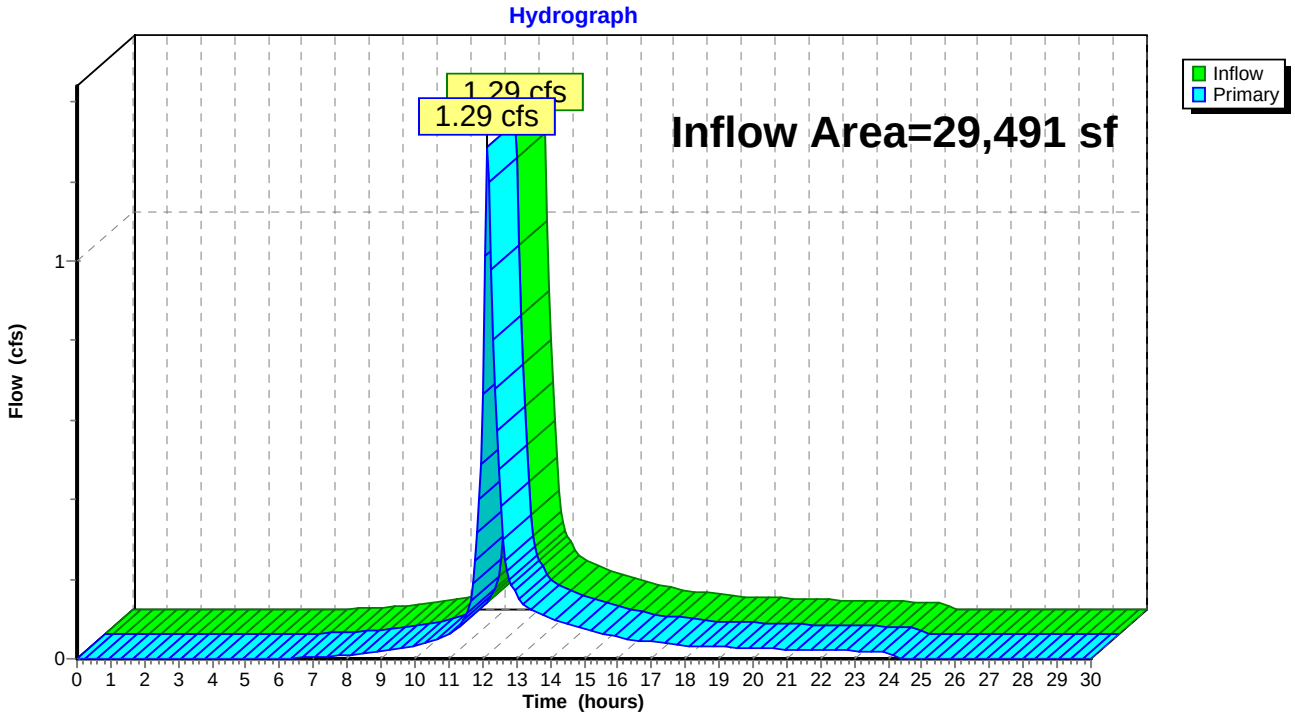


Summary for Link DP1:

Inflow Area = 29,491 sf, 52.52% Impervious, Inflow Depth = 1.95" for 2 Year Storm event
Inflow = 1.29 cfs @ 12.14 hrs, Volume= 4,795 cf
Primary = 1.29 cfs @ 12.14 hrs, Volume= 4,795 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.06 hrs

Link DP1:



Time span=0.00-30.00 hrs, dt=0.06 hrs, 501 points x 5
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment ES1: Runoff Area=10,903 sf 15.13% Impervious Runoff Depth=2.23"
Flow Length=515' Tc=5.5 min CN=67 Runoff=0.63 cfs 2,028 cf

Subcatchment OS1: Off Site Runoff Area=18,588 sf 74.45% Impervious Runoff Depth=4.35"
Flow Length=722' Tc=10.6 min CN=89 Runoff=1.78 cfs 6,736 cf

Pond DP2: CB at corner of Cabot Street and McDonough Street Inflow=2.34 cfs 8,764 cf
Primary=2.34 cfs 8,764 cf

Link DP1: Inflow=2.34 cfs 8,764 cf
Primary=2.34 cfs 8,764 cf

Total Runoff Area = 29,491 sf Runoff Volume = 8,764 cf Average Runoff Depth = 3.57"
47.48% Pervious = 14,003 sf 52.52% Impervious = 15,488 sf

Summary for Subcatchment ES1:

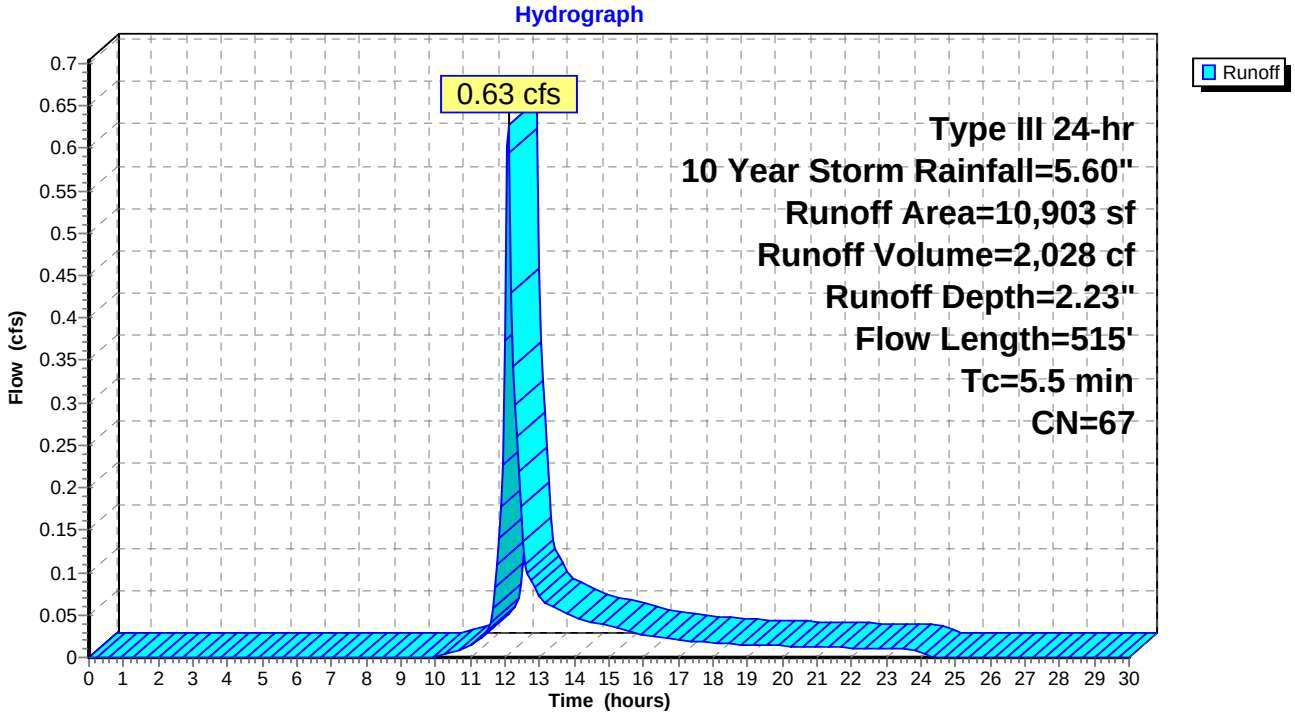
Runoff = 0.63 cfs @ 12.09 hrs, Volume= 2,028 cf, Depth= 2.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.06 hrs
Type III 24-hr 10 Year Storm Rainfall=5.60"

Area (sf)	CN	Description
9,253	61	>75% Grass cover, Good, HSG B
1,000	98	Roofs, HSG B
650	98	Paved parking, HSG B
10,903	67	Weighted Average
9,253	61	84.87% Pervious Area
1,650	98	15.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	305	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	210	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.5	515	Total			

Subcatchment ES1:



Summary for Subcatchment OS1: Off Site

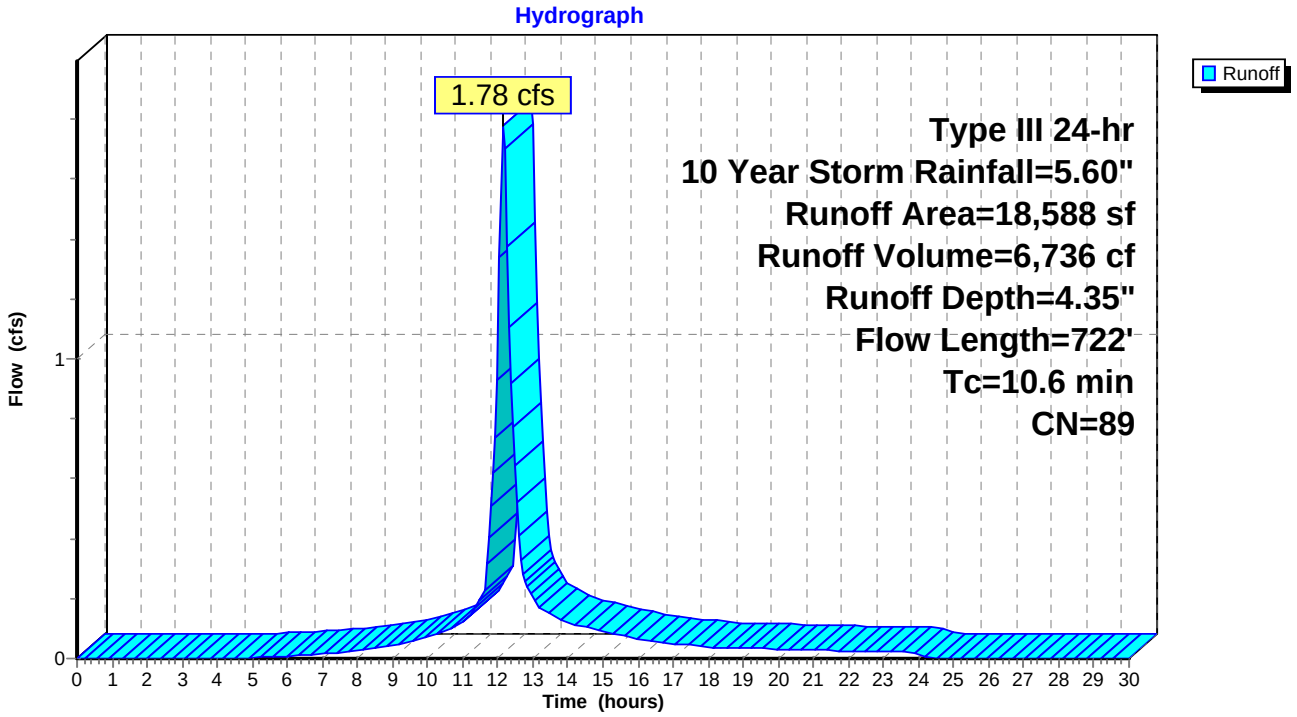
Runoff = 1.78 cfs @ 12.14 hrs, Volume= 6,736 cf, Depth= 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.06 hrs
Type III 24-hr 10 Year Storm Rainfall=5.60"

Area (sf)	CN	Description
13,838	98	Unconnected roofs, HSG B
4,750	61	>75% Grass cover, Good, HSG B
18,588	89	Weighted Average
4,750	61	25.55% Pervious Area
13,838	98	74.45% Impervious Area
13,838		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	119	0.0252	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	42	0.0833	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.5	46	0.0326	1.43		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.21"
4.0	305	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	210	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.6	722	Total			

Subcatchment OS1: Off Site

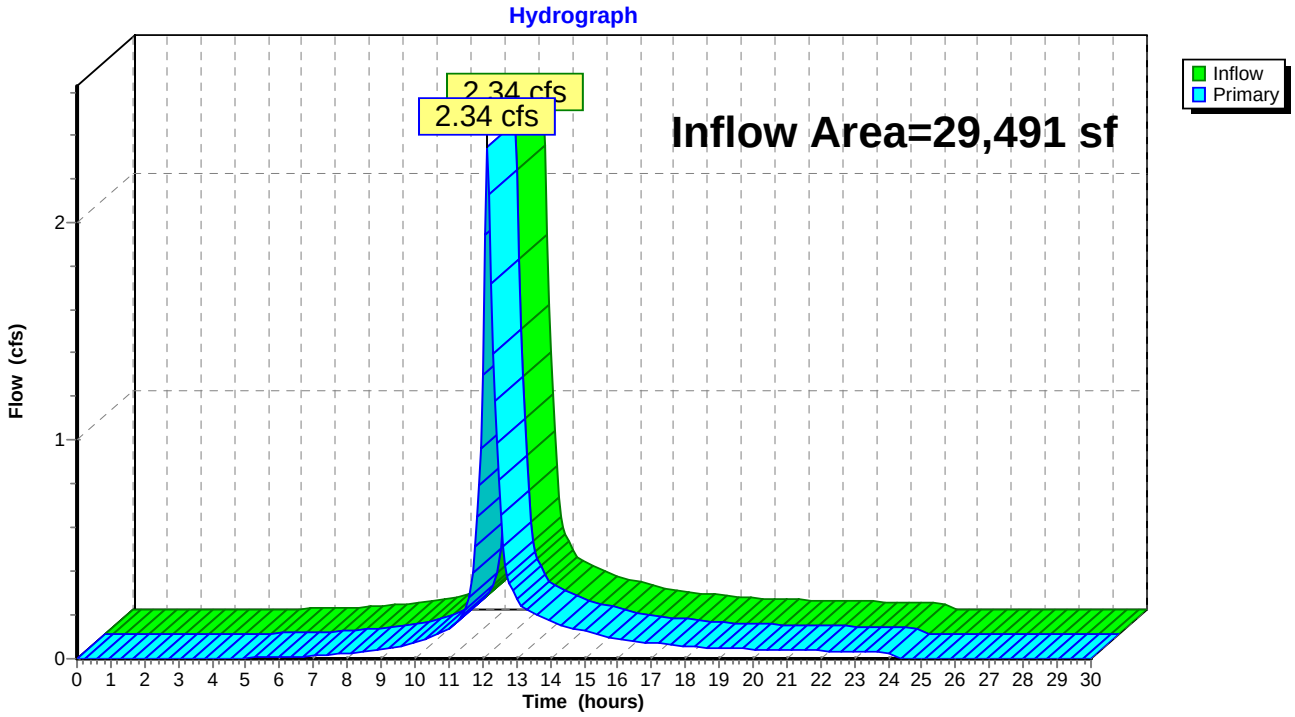


Summary for Pond DP2: CB at corner of Cabot Street and McDonough Street

Inflow Area = 29,491 sf, 52.52% Impervious, Inflow Depth = 3.57" for 10 Year Storm event
Inflow = 2.34 cfs @ 12.13 hrs, Volume= 8,764 cf
Primary = 2.34 cfs @ 12.13 hrs, Volume= 8,764 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.06 hrs / 5

Pond DP2: CB at corner of Cabot Street and McDonough Street

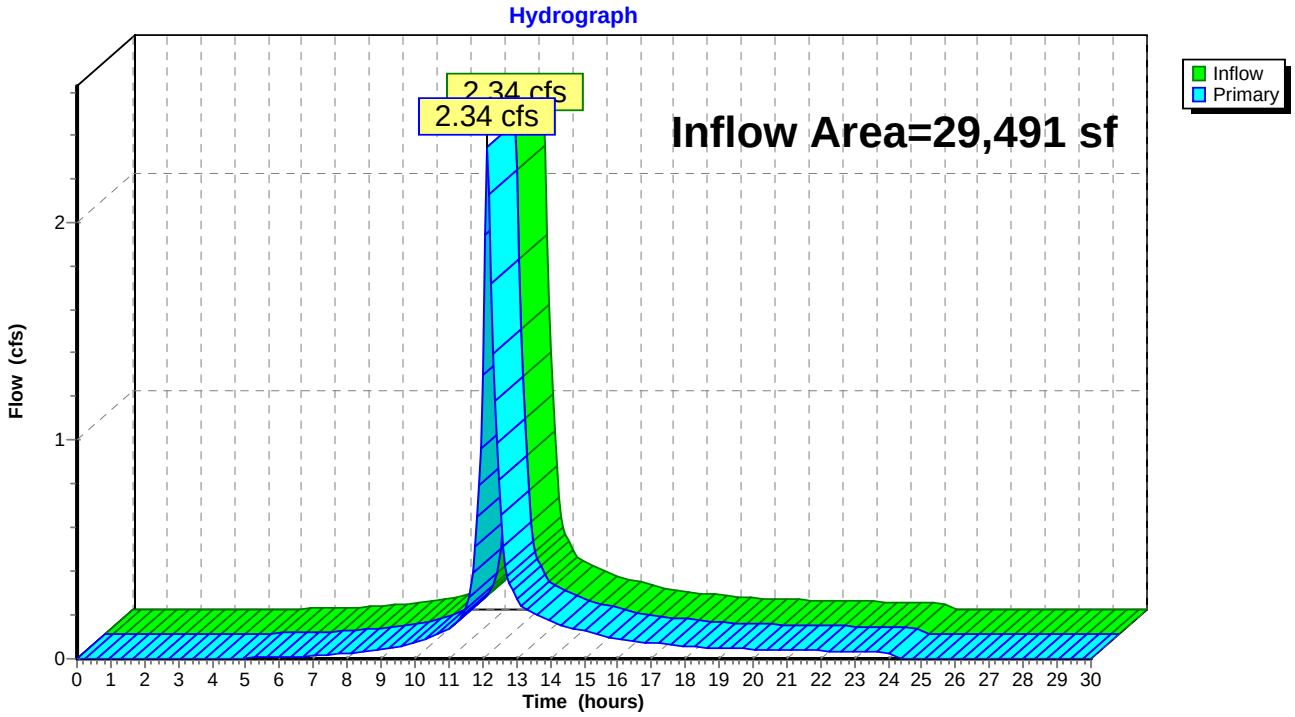


Summary for Link DP1:

Inflow Area = 29,491 sf, 52.52% Impervious, Inflow Depth = 3.57" for 10 Year Storm event
Inflow = 2.34 cfs @ 12.13 hrs, Volume= 8,764 cf
Primary = 2.34 cfs @ 12.13 hrs, Volume= 8,764 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.06 hrs

Link DP1:



Time span=0.00-30.00 hrs, dt=0.06 hrs, 501 points x 5
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment ES1: Runoff Area=10,903 sf 15.13% Impervious Runoff Depth=3.39"
Flow Length=515' Tc=5.5 min CN=67 Runoff=0.97 cfs 3,077 cf

Subcatchment OS1: Off Site Runoff Area=18,588 sf 74.45% Impervious Runoff Depth=5.81"
Flow Length=722' Tc=10.6 min CN=89 Runoff=2.34 cfs 8,993 cf

Pond DP2: CB at corner of Cabot Street and McDonough Street Inflow=3.20 cfs 12,070 cf
Primary=3.20 cfs 12,070 cf

Link DP1: Inflow=3.20 cfs 12,070 cf
Primary=3.20 cfs 12,070 cf

Total Runoff Area = 29,491 sf Runoff Volume = 12,070 cf Average Runoff Depth = 4.91"
47.48% Pervious = 14,003 sf 52.52% Impervious = 15,488 sf

Summary for Subcatchment ES1:

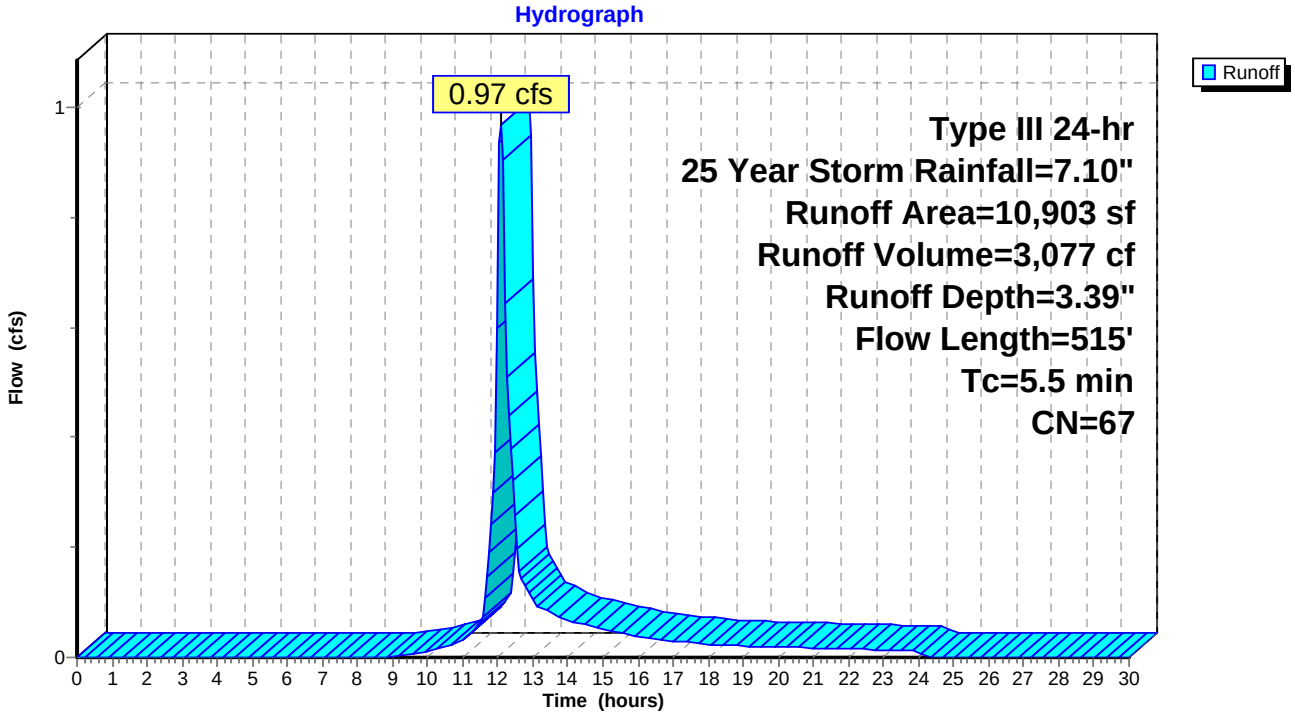
Runoff = 0.97 cfs @ 12.08 hrs, Volume= 3,077 cf, Depth= 3.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.06 hrs
Type III 24-hr 25 Year Storm Rainfall=7.10"

Area (sf)	CN	Description
9,253	61	>75% Grass cover, Good, HSG B
1,000	98	Roofs, HSG B
650	98	Paved parking, HSG B
10,903	67	Weighted Average
9,253	61	84.87% Pervious Area
1,650	98	15.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	305	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	210	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.5	515	Total			

Subcatchment ES1:



Summary for Subcatchment OS1: Off Site

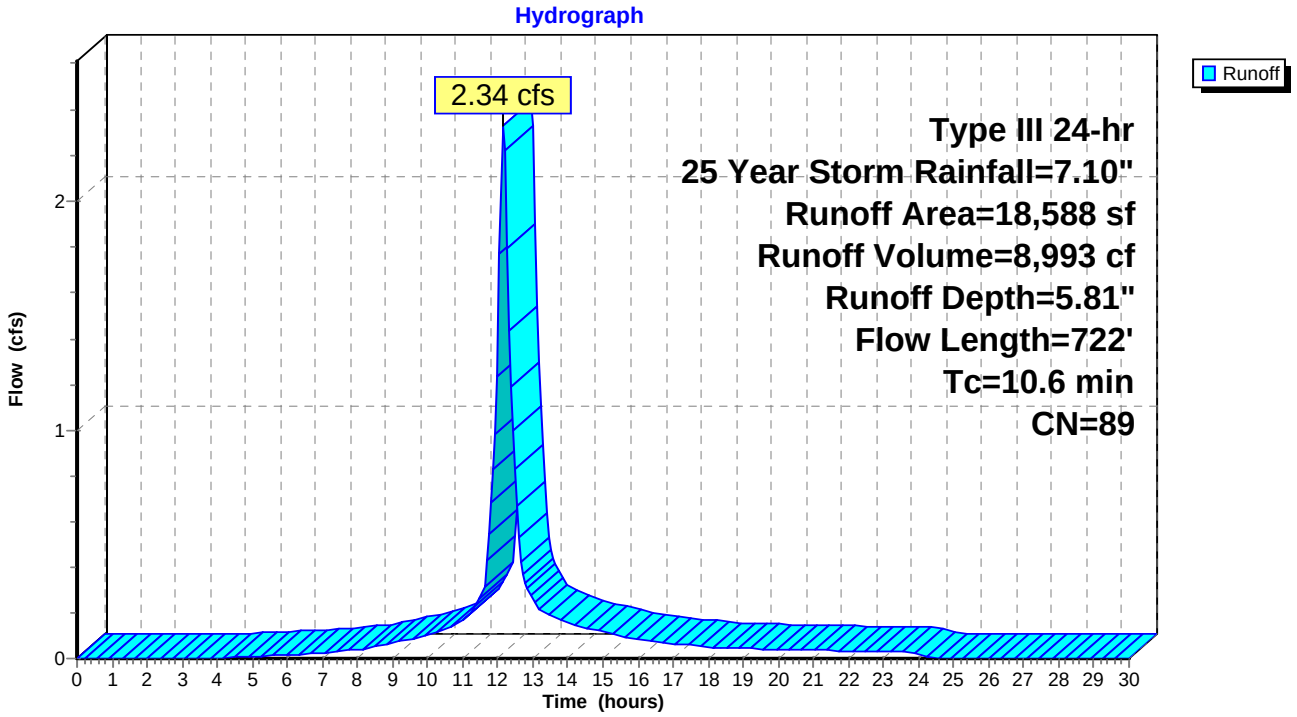
Runoff = 2.34 cfs @ 12.14 hrs, Volume= 8,993 cf, Depth= 5.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.06 hrs
Type III 24-hr 25 Year Storm Rainfall=7.10"

Area (sf)	CN	Description
13,838	98	Unconnected roofs, HSG B
4,750	61	>75% Grass cover, Good, HSG B
18,588	89	Weighted Average
4,750	61	25.55% Pervious Area
13,838	98	74.45% Impervious Area
13,838		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	119	0.0252	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	42	0.0833	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.5	46	0.0326	1.43		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.21"
4.0	305	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	210	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.6	722	Total			

Subcatchment OS1: Off Site

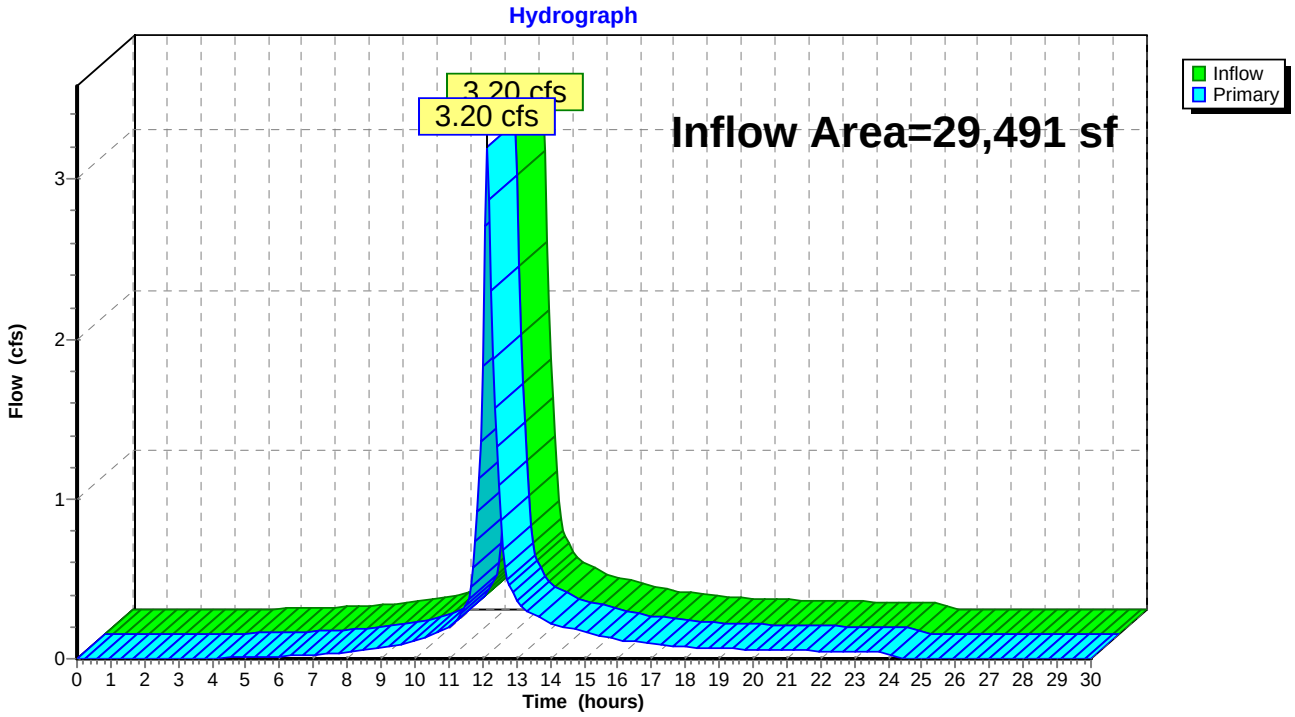


Summary for Pond DP2: CB at corner of Cabot Street and McDonough Street

Inflow Area = 29,491 sf, 52.52% Impervious, Inflow Depth = 4.91" for 25 Year Storm event
Inflow = 3.20 cfs @ 12.13 hrs, Volume= 12,070 cf
Primary = 3.20 cfs @ 12.13 hrs, Volume= 12,070 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.06 hrs / 5

Pond DP2: CB at corner of Cabot Street and McDonough Street

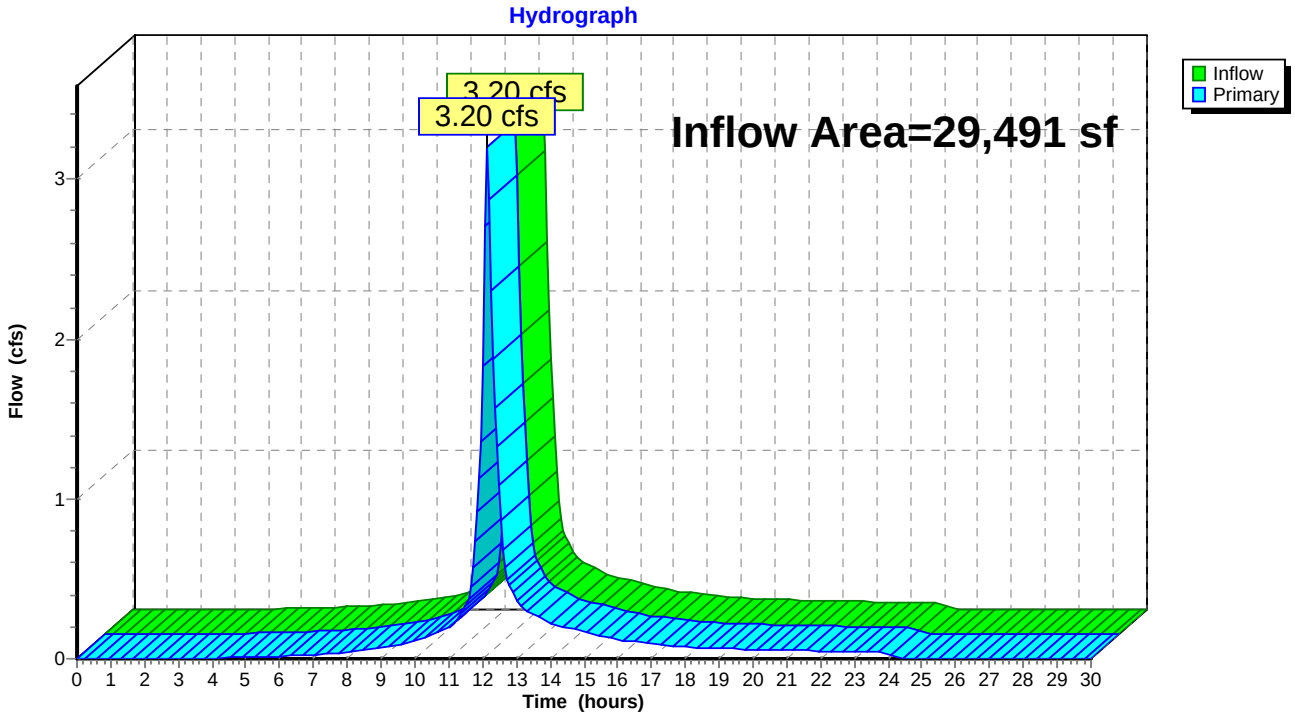


Summary for Link DP1:

Inflow Area = 29,491 sf, 52.52% Impervious, Inflow Depth = 4.91" for 25 Year Storm event
Inflow = 3.20 cfs @ 12.13 hrs, Volume= 12,070 cf
Primary = 3.20 cfs @ 12.13 hrs, Volume= 12,070 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.06 hrs

Link DP1:



Time span=0.00-30.00 hrs, dt=0.06 hrs, 501 points x 5
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment ES1: Runoff Area=10,903 sf 15.13% Impervious Runoff Depth=4.54"
Flow Length=515' Tc=5.5 min CN=67 Runoff=1.31 cfs 4,125 cf

Subcatchment OS1: Off Site Runoff Area=18,588 sf 74.45% Impervious Runoff Depth=7.18"
Flow Length=722' Tc=10.6 min CN=89 Runoff=2.86 cfs 11,118 cf

Pond DP2: CB at corner of Cabot Street and McDonough Street Inflow=4.02 cfs 15,243 cf
Primary=4.02 cfs 15,243 cf

Link DP1: Inflow=4.02 cfs 15,243 cf
Primary=4.02 cfs 15,243 cf

Total Runoff Area = 29,491 sf Runoff Volume = 15,243 cf Average Runoff Depth = 6.20"
47.48% Pervious = 14,003 sf 52.52% Impervious = 15,488 sf

Summary for Subcatchment ES1:

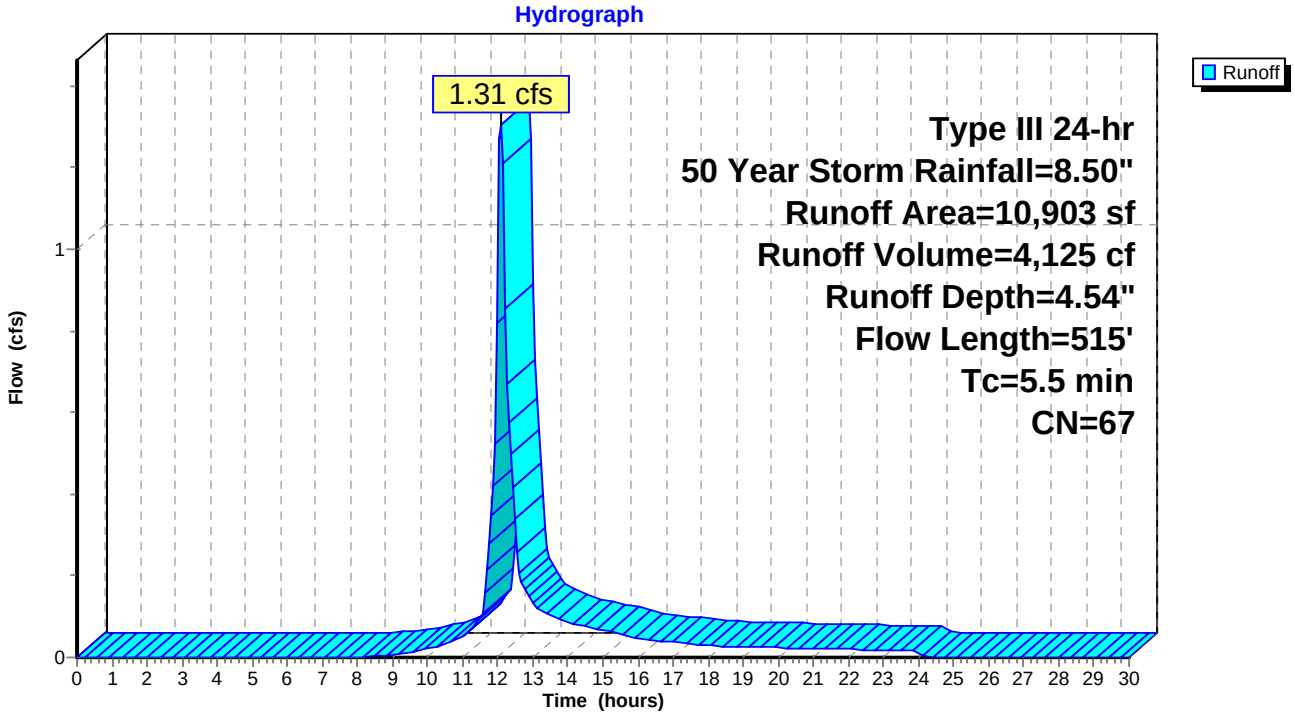
Runoff = 1.31 cfs @ 12.08 hrs, Volume= 4,125 cf, Depth= 4.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.06 hrs
Type III 24-hr 50 Year Storm Rainfall=8.50"

Area (sf)	CN	Description
9,253	61	>75% Grass cover, Good, HSG B
1,000	98	Roofs, HSG B
650	98	Paved parking, HSG B
10,903	67	Weighted Average
9,253	61	84.87% Pervious Area
1,650	98	15.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	305	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	210	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.5	515	Total			

Subcatchment ES1:



Summary for Subcatchment OS1: Off Site

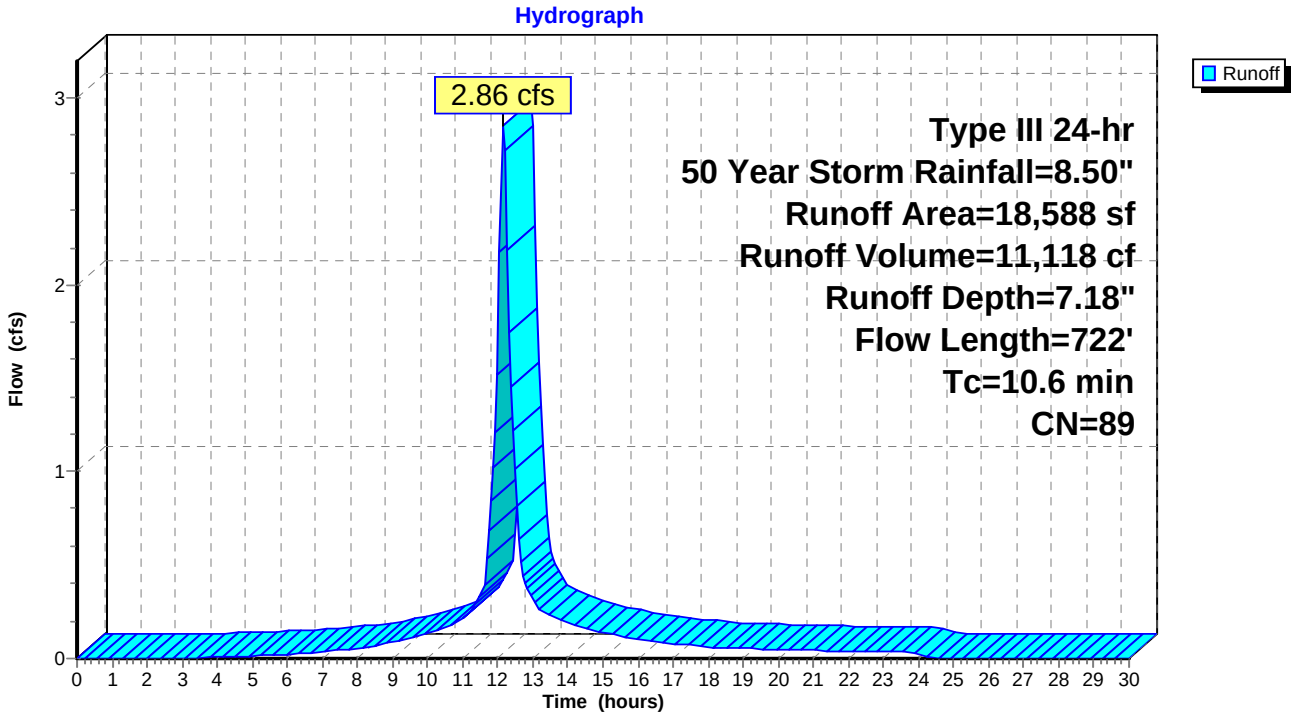
Runoff = 2.86 cfs @ 12.14 hrs, Volume= 11,118 cf, Depth= 7.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.06 hrs
Type III 24-hr 50 Year Storm Rainfall=8.50"

Area (sf)	CN	Description
13,838	98	Unconnected roofs, HSG B
4,750	61	>75% Grass cover, Good, HSG B
18,588	89	Weighted Average
4,750	61	25.55% Pervious Area
13,838	98	74.45% Impervious Area
13,838		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	119	0.0252	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
2.8	42	0.0833	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.5	46	0.0326	1.43		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.21"
4.0	305	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	210	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.6	722	Total			

Subcatchment OS1: Off Site

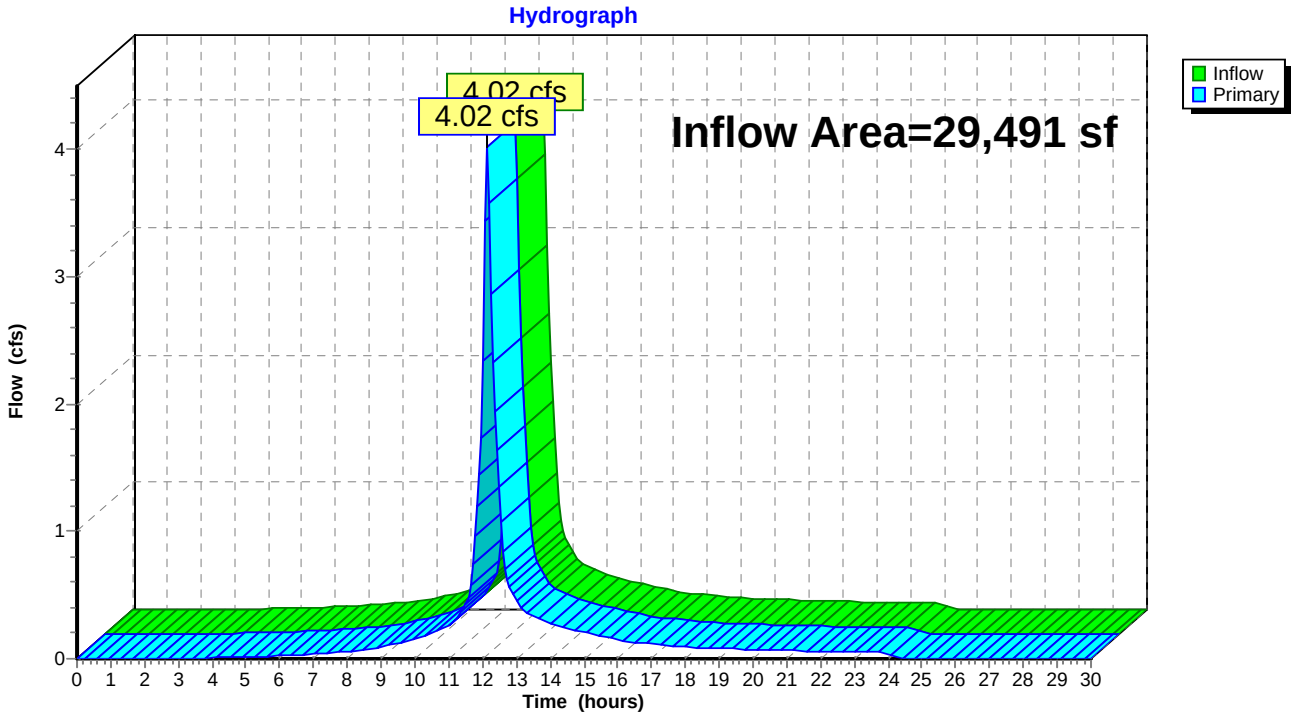


Summary for Pond DP2: CB at corner of Cabot Street and McDonough Street

Inflow Area = 29,491 sf, 52.52% Impervious, Inflow Depth = 6.20" for 50 Year Storm event
Inflow = 4.02 cfs @ 12.12 hrs, Volume= 15,243 cf
Primary = 4.02 cfs @ 12.12 hrs, Volume= 15,243 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.06 hrs / 5

Pond DP2: CB at corner of Cabot Street and McDonough Street

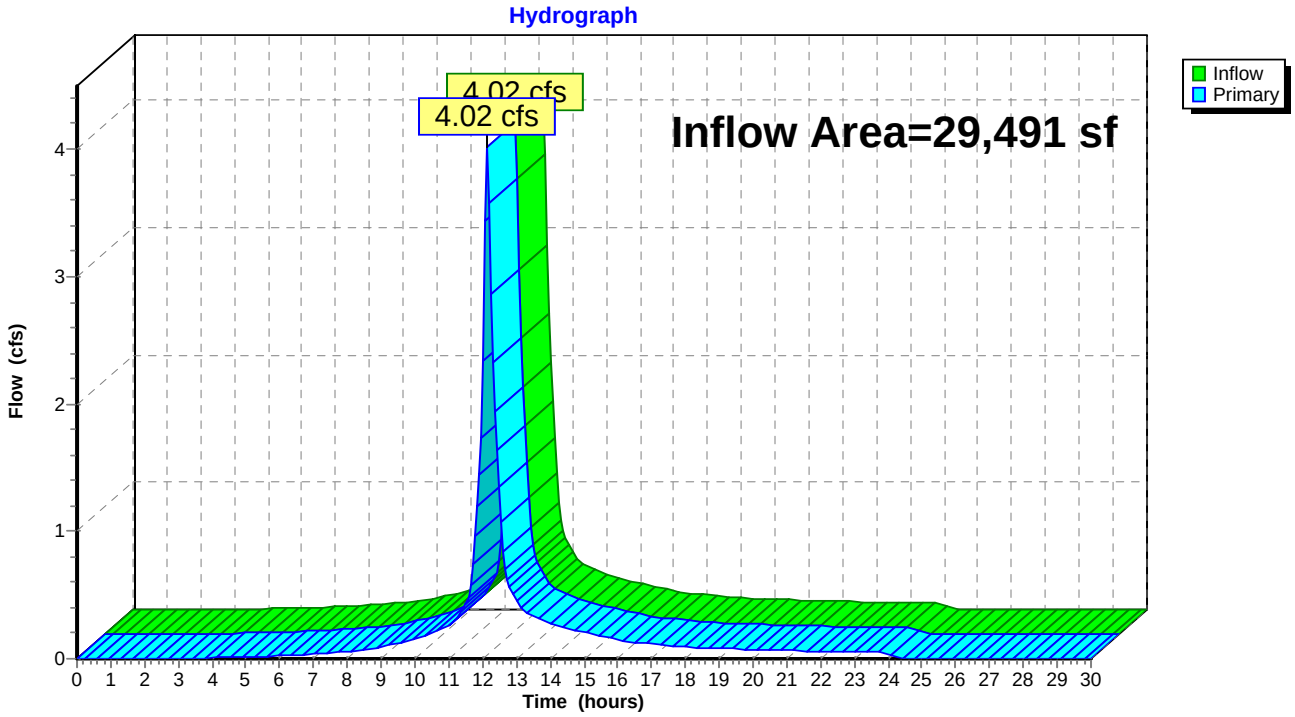


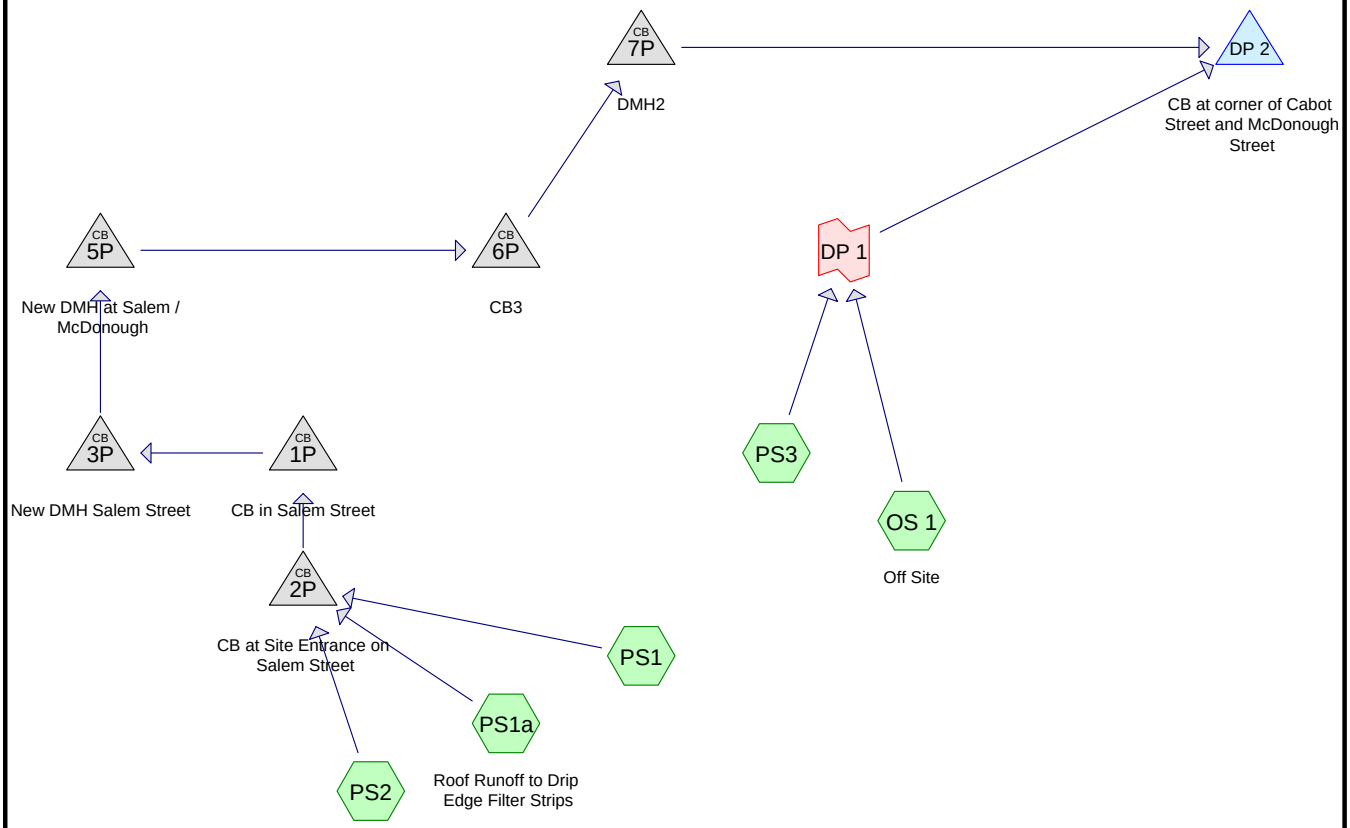
Summary for Link DP1:

Inflow Area = 29,491 sf, 52.52% Impervious, Inflow Depth = 6.20" for 50 Year Storm event
Inflow = 4.02 cfs @ 12.12 hrs, Volume= 15,243 cf
Primary = 4.02 cfs @ 12.12 hrs, Volume= 15,243 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.06 hrs

Link DP1:





Subcat Reach Pond Link

Routing Diagram for 3082 Post-construction
Prepared by Ambit Engineering, Inc., Printed 3/16/2020

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
10,849	61	>75% Grass cover, Good, HSG B (OS 1, PS1, PS2, PS3)
1,794	98	Paved parking, HSG B (PS1, PS2)
3,010	98	Roofs, HSG B (PS1a, PS2)
13,838	98	Unconnected roofs, HSG B (OS 1)
29,491	**84**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
29,491	HSG B	OS 1, PS1, PS1a, PS2, PS3
0	HSG C	
0	HSG D	
0	Other	
29,491		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
0	10,849	0	0	0	10,849	>75% Grass cover, Good	
0	1,794	0	0	0	1,794	Paved parking	
0	3,010	0	0	0	3,010	Roofs	
0	13,838	0	0	0	13,838	Unconnected roofs	
0	**29,491**	**0**	**0**	**0**	**29,491**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	15.18	15.13	9.0	0.0056	0.013	15.0	0.0	0.0
2	2P	18.40	15.28	36.0	0.0867	0.013	15.0	0.0	0.0
3	3P	15.03	11.80	97.0	0.0333	0.013	15.0	0.0	0.0
4	5P	11.78	11.50	15.0	0.0187	0.013	15.0	0.0	0.0
5	6P	11.82	10.56	32.0	0.0394	0.013	15.0	0.0	0.0
6	7P	10.57	0.00	200.0	0.0529	0.013	18.0	0.0	0.0

Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 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 OS 1: Off Site Runoff Area=18,588 sf 74.45% Impervious Runoff Depth=2.53"
Flow Length=722' Tc=10.8 min CN=89 Runoff=1.07 cfs 3,924 cf

Subcatchment PS1: Runoff Area=2,893 sf 48.81% Impervious Runoff Depth=1.71"
Flow Length=143' Slope=0.0200 '/' Tc=0.8 min CN=79 Runoff=0.16 cfs 413 cf

Subcatchment PS1a: Roof Runoff to Drip Runoff Area=2,717 sf 100.00% Impervious Runoff Depth=3.46"
Tc=10.0 min CN=98 Runoff=0.20 cfs 782 cf

Subcatchment PS2: Runoff Area=1,411 sf 47.84% Impervious Runoff Depth=1.71"
Flow Length=89' Slope=0.0200 '/' Tc=1.1 min CN=79 Runoff=0.08 cfs 202 cf

Subcatchment PS3: Runoff Area=3,882 sf 0.00% Impervious Runoff Depth=0.66"
Flow Length=552' Tc=6.3 min CN=61 Runoff=0.05 cfs 214 cf

Pond 1P: CB in Salem Street Peak Elev=15.53' Inflow=0.35 cfs 1,398 cf
15.0" Round Culvert n=0.013 L=9.0' S=0.0056 '/' Outflow=0.35 cfs 1,398 cf

Pond 2P: CB at Site Entrance on Salem Street Peak Elev=18.71' Inflow=0.35 cfs 1,398 cf
15.0" Round Culvert n=0.013 L=36.0' S=0.0867 '/' Outflow=0.35 cfs 1,398 cf

Pond 3P: New DMH Salem Street Peak Elev=15.34' Inflow=0.35 cfs 1,398 cf
15.0" Round Culvert n=0.013 L=97.0' S=0.0333 '/' Outflow=0.35 cfs 1,398 cf

Pond 5P: New DMH at Salem / McDonough Peak Elev=12.09' Inflow=0.35 cfs 1,398 cf
15.0" Round Culvert n=0.013 L=15.0' S=0.0187 '/' Outflow=0.35 cfs 1,398 cf

Pond 6P: CB3 Peak Elev=12.13' Inflow=0.35 cfs 1,398 cf
15.0" Round Culvert n=0.013 L=32.0' S=0.0394 '/' Outflow=0.35 cfs 1,398 cf

Pond 7P: DMH2 Peak Elev=10.86' Inflow=0.35 cfs 1,398 cf
18.0" Round Culvert n=0.013 L=200.0' S=0.0529 '/' Outflow=0.35 cfs 1,398 cf

Pond DP 2: CB at corner of Cabot Street and McDonough Street Inflow=1.41 cfs 5,535 cf
Primary=1.41 cfs 5,535 cf

Link DP 1: Inflow=1.12 cfs 4,138 cf
Primary=1.12 cfs 4,138 cf

Total Runoff Area = 29,491 sf Runoff Volume = 5,535 cf Average Runoff Depth = 2.25"
36.79% Pervious = 10,849 sf 63.21% Impervious = 18,642 sf

Summary for Subcatchment OS 1: Off Site

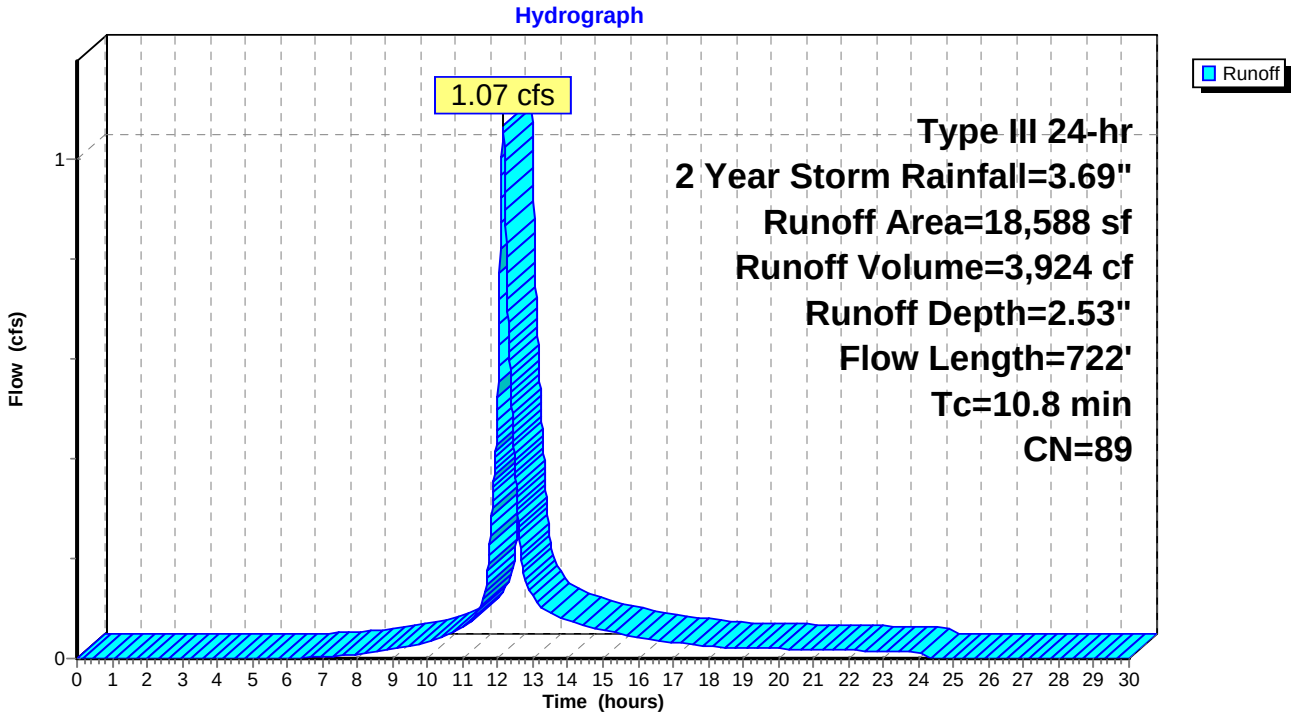
Runoff = 1.07 cfs @ 12.15 hrs, Volume= 3,924 cf, Depth= 2.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Storm Rainfall=3.69"

Area (sf)	CN	Description
13,838	98	Unconnected roofs, HSG B
4,750	61	>75% Grass cover, Good, HSG B
18,588	89	Weighted Average
4,750		25.55% Pervious Area
13,838		74.45% Impervious Area
13,838		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	119	0.0252	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	46	0.0326	1.39		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
2.9	42	0.0833	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
4.0	305	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	210	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.8	722	Total			

Subcatchment OS 1: Off Site



Summary for Subcatchment PS1:

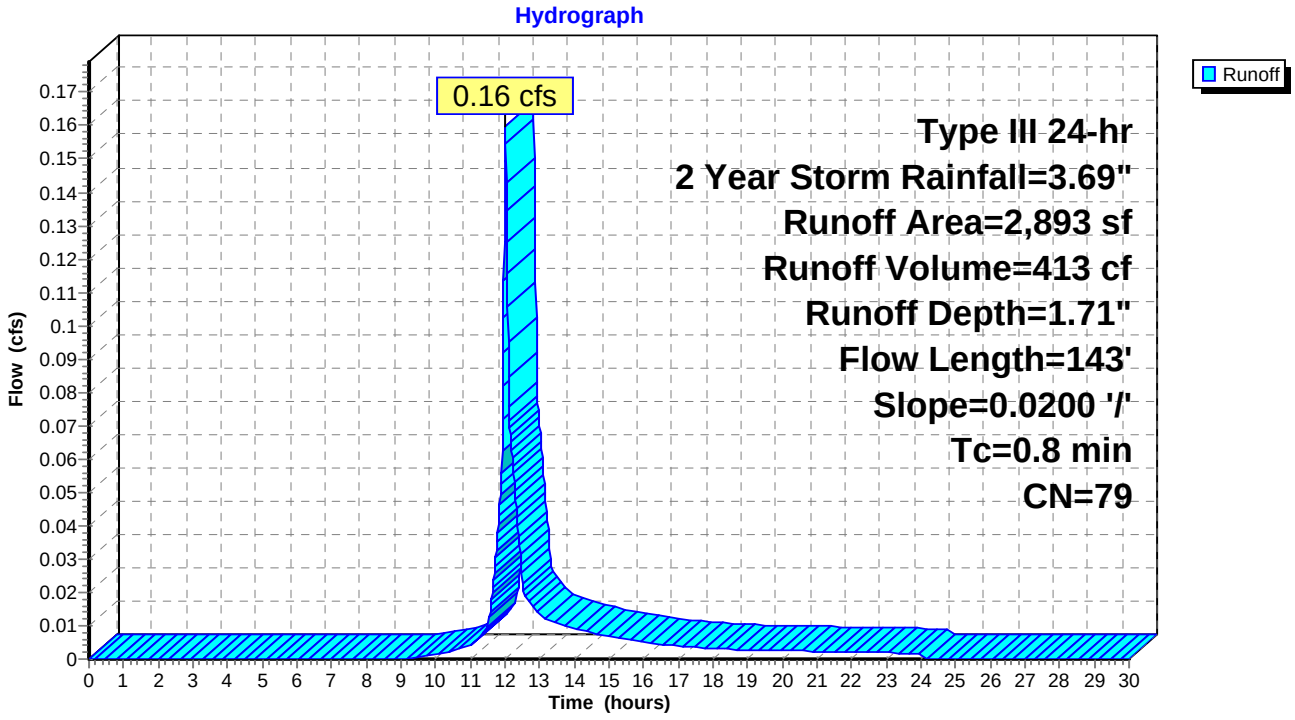
Runoff = 0.16 cfs @ 12.01 hrs, Volume= 413 cf, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Storm Rainfall=3.69"

Area (sf)	CN	Description
1,481	61	>75% Grass cover, Good, HSG B
1,412	98	Paved parking, HSG B
2,893	79	Weighted Average
1,481		51.19% Pervious Area
1,412		48.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	143	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps

Subcatchment PS1:



Summary for Subcatchment PS1a: Roof Runoff to Drip Edge Filter Strips

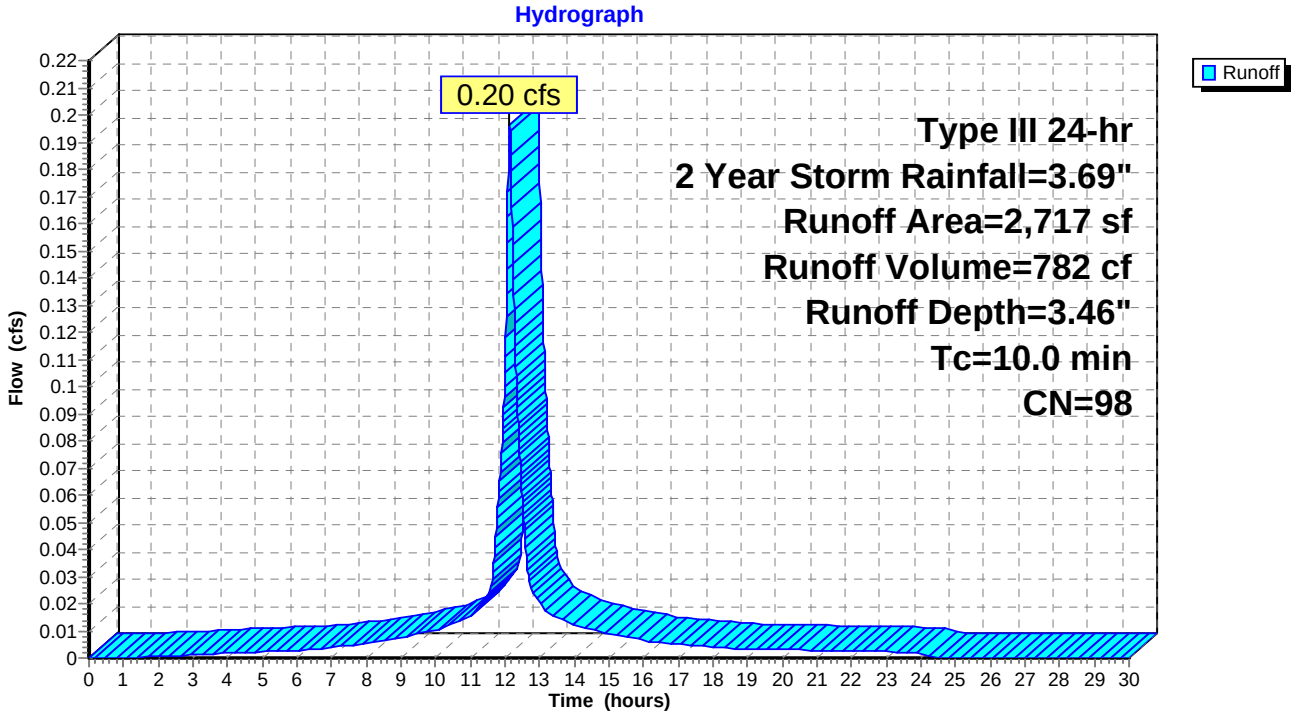
Runoff = 0.20 cfs @ 12.13 hrs, Volume= 782 cf, Depth= 3.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Storm Rainfall=3.69"

Area (sf)	CN	Description
2,717	98	Roofs, HSG B
2,717		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Travel Time Through Filter Media**

Subcatchment PS1a: Roof Runoff to Drip Edge Filter Strips



Summary for Subcatchment PS2:

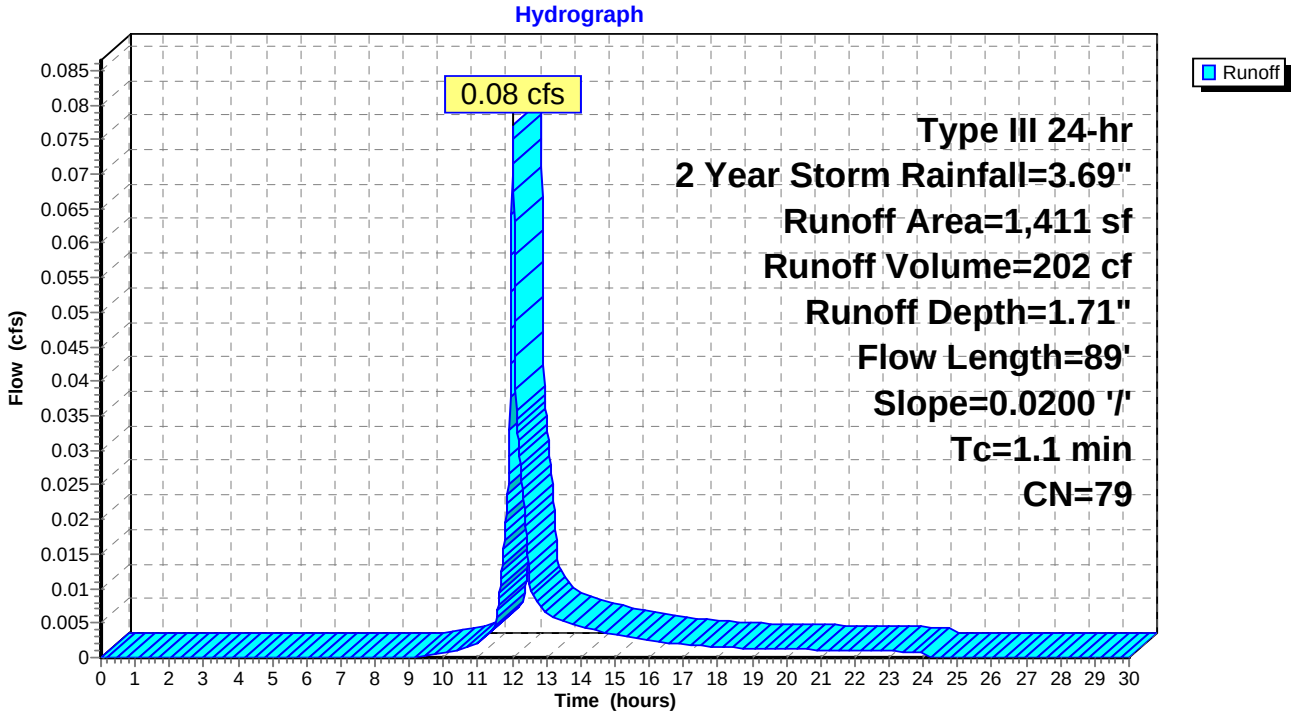
Runoff = 0.08 cfs @ 12.02 hrs, Volume= 202 cf, Depth= 1.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Storm Rainfall=3.69"

Area (sf)	CN	Description
382	98	Paved parking, HSG B
293	98	Roofs, HSG B
736	61	>75% Grass cover, Good, HSG B
1,411	79	Weighted Average
736		52.16% Pervious Area
675		47.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	89	0.0200	1.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"

Subcatchment PS2:



Summary for Subcatchment PS3:

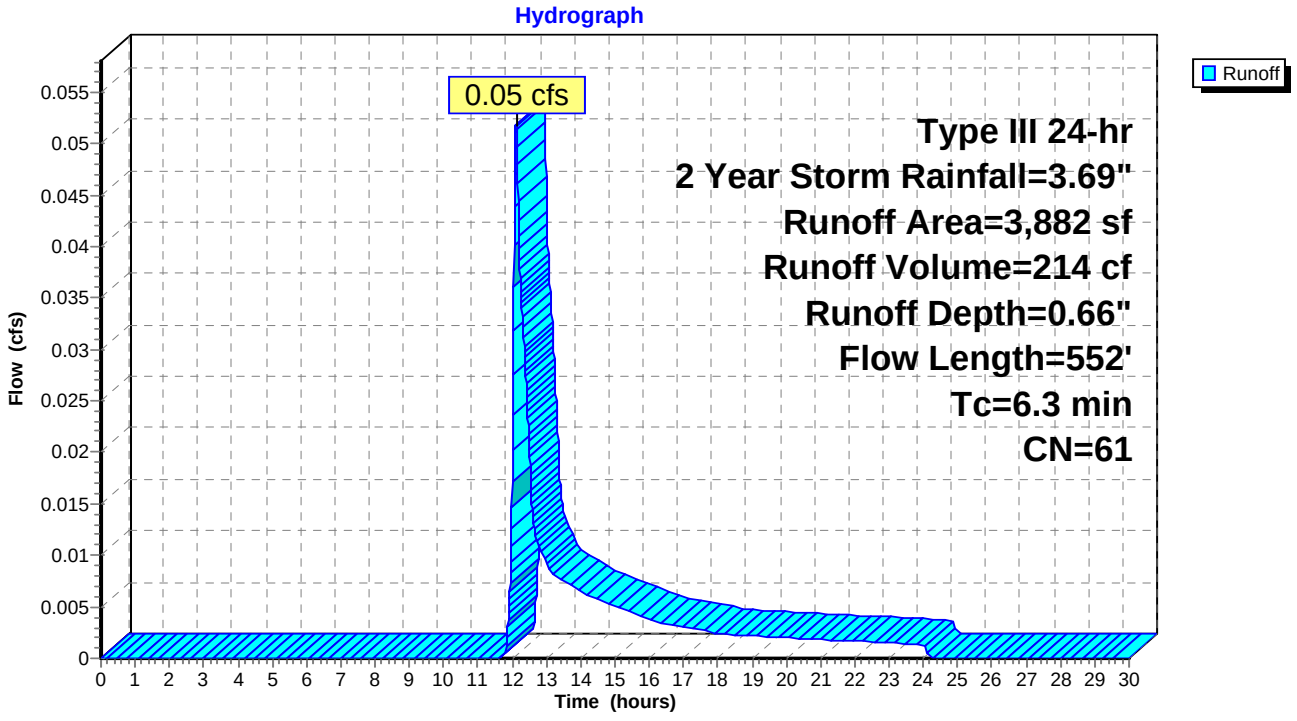
Runoff = 0.05 cfs @ 12.11 hrs, Volume= 214 cf, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2 Year Storm Rainfall=3.69"

Area (sf)	CN	Description
3,882	61	>75% Grass cover, Good, HSG B
3,882		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	342	0.0292	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	210	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.3	552	Total			

Subcatchment PS3:



Summary for Pond 1P: CB in Salem Street

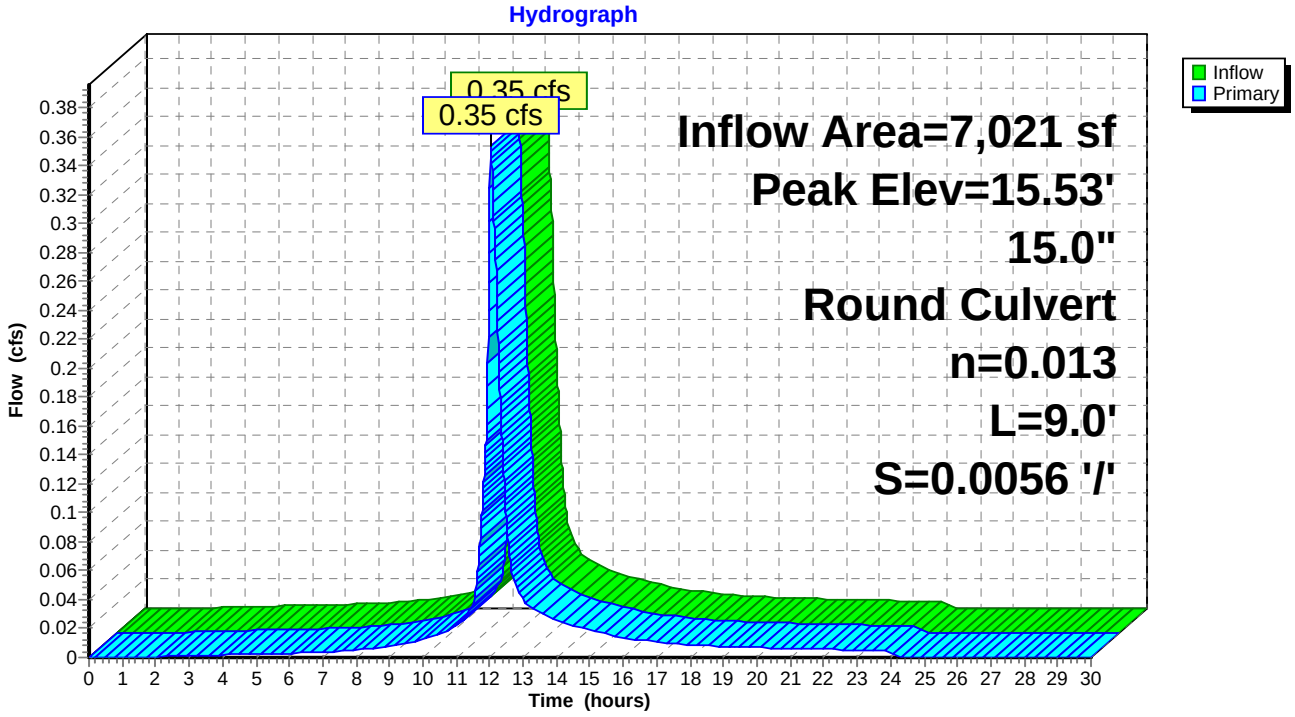
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 2.39" for 2 Year Storm event
Inflow = 0.35 cfs @ 12.02 hrs, Volume= 1,398 cf
Outflow = 0.35 cfs @ 12.02 hrs, Volume= 1,398 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.35 cfs @ 12.02 hrs, Volume= 1,398 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 15.53' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	15.18'	**15.0" Round Culvert** L= 9.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.18' / 15.13' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.35 cfs @ 12.02 hrs HW=15.53' (Free Discharge)
1=Culvert (Barrel Controls 0.35 cfs @ 1.90 fps)

Pond 1P: CB in Salem Street



Summary for Pond 2P: CB at Site Entrance on Salem Street

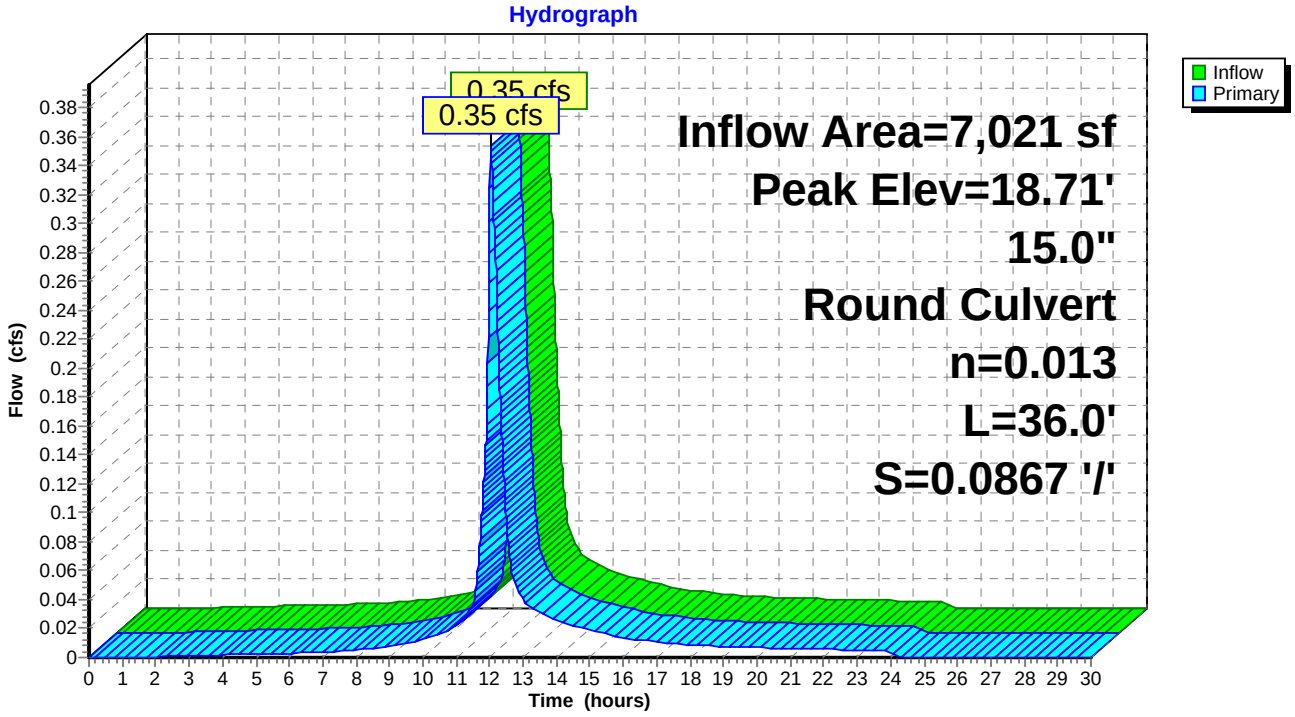
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 2.39" for 2 Year Storm event
Inflow = 0.35 cfs @ 12.02 hrs, Volume= 1,398 cf
Outflow = 0.35 cfs @ 12.02 hrs, Volume= 1,398 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.35 cfs @ 12.02 hrs, Volume= 1,398 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 18.71' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.40'	**15.0" Round Culvert** L= 36.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.40' / 15.28' S= 0.0867 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.35 cfs @ 12.02 hrs HW=18.71' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.35 cfs @ 1.49 fps)

Pond 2P: CB at Site Entrance on Salem Street



Summary for Pond 3P: New DMH Salem Street

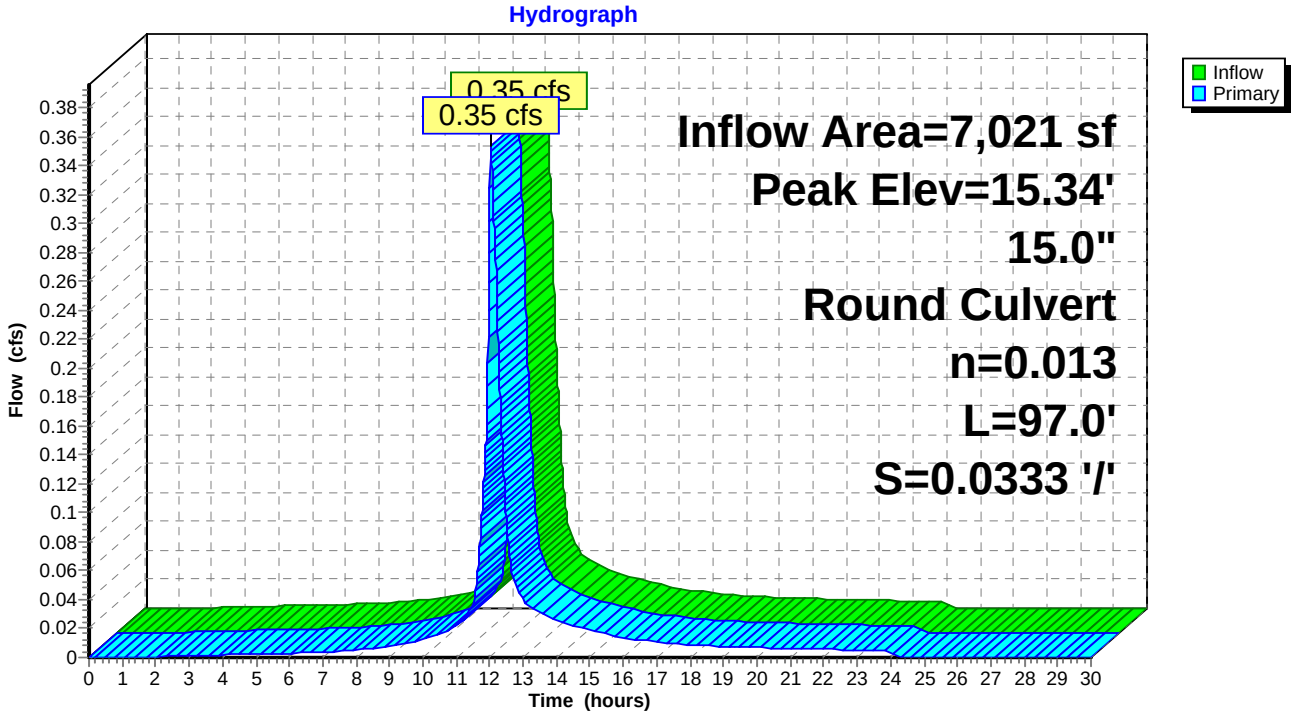
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 2.39" for 2 Year Storm event
Inflow = 0.35 cfs @ 12.02 hrs, Volume= 1,398 cf
Outflow = 0.35 cfs @ 12.02 hrs, Volume= 1,398 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.35 cfs @ 12.02 hrs, Volume= 1,398 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 15.34' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	15.03'	**15.0" Round Culvert** L= 97.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.03' / 11.80' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.35 cfs @ 12.02 hrs HW=15.34' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.35 cfs @ 1.49 fps)

Pond 3P: New DMH Salem Street



Summary for Pond 5P: New DMH at Salem / McDonough

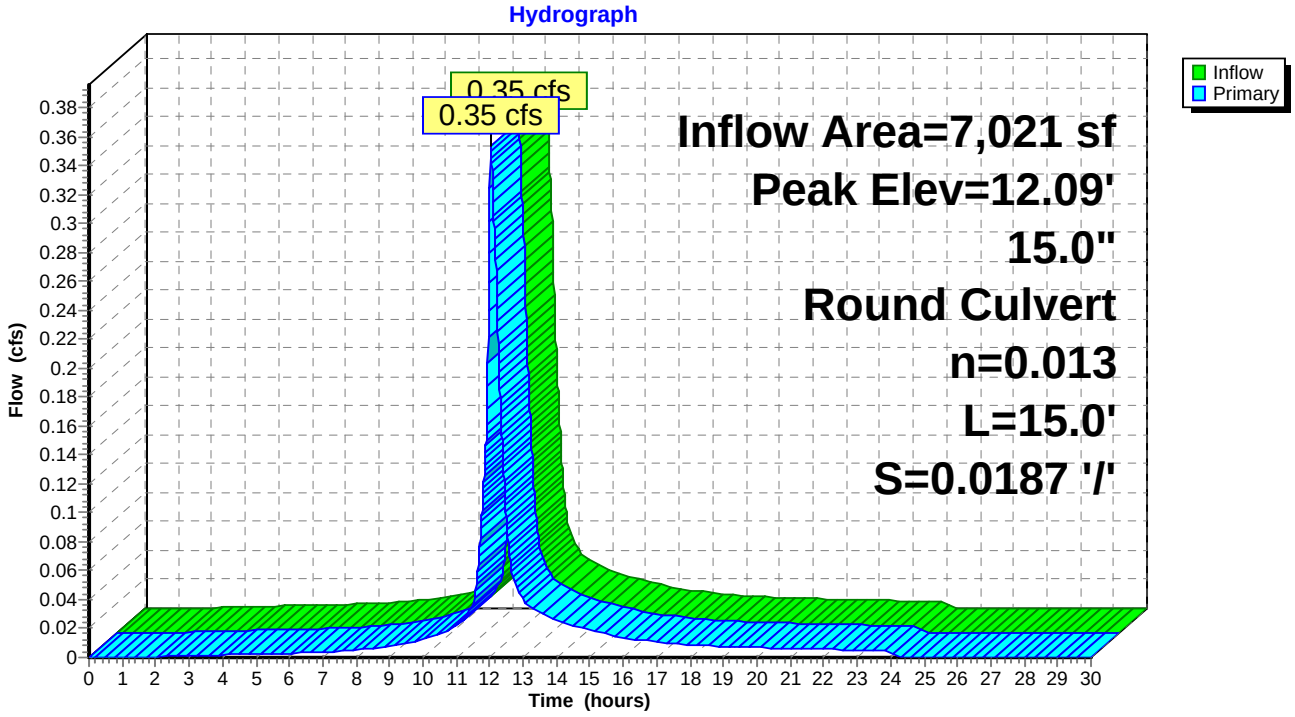
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 2.39" for 2 Year Storm event
Inflow = 0.35 cfs @ 12.02 hrs, Volume= 1,398 cf
Outflow = 0.35 cfs @ 12.02 hrs, Volume= 1,398 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.35 cfs @ 12.02 hrs, Volume= 1,398 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 12.09' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	11.78'	**15.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.78' / 11.50' S= 0.0187 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.35 cfs @ 12.02 hrs HW=12.09' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.35 cfs @ 1.49 fps)

Pond 5P: New DMH at Salem / McDonough



Summary for Pond 6P: CB3

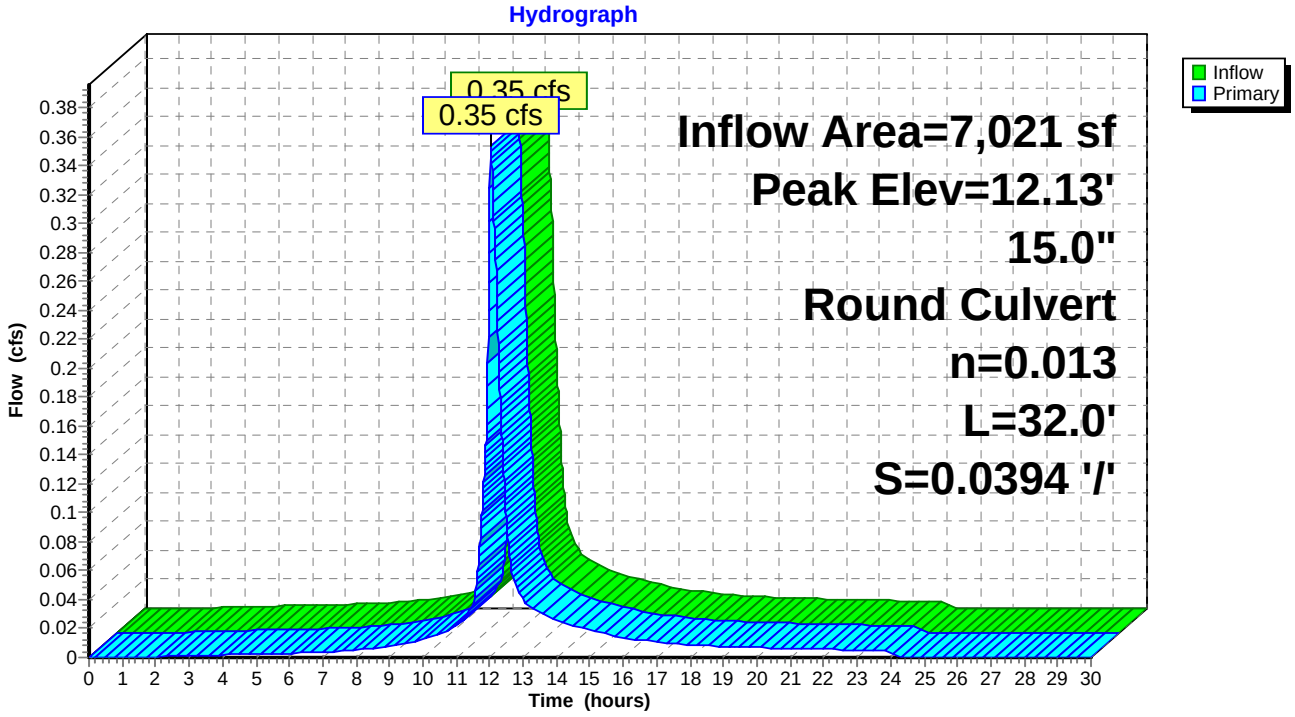
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 2.39" for 2 Year Storm event
Inflow = 0.35 cfs @ 12.02 hrs, Volume= 1,398 cf
Outflow = 0.35 cfs @ 12.02 hrs, Volume= 1,398 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.35 cfs @ 12.02 hrs, Volume= 1,398 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 12.13' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	11.82'	**15.0" Round Culvert** L= 32.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.82' / 10.56' S= 0.0394 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.35 cfs @ 12.02 hrs HW=12.13' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.35 cfs @ 1.49 fps)

Pond 6P: CB3



Summary for Pond 7P: DMH2

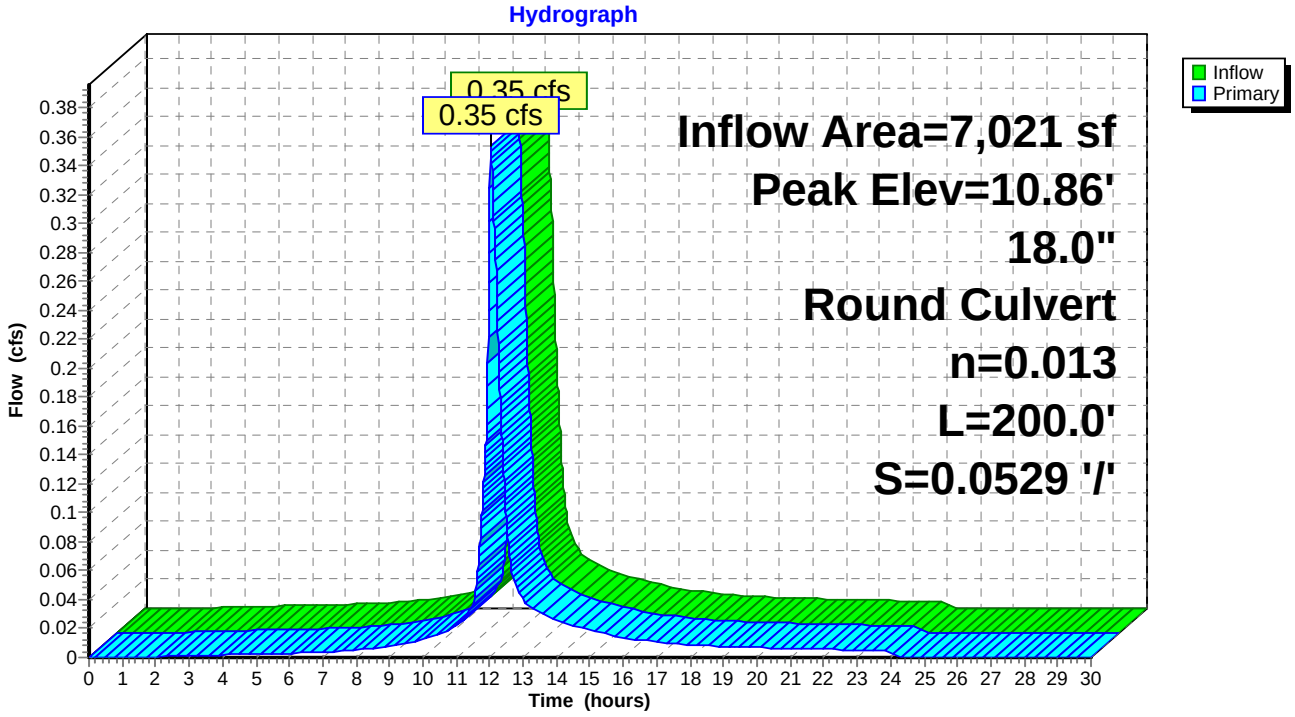
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 2.39" for 2 Year Storm event
Inflow = 0.35 cfs @ 12.02 hrs, Volume= 1,398 cf
Outflow = 0.35 cfs @ 12.02 hrs, Volume= 1,398 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.35 cfs @ 12.02 hrs, Volume= 1,398 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 10.86' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	10.57'	**18.0" Round Culvert** L= 200.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 10.57' / 0.00' S= 0.0529 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.35 cfs @ 12.02 hrs HW=10.86' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.35 cfs @ 1.45 fps)

Pond 7P: DMH2

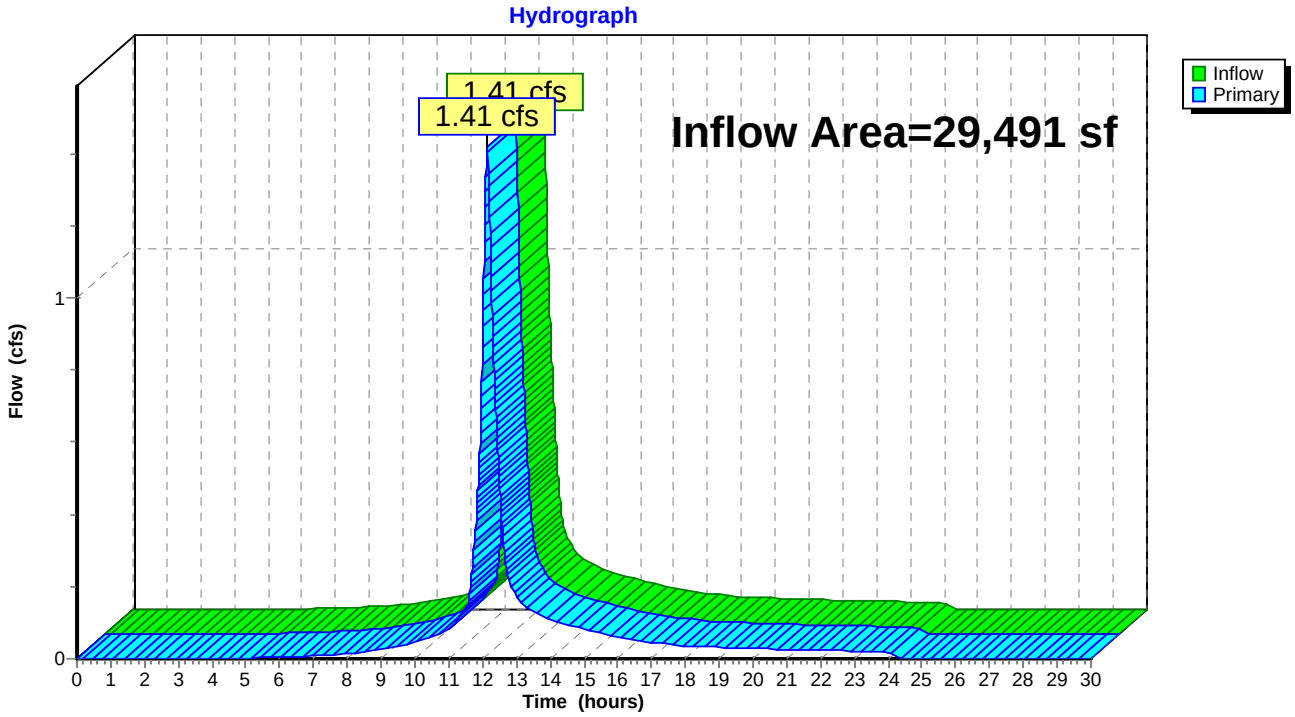


Summary for Pond DP 2: CB at corner of Cabot Street and McDonough Street

Inflow Area = 29,491 sf, 63.21% Impervious, Inflow Depth = 2.25" for 2 Year Storm event
Inflow = 1.41 cfs @ 12.14 hrs, Volume= 5,535 cf
Primary = 1.41 cfs @ 12.14 hrs, Volume= 5,535 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond DP 2: CB at corner of Cabot Street and McDonough Street

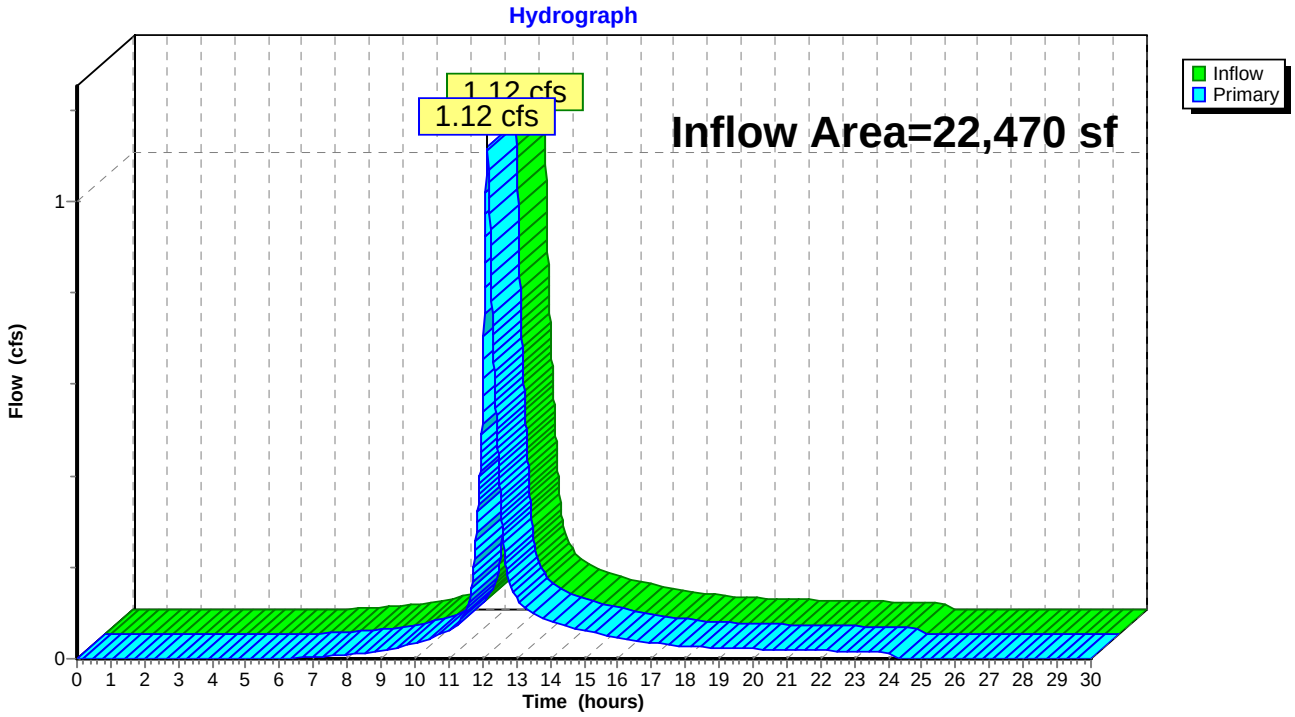


Summary for Link DP 1:

Inflow Area = 22,470 sf, 61.58% Impervious, Inflow Depth = 2.21" for 2 Year Storm event
Inflow = 1.12 cfs @ 12.15 hrs, Volume= 4,138 cf
Primary = 1.12 cfs @ 12.15 hrs, Volume= 4,138 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link DP 1:



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 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 OS 1: Off Site Runoff Area=18,588 sf 74.45% Impervious Runoff Depth=4.35"
Flow Length=722' Tc=10.8 min CN=89 Runoff=1.79 cfs 6,736 cf

Subcatchment PS1: Runoff Area=2,893 sf 48.81% Impervious Runoff Depth=3.32"
Flow Length=143' Slope=0.0200 '/' Tc=0.8 min CN=79 Runoff=0.31 cfs 802 cf

Subcatchment PS1a: Roof Runoff to Drip Runoff Area=2,717 sf 100.00% Impervious Runoff Depth=5.36"
Tc=10.0 min CN=98 Runoff=0.30 cfs 1,214 cf

Subcatchment PS2: Runoff Area=1,411 sf 47.84% Impervious Runoff Depth=3.32"
Flow Length=89' Slope=0.0200 '/' Tc=1.1 min CN=79 Runoff=0.15 cfs 391 cf

Subcatchment PS3: Runoff Area=3,882 sf 0.00% Impervious Runoff Depth=1.74"
Flow Length=552' Tc=6.3 min CN=61 Runoff=0.17 cfs 564 cf

Pond 1P: CB in Salem Street Peak Elev=15.66' Inflow=0.64 cfs 2,407 cf
15.0" Round Culvert n=0.013 L=9.0' S=0.0056 '/' Outflow=0.64 cfs 2,407 cf

Pond 2P: CB at Site Entrance on Salem Street Peak Elev=18.82' Inflow=0.64 cfs 2,407 cf
15.0" Round Culvert n=0.013 L=36.0' S=0.0867 '/' Outflow=0.64 cfs 2,407 cf

Pond 3P: New DMH Salem Street Peak Elev=15.45' Inflow=0.64 cfs 2,407 cf
15.0" Round Culvert n=0.013 L=97.0' S=0.0333 '/' Outflow=0.64 cfs 2,407 cf

Pond 5P: New DMH at Salem / McDonough Peak Elev=12.20' Inflow=0.64 cfs 2,407 cf
15.0" Round Culvert n=0.013 L=15.0' S=0.0187 '/' Outflow=0.64 cfs 2,407 cf

Pond 6P: CB3 Peak Elev=12.24' Inflow=0.64 cfs 2,407 cf
15.0" Round Culvert n=0.013 L=32.0' S=0.0394 '/' Outflow=0.64 cfs 2,407 cf

Pond 7P: DMH2 Peak Elev=10.97' Inflow=0.64 cfs 2,407 cf
18.0" Round Culvert n=0.013 L=200.0' S=0.0529 '/' Outflow=0.64 cfs 2,407 cf

Pond DP 2: CB at corner of Cabot Street and McDonough Street Inflow=2.44 cfs 9,706 cf
Primary=2.44 cfs 9,706 cf

Link DP 1: Inflow=1.94 cfs 7,300 cf
Primary=1.94 cfs 7,300 cf

Total Runoff Area = 29,491 sf Runoff Volume = 9,706 cf Average Runoff Depth = 3.95"
36.79% Pervious = 10,849 sf 63.21% Impervious = 18,642 sf

Summary for Subcatchment OS 1: Off Site

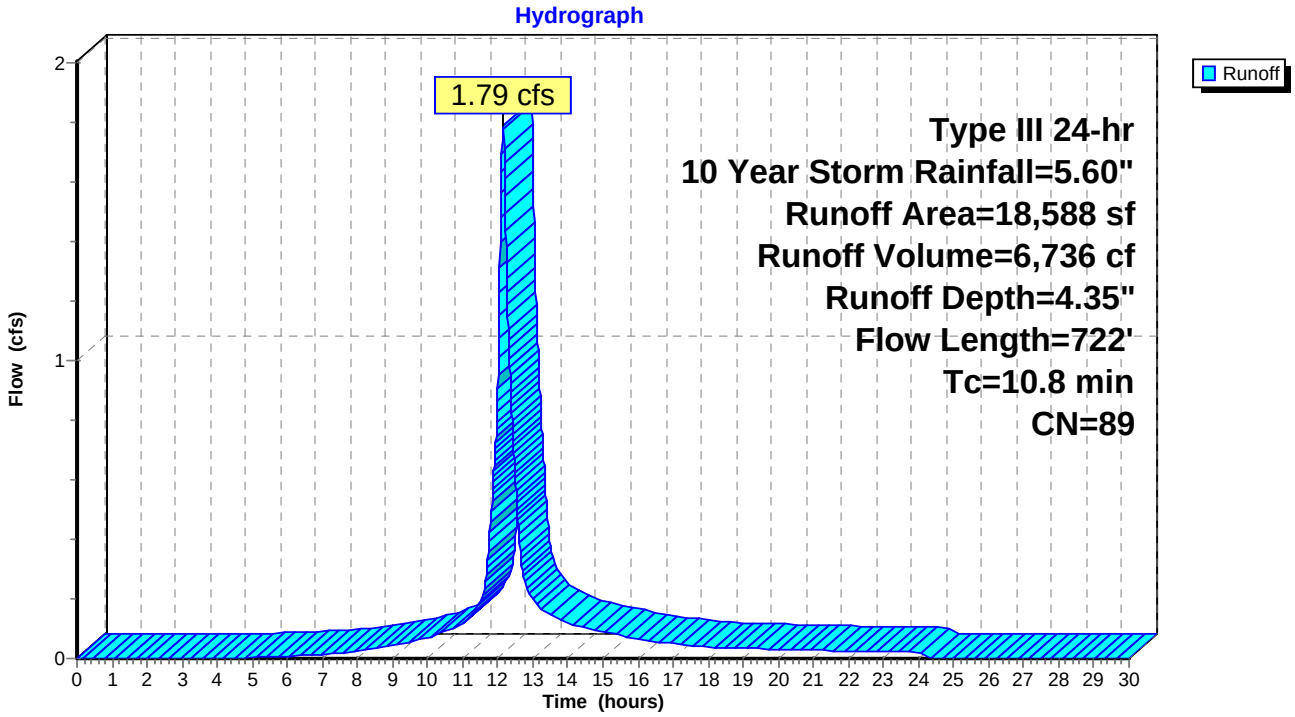
Runoff = 1.79 cfs @ 12.15 hrs, Volume= 6,736 cf, Depth= 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Storm Rainfall=5.60"

Area (sf)	CN	Description
13,838	98	Unconnected roofs, HSG B
4,750	61	>75% Grass cover, Good, HSG B
18,588	89	Weighted Average
4,750		25.55% Pervious Area
13,838		74.45% Impervious Area
13,838		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	119	0.0252	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	46	0.0326	1.39		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
2.9	42	0.0833	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
4.0	305	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	210	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.8	722	Total			

Subcatchment OS 1: Off Site



Summary for Subcatchment PS1:

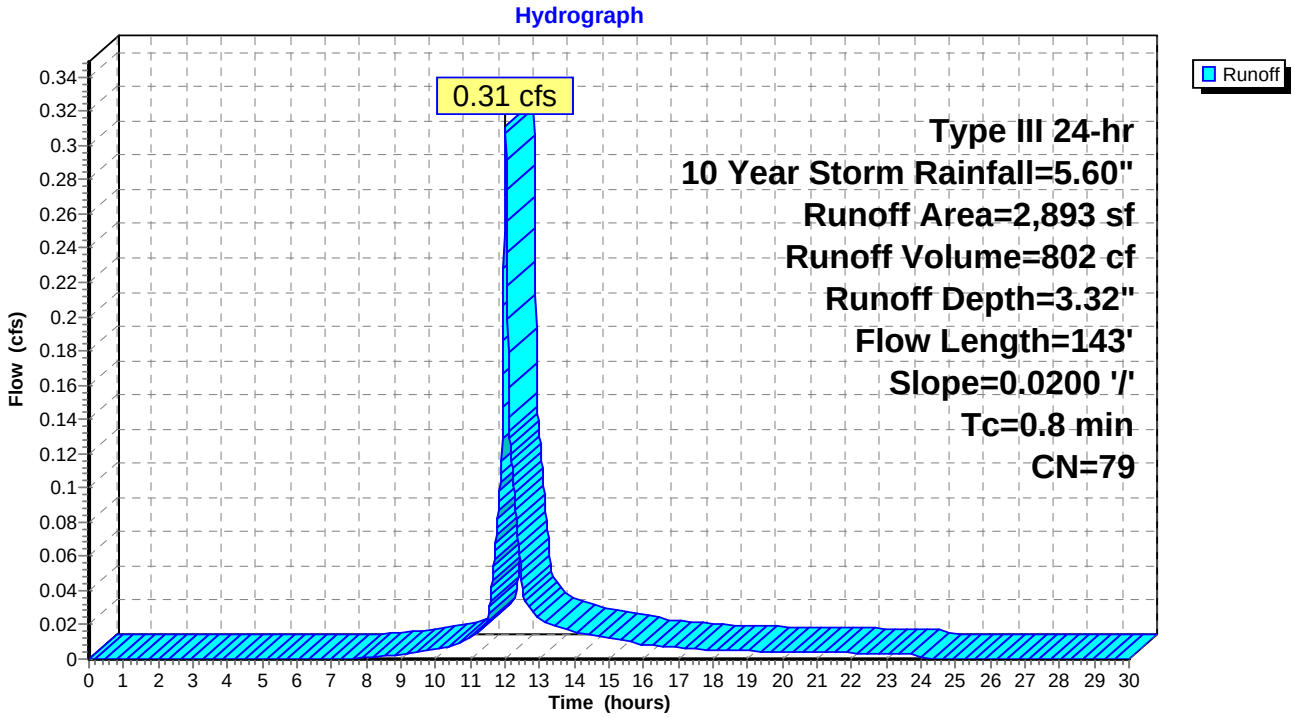
Runoff = 0.31 cfs @ 12.01 hrs, Volume= 802 cf, Depth= 3.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Storm Rainfall=5.60"

Area (sf)	CN	Description
1,481	61	>75% Grass cover, Good, HSG B
1,412	98	Paved parking, HSG B
2,893	79	Weighted Average
1,481		51.19% Pervious Area
1,412		48.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	143	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps

Subcatchment PS1:



Summary for Subcatchment PS1a: Roof Runoff to Drip Edge Filter Strips

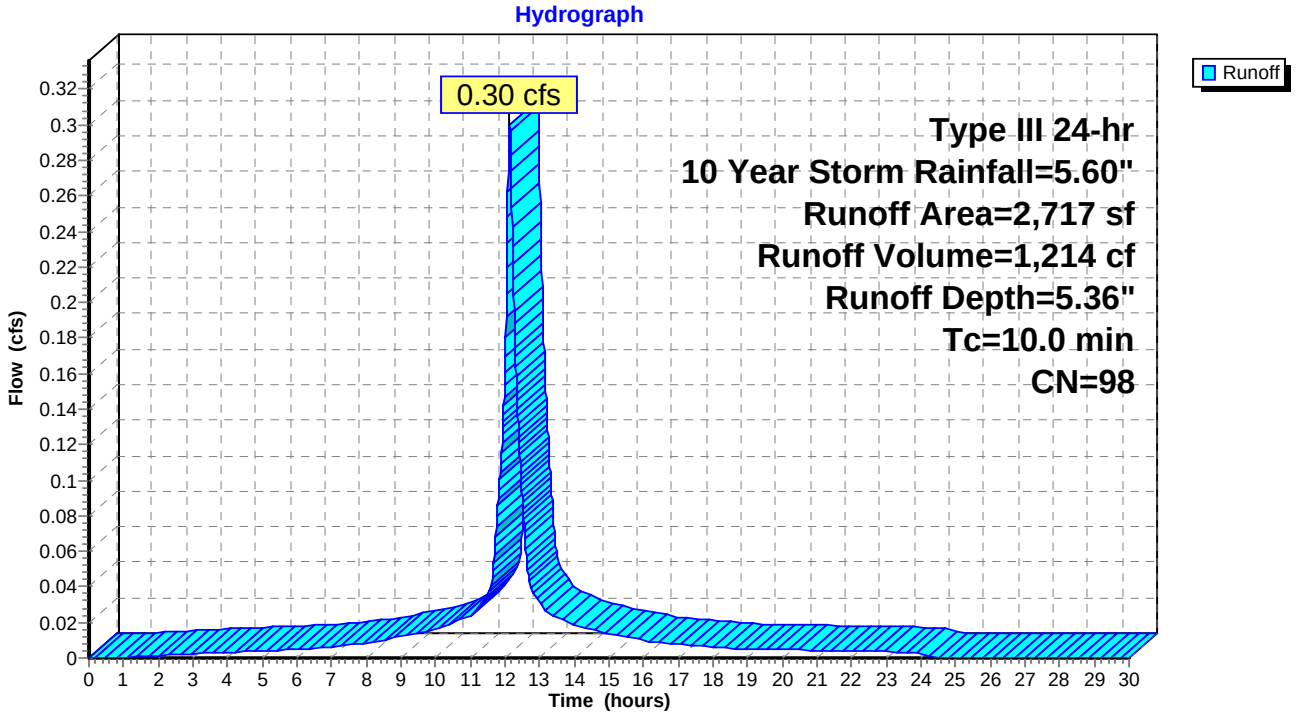
Runoff = 0.30 cfs @ 12.13 hrs, Volume= 1,214 cf, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Storm Rainfall=5.60"

Area (sf)	CN	Description
2,717	98	Roofs, HSG B
2,717		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Travel Time Through Filter Media**

Subcatchment PS1a: Roof Runoff to Drip Edge Filter Strips



Summary for Subcatchment PS2:

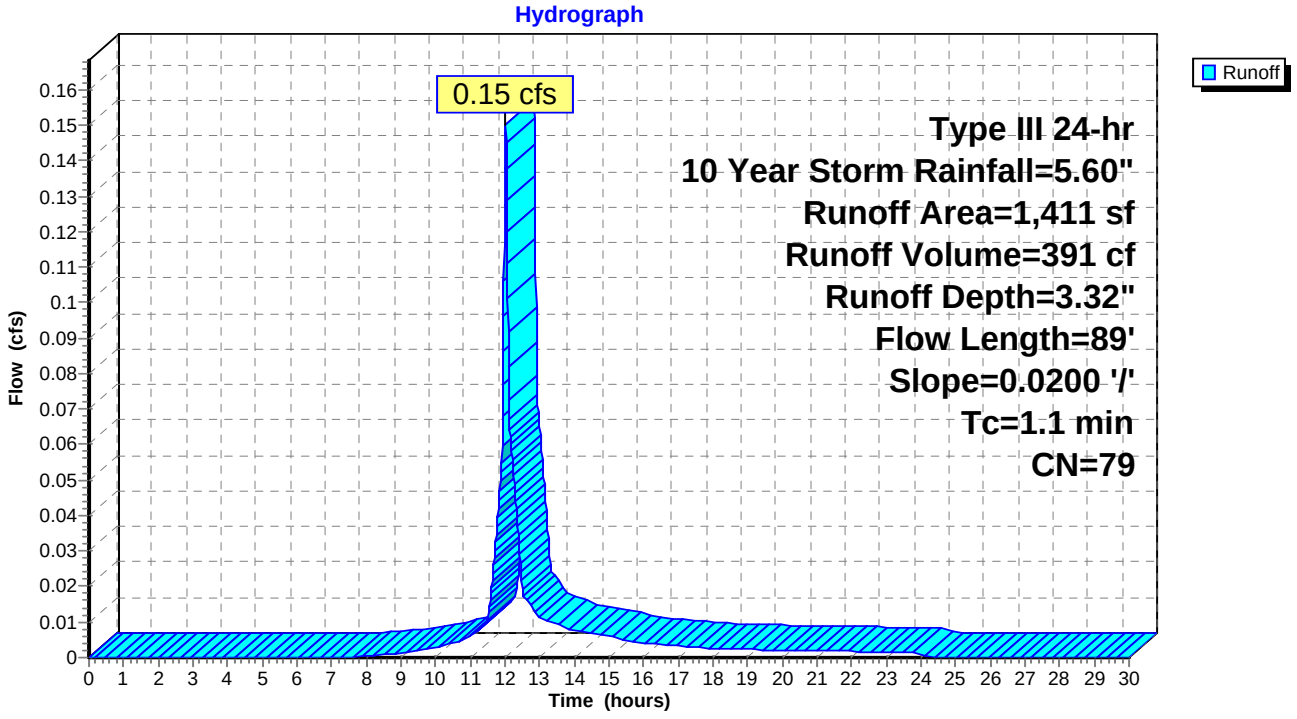
Runoff = 0.15 cfs @ 12.02 hrs, Volume= 391 cf, Depth= 3.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Storm Rainfall=5.60"

Area (sf)	CN	Description
382	98	Paved parking, HSG B
293	98	Roofs, HSG B
736	61	>75% Grass cover, Good, HSG B
1,411	79	Weighted Average
736		52.16% Pervious Area
675		47.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	89	0.0200	1.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"

Subcatchment PS2:



Summary for Subcatchment PS3:

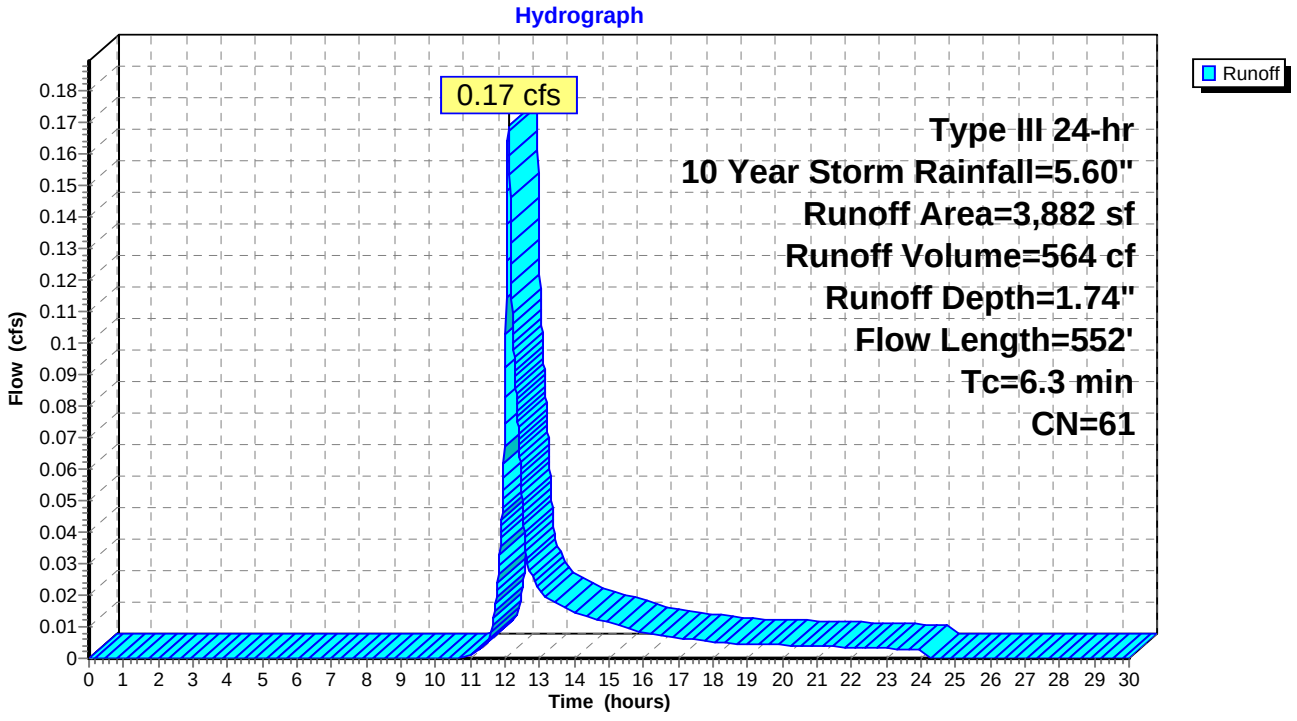
Runoff = 0.17 cfs @ 12.10 hrs, Volume= 564 cf, Depth= 1.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 Year Storm Rainfall=5.60"

Area (sf)	CN	Description
3,882	61	>75% Grass cover, Good, HSG B
3,882		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	342	0.0292	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	210	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.3	552	Total			

Subcatchment PS3:



Summary for Pond 1P: CB in Salem Street

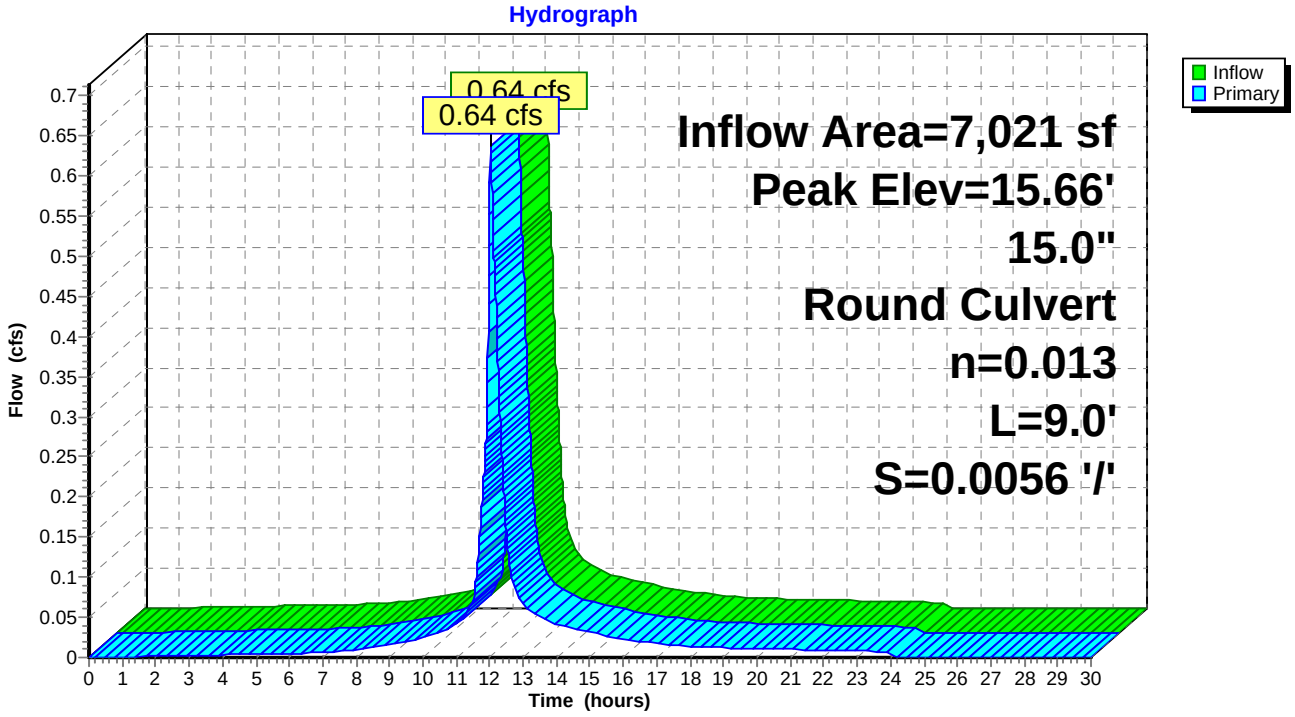
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 4.11" for 10 Year Storm event
Inflow = 0.64 cfs @ 12.02 hrs, Volume= 2,407 cf
Outflow = 0.64 cfs @ 12.02 hrs, Volume= 2,407 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.64 cfs @ 12.02 hrs, Volume= 2,407 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 15.66' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	15.18'	**15.0" Round Culvert** L= 9.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.18' / 15.13' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.64 cfs @ 12.02 hrs HW=15.66' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.64 cfs @ 2.19 fps)

Pond 1P: CB in Salem Street



Summary for Pond 2P: CB at Site Entrance on Salem Street

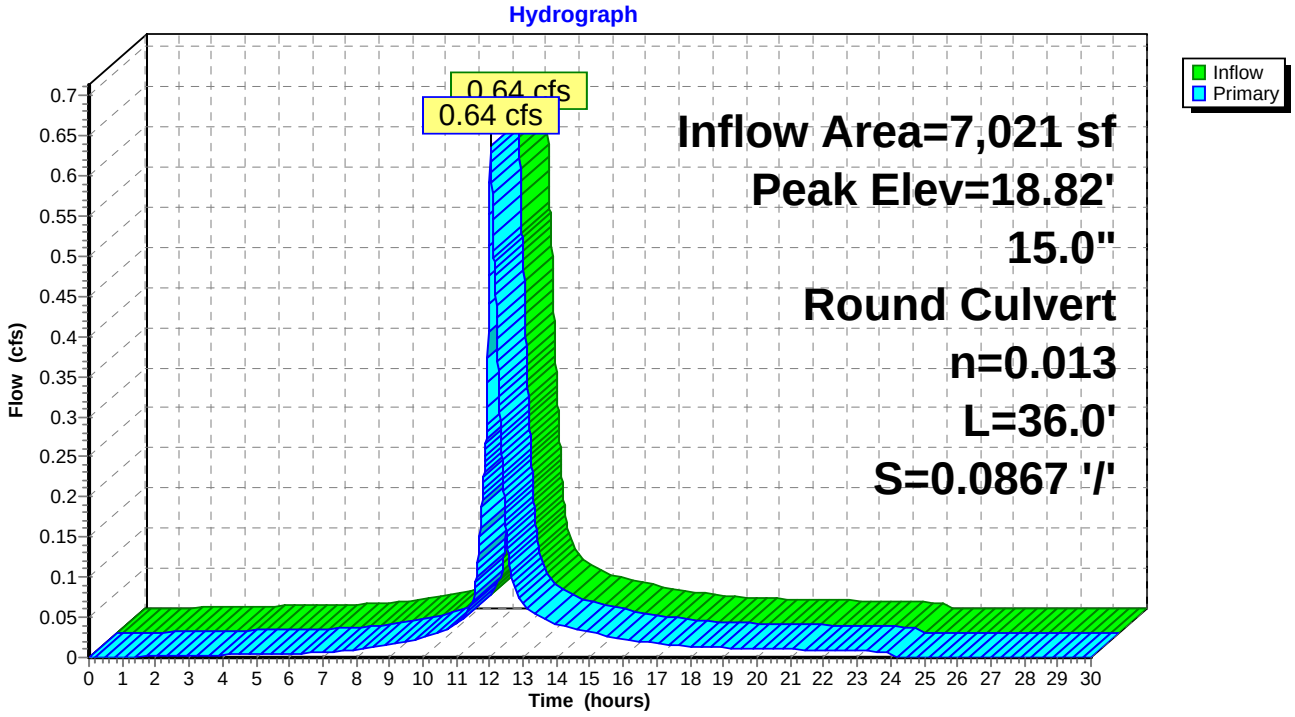
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 4.11" for 10 Year Storm event
Inflow = 0.64 cfs @ 12.02 hrs, Volume= 2,407 cf
Outflow = 0.64 cfs @ 12.02 hrs, Volume= 2,407 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.64 cfs @ 12.02 hrs, Volume= 2,407 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 18.82' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.40'	**15.0" Round Culvert** L= 36.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.40' / 15.28' S= 0.0867 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.64 cfs @ 12.02 hrs HW=18.82' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.64 cfs @ 1.75 fps)

Pond 2P: CB at Site Entrance on Salem Street



Summary for Pond 3P: New DMH Salem Street

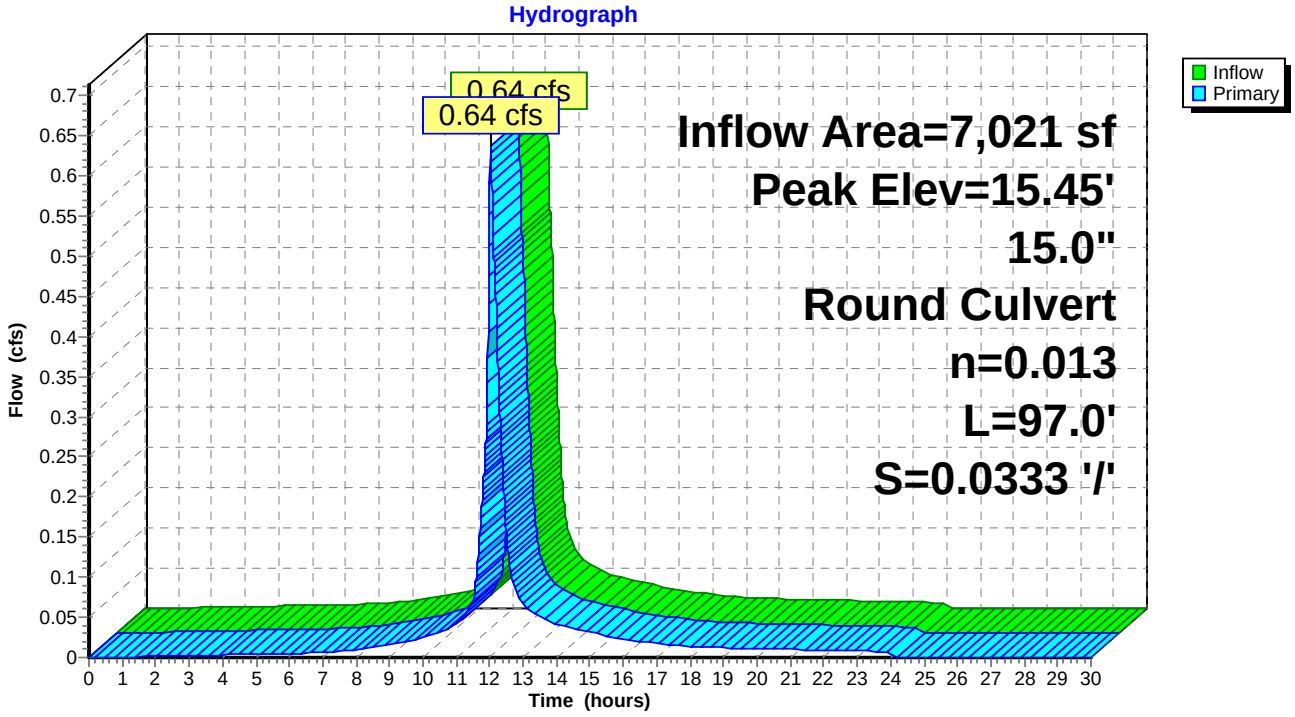
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 4.11" for 10 Year Storm event
Inflow = 0.64 cfs @ 12.02 hrs, Volume= 2,407 cf
Outflow = 0.64 cfs @ 12.02 hrs, Volume= 2,407 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.64 cfs @ 12.02 hrs, Volume= 2,407 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 15.45' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	15.03'	**15.0" Round Culvert** L= 97.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.03' / 11.80' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.64 cfs @ 12.02 hrs HW=15.45' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.64 cfs @ 1.75 fps)

Pond 3P: New DMH Salem Street



Summary for Pond 5P: New DMH at Salem / McDonough

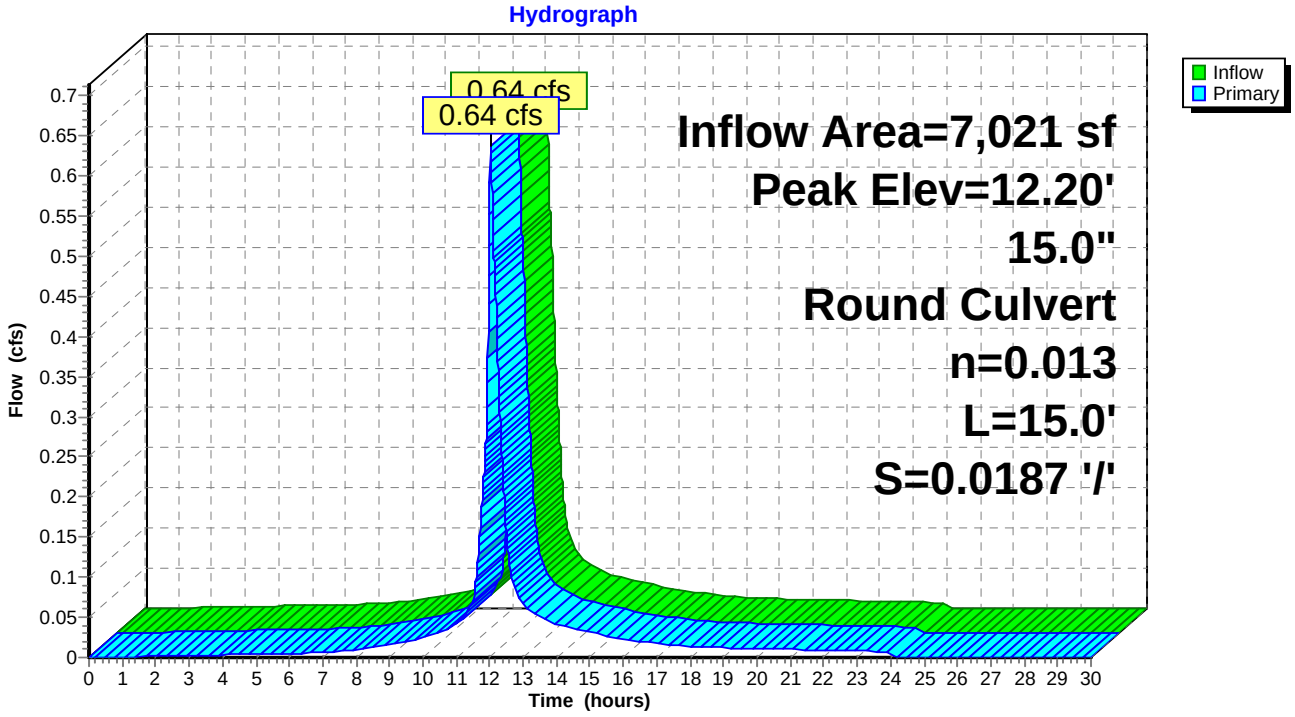
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 4.11" for 10 Year Storm event
Inflow = 0.64 cfs @ 12.02 hrs, Volume= 2,407 cf
Outflow = 0.64 cfs @ 12.02 hrs, Volume= 2,407 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.64 cfs @ 12.02 hrs, Volume= 2,407 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 12.20' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	11.78'	**15.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.78' / 11.50' S= 0.0187 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.64 cfs @ 12.02 hrs HW=12.20' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.64 cfs @ 1.75 fps)

Pond 5P: New DMH at Salem / McDonough



Summary for Pond 6P: CB3

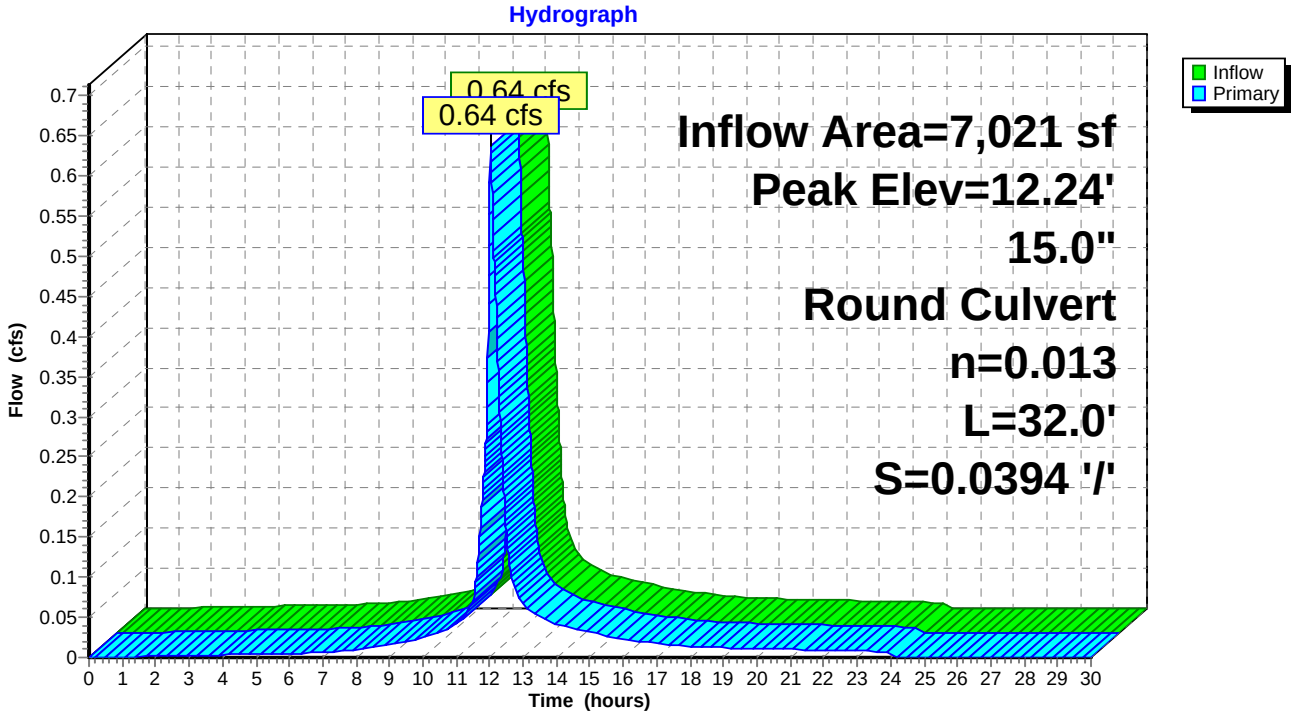
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 4.11" for 10 Year Storm event
Inflow = 0.64 cfs @ 12.02 hrs, Volume= 2,407 cf
Outflow = 0.64 cfs @ 12.02 hrs, Volume= 2,407 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.64 cfs @ 12.02 hrs, Volume= 2,407 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 12.24' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	11.82'	**15.0" Round Culvert** L= 32.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.82' / 10.56' S= 0.0394 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.64 cfs @ 12.02 hrs HW=12.24' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.64 cfs @ 1.75 fps)

Pond 6P: CB3



Summary for Pond 7P: DMH2

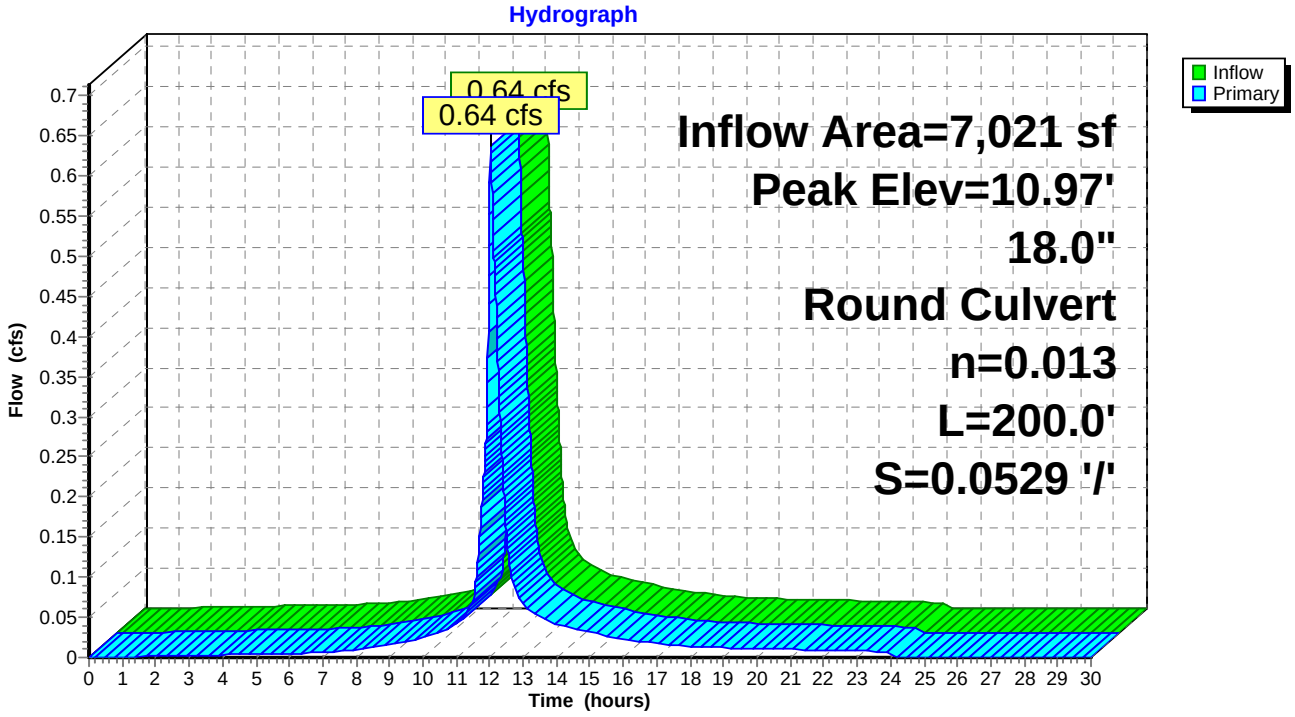
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 4.11" for 10 Year Storm event
Inflow = 0.64 cfs @ 12.02 hrs, Volume= 2,407 cf
Outflow = 0.64 cfs @ 12.02 hrs, Volume= 2,407 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.64 cfs @ 12.02 hrs, Volume= 2,407 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 10.97' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	10.57'	**18.0" Round Culvert** L= 200.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 10.57' / 0.00' S= 0.0529 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.64 cfs @ 12.02 hrs HW=10.97' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.64 cfs @ 1.70 fps)

Pond 7P: DMH2

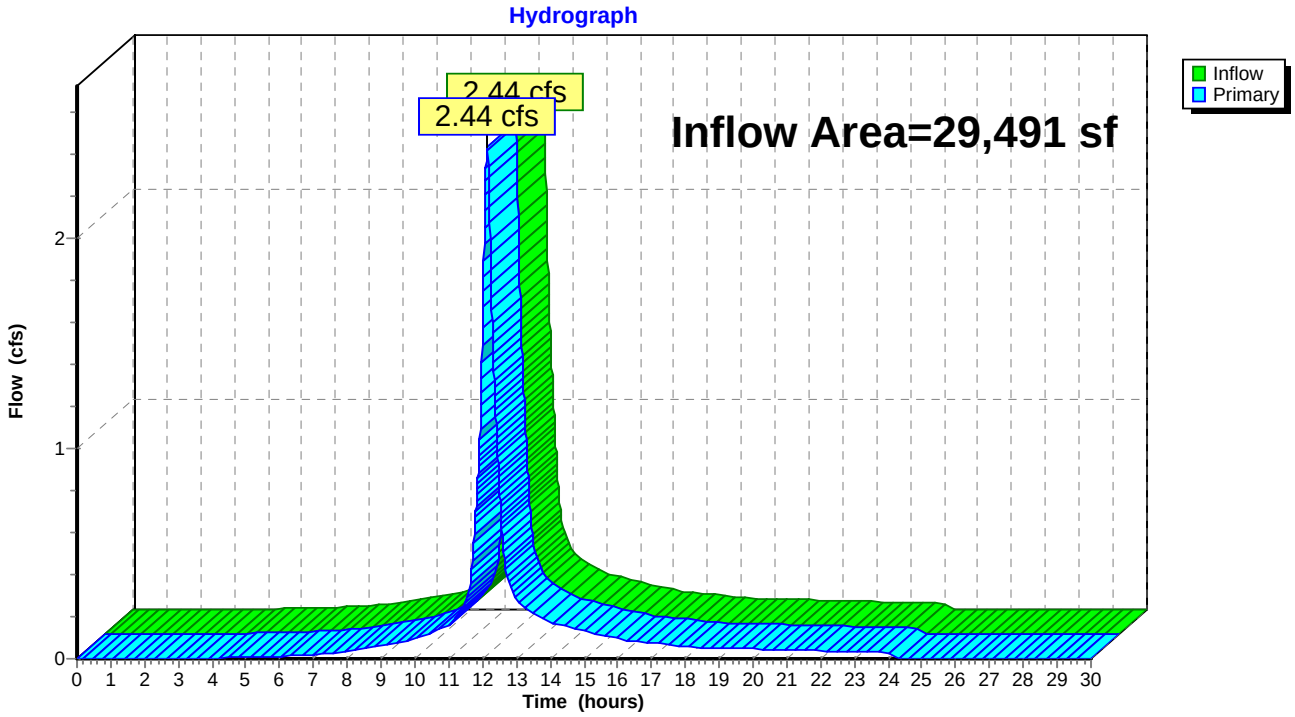


Summary for Pond DP 2: CB at corner of Cabot Street and McDonough Street

Inflow Area = 29,491 sf, 63.21% Impervious, Inflow Depth = 3.95" for 10 Year Storm event
Inflow = 2.44 cfs @ 12.14 hrs, Volume= 9,706 cf
Primary = 2.44 cfs @ 12.14 hrs, Volume= 9,706 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond DP 2: CB at corner of Cabot Street and McDonough Street

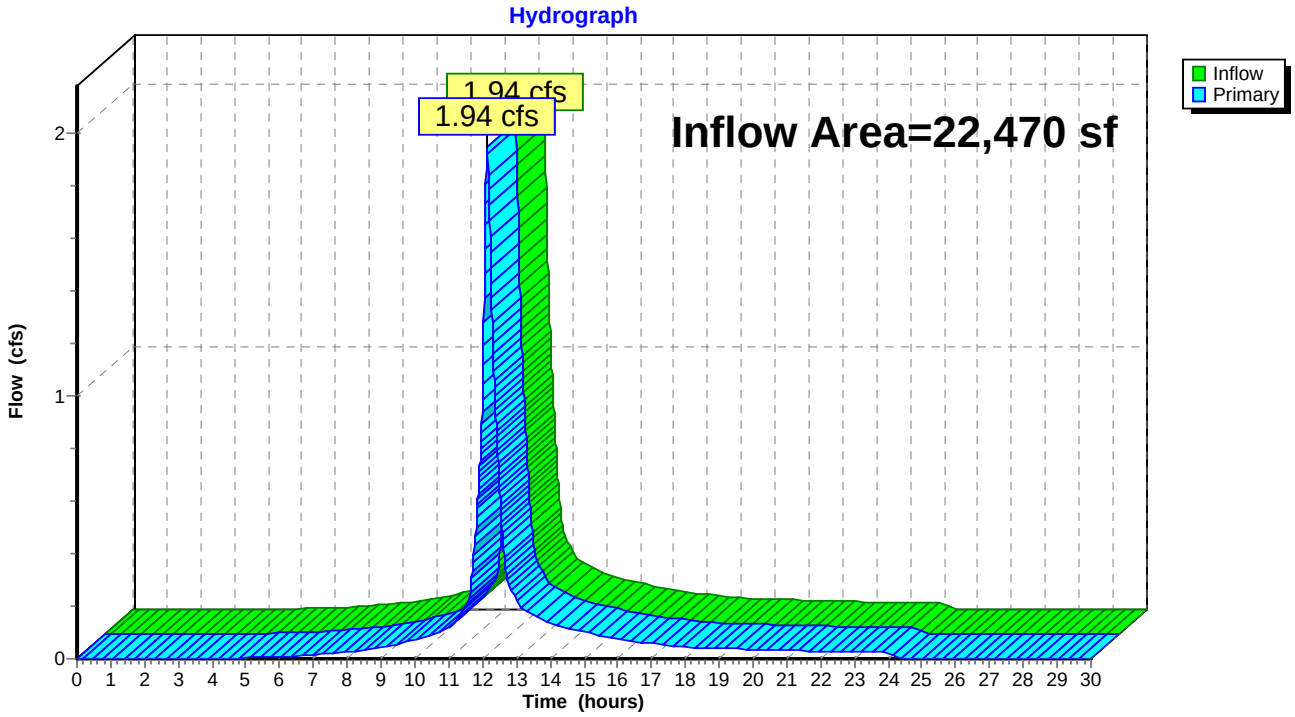


Summary for Link DP 1:

Inflow Area = 22,470 sf, 61.58% Impervious, Inflow Depth = 3.90" for 10 Year Storm event
Inflow = 1.94 cfs @ 12.14 hrs, Volume= 7,300 cf
Primary = 1.94 cfs @ 12.14 hrs, Volume= 7,300 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link DP 1:



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 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 OS 1: Off Site Runoff Area=18,588 sf 74.45% Impervious Runoff Depth=5.81"
Flow Length=722' Tc=10.8 min CN=89 Runoff=2.36 cfs 8,993 cf

Subcatchment PS1: Runoff Area=2,893 sf 48.81% Impervious Runoff Depth=4.68"
Flow Length=143' Slope=0.0200 '/' Tc=0.8 min CN=79 Runoff=0.43 cfs 1,127 cf

Subcatchment PS1a: Roof Runoff to Drip Runoff Area=2,717 sf 100.00% Impervious Runoff Depth=6.86"
Tc=10.0 min CN=98 Runoff=0.38 cfs 1,553 cf

Subcatchment PS2: Runoff Area=1,411 sf 47.84% Impervious Runoff Depth=4.68"
Flow Length=89' Slope=0.0200 '/' Tc=1.1 min CN=79 Runoff=0.21 cfs 550 cf

Subcatchment PS3: Runoff Area=3,882 sf 0.00% Impervious Runoff Depth=2.77"
Flow Length=552' Tc=6.3 min CN=61 Runoff=0.28 cfs 897 cf

Pond 1P: CB in Salem Street Peak Elev=15.75' Inflow=0.87 cfs 3,231 cf
15.0" Round Culvert n=0.013 L=9.0' S=0.0056 '/' Outflow=0.87 cfs 3,231 cf

Pond 2P: CB at Site Entrance on Salem Street Peak Elev=18.90' Inflow=0.87 cfs 3,231 cf
15.0" Round Culvert n=0.013 L=36.0' S=0.0867 '/' Outflow=0.87 cfs 3,231 cf

Pond 3P: New DMH Salem Street Peak Elev=15.53' Inflow=0.87 cfs 3,231 cf
15.0" Round Culvert n=0.013 L=97.0' S=0.0333 '/' Outflow=0.87 cfs 3,231 cf

Pond 5P: New DMH at Salem / McDonough Peak Elev=12.28' Inflow=0.87 cfs 3,231 cf
15.0" Round Culvert n=0.013 L=15.0' S=0.0187 '/' Outflow=0.87 cfs 3,231 cf

Pond 6P: CB3 Peak Elev=12.32' Inflow=0.87 cfs 3,231 cf
15.0" Round Culvert n=0.013 L=32.0' S=0.0394 '/' Outflow=0.87 cfs 3,231 cf

Pond 7P: DMH2 Peak Elev=11.04' Inflow=0.87 cfs 3,231 cf
18.0" Round Culvert n=0.013 L=200.0' S=0.0529 '/' Outflow=0.87 cfs 3,231 cf

Pond DP 2: CB at corner of Cabot Street and McDonough Street Inflow=3.25 cfs 13,121 cf
Primary=3.25 cfs 13,121 cf

Link DP 1: Inflow=2.61 cfs 9,891 cf
Primary=2.61 cfs 9,891 cf

Total Runoff Area = 29,491 sf Runoff Volume = 13,121 cf Average Runoff Depth = 5.34"
36.79% Pervious = 10,849 sf 63.21% Impervious = 18,642 sf

Summary for Subcatchment OS 1: Off Site

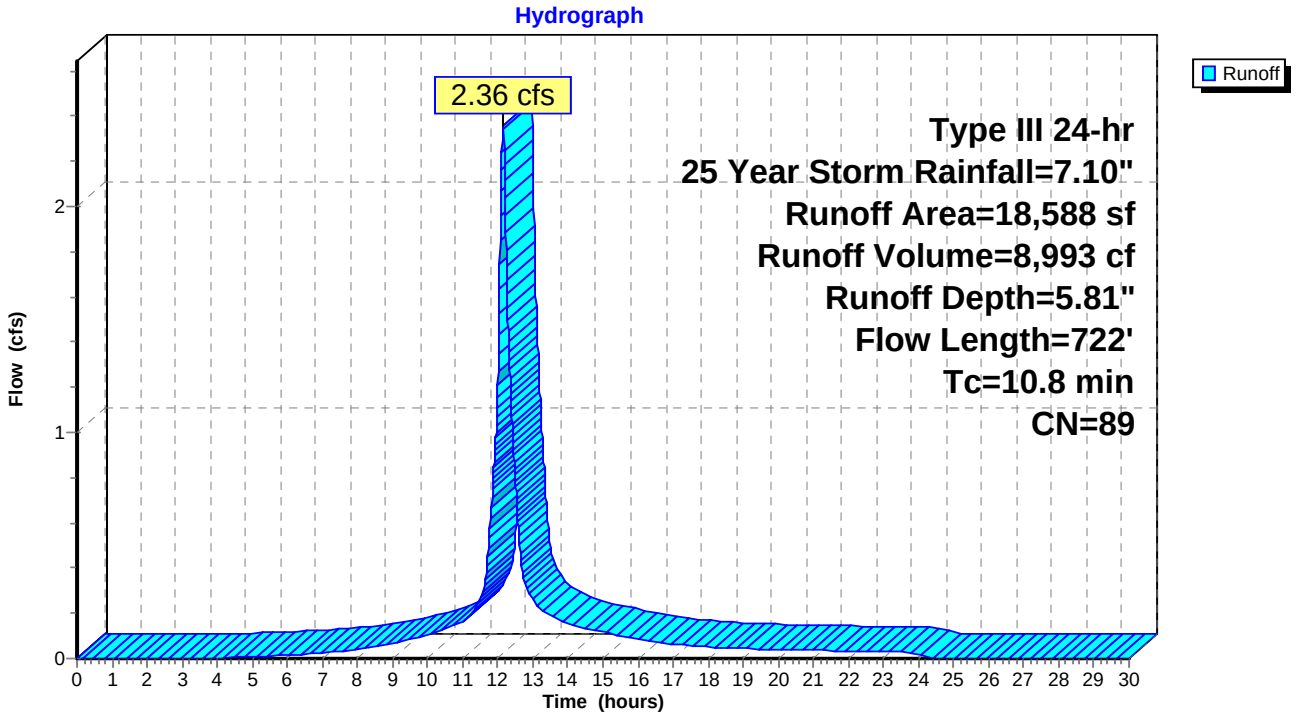
Runoff = 2.36 cfs @ 12.14 hrs, Volume= 8,993 cf, Depth= 5.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Storm Rainfall=7.10"

Area (sf)	CN	Description
13,838	98	Unconnected roofs, HSG B
4,750	61	>75% Grass cover, Good, HSG B
18,588	89	Weighted Average
4,750		25.55% Pervious Area
13,838		74.45% Impervious Area
13,838		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	119	0.0252	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	46	0.0326	1.39		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
2.9	42	0.0833	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
4.0	305	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	210	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.8	722	Total			

Subcatchment OS 1: Off Site



Summary for Subcatchment PS1:

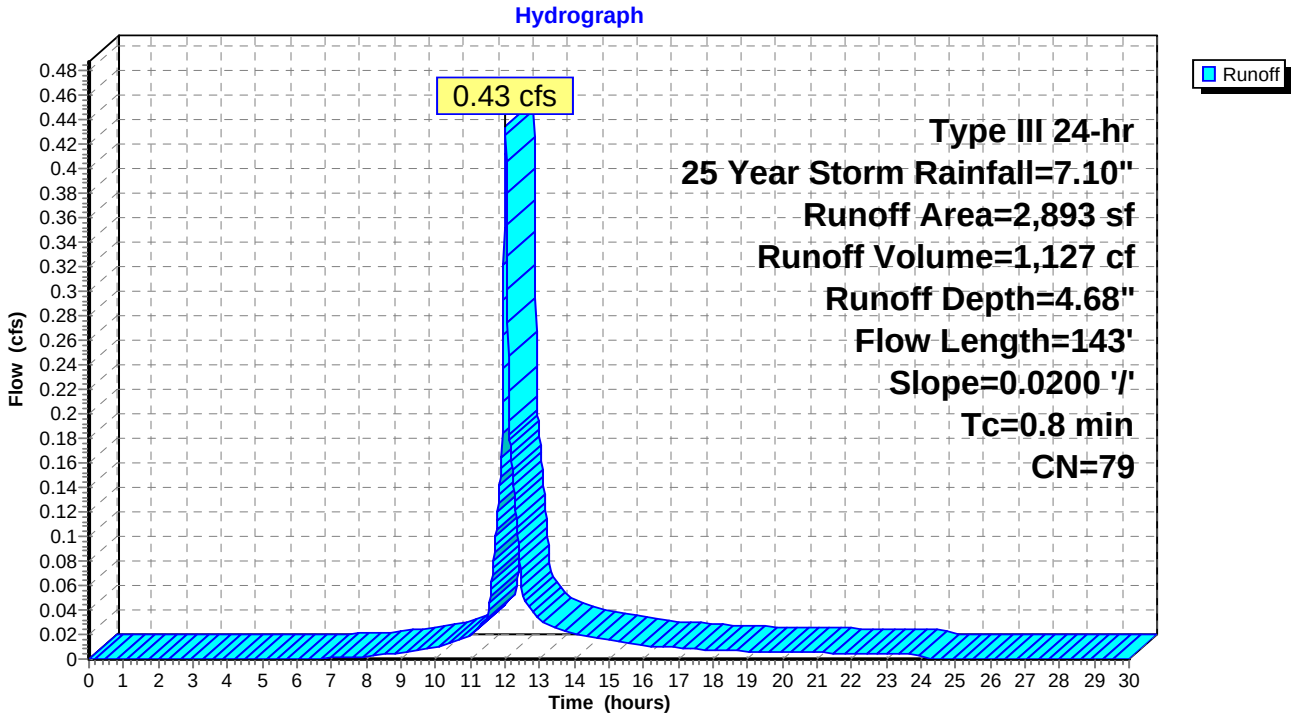
Runoff = 0.43 cfs @ 12.01 hrs, Volume= 1,127 cf, Depth= 4.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Storm Rainfall=7.10"

Area (sf)	CN	Description
1,481	61	>75% Grass cover, Good, HSG B
1,412	98	Paved parking, HSG B
2,893	79	Weighted Average
1,481		51.19% Pervious Area
1,412		48.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	143	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps

Subcatchment PS1:



Summary for Subcatchment PS1a: Roof Runoff to Drip Edge Filter Strips

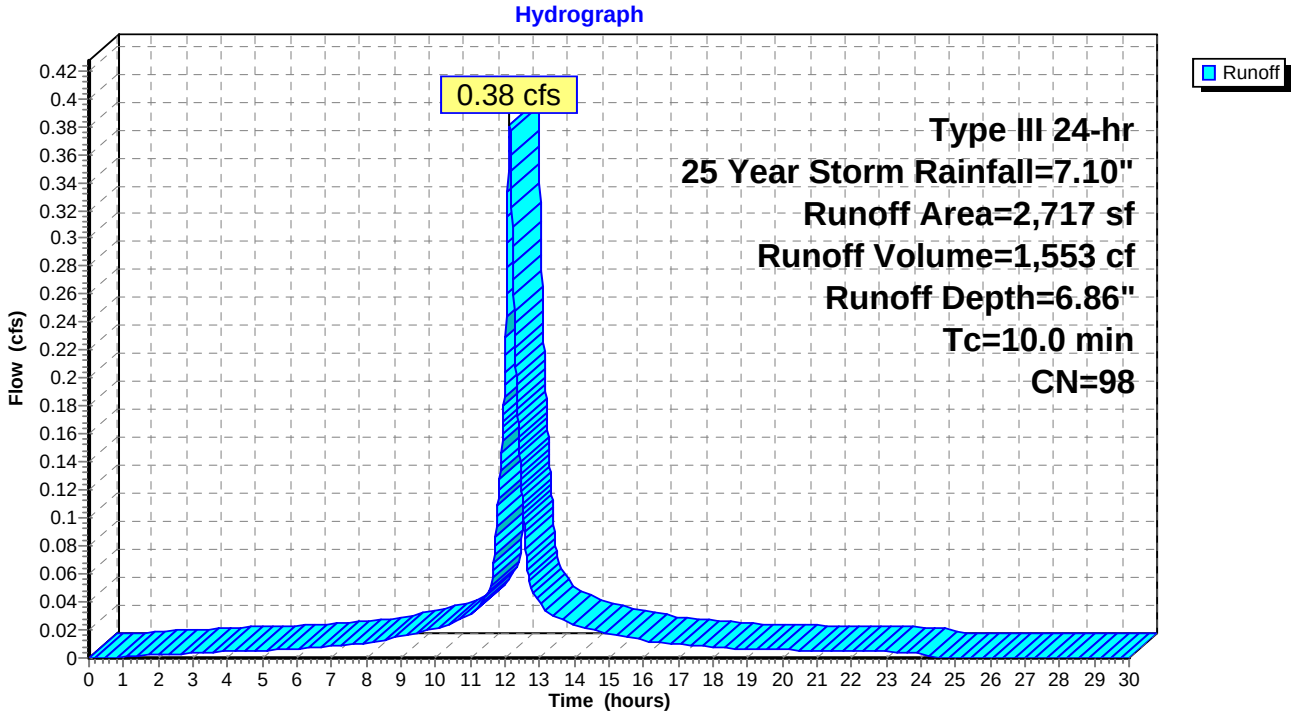
Runoff = 0.38 cfs @ 12.13 hrs, Volume= 1,553 cf, Depth= 6.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Storm Rainfall=7.10"

Area (sf)	CN	Description
2,717	98	Roofs, HSG B
2,717		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Travel Time Through Filter Media**

Subcatchment PS1a: Roof Runoff to Drip Edge Filter Strips



Summary for Subcatchment PS2:

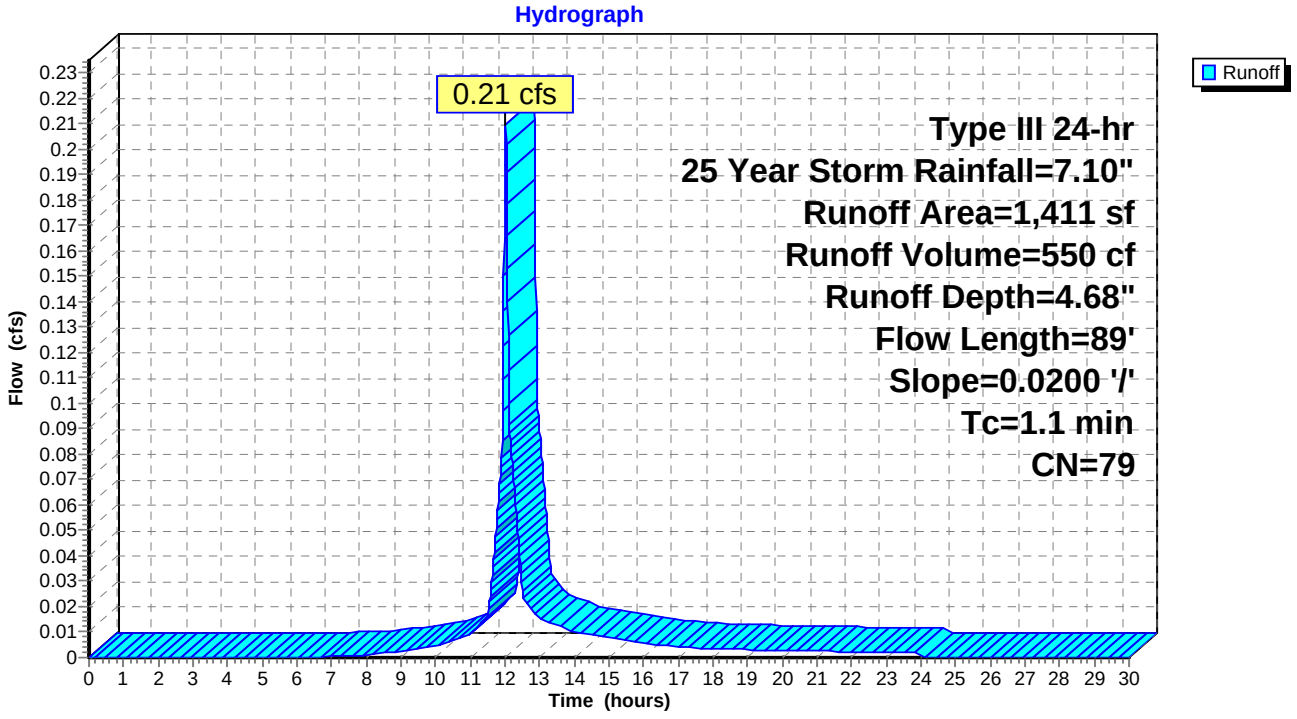
Runoff = 0.21 cfs @ 12.02 hrs, Volume= 550 cf, Depth= 4.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Storm Rainfall=7.10"

Area (sf)	CN	Description
382	98	Paved parking, HSG B
293	98	Roofs, HSG B
736	61	>75% Grass cover, Good, HSG B
1,411	79	Weighted Average
736		52.16% Pervious Area
675		47.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	89	0.0200	1.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"

Subcatchment PS2:



Summary for Subcatchment PS3:

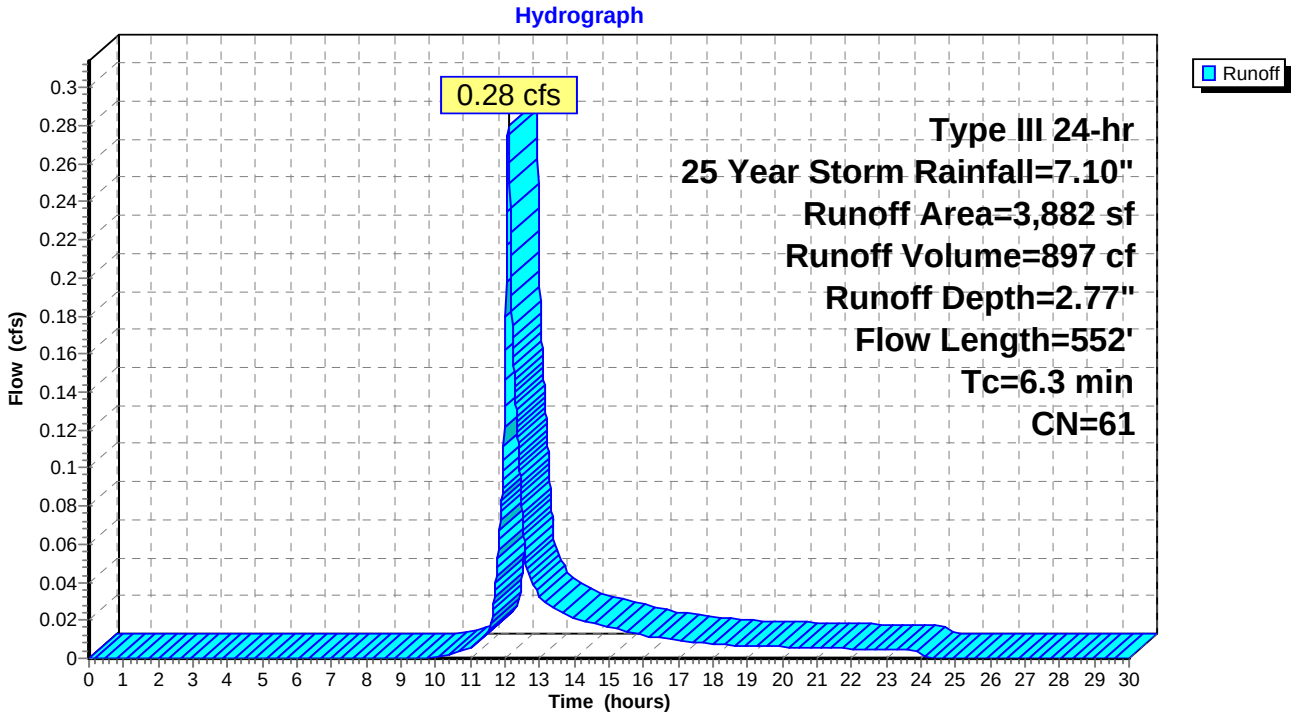
Runoff = 0.28 cfs @ 12.10 hrs, Volume= 897 cf, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 25 Year Storm Rainfall=7.10"

Area (sf)	CN	Description
3,882	61	>75% Grass cover, Good, HSG B
3,882		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	342	0.0292	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	210	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.3	552	Total			

Subcatchment PS3:



Summary for Pond 1P: CB in Salem Street

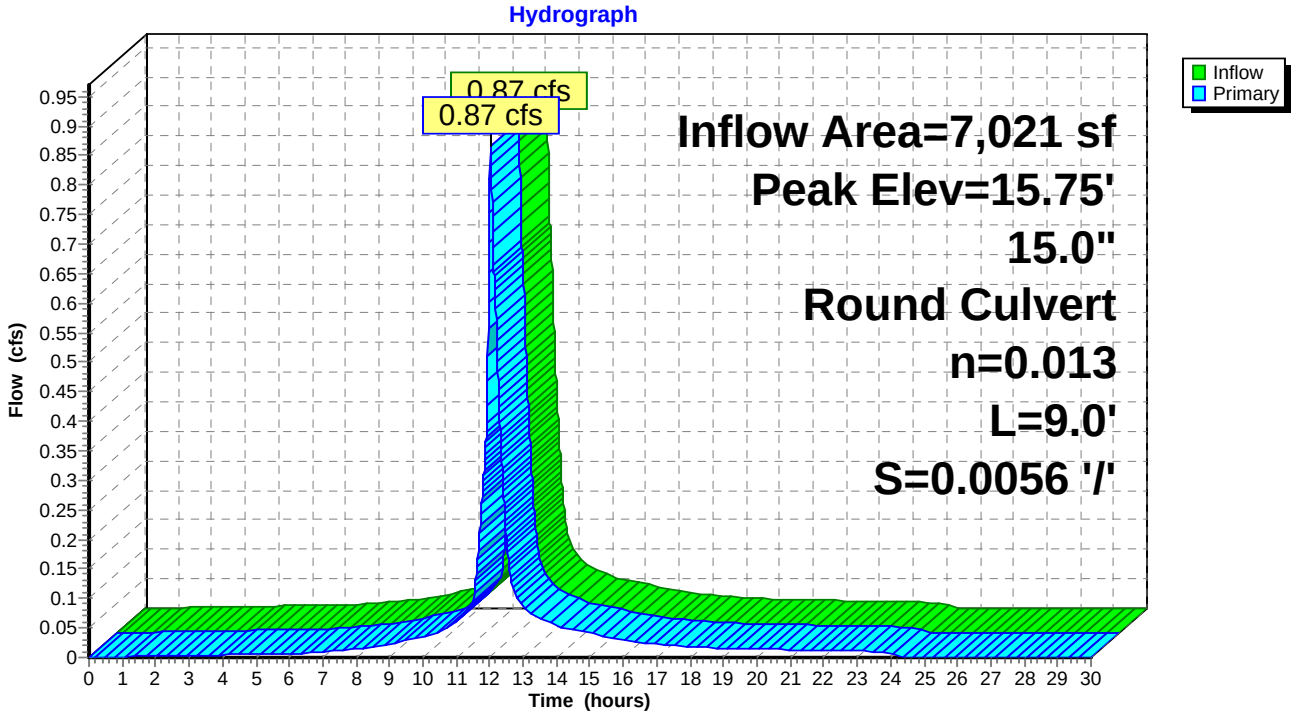
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 5.52" for 25 Year Storm event
Inflow = 0.87 cfs @ 12.02 hrs, Volume= 3,231 cf
Outflow = 0.87 cfs @ 12.02 hrs, Volume= 3,231 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.87 cfs @ 12.02 hrs, Volume= 3,231 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 15.75' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	15.18'	**15.0" Round Culvert** L= 9.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.18' / 15.13' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.86 cfs @ 12.02 hrs HW=15.74' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.86 cfs @ 2.36 fps)

Pond 1P: CB in Salem Street



Summary for Pond 2P: CB at Site Entrance on Salem Street

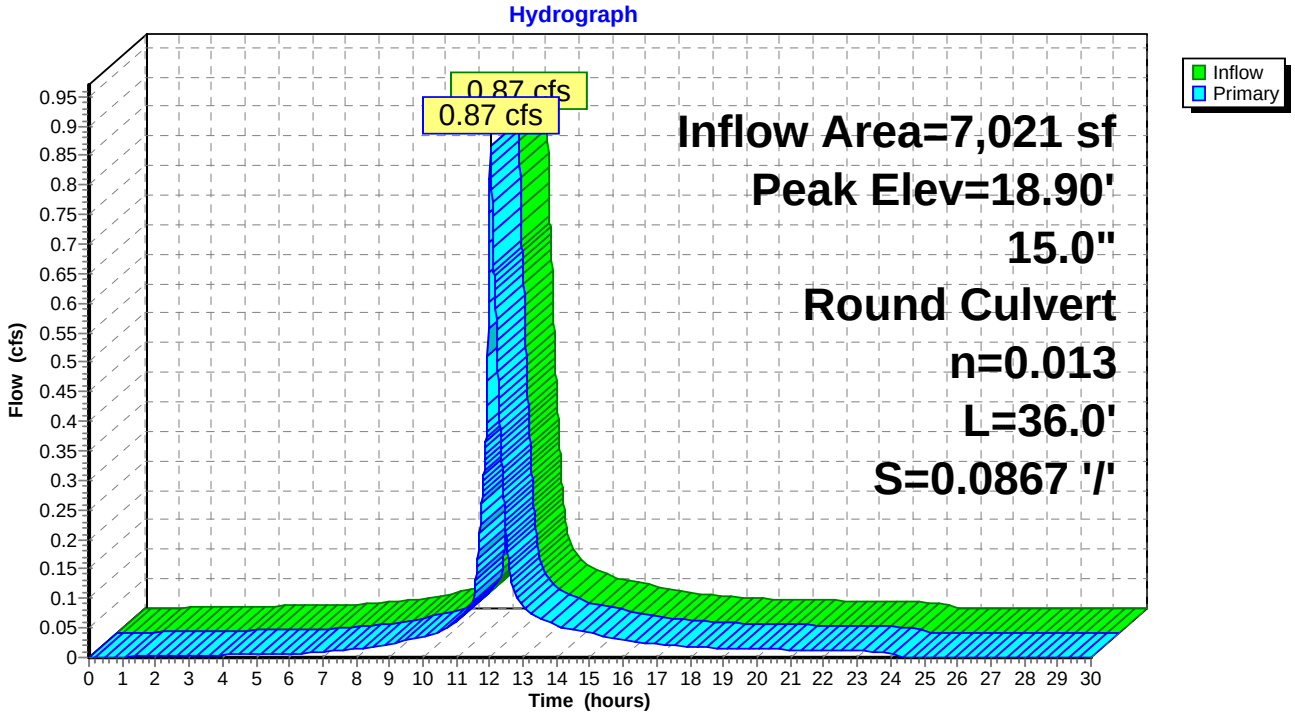
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 5.52" for 25 Year Storm event
Inflow = 0.87 cfs @ 12.02 hrs, Volume= 3,231 cf
Outflow = 0.87 cfs @ 12.02 hrs, Volume= 3,231 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.87 cfs @ 12.02 hrs, Volume= 3,231 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 18.90' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.40'	**15.0" Round Culvert** L= 36.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.40' / 15.28' S= 0.0867 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.86 cfs @ 12.02 hrs HW=18.90' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.86 cfs @ 1.90 fps)

Pond 2P: CB at Site Entrance on Salem Street



Summary for Pond 3P: New DMH Salem Street

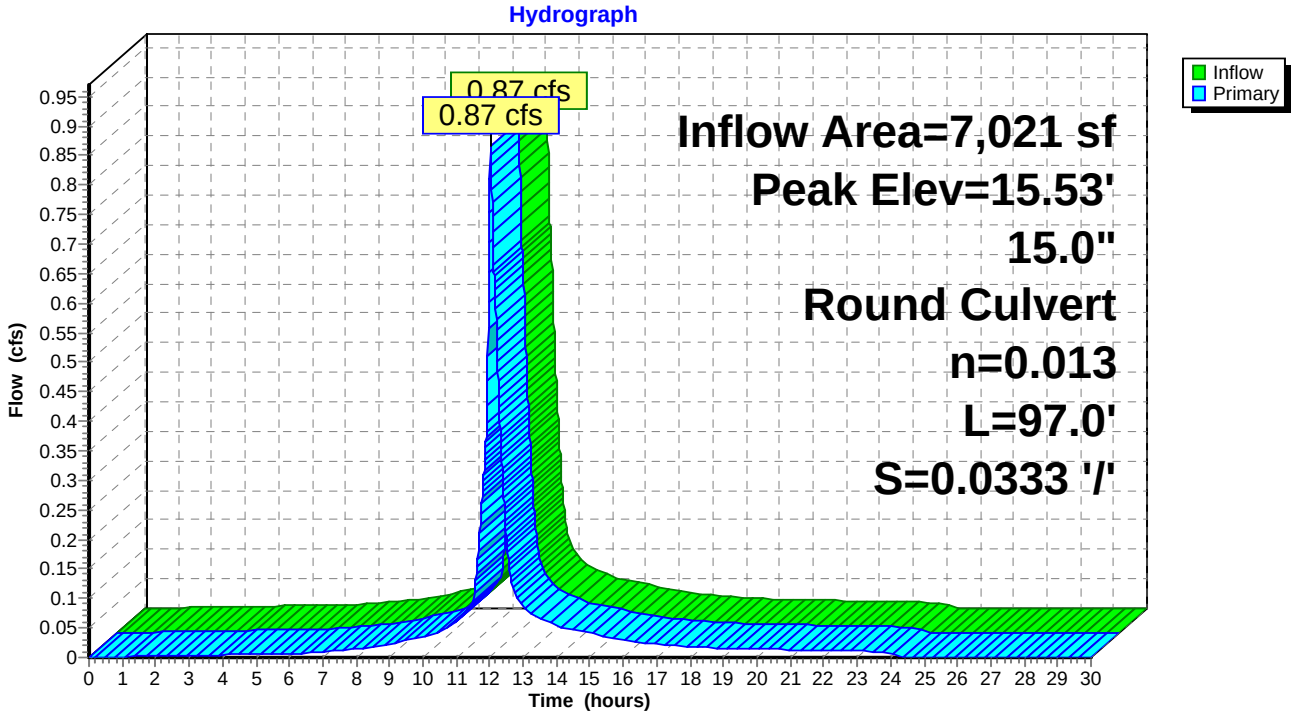
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 5.52" for 25 Year Storm event
Inflow = 0.87 cfs @ 12.02 hrs, Volume= 3,231 cf
Outflow = 0.87 cfs @ 12.02 hrs, Volume= 3,231 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.87 cfs @ 12.02 hrs, Volume= 3,231 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 15.53' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	15.03'	**15.0" Round Culvert** L= 97.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.03' / 11.80' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.86 cfs @ 12.02 hrs HW=15.53' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.86 cfs @ 1.90 fps)

Pond 3P: New DMH Salem Street



Summary for Pond 5P: New DMH at Salem / McDonough

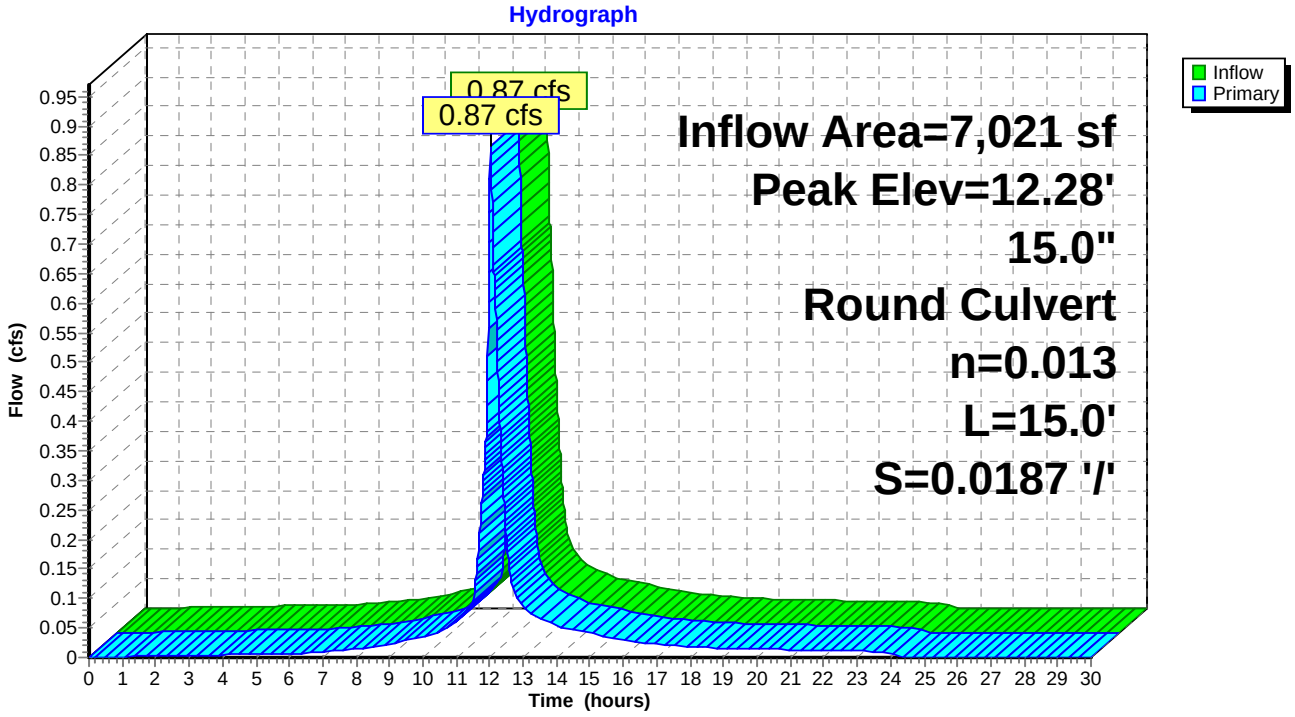
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 5.52" for 25 Year Storm event
Inflow = 0.87 cfs @ 12.02 hrs, Volume= 3,231 cf
Outflow = 0.87 cfs @ 12.02 hrs, Volume= 3,231 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.87 cfs @ 12.02 hrs, Volume= 3,231 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 12.28' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	11.78'	**15.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.78' / 11.50' S= 0.0187 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.86 cfs @ 12.02 hrs HW=12.28' (Free Discharge)
1=Culvert (Inlet Controls 0.86 cfs @ 1.90 fps)

Pond 5P: New DMH at Salem / McDonough



Summary for Pond 6P: CB3

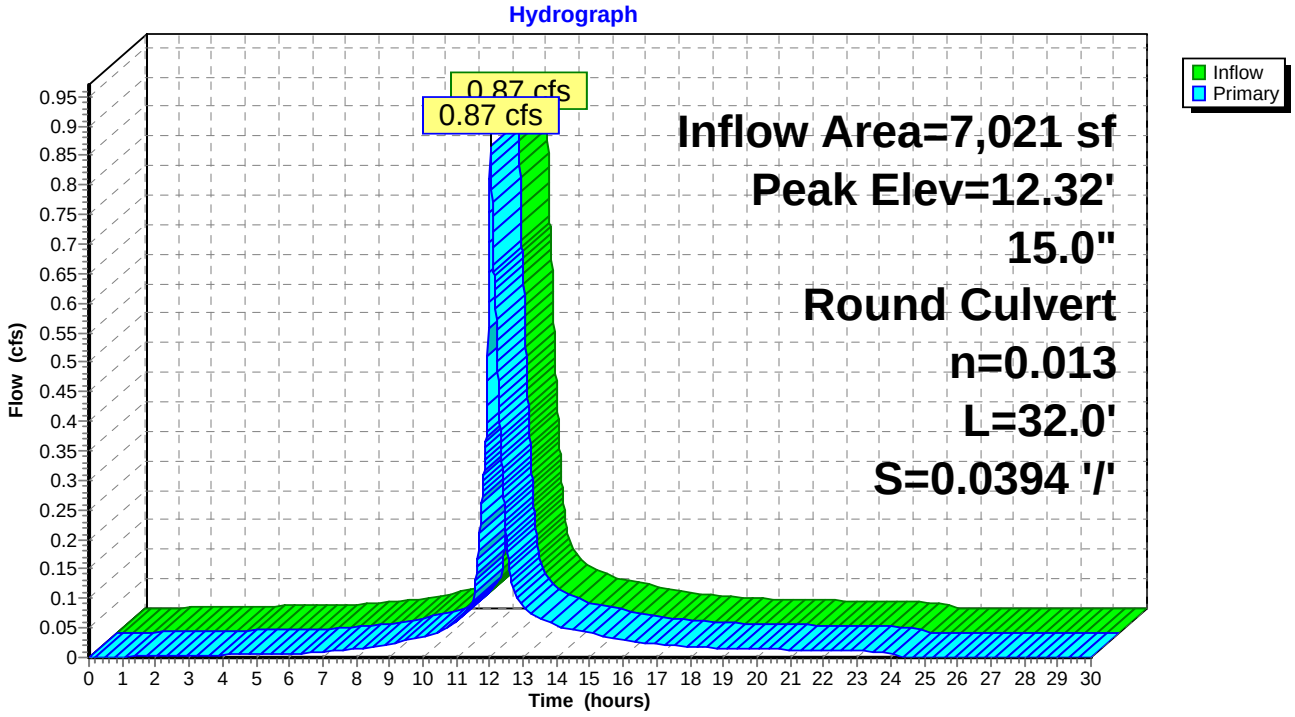
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 5.52" for 25 Year Storm event
Inflow = 0.87 cfs @ 12.02 hrs, Volume= 3,231 cf
Outflow = 0.87 cfs @ 12.02 hrs, Volume= 3,231 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.87 cfs @ 12.02 hrs, Volume= 3,231 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 12.32' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	11.82'	**15.0" Round Culvert** L= 32.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.82' / 10.56' S= 0.0394 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.86 cfs @ 12.02 hrs HW=12.32' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.86 cfs @ 1.90 fps)

Pond 6P: CB3



Summary for Pond 7P: DMH2

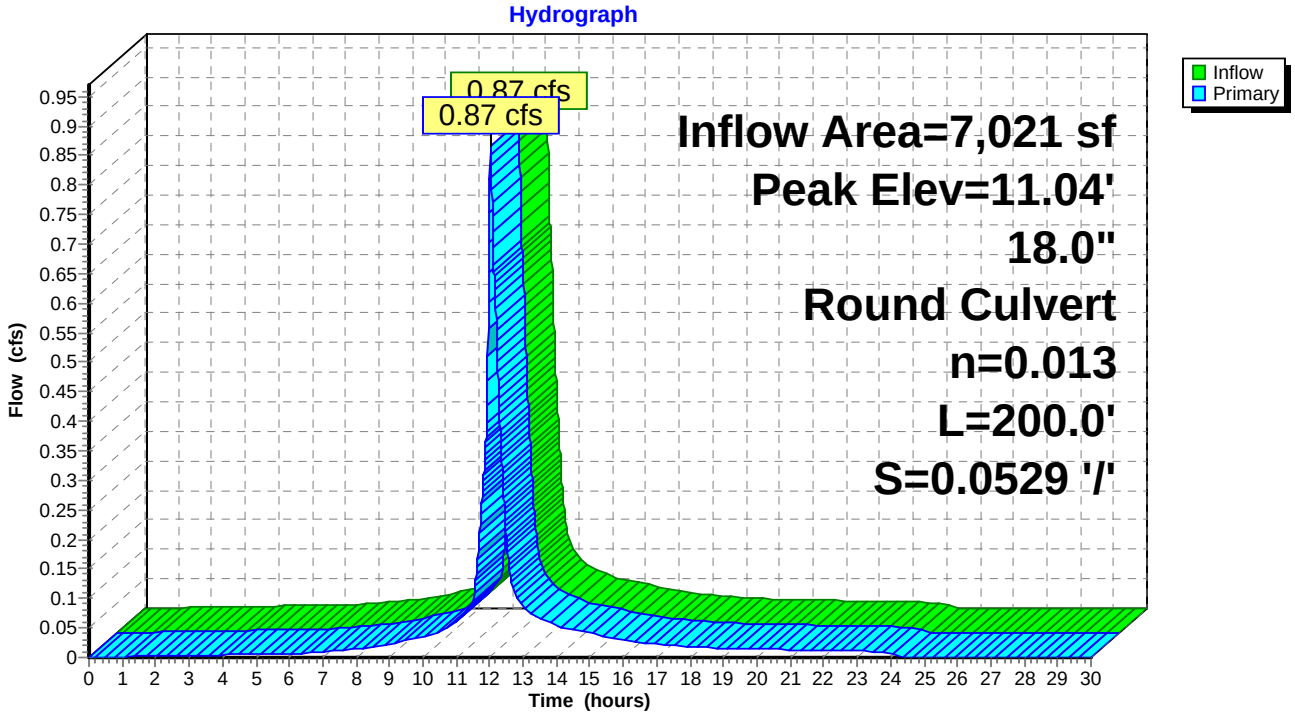
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 5.52" for 25 Year Storm event
Inflow = 0.87 cfs @ 12.02 hrs, Volume= 3,231 cf
Outflow = 0.87 cfs @ 12.02 hrs, Volume= 3,231 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.87 cfs @ 12.02 hrs, Volume= 3,231 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 11.04' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	10.57'	**18.0" Round Culvert** L= 200.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 10.57' / 0.00' S= 0.0529 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.86 cfs @ 12.02 hrs HW=11.04' (Free Discharge)
1=Culvert (Inlet Controls 0.86 cfs @ 1.84 fps)

Pond 7P: DMH2

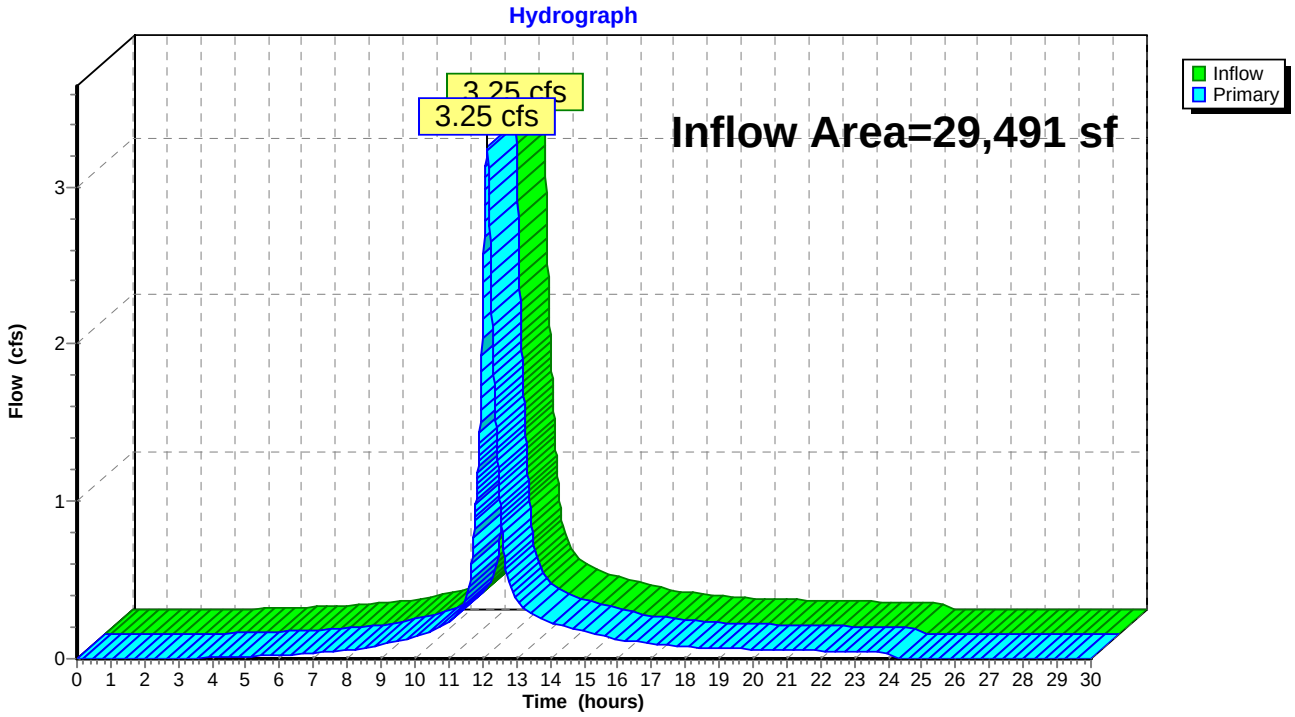


Summary for Pond DP 2: CB at corner of Cabot Street and McDonough Street

Inflow Area = 29,491 sf, 63.21% Impervious, Inflow Depth = 5.34" for 25 Year Storm event
Inflow = 3.25 cfs @ 12.13 hrs, Volume= 13,121 cf
Primary = 3.25 cfs @ 12.13 hrs, Volume= 13,121 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond DP 2: CB at corner of Cabot Street and McDonough Street

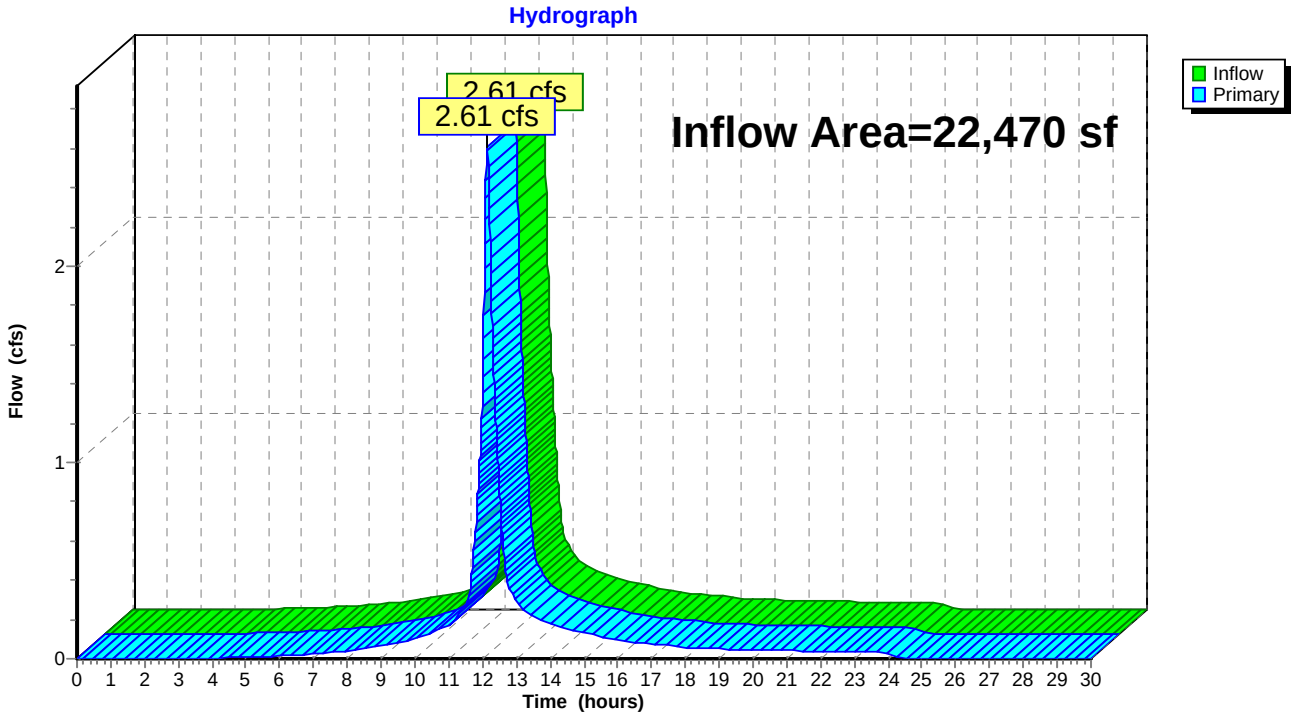


Summary for Link DP 1:

Inflow Area = 22,470 sf, 61.58% Impervious, Inflow Depth = 5.28" for 25 Year Storm event
Inflow = 2.61 cfs @ 12.14 hrs, Volume= 9,891 cf
Primary = 2.61 cfs @ 12.14 hrs, Volume= 9,891 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link DP 1:



Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 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 OS 1: Off Site Runoff Area=18,588 sf 74.45% Impervious Runoff Depth=7.18"
Flow Length=722' Tc=10.8 min CN=89 Runoff=2.88 cfs 11,118 cf

Subcatchment PS1: Runoff Area=2,893 sf 48.81% Impervious Runoff Depth=5.98"
Flow Length=143' Slope=0.0200 '/' Tc=0.8 min CN=79 Runoff=0.55 cfs 1,440 cf

Subcatchment PS1a: Roof Runoff to Drip Runoff Area=2,717 sf 100.00% Impervious Runoff Depth=8.26"
Tc=10.0 min CN=98 Runoff=0.46 cfs 1,870 cf

Subcatchment PS2: Runoff Area=1,411 sf 47.84% Impervious Runoff Depth=5.98"
Flow Length=89' Slope=0.0200 '/' Tc=1.1 min CN=79 Runoff=0.27 cfs 703 cf

Subcatchment PS3: Runoff Area=3,882 sf 0.00% Impervious Runoff Depth=3.83"
Flow Length=552' Tc=6.3 min CN=61 Runoff=0.39 cfs 1,239 cf

Pond 1P: CB in Salem Street Peak Elev=15.82' Inflow=1.08 cfs 4,013 cf
15.0" Round Culvert n=0.013 L=9.0' S=0.0056 '/' Outflow=1.08 cfs 4,013 cf

Pond 2P: CB at Site Entrance on Salem Street Peak Elev=18.96' Inflow=1.08 cfs 4,013 cf
15.0" Round Culvert n=0.013 L=36.0' S=0.0867 '/' Outflow=1.08 cfs 4,013 cf

Pond 3P: New DMH Salem Street Peak Elev=15.59' Inflow=1.08 cfs 4,013 cf
15.0" Round Culvert n=0.013 L=97.0' S=0.0333 '/' Outflow=1.08 cfs 4,013 cf

Pond 5P: New DMH at Salem / McDonough Peak Elev=12.34' Inflow=1.08 cfs 4,013 cf
15.0" Round Culvert n=0.013 L=15.0' S=0.0187 '/' Outflow=1.08 cfs 4,013 cf

Pond 6P: CB3 Peak Elev=12.38' Inflow=1.08 cfs 4,013 cf
15.0" Round Culvert n=0.013 L=32.0' S=0.0394 '/' Outflow=1.08 cfs 4,013 cf

Pond 7P: DMH2 Peak Elev=11.10' Inflow=1.08 cfs 4,013 cf
18.0" Round Culvert n=0.013 L=200.0' S=0.0529 '/' Outflow=1.08 cfs 4,013 cf

Pond DP 2: CB at corner of Cabot Street and McDonough Street Inflow=4.02 cfs 16,371 cf
Primary=4.02 cfs 16,371 cf

Link DP 1: Inflow=3.23 cfs 12,358 cf
Primary=3.23 cfs 12,358 cf

Total Runoff Area = 29,491 sf Runoff Volume = 16,371 cf Average Runoff Depth = 6.66"
36.79% Pervious = 10,849 sf 63.21% Impervious = 18,642 sf

Summary for Subcatchment OS 1: Off Site

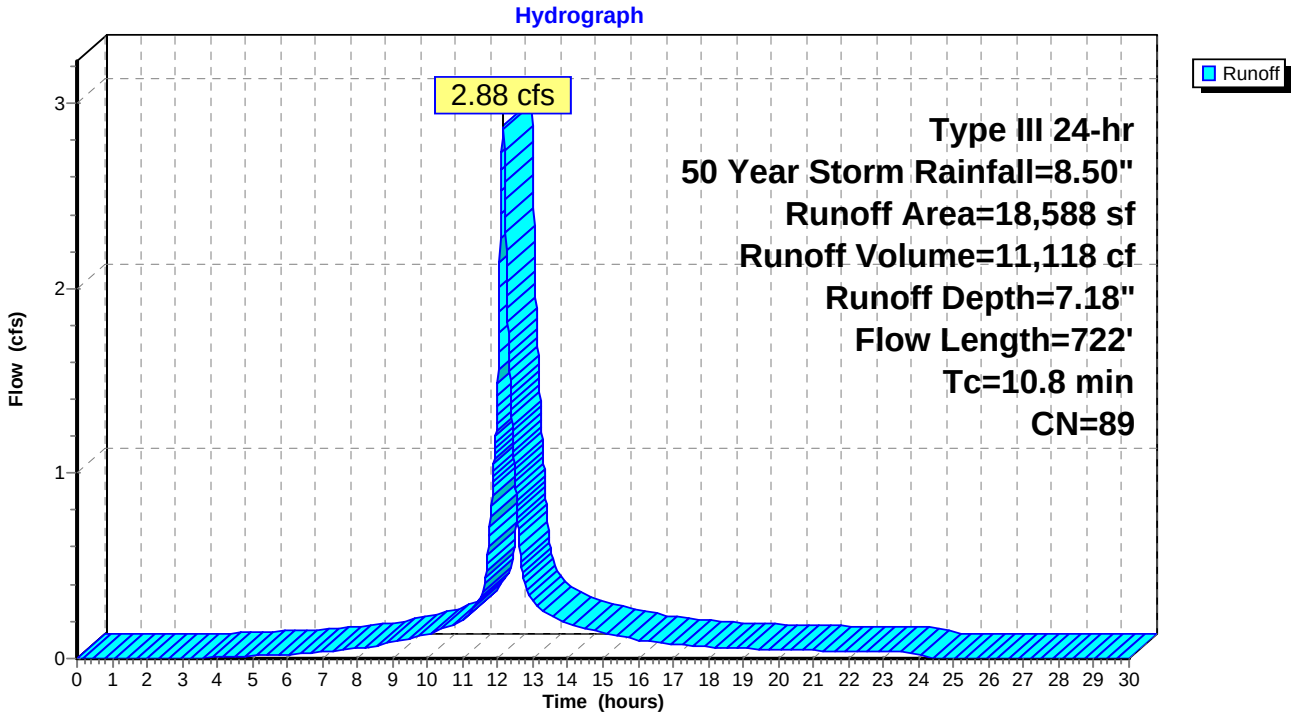
Runoff = 2.88 cfs @ 12.14 hrs, Volume= 11,118 cf, Depth= 7.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 Year Storm Rainfall=8.50"

Area (sf)	CN	Description
13,838	98	Unconnected roofs, HSG B
4,750	61	>75% Grass cover, Good, HSG B
18,588	89	Weighted Average
4,750		25.55% Pervious Area
13,838		74.45% Impervious Area
13,838		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.8	119	0.0252	1.11		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.6	46	0.0326	1.39		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"
2.9	42	0.0833	0.25		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.00"
4.0	305	0.0328	1.27		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	210	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.8	722	Total			

Subcatchment OS 1: Off Site



Summary for Subcatchment PS1:

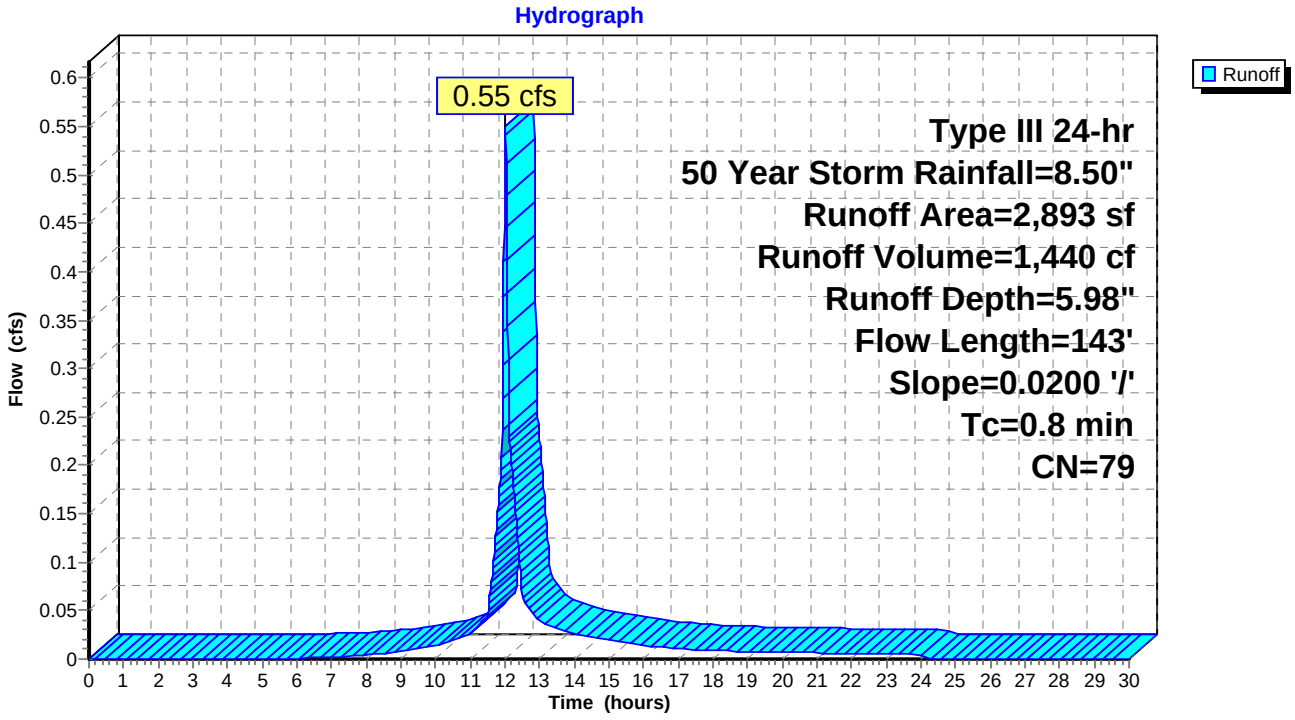
Runoff = 0.55 cfs @ 12.01 hrs, Volume= 1,440 cf, Depth= 5.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 Year Storm Rainfall=8.50"

Area (sf)	CN	Description
1,481	61	>75% Grass cover, Good, HSG B
1,412	98	Paved parking, HSG B
2,893	79	Weighted Average
1,481		51.19% Pervious Area
1,412		48.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	143	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps

Subcatchment PS1:



Summary for Subcatchment PS1a: Roof Runoff to Drip Edge Filter Strips

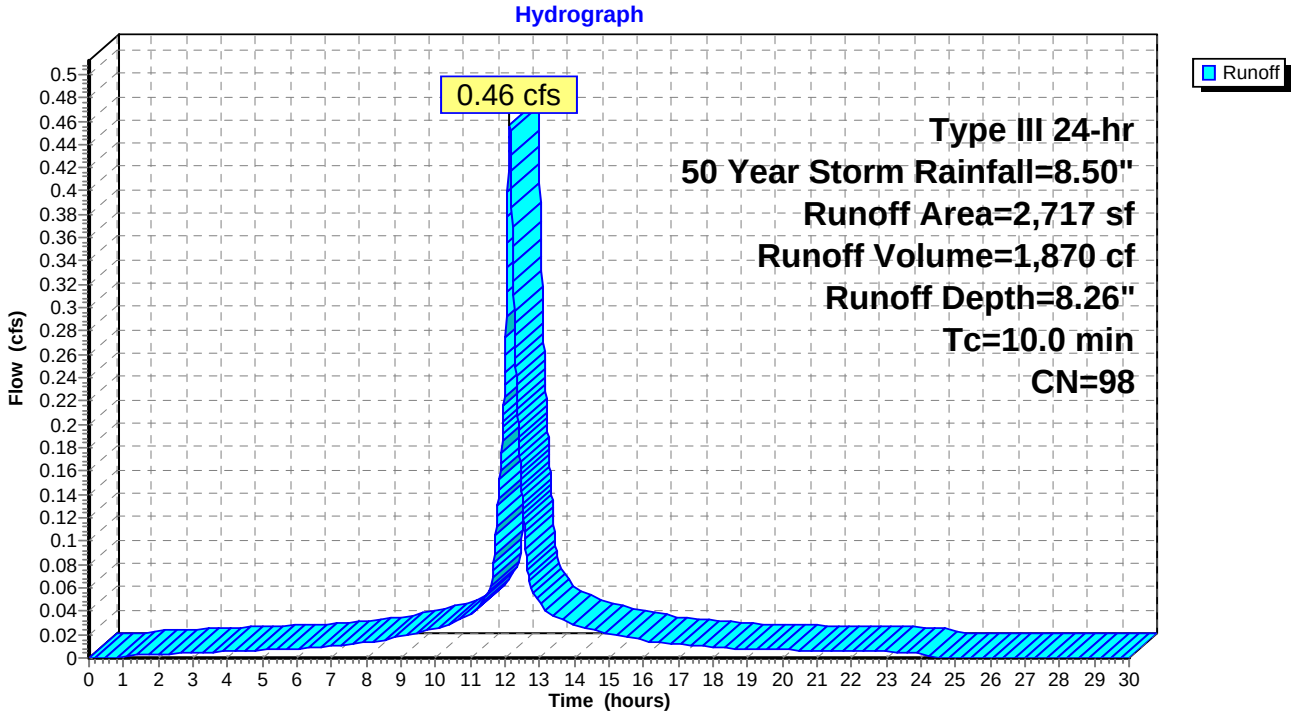
Runoff = 0.46 cfs @ 12.13 hrs, Volume= 1,870 cf, Depth= 8.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 Year Storm Rainfall=8.50"

Area (sf)	CN	Description
2,717	98	Roofs, HSG B
2,717		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry, Travel Time Through Filter Media**

Subcatchment PS1a: Roof Runoff to Drip Edge Filter Strips



Summary for Subcatchment PS2:

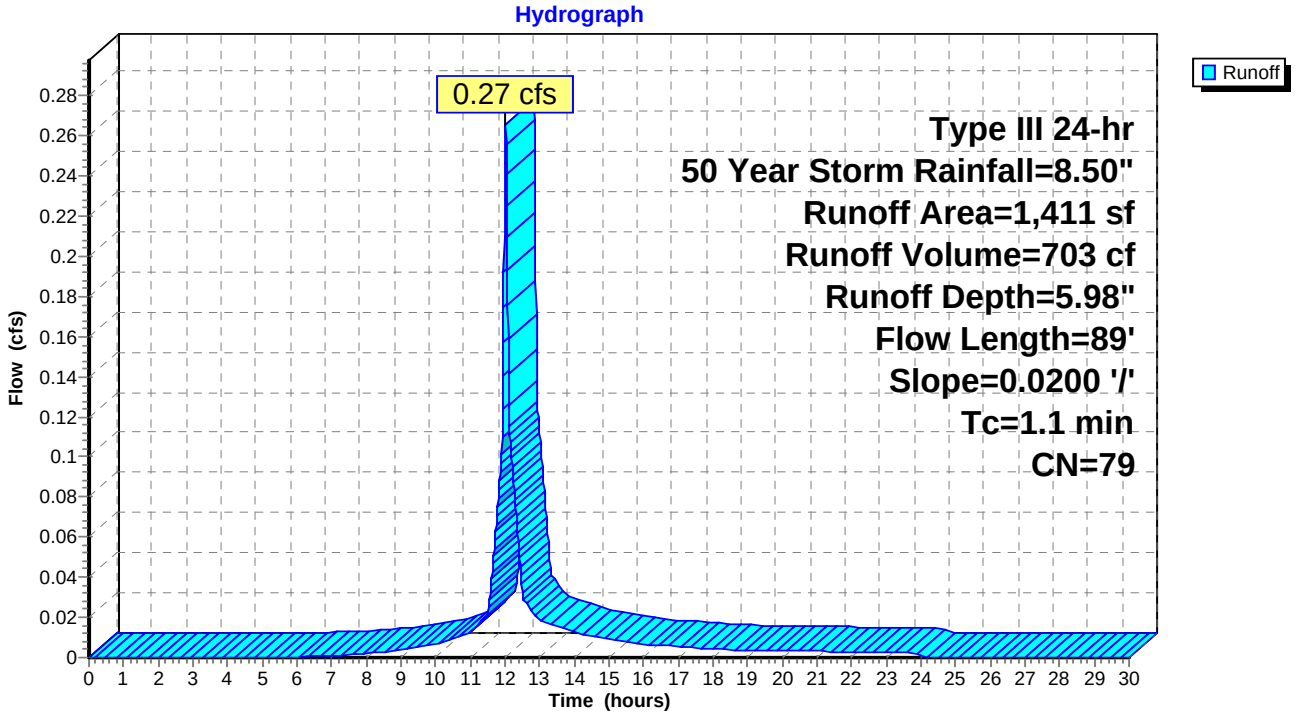
Runoff = 0.27 cfs @ 12.02 hrs, Volume= 703 cf, Depth= 5.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 Year Storm Rainfall=8.50"

Area (sf)	CN	Description
382	98	Paved parking, HSG B
293	98	Roofs, HSG B
736	61	>75% Grass cover, Good, HSG B
1,411	79	Weighted Average
736		52.16% Pervious Area
675		47.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	89	0.0200	1.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.00"

Subcatchment PS2:



Summary for Subcatchment PS3:

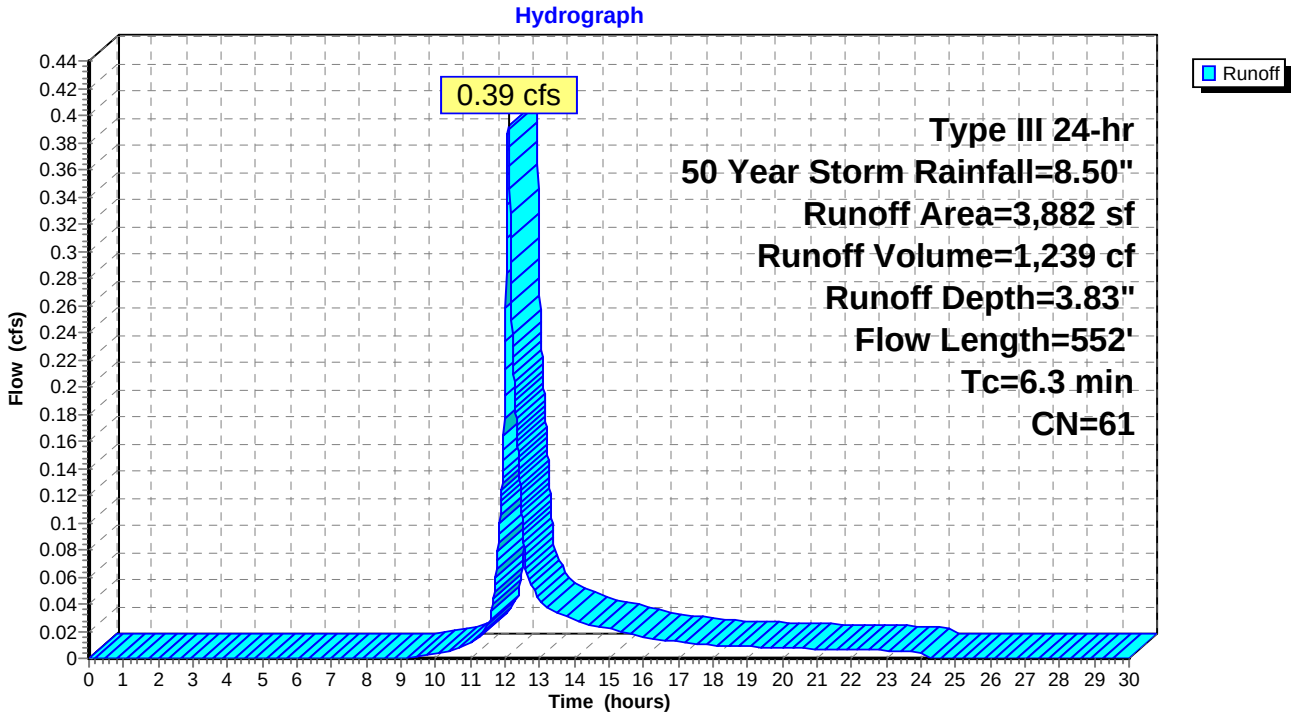
Runoff = 0.39 cfs @ 12.10 hrs, Volume= 1,239 cf, Depth= 3.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 50 Year Storm Rainfall=8.50"

Area (sf)	CN	Description
3,882	61	>75% Grass cover, Good, HSG B
3,882		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.8	342	0.0292	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	210	0.0130	2.31		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.3	552	Total			

Subcatchment PS3:



Summary for Pond 1P: CB in Salem Street

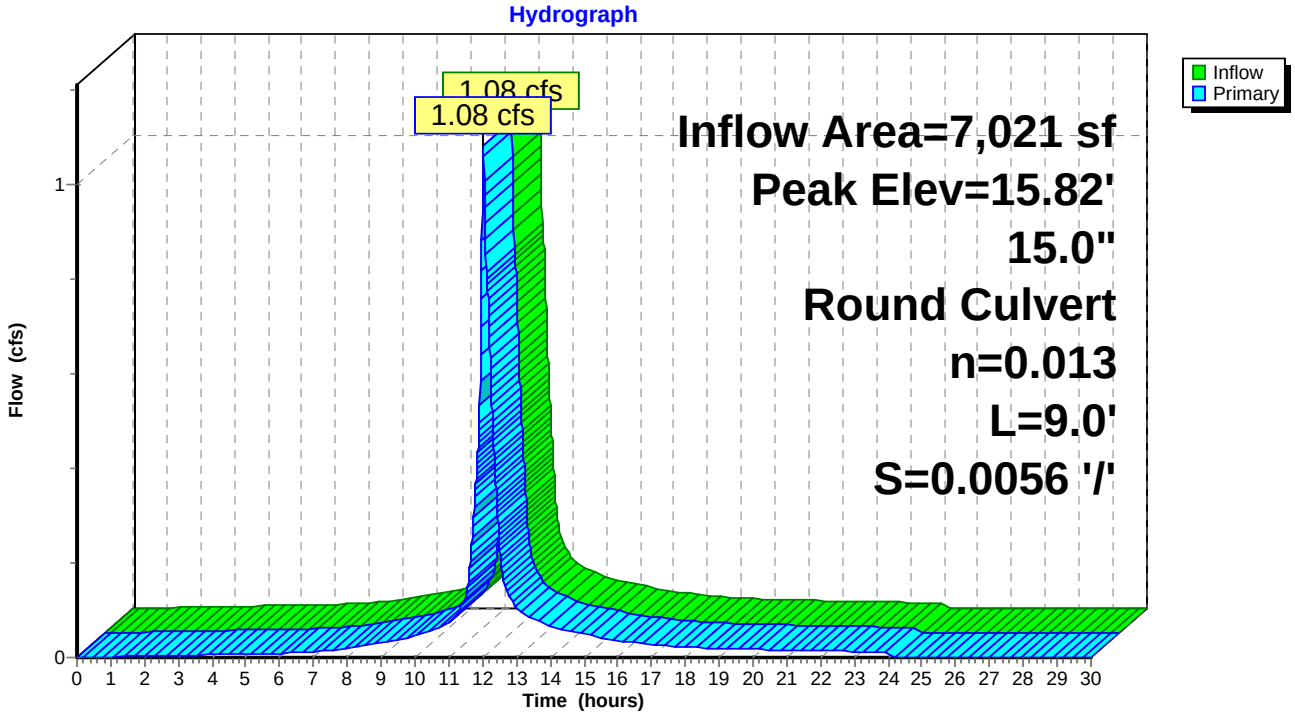
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 6.86" for 50 Year Storm event
Inflow = 1.08 cfs @ 12.02 hrs, Volume= 4,013 cf
Outflow = 1.08 cfs @ 12.02 hrs, Volume= 4,013 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.08 cfs @ 12.02 hrs, Volume= 4,013 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 15.82' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	15.18'	**15.0" Round Culvert** L= 9.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.18' / 15.13' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.08 cfs @ 12.02 hrs HW=15.82' (Free Discharge)
1=Culvert (Barrel Controls 1.08 cfs @ 2.49 fps)

Pond 1P: CB in Salem Street



Summary for Pond 2P: CB at Site Entrance on Salem Street

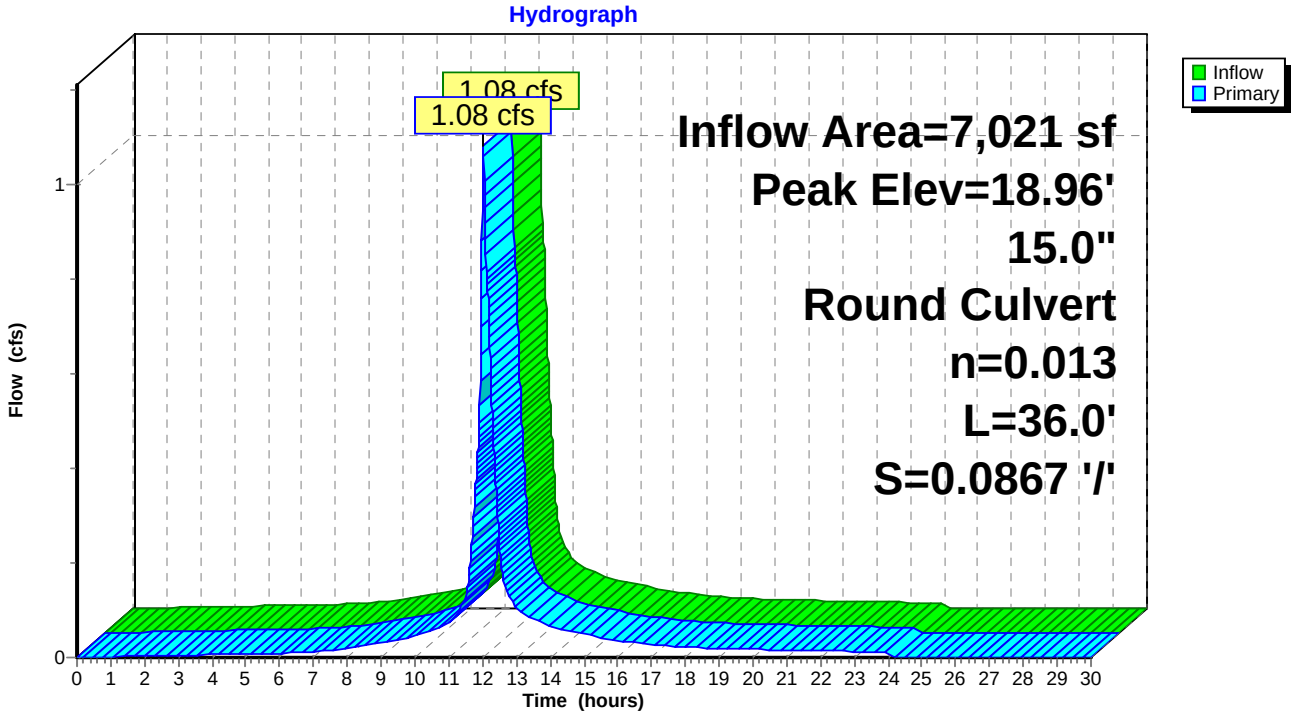
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 6.86" for 50 Year Storm event
Inflow = 1.08 cfs @ 12.02 hrs, Volume= 4,013 cf
Outflow = 1.08 cfs @ 12.02 hrs, Volume= 4,013 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.08 cfs @ 12.02 hrs, Volume= 4,013 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 18.96' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	18.40'	**15.0" Round Culvert** L= 36.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 18.40' / 15.28' S= 0.0867 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.08 cfs @ 12.02 hrs HW=18.96' (Free Discharge)
1=Culvert (Inlet Controls 1.08 cfs @ 2.02 fps)

Pond 2P: CB at Site Entrance on Salem Street



Summary for Pond 3P: New DMH Salem Street

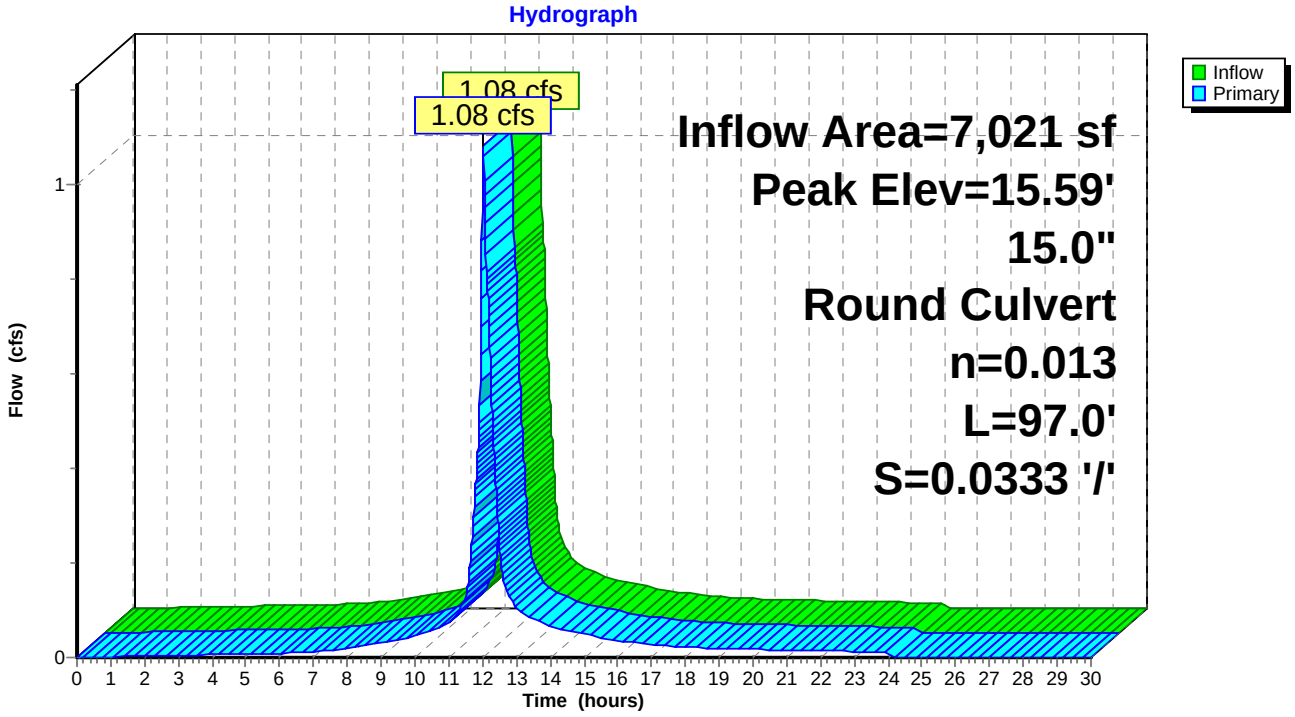
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 6.86" for 50 Year Storm event
Inflow = 1.08 cfs @ 12.02 hrs, Volume= 4,013 cf
Outflow = 1.08 cfs @ 12.02 hrs, Volume= 4,013 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.08 cfs @ 12.02 hrs, Volume= 4,013 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 15.59' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	15.03'	**15.0" Round Culvert** L= 97.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 15.03' / 11.80' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.08 cfs @ 12.02 hrs HW=15.59' (Free Discharge)
1=Culvert (Inlet Controls 1.08 cfs @ 2.02 fps)

Pond 3P: New DMH Salem Street



Summary for Pond 5P: New DMH at Salem / McDonough

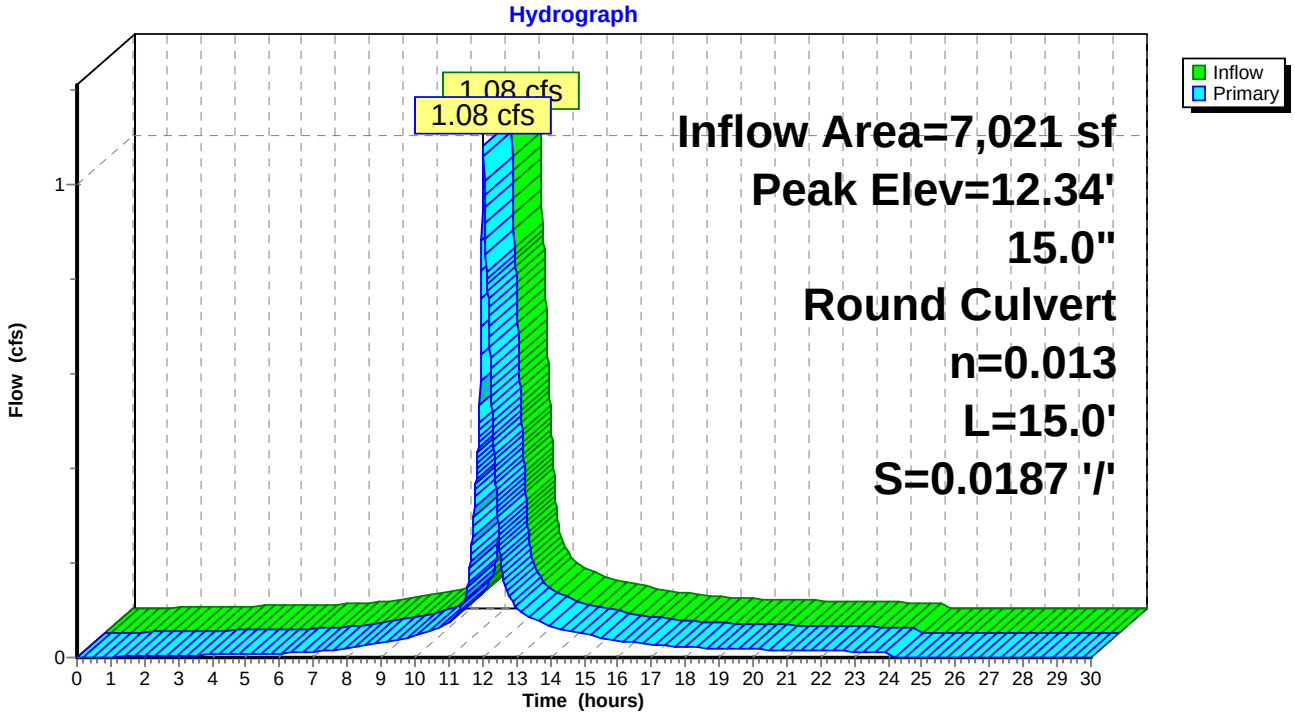
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 6.86" for 50 Year Storm event
Inflow = 1.08 cfs @ 12.02 hrs, Volume= 4,013 cf
Outflow = 1.08 cfs @ 12.02 hrs, Volume= 4,013 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.08 cfs @ 12.02 hrs, Volume= 4,013 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 12.34' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	11.78'	**15.0" Round Culvert** L= 15.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.78' / 11.50' S= 0.0187 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.08 cfs @ 12.02 hrs HW=12.34' (Free Discharge)
1=Culvert (Inlet Controls 1.08 cfs @ 2.02 fps)

Pond 5P: New DMH at Salem / McDonough



Summary for Pond 6P: CB3

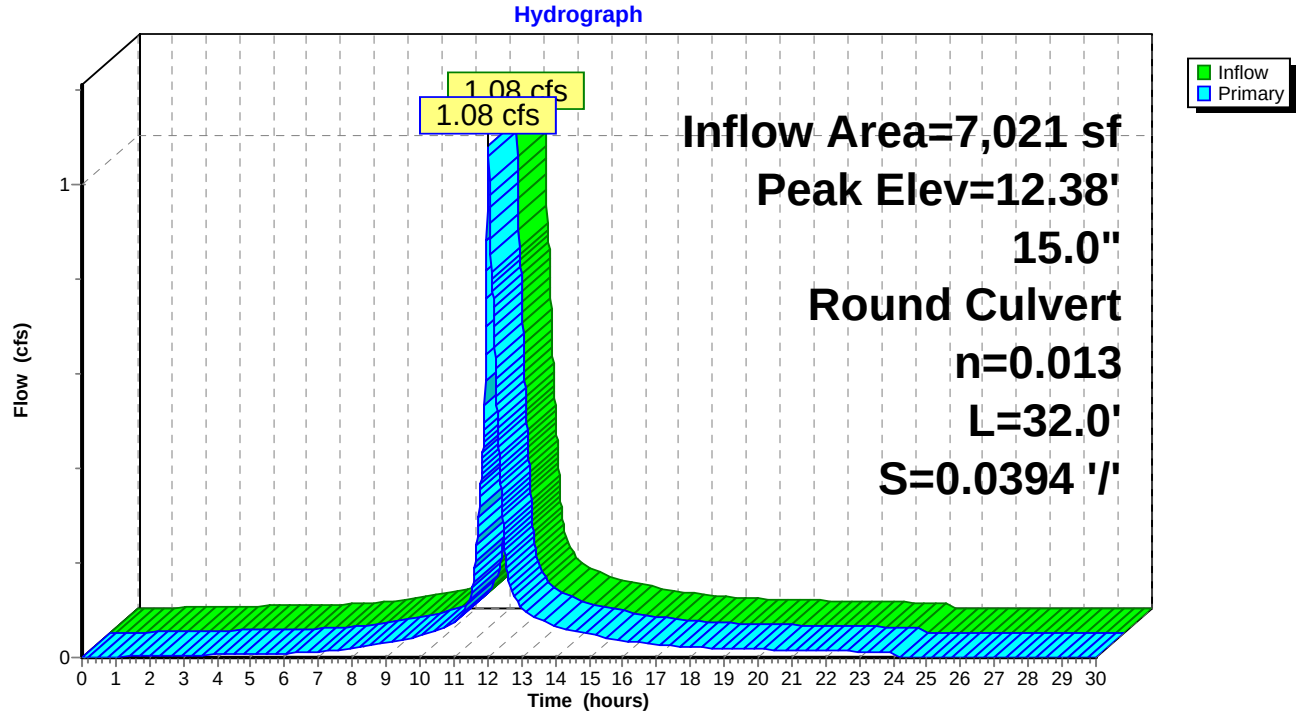
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 6.86" for 50 Year Storm event
Inflow = 1.08 cfs @ 12.02 hrs, Volume= 4,013 cf
Outflow = 1.08 cfs @ 12.02 hrs, Volume= 4,013 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.08 cfs @ 12.02 hrs, Volume= 4,013 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 12.38' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	11.82'	**15.0" Round Culvert** L= 32.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 11.82' / 10.56' S= 0.0394 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.08 cfs @ 12.02 hrs HW=12.38' (Free Discharge)
1=Culvert (Inlet Controls 1.08 cfs @ 2.02 fps)

Pond 6P: CB3



Summary for Pond 7P: DMH2

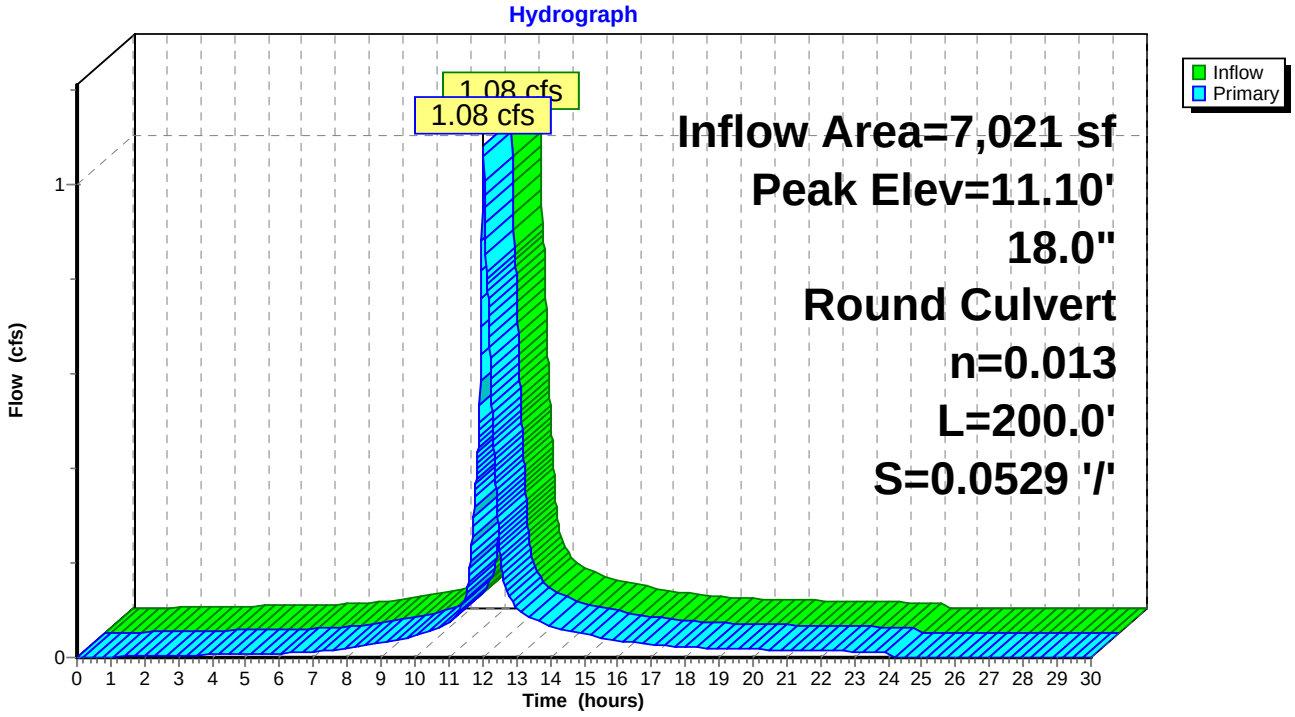
Inflow Area = 7,021 sf, 68.42% Impervious, Inflow Depth = 6.86" for 50 Year Storm event
Inflow = 1.08 cfs @ 12.02 hrs, Volume= 4,013 cf
Outflow = 1.08 cfs @ 12.02 hrs, Volume= 4,013 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.08 cfs @ 12.02 hrs, Volume= 4,013 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Peak Elev= 11.10' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	10.57'	**18.0" Round Culvert** L= 200.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 10.57' / 0.00' S= 0.0529 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.08 cfs @ 12.02 hrs HW=11.10' (Free Discharge)
1=Culvert (Inlet Controls 1.08 cfs @ 1.95 fps)

Pond 7P: DMH2

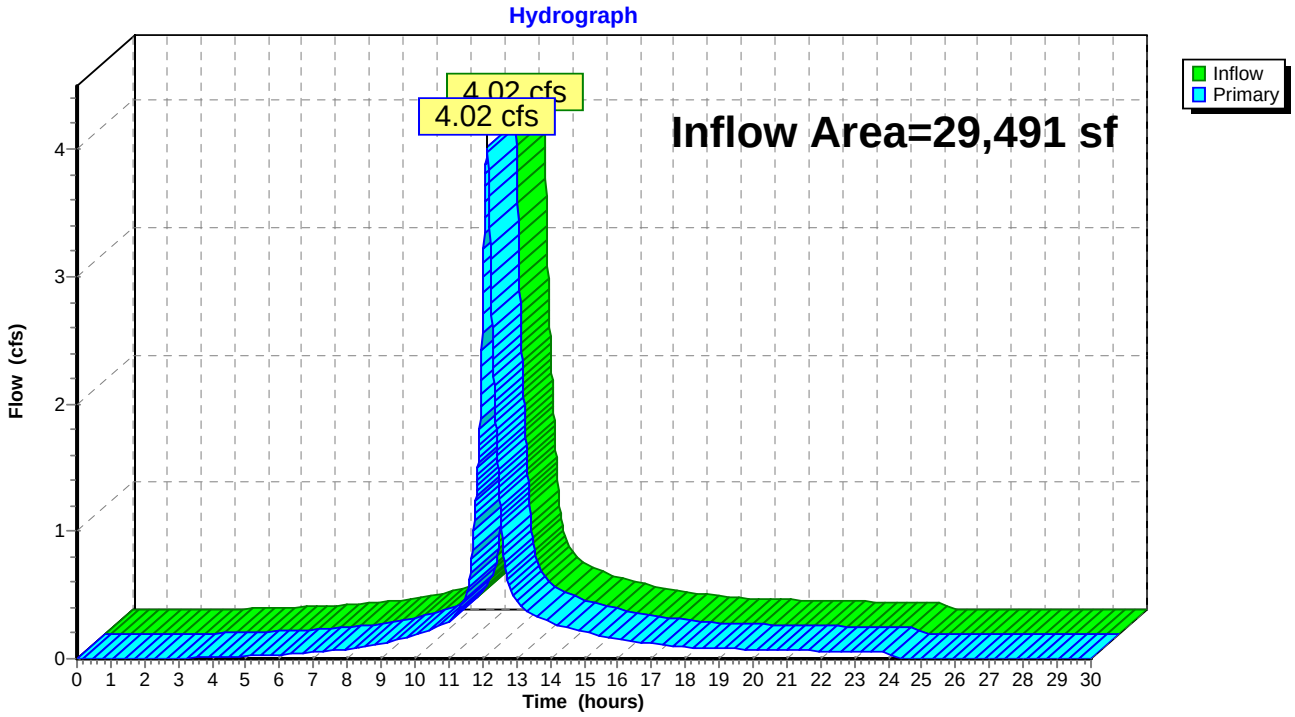


Summary for Pond DP 2: CB at corner of Cabot Street and McDonough Street

Inflow Area = 29,491 sf, 63.21% Impervious, Inflow Depth = 6.66" for 50 Year Storm event
Inflow = 4.02 cfs @ 12.13 hrs, Volume= 16,371 cf
Primary = 4.02 cfs @ 12.13 hrs, Volume= 16,371 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Pond DP 2: CB at corner of Cabot Street and McDonough Street

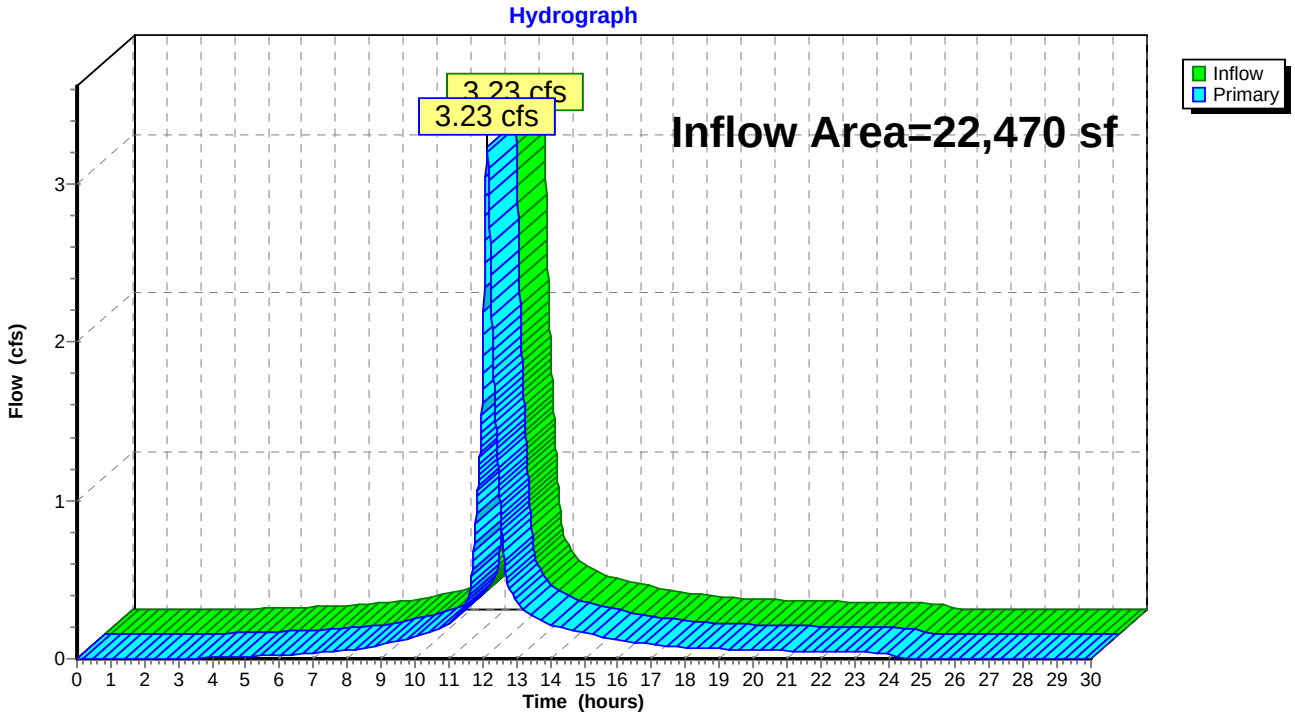


Summary for Link DP 1:

Inflow Area = 22,470 sf, 61.58% Impervious, Inflow Depth = 6.60" for 50 Year Storm event
Inflow = 3.23 cfs @ 12.14 hrs, Volume= 12,358 cf
Primary = 3.23 cfs @ 12.14 hrs, Volume= 12,358 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link DP 1:



APPENDIX D

SOIL SURVEY INFORMATION

United States Department of Agriculture

NRCS

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

November 12, 2019

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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Contents

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 Scale: 1:1,090 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

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 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 21, Sep 16, 2019

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 9, 2017

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
699	Urban land	2.2	99.7%
799	Urban land-Canton complex, 3 to 15 percent slopes	0.0	0.3%
Totals for Area of Interest		**2.2**	**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

699—Urban land

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Not named

Percent of map unit: 15 percent
Hydric soil rating: No

799—Urban land-Canton complex, 3 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9cq0
Elevation: 0 to 1,000 feet
Mean annual precipitation: 42 to 46 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Canton

Setting

Parent material: Till

Typical profile

H1 - 0 to 5 inches: gravelly fine sandy loam
H2 - 5 to 21 inches: gravelly fine sandy loam
H3 - 21 to 60 inches: loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Udorthents

Percent of map unit: 5 percent
Hydric soil rating: No

Squamscott and scitico

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

Boxford and eldridge

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

Chatfield

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

Scituate and newfields

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

Walpole

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

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APPENDIX E

FEMA FIRM MAP

consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles, Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD 29). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was New Hampshire State Plane, FIPSZONE 2800. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles (DOQs) produced at a scale of 1:12,000 from photography dated 1998 or later.

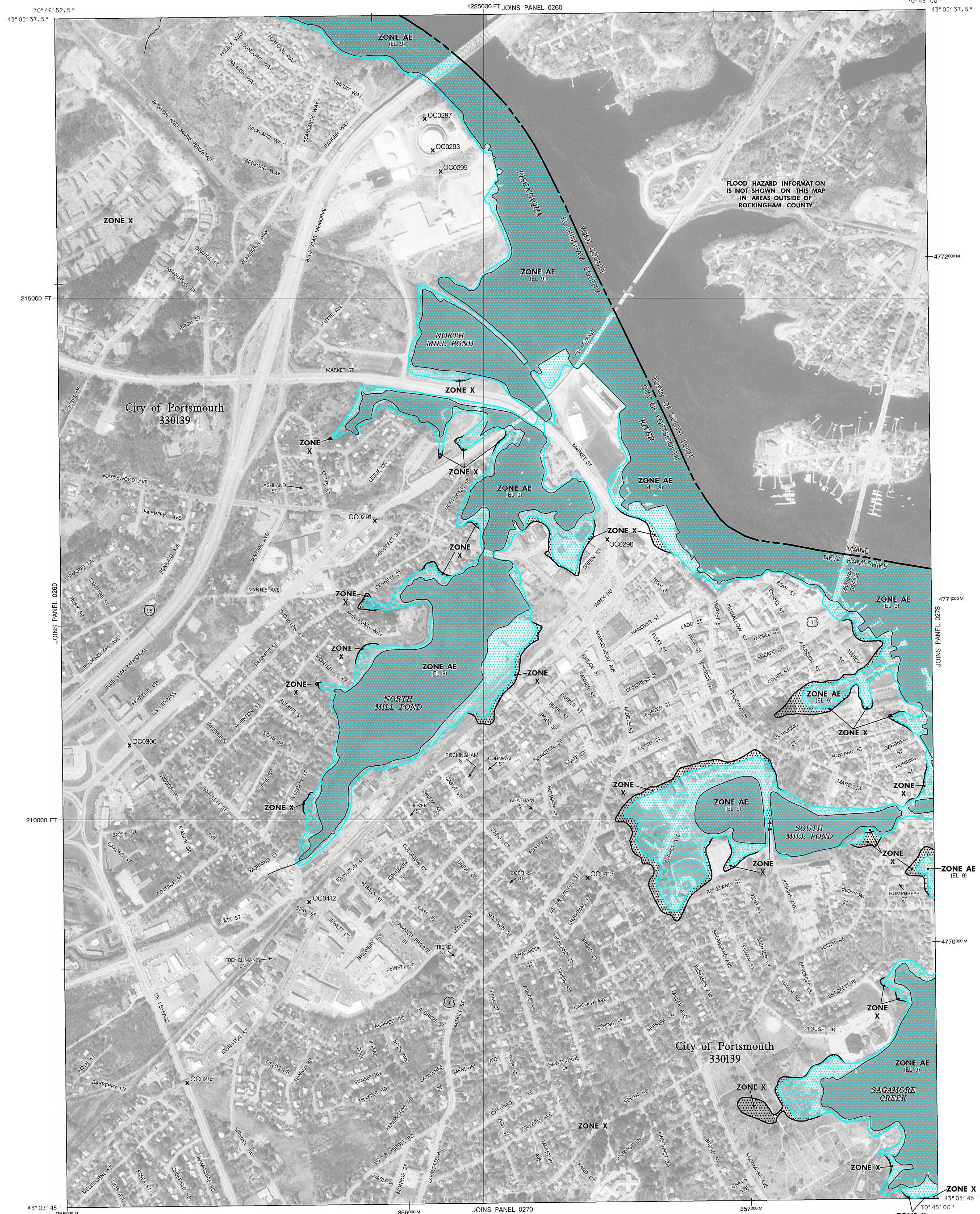
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at www.fema.gov/msc.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at www.fema.gov.



The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

A — A	Cross section line
23 - - - 23	Transect line
97° 07' 30", 32° 22' 30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4276000 M	1000-meter Universal Transverse Mercator grid tick values, zone 19
600000 FT	5000-foot grid: New Hampshire State Plane coordinate system, (FIPSZONE 2800), Transverse Mercator projection.
DX5510 x	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
MAY 17, 2005

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0259E

FIRM
FLOOD INSURANCE RATE MAP
ROCKINGHAM COUNTY,
NEW HAMPSHIRE
(ALL JURISDICTIONS)

PANEL 259 OF 681

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
PORTSMOUTH, CITY OF	330139	0259	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
33015C0259E

EFFECTIVE DATE

APPENDIX F

INSPECTION & MAINTENANCE PLAN

STORMWATER INSPECTION & MAINTENANCE PLAN

FOR

BONZA BUILDERS, LLC

Proposed Residential Redevelopment

41 Salem Street

Portsmouth, NH

Introduction

The intent of this plan is to provide Bonz Builders, LLC (herein referred to as "owner") with a list of procedures that document the inspection and maintenance requirements of the stormwater management system for this development. Specifically, the drip edge soil filters and associated structures on the project site (collectively referred to as the "Stormwater Management System").

The following inspection and maintenance program is necessary to keep the stormwater management system functioning properly. These measures will also help minimize potential environmental impacts. By following the enclosed procedures, the owner will be able to maintain the functional design of the stormwater management system and maximize its ability to remove sediment and other contaminants from site generated stormwater runoff.

Annual Report

The owner shall prepare an annual Inspection & Maintenance Report. The report shall include a summary of the system's maintenance and repair by transmission of the Inspection & Maintenance Log and other information as required. A copy of the report shall be delivered annually to the City of Portsmouth Code Enforcement Officer.

Inspection & Maintenance Checklist/Log

The following pages contain a Stormwater Management System Inspection & Maintenance Checklist and a blank copy of the Stormwater Management System Inspection & Maintenance Log. These forms are provided to the owner as a guideline for performing the inspection and maintenance of the Stormwater Management System. This is a guideline and should be periodically reviewed for conformance with current practice and standards.

STORMWATER MANAGEMENT SYSTEM COMPONENTS

The Stormwater Management System is designed to mitigate both the quantity and quality of site-generated stormwater runoff. As a result, the design includes the following elements:

Non-Structural BMP's

Non-Structural best management practices (BMP's) include temporary and permanent measures that typically require less labor and capital inputs and are intended to provide protection against erosion of soils. Examples of non-structural BMP's on this project include but are not limited to: temporary and permanent mulching, temporary and permanent grass cover, trees, shrubs and ground covers, miscellaneous landscape plantings, dust control, tree protection, topsoiling, sediment barriers, and a stabilized construction entrance.

Structural BMP's

Structural BMP's are more labor and capital-intensive structures or installations that require more specialized personnel to install. Examples on this project include but are not limited to: storm drains, the drip edge soil filters and associated structures, and the infiltration trench system.

Inspection and Maintenance Requirements

The following summarizes the inspection and maintenance requirements for the various BMP's that may be found on this project.

1. **Grassed areas:** After each rain event of 0.5" or more during a 24-hour period, inspect grassed areas for signs of disturbance, such as erosion. If damaged areas are discovered, immediately repair the damage. Repairs may include adding new topsoil, lime, seed, fertilizer and mulch.
2. **Plantings**: Planting and landscaping (trees, shrubs) shall be monitored bi-monthly during the first year to insure viability and vigorous growth. Replace dead or dying vegetation with new stock and make adjustments to the conditions that caused the dead or dying vegetation. During dryer times of the year, provide weekly watering or irrigation during the establishment period of the first year. Make the necessary adjustments to ensure long-term health of the vegetated covers, i.e. provide more permanent mulch or compost or other means of protection.
3. **Catch Basins and Storm Drains:** Monitor drain inlets for excessive accumulation of sediments or missing stone/riprap. Remove sediments as required.
4. **Roofline Drip Edge Filter Strip:** After acceptance of the Filter, perform the following inspections on a semi-annual basis or after significant rainfall events (10-year, 24 hour storms, or back to back 2 year, 24 hour storms):
    a. Monitor Filter for 72 hours following a rain storm. If the Filter fails to fully drain within this period time, the engineered soil may have become plugged. Inspect for other causes of blockage. If it's determined that the soil has become plugged and is no longer functioning as engineered, then replacement of soils shall be required. Contractor shall use care in removing soil around foundations.
    b. Monitor for excessive or concentrated accumulations of debris, or excessive erosion. Remove debris as required.

Invasive Species

The site should be monitored during construction for the presence of any invasive species. Such growth should be removed and disposed properly.

Stormwater Management System

Inspection & Maintenance Checklist for Post Construction Condition—for Bonza Builders, LLC, 41 Salem Street, Portsmouth, NH

BMP/System Component	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance/Cleanout Threshold
Closed Drainage System			
Drainage Pipes	Yearly	*Check for sediment clogging, or soiled runoff.*	Clean entire drainage system and remove all sediments if discovered in piping.
Roofline Drip Edge Soil Filter	2 X Annually	*Keep filter surface clean*	Remove any weeds, trash, debris and accumulated sediment. If filter does not drain within 72 hours following a rain event, a qualified professional should assess the condition of the facility to determine restoration measures.
Annual Report	Yearly	*Prepare Annual Report, including all Inspection & Maintenance Logs. Provide to Town (if required).*	N/A

Stormwater Management System Maintenance Summary

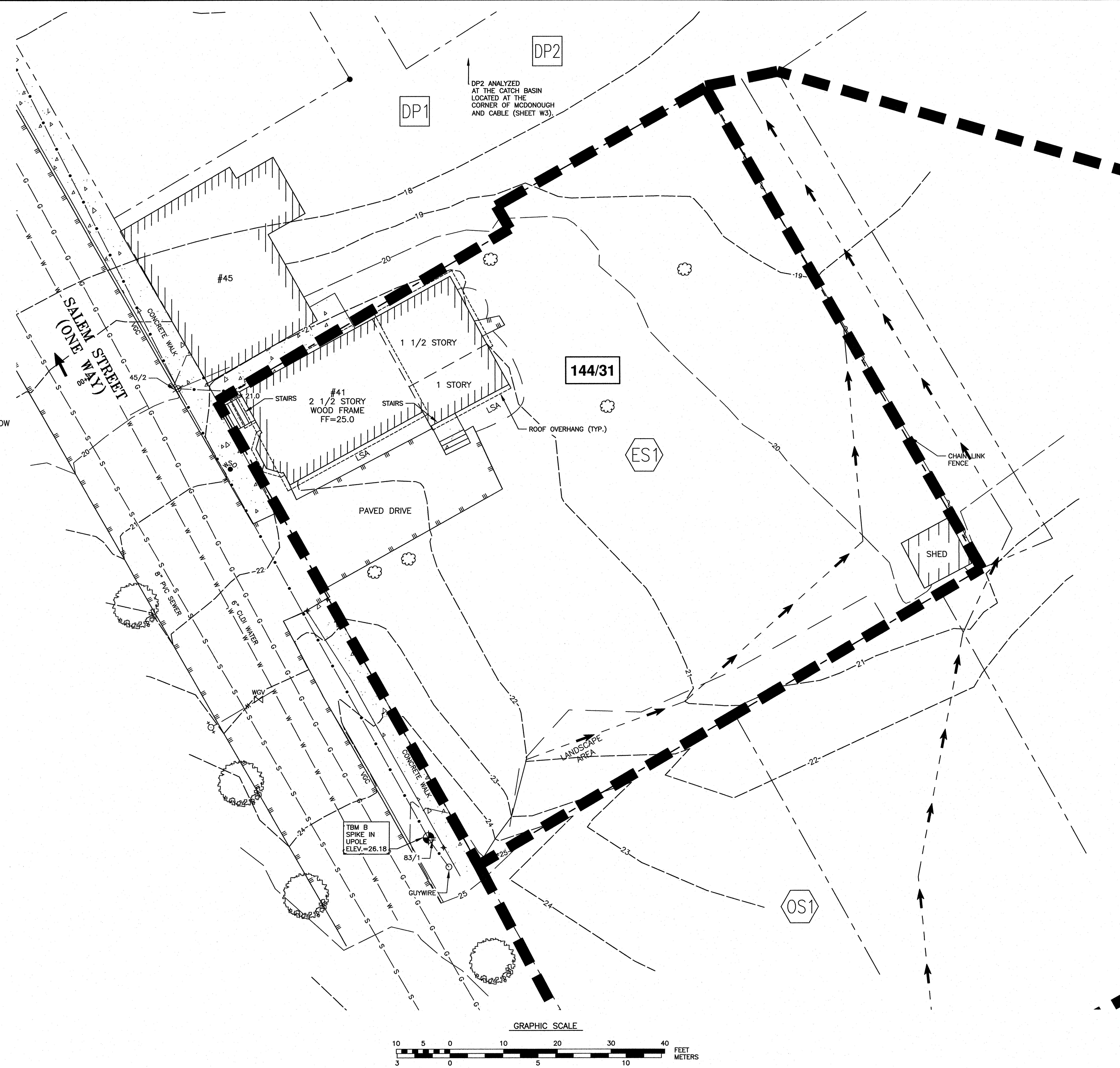
Inspection & Maintenance Log—for Bonza Builders, LLC, 41 Salem Street, Portsmouth, NH

BMP/System Component	Date Inspected	Inspector	Problems Noted, Required Maintenance *(List Items/Comments)*	Date of Maintenance	Performed By

Data Sheets

LEGEND

EXISTING	PROPOSED	
D	D	STORM DRAIN
X X	X X	SILT FENCE
100	100	CONTOUR
97x3	98x0	SPOT ELEVATION
		EDGE OF PAVEMENT (EP)
		SUBCATCHMENT LINE
6	600	SUBCATCHMENT NUMBER
1234 WOODS	1234 WOODS	AREA IN SQUARE FEET / DESCRIPTION OF COVER
6	600	POND (DESIGN MODEL)
6	600	REACH (DESIGN MODEL)
		DRAINAGE VECTOR
		EDGE OF WOODS / TREES
CB	CB	CATCH BASIN
DMH	DMH	DRAIN MANHOLE
W	W	WELL
EL.	EL.	ELEVATION
EP	EP	EDGE OF PAVEMENT
FF	FF	FINISHED FLOOR
INV	INV	INVERT
TBM	TBM	TEMPORARY BENCH MARK
TYP	TYP	TYPICAL
		Tc PATH
HSG	HSG	HYDROLGIC SOIL GROUP
SF	SF	SHEET FLOW
SCF	SCF	SHALLOW CONCENTRATED FLOW
CHANNEL	CHANNEL	CHANNEL FLOW



AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 144 AS LOT 31.

2) OWNER OF RECORD:
BONZA BUILDERS, LLC
79 EXETER ROAD
NORTH HAMPTON, NH 03862
6056/205

3) PARCEL IS LOCATED IN THE GENERAL RESIDENCE C (GRC) ZONING DISTRICT.

NOTES:

1) THIS PLAN IS INTENDED FOR RUNOFF ANALYSIS ONLY AND SHALL NOT BE USED FOR CONSTRUCTION.

2) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION ON PUBLIC OR PRIVATE PROPERTY.

3) UNDERGROUND UTILITY LOCATIONS ARE BASED UPON BEST AVAILABLE EVIDENCE AND ARE NOT FIELD VERIFIED. LOCATING AND PROTECTING ANY ABOVEGROUND OR UNDERGROUND UTILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND/OR THE OWNER. UTILITY CONFLICTS SHOULD BE REPORTED AT ONCE TO THE DESIGN ENGINEER.

4) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

SITE DEVELOPMENT 41 SALEM STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	3/18/20

REVISIONS

STATE OF NEW HAMPSHIRE JOSEPH L. MULLEDY No. 11802 LICENSED PROFESSIONAL ENGINEER
3/18/20

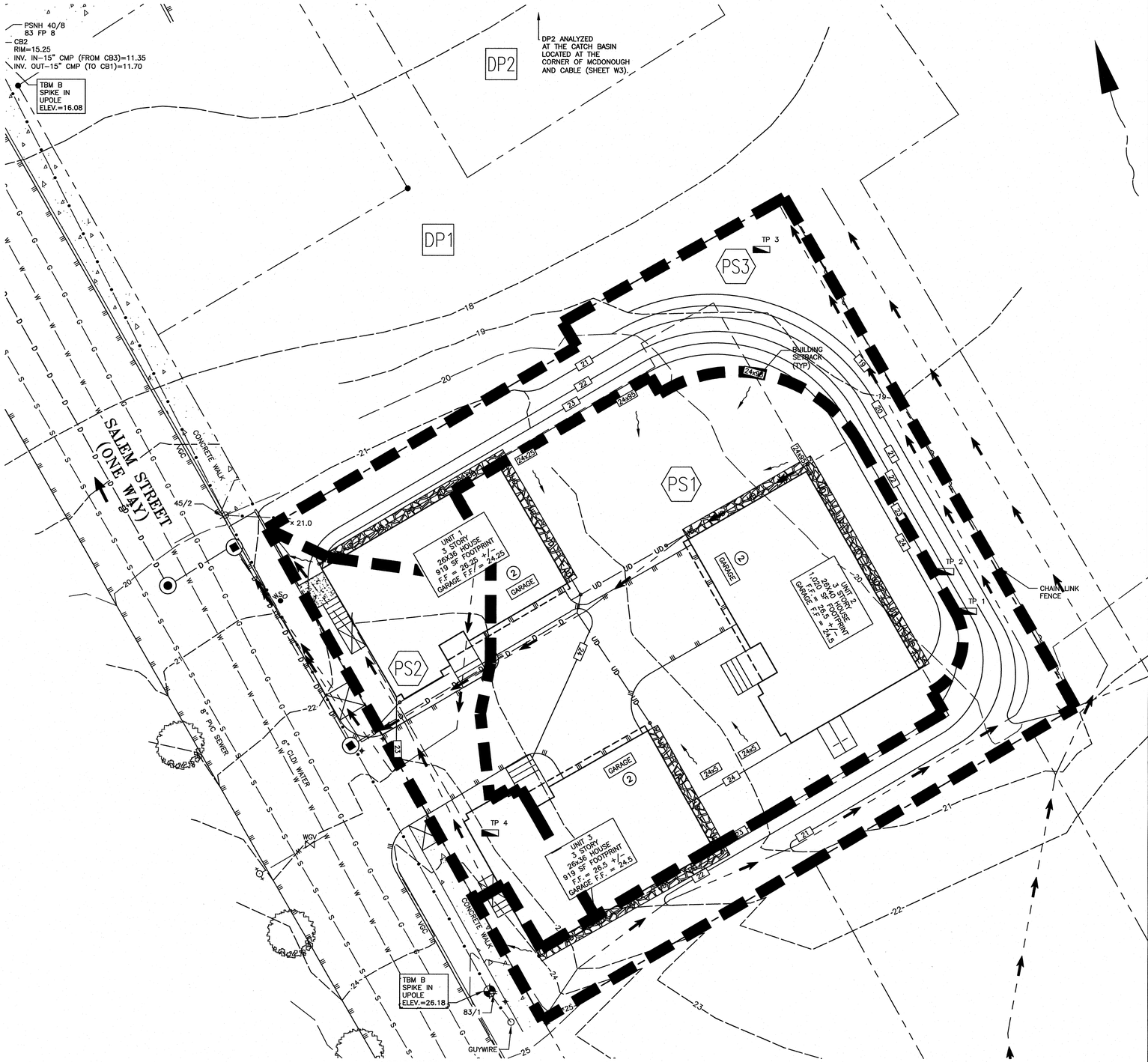
SCALE: 1" = 10' MARCH 2020

PLAN OF EXISTING SUBCATCHMENTS

W1

LEGEND

EXISTING	PROPOSED	
D	D	STORM DRAIN
X X	X X	SILT FENCE
100	100	CONTOUR
97x3	98x0	SPOT ELEVATION
		EDGE OF PAVEMENT (EP)
		SUBCATCHMENT LINE
6	600	SUBCATCHMENT NUMBER
1234 WOODS	1234 WOODS	AREA IN SQUARE FEET DESCRIPTION OF COVER
6	600	POND (DESIGN MODEL)
6	600	REACH (DESIGN MODEL)
		DRAINAGE VECTOR
		EDGE OF WOODS / TREES
CB	CB	CATCH BASIN
DMH	DMH	DRAIN MANHOLE
W	W	WELL
EL.	EL.	ELEVATION
EP	EP	EDGE OF PAVEMENT
FF	FF	FINISHED FLOOR
INV	INV	INVERT
TBM	TBM	TEMPORARY BENCH MARK



AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
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SITE DEVELOPMENT
41 SALEM STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	3/18/20

REVISIONS

STATE OF NEW HAMPSHIRE
JOSEPH L. MULLEDY
No. 11502
LICENSED PROFESSIONAL ENGINEER
3/18/20

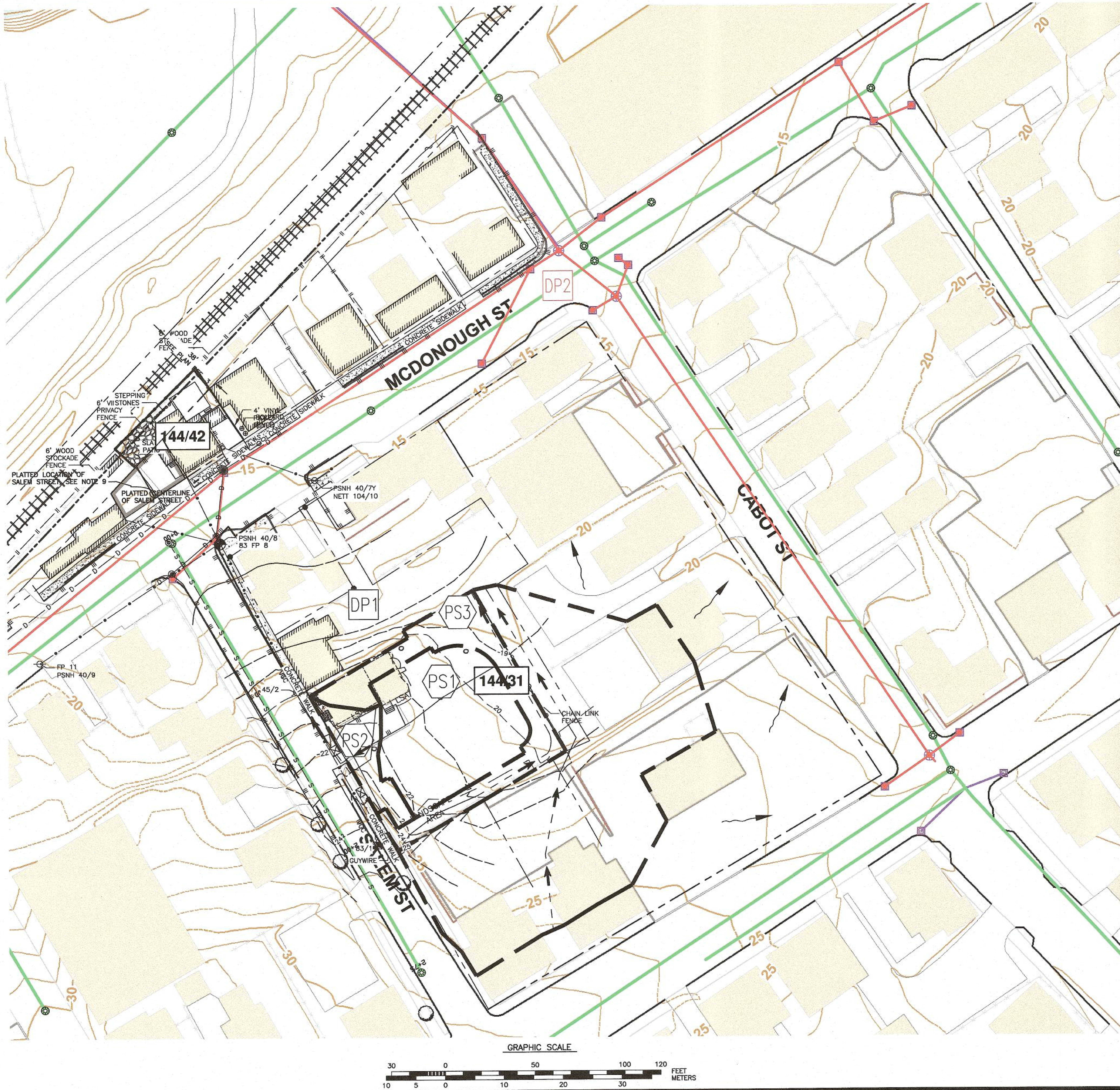
SCALE: 1" = 10' MARCH 2020

PLAN OF PROPOSED SUBCATCHMENTS

W2

LEGEND

EXISTING	PROPOSED	
D	D	STORM DRAIN
X X	X X	SILT FENCE
100	100	CONTOUR
97x3	98x0	SPOT ELEVATION
		EDGE OF PAVEMENT (EP)
		SUBCATCHMENT LINE
6	600	SUBCATCHMENT NUMBER
1234	1234	AREA IN SQUARE FEET
WOODS	WOODS	DESCRIPTION OF COVER
6	600	POND (DESIGN MODEL)
6	600	REACH (DESIGN MODEL)
		DRAINAGE VECTOR
		EDGE OF WOODS / TREES
CB	CB	CATCH BASIN
DMH	DMH	DRAIN MANHOLE
W	W	WELL
EL.	EL.	ELEVATION
EP	EP	EDGE OF PAVEMENT
FF	FF	FINISHED FLOOR
INV	INV	INVERT
TBM	TBM	TEMPORARY BENCH MARK
TYP	TYP	TYPICAL
		Tc PATH
HSG	HSG	HYDROLGIC SOIL GROUP
SF	SF	SHEET FLOW
SCF	SCF	SHALLOW CONCENTRATED FLOW
CHANNEL	CHANNEL	CHANNEL FLOW



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79 EXETER ROAD
NORTH HAMPTON, NH 03862
6056/205

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SITE DEVELOPMENT
41 SALEM STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	3/18/20

REVISIONS

STATE OF NEW HAMPSHIRE
JOSEPH L. MULLEDY
No. 11502
LICENSED
PROFESSIONAL ENGINEER
3/18/20

SCALE: 1" = 30'   MARCH 2020

PLAN OF OFFSITE SUBCATCHMENTS

W3

City of Portsmouth, New Hampshire

Site Plan Application Checklist

This site plan application checklist is a tool designed to assist the applicant in the planning process and for preparing the application for Planning Board review. A pre-application conference with a member of the planning department is strongly encouraged as additional project information may be required depending on the size and scope. The applicant is cautioned that this checklist is only a guide and is not intended to be a complete list of all site plan review requirements. Please refer to the Site Plan review regulations for full details.

Applicant Responsibilities (Section 2.5.2): Applicable fees are due upon application submittal along with required attachments. The application shall be complete as submitted and provide adequate information for evaluation of the proposed site development. Waiver requests must be submitted in writing with appropriate justification.

Name of Owner/Applicant: BONZA BUILDERS LLC. Date Submitted: 3-18-20

Phone Number: 603-770-5636 E-mail: _____

Site Address: 41 SALEM STREET Map: 144 Lot: 31

Zoning District: GENERAL RESIDENCE C Lot area: 10,903 sq. ft.

Application Requirements			
☑	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
☒	Fully executed and signed Application form. **(2.5.2.3)**	ONLINE	N/A
☒	All application documents, plans, supporting documentation and other materials provided in digital Portable Document Format (PDF). **(2.5.2.8)**	ONLINE	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Statement that lists and describes "green" building components and systems. **(2.5.3.1A)**	SUBMITTED MATERIAL	
☒	Gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. **(2.5.3.1B)**	ARCHITECTURAL PLANS	N/A
☒	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1C)**	STANDARD BOUNDARY SURVEY	N/A
☒	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1D)**	COVER SHEET	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. **(2.5.3.1E)**	COVER SHEET & STANDARD BOUNDARY SURVEY	N/A
☒	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1F)**	COVER SHEET	N/A
☒	List of reference plans. **(2.5.3.1G)**	STANDARD BOUNDARY SURVEY	N/A
☒	List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1H)**	COVER SHEET	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Full size plans shall not be larger than 22 inches by 34 inches with match lines as required, unless approved by the Planning Director. Submittals shall be a minimum of 11 inches by 17 inches as specified by Planning Dept. staff. **(2.5.4.1A)**	Required on all plan sheets	N/A
☒	Scale: Not less than 1 inch = 60 feet and a graphic bar scale shall be included on all plans. **(2.5.4.1B)**	Required on all plan sheets	N/A
☒	GIS data should be referenced to the coordinate system New Hampshire State Plane, NAD83 (1996), with units in feet. **(2.5.4.1C)**	TO BE SUBMITTED	N/A
☒	Plans shall be drawn to scale. **(2.5.4.1D)**	Required on all plan sheets	N/A
☒	Plans shall be prepared and stamped by a NH licensed civil engineer. **(2.5.4.1D)**	YES	N/A
☒	Wetlands shall be delineated by a NH certified wetlands scientist and so stamped. **(2.5.4.1E)**	N/A	N/A
☒	Title (name of development project), north point, scale, legend. **(2.5.4.2A)**	COVER SHEET	N/A
☒	Date plans first submitted, date and explanation of revisions. **(2.5.4.2B)**	YES	N/A
☒	Individual plan sheet title that clearly describes the information that is displayed. **(2.5.4.2C)**	Required on all plan sheets	N/A
☒	Source and date of data displayed on the plan. **(2.5.4.2D)**	STANDARD BOUNDARY SURVEY & EXISTING CONDITIONS PLAN	N/A

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)**	SHEET C2	N/A
☒	Plan sheets submitted for recording shall include the following notes: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." b. "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." **(2.13.3)**	SHEET C2	N/A
☒	Plan sheets showing landscaping and screening shall also include the following additional notes: a. "The property owner and all future property owners shall be responsible for the maintenance, repair and replacement of all required screening and landscape materials." b. "All required plant materials shall be tended and maintained in a healthy growing condition, replaced when necessary, and kept free of refuse and debris. All required fences and walls shall be maintained in good repair." c. "The property owner shall be responsible to remove and replace dead or diseased plant materials immediately with the same type, size and quantity of plant materials as originally installed, unless alternative plantings are requested, justified and approved by the Planning Board or Planning Director." **(2.13.4)**	SHEET C5	N/A

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
	1. Existing Conditions: (2.5.4.3A)		
☒	a. Surveyed plan of site showing existing natural and built features;	STANDARD BOUNDARY SURVEY	
☒	b. Zoning boundaries;	COVER SHEET	
☒	c. Dimensional Regulations;	SHEET C2	
☒	d. Wetland delineation, wetland function and value assessment;	N/A	
☒	e. SFHA, 100-year flood elevation line and BFE data.	N/A	
	2. Buildings and Structures: (2.5.4.3B)		
☒	a. Plan view: Use, size, dimensions, footings, overhangs, 1st fl. elevation;	ARCHITECTS PLAN	
☒	b. Elevations: Height, massing, placement, materials, lighting, façade treatments;	ARCHITECTS PLAN	
☒	c. Total Floor Area;	ARCHITECTS PLAN	
☒	d. Number of Usable Floors;	ARCHITECTS PLAN	
☒	e. Gross floor area by floor and use.	ARCHITECTS PLAN	
	3. Access and Circulation: (2.5.4.3C)		
☒	a. Location/width of access ways within site;	SHEET C2	
☒	b. Location of curbing, right of ways, edge of pavement and sidewalks;	SHEET C2	
☒	c. Location, type, size and design of traffic signing (pavement markings);	N/A	
☒	d. Names/layout of existing abutting streets;	STANDARD BOUNDARY SURVEY	
☒	e. Driveway curb cuts for abutting prop. and public roads;	SHEET C2	
☒	f. If subdivision; Names of all roads, right of way lines and easements noted;	N/A	
☒	g. AASHTO truck turning templates, description of minimum vehicle allowed being a WB-50 (unless otherwise approved by TAC).	N/A	
	4. Parking and Loading: (2.5.4.3D)		
☒	a. Location of off street parking/loading areas, landscaped areas/buffers;	SHEET C2	
☒	b. Parking Calculations (# required and the # provided).	SHEET C2	
	5. Water Infrastructure: (2.5.4.3E)		
☒	a. Size, type and location of water mains, shut-offs, hydrants & Engineering data;	SHEET C3	
☒	b. Location of wells and monitoring wells (include protective radii).	N/A	
	6. Sewer Infrastructure: (2.5.4.3F)		
☒	a. Size, type and location of sanitary sewage facilities & Engineering data.	SHEET C3	
	7. Utilities: (2.5.4.3G)		
☒	a. The size, type and location of all above & below ground utilities;	SHEET C3	
☒	b. Size type and location of generator pads, transformers and other fixtures.	SHEET C3	

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☐	**8. Solid Waste Facilities: (2.5.4.3H)**		
☒	a. The size, type and location of solid waste facilities.	N/A	
	9. Storm water Management: (2.5.4.3I)		
☒	a. The location, elevation and layout of all storm-water drainage.	SHEET C4	
	10. Outdoor Lighting: (2.5.4.3J)		
☒	a. Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and; b. photometric plan.	N/A	
☒	**11.** Indicate where dark sky friendly lighting measures have been implemented. **(10.1)**	N/A	
	12. Landscaping: (2.5.4.3K)		
☒	a. Identify all undisturbed area, existing vegetation and that which is to be retained;	SHEET C5	
☒	**b.** Location of any irrigation system and water source.	N/A	
	13. Contours and Elevation: (2.5.4.3L)		
☒	a. Existing/Proposed contours (2 foot minimum) and finished grade elevations.	SHEET C4	
	14. Open Space: (2.5.4.3M)		
☒	a. Type, extent and location of all existing/proposed open space.	SHEET C2	
☒	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**	N/A	
☒	**16. Location of snow storage areas and/or off-site snow removal. (2.5.4.3O)**	SHEET C2	
☒	**17. Character/Civic District (All following information shall be included): (2.5.4.3Q)**	N/A	
	a. Applicable Building Height (10.5A21.20 & 10.5A43.30);		
	b. Applicable Special Requirements (10.5A21.30);		
	c. Proposed building form/type (10.5A43);		
	d. Proposed community space (10.5A46).		

Other Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Traffic Impact Study or Trip Generation Report, as required. (*Four (4) hardcopies of the full study/report and Six (6) summaries to be submitted with the Site Plan Application*) **(3.2.1-2)**	SUBMITTED MATERIAL	
☒	Indicate where Low Impact Development Design practices have been incorporated. **(7.1)**	SUBMITTED MATERIAL	
☒	Indicate whether the proposed development is located in a wellhead protection or aquifer protection area. Such determination shall be approved by the Director of the Dept. of Public Works. **(7.3.1)**	N/A	
☒	Indicate where measures to minimize impervious surfaces have been implemented. **(7.4.3)**	SHEET C4	
☒	Calculation of the maximum effective impervious surface as a percentage of the site. **(7.4.3.2)**	SEE DRAINAGE ANALYSIS	
☒	Stormwater Management and Erosion Control Plan. (*Four (4) hardcopies of the full plan/report and Six (6) summaries to be submitted with the Site Plan Application*) **(7.4.4.1)**	DRAINAGE ANALYSIS	

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	All local approvals, permits, easements and licenses required, including but not limited to: a. Waivers; b. Driveway permits; c. Special exceptions; d. Variances granted; e. Easements; f. Licenses. **(2.5.3.2A)**	COVER SHEET	
☒	Exhibits, data, reports or studies that may have been required as part of the approval process, including but not limited to: a. Calculations relating to stormwater runoff; b. Information on composition and quantity of water demand and wastewater generated; c. Information on air, water or land pollutants to be discharged, including standards, quantity, treatment and/or controls; d. Estimates of traffic generation and counts pre- and post-construction; e. Estimates of noise generation; f. A Stormwater Management and Erosion Control Plan; g. Endangered species and archaeological / historical studies; h. Wetland and water body (coastal and inland) delineations; i. Environmental impact studies. **(2.5.3.2B)**	SITE PLANS	

Final Site Plan Approval Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	A document from each of the required private utility service providers indicating approval of the proposed site plan and indicating an ability to provide all required private utilities to the site. **(2.5.3.2D)**	SUBMITTED MATERIAL	
☒	A list of any required state and federal permit applications required for the project and the status of same. **(2.5.3.2E)**	N/A	

Applicant's Signature: John Chagnon **Date:** 3-18-20