PROPOSED SUBDIVISION
CLIPPER TRADERS, LLC
PROPOSED CLIPPER LANE
PORTSMOUTH, NEW HAMPSHIRE
SUBDIVISION PLANS

APPLICANTS AND OWNERS:
CLIPPER TRADERS, LLC
PO BOX 121
NEW CASTLE, NH 03854

PORTSMOUTH LUMBER AND HARDWARE, LLC
105 BARTLETT STREET
PORTSMOUTH, N.H. 03801

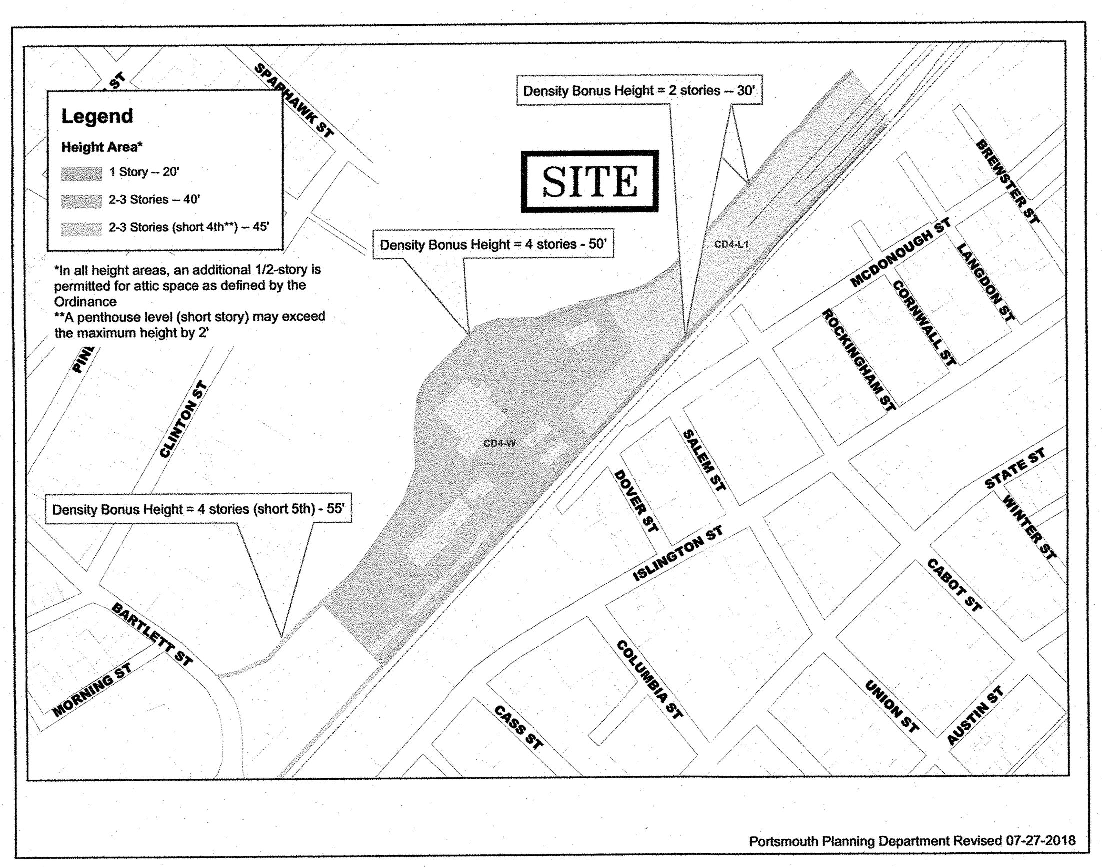
BOSTON AND MAINE CORPORATION
IRON HORSE PARK
HIGH STREET
NORTH BILLERICA, MA 01862

CIVIL ENGINEER & LAND SURVEYOR:
AMBIT ENGINEERING, INC.
200 GRIFFIN ROAD, UNIT 3
PORTSMOUTH, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

ARCHITECT:
WINTER HOLBEN
7 WALLINGFORD SQUARE
KITTERY, ME 03904
Tel (207) 994-3104

TRAFFIC ENGINEER:
STEPHEN G. PERNAW & COMPANY, INC.
PO BOX 1721
LOUDON, N.H. 03307
Tel (603) 731-8500
Fax (603) 929-6094

LANDSCAPE CONSULTANT:
TERRA FIRMA
163.A COURT STREET
PORTSMOUTH, N.H. 03801
Tel (603) 430-8388



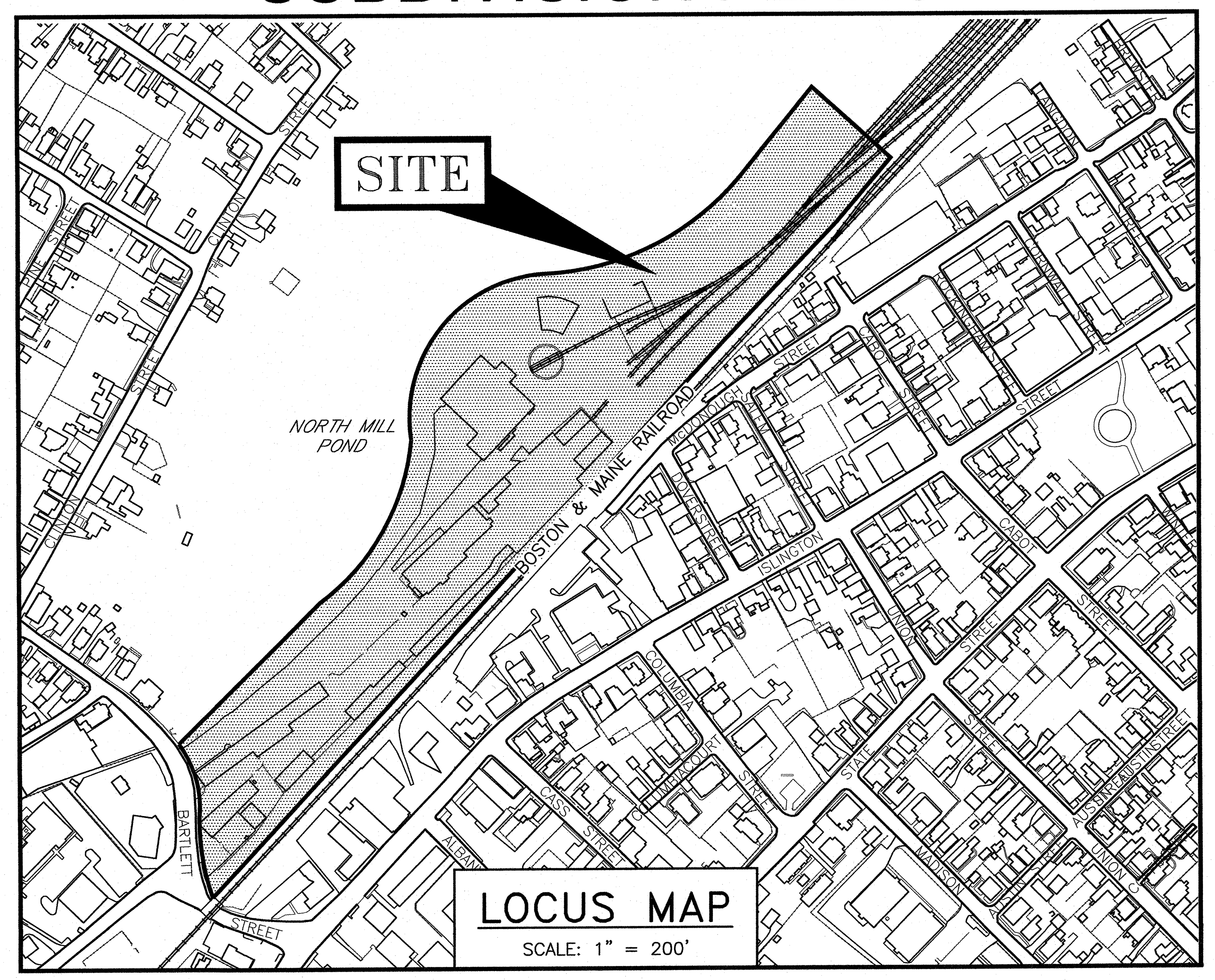
Map 10.5A21A
Character Districts and Civic Districts

Legend
Downtown Overlay District
Historic District

Character Districts
CD5 Character District 5
CD4 Character District 4
CD4-W Character District 4-W
CD4-L1 Character District 4-L1
CD4-L2 Character District 4-L2

Civic District
Civic District

Municipal District
Municipal District



LOCUS MAP
SCALE: 1" = 200'

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

LEGEND:

N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
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
	GRANITE BOUND w/IRON ROD FOUND
MSL	MEAN SEA LEVEL
HOTL	HIGHEST OBSERVABLE TIDE LINE
1	PHOTO LOCATION

EXISTING	PROPOSED	
		PROPERTY LINE
		SETBACK LINE
FM	FM	FORCE MAIN
S	S	SEWER PIPE
SL	SL	SEWER LATERAL
G	PG	GAS LINE
D	D	STORM DRAIN
FD	FD	FOUNDATION DRAIN
W	W	WATER LINE
FS	FS	FIRE SERVICE LINE
UE	UGE	UNDERGROUND ELECTRIC SUPPLY
		UNDERGROUND ELECTRIC SERVICE
OHW	OHW	OVERHEAD ELECTRIC/WIRES
		RETAINING WALL
		EDGE OF PAVEMENT (EP)
100	100	CONTOUR
97x3	98x0	SPOT ELEVATION
		UTILITY POLE
E	E	ELECTRIC METER
		TRANSFORMER ON CONCRETE PAD
		ELECTRIC HANDHOLD/PULLBOX
WSO	WSO	WATER SHUT OFF/CURB STOP
C.O.	C.O.	PIPE CLEANOUT
	GV	GATE VALVE
	SMH	SEWER MANHOLE
	HYD	HYDRANT
	DMH	DRAIN MANHOLE
CB	CB WMH	CATCH BASIN
		WATER METER MANHOLE
#5		TEST BORING
TP 1		TEST PIT
LA		LANDSCAPED AREA
CI	CI	CAST IRON PIPE
COP	COP	COPPER PIPE
CMP	CMP	CORRUGATED METAL PIPE
DI	DI	DUCTILE IRON PIPE
PVC	PVC	POLYVINYL CHLORIDE PIPE
RCP	RCP	REINFORCED CONCRETE PIPE
HYD	HYD	HYDRANT
℄	℄	CENTERLINE
EP	EP	EDGE OF PAVEMENT
EL.	EL.	ELEVATION
INV	INV	INVERT
FF	FF	FINISHED FLOOR
TBM	TBM	TEMPORARY BENCH MARK
TYP	TYP	TYPICAL

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

SUBDIVISION PLANS
PROPOSED SUBDIVISION
105 BARTLETT 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: 16 OCTOBER 2018

PROPOSED LOT AREAS & TAX MAP NUMBERS

LOT	AREA	TM/LOT #
1	20,678 S.F. 0.4747 ACRES	TO BE DETERMINED
2	51,952 S.F. 1.1927 ACRES	TO BE DETERMINED
3	102,003 S.F. 2.3417 ACRES	TO BE DETERMINED
4	61,781± S.F. 1.4183± ACRES	TO BE DETERMINED
5	177,433± S.F. 4.0733± ACRES	TO BE DETERMINED
R.O.W.	69,610± S.F. 1.5980± ACRES	TO BE DETERMINED

VARIANCES GRANTED FROM PROPOSED PORTSMOUTH ZONING ORDINANCE

PROPOSED LOT 3 (CD4–W):

VARIANCES FROM 10.5A41.10B

1) TO ALLOW FOR A FRONT LOT LINE BUILDOUT OF 24.7%, WHERE NO REQUIREMENT CURRENTLY EXIST AND 50% IS REQUIRED.
2) TO ALLOW FOR A MINIMUM OPEN SPACE OF 9.6%, WHERE 0% EXIST AND 15% IS REQUIRED.

PROPOSED LOT 4 (CD4–W):

VARIANCES FROM 10.5A41.10B

1) TO ALLOW FOR A FRONT LOT LINE BUILDOUT OF 29.1%, WHERE NO REQUIREMENT CURRENTLY EXIST AND 50% IS REQUIRED.
2) TO ALLOW FOR A MAXIMUM BUILDING FOOTPRINT OF 20,313 S.F., WHERE NO REQUIREMENT CURRENTLY EXISTS, A BUILDING FOOTPRINT OF 20,313 S.F. CURRENTLY EXISTS AND A MAXIMUM OF 15,000 S.F. IS ALLOWED.

PROPOSED LOT 5 (CD4–W):

VARIANCES FROM 10.5A41.10B

1) TO ALLOW FOR A FRONT LOT LINE BUILDOUT OF 0%, WHERE NO REQUIREMENT CURRENTLY EXIST AND 50% IS REQUIRED.
2) TO ALLOW FOR A MAXIMUM PRIMARY FRONT SETBACK OF 75.6 FEET, WHERE NO MAXIMUM CURRENTLY EXISTS AND A MAXIMUM OF 10 FEET IS REQUIRED.

VARIANCES GRANTED FROM CURRENT PORTSMOUTH ZONING ORDINANCE

PROPOSED LOT 1 (CD4–W ZONE):

VARIANCES FROM 10.5A41.10B

1) TO ALLOW FOR A FRONT LOT LINE BUILDOUT OF 13.4%, WHERE 28.5% CURRENTLY EXISTS AND 50% IS REQUIRED.
2) TO ALLOW FOR A MAXIMUM PRIMARY FRONT SETBACK OF 27.2 FEET, WHERE 27.2 FEET CURRENTLY EXISTS AND 10 FEET IS REQUIRED.

PROPOSED LOT 2 (CD4–W ZONE):

VARIANCES FROM 10.5A41.10B

1) TO ALLOW FOR A PRIMARY FRONT LOT LINE BUILDOUT OF 13.3%, WHERE 7.5% CURRENTLY EXISTS AND 50% IS REQUIRED.
2) TO ALLOW FOR A SECONDARY FRONT LOT LINE BUILDOUT OF 0%, WHERE NONE CURRENTLY EXISTS AND 50% IS REQUIRED.
3) TO ALLOW FOR A MAXIMUM PRIMARY FRONT SETBACK OF 18.2 FEET, WHERE 18.2 FEET CURRENTLY EXISTS AND 10 FEET IS REQUIRED.
4) TO ALLOW FOR A MAXIMUM SECONDARY FRONT SETBACK OF 30.2 FEET, WHERE NONE CURRENTLY EXISTS AND 15 FEET IS REQUIRED.

VARIANCES GRANTED FROM CURRENT PORTSMOUTH ZONING ORDINANCE

PROPOSED LOT 3 (OR ZONE):

VARIANCES FROM 10.530

1) TO ALLOW FOR A FRONT SETBACK OF 0 FEET, WHERE 569.7 FEET CURRENTLY EXISTS AND 70 FEET IS REQUIRED.
2) TO ALLOW FOR AN OPEN SPACE AREA OF 9.6%, WHERE 0% OPEN SPACE CURRENTLY EXISTS AND 20% OPEN SPACE IS REQUIRED.

PROPOSED LOT 4 (OR ZONE):

VARIANCES FROM 10.530

1) TO ALLOW FOR A LOT SIZE OF 1.4183± ACRES, WHERE 1.2924± ACRES CURRENTLY EXISTS AND 2 ACRES IS REQUIRED.
2) TO ALLOW FOR A FRONT SETBACK OF 1.7 FEET, WHERE 840 FEET CURRENTLY EXISTS AND 70 FEET IS REQUIRED.
3) TO ALLOW FOR A SIDE SIDE SETBACK OF 3.9 FEET, WHERE 0.4 FEET CURRENTLY EXISTS AND 50 FEET IS REQUIRED.
4) TO ALLOW FOR A REAR SETBACK OF 46.9 FEET, WHERE 1.2 FEET CURRENTLY EXISTS AND 50 FEET IS REQUIRED.

PROPOSED LOT 5 (OR ZONE):

VARIANCES FROM 10.530

1) TO ALLOW FOR A REAR SETBACK OF 33.7 FEET, WHERE 50 FEET IS REQUIRED.

GRAPHIC SCALE

60 40 20 0 50 100 150 200 250 FEET

20 10 0 10 20 30 40 50 60 70 METERS

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 PURPOSE OF THIS PLAN IS TO SHOW THE OVERALL PROJECT AREA AND ZONING VARIANCES RECEIVED FOR THE SUBDIVISION.

CLIPPER TRADERS 105 BARTLETT STREET PROPOSED SUBDIVISION PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	SHEET NUMBER	10/16/18
1	ISSUED FOR APPROVAL	9/18/18
0	ISSUED FOR COMMENT	4/26/18

REVISIONS

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

SCALE 1" =60' SEPTEMBER 2018

ZONING AND OVERALL PLAN

01

FB 243 PG 22

2429

LEGEND:

HOTL	HIGHEST OBSERVABLE TIDE LINE
TBZ	100' TIDAL BUFFER ZONE
SWQPA	250' PROTECTED SHORELAND
MHW	MEAN HIGH TIDAL WATER
PSS	PRIMARY STRUCTURE SETBACK

WETLAND NOTES:

1) HIGHEST OBSERVABLE TIDE LINE DELINEATED BY STEVEN D. RIKER, CWS IN ACCORDANCE WITH THE FOLLOWING STANDARDS:

A) U.S. ARMY CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL. TECHNICAL REPORT Y-87-1 (JAN. 1987). AND REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2.0, JANUARY 2012.

B) FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 8.1, USDA-NRCS, 2017 AND (FOR DISTURBED SITES) FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 4. NEIWPCC WETLANDS WORK GROUP (2017).

C) NATIONAL LIST OF PLANT SPECIES THAT OCCUR IN WETLANDS: NORTHEAST (REGION 1). USFWS (MAY 1988).

D) CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES. USFW MANUAL FWS/OBS-79/31 (1997).

E) ''IDENTIFICATION AND DOCUMENTATION OF VERNAL POOLS IN NEW HAMPSHIRE'' (1997). NEW HAMPSHIRE FISH AND GAME DEPARTMENT.

2) WETLAND FLAGS WERE FIELD LOCATED ON 8/9/2017 BY AMBIT ENGINEERING, INC.

ANTICIPATED ENVIRONMENTAL PERMITTING

NH DES WETLANDS– IMPACTS TO TIDAL WETLAND AND THE PREVIOUSLY DEVELOPED 100' TIDAL BUFFER ZONE
NH DES SHORELAND– IMPACTS TO THE 250' PROTECTED SHORELAND
CITY OF PORTSMOUTH CONDITIONAL USE– IMPACTS TO CITY OF PORTSMOUTH 100' WETLAND BUFFER

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 PURPOSE OF THIS PLAN IS TO SHOW THE ANTICIPATED IMPACTS WITHIN AREAS OF JURISDICTION (CITY AND STATE).

2) TEMPORARY CONSTRUCTION IMPACTS AND PERMANENT IMPACTS WILL BE CLEARLY DEPICTED AT THE TIME OF FILLING.

3) IT IS ANTICIPATED THAT THERE WILL BE A REDUCTION IN IMPERVIOUS SURFACE AS A RESULT OF THE PROJECT.

4) THE PROJECT DOES REQUIRE SOME REMOVAL OF VEGETATION WITHIN THE 50' WATERFRONT BUFFER.

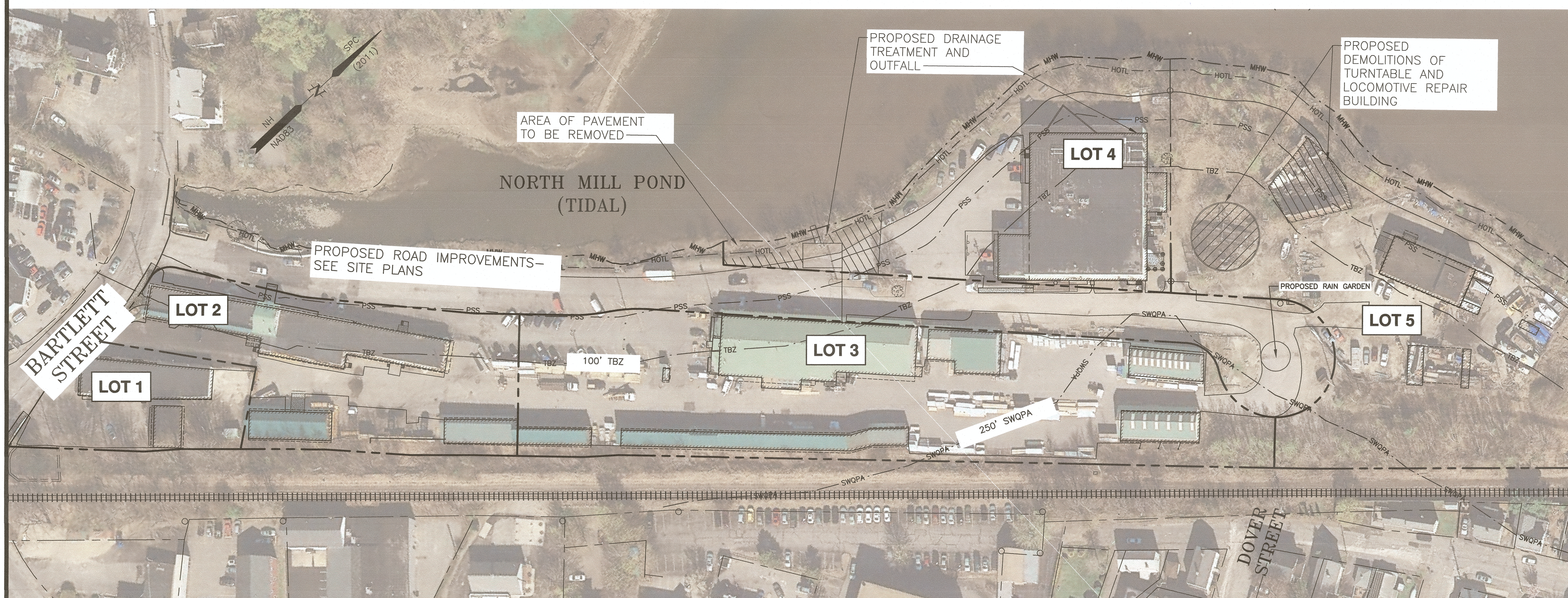
5) RAIN GARDEN AND OTHER PROPOSED PLANTINGS WILL BE COMPOSED OF NATIVE SPECIES.

6) IT IS ANTICIPATED THAT THE NH DES WETLAND PERMIT WILL NOT REQUIRE ANY WAIVERS OF ANY RULES; ENV-WT 300-ENV-WT 800.

7) IT IS ANTICIPATED THAT THE PROJECT WILL BE CONSIDERED "LESS NON CONFORMING" UNDER THE SWQPA AND A MORE NEARLY CONFORMING WORKSHEET WILL BE SUBMITTED WITH THE NH DES SHORELAND APPLICATION.

8) ALL IMPACTS OCCUR IN AREA THAT ARE PREVIOUSLY DEVELOPED OR HISTORICALLY ALTERED.

9) PREVIOUSLY APPROVED CUP (2012) CITY OF PORTSMOUTH FILE 16-12 FOR LOT 2 BUILDING.



GRAPHIC SCALE

60 40 20 0 50 100 150 200 250 FEET
20 10 0 10 20 30 40 50 60 70 METERS

CLIPPER TRADERS
105 BARTLETT STREET
PROPOSED SUBDIVISION
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	10/16/18

REVISIONS

STATE OF NEW HAMPSHIRE STEVEN D. RIKER No. 219 CERTIFIED WETLAND SCIENTIST 10/16/18

STATE OF NEW HAMPSHIRE JOHN R. CHAGNON No. 8351 LICENSED PROFESSIONAL ENGINEER

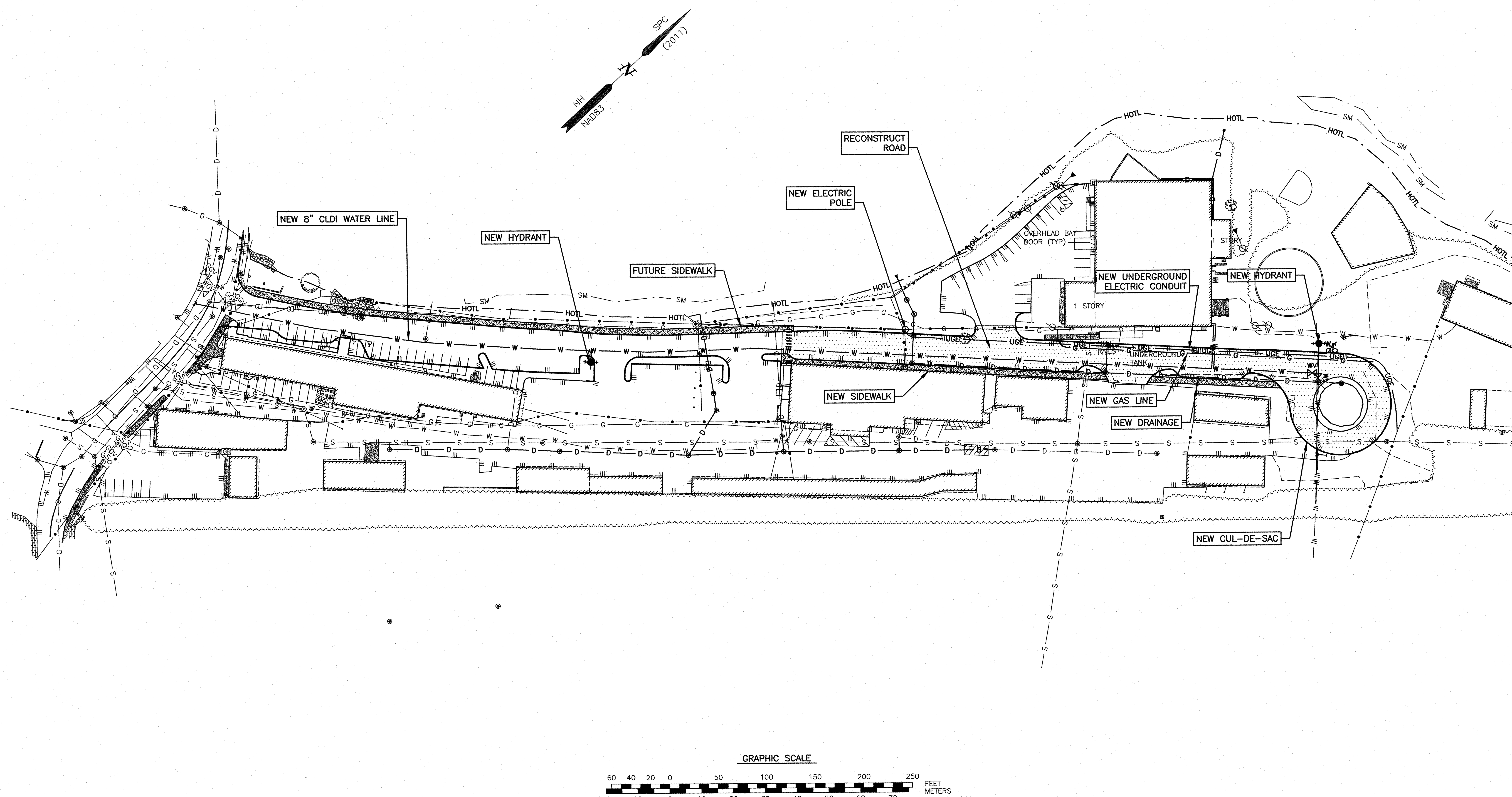
SCALE 1" =60' SEPTEMBER 2018

ENVIRONMENTAL PERMIT PLAN

02

FB 243 PG 22

2429



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

NOTE:
1) THE PURPOSE OF THIS PLAN IS TO SHOW PROPOSED UTILITY IMPROVEMENTS.

UTILITY IMPROVEMENTS CLIPPER TRADERS, LLC OFF BARTLETT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	10/16/18

REVISIONS

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

SCALE: 1" = 60' OCTOBER 2018

UTILITY PLAN 03

FB 243 PG 22

2429

J:\JOBS2\JN2400s\JN 2420s\JN 2429\2017 Site Development\Plans & Specs\Site\2429 Presentation.dwg, UTILITY

Plant List - TREES AND SHRUBS

ID	Qty	Latin Name	Common Name	Scheduled Size
CCP	3	Carpinus caroliniana 'Palisade'	American Hornbeam	2" Cal.
CR1	21	Cornus racemosa	Gray Dogwood	2.5-3' #2B
CSF	18	Cornus sericea 'Fire Dance'	Fire Dance Dogwood	6' HT
CSK1	23	Cornus sericea 'Kelseyi' (1)	Kelsey's Dwarf Red-Osier Dogwood	18-24" #2B
IGS	20	Ilex glabra 'Shamrock'	Shamrock Inkberry	
JCR	80	Juniperus communis 'Repanda'	Rependa Juniper	3 Gal.
LS	4	Liquidambar styraciflua	Sweetgum	2" Cal.
LT1	3	Liriodendron tulipifera	Tuliptree	2.5-3' #2B
MG1	154	Myrica gale	Sweetgale	2-2.5' #5
NYS	4	Nyssa sylvatica	Black Tupelo	1 1/2-2" Cal.
RGL	78	Rhus aromatica 'Grow Low'	Grow Low Sumac	18"+ Ht.
SAS	4	Sassafras albidum	Sassafras	
SAW	118	Spiraea x bumalda 'Anthony Waterer'	Anthony Waterer Spirea	
UAP	10	Ulmus americana 'Princeton'	Princeton Elm	
VTC	16	Viburnum trilobum 'Compactum'	Dwarf Cranberry Bush Viburnum	

Plant List - PERENNIALS

ID	Qty	Latin Name	Common Name	Scheduled Size
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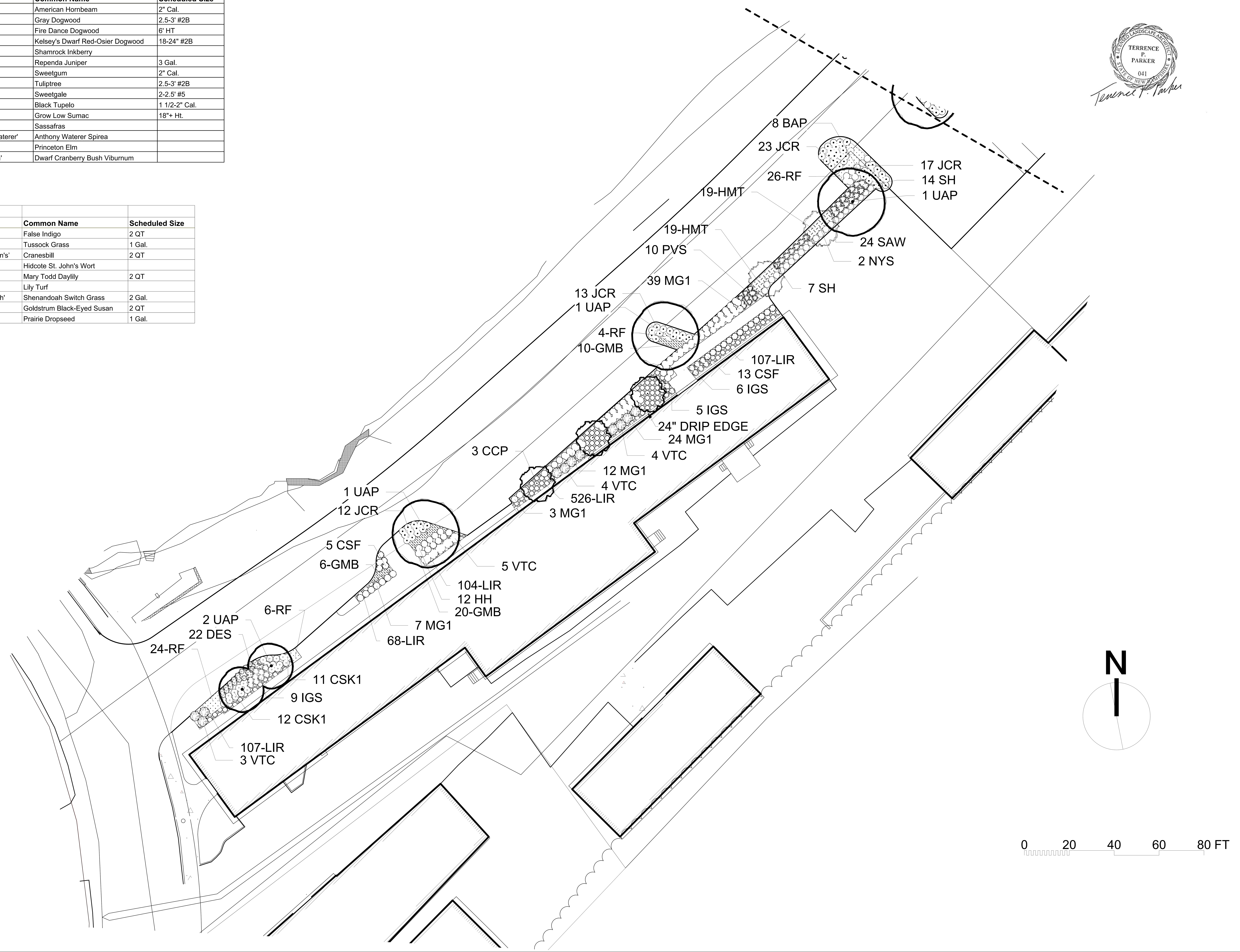
GMB	36	Geranium macrorrhizum 'Bevan's'	Cranesbill	2 QT
HH	12	Hypericum 'Hidcote'	Hidcote St. John's Wort	
HMT	48	Hemerocallis 'Mary Todd'	Mary Todd Daylily	2 QT
LIR	912	Liriope spicata	Lily Turf	
PVS	177	Panicum virgatum 'Shenandoah'	Shenandoah Switch Grass	2 Gal.
RF	60	Rudbeckia fulgida 'Goldstrum'	Goldstrum Black-Eyed Susan	2 QT
SH	21	Sporobolus heterolepsis	Prairie Dropseed	1 Gal.



TERRENCE P. PARKER 041 — LICENSED LANDSCAPE ARCHITECT — STATE OF NEW HAMPSHIRE

terra firma
landscape architecture
163.a court street · portsmouth, nh 03801
office 603.430.8388 | terrence@terrafirmalandarch.com

Issue Notes | Date | No.

Date 10/15/2018
Revision
Project ID CLIPPERS TRADERS
Drawing Code
CAD File Name 101018cla1
Plot Date 00/00/00

Designed By TP
Drawn By TC
Checked By TP
Reviewed By TP
Submitted By TP
Project Manager

Design Firm: terra firma landscape architecture, 163.a Court Street, Portsmouth, NH 03801

Consultant

Project Title: CLIPPERS TRADERS

Sheet Title: LANDSCAPE PLAN PART 1

Scale 1"=20'

Sheet No. L-1 of 4

Plant List - TREES AND SHRUBS				
ID	Qty	Latin Name	Common Name	Scheduled Size
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JCR	80	Juniperus communis 'Repanda'	Rependa Juniper	3 Gal.
LS	4	Liquidambar styraciflua	Sweetgum	2" Cal.
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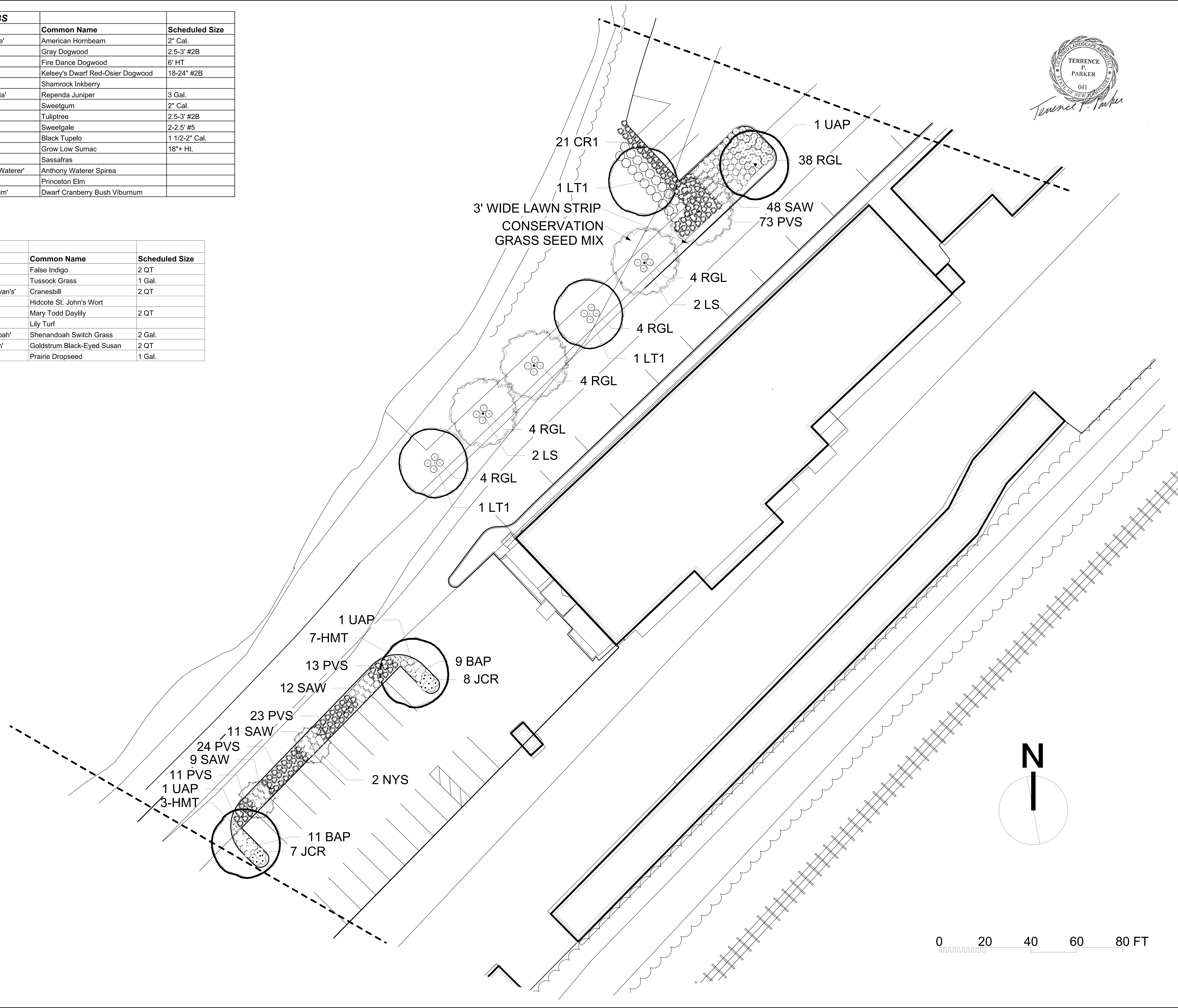

TERRENCE P. PARKER 041
LICENSED LANDSCAPE ARCHITECT
STATE OF NEW HAMPSHIRE

Terrence P. Parker

terra firma
landscape architecture
163.a court street · portsmouth, nh 03801
office 603.430.8388 | terrence@terrafirmalandarch.com

Issue Notes		
No.	Date	

Designed By: TP	Date: 10/15/2018		
Drawn By: TC	Revision: Revision		
Checked By: TP	Project ID: CLIPPERS TRADERS		
Reviewed By: TP	Drawing Code: Drawing Code		
Submitted By: TP	CAD File Name: 101018ctla1		
Project Manager:	Plot Date: 00/00/00		

Design Firm: terra firma landscape architecture
163.a Court Street
Portsmouth, NH 03801

Consultant:

Project Title: CLIPPERS TRADERS

Sheet Title: LANDSCAPE PLAN PART 2

Scale: 1"=20'

Sheet No.: L-2 of 4

Plant List - TREES AND SHRUBS				
ID	**Qty**	**Latin Name**	**Common Name**	**Scheduled Size**
CCP	3	Carpinus caroliniana 'Palisade'	American Hornbeam	2" Cal.
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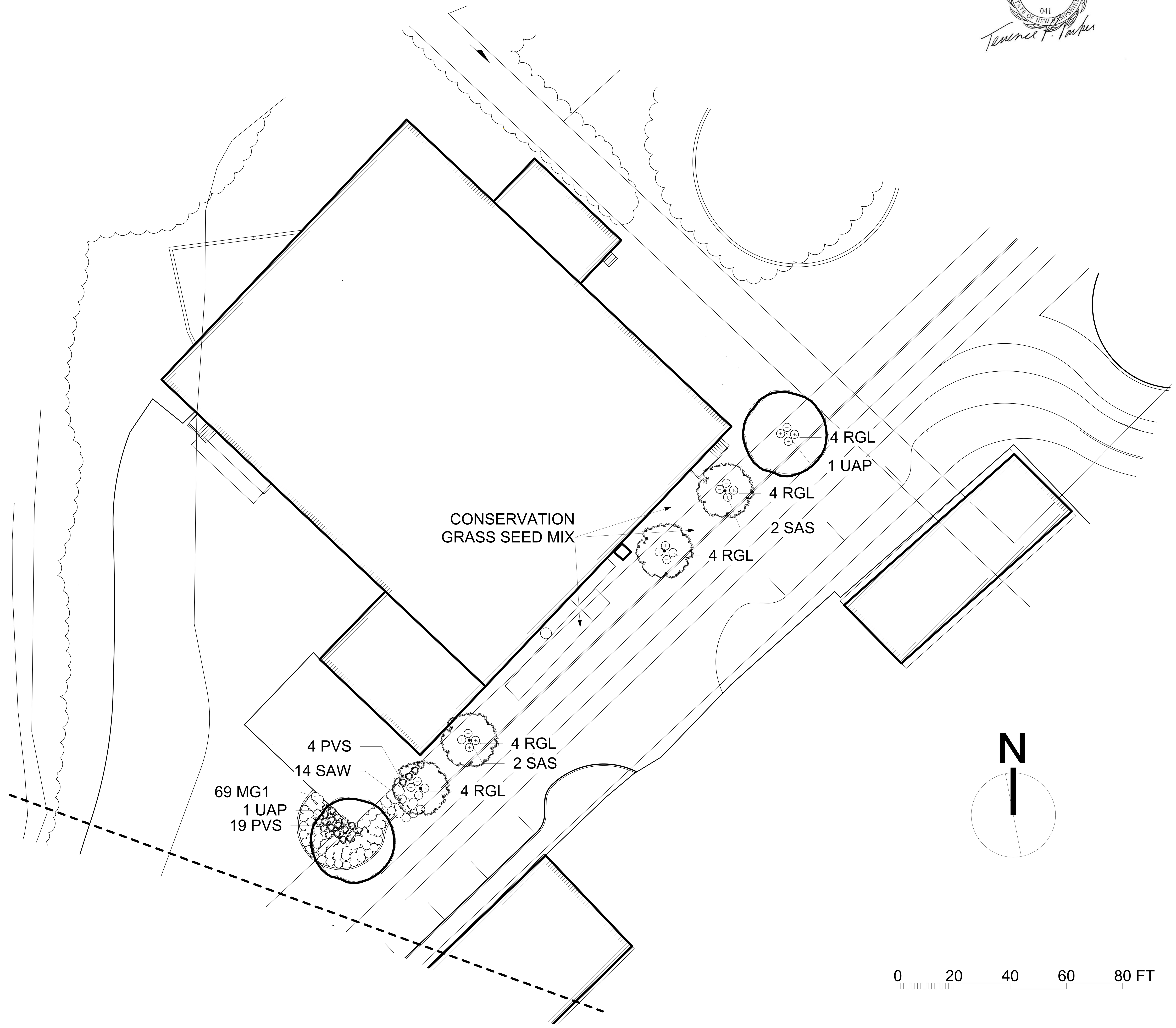
RF	60	Rudbeckia fulgida 'Goldstrum'	Goldstrum Black-Eyed Susan	2 QT
SH	21	Sporobolus heterolepsis	Prairie Dropseed	1 Gal.



TERRENCE P. PARKER 041
LICENSED LANDSCAPE ARCHITECT
STATE OF NEW HAMPSHIRE

terra firma
landscape architecture
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office 603.430.8388 | terrence@terrafirmalandarch.com

Issue Notes | Date | No.

Date 10/15/2018
Revision
Project ID CLIPPERS TRADERS
Drawing Code
CAD File Name 101018cdla1
Plot Date 00/00/00

Designed By TP
Drawn By TC
Checked By TP
Reviewed By TP
Submitted By TP
Project Manager

Design Firm
terra firma landscape architecture
163.a Court Street
Portsmouth, NH 03801

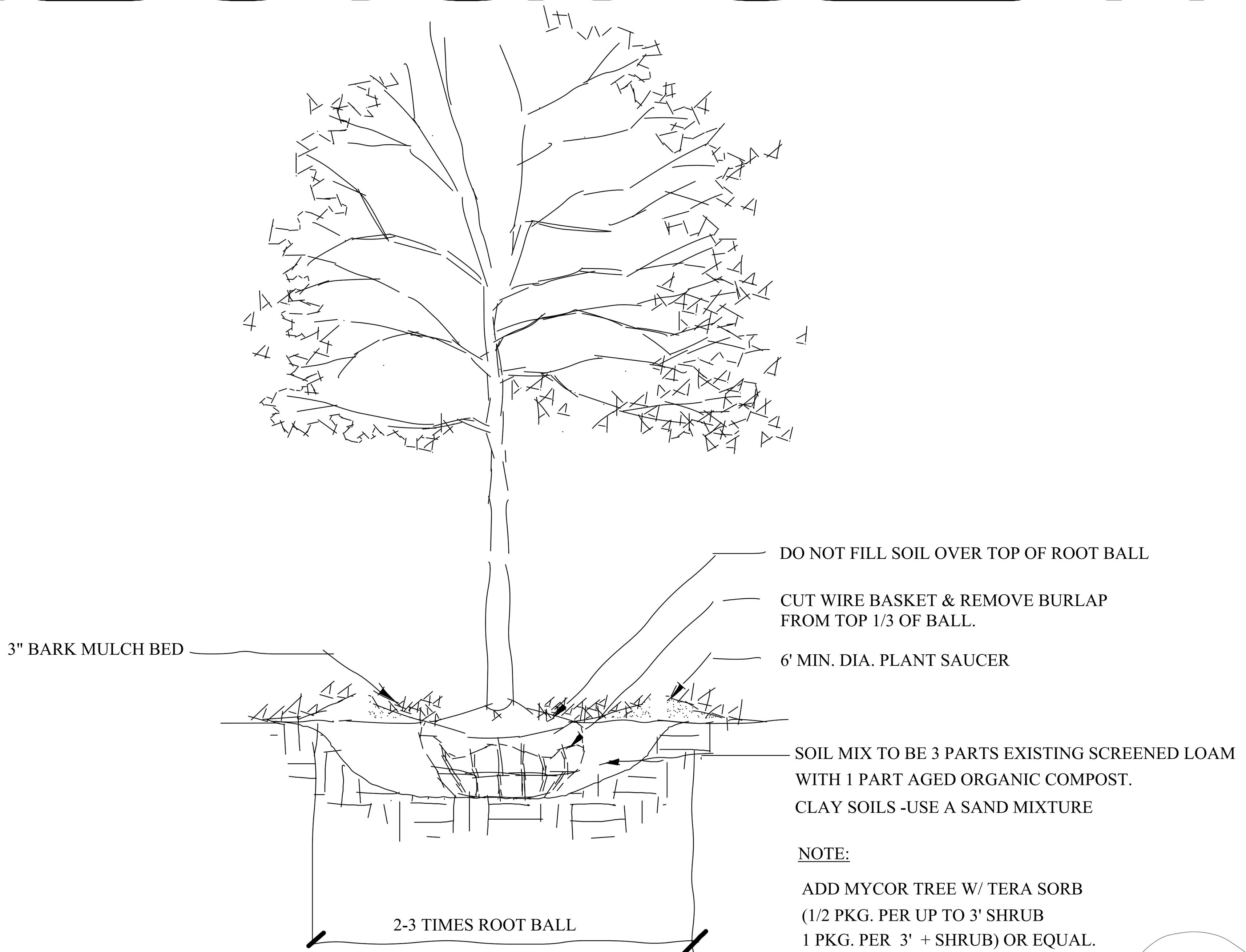
Consultant

Project Title
CLIPPERS TRADERS

Sheet Title
LANDSCAPE PLAN
PART 3

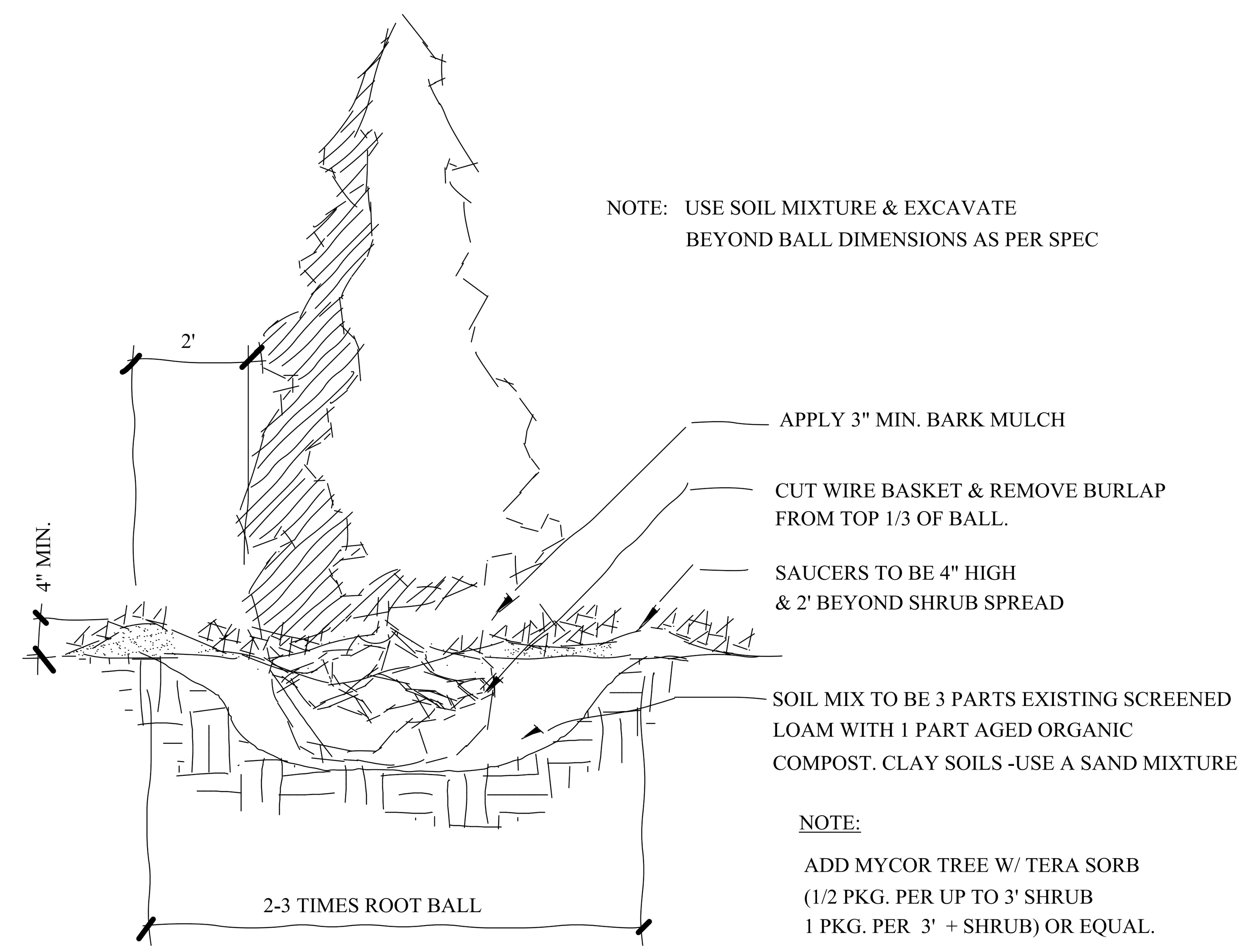
Scale 1"=20'

Sheet No.
L-3
of
4



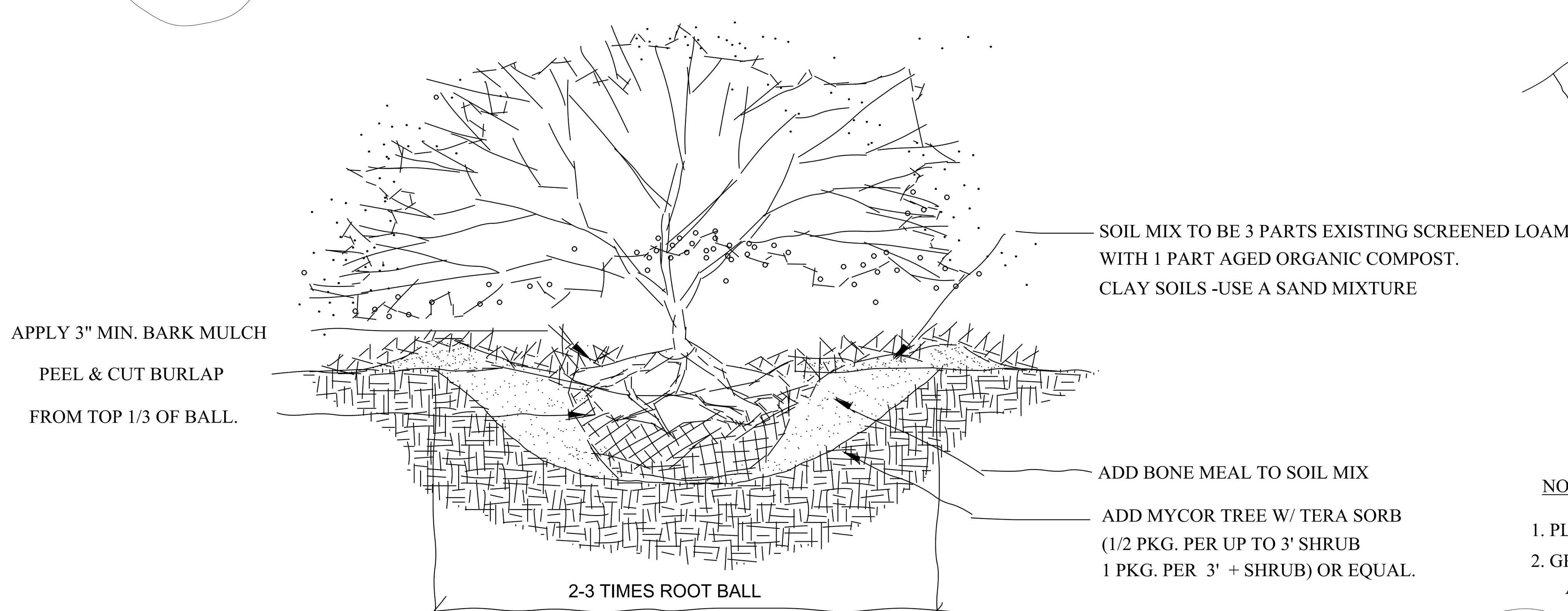
1 | L-4

TREE PLANTING - 2"+ CAL.
SCALE: NTS



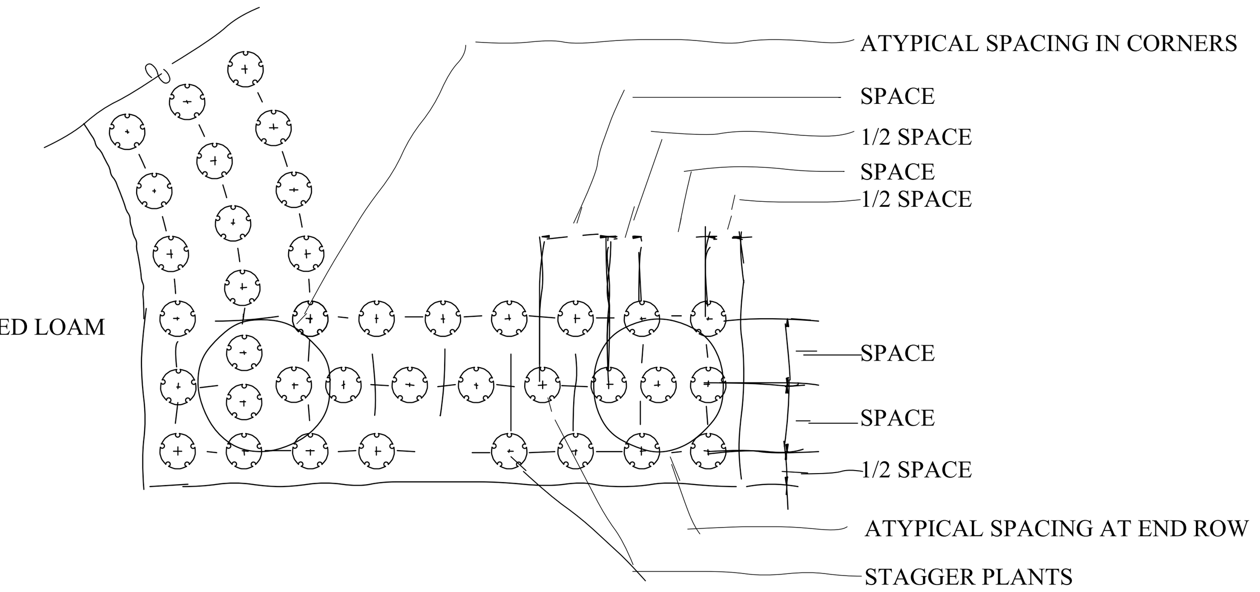
2 | L-4

PYRAMIDAL EVERGREEN TREE PLANTING
SCALE: NTS



3 | L-4

B&B SHRUB PLANTING
SCALE: NTS



NOTES:

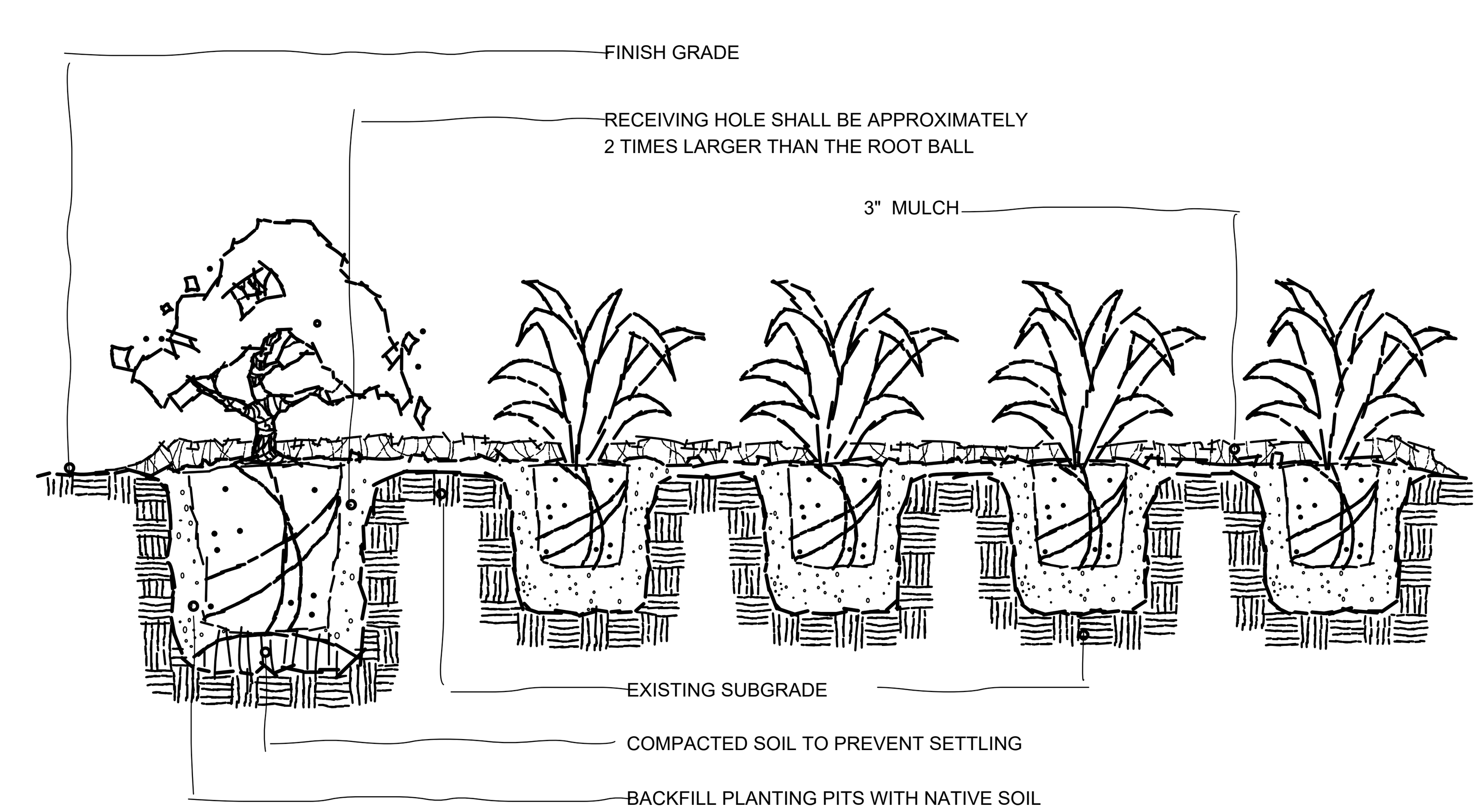
1. PLACE PLANTS IN BED AS SHOWN, SPACING AS SPECIFIED IN PLANT SCHEDULE.
2. GROUNDCOVER SHALL BE TRIANGULAR SPACED IN ROWS PARALLEL TO STRAIGHT EDGES AND SHALL BE EVENLY SPACED IN ROWS PARALLEL TO CURVE EDGES.

4 | L-4

GROUND COVER SPACING DETAIL
SCALE: NTS

LANDSCAPE NOTES:

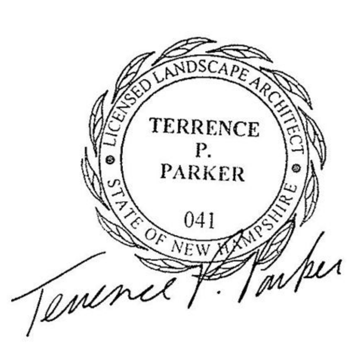
1. THE CONTRACTOR SHALL LOCATE AND VERIFY THE EXISTENCE OF ALL UTILITIES PRIOR TO STARTING WORK.
2. THE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN ON THE DRAWINGS.
3. ALL MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE CURRENT AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
4. ALL PLANT SUBSTITUTIONS MUST BE APPROVED BY THE LANDSCAPE ARCHITECT.
5. ALL PLANT MATERIALS SHALL BE EXACTLY AS SPECIFIED BY THE LANDSCAPE ARCHITECT. IF PLANT SPECIES CULTIVARS ARE FOUND TO VARY FROM THAT SPECIFIED AT ANY TIME DURING THE GUARANTEE PERIOD, THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO HAVE THE CONTRACTOR REPLACE THAT PLANT MATERIAL. THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO REJECT ANY PLANT DELIVERED TO THE SITE FOR AESTHETIC REASONS BEFORE PLANTING. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR THE QUALITY FOR ALL THE PLANTS.
6. PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL AT THE PLACE OF GROWTH, UPON DELIVERY OR AT THE JOB SITE WHILE WORK IS ON-GOING TO CONFORMITY TO SPECIFIED QUALITY, SIZE AND VARIETY.
7. PLANTS FURNISHED IN CONTAINERS SHALL HAVE THE ROOTS WELL ESTABLISHED IN THE SOIL MASS AND SHALL HAVE AT LEAST ONE (1) GROWING SEASON. ROOT-BOUND PLANTS OR INADEQUATELY SIZED CONTAINERS TO SUPPORT THE PLANT MAY BE DEEMED UNACCEPTABLE.
8. NO PLANT SHALL BE PUT IN THE GROUND BEFORE GRADING HAS BEEN FINISHED AND APPROVED BY THE LANDSCAPE ARCHITECT.
9. ALL PLANTS SHALL BE INSTALLED AND DETAILED PER PROJECT SPECIFICATIONS.
10. ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24-HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL BE WATERED WEEKLY, OR MORE OFTEN IF NECESSARY, DURING THE FIRST GROWING SEASON.
11. ALL PLANTS SHALL BE GUARANTEED BY THE CONTRACTOR FOR NOT LESS THAN ONE FULL YEAR FROM THE TIME OF PROVISIONAL ACCEPTANCE. DURING THIS TIME, THE OWNER SHALL MAINTAIN ALL PLANT MATERIALS IN THE ABOVE MANNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT THE PLANTS TO ENSURE PROPER CARE. IF THE CONTRACTOR IS DISSATISFIED WITH THE CARE GIVEN, HE SHALL IMMEDIATELY, AND IN SUFFICIENT TIME TO PERMIT THE CONDITION TO BE RECTIFIED, NOTIFY THE LANDSCAPE ARCHITECT IN WRITING OR OTHERWISE FORFEIT HIS CLAIM. LANDSCAPE CONTRACTOR SHALL PRUNE PLANTINGS OF DEAD LIMBS OR TWIGS DURING THE FIRST YEAR OF GROWTH.
12. FINAL ACCEPTANCE BY THE LANDSCAPE ARCHITECT WILL BE MADE UPON THE CONTRACTOR'S REQUEST AFTER ALL CORRECTIVE WORK HAS BEEN COMPLETED.
13. LANDSCAPE CONTRACTOR SHOULD REPLACE DEAD PLANTINGS IMMEDIATELY UPON OWNER DIRECTION WITHIN THE WARRANTY PERIOD AND AGAIN AT THE END OF THE GUARANTEE PERIOD, THE CONTRACTOR SHALL HAVE REPLACED ANY PLANT MATERIAL THAT IS MISSING, NOT TRUE TO SIZE AS SPECIFIED, THAT HAVE DIED, THAT HAVE LOST THEIR NATURAL SHAPE DUE TO DEAD BRANCHES, EXCESSIVE PRUNING OR INADEQUATE OR IMPROPER CARE, OR THAT ARE, IN THE OPINION OF THE LANDSCAPE ARCHITECT, IN UNHEALTHY OR UNSIGHTLY CONDITION.
14. ALL LANDSCAPE AREAS TO BE GRASS COMMON TO REGION EXCEPT FOR INTERIOR LANDSCAPED ISLANDS OR WHERE OTHER PLANT MATERIAL IS CALLED FOR.
15. ALL TREES AND SHRUBS TO BE PLANTED IN MULCH BEDS WITH DEFINED AND CUT EDGES TO SEPARATE TURF GRASS AREAS.
16. FOR ANY LANDSCAPE AREA SO DESIGNATED TO REMAIN, WHETHER ON OR OFF-SITE, REMOVE WEEDS, ROCKS, CONSTRUCTION ITEMS, ETC., THEN APPLY GRASS SEED OR PINE BARK MULCH AS DEPICTED ON PLANS.
17. LANDSCAPE CONTRACTOR SHALL FEED AND PRUNE EX. TREES, ON OR JUST OFF SITE, THAT HAVE EXPERIENCED ROOT BASE INTRUSION OR DAMAGE DURING CONSTRUCTION IMMEDIATELY AND FOR THE DURATION OF THE WARRANTY PERIOD AT THE DIRECTION OF THE LANDSCAPE ARCHITECT.
18. EXISTING TREES TO REMAIN SHALL BE PROTECTED WITH TEMPORARY SNOW FENCING AT THE EDGE OF THE EX. TREE CANOPY THE CONTRACTOR SHALL NOT STORE VEHICLES OR MATERIALS WITHIN THE LANDSCAPED AREAS. ANY DAMAGE TO EXISTING TREES, SHRUBS OR LAWN SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
19. ALL MULCH AREAS SHALL RECEIVE A 2" LAYER OF SHREDDED PINE BARK MULCH.
20. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.



NOTE: SHRUBS SHALL BE PLANTED A MINIMUM OF 1" & NO MORE THAN 2" ABOVE FINISH GRADE, DEPENDING UPON SITE CONDITIONS.

5 | L-4

SHRUB/GROUND COVER PLANTING DETAIL
SCALE: NTS



terra firma
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Date	Revision	Project ID	Drawing Code	CAD File Name	Plot Date
10/15/2018	Revision	CLIPPERS TRADERS	Drawing Code	101018cta1	00/00/00

Designed By	Drawn By	Checked By	Reviewed By	Submitted By	Project Manager
TP	TC	TP	TP	TP	

No.	Date	Issue Notes

Design Firm: terra firma landscape architecture
163.a Court Street
Portsmouth, NH 03801

Consultant

Project Title: CLIPPERS TRADERS

Sheet Title: LANDSCAPE DETAILS

Scale: NTS

Sheet No.: L-4 of 4

ABUTTER LIST

139/1
N/F
REGAN ELECTRONIC CO. INC.
94 LANGDON STREET
PORTSMOUTH, NH 03801
2956/1527

144/46
N/F
MYLES S. BRATTER
177 BARTLETT STREET
PORTSMOUTH, NH 03801
2424/1690

163/2
N/F
INDUSTRIAL RENTS–NH, LLC
6 WAYNE ROAD
WESTFORD, MA 01886
5606/2334

144/37
N/F
ANDREW S. MARTIN
230 McDONOUGH STREET
PORTSMOUTH, NH 03801
5082/386

144/47
N/F
GREAT McDONOUGH STREET, LLC
135 McDONOUGH STREET
PORTSMOUTH, NH 03801
3440/532

164/5
N/F
HOUSTON HOLDINGS, LLC
653 ISLINGTON STREET
PORTSMOUTH, NH 03801
3558/464

144/38
N/F
HEIDI J. RAMMER
765 PARK PLACE, APT. 1
BROOKLYN, NY 11216
3484/299

157/6
N/F
SUMMIT 501 ISLINGTON, LLC
c/o TODD BAKER
953 ISLINGTON STREET #23D
PORTSMOUTH, NH 03801
5256/441

164/6
N/F
NED AND BILL PROPERTIES, LLC
ATTN: WILLIAM SAVOIE
PO BOX 822
SOUTHERN PINES, NC 28388
4586/2511

144/41
N/F
BRANDON J. TERRY &
LAURA E. TERRY
209 McDONOUGH STREET
PORTSMOUTH, NH 03801
4322/66

157/7
N/F
J & J'S DROP
AND DRIVE, LLC
402 DEER STREET
PORTSMOUTH, NH 03801
5353/2395

164/7
N/F
HH WHOLESALERS, LLC
1 MIDDLE STREET, SUITE 1
PORTSMOUTH, NH 03801
5399/810

144/42
N/F
CANDACE COUTURE
199 McDONOUGH STREET
PORTSMOUTH, NH 03801
5451/2657

157/13
N/F
J & J'S DROP
AND DRIVE, LLC
402 DEER STREET
PORTSMOUTH, NH 03801
5353/2395

164/8
N/F
ARANOSIAN OIL COMPANY
557 NORTH STATE STREET
CONCORD, NH 03301
1686/263

144/43
N/F
HAVEN PROPERTIES, LLC
80 HAVEN ROAD
PORTSMOUTH, NH 03801
5791/2011

157/14
N/F
J & J'S DROP
AND DRIVE, LLC
402 DEER STREET
PORTSMOUTH, NH 03801
5353/2395

164/12
N/F
JOSEPH GOBBI
SUPPLY CORPORATION
PO BOX 125
PORTSMOUTH, NH 03801
3233/1949

144/44
N/F
RUTH E. JAMES
179 McDONOUGH STREET
PORTSMOUTH, NH 03801
5342/2028

157/15
N/F
J & J'S DROP
AND DRIVE, LLC
402 DEER STREET
PORTSMOUTH, NH 03801
5353/2395

165/1
N/F
ALAN MERTON
INVESTMENTS, LLC
PO BOX 284
STRATHAM, NH 03885
4771/1259

144/45
N/F
JAMES A. HEWITT REVOCABLE TRUST &
ELIZABETH E. HEWITT REVOCABLE TRUST
JAMES A. HEWITT &
ELIZABETH E. HEWITT, TRUSTEES
726 MIDDLE ROAD
PORTSMOUTH, NH 03801
5438/2237

158/13
N/F
SLATTERY & DUMONT, LLC
66 OLD CONCORD TURNPIKE #10
BARRINGTON, NH 03825
3471/196

165/14
N/F
BOSTON AND
MAINE CORPORATION
IRON HORSE PARK
HIGH STREET
NORTH BILLERICA, MA 01862

163/1
N/F
M & B PROPERTIES, LLC
54 BARTLETT STREET
PORTSMOUTH, NH 03801
5794/996

WETLAND NOTES:

1) HIGHEST OBSERVABLE TIDE LINE DELINEATED BY STEVEN D. RIKER, CWS ON 8/17/2018 IN ACCORDANCE WITH THE FOLLOWING STANDARDS:

A) U.S. ARMY CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL. TECHNICAL REPORT Y–87–1 (JAN. 1987). AND REGIONAL SUPPLEMENT TO THE CORPS OF ENGINEERS WETLAND DELINEATION MANUAL: NORTHCENTRAL AND NORTHEAST REGION, VERSION 2.0, JANUARY 2012.

B) FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, VERSION 8.1, USDA–NRCS, 2017 AND (FOR DISTURBED SITES) FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, VERSION 4. NEIWPCC WETLANDS WORK GROUP (2017).

C) NATIONAL LIST OF PLANT SPECIES THAT OCCUR IN WETLANDS: NORTHEAST (REGION 1). USFWS (MAY 1988).

D) CLASSIFICATION OF WETLANDS AND DEEPWATER HABITATS OF THE UNITED STATES. USFW MANUAL FWS/OBS–79/31 (1997).

E) "IDENTIFICATION AND DOCUMENTATION OF VERNAL POOLS IN NEW HAMPSHIRE" (1997). NEW HAMPSHIRE FISH AND GAME DEPARTMENT.

2) WETLAND FLAGS WERE FIELD LOCATED BY AMBIT ENGINEERING, INC.

ZONING DISTRICT DIMENSIONAL REQUIREMENTS:

CHARACTER DISTRICT CD4–W:

MIN. LOT AREA:	5,000 S.F.
FRONTAGE:	NO REQUIREMENT
SETBACKS:	
FRONT (MAX.)	10 FEET (PRIMARY)
FRONT (MAX.)	15 FEET (SECONDARY)
SIDE	NO REQUIREMENT
REAR	5 FEET
MAXIMUM STRUCTURE HEIGHT:	45 FEET
MAXIMUM STRUCTURE COVERAGE:	60%
MAXIMUM BUILDING FOOTPRINT:	15,000–20,000 S.F.
MINIMUM OPEN SPACE:	15%
MINIMUM FRONT LOT LINE BUILDOUT:	50%

CHARACTER DISTRICT CD4–L1:

MIN. LOT AREA:	3,000 S.F.
FRONTAGE:	NO REQUIREMENT
SETBACKS:	
FRONT (MAX.)	15 FEET (PRIMARY)
FRONT (MAX.)	12 FEET (SECONDARY)
SIDE	5–20 FEET
REAR	5 FEET
MAXIMUM STRUCTURE HEIGHT:	20–30 FEET
MAXIMUM STRUCTURE COVERAGE:	60%
MAXIMUM BUILDING FOOTPRINT:	2,500–3,500 S.F.
MINIMUM OPEN SPACE:	25%
MAXIMUM BLOCK LENGTH:	80–100 FEET
BUILDING SEPARATION:	15–30 FEET
VIEW CORRIDORS:	SEE ZONING ORDINANCE

TRANSPORTATION CORRIDOR (TC):
NO DIMENSIONAL OR USE REQUIREMENTS DEFINED IN ORDINANCE

PLAN REFERENCES:

1) LAND IN PORTSMOUTH, N.H. BOSTON AND MAINE RAILROAD TO ERMINIO A.RICCI, SCALE : 1" = 40', APRIL 1960 RCRD 1595/091.

2) LAND IN PORTSMOUTH, N.H. BOSTON AND MAINE RAILROAD TO ERMINIO A.RICCI, SCALE : 1" = 40', MAY 1957 RCRD 02612.

3) EASEMENT OF LAND IN PORTSMOUTH, N.N. BOSTON AND MAINE RAILROAD TO UNITED STATES OF AMERICA, SCALE 1" = 20', MAY 1957, RCRD 02633.

4) LAND IN PORTSMOUTH, N.H. VITO P. MASSARO TO PORT CITY BEVERAGE CO, SCALE 1" = 40', APRIL 1949, RCRD 01448.

5) LAND IN PORTSMOUTH, N.H. MARY E. MORAN TO BOSTON AND MAINE RAILROAD, SCALE 1" = 40', MARCH 1920, RCRD 00540.

6) PLAN OF LAND OF MARY E. MORAN ON BARTLETT AND ISLINGTON STREETS PORTSMOUTH, N.H., PREPARED BY JOHN W. DURGIN, SCALE 1" = 20', MAY 1920, RCRD 08.

7) DRAINAGE EASEMENT GEORGE E. FRISBEE TO THE CITY OF PORTSMOUTH, N.H., PREPARED BY RICHARD P. MILLETTE AND ASSOCIATES, SCALE : 1" = 20', JUNE 1981, RCRD B–10456.

8) LAND IN PORTSMOUTH, N.H. BOSTON AND MAINE RAILROAD TO PORTSMOUTH FACTORY BUILDING ASSOCIATION, SCALE 1" = 20' OCTOBER 1923, RCRD 00356.

9) NH ELECTRIC CO. PLAN SHOWING AREA RESERVED FOR TRANSFORMER SUBSTATION ON PROPERTY OF CONTINENTAL SHOE CORP. PORTSMOUTH, N.H., SCALE 1" = 30', 11–27–53, RCRD 1303/378.

10) BOSTON AND MAINE RAILROAD PLAN TO ACCOMPANY AGREEMENT BETWEEN BOSTON AND MAINE RAILROAD AND CONCORD AND PORTSMOUTH RAILROAD COVERING RELOCATION OF TRACKS OF CONCORD AND PORTSMOUTH RAILROAD IN PORTSMOUTH, N.H. OCCASIONED BY CONSTRUCTION OF NEW HIGHWAY AND BRIDGE BY MAINE – NEW HAMPSHIRE INTERSTATE BRIDGE AUTHORITY, SCALE 1" = 500', DECEMBER 1936, RCRD 0934.

11) LAND IN PORTSMOUTH, N.H. BOSTON AND MAINE RAILROAD TO CITY CONCRETE CO.,INC., SCALE 1" = 80', JANUARY 1955, RCRD 02897.

12) LAND IN PORTSMOUTH, N.H. BOSTON AND MAIN RAILROAD TO ALL STATE REALTY CORPORATION, SCALE 1" = 50", FEBRUARY 1961, RCRD 160.

13) LAND IN PORTSMOUTH, N.H. BOSTON AND MAINE RAILRAOD TO VITO P. MASSARO, SCALE 1" = 40', APRIL 1949, RCRD 01450.

14) DRAINAGE EASEMENT STUART AND PAULA BOXER AND ARANOSIAN OIL COMPANY TO THE CITY OF PORTSMOUTH, N.H., PREPARED BY RICHARD P. MILLETTE AND ASSOCIATES, SCALE: 1" = 20', JUNE 1981, RCRD B–10455.

15) CONDOMINIUM PLAN ISLINGTON PLACE PREPARED FOR ANCHOR BUILDING ASSOCIATES, PREPARED BY KIMBALL CHASE COMPANY, INC., SCALE 1" = 20', 12–10–86, RCRD D–15826.

16) PLAN OF LOT 565–581 ISLINGTON STREET PORTSMOUTH, N.H., PREPARED BY JOHN W. DURGIN CIVIL ENGINEERS, SCALE 1" = 10', DECEMBER 1949 REVISED JANUARY 1963, RCRD B28.

17) SUBDIVISION OF LAND PORTSMOUTH, N.H. FOR GEORGE AND PAULINE J. FRISBEE, PREPARED BY JOHN W. DURGIN CIVIL ENGINEERS PROFESSIONAL ASSOCIATION, SCALE" 1" = 30', DECEMBER 1976, RCRD C–6587.

18) RIGHT OF WAY AND TRACK MAP BOSTON AND MAINE R.R. OPERATED BY THE BOSTON AND MAINE R.R.STATION 2966+20 TO STATION 3019+0, SCALE 1" = 100', JUNE 30, 1914, VAL V3NH 55.

19) PLAN OF LAND FOR DEER STREET ASSOCIATES DEER AND BRIDGE STREETS AND MAPLEWOOD AVENUE PORTSMOUTH, N.H. COUNTY OF ROCKINGHAM, PREPARED BY AMBIT SURVEY, SCALE: 1" = 30', SEPTEMBER 1993.

20) PROPOSED EASEMENTS– BARTLETT STREET BARTLETT SEWER SEPERATION PROJECT OVER LAND OF PAN AM RAILWAYS PORTSMOUTH, NEW HAMPSHIRE FOR CITY OF PORTSMOUTH, PREPARED BY JAMES VERRA AND ASSOCIATES, INC., SCALE : 1" = 20', DATED 10–01–2007 RCRD D–35477.

21) SEWER AND STORM DRAIN EASEMENT PLAN 105 BARTLETT STREET PORTSMOUOTH, NEW HAMPSHIRE ASSESSOR'S PARCEL 164–001 & 164–003 EASEMENT OWNER CITY OF PORTSMOUTH, PREPARED BY JAMES VERRA AND ASSOCIATES, INC., SCALE 1" = 20', DATED 01/05/2012, RCRD D–37763.

22) EASEMENT PLAN TAX MAP 164 – LOT 4 BOSTON & MAINE CORPORATION TO THE CITY OF PORTSMOUTH OFF BREWSTER STREET CITY OF PORTSMOUTH COUNTY OF ROCKINGHAM STATE OF NEW HAMPSHIRE, PREPARED BY AMBIT ENGINEERING, INC. SCALE: 1" = 30', DATED SEPTEMBER 2012, RCRD D–37720.

23) STANDARD BOUNDARY SURVEY TAX MAP 157 – LOTS 7,8,10,11,12,13,14,AND 15 WASHBURN REALTY, INC. AND WASHBURN PLUMBING AND HEATING SUPPLY COMPANY, INC. FOR JAY McSHARRY 449 & 459 ISLINGTON STREET AND 18, 30, 40, & 46 DOVER STREET AND 268 & 280 MCDONOUGH STREET CITY OF PORTSMOUTH, COUNTY OF ROCKINGHAM STATE OF NEW HAMPSHIRE, PREPARED BY AMBIT ENGINEERING, INC., SCALE 1" = 20', DATED JANUARY 2012, NOT RECORDED.

24) SITE REDEVELOPMENT NED & BILL PROPERTIES 621–627 ISLINGTON STREET PORTSMOUTH, N.H., PREPARED BY AMBIT ENGINEERING, INC., SCALE 1" = 10', DATED MARCH 2006, NOT RECORDED.

25) PLAN OF LAND FOR SAGAMORE ENTERPRISES 653 ISLINGTON STREET COUNTY OF ROCKINGHAM PORTSMOUTH N.H., PREPARED BY RICHARD P. MILLETTE AND ASSOCIATES, SCALE 1" = 10', DATED SEPTEMBER 21, 1988, RCRD D–18742.

26) STATION MAP – LANDS BOSTON AND MAINE R.R. OPERATED BY THE BOSTON AND MAINE R.R. STATION 2966+20 TO STATION 3019+0, OFFICE OF VALUATION ENGINEER. BOSTON, MASS, SCALE 1" = 100", JUNE 30, 1914 VAL V3NH SL55.

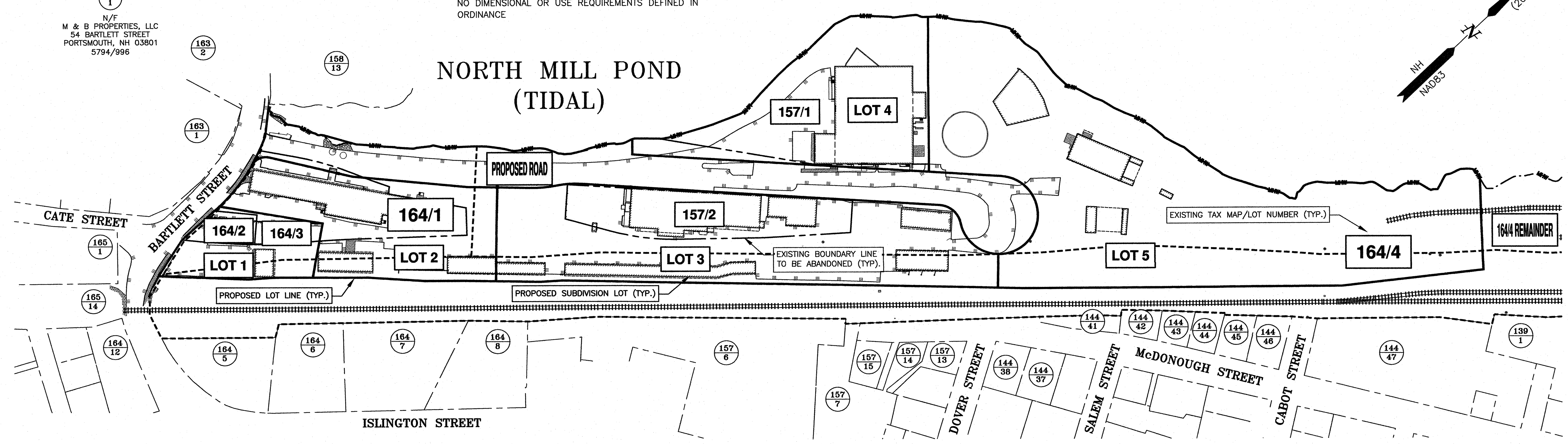
27) STATION MAP – LANDS CONCORD AND PORTSMOUTH R,R, OPERATED BY THE BOSTON AND MAINE R.R. STATION 0+0 TO STATION 33+0, OFFICE OF VALUATION ENGINEER. BOSTON, MASS, SCALE 1" = 100', JUNE 30, 1914 VAL V3NH SL55A.

STATE OF NEW HAMPSHIRE
STEVEN D. RIKER
No. 219
CERTIFIED WETLAND SCIENTIST

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

"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 — DATE 10/16/2018



GRAPHIC SCALE
100 50 0 100 200 300 400 FEET
30 20 10 0 50 100 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) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 157 AS LOTS 1 & 2 AND ASSESSOR'S MAP 164 AS LOTS 1, 2, 3, & 4.

2) OWNERS OF RECORD:

MAP 157 LOT 1:
CLIPPER TRADERS, LLC
105 BARTLETT STREET
PORTSMOUTH, NH 03801
5598/2725

MAP 157 LOT 2:
PORTSMOUTH LUMBER AND HARDWARE, LLC
105 BARTLETT STREET
PORTSMOUTH, NH 03801
5372/2606

MAP 164 LOT 1, 2, AND 3
PORTSMOUTH LUMBER AND HARDWARE, LLC
105 BARTLETT STREET
PORTSMOUTH, NH 03801
5372/2606, 5808/1379, AND 5540/2567

MAP 164 LOT 4
BOSTON AND MAINE CORPORATION
IRON HORSE PARK
NORTH BILLERICA, MA 01862
VARIOUS DEED & PLAN REFERENCES

3) PORTIONS OF MAP 157 LOT 1 AND MAP 164 LOT 4 ARE IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE DATE MAY 17, 2005.

4) PARCELS ARE LOCATED IN CHARACTER DISTRICT 4–W (CD4–W), OFFICE RESEARCH (OR), AND TRANSPORTATION CORRIDOR (TC) ZONING DISTRICTS.

5) THE PURPOSE OF THIS PLAN IS TO SHOW THE CONSOLIDATION AND SUBDIVISION OF THE PARCELS INTO 5 LOTS AND A RIGHT–OF–WAY, AND TO RELOCATE THE LOT LINE OF MAP 164 LOT 4.

6) VARIANCES TO DIMENSIONAL REQUIREMENTS GRANTED BY THE PORTSMOUTH ZONING BOARD OF ADJUSTMENT APRIL 17, 2018. SEE LISTING ON SHEET 4 OF 4.

NO.	DESCRIPTION	DATE
3	UPDATE ZONING	10/16/18
2	RENAME PROPOSED ROAD	7/17/18
1	ISSUED FOR APPROVAL	6/18/18
0	ISSUED FOR COMMENT	3/5/18

REVISIONS

OVERALL SUBDIVISION PLAN
TAX MAP 157 – LOTS 1 & 2
TAX MAP 164 – LOTS 1, 2, 3, & 4

OWNER OF RECORD
TAX MAP 157, LOT 2 &
TAX MAP 164, LOTS 1, 2, & 3:
PORTSMOUTH LUMBER AND HARDWARE, LLC
OWNER OF RECORD
TAX MAP 157, LOT 1
CLIPPER TRADERS, LLC
OWNER OF RECORD
TAX MAP 164, LOT 4:
BOSTON AND MAINE CORPORATION
PROPERTY LOCATED AT:
105 BARTLETT STREET
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE 1"=100' SHEET 1 OF 4 FEBRUARY 2018

FB 243 PG 22 2429

PROPOSED LOT AREAS & TAX MAP NUMBERS

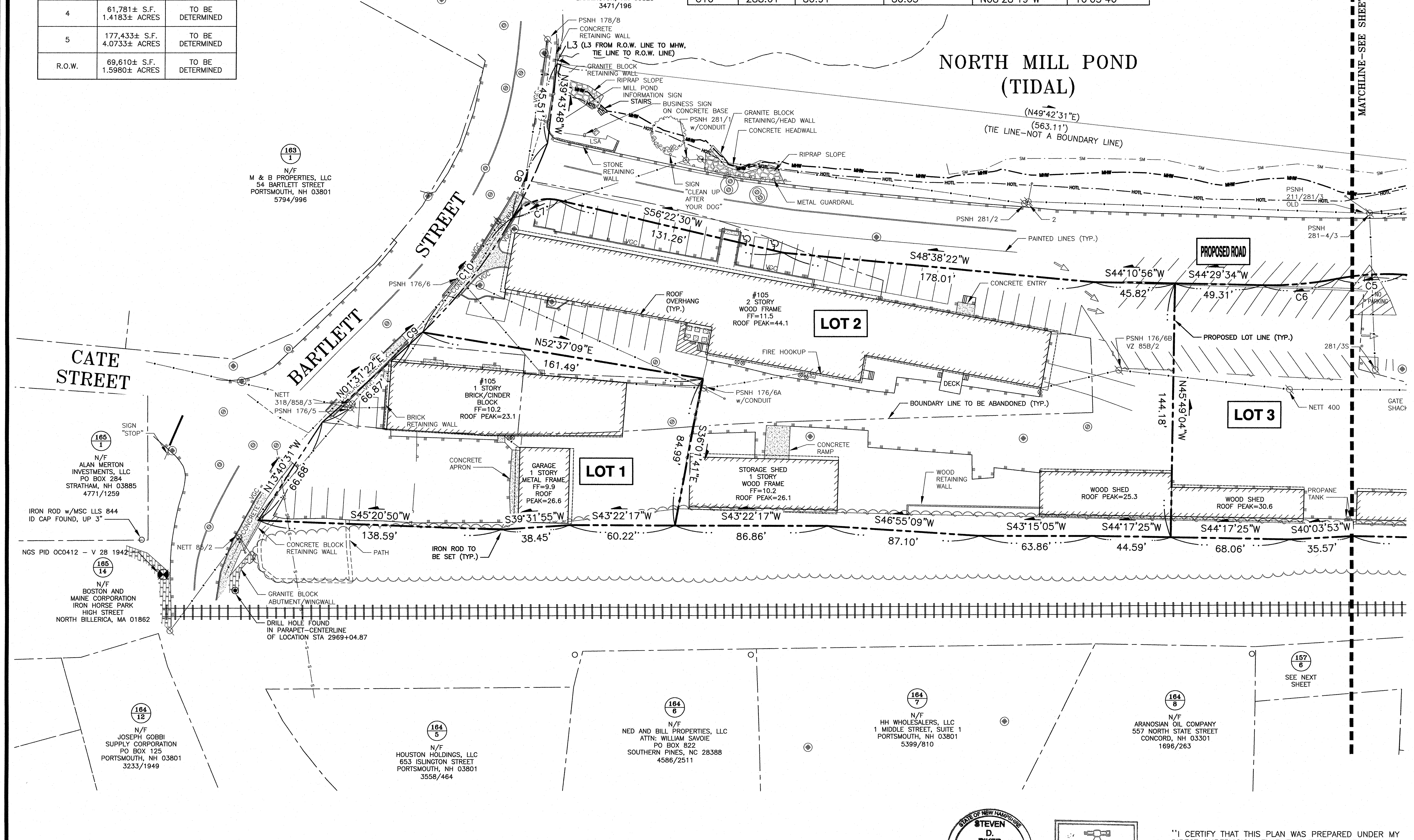
LOT	AREA	TM/LOT #
1	20,678 S.F. 0.4747 ACRES	TO BE DETERMINED
2	51,952 S.F. 1.1927 ACRES	TO BE DETERMINED
3	102,003 S.F. 2.3417 ACRES	TO BE DETERMINED
4	61,781± S.F. 1.4183± ACRES	TO BE DETERMINED
5	177,433± S.F. 4.0733± ACRES	TO BE DETERMINED
R.O.W.	69,610± S.F. 1.5980± ACRES	TO BE DETERMINED

LENGTH TABLE

LINE	BEARING	DISTANCE
L1	S46°54'17"E	11.80'
L2	S46°49'43"E	11.20'
L3	N59°39'51"E	2'±

CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	60.00'	266.77'	95.37'	S05°48'40"E	254°44'33"
C2	60.00'	185.84'	119.97'	S44°26'53"E	177°28'07"
C3	60.00'	80.92'	74.93'	S82°55'23"W	77°16'26"
C4	35.00'	45.66'	42.49'	S84°11'20"W	74°44'33"
C5	150.00'	38.24'	38.14'	S39°30'52"W	14°36'24"
C6	200.00'	42.87'	42.79'	S38°21'07"W	12°16'55"
C7	25.00'	31.80'	29.70'	S19°56'09"W	72°52'42"
C8	288.61'	48.94'	48.88'	N21°21'40"W	9°42'56"
C9	288.61'	9.89'	9.89'	N00°32'28"E	1°57'48"
C10	288.61'	80.91'	80.65'	N08°28'19"W	16°03'46"



APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN ____________ DATE ____________

"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."

10/16/2018

PAUL A DOBBERSTEIN, LLS — DATE

STATE OF NEW HAMPSHIRE STEVEN D. RIKER No. 219 CERTIFIED WETLAND SCIENTIST

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) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 157 AS LOTS 1 & 2 AND ASSESSOR'S MAP 164 AS LOTS 1, 2, 3, & 4.

2) PORTIONS OF MAP 157 LOT 1 AND MAP 164 LOT 4 ARE IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE DATE MAY 17, 2005.

3) PARCELS ARE LOCATED IN CHARACTER DISTRICT 4-W (CD4-W), CHARACTER DISTRICT 4-L1 (CD4-L1) AND TRANSPORTATION CORRIDOR (TC) ZONING DISTRICTS.

4) THE PURPOSE OF THIS PLAN IS TO SHOW THE CONSOLIDATION AND SUBDIVISION OF THE PARCELS INTO 5 LOTS AND A ROAD, AND TO RELOCATE THE LOT LINE OF MAP 164 LOT 4.

NO.	DESCRIPTION	DATE
4	RE-PLOT	10/16/18
3	RENAME PROPOSED ROAD	7/17/18
2	ISSUED FOR APPROVAL	6/18/18
1	ISSUED FOR CONCEPTUAL REVIEW	3/5/18
0	ISSUED FOR COMMENT	2/12/18

REVISIONS

SUBDIVISION PLAN TAX MAP 157 – LOTS 1 & 2 TAX MAP 164 – LOTS 1, 2, 3, & 4

OWNER OF RECORD
TAX MAP 157, LOT 2 &
TAX MAP 164, LOTS 1, 2, & 3:
PORTSMOUTH LUMBER AND HARDWARE, LLC
OWNER OF RECORD
TAX MAP 157, LOT 1
CLIPPER TRADERS, LLC
OWNER OF RECORD
TAX MAP 164, LOT 4:
BOSTON AND MAINE CORPORATION
PROPERTY LOCATED AT:
105 BARTLETT STREET
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE 1"=30' — SHEET 2 OF 4 — FEBRUARY 2018

FB 243 PG 22 — 2429

CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	60.00'	266.77'	95.37'	S05°48'40"E	254°44'33"
C2	60.00'	185.84'	119.97'	S44°26'53"E	177°28'07"
C3	60.00'	80.92'	74.93'	S82°55'23"W	77°16'26"
C4	35.00'	45.66'	42.49'	S84°11'20"W	74°44'33"
C5	150.00'	38.24'	38.14'	S39°30'52"W	14°36'24"
C6	200.00'	42.87'	42.79'	S38°21'07"W	12°16'55"
C7	25.00'	31.80'	29.70'	S19°56'09"W	72°52'42"
C8	288.61'	48.94'	48.88'	N21°21'40"W	9°42'56"
C9	288.61'	9.89'	9.89'	N00°32'28"E	1°57'48"
C10	288.61'	80.91'	80.65'	N08°28'19"W	16°03'46"

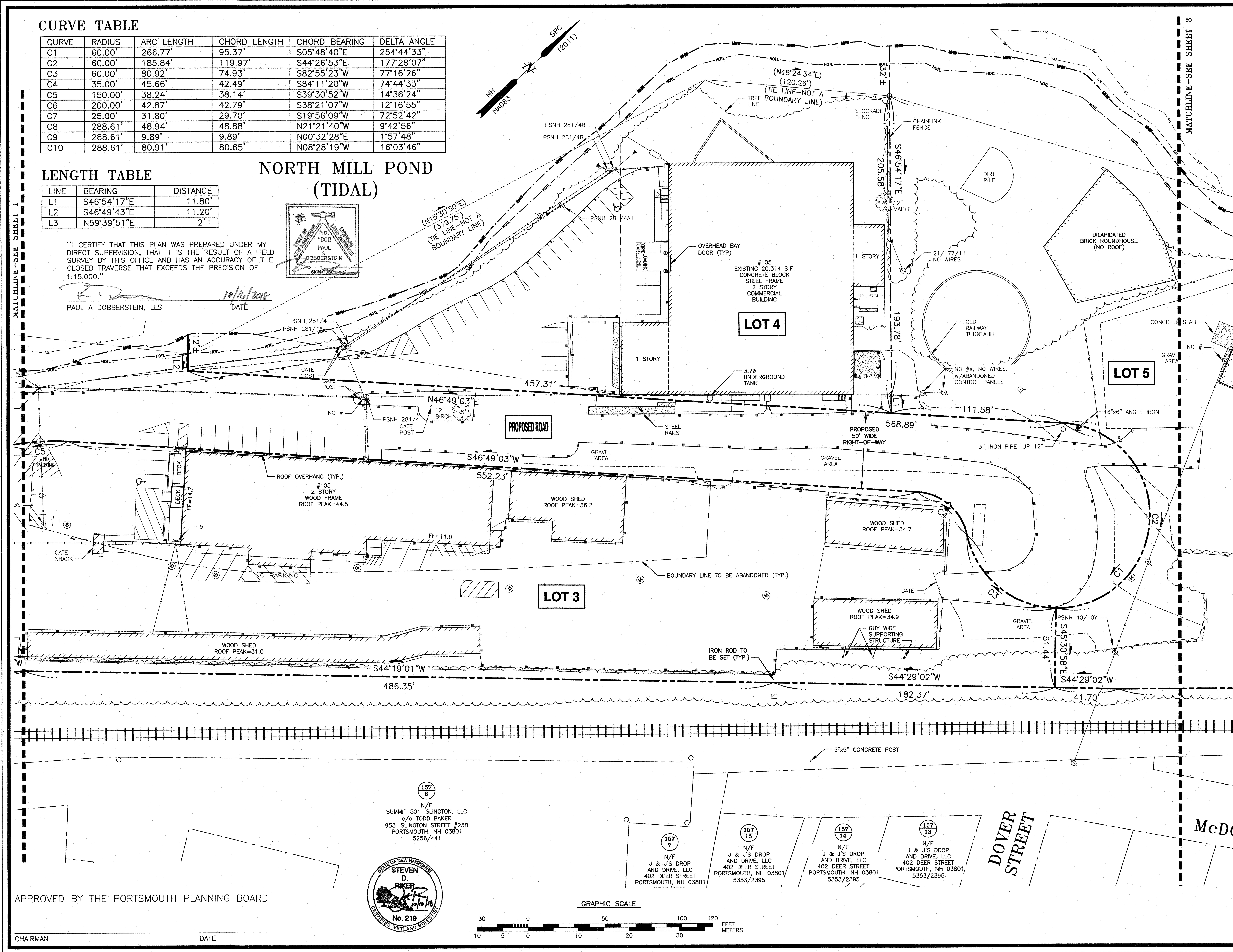
LENGTH TABLE

LINE	BEARING	DISTANCE
L1	S46°54'17"E	11.80'
L2	S46°49'43"E	11.20'
L3	N59°39'51"E	2'±

"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 A THE CLOSED TRAVERSE THAT EXCEEDS THE PRECISION OF 1:15,000."

PAUL A DOBBERSTEIN, LLS — DATE 10/16/2018

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



STATE OF NEW HAMPSHIRE STEVEN D. RIKER No. 219 CERTIFIED WETLAND SCIENTIST 10/16/18

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) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 157 AS LOTS 1 & 2 AND ASSESSOR'S MAP 164 AS LOTS 1, 2, 3, & 4.

2) PORTIONS OF MAP 157 LOT 1 AND MAP 164 LOT 4 ARE IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE DATE MAY 17, 2005.

3) PARCELS ARE LOCATED IN CHARACTER DISTRICT 4–W (CD4–W), CHARACTER DISTRICT 4–L1 (CD4–L1) AND TRANSPORTATION CORRIDOR (TC) ZONING DISTRICTS.

4) THE PURPOSE OF THIS PLAN IS TO SHOW THE CONSOLIDATION AND SUBDIVISION OF THE PARCELS INTO 5 LOTS AND A ROAD, AND TO RELOCATE THE LOT LINE OF MAP 164 LOT 4.

NO.	DESCRIPTION	DATE
4	LABEL ROW	10/16/18
3	RENAME PROPOSED ROAD	7/17/18
2	ISSUED FOR APPROVAL	6/18/18
1	ISSUED FOR CONCEPTUAL REVIEW	3/5/18
0	ISSUED FOR COMMENT	2/12/18

REVISIONS

SUBDIVISION PLAN
TAX MAP 157 – LOTS 1 & 2
TAX MAP 164 – LOTS 1, 2, 3, & 4

OWNER OF RECORD
TAX MAP 157, LOT 2 &
TAX MAP 164, LOTS 1, 2, & 3:
PORTSMOUTH LUMBER AND HARDWARE, LLC
OWNER OF RECORD
TAX MAP 157, LOT 1
CLIPPER TRADERS, LLC
OWNER OF RECORD
TAX MAP 164, LOT 4:
BOSTON AND MAINE CORPORATION
PROPERTY LOCATED AT:
105 BARTLETT STREET
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE 1"=30' — SHEET 3 OF 4 — FEBRUARY 2018

FB 243 PG 22 — 2429

VARIANCES GRANTED FROM PORTSMOUTH ZONING ORDINANCE

PROPOSED LOT 3 (CD4–W):

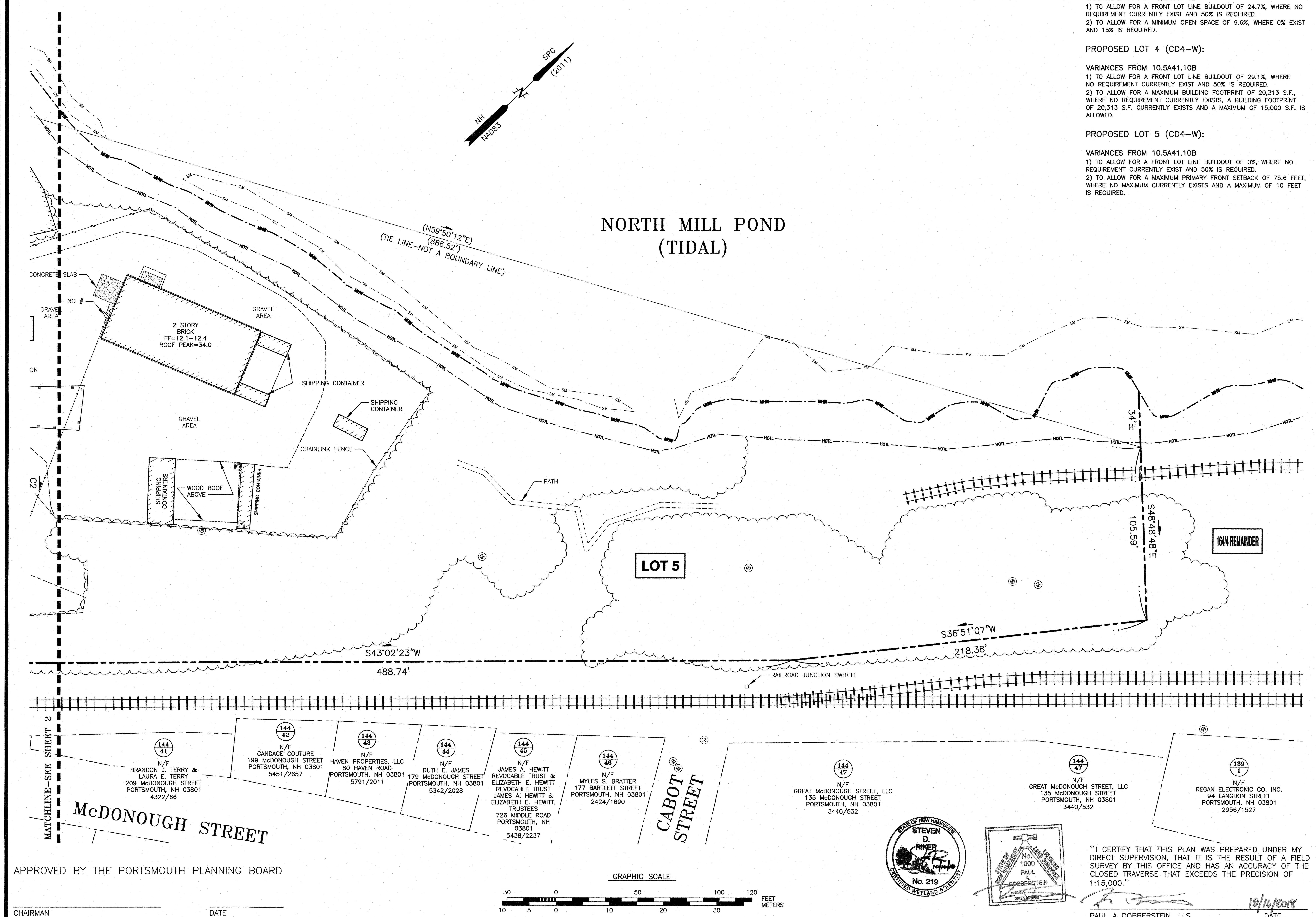
VARIANCES FROM 10.5A41.10B
1) TO ALLOW FOR A FRONT LOT LINE BUILDOUT OF 24.7%, WHERE NO REQUIREMENT CURRENTLY EXIST AND 50% IS REQUIRED.
2) TO ALLOW FOR A MINIMUM OPEN SPACE OF 9.6%, WHERE 0% EXIST AND 15% IS REQUIRED.

PROPOSED LOT 4 (CD4–W):

VARIANCES FROM 10.5A41.10B
1) TO ALLOW FOR A FRONT LOT LINE BUILDOUT OF 29.1%, WHERE NO REQUIREMENT CURRENTLY EXIST AND 50% IS REQUIRED.
2) TO ALLOW FOR A MAXIMUM BUILDING FOOTPRINT OF 20,313 S.F., WHERE NO REQUIREMENT CURRENTLY EXISTS, A BUILDING FOOTPRINT OF 20,313 S.F. CURRENTLY EXISTS AND A MAXIMUM OF 15,000 S.F. IS ALLOWED.

PROPOSED LOT 5 (CD4–W):

VARIANCES FROM 10.5A41.10B
1) TO ALLOW FOR A FRONT LOT LINE BUILDOUT OF 0%, WHERE NO REQUIREMENT CURRENTLY EXIST AND 50% IS REQUIRED.
2) TO ALLOW FOR A MAXIMUM PRIMARY FRONT SETBACK OF 75.6 FEET, WHERE NO MAXIMUM CURRENTLY EXISTS AND A MAXIMUM OF 10 FEET IS REQUIRED.



APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

"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."

10/16/2018

PAUL A DOBBERSTEIN, LLS 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) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 157 AS LOTS 1 & 2 AND ASSESSOR'S MAP 164 AS LOTS 1, 2, 3, & 4.

2) PORTIONS OF MAP 157 LOT 1 AND MAP 164 LOT 4 ARE IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE DATE MAY 17, 2005.

3) PARCELS ARE LOCATED IN CHARACTER DISTRICT 4–W (CD4–W), CHARACTER DISTRICT 4–L1 (CD4–L1) AND TRANSPORTATION CORRIDOR (TC) ZONING DISTRICTS.

4) THE PURPOSE OF THIS PLAN IS TO SHOW THE CONSOLIDATION AND SUBDIVISION OF THE PARCELS INTO 5 LOTS AND A ROAD, AND TO RELOCATE THE LOT LINE OF MAP 164 LOT 4.

NO.	DESCRIPTION	DATE
4	UPDATE ZONING	10/16/18
3	ADD GRANTED VARIANCES	7/17/18
2	ISSUED FOR APPROVAL	6/18/18
1	ISSUED FOR CONCEPTUAL REVIEW	3/5/18
0	ISSUED FOR COMMENT	2/12/18

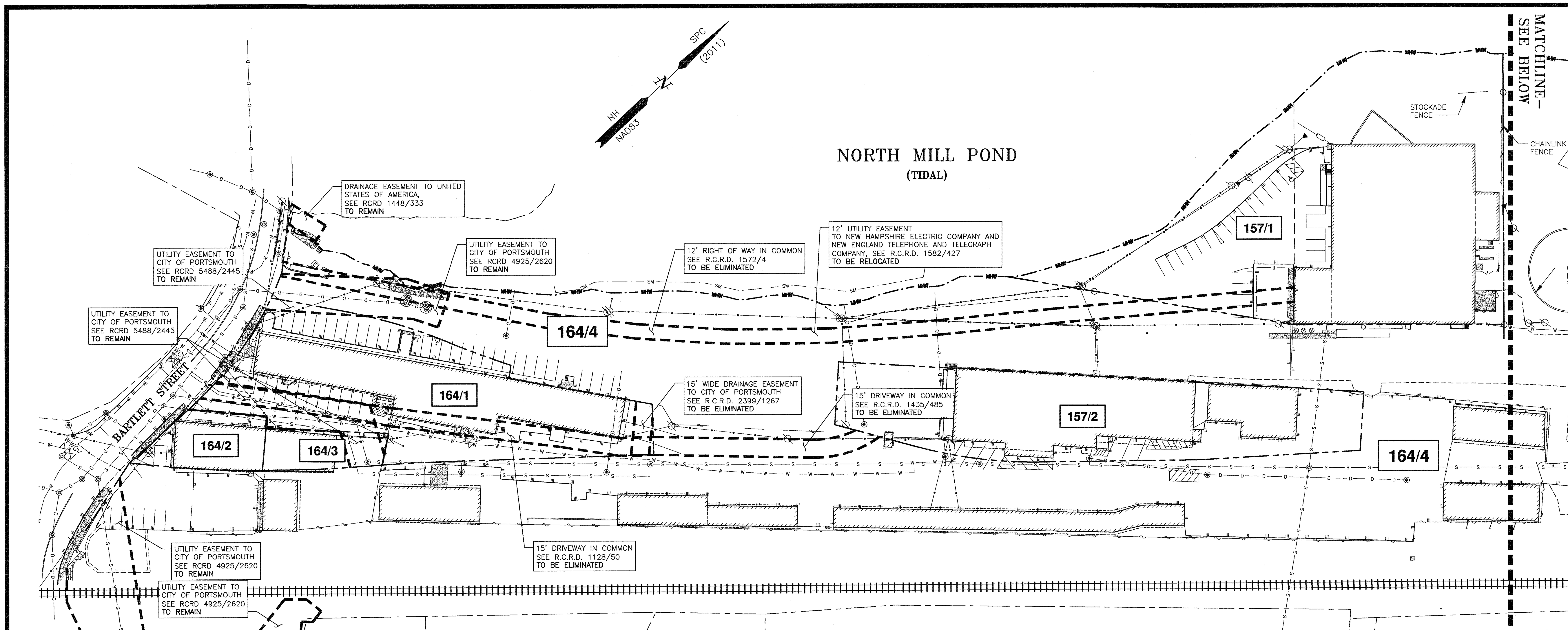
REVISIONS

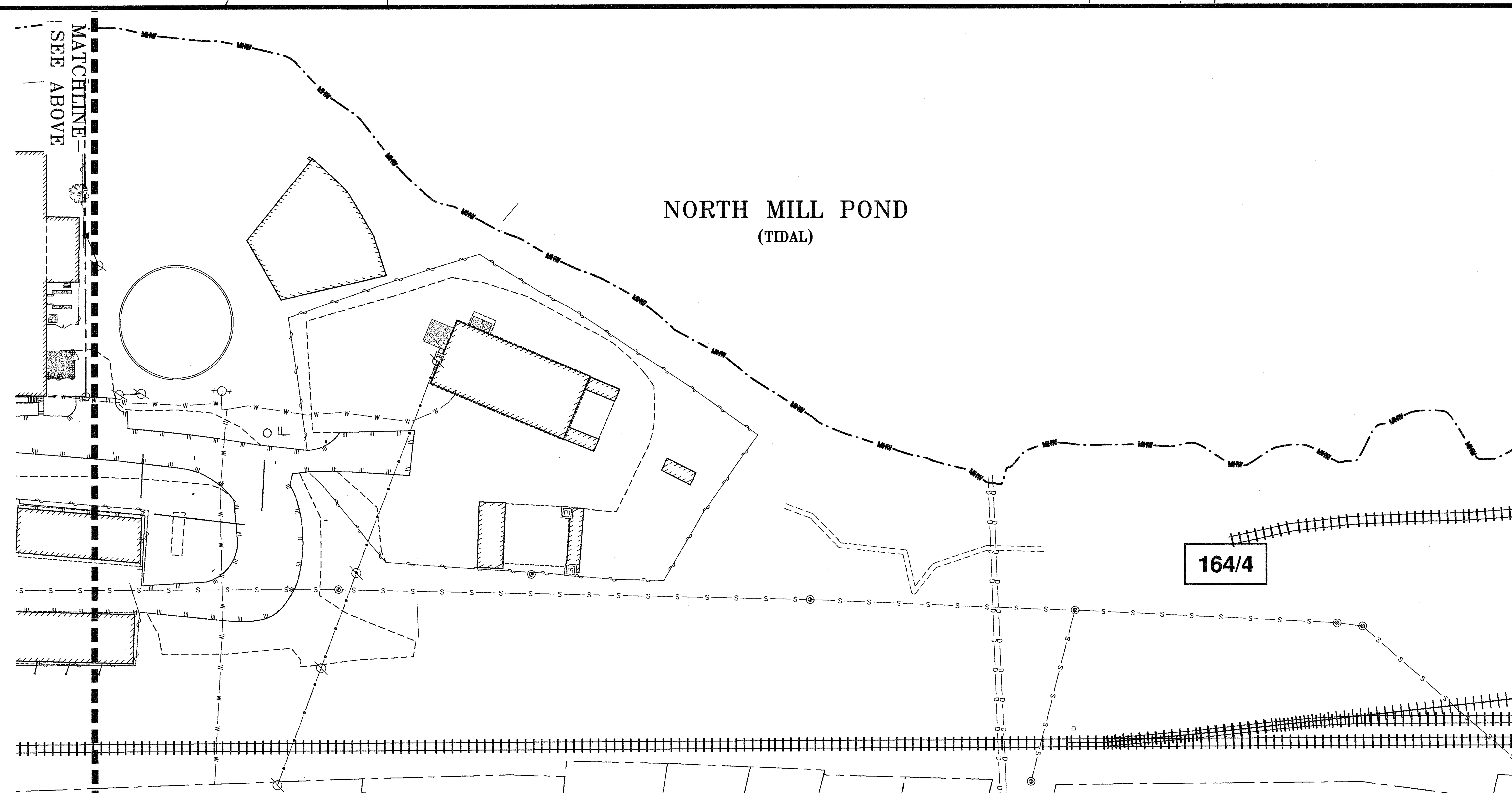
SUBDIVISION PLAN TAX MAP 157 – LOTS 1 & 2 TAX MAP 164 – LOTS 1, 2, 3, & 4

OWNER OF RECORD
TAX MAP 157, LOT 2 &
TAX MAP 164, LOTS 1, 2, & 3:
PORTSMOUTH LUMBER AND HARDWARE, LLC
OWNER OF RECORD
TAX MAP 157, LOT 1
CLIPPER TRADERS, LLC
OWNER OF RECORD
TAX MAP 164, LOT 4:
BOSTON AND MAINE CORPORATION
PROPERTY LOCATED AT:
105 BARTLETT STREET
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE 1"=30' SHEET 4 OF 4 *FEBRUARY 2018*

FB 243 PG 22 2429





GRAPHIC SCALE

50 40 30 20 10 0 50 100 150 200 FEET

15 10 5 0 10 20 30 40 50 60 METERS

"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

10/16/2018
DATE

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

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) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 157 AS LOTS 1 & 2 AND ASSESSOR'S MAP 164 AS LOTS 1, 2, 3, & 4.

2) PORTIONS OF MAP 157 LOT 1 AND MAP 164 LOT 4 ARE IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE DATE MAY 17, 2005.

3) THE PURPOSE OF THIS PLAN IS TO SHOW THE EXISTING EASEMENTS ENCUMBERING AND BENEFITING THE PARCELS.

4) HORIZONTAL DATUM AND BASIS OF BEARINGS IS THE NH STATE PLANE COORDINATE SYSTEM NAD 83 (2011). BASIS OF HORIZONTAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS.

0	ISSUED FOR COMMENT	10/16/18
NO.	DESCRIPTION	DATE

REVISIONS

EXISTING EASEMENT PLAN
TAX MAP 157 – LOTS 1 & 2
TAX MAP 164 – LOTS 1, 2, 3, & 4

OWNER OF RECORD
TAX MAP 157, LOT 2 &
TAX MAP 164, LOTS 1, 2, & 3:
PORTSMOUTH LUMBER AND HARDWARE, LLC

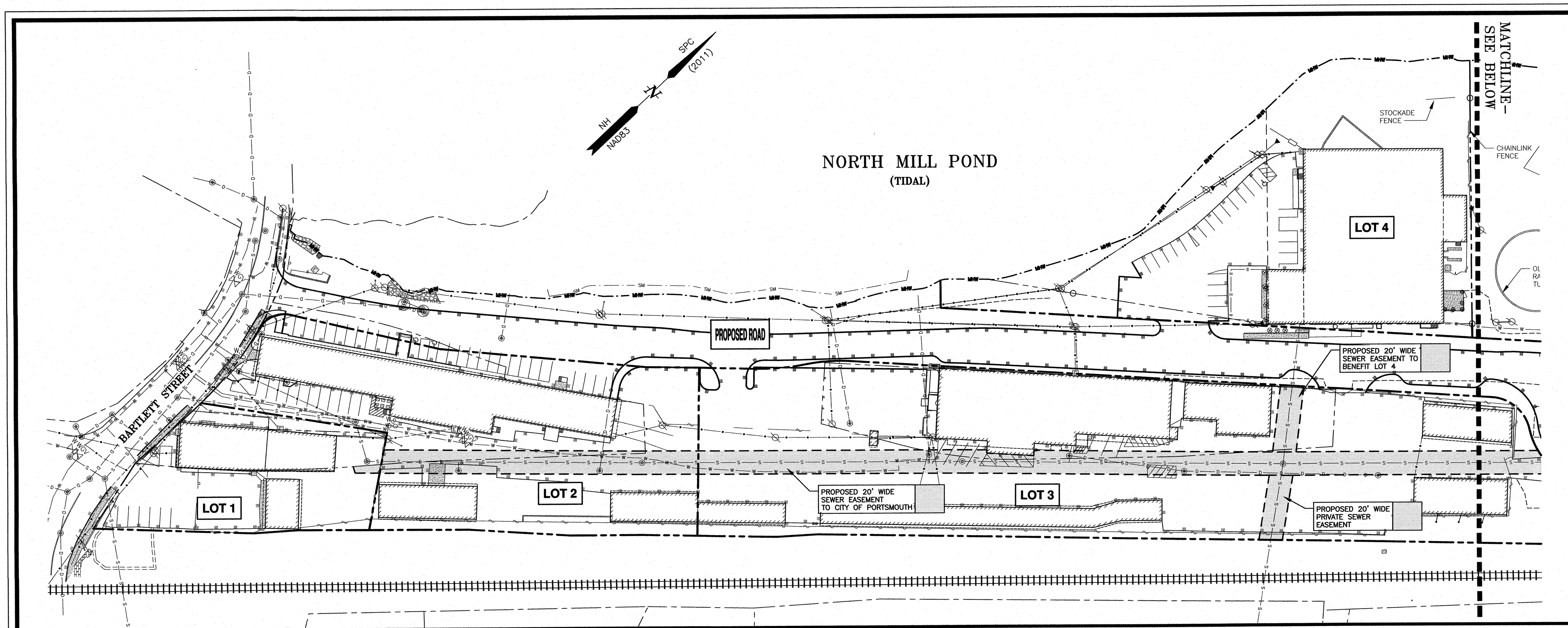
OWNER OF RECORD
TAX MAP 157, LOT 1
CLIPPER TRADERS, LLC

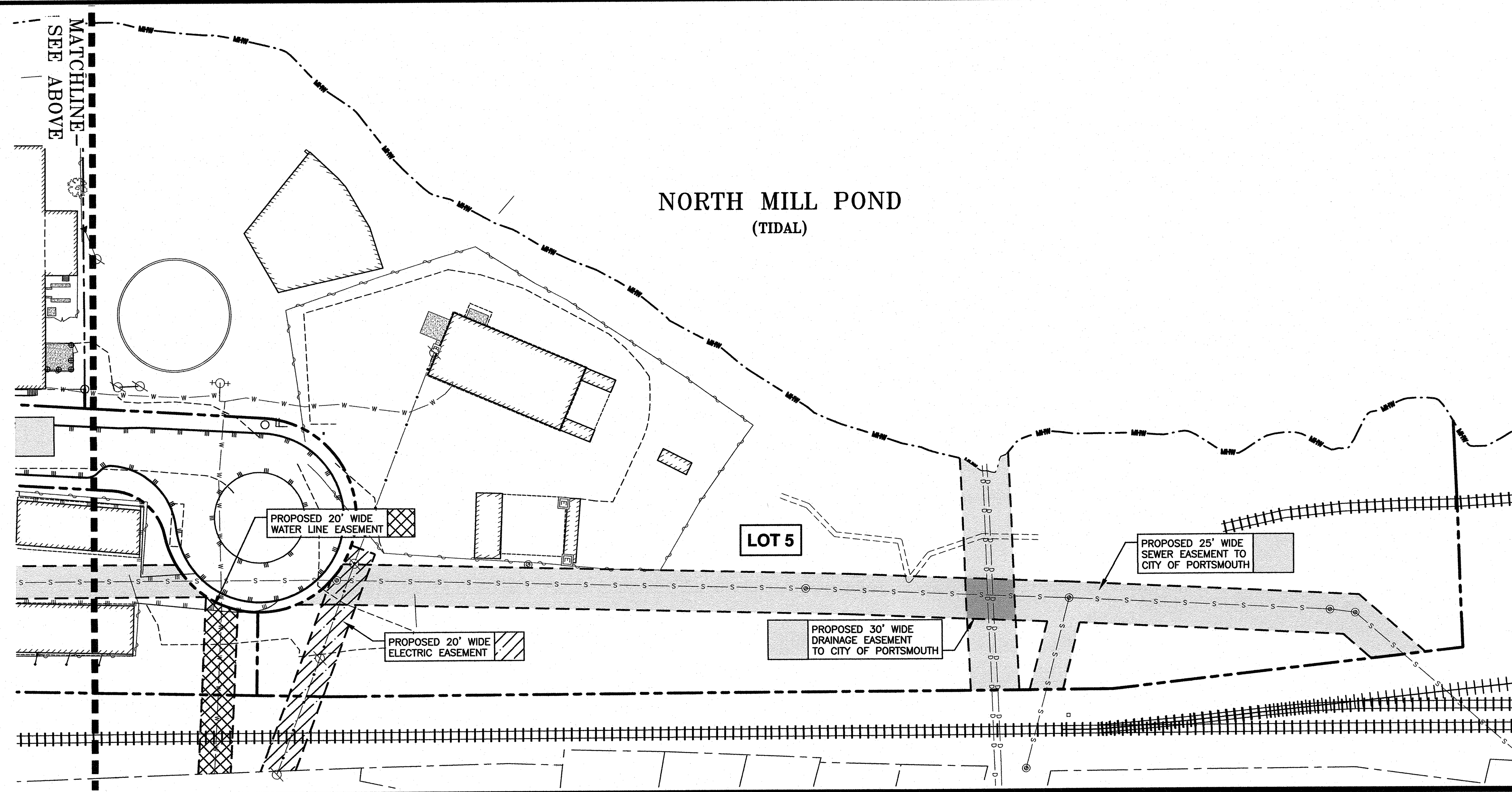
OWNER OF RECORD
TAX MAP 164, LOT 4:
BOSTON AND MAINE CORPORATION

PROPERTY LOCATED AT:
105 BARTLETT STREET
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE 1"=50'   OCTOBER 2018

FB 243 PG 22   2429





GRAPHIC SCALE

50 40 30 20 10 0 50 100 150 200 FEET

15 10 5 0 10 20 30 40 50 60 METERS

"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 — DATE 10/16/2018

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

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) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 157 AS LOTS 1 & 2 AND ASSESSOR'S MAP 164 AS LOTS 1, 2, 3, & 4.

2) PORTIONS OF MAP 157 LOT 1 AND MAP 164 LOT 4 ARE IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE DATE MAY 17, 2005.

3) THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED EASEMENTS ENCUMBERING AND BENEFITING THE PARCELS.

4) HORIZONTAL DATUM AND BASIS OF BEARINGS IS THE NH STATE PLANE COORDINATE SYSTEM NAD 83 (2011). BASIS OF HORIZONTAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS.

5) THE CITY OF PORTSMOUTH WILL BE GRANTED A BLANKET EASEMENT, ALONG WITH OTHER UTILITIES, WITHIN THE AREA OF THE PROPOSED ROAD.

0	ISSUED FOR COMMENT	10/16/18
NO.	DESCRIPTION	DATE

REVISIONS

PROPOSED EASEMENT PLAN TAX MAP 157 – LOTS 1 & 2 TAX MAP 164 – LOTS 1, 2, 3, & 4

OWNER OF RECORD
TAX MAP 157, LOT 2 &
TAX MAP 164, LOTS 1, 2, & 3:
PORTSMOUTH LUMBER AND HARDWARE, LLC

OWNER OF RECORD
TAX MAP 157, LOT 1
CLIPPER TRADERS, LLC

OWNER OF RECORD
TAX MAP 164, LOT 4:
BOSTON AND MAINE CORPORATION

PROPERTY LOCATED AT:
105 BARTLETT STREET
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE 1"=50' — OCTOBER 2018

FB 243 PG 22 — 2429

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:

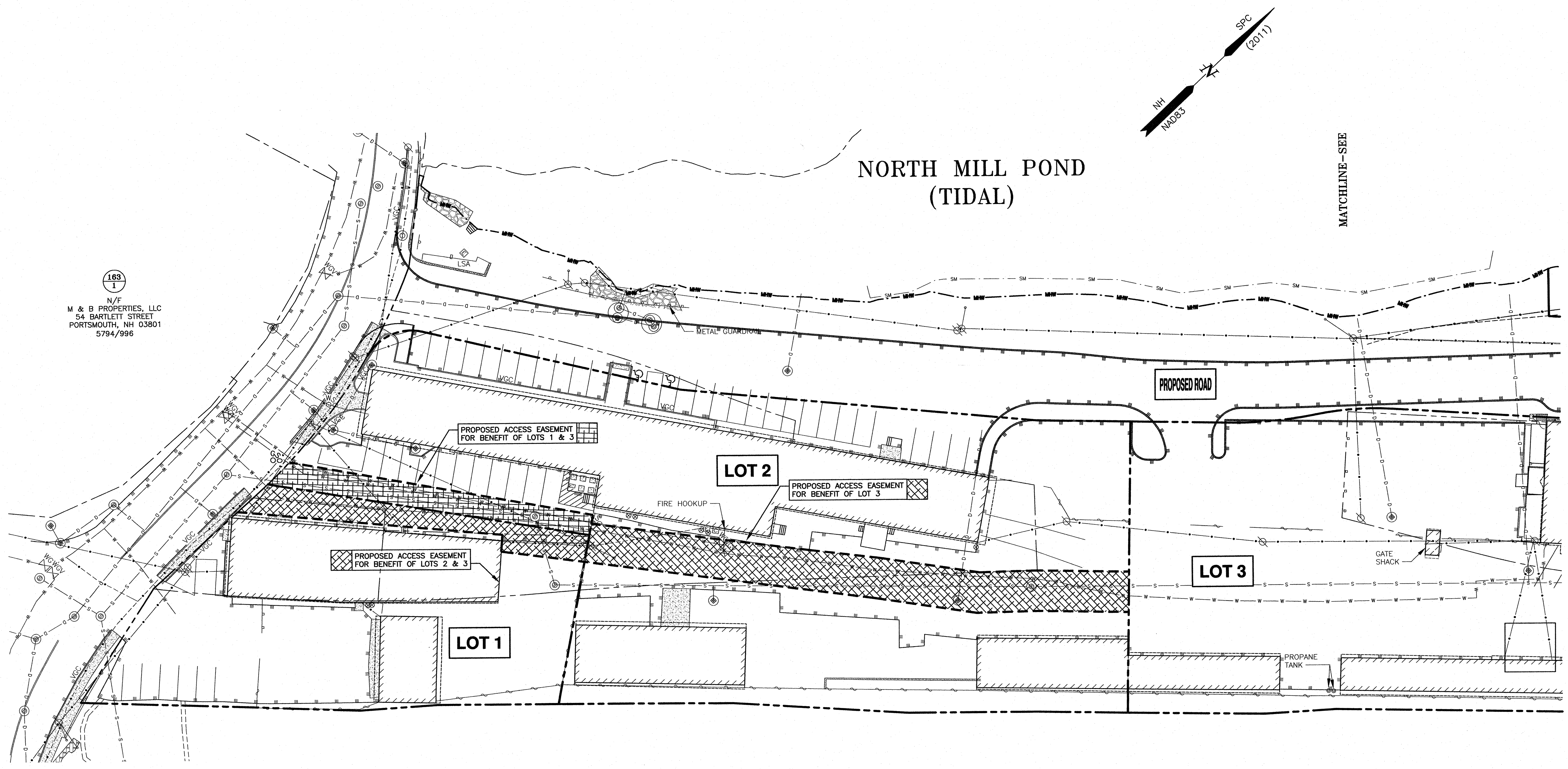
1) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 157 AS LOTS 1 & 2 AND ASSESSOR'S MAP 164 AS LOTS 1, 2, 3, & 4.

2) PORTIONS OF MAP 157 LOT 1 AND MAP 164 LOT 4 ARE IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE DATE MAY 17, 2005.

3) THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED EASEMENTS ENCUMBERING AND BENEFITING THE PARCELS.

4) HORIZONTAL DATUM AND BASIS OF BEARINGS IS THE NH STATE PLANE COORDINATE SYSTEM NAD 83 (2011). BASIS OF HORIZONTAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS.

5) THE CITY OF PORTSMOUTH WILL BE GRANTED A BLANKET EASEMENT, ALONG WITH OTHER UTILITIES, WITHIN THE AREA OF THE PROPOSED ROAD.



APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

GRAPHIC SCALE

30 0 50 100 120 FEET
10 5 0 10 20 30 METERS

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

"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."

10/16/2018

PAUL A DOBBERSTEIN, LLS DATE

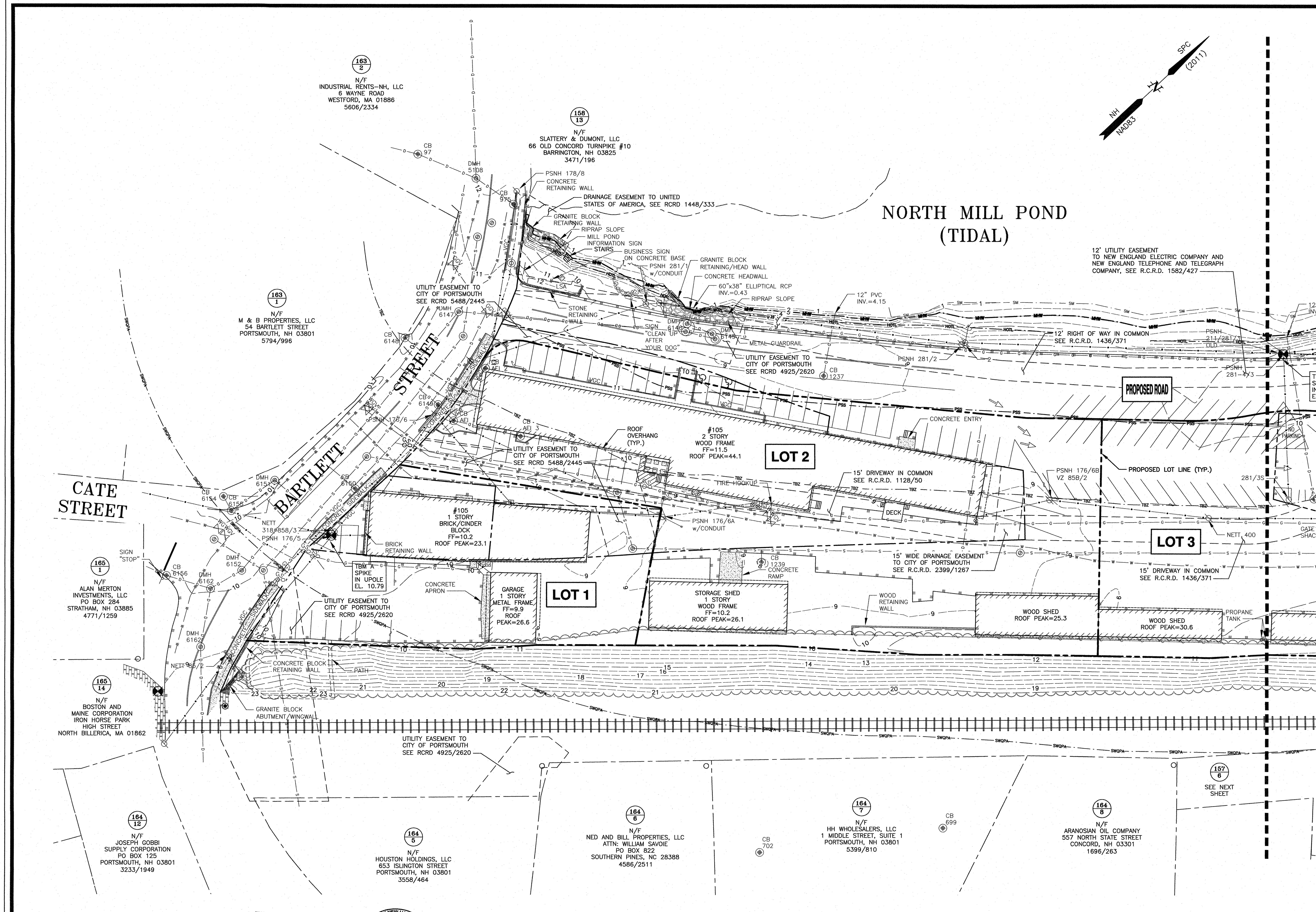
0	ISSUED FOR COMMENT	10/16/18
NO.	DESCRIPTION	DATE
REVISIONS		

PROPOSED EASEMENT PLAN
TAX MAP 157 - LOTS 1 & 2
TAX MAP 164 - LOTS 1, 2, 3, & 4

OWNER OF RECORD
TAX MAP 157, LOT 2 &
TAX MAP 164, LOTS 1, 2, & 3:
PORTSMOUTH LUMBER AND HARDWARE, LLC
OWNER OF RECORD
TAX MAP 157, LOT 1
CLIPPER TRADERS, LLC
OWNER OF RECORD
TAX MAP 164, LOT 4:
BOSTON AND MAINE CORPORATION
PROPERTY LOCATED AT:
105 BARTLETT STREET
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE 1"=30' OCTOBER 2018

FB 243 PG 22 2429



"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 — DATE 10/16/2018

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

STATE OF NEW HAMPSHIRE STEVEN D. RIKER No. 219 CERTIFIED WETLAND SCIENTIST 10/16/18

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) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 157 AS LOTS 1 & 2 AND ASSESSOR'S MAP 16 AS LOTS 1, 2, 3, & 4.

2) PORTIONS OF MAP 157 LOT 1 AND MAP 164 LOT 4 ARE IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE DATE MAY 17, 2005.

3) THE PURPOSE OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS ON THE PARCELS.

4) VERTICAL DATUM IS MEAN SEA LEVEL NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS (±0.3').

5) HORIZONTAL DATUM AND BASIS OF BEARINGS IS THE NH STATE PLANE COORDINATE SYSTEM NAD 83 (2011). BASIS OF HORIZONTAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS.

SUBDIVISION PLAN
CLIPPER TRADERS, LLC
OFF BARTLETT STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	ADD EXISTING EASEMENTS	10/16/18
2	RENAME PROPOSED ROAD	7/17/18
1	ISSUED FOR CONCEPTUAL REIVEW	3/5/18
0	ISSUED FOR COMMENT	2/12/18

REVISIONS

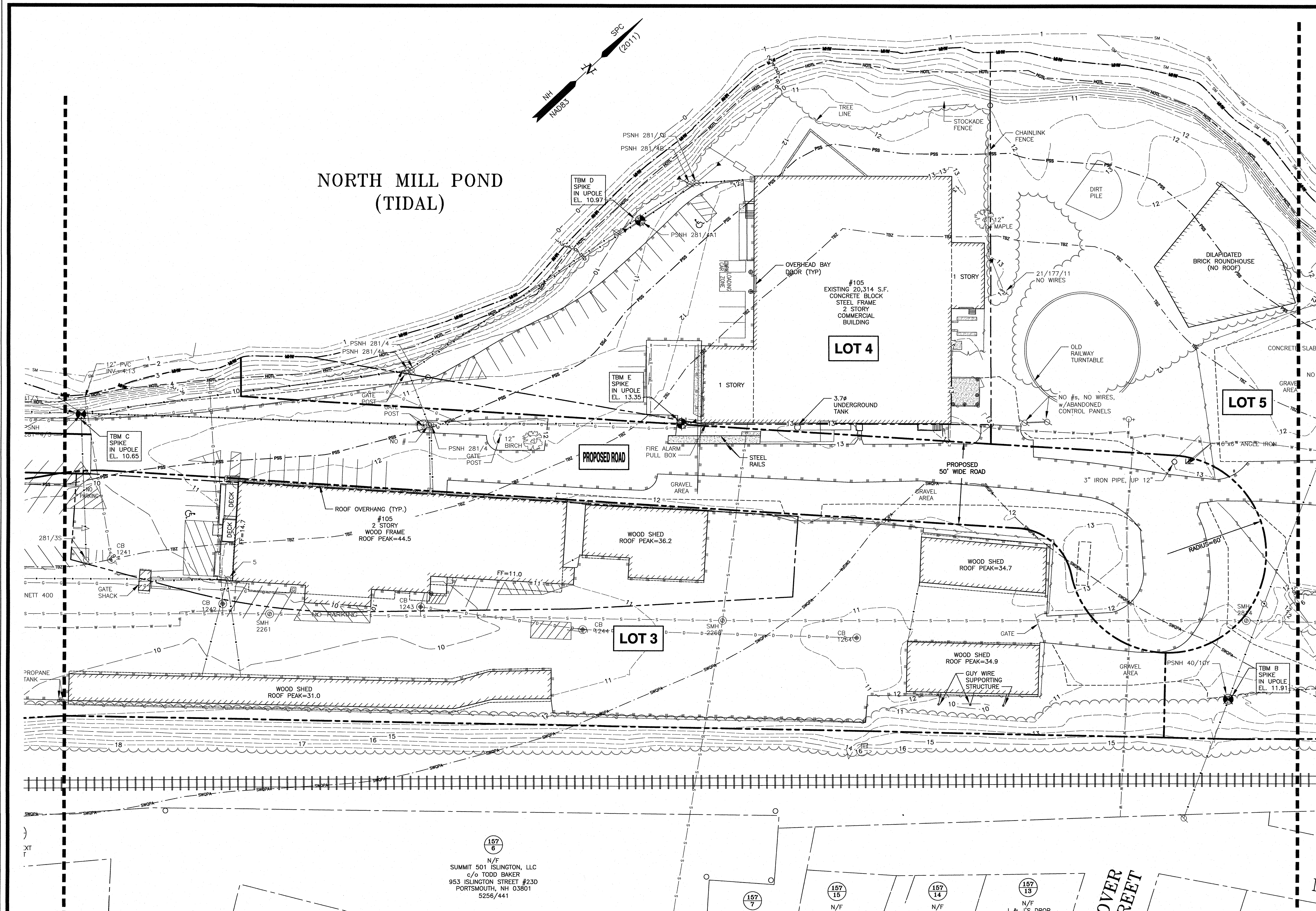
SCALE 1"=30' FEBRUARY 2018

EXISTING CONDITIONS PLAN

C1

FB 243 PG 22

2429



"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 — 10/16/2018 DATE

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

STATE OF NEW HAMPSHIRE — STEVEN D. RIKER — No. 219 — CERTIFIED WETLAND SCIENTIST — 10/16/18

GRAPHIC SCALE
30 0 50 100 120 FEET
10 5 0 10 20 30 METERS

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

NOTES:

1) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 157 AS LOTS 1 & 2 AND ASSESSOR'S MAP 16 AS LOTS 1, 2, 3, & 4.

2) PORTIONS OF MAP 157 LOT 1 AND MAP 164 LOT 4 ARE IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE DATE MAY 17, 2005.

3) THE PURPOSE OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS ON THE PARCELS.

4) VERTICAL DATUM IS MEAN SEA LEVEL NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS (±0.3').

5) HORIZONTAL DATUM AND BASIS OF BEARINGS IS THE NH STATE PLANE COORDINATE SYSTEM NAD 83 (2011). BASIS OF HORIZONTAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS.

SUBDIVISION PLAN
CLIPPER TRADERS, LLC
OFF BARTLETT STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	ADD EXISTING EASEMENTS, ADD TOPOGRAPHIC INFORMATION ON LOT 157/1	10/16/18
2	RENAME PROPOSED ROAD	7/17/18
1	ISSUED FOR CONCEPTUAL REVIEW	3/5/18
0	ISSUED FOR COMMENT	2/12/18

REVISIONS

SCALE 1"=30' — FEBRUARY 2018

EXISTING CONDITIONS PLAN

C2

FB 243 PG 22 — 2429

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:

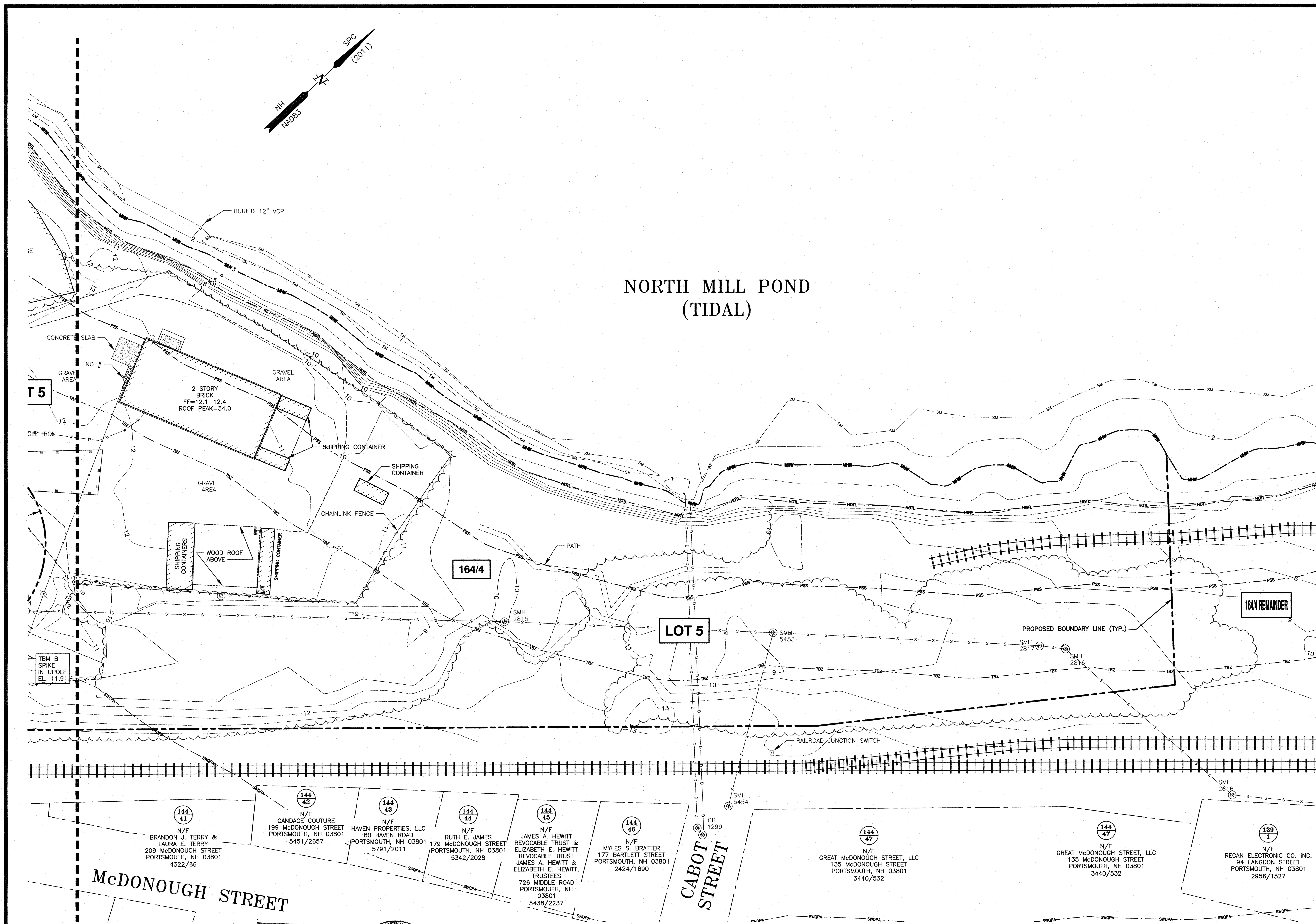
1) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 157 AS LOTS 1 & 2 AND ASSESSOR'S MAP 16 AS LOTS 1, 2, 3, & 4.

2) PORTIONS OF MAP 157 LOT 1 AND MAP 164 LOT 4 ARE IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE DATE MAY 17, 2005.

3) THE PURPOSE OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS ON THE PARCELS.

4) VERTICAL DATUM IS MEAN SEA LEVEL NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS (±0.3').

5) HORIZONTAL DATUM AND BASIS OF BEARINGS IS THE NH STATE PLANE COORDINATE SYSTEM NAD 83 (2011). BASIS OF HORIZONTAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS.



"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 — 10/16/2018 DATE

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

STATE OF NEW HAMPSHIRE STEVEN D. RIKER No. 219 CERTIFIED WETLAND SCIENTIST

GRAPHIC SCALE: 30 0 50 100 120 FEET; 10 5 0 10 20 30 METERS

SUBDIVISION PLAN
CLIPPER TRADERS, LLC
OFF BARTLETT STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	ISSUED FOR CONCEPTUAL REVIEW	3/5/18
0	ISSUED FOR COMMENT	2/12/18

REVISIONS

SCALE 1"=30' FEBRUARY 2018

EXISTING CONDITIONS PLAN

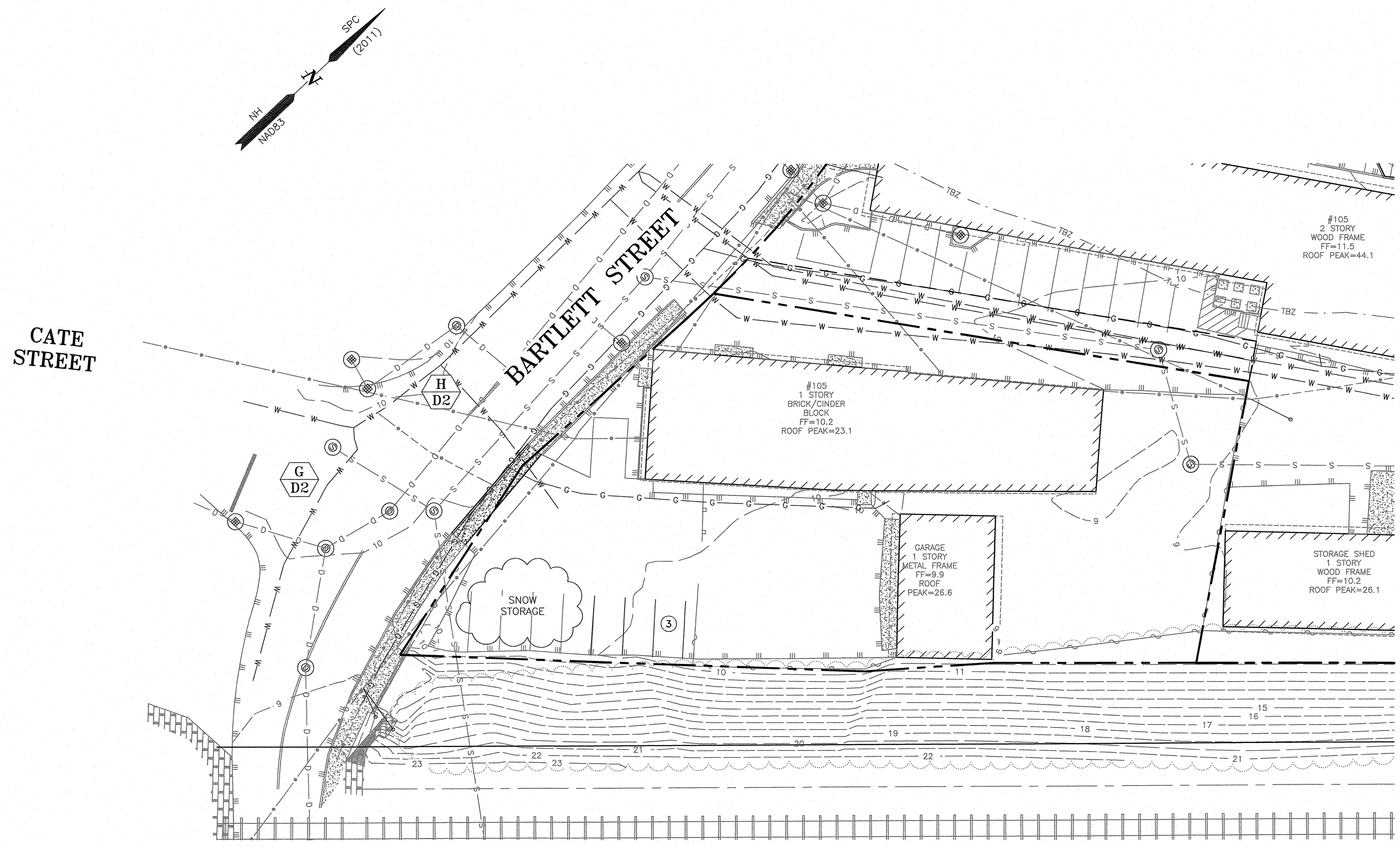
C3

FB 243 PG 22

2429

IMPERVIOUS SURFACE AREAS
(TO PROPERTY LINE)

STRUCTURE	PRE-CONSTRUCTION IMPERVIOUS (S.F.)	POST-CONSTRUCTION IMPERVIOUS (S.F.)
STRUCTURE (TO ROOF EDGE)	6,379	6,379
CONCRETE	165	169
GRAVEL	0	0
RETAINING WALLS	13	13
PAVEMENT	8,693	8,693
TOTAL	15,250	15,254
LOT SIZE	20,677	20,677
% LOT COVERAGE	73.8%	73.8%



GRAPHIC SCALE

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

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) CITY OF PORTSMOUTH ASSESSOR'S MAP AND LOT NUMBER TO BE DETERMINED.

2) OWNER OF RECORD:
PORTSMOUTH LUMBER AND HARDWARE, LLC
105 BARTLETT STREET
PORTSMOUTH, NH 03801

3) PROPOSED LOT AREA:
20,677 SF; 0.4747 ACRE

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

5) PARCEL ARE LOCATED IN CHARACTER DISTRICT 4-W (CD4-W) ZONING DISTRICT.

6) VERTICAL DATUM IS MEAN SEA LEVEL NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS (±0.3').

7) HORIZONTAL DATUM AND BASIS OF BEARINGS IS THE NH STATE PLANE COORDINATE SYSTEM NAD 83 (2011). BASIS OF HORIZONTAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS

8) THE PURPOSE OF THIS PLAN IS TO SHOW SITE DETAILS ON PROPOSED LOT 1.

9) PARKING CALCULATION:
EXISTING USE:
GARAGE (NO REQUIREMENT)
WAREHOUSE: 4,800 S.F.
4,800 S.F. x 1 Space/1,000 S.F. =
3 SPACES REQUIRED

CLIPPER TRADERS PROPOSED LOT 1 PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3		10/16/18
2	ISSUED FOR APPROVAL	9/18/18
1	ISSUED FOR APPROVAL	5/22/18
0	ISSUED FOR COMMENT	4/26/18

REVISIONS

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

SCALE 1" = 20'   APRIL 2018

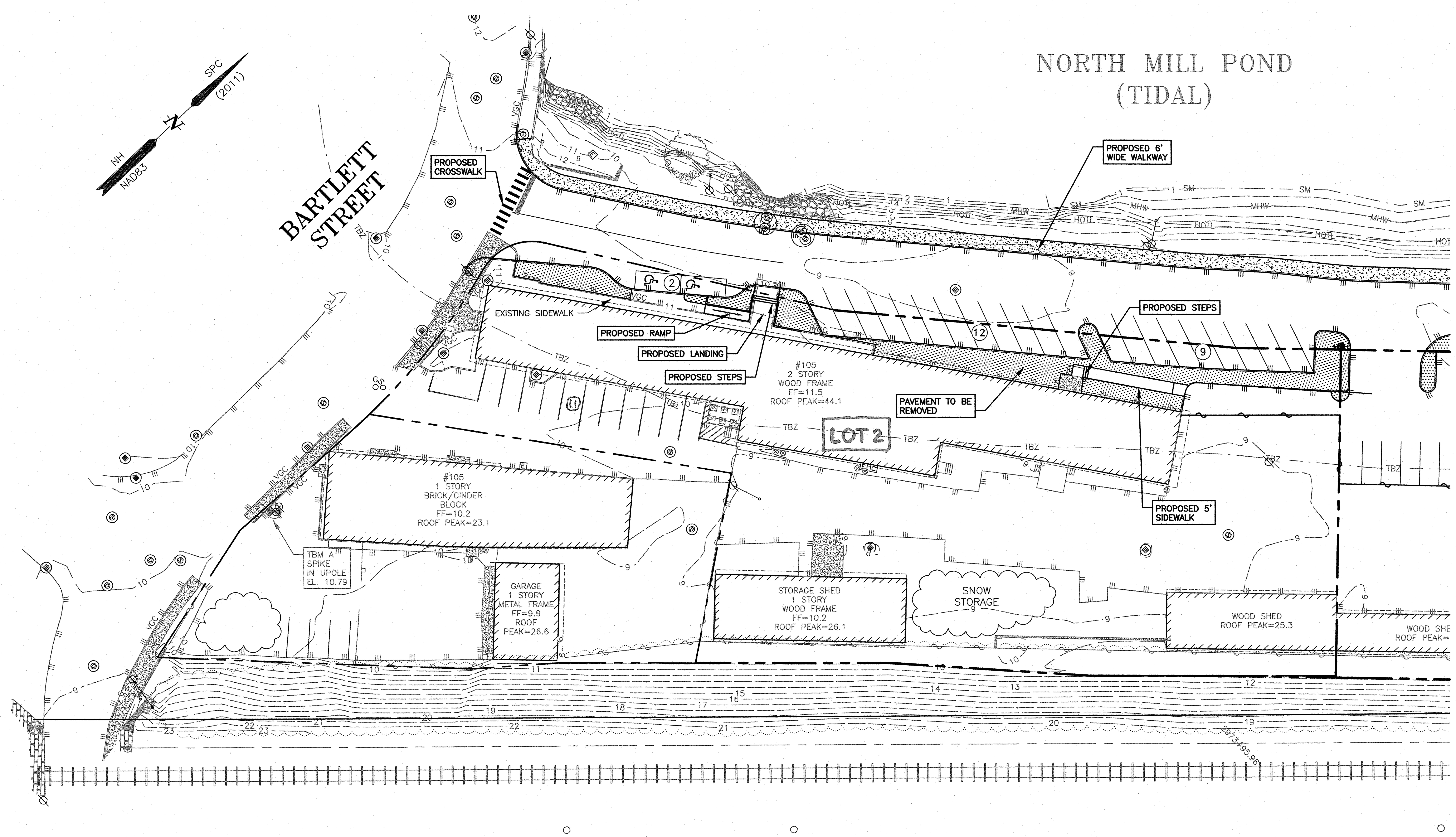
LOT 1 PLAN   C4

FB 243 PG 22   2429

J:\JOBS2\JN2400s\JN 2420s\JN 2429\2017 Site Development\Plans & Specs\Site\2429 SITE 2018.dwg, LOT 1 C2.1

IMPERVIOUS SURFACE AREAS
(TO PROPERTY LINE)

STRUCTURE	PRE-CONSTRUCTION IMPERVIOUS (S.F.)	POST-CONSTRUCTION IMPERVIOUS (S.F.)
MAIN STRUCTURE	17,203	17,203
CONCRETE, STAIRS, PADS	1,117	594
RETAINING WALLS	60	60
PAVEMENT	24,049	23,691
TOTAL	42429	41548
LOT SIZE	51,952	51,952
% LOT COVERAGE	81.7%	80.0%



GRAPHIC SCALE
1" =30'

30 20 10 0 50 100 120 HORIZONTAL
3 2 1 0 5 10 12 VERTICAL

J:\JOBS2\JN2400s\JN 2420s\JN 2429\2017 Site Development\Plans & Specs\Site\2429 SITE 2018.dwg, LOT 2 C2.2

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 TO BE SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP WITH LOT NUMBER TO BE DETERMINED.

2) OWNER OF RECORD:
PORTSMOUTH LUMBER AND HARDWARE, LLC
105 BARTLETT STREET
PORTSMOUTH, NH 03801

3) PROPOSED LOT AREA:
51,952 SF; 1.192 ACRES

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

5) PARCEL IS LOCATED IN THE CHARACTER DISTRICT 4-W (CD4-W) ZONING DISTRICT.

6) VERTICAL DATUM IS MEAN SEA LEVEL NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS (±0.3').

7) HORIZONTAL DATUM AND BASIS OF BEARINGS IS THE NH STATE PLANE COORDINATE SYSTEM NAD 83 (2011). BASIS OF HORIZONTAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS

8) PARKING REQUIREMENTS:
GENERAL RETAIL:
4832 SF X1 SP PER 300 SF = 17 SPACES
GENERAL MANUFACTURING:
1888 SF X 1 SP PER 1000SF = 2 SPACES
WHOLESALE USE/WAREHOUSE FL 1:
4550 SF X 1 SP PER 2000SF = 3 SPACES
WHOLESALE USE/WAREHOUSE FL 2:
5048 SF X 1 SP PER 2000SF = 3 SPACES
BUSINESS OFFICE:
1000 SF X 1SP/350 SF = 3 SPACES

TOTAL SPACES: 28 REQUIRED SPACES
PROPOSED SPACES:

8) THE PURPOSE OF THIS PLAN IS TO SHOW SITE DETAILS ON PROPOSED LOT 2.

CLIPPER TRADERS PROPOSED LOT 2 PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	PARKING COVERAGE	10/16/18
1	ISSUED FOR APPROVAL	5/22/18
0	ISSUED FOR COMMENT	4/26/18

REVISIONS

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

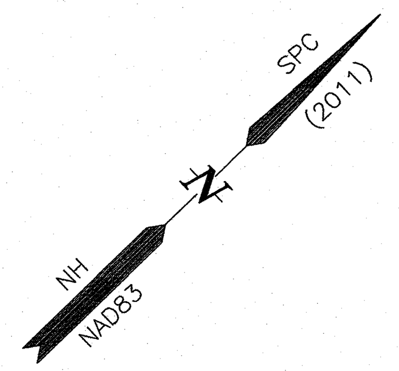
SCALE 1" = 30' APRIL 2018

LOT 2 PLAN

C5

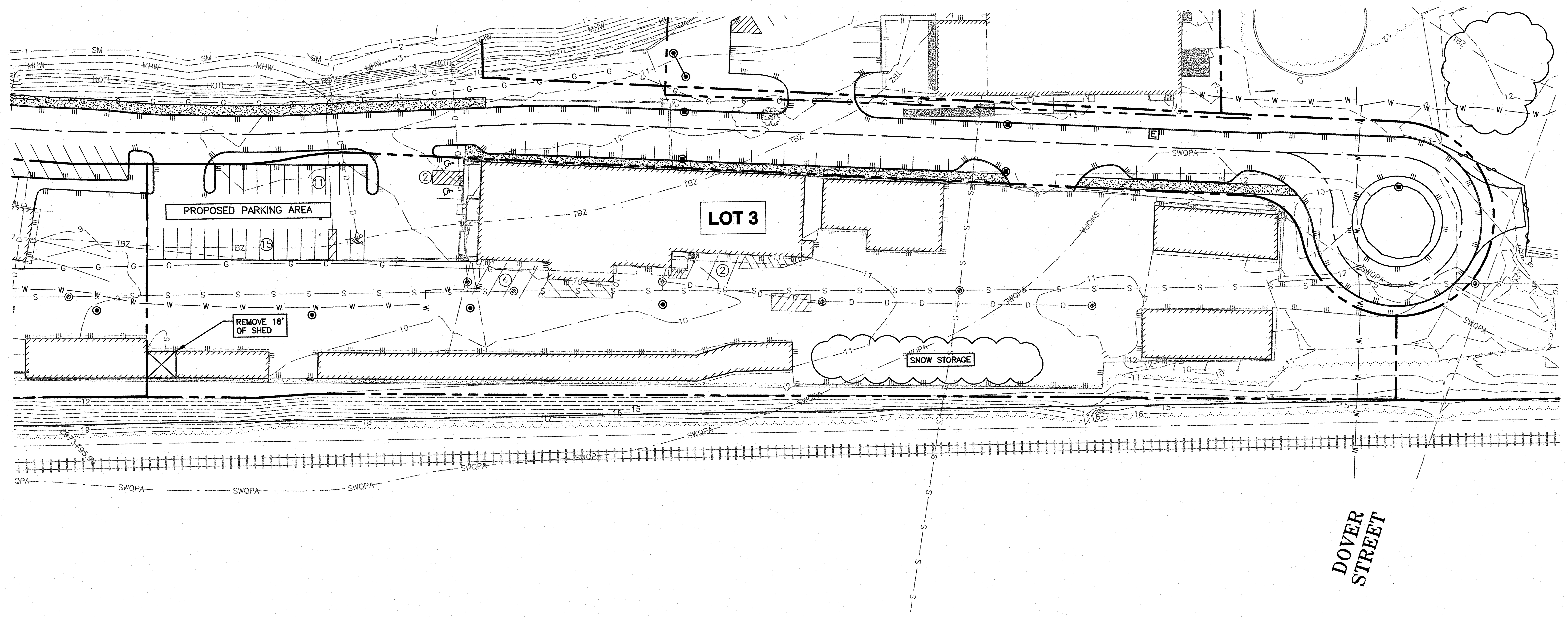
FB 243 PG 22

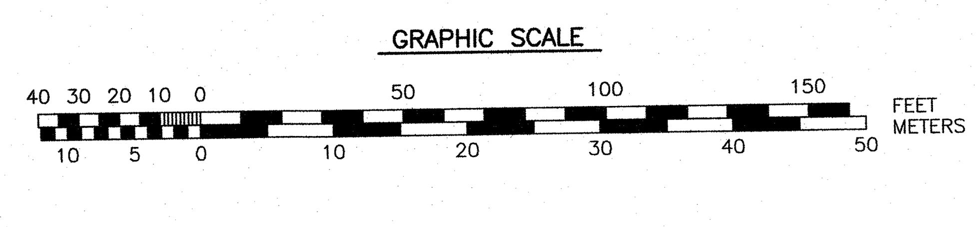
2429



IMPERVIOUS SURFACE AREAS
(TO PROPERTY LINE)

STRUCTURE	PRE-CONSTRUCTION IMPERVIOUS (S.F.)	POST-CONSTRUCTION IMPERVIOUS (S.F.)
STRUCTURES	26,062	26,062
CONCRETE & CURBING	59	59
GRAVEL	1,352	1,352
PAVEMENT	59,798	58,831
TOTAL	87,271	86,304
LOT SIZE	102,003	102,003
% LOT COVERAGE	85.6%	84.6%





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 TO BE SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP AND LOT NUMBER TO BE DETERMINED.

2) OWNER OF RECORD:
PORTSMOUTH LUMBER AND HARDWARE, LLC
105 BARTLETT STREET
PORTSMOUTH, NH 03801

3) PROPOSED LOT AREA:
102,003 SF; 2.341 ACRES

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

5) PARCEL IS LOCATED IN THE CHARACTER DISTRICT 4-W (CD4-W) ZONING DISTRICT.

6) VERTICAL DATUM IS MEAN SEA LEVEL NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS (±0.3').

7) HORIZONTAL DATUM AND BASIS OF BEARINGS IS THE NH STATE PLANE COORDINATE SYSTEM NAD 83 (2011). BASIS OF HORIZONTAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS

8) THE PURPOSE OF THIS PLAN IS TO SHOW SITE DETAILS ON PROPOSED LOT 3.

9) PROPOSED PARKING:
STORE: 8,100 SF X $\frac{1}{300}$ = 27 SPACES REQUIRED
OFFICE: 2,050 SF X $\frac{1}{350}$ = 6 SPACES REQUIRED
LUMBER OPERATIONS: 10,490 SF NO REQUIREMENT
TOTAL REQUIRED: 33
34 PROVIDED

CLIPPER TRADERS PROPOSED LOT 3 PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	PARKKING NOTES	10/16/18
1	ISSUED FOR APPROVAL	5/22/18
0	ISSUED FOR COMMENT	4/26/18

REVISIONS

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

SCALE 1" = 40'
APRIL 2018

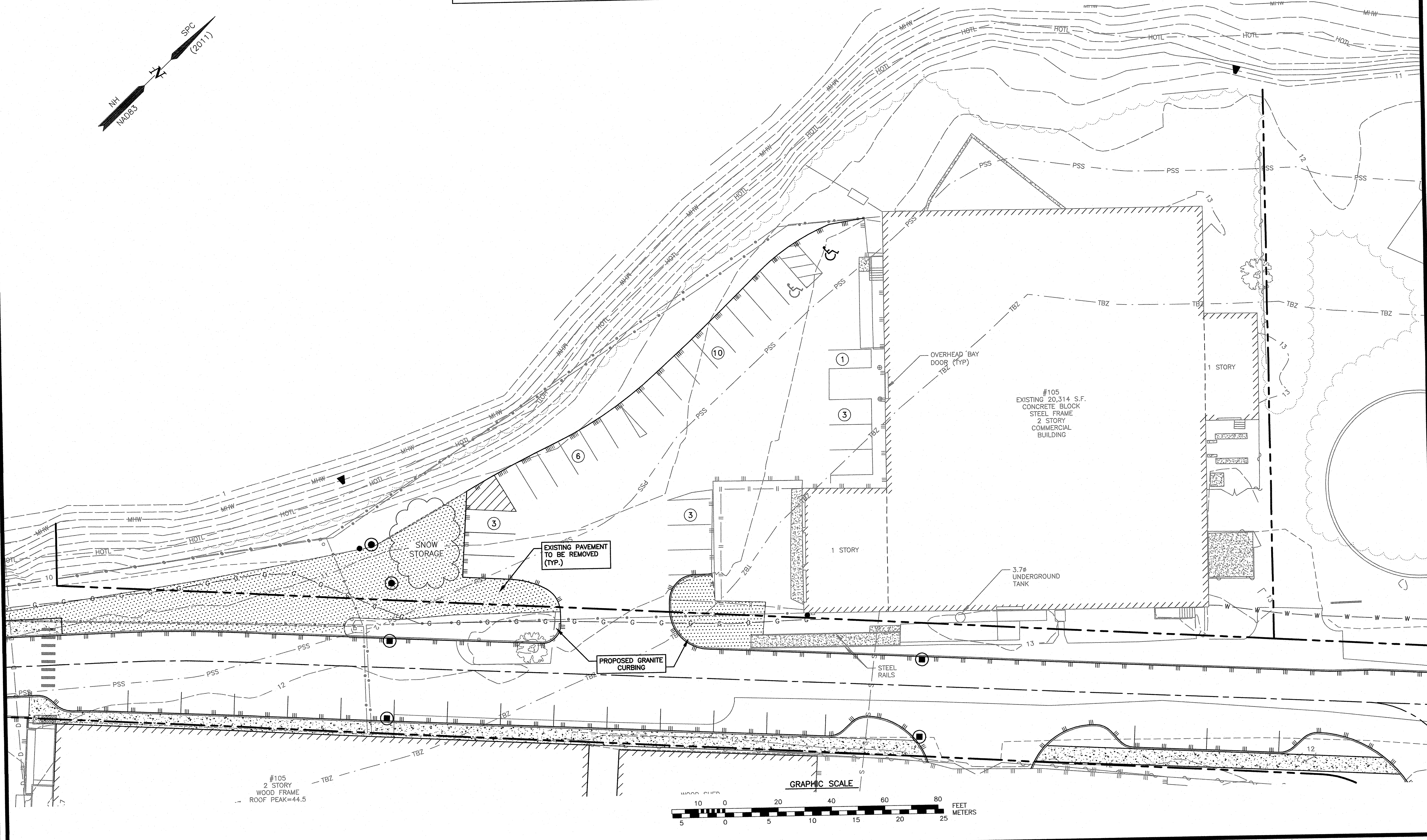
LOT 3 PLAN

C6

FB 243 PG 22

2429

IMPERVIOUS SURFACE AREAS (TO PROPERTY LINE)		
STRUCTURE	PR-CONSTRUCTION IMPERVIOUS (S.F.)	POST-CONSTRUCTION IMPERVIOUS (S.F.)
MAIN STRUCTURE	20,552	20,552
CONCRETE	572	572
RAMP	157	157
GRAVEL	611	1,352
PAVEMENT	14,416	11,908
RETAINING WALL	78	78
TOTAL	36,308	34,541
LOT SIZE	61,781	61,781
% LOT COVERAGE	58.8%	55.9%



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 TO BE SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP AND LOT NUMBER TO BE DETERMINED.

2) OWNERS OF RECORD:
BOSTON AND MAINE CORPORATION
IRON HORSE PARK
NORTH BILLERICA, MA 01862

CLIPPER TRADERS, LLC
105 BARTLETT STREET
PORTSMOUTH, NH 03801
5598/2725

3) PROPOSED LOT AREA:
61,764 SF; 1.418 ACRES

4) PORTIONS OF THE PARCEL IS IN A FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE DATE MAY 17, 2005.

5) PROPOSED PARCEL IS LOCATED IN THE CD-4W ZONING DISTRICT.

6) VERTICAL DATUM IS MEAN SEA LEVEL NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS (±0.3').

7) HORIZONTAL DATUM AND BASIS OF BEARINGS IS THE NH STATE PLANE COORDINATE SYSTEM NAD 83 (2011). BASIS OF HORIZONTAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS

8) THE PURPOSE OF THIS PLAN IS TO SHOW SITE DETAILS ON PROPOSED LOT 4.

9) PROPOSED PARKING:
25 SPACES REQUIRED PER VARIANCE GRANTED 3/21/2016
25 SPACES PROVIDED

CLIPPER TRADERS PROPOSED LOT 4 PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	PARKING NOTES	10/16/18
1	ISSUED FOR APPROVAL	5/22/18
0	ISSUED FOR COMMENT	4/26/18

REVISIONS

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

SCALE 1" = 20'

APRIL 2018

LOT 4 PLAN

C7

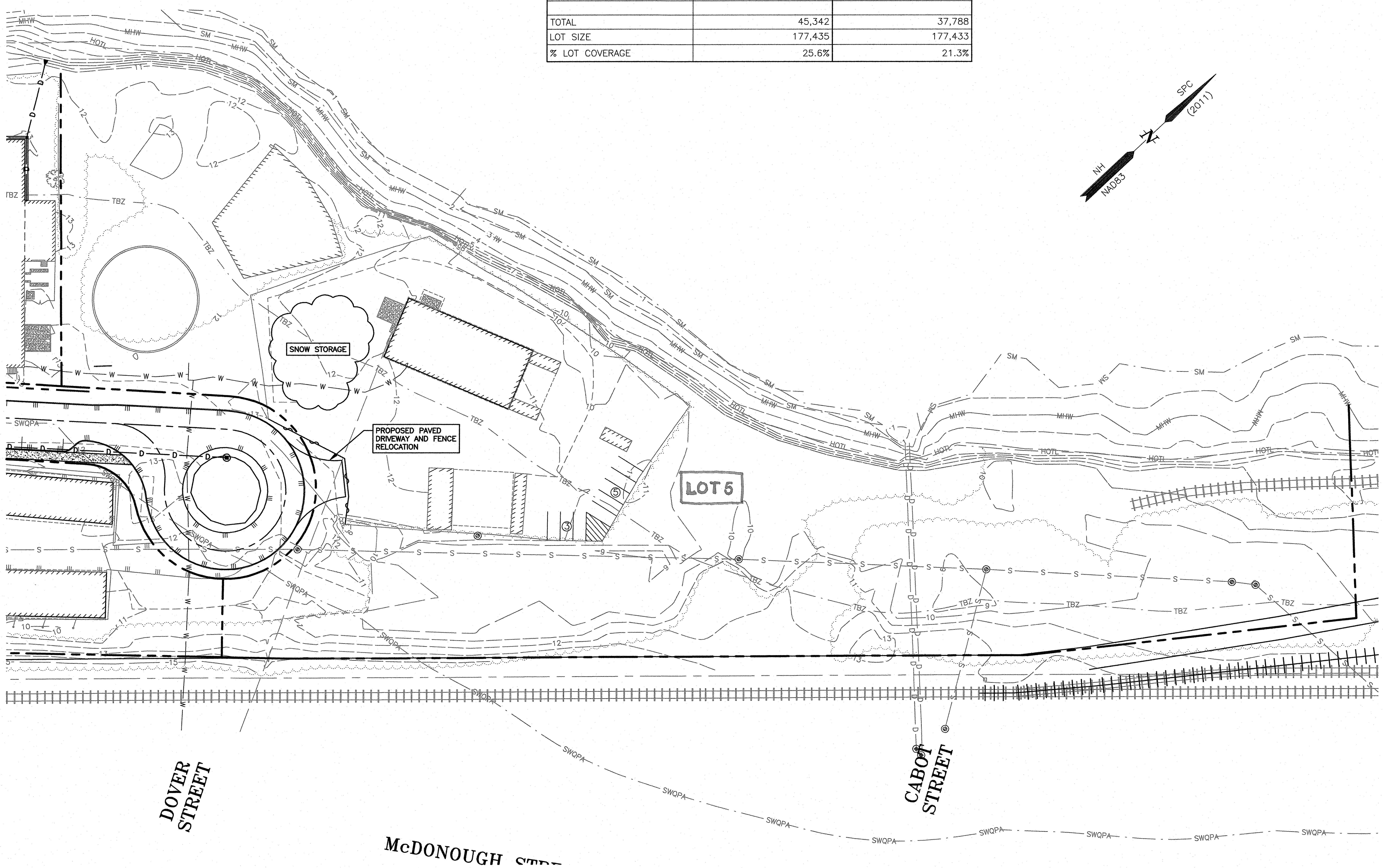
FB 243 PG 22

2429

J:\JOBS2\JN2400s\JN 2420s\JN 2429\2017 Site Development\Plans & Specs\Site\2429 SITE 2018.dwg, LOT 4 C2.4

IMPERVIOUS SURFACE AREAS
(TO PROPERTY LINE)

STRUCTURE	PRE-CONSTRUCTION IMPERVIOUS (S.F.)	POST-CONSTRUCTION IMPERVIOUS (S.F.)
STRUCTURES + TURNSTYLE	14,688	7,351
CONCRETE	227	227
GRAVEL	29,191	29,191
PAVEMENT	1,236	1,019
TOTAL	45,342	37,788
LOT SIZE	177,435	177,433
% LOT COVERAGE	25.6%	21.3%



GRAPHIC SCALE

40 30 20 10 0 50 100 150 FEET

10 5 0 10 20 30 40 50 METERS

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 TO BE SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP AND LOT NUMBER TO BE DETERMINED.

2) OWNERS OF RECORD:
BOSTON AND MAINE CORPORATION
IRON HORSE PARK
NORTH BILLERICA, MA 01862

3) PROPOSED LOT AREA:
177,433 SF;

4) PORTIONS OF THE PARCEL IS IN A FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE DATE MAY 17, 2005.

5) PROPOSED PARCEL IS LOCATED IN THE CD4-W & CD4-L1 ZONING DISTRICTS.

6) VERTICAL DATUM IS MEAN SEA LEVEL NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS (±0.3').

7) HORIZONTAL DATUM AND BASIS OF BEARINGS IS THE NH STATE PLANE COORDINATE SYSTEM NAD 83 (2011). BASIS OF HORIZONTAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS

8) THE PURPOSE OF THIS PLAN IS TO SHOW SITE DETAILS ON PROPOSED LOT 5.

9) PROPOSED PARKKING; 4,000 SF X $\frac{1}{500}$ SF = 8 SPACES REQUIRED (LIGHT INDUSTRY)
8 SPACES PROVIDED

CLIPPER TRADERS PROPOSED LOT 5 PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	DRIVEWAY, SNOW STORAGE PARKING, FHZ	9/18/18
1	ISSUED FOR APPROVAL	5/22/18
0	ISSUED FOR COMMENT	4/26/18

REVISIONS

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

SCALE 1" = 40'   APRIL 2018

LOT 5 PLAN   C8

FB 243 PG 22   2429

DRAINAGE STRUCTURES

CB 1264
RIM: 10.22
INV. OUT: 8.19

CB 1244
RIM: 10.20
INV. IN: 8.25 (4")
INV. IN: 7.37 (10")
INV. OUT: 7.20 (12")

CB 1243
RIM: 9.54
INV. IN: 7.43 (4")
INV. OUT: 7.53 (NEW 6")

PDMH 3
RIM: X.XX (RAISE TO GRADE)
INV. IN: 6.36 (12")
INV. IN: 6.36 (6")
INV. OUT: 6.36 (12")

CB 1242
RIM: 9.34
INV. IN: 3.88 (6")
INV. OUT: 6.44 (NEW 6")

PDMH 4
RIM: X.XX (RAISE TO GRADE)
INV. IN: 6.82 (12")
INV. IN: 6.82 (12")
INV. INV. OUT: 6.82 (12")

PDMH 5
RIM: X.XX (RAISE TO GRADE)
INV. IN: 5.08 (12")
INV. IN: 5.98 (12")
INV. OUT: 5.08 (15")

CB 1241
RIM: 8.91
INV. IN: 4.88 (NEW 15")
INV. OUT: 4.88 (NEW 15")

PDMH 2
INV. IN: 5.60
INV. OUT: 5.60

PDMH 1
INV. IN: 4.83
INV. OUT: 4.73

F.E.S.
INV. 4.13

CB 1240
RAISE RIM EL. 8.13
INV. IN: 5.80 (NEW 12")
INV. OUT: 5.80 (NEW 12")

CB 1239
RAISE RIM EL. 8.13
INV. OUT: 6.26 (NEW 12")

FROM CB 1239 TO CB 1240
TYPE: 12" HDPE: L= 117 FT
SLOPE: 0.0039

FROM CB 1240 TO PDMH 2
TYPE: 12" HDPE: L= 50 FT
SLOPE: 0.0040

FROM PDMH 2 TO PDMH 5
TYPE: 12" HDPE: L= 129 FT
SLOPE: 0.0040

FROM PCB 3 TO PDMH 5
12" HDPE: L= 94 FT
SLOPE: 0.0039

FROM CB 1242 TO PCB 3
6" HDPE: L= 12 FT
SLOPE: 0.0067

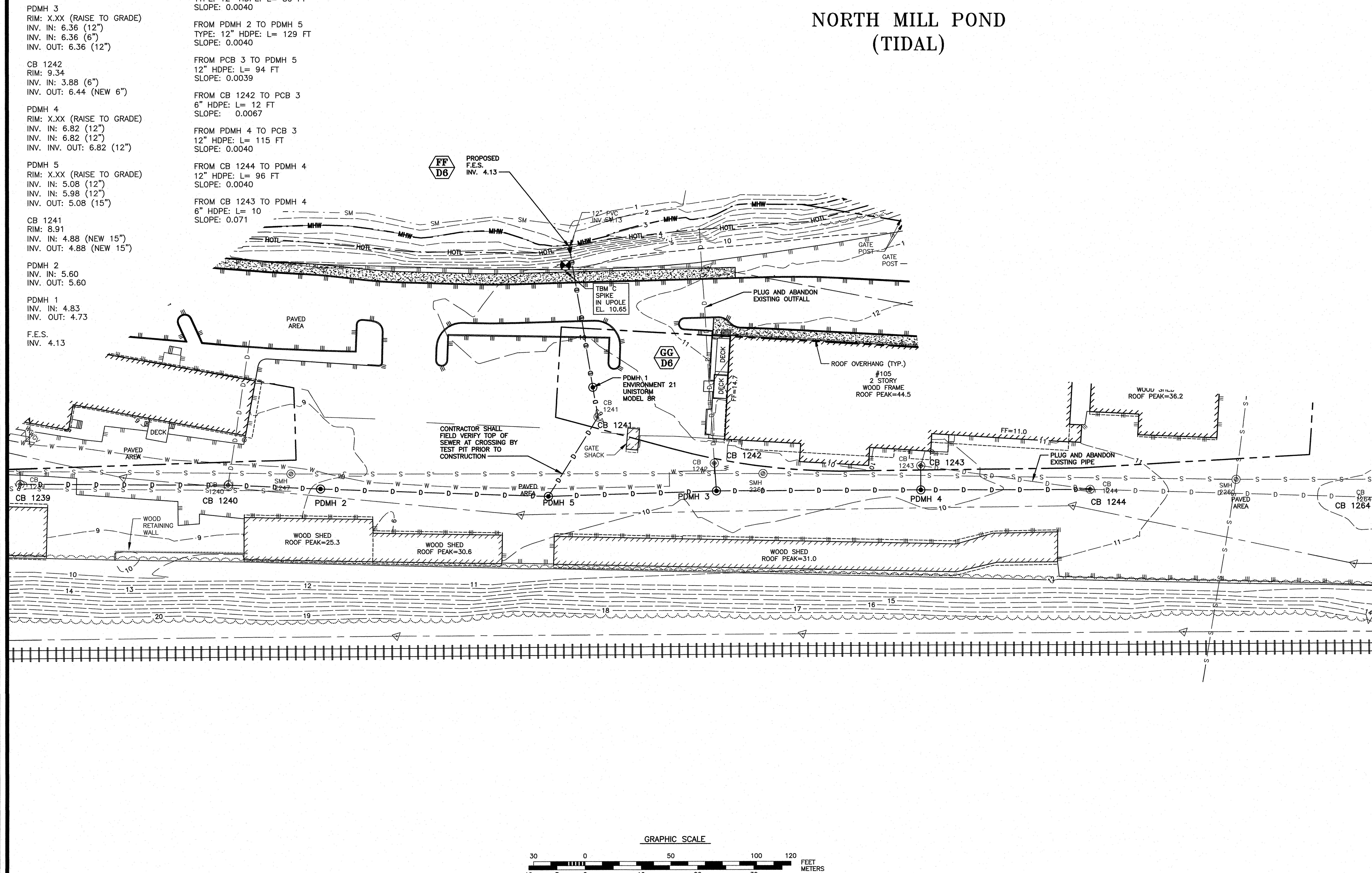
FROM PDMH 4 TO PCB 3
12" HDPE: L= 115 FT
SLOPE: 0.0040

FROM CB 1244 TO PDMH 4
12" HDPE: L= 96 FT
SLOPE: 0.0040

FROM CB 1243 TO PDMH 4
6" HDPE: L= 10
SLOPE: 0.071

FROM CB 1241 TO PDMH 1
15" HDPE: L= 13
SLOPE: 0.004

FROM PSMH 1 TO F.E.S.
15" HDPE: L= 80
SLOPE: 0.0075



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

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).

SUBDIVISION PLAN CLIPPER TRADERS, LLC OFF BARTLETT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	10/16/18

REVISIONS

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

SCALE 1"=30' FEBRUARY 2018

STORMWATER SEPARATION PLAN

C9

FB 243 PG 22

2429

DRAINAGE STRUCTURES

FES
INV. OUT: 5.39

PDMH 10 TO FES
15" HDPE: L: 19 FT
SLOPE: 0.0074

PCB 9
RIM: 10.00
INV. OUT: 7.50

FROM PCB 9 TO PDMH 11
12" HDPE: L: 76 FT
SLOPE: 0.0254

PDMH 10
RIM: 10.75
INV. IN: 5.63 (12")
INV. IN: 8.85 (12" UD)
INV. OUT: 5.53

FROM PDMH 11 TO PDMH 10
12" HDPE: L: 11 FT
SLOPE: 0.0055

PDMH 11 (UNISTORM MODEL 5R)
SEE DETAIL SHEET
RIM: 11.5
INV. IN: 5.57
INV. IN: 5.57
INV. OUT: 5.57

PCB 10 TO PDMH 11
12" HDPE: L: 18 FT
SLOPE: 0.0083

PCB 10
RIM: 10.97
INV. IN: 5.82
INV. OUT: 5.72

FROM PCB 11 TO PCB 10
12" HDPE: L= 26 FT
SLOPE: 0.0027

PCB 11
RIM: 10.97
INV. IN: 5.98 (12")
INV. OUT: 5.95 (12")

FROM PCB 13 TO PCB 11
12" HDPE: L=196 FT
SLOPE: 0.0049

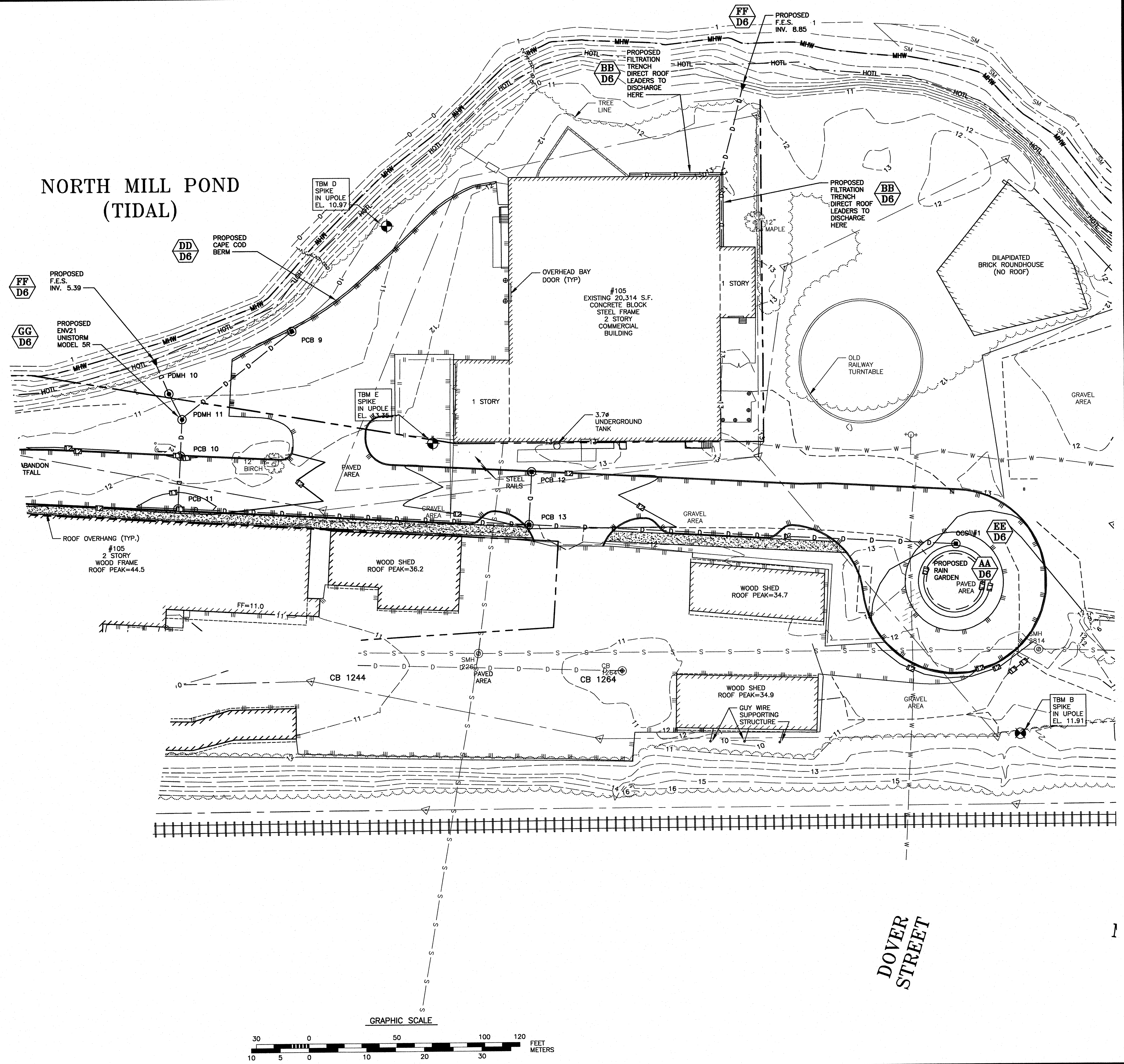
PCB 12
RIM: 11.41
IN. OUT: 7.14

FROM PCB 12 TO PCB 13
12" HDPE: L=26 FT
SLOPE: 0.0050

PCB 13
RIM: 11.41
INV. IN: 7.05
IN. OUT: 6.95

FROM OCS #1 TO PCB 13
12" HDPE: L=239 FT
SLOPE: 0.0050

OCS #1
SEE DETAIL SHEET



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.

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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

SUBDIVISION PLAN
CLIPPER TRADERS, LLC
OFF BARTLETT STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	10/16/18

REVISIONS

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

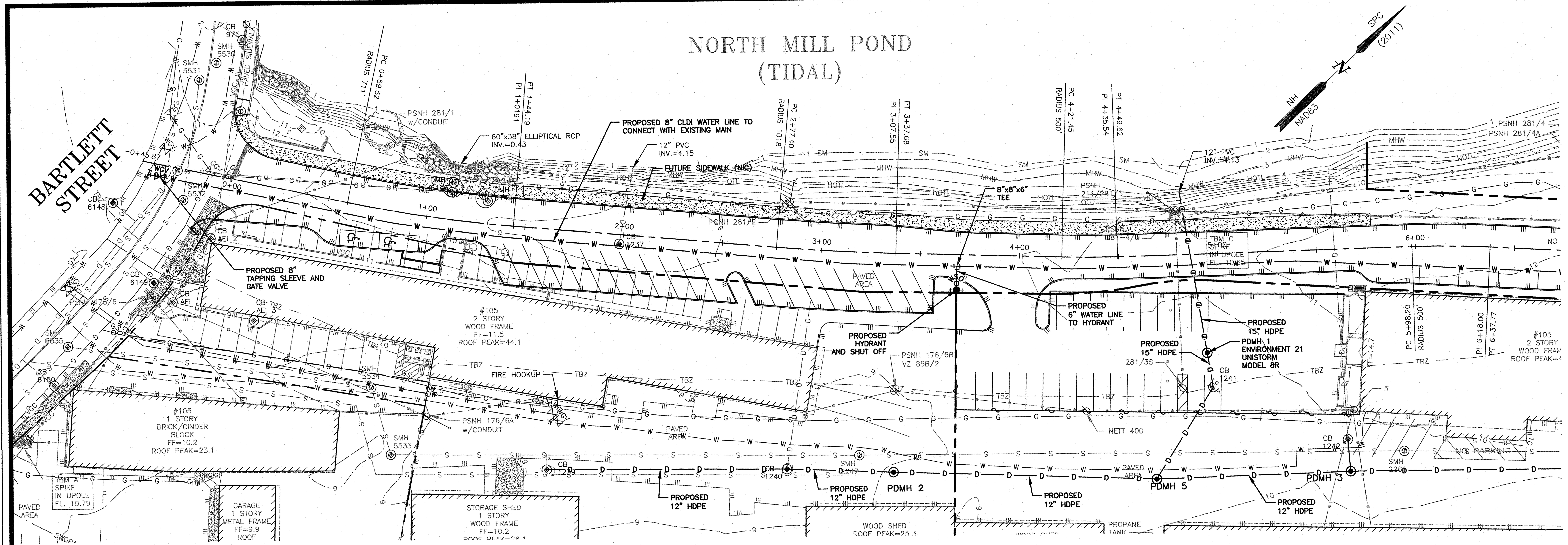
SCALE 1"=30' FEBRUARY 2018

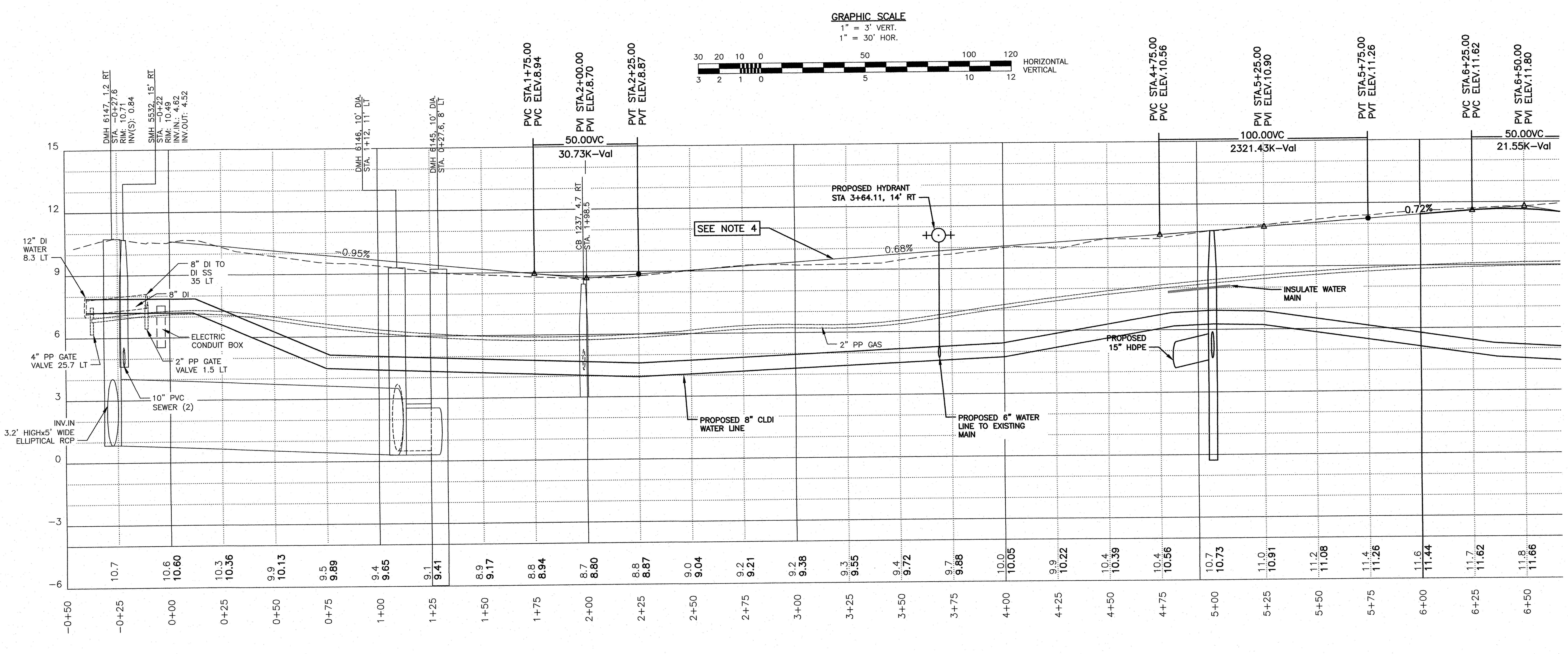
STORMWATER SEPARATION PLAN

C10

FB 243 PG 22

2429





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4) ROAD PROFILE SHOWN FROM STATION 0+00 TO 6+00 IS FOR CALCULATION OF WAIVERS; ROAD WILL ONLY BE RECONSTRUCTED FROM STATION 6+00 TO THE CUL-DE-SAC.

SUBDIVISION PLAN
CLIPPER TRADERS, LLC
OFF BARTLETT STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	ADDED UTILITIES	10/16/18
1	ISSUED FOR APPROVAL	9/18/18
0	ISSUED FOR COMMENT	2/12/18

REVISIONS

STATE OF NEW HAMPSHIRE JOHN R. CHAGNON No. 7351 LICENSED PROFESSIONAL ENGINEER

SCALE 1"=30' FEBRUARY 2018

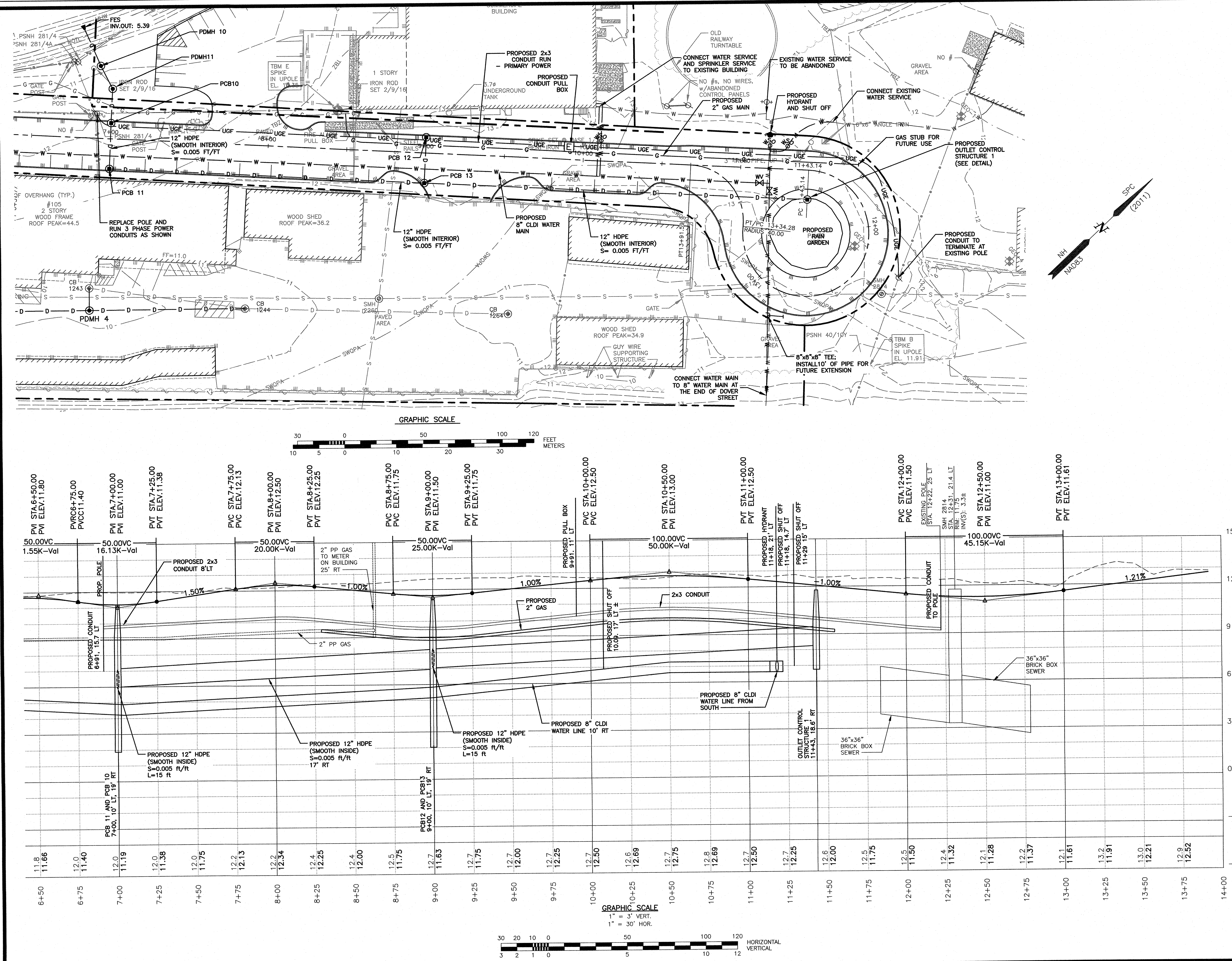
ROADWAY PLAN & PROFILE

P1

FB 243 PG 22

2429

J:\JOBS2\JN2400s\JN 2420s\JN 2429\2017 Site Development\Plans & Specs\Site\2429 SITE 2018.dwg, P1 PROFILE



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4) ELECTRICAL CONDUITS WILL BE RUN AT THE TIME OF LOT 5 DEVELOPMENT. PULL ROPES TO BE INSTALLED AND LEFT FOR FUTURE USE.

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SUBDIVISION PLAN
CLIPPER TRADERS, LLC
OFF BARTLETT STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
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REVISIONS

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

SCALE 1"=30' FEBRUARY 2018

ROADWAY PLAN & PROFILE

P2

FB 243 PG 22

2429

J:\JOBS2\JN2400s\JN 2420s\JN 2429\2017 Site Development\Plans & Specs\Site\2429 SITE 2018.dwg, P2 PROFILE

EROSION CONTROL NOTES

CONSTRUCTION SEQUENCE

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

THE CONTRACTOR SHALL OBTAIN AN **NPDES** PHASE II STORMWATER PERMIT BEFORE BEGINNING CONSTRUCTION AND SHALL HAVE ON SITE A STORMWATER POLLUTION PREVENTION PLAN (**S.W.P.P.P.**) AVAILABLE FOR INSPECTION BY THE PERMITTING AUTHORITY DURING THE CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CARRYING OUT THE **S.W.P.P.P.** AND INSPECTING AND MAINTAINING ALL BMP'S CALLED FOR BY THE PLAN. THE CONTRACTOR SHALL SUBMIT A NOTICE OF TERMINATION (**N.O.T.**) FORM TO THE REGIONAL EPA OFFICE WITHIN 30 DAYS OF FINAL STABILIZATION OF THE ENTIRE SITE OR TURNING OVER CONTROL OF THE SITE TO ANOTHER OPERATOR.

INSTALL PERIMETER CONTROLS, i.e., SILT SOXX AROUND THE LIMITS OF DISTURBANCE.

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

CONSTRUCT BASINS AND OUTLETS, BUT DO NOT ALLOW INFLOW UNTIL ALL CONTRIBUTING AREAS ARE STABILIZED AND EROSION–FREE.

ALL PERMANENT DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.

PLACE BINDER LAYER OF PAVEMENT, THEN RAISE CATCH BASIN FRAMES TO FINAL GRADE. REINSTALL BASIN INLET PROTECTION.

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

CONSTRUCT ASPHALT WEARING COURSE.

REMOVE TRAPPED SEDIMENTS FROM COLLECTION DEVICES AS APPROPRIATE, AND THEN REMOVE TEMPORARY EROSION CONTROL MEASURES.

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".

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 SHALL BE PERIODICALLY INSPECTED DURING THE LIFE OF THE PROJECT AND AFTER EACH STORM. ALL DAMAGED SILT FENCES 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 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.

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 BARRIER SHALL BE CHECKED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL.

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

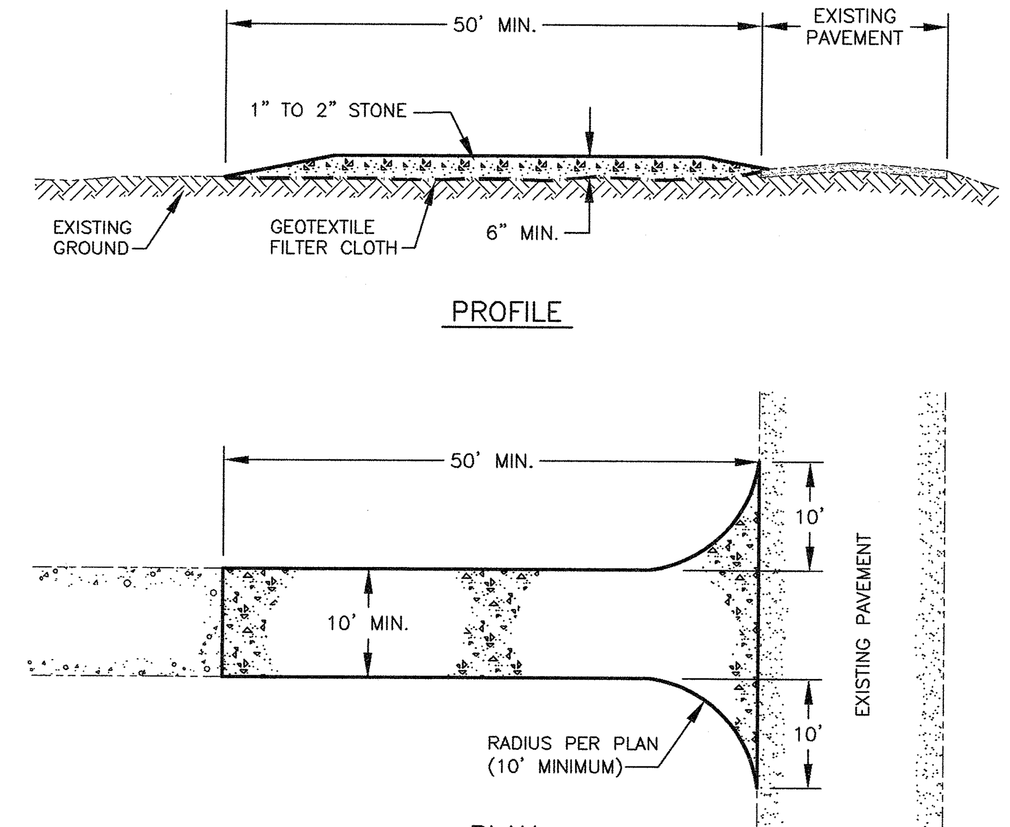
ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.

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.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN

DATE



PLAN

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.

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.

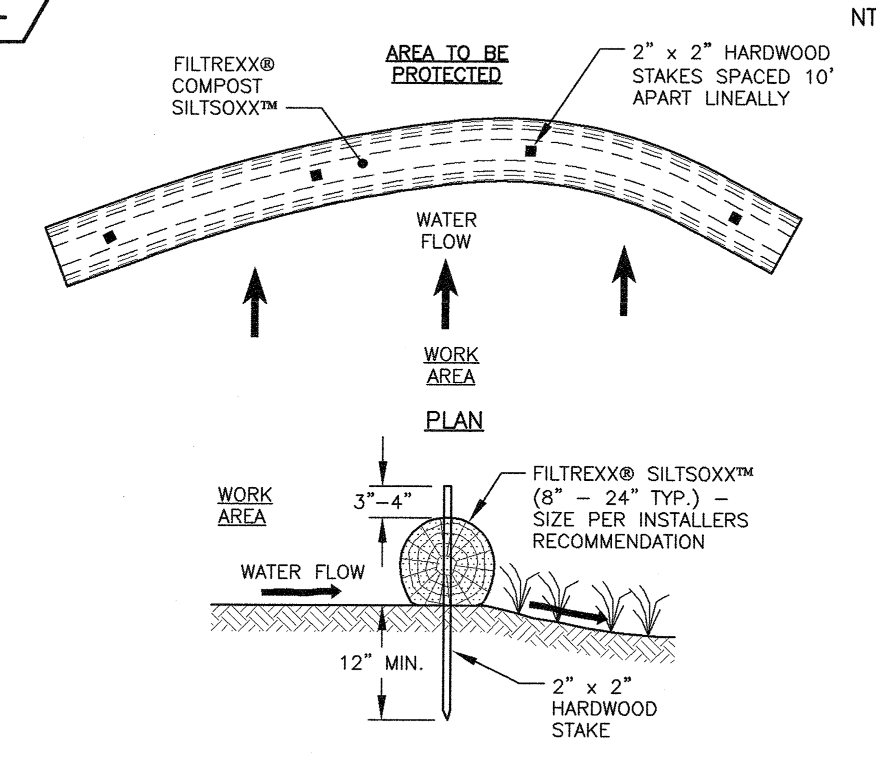
6) ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.

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.

A / – STABILIZED CONSTRUCTION ENTRANCE

NTS

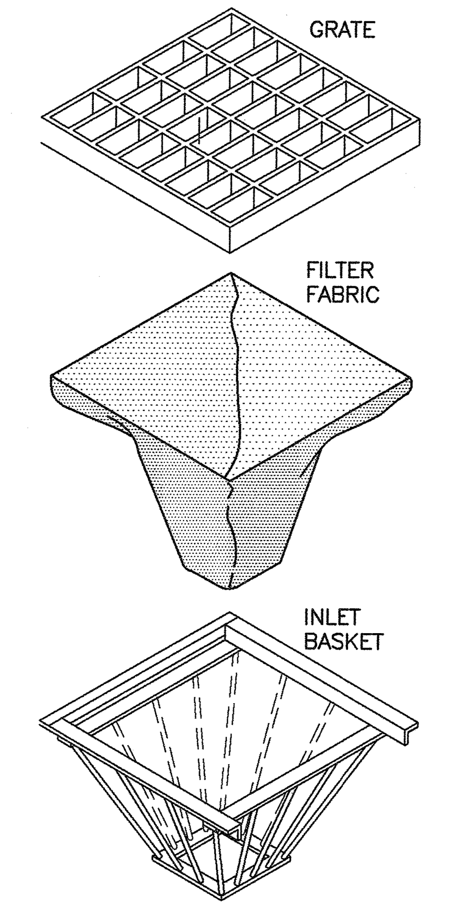


ELEVATION

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.

C / – FILTREXX® SILTSOXX™ FILTRATION SYSTEM

NTS



LENGTH (L) & WIDTH (W) AS REQUIRED TO FIT NHDOT TYPE GRATE & FRAME.

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.

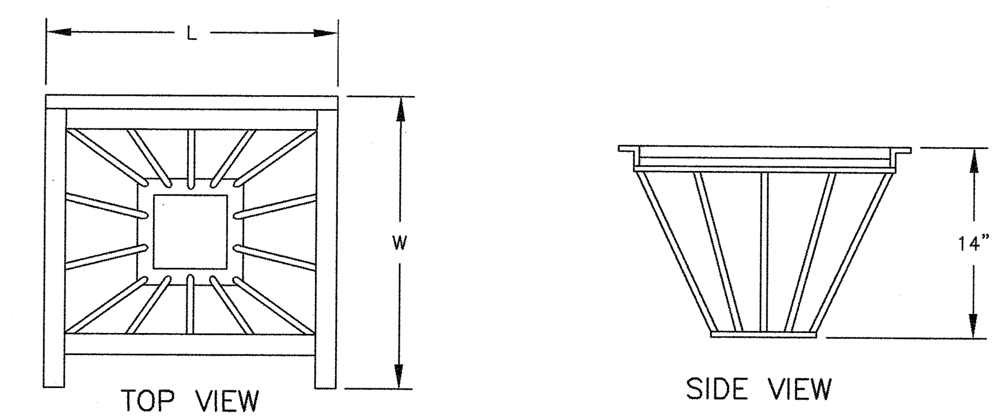
2) FILTER FABRIC SHALL BE PUSHED DOWN AND FORMED TO THE SHAPE OF THE BASKET. THE SHEET OF FABRIC SHALL BE LARGE ENOUGH TO BE SUPPORTED BY THE BASKET FRAME WHEN HOLDING SEDIMENT AND, SHALL EXTEND AT LEAST 6" PAST THE FRAME. THE INLET GRATE SHALL BE PLACED OVER THE BASKET/FRAME AND WILL SERVE AS THE FABRIC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



TOP VIEW

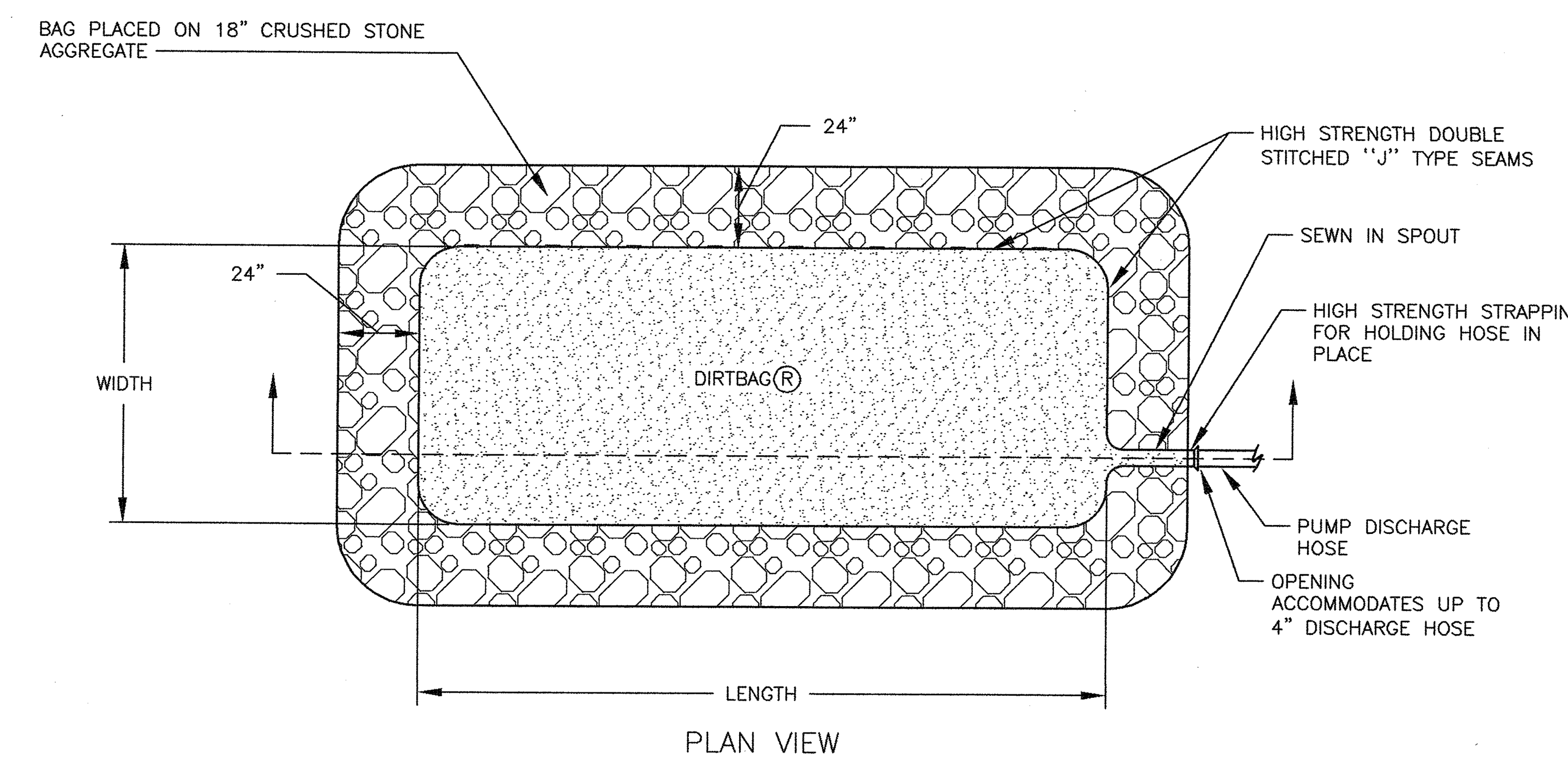
SIDE VIEW

B / – CATCH BASIN INLET BASKET

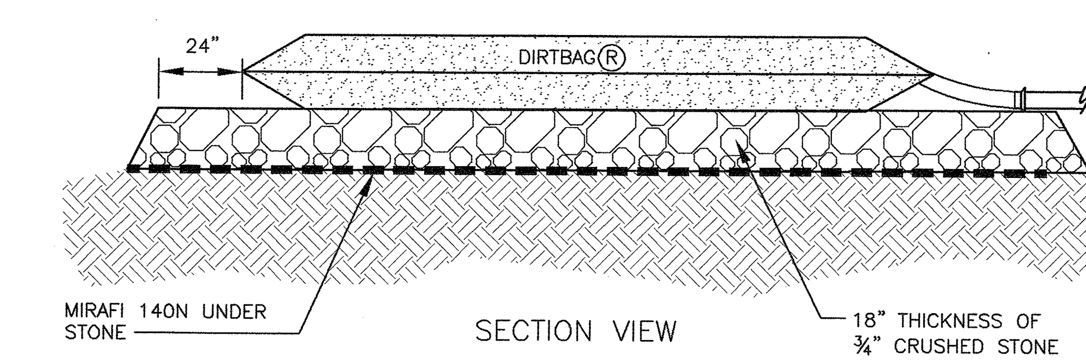
AS NEEDED

NTS

NOTES:
1) REVIEW INSTALLATION REQUIREMENTS ON OFFSITE BASINS WITH CITY DPW.



PLAN VIEW



SECTION VIEW

CC / – DIRTBAG DETAIL

AS NEEDED

NTS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801–7114
Tel (603) 430–9282
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STORMWATER MANAGEMENT SYSTEM INSPECTION & MAINTENANCE

THE OPERATOR IS RESPONSIBLE FOR IMPLEMENTING AND FOLLOWING THE STORMWATER INSPECTION AND MAINTENANCE PLAN WHICH CAN BE FOUND IN THE DRAINAGE REPORT.

PROPOSED SUBDIVISION CLIPPER TRADERS, LLC 105 BARTLETT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	ISSUED FOR APPROVAL	10/16/18
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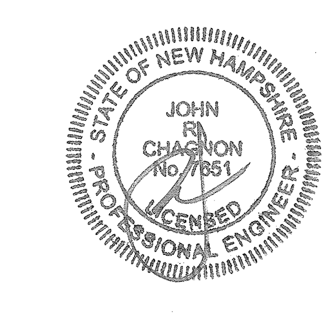
REVISIONS



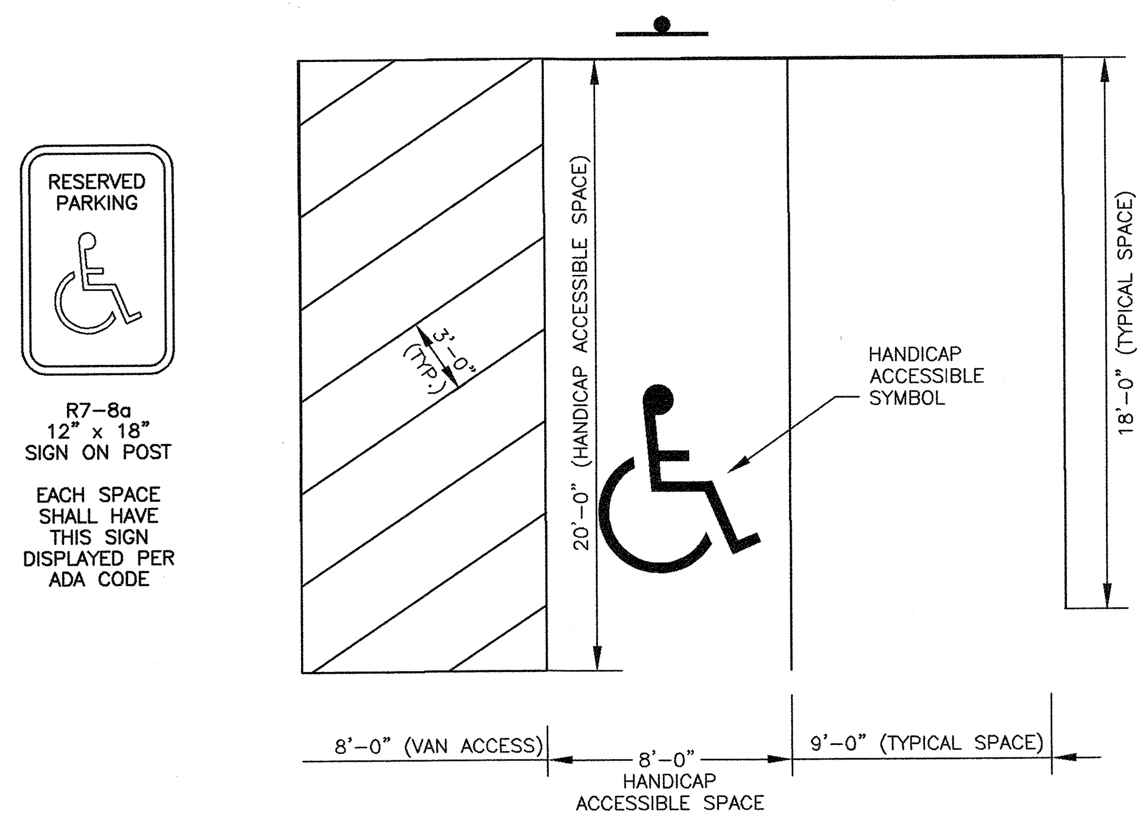
SCALE: AS NOTED

FEBRUARY 2018

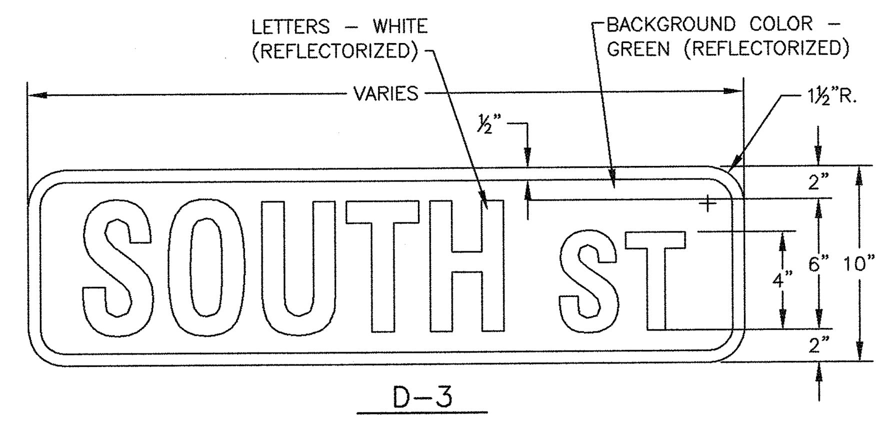
DETAILS

D1

2429



D ADA PARKING SIGN AND STRIPING
NTS

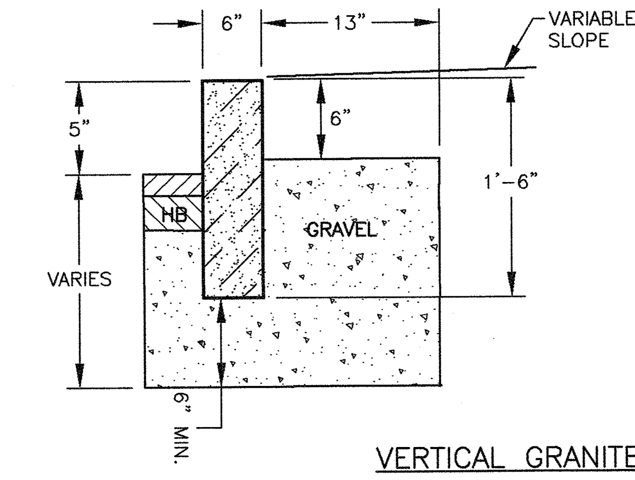


E "STREET NAME" SIGN DETAIL
NTS

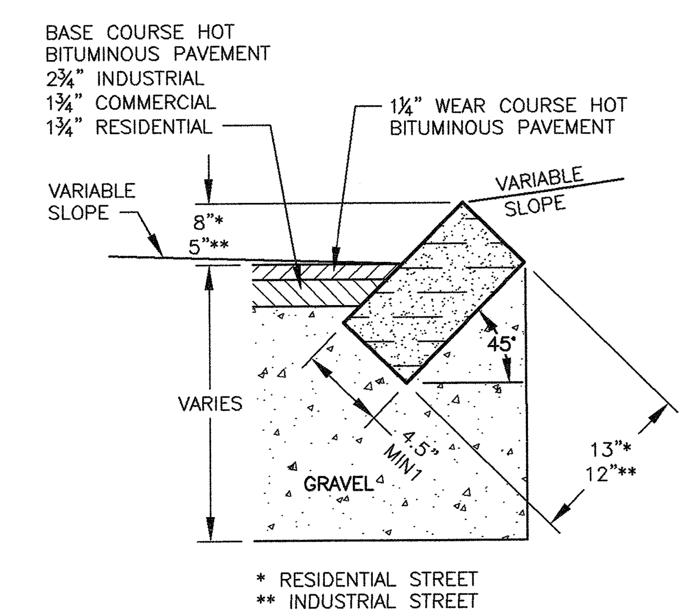
MIN. LENGTH OF CURB STONES: 3FT.
MAX. LENGTH OF CURB STONES: 10FT.
MAX. LENGTH OF STRAIGHT CURB STONES LAID ON CURVE: SEE CHART

NOTE: ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATE LENGTH.

Radius	Max. length
21'	3'
22' – 28'	4'
29' – 35'	5'
36' – 42'	6'
43' – 49'	7'
50' – 56'	8'
57' – 60'	9'
over 60'	10'



VERTICAL GRANITE CURB
(COMMERCIAL STREETS)

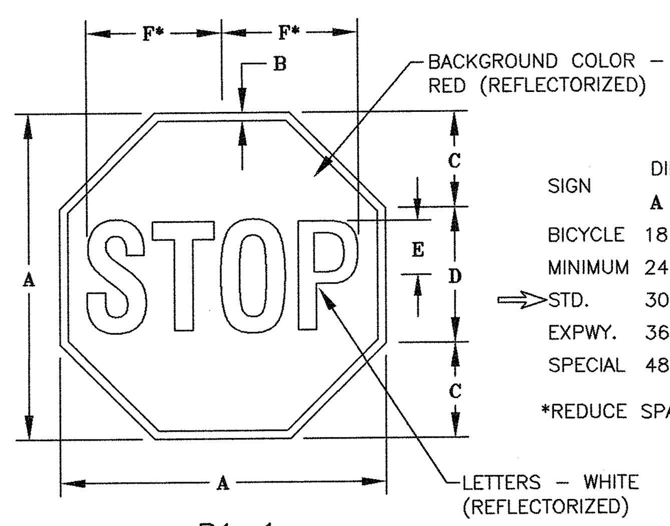


MIN. LENGTH OF STRAIGHT CURB STONES: 18"
MAX. LENGTH OF STRAIGHT CURB STONES: 8FT.
MAX. LENGTH OF STRAIGHT STRAIGHT CURB STONES LAID ON CURVE: SEE CHART

Radius for stones with square joints	Maximum length
16' – 28'	6" to 1'
29' – 41'	2'
42' – 55'	3'
56' – 68'	4'
69' – 82'	5'
83' – 96'	6'
97' – 110'	7'
over 110'	8'

SLOPED GRANITE CURB
(RESIDENTIAL & INDUSTRIAL STREETS)

H GRANITE CURBING DETAILS
NTS



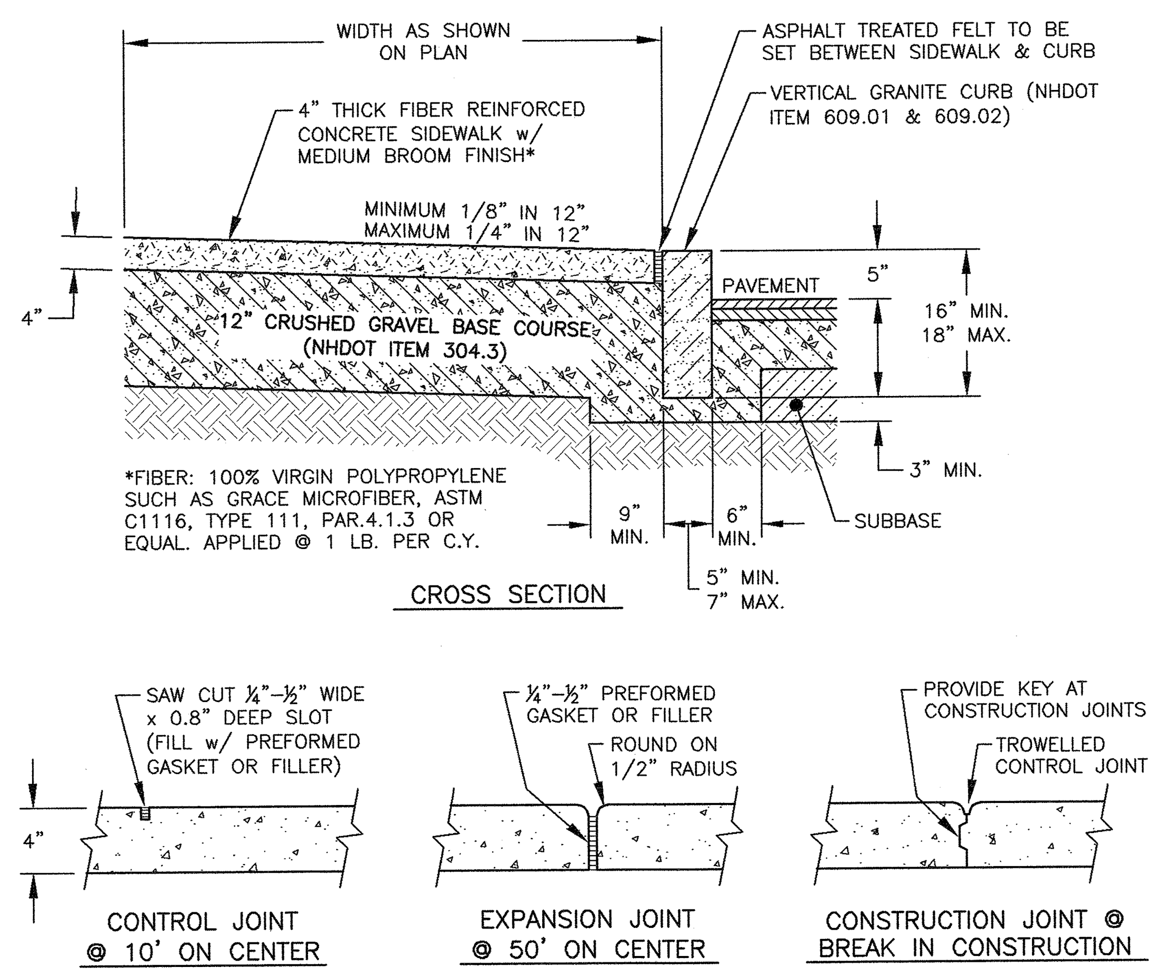
DIMENSIONS (Inches)

SIGN	A	B	C	D	E
BICYCLE	18	3/8	6	6C	7¾
MINIMUM	24	5/8	8	8C	10
STD.	30	3/4	10	10C	12½
EXPWY.	36	7/8	12	12C	15
SPECIAL	48	1¼	16	16C	20

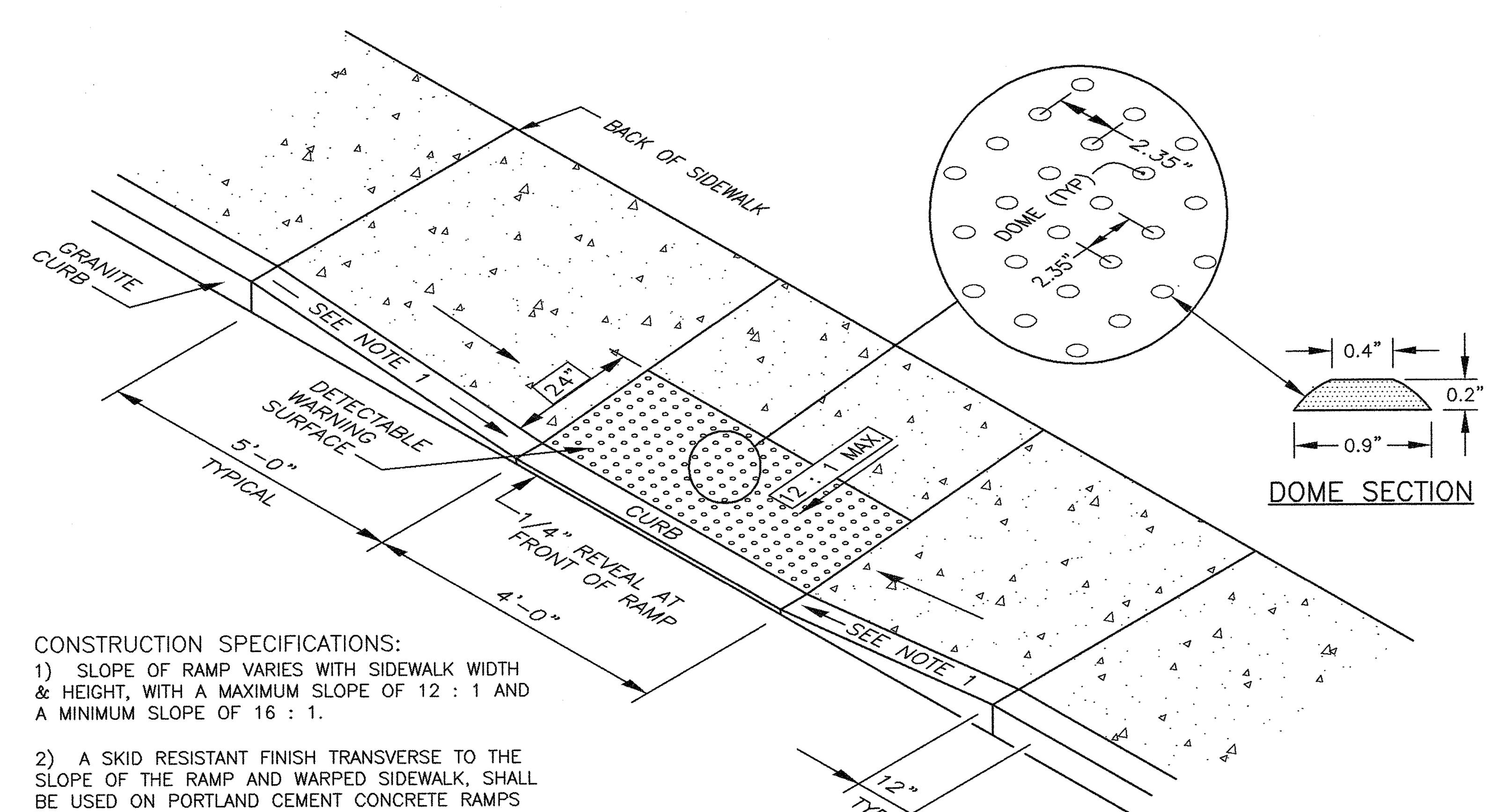
*REDUCE SPACING 40%

R1–1
A" x A"

E STOP SIGN DETAIL
NTS



G PORTLAND CEMENT CONCRETE SIDEWALK
(WITH VERTICAL GRANITE CURB)
NTS



CONSTRUCTION SPECIFICATIONS:
1) SLOPE OF RAMP VARIES WITH SIDEWALK WIDTH & HEIGHT, WITH A MAXIMUM SLOPE OF 12 : 1 AND A MINIMUM SLOPE OF 16 : 1.

2) A SKID RESISTANT FINISH TRANSVERSE TO THE SLOPE OF THE RAMP AND WARPED SIDEWALK, SHALL BE USED ON PORTLAND CEMENT CONCRETE RAMPS AT STREET INTERSECTIONS.

ISOMETRIC VIEW
I TIP DOWN FOR CONCRETE SIDEWALK
NTS

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) 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).

PROPOSED SUBDIVISION CLIPPER TRADERS, LLC 105 BARTLETT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	ISSUED FOR APPROVAL	10/16/18
1	ISSUED FOR COMMENT	9/18/18
0	ISSUED FOR COMMENT	2/12/18

REVISIONS

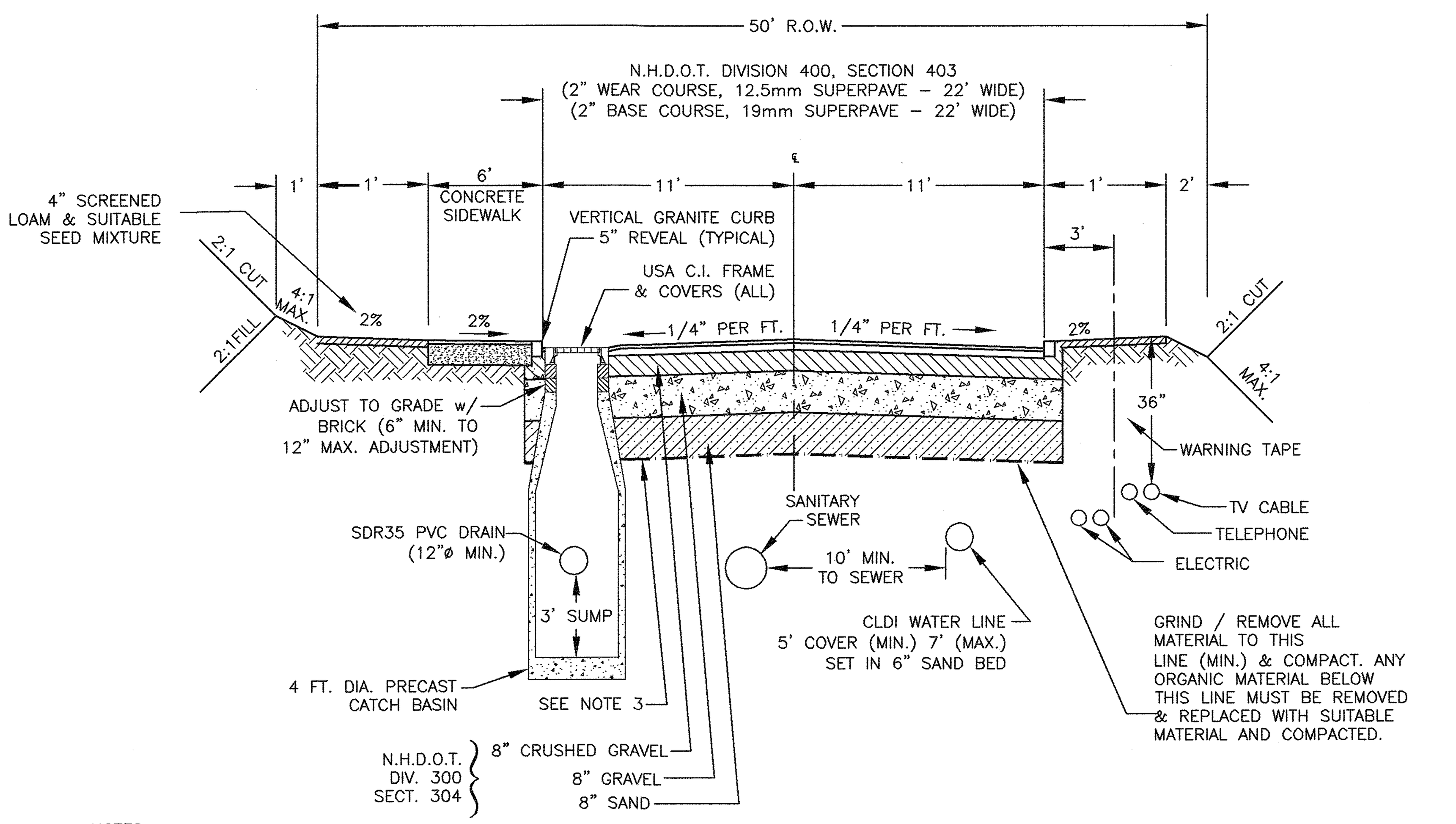
STATE OF NEW HAMPSHIRE
JOHN R. CHAGNON
No. 7651
LICENSED
PROFESSIONAL ENGINEER

SCALE: AS NOTED

FEBRUARY 2018

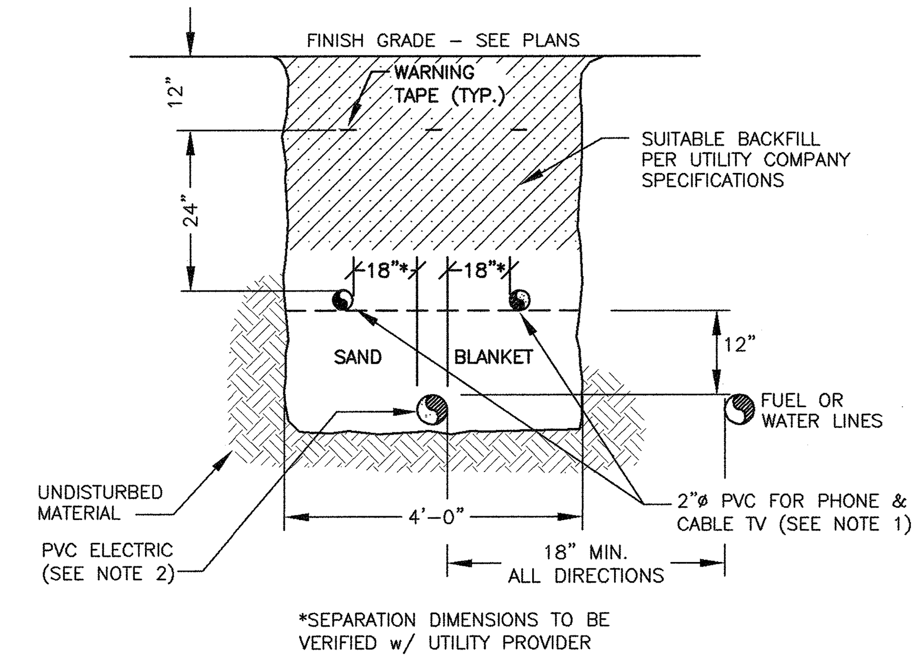
DETAILS

D2



NOTES:
1) REMOVE LEDGE TO 28" BELOW FINISHED SURFACE.
2) REMOVE CLAY, LOAM AND ANY OTHER UNSUITABLE MATERIALS TO 28" BELOW FINISHED SURFACE.
3) INSTALL GEOTEXTILE FABRIC ABOVE CLAYS AND SILTS OR IN AREAS WHERE EXCAVATION IS BELOW THE SEASONAL HIGH WATER TABLE.

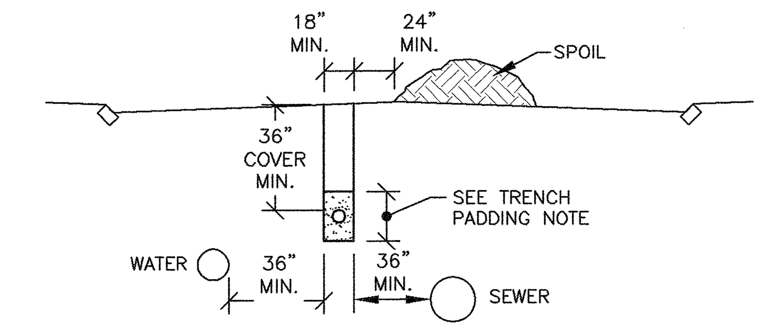
J – TYPICAL ROADWAY CROSS SECTION
NTS



*SEPARATION DIMENSIONS TO BE VERIFIED w/ UTILITY PROVIDER

NOTES:
1) ALL CONDUIT TO BE U.L. LISTED, SCH. 80 UNDER ALL TRAVEL WAYS, & SCHED. 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

M – BURIED ELEC/COMM CABLE
NTS



TRENCH DEPTH
MAINS: THE TRENCH SHALL BE DEEP ENOUGH TO PROVIDE 36" OF COVER FROM FINISHED GRADE TO CROWN OF PIPE.
SERVICES & MAINS ON PRIVATE PROPERTY: 24" OF COVER REQUIRED

TRENCH WIDTH:
TRENCH SHALL BE AT LEAST 18" WIDE, UNLESS OTHERWISE SPECIFIED BY UNITIL PERSONNEL. THE SPOIL SHOULD BE AT LEAST 24" FROM THE EDGE OF THE TRENCH (O.S.H.A.).

TRENCH OFFSET:
TRENCH SHALL BE LAID OUT SO AS TO PROVIDE A MINIMUM OFFSET OF 36" FROM OTHER UTILITIES. WHERE PRACTICAL, GAS MAINS SHOULD BE ON THE OPPOSITE SIDE OF THE STREET FROM WATER MAIN.

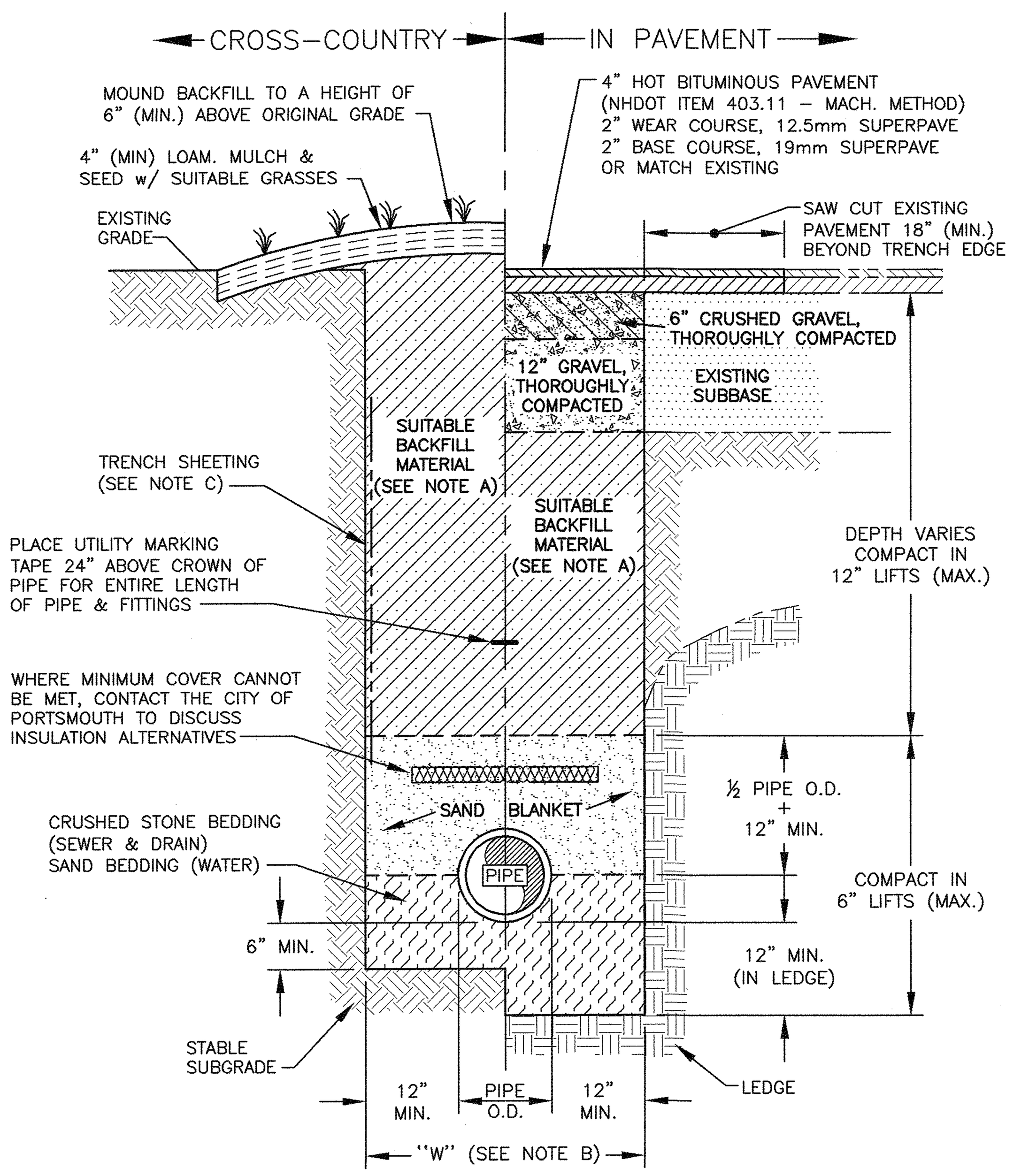
TRENCH PADDING:
THE NATURAL BOTTOM OF THE TRENCH SHALL BE PADDED WITH 6" OF SAND. ALSO, SUFFICIENT SAND MUST BE PROVIDED FOR A MINIMUM OF 6" OF COVER ABOVE THE GAS MAIN. SAND SHALL BE PROVIDED BY THE EXCAVATOR AND MUST BE ON SITE PRIOR TO INSTALLATION OF PIPE.

PRE–CONSTRUCTION MEETING:
NO TRENCHING SHALL BE STARTED PRIOR UNTIL AN ON SITE MEETING HAS BEEN HELD BETWEEN THE EXCAVATING CONTRACTOR AND UNITIL PERSONNEL. PRIOR TO THE MEETING, THE CONTRACTOR MUST NOTIFY DIGSAFE OF THE PROPOSED WORK. THE FOLLOWING SHALL BE CONFIRMED AT THE MEETING: ROUTE OF TRENCH AND TENTATIVE START DATE.

INSTALLATION OF GAS MAIN & SERVICES:
ONCE UNITIL HAS INSTALLED THE MAIN AND SERVICES, THE BUILDER/DEVELOPER WILL COVER THE PIPE WITH 6" OF SAND AND INSTALL THE TRACING WIRE AND WARNING TAPE PRIOR TO BACKFILLING. THE EXCAVATING CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER COMPACTING OF THE TRENCH AND MAINTAINING ALL SURFACE (VALVE) BOXES PRIOR TO AND DURING ON SITE PAVING.

IF THIS WORK IS TO TAKE PLACE OUTSIDE OF NORMAL CONSTRUCTION SEASON (APRIL THROUGH NOVEMBER), OFF SITE TIE–INS ON CITY STREETS SHALL BE DONE SUBJECT TO UNITIL CREW AVAILABILITY AND ISSUANCE OF REQUIRED PERMITS.

O – GAS INSTALLATION
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.

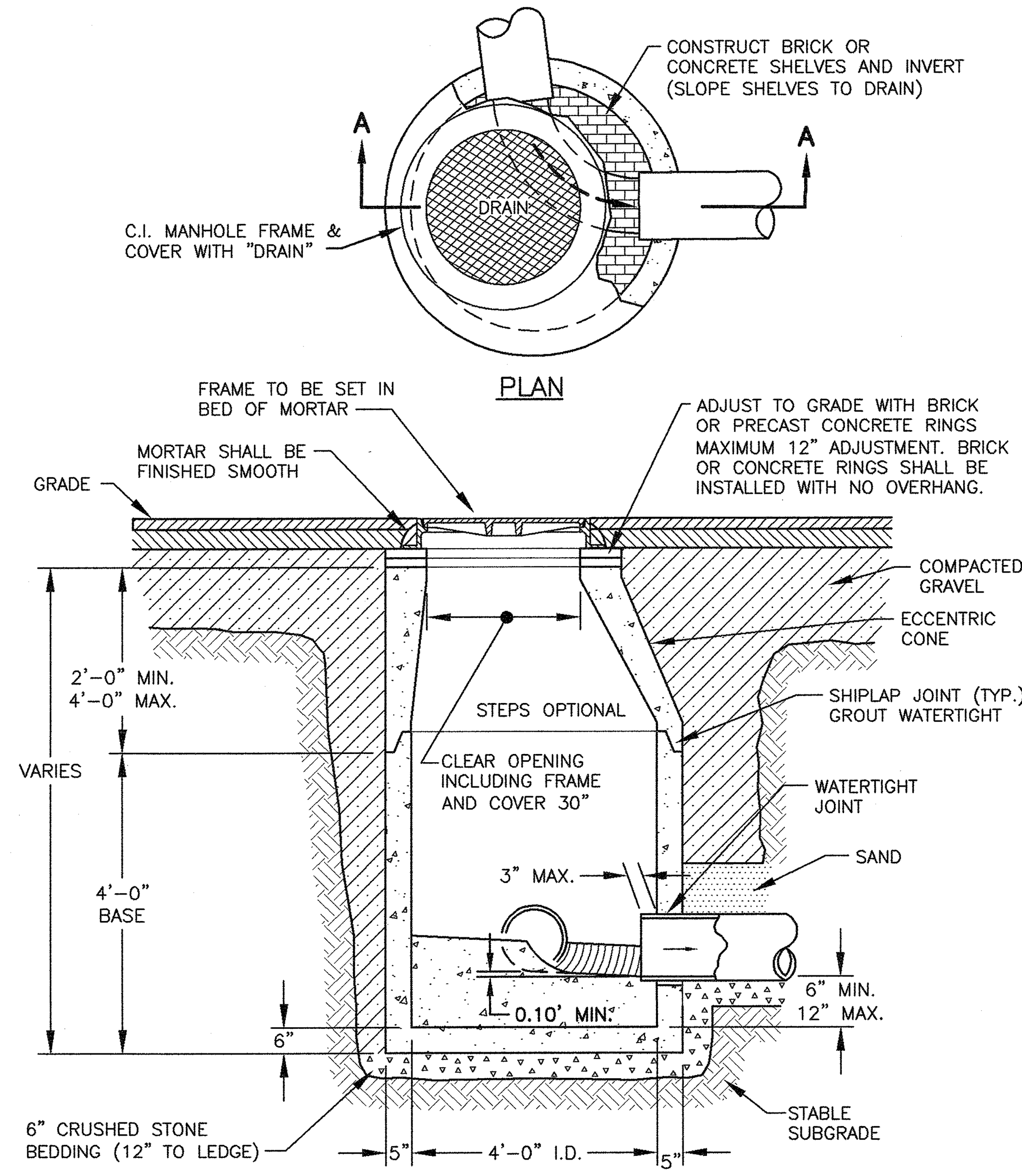
B) "W" = MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE O.D..

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

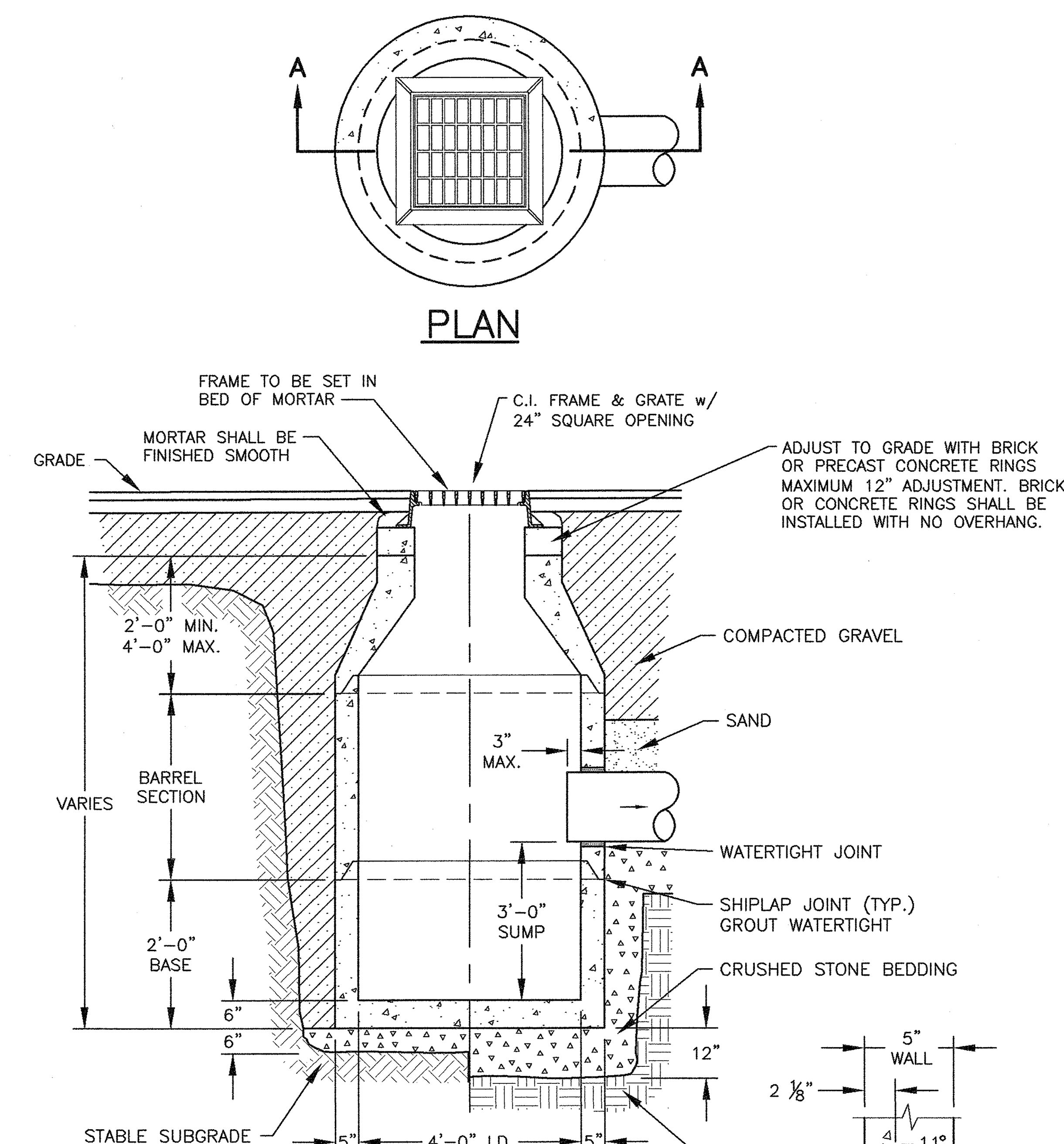
E) ALL PAVEMENT CUTS SHALL BE REPAIRED BY THE INFRARED HEAT METHOD.

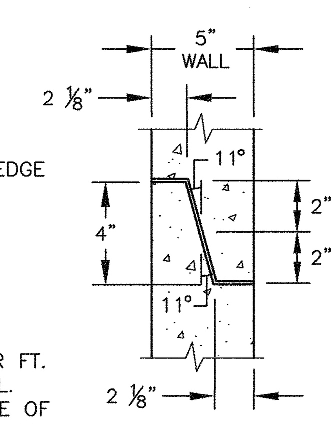
L – TYPICAL PIPE TRENCH
NTS



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 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 FT..
4. EACH CASTING TO HAVE LIFTING HOLES CAST IN.

N – DRAIN MANHOLE DETAIL
NTS





DETAIL OF SHIPLAP JOINT

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.

P – CATCH BASIN
NTS

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

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PROPOSED SUBDIVISION CLIPPER TRADERS, LLC 105 BARTLETT STREET PORTSMOUTH, N.H.

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0	ISSUED FOR COMMENT	2/12/18

REVISIONS

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

SCALE: AS NOTED

FEBRUARY 2018

DETAILS

D3

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"

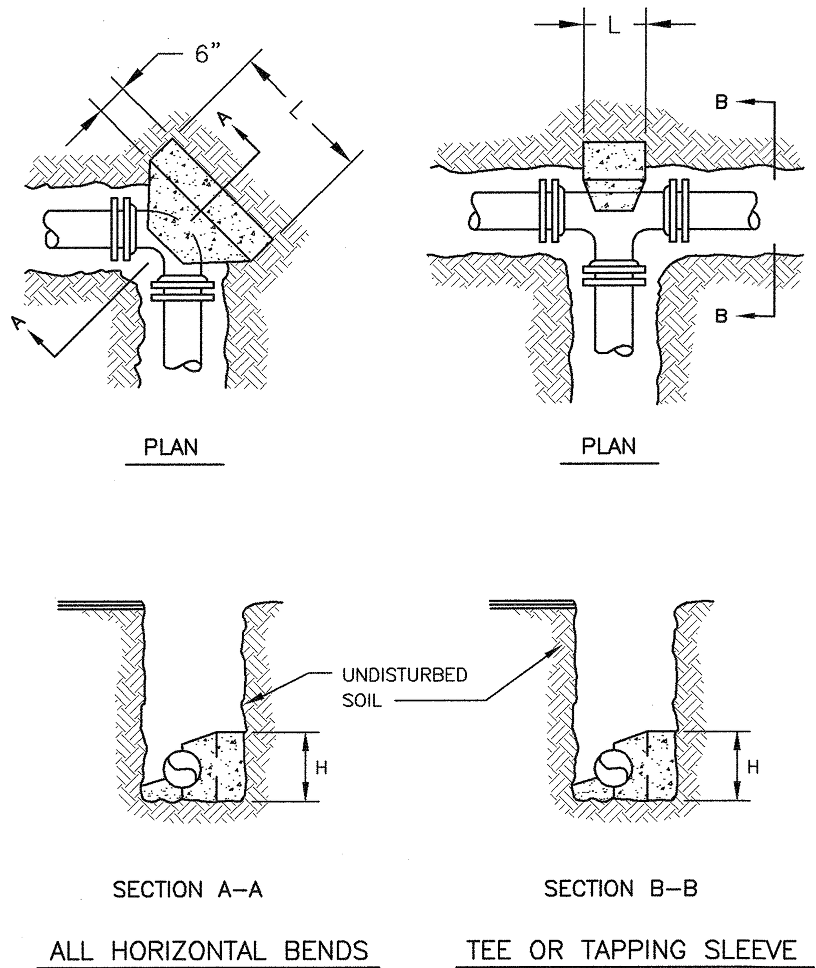
* – FOR 3" AND SMALLER PIPES

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.

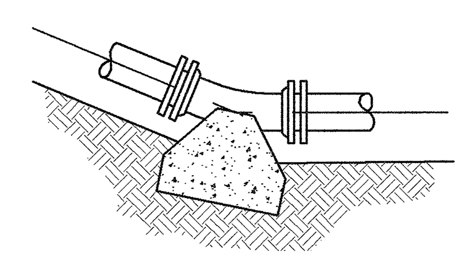


ALL HORIZONTAL BENDS

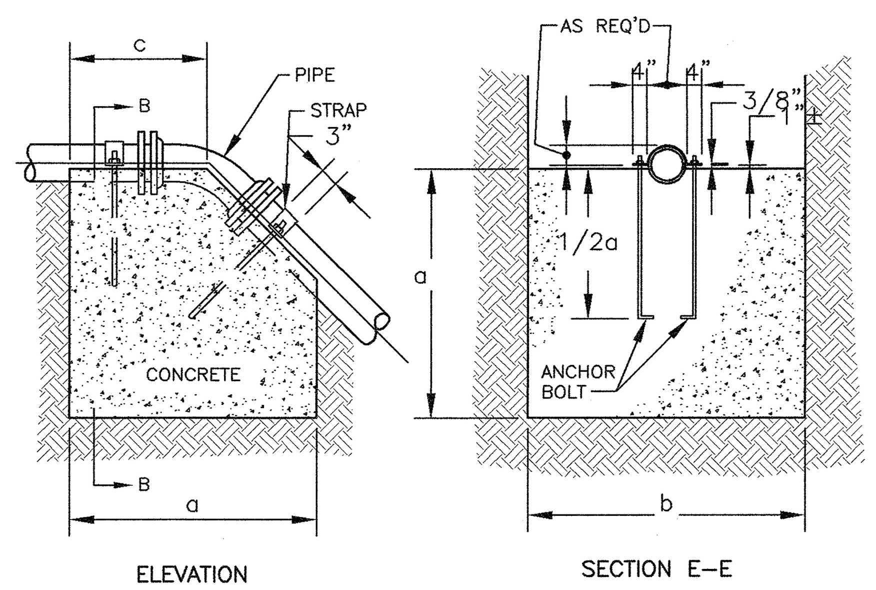
TEE OR TAPPING SLEEVE

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"

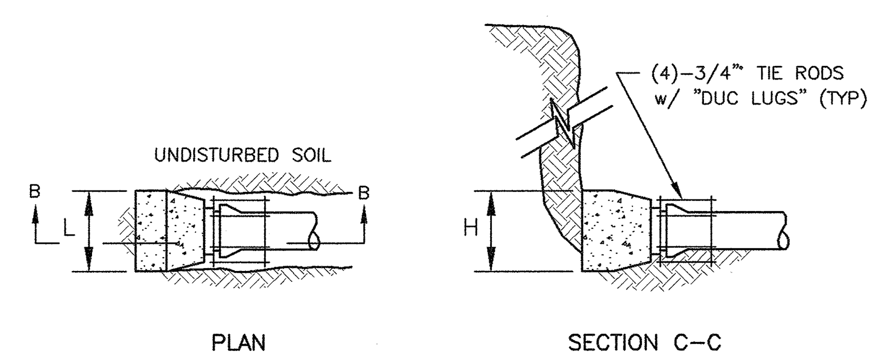


USE SAME DIMENSIONS AS FOR HORIZONTAL BEND ANCHORS



VERTICAL BEND

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



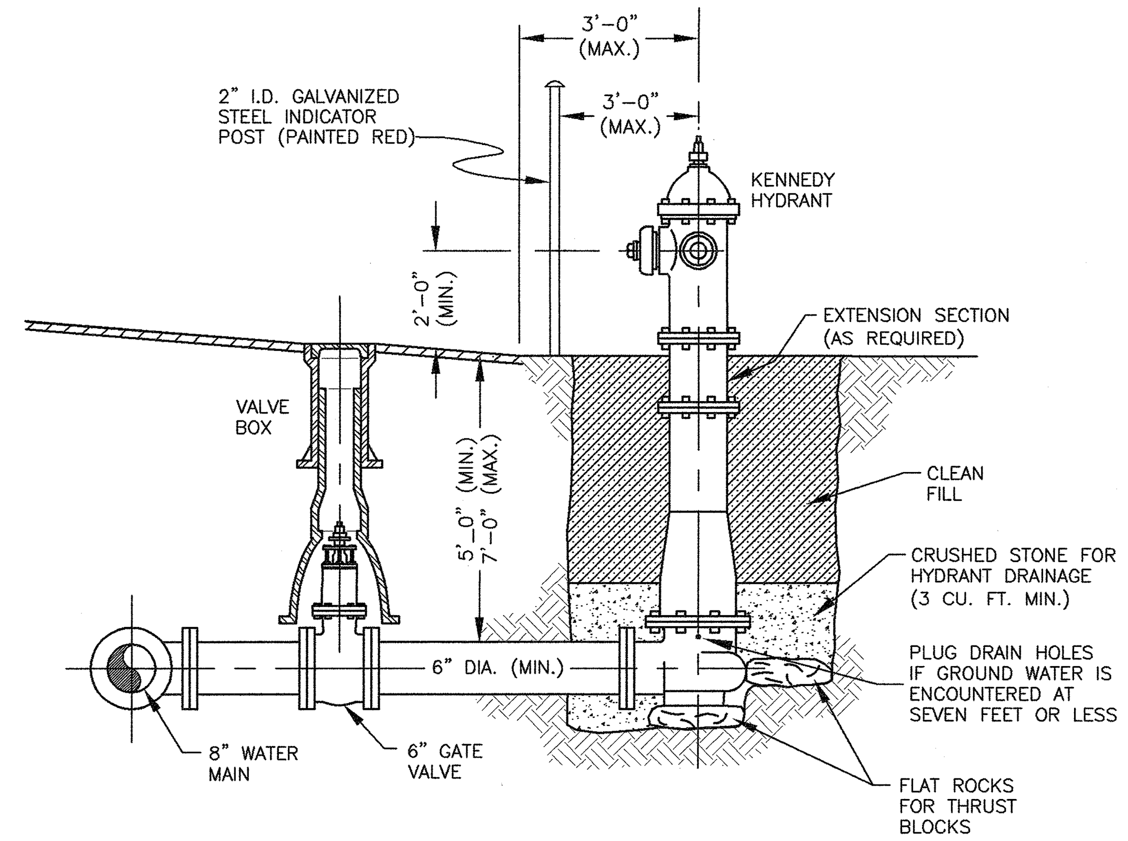
RESTRAINED PLUG OR CAP

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

VERTICAL ANCHORING

Q – PRESSURE PIPE ANCHORING DETAILS

NTS

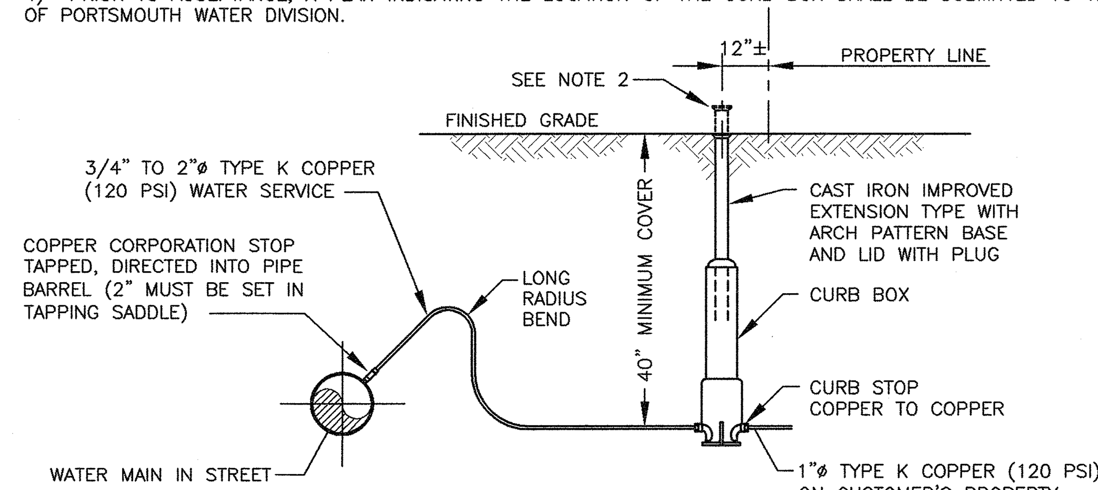


NOTES:
1) HYDRANTS SHALL BE INSTALLED A MAXIMUM DISTANCE OF 3 FEET CURB LINE TO OPERATING NUT.
2) THE PUMPER OUTLET NOZZLE SHALL FACE THE STREET.
3) CENTERLINE OF NOZZLES SHALL BE A MINIMUM OF 2 FEET ABOVE FINISHED GRADE OF STREET.
4) AREA AROUND HYDRANT SHALL BE GRADED TO ALLOW ANY SURFACE WATER TO DRAIN AWAY FROM HYDRANT.
5) HYDRANT SHALL BE FIRMLY SUPPORTED ALL AROUND THE STANDPIPE.
6) EARTH FILL SHALL BE TAMPED TO GIVE FIRM SUPPORT TO THE HYDRANT BARREL.
7) A GATE VALVE SHALL BE INSTALLED BETWEEN THE HYDRANT AND THE MAIN ON THE LATERAL.
8) HYDRANT LATERALS SHALL BE 6" INSIDE DIAMETER (MINIMUM).
9) HYDRANT LATERALS SHALL BE CONNECTED TO WATER MAINS 8 INCHES IN DIAMETER OR LARGER.
10) ALL JOINTS AT HYDRANT CONNECTION SHALL BE RESTRAINED MECHANICAL JOINTS.
11) INSTALLATION OF HYDRANTS IN AREAS OF HEAVY VEGETATIVE GROWTH SHALL HAVE A 10 FOOT RADIUS CLEAR AREA ALL AROUND THE OPERATING NUT OF THE HYDRANT.
12) THERE SHALL ALSO BE AN INDICATOR POST FABRICATED FROM 2 INCH INSIDE DIAMETER GALVANIZED STEEL PIPE, 7 FEET ABOVE FINISHED GRADE, AND SET 2 FEET BELOW GRADE IN CLASS "A" CONCRETE CONCRETE 6 INCHES ALL AROUND POST. THIS POST SHALL BE COATED WITH ZINC CHROMATE PRIMER AND PAINTED WITH HIGH VISIBILITY RED. THE INDICATOR POST SHALL BE NO CLOSER THAN 3 FEET FROM THE OPERATING NUT, AND SET ON THE SIDE OF THE HYDRANT FACING ONCOMING TRAFFIC. TOP OF POST SHALL BE THREADED AND CAPPED.
13) INSTALLATION OF HYDRANTS IN HEAVY GROWTH AREAS SHALL HAVE GATE BOXES RAISED 6 INCHES ABOVE GRADE AND SHALL BE PAINTED ORANGE FOR HIGH VISIBILITY.

R – FIRE HYDRANT INSTALLATION DETAIL

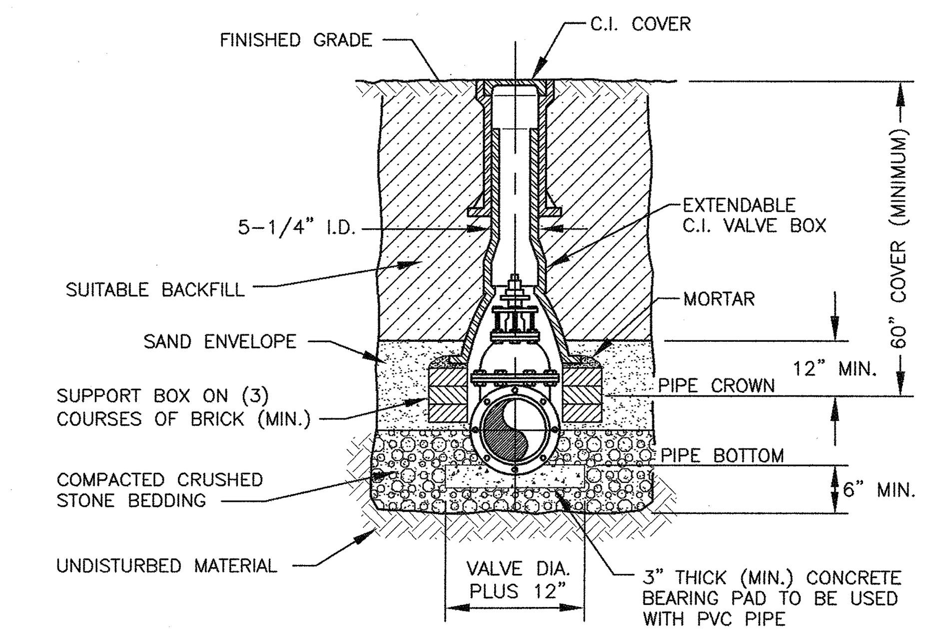
PORTSMOUTH NTS

NOTE:
1) INSTALLATION OF WATER MAIN TAP & CURB STOP & BOX SHALL ONLY BE PERFORMED BY THOSE AUTHORIZED BY THE PUBLIC WORKS DEPARTMENT.
2) IN AREAS OF HEAVY GROWTH THE CURB BOX COVER SHALL BE SET 6" ABOVE FINISH GRADE AND A WITNESS STAKE SET.
3) CURB BOX SHALL BE SET APPROXIMATELY 12" OUTSIDE PROPERTY LINE AS SHOWN.
4) PRIOR TO ACCEPTANCE, A PLAN INDICATING THE LOCATION OF THE CURB BOX SHALL BE SUBMITTED TO THE CITY OF PORTSMOUTH WATER DIVISION.



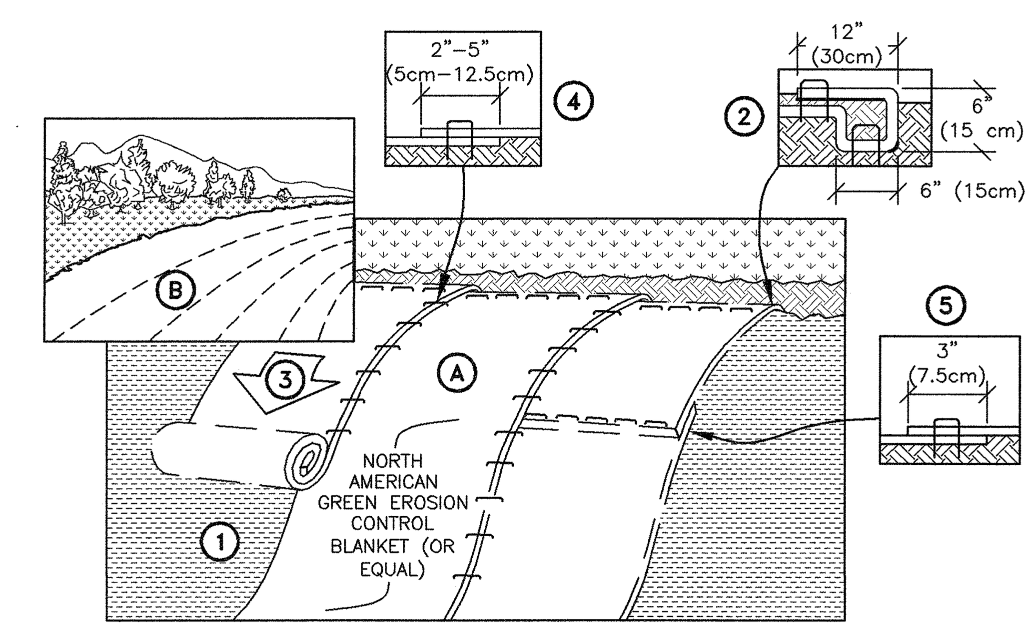
S – WATER SERVICE CONNECTION

(PORTSMOUTH) NTS



T – TYPICAL VALVE BOX INSTALLATION

NTS

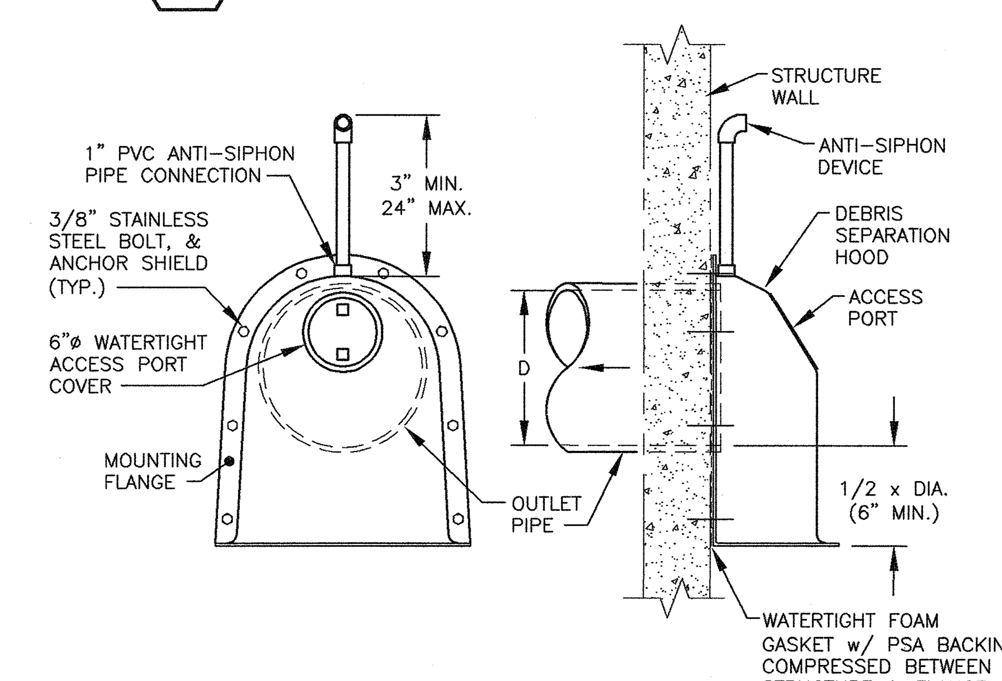


1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP'S), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
   NOTE: WHEN USING CELL–O–SEED DO NOT SEED PREPARED AREA. CELL–O–SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECEP'S IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP'S EXTENDED BEYOND THE UP–SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP'S WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP'S BACK OVER SEED AND COMPACTED SOIL. SECURE RECP'S OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE RECP'S.
3. ROLL THE RECP'S (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP'S WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP'S MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM™, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP'S MUST BE STAPLED WITH APPROXIMATELY 2"–5" OVERLAP DEPENDING ON RECP'S TYPE.
5. CONSECUTIVE RECP'S SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE RECP'S WIDTH.

NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTH GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE RECP'S.

U – EROSION CONTROL BLANKET

FOR SLOPES STEEPER THAN 3:1, UP TO 2:1 NTS



FRONT VIEW

SIDE VIEW

V – CATCH BASIN OUTLET HOOD DETAIL

THE "SNOUT" 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

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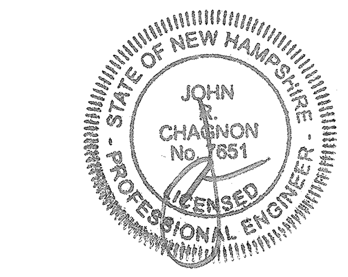
PROPOSED SUBDIVISION
CLIPPER TRADERS, LLC
105 BARTLETT STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	ISSUED FOR APPROVAL	10/16/18
1	ISSUED FOR COMMENT	9/18/18
0	ISSUED FOR COMMENT	2/12/18

REVISIONS



SCALE: AS NOTED FEBRUARY 2018

DETAILS

D4

2429

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN

DATE

GENERAL NOTES

1) MINIMUM PIPE SIZE FOR COMMERCIAL SERVICE SHALL BE SIX INCHES.

2) PIPE AND JOINT MATERIALS:

A. PLASTIC SEWER PIPE

1. PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING ASTM STANDARDS:

ASTM STANDARDS	GENERIC PIPE MATERIAL	SIZES APPROVED
D3034	*PVC (SOLID WALL)	8" THROUGH 15" (SDR 35)
F679	PVC (SOLID WALL)	18" THROUGH 27" (T-1 & T-2)
F789	PVC (SOLID WALL)	4" THROUGH 18" (T-1 To T-3)
F794	PVC (RIBBED WALL)	8" THROUGH 36"
AWWA C900	PVC (SOLID WALL)	8" THROUGH 18"

*PVC: POLYVINYL CHLORIDE

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

B. DUCTILE IRON PIPE, FITTINGS AND JOINTS.

1. DUCTILE IRON PIPE AND FITTINGS FOR SEWERS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE UNITED STATES OF AMERICA STANDARDS INSTITUTE:

A21.50 THICKNESS DESIGN OF DUCTILE IRON PIPE AND WITH ASTM A-536 DUCTILE IRON CASTINGS.

A21.51 DUCTILE IRON PIPE, CENTRIFUGALLY CAST IN METAL MOULDS OR SAND LINED MOULDS FOR SEWER APPLICATIONS.

2. JOINTS SHALL BE OF THE MECHANICAL OR PUSH ON TYPE. JOINTS AND GASKETS SHALL CONFORM TO:

A21.11 RUBBER GASKET JOINTS FOR CAST IRON PRESSURE PIPE & FITTINGS.

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

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

5) TEES AND WYES: WHERE A TEE OR WYE IS NOT AVAILABLE IN THE EXISTING STREET SEWER, AN APPROPRIATE CONNECTION SHALL BE MADE DEPENDING ON THE PIPE ENCOUNTERED, FOR PVC PIPE, USE PVC SADDLES OR INSERT-A-TEE, OR CUT IN A SANITARY TEE. FOR CLAY PIPE, USE INSERT-A-TEE OR CUT IN A SANITARY TEE. ALL WORK TO BE APPROVED BY GOVERNING BODY.

6) HOUSE SEWER INSTALLATION: THE PIPE SHALL BE HANDLED, PLACED AND JOINTED IN ACCORDANCE WITH INSTALLATION GUIDES OF THE APPROPRIATE MANUFACTURER. IT SHALL BE CAREFULLY BEDDED ON A 4 INCH LAYER OF CRUSHED STONE AND/OR GRAVEL AS SPECIFIED IN NOTE 10. BEDDING AND REFILL FOR DEPTH OF 12 INCHES ABOVE THE TOP OF THE PIPE SHALL BE CAREFULLY AND THOROUGHLY TAMPED BY HAND OR WITH APPROPRIATE MECHANICAL DEVICES.

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

7) TESTING: WHEN REQUIRED BY THE GOVERNING AUTHORITY, TESTING SHALL CONFORM TO ENV-WQ 704.07.

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

9) WATER SERVICE SHALL NOT BE LAID IN SAME TRENCH AS SEWER SERVICE, UNLESS IT IS ON A SHELF 12" HIGHER, AND 18" APART.

10) BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE, FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33 STONE SIZE NO. 67.

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

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

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

12) CAST-IN-PLACE CONCRETE: SHALL CONFORM TO THE REQUIREMENTS FOR CLASS A (3000 PSI) CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS AS FOLLOWS:

CEMENT: 6.0 BAGS PER CUBIC YARD
WATER: 5.75 GALLONS PER BAG OF CEMENT
MAXIMUM AGGREGATE SIZE: 3/4 INCH

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

14) BACKFILL UP TO SUBBASE GRAVEL SHALL BE WITH EXCAVATED SOIL FROM TRENCHING OPERATIONS. COMPACT IN 8" LIFTS WITH VIBRATORY PLATE COMPACTORS TO 90% OF MODIFIED PROCTOR DENSITY. IF FINE-GRAINED, COMPACT WITH POGO STICKS OR SHEEPSFOOT ROLLERS. PLACE NO LARGE ROCKS WITHIN 24" OF PIPE. TRENCHES THAT ARE NOT ADEQUATELY COMPACTED SHALL BE RE-EXCAVATED AND BACKFILLED UNDER THE SUPERVISION OF THE DESIGN ENGINEER OR GOVERNING BODY. UNSUITABLE BACKFILL MATERIAL INCLUDES CHUNKS OF PAVEMENT, TOPSOIL, ROCKS OVER 6" IN SIZE, MUCK, PEAT OR PIECES OF PAVEMENT.

15) THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB-SITE SAFETY AND COMPLIANCE WITH GOVERNING REGULATIONS.

GENERAL NOTES, cont'd

16) ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE. REFILL WITH BEDDING MATERIAL. FOR TRENCH WIDTH SEE TRENCH DETAIL.

17) SAND BLANKET: CLEAN SAND, FREE FROM ORGANIC MATTER, SO GRADED THAT 90% - 100% PASSES A 1/2 INCH SIEVE AND NOT MORE THAN 15% WILL PASS A #200 SIEVE. BLANKET MAY BE OMITTED FOR DUCTILE IRON AND REINFORCED CONCRETE PIPE PROVIDED THAT NO STONE LARGER THAN 2 INCHES IS IN CONTACT WITH THE PIPE.

18) BASE COURSE GRAVEL, IF ORDERED BY THE ENGINEER, SHALL MEET THE REQUIREMENTS OF DIVISION 300 OF THE LATEST EDITION OF THE:

STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION OF THE STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION.

19) FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.

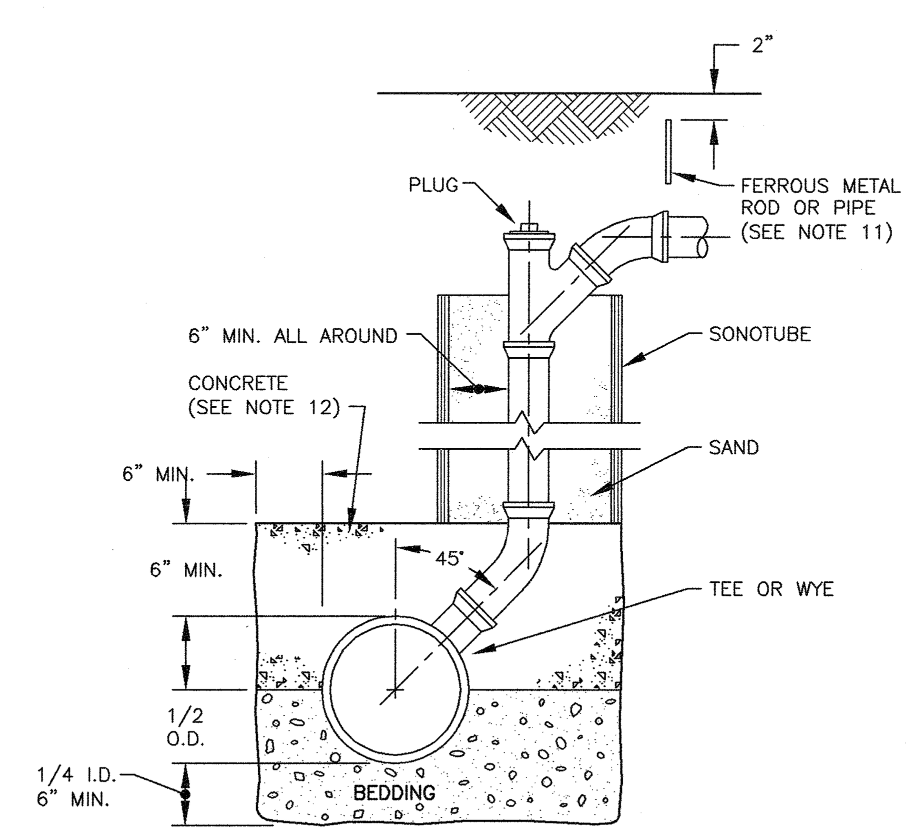
20) IF FULL ENCASEMENT IS UTILIZED, DEPTH OF CONCRETE BELOW PIPE SHALL BE 1/4 I.D. (4" MIN.) BLOCK SUPPORT SHALL BE SOLID CONCRETE BLOCKS.

21) 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).

22) THE CONTRACTOR SHALL NOTIFY DIG SAFE AT 1-888-DIG-SAFE (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO COMMENCING ANY EXCAVATION.

23) THE PURPOSE OF THIS PLAN IS TO SHOW STANDARDS FOR SEWER CONSTRUCTION.

24) ALL WORK SHALL BE IN COMPLIANCE WITH NHDES CODE OF ADMINISTRATIVE RULES PART ENV-WQ 704 DESIGN OF SEWERS.

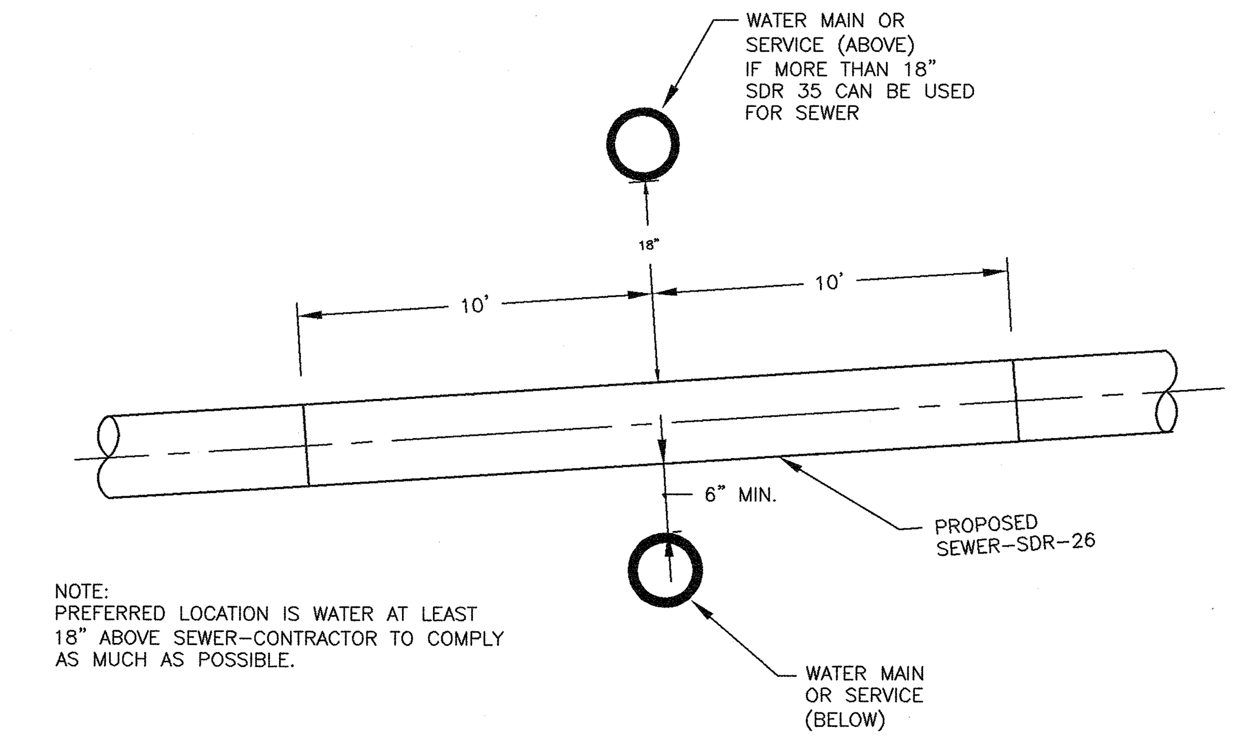


NO BACKFILLING BEFORE CONCRETE HAS TAKEN INITIAL SET (7 HRS. MIN.). BACKFILLING TO BE BROUGHT UP EVENLY ON ALL SIDES.

X / – CHIMNEY (SEE NOTE 13) IF NEEDED
NOT TO SCALE

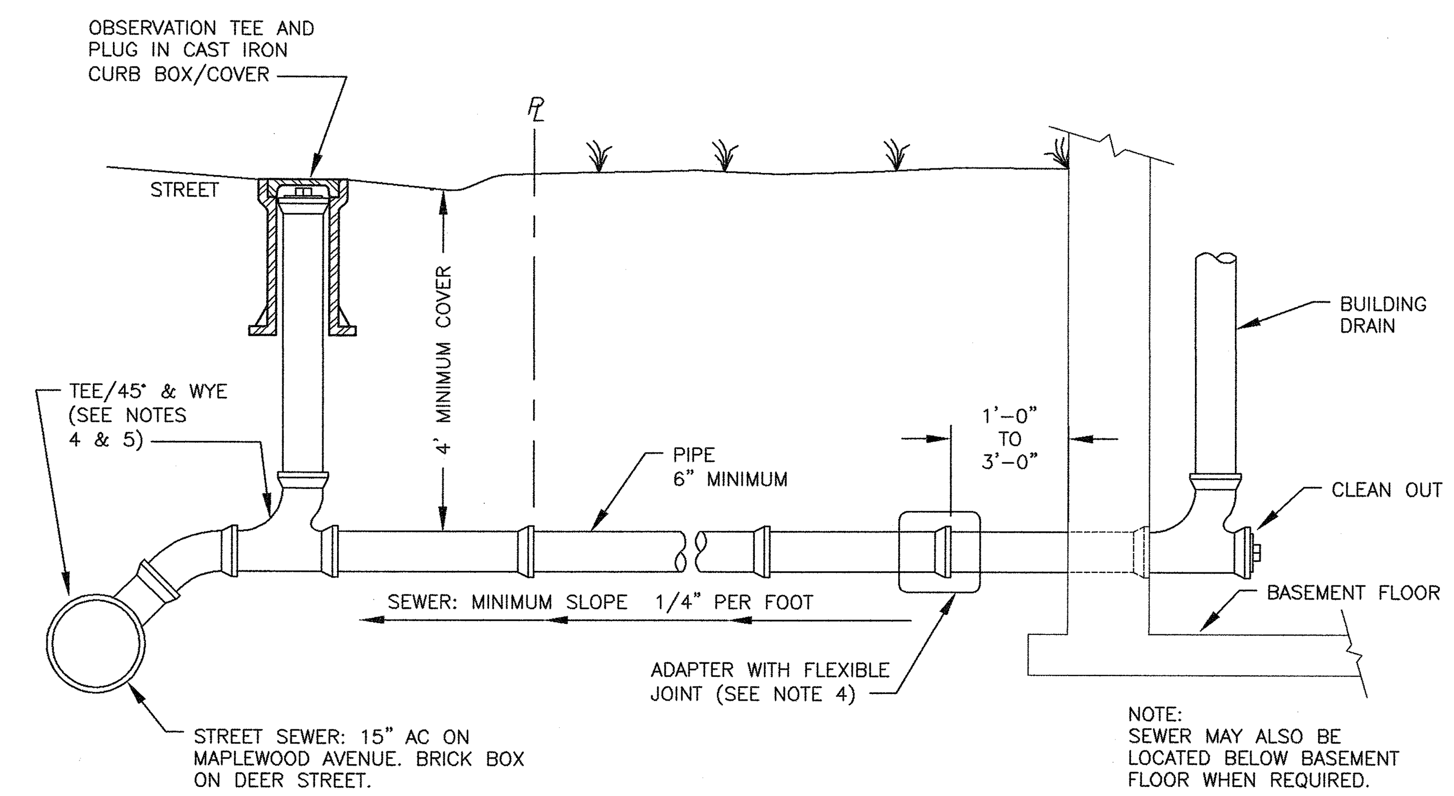
APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN ______________ DATE ______________



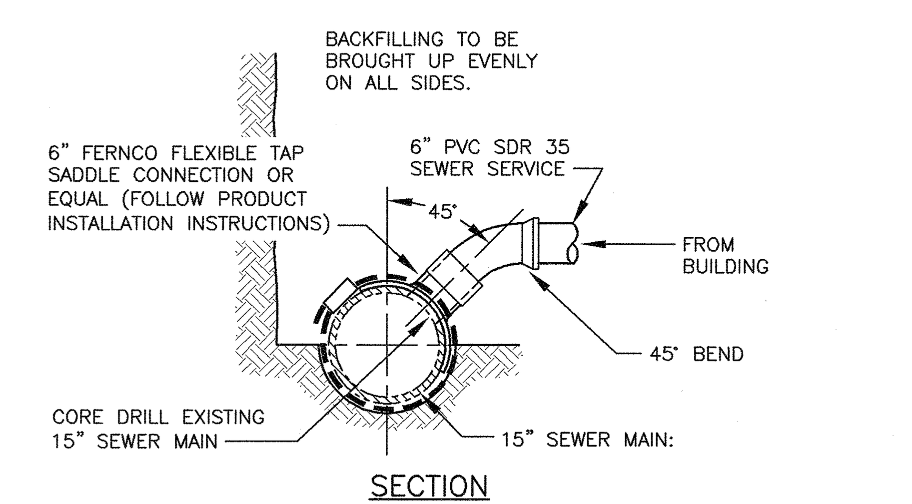
NOTE: PREFERRED LOCATION IS WATER AT LEAST 18" ABOVE SEWER-CONTRACTOR TO COMPLY AS MUCH AS POSSIBLE.

W / – WATER CROSSING
IF NEEDED-WHERE WATER LINE IS LESS THAN 18" ABOVE (OR IS BELOW) SEWER. NTS



NOTE: SEWER MAY ALSO BE LOCATED BELOW BASEMENT FLOOR WHEN REQUIRED.

Y / – SEWER SERVICE
NOT TO SCALE NTS



SECTION

Z / – SEWER SERVICE CONNECTION DETAIL
(AC PIPE) NTS

NOTE: COORDINATE DESIGN OF BRICK BOX SEWER CONNECTION WITH CITY OF PORTSMOUTH DPW. PROVIDE SHOP DRAWINGS FOR REVIEW.

AMBIT ENGINEERING, INC.
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PROPOSED SUBDIVISION
CLIPPER TRADERS, LLC
105 BARTLETT STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR APPROVAL	10/16/18

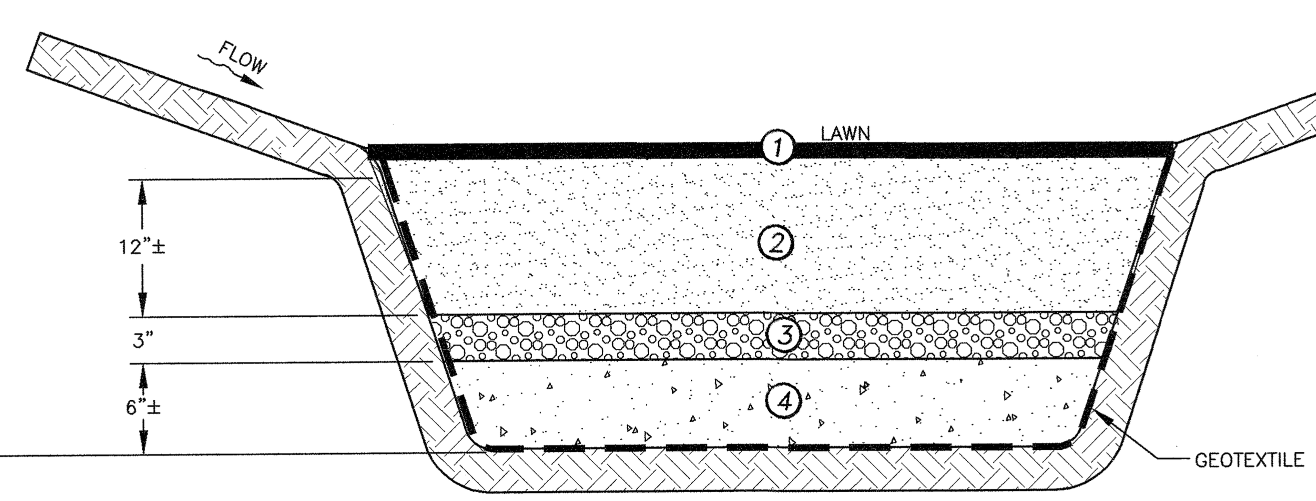
REVISIONS

STATE OF NEW HAMPSHIRE JOHN R. CHAGNON No. 7661 LICENSED PROFESSIONAL ENGINEER

SCALE: AS NOTED FEBRUARY 2018

SEWER DETAILS D5

2429



AA RAIN GARDEN
—
NTS

SAND SPECIFICATION	
SIEVE SIZE	ASTM C33 FINE AGGREGATE SPECIFICATION
3/8"	100
#4	95–100
#8	80–100
#10	50–85
#16	50–85
#30	25–60
#40	50–85
#50	5–30
#100	0–10

RAIN GARDEN MEDIA

1. BIORETENTION BASIN SEED MIX
2. SOIL FILTER LAYER:
   20% – 30% MULCH BY VOLUME, MIXED THOROUGHLY WITH LOAMY, COARSE SAND (70% – 80% BY VOLUME) MEETING THE FOLLOWING GRADATION;

SIEVE NO.	% BY WEIGHT, PASSING
10	85 – 100
20	70 –100
60	15 – 40
200	8 – 15

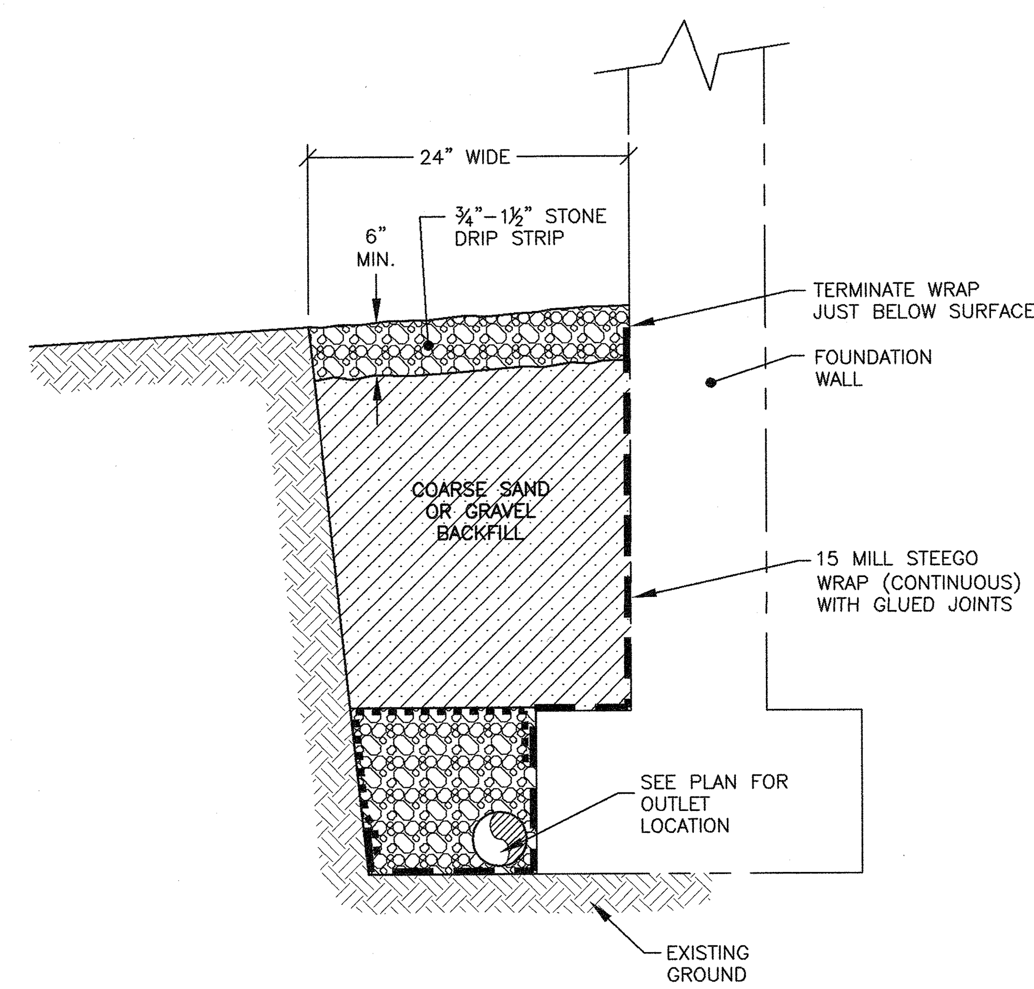
3. 3/8" PEA STONE
4. 0.75"ø – 1.5"ø CRUSHED STONE, WASHED.

FILTRATION MAINTENANCE
SOILS: VISUALLY INSPECT AND REPAIR EROSION MONTHLY. USE SMALL STONES TO STABILIZE EROSION ALONG DRAINAGE PATHS. CHECK THE pH ONCE OR TWICE A YEAR. APPLY AN ALKALINE PRODUCT, SUCH AS LIMESTONE, IF NEEDED.

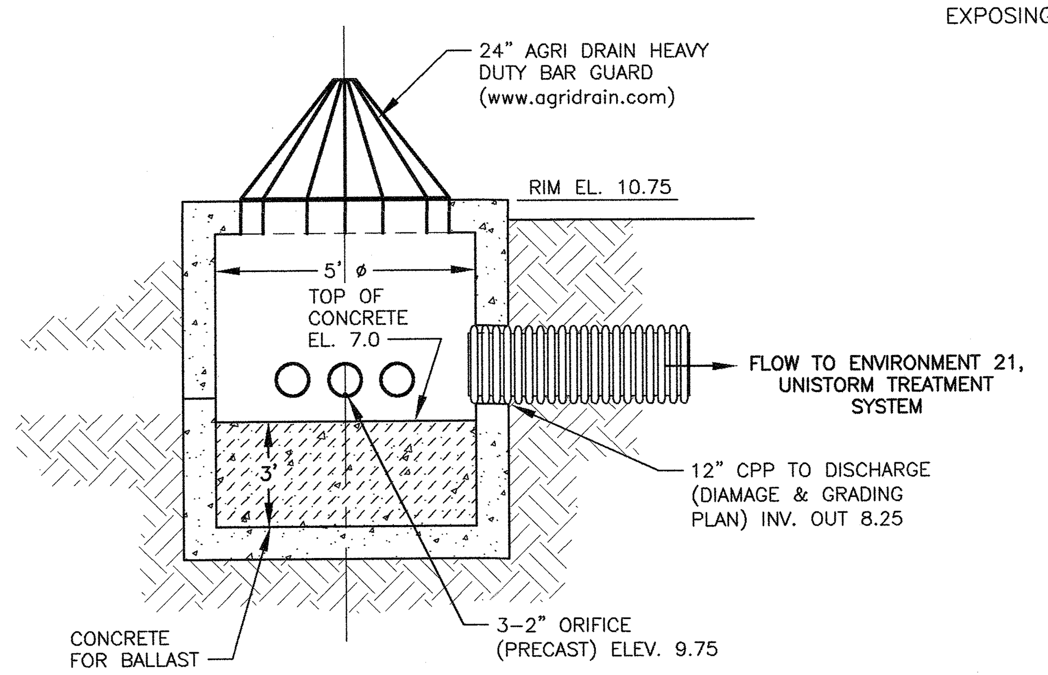
IF FILTRATION BASIN FAILS TO EMPTY 72 AFTER A RAINFALL, THE BASIN SHALL BE INSPECTED. IF AFTER INSPECTION IT IS DETERMINED THAT THE ENGINEERED SOIL HAS CLOGGED, THE ENGINEERED SOIL SHALL BE REPLACED. IN THE EVENT OF SOIL REPLACEMENT IN THE FILTRATION BASIN, AN AIRSPADE SHALL BE USED, TO CAREFULLY REMOVE THE SOILS SURROUNDING THE TREE ROOTS. TREE ROOTS ARE TO BE PROTECTED FROM DRYING OUT DURING THE PLACEMENT OF NEW SOILS AND NEW SOILS ARE TO BE REPLACED IMMEDIATELY UPON EXPOSING THE ROOT SYSTEMS.

FILTRATION CONSTRUCTION
SOILS: DO NOT COMPACT SOIL. EXCAVATE BASIN, HAND RAKE STONE, PEA STONE AND MULCH LAYERS.

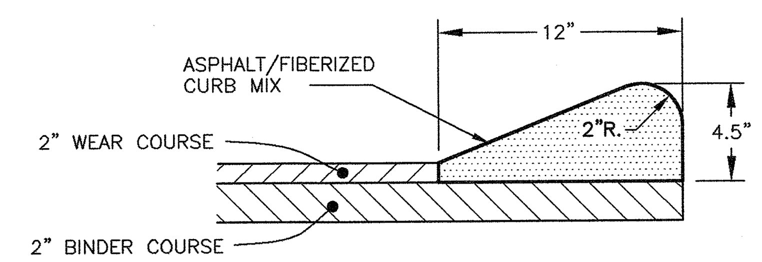
FILTRATION CONSTRUCTION INSPECTION
INSPECT EACH LAYER OF CONSTRUCTION: CONTACT THE PORTSMOUTH DEPARTMENT OF PUBLIC WORKS FOR INSPECTIONS DURING THE CONSTRUCTION PROCESS. CALL FOR INSPECTION BEFORE FILLING EXCAVATION WITH STONE, PEA STONE AND MULCH.



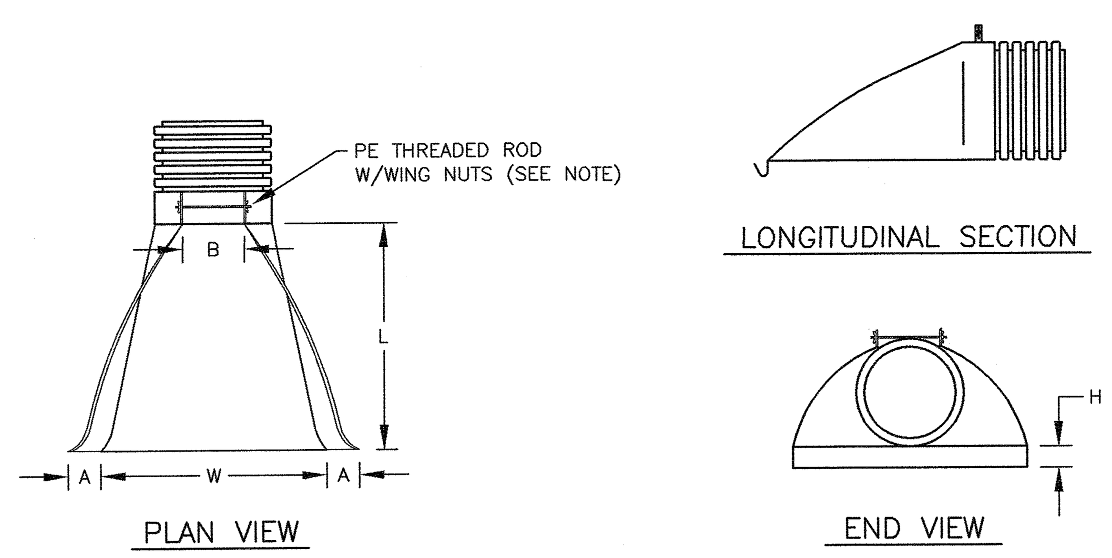
BB STONE DRIP APRON
(UNDER BUILDING DRIP LINE) NTS
—



EE RAIN GARDEN OUTLET CONTROL STRUCTURE
—
NTS



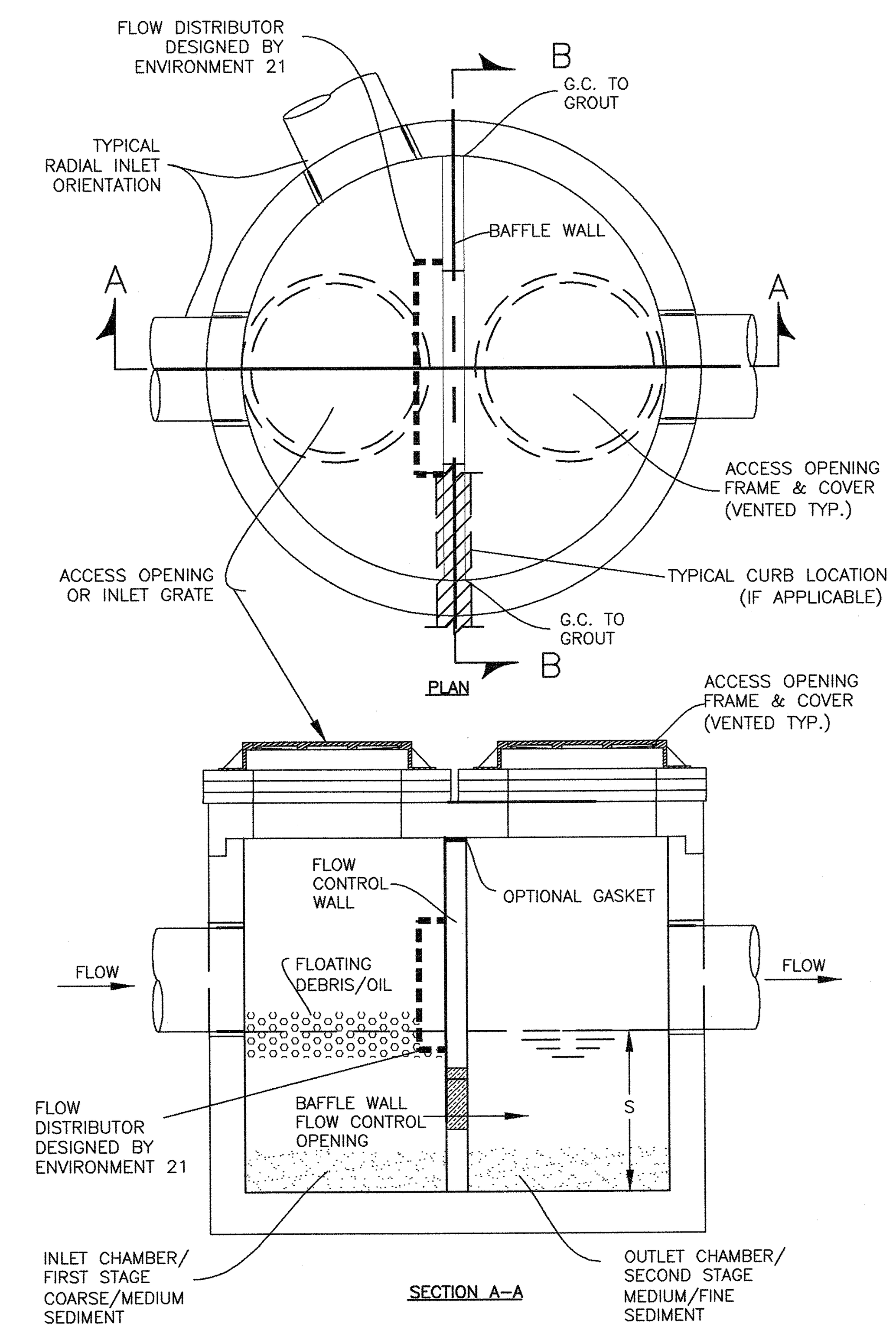
DD CAPE COD BERM
—
NTS



PART NO.	PIPE SIZE	A	B (MAX.)	H	L	W
1210–NP	12" / 300mm	6.5" / 165mm	10" / 254mm	6.5" / 165mm	25" / 635mm	29" / 735mm
1510–NP	15" / 375mm	6.5" / 165mm	10" / 254mm	6.5" / 165mm	25" / 635mm	29" / 735mm
1810–NP	18" / 450mm	7.5" / 190mm	15" / 380mm	6.5" / 165mm	32" / 812mm	35" / 890mm
2410–NP	24" / 600mm	7.5" / 190mm	18" / 450mm	6.5" / 165mm	36" / 900mm	45" / 1140mm
3012–NP	30" / 750mm	10.5" / 266mm	N/A	7.0" / 178mm	53" / 1345mm	68" / 1725mm
3612–NP	36" / 900mm	10.5" / 266mm	N/A	7.0" / 178mm	53" / 1345mm	68" / 1725mm

NOTE: PE THREADED ROD w/ WING NUTS PROVIDED FOR END SECTIONS 12"–24", 30" & 36" END SECTIONS TO BE WELDED TO PIPE PER MANUFACTURER'S RECOMMENDATIONS.

FF ADVANCED DRAINAGE SYSTEM (ADS) FLARED END SECTION
—
NTS



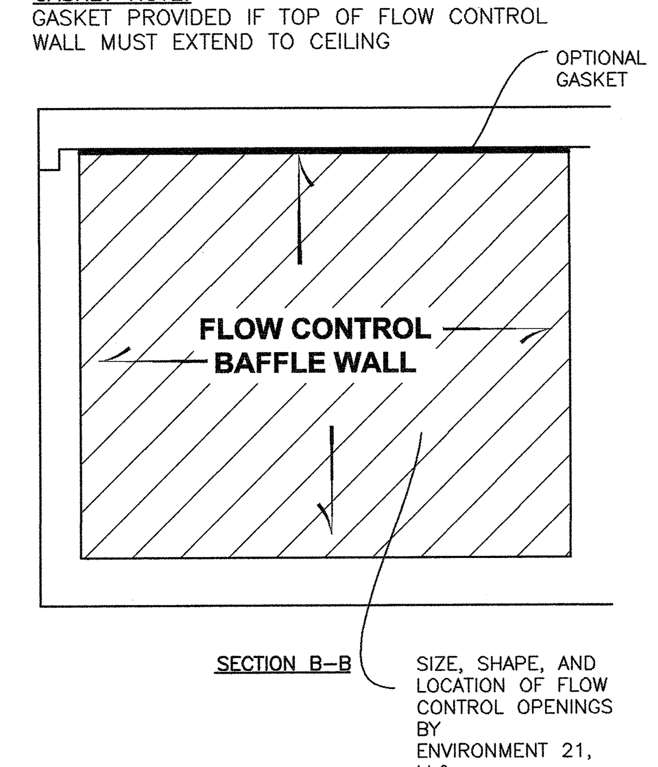
GENERAL NOTES:
MANHOLE DESIGN SPECIFICATIONS CONFORM TO LATEST A.S.T.M. C478 SPEC. FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS.
DESIGN LOADING: AASHTO HS20–44

NOTES:
1) RAINFALL INTENSITY USED FOR TREATMENT FLOW = 0.80–1.0 IN/HR

MANUFACTURING NOTES:
1) DESIGN OF INTERNAL BAFFLE WALL PROVIDED TO LICENSED MANUFACTURER BY ENVIRONMENT 21, LLC.
2) LOCATION AND SIZE OF MANHOLE OPENINGS MAY BE ADJUSTED BY LICENSED MANUFACTURER.
3) G.C. TO GROUT INLET AND OUTLET PIPES.

GENERAL DESIGN GUIDELINES FOR UNISTORM TREATMENT CHAMBER
1) FLOW DISTRIBUTOR USED TO DISSIPATE INLET FLOW STIRRING POWER.
THIS ELIMINATES THE NEED TO BYPASS HIGH FLOW EVENTS.
2) TYPICAL INTERNAL HEAD LOSS FOR DESIGN STORM IS 0.20 FT.
3) DESIGN OF FLOW CONTROL BAFFLE WALL AND FLOW DISTRIBUTOR BASED ON ENVIRONMENT 21 ANALYSIS OF SITE–SPECIFIC STORM SEWER HYDRAULICS.
4) SITE–SPECIFIC AUTOCAD DRAWING DETAIL PREPARED BY ENVIRONMENT 21 AVAILABLE

GASKET NOTE:
GASKET PROVIDED IF TOP OF FLOW CONTROL WALL MUST EXTEND TO CEILING



SECTION B–B

SIZE, SHAPE, AND LOCATION OF FLOW CONTROL OPENINGS BY ENVIRONMENT 21, LLC

GG STORMWATER TREATMENT DEVICE
—
NTS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
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PROPOSED SUBDIVISION CLIPPER TRADERS, LLC 105 BARTLETT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
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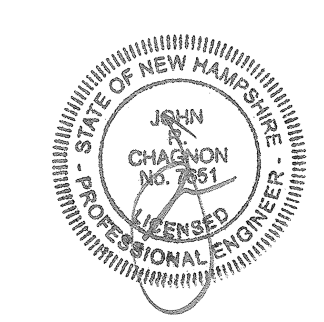
REVISIONS



SCALE: AS NOTED FEBRUARY 2018

DETAILS D6

2429

AMBIT ENGINEERING, INC. CIVIL ENGINEERS AND LAND SURVEYORS
200 Griffin Road, Unit 3, Portsmouth, NH 03801 Phone (603) 430-9282 Fax 436-2315

16 October 2018

Ms. Juliet Walker, Chair
City of Portsmouth Technical Advisory Committee
1 Junkins Avenue
Portsmouth, NH 03801

RE: Subdivision Approval for 105 Bartlett Street; Clipper Traders

Dear Ms. Walker and TAC Members:

We hereby submit, on behalf of Clipper Traders, the attached for consideration at your October 30, 2018 TAC Committee Meeting. The following plan changes / additional submission items are included in response to the comments received at your October 2, 2018 TAC Meeting:

- An updated checklist is included.
- Waiver requests to the appropriate Portsmouth road standards are included in a separate letter.
- Existing utilities are shown.
- The plans show proposed utilities.
- The plans show the full extent of Lot 5.
- Parking Calculations for each lot are included.
- Proposed sidewalk is detailed.
- Stormwater separation from the existing sewer is detailed.
- Easements are detailed.
- Stormwater run-off treatment is detailed; Drainage Analysis provided.
- Snow storage is shown.
- Hydrant locations have been detailed.
- Building at lot line issue resolution shown.
- Detailed landscape Plans included.
- Impervious surface calculations have been updated.

Please place us on the agenda for the October 30, 2018 TAC Meeting. Please feel free to call if you have any questions or comments.

Sincerely,

John Chagnon, PE
Ambit Engineering, Inc.

CC (via email): Doug Pinciaro, Ed Hayes, Kevin Baum, Brandon Holben, Steve Pernaw

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AMBIT ENGINEERING, INC. CIVIL ENGINEERS AND LAND SURVEYORS
200 Griffin Road, Unit 3, Portsmouth, NH 03801 Phone (603) 430-9282 Fax 436-2315

16 October, 2018

Juliet T. W. Walker, Planning Director
City of Portsmouth Technical Advisory Committee
1 Junkins Avenue
Portsmouth, NH 03801

RE: Waiver Requests for Subdivision Approval for 105 Bartlett Street; Clipper Traders

Dear Ms. Walker;

On behalf of Clipper Traders, and in conjunction with the application for Subdivision Approval for the above reference property, we hereby submit the following waiver requests to the City of Portsmouth Subdivision Regulations; Section VI General Requirements. The waivers are requested to support the proposed subdivision of land. Land from the existing B&M property will be added to the current private lot holdings; currently most of the land is leased to the applicants. Also, some additional land not leased will be added to create Lot 5 for future development. The waivers will allow the existing, functional driveway (with modifications) to remain as it currently exists servicing the existing businesses. We propose to leave the first 600 feet of the road as it currently exists in profile, though we propose modifications to the width and adjacent parking to better serve the businesses currently developed on the proposed roadway and to provide for additional safety now and in the future when Lot 5 is developed and additional traffic is added. The Proposed Road, from station 6+00 to the proposed cul-de-sac will be re-constructed. The waivers allow this existing road condition to be developed in a formal manner. The re-use of this section allows for potential modification as a result of the Proposed Greenway Project. Those design improvements need not be constrained by recently constructed improvements. The requested waivers are:

- Section VI 3.B Minimum Right of Way. The plan proposes a 50 foot right of way where 60 feet is required.
- Section VI 3. I Maximum Cul-de-Sac length. The plan proposes a 1,050 +/- long cul-de-sac where a maximum length of a cul-de-sac is generally limited to 500 feet.
- Section VI 3. O Grade of Streets. The plan proposes to leave existing grades in place for the first 600 feet of the proposed road where minimum grades of 1% are required.

We feel that the waivers are justified as the improvements will increase roadway safety and functionality. The existing width available, between the buildings, limits the available right-of-way to 50 feet. The existing roadway serves structures in excess of the proposed cul-de-sac length; without the benefit of a safe, dedicated turn around. Granting the waiver will allow the construction of a dedicated, fire truck compliant turn around at the end of the existing roadway. The grades of the existing roadway, in the section we propose to leave as is, perform well. The plans include improvements to the drainage in this section, as well as lane and parking improvements.

We hereby respectfully request that you recommend that the Planning Board vote in the affirmative to grant the requested waivers.

Sincerely,

John Chagnon, PE
Ambit Engineering, Inc.

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City of Portsmouth, New Hampshire

Subdivision Application Checklist

This subdivision 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 subdivision review requirements. Please refer to the Subdivision review regulations for full details.

Applicant Responsibilities (Section III.C): Applicable fees are due upon application submittal along with required number of copies of the Preliminary or final plat and supporting documents and studies. Please consult with Planning staff for submittal requirements.

Owner: Boston & Maine Railroad Date Submitted: October 16, 2018

Applicant: Clipper Traders LLC

Phone Number: 603-475-2828 E-mail: ______

Site Address 1: 105 Bartlett Street Map: ______ Lot: ______

Site Address 2: Tax Map 157, Lots 1 & 2, Lots 1 Map: ______ Lot: ______

Application Requirements			
☐	**Required Items for Submittal**	**Item Location (e.g. Page or Plan Sheet/Note #)**	**Waiver Requested**
☐	Completed Application form. **(III.C.2-3)**	Submitted	N/A
☐	All application documents, plans, supporting documentation and other materials provided in digital Portable Document Format (PDF) on compact disc, DVD or flash drive. **(III.C.4)**	Submitted	N/A

Requirements for Preliminary/Final Plat				
☐	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
☐	Name and address of record owner, any option holders, descriptive name of subdivision, engineer and/or surveyor or name of person who prepared the plat. **(Section IV.1/V.1)**	Cover Sheet	☐ Preliminary Plat ☐ Final Plat	N/A

Requirements for Preliminary/Final Plat				
☐	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
☐	**Preliminary Plat** Names and addresses of all adjoining property owners. **(Section IV.2)** **Final Plat** Names and addresses of all abutting property owners, locations of buildings within one hundred (100) feet of the parcel, and any new house numbers within the subdivision. **(Section V.2)**	Subdivision Overall Plan	☐ Preliminary Plat ☐ Final Plat	N/A
☐	North point, date, and bar scale. **(Section IV.3/V3)**	Required on all Plan Sheets	☐ Preliminary Plat ☐ Final Plat	N/A
☐	Zoning classification and minimum yard dimensions required. **(Section IV.4/V.4)**	Subdivision Overall Plan	☐ Preliminary Plat ☐ Final Plat	N/A
☐	**Preliminary Plat** Scale (not to be smaller than one hundred (100) feet = 1 inch) and location map (at a scale of 1" = 1000'). **(Section IV.5)** **Final Plat** Scale (not to be smaller than 1"=100'), Location map (at a scale of 1"=1,000') showing the property being subdivided and its relation to the surrounding area within a radius of 2,000 feet. Said location map shall delineate all streets and other major physical features that my either affect or be affected by the proposed development. **(Section V.5)**	Previously Submitted	☐ Preliminary Plat ☐ Final Plat	N/A
☐	Location and approximate dimensions of all existing and proposed property lines including the entire area proposed to be subdivided, the areas of proposed lots, and any adjacent parcels in the same ownership. **(Section IV.6)**	Subdivision Plans	☐ Preliminary Plat ☐ Final Plat	
☐	Dimensions and areas of all lots and any and all property to be dedicated or reserved for schools, parks, playgrounds, or other public purpose. Dimensions shall include radii and length of all arcs and calculated bearing for all straight lines. **(Section V.6/ IV.7)**	None Shown	☐ Preliminary Plat ☐ Final Plat	N/A
☐	Location, names, and present widths of all adjacent streets, with a designation as to whether public or private and approximate location of existing utilities to be used. Curbs and sidewalks shall be shown. **(Section IV.8/V.7)**	Overall Subdivision Plan	☐ Preliminary Plat ☐ Final Plat	

Requirements for Preliminary/Final Plat				
☐	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
	Location of significant physical features, including bodies of water, watercourses, wetlands, railroads, important vegetation, stone walls and soils types that my influence the design of the subdivision. **(Section IV.9/V.8)**	Existing Conditions Plan C1 – C3	☐ Preliminary Plat ☐ Final Plat	
☐	**Preliminary Plat** Proposed locations, widths and other dimensions of all new streets and utilities, including water mains, storm and sanitary sewer mains, catch basins and culverts, street lights, fire hydrants, sewerage pump stations, etc. **(Section IV.10)** **Final Plat** Proposed locations and profiles of all proposed streets and utilities, including water mains, storm and sanitary sewer mains, catchbasins and culverts, together with typical cross sections. Profiles shall be drawn to a horizontal scale of 1"=50' and a vertical scale of 1"=5', showing existing centerline grade, existing left and right sideline grades, and proposed centerline grade. **(Section V.9)**	Roadway Plan and Profiles P1-P2 Overall Utility Exhibit 03	☐ Preliminary Plat ☐ Final Plat	
☐	When required by the Board, the plat shall be accompanied by profiles of proposed street grades, including extensions for a reasonable distance beyond the subject land; also grades and sizes of proposed utilities. **(Section IV.10)**	Sheets P1 & P2	☐ Preliminary Plat ☐ Final Plat	
☐	Base flood elevation (BFE) for subdivisions involving greater than five (5) acres or fifty (50) lots. **(Section IV.11)**	Existing Conditions Plan FIRM Maps in Supplemental Information	☐ Preliminary Plat ☐ Final Plat	
☐	For subdivisions of five (5) lots or more, or at the discretion of the Board otherwise, the preliminary plat shall show contours at intervals no greater than two (2) feet. Contours shall be shown in dotted lines for existing natural surface and in solid lines for proposed final grade, together with the final grade elevations shown in figures at all lot corners. If existing grades are not to be changed, then the contours in these areas shall be solid lines. **(Section IV.12/ V.12)**	Existing provided at 1-foot interval contours. Sheets C1-C3	☐ Preliminary Plat ☐ Final Plat	

Requirements for Preliminary/Final Plat				
☐	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Required for Preliminary / Final Plat**	**Waiver Requested**
☐	Dates and permit numbers of all necessary permits from governmental agencies from which approval is required by Federal or State law. **(Section V.10)**	Environmental Permit Plan 0S2	Preliminary Plat ☐Final Plat	
☐	For subdivisions involving greater than five (5) acres or fifty (50) lots, the final plat shall show hazard zones and shall include elevation data for flood hazard zones. **(Section V.11)**	Lot Plan C4-C8	Preliminary Plat ☐Final Plat	
☐	Location of all permanent monuments. **(Section V.12)**	To Be Set on Approval	Preliminary Plat ☐Final Plat	

General Requirements[1]			
☐ Required Items for Submittal		Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
☐	**1. Basic Requirements: (VI.1)** a. Conformity to Official Plan or Map b. Hazards c. Relation to Topography d. Planned Unit Development	Conforms with the exception of some structure setbacks. Variance obtained. See Sheet OS1	
☐	**2. Lots: (VI.2)** a. Lot Arrangement b. Lot sizes c. Commercial and Industrial Lots	Subdivision Plans	
☐	**3. Streets: (VI.3)** a. Relation to adjoining Street System b. Street Rights-of-Way c. Access d. Parallel Service Roads e. Street Intersection Angles f. Merging Streets g. Street Deflections and Vertical Alignment h. Marginal Access Streets i. Cul-de-Sacs j. Rounding Street Corners k. Street Name Signs l. Street Names m. Block Lengths n. Block Widths o. Grade of Streets p. Grass Strips	Meet Ordinance with the exception of he proposed R-O-W width of 50 feet and the Roadway width of 22 feet. See Plan & Profile P1 & P2	
☐	**4. Curbing: (VI.4)**	P1 & P2	
☐	**5. Driveways: (VI.5)**	C4- C8	
☐	**6. Drainage Improvements: (VI.6)**	Stormwater Plans C9 & 10	
☐	**7. Municipal Water Service: (VI.7)**	P1 & P2	
☐	**8. Municipal Sewer Service: (VI.8)**	Existing	
☐	**9. Installation of Utilities: (VI.9)** a. All Districts b. Indicator Tape	See Detail Sheets D1-D6	
☐	**10. On-Site Water Supply: (VI.10)**	N/A	
☐	**11. On-Site Sewage Disposal Systems: (VI.11)**	N/A	
☐	**12. Open Space: (VI.12)** a. Natural Features b. Buffer Strips c. Parks d. Tree Planting	Site Plans C4 – C8	
☐	**13. Flood Hazard Areas: (VI.13)** a. Permits b. Minimization of Flood Damage c. Elevation and Flood-Proofing Records d. Alteration of Watercourses	N/A	
☐	**14. Erosion and Sedimentation Control (VI.14)**	Stormwater Sheets C9-C10	

☐	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
☐ ☐ ☐	**15. Easements (VI.15)** a. Utilities b. Drainage	Easement Plans	
☐	**16. Monuments: (VI.16)**	Set on Approval	
☐	**17. Benchmarks: (VI.17)**	Existing Conditions C1-C3	
☐	**18. House Numbers (VI.18)**	TBD	

Design Standards

	Required Items for Submittal	Indicate compliance and/or provide explanation as to alternative design	Waiver Requested
☐	**1. Streets have been designed according to the design standards required under Section (VII.1).** a. Clearing b. Excavation c. Rough Grade and Preparation of Sub-Grade d. Base Course e. Street Paving f. Side Slopes g. Approval Specifications h. Curbing i. Sidewalks j. Inspection and Methods	Sheets P1 & P2, and Details. See Waiver Requests.	
☐	**2. Storm water Sewers and Other Drainage Appurtenances have been designed according to the design standards required under Section (VII.2).** a. Design b. Standards of Construction	Stormwater Plans C9 & C10	
☐	**3. Sanitary Sewers have been designed according to the design standards required under Section (VII.3).** a. Design b. Lift Stations c. Materials d. Construction Standards	Existing No Changes	
☐	**4. Water Mains and Fire Hydrants have been designed according to the design standards required under Section (VII.4).** a. Connections to Lots b. Design and Construction c. Materials d. Notification Prior to Construction	Sheets P1 & P2, and Details. Will need City System Review.	

Applicant's/Representative's Signature:____________________________________**Date:** October 16, 2018

[1] See City of Portsmouth, NH Subdivision Rules and Regulations for details.

PRIVATE ROAD MAINTENANCE AGREEMENT

THIS PRIVATE ROAD MAINTENANCE AGREEMENT (this "Agreement") is made as of the ____ day of ______, 2018 by and between PORTSMOUTH LUMBER AND HARDWARE, LLC, a New Hampshire limited liability company ("PLH") and CLIPPER TRADERS, LLC, a New Hampshire limited liability company ("Clipper").

RECITALS:

WHEREAS, PLH is the owner of Lots 1, 2 and 3 in a subdivision in Portsmouth, New Hampshire (the "Subdivision"), as shown on a plan entitled "Subdivision Plan, Tax Map 157 – Lots 1&2, Tax Map 164 – Lots 1, 2, 3 & 4" prepared by Ambit Engineering, Inc., dated February 2018 and last revised ________, 2018, approved by the City of Portsmouth Planning Board on ________, and recorded in the Rockingham County Registry of Deeds (the "Registry") as Plan No. _________ (the "Subdivision Plan");

WHEREAS, Clipper is the owner of Lots 4 and 5 of the Subdivision as shown on the Subdivision Plan;

WHEREAS, ingress, egress and utility access to Lots 2, 3, 4 and 5 (collectively, the "Lots") is made over a private road shown on the Subdivision Plan as "Proposed 50' Wide Road" (the "Road");

WHEREAS, PLH and Clipper as the owners of the Lots utilizing the Road (each a "Lot Owner" and collectively, the "Lot Owners") desire to enter into an agreement regarding the cost of maintenance and improvements to the Road.

NOW THEREFORE, in consideration of the mutual covenants, agreements and promises contained herein and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the PLH and Clipper agree as follows:

AGREEMENT

1. Purpose. The Road shall be used for the purpose of ingress and egress to and from the Subdivision, by all owners of the Lots and their occupants, agents, employees, guests, and service and emergency vehicles and for the installation, maintenance and replacement of lines and associated infrastructure for the provision of electric, natural gas, water, sewer or other utilities servicing the Lots.

2. Road Maintenance. The parties agree that the Road shall be maintained in good operating condition at all times as necessary to insure safe access by the Lot Owners and emergency vehicles.

3. Road Maintenance Costs. The costs and expenses of any and all plowing, sanding, paving, seal coating, striping, pothole repair and all other improvements, maintenance and repairs necessary to maintain the Road, including any utilities servicing the Subdivision (the

"Road Maintenance Costs") shall be shared equally by the Lot Owners, except as otherwise provided herein. A majority vote of the Lot Owners shall be required for any Road improvements and to accept the bid for any Road improvement contract.

Notwithstanding anything herein to the contrary, each individual Lot Owner shall bear the cost of the following:

(a) Any improvements, maintenance or repairs to the Road or associated utilities performed without the prior approval of the other Lot Owners prior to performing such work, unless such work is deemed an emergency;

(b) Any improvements, maintenance or repairs to the Road or installation or replacement of utilities serving only that Lot Owner's individual Lot or Lots; and

(c) Any damage to the Road or associated utilities caused by an individual Lot Owner, its employees, contractors or agents.

4. Billing and Payment. The parties agree that all costs required hereunder shall be promptly paid by each party as to its share within thirty (30) days of request for payment by the other Lot Owners or the Road Agent (defined below). The parties shall promptly share all billing information and payment information.

5. Road Agent. The Lot Owners may appoint a road agent ("Road Agent"), by a vote of the majority of the Lot Owners. The Road Agent shall be responsible for monitoring the condition of the road surface, initiating maintenance activities as needed to maintain the minimum road surface standards (including the hiring of contractors to complete same), the preparation of a Road maintenance budget and the billing and collection of Road Maintenance Costs.

6. Snow Plowing. The Road shall be snowplowed so as to permit year round access. The cost shall be shared by the parcel owners as indicated in Paragraph 4 above. Individual driveway snow plowing, if desired, will be invoiced to the individual Lot Owner directly by the snow plow contractor.

7. Parking. For the safety of the Lot Owners, no machinery, trailers, vehicles or other property may be stored on the Road.

8. Future Lots. Any additional Lots gaining access to the Road by way of further division of existing Lots, either by further subdivision, submission to condominium form of ownership or otherwise (a "Subdivided Lot"), will be bound by all terms and conditions of this Agreement. In the event that a homeowners' association or condominium association is created for any Subdivided Lot, then the association shall be appointed as the representative of Subdivided Lot owners.

9. Dispute Resolution. The parties agree that in the event a dispute arises hereunder, they will meet to mediate in good faith such dispute for up to sixty (60) days, and if that fails,

they shall submit the matter to binding arbitration under the rules of the American Arbitration Association. The decision of the arbitrator shall be final and binding on all of the lot owners. In selecting a third party arbitrator, each lot shall be entitled to one vote, and the nominee receiving a majority of the votes shall be the arbitrator. All parties shall share in the cost of any arbitration.

10. Lien; Enforcement. Any assessment made against any Lot Owner for that owner's share of the Road Maintenance Costs shall be a lien and charge upon the Lot against which each such assessment is made, which lien shall continue until the assessment is paid and shall be the personal obligation of the Lot Owner. Notwithstanding anything herein to the contrary, mediation and arbitration shall not be required for any civil action to enforce payment of the delinquent assessment or to foreclose the lien against the Lot, and there shall be added to the amount of such assessment due all costs of collection. In the event a judgment is obtained, such judgment shall include interest on the assessment, together with all attorney's fees and expenses and costs of the action.

11. Notice. Any notice required to be given under this Agreement shall be in writing and either (i) hand delivered or (ii) mailed to the address to which the Lot Owner's property tax bills are sent.

12. Invalidity. Should any provision in this Agreement be deemed invalid or unenforceable, the remainder of the Agreement shall not be affected and each term and condition shall be valid and enforceable to the extent permitted by law.

13. Assignment; Successors: This Agreement shall be binding upon and shall inure to the benefit of the parties, their successors and assigns.

14. Governing Law; Counterparts; Integration; Amendments: This Agreement shall be governed and construed in accordance with the laws of the State of New Hampshire, as amended from time to time, without regard to principles of conflicts of laws. This Agreement may be executed in counterparts, which together, shall constitute but one original. This Agreement contains the entire agreement between the parties relating to the subject matter hereof and supercedes all oral statements and prior writing with respect thereto and may not be terminated or amended except as provided herein. This Agreement may be amended only in a writing executed by the parties.

[remainder of page intentionally left blank]

IN WITNESS WHEREOF, the parties have executed this Agreement as of the day and year first above written.

PORTSMOUTH LUMBER AND HARDWARE, LLC

______________________________	By:_______________________________
Witness	_______________________________
	Its duly authorized _________________

CLIPPER TRADERS, LLC

______________________________	By:_______________________________
Witness	_______________________________
	Its duly authorized _________________

Stephen G. Pernaw & Company, Inc.
P.O. Box 1721 • Concord, NH 03302
tel: (603) 731-8500 • fax: (866) 929-6094 • sgp@ pernaw.com
Transportation: Engineering • Planning • Design

M E M O R A N D U M

Ref: 1821A

To: Doug Pinciaro, Clipper Traders, LLC
Ed Hayes, Ricci Lumber

From: Stephen G. Pernaw, P.E., PTOE

Subject: Proposed Residential Subdivision
Portsmouth, New Hampshire

Date: October 1, 2018

On June 18, 2018 our office published the report entitled *"Traffic Impact and Site Access Study – Proposed Residential Subdivision"* for Clipper Traders, LLC to assess the traffic impacts associated with the proposed residential subdivision/development located on the south side of North Mill Pond in Portsmouth, New Hampshire. That document was followed up by *"Addendum One"* dated August 20, 2018. We are now in receipt of peer review comments from The Engineering Corporation (TEC) dated September 17, 2018. The purpose of this memorandum is to provide responses to each of their comments.

TEC Comment 1: Study Area – *"The Traffic Impact and Site Access Study (TISAS) and the Addendum evaluate a reasonable study area for the purposes of evaluating the potential traffic impacts to the surrounding street system with the construction of the proposed development. TEC concurs that the scope of the study is in general accordance with NHDOT guidelines."*

SGP & Company, Inc. Response: Comment acknowledged; no response necessary.

TEC Comment 2: Traffic Counts – *"Traffic counts used within the TISAS were conducted in April 2018 during a period in which area schools were in session. The counts used within the Addendum were conducted in August 2018. The April counts were seasonally adjusted upward by 3% during the weekday morning peak hour and 4% during the weekday evening peak hour, and the August counts were seasonally adjusted upward by 7% during the weekday morning peak hour and 2% during the weekday evening peak hour to reflect peak month conditions, consistent with NHDOT standards. This is generally reflective of summertime volumes in the seacoast area. TEC concurs with the use of these traffic volumes and adjustment factors based on NHDOT guidelines.*

The weekday morning and evening peak commuter hours were studied within the TISAS and Addendum to determine the Project's overall effect on the roadway system. TEC concurs that these selected time periods are generally appropriate for a residential development, as the morning and evening peak hours of the residential dwelling units will typically overlap with the morning and evening peak commuter hours of the adjacent street system."

SGP & Company, Inc. Response: Comment acknowledged; no response necessary.

<u>TEC Comment 3 - Background Growth</u> – *"The TISAS and the Addendum use an annual traffic volume growth adjustment factor of 1.0 percent per year based on standard rates approved by NHDOT. TEC concurs with the adjustment factors based on NHDOT guidelines. Steven G. Pernaw and Company, Inc. (SGP) concurrently overlaid projected traffic volumes associated with four pending development projects within the study area. The future conditions in 2020 (opening year) and 2030 (10-year horizon) were studied in conformance with NHDOT requirements."*

"TEC notes that the mixed-use development along Cate Street, including the extension of Cate Street between US 1 Bypass and Bartlett Street, which is currently within the public hearing process, is not included within this study. TEC understands that the timing of the completion of the subject residential development will likely occur prior to or concurrent with the opening of the Cate Street Extension. Further, it is noted that the traffic from the mixed-use development will have an impact on the Bartlett Street study area intersections in the future. The mixed-use development traffic will not materially affect the Maplewood Avenue intersection studied within the Addendum. TEC recommends that SGP discuss the potential impact of the extension of Cate Street on the residential development access drive intersection with Bartlett Street."

SGP & Company, Inc. Response: The mixed-use development that involves the extension of Cate Street will have several different impacts at the Bartlett Street/Existing Shared Driveway intersection: 1) the site generated traffic from the mixed-used development will add vehicle-trips to Bartlett Street, 2) the extension of Cate Street will reduce vehicle-trips on certain sections of Bartlett Street due to local trip diversions, and 3) the extension of Cate Street will alter the travel patterns of those currently using the Existing Shared Driveway. For example, some drivers will exit left rather than exit right from the Existing Shared Driveway to reach the new alignment (Cate Street Extension). The net change on Bartlett Street during the weekday PM peak hour is approximately -200 vph north of the shared driveway and -50 vph south of the shared driveway.

<u>TEC Comment 4 - Crash Data</u> - *"No motor vehicle crash data was provided within the TISAS or Addendum. SGP should obtain and review crash data at the study area intersections to determine whether any specific crash trends exist. This is primarily of concern at the two site access points onto Bartlett Street and Maplewood Avenue. The crash data typically indicates the number, type, and severity of crashes at the study area intersections for the most recent three years on record. SGP should further provide documentation of other traffic safety related issues/deficiencies at the intersections and subject roadways, such as sight distances, if applicable."*

SGP & Company, Inc. Response: Crash data from the State of New Hampshire Department of Transportation for the most recent three-year period (2013 to 2015) was researched to identify accident rates and patterns in the study area. Over the three-year period, the Location Data Reports indicate that 2,407 crashes were recorded on a city-wide basis. It should be noted that this database is considered to be a subset of the total collisions as not all incidents are required to be reported to the State. Of these, thirteen crashes contained sufficient detail to locate them in the study area. These reports, along with a summary table, are attached (see Attachments 1-3).

Five crashes occurred in the vicinity of the Bartlett Street/Cate Street intersection. There was one collision that resulted in personal injury and the majority (80%) of the crashes involved two or more vehicles. Inclement weather or unfavorable surface conditions may have been a contributing factor in four of the five collisions.

Eight collisions occurred in the vicinity of the Bartlett Street/Islington Street intersection. There was one crash that resulted in injury to one person. All of the crashes involved two vehicles. Inclement weather or unfavorable surface conditions were not a contributing factor in any of these eight collisions.

No fatalities were reported in this study group. There were no discernible trends in terms of crash frequency as four crashes occurred in 2013, three occurred in 2014, and six occurred in 2015. In terms of monthly variations, August was the highest months (3 crashes) and the lowest months included January, April, and June (0 crashes each). In terms of daily variations, four crashes over the three-year period occurred on Fridays, and the lowest days were Mondays, Tuesdays, Thursdays and Saturdays with one crash each.

<u>TEC Comment 5 - Site Trip Generation</u> - *"The TISAS and Addendum uses data published in the industry standard Institute of Transportation Engineers (ITE) publication, Trip Generation, 10th Edition to estimate the traffic generated by the proposed development. The TISAS uses data found under Land Use Code (LUC) 221 - Multi-Family Housing (High Rise) for the apartment units. TEC concurs with these land uses and general traffic generation methodology."*

SGP & Company, Inc. Response: Comment acknowledged; no response necessary.

<u>TEC Comment 6 - Trip Distribution</u> – *"The traffic generated by the proposed Project was distributed onto the adjacent roadway system based upon existing travel patterns at the Bartlett Street driveway. The Addendum relocates approximately a third of the site traffic to the Maplewood Avenue driveway. SGP should confirm this distribution based on available Journey to Work data published by the US Census and considering other in-City trips related to school or shopping activities. As previously noted, the impact of the extension of Cate Street from Bartlett Street to US 1 Bypass was not considered within this report. Therefore, no site traffic was distributed toward US 1 Bypass via Cate Street. TEC recommends SGP provide a discussion on whether the residential development site generated traffic will divert to this connection."*

SGP & Company, Inc. Response: An alternative trip distribution analysis based on Journey to Work data suggests that the primary trips will be distributed 57% West and 43% East on Bartlett Street, rather than a 50-50 split. When these percentages are applied to the trip generation estimates for the subject site, the net change in turning movement volumes is negligible (+/- 2 PM peak hour trips). The extension of Cate Street from Bartlett Street to US1 Bypass was not considered in this traffic study as it preceded the traffic study for the Cate Street project, and is not an approved project at this juncture. Nevertheless, it is expected that a portion of the site generated traffic from this residential development will utilize the new Cate Street extension; if/when that project comes to fruition. It should be noted that the non-residential trips currently using the shared driveway are also expected to utilize Cate Street extension, and this has been accounted for in the traffic study for the Cate Street project.

<u>TEC Comment 7 - Capacity and Queue Analysis</u> – *"TEC generally concurs with the results of the capacity and queue analysis provided as part of the TISAS; utilizing Highway Capacity Manual 2010 (HCM 2010) methodology as modeled by Synchro 10."*

SGP & Company, Inc. Response: Comment acknowledged; no response necessary.

<u>TEC Comment 8</u> - *"Overall, TEC concurs that the general impact of the Project on the control delay, queue, and level of service along the approaches to the study area intersections is anticipated to be nominal in terms of 'vehicular' traffic."*

SGP & Company, Inc. Response: Comment acknowledged; no response necessary.

<u>TEC Comment 9</u> - *"At the intersection of Islington Street / Bartlett Street / Pharmacy Driveway, the capacity and queue analyses depict significant vehicle delay and queues along the eastbound Bartlett Street approach and the northbound Islington Street left turn during the weekday evening peak hour in the 2020 and 2030 No Build conditions. The addition of site generated traffic increases the delay and projected queue lengths on these movements. Improvements at this intersection are under final design by the City for construction next year. No additional lanes will be provided with*

the planned improvements. Additional mitigation by the applicant is not likely to be warranted as the site generated traffic increases the overall volumes through the intersection by approximately 1%."

SGP & Company, Inc. Response: Comment acknowledged; no response necessary.

<u>TEC Comment 10</u> – "*SGP analyzed the intersection of Bartlett Street / Cate Street without the addition of the multi-use development and extension of Cate Street. With the addition of the residential development site traffic and without the additional multi-use development site traffic, the intersection operates with acceptable levels of service in the 2020 and 2030 Build conditions. TEC notes that the condominium development under construction at 30 Cate Street will be widening the Cate Street approach to the intersection to provide an exclusive right turn lane as a condition of their approval. The analyses within the TISAS should be revised to reflect the eastbound right turn lane as constructed within the No Build and Build analyses."*

SGP & Company, Inc. Response: The No-Build and Build analyses have been updated as requested, and Table 4A has been updated accordingly (see Attachments 4-12).

<u>TEC Comment 11</u> – "*The intersections of the site access with Bartlett Street and the site access with Maplewood Avenue are projected to operate with acceptable levels of service in the 2030 Build condition with the addition of site generated traffic."*

SGP & Company, Inc. Response: Comment acknowledged; no response necessary.

<u>TEC Comment 12</u> – "*TEC agrees that the site access onto Maplewood Avenue should be gate controlled to allow access to residents and emergency vehicles only. This will prevent cut-through traffic within the development by the general public. The location of the gate will be confirmed during the site plan review process. TEC recommends that delivery and refuse vehicles should be restricted from using this access and should be directed to the Bartlett Street access."*

SGP & Company, Inc. Response: Comment acknowledged; no response necessary.

<u>TEC Comment 13</u> – "*TEC concurs with the determination that the site access onto Bartlett Street warrants the addition of a left turn lane on the southbound approach of Bartlett Street during the existing condition. SGP has provided a Concept Plan within the TISAS illustrating the potential for a two-way left turn lane along the site frontage of Bartlett Street. Due to the constrained width and horizontal geometry of Bartlett Street in the vicinity of Cate Street, TEC does not recommend the construction of a two-way left turn lane along this section of Bartlett Street. Further, large trucks use, and are proposed to continue to use, the existing driveway to access Ricci Lumber and other commercial uses on the site. These vehicles are consistently observed to cross the double-yellow centerline of Bartlett Street when turning right exiting from the driveway onto northbound Bartlett Street. The provision of a southbound left turn lane into the site access would be desirable from a safety standpoint for vehicles turning into the site as well as through vehicles along Bartlett Street. However, the intersection of the site access with Bartlett Street would need to be redesigned to ensure safe and efficient turning movements for all size vehicles prior to construction of this improvement. TEC recommends this intersection be considered for redesign during the site plan review process to accommodate all vehicles and provide the southbound left turn lane, if possible."*

SGP & Company, Inc. Response: It is not possible to provide both a southbound left-turn lane on Bartlett Street and a sufficient pavement area for large trucks to exit right from the driveway due to space limitations. Based on the TEC recommendation <u>not</u> to construct a two-way left turn lane along the section of Bartlett Street, we recommend that consideration be given to prohibiting right-turn departures by large trucks once the Cate Street Extension project is completed (by others). In response to the TEC recommendation to consider a redesign of this intersection in conjunction with the site plan review process, we offer Exhibit 1, a preliminary conceptual plan for discussion purposes only. This design includes a 5-foot bike lane, a 2-foot bike lane buffer and two 11-foot travel lanes on the site access road. The following exhibits (that follow Attachment 12) show the implications associated with several Design Vehicle movements.

- Exhibit 1-A: A single-unit box truck (SU) works well with this design and there is no lane encroachment on Bartlett Street.
- Exhibit 1-B: A WB-50 tractor-trailer truck is able to exit right without lane encroachment on Bartlett Street; however the full width of the site access road is required.
- Exhibit 1-C: A WB-50 tractor-trailer truck is able to enter from the south without lane encroachment on Bartlett Street; however it requires the full width of the site access road.
- Exhibit 1-D: A WB-50 tractor-trailer truck is able to enter the site access road from the north without lane encroachment on Bartlett Street; however it requires most of the width of the site access road.
- Exhibit 1-E: A WB-50 tractor-trailer truck is able to exit left from the site access road with no issues.
- Exhibit 1-F: A WB-67 tractor-trailer truck is able to exit right from the site access road with this design; however it requires the full width of both the site access road and Bartlett Street.

TEC Comment 14 – *"Routing the residential development traffic through the existing commercial development changes the nature of the access from Bartlett Street and through the commercial portions of the site to a circulation road rather than a driveway. During the site plan review process, the on-site circulation should be analyzed to remove or reconfigure the existing head-in parking for the commercial uses along the new access roadway. In addition, TEC recommends reviewing the on-site truck circulation to potentially relocate these vehicles from the primary access to the existing secondary driveway onto Bartlett Street along the south side of the commercial buildings."*

SGP & Company, Inc. Response: Comment acknowledged; alternative circulation plans will be investigated during the site plan review process.

TEC Comment 15 - Sight Distances – *"The sight distances reported in the Addendum are visually represented rather than measured in accordance with the American Association of State Highway and Transportation Officials (AASHTO) requirements. There are two types of sight distances required at an intersection: Intersection Sight Distance (ISD), which is the sight distance necessary for vehicles exiting a stop condition to enter the through traffic flow without the through vehicles slowing down significantly; and Stopping Sight Distance (SSD), which is the sight distance necessary for through vehicles to see a vehicle entering the roadway and be able to avoid collision. It appears that sufficient sight distances are provided at both site access points to meet the minimum SSD for a vehicle travel speed of 30 mph."*

"During the site plan review process, the Applicant shall provide a plan within the set that depicts the AASHTO minimum sight distance to/from each of the site access intersections onto Bartlett Street and Maplewood Avenue. The sight line clear areas should be compared against future proposed Landscaping Plans to confirm that the sight lines will remain clear as reported in the traffic study. The Applicant should commit to remove and maintain vegetation along the site frontage consistently to ensure that sight lines remain unobstructed at the site access intersections."

SGP & Company, Inc. Response: Ambit Engineering, Inc. will prepare said plans in conjunction with the site plan review process.

cc: John Chagnon, P.E. – Ambit Engineering, Inc.

ATTACHMENTS

EXHIBIT 1

DRAFT FOR DISCUSSION PURPOSES ONLY

CLIPPER TRADERS
RESIDENTIAL DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

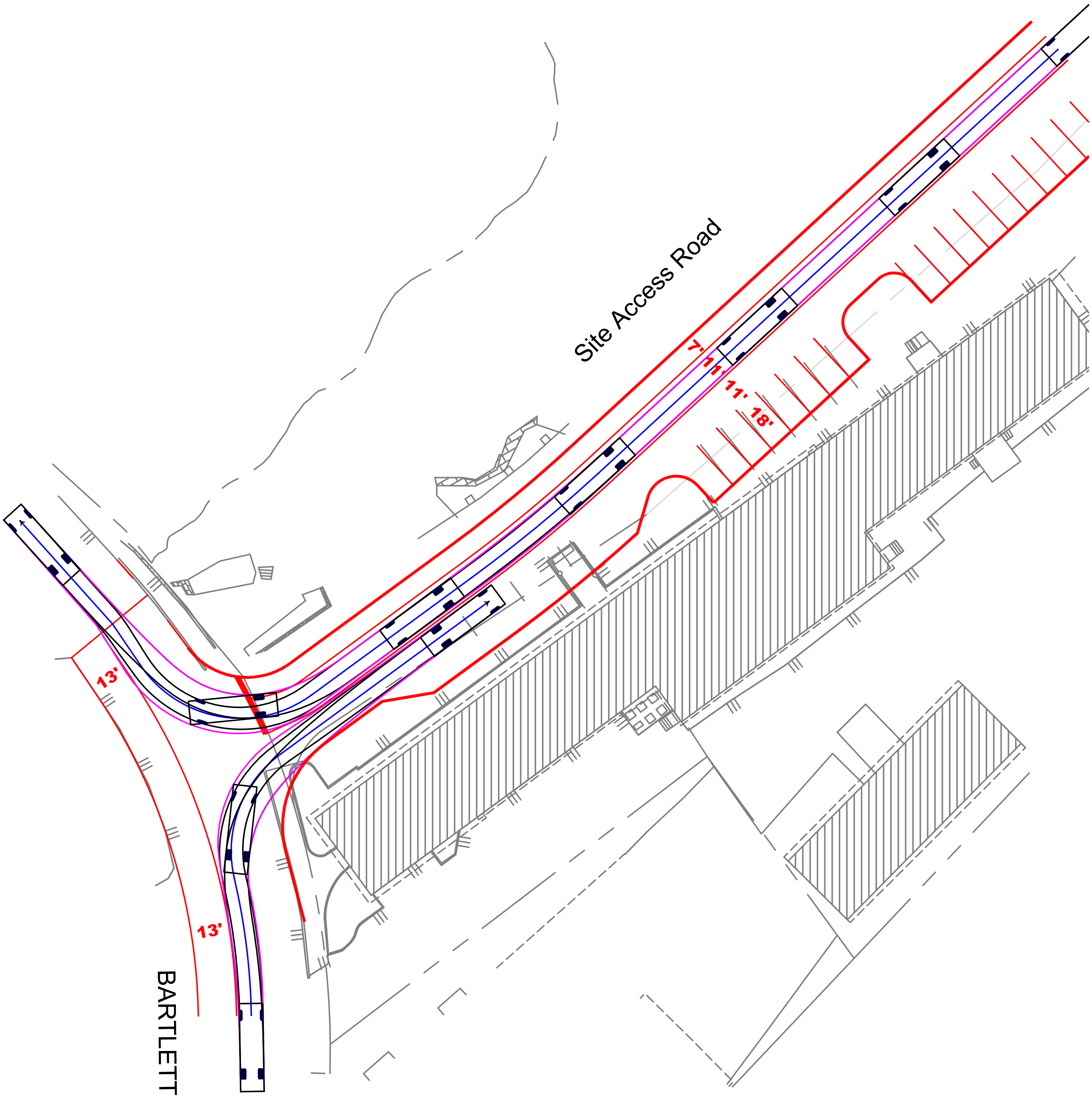
BARTLETT STREET / SITE ACCESS ROAD INTERSECTION

DRAWN:	SCALE:
CAP	1" = 50'
DESIGNED:	JOB NO.
SGP	1821A
CHECKED:	DATE:
SGP	9/28/18

TRANSPORTATION
- ENGINEERING
- PLANNING
- DESIGN

SGP

Stephen G. Pernaw & Co. Inc.
P.O. Box 1721, Concord, NH 03302
Phone: (603) 731-8500, Fax: (866) 929-6094,
sgp@pernaw.com



SU RIGHT-IN & RIGHT-OUT

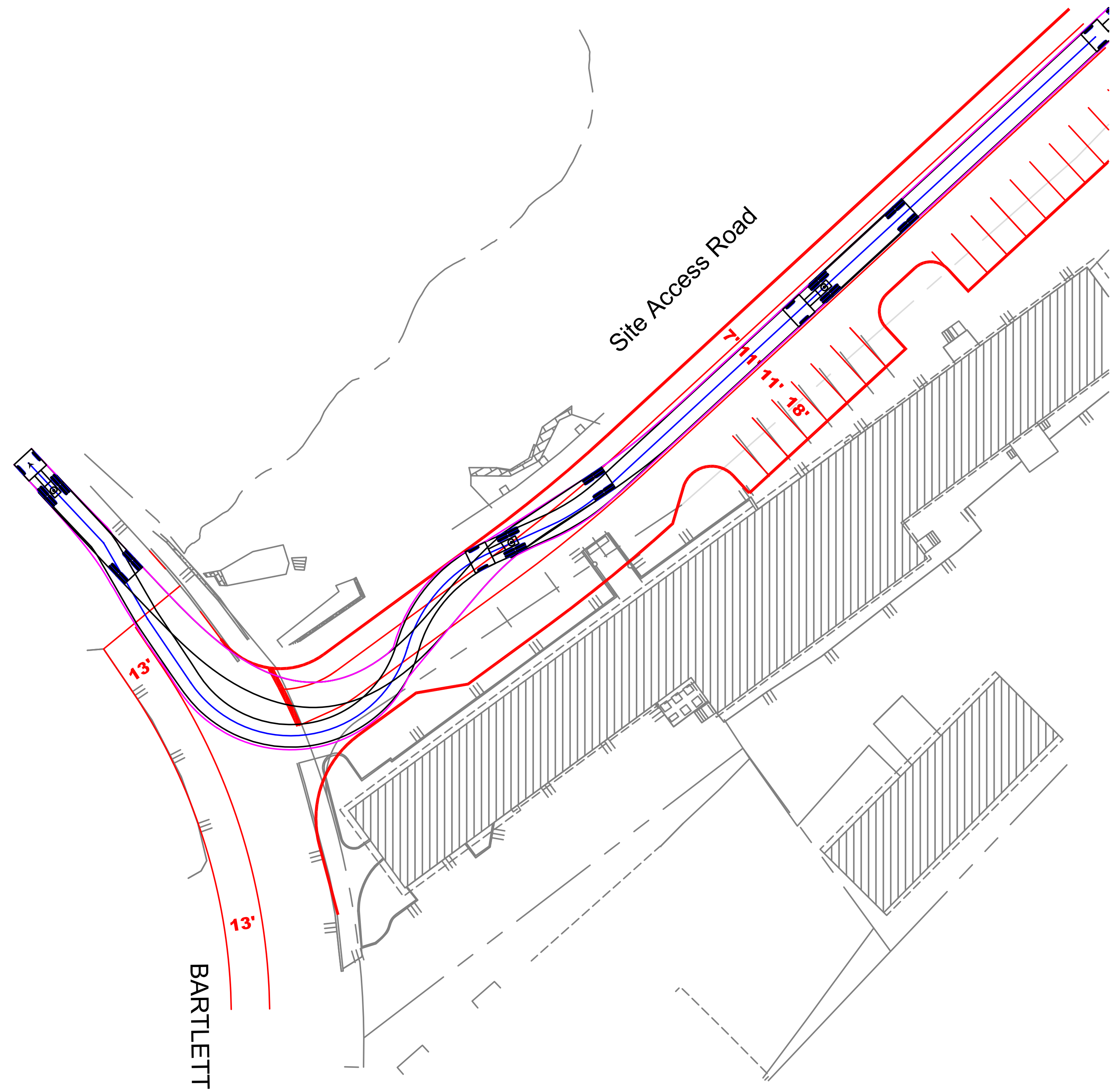
No lane encroachment on Bartlett Street;
movements can occur simultaneously.

EXHIBIT 1-A

DRAFT FOR DISCUSSION PURPOSES ONLY

CLIPPER TRADERS DEVELOPMENT PORTSMOUTH, NEW HAMPSHIRE	DRAWN: CAP	SCALE: 1" = 50'	TRANSPORTATION • ENGINEERING • PLANNING • DESIGN SGP
	DESIGNED: SGP	JOB NO. 1821A	
BARTLETT STREET / SITE ACCESS ROAD INTERSECTION	CHECKED: SGP	DATE: 9/28/18	Stephen G. Pernaw & Co. Inc.

Stephen G. Pernaw & Co. Inc.
P.O. Box 1721, Concord, NH 03302
Phone: (603) 731-8500, Fax: (866) 929-6094,
sgp@pernaw.com



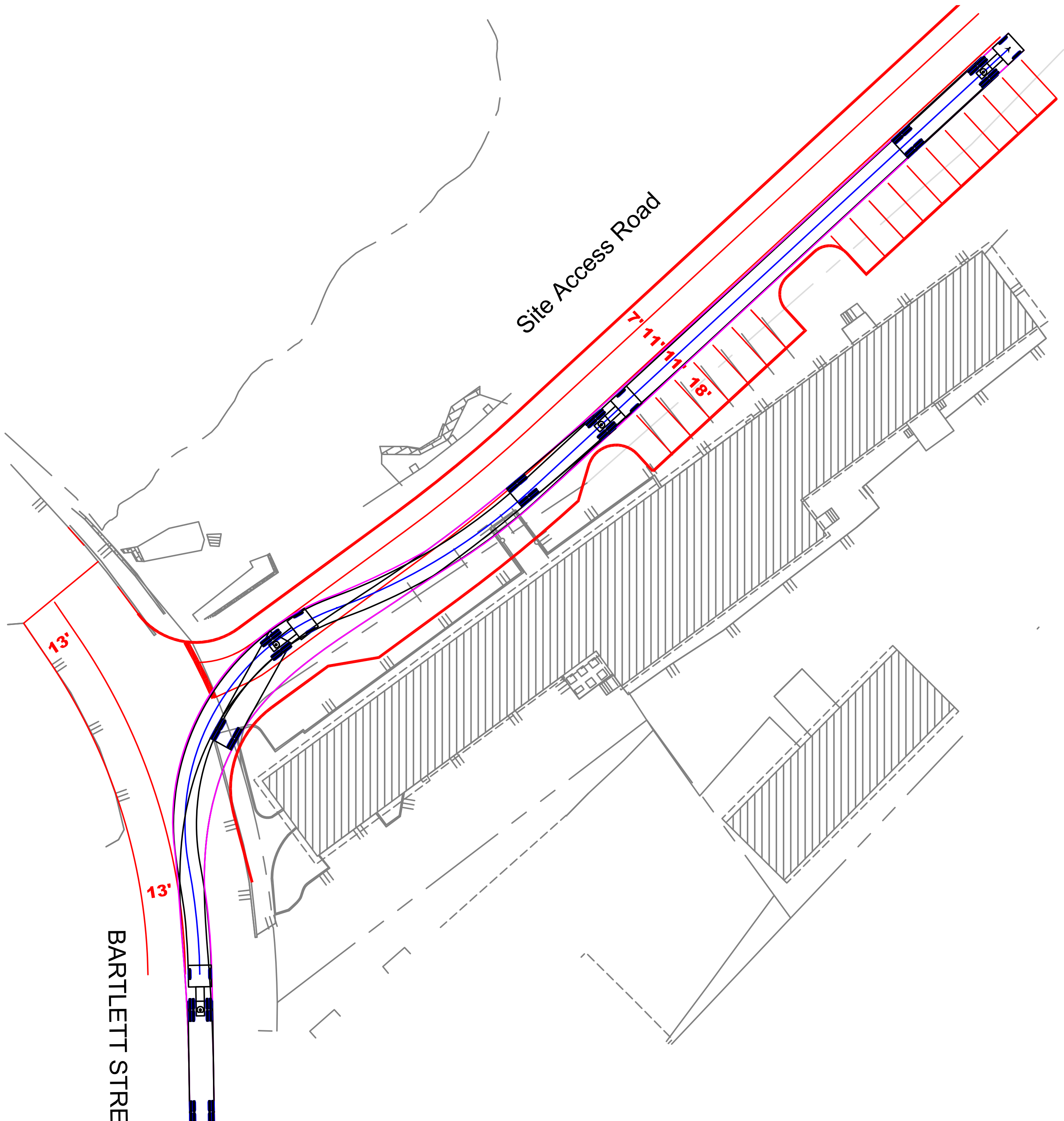
WB-50 RIGHT-OUT

No lane encroachment on Bartlett Street, but requires full width of the site access road to exit right.

EXHIBIT 1-B

DRAFT FOR DISCUSSION PURPOSES ONLY

CLIPPER TRADERS DEVELOPMENT PORTSMOUTH, NEW HAMPSHIRE	DRAWN: CAP	SCALE: 1" = 50'	TRANSPORTATION • ENGINEERING • PLANNING • DESIGN SGP
	DESIGNED: SGP	JOB NO. 1821A	
BARTLETT STREET / SITE ACCESS ROAD INTERSECTION	CHECKED: SGP	DATE: 9/28/18	Stephen G. Pernaw & Co. Inc. P.O. Box 1721, Concord, NH 03302 Phone: (603) 731-8500, Fax: (866) 929-6094, sgp@pernaw.com



WB-50 RIGHT-IN

No lane encroachment on Bartlett Street, but requires the driver to wait until the full width of the site access road is available to enter.

EXHIBIT 1-C

DRAFT FOR DISCUSSION PURPOSES ONLY

CLIPPER TRADERS DEVELOPMENT PORTSMOUTH, NEW HAMPSHIRE	DRAWN: CAP	SCALE: 1" = 50'	TRANSPORTATION • ENGINEERING • PLANNING • DESIGN SGP
	DESIGNED: SGP	JOB NO. 1821A	
BARTLETT STREET / SITE ACCESS ROAD INTERSECTION	CHECKED: SGP	DATE: 9/28/18	

Stephen G. Pernaw & Co. Inc.
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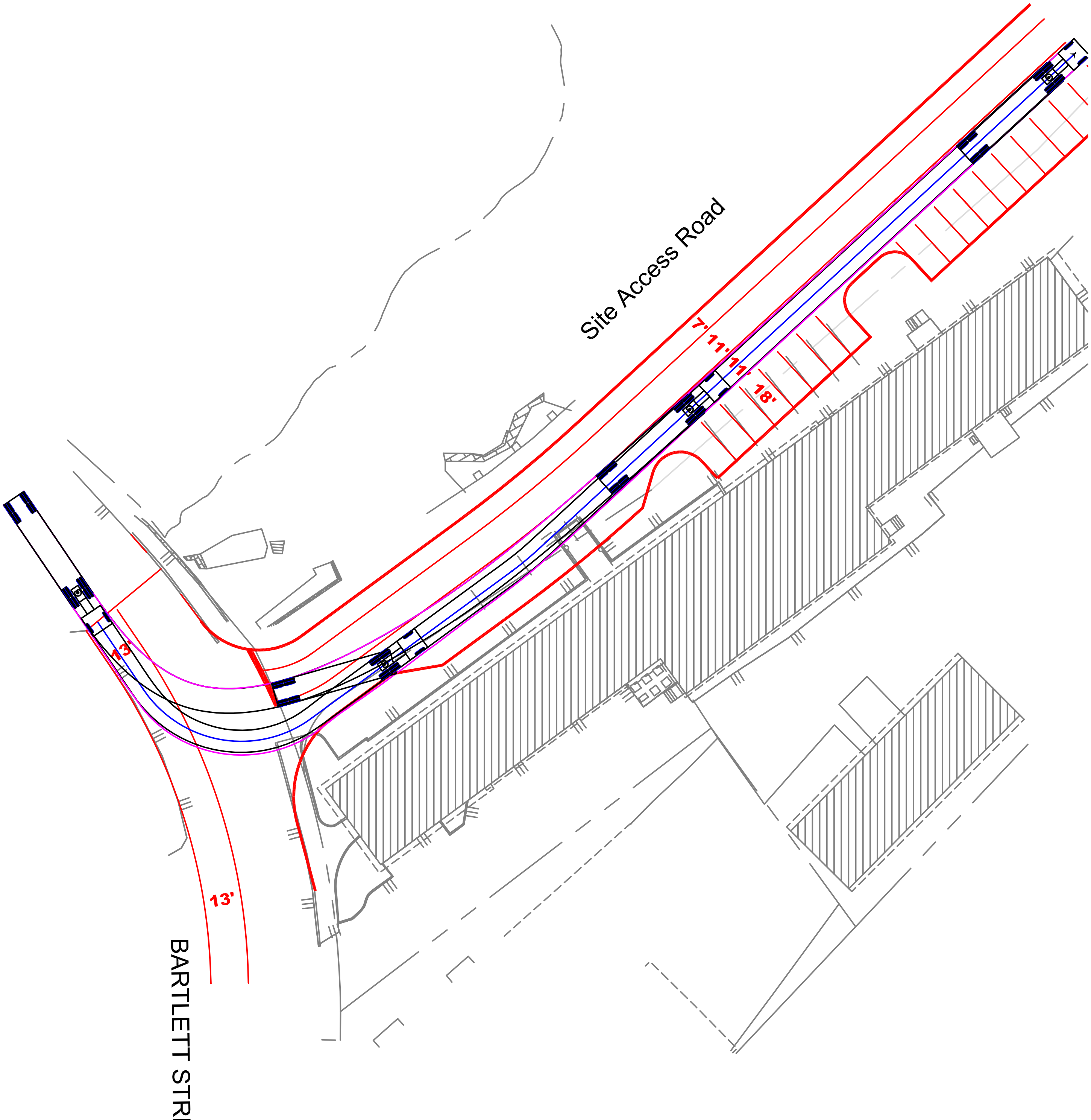
sgp@pernaw.com



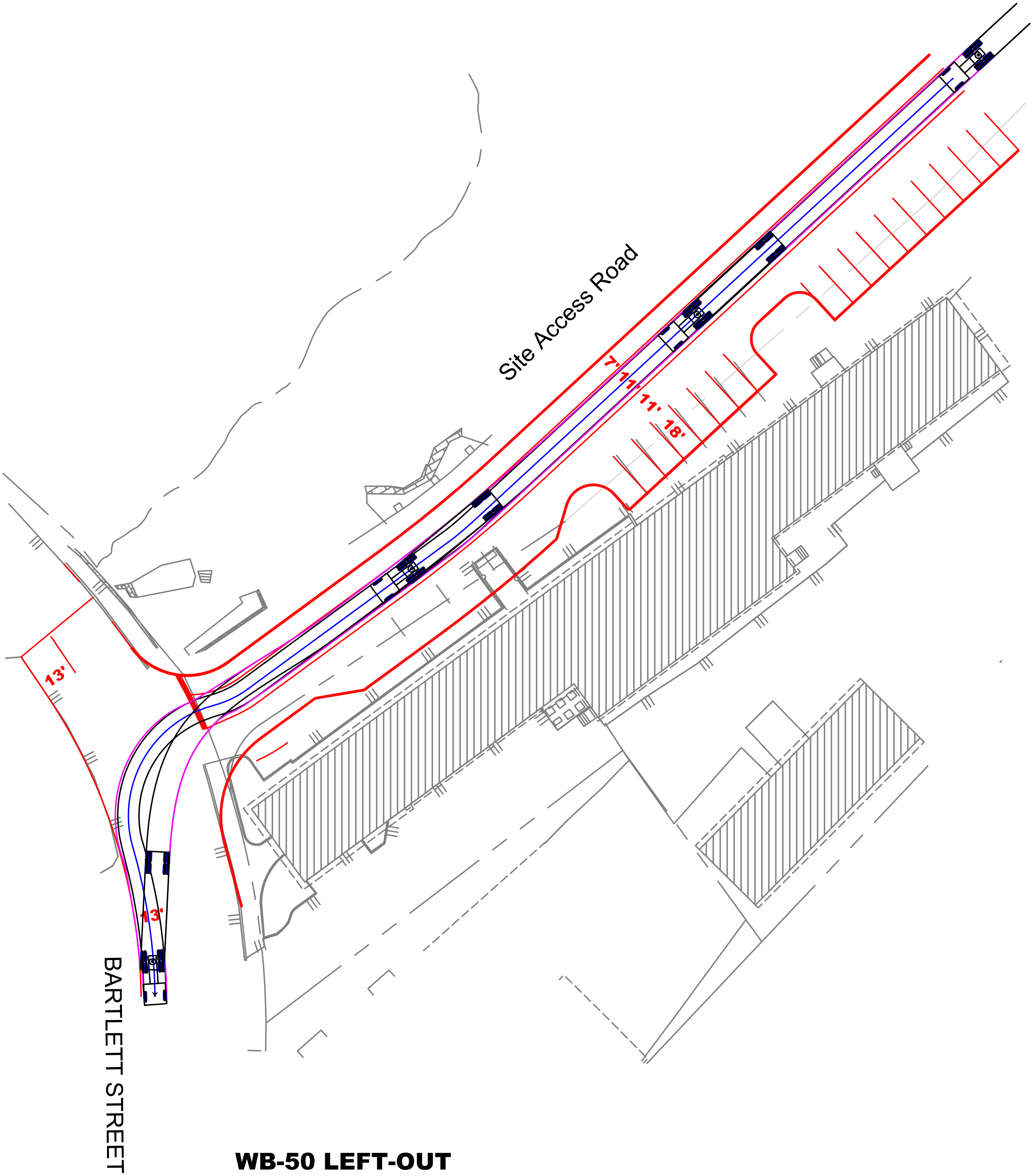
WB-50 LEFT-IN

Requires driver to wait until full width of the site access road is available to enter.

EXHIBIT 1-D

DRAFT FOR DISCUSSION PURPOSES ONLY

CLIPPER TRADERS DEVELOPMENT PORTSMOUTH, NEW HAMPSHIRE	DRAWN: CAP	SCALE: 1" = 50'	TRANSPORTATION • ENGINEERING • PLANNING • DESIGN SGP
	DESIGNED: SGP	JOB NO. 1821A	
BARTLETT STREET / SITE ACCESS ROAD INTERSECTION	CHECKED: SGP	DATE: 9/28/18	Stephen G. Pernaw & Co. Inc. P.O. Box 1721, Concord, NH 03302 Phone: (603) 731-8500, Fax: (866) 929-6094, sgp@pernaw.com



WB-50 LEFT-OUT

No issues.

EXHIBIT 1-E

DRAFT FOR DISCUSSION PURPOSES ONLY

CLIPPER TRADERS DEVELOPMENT PORTSMOUTH, NEW HAMPSHIRE	DRAWN: CAP	SCALE: 1" = 50'	
	DESIGNED: SGP	JOB NO. 1821A	
BARTLETT STREET / SITE ACCESS ROAD INTERSECTION	CHECKED: SGP	DATE: 9/28/18	

TRANSPORTATION
• ENGINEERING
• PLANNING
• DESIGN
SGP
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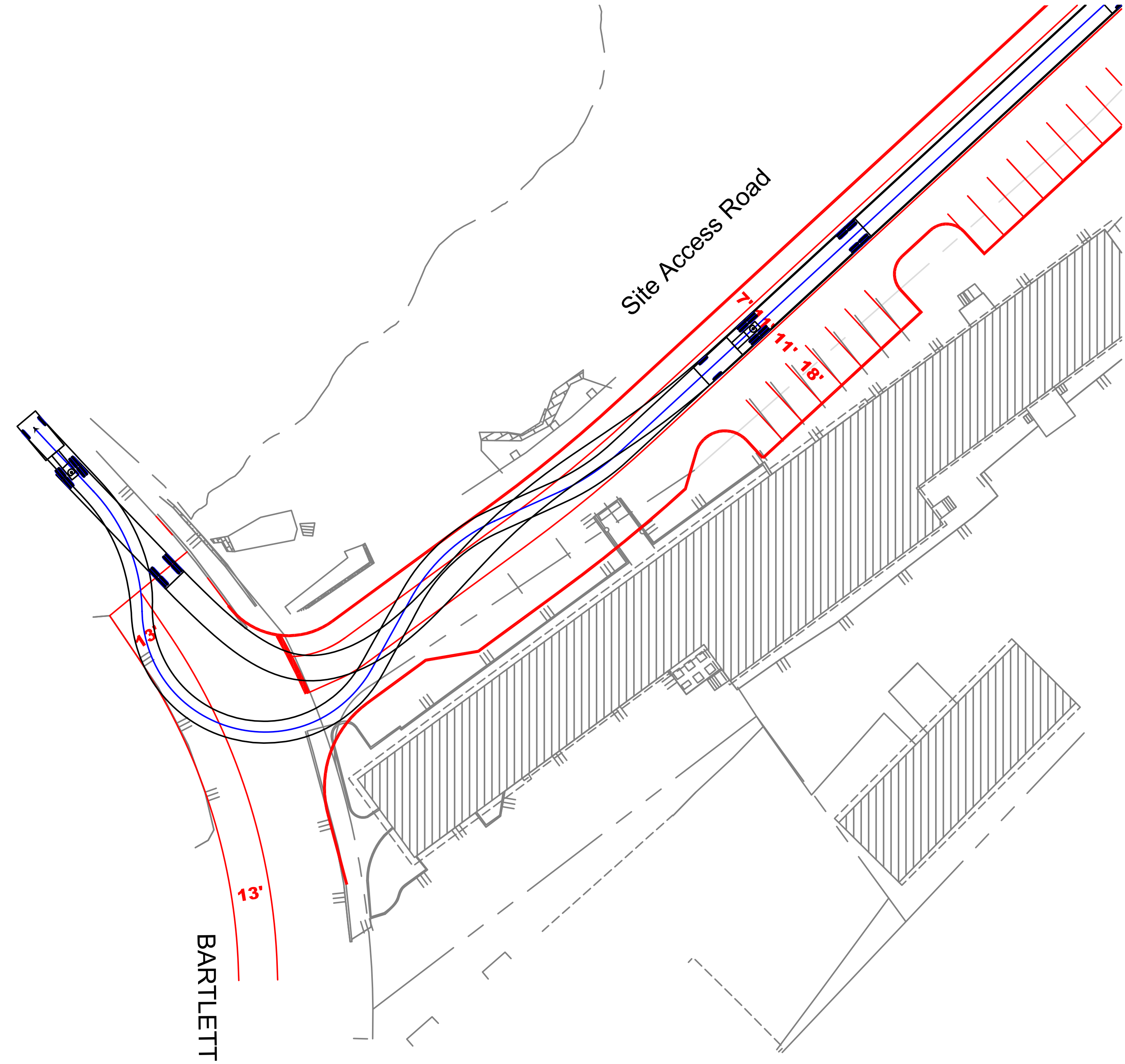

WB-67 RIGHT-OUT

Lane encroachment occurs on Bartlett Street and full width of the site access road is needed to exit right. Note: existing intersection is likely not capable of accomodating a WB-67 properly.

EXHIBIT 1-F

DRAFT FOR DISCUSSION PURPOSES ONLY

CLIPPER TRADERS DEVELOPMENT PORTSMOUTH, NEW HAMPSHIRE	DRAWN: CAP	SCALE: 1" = 50'	TRANSPORTATION • ENGINEERING • PLANNING • DESIGN SGP
	DESIGNED: SGP	JOB NO. 1821A	
BARTLETT STREET / SITE ACCESS ROAD INTERSECTION	CHECKED: SGP	DATE: 9/28/18	Stephen G. Pernaw & Co. Inc.

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sgp@pernaw.com

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P.O. Box 1721 • Concord, NH 03302
tel: (603) 731-8500 • fax: (866) 929-6094 • sgp@ pernaw.com
Transportation: Engineering • Planning • Design

MEMORANDUM

Ref: 1821A

To: Juliet T. H. Walker, AICP
Planning Director
City of Portsmouth Planning Department

From: Stephen G. Pernaw, P.E., PTOE

Subject: Proposed Residential Subdivision
Portsmouth, New Hampshire

Date: October 9, 2018

At the Technical Advisory Committee meeting on October 2, 2018 we received input regarding the proposed layout of the Proposed Road, and its intersection with Bartlett Street. As a result, we have updated the concept plan for this area (see Exhibit 1, attached) and have revised the various truck turning templates accordingly.

With respect to the concept plan: 1) the proposed layout does not involve any work beyond the existing pavement edge on the north side of the Proposed Road, 2) the 11-foot outbound travel lane widens out to 14-feet at the throat of the intersection (to facilitate truck movements), and 3) the double-yellow centerline on Bartlett Street is proposed to be repositioned to provide a 12-foot southbound travel lane on Bartlett Street (to provide more maneuvering space for trucks).

With respect to the turning templates, right-turn departures by a WB-50 tractor-trailer truck (to Bartlett Street northbound) is shown to occur within the limits of the outbound travel lane on the Proposed Road, as suggested by Eric Eby.

In an attempt to facilitate matters at your end, we have taken the liberty to forward this memorandum to Eric Eby and TEC. If you have any questions, please contact me directly.

Attachments

cc: John Chagnon, P.E. – Ambit Engineering, Inc.
Doug Pinciaro, Clipper Traders, LLC
Ed Hayes, Ricci Lumber
Eric Eby, P.E. – City of Portsmouth
Elizabeth Oltman, P.E. – The Engineering Corporation

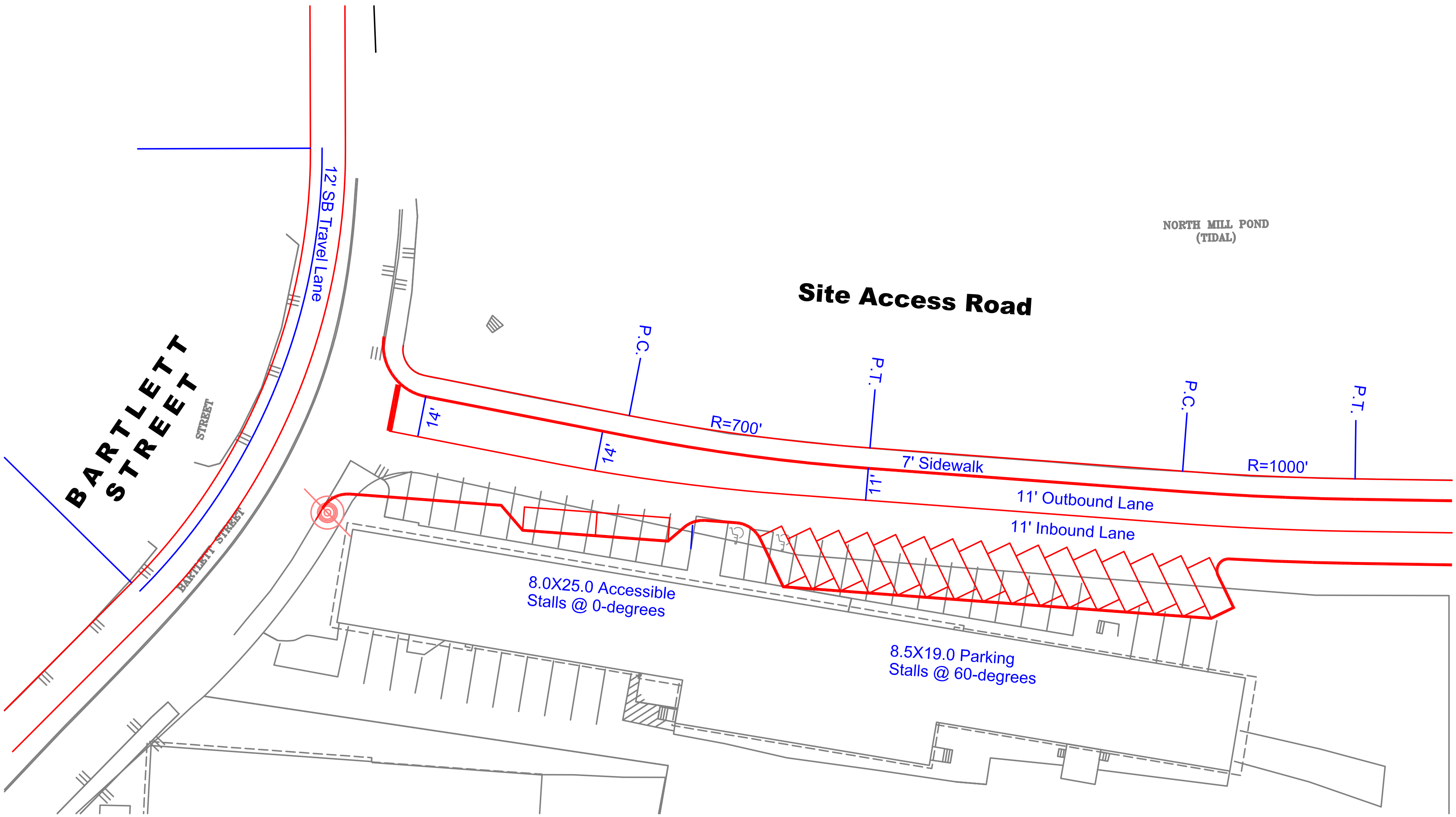

EXHIBIT 1

REVISIONS		
NUMBER	DATE	DESCRIPTION

CLIPPER TRADERS, LLC
RESIDENTIAL DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

BARTLETT ST / SITE ACCESS RD
INTERSECTION
CONCEPT "A"

DRAWN: CAP	SCALE: 1" = 50'
DESIGNED: SGP	JOB NO. 1821A
CHECKED: SGP	DATE: 10/06/18

TRANSPORTATION
- ENGINEERING
- PLANNING
- DESIGN

SGP

Stephen G. Pernaw & Co. Inc.
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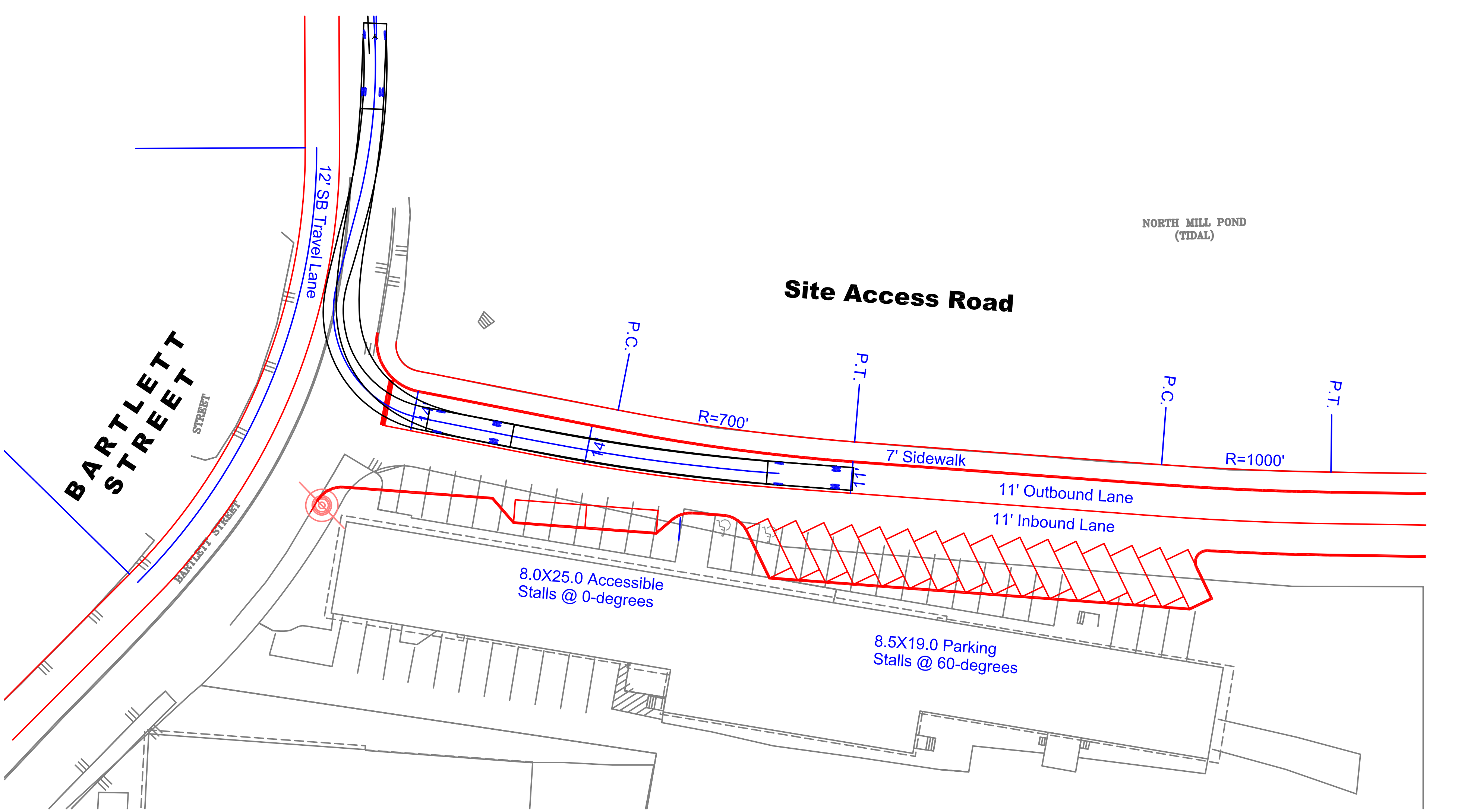

EXHIBIT 1A

REVISIONS		
NUMBER	DATE	DESCRIPTION

CLIPPER TRADERS, LLC
RESIDENTIAL DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

BARTLETT ST / SITE ACCESS RD INTERSECTION
SU: RIGHT-OUT

DRAWN: CAP	SCALE: 1" = 50'
DESIGNED: SGP	JOB NO. 1821A
CHECKED: SGP	DATE: 10/06/18

TRANSPORTATION
• ENGINEERING
• PLANNING
• DESIGN
SGP
Stephen G. Pernaw & Co. Inc.
PO Box 1721, Concord, NH 03301
Phone: (603) 228-5750, Fax: (866) 929-6094

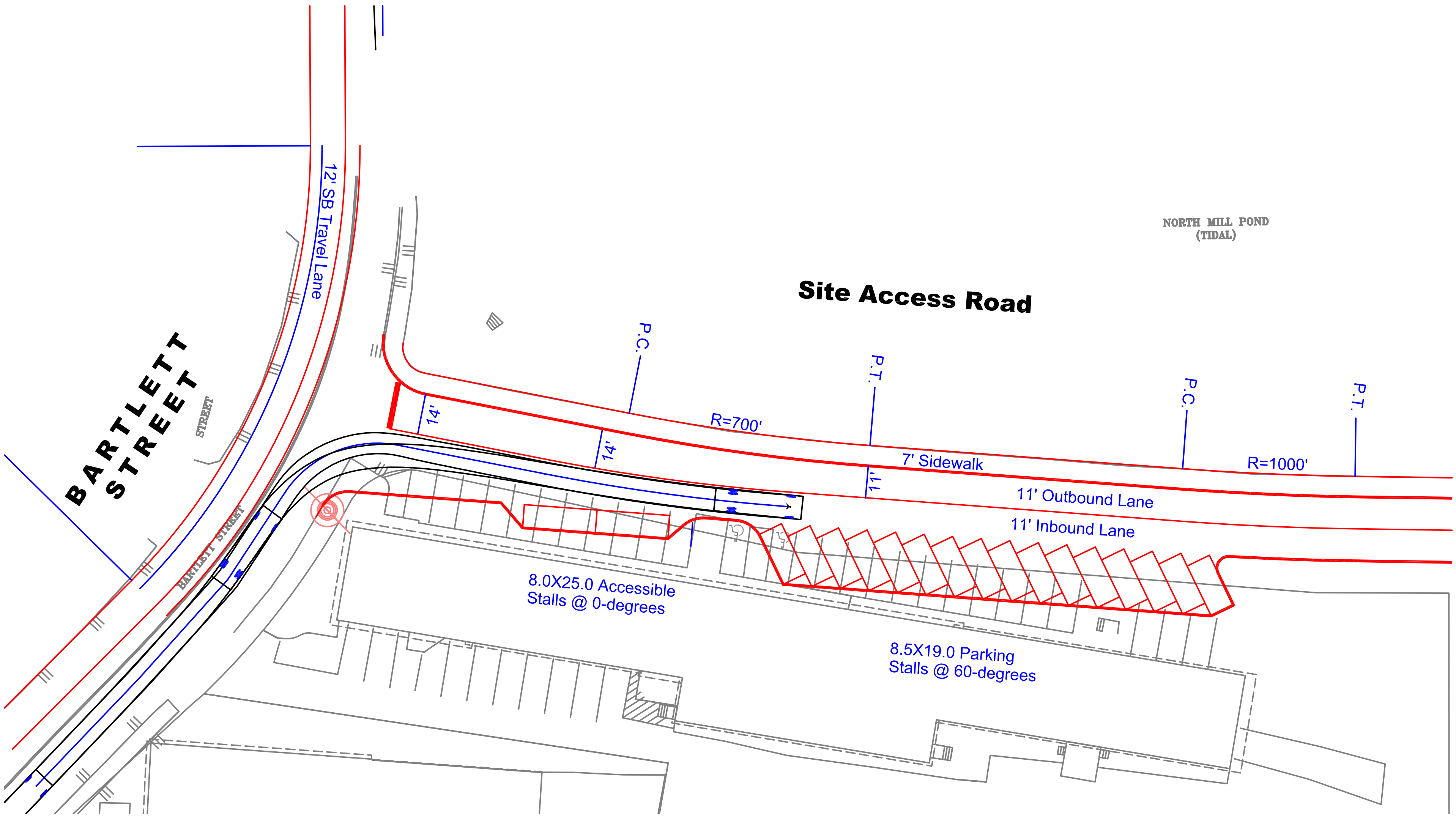

EXHIBIT 1B

REVISIONS		
NUMBER	DATE	DESCRIPTION

CLIPPER TRADERS, LLC
RESIDENTIAL DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

BARTLETT ST / SITE ACCESS RD
INTERSECTION
SU: RIGHT-IN

DRAWN:	SCALE:
CAP	1" = 50'
DESIGNED:	JOB NO.
SGP	1821A
CHECKED:	DATE:
SGP	10/06/18

TRANSPORTATION
• ENGINEERING
• PLANNING
• DESIGN
SGP
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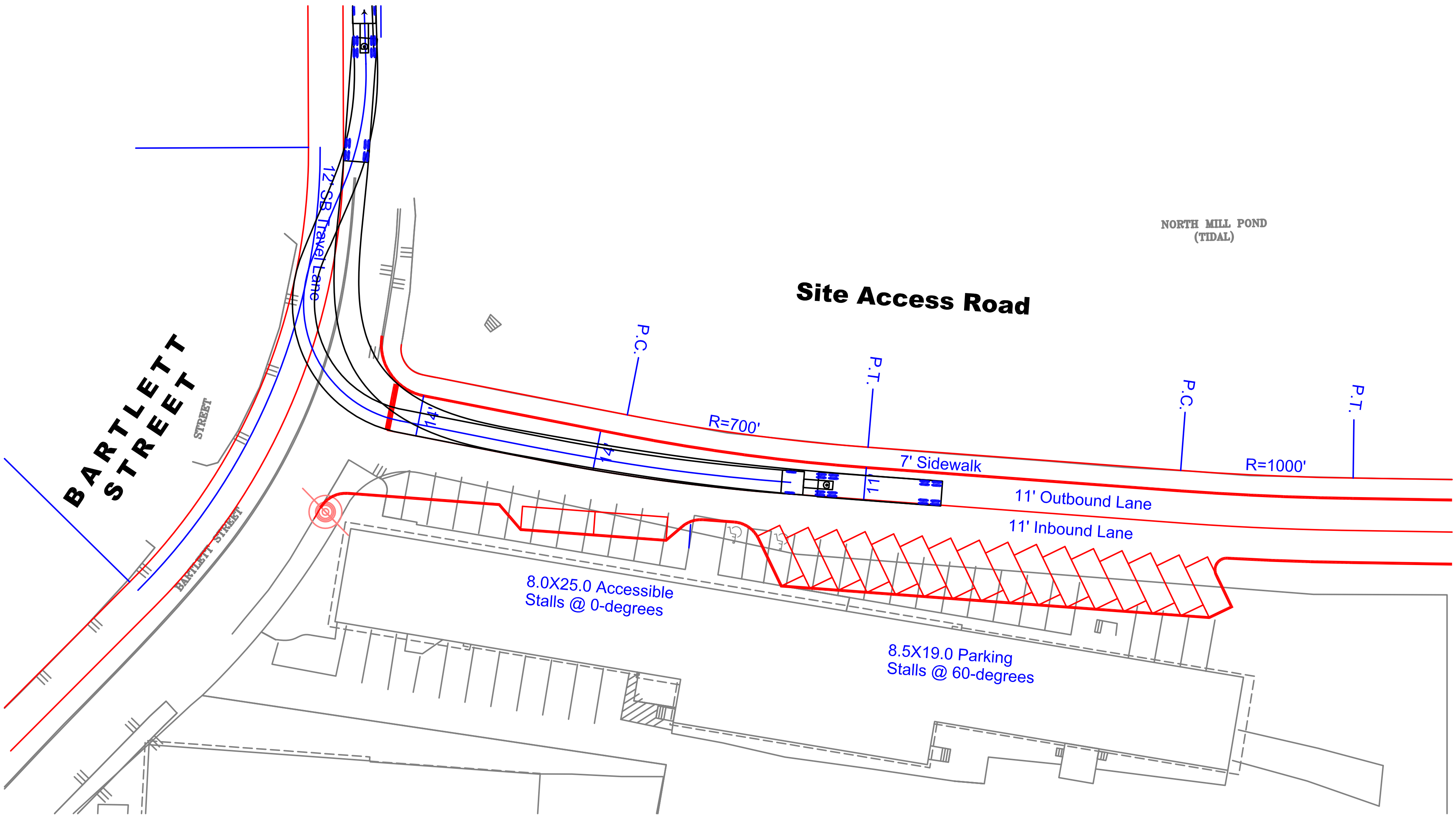

EXHIBIT 1C

REVISIONS		
NUMBER	DATE	DESCRIPTION

CLIPPER TRADERS, LLC
RESIDENTIAL DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

BARTLETT ST / SITE ACCESS RD INTERSECTION
WB-50: RIGHT-OUT

DRAWN: CAP	SCALE: 1" = 50'
DESIGNED: SGP	JOB NO. 1821A
CHECKED: SGP	DATE: 10/06/18

TRANSPORTATION
• ENGINEERING
• PLANNING
• DESIGN
SGP
Stephen G. Pernaw & Co. Inc.
PO Box 1721, Concord, NH 03301
Phone: (603) 228-5750, Fax: (866) 929-6094

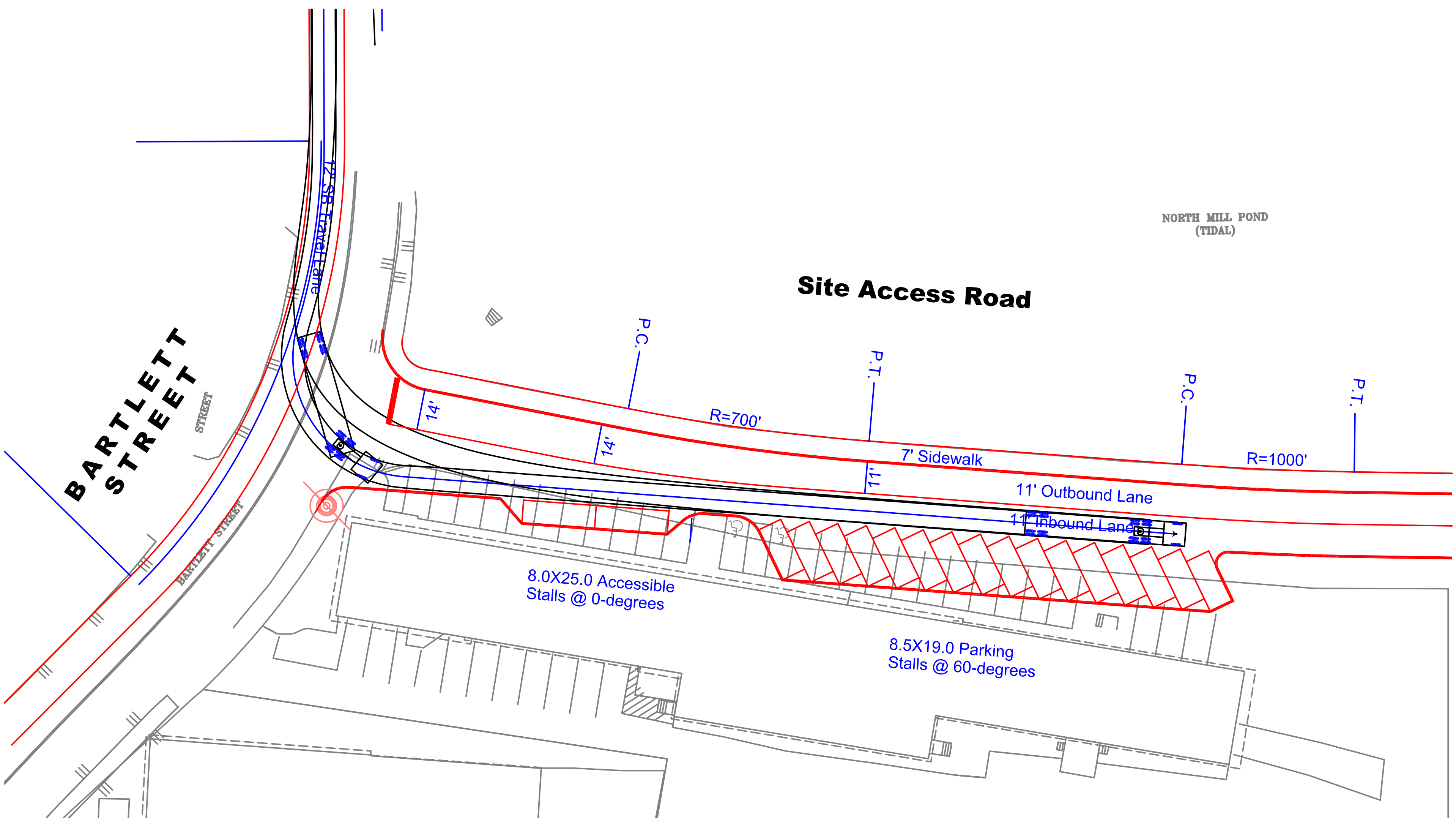

EXHIBIT 1D

REVISIONS		
NUMBER	DATE	DESCRIPTION

CLIPPER TRADERS, LLC
RESIDENTIAL DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

BARTLETT ST / SITE ACCESS RD INTERSECTION
WB-50: LEFT-IN

DRAWN: CAP	SCALE: 1" = 50'
DESIGNED: SGP	JOB NO. 1821A
CHECKED: SGP	DATE: 10/06/18

TRANSPORTATION
• ENGINEERING
• PLANNING
• DESIGN

SGP

Stephen G. Pernaw & Co. Inc.
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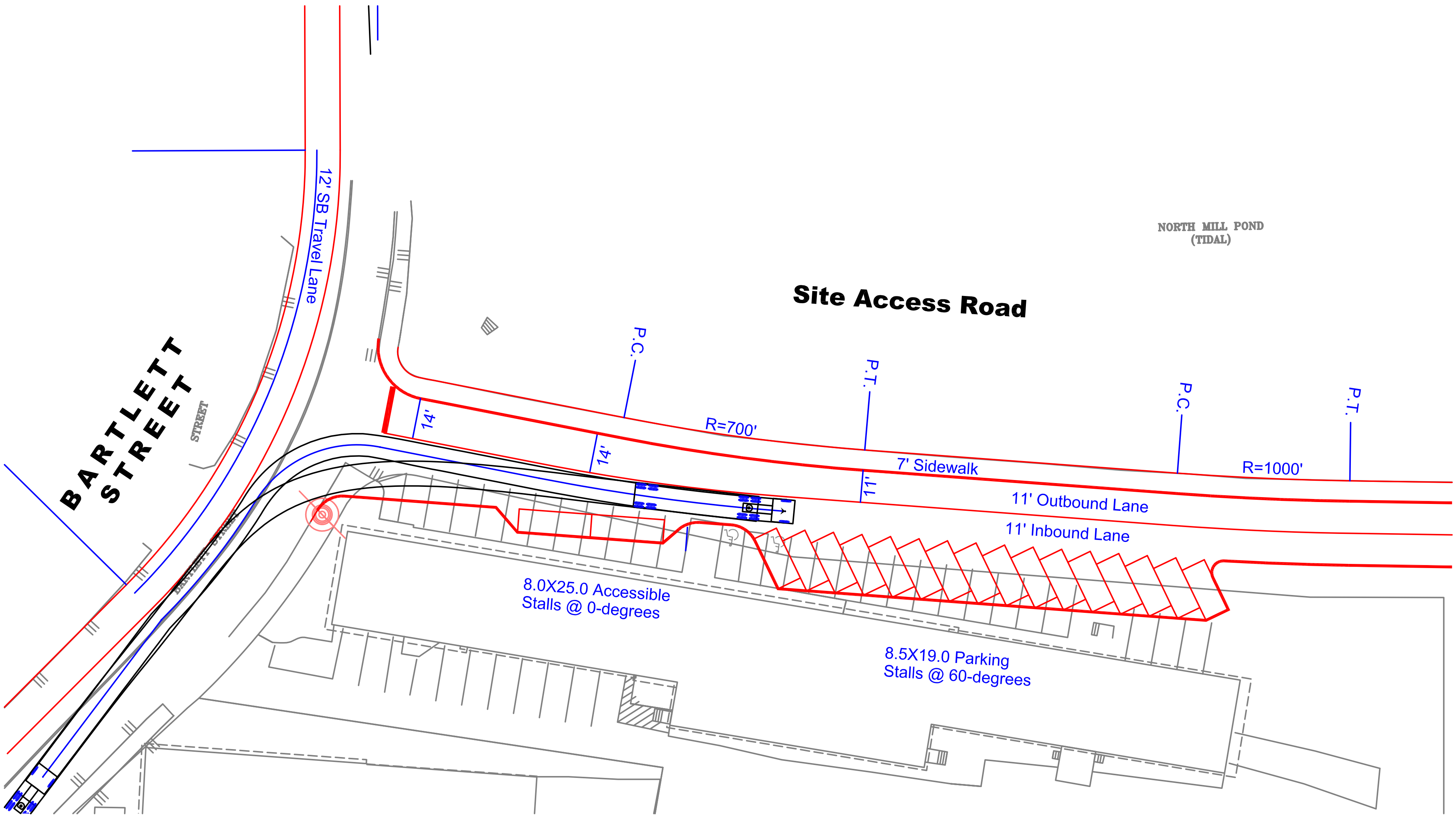

EXHIBIT 1E

REVISIONS		
NUMBER	DATE	DESCRIPTION

CLIPPER TRADERS, LLC
RESIDENTIAL DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

BARTLETT ST / SITE ACCESS RD INTERSECTION
WB-50: RIGHT-IN

DRAWN:	SCALE:
CAP	1" = 50'
DESIGNED: SGP	JOB NO. 1821A
CHECKED: SGP	DATE: 10/06/18

TRANSPORTATION
• ENGINEERING
• PLANNING
• DESIGN
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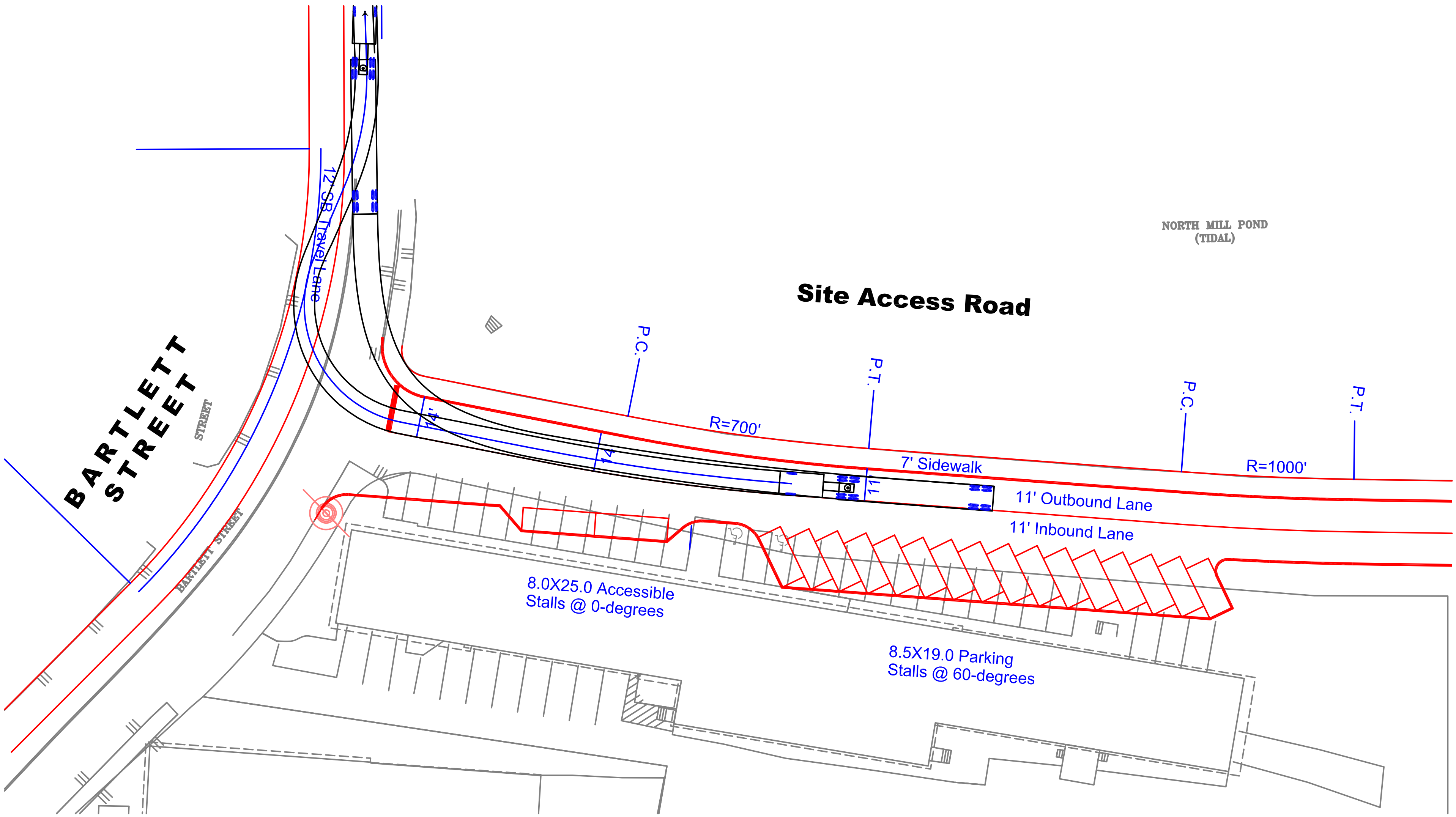

CASE A = TRUCK OFF-TRACKS
OVER SIDEWALK AT CORNER

EXHIBIT 1F

REVISIONS		
NUMBER	DATE	DESCRIPTION

CLIPPER TRADERS, LLC
RESIDENTIAL DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

BARTLETT ST / SITE ACCESS RD
INTERSECTION
WB-67: RIGHT-OUT (Case A)

DRAWN: CAP	SCALE: 1" = 50'
DESIGNED: SGP	JOB NO. 1821A
CHECKED: SGP	DATE: 10/06/18

TRANSPORTATION
• ENGINEERING
• PLANNING
• DESIGN
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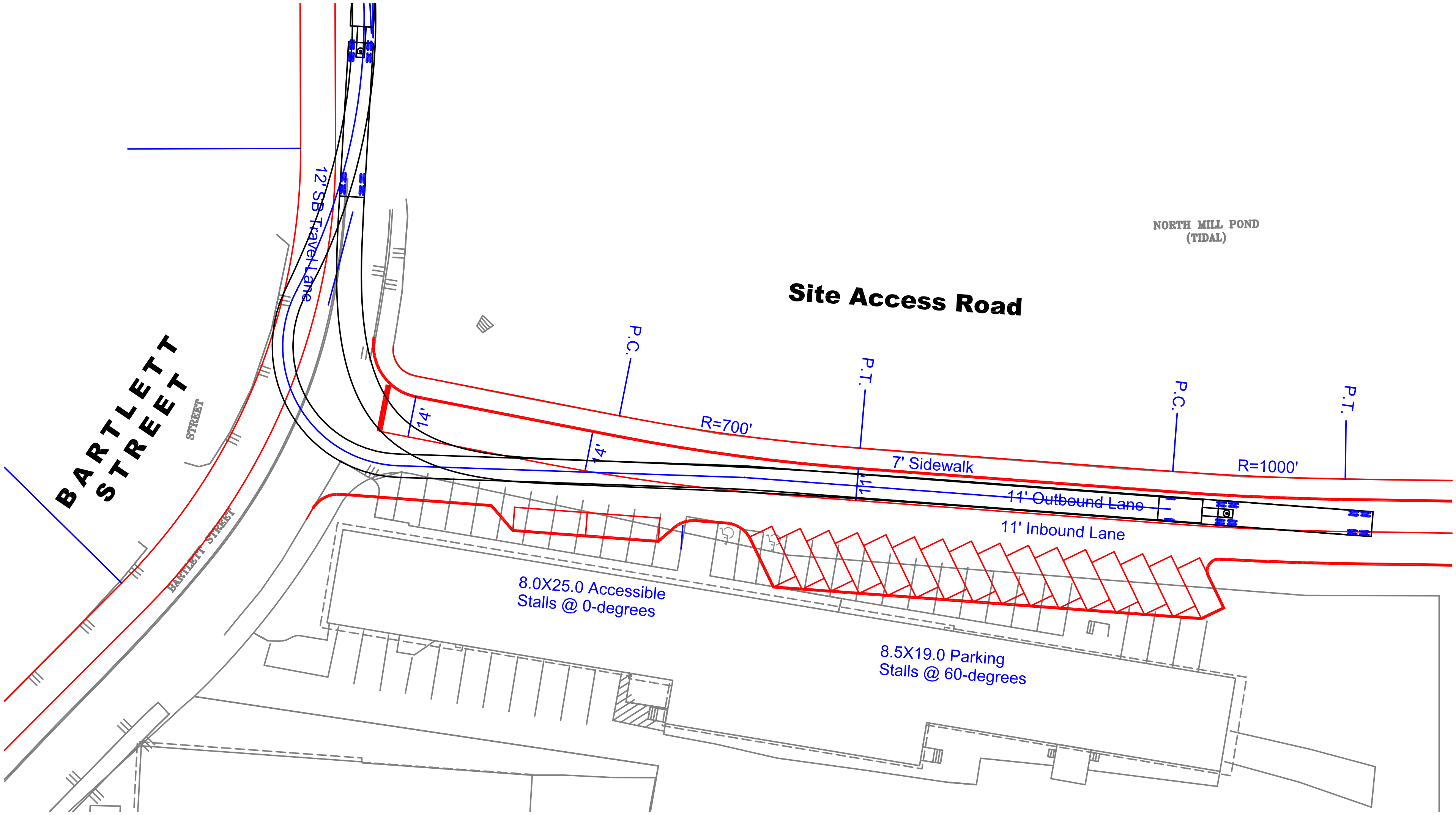

CASE B = TRUCK UTILIZES FULL
WIDTH OF SITE ACCESS ROAD

EXHIBIT 1G

REVISIONS		
NUMBER	DATE	DESCRIPTION

CLIPPER TRADERS, LLC
RESIDENTIAL DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

BARTLETT ST / SITE ACCESS RD INTERSECTION
WB-67: RIGHT-OUT (Case B)

DRAWN: CAP	SCALE: 1" = 50'
DESIGNED: SGP	JOB NO. 1821A
CHECKED: SGP	DATE: 10/06/18

TRANSPORTATION
• ENGINEERING
• PLANNING
• DESIGN
SGP
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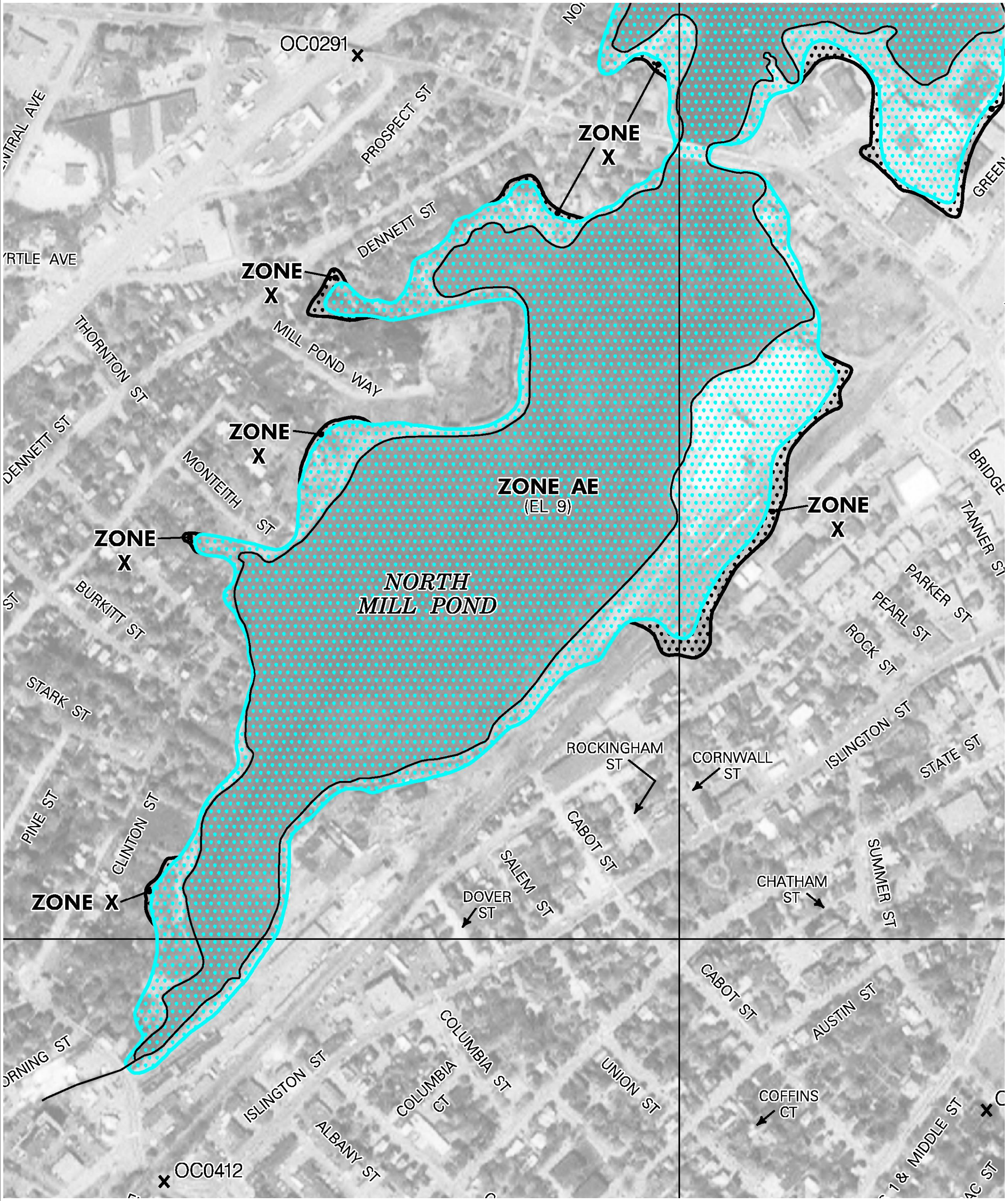


MAP SCALE 1" = 500'

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 MAY 17, 2005

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using FIRMette - Desktop version 3.0. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. Further information about National Flood Insurance Program flood hazard maps is available at http://www.msc.fema.gov/.

DEARBORN WAY
Maplewood Ave Bridge
North Mill Pond
ZONE AE (EL 8)
ZONE AE (EL 8)
Bartlett St Bridge
ADLER ST
DENNETT ST
KANE ST
MILL POND WAY
RUTH ST
THORNTON ST EXT
MONTEITH ST
SPARHAWK ST
BURKITT ST
DENNETT ST
THORNTON ST
STARK ST
MEREDITH WAY
PINE ST
CLINTON ST
BARTLETT ST
COTTAGE ST
MORNING ST
CATE ST
MAPLEWOOD AVE
DEER ST
BRIDGE ST
HANOVER ST
HIGH ST
LADD ST
PENHALLOW ST
CHURCH ST
PLEASANT ST
FLEET ST
ROCK ST
PEARL ST
BREWSTER ST
LANGDON ST
MCDONOUGH ST
CORNWALL ST
CABOT ST
SALEM ST
DOVER ST
STATE ST
ISLINGTON ST
COLUMBIA ST
CASS ST
S ALBANY ST
UNION ST
MADISON ST
CABOT ST
AUSTIN ST
MIDDLE ST
RICHARDS AVE
MARK ST
ROGERS ST
PARROTT AVE
Byp
1
1A

BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States

BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States
Design Criteria and Allowable Variances

See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada
Design Criteria and Allowable Variances

Design No. U305

October 08, 2018

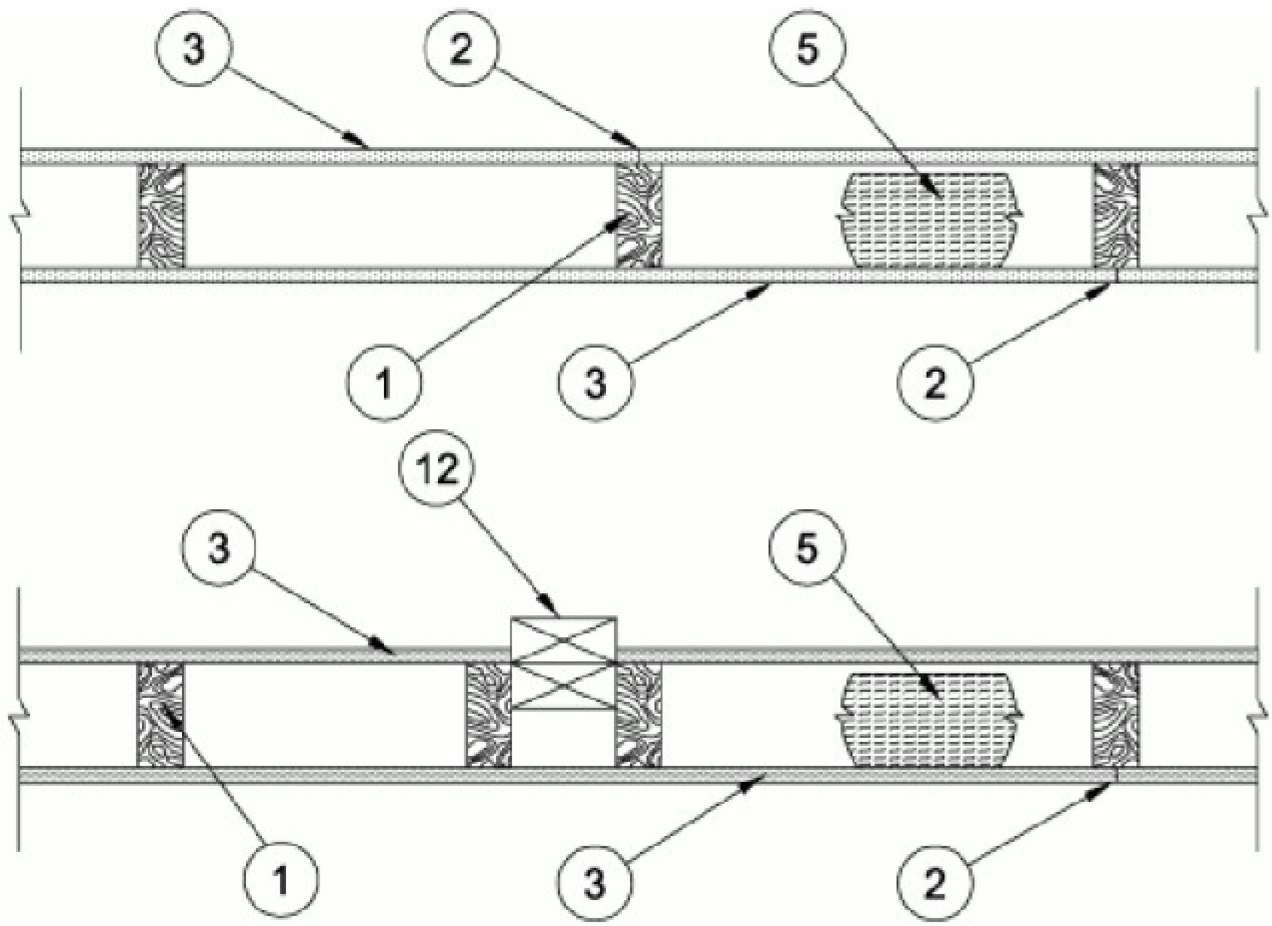
Bearing Wall Rating — 1 Hr

Finish Rating — See Items 3, 3A, 3D, 3E, 3F, 3G, 3H, 3J and 3L.

STC Rating - 56 (See Item 9)

This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide BXUV or BXUV7

*** Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



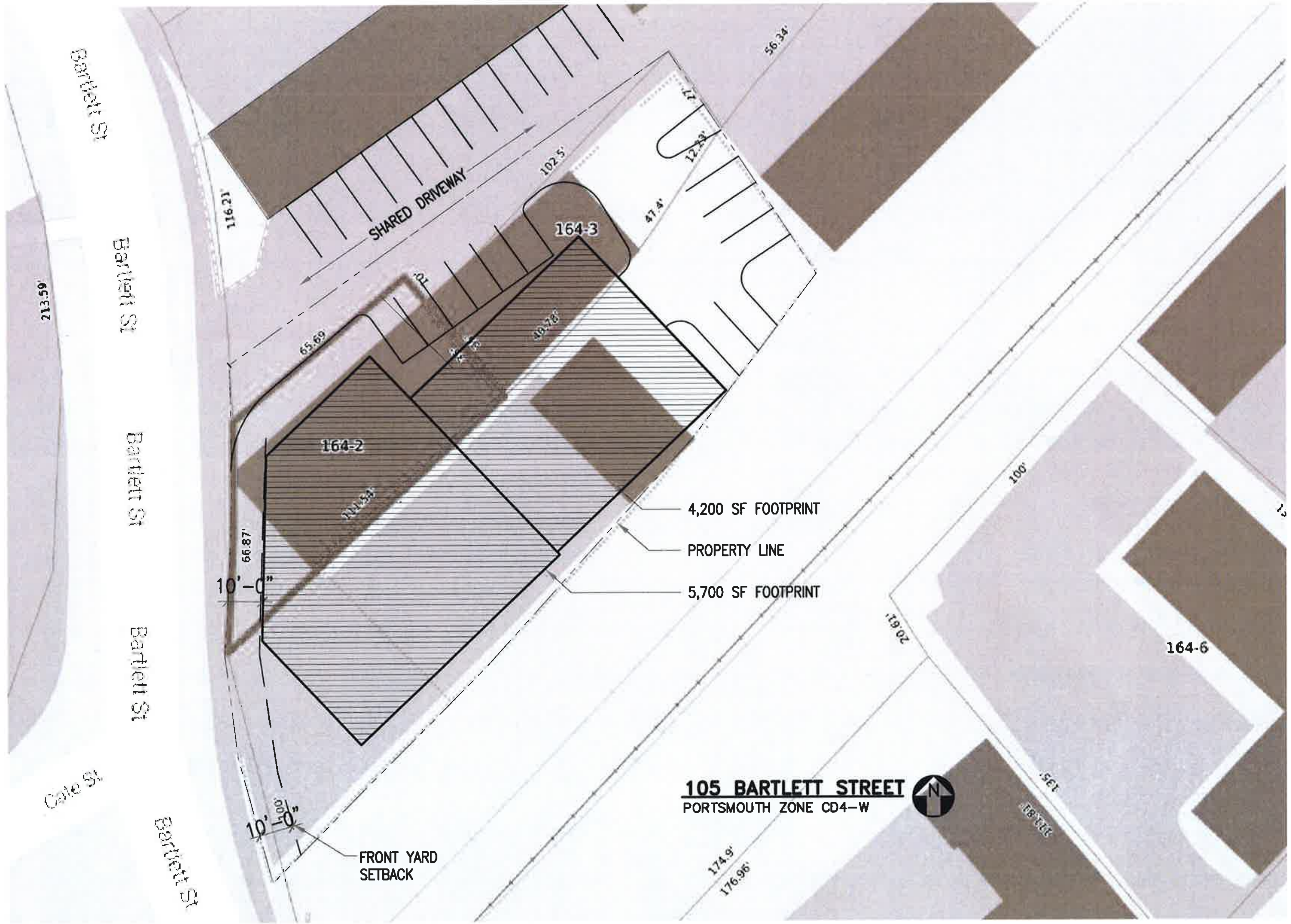
CLIPPER TRADERS
PORTSMOUTH, NH

BUILDING AREAS

- B1 - 18,000 SF +/-
- B2- 19,000 SF +/-
- B3- 2,950 SF +/-
- B4- 2,950 SF +/-
- B5- 2,530 +/-
- B6- 2,530 +/-
- B7- 1,800 SF +/-
- B8- 2,850 SF +/-
- B9- 3,400 SF +/-
- B10- 2,350 SF +/-

PROJECT CLIPPER TRADERS | DRAWING **SITE PLAN** | 08/06/18

7 WALLINGFORD SQUARE
UNIT 2099
KITTERY, ME 03904
207.994.3104
WINTER HOLBEN



PRELIMINARY CONSULTATION CONCEPT SITE DEVELOPMENT

3.5.18

7 WALLINGFORD SQUARE
UNIT 2099
KITTERY, ME 03904
207.994.3104

WINTER HOLBEN
architecture + design

WINTER HOLBEN: BH/MR
SCALE: 1/32" = 1'-0"
PROJECT NO: 17112

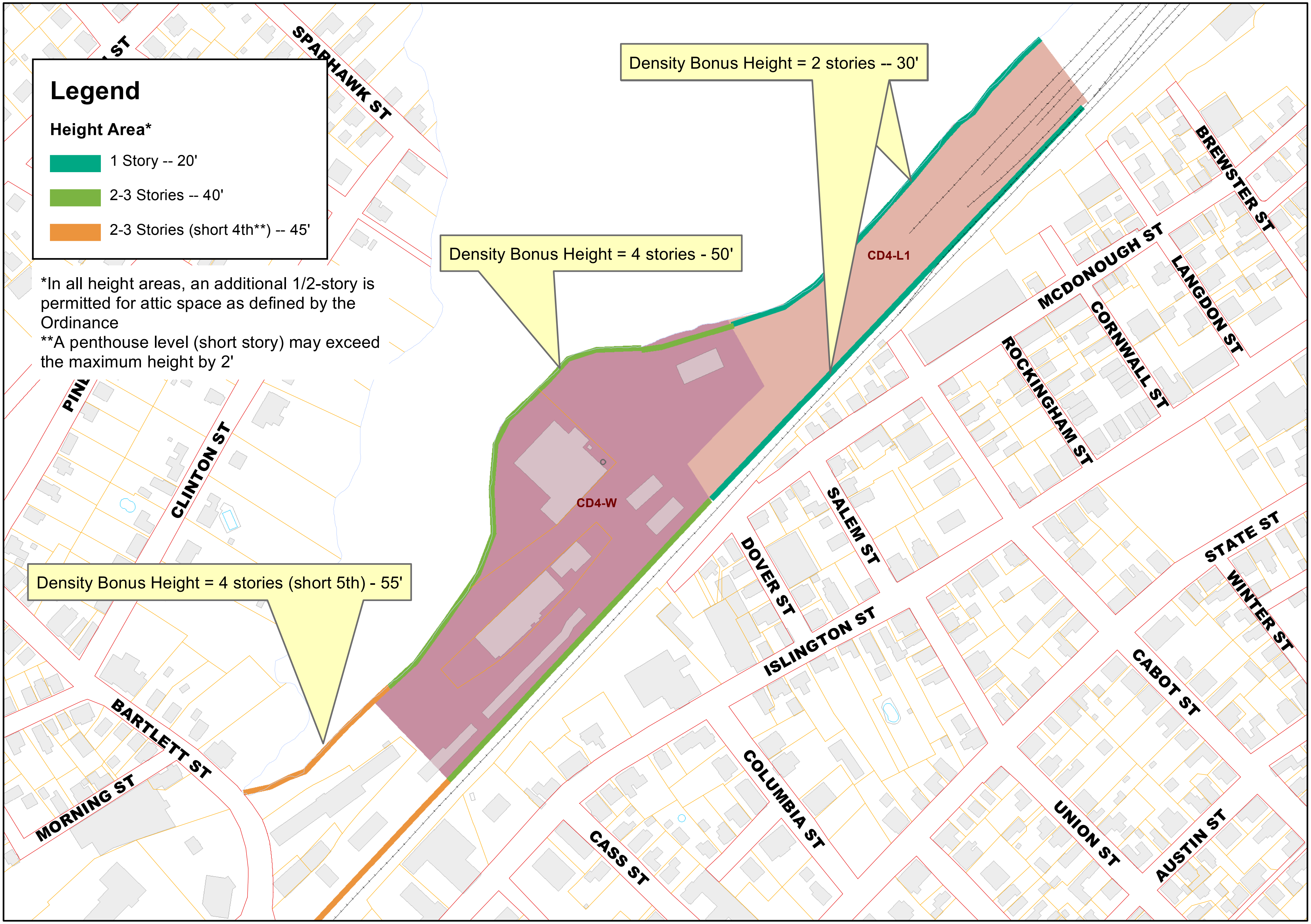
DRAWING NO.
P1

Planning Department staff recommends the following revisions to proposed Parts 1A, 1B, and 2 of the 105 Bartlett Street Zoning Amendments (dated July 9, 2018)

After the public hearing has closed and before voting to close Second Reading, the Council may vote to incorporate any or all of the revisions listed below to the zoning amendments (Parts 1A, 1B, and 2) under consideration for 105 Bartlett Street.

1. <u>(Revision to Part 1B) Zoning Map Change – Character Districts and Civic Districts Map (10.5A21A)</u>: Change the proposed Character District Designation from CD4-L2 to CD4-L1. [see Map attached]
   Comment – The purpose of this amendment is to limit land uses in this area to primarily residential uses and limited office uses. Dimensional standards are the same as the CD4-L2.
2. <u>(Revisions to Parts 1A and 1B) Zoning Map Change – Character Districts and Civic Districts Map (10.5A21A)</u>: Change the portion of the property located between Cabot and Salem Streets and bound by the railroad tracks and the North Mill Pond shoreline and the portion of the property located between Dover and Salem Streets and bound by the railroad tracks and a line parallel to and 10' northwest of the City sewer line from CD4-W to CD4-L1. Maximum building footprint would be 2,500 sq. ft. (3,500 sq. ft. with incentive overlay density bonus), maximum building block length would be 80' (100' with bonus). [See Map attached]
   Comment – The purpose of this amendment is to limit the mass and scale of buildings located in closest proximity to the abutting residential properties.
3. <u>(Revisions to Parts 1A and 1B) Zoning Map Change – Building Height Standards (10.5A21B)</u>: Reduce the maximum building height for buildings located between Salem and Cabot Streets in the revised CD4-L1 Districts from 2 Stories / 35 feet to 1-Story / 20 feet. The maximum height with the incentive overlay density bonus would be 2 stories / 30 feet.
   Comment – The purpose of this amendment is to reduce the height of buildings located in closest proximity to the abutting residential properties, where the current zoning allows a maximum height of 35' and where the maximum existing height of buildings is less than 30' and 2 ½ stories. NOTE: This revision should be made in conjunction with the proposed revisions 1 and 2 and is not a stand-alone revision as proposed.
4. <u>(Revision to Part 1B) Incentive Overlay Districts – Development Standards (10.5A46.10)</u>: Modify footnotes 1 and 2 allowing for a maximum building footprint of 3,500 and a maximum building block length of 100' to apply to both the CD4-L1 and CD4-L2 districts.
   Comment: This amendment retains the density bonus development standards originally proposed for CD4-L2 but expands their application to the CD4-L1 District in order to be consistent with the proposed map changes listed above. NOTE: This revision should be made in conjunction with the proposed revisions 1 and 2 and is not a stand-alone revision as proposed.

5. (Revisions to Parts 1A and 1B) View Corridors (10.5A42): Add a view corridor requirement at Cornwall Street equal to the minimum width of the existing public right-of-way. This would apply to new buildings or structures located within 400' of the North Mill Pond in the Character Districts.
Comment – The purpose of this amendment is preserve a view corridor the width of the Cornwall Street right of way. The view corridor would only apply to properties in the proposed district (from railroad boundary to water) as the properties on the east side of the railroad tracks are not currently under consideration for a zoning change. With this revision, the proposed zoning amendments would require view corridors at Dover Street, Cabot Street, Cornwall Street, and Langdon Street.
6. (Revision to Part 1B) Incentive Overlay Districts – Development Standards (10.5A46.10): Modify footnote 1 to require 30' minimum separation between individual buildings in CD4-L1/L2 if the building footprint is greater than 2,500 sq. ft. In addition, where the separation between buildings is 30' or more, allow surface parking to be located between buildings and not setback 20' from the façade of the building.
Comment – The purpose of this amendment is to provide a mechanism for increasing the spacing between buildings in the CD4-L1/L2 districts. Per the definition of building block length in the Ordinance, individual building blocks must be separated by open space or community space of at least 15' in width. This amendment would allow parking to be located between buildings in exchange for a wider building separation distance if the buildings are greater than 2,500 sq. ft. in footprint.
7. (Revision to Part 1A) Incentive Overlay Districts – Development Standards (10.5A46.10): Limit the maximum building footprint to 20,000 SF within 200 feet of the North Mill Pond.
Comment – The purpose of this amendment is reduce impact to the view of the North Mill Pond and improve the spatial relationship between any proposed community space and the North Mill Pond. This maximum would not apply to properties located in CD4-L1 or CD4-L2.
8. (Revisions to Parts 1A and 2) Incentive Overlay Standards – Development Standards (10.5A46.10): Change proposed ground story parking provision to allow for ground story parking in any property in the North End of West End Incentive Overlay Districts if a liner building is provided where the building fronts on a street. Remove requirement for the liner building to be designed as a shopfront for commercial space and expand this to apply to both private and public streets in any district (not just the CD4-W).
Comment – This is a clarification of a previously drafted amendment included in Part 2 of the proposed zoning amendments that would require the provision of a liner building wherever ground story parking is proposed in the West End Incentive Overlay Districts where the building fronts on a street. The modification would apply to both public or private streets (but not driveways). Provision of a liner building helps to ensure an active street frontage at the pedestrian scale.



Portsmouth Planning Department Revised 07-27-2018

DRAINAGE ANALYSIS

CLIPPER TRADERS, LLC
SUBDIVISION

Off Bartlett Street
PORTSTMOUTH, NH

October 2018

STATE OF NEW HAMPSHIRE
JOSEPH L. MULLEDY
No. 11502
LICENSED
PROFESSIONAL ENGINEER

10/16/18

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 Number 2429)

TABLE OF CONTENTS

EXECUTIVE SUMMARY

This drainage analysis examines the pre-development (existing) and post-development (proposed) stormwater drainage patterns for the proposed project off Bartlett Street in Portsouth, NH. The site is shown on the Town of Portsmouth Tax Map 157 as Lots 1 & 2 and Map 164 as lots 1, 2, 3 & 4. The total proposal is to subdivide the above described lots into 5 individual lots. The total area of the drainage analysis in the existing conditions is 8.47 acres. This area increases in the proposed conditions to 12.67 acres due to the separation of drainage from the existing sewer.

The proposed development will include construction of a new roadway ending in a cul-de-sac, new utilities to support current and future build-out conditions. 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.

A rain garden is proposed within the center circle of the cul-de-sac. A closed drainage system will support the new roadway that will be treated in an Environment 21, Unistorm (Model 5R) stormwater treatment system. The building and parking lot on proposed Lot 4 will be treated in a filtration trench and the separated drain will be treated utilizing an Environment 21, Unistorme (Model 8R) stormwater treatment system.

CLIPPER TRADERS, LLC SUBDIVISION

BARTLETT STREET, NEW HAMPSHIRE

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 Town of Portsmouth, NH Assessor's Tax Map 157 as Lots 1 & 2 and Map 164 as lots 1, 2, 3 & 4. Bounding the site to north of the site is the North Mill Pond. To the West of the site is Bartlett Street. The property to the east is currently owned by Pan Am Railway. To the south the property is bound by Islington Street and the many commercial and residential properties along it.

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 watershed 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 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. Rainfall data was used from the Extreme Precipitation Tables, provided by the Northeast Climate Center. Runoff curve numbers are taken from "The Stormwater Management and Erosion Control Handbook for Urban and Developing Areas in New Hampshire."

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 2-year, 10-year and 50-year. Since this project disturbs less than 50,000 square-feet of contiguous terrain within the 250 foot shoreland zone, an Alteration of Terrain (AoT) permit from the New Hampshire Department of Environmental Services (NHDES) is not required.

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, the site is made up of one soil type:

799 – Urban land – Canton complex, well drained with a typical depth to restrictive feature of more than 80 inches. This soil has a Hydrologic Soil Group (HSG) classification of A, with a Low runoff class.

One Test Pit was performed on the site to support this design. The test pit indicated that the soil is a moderately well drained soil with a typical depth to restrictive feature of 36" inches. This soil has a Hydrologic Soil Group (HSG) classification of A.

The physical characteristics of the site consist of grades that generally slope toward the North Mill Pond. Elevations on the site range from 13 to 0 feet above sea level. The existing site is partially developed and includes existing sstructure located throughout the lot with a paved parking. 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

Large portions of the existing site drains via overland flow from the south side of the lot to the north, where runoff drains off the site via overland flow directly into the North Mill Pond. While other portions are collected in catch basins and discharge directly to the North Mill Pond. A substantial area (4.14 acres) is captured in catch basins that are then discharged to the brick sewer that traverses the site. None of the existing runoff receives any treatment.

In the pre-development condition, the site has been analyzed with 15 subcatchements (ES1, ES1a, ES1b, ES2, ES2a, ES2b, ES2c, ES3, ES4, ES5, ES6, ES7, ES8, ES9 and ES10) based on localized topography and discharge location. Subcatchments ES1a, ES1b, ES2a, ES2b and ES2c are unchanged in the proposed condition and will not be studied further in this analysis. Subcatchments ES2, ES3, ES5, ES6, ES7, ES8 and Es10 discharge to the combined sewer in the existing condition and are analyzed at Discharge Point 2 (DP2). These catch basins are proposed to be removed (separated) from the sewer by this project. The remaining subcatchments are analyzed at Discharge Point (DP1) which represents the North Mill Pond.

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	23,090	5.0	98	2.97	4.52	DP1
ES2	65,464	7.6	81	5.78	10.02	DP1
ES3	28,735	5.0	91	3.43	5.41	DP1
ES4	148,459	5.3	69	9.64	19.38	DP1
ES5	17,243	5.0	87	1.91	3.12	DP1
ES6	18,912	5.0	86	2.06	3.39	DP1
ES7	13,792	5.0	88	1.56	2.53	DP1
ES8	38,484	5.0	83	3.91	6.63	DP1
ES9	170,146	7.4	57	5.54	14.19	DP1
ES10	27,141	7.8	76	2.07	3.79	DP1

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 broken down into fourteen on-site watershed basins (PS l, PS 2, PS3, PS4, PS 5, PS 6, PS7, PS8, PS9 and PS10) based on localized topography, drainage structure locations and discharge locations. All Basins drain to Design Point 1 (DP1). This allows for a direct review of Design Points to show the comparison of runoff from the site in the pre development and post-development 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	23,090	5.0	97	2.95	4.50	DP1
PS2	65,464	7.6	81	5.78	10.02	DP1
PS3	28,735	5.0	89	3.31	5.32	DP1
PS4	78,241	5.3	42	0.38	2.90	DP1
PS 4a	14,755	5.0	98	1.90	2.89	DP1
PS4b	20,314	5.0	98	2.61	3.97	DP1
PS 4c	12,582	5.0	92	1.52	2.39	DP1
PS4d	14,029	5.0	81	1.36	2.34	DP1
PS4e	17,277	5.0	76	1.45	2.65	DP1
PS5	17,243	5.0	87	1.91	3.12	DP1
PS6	18,912	5.0	86	2.06	3.39	DP1
PS7	13,792	5.0	88	1.56	2.53	DP1
PS8	36,146	5.0	82	3.58	6.13	DP1
PS9	164,174	7.4	55	4.63	12.63	DP1
PS10	27,141	7.8	74	1.94	3.64	DP1

The overall impervious coverage of the area analyzed in this report for all basins, decreases from 7.35 acres (57%) in the pre-development condition to 6.97 acres (55%) in the post-development condition. Since the project will decrease the amount of impervious area in the post-development condition, groundwater recharge not required. The rain garden biofiltration facilities provide water quality treatment to the area of new roadway. The Environment 21 treatment units (Unistorm) provide treatment to the newly separated drain from the sewer and treatment to Lot 4.

Table 3: Pre-Development to Post-Development Comparison

	Ql0 (CFS)		Q50(CFS)	
Design Point	**Pre**	**Post**	**Pre**	**Post**
DP 1	19.72	34.49	41.11	64.32
DP2	18.37	0.00	30.65	0.00

EROSION AND SEDIMENT CONTROL PRACTICES

The erosion potential for this site as it exists is low due to the existing vegetation. During construction, the major potential for erosion is wind and storm water 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 entrances at all access points to the site
- Rock sediment barriers at catch basins and in drainage swales
- 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 provide much needed treatment to the runoff from this highly industrialized site to the greatest extent feasible. This report indicates that the development decreases the amount of impervious surface on the project. With the design of the rain garden, the separation of the combined drain and the addition of two

Environment 21 treatment units the post-development quality of runoff is significantly improved and the environment is better served due to separation of the drain from the sewer. The increases in peak rates of runoff in the developed condition should be viewed as favorable considering that a substantial amount of runoff is being removed from the City's sewer system thereby reducing combined sewer overflows further downstream during wet weather.

REFERENCES

1. Town of Portsmouth, NH, *Land Development Regulations*.

2. Town of Portsmouth, NH, *Zoning Ordinance*.

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

4. 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.

5. HydroCAD Software Solution, LLC. *HydroCAD Stormwater Modeling System Version 10.0* dated 2007.

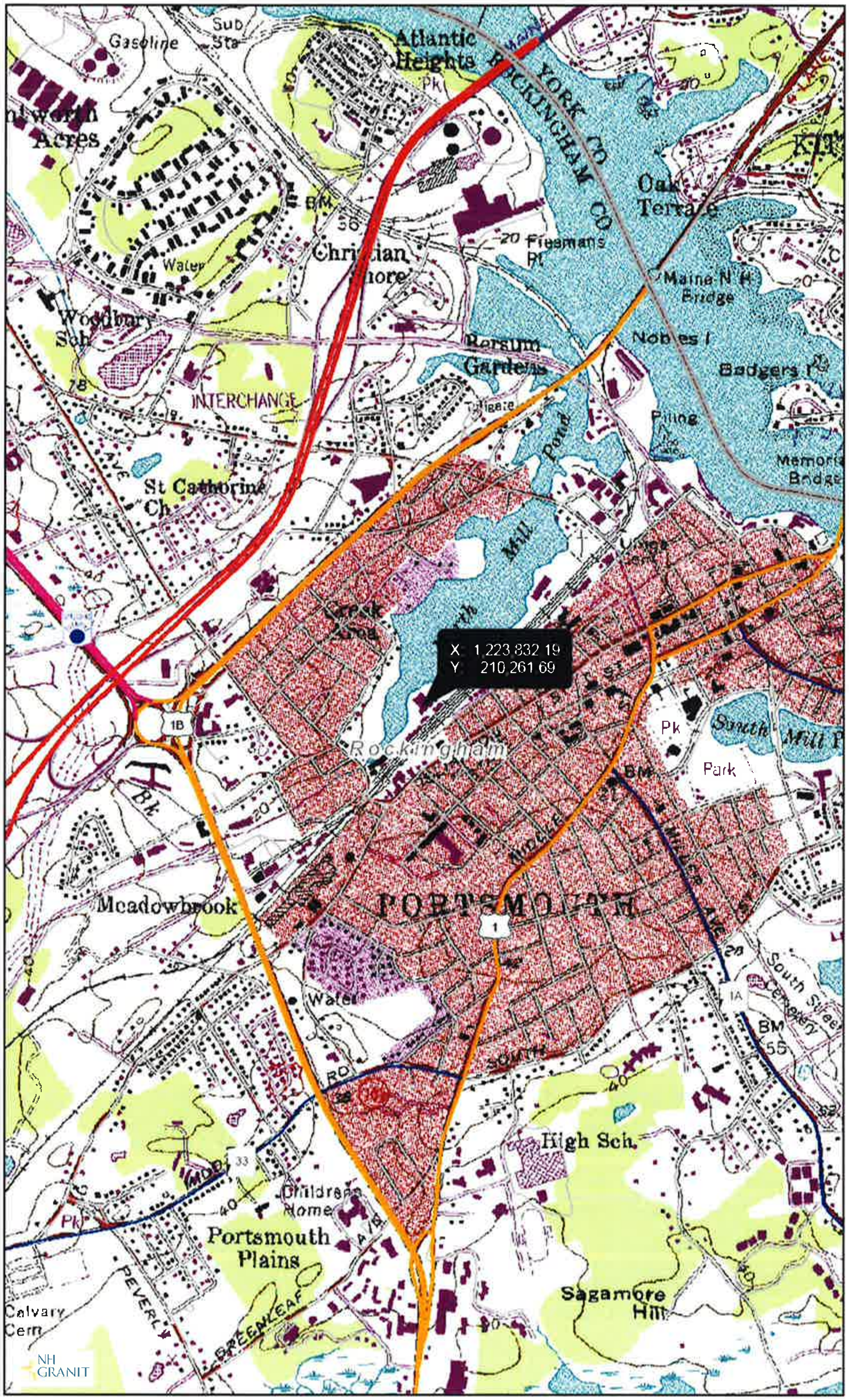
6. Northeast Regional Climate Center, *Extreme Precipitation Tables*, accessed April 10, 2018.

7. New Hampshire Code of Administrative Rules, *Env-Wq 1500*, effective 08-15-2017.

APPENDIX A

VICINITY MAP

Map by NH GRANIT



Legend

- State
- County
- City/Town
- Interstates
- Turnpikes
- US Routes
- State Routes
- Local Roads

Map Scale

1: 18,608

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Map Generated: 1/8/2016

Notes

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**

PWD Stormwater Plan Review Infiltration Testing Log

Version 1 *7/1/2015*

Project Name: Clipper Traders
Project Address: Bartlett St,
Testing Company: Ambit Engineering
Phone Number:
Date: OCT. 10, 2018
Weather: Sun
Tester's Name: Joe Mulledy
Email Address:

Test Number: 1
Test Depth (feet): 24"
Test Pit/Boring Hole Number: 1
Surface Elevation (feet): ≈ 10.0
Test Method: KSAT
Instrument Diameter (inches): 4"

Soil Characterization

Depth (feet):	Soil Texture:	Limiting Layers Type and Depth (feet):
Fill To 24"	Granular To 24"	

Presoak

Time:	Time Interval:	Measurement, (feet):	Drop in water level, (feet):
	0	2'	1'
	30		
	30		

Infiltration Testing

Time:	Time Interval (~~10 or 30~~ 60 minutes):	Measurement, (feet):	Drop in water level, (feet):	Infiltration rate (inches per hour):	Remarks:
T0 = 12:35	0	I0 2' → 11"	—	—	Stabilized @ 11"
1:32	60	I0 2' → 11"	7"	7"	stabilized @ 11"
2:35	60	I0 2' → 11"	7"	7"	stabilized @ 11"
3:35	60	I0 2' → 11"	6"	6"	Stabilized @ 11"
4:35	60	I0 2' → 11"	7"	7"	

Stabilized Infiltration Testing Rate (inches per hour):

AMBIT ENGINEERING, INC.
200 GRIFFIN ROAD-UNIT 3
PORTSMOUTH, NH 03801-7114
603-430-9282

TEST PIT LOGS

TEST PIT #1 Logged By SDR Designer Job No. 2429

Witnessed By Date 10/15/18

ESHWT: 36" Observed H2O: 36" Restrictive Layer 36" Refusal : NONE TO 44"

Roots: Percolation Rate Notes:

DEPTH	**DESCRIPTION**
0-20	10 YR 3/1 FINE SANDY LOAM (FILL) GRANULAR, FRIABLE
20-36	10YR 2/1 FINE SANDY LOAM (FILL) GRANULAR, FRIABLE
36-44	10YR 5/4 FINE LOAMY SAND, FIRM, MASSIVE
	2.5Y 6/2 REDOX DEPLETIONS
	7.5YR 4/4 REDOX CONCENTRATIONS

TEST PIT #2 Logged By Designer Job No.

Witnessed By : Date

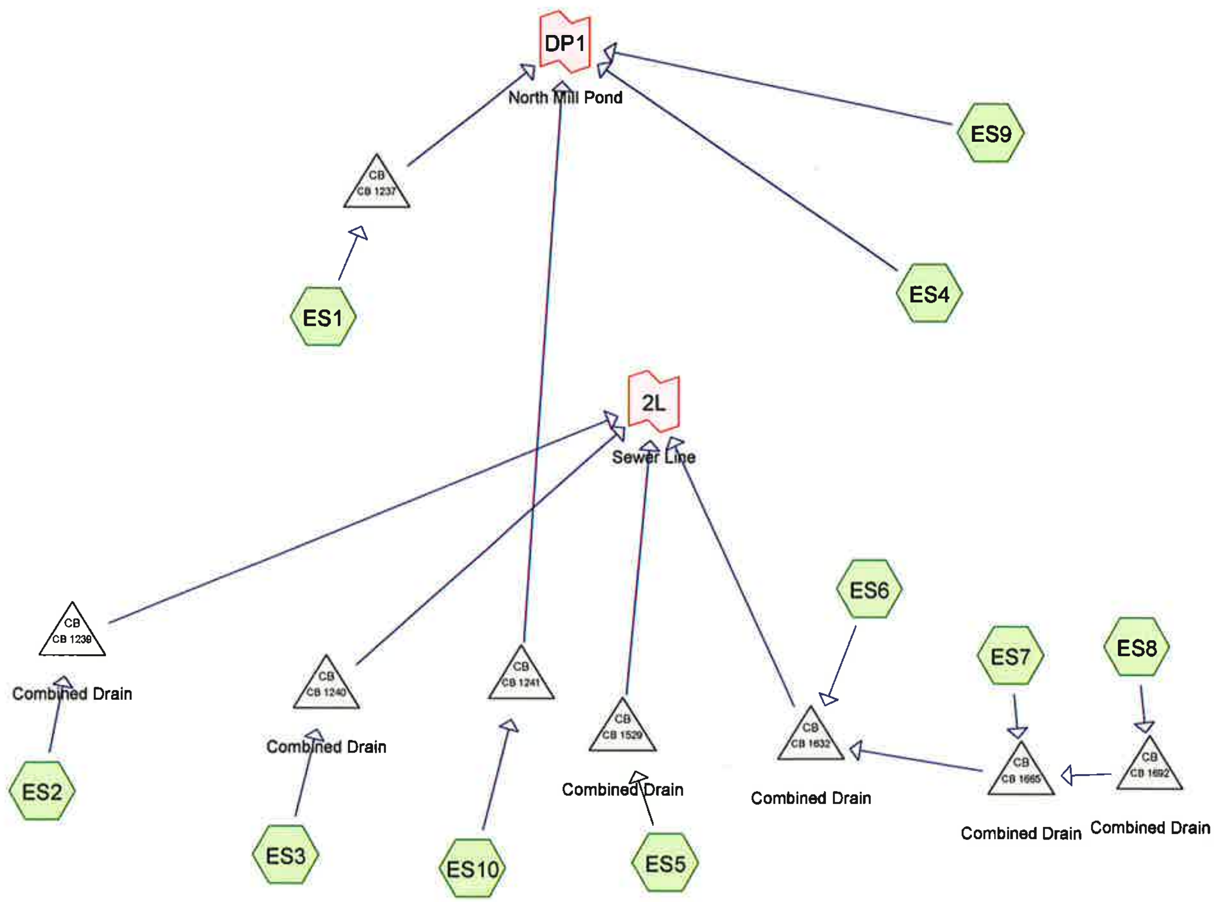
ESHWT: Observed H2O: Restrictive Layer: Refusal:

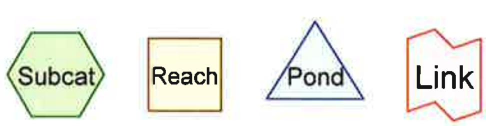
Roots: None Percolation Rate: Notes

DEPTH **DESCRIPTION**

APPENDIX C

HYDROCAD DRAINAGE ANALYSIS CALCULATIONS





Routing Diagram for 2429 Existing Conditions
Prepared by Ambit Engineering, Inc., Printed 10/16/2018

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.697	39	>75% Grass cover, Good, HSG A (ES4, ES6, ES8, ES9)
0.412	77	Fallow, bare soil, HSG A (ES2, ES3, ES4)
0.114	96	Gravel surface, HSG A (ES10)
1.892	98	Gravel surface, HSG A (ES2, ES3, ES4, ES5, ES6, ES7, ES8, ES9)
3.505	98	Paved parking, HSG A (ES1, ES10, ES2, ES3, ES4, ES5, ES6, ES7, ES8, ES9)
1.731	98	Roofs, HSG A (ES1, ES2, ES3, ES4, ES5, ES6, ES7, ES8, ES9)
0.126	98	Unconnected pavement, sidewalk, HSG A (ES1, ES2, ES3, ES4, ES9)
0.071	98	Unconnected roofs, HSG A (ES10)
3.196	30	Woods, Good, HSG A (ES10, ES2, ES3, ES4, ES5, ES6, ES7, ES8, ES9)
0.914	32	Woods/grass comb., Good, HSG A (ES4, ES9)
12.660	**72**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
12.660	HSG A	ES1, ES10, ES2, ES3, ES4, ES5, ES6, ES7, ES8, ES9
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
12.660		**TOTAL AREA**

Time span=0.00-72.00 hrs, dt=0.04 hrs, 1801 points x 7
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=23,090 sf 100.00% Impervious Runoff Depth=5.36"
Flow Length=209' Tc=5.0 min CN=98 Runoff=2.97 cfs 0.237 af

Subcatchment ES10: Runoff Area=27,141 sf 50.56% Impervious Runoff Depth=3.04"
Flow Length=300' Tc=7.8 min CN=76 Runoff=2.07 cfs 0.158 af

Subcatchment ES2: Runoff Area=65,464 sf 65.78% Impervious Runoff Depth=3.52"
Flow Length=400' Tc=7.6 min CN=81 Runoff=5.78 cfs 0.441 af

Subcatchment ES3: Runoff Area=28,735 sf 86.24% Impervious Runoff Depth=4.57"
Flow Length=140' Tc=5.0 min CN=91 Runoff=3.43 cfs 0.251 af

Subcatchment ES4: Runoff Area=148,459 sf 52.87% Impervious Runoff Depth=2.40"
Flow Length=342' Tc=5.3 min CN=69 Runoff=9.64 cfs 0.683 af

Subcatchment ES5: Runoff Area=17,243 sf 83.68% Impervious Runoff Depth=4.14"
Flow Length=165' Tc=5.0 min CN=87 Runoff=1.91 cfs 0.136 af

Subcatchment ES6: Runoff Area=18,912 sf 81.61% Impervious Runoff Depth=4.03"
Flow Length=171' Tc=5.0 min CN=86 Runoff=2.06 cfs 0.146 af

Subcatchment ES7: Runoff Area=13,792 sf 86.00% Impervious Runoff Depth=4.24"
Flow Length=144' Tc=5.0 min CN=88 Runoff=1.56 cfs 0.112 af

Subcatchment ES8: Runoff Area=38,484 sf 77.66% Impervious Runoff Depth=3.72"
Flow Length=253' Tc=5.0 min CN=83 Runoff=3.91 cfs 0.274 af

Subcatchment ES9: Runoff Area=170,146 sf 37.83% Impervious Runoff Depth=1.44"
Flow Length=452' Tc=7.4 min CN=57 Runoff=5.54 cfs 0.468 af

Pond CB 1237: Peak Elev=6.69' Inflow=2.97 cfs 0.237 af
12.0" Round Culvert n=0.013 L=39.0' S=0.0051 '/' Outflow=2.97 cfs 0.237 af

Pond CB 1239: Combined Drain Peak Elev=45.40' Inflow=5.78 cfs 0.441 af
8.0" Round Culvert n=0.013 L=156.0' S=0.0050 '/' Outflow=5.78 cfs 0.441 af

Pond CB 1240: Combined Drain Peak Elev=18.70' Inflow=3.43 cfs 0.251 af
8.0" Round Culvert n=0.013 L=158.0' S=0.0050 '/' Outflow=3.43 cfs 0.251 af

Pond CB 1241: Peak Elev=8.43' Inflow=2.07 cfs 0.158 af
8.0" Round Culvert n=0.013 L=103.0' S=0.0050 '/' Outflow=2.07 cfs 0.158 af

Pond CB 1529: Combined Drain Peak Elev=20.34' Inflow=1.91 cfs 0.136 af
6.0" Round Culvert n=0.013 L=109.0' S=0.0050 '/' Outflow=1.91 cfs 0.136 af

Pond CB 1632: Combined Drain Peak Elev=55.93' Inflow=7.53 cfs 0.532 af
8.0" Round Culvert n=0.013 L=107.0' S=0.0050 '/' Outflow=7.53 cfs 0.532 af

Pond CB 1665: Combined Drain Peak Elev=64.21' Inflow=5.47 cfs 0.386 af
10.0" Round Culvert n=0.013 L=95.0' S=0.0140 '/' Outflow=5.47 cfs 0.386 af

Pond CB 1692: Combined Drain Peak Elev=70.58' Inflow=3.91 cfs 0.274 af
10.0" Round Culvert n=0.013 L=162.0' S=0.0053 '/' Outflow=3.91 cfs 0.274 af

Link 2L: Sewer Line Inflow=18.37 cfs 1.360 af
Primary=18.37 cfs 1.360 af

Link DP1: North Mill Pond Inflow=19.72 cfs 1.546 af
Primary=19.72 cfs 1.546 af

Total Runoff Area = 12.660 ac Runoff Volume = 2.906 af Average Runoff Depth = 2.75"
42.13% Pervious = 5.334 ac 57.87% Impervious = 7.326 ac

Summary for Subcatchment ES1:

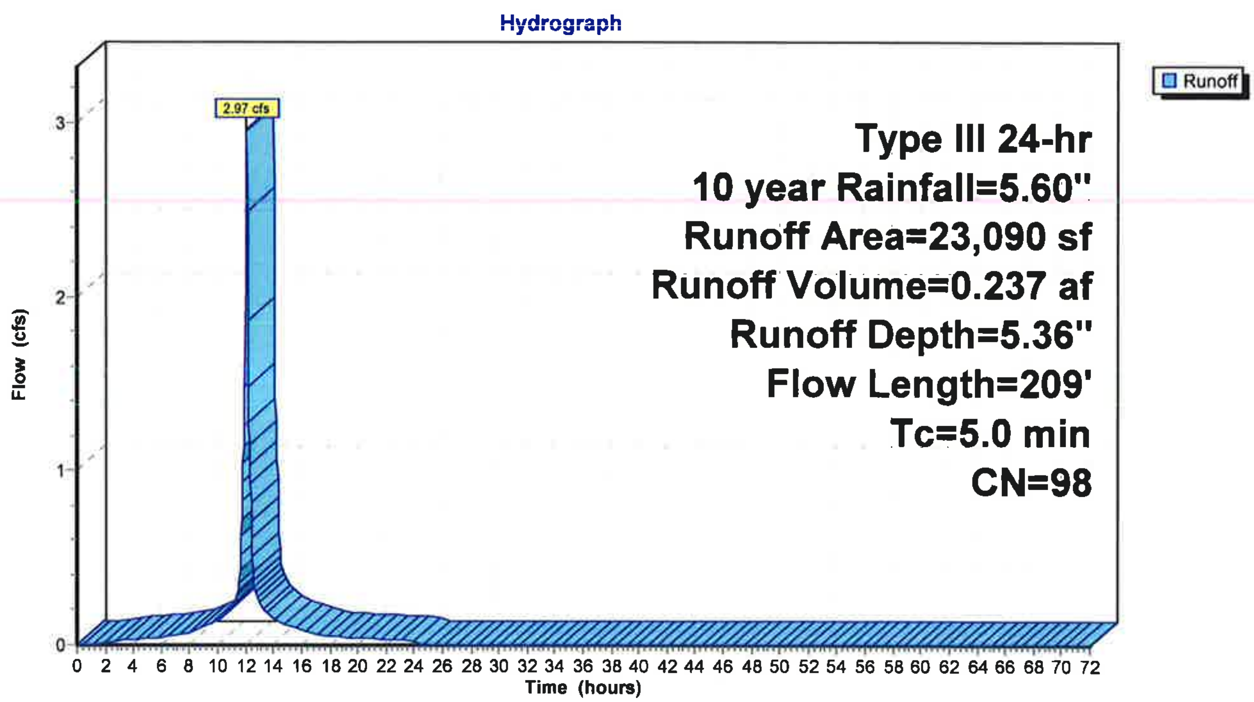
Runoff = 2.97 cfs @ 12.07 hrs, Volume= 0.237 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	5,133	98	Roofs, HSG A
	17,020	98	Paved parking, HSG A
*	937	98	Unconnected pavement, sidewalk, HSG A
	23,090	98	Weighted Average
	23,090		100.00% Impervious Area
	937		4.06% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	16	0.0500	1.70		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.8	193	0.0078	1.79		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	209	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES1:



Summary for Subcatchment ES10:

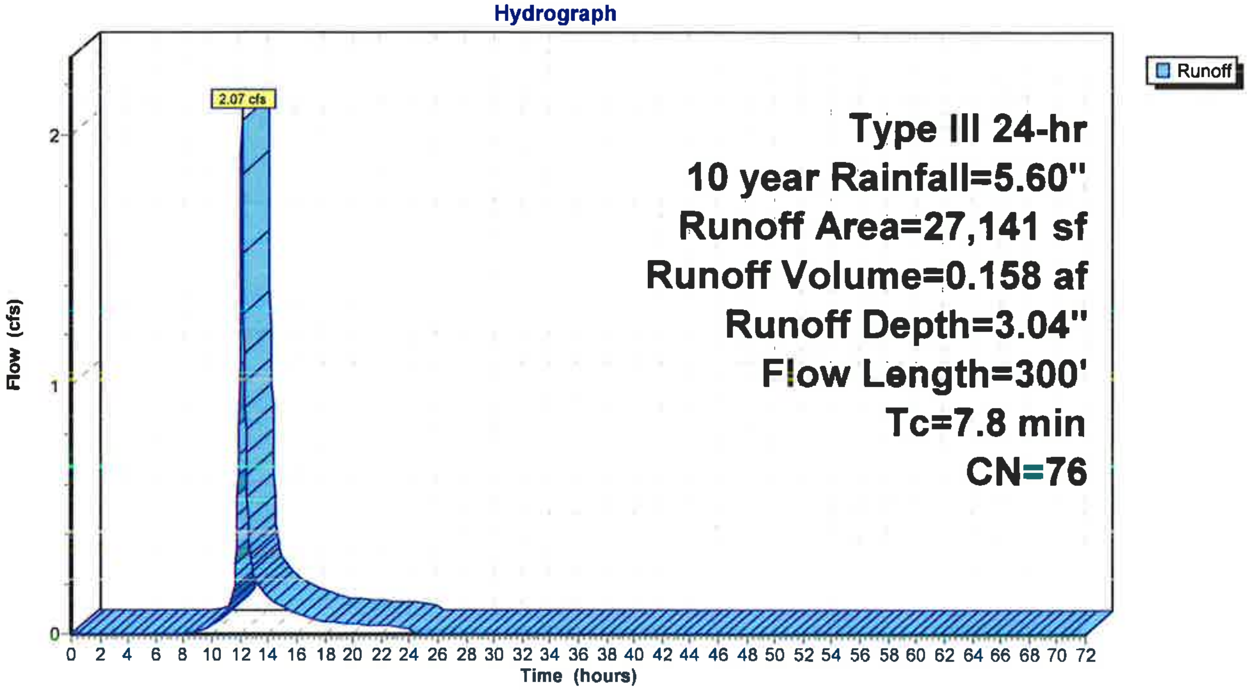
Runoff = 2.07 cfs @ 12.11 hrs, Volume= 0.158 af, Depth= 3.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

Area (sf)	CN	Description
3,111	98	Unconnected roofs, HSG A
10,611	98	Paved parking, HSG A
8,473	30	Woods, Good, HSG A
4,946	96	Gravel surface, HSG A
27,141	76	Weighted Average
13,419		49.44% Pervious Area
13,722		50.56% Impervious Area
3,111		22.67% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	40	0.2250	2.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.2	142	0.0030	0.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	101	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.8	300	Total			

Subcatchment ES10:



Summary for Subcatchment ES2:

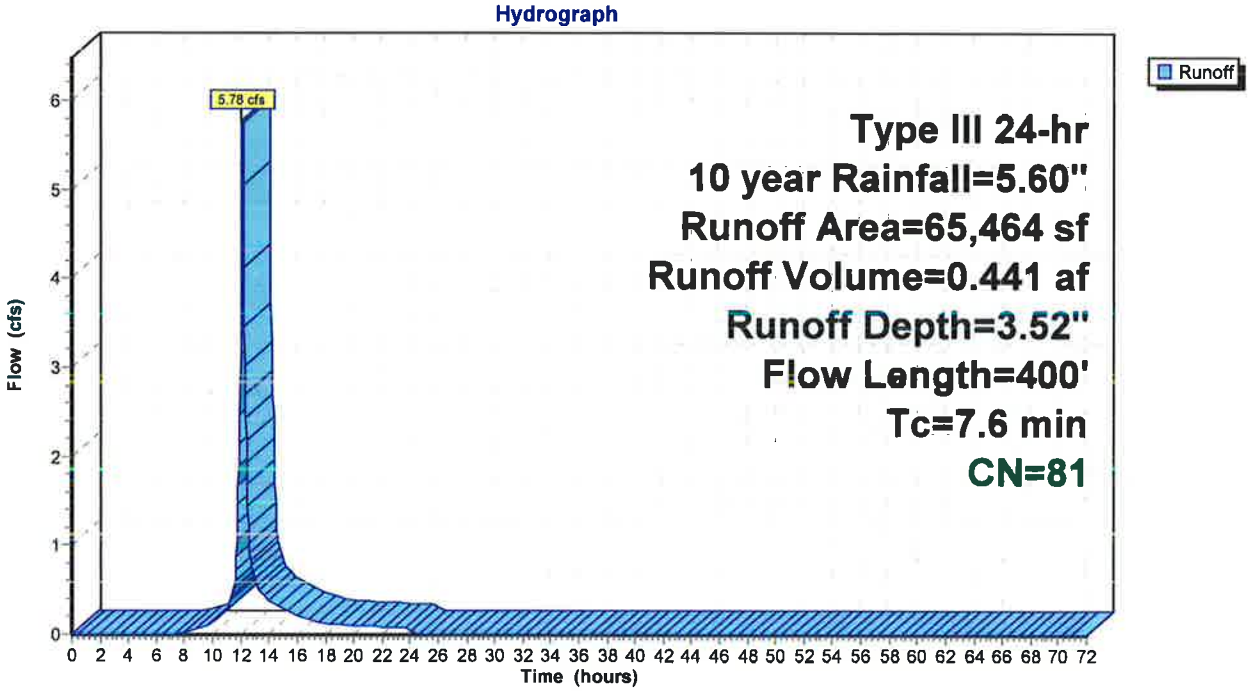
Runoff = 5.78 cfs @ 12.11 hrs, Volume= 0.441 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	14,223	98	Roofs, HSG A
	19,836	98	Paved parking, HSG A
*	2,813	98	Unconnected pavement, sidewalk, HSG A
	13,300	30	Woods, Good, HSG A
*	6,192	98	Gravel surface, HSG A
	9,100	77	Fallow, bare soil, HSG A
	65,464	81	Weighted Average
	22,400		34.22% Pervious Area
	43,064		65.78% Impervious Area
	2,813		6.53% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	34	0.0441	3.38		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	24	0.3333	2.89		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	8	0.5125	11.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	89	0.0056	1.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	210	0.0071	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	6	0.0182	2.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	15	0.0067	1.66		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	14	0.0179	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.6	400	Total			

Subcatchment ES2:



Summary for Subcatchment ES3:

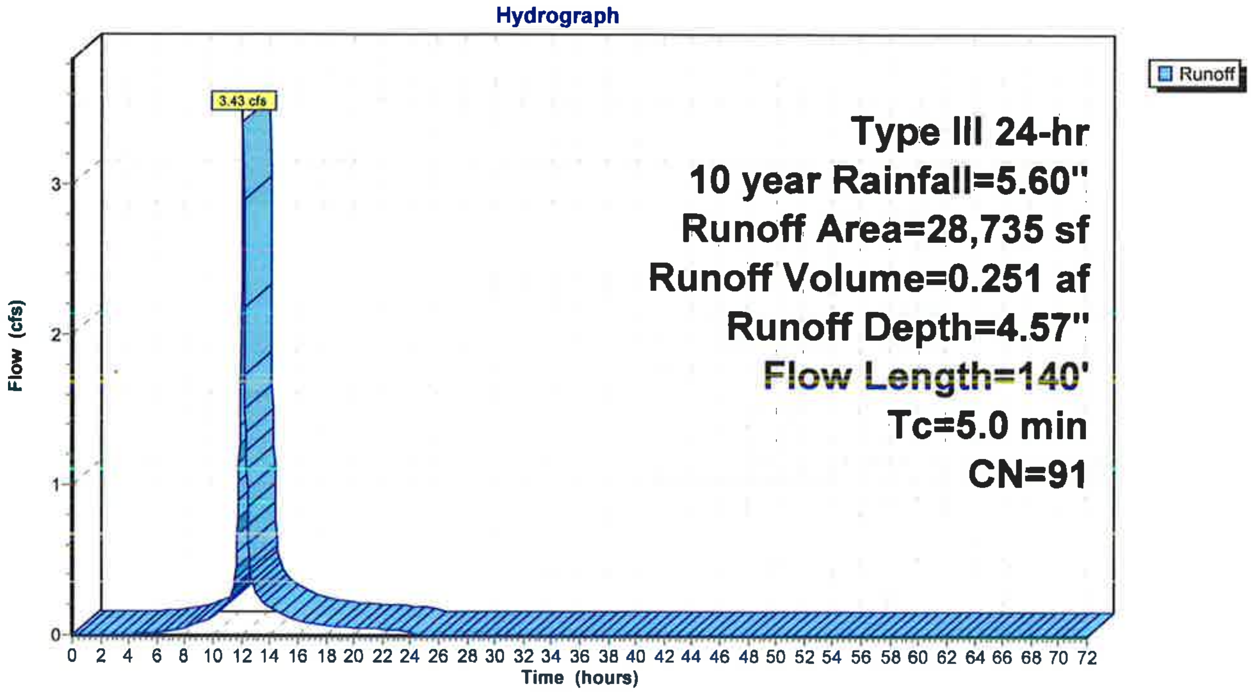
Runoff = 3.43 cfs @ 12.07 hrs, Volume= 0.251 af, Depth= 4.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	3,055	98	Roofs, HSG A
	19,765	98	Paved parking, HSG A
*	692	98	Unconnected pavement, sidewalk, HSG A
	2,441	30	Woods, Good, HSG A
*	1,269	98	Gravel surface, HSG A
	1,513	77	Fallow, bare soil, HSG A
	28,735	91	Weighted Average
	3,954		13.76% Pervious Area
	24,781		86.24% Impervious Area
	692		2.79% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	21	0.0238	2.48		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	37	0.2703	2.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	34	0.0221	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	48	0.0104	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.5	140	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES3:



Summary for Subcatchment ES4:

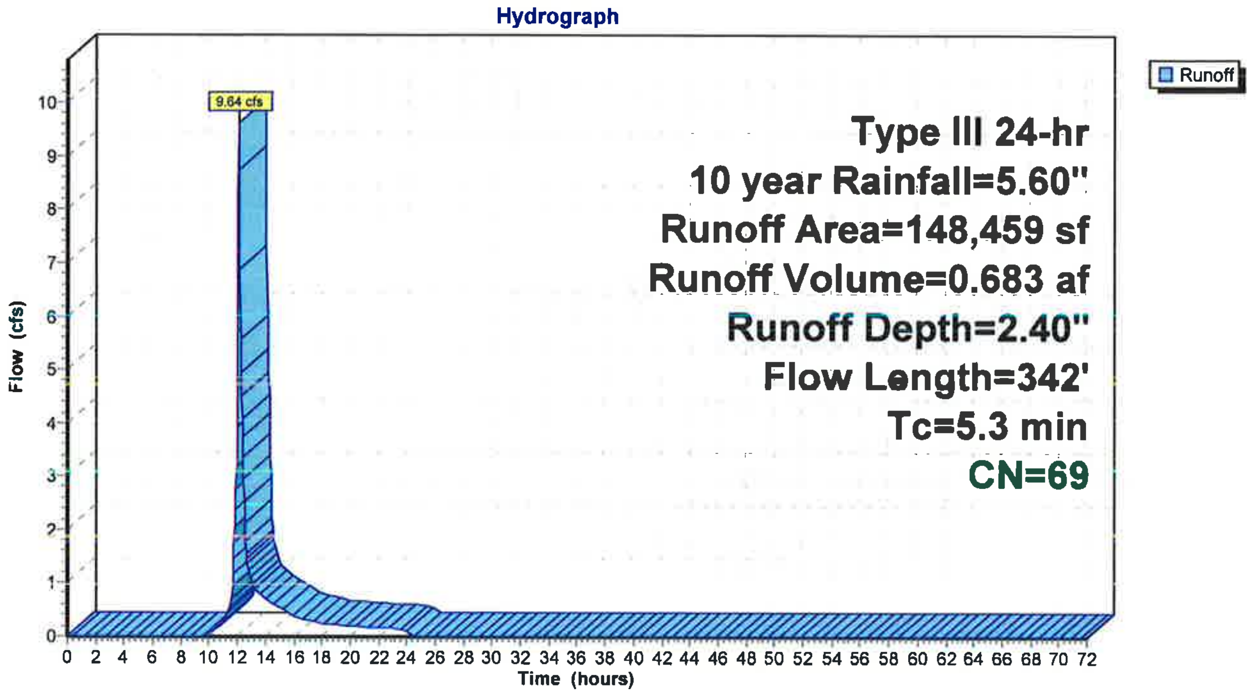
Runoff = 9.64 cfs @ 12.08 hrs, Volume= 0.683 af, Depth= 2.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	28,300	98	Roofs, HSG A
	40,115	98	Paved parking, HSG A
	25,323	32	Woods/grass comb., Good, HSG A
*	813	98	Unconnected pavement, sidewalk, HSG A
	29,455	30	Woods, Good, HSG A
	7,831	39	>75% Grass cover, Good, HSG A
*	9,267	98	Gravel surface, HSG A
	7,355	77	Fallow, bare soil, HSG A
	148,459	69	Weighted Average
	69,964		47.13% Pervious Area
	78,495		52.87% Impervious Area
	813		1.04% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	49	0.0153	2.51		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	42	0.0059	0.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	251	0.0498	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.3	342	Total			

Subcatchment ES4:



Summary for Subcatchment ES5:

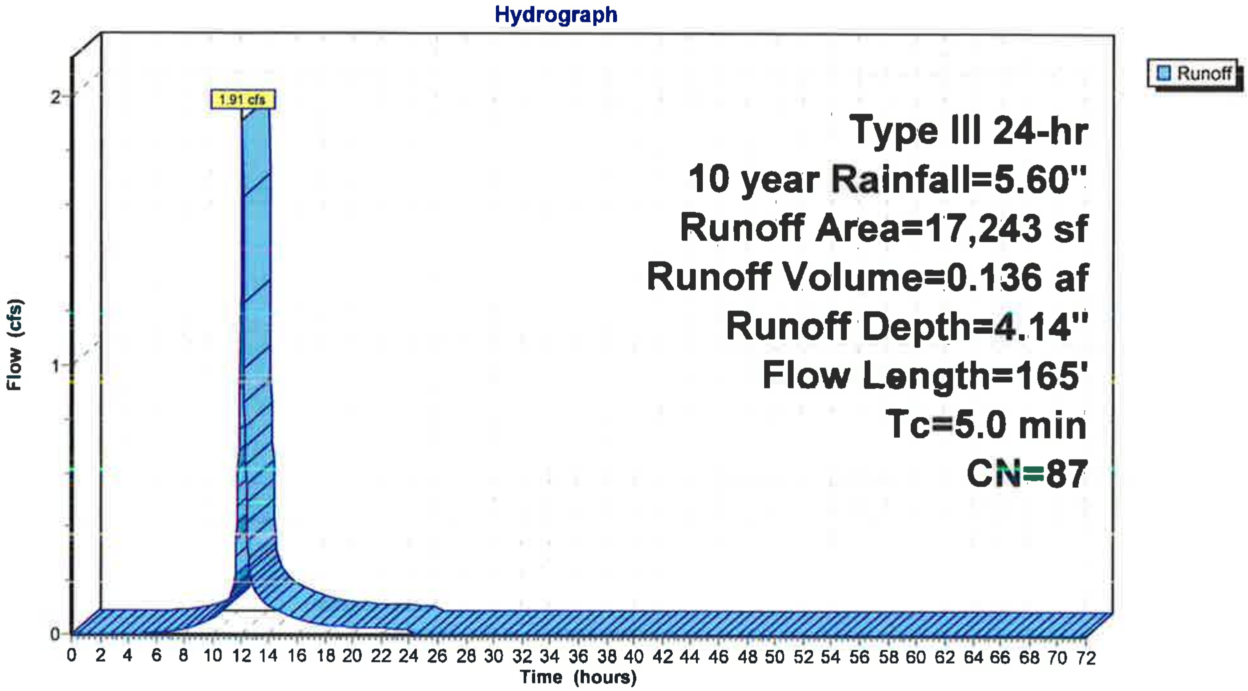
Runoff = 1.91 cfs @ 12.07 hrs, Volume= 0.136 af, Depth= 4.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	5,417	98	Roofs, HSG A
	7,124	98	Paved parking, HSG A
	2,814	30	Woods, Good, HSG A
*	1,888	98	Gravel surface, HSG A
	17,243	87	Weighted Average
	2,814		16.32% Pervious Area
	14,429		83.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	18	0.0278	2.68		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	27	0.2222	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	17	0.0050	0.68		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
0.7	103	0.0146	2.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	165	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES5:



Summary for Subcatchment ES6:

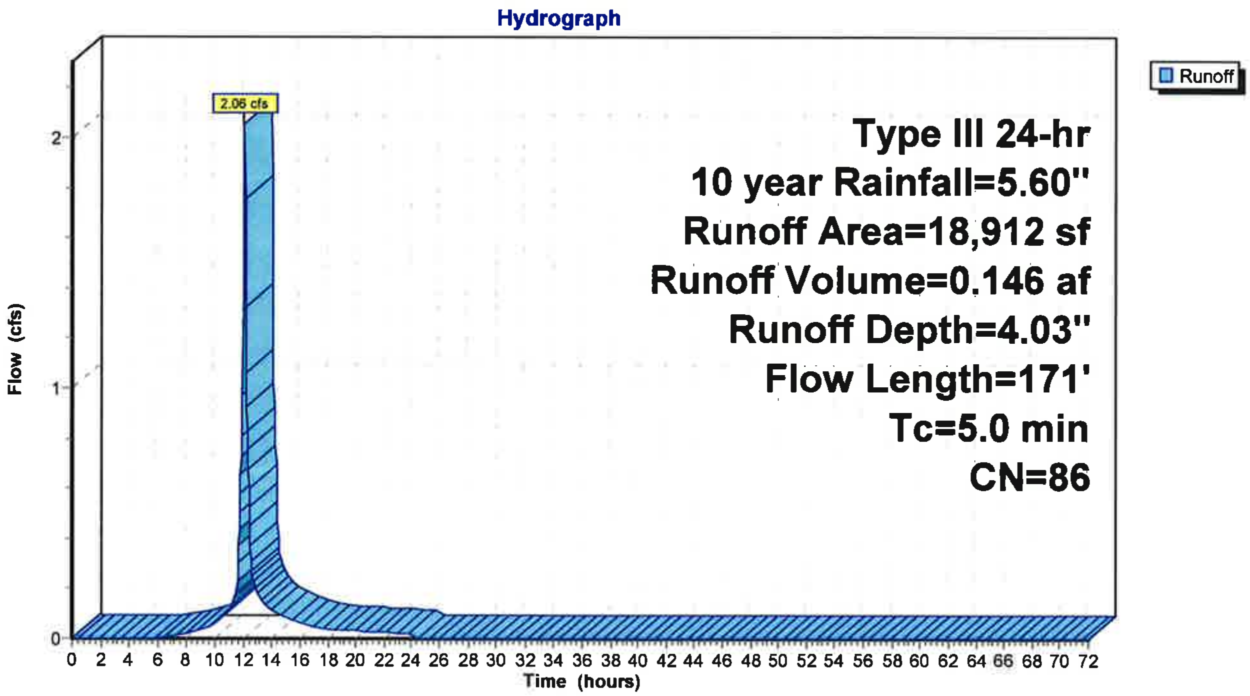
Runoff = 2.06 cfs @ 12.07 hrs, Volume= 0.146 af, Depth= 4.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	6,270	98	Roofs, HSG A
	6,874	98	Paved parking, HSG A
	3,205	30	Woods, Good, HSG A
	273	39	>75% Grass cover, Good, HSG A
*	2,290	98	Gravel surface, HSG A
	18,912	86	Weighted Average
	3,478		18.39% Pervious Area
	15,434		81.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	17	0.0294	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.3200	2.83		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	129	0.0155	2.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	171	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES6:



Summary for Subcatchment ES7:

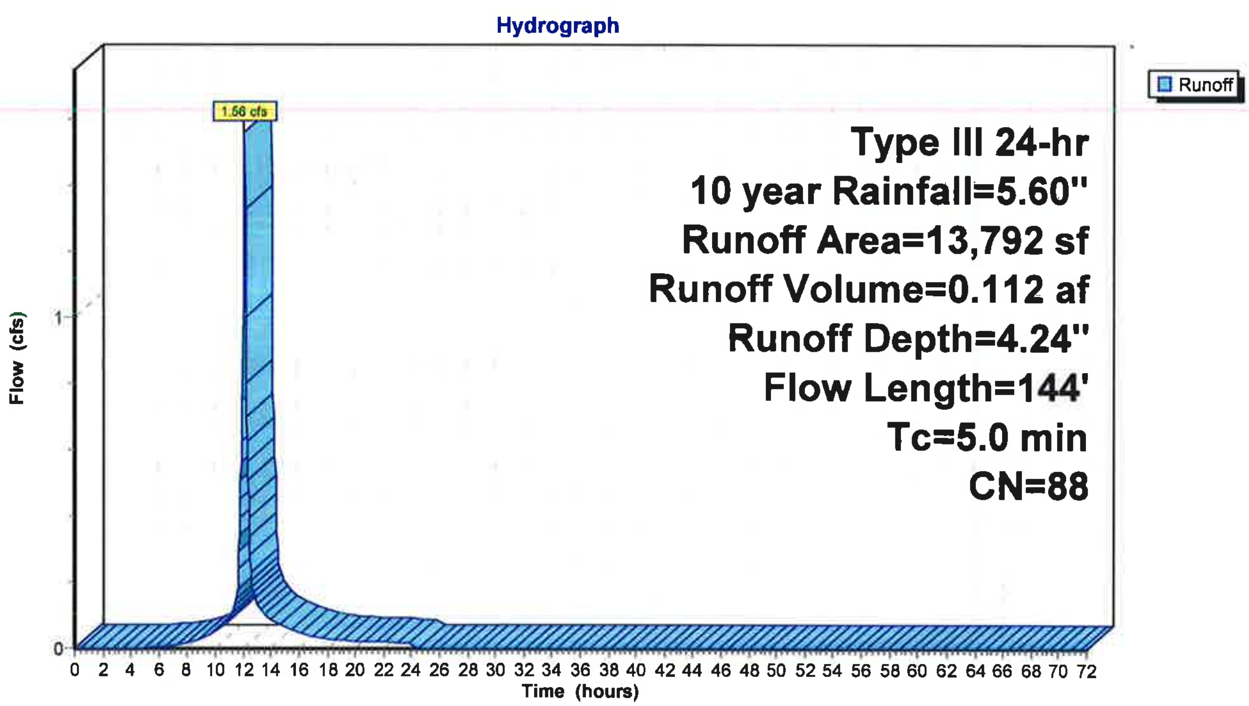
Runoff = 1.56 cfs @ 12.07 hrs, Volume= 0.112 af, Depth= 4.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	1,722	98	Roofs, HSG A
	8,479	98	Paved parking, HSG A
	1,931	30	Woods, Good, HSG A
*	1,660	98	Gravel surface, HSG A
	13,792	88	Weighted Average
	1,931		14.00% Pervious Area
	11,861		86.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	19	0.0263	2.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	21	0.1548	1.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	104	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	144	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES7:



Summary for Subcatchment ES8:

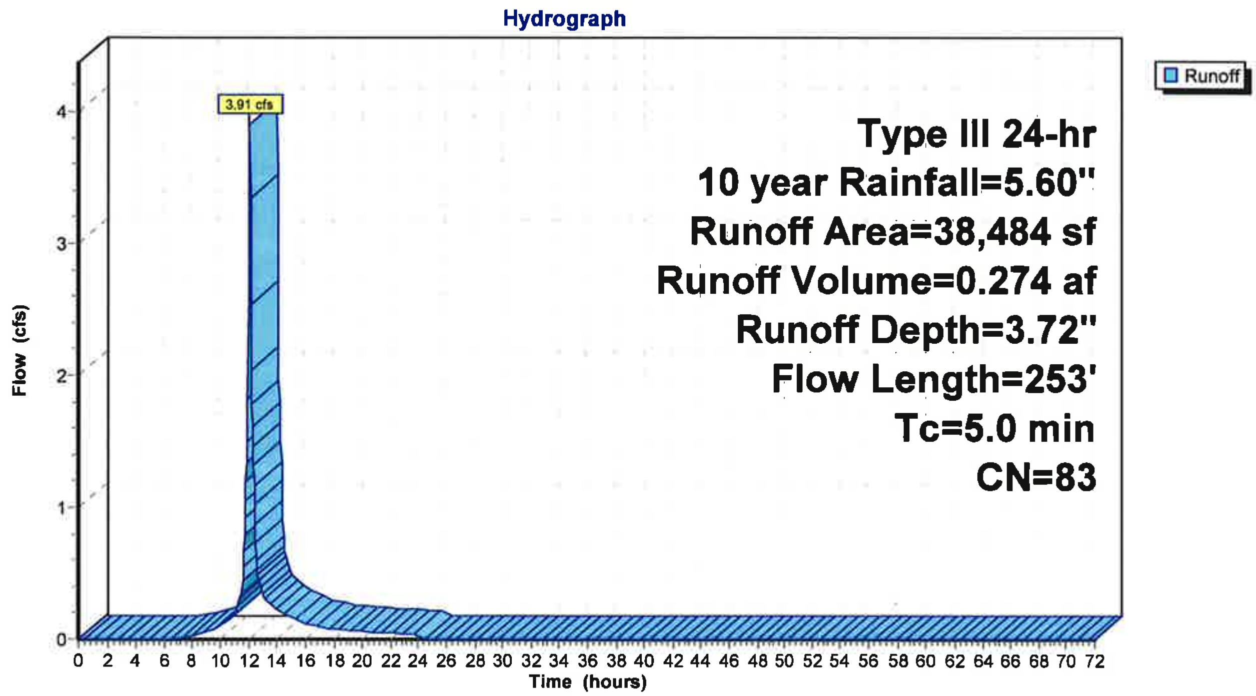
Runoff = 3.91 cfs @ 12.08 hrs, Volume= 0.274 af, Depth= 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	3,914	98	Roofs, HSG A
	18,114	98	Paved parking, HSG A
	6,260	30	Woods, Good, HSG A
	2,338	39	>75% Grass cover, Good, HSG A
*	7,858	98	Gravel surface, HSG A
	38,484	83	Weighted Average
	8,598		22.34% Pervious Area
	29,886		77.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	32	0.1406	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	204	0.0036	1.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.2	253	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES8:



Summary for Subcatchment ES9:

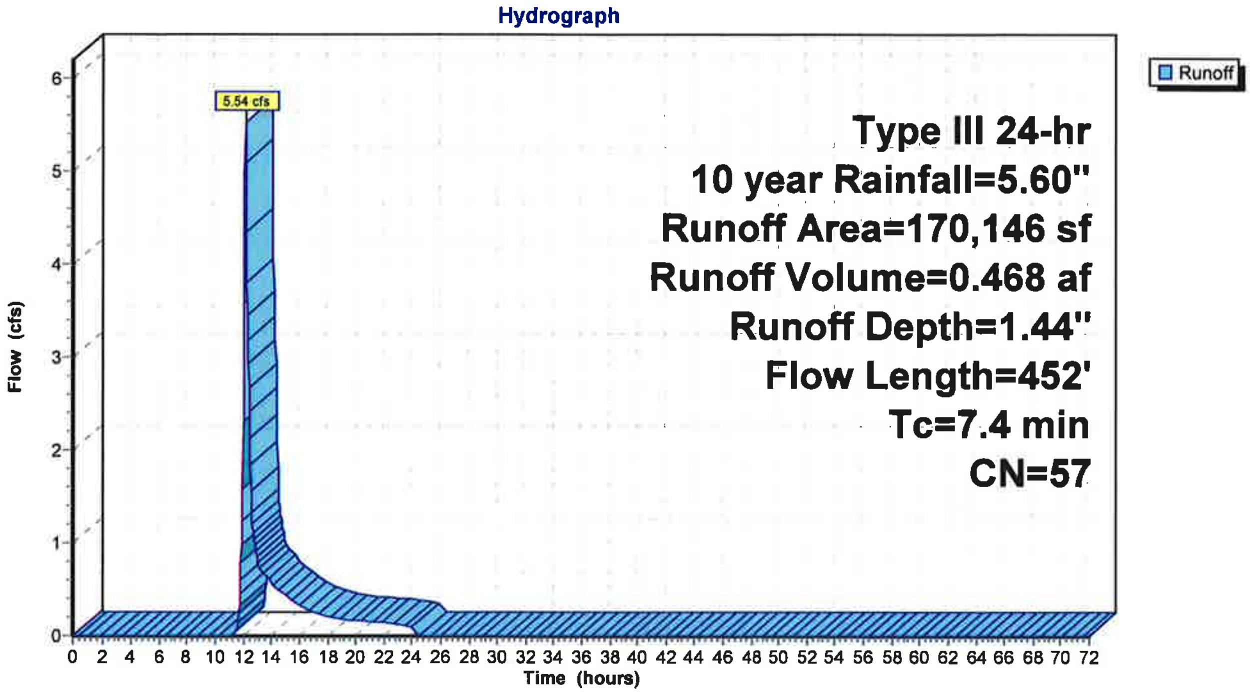
Runoff = 5.54 cfs @ 12.12 hrs, Volume= 0.468 af, Depth= 1.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	7,387	98	Roofs, HSG A
	4,750	98	Paved parking, HSG A
	14,477	32	Woods/grass comb., Good, HSG A
*	234	98	Unconnected pavement, sidewalk, HSG A
	71,360	30	Woods, Good, HSG A
	19,936	39	>75% Grass cover, Good, HSG A
*	52,002	98	Gravel surface, HSG A
	170,146	57	Weighted Average
	105,773		62.17% Pervious Area
	64,373		37.83% Impervious Area
	234		0.36% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	22	0.0227	2.43		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	36	0.1239	1.76		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	40	0.0375	3.93		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	134	0.0112	0.53		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	86	0.0116	1.73		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	134	0.0672	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.4	452	Total			

Subcatchment ES9:



Summary for Pond CB 1237:

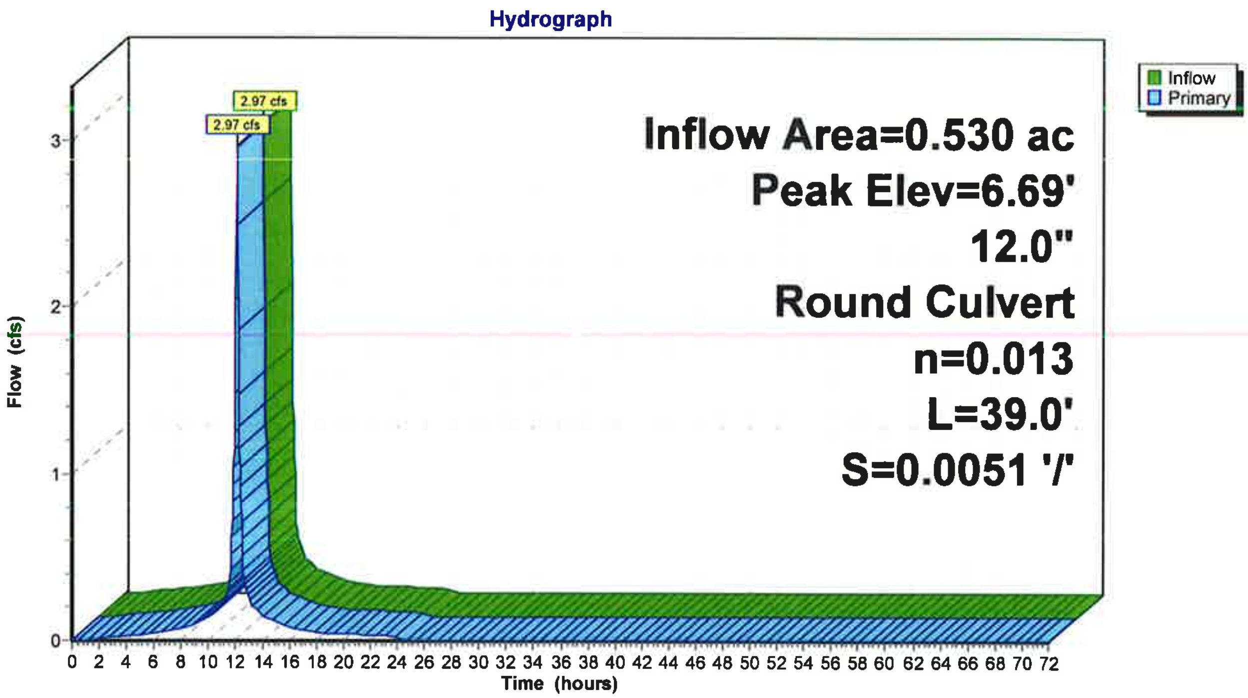
Inflow Area =	0.530 ac,100.00% Impervious,	Inflow Depth = 5.36"	for 10 year event		
Inflow =	2.97 cfs @	12.07 hrs,	Volume=	0.237 af	
Outflow =	2.97 cfs @	12.07 hrs,	Volume=	0.237 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.97 cfs @	12.07 hrs,	Volume=	0.237 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 6.69' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.29'	**12.0" Round Culvert** L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.29' / 5.09' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.88 cfs @ 12.07 hrs HW=6.66' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 2.88 cfs @ 3.66 fps)

Pond CB 1237:



Summary for Pond CB 1239: Combined Drain

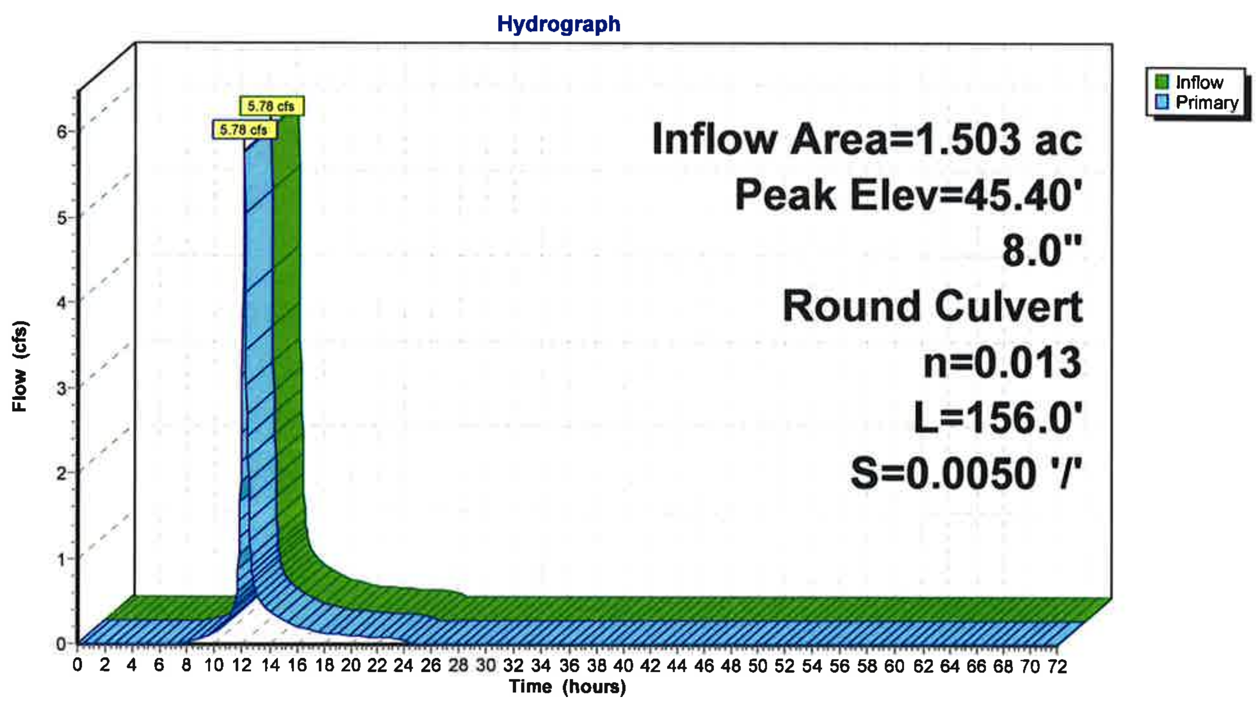
Inflow Area =	1.503 ac,	65.78% Impervious,	Inflow Depth = 3.52"	for 10 year event
Inflow =	5.78 cfs @	12.11 hrs,	Volume=	0.441 af
Outflow =	5.78 cfs @	12.11 hrs,	Volume=	0.441 af, Atten= 0%, Lag= 0.0 min
Primary =	5.78 cfs @	12.11 hrs,	Volume=	0.441 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 45.40' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.32'	**8.0" Round Culvert** L= 156.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 3.32' / 2.54' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=5.70 cfs @ 12.11 hrs HW=44.19' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 5.70 cfs @ 16.32 fps)

Pond CB 1239: Combined Drain



Summary for Pond CB 1240: Combined Drain

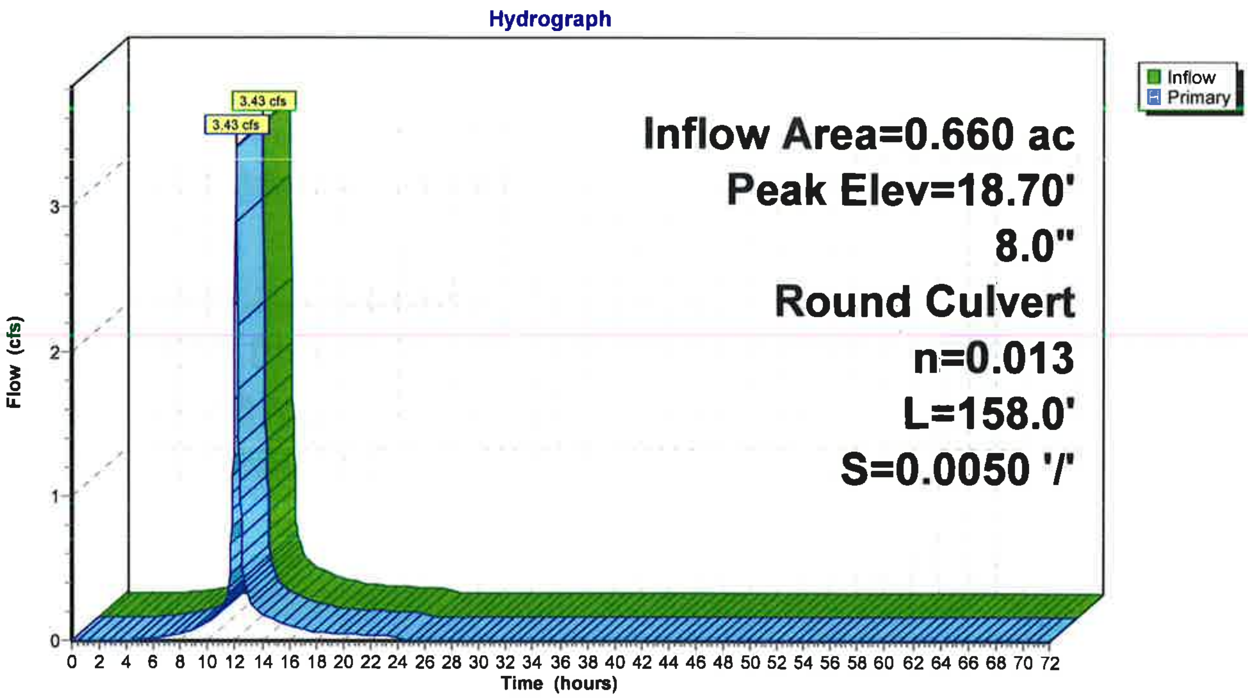
Inflow Area =	0.660 ac, 86.24% Impervious, Inflow Depth = 4.57"	for 10 year event	
Inflow =	3.43 cfs @ 12.07 hrs, Volume=	0.251 af	
Outflow =	3.43 cfs @ 12.07 hrs, Volume=	0.251 af, Atten= 0%, Lag= 0.0 min	
Primary =	3.43 cfs @ 12.07 hrs, Volume=	0.251 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 18.70' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.85'	**8.0" Round Culvert** L= 158.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 3.85' / 3.06' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=3.38 cfs @ 12.07 hrs HW=18.28' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 3.38 cfs @ 9.67 fps)

Pond CB 1240: Combined Drain



Summary for Pond CB 1241:

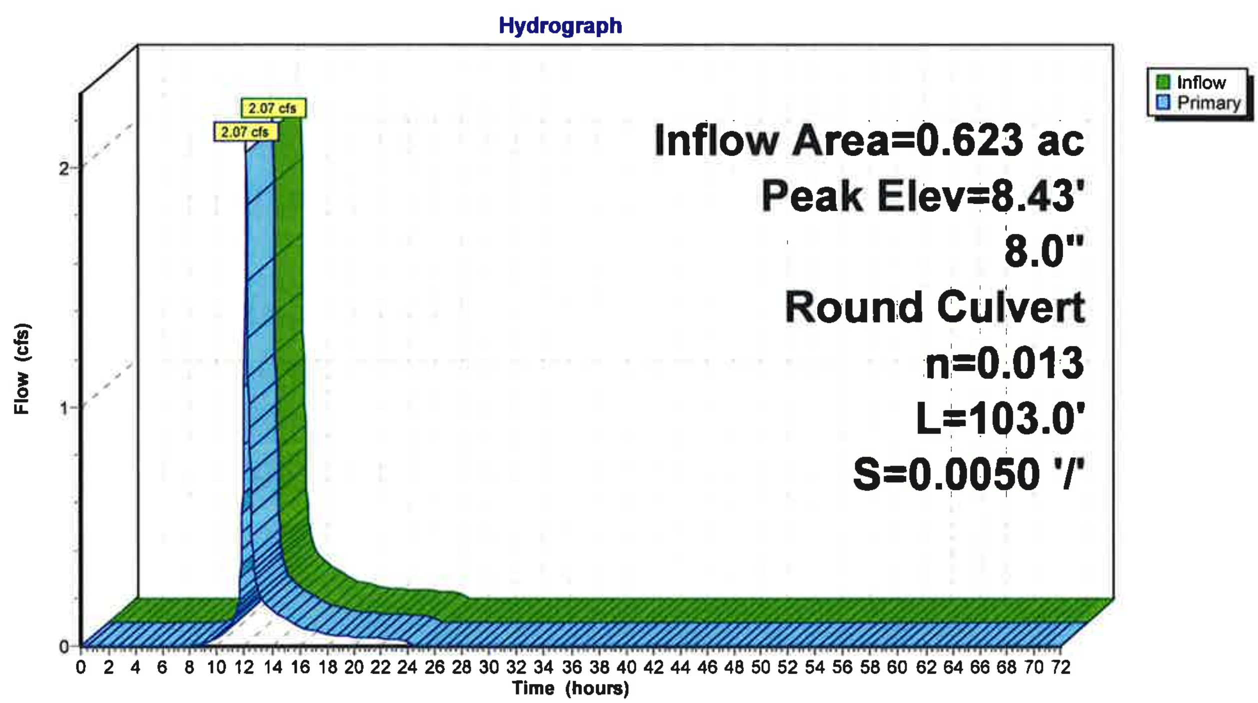
Inflow Area =	0.623 ac, 50.56% Impervious,	Inflow Depth = 3.04"	for 10 year event	
Inflow =	2.07 cfs @	12.11 hrs, Volume=	0.158 af	
Outflow =	2.07 cfs @	12.11 hrs, Volume=	0.158 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.07 cfs @	12.11 hrs, Volume=	0.158 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 8.43' @ 12.12 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.44'	**8.0" Round Culvert** L= 103.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 4.44' / 3.93' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=2.05 cfs @ 12.11 hrs HW=8.36' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 2.05 cfs @ 5.86 fps)

Pond CB 1241:



Summary for Pond CB 1529: Combined Drain

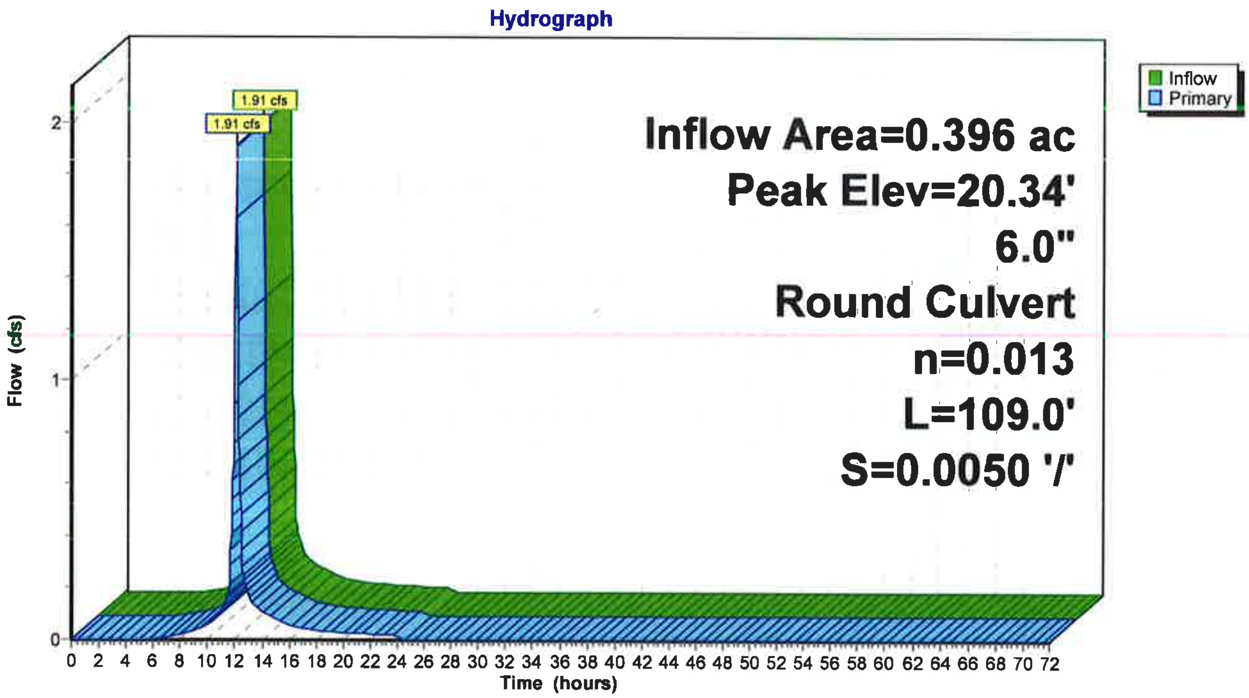
Inflow Area =	0.396 ac,	83.68% Impervious,	Inflow Depth = 4.14"	for 10 year event
Inflow =	1.91 cfs @	12.07 hrs, Volume=	0.136 af	
Outflow =	1.91 cfs @	12.07 hrs, Volume=	0.136 af, Atten= 0%, Lag= 0.0 min	
Primary =	1.91 cfs @	12.07 hrs, Volume=	0.136 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 20.34' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.47'	**6.0" Round Culvert** L= 109.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.47' / 4.92' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.89 cfs @ 12.07 hrs HW=19.97' TW=0.00' (Dynamic Tailwater)
└1=Culvert (Barrel Controls 1.89 cfs @ 9.62 fps)

Pond CB 1529: Combined Drain



Summary for Pond CB 1632: Combined Drain

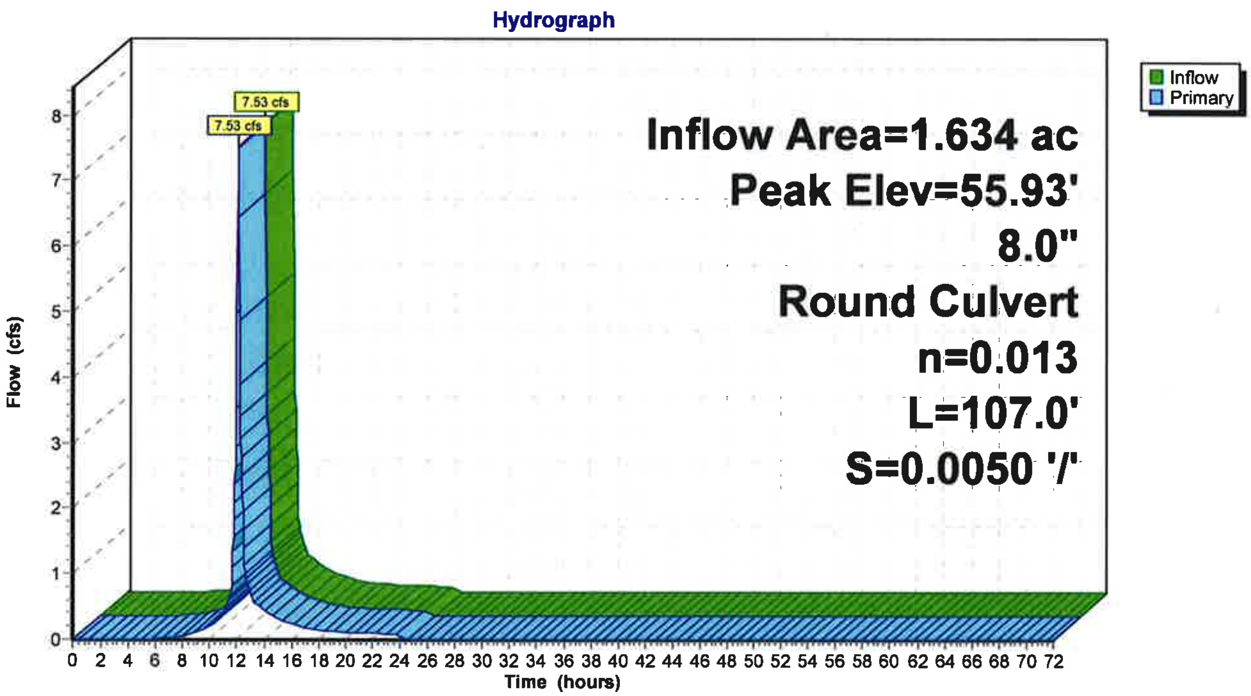
Inflow Area =	1.634 ac, 80.32% Impervious,	Inflow Depth = 3.90"	for 10 year event	
Inflow =	7.53 cfs @	12.08 hrs, Volume=	0.532 af	
Outflow =	7.53 cfs @	12.08 hrs, Volume=	0.532 af,	Atten= 0%, Lag= 0.0 min
Primary =	7.53 cfs @	12.08 hrs, Volume=	0.532 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 55.93' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.38'	**8.0" Round Culvert** L= 107.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 3.38' / 2.84' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=7.44 cfs @ 12.08 hrs HW=54.75' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 7.44 cfs @ 21.31 fps)

Pond CB 1632: Combined Drain



Summary for Pond CB 1665: Combined Drain

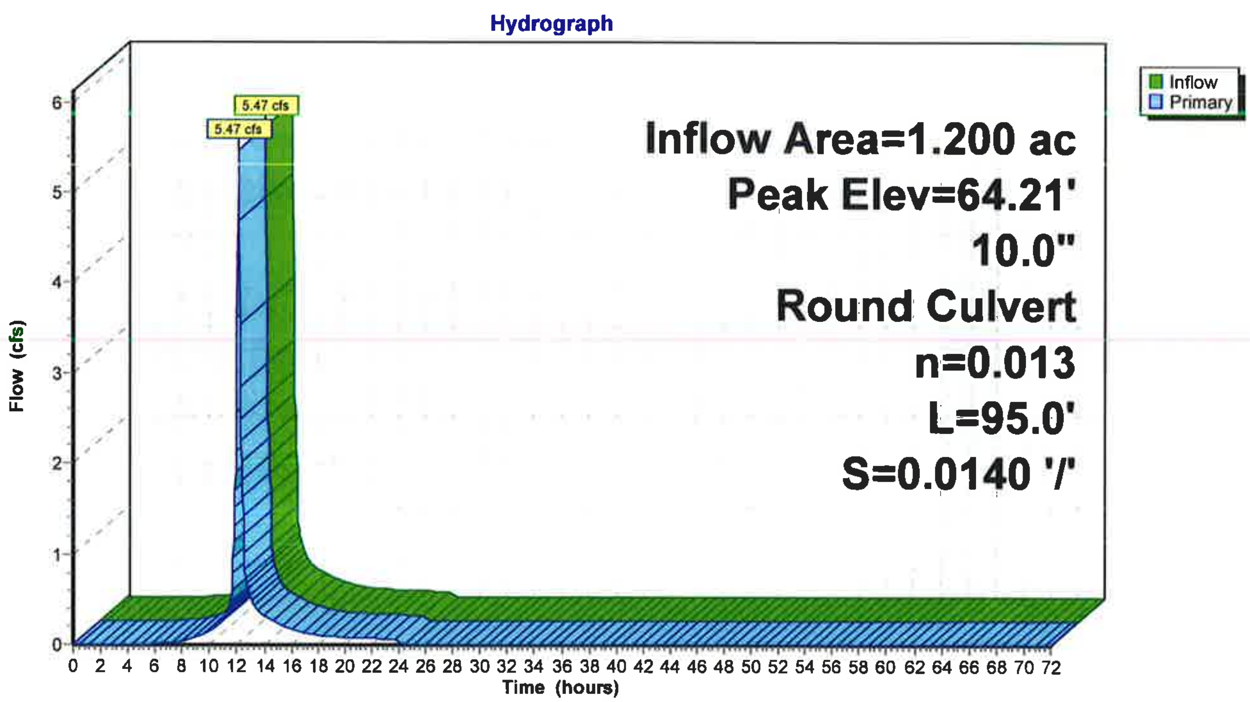
Inflow Area = 1.200 ac, 79.86% Impervious, Inflow Depth = 3.86" for 10 year event
Inflow = 5.47 cfs @ 12.08 hrs, Volume= 0.386 af
Outflow = 5.47 cfs @ 12.08 hrs, Volume= 0.386 af, Atten= 0%, Lag= 0.0 min
Primary = 5.47 cfs @ 12.08 hrs, Volume= 0.386 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 64.21' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.11'	**10.0" Round Culvert** L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.11' / 5.78' S= 0.0140 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=5.41 cfs @ 12.08 hrs HW=62.88' TW=54.78' (Dynamic Tailwater)
└1=Culvert (Outlet Controls 5.41 cfs @ 9.91 fps)

Pond CB 1665: Combined Drain



Summary for Pond CB 1692: Combined Drain

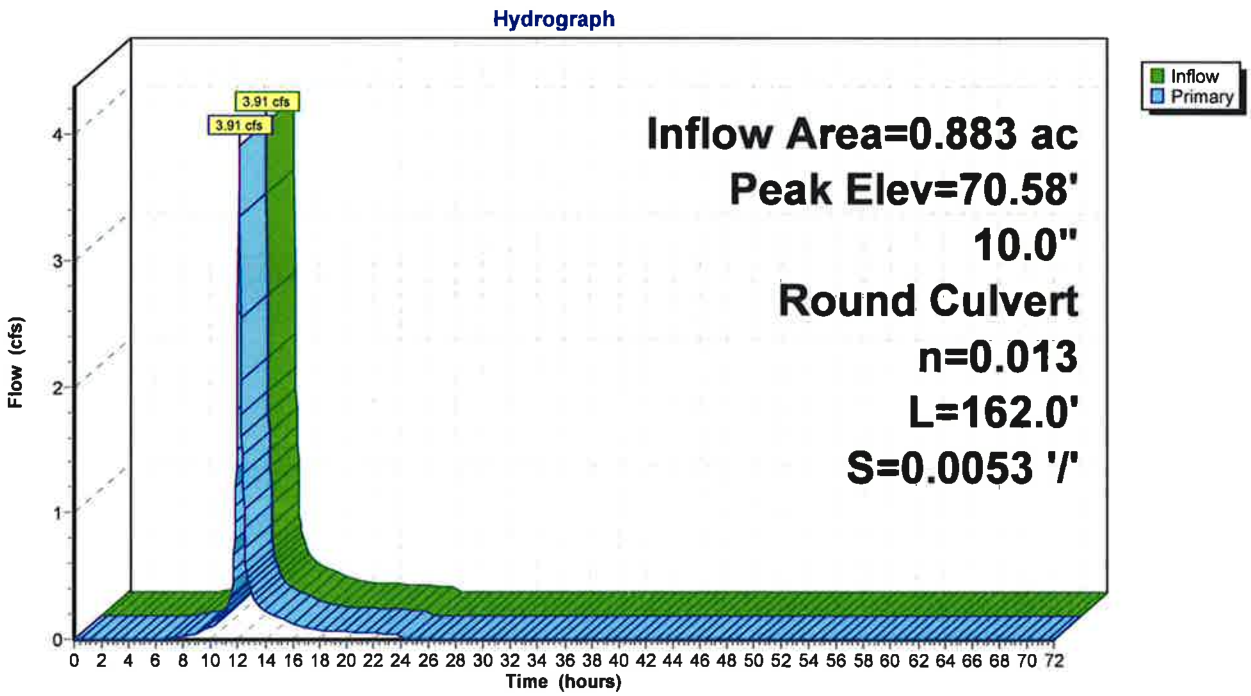
Inflow Area =	0.883 ac,	77.66% Impervious,	Inflow Depth = 3.72"	for 10 year event
Inflow =	3.91 cfs @	12.08 hrs,	Volume=	0.274 af
Outflow =	3.91 cfs @	12.08 hrs,	Volume=	0.274 af, Atten= 0%, Lag= 0.0 min
Primary =	3.91 cfs @	12.08 hrs,	Volume=	0.274 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 70.58' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.17'	**10.0" Round Culvert** L= 162.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.17' / 7.31' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=3.87 cfs @ 12.08 hrs HW=69.21' TW=62.98' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 3.87 cfs @ 7.09 fps)

Pond CB 1692: Combined Drain

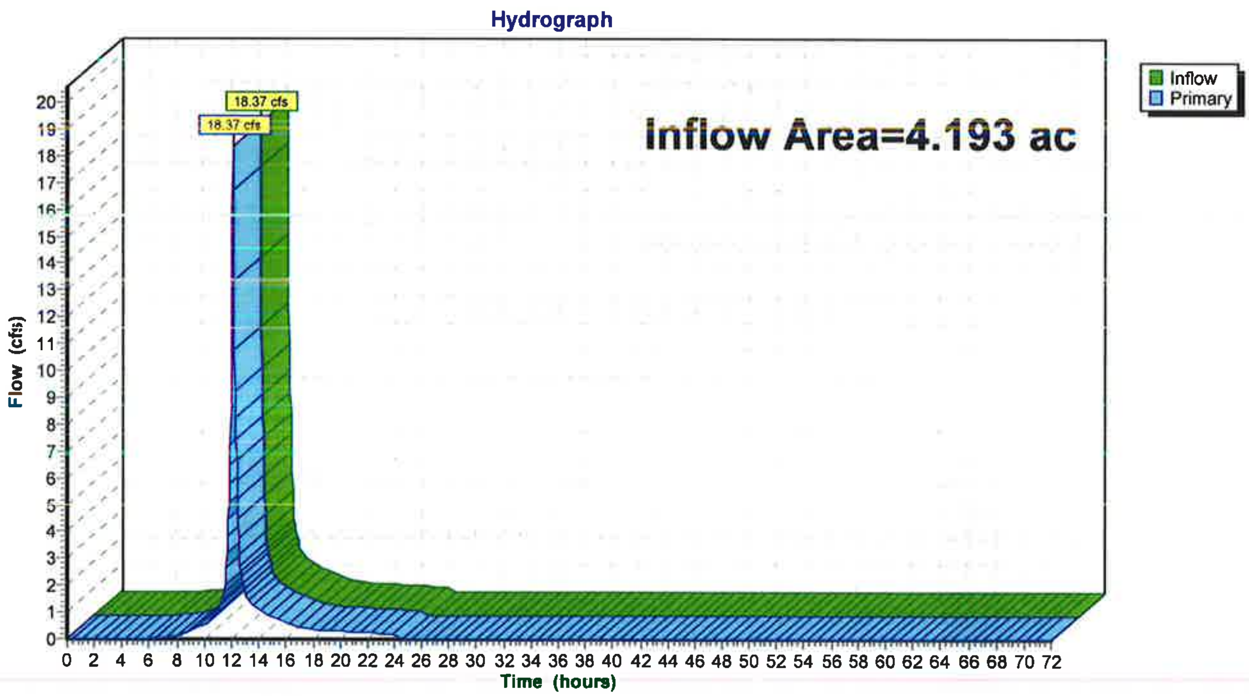


Summary for Link 2L: Sewer Line

Inflow Area = 4.193 ac, 76.36% Impervious, Inflow Depth = 3.89" for 10 year event
Inflow = 18.37 cfs @ 12.08 hrs, Volume= 1.360 af
Primary = 18.37 cfs @ 12.08 hrs, Volume= 1.360 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs

Link 2L: Sewer Line

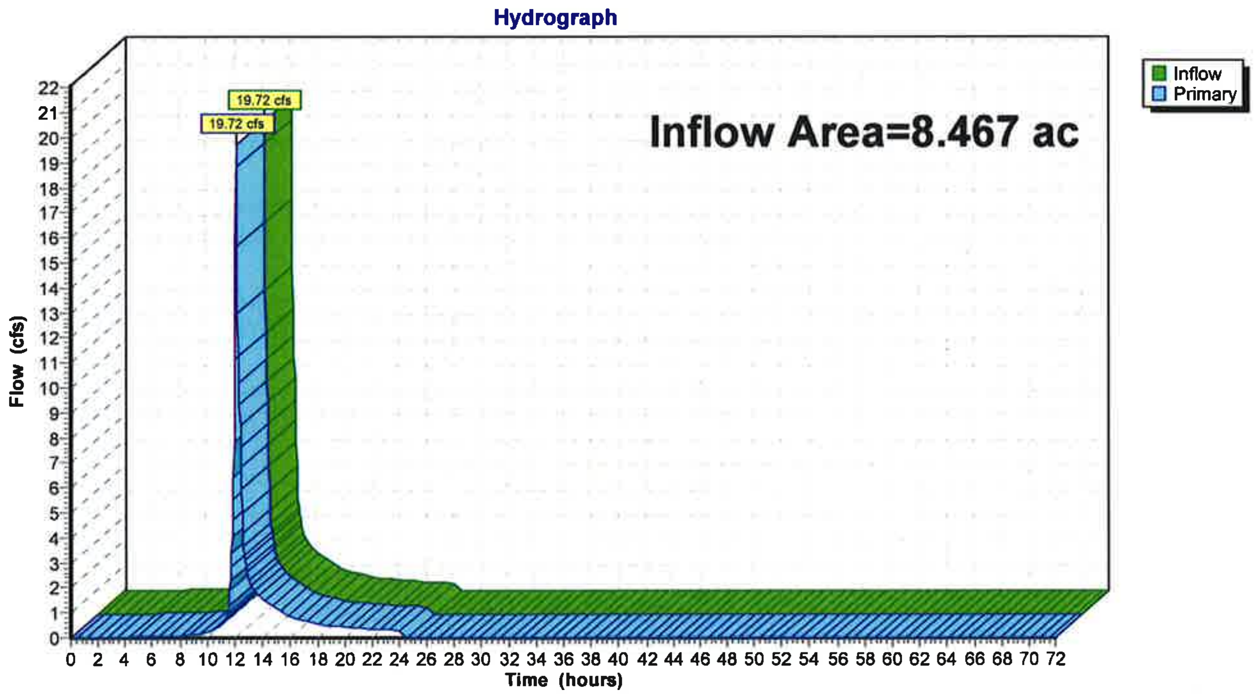


Summary for Link DP1: North Mill Pond

Inflow Area =	8.467 ac, 48.72% Impervious,	Inflow Depth = 2.19"	for 10 year event
Inflow =	19.72 cfs @ 12.09 hrs, Volume=	1.546 af	
Primary =	19.72 cfs @ 12.09 hrs, Volume=	1.546 af, Atten= 0%, Lag= 0.0 min	

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs

Link DP1: North Mill Pond



Time span=0.00-72.00 hrs, dt=0.04 hrs, 1801 points x 7
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=23,090 sf 100.00% Impervious Runoff Depth=8.26"
Flow Length=209' Tc=5.0 min CN=98 Runoff=4.52 cfs 0.365 af

Subcatchment ES10: Runoff Area=27,141 sf 50.56% Impervious Runoff Depth=5.61"
Flow Length=300' Tc=7.8 min CN=76 Runoff=3.79 cfs 0.292 af

Subcatchment ES2: Runoff Area=65,464 sf 65.78% Impervious Runoff Depth=6.22"
Flow Length=400' Tc=7.6 min CN=81 Runoff=10.02 cfs 0.778 af

Subcatchment ES3: Runoff Area=28,735 sf 86.24% Impervious Runoff Depth=7.42"
Flow Length=140' Tc=5.0 min CN=91 Runoff=5.41 cfs 0.408 af

Subcatchment ES4: Runoff Area=148,459 sf 52.87% Impervious Runoff Depth=4.78"
Flow Length=342' Tc=5.3 min CN=69 Runoff=19.38 cfs 1.357 af

Subcatchment ES5: Runoff Area=17,243 sf 83.68% Impervious Runoff Depth=6.94"
Flow Length=165' Tc=5.0 min CN=87 Runoff=3.12 cfs 0.229 af

Subcatchment ES6: Runoff Area=18,912 sf 81.61% Impervious Runoff Depth=6.82"
Flow Length=171' Tc=5.0 min CN=86 Runoff=3.39 cfs 0.247 af

Subcatchment ES7: Runoff Area=13,792 sf 86.00% Impervious Runoff Depth=7.06"
Flow Length=144' Tc=5.0 min CN=88 Runoff=2.53 cfs 0.186 af

Subcatchment ES8: Runoff Area=38,484 sf 77.66% Impervious Runoff Depth=6.46"
Flow Length=253' Tc=5.0 min CN=83 Runoff=6.63 cfs 0.475 af

Subcatchment ES9: Runoff Area=170,146 sf 37.83% Impervious Runoff Depth=3.36"
Flow Length=452' Tc=7.4 min CN=57 Runoff=14.19 cfs 1.095 af

Pond CB 1237: Peak Elev=7.49' Inflow=4.52 cfs 0.365 af
12.0" Round Culvert n=0.013 L=39.0' S=0.0051 '/' Outflow=4.52 cfs 0.365 af

Pond CB 1239: Combined Drain Peak Elev=129.75' Inflow=10.02 cfs 0.778 af
8.0" Round Culvert n=0.013 L=156.0' S=0.0050 '/' Outflow=10.02 cfs 0.778 af

Pond CB 1240: Combined Drain Peak Elev=41.09' Inflow=5.41 cfs 0.408 af
8.0" Round Culvert n=0.013 L=158.0' S=0.0050 '/' Outflow=5.41 cfs 0.408 af

Pond CB 1241: Peak Elev=17.47' Inflow=3.79 cfs 0.292 af
8.0" Round Culvert n=0.013 L=103.0' S=0.0050 '/' Outflow=3.79 cfs 0.292 af

Pond CB 1529: Combined Drain Peak Elev=45.15' Inflow=3.12 cfs 0.229 af
6.0" Round Culvert n=0.013 L=109.0' S=0.0050 '/' Outflow=3.12 cfs 0.229 af

Pond CB 1632: Combined Drain Peak Elev=148.96' Inflow=12.54 cfs 0.908 af
8.0" Round Culvert n=0.013 L=107.0' S=0.0050 '/' Outflow=12.54 cfs 0.908 af

Pond CB 1665: Combined Drain Peak Elev=172.12' Inflow=9.15 cfs 0.662 af
10.0" Round Culvert n=0.013 L=95.0' S=0.0140 '/' Outflow=9.15 cfs 0.662 af

Pond CB 1692: Combined Drain Peak Elev=190.40' Inflow=6.63 cfs 0.475 af
10.0" Round Culvert n=0.013 L=162.0' S=0.0053 '/' Outflow=6.63 cfs 0.475 af

Link 2L: Sewer Line Inflow=30.65 cfs 2.323 af
Primary=30.65 cfs 2.323 af

Link DP1: North Mill Pond Inflow=41.11 cfs 3.108 af
Primary=41.11 cfs 3.108 af

Total Runoff Area = 12.660 ac Runoff Volume = 5.431 af Average Runoff Depth = 5.15"
42.13% Pervious = 5.334 ac 57.87% Impervious = 7.326 ac

Summary for Subcatchment ES1:

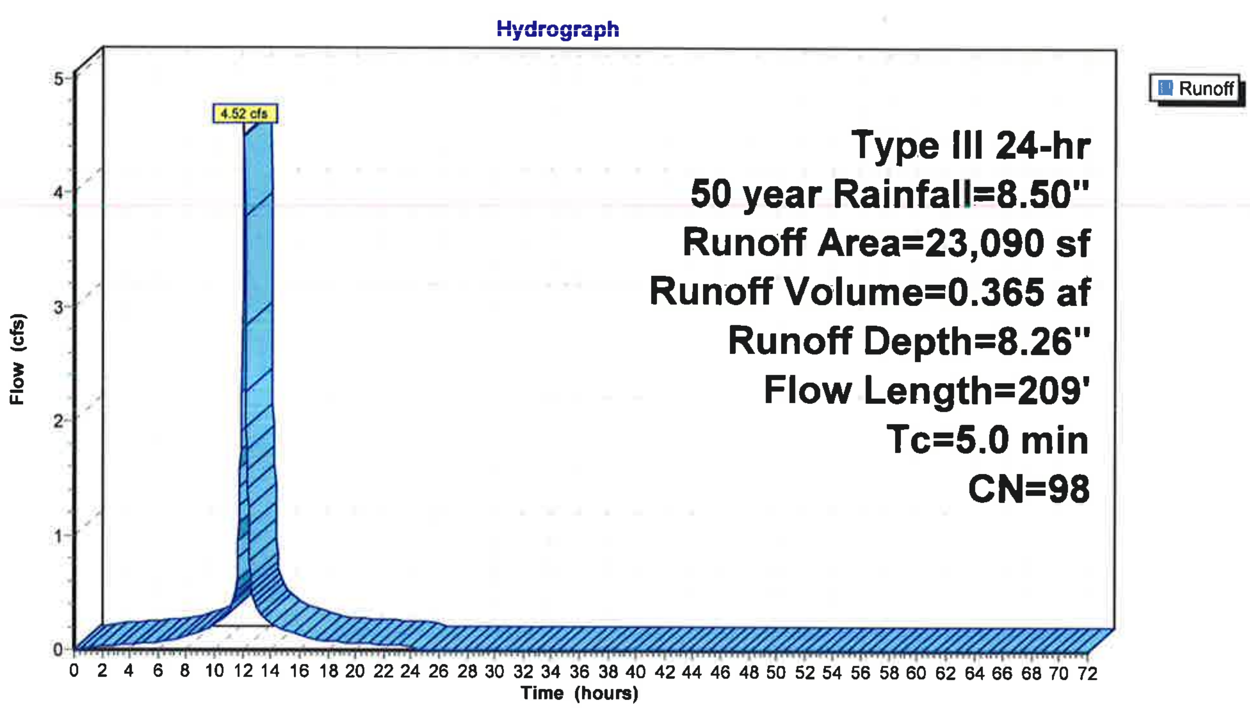
Runoff = 4.52 cfs @ 12.07 hrs, Volume= 0.365 af, Depth= 8.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	5,133	98	Roofs, HSG A
	17,020	98	Paved parking, HSG A
*	937	98	Unconnected pavement, sidewalk, HSG A
	23,090	98	Weighted Average
	23,090		100.00% Impervious Area
	937		4.06% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	16	0.0500	1.70		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.8	193	0.0078	1.79		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	209	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES1:



Summary for Subcatchment ES10:

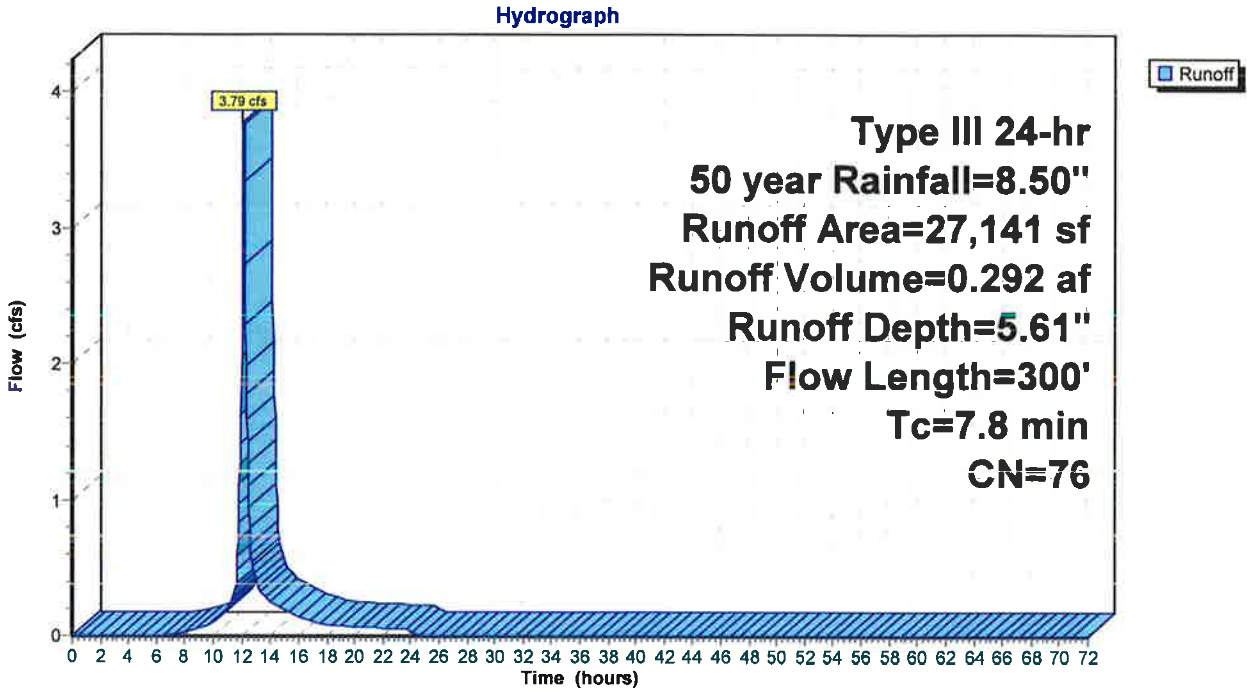
Runoff = 3.79 cfs @ 12.11 hrs, Volume= 0.292 af, Depth= 5.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

Area (sf)	CN	Description
3,111	98	Unconnected roofs, HSG A
10,611	98	Paved parking, HSG A
8,473	30	Woods, Good, HSG A
4,946	96	Gravel surface, HSG A
27,141	76	Weighted Average
13,419		49.44% Pervious Area
13,722		50.56% Impervious Area
3,111		22.67% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	40	0.2250	2.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.2	142	0.0030	0.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	101	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.8	300	Total			

Subcatchment ES10:



Summary for Subcatchment ES2:

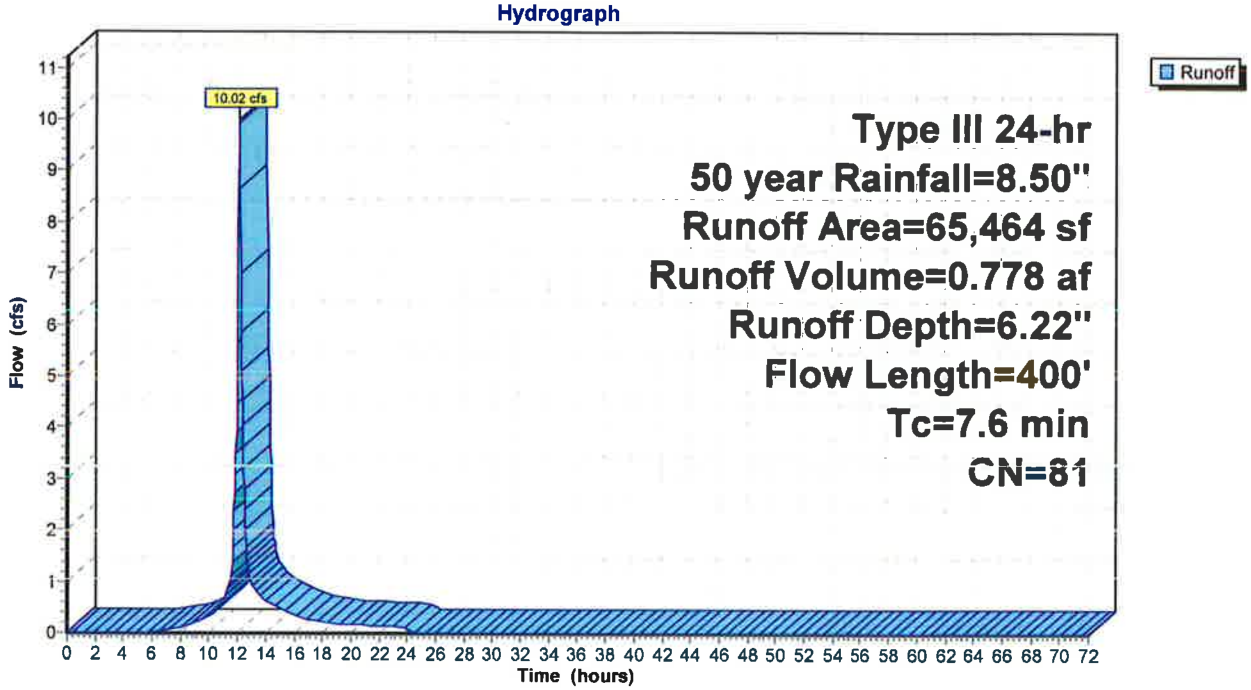
Runoff = 10.02 cfs @ 12.11 hrs, Volume= 0.778 af, Depth= 6.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	14,223	98	Roofs, HSG A
	19,836	98	Paved parking, HSG A
*	2,813	98	Unconnected pavement, sidewalk, HSG A
	13,300	30	Woods, Good, HSG A
*	6,192	98	Gravel surface, HSG A
	9,100	77	Fallow, bare soil, HSG A
	65,464	81	Weighted Average
	22,400		34.22% Pervious Area
	43,064		65.78% Impervious Area
	2,813		6.53% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	34	0.0441	3.38		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	24	0.3333	2.89		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	8	0.5125	11.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	89	0.0056	1.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	210	0.0071	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	6	0.0182	2.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	15	0.0067	1.66		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	14	0.0179	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.6	400	Total			

Subcatchment ES2:



Summary for Subcatchment ES3:

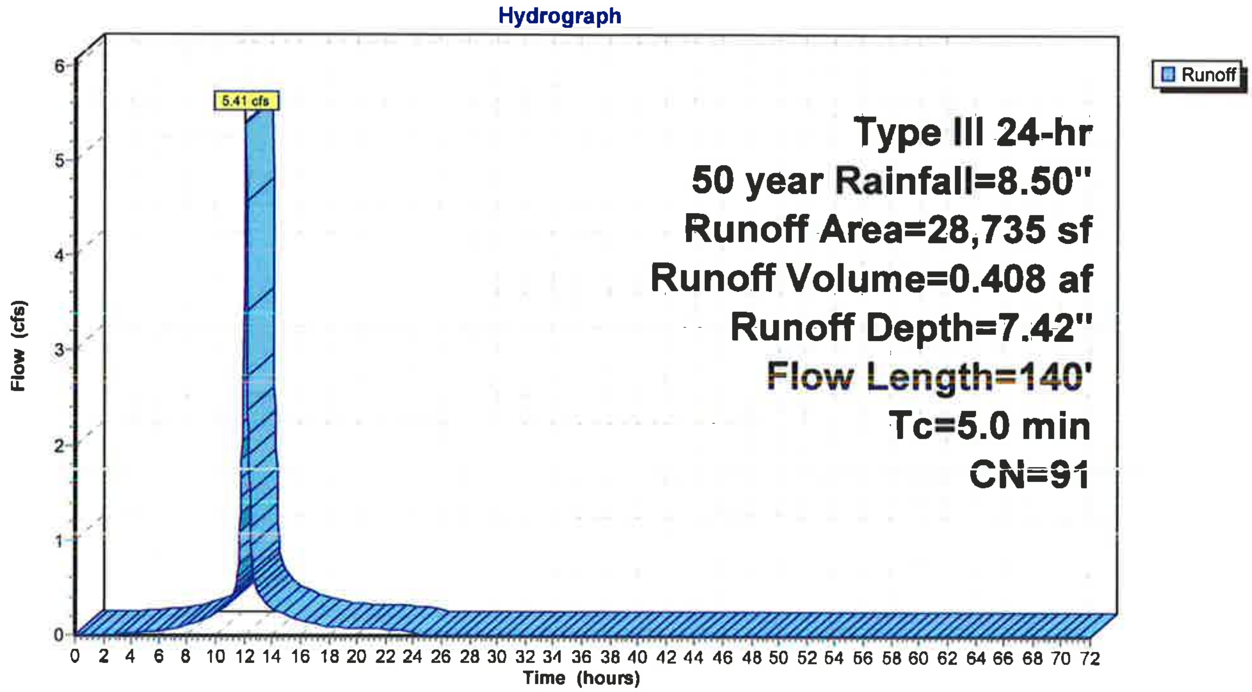
Runoff = 5.41 cfs @ 12.07 hrs, Volume= 0.408 af, Depth= 7.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	3,055	98	Roofs, HSG A
	19,765	98	Paved parking, HSG A
*	692	98	Unconnected pavement, sidewalk, HSG A
	2,441	30	Woods, Good, HSG A
*	1,269	98	Gravel surface, HSG A
	1,513	77	Fallow, bare soil, HSG A
	28,735	91	Weighted Average
	3,954		13.76% Pervious Area
	24,781		86.24% Impervious Area
	692		2.79% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	21	0.0238	2.48		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	37	0.2703	2.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	34	0.0221	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	48	0.0104	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.5	140	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES3:



Summary for Subcatchment ES4:

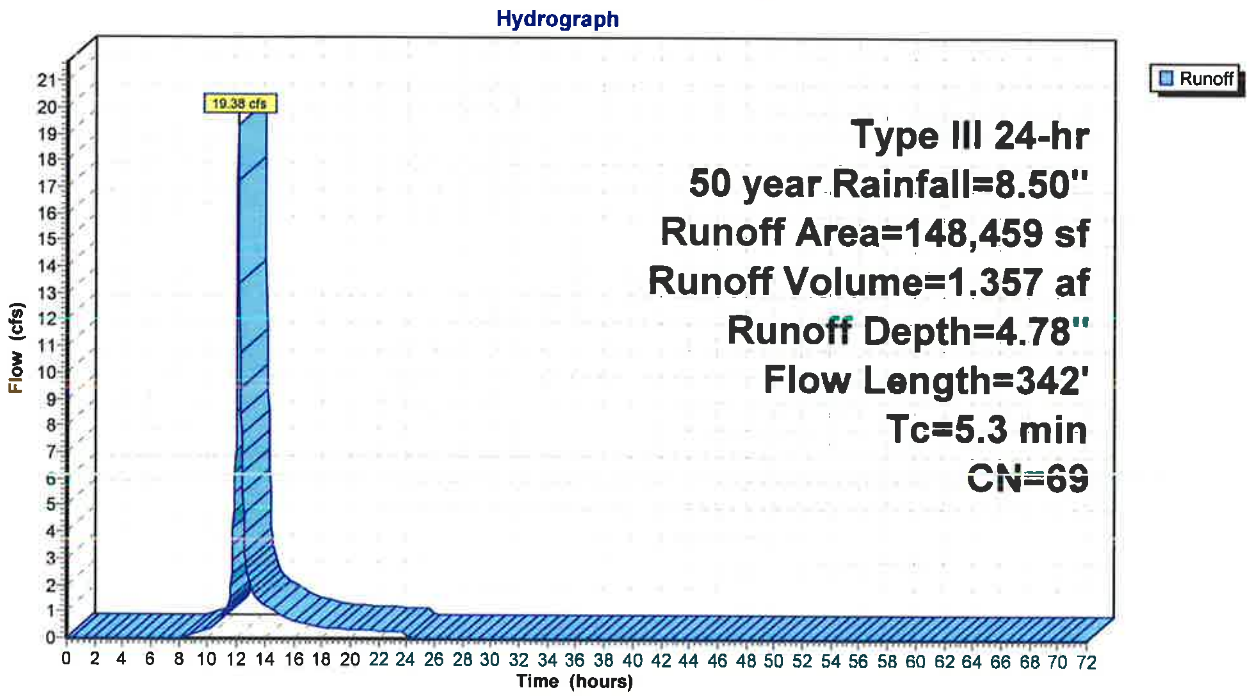
Runoff = 19.38 cfs @ 12.08 hrs, Volume= 1.357 af, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	28,300	98	Roofs, HSG A
	40,115	98	Paved parking, HSG A
	25,323	32	Woods/grass comb., Good, HSG A
*	813	98	Unconnected pavement, sidewalk, HSG A
	29,455	30	Woods, Good, HSG A
	7,831	39	>75% Grass cover, Good, HSG A
*	9,267	98	Gravel surface, HSG A
	7,355	77	Fallow, bare soil, HSG A
	148,459	69	Weighted Average
	69,964		47.13% Pervious Area
	78,495		52.87% Impervious Area
	813		1.04% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	49	0.0153	2.51		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	42	0.0059	0.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	251	0.0498	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.3	342	Total			

Subcatchment ES4:



Summary for Subcatchment ES5:

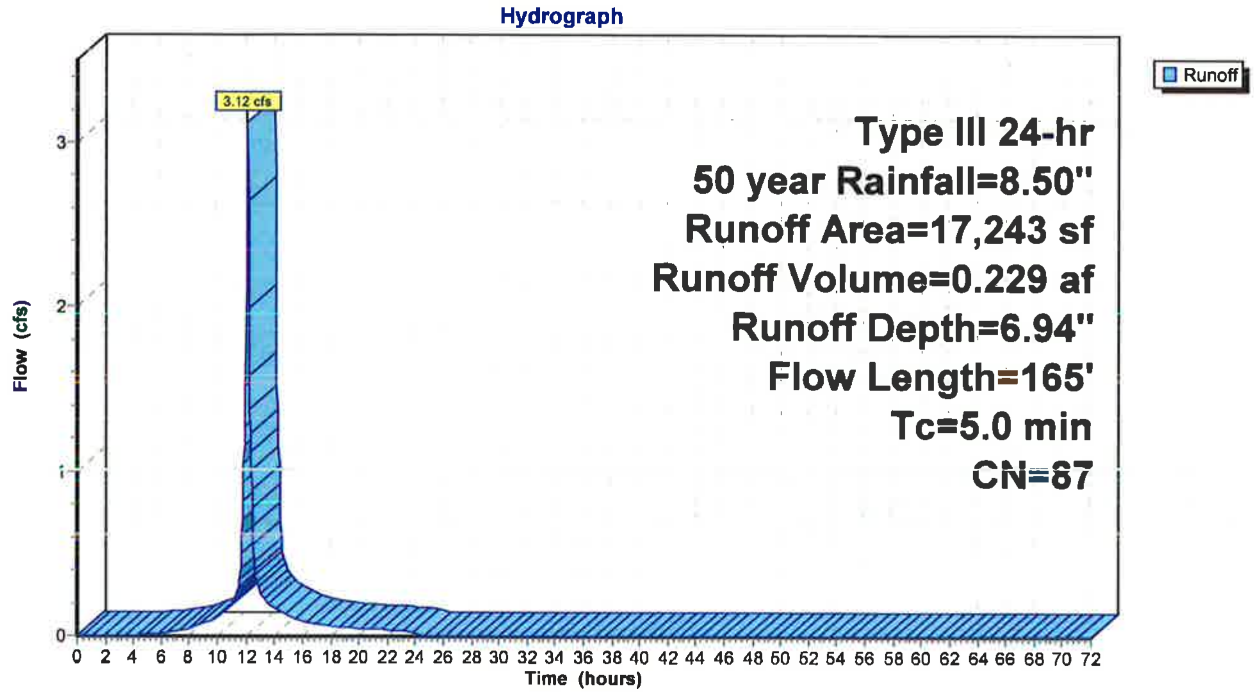
Runoff = 3.12 cfs @ 12.07 hrs, Volume= 0.229 af, Depth= 6.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	5,417	98	Roofs, HSG A
	7,124	98	Paved parking, HSG A
	2,814	30	Woods, Good, HSG A
*	1,888	98	Gravel surface, HSG A
	17,243	87	Weighted Average
	2,814		16.32% Pervious Area
	14,429		83.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	18	0.0278	2.68		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	27	0.2222	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	17	0.0050	0.68		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
0.7	103	0.0146	2.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	165	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES5:



Summary for Subcatchment ES6:

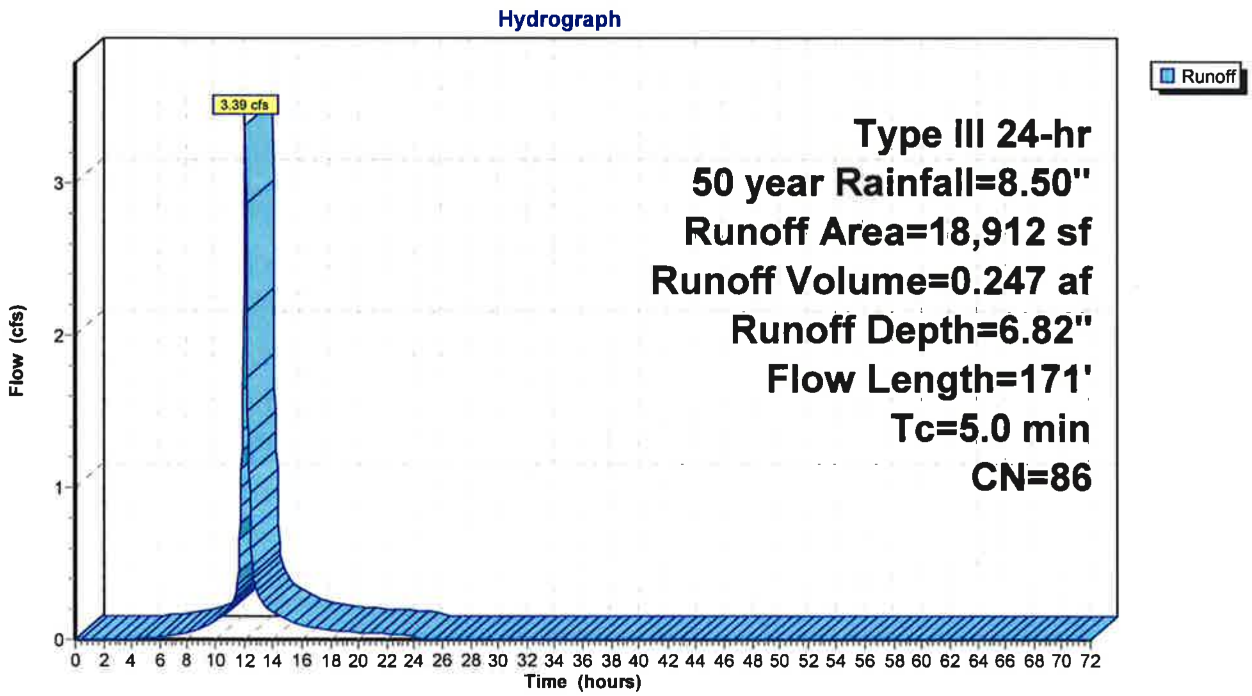
Runoff = 3.39 cfs @ 12.07 hrs, Volume= 0.247 af, Depth= 6.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	6,270	98	Roofs, HSG A
	6,874	98	Paved parking, HSG A
	3,205	30	Woods, Good, HSG A
	273	39	>75% Grass cover, Good, HSG A
*	2,290	98	Gravel surface, HSG A
	18,912	86	Weighted Average
	3,478		18.39% Pervious Area
	15,434		81.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	17	0.0294	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.3200	2.83		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	129	0.0155	2.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	171	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES6:



Summary for Subcatchment ES7:

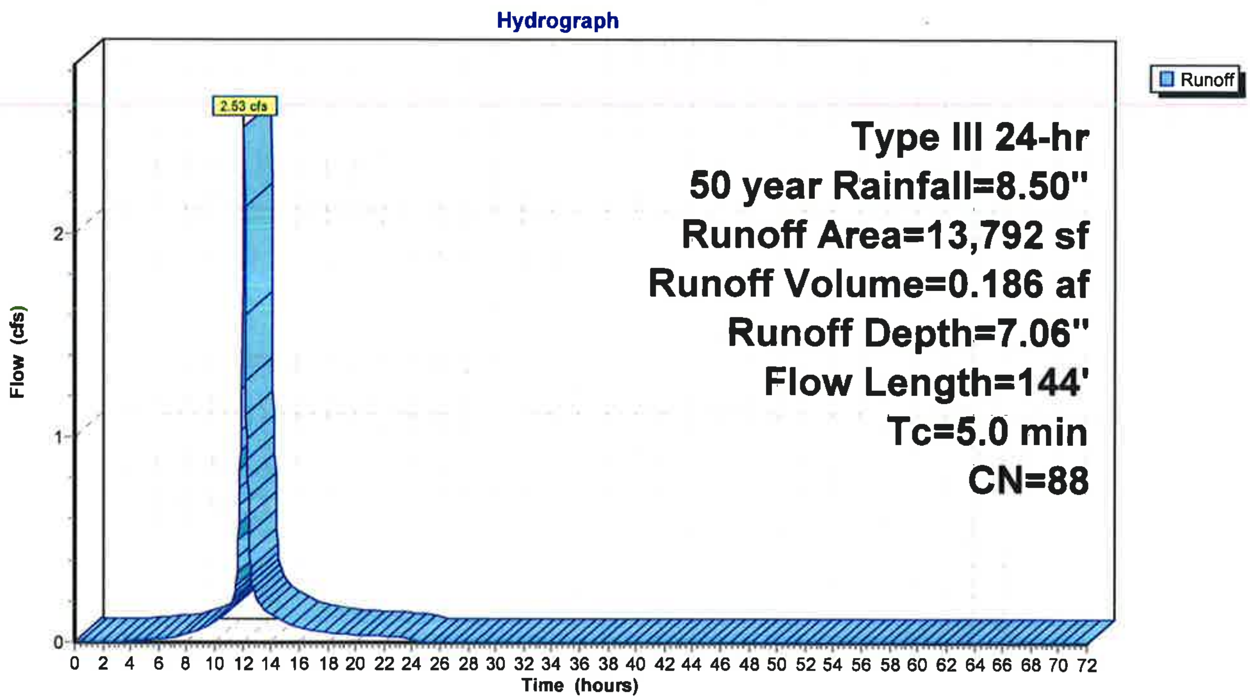
Runoff = 2.53 cfs @ 12.07 hrs, Volume= 0.186 af, Depth= 7.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	1,722	98	Roofs, HSG A
	8,479	98	Paved parking, HSG A
	1,931	30	Woods, Good, HSG A
*	1,660	98	Gravel surface, HSG A
	13,792	88	Weighted Average
	1,931		14.00% Pervious Area
	11,861		86.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	19	0.0263	2.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	21	0.1548	1.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	104	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	144	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES7:



Summary for Subcatchment ES8:

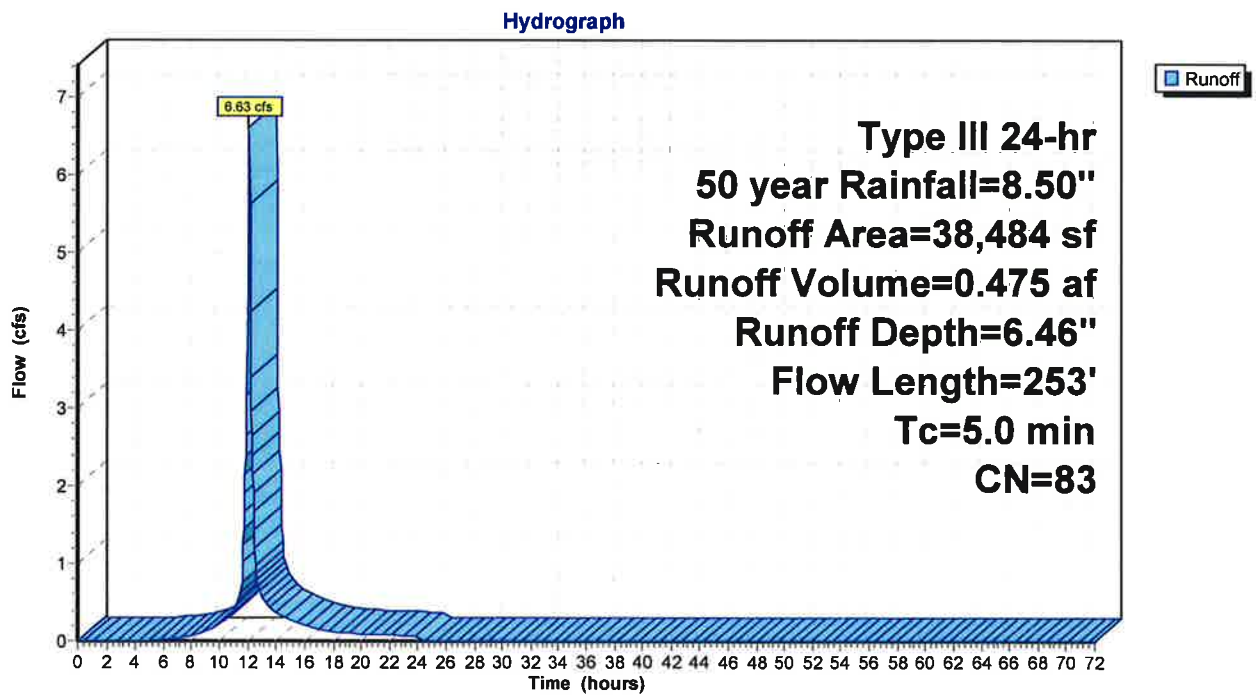
Runoff = 6.63 cfs @ 12.07 hrs, Volume= 0.475 af, Depth= 6.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	3,914	98	Roofs, HSG A
	18,114	98	Paved parking, HSG A
	6,260	30	Woods, Good, HSG A
	2,338	39	>75% Grass cover, Good, HSG A
*	7,858	98	Gravel surface, HSG A
	38,484	83	Weighted Average
	8,598		22.34% Pervious Area
	29,886		77.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	32	0.1406	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	204	0.0036	1.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.2	253	Total, Increased to minimum Tc = 5.0 min			

Subcatchment ES8:



Summary for Subcatchment ES9:

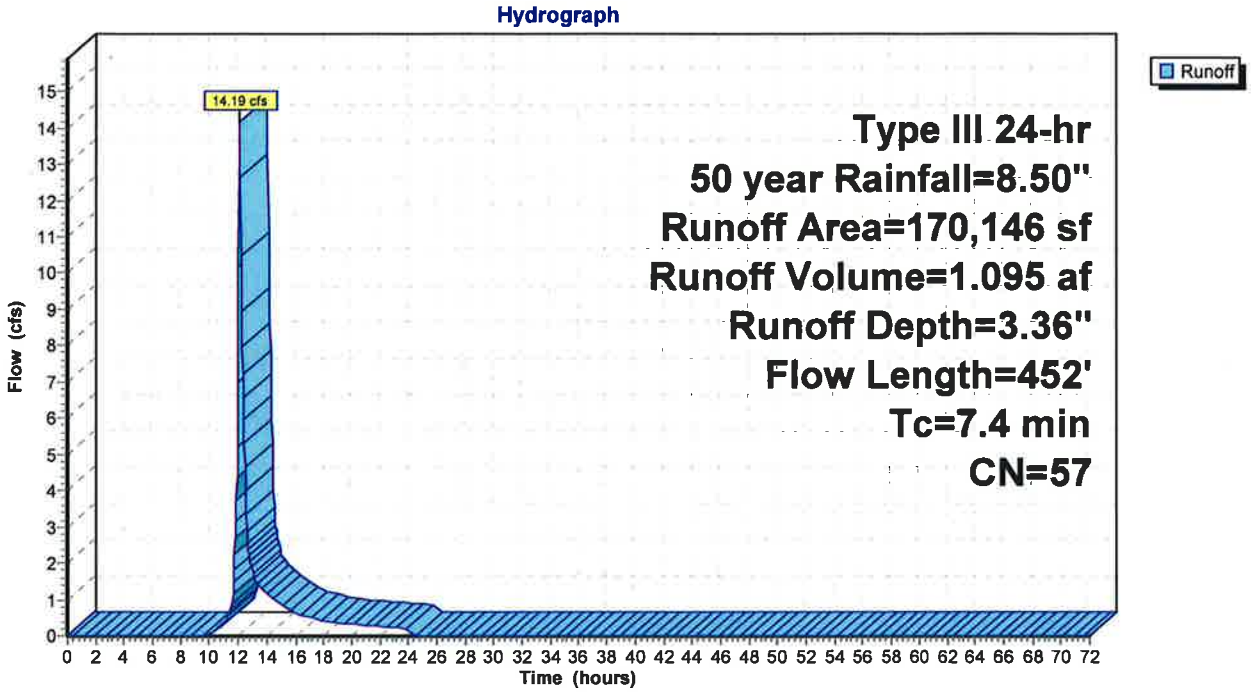
Runoff = 14.19 cfs @ 12.11 hrs, Volume= 1.095 af, Depth= 3.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	7,387	98	Roofs, HSG A
	4,750	98	Paved parking, HSG A
	14,477	32	Woods/grass comb., Good, HSG A
*	234	98	Unconnected pavement, sidewalk, HSG A
	71,360	30	Woods, Good, HSG A
	19,936	39	>75% Grass cover, Good, HSG A
*	52,002	98	Gravel surface, HSG A
	170,146	57	Weighted Average
	105,773		62.17% Pervious Area
	64,373		37.83% Impervious Area
	234		0.36% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	22	0.0227	2.43		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	36	0.1239	1.76		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	40	0.0375	3.93		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	134	0.0112	0.53		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	86	0.0116	1.73		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	134	0.0672	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.4	452	Total			

Subcatchment ES9:



Summary for Pond CB 1237:

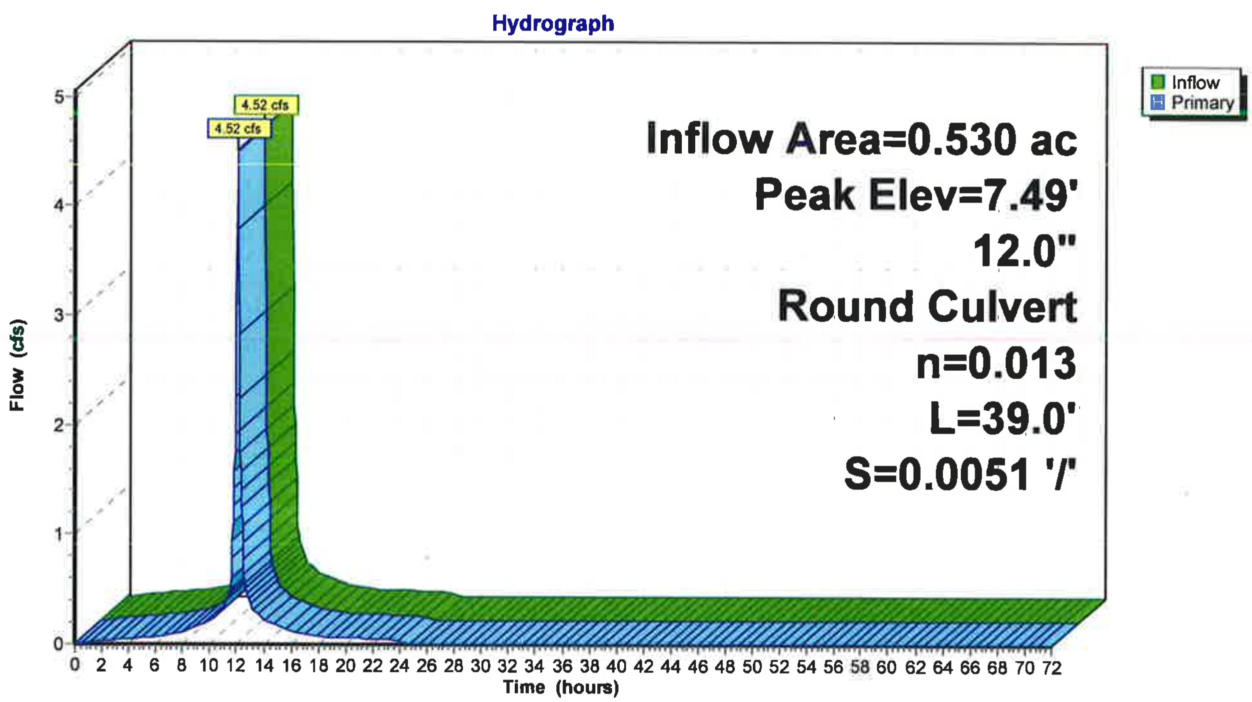
Inflow Area =	0.530 ac,100.00% Impervious,	Inflow Depth = 8.26"	for 50 year event	
Inflow =	4.52 cfs @	12.07 hrs, Volume=	0.365 af	
Outflow =	4.52 cfs @	12.07 hrs, Volume=	0.365 af,	Atten= 0%, Lag= 0.0 min
Primary =	4.52 cfs @	12.07 hrs, Volume=	0.365 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 7.49' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.29'	**12.0" Round Culvert** L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.29' / 5.09' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.44 cfs @ 12.07 hrs HW=7.44' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 4.44 cfs @ 5.65 fps)

Pond CB 1237:



Summary for Pond CB 1239: Combined Drain

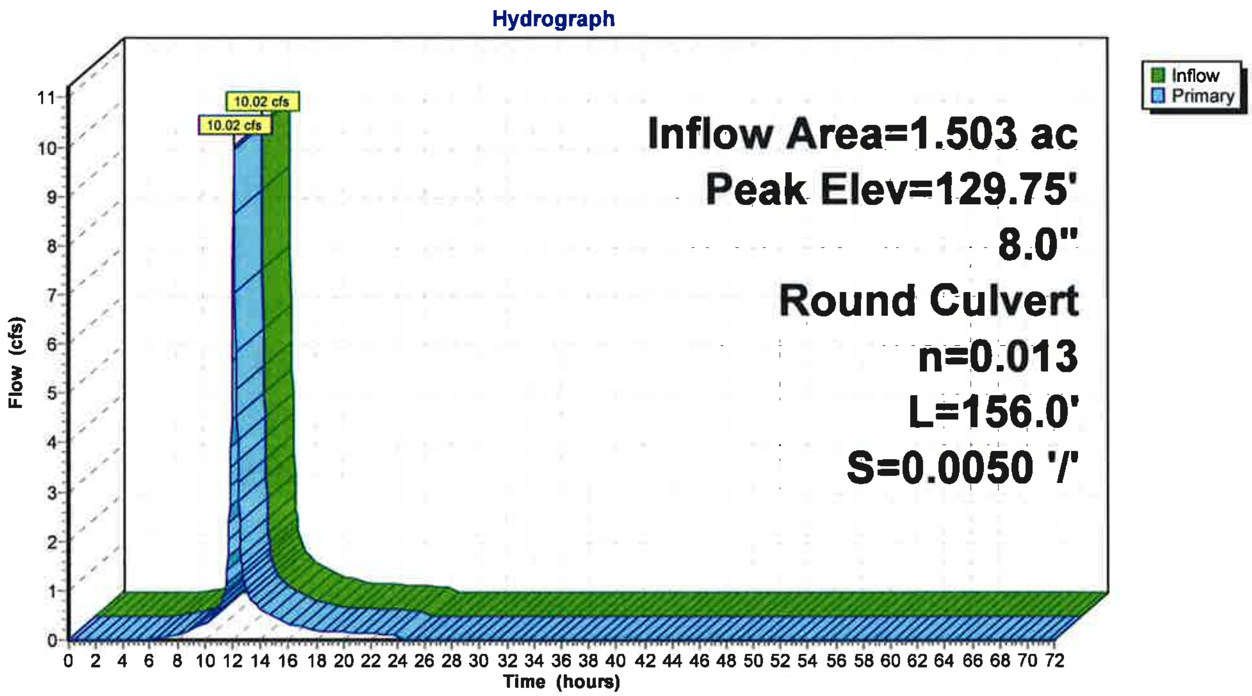
Inflow Area = 1.503 ac, 65.78% Impervious, Inflow Depth = 6.22" for 50 year event
Inflow = 10.02 cfs @ 12.11 hrs, Volume= 0.778 af
Outflow = 10.02 cfs @ 12.11 hrs, Volume= 0.778 af, Atten= 0%, Lag= 0.0 min
Primary = 10.02 cfs @ 12.11 hrs, Volume= 0.778 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 129.75' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.32'	**8.0" Round Culvert** L= 156.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 3.32' / 2.54' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=9.85 cfs @ 12.11 hrs HW=125.73' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 9.85 cfs @ 28.22 fps)

Pond CB 1239: Combined Drain



Summary for Pond CB 1240: Combined Drain

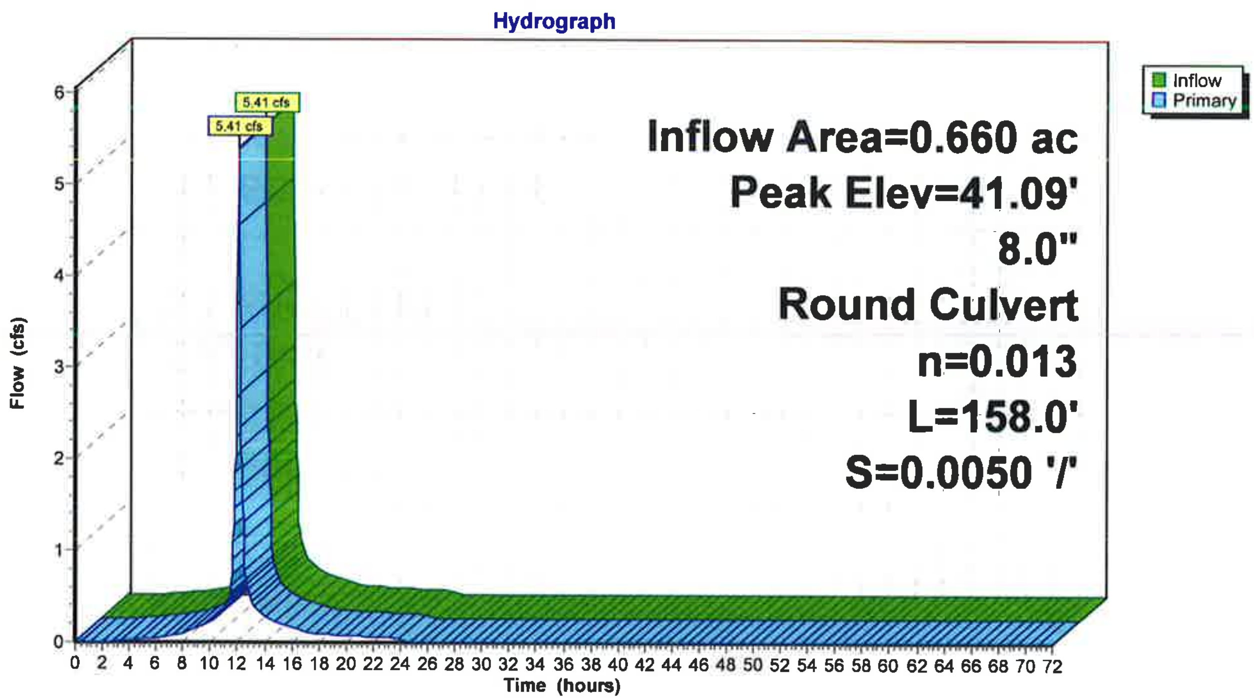
Inflow Area =	0.660 ac, 86.24% Impervious, Inflow Depth = 7.42" for 50 year event			
Inflow =	5.41 cfs @	12.07 hrs, Volume=	0.408 af	
Outflow =	5.41 cfs @	12.07 hrs, Volume=	0.408 af,	Atten= 0%, Lag= 0.0 min
Primary =	5.41 cfs @	12.07 hrs, Volume=	0.408 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 41.09' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.85'	**8.0" Round Culvert** L= 158.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 3.85' / 3.06' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=5.33 cfs @ 12.07 hrs HW=39.95' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 5.33 cfs @ 15.26 fps)

Pond CB 1240: Combined Drain



Summary for Pond CB 1241:

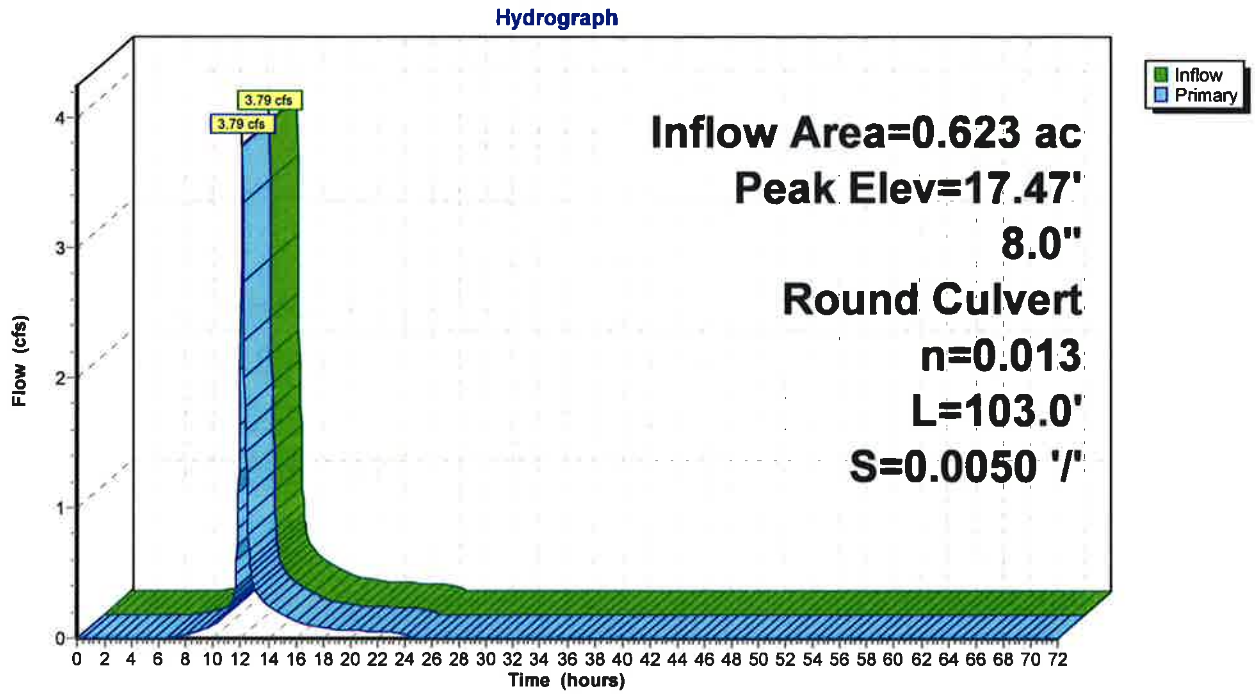
Inflow Area =	0.623 ac,	50.56% Impervious,	Inflow Depth = 5.61"	for 50 year event
Inflow =	3.79 cfs @	12.11 hrs, Volume=	0.292 af	
Outflow =	3.79 cfs @	12.11 hrs, Volume=	0.292 af,	Atten= 0%, Lag= 0.0 min
Primary =	3.79 cfs @	12.11 hrs, Volume=	0.292 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 17.47' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.44'	**8.0" Round Culvert** L= 103.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 4.44' / 3.93' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=3.74 cfs @ 12.11 hrs HW=17.15' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.74 cfs @ 10.71 fps)

Pond CB 1241:



Summary for Pond CB 1529: Combined Drain

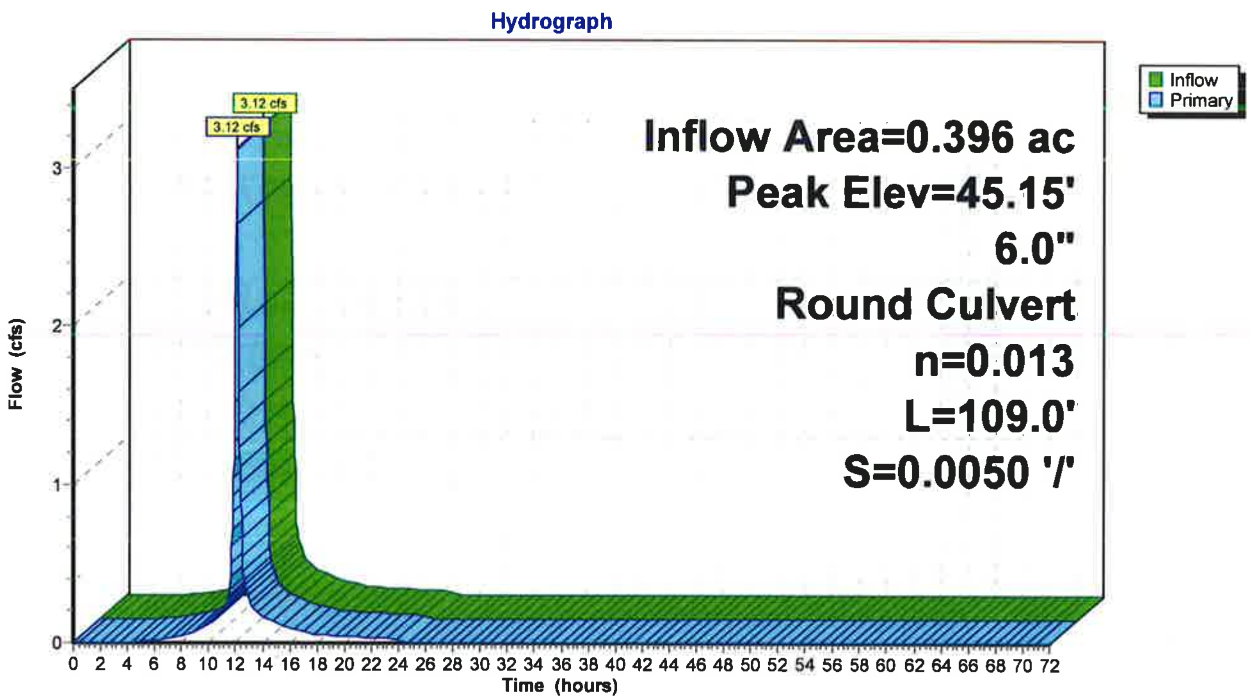
Inflow Area =	0.396 ac, 83.68% Impervious,	Inflow Depth = 6.94"	for 50 year event	
Inflow =	3.12 cfs @	12.07 hrs, Volume=	0.229 af	
Outflow =	3.12 cfs @	12.07 hrs, Volume=	0.229 af,	Atten= 0%, Lag= 0.0 min
Primary =	3.12 cfs @	12.07 hrs, Volume=	0.229 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 45.15' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.47'	**6.0" Round Culvert** L= 109.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.47' / 4.92' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=3.08 cfs @ 12.07 hrs HW=44.01' TW=0.00' (Dynamic Tailwater)
└1=Culvert (Barrel Controls 3.08 cfs @ 15.67 fps)

Pond CB 1529: Combined Drain



Summary for Pond CB 1632: Combined Drain

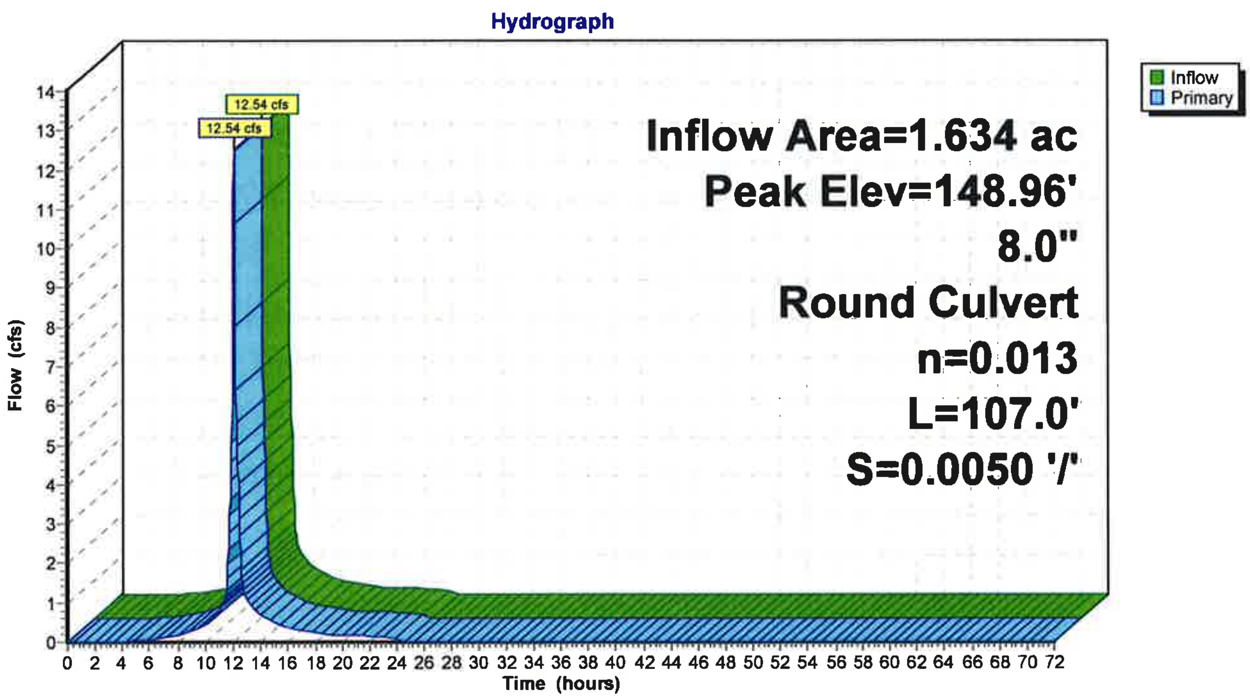
Inflow Area =	1.634 ac,	80.32% Impervious,	Inflow Depth = 6.67"	for 50 year event
Inflow =	12.54 cfs @	12.07 hrs, Volume=	0.908 af	
Outflow =	12.54 cfs @	12.07 hrs, Volume=	0.908 af,	Atten= 0%, Lag= 0.0 min
Primary =	12.54 cfs @	12.07 hrs, Volume=	0.908 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 148.96' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	3.38'	**8.0" Round Culvert** L= 107.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 3.38' / 2.84' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=12.36 cfs @ 12.07 hrs HW=145.00' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 12.36 cfs @ 35.41 fps)

Pond CB 1632: Combined Drain



Summary for Pond CB 1665: Combined Drain

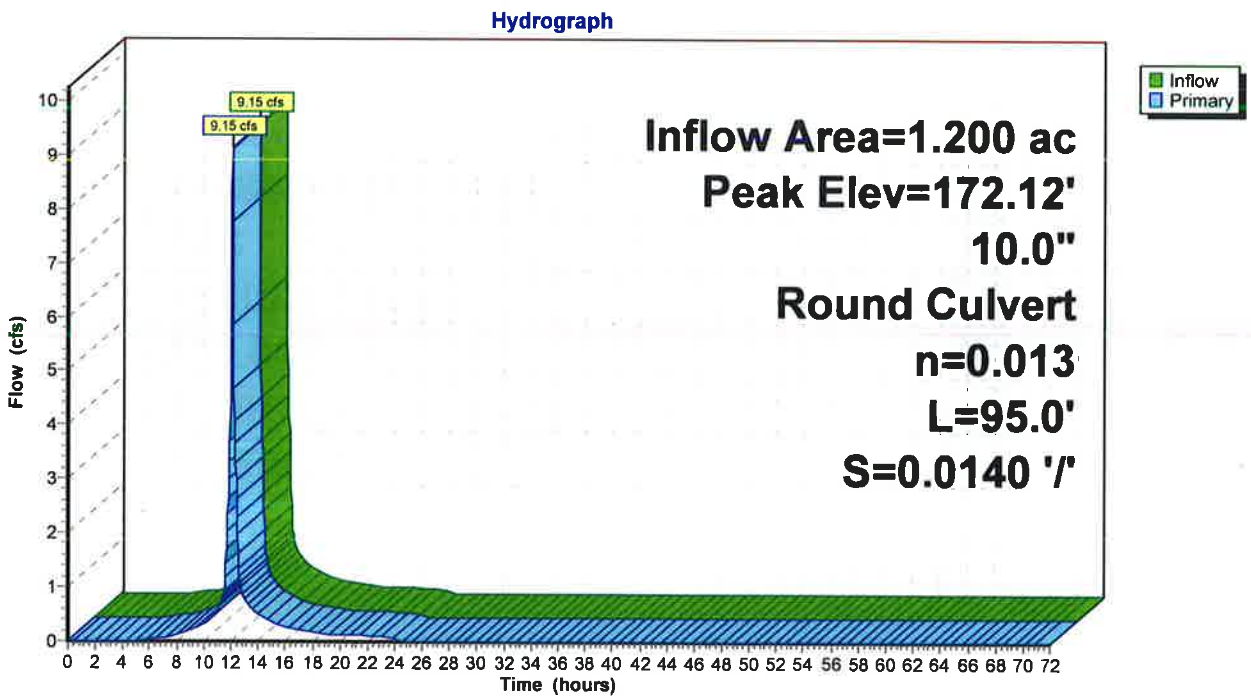
Inflow Area =	1.200 ac, 79.86% Impervious, Inflow Depth = 6.61"	for 50 year event	
Inflow =	9.15 cfs @ 12.07 hrs, Volume=	0.662 af	
Outflow =	9.15 cfs @ 12.07 hrs, Volume=	0.662 af,	Atten= 0%, Lag= 0.0 min
Primary =	9.15 cfs @ 12.07 hrs, Volume=	0.662 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 172.12' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.11'	**10.0" Round Culvert** L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.11' / 5.78' S= 0.0140 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=9.02 cfs @ 12.07 hrs HW=167.59' TW=145.05' (Dynamic Tailwater)
1=Culvert (Outlet Controls 9.02 cfs @ 16.54 fps)

Pond CB 1665: Combined Drain



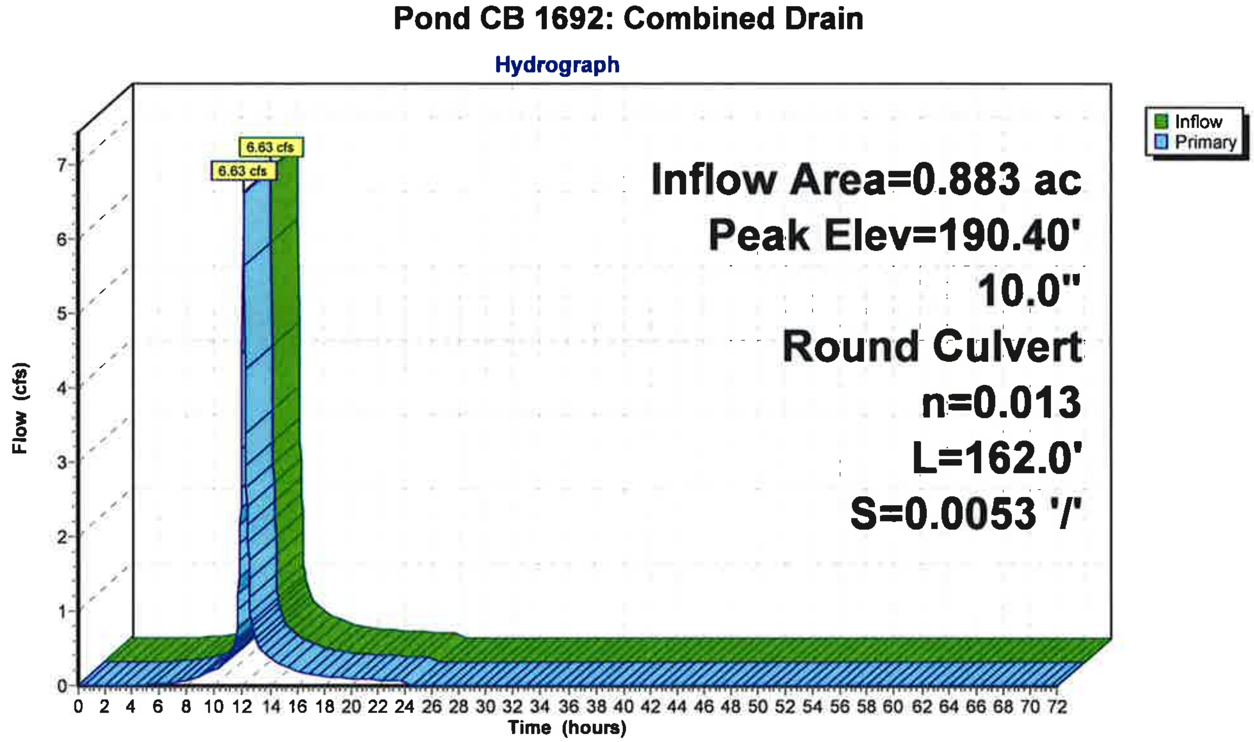
Summary for Pond CB 1692: Combined Drain

Inflow Area =	0.883 ac,	77.66% Impervious,	Inflow Depth = 6.46"	for 50 year event
Inflow =	6.63 cfs @	12.07 hrs, Volume=	0.475 af	
Outflow =	6.63 cfs @	12.07 hrs, Volume=	0.475 af,	Atten= 0%, Lag= 0.0 min
Primary =	6.63 cfs @	12.07 hrs, Volume=	0.475 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 190.40' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.17'	**10.0" Round Culvert** L= 162.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.17' / 7.31' S= 0.0053 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=6.54 cfs @ 12.07 hrs HW=185.56' TW=167.75' (Dynamic Tailwater)
1=Culvert (Outlet Controls 6.54 cfs @ 11.98 fps)

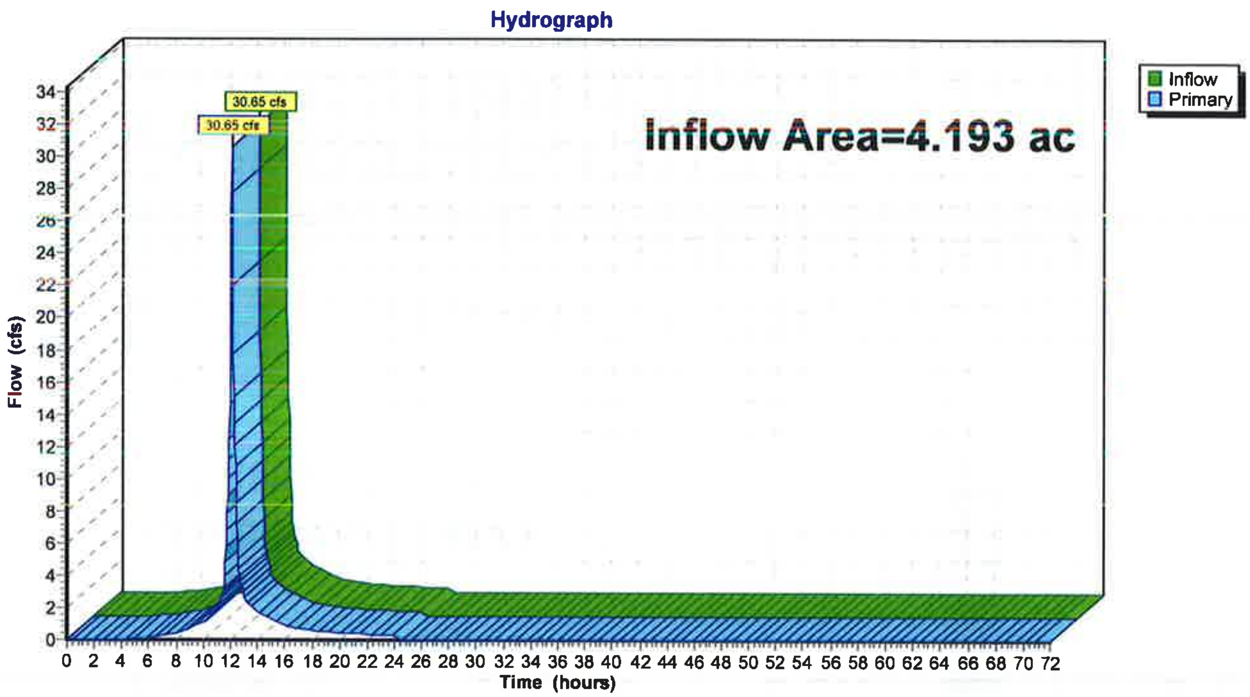


Summary for Link 2L: Sewer Line

Inflow Area =	4.193 ac,	76.36% Impervious,	Inflow Depth = 6.65"	for 50 year event	
Inflow =	30.65 cfs @	12.08 hrs,	Volume=	2.323 af	
Primary =	30.65 cfs @	12.08 hrs,	Volume=	2.323 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs

Link 2L: Sewer Line

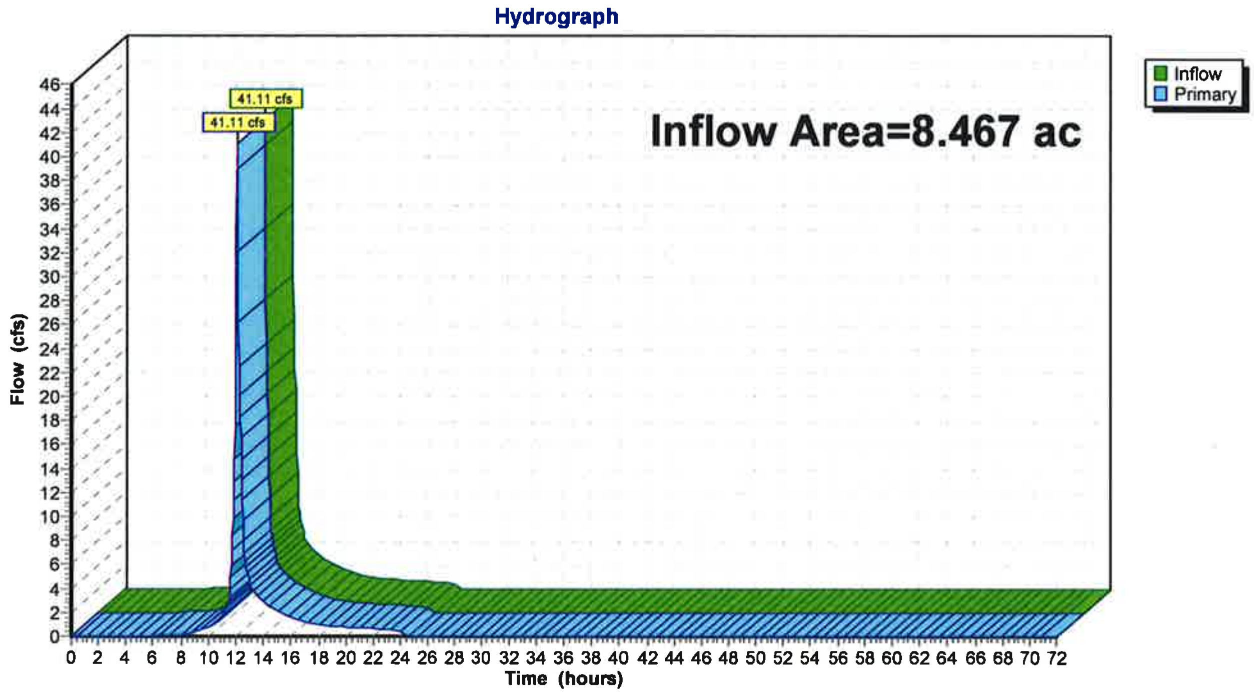


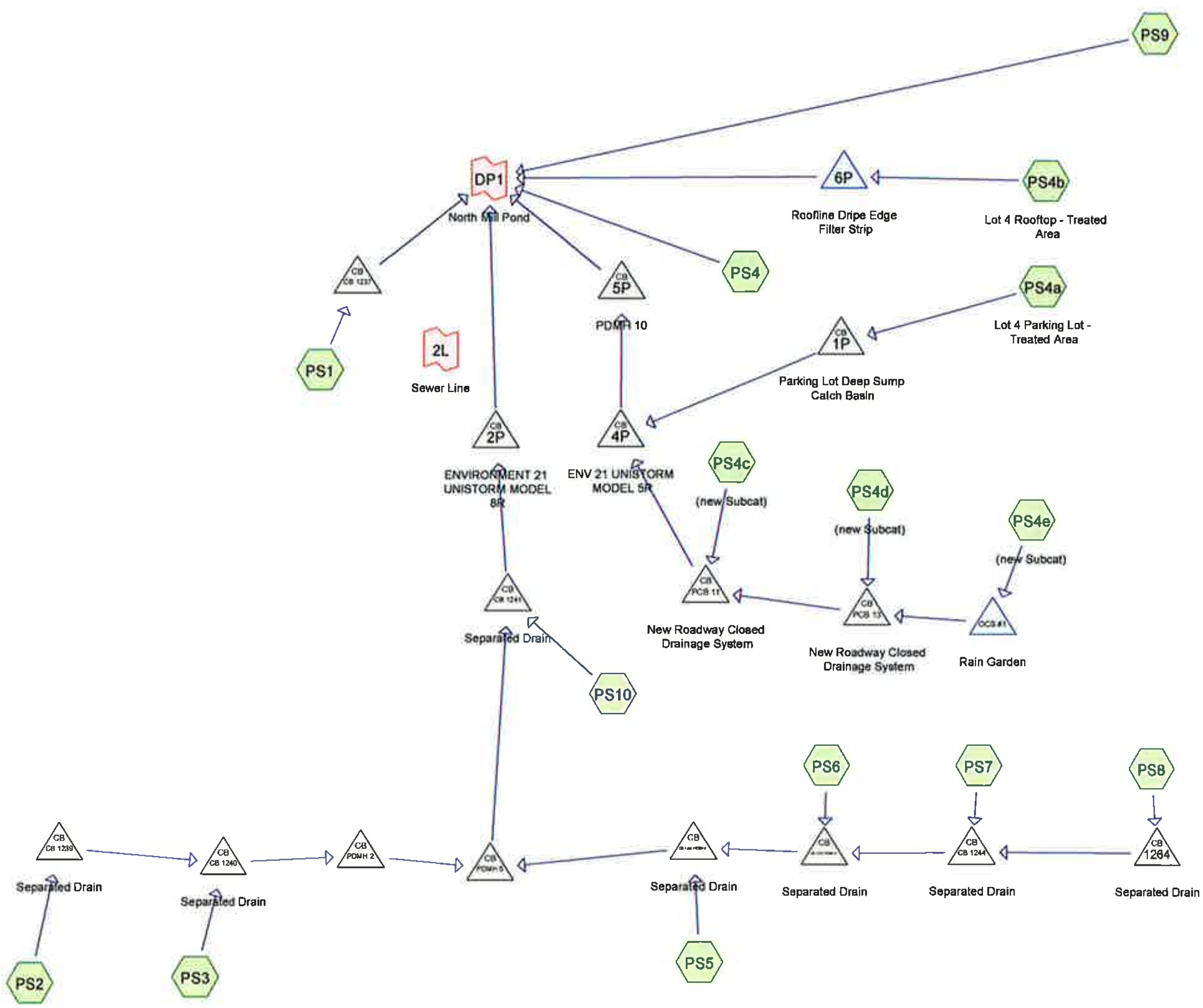
Summary for Link DP1: North Mill Pond

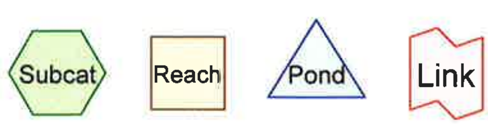
Inflow Area =	8.467 ac,	48.72% Impervious,	Inflow Depth = 4.40"	for 50 year event
Inflow =	41.11 cfs @	12.09 hrs, Volume=	3.108 af	
Primary =	41.11 cfs @	12.09 hrs, Volume=	3.108 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs

Link DP1: North Mill Pond







Routing Diagram for 2429 Proposed Conditions

Prepared by Ambit Engineering, Inc., Printed 10/16/2018

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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.054	39	>75% Grass cover, Good, HSG A (PS1, PS10, PS3, PS4, PS4c, PS4d, PS4e, PS6, PS8, PS9)
0.412	77	Fallow, bare soil, HSG A (PS2, PS3, PS4)
0.114	96	Gravel surface, HSG A (PS10)
1.595	98	Gravel surface, HSG A (PS2, PS3, PS5, PS6, PS7, PS8, PS9)
2.875	98	Paved parking, HSG A (PS1, PS10, PS2, PS3, PS4, PS4a, PS5, PS6, PS7, PS8, PS9)
0.528	98	Paved roads w/curbs & sewers, HSG A (PS4c, PS4d, PS4e)
1.715	98	Roofs, HSG A (PS1, PS2, PS3, PS4b, PS4c, PS4d, PS4e, PS5, PS6, PS7, PS8, PS9)
0.078	98	Sidewalk new, HSG A (PS1, PS4)
0.126	98	Unconnected pavement, sidewalk, HSG A (PS1, PS2, PS3, PS4, PS9)
0.071	98	Unconnected roofs, HSG A (PS10)
3.196	30	Woods, Good, HSG A (PS10, PS2, PS3, PS4, PS5, PS6, PS7, PS8, PS9)
0.904	32	Woods/grass comb., Good, HSG A (PS4, PS9)
12.670	**71**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
12.670	HSG A	PS1, PS10, PS2, PS3, PS4, PS4a, PS4b, PS4c, PS4d, PS4e, PS5, PS6, PS7, PS8, PS9
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
12.670		**TOTAL AREA**

Time span=0.00-72.00 hrs, dt=0.04 hrs, 1801 points x 7
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 PS1: Runoff Area=23,090 sf 98.87% Impervious Runoff Depth=5.25"
Flow Length=209' Tc=5.0 min CN=97 Runoff=2.95 cfs 0.232 af

Subcatchment PS10: Runoff Area=27,141 sf 47.00% Impervious Runoff Depth=2.85"
Flow Length=300' Tc=7.8 min CN=74 Runoff=1.94 cfs 0.148 af

Subcatchment PS2: Runoff Area=65,464 sf 65.78% Impervious Runoff Depth=3.52"
Flow Length=400' Tc=7.6 min CN=81 Runoff=5.78 cfs 0.441 af

Subcatchment PS3: Runoff Area=28,735 sf 83.35% Impervious Runoff Depth=4.35"
Flow Length=140' Tc=5.0 min CN=89 Runoff=3.31 cfs 0.239 af

Subcatchment PS4: Runoff Area=78,241 sf 9.20% Impervious Runoff Depth=0.48"
Flow Length=342' Tc=5.3 min CN=42 Runoff=0.38 cfs 0.072 af

Subcatchment PS4a: Lot 4 Parking Lot - Runoff Area=14,755 sf 100.00% Impervious Runoff Depth=5.36"
Tc=5.0 min CN=98 Runoff=1.90 cfs 0.151 af

Subcatchment PS4b: Lot 4 Rooftop - Runoff Area=20,314 sf 100.00% Impervious Runoff Depth=5.36"
Tc=5.0 min CN=98 Runoff=2.61 cfs 0.208 af

Subcatchment PS4c: (new Subcat) Runoff Area=12,582 sf 89.27% Impervious Runoff Depth=4.68"
Tc=5.0 min CN=92 Runoff=1.52 cfs 0.113 af

Subcatchment PS4d: (new Subcat) Runoff Area=14,029 sf 70.87% Impervious Runoff Depth=3.52"
Tc=5.0 min CN=81 Runoff=1.36 cfs 0.095 af

Subcatchment PS4e: (new Subcat) Runoff Area=17,277 sf 61.96% Impervious Runoff Depth=3.04"
Tc=5.0 min CN=76 Runoff=1.45 cfs 0.100 af

Subcatchment PS5: Runoff Area=17,243 sf 83.68% Impervious Runoff Depth=4.14"
Flow Length=165' Tc=5.0 min CN=87 Runoff=1.91 cfs 0.136 af

Subcatchment PS6: Runoff Area=18,912 sf 81.61% Impervious Runoff Depth=4.03"
Flow Length=171' Tc=5.0 min CN=86 Runoff=2.06 cfs 0.146 af

Subcatchment PS7: Runoff Area=13,792 sf 86.00% Impervious Runoff Depth=4.24"
Flow Length=144' Tc=5.0 min CN=88 Runoff=1.56 cfs 0.112 af

Subcatchment PS8: Runoff Area=36,146 sf 76.21% Impervious Runoff Depth=3.62"
Flow Length=253' Tc=5.0 min CN=82 Runoff=3.58 cfs 0.250 af

Subcatchment PS9: Runoff Area=164,174 sf 35.57% Impervious Runoff Depth=1.29"
Flow Length=452' Tc=7.4 min CN=55 Runoff=4.63 cfs 0.406 af

Pond 1P: Parking Lot Deep Sump Catch Basin Peak Elev=8.37' Inflow=1.90 cfs 0.151 af
12.0" Round Culvert n=0.013 L=76.0' S=0.0254 '/' Outflow=1.90 cfs 0.151 af

Pond 2P: ENVIRONMENT 21 UNISTORM MODEL 8R Peak Elev=18.94' Inflow=19.77 cfs 1.473 af
15.0" Round Culvert n=0.013 L=80.0' S=0.0075 '/' Outflow=19.77 cfs 1.473 af

Pond 4P: ENV 21 UNISTORM MODEL 5R Peak Elev=7.70' Inflow=4.89 cfs 0.384 af
15.0" Round Culvert n=0.013 L=15.0' S=0.0047 '/' Outflow=4.89 cfs 0.384 af

Pond 5P: PDMH 10 Peak Elev=7.02' Inflow=4.89 cfs 0.384 af
15.0" Round Culvert n=0.013 L=19.0' S=0.0074 '/' Outflow=4.89 cfs 0.384 af

Pond 6P: Roofline Dripe Edge Filter Strip Peak Elev=10.15' Storage=0.003 af Inflow=2.61 cfs 0.208 af
12.0" Round Culvert n=0.013 L=30.0' S=0.0050 '/' Outflow=2.57 cfs 0.208 af

Pond 1264: Separated Drain Peak Elev=63.46' Inflow=3.58 cfs 0.250 af
10.0" Round Culvert n=0.013 L=162.0' S=0.0051 '/' Outflow=3.58 cfs 0.250 af

Pond CB 1237: Peak Elev=6.69' Inflow=2.95 cfs 0.232 af
12.0" Round Culvert n=0.013 L=39.0' S=0.0051 '/' Outflow=2.95 cfs 0.232 af

Pond CB 1239: Separated Drain Peak Elev=60.57' Inflow=5.78 cfs 0.441 af
12.0" Round Culvert n=0.013 L=116.0' S=0.0040 '/' Outflow=5.78 cfs 0.441 af

Pond CB 1240: Separated Drain Peak Elev=56.46' Inflow=8.92 cfs 0.680 af
12.0" Round Culvert n=0.013 L=50.0' S=0.0040 '/' Outflow=8.92 cfs 0.680 af

Pond CB 1241: Separated Drain Peak Elev=30.12' Inflow=19.77 cfs 1.473 af
15.0" Round Culvert n=0.013 L=12.5' S=0.0040 '/' Outflow=19.77 cfs 1.473 af

Pond CB 1242 / PDMH 3: Separated Drain Peak Elev=48.54' Inflow=9.11 cfs 0.645 af
12.0" Round Culvert n=0.013 L=94.0' S=0.0040 '/' Outflow=9.11 cfs 0.645 af

Pond CB 1243 / PDMH 4: Separated Drain Peak Elev=55.16' Inflow=7.20 cfs 0.508 af
12.0" Round Culvert n=0.013 L=115.0' S=0.0040 '/' Outflow=7.20 cfs 0.508 af

Pond CB 1244: Separated Drain Peak Elev=58.13' Inflow=5.14 cfs 0.362 af
12.0" Round Culvert n=0.013 L=95.0' S=0.0040 '/' Outflow=5.14 cfs 0.362 af

Pond OCS #1: Rain Garden Peak Elev=10.31' Storage=1,254 cf Inflow=1.45 cfs 0.100 af
Discarded=0.14 cfs 0.075 af Primary=0.22 cfs 0.026 af Outflow=0.36 cfs 0.100 af

Pond PCB 11: New Roadway Closed Drainage System Peak Elev=8.39' Inflow=2.99 cfs 0.233 af
12.0" Round Culvert n=0.013 L=50.0' S=0.0050 '/' Outflow=2.99 cfs 0.233 af

Pond PCB 13: New Roadway Closed Drainage System Peak Elev=8.81' Inflow=1.47 cfs 0.120 af
12.0" Round Culvert n=0.013 L=195.0' S=0.0050 '/' Outflow=1.47 cfs 0.120 af

Pond PDMH 2: Peak Elev=50.35' Inflow=8.92 cfs 0.680 af
12.0" Round Culvert n=0.013 L=129.0' S=0.0040 '/' Outflow=8.92 cfs 0.680 af

Pond PDMH 5: Peak Elev=39.33' Inflow=17.93 cfs 1.325 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0040 '/' Outflow=17.93 cfs 1.325 af

Link 2L: Sewer Line

Primary=0.00 cfs 0.000 af

Link DP1: North Mill Pond

Inflow=34.49 cfs 2.776 af
Primary=34.49 cfs 2.776 af

Total Runoff Area = 12.670 ac Runoff Volume = 2.850 af Average Runoff Depth = 2.70"
44.84% Pervious = 5.681 ac 55.16% Impervious = 6.988 ac

Summary for Subcatchment PS1:

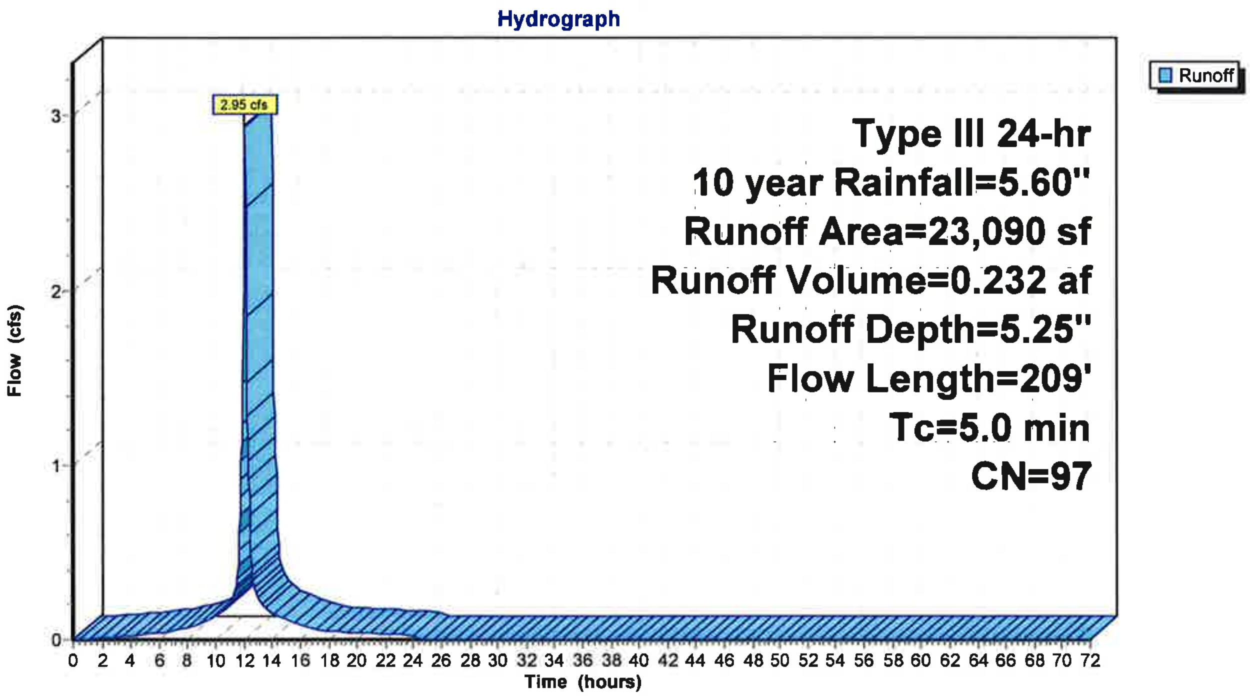
Runoff = 2.95 cfs @ 12.07 hrs, Volume= 0.232 af, Depth= 5.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	3,527	98	Roofs, HSG A
	16,758	98	Paved parking, HSG A
*	937	98	Unconnected pavement, sidewalk, HSG A
	262	39	>75% Grass cover, Good, HSG A
*	1,606	98	Sidewalk new, HSG A
	23,090	97	Weighted Average
	262		1.13% Pervious Area
	22,828		98.87% Impervious Area
	937		4.10% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	16	0.0500	1.70		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.8	193	0.0078	1.79		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	209	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS1:



Summary for Subcatchment PS10:

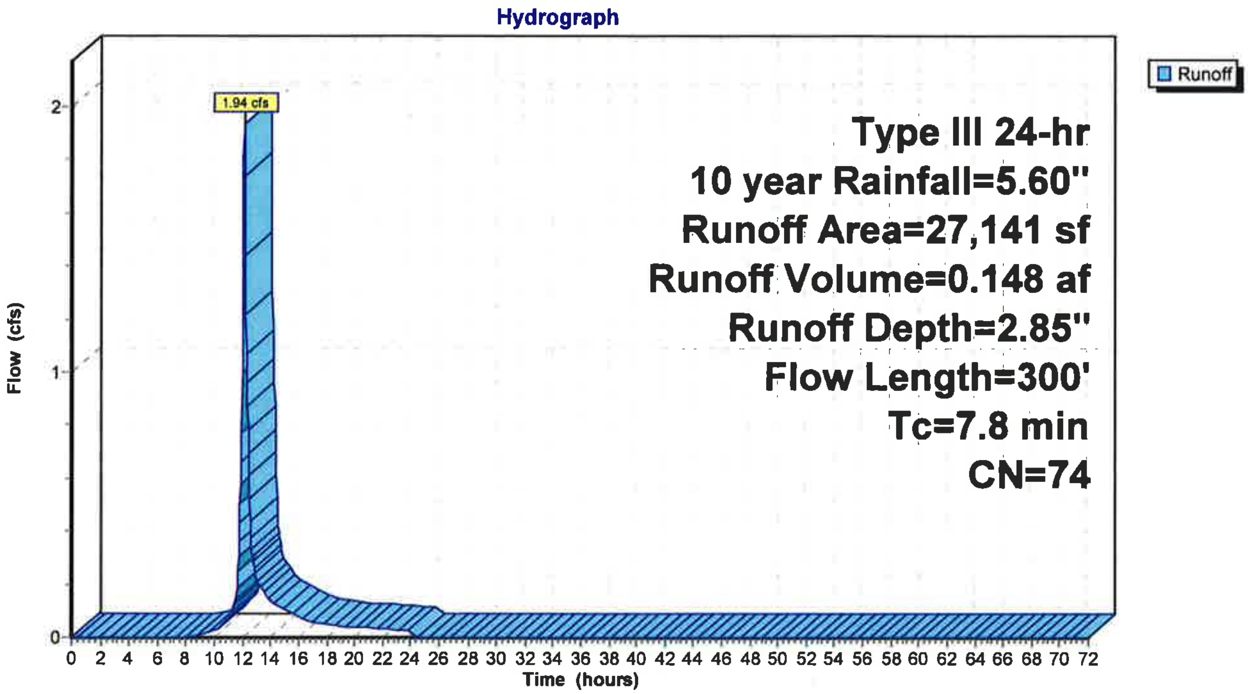
Runoff = 1.94 cfs @ 12.12 hrs, Volume= 0.148 af, Depth= 2.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

Area (sf)	CN	Description
3,111	98	Unconnected roofs, HSG A
9,646	98	Paved parking, HSG A
8,473	30	Woods, Good, HSG A
4,946	96	Gravel surface, HSG A
965	39	>75% Grass cover, Good, HSG A
27,141	74	Weighted Average
14,384		53.00% Pervious Area
12,757		47.00% Impervious Area
3,111		24.39% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	40	0.2250	2.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.2	142	0.0030	0.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	101	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.8	300	Total			

Subcatchment PS10:



Summary for Subcatchment PS2:

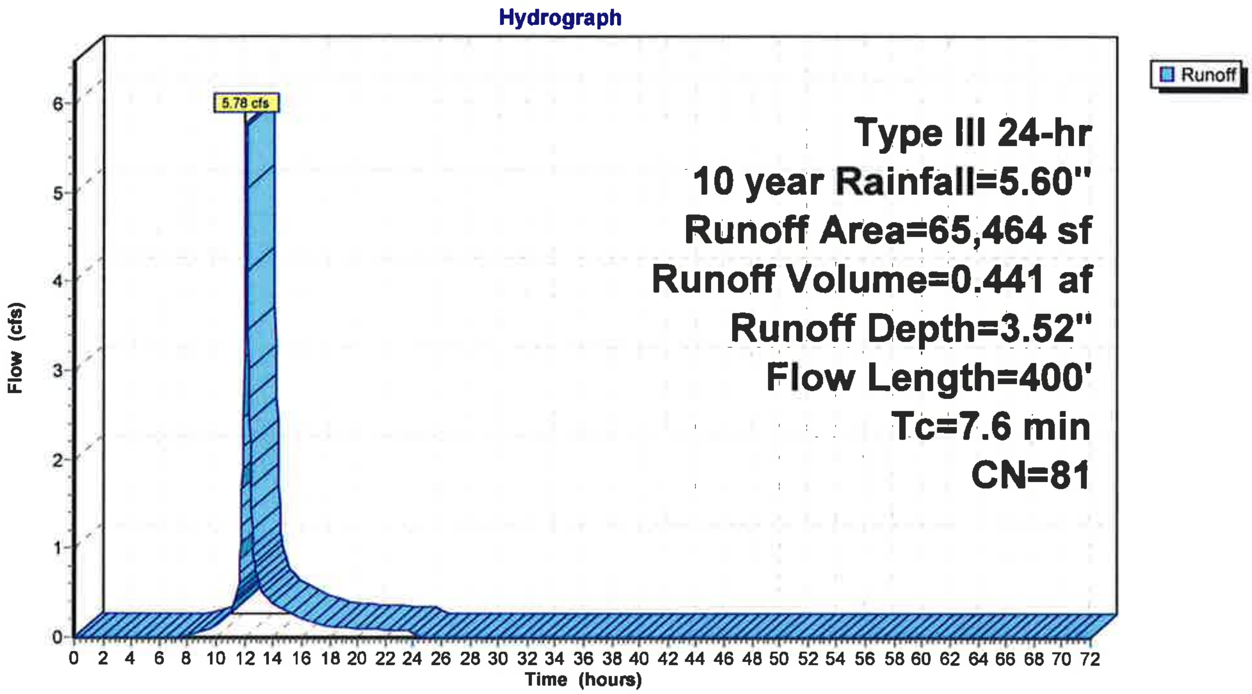
Runoff = 5.78 cfs @ 12.11 hrs, Volume= 0.441 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	14,223	98	Roofs, HSG A
	19,836	98	Paved parking, HSG A
*	2,813	98	Unconnected pavement, sidewalk, HSG A
	13,300	30	Woods, Good, HSG A
*	6,192	98	Gravel surface, HSG A
	9,100	77	Fallow, bare soil, HSG A
	65,464	81	Weighted Average
	22,400		34.22% Pervious Area
	43,064		65.78% Impervious Area
	2,813		6.53% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	34	0.0441	3.38		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	24	0.3333	2.89		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	8	0.5125	11.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	89	0.0056	1.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	210	0.0071	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	6	0.0182	2.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	15	0.0067	1.66		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	14	0.0179	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.6	400	Total			

Subcatchment PS2:



Summary for Subcatchment PS3:

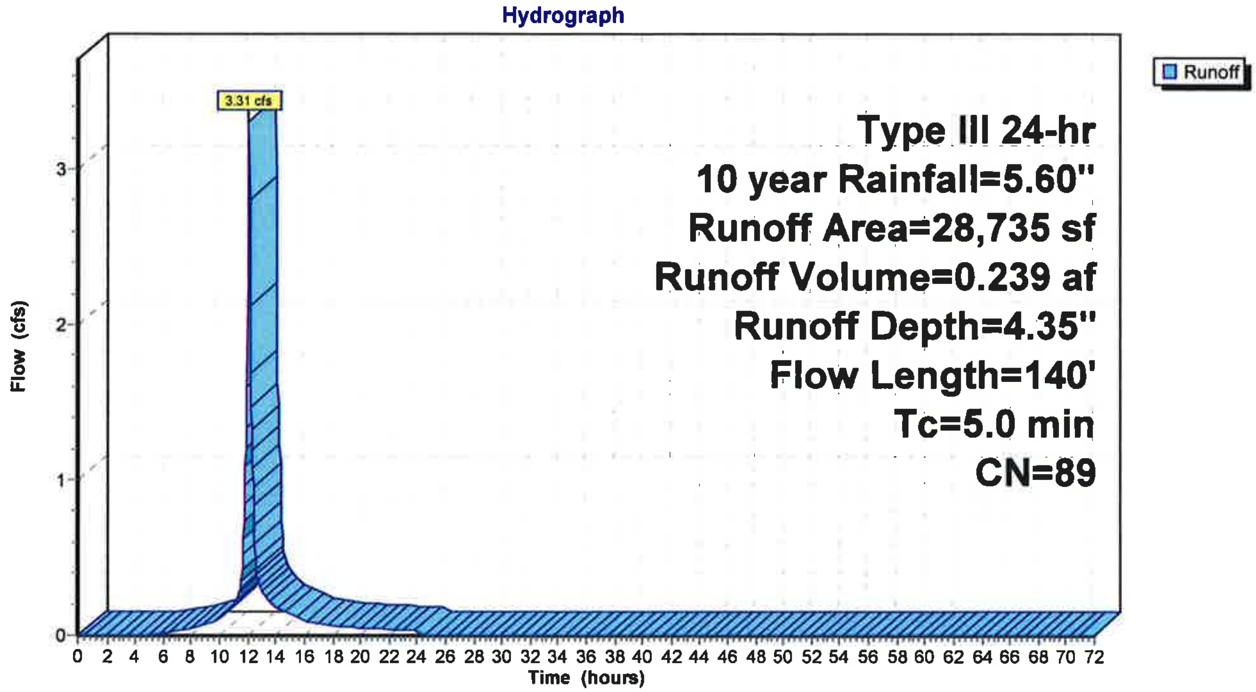
Runoff = 3.31 cfs @ 12.07 hrs, Volume= 0.239 af, Depth= 4.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	3,055	98	Roofs, HSG A
	18,934	98	Paved parking, HSG A
*	692	98	Unconnected pavement, sidewalk, HSG A
	2,441	30	Woods, Good, HSG A
*	1,269	98	Gravel surface, HSG A
	1,513	77	Fallow, bare soil, HSG A
	831	39	>75% Grass cover, Good, HSG A
	28,735	89	Weighted Average
	4,785		16.65% Pervious Area
	23,950		83.35% Impervious Area
	692		2.89% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	21	0.0238	2.48		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	37	0.2703	2.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	34	0.0221	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	48	0.0104	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.5	140	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS3:



Summary for Subcatchment PS4:

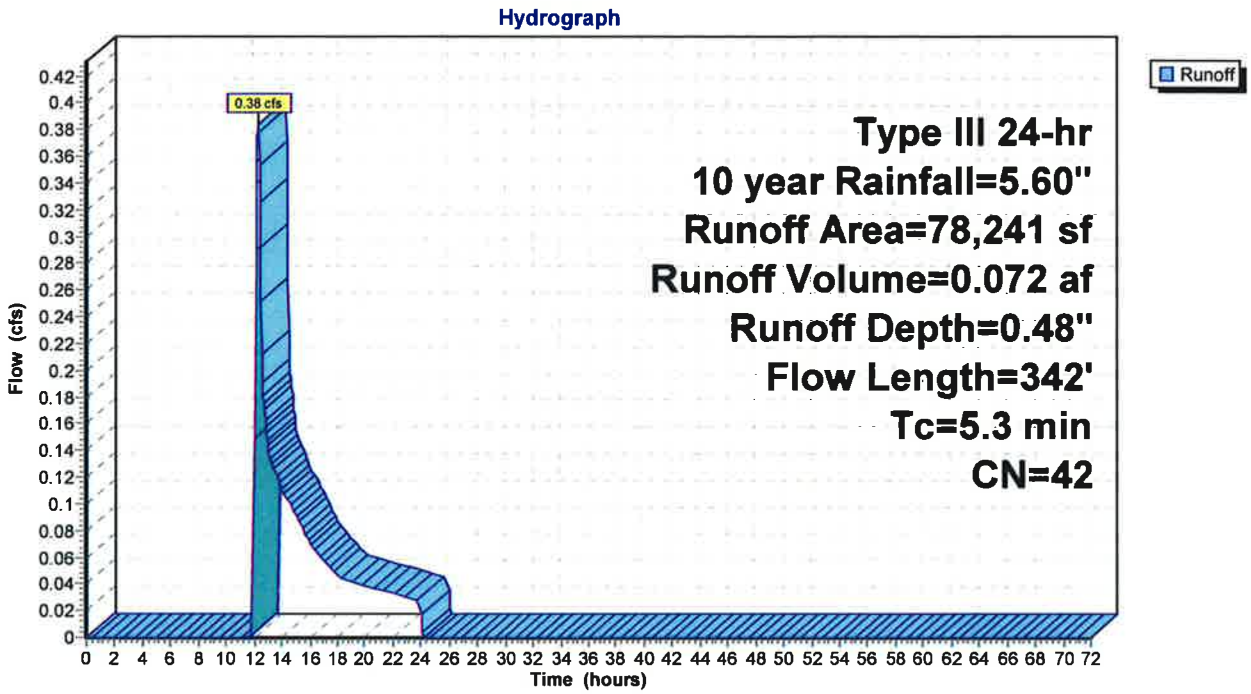
Runoff = 0.38 cfs @ 12.30 hrs, Volume= 0.072 af, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	4,595	98	Paved parking, HSG A
	24,921	32	Woods/grass comb., Good, HSG A
*	813	98	Unconnected pavement, sidewalk, HSG A
	29,455	30	Woods, Good, HSG A
	4,789	39	>75% Grass cover, Good, HSG A
	7,355	77	Fallow, bare soil, HSG A
	230	39	>75% Grass cover, Good, HSG A
	4,292	39	>75% Grass cover, Good, HSG A
*	1,791	98	Sidewalk new, HSG A
	78,241	42	Weighted Average
	71,042		90.80% Pervious Area
	7,199		9.20% Impervious Area
	813		11.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	49	0.0153	2.51		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	42	0.0059	0.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	251	0.0498	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.3	342	Total			

Subcatchment PS4:



Summary for Subcatchment PS4a: Lot 4 Parking Lot - Treated Area

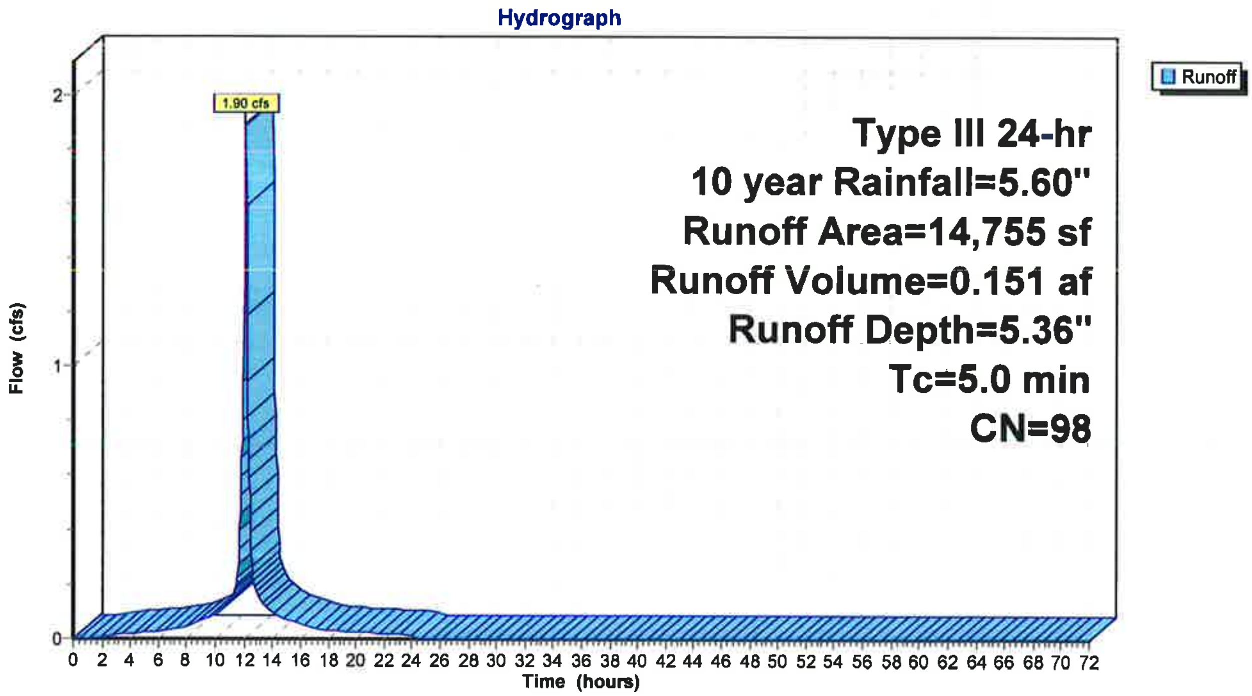
Runoff = 1.90 cfs @ 12.07 hrs, Volume= 0.151 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

Area (sf)	CN	Description
14,755	98	Paved parking, HSG A
14,755		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4a: Lot 4 Parking Lot - Treated Area



Summary for Subcatchment PS4b: Lot 4 Rooftop - Treated Area

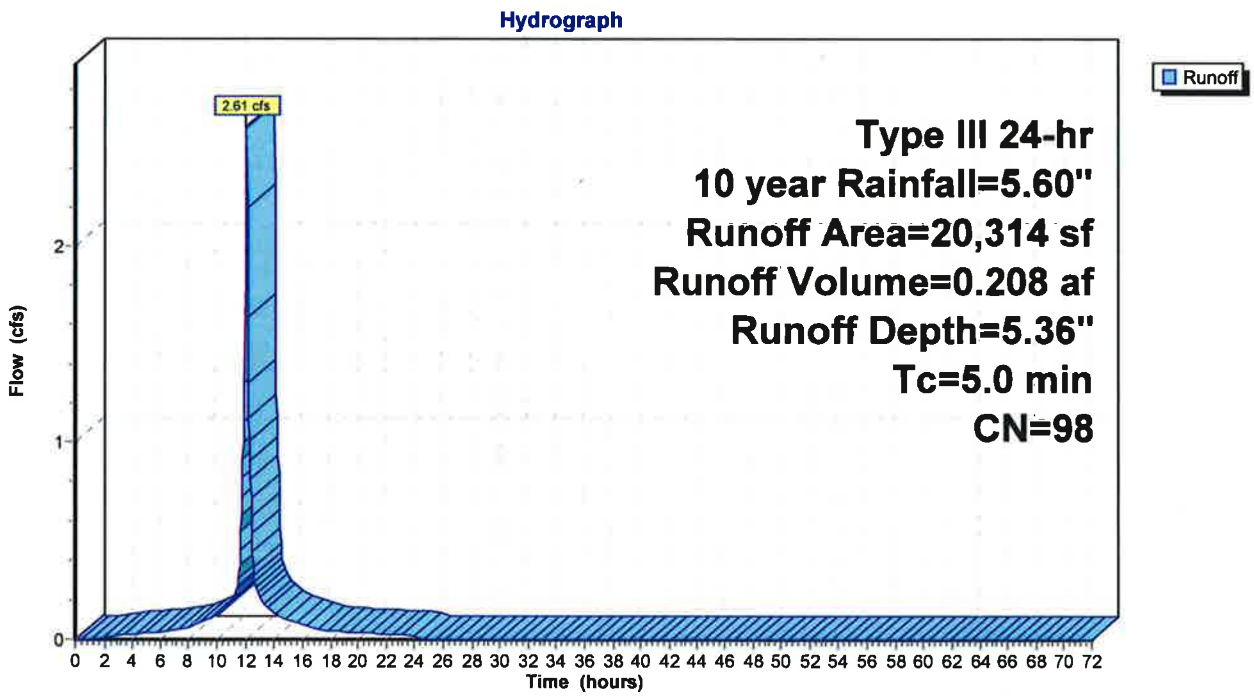
Runoff = 2.61 cfs @ 12.07 hrs, Volume= 0.208 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

Area (sf)	CN	Description
20,314	98	Roofs, HSG A
20,314		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4b: Lot 4 Rooftop - Treated Area



Summary for Subcatchment PS4c: (new Subcat)

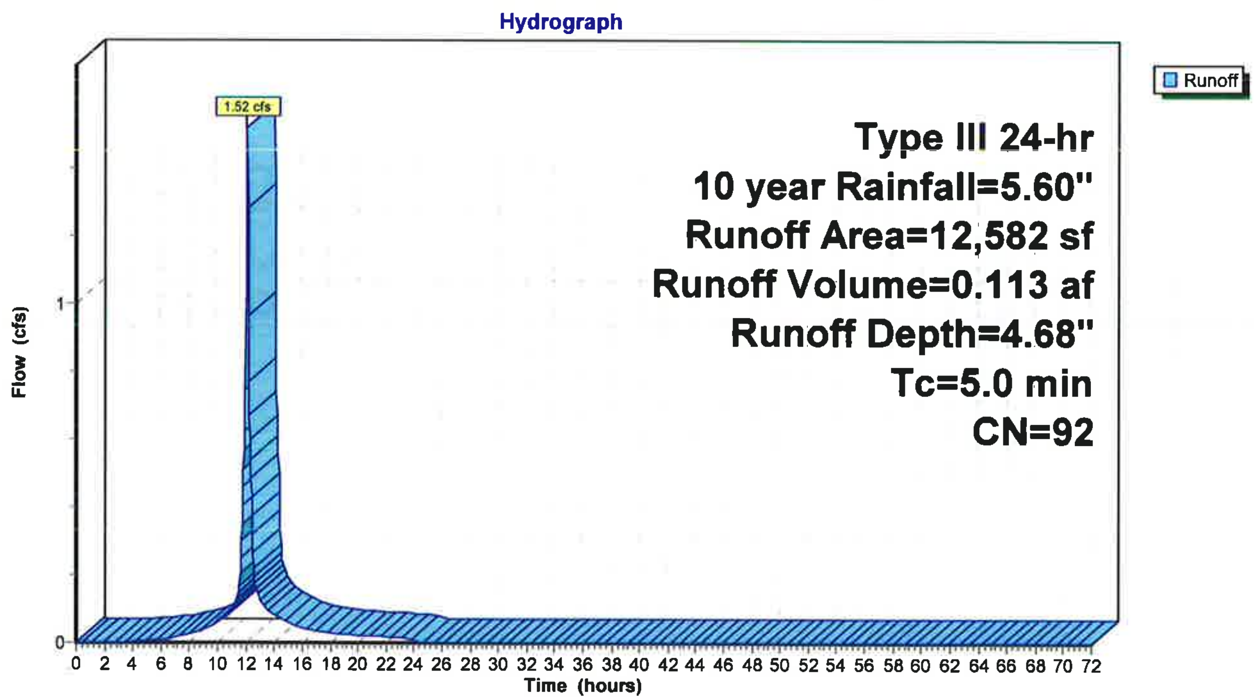
Runoff = 1.52 cfs @ 12.07 hrs, Volume= 0.113 af, Depth= 4.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

Area (sf)	CN	Description
6,553	98	Paved roads w/curbs & sewers, HSG A
4,679	98	Roofs, HSG A
1,350	39	>75% Grass cover, Good, HSG A
12,582	92	Weighted Average
1,350		10.73% Pervious Area
11,232		89.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment PS4c: (new Subcat)



Summary for Subcatchment PS4d: (new Subcat)

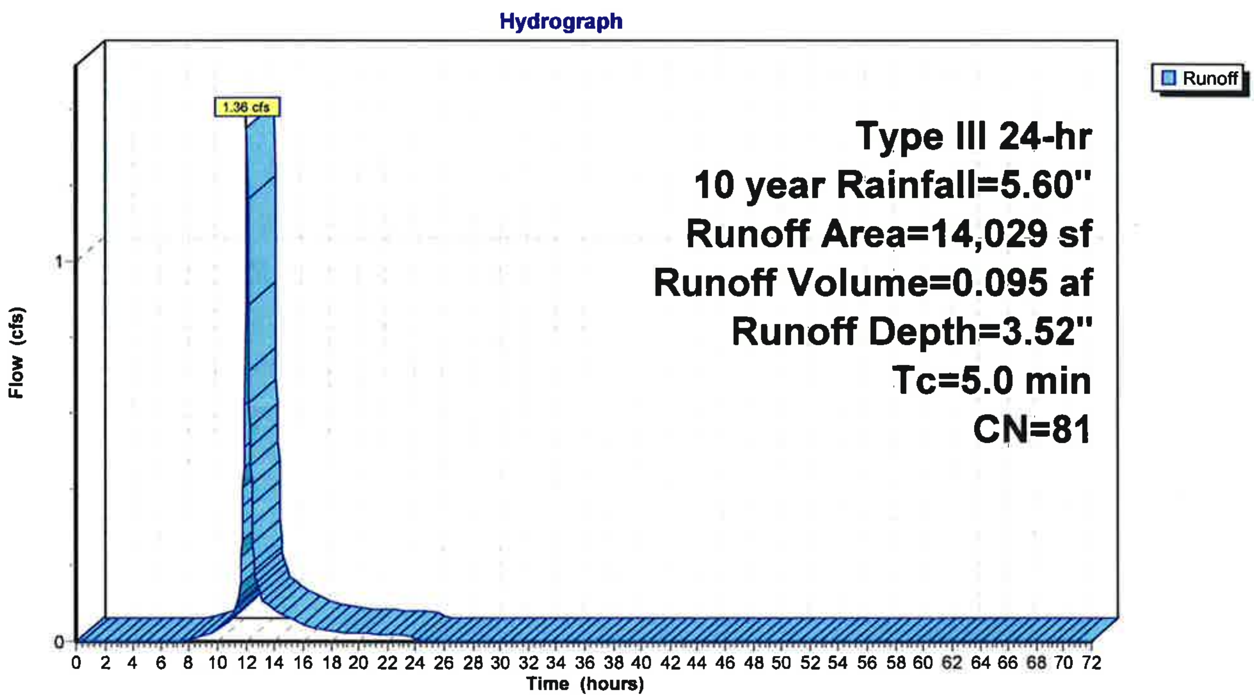
Runoff = 1.36 cfs @ 12.08 hrs, Volume= 0.095 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

Area (sf)	CN	Description
6,695	98	Paved roads w/curbs & sewers, HSG A
4,086	39	>75% Grass cover, Good, HSG A
2,262	98	Roofs, HSG A
986	98	Roofs, HSG A
14,029	81	Weighted Average
4,086		29.13% Pervious Area
9,943		70.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4d: (new Subcat)



Summary for Subcatchment PS4e: (new Subcat)

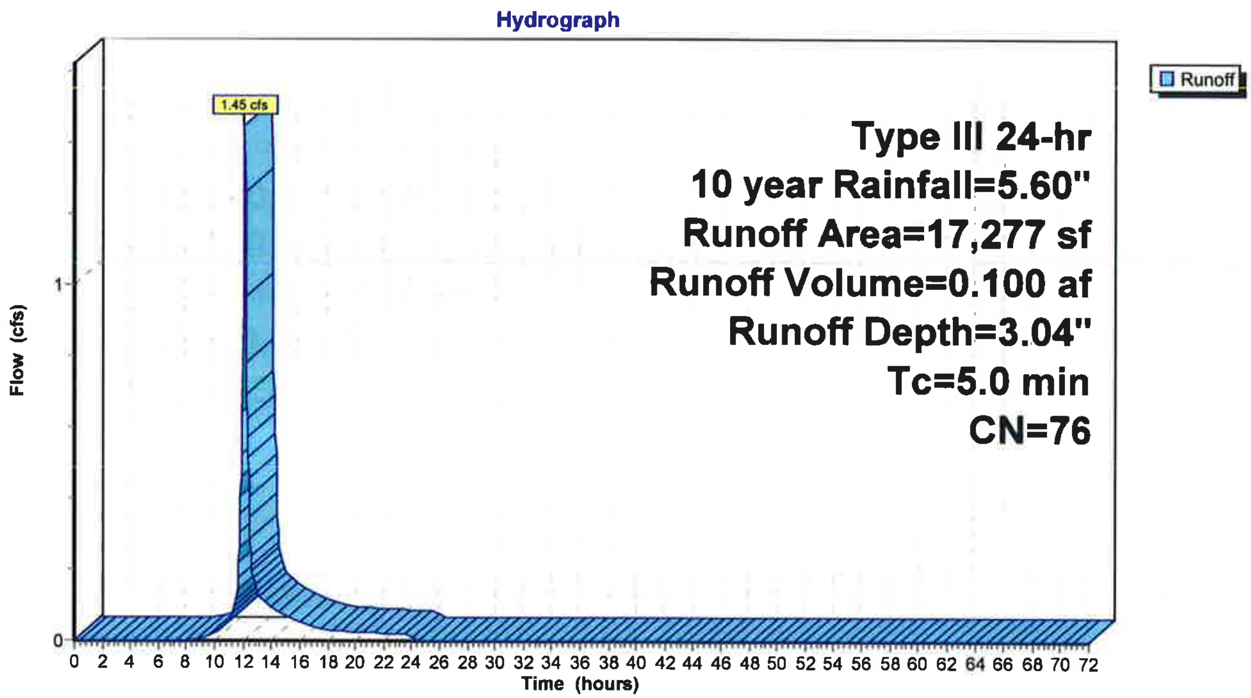
Runoff = 1.45 cfs @ 12.08 hrs, Volume= 0.100 af, Depth= 3.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

Area (sf)	CN	Description
9,743	98	Paved roads w/curbs & sewers, HSG A
961	98	Roofs, HSG A
2,279	39	>75% Grass cover, Good, HSG A
1,831	39	>75% Grass cover, Good, HSG A
2,463	39	>75% Grass cover, Good, HSG A
17,277	76	Weighted Average
6,573		38.04% Pervious Area
10,704		61.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4e: (new Subcat)



Summary for Subcatchment PS5:

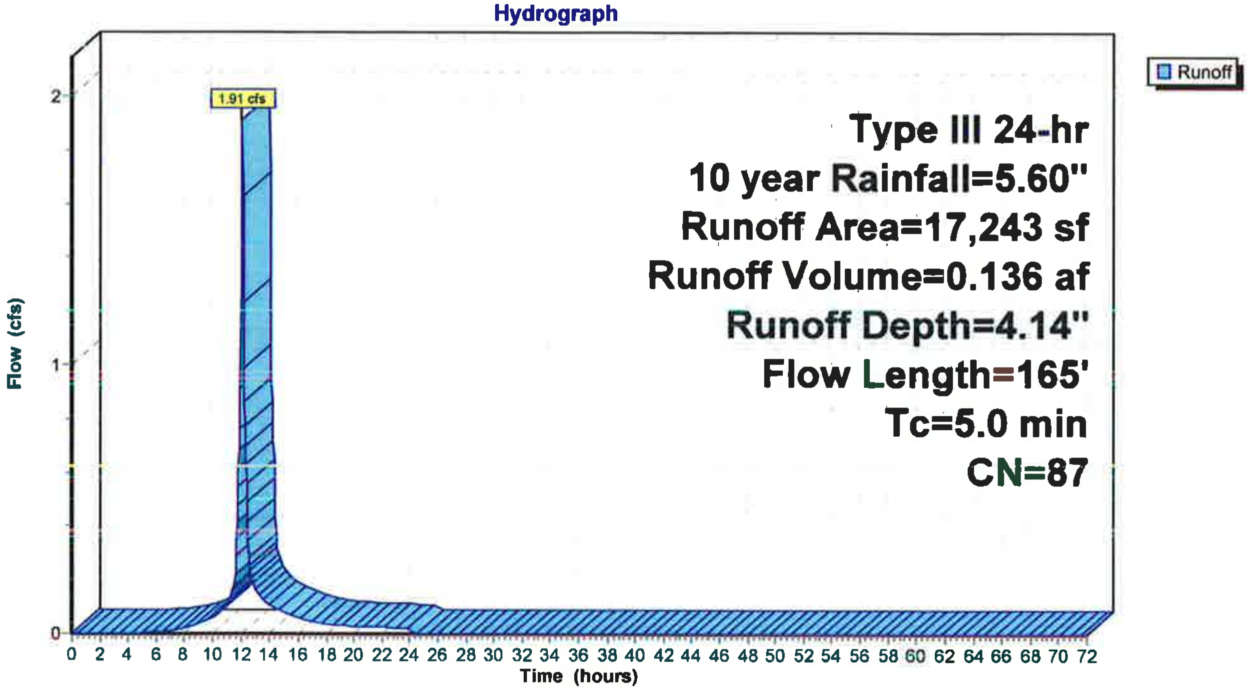
Runoff = 1.91 cfs @ 12.07 hrs, Volume= 0.136 af, Depth= 4.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	5,417	98	Roofs, HSG A
	7,124	98	Paved parking, HSG A
	2,814	30	Woods, Good, HSG A
*	1,888	98	Gravel surface, HSG A
	17,243	87	Weighted Average
	2,814		16.32% Pervious Area
	14,429		83.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	18	0.0278	2.68		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	27	0.2222	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	17	0.0050	0.68		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
0.7	103	0.0146	2.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	165	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS5:



Summary for Subcatchment PS6:

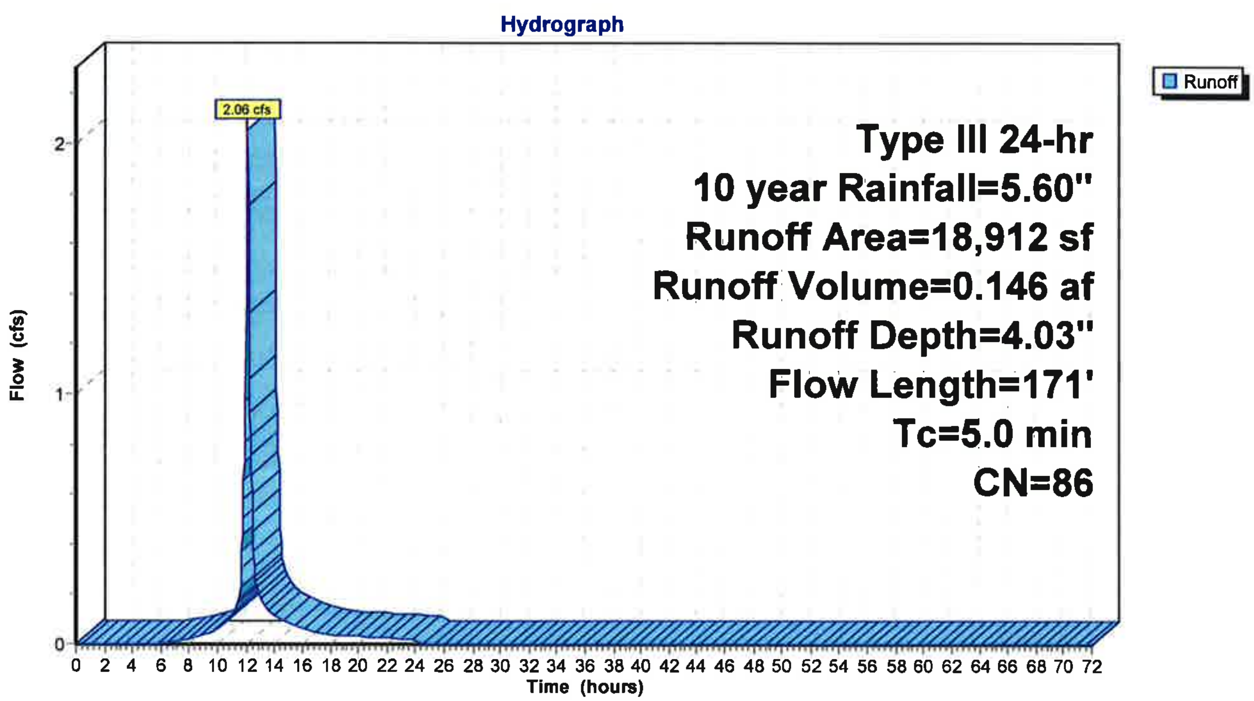
Runoff = 2.06 cfs @ 12.07 hrs, Volume= 0.146 af, Depth= 4.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	6,270	98	Roofs, HSG A
	6,874	98	Paved parking, HSG A
	3,205	30	Woods, Good, HSG A
	273	39	>75% Grass cover, Good, HSG A
*	2,290	98	Gravel surface, HSG A
	18,912	86	Weighted Average
	3,478		18.39% Pervious Area
	15,434		81.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	17	0.0294	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.3200	2.83		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	129	0.0155	2.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	171	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS6:



Summary for Subcatchment PS7:

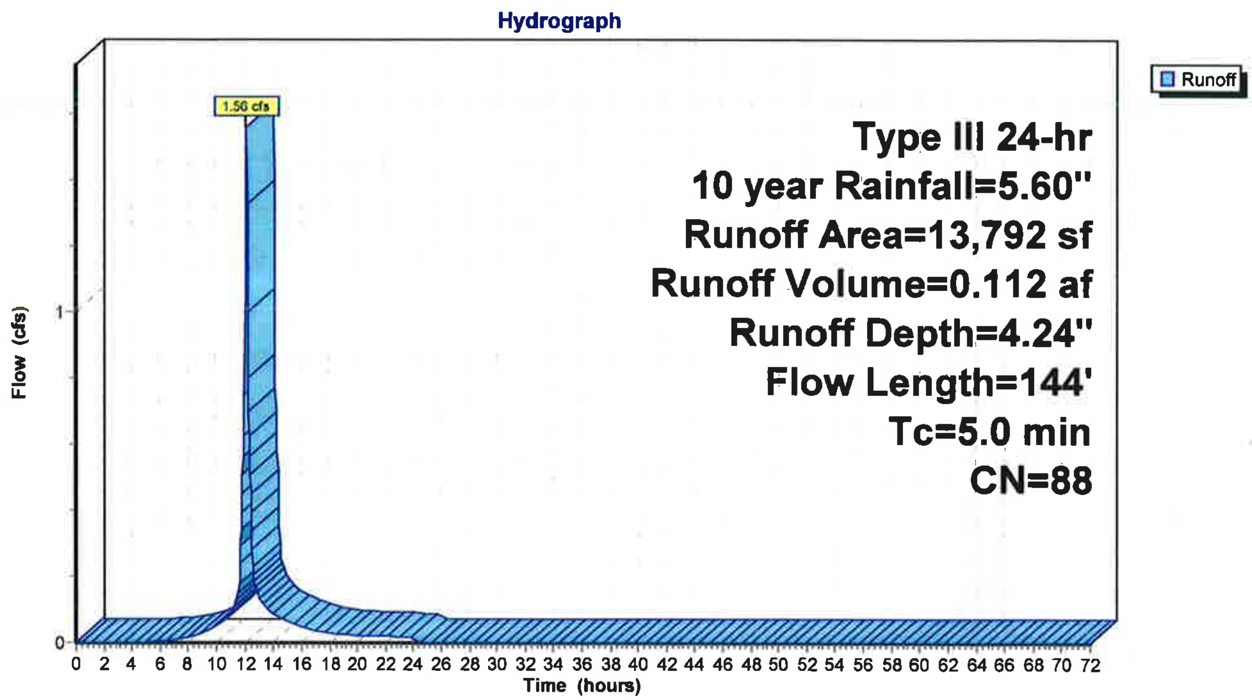
Runoff = 1.56 cfs @ 12.07 hrs, Volume= 0.112 af, Depth= 4.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	1,722	98	Roofs, HSG A
	8,479	98	Paved parking, HSG A
	1,931	30	Woods, Good, HSG A
*	1,660	98	Gravel surface, HSG A
	13,792	88	Weighted Average
	1,931		14.00% Pervious Area
	11,861		86.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	19	0.0263	2.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	21	0.1548	1.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	104	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	144	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS7:



Summary for Subcatchment PS8:

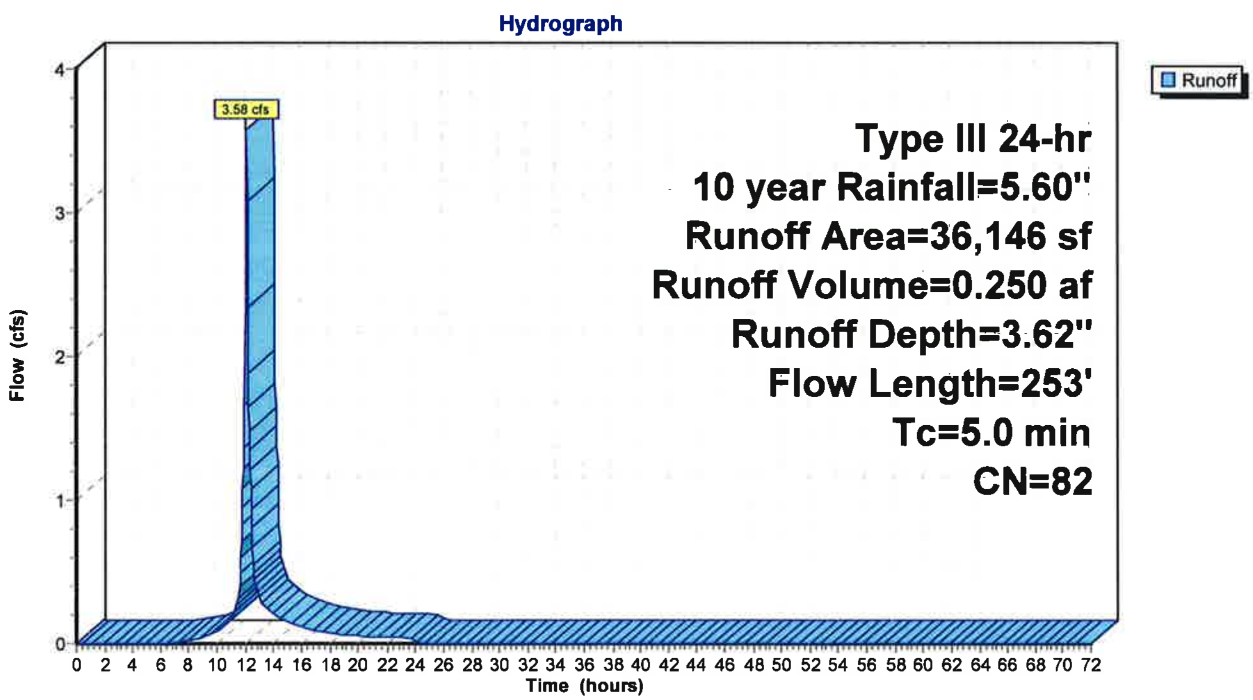
Runoff = 3.58 cfs @ 12.08 hrs, Volume= 0.250 af, Depth= 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	3,914	98	Roofs, HSG A
	17,049	98	Paved parking, HSG A
	6,260	30	Woods, Good, HSG A
	2,338	39	>75% Grass cover, Good, HSG A
*	6,585	98	Gravel surface, HSG A
	36,146	82	Weighted Average
	8,598		23.79% Pervious Area
	27,548		76.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	32	0.1406	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	204	0.0036	1.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.2	253	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS8:



Summary for Subcatchment PS9:

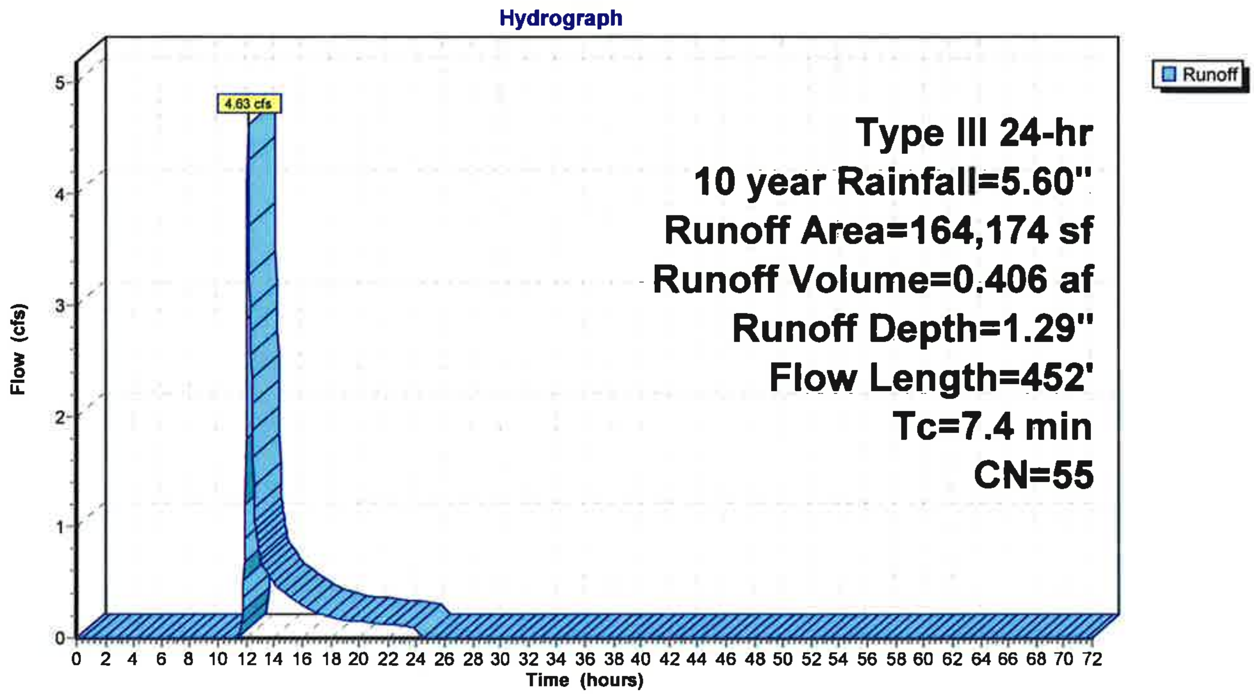
Runoff = 4.63 cfs @ 12.13 hrs, Volume= 0.406 af, Depth= 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 10 year Rainfall=5.60"

	Area (sf)	CN	Description
	7,387	98	Roofs, HSG A
	1,171	98	Paved parking, HSG A
	14,477	32	Woods/grass comb., Good, HSG A
*	234	98	Unconnected pavement, sidewalk, HSG A
	71,360	30	Woods, Good, HSG A
	19,936	39	>75% Grass cover, Good, HSG A
*	49,609	98	Gravel surface, HSG A
	164,174	55	Weighted Average
	105,773		64.43% Pervious Area
	58,401		35.57% Impervious Area
	234		0.40% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	22	0.0227	2.43		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	36	0.1239	1.76		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	40	0.0375	3.93		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	134	0.0112	0.53		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	86	0.0116	1.73		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	134	0.0672	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.4	452	Total			

Subcatchment PS9:



Summary for Pond 1P: Parking Lot Deep Sump Catch Basin

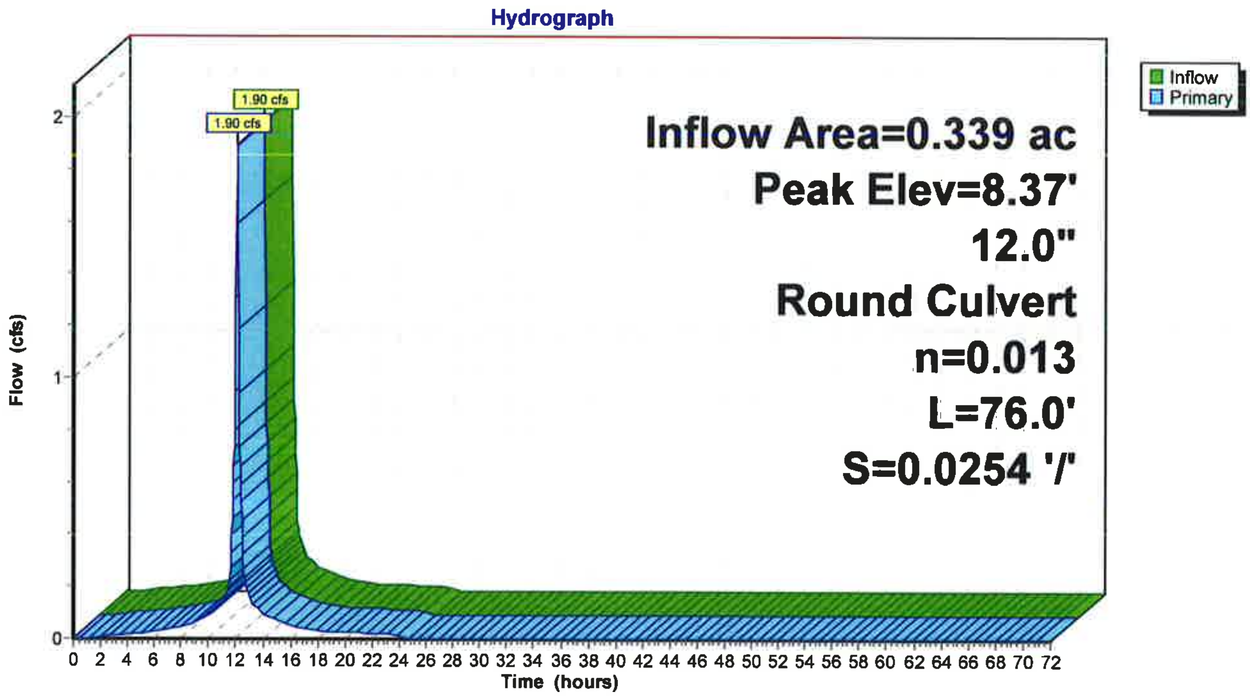
Inflow Area =	0.339 ac,100.00% Impervious,	Inflow Depth = 5.36"	for 10 year event		
Inflow =	1.90 cfs @	12.07 hrs,	Volume=	0.151 af	
Outflow =	1.90 cfs @	12.07 hrs,	Volume=	0.151 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.90 cfs @	12.07 hrs,	Volume=	0.151 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 8.37' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.50'	**12.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.50' / 5.57' S= 0.0254 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.87 cfs @ 12.07 hrs HW=8.35' TW=7.65' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.87 cfs @ 3.56 fps)

Pond 1P: Parking Lot Deep Sump Catch Basin



Summary for Pond 2P: ENVIRONMENT 21 UNISTORM MODEL 8R

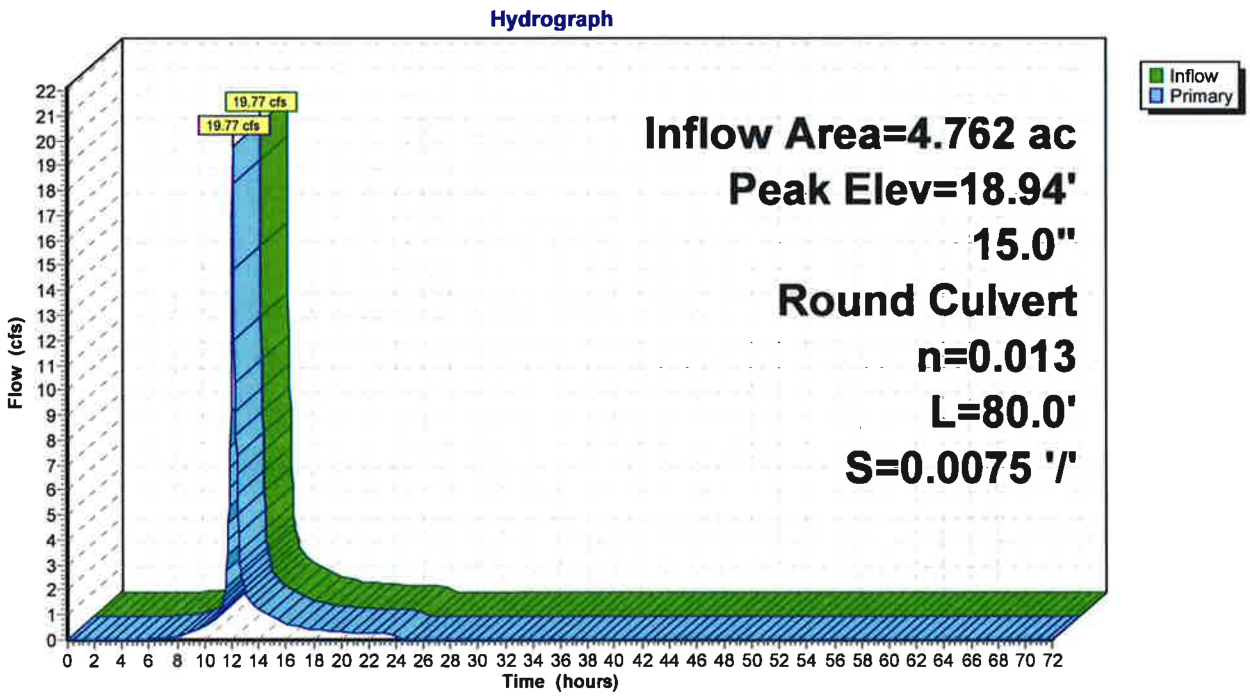
Inflow Area =	4.762 ac,	71.85% Impervious,	Inflow Depth = 3.71"	for 10 year event	
Inflow =	19.77 cfs @	12.09 hrs,	Volume=	1.473 af	
Outflow =	19.77 cfs @	12.09 hrs,	Volume=	1.473 af,	Atten= 0%, Lag= 0.0 min
Primary =	19.77 cfs @	12.09 hrs,	Volume=	1.473 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 18.94' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.73'	**15.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 4.73' / 4.13' S= 0.0075 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=19.52 cfs @ 12.09 hrs HW=18.60' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 19.52 cfs @ 15.91 fps)

Pond 2P: ENVIRONMENT 21 UNISTORM MODEL 8R



Summary for Pond 4P: ENV 21 UNISTORM MODEL 5R

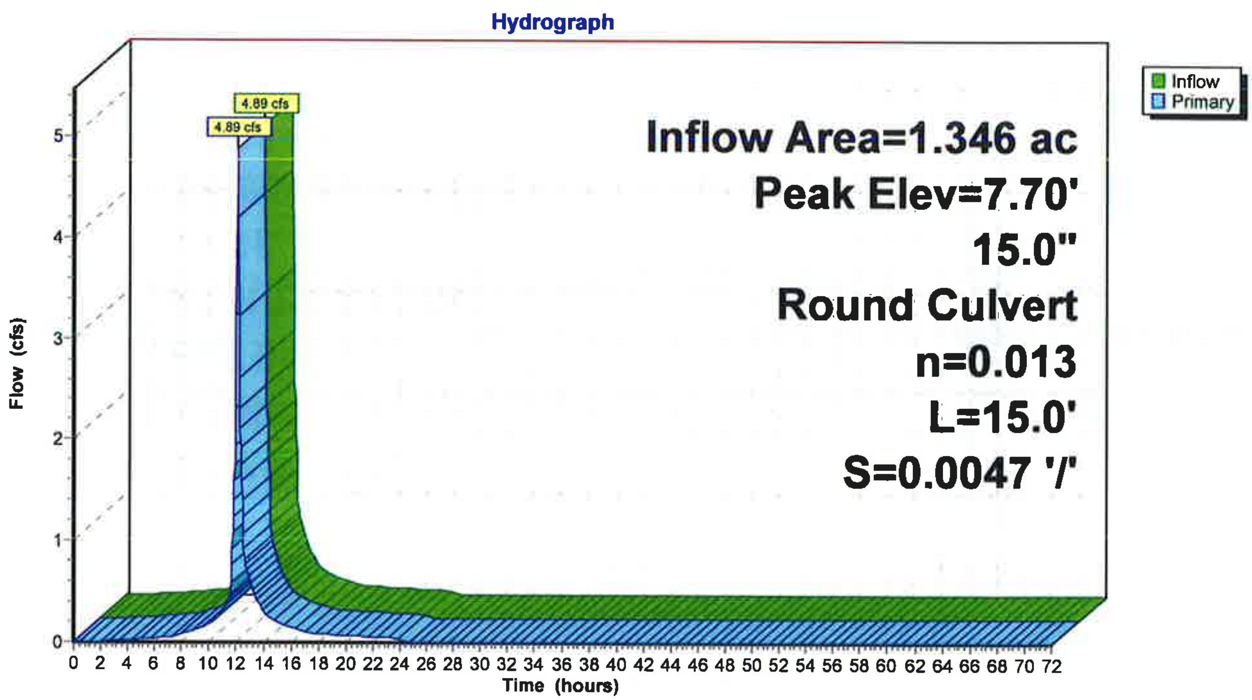
Inflow Area =	1.346 ac, 79.52% Impervious,	Inflow Depth = 3.43"	for 10 year event	
Inflow =	4.89 cfs @	12.08 hrs, Volume=	0.384 af	
Outflow =	4.89 cfs @	12.08 hrs, Volume=	0.384 af,	Atten= 0%, Lag= 0.0 min
Primary =	4.89 cfs @	12.08 hrs, Volume=	0.384 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 7.70' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.70'	**15.0" Round Culvert** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.70' / 5.63' S= 0.0047 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.84 cfs @ 12.08 hrs HW=7.67' TW=7.00' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 4.84 cfs @ 3.94 fps)

Pond 4P: ENV 21 UNISTORM MODEL 5R



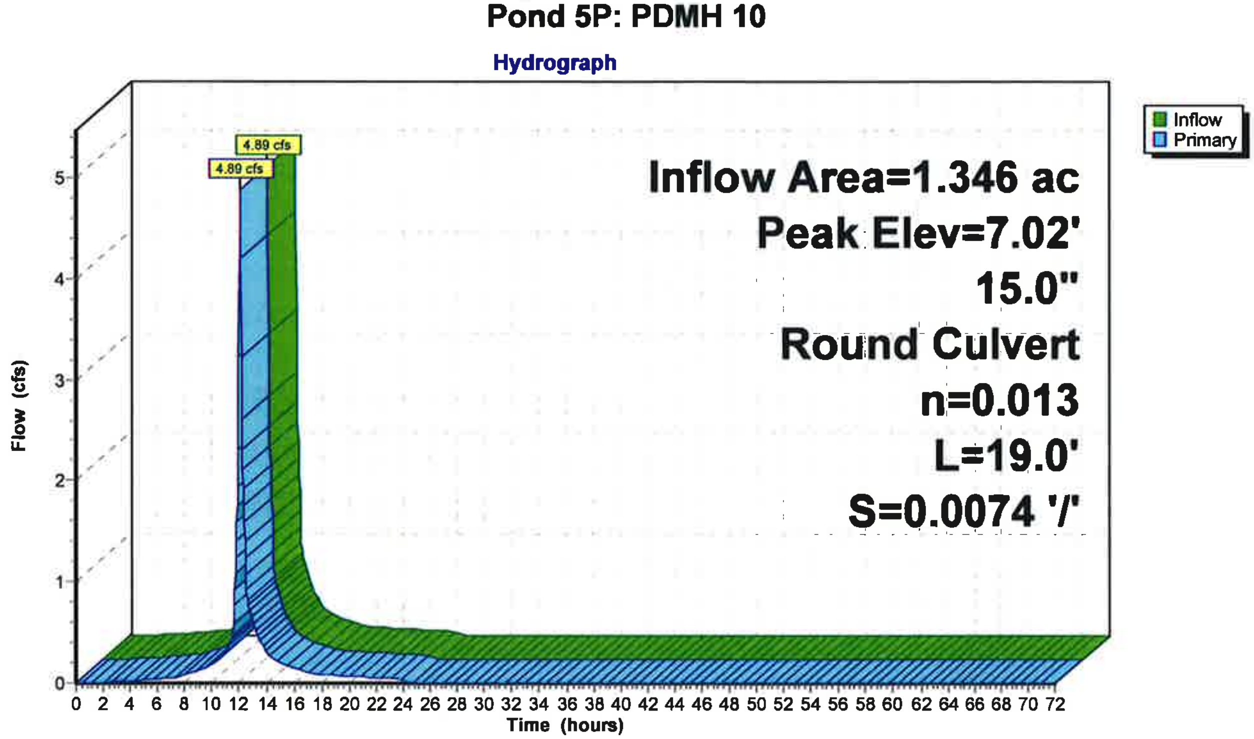
Summary for Pond 5P: PDMH 10

Inflow Area =	1.346 ac,	79.52% Impervious,	Inflow Depth = 3.43"	for 10 year event	
Inflow =	4.89 cfs @	12.08 hrs,	Volume=	0.384 af	
Outflow =	4.89 cfs @	12.08 hrs,	Volume=	0.384 af,	Atten= 0%, Lag= 0.0 min
Primary =	4.89 cfs @	12.08 hrs,	Volume=	0.384 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 7.02' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.53'	**15.0" Round Culvert** L= 19.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.53' / 5.39' S= 0.0074 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.84 cfs @ 12.08 hrs HW=7.00' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 4.84 cfs @ 4.21 fps)



Summary for Pond 6P: Roofline Dripe Edge Filter Strip

Inflow Area =	0.466 ac,100.00% Impervious,	Inflow Depth = 5.36"	for 10 year event	
Inflow =	2.61 cfs @	12.07 hrs, Volume=	0.208 af	
Outflow =	2.57 cfs @	12.09 hrs, Volume=	0.208 af,	Atten= 2%, Lag= 0.8 min
Primary =	2.57 cfs @	12.09 hrs, Volume=	0.208 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 10.15' @ 12.08 hrs Surf.Area= 0.007 ac Storage= 0.003 af

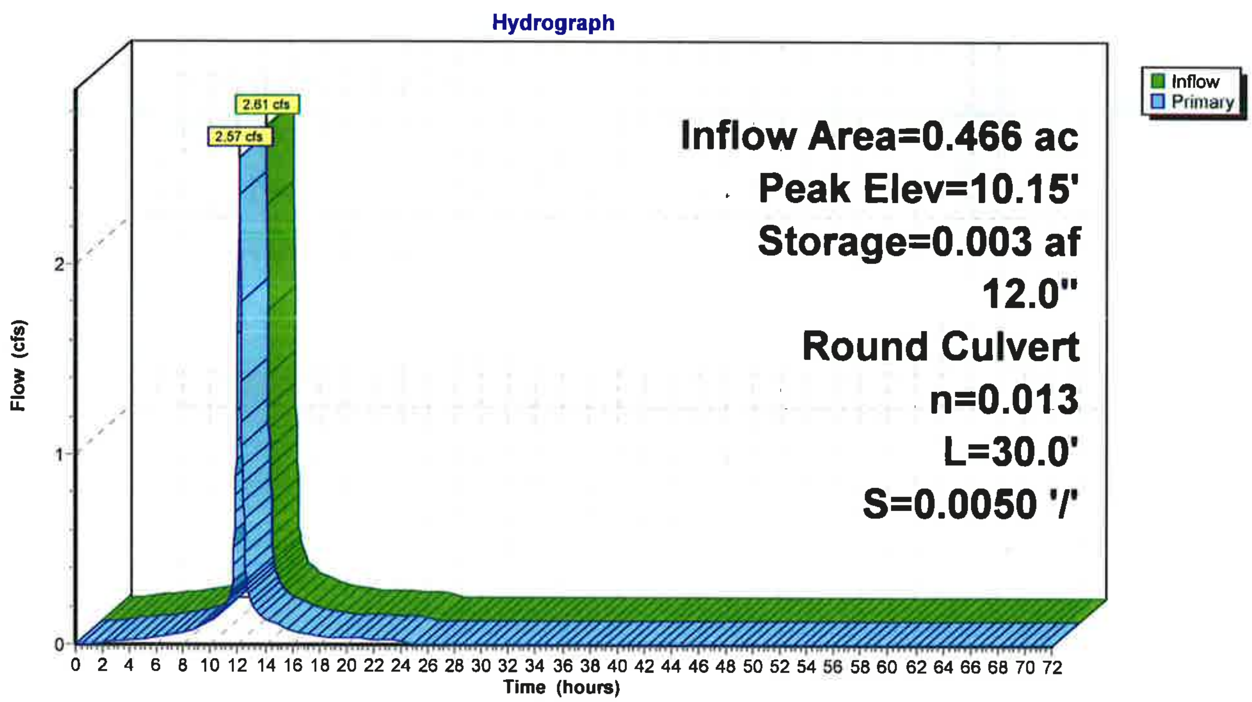
Plug-Flow detention time= 4.0 min calculated for 0.208 af (100% of inflow)
Center-of-Mass det. time= 3.2 min (748.5 - 745.3)

Volume	Invert	Avail.Storage	Storage Description
#1	9.00'	0.006 af	**2.00'W x 163.00'L x 2.00'H Prismatoid** 0.015 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	9.00'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 9.00' / 8.85' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.54 cfs @ 12.09 hrs HW=10.14' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 2.54 cfs @ 3.55 fps)

Pond 6P: Roofline Dripe Edge Filter Strip



Summary for Pond 1264: Separated Drain

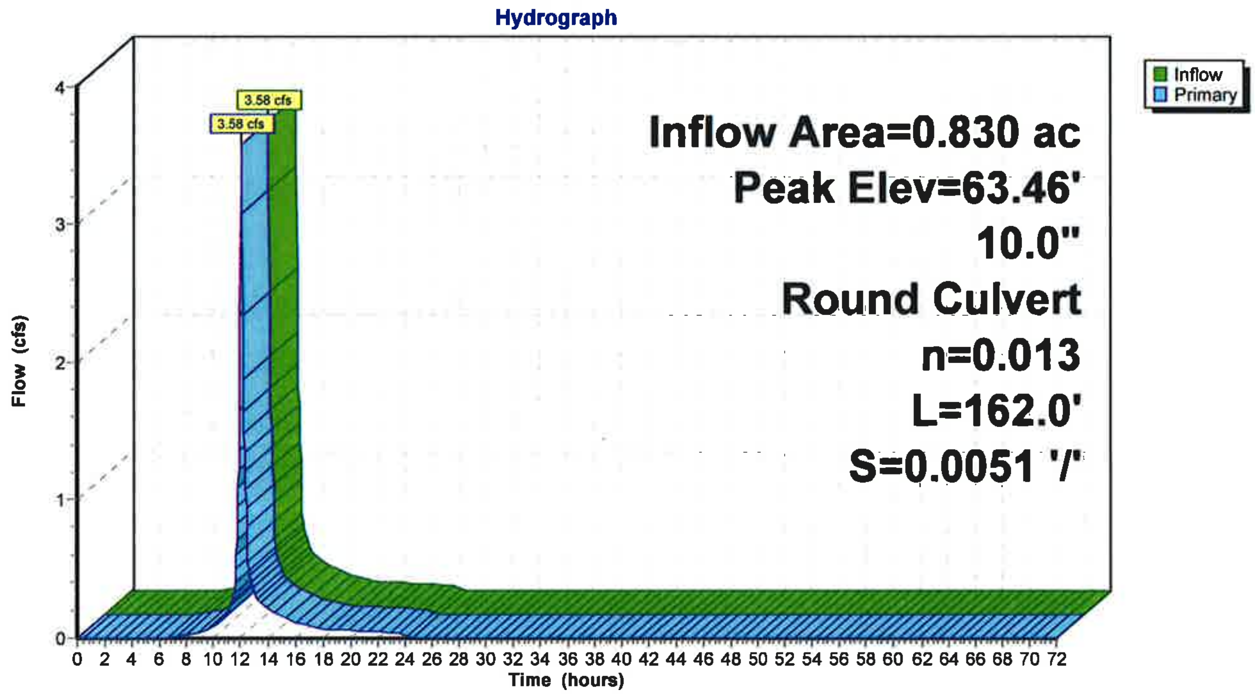
Inflow Area =	0.830 ac, 76.21% Impervious,	Inflow Depth = 3.62"	for 10 year event	
Inflow =	3.58 cfs @	12.08 hrs, Volume=	0.250 af	
Outflow =	3.58 cfs @	12.08 hrs, Volume=	0.250 af,	Atten= 0%, Lag= 0.0 min
Primary =	3.58 cfs @	12.08 hrs, Volume=	0.250 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 63.46' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.19'	**10.0" Round Culvert** L= 162.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.19' / 7.37' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=3.55 cfs @ 12.08 hrs HW=62.25' TW=57.00' (Dynamic Tailwater)
1=Culvert (Outlet Controls 3.55 cfs @ 6.50 fps)

Pond 1264: Separated Drain



Summary for Pond CB 1237:

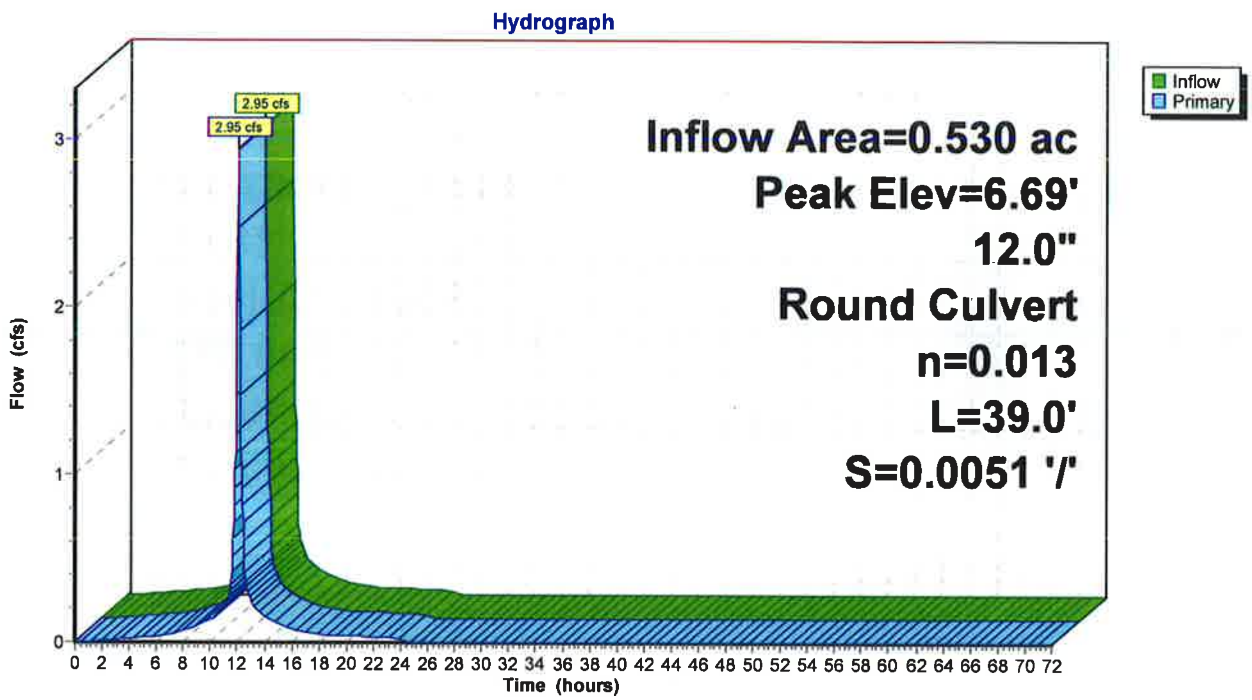
Inflow Area =	0.530 ac,	98.87% Impervious,	Inflow Depth = 5.25"	for 10 year event	
Inflow =	2.95 cfs @	12.07 hrs,	Volume=	0.232 af	
Outflow =	2.95 cfs @	12.07 hrs,	Volume=	0.232 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.95 cfs @	12.07 hrs,	Volume=	0.232 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 6.69' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.29'	**12.0" Round Culvert** L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.29' / 5.09' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.86 cfs @ 12.07 hrs HW=6.65' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 2.86 cfs @ 3.64 fps)

Pond CB 1237:



Summary for Pond CB 1239: Separated Drain

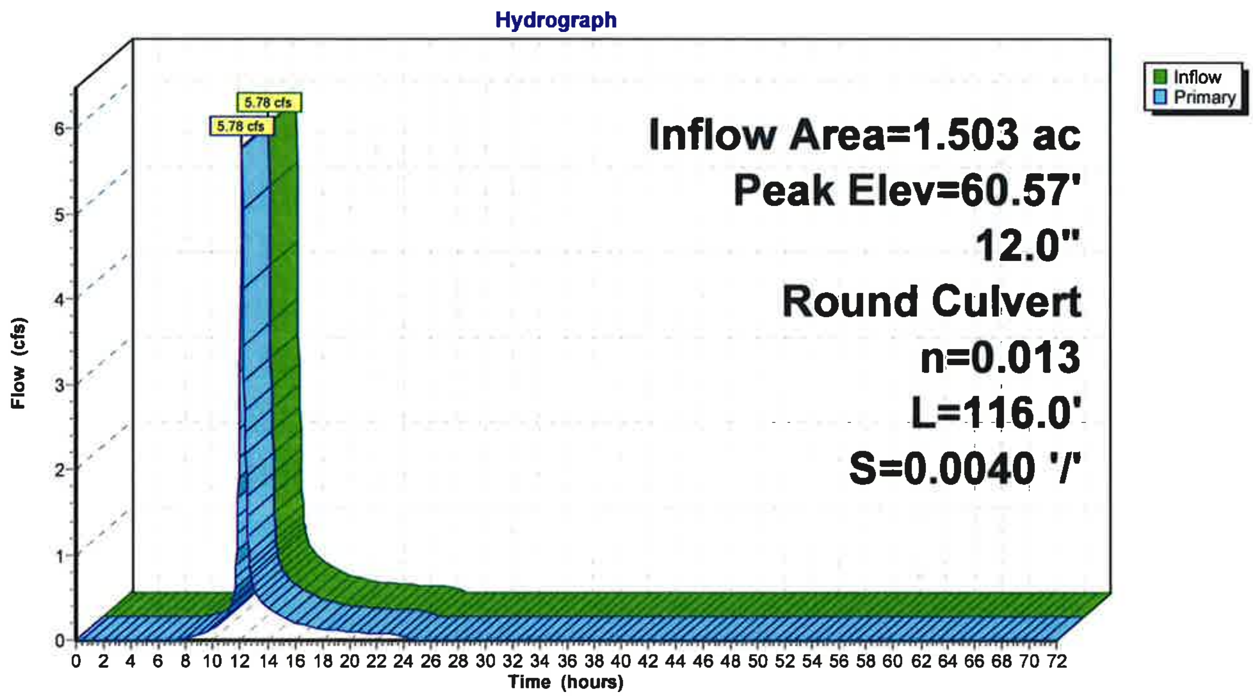
Inflow Area =	1.503 ac, 65.78% Impervious,	Inflow Depth = 3.52"	for 10 year event
Inflow =	5.78 cfs @ 12.11 hrs,	Volume=	0.441 af
Outflow =	5.78 cfs @ 12.11 hrs,	Volume=	0.441 af, Atten= 0%, Lag= 0.0 min
Primary =	5.78 cfs @ 12.11 hrs,	Volume=	0.441 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 60.57' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.26'	**12.0" Round Culvert** L= 116.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.26' / 5.80' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=5.70 cfs @ 12.11 hrs HW=55.84' TW=51.64' (Dynamic Tailwater)
1=Culvert (Outlet Controls 5.70 cfs @ 7.25 fps)

Pond CB 1239: Separated Drain



Summary for Pond CB 1240: Separated Drain

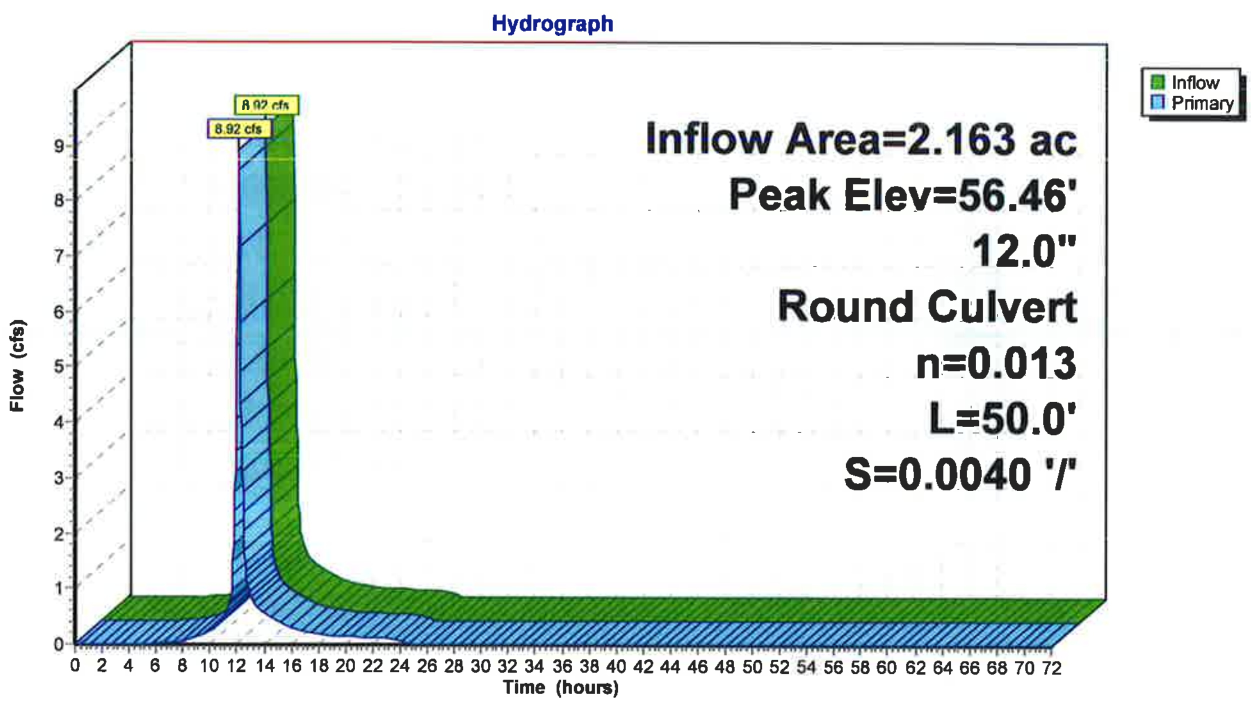
Inflow Area = 2.163 ac, 71.14% Impervious, Inflow Depth = 3.77" for 10 year event
Inflow = 8.92 cfs @ 12.09 hrs, Volume= 0.680 af
Outflow = 8.92 cfs @ 12.09 hrs, Volume= 0.680 af, Atten= 0%, Lag= 0.0 min
Primary = 8.92 cfs @ 12.09 hrs, Volume= 0.680 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 56.46' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.80'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.80' / 5.60' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=8.73 cfs @ 12.09 hrs HW=54.03' TW=48.14' (Dynamic Tailwater)
└1=**Culvert** (Outlet Controls 8.73 cfs @ 11.12 fps)

Pond CB 1240: Separated Drain



Summary for Pond CB 1241: Separated Drain

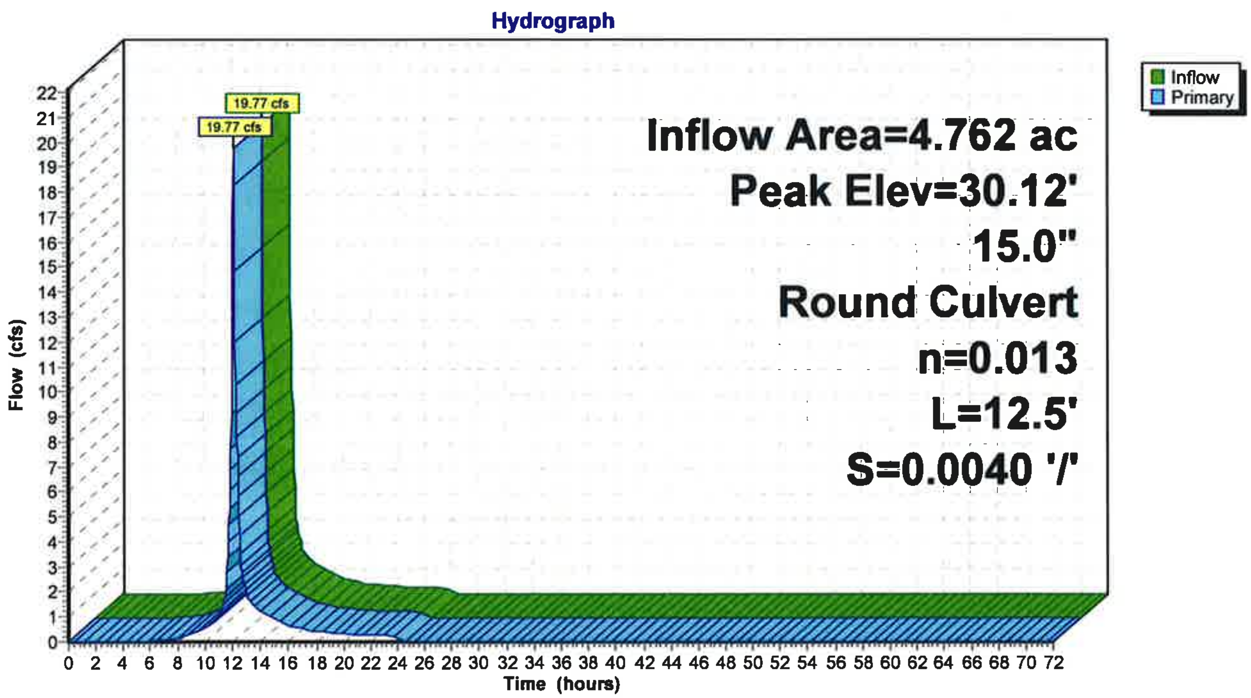
Inflow Area =	4.762 ac,	71.85% Impervious,	Inflow Depth = 3.71"	for 10 year event	
Inflow =	19.77 cfs @	12.09 hrs,	Volume=	1.473 af	
Outflow =	19.77 cfs @	12.09 hrs,	Volume=	1.473 af,	Atten= 0%, Lag= 0.0 min
Primary =	19.77 cfs @	12.09 hrs,	Volume=	1.473 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 30.12' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.88'	**15.0" Round Culvert** L= 12.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 4.88' / 4.83' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=19.52 cfs @ 12.09 hrs HW=29.51' TW=18.60' (Dynamic Tailwater)
1=Culvert (Inlet Controls 19.52 cfs @ 15.91 fps)

Pond CB 1241: Separated Drain



Summary for Pond CB 1242 / PDMH 3: Separated Drain

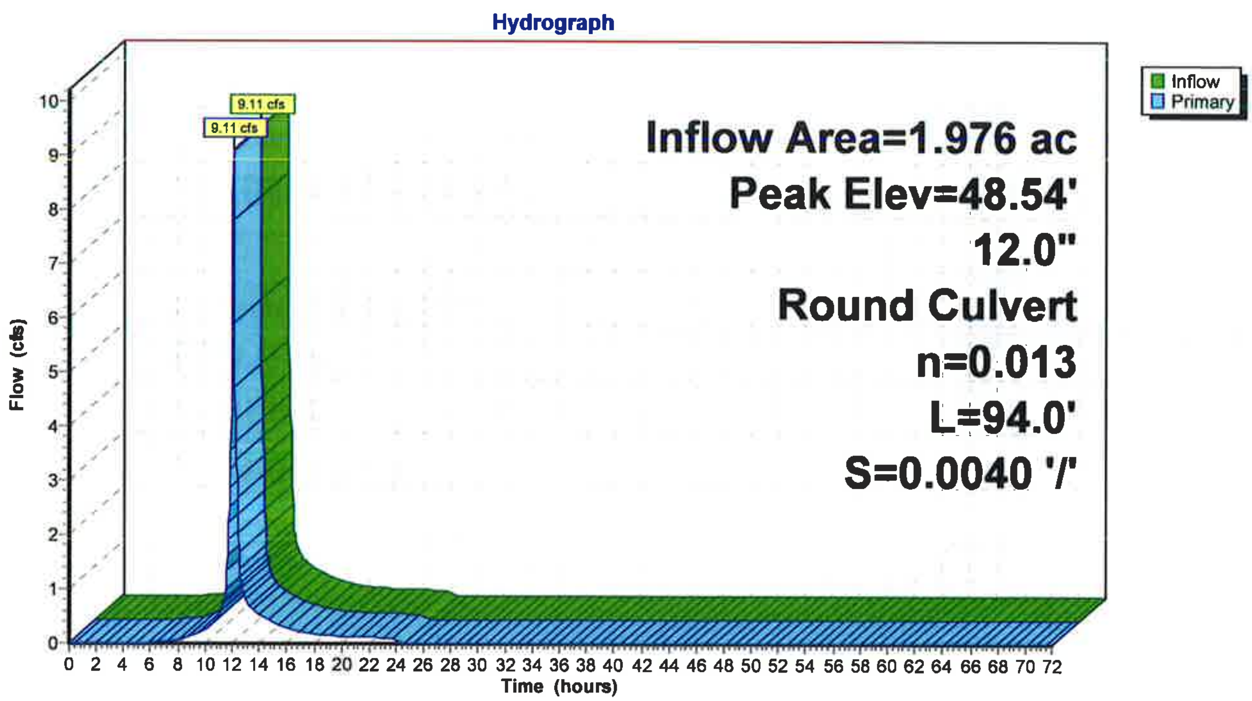
Inflow Area =	1.976 ac,	80.46% Impervious,	Inflow Depth = 3.91"	for 10 year event	
Inflow =	9.11 cfs @	12.08 hrs,	Volume=	0.645 af	
Outflow =	9.11 cfs @	12.08 hrs,	Volume=	0.645 af,	Atten= 0%, Lag= 0.0 min
Primary =	9.11 cfs @	12.08 hrs,	Volume=	0.645 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 48.54' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.36'	**12.0" Round Culvert** L= 94.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.36' / 5.98' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=9.01 cfs @ 12.08 hrs HW=47.33' TW=38.24' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 9.01 cfs @ 11.47 fps)

Pond CB 1242 / PDMH 3: Separated Drain



Summary for Pond CB 1243 / PDMH 4: Separated Drain

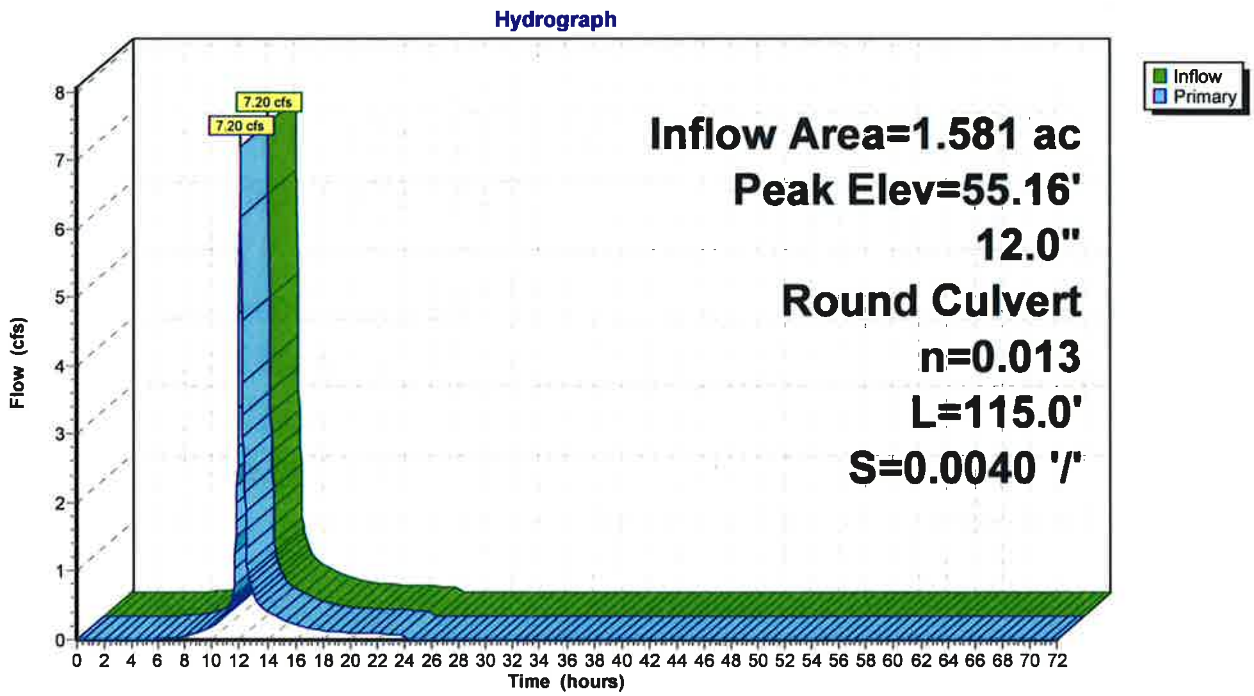
Inflow Area =	1.581 ac, 79.66% Impervious, Inflow Depth = 3.86"	for 10 year event	
Inflow =	7.20 cfs @ 12.08 hrs, Volume=	0.508 af	
Outflow =	7.20 cfs @ 12.08 hrs, Volume=	0.508 af, Atten= 0%, Lag= 0.0 min	
Primary =	7.20 cfs @ 12.08 hrs, Volume=	0.508 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 55.16' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.82'	**12.0" Round Culvert** L= 115.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.82' / 6.36' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=7.12 cfs @ 12.08 hrs HW=53.88' TW=47.37' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 7.12 cfs @ 9.06 fps)

Pond CB 1243 / PDMH 4: Separated Drain



Summary for Pond CB 1244: Separated Drain

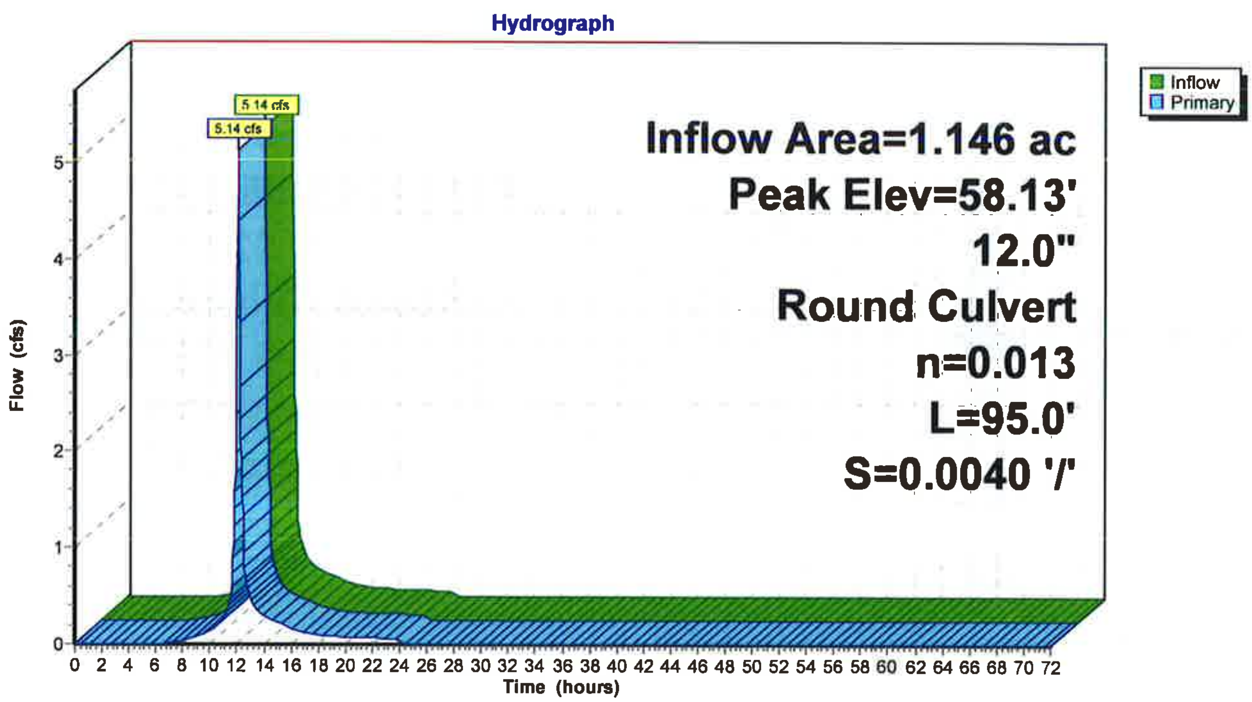
Inflow Area =	1.146 ac,	78.92% Impervious,	Inflow Depth = 3.79"	for 10 year event
Inflow =	5.14 cfs @	12.08 hrs, Volume=	0.362 af	
Outflow =	5.14 cfs @	12.08 hrs, Volume=	0.362 af,	Atten= 0%, Lag= 0.0 min
Primary =	5.14 cfs @	12.08 hrs, Volume=	0.362 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 58.13' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.20'	**12.0" Round Culvert** L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.20' / 6.82' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=5.09 cfs @ 12.08 hrs HW=56.86' TW=53.94' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 5.09 cfs @ 6.48 fps)

Pond CB 1244: Separated Drain



Summary for Pond OCS #1: Rain Garden

Inflow Area = 0.397 ac, 61.96% Impervious, Inflow Depth = 3.04" for 10 year event
Inflow = 1.45 cfs @ 12.08 hrs, Volume= 0.100 af
Outflow = 0.36 cfs @ 12.47 hrs, Volume= 0.100 af, Atten= 75%, Lag= 23.6 min
Discarded = 0.14 cfs @ 12.47 hrs, Volume= 0.075 af
Primary = 0.22 cfs @ 12.47 hrs, Volume= 0.026 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 10.31' @ 12.47 hrs Surf.Area= 1,718 sf Storage= 1,254 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 34.6 min (860.7 - 826.2)

Volume	Invert	Avail.Storage	Storage Description
#1	9.50'	2,543 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

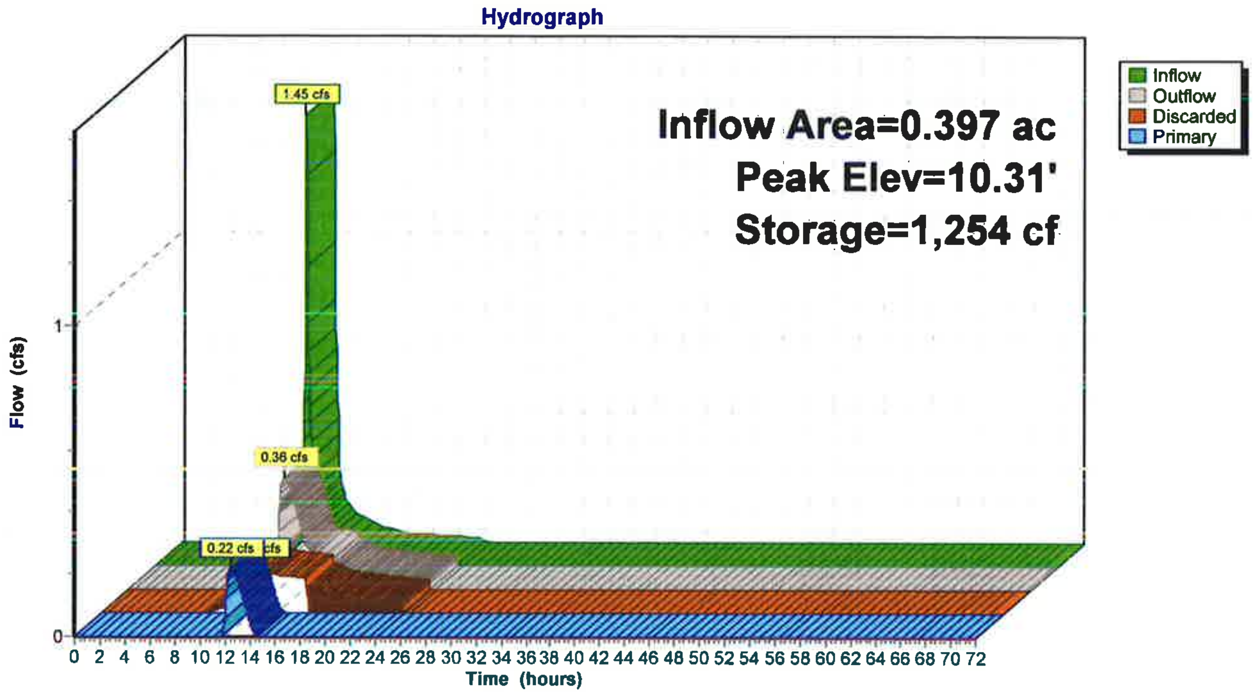
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
9.50	1,375	133.0	0	0	1,375
11.00	2,038	161.7	2,543	2,543	2,083

Device	Routing	Invert	Outlet Devices
#1	Primary	8.25'	**12.0" Round Culvert** L= 240.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.25' / 7.05' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	9.75'	**2.0" Vert. Orifice/Grate X 3.00** C= 0.600
#3	Device 1	10.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	9.50'	**3.500 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.14 cfs @ 12.47 hrs HW=10.31' (Free Discharge)
└─**4=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.22 cfs @ 12.47 hrs HW=10.31' TW=7.41' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.22 cfs of 3.15 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.22 cfs @ 3.33 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond OCS #1: Rain Garden



Summary for Pond PCB 11: New Roadway Closed Drainage System

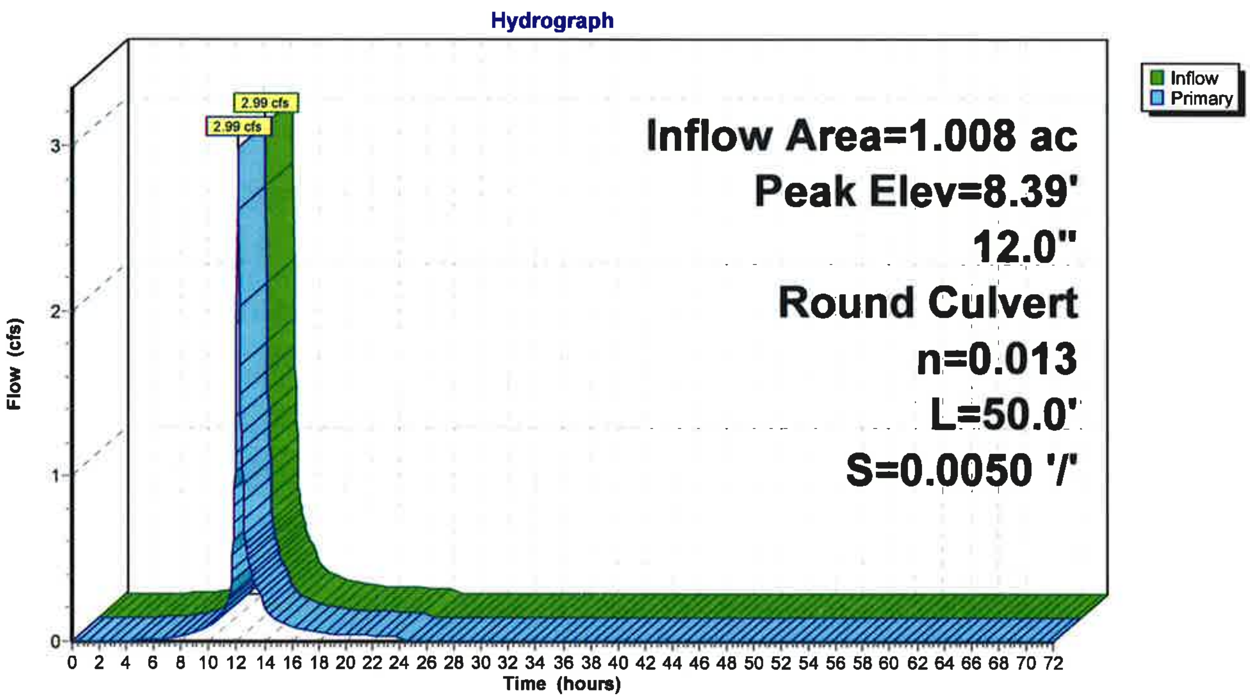
Inflow Area =	1.008 ac, 72.64% Impervious, Inflow Depth = 2.78" for 10 year event			
Inflow =	2.99 cfs @	12.08 hrs,	Volume=	0.233 af
Outflow =	2.99 cfs @	12.08 hrs,	Volume=	0.233 af, Atten= 0%, Lag= 0.0 min
Primary =	2.99 cfs @	12.08 hrs,	Volume=	0.233 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 8.39' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.95'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.95' / 5.70' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.98 cfs @ 12.08 hrs HW=8.37' TW=7.69' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.98 cfs @ 3.79 fps)

Pond PCB 11: New Roadway Closed Drainage System



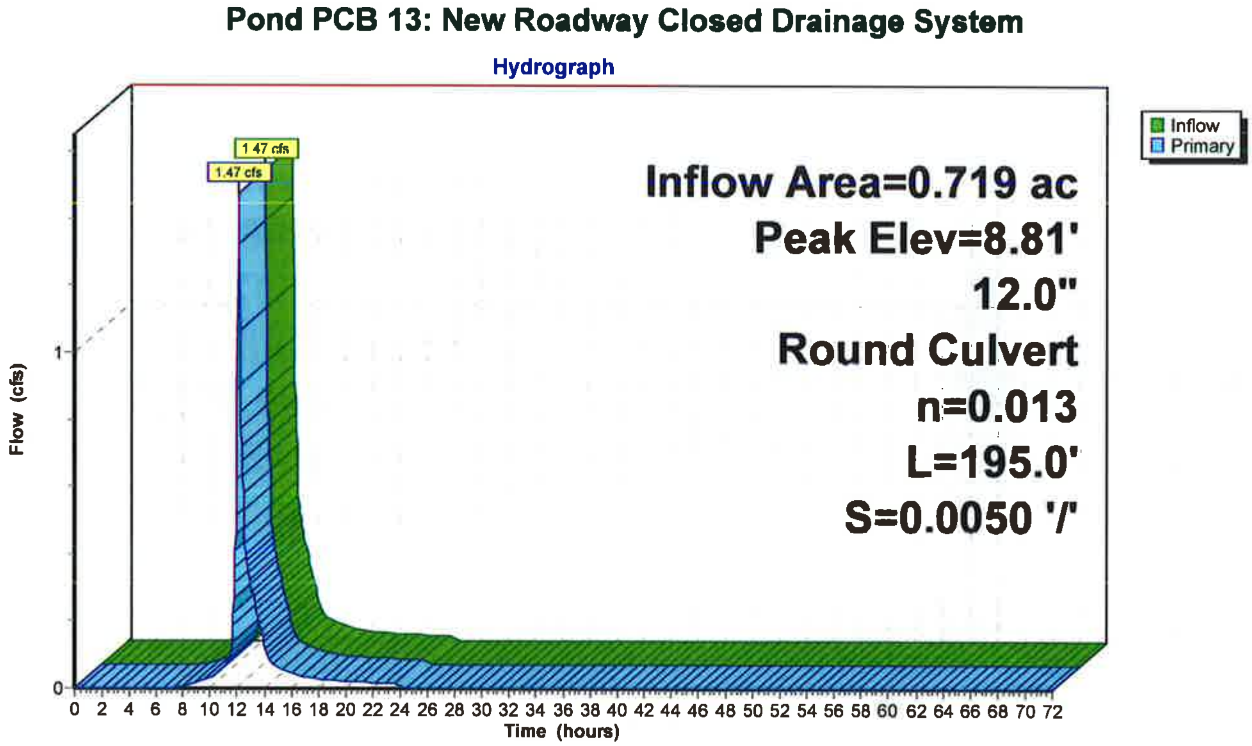
Summary for Pond PCB 13: New Roadway Closed Drainage System

Inflow Area =	0.719 ac, 65.95% Impervious, Inflow Depth = 2.01"	for 10 year event	
Inflow =	1.47 cfs @ 12.08 hrs, Volume=	0.120 af	
Outflow =	1.47 cfs @ 12.08 hrs, Volume=	0.120 af,	Atten= 0%, Lag= 0.0 min
Primary =	1.47 cfs @ 12.08 hrs, Volume=	0.120 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 8.81' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.95'	**12.0" Round Culvert** L= 195.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.95' / 5.98' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.46 cfs @ 12.08 hrs HW=8.77' TW=8.36' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 1.46 cfs @ 1.86 fps)



Summary for Pond PDMH 2:

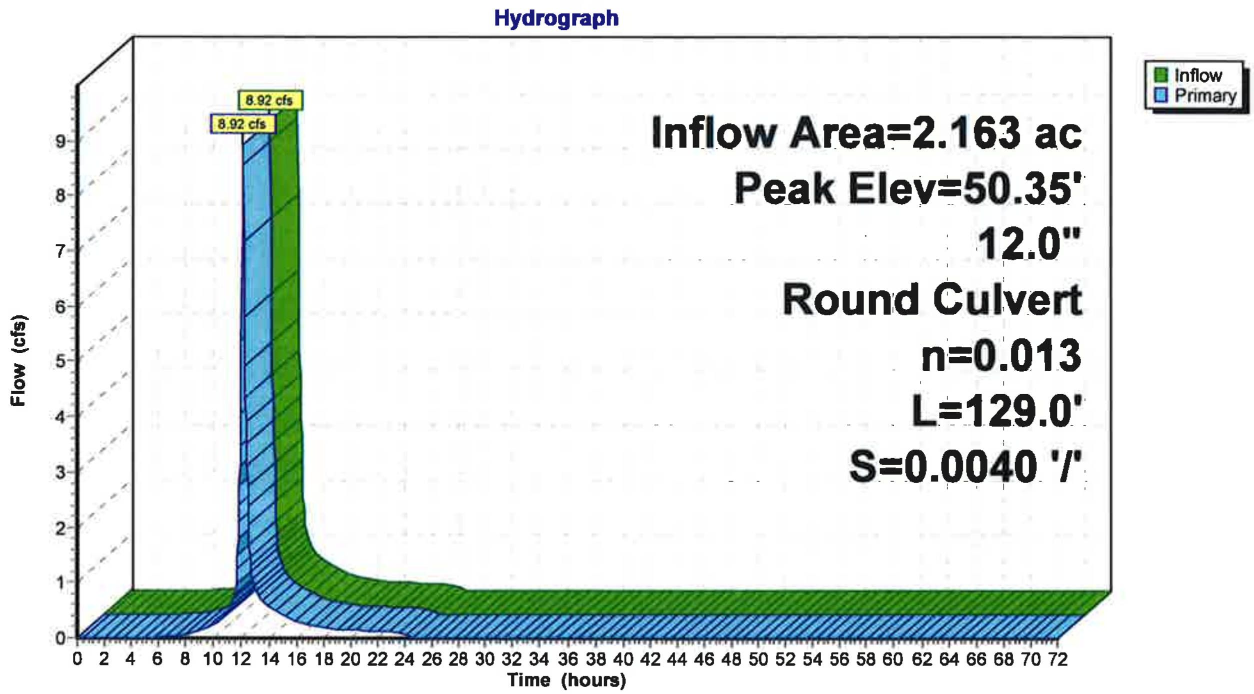
Inflow Area =	2.163 ac,	71.14% Impervious,	Inflow Depth =	3.77"	for 10 year event
Inflow =	8.92 cfs @	12.09 hrs,	Volume=	0.680 af	
Outflow =	8.92 cfs @	12.09 hrs,	Volume=	0.680 af,	Atten= 0%, Lag= 0.0 min
Primary =	8.92 cfs @	12.09 hrs,	Volume=	0.680 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 50.35' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.60'	**12.0" Round Culvert** L= 129.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.60' / 5.08' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=8.73 cfs @ 12.09 hrs HW=48.14' TW=37.48' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 8.73 cfs @ 11.12 fps)

Pond PDMH 2:



Summary for Pond PDMH 5:

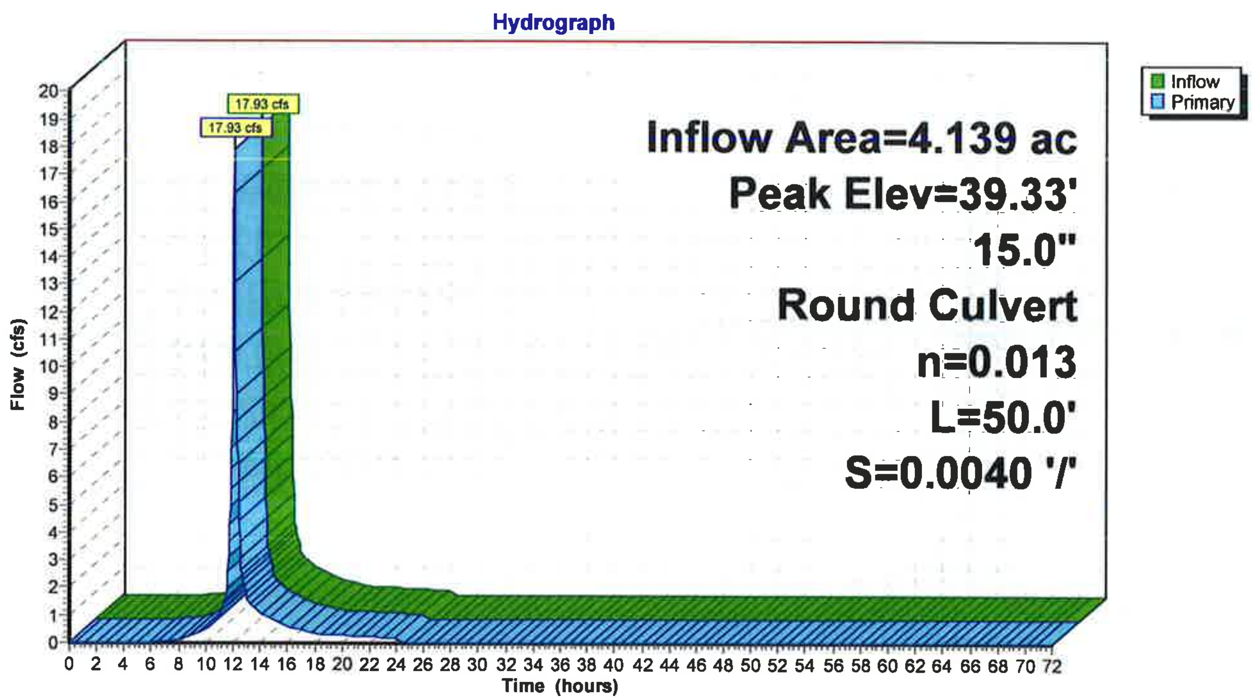
Inflow Area =	4.139 ac,	75.59% Impervious,	Inflow Depth = 3.84"	for 10 year event	
Inflow =	17.93 cfs @	12.08 hrs,	Volume=	1.325 af	
Outflow =	17.93 cfs @	12.08 hrs,	Volume=	1.325 af,	Atten= 0%, Lag= 0.0 min
Primary =	17.93 cfs @	12.08 hrs,	Volume=	1.325 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 39.33' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.08'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.08' / 4.88' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=17.79 cfs @ 12.08 hrs HW=38.78' TW=29.72' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 17.79 cfs @ 14.49 fps)

Pond PDMH 5:

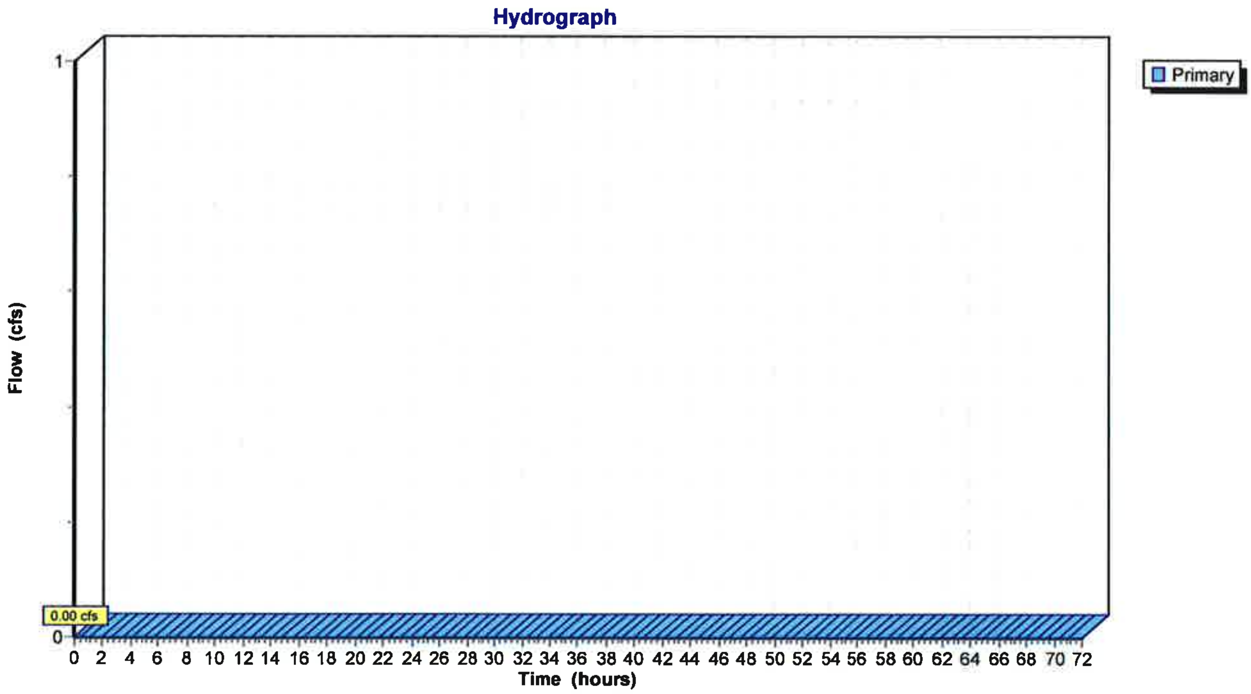


Summary for Link 2L: Sewer Line

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs

Link 2L: Sewer Line

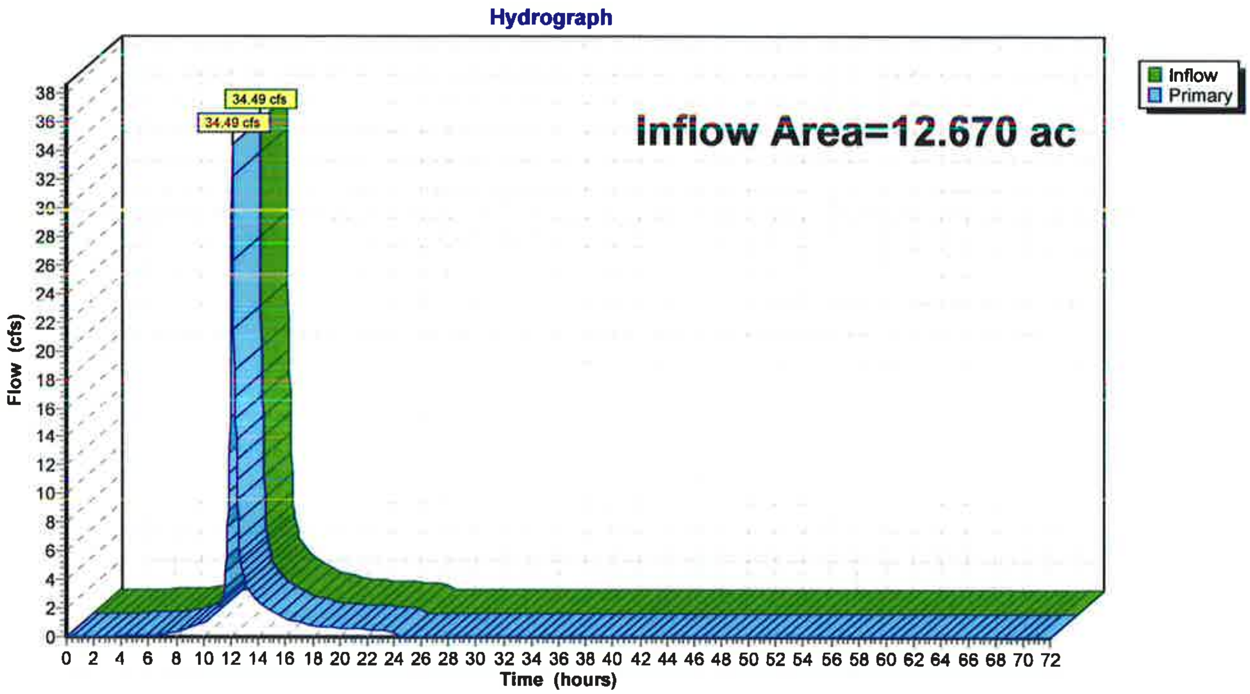


Summary for Link DP1: North Mill Pond

Inflow Area =	12.670 ac,	55.16% Impervious,	Inflow Depth = 2.63"	for 10 year event	
Inflow =	34.49 cfs @	12.09 hrs,	Volume=	2.776 af	
Primary =	34.49 cfs @	12.09 hrs,	Volume=	2.776 af,	Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs

Link DP1: North Mill Pond



Time span=0.00-72.00 hrs, dt=0.04 hrs, 1801 points x 7
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 PS1: Runoff Area=23,090 sf 98.87% Impervious Runoff Depth=8.14"
Flow Length=209' Tc=5.0 min CN=97 Runoff=4.50 cfs 0.360 af

Subcatchment PS10: Runoff Area=27,141 sf 47.00% Impervious Runoff Depth=5.38"
Flow Length=300' Tc=7.8 min CN=74 Runoff=3.64 cfs 0.279 af

Subcatchment PS2: Runoff Area=65,464 sf 65.78% Impervious Runoff Depth=6.22"
Flow Length=400' Tc=7.6 min CN=81 Runoff=10.02 cfs 0.778 af

Subcatchment PS3: Runoff Area=28,735 sf 83.35% Impervious Runoff Depth=7.18"
Flow Length=140' Tc=5.0 min CN=89 Runoff=5.32 cfs 0.395 af

Subcatchment PS4: Runoff Area=78,241 sf 9.20% Impervious Runoff Depth=1.68"
Flow Length=342' Tc=5.3 min CN=42 Runoff=2.90 cfs 0.252 af

Subcatchment PS4a: Lot 4 Parking Lot - Runoff Area=14,755 sf 100.00% Impervious Runoff Depth=8.26"
Tc=5.0 min CN=98 Runoff=2.89 cfs 0.233 af

Subcatchment PS4b: Lot 4 Rooftop - Runoff Area=20,314 sf 100.00% Impervious Runoff Depth=8.26"
Tc=5.0 min CN=98 Runoff=3.97 cfs 0.321 af

Subcatchment PS4c: (new Subcat) Runoff Area=12,582 sf 89.27% Impervious Runoff Depth=7.54"
Tc=5.0 min CN=92 Runoff=2.39 cfs 0.181 af

Subcatchment PS4d: (new Subcat) Runoff Area=14,029 sf 70.87% Impervious Runoff Depth=6.22"
Tc=5.0 min CN=81 Runoff=2.34 cfs 0.167 af

Subcatchment PS4e: (new Subcat) Runoff Area=17,277 sf 61.96% Impervious Runoff Depth=5.61"
Tc=5.0 min CN=76 Runoff=2.65 cfs 0.186 af

Subcatchment PS5: Runoff Area=17,243 sf 83.68% Impervious Runoff Depth=6.94"
Flow Length=165' Tc=5.0 min CN=87 Runoff=3.12 cfs 0.229 af

Subcatchment PS6: Runoff Area=18,912 sf 81.61% Impervious Runoff Depth=6.82"
Flow Length=171' Tc=5.0 min CN=86 Runoff=3.39 cfs 0.247 af

Subcatchment PS7: Runoff Area=13,792 sf 86.00% Impervious Runoff Depth=7.06"
Flow Length=144' Tc=5.0 min CN=88 Runoff=2.53 cfs 0.186 af

Subcatchment PS8: Runoff Area=36,146 sf 76.21% Impervious Runoff Depth=6.34"
Flow Length=253' Tc=5.0 min CN=82 Runoff=6.13 cfs 0.438 af

Subcatchment PS9: Runoff Area=164,174 sf 35.57% Impervious Runoff Depth=3.13"
Flow Length=452' Tc=7.4 min CN=55 Runoff=12.63 cfs 0.983 af

Pond 1P: Parking Lot Deep Sump Catch Basin Peak Elev=10.30' Inflow=2.89 cfs 0.233 af
12.0" Round Culvert n=0.013 L=76.0' S=0.0254 '/' Outflow=2.89 cfs 0.233 af

Pond 2P: ENVIRONMENT 21 UNISTORM MODEL 8R Peak Elev=44.41' Inflow=33.55 cfs 2.552 af
15.0" Round Culvert n=0.013 L=80.0' S=0.0075 '/' Outflow=33.55 cfs 2.552 af

Pond 4P: ENV 21 UNISTORM MODEL 5R Peak Elev=9.49' Inflow=7.64 cfs 0.659 af
15.0" Round Culvert n=0.013 L=15.0' S=0.0047 '/' Outflow=7.64 cfs 0.659 af

Pond 5P: PDMH 10 Peak Elev=7.82' Inflow=7.64 cfs 0.659 af
15.0" Round Culvert n=0.013 L=19.0' S=0.0074 '/' Outflow=7.64 cfs 0.659 af

Pond 6P: Roofline Dripe Edge Filter Strip Peak Elev=10.78' Storage=0.005 af Inflow=3.97 cfs 0.321 af
12.0" Round Culvert n=0.013 L=30.0' S=0.0050 '/' Outflow=3.90 cfs 0.321 af

Pond 1264: Separated Drain Peak Elev=170.56' Inflow=6.13 cfs 0.438 af
10.0" Round Culvert n=0.013 L=162.0' S=0.0051 '/' Outflow=6.13 cfs 0.438 af

Pond CB 1237: Peak Elev=7.48' Inflow=4.50 cfs 0.360 af
12.0" Round Culvert n=0.013 L=39.0' S=0.0051 '/' Outflow=4.50 cfs 0.360 af

Pond CB 1239: Separated Drain Peak Elev=163.83' Inflow=10.02 cfs 0.778 af
12.0" Round Culvert n=0.013 L=116.0' S=0.0040 '/' Outflow=10.02 cfs 0.778 af

Pond CB 1240: Separated Drain Peak Elev=151.42' Inflow=15.07 cfs 1.173 af
12.0" Round Culvert n=0.013 L=50.0' S=0.0040 '/' Outflow=15.07 cfs 1.173 af

Pond CB 1241: Separated Drain Peak Elev=76.63' Inflow=33.55 cfs 2.552 af
15.0" Round Culvert n=0.013 L=12.5' S=0.0040 '/' Outflow=33.55 cfs 2.552 af

Pond CB 1242 / PDMH 3: Separated Drain Peak Elev=128.01' Inflow=15.17 cfs 1.100 af
12.0" Round Culvert n=0.013 L=94.0' S=0.0040 '/' Outflow=15.17 cfs 1.100 af

Pond CB 1243 / PDMH 4: Separated Drain Peak Elev=146.54' Inflow=12.04 cfs 0.871 af
12.0" Round Culvert n=0.013 L=115.0' S=0.0040 '/' Outflow=12.04 cfs 0.871 af

Pond CB 1244: Separated Drain Peak Elev=154.95' Inflow=8.66 cfs 0.624 af
12.0" Round Culvert n=0.013 L=95.0' S=0.0040 '/' Outflow=8.66 cfs 0.624 af

Pond OCS #1: Rain Garden Peak Elev=10.86' Storage=2,268 cf Inflow=2.65 cfs 0.186 af
Discarded=0.16 cfs 0.109 af Primary=1.10 cfs 0.077 af Outflow=1.26 cfs 0.186 af

Pond PCB 11: New Roadway Closed Drainage System Peak Elev=11.23' Inflow=4.76 cfs 0.426 af
12.0" Round Culvert n=0.013 L=50.0' S=0.0050 '/' Outflow=4.76 cfs 0.426 af

Pond PCB 13: New Roadway Closed Drainage System Peak Elev=12.30' Inflow=2.37 cfs 0.244 af
12.0" Round Culvert n=0.013 L=195.0' S=0.0050 '/' Outflow=2.37 cfs 0.244 af

Pond PDMH 2: Peak Elev=133.98' Inflow=15.07 cfs 1.173 af
12.0" Round Culvert n=0.013 L=129.0' S=0.0040 '/' Outflow=15.07 cfs 1.173 af

Pond PDMH 5: Peak Elev=102.50' Inflow=30.07 cfs 2.273 af
15.0" Round Culvert n=0.013 L=50.0' S=0.0040 '/' Outflow=30.07 cfs 2.273 af

Link 2L: Sewer Line

Primary=0.00 cfs 0.000 af

Link DP1: North Mill Pond

Inflow=64.32 cfs 5.127 af
Primary=64.32 cfs 5.127 af

Total Runoff Area = 12.670 ac Runoff Volume = 5.235 af Average Runoff Depth = 4.96"
44.84% Pervious = 5.681 ac 55.16% Impervious = 6.988 ac

Summary for Subcatchment PS1:

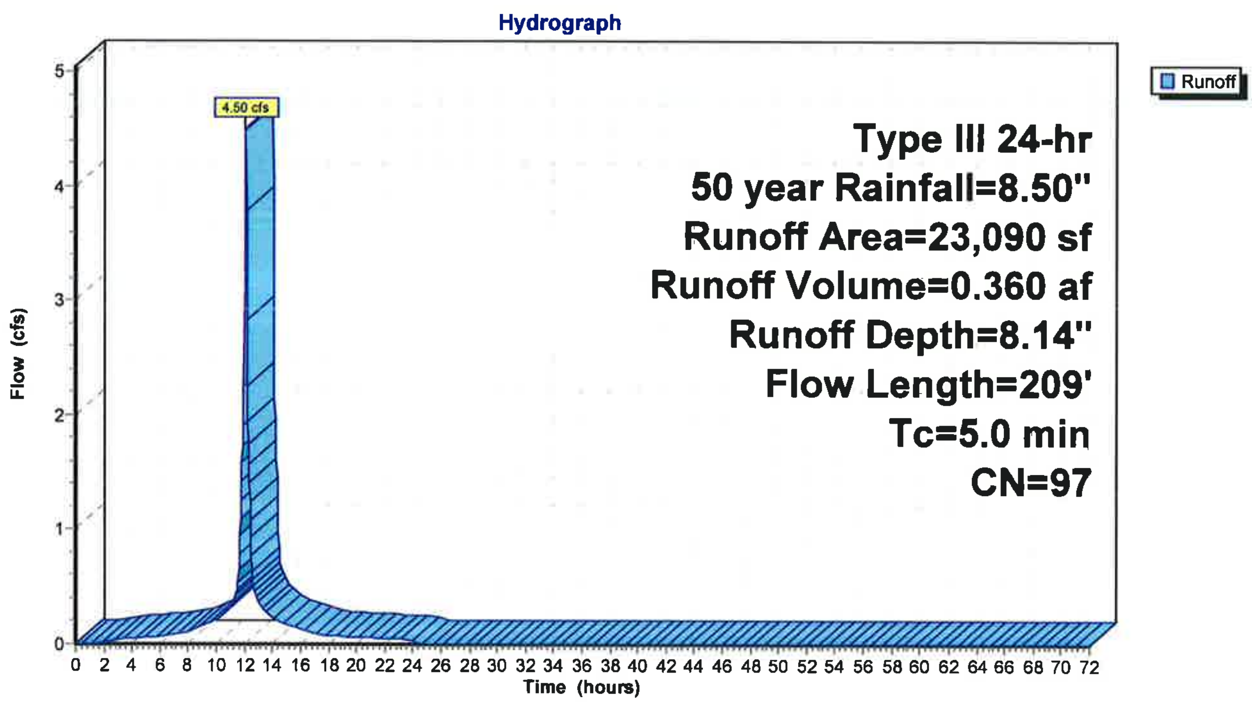
Runoff = 4.50 cfs @ 12.07 hrs, Volume= 0.360 af, Depth= 8.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	3,527	98	Roofs, HSG A
	16,758	98	Paved parking, HSG A
*	937	98	Unconnected pavement, sidewalk, HSG A
	262	39	>75% Grass cover, Good, HSG A
*	1,606	98	Sidewalk new, HSG A
	23,090	97	Weighted Average
	262		1.13% Pervious Area
	22,828		98.87% Impervious Area
	937		4.10% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	16	0.0500	1.70		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.8	193	0.0078	1.79		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.0	209	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS1:



Summary for Subcatchment PS10:

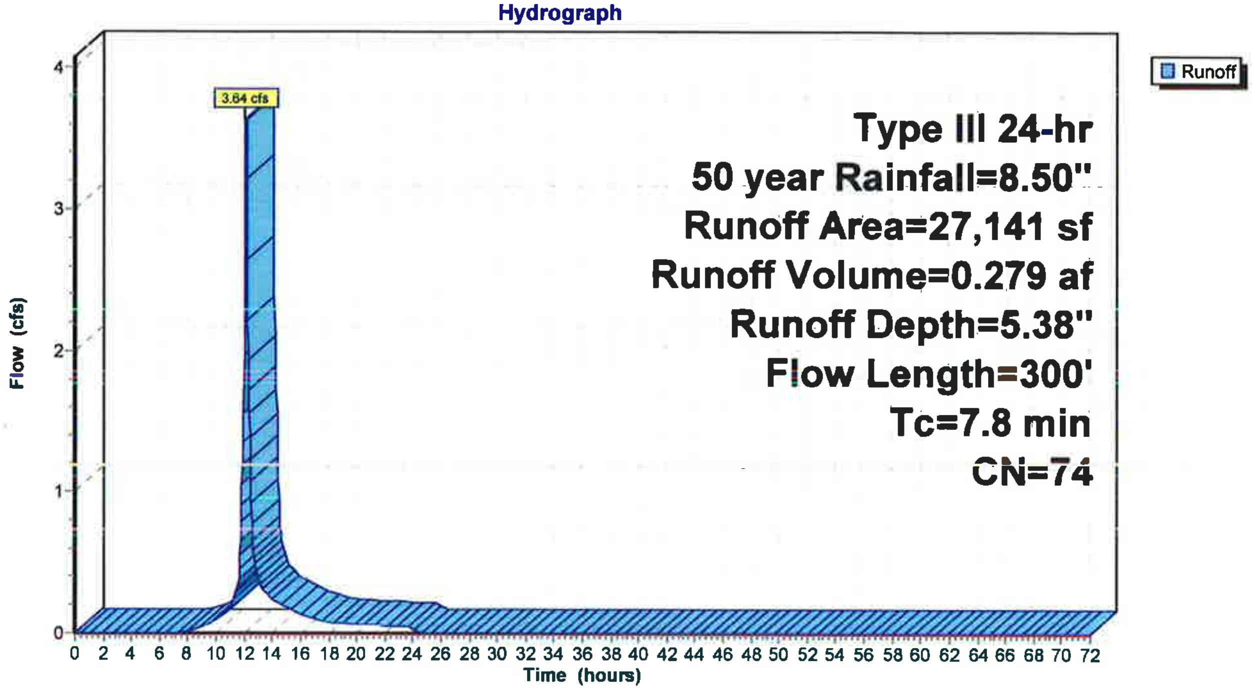
Runoff = 3.64 cfs @ 12.11 hrs, Volume= 0.279 af, Depth= 5.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

Area (sf)	CN	Description
3,111	98	Unconnected roofs, HSG A
9,646	98	Paved parking, HSG A
8,473	30	Woods, Good, HSG A
4,946	96	Gravel surface, HSG A
965	39	>75% Grass cover, Good, HSG A
27,141	74	Weighted Average
14,384		53.00% Pervious Area
12,757		47.00% Impervious Area
3,111		24.39% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	40	0.2250	2.37		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.2	142	0.0030	0.38		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.2	101	0.0050	1.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.8	300	Total			

Subcatchment PS10:



Summary for Subcatchment PS2:

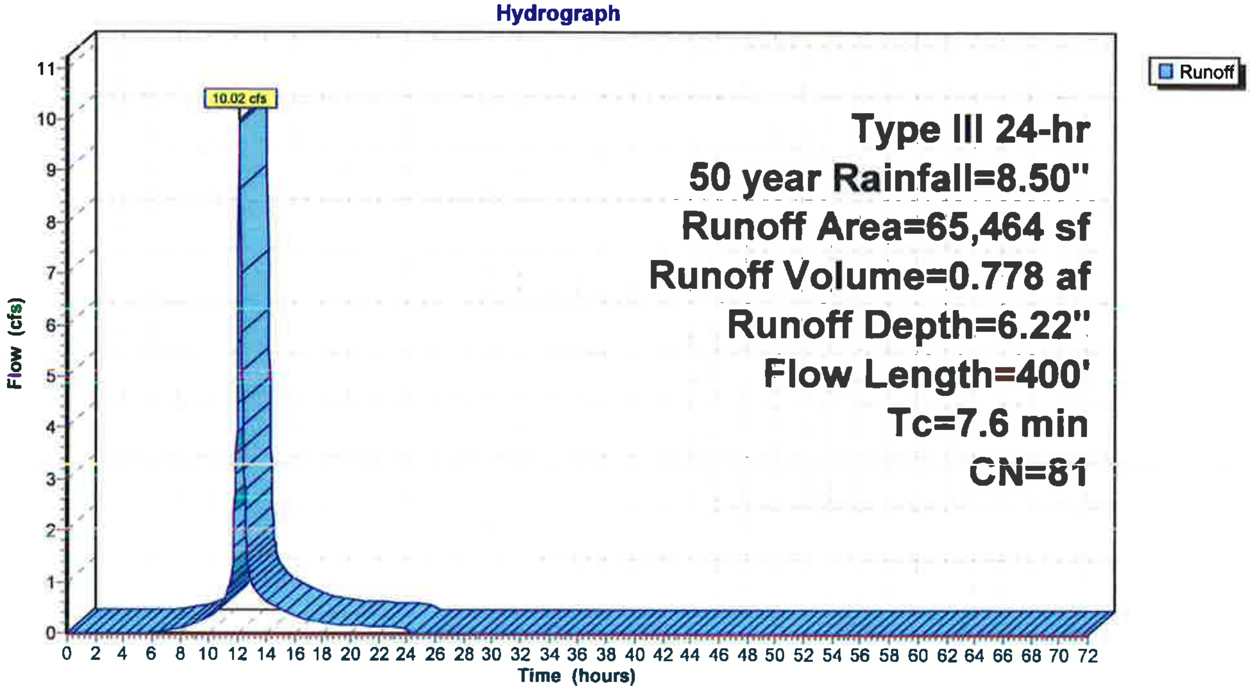
Runoff = 10.02 cfs @ 12.11 hrs, Volume= 0.778 af, Depth= 6.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	14,223	98	Roofs, HSG A
	19,836	98	Paved parking, HSG A
*	2,813	98	Unconnected pavement, sidewalk, HSG A
	13,300	30	Woods, Good, HSG A
*	6,192	98	Gravel surface, HSG A
	9,100	77	Fallow, bare soil, HSG A
	65,464	81	Weighted Average
	22,400		34.22% Pervious Area
	43,064		65.78% Impervious Area
	2,813		6.53% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	34	0.0441	3.38		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.1	24	0.3333	2.89		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.0	8	0.5125	11.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.0	89	0.0056	1.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
5.9	210	0.0071	0.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.0	6	0.0182	2.74		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	15	0.0067	1.66		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.2	14	0.0179	0.94		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.6	400	Total			

Subcatchment PS2:



Summary for Subcatchment PS3:

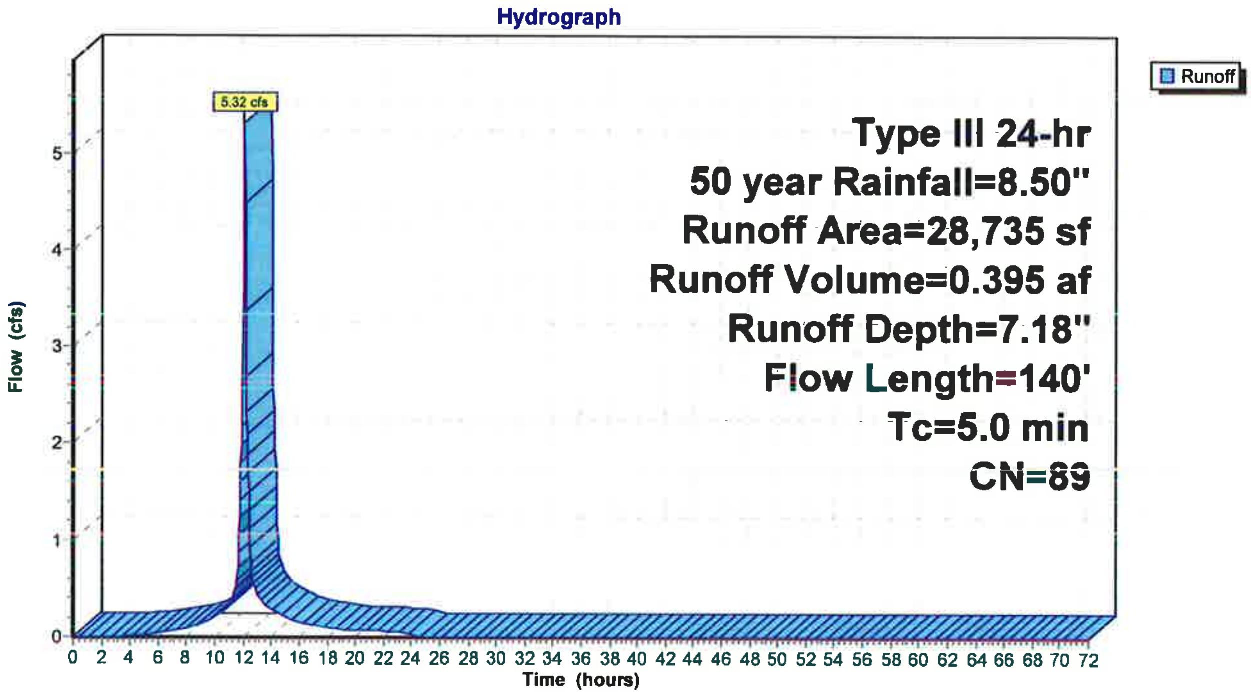
Runoff = 5.32 cfs @ 12.07 hrs, Volume= 0.395 af, Depth= 7.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	3,055	98	Roofs, HSG A
	18,934	98	Paved parking, HSG A
*	692	98	Unconnected pavement, sidewalk, HSG A
	2,441	30	Woods, Good, HSG A
*	1,269	98	Gravel surface, HSG A
	1,513	77	Fallow, bare soil, HSG A
	831	39	>75% Grass cover, Good, HSG A
	28,735	89	Weighted Average
	4,785		16.65% Pervious Area
	23,950		83.35% Impervious Area
	692		2.89% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	21	0.0238	2.48		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	37	0.2703	2.60		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.5	34	0.0221	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	48	0.0104	1.13		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
1.5	140	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS3:



Summary for Subcatchment PS4:

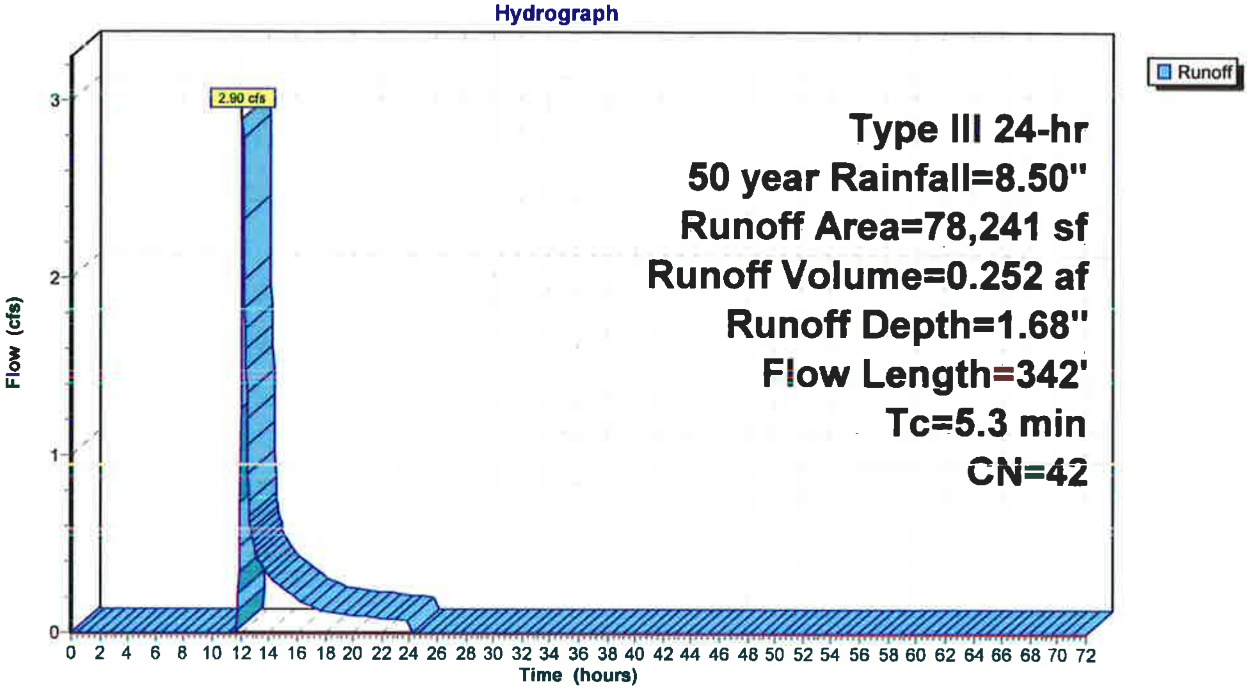
Runoff = 2.90 cfs @ 12.10 hrs, Volume= 0.252 af, Depth= 1.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	4,595	98	Paved parking, HSG A
	24,921	32	Woods/grass comb., Good, HSG A
*	813	98	Unconnected pavement, sidewalk, HSG A
	29,455	30	Woods, Good, HSG A
	4,789	39	>75% Grass cover, Good, HSG A
	7,355	77	Fallow, bare soil, HSG A
	230	39	>75% Grass cover, Good, HSG A
	4,292	39	>75% Grass cover, Good, HSG A
*	1,791	98	Sidewalk new, HSG A
	78,241	42	Weighted Average
	71,042		90.80% Pervious Area
	7,199		9.20% Impervious Area
	813		11.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	49	0.0153	2.51		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.3	42	0.0059	0.54		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.7	251	0.0498	1.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.3	342	Total			

Subcatchment PS4:



Summary for Subcatchment PS4a: Lot 4 Parking Lot - Treated Area

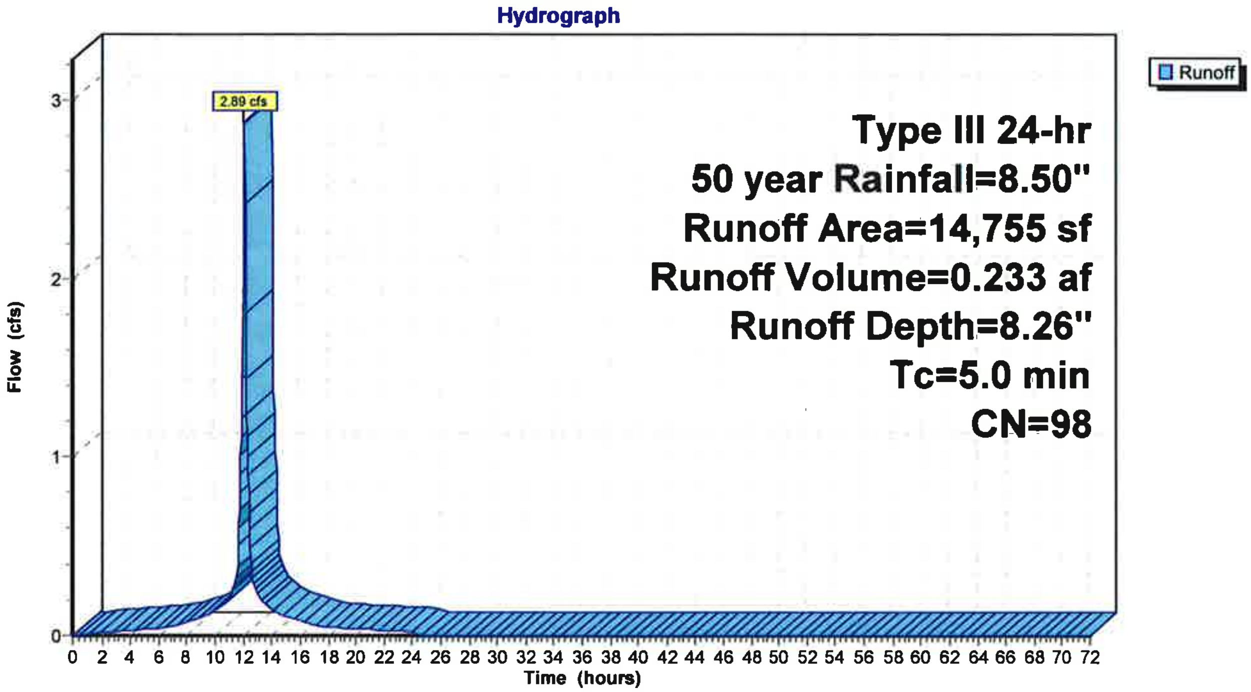
Runoff = 2.89 cfs @ 12.07 hrs, Volume= 0.233 af, Depth= 8.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

Area (sf)	CN	Description
14,755	98	Paved parking, HSG A
14,755		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4a: Lot 4 Parking Lot - Treated Area



Summary for Subcatchment PS4b: Lot 4 Rooftop - Treated Area

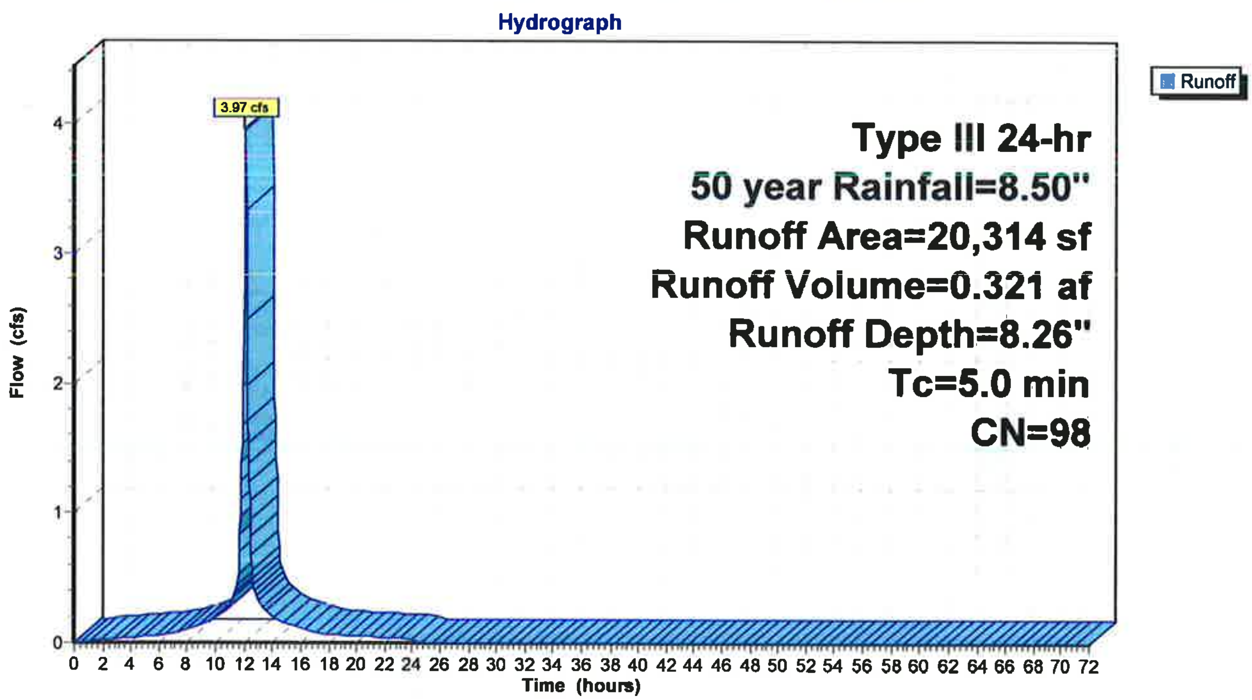
Runoff = 3.97 cfs @ 12.07 hrs, Volume= 0.321 af, Depth= 8.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

Area (sf)	CN	Description
20,314	98	Roofs, HSG A
20,314		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4b: Lot 4 Rooftop - Treated Area



Summary for Subcatchment PS4c: (new Subcat)

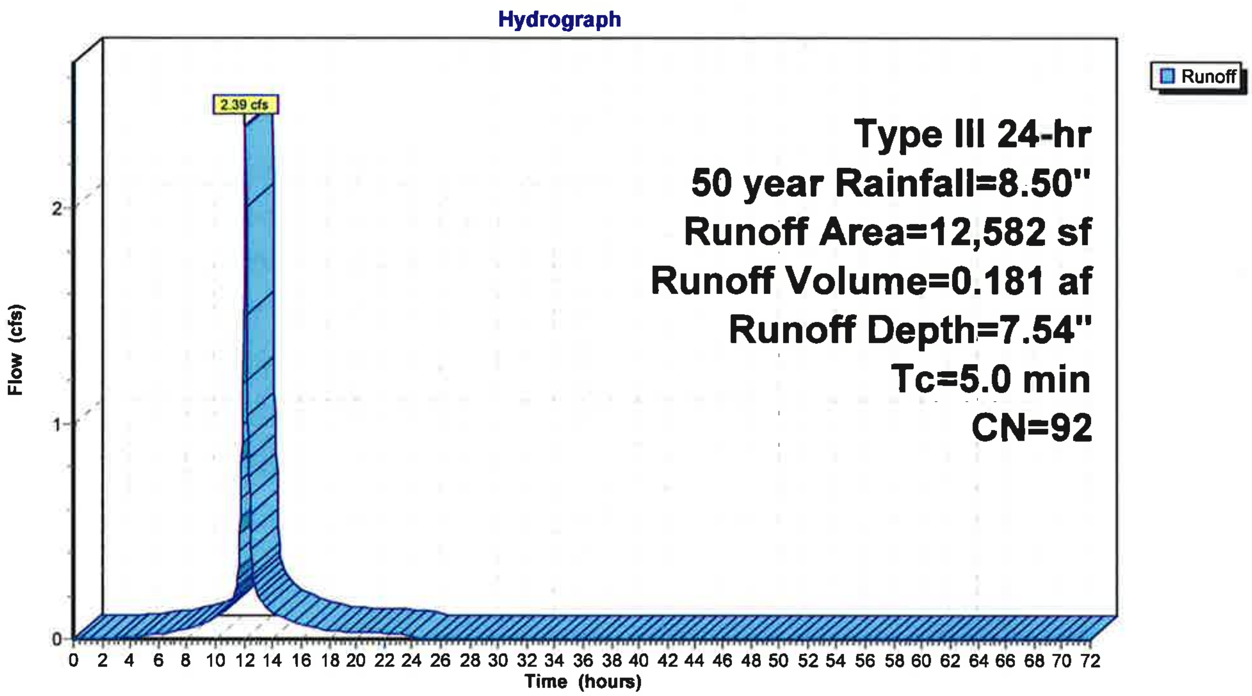
Runoff = 2.39 cfs @ 12.07 hrs, Volume= 0.181 af, Depth= 7.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

Area (sf)	CN	Description
6,553	98	Paved roads w/curbs & sewers, HSG A
4,679	98	Roofs, HSG A
1,350	39	>75% Grass cover, Good, HSG A
12,582	92	Weighted Average
1,350		10.73% Pervious Area
11,232		89.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4c: (new Subcat)



Summary for Subcatchment PS4d: (new Subcat)

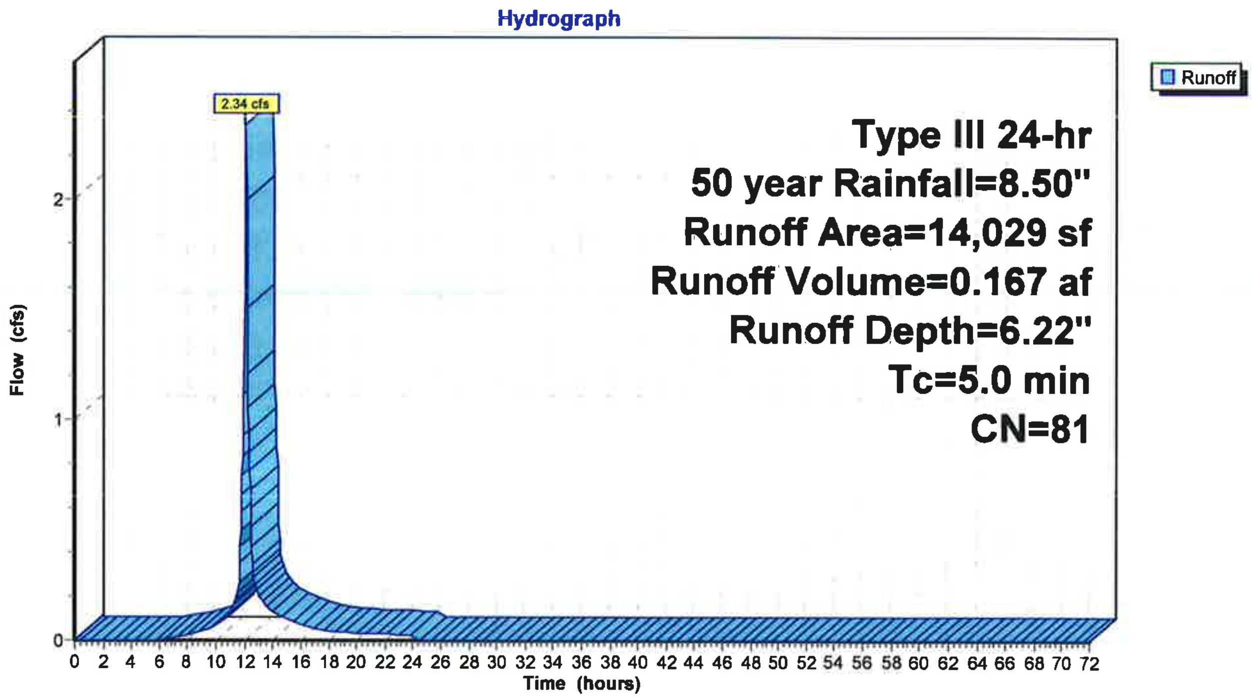
Runoff = 2.34 cfs @ 12.07 hrs, Volume= 0.167 af, Depth= 6.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

Area (sf)	CN	Description
6,695	98	Paved roads w/curbs & sewers, HSG A
4,086	39	>75% Grass cover, Good, HSG A
2,262	98	Roofs, HSG A
986	98	Roofs, HSG A
14,029	81	Weighted Average
4,086		29.13% Pervious Area
9,943		70.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4d: (new Subcat)



Summary for Subcatchment PS4e: (new Subcat)

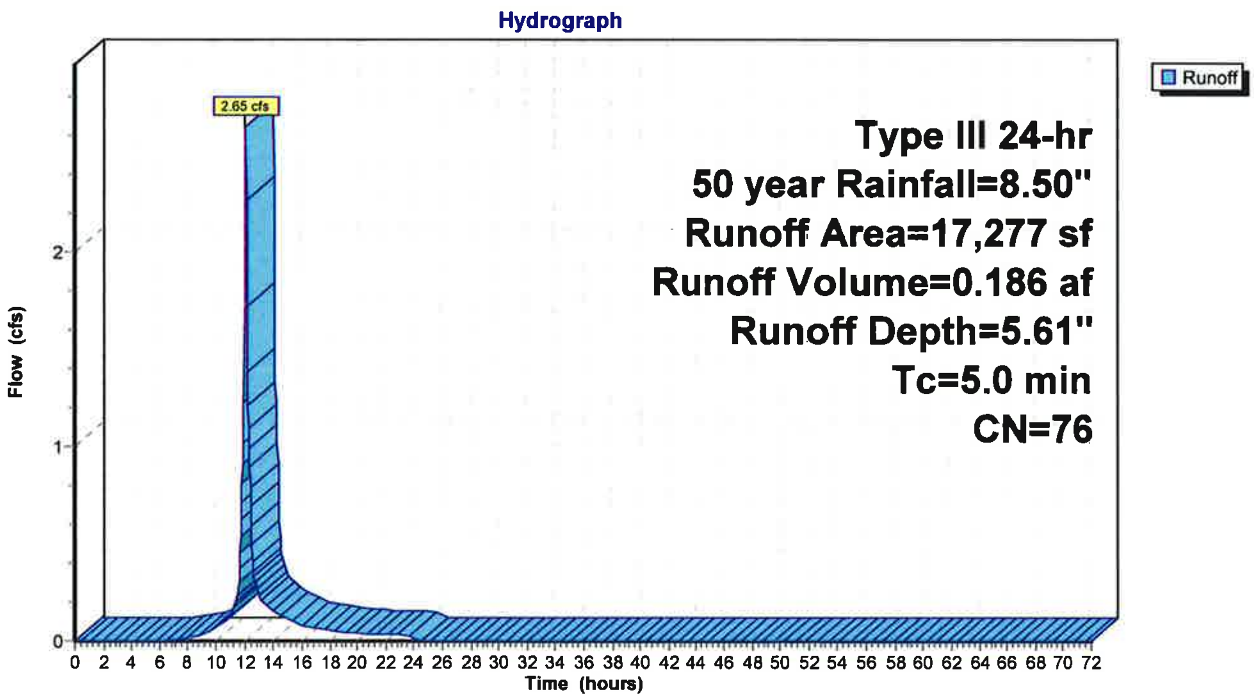
Runoff = 2.65 cfs @ 12.08 hrs, Volume= 0.186 af, Depth= 5.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

Area (sf)	CN	Description
9,743	98	Paved roads w/curbs & sewers, HSG A
961	98	Roofs, HSG A
2,279	39	>75% Grass cover, Good, HSG A
1,831	39	>75% Grass cover, Good, HSG A
2,463	39	>75% Grass cover, Good, HSG A
17,277	76	Weighted Average
6,573		38.04% Pervious Area
10,704		61.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment PS4e: (new Subcat)



Summary for Subcatchment PS5:

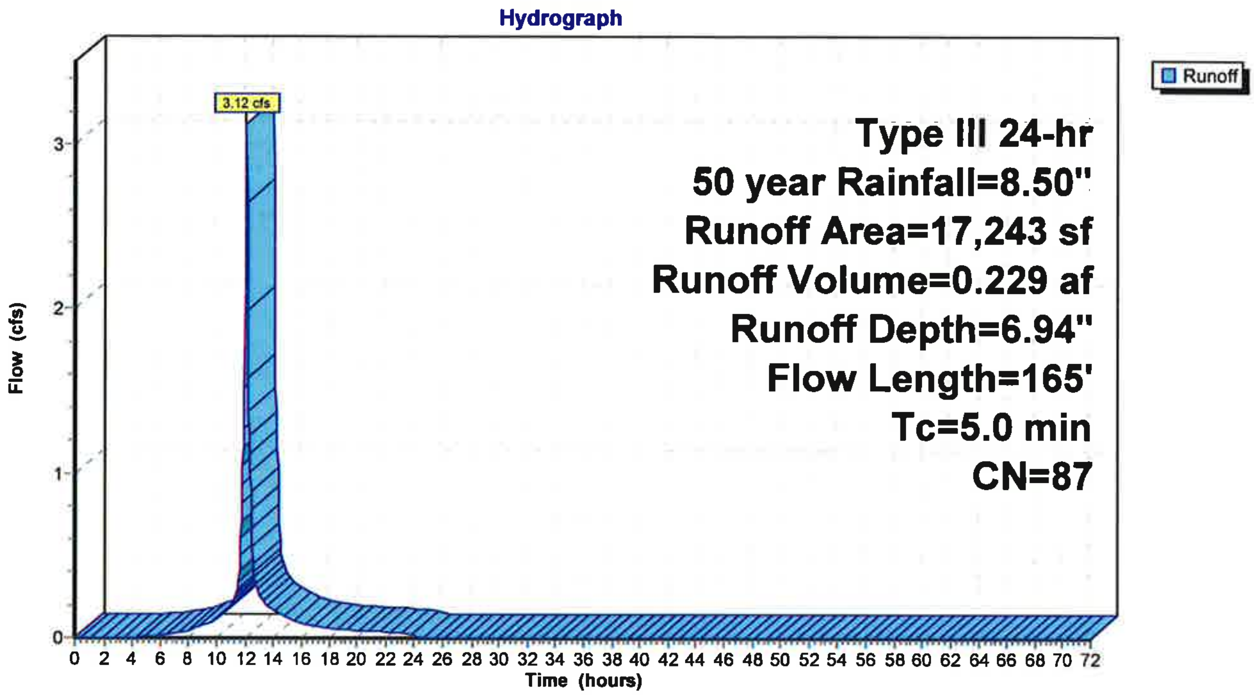
Runoff = 3.12 cfs @ 12.07 hrs, Volume= 0.229 af, Depth= 6.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	5,417	98	Roofs, HSG A
	7,124	98	Paved parking, HSG A
	2,814	30	Woods, Good, HSG A
*	1,888	98	Gravel surface, HSG A
	17,243	87	Weighted Average
	2,814		16.32% Pervious Area
	14,429		83.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	18	0.0278	2.68		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	27	0.2222	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	17	0.0050	0.68		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 4.86"
0.7	103	0.0146	2.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.4	165	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS5:



Summary for Subcatchment PS6:

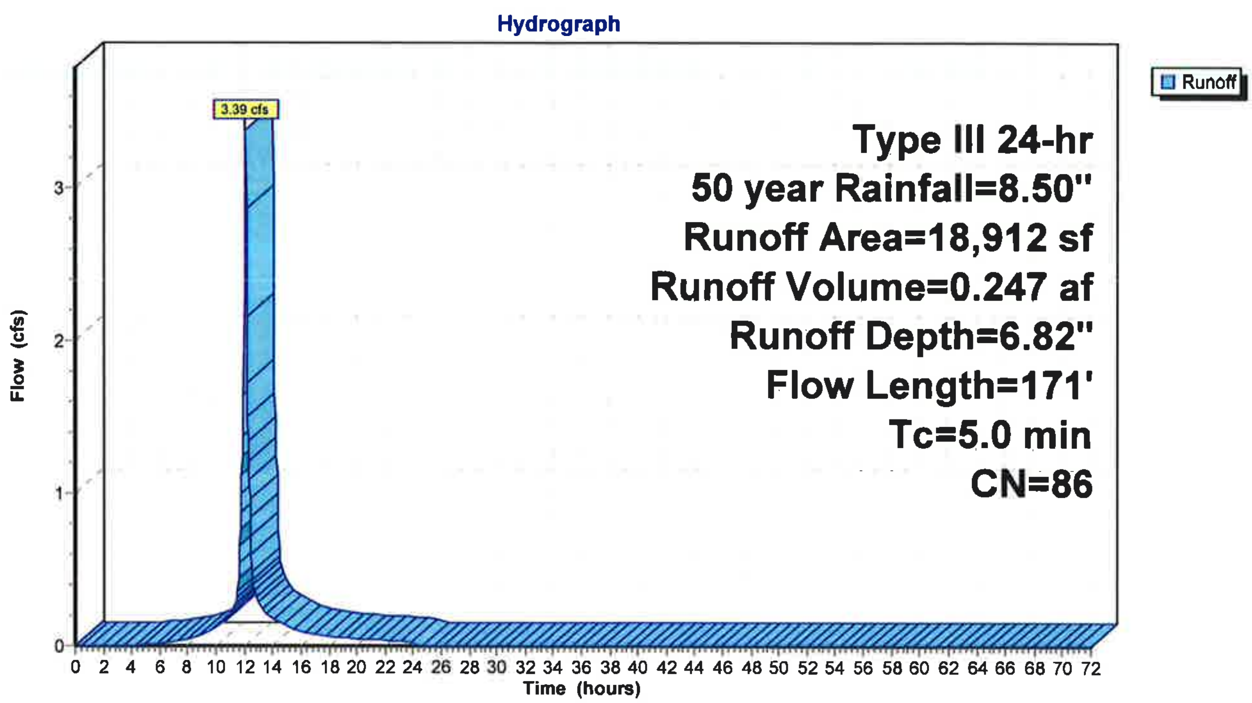
Runoff = 3.39 cfs @ 12.07 hrs, Volume= 0.247 af, Depth= 6.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	6,270	98	Roofs, HSG A
	6,874	98	Paved parking, HSG A
	3,205	30	Woods, Good, HSG A
	273	39	>75% Grass cover, Good, HSG A
*	2,290	98	Gravel surface, HSG A
	18,912	86	Weighted Average
	3,478		18.39% Pervious Area
	15,434		81.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	17	0.0294	1.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	25	0.3200	2.83		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	129	0.0155	2.53		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.2	171	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS6:



Summary for Subcatchment PS7:

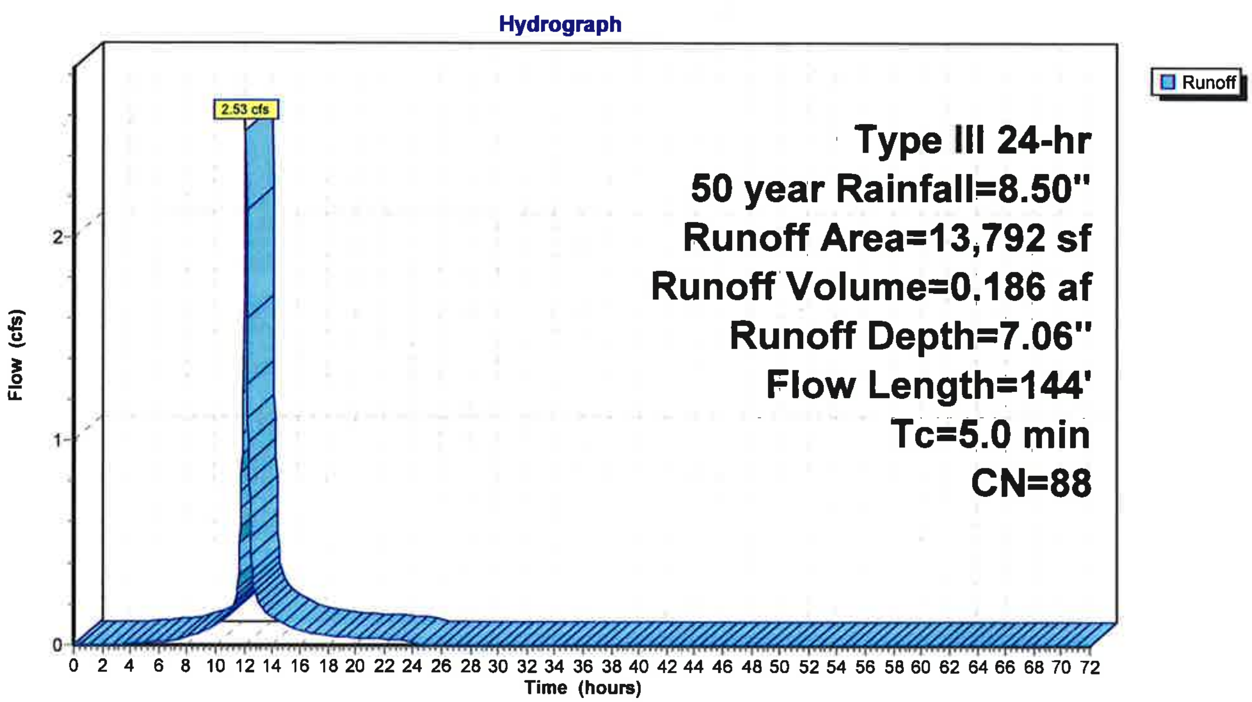
Runoff = 2.53 cfs @ 12.07 hrs, Volume= 0.186 af, Depth= 7.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	1,722	98	Roofs, HSG A
	8,479	98	Paved parking, HSG A
	1,931	30	Woods, Good, HSG A
*	1,660	98	Gravel surface, HSG A
	13,792	88	Weighted Average
	1,931		14.00% Pervious Area
	11,861		86.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	19	0.0263	2.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.2	21	0.1548	1.97		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	104	0.0120	2.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.1	144	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS7:



Summary for Subcatchment PS8:

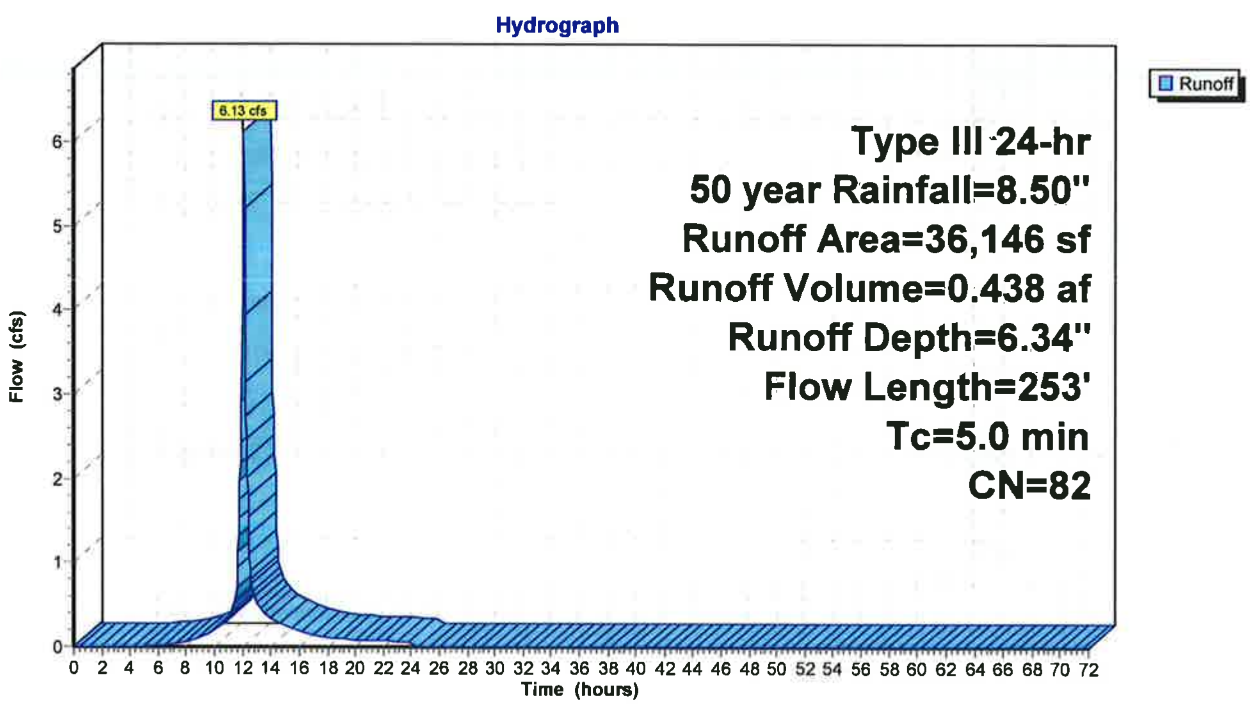
Runoff = 6.13 cfs @ 12.07 hrs, Volume= 0.438 af, Depth= 6.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	3,914	98	Roofs, HSG A
	17,049	98	Paved parking, HSG A
	6,260	30	Woods, Good, HSG A
	2,338	39	>75% Grass cover, Good, HSG A
*	6,585	98	Gravel surface, HSG A
	36,146	82	Weighted Average
	8,598		23.79% Pervious Area
	27,548		76.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	17	0.0294	2.76		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	32	0.1406	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.8	204	0.0036	1.22		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.2	253	Total, Increased to minimum Tc = 5.0 min			

Subcatchment PS8:



Summary for Subcatchment PS9:

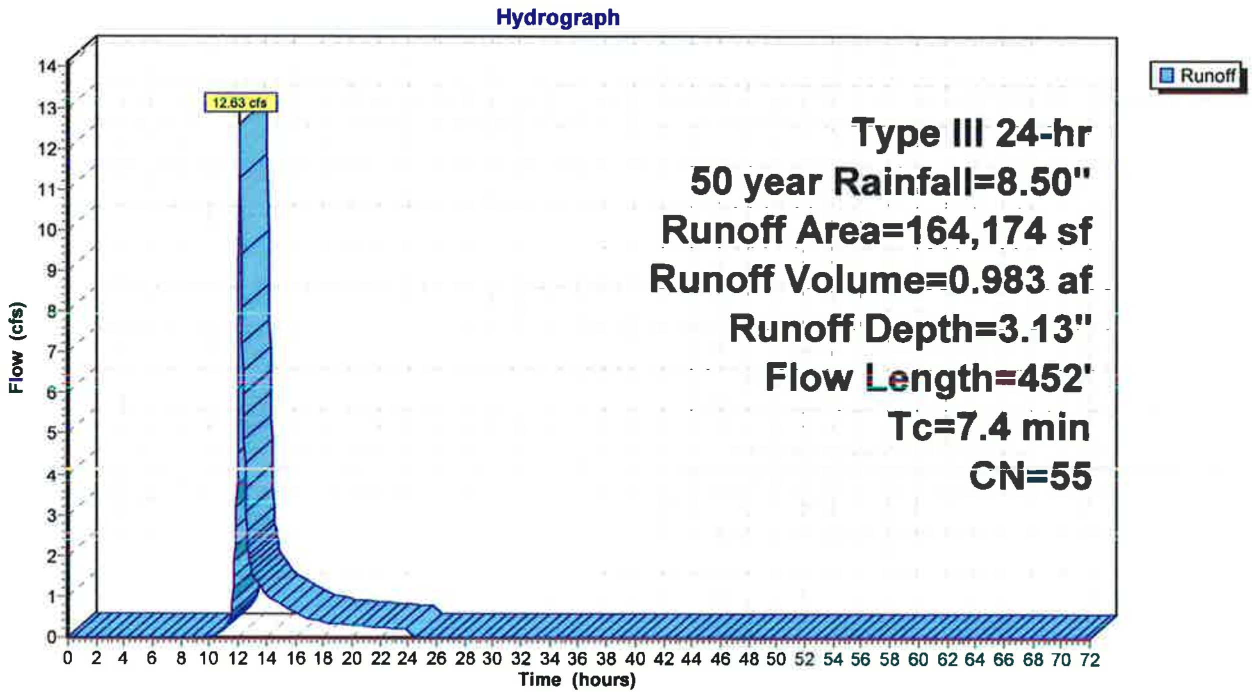
Runoff = 12.63 cfs @ 12.12 hrs, Volume= 0.983 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 50 year Rainfall=8.50"

	Area (sf)	CN	Description
	7,387	98	Roofs, HSG A
	1,171	98	Paved parking, HSG A
	14,477	32	Woods/grass comb., Good, HSG A
*	234	98	Unconnected pavement, sidewalk, HSG A
	71,360	30	Woods, Good, HSG A
	19,936	39	>75% Grass cover, Good, HSG A
*	49,609	98	Gravel surface, HSG A
	164,174	55	Weighted Average
	105,773		64.43% Pervious Area
	58,401		35.57% Impervious Area
	234		0.40% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	22	0.0227	2.43		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.3	36	0.1239	1.76		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	40	0.0375	3.93		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.2	134	0.0112	0.53		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.8	86	0.0116	1.73		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	134	0.0672	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
7.4	452	Total			

Subcatchment PS9:



Summary for Pond 1P: Parking Lot Deep Sump Catch Basin

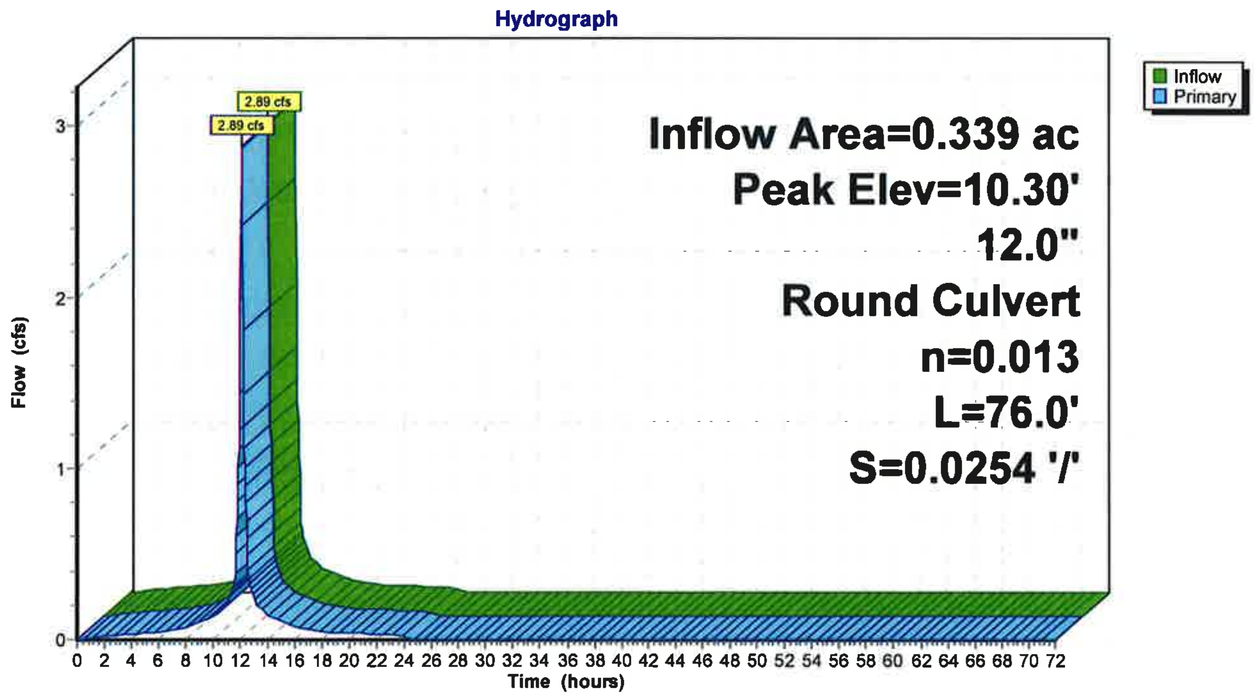
Inflow Area = 0.339 ac,100.00% Impervious, Inflow Depth = 8.26" for 50 year event
Inflow = 2.89 cfs @ 12.07 hrs, Volume= 0.233 af
Outflow = 2.89 cfs @ 12.07 hrs, Volume= 0.233 af, Atten= 0%, Lag= 0.0 min
Primary = 2.89 cfs @ 12.07 hrs, Volume= 0.233 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 10.30' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.50'	**12.0" Round Culvert** L= 76.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.50' / 5.57' S= 0.0254 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.84 cfs @ 12.07 hrs HW=10.19' TW=9.40' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.84 cfs @ 3.61 fps)

Pond 1P: Parking Lot Deep Sump Catch Basin



Summary for Pond 2P: ENVIRONMENT 21 UNISTORM MODEL 8R

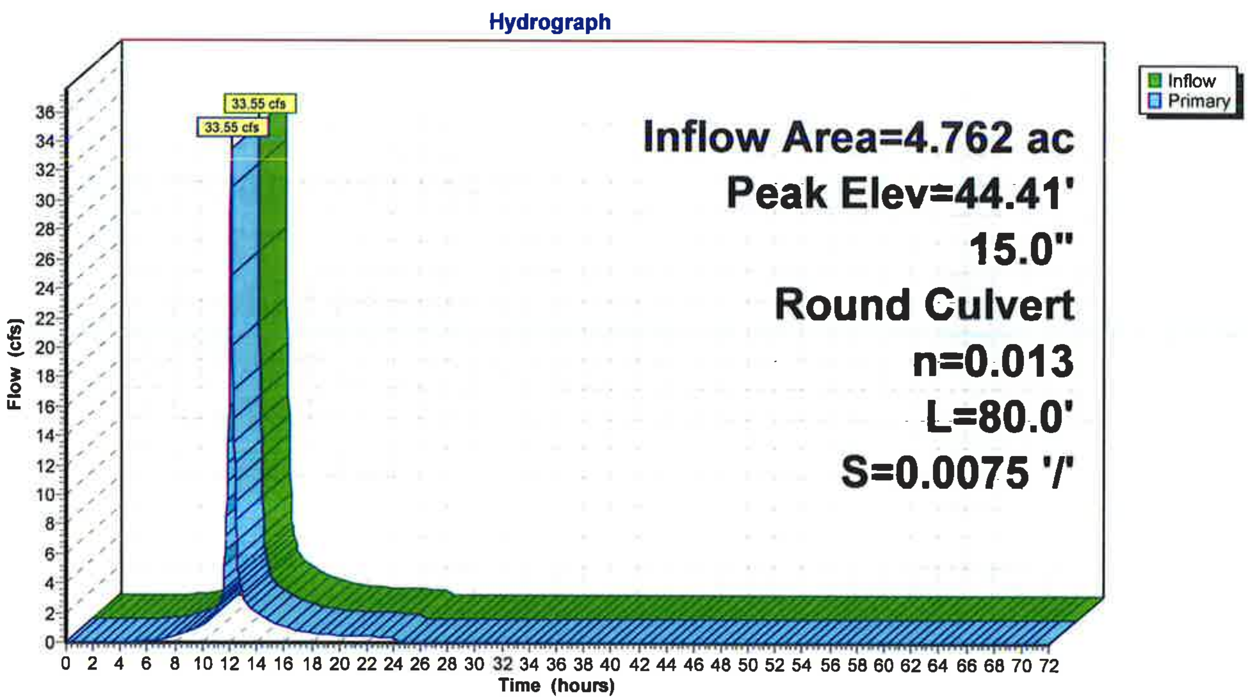
Inflow Area = 4.762 ac, 71.85% Impervious, Inflow Depth = 6.43" for 50 year event
Inflow = 33.55 cfs @ 12.09 hrs, Volume= 2.552 af
Outflow = 33.55 cfs @ 12.09 hrs, Volume= 2.552 af, Atten= 0%, Lag= 0.0 min
Primary = 33.55 cfs @ 12.09 hrs, Volume= 2.552 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 44.41' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.73'	**15.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 4.73' / 4.13' S= 0.0075 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=33.18 cfs @ 12.09 hrs HW=43.58' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 33.18 cfs @ 27.04 fps)

Pond 2P: ENVIRONMENT 21 UNISTORM MODEL 8R



Summary for Pond 4P: ENV 21 UNISTORM MODEL 5R

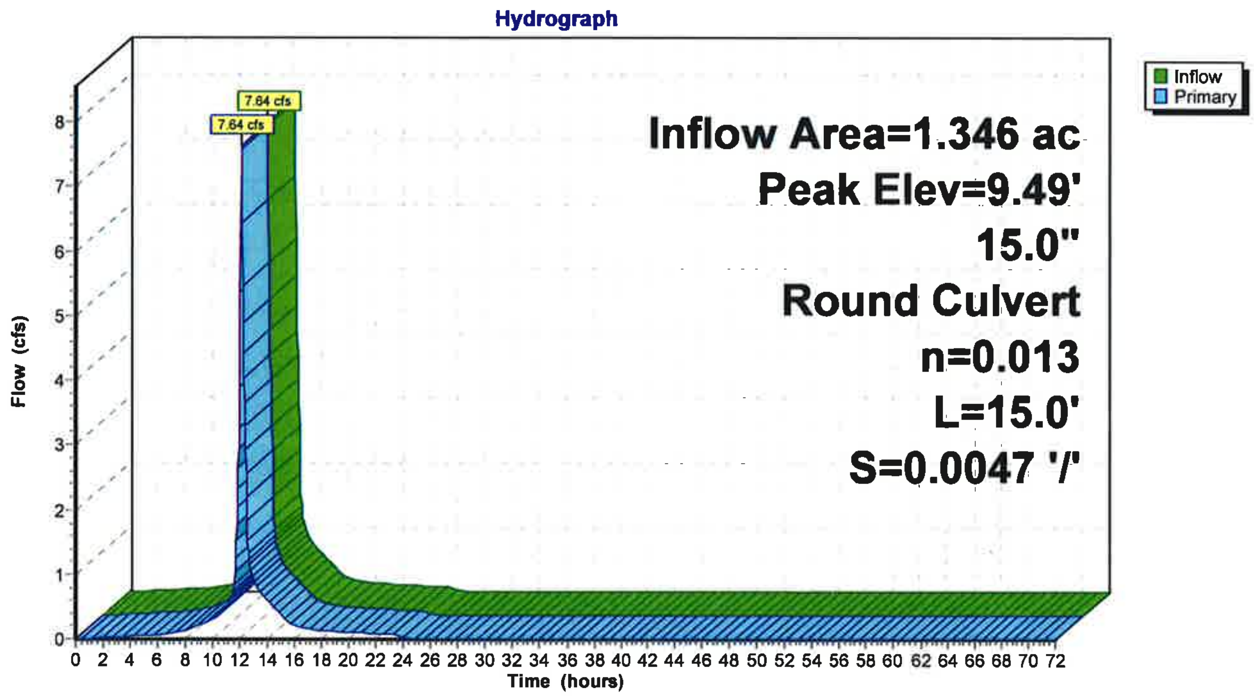
Inflow Area =	1.346 ac, 79.52% Impervious, Inflow Depth = 5.87" for 50 year event		
Inflow =	7.64 cfs @ 12.07 hrs, Volume=	0.659 af	
Outflow =	7.64 cfs @ 12.07 hrs, Volume=	0.659 af, Atten= 0%, Lag= 0.0 min	
Primary =	7.64 cfs @ 12.07 hrs, Volume=	0.659 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 9.49' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.70'	**15.0" Round Culvert** L= 15.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.70' / 5.63' S= 0.0047 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=7.50 cfs @ 12.07 hrs HW=9.39' TW=7.78' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.50 cfs @ 6.11 fps)

Pond 4P: ENV 21 UNISTORM MODEL 5R



Summary for Pond 5P: PDMH 10

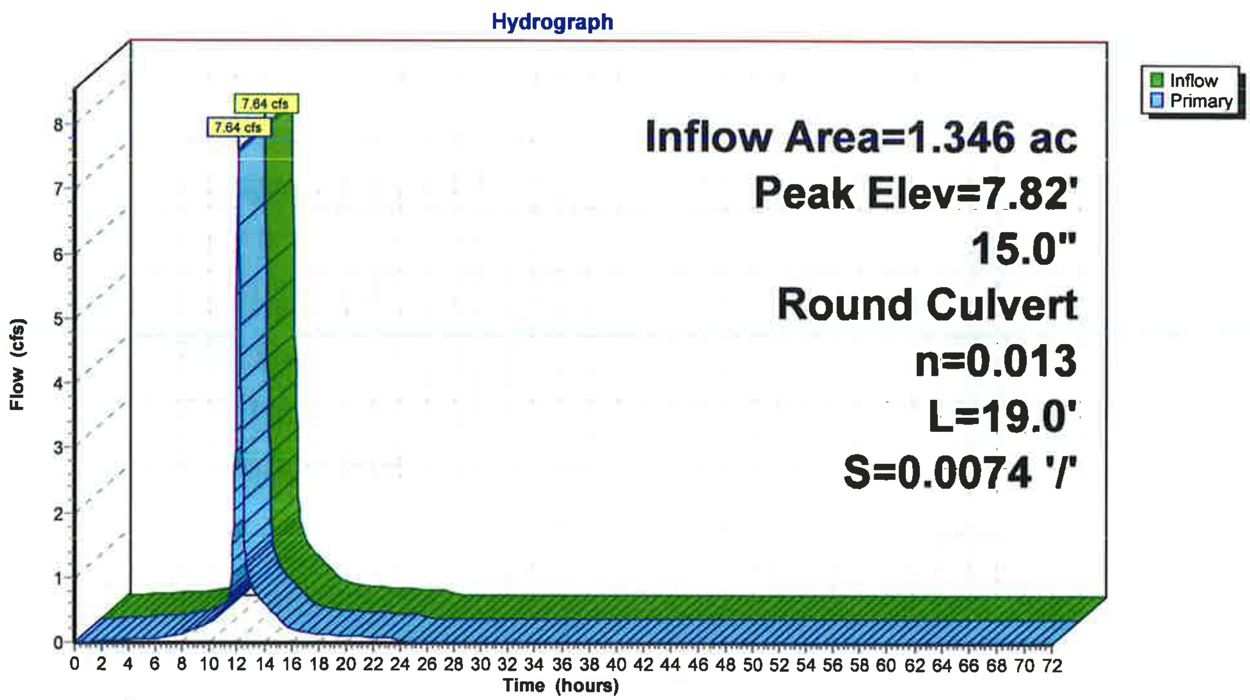
Inflow Area = 1.346 ac, 79.52% Impervious, Inflow Depth = 5.87" for 50 year event
Inflow = 7.64 cfs @ 12.07 hrs, Volume= 0.659 af
Outflow = 7.64 cfs @ 12.07 hrs, Volume= 0.659 af, Atten= 0%, Lag= 0.0 min
Primary = 7.64 cfs @ 12.07 hrs, Volume= 0.659 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 7.82' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.53'	**15.0" Round Culvert** L= 19.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.53' / 5.39' S= 0.0074 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=7.52 cfs @ 12.07 hrs HW=7.78' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 7.52 cfs @ 6.13 fps)

Pond 5P: PDMH 10



Summary for Pond 6P: Roofline Dripe Edge Filter Strip

Inflow Area =	0.466 ac,100.00% Impervious,	Inflow Depth = 8.26"	for 50 year event	
Inflow =	3.97 cfs @	12.07 hrs, Volume=	0.321 af	
Outflow =	3.90 cfs @	12.09 hrs, Volume=	0.321 af,	Atten= 2%, Lag= 1.0 min
Primary =	3.90 cfs @	12.09 hrs, Volume=	0.321 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 10.78' @ 12.09 hrs Surf.Area= 0.007 ac Storage= 0.005 af

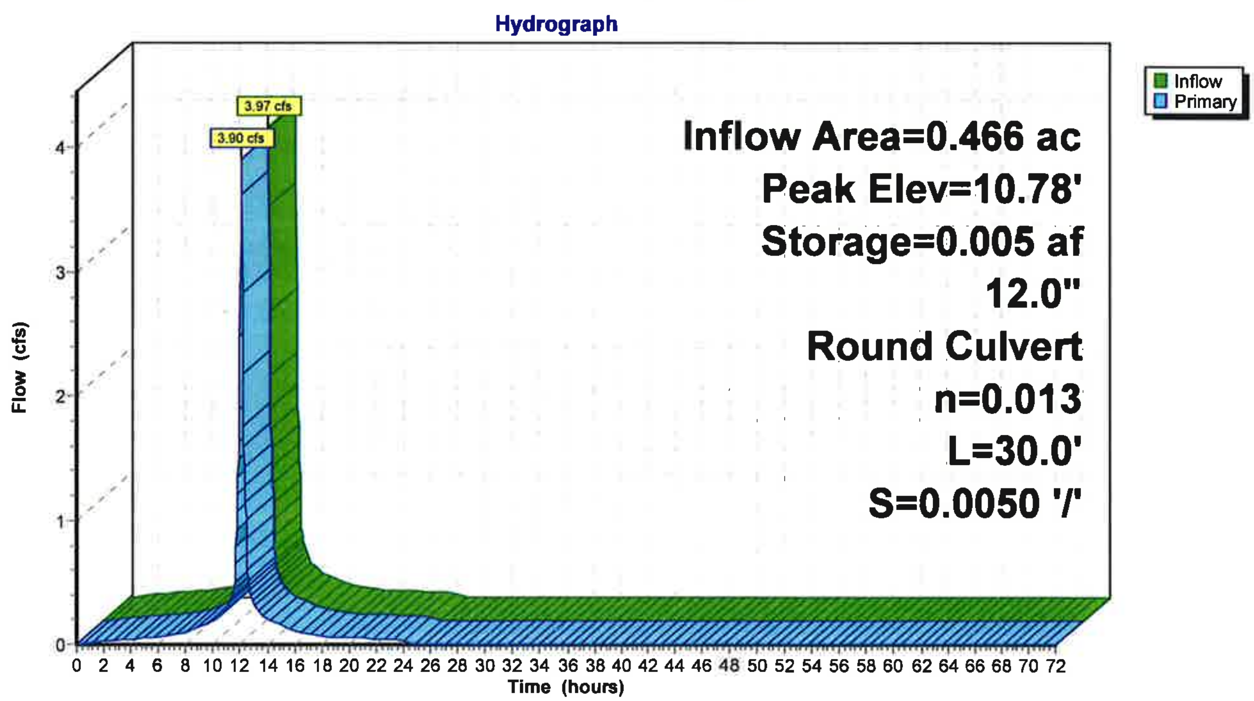
Plug-Flow detention time= 3.4 min calculated for 0.321 af (100% of inflow)
Center-of-Mass det. time= 2.7 min (742.2 - 739.5)

Volume	Invert	Avail.Storage	Storage Description
#1	9.00'	0.006 af	**2.00'W x 163.00'L x 2.00'H Prismatoid** 0.015 af Overall x 40.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	9.00'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 9.00' / 8.85' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.83 cfs @ 12.09 hrs HW=10.75' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.83 cfs @ 4.88 fps)

Pond 6P: Roofline Dripe Edge Filter Strip



Summary for Pond 1264: Separated Drain

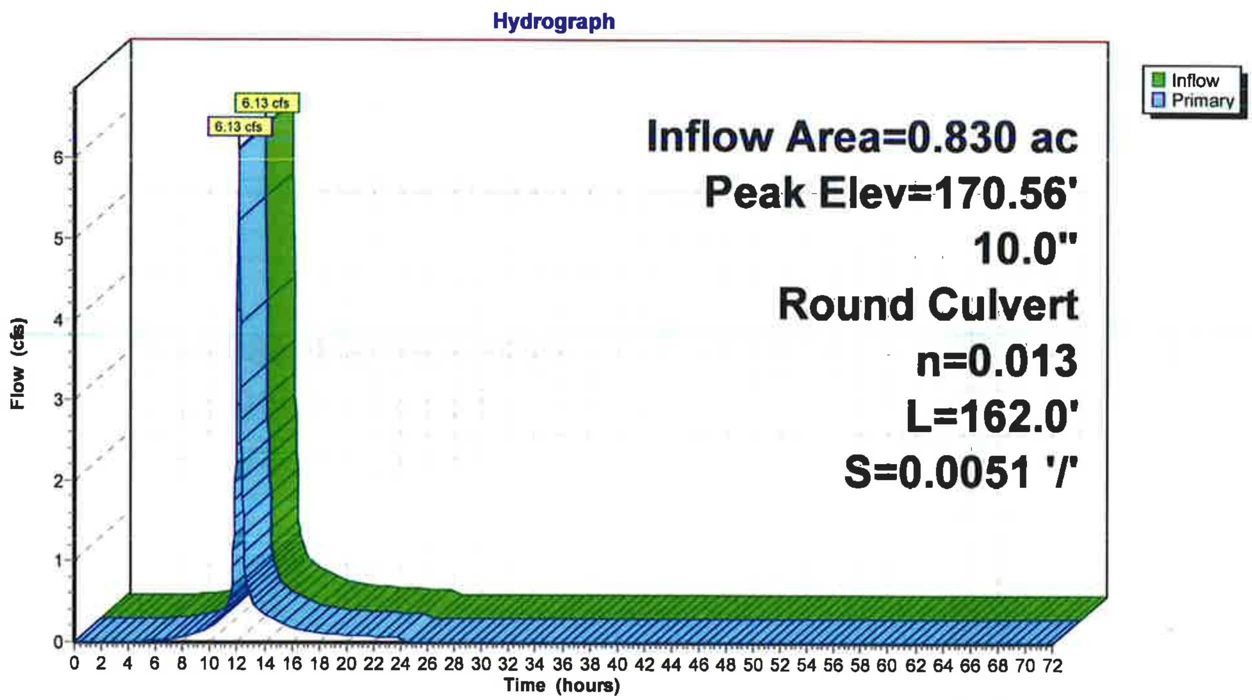
Inflow Area =	0.830 ac,	76.21% Impervious,	Inflow Depth = 6.34"	for 50 year event
Inflow =	6.13 cfs @	12.07 hrs, Volume=	0.438 af	
Outflow =	6.13 cfs @	12.07 hrs, Volume=	0.438 af, Atten= 0%, Lag= 0.0 min	
Primary =	6.13 cfs @	12.07 hrs, Volume=	0.438 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 170.56' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.19'	**10.0" Round Culvert** L= 162.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.19' / 7.37' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=6.05 cfs @ 12.07 hrs HW=166.03' TW=150.75' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 6.05 cfs @ 11.10 fps)

Pond 1264: Separated Drain



Summary for Pond CB 1237:

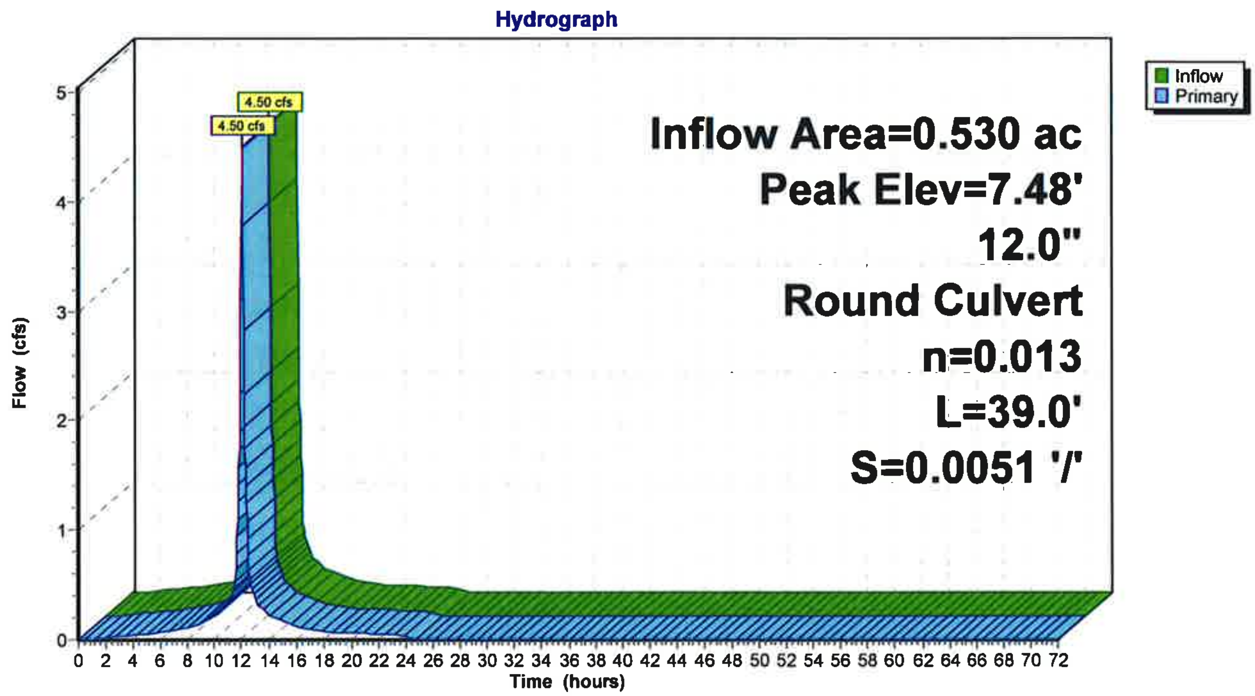
Inflow Area =	0.530 ac, 98.87% Impervious, Inflow Depth = 8.14"	for 50 year event	
Inflow =	4.50 cfs @ 12.07 hrs, Volume=	0.360 af	
Outflow =	4.50 cfs @ 12.07 hrs, Volume=	0.360 af,	Atten= 0%, Lag= 0.0 min
Primary =	4.50 cfs @ 12.07 hrs, Volume=	0.360 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 7.48' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.29'	**12.0" Round Culvert** L= 39.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.29' / 5.09' S= 0.0051 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.43 cfs @ 12.07 hrs HW=7.43' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 4.43 cfs @ 5.64 fps)

Pond CB 1237:



Summary for Pond CB 1239: Separated Drain

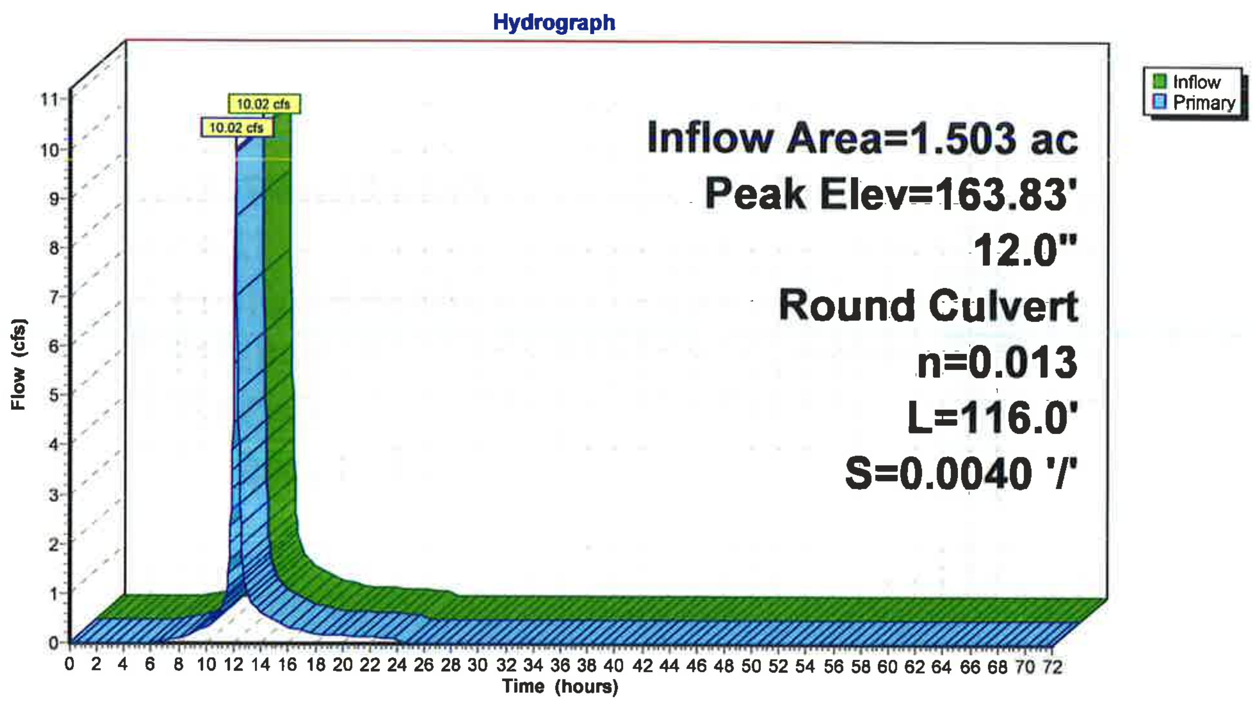
Inflow Area =	1.503 ac, 65.78% Impervious, Inflow Depth = 6.22" for 50 year event			
Inflow =	10.02 cfs @	12.11 hrs, Volume=	0.778 af	
Outflow =	10.02 cfs @	12.11 hrs, Volume=	0.778 af,	Atten= 0%, Lag= 0.0 min
Primary =	10.02 cfs @	12.11 hrs, Volume=	0.778 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 163.83' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.26'	**12.0" Round Culvert** L= 116.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.26' / 5.80' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=9.85 cfs @ 12.11 hrs HW=150.54' TW=137.98' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 9.85 cfs @ 12.54 fps)

Pond CB 1239: Separated Drain



Summary for Pond CB 1240: Separated Drain

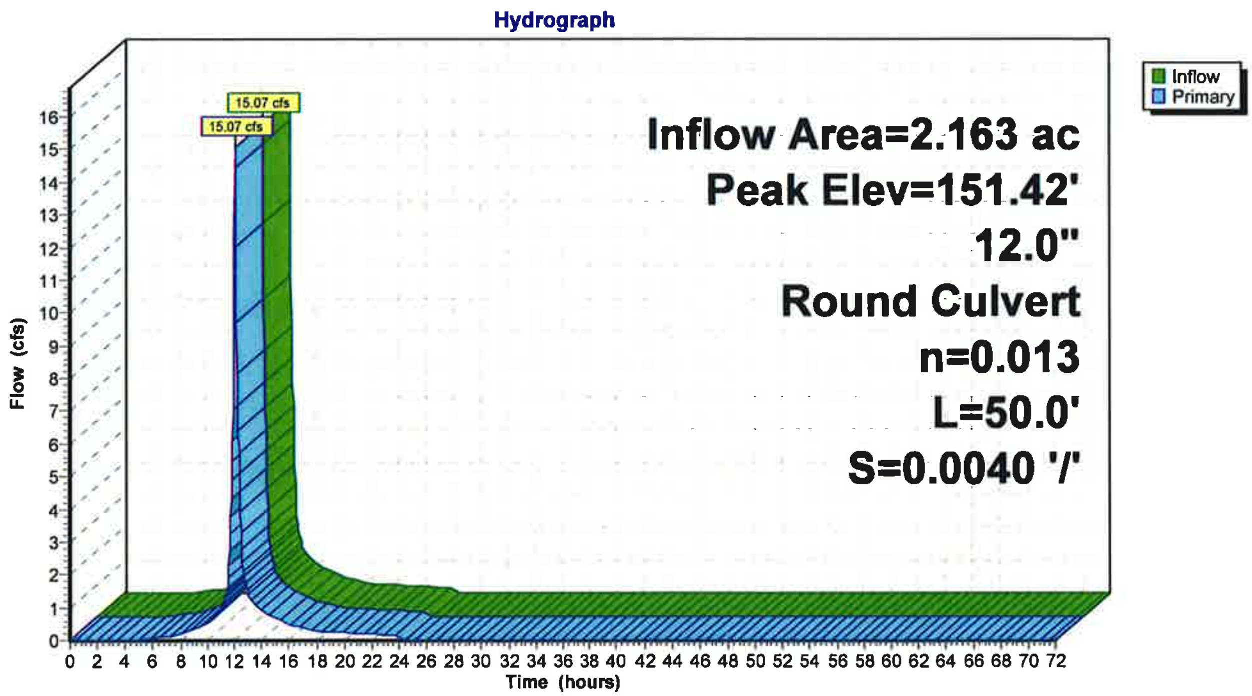
Inflow Area =	2.163 ac, 71.14% Impervious, Inflow Depth = 6.51" for 50 year event		
Inflow =	15.07 cfs @ 12.09 hrs, Volume=	1.173 af	
Outflow =	15.07 cfs @ 12.09 hrs, Volume=	1.173 af,	Atten= 0%, Lag= 0.0 min
Primary =	15.07 cfs @ 12.09 hrs, Volume=	1.173 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 151.42' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.80'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.80' / 5.60' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=14.77 cfs @ 12.09 hrs HW=144.71' TW=127.86' (Dynamic Tailwater)
1=Culvert (Outlet Controls 14.77 cfs @ 18.80 fps)

Pond CB 1240: Separated Drain



Summary for Pond CB 1241: Separated Drain

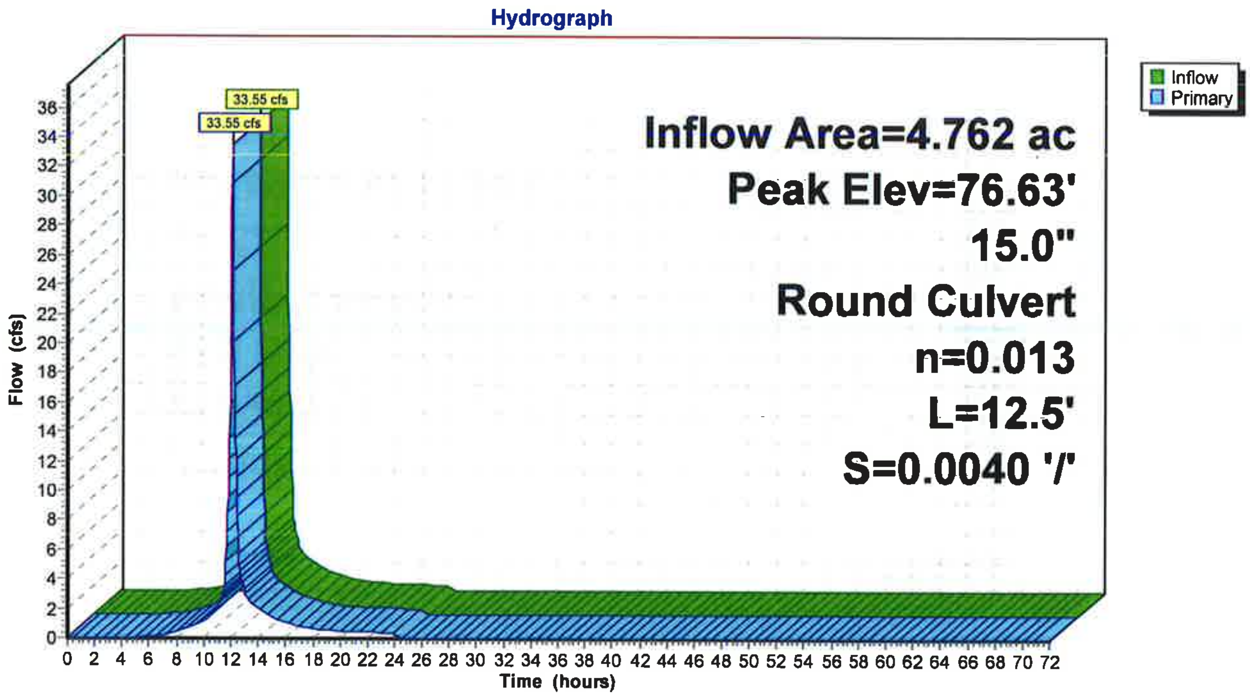
Inflow Area = 4.762 ac, 71.85% Impervious, Inflow Depth = 6.43" for 50 year event
Inflow = 33.55 cfs @ 12.09 hrs, Volume= 2.552 af
Outflow = 33.55 cfs @ 12.09 hrs, Volume= 2.552 af, Atten= 0%, Lag= 0.0 min
Primary = 33.55 cfs @ 12.09 hrs, Volume= 2.552 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 76.63' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	4.88'	**15.0" Round Culvert** L= 12.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 4.88' / 4.83' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=33.18 cfs @ 12.09 hrs HW=75.11' TW=43.58' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 33.18 cfs @ 27.04 fps)

Pond CB 1241: Separated Drain



Summary for Pond CB 1242 / PDMH 3: Separated Drain

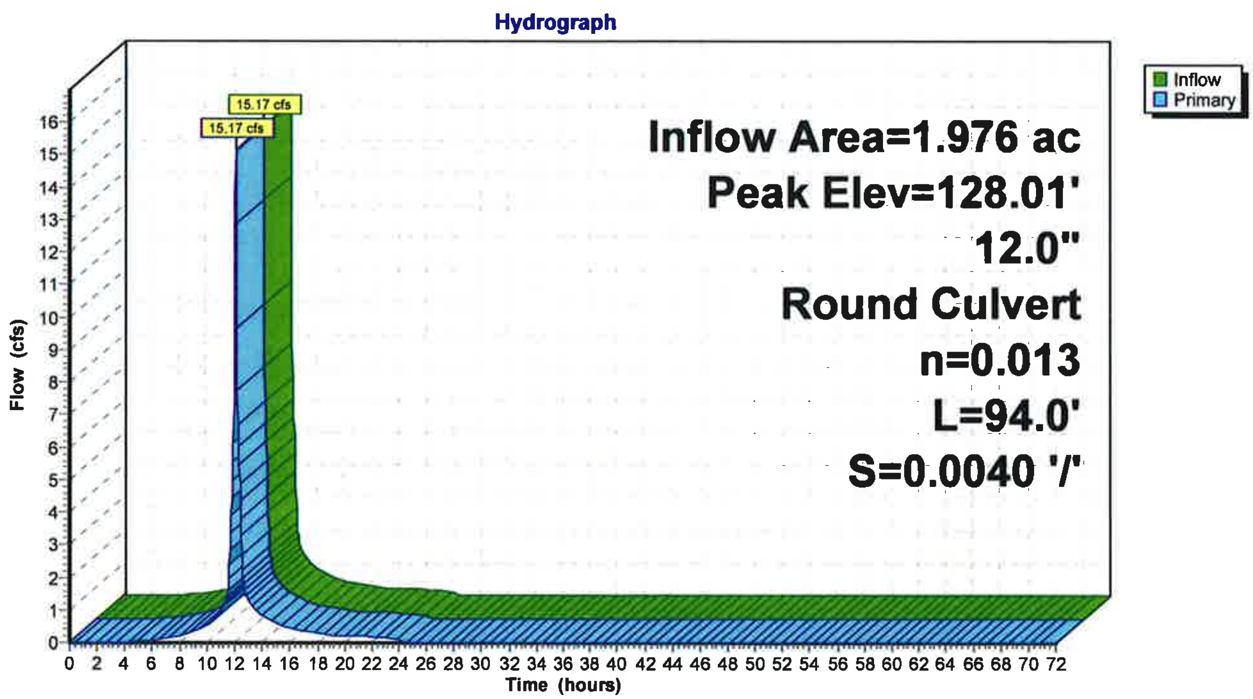
Inflow Area =	1.976 ac, 80.46% Impervious,	Inflow Depth = 6.68"	for 50 year event	
Inflow =	15.17 cfs @	12.07 hrs, Volume=	1.100 af	
Outflow =	15.17 cfs @	12.07 hrs, Volume=	1.100 af,	Atten= 0%, Lag= 0.0 min
Primary =	15.17 cfs @	12.07 hrs, Volume=	1.100 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 128.01' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.36'	**12.0" Round Culvert** L= 94.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.36' / 5.98' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=14.95 cfs @ 12.07 hrs HW=123.97' TW=98.91' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 14.95 cfs @ 19.04 fps)

Pond CB 1242 / PDMH 3: Separated Drain



Summary for Pond CB 1243 / PDMH 4: Separated Drain

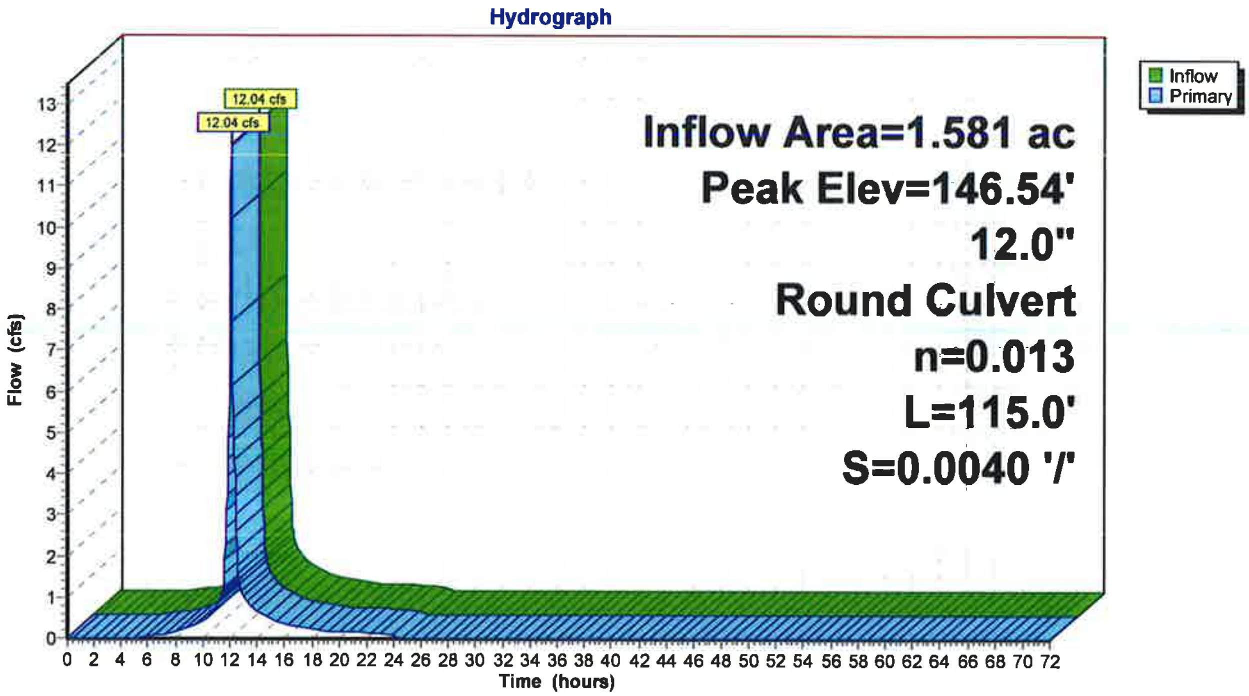
Inflow Area =	1.581 ac, 79.66% Impervious, Inflow Depth = 6.61"	for 50 year event	
Inflow =	12.04 cfs @ 12.07 hrs, Volume=	0.871 af	
Outflow =	12.04 cfs @ 12.07 hrs, Volume=	0.871 af, Atten= 0%, Lag= 0.0 min	
Primary =	12.04 cfs @ 12.07 hrs, Volume=	0.871 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 146.54' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.82'	**12.0" Round Culvert** L= 115.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.82' / 6.36' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=11.88 cfs @ 12.07 hrs HW=142.18' TW=124.03' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 11.88 cfs @ 15.12 fps)

Pond CB 1243 / PDMH 4: Separated Drain



Summary for Pond CB 1244: Separated Drain

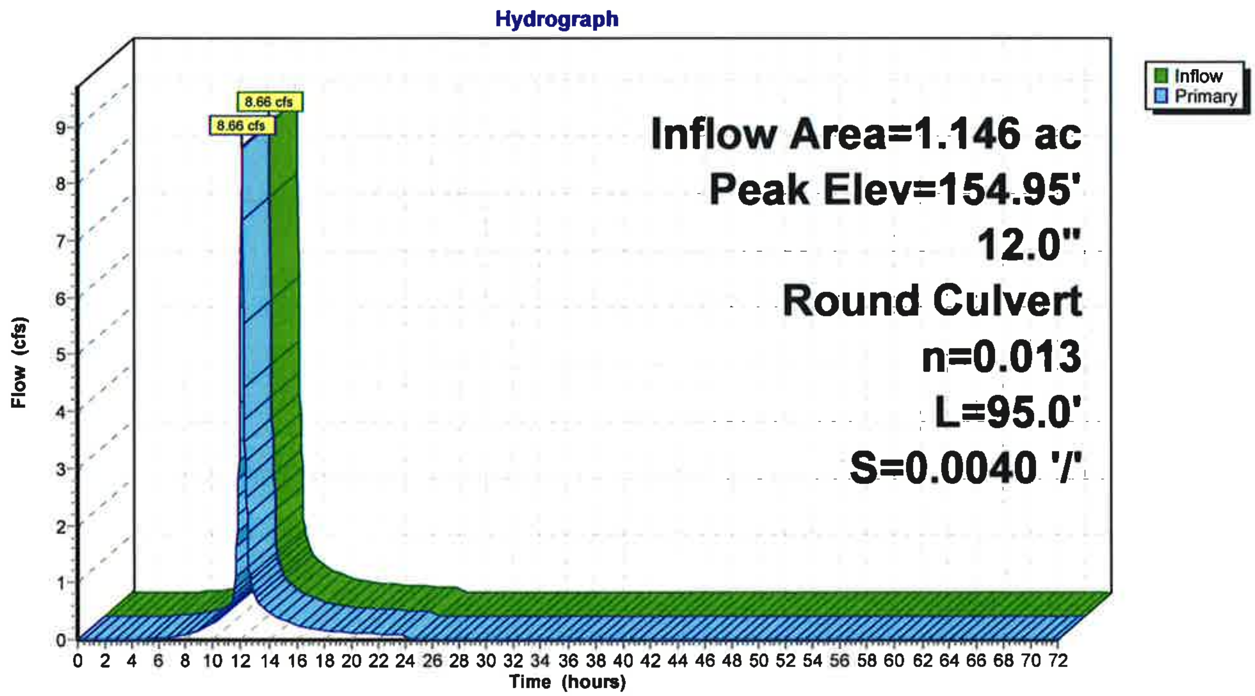
Inflow Area =	1.146 ac,	78.92% Impervious,	Inflow Depth = 6.54"	for 50 year event
Inflow =	8.66 cfs @	12.07 hrs, Volume=	0.624 af	
Outflow =	8.66 cfs @	12.07 hrs, Volume=	0.624 af,	Atten= 0%, Lag= 0.0 min
Primary =	8.66 cfs @	12.07 hrs, Volume=	0.624 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 154.95' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.20'	**12.0" Round Culvert** L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.20' / 6.82' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=8.54 cfs @ 12.07 hrs HW=150.50' TW=142.27' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 8.54 cfs @ 10.87 fps)

Pond CB 1244: Separated Drain



Summary for Pond OCS #1: Rain Garden

Inflow Area = 0.397 ac, 61.96% Impervious, Inflow Depth = 5.61" for 50 year event
Inflow = 2.65 cfs @ 12.08 hrs, Volume= 0.186 af
Outflow = 1.26 cfs @ 12.24 hrs, Volume= 0.186 af, Atten= 53%, Lag= 9.8 min
Discarded = 0.16 cfs @ 12.24 hrs, Volume= 0.109 af
Primary = 1.10 cfs @ 12.24 hrs, Volume= 0.077 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 10.86' @ 12.24 hrs Surf.Area= 1,972 sf Storage= 2,268 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 41.1 min (849.7 - 808.6)

Volume	Invert	Avail.Storage	Storage Description
#1	9.50'	2,543 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

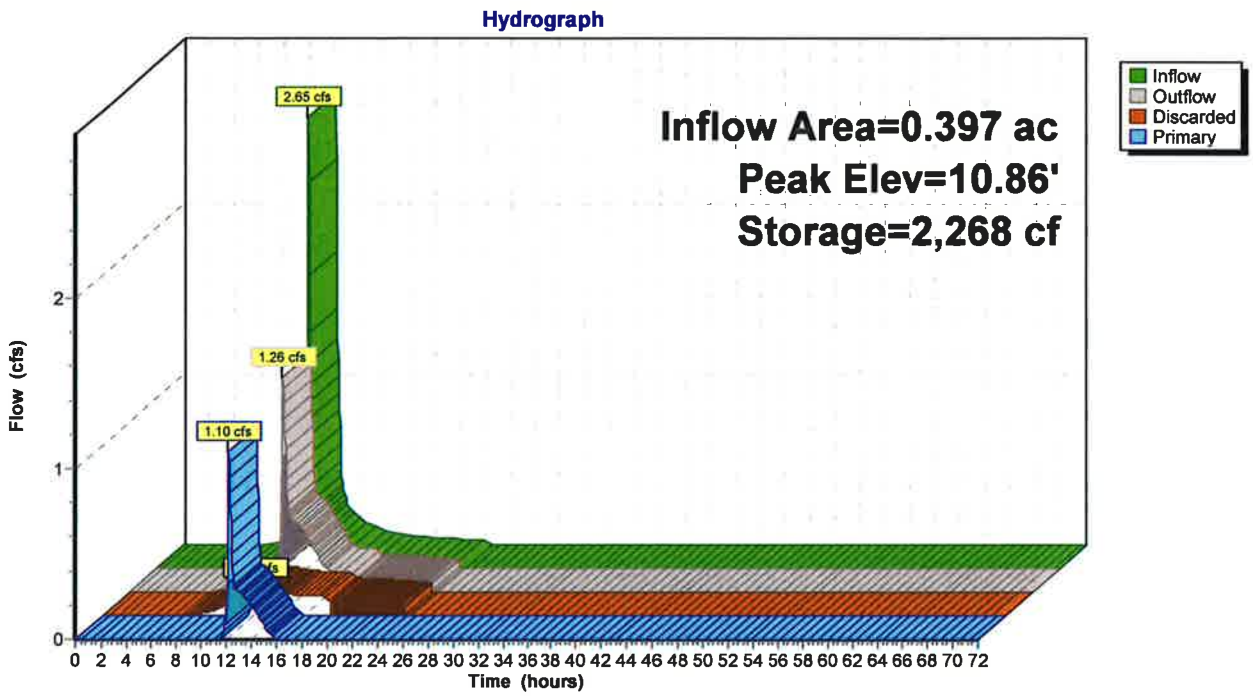
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
9.50	1,375	133.0	0	0	1,375
11.00	2,038	161.7	2,543	2,543	2,083

Device	Routing	Invert	Outlet Devices
#1	Primary	8.25'	**12.0" Round Culvert** L= 240.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.25' / 7.05' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	9.75'	**2.0" Vert. Orifice/Grate X 3.00** C= 0.600
#3	Device 1	10.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Discarded	9.50'	**3.500 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.16 cfs @ 12.24 hrs HW=10.86' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.16 cfs)

Primary OutFlow Max=1.10 cfs @ 12.24 hrs HW=10.86' TW=9.14' (Dynamic Tailwater)
└**1=Culvert** (Passes 1.10 cfs of 2.75 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.32 cfs @ 4.88 fps)
  └**3=Orifice/Grate** (Weir Controls 0.78 cfs @ 1.10 fps)

Pond OCS #1: Rain Garden



Summary for Pond PCB 11: New Roadway Closed Drainage System

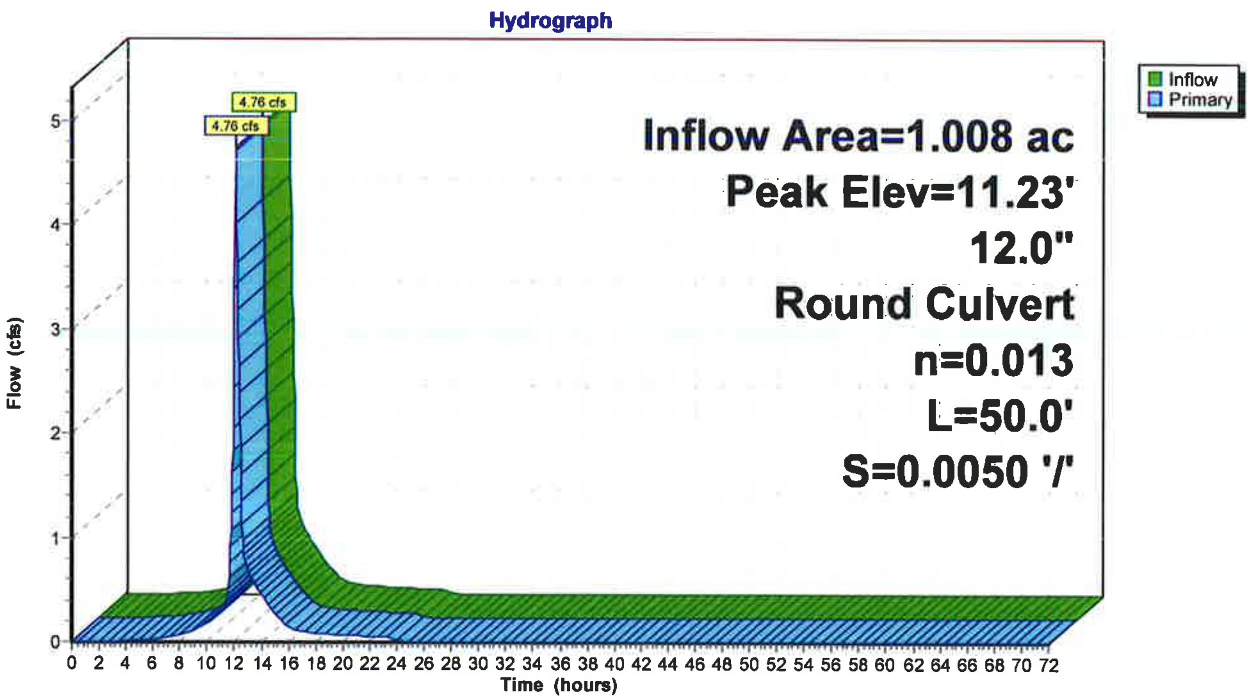
Inflow Area =	1.008 ac, 72.64% Impervious, Inflow Depth = 5.07"	for 50 year event	
Inflow =	4.76 cfs @ 12.07 hrs, Volume=	0.426 af	
Outflow =	4.76 cfs @ 12.07 hrs, Volume=	0.426 af,	Atten= 0%, Lag= 0.0 min
Primary =	4.76 cfs @ 12.07 hrs, Volume=	0.426 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 11.23' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.95'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.95' / 5.70' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.67 cfs @ 12.07 hrs HW=11.06' TW=9.37' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 4.67 cfs @ 5.94 fps)

Pond PCB 11: New Roadway Closed Drainage System



Summary for Pond PCB 13: New Roadway Closed Drainage System

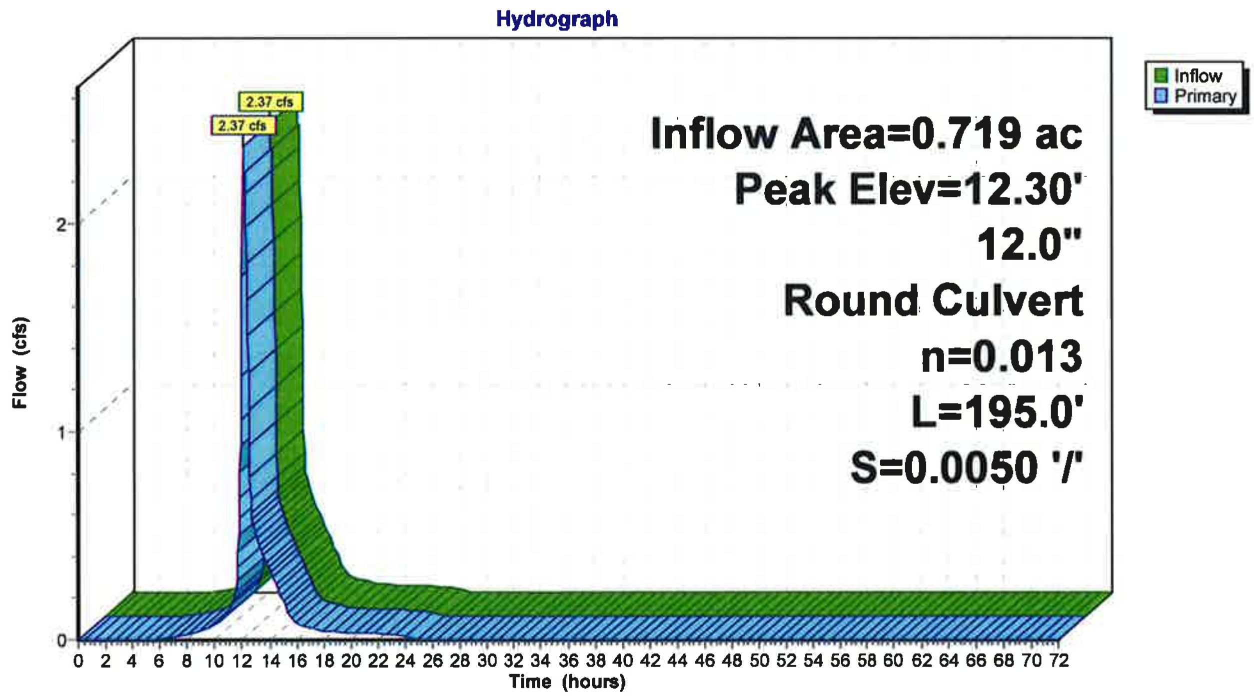
Inflow Area =	0.719 ac, 65.95% Impervious, Inflow Depth = 4.08" for 50 year event		
Inflow =	2.37 cfs @ 12.06 hrs, Volume=	0.244 af	
Outflow =	2.37 cfs @ 12.06 hrs, Volume=	0.244 af,	Atten= 0%, Lag= 0.0 min
Primary =	2.37 cfs @ 12.06 hrs, Volume=	0.244 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 12.30' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.95'	**12.0" Round Culvert** L= 195.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.95' / 5.98' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.33 cfs @ 12.06 hrs HW=12.03' TW=10.99' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 2.33 cfs @ 2.97 fps)

Pond PCB 13: New Roadway Closed Drainage System



Summary for Pond PDMH 2:

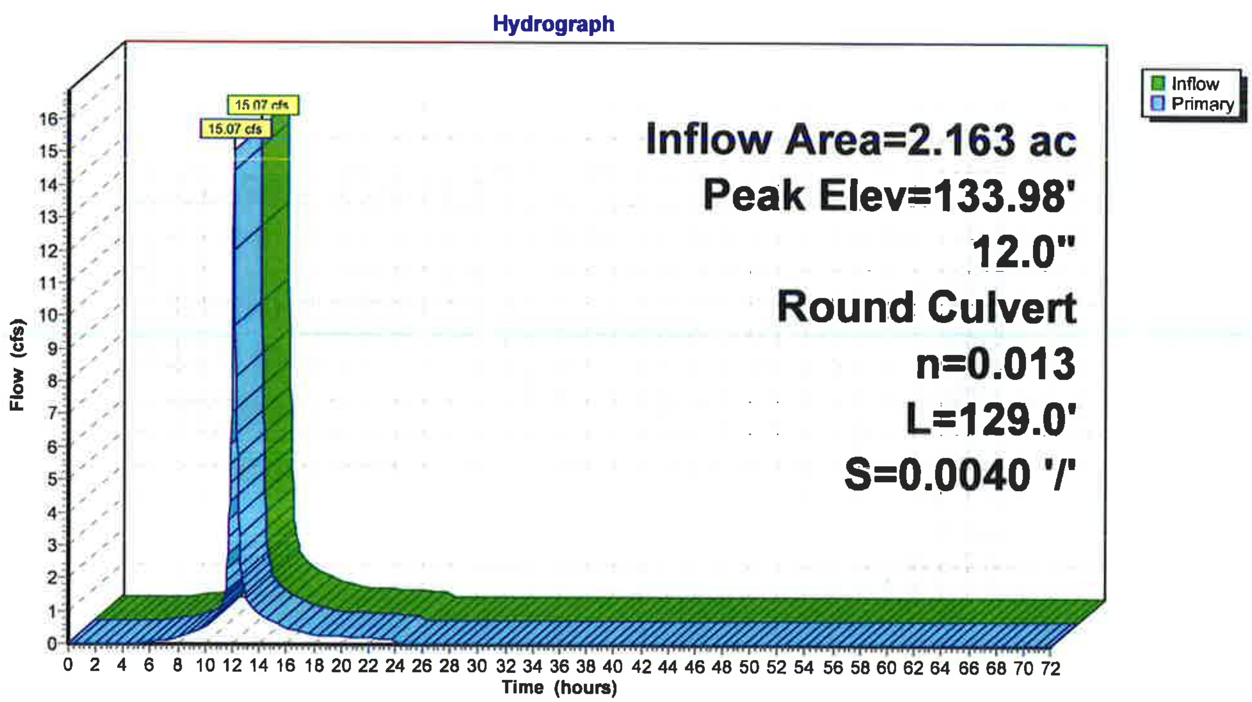
Inflow Area =	2.163 ac,	71.14% Impervious,	Inflow Depth = 6.51"	for 50 year event	
Inflow =	15.07 cfs @	12.09 hrs,	Volume=	1.173 af	
Outflow =	15.07 cfs @	12.09 hrs,	Volume=	1.173 af,	Atten= 0%, Lag= 0.0 min
Primary =	15.07 cfs @	12.09 hrs,	Volume=	1.173 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 133.98' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.60'	**12.0" Round Culvert** L= 129.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.60' / 5.08' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=14.77 cfs @ 12.09 hrs HW=127.86' TW=97.40' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 14.77 cfs @ 18.80 fps)

Pond PDMH 2:



Summary for Pond PDMH 5:

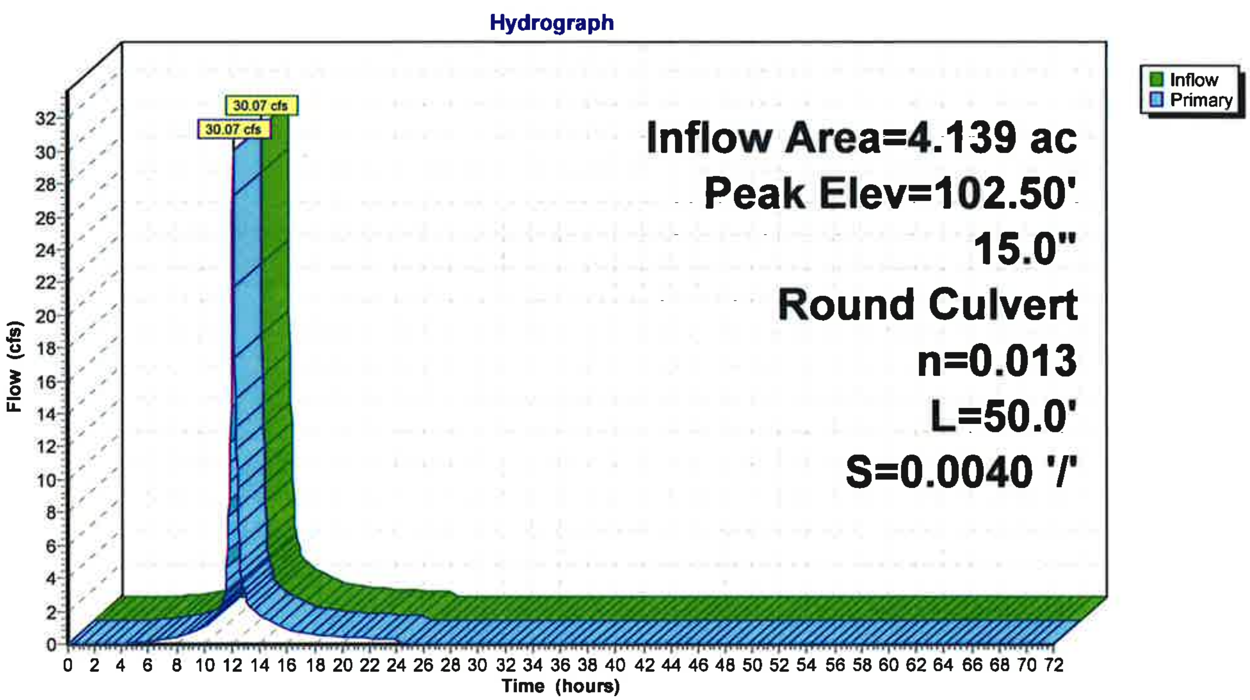
Inflow Area =	4.139 ac, 75.59% Impervious, Inflow Depth = 6.59" for 50 year event			
Inflow =	30.07 cfs @	12.08 hrs, Volume=	2.273 af	
Outflow =	30.07 cfs @	12.08 hrs, Volume=	2.273 af,	Atten= 0%, Lag= 0.0 min
Primary =	30.07 cfs @	12.08 hrs, Volume=	2.273 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs / 7
Peak Elev= 102.50' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	5.08'	**15.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.08' / 4.88' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=29.88 cfs @ 12.08 hrs HW=101.34' TW=75.76' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 29.88 cfs @ 24.35 fps)

Pond PDMH 5:

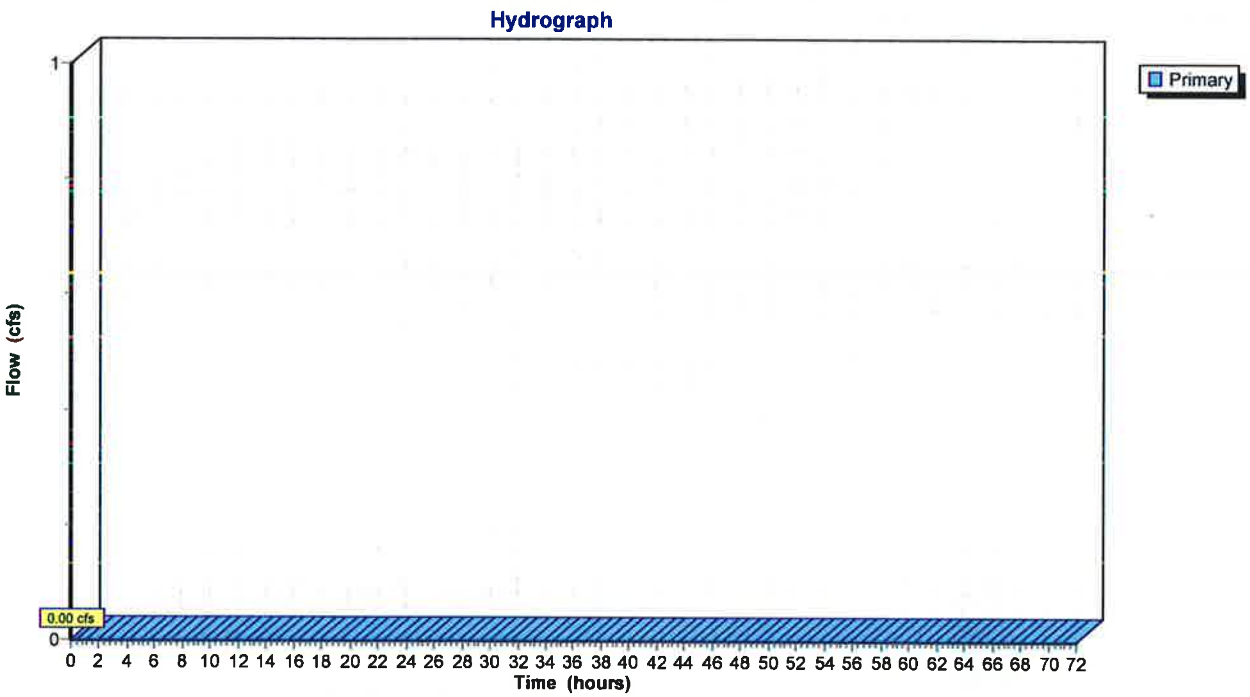


Summary for Link 2L: Sewer Line

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs

Link 2L: Sewer Line

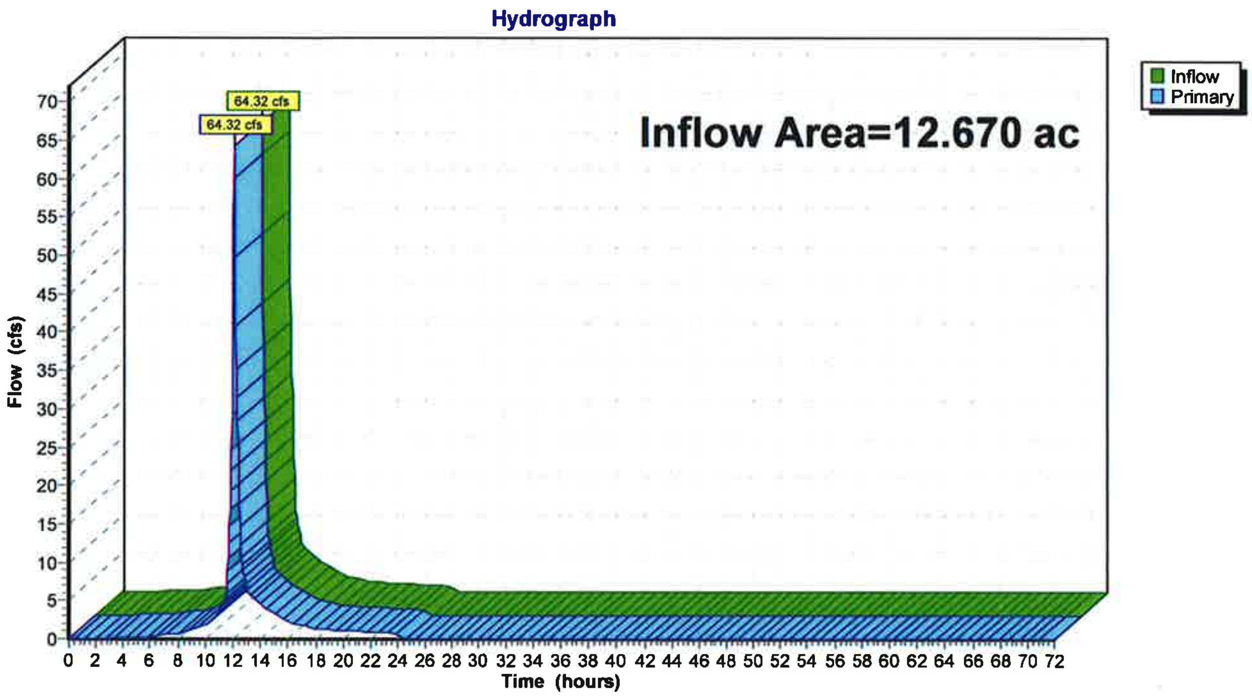


Summary for Link DP1: North Mill Pond

Inflow Area =	12.670 ac,	55.16% Impervious,	Inflow Depth = 4.86"	for 50 year event
Inflow =	64.32 cfs @	12.09 hrs, Volume=	5.127 af	
Primary =	64.32 cfs @	12.09 hrs, Volume=	5.127 af, Atten= 0%, Lag= 0.0 min	

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs

Link DP1: North Mill Pond



APPENDIX D

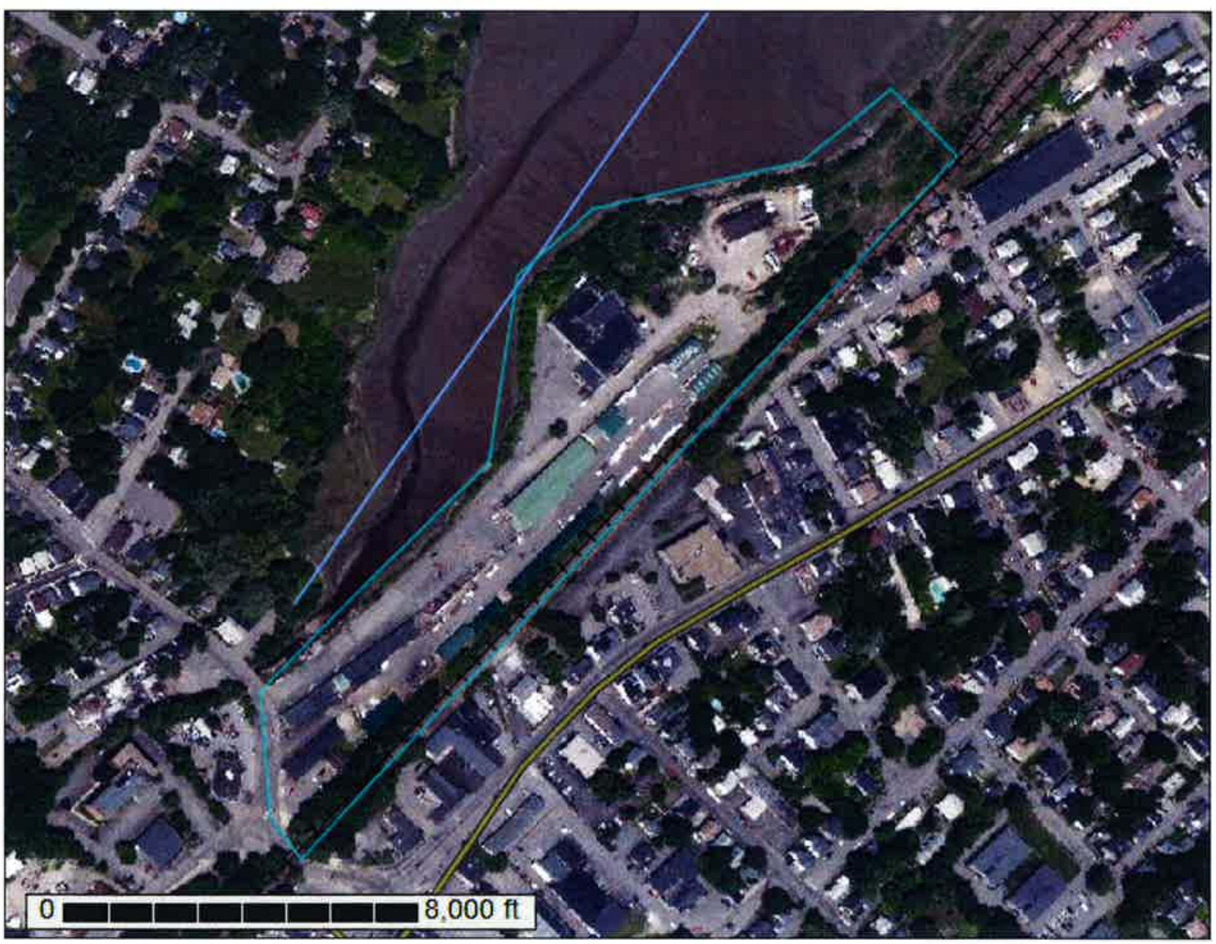
SOIL SURVEY INFORMATION

USDA 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



October 16, 2018

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.

Soil Map

Map Scale: 1:3,180 if printed on A portrait (8.5" x 11") sheet.

N

0 45 90 180 270 Meters

0 150 300 600 900 Feet

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 20, Sep 7, 2018

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—Jun 26, 2016

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	0.1	1.1%
799	Urban land-Canton complex, 3 to 15 percent slopes	11.0	87.0%
W	Water	1.5	11.9%
Totals for Area of Interest		**12.7**	**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

Boxford and eldridge

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

Squamscott and scitico

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

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

W—Water

Map Unit Setting

National map unit symbol: 9cq3
Elevation: 200 to 2,610 feet
Farmland classification: Not prime farmland

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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APPENDIX E

INSPECTION & MAINTENANCE PLAN

INSPECTION & MAINTENANCE PLAN

FOR

Residential Development

The Housing Partnership

Airfield Drive

Rye, NH

Introduction

The intent of this plan is to provide The Housing Partnership (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 rain gardens, detention pond and associated structures and pipes 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 Town of Rye Code Enforcement Officer or other agency having jurisdiction.

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 and catch basins, the forebay/rain garden/detention pond and associated inlet/outlet pipes, headwalls/end sections, and outlet control structures.

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. **Storm Drain Outlets and Outlet Control Structures:** Monitor drain inlets and outlet aprons for excessive accumulation of sediments or missing stone/riprap. Remove sediments as required to maintain filtering capabilities of the stone. Replace missing riprap.
4. **Rain Garden Maintenance:** In order to keep the rain garden functioning properly, it is important to keep the filter surface porous and unplugged by debris. After acceptance of the detention pond, 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 for excessive or concentrated accumulations of debris, or excessive erosion. Remove debris as required.
   b. Monitor the outfall structure for problems with clogged pipes. Repair or remove clogs as required and determine cause of clogging. Pipes should be inspected annually and

after every major rainstorm. Broken or damaged pipes should be repaired or replaced as necessary.

c. Monitor the berm and emergency spillway for signs of erosion, tree growth, rodent burrows or other structural damage bi-yearly, or after significant rain events that triggered an outflow through the emergency spillway. Repair any damages to original condition. Replace torn or ripped fabric linings if necessary. Repair any subsequent damages below outfall outlet by extending the riprap into the damage areas.

d. Monitor side slopes of rain garden for damages or erosion—repair as necessary.

e. Monitor turf health and keep protected from fire, grazing, traffic and dense weed growth. Lime and fertilizer should be applied as necessary to promote good growth as determined by soil tests. Mowing the vegetated areas of the basin should be carried out as necessary.

f. Sediment accumulation should be continually checked in the basin. Sediment should be removed as it is discovered. Particularly if it has accumulated near the outlet of the basin.

g. The outlet control structure should be inspected annually and after every major rainstorm. The outlet control structure has within it a weir structure with various size orifices for controlling flow out of the basin. These orifices should be kept clear and unclogged. Any sediment or debris that has built up inside the outlet control structure should be removed when discovered.

Invasive Species

Monitor Stormwater Management System for signs of invasive species growth. If caught earlier enough, their eradication is much easier. The most likely places where invasions start is in wetter, disturbed soils or detention ponds. Species such as phragmites and purple loose-strife are common invaders in these wetter areas. If they are found, then the owner shall contact a wetlands scientist with experience in invasive species control to implement a plan of action to eradicate the invaders. Measures that do not require the application of chemical herbicides should be the first line of defense.

Stormwater Management System

Inspection & Maintenance Checklist for Post Construction Condition — Clipper Traders, LLC, Portsmouth, NH

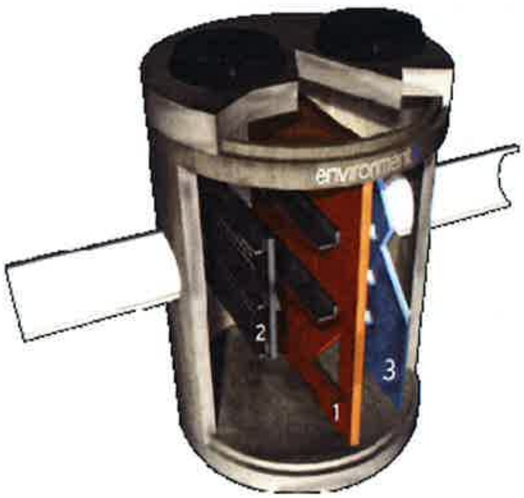
BMP/System Component	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance/Cleanout Threshold
Rain Garden and Detention Basin	Monthly	*Check for sediment clogging; leaks, excessive weed growth and sloughing of berms. Check plant vitality. Check for scouring near pipe inlet. Check for invasive species.*	Repair leaks, scouring or sloughs, remove weeds and trash/debris; remove sediments regularly near pipe inlet. Replant dead or dying wetlands vegetation.
Environment 21 Unistorm Systems (Models 5R & 8R)	See Attached	*See Attached*	See Attached
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.
Annual Report	Yearly	*Prepare Annual Report, including all Inspection & Maintenance Logs. Provide to C.E.O. if required).*	N/A

Stormwater Management System Maintenance Summary

Inspection & Maintenance Checklist for Post Construction Condition — Clipper Traders, LLC, Portsmouth, NH

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

UniStorm
Stormwater Treatment System



- **Single Structure configuration**
- **Sedimentation Science –Stokes Law**
- **Locally manufactured**
- **Field Tested and Proven**

Partial Project List

Indiana State University
Binghamton University – NY
New Century –Kansas
Chrysler Plant – Ontario, Canada
Jewett Elementary School - OR
Tropical Mexico Rest. - CA
Taco Bell - Ohio
CSK Auto - Arizona
Sams Club - Ohio
Rogue Valley Avenue A – Oregon
Jericho Road, Hatfield –MA
Rock Ridge Country Club – CT
Mahopac Firehouse - NY

The UniStorm Stormwater Treatment System provides primary treatment of stormwater using locally available precast manholes (UniStorm-R) and vaults (UniStorm-V). The UniStorm employs low head-loss, internal flow diffuser and flow distributors to reduce stormwater turbulence and improve flow distribution. This allows on-line operation there by reducing pollutant bypass during high intensity rainfall events.

The UniStorm Stormwater Treatment Systems are sized to help meet the EPA goal of 80%TSS and 40% phosphorus. The shallow sump depths of 4 feet to 6 feet thereby reducing excavation cost and facilitates pump out during maintenance.

In addition the UniStorm can be designed for flow control at the outlet of detention.

In addition to a standard online system the UniStorm can also be configured with an internal high flow bypass or can be designed offline by utilizing junction structures. Allowing the design engineer to decrease the size of the system required for the project, there by decreasing construction cost.

All UniStorm Stormwater Treatment Systems are manufactured locally to the project site by approved manufacturers with a proven record of quality in the precast concrete market. Our approved manufacturers carry the highest of quality control standards... NPCA Certification and state DOT approved manufacturers.

Contact Information

PO Box 55
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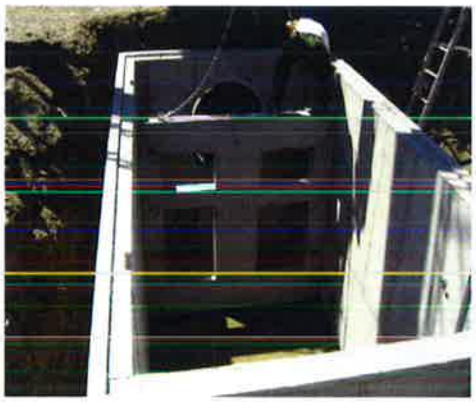
environment21
Global Stormwater Solutions

Service Features and Maintenance



Every Environment 21 system is designed site specific providing for optimal performance for your project. With every system design you will receive a Site Layout, Design Storm Hydrology, Water Quality Hydrology, back Water Analysis, and System Specific drawing.
In addition we provide you with an estimated pump out and inspection interval specific to your site and system. The unique design of the UniStorm utilizing vertical inserts with multiple access openings per chamber allows for clear access to all area of the chamber for inspection and maintenance.

Through continuous field and laboratory testing, combined with ongoing realistic Case Studies we are able to give you the confidence that you are meeting your local and national EPA Stormwater Management Requirements to the best of your ability. With such high profile projects like Jewett Elementary School in Central Point, Oregon why shouldn't you be using a Stormwater Treatment System with all of your concerns and project needs met. Environment 21 engineers work directly with you to reduce treatment system cost while still providing the maximum treatment efficiency.

System Sizing

Model	Impervious Area	Max. Inlet Pipe	Peak Flow
5R	0.0 -3.0 acres	15"	6 cfs
6R	3.0 - 4.0 acres	18"	7 cfs
7R	4.0 – 6.0 acres	21"	9 cfs
8R	6.0 – 10.0 acres	24"	16 cfs
10R	10.0 – 12.0 acres	30"	25 cfs
12R	12.0 – 15.0 acres	36"	35 cfs
48V	0.0 – 2.0 acres	15"	4 cfs
510V	2.0 - 4.0 acres	18"	6 cfs
612V	4.0 – 5.0 acres	24"	10 cfs
1020V	5.0 – 12.0 acres	36"	25 cfs

SERVICES AVAILABLE

Technical Support
Preliminary Designs
Installation and Setup
Maintenance
Application Support

24 Hour Preliminary Designs

Using our user friendly online Sizing Request Form we can complete a preliminary design and have it waiting in your inbox within 24 hours. No need to register, no annoying salesmen calling on you. In addition our expert sales & engineering staff can assist you with any regulatory approval.

More Installations

East Town Road, Milford – CT
Lakeshore High School - NY
Fulton Drive - Ohio
Family House – North Carolina
Hartford Life – CT
Dunda Street - Ontario, Canada
Lake Forest North Sub. – NY

For a complete list of installations Please feel free to contact our Corporate Headquarters.

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UniStorm Manhole Maintenance

UNISTORM –RFV DESCRIPTION

The UNISTORM-RFV is a Precast Concrete manhole consisting of inlet and outlet stages of treatment separated by a Precast concrete baffle wall. The baffle wall is designed to meet site-specific flow requirements and provides three functions:

(1) Remove floatables and sediment in the inlet stage
(2) Provide a low head loss flow path between the first and second stages and provide for additional sediment removal in the second stage.
(3) Support the Environment 21 Flow Control Vanes mounted in the upstream side of the baffle wall.

UNISTORM-RFV manholes are manufactured from standard precast concrete components. These components are designed to reduce the weight that needs to be handled during shipment and installation.

Normal water depth in the UNISTORM-R sump will be 4-5 ft. This shallow sump reduces excavation costs and the depth to be accessed from a pumper truck.

POLLUTANT STORAGE CAPACITY AND CLEANOUT FREQUENCY

Recommended practice for the UNISTORM-RFV is to plan on semi-annual inspections and annual pumpout based on the following general design guidelines:

(1) Sediment Sump -- the rate at which sediment is accumulated will depend on land use and other pavement activities (e.g., heavy winter sanding will create extra sediment, while regular sweeping will reduce accumulation). Environment 21 recommends sediment pumpout when the average depth of the sediment pile is 0.50 ft. The UNISTORM-RFV sump is designed to store an average sediment pile depth of 1.0 ft.

(2) Floatables Chambers -- oil sheen and floating debris will be retained in the inlet stage of the UNISTORM-RFV. Annual accumulation of floatables is estimated at less than 0.50 inches but can vary depending on land use.

During the first year of operation, Environment 21 recommends visual inspections in February, May, and October. This inspection schedule can be modified in subsequent years according to experience and/or to meet specific stormwater permit requirements.

environment21
Global Stormwater Solutions

8713 Read Road • PO Box 55
East Pembroke, NY 14056
Phone 585-762-8314 Fax 585-762-8315
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SEDIMENT PILE DEPTH MEASUREMENT

Cast iron manhole frames with vented covers are provided in the UNISTORM-R roof to make the sediment pile readily accessible for measurement and cleaning. Sediment should be removed when the first-stage sediment pile depth is 6"-12". Normal water depth in the UNISTORM-RFV sump will be 4-5 ft.

To detect the surface of the first stage sediment pile, use a measuring rod with 3-6 inch diameter end plate. Lower the rod into the UNISTORM-RFV until a slight resistance to movement occurs when the end plate contacts the top of the sediment pile.
To determine sediment pile depth, twist the measuring rod into the sediment pile and measure the additional depth needed to contact the floor of the UNISTORM-RFV.

Organic debris that has become waterlogged and settled to the floor is expected to be present in relatively small quantities that will be removed during pumpout of the mineral sediment.

FLOATABLES OBSERVATION AND MEASUREMENT

Oil sheen and floating debris can be observed by using a flood light to illuminate the water surface in the inlet stage of the UNISTORM-RFV. Gently stir the floatables to estimate depth. This depth will typically be less than one inch and floatables can be skimmed from the surface prior to pumpout of the sediment.

PUMPOUT

Pumpout of the UNISTORM-RFV is achieved using standard truck-mounted sewer and catch basin cleaners with positive displacement rotary lobe vacuum pumps. Manhole openings provide access to both stages of the UNISTORM-RFV. Site Plans for the project should include a driveway area for pumper truck access to the UNISTORM-RFV.

DISPOSAL OF WASTEWATER, SEDIMENT, AND FLOATABLES

Commercial and retail sites are usually adjacent and tributary to public stormwater systems, and accordingly pumper truck contents should be delivered to an approved waste disposal facility. Facilities used by the local Highway Department may be acceptable. For industrial sites, pumper truck contents should be delivered to a disposal site approved by the owner of the industrial site.

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UNISTORM-V MAINTENANCE

UNISTORM –V DESCRIPTION

The UNISTORM-V is a 3-compartment Precast concrete vault. Vault width ranges from 6-12 feet depending on the diameter of the storm sewer pipe. Vault length increases with the size of the impervious area being treated. UNISTORM-V vaults are manufactured from standard precast concrete modules. Use of modules reduces the weight of the structures that need to be handled during shipment and installation.

Normal water depth in the UNISTORM sump will be 3.5-4.0 ft. This shallow sump reduces excavation costs and the depth to be accessed from a pumper truck.

UNISTORM-V inlet and outlet compartments are typically 36 inches long, and act as flow distributors for the quiescent middle compartment. The middle compartment length will be longer and vary depending on the size of the impervious area being treated.
Each compartment is equipped with 24"-30" access openings.

POLLUTANT STORAGE CAPACITY AND CLEANOUT FREQUENCY

Recommended practice for the UNISTORM-V is to plan on semi-annual inspections and annual pumpout based on the following general design guidelines:

(1) Sediment Sump -- the rate at which sediment is accumulated will depend on land use and Highway Department activities (e.g., heavy winter sanding will create extra pavement sediment, while regular pavement sweeping will reduce sediment accumulation). Environment 21 recommends sediment pumpout when the average depth of the sediment pile is 0.50 ft. The UNISTORM sump is designed to store an average sediment pile depth of 1.5 ft.

(2) Floatables Chambers -- oil sheen and floating debris will be retained in the inlet and middle sections of the UNISTORM-V. Annual accumulation of floatables is estimated at less than 0.50 inches but can vary depending on land use.

During the first year of operation, Environment 21 recommends visual inspections in February, May, and October. This inspection schedule can be modified in subsequent years according to experience and/or to meet specific stormwater permit requirements.

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SEDIMENT PILE DEPTH MEASUREMENT

Cast iron manhole frames with vented covers are provided in the UNISTORM-V roof to make the sediment pile readily accessible for measurement and cleaning. Sediment should be removed when the pile depth is 6"-12". Normal water depth in the UNISTORM sump will be 3.5-4.0 ft.

During routine inspections, the distance from the rim of the UNISTORM access opening to the top of the sediment pile can be determined by slowly lowering a measuring rod with 3-6-inch diameter end plate. The end plate improves the ability to sense when the top of the sediment pipe has been contacted.
To determine sediment pile depth, twist the measuring rod into the sediment pile until the end plate contacts the floor of the UNISTORM-V.

Organic debris that has become waterlogged and settled to the floor is expected to be present in relatively small quantities that will be removed during pumpout of the mineral sediment.

FLOATABLES OBSERVATION AND MEASUREMENT

Oil sheen and floating debris can be observed using a flood light to illuminate the water surface in the inlet and middle sections of the UNISTORM. Gently stir the floatables to estimate depth. This depth will typically be less than one inch and floatables can be skimmed from the surface prior to pumpout of the sediment.

PUMPOUT

Pumpout of the UNISTORM is achieved using standard truck-mounted sewer and catch basin cleaners with positive displacement rotary lobe vacuum pumps. Manhole openings provide access to all sections of the UNISTORM. Site Plans for the project should include a driveway area for truck access to the UNISTORM.

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Commercial and retail sites are usually adjacent and tributary to public stormwater systems, and accordingly pumper truck contents should be delivered to an approved waste disposal facility. Facilities used by the local Highway Department may be acceptable. For industrial sites, pumper truck contents should be delivered to a disposal site approved by the owner of the industrial site.

UNISTORM ONLINE SYSTEM / ADAPT TO SITE LAYOUT

DATE: 07-21-14
DWG. NO.: Detail - Unistorm-R

UNISTORM SIZING TABLE				
UNISTORM MODEL #	D (ft.)	MAX. S (ft.)	IMPERVIOUS AREA (acres)	STANDARD INLET PIPE SIZE (in.)
5R	5	5.0±	0 - 3	12-15
6R	6	5.3±	3 - 4	18
7R	7	5.6±	4 - 6	21
8R	8	6.0±	6 - 10	24
10R	10	6.6±	10 - 12	30
12R	12	7.3±	12 - 15	36

environment 21
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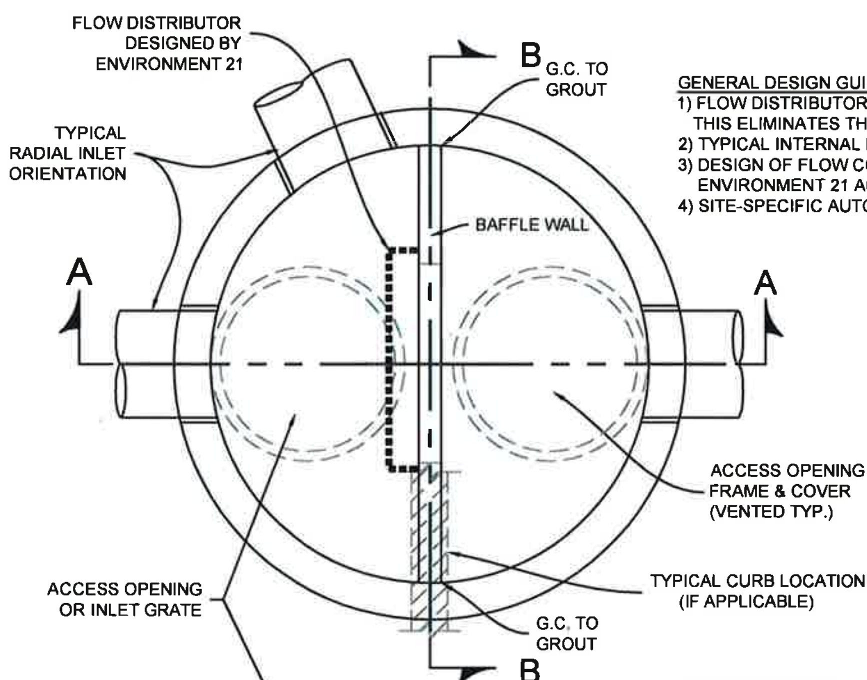
CALL: 1-800-809-2801

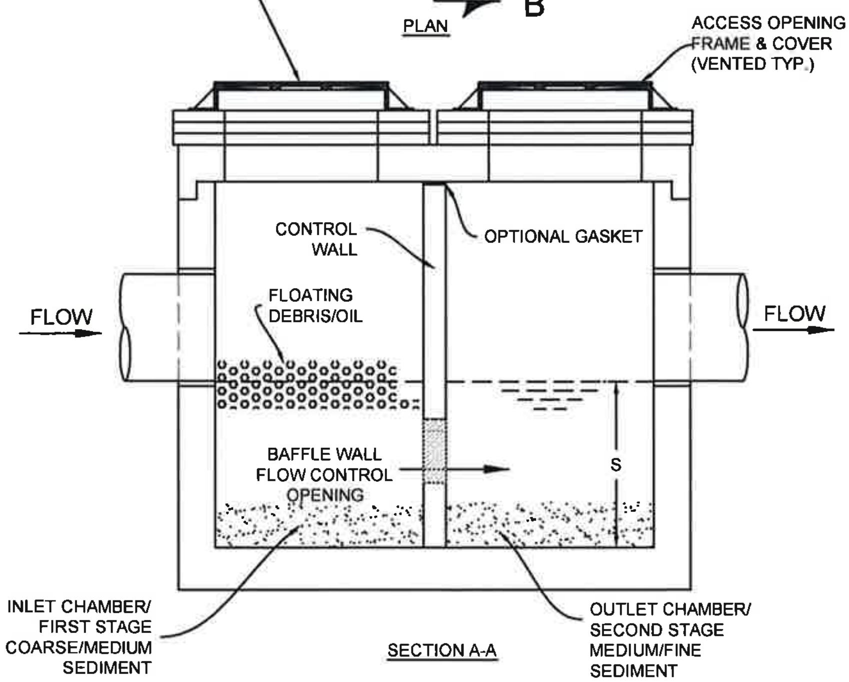
NOTES:
1) RAINFALL INTENSITY USED FOR TREATMENT FLOW = 0.80–1.0 IN/HR

MANUFACTURING NOTES:
1) DESIGN OF INTERNAL BAFFLE WALL PROVIDED TO LICENSED MANUFACTURER BY ENVIRONMENT 21, LLC.
2) LOCATION AND SIZE OF MANHOLE OPENINGS MAY BE ADJUSTED BY LICENSED MANUFACTURER.
3) G.C. TO GROUT INLET AND OUTLET PIPES.

GENERAL DESIGN GUIDELINES FOR UNISTORM TREATMENT CHAMBER
1) FLOW DISTRIBUTOR USED TO DISSIPATE INLET FLOW STIRRING POWER. THIS ELIMINATES THE NEED TO BYPASS HIGH FLOW EVENTS.
2) TYPICAL INTERNAL HEAD LOSS FOR DESIGN STORM IS 0.20 FT.
3) DESIGN OF FLOW CONTROL BAFFLE WALL AND FLOW DISTRIBUTOR BASED ON ENVIRONMENT 21 ANALYSIS OF SITE-SPECIFIC STORM SEWER HYDRAULICS.
4) SITE-SPECIFIC AUTOCAD DRAWING DETAIL PREPARED BY ENVIRONMENT 21 AVAILABLE

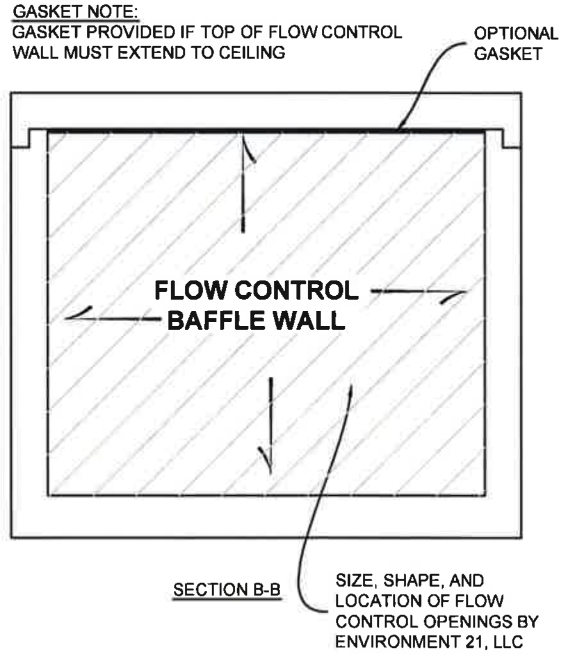


PLAN



SECTION A-A

GASKET NOTE:
GASKET PROVIDED IF TOP OF FLOW CONTROL WALL MUST EXTEND TO CEILING

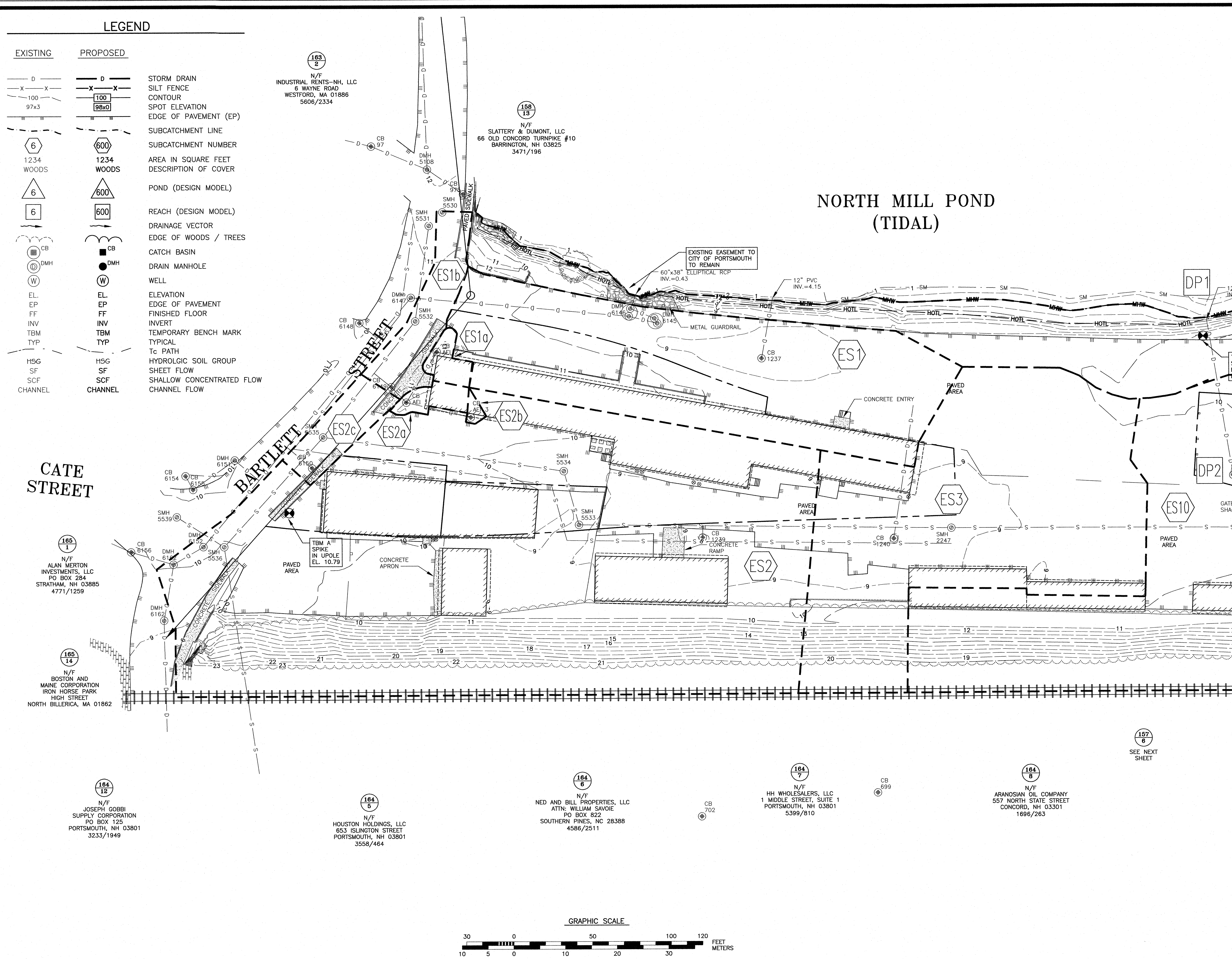


SECTION B-B

GENERAL NOTES:
MANHOLE DESIGN SPECIFICATIONS CONFORM TO LATEST A.S.T.M. C478 SPEC. FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS.
DESIGN LOADING: AASHTO HS20-44

LEGEND

EXISTING	PROPOSED	
D	D	STORM DRAIN
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

PROJECT LOCATION:
Bartlett Street

PARCEL I.D.:
TAX MAP 157 / LOTS 1 & 2
TAX MAP 164 / LOTS 1, 2, 3 & 4

OWNER:
CLIPPER TRADERS, LLC

NOTES:

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SUBDIVISION PLAN CLIPPER TRADERS, LLC OFF BARTLETT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR APPROVAL	10/16/18

REVISIONS

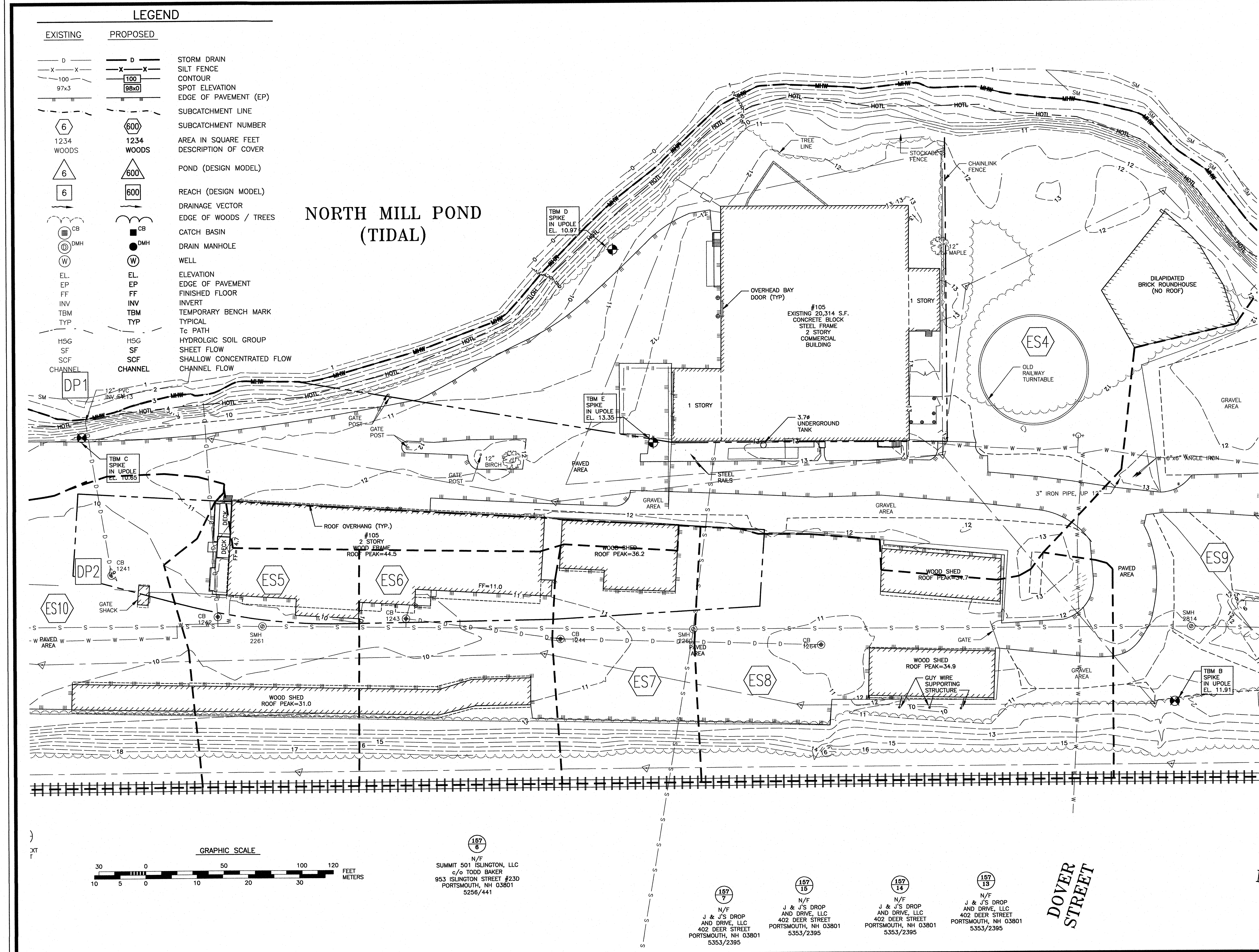
STATE OF NEW HAMPSHIRE
JOSEPH L. MULLEDY No. 11902
LICENSED PROFESSIONAL ENGINEER
10/16/18

SCALE: 1" = 30'

PLAN OF EXISTING SUBCATCHMENTS

W1a

2429



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SUBDIVISION PLAN
CLIPPER TRADERS, LLC
OFF BARTLETT STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
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REVISIONS

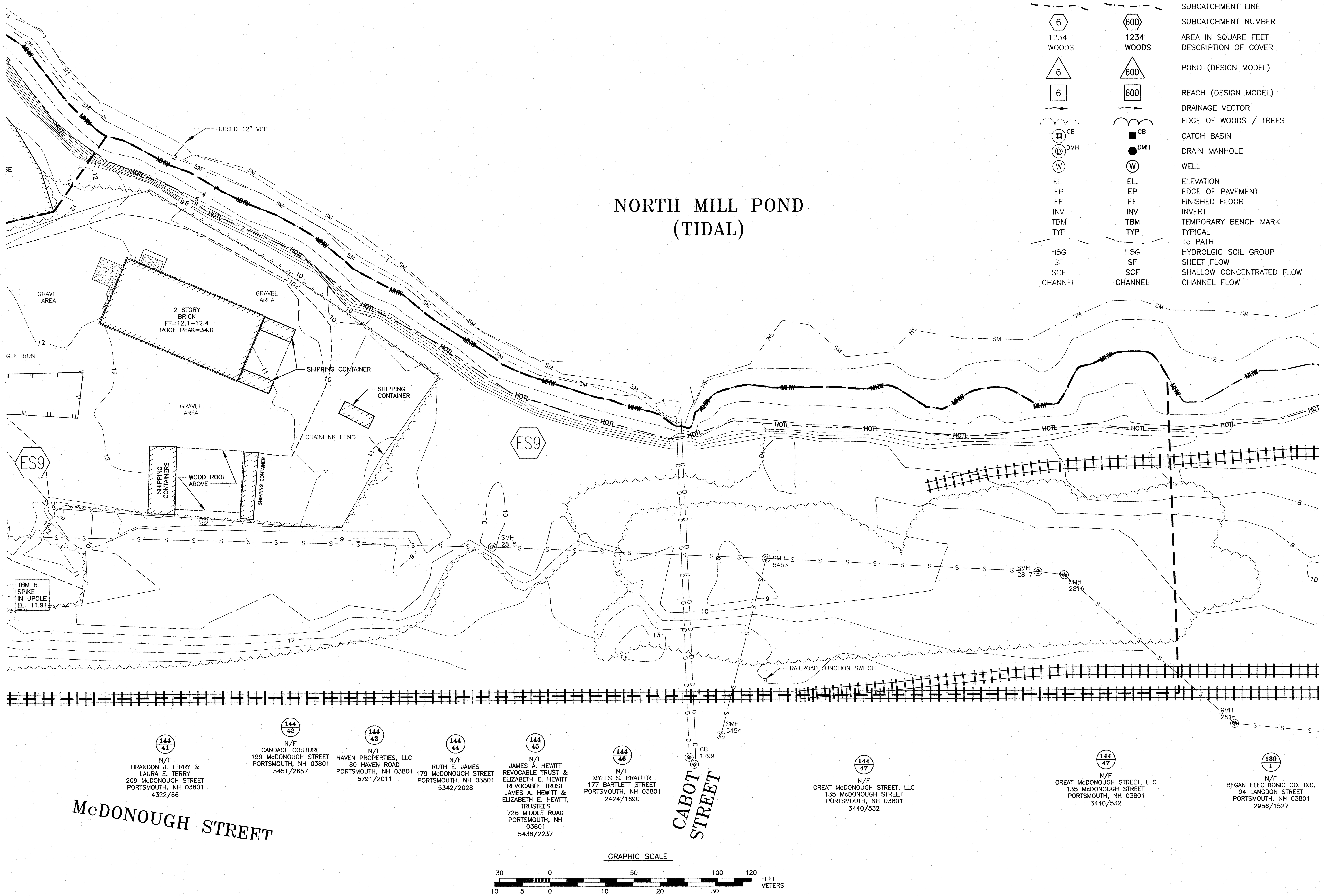
STATE OF NEW HAMPSHIRE JOSEPH L. MULLEDY No. 11502 LICENSED PROFESSIONAL ENGINEER
10/16/18

SCALE: 1" = 30'
OCTOBER 2018

PLAN OF EXISTING SUBCATCHMENTS

W1b

2429



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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SUBDIVISION PLAN
CLIPPER TRADERS, LLC
OFF BARTLETT STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
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REVISIONS

STATE OF NEW HAMPSHIRE
JOSEPH L. MULLEDY
No. 11502
LICENSED
PROFESSIONAL ENGINEER
10/16/18

SCALE: 1" = 30' OCTOBER 2018

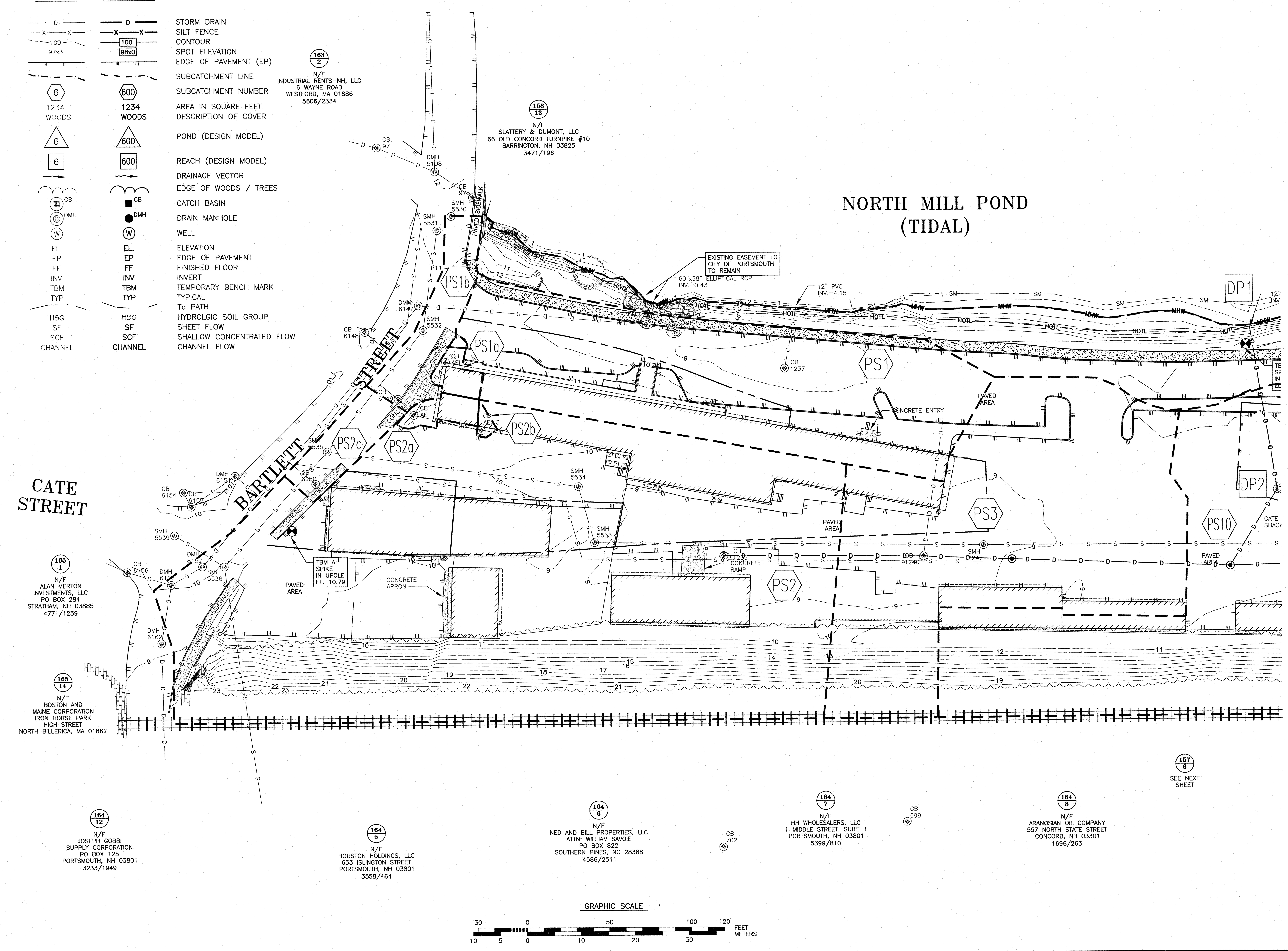
PLAN OF EXISTING SUBCATCHMENTS

W1c

2429

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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SUBDIVISION PLAN CLIPPER TRADERS, LLC OFF BARTLETT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
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REVISIONS

STATE OF NEW HAMPSHIRE JOSEPH L. MULLEDY No. 11502 LICENSED PROFESSIONAL ENGINEER

10/16/18

SCALE: 1" = 30'

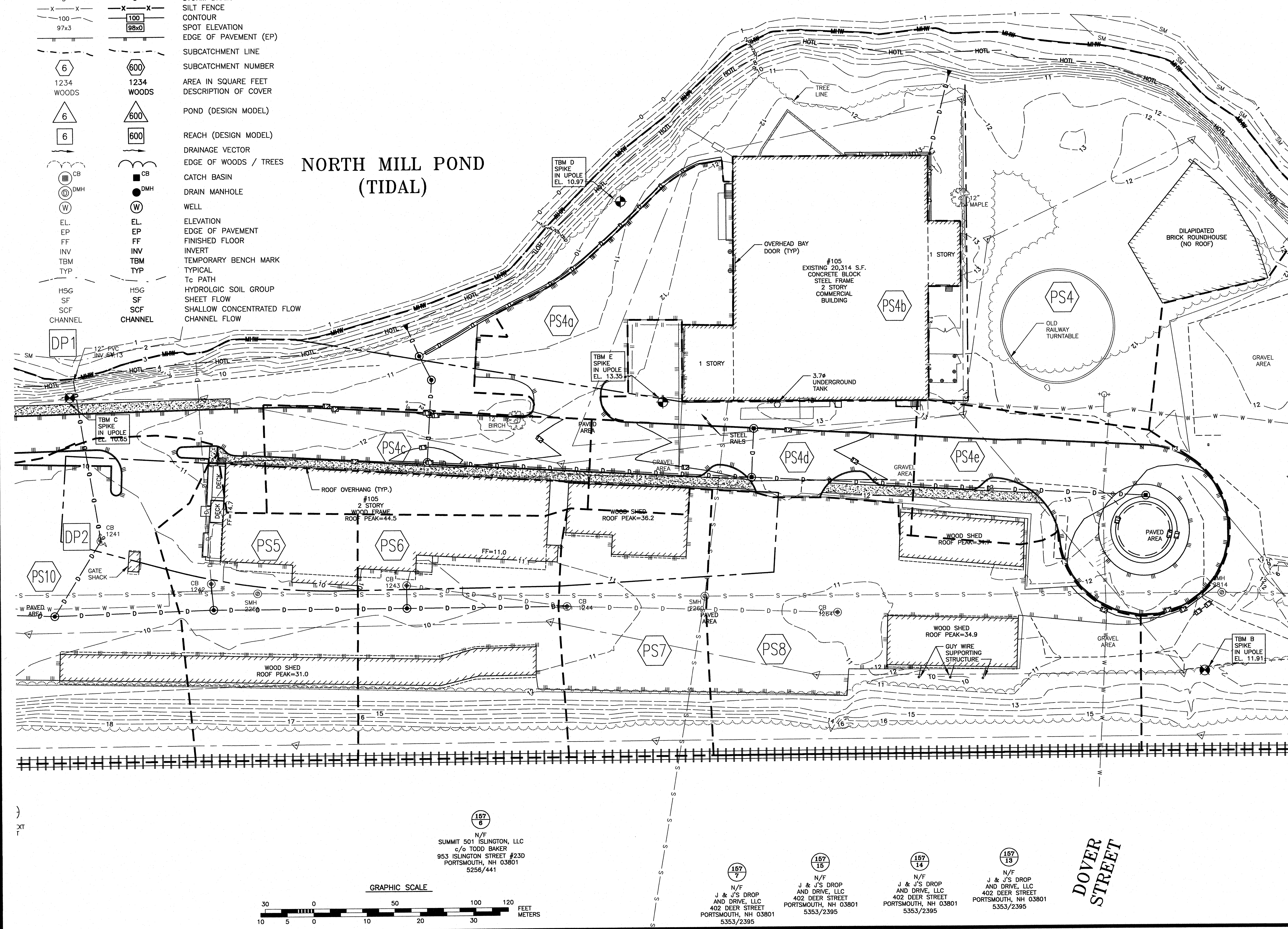
PLAN OF PROPOSED SUBCATCHMENTS

W2a

2429

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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CLIPPER TRADERS, LLC
OFF BARTLETT STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
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REVISIONS

STATE OF NEW HAMPSHIRE JOSEPH L. MULLEDY No. 11532 LICENSED PROFESSIONAL ENGINEER

10/16/18

SCALE: 1" = 30'

PLAN OF PROPOSED SUBCATCHMENTS

W2b

AMBIT ENGINEERING, INC.
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Portsmouth, N.H. 03801-7114
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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
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EL.	EL.	ELEVATION
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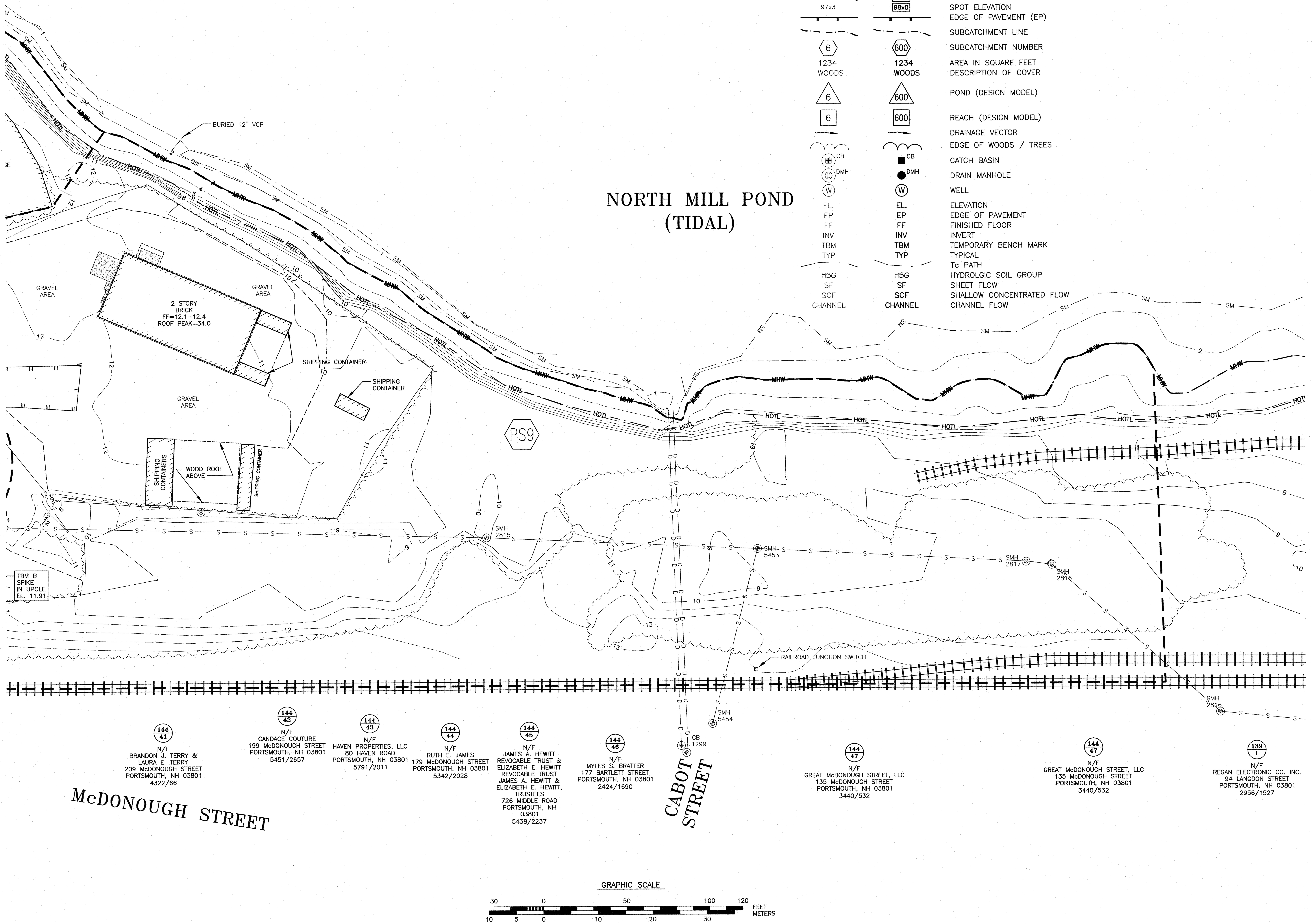

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REVISIONS

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JOSEPH L. MULLEDY
No. 11502
LICENSED
PROFESSIONAL ENGINEER

10/16/18

SCALE: 1" = 30'

PLAN OF PROPOSED SUBCATCHMENTS

W2c

2429