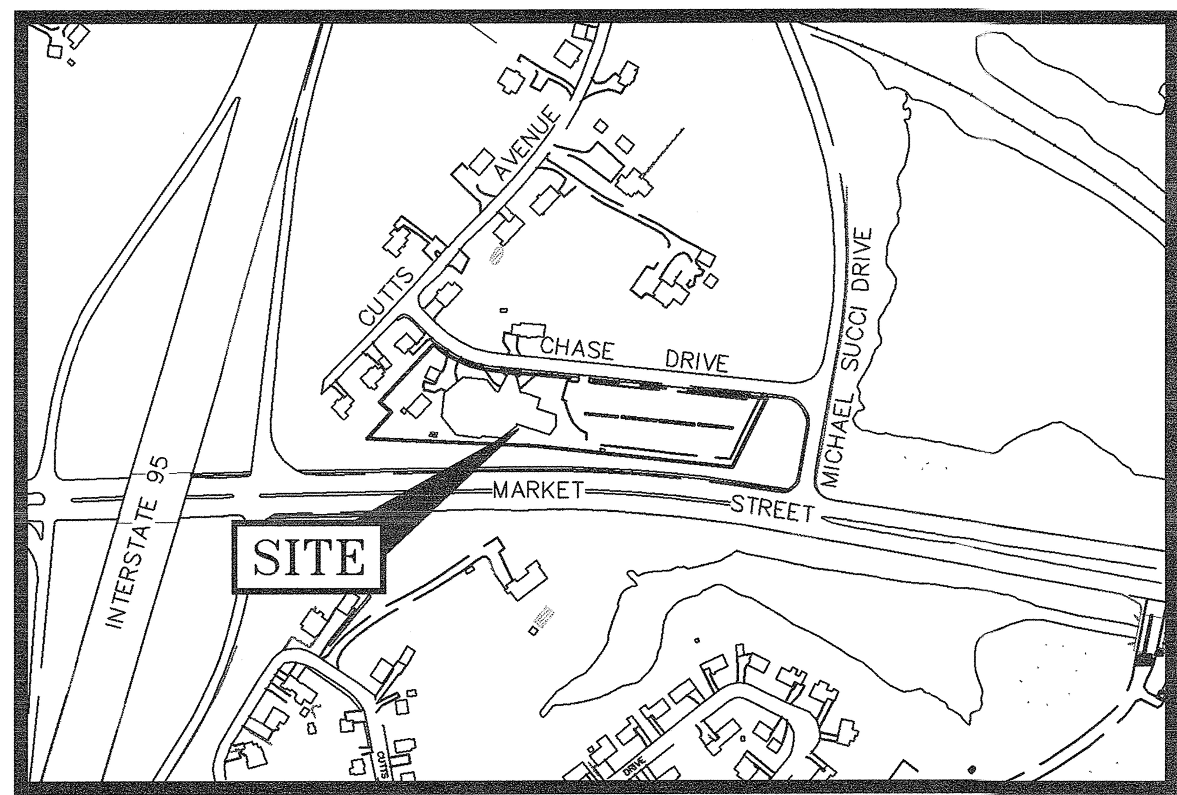

LOCATION MAP   SCALE 1"=400'

PLAN REFERENCE:

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2) SEE PLAN REFERENCE 1 FOR ADDITIONAL PLAN REFERENCES.

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

LEGEND:

EXISTING

N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
11/21	MAP 11 / LOT 21
RR SPK FND / RR SPK SET	RAILROAD SPIKE FOUND/SET
IR FND / IR SET	IRON ROD FOUND/SET
IP FND / IP SET	IRON PIPE FOUND/SET
DH FND / DH SET	DRILL HOLE FOUND/SET
NHHB FND	NHDOT BOUND FOUND
TB FND	TOWN BOUND FOUND
BND w/DH / BND w/DH	BOUND w/ DRILL HOLE
ST BND w/DH / ST BND w/DH	STONE BOUND w/DRILL HOLE
SWOPA	NHDES 250' PROTECTED SHORELAND
HOTL	HIGHEST OBSERVABLE TIDE LINE
D	STORM DRAIN
	UNDERGROUND ELECTRIC
	OVERHEAD ELECTRIC/WIRES
	EDGE OF PAVEMENT (EP)
	WOODS / TREE LINE
	UTILITY POLE (w/ GUY)
WS	WATER SHUT OFF/CURB STOP
GV	GATE VALVE
HYD	HYDRANT
G W E	METER (GAS, WATER, ELECTRIC)
	CATCH BASIN

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

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 210 AS LOT 2.

2) OWNER OF RECORD:
BETHEL ASSEMBLY OF GOD
200 CHASE DRIVE
PORTSMOUTH, N.H. 03801
1986/395 & 2248/889
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3) PARCEL IS IS NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE DATE 5/17/2005.

4) EXISTING LOT AREA:
116,591 S.F.
2.6766 ACRES

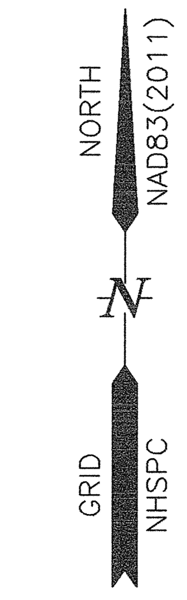
PROPOSED LOT 1
90,096 S.F.
2.0683 ACRES

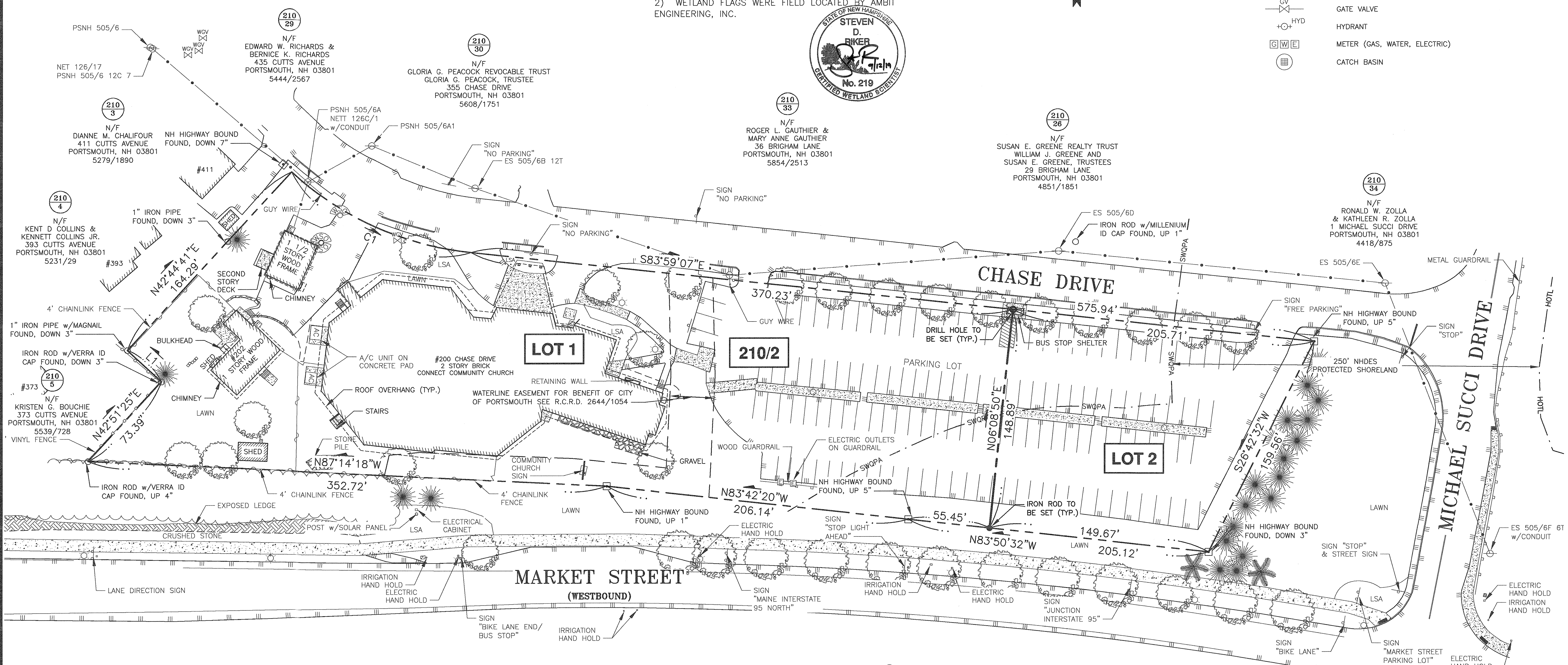
PROPOSED LOT 2
26,495 S.F.
0.6082 ACRES

5) PARCEL IS LOCATED IN THE GATEWAY CENTER (G2) ZONING DISTRICT.

6) DIMENSIONAL REQUIREMENTS:
SEE ZONING ORDINANCE

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE SUBDIVISION OF TAX MAP 210 LOT 2 IN THE CITY OF PORTSMOUTH INTO TWO LOTS.





LENGTH TABLE

LINE	BEARING	DISTANCE
L1	N47°21'20"W	31.46'

CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
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GRAPHIC SCALE
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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.''

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

PAUL A DOBBERSTEIN, LLS   DATE 9/12/2019

NO.	DESCRIPTION	DATE
1	REVISE PROPOSED BOUNDARY LINE LOCATION	9/12/19
0	ISSUED FOR COMMENT	8/6/18

REVISIONS

SUBDIVISION PLAN
TAX MAP 210 – LOT 2

OWNER:

BETHEL ASSEMBLY OF GOD

200 CHASE DRIVE
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE 1"=40'   AUGUST 2018

FB 287 PG 23   2872

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: Bethel Assembly of God Date Submitted: 9-16-19

Applicant: 200 Chase Drive, LLC

Phone Number: 610-8260 E-mail: steve@coveworkspace.com

Site Address 1: 200 Chase Drive Map: 210 Lot: 2

Site Address 2: _____ 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)**	On Line	N/A
☐	All application documents, plans, supporting documentation and other materials provided in digital Portable Document Format (PDF). **(III.C.4)**	On Line	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 Plan Cover Sheet	☑ 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 Plan; Note 5	☑ 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)**	1" = 40' Cover Sheet	☑ 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 Plan	☑ 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)**	Community Space Plan Sheet C9	☑ 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)**	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 Sheet C1	☑ 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)**	Utilities Plan Sheet C8 N/A No New Roads	☑ 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)**	N/A	☑ Preliminary Plat ☑ Final Plat	
☐	Base flood elevation (BFE) for subdivisions involving greater than five (5) acres or fifty (50) lots. **(Section IV.11)**	N/A	☑ 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 Conditions Plan Sheet C1	☑ 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)**	TBD	☐ 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)**	N/A	☐ Preliminary Plat ☑ Final Plat	
☐	Location of all permanent monuments. **(Section V.12)**	Subdivision Plan	☐ 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	Subdivision Plan	
☐	**2. Lots: (VI.2)** a. Lot Arrangement b. Lot sizes c. Commercial and Industrial Lots	Subdivision Plan	
☐	**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	N/A	
☐	**4. Curbing: (VI.4)**	N/A	
☐	**5. Driveways: (VI.5)**	See Site Plans	
☐	**6. Drainage Improvements: (VI.6)**	See Site Plans	
☐	**7. Municipal Water Service: (VI.7)**	See Site Plans	
☐	**8. Municipal Sewer Service: (VI.8)**	See Site Plans	
☐	**9. Installation of Utilities: (VI.9)** a. All Districts b. Indicator Tape	See Site Plans	
☐	**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	Sheet C9	
☐	**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)**	Sheet D1	

☑	Required Items for Submittal	Item Location (e.g. Page/line or Plan Sheet/Note #)	Waiver Requested
☐ ☐ ☐	**15. Easements (VI.15)** a. Utilities b. Drainage	Subdivision Plan	
☐	**16. Monuments: (VI.16)**	Subdivision Plan	
☐	**17. Benchmarks: (VI.17)**	Existing Conditions Plan C1	
☐	**18. House Numbers (VI.18)**	N/A	

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	N/A	
☐	**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	See Site Plans	
☐	**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	See Site Plans	
☐	**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	See Site Plans	

Applicant's/Representative's Signature:_____ **Date:**_____

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

Chase Drive Gateway Development Site
Subdivision and Site Plan Review

200 CHASE DRIVE
Portsmouth, New Hampshire
Assessor's Parcel 210-02

Owner:

BETHEL ASSEMBLY OF GOD
200 CHASE DRIVE
PORTSMOUTH, NH 03801

Applicant:

200 Chase Drive, LLC
c/o Cove Workspace
36 Maplewood Avenue
PORTSMOUTH, NH 03801

Issued:

SEPTEMBER 16, 2019 TAC REVIEW

APPROVED BY THE PORTSMOUTH PLANNING BOARD	
CHAIRMAN	DATE

Civil Engineer:

ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

Landscape Architect:

WOODBURN & COMPANY
Landscape Architecture, LLC
103 Kent Place
Newmarket, NH 03857
Tel 603.659.5949
Fax: 603.659.5939

Architect:

SOMMA
39 Maplewood Avenue
Portsmouth, NH 03801
603.766.3760

Surveyor:

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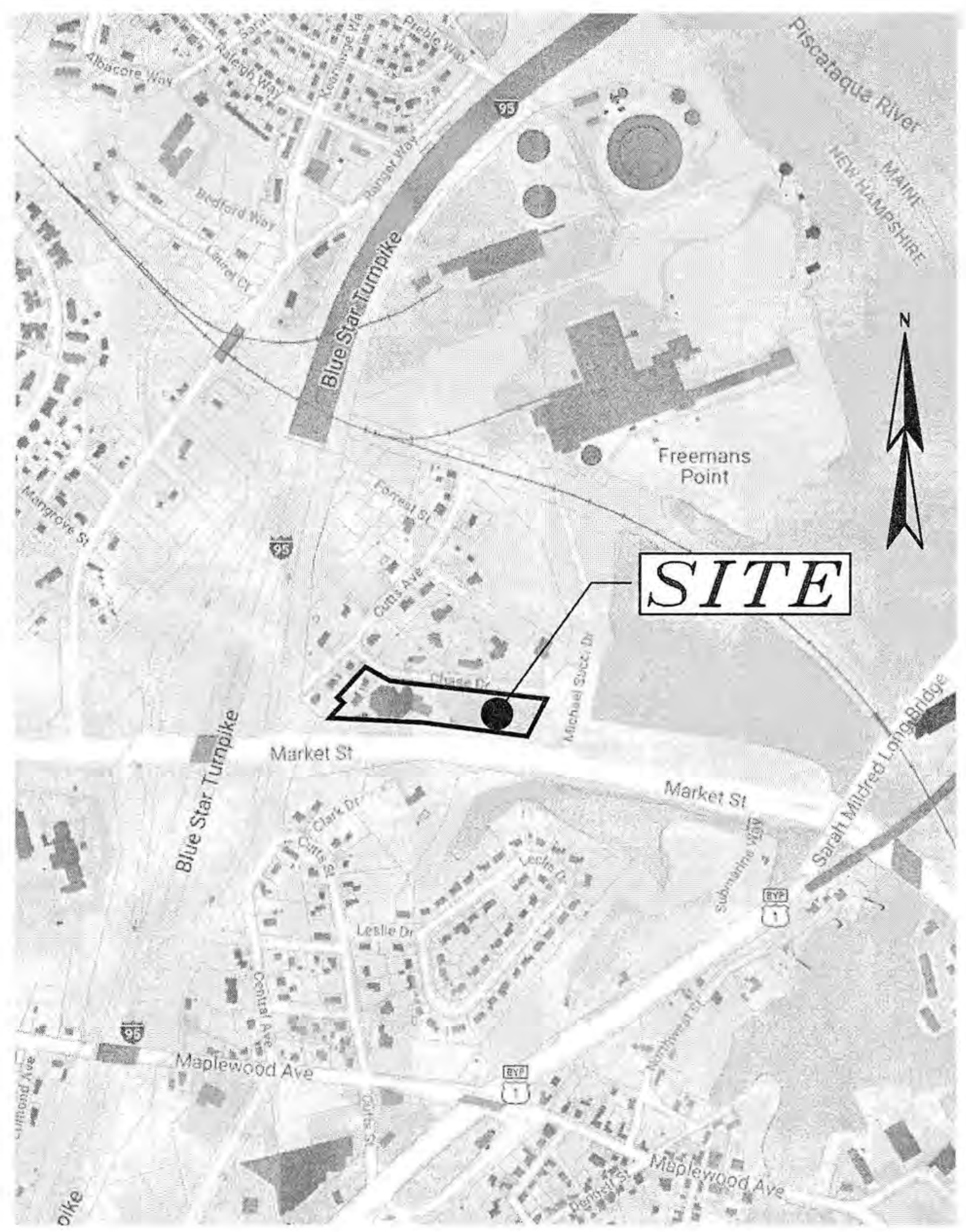
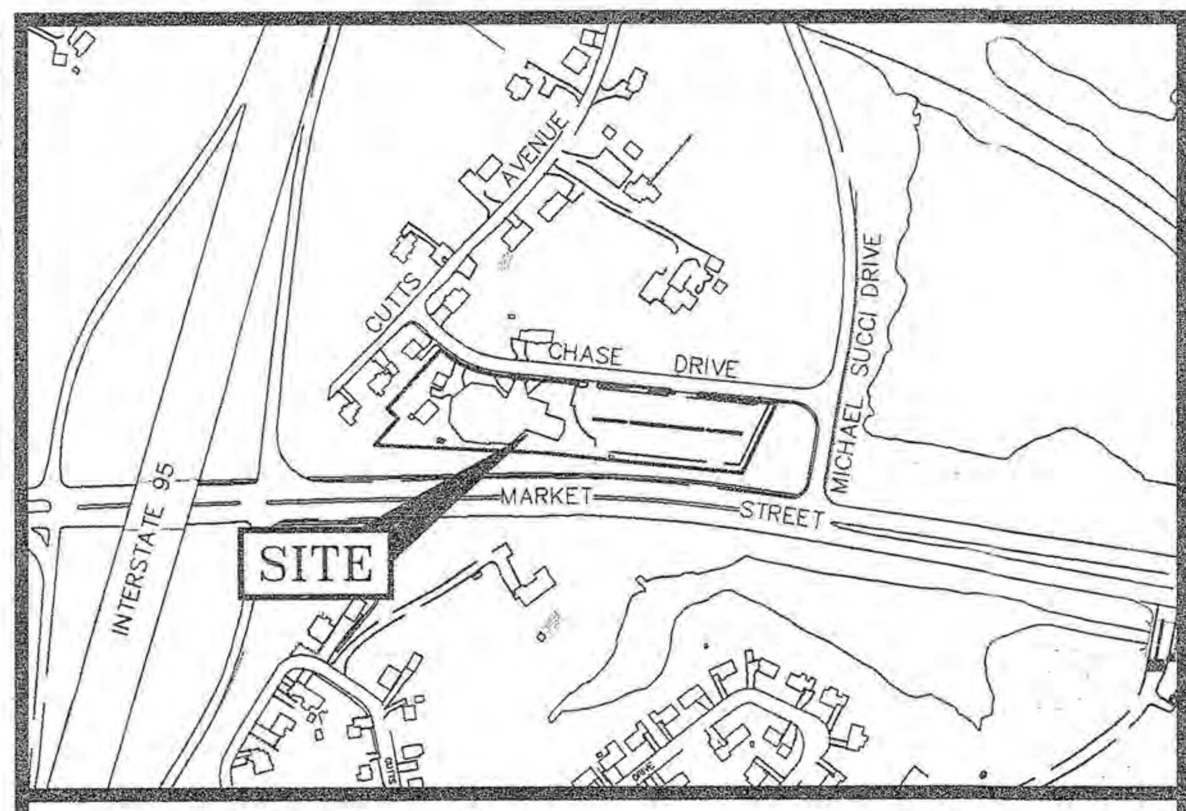


Locus Map
Scale: Not to Scale

Sheet Index Title	*Sheet No.:*	*Rev.*	*Date*
Existing Conditions Plans (by Ambit Engineering, Inc.)	C1	2	02/17/19
Existing Utilities Plans (by Ambit Engineering, Inc.)	C2	1	02/17/19
Subdivision Plan (by Ambit Engineering, Inc.)	1 of 1	1	09/12/19
Overall Site Plan	C.3	1	09/16/19
Site Plan	C.4	1	09/16/19
Grading and Drainage Plan	C.5	0	09/16/19
Grading and Drainage Plan	C.6	0	09/16/19
Sediment & Erosion Control Plan	C.7	0	09/16/19
Utilities Plan	C.8	0	09/16/19
Community Space Plan	C.9	0	09/16/19
Landscape Plan	L-1	0	09/16/19
Landscape Details	L-2	0	09/16/19
Site Lighting Plan	1 of 1	0	09/06/19
Erosion Control Notes & Details	D.1	1	09/16/19
Construction Details	D.2	1	09/16/19
Construction Details	D.3	1	09/16/19
Construction Details	D.4	1	09/16/19
Construction Details	D.5	1	09/16/19
Construction Details	D.6	1	09/16/19
Construction Details	D.7	1	09/16/19
Floor Plans (by SOMMA Studios)	3 Sheets	0	09/19
Exterior Elevations (by SOMMA Studios)	4 Sheets	0	09/19
Building Rendering (by SOMMA Studios)	1 of 1	0	06/19

P4950



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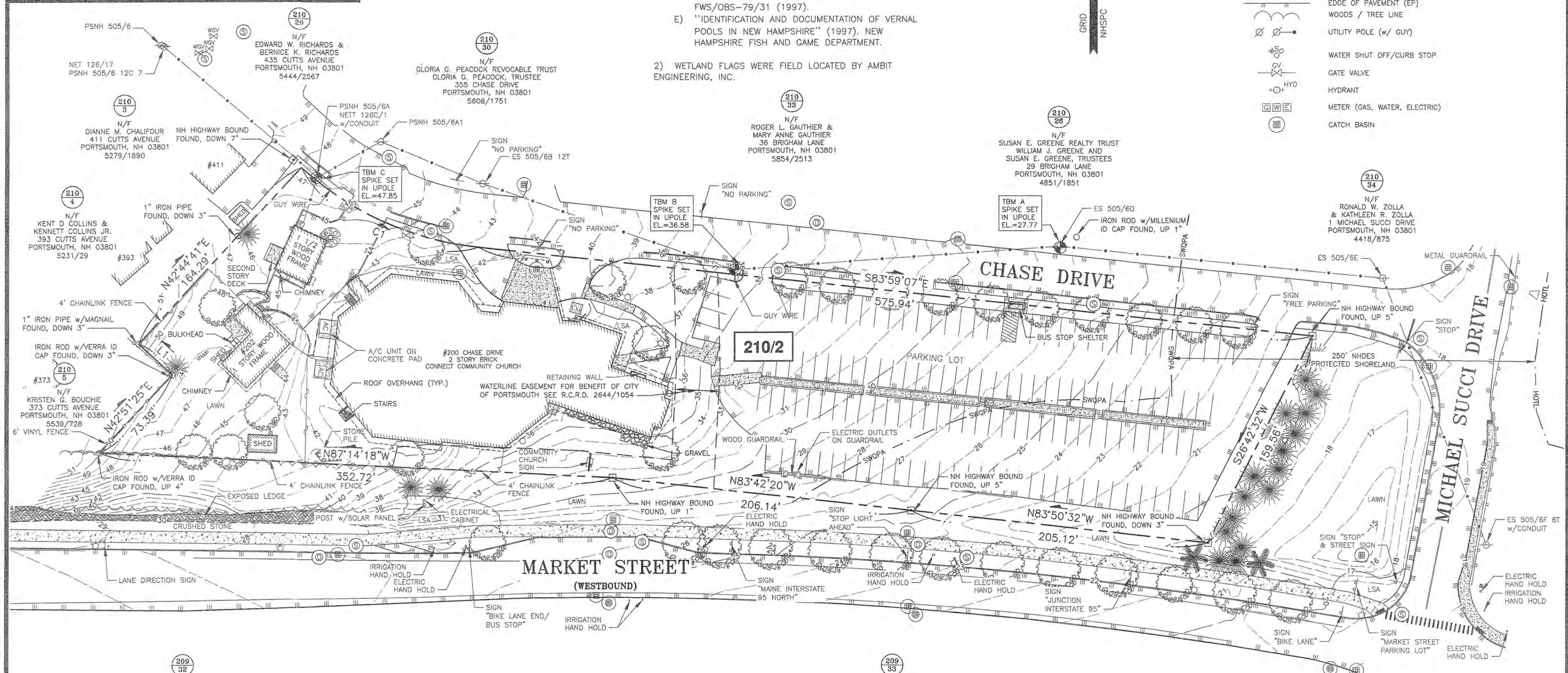
8) VERTICAL DATUM IS MEAN SEA LEVEL NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS (±0.2').

9) SEE SHEET C2 FOR UTILITIES AND INVERT INFORMATION.



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STEVEN D. RIKER No. 219 CERTIFIED WETLAND SCIENTIST

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BETHEL ASSEMBLY OF GOD 200 CHASE DR PORTSMOUTH, N.H.

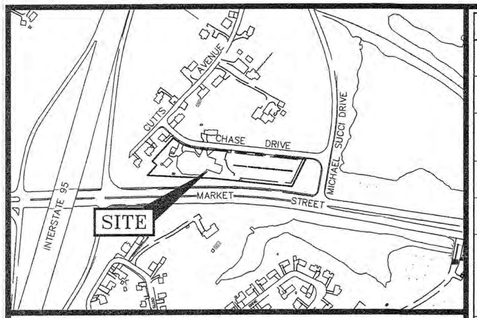
NO.	DESCRIPTION	DATE
2	REVISE PER COMMENTS	2/17/19
1	PLAN UPDATE	2/11/19
0	ISSUED FOR COMMENT	8/6/18

REVISIONS

SCALE 1" = 40'   AUGUST 2018

EXISTING CONDITIONS PLAN   C1

FB 287 PG 23   2872



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2) SEE PLAN REFERENCE 1 FOR ADDITIONAL PLAN REFERENCES.

SEWER STRUCTURE TABLE

STRUCTURE	RIM ELEV.	INV. ELEV. IN / INV. ELEV. OUT	PIPE SIZE & TYPE (FROM/TO)
SMH 981	29.16	21.67 (PER DPW)	– (SMH 980)
			– (SMH 982)
SMH 982	27.65	19.21 (PER DPW)	– (SMH 981)
			10" VCP (SMH 983)
SMH 983	26.00	17.53	10" VCP (SMH 982)
		17.51	10" VCP (SMH 984)
SMH 984	23.60	15.54	10" CI (SMH 983)
		15.49	10" CI (SMH 985)
SMH 985	18.36	12.66 9.36 9.32	10" CI (CLEANOUT FOR OUTSIDE DROP FROM SMH 984) 10" CI (SMH 984) 15" CI (SMH 1017)
		9.26	– (SMH 2365)
SMH 1017	18.09	10.93 10.45	8" VCP (SMH 1018) 15" CI (SMH 1016)
		10.41	15" CI (SMH 985)
SMH 1018	26.75	20.10	8" VCP (SMH 1019)
		20.08	8" VCP (SMH 1017)
SMH 1019	34.84	28.94 28.40	8" PVC (SMH 5489) 8" VCP (SMH 1020)
		28.34	8" VCP (SMH 1018)
SMH 1020	44.81	34.87	8" VCP (SMH 1021)
		34.85	8" VCP (SMH 1019)
SMH 1021	45.92	36.65	8" VCP (SMH 1022)
		36.59	8" VCP (SMH 1020)
SMH 1022	52.54	40.29 (PER DPW)	–(FROM SW)
			–(SMH 1021)
SMH 5489	38.42	31.82	8" PVC (SMH 5488)
		31.76	8" PVC (SMH 1019)

DRAIN STRUCTURE TABLE

STRUCTURE	RIM ELEV.	INV. ELEV. IN / INV. ELEV. OUT	PIPE SIZE & TYPE (FROM/TO)
DMH 1 (NO DPW #)	23.97 SUMP=12.27	17.67 13.74	15" CPP (CB 3377) 6" CMP (SW)
		13.52	15" RCP (CB 3374)
DMH 2 (NO DPW #)	25.85	–	–
		–	–
DMH 3376	27.11	–	–
		–	–
DMH 5097	26.78	21.78 21.53	8" PVC (WNW) 12" CPP (CB 3395)
		20.53	12" CPP (DMH 2)
DMH 22364	34.02 SUMP=26.82	29.82 27.19	15" CPP (DMH 22365) 30" CMP (CB 22361)
		27.02	30" CPP (CB 22362)
CB 611	17.91	–	–
		–	–
CB 3374	22.36	–	–
		–	–
CB 3375	24.88	–	–
		–	–
CB 3377	23.85 SUMP=15.25	–	–
		18.00± (OIL SEPARATOR)	15" CPP (DMH 1)
CB 3395	26.55	(CANNOT OPEN –FROZEN & FULL INLET BAG)	–
			–
CB 3396	14.02 SUMP=9.97	–	–
		10.57	15" CMP (CB 611)
CB 3397	17.35 SUMP=10.45	–	–
		12.63	15" RCP (CB 3398)
CB 3398	17.42 SUMP=9.62	11.72 11.67	30" CMP (CB 22362) 15" RCP (CB 3397)
		11.52	30" CMP (CB 3399)

DRAIN STRUCTURE TABLE

STRUCTURE	RIM ELEV.	INV. ELEV. IN / INV. ELEV. OUT	PIPE SIZE & TYPE (FROM/TO)
CB 3399	17.82 SUMP=8.62	9.62	30" CMP (CB 3398)
		9.05	30" CMP (TO OUTFALL)
CB 7846	26.97	–	–
		–	–
CB 13892 (DMH w/SEWER COVER)	51.00	–	–
		–	–
CB 13929	43.86 SUMP=36.36	37.16 36.80	8" PVC (CB 13930) 30" RCP (CB 13892)
		36.76	30" RCP (CB 22361)
CB 13930	40.70	(YARD DRAIN– RETAINING WALL OVER PART OF COVER)	–
			–
CB 22361	40.92 SUMP=32.52	35.32	30" RCP (CB 13929)
		35.12	30" CMP (DMH 22364)
CB 22362	29.79 SUMP=22.29	24.49 23.54	15" RCP (CB 22363) 30" CMP (DMH 22364)
		23.29	30" CMP (CB 3398)
CB 22363	29.81 SUMP=22.21	–	–
		24.76	15" RCP (CB 22362)

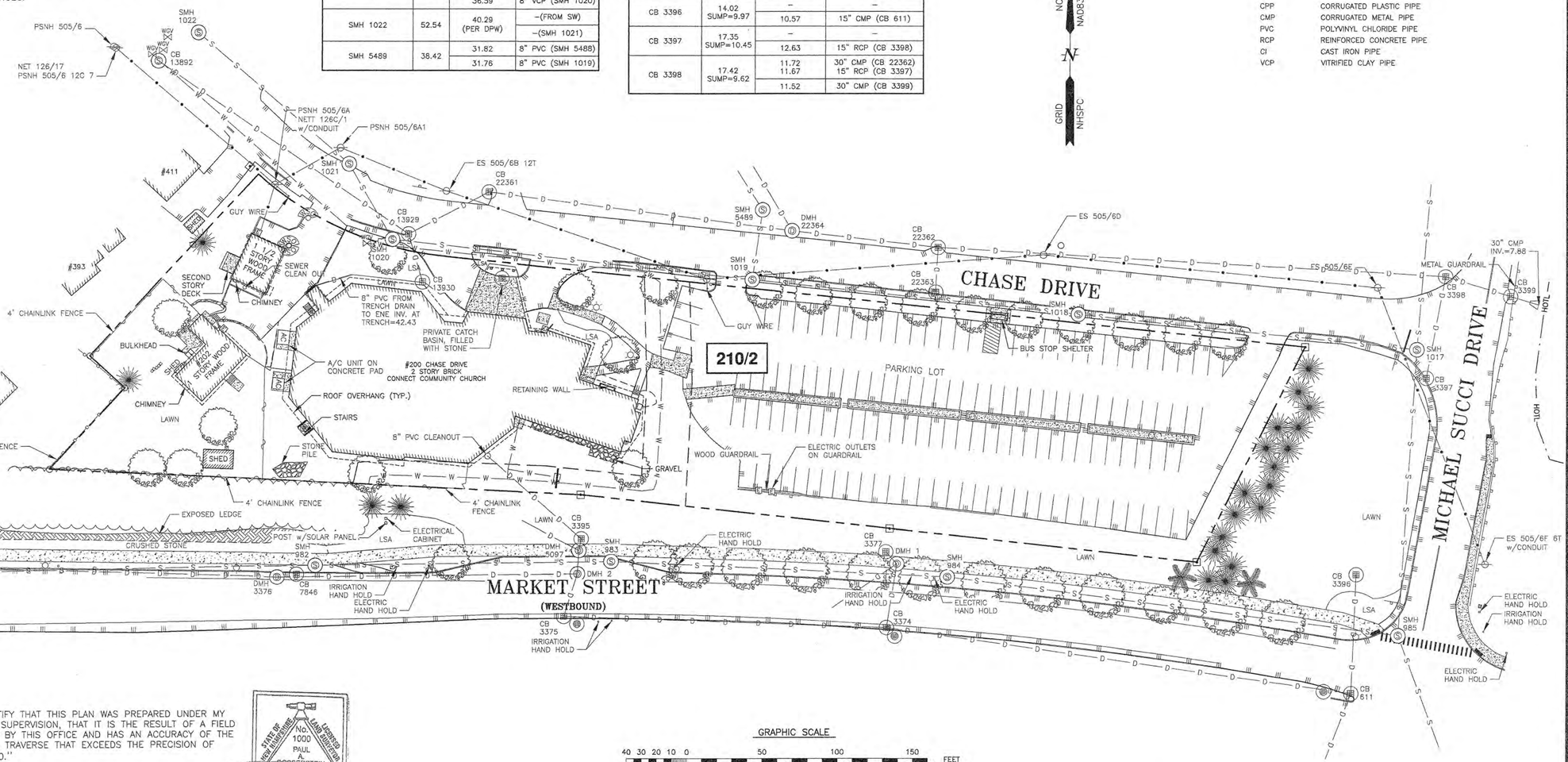
NORTH NAD83(2011)

GRID NHSPC

LEGEND:

EXISTING

N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS MAP 11 / LOT 21
11/21	
RR SPK FND	RR SPK SET — RAILROAD SPIKE FOUND/SET
IR FND	IR SET — IRON ROD FOUND/SET
IP FND	IP SET — IRON PIPE FOUND/SET
DH FND	DH SET — DRILL HOLE FOUND/SET
NHHB FND	NHDOT BOUND FOUND
TB FND	TOWN BOUND FOUND
BND w/DH	BND w/DH — BOUND w/ DRILL HOLE
ST BND w/DH	ST BND w/DH — STONE BOUND w/DRILL HOLE
SWQPA	NHDES 250' PROTECTED SHORELAND
HOTL	HIGHEST OBSERVABLE TIDE LINE
D	STORM DRAIN
	UNDERGROUND ELECTRIC
	OVERHEAD ELECTRIC/WIRES
EP	EDGE OF PAVEMENT (EP)
	WOODS / TREE LINE
	UTILITY POLE (w/ GUY)
	WATER SHUT OFF/CURB STOP
GV	GATE VALVE
HYD	HYDRANT
GWE	METER (GAS, WATER, ELECTRIC)
	CATCH BASIN
CPP	CORRUGATED PLASTIC PIPE
CMP	CORRUGATED METAL PIPE
PVC	POLYVINYL CHLORIDE PIPE
RCP	REINFORCED CONCRETE PIPE
CI	CAST IRON PIPE
VCP	VITRIFIED CLAY PIPE



GRAPHIC SCALE

40 30 20 10 0 50 100 150 FEET

10 5 0 10 20 30 40 50 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 2/18/2019

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

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

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 210 AS LOT 2.

2) OWNER OF RECORD:
BETHEL ASSEMBLY OF GOD
200 CHASE DRIVE
PORTSMOUTH, N.H. 03801
1986/395 & 2248/889
D-38287

3) PARCEL IS IS NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE DATE 5/17/2005.

4) EXISTING LOT AREA:
116,591 S.F.
2.6766 ACRES

5) PARCEL IS LOCATED IN THE GATEWAY CENTER (G2) ZONING DISTRICT.

6) DIMENSIONAL REQUIREMENTS:
SEE ZONING ORDINANCE

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE EXISTING UTILITIES AND INVERTS ON TAX MAP 210 LOT 2 IN THE CITY OF PORTSMOUTH.

8) VERTICAL DATUM IS MEAN SEA LEVEL NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS (±0.2').

BETHEL ASSEMBLY OF GOD
200 CHASE DR
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	REVISE PER COMMENTS	2/17/19
0	ISSUED FOR COMMENT	2/11/19

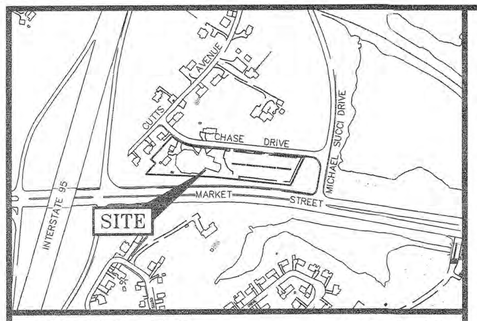
REVISIONS

SCALE 1" = 40' FEBRUARY 2019

EXISTING UTILITIES PLAN — **C2**

FB 287 PG 23

2872



LOCATION MAP SCALE 1"=400'

PLAN REFERENCE:

1) LOT LINE ADJUSTMENT PLAN 200 CHASE DRIVE & 373 CUTTS AVENUE PORTSMOUTH, NEW HAMPSHIRE ASSESSOR'S PARCELS 210-2 & 210-5 FOR KRISTEN G. BOUCHIE & THE BETHEL ASSEMBLY OF GOD. PREPARED BY JAMES VERRA AND ASSOCIATES, INC. DATED MAY 23, 2013, FINAL REVISION DATE JUNE 25, 2013. R.C.R.D. PLAN D-38287.

2) SEE PLAN REFERENCE 1 FOR ADDITIONAL PLAN REFERENCES.

WETLAND NOTES:

1) HIGHEST OBSERVABLE TIDE LINE DELINEATED BY STEVEN D. RIKER, CWS ON 8/3/2018 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.

STATE OF NEW HAMPSHIRE STEVEN D. RIKER No. 218 CERTIFIED WETLAND SCIENTIST

LEGEND:

EXISTING

N/F	NOW OR FORMERLY
RP	RECORD OF PROBATE
RCRD	ROCKINGHAM COUNTY REGISTRY OF DEEDS
11/27	MAP 11 / LOT 21
RR SPK FND	RAILROAD SPIKE FOUND/SET
IR FND	IRON ROD FOUND/SET
IP FND	IRON PIPE FOUND/SET
DH FND	DRILL HOLE FOUND/SET
NHHB FND	NHDOT BOUND FOUND
TB FND	TOWN BOUND FOUND
BND w/DH	BOUND w/ DRILL HOLE
ST BND w/DH	STONE BOUND w/DRILL HOLE
RR SPK SET	
IR SET	
IP SET	
DH SET	
SWOPA	NHDES 250' PROTECTED SHORELAND
HOTL	HIGHEST OBSERVABLE TIDE LINE
D	STORM DRAIN
	UNDERGROUND ELECTRIC
	OVERHEAD ELECTRIC/WIRES
	EDGE OF PAVEMENT (EP)
	WOODS / TREE LINE
	UTILITY POLE (w/ GUY)
WSO	WATER SHUT OFF/CURB STOP
GV	GATE VALVE
HYD	HYDRANT
G W E	METER (GAS, WATER, ELECTRIC)
	CATCH BASIN

NORTH NAD83(2011) N GRID NHSPC

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

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 210 AS LOT 2.

2) OWNER OF RECORD:
BETHEL ASSEMBLY OF GOD
200 CHASE DRIVE
PORTSMOUTH, N.H. 03801
1986/395 & 2248/889
D-38287

3) PARCEL IS IS NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE DATE 5/17/2005.

4) EXISTING LOT AREA:
116,591 S.F.
2.6766 ACRES

PROPOSED LOT 1
90,096 S.F.
2.0683 ACRES

PROPOSED LOT 2
26,495 S.F.
0.6082 ACRES

5) PARCEL IS LOCATED IN THE GATEWAY CENTER (G2) ZONING DISTRICT.

6) DIMENSIONAL REQUIREMENTS:
SEE ZONING ORDINANCE

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE SUBDIVISION OF TAX MAP 210 LOT 2 IN THE CITY OF PORTSMOUTH INTO TWO LOTS.

NO.	DESCRIPTION	DATE
1	REVISE PROPOSED BOUNDARY LINE LOCATION	9/12/19
0	ISSUED FOR COMMENT	8/6/18

REVISIONS

SUBDIVISION PLAN
TAX MAP 210 - LOT 2

OWNER:
BETHEL ASSEMBLY OF GOD
200 CHASE DRIVE
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE 1"=40' AUGUST 2018

FB 287 PG 23 2872

PSNH 505/5 — NET 126/17 PSNH 505/6 12C 7 — WGV WSO

210/29 N/F EDWARD W. RICHARDS & BERNICE K. RICHARDS 435 CUTTS AVENUE PORTSMOUTH, NH 03801 5444/2567

210/30 N/F GLORIA G. PEACOCK REVOCABLE TRUST GLORIA G. PEACOCK, TRUSTEE 355 CHASE DRIVE PORTSMOUTH, NH 03801 5608/1751

210/3 N/F DIANNE M. CHAUFOUR 411 CUTTS AVENUE PORTSMOUTH, NH 03801 5279/1890

NH HIGHWAY BOUND FOUND, DOWN 7"

PSNH 505/6A NETT 126C/1 w/CONDUIT — PSNH 505/6A1 — SIGN "NO PARKING" — ES 505/6B 12T

210/33 N/F ROGER L. GAUTHIER & MARY ANNE GAUTHIER 36 BRIGHAM LANE PORTSMOUTH, NH 03801 5854/2513

210/26 N/F SUSAN E. GREENE REALTY TRUST WILLIAM J. GREENE AND SUSAN E. GREENE, TRUSTEES 29 BRIGHAM LANE PORTSMOUTH, NH 03801 4851/1851

210/34 N/F RONALD W. ZOLLA & KATHLEEN R. ZOLLA 1 MICHAEL SUCCI DRIVE PORTSMOUTH, NH 03801 4418/875

#411 — #393 — #373

210/4 N/F KENT D COLLINS & KENNETT COLLINS JR. 393 CUTTS AVENUE PORTSMOUTH, NH 03801 5231/29

1" IRON PIPE FOUND, DOWN 3" — GUY WIRE — SIGN "NO PARKING" — SIGN "NO PARKING"

ES 505/6D — IRON ROD w/MILLENIUM ID CAP FOUND, UP 1"

ES 505/6E — METAL GUARDRAIL

N42°44'41"E 164.29'

1 1/2 STORY WOOD FRAME — SECOND STORY DECK — CHIMNEY — C1 — LSA — LAWN — S83°59'07"E 370.23' — CHASE DRIVE — 575.94' — 205.71'

4' CHAINLINK FENCE — 1" IRON PIPE w/MAGNAIL FOUND, DOWN 3" — BULKHEAD — IRON ROD w/VERRA ID CAP FOUND, DOWN 3" — L1

210/5 N/F KRISTEN G. BOUCHIE 373 CUTTS AVENUE PORTSMOUTH, NH 03801 5539/728

N42°51'25"E 73.39' — VINYL FENCE — IRON ROD w/VERRA ID CAP FOUND, UP 4"

SHED — 1 STORY WOOD FRAME — CHIMNEY — LAWN — STONE PILE — SHED — N87°14'18"W 352.72' — 4' CHAINLINK FENCE — EXPOSED LEDGE — CRUSHED STONE — POST w/SOLAR PANEL — LSA — ELECTRICAL CABINET

A/C UNIT ON CONCRETE PAD — #200 CHASE DRIVE 2 STORY BRICK CONNECT COMMUNITY CHURCH — ROOF OVERHANG (TYP.) — STAIRS — COMMUNITY CHURCH SIGN — 4' CHAINLINK FENCE — LAWN — NH HIGHWAY BOUND FOUND, UP 1"

RETAINING WALL — WATERLINE EASEMENT FOR BENEFIT OF CITY OF PORTSMOUTH SEE R.C.R.D. 2644/1054 — GRAVEL

LOT 1 — 210/2 — PARKING LOT — LOT 2

DRILL HOLE TO BE SET (TYP.) — BUS STOP SHELTER — SWOPA — 250' NHDES PROTECTED SHORELAND — HOTL

N06°08'50"E 148.89' — WOOD GUARDRAIL — ELECTRIC OUTLETS ON GUARDRAIL — SWOPA

N83°42'20"W 206.14' — 55.45' — IRON ROD TO BE SET (TYP.) — 149.67' — N83°50'32"W — LAWN — 205.12'

S26°42'32"W 159.56' — SIGN "FREE PARKING" — NH HIGHWAY BOUND FOUND, UP 5" — SIGN "STOP" — NH HIGHWAY BOUND FOUND, DOWN 3" — SIGN "STOP" & STREET SIGN — LSA — LAWN — ES 505/6F 6T w/CONDUIT

MICHAEL SUCCI DRIVE

MARKET STREET (WESTBOUND)

LANE DIRECTION SIGN — IRRIGATION HAND HOLD — ELECTRIC HAND HOLD — SIGN "BIKE LANE END/ BUS STOP" — IRRIGATION HAND HOLD — SIGN "MAINE INTERSTATE 95 NORTH" — ELECTRIC HAND HOLD — IRRIGATION HAND HOLD — ELECTRIC HAND HOLD — SIGN "JUNCTION INTERSTATE 95" — SIGN "BIKE LANE" — SIGN "MARKET STREET PARKING LOT" — ELECTRIC HAND HOLD — IRRIGATION HAND HOLD — SIGN "NO U-TURN"

209/32 N/F NANCY A. GOBBI 207 CUTTS STREET PORTSMOUTH, NH 03801 3104/1043

209/33 N/F FREDERICK W. WATSON REVOCABLE TRUST ROBERT D. WATSON, TRUSTEE 53 SLEEPY HOLLOW DRIVE GREENLAND, NH 03840 5200/1329

LENGTH TABLE

LINE	BEARING	DISTANCE
L1	N47°21'20"W	31.46'

CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	215.00'	135.68'	133.44'	S65°54'23"E	36°09'27"

GRAPHIC SCALE
40 30 20 10 0 50 100 150 FEET
10 5 0 10 20 30 40 50 METERS

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."

PAUL A DOBBERSTEIN, LLS DATE

NO. 1001 PAUL A. DOBBERSTEIN SIGNATURE

NOTES:

1. THE INTENT OF THIS PLAN IS TO DEPICT THE PROPOSED DEVELOPMENT SITE PER CITY OF PORTSMOUTH ZONING DISTRICT G2 (GATEWAY NEIGHBORHOOD MIXED USE DISTRICT) AND THE DEVELOPMENT SITE STANDARDS (SECTION 10.5B40).
2. THE EXISTING LOT 210–2 CONSISTS OF A COMMUNITY BUILDING AND TWO SINGLE FAMILY RESIDENTIAL BUILDINGS. THE INTENT IS TO SUBDIVIDE THE EXISTING LOT TO CREATE LOT 210–2–1 WHICH WILL CONSTRUCT A NEW 22 UNIT APARTMENT BUILDING PER SECTION 10.5B34.40. THE TWO CONTIGUOUS LOTS WILL BE INCLUDED IN THE DEVELOPMENT SITE.
3. THE EXISTING USE OF THE COMMUNITY BUILDING AS A PLACE OF ASSEMBLY IS PERMITTED AS AN EXISTING USE. AS NOTED IN SECTION 10.5B50, "THE PURPOSE OF THIS SECTION IS TO ESTABLISH STANDARDS FOR THE CONTINUED UTILIZATION OF EXISTING BUILDINGS IN THE GATEWAY NEIGHBORHOOD MIXED USE DISTRICTS CONSTRUCTED PRIOR TO THE EFFECTIVE DATE OF ARTICLE 10.5B".
4. A NHDES WETLANDS BUREAU SHORELAND PERMIT WILL BE REQUIRED FOR WORK WITHIN 250 FT OF THE HIGHEST OBSERVABLE TIDE LINE (HOTL).
5. PRIOR TO COMMENCEMENT OF CONSTRUCTION, A CERTIFIED ARBORIST SHALL REVIEW THE AREA OF CONSTRUCTION AND TREES SELECTED TO REMAIN WITH THE LANDSCAPE ARCHITECT AND THE CONTRACTOR'S PROJECT MANAGER. SPECIFIC MONETARY VALUE OF THE TREES TO REMAIN SHALL BE DETERMINED AND DOCUMENTED FOR. ARBORIST SHALL MAKE RECOMMENDATIONS FOR PRESERVATION RECOMMENDATIONS BEYOND THOSE CALLED OUT IN THE DRAWINGS, TREE PRESERVATION PLANS AND SPECIFICATIONS, INCLUDING, BUT NOT LIMITED TO, PRUNING, ROOT PRUNING, PRE–FERTILIZATION AND THE LIKE.
6. ALL EXCAVATION WITHIN THE DRIP LINE OF EXISTING TREES TO BE DONE WITH AN AIR SPADE. ANY ROOTS WHICH REQUIRE REMOVAL SHALL BE CUT CLEANLY WITH A SHARP TOOL. EXPOSED ROOTS IN EXCAVATED AREAS SHALL NOT BE ALLOWED TO DRY OUT.
7. TREES TO REMAIN WITHIN THE CONSTRUCTION ZONE SHALL BE PROTECTED FROM DAMAGE FOR THE DURATION OF THE PROJECT BY WEIGHTED CHAIN–LINK FENCE AT THE DRIP LINE OR OTHER SUITABLE MEANS OF PROTECTION TO BE APPROVED BY LANDSCAPE ARCHITECT OR CLIENT'S REPRESENTATIVE. FENCE SHALL BE LOCATED AT THE DRIP LINE AT A MINIMUM AND SHALL INCLUDE ANY AND ALL SURFACE ROOTS. DO NOT FILL OR MULCH ON THE TRUNK FLARE. DO NOT DISTURB ROOTS. IN ORDER TO PROTECT THE INTEGRITY OF THE ROOTS, BRANCHES, TRUNK AND BARK OF THE TREE(S) NO VEHICLES OR CONSTRUCTION EQUIPMENT SHALL DRIVE OR PARK IN OR ON THE AREA WITHIN THE DRIP LINE(S) OF THE TREE(S). DO NOT STORE ANY REFUSE OR CONSTRUCTION MATERIALS OR PORTALETS WITHIN THE TREE PROTECTION AREA.
8. BUILDING HEIGHT MEASURED FROM AVERAGE GRADE MEASURED 6 FT OFF OF BUILDING EVERY 5 FOOT INTERVAL. BUILDING HEIGHT FROM FINISHED FLOOR TO ROOF TOP IS 43'–8". AVERAGE GRADE AROUND PERIMETER OF BUILDING IS 8 INCHES BELOW FINISHED FLOOR BASED ON PROPOSED GRADING (1 FT USED FOR FLEXIBILITY IN CONSTRUCTION).

ZONING SUMMARY

ZONING DISTRICT G2 (GATEWAY NEIGHBORHOOD MIXED USE CENTER)

TAX MAP 210, LOTS 2 & 2–1 (NEWLY CREATED LOT)

DEVELOPMENT SITE AREA 2.68± ACRES

PERMITTED USES MULTI–FAMILY GREATER THAN 8 UNITS
PLACE OF ASSEMBLY (EXISTING)
SINGLE FAMILY RESIDENTIAL (EXISTING)

PROPOSED MIXED USE DEVELOPMENT SITE (PER SECTION 10.5B40)

DEVELOPMENT SITE STANDARDS	REQUIRED	PROVIDED
MINIMUM DEVELOPMENT SITE AREA	20,000 SF	116,591 SF
MINIMUM SITE WIDTH	100 FT	711.6 FT
MINIMUM SITE DEPTH	100 FT	147.7 FT
MINIMUM PERIMETER BUFFER TO RESIDENTIAL, MIXED RESIDENTIAL OR CHARACTER DISTRICT	75 FT	NA
MAXIMUM BLOCK LENGTH	800 FT	764 FT
MAXIMUM BLOCK PERIMETER	2,200 FT	1,905 FT
MAXIMUM BUILDING COVERAGE	70%	24.2%
MINIMUM OPEN SPACE COVERAGE	20%	37.5%
MINIMUM COMMUNITY SPACE	20%	20%

ZONING SUMMARY CONTINUED:

APARTMENT BUILDING DESIGN STANDARDS (PER SECTION 10.5B34.40):

	REQUIRED	PROVIDED
MINIMUM LOT DEPTH	NR	
MINIMUM STREET FRONTAGE	50 FT	±149 FT
SETBACKS:		
FRONT: MARKET STREET	10–30 FT	11.0± FT
CHASE STREET	10–30 FT	11.2± FT
MICHAEL SUCCI DRIVE	10–30 FT	10.3± FT
INTERIOR LOT LINES	0 FT	149± FT
BUILDING LOT USE:		
MAXIMUM DWELLING UNITS PER BUILDING	24	22
MAXIMUM DWELLING UNIT SIZE	NR	
DESIGN STANDARDS:		
MAXIMUM BUILDING HEIGHT –	50 FT	44'–8" (SEE NOTE 8)
MINIMUM STREET FACING FAÇADE HEIGHT	24 FT	24+ FT
MAXIMUM FINISHED FLOOR SURFACE OF GROUND FLOOR ABOVE SIDEWALK GRADE	36 INCHES	<3 FT
MAXIMUM BUILDING COVERAGE	50%	28.6%
MAXIMUM BUILDING FOOTPRINT	20,000 SF	7,600± SF
MAXIMUM FAÇADE MODULATION LENGTH	50 FEET	48 FEET
MINIMUM STREET FACING FAÇADE GLAZING	20% (GROUND FLOOR)	20%+
STREET FACING ENTRANCE	REQUIRED	PROVIDED
FAÇADE TYPES	FORECOURT, STEP, RECESSED ENTRY, DOORYARD, PORCH	DOORYARD

SRB = SINGLE RESIDENCE B DISTRICT (SRB)

G2 = GATEWAY NEIGHBORHOOD MIXED–USE DISTRICT (G–2)

LEGEND

PROPOSED PROPERTY LINE

DEVELOPMENT SITE AREA

PARKING CALCULATIONS:

EXISTING LOT – EXISTING CHURCH

		REQUIRED
ASSEMBLY:	545 OCCUPANTS*	136
NURSERY:	29 OCCUPANTS	15
BUSINESS:	700 SF (1 PER 350)	2
CLASSROOMS:	210 OCCUPANTS	PDA**
	REQUIRED	153
EXISTING PARKING SPACES		133
PROVIDED		75**

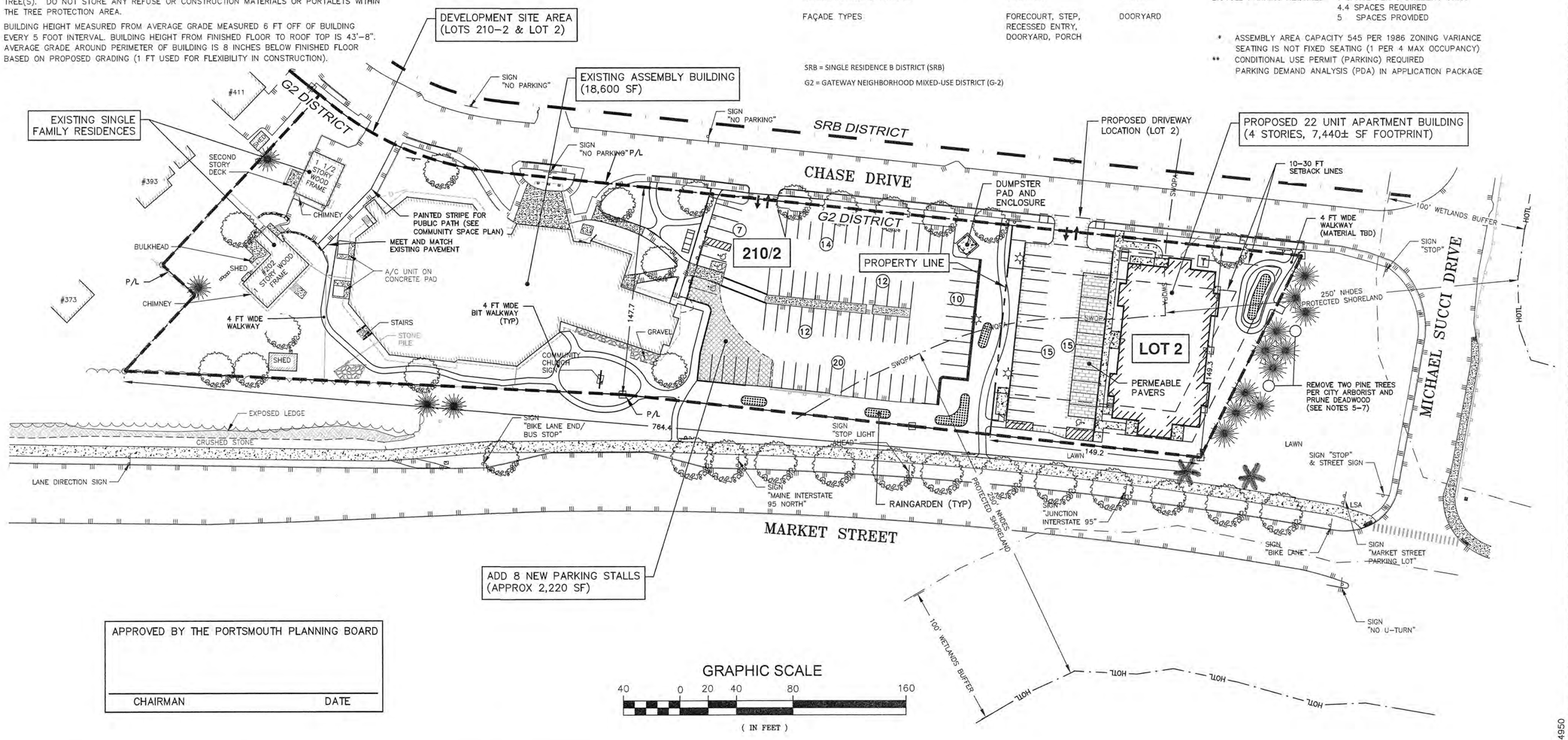
PROPOSED LOT – 22 UNIT BUILDING

DWELLING UNITS 1.3 SPACES PER DWELLING UNIT
28.6 MINIMUM REQUIRED (22 DWELLING UNIT)
4.4 VISITOR PARKING SPACES (1 PER 5 UNITS)
33 SPACES REQUIRED

PARKING INCENTIVE SECTION 10.5B82.10 A)
20% REDUCTION IN SPACES PER 10.5B82.10.A) 27 SPACES REQUIRED
20% INCREASE ALLOWED 33 SPACES ALLOWED
30 SPACES PROPOSED

BICYCLE PARKING REQUIRED 1 SPACE PER 5 DWELLING UNITS
4.4 SPACES REQUIRED
5 SPACES PROVIDED

* ASSEMBLY AREA CAPACITY 545 PER 1986 ZONING VARIANCE
SEATING IS NOT FIXED SEATING (1 PER 4 MAX OCCUPANCY)
** CONDITIONAL USE PERMIT (PARKING) REQUIRED
PARKING DEMAND ANALYSIS (PDA) IN APPLICATION PACKAGE



APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

P4950

ENGINEER:

ALTUS ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
(603) 433–2335 www.ALTUS–ENG.com

CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

9/16/19

ISSUED FOR: TAC

ISSUE DATE: SEPTEMBER 16, 2019

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	CDB	06/04/19
1	DESIGN REVIEW	CDB	06/26/19
2	TAC	CDB	09/16/19

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4950–SITE.DWG

SCALE:
22" x 34" – 1" = 40'
11" x 17" – 1" = 80'

OWNER:
BETHEL ASSEMBLY OF GOD
200 CHASE DRIVE
PORTSMOUTH, NH 03801

APPLICANT:
200 CHASE DRIVE, LLC
36 MAPLEWOOD AVE.
PORTSMOUTH, NH 03801

CHASE DRIVE GATEWAY DEVELOPMENT SITE

200 CHASE DRIVE
PORTSMOUTH, NH

ASSESSOR'S PARCEL 210–2

TITLE:

OVERALL SITE PLAN

SHEET NUMBER:

C.3

LEGEND

* SEE SHEET C-1 FOR EXISTING FEATURES

- PROPERTY LINE
- PROPOSED PAVEMENT
- VGC SGC BCC — VERTICAL GRANITE CURB/SLOPED GRANITE CURB/ BITUMINOUS CONCRETE CURB (CAPE COD)
- SAWCUT LINE/MATCH EXISTING
- PROPOSED BUILDING
- PROPOSED RETAINING WALL

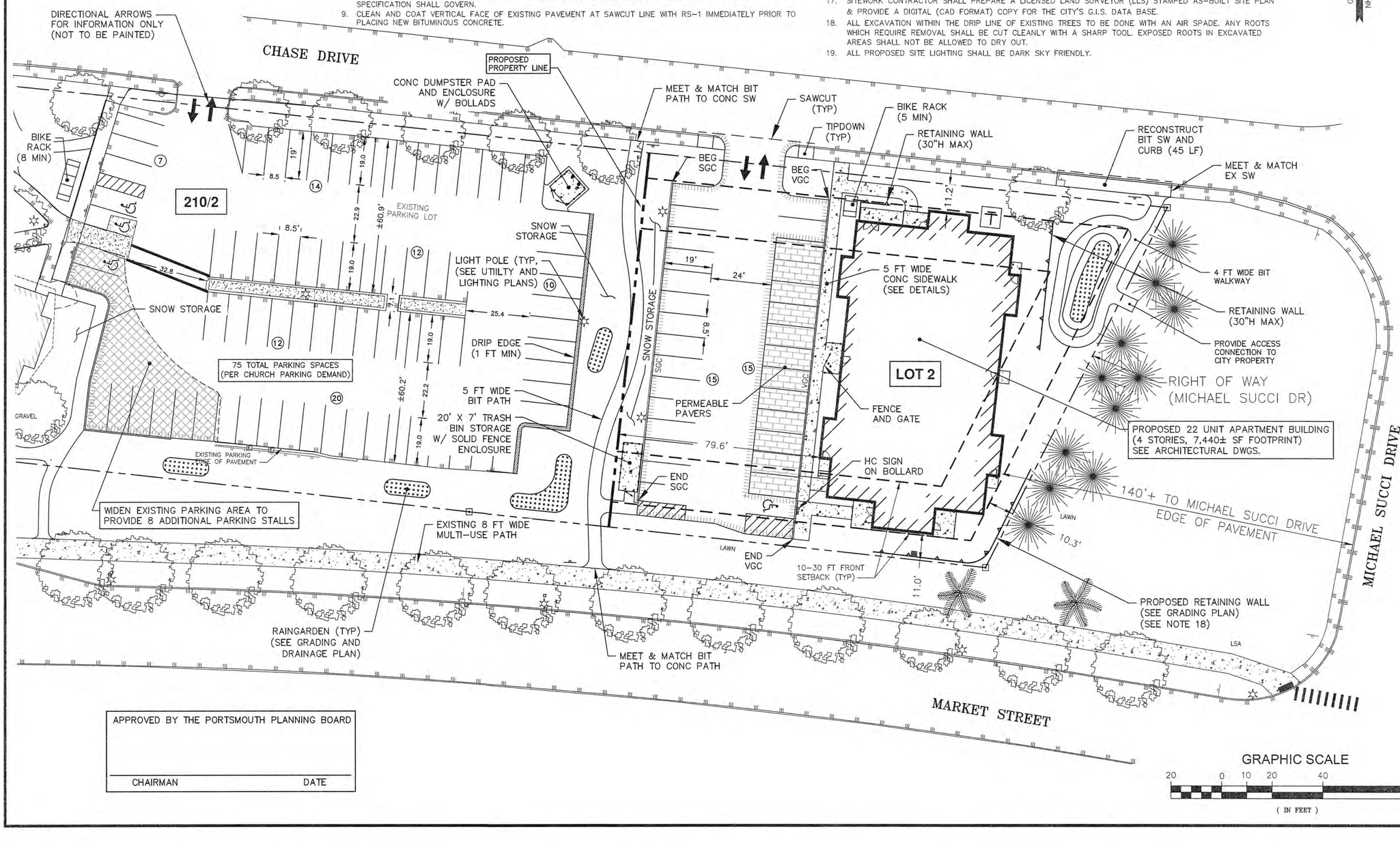
SITE NOTES

1. DO NOT BEGIN CONSTRUCTION UNTIL ALL STATE, LOCAL AND FEDERAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.
2. CONTRACTOR SHALL CALL DIG SAFE AT 1 (800) DIG-SAFE AT LEAST SEVENTY-TWO (72) HOURS PRIOR TO COMMENCING CONSTRUCTION.
3. CONTRACTOR SHALL NOTIFY CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES.
4. CONTRACTOR SHALL INSTALL AND MAINTAIN TEMPORARY SEDIMENT AND EROSION CONTROL ITEMS TO PREVENT SEDIMENT FROM CONSTRUCTION ACTIVITIES FROM LEAVING THE SITE. CONTROLS SHALL BE INSPECTED ON A REGULAR BASIS AND AFTER ALL RAIN EVENTS OF 0.25 INCHES OR GREATER. ANY DEFICIENCIES IN THE CONTROLS SHALL BE ADDRESSED IMMEDIATELY AND BROUGHT TO THE ATTENTION OF THE OWNER. ALL STORMS DRAINS WITHIN OR ADJACENT TO THE WORK AREA, WITH THE POTENTIAL TO RECEIVE RUNOFF FROM EXPOSED CONSTRUCTION AREAS, SHALL RECEIVE STORM DRAIN INLET PROTECTION.
5. CONTRACTOR SHALL PREVENT TRACKING OF DIRT ONTO ANY PUBLIC OR PRIVATE ROADWAYS. IF TRACKING OF DIRT FROM CONSTRUCTION VEHICLES IS PRESENT ON THE OPEN STREETS, CONTRACTOR WILL BE REQUIRED TO SWEEP THE ROADWAY AT NO ADDITIONAL EXPENSE TO THE OWNER.
6. ALL BONDS AND FEES SHALL BE PAID/POSTED PRIOR TO INITIATING CONSTRUCTION.
7. ALL CONDITIONS OF APPROVAL SHALL REMAIN IN EFFECT IN PERPETUITY PURSUANT TO THE REQUIREMENTS OF THE SITE PLAN REVIEW REGULATIONS.
8. ALL CONSTRUCTION SHALL MEET THE MINIMUM CONSTRUCTION STANDARDS OF THE CITY OF PORTSMOUTH & NHDOT'S STANDARD SPECIFICATIONS FOR ROAD & BRIDGE, LATEST EDITION. THE MORE STRINGENT SPECIFICATION SHALL GOVERN.
9. CLEAN AND COAT VERTICAL FACE OF EXISTING PAVEMENT AT SAWCUT LINE WITH RS-1 IMMEDIATELY PRIOR TO PLACING NEW BITUMINOUS CONCRETE.

SITE NOTES CONT'D

10. THE CONTRACTOR SHALL VERIFY ALL BENCHMARKS AND TOPOGRAPHY IN THE FIELD PRIOR TO CONSTRUCTION.
11. THE CONTRACTOR SHALL VERIFY ALL BUILDING DIMENSIONS WITH THE ARCHITECTURAL AND STRUCTURAL PLANS PRIOR TO CONSTRUCTION. ALL DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ARCHITECT AND ENGINEER FOR RESOLUTION.
12. FOR AREAS OF DISTURBANCE OVER 43,560 SF, COVERAGE UNDER EPA NPDES PHASE II CONSTRUCTION GENERAL PERMIT IS REQUIRED.
13. SNOW SHALL BE STORED AT THE EDGE OF PAVEMENT, IN UPLAND AREAS SHOWN THEREON. NO SNOW STORAGE SHALL BE PROVIDED WITHIN THE LANDSCAPED AREA BETWEEN THE DRIVEWAY ENTRANCE THAT WOULD RESTRICT SITE VEHICULAR AND PEDESTRIAN SIGHT DISTANCE. IF ADEQUATE ON-SITE SNOW STORAGE IS NOT AVAILABLE, THE SNOW SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED.
14. PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC DEVICES," "STANDARD ALPHABETS FOR HIGHWAY SIGNS AND PAVEMENT MARKINGS" AND THE AMERICANS WITH DISABILITIES ACT (ADA), LATEST EDITIONS.
15. ALL IMPROVEMENTS SHOWN ON THIS SITE PLAN SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PLAN BY THE PROPERTY OWNER AND ALL FUTURE PROPERTY OWNERS. NO CHANGES SHALL BE MADE TO THIS SITE PLAN WITHOUT THE EXPRESS APPROVAL OF THE PORTSMOUTH PLANNING DIRECTOR.
16. THE APPROVED SITE PLAN SHALL BE RECORDED IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
17. SITEWORK CONTRACTOR SHALL PREPARE A LICENSED LAND SURVEYOR (LLS) STAMPED AS-BUILT SITE PLAN & PROVIDE A DIGITAL (CAD FORMAT) COPY FOR THE CITY'S G.I.S. DATA BASE.
18. ALL EXCAVATION WITHIN THE DRIP LINE OF EXISTING TREES TO BE DONE WITH AN AIR SPADE. ANY ROOTS WHICH REQUIRE REMOVAL SHALL BE CUT CLEANLY WITH A SHARP TOOL. EXPOSED ROOTS IN EXCAVATED AREAS SHALL NOT BE ALLOWED TO DRY OUT.
19. ALL PROPOSED SITE LIGHTING SHALL BE DARK SKY FRIENDLY.

NORTH NAD83(2011) — GRID NHSPC



APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

GRAPHIC SCALE

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STATE OF NEW HAMPSHIRE - CORY D. BELDEN No. 14236 LICENSED PROFESSIONAL ENGINEER

9/16/19

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ISSUE DATE: SEPTEMBER 16, 2019

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CHASE DRIVE GATEWAY DEVELOPMENT SITE

200 CHASE DRIVE
PORTSMOUTH, NH

ASSESSOR'S PARCEL 210-2

TITLE:

SITE PLAN

SHEET NUMBER:

C.4

LEGEND

* SEE SHEET C-1 FOR EXISTING FEATURES

- PROPERTY LINE
- SWQPA — 250 FT SHORELAND BUFFER
- WETLAND SETBACK LINE
- PROPOSED PAVEMENT
- VGC SGC BCC — VERTICAL GRANITE CURB/SLOPED GRANITE CURB/ BITUMINOUS CONCRETE CURB (CAPE COD)
- SAWCUT LINE/MATCH EXISTING
- PROPOSED BUILDING
- PROPOSED RETAINING WALL

GRADING AND DRAINAGE NOTES

SEE SHEET C-6 FOR GRADING AND DRAINAGE NOTES

STORMWATER PRACTICES

RAINGARDEN #1

BOTTOM AREA= 200 SF
BOTTOM ELEV = 19.0
BERM ELEV = 20.2

RAINGARDEN #2

BOTTOM AREA= 100 SF
BOTTOM ELEV = 25.0
BERM ELEV = 26.0

RAINGARDEN #3

BOTTOM AREA= 250 SF
BOTTOM ELEV = 24.0
BERM ELEV = 25.0

RAINGARDEN #4

BOTTOM AREA= 100 SF
BOTTOM ELEV = 26.0
BERM ELEV = 27.0

RAINGARDEN #5

BOTTOM AREA= 100 SF
BOTTOM ELEV = 28.0
BERM ELEV = 29.0

DRAINAGE STRUCTURES

PDMH #1
COVER = 25.5±
IN (30" CMP) = 15.28
IN (12" HDPE) = 15.78
INV. OUT (30" CMP) = 15.16

PDMH #2
COVER = 25.9±
12" INV IN = 19.50 (OS3)
8" INV IN = 19.50 (OS4)
INV. OUT (12" HDPE) = 19.40

OUTLET STRUCTURE 1 (OS1)
RIM (18" BEEHIVE) = 19.5
6" UD (IN)= 16.25
12" INV (OUT) = 16.25

YARD DRAIN 2 (YD2)
RIM (8" BEEHIVE) = 25.5
6" UD (IN)= 22.25
8" INV (OUT) = 22.25

OUTLET STRUCTURE 3 (OS3)
RIM (18" BEEHIVE) = 24.5
6" UD (IN)= 21.25
8" INV IN = 21.35 (YD2)
12" INV (OUT) = 21.25

OUTLET STRUCTURE 4 (OS4)
RIM (18" BEEHIVE) = 26.5
6" UD (IN)= 23.25
8" INV IN = 23.35 (YD5)
12" INV (OUT) = 23.25

YARD DRAIN 5 (YD5)
RIM (8" BEEHIVE) = 28.5
6" UD (IN)= 25.25
8" INV (OUT) = 25.25

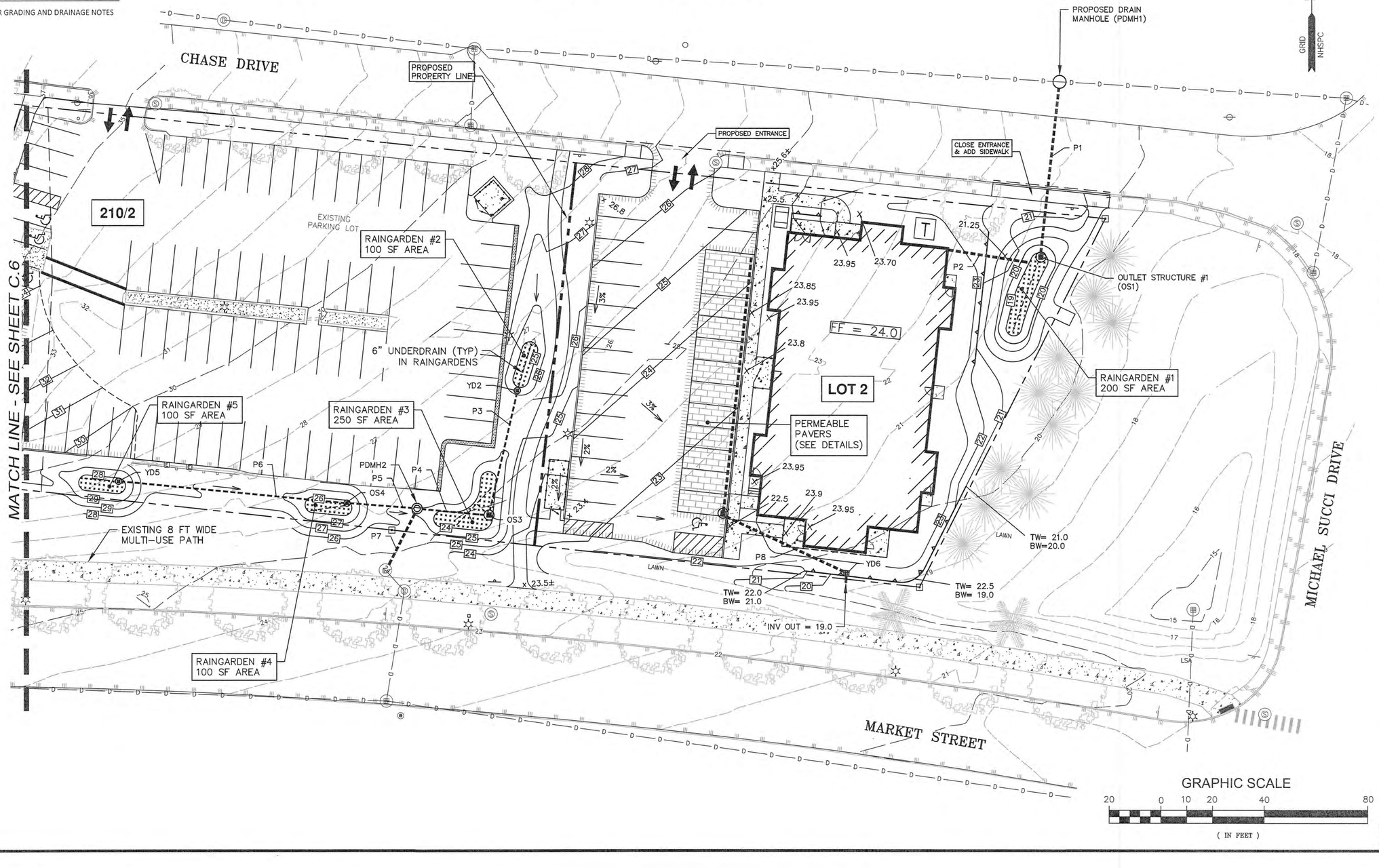
YARD DRAIN 6 (YD6)
6" INV. IN = 19.3
8" INV OUT = 19.2

STORM DRAINS

P1 = 12" HDPE, 64 LF, S=0.007
P2 = 8" HDPE, 30 LF, S=0.02
P3 = 8" HDPE. 52 LF, S=0.017
P4 = 12" HDPE, 26 LF, S=0.067
P5 = 12" HDPE, 22 LF, S=0.170
P6 = 8" HDPE, 84 LF, S=0.023
P7 = 12" HDPE, 16 LF, S=0.081
P8 = 12" HDPE, 50 LF, S-0.005

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE



P4950

ENGINEER:

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STATE OF NEW HAMPSHIRE
CORY D. BELDEN
No. 14239
LICENSED
PROFESSIONAL ENGINEER
9/16/19

ISSUED FOR: TAC

ISSUE DATE: SEPTEMBER 16, 2019

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CHASE DRIVE GATEWAY DEVELOPMENT SITE

200 CHASE DRIVE
PORTSMOUTH, NH

ASSESSOR'S PARCEL 210–2

TITLE:

GRADING AND DRAINAGE PLAN

SHEET NUMBER:
C.5

LEGEND

* SEE SHEET C1 FOR EXISTING FEATURES

PROPERTY LINE

SWQPA — 250 FT SHORELAND BUFFER

WETLAND SETBACK LINE

PROPOSED PAVEMENT

VGC SGC BCC — VERTICAL GRANITE CURB/SLOPED GRANITE CURB/ BITUMINOUS CONCRETE CURB (CAPE COD)

SAWCUT LINE/MATCH EXISTING

PROPOSED BUILDING

PROPOSED RETAINING WALL

GRADING AND DRAINAGE NOTES

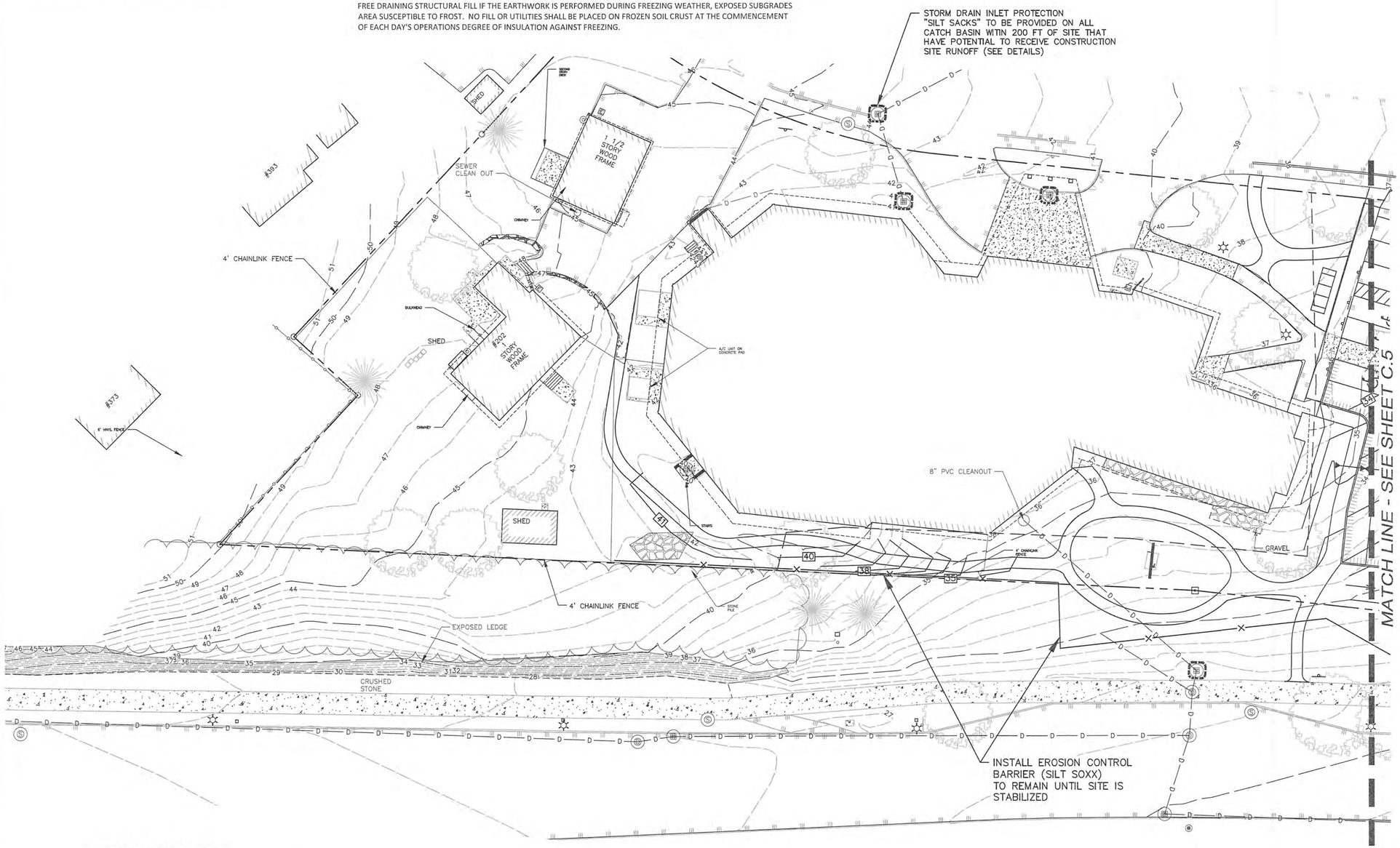
1. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES SCHEDULED TO REMAIN.
2. ALL BENCHMARKS AND TOPOGRAPHY SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO INITIATING CONSTRUCTION
3. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL READ AND FAMILIARIZE THEMSELVES WITH THE PROJECT GEOTECHNICAL REPORT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING ALL THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT.
4. DEWATERING ACTIVITIES SHALL BE DONE IN ACCORDANCE WITH EPA AND NHDES REGULATIONS AND GUIDELINES.
5. PROTECTION OF SUBGRADE: THE CONTRACTOR SHALL BE REQUIRED TO MAINTAIN STABLE, DEWATERED SUBGRADES FOR FOUNDATIONS, PAVEMENT AREAS, UTILITY TRENCHES AND OTHER AREAS DURING CONSTRUCTION. SUBGRADE DISTURBANCE MAY BE INFLUENCED BY EXCAVATION METHODS, MOISTURE, PRECIPITATION, GROUNDWATER CONTROL, AND CONSTRUCTION ACTIVITIES. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO PREVENT SUBGRADE DISTURBANCE. SUCH PRECAUTIONS MAY INCLUDE DIVERTING STORMWATER RUNOFF AWAY FROM CONSTRUCTION AREAS, REDUCING TRAFFIC IN SENSITIVE AREAS, AND MAINTAINING AN EFFECTIVE DEWATERING PROGRAM. SOILS EXHIBITING HEAVING OR INSTABILITY SHALL BE OVER EXCAVATED TO MORE COMPETENT BEARING SOIL AND BEARING SOIL AND REPLACED WITH FREE DRAINING STRUCTURAL FILL IF THE EARTHWORK IS PERFORMED DURING FREEZING WEATHER, EXPOSED SUBGRADES AREA SUSCEPTIBLE TO FROST. NO FILL OR UTILITIES SHALL BE PLACED ON FROZEN SOIL CRUST AT THE COMMENCEMENT OF EACH DAY'S OPERATIONS DEGREE OF INSULATION AGAINST FREEZING.
6. IF SUITABLE, EXCAVATED MATERIALS SHALL BE PLACED AS FILL WITHIN UPLAND AREAS ONLY AND SHALL NOT BE PLACED WITHIN WETLANDS. PLACEMENT OF BORROW MATERIALS SHALL BE PERFORMED IN A MANNER THAT PREVENTS LONG TERM DIFFERENTIAL SETTLEMENT. EXCESSIVELY WET MATERIALS SHALL BE STOCKPILED AND ALLOWED TO DRAIN BEFORE PLACEMENT. FROZEN MATERIAL SHALL NOT BE USED FOR CONSTRUCTION.
7. ALL STORM DRAIN PIPE SHALL BE ADS N-12 OR EQUAL AND APPROVED BY THE ENGINEER.
8. ALL CATCH BASIN, GATE VALVE COVERS, AND MANHOLE RIMS SHALL BE SET FLUSH WITH OR NO LESS THAN 0.1' BELOW FINISHED GRADE. ANY RIM OR VALVE COVER ABOVE SURROUNDING FINISHED GRADE WILL NOT BE ACCEPTED.
9. ALL CATCH BASINS SHALL BE PRECAST, LOCATED IN PAVEMENT AREAS, H-20 LOADING AND BE EQUIPPED WITH 4-FOOT DEEP MIN SEDIMENTATION SUMPS AND GREASE HOODS. (SEE DETAILS)
10. ALL SPOT GRADES ARE AT THE FINISH GRADE AND BOTTOM OF CURB WHERE APPLICABLE.
11. UNLESS OTHERWISE SPECIFIED, RETAINING WALL AND BUILDING PERIMETER DRAINS SHALL BE DIRECTED TO THE NEAREST DRAINAGE STRUCTURE. IF DEEMED APPROPRIATE, CONTRACTOR SHALL PROVIDE ADDITIONAL UNDERDRAINS AT THE DIRECTION OF THE ENGINEER.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

NORTH NAD83(2011)

GRID NHSPC



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CHASE DRIVE GATEWAY DEVELOPMENT SITE

200 CHASE DRIVE
PORTSMOUTH, NH

ASSESSOR'S PARCEL 210-2

TITLE:

GRADING AND DRAINAGE PLAN

SHEET NUMBER:

C.6

LEGEND

* SEE SHEET C-1 FOR EXISTING FEATURES

PROPERTY LINE

SWQPA — 250 FT SHORELAND BUFFER

WETLAND SETBACK LINE

PROPOSED PAVEMENT

VGC SGC BCC — VERTICAL GRANITE CURB/SLOPED GRANITE CURB/ BITUMINOUS CONCRETE CURB (CAPE COD)

SAWCUT LINE/MATCH EXISTING

PROPOSED BUILDING

PROPOSED RETAINING WALL

NOTES

- SEE SHEET D-1 FOR EROSION AND SEDIMENT CONTROL NOTES.
- STORMWATER PONDS AND SWALES MUST BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
- ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL ALL CONTRIBUTING AREAS ARE STABILIZED.
- STABILIZED CONSTRUCTION EXIT TO BE INSTALLED PRIOR TO ANY EARTHWORK ACTIVITIES.

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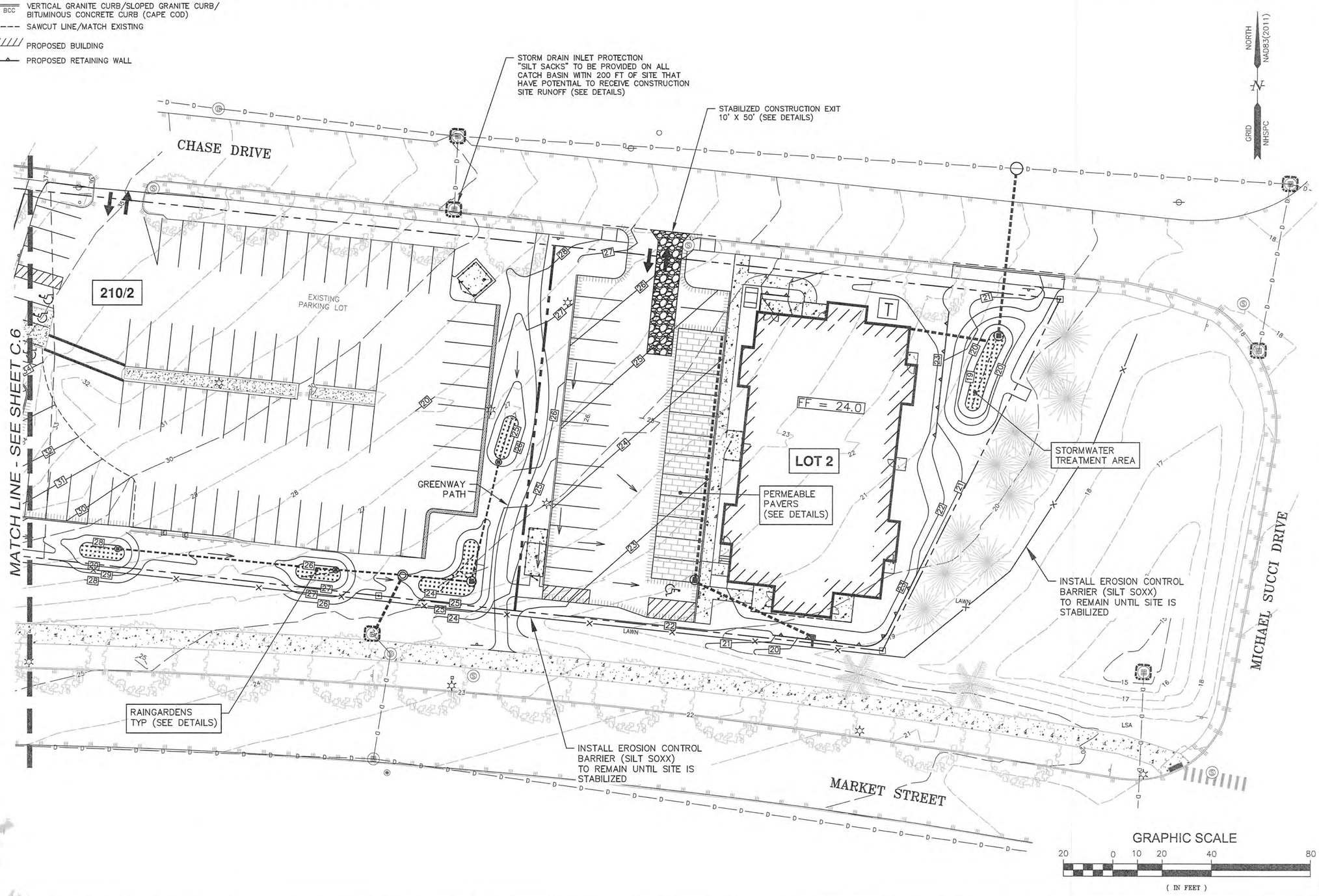

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200 CHASE DRIVE
PORTSMOUTH, NH

ASSESSOR'S PARCEL 210-2

TITLE:

EROSION CONTROL PLAN

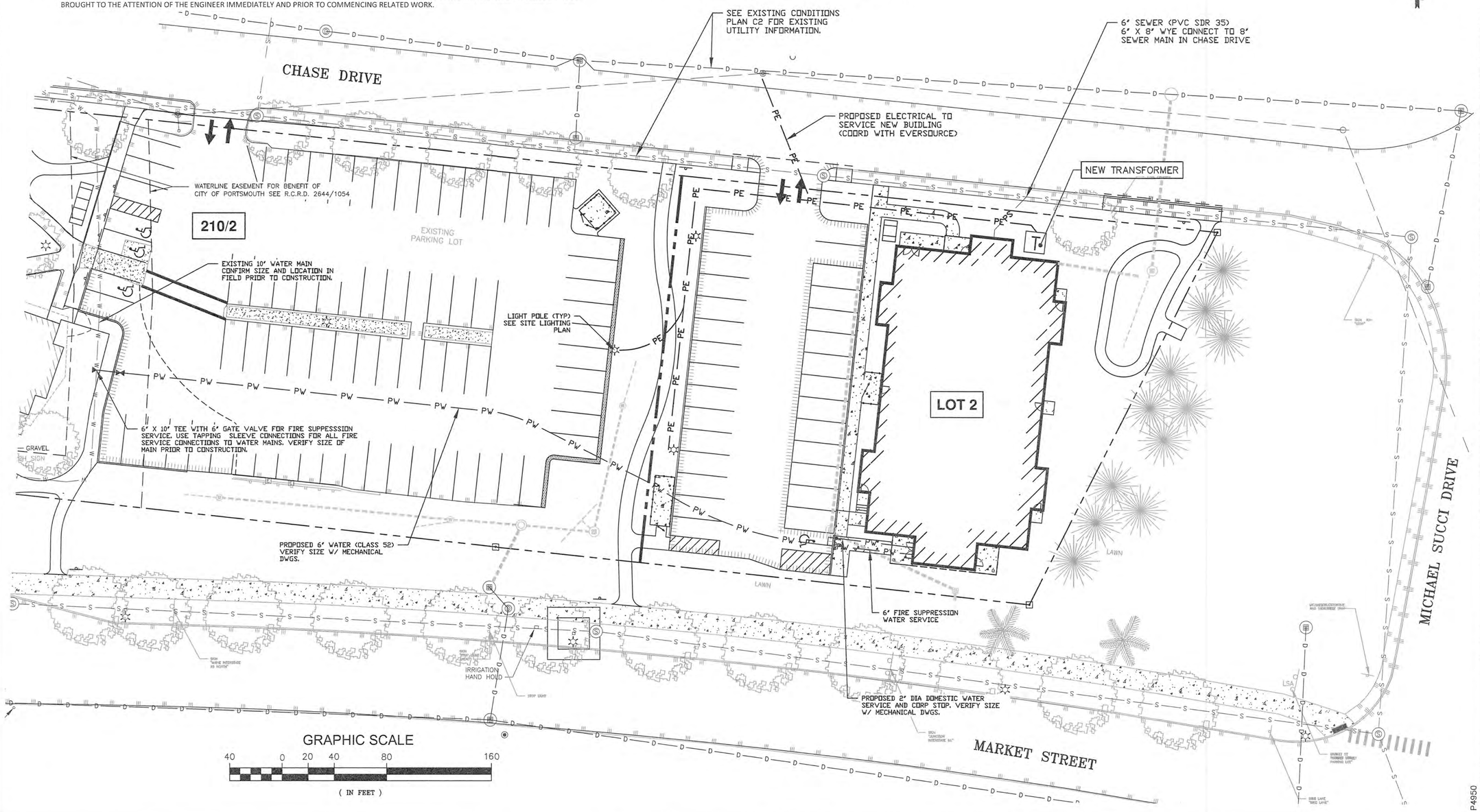
SHEET NUMBER: C.7

UTILITY NOTES

1. ALL WATER MAIN INSTALLATIONS AND SERVICE CONNECTIONS SHALL CONFORM TO PORTSMOUTH WATER DEPARTMENT STANDARDS. WATER MAIN SHALL BE WRAPPED WITH A WATER TIGHT POLYETHYLENE WRAPPING. ALL JOINTS SHALL HAVE THREE (3) WEDGES PER JOINT.
2. ALL SEWER INSTALLATIONS AND SERVICE CONNECTIONS SHALL CONFORM TO PORTSMOUTH WATER AND SEWER DEPARTMENT STANDARDS. CONTRACTOR SHALL CONTACT PORTSMOUTH DPW FOR TESTING OF SEWER LINES.
3. DO NOT BEGIN CONSTRUCTION UNTIL ALL STATE, LOCAL, AND FEDERAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED. CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH ALL PERMIT CONDITIONS AND REQUIREMENTS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR POSTING OF ALL BONDS AND PAYMENT OF ALL TAP, TIE-IN AND CONNECTION FEES.
5. FIRE ALARM PANEL SHALL BE MONITORED THROUGH A THIRD-PARTY SECURITY COMPANY. CONTRACTOR SHALL COORDINATE ALL PANEL LOCATIONS AND INTERCONNECTIONS WITH FIRE DEPARTMENT.
6. THE APPLICANT SHALL HAVE A SITE SURVEY CONDUCTED BY A RADIO COMMUNICATIONS CARRIER APPROVED BY THE CITY'S COMMUNICATION DIVISION. THE RADIO COMMUNICATIONS CARRIER MUST BE FAMILIAR AND CONVERSANT WITH THE POLICE AND RADIO CONFIGURATION. IF THE SITE SURVEY INDICATES IT IS NECESSARY TO INSTALL A SIGNAL REPEATER EITHER ON OR NEAR THE PROPOSED PROJECT, THOSE COSTS SHALL BE THE RESPONSIBILITY OF THE PROPERTY OWNER. THE APPLICANT SHALL BE REQUIRED TO PAY FOR THE SITE SURVEY WHETHER OR NOT THE SURVEY INDICATES A REPEATER IS NECESSARY. THE OWNER SHALL COORDINATE WITH THE SUPERVISOR OF RADIO COMMUNICATIONS FOR THE CITY. THE SURVEY SHALL BE COMPLETED AND THE REPEATER, IF DETERMINED IT IS REQUIRED, SHALL BE INSTALLED PRIOR TO THE ISSUANCE OF CERTIFICATE OF OCCUPANCY.
7. ALL TRENCHING, PIPE LAYING AND BACKFILLING SHALL CONFORM TO FEDERAL OSHA AND CITY REGULATIONS.
8. SITEWORK CONTRACTOR SHALL COORDINATE ALL WORK WITH MECHANICAL DRAWINGS.
9. SEE ARCHITECTURAL/MECHANICAL DRAWINGS FOR EXACT LOCATIONS & ELEVATIONS OF UTILITY CONNECTIONS AT BUILDINGS. COORDINATE ALL WORK WITHIN FIVE (5) FEET OF BUILDINGS WITH BUILDING CONTRACTOR AND ARCHITECTURAL/MECHANICAL DRAWINGS. ALL CONFLICTS AND DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY AND PRIOR TO COMMENCING RELATED WORK.
10. FINAL UTILITY LOCATIONS TO BE COORDINATED BETWEEN THE CONTRACTOR, ALL APPROPRIATE UTILITY COMPANIES AND THE ARCHITECT.
11. CONTRACTOR SHALL COORDINATE ALL TELECOMMUNICATIONS INSTALLATIONS WITH FAIRPOINT COMMUNICATIONS.
12. CONTRACTOR SHALL COORDINATE ALL CABLE INSTALLATIONS WITH COMCAST.
13. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL INSTALLATIONS WITH EVERSOURCE. ALL ELECTRIC CONDUIT INSTALLATION SHALL BE INSPECTED BY EVERSOURCE PRIOR TO BACKFILL, 48-HOUR MINIMUM NOTICE REQUIRED.
14. TRANSFORMER SHALL BE PAD MOUNTED. COORDINATE WITH ARCHITECT & EVERSOURCE.
15. DETECTABLE WARNING TAPE SHALL BE PLACED OVER THE ENTIRE LENGTH OF ALL BURIED UTILITIES, COLORS PER THE RESPECTIVE UTILITY PROVIDERS.
16. CONTRACTOR SHALL CONTACT CITY OF PORTSMOUTH DEPARTMENT OF PUBLIC WORKS AT 603-427-1530 TO COORDINATE INSPECTION OF SEWER WORK.
17. THE TESTING OF THE MUNICIPAL SEWER INFRASTRUCTURE IMPROVEMENTS SHALL BE UNDER THE SUPERVISION OF THE PORTSMOUTH DEPARTMENT OF PUBLIC WORKS (DPW).
18. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL DISCONNECTIONS/INSTALLATIONS WITH EVERSOURCE. CONTACT NICK KOSKO @ 603-332-4227, EXT. 5555334
19. CONTRACTOR SHALL COORDINATE ALL NATURAL GAS DISCONNECTIONS/INSTALLATIONS WITH UNITIL CORPORATION. CONTACT DAVID BEAULIEU @ 603-294-5144
20. CONTRACTOR SHALL COORDINATE ALL CABLE DISCONNECTIONS/INSTALLATIONS WITH COMCAST. CONTACT MIKE COLLINS @ 603-679-5695 EXT 1037
21. CONTRACTOR SHALL COORDINATE ALL TELE-COMMUNICATION DISCONNECTIONS AND INSTALLATION WITH FAIRPOINT COMMUNICATIONS. CONTACT JOE CONSIDINE @ 603-427-5525

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE



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0	INITIAL SUBMISSION	CDB	09/16/19

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4950-SITE.DWG

SCALE:
22" x 34" – 1" = 40'
11" x 17" – 1" = 80'

OWNER:
BETHEL ASSEMBLY OF GOD
200 CHASE DRIVE
PORTSMOUTH, NH 03801

APPLICANT:
200 CHASE DRIVE, LLC
36 MAPLEWOOD AVE.
PORTSMOUTH, NH 03801

CHASE DRIVE GATEWAY DEVELOPMENT SITE

200 CHASE DRIVE
PORTSMOUTH, NH

ASSESSOR'S PARCEL 210-2

TITLE:

UTILITY PLAN

SHEET NUMBER:
C.8

P4950

LEGEND

- PROPOSED PROPERTY LINE
- DEVELOPMENT SITE AREA
- PROPOSED COMMUNITY SPACE

APPROVED BY THE PORTSMOUTH PLANNING BOARD

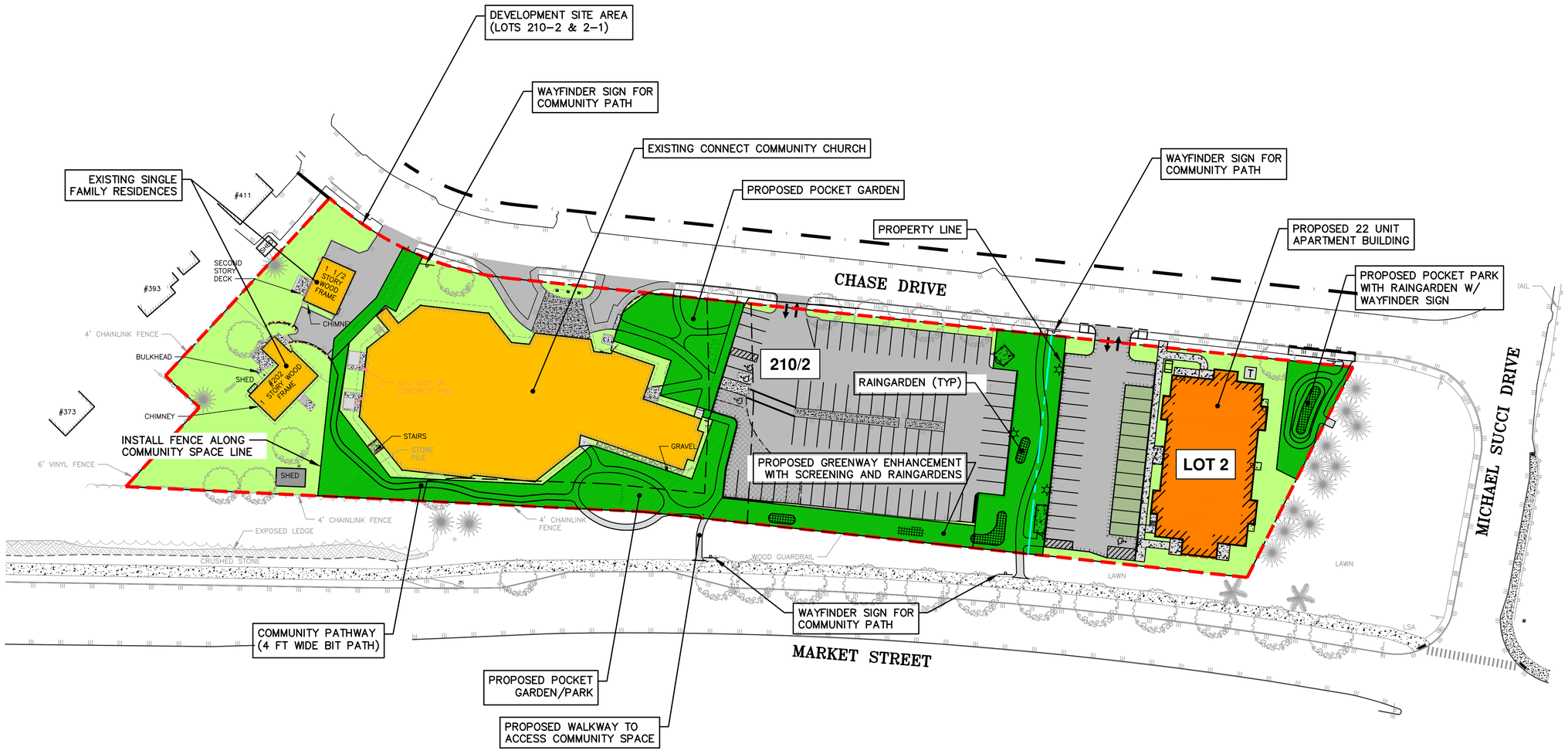
CHAIRMAN DATE

NORTH (NAD83(2011))
GRID
MERIDIAN

COMMUNITY SPACE REQUIREMENT

REQUIRED 20% OF SITE DEVELOPMENT AREA = 23,320 SF
TOTAL PROVIDED = 24,270 SF COMMUNITY SPACE PROVIDED

SEE LANDSCAPE PLAN FOR MORE DETAIL ON COMMUNITY SPACE ENHANCEMENTS



GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

P4950

ENGINEER:

ALTUS ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

ISSUED FOR:
TAC

ISSUE DATE:
SEPTEMBER 16, 2019

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	CDB	06/04/19
1	DESIGN REVIEW	CDB	06/26/19
2	TAC	CDB	09/16/19

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4950-SITE.DWG

SCALE:
22" x 34" - 1" = 40'
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CHASE DRIVE GATEWAY DEVELOPMENT SITE

200 CHASE DRIVE
PORTSMOUTH, NH

ASSESSOR'S PARCEL 210-2

TITLE:

COMMUNITY SPACE PLAN

SHEET NUMBER:

C.9

Plant List

TREES

Symbol	Botanical Name	Common Name	Quantity	Size	Min. Size	Comments
Bn	*Betula nigra 'Heritage'*	Heritage River Birch	7	10-12' ht.		BB
Ck	*Cornus kousa*	Kousa Dogwood	1	8-10' ht		BB multi-stemmed
Mag	*Magnolia 'Butterfly'*	Butterfly magnolia	1	8-10' ht		BB multi-stemmed
Pc	*Pyrus calleryana 'Chanticleer*	Chanticleer Flowering Pear	1	2.5-3" cal.		BB matched
Pg	*Picea glauca*	White Spruce	2	8-10' ht.		BB
PoG	*Picea orientalis 'Gowdy'*	Gowdy Oriental Spruce	2	8-10' ht.		BB
Ua	*Ulmus americana 'Princeton'*	Princeton American Elm	4	2.5-3" cal.		BB matched
Z	*Zelkova serrata 'Green Vase'*	Green Vase Zelkova	7	2.5-3" cal.		BB matched

SHRUBS

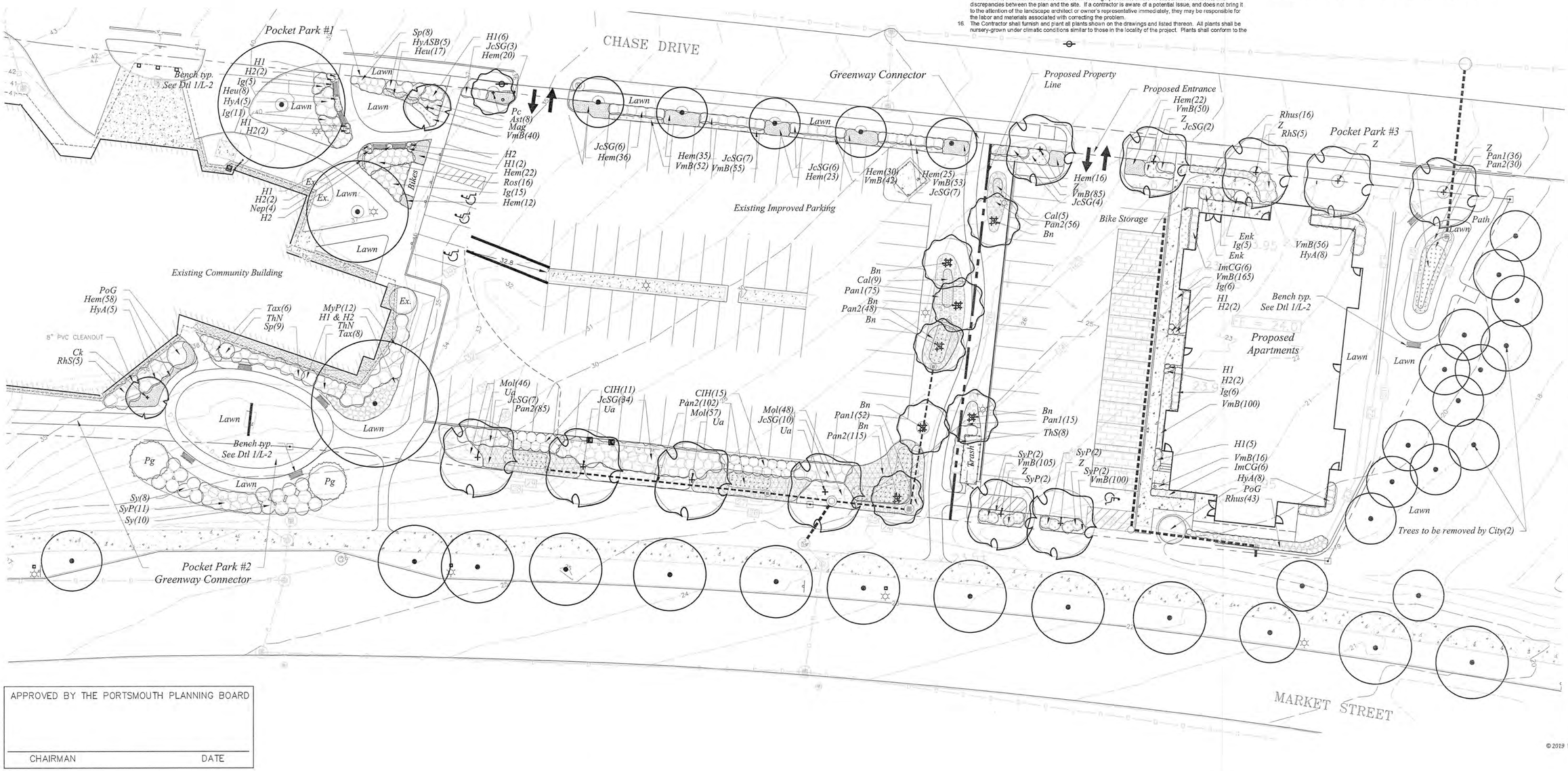
Symbol	Botanical Name	Common Name	Quantity	Size		Comments
ClH	*Cornus alba 'Ivory Halo'*	Ivory Halo Dogwood	26	2-2.5'ht		BB
Enk	*Enkianthus campanulatus*	Redvein Enkianthus	2	4-5' ht.		BB
HyA	*Hydrangea arborescens 'Incrediball'*	Incredibail Hydrangea	26	5 gal	24"x24"	
HyASB	*Hydrangea macrophylla 'All Summer Beauty'*	All Summer Beauty Hydranges (Blue hortensia)	5	3 gal.	18"x18"	
Ig	*Ilex glabra 'Shamrock'*	Shamrock Inkberry	48	5 gal	24"x24"	
ImCG	*Ilex meserve 'China Girl'*	China Girl Holly	12	2.5'-3'		BB
JcSG	*Juniperus chinensis 'Seagreen'*	Seagreen Juniper	86	2.5-3' ht.		BB
MyP	*Myrica pensylvanica*	Northern Bayberry	12	3-4' ht.		BB
RhS	*Rhododendron 'Scintillation'*	Scintillation Rhododendron	18	2.5-3' ht.		BB
Rhus	*Rhus aromatica 'Grow-Low'*	Grow Low Sumac	59	3 gal.	18"x18"	
Ros	*Rosa 'Knockout'*	Double Red Knockout Rose	16	2 gal.		
Sp	*Spiraea x bumalda 'Anthony Waterer'*	Anthony Waterer Spirea	17	3 gal.	18"x18"	
Sy	*Syringa vulgaris 'President Lincoln'*	Single blue Lilac	18	4-5' ht.		BB
SyP	*Syringa meyeri 'Palibin'*	Dwarf Korean Lilac	15	2.5-3' ht.		BB
Tax	*Taxus media 'Greenwave'*	Greenwave Yew	14	2.5-3' ht.		BB
ThN	*Thuja occidentalis 'Nigra'*	Dark American Arborvitae	2	6-7' ht.		BB
ThS	*Thuja occidentalis 'Smaragd'*	Emerald Green Arborvitae	8	5-8'ht.		BB

PERENNIALS, GROUNDCOVERS, VINES and ANNUALS

Symbol	Botanical Name	Common Name	Quantity	Size	Comments
Ast	*Astilbe 'Fanal'*	Rubyred Astilbe	8	1 gal	
Cal	*Calamagrostis acutifolia 'Karl Foerster'*	Feather Reed Grass	14	1 gal	
H1	*Hosta sieboldiana 'Elegans'*	Elegans Hosta	41	1 gal	
H2	*Hosta 'Frances Williams'*	Frances Williams Hosta	35	1 gal	
Hem	*Hemerocallis 'Happy Returns'*	Happy Returns Daylily	86	1 gal	
Hem	*Hemerocallis 'Siloam Double Classic'*	Siloam Double Classic Daylily	86	1 gal	
Hem	*Hemerocallis 'Apricot Sparkle'*	Apricot Sparkle Daylily	86	1 gal	
Heu	*Heuchera 'Splendens'*	Coral Bells	25	2qt	
Mol	*Molinia caerulea 'Variegata'*	Variegated Moor Grass	151	1 gal	
Nep	*Nepeta feassenii x 'Walker's Low'*	Walker's Low Catmint	4	1 gal	
Pan1	*Panicum virgatum 'Cheyenne Sky'*	Cheyenne Sky Switch Grass	178	1 gal	
Pan2	*Panicum virgatum 'Heavy Metal*	Heavy Metal Switch Grass	436	1 gal	
VmB	*Vinca minor 'Bowles'*	Bowles Periwinkle	714	2.5" Pots	

LANDSCAPE NOTES:

1. Design is based on drawings by Altus Engineering, Inc. dated 09-16-2019 and may require adjustment due to actual field conditions.
2. The contractor shall follow best management practices during construction and shall take all means necessary to stabilize and protect the site from erosion.
3. Erosion Control shall be in place prior to construction.
4. Erosion Control to consist of Hay Bales and Erosion Control Fabric shall be staked in place between the work and Water bodies, Wetlands and/or drainage ways prior to any construction.
5. The Contractor shall verify layout and grades and inform the Landscape Architect or Client's Representative of any discrepancies or changes in layout and/or grade relationships prior to construction.
6. It is the contractor's responsibility to verify drawings provided are to the correct scale prior to any bid, estimate or installation. A graphic scale bar has been provided on each sheet for this purpose. If it is determined that the scale of the drawing is incorrect, the landscape architect will provide a set of drawings at the correct scale, at the request of the contractor.
7. **Prior to commencement of construction, a certified arborist shall review the area of construction and trees selected to remain with the landscape architect and the contractor's project manager. Specific monetary value of the trees to remain shall be determined and documented for. Arborist shall make recommendations for preservation recommendations beyond those called out here and in the drawings, tree preservation plans and specifications, including, but not limited to, pruning, root pruning, pre-fertilization and the like.**
8. **All excavation within the drip line of existing trees to be done with an Air Spade. Any roots which require removal shall be cut cleanly with a sharp tool. Exposed roots in excavated areas shall not be allowed to dry out.**
9. Trees to Remain within the construction zone shall be protected from damage for the duration of the project by weighted chain-link fence at the drip line or other suitable means of protection to be approved by Landscape Architect or Client's Representative. Fence shall be located at the drip line at a minimum and shall include any and all surface roots. Do not fill or mulch on the trunk flare. Do not disturb roots, in order to protect the integrity of the roots, branches, trunk and bark of the tree(s) no vehicles or construction equipment shall drive or park in or on the area within the drip line(s) of the tree(s). Do not store any refuse or construction materials or portalets within the tree protection area.
10. This plan is for review purposes only, NOT for Construction. Construction Documents will be provided upon request.
11. Location, support, protection, and restoration of all existing utilities and appurtenances shall be the responsibility of the Contractor.
12. The Contractor shall verify exact location and elevation of all utilities with the respective utility owners prior to construction. Call DIGSAFE at 1-888-344-7233.
13. The Contractor shall procure any required permits prior to construction.
14. Prior to any landscape construction activities Contractor shall test all existing loam and loam from off-site intended to be used for lawns and plant beds using a thorough sampling throughout the supply. Soil testing shall indicate levels of ph, nitrates, macro and micro nutrients, texture, soluble salts, and organic matter. Contractor shall provide Landscape Architect with test results and recommendations from the testing facility along with soil amendment plans as necessary for the proposed plantings to thrive. All loam to be used on site shall be amended as approved by the Landscape Architect prior to placement.
15. Contractor shall notify landscape architect or owner's representative immediately if at any point during demolition or construction a site condition is discovered which may negatively impact the completed project. This includes, but is not limited to, unforeseen drainage problems, unknown subsurface conditions, and discrepancies between the plan and the site. If a contractor is aware of a potential issue, and does not bring it to the attention of the landscape architect or owner's representative immediately, they may be responsible for the labor and materials associated with correcting the problem.
16. The Contractor shall furnish and plant all plants shown on the drawings and listed thereon. All plants shall be nursery-grown under climatic conditions similar to those in the locality of the project. Plants shall conform to the botanical names and standards of size, culture, and quality for the highest grades and standards as adopted by the American Association of Nurserymen, Inc. in the ANSI Z60.1 American Standard of Nursery Stock. American Standards Institute, Inc. 230 Southern Building, Washington, D.C. 20005.
17. A complete list of plants, including a schedule of sizes, quantities, and other requirements is shown on the drawings. In the event that quantity discrepancies or material omissions occur in the plant materials list, the planting plans shall govern.
18. All plants shall be legibly tagged with proper botanical name.
19. The Contractor shall guarantee all plants for not less than one year from time of acceptance.
20. Owner or Owner's Representative will inspect plants upon delivery for conformity to Specification requirements. Such approval shall not affect the right of inspection and rejection during or after the progress of the work. The Owner reserves the right to inspect and/or select all trees at the place of growth and reserves the right to approve a representative sample of each type of shrub, herbaceous perennial, annual, and ground cover at the place of growth. Such sample will serve as a minimum standard for all plants of the same species used in this work.
21. No substitutions of plants may be made without prior approval of the Owner or the Owner's Representative for any reason.
22. If an automatic irrigation system is installed, all irrigation valve boxes shall be located within planting bed areas.
23. The contractor is responsible for all plant material from the time their work commences until final acceptance. This includes but is not limited to maintaining all plants in good condition, the security of the plant material once delivered to the site, and watering of plants. Plants shall be appropriately watered prior to, during and after planting. It is the contractor's responsibility to provide water from off site, should it not be available on site.
24. Contractor shall provide an alternate price for irrigating all newly landscaped areas and resetting of any existing irrigation that will be disturbed during planting. Contractor shall provide irrigation design for review by Landscape Architect or Owner's Representative when awarded the project.
25. All disturbed areas will be dressed with 6" of topsoil and planted as noted on the plans or seeded except plant beds. Plant beds shall be prepared to a depth of 12" with 75% loam and 25% compost.
26. Trees, ground cover, and shrub beds shall be mulched to a depth of 2" with one-year-old, well-composted, shredded native bark not longer than 4" in length and ¼" in width, free of woodchips and sawdust. Mulch for ferns and herbaceous perennials shall be no longer than 1" in length. Trees in lawn areas shall be mulched in a 5' diameter min. saucer. Color of mulch shall be black.
27. Drip strip shall extend to 6" beyond roof overhang and shall be edged with 3/16" thick metal edger.
28. In no case shall mulch touch the stem of a plant nor shall mulch ever be more than 3" thick total (including previously applied mulch) over the root ball of any plant.
29. Secondary lateral branches of deciduous trees overhanging vehicular and pedestrian travel ways shall be pruned up to a height of 6' to allow clear and safe passage of vehicles and pedestrians under tree canopy.
30. The property owner and all future property owners shall be responsible for the maintenance, repair, and replacement of all required screening and landscape materials.
31. All required plant materials shall be tended and maintained in a healthy growing condition, replaced when necessary, and kept free of refuse and debris. All required fences and walls shall be maintained in good repair.
32. The property owner shall be responsible to remove and replace dead or diseased plant materials immediately with the same type, size, and quantity of plant materials as originally installed, unless alternative plantings are requested, justified and approved by the Planning Board or Planning Director.
33. Snow shall be stored a minimum of 5' from shrubs and trunks of trees.
34. Landscape Architect is not responsible for the means and methods of the contractor.



APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

woodburn & company
LANDSCAPE ARCHITECTURE
103 Kent Place Newmarket, New Hampshire Phone: 603.659.5949

Bethel Assembly of God

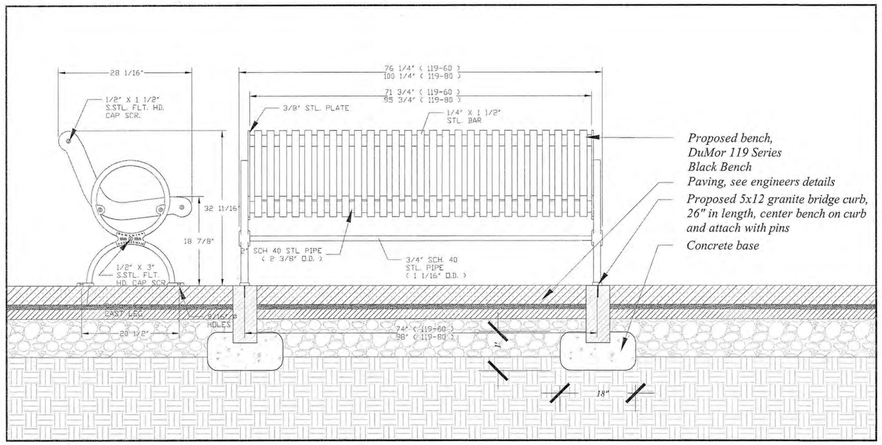
LANDSCAPE PLAN

200 Chase Drive, Portsmouth, NH 03801

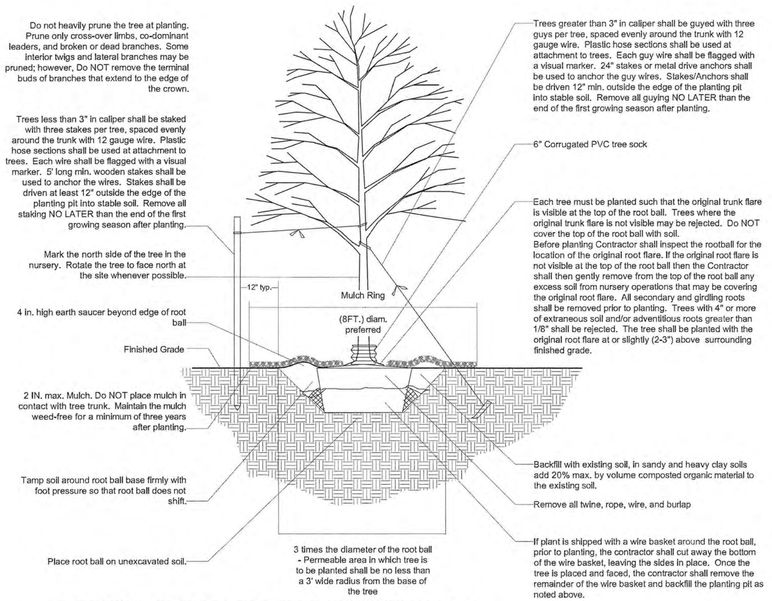
Drawn By:	LF
Checked By:	RW
Scale:	1" = 20'
Date:	2019-09-19
Revisions:	

L-1

Sheet 1 of 2



1 Bench Detail
Scale: 3/4"=1'-0"



CITY OF PORTSMOUTH SPECIFIC NOTES: TREE PLANTING REQUIREMENTS:ANSI A300 PART 6 AND...

PLANTING HOLES SHALL BE DUG BY HAND - NO MACHINE DIGGING. THE ONLY EXCEPTIONS ARE NEW CONSTRUCTION WHERE NEW PLANTING PIETS, PLANTING BEDS WITH GRANITE CURBING AND PLANTING WITH SILVA CELLS ARE USED.

ALL PLANTINGS SHALL BE BACKFILLED WITH SOIL FROM THE SITE AND AMENDED WITH NO MORE THAN 20% ORGANIC COMPOST. THE OLNY EXCEPTIONS ARE FOR NEW CONSTRUCTION WHERE ENGINEERED SOIL IS USED IN CONJUNCTION WITH SILVA CELLS AND WEHRE NEW PLANTING BEDS ARE BEING CREATED,

ALL PLANTINGS SHALL BE BACKFILLED IN THREE LIFTS AND ALL LIFTS SHALL BE WATERED SO THE PLANTING WILLBE SET AND FREE OF AIR POCKETS. NO EXCEPTIONS.

AT THE TIME PLANTING IS COMPLETE THE PLANTING SHALL RECIEVE ADDITIONAL WATER TO ENSURE COMPLETE HYDRATION OF THE ROOTS, BACKFILL MATERIAL AND MULCH LAYER.

ALL PLANTING STOCK SHALL BE SPECIMEN QUALITY, FREE FROM DEFECTS OR INJURY. ANY PLANT MATERIAL OR PLANTING PRACTICES THAT FAIL TO MEET THE STANDARDS SET FORTH IN THE ANSI A300 PART 6 STANDARD PRACTICES FOR PLANTING AND TRANSPORTATION OR THE REQUIREMENTS LISTED ABOVE WILL BE REJECTED.

2 Tree Planting Detail
NTS - Not to Scale

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

woodburn & company
LANDSCAPE ARCHITECTURE
103 Kent Place Newmarket, New Hampshire Phone: 603.659.5949

Bethel Assembly of God

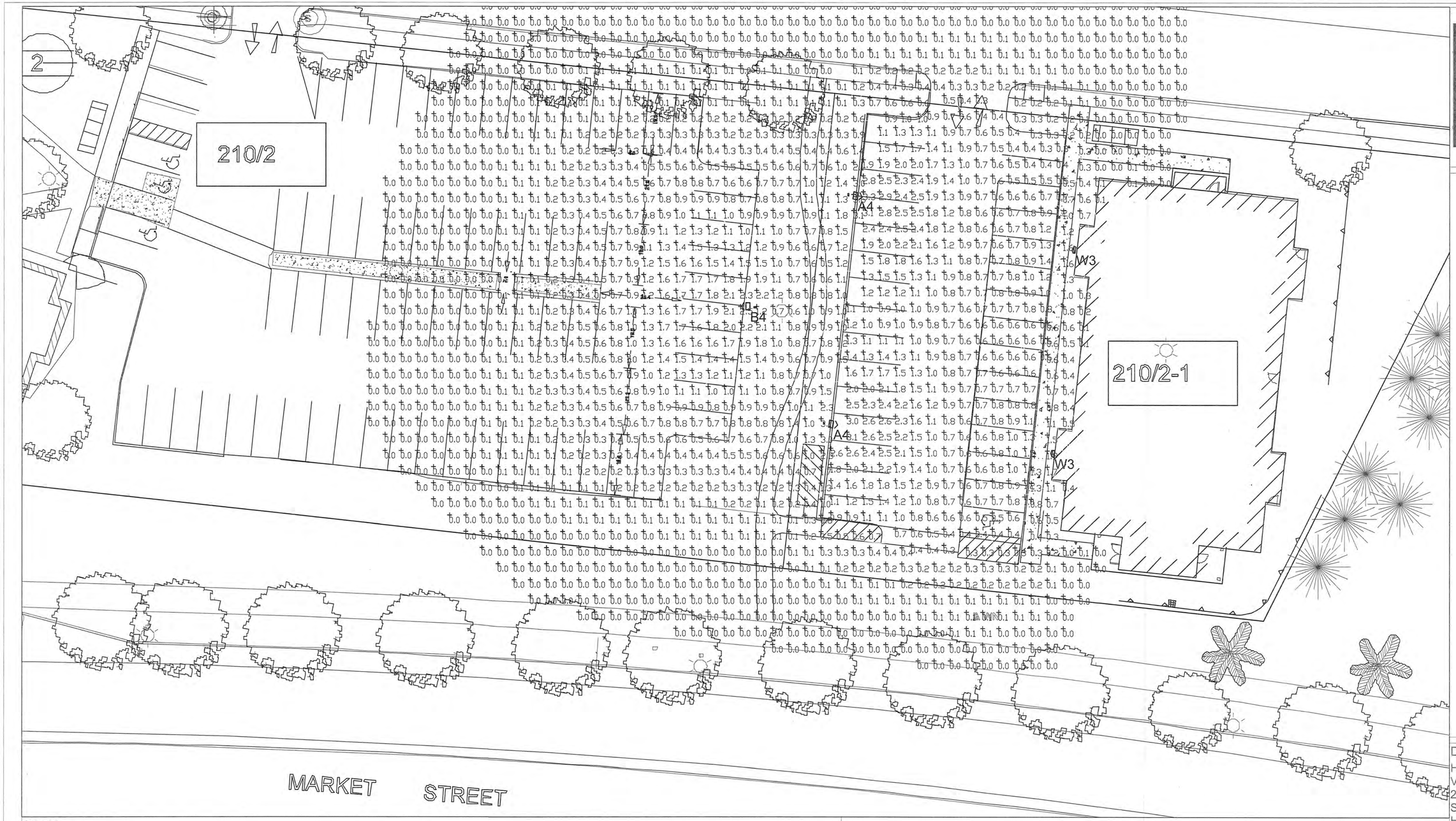
LANDSCAPE DETAILS

200 Chase Drive, Portsmouth, NH 03801

Drawn By:	LF
Checked By:	RW
Scale:	1" = 20'
Date:	2019-09-19
Revisions:	

L-2

Sheet 2 of 2



200 CHASE DR
PORTSMOUTH, NH
Site Lighting Layout

Schedule

Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumens Per Lamp	Light Loss Factor	Wattage
	A4	2	Lithonia Lighting	DSX0 LED P2 40K TFTM MVOLT SPA DDBXD with SSS 14 4C DM19AS DDBXD	DSX0 LED Area Fixture; mounted at 14ft	LED	1	DSX0_LED_P2_40K_TFTM_MVOLT.ies	6007	0.9	49
	B4	1	Lithonia Lighting	DSX0 LED P3 40K TFTM MVOLT SPA DDBXD with SSS 20 4C DM19AS DDBXD	DSX0 LED Area Fixture; mounted at 20ft	LED	1	DSX0_LED_P3_40K_TFTM_MVOLT.ies	8447	0.9	71
	W3	2	Lithonia Lighting	DSXW1 LED 10C 530 40K T3M MVOLT HS DDBXD	DSXW1 LED WITH (1) 10 LED LIGHT ENGINES, TYPE T3M OPTIC, 4000K, @ 530mA WITH HOUSE-SIDE SHIELDS; mounted at 12ft	LED	1	DSXW1_LED_10C_530_40K_T3M_MVOLT_HS.ies	1730	0.9	19.1

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
200 Chase Dr Parking Lot	+	1.1 fc	3.3 fc	0.3 fc	11.0:1	3.7:1
Outside of Parking Lot	+	0.3 fc	3.6 fc	0.0 fc	N/A	N/A

Designer
Heidi G. Connors
Visible Light, Inc.
24 Stickney Terrace
Suite 6
Hampton, NH 03842
Date
9/6/2019
Scale
1"=30' (11 X17)
Drawing No.

Summary

SEDIMENT AND EROSION CONTROL NOTES

PROJECT NAME AND LOCATION

Owner:
BETHEL ASSEMBLY OF GOD
200 CHASE DRIVE
PORTSMOUTH, NH 03801

LATITUDE: 043° 05' 05" N
LONGITUDE: 070° 46' 10" W

DESCRIPTION

The proposed Mixed Use Site Development in the Gateway Neighborhood Mixed Use District (G2) will subdivide the existing 2.7 acre lot into two lots and develop the lots under the Site Development regulations as contiguous lots. A new 22 unit residential apartment building will be constructed on the new lot along with associated site improvements.

DISTURBED AREA

The total area to be disturbed on the parcel and for the buildings, driveway, parking area, drainage, and utility construction is approximately 46,000 SF± (1.0 acres±). The combined disturbed area exceeds 43,560 SF (1 acre), thus a SWPPP will be required for compliance with the USEPA-NPDES Construction General Permit.

NPDES CONSTRUCTION GENERAL PERMIT

Contractor shall prepare a Stormwater Pollution Prevention Plan (SWPPP) is accordance with federal storm water permit requirements (see "Developing Your Stormwater Pollution Prevention Plan", EPA 833-R-060-4). The SWPPP must be prepared in a format acceptable to the Owner and provided to the City at least fourteen (14) days prior to initiating construction. Contractor is responsible for all cost associated with preparation and implementation of SWPPP including any temporary erosion control measures (whether indicated or not on these drawings) as required for the contractor's sequence of activities.

The Contractor and Owner shall each file a Notice of Intent (NOI) with the U.S.E.P.A. under the NPDES Construction General Permit. (U.S.E.P.A., 1200 Pennsylvania Avenue NW, Washington, DC 20460) All work shall be in accordance with NPDES General Permit: NHG07000, including NOI requirements, effluent limitations, standards and management for construction. The Contractor shall be responsible for obtaining a USEPA Construction Dewatering Permit, if required.

SEQUENCE OF MAJOR ACTIVITIES

1. Prepare SWPPP and file NPDES Notice of Intent, prior to any construction activities (Required).
2. Hold a pre-construction meeting with City & stake holders.
3. Install temporary erosion control measures, including silt fences and stabilized construction entrance.
4. Protect specified trees (see plans).
5. Remove pavement & construct utility infrastructure.
6. Rough grade lot to prepare for site development. Construct temporary sediment control basins. Stabilize swales prior to directing flow to them.
7. Construct building foundations. Construct parking, driveways, sidewalks & curbing.
8. Loam and seed disturbed areas.
9. Construct raingardens & landscaping after site is stabilized.
10. When all construction activity is complete and site is stabilized, remove all hay bales, stone check dams (if applicable), silt fences and temporary structures and sediment that has been trapped by these devices.
11. File a Notice of Termination (N.O.T.) with U.S.E.P.A. (Required)

NAME OF RECEIVING WATER

The majority of the site connects to the municipal stormwater collection system and eventually discharging to the Piscataqua River.

TEMPORARY EROSION & SEDIMENT CONTROL AND STABILIZATION PRACTICES

All work shall be in accordance with state and local permits. Work shall conform to the practices described in the "New Hampshire Stormwater Manual, Volumes 1 – 3", issued December 2008, as amended. As indicated in the sequence of Major Activities, the silt fences shall be installed prior to commencing any clearing or grading of the site. Structural controls shall be installed concurrently with the applicable activity. Once construction activity ceases permanently in an area, silt fences and any earth/dikes will be removed once permanent measures are established.

During construction, runoff will be diverted around the site with stabilized channels where possible. Sheet runoff from the site shall be filtered through hay bale barriers, stone check dams, and silt fences. All storm drain inlets shall be provided with hay bale filters or stone check dams. Stone rip rap shall be provided at the outlets of drain pipes and culverts where shown on the drawings.

Stabilize all ditches, swales, stormwater ponds, level spreaders and their contributing areas prior to directing flow to them.

Temporary and permanent vegetation and mulching is an integral component of the erosion and sedimentation control plan. All areas shall be inspected and maintained until vegetative cover is established. These control measures are essential to erosion prevention and also reduce costly rework of graded and shaped areas.

Temporary vegetation shall be maintained in these areas until permanent seeding is applied. Additionally, erosion and sediment control measures shall be maintained until permanent vegetation is established.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

A. GENERAL

These are general inspection and maintenance practices that shall be used to implement the plan:

1. The smallest practical portion of the site shall be denuded at one time, but in no case shall it exceed 5 acres at one time.
2. All control measures shall be inspected at least once each week and following any storm event of 0.5 inches or greater.
3. All measures shall be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours.
4. Built-up sediment shall be removed from silt fence or other barriers when it has reached one-third the height of the fence or bale, or when "bulges" occur.
5. All diversion dikes shall be inspected and any breaches promptly repaired.
6. Temporary seeding and planting shall be inspected for bare spots, washouts, and unhealthy growth.
7. The owner's authorized engineer shall inspect the site on a periodic basis to review compliance with the Plans.
8. All roadways and parking lots shall be stabilized within 72 hours of achieving finished grade.
9. All cut and fill slopes shall be seeded/loamed within 72 hours of achieving finished grade.
10. An area shall be considered stable if one of the following has occurred:
    a. Base coarse gravels have been installed in areas to be paved;
    b. A minimum of 85% vegetated growth as been established;
    c. A minimum of 3 inches of non-erosive material such as stone of riprap has been installed;
    – or –
    d. Erosion control blankets have been properly installed.
11. The length of time of exposure of area disturbed during construction shall not exceed 45 days.

B. MULCHING

Mulch shall be used on highly erodible soils, on critically eroding areas, on areas where conservation of moisture will facilitate plant establishment, and where shown on the plans.

1. Timing – In order for mulch to be effective, it must be in place prior to major storm events. There are two (2) types of standards which shall be used to assure this:
    a. Apply mulch prior to any storm event. This is applicable when working within 100 feet of wetlands. It will be necessary to closely monitor weather predictions, usually by contacting the National Weather Service in Concord, to have adequate warning of significant storms.
    b. Required Mulching within a specified time period. The time period can range from 21 to 28 days of inactivity on a area, the length of time varying with site conditions. Professional judgment shall be used to evaluate the interaction of site conditions (soil erodibility, season of year, extent of disturbance, proximity to sensitive resources, etc.) and the potential impact of erosion on adjacent areas to choose an appropriate time restriction.

INSTALLATION, MAINTENANCE AND INSPECTION PROCEDURES FOR TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES (CON'T)

2. Guidelines for Winter Mulch Application –

Type	Rate per 1,000 s.f.	Use and Comments
Hay or Straw	70 to 90 lbs.	Must be dry and free from mold. May be used with plantings.
Wood Chips or Bark Mulch	460 to 920 lbs.	Used mostly with trees and shrub plantings.
Jute and Fibrous Matting (Erosion Blanket	As per manufacturer Specifications	Used in slope areas, water courses and other Control areas.
Crushed Stone 1/4" to 1-1/2" dia.	Spread more than 1/2" thick	Effective in controlling wind and water erosion.
Erosion Control Mix	2" thick (min)	* The organic matter content is between 80 and 100%, dry weight basis. * Particle size by weight is 100% passing a 6" screen and a minimum of 70 %, maximum of 85%, passing a 0.75" screen. * The organic portion needs to be fibrous and elongated. * Large portions of silts, clays or fine sands are not acceptable in the mix. * Soluble salts content is less than 4.0 mmhos/cm. * The pH should fall between 5.0 and 8.0.

3. Maintenance – All mulches must be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by mulch, additional mulch shall be immediately applied.

C. TEMPORARY GRASS COVER

1. Seedbed Preparation –
Apply fertilizer at the rate of 600 pounds per acre of 10–10–10. Apply limestone (equivalent to 50 percent calcium plus magnesium oxide) at a rate of three (3) tons per acre.

2. Seeding –
a. Utilize annual rye grass at a rate of 40 lbs/acre.
b. Where the soil has been compacted by construction operations, loosen soil to a depth of two (2) inches before applying fertilizer, lime and seed.
c. Apply seed uniformly by hand, cyclone seeder, or hydroseeder (slurry including seed and fertilizer). Hydroseedings, which include mulch, may be left on soil surface. Seeding rates must be increased 10% when hydroseeding.

3. Maintenance –
Temporary seedings shall be periodically inspected. At a minimum, 95% of the soil surface should be covered by vegetation. If any evidence of erosion or sedimentation is apparent, repairs shall be made and other temporary measures used in the interim (mulch, filter barriers, check dams, etc.).

D. FILTERS

1. Tubular Sediment Barrier
a. See detail.
b. Install per manufacturer's requirements.

2. Silt Fence (if used)
a. Synthetic filter fabric shall be a pervious sheet of propylene, nylon, polyester or ethylene yarn and shall be certified by the manufacturer or supplier as conforming to the following requirements:

Physical Property	Test	Requirements
Filtering Efficiency	VTM-51	75% minimum
Tensile Strength at 20% Maximum Elongation*	VTM-52	Extra Strength 50 lb/lin in (min) Standard Strength 30 lb/lin in (min)
Flow Rate	VTM-51	0.3 gal/sf/min (min)

* Requirements reduced by 50 percent after six (6) months of installation.

Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizer to provide a minimum of six (6) months of expected usable construction life at a temperature range of 0 degrees F to 120° F.

b. Posts shall be spaced a maximum of ten (10) feet apart at the barrier location or as recommended by the manufacturer and driven securely into the ground (minimum of 16 inches).

c. A trench shall be excavated approximately six (6) inches wide and eight (8) inches deep along the line of posts and upslope from the barrier.

d. When standard strength filter fabric is used, a wire mesh support fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least one (1) inch long, tie wires or hog rings. The wire shall extend no more than 36 inches above the original ground surfaces.

e. The "standard strength" filter fabric shall be stapled or wired to the fence, and eight (8) inches of the fabric shall be extended into the trench. The fabric shall not extend more than 36 inches above the original ground surface. Filter fabric shall not be stapled to existing trees.

f. When extra strength filter fabric and closer post spacing are used, the wire mesh support fence may be eliminated. In such a case, the filter fabric is stapled or wired directly to the posts with all other provisions of item (g) applying.

g. The trench shall be backfilled and the soil compacted over the filter fabric.

h. Silt fences shall be removed when they have served their useful purpose but not before the upslope areas has been permanently stabilized.

3. Sequence of Installation –
Sediment barriers shall be installed prior to any soil disturbance of the contributing upslope drainage area.

4. Maintenance –
a. Silt fence barriers shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. They shall be repaired if there are any signs of erosion or sedimentation below them. Any required repairs shall be made immediately. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water, the sediment barriers shall be replaced with a temporary stone check dam.

b. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier still is necessary, the fabric shall be replaced promptly.

c. Sediment deposits must be removed when deposits reach approximately one-third (1/3) the height of the barrier.

d. Any sediment deposits remaining in place after the silt fence or other barrier is no longer required shall be removed. The area shall be prepared and seeded.

e. Additional stone may have to be added to the construction entrance, rock barrier and riprap lined swales, etc., periodically to maintain proper function of the erosion control structure.

E. PERMANENT SEEDING –

1. Bedding – stones larger than 1½", trash, roots, and other debris that will interfere with seeding and future maintenance of the area should be removed. Where feasible, the soil should be tilled to a depth of 5" to prepare a seedbed and mix fertilizer into the soil.

2. Fertilizer – lime and fertilizer should be applied evenly over the area prior to or at the time of seeding and incorporated into the soil. Kinds and amounts of lime and fertilizer should be based on an evaluation of soil tests. When a soil test is not available, the following minimum amounts should be applied:

Agricultural Limestone @ 100 lbs. per 1,000 s.f.
10–20–20 fertilizer @ 12 lbs. per 1,000 s.f.

3. Seed Mixture (See Landscape Drawings for additional information):

3.1. Lawn seed mix shall be a fresh, clean new seed crop. The Contractor shall furnish a dealer's guaranteed statement of the composition of the mixture and the percentage of purity and germination of each variety.
3.2. Seed mixture shall consist of
    a. 1/3 Kentucky blue,
    b. 1/3 perennial rye, and
    c. 1/3 fine fescue.
3.1. Turf type tall fescue is unacceptable.

4. Sodding – sodding is done where it is desirable to rapidly establish cover on a disturbed area. Sodding an area may be substituted for permanent seeding procedures anywhere on site. Bed preparation, fertilizing, and placement of sod shall be performed according to the S.C.S. Handbook. Sodding is recommended for steep sloped areas, areas immediately adjacent to sensitive water courses, easily erodible soils (fine sand/silt), etc.

WINTER CONSTRUCTION NOTES

1. 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 elsewhere seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting. 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;

2. All ditches or swales which do not exhibit a minimum of 85% vegetative growth by October 15th, or which are disturbed after October 15th, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions; and

3. After November 15th, incomplete road or parking surfaces where work has stopped for the winter season shall be protected with a minimum of 3 inches of crushed gravel per NHDOT Item 304.3.

WINTER CONSTRUCTION NOTES

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3. After November 15th, incomplete road or parking surfaces where work has stopped for the winter season shall be protected with a minimum of 3 inches of crushed gravel per NHDOT Item 304.3.

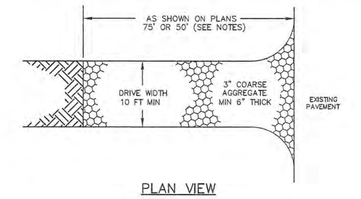
Long Term Inspection & Maintenance Schedule

	Spring	Fall or Yearly	After Major Storm	Every 2-5 Years
Vegetated Areas				
Inspect all slopes and embankments	x		x	
Replant bare areas or areas with sparse growth	x		x	
Armor areas with rill erosion with an appropriate lining or divert the erosive flows to on-site areas able to withstand concentrated flows.	x		x	
Stormwater Channels				
Inspect ditches, swales and other open stormwater channels	x	x	x	
Remove any obstructions and accumulated sediments or debris	x	x		
Control vegetated growth and woody vegetation		x		
Repair any erosion of the ditch lining		x		
Mow vegetated ditches		x		
Remove woody vegetation growing through riprap		x		
Repair any slumping side slopes		x		
Replace riprap where underlying filter fabric or underdrain gravel is exposed or where stones have been dislodged		x		
Culverts				
Remove accumulated sediments and debris at inlet, outlet and within the conduit	x	x	x	
Repair any erosion damage at the culvert's inlet and outlet	x	x	x	
Remove woody vegetation growing through riprap		x		
Roadways and Parking Surfaces				
Remove accumulated winter sand along roadways	x			
Sweep pavement to remove sediment	x			
Grade road shoulders and remove excess sand either manually or by a front-end loader	x			
Grade gravel roads and gravel shoulders	x			
Clean out sediment contained in water bars or open-top culverts	x			
Ensure that stormwater is not impeded by accumulations of material or false ditches in the roadway shoulder	x			
Runoff Infiltration Facilities				
Remove dead vegetation and any accumulated sediment (manually at the entrance to the garden) to allow for new growth	x			
Weed; add additional hardwood mulch to suppress weeds	x	x		
Mow turf three (3) times a growing season				
Aerate area with deep tines, if water ponds on the surface for more than 24 hours during the first year or for a length of 72 hours		x		
Vegetative Swale				
Mow grass swales monthly				
Inspect swale following significant rainfall event	x	x	x	
Control vegetated growth and woody vegetation	x	x		
Repair any erosion of the ditch	x	x		
Remove debris and liter as necessary				

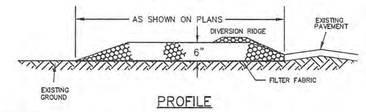
NOTE:
ALL FACILITIES SHOULD BE INSPECTED ON AN ANNUAL BASIS AT A MINIMUM. IN ADDITION, ALL FACILITIES SHOULD BE INSPECTED AFTER A SIGNIFICANT PRECIPITATION EVENT TO ENSURE THE FACILITY IS DRAINING APPROPRIATELY AND TO IDENTIFY ANY DAMAGE THAT OCCURRED AS A RESULT OF THE INCREASED RUNOFF. FOR THE PURPOSE OF THIS STORMWATER MANAGEMENT PROGRAM, A SIGNIFICANT RAINFALL EVENT IS CONSIDERED AN EVENT OF THREE (3) INCHES IN A 24-HOUR PERIOD OR 0.5 INCHES IN A ONE-HOUR PERIOD. IT IS ANTICIPATED THAT A SHORT, INTENSE EVENT IS LIKELY TO HAVE A HIGHER POTENTIAL OF EROSION FOR THIS SITE THAN A LONGER, HIGH VOLUME EVENT.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE



PLAN VIEW

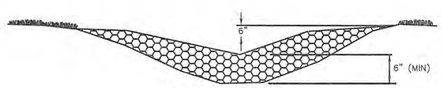


PROFILE

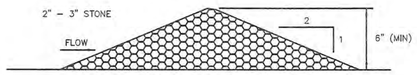
CONSTRUCTION SPECIFICATIONS

1. REFERENCE NEW HAMPSHIRE STORMWATER MANUAL VOLUME 3 (LATEST EDITION), SECTION 4.2 "TEMPORARY CONSTRUCTION EXIT" REQUIREMENTS AND BMP DETAIL.
2. STONE SIZE – 3" COARSE AGGREGATE
3. THICKNESS – SIX (6) INCHES (MINIMUM).
4. LENGTH – 75 FOOT MINIMUM, OR 50 FOOT ALLOWED WHEN DIVERSION RIDGE IS PROVIDED.
5. WIDTH – 1/2 OF DRIVEWAY (10 FOOT MINIMUM).
6. FILTER FABRIC – MIRAFI 600X OR APPROVED EQUAL.
7. SURFACE WATER CONTROL – 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.
8. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS WILL REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

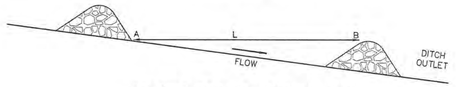
STABILIZED CONSTRUCTION EXIT NOT TO SCALE



CROSS-SECTION



STRUCTURE DETAIL



SPACING BETWEEN STRUCTURES

1. L = DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION
2. CHECK DAM SHALL BE CONSTRUCTED OF 2" TO 3" STONE WITH COMPLETE COVERAGE OF DITCH OR SWALE TO INSURE THAT THE CENTER OF THE STRUCTURE IS LOWER THAN THE EDGES.

MAINTENANCE

TEMPORARY GRADE STABILIZATION STRUCTURES SHOULD BE CHECKED AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED STORMS. ANY NECESSARY REPAIRS SHOULD BE MADE IMMEDIATELY. PARTICULAR ATTENTION SHOULD BE GIVEN TO END RUN AND EROSION AT THE DOWNSTREAM TOE OF THE STRUCTURE. WHEN THE STRUCTURES ARE REMOVED, THE DISTURBED PORTION SHOULD BE BROUGHT TO THE EXISTING CHANNEL GRADE AND THE AREAS PREPARED, SEEDED, AND MULCHED. WHILE THIS PRACTICE IS NOT INTENDED TO BE USED PRIMARILY FOR SEDIMENT TRAPPING, SOME SEDIMENT WILL ACCUMULATE BEHIND THE STRUCTURES. SEDIMENT SHALL BE REMOVED FROM BEHIND THE STRUCTURES WHEN IT HAS ACCUMULATED TO ONE HALF OF THE ORIGINAL HEIGHT OF THE STRUCTURE.

CONSTRUCTION SPECIFICATIONS

1. STRUCTURES SHALL BE INSTALLED ACCORDING TO THE DIMENSIONS SHOWN ON THE PLANS AT THE APPROPRIATE SPACING.
2. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER SO THAT EROSION AND AIR AND WATER POLLUTION WILL BE MINIMIZED.
3. SEEDING, FERTILIZING, AND MULCHING SHALL CONFORM TO THE RECOMMENDATIONS IN THE APPROPRIATE VEGETATIVE BMP.
4. STRUCTURES SHALL BE REMOVED FROM THE CHANNEL WHEN THEIR USEFUL LIFE HAS BEEN COMPLETED.

STONE CHECK DAM NOT TO SCALE

ENGINEER:
ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

CORY D. BEDIEN No. 14239 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE
9/16/19

ISSUED FOR: TAC

ISSUE DATE: SEPTEMBER 16, 2019

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	CDB	06/26/19
1	TAC SUBMISSION	CDB	09/16/19

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4950DETAILS.DWG

SCALE: NOT TO SCALE

OWNER:
BETHEL ASSEMBLY OF GOD
200 CHASE DRIVE
PORTSMOUTH, NH 03801

APPLICANT:
200 CHASE DRIVE, LLC
36 MAPLEWOOD AVE.
PORTSMOUTH, NH 03801

CHASE DRIVE GATEWAY DEVELOPMENT SITE

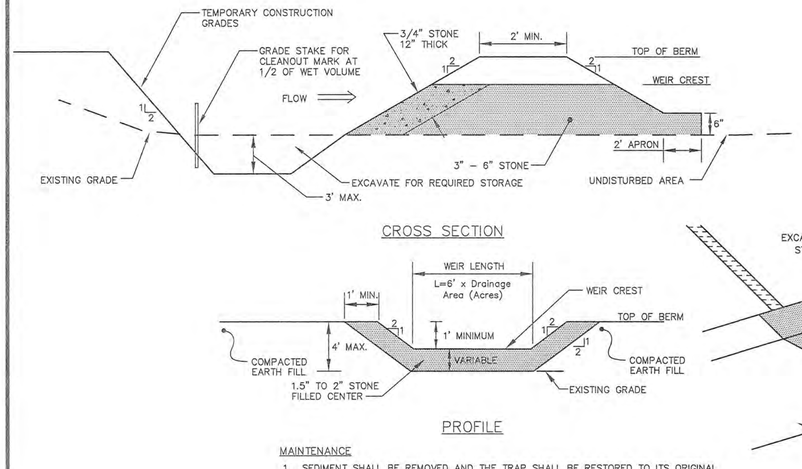
200 CHASE DRIVE
PORTSMOUTH, NH

ASSESSOR'S PARCEL 210-2

TITLE:
EROSION CONTROL DETAILS

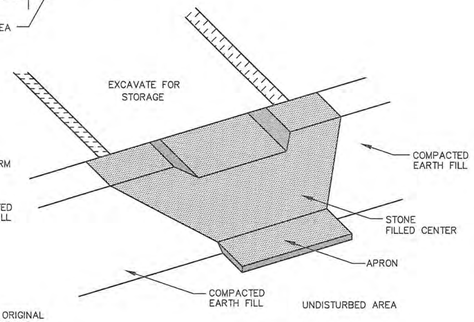
SHEET NUMBER:
D.1

P4950



CROSS SECTION

PROFILE

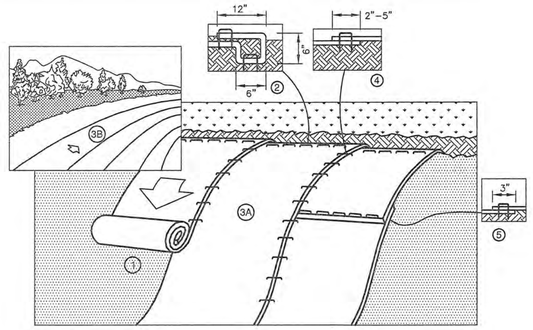


ISOMETRIC VIEW

MAINTENANCE

1. SEDIMENT SHALL BE REMOVED AND THE TRAP SHALL BE RESTORED TO ITS ORIGINAL CAPACITY WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN STORAGE VOLUME. SEDIMENT REMOVED SHALL BE DISPOSED OF SO THAT IT DOES NOT CAUSE A SEDIMENT PROBLEM AT ANOTHER LOCATION.
2. THE STRUCTURE SHALL BE CHECKED BI-WEEKLY AND AFTER EVERY MAJOR STORM TO INSURE THAT IT IS WORKING PROPERLY AND IS NOT DAMAGED. DAMAGE TO THE STRUCTURE SHALL BE REPAIRED IMMEDIATELY.
3. 3/4" STONE SHALL BE CHECKED DURING INSPECTION AND REPLACED WHEN THE OPENINGS IN THE STONE HAVE BECOME CLOGGED.
4. WHEN THE DRAINAGE AREA FLOWING INTO THE BASIN HAS BEEN FULLY STABILIZED, THE SEDIMENT TRAP SHALL BE REMOVED AND THE AREA VEGETATED USING LOAM AND SEED WITH MULCH (OR SOD IF NECESSARY) WITHIN 72 HOURS OF THE REMOVAL OF THE BASIN.

TEMPORARY SEDIMENT TRAP (TST) OUTLET NOT TO SCALE



NOTES

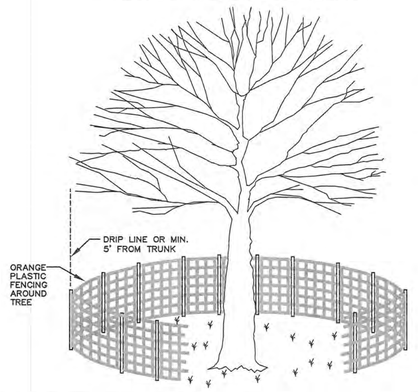
1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET 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 BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"–5" OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
5. CONSECUTIVE BLANKETS 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 BLANKET WIDTH. NOTE: IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

EROSION CONTROL BLANKET - SLOPE NOT TO SCALE

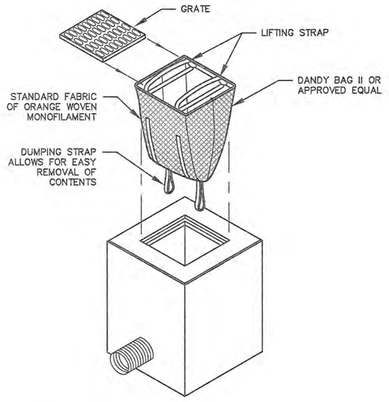
NOTE:
IF SOIL BECOMES COMPATCED OVER THE ROOT ZONE OF ANY TREE, THE GROUND SHOULD BE AERATED BY PUNCHING SMALL HOLES IN IT WITH SUITABLE AERATING EQUIPMENT.

ANY DAMAGE TO THE CROWN, TRUNK OR ROOT SYSTEM OF ANY TREE RETAINED ON SITE SHOULD BE REPAIRED IMMEDIATELY. CONSULT A FORESTER OR TREE SPECIALIST FOR MORE SERIOUS DAMAGE OF TREES.

CONTRACTOR TO USE TREE PROTECTION WHERE SUITABLE AND/OR AS DIRECTED BY THE ENGINEER.



TREE PROTECTION DETAILS NOT TO SCALE



INSTALLATION AND MAINTENANCE:

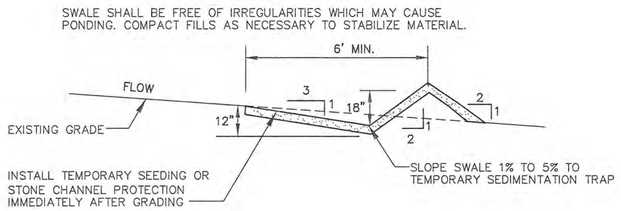
INSTALLATION: REMOVE THE GRATE FROM CATCH BASIN. IF USING OPTIONAL OIL ABSORBENTS; PLACE ABSORBENT PILLOW IN UNIT. STAND GRATE ON END. MOVE THE TOP LIFTING STRAPS OUT OF THE WAY AND PLACE THE GRATE INTO CATCH BASIN INSERT SO THE GRATE IS BELOW THE TOP STRAPS AND ABOVE THE LOWER STRAPS. HOLDING THE LIFTING DEVICES, INSERT THE GRATE INTO THE INLET.

MAINTENANCE: REMOVE ALL ACCUMULATED SEDIMENT AND DEBRIS FROM VICINITY OF THE UNIT AFTER EACH STORM EVENT. AFTER EACH STORM EVENT AND AT REGULAR INTERVALS, LOOK INTO THE CATCH BASIN INSERT. IF THE CONTAINMENT AREA IS MORE THAN 1/3 FULL OF SEDIMENT, THE UNIT MUST BE EMPTIED. TO EMPTY THE UNIT, LIFT THE UNIT OUT OF THE INLET USING THE LIFTING STRAPS AND REMOVE THE GRATE. IF USING OPTIONAL ABSORBENTS; REPLACE ABSORBENT WHEN NEAR SATURATION.

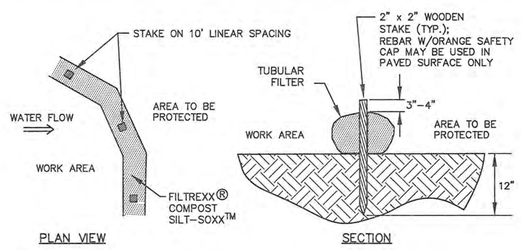
UNACCEPTABLE INLET PROTECTION METHOD:

A SIMPLE SHEET OF GEOTEXTILE UNDER THE GRATE IS NOT ACCEPTABLE.

STORM DRAIN INLET PROTECTION NOT TO SCALE

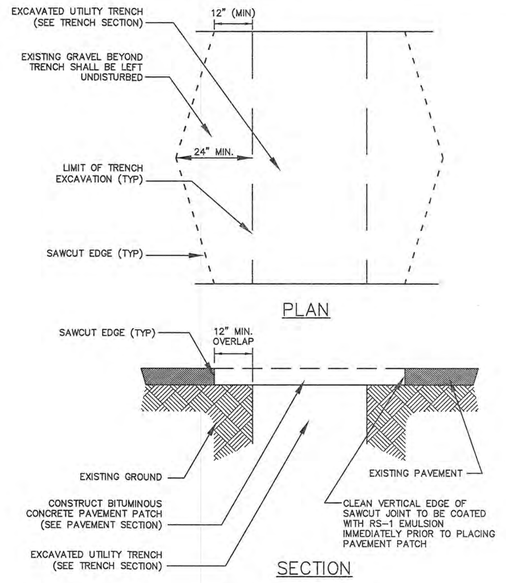


TEMPORARY DIVERSION SWALE NOT TO SCALE



NOTES:
1. SILTSOXX OR APPROVED EQUAL SHALL BE USED FOR TUBULAR SEDIMENT BARRIERS.
2. ALL MATERIAL TO MEET MANUFACTURER'S SPECIFICATIONS.
3. COMPOST/SOIL/ROCK/SEED FILL MATERIAL SHALL BE ADJUSTED AS NECESSARY TO MEET THE REQUIREMENTS OF THE SPECIFIC APPLICATION.
4. ALL SEDIMENT TRAPPED BY BARRIER SHALL BE DISPOSED OF PROPERLY.

TUBULAR SEDIMENT BARRIER DETAIL NOT TO SCALE



NOTES

1. MACHINE CUT EXISTING PAVEMENT.
2. ALL TEMPORARY, DAMAGED OR DEFECTIVE PAVEMENT SHALL BE REMOVED PRIOR TO PLACEMENT OF PERMANENT TRENCH REPAIRS.
3. DIAMOND PATCHES, SHALL BE REQUIRED FOR ALL TRENCHES CROSSING ROADWAY. DIAMOND PATCHES SHALL MEET NHDOT REQUIREMENTS.

TYPICAL TRENCH PATCH NOT TO SCALE

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

ENGINEER:
ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE
9/12/19

ISSUED FOR: TAC

ISSUE DATE: SEPTEMBER 16, 2019

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	CDB	06/26/19
1	TAC SUBMISSION	CDB	09/16/19

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4950DETAILS.DWG

SCALE: NOT TO SCALE

OWNER:
BETHEL ASSEMBLY OF GOD
200 CHASE DRIVE
PORTSMOUTH, NH 03801

APPLICANT:
200 CHASE DRIVE, LLC
36 MAPLEWOOD AVE.
PORTSMOUTH, NH 03801

CHASE DRIVE GATEWAY DEVELOPMENT SITE

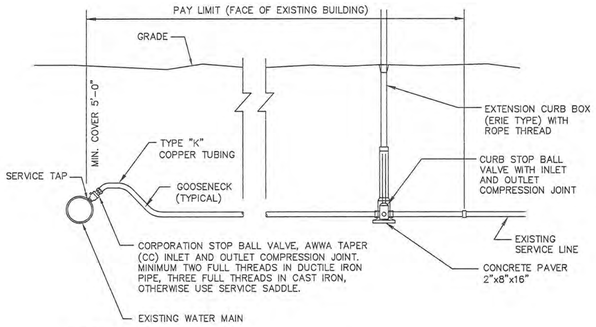
200 CHASE DRIVE
PORTSMOUTH, NH

ASSESSOR'S PARCEL 210-2

TITLE: CONSTRUCTION DETAILS

SHEET NUMBER: D.2

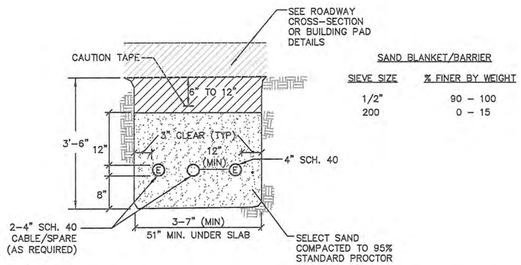
P4950



NOTES

1. PROVIDE NEW LINE USING CONTINUOUS LENGTHS OF COPPER. NO COUPLING ALLOWED IN ROADWAY WITHOUT APPROVAL OF ENGINEER.
2. TAPS TO BE MADE AT APPROXIMATELY 2:00 & 10:00
3. PROVIDE FOR SERVICE LINE CONTRACTION AND EXPANSION BY INSTALLING "S" IN SERVICE LINE NEAR MAIN.
4. IF SERVICE IS INSTALLED WITH LESS THAN 5' COVER, INSULATE OVER LINE.
5. REMOVE EXISTING CURB STOP.
6. CONNECT CURB STOP TO EXISTING SERVICE LINE AT PROPERTY LINE OR AT LOCATION APPROVED BY THE ENGINEER (NO COUPLING WITHOUT APPROVAL OF ENGINEER) AFTER PRESSURE TESTING AND DISINFECTION.
7. SHUT OFF EXISTING CORPORATION AND REMOVE OR ABANDON EXISTING SERVICE LINE.
8. CURB BOX SHALL BE SET IN THE GRASS/LANDSCAPE AREA BETWEEN CURB AND SIDEWALK UNLESS DIRECTED OTHERWISE.
9. 2" OR LARGER SERVICE CONNECTIONS SHALL USE A STAINLESS STEEL SERVICE SADDLE.

SERVICE CONNECTION DETAIL NOT TO SCALE



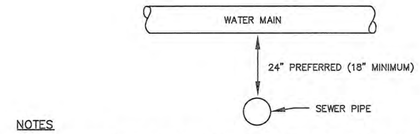
SAND BLANKET/BARRIER

SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 – 100
200	0 – 15

NOTES

1. ALL CONDUIT IS TO BE SCHEDULE 40 PVC, ELECTRICAL GRADE, GRAY IN COLOR AND INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS. A 10-FOOT HORIZONTAL SECTION OF RIGID GALVANIZED STEEL CONDUIT WILL BE REQUIRED AT EACH SWEEP, UNLESS IN THE OPINION OF THE SERVICE PROVIDER DESIGNER, THE SWEEP-PVC JOINT IS NOT SUBJECT TO FAILURE DURING PULLING OF THE CABLE. ALL JOINTS ARE TO BE WATERTIGHT.
2. ALL 90 DEGREE SWEEPS WILL BE MADE WITH RIGID GALVANIZED STEEL WITH A MINIMUM RADIUS OF 36 INCHES FOR PRIMARY CABLES AND 24 INCHES FOR SECONDARY CABLES.
3. BACKFILL MAY BE MADE WITH EXCAVATED MATERIAL OR COMPARABLE, UNLESS MATERIAL IS DEEMED UNSUITABLE BY SERVICE PROVIDER. BACKFILL SHALL BE FREE OF FROZEN LUMPS, ROCKS, DEBRIS, AND RUBBISH. ORGANIC MATERIAL SHALL NOT BE USED AS BACKFILL. BACKFILL SHALL BE IN 6-INCH LAYERS AND THOROUGHLY COMPACTED.
4. A SUITABLE PULLING STRING, CAPABLE OF 300 POUNDS OF PULL, MUST BE INSTALLED IN THE CONDUIT BEFORE SERVICE PROVIDER IS NOTIFIED TO INSTALL CABLE. THE STRING SHOULD BE BLOWN INTO THE CONDUIT AFTER THE RUN IS ASSEMBLED TO AVOID BONDING THE STRING TO THE CONDUIT. A MINIMUM OF TWENTY-FOUR (24") INCHES OF ROPE SLACK SHALL REMAIN AT THE END OF EACH DUCT. PULL ROPE SHALL BE INSTALLED IN ALL CONDUIT FOR FUTURE PULLS. PULL ROPE SHALL BE NYLON ROPE HAVING A MINIMUM TENSILE STRENGTH OF THREE HUNDRED (300#) LBS.
5. SERVICE PROVIDER SHALL BE GIVEN THE OPPORTUNITY TO INSPECT ALL CONDUIT PRIOR TO BACKFILL. THE CONTRACTOR IS RESPONSIBLE FOR ALL REPAIRS SHOULD SERVICE PROVIDER BE UNABLE TO INSTALL ITS CABLE IN A SUITABLE MANNER.
6. TYPICAL CONDUIT SIZES ARE 3-INCH FOR SINGLE PHASE PRIMARY AND SECONDARY VOLTAGE CABLES, 4-INCH FOR THREE PHASE SECONDARY, AND 5-INCH FOR THREE PHASE PRIMARY. HOWEVER, SERVICE PROVIDERS MAY REQUIRE DIFFERENT NUMBERS, TYPES AND SIZES OF CONDUIT THAN THOSE SHOWN HERE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL CONDUIT SIZES, TYPES AND NUMBERS WITH EACH SERVICE PROVIDER PRIOR TO ORDERING THEM.
7. ROUTING OF CONDUIT, LOCATION OF MANHOLES, TRANSFORMERS, CABINETS, HANDHOLES, ETC., SHALL BE DETERMINED BY SERVICE PROVIDER DESIGN PERSONNEL. THE CONTRACTOR SHALL COORDINATE WITH ALL SERVICE PROVIDERS PRIOR TO THE INSTALLATION OF ANY CONDUIT.
8. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND WHERE APPLICABLE, THE NATIONAL ELECTRIC CODE. WHERE REQUIRED BY UTILITY PROVIDER, CONDUIT SHALL BE SUPPORTED IN PLACE USING PIPE STANCHIONS PLACED EVERY FIVE (5') FEET ALONG THE CONDUIT RUN.
9. UNDER A BUILDING SLAB THE CONDUIT SHALL BE ENCASED IN 8" OF CONCRETE ON ALL SIDES.
10. ALL CONDUIT TERMINATIONS SHALL BE CAPPED TO PREVENT DEBRIS FROM ENTERING CONDUIT.

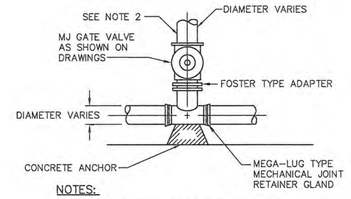
ELECTRIC / COMMUNICATION TRENCH NOT TO SCALE



NOTES

1. A MINIMUM HORIZONTAL DISTANCE OF 10 FEET SHALL BE MAINTAINED BETWEEN WATER AND SEWER MAINS. A MINIMUM VERTICAL DISTANCE WITH WATER ABOVE SEWER SHALL BE MAINTAINED.
2. SEWER PIPE JOINTS SHALL BE LOCATED A MINIMUM OF 6 FEET HORIZONTALLY FROM WATER MAIN.
3. IF THE REQUIRED CONFIGURATION CANNOT BE MET, THE SEWER MAIN SHALL BE CONSTRUCTED TO MEET THE NHDES REQUIREMENTS FOR FORCE MAIN CONSTRUCTION.

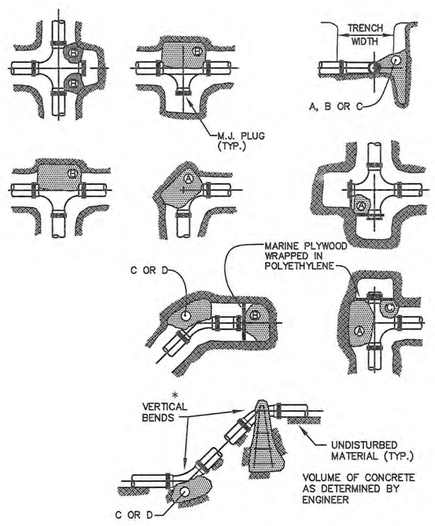
WATER MAIN / SEWER CROSSING NOT TO SCALE



NOTES:

1. GATE VALVES SHALL OPEN RIGHT, PER CITY STANDARDS.
2. BRANCH PIPING SHALL BE MECHANICALLY RESTRAINED AS NOTED UNDER THRUST BLOCK DETAIL REQUIREMENTS.

TEE & GATE VALVE ASSEMBLY DETAIL NOT TO SCALE



TEST PRESSURE = 150 psi	SQUARE FEET OF CONCRETE THRUST BLOCKING BEARING ON UNDISTURBED MATERIAL					
	REACTION TYPE	PIPE SIZE				
		4"	6"	8"	10"	12"
	A 90°	0.89	2.19	3.82	11.14	17.24
	B 180°	0.65	1.55	2.78	8.38	12.00
	C 45°	0.48	1.19	2.12	6.02	9.32
	D 22-1/2°	0.25	0.60	1.06	3.08	4.74
	E 11-1/4°	0.13	0.30	0.54	1.54	2.38

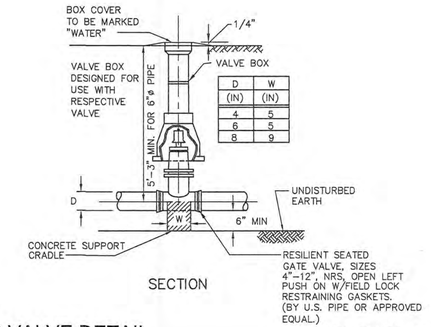
NOTES:

1. POUR THRUST BLOCKS AGAINST UNDISTURBED MATERIAL, WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND THRUST BLOCK TO UNDISTURBED MATERIAL. NO JOINTS SHALL BE COVERED WITH CONCRETE.
2. ON BENDS AND TEES, EXTEND THRUST BLOCKS FULL LENGTH OF FITTING.
3. PLACE BOARD IN FRONT OF ALL PLUGS BEFORE POURING THRUST BLOCKS.
4. WHERE M.J. PIPE IS USED, M.J. PLUG WITH RETAINER GLAND MAY BE SUBSTITUTED FOR END BLOCKINGS.
5. POLYETHYLENE (6 MIL) SHALL BE PLACED AROUND FITTINGS PRIOR TO CONCRETE PLACEMENT.

THRUST BLOCKING DETAIL NOT TO SCALE

APPROVED BY THE PORTSMOUTH PLANNING BOARD

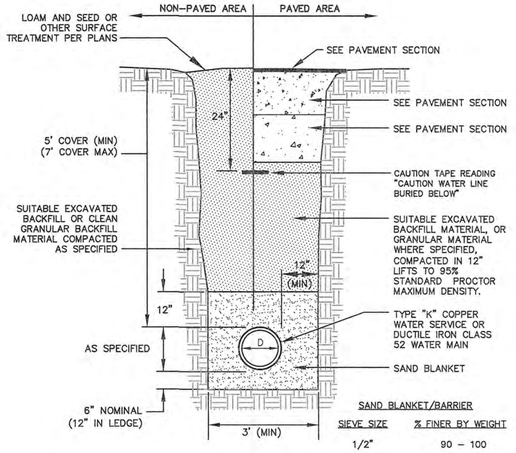
CHAIRMAN DATE



D (IN)	W (IN)
4	5
6	5
8	9

SECTION

WATER VALVE DETAIL NOT TO SCALE



SAND BLANKET/BARRIER

SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 – 100
200	0 – 15

NOTES

1. BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.
2. WATER MAINS SHALL BE POLY WRAPPED.
3. WATER MAINS SHALL HAVE 3 WEDGES PER JOINT.

WATER MAIN TRENCH NOT TO SCALE

ENGINEER:
ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER
9/16/19

ISSUED FOR: TAC

ISSUE DATE: SEPTEMBER 16, 2019

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	CDB	06/26/19
1	TAC SUBMISSION	CDB	09/16/19

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4950DETAILS.DWG

SCALE: NOT TO SCALE

OWNER:
BETHEL ASSEMBLY OF GOD
200 CHASE DRIVE
PORTSMOUTH, NH 03801

APPLICANT:
200 CHASE DRIVE, LLC
36 MAPLEWOOD AVE.
PORTSMOUTH, NH 03801

CHASE DRIVE GATEWAY DEVELOPMENT SITE

200 CHASE DRIVE
PORTSMOUTH, NH

ASSESSOR'S PARCEL 210-2

TITLE: CONSTRUCTION DETAILS

SHEET NUMBER: D.3

P4950

MANHOLE NOTES:

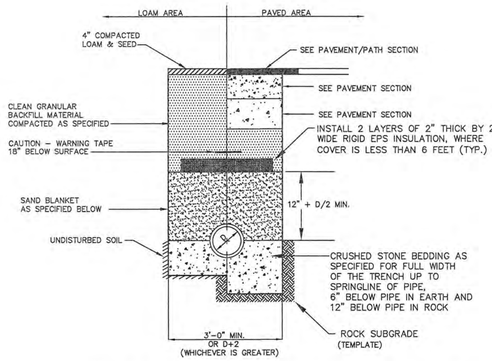
1. IT IS THE INTENTION OF THE NHDES THAT THE MANHOLE, INCLUDING ALL COMPONENT PARTS, HAVE ADEQUATE SPACE, STRENGTH AND LEAKPROOF QUALITIES CONSIDERED NECESSARY BY THE COMMISSION FOR THE INTENDED SERVICE. SPACE REQUIREMENTS AND CONFIGURATIONS, SHALL BE AS SHOWN ON THE DRAWING. MANHOLES MAY BE AN ASSEMBLY OF PRECAST SECTIONS, WITH OR WITHOUT STEEL REINFORCEMENT, WITH ADEQUATE JOINTING, OR CONCRETE CAST MONOLITHICALLY IN PLACE WITH OR WITHOUT REINFORCEMENT IN ANY APPROVED MANHOLE. THE COMPLETE STRUCTURE SHALL BE OF SUCH MATERIAL AND QUALITY AS TO WITHSTAND LOADS OF 8 TONS (H-20 LOADING) WITHOUT FAILURE AND PREVENT LEAKAGE IN EXCESS OF ONE GALLON PER DAY PER VERTICAL FOOT OF MAN-HOLE CONTINUOUSLY FOR THE LIFE OF THE STRUCTURE, A PERIOD GENERALLY IN EXCESS OF 25 YEARS IS TO BE UNDERSTOOD IN BOTH CASES.
2. BARRELS AND CONE SECTIONS SHALL BE PRECAST REINFORCED.
3. PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C478.
4. LEAKAGE TEST SHALL BE PERFORMED IN ACCORDANCE WITH THE TOWN'S STANDARD SPECIFICATIONS.
5. INVERTS AND SHELVES MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW AT CHANGES IN DIRECTION. THE INVERTS SHALL BE LAID OUT IN CURVES, OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY.
6. FRAMES AND COVERS MANHOLE FRAMES AND COVERS SHALL BE OF HEAVY DUTY DESIGN AND PROVIDE A 30-INCH CLEAR OPENING. A 3-INCH (MINIMUM HEIGHT) LETTER "S" FOR SEWERS OR "D" FOR DRAINS SHALL BE PLAINLY CAST INTO THE CENTER OF EACH COVER.
7. BEDDING SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33.

   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 BASE, SCREENED GRAVEL OR CRUSHED STONE 1-1/2" TO 1/2" SHALL BE USED.
8. CONCRETE FOR DROP SUPPORT SHALL CONFORM TO THE REQUIREMENT FOR CLASS A (3000 LBS.) 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 CEMENT
   MAXIMUM SIZE OF AGGREGATE 1 INCH
9. FLEXIBLE JOINT A FLEXIBLE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES:

   PVC PIPE - 60"
   RCP & CI PIPE - ALL SIZES - 48"
   AC & VC PIPE - UP THROUGH 12" DIAMETER - 18"
   AC & VC PIPE - LARGER THAN 12" DIAMETER - 36"
10. SHALLOW MANHOLE IN LIEU OF A CONE SECTION, WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED HAVING AN ECCENTRIC ENTRANCE OPENING AND CAPABLE OF SUPPORTING H-20 LOADS.



BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.

SAND BLANKET

SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 - 100
200	0 - 15

CRUSHED STONE BEDDING *

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

* EQUIVALENT TO STANDARD STONE SIZE #67 - SECTION 703 OF NHDOT STANDARD SPECIFICATIONS

SEWER TRENCH SECTION — NOT TO SCALE

STANDARD TRENCH NOTES:

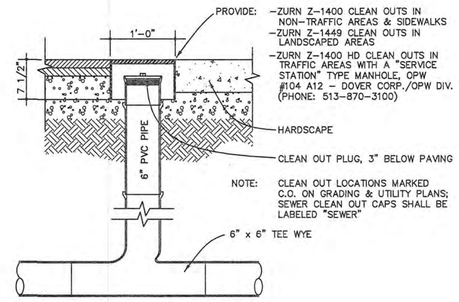
1. ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE: BACKFILL AS STATED IN THE TECHNICAL SPECIFICATIONS OR AS SHOWN OF THE DRAWING.
2. BEDDING: SCREENED GRAVEL AND/OR CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33, STONE SIZE NO. 67.

   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 BASE, SCREENED GRAVEL OR CRUSHED STONE 1-1/2 INCH TO 1/2 INCH SHALL BE USED.
3. SAND BLANKET: CLEAN SAND FREE FROM ORGANIC MATTER, SO GRADED THAT 90 - 100% PASSES 1/2 INCH SIEVE AND NOT MORE THAN 15% WILL PASS A #200 SIEVE. BLANKET MAY BE OMITTED FOR CAST-IRON, DUCTILE IRON, AND REINFORCED CONCRETE PIPE PROVIDED HOWEVER, THAT NO STONE LARGER THAN 2" IS IN CONTACT WITH THE PIPE.
4. SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS, SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS; PIECES OF PAVEMENT; ORGANIC MATTER; TOP SOIL; ALL WET OR SOFT MUCK, PEAT, OR CLAY; ALL EXCAVATED LEDGE MATERIAL; ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION; AND ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.
5. BASE COURSE AND PAVEMENT SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S LATEST EDITION OF THE STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES - DIVISIONS 300 AND 400 RESPECTIVELY.
6. 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 1 FOOT ABOVE THE TOP OF 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 THAT 1 FOOT ABOVE THE TOP OF THE PIPE.
7. 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 IN NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE OUTSIDE DIAMETER (O.D.) ALSO, W SHALL BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.
8. FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUNDED TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
9. CONCRETE FOR ENCASEMENT SHALL CONFORM TO THE NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS STANDARD SPECIFICATION REQUIREMENTS FOR CLASS A (3000#) CONCRETE AS FOLLOWS:
   CEMENT: 6.0 BAGS PER CUBIC YARD
   WATER: 5.75 GALLONS PER BAG CEMENT
   MAXIMUM SIZE OF AGGREGATE: 1 INCH
   CONCRETE ENCASEMENT IS NOT ALLOWED FOR PVC PIPE.
10. CONCRETE FULL ENCASEMENT: IF FULL ENCASEMENT IS UTILIZED, DEPTH OF CONCRETE BELOW PIPE SHALL BE 1/4 I.D. (4" MINIMUM). BLOCK SUPPORT SHALL BE SOLID CONCRETE BLOCKS.
11. NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES DESIGN STANDARDS REQUIRE TEN FEET (10') SEPARATION BETWEEN WATER AND SEWER. REFER TO CITY'S STANDARD SPECIFICATIONS FOR METHODS OF PROTECTION IN AREAS THAT CANNOT MEET THESE REQUIREMENTS.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE



CLEANOUT DETAIL — NOT TO SCALE

ENGINEER:
ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE
9/16/19

ISSUED FOR: TAC

ISSUE DATE: SEPTEMBER 16, 2019

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	CDB	06/26/19
1	TAC SUBMISSION	CDB	09/16/19

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4950DETAILS.DWG

SCALE: NOT TO SCALE

OWNER:
BETHEL ASSEMBLY OF GOD
200 CHASE DRIVE
PORTSMOUTH, NH 03801

APPLICANT:
200 CHASE DRIVE, LLC
36 MAPLEWOOD AVE.
PORTSMOUTH, NH 03801

CHASE DRIVE GATEWAY DEVELOPMENT SITE

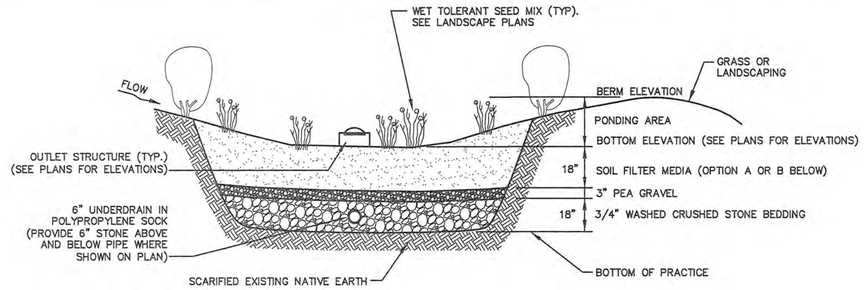
200 CHASE DRIVE
PORTSMOUTH, NH

ASSESSOR'S PARCEL 210-2

TITLE: CONSTRUCTION DETAILS

SHEET NUMBER: D.4

P4950



NOTES

1. WHEN CONTRACTOR EXCAVATES RAIN GARDEN AREA TO SUBGRADE, DESIGN ENGINEER SHALL PERFORM SUBSURFACE EVALUATION PRIOR TO THE PLACEMENT OF ANY SELECT MATERIAL OR OTHER BACKFILL.
2. SOIL FILTER MEDIA SHALL EITHER OPTION A OR OPTION B AT CONTRACTOR'S DISCRETION.

MAINTENANCE REQUIREMENTS

- SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EXCEEDING 2.5 INCHES IN A 24–HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS A WARRANTED BY SUCH INSPECTION.
- PRETREATMENT MEASURES SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND CLEANED OF ACCUMULATED SEDIMENT AS WARRANTED BY INSPECTION, BUT NO LESS THAN ONCE ANNUALLY.
- AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF BIORETENTION SYSTEM DOES NOT DRAIN WITHIN 72–HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE FILTRATION FUNCTION OR INFILTRATION FUNCTION (AS APPLICABLE), INCLUDING BUT NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENTS OR RECONSTRUCTION OF THE FILTER MEDIA.
- VEGETATION SHOULD BE INSPECTED AT LEAST ANNUALLY, AND MAINTAINED IN HEALTHY CONDITION, INCLUDING, PRUNING, REMOVAL, AND REPLACEMENT OF DEAD OR DISEASED VEGETATION, AND REMOVAL OF INVASIVE SPECIES.

DESIGN REFERENCES

- UNH STORMWATER CENTER
- EPA (1999A)
- NEW HAMPSHIRE STORMWATER MANAGEMENT MANUAL, VOLUME 2, DECEMBER 2008 AS AMENDED.

TYPICAL RAINGARDEN

NOT TO SCALE

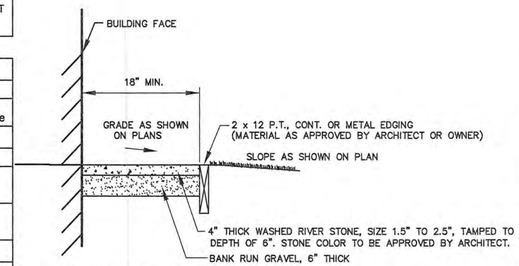
CRUSHED STONE BEDDING *

SIEVE SIZE	% PASSING BY WEIGHT
1"	100
3/4"	90 – 100
3/8"	20 – 55
# 4	0 –10
# 8	0 – 5

* EQUIVALENT TO STANDARD STONE SIZE #67 – SECTION 703 OF NHDOT NHDOT STANDARD SPECIFICATIONS

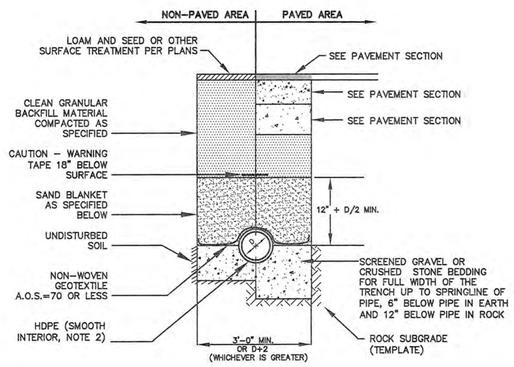
FILTER MEDIA MIXTURES

Component Material	Percent of Mixture by Volume	Gradation of material	
		Sieve No.	Percent by Weight Passing Standard Sieve
Filter Media Option A			
ASTM C–33 concrete sand	50 to 55		
Loamy sand topsoil, with fines as indicated	20 to 30	200	15 to 25
Moderately fine shredded bark or wood fiber mulch, with fines as indicated	20 to 30	200	< 5
Filter Media Option B			
Moderately fine shredded bark or wood fiber mulch, with fines as indicated	20 to 30	200	< 5
Loamy coarse sand	70 to 80	10	85 to 100
		20	70 to 100
		60	15 to 40
		200	8 to 15



DRIP EDGE DETAIL

NOT TO SCALE



NOTES:

1. BACKFILL MATERIAL BELOW PAVED OR CONCRETE AREAS, BEDDING MATERIAL, AND SAND BLANKET SHALL BE COMPACTED TO NOT LESS THAN 95% OF AASHTO T 99, METHOD C. SUITABLE BACKFILL MATERIAL BELOW LOAM AREAS SHALL BE COMPACTED TO NOT LESS THAN 90% OF AASHTO T 99, METHOD C.
2. ALL PIPE SHALL BE HDPE WITH SMOOTH INTERIOR AND CORRUGATED EXTERIOR, ADS TYPE N–12 OR APPROVED EQUAL.

SAND BLANKET/BARRIER

SIEVE SIZE	% FINER BY WEIGHT
1/2"	90 – 100
200	0 – 15

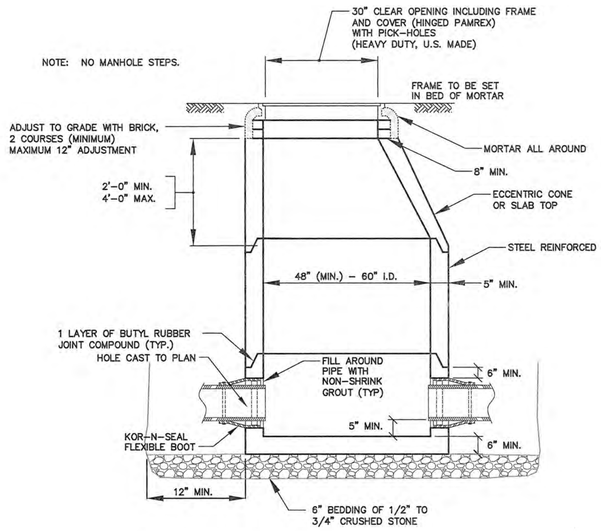
SCREENED GRAVEL OR CRUSHED STONE BEDDING *

SIEVE SIZE	% PASSING BY WEIGHT
1"	100
3/4"	90 – 100
3/8"	20 – 55
# 4	0 – 10
# 8	0 – 5

* EQUIVALENT TO STANDARD STONE SIZE #67 – SECTION 703 OF NHDOT STANDARD SPECIFICATIONS

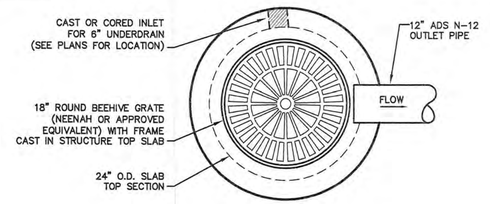
STORM DRAIN TRENCH

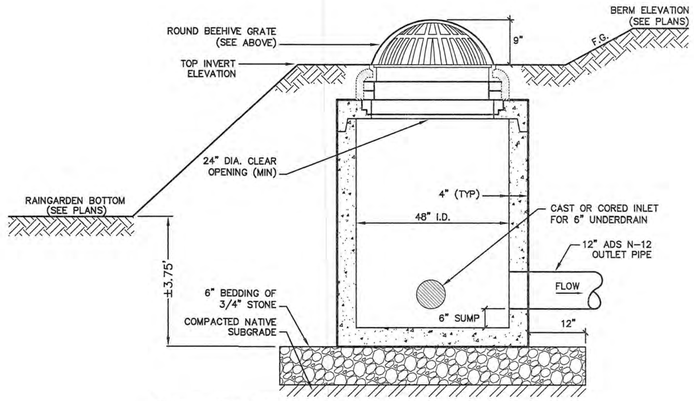
NOT TO SCALE



DRAIN MANHOLE DETAIL

NOT TO SCALE





CONSTRUCTION SPECIFICATIONS

1. OUTLET STRUCTURE SHALL BE CONSTRUCTED ONSITE OR PRECAST TO EQUAL DIMENSIONS.
2. ALL JOINTS AND PIPE OPENINGS SHALL BE SEALED WATERTIGHT WITH MORTAR.
3. STRUCTURE IS TO BE BUILT TO WITHSTAND H20 LOADING.
4. SOIL UNDERLYING THE STRUCTURE'S GRAVEL BASE PAD AND THE PAD ITSELF ARE TO BE COMPACTED TO 95% MODIFIED PROCTOR.
5. ALL CONCRETE SHALL BE 4,000 PSI MINIMUM.

OUTLET STRUCTURE DETAIL

NOT TO SCALE

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

ENGINEER:
ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433–2335 www.ALTUS–ENG.com

STATE OF NEW HAMPSHIRE – CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER
9/16/19

ISSUED FOR: TAC

ISSUE DATE: SEPTEMBER 16, 2019

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	CDB	06/26/19
1	TAC SUBMISSION	CDB	09/16/19

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4950DETAILS.DWG

SCALE: NOT TO SCALE

OWNER:
BETHEL ASSEMBLY OF GOD
200 CHASE DRIVE
PORTSMOUTH, NH 03801

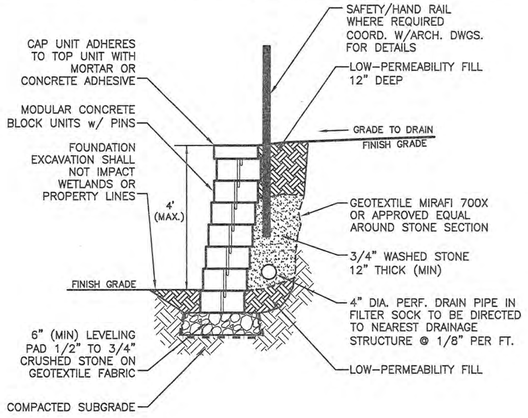
APPLICANT:
200 CHASE DRIVE, LLC
36 MAPLEWOOD AVE.
PORTSMOUTH, NH 03801

PROJECT:
CHASE DRIVE GATEWAY DEVELOPMENT SITE
200 CHASE DRIVE
PORTSMOUTH, NH
ASSESSOR'S PARCEL 210–2

TITLE: CONSTRUCTION DETAILS

SHEET NUMBER: D.5

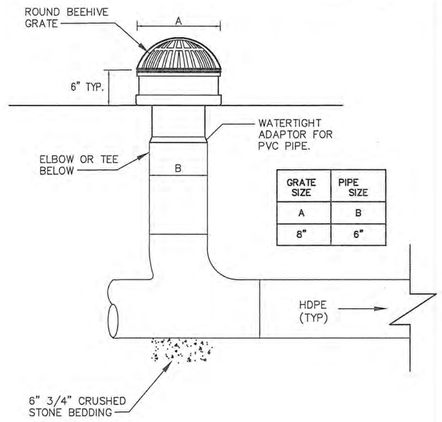
P4950



NOTES:

1. TYPICAL MODULAR BLOCK SHALL BE PRECAST CONCRETE MEASURING APPROXIMATELY 16"x12"x6". OTHER BLOCK SIZES MAY BE APPROVED BY THE ENGINEER UPON REQUEST. CAP UNITS SHALL BE PER THE STANDARDS OF THE SELECTED MANUFACTURER.
2. BLOCK MANUFACTURER SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
3. WALL SHALL BE INSTALLED PER THE REQUIREMENTS OF THE MANUFACTURER.
4. WALL HEIGHT SHALL NOT EXCEED 4' WITHOUT DESIGN DRAWINGS STAMPED BY A PROFESSIONAL STRUCTURAL ENGINEER.
5. LOCKING PINS MAY OR MAY NOT BE REQUIRED BASED ON THE WALL MANUFACTURER APPROVED BY THE ENGINEER.
6. WALL SHALL BE EMBEDDED BELOW EXISTING GRADE THE DEPTH OF AT LEAST ONE BLOCK UNLESS OTHERWISE SPECIFIED BY THE WALL MANUFACTURER.
7. WALL BATTER SHALL BE PER THE MANUFACTURER'S SPECIFICATIONS.
8. BLOCK FINISH SHALL BE AT THE DISCRETON OF THE OWNER.
9. MODULAR BLOCK RETAINING WALL SHALL BE DIAMOND PRO WALL SYSTEM BY ANCHOR WALL SYSTEMS (OR APPROVED EQUAL). VERIFY WITH OWNER & ARCHITECT.

MODULAR BLOCK RETAINING WALL NOT TO SCALE

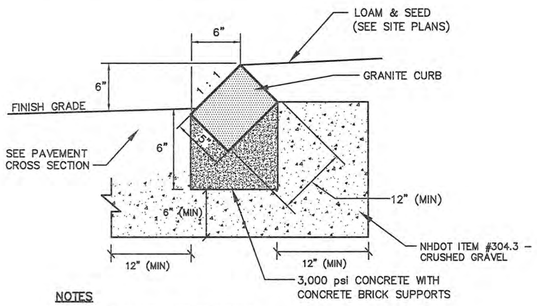


GRATE SIZE	PIPE SIZE
A	B
6"	6"

YARD DRAIN NOTES:

1. INLINE DRAIN TO BE PVC DIAMETER AS SPECIFIED AND AS MANUFACTURED BY ADS 1-800-821-6710 OR APPROVED EQUAL.
2. THE CONTRACTOR SHALL INSTALL THE INLINE DRAIN AS PER THE MANUFACTURER'S RECOMMENDATIONS AND AS SHOWN ON THE DRAWINGS.

YARD DRAIN AND GRATE NOT TO SCALE



NOTES

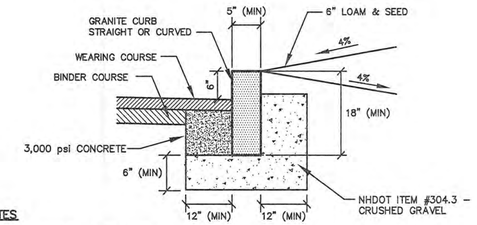
1. SEE SITE PLAN FOR LIMITS OF CURBING
2. ADJOINING STONES OF STRAIGHT CURB LAID ON CURVES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH
3. MINIMUM LENGTH OF STRAIGHT CURB STONES = 18"
4. MAXIMUM LENGTH OF STRAIGHT CURB STONES = 8'
5. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES - SEE CHART

RADIUS FOR STONES WITH SQUARE JOINTS	MAXIMUM LENGTH
16'-28'	1'-6"
29'-41'	2'
42'-55'	3'
56'-68'	4'
69'-82'	5'
83'-96'	6'
97'-110'	7'
OVER 110'	8'

SLOPED GRANITE CURB NOT TO SCALE

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

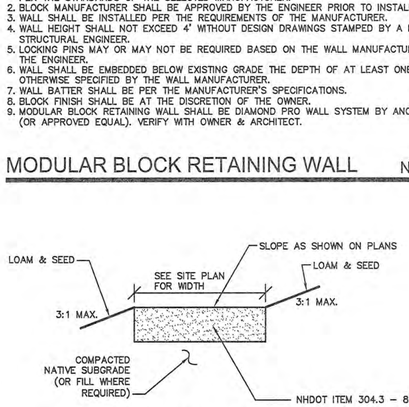


NOTES

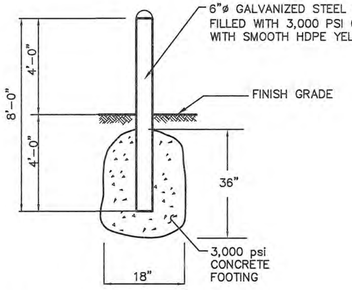
1. SEE PLANS FOR CURB LOCATION.
2. SEE PLANS FOR PAVEMENT CROSS SECTION.
3. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.
4. MINIMUM LENGTH OF CURB STONES = 4'.
5. MAXIMUM LENGTH OF CURB STONES = 10'.
6. MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES - SEE CHART.
7. CURB ENDS TO ROUNDED AND BATTERED FACES TO BE CUT WHEN CALL FOR ON THE PLANS.
8. CURB SHALL BE INSTALLED PRIOR TO PLACEMENT OF TOP PAVEMENT COURSE.
9. JOINTS BETWEEN CURB STONES SHALL BE MORTARED.

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'

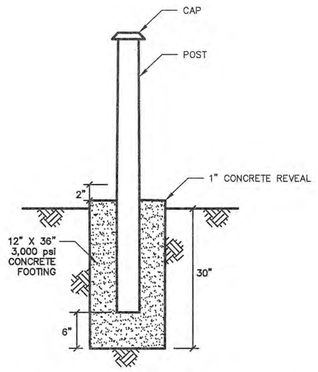
VERTICAL GRANITE CURB NOT TO SCALE



GRAVEL PATH CROSS SECTION NOT TO SCALE



BOLLARD NOT TO SCALE



FENCE POST DETAIL NOT TO SCALE

POST CAP STYLE

NEW ENGLAND - V55NE

POST OPTION

5" X 5" - .140 Wall
Post set in concrete

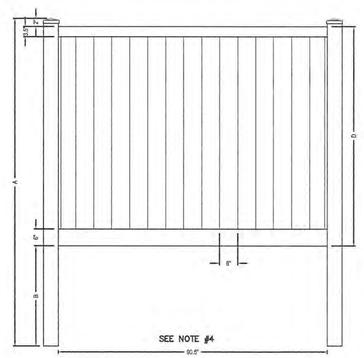
FENCE HEIGHT

6'-0", see height schedule below

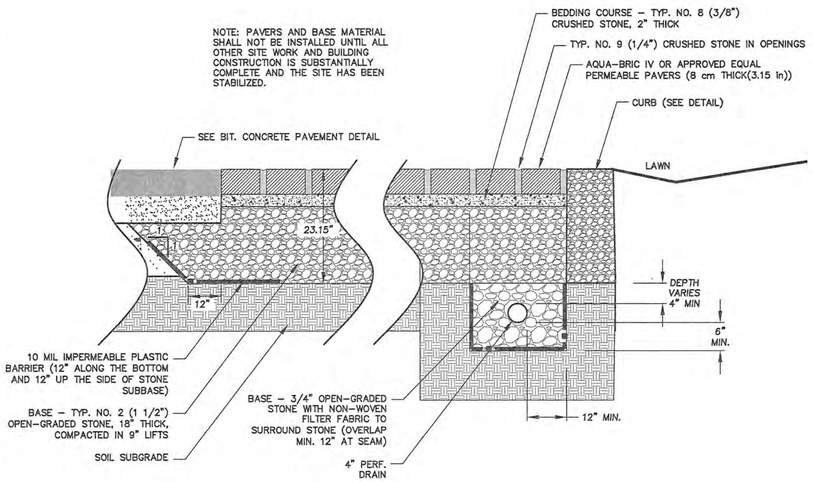
A		B		C		D	
H(FT)	INCHES	H(FT)	INCHES	H(FT)	INCHES	H(FT)	INCHES
3	60	3	22	3	8.5	3	36
4	84	4	34	4	20.5	4	48
5	96	5	34	5	32.5	5	60
6	108	6	34	6	44.5	6	72
8	144	8	46	8	68.5	8	96
10	168	10	46	10	92.5	10	120

NOTE:

1. FENCE SHALL BE ILLUSION VINYL FENCE PRODUCT OR APPROVED EQUAL.
2. COLOR SHALL BE DETERMINE BY LANDSCAPE ARCHITECT OR APPLICANT.
3. POST SHALL BE SET IN CONCRETE.
4. OPENING CLEARANCE DIMENSIONS PER OWNER REQUIREMENT.

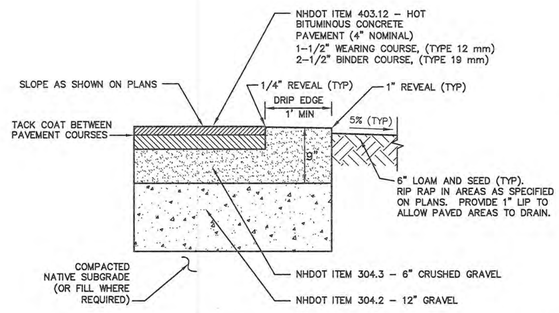


DUMPSTER/SOLID WASTE STORAGE SCREENING DETAIL NOT TO SCALE



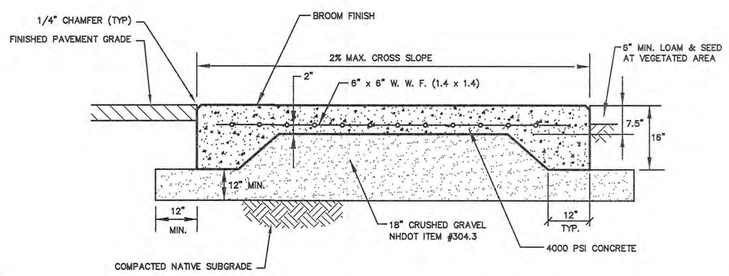
PERMEABLE PAVERS DETAIL

NOT TO SCALE



NOTE: SUBGRADE AREA TO BE PROOF ROLLED PER GEOTECHNICAL REPORT RECOMMENDATIONS OR ENGINEER.

PAVEMENT CROSS SECTION NOT TO SCALE



DUMPSTER SLAB DETAILS NOT TO SCALE

P4950

ENGINEER:
ALTUS ENGINEERING, INC.
133 COURT STREET PORTSMOUTH, NH 03801
(603) 433-2335 www.ALTUS-ENG.com

STATE OF NEW HAMPSHIRE - CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER
9/16/19

ISSUED FOR: TAC

ISSUE DATE: SEPTEMBER 16, 2019

REVISIONS

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DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4950DETAILS.DWG

SCALE: NOT TO SCALE

OWNER:
BETHEL ASSEMBLY OF GOD
200 CHASE DRIVE
PORTSMOUTH, NH 03801

APPLICANT:
200 CHASE DRIVE, LLC
36 MAPLEWOOD AVE.
PORTSMOUTH, NH 03801

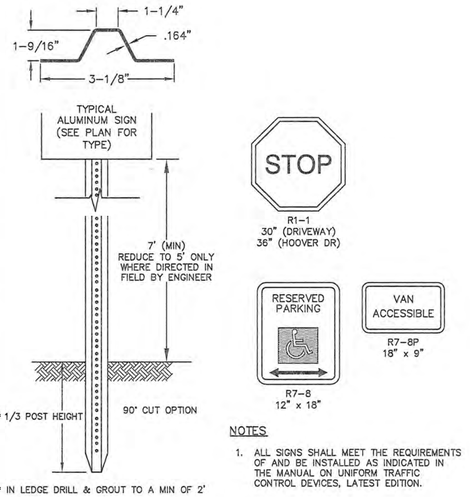
PROJECT:
CHASE DRIVE GATEWAY DEVELOPMENT SITE
200 CHASE DRIVE
PORTSMOUTH, NH
ASSESSOR'S PARCEL 210-2

TITLE:
CONSTRUCTION DETAILS

SHEET NUMBER:
D.6

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE



NOTES

1. ALL SIGNS SHALL MEET THE REQUIREMENTS OF AND BE INSTALLED AS INDICATED IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.

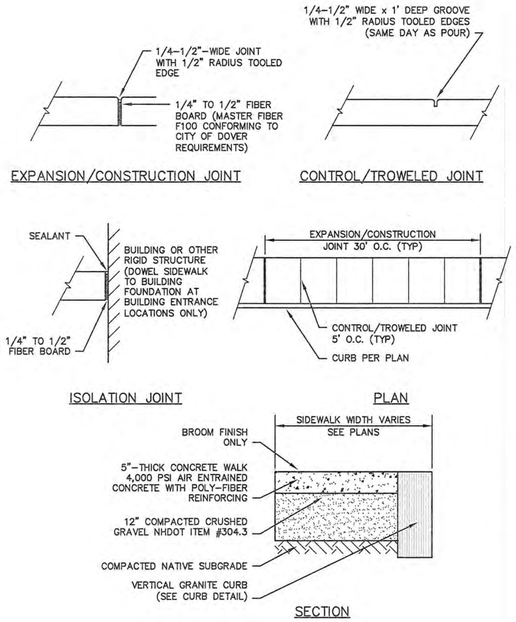
LENGTH: AS REQUIRED

WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)

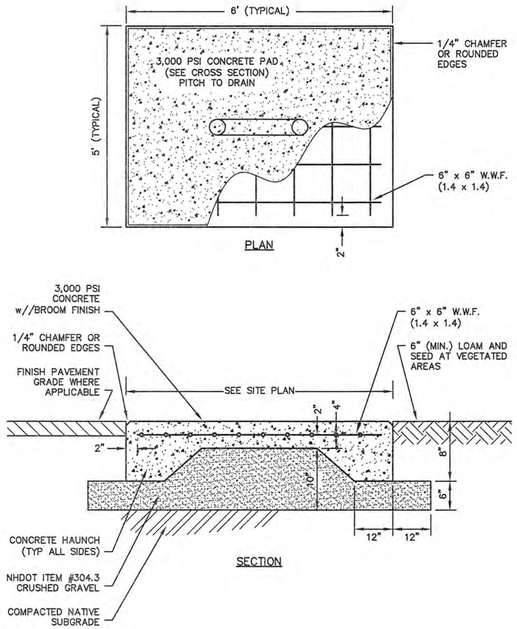
HOLES: 3/8" DIAMETER, 1" C-C FULL LENGTH

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

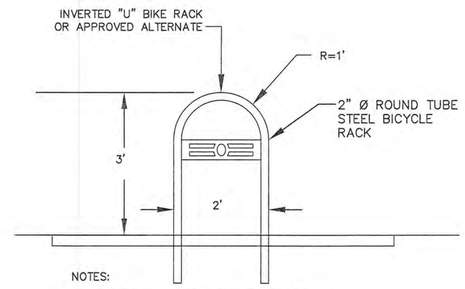
SIGN DETAILS NOT TO SCALE



CONCRETE SIDEWALK DETAIL NOT TO SCALE



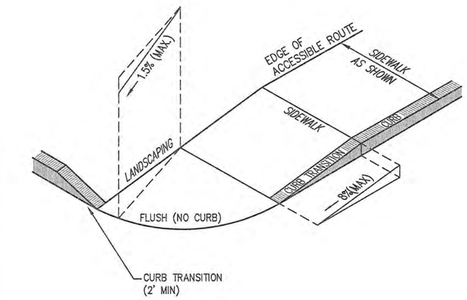
BICYCLE RACK PAD NOT TO SCALE

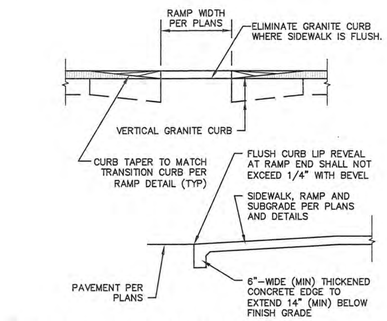


NOTES:

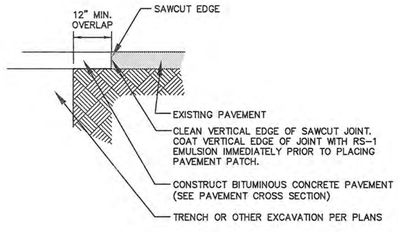
1. INSTALL BICYCLE RACK IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. DETAIL DEPICTS IN-GROUND MOUNT. USE SURFACE MOUNT BICYCLE RACK FOR INSTALLATIONS ON CONCRETE PADS.
3. SEE SITE PLAN FOR CONCRETE PAD LAYOUT & REQUIRED NUMBER OF STALLS. PROVIDE RACKS AS SHOWN ON SITE PLAN. THERE SHALL BE A MINIMUM OF 1.5 FEET TO EDGE OF CONCRETE PAD FROM RACK.

BICYCLE RACK DETAIL NOT TO SCALE

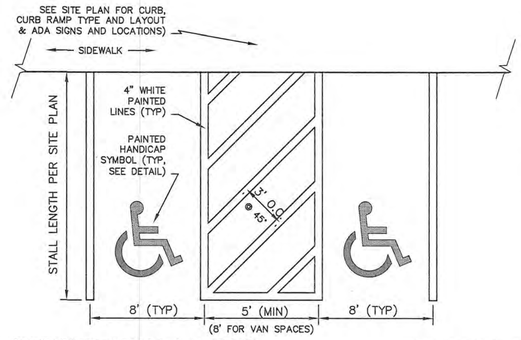




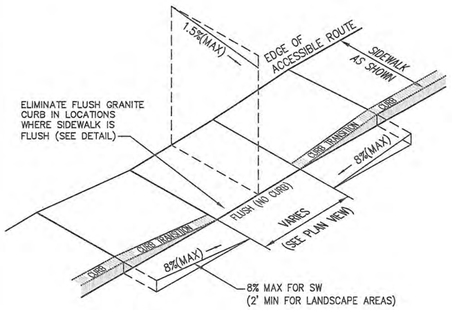
FLUSH CURB AT RAMP DETAIL NOT TO SCALE



TYPICAL PAVEMENT SAWCUT NOT TO SCALE



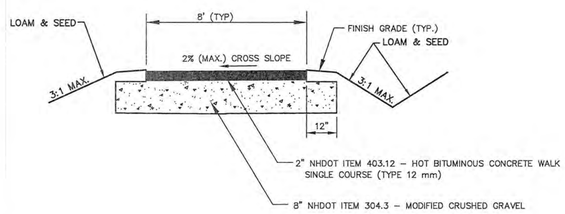
PARKING STALL LAYOUT NOT TO SCALE



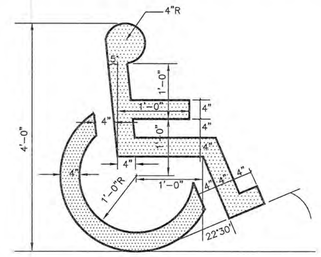
ADDITIONAL NOTES APPLICABLE TO ALL CURB RAMPS:

1. ALL CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH AMERICANS WITH DISABILITIES ACT (ADA) AND ALL APPLICABLE CODES.
2. THE MAXIMUM ALLOWABLE CROSS SLOPE OF AN ACCESSIBLE ROUTE (SIDEWALK) AND CURB SHALL BE 2%.
3. THE MAXIMUM ALLOWABLE RUNNING SLOPE OF AN ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE 5%.
4. THE MAXIMUM ALLOWABLE RUNNING SLOPE OF AN ACCESSIBLE ROUTE (SIDEWALK) CURB RAMP SHALL BE 8.3% FOR A MAXIMUM ELEVATION CHANGE OF 6".
5. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
6. BASE OF RAMP SHALL BE GRADED TO PREVENT THE PONDING OF WATER.
7. SEE TYPICAL SIDEWALK SECTION FOR RAMP CONSTRUCTION.
8. FLUSH CURB SECTIONS SHALL HAVE A MAXIMUM LIP REVEAL OF 1/4" WITH A BEVEL AT THE EDGE OF PAVEMENT.
9. EDGES OF SIDEWALK FOOTINGS ALONG FLUSH CURBS SHALL BE HAUNCHED SO AS TO EXTEND TO A MINIMUM DEPTH OF 1' BELOW FINISH GRADE.
10. NO RAMP SHALL BE LESS THAN 4' IN WIDTH.
11. CURB RAMPS SHALL HAVE A FLAT 2% MAX LANDING AT THE TOP AND BOTTOM OF THE RAMPS WHEN THERE IS A CHANGE IN DIRECTION.

CURB RAMP NOT TO SCALE



BITUMINOUS CONCRETE SIDEWALK NOT TO SCALE



NOTES

1. SYMBOL TO BE PAINTED IN ALL HANDICAPPED ACCESSIBLE SPACES IN WHITE PAINT (BLUE-PAINTED SQUARE BACKGROUND OPTIONAL).

PAINTED ADA SYMBOL NOT TO SCALE

ENGINEER:
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STATE OF NEW HAMPSHIRE CORY D. BELDEN No. 14020 LICENSED PROFESSIONAL ENGINEER
9/16/19

ISSUED FOR: TAC

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CHASE DRIVE GATEWAY DEVELOPMENT SITE

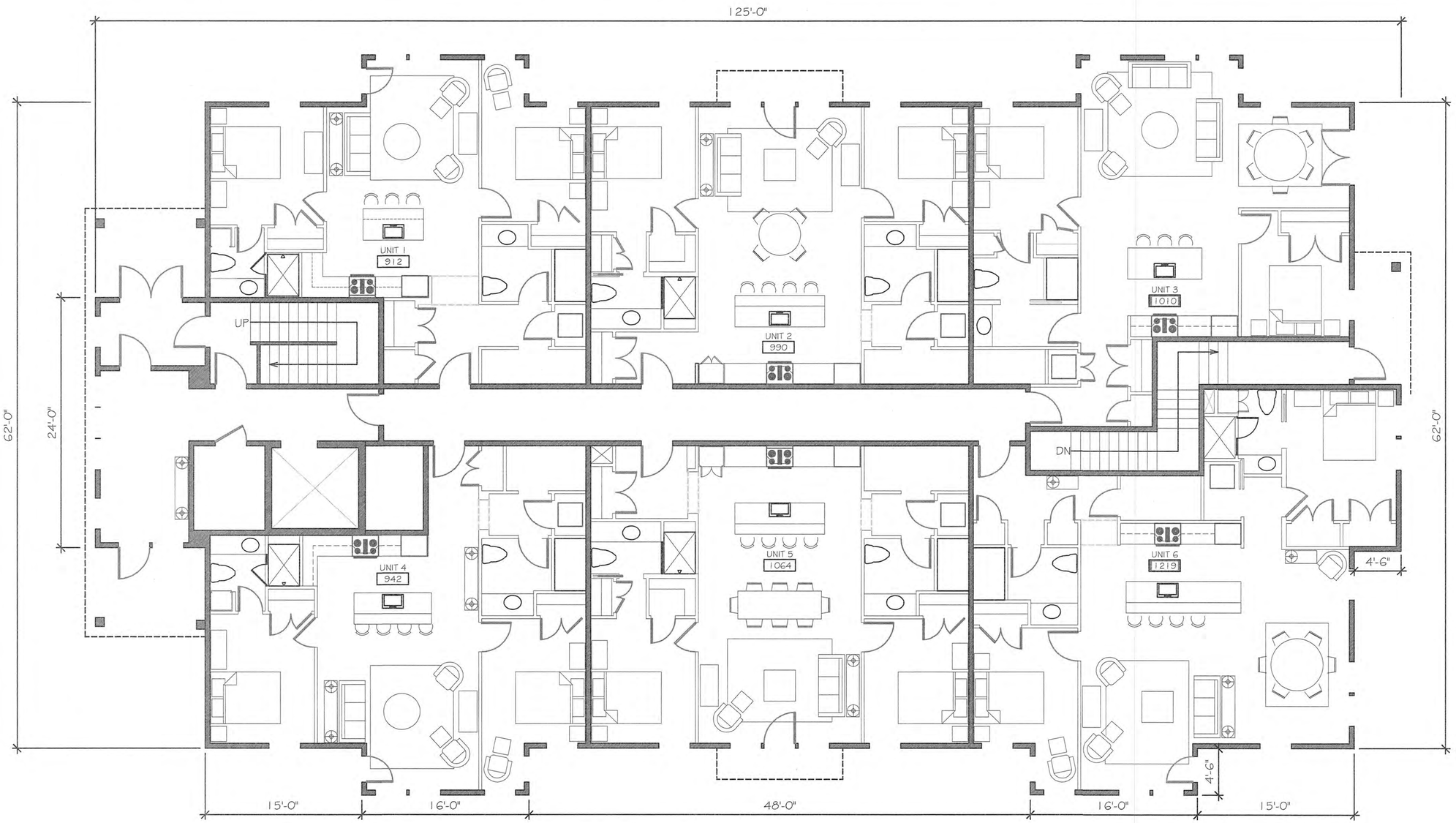
200 CHASE DRIVE
PORTSMOUTH, NH

ASSESSOR'S PARCEL 210-2

TITLE: CONSTRUCTION DETAILS

SHEET NUMBER: D.7

P4950

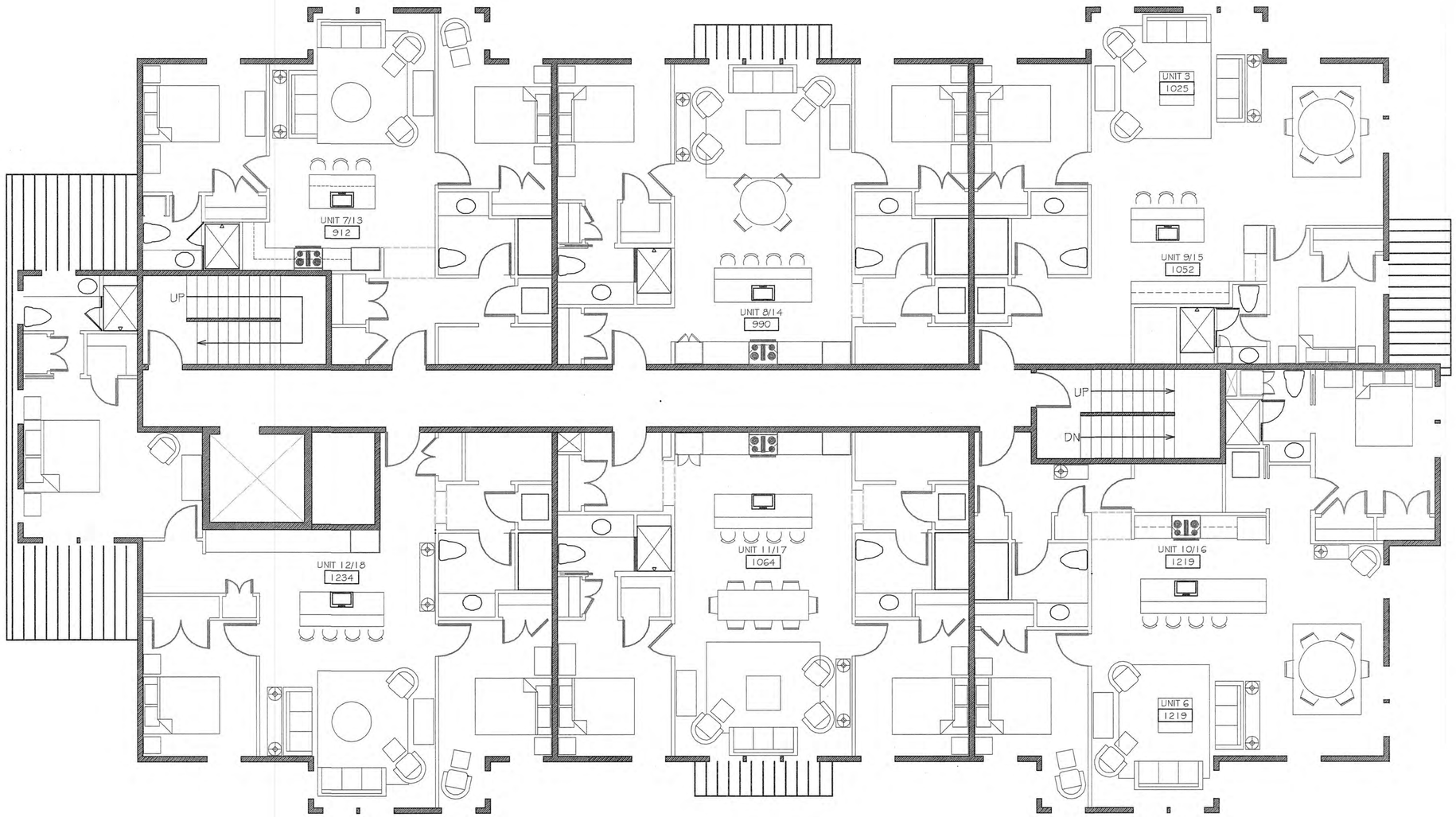


TOTAL FLOOR AREA: 28,727sf	
NUMBER OF USABLE FLOORS: 4	
GROSS FLOOR AREA/FLOOR [& USE]:	FIRST FLOOR- 7432sf [RESIDENTIAL]
	SECOND FLOOR- 7432sf [RESIDENTIAL]
	THIRD FLOOR- 7432sf [RESIDENTIAL]
	FOURTH FLOOR- 6431sf [RESIDENTIAL]

SUBDIVISION at 200 CHASE DRIVE — FIRST FLOOR SKETCH PLAN

PORTSMOUTH, NEW HAMPSHIRE

9.2019

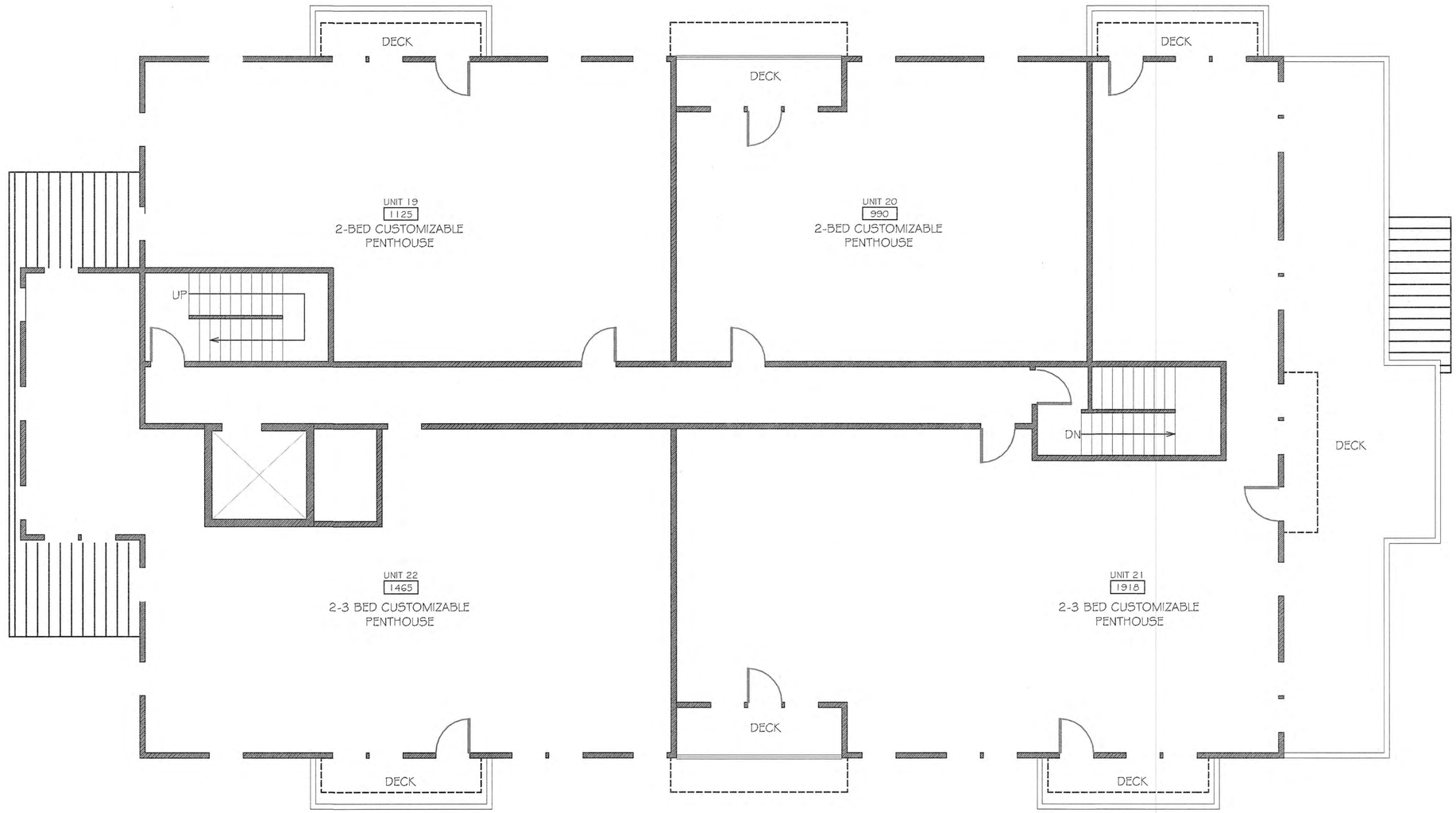


SUBDIVISION at 200 CHASE DRIVE

PORTSMOUTH, NEW HAMPSHIRE

SECOND AND THIRD FLOOR SKETCH PLANS

9.2019



SUBDIVISION at 200 CHASE DRIVE — FOURTH FLOOR SKETCH PLAN — 9.2019

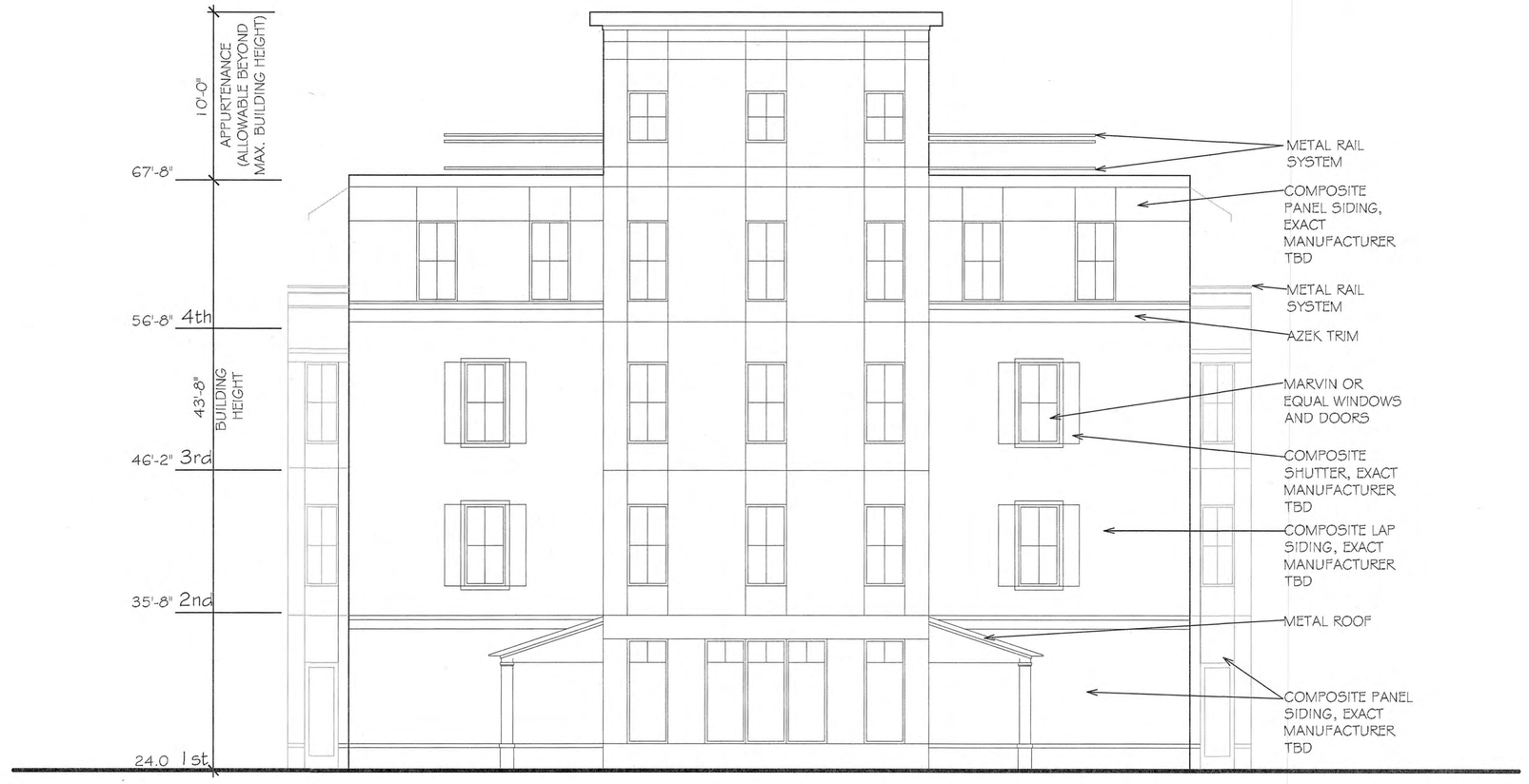
PORTSMOUTH, NEW HAMPSHIRE

SUBDIVISION at 200 CHASE DRIVE CHASE ELEVATION SKETCH 9.2019

PORTSMOUTH, NEW HAMPSHIRE

SUBDIVISION at 200 CHASE DRIVE CHURCH FACING ELEVATION SKETCH 9.2019

PORTSMOUTH, NEW HAMPSHIRE



SUBDIVISION at 200 CHASE DRIVE MARKET STREET ELEVATION SKETCH 9.2019

PORTSMOUTH, NEW HAMPSHIRE

SUBDIVISION at 200 CHASE DRIVE

PORTSMOUTH, NEW HAMPSHIRE

MICHAEL SUCCI DR. ELEVATION

9.2019

200 Chase Ave, Portsmouth, NH
June 2019

Artist Renderings of Michael Succi Drive Elevation

City of Portsmouth, New Hampshire

Site Plan Application Checklist

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

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

Name of Owner/Applicant: Bethel Assembly of God c/o Chad Lynn Date Submitted: 9-16-19

Phone Number: 603-436-8815 E-mail: chadlynn4him@yahoo.com

Site Address: 200 Chase Drive Map: 210 Lot: 2

Zoning District: G2 (Gateway Neighborhood Mixed Use Center) Lot area: +/-116,591 sq. ft.

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

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Statement that lists and describes "green" building components and systems. **(2.5.3.1A)**	In application package	
☒	Gross floor area and dimensions of all buildings and statement of uses and floor area for each floor. **(2.5.3.1B)**	Architectural drawings	N/A
☒	Tax map and lot number, and current zoning of all parcels under Site Plan Review. **(2.5.3.1C)**	Cover sheet, Title block, Overall Site Plan, Sheet C.3	N/A
☒	Owner's name, address, telephone number, and signature. Name, address, and telephone number of applicant if different from owner. **(2.5.3.1D)**	Cover sheet, Application for signature, above	N/A

Site Plan Review Application Required Information			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	Names and addresses (including Tax Map and Lot number and zoning districts) of all direct abutting property owners (including properties located across abutting streets) and holders of existing conservation, preservation or agricultural preservation restrictions affecting the subject property. **(2.5.3.1E)**	Abutter's existing conditions sheet C1 Zone boundary - overall site plan sheet C.3	N/A
☒	Names, addresses and telephone numbers of all professionals involved in the site plan design. **(2.5.3.1F)**	Cover sheet, Title block of each sheet	N/A
☒	List of reference plans. **(2.5.3.1G)**	Existing conditions survey sheet C1	N/A
☒	List of names and contact information of all public or private utilities servicing the site. **(2.5.3.1H)**	Utilities plan notes, Sheet C.8	N/A

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

Site Plan Specifications			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	A note shall be provided on the Site Plan stating: "All conditions on this Plan shall remain in effect in perpetuity pursuant to the requirements of the Site Plan Review Regulations." **(2.5.4.2E)**	Sheet C.4, Site note 7	N/A
☒	Plan sheets submitted for recording shall include the following notes: a. "This Site Plan shall be recorded in the Rockingham County Registry of Deeds." b. "All improvements shown on this Site Plan shall be constructed and maintained in accordance with the Plan by the property owner and all future property owners. No changes shall be made to this Site Plan without the express approval of the Portsmouth Planning Director." **(2.13.3)**	Sheet C.4 Site note 16. Site note 15.	N/A
☒	Plan sheets showing landscaping and screening shall also include the following additional notes: a. "The property owner and all future property owners shall be responsible for the maintenance, repair and replacement of all required screening and landscape materials." b. "All required plant materials shall be tended and maintained in a healthy growing condition, replaced when necessary, and kept free of refuse and debris. All required fences and walls shall be maintained in good repair." c. "The property owner shall be responsible to remove and replace dead or diseased plant materials immediately with the same type, size and quantity of plant materials as originally installed, unless alternative plantings are requested, justified and approved by the Planning Board or Planning Director." **(2.13.4)**	Landscape Plans	N/A

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

Site Plan Specifications – Required Exhibits and Data			
☑	**Required Items for Submittal**	**Item Location (e.g. Page/line or Plan Sheet/Note #)**	**Waiver Requested**
☒	**8. Solid Waste Facilities: (2.5.4.3H)**		
☒	a. The size, type and location of solid waste facilities.	Overall site plan and site plan	
	9. Storm water Management: (2.5.4.3I)		
☒	a. The location, elevation and layout of all storm-water drainage.	Grading & drainage plan & utilities plan	
	10. Outdoor Lighting: (2.5.4.3J)		
☒	a. Type and placement of all lighting (exterior of building, parking lot and any other areas of the site) and; b. photometric plan.	Site lighting plan	
☒	**11.** Indicate where dark sky friendly lighting measures have been implemented. **(10.1)**	Site lighting plan & site plan note 19	
	12. Landscaping: (2.5.4.3K)		
☒	a. Identify all undisturbed area, existing vegetation and that which is to be retained;	Overall site plan, grading & drainage plan	
☒	**b.** Location of any irrigation system and water source.	NA	
	13. Contours and Elevation: (2.5.4.3L)		
☒	a. Existing/Proposed contours (2 foot minimum) and finished grade elevations.	Grading & drainage plan	
	14. Open Space: (2.5.4.3M)		
☒	a. Type, extent and location of all existing/proposed open space.	Landscape and community space plan	
☒	**15. All easements, deed restrictions and non-public rights of ways. (2.5.4.3N)**	Existing conditions survey & subdivision plan	
☒	**16. Location of snow storage areas and/or off-site snow removal. (2.5.4.3O)**	Site plan	
☐	**17. Character/Civic District (All following information shall be included): (2.5.4.3Q)**	NA	
	a. Applicable Building Height (10.5A21.20 & 10.5A43.30);		
	b. Applicable Special Requirements (10.5A21.30);		
	c. Proposed building form/type (10.5A43);		
	d. Proposed community space (10.5A46).		

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

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

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

Applicant's Signature: Eric Digitally signed by Eric Date: 2019.09.13 14:24:22 -04'00' **Date:** _____

Bethel Church
200 Chase Drive
PORTSMOUTH, NH

AVERAGE GRADE PLANE COMPUTATION

MEASUREMENTS AT 6-FOOT AROUND BUILDING AT INTERVALS 5-FEET OUTSIDE BUILDING FOOTPRINT

SEGMENT	ELEVATION	SEGMENT	ELEVATION	SEGMENT	ELEVATION
1	25.5	37	23	73	23.27
2	25.5	38	23	74	23.34
3	24	39	23	75	23.41
4	24	40	23	76	23.48
5	24	41	23	77	23.55
6	24	42	23	78	23.62
7	24	43	23	79	23.69
8	23.5	44	23	80	23.85
9	23.2	45	23	81	23.95
10	23.2	46	23	82	24.05
11	23	47	23	83	24.15
12	23	48	23	84	24.25
13	23.5	49	23	85	24.35
14	23.5	50	23	86	24.45
15	23	51	23	87	24.55
16	23	52	23	88	24.65
17	23	53	23	89	24.75
18	23	54	23		841.3
19	23	55	23		
20	23	56	23	AVE.	9.45
21	23	57	23	FF =	24
22	23	58	23		
23	23	59	23	AVE Gragd	14.55
24	23	60	23.9		8" below FF
25	23	61	23.7		
26	23	62	22.5		
27	23.2	63	22.57		
28	23.2	64	22.64		
29	23.2	65	22.71		
30	23.2	66	22.78		
31	23.2	67	22.85		
32	23.2	68	22.92		
33	23.2	69	22.99		
34	23	70	23.06		
35	23	71	23.13		
36	23	72	23.2		

ALTUS
ENGINEERING, INC.

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

SEWER DESIGN FLOW TABLE

200 Chase Drive Apartments (22 Units)
22 apartment units
28 2-bedroom units & 14 3-bedroom units

Design flow based on Metcalf and Eddy/AECOM Wastewater Engineering, 5th Edition (2014) Table 3-3 page 190

Apartment 38 gpd per person typical

Assume 2.5 occupants per 2-bdr unit

Design flow:	=2.5 people x 38 gpd/person *22 units	**2,090 GPD**
Infiltration	300 GPD/in/mile = 300x(25/5280)x6	**9 GPD**
		2,099
peaking factor	6	
peak flow (NHDES for design flows under 100,000 gpd)		**12,594 GPD**
Design peak hourly flow (NHDES)		**524.75 GPH**

Tel: (603) 433-2335 E-mail: Altus@altus-eng.com

CHASE DRIVE GATEWAY DEVELOPMENT SITE

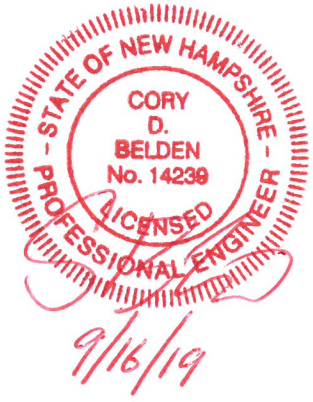
200 Chase Drive
Portsmouth, NH
Assessor's Parcel 210-02

DRAINAGE REPORT

September 2019

Prepared for:

200 Chase Drive, LLC
36 Maplewood Ave
Portsmouth, NH



Prepared By:

ALTUS ENGINEERING, INC.
133 Court Street
Portsmouth, NH 03801
Phone: (603) 433-2335

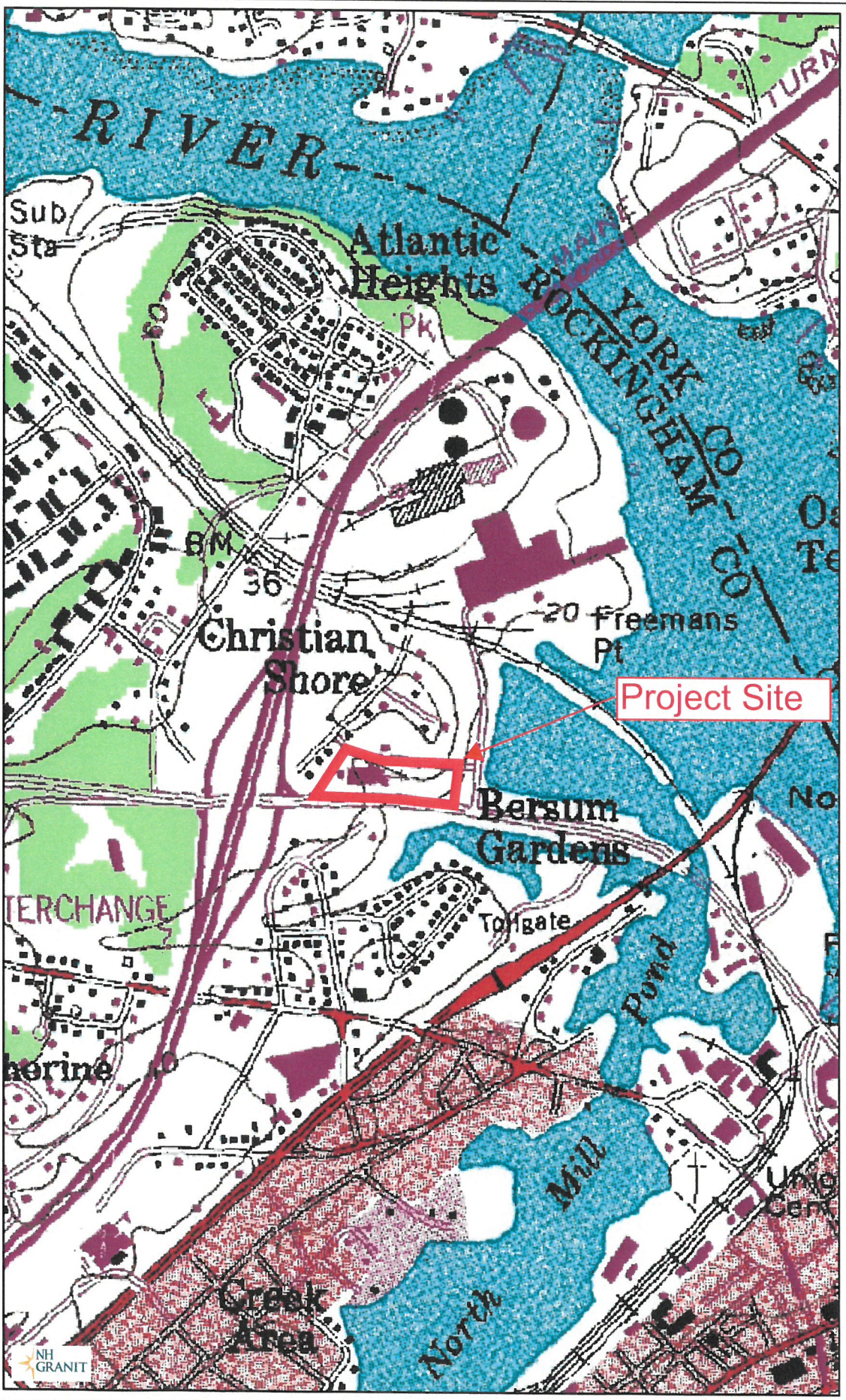
200 Chase Drive
Portsmouth, NH
Assessor's Parcel 210-02

TABLE OF CONTENTS

SECTIONS 1-4

1) USGS Site Location Map
2) Project Narrative
3) FEMA Map
4) Aerial Photo

Map by NH GRANIT



Legend

Map Scale
1: 10,000

Map Generated: 9/11/2019

Notes

"200 Chase Drive Gateway Development Site"
Drainage Report
Assessor's Map 210 Lot 02
Altus Project P4950

PROJECT DESCRIPTION

The Bethel Assembly of God (owner) and 200 Chase Drive, LLC (Applicant) are proposing to re-develop the site located at 200 Chase Drive (Assessor's Map 210, Lot 02) to construct new multi-family building that will provide 22 housing units. The property is owned by the Bethel Assembly of God and is the current home to the Connect Community Church, which was built in 1972, according to City records, and expanded around 1986. The Property is identified as Tax Map 210-Lot 2 and is approximately 2.7 (+/-) acres in size and is located in the City's Gateway Neighborhood Mixed Use "G-2 District".

The proposed Gateway Neighborhood Development Site will sub-divided the existing 2.7 acre lot into two lots and develop the lots under the Development Site regulations as contiguous lots. A new 22-Unit residential apartment building will be constructed on the new lot, closest to Michael Succi Drive. The applicant and project team have worked to develop a project that fits within the Zoning regulations for the G-2 District that does not require any Zoning relief. The existing site was constructed in the prior to stormwater regulations and does not have treatment on site. The existing 133 stall parking lot consists of approximately 1.1 acres of pavement that sheet flows to the municipal storm drain system and drains to North Mill Pond without treatment or retention. The proposed project will provide treatment in the form of five (5) raingardens as a method of Low Impact development (LID) as well as Porous Parking areas for the new development site that will infiltrate the runoff. The development area eventually drains to North Mill Pond as referenced by the attached USGS map. The site is located within the *Coastal and Great Bay Regional Communities*, so the rainfall precipitation results obtained from the NRCC have been increased by 15% for the hydrologic analysis. The stormwater management system proposed for the site will reduce peak flows and treat site runoff prior to discharging back to the municipal storm drain systems.

Pre-Development (Existing Conditions)

The pre-development site conditions reflect the existing conditions of the site, which include the existing church and associated parking lot. The current site discharges to the municipal storm drain system in Market Street, identified as the Points of Analysis #1 (POA1) on the plans. There is also an existing 30" CMP storm drain that extends along Chase Drive and discharges into to tidal waters on the east side of Michael Succi Drive. A small portion of the site in the area of the church entrance is collected and connected to this system. The downstream connection point of this system at the intersection of Chase Drive and Michael Succi Drive is identified as POA #2. The Pre-Development analysis models the existing conditions and existing drain systems for each point of analysis. The grades and elevations shown on the plans are based on the site survey completed by Ambit Engineering, dated May 17, 2019 and included in the plan set as sheets C1 and C2.

The study pre-development area was divided into five watersheds for the project site. Additionally, estimates were made for the contributing drainage area to the Chase Drive drainage systems based on topographic data. It was estimated that 5 aces of 1/3 acre lot residential development contributes to the Chase Drive drainage system from Brigham Lane and Cutts Ave. These areas were added to the flows in the Chase Drive drainage system to reflect the existing site conditions. Watersheds No.1 through 4 discharge to POA #1 as identified above and watersheds No. 5 through 15 discharge to POA #2, as identified above. The points of analysis are the same for the pre and post development models and are used for comparison of flows prior to construction and after the site is development as shown on the plans.

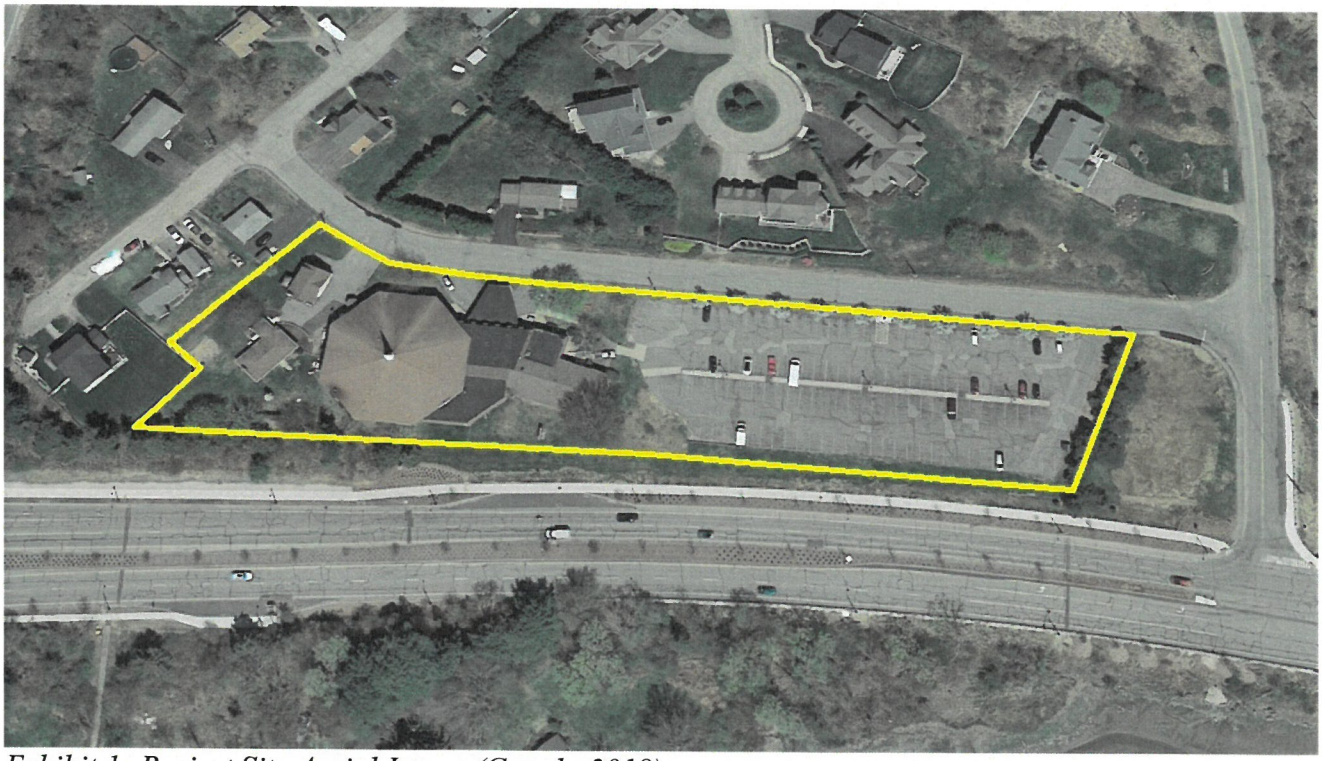


Exhibit 1: Project Site Aerial Image (Google-2018)

Post-Development (Proposed Site Design)

The Proposed development will construct a new 22 unit building and a new 30 stall parking lot to serve the building. The existing 133 stall parking lot (1.1 acres) that services the church will be reduced by approximately half its size (0.55 acres) to a 75 stall parking as the demand for parking has significantly reduced over the years. New sidewalks and pathways will be constructed to provide community space access to pocket parks and gardens proposed for the site. The new parking lot will be constructed with porous pavers to infiltrate the surface water from the lot and re five new raingardens will be constructed on site to treat and manage the stormwater..

The proposed stormwater system is depicted on the Grading and Drainage Plan in the project plans and the attached Post-Development Drainage Plan. For the post development analysis, the site was divided into ten (10) watershed areas to depict the post-development conditions. The same watersheds for the Cutts Ave and Brigham Lane drainage areas were used for the Chase Drive drainage analysis that were used in the Pre-Development model for comparison of the Pre and Post development conditions at the two points of analysis.

The "Post-Development Drainage Plan" illustrates the proposed stormwater management system. The subcatchments from the Pre-Development conditions have been divided into smaller areas to emulate the proposed grading and stormwater management system proposed for construction. The post-development conditions were analyzed at the same primary discharge point examined in the pre-development modeling.

Site topography, existing features, proposed site improvements, proposed grading, drainage and erosion control measures are shown on the accompanying plans. Recommended erosion control measures are based upon the December 2008 edition of the "*New Hampshire Stormwater Manual Volumes 1 through 3*" prepared by NHDES and Comprehensive Environmental, Inc. as amended.

Effective Impervious Area

The existing site is a 2.68 acre lot that consists of an 18,600 square foot (footprint) church, 133 stall parking lot, two residential houses, and associated driveways and walkways. The church was originally built in 1972 and expanded in 1986 prior to stormwater regulations for retention and treatment. The existing site effective impervious area is all of the impervious areas, which totals 74,700 square feet, or 64% of the site.

The proposed project will construct a new 7440 square foot building and associated parking and walkways. The existing church parking lot will be reduced to 75 parking stalls and walkways will be added throughout the site for community space. The total impervious area on the site will be reduced by approximately 2,800 square feet, down to 71,900 sf total. However, the proposed improvements will provide stormwater treatment to the proposed improvements, as well as the existing parking lot, which will provide treatment to 42,700 square feet of impervious area.

Therefore the ***Effective Impervious Area,*** untreated impervious area, will be reduced from 74,900 sf (64% of site) to 29,200 sf (25% of the site).

Drainage Analysis

A complete summary of the drainage model is included in the appendix of this report. The following table compares pre- and post-development peak rates at the two Points of Analysis identified on the plans for the 2, 10, 25, and 50 year storm events:

Stormwater Modeling Summary
Peak Q (cfs) for Type III 24-Hour Storm Events

*Rainfall Intensities reflect 15% Increase per AOT	2-Yr Storm (3.74 inch)	10-Yr Storm (5.67 inch)	25-Yr Storm (7.19 inch)	50-Yr Storm (8.61 inch)
POA #1				
Pre	7.6	11.3	15.4	18.5
Post	5.3	9.2	12.1	15.0
Net Change	**-2.3**	**-2.1**	**-3.3**	**-3.5**
POA #2				
Pre	6.6	14.0	20.3	26.3
Post	7.1	14.9	21.4	27.7
Net Change	**+0.5**	**+0.9**	**+1.1**	**+1.4**
TOTAL Change	**-1.8**	**-1.2**	**-2.2**	**-2.1**

As the above table demonstrates, the proposed peak rates of runoff will not be increased from the existing conditions for any of the analyzed storm events.

CONCLUSION

The proposed 200 Chase Drive development will not have an adverse effect on abutting properties and infrastructure as a result of stormwater runoff. The existing site was developed in the 1970's and 80's and has no designed stormwater treatment facilities and minimal detention areas. The proposed improvements will slightly reduce the total impervious area on site by 2,800 square feet, but will provide treatment to approximately 42,700 square feet of impervious area, reducing the effective impervious area from 64% to 25%. The analysis of the site utilizes a 15% increase to the rainfall intensities for seacoast communities, as is recommended by NHDES. The site was analyzed for the 2, 10, 25, and 50 year storm events and shows a reduction in offsite discharge for all storm events.

Post-construction peak rates of runoff from the site will be lower than the existing conditions for all analyzed storm events. The construction of a stormwater drainage system consisting of a permeable pavement surface and five raingardens will provide the treatment to stormwater runoff to significantly improve the offsite runoff. Appropriate steps will be taken to properly mitigate erosion and sedimentation through the use of temporary and permanent Best Management Practices for sediment and erosion control.

CALCULATION METHODS

The project lies with the ***Coastal and Great Bay Regional Communities*** as identified in Section 6 – One-Stop AoT Screening Layers Results. As a result, the rainfall precipitation results obtained from the Northeast Regional Climate Center for the project site have been increased by 15% for the hydrologic analysis. The drainage study was completed using the USDA SCS TR-20 Method within the HydroCAD Stormwater Modeling System. Reservoir routing was performed with the Dynamic Storage Indication method which automates the calculation of Tailwater conditions. A Type III 24-hour rainfall distribution was utilized in analyzing the data for the 2, 10, 25, and 50 Year - 24-hour storm events using rainfall data provided by Northeast Regional Climate Center – Extreme Precipitation Tables.

Disclaimer

Altus Engineering, Inc. notes that stormwater modeling is limited in its capacity to precisely predict peak rates of runoff and flood elevations. Results should not be considered to represent actual storm events due to the number of variables and assumptions involved in the modeling effort. Surface roughness coefficients (n), entrance loss coefficients (ke), velocity factors (kv) and times of concentration (Tc) are based on subjective field observations and engineering judgment using available data. For design purposes, curve numbers (Cn) describe the average conditions. However, curve numbers will vary from storm to storm depending on the antecedent runoff conditions (ARC) including saturation and frozen ground. Also, higher water elevations than predicted by modeling could occur if drainage channels, closed drain systems or culverts are not maintained and/or become blocked by debris before and/or during a storm event as this will impact flow capacity of the structures. Structures should be re-evaluated if future changes occur within relevant drainage areas in order to assess any required design modifications.

PIN
- Approximate location based on user input and does not represent an authoritative property location

MAP PANELS
- Selected FloodMap Boundary
- Digital Data Available
- No Digital Data Available
- Unmapped

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*
- Otherwise Protected Area
- Coastal Barrier Resource System Area

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth
- Regulatory Floodway *Zone AE, AO, AH, VE, AR*

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

Bethel Assembly of God

May 2018 - Aerial Image (Google Earth)

SECTION 5

Drainage Analysis

- Extreme Precipitation Tables
- 30" CMP Pipe Capacity
- Pre-Development
- Post Development

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.771 degrees West
Latitude	43.085 degrees North
Elevation	0 feet
Date/Time	Wed, 28 Aug 2019 16:06:47 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.04	**1yr**	0.70	0.98	1.21	1.56	2.02	2.65	2.91	**1yr**	2.35	2.80	3.21	3.93	4.53	**1yr**
2yr	0.32	0.50	0.62	0.81	1.02	1.30	**2yr**	0.88	1.18	1.51	1.93	2.48	3.20	3.56	**2yr**	2.83	3.42	3.92	4.67	5.31	**2yr**
5yr	0.37	0.58	0.73	0.97	1.24	1.60	**5yr**	1.07	1.46	1.88	2.42	3.13	4.05	4.56	**5yr**	3.59	4.39	5.02	5.91	6.68	**5yr**
10yr	0.41	0.65	0.82	1.11	1.45	1.88	**10yr**	1.25	1.72	2.22	2.88	3.74	4.85	5.51	**10yr**	4.29	5.30	6.06	7.08	7.95	**10yr**
25yr	0.48	0.76	0.96	1.33	1.77	2.33	**25yr**	1.52	2.13	2.76	3.61	4.72	6.15	7.07	**25yr**	5.44	6.80	7.76	8.98	10.01	**25yr**
50yr	0.53	0.85	1.09	1.53	2.06	2.74	**50yr**	1.78	2.52	3.27	4.30	5.64	7.36	8.55	**50yr**	6.51	8.22	9.37	10.76	11.93	**50yr**
100yr	0.59	0.96	1.24	1.76	2.40	3.24	**100yr**	2.07	2.96	3.88	5.13	6.74	8.82	10.34	**100yr**	7.80	9.94	11.32	12.90	14.22	**100yr**
200yr	0.67	1.09	1.42	2.03	2.80	3.81	**200yr**	2.42	3.50	4.59	6.09	8.04	10.56	12.50	**200yr**	9.35	12.02	13.67	15.46	16.95	**200yr**
500yr	0.79	1.30	1.70	2.46	3.45	4.73	**500yr**	2.98	4.35	5.72	7.66	10.16	13.42	16.08	**500yr**	11.88	15.46	17.55	19.66	21.40	**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	1.32	1.67	2.22	2.48	1yr	1.96	2.38	2.85	3.16	3.86	1yr
2yr	0.31	0.49	0.60	0.81	1.00	1.19	2yr	0.86	1.16	1.36	1.82	2.34	3.05	3.44	2yr	2.70	3.31	3.81	4.53	5.06	2yr
5yr	0.35	0.54	0.67	0.92	1.17	1.40	5yr	1.01	1.37	1.61	2.12	2.74	3.77	4.17	5yr	3.34	4.01	4.70	5.51	6.21	5yr
10yr	0.38	0.59	0.73	1.02	1.32	1.60	10yr	1.14	1.56	1.81	2.39	3.06	4.35	4.84	10yr	3.85	4.65	5.41	6.38	7.16	10yr
25yr	0.44	0.67	0.83	1.18	1.56	1.90	25yr	1.34	1.86	2.10	2.76	3.55	4.67	5.86	25yr	4.13	5.63	6.60	7.74	8.63	25yr
50yr	0.48	0.73	0.91	1.31	1.76	2.16	50yr	1.52	2.12	2.34	3.09	3.94	5.27	6.76	50yr	4.66	6.50	7.66	8.97	9.96	50yr
100yr	0.53	0.81	1.01	1.46	2.00	2.47	100yr	1.73	2.41	2.62	3.43	4.37	5.91	7.80	100yr	5.23	7.50	8.89	10.42	11.48	100yr
200yr	0.59	0.89	1.12	1.63	2.27	2.81	200yr	1.96	2.75	2.93	3.80	4.82	6.61	8.99	200yr	5.85	8.64	10.30	12.10	13.27	200yr
500yr	0.68	1.01	1.31	1.90	2.70	3.36	500yr	2.33	3.29	3.40	4.35	5.49	7.67	10.85	500yr	6.79	10.43	12.53	14.79	16.05	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	1.25	1.74	2.21	2.98	3.15	1yr	2.64	3.03	3.57	4.37	5.03	1yr
2yr	0.34	0.52	0.64	0.86	1.06	1.27	2yr	0.92	1.24	1.48	1.96	2.52	3.42	3.69	2yr	3.03	3.55	4.08	4.82	5.62	2yr
5yr	0.40	0.62	0.76	1.05	1.33	1.62	5yr	1.15	1.58	1.88	2.53	3.25	4.33	4.95	5yr	3.83	4.76	5.36	6.35	7.13	5yr
10yr	0.47	0.72	0.89	1.24	1.60	1.97	10yr	1.38	1.93	2.28	3.10	3.95	5.32	6.19	10yr	4.71	5.95	6.80	7.81	8.73	10yr
25yr	0.57	0.87	1.08	1.55	2.04	2.56	25yr	1.76	2.50	2.95	4.06	5.14	7.79	8.32	25yr	6.89	8.00	9.13	10.31	11.38	25yr
50yr	0.67	1.02	1.26	1.82	2.45	3.11	50yr	2.11	3.04	3.59	4.99	6.30	9.76	10.44	50yr	8.64	10.04	11.41	12.69	13.93	50yr
100yr	0.78	1.18	1.48	2.14	2.94	3.79	100yr	2.54	3.70	4.36	6.14	7.73	12.22	13.08	100yr	10.82	12.58	14.28	15.65	17.05	100yr
200yr	0.92	1.38	1.75	2.53	3.53	4.62	200yr	3.04	4.51	5.32	7.55	9.48	15.34	16.42	200yr	13.58	15.79	17.88	19.29	20.88	200yr
500yr	1.14	1.69	2.17	3.16	4.49	5.99	500yr	3.88	5.85	6.90	9.97	12.47	20.76	22.18	500yr	18.37	21.33	24.10	25.44	27.30	500yr

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Northeast Regional Climate Center


Draniage Area 12S
5.0 acres (1/3 lot size)
CN = 72
Legend
Connect Community Church
Drainage Area 12S
Brigham Ln
Chase Dr
Market St
Google Earth
© 2018 Google
N
200 ft

Free Online Manning Pipe Flow Calculator

>> Drop your fears at the door; love is spoken here. <<

Manning Formula Uniform Pipe Flow at Given Slope and Depth

Can you help me translate, program, or host these calculators? (../contact.php)[Hide this request]

Check out our spreadsheet version of this calculator: Download Spreadsheet (spreadsheet/Manning-Pipe-Flow.xlsx) Open Google Sheets version (spreadsheet/Manning-Pipe-Flow.php) View All Spreadsheets (http://www.hawsedc.com/engcalcs/SpreadsheetLibrary.php)

Printable Title

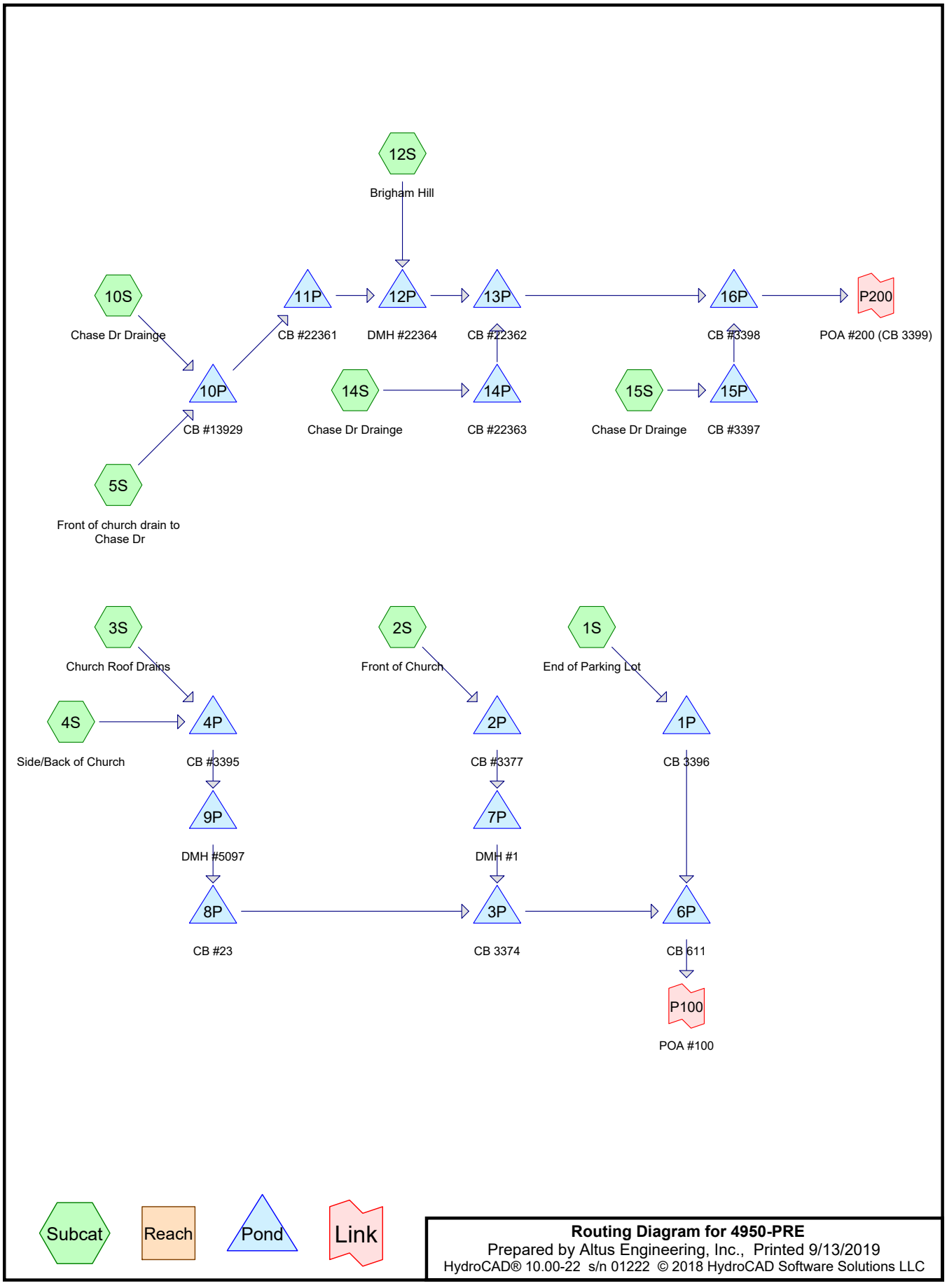
Printable Subtitle

Set units: m | mm | ft | in

Pipe diameter, d_0	30	in
Manning roughness, n ? (http://www.engineeringtoolbox.com/mannings-roughness-d_799.html)	.024	
Pressure slope (possibly ? (../pressureslope.php) equal to pipe slope), S_0	.0315	rise/run
Percent of (or ratio to) full depth (100% or 1 if flowing full)	.9	fraction

Results

Flow, Q	42.0228	cfs
Velocity, v	9.0311	ft/sec
Velocity head, h_v	15.2113	in
Flow area	670.0719	sq. in.
Wetted perimeter	74.9427	in
Hydraulic radius	8.9411	in
Top width, T	18.0000	in
Froude number, F	0.90	
Shear stress (tractive force), tau	1.4654	psf



Routing Diagram for 4950-PRE
Prepared by Altus Engineering, Inc., Printed 9/13/2019
HydroCAD® 10.00-22 s/n 01222 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.000	72	1/3 acre lots, 30% imp, HSG B (12S)
1.564	61	>75% Grass cover, Good, HSG B (1S, 2S, 4S, 5S)
1.370	98	Paved parking, HSG B (1S, 2S, 10S, 14S, 15S)
0.033	98	Paved parking, HSG C (4S)
0.518	98	Roofs, HSG B (2S, 3S, 4S, 5S)
0.218	98	Unconnected pavement, HSG B (1S, 2S, 5S, 10S, 14S, 15S)
0.016	98	Unconnected pavement, HSG C (4S)

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
8.670	HSG B	1S, 2S, 3S, 4S, 5S, 10S, 12S, 14S, 15S
0.050	HSG C	4S
0.000	HSG D	
0.000	Other	

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	5.000	0.000	0.000	0.000	5.000	1/3 acre lots, 30% imp	12S
0.000	1.564	0.000	0.000	0.000	1.564	>75% Grass cover, Good	1S, 2S, 4S, 5S
0.000	1.370	0.033	0.000	0.000	1.403	Paved parking	1S, 2S, 4S, 10S, 14S, 15S
0.000	0.518	0.000	0.000	0.000	0.518	Roofs	2S, 3S, 4S, 5S
0.000	0.218	0.016	0.000	0.000	0.235	Unconnected pavement	1S, 2S, 4S, 5S, 10S, 14S, 15S

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	10.57	9.10	75.0	0.0196	0.012	15.0	0.0	0.0
2	2P	82.80	82.70	10.0	0.0100	0.012	12.0	0.0	0.0
3	3P	13.00	9.10	306.0	0.0127	0.012	24.0	0.0	0.0
4	4P	20.70	20.60	5.0	0.0200	0.012	12.0	0.0	0.0
5	6P	9.00	8.90	10.0	0.0100	0.012	24.0	0.0	0.0
6	7P	13.52	13.30	38.0	0.0058	0.012	15.0	0.0	0.0
7	8P	20.00	13.10	210.0	0.0329	0.012	24.0	0.0	0.0
8	9P	20.53	20.10	45.0	0.0096	0.012	12.0	0.0	0.0
9	10P	36.76	35.32	60.0	0.0240	0.012	30.0	0.0	0.0
10	11P	35.12	27.19	200.0	0.0396	0.024	30.0	0.0	0.0
11	12P	27.02	23.54	98.0	0.0355	0.024	30.0	0.0	0.0
12	13P	23.29	11.72	330.0	0.0351	0.024	30.0	0.0	0.0
13	14P	24.76	24.49	28.0	0.0096	0.012	15.0	0.0	0.0
14	15P	24.76	24.49	28.0	0.0096	0.012	15.0	0.0	0.0
15	16P	11.52	9.62	40.0	0.0475	0.024	30.0	0.0	0.0

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
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 1S: End of Parking Lot Runoff Area=72,375 sf 55.89% Impervious Runoff Depth>1.93"
Flow Length=480' Tc=6.0 min CN=82 Runoff=3.76 cfs 0.267 af

Subcatchment 2S: Front of Church Runoff Area=24,185 sf 40.56% Impervious Runoff Depth>1.49"
Flow Length=320' Tc=7.8 min CN=76 Runoff=0.90 cfs 0.069 af

Subcatchment 3S: Church Roof Drains Runoff Area=10,350 sf 100.00% Impervious Runoff Depth>3.44"
Flow Length=430' Tc=9.8 min CN=98 Runoff=0.75 cfs 0.068 af

Subcatchment 4S: Side/Back of Church Runoff Area=23,870 sf 25.26% Impervious Runoff Depth>1.12"
Flow Length=430' Tc=9.8 min CN=70 Runoff=0.59 cfs 0.051 af

Subcatchment 5S: Front of church drain to Runoff Area=13,200 sf 69.92% Impervious Runoff Depth>2.34"
Flow Length=100' Slope=0.0200 '/' Tc=9.7 min CN=87 Runoff=0.73 cfs 0.059 af

Subcatchment 10S: Chase Dr Drainge Runoff Area=4,750 sf 100.00% Impervious Runoff Depth>3.44"
Tc=6.0 min CN=98 Runoff=0.39 cfs 0.031 af

Subcatchment 12S: Brigham Hill Runoff Area=5.000 ac 30.00% Impervious Runoff Depth>1.24"
Tc=15.0 min CN=72 Runoff=5.22 cfs 0.515 af

Subcatchment 14S: Chase Dr Drainge Runoff Area=6,650 sf 100.00% Impervious Runoff Depth>3.44"
Tc=6.0 min CN=98 Runoff=0.55 cfs 0.044 af

Subcatchment 15S: Chase Dr Drainge Runoff Area=6,650 sf 100.00% Impervious Runoff Depth>3.44"
Tc=6.0 min CN=98 Runoff=0.55 cfs 0.044 af

Pond 1P: CB 3396 Peak Elev=11.61' Storage=13 cf Inflow=3.76 cfs 0.267 af
15.0" Round Culvert n=0.012 L=75.0' S=0.0196 '/' Outflow=3.76 cfs 0.267 af

Pond 2P: CB #3377 Peak Elev=85.40' Storage=33 cf Inflow=0.90 cfs 0.069 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=2.74 cfs 0.070 af

Pond 3P: CB 3374 Peak Elev=86.10' Storage=0 cf Inflow=4.12 cfs 0.182 af
24.0" Round Culvert n=0.012 L=306.0' S=0.0127 '/' Outflow=4.12 cfs 0.182 af

Pond 4P: CB #3395 Peak Elev=86.44' Storage=74 cf Inflow=1.34 cfs 0.119 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0200 '/' Outflow=1.59 cfs 0.118 af

Pond 6P: CB 611 Peak Elev=10.46' Storage=18 cf Inflow=7.77 cfs 0.449 af
24.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=7.58 cfs 0.449 af

Pond 7P: DMH #1 Peak Elev=86.31' Storage=131 cf Inflow=2.74 cfs 0.070 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0058 '/' Outflow=2.70 cfs 0.066 af

Pond 8P: CB #23 Peak Elev=86.11' Storage=61 cf Inflow=1.60 cfs 0.117 af
24.0" Round Culvert n=0.012 L=210.0' S=0.0329 '/' Outflow=1.59 cfs 0.115 af

Pond 9P: DMH #5097 Peak Elev=86.26' Storage=79 cf Inflow=1.59 cfs 0.118 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0096 '/' Outflow=1.60 cfs 0.117 af

Pond 10P: CB #13929 Peak Elev=37.16' Storage=5 cf Inflow=1.08 cfs 0.090 af
30.0" Round Culvert n=0.012 L=60.0' S=0.0240 '/' Outflow=1.08 cfs 0.090 af

Pond 11P: CB #22361 Peak Elev=35.52' Storage=5 cf Inflow=1.08 cfs 0.090 af
30.0" Round Culvert n=0.024 L=200.0' S=0.0396 '/' Outflow=1.08 cfs 0.090 af

Pond 12P: DMH #22364 Peak Elev=28.00' Storage=12 cf Inflow=6.01 cfs 0.605 af
30.0" Round Culvert n=0.024 L=98.0' S=0.0355 '/' Outflow=6.01 cfs 0.605 af

Pond 13P: CB #22362 Peak Elev=24.18' Storage=11 cf Inflow=6.31 cfs 0.649 af
30.0" Round Culvert n=0.024 L=330.0' S=0.0351 '/' Outflow=6.31 cfs 0.649 af

Pond 14P: CB #22363 Peak Elev=25.10' Storage=4 cf Inflow=0.55 cfs 0.044 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0096 '/' Outflow=0.55 cfs 0.044 af

Pond 15P: CB #3397 Peak Elev=25.10' Storage=4 cf Inflow=0.55 cfs 0.044 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0096 '/' Outflow=0.55 cfs 0.044 af

Pond 16P: CB #3398 Peak Elev=12.41' Storage=11 cf Inflow=6.62 cfs 0.693 af
30.0" Round Culvert n=0.024 L=40.0' S=0.0475 '/' Outflow=6.62 cfs 0.693 af

Link P100: POA #100 Inflow=7.58 cfs 0.449 af
Primary=7.58 cfs 0.449 af

Link P200: POA #200 (CB 3399) Inflow=6.62 cfs 0.693 af
Primary=6.62 cfs 0.693 af

Summary for Subcatchment 1S: End of Parking Lot

Runoff = 3.76 cfs @ 12.09 hrs, Volume= 0.267 af, Depth> 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
40,288	98	Paved parking, HSG B
31,927	61	>75% Grass cover, Good, HSG B
160	98	Unconnected pavement, HSG B
72,375	82	Weighted Average
31,927		44.11% Pervious Area
40,448		55.89% Impervious Area
160		0.40% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	200	0.0500	2.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.25"
1.7	280	0.0330	2.72		**Shallow Concentrated Flow, swale** Grassed Waterway Kv= 15.0 fps
3.2	480	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S: Front of Church

Runoff = 0.90 cfs @ 12.12 hrs, Volume= 0.069 af, Depth> 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
2,480	98	Roofs, HSG B
6,090	98	Paved parking, HSG B
1,240	98	Unconnected pavement, HSG B
14,375	61	>75% Grass cover, Good, HSG B
24,185	76	Weighted Average
14,375		59.44% Pervious Area
9,810		40.56% Impervious Area
1,240		12.64% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	100	0.0500	0.25		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
0.5	120	0.0700	3.97		**Shallow Concentrated Flow, sheet** Grassed Waterway Kv= 15.0 fps
0.6	100	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.8	320	Total			

Summary for Subcatchment 3S: Church Roof Drains

Runoff = 0.75 cfs @ 12.13 hrs, Volume= 0.068 af, Depth> 3.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
10,350	98	Roofs, HSG B
10,350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0300	0.20		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
1.5	330	0.0600	3.67		**Shallow Concentrated Flow, shallow** Grassed Waterway Kv= 15.0 fps
9.8	430	Total			

Summary for Subcatchment 4S: Side/Back of Church

Runoff = 0.59 cfs @ 12.15 hrs, Volume= 0.051 af, Depth> 1.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
1,840	98	Roofs, HSG B
2,017	98	Roofs, HSG B
1,458	98	Paved parking, HSG C
715	98	Unconnected pavement, HSG C
17,840	61	>75% Grass cover, Good, HSG B
23,870	70	Weighted Average
17,840		74.74% Pervious Area
6,030		25.26% Impervious Area
715		11.86% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0300	0.20		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
1.5	330	0.0600	3.67		**Shallow Concentrated Flow, shallow** Grassed Waterway Kv= 15.0 fps
9.8	430	Total			

Summary for Subcatchment 5S: Front of church drain to Chase Dr

Runoff = 0.73 cfs @ 12.13 hrs, Volume= 0.059 af, Depth> 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
3,970	61	>75% Grass cover, Good, HSG B
5,880	98	Roofs, HSG B
3,350	98	Unconnected pavement, HSG B
13,200	87	Weighted Average
3,970		30.08% Pervious Area
9,230		69.92% Impervious Area
3,350		36.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0200	0.17		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"

Summary for Subcatchment 10S: Chase Dr Drainge

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.031 af, Depth> 3.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
3,500	98	Paved parking, HSG B
1,250	98	Unconnected pavement, HSG B
4,750	98	Weighted Average
4,750		100.00% Impervious Area
1,250		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment 12S: Brigham Hill

Runoff = 5.22 cfs @ 12.22 hrs, Volume= 0.515 af, Depth> 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (ac)	CN	Description
5.000	72	1/3 acre lots, 30% imp, HSG B
3.500		70.00% Pervious Area
1.500		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry, Tc Estimate**

Summary for Subcatchment 14S: Chase Dr Drainge

Runoff = 0.55 cfs @ 12.08 hrs, Volume= 0.044 af, Depth> 3.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
4,900	98	Paved parking, HSG B
1,750	98	Unconnected pavement, HSG B
6,650	98	Weighted Average
6,650		100.00% Impervious Area
1,750		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment 15S: Chase Dr Drainge

Runoff = 0.55 cfs @ 12.08 hrs, Volume= 0.044 af, Depth> 3.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
4,900	98	Paved parking, HSG B
1,750	98	Unconnected pavement, HSG B
6,650	98	Weighted Average
6,650		100.00% Impervious Area
1,750		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Pond 1P: CB 3396

Inflow Area = 1.662 ac, 55.89% Impervious, Inflow Depth > 1.93" for 2-Year event
Inflow = 3.76 cfs @ 12.09 hrs, Volume= 0.267 af
Outflow = 3.76 cfs @ 12.09 hrs, Volume= 0.267 af, Atten= 0%, Lag= 0.0 min
Primary = 3.76 cfs @ 12.09 hrs, Volume= 0.267 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 11.61' @ 12.09 hrs Surf.Area= 13 sf Storage= 13 cf
Flood Elev= 89.86' Surf.Area= 9,251 sf Storage= 11,412 cf

Plug-Flow detention time= 0.2 min calculated for 0.267 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (829.0 - 828.9)

Volume	Invert	Avail.Storage	Storage Description
#1	10.57'	43 cf	**4.00'D x 3.45'H Vertical Cone/Cylinder**
#2	14.00'	11,369 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		11,412 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.00	5	0	0
15.00	338	172	172
16.00	1,664	1,001	1,173
17.00	4,745	3,205	4,377
18.00	9,238	6,992	11,369

Device	Routing	Invert	Outlet Devices
#1	Primary	10.57'	**15.0" Round Culvert** L= 75.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.57' / 9.10' S= 0.0196 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.76 cfs @ 12.09 hrs HW=11.61' TW=10.17' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.76 cfs @ 3.46 fps)

Summary for Pond 2P: CB #3377

Inflow Area = 0.555 ac, 40.56% Impervious, Inflow Depth > 1.49" for 2-Year event
Inflow = 0.90 cfs @ 12.12 hrs, Volume= 0.069 af
Outflow = 2.74 cfs @ 12.14 hrs, Volume= 0.070 af, Atten= 0%, Lag= 1.4 min
Primary = 2.74 cfs @ 12.14 hrs, Volume= 0.070 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 85.40' @ 12.13 hrs Surf.Area= 13 sf Storage= 33 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	82.80'	50 cf	**4.00'D x 4.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	82.80'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.80' / 82.70' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.14 hrs HW=83.95' TW=86.31' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond 3P: CB 3374

Inflow Area = 1.341 ac, 44.84% Impervious, Inflow Depth > 1.63" for 2-Year event
Inflow = 4.12 cfs @ 12.11 hrs, Volume= 0.182 af
Outflow = 4.12 cfs @ 12.11 hrs, Volume= 0.182 af, Atten= 0%, Lag= 0.0 min
Primary = 4.12 cfs @ 12.11 hrs, Volume= 0.182 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.10' @ 0.00 hrs Surf.Area= 13 sf Storage= 0 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 44 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (833.6 - 833.6)

Volume	Invert	Avail.Storage	Storage Description
#1	86.10'	44 cf	**4.00'D x 3.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	13.00'	**24.0" Round Culvert** L= 306.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.00' / 9.10' S= 0.0127 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.11 hrs HW=86.10' TW=10.45' (Dynamic Tailwater)
1=Culvert (Passes 0.00 cfs of 100.18 cfs potential flow)

Summary for Pond 4P: CB #3395

Inflow Area = 0.786 ac, 47.87% Impervious, Inflow Depth > 1.82" for 2-Year event
Inflow = 1.34 cfs @ 12.14 hrs, Volume= 0.119 af
Outflow = 1.59 cfs @ 12.14 hrs, Volume= 0.118 af, Atten= 0%, Lag= 0.1 min
Primary = 1.59 cfs @ 12.14 hrs, Volume= 0.118 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.44' @ 12.14 hrs Surf.Area= 13 sf Storage= 74 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= 10.7 min calculated for 0.118 af (99% of inflow)
Center-of-Mass det. time= 5.0 min (809.0 - 804.0)

Volume	Invert	Avail.Storage	Storage Description
#1	20.70'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.70'	**12.0" Round Culvert** L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.70' / 20.60' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.80 cfs @ 12.14 hrs HW=86.44' TW=86.21' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.80 cfs @ 2.29 fps)

Summary for Pond 6P: CB 611

Inflow Area = 3.002 ac, 50.95% Impervious, Inflow Depth > 1.79" for 2-Year event
Inflow = 7.77 cfs @ 12.11 hrs, Volume= 0.449 af
Outflow = 7.58 cfs @ 12.11 hrs, Volume= 0.449 af, Atten= 3%, Lag= 0.0 min
Primary = 7.58 cfs @ 12.11 hrs, Volume= 0.449 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 10.46' @ 12.11 hrs Surf.Area= 13 sf Storage= 18 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 112 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.1 min (831.0 - 830.9)

Volume	Invert	Avail.Storage	Storage Description
#1	9.00'	112 cf	**4.00'D x 8.91'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	9.00'	**24.0" Round Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 9.00' / 8.90' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=7.48 cfs @ 12.11 hrs HW=10.44' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 7.48 cfs @ 4.31 fps)

Summary for Pond 7P: DMH #1

Inflow Area = 0.555 ac, 40.56% Impervious, Inflow Depth > 1.50" for 2-Year event
Inflow = 2.74 cfs @ 12.14 hrs, Volume= 0.070 af
Outflow = 2.70 cfs @ 12.14 hrs, Volume= 0.066 af, Atten= 2%, Lag= 0.0 min
Primary = 2.70 cfs @ 12.14 hrs, Volume= 0.066 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.31' @ 12.14 hrs Surf.Area= 13 sf Storage= 131 cf

Plug-Flow detention time= 31.4 min calculated for 0.066 af (96% of inflow)
Center-of-Mass det. time= 8.1 min (856.1 - 848.0)

Volume	Invert	Avail.Storage	Storage Description
#1	13.52'	131 cf	**4.00'D x 10.45'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	13.52'	**15.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.52' / 13.30' S= 0.0058 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.69 cfs @ 12.14 hrs HW=86.31' TW=86.10' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.69 cfs @ 2.19 fps)

Summary for Pond 8P: CB #23

Inflow Area = 0.786 ac, 47.87% Impervious, Inflow Depth > 1.78" for 2-Year event
Inflow = 1.60 cfs @ 12.83 hrs, Volume= 0.117 af
Outflow = 1.59 cfs @ 12.83 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.0 min
Primary = 1.59 cfs @ 12.83 hrs, Volume= 0.115 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.11' @ 12.83 hrs Surf.Area= 13 sf Storage= 61 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 61 cf

Plug-Flow detention time= 15.2 min calculated for 0.115 af (98% of inflow)
Center-of-Mass det. time= 6.3 min (820.7 - 814.3)

Volume	Invert	Avail.Storage	Storage Description
#1	20.00'	61 cf	**4.00'D x 4.88'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.00'	**24.0" Round Culvert** L= 210.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.00' / 13.10' S= 0.0329 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=1.58 cfs @ 12.83 hrs HW=86.11' TW=86.10' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.58 cfs @ 0.50 fps)

Summary for Pond 9P: DMH #5097

Inflow Area = 0.786 ac, 47.87% Impervious, Inflow Depth > 1.80" for 2-Year event
Inflow = 1.59 cfs @ 12.14 hrs, Volume= 0.118 af
Outflow = 1.60 cfs @ 12.83 hrs, Volume= 0.117 af, Atten= 0%, Lag= 41.4 min
Primary = 1.60 cfs @ 12.83 hrs, Volume= 0.117 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.26' @ 12.13 hrs Surf.Area= 13 sf Storage= 79 cf

Plug-Flow detention time= 11.8 min calculated for 0.117 af (99% of inflow)
Center-of-Mass det. time= 5.3 min (814.3 - 809.0)

Volume	Invert	Avail.Storage	Storage Description
#1	20.53'	79 cf	**4.00'D x 6.25'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.53'	**12.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.53' / 20.10' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.83 hrs HW=25.05' TW=86.11' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond 10P: CB #13929

Inflow Area = 0.412 ac, 77.88% Impervious, Inflow Depth > 2.63" for 2-Year event
Inflow = 1.08 cfs @ 12.11 hrs, Volume= 0.090 af
Outflow = 1.08 cfs @ 12.11 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.0 min
Primary = 1.08 cfs @ 12.11 hrs, Volume= 0.090 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 37.16' @ 12.11 hrs Surf.Area= 13 sf Storage= 5 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 89 cf

Plug-Flow detention time= 0.3 min calculated for 0.090 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (794.0 - 793.8)

Volume	Invert	Avail.Storage	Storage Description
#1	36.76'	89 cf	**4.00'D x 7.10'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	36.76'	**30.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.76' / 35.32' S= 0.0240 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

Primary OutFlow Max=1.08 cfs @ 12.11 hrs HW=37.16' TW=35.52' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.08 cfs @ 2.15 fps)

Summary for Pond 11P: CB #22361

Inflow Area = 0.412 ac, 77.88% Impervious, Inflow Depth > 2.63" for 2-Year event
Inflow = 1.08 cfs @ 12.11 hrs, Volume= 0.090 af
Outflow = 1.08 cfs @ 12.11 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.0 min
Primary = 1.08 cfs @ 12.11 hrs, Volume= 0.090 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 35.52' @ 12.11 hrs Surf.Area= 13 sf Storage= 5 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 73 cf

Plug-Flow detention time= 0.3 min calculated for 0.090 af (100% of inflow)

Center-of-Mass det. time= 0.2 min (794.2 - 794.0)

Volume	Invert	Avail.Storage	Storage Description
#1	35.12'	73 cf	**4.00'D x 5.80'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	35.12'	**30.0" Round Culvert** L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.12' / 27.19' S= 0.0396 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=1.08 cfs @ 12.11 hrs HW=35.52' TW=27.89' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.08 cfs @ 2.15 fps)

Summary for Pond 12P: DMH #22364

Inflow Area = 5.412 ac, 33.65% Impervious, Inflow Depth > 1.34" for 2-Year event
Inflow = 6.01 cfs @ 12.21 hrs, Volume= 0.605 af
Outflow = 6.01 cfs @ 12.21 hrs, Volume= 0.605 af, Atten= 0%, Lag= 0.0 min
Primary = 6.01 cfs @ 12.21 hrs, Volume= 0.605 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 28.00' @ 12.21 hrs Surf.Area= 13 sf Storage= 12 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 79 cf

Plug-Flow detention time= 0.1 min calculated for 0.605 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (855.1 - 855.1)

Volume	Invert	Avail.Storage	Storage Description
#1	27.02'	79 cf	**4.00'D x 6.30'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	27.02'	**30.0" Round Culvert** L= 98.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.02' / 23.54' S= 0.0355 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=6.01 cfs @ 12.21 hrs HW=28.00' TW=24.18' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.01 cfs @ 3.37 fps)

Summary for Pond 13P: CB #22362

Inflow Area = 5.565 ac, 35.47% Impervious, Inflow Depth > 1.40" for 2-Year event
Inflow = 6.31 cfs @ 12.20 hrs, Volume= 0.649 af
Outflow = 6.31 cfs @ 12.20 hrs, Volume= 0.649 af, Atten= 0%, Lag= 0.0 min
Primary = 6.31 cfs @ 12.20 hrs, Volume= 0.649 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.18' @ 12.20 hrs Surf.Area= 13 sf Storage= 11 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 82 cf

Plug-Flow detention time= 0.1 min calculated for 0.649 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (848.3 - 848.3)

Volume	Invert	Avail.Storage	Storage Description
#1	23.29'	82 cf	**4.00'D x 6.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	23.29'	**30.0" Round Culvert** L= 330.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 23.29' / 11.72' S= 0.0351 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=6.31 cfs @ 12.20 hrs HW=24.18' TW=12.41' (Dynamic Tailwater)
1=Culvert (Outlet Controls 6.31 cfs @ 6.03 fps)

Summary for Pond 14P: CB #22363

Inflow Area = 0.153 ac,100.00% Impervious, Inflow Depth > 3.44" for 2-Year event
Inflow = 0.55 cfs @ 12.08 hrs, Volume= 0.044 af
Outflow = 0.55 cfs @ 12.08 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.1 min
Primary = 0.55 cfs @ 12.08 hrs, Volume= 0.044 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.10' @ 12.08 hrs Surf.Area= 13 sf Storage= 4 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.5 min calculated for 0.044 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (753.4 - 753.0)

Volume	Invert	Avail.Storage	Storage Description
#1	24.76'	63 cf	**4.00'D x 5.05'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	24.76'	**15.0" Round Culvert** L= 28.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 24.76' / 24.49' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.55 cfs @ 12.08 hrs HW=25.10' TW=24.05' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.55 cfs @ 3.01 fps)

Summary for Pond 15P: CB #3397

Inflow Area = 0.153 ac,100.00% Impervious, Inflow Depth > 3.44" for 2-Year event
Inflow = 0.55 cfs @ 12.08 hrs, Volume= 0.044 af
Outflow = 0.55 cfs @ 12.08 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.1 min
Primary = 0.55 cfs @ 12.08 hrs, Volume= 0.044 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 25.10' @ 12.08 hrs Surf.Area= 13 sf Storage= 4 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.5 min calculated for 0.044 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (753.4 - 753.0)

Volume	Invert	Avail.Storage	Storage Description
#1	24.76'	63 cf	**4.00'D x 5.05'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	24.76'	**15.0" Round Culvert** L= 28.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 24.76' / 24.49' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.55 cfs @ 12.08 hrs HW=25.10' TW=12.30' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.55 cfs @ 3.01 fps)

Summary for Pond 16P: CB #3398

Inflow Area = 5.717 ac, 37.19% Impervious, Inflow Depth > 1.45" for 2-Year event
Inflow = 6.62 cfs @ 12.19 hrs, Volume= 0.693 af
Outflow = 6.62 cfs @ 12.19 hrs, Volume= 0.693 af, Atten= 0%, Lag= 0.0 min
Primary = 6.62 cfs @ 12.19 hrs, Volume= 0.693 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 12.41' @ 12.19 hrs Surf.Area= 13 sf Storage= 11 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= 0.1 min calculated for 0.693 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (842.4 - 842.3)

Volume	Invert	Avail.Storage	Storage Description
#1	11.52'	74 cf	**4.00'D x 5.90'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	11.52'	**30.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 11.52' / 9.62' S= 0.0475 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=6.62 cfs @ 12.19 hrs HW=12.41' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 6.62 cfs @ 6.27 fps)

Summary for Link P100: POA #100

Inflow Area = 3.002 ac, 50.95% Impervious, Inflow Depth > 1.79" for 2-Year event
Inflow = 7.58 cfs @ 12.11 hrs, Volume= 0.449 af
Primary = 7.58 cfs @ 12.11 hrs, Volume= 0.449 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link P200: POA #200 (CB 3399)

Inflow Area = 5.717 ac, 37.19% Impervious, Inflow Depth > 1.45" for 2-Year event
Inflow = 6.62 cfs @ 12.19 hrs, Volume= 0.693 af
Primary = 6.62 cfs @ 12.19 hrs, Volume= 0.693 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
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 1S: End of Parking Lot Runoff Area=72,375 sf 55.89% Impervious Runoff Depth>3.60"
Flow Length=480' Tc=6.0 min CN=82 Runoff=6.98 cfs 0.498 af

Subcatchment 2S: Front of Church Runoff Area=24,185 sf 40.56% Impervious Runoff Depth>3.02"
Flow Length=320' Tc=7.8 min CN=76 Runoff=1.85 cfs 0.140 af

Subcatchment 3S: Church Roof Drains Runoff Area=10,350 sf 100.00% Impervious Runoff Depth>5.34"
Flow Length=430' Tc=9.8 min CN=98 Runoff=1.15 cfs 0.106 af

Subcatchment 4S: Side/Back of Church Runoff Area=23,870 sf 25.26% Impervious Runoff Depth>2.47"
Flow Length=430' Tc=9.8 min CN=70 Runoff=1.38 cfs 0.113 af

Subcatchment 5S: Front of church drain to Runoff Area=13,200 sf 69.92% Impervious Runoff Depth>4.11"
Flow Length=100' Slope=0.0200 '/' Tc=9.7 min CN=87 Runoff=1.26 cfs 0.104 af

Subcatchment 10S: Chase Dr Drainge Runoff Area=4,750 sf 100.00% Impervious Runoff Depth>5.34"
Tc=6.0 min CN=98 Runoff=0.60 cfs 0.049 af

Subcatchment 12S: Brigham Hill Runoff Area=5.000 ac 30.00% Impervious Runoff Depth>2.64"
Tc=15.0 min CN=72 Runoff=11.69 cfs 1.102 af

Subcatchment 14S: Chase Dr Drainge Runoff Area=6,650 sf 100.00% Impervious Runoff Depth>5.34"
Tc=6.0 min CN=98 Runoff=0.83 cfs 0.068 af

Subcatchment 15S: Chase Dr Drainge Runoff Area=6,650 sf 100.00% Impervious Runoff Depth>5.34"
Tc=6.0 min CN=98 Runoff=0.83 cfs 0.068 af

Pond 1P: CB 3396 Peak Elev=12.59' Storage=25 cf Inflow=6.98 cfs 0.498 af
15.0" Round Culvert n=0.012 L=75.0' S=0.0196 '/' Outflow=6.98 cfs 0.498 af

Pond 2P: CB #3377 Peak Elev=86.47' Storage=46 cf Inflow=1.85 cfs 0.140 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=3.51 cfs 0.140 af

Pond 3P: CB 3374 Peak Elev=86.10' Storage=0 cf Inflow=4.81 cfs 0.351 af
24.0" Round Culvert n=0.012 L=306.0' S=0.0127 '/' Outflow=4.81 cfs 0.351 af

Pond 4P: CB #3395 Peak Elev=87.22' Storage=74 cf Inflow=2.53 cfs 0.218 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0200 '/' Outflow=2.91 cfs 0.217 af

Pond 6P: CB 611 Peak Elev=10.87' Storage=24 cf Inflow=11.62 cfs 0.849 af
24.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=11.32 cfs 0.849 af

Pond 7P: DMH #1 Peak Elev=94.10' Storage=131 cf Inflow=3.51 cfs 0.140 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0058 '/' Outflow=3.47 cfs 0.137 af

Pond 8P: CB #23 Peak Elev=86.14' Storage=61 cf Inflow=2.67 cfs 0.216 af
24.0" Round Culvert n=0.012 L=210.0' S=0.0329 '/' Outflow=2.70 cfs 0.214 af

Pond 9P: DMH #5097 Peak Elev=86.63' Storage=79 cf Inflow=2.91 cfs 0.217 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0096 '/' Outflow=2.67 cfs 0.216 af

Pond 10P: CB #13929 Peak Elev=37.28' Storage=7 cf Inflow=1.80 cfs 0.152 af
30.0" Round Culvert n=0.012 L=60.0' S=0.0240 '/' Outflow=1.80 cfs 0.152 af

Pond 11P: CB #22361 Peak Elev=35.64' Storage=7 cf Inflow=1.80 cfs 0.152 af
30.0" Round Culvert n=0.024 L=200.0' S=0.0396 '/' Outflow=1.80 cfs 0.152 af

Pond 12P: DMH #22364 Peak Elev=28.54' Storage=19 cf Inflow=13.05 cfs 1.254 af
30.0" Round Culvert n=0.024 L=98.0' S=0.0355 '/' Outflow=13.05 cfs 1.254 af

Pond 13P: CB #22362 Peak Elev=24.62' Storage=17 cf Inflow=13.52 cfs 1.322 af
30.0" Round Culvert n=0.024 L=330.0' S=0.0351 '/' Outflow=13.52 cfs 1.322 af

Pond 14P: CB #22363 Peak Elev=25.19' Storage=5 cf Inflow=0.83 cfs 0.068 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0096 '/' Outflow=0.83 cfs 0.068 af

Pond 15P: CB #3397 Peak Elev=25.19' Storage=5 cf Inflow=0.83 cfs 0.068 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0096 '/' Outflow=0.83 cfs 0.068 af

Pond 16P: CB #3398 Peak Elev=12.88' Storage=17 cf Inflow=14.01 cfs 1.390 af
30.0" Round Culvert n=0.024 L=40.0' S=0.0475 '/' Outflow=14.01 cfs 1.390 af

Link P100: POA #100 Inflow=11.32 cfs 0.849 af
Primary=11.32 cfs 0.849 af

Link P200: POA #200 (CB 3399) Inflow=14.01 cfs 1.390 af
Primary=14.01 cfs 1.390 af

Summary for Subcatchment 1S: End of Parking Lot

Runoff = 6.98 cfs @ 12.09 hrs, Volume= 0.498 af, Depth> 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
40,288	98	Paved parking, HSG B
31,927	61	>75% Grass cover, Good, HSG B
160	98	Unconnected pavement, HSG B
72,375	82	Weighted Average
31,927		44.11% Pervious Area
40,448		55.89% Impervious Area
160		0.40% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	200	0.0500	2.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.25"
1.7	280	0.0330	2.72		**Shallow Concentrated Flow, swale** Grassed Waterway Kv= 15.0 fps
3.2	480	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S: Front of Church

Runoff = 1.85 cfs @ 12.11 hrs, Volume= 0.140 af, Depth> 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
2,480	98	Roofs, HSG B
6,090	98	Paved parking, HSG B
1,240	98	Unconnected pavement, HSG B
14,375	61	>75% Grass cover, Good, HSG B
24,185	76	Weighted Average
14,375		59.44% Pervious Area
9,810		40.56% Impervious Area
1,240		12.64% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	100	0.0500	0.25		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
0.5	120	0.0700	3.97		**Shallow Concentrated Flow, sheet** Grassed Waterway Kv= 15.0 fps
0.6	100	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.8	320	Total			

Summary for Subcatchment 3S: Church Roof Drains

Runoff = 1.15 cfs @ 12.13 hrs, Volume= 0.106 af, Depth> 5.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
10,350	98	Roofs, HSG B
10,350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0300	0.20		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
1.5	330	0.0600	3.67		**Shallow Concentrated Flow, shallow** Grassed Waterway Kv= 15.0 fps
9.8	430	Total			

Summary for Subcatchment 4S: Side/Back of Church

Runoff = 1.38 cfs @ 12.14 hrs, Volume= 0.113 af, Depth> 2.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
1,840	98	Roofs, HSG B
2,017	98	Roofs, HSG B
1,458	98	Paved parking, HSG C
715	98	Unconnected pavement, HSG C
17,840	61	>75% Grass cover, Good, HSG B
23,870	70	Weighted Average
17,840		74.74% Pervious Area
6,030		25.26% Impervious Area
715		11.86% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0300	0.20		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
1.5	330	0.0600	3.67		**Shallow Concentrated Flow, shallow** Grassed Waterway Kv= 15.0 fps
9.8	430	Total			

Summary for Subcatchment 5S: Front of church drain to Chase Dr

Runoff = 1.26 cfs @ 12.13 hrs, Volume= 0.104 af, Depth> 4.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
3,970	61	>75% Grass cover, Good, HSG B
5,880	98	Roofs, HSG B
3,350	98	Unconnected pavement, HSG B
13,200	87	Weighted Average
3,970		30.08% Pervious Area
9,230		69.92% Impervious Area
3,350		36.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0200	0.17		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"

Summary for Subcatchment 10S: Chase Dr Drainge

Runoff = 0.60 cfs @ 12.08 hrs, Volume= 0.049 af, Depth> 5.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
3,500	98	Paved parking, HSG B
1,250	98	Unconnected pavement, HSG B
4,750	98	Weighted Average
4,750		100.00% Impervious Area
1,250		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment 12S: Brigham Hill

Runoff = 11.69 cfs @ 12.21 hrs, Volume= 1.102 af, Depth> 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (ac)	CN	Description
5.000	72	1/3 acre lots, 30% imp, HSG B
3.500		70.00% Pervious Area
1.500		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry, Tc Estimate**

Summary for Subcatchment 14S: Chase Dr Drainge

Runoff = 0.83 cfs @ 12.08 hrs, Volume= 0.068 af, Depth> 5.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
4,900	98	Paved parking, HSG B
1,750	98	Unconnected pavement, HSG B
6,650	98	Weighted Average
6,650		100.00% Impervious Area
1,750		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment 15S: Chase Dr Drainge

Runoff = 0.83 cfs @ 12.08 hrs, Volume= 0.068 af, Depth> 5.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
4,900	98	Paved parking, HSG B
1,750	98	Unconnected pavement, HSG B
6,650	98	Weighted Average
6,650		100.00% Impervious Area
1,750		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Pond 1P: CB 3396

Inflow Area = 1.662 ac, 55.89% Impervious, Inflow Depth > 3.60" for 10-Year event
Inflow = 6.98 cfs @ 12.09 hrs, Volume= 0.498 af
Outflow = 6.98 cfs @ 12.09 hrs, Volume= 0.498 af, Atten= 0%, Lag= 0.1 min
Primary = 6.98 cfs @ 12.09 hrs, Volume= 0.498 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 12.59' @ 12.09 hrs Surf.Area= 13 sf Storage= 25 cf
Flood Elev= 89.86' Surf.Area= 9,251 sf Storage= 11,412 cf

Plug-Flow detention time= 0.1 min calculated for 0.498 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (811.2 - 811.1)

Volume	Invert	Avail.Storage	Storage Description
#1	10.57'	43 cf	**4.00'D x 3.45'H Vertical Cone/Cylinder**
#2	14.00'	11,369 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		11,412 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.00	5	0	0
15.00	338	172	172
16.00	1,664	1,001	1,173
17.00	4,745	3,205	4,377
18.00	9,238	6,992	11,369

Device	Routing	Invert	Outlet Devices
#1	Primary	10.57'	**15.0" Round Culvert** L= 75.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.57' / 9.10' S= 0.0196 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=6.97 cfs @ 12.09 hrs HW=12.59' TW=10.81' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 6.97 cfs @ 5.68 fps)

Summary for Pond 2P: CB #3377

Inflow Area = 0.555 ac, 40.56% Impervious, Inflow Depth > 3.02" for 10-Year event
Inflow = 1.85 cfs @ 12.11 hrs, Volume= 0.140 af
Outflow = 3.51 cfs @ 12.03 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min
Primary = 3.51 cfs @ 12.03 hrs, Volume= 0.140 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.47' @ 12.10 hrs Surf.Area= 13 sf Storage= 46 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.0 min (828.9 - 828.0)

Volume	Invert	Avail.Storage	Storage Description
#1	82.80'	50 cf	**4.00'D x 4.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	82.80'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.80' / 82.70' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.03 hrs HW=84.25' TW=86.45' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond 3P: CB 3374

Inflow Area = 1.341 ac, 44.84% Impervious, Inflow Depth > 3.14" for 10-Year event
Inflow = 4.81 cfs @ 12.03 hrs, Volume= 0.351 af
Outflow = 4.81 cfs @ 12.03 hrs, Volume= 0.351 af, Atten= 0%, Lag= 0.0 min
Primary = 4.81 cfs @ 12.03 hrs, Volume= 0.351 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.10' @ 0.00 hrs Surf.Area= 13 sf Storage= 0 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 44 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (818.6 - 818.6)

Volume	Invert	Avail.Storage	Storage Description
#1	86.10'	44 cf	**4.00'D x 3.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	13.00'	**24.0" Round Culvert** L= 306.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.00' / 9.10' S= 0.0127 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.03 hrs HW=86.10' TW=10.75' (Dynamic Tailwater)
1=Culvert (Passes 0.00 cfs of 100.18 cfs potential flow)

Summary for Pond 4P: CB #3395

Inflow Area = 0.786 ac, 47.87% Impervious, Inflow Depth > 3.34" for 10-Year event
Inflow = 2.53 cfs @ 12.14 hrs, Volume= 0.218 af
Outflow = 2.91 cfs @ 12.13 hrs, Volume= 0.217 af, Atten= 0%, Lag= 0.0 min
Primary = 2.91 cfs @ 12.13 hrs, Volume= 0.217 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 87.22' @ 12.15 hrs Surf.Area= 13 sf Storage= 74 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 3.2 min (801.2 - 798.0)

Volume	Invert	Avail.Storage	Storage Description
#1	20.70'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.70'	**12.0" Round Culvert** L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.70' / 20.60' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=3.09 cfs @ 12.13 hrs HW=87.21' TW=86.54' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.09 cfs @ 3.94 fps)

Summary for Pond 6P: CB 611

Inflow Area = 3.002 ac, 50.95% Impervious, Inflow Depth > 3.40" for 10-Year event
Inflow = 11.62 cfs @ 12.10 hrs, Volume= 0.849 af
Outflow = 11.32 cfs @ 12.10 hrs, Volume= 0.849 af, Atten= 3%, Lag= 0.0 min
Primary = 11.32 cfs @ 12.10 hrs, Volume= 0.849 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 10.87' @ 12.10 hrs Surf.Area= 13 sf Storage= 24 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 112 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.1 min (814.4 - 814.3)

Volume	Invert	Avail.Storage	Storage Description
#1	9.00'	112 cf	**4.00'D x 8.91'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	9.00'	**24.0" Round Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 9.00' / 8.90' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=11.28 cfs @ 12.10 hrs HW=10.87' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 11.28 cfs @ 4.80 fps)

Summary for Pond 7P: DMH #1

Inflow Area = 0.555 ac, 40.56% Impervious, Inflow Depth > 3.02" for 10-Year event
Inflow = 3.51 cfs @ 12.03 hrs, Volume= 0.140 af
Outflow = 3.47 cfs @ 12.03 hrs, Volume= 0.137 af, Atten= 1%, Lag= 0.0 min
Primary = 3.47 cfs @ 12.03 hrs, Volume= 0.137 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 94.10' @ 12.03 hrs Surf.Area= 13 sf Storage= 131 cf

Plug-Flow detention time= 17.9 min calculated for 0.137 af (98% of inflow)
Center-of-Mass det. time= 5.3 min (834.2 - 828.9)

Volume	Invert	Avail.Storage	Storage Description
#1	13.52'	131 cf	**4.00'D x 10.45'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	13.52'	**15.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.52' / 13.30' S= 0.0058 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.47 cfs @ 12.03 hrs HW=86.44' TW=86.10' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.47 cfs @ 2.83 fps)

Summary for Pond 8P: CB #23

Inflow Area = 0.786 ac, 47.87% Impervious, Inflow Depth > 3.30" for 10-Year event
Inflow = 2.67 cfs @ 12.14 hrs, Volume= 0.216 af
Outflow = 2.70 cfs @ 12.14 hrs, Volume= 0.214 af, Atten= 0%, Lag= 0.0 min
Primary = 2.70 cfs @ 12.14 hrs, Volume= 0.214 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.14' @ 12.14 hrs Surf.Area= 13 sf Storage= 61 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 61 cf

Plug-Flow detention time= 9.1 min calculated for 0.214 af (99% of inflow)
Center-of-Mass det. time= 4.1 min (808.7 - 804.6)

Volume	Invert	Avail.Storage	Storage Description
#1	20.00'	61 cf	**4.00'D x 4.88'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.00'	**24.0" Round Culvert** L= 210.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.00' / 13.10' S= 0.0329 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=2.70 cfs @ 12.14 hrs HW=86.14' TW=86.10' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.70 cfs @ 0.86 fps)

Summary for Pond 9P: DMH #5097

Inflow Area = 0.786 ac, 47.87% Impervious, Inflow Depth > 3.32" for 10-Year event
Inflow = 2.91 cfs @ 12.13 hrs, Volume= 0.217 af
Outflow = 2.67 cfs @ 12.14 hrs, Volume= 0.216 af, Atten= 8%, Lag= 0.6 min
Primary = 2.67 cfs @ 12.14 hrs, Volume= 0.216 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.63' @ 12.14 hrs Surf.Area= 13 sf Storage= 79 cf

Plug-Flow detention time= 7.0 min calculated for 0.216 af (99% of inflow)
Center-of-Mass det. time= 3.4 min (804.6 - 801.2)

Volume	Invert	Avail.Storage	Storage Description
#1	20.53'	79 cf	**4.00'D x 6.25'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.53'	**12.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.53' / 20.10' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.64 cfs @ 12.14 hrs HW=86.63' TW=86.14' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.64 cfs @ 3.36 fps)

Summary for Pond 10P: CB #13929

Inflow Area = 0.412 ac, 77.88% Impervious, Inflow Depth > 4.43" for 10-Year event
Inflow = 1.80 cfs @ 12.11 hrs, Volume= 0.152 af
Outflow = 1.80 cfs @ 12.11 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.0 min
Primary = 1.80 cfs @ 12.11 hrs, Volume= 0.152 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 37.28' @ 12.11 hrs Surf.Area= 13 sf Storage= 7 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 89 cf

Plug-Flow detention time= 0.2 min calculated for 0.152 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (782.6 - 782.4)

Volume	Invert	Avail.Storage	Storage Description
#1	36.76'	89 cf	**4.00'D x 7.10'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	36.76'	**30.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.76' / 35.32' S= 0.0240 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

Primary OutFlow Max=1.80 cfs @ 12.11 hrs HW=37.28' TW=35.64' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.80 cfs @ 2.45 fps)

Summary for Pond 11P: CB #22361

Inflow Area = 0.412 ac, 77.88% Impervious, Inflow Depth > 4.43" for 10-Year event
Inflow = 1.80 cfs @ 12.11 hrs, Volume= 0.152 af
Outflow = 1.80 cfs @ 12.11 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.0 min
Primary = 1.80 cfs @ 12.11 hrs, Volume= 0.152 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 35.64' @ 12.11 hrs Surf.Area= 13 sf Storage= 7 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 73 cf

Plug-Flow detention time= 0.2 min calculated for 0.152 af (100% of inflow)

Center-of-Mass det. time= 0.2 min (782.7 - 782.6)

Volume	Invert	Avail.Storage	Storage Description
#1	35.12'	73 cf	**4.00'D x 5.80'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	35.12'	**30.0" Round Culvert** L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.12' / 27.19' S= 0.0396 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=1.79 cfs @ 12.11 hrs HW=35.64' TW=28.38' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.79 cfs @ 2.45 fps)

Summary for Pond 12P: DMH #22364

Inflow Area = 5.412 ac, 33.65% Impervious, Inflow Depth > 2.78" for 10-Year event
Inflow = 13.05 cfs @ 12.20 hrs, Volume= 1.254 af
Outflow = 13.05 cfs @ 12.20 hrs, Volume= 1.254 af, Atten= 0%, Lag= 0.0 min
Primary = 13.05 cfs @ 12.20 hrs, Volume= 1.254 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 28.54' @ 12.20 hrs Surf.Area= 13 sf Storage= 19 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 79 cf

Plug-Flow detention time= 0.1 min calculated for 1.254 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (836.1 - 836.0)

Volume	Invert	Avail.Storage	Storage Description
#1	27.02'	79 cf	**4.00'D x 6.30'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	27.02'	**30.0" Round Culvert** L= 98.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.02' / 23.54' S= 0.0355 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=13.05 cfs @ 12.20 hrs HW=28.54' TW=24.62' (Dynamic Tailwater)
1=Culvert (Inlet Controls 13.05 cfs @ 4.19 fps)

Summary for Pond 13P: CB #22362

Inflow Area = 5.565 ac, 35.47% Impervious, Inflow Depth > 2.85" for 10-Year event
Inflow = 13.52 cfs @ 12.19 hrs, Volume= 1.322 af
Outflow = 13.52 cfs @ 12.19 hrs, Volume= 1.322 af, Atten= 0%, Lag= 0.0 min
Primary = 13.52 cfs @ 12.19 hrs, Volume= 1.322 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.62' @ 12.19 hrs Surf.Area= 13 sf Storage= 17 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 82 cf

Plug-Flow detention time= 0.1 min calculated for 1.321 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (831.5 - 831.4)

Volume	Invert	Avail.Storage	Storage Description
#1	23.29'	82 cf	**4.00'D x 6.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	23.29'	**30.0" Round Culvert** L= 330.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 23.29' / 11.72' S= 0.0351 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=13.51 cfs @ 12.19 hrs HW=24.62' TW=12.88' (Dynamic Tailwater)
1=Culvert (Outlet Controls 13.51 cfs @ 7.38 fps)

Summary for Pond 14P: CB #22363

Inflow Area = 0.153 ac,100.00% Impervious, Inflow Depth > 5.34" for 10-Year event
Inflow = 0.83 cfs @ 12.08 hrs, Volume= 0.068 af
Outflow = 0.83 cfs @ 12.08 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.1 min
Primary = 0.83 cfs @ 12.08 hrs, Volume= 0.068 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.19' @ 12.08 hrs Surf.Area= 13 sf Storage= 5 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.4 min calculated for 0.068 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (746.0 - 745.7)

Volume	Invert	Avail.Storage	Storage Description
#1	24.76'	63 cf	**4.00'D x 5.05'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	24.76'	**15.0" Round Culvert** L= 28.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 24.76' / 24.49' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.83 cfs @ 12.08 hrs HW=25.19' TW=24.42' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.83 cfs @ 3.33 fps)

Summary for Pond 15P: CB #3397

Inflow Area = 0.153 ac,100.00% Impervious, Inflow Depth > 5.34" for 10-Year event
Inflow = 0.83 cfs @ 12.08 hrs, Volume= 0.068 af
Outflow = 0.83 cfs @ 12.08 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.1 min
Primary = 0.83 cfs @ 12.08 hrs, Volume= 0.068 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 25.19' @ 12.08 hrs Surf.Area= 13 sf Storage= 5 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.4 min calculated for 0.068 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (746.0 - 745.7)

Volume	Invert	Avail.Storage	Storage Description
#1	24.76'	63 cf	**4.00'D x 5.05'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	24.76'	**15.0" Round Culvert** L= 28.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 24.76' / 24.49' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.83 cfs @ 12.08 hrs HW=25.19' TW=12.70' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.83 cfs @ 3.33 fps)

Summary for Pond 16P: CB #3398

Inflow Area = 5.717 ac, 37.19% Impervious, Inflow Depth > 2.92" for 10-Year event
Inflow = 14.01 cfs @ 12.19 hrs, Volume= 1.390 af
Outflow = 14.01 cfs @ 12.19 hrs, Volume= 1.390 af, Atten= 0%, Lag= 0.0 min
Primary = 14.01 cfs @ 12.19 hrs, Volume= 1.390 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 12.88' @ 12.19 hrs Surf.Area= 13 sf Storage= 17 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= 0.1 min calculated for 1.389 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (827.3 - 827.3)

Volume	Invert	Avail.Storage	Storage Description
#1	11.52'	74 cf	**4.00'D x 5.90'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	11.52'	**30.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 11.52' / 9.62' S= 0.0475 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=14.01 cfs @ 12.19 hrs HW=12.88' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 14.01 cfs @ 7.42 fps)

Summary for Link P100: POA #100

Inflow Area = 3.002 ac, 50.95% Impervious, Inflow Depth > 3.40" for 10-Year event
Inflow = 11.32 cfs @ 12.10 hrs, Volume= 0.849 af
Primary = 11.32 cfs @ 12.10 hrs, Volume= 0.849 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link P200: POA #200 (CB 3399)

Inflow Area = 5.717 ac, 37.19% Impervious, Inflow Depth > 2.92" for 10-Year event
Inflow = 14.01 cfs @ 12.19 hrs, Volume= 1.390 af
Primary = 14.01 cfs @ 12.19 hrs, Volume= 1.390 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
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 1S: End of Parking Lot Runoff Area=72,375 sf 55.89% Impervious Runoff Depth>4.98"
Flow Length=480' Tc=6.0 min CN=82 Runoff=9.55 cfs 0.689 af

Subcatchment 2S: Front of Church Runoff Area=24,185 sf 40.56% Impervious Runoff Depth>4.31"
Flow Length=320' Tc=7.8 min CN=76 Runoff=2.64 cfs 0.200 af

Subcatchment 3S: Church Roof Drains Runoff Area=10,350 sf 100.00% Impervious Runoff Depth>6.82"
Flow Length=430' Tc=9.8 min CN=98 Runoff=1.46 cfs 0.135 af

Subcatchment 4S: Side/Back of Church Runoff Area=23,870 sf 25.26% Impervious Runoff Depth>3.67"
Flow Length=430' Tc=9.8 min CN=70 Runoff=2.08 cfs 0.168 af

Subcatchment 5S: Front of church drain to Runoff Area=13,200 sf 69.92% Impervious Runoff Depth>5.54"
Flow Length=100' Slope=0.0200 '/' Tc=9.7 min CN=87 Runoff=1.68 cfs 0.140 af

Subcatchment 10S: Chase Dr Drainge Runoff Area=4,750 sf 100.00% Impervious Runoff Depth>6.83"
Tc=6.0 min CN=98 Runoff=0.76 cfs 0.062 af

Subcatchment 12S: Brigham Hill Runoff Area=5.000 ac 30.00% Impervious Runoff Depth>3.88"
Tc=15.0 min CN=72 Runoff=17.24 cfs 1.615 af

Subcatchment 14S: Chase Dr Drainge Runoff Area=6,650 sf 100.00% Impervious Runoff Depth>6.83"
Tc=6.0 min CN=98 Runoff=1.06 cfs 0.087 af

Subcatchment 15S: Chase Dr Drainge Runoff Area=6,650 sf 100.00% Impervious Runoff Depth>6.83"
Tc=6.0 min CN=98 Runoff=1.06 cfs 0.087 af

Pond 1P: CB 3396 Peak Elev=14.08' Storage=45 cf Inflow=9.55 cfs 0.689 af
15.0" Round Culvert n=0.012 L=75.0' S=0.0196 '/' Outflow=9.51 cfs 0.689 af

Pond 2P: CB #3377 Peak Elev=86.79' Storage=50 cf Inflow=2.64 cfs 0.200 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=3.40 cfs 0.200 af

Pond 3P: CB 3374 Peak Elev=86.10' Storage=0 cf Inflow=6.20 cfs 0.495 af
24.0" Round Culvert n=0.012 L=306.0' S=0.0127 '/' Outflow=6.20 cfs 0.495 af

Pond 4P: CB #3395 Peak Elev=88.16' Storage=74 cf Inflow=3.53 cfs 0.303 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0200 '/' Outflow=3.98 cfs 0.301 af

Pond 6P: CB 611 Peak Elev=11.34' Storage=29 cf Inflow=15.39 cfs 1.185 af
24.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=15.40 cfs 1.185 af

Pond 7P: DMH #1 Peak Elev=94.04' Storage=131 cf Inflow=3.40 cfs 0.200 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0058 '/' Outflow=3.39 cfs 0.197 af

Pond 8P: CB #23 Peak Elev=86.18' Storage=61 cf Inflow=3.56 cfs 0.300 af
24.0" Round Culvert n=0.012 L=210.0' S=0.0329 '/' Outflow=3.66 cfs 0.298 af

Pond 9P: DMH #5097 Peak Elev=87.05' Storage=79 cf Inflow=3.98 cfs 0.301 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0096 '/' Outflow=3.56 cfs 0.300 af

Pond 10P: CB #13929 Peak Elev=37.36' Storage=7 cf Inflow=2.36 cfs 0.202 af
30.0" Round Culvert n=0.012 L=60.0' S=0.0240 '/' Outflow=2.36 cfs 0.202 af

Pond 11P: CB #22361 Peak Elev=35.72' Storage=7 cf Inflow=2.36 cfs 0.202 af
30.0" Round Culvert n=0.024 L=200.0' S=0.0396 '/' Outflow=2.36 cfs 0.202 af

Pond 12P: DMH #22364 Peak Elev=28.94' Storage=24 cf Inflow=19.05 cfs 1.817 af
30.0" Round Culvert n=0.024 L=98.0' S=0.0355 '/' Outflow=19.05 cfs 1.817 af

Pond 13P: CB #22362 Peak Elev=24.95' Storage=21 cf Inflow=19.66 cfs 1.904 af
30.0" Round Culvert n=0.024 L=330.0' S=0.0351 '/' Outflow=19.66 cfs 1.904 af

Pond 14P: CB #22363 Peak Elev=25.25' Storage=6 cf Inflow=1.06 cfs 0.087 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0096 '/' Outflow=1.06 cfs 0.087 af

Pond 15P: CB #3397 Peak Elev=25.25' Storage=6 cf Inflow=1.06 cfs 0.087 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0096 '/' Outflow=1.06 cfs 0.087 af

Pond 16P: CB #3398 Peak Elev=13.23' Storage=21 cf Inflow=20.28 cfs 1.991 af
30.0" Round Culvert n=0.024 L=40.0' S=0.0475 '/' Outflow=20.28 cfs 1.991 af

Link P100: POA #100 Inflow=15.40 cfs 1.185 af
Primary=15.40 cfs 1.185 af

Link P200: POA #200 (CB 3399) Inflow=20.28 cfs 1.991 af
Primary=20.28 cfs 1.991 af

Summary for Subcatchment 1S: End of Parking Lot

Runoff = 9.55 cfs @ 12.09 hrs, Volume= 0.689 af, Depth> 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
40,288	98	Paved parking, HSG B
31,927	61	>75% Grass cover, Good, HSG B
160	98	Unconnected pavement, HSG B
72,375	82	Weighted Average
31,927		44.11% Pervious Area
40,448		55.89% Impervious Area
160		0.40% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	200	0.0500	2.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.25"
1.7	280	0.0330	2.72		**Shallow Concentrated Flow, swale** Grassed Waterway Kv= 15.0 fps
3.2	480	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S: Front of Church

Runoff = 2.64 cfs @ 12.11 hrs, Volume= 0.200 af, Depth> 4.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
2,480	98	Roofs, HSG B
6,090	98	Paved parking, HSG B
1,240	98	Unconnected pavement, HSG B
14,375	61	>75% Grass cover, Good, HSG B
24,185	76	Weighted Average
14,375		59.44% Pervious Area
9,810		40.56% Impervious Area
1,240		12.64% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	100	0.0500	0.25		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
0.5	120	0.0700	3.97		**Shallow Concentrated Flow, sheet** Grassed Waterway Kv= 15.0 fps
0.6	100	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.8	320	Total			

Summary for Subcatchment 3S: Church Roof Drains

Runoff = 1.46 cfs @ 12.13 hrs, Volume= 0.135 af, Depth> 6.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
10,350	98	Roofs, HSG B
10,350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0300	0.20		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
1.5	330	0.0600	3.67		**Shallow Concentrated Flow, shallow** Grassed Waterway Kv= 15.0 fps
9.8	430	Total			

Summary for Subcatchment 4S: Side/Back of Church

Runoff = 2.08 cfs @ 12.14 hrs, Volume= 0.168 af, Depth> 3.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
1,840	98	Roofs, HSG B
2,017	98	Roofs, HSG B
1,458	98	Paved parking, HSG C
715	98	Unconnected pavement, HSG C
17,840	61	>75% Grass cover, Good, HSG B
23,870	70	Weighted Average
17,840		74.74% Pervious Area
6,030		25.26% Impervious Area
715		11.86% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0300	0.20		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
1.5	330	0.0600	3.67		**Shallow Concentrated Flow, shallow** Grassed Waterway Kv= 15.0 fps
9.8	430	Total			

Summary for Subcatchment 5S: Front of church drain to Chase Dr

Runoff = 1.68 cfs @ 12.13 hrs, Volume= 0.140 af, Depth> 5.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
3,970	61	>75% Grass cover, Good, HSG B
5,880	98	Roofs, HSG B
3,350	98	Unconnected pavement, HSG B
13,200	87	Weighted Average
3,970		30.08% Pervious Area
9,230		69.92% Impervious Area
3,350		36.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0200	0.17		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"

Summary for Subcatchment 10S: Chase Dr Drainge

Runoff = 0.76 cfs @ 12.08 hrs, Volume= 0.062 af, Depth> 6.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
3,500	98	Paved parking, HSG B
1,250	98	Unconnected pavement, HSG B
4,750	98	Weighted Average
4,750		100.00% Impervious Area
1,250		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment 12S: Brigham Hill

Runoff = 17.24 cfs @ 12.21 hrs, Volume= 1.615 af, Depth> 3.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (ac)	CN	Description
5.000	72	1/3 acre lots, 30% imp, HSG B
3.500		70.00% Pervious Area
1.500		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry, Tc Estimate**

Summary for Subcatchment 14S: Chase Dr Drainge

Runoff = 1.06 cfs @ 12.08 hrs, Volume= 0.087 af, Depth> 6.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
4,900	98	Paved parking, HSG B
1,750	98	Unconnected pavement, HSG B
6,650	98	Weighted Average
6,650		100.00% Impervious Area
1,750		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment 15S: Chase Dr Drainge

Runoff = 1.06 cfs @ 12.08 hrs, Volume= 0.087 af, Depth> 6.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
4,900	98	Paved parking, HSG B
1,750	98	Unconnected pavement, HSG B
6,650	98	Weighted Average
6,650		100.00% Impervious Area
1,750		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Pond 1P: CB 3396

Inflow Area = 1.662 ac, 55.89% Impervious, Inflow Depth > 4.98" for 25-Year event
Inflow = 9.55 cfs @ 12.09 hrs, Volume= 0.689 af
Outflow = 9.51 cfs @ 12.09 hrs, Volume= 0.689 af, Atten= 0%, Lag= 0.1 min
Primary = 9.51 cfs @ 12.09 hrs, Volume= 0.689 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.08' @ 12.10 hrs Surf.Area= 44 sf Storage= 45 cf
Flood Elev= 89.86' Surf.Area= 9,251 sf Storage= 11,412 cf

Plug-Flow detention time= 0.1 min calculated for 0.689 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (802.1 - 802.0)

Volume	Invert	Avail.Storage	Storage Description
#1	10.57'	43 cf	**4.00'D x 3.45'H Vertical Cone/Cylinder**
#2	14.00'	11,369 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		11,412 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.00	5	0	0
15.00	338	172	172
16.00	1,664	1,001	1,173
17.00	4,745	3,205	4,377
18.00	9,238	6,992	11,369

Device	Routing	Invert	Outlet Devices
#1	Primary	10.57'	**15.0" Round Culvert** L= 75.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.57' / 9.10' S= 0.0196 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=9.41 cfs @ 12.09 hrs HW=14.04' TW=11.31' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 9.41 cfs @ 7.67 fps)

Summary for Pond 2P: CB #3377

Inflow Area = 0.555 ac, 40.56% Impervious, Inflow Depth > 4.31" for 25-Year event
Inflow = 2.64 cfs @ 12.11 hrs, Volume= 0.200 af
Outflow = 3.40 cfs @ 11.97 hrs, Volume= 0.200 af, Atten= 0%, Lag= 0.0 min
Primary = 3.40 cfs @ 11.97 hrs, Volume= 0.200 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.79' @ 12.12 hrs Surf.Area= 13 sf Storage= 50 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.4 min (819.2 - 817.8)

Volume	Invert	Avail.Storage	Storage Description
#1	82.80'	50 cf	**4.00'D x 4.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	82.80'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.80' / 82.70' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 11.97 hrs HW=84.21' TW=86.43' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond 3P: CB 3374

Inflow Area = 1.341 ac, 44.84% Impervious, Inflow Depth > 4.43" for 25-Year event
Inflow = 6.20 cfs @ 12.13 hrs, Volume= 0.495 af
Outflow = 6.20 cfs @ 12.13 hrs, Volume= 0.495 af, Atten= 0%, Lag= 0.0 min
Primary = 6.20 cfs @ 12.13 hrs, Volume= 0.495 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.10' @ 0.00 hrs Surf.Area= 13 sf Storage= 0 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 44 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	86.10'	44 cf	**4.00'D x 3.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	13.00'	**24.0" Round Culvert** L= 306.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.00' / 9.10' S= 0.0127 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.13 hrs HW=86.10' TW=11.25' (Dynamic Tailwater)
1=Culvert (Passes 0.00 cfs of 100.08 cfs potential flow)

Summary for Pond 4P: CB #3395

Inflow Area = 0.786 ac, 47.87% Impervious, Inflow Depth > 4.62" for 25-Year event
Inflow = 3.53 cfs @ 12.14 hrs, Volume= 0.303 af
Outflow = 3.98 cfs @ 12.14 hrs, Volume= 0.301 af, Atten= 0%, Lag= 0.2 min
Primary = 3.98 cfs @ 12.14 hrs, Volume= 0.301 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 88.16' @ 12.14 hrs Surf.Area= 13 sf Storage= 74 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= 4.9 min calculated for 0.301 af (100% of inflow)
Center-of-Mass det. time= 2.5 min (796.2 - 793.7)

Volume	Invert	Avail.Storage	Storage Description
#1	20.70'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.70'	**12.0" Round Culvert** L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.70' / 20.60' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=4.02 cfs @ 12.14 hrs HW=88.16' TW=87.03' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.02 cfs @ 5.12 fps)

Summary for Pond 6P: CB 611

Inflow Area = 3.002 ac, 50.95% Impervious, Inflow Depth > 4.73" for 25-Year event
Inflow = 15.39 cfs @ 12.11 hrs, Volume= 1.185 af
Outflow = 15.40 cfs @ 12.11 hrs, Volume= 1.185 af, Atten= 0%, Lag= 0.0 min
Primary = 15.40 cfs @ 12.11 hrs, Volume= 1.185 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 11.34' @ 12.11 hrs Surf.Area= 13 sf Storage= 29 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 112 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.1 min (805.7 - 805.6)

Volume	Invert	Avail.Storage	Storage Description
#1	9.00'	112 cf	**4.00'D x 8.91'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	9.00'	**24.0" Round Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 9.00' / 8.90' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=15.34 cfs @ 12.11 hrs HW=11.33' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 15.34 cfs @ 5.27 fps)

Summary for Pond 7P: DMH #1

Inflow Area = 0.555 ac, 40.56% Impervious, Inflow Depth > 4.32" for 25-Year event
Inflow = 3.40 cfs @ 11.97 hrs, Volume= 0.200 af
Outflow = 3.39 cfs @ 11.97 hrs, Volume= 0.197 af, Atten= 0%, Lag= 0.0 min
Primary = 3.39 cfs @ 11.97 hrs, Volume= 0.197 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 94.04' @ 11.97 hrs Surf.Area= 13 sf Storage= 131 cf

Plug-Flow detention time= 13.4 min calculated for 0.197 af (98% of inflow)
Center-of-Mass det. time= 4.4 min (823.6 - 819.2)

Volume	Invert	Avail.Storage	Storage Description
#1	13.52'	131 cf	**4.00'D x 10.45'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	13.52'	**15.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.52' / 13.30' S= 0.0058 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.38 cfs @ 11.97 hrs HW=86.43' TW=86.10' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 3.38 cfs @ 2.76 fps)

Summary for Pond 8P: CB #23

Inflow Area = 0.786 ac, 47.87% Impervious, Inflow Depth > 4.59" for 25-Year event
Inflow = 3.56 cfs @ 12.13 hrs, Volume= 0.300 af
Outflow = 3.66 cfs @ 12.13 hrs, Volume= 0.298 af, Atten= 0%, Lag= 0.0 min
Primary = 3.66 cfs @ 12.13 hrs, Volume= 0.298 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.18' @ 12.13 hrs Surf.Area= 13 sf Storage= 61 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 61 cf

Plug-Flow detention time= 6.8 min calculated for 0.298 af (99% of inflow)
Center-of-Mass det. time= 3.1 min (802.0 - 798.9)

Volume	Invert	Avail.Storage	Storage Description
#1	20.00'	61 cf	**4.00'D x 4.88'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.00'	**24.0" Round Culvert** L= 210.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.00' / 13.10' S= 0.0329 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=3.65 cfs @ 12.13 hrs HW=86.18' TW=86.10' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 3.65 cfs @ 1.16 fps)

Summary for Pond 9P: DMH #5097

Inflow Area = 0.786 ac, 47.87% Impervious, Inflow Depth > 4.61" for 25-Year event
Inflow = 3.98 cfs @ 12.14 hrs, Volume= 0.301 af
Outflow = 3.56 cfs @ 12.13 hrs, Volume= 0.300 af, Atten= 10%, Lag= 0.0 min
Primary = 3.56 cfs @ 12.13 hrs, Volume= 0.300 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 87.05' @ 12.13 hrs Surf.Area= 13 sf Storage= 79 cf

Plug-Flow detention time= 5.3 min calculated for 0.300 af (100% of inflow)
Center-of-Mass det. time= 2.6 min (798.9 - 796.2)

Volume	Invert	Avail.Storage	Storage Description
#1	20.53'	79 cf	**4.00'D x 6.25'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.53'	**12.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.53' / 20.10' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=3.53 cfs @ 12.13 hrs HW=87.05' TW=86.18' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.53 cfs @ 4.50 fps)

Summary for Pond 10P: CB #13929

Inflow Area = 0.412 ac, 77.88% Impervious, Inflow Depth > 5.88" for 25-Year event
Inflow = 2.36 cfs @ 12.11 hrs, Volume= 0.202 af
Outflow = 2.36 cfs @ 12.11 hrs, Volume= 0.202 af, Atten= 0%, Lag= 0.0 min
Primary = 2.36 cfs @ 12.11 hrs, Volume= 0.202 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 37.36' @ 12.11 hrs Surf.Area= 13 sf Storage= 7 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 89 cf

Plug-Flow detention time= 0.2 min calculated for 0.202 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (776.5 - 776.3)

Volume	Invert	Avail.Storage	Storage Description
#1	36.76'	89 cf	**4.00'D x 7.10'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	36.76'	**30.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.76' / 35.32' S= 0.0240 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

Primary OutFlow Max=2.35 cfs @ 12.11 hrs HW=37.36' TW=35.72' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.35 cfs @ 2.63 fps)

Summary for Pond 11P: CB #22361

Inflow Area = 0.412 ac, 77.88% Impervious, Inflow Depth > 5.88" for 25-Year event
Inflow = 2.36 cfs @ 12.11 hrs, Volume= 0.202 af
Outflow = 2.36 cfs @ 12.11 hrs, Volume= 0.202 af, Atten= 0%, Lag= 0.0 min
Primary = 2.36 cfs @ 12.11 hrs, Volume= 0.202 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 35.72' @ 12.11 hrs Surf.Area= 13 sf Storage= 7 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 73 cf

Plug-Flow detention time= 0.2 min calculated for 0.202 af (100% of inflow)

Center-of-Mass det. time= 0.1 min (776.6 - 776.5)

Volume	Invert	Avail.Storage	Storage Description
#1	35.12'	73 cf	**4.00'D x 5.80'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	35.12'	**30.0" Round Culvert** L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.12' / 27.19' S= 0.0396 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=2.35 cfs @ 12.11 hrs HW=35.72' TW=28.73' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.35 cfs @ 2.63 fps)

Summary for Pond 12P: DMH #22364

Inflow Area = 5.412 ac, 33.65% Impervious, Inflow Depth > 4.03" for 25-Year event
Inflow = 19.05 cfs @ 12.20 hrs, Volume= 1.817 af
Outflow = 19.05 cfs @ 12.20 hrs, Volume= 1.817 af, Atten= 0%, Lag= 0.0 min
Primary = 19.05 cfs @ 12.20 hrs, Volume= 1.817 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 28.94' @ 12.20 hrs Surf.Area= 13 sf Storage= 24 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 79 cf

Plug-Flow detention time= 0.1 min calculated for 1.817 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (826.3 - 826.2)

Volume	Invert	Avail.Storage	Storage Description
#1	27.02'	79 cf	**4.00'D x 6.30'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	27.02'	**30.0" Round Culvert** L= 98.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.02' / 23.54' S= 0.0355 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=19.04 cfs @ 12.20 hrs HW=28.94' TW=24.95' (Dynamic Tailwater)
1=Culvert (Inlet Controls 19.04 cfs @ 4.71 fps)

Summary for Pond 13P: CB #22362

Inflow Area = 5.565 ac, 35.47% Impervious, Inflow Depth > 4.11" for 25-Year event
Inflow = 19.66 cfs @ 12.19 hrs, Volume= 1.904 af
Outflow = 19.66 cfs @ 12.19 hrs, Volume= 1.904 af, Atten= 0%, Lag= 0.0 min
Primary = 19.66 cfs @ 12.19 hrs, Volume= 1.904 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.95' @ 12.19 hrs Surf.Area= 13 sf Storage= 21 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 82 cf

Plug-Flow detention time= 0.1 min calculated for 1.904 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (822.5 - 822.5)

Volume	Invert	Avail.Storage	Storage Description
#1	23.29'	82 cf	**4.00'D x 6.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	23.29'	**30.0" Round Culvert** L= 330.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 23.29' / 11.72' S= 0.0351 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=19.65 cfs @ 12.19 hrs HW=24.95' TW=13.23' (Dynamic Tailwater)
1=Culvert (Outlet Controls 19.65 cfs @ 8.08 fps)

Summary for Pond 14P: CB #22363

Inflow Area = 0.153 ac,100.00% Impervious, Inflow Depth > 6.83" for 25-Year event
Inflow = 1.06 cfs @ 12.08 hrs, Volume= 0.087 af
Outflow = 1.06 cfs @ 12.08 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.1 min
Primary = 1.06 cfs @ 12.08 hrs, Volume= 0.087 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.25' @ 12.08 hrs Surf.Area= 13 sf Storage= 6 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.4 min calculated for 0.087 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (742.5 - 742.3)

Volume	Invert	Avail.Storage	Storage Description
#1	24.76'	63 cf	**4.00'D x 5.05'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	24.76'	**15.0" Round Culvert** L= 28.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 24.76' / 24.49' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.06 cfs @ 12.08 hrs HW=25.25' TW=24.69' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.06 cfs @ 3.52 fps)

Summary for Pond 15P: CB #3397

Inflow Area = 0.153 ac,100.00% Impervious, Inflow Depth > 6.83" for 25-Year event
Inflow = 1.06 cfs @ 12.08 hrs, Volume= 0.087 af
Outflow = 1.06 cfs @ 12.08 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.1 min
Primary = 1.06 cfs @ 12.08 hrs, Volume= 0.087 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 25.25' @ 12.08 hrs Surf.Area= 13 sf Storage= 6 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.4 min calculated for 0.087 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (742.5 - 742.3)

Volume	Invert	Avail.Storage	Storage Description
#1	24.76'	63 cf	**4.00'D x 5.05'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	24.76'	**15.0" Round Culvert** L= 28.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 24.76' / 24.49' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.06 cfs @ 12.08 hrs HW=25.25' TW=12.98' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.06 cfs @ 3.52 fps)

Summary for Pond 16P: CB #3398

Inflow Area = 5.717 ac, 37.19% Impervious, Inflow Depth > 4.18" for 25-Year event
Inflow = 20.28 cfs @ 12.19 hrs, Volume= 1.991 af
Outflow = 20.28 cfs @ 12.19 hrs, Volume= 1.991 af, Atten= 0%, Lag= 0.0 min
Primary = 20.28 cfs @ 12.19 hrs, Volume= 1.991 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.23' @ 12.19 hrs Surf.Area= 13 sf Storage= 21 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= 0.0 min calculated for 1.991 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (819.0 - 819.0)

Volume	Invert	Avail.Storage	Storage Description
#1	11.52'	74 cf	**4.00'D x 5.90'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	11.52'	**30.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 11.52' / 9.62' S= 0.0475 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=20.27 cfs @ 12.19 hrs HW=13.23' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 20.27 cfs @ 8.01 fps)

Summary for Link P100: POA #100

Inflow Area = 3.002 ac, 50.95% Impervious, Inflow Depth > 4.73" for 25-Year event
Inflow = 15.40 cfs @ 12.11 hrs, Volume= 1.185 af
Primary = 15.40 cfs @ 12.11 hrs, Volume= 1.185 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link P200: POA #200 (CB 3399)

Inflow Area = 5.717 ac, 37.19% Impervious, Inflow Depth > 4.18" for 25-Year event
Inflow = 20.28 cfs @ 12.19 hrs, Volume= 1.991 af
Primary = 20.28 cfs @ 12.19 hrs, Volume= 1.991 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
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 1S: End of Parking Lot Runoff Area=72,375 sf 55.89% Impervious Runoff Depth>6.29"
Flow Length=480' Tc=6.0 min CN=82 Runoff=11.95 cfs 0.871 af

Subcatchment 2S: Front of Church Runoff Area=24,185 sf 40.56% Impervious Runoff Depth>5.57"
Flow Length=320' Tc=7.8 min CN=76 Runoff=3.39 cfs 0.258 af

Subcatchment 3S: Church Roof Drains Runoff Area=10,350 sf 100.00% Impervious Runoff Depth>8.21"
Flow Length=430' Tc=9.8 min CN=98 Runoff=1.74 cfs 0.163 af

Subcatchment 4S: Side/Back of Church Runoff Area=23,870 sf 25.26% Impervious Runoff Depth>4.85"
Flow Length=430' Tc=9.8 min CN=70 Runoff=2.75 cfs 0.222 af

Subcatchment 5S: Front of church drain to Runoff Area=13,200 sf 69.92% Impervious Runoff Depth>6.89"
Flow Length=100' Slope=0.0200 '/' Tc=9.7 min CN=87 Runoff=2.06 cfs 0.174 af

Subcatchment 10S: Chase Dr Drainge Runoff Area=4,750 sf 100.00% Impervious Runoff Depth>8.21"
Tc=6.0 min CN=98 Runoff=0.91 cfs 0.075 af

Subcatchment 12S: Brigham Hill Runoff Area=5.000 ac 30.00% Impervious Runoff Depth>5.09"
Tc=15.0 min CN=72 Runoff=22.60 cfs 2.119 af

Subcatchment 14S: Chase Dr Drainge Runoff Area=6,650 sf 100.00% Impervious Runoff Depth>8.21"
Tc=6.0 min CN=98 Runoff=1.27 cfs 0.104 af

Subcatchment 15S: Chase Dr Drainge Runoff Area=6,650 sf 100.00% Impervious Runoff Depth>8.21"
Tc=6.0 min CN=98 Runoff=1.27 cfs 0.104 af

Pond 1P: CB 3396 Peak Elev=15.27' Storage=356 cf Inflow=11.95 cfs 0.871 af
15.0" Round Culvert n=0.012 L=75.0' S=0.0196 '/' Outflow=10.67 cfs 0.871 af

Pond 2P: CB #3377 Peak Elev=87.24' Storage=50 cf Inflow=3.39 cfs 0.258 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=3.43 cfs 0.258 af

Pond 3P: CB 3374 Peak Elev=86.10' Storage=0 cf Inflow=8.08 cfs 0.635 af
24.0" Round Culvert n=0.012 L=306.0' S=0.0127 '/' Outflow=8.08 cfs 0.635 af

Pond 4P: CB #3395 Peak Elev=89.11' Storage=74 cf Inflow=4.49 cfs 0.384 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0200 '/' Outflow=4.68 cfs 0.383 af

Pond 6P: CB 611 Peak Elev=11.77' Storage=35 cf Inflow=18.76 cfs 1.506 af
24.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=18.51 cfs 1.506 af

Pond 7P: DMH #1 Peak Elev=86.44' Storage=131 cf Inflow=3.43 cfs 0.258 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0058 '/' Outflow=3.44 cfs 0.255 af

Pond 8P: CB #23 Peak Elev=86.24' Storage=61 cf Inflow=4.83 cfs 0.382 af
24.0" Round Culvert n=0.012 L=210.0' S=0.0329 '/' Outflow=4.85 cfs 0.380 af

Pond 9P: DMH #5097 Peak Elev=87.83' Storage=79 cf Inflow=4.68 cfs 0.383 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0096 '/' Outflow=4.83 cfs 0.382 af

Pond 10P: CB #13929 Peak Elev=37.42' Storage=8 cf Inflow=2.88 cfs 0.249 af
30.0" Round Culvert n=0.012 L=60.0' S=0.0240 '/' Outflow=2.88 cfs 0.249 af

Pond 11P: CB #22361 Peak Elev=35.78' Storage=8 cf Inflow=2.88 cfs 0.249 af
30.0" Round Culvert n=0.024 L=200.0' S=0.0396 '/' Outflow=2.88 cfs 0.249 af

Pond 12P: DMH #22364 Peak Elev=29.36' Storage=29 cf Inflow=24.83 cfs 2.368 af
30.0" Round Culvert n=0.024 L=98.0' S=0.0355 '/' Outflow=24.83 cfs 2.367 af

Pond 13P: CB #22362 Peak Elev=25.24' Storage=25 cf Inflow=25.56 cfs 2.472 af
30.0" Round Culvert n=0.024 L=330.0' S=0.0351 '/' Outflow=25.56 cfs 2.472 af

Pond 14P: CB #22363 Peak Elev=25.35' Storage=7 cf Inflow=1.27 cfs 0.104 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0096 '/' Outflow=1.27 cfs 0.104 af

Pond 15P: CB #3397 Peak Elev=25.30' Storage=7 cf Inflow=1.27 cfs 0.104 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0096 '/' Outflow=1.27 cfs 0.104 af

Pond 16P: CB #3398 Peak Elev=13.55' Storage=25 cf Inflow=26.31 cfs 2.576 af
30.0" Round Culvert n=0.024 L=40.0' S=0.0475 '/' Outflow=26.31 cfs 2.576 af

Link P100: POA #100 Inflow=18.51 cfs 1.506 af
Primary=18.51 cfs 1.506 af

Link P200: POA #200 (CB 3399) Inflow=26.31 cfs 2.576 af
Primary=26.31 cfs 2.576 af

Summary for Subcatchment 1S: End of Parking Lot

Runoff = 11.95 cfs @ 12.09 hrs, Volume= 0.871 af, Depth> 6.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
40,288	98	Paved parking, HSG B
31,927	61	>75% Grass cover, Good, HSG B
160	98	Unconnected pavement, HSG B
72,375	82	Weighted Average
31,927		44.11% Pervious Area
40,448		55.89% Impervious Area
160		0.40% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	200	0.0500	2.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.25"
1.7	280	0.0330	2.72		**Shallow Concentrated Flow, swale** Grassed Waterway Kv= 15.0 fps
3.2	480	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S: Front of Church

Runoff = 3.39 cfs @ 12.11 hrs, Volume= 0.258 af, Depth> 5.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
2,480	98	Roofs, HSG B
6,090	98	Paved parking, HSG B
1,240	98	Unconnected pavement, HSG B
14,375	61	>75% Grass cover, Good, HSG B
24,185	76	Weighted Average
14,375		59.44% Pervious Area
9,810		40.56% Impervious Area
1,240		12.64% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	100	0.0500	0.25		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
0.5	120	0.0700	3.97		**Shallow Concentrated Flow, sheet** Grassed Waterway Kv= 15.0 fps
0.6	100	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
7.8	320	Total			

Summary for Subcatchment 3S: Church Roof Drains

Runoff = 1.74 cfs @ 12.13 hrs, Volume= 0.163 af, Depth> 8.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
10,350	98	Roofs, HSG B
10,350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0300	0.20		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
1.5	330	0.0600	3.67		**Shallow Concentrated Flow, shallow** Grassed Waterway Kv= 15.0 fps
9.8	430	Total			

Summary for Subcatchment 4S: Side/Back of Church

Runoff = 2.75 cfs @ 12.14 hrs, Volume= 0.222 af, Depth> 4.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
1,840	98	Roofs, HSG B
2,017	98	Roofs, HSG B
1,458	98	Paved parking, HSG C
715	98	Unconnected pavement, HSG C
17,840	61	>75% Grass cover, Good, HSG B
23,870	70	Weighted Average
17,840		74.74% Pervious Area
6,030		25.26% Impervious Area
715		11.86% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0300	0.20		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
1.5	330	0.0600	3.67		**Shallow Concentrated Flow, shallow** Grassed Waterway Kv= 15.0 fps
9.8	430	Total			

Summary for Subcatchment 5S: Front of church drain to Chase Dr

Runoff = 2.06 cfs @ 12.13 hrs, Volume= 0.174 af, Depth> 6.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
3,970	61	>75% Grass cover, Good, HSG B
5,880	98	Roofs, HSG B
3,350	98	Unconnected pavement, HSG B
13,200	87	Weighted Average
3,970		30.08% Pervious Area
9,230		69.92% Impervious Area
3,350		36.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0200	0.17		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"

Summary for Subcatchment 10S: Chase Dr Drainge

Runoff = 0.91 cfs @ 12.08 hrs, Volume= 0.075 af, Depth> 8.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
3,500	98	Paved parking, HSG B
1,250	98	Unconnected pavement, HSG B
4,750	98	Weighted Average
4,750		100.00% Impervious Area
1,250		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment 12S: Brigham Hill

Runoff = 22.60 cfs @ 12.21 hrs, Volume= 2.119 af, Depth> 5.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (ac)	CN	Description
5.000	72	1/3 acre lots, 30% imp, HSG B
3.500		70.00% Pervious Area
1.500		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry, Tc Estimate**

Summary for Subcatchment 14S: Chase Dr Drainge

Runoff = 1.27 cfs @ 12.08 hrs, Volume= 0.104 af, Depth> 8.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
4,900	98	Paved parking, HSG B
1,750	98	Unconnected pavement, HSG B
6,650	98	Weighted Average
6,650		100.00% Impervious Area
1,750		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment 15S: Chase Dr Drainge

Runoff = 1.27 cfs @ 12.08 hrs, Volume= 0.104 af, Depth> 8.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
4,900	98	Paved parking, HSG B
1,750	98	Unconnected pavement, HSG B
6,650	98	Weighted Average
6,650		100.00% Impervious Area
1,750		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Pond 1P: CB 3396

Inflow Area = 1.662 ac, 55.89% Impervious, Inflow Depth > 6.29" for 50-Year event
Inflow = 11.95 cfs @ 12.09 hrs, Volume= 0.871 af
Outflow = 10.67 cfs @ 12.13 hrs, Volume= 0.871 af, Atten= 11%, Lag= 2.7 min
Primary = 10.67 cfs @ 12.13 hrs, Volume= 0.871 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 15.27' @ 12.13 hrs Surf.Area= 711 sf Storage= 356 cf
Flood Elev= 89.86' Surf.Area= 9,251 sf Storage= 11,412 cf

Plug-Flow detention time= 0.2 min calculated for 0.871 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (795.6 - 795.5)

Volume	Invert	Avail.Storage	Storage Description
#1	10.57'	43 cf	**4.00'D x 3.45'H Vertical Cone/Cylinder**
#2	14.00'	11,369 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		11,412 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.00	5	0	0
15.00	338	172	172
16.00	1,664	1,001	1,173
17.00	4,745	3,205	4,377
18.00	9,238	6,992	11,369

Device	Routing	Invert	Outlet Devices
#1	Primary	10.57'	**15.0" Round Culvert** L= 75.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.57' / 9.10' S= 0.0196 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=10.66 cfs @ 12.13 hrs HW=15.27' TW=11.76' (Dynamic Tailwater)
1=Culvert (Outlet Controls 10.66 cfs @ 8.69 fps)

Summary for Pond 2P: CB #3377

Inflow Area = 0.555 ac, 40.56% Impervious, Inflow Depth > 5.57" for 50-Year event
Inflow = 3.39 cfs @ 12.11 hrs, Volume= 0.258 af
Outflow = 3.43 cfs @ 12.12 hrs, Volume= 0.258 af, Atten= 0%, Lag= 0.6 min
Primary = 3.43 cfs @ 12.12 hrs, Volume= 0.258 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 87.24' @ 12.12 hrs Surf.Area= 13 sf Storage= 50 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.4 min (811.9 - 810.5)

Volume	Invert	Avail.Storage	Storage Description
#1	82.80'	50 cf	**4.00'D x 4.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	82.80'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.80' / 82.70' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=3.38 cfs @ 12.12 hrs HW=87.24' TW=86.44' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.38 cfs @ 4.30 fps)

Summary for Pond 3P: CB 3374

Inflow Area = 1.341 ac, 44.84% Impervious, Inflow Depth > 5.68" for 50-Year event
Inflow = 8.08 cfs @ 12.13 hrs, Volume= 0.635 af
Outflow = 8.08 cfs @ 12.13 hrs, Volume= 0.635 af, Atten= 0%, Lag= 0.0 min
Primary = 8.08 cfs @ 12.13 hrs, Volume= 0.635 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.10' @ 0.00 hrs Surf.Area= 13 sf Storage= 0 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 44 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	86.10'	44 cf	**4.00'D x 3.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	13.00'	**24.0" Round Culvert** L= 306.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.00' / 9.10' S= 0.0127 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.13 hrs HW=86.10' TW=11.76' (Dynamic Tailwater)
1=Culvert (Passes 0.00 cfs of 99.74 cfs potential flow)

Summary for Pond 4P: CB #3395

Inflow Area = 0.786 ac, 47.87% Impervious, Inflow Depth > 5.87" for 50-Year event
Inflow = 4.49 cfs @ 12.14 hrs, Volume= 0.384 af
Outflow = 4.68 cfs @ 12.13 hrs, Volume= 0.383 af, Atten= 0%, Lag= 0.0 min
Primary = 4.68 cfs @ 12.13 hrs, Volume= 0.383 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 89.11' @ 12.14 hrs Surf.Area= 13 sf Storage= 74 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= 4.1 min calculated for 0.383 af (100% of inflow)
Center-of-Mass det. time= 2.1 min (792.3 - 790.2)

Volume	Invert	Avail.Storage	Storage Description
#1	20.70'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.70'	**12.0" Round Culvert** L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.70' / 20.60' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=4.01 cfs @ 12.13 hrs HW=88.94' TW=87.82' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.01 cfs @ 5.10 fps)

Summary for Pond 6P: CB 611

Inflow Area = 3.002 ac, 50.95% Impervious, Inflow Depth > 6.02" for 50-Year event
Inflow = 18.76 cfs @ 12.13 hrs, Volume= 1.506 af
Outflow = 18.51 cfs @ 12.13 hrs, Volume= 1.506 af, Atten= 1%, Lag= 0.0 min
Primary = 18.51 cfs @ 12.13 hrs, Volume= 1.506 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 11.77' @ 12.13 hrs Surf.Area= 13 sf Storage= 35 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 112 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.1 min (799.4 - 799.3)

Volume	Invert	Avail.Storage	Storage Description
#1	9.00'	112 cf	**4.00'D x 8.91'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	9.00'	**24.0" Round Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 9.00' / 8.90' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=18.48 cfs @ 12.13 hrs HW=11.76' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 18.48 cfs @ 5.88 fps)

Summary for Pond 7P: DMH #1

Inflow Area = 0.555 ac, 40.56% Impervious, Inflow Depth > 5.58" for 50-Year event
Inflow = 3.43 cfs @ 12.12 hrs, Volume= 0.258 af
Outflow = 3.44 cfs @ 12.12 hrs, Volume= 0.255 af, Atten= 0%, Lag= 0.0 min
Primary = 3.44 cfs @ 12.12 hrs, Volume= 0.255 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.44' @ 12.12 hrs Surf.Area= 13 sf Storage= 131 cf

Plug-Flow detention time= 11.0 min calculated for 0.255 af (99% of inflow)
Center-of-Mass det. time= 3.8 min (815.7 - 811.9)

Volume	Invert	Avail.Storage	Storage Description
#1	13.52'	131 cf	**4.00'D x 10.45'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	13.52'	**15.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.52' / 13.30' S= 0.0058 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.44 cfs @ 12.12 hrs HW=86.44' TW=86.10' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.44 cfs @ 2.80 fps)

Summary for Pond 8P: CB #23

Inflow Area = 0.786 ac, 47.87% Impervious, Inflow Depth > 5.83" for 50-Year event
Inflow = 4.83 cfs @ 12.13 hrs, Volume= 0.382 af
Outflow = 4.85 cfs @ 12.13 hrs, Volume= 0.380 af, Atten= 0%, Lag= 0.0 min
Primary = 4.85 cfs @ 12.13 hrs, Volume= 0.380 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.24' @ 12.13 hrs Surf.Area= 13 sf Storage= 61 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 61 cf

Plug-Flow detention time= 5.6 min calculated for 0.380 af (99% of inflow)
Center-of-Mass det. time= 2.3 min (796.8 - 794.5)

Volume	Invert	Avail.Storage	Storage Description
#1	20.00'	61 cf	**4.00'D x 4.88'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.00'	**24.0" Round Culvert** L= 210.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.00' / 13.10' S= 0.0329 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=4.84 cfs @ 12.13 hrs HW=86.24' TW=86.10' (Dynamic Tailwater)
1=Culvert (Outlet Controls 4.84 cfs @ 1.54 fps)

Summary for Pond 9P: DMH #5097

Inflow Area = 0.786 ac, 47.87% Impervious, Inflow Depth > 5.85" for 50-Year event
Inflow = 4.68 cfs @ 12.13 hrs, Volume= 0.383 af
Outflow = 4.83 cfs @ 12.13 hrs, Volume= 0.382 af, Atten= 0%, Lag= 0.0 min
Primary = 4.83 cfs @ 12.13 hrs, Volume= 0.382 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 87.83' @ 12.13 hrs Surf.Area= 13 sf Storage= 79 cf

Plug-Flow detention time= 4.4 min calculated for 0.382 af (100% of inflow)
Center-of-Mass det. time= 2.2 min (794.5 - 792.3)

Volume	Invert	Avail.Storage	Storage Description
#1	20.53'	79 cf	**4.00'D x 6.25'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.53'	**12.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.53' / 20.10' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=4.76 cfs @ 12.13 hrs HW=87.82' TW=86.24' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.76 cfs @ 6.06 fps)

Summary for Pond 10P: CB #13929

Inflow Area = 0.412 ac, 77.88% Impervious, Inflow Depth > 7.24" for 50-Year event
Inflow = 2.88 cfs @ 12.11 hrs, Volume= 0.249 af
Outflow = 2.88 cfs @ 12.11 hrs, Volume= 0.249 af, Atten= 0%, Lag= 0.0 min
Primary = 2.88 cfs @ 12.11 hrs, Volume= 0.249 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 37.42' @ 12.11 hrs Surf.Area= 13 sf Storage= 8 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 89 cf

Plug-Flow detention time= 0.2 min calculated for 0.248 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (772.1 - 771.9)

Volume	Invert	Avail.Storage	Storage Description
#1	36.76'	89 cf	**4.00'D x 7.10'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	36.76'	**30.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.76' / 35.32' S= 0.0240 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

Primary OutFlow Max=2.87 cfs @ 12.11 hrs HW=37.42' TW=35.78' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.87 cfs @ 2.77 fps)

Summary for Pond 11P: CB #22361

Inflow Area = 0.412 ac, 77.88% Impervious, Inflow Depth > 7.24" for 50-Year event
Inflow = 2.88 cfs @ 12.11 hrs, Volume= 0.249 af
Outflow = 2.88 cfs @ 12.11 hrs, Volume= 0.249 af, Atten= 0%, Lag= 0.0 min
Primary = 2.88 cfs @ 12.11 hrs, Volume= 0.249 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 35.78' @ 12.11 hrs Surf.Area= 13 sf Storage= 8 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 73 cf

Plug-Flow detention time= 0.2 min calculated for 0.249 af (100% of inflow)

Center-of-Mass det. time= 0.1 min (772.2 - 772.1)

Volume	Invert	Avail.Storage	Storage Description
#1	35.12'	73 cf	**4.00'D x 5.80'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	35.12'	**30.0" Round Culvert** L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.12' / 27.19' S= 0.0396 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=2.87 cfs @ 12.11 hrs HW=35.78' TW=29.06' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.87 cfs @ 2.77 fps)

Summary for Pond 12P: DMH #22364

Inflow Area = 5.412 ac, 33.65% Impervious, Inflow Depth > 5.25" for 50-Year event
Inflow = 24.83 cfs @ 12.19 hrs, Volume= 2.368 af
Outflow = 24.83 cfs @ 12.19 hrs, Volume= 2.367 af, Atten= 0%, Lag= 0.0 min
Primary = 24.83 cfs @ 12.19 hrs, Volume= 2.367 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 29.36' @ 12.19 hrs Surf.Area= 13 sf Storage= 29 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 79 cf

Plug-Flow detention time= 0.1 min calculated for 2.367 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (819.3 - 819.2)

Volume	Invert	Avail.Storage	Storage Description
#1	27.02'	79 cf	**4.00'D x 6.30'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	27.02'	**30.0" Round Culvert** L= 98.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.02' / 23.54' S= 0.0355 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=24.82 cfs @ 12.19 hrs HW=29.35' TW=25.24' (Dynamic Tailwater)
1=Culvert (Inlet Controls 24.82 cfs @ 5.20 fps)

Summary for Pond 13P: CB #22362

Inflow Area = 5.565 ac, 35.47% Impervious, Inflow Depth > 5.33" for 50-Year event
Inflow = 25.56 cfs @ 12.19 hrs, Volume= 2.472 af
Outflow = 25.56 cfs @ 12.19 hrs, Volume= 2.472 af, Atten= 0%, Lag= 0.0 min
Primary = 25.56 cfs @ 12.19 hrs, Volume= 2.472 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.24' @ 12.19 hrs Surf.Area= 13 sf Storage= 25 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 82 cf

Plug-Flow detention time= 0.0 min calculated for 2.472 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (816.0 - 815.9)

Volume	Invert	Avail.Storage	Storage Description
#1	23.29'	82 cf	**4.00'D x 6.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	23.29'	**30.0" Round Culvert** L= 330.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 23.29' / 11.72' S= 0.0351 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=25.55 cfs @ 12.19 hrs HW=25.24' TW=13.55' (Dynamic Tailwater)
1=Culvert (Outlet Controls 25.55 cfs @ 8.55 fps)

Summary for Pond 14P: CB #22363

Inflow Area = 0.153 ac,100.00% Impervious, Inflow Depth > 8.21" for 50-Year event
Inflow = 1.27 cfs @ 12.08 hrs, Volume= 0.104 af
Outflow = 1.27 cfs @ 12.08 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.0 min
Primary = 1.27 cfs @ 12.08 hrs, Volume= 0.104 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.35' @ 12.17 hrs Surf.Area= 13 sf Storage= 7 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.3 min calculated for 0.104 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (740.2 - 740.0)

Volume	Invert	Avail.Storage	Storage Description
#1	24.76'	63 cf	**4.00'D x 5.05'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	24.76'	**15.0" Round Culvert** L= 28.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 24.76' / 24.49' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.23 cfs @ 12.08 hrs HW=25.30' TW=24.92' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.23 cfs @ 3.56 fps)

Summary for Pond 15P: CB #3397

Inflow Area = 0.153 ac,100.00% Impervious, Inflow Depth > 8.21" for 50-Year event
Inflow = 1.27 cfs @ 12.08 hrs, Volume= 0.104 af
Outflow = 1.27 cfs @ 12.08 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.0 min
Primary = 1.27 cfs @ 12.08 hrs, Volume= 0.104 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 25.30' @ 12.08 hrs Surf.Area= 13 sf Storage= 7 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.3 min calculated for 0.104 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (740.2 - 740.0)

Volume	Invert	Avail.Storage	Storage Description
#1	24.76'	63 cf	**4.00'D x 5.05'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	24.76'	**15.0" Round Culvert** L= 28.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 24.76' / 24.49' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.27 cfs @ 12.08 hrs HW=25.30' TW=13.24' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.27 cfs @ 3.66 fps)

Summary for Pond 16P: CB #3398

Inflow Area = 5.717 ac, 37.19% Impervious, Inflow Depth > 5.41" for 50-Year event
Inflow = 26.31 cfs @ 12.19 hrs, Volume= 2.576 af
Outflow = 26.31 cfs @ 12.19 hrs, Volume= 2.576 af, Atten= 0%, Lag= 0.0 min
Primary = 26.31 cfs @ 12.19 hrs, Volume= 2.576 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.55' @ 12.19 hrs Surf.Area= 13 sf Storage= 25 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= 0.0 min calculated for 2.576 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (812.9 - 812.9)

Volume	Invert	Avail.Storage	Storage Description
#1	11.52'	74 cf	**4.00'D x 5.90'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	11.52'	**30.0" Round Culvert** L= 40.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 11.52' / 9.62' S= 0.0475 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=26.30 cfs @ 12.19 hrs HW=13.55' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 26.30 cfs @ 8.42 fps)

Summary for Link P100: POA #100

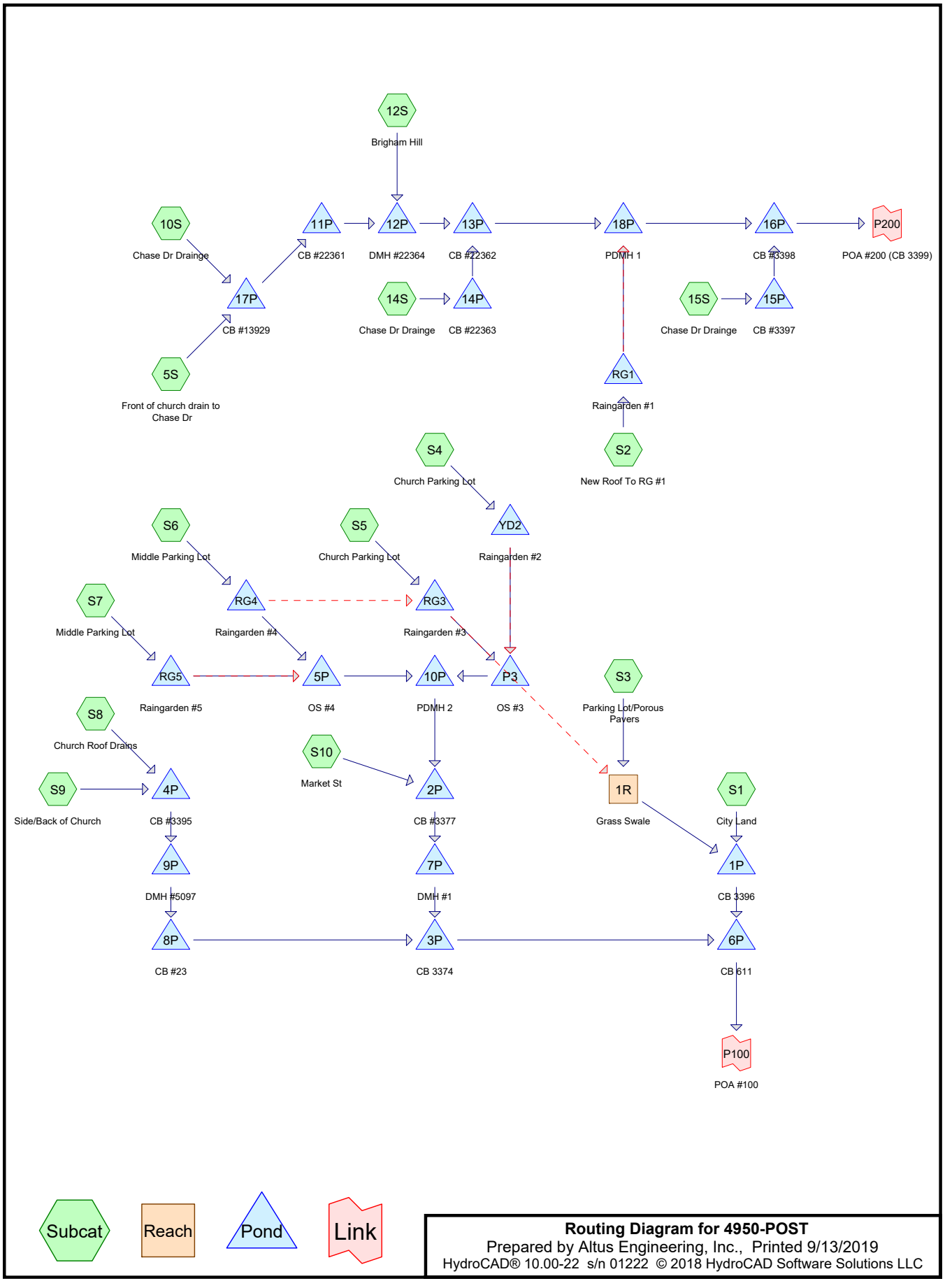
Inflow Area = 3.002 ac, 50.95% Impervious, Inflow Depth > 6.02" for 50-Year event
Inflow = 18.51 cfs @ 12.13 hrs, Volume= 1.506 af
Primary = 18.51 cfs @ 12.13 hrs, Volume= 1.506 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link P200: POA #200 (CB 3399)

Inflow Area = 5.717 ac, 37.19% Impervious, Inflow Depth > 5.41" for 50-Year event
Inflow = 26.31 cfs @ 12.19 hrs, Volume= 2.576 af
Primary = 26.31 cfs @ 12.19 hrs, Volume= 2.576 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs



Routing Diagram for 4950-POST
Prepared by Altus Engineering, Inc., Printed 9/13/2019
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
5.000	72	1/3 acre lots, 30% imp, HSG B (12S)
1.565	61	>75% Grass cover, Good, HSG B (5S, S1, S10, S2, S3, S4, S5, S6, S7, S9)
1.003	98	Paved parking, HSG B (10S, 14S, 15S, S1, S3, S4, S5, S6, S7)
0.033	98	Paved parking, HSG C (S9)
0.046	85	Porous Pavers, HSG B (S3)
0.689	98	Roofs, HSG B (5S, S10, S2, S7, S8, S9)
0.330	98	Unconnected pavement, HSG B (5S, 10S, 14S, 15S, S1, S10, S2, S3, S4, S5, S6, S7)
0.054	98	Unconnected pavement, HSG C (S9)

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
8.633	HSG B	5S, 10S, 12S, 14S, 15S, S1, S10, S2, S3, S4, S5, S6, S7, S8, S9
0.088	HSG C	S9
0.000	HSG D	
0.000	Other	

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	5.000	0.000	0.000	0.000	5.000	1/3 acre lots, 30% imp	12S
0.000	1.565	0.000	0.000	0.000	1.565	>75% Grass cover, Good	5S, S1, S10, S2, S3, S4, S5, S6, S7, S9
0.000	1.003	0.033	0.000	0.000	1.037	Paved parking	10S, 14S, 15S, S1, S3, S4, S5, S6, S7, S9
0.000	0.046	0.000	0.000	0.000	0.046	Porous Pavers	S3
0.000	0.689	0.000	0.000	0.000	0.689	Roofs	5S, S10, S2, S7, S8, S9
0.000	0.330	0.054	0.000	0.000	0.384	Unconnected pavement	5S, 10S, 14S, 15S, S1, S10, S2, S3, S4, S5, S6, S7, S9

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	10.57	9.10	75.0	0.0196	0.012	15.0	0.0	0.0
2	2P	82.80	82.70	10.0	0.0100	0.012	12.0	0.0	0.0
3	3P	13.00	9.10	306.0	0.0127	0.012	24.0	0.0	0.0
4	4P	20.70	20.60	5.0	0.0200	0.012	12.0	0.0	0.0
5	5P	23.25	19.50	22.0	0.1705	0.012	12.0	0.0	0.0
6	6P	9.00	8.90	10.0	0.0100	0.012	24.0	0.0	0.0
7	7P	13.52	13.30	38.0	0.0058	0.012	15.0	0.0	0.0
8	8P	20.00	13.10	210.0	0.0329	0.012	24.0	0.0	0.0
9	9P	20.53	20.10	45.0	0.0096	0.012	12.0	0.0	0.0
10	10P	19.40	18.10	16.0	0.0812	0.012	12.0	0.0	0.0
11	11P	35.12	27.19	200.0	0.0396	0.024	30.0	0.0	0.0
12	12P	27.02	23.54	98.0	0.0355	0.024	30.0	0.0	0.0
13	13P	23.29	15.28	225.0	0.0356	0.024	30.0	0.0	0.0
14	14P	24.76	24.49	28.0	0.0096	0.012	15.0	0.0	0.0
15	15P	24.76	24.49	28.0	0.0096	0.012	15.0	0.0	0.0
16	16P	11.52	9.62	40.0	0.0475	0.024	30.0	0.0	0.0
17	17P	36.76	35.32	60.0	0.0240	0.012	30.0	0.0	0.0
18	18P	15.16	11.72	105.0	0.0328	0.024	30.0	0.0	0.0
19	P3	21.25	19.50	26.0	0.0673	0.012	12.0	0.0	0.0
20	RG1	16.25	15.78	64.0	0.0073	0.012	12.0	0.0	0.0
21	RG3	21.26	21.25	1.0	0.0100	0.012	12.0	0.0	0.0
22	RG4	23.25	22.35	1.0	0.9000	0.012	8.0	0.0	0.0
23	RG5	25.25	23.35	84.0	0.0226	0.012	8.0	0.0	0.0
24	YD2	22.25	21.35	52.0	0.0173	0.012	12.0	0.0	0.0

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
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 5S: Front of church drain to Runoff Area=13,200 sf 69.92% Impervious Runoff Depth>2.34"
Flow Length=100' Slope=0.0200 '/' Tc=9.7 min CN=87 Runoff=0.73 cfs 0.059 af

Subcatchment 10S: Chase Dr Drainge Runoff Area=4,750 sf 100.00% Impervious Runoff Depth>3.44"
Tc=6.0 min CN=98 Runoff=0.39 cfs 0.031 af

Subcatchment 12S: Brigham Hill Runoff Area=5.000 ac 30.00% Impervious Runoff Depth>1.24"
Tc=15.0 min CN=72 Runoff=5.22 cfs 0.515 af

Subcatchment 14S: Chase Dr Drainge Runoff Area=6,650 sf 100.00% Impervious Runoff Depth>3.44"
Tc=6.0 min CN=98 Runoff=0.55 cfs 0.044 af

Subcatchment 15S: Chase Dr Drainge Runoff Area=6,650 sf 100.00% Impervious Runoff Depth>3.44"
Tc=6.0 min CN=98 Runoff=0.55 cfs 0.044 af

Subcatchment S1: City Land Runoff Area=29,510 sf 8.34% Impervious Runoff Depth>0.75"
Flow Length=480' Tc=6.0 min UI Adjusted CN=63 Runoff=0.48 cfs 0.042 af

Subcatchment S10: Market St Runoff Area=6,700 sf 20.90% Impervious Runoff Depth>1.01"
Tc=0.0 min UI Adjusted CN=68 Runoff=0.20 cfs 0.013 af

Subcatchment S2: New Roof To RG #1 Runoff Area=11,820 sf 71.07% Impervious Runoff Depth>2.34"
Tc=6.0 min CN=87 Runoff=0.74 cfs 0.053 af

Subcatchment S3: Parking Lot/Porous Runoff Area=10,020 sf 63.72% Impervious Runoff Depth>1.22"
Tc=790.0 min CN=89 Runoff=0.04 cfs 0.023 af

Subcatchment S4: Church Parking Lot Runoff Area=6,740 sf 59.20% Impervious Runoff Depth>2.01"
Tc=6.0 min CN=83 Runoff=0.37 cfs 0.026 af

Subcatchment S5: Church Parking Lot Runoff Area=14,260 sf 81.63% Impervious Runoff Depth>2.71"
Tc=6.0 min CN=91 Runoff=1.02 cfs 0.074 af

Subcatchment S6: Middle Parking Lot Runoff Area=10,830 sf 73.04% Impervious Runoff Depth>2.43"
Tc=6.0 min CN=88 Runoff=0.70 cfs 0.050 af

Subcatchment S7: Middle Parking Lot Runoff Area=6,710 sf 65.72% Impervious Runoff Depth>2.17"
Tc=6.0 min CN=85 Runoff=0.39 cfs 0.028 af

Subcatchment S8: Church Roof Drains Runoff Area=10,350 sf 100.00% Impervious Runoff Depth>3.44"
Flow Length=430' Tc=9.8 min CN=98 Runoff=0.75 cfs 0.068 af

Subcatchment S9: Side/Back of Church Runoff Area=23,870 sf 32.17% Impervious Runoff Depth>1.30"
Flow Length=430' Tc=9.8 min CN=73 Runoff=0.71 cfs 0.059 af

Reach 1R: Grass Swale Avg. Flow Depth=0.03' Max Vel=1.07 fps Inflow=0.04 cfs 0.023 af
n=0.022 L=135.0' S=0.0296 '/' Capacity=56.94 cfs Outflow=0.04 cfs 0.023 af

Pond 1P: CB 3396 Peak Elev=10.89' Storage=4 cf Inflow=0.49 cfs 0.065 af
15.0" Round Culvert n=0.012 L=75.0' S=0.0196 '/' Outflow=0.49 cfs 0.065 af

Pond 2P: CB #3377 Peak Elev=86.97' Storage=50 cf Inflow=3.39 cfs 0.154 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=4.39 cfs 0.155 af

Pond 3P: CB 3374 Peak Elev=86.10' Storage=0 cf Inflow=6.58 cfs 0.275 af
24.0" Round Culvert n=0.012 L=306.0' S=0.0127 '/' Outflow=6.58 cfs 0.275 af

Pond 4P: CB #3395 Peak Elev=86.68' Storage=74 cf Inflow=1.45 cfs 0.127 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0200 '/' Outflow=1.99 cfs 0.126 af

Pond 5P: OS #4 Peak Elev=87.36' Storage=41 cf Inflow=2.33 cfs 0.068 af
12.0" Round Culvert n=0.012 L=22.0' S=0.1705 '/' Outflow=2.16 cfs 0.067 af

Pond 6P: CB 611 Peak Elev=10.19' Storage=15 cf Inflow=6.92 cfs 0.340 af
24.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=5.33 cfs 0.341 af

Pond 7P: DMH #1 Peak Elev=94.30' Storage=131 cf Inflow=4.39 cfs 0.155 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0058 '/' Outflow=4.30 cfs 0.152 af

Pond 8P: CB #23 Peak Elev=93.64' Storage=61 cf Inflow=2.82 cfs 0.125 af
24.0" Round Culvert n=0.012 L=210.0' S=0.0329 '/' Outflow=2.81 cfs 0.124 af

Pond 9P: DMH #5097 Peak Elev=86.59' Storage=79 cf Inflow=1.99 cfs 0.126 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0096 '/' Outflow=2.82 cfs 0.125 af

Pond 10P: PDMH 2 Peak Elev=87.04' Storage=82 cf Inflow=3.30 cfs 0.143 af
12.0" Round Culvert n=0.012 L=16.0' S=0.0812 '/' Outflow=3.30 cfs 0.141 af

Pond 11P: CB #22361 Peak Elev=35.52' Storage=5 cf Inflow=1.08 cfs 0.090 af
30.0" Round Culvert n=0.024 L=200.0' S=0.0396 '/' Outflow=1.08 cfs 0.090 af

Pond 12P: DMH #22364 Peak Elev=28.00' Storage=12 cf Inflow=6.01 cfs 0.605 af
30.0" Round Culvert n=0.024 L=98.0' S=0.0355 '/' Outflow=6.01 cfs 0.605 af

Pond 13P: CB #22362 Peak Elev=24.30' Storage=13 cf Inflow=6.31 cfs 0.649 af
30.0" Round Culvert n=0.024 L=225.0' S=0.0356 '/' Outflow=6.31 cfs 0.649 af

Pond 14P: CB #22363 Peak Elev=25.12' Storage=4 cf Inflow=0.55 cfs 0.044 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0096 '/' Outflow=0.55 cfs 0.044 af

Pond 15P: CB #3397 Peak Elev=25.12' Storage=4 cf Inflow=0.55 cfs 0.044 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0096 '/' Outflow=0.55 cfs 0.044 af

Pond 16P: CB #3398 Peak Elev=12.60' Storage=14 cf Inflow=7.14 cfs 0.737 af
30.0" Round Culvert n=0.024 L=40.0' S=0.0475 '/' Outflow=7.14 cfs 0.737 af

Pond 17P: CB #13929 Peak Elev=37.16' Storage=5 cf Inflow=1.08 cfs 0.090 af
30.0" Round Culvert n=0.012 L=60.0' S=0.0240 '/' Outflow=1.08 cfs 0.090 af

Pond 18P: PDMH 1 Peak Elev=16.12' Storage=12 cf Inflow=6.80 cfs 0.693 af
30.0" Round Culvert n=0.024 L=105.0' S=0.0328 '/' Outflow=6.80 cfs 0.693 af

Pond P3: OS #3 Peak Elev=87.47' Storage=44 cf Inflow=3.20 cfs 0.077 af
12.0" Round Culvert n=0.012 L=26.0' S=0.0673 '/' Outflow=3.17 cfs 0.076 af

Pond RG1: Raingarden #1 Peak Elev=19.62' Storage=588 cf Inflow=0.74 cfs 0.053 af
Outflow=0.70 cfs 0.044 af

Pond RG3: Raingarden #3 Peak Elev=25.11' Storage=930 cf Inflow=1.02 cfs 0.074 af
Outflow=2.32 cfs 0.057 af

Pond RG4: Raingarden #4 Peak Elev=27.22' Storage=444 cf Inflow=0.70 cfs 0.050 af
Outflow=1.42 cfs 0.045 af

Pond RG5: Raingarden #5 Peak Elev=28.81' Storage=326 cf Inflow=0.39 cfs 0.028 af
Outflow=0.91 cfs 0.023 af

Pond YD2: Raingarden #2 Peak Elev=25.79' Storage=321 cf Inflow=0.37 cfs 0.026 af
Outflow=0.88 cfs 0.020 af

Link P100: POA #100 Inflow=5.33 cfs 0.341 af
Primary=5.33 cfs 0.341 af

Link P200: POA #200 (CB 3399) Inflow=7.14 cfs 0.737 af
Primary=7.14 cfs 0.737 af

Summary for Subcatchment 5S: Front of church drain to Chase Dr

Runoff = 0.73 cfs @ 12.13 hrs, Volume= 0.059 af, Depth> 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
3,970	61	>75% Grass cover, Good, HSG B
5,880	98	Roofs, HSG B
3,350	98	Unconnected pavement, HSG B
13,200	87	Weighted Average
3,970		30.08% Pervious Area
9,230		69.92% Impervious Area
3,350		36.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0200	0.17		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"

Summary for Subcatchment 10S: Chase Dr Drainge

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.031 af, Depth> 3.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
3,500	98	Paved parking, HSG B
1,250	98	Unconnected pavement, HSG B
4,750	98	Weighted Average
4,750		100.00% Impervious Area
1,250		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment 12S: Brigham Hill

Runoff = 5.22 cfs @ 12.22 hrs, Volume= 0.515 af, Depth> 1.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (ac)	CN	Description
5.000	72	1/3 acre lots, 30% imp, HSG B
3.500		70.00% Pervious Area
1.500		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry, Tc Estimate**

Summary for Subcatchment 14S: Chase Dr Drainge

Runoff = 0.55 cfs @ 12.08 hrs, Volume= 0.044 af, Depth> 3.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
4,900	98	Paved parking, HSG B
1,750	98	Unconnected pavement, HSG B
6,650	98	Weighted Average
6,650		100.00% Impervious Area
1,750		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment 15S: Chase Dr Drainge

Runoff = 0.55 cfs @ 12.08 hrs, Volume= 0.044 af, Depth> 3.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
4,900	98	Paved parking, HSG B
1,750	98	Unconnected pavement, HSG B
6,650	98	Weighted Average
6,650		100.00% Impervious Area
1,750		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment S1: City Land

Runoff = 0.48 cfs @ 12.11 hrs, Volume= 0.042 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Adj	Description
1,490	98		Paved parking, HSG B
27,050	61		>75% Grass cover, Good, HSG B
970	98		Unconnected pavement, HSG B
29,510	64	63	Weighted Average, UI Adjusted
27,050			91.66% Pervious Area
2,460			8.34% Impervious Area
970			39.43% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	200	0.0500	2.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.25"
1.7	280	0.0330	2.72		**Shallow Concentrated Flow, swale** Grassed Waterway Kv= 15.0 fps
3.2	480	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment S10: Market St

Runoff = 0.20 cfs @ 12.00 hrs, Volume= 0.013 af, Depth> 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Adj	Description
5,300	61		>75% Grass cover, Good, HSG B
1,000	98		Roofs, HSG B
400	98		Unconnected pavement, HSG B
6,700	69	68	Weighted Average, UI Adjusted
5,300			79.10% Pervious Area
1,400			20.90% Impervious Area
400			28.57% Unconnected

Summary for Subcatchment S2: New Roof To RG #1

Runoff = 0.74 cfs @ 12.09 hrs, Volume= 0.053 af, Depth> 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
7,440	98	Roofs, HSG B
3,420	61	>75% Grass cover, Good, HSG B
960	98	Unconnected pavement, HSG B
11,820	87	Weighted Average
3,420		28.93% Pervious Area
8,400		71.07% Impervious Area
960		11.43% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S3: Parking Lot/Porous Pavers

Runoff = 0.04 cfs @ 21.95 hrs, Volume= 0.023 af, Depth> 1.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

	Area (sf)	CN	Description
	1,650	61	>75% Grass cover, Good, HSG B
	5,135	98	Paved parking, HSG B
*	1,985	85	Porous Pavers, HSG B
	1,250	98	Unconnected pavement, HSG B
	10,020	89	Weighted Average
	3,635		36.28% Pervious Area
	6,385		63.72% Impervious Area
	1,250		19.58% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
790.0					**Direct Entry,**

Summary for Subcatchment S4: Church Parking Lot

Runoff = 0.37 cfs @ 12.09 hrs, Volume= 0.026 af, Depth> 2.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
3,790	98	Paved parking, HSG B
2,750	61	>75% Grass cover, Good, HSG B
200	98	Unconnected pavement, HSG B
6,740	83	Weighted Average
2,750		40.80% Pervious Area
3,990		59.20% Impervious Area
200		5.01% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S5: Church Parking Lot

Runoff = 1.02 cfs @ 12.09 hrs, Volume= 0.074 af, Depth> 2.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
11,540	98	Paved parking, HSG B
2,620	61	>75% Grass cover, Good, HSG B
100	98	Unconnected pavement, HSG B
14,260	91	Weighted Average
2,620		18.37% Pervious Area
11,640		81.63% Impervious Area
100		0.86% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S6: Middle Parking Lot

Runoff = 0.70 cfs @ 12.09 hrs, Volume= 0.050 af, Depth> 2.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
6,585	98	Paved parking, HSG B
2,920	61	>75% Grass cover, Good, HSG B
1,325	98	Unconnected pavement, HSG B
10,830	88	Weighted Average
2,920		26.96% Pervious Area
7,910		73.04% Impervious Area
1,325		16.75% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S7: Middle Parking Lot

Runoff = 0.39 cfs @ 12.09 hrs, Volume= 0.028 af, Depth> 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
1,870	98	Paved parking, HSG B
2,300	61	>75% Grass cover, Good, HSG B
1,480	98	Roofs, HSG B
1,060	98	Unconnected pavement, HSG B
6,710	85	Weighted Average
2,300		34.28% Pervious Area
4,410		65.72% Impervious Area
1,060		24.04% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S8: Church Roof Drains

Runoff = 0.75 cfs @ 12.13 hrs, Volume= 0.068 af, Depth> 3.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
10,350	98	Roofs, HSG B
10,350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0300	0.20		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
1.5	330	0.0600	3.67		**Shallow Concentrated Flow, shallow** Grassed Waterway Kv= 15.0 fps
9.8	430	Total			

Summary for Subcatchment S9: Side/Back of Church

Runoff = 0.71 cfs @ 12.14 hrs, Volume= 0.059 af, Depth> 1.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-Year Rainfall=3.68"

Area (sf)	CN	Description
1,840	98	Roofs, HSG B
2,017	98	Roofs, HSG B
1,458	98	Paved parking, HSG C
2,365	98	Unconnected pavement, HSG C
16,190	61	>75% Grass cover, Good, HSG B
23,870	73	Weighted Average
16,190		67.83% Pervious Area
7,680		32.17% Impervious Area
2,365		30.79% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0300	0.20		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
1.5	330	0.0600	3.67		**Shallow Concentrated Flow, shallow** Grassed Waterway Kv= 15.0 fps
9.8	430	Total			

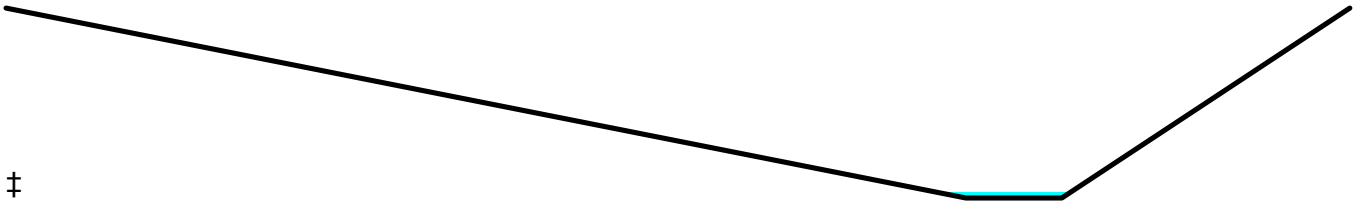
Summary for Reach 1R: Grass Swale

Inflow Area = 0.230 ac, 63.72% Impervious, Inflow Depth > 1.22" for 2-Year event
Inflow = 0.04 cfs @ 21.95 hrs, Volume= 0.023 af
Outflow = 0.04 cfs @ 21.98 hrs, Volume= 0.023 af, Atten= 0%, Lag= 2.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.07 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 0.78 fps, Avg. Travel Time= 2.9 min

Peak Storage= 5 cf @ 21.98 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 1.00' Flow Area= 7.5 sf, Capacity= 56.94 cfs

1.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 10.0 3.0 '/' Top Width= 14.00'
Length= 135.0' Slope= 0.0296 '/'
Inlet Invert= 19.00', Outlet Invert= 15.00'



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Summary for Pond 1P: CB 3396

Inflow Area = 0.907 ac, 22.38% Impervious, Inflow Depth > 0.87" for 2-Year event
Inflow = 0.49 cfs @ 12.11 hrs, Volume= 0.065 af
Outflow = 0.49 cfs @ 12.11 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.1 min
Primary = 0.49 cfs @ 12.11 hrs, Volume= 0.065 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 10.89' @ 12.11 hrs Surf.Area= 13 sf Storage= 4 cf
Flood Elev= 89.86' Surf.Area= 9,251 sf Storage= 11,412 cf

Plug-Flow detention time= 0.4 min calculated for 0.065 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (1,004.7 - 1,004.6)

Volume	Invert	Avail.Storage	Storage Description
#1	10.57'	43 cf	**4.00'D x 3.45'H Vertical Cone/Cylinder**
#2	14.00'	11,369 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		11,412 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.00	5	0	0
15.00	338	172	172
16.00	1,664	1,001	1,173
17.00	4,745	3,205	4,377
18.00	9,238	6,992	11,369

Device	Routing	Invert	Outlet Devices
#1	Primary	10.57'	**15.0" Round Culvert** L= 75.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.57' / 9.10' S= 0.0196 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.48 cfs @ 12.11 hrs HW=10.89' TW=9.87' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.48 cfs @ 1.93 fps)

Summary for Pond 2P: CB #3377

Inflow Area = 1.039 ac, 64.88% Impervious, Inflow Depth > 1.78" for 2-Year event
Inflow = 3.39 cfs @ 12.15 hrs, Volume= 0.154 af
Outflow = 4.39 cfs @ 12.21 hrs, Volume= 0.155 af, Atten= 0%, Lag= 3.4 min
Primary = 4.39 cfs @ 12.21 hrs, Volume= 0.155 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.97' @ 12.25 hrs Surf.Area= 13 sf Storage= 50 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.9 min (860.3 - 859.4)

Volume	Invert	Avail.Storage	Storage Description
#1	82.80'	50 cf	**4.00'D x 4.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	82.80'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.80' / 82.70' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.21 hrs HW=84.66' TW=86.33' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 3P: CB 3374

Inflow Area = 1.824 ac, 59.63% Impervious, Inflow Depth > 1.81" for 2-Year event
Inflow = 6.58 cfs @ 12.21 hrs, Volume= 0.275 af
Outflow = 6.58 cfs @ 12.21 hrs, Volume= 0.275 af, Atten= 0%, Lag= 0.0 min
Primary = 6.58 cfs @ 12.21 hrs, Volume= 0.275 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.10' @ 0.00 hrs Surf.Area= 13 sf Storage= 0 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 44 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	86.10'	44 cf	**4.00'D x 3.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	13.00'	**24.0" Round Culvert** L= 306.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.00' / 9.10' S= 0.0127 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.21 hrs HW=86.10' TW=10.16' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 0.00 cfs of 100.18 cfs potential flow)

Summary for Pond 4P: CB #3395

Inflow Area = 0.786 ac, 52.69% Impervious, Inflow Depth > 1.95" for 2-Year event
Inflow = 1.45 cfs @ 12.14 hrs, Volume= 0.127 af
Outflow = 1.99 cfs @ 12.00 hrs, Volume= 0.126 af, Atten= 0%, Lag= 0.0 min
Primary = 1.99 cfs @ 12.00 hrs, Volume= 0.126 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.68' @ 12.14 hrs Surf.Area= 13 sf Storage= 74 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= 10.2 min calculated for 0.126 af (99% of inflow)
Center-of-Mass det. time= 4.8 min (808.7 - 803.9)

Volume	Invert	Avail.Storage	Storage Description
#1	20.70'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.70'	**12.0" Round Culvert** L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.70' / 20.60' S= 0.0200 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=3.77 cfs @ 12.00 hrs HW=26.18' TW=25.18' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 3.77 cfs @ 4.80 fps)

Summary for Pond 5P: OS #4

Inflow Area = 0.403 ac, 70.24% Impervious, Inflow Depth > 2.03" for 2-Year event
Inflow = 2.33 cfs @ 12.16 hrs, Volume= 0.068 af
Outflow = 2.16 cfs @ 12.16 hrs, Volume= 0.067 af, Atten= 8%, Lag= 0.0 min
Primary = 2.16 cfs @ 12.16 hrs, Volume= 0.067 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 87.36' @ 12.16 hrs Surf.Area= 13 sf Storage= 41 cf

Plug-Flow detention time= 10.2 min calculated for 0.067 af (99% of inflow)
Center-of-Mass det. time= 3.7 min (858.0 - 854.3)

Volume	Invert	Avail.Storage	Storage Description
#1	23.25'	41 cf	**4.00'D x 3.25'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	23.25'	**12.0" Round Culvert** L= 22.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.25' / 19.50' S= 0.1705 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.51 cfs @ 12.16 hrs HW=87.35' TW=86.91' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.51 cfs @ 3.19 fps)

Summary for Pond 6P: CB 611

Inflow Area = 2.732 ac, 47.25% Impervious, Inflow Depth > 1.50" for 2-Year event
Inflow = 6.92 cfs @ 12.21 hrs, Volume= 0.340 af
Outflow = 5.33 cfs @ 12.13 hrs, Volume= 0.341 af, Atten= 23%, Lag= 0.0 min
Primary = 5.33 cfs @ 12.13 hrs, Volume= 0.341 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 10.19' @ 12.13 hrs Surf.Area= 13 sf Storage= 15 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 112 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	9.00'	112 cf	**4.00'D x 8.91'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	9.00'	**24.0" Round Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 9.00' / 8.90' S= 0.0100 '/' Cc= 0.900

n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=4.91 cfs @ 12.13 hrs HW=10.13' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 4.91 cfs @ 3.89 fps)

Summary for Pond 7P: DMH #1

Inflow Area = 1.039 ac, 64.88% Impervious, Inflow Depth > 1.79" for 2-Year event
Inflow = 4.39 cfs @ 12.21 hrs, Volume= 0.155 af
Outflow = 4.30 cfs @ 12.21 hrs, Volume= 0.152 af, Atten= 2%, Lag= 0.0 min
Primary = 4.30 cfs @ 12.21 hrs, Volume= 0.152 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 94.30' @ 12.21 hrs Surf.Area= 13 sf Storage= 131 cf

Plug-Flow detention time= 14.0 min calculated for 0.151 af (98% of inflow)
Center-of-Mass det. time= 3.0 min (863.3 - 860.3)

Volume	Invert	Avail.Storage	Storage Description
#1	13.52'	131 cf	**4.00'D x 10.45'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	13.52'	**15.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.52' / 13.30' S= 0.0058 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=4.28 cfs @ 12.21 hrs HW=86.63' TW=86.10' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.28 cfs @ 3.49 fps)

Summary for Pond 8P: CB #23

Inflow Area = 0.786 ac, 52.69% Impervious, Inflow Depth > 1.91" for 2-Year event
Inflow = 2.82 cfs @ 12.05 hrs, Volume= 0.125 af
Outflow = 2.81 cfs @ 12.05 hrs, Volume= 0.124 af, Atten= 0%, Lag= 0.0 min
Primary = 2.81 cfs @ 12.05 hrs, Volume= 0.124 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 93.64' @ 12.05 hrs Surf.Area= 13 sf Storage= 61 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 61 cf

Plug-Flow detention time= 13.3 min calculated for 0.124 af (99% of inflow)
Center-of-Mass det. time= 6.0 min (819.8 - 813.8)

Volume	Invert	Avail.Storage	Storage Description
#1	20.00'	61 cf	**4.00'D x 4.88'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.00'	**24.0" Round Culvert** L= 210.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.00' / 13.10' S= 0.0329 '/' Cc= 0.900

n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=2.80 cfs @ 12.05 hrs HW=86.15' TW=86.10' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 2.80 cfs @ 0.89 fps)

Summary for Pond 9P: DMH #5097

Inflow Area = 0.786 ac, 52.69% Impervious, Inflow Depth > 1.93" for 2-Year event
Inflow = 1.99 cfs @ 12.00 hrs, Volume= 0.126 af
Outflow = 2.82 cfs @ 12.05 hrs, Volume= 0.125 af, Atten= 0%, Lag= 3.0 min
Primary = 2.82 cfs @ 12.05 hrs, Volume= 0.125 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.59' @ 12.13 hrs Surf.Area= 13 sf Storage= 79 cf

Plug-Flow detention time= 11.2 min calculated for 0.125 af (99% of inflow)
Center-of-Mass det. time= 5.1 min (813.8 - 808.7)

Volume	Invert	Avail.Storage	Storage Description
#1	20.53'	79 cf	**4.00'D x 6.25'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.53'	**12.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.53' / 20.10' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.05 hrs HW=25.43' TW=86.15' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 10P: PDMH 2

Inflow Area = 0.885 ac, 72.52% Impervious, Inflow Depth > 1.94" for 2-Year event
Inflow = 3.30 cfs @ 12.15 hrs, Volume= 0.143 af
Outflow = 3.30 cfs @ 12.15 hrs, Volume= 0.141 af, Atten= 0%, Lag= 0.0 min
Primary = 3.30 cfs @ 12.15 hrs, Volume= 0.141 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 87.04' @ 12.15 hrs Surf.Area= 13 sf Storage= 82 cf

Plug-Flow detention time= 12.1 min calculated for 0.141 af (99% of inflow)
Center-of-Mass det. time= 4.4 min (858.7 - 854.3)

Volume	Invert	Avail.Storage	Storage Description
#1	19.40'	82 cf	**4.00'D x 6.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	19.40'	**12.0" Round Culvert** L= 16.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 19.40' / 18.10' S= 0.0812 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.30 cfs @ 12.15 hrs HW=87.00' TW=86.63' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.30 cfs @ 2.92 fps)

Summary for Pond 11P: CB #22361

Inflow Area = 0.412 ac, 77.88% Impervious, Inflow Depth > 2.63" for 2-Year event
Inflow = 1.08 cfs @ 12.11 hrs, Volume= 0.090 af
Outflow = 1.08 cfs @ 12.11 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.0 min
Primary = 1.08 cfs @ 12.11 hrs, Volume= 0.090 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 35.52' @ 12.11 hrs Surf.Area= 13 sf Storage= 5 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 73 cf

Plug-Flow detention time= 0.3 min calculated for 0.090 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (794.2 - 794.0)

Volume	Invert	Avail.Storage	Storage Description
#1	35.12'	73 cf	**4.00'D x 5.80'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	35.12'	**30.0" Round Culvert** L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.12' / 27.19' S= 0.0396 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=1.08 cfs @ 12.11 hrs HW=35.52' TW=27.89' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.08 cfs @ 2.15 fps)

Summary for Pond 12P: DMH #22364

Inflow Area = 5.412 ac, 33.65% Impervious, Inflow Depth > 1.34" for 2-Year event
Inflow = 6.01 cfs @ 12.21 hrs, Volume= 0.605 af
Outflow = 6.01 cfs @ 12.21 hrs, Volume= 0.605 af, Atten= 0%, Lag= 0.0 min
Primary = 6.01 cfs @ 12.21 hrs, Volume= 0.605 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 28.00' @ 12.21 hrs Surf.Area= 13 sf Storage= 12 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 79 cf

Plug-Flow detention time= 0.1 min calculated for 0.605 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (855.1 - 855.1)

Volume	Invert	Avail.Storage	Storage Description
#1	27.02'	79 cf	**4.00'D x 6.30'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	27.02'	**30.0" Round Culvert** L= 98.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.02' / 23.54' S= 0.0355 '/' Cc= 0.900

n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=6.01 cfs @ 12.21 hrs HW=28.00' TW=24.30' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.01 cfs @ 3.37 fps)

Summary for Pond 13P: CB #22362

Inflow Area = 5.565 ac, 35.47% Impervious, Inflow Depth > 1.40" for 2-Year event
Inflow = 6.31 cfs @ 12.20 hrs, Volume= 0.649 af
Outflow = 6.31 cfs @ 12.20 hrs, Volume= 0.649 af, Atten= 0%, Lag= 0.0 min
Primary = 6.31 cfs @ 12.20 hrs, Volume= 0.649 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.30' @ 12.20 hrs Surf.Area= 13 sf Storage= 13 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 82 cf

Plug-Flow detention time= 0.1 min calculated for 0.649 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (848.3 - 848.3)

Volume	Invert	Avail.Storage	Storage Description
#1	23.29'	82 cf	**4.00'D x 6.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	23.29'	**30.0" Round Culvert** L= 225.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.29' / 15.28' S= 0.0356 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=6.31 cfs @ 12.20 hrs HW=24.30' TW=16.12' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.31 cfs @ 3.41 fps)

Summary for Pond 14P: CB #22363

Inflow Area = 0.153 ac,100.00% Impervious, Inflow Depth > 3.44" for 2-Year event
Inflow = 0.55 cfs @ 12.08 hrs, Volume= 0.044 af
Outflow = 0.55 cfs @ 12.08 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.1 min
Primary = 0.55 cfs @ 12.08 hrs, Volume= 0.044 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.12' @ 12.08 hrs Surf.Area= 13 sf Storage= 4 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.5 min calculated for 0.044 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (753.4 - 753.0)

Volume	Invert	Avail.Storage	Storage Description
#1	24.76'	63 cf	**4.00'D x 5.05'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	24.76'	**15.0" Round Culvert** L= 28.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 24.76' / 24.49' S= 0.0096 '/' Cc= 0.900
n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.55 cfs @ 12.08 hrs HW=25.12' TW=24.14' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.55 cfs @ 2.84 fps)

Summary for Pond 15P: CB #3397

Inflow Area = 0.153 ac,100.00% Impervious, Inflow Depth > 3.44" for 2-Year event
Inflow = 0.55 cfs @ 12.08 hrs, Volume= 0.044 af
Outflow = 0.55 cfs @ 12.08 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.1 min
Primary = 0.55 cfs @ 12.08 hrs, Volume= 0.044 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.12' @ 12.08 hrs Surf.Area= 13 sf Storage= 4 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.5 min calculated for 0.044 af (100% of inflow)
Center-of-Mass det. time= 0.4 min (753.4 - 753.0)

Volume	Invert	Avail.Storage	Storage Description
#1	24.76'	63 cf	**4.00'D x 5.05'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	24.76'	**15.0" Round Culvert** L= 28.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.76' / 24.49' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.55 cfs @ 12.08 hrs HW=25.12' TW=12.47' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.55 cfs @ 2.84 fps)

Summary for Pond 16P: CB #3398

Inflow Area = 5.989 ac, 38.72% Impervious, Inflow Depth > 1.48" for 2-Year event
Inflow = 7.14 cfs @ 12.18 hrs, Volume= 0.737 af
Outflow = 7.14 cfs @ 12.18 hrs, Volume= 0.737 af, Atten= 0%, Lag= 0.0 min
Primary = 7.14 cfs @ 12.18 hrs, Volume= 0.737 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 12.60' @ 12.18 hrs Surf.Area= 13 sf Storage= 14 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= 0.1 min calculated for 0.737 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (844.7 - 844.6)

Volume	Invert	Avail.Storage	Storage Description
#1	11.52'	74 cf	**4.00'D x 5.90'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	11.52'	**30.0" Round Culvert**

L= 40.0' RCP, square edge headwall, Ke= 0.500
Inlet / Outlet Invert= 11.52' / 9.62' S= 0.0475 '/' Cc= 0.900
n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=7.14 cfs @ 12.18 hrs HW=12.60' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.14 cfs @ 3.53 fps)

Summary for Pond 17P: CB #13929

Inflow Area = 0.412 ac, 77.88% Impervious, Inflow Depth > 2.63" for 2-Year event
Inflow = 1.08 cfs @ 12.11 hrs, Volume= 0.090 af
Outflow = 1.08 cfs @ 12.11 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.0 min
Primary = 1.08 cfs @ 12.11 hrs, Volume= 0.090 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 37.16' @ 12.11 hrs Surf.Area= 13 sf Storage= 5 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 89 cf

Plug-Flow detention time= 0.3 min calculated for 0.090 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (794.0 - 793.8)

Volume	Invert	Avail.Storage	Storage Description
#1	36.76'	89 cf	**4.00'D x 7.10'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	36.76'	**30.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.76' / 35.32' S= 0.0240 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

Primary OutFlow Max=1.08 cfs @ 12.11 hrs HW=37.16' TW=35.52' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.08 cfs @ 2.15 fps)

Summary for Pond 18P: PDMH 1

Inflow Area = 5.836 ac, 37.12% Impervious, Inflow Depth > 1.43" for 2-Year event
Inflow = 6.80 cfs @ 12.19 hrs, Volume= 0.693 af
Outflow = 6.80 cfs @ 12.19 hrs, Volume= 0.693 af, Atten= 0%, Lag= 0.0 min
Primary = 6.80 cfs @ 12.19 hrs, Volume= 0.693 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 16.12' @ 12.19 hrs Surf.Area= 13 sf Storage= 12 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 130 cf

Plug-Flow detention time= 0.1 min calculated for 0.693 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (850.4 - 850.3)

Volume	Invert	Avail.Storage	Storage Description
#1	15.16'	130 cf	**4.00'D x 10.35'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	15.16'	**30.0" Round Culvert** L= 105.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 15.16' / 11.72' S= 0.0328 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=6.80 cfs @ 12.19 hrs HW=16.12' TW=12.60' (Dynamic Tailwater)
1=Culvert (Outlet Controls 6.80 cfs @ 5.77 fps)

Summary for Pond P3: OS #3

Inflow Area = 0.482 ac, 74.43% Impervious, Inflow Depth > 1.91" for 2-Year event
Inflow = 3.20 cfs @ 12.15 hrs, Volume= 0.077 af
Outflow = 3.17 cfs @ 12.15 hrs, Volume= 0.076 af, Atten= 1%, Lag= 0.0 min
Primary = 3.17 cfs @ 12.15 hrs, Volume= 0.076 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 87.47' @ 12.18 hrs Surf.Area= 13 sf Storage= 44 cf

Plug-Flow detention time= 10.7 min calculated for 0.076 af (99% of inflow)
Center-of-Mass det. time= 3.0 min (851.1 - 848.0)

Volume	Invert	Avail.Storage	Storage Description
#1	21.25'	44 cf	**4.00'D x 3.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	21.25'	**12.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.25' / 19.50' S= 0.0673 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.42 cfs @ 12.15 hrs HW=87.44' TW=87.03' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.42 cfs @ 3.08 fps)

Summary for Pond RG1: Raingarden #1

Inflow Area = 0.271 ac, 71.07% Impervious, Inflow Depth > 2.34" for 2-Year event
Inflow = 0.74 cfs @ 12.09 hrs, Volume= 0.053 af
Outflow = 0.70 cfs @ 12.12 hrs, Volume= 0.044 af, Atten= 5%, Lag= 1.7 min
Primary = 0.70 cfs @ 12.12 hrs, Volume= 0.044 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 19.62' @ 12.12 hrs Surf.Area= 450 sf Storage= 588 cf

Plug-Flow detention time= 133.8 min calculated for 0.044 af (84% of inflow)
Center-of-Mass det. time= 67.0 min (879.4 - 812.4)

Volume	Invert	Avail.Storage	Storage Description
#1	16.25'	975 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
16.25	200	0.0	0	0
17.25	200	40.0	80	80
17.50	200	10.0	5	85
19.00	200	100.0	300	385
20.00	600	100.0	400	785
20.20	1,300	100.0	190	975

Device	Routing	Invert	Outlet Devices
#1	Primary	16.25'	**12.0" Round Culvert** L= 64.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.25' / 15.78' S= 0.0073 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	19.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	16.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 10.00'

Primary OutFlow Max=0.70 cfs @ 12.12 hrs HW=19.62' TW=16.07' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.70 cfs of 5.93 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 0.67 cfs @ 1.15 fps)
3=Exfiltration (Controls 0.03 cfs)

Summary for Pond RG3: Raingarden #3

Inflow Area = 0.327 ac, 81.63% Impervious, Inflow Depth > 2.71" for 2-Year event
Inflow = 1.02 cfs @ 12.09 hrs, Volume= 0.074 af
Outflow = 2.32 cfs @ 12.15 hrs, Volume= 0.057 af, Atten= 0%, Lag= 3.9 min
Primary = 2.32 cfs @ 12.15 hrs, Volume= 0.057 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.11' @ 12.14 hrs Surf.Area= 601 sf Storage= 930 cf

Plug-Flow detention time= 124.7 min calculated for 0.057 af (77% of inflow)
Center-of-Mass det. time= 43.6 min (840.3 - 796.7)

Volume	Invert	Avail.Storage	Storage Description
#1	21.25'	1,022 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.25	250	0.0	0	0
22.25	250	40.0	100	100
22.50	250	10.0	6	106
24.00	250	100.0	375	481
25.00	525	100.0	388	869
25.25	700	100.0	153	1,022

Device	Routing	Invert	Outlet Devices
#1	Primary	21.26'	**12.0" Round Culvert** L= 1.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.26' / 21.25' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	24.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	21.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 15.00'

Primary OutFlow Max=0.00 cfs @ 12.15 hrs HW=25.09' TW=87.44' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)
└─**2=Orifice/Grate** (Controls 0.00 cfs)
└─**3=Exfiltration** (Passes 0.00 cfs of 0.03 cfs potential flow)

Summary for Pond RG4: Raingarden #4

Inflow Area = 0.249 ac, 73.04% Impervious, Inflow Depth > 2.43" for 2-Year event
Inflow = 0.70 cfs @ 12.09 hrs, Volume= 0.050 af
Outflow = 1.42 cfs @ 12.16 hrs, Volume= 0.045 af, Atten= 0%, Lag= 4.4 min
Primary = 1.42 cfs @ 12.16 hrs, Volume= 0.045 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 27.22' @ 12.18 hrs Surf.Area= 384 sf Storage= 444 cf

Plug-Flow detention time= 83.1 min calculated for 0.045 af (89% of inflow)
Center-of-Mass det. time= 31.3 min (840.0 - 808.8)

Volume	Invert	Avail.Storage	Storage Description
#1	23.25'	455 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.25	100	0.0	0	0
24.25	100	40.0	40	40
24.50	100	10.0	3	43
26.00	100	100.0	150	193
27.00	260	100.0	180	373
27.25	400	100.0	83	455

Device	Routing	Invert	Outlet Devices
#1	Primary	23.25'	**8.0" Round Culvert** L= 1.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.25' / 22.35' S= 0.9000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	26.50'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	23.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 17.00'

Primary OutFlow Max=0.00 cfs @ 12.16 hrs HW=27.20' TW=87.36' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)
  └─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Exfiltration** (Passes 0.00 cfs of 0.02 cfs potential flow)

Summary for Pond RG5: Raingarden #5

Inflow Area = 0.154 ac, 65.72% Impervious, Inflow Depth > 2.17" for 2-Year event
Inflow = 0.39 cfs @ 12.09 hrs, Volume= 0.028 af
Outflow = 0.91 cfs @ 12.16 hrs, Volume= 0.023 af, Atten= 0%, Lag= 4.3 min
Primary = 0.91 cfs @ 12.16 hrs, Volume= 0.023 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 28.81' @ 12.15 hrs Surf.Area= 230 sf Storage= 326 cf

Plug-Flow detention time= 129.7 min calculated for 0.023 af (84% of inflow)
Center-of-Mass det. time= 62.3 min (881.6 - 819.3)

Volume	Invert	Avail.Storage	Storage Description
#1	25.25'	455 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.25	100	0.0	0	0
26.25	100	40.0	40	40
26.50	100	10.0	3	43
28.00	100	100.0	150	193
29.00	260	100.0	180	373
29.25	400	100.0	83	455

Device	Routing	Invert	Outlet Devices
#1	Primary	25.25'	**8.0" Round Culvert** L= 84.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 25.25' / 23.35' S= 0.0226 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	28.50'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	25.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 19.00'

Primary OutFlow Max=0.00 cfs @ 12.16 hrs HW=28.78' TW=87.36' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)
  └─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Exfiltration** (Passes 0.00 cfs of 0.01 cfs potential flow)

Summary for Pond YD2: Raingarden #2

Inflow Area = 0.155 ac, 59.20% Impervious, Inflow Depth > 2.01" for 2-Year event
Inflow = 0.37 cfs @ 12.09 hrs, Volume= 0.026 af
Outflow = 0.88 cfs @ 12.15 hrs, Volume= 0.020 af, Atten= 0%, Lag= 3.7 min
Primary = 0.88 cfs @ 12.15 hrs, Volume= 0.020 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.79' @ 12.14 hrs Surf.Area= 226 sf Storage= 321 cf

Plug-Flow detention time= 128.6 min calculated for 0.020 af (77% of inflow)
Center-of-Mass det. time= 44.3 min (870.1 - 825.8)

Volume	Invert	Avail.Storage	Storage Description
#1	22.25'	455 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.25	100	0.0	0	0
23.25	100	40.0	40	40
23.50	100	10.0	3	43
25.00	100	100.0	150	193
26.00	260	100.0	180	373
26.25	400	100.0	83	455

Device	Routing	Invert	Outlet Devices
#1	Primary	22.25'	**12.0" Round Culvert** L= 52.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 22.25' / 21.35' S= 0.0173 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	25.50'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	22.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 16.00'

Primary OutFlow Max=0.00 cfs @ 12.15 hrs HW=25.76' TW=87.44' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)
  └─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Exfiltration** (Passes 0.00 cfs of 0.01 cfs potential flow)

Summary for Link P100: POA #100

Inflow Area = 2.732 ac, 47.25% Impervious, Inflow Depth > 1.50" for 2-Year event
Inflow = 5.33 cfs @ 12.13 hrs, Volume= 0.341 af
Primary = 5.33 cfs @ 12.13 hrs, Volume= 0.341 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link P200: POA #200 (CB 3399)

Inflow Area = 5.989 ac, 38.72% Impervious, Inflow Depth > 1.48" for 2-Year event
Inflow = 7.14 cfs @ 12.18 hrs, Volume= 0.737 af
Primary = 7.14 cfs @ 12.18 hrs, Volume= 0.737 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
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 5S: Front of church drain to Runoff Area=13,200 sf 69.92% Impervious Runoff Depth>4.11"
Flow Length=100' Slope=0.0200 '/' Tc=9.7 min CN=87 Runoff=1.26 cfs 0.104 af

Subcatchment 10S: Chase Dr Drainge Runoff Area=4,750 sf 100.00% Impervious Runoff Depth>5.34"
Tc=6.0 min CN=98 Runoff=0.60 cfs 0.049 af

Subcatchment 12S: Brigham Hill Runoff Area=5.000 ac 30.00% Impervious Runoff Depth>2.64"
Tc=15.0 min CN=72 Runoff=11.69 cfs 1.102 af

Subcatchment 14S: Chase Dr Drainge Runoff Area=6,650 sf 100.00% Impervious Runoff Depth>5.34"
Tc=6.0 min CN=98 Runoff=0.83 cfs 0.068 af

Subcatchment 15S: Chase Dr Drainge Runoff Area=6,650 sf 100.00% Impervious Runoff Depth>5.34"
Tc=6.0 min CN=98 Runoff=0.83 cfs 0.068 af

Subcatchment S1: City Land Runoff Area=29,510 sf 8.34% Impervious Runoff Depth>1.89"
Flow Length=480' Tc=6.0 min UI Adjusted CN=63 Runoff=1.43 cfs 0.106 af

Subcatchment S10: Market St Runoff Area=6,700 sf 20.90% Impervious Runoff Depth>2.30"
Tc=0.0 min UI Adjusted CN=68 Runoff=0.50 cfs 0.030 af

Subcatchment S2: New Roof To RG #1 Runoff Area=11,820 sf 71.07% Impervious Runoff Depth>4.11"
Tc=6.0 min CN=87 Runoff=1.28 cfs 0.093 af

Subcatchment S3: Parking Lot/Porous Runoff Area=10,020 sf 63.72% Impervious Runoff Depth>2.15"
Tc=790.0 min CN=89 Runoff=0.07 cfs 0.041 af

Subcatchment S4: Church Parking Lot Runoff Area=6,740 sf 59.20% Impervious Runoff Depth>3.70"
Tc=6.0 min CN=83 Runoff=0.67 cfs 0.048 af

Subcatchment S5: Church Parking Lot Runoff Area=14,260 sf 81.63% Impervious Runoff Depth>4.54"
Tc=6.0 min CN=91 Runoff=1.66 cfs 0.124 af

Subcatchment S6: Middle Parking Lot Runoff Area=10,830 sf 73.04% Impervious Runoff Depth>4.22"
Tc=6.0 min CN=88 Runoff=1.19 cfs 0.087 af

Subcatchment S7: Middle Parking Lot Runoff Area=6,710 sf 65.72% Impervious Runoff Depth>3.90"
Tc=6.0 min CN=85 Runoff=0.70 cfs 0.050 af

Subcatchment S8: Church Roof Drains Runoff Area=10,350 sf 100.00% Impervious Runoff Depth>5.34"
Flow Length=430' Tc=9.8 min CN=98 Runoff=1.15 cfs 0.106 af

Subcatchment S9: Side/Back of Church Runoff Area=23,870 sf 32.17% Impervious Runoff Depth>2.74"
Flow Length=430' Tc=9.8 min CN=73 Runoff=1.54 cfs 0.125 af

Reach 1R: Grass Swale Avg. Flow Depth=0.04' Max Vel=1.27 fps Inflow=0.07 cfs 0.041 af
n=0.022 L=135.0' S=0.0296 '/' Capacity=56.94 cfs Outflow=0.07 cfs 0.041 af

Pond 1P: CB 3396 Peak Elev=11.18' Storage=8 cf Inflow=1.43 cfs 0.148 af
15.0" Round Culvert n=0.012 L=75.0' S=0.0196 '/' Outflow=1.48 cfs 0.148 af

Pond 2P: CB #3377 Peak Elev=88.60' Storage=50 cf Inflow=4.83 cfs 0.300 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=5.89 cfs 0.303 af

Pond 3P: CB 3374 Peak Elev=86.10' Storage=0 cf Inflow=7.34 cfs 0.526 af
24.0" Round Culvert n=0.012 L=306.0' S=0.0127 '/' Outflow=7.34 cfs 0.526 af

Pond 4P: CB #3395 Peak Elev=87.26' Storage=74 cf Inflow=2.69 cfs 0.231 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0200 '/' Outflow=3.01 cfs 0.229 af

Pond 5P: OS #4 Peak Elev=89.14' Storage=41 cf Inflow=2.80 cfs 0.126 af
12.0" Round Culvert n=0.012 L=22.0' S=0.1705 '/' Outflow=3.06 cfs 0.125 af

Pond 6P: CB 611 Peak Elev=10.64' Storage=21 cf Inflow=8.27 cfs 0.674 af
24.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=9.20 cfs 0.674 af

Pond 7P: DMH #1 Peak Elev=87.09' Storage=131 cf Inflow=5.89 cfs 0.303 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0058 '/' Outflow=5.87 cfs 0.300 af

Pond 8P: CB #23 Peak Elev=86.14' Storage=61 cf Inflow=2.72 cfs 0.228 af
24.0" Round Culvert n=0.012 L=210.0' S=0.0329 '/' Outflow=2.72 cfs 0.226 af

Pond 9P: DMH #5097 Peak Elev=86.66' Storage=79 cf Inflow=3.01 cfs 0.229 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0096 '/' Outflow=2.72 cfs 0.228 af

Pond 10P: PDMH 2 Peak Elev=89.03' Storage=82 cf Inflow=4.45 cfs 0.273 af
12.0" Round Culvert n=0.012 L=16.0' S=0.0812 '/' Outflow=4.45 cfs 0.271 af

Pond 11P: CB #22361 Peak Elev=35.64' Storage=7 cf Inflow=1.80 cfs 0.152 af
30.0" Round Culvert n=0.024 L=200.0' S=0.0396 '/' Outflow=1.80 cfs 0.152 af

Pond 12P: DMH #22364 Peak Elev=28.54' Storage=19 cf Inflow=13.05 cfs 1.254 af
30.0" Round Culvert n=0.024 L=98.0' S=0.0355 '/' Outflow=13.05 cfs 1.254 af

Pond 13P: CB #22362 Peak Elev=24.84' Storage=19 cf Inflow=13.52 cfs 1.322 af
30.0" Round Culvert n=0.024 L=225.0' S=0.0356 '/' Outflow=13.52 cfs 1.322 af

Pond 14P: CB #22363 Peak Elev=25.21' Storage=6 cf Inflow=0.83 cfs 0.068 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0096 '/' Outflow=0.83 cfs 0.068 af

Pond 15P: CB #3397 Peak Elev=25.21' Storage=6 cf Inflow=0.83 cfs 0.068 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0096 '/' Outflow=0.83 cfs 0.068 af

Pond 16P: CB #3398 Peak Elev=13.16' Storage=21 cf Inflow=14.88 cfs 1.473 af
30.0" Round Culvert n=0.024 L=40.0' S=0.0475 '/' Outflow=14.88 cfs 1.473 af

Pond 17P: CB #13929 Peak Elev=37.28' Storage=7 cf Inflow=1.80 cfs 0.152 af
30.0" Round Culvert n=0.012 L=60.0' S=0.0240 '/' Outflow=1.80 cfs 0.152 af

Pond 18P: PDMH 1 Peak Elev=16.64' Storage=19 cf Inflow=14.37 cfs 1.405 af
30.0" Round Culvert n=0.024 L=105.0' S=0.0328 '/' Outflow=14.37 cfs 1.405 af

Pond P3: OS #3 Peak Elev=89.30' Storage=44 cf Inflow=4.05 cfs 0.148 af
12.0" Round Culvert n=0.012 L=26.0' S=0.0673 '/' Outflow=3.99 cfs 0.147 af

Pond RG1: Raingarden #1 Peak Elev=19.69' Storage=616 cf Inflow=1.28 cfs 0.093 af
Outflow=1.26 cfs 0.083 af

Pond RG3: Raingarden #3 Peak Elev=89.46' Storage=1,022 cf Inflow=1.66 cfs 0.124 af
Outflow=2.73 cfs 0.107 af

Pond RG4: Raingarden #4 Peak Elev=89.91' Storage=455 cf Inflow=1.19 cfs 0.087 af
Outflow=1.69 cfs 0.081 af

Pond RG5: Raingarden #5 Peak Elev=89.48' Storage=455 cf Inflow=0.70 cfs 0.050 af
Outflow=1.41 cfs 0.045 af

Pond YD2: Raingarden #2 Peak Elev=89.33' Storage=455 cf Inflow=0.67 cfs 0.048 af
Outflow=1.32 cfs 0.042 af

Link P100: POA #100 Inflow=9.20 cfs 0.674 af
Primary=9.20 cfs 0.674 af

Link P200: POA #200 (CB 3399) Inflow=14.88 cfs 1.473 af
Primary=14.88 cfs 1.473 af

Summary for Subcatchment 5S: Front of church drain to Chase Dr

Runoff = 1.26 cfs @ 12.13 hrs, Volume= 0.104 af, Depth> 4.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
3,970	61	>75% Grass cover, Good, HSG B
5,880	98	Roofs, HSG B
3,350	98	Unconnected pavement, HSG B
13,200	87	Weighted Average
3,970		30.08% Pervious Area
9,230		69.92% Impervious Area
3,350		36.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0200	0.17		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"

Summary for Subcatchment 10S: Chase Dr Drainge

Runoff = 0.60 cfs @ 12.08 hrs, Volume= 0.049 af, Depth> 5.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
3,500	98	Paved parking, HSG B
1,250	98	Unconnected pavement, HSG B
4,750	98	Weighted Average
4,750		100.00% Impervious Area
1,250		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment 12S: Brigham Hill

Runoff = 11.69 cfs @ 12.21 hrs, Volume= 1.102 af, Depth> 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (ac)	CN	Description
5.000	72	1/3 acre lots, 30% imp, HSG B
3.500		70.00% Pervious Area
1.500		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry, Tc Estimate**

Summary for Subcatchment 14S: Chase Dr Drainge

Runoff = 0.83 cfs @ 12.08 hrs, Volume= 0.068 af, Depth> 5.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
4,900	98	Paved parking, HSG B
1,750	98	Unconnected pavement, HSG B
6,650	98	Weighted Average
6,650		100.00% Impervious Area
1,750		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment 15S: Chase Dr Drainge

Runoff = 0.83 cfs @ 12.08 hrs, Volume= 0.068 af, Depth> 5.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
4,900	98	Paved parking, HSG B
1,750	98	Unconnected pavement, HSG B
6,650	98	Weighted Average
6,650		100.00% Impervious Area
1,750		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment S1: City Land

Runoff = 1.43 cfs @ 12.10 hrs, Volume= 0.106 af, Depth> 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Adj	Description
1,490	98		Paved parking, HSG B
27,050	61		>75% Grass cover, Good, HSG B
970	98		Unconnected pavement, HSG B
29,510	64	63	Weighted Average, UI Adjusted
27,050			91.66% Pervious Area
2,460			8.34% Impervious Area
970			39.43% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	200	0.0500	2.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.25"
1.7	280	0.0330	2.72		**Shallow Concentrated Flow, swale** Grassed Waterway Kv= 15.0 fps
3.2	480	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment S10: Market St

Runoff = 0.50 cfs @ 12.00 hrs, Volume= 0.030 af, Depth> 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Adj	Description
5,300	61		>75% Grass cover, Good, HSG B
1,000	98		Roofs, HSG B
400	98		Unconnected pavement, HSG B
6,700	69	68	Weighted Average, UI Adjusted
5,300			79.10% Pervious Area
1,400			20.90% Impervious Area
400			28.57% Unconnected

Summary for Subcatchment S2: New Roof To RG #1

Runoff = 1.28 cfs @ 12.09 hrs, Volume= 0.093 af, Depth> 4.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
7,440	98	Roofs, HSG B
3,420	61	>75% Grass cover, Good, HSG B
960	98	Unconnected pavement, HSG B
11,820	87	Weighted Average
3,420		28.93% Pervious Area
8,400		71.07% Impervious Area
960		11.43% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S3: Parking Lot/Porous Pavers

Runoff = 0.07 cfs @ 21.95 hrs, Volume= 0.041 af, Depth> 2.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

	Area (sf)	CN	Description
	1,650	61	>75% Grass cover, Good, HSG B
	5,135	98	Paved parking, HSG B
*	1,985	85	Porous Pavers, HSG B
	1,250	98	Unconnected pavement, HSG B
	10,020	89	Weighted Average
	3,635		36.28% Pervious Area
	6,385		63.72% Impervious Area
	1,250		19.58% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
790.0					**Direct Entry,**

Summary for Subcatchment S4: Church Parking Lot

Runoff = 0.67 cfs @ 12.09 hrs, Volume= 0.048 af, Depth> 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
3,790	98	Paved parking, HSG B
2,750	61	>75% Grass cover, Good, HSG B
200	98	Unconnected pavement, HSG B
6,740	83	Weighted Average
2,750		40.80% Pervious Area
3,990		59.20% Impervious Area
200		5.01% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S5: Church Parking Lot

Runoff = 1.66 cfs @ 12.08 hrs, Volume= 0.124 af, Depth> 4.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
11,540	98	Paved parking, HSG B
2,620	61	>75% Grass cover, Good, HSG B
100	98	Unconnected pavement, HSG B
14,260	91	Weighted Average
2,620		18.37% Pervious Area
11,640		81.63% Impervious Area
100		0.86% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S6: Middle Parking Lot

Runoff = 1.19 cfs @ 12.09 hrs, Volume= 0.087 af, Depth> 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
6,585	98	Paved parking, HSG B
2,920	61	>75% Grass cover, Good, HSG B
1,325	98	Unconnected pavement, HSG B
10,830	88	Weighted Average
2,920		26.96% Pervious Area
7,910		73.04% Impervious Area
1,325		16.75% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S7: Middle Parking Lot

Runoff = 0.70 cfs @ 12.09 hrs, Volume= 0.050 af, Depth> 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
1,870	98	Paved parking, HSG B
2,300	61	>75% Grass cover, Good, HSG B
1,480	98	Roofs, HSG B
1,060	98	Unconnected pavement, HSG B
6,710	85	Weighted Average
2,300		34.28% Pervious Area
4,410		65.72% Impervious Area
1,060		24.04% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S8: Church Roof Drains

Runoff = 1.15 cfs @ 12.13 hrs, Volume= 0.106 af, Depth> 5.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
10,350	98	Roofs, HSG B
10,350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0300	0.20		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
1.5	330	0.0600	3.67		**Shallow Concentrated Flow, shallow** Grassed Waterway Kv= 15.0 fps
9.8	430	Total			

Summary for Subcatchment S9: Side/Back of Church

Runoff = 1.54 cfs @ 12.14 hrs, Volume= 0.125 af, Depth> 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.58"

Area (sf)	CN	Description
1,840	98	Roofs, HSG B
2,017	98	Roofs, HSG B
1,458	98	Paved parking, HSG C
2,365	98	Unconnected pavement, HSG C
16,190	61	>75% Grass cover, Good, HSG B
23,870	73	Weighted Average
16,190		67.83% Pervious Area
7,680		32.17% Impervious Area
2,365		30.79% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0300	0.20		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
1.5	330	0.0600	3.67		**Shallow Concentrated Flow, shallow** Grassed Waterway Kv= 15.0 fps
9.8	430	Total			

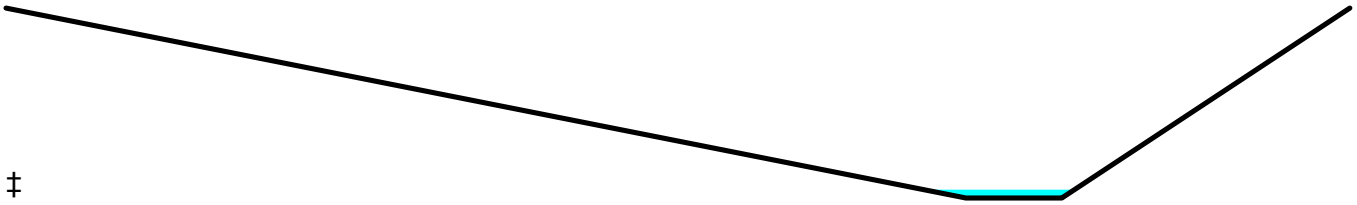
Summary for Reach 1R: Grass Swale

Inflow Area = 0.230 ac, 63.72% Impervious, Inflow Depth > 2.15" for 10-Year event
Inflow = 0.07 cfs @ 21.95 hrs, Volume= 0.041 af
Outflow = 0.07 cfs @ 21.97 hrs, Volume= 0.041 af, Atten= 0%, Lag= 1.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.27 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 0.87 fps, Avg. Travel Time= 2.6 min

Peak Storage= 8 cf @ 21.97 hrs
Average Depth at Peak Storage= 0.04'
Bank-Full Depth= 1.00' Flow Area= 7.5 sf, Capacity= 56.94 cfs

1.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 10.0 3.0 '/' Top Width= 14.00'
Length= 135.0' Slope= 0.0296 '/'
Inlet Invert= 19.00', Outlet Invert= 15.00'



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Summary for Pond 1P: CB 3396

Inflow Area = 0.907 ac, 22.38% Impervious, Inflow Depth > 1.95" for 10-Year event
Inflow = 1.43 cfs @ 12.10 hrs, Volume= 0.148 af
Outflow = 1.48 cfs @ 12.09 hrs, Volume= 0.148 af, Atten= 0%, Lag= 0.0 min
Primary = 1.48 cfs @ 12.09 hrs, Volume= 0.148 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 11.18' @ 12.06 hrs Surf.Area= 13 sf Storage= 8 cf
Flood Elev= 89.86' Surf.Area= 9,251 sf Storage= 11,412 cf

Plug-Flow detention time= 0.2 min calculated for 0.148 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (955.5 - 955.4)

Volume	Invert	Avail.Storage	Storage Description
#1	10.57'	43 cf	**4.00'D x 3.45'H Vertical Cone/Cylinder**
#2	14.00'	11,369 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		11,412 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.00	5	0	0
15.00	338	172	172
16.00	1,664	1,001	1,173
17.00	4,745	3,205	4,377
18.00	9,238	6,992	11,369

Device	Routing	Invert	Outlet Devices
#1	Primary	10.57'	**15.0" Round Culvert** L= 75.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.57' / 9.10' S= 0.0196 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.41 cfs @ 12.09 hrs HW=11.16' TW=10.41' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.41 cfs @ 3.66 fps)

Summary for Pond 2P: CB #3377

Inflow Area = 1.039 ac, 64.88% Impervious, Inflow Depth > 3.47" for 10-Year event
Inflow = 4.83 cfs @ 12.05 hrs, Volume= 0.300 af
Outflow = 5.89 cfs @ 12.02 hrs, Volume= 0.303 af, Atten= 0%, Lag= 0.0 min
Primary = 5.89 cfs @ 12.02 hrs, Volume= 0.303 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 88.60' @ 12.02 hrs Surf.Area= 13 sf Storage= 50 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.4 min (836.7 - 836.3)

Volume	Invert	Avail.Storage	Storage Description
#1	82.80'	50 cf	**4.00'D x 4.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	82.80'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.80' / 82.70' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=4.52 cfs @ 12.02 hrs HW=88.51' TW=87.08' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 4.52 cfs @ 5.76 fps)

Summary for Pond 3P: CB 3374

Inflow Area = 1.824 ac, 59.63% Impervious, Inflow Depth > 3.46" for 10-Year event
Inflow = 7.34 cfs @ 12.02 hrs, Volume= 0.526 af
Outflow = 7.34 cfs @ 12.02 hrs, Volume= 0.526 af, Atten= 0%, Lag= 0.0 min
Primary = 7.34 cfs @ 12.02 hrs, Volume= 0.526 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.10' @ 0.00 hrs Surf.Area= 13 sf Storage= 0 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 44 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (825.1 - 825.1)

Volume	Invert	Avail.Storage	Storage Description
#1	86.10'	44 cf	**4.00'D x 3.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	13.00'	**24.0" Round Culvert** L= 306.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.00' / 9.10' S= 0.0127 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.02 hrs HW=86.10' TW=10.38' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.00 cfs of 100.18 cfs potential flow)

Summary for Pond 4P: CB #3395

Inflow Area = 0.786 ac, 52.69% Impervious, Inflow Depth > 3.52" for 10-Year event
Inflow = 2.69 cfs @ 12.14 hrs, Volume= 0.231 af
Outflow = 3.01 cfs @ 12.14 hrs, Volume= 0.229 af, Atten= 0%, Lag= 0.2 min
Primary = 3.01 cfs @ 12.14 hrs, Volume= 0.229 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 87.26' @ 12.14 hrs Surf.Area= 13 sf Storage= 74 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= 6.4 min calculated for 0.229 af (99% of inflow)
Center-of-Mass det. time= 3.1 min (799.7 - 796.6)

Volume	Invert	Avail.Storage	Storage Description
#1	20.70'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.70'	**12.0" Round Culvert** L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.70' / 20.60' S= 0.0200 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.93 cfs @ 12.14 hrs HW=87.26' TW=86.66' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.93 cfs @ 3.73 fps)

Summary for Pond 5P: OS #4

Inflow Area = 0.403 ac, 70.24% Impervious, Inflow Depth > 3.75" for 10-Year event
Inflow = 2.80 cfs @ 13.55 hrs, Volume= 0.126 af
Outflow = 3.06 cfs @ 13.55 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.0 min
Primary = 3.06 cfs @ 13.55 hrs, Volume= 0.125 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 89.14' @ 12.13 hrs Surf.Area= 13 sf Storage= 41 cf

Plug-Flow detention time= 6.0 min calculated for 0.125 af (99% of inflow)
Center-of-Mass det. time= 2.3 min (828.2 - 826.0)

Volume	Invert	Avail.Storage	Storage Description
#1	23.25'	41 cf	**4.00'D x 3.25'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	23.25'	**12.0" Round Culvert** L= 22.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.25' / 19.50' S= 0.1705 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 13.55 hrs HW=86.77' TW=86.81' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 6P: CB 611

Inflow Area = 2.732 ac, 47.25% Impervious, Inflow Depth > 2.96" for 10-Year event
Inflow = 8.27 cfs @ 12.05 hrs, Volume= 0.674 af
Outflow = 9.20 cfs @ 12.05 hrs, Volume= 0.674 af, Atten= 0%, Lag= 0.0 min
Primary = 9.20 cfs @ 12.05 hrs, Volume= 0.674 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 10.64' @ 12.05 hrs Surf.Area= 13 sf Storage= 21 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 112 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.1 min (853.7 - 853.7)

Volume	Invert	Avail.Storage	Storage Description
#1	9.00'	112 cf	**4.00'D x 8.91'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	9.00'	**24.0" Round Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 9.00' / 8.90' S= 0.0100 '/' Cc= 0.900

n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=8.99 cfs @ 12.05 hrs HW=10.62' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 8.99 cfs @ 4.52 fps)

Summary for Pond 7P: DMH #1

Inflow Area = 1.039 ac, 64.88% Impervious, Inflow Depth > 3.50" for 10-Year event
Inflow = 5.89 cfs @ 12.02 hrs, Volume= 0.303 af
Outflow = 5.87 cfs @ 12.02 hrs, Volume= 0.300 af, Atten= 0%, Lag= 0.0 min
Primary = 5.87 cfs @ 12.02 hrs, Volume= 0.300 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 87.09' @ 12.02 hrs Surf.Area= 13 sf Storage= 131 cf

Plug-Flow detention time= 7.9 min calculated for 0.300 af (99% of inflow)
Center-of-Mass det. time= 2.1 min (838.8 - 836.7)

Volume	Invert	Avail.Storage	Storage Description
#1	13.52'	131 cf	**4.00'D x 10.45'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	13.52'	**15.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.52' / 13.30' S= 0.0058 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=5.85 cfs @ 12.02 hrs HW=87.08' TW=86.10' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 5.85 cfs @ 4.76 fps)

Summary for Pond 8P: CB #23

Inflow Area = 0.786 ac, 52.69% Impervious, Inflow Depth > 3.49" for 10-Year event
Inflow = 2.72 cfs @ 12.14 hrs, Volume= 0.228 af
Outflow = 2.72 cfs @ 12.13 hrs, Volume= 0.226 af, Atten= 0%, Lag= 0.0 min
Primary = 2.72 cfs @ 12.13 hrs, Volume= 0.226 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.14' @ 12.13 hrs Surf.Area= 13 sf Storage= 61 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 61 cf

Plug-Flow detention time= 9.5 min calculated for 0.226 af (99% of inflow)
Center-of-Mass det. time= 3.8 min (806.9 - 803.1)

Volume	Invert	Avail.Storage	Storage Description
#1	20.00'	61 cf	**4.00'D x 4.88'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.00'	**24.0" Round Culvert** L= 210.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.00' / 13.10' S= 0.0329 '/' Cc= 0.900

n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=2.72 cfs @ 12.13 hrs HW=86.14' TW=86.10' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 2.72 cfs @ 0.86 fps)

Summary for Pond 9P: DMH #5097

Inflow Area = 0.786 ac, 52.69% Impervious, Inflow Depth > 3.51" for 10-Year event
Inflow = 3.01 cfs @ 12.14 hrs, Volume= 0.229 af
Outflow = 2.72 cfs @ 12.14 hrs, Volume= 0.228 af, Atten= 10%, Lag= 0.0 min
Primary = 2.72 cfs @ 12.14 hrs, Volume= 0.228 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.66' @ 12.14 hrs Surf.Area= 13 sf Storage= 79 cf

Plug-Flow detention time= 7.0 min calculated for 0.228 af (99% of inflow)
Center-of-Mass det. time= 3.4 min (803.1 - 799.7)

Volume	Invert	Avail.Storage	Storage Description
#1	20.53'	79 cf	**4.00'D x 6.25'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.53'	**12.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.53' / 20.10' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.73 cfs @ 12.14 hrs HW=86.66' TW=86.14' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.73 cfs @ 3.47 fps)

Summary for Pond 10P: PDMH 2

Inflow Area = 0.885 ac, 72.52% Impervious, Inflow Depth > 3.70" for 10-Year event
Inflow = 4.45 cfs @ 12.05 hrs, Volume= 0.273 af
Outflow = 4.45 cfs @ 12.05 hrs, Volume= 0.271 af, Atten= 0%, Lag= 0.0 min
Primary = 4.45 cfs @ 12.05 hrs, Volume= 0.271 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 89.03' @ 12.12 hrs Surf.Area= 13 sf Storage= 82 cf

Plug-Flow detention time= 7.0 min calculated for 0.271 af (99% of inflow)
Center-of-Mass det. time= 2.9 min (835.8 - 832.9)

Volume	Invert	Avail.Storage	Storage Description
#1	19.40'	82 cf	**4.00'D x 6.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	19.40'	**12.0" Round Culvert** L= 16.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 19.40' / 18.10' S= 0.0812 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.05 hrs HW=87.35' TW=87.89' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond 11P: CB #22361

Inflow Area = 0.412 ac, 77.88% Impervious, Inflow Depth > 4.43" for 10-Year event
Inflow = 1.80 cfs @ 12.11 hrs, Volume= 0.152 af
Outflow = 1.80 cfs @ 12.11 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.0 min
Primary = 1.80 cfs @ 12.11 hrs, Volume= 0.152 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 35.64' @ 12.11 hrs Surf.Area= 13 sf Storage= 7 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 73 cf

Plug-Flow detention time= 0.2 min calculated for 0.152 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (782.7 - 782.6)

Volume	Invert	Avail.Storage	Storage Description
#1	35.12'	73 cf	**4.00'D x 5.80'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	35.12'	**30.0" Round Culvert** L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.12' / 27.19' S= 0.0396 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=1.79 cfs @ 12.11 hrs HW=35.64' TW=28.38' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.79 cfs @ 2.45 fps)

Summary for Pond 12P: DMH #22364

Inflow Area = 5.412 ac, 33.65% Impervious, Inflow Depth > 2.78" for 10-Year event
Inflow = 13.05 cfs @ 12.20 hrs, Volume= 1.254 af
Outflow = 13.05 cfs @ 12.20 hrs, Volume= 1.254 af, Atten= 0%, Lag= 0.0 min
Primary = 13.05 cfs @ 12.20 hrs, Volume= 1.254 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 28.54' @ 12.20 hrs Surf.Area= 13 sf Storage= 19 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 79 cf

Plug-Flow detention time= 0.1 min calculated for 1.254 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (836.1 - 836.0)

Volume	Invert	Avail.Storage	Storage Description
#1	27.02'	79 cf	**4.00'D x 6.30'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	27.02'	**30.0" Round Culvert** L= 98.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.02' / 23.54' S= 0.0355 '/' Cc= 0.900

n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=13.05 cfs @ 12.20 hrs HW=28.54' TW=24.84' (Dynamic Tailwater)
1=Culvert (Inlet Controls 13.05 cfs @ 4.19 fps)

Summary for Pond 13P: CB #22362

Inflow Area = 5.565 ac, 35.47% Impervious, Inflow Depth > 2.85" for 10-Year event
Inflow = 13.52 cfs @ 12.19 hrs, Volume= 1.322 af
Outflow = 13.52 cfs @ 12.19 hrs, Volume= 1.322 af, Atten= 0%, Lag= 0.0 min
Primary = 13.52 cfs @ 12.19 hrs, Volume= 1.322 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.84' @ 12.19 hrs Surf.Area= 13 sf Storage= 19 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 82 cf

Plug-Flow detention time= 0.1 min calculated for 1.321 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (831.5 - 831.4)

Volume	Invert	Avail.Storage	Storage Description
#1	23.29'	82 cf	**4.00'D x 6.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	23.29'	**30.0" Round Culvert** L= 225.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.29' / 15.28' S= 0.0356 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=13.51 cfs @ 12.19 hrs HW=24.84' TW=16.64' (Dynamic Tailwater)
1=Culvert (Inlet Controls 13.51 cfs @ 4.24 fps)

Summary for Pond 14P: CB #22363

Inflow Area = 0.153 ac,100.00% Impervious, Inflow Depth > 5.34" for 10-Year event
Inflow = 0.83 cfs @ 12.08 hrs, Volume= 0.068 af
Outflow = 0.83 cfs @ 12.08 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.1 min
Primary = 0.83 cfs @ 12.08 hrs, Volume= 0.068 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.21' @ 12.08 hrs Surf.Area= 13 sf Storage= 6 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.4 min calculated for 0.068 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (746.0 - 745.7)

Volume	Invert	Avail.Storage	Storage Description
#1	24.76'	63 cf	**4.00'D x 5.05'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	24.76'	**15.0" Round Culvert** L= 28.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 24.76' / 24.49' S= 0.0096 '/' Cc= 0.900
n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.83 cfs @ 12.08 hrs HW=25.21' TW=24.59' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.83 cfs @ 3.12 fps)

Summary for Pond 15P: CB #3397

Inflow Area = 0.153 ac,100.00% Impervious, Inflow Depth > 5.34" for 10-Year event
Inflow = 0.83 cfs @ 12.08 hrs, Volume= 0.068 af
Outflow = 0.83 cfs @ 12.08 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.1 min
Primary = 0.83 cfs @ 12.08 hrs, Volume= 0.068 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.21' @ 12.08 hrs Surf.Area= 13 sf Storage= 6 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.4 min calculated for 0.068 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (746.0 - 745.7)

Volume	Invert	Avail.Storage	Storage Description
#1	24.76'	63 cf	**4.00'D x 5.05'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	24.76'	**15.0" Round Culvert** L= 28.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.76' / 24.49' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.83 cfs @ 12.08 hrs HW=25.21' TW=12.97' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.83 cfs @ 3.12 fps)

Summary for Pond 16P: CB #3398

Inflow Area = 5.989 ac, 38.72% Impervious, Inflow Depth > 2.95" for 10-Year event
Inflow = 14.88 cfs @ 12.18 hrs, Volume= 1.473 af
Outflow = 14.88 cfs @ 12.18 hrs, Volume= 1.473 af, Atten= 0%, Lag= 0.0 min
Primary = 14.88 cfs @ 12.18 hrs, Volume= 1.473 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.16' @ 12.18 hrs Surf.Area= 13 sf Storage= 21 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= 0.1 min calculated for 1.472 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (827.7 - 827.7)

Volume	Invert	Avail.Storage	Storage Description
#1	11.52'	74 cf	**4.00'D x 5.90'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	11.52'	**30.0" Round Culvert**

L= 40.0' RCP, square edge headwall, Ke= 0.500
Inlet / Outlet Invert= 11.52' / 9.62' S= 0.0475 '/' Cc= 0.900
n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=14.88 cfs @ 12.18 hrs HW=13.16' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 14.88 cfs @ 4.36 fps)

Summary for Pond 17P: CB #13929

Inflow Area = 0.412 ac, 77.88% Impervious, Inflow Depth > 4.43" for 10-Year event
Inflow = 1.80 cfs @ 12.11 hrs, Volume= 0.152 af
Outflow = 1.80 cfs @ 12.11 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.0 min
Primary = 1.80 cfs @ 12.11 hrs, Volume= 0.152 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 37.28' @ 12.11 hrs Surf.Area= 13 sf Storage= 7 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 89 cf

Plug-Flow detention time= 0.2 min calculated for 0.152 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (782.6 - 782.4)

Volume	Invert	Avail.Storage	Storage Description
#1	36.76'	89 cf	**4.00'D x 7.10'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	36.76'	**30.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.76' / 35.32' S= 0.0240 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

Primary OutFlow Max=1.80 cfs @ 12.11 hrs HW=37.28' TW=35.64' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.80 cfs @ 2.45 fps)

Summary for Pond 18P: PDMH 1

Inflow Area = 5.836 ac, 37.12% Impervious, Inflow Depth > 2.89" for 10-Year event
Inflow = 14.37 cfs @ 12.18 hrs, Volume= 1.405 af
Outflow = 14.37 cfs @ 12.18 hrs, Volume= 1.405 af, Atten= 0%, Lag= 0.0 min
Primary = 14.37 cfs @ 12.18 hrs, Volume= 1.405 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 16.64' @ 12.19 hrs Surf.Area= 13 sf Storage= 19 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 130 cf

Plug-Flow detention time= 0.1 min calculated for 1.405 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (831.6 - 831.6)

Volume	Invert	Avail.Storage	Storage Description
#1	15.16'	130 cf	**4.00'D x 10.35'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	15.16'	**30.0" Round Culvert** L= 105.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 15.16' / 11.72' S= 0.0328 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=14.35 cfs @ 12.18 hrs HW=16.64' TW=13.16' (Dynamic Tailwater)
1=Culvert (Outlet Controls 14.35 cfs @ 6.84 fps)

Summary for Pond P3: OS #3

Inflow Area = 0.482 ac, 74.43% Impervious, Inflow Depth > 3.70" for 10-Year event
Inflow = 4.05 cfs @ 14.78 hrs, Volume= 0.148 af
Outflow = 3.99 cfs @ 14.78 hrs, Volume= 0.147 af, Atten= 2%, Lag= 0.0 min
Primary = 3.99 cfs @ 14.78 hrs, Volume= 0.147 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 89.30' @ 12.13 hrs Surf.Area= 13 sf Storage= 44 cf

Plug-Flow detention time= 6.4 min calculated for 0.147 af (99% of inflow)
Center-of-Mass det. time= 2.1 min (836.8 - 834.6)

Volume	Invert	Avail.Storage	Storage Description
#1	21.25'	44 cf	**4.00'D x 3.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	21.25'	**12.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.25' / 19.50' S= 0.0673 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=3.82 cfs @ 14.78 hrs HW=84.93' TW=83.91' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.82 cfs @ 4.86 fps)

Summary for Pond RG1: Raingarden #1

Inflow Area = 0.271 ac, 71.07% Impervious, Inflow Depth > 4.11" for 10-Year event
Inflow = 1.28 cfs @ 12.09 hrs, Volume= 0.093 af
Outflow = 1.26 cfs @ 12.10 hrs, Volume= 0.083 af, Atten= 1%, Lag= 0.8 min
Primary = 1.26 cfs @ 12.10 hrs, Volume= 0.083 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 19.69' @ 12.10 hrs Surf.Area= 474 sf Storage= 616 cf

Plug-Flow detention time= 88.1 min calculated for 0.083 af (89% of inflow)
Center-of-Mass det. time= 36.5 min (833.1 - 796.6)

Volume	Invert	Avail.Storage	Storage Description
#1	16.25'	975 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
16.25	200	0.0	0	0
17.25	200	40.0	80	80
17.50	200	10.0	5	85
19.00	200	100.0	300	385
20.00	600	100.0	400	785
20.20	1,300	100.0	190	975

Device	Routing	Invert	Outlet Devices
#1	Primary	16.25'	**12.0" Round Culvert** L= 64.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.25' / 15.78' S= 0.0073 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	19.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	16.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 10.00'

Primary OutFlow Max=1.26 cfs @ 12.10 hrs HW=19.69' TW=16.49' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.26 cfs of 5.99 cfs potential flow)
  └─**2=Orifice/Grate** (Weir Controls 1.23 cfs @ 1.41 fps)
  └─**3=Exfiltration** (Controls 0.03 cfs)

Summary for Pond RG3: Raingarden #3

Inflow Area = 0.327 ac, 81.63% Impervious, Inflow Depth > 4.54" for 10-Year event
Inflow = 1.66 cfs @ 12.08 hrs, Volume= 0.124 af
Outflow = 2.73 cfs @ 14.78 hrs, Volume= 0.107 af, Atten= 0%, Lag= 161.7 min
Primary = 2.73 cfs @ 14.78 hrs, Volume= 0.107 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 89.46' @ 12.14 hrs Surf.Area= 700 sf Storage= 1,022 cf

Plug-Flow detention time= 105.0 min calculated for 0.107 af (86% of inflow)
Center-of-Mass det. time= 44.9 min (827.6 - 782.7)

Volume	Invert	Avail.Storage	Storage Description
#1	21.25'	1,022 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.25	250	0.0	0	0
22.25	250	40.0	100	100
22.50	250	10.0	6	106
24.00	250	100.0	375	481
25.00	525	100.0	388	869
25.25	700	100.0	153	1,022

Device	Routing	Invert	Outlet Devices
#1	Primary	21.26'	**12.0" Round Culvert** L= 1.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.26' / 21.25' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	24.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	21.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 15.00'

Primary OutFlow Max=0.00 cfs @ 14.78 hrs HW=25.18' TW=84.93' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)
└─**2=Orifice/Grate** (Controls 0.00 cfs)
└─**3=Exfiltration** (Passes 0.00 cfs of 0.04 cfs potential flow)

Summary for Pond RG4: Raingarden #4

Inflow Area = 0.249 ac, 73.04% Impervious, Inflow Depth > 4.22" for 10-Year event
Inflow = 1.19 cfs @ 12.09 hrs, Volume= 0.087 af
Outflow = 1.69 cfs @ 12.08 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min
Primary = 1.69 cfs @ 12.08 hrs, Volume= 0.081 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 89.91' @ 12.14 hrs Surf.Area= 400 sf Storage= 455 cf

Plug-Flow detention time= 60.6 min calculated for 0.081 af (93% of inflow)
Center-of-Mass det. time= 24.3 min (817.7 - 793.4)

Volume	Invert	Avail.Storage	Storage Description
#1	23.25'	455 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.25	100	0.0	0	0
24.25	100	40.0	40	40
24.50	100	10.0	3	43
26.00	100	100.0	150	193
27.00	260	100.0	180	373
27.25	400	100.0	83	455

Device	Routing	Invert	Outlet Devices
#1	Primary	23.25'	**8.0" Round Culvert** L= 1.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.25' / 22.35' S= 0.9000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	26.50'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	23.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 17.00'

Primary OutFlow Max=2.18 cfs @ 12.08 hrs HW=89.24' TW=87.56' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.18 cfs @ 6.26 fps)
└**2=Orifice/Grate** (Passes < 2.18 cfs potential flow)
└**3=Exfiltration** (Passes < 0.16 cfs potential flow)

Summary for Pond RG5: Raingarden #5

Inflow Area = 0.154 ac, 65.72% Impervious, Inflow Depth > 3.90" for 10-Year event
Inflow = 0.70 cfs @ 12.09 hrs, Volume= 0.050 af
Outflow = 1.41 cfs @ 13.55 hrs, Volume= 0.045 af, Atten= 0%, Lag= 87.8 min
Primary = 1.41 cfs @ 13.55 hrs, Volume= 0.045 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 89.48' @ 12.14 hrs Surf.Area= 400 sf Storage= 455 cf

Plug-Flow detention time= 89.8 min calculated for 0.045 af (89% of inflow)
Center-of-Mass det. time= 38.4 min (841.1 - 802.7)

Volume	Invert	Avail.Storage	Storage Description
#1	25.25'	455 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.25	100	0.0	0	0
26.25	100	40.0	40	40
26.50	100	10.0	3	43
28.00	100	100.0	150	193
29.00	260	100.0	180	373
29.25	400	100.0	83	455

Device	Routing	Invert	Outlet Devices
#1	Primary	25.25'	**8.0" Round Culvert** L= 84.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 25.25' / 23.35' S= 0.0226 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	28.50'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	25.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 19.00'

Primary OutFlow Max=0.00 cfs @ 13.55 hrs HW=30.21' TW=85.69' (Dynamic Tailwater)
└**1=Culvert** (Controls 0.00 cfs)
└**2=Orifice/Grate** (Controls 0.00 cfs)
└**3=Exfiltration** (Passes 0.00 cfs of 0.02 cfs potential flow)

Summary for Pond YD2: Raingarden #2

Inflow Area = 0.155 ac, 59.20% Impervious, Inflow Depth > 3.70" for 10-Year event
Inflow = 0.67 cfs @ 12.09 hrs, Volume= 0.048 af
Outflow = 1.32 cfs @ 14.78 hrs, Volume= 0.042 af, Atten= 0%, Lag= 161.6 min
Primary = 1.32 cfs @ 14.78 hrs, Volume= 0.042 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 89.33' @ 12.14 hrs Surf.Area= 400 sf Storage= 455 cf

Plug-Flow detention time= 101.5 min calculated for 0.042 af (87% of inflow)
Center-of-Mass det. time= 44.3 min (852.7 - 808.4)

Volume	Invert	Avail.Storage	Storage Description
#1	22.25'	455 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.25	100	0.0	0	0
23.25	100	40.0	40	40
23.50	100	10.0	3	43
25.00	100	100.0	150	193
26.00	260	100.0	180	373
26.25	400	100.0	83	455

Device	Routing	Invert	Outlet Devices
#1	Primary	22.25'	**12.0" Round Culvert** L= 52.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 22.25' / 21.35' S= 0.0173 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	25.50'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	22.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 16.00'

Primary OutFlow Max=0.00 cfs @ 14.78 hrs HW=26.10' TW=84.93' (Dynamic Tailwater)
- **1=Culvert** (Controls 0.00 cfs)
  - **2=Orifice/Grate** (Controls 0.00 cfs)
  - **3=Exfiltration** (Passes 0.00 cfs of 0.02 cfs potential flow)

Summary for Link P100: POA #100

Inflow Area = 2.732 ac, 47.25% Impervious, Inflow Depth > 2.96" for 10-Year event
Inflow = 9.20 cfs @ 12.05 hrs, Volume= 0.674 af
Primary = 9.20 cfs @ 12.05 hrs, Volume= 0.674 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link P200: POA #200 (CB 3399)

Inflow Area = 5.989 ac, 38.72% Impervious, Inflow Depth > 2.95" for 10-Year event
Inflow = 14.88 cfs @ 12.18 hrs, Volume= 1.473 af
Primary = 14.88 cfs @ 12.18 hrs, Volume= 1.473 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
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 5S: Front of church drain to Runoff Area=13,200 sf 69.92% Impervious Runoff Depth>5.54"
Flow Length=100' Slope=0.0200 '/' Tc=9.7 min CN=87 Runoff=1.68 cfs 0.140 af

Subcatchment 10S: Chase Dr Drainge Runoff Area=4,750 sf 100.00% Impervious Runoff Depth>6.83"
Tc=6.0 min CN=98 Runoff=0.76 cfs 0.062 af

Subcatchment 12S: Brigham Hill Runoff Area=5.000 ac 30.00% Impervious Runoff Depth>3.88"
Tc=15.0 min CN=72 Runoff=17.24 cfs 1.615 af

Subcatchment 14S: Chase Dr Drainge Runoff Area=6,650 sf 100.00% Impervious Runoff Depth>6.83"
Tc=6.0 min CN=98 Runoff=1.06 cfs 0.087 af

Subcatchment 15S: Chase Dr Drainge Runoff Area=6,650 sf 100.00% Impervious Runoff Depth>6.83"
Tc=6.0 min CN=98 Runoff=1.06 cfs 0.087 af

Subcatchment S1: City Land Runoff Area=29,510 sf 8.34% Impervious Runoff Depth>2.95"
Flow Length=480' Tc=6.0 min UI Adjusted CN=63 Runoff=2.31 cfs 0.167 af

Subcatchment S10: Market St Runoff Area=6,700 sf 20.90% Impervious Runoff Depth>3.47"
Tc=0.0 min UI Adjusted CN=68 Runoff=0.76 cfs 0.044 af

Subcatchment S2: New Roof To RG #1 Runoff Area=11,820 sf 71.07% Impervious Runoff Depth>5.54"
Tc=6.0 min CN=87 Runoff=1.70 cfs 0.125 af

Subcatchment S3: Parking Lot/Porous Runoff Area=10,020 sf 63.72% Impervious Runoff Depth>2.92"
Tc=790.0 min CN=89 Runoff=0.10 cfs 0.056 af

Subcatchment S4: Church Parking Lot Runoff Area=6,740 sf 59.20% Impervious Runoff Depth>5.09"
Tc=6.0 min CN=83 Runoff=0.91 cfs 0.066 af

Subcatchment S5: Church Parking Lot Runoff Area=14,260 sf 81.63% Impervious Runoff Depth>6.00"
Tc=6.0 min CN=91 Runoff=2.16 cfs 0.164 af

Subcatchment S6: Middle Parking Lot Runoff Area=10,830 sf 73.04% Impervious Runoff Depth>5.66"
Tc=6.0 min CN=88 Runoff=1.58 cfs 0.117 af

Subcatchment S7: Middle Parking Lot Runoff Area=6,710 sf 65.72% Impervious Runoff Depth>5.31"
Tc=6.0 min CN=85 Runoff=0.93 cfs 0.068 af

Subcatchment S8: Church Roof Drains Runoff Area=10,350 sf 100.00% Impervious Runoff Depth>6.82"
Flow Length=430' Tc=9.8 min CN=98 Runoff=1.46 cfs 0.135 af

Subcatchment S9: Side/Back of Church Runoff Area=23,870 sf 32.17% Impervious Runoff Depth>3.99"
Flow Length=430' Tc=9.8 min CN=73 Runoff=2.26 cfs 0.182 af

Reach 1R: Grass Swale Avg. Flow Depth=0.05' Max Vel=1.39 fps Inflow=0.10 cfs 0.056 af
n=0.022 L=135.0' S=0.0296 '/' Capacity=56.94 cfs Outflow=0.10 cfs 0.056 af

Pond 1P: CB 3396 Peak Elev=11.46' Storage=11 cf Inflow=2.31 cfs 0.222 af
15.0" Round Culvert n=0.012 L=75.0' S=0.0196 '/' Outflow=2.34 cfs 0.222 af

Pond 2P: CB #3377 Peak Elev=90.81' Storage=50 cf Inflow=6.29 cfs 0.420 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=7.77 cfs 0.421 af

Pond 3P: CB 3374 Peak Elev=86.10' Storage=0 cf Inflow=11.76 cfs 0.731 af
24.0" Round Culvert n=0.012 L=306.0' S=0.0127 '/' Outflow=11.76 cfs 0.731 af

Pond 4P: CB #3395 Peak Elev=88.19' Storage=74 cf Inflow=3.71 cfs 0.317 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0200 '/' Outflow=4.37 cfs 0.316 af

Pond 5P: OS #4 Peak Elev=93.70' Storage=41 cf Inflow=2.81 cfs 0.173 af
12.0" Round Culvert n=0.012 L=22.0' S=0.1705 '/' Outflow=3.14 cfs 0.173 af

Pond 6P: CB 611 Peak Elev=10.96' Storage=25 cf Inflow=14.11 cfs 0.953 af
24.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=12.10 cfs 0.957 af

Pond 7P: DMH #1 Peak Elev=87.81' Storage=131 cf Inflow=7.77 cfs 0.421 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0058 '/' Outflow=7.73 cfs 0.418 af

Pond 8P: CB #23 Peak Elev=86.21' Storage=61 cf Inflow=4.35 cfs 0.315 af
24.0" Round Culvert n=0.012 L=210.0' S=0.0329 '/' Outflow=4.40 cfs 0.313 af

Pond 9P: DMH #5097 Peak Elev=87.48' Storage=79 cf Inflow=4.37 cfs 0.316 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0096 '/' Outflow=4.35 cfs 0.315 af

Pond 10P: PDMH 2 Peak Elev=93.15' Storage=82 cf Inflow=5.86 cfs 0.378 af
12.0" Round Culvert n=0.012 L=16.0' S=0.0812 '/' Outflow=5.86 cfs 0.376 af

Pond 11P: CB #22361 Peak Elev=35.72' Storage=7 cf Inflow=2.36 cfs 0.202 af
30.0" Round Culvert n=0.024 L=200.0' S=0.0396 '/' Outflow=2.36 cfs 0.202 af

Pond 12P: DMH #22364 Peak Elev=28.94' Storage=24 cf Inflow=19.05 cfs 1.817 af
30.0" Round Culvert n=0.024 L=98.0' S=0.0355 '/' Outflow=19.05 cfs 1.817 af

Pond 13P: CB #22362 Peak Elev=25.25' Storage=25 cf Inflow=19.66 cfs 1.904 af
30.0" Round Culvert n=0.024 L=225.0' S=0.0356 '/' Outflow=19.66 cfs 1.904 af

Pond 14P: CB #22363 Peak Elev=25.34' Storage=7 cf Inflow=1.06 cfs 0.087 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0096 '/' Outflow=1.06 cfs 0.087 af

Pond 15P: CB #3397 Peak Elev=25.28' Storage=6 cf Inflow=1.06 cfs 0.087 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0096 '/' Outflow=1.06 cfs 0.087 af

Pond 16P: CB #3398 Peak Elev=13.60' Storage=26 cf Inflow=21.43 cfs 2.105 af
30.0" Round Culvert n=0.024 L=40.0' S=0.0475 '/' Outflow=21.43 cfs 2.105 af

Pond 17P: CB #13929 Peak Elev=37.36' Storage=7 cf Inflow=2.36 cfs 0.202 af
30.0" Round Culvert n=0.012 L=60.0' S=0.0240 '/' Outflow=2.36 cfs 0.202 af

Pond 18P: PDMH 1 Peak Elev=17.03' Storage=24 cf Inflow=20.78 cfs 2.018 af
30.0" Round Culvert n=0.024 L=105.0' S=0.0328 '/' Outflow=20.78 cfs 2.018 af

Pond P3: OS #3 Peak Elev=93.58' Storage=44 cf Inflow=3.84 cfs 0.206 af
12.0" Round Culvert n=0.012 L=26.0' S=0.0673 '/' Outflow=3.83 cfs 0.205 af

Pond RG1: Raingarden #1 Peak Elev=19.73' Storage=635 cf Inflow=1.70 cfs 0.125 af
Outflow=1.68 cfs 0.114 af

Pond RG3: Raingarden #3 Peak Elev=94.40' Storage=1,022 cf Inflow=2.16 cfs 0.164 af
Outflow=3.43 cfs 0.147 af

Pond RG4: Raingarden #4 Peak Elev=95.54' Storage=455 cf Inflow=1.58 cfs 0.117 af
Outflow=2.30 cfs 0.111 af

Pond RG5: Raingarden #5 Peak Elev=93.74' Storage=455 cf Inflow=0.93 cfs 0.068 af
Outflow=1.62 cfs 0.062 af

Pond YD2: Raingarden #2 Peak Elev=93.58' Storage=455 cf Inflow=0.91 cfs 0.066 af
Outflow=1.59 cfs 0.060 af

Link P100: POA #100 Inflow=12.10 cfs 0.957 af
Primary=12.10 cfs 0.957 af

Link P200: POA #200 (CB 3399) Inflow=21.43 cfs 2.105 af
Primary=21.43 cfs 2.105 af

Summary for Subcatchment 5S: Front of church drain to Chase Dr

Runoff = 1.68 cfs @ 12.13 hrs, Volume= 0.140 af, Depth> 5.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
3,970	61	>75% Grass cover, Good, HSG B
5,880	98	Roofs, HSG B
3,350	98	Unconnected pavement, HSG B
13,200	87	Weighted Average
3,970		30.08% Pervious Area
9,230		69.92% Impervious Area
3,350		36.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0200	0.17		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"

Summary for Subcatchment 10S: Chase Dr Drainge

Runoff = 0.76 cfs @ 12.08 hrs, Volume= 0.062 af, Depth> 6.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
3,500	98	Paved parking, HSG B
1,250	98	Unconnected pavement, HSG B
4,750	98	Weighted Average
4,750		100.00% Impervious Area
1,250		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment 12S: Brigham Hill

Runoff = 17.24 cfs @ 12.21 hrs, Volume= 1.615 af, Depth> 3.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (ac)	CN	Description
5.000	72	1/3 acre lots, 30% imp, HSG B
3.500		70.00% Pervious Area
1.500		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry, Tc Estimate**

Summary for Subcatchment 14S: Chase Dr Drainge

Runoff = 1.06 cfs @ 12.08 hrs, Volume= 0.087 af, Depth> 6.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
4,900	98	Paved parking, HSG B
1,750	98	Unconnected pavement, HSG B
6,650	98	Weighted Average
6,650		100.00% Impervious Area
1,750		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment 15S: Chase Dr Drainge

Runoff = 1.06 cfs @ 12.08 hrs, Volume= 0.087 af, Depth> 6.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
4,900	98	Paved parking, HSG B
1,750	98	Unconnected pavement, HSG B
6,650	98	Weighted Average
6,650		100.00% Impervious Area
1,750		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment S1: City Land

Runoff = 2.31 cfs @ 12.09 hrs, Volume= 0.167 af, Depth> 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Adj	Description
1,490	98		Paved parking, HSG B
27,050	61		>75% Grass cover, Good, HSG B
970	98		Unconnected pavement, HSG B
29,510	64	63	Weighted Average, UI Adjusted
27,050			91.66% Pervious Area
2,460			8.34% Impervious Area
970			39.43% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	200	0.0500	2.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.25"
1.7	280	0.0330	2.72		**Shallow Concentrated Flow, swale** Grassed Waterway Kv= 15.0 fps
3.2	480	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment S10: Market St

Runoff = 0.76 cfs @ 12.00 hrs, Volume= 0.044 af, Depth> 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Adj	Description
5,300	61		>75% Grass cover, Good, HSG B
1,000	98		Roofs, HSG B
400	98		Unconnected pavement, HSG B
6,700	69	68	Weighted Average, UI Adjusted
5,300			79.10% Pervious Area
1,400			20.90% Impervious Area
400			28.57% Unconnected

Summary for Subcatchment S2: New Roof To RG #1

Runoff = 1.70 cfs @ 12.08 hrs, Volume= 0.125 af, Depth> 5.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
7,440	98	Roofs, HSG B
3,420	61	>75% Grass cover, Good, HSG B
960	98	Unconnected pavement, HSG B
11,820	87	Weighted Average
3,420		28.93% Pervious Area
8,400		71.07% Impervious Area
960		11.43% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S3: Parking Lot/Porous Pavers

Runoff = 0.10 cfs @ 21.95 hrs, Volume= 0.056 af, Depth> 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

	Area (sf)	CN	Description
	1,650	61	>75% Grass cover, Good, HSG B
	5,135	98	Paved parking, HSG B
*	1,985	85	Porous Pavers, HSG B
	1,250	98	Unconnected pavement, HSG B
	10,020	89	Weighted Average
	3,635		36.28% Pervious Area
	6,385		63.72% Impervious Area
	1,250		19.58% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
790.0					**Direct Entry,**

Summary for Subcatchment S4: Church Parking Lot

Runoff = 0.91 cfs @ 12.09 hrs, Volume= 0.066 af, Depth> 5.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
3,790	98	Paved parking, HSG B
2,750	61	>75% Grass cover, Good, HSG B
200	98	Unconnected pavement, HSG B
6,740	83	Weighted Average
2,750		40.80% Pervious Area
3,990		59.20% Impervious Area
200		5.01% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S5: Church Parking Lot

Runoff = 2.16 cfs @ 12.08 hrs, Volume= 0.164 af, Depth> 6.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
11,540	98	Paved parking, HSG B
2,620	61	>75% Grass cover, Good, HSG B
100	98	Unconnected pavement, HSG B
14,260	91	Weighted Average
2,620		18.37% Pervious Area
11,640		81.63% Impervious Area
100		0.86% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S6: Middle Parking Lot

Runoff = 1.58 cfs @ 12.08 hrs, Volume= 0.117 af, Depth> 5.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
6,585	98	Paved parking, HSG B
2,920	61	>75% Grass cover, Good, HSG B
1,325	98	Unconnected pavement, HSG B
10,830	88	Weighted Average
2,920		26.96% Pervious Area
7,910		73.04% Impervious Area
1,325		16.75% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S7: Middle Parking Lot

Runoff = 0.93 cfs @ 12.09 hrs, Volume= 0.068 af, Depth> 5.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
1,870	98	Paved parking, HSG B
2,300	61	>75% Grass cover, Good, HSG B
1,480	98	Roofs, HSG B
1,060	98	Unconnected pavement, HSG B
6,710	85	Weighted Average
2,300		34.28% Pervious Area
4,410		65.72% Impervious Area
1,060		24.04% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S8: Church Roof Drains

Runoff = 1.46 cfs @ 12.13 hrs, Volume= 0.135 af, Depth> 6.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
10,350	98	Roofs, HSG B
10,350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0300	0.20		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
1.5	330	0.0600	3.67		**Shallow Concentrated Flow, shallow** Grassed Waterway Kv= 15.0 fps
9.8	430	Total			

Summary for Subcatchment S9: Side/Back of Church

Runoff = 2.26 cfs @ 12.14 hrs, Volume= 0.182 af, Depth> 3.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=7.07"

Area (sf)	CN	Description
1,840	98	Roofs, HSG B
2,017	98	Roofs, HSG B
1,458	98	Paved parking, HSG C
2,365	98	Unconnected pavement, HSG C
16,190	61	>75% Grass cover, Good, HSG B
23,870	73	Weighted Average
16,190		67.83% Pervious Area
7,680		32.17% Impervious Area
2,365		30.79% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0300	0.20		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
1.5	330	0.0600	3.67		**Shallow Concentrated Flow, shallow** Grassed Waterway Kv= 15.0 fps
9.8	430	Total			

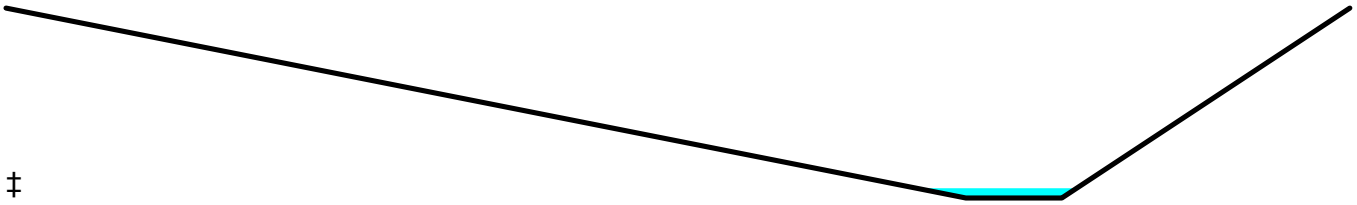
Summary for Reach 1R: Grass Swale

Inflow Area = 0.230 ac, 63.72% Impervious, Inflow Depth > 2.92" for 25-Year event
Inflow = 0.10 cfs @ 21.95 hrs, Volume= 0.056 af
Outflow = 0.10 cfs @ 21.96 hrs, Volume= 0.056 af, Atten= 0%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.39 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 0.92 fps, Avg. Travel Time= 2.4 min

Peak Storage= 9 cf @ 21.96 hrs
Average Depth at Peak Storage= 0.05'
Bank-Full Depth= 1.00' Flow Area= 7.5 sf, Capacity= 56.94 cfs

1.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 10.0 3.0 '/' Top Width= 14.00'
Length= 135.0' Slope= 0.0296 '/'
Inlet Invert= 19.00', Outlet Invert= 15.00'



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Summary for Pond 1P: CB 3396

Inflow Area = 0.907 ac, 22.38% Impervious, Inflow Depth > 2.94" for 25-Year event
Inflow = 2.31 cfs @ 12.09 hrs, Volume= 0.222 af
Outflow = 2.34 cfs @ 12.09 hrs, Volume= 0.222 af, Atten= 0%, Lag= 0.0 min
Primary = 2.34 cfs @ 12.09 hrs, Volume= 0.222 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 11.46' @ 12.10 hrs Surf.Area= 13 sf Storage= 11 cf
Flood Elev= 89.86' Surf.Area= 9,251 sf Storage= 11,412 cf

Plug-Flow detention time= 0.2 min calculated for 0.222 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (934.6 - 934.5)

Volume	Invert	Avail.Storage	Storage Description
#1	10.57'	43 cf	**4.00'D x 3.45'H Vertical Cone/Cylinder**
#2	14.00'	11,369 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		11,412 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.00	5	0	0
15.00	338	172	172
16.00	1,664	1,001	1,173
17.00	4,745	3,205	4,377
18.00	9,238	6,992	11,369

Device	Routing	Invert	Outlet Devices
#1	Primary	10.57'	**15.0" Round Culvert** L= 75.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.57' / 9.10' S= 0.0196 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.10 cfs @ 12.09 hrs HW=11.44' TW=10.95' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 2.10 cfs @ 3.26 fps)

Summary for Pond 2P: CB #3377

Inflow Area = 1.039 ac, 64.88% Impervious, Inflow Depth > 4.86" for 25-Year event
Inflow = 6.29 cfs @ 12.08 hrs, Volume= 0.420 af
Outflow = 7.77 cfs @ 12.07 hrs, Volume= 0.421 af, Atten= 0%, Lag= 0.0 min
Primary = 7.77 cfs @ 12.07 hrs, Volume= 0.421 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 90.81' @ 12.09 hrs Surf.Area= 13 sf Storage= 50 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.2 min (824.2 - 824.1)

Volume	Invert	Avail.Storage	Storage Description
#1	82.80'	50 cf	**4.00'D x 4.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	82.80'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.80' / 82.70' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=6.49 cfs @ 12.07 hrs HW=90.75' TW=87.81' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.49 cfs @ 8.26 fps)

Summary for Pond 3P: CB 3374

Inflow Area = 1.824 ac, 59.63% Impervious, Inflow Depth > 4.81" for 25-Year event
Inflow = 11.76 cfs @ 12.09 hrs, Volume= 0.731 af
Outflow = 11.76 cfs @ 12.09 hrs, Volume= 0.731 af, Atten= 0%, Lag= 0.0 min
Primary = 11.76 cfs @ 12.09 hrs, Volume= 0.731 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.10' @ 0.00 hrs Surf.Area= 13 sf Storage= 0 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 44 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	86.10'	44 cf	**4.00'D x 3.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	13.00'	**24.0" Round Culvert** L= 306.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.00' / 9.10' S= 0.0127 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=86.10' TW=10.96' (Dynamic Tailwater)
1=Culvert (Passes 0.00 cfs of 100.18 cfs potential flow)

Summary for Pond 4P: CB #3395

Inflow Area = 0.786 ac, 52.69% Impervious, Inflow Depth > 4.85" for 25-Year event
Inflow = 3.71 cfs @ 12.14 hrs, Volume= 0.317 af
Outflow = 4.37 cfs @ 12.13 hrs, Volume= 0.316 af, Atten= 0%, Lag= 0.0 min
Primary = 4.37 cfs @ 12.13 hrs, Volume= 0.316 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 88.19' @ 12.13 hrs Surf.Area= 13 sf Storage= 74 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.4 min (794.1 - 791.7)

Volume	Invert	Avail.Storage	Storage Description
#1	20.70'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.70'	**12.0" Round Culvert** L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.70' / 20.60' S= 0.0200 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=3.20 cfs @ 12.13 hrs HW=88.19' TW=87.47' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 3.20 cfs @ 4.07 fps)

Summary for Pond 5P: OS #4

Inflow Area = 0.403 ac, 70.24% Impervious, Inflow Depth > 5.17" for 25-Year event
Inflow = 2.81 cfs @ 12.83 hrs, Volume= 0.173 af
Outflow = 3.14 cfs @ 12.83 hrs, Volume= 0.173 af, Atten= 0%, Lag= 0.0 min
Primary = 3.14 cfs @ 12.83 hrs, Volume= 0.173 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 93.70' @ 12.09 hrs Surf.Area= 13 sf Storage= 41 cf

Plug-Flow detention time= 4.6 min calculated for 0.173 af (100% of inflow)
Center-of-Mass det. time= 1.9 min (812.0 - 810.1)

Volume	Invert	Avail.Storage	Storage Description
#1	23.25'	41 cf	**4.00'D x 3.25'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	23.25'	**12.0" Round Culvert** L= 22.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.25' / 19.50' S= 0.1705 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.83 hrs HW=86.85' TW=86.92' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.00 cfs)

Summary for Pond 6P: CB 611

Inflow Area = 2.732 ac, 47.25% Impervious, Inflow Depth > 4.19" for 25-Year event
Inflow = 14.11 cfs @ 12.09 hrs, Volume= 0.953 af
Outflow = 12.10 cfs @ 12.09 hrs, Volume= 0.957 af, Atten= 14%, Lag= 0.0 min
Primary = 12.10 cfs @ 12.09 hrs, Volume= 0.957 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 10.96' @ 12.09 hrs Surf.Area= 13 sf Storage= 25 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 112 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	9.00'	112 cf	**4.00'D x 8.91'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	9.00'	**24.0" Round Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 9.00' / 8.90' S= 0.0100 '/' Cc= 0.900

n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=12.04 cfs @ 12.09 hrs HW=10.95' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 12.04 cfs @ 4.89 fps)

Summary for Pond 7P: DMH #1

Inflow Area = 1.039 ac, 64.88% Impervious, Inflow Depth > 4.86" for 25-Year event
Inflow = 7.77 cfs @ 12.07 hrs, Volume= 0.421 af
Outflow = 7.73 cfs @ 12.07 hrs, Volume= 0.418 af, Atten= 0%, Lag= 0.0 min
Primary = 7.73 cfs @ 12.07 hrs, Volume= 0.418 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 87.81' @ 12.07 hrs Surf.Area= 13 sf Storage= 131 cf

Plug-Flow detention time= 6.1 min calculated for 0.418 af (99% of inflow)
Center-of-Mass det. time= 1.8 min (826.0 - 824.2)

Volume	Invert	Avail.Storage	Storage Description
#1	13.52'	131 cf	**4.00'D x 10.45'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	13.52'	**15.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.52' / 13.30' S= 0.0058 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=7.73 cfs @ 12.07 hrs HW=87.81' TW=86.10' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.73 cfs @ 6.30 fps)

Summary for Pond 8P: CB #23

Inflow Area = 0.786 ac, 52.69% Impervious, Inflow Depth > 4.81" for 25-Year event
Inflow = 4.35 cfs @ 12.13 hrs, Volume= 0.315 af
Outflow = 4.40 cfs @ 12.13 hrs, Volume= 0.313 af, Atten= 0%, Lag= 0.0 min
Primary = 4.40 cfs @ 12.13 hrs, Volume= 0.313 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.21' @ 12.13 hrs Surf.Area= 13 sf Storage= 61 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 61 cf

Plug-Flow detention time= 5.8 min calculated for 0.313 af (99% of inflow)
Center-of-Mass det. time= 2.6 min (799.5 - 796.9)

Volume	Invert	Avail.Storage	Storage Description
#1	20.00'	61 cf	**4.00'D x 4.88'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.00'	**24.0" Round Culvert** L= 210.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.00' / 13.10' S= 0.0329 '/' Cc= 0.900

n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=4.39 cfs @ 12.13 hrs HW=86.21' TW=86.10' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 4.39 cfs @ 1.40 fps)

Summary for Pond 9P: DMH #5097

Inflow Area = 0.786 ac, 52.69% Impervious, Inflow Depth > 4.83" for 25-Year event
Inflow = 4.37 cfs @ 12.13 hrs, Volume= 0.316 af
Outflow = 4.35 cfs @ 12.13 hrs, Volume= 0.315 af, Atten= 1%, Lag= 0.0 min
Primary = 4.35 cfs @ 12.13 hrs, Volume= 0.315 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 87.48' @ 12.13 hrs Surf.Area= 13 sf Storage= 79 cf

Plug-Flow detention time= 5.1 min calculated for 0.315 af (100% of inflow)
Center-of-Mass det. time= 2.8 min (796.9 - 794.1)

Volume	Invert	Avail.Storage	Storage Description
#1	20.53'	79 cf	**4.00'D x 6.25'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.53'	**12.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.53' / 20.10' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=4.24 cfs @ 12.13 hrs HW=87.47' TW=86.21' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.24 cfs @ 5.40 fps)

Summary for Pond 10P: PDMH 2

Inflow Area = 0.885 ac, 72.52% Impervious, Inflow Depth > 5.12" for 25-Year event
Inflow = 5.86 cfs @ 12.08 hrs, Volume= 0.378 af
Outflow = 5.86 cfs @ 12.08 hrs, Volume= 0.376 af, Atten= 0%, Lag= 0.0 min
Primary = 5.86 cfs @ 12.08 hrs, Volume= 0.376 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 93.15' @ 12.08 hrs Surf.Area= 13 sf Storage= 82 cf

Plug-Flow detention time= 5.3 min calculated for 0.376 af (100% of inflow)
Center-of-Mass det. time= 2.3 min (823.4 - 821.1)

Volume	Invert	Avail.Storage	Storage Description
#1	19.40'	82 cf	**4.00'D x 6.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	19.40'	**12.0" Round Culvert** L= 16.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 19.40' / 18.10' S= 0.0812 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=7.55 cfs @ 12.08 hrs HW=93.08' TW=89.10' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.55 cfs @ 9.61 fps)

Summary for Pond 11P: CB #22361

Inflow Area = 0.412 ac, 77.88% Impervious, Inflow Depth > 5.88" for 25-Year event
Inflow = 2.36 cfs @ 12.11 hrs, Volume= 0.202 af
Outflow = 2.36 cfs @ 12.11 hrs, Volume= 0.202 af, Atten= 0%, Lag= 0.0 min
Primary = 2.36 cfs @ 12.11 hrs, Volume= 0.202 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 35.72' @ 12.11 hrs Surf.Area= 13 sf Storage= 7 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 73 cf

Plug-Flow detention time= 0.2 min calculated for 0.202 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (776.6 - 776.5)

Volume	Invert	Avail.Storage	Storage Description
#1	35.12'	73 cf	**4.00'D x 5.80'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	35.12'	**30.0" Round Culvert** L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.12' / 27.19' S= 0.0396 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=2.35 cfs @ 12.11 hrs HW=35.72' TW=28.73' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.35 cfs @ 2.63 fps)

Summary for Pond 12P: DMH #22364

Inflow Area = 5.412 ac, 33.65% Impervious, Inflow Depth > 4.03" for 25-Year event
Inflow = 19.05 cfs @ 12.20 hrs, Volume= 1.817 af
Outflow = 19.05 cfs @ 12.20 hrs, Volume= 1.817 af, Atten= 0%, Lag= 0.0 min
Primary = 19.05 cfs @ 12.20 hrs, Volume= 1.817 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 28.94' @ 12.20 hrs Surf.Area= 13 sf Storage= 24 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 79 cf

Plug-Flow detention time= 0.1 min calculated for 1.817 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (826.3 - 826.2)

Volume	Invert	Avail.Storage	Storage Description
#1	27.02'	79 cf	**4.00'D x 6.30'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	27.02'	**30.0" Round Culvert** L= 98.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.02' / 23.54' S= 0.0355 '/' Cc= 0.900

n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=19.04 cfs @ 12.20 hrs HW=28.94' TW=25.25' (Dynamic Tailwater)
1=Culvert (Inlet Controls 19.04 cfs @ 4.71 fps)

Summary for Pond 13P: CB #22362

Inflow Area = 5.565 ac, 35.47% Impervious, Inflow Depth > 4.11" for 25-Year event
Inflow = 19.66 cfs @ 12.19 hrs, Volume= 1.904 af
Outflow = 19.66 cfs @ 12.19 hrs, Volume= 1.904 af, Atten= 0%, Lag= 0.0 min
Primary = 19.66 cfs @ 12.19 hrs, Volume= 1.904 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.25' @ 12.19 hrs Surf.Area= 13 sf Storage= 25 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 82 cf

Plug-Flow detention time= 0.1 min calculated for 1.903 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (822.5 - 822.5)

Volume	Invert	Avail.Storage	Storage Description
#1	23.29'	82 cf	**4.00'D x 6.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	23.29'	**30.0" Round Culvert** L= 225.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.29' / 15.28' S= 0.0356 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=19.65 cfs @ 12.19 hrs HW=25.25' TW=17.03' (Dynamic Tailwater)
1=Culvert (Inlet Controls 19.65 cfs @ 4.76 fps)

Summary for Pond 14P: CB #22363

Inflow Area = 0.153 ac,100.00% Impervious, Inflow Depth > 6.83" for 25-Year event
Inflow = 1.06 cfs @ 12.08 hrs, Volume= 0.087 af
Outflow = 1.06 cfs @ 12.08 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.0 min
Primary = 1.06 cfs @ 12.08 hrs, Volume= 0.087 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.34' @ 12.19 hrs Surf.Area= 13 sf Storage= 7 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.4 min calculated for 0.087 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (742.6 - 742.3)

Volume	Invert	Avail.Storage	Storage Description
#1	24.76'	63 cf	**4.00'D x 5.05'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	24.76'	**15.0" Round Culvert** L= 28.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 24.76' / 24.49' S= 0.0096 '/' Cc= 0.900
n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.02 cfs @ 12.08 hrs HW=25.28' TW=24.91' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 1.02 cfs @ 3.15 fps)

Summary for Pond 15P: CB #3397

Inflow Area = 0.153 ac,100.00% Impervious, Inflow Depth > 6.83" for 25-Year event
Inflow = 1.06 cfs @ 12.08 hrs, Volume= 0.087 af
Outflow = 1.06 cfs @ 12.08 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.1 min
Primary = 1.06 cfs @ 12.08 hrs, Volume= 0.087 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.28' @ 12.08 hrs Surf.Area= 13 sf Storage= 6 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.4 min calculated for 0.087 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (742.5 - 742.3)

Volume	Invert	Avail.Storage	Storage Description
#1	24.76'	63 cf	**4.00'D x 5.05'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	24.76'	**15.0" Round Culvert** L= 28.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.76' / 24.49' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.06 cfs @ 12.08 hrs HW=25.28' TW=13.33' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 1.06 cfs @ 3.28 fps)

Summary for Pond 16P: CB #3398

Inflow Area = 5.989 ac, 38.72% Impervious, Inflow Depth > 4.22" for 25-Year event
Inflow = 21.43 cfs @ 12.18 hrs, Volume= 2.105 af
Outflow = 21.43 cfs @ 12.18 hrs, Volume= 2.105 af, Atten= 0%, Lag= 0.0 min
Primary = 21.43 cfs @ 12.18 hrs, Volume= 2.105 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.60' @ 12.18 hrs Surf.Area= 13 sf Storage= 26 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= 0.1 min calculated for 2.105 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (818.9 - 818.8)

Volume	Invert	Avail.Storage	Storage Description
#1	11.52'	74 cf	**4.00'D x 5.90'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	11.52'	**30.0" Round Culvert**

L= 40.0' RCP, square edge headwall, Ke= 0.500
Inlet / Outlet Invert= 11.52' / 9.62' S= 0.0475 '/' Cc= 0.900
n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=21.42 cfs @ 12.18 hrs HW=13.60' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 21.42 cfs @ 4.91 fps)

Summary for Pond 17P: CB #13929

Inflow Area = 0.412 ac, 77.88% Impervious, Inflow Depth > 5.88" for 25-Year event
Inflow = 2.36 cfs @ 12.11 hrs, Volume= 0.202 af
Outflow = 2.36 cfs @ 12.11 hrs, Volume= 0.202 af, Atten= 0%, Lag= 0.0 min
Primary = 2.36 cfs @ 12.11 hrs, Volume= 0.202 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 37.36' @ 12.11 hrs Surf.Area= 13 sf Storage= 7 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 89 cf

Plug-Flow detention time= 0.2 min calculated for 0.202 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (776.5 - 776.3)

Volume	Invert	Avail.Storage	Storage Description
#1	36.76'	89 cf	**4.00'D x 7.10'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	36.76'	**30.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.76' / 35.32' S= 0.0240 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

Primary OutFlow Max=2.35 cfs @ 12.11 hrs HW=37.36' TW=35.72' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.35 cfs @ 2.63 fps)

Summary for Pond 18P: PDMH 1

Inflow Area = 5.836 ac, 37.12% Impervious, Inflow Depth > 4.15" for 25-Year event
Inflow = 20.78 cfs @ 12.18 hrs, Volume= 2.018 af
Outflow = 20.78 cfs @ 12.18 hrs, Volume= 2.018 af, Atten= 0%, Lag= 0.0 min
Primary = 20.78 cfs @ 12.18 hrs, Volume= 2.018 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 17.03' @ 12.19 hrs Surf.Area= 13 sf Storage= 24 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 130 cf

Plug-Flow detention time= 0.1 min calculated for 2.018 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (822.1 - 822.1)

Volume	Invert	Avail.Storage	Storage Description
#1	15.16'	130 cf	**4.00'D x 10.35'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	15.16'	**30.0" Round Culvert** L= 105.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 15.16' / 11.72' S= 0.0328 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=20.76 cfs @ 12.18 hrs HW=17.03' TW=13.60' (Dynamic Tailwater)
1=Culvert (Outlet Controls 20.76 cfs @ 7.32 fps)

Summary for Pond P3: OS #3

Inflow Area = 0.482 ac, 74.43% Impervious, Inflow Depth > 5.13" for 25-Year event
Inflow = 3.84 cfs @ 17.00 hrs, Volume= 0.206 af
Outflow = 3.83 cfs @ 17.00 hrs, Volume= 0.205 af, Atten= 0%, Lag= 0.0 min
Primary = 3.83 cfs @ 17.00 hrs, Volume= 0.205 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 93.58' @ 12.09 hrs Surf.Area= 13 sf Storage= 44 cf

Plug-Flow detention time= 4.8 min calculated for 0.205 af (99% of inflow)
Center-of-Mass det. time= 1.8 min (828.8 - 827.0)

Volume	Invert	Avail.Storage	Storage Description
#1	21.25'	44 cf	**4.00'D x 3.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	21.25'	**12.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.25' / 19.50' S= 0.0673 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 17.00 hrs HW=26.94' TW=87.14' (Dynamic Tailwater)
1=Culvert (Controls 0.00 cfs)

Summary for Pond RG1: Raingarden #1

Inflow Area = 0.271 ac, 71.07% Impervious, Inflow Depth > 5.54" for 25-Year event
Inflow = 1.70 cfs @ 12.08 hrs, Volume= 0.125 af
Outflow = 1.68 cfs @ 12.10 hrs, Volume= 0.114 af, Atten= 1%, Lag= 0.7 min
Primary = 1.68 cfs @ 12.10 hrs, Volume= 0.114 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 19.73' @ 12.10 hrs Surf.Area= 490 sf Storage= 635 cf

Plug-Flow detention time= 71.7 min calculated for 0.114 af (91% of inflow)
Center-of-Mass det. time= 26.7 min (815.1 - 788.4)

Volume	Invert	Avail.Storage	Storage Description
#1	16.25'	975 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
16.25	200	0.0	0	0
17.25	200	40.0	80	80
17.50	200	10.0	5	85
19.00	200	100.0	300	385
20.00	600	100.0	400	785
20.20	1,300	100.0	190	975

Device	Routing	Invert	Outlet Devices
#1	Primary	16.25'	**12.0" Round Culvert** L= 64.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.25' / 15.78' S= 0.0073 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	19.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	16.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 10.00'

Primary OutFlow Max=1.67 cfs @ 12.10 hrs HW=19.73' TW=16.82' (Dynamic Tailwater)
↑└─**1=Culvert** (Passes 1.67 cfs of 5.99 cfs potential flow)
↑ └─**2=Orifice/Grate** (Weir Controls 1.65 cfs @ 1.55 fps)
└─**3=Exfiltration** (Controls 0.03 cfs)

Summary for Pond RG3: Raingarden #3

Inflow Area = 0.327 ac, 81.63% Impervious, Inflow Depth > 6.00" for 25-Year event
Inflow = 2.16 cfs @ 12.08 hrs, Volume= 0.164 af
Outflow = 3.43 cfs @ 12.08 hrs, Volume= 0.147 af, Atten= 0%, Lag= 0.0 min
Primary = 3.43 cfs @ 12.08 hrs, Volume= 0.147 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 94.40' @ 12.10 hrs Surf.Area= 700 sf Storage= 1,022 cf

Plug-Flow detention time= 94.3 min calculated for 0.147 af (90% of inflow)
Center-of-Mass det. time= 44.3 min (819.9 - 775.5)

Volume	Invert	Avail.Storage	Storage Description
#1	21.25'	1,022 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.25	250	0.0	0	0
22.25	250	40.0	100	100
22.50	250	10.0	6	106
24.00	250	100.0	375	481
25.00	525	100.0	388	869
25.25	700	100.0	153	1,022

Device	Routing	Invert	Outlet Devices
#1	Primary	21.26'	**12.0" Round Culvert** L= 1.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.26' / 21.25' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	24.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	21.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 15.00'

Primary OutFlow Max=4.24 cfs @ 12.08 hrs HW=92.21' TW=90.96' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 4.24 cfs @ 5.40 fps)
↑**2=Orifice/Grate** (Passes < 9.54 cfs potential flow)
3=Exfiltration (Passes < 0.31 cfs potential flow)

Summary for Pond RG4: Raingarden #4

Inflow Area = 0.249 ac, 73.04% Impervious, Inflow Depth > 5.66" for 25-Year event
Inflow = 1.58 cfs @ 12.08 hrs, Volume= 0.117 af
Outflow = 2.30 cfs @ 12.08 hrs, Volume= 0.111 af, Atten= 0%, Lag= 0.0 min
Primary = 2.30 cfs @ 12.08 hrs, Volume= 0.111 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 95.54' @ 12.10 hrs Surf.Area= 400 sf Storage= 455 cf

Plug-Flow detention time= 48.2 min calculated for 0.111 af (95% of inflow)
Center-of-Mass det. time= 19.4 min (804.9 - 785.4)

Volume	Invert	Avail.Storage	Storage Description
#1	23.25'	455 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.25	100	0.0	0	0
24.25	100	40.0	40	40
24.50	100	10.0	3	43
26.00	100	100.0	150	193
27.00	260	100.0	180	373
27.25	400	100.0	83	455

Device	Routing	Invert	Outlet Devices
#1	Primary	23.25'	**8.0" Round Culvert** L= 1.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.25' / 22.35' S= 0.9000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	26.50'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	23.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 17.00'

Primary OutFlow Max=2.91 cfs @ 12.08 hrs HW=93.38' TW=90.38' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.91 cfs @ 8.34 fps)
└**2=Orifice/Grate** (Passes < 2.91 cfs potential flow)
└**3=Exfiltration** (Passes < 0.16 cfs potential flow)

Summary for Pond RG5: Raingarden #5

Inflow Area = 0.154 ac, 65.72% Impervious, Inflow Depth > 5.31" for 25-Year event
Inflow = 0.93 cfs @ 12.09 hrs, Volume= 0.068 af
Outflow = 1.62 cfs @ 12.09 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.3 min
Primary = 1.62 cfs @ 12.09 hrs, Volume= 0.062 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 93.74' @ 12.10 hrs Surf.Area= 400 sf Storage= 455 cf

Plug-Flow detention time= 69.0 min calculated for 0.062 af (91% of inflow)
Center-of-Mass det. time= 25.5 min (819.6 - 794.1)

Volume	Invert	Avail.Storage	Storage Description
#1	25.25'	455 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.25	100	0.0	0	0
26.25	100	40.0	40	40
26.50	100	10.0	3	43
28.00	100	100.0	150	193
29.00	260	100.0	180	373
29.25	400	100.0	83	455

Device	Routing	Invert	Outlet Devices
#1	Primary	25.25'	**8.0" Round Culvert** L= 84.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 25.25' / 23.35' S= 0.0226 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	28.50'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	25.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 19.00'

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=92.15' TW=93.69' (Dynamic Tailwater)
└**1=Culvert** (Controls 0.00 cfs)
└**2=Orifice/Grate** (Controls 0.00 cfs)
└**3=Exfiltration** (Passes 0.00 cfs of 0.16 cfs potential flow)

Summary for Pond YD2: Raingarden #2

Inflow Area = 0.155 ac, 59.20% Impervious, Inflow Depth > 5.09" for 25-Year event
Inflow = 0.91 cfs @ 12.09 hrs, Volume= 0.066 af
Outflow = 1.59 cfs @ 12.09 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.2 min
Primary = 1.59 cfs @ 12.09 hrs, Volume= 0.060 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 93.58' @ 12.10 hrs Surf.Area= 400 sf Storage= 455 cf

Plug-Flow detention time= 91.0 min calculated for 0.060 af (91% of inflow)
Center-of-Mass det. time= 45.2 min (844.6 - 799.4)

Volume	Invert	Avail.Storage	Storage Description
#1	22.25'	455 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.25	100	0.0	0	0
23.25	100	40.0	40	40
23.50	100	10.0	3	43
25.00	100	100.0	150	193
26.00	260	100.0	180	373
26.25	400	100.0	83	455

Device	Routing	Invert	Outlet Devices
#1	Primary	22.25'	**12.0" Round Culvert** L= 52.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 22.25' / 21.35' S= 0.0173 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	25.50'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	22.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 16.00'

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=91.67' TW=93.57' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)
  └─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Exfiltration** (Passes 0.00 cfs of 0.16 cfs potential flow)

Summary for Link P100: POA #100

Inflow Area = 2.732 ac, 47.25% Impervious, Inflow Depth > 4.20" for 25-Year event
Inflow = 12.10 cfs @ 12.09 hrs, Volume= 0.957 af
Primary = 12.10 cfs @ 12.09 hrs, Volume= 0.957 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link P200: POA #200 (CB 3399)

Inflow Area = 5.989 ac, 38.72% Impervious, Inflow Depth > 4.22" for 25-Year event
Inflow = 21.43 cfs @ 12.18 hrs, Volume= 2.105 af
Primary = 21.43 cfs @ 12.18 hrs, Volume= 2.105 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
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 5S: Front of church drain to Runoff Area=13,200 sf 69.92% Impervious Runoff Depth>6.89"
Flow Length=100' Slope=0.0200 '/' Tc=9.7 min CN=87 Runoff=2.06 cfs 0.174 af

Subcatchment 10S: Chase Dr Drainge Runoff Area=4,750 sf 100.00% Impervious Runoff Depth>8.21"
Tc=6.0 min CN=98 Runoff=0.91 cfs 0.075 af

Subcatchment 12S: Brigham Hill Runoff Area=5.000 ac 30.00% Impervious Runoff Depth>5.09"
Tc=15.0 min CN=72 Runoff=22.60 cfs 2.119 af

Subcatchment 14S: Chase Dr Drainge Runoff Area=6,650 sf 100.00% Impervious Runoff Depth>8.21"
Tc=6.0 min CN=98 Runoff=1.27 cfs 0.104 af

Subcatchment 15S: Chase Dr Drainge Runoff Area=6,650 sf 100.00% Impervious Runoff Depth>8.21"
Tc=6.0 min CN=98 Runoff=1.27 cfs 0.104 af

Subcatchment S1: City Land Runoff Area=29,510 sf 8.34% Impervious Runoff Depth>4.03"
Flow Length=480' Tc=6.0 min UI Adjusted CN=63 Runoff=3.19 cfs 0.227 af

Subcatchment S10: Market St Runoff Area=6,700 sf 20.90% Impervious Runoff Depth>4.62"
Tc=0.0 min UI Adjusted CN=68 Runoff=1.02 cfs 0.059 af

Subcatchment S2: New Roof To RG #1 Runoff Area=11,820 sf 71.07% Impervious Runoff Depth>6.89"
Tc=6.0 min CN=87 Runoff=2.09 cfs 0.156 af

Subcatchment S3: Parking Lot/Porous Runoff Area=10,020 sf 63.72% Impervious Runoff Depth>3.64"
Tc=790.0 min CN=89 Runoff=0.12 cfs 0.070 af

Subcatchment S4: Church Parking Lot Runoff Area=6,740 sf 59.20% Impervious Runoff Depth>6.41"
Tc=6.0 min CN=83 Runoff=1.13 cfs 0.083 af

Subcatchment S5: Church Parking Lot Runoff Area=14,260 sf 81.63% Impervious Runoff Depth>7.37"
Tc=6.0 min CN=91 Runoff=2.62 cfs 0.201 af

Subcatchment S6: Middle Parking Lot Runoff Area=10,830 sf 73.04% Impervious Runoff Depth>7.01"
Tc=6.0 min CN=88 Runoff=1.93 cfs 0.145 af

Subcatchment S7: Middle Parking Lot Runoff Area=6,710 sf 65.72% Impervious Runoff Depth>6.65"
Tc=6.0 min CN=85 Runoff=1.16 cfs 0.085 af

Subcatchment S8: Church Roof Drains Runoff Area=10,350 sf 100.00% Impervious Runoff Depth>8.21"
Flow Length=430' Tc=9.8 min CN=98 Runoff=1.74 cfs 0.163 af

Subcatchment S9: Side/Back of Church Runoff Area=23,870 sf 32.17% Impervious Runoff Depth>5.21"
Flow Length=430' Tc=9.8 min CN=73 Runoff=2.94 cfs 0.238 af

Reach 1R: Grass Swale Avg. Flow Depth=0.06' Max Vel=1.48 fps Inflow=0.12 cfs 0.070 af
n=0.022 L=135.0' S=0.0296 '/' Capacity=56.94 cfs Outflow=0.12 cfs 0.070 af

Pond 1P: CB 3396 Peak Elev=11.75' Storage=15 cf Inflow=3.20 cfs 0.297 af
15.0" Round Culvert n=0.012 L=75.0' S=0.0196 '/' Outflow=3.29 cfs 0.297 af

Pond 2P: CB #3377 Peak Elev=92.04' Storage=50 cf Inflow=8.08 cfs 0.535 af
12.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=8.21 cfs 0.560 af

Pond 3P: CB 3374 Peak Elev=86.10' Storage=0 cf Inflow=12.33 cfs 0.953 af
24.0" Round Culvert n=0.012 L=306.0' S=0.0127 '/' Outflow=12.33 cfs 0.953 af

Pond 4P: CB #3395 Peak Elev=89.40' Storage=74 cf Inflow=4.69 cfs 0.400 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0200 '/' Outflow=4.95 cfs 0.399 af

Pond 5P: OS #4 Peak Elev=95.94' Storage=41 cf Inflow=4.19 cfs 0.219 af
12.0" Round Culvert n=0.012 L=22.0' S=0.1705 '/' Outflow=3.85 cfs 0.218 af

Pond 6P: CB 611 Peak Elev=11.29' Storage=29 cf Inflow=15.61 cfs 1.250 af
24.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=14.98 cfs 1.252 af

Pond 7P: DMH #1 Peak Elev=88.03' Storage=131 cf Inflow=8.21 cfs 0.560 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0058 '/' Outflow=8.21 cfs 0.557 af

Pond 8P: CB #23 Peak Elev=86.23' Storage=61 cf Inflow=4.75 cfs 0.398 af
24.0" Round Culvert n=0.012 L=210.0' S=0.0329 '/' Outflow=4.74 cfs 0.396 af

Pond 9P: DMH #5097 Peak Elev=87.80' Storage=79 cf Inflow=4.95 cfs 0.399 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0096 '/' Outflow=4.75 cfs 0.398 af

Pond 10P: PDMH 2 Peak Elev=94.91' Storage=82 cf Inflow=7.51 cfs 0.477 af
12.0" Round Culvert n=0.012 L=16.0' S=0.0812 '/' Outflow=7.51 cfs 0.475 af

Pond 11P: CB #22361 Peak Elev=35.78' Storage=8 cf Inflow=2.88 cfs 0.249 af
30.0" Round Culvert n=0.024 L=200.0' S=0.0396 '/' Outflow=2.88 cfs 0.249 af

Pond 12P: DMH #22364 Peak Elev=29.36' Storage=29 cf Inflow=24.83 cfs 2.368 af
30.0" Round Culvert n=0.024 L=98.0' S=0.0355 '/' Outflow=24.83 cfs 2.367 af

Pond 13P: CB #22362 Peak Elev=25.69' Storage=30 cf Inflow=25.56 cfs 2.472 af
30.0" Round Culvert n=0.024 L=225.0' S=0.0356 '/' Outflow=25.56 cfs 2.472 af

Pond 14P: CB #22363 Peak Elev=25.72' Storage=12 cf Inflow=1.27 cfs 0.104 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0096 '/' Outflow=1.26 cfs 0.104 af

Pond 15P: CB #3397 Peak Elev=25.33' Storage=7 cf Inflow=1.27 cfs 0.104 af
15.0" Round Culvert n=0.012 L=28.0' S=0.0096 '/' Outflow=1.27 cfs 0.104 af

Pond 16P: CB #3398 Peak Elev=14.14' Storage=33 cf Inflow=27.71 cfs 2.720 af
30.0" Round Culvert n=0.024 L=40.0' S=0.0475 '/' Outflow=27.71 cfs 2.720 af

Pond 17P: CB #13929 Peak Elev=37.42' Storage=8 cf Inflow=2.88 cfs 0.249 af
30.0" Round Culvert n=0.012 L=60.0' S=0.0240 '/' Outflow=2.88 cfs 0.249 af

Pond 18P: PDMH 1 Peak Elev=17.44' Storage=29 cf Inflow=26.93 cfs 2.616 af
30.0" Round Culvert n=0.024 L=105.0' S=0.0328 '/' Outflow=26.93 cfs 2.616 af

Pond P3: OS #3 Peak Elev=96.52' Storage=44 cf Inflow=5.20 cfs 0.261 af
12.0" Round Culvert n=0.012 L=26.0' S=0.0673 '/' Outflow=5.20 cfs 0.260 af

Pond RG1: Raingarden #1 Peak Elev=19.76' Storage=652 cf Inflow=2.09 cfs 0.156 af
Outflow=2.06 cfs 0.144 af

Pond RG3: Raingarden #3 Peak Elev=96.66' Storage=1,022 cf Inflow=2.62 cfs 0.201 af
Outflow=3.69 cfs 0.184 af

Pond RG4: Raingarden #4 Peak Elev=97.42' Storage=455 cf Inflow=1.93 cfs 0.145 af
Outflow=2.69 cfs 0.139 af

Pond RG5: Raingarden #5 Peak Elev=96.47' Storage=455 cf Inflow=1.16 cfs 0.085 af
Outflow=1.50 cfs 0.079 af

Pond YD2: Raingarden #2 Peak Elev=96.61' Storage=455 cf Inflow=1.13 cfs 0.083 af
Outflow=1.51 cfs 0.077 af

Link P100: POA #100 Inflow=14.98 cfs 1.252 af
Primary=14.98 cfs 1.252 af

Link P200: POA #200 (CB 3399) Inflow=27.71 cfs 2.720 af
Primary=27.71 cfs 2.720 af

Summary for Subcatchment 5S: Front of church drain to Chase Dr

Runoff = 2.06 cfs @ 12.13 hrs, Volume= 0.174 af, Depth> 6.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
3,970	61	>75% Grass cover, Good, HSG B
5,880	98	Roofs, HSG B
3,350	98	Unconnected pavement, HSG B
13,200	87	Weighted Average
3,970		30.08% Pervious Area
9,230		69.92% Impervious Area
3,350		36.29% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0200	0.17		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"

Summary for Subcatchment 10S: Chase Dr Drainge

Runoff = 0.91 cfs @ 12.08 hrs, Volume= 0.075 af, Depth> 8.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
3,500	98	Paved parking, HSG B
1,250	98	Unconnected pavement, HSG B
4,750	98	Weighted Average
4,750		100.00% Impervious Area
1,250		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment 12S: Brigham Hill

Runoff = 22.60 cfs @ 12.21 hrs, Volume= 2.119 af, Depth> 5.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (ac)	CN	Description
5.000	72	1/3 acre lots, 30% imp, HSG B
3.500		70.00% Pervious Area
1.500		30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry, Tc Estimate**

Summary for Subcatchment 14S: Chase Dr Drainge

Runoff = 1.27 cfs @ 12.08 hrs, Volume= 0.104 af, Depth> 8.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
4,900	98	Paved parking, HSG B
1,750	98	Unconnected pavement, HSG B
6,650	98	Weighted Average
6,650		100.00% Impervious Area
1,750		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment 15S: Chase Dr Drainge

Runoff = 1.27 cfs @ 12.08 hrs, Volume= 0.104 af, Depth> 8.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
4,900	98	Paved parking, HSG B
1,750	98	Unconnected pavement, HSG B
6,650	98	Weighted Average
6,650		100.00% Impervious Area
1,750		26.32% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, tc min**

Summary for Subcatchment S1: City Land

Runoff = 3.19 cfs @ 12.09 hrs, Volume= 0.227 af, Depth> 4.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Adj	Description
1,490	98		Paved parking, HSG B
27,050	61		>75% Grass cover, Good, HSG B
970	98		Unconnected pavement, HSG B
29,510	64	63	Weighted Average, UI Adjusted
27,050			91.66% Pervious Area
2,460			8.34% Impervious Area
970			39.43% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	200	0.0500	2.30		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.25"
1.7	280	0.0330	2.72		**Shallow Concentrated Flow, swale** Grassed Waterway Kv= 15.0 fps
3.2	480	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment S10: Market St

Runoff = 1.02 cfs @ 12.00 hrs, Volume= 0.059 af, Depth> 4.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Adj	Description
5,300	61		>75% Grass cover, Good, HSG B
1,000	98		Roofs, HSG B
400	98		Unconnected pavement, HSG B
6,700	69	68	Weighted Average, UI Adjusted
5,300			79.10% Pervious Area
1,400			20.90% Impervious Area
400			28.57% Unconnected

Summary for Subcatchment S2: New Roof To RG #1

Runoff = 2.09 cfs @ 12.08 hrs, Volume= 0.156 af, Depth> 6.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
7,440	98	Roofs, HSG B
3,420	61	>75% Grass cover, Good, HSG B
960	98	Unconnected pavement, HSG B
11,820	87	Weighted Average
3,420		28.93% Pervious Area
8,400		71.07% Impervious Area
960		11.43% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S3: Parking Lot/Porous Pavers

Runoff = 0.12 cfs @ 21.95 hrs, Volume= 0.070 af, Depth> 3.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

	Area (sf)	CN	Description
	1,650	61	>75% Grass cover, Good, HSG B
	5,135	98	Paved parking, HSG B
*	1,985	85	Porous Pavers, HSG B
	1,250	98	Unconnected pavement, HSG B
	10,020	89	Weighted Average
	3,635		36.28% Pervious Area
	6,385		63.72% Impervious Area
	1,250		19.58% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
790.0					**Direct Entry,**

Summary for Subcatchment S4: Church Parking Lot

Runoff = 1.13 cfs @ 12.09 hrs, Volume= 0.083 af, Depth> 6.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
3,790	98	Paved parking, HSG B
2,750	61	>75% Grass cover, Good, HSG B
200	98	Unconnected pavement, HSG B
6,740	83	Weighted Average
2,750		40.80% Pervious Area
3,990		59.20% Impervious Area
200		5.01% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S5: Church Parking Lot

Runoff = 2.62 cfs @ 12.08 hrs, Volume= 0.201 af, Depth> 7.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
11,540	98	Paved parking, HSG B
2,620	61	>75% Grass cover, Good, HSG B
100	98	Unconnected pavement, HSG B
14,260	91	Weighted Average
2,620		18.37% Pervious Area
11,640		81.63% Impervious Area
100		0.86% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S6: Middle Parking Lot

Runoff = 1.93 cfs @ 12.08 hrs, Volume= 0.145 af, Depth> 7.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
6,585	98	Paved parking, HSG B
2,920	61	>75% Grass cover, Good, HSG B
1,325	98	Unconnected pavement, HSG B
10,830	88	Weighted Average
2,920		26.96% Pervious Area
7,910		73.04% Impervious Area
1,325		16.75% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S7: Middle Parking Lot

Runoff = 1.16 cfs @ 12.08 hrs, Volume= 0.085 af, Depth> 6.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
1,870	98	Paved parking, HSG B
2,300	61	>75% Grass cover, Good, HSG B
1,480	98	Roofs, HSG B
1,060	98	Unconnected pavement, HSG B
6,710	85	Weighted Average
2,300		34.28% Pervious Area
4,410		65.72% Impervious Area
1,060		24.04% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Tc min**

Summary for Subcatchment S8: Church Roof Drains

Runoff = 1.74 cfs @ 12.13 hrs, Volume= 0.163 af, Depth> 8.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
10,350	98	Roofs, HSG B
10,350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0300	0.20		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
1.5	330	0.0600	3.67		**Shallow Concentrated Flow, shallow** Grassed Waterway Kv= 15.0 fps
9.8	430	Total			

Summary for Subcatchment S9: Side/Back of Church

Runoff = 2.94 cfs @ 12.14 hrs, Volume= 0.238 af, Depth> 5.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-Year Rainfall=8.46"

Area (sf)	CN	Description
1,840	98	Roofs, HSG B
2,017	98	Roofs, HSG B
1,458	98	Paved parking, HSG C
2,365	98	Unconnected pavement, HSG C
16,190	61	>75% Grass cover, Good, HSG B
23,870	73	Weighted Average
16,190		67.83% Pervious Area
7,680		32.17% Impervious Area
2,365		30.79% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	100	0.0300	0.20		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 3.25"
1.5	330	0.0600	3.67		**Shallow Concentrated Flow, shallow** Grassed Waterway Kv= 15.0 fps
9.8	430	Total			

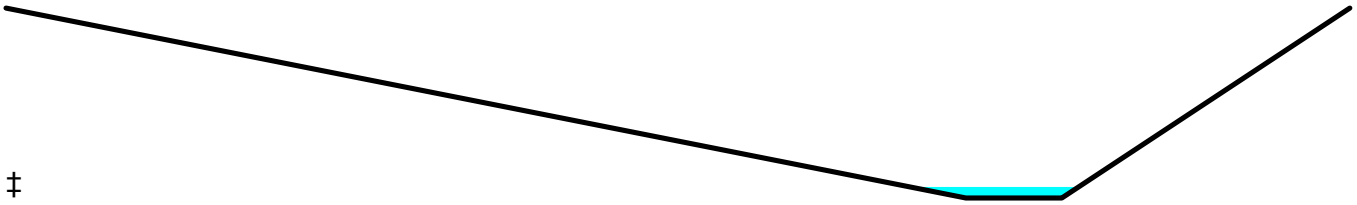
Summary for Reach 1R: Grass Swale

Inflow Area = 0.230 ac, 63.72% Impervious, Inflow Depth > 3.64" for 50-Year event
Inflow = 0.12 cfs @ 21.95 hrs, Volume= 0.070 af
Outflow = 0.12 cfs @ 21.96 hrs, Volume= 0.070 af, Atten= 0%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.48 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 0.96 fps, Avg. Travel Time= 2.3 min

Peak Storage= 11 cf @ 21.96 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 1.00' Flow Area= 7.5 sf, Capacity= 56.94 cfs

1.00' x 1.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 10.0 3.0 '/' Top Width= 14.00'
Length= 135.0' Slope= 0.0296 '/'
Inlet Invert= 19.00', Outlet Invert= 15.00'



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Summary for Pond 1P: CB 3396

Inflow Area = 0.907 ac, 22.38% Impervious, Inflow Depth > 3.93" for 50-Year event
Inflow = 3.20 cfs @ 12.09 hrs, Volume= 0.297 af
Outflow = 3.29 cfs @ 12.10 hrs, Volume= 0.297 af, Atten= 0%, Lag= 0.5 min
Primary = 3.29 cfs @ 12.10 hrs, Volume= 0.297 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 11.75' @ 12.10 hrs Surf.Area= 13 sf Storage= 15 cf
Flood Elev= 89.86' Surf.Area= 9,251 sf Storage= 11,412 cf

Plug-Flow detention time= 0.2 min calculated for 0.297 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (920.9 - 920.8)

Volume	Invert	Avail.Storage	Storage Description
#1	10.57'	43 cf	**4.00'D x 3.45'H Vertical Cone/Cylinder**
#2	14.00'	11,369 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		11,412 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
14.00	5	0	0
15.00	338	172	172
16.00	1,664	1,001	1,173
17.00	4,745	3,205	4,377
18.00	9,238	6,992	11,369

Device	Routing	Invert	Outlet Devices
#1	Primary	10.57'	**15.0" Round Culvert** L= 75.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.57' / 9.10' S= 0.0196 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.11 cfs @ 12.10 hrs HW=11.75' TW=11.28' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 3.11 cfs @ 3.35 fps)

Summary for Pond 2P: CB #3377

Inflow Area = 1.039 ac, 64.88% Impervious, Inflow Depth > 6.18" for 50-Year event
Inflow = 8.08 cfs @ 12.08 hrs, Volume= 0.535 af
Outflow = 8.21 cfs @ 12.08 hrs, Volume= 0.560 af, Atten= 0%, Lag= 0.0 min
Primary = 8.21 cfs @ 12.08 hrs, Volume= 0.560 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 92.04' @ 12.08 hrs Surf.Area= 13 sf Storage= 50 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	82.80'	50 cf	**4.00'D x 4.00'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	82.80'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 82.80' / 82.70' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=7.57 cfs @ 12.08 hrs HW=92.03' TW=88.03' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.57 cfs @ 9.64 fps)

Summary for Pond 3P: CB 3374

Inflow Area = 1.824 ac, 59.63% Impervious, Inflow Depth > 6.27" for 50-Year event
Inflow = 12.33 cfs @ 12.10 hrs, Volume= 0.953 af
Outflow = 12.33 cfs @ 12.10 hrs, Volume= 0.953 af, Atten= 0%, Lag= 0.0 min
Primary = 12.33 cfs @ 12.10 hrs, Volume= 0.953 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.10' @ 0.00 hrs Surf.Area= 13 sf Storage= 0 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 44 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	86.10'	44 cf	**4.00'D x 3.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	13.00'	**24.0" Round Culvert** L= 306.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.00' / 9.10' S= 0.0127 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 12.10 hrs HW=86.10' TW=11.28' (Dynamic Tailwater)
1=Culvert (Passes 0.00 cfs of 100.06 cfs potential flow)

Summary for Pond 4P: CB #3395

Inflow Area = 0.786 ac, 52.69% Impervious, Inflow Depth > 6.12" for 50-Year event
Inflow = 4.69 cfs @ 12.14 hrs, Volume= 0.400 af
Outflow = 4.95 cfs @ 12.13 hrs, Volume= 0.399 af, Atten= 0%, Lag= 0.0 min
Primary = 4.95 cfs @ 12.13 hrs, Volume= 0.399 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 89.40' @ 12.13 hrs Surf.Area= 13 sf Storage= 74 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 2.1 min (790.0 - 787.9)

Volume	Invert	Avail.Storage	Storage Description
#1	20.70'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.70'	**12.0" Round Culvert** L= 5.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.70' / 20.60' S= 0.0200 '/' Cc= 0.900

n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=4.78 cfs @ 12.13 hrs HW=89.40' TW=87.80' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.78 cfs @ 6.09 fps)

Summary for Pond 5P: OS #4

Inflow Area = 0.403 ac, 70.24% Impervious, Inflow Depth > 6.51" for 50-Year event
Inflow = 4.19 cfs @ 12.09 hrs, Volume= 0.219 af
Outflow = 3.85 cfs @ 12.09 hrs, Volume= 0.218 af, Atten= 8%, Lag= 0.0 min
Primary = 3.85 cfs @ 12.09 hrs, Volume= 0.218 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 95.94' @ 12.09 hrs Surf.Area= 13 sf Storage= 41 cf

Plug-Flow detention time= 4.1 min calculated for 0.218 af (100% of inflow)
Center-of-Mass det. time= 1.8 min (806.0 - 804.2)

Volume	Invert	Avail.Storage	Storage Description
#1	23.25'	41 cf	**4.00'D x 3.25'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	23.25'	**12.0" Round Culvert** L= 22.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.25' / 19.50' S= 0.1705 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=4.23 cfs @ 12.09 hrs HW=95.92' TW=94.67' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.23 cfs @ 5.38 fps)

Summary for Pond 6P: CB 611

Inflow Area = 2.732 ac, 47.25% Impervious, Inflow Depth > 5.49" for 50-Year event
Inflow = 15.61 cfs @ 12.10 hrs, Volume= 1.250 af
Outflow = 14.98 cfs @ 12.10 hrs, Volume= 1.252 af, Atten= 4%, Lag= 0.0 min
Primary = 14.98 cfs @ 12.10 hrs, Volume= 1.252 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 11.29' @ 12.10 hrs Surf.Area= 13 sf Storage= 29 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 112 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	9.00'	112 cf	**4.00'D x 8.91'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	9.00'	**24.0" Round Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 9.00' / 8.90' S= 0.0100 '/' Cc= 0.900

n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=14.96 cfs @ 12.10 hrs HW=11.28' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 14.96 cfs @ 5.23 fps)

Summary for Pond 7P: DMH #1

Inflow Area = 1.039 ac, 64.88% Impervious, Inflow Depth > 6.47" for 50-Year event
Inflow = 8.21 cfs @ 12.08 hrs, Volume= 0.560 af
Outflow = 8.21 cfs @ 12.08 hrs, Volume= 0.557 af, Atten= 0%, Lag= 0.0 min
Primary = 8.21 cfs @ 12.08 hrs, Volume= 0.557 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 88.03' @ 12.08 hrs Surf.Area= 13 sf Storage= 131 cf

Plug-Flow detention time= 4.9 min calculated for 0.557 af (99% of inflow)
Center-of-Mass det. time= 1.5 min (804.4 - 803.0)

Volume	Invert	Avail.Storage	Storage Description
#1	13.52'	131 cf	**4.00'D x 10.45'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	13.52'	**15.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.52' / 13.30' S= 0.0058 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=8.20 cfs @ 12.08 hrs HW=88.03' TW=86.10' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 8.20 cfs @ 6.68 fps)

Summary for Pond 8P: CB #23

Inflow Area = 0.786 ac, 52.69% Impervious, Inflow Depth > 6.08" for 50-Year event
Inflow = 4.75 cfs @ 12.13 hrs, Volume= 0.398 af
Outflow = 4.74 cfs @ 12.13 hrs, Volume= 0.396 af, Atten= 0%, Lag= 0.0 min
Primary = 4.74 cfs @ 12.13 hrs, Volume= 0.396 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 86.23' @ 12.13 hrs Surf.Area= 13 sf Storage= 61 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 61 cf

Plug-Flow detention time= 5.5 min calculated for 0.396 af (99% of inflow)
Center-of-Mass det. time= 1.9 min (794.2 - 792.3)

Volume	Invert	Avail.Storage	Storage Description
#1	20.00'	61 cf	**4.00'D x 4.88'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.00'	**24.0" Round Culvert** L= 210.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.00' / 13.10' S= 0.0329 '/' Cc= 0.900

n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=4.73 cfs @ 12.13 hrs HW=86.23' TW=86.10' (Dynamic Tailwater)
1=Culvert (Outlet Controls 4.73 cfs @ 1.51 fps)

Summary for Pond 9P: DMH #5097

Inflow Area = 0.786 ac, 52.69% Impervious, Inflow Depth > 6.10" for 50-Year event
Inflow = 4.95 cfs @ 12.13 hrs, Volume= 0.399 af
Outflow = 4.75 cfs @ 12.13 hrs, Volume= 0.398 af, Atten= 4%, Lag= 0.0 min
Primary = 4.75 cfs @ 12.13 hrs, Volume= 0.398 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 87.80' @ 12.13 hrs Surf.Area= 13 sf Storage= 79 cf

Plug-Flow detention time= 4.4 min calculated for 0.398 af (100% of inflow)
Center-of-Mass det. time= 2.3 min (792.3 - 790.0)

Volume	Invert	Avail.Storage	Storage Description
#1	20.53'	79 cf	**4.00'D x 6.25'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	20.53'	**12.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.53' / 20.10' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=4.73 cfs @ 12.13 hrs HW=87.80' TW=86.23' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.73 cfs @ 6.02 fps)

Summary for Pond 10P: PDMH 2

Inflow Area = 0.885 ac, 72.52% Impervious, Inflow Depth > 6.47" for 50-Year event
Inflow = 7.51 cfs @ 12.08 hrs, Volume= 0.477 af
Outflow = 7.51 cfs @ 12.08 hrs, Volume= 0.475 af, Atten= 0%, Lag= 0.0 min
Primary = 7.51 cfs @ 12.08 hrs, Volume= 0.475 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 94.91' @ 12.08 hrs Surf.Area= 13 sf Storage= 82 cf

Plug-Flow detention time= 4.4 min calculated for 0.475 af (100% of inflow)
Center-of-Mass det. time= 1.9 min (808.4 - 806.4)

Volume	Invert	Avail.Storage	Storage Description
#1	19.40'	82 cf	**4.00'D x 6.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	19.40'	**12.0" Round Culvert** L= 16.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 19.40' / 18.10' S= 0.0812 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=6.40 cfs @ 12.08 hrs HW=94.89' TW=92.02' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 6.40 cfs @ 8.15 fps)

Summary for Pond 11P: CB #22361

Inflow Area = 0.412 ac, 77.88% Impervious, Inflow Depth > 7.24" for 50-Year event
Inflow = 2.88 cfs @ 12.11 hrs, Volume= 0.249 af
Outflow = 2.88 cfs @ 12.11 hrs, Volume= 0.249 af, Atten= 0%, Lag= 0.0 min
Primary = 2.88 cfs @ 12.11 hrs, Volume= 0.249 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 35.78' @ 12.11 hrs Surf.Area= 13 sf Storage= 8 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 73 cf

Plug-Flow detention time= 0.2 min calculated for 0.249 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (772.2 - 772.1)

Volume	Invert	Avail.Storage	Storage Description
#1	35.12'	73 cf	**4.00'D x 5.80'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	35.12'	**30.0" Round Culvert** L= 200.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 35.12' / 27.19' S= 0.0396 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=2.87 cfs @ 12.11 hrs HW=35.78' TW=29.06' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 2.87 cfs @ 2.77 fps)

Summary for Pond 12P: DMH #22364

Inflow Area = 5.412 ac, 33.65% Impervious, Inflow Depth > 5.25" for 50-Year event
Inflow = 24.83 cfs @ 12.19 hrs, Volume= 2.368 af
Outflow = 24.83 cfs @ 12.19 hrs, Volume= 2.367 af, Atten= 0%, Lag= 0.0 min
Primary = 24.83 cfs @ 12.19 hrs, Volume= 2.367 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 29.36' @ 12.19 hrs Surf.Area= 13 sf Storage= 29 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 79 cf

Plug-Flow detention time= 0.1 min calculated for 2.367 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (819.3 - 819.2)

Volume	Invert	Avail.Storage	Storage Description
#1	27.02'	79 cf	**4.00'D x 6.30'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	27.02'	**30.0" Round Culvert** L= 98.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 27.02' / 23.54' S= 0.0355 '/' Cc= 0.900

n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=24.82 cfs @ 12.19 hrs HW=29.35' TW=25.69' (Dynamic Tailwater)
1=Culvert (Inlet Controls 24.82 cfs @ 5.20 fps)

Summary for Pond 13P: CB #22362

Inflow Area = 5.565 ac, 35.47% Impervious, Inflow Depth > 5.33" for 50-Year event
Inflow = 25.56 cfs @ 12.19 hrs, Volume= 2.472 af
Outflow = 25.56 cfs @ 12.19 hrs, Volume= 2.472 af, Atten= 0%, Lag= 0.0 min
Primary = 25.56 cfs @ 12.19 hrs, Volume= 2.472 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.69' @ 12.19 hrs Surf.Area= 13 sf Storage= 30 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 82 cf

Plug-Flow detention time= 0.1 min calculated for 2.472 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (816.0 - 815.9)

Volume	Invert	Avail.Storage	Storage Description
#1	23.29'	82 cf	**4.00'D x 6.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	23.29'	**30.0" Round Culvert** L= 225.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.29' / 15.28' S= 0.0356 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=25.55 cfs @ 12.19 hrs HW=25.69' TW=17.44' (Dynamic Tailwater)
1=Culvert (Inlet Controls 25.55 cfs @ 5.28 fps)

Summary for Pond 14P: CB #22363

Inflow Area = 0.153 ac,100.00% Impervious, Inflow Depth > 8.21" for 50-Year event
Inflow = 1.27 cfs @ 12.08 hrs, Volume= 0.104 af
Outflow = 1.26 cfs @ 12.08 hrs, Volume= 0.104 af, Atten= 1%, Lag= 0.0 min
Primary = 1.26 cfs @ 12.08 hrs, Volume= 0.104 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.72' @ 12.20 hrs Surf.Area= 13 sf Storage= 12 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.4 min calculated for 0.104 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (740.3 - 740.0)

Volume	Invert	Avail.Storage	Storage Description
#1	24.76'	63 cf	**4.00'D x 5.05'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	24.76'	**15.0" Round Culvert** L= 28.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 24.76' / 24.49' S= 0.0096 '/' Cc= 0.900
n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.09 cfs @ 12.08 hrs HW=25.41' TW=25.21' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 1.09 cfs @ 2.45 fps)

Summary for Pond 15P: CB #3397

Inflow Area = 0.153 ac,100.00% Impervious, Inflow Depth > 8.21" for 50-Year event
Inflow = 1.27 cfs @ 12.08 hrs, Volume= 0.104 af
Outflow = 1.27 cfs @ 12.08 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.1 min
Primary = 1.27 cfs @ 12.08 hrs, Volume= 0.104 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.33' @ 12.08 hrs Surf.Area= 13 sf Storage= 7 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.3 min calculated for 0.104 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (740.2 - 740.0)

Volume	Invert	Avail.Storage	Storage Description
#1	24.76'	63 cf	**4.00'D x 5.05'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	24.76'	**15.0" Round Culvert** L= 28.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 24.76' / 24.49' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.27 cfs @ 12.08 hrs HW=25.33' TW=13.67' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 1.27 cfs @ 3.40 fps)

Summary for Pond 16P: CB #3398

Inflow Area = 5.989 ac, 38.72% Impervious, Inflow Depth > 5.45" for 50-Year event
Inflow = 27.71 cfs @ 12.18 hrs, Volume= 2.720 af
Outflow = 27.71 cfs @ 12.18 hrs, Volume= 2.720 af, Atten= 0%, Lag= 0.0 min
Primary = 27.71 cfs @ 12.18 hrs, Volume= 2.720 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.14' @ 12.18 hrs Surf.Area= 13 sf Storage= 33 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= 0.1 min calculated for 2.720 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (812.5 - 812.5)

Volume	Invert	Avail.Storage	Storage Description
#1	11.52'	74 cf	**4.00'D x 5.90'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	11.52'	**30.0" Round Culvert**

L= 40.0' RCP, square edge headwall, Ke= 0.500
Inlet / Outlet Invert= 11.52' / 9.62' S= 0.0475 '/' Cc= 0.900
n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=27.70 cfs @ 12.18 hrs HW=14.14' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 27.70 cfs @ 5.64 fps)

Summary for Pond 17P: CB #13929

Inflow Area = 0.412 ac, 77.88% Impervious, Inflow Depth > 7.24" for 50-Year event
Inflow = 2.88 cfs @ 12.11 hrs, Volume= 0.249 af
Outflow = 2.88 cfs @ 12.11 hrs, Volume= 0.249 af, Atten= 0%, Lag= 0.0 min
Primary = 2.88 cfs @ 12.11 hrs, Volume= 0.249 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 37.42' @ 12.11 hrs Surf.Area= 13 sf Storage= 8 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 89 cf

Plug-Flow detention time= 0.2 min calculated for 0.248 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (772.1 - 771.9)

Volume	Invert	Avail.Storage	Storage Description
#1	36.76'	89 cf	**4.00'D x 7.10'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	36.76'	**30.0" Round Culvert** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 36.76' / 35.32' S= 0.0240 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf

Primary OutFlow Max=2.87 cfs @ 12.11 hrs HW=37.42' TW=35.78' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.87 cfs @ 2.77 fps)

Summary for Pond 18P: PDMH 1

Inflow Area = 5.836 ac, 37.12% Impervious, Inflow Depth > 5.38" for 50-Year event
Inflow = 26.93 cfs @ 12.18 hrs, Volume= 2.616 af
Outflow = 26.93 cfs @ 12.18 hrs, Volume= 2.616 af, Atten= 0%, Lag= 0.0 min
Primary = 26.93 cfs @ 12.18 hrs, Volume= 2.616 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 17.44' @ 12.19 hrs Surf.Area= 13 sf Storage= 29 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 130 cf

Plug-Flow detention time= 0.0 min calculated for 2.616 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (815.4 - 815.3)

Volume	Invert	Avail.Storage	Storage Description
#1	15.16'	130 cf	**4.00'D x 10.35'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	15.16'	**30.0" Round Culvert** L= 105.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 15.16' / 11.72' S= 0.0328 '/' Cc= 0.900 n= 0.024, Flow Area= 4.91 sf

Primary OutFlow Max=26.89 cfs @ 12.18 hrs HW=17.44' TW=14.14' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 26.89 cfs @ 7.51 fps)

Summary for Pond P3: OS #3

Inflow Area = 0.482 ac, 74.43% Impervious, Inflow Depth > 6.49" for 50-Year event
Inflow = 5.20 cfs @ 12.08 hrs, Volume= 0.261 af
Outflow = 5.20 cfs @ 12.08 hrs, Volume= 0.260 af, Atten= 0%, Lag= 0.0 min
Primary = 5.20 cfs @ 12.08 hrs, Volume= 0.260 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 96.52' @ 12.10 hrs Surf.Area= 13 sf Storage= 44 cf

Plug-Flow detention time= 3.9 min calculated for 0.259 af (100% of inflow)
Center-of-Mass det. time= 1.5 min (806.8 - 805.3)

Volume	Invert	Avail.Storage	Storage Description
#1	21.25'	44 cf	**4.00'D x 3.50'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	21.25'	**12.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.25' / 19.50' S= 0.0673 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=4.23 cfs @ 12.08 hrs HW=96.14' TW=94.89' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 4.23 cfs @ 5.39 fps)

Summary for Pond RG1: Raingarden #1

Inflow Area = 0.271 ac, 71.07% Impervious, Inflow Depth > 6.89" for 50-Year event
Inflow = 2.09 cfs @ 12.08 hrs, Volume= 0.156 af
Outflow = 2.06 cfs @ 12.10 hrs, Volume= 0.144 af, Atten= 1%, Lag= 0.7 min
Primary = 2.06 cfs @ 12.10 hrs, Volume= 0.144 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 19.76' @ 12.10 hrs Surf.Area= 504 sf Storage= 652 cf

Plug-Flow detention time= 61.8 min calculated for 0.144 af (92% of inflow)
Center-of-Mass det. time= 21.9 min (804.5 - 782.6)

Volume	Invert	Avail.Storage	Storage Description
#1	16.25'	975 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
16.25	200	0.0	0	0
17.25	200	40.0	80	80
17.50	200	10.0	5	85
19.00	200	100.0	300	385
20.00	600	100.0	400	785
20.20	1,300	100.0	190	975

Device	Routing	Invert	Outlet Devices
#1	Primary	16.25'	**12.0" Round Culvert** L= 64.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 16.25' / 15.78' S= 0.0073 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	19.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	16.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 10.00'

Primary OutFlow Max=2.06 cfs @ 12.10 hrs HW=19.76' TW=17.13' (Dynamic Tailwater)
└─**1=Culvert** (Passes 2.06 cfs of 5.70 cfs potential flow)
  ├─**2=Orifice/Grate** (Weir Controls 2.03 cfs @ 1.66 fps)
  └─**3=Exfiltration** (Controls 0.03 cfs)

Summary for Pond RG3: Raingarden #3

Inflow Area = 0.327 ac, 81.63% Impervious, Inflow Depth > 7.37" for 50-Year event
Inflow = 2.62 cfs @ 12.08 hrs, Volume= 0.201 af
Outflow = 3.69 cfs @ 12.08 hrs, Volume= 0.184 af, Atten= 0%, Lag= 0.0 min
Primary = 3.69 cfs @ 12.08 hrs, Volume= 0.184 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 96.66' @ 12.11 hrs Surf.Area= 700 sf Storage= 1,022 cf

Plug-Flow detention time= 73.3 min calculated for 0.184 af (91% of inflow)
Center-of-Mass det. time= 30.0 min (800.5 - 770.5)

Volume	Invert	Avail.Storage	Storage Description
#1	21.25'	1,022 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
21.25	250	0.0	0	0
22.25	250	40.0	100	100
22.50	250	10.0	6	106
24.00	250	100.0	375	481
25.00	525	100.0	388	869
25.25	700	100.0	153	1,022

Device	Routing	Invert	Outlet Devices
#1	Primary	21.26'	**12.0" Round Culvert** L= 1.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 21.26' / 21.25' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	24.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	21.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 15.00'

Primary OutFlow Max=0.00 cfs @ 12.08 hrs HW=95.29' TW=96.14' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)
└─**2=Orifice/Grate** (Controls 0.00 cfs)
└─**3=Exfiltration** (Passes 0.00 cfs of 0.32 cfs potential flow)

Summary for Pond RG4: Raingarden #4

Inflow Area = 0.249 ac, 73.04% Impervious, Inflow Depth > 7.01" for 50-Year event
Inflow = 1.93 cfs @ 12.08 hrs, Volume= 0.145 af
Outflow = 2.69 cfs @ 12.09 hrs, Volume= 0.139 af, Atten= 0%, Lag= 0.3 min
Primary = 2.69 cfs @ 12.09 hrs, Volume= 0.139 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 97.42' @ 12.11 hrs Surf.Area= 400 sf Storage= 455 cf

Plug-Flow detention time= 43.3 min calculated for 0.139 af (96% of inflow)
Center-of-Mass det. time= 19.2 min (799.0 - 779.8)

Volume	Invert	Avail.Storage	Storage Description
#1	23.25'	455 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.25	100	0.0	0	0
24.25	100	40.0	40	40
24.50	100	10.0	3	43
26.00	100	100.0	150	193
27.00	260	100.0	180	373
27.25	400	100.0	83	455

Device	Routing	Invert	Outlet Devices
#1	Primary	23.25'	**8.0" Round Culvert** L= 1.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.25' / 22.35' S= 0.9000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	26.50'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	23.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 17.00'

Primary OutFlow Max=1.88 cfs @ 12.09 hrs HW=97.17' TW=95.92' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.88 cfs @ 5.39 fps)
└**2=Orifice/Grate** (Passes < 1.88 cfs potential flow)
└**3=Exfiltration** (Passes < 0.17 cfs potential flow)

Summary for Pond RG5: Raingarden #5

Inflow Area = 0.154 ac, 65.72% Impervious, Inflow Depth > 6.65" for 50-Year event
Inflow = 1.16 cfs @ 12.08 hrs, Volume= 0.085 af
Outflow = 1.50 cfs @ 12.09 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.3 min
Primary = 1.50 cfs @ 12.09 hrs, Volume= 0.079 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 96.47' @ 12.11 hrs Surf.Area= 400 sf Storage= 455 cf

Plug-Flow detention time= 62.5 min calculated for 0.079 af (93% of inflow)
Center-of-Mass det. time= 25.3 min (813.3 - 788.0)

Volume	Invert	Avail.Storage	Storage Description
#1	25.25'	455 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.25	100	0.0	0	0
26.25	100	40.0	40	40
26.50	100	10.0	3	43
28.00	100	100.0	150	193
29.00	260	100.0	180	373
29.25	400	100.0	83	455

Device	Routing	Invert	Outlet Devices
#1	Primary	25.25'	**8.0" Round Culvert** L= 84.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 25.25' / 23.35' S= 0.0226 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	28.50'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	25.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 19.00'

Primary OutFlow Max=0.59 cfs @ 12.09 hrs HW=96.15' TW=95.92' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 0.59 cfs @ 1.68 fps)
└**2=Orifice/Grate** (Passes < 0.81 cfs potential flow)
└**3=Exfiltration** (Passes < 0.17 cfs potential flow)

Summary for Pond YD2: Raingarden #2

Inflow Area = 0.155 ac, 59.20% Impervious, Inflow Depth > 6.41" for 50-Year event
Inflow = 1.13 cfs @ 12.09 hrs, Volume= 0.083 af
Outflow = 1.51 cfs @ 12.08 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min
Primary = 1.51 cfs @ 12.08 hrs, Volume= 0.077 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 96.61' @ 12.11 hrs Surf.Area= 400 sf Storage= 455 cf

Plug-Flow detention time= 62.4 min calculated for 0.077 af (93% of inflow)
Center-of-Mass det. time= 23.9 min (817.0 - 793.0)

Volume	Invert	Avail.Storage	Storage Description
#1	22.25'	455 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.25	100	0.0	0	0
23.25	100	40.0	40	40
23.50	100	10.0	3	43
25.00	100	100.0	150	193
26.00	260	100.0	180	373
26.25	400	100.0	83	455

Device	Routing	Invert	Outlet Devices
#1	Primary	22.25'	**12.0" Round Culvert** L= 52.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 22.25' / 21.35' S= 0.0173 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	25.50'	**8.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	22.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 16.00'

Primary OutFlow Max=0.00 cfs @ 12.08 hrs HW=94.99' TW=96.14' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.00 cfs)
  └─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Exfiltration** (Passes 0.00 cfs of 0.17 cfs potential flow)

Summary for Link P100: POA #100

Inflow Area = 2.732 ac, 47.25% Impervious, Inflow Depth > 5.50" for 50-Year event
Inflow = 14.98 cfs @ 12.10 hrs, Volume= 1.252 af
Primary = 14.98 cfs @ 12.10 hrs, Volume= 1.252 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link P200: POA #200 (CB 3399)

Inflow Area = 5.989 ac, 38.72% Impervious, Inflow Depth > 5.45" for 50-Year event
Inflow = 27.71 cfs @ 12.18 hrs, Volume= 2.720 af
Primary = 27.71 cfs @ 12.18 hrs, Volume= 2.720 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

SECTION 6

Soil Data

- Web Soil Survey
- NH Ksat Canton Soil Series

Soil Map—Rockingham County, New Hampshire
(Bethel Church)

Map Scale: 1:1,410 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Rockingham County, New Hampshire
Survey Area Data: Version 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—Sep 9, 2017

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
799	Urban land-Canton complex, 3 to 15 percent slopes	3.0	100.0%
Totals for Area of Interest		**3.0**	**100.0%**

Soil Series	legend number	Ksat low - B in/hr	Ksat high - B in/hr	Ksat low - C in/hr	Ksat high - C in/hr	Hyd. Grp.	Group	Land Form	Temp.	Soil Textures	Spodosol ?	Other
Occum	1	0.6	2.0	6.00	20.0	B	2	Flood Plain (Bottom Land)	mesic	loamy	no	loamy over loamy sand
Suncook	2	6.0	20.0	6.00	20.0	A	1	Flood Plain (Bottomland)	mesic	sandy	no	occasionally flooded
Lim	3	0.6	2.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	mesic	loamy	no	
Pootatuck	4	0.6	6.0	6.00	20.0	B	3	Flood Plain (Bottom Land)	mesic	loamy	no	single grain in C
Rippowam	5	0.6	6.0	6.00	20.0	C	5	Flood Plain (Bottom Land)	mesic	loamy	no	
Saco	6	0.6	2.0	6.00	20.0	D	6	Flood Plain (Bottom Land)	mesic	silty	no	strata
Hadley	8	0.6	2.0	0.60	6.0	B	2	Flood Plain (Bottom Land)	mesic	silty	no	strata of fine sand
Winooski	9	0.6	6.0	0.60	6.0	B		Flood Plain (Bottom Land)	mesic	silty over loamy	no	
Merrimac	10	2.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	mesic	gravelly sand	no	loamy cap
Gloucester	11	6.0	20.0	6.00	20.0	A	1	Sandy Till	mesic	sandy-skeletal	no	loamy cap
Hinckley	12	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	mesic	sandy-skeletal	no	
Sheepscot	14	6.0	20.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly coarse sand
Searsport	15	6.0	20.0	6.00	20.0	D	6	Outwash and Stream Terraces	frigid	sandy	no	organic over sand
Saugatuck	16	0.06	0.2	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	yes	ortstein
Colton, gravelly	21	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	gravelly surface
Colton	22	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	
Masardis	23	6.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	frigid	sandy-skeletal	yes	slate, loamy cap
Agawam	24	6.0	20.0	20.00	100.0	B	2	Outwash and Stream Terraces	mesic	loamy over sandy	no	loamy over sand/gravel
Windsor	26	6.0	20.0	6.00	20.0	A	1	Outwash and Stream Terraces	mesic	sandy	no	
Groveton	27	0.6	2.0	0.60	6.0	B	2	Outwash and Stream Terraces	frigid	loamy	yes	loamy over sandy
Madawaska	28	0.6	2.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Woodbridge	29	0.6	2.0	0.00	0.6	C	3	Firm, platy, loamy till	mesic	loamy	no	sandy loam in Cd
Unadilla	30	0.6	2.0	2.00	20.0	B	2	Terraces and glacial lake plains	mesic	silty	no	silty over gravelly
Hartland	31	0.6	2.0	0.20	2.0	B	2	Terraces and glacial lake plains	mesic	silty	no	very fine sandy loam
Boxford	32	0.1	0.2	0.00	0.2	C	3	Silt and Clay Deposits	mesic	fine	no	silty clay loam
Scitico	33	0.0	0.2	0.00	0.2	C	5	Silt and Clay Deposits	mesic	fine	no	
Wareham	34	6.0	20.0	6.00	20.0	C	5	Outwash and Stream Terraces	mesic	sandy	no	
Champlain	35	6.0	20.0	20.00	100.0	A	1	Outwash and Stream Terraces	frigid	gravelly sand	no	
Adams	36	6.0	20.0	20.00	99.0	A	1	Outwash and Stream Terraces	frigid	sandy	yes	
Melrose	37	2.0	6.0	0.00	0.2	C	3	Sandy/loamy over silt/clay	frigid	loamy over clayey	no	silty clay loam in C
Eldridge	38	6.0	20.0	0.06	0.6	C	3	Sandy/loamy over silt/clay	mesic	sandy over loamy	no	
Millis	39					C	3	Firm, platy, sandy till	frigid	loamy	yes	loamy sand in Cd
Canton	42	2.0	6.0	6.00	20.0	B	2	Loose till, sandy textures	mesic	loamy over sandy	no	loamy over loamy sand
Montauk	44	0.6	6.0	0.06	0.6	C	3	Firm, platy, sandy till	mesic	loamy	no	loamy sand in Cd
Henniker	46	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	no	loamy sand in Cd
Madawaska, aquentic	48	0.6	2.0	6.00	20.0	B	3	Outwash and Stream Terraces	frigid	loamy over sandy	yes	sandy or sandy-skeletal
Whitman	49	0.0	0.2	0.00	0.2	D	6	Firm, platy, loamy till	mesic	loamy	no	mucky loam
Hermon	55	2.0	20.0	6.00	20.0	A	1	Sandy Till	frigid	sandy-skeletal	yes	loamy cap
Becket	56	0.6	2.0	0.06	0.6	C	3	Firm, platy, sandy till	frigid	loamy	yes	gravelly sandy loam in Cd
Waumbeck	58	2.0	20.0	6.00	20.0	B	3	Loose till, sandy textures	frigid	sandy-skeletal	yes	very cobbly loamy sand
Charlton	62	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	mesic	loamy	no	fine sandy loam
Paxton	66	0.6	2.0	0.00	0.2	C	3	Firm, platy, loamy till	mesic	loamy	no	
Sutton	68	0.6	6.0	0.60	6.0	B	3	Loose till, loamy textures	mesic	loamy	no	
Berkshire	72	0.6	6.0	0.60	6.0	B	2	Loose till, loamy textures	frigid	loamy	yes	fine sandy loam
Marlow	76	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	fine sandy loam in Cd
Peru	78	0.6	2.0	0.06	0.6	C	3	Firm, platy, loamy till	frigid	loamy	yes	
Thorndike	84	0.6	2.0	0.60	2.0	C/D	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	less than 20 in. deep
Hollis	86	0.6	6.0	0.60	6.0	C/D	4	Loose till, bedrock	mesic	loamy	no	less than 20 in. deep
Winnecook	88	0.6	2.0	0.60	2.0	C	4	Friable till, silty, schist & phyllite	frigid	loamy-skeletal	yes	20 to 40 in. deep
Chatfield	89	0.6	6.0	0.60	6.0	B	4	Loose till, bedrock	mesic	loamy	no	20 to 40 in. deep
Hogback	91	2.0	6.0	2.00	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Lyman	92	2.0	6.0	2.00	6.0	A/D	4	Loose till, bedrock	frigid	loamy	yes	less than 20 in. deep
Woodstock	93	2.0	6.0	2.00	6.0	C/D	4	Loose till, bedrock	frigid	loamy	no	less than 20 in. deep
Rawsonville	98	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep
Tunbridge	99	0.6	6.0	0.60	6.0	C	4	Loose till, bedrock	frigid	loamy	yes	20 to 40 in. deep

SECTION 7

Inspection and Maintenance Manual

STORMWATER INSPECTION AND MAINTENANCE MANUAL

CHASE DRIVE GATEWAY DEVELOPMENT SITE

200 Chase Drive
Portsmouth, NH
Assessor's Parcel 210-02

Proper inspection, maintenance, and repair are key elements in maintaining a successful stormwater management program on a developed property. Routine inspections ensure permit compliance and reduce the potential for deterioration of infrastructure or reduced water quality. The following responsible parties shall be in charge of managing the stormwater facilities:

RESPONSIBLE PARTIES:

Owner: Bethel Assembly of God
Name *Company* *Phone*

Inspection:_____
Name *Company* *Phone*

Maintenance:_____
Name *Company* *Phone*

NOTE: Inspection and maintenance responsibilities transfer to future property owners.

Included in this Inspection and Maintenance Manual are the following components:

- Drainage Features and Site BMP Functions and Maintenance Descriptions
- Inspection and Maintenance Checklist
- Stormwater System Operations and Maintenance Report Form
- Site Grading and Drainage Plan

The owner shall submit an annual inspection log to the Planning Department for the inspection and maintenance of the porous pavers by July 15.

RAINGARDENS AND INFILTRATION BASINS

Function – Raingardens and infiltration ponds provide treatment to runoff prior to directing it to stormwater systems by filtering sediment and suspended solids, trapping them in the bottom of the garden and in the filter media itself. Additional treatment is provided by the native water-tolerant vegetation which removes nutrients and other pollutants through bio-uptake. Stormwater detention and infiltration can also be provided as the filtering process slows runoff, decreases the peak rate of discharge and promotes groundwater recharge.

Detention ponds temporarily store runoff and allow for its controlled release during and after a storm event, decreasing peak rates of runoff and minimizing flooding.

Raingardens, infiltration ponds, and detention ponds shall be managed (Per AGR 3800 and RSA 430:53) to: prevent and control the spread of invasive plant, insect, and fungal species; minimize the adverse environmental and economic effects invasive species cause to agriculture, forests, wetlands, wildlife, and other natural resources of the state; and protect the public from potential health problems attributed to certain invasive species.

Maintenance

- Inspect annually and after significant rainfall event.
- If a raingarden does not completely drain within 72-hours following a rainfall event, then a qualified professional should assess the condition of the facility to determine measures required to restore its filtration and/or infiltration function(s), including but not limited to removal of accumulated sediments and/or replacement or reconstruction of the filter media.
- Replace any riprap dislodged from spillways, inlets and outlets.
- Remove any obstructions, litter and accumulated sediment or debris as warranted but no less than once a year.
- Mowing of any grassed area in or adjacent to a raingarden shall be performed on a monthly basis (when areas are not inundated) to keep the vegetation in vigorous condition. The cut grass shall be removed to prevent the decaying organic litter from clogging the filter media or choking other vegetation.
- Select vegetation should be maintained in healthy condition. This may include pruning, removal and replacement of dead or diseased vegetation.
- Remove any invasive species, Per AGR 3800 and RSA 430:53.

The owner shall submit an annual inspection log to the Planning Department for the inspection and maintenance of the porous pavers by July 15.

POROUS PAVERS

Function – Porous pavement (Pavers) is designed to capture rainwater runoff containing suspended solids, nutrients and pollutants. Proper maintenance of porous pavement is crucial for ensuring its longevity and functionality to infiltrate runoff.

Maintenance

- Signs shall be installed indicating the location of porous pavement and the special maintenance required.
- New porous pavement shall be inspected several times in the first month after construction and at least annually thereafter. Inspections shall be conducted after major storms to check for surface ponding that might indicate possible clogging.
- Inspect annually for pavement deterioration or spalling.
- Vacuum sweeping shall be performed once a year or as needed to maintain permeability. Power washing may be required prior to vacuum sweeping to dislodge trapped particles.
- Sand and abrasives shall not be used for winter maintenance, as they will clog the pores; de-icing materials shall be used instead.
- Never reseal or repave with impermeable materials. If the porous pavement is damaged, it can be repaired using conventional, non-porous patching mixes as long as the cumulative area repaired does not exceed 10 percent of the paved area.

CULVERTS AND DRAINAGE PIPES

Function – Culverts and drainage pipes convey stormwater away from buildings, walkways, and parking areas and to surface waters or closed drainage systems.

Maintenance

- Culverts and drainage pipes shall be inspected semi-annually, or more often as needed, for accumulation of debris and structural integrity. Leaves and other debris shall be removed from the inlet and outlet to insure the functionality of drainage structures. Debris shall be disposed of on site where it will not concentrate back at the drainage structures or at a solid waste disposal facility.
- Riprap Areas - Culvert outlets and inlets shall be inspected during annual maintenance and operations for erosion and scour. If scour or creek erosion is identified, the outlet owner shall take appropriate means to prevent further erosion. Increased lengths of riprap may require a NHDES Wetlands Permit modification.

CATCH BASINS

Function – Catch basins collect stormwater, primarily from paved surfaces and roofs. Stormwater from paved areas often contains sediment and contaminants. Catch basin sumps serve to trap sediment, trace metals, nutrients and debris. Hooded catch basins trap hydrocarbons and floating debris.

Maintenance

- Remove leaves and debris from structure grates on an as-needed basis.
- Sumps shall be inspected and cleaned (as needed) on an annual basis to protect water quality and infiltration capacity. Catch basin debris shall be disposed of at a solid waste disposal facility.

DRIP EDGES

Function – Drip edges are to provide erosion control of surface where impervious surfaces meet non-impervious surfaces, such as building or roadway edges.

Maintenance

- Drip edges should be inspected annually for erosion, rutting, and migration of stone. Any areas experiencing erosion shall be properly maintained by replacing or adding additional stone to the area of concern.

LANDSCAPED AREAS - FERTILIZER MANAGEMENT

Function – Fertilizer management involves controlling the rate, timing and method of fertilizer application so that the nutrients are taken up by the plants thereby reducing the chance of polluting the surface and ground waters. Fertilizer management can be effective in reducing the amounts of phosphorus and nitrogen in runoff from landscaped areas, particularly lawns.

Maintenance

- Have the soil tested by your landscaper or local Soil Conservation Service for nutrient requirements and follow the recommendations.
- Do not apply fertilizer to frozen ground.
- Clean up any fertilizer spills.
- Do not allow fertilizer to be broadcast into water bodies.
- When fertilizing a lawn, water thoroughly, but do not create a situation where water runs off the surface of the lawn.

LANDSCAPED AREAS - LITTER CONTROL

Function – Landscaped areas tend to filter debris and contaminates that may block drainage systems and pollute the surface and ground waters.

Maintenance

- Litter Control and lawn maintenance involves removing litter such as trash, leaves, lawn clippings, pet wastes, oil and chemicals from streets, parking lots, and lawns before materials are transported into surface waters.
- Litter control shall be implemented as part of the grounds maintenance program.

GENERAL CLEAN UP

Upon completion of the project, the contractor shall remove all temporary stormwater structures (i.e., temporary stone check dams, silt fence, temporary diversion swales, catch basin inlet basket, etc.). Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required shall be dressed to conform to the existing grade, prepared, and seeded. Remove any sediment in catch basins and clean drain pipes that may have accumulated during construction.

Once in operation, all paved areas of the site should be swept at least once annually, preferably at the end of winter prior to significant spring rains.

APPENDIX

A. INSPECTION & MAINTENANCE CHECKLIST

B. STORM WATER SYSTEM OPERATION AND MAINTENCE REPORT

C. GRADING AND DRAINAGE PLAN

The Grading and Drainage Plan shall be referenced for storm water system practices and structures required for inspection and annual reporting.

Inspection & Maintenance Checklist

BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance/ Cleanout Threshold
Porous Pavers:			
Vacuum Sweeping	Annually	N/A	No ponding of water on porous pavement surface
De-icing Agents	N/A	N/A	**Minimize Sand Use on Porous Pavers**
Closed Drainage System:			
Drainage Pipes	1 time per 2 years	Check for sediment accumulation & clogging.	Less than 2" sediment depth
Catch Basins	Annually	Check for sediment accumulation (Less than 24" sediment), blocked hood, and floating debris.	Clean Sumps. Remove all floating debris.
Drain Manhole	Annually	Check for sediment, debris, and obstructions.	Remove all Obstructions.

BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
BMPs:			
Raingardens or Infiltration Pond	Annually	• Check infiltration rates and filter media. • Check for trash & debris. • Check for sediment buildup. • Check for vegetation stability. • Check for excess woody vegetation growth. • Check for invasive species.	Remove trash & debris, sediment, woody vegetation, and invasive species. Side slopes and berm are to be mowed. Replant vegetation if required.
Vegetated Swale	Annually	Check for sediment buildup, vegetation loss and invasive species, debris, and damage.	Remove sediment, debris and invasive species, repair damage, and mow grass monthly to a depth of 4 inches.
Riprap Outlet Protection	Annually	Check for sediment buildup and structure damage.	Remove excess sediment and repair damage.
Litter & Trash Removal	Routinely	N/A	Parcel will be free of litter/trash.

STORM WATER SYSTEM OPERATION AND MAINTENANCE REPORT

General Information		
Project Name		
Owner		
Inspector's Name(s)		
Inspector's Contact Information		
Date of Inspection	**Start Time:**	**End Time:**
Type of Inspection: ☐ Annual Report ☐ Post-storm event ☐ Due to a discharge of significant amounts of sediment		
Notes:		

General Site Questions and Discharges of Significant Amounts of Sediment			
Subject		**Status**	**Notes**
A discharge of significant amounts of sediment may be indicated by (but is not limited to) observations of the following. Note whether any are observed during this inspection:			*Notes/ Action taken:*
1	Do the current site conditions reflect the attached site plan?	❑Yes ❑No	
2	Is the site permanently stabilized, temporary erosion and sediment controls are removed, and stormwater discharges from construction activity are eliminated?	❑Yes ❑No	
3	Is there evidence of the discharge of significant amounts of sediment to surface waters, or conveyance systems leading to surface waters?	❑Yes ❑No	
4	Is there evidence of concentrated flows of stormwater such as rills or channels that cause erosion when such flows are not filtered, settled or otherwise treated to remove sediment?	❑Yes ❑No	
5	Is there evidence of deposits of sediment from the site on any adjacent property or stormwater system.	❑Yes ❑No	
6	Is there evidence of discharges from the site to streams running through or along the site where visual observations indicate significant amounts of sediment present in them.	❑Yes ❑No	
7	Is there evidence of invasive species within the stormwater treatment areas?	❑Yes ❑No	

Permit Coverage and Plans				
#	BMP/Facility	Inspected	Corrective Action Needed and Notes	Date Corrected
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		☐Yes ☐No		
		☐Yes ☐No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		
		❑Yes ❑No		

SITE DE-ICING LOG

Permit Coverage and Plans			
The owner or owner's representative shall keep a log of de-icing activities to track the amount of de-icing materials applied to the site.			
Date	**De-Icing Material Used**	**Amount Used**	**Notes:**

APPENDIX:

Plans: DA-1: Pre-Development Drainage Plan *(11" x 17")*
DA-2: Post-Development Drainage Plan *(11" x 17")*

Project Plans *(22" x 34") (project plans under separate attachment)*

ALTUS
ENGINEERING, INC.

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

"Green" Statement"

Assessor's Map 210 Lot 02
200 Chase Drive
"200 Chase Drive Gateway Development Site"
Altus Project P4950

Pursuant to Section 2.4.3.1(a) of the Site Plan Review Regulations, Altus Engineering, Inc. (Altus) respectfully submits the following list of the project's "green" components for the site plan amendment and expansion of the property located at 200 Chase Drive:

- The existing church located on the site was built in 1972. In 1986, the Site was expanded to constructed in the 1980's prior to stormwater treatment or detention design considerations. Runoff from the pavement and building surfaces currently discharge to a closed drainage system that discharges to the wetlands to the south. The stormwater management design for this site will enhance the runoff quality and reduce the peak rates of runoff to improve down gradient conditions.
- The proposed stormwater management system is designed to use elements of low impact design (LID) to treat and detain stormwater. The stormwater management system is designed to provide treatment to the new development area, as well as much of the existing parking lot. The proposed project will reduce peak runoff rates of stormwater leaving the site.
- A portion of the new parking lot for the 22 unit building will be constructed using porous materials (permeable pavers) to provide treatment and infiltration of the surface water from the parking area.
- Five raingardens will be constructed on the site to treat and detain stormwater flows from the proposed site development.
- The existing site is a 2.68 acre lot that consists of an 18,600 square foot (footprint) church, 133 stall parking lot, two residential houses, and associated driveways and walkways. The existing site impervious area totals 74,700 square feet, or 64% of the site.
- The ***Effective Impervious Area,*** untreated impervious area, will be reduced from 74,900 sf (64% of site) to 29,200 sf (25% of the site), by providing treatment to the proposed improvements and existing parking lot.

- No wetlands will be impacted as a result of the development.
- The existing mature Scotch Pine tree stand on the eastern side of the property will be maintained. Two constructed trees will be removed and the remaining trees will be pruned od deadwood. The proposed landscape plan for the development area will plant additional trees to provide shade areas and visual buffers.
- The proposed development will provide an exterior bicycle rack.

- The new buildings will be a code compliant buildings with components that will meet or exceed all applicable energy codes.
    - The proposed interior lighting will have LED fixtures to reduce electrical usage.
    - Proposed low-flow plumbing fixtures to reduce overall water usage.
- The project will provide 20% (24,270 square feet) of the lot development area as community space. These areas will include walking paths, pocket gardens, and pocket parks for community use and will be landscaped to enhance the areas.
- The proposed site lighting will have LED fixtures. The lights will be dark sky friendly and will exceed the minimum City requirements.

Wde/4787.2-App-City-Site-GreenStatment.doc

IMPERVIOUS AREA CALCUALTIONS TABLE

Chase Drive Gateway Development Site

200 Chase Drive, Portsmouth, NH

	Pre Development	Post Development	Increase
Description	s.f.	s.f.	s.f.
Driveways and Parking Areas	51,640	35,700	-15,940
Porous Pavement(Pavers)	0	1,940	1,940*
Buildings (Roofs)	20,860	28,300	7,440
Other (Sidewalks, Decks, Etc)	2,200	7,900	5,700
TOTALS	74,700	71,900	-2,800
			-3.75%

Prepared by Altus Engineering

16-Sep-19

P4950

D-Series Size 0
LED Area Luminaire

Catalog Number

Notes

Type

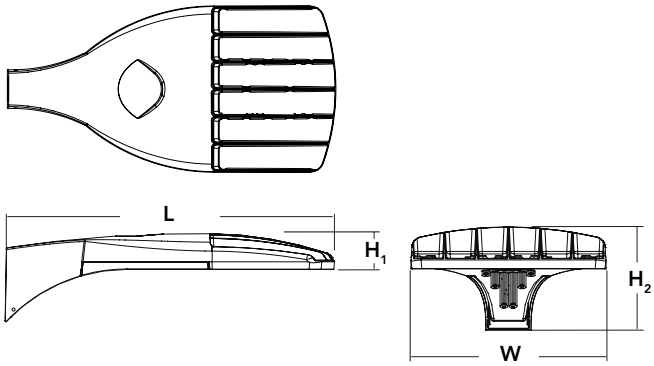
Hit the Tab key or mouse over the page to see all interactive elements.

Introduction

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment. The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire. The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 400W metal halide with typical energy savings of 70% and expected service life of over 100,000 hours.

Specifications

EPA:	0.95 ft² (.09 m²)
Length:	26" (66.0 cm)
Width:	13" (33.0 cm)
Height$_1$:	3" (7.62 cm)
Height$_2$:	7" (17.8 cm)
Weight (max):	16 lbs (7.25 kg)



A+ Capable options indicated by this color background.

Ordering Information

EXAMPLE: DSX0 LED P6 40K T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

DSX0 LED

Series	LEDs	Color temperature	Distribution	Voltage	Mounting
DSX0 LED	**Forward optics** P1 P4 P7 P2 P5 P3 P6 **Rotated optics** P10[1] P12[1] P11[1] P13[1]	30K 3000 K 40K 4000 K 50K 5000 K	T1S Type I short T2S Type II short T2M Type II medium T3S Type III short T3M Type III medium T4M Type IV medium TFTM Forward throw medium T5VS Type V very short T5S Type V short T5M Type V medium T5W Type V wide BLC Backlight control[2] LCCO Left corner cutoff[2] RCCO Right corner cutoff[2]	MVOLT [3,4] 120 [4] 208 [4] 240 [4] 277 [4] 347 [4,5] 480 [4,5]	**Shipped included** SPA Square pole mounting RPA Round pole mounting WBA Wall bracket SPUMBA Square pole universal mounting adaptor [6] RPUMBA Round pole universal mounting adaptor [6] **Shipped separately** KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)[7]

Control options		Other options	Finish *(required)*
Shipped installed		**Shipped installed**	DDBXD Dark bronze
NLTAIR2 nLight AIR generation 2 enabled[8,9]	PIR High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 5fc [13,14]	HS House-side shield [16]	DBLXD Black
PIRHN Network, high/low motion/ambient sensor[10]	PIRH High/low, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 5fc [13,14]	SF Single fuse (120, 277, 347V) [4]	DNAXD Natural aluminum
PER NEMA twist-lock receptacle only (control ordered separate) [11]	PIR1FC3V High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc [13,14]	DF Double fuse (208, 240, 480V) [4]	DWHXD White
PER5 Five-pin receptacle only (control ordered separate) [11,12]	PIRH1FC3V High/low, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc [13,14]	L90 Left rotated optics [1]	DDBTXD Textured dark bronze
PER7 Seven-pin receptacle only (leads exit fixture) (control ordered separate) [11,12]	FAO Field adjustable output [15]	R90 Right rotated optics [1]	DBLBXD Textured black
DMG 0-10V dimming extend out back of housing for external control (control ordered separate)		DDL Diffused drop lens [16]	DNATXD Textured natural aluminum
		Shipped separately	DWHGXD Textured white
		BS Bird spikes [17]	
		EGS External glare shield [17]	

Ordering Information

Accessories

Ordered and shipped separately.

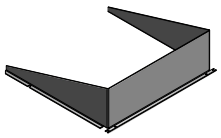
DLL127F 1.5 JU	Photocell - SSL twist-lock (120-277V) [18]
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (347V) [18]
DLL480F 1.5 CUL JU	Photocell - SSL twist-lock (480V) [18]
DSHORT SBK U	Shorting cap [18]
DSX0HS 20C U	House-side shield for P1,P2,P3 and P4 [16]
DSX0HS 30C U	House-side shield for P10,P11,P12 and P13 [16]
DSX0HS 40C U	House-side shield for P5,P6 AND P7 [16]
DSX0DDL U	Diffused drop lens (polycarbonate) [16]
PUMBA DDBXD U*	Square and round pole universal mounting bracket adaptor (specify finish) [19]
KMA8 DDBXD U	Mast arm mounting bracket adaptor (specify finish) [6]

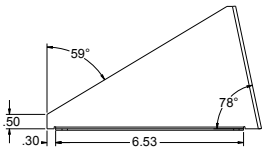
For more control options, visit DTL and ROAM online. Link to nLight Air 2

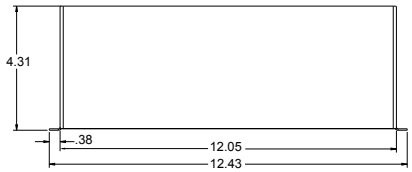
NOTES

1 P10, P11, P12 and P13 and rotated options (L90 or R90) only available together.
2 Not available with HS or DDL.
3 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
4 Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
5 Not available in P4, P7 or P13. Not available with BL30, BL50 or PNMT options.
6 Universal mounting brackets intended for retrofit on existing pre-drilled poles only. 1.5 G vibration load rating per ANCI C136.31.
7 Must order fixture with SPA mounting. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" mast arm (not included).
8 Must be ordered with PIRHN.
9 Sensor cover available only in dark bronze, black, white and natural aluminum colors.
10 Must be ordered with NLTAIR2. For more information on nLight Air 2 visit this link
11 Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Shorting Cap included.
12 If ROAM® node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Shorting Cap included.
13 Reference Motion Sensor table on page 3.
14 Reference PER Table on page 3 to see functionality.
15 Not available with other dimming controls options.
16 Not available with BLC, LCCO and RCCO distribution.
17 Must be ordered with fixture for factory pre-drilling.
18 Requires luminaire to be specified with PER, PER5 or PER7 option. See PER Table on page 3.
19 For retrofit use only.

EGS – External Glare Shield

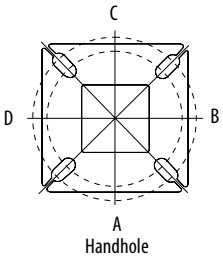




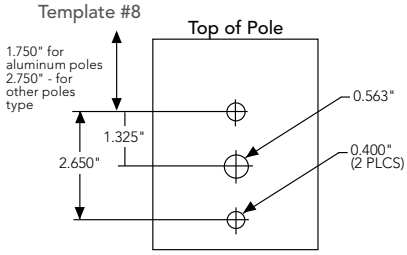


Drilling

HANDHOLE ORIENTATION
(from top of pole)



Template #8



Tenon Mounting Slipfitter

Tenon O.D.	Single Unit	2 at 180°	2 at 90°	3 at 120°	3 at 90°	4 at 90°
2-3/8"	AST20-190	AST20-280	AST20-290	AST20-320	AST20-390	AST20-490
2-7/8"	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

Mounting Option	Drilling Template	Single	2 @ 180	2 @ 90	3 @ 90	3 @ 120	4 @ 90
Head Location		Side B	Side B & D	Side B & C	Side B, C & D	Round Pole Only	Side A, B, C & D
Drill Nomenclature	#8	DM19AS	DM28AS	DM29AS	DM39AS	DM32AS	DM49AS
		Minimum Acceptable Outside Pole Dimension					
SPA	#8	2-7/8"	2-7/8"	3.5"	3.5"		3.5"
RPA	#8	2-7/8"	2-7/8"	3.5"	3.5"	3"	3.5"
SPUMBA	#5	2-7/8"	3"	4"	4"		4"
RPUMBA	#5	2-7/8"	3.5"	5"	5"	3.5"	5"

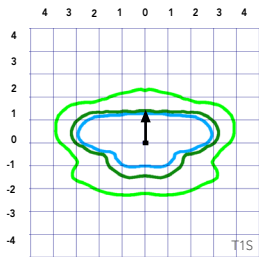
Photometric Diagrams

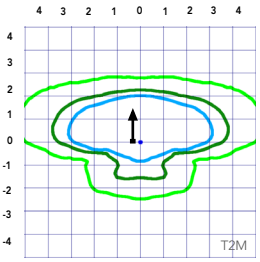
To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Area Size 0 homepage.

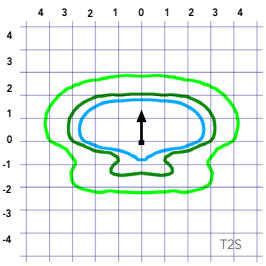
Isofootcandle plots for the DSX0 LED 40C 1000 40K. Distances are in units of mounting height (20').

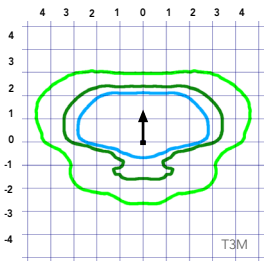
LEGEND

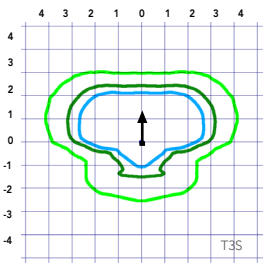
- 0.1 fc
- 0.5 fc
- 1.0 fc

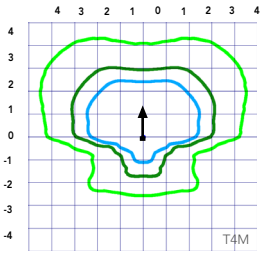


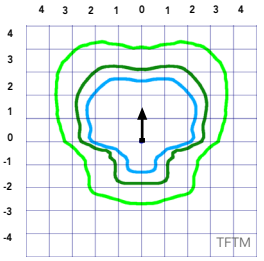


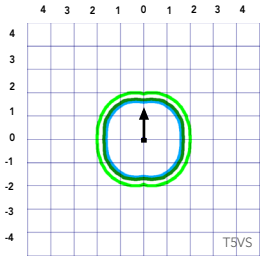


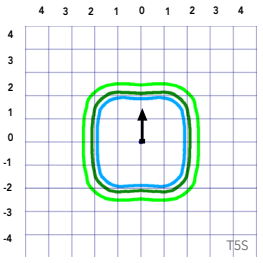


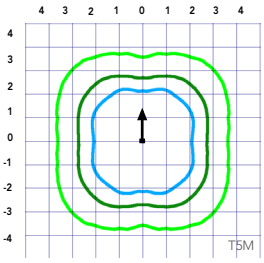


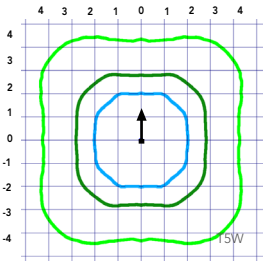


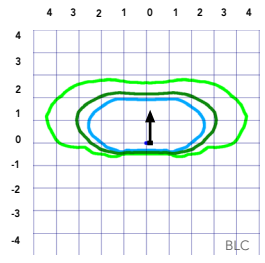


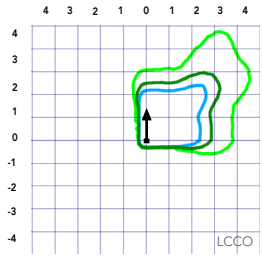


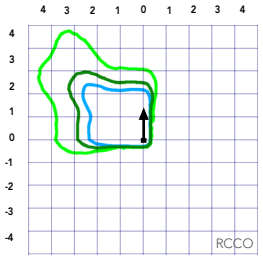












One Lithonia Way • Conyers, Georgia 30012 • Phone: 800.705.7378 • www.lithonia.com

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.04
5°C	41°F	1.04
10°C	50°F	1.03
15°C	50°F	1.02
20°C	68°F	1.01
25°C	**77°C**	**1.00**
30°C	86°F	0.99
35°C	95°F	0.98
40°C	104°F	0.97

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	Lumen Maintenance Factor
25,000	0.96
50,000	0.92
100,000	0.85

Motion Sensor Default Settings						
Option	Dimmed State	High Level (when triggered)	Photocell Operation	Dwell Time	Ramp-up Time	Ramp-down Time
PIR or PIRH	3V (37%) Output	10V (100%) Output	Enabled @ 5FC	5 min	3 sec	5 min
*PIR1FC3V or PIRH1FC3V	3V (37%) Output	10V (100%) Output	Enabled @ 1FC	5 min	3 sec	5 min
*for use with separate Dusk to Dawn or timer.						

Electrical Load

					Current (A)					
	Performance Package	LED Count	Drive Current	Wattage	120	208	240	277	347	480
Forward Optics (Non-Rotated)	P1	20	530	38	0.32	0.18	0.15	0.15	0.10	0.08
	P2	20	700	49	0.41	0.23	0.20	0.19	0.14	0.11
	P3	20	1050	71	0.60	0.37	0.32	0.27	0.21	0.15
	P4	20	1400	92	0.77	0.45	0.39	0.35	0.28	0.20
	P5	40	700	89	0.74	0.43	0.38	0.34	0.26	0.20
	P6	40	1050	134	1.13	0.65	0.55	0.48	0.39	0.29
	P7	40	1300	166	1.38	0.80	0.69	0.60	0.50	0.37
Rotated Optics (Requires L90 or R90)	P10	30	530	53	0.45	0.26	0.23	0.21	0.16	0.12
	P11	30	700	72	0.60	0.35	0.30	0.27	0.20	0.16
	P12	30	1050	104	0.88	0.50	0.44	0.39	0.31	0.23
	P13	30	1300	128	1.08	0.62	0.54	0.48	0.37	0.27

Controls Options

Nomenclature	Descripton	Functionality	Primary control device	Notes
FAO	Field adjustable output device installed inside the lumiaire; wired to the driver dimming leads.	Allows the lumiaire to be manually dimmed, effectively trimming the light output.	FAO device	Cannot be used with other controls options that need the 0-10V leads
DS	Drivers wired independantly for 50/50 luminaire operation	The luminaire is wired to two separate circuits, allowing for 50/50 operation.	Independently wired drivers	Requires two seperately switched circuits. Consider nLight AIR as a more cost effective alternative.
PER5 or PER7	Twist-lock photocell receptacle	Compatible with standard twist-lock photocells for dusk to dawn operation, or advanced control nodes that provide 0-10V dimming signals.	Twist-lock photocells such as DLL Elite or advanced control nodes such as ROAM.	Pins 4 & 5 to dimming leads on driver, Pins 6 & 7 are capped inside luminaire
PIR or PIRH	Motion sensors with integral photocell. PIR for 8-15' mounting; PIRH for 15-30' mounting	Luminaires dim when no occupancy is detected.	Acuity Controls SBOR	Also available with PIRH1FC3V when the sensor photocell is used for dusk-to-dawn operation.
NLTAIR2 PIRHN	nLight AIR enabled luminaire for motion sensing, photocell and wireless communication.	Motion and ambient light sensing with group response. Scheduled dimming with motion sensor over-ride when wirelessly connected to the nLight Eclypse.	nLight Air rSDGR	nLight AIR sensors can be programmed and commissioned from the ground using the CIAIRity Pro app.

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Forward Optics

Power Package	LED Count	Drive Current	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P1	20	530	38W	T1S	4,369	1	0	1	115	4,706	1	0	1	124	4,766	1	0	1	125
				T2S	4,364	1	0	1	115	4,701	1	0	1	124	4,761	1	0	1	125
				T2M	4,387	1	0	1	115	4,726	1	0	1	124	4,785	1	0	1	126
				T3S	4,248	1	0	1	112	4,577	1	0	1	120	4,634	1	0	1	122
				T3M	4,376	1	0	1	115	4,714	1	0	1	124	4,774	1	0	1	126
				T4M	4,281	1	0	1	113	4,612	1	0	2	121	4,670	1	0	2	123
				TFTM	4,373	1	0	1	115	4,711	1	0	2	124	4,771	1	0	2	126
				T5VS	4,548	2	0	0	120	4,900	2	0	0	129	4,962	2	0	0	131
				T5S	4,552	2	0	0	120	4,904	2	0	0	129	4,966	2	0	0	131
				T5M	4,541	3	0	1	120	4,891	3	0	1	129	4,953	3	0	1	130
				T5W	4,576	3	0	2	120	4,929	3	0	2	130	4,992	3	0	2	131
				BLC	3,586	1	0	1	94	3,863	1	0	1	102	3,912	1	0	1	103
				LCCO	2,668	1	0	1	70	2,874	1	0	2	76	2,911	1	0	2	77
				RCCO	2,668	1	0	1	70	2,874	1	0	2	76	2,911	1	0	2	77
P2	20	700	49W	T1S	5,570	1	0	1	114	6,001	1	0	1	122	6,077	2	0	2	124
				T2S	5,564	1	0	2	114	5,994	1	0	2	122	6,070	2	0	2	124
				T2M	5,593	1	0	1	114	6,025	1	0	1	123	6,102	1	0	1	125
				T3S	5,417	1	0	2	111	5,835	1	0	2	119	5,909	2	0	2	121
				T3M	5,580	1	0	2	114	6,011	1	0	2	123	6,087	1	0	2	124
				T4M	5,458	1	0	2	111	5,880	1	0	2	120	5,955	1	0	2	122
				TFTM	5,576	1	0	2	114	6,007	1	0	2	123	6,083	1	0	2	124
				T5VS	5,799	2	0	0	118	6,247	2	0	0	127	6,327	2	0	0	129
				T5S	5,804	2	0	0	118	6,252	2	0	0	128	6,332	2	0	1	129
				T5M	5,789	3	0	1	118	6,237	3	0	1	127	6,316	3	0	1	129
				T5W	5,834	3	0	2	119	6,285	3	0	2	128	6,364	3	0	2	130
				BLC	4,572	1	0	1	93	4,925	1	0	1	101	4,987	1	0	1	102
				LCCO	3,402	1	0	2	69	3,665	1	0	2	75	3,711	1	0	2	76
				RCCO	3,402	1	0	2	69	3,665	1	0	2	75	3,711	1	0	2	76
P3	20	1050	71W	T1S	7,833	2	0	2	110	8,438	2	0	2	119	8,545	2	0	2	120
				T2S	7,825	2	0	2	110	8,429	2	0	2	119	8,536	2	0	2	120
				T2M	7,865	2	0	2	111	8,473	2	0	2	119	8,580	2	0	2	121
				T3S	7,617	2	0	2	107	8,205	2	0	2	116	8,309	2	0	2	117
				T3M	7,846	2	0	2	111	8,452	2	0	2	119	8,559	2	0	2	121
				T4M	7,675	2	0	2	108	8,269	2	0	2	116	8,373	2	0	2	118
				TFTM	7,841	2	0	2	110	8,447	2	0	2	119	8,554	2	0	2	120
				T5VS	8,155	3	0	0	115	8,785	3	0	0	124	8,896	3	0	0	125
				T5S	8,162	3	0	1	115	8,792	3	0	1	124	8,904	3	0	1	125
				T5M	8,141	3	0	2	115	8,770	3	0	2	124	8,881	3	0	2	125
				T5W	8,204	3	0	2	116	8,838	4	0	2	124	8,950	4	0	2	126
				BLC	6,429	1	0	2	91	6,926	1	0	2	98	7,013	1	0	2	99
				LCCO	4,784	1	0	2	67	5,153	1	0	2	73	5,218	1	0	2	73
				RCCO	4,784	1	0	2	67	5,153	1	0	2	73	5,218	1	0	2	73
P4	20	1400	92W	T1S	9,791	2	0	2	106	10,547	2	0	2	115	10,681	2	0	2	116
				T2S	9,780	2	0	2	106	10,536	2	0	2	115	10,669	2	0	2	116
				T2M	9,831	2	0	2	107	10,590	2	0	2	115	10,724	2	0	2	117
				T3S	9,521	2	0	2	103	10,256	2	0	2	111	10,386	2	0	2	113
				T3M	9,807	2	0	2	107	10,565	2	0	2	115	10,698	2	0	2	116
				T4M	9,594	2	0	2	104	10,335	2	0	3	112	10,466	2	0	3	114
				TFTM	9,801	2	0	2	107	10,558	2	0	2	115	10,692	2	0	2	116
				T5VS	10,193	3	0	1	111	10,981	3	0	1	119	11,120	3	0	1	121
				T5S	10,201	3	0	1	111	10,990	3	0	1	119	11,129	3	0	1	121
				T5M	10,176	4	0	2	111	10,962	4	0	2	119	11,101	4	0	2	121
				T5W	10,254	4	0	3	111	11,047	4	0	3	120	11,186	4	0	3	122
				BLC	8,036	1	0	2	87	8,656	1	0	2	94	8,766	1	0	2	95
				LCCO	5,979	1	0	2	65	6,441	1	0	2	70	6,523	1	0	3	71
					5,979	1	0	2	65	6,441	1	0	2	70	6,523	1	0	3	71

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Forward Optics

Power Package	LED Count	Drive Current	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P5	40	700	89W	T1S	10,831	2	0	2	122	11,668	2	0	2	131	11,816	2	0	2	133
				T2S	10,820	2	0	2	122	11,656	2	0	2	131	11,803	2	0	2	133
				T2M	10,876	2	0	2	122	11,716	2	0	2	132	11,864	2	0	2	133
				T3S	10,532	2	0	2	118	11,346	2	0	2	127	11,490	2	0	2	129
				T3M	10,849	2	0	2	122	11,687	2	0	2	131	11,835	2	0	2	133
				T4M	10,613	2	0	3	119	11,434	2	0	3	128	11,578	2	0	3	130
				TFTM	10,842	2	0	2	122	11,680	2	0	2	131	11,828	2	0	2	133
				T5VS	11,276	3	0	1	127	12,148	3	0	1	136	12,302	3	0	1	138
				T5S	11,286	3	0	1	127	12,158	3	0	1	137	12,312	3	0	1	138
				T5M	11,257	4	0	2	126	12,127	4	0	2	136	12,280	4	0	2	138
				T5W	11,344	4	0	3	127	12,221	4	0	3	137	12,375	4	0	3	139
				BLC	8,890	1	0	2	100	9,576	1	0	2	108	9,698	1	0	2	109
				LCCO	6,615	1	0	3	74	7,126	1	0	3	80	7,216	1	0	3	81
				RCCO	6,615	1	0	3	74	7,126	1	0	3	80	7,216	1	0	3	81
P6	40	1050	134W	T1S	14,805	3	0	3	110	15,949	3	0	3	119	16,151	3	0	3	121
				T2S	14,789	3	0	3	110	15,932	3	0	3	119	16,134	3	0	3	120
				T2M	14,865	3	0	3	111	16,014	3	0	3	120	16,217	3	0	3	121
				T3S	14,396	3	0	3	107	15,509	3	0	3	116	15,705	3	0	3	117
				T3M	14,829	2	0	3	111	15,975	3	0	3	119	16,177	3	0	3	121
				T4M	14,507	2	0	3	108	15,628	3	0	3	117	15,826	3	0	3	118
				TFTM	14,820	2	0	3	111	15,965	3	0	3	119	16,167	3	0	3	121
				T5VS	15,413	4	0	1	115	16,604	4	0	1	124	16,815	4	0	1	125
				T5S	15,426	3	0	1	115	16,618	4	0	1	124	16,828	4	0	1	126
				T5M	15,387	4	0	2	115	16,576	4	0	2	124	16,786	4	0	2	125
				T5W	15,506	4	0	3	116	16,704	4	0	3	125	16,915	4	0	3	126
				BLC	12,151	1	0	2	91	13,090	1	0	2	98	13,255	1	0	2	99
				LCCO	9,041	1	0	3	67	9,740	1	0	3	73	9,863	1	0	3	74
				RCCO	9,041	1	0	3	67	9,740	1	0	3	73	9,863	1	0	3	74
P7	40	1300	166W	T1S	17,023	3	0	3	103	18,338	3	0	3	110	18,570	3	0	3	112
				T2S	17,005	3	0	3	102	18,319	3	0	3	110	18,551	3	0	3	112
				T2M	17,092	3	0	3	103	18,413	3	0	3	111	18,646	3	0	3	112
				T3S	16,553	3	0	3	100	17,832	3	0	3	107	18,058	3	0	3	109
				T3M	17,051	3	0	3	103	18,369	3	0	3	111	18,601	3	0	3	112
				T4M	16,681	3	0	3	100	17,969	3	0	3	108	18,197	3	0	3	110
				TFTM	17,040	3	0	3	103	18,357	3	0	4	111	18,590	3	0	4	112
				T5VS	17,723	4	0	1	107	19,092	4	0	1	115	19,334	4	0	1	116
				T5S	17,737	4	0	2	107	19,108	4	0	2	115	19,349	4	0	2	117
				T5M	17,692	4	0	2	107	19,059	4	0	2	115	19,301	4	0	2	116
				T5W	17,829	5	0	3	107	19,207	5	0	3	116	19,450	5	0	3	117
				BLC	13,971	2	0	2	84	15,051	2	0	2	91	15,241	2	0	2	92
				LCCO	10,396	1	0	3	63	11,199	1	0	3	67	11,341	1	0	3	68
					10,396	1	0	3	63	11,199	1	0	3	67	11,341	1	0	3	68

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Rotated Optics

Power Package	LED Count	Drive Current	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P10	30	530	53W	T1S	6,727	2	0	2	127	7,247	3	0	3	137	7,339	3	0	3	138
				T2S	6,689	3	0	3	126	7,205	3	0	3	136	7,297	3	0	3	138
				T2M	6,809	3	0	3	128	7,336	3	0	3	138	7,428	3	0	3	140
				T3S	6,585	3	0	3	124	7,094	3	0	3	134	7,183	3	0	3	136
				T3M	6,805	3	0	3	128	7,331	3	0	3	138	7,424	3	0	3	140
				T4M	6,677	3	0	3	126	7,193	3	0	3	136	7,284	3	0	3	137
				TFTM	6,850	3	0	3	129	7,379	3	0	3	139	7,472	3	0	3	141
				T5VS	6,898	3	0	0	130	7,431	3	0	0	140	7,525	3	0	0	142
				T5S	6,840	2	0	1	129	7,368	2	0	1	139	7,461	2	0	1	141
				T5M	6,838	3	0	1	129	7,366	3	0	2	139	7,460	3	0	2	141
				T5W	6,777	3	0	2	128	7,300	3	0	2	138	7,393	3	0	2	139
				BLC	5,626	2	0	2	106	6,060	2	0	2	114	6,137	2	0	2	116
				LCCO	4,018	1	0	2	76	4,328	1	0	2	82	4,383	1	0	2	83
				RCCO	4,013	3	0	3	76	4,323	3	0	3	82	4,377	3	0	3	83
P11	30	700	72W	T1S	8,594	3	0	3	119	9,258	3	0	3	129	9,376	3	0	3	130
				T2S	8,545	3	0	3	119	9,205	3	0	3	128	9,322	3	0	3	129
				T2M	8,699	3	0	3	121	9,371	3	0	3	130	9,490	3	0	3	132
				T3S	8,412	3	0	3	117	9,062	3	0	3	126	9,177	3	0	3	127
				T3M	8,694	3	0	3	121	9,366	3	0	3	130	9,484	3	0	3	132
				T4M	8,530	3	0	3	118	9,189	3	0	3	128	9,305	3	0	3	129
				TFTM	8,750	3	0	3	122	9,427	3	0	3	131	9,546	3	0	3	133
				T5VS	8,812	3	0	0	122	9,493	3	0	0	132	9,613	3	0	0	134
				T5S	8,738	3	0	1	121	9,413	3	0	1	131	9,532	3	0	1	132
				T5M	8,736	3	0	2	121	9,411	3	0	2	131	9,530	3	0	2	132
				T5W	8,657	4	0	2	120	9,326	4	0	2	130	9,444	4	0	2	131
				BLC	7,187	3	0	3	100	7,742	3	0	3	108	7,840	3	0	3	109
				LCCO	5,133	1	0	2	71	5,529	1	0	2	77	5,599	1	0	2	78
				RCCO	5,126	3	0	3	71	5,522	3	0	3	77	5,592	3	0	3	78
P12	30	1050	104W	T1S	12,149	3	0	3	117	13,088	3	0	3	126	13,253	3	0	3	127
				T2S	12,079	4	0	4	116	13,012	4	0	4	125	13,177	4	0	4	127
				T2M	12,297	3	0	3	118	13,247	3	0	3	127	13,415	3	0	3	129
				T3S	11,891	4	0	4	114	12,810	4	0	4	123	12,972	4	0	4	125
				T3M	12,290	3	0	3	118	13,239	4	0	4	127	13,407	4	0	4	129
				T4M	12,058	4	0	4	116	12,990	4	0	4	125	13,154	4	0	4	126
				TFTM	12,369	4	0	4	119	13,325	4	0	4	128	13,494	4	0	4	130
				T5VS	12,456	3	0	1	120	13,419	3	0	1	129	13,589	4	0	1	131
				T5S	12,351	3	0	1	119	13,306	3	0	1	128	13,474	3	0	1	130
				T5M	12,349	4	0	2	119	13,303	4	0	2	128	13,471	4	0	2	130
				T5W	12,238	4	0	3	118	13,183	4	0	3	127	13,350	4	0	3	128
				BLC	10,159	3	0	3	98	10,944	3	0	3	105	11,083	3	0	3	107
				LCCO	7,256	1	0	3	70	7,816	1	0	3	75	7,915	1	0	3	76
				RCCO	7,246	3	0	3	70	7,806	4	0	4	75	7,905	4	0	4	76
P13	30	1300	128W	T1S	14,438	3	0	3	113	15,554	3	0	3	122	15,751	3	0	3	123
				T2S	14,355	4	0	4	112	15,465	4	0	4	121	15,660	4	0	4	122
				T2M	14,614	3	0	3	114	15,744	4	0	4	123	15,943	4	0	4	125
				T3S	14,132	4	0	4	110	15,224	4	0	4	119	15,417	4	0	4	120
				T3M	14,606	4	0	4	114	15,735	4	0	4	123	15,934	4	0	4	124
				T4M	14,330	4	0	4	112	15,438	4	0	4	121	15,633	4	0	4	122
				TFTM	14,701	4	0	4	115	15,836	4	0	4	124	16,037	4	0	4	125
				T5VS	14,804	4	0	1	116	15,948	4	0	1	125	16,150	4	0	1	126
				T5S	14,679	3	0	1	115	15,814	3	0	1	124	16,014	3	0	1	125
				T5M	14,676	4	0	2	115	15,810	4	0	2	124	16,010	4	0	2	125
				T5W	14,544	4	0	3	114	15,668	4	0	3	122	15,866	4	0	3	124
				BLC	7919	3	0	3	62	8531	3	0	3	67	8639	3	0	3	67
				LCCO	5145	1	0	2	40	5543	1	0	2	43	5613	1	0	2	44
					5139	3	0	3	40	5536	3	0	3	43	5606	3	0	3	44

A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is A+ Certified when ordered with DTL® controls marked by a shaded background. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability1
- This luminaire is part of an A+ Certified solution for ROAM® or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background[1]

To learn more about A+, visit www.acuitybrands.com/aplus.

1. See ordering tree for details.
2. A+ Certified Solutions for ROAM require the order of one ROAM node per luminaire. Sold Separately: Link to Roam; Link to DTL DLL

FEATURES & SPECIFICATIONS

INTENDED USE

The sleek design of the D-Series Size 0 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and pedestrian areas.

CONSTRUCTION

Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED driver is mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (0.95 ft^2) for optimized pole wind loading.

FINISH

Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS

Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in 3000 K, 4000 K or 5000 K (70 CRI) configurations. The D-Series Size 0 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL

Light engine(s) configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L85/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of 100,000 hours with <1% failure rate. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

STANDARD CONTROLS

The DSX0 LED area luminaire has a number of control options. Dusk to dawn controls can be utilized via optional NEMA twist-lock photocell receptacles. Integrated motion sensors with on-board photocells feature field-adjustable programing and are suitable for mounting heights up to 30 feet.

nLIGHT AIR CONTROLS

The DSX0 LED area luminaire is also available with nLight® AIR for the ultimate in wireless control. This powerful controls platform provides out-of-the-box basic motion sensing and photocontrol functionality and is suitable for mounting heights up to 40 feet. Once commissioned using a smartphone and the easy-to-use CLAIRITY app, nLight AIR equipped luminaries can be grouped, resulting in motion sensor and photocell group response without the need for additional equipment. Scheduled dimming with motion sensor over-ride can be achieved when used with the nLight Eclypse. Additional information about nLight Air can be found here.

INSTALLATION

Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 0 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 0 utilizes the AERIS™ series pole drilling pattern (template #8). Optional terminal block and NEMA photocontrol receptacle are also available.

LISTINGS

UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40°C minimum ambient. U.S. Patent No. D672,492 S. International patent pending.

DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only.

WARRANTY

5-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/resources/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25 °C.
Specifications subject to change without notice.

D-Series Size 1
LED Wall Luminaire

Catalog Number

Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

d-series

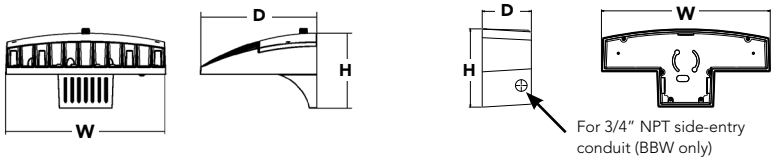
Specifications

Luminaire

Width:	13-3/4" (34.9 cm)	**Weight:**	12 lbs (5.4 kg)
Depth:	10" (25.4 cm)		
Height:	6-3/8" (16.2 cm)		

Back Box (BBW, ELCW)

Width:	13-3/4" (34.9 cm)	**BBW Weight:**	5 lbs (2.3 kg)
Depth:	4" (10.2 cm)	**ELCW Weight:**	10 lbs (4.5 kg)
Height:	6-3/8" (16.2 cm)		



Introduction

The D-Series Wall luminaire is a stylish, fully integrated LED solution for building-mount applications. It features a sleek, modern design and is carefully engineered to provide long-lasting, energy-efficient lighting with a variety of optical and control options for customized performance.

With an expected service life of over 20 years of nighttime use and up to 74% in energy savings over comparable 250W metal halide luminaires, the D-Series Wall is a reliable, low-maintenance lighting solution that produces sites that are exceptionally illuminated.

Ordering Information

EXAMPLE: DSXW1 LED 20C 1000 40K T3M MVOLT DDBTXD

DSXW1 LED

Series	LEDs	Drive Current	Color temperature	Distribution	Voltage	Mounting	Control Options
DSXW1 LED	10C 10 LEDs (one engine) 20C 20 LEDs (two engines) [1]	350 350 mA 530 530 mA 700 700 mA 1000 1000 mA (1 A) [1]	30K 3000 K 40K 4000 K 50K 5000 K AMBPC Amber phosphor converted	T2S Type II Short T2M Type II Medium T3S Type III Short T3M Type III Medium T4M Type IV Medium TFTM Forward Throw Medium	MVOLT [2] 120 [3] 208 [3] 240 [3] 277 [3] 347 [3,4] 480 [3,4]	**Shipped included** (blank) Surface mounting bracket BBW Surface-mounted back box (for conduit entry) [5]	**Shipped installed** PE Photoelectric cell, button type [6] DMG 0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately) PIR 180° motion/ambient light sensor, <15' mtg ht [1,7] PIRH 180° motion/ambient light sensor, 15-30' mtg ht [1,7] PIR1FC3V Motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc [1,7] PIRH1FC3V Motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc [1,7] ELCW Emergency battery backup (includes external component enclosure), CA Title 20 Noncompliant [8,9]

Other Options

Shipped installed

SF	Single fuse (120, 277 or 347V) [3,10]
DF	Double fuse (208, 240 or 480V) [3,10]
HS	House-side shield [11]
SPD	Separate surge protection [12]

Shipped separately [11]

BSW	Bird-deterrent spikes
WG	Wire guard
VG	Vandal guard
DDL	Diffused drop lens

Finish *(required)*

DDBXD	Dark bronze	DSSXD	Sandstone	DWHGXD	Textured white
DBLXD	Black	DDBTXD	Textured dark bronze	DSSTXD	Textured sandstone
DNAXD	Natural aluminum	DBLBXD	Textured black		
DWHXD	White	DNATXD	Textured natural aluminum		

Accessories

Ordered and shipped separately.

DSXWHS U	House-side shield (one per light engine)
DSXWBSW U	Bird-deterrent spikes
DSXW1WG U	Wire guard accessory
DSXW1VG U	Vandal guard accessory

NOTES

1. 20C 1000 is not available with PIR, PIRH, PIR1FC3V or PIRH1FC3V.
2. MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
3. Single fuse (SF) requires 120, 277 or 347 voltage option. Double fuse (DF) requires 208, 240 or 480 voltage option.
4. Only available with 20C, 700mA or 1000mA. Not available with PIR or PIRH.
5. Back box ships installed on fixture. Cannot be field installed. Cannot be ordered as an accessory.
6. Photocontrol (PE) requires 120, 208, 240, 277 or 347 voltage option. Not available with motion/ambient light sensors (PIR or PIRH).
7. Reference Motion Sensor table on page 3.
8. Cold weather (-20C) rated. Not compatible with conduit entry applications. Not available with BBW mounting option. Not available with fusing. Not available with 347 or 480 voltage options. Emergency components located in back box housing. Emergency mode IES files located on product page at www.lithonia.com
9. Not available with SPD.
10. Not available with ELCW.
11. Also available as a separate accessory; see Accessories information.
12. Not available with ELCW.

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

LEDs	Drive Current (mA)	System Watts	Dist. Type	30K (3000 K, 70CRI)					40K (4000 K, 70CRI)					50K (5000 K, 70CRI)					AMBPC (Amber Phosphor Converted)				
				Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
10C (10 LEDs)	350mA	13W	T2S	1,415	0	0	1	109	1,520	0	0	1	117	1,530	0	0	1	118	894	0	0	1	69
			T2M	1,349	0	0	1	104	1,448	0	0	1	111	1,458	0	0	1	112	852	0	0	1	66
			T3S	1,399	0	0	1	108	1,503	0	0	1	116	1,512	0	0	1	116	884	0	0	1	68
			T3M	1,385	0	0	1	107	1,488	0	0	1	114	1,497	0	0	1	115	876	0	0	1	67
			T4M	1,357	0	0	1	104	1,458	0	0	1	112	1,467	0	0	1	113	858	0	0	1	66
			TFTM	1,411	0	0	1	109	1,515	0	0	1	117	1,525	0	0	1	117	892	0	0	1	69
			ASYDF	1,262	1	0	1	97	1,354	1	0	1	104	1,363	1	0	1	105	797	0	0	1	61
	530 mA	19W	T2S	2,053	1	0	1	108	2,205	1	0	1	116	2,220	1	0	1	117	1,264	0	0	1	67
			T2M	1,957	1	0	1	103	2,102	1	0	1	111	2,115	1	0	1	111	1,205	0	0	1	63
			T3S	2,031	1	0	1	107	2,181	1	0	1	115	2,194	1	0	1	115	1,250	0	0	1	66
			T3M	2,010	1	0	1	106	2,159	1	0	1	114	2,172	1	0	1	114	1,237	0	0	1	65
			T4M	1,970	1	0	1	104	2,115	1	0	1	111	2,129	1	0	1	112	1,212	0	0	1	64
			TFTM	2,047	0	0	1	108	2,198	1	0	1	116	2,212	1	0	1	116	1,260	0	0	1	66
			ASYDF	1,831	1	0	1	96	1,966	1	0	1	103	1,978	1	0	1	104	1,127	0	0	1	59
	700 mA	26W	T2S	2,623	1	0	1	101	2,816	1	0	1	108	2,834	1	0	1	109	1,544	0	0	1	59
			T2M	2,499	1	0	1	96	2,684	1	0	1	103	2,701	1	0	1	104	1,472	0	0	1	57
			T3S	2,593	1	0	1	100	2,785	1	0	1	107	2,802	1	0	1	108	1,527	0	0	1	59
			T3M	2,567	1	0	1	99	2,757	1	0	1	106	2,774	1	0	1	107	1,512	0	0	1	58
			T4M	2,515	1	0	1	97	2,701	1	0	1	104	2,718	1	0	1	105	1,481	0	0	1	57
			TFTM	2,614	1	0	1	101	2,808	1	0	1	108	2,825	1	0	1	109	1,539	0	0	1	59
			ASYDF	2,337	1	0	1	90	2,510	1	0	1	97	2,525	1	0	1	97	1,376	1	0	1	53
	1000 mA	39W	T2S	3,685	1	0	1	94	3,957	1	0	1	101	3,982	1	0	1	102	2,235	1	0	1	57
			T2M	3,512	1	0	1	90	3,771	1	0	1	97	3,794	1	0	1	97	2,130	1	0	1	55
			T3S	3,644	1	0	1	93	3,913	1	0	1	100	3,938	1	0	1	101	2,210	1	0	1	57
			T3M	3,607	1	0	1	92	3,873	1	0	1	99	3,898	1	0	1	100	2,187	1	0	1	56
			T4M	3,534	1	0	2	91	3,796	1	0	2	97	3,819	1	0	2	98	2,143	1	0	1	55
			TFTM	3,673	1	0	1	94	3,945	1	0	1	101	3,969	1	0	1	102	2,228	1	0	1	57
			ASYDF	3,284	1	0	2	84	3,527	1	0	2	90	3,549	1	0	2	91	1,992	1	0	1	51
20C (20 LEDs)	350mA	23W	T2S	2,820	1	0	1	123	3,028	1	0	1	132	3,047	1	0	1	132	1,777	1	0	1	77
			T2M	2,688	1	0	1	117	2,886	1	0	1	125	2,904	1	0	1	126	1,693	1	0	1	74
			T3S	2,789	1	0	1	121	2,994	1	0	1	130	3,014	1	0	1	131	1,757	0	0	1	76
			T3M	2,760	1	0	1	120	2,965	1	0	1	129	2,983	1	0	1	130	1,739	1	0	1	76
			T4M	2,704	1	0	1	118	2,905	1	0	1	126	2,922	1	0	1	127	1,704	1	0	1	74
			TFTM	2,811	1	0	1	122	3,019	1	0	1	131	3,038	1	0	1	132	1,771	0	0	1	77
			ASYDF	2,514	1	0	1	109	2,699	1	0	1	117	2,716	1	0	1	118	1,584	1	0	1	69
	530 mA	35W	T2S	4,079	1	0	1	117	4,380	1	0	1	125	4,407	1	0	1	126	2,504	1	0	1	72
			T2M	3,887	1	0	1	111	4,174	1	0	1	119	4,201	1	0	1	120	2,387	1	0	1	68
			T3S	4,033	1	0	1	115	4,331	1	0	1	124	4,359	1	0	1	125	2,477	1	0	1	71
			T3M	3,993	1	0	2	114	4,288	1	0	2	123	4,315	1	0	2	123	2,451	1	0	1	70
			T4M	3,912	1	0	2	112	4,201	1	0	2	120	4,227	1	0	2	121	2,402	1	0	1	69
			TFTM	4,066	1	0	2	116	4,366	1	0	2	125	4,394	1	0	2	126	2,496	1	0	1	71
			ASYDF	3,636	1	0	2	104	3,904	1	0	2	112	3,928	1	0	2	112	2,232	1	0	1	64
	700 mA	46W	T2S	5,188	1	0	1	113	5,572	1	0	1	121	5,607	1	0	1	122	3,065	1	0	1	67
			T2M	4,945	1	0	2	108	5,309	1	0	2	115	5,343	1	0	2	116	2,921	1	0	1	64
			T3S	5,131	1	0	2	112	5,510	1	0	2	120	5,544	1	0	2	121	3,031	1	0	1	66
			T3M	5,078	1	0	2	110	5,454	1	0	2	119	5,487	1	0	2	119	3,000	1	0	1	65
			T4M	4,975	1	0	2	108	5,343	1	0	2	116	5,376	1	0	2	117	2,939	1	0	1	64
			TFTM	5,172	1	0	2	112	5,554	1	0	2	121	5,589	1	0	2	122	3,055	1	0	1	66
			ASYDF	4,624	1	0	2	101	4,965	1	0	2	108	4,996	1	0	2	109	2,732	1	0	1	59
	1000 mA	73W	T2S	7,204	1	0	2	99	7,736	2	0	2	106	7,784	2	0	2	107	4,429	1	0	1	61
			T2M	6,865	1	0	2	94	7,373	2	0	2	101	7,419	2	0	2	102	4,221	1	0	1	58
			T3S	7,125	1	0	2	98	7,651	1	0	2	105	7,698	1	0	2	105	4,380	1	0	1	60
			T3M	7,052	1	0	2	97	7,573	2	0	2	104	7,620	2	0	2	104	4,335	1	0	2	59
			T4M	6,909	1	0	2	95	7,420	1	0	2	102	7,466	1	0	2	102	4,248	1	0	2	58
			TFTM	7,182	1	0	2	98	7,712	1	0	2	106	7,761	1	0	2	106	4,415	1	0	2	60
			ASYDF	6,421	2	0	2	88	6,896	2	0	3	94	6,938	2	0	3	95	3,947	1	0	2	54

Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.02
10°C	50°F	1.01
20°C	68°F	1.00
25°C	**77°F**	**1.00**
30°C	86°F	1.00
40°C	104°F	0.98

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the **DSXW1 LED 20C 1000** platform in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	0	25,000	50,000	100,000
Lumen Maintenance Factor	1.0	0.95	0.93	0.88

Electrical Load

LEDs	Drive Current (mA)	System Watts	Current (A) 120V	208V	240V	277V	347V	480V
10C	350	14 W	0.13	0.07	0.06	0.06	-	-
	530	20 W	0.19	0.11	0.09	0.08	-	-
	700	27 W	0.25	0.14	0.13	0.11	-	-
	1000	40 W	0.37	0.21	0.19	0.16	-	-
20C	350	24 W	0.23	0.13	0.12	0.10	-	-
	530	36 W	0.33	0.19	0.17	0.14	-	-
	700	47 W	0.44	0.25	0.22	0.19	0.15	0.11
	1000	74 W	0.69	0.40	0.35	0.30	0.23	0.17

Motion Sensor Default Settings

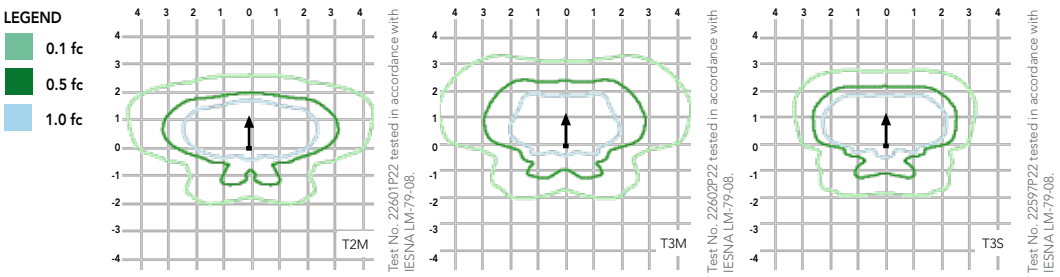
Option	Dimmed State	High Level (when triggered)	Photocell Operation	Dwell Time	Ramp-up Time	Ramp-down Time
*PIR or PIRH	3V (37%) Output	10V (100%) Output	Enabled @ 5FC	5 min	3 sec	5 min
PIR1FC3V or PIRH1FC3V	3V (37%) Output	10V (100%) Output	Enabled @ 1FC	5 min	3 sec	5 min

*for use with Inline Dusk to Dawn or timer

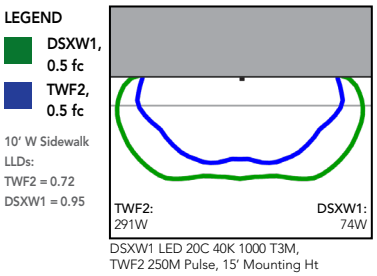
Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Wall Size 1 homepage.

Isofootcandle plots for the DSXW1 LED 20C 1000 40K. Distances are in units of mounting height (15').



Distribution overlay comparison to 250W metal halide.



DSXW1 LED 20C 40K 1000 T3M, TWF2 250M Pulse, 15' Mounting Ht

Options and Accessories

T3M (left), ASYDF (right) lenses

HS - House-side shields

BSW - Bird-deterrent spikes

WG - Wire guard

VG - Vandal guard

DDL - Diffused drop lens

FEATURES & SPECIFICATIONS

INTENDED USE

The energy savings, long life and easy-to-install design of the D-Series Wall Size 1 make it the smart choice for building-mounted doorway and pathway illumination for nearly any facility.

CONSTRUCTION

Two-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance. The LED driver is mounted to the door to thermally isolate it from the light engines for low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65).

FINISH

Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in textured and non-textured finishes.

OPTICS

Precision-molded proprietary acrylic lenses provide multiple photometric distributions tailored specifically to building mounted applications. Light engines are available in 3000 K (70 min. CRI), 4000 K (70 min. CRI) or 5000 K (70 min. CRI) configurations.

ELECTRICAL

Light engine(s) consist of 10 high-efficacy LEDs mounted to a metal-core circuit board to maximize heat dissipation and promote long life (L88/100,000 hrs at 25°C). Class 1 electronic drivers have a power factor >90%, THD <20%, and a minimum 2.5KV surge rating. When ordering the SPD option, a separate surge protection device is installed within the luminaire which meets a minimum Category C Low (per ANSI/IEEE C62.41.2).

INSTALLATION

Included universal mounting bracket attaches securely to any 4" round or square outlet box for quick and easy installation. Luminaire has a slotted gasket wireway and attaches to the mounting bracket via corrosion-resistant screws.

LISTINGS

CSA certified to U.S. and Canadian standards. Rated for -40°C minimum ambient.

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

WARRANTY

Five-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/resources/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

ALTUS ENGINEERING, INC.

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

200 Chase Drive Gateway Development Site

Assessor's Map 210, Lot 02
200 Chassed Drive, Portsmouth, NH
Altus Project #P4950

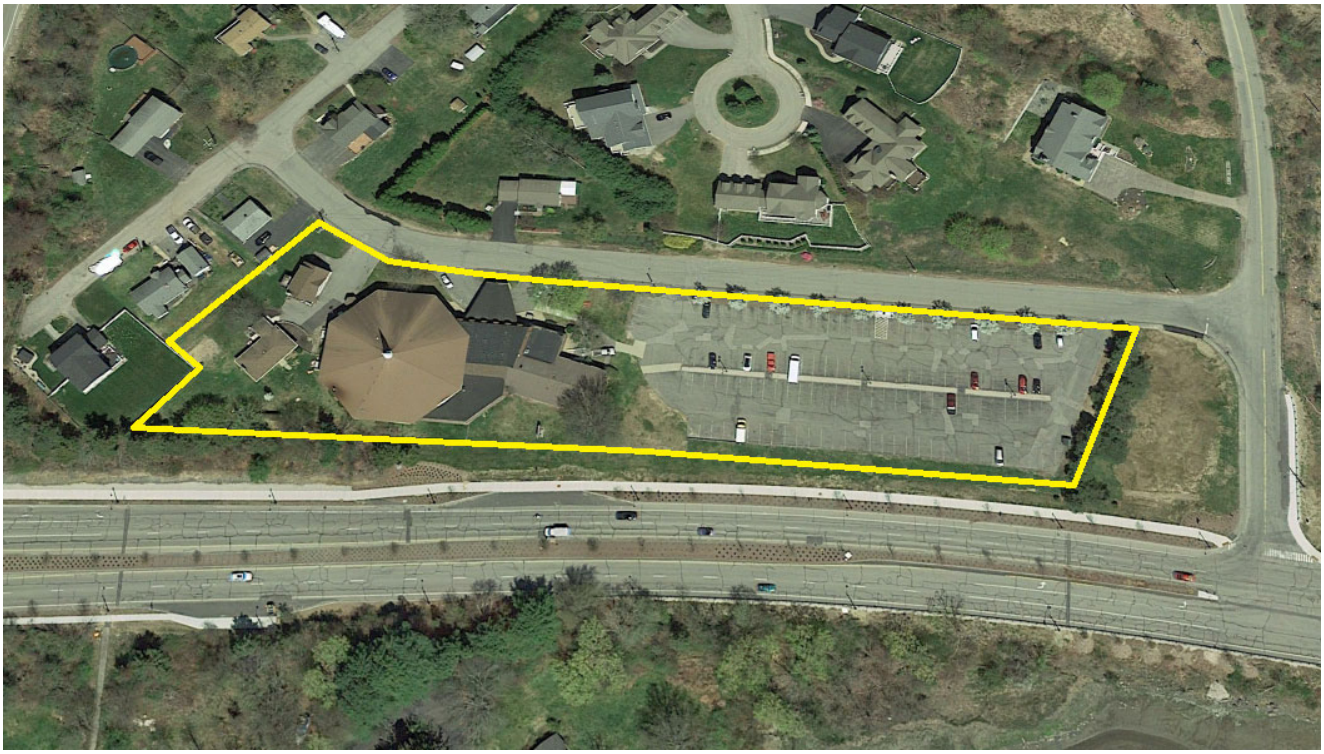
PARKING DEMAND ANALYSIS

(For Conditional Use Permit Application)

September 16, 2019

The Bethel Assembly of God (owner) and 200 Chase Drive, LLC (Applicant) are proposing to re-develop the site located at 200 Chase Drive (Assessor's Map 210, Lot 02) to construct a new multi-family building that will provide 22 housing units. The proposed project will sub-divide the existing 2.68 acre lot into two lots and develop the lots under the Development Site regulations as contiguous lots. A new 22-Unit residential apartment building will be constructed on the new lot, closest to Michael Succi Drive. The existing church will remain on the original lot and continue to function as a religious place of assembly.

The aerial image below shows the existing church property and 133 stall parking lot.



Connect Community Church and Residences (Existing):

The Connect Community Church has been serving the Portsmouth community for nearly 50 years. During the 1980's the church had a rise in membership and expanded the church for a large assembly area (545 occupancy). Unfortunately, the closure of Pease Air Force Base (AFB) in 1991 had a resounding impact on the church and membership declined by almost two-thirds. The church has struggled with debt and reduced membership for the last 28 years. The existing parking lot has 133 parking stalls and was designed to serve the church in the 1980's. The current Pastor (Chad Lynn), has been keeping recent records of attendance at the services since March 2019 to document the attendance and assess the current parking demand. During this period, the church has been holding two weekend services at 9 am and 11 am on Sunday morning. The attached "Check-Ins Report" shows the attendance at both of these services and includes volunteers that assist with the services. The pastor and assistant Pastor live on site in the two residential houses. The 11 am service is typically the highest attended service and averaged 132 people for the 27 week period, however the single service high attendance was 186 which occurred on April 21, 2019 (Easter Sunday).

Using the 186 peak attendance for the 2019 Easter Sunday service as the basis for the parking lot design and an average of 3 persons per vehicle, the parking demand for the church would be 62 parking spaces. Pastor Chad Lynn has indicated that they feel 3 persons per vehicle is a reasonable estimate, as many families attend the church. The proposed project will reduce the existing 133 stall parking lot to 75 parking stalls. The church has indicated that they feel 75 parking stalls will adequately serve their needs for the foreseeable future. The attached "Overall Site Plan" illustrates the proposed parking lot configuration for the proposed church and the new 22 Unit development.

The church has also committed to starting a Tuesday night service to provide their membership with another option if they are unable to attend the Sunday services, but it is not yet known how much impact it will have on the weekend attendances. The church continues to monitor the attendance of each service and keep records. They have considered the option to add a Sunday afternoon service and a Saturday service to provided additional options to their members and to control the attendance, if the demand is necessary.

The two single family residences located on the west side of the church are the residences of the Pastor and assistant Pastor for the church. The zoning variance to create this housing stipulated that the houses are only to be occupied by people who work at the church. Each house has two designated parking spaces, which serve the residences.

22 Unit Residential Apartment Building (Proposed):

The current Zoning regulations (Section 10.1110) allow for 1.3 parking stalls per unit for multi-family buildings and 1 visitor stall per 5 units. The minimum required number of stalls for the new 22-unit lot would be 33 stalls based on current zoning regulations. The 33 required stalls are reduced by 20% based on Section 10.5B82.10 because a local bus connection is located adjacent to the site. Therefore the minimum number of parking stalls require is 27, while an additional 20% is allowed by Planning Board approval, which would be a maximum of 33 parking stalls. 30 parking stalls are proposed for the new 22 Unit building.

Table 1. Parking Table

(not included two single family residences)

Existing Church

Based on current zoning requirements:	Required Spaces
Assembly (545 capacity buy zoning)	136 Spaces
Nursery (29 Occupants)	15 Spaces
Business (700 sf)	2 spaces
Classroom (210 Occupants)	Parking Demand Analysis required
Total Existing Parking Spaces	133 Spaces
Total Proposed Parking Spaces =	75 Spaces

Proposed 22 Unit Apartment Building (allowed per current zoning regulations)

Number of Units	22
Parking Spaces	
1.3 spaces per unit	28.6 spaces
Visitor Spaces (1 per 5 units)	4.4 spaces
Spaces Required	33 spaces
20% Reduction for bus transit (10.5B82.10)	
Min Parking Spaces Required	27 spaces
Max Parking Spaces Allowed (+20%)	33 spaces
Number of Proposed parking spaces =	30 spaces

Shared Use demand analysis

Based on the shared used demand analysis for the

Weekend Day	
Required Parking Church (100%) =	153 Spaces
22 Unit Apartment Building (80% of 27)	22 Spaces
Total Number of Required Parking Spaces = (based on Zoning regulations)	175 Parking Spaces
Total Number of Proposed Parking Spaces =	105 Parking Spaces

The primary usage of the existing church is for the assembly. As shown in the attached attendance record, the attendance averages 132 attendees for the most 11 am Sunday service, which is the highest attended service. There are also classrooms and a nursery located in the building based on the building floor plans. The nursery is a small child day-care service provided during services, as the church currently does not run nor is licensed for a nursery. The church also does not have classes at the church, and per zoning regulations, a school use would require a parking demand analysis. In the event that the church wanted to host classes, the classes would not be held at the same time as the weekly services, so the parking demand would not increase for the classroom usage. Additionally, the classes would not exceed the peak parking demand for the weekend services. Therefore, the peak parking demand is estimated to be the peak attendance at the weekly services. Using the 186 attendance for Easter Sunday would require 62 parking stalls based on 3 persons per vehicle. Because the assembly is not fixed seating, the minimum parking stalls by zoning is 1 stall per 4 persons may occupancy, which would be 47 stalls for 186 capacity. It is estimated that 75 parking stalls will serve the church for the foreseeable future.

In the event that the church does anticipate an event that would require more than 75 parking stalls, the church would implement a special event parking plan, in which they could shuttle attendees to the Foundry Parking Garage, less than a miles away.

On Sunday September 8, I went to the church at 11:30 am to count vehicles in the parking lot. The lot is still being used by the City as a parking shuttle service to the downtown businesses and hotels. There were 74 vehicles parked in the lot during the site visit, but many vehicles were parked near the bus stand and at the far end of lot, away from the church, though many empty stalls were still located closer to the church. There were also a number of out of state license plates noted, which suggests that the cars were not for the church service. Based on this information, the 75 proposed parking stalls is adequate to serve the weekend services.

Lastly, the design intent is not to design a “mall” parking lot that is at capacity for 1% of the year, but a sea of empty pavement the remainder of the year. The intent is to have a parking lot that serves the demand of the church for the standard services and majority of the church’s functions. If there is a function or special event where the church anticipates the attendance to exceed the allotted 75 stall parking lot, the church will implement a special events plan to provide a bus service to the Foundry Parking Garage (or other approved location). There is also an existing bus transit stop on Market Street in front of the church that can be used in combination with a shuttle service. The church will continue to monitor the attendance and parking at the services and potentially add an additional Sunday or Saturday service, as requested by the membership, if the demand is necessary to decrease the peak of the Sunday morning services.

We feel that the requirement for 175 parking stalls by the zoning regulations exceeds the parking demand for the church. Implementing this standard would create a large parking lot and significant impervious area that would not be used. Based on record data from six months of services, the peak demand is approximately 62 parking stalls. The church is proposing to provide 75 parking stalls and feels that it will serve their needs for the foreseeable future. The church has the ability to add services to manage the parking if the demand is needed and provisions can be made for special events. Therefore, we feel that the current proposal to provide 75 parking stalls for the church and 30 parking stalls for the 22-Unit apartment building, for a total of 105 off-street parking stalls is a reasonable request for the Conditional Use Permit.

ALTUS ENGINEERING, INC.

Cory Belden, PE

Attachments

- Check-ins Report (Church attendance 3/3/19-9/119)
- Existing Conditions Site Plan, by Ambit Engineering
- Overall Site Plan, by Altus Engineering

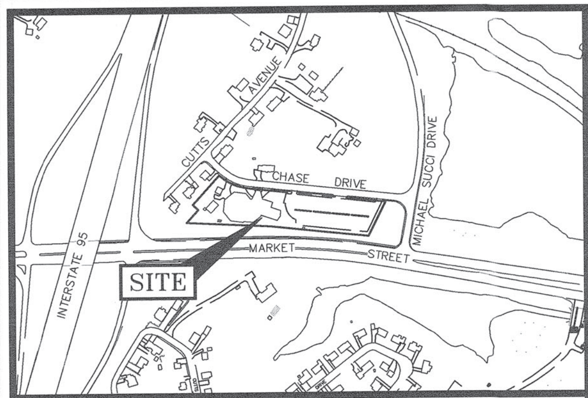
Ecopy: Stephen Kelm, 200 Chase Drive, LLC
Pastor Chad Lynn, Connect Community Church

wde/4950-Parking Demand Analysis_091619.doc

3_3 - 9_1 - Check-Ins Report

Time	Date	Connect.Kids	Adults	Total
Sun. 9:00am	March 3, 2019	15	79	94
Sun. 9:00am	March 10, 2019	9	52	61
Sun. 9:00am	March 17, 2019	13	68	81
Sun. 9:00am	March 24, 2019	9	87	96
Sun. 9:00am	March 31, 2019	14	83	97
Sun. 9:00am	April 7, 2019	12	95	107
Sun. 9:00am	April 14, 2019	20	87	107
Sun. 9:00am	April 21, 2019	17	169	186
Sun. 9:00am	April 28, 2019	15	89	104
Sun. 9:00am	May 5, 2019	21	90	111
Sun. 9:00am	May 12, 2019	8	107	115
Sun. 9:00am	May 19, 2019	15	88	103
Sun. 9:00am	May 26, 2019	17	118	135
Sun. 9:00am	June 2, 2019	19	106	125
Sun. 9:00am	June 9, 2019	20	64	84
Sun. 9:00am	June 16, 2019	4	65	69
Sun. 9:00am	June 23, 2019	11	87	98
Sun. 9:00am	June 30, 2019	17	81	98
Sun. 9:00am	July 7, 2019	14	74	88
Sun. 9:00am	July 14, 2019	9	61	70
Sun. 9:00am	July 21, 2019	10	62	72
Sun. 9:00am	July 28, 2019	17	81	98
Sun. 9:00am	August 4, 2019	14	87	101
Sun. 9:00am	August 11, 2019	18	100	118
Sun. 9:00am	August 18, 2019	10	73	83
Sun. 9:00am	August 25, 2019	8	87	95
Sun. 9:00am	September 1, 2019	12	102	114

Sun. 11:00am	March 3, 2019	16	119	135
Sun. 11:00am	March 10, 2019	20	102	122
Sun. 11:00am	March 17, 2019	20	127	147
Sun. 11:00am	March 24, 2019	28	127	155
Sun. 11:00am	March 31, 2019	23	125	148
Sun. 11:00am	April 7, 2019	18	119	137
Sun. 11:00am	April 14, 2019	19	129	148
Sun. 11:00am	April 21, 2019	18	147	165
Sun. 11:00am	April 28, 2019	20	127	147
Sun. 11:00am	May 5, 2019	20	107	127
Sun. 11:00am	May 12, 2019	24	97	121
Sun. 11:00am	May 19, 2019	21	117	138
Sun. 11:00am	May 26, 2019	10	97	107
Sun. 11:00am	June 2, 2019	14	98	112
Sun. 11:00am	June 9, 2019	18	125	143
Sun. 11:00am	June 16, 2019	23	84	107
Sun. 11:00am	June 23, 2019	11	98	109
Sun. 11:00am	June 30, 2019	24	95	118
Sun. 11:00am	July 7, 2019	14	99	113
Sun. 11:00am	July 14, 2019	25	95	120
Sun. 11:00am	July 21, 2019	19	89	108
Sun. 11:00am	July 28, 2019	29	99	128
Sun. 11:00am	August 4, 2019	29	118	147
Sun. 11:00am	August 11, 2019	30	108	138
Sun. 11:00am	August 18, 2019	25	113	138
Sun. 11:00am	August 25, 2019	37	135	172
Sun. 11:00am	September 1, 2019	19	102	121



LOCATION MAP SCALE 1"=400'

PLAN REFERENCE:

1) LOT LINE ADJUSTMENT PLAN 200 CHASE DRIVE & 373 CUTTS AVENUE PORTSMOUTH, NEW HAMPSHIRE ASSESSOR'S PARCELS 210-2 & 210-5 FOR KRISTEN G. BOUCHIE & THE BETHEL ASSEMBLY OF GOD. PREPARED BY JAMES VERRA AND ASSOCIATES, INC. DATED MAY 23, 2013, FINAL REVISION DATE JUNE 25, 2013. R.C.R.D. PLAN D-38287.

2) SEE PLAN REFERENCE 1 FOR ADDITIONAL PLAN REFERENCES.

WETLAND NOTES:

1) HIGHEST OBSERVABLE TIDE LINE DELINEATED BY STEVEN D. RIKER, CWS ON 8/3/2018 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.

LEGEND:

EXISTING

N/F		NOW OR FORMERLY
RP		RECORD OF PROBATE
RCRD		ROCKINGHAM COUNTY REGISTRY OF DEEDS
11/21		MAP 11 / LOT 21
RR SPK FND	RR SPK SET	RAILROAD SPIKE FOUND/SET
IR FND	IR SET	IRON ROD FOUND/SET
IP FND	IP SET	IRON PIPE FOUND/SET
DH FND	DH SET	DRILL HOLE FOUND/SET
NHHB FND		NHDOT BOUND FOUND
TB FND		TOWN BOUND FOUND
BND w/DH	BND w/DH	BOUND w/ DRILL HOLE
ST BND w/DH	ST BND w/DH	STONE BOUND w/DRILL HOLE
SWOPA		NHDES 250' PROTECTED SHORELAND
HOTL		HIGHEST OBSERVABLE TIDE LINE
D		STORM DRAIN
		UNDERGROUND ELECTRIC
		OVERHEAD ELECTRIC/WIRES
		EDGE OF PAVEMENT (EP)
		WOODS / TREE LINE
		UTILITY POLE (w/ GUY)
WSO CS		WATER SHUT OFF/CURB STOP
GV		GATE VALVE
HYD		HYDRANT
G W E		METER (GAS, WATER, ELECTRIC)
		CATCH BASIN

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

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 210 AS LOT 2.

2) OWNER OF RECORD:
BETHEL ASSEMBLY OF GOD
200 CHASE DRIVE
PORTSMOUTH, N.H. 03801
1986/395 & 2248/889
D-38287

3) PARCEL IS NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE DATE 5/17/2005.

4) EXISTING LOT AREA:
116,591 S.F.
2.6766 ACRES

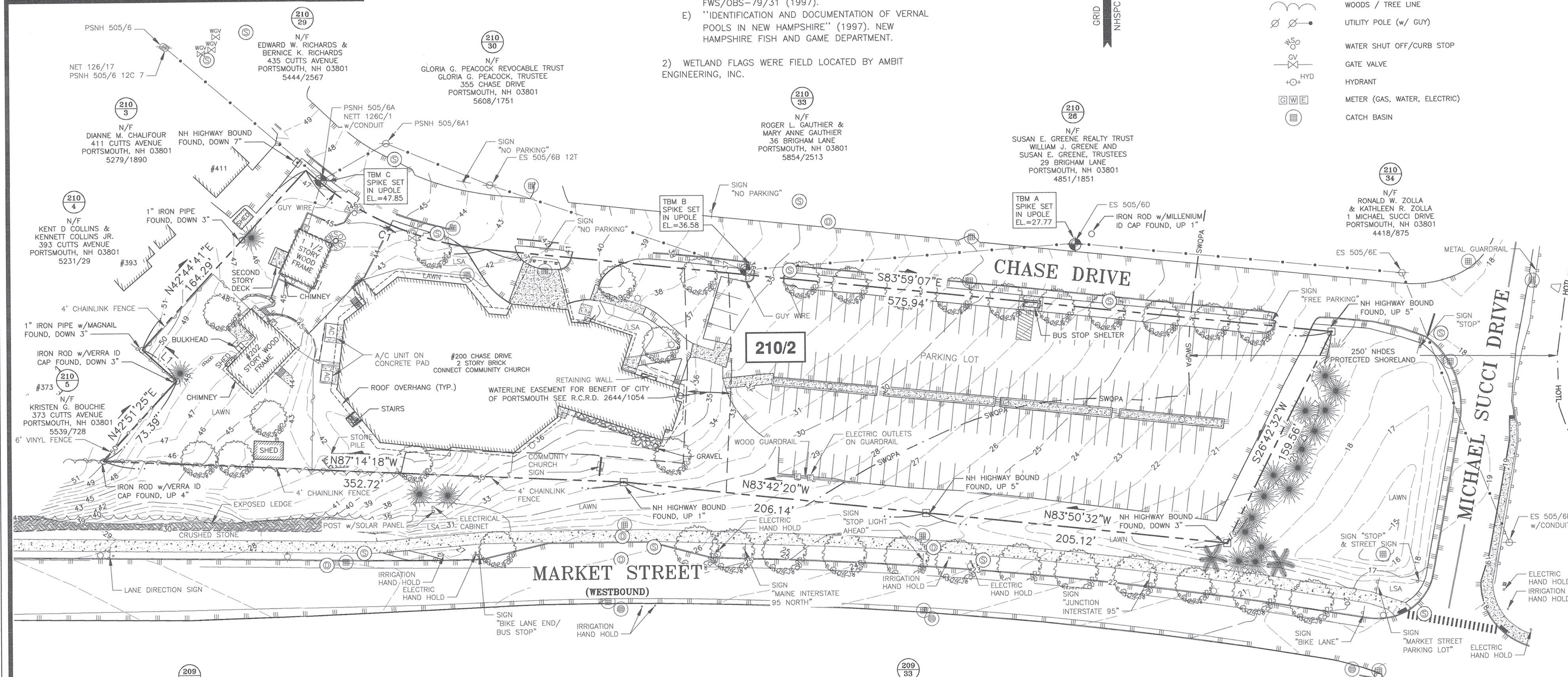
5) PARCEL IS LOCATED IN THE GATEWAY CENTER (G2) ZONING DISTRICT.

6) DIMENSIONAL REQUIREMENTS:
SEE ZONING ORDINANCE

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE RESULT OF A STANDARD BOUNDARY AND TOPOGRAPHIC SURVEY OF TAX MAP 210 LOT 2 IN THE CITY OF PORTSMOUTH.

8) VERTICAL DATUM IS MEAN SEA LEVEL NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GPS OBSERVATIONS (±0.2').

9) SEE SHEET C2 FOR UTILITIES AND INVERT INFORMATION.



LENGTH TABLE

LINE	BEARING	DISTANCE
L1	N47°21'20"W	31.46'

CURVE TABLE

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1	215.00'	135.68'	133.44'	S65°54'23"E	36°09'27"

''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.''

2/17/2019

PAUL A DOBBERSTEIN, LLS 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

GRAPHIC SCALE

40 30 20 10 0 50 100 150 FEET
10 5 0 10 20 30 40 50 METERS

BETHEL ASSEMBLY OF GOD 200 CHASE DR PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	REVISE PER COMMENTS	2/17/19
1	PLAN UPDATE	2/11/19
0	ISSUED FOR COMMENT	8/6/18

REVISIONS

SCALE 1" = 40' AUGUST 2018

EXISTING CONDITIONS PLAN

C1

FB 287 PG 23

2872

NOTES:

1. THE INTENT OF THIS PLAN IS TO DEPICT THE PROPOSED DEVELOPMENT SITE PER CITY OF PORTSMOUTH ZONING DISTRICT G2 (GATEWAY NEIGHBORHOOD MIXED USE DISTRICT) AND THE DEVELOPMENT SITE STANDARDS (SECTION 10.5B40).
2. THE EXISTING LOT 210–2 CONSISTS OF A COMMUNITY BUILDING AND TWO SINGLE FAMILY RESIDENTIAL BUILDINGS. THE INTENT IS TO SUBDIVIDE THE EXISTING LOT TO CREATE LOT 210–2–1 WHICH WILL CONSTRUCT A NEW 22 UNIT APARTMENT BUILDING PER SECTION 10.5B34.40. THE TWO CONTIGUOUS LOTS WILL BE INCLUDED IN THE DEVELOPMENT SITE.
3. THE EXISTING USE OF THE COMMUNITY BUILDING AS A PLACE OF ASSEMBLY IS PERMITTED AS AN EXISTING USE. AS NOTED IN SECTION 10.5B50, "THE PURPOSE OF THIS SECTION IS TO ESTABLISH STANDARDS FOR THE CONTINUED UTILIZATION OF EXISTING BUILDINGS IN THE GATEWAY NEIGHBORHOOD MIXED USE DISTRICTS CONSTRUCTED PRIOR TO THE EFFECTIVE DATE OF ARTICLE 10.5B".
4. A NHDES WETLANDS BUREAU SHORELAND PERMIT WILL BE REQUIRED FOR WORK WITHIN 250 FT OF THE HIGHEST OBSERVABLE TIDE LINE (HOTL).
5. PRIOR TO COMMENCEMENT OF CONSTRUCTION, A CERTIFIED ARBORIST SHALL REVIEW THE AREA OF CONSTRUCTION AND TREES SELECTED TO REMAIN WITH THE LANDSCAPE ARCHITECT AND THE CONTRACTOR'S PROJECT MANAGER. SPECIFIC MONETARY VALUE OF THE TREES TO REMAIN SHALL BE DETERMINED AND DOCUMENTED FOR. ARBORIST SHALL MAKE RECOMMENDATIONS FOR PRESERVATION RECOMMENDATIONS BEYOND THOSE CALLED OUT IN THE DRAWINGS, TREE PRESERVATION PLANS AND SPECIFICATIONS, INCLUDING, BUT NOT LIMITED TO, PRUNING, ROOT PRUNING, PRE–FERTILIZATION AND THE LIKE.
6. ALL EXCAVATION WITHIN THE DRIP LINE OF EXISTING TREES TO BE DONE WITH AN AIR SPADE. ANY ROOTS WHICH REQUIRE REMOVAL SHALL BE CUT CLEANLY WITH A SHARP TOOL. EXPOSED ROOTS IN EXCAVATED AREAS SHALL NOT BE ALLOWED TO DRY OUT.
7. TREES TO REMAIN WITHIN THE CONSTRUCTION ZONE SHALL BE PROTECTED FROM DAMAGE FOR THE DURATION OF THE PROJECT BY WEIGHTED CHAIN–LINK FENCE AT THE DRIP LINE OR OTHER SUITABLE MEANS OF PROTECTION TO BE APPROVED BY LANDSCAPE ARCHITECT OR CLIENT'S REPRESENTATIVE. FENCE SHALL BE LOCATED AT THE DRIP LINE AT A MINIMUM AND SHALL INCLUDE ANY AND ALL SURFACE ROOTS. DO NOT FILL OR MULCH ON THE TRUNK FLARE. DO NOT DISTURB ROOTS. IN ORDER TO PROTECT THE INTEGRITY OF THE ROOTS, BRANCHES, TRUNK AND BARK OF THE TREE(S) NO VEHICLES OR CONSTRUCTION EQUIPMENT SHALL DRIVE OR PARK IN OR ON THE AREA WITHIN THE DRIP LINE(S) OF THE TREE(S). DO NOT STORE ANY REFUSE OR CONSTRUCTION MATERIALS OR PORTALETS WITHIN THE TREE PROTECTION AREA.
8. BUILDING HEIGHT MEASURED FROM AVERAGE GRADE MEASURED 6 FT OFF OF BUILDING EVERY 5 FOOT INTERVAL. BUILDING HEIGHT FROM FINISHED FLOOR TO ROOF TOP IS 43'–8". AVERAGE GRADE AROUND PERIMETER OF BUILDING IS 8 INCHES BELOW FINISHED FLOOR BASED ON PROPOSED GRADING (1 FT USED FOR FLEXIBILITY IN CONSTRUCTION).

ZONING SUMMARY

ZONING DISTRICT G2 (GATEWAY NEIGHBORHOOD MIXED USE CENTER)
TAX MAP 210, LOTS 2 & 2–1 (NEWLY CREATED LOT)
DEVELOPMENT SITE AREA 2.68± ACRES

PERMITTED USES MULTI–FAMILY GREATER THAN 8 UNITS
PLACE OF ASSEMBLY (EXISTING)
SINGLE FAMILY RESIDENTIAL (EXISTING)

PROPOSED MIXED USE DEVELOPMENT SITE (PER SECTION 10.5B40)

DEVELOPMENT SITE STANDARDS	REQUIRED	PROVIDED
MINIMUM DEVELOPMENT SITE AREA	20,000 SF	116,591 SF
MINIMUM SITE WIDTH	100 FT	711.6 FT
MINIMUM SITE DEPTH	100 FT	147.7 FT
MINIMUM PERIMETER BUFFER TO RESIDENTIAL, MIXED RESIDENTIAL OR CHARACTER DISTRICT	75 FT	NA
MAXIMUM BLOCK LENGTH	800 FT	764 FT
MAXIMUM BLOCK PERIMETER	2,200 FT	1,905 FT
MAXIMUM BUILDING COVERAGE	70%	24.2%
MINIMUM OPEN SPACE COVERAGE	20%	37.5%
MINIMUM COMMUNITY SPACE	20%	20%

ZONING SUMMARY CONTINUED:

APARTMENT BUILDING DESIGN STANDARDS (PER SECTION 10.5B34.40):

	REQUIRED	PROVIDED
MINIMUM LOT DEPTH	NR	
MINIMUM STREET FRONTAGE	50 FT	±149 FT
SETBACKS:		
FRONT: MARKET STREET	10–30 FT	11.0± FT
CHASE STREET	10–30 FT	11.2± FT
MICHAEL SUCCI DRIVE	10–30 FT	10.3± FT
INTERIOR LOT LINES	0 FT	149± FT
BUILDING LOT USE:		
MAXIMUM DWELLING UNITS PER BUILDING	24	22
MAXIMUM DWELLING UNIT SIZE	NR	
DESIGN STANDARDS:		
MAXIMUM BUILDING HEIGHT –	50 FT	44'–8" (SEE NOTE 8)
MINIMUM STREET FACING FAÇADE HEIGHT	24 FT	24+ FT
MAXIMUM FINISHED FLOOR SURFACE OF GROUND FLOOR ABOVE SIDEWALK GRADE	36 INCHES	<3 FT
MAXIMUM BUILDING COVERAGE	50%	28.6%
MAXIMUM BUILDING FOOTPRINT	20,000 SF	7,600± SF
MAXIMUM FAÇADE MODULATION LENGTH	50 FEET	48 FEET
MINIMUM STREET FACING FAÇADE GLAZING	20% (GROUND FLOOR)	20%+
STREET FACING ENTRANCE	REQUIRED	PROVIDED
FAÇADE TYPES	FORECOURT, STEP, RECESSED ENTRY, DOORYARD, PORCH	DOORYARD

SRB = SINGLE RESIDENCE B DISTRICT (SRB)

G2 = GATEWAY NEIGHBORHOOD MIXED–USE DISTRICT (G–2)

LEGEND

PROPOSED PROPERTY LINE

DEVELOPMENT SITE AREA

PARKING CALCULATIONS:

EXISTING LOT – EXISTING CHURCH

		REQUIRED
ASSEMBLY:	545 OCCUPANTS*	136
NURSERY:	29 OCCUPANTS	15
BUSINESS:	700 SF (1 PER 350)	2
CLASSROOMS:	210 OCCUPANTS	PDA**
	REQUIRED	153
	EXISTING PARKING SPACES	133
	PROVIDED	75**

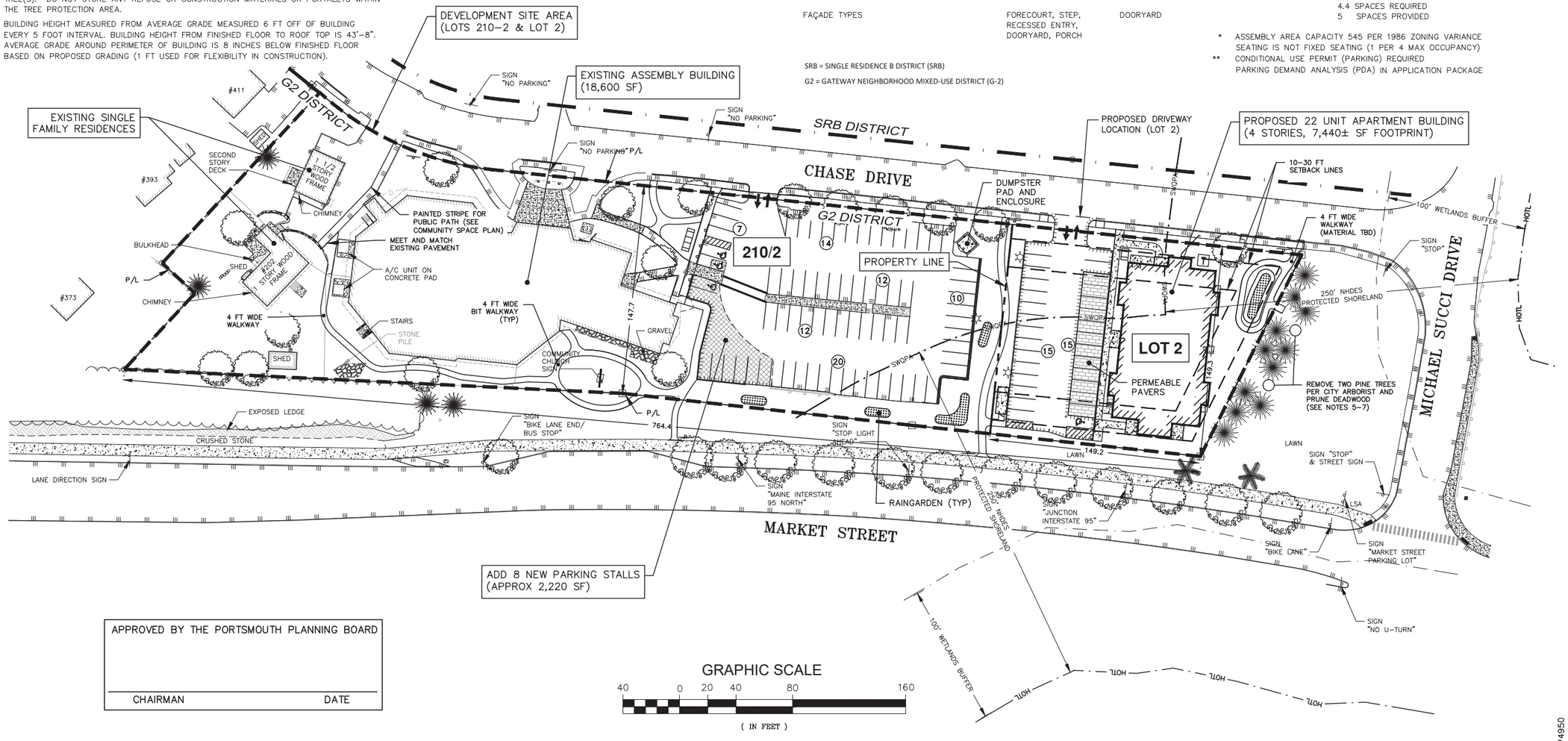
PROPOSED LOT – 22 UNIT BUILDING

DWELLING UNITS 1.3 SPACES PER DWELLING UNIT
28.6 MINIMUM REQUIRED (22 DWELLING UNIT)
4.4 VISITOR PARKING SPACES (1 PER 5 UNITS)
33 SPACES REQUIRED

PARKING INCENTIVE SECTION 10.5B82.10 A)
20% REDUCTION IN SPACES PER 10.5B82.10.A) 27 SPACES REQUIRED
20% INCREASE ALLOWED 33 SPACES ALLOWED
30 SPACES PROPOSED

BICYCLE PARKING REQUIRED 1 SPACE PER 5 DWELLING UNITS
4.4 SPACES REQUIRED
5 SPACES PROVIDED

* ASSEMBLY AREA CAPACITY 545 PER 1986 ZONING VARIANCE SEATING IS NOT FIXED SEATING (1 PER 4 MAX OCCUPANCY)
** CONDITIONAL USE PERMIT (PARKING) REQUIRED
PARKING DEMAND ANALYSIS (PDA) IN APPLICATION PACKAGE



APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

P4950

ENGINEER:

ALTUS ENGINEERING, INC.

133 COURT STREET PORTSMOUTH, NH 03801
(603) 433–2335 www.ALTUS–ENG.com

ISSUED FOR:

TAC

ISSUE DATE:

SEPTEMBER 16, 2019

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	CDB	06/04/19
1	DESIGN REVIEW	CDB	06/26/19
2	TAC	CDB	09/16/19

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4950–SITE.DWG

SCALE:

22" x 34" – 1" = 40'
11" x 17" – 1" = 80'

OWNER:

BETHEL ASSEMBLY OF GOD
200 CHASE DRIVE
PORTSMOUTH, NH 03801

APPLICANT:

200 CHASE DRIVE, LLC
36 MAPLEWOOD AVE.
PORTSMOUTH, NH 03801

CHASE DRIVE GATEWAY DEVELOPMENT SITE

200 CHASE DRIVE
PORTSMOUTH, NH

ASSESSOR'S PARCEL 210–2

TITLE:

OVERALL SITE PLAN

SHEET NUMBER:

C.3

ALTUS ENGINEERING, INC.

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

Bethel Assembly of God
Chase Drive Gateway Development

200 Chase Drive
Portsmouth, NH

Cost Estimate - Site Work

DATE: 13-Sep-19
PROJECT: 4950

ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL COST
SITEWORK DEMOLITION				
SITE FEATURES AND UTILITIES (ALLOWANCE)	1	LS	$8,000.00	$8,000.00
CLEARING AND GRUBBING				
TREE AND VEGETATION REMOVAL	1	LS	$1,000.00	$1,000.00
WATER SUPPLY				
DOMESTIC WATER SERVICE	25	LF	$45.00	$1,125
CURB STOP	1	EA	$250.00	$250
6-LIVE TAP AND GATE VALVE	1	EA	$2,500.00	$2,500
6-INCH DI CLASS 52 WATER MAIN	315	LF	$80.00	$25,200
SEWER SERVICE				
6" PVC SDR 35	20	LF	$45.00	$900
WYE SERVICE CONNECTION	1	EA	$2,500.00	$2,500
ELECTRIC/PHONE/CABLE SERVICES				
SCH 40 CONDUIT (x4 PER TRENCH)	110	LF	$50.00	$5,500
CONCRETE TRANSFORMER PAD	1	EA	$3,500.00	$3,500
CURBING AND EDGE TREATMENT				
VERTICAL GRANITE CURBING	135	LF	$35.00	$4,725
SLOPED GRANITE CURBING	125	LF	$18.00	$2,250
STONE DRIP EDGE	185	SF	$3.50	$648
STORM DRAINAGE SYSTEM				
CATCH BASIN/ MANHOLE/OUTLET STRUCTURE/YARD DRAIN	8	EA	$2,000.00	$16,000
8-INCH HDPE STORM DRAINAGE	165	LF	$24.00	$3,960
12-INCH HDPE STORM DRAINAGE	190	LF	$30.00	$5,700
RAIN GARDENS	70	SY	$75.00	$5,250
CORE DRILL EXISTING STRUCTURES	2	EA	$500.00	$1,000
SEDIMENT AND EROSION CONTROL				
TEMPORARY EROSION CONTROL/SWPPP	1	LS	$8,000.00	$8,000
CONCRETE FLATWORK				
CONCRETE PADS	60	SY	$40.00	$2,400
SIDEWALKS				
2" BITUMINOUS SIDEWALKS	475	SY	$25.00	$11,875
CONCRETE SIDEWALKS	125	SY	$40.00	$5,000
RETAINING WALLS				
MODULAR BLOCK RETAINING WALL	675	SF	$20.00	$13,500
AGGREGATE BASE COURSES				
6" CRUSHED GRAVEL	170	CY	$40.00	$6,800
12" NHDOT 304.1 GRAVEL	340	CY	$30.00	$10,200
CUTS/FILLS AND IMPORTING MATERIALS	1	LS	$7,000.00	$7,000
HOT BITUMINOUS PAVEMENT				
4" HOT BITUMINOUS PAVEMENT (BOTH PARCELS)	230	TON	$85.00	$19,550

PERMEABLE PAVERS				
PERMEABLE PAVERS (INCLUDING UNDERDRAINS AND SUBBASE MATERIALS)	215	SY	$50.00	$10,750
STRIPING AND SIGNAGE				
STRIPING	1	LS	$2,500.00	$2,500
TRAFFIC SIGNAGE	1	LS	$1,000.00	$1,000
LANDSCAPING				
LANDSCAPING INCLUDING RAIN GARDEN PLANTINGS (ALLOWANCE)	1	LS	$30,000.00	$30,000
LOAM AND SEED - TURF ESTABLISHMENT	1	LS	$5,000.00	$5,000
LIGHTING				
POLES, POLE BASES AND FIXTURES INCLUDING CONDUIT	3	EA	$4,000.00	$12,000
DUMPSTER ENCLOSURE				
ENCLOSURE FENCING AND GATE	2	EA	$750.00	$1,500

SUBTOTAL **$237,083**

TOTAL: ***$237,083***

EXCLUSIONS:

ITEMS EXCLUDED FROM THIS ESTIMATE INCLUDE, BUT ARE NOT LIMITED TO, THOSE ITEMS SPECIFIED ABOVE AS BEING NOT INCLUDED IN THIS ESTIMATE AND THE FOLLOWING:

INSPECTION FEES, MONUMENTATION, HVAC PADS, TEMPORARY FENCING AND BARRICADES, TRAFFIC CONTROL, MATERIALS AND COMPACTION TESTING, BUILDING FOUNDATION, BUILDING FOUNDATION EXCAVATION, BUILDING MOUNTED EXTERIOR LIGHTING, BUILDINGS, LEDGE REMOVAL