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 Chase Drive, Portsmouth, NH
Altus Project #P4950

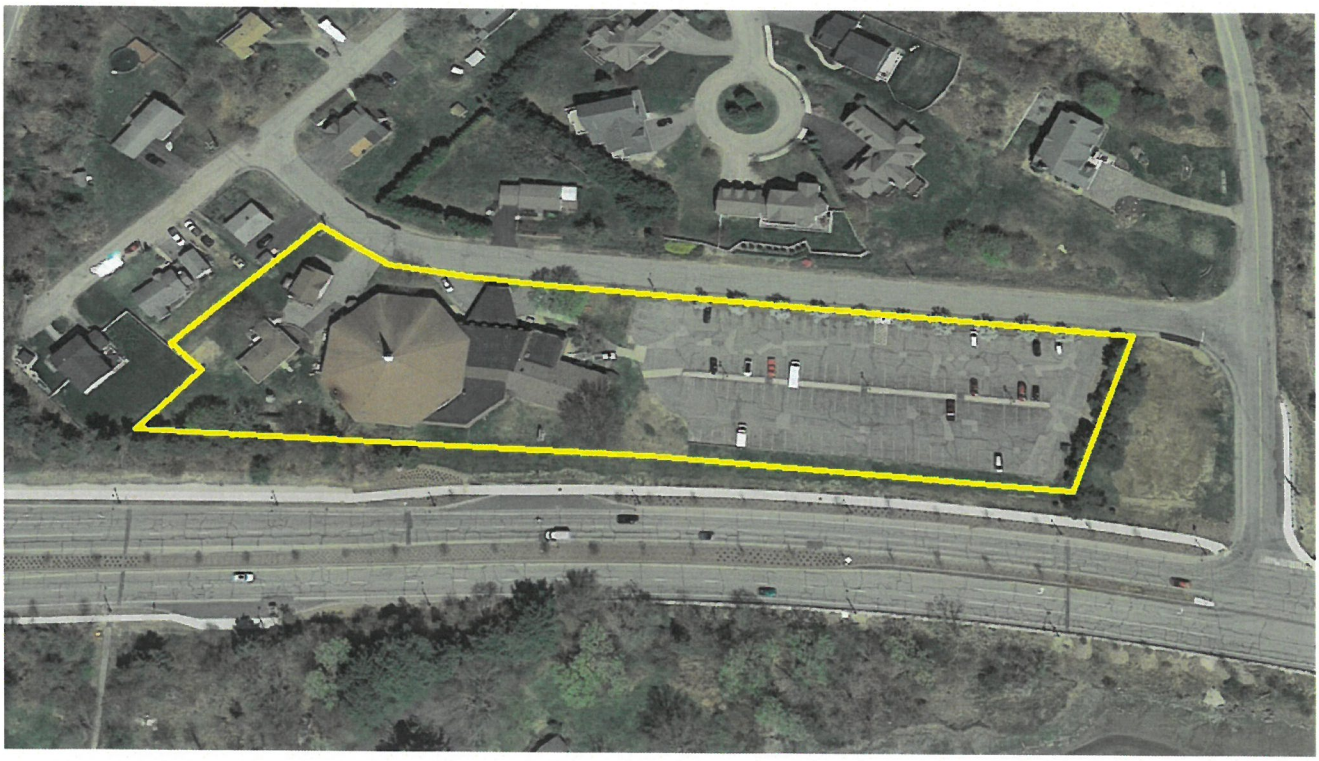
PARKING DEMAND ANALYSIS

(For Conditional Use Permit Application)

Revised January 23, 2020

The Bethel Assembly of God (owner) and 200 Chase Drive, LLC (Applicant) are proposing to re-develop the property located at 200 Chase Drive (Assessor's Map 210, Lot 02) to construct a new multi-family building that will provide 22 housing units and retain the existing church and residential houses. 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 the existing parking lot which has 133 parking stalls.



1. PARKING USE SUMAMRY

A. Connect Community Church and Residences (Existing):

The Connect Community Church (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. It is currently under utilized and has been leased to the City for a downtown off-site parking shuttle service for the past three years. This service will end in 2020.

i. Attendance

The current Pastor (Chad Lynn), has been keeping records of attendance at the services since March 2019 to assess the church attendance and parking demand. During this period, the church has been holding two weekend services at 9 am and 11 am on Sunday mornings. The Attendance Records in Attachments shows the attendance at both of these services, which includes volunteers that assist with the services. As shown in the report, the 11 am service is typically the highest attended service and has averaged 135.5 attendees for the 35 week period that data was taken. Excluding the Easter Sunday and Celebration Sunday services, the high regular service attendance was 172. The Easter Sunday and Celebration Sunday services are special event services and had high attendances of 186 and 190, respectively. for the 9 am service and was the highest service attendance during this period.

Average attendance for 30 weeks (11 am service) = 135.5 attendees
Single Week high attendance (excluding Special Services) = 172 attendees
Single High Special Event (Celebration Sunday) = 190 attendees

ii. Vehicle Usage

The church has been collecting attendance data since March of 2019. During this period the church also estimated the vehicle usage by attendees for the services and estimated the average persons per vehicle was 2.9. This did not account for the volunteers and was as estimate as the lot was still being used by the City for the parking shuttle service. Starting October 6, 2019 the church began a more comprehensive parking analysis to assess the number of non-church, volunteer, and church attendee vehicles utilizing the parking lot. Based on the 10 week period from 10/6/19 through 12/8/19, the records indicate that for the highest attended services, the average is 2.6 persons per vehicle. Although the average throughout the period is 2.4 persons per vehicle, this accounts for approximately 15 volunteers per service that are primarily single occupancy. Removing the volunteers results in an average of 2.8 persons per vehicle for the general membership attending each service.

Based on these number, we feel that 2.6 persons per vehicles is a reasonable estimate based on the data collected.

Average vehicle usage per attendee = 2.6 Persons per Vehicle

B. 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.

Minimum allowed parking stalls per zoning = 27 stalls
Maximum allowed parking stalls per zoning = 33 stalls
Proposed number of parking stalls per site plan = 30 stalls

C. Two Single Family residences (Existing):

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.

Minimum Parking Stalls Required = 4 stalls

2. PARKING DEMAND

Using the single high standard service attendance of 172 attendees for the 35 week data period and the average of 2.6 attendees per vehicle, the parking demand would be 66 parking stalls. As noted above and shown in the attached records, the average attendance for the 9 am Sunday service is 105.2 attendees, and the 11 am service is 135.0 attendees. The average vehicles per service is 58 vehicles over the period vehicles were monitored.

The church has been monitoring membership for many years and the current membership level is at the highest point since the 1980's prior to Pease closure. The attendance on 11/17/19 is the single day highest attendance seen in the last 18 years. Even for this day, the highest total vehicles was 65 total. The church's goal is to provide smaller and more intimate services, so as the attendance increases, more services will be added to disperse the attendance. Currently there is not the need to offer the additional services. The

church does not intend to exceed 150 average attendees per service and will work with the members to maintain the smaller service size. 75 parking stalls would have provided 10 extra parking spaces for the highest single standard service attendance day in the last 18 years. Allowing for a 10% increase to the highest 35 weeks standard attendance of 172 attendees and using the 2.6 average attendees per vehicle estimate, the parking demand for the church is 73 parking stalls. The church has indicated that 75 parking stalls will adequately serve their needs for the foreseeable future.

Parking Demand for Church = 73 Parking Stalls

3. MITIGATION

Standard services:
The church has indicated that the long term solution to an increase in attendance is to offer more services, which will disperse the attendance. The church has considered a week night services and weekend evening services to provide more opportunities to members. The goal of the church is to provide small, more intimate services, so it is not the goal of the church to exceed 150 average attendees per service. The church will continue to monitor membership, service attendances, and parking and will work with the membership to maintain the smaller service size so that the 75 parking stalls continues to adequately serve the church for all weekly services.

Large Events:
On rare occasions there could be a situation where the church would like to host an event that may have a parking demand higher than 75, or over 250 attendees. The church realizes that they may not be able to host these types of events similar to years past with the decreased parking availability. In such circumstances, the church has a number of options to mitigate the parking impacts.

1. Carpool – The church can encourage members to carpool to at least 3 persons per vehicle for large events. Many members of the church are friends and family and it is anticipated that they could increase the attendees per vehicle ratio by encouraging carpools for special events.
2. Bus Transit – There is a COAST bus transit located on Market Street directly in front of the church. Similar to carpooling, the church can encourage members to utilize the COAST bus transit for special events.
3. Shuttle Service – The church has a bus and has the ability to run a shuttle service to an off-site parking facility such as the Foundry Garage, less than 1 mile away, to allow attendees to park off-site for large events.

4. CONCLUSION

Based on this Parking Demand Analysis, we feel that the proposed 109 parking stalls (75 for the church, 30 for the new 22-unit apartment building, and 4 for the two residential houses) will adequately serve the proposed development site. Current zoning regulations would require 134 on-site parking stalls which exceeds the parking demand for the site. Implementing the parking requirement per the zoning regulations would create a larger than necessary parking lot and significant impervious areas that would rarely be used. Based on the 35 week average attendance of 135.5 attendees for the most attended service, 52 parking spaces would be needed on average for the standard weekly service. Per zoning regulations, a 109 parking stall lot would be required for the church, which would leave approximately 57 empty parking stalls for the average weekend services. The remainder of the week the lot would also remain predominantly empty. The church is proposing to provide 75 parking stalls, which meets the parking demand analysis and accounts for a 10% increase to the single highest attendance in 18 years. The church has the ability mitigate impacts for larger event and add services to manage the parking if the demand is needed. Therefore, we feel that the current proposal to provide 75 parking stalls for the church, 30 parking stalls for the 22-Unit apartment building, and 4 parking stalls for single family homes, for a total of 109 off-street parking stalls will adequately service the proposed site development.

Attachments

- Table 1: Parking Calculations (Based on 545 Church Capacity)
- Table 2: Parking Calculations (Based on 350 Church Capacity)
- Attendance Records
- Community Connect Church Parking Plan
- Special Events Parking Exhibit
- Site Pictures
- Existing Conditions Site Plan, by Ambit Engineering
- Overall Site Plan, by Altus Engineering

ALTUS ENGINEERING, INC.

Cory Belden, PE

Ecopy: Stephen Kelm, 200 Chase Drive, LLC
Pastor Chad Lynn, Connect Community Church

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Table 2. Parking Calculations

(Based on 350 Capacity for the Church Assembly)

Existing Church

	Required Spaces
Assembly (350 capacity)	
1 stall per 4 occupants	88 Spaces
20% Reduction for bus transit (10.5B82.10)	
Min Parking Spaces Required	**70 Spaces Required**

Existing Single Family Residential

Two Single Family Residential (SFR) Houses	
2 stalls per residence	**4 Spaces Required**

Proposed 22 Unit Apartment Building (allowed per current Zoning Ordinance)

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 Required**
Total Required On-Site Parking =	**101 Spaces**

Shared Use Demand Analysis

Based on the shared used demand analysis for the Weekend Day

Minimum Required Church Parking (100%) =	70 Spaces
Residential (Apartment Building and SFR)	
(80% of 31 Parking Spaces)	25 Spaces

Total Number of Required Parking Spaces (Based on Shared Used Analysis)	=	**95 Parking Spaces**

TOTAL PROPOSED PARKING SPACES

Church	75 Spaces
22-Unit Residential Building	30 Spaces
Two Single Family Residential	4 Spaces

Total Number of Proposed Parking Spaces	=	**109 Parking Spaces**

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Table 1. Parking Calculations

Existing Church

	Required Spaces
Assembly (545 capacity by zoning)	
1 stall per 4 occupants	136 Spaces
20% Reduction for bus transit (10.5B82.10)	
Min Parking Spaces Required	**109 Spaces Required**

Existing Single Family Residential

Two Single Family Residential (SFR) Houses	
2 stalls per residence	**4 Spaces Required**

Proposed 22 Unit Apartment Building (allowed per current Zoning Ordinance)

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 Required**
Total Required On-Site Parking =	**140 Spaces**

Shared Use Demand Analysis

Based on the shared used demand analysis for the Weekend Day

Minimum Required Church Parking (100%) =	109 Spaces
Residential (Apartment Building and SFR)	
(80% of 31 Parking Spaces)	25 Spaces
Total Number of Required Parking Spaces Based on Shared Used Analysis =	**134 Parking Spaces**
Total Number of Proposed Parking Spaces	
Church	75 Spaces
22-Unit residential building	30 Spaces
Two Single Family Residential	4 Spaces
TOTAL PROPOSED PARKING SPACES	**109 Parking Spaces**

Community Connect Church

Attendance Records

Date	Time	Attendance	Time	Attendance	
3/3/2019	9:00 AM	94	11:00 AM	135	
3/10/2019	9:00 AM	61	11:00 AM	122	
3/17/2019	9:00 AM	81	11:00 AM	147	
3/24/2019	9:00 AM	96	11:00 AM	155	
3/31/2019	9:00 AM	97	11:00 AM	148	
4/7/2019	9:00 AM	107	11:00 AM	137	
4/14/2019	9:00 AM	107	11:00 AM	148	
4/21/2019	9:00 AM	186	11:00 AM	165	*EASTER SUNDAY
4/28/2019	9:00 AM	104	11:00 AM	147	
5/5/2019	9:00 AM	111	11:00 AM	127	
5/12/2019	9:00 AM	115	11:00 AM	121	
5/19/2019	9:00 AM	103	11:00 AM	138	
5/26/2019	9:00 AM	135	11:00 AM	107	
6/2/2019	9:00 AM	125	11:00 AM	112	
6/9/2019	9:00 AM	84	11:00 AM	143	
6/16/2019	9:00 AM	69	11:00 AM	107	
6/23/2019	9:00 AM	98	11:00 AM	109	
6/30/2019	9:00 AM	98	11:00 AM	118	
7/7/2019	9:00 AM	88	11:00 AM	113	
7/14/2019	9:00 AM	70	11:00 AM	120	
7/21/2019	9:00 AM	72	11:00 AM	108	
7/28/2019	9:00 AM	98	11:00 AM	128	
8/4/2019	9:00 AM	101	11:00 AM	147	
8/11/2019	9:00 AM	118	11:00 AM	138	
8/18/2019	9:00 AM	83	11:00 AM	138	
8/25/2019	9:00 AM	95	11:00 AM	172	
9/1/2019	9:00 AM	114	11:00 AM	121	
9/8/2019	9:00 AM		11:00 AM		No data
9/15/2019	9:00 AM		11:00 AM		No data
9/22/2019	9:00 AM		11:00 AM		No data
9/29/2019	9:00 AM	93	11:00 AM	105	
10/6/2019	9:00 AM	114	11:00 AM	139	
10/13/2019	9:00 AM	135	11:00 AM	146	
10/20/2019	9:00 AM	124	11:00 AM	190	*Celebration Sunday
10/27/2019	9:00 AM	111	11:00 AM	150	
11/3/2019	9:00 AM	123	11:00 AM	138	
11/10/2019	9:00 AM	121	11:00 AM	141	
11/17/2019	9:00 AM	123	11:00 AM	163	
11/24/2019	9:00 AM	101	11:00 AM	101	*Combined Service
12/1/2019	9:00 AM	113	11:00 AM	161	
12/8/2019	9:00 AM	130	11:00 AM	125	
	Ave Attendance	105.2	Ave Attendance	135.0	

Community Connect Church

Vehicle and Attendance Records

(October 3 to December 8, 2019)

	Early service (9 am)		Late service (11 am)		
Date	Attendance	Vehicles	Attendance	Vehicles	
10/6/2019	114	55	139	61	
10/13/2019	135	65	146	62	
10/20/2019	124	59	190	79	*Celebration Sunday
10/27/2019	111	54	150	66	
11/3/2019	123	58	138	62	
11/10/2019	121	55	141	59	**
11/17/2019	123	57	163	65	**
11/24/2019	No Service		202	73	***Thanksgiving (Single Service)
12/1/2019	113	58	161	65	
12/8/2019	130	57	125	55	

Average 2.4 persons/vehicle

Each service averages fifteen volunteers, which include usshers, attendant, band member, speakers, child care helpers, etc. The volunteers are predominantly single occupancy.

Excluding the volunteers, the average person/vehicle is: **2.8** persons/vehicle (late service)

As note, for the Thanksgiving service, volunteers parked off-site and the pesons per vehilce was : 2.8

The average of the thhee highest attendeed service is 2.6 persons/vehicle (late service)

Because of the high volunteer vehicles, which are predominantly single occupants, the ration of peson/per vehicle increases as the attendance increases.

Therefore, we recommend 2.6 persons per vehicle for capacity analysis of the parking lot,

** Vehicles counted by Cory Belden of Altus Engineering, Inc.

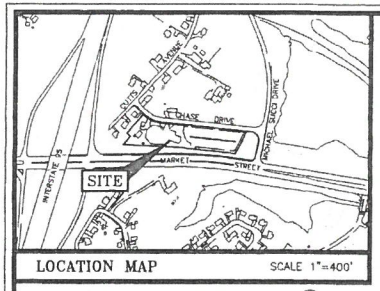
*** For the Thanksgiving Service the Church implemented parking measures by allowing 8 vehicles to park in the parsonage lot and having 10 volunteer vehicles shuttle from an off-site lot.

11/10/19 8:48 am (Approx 30 vehicles)

11/1019 12:10 pm (59 church and 7 non-church vehicles)

11/17/19 9:05 am (40 church, and 9 non-church vehicles)

11/10/19 9:20 am (51 church, 7 non-church vehicles)



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.

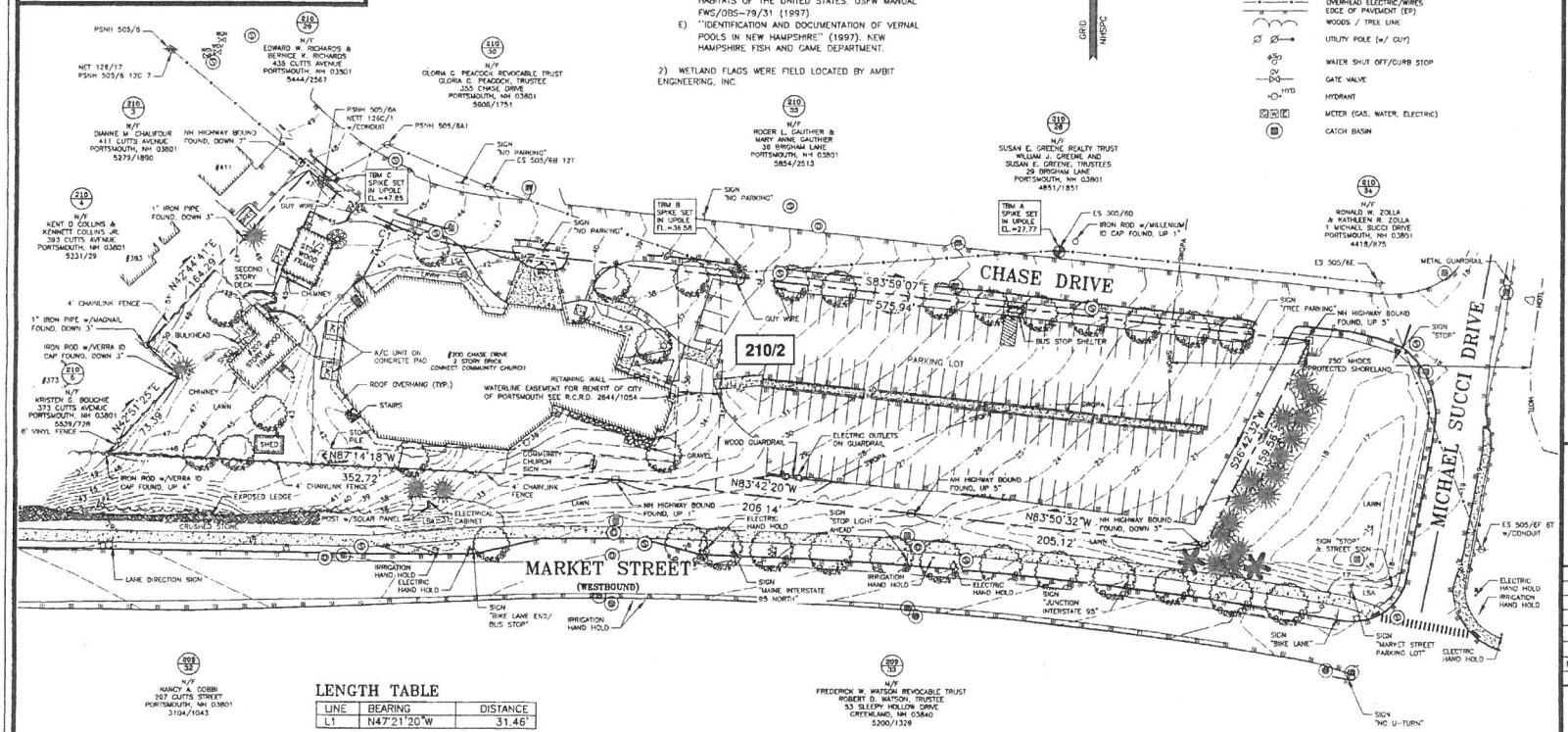
2) WETLAND FLAGS WERE FIELD LOCATED BY AMBIT ENGINEERING, INC.

LEGEND:

EXISTING

N/F		NOW OR FORMERLY
RP		RECORD OF PROBATE
RCRD		ROCKINGHAM COUNTY REGISTRY OF DEEDS
(##)		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
250'NHDES	250' NHDES 250' PROTECTED SHORELAND	
HOTL	HIGHEST OBSERVABLE TIDE LINE	
D	STORM DRAIN	
UE	UNDERGROUND ELECTRIC	
OHW	OVERHEAD ELECTRIC/WIRES	
EP	EDGE OF PAVEMENT (EP)	
W	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) — GRID — NHSPC



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."

PAUL A. DOBBERSTEIN, LLS DATE

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

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.
2.6756 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.

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	8/8/18

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 CHURCH AND TWO SINGLE FAMILY RESIDENTIAL BUILDINGS. THE INTENT IS TO DIVIDE THE LOT TO CREATE A NEW LOT OR CONDOMINIUM UNIT. THE NEW LOT/UNIT WILL CONSTRUCT A NEW 22 UNIT APARTMENT BUILDING PER SECTION 10.5B34.40. THE ENTIRE LOT 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 1 FOOT BELOW FINISHED FLOOR BASED ON PROPOSED GRADING.

ZONING SUMMARY

ZONING DISTRICT G2 (GATEWAY NEIGHBORHOOD MIXED USE CENTER)

TAX MAP 210, LOT 2

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%	24.25%
MINIMUM OPEN SPACE COVERAGE	20%	34.2%
MINIMUM COMMUNITY SPACE 20% REQUIRED 22.1% PROVIDED		

No.	DESCRIPTION	AREA
1	GREENWAY #1	9,800 S.F.
2	GREENWAY #2	7,190 S.F.
3	GREENWAY #3	4,110 S.F.
4	GREENWAY #4	2,590 S.F.
5	GREENWAY (ENHANCEMENTS)	2,300 S.F.
	TOTAL	25,790 S.F.

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	10.0 FT
CHASE STREET	10–30 FT	10.2± FT
MICHAEL SUCCI DRIVE	10–30 FT	10.2± 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 (ENTIRE LOT)	50%	24.25%
MAXIMUM BUILDING FOOTPRINT NEW BUILDING	20,000 SF	7,660± SF
EXISTING CHURCH		18,600± 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

PARKING CALCULATIONS:

EXISTING CHURCH
BASED ON CURRENT ZONING REQUIREMENTS: REQUIRED SPACES

ASSEMBLY (545 CAPACITY BY ZONING*) 136 SPACES
(1 STALL PER 4 OCCUPANTS)

20% REDUCTION FOR BUS TRANSIT (10.5B82.10)
MIN PARKING SPACES REQUIRED 109 SPACES REQUIRED

EXISTING RESIDENTIAL SINGLE FAMILY DWELLINGS

TWO RESIDENTIAL HOMES 4 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

TOTAL REQUIRED ON–SITE PARKING SPACES = 140 SPACES

SHARED USE DEMAND ANALYSIS

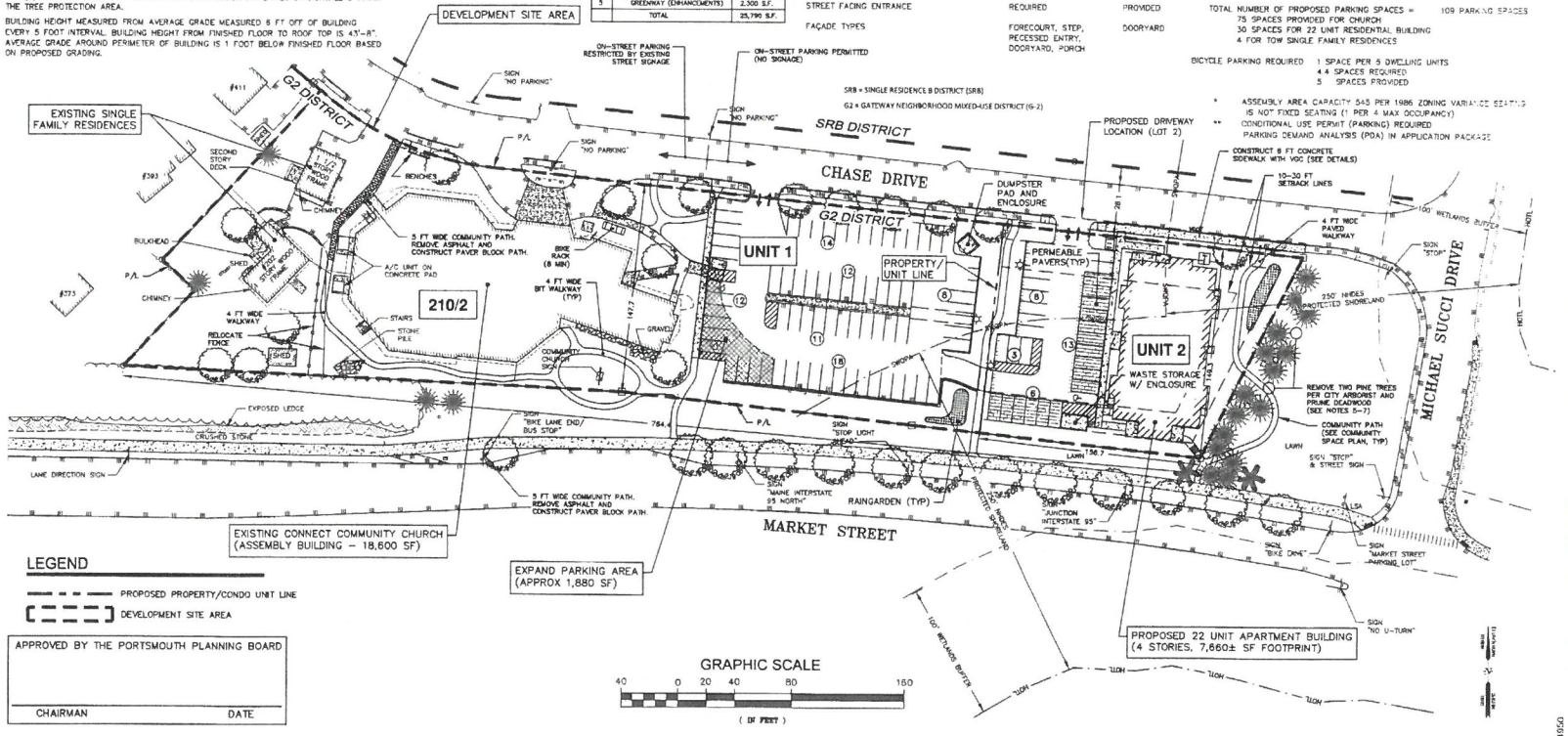
BASED ON THE SHARED USED DEMAND ANALYSIS FOR THE WEEKEND DAY
REQUIRED PARKING CHURCH (100%) = 109 SPACES
RESIDENTIAL 22 UNIT APARTMENT BUILDING
AND TWO SINGLE FAMILY HOMES (80% OF 31) 25 SPACES

TOTAL NUMBER OF REQUIRED PARKING SPACES = 134 PARKING SPACES
(BASED ON ZONING REGULATIONS)

TOTAL NUMBER OF PROPOSED PARKING SPACES = 109 PARKING SPACES
75 SPACES PROVIDED FOR CHURCH
30 SPACES FOR 22 UNIT RESIDENTIAL BUILDING
4 FOR TOW SINGLE FAMILY RESIDENCES

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



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. 14288 PROFESSIONAL ENGINEER

4/17/19

ISSUED FOR:
PLANNING BOARD APPROVAL

ISSUE DATE:
NOVEMBER 18, 2019

REVISIONS:

NO.	DESCRIPTION	BY	DATE
1	INITIAL SUBMISSION	CDB	05/04/19
2	DESIGN REVIEW	CDB	09/09/19
3	TAC	CDB	09/16/19
4	TAC COMMENTS	CDB	10/18/19
5	TAC COMMENTS	CDB	11/18/19

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4951–SITE.DAG

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

P4950

CONNECT COMMUNITY CHURCH PLAN FOR FUTURE PARKING

12/17/2019

OVERVIEW

This plan details Connect Community Church's strategy to handle parking after the proposed project by 200 Chase Drive LLC is completed. The plan entails the use of 75 parking spaces for the church's use on Sundays and special events.

OBJECTIVE

The objective of this plan is to show that the present and future parking needs of Connect Community Church can be met with the 75 spaces and the proposed plan mentioned in this document.

THE PLAN

The Connect Community Church parking plan has four major components

- **#1** The use of parking attendants to accommodate parking needs, safety and quick and efficient placement of cars.
- **#2** The adding of additional services as the church grows.
- **#3** The maximizing of the church parking lot
- **#4** The use of remote parking by our volunteer base.

THE USE OF PARKING ATTENDANTS

The use of the parking attendants to accommodate parking needs, safety and quick and efficient placement of cars

- **Action #1**: Parking attendants will be working high attendance services to ensure the safety of church attendees, guest and any residual traffic flow coming down Chase Drive.
- **Action #2**: To efficiently park incoming cars and release exiting cars in an orderly and safe manner.

- **Action #3**: To effectively enable stack parking for incoming vehicles and outgoing vehicles. (see Special Events Parking Plan)

THE ADDING OF ADDITIONAL SERVICES

The adding of additional services as the church grows beyond its present size to keep individual services below 150 average attendance

- **Action #1**: We have intentionally shrunk the size of our services to increase intimacy and to increase the inviting nature of our church experience.
- **Action #2**: We have 200 seats in the sanctuary at this time. We would add another service at 80% capacity to continue to provide seating for larger families in any given service and to ensure we stay within the 75 parking spaces of the church.
- **Action #3**: The leadership of Connect has already begun planning for a 3rd service.

THE MAXIMIZING OF THE CHURCH PARKING LOT

The maximizing of the church parking potential by stack parking and utilizing the parsonage driveway

- **Action #1**: To maximize the church parking, we could enact stacked parking in the church's lot for additional
- **Action #2**: As we enact stacked parking it would give us an additional 19 cars in our parking lot. (See Special Events Parking Plan)
- **Action #3**: We would park 6 vehicles in the driveway of the parsonage.
- **Action #4**: With the additional parking, the church could accommodate up to 100 vehicles on-site.

THE USE OF REMOTE PARKING FOR THE CHURCH VOLUNTEER BASE

Remote parking would free up additional parking spaces

- **Action #1**: Designate at least 15 people from our volunteer base that would park at a remote site. *(this plan was already test ran during our November 24th service)*
- **Action #2**: Target the Foundry garage, other churches or empty parking lots as potential overflow parking when the need arises.
- **Action #3**: This remote parking would allow for an additional 35+ people to come to each service for a total of 70 extra people per Sunday based on 2 services.

RESULTS OF PARKING PLAN STUDY

The parking plan to provide 75 Parking Stalls for Connect Community Church will meet present and future needs of the church

Capacity based on 75 Parking Stalls (2.5 ave. persons/vehicle)	185 people per service	370 total in 2 services	370 total attendees
Stacked parking and use of parsonage driveway added (25 additional stalls)	60 people added per service	120 total for 2 services	490 total attendees
Use of remote parking for volunteers (15 Additional Stalls)	35 people added per service	70 total for 2 services	560 total attendees (two services with stacked parking and remote volunteers parking)
Adding additional service with NO additional parking	185 people added for 3rd service alone	185 added	555 attendees in 3 services
Adding additional service with stacked parking and use of parsonage driveway added	245 people per service	735 total for 3 services	735 attendees in 3 services
Adding an additional service with stacked parking and remote parking volunteer	280 people per service	840 total for 3 services	840 attendees in 3 services (with stacked and remote parking in all 3 services)

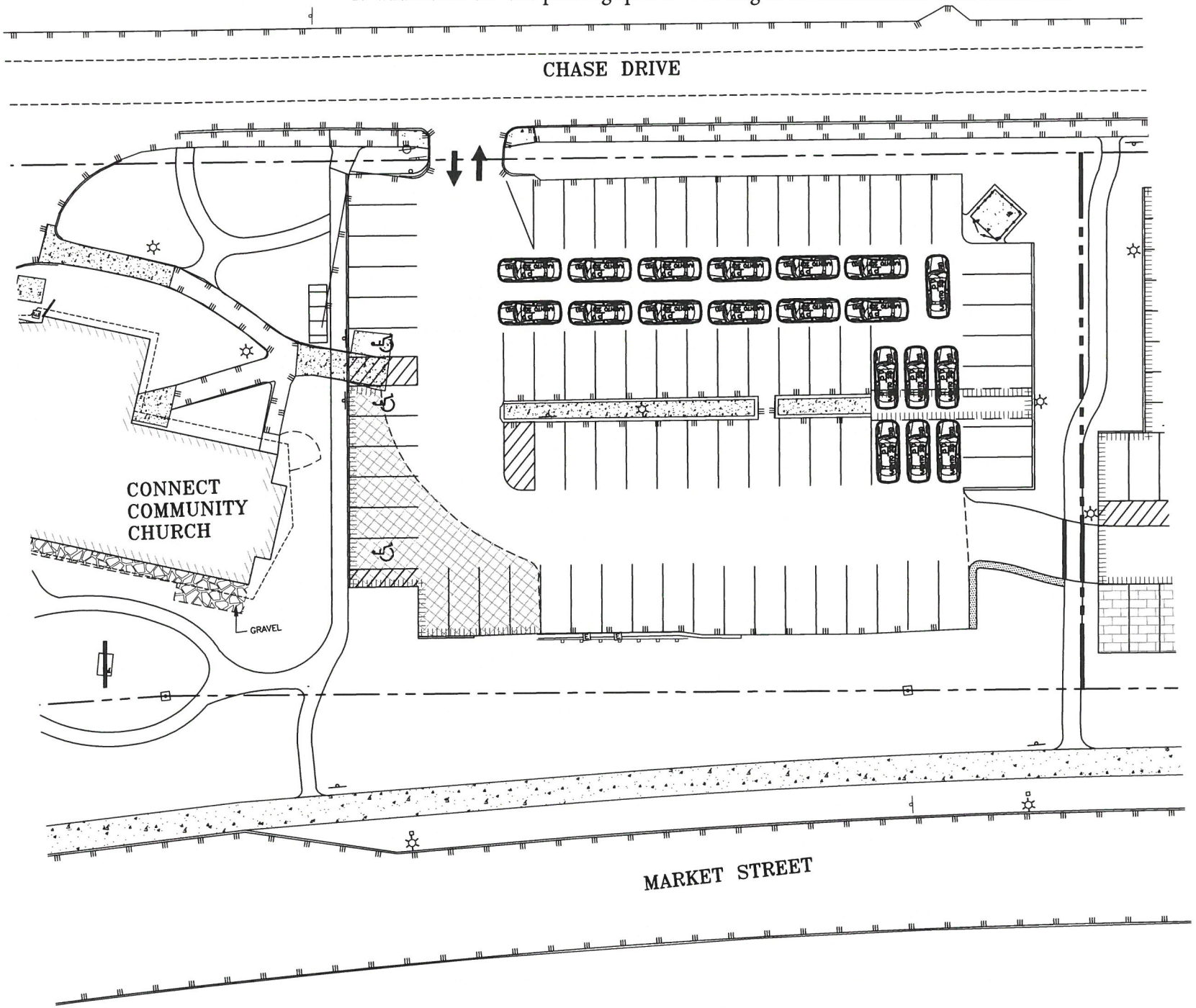
RESULTS OF PARKING PLAN

Many parts of this parking plan have already been instituted into our present parking situation or have been test ran on special services. The leadership of Connect has confidence that we can meet the necessary requirements for our parking in the 75 spots that the church will have after construction is complete. The Church has averaged approximately 240 total attendees for the two services since March of 2019 with the current membership; 105 attendees for the 9 am service and 135 attendees for the 11 am service. This plan makes large provisions for the potential growth and expansion of the church. We are excited about the future of Connect and we look forward to continuing to be a vital part of the Portsmouth community. Thank you for considering this parking plan.

Leadership of Connect Community Church

CONNECT COMMUNITY CHURCH SPECIAL EVENT PARKING PLAN

19 additional on -site parking spaces - Parking to be administered with attendants



ALTUS ENGINEERING, INC.

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

TRAFFIC GENERATION MEMORANDUM

Assessor's Map 210, Lot 02
200 Chase Drive, Portsmouth, NH
Altus Project #P4950

November 5, 2019

The Bethel Assembly of God (owner) and 200 Chase Drive, LLC (Applicant) are proposing to re-develop the property located at 200 Chase Drive (Assessor's Map 210, Lot 02) to construct a new multi-family building that will provide 22 housing units and retain the existing church and residential houses. The existing church will continue to operate as it is today. This traffic generation memorandum is to determine the anticipate traffic that results from the proposed 22-Unit residential apartment building, excluding the existing church traffic. Utilizing the Institute of Transportation Engineers (ITE) Trip Generation Manual (9th Edition), the anticipated traffic generated from the proposed apartment building (Section 220) is as follows:

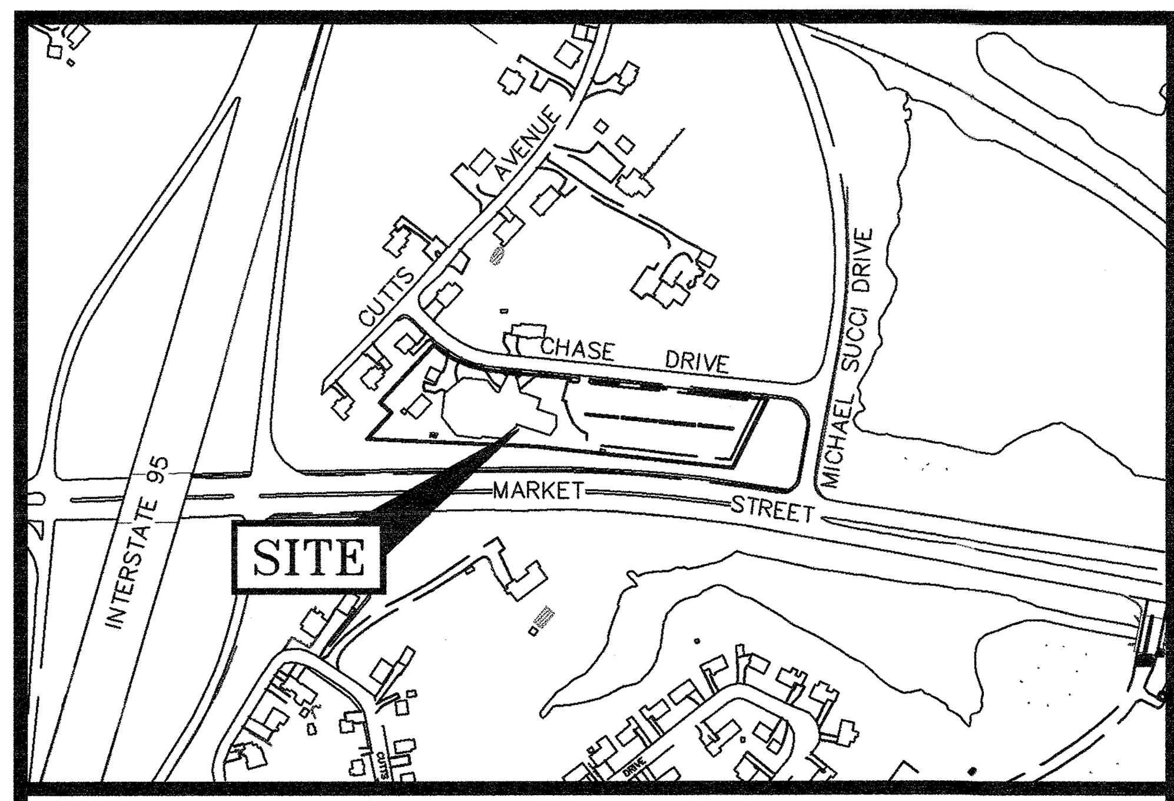
Trip Generation Table
22-Unit Apartment (ITE, Section 220)

	Time	Rate	Vehicle Trips
Total Trips*	Weekday	6.65	146.3
	Saturday	6.39	140.6
	Sunday	5.86	128.9
*Total trips estimate 50% entering and 50% exiting site			
Peak Hr	Weekday AM Peak Hr	0.55	12.1
	Weekday PM Peak Hr	0.67	14.7
	Saturday Peak Hr	0.52	11.4
	Sunday Peak Hr	0.51	11.2

Note: This Traffic Generation Memo excludes any existing traffic counts from the existing use of the church parking lot as a public parking lot.

Ecopy: Stephen Kelm, 200 Chase Drive, LLC
Pastor Chad Lynn, Connect Community Church

wde/4950-TRAFFIC MEMO.doc



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. 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
SWQPA		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)
GRID NHSPC

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

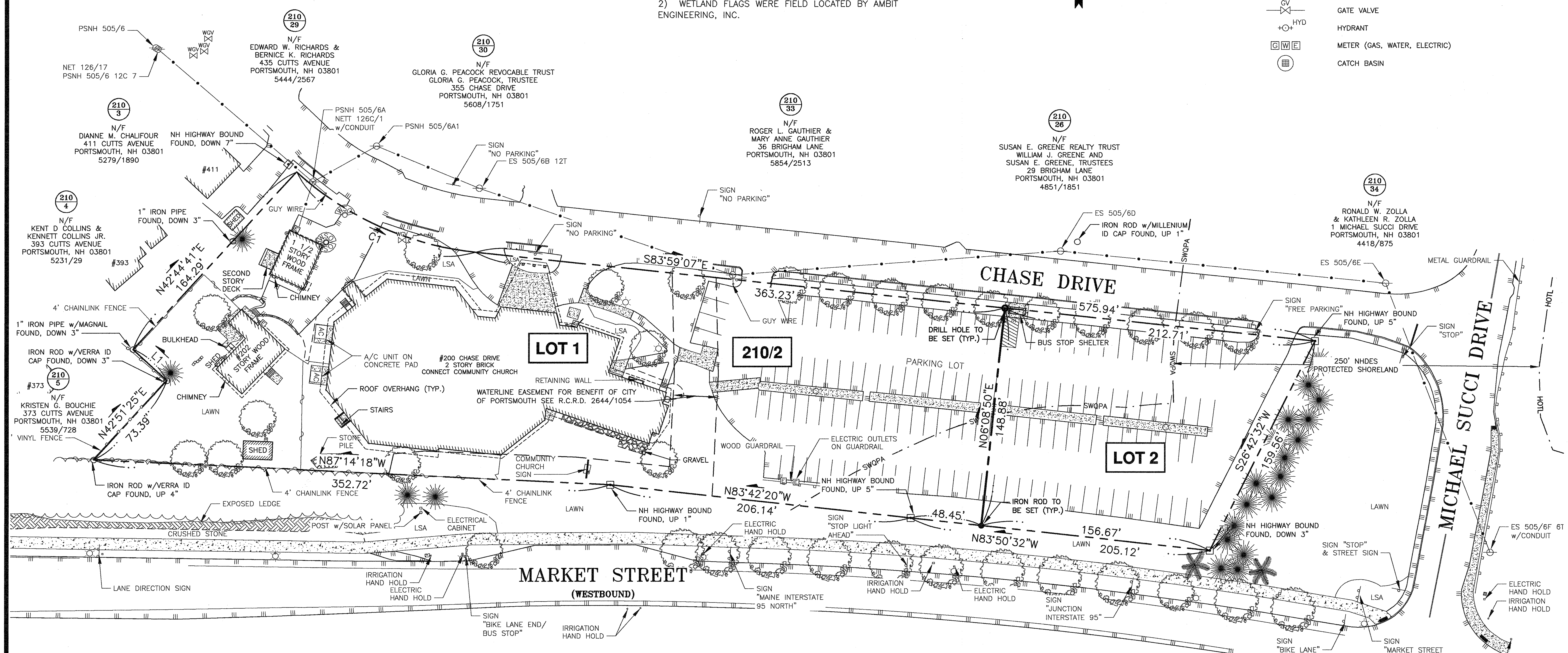
PROPOSED LOT 1
89,054 S.F.
2.0444 ACRES

PROPOSED LOT 2
27,537 S.F.
0.6322 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
C1	215.00'	135.68'	133.44'	S65°54'23"E	36°09'27"

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

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."

10/15/2019
PAUL A DOBBERSTEIN, LLS DATE

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

NO.	DESCRIPTION	DATE
2	REVISE PROPOSED BOUNDARY LINE LOCATION	10/12/19
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

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

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:

JANUARY 29, 2020 PLANNING BOARD APPROVAL

Civil Engineer:

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

Landscape Architect:

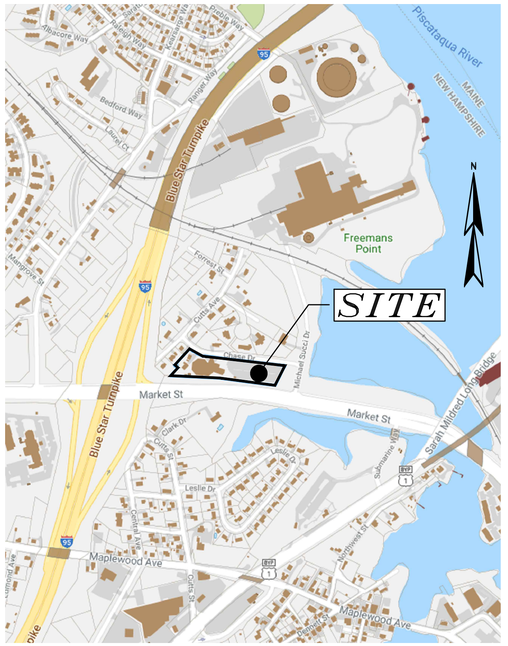
WOODBURN & COMPANY
Landscape Architecture, LLC
103 Kent Place
Newmarket, NH 03857
Tel 603.659.5949
Fax: 603.659.5939

Architect:

SOMMA
39 Maplewood Avenue
Portsmouth, NH 03801
603.766.3760

Surveyor:

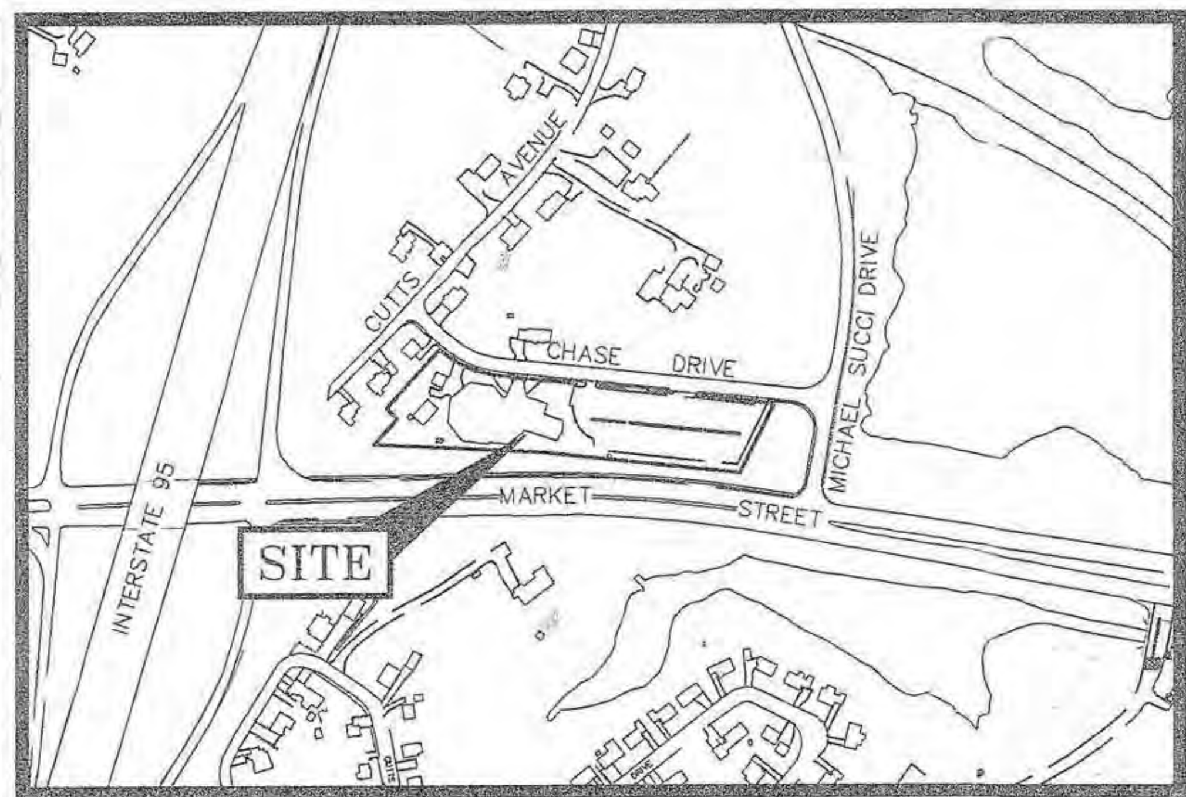
AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315



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	2	10/12/19
Overall Site Plan	C.3	6	01/29/20
Site Plan	C.4	6	01/29/20
Grading and Drainage Plan	C.5	6	01/29/20
Grading and Drainage Plan	C.6	4	01/29/20
Sediment & Erosion Control Plan	C.7	4	01/29/20
Utilities Plan	C.8	4	01/29/20
Community Space Plan	C.9	6	01/29/20
Easement Plan	C.10	0	01/29/20
Overall Site Landscape Plan and Details	L-1	5	01/29/20
Landscape Plan	L-2	6	01/29/20
Site Lighting Plan	1 of 1	2	10/15/19
Erosion Control Notes & Details	D.1	2	11/18/19
Construction Details	D.2	1	09/16/19
Construction Details	D.3	1	09/16/19
Construction Details	D.4	2	10/18/19
Construction Details	D.5	2	12/23/19
Construction Details	D.6	3	11/18/19
Construction Details	D.7	2	11/18/19
Stormtech SC-310 Standard Cross Section	1 of 1	0	05/10/19
Floor Plans (by SOMMA Studios)	3 Sheets	1	10/19
Exterior Elevations (by SOMMA Studios)	4 Sheets	1	10/19
Building Rendering (by SOMMA Studios)	1 of 1	0	06/19

P4950



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

Existing	Proposed/Set	Description
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
SWQPA		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

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

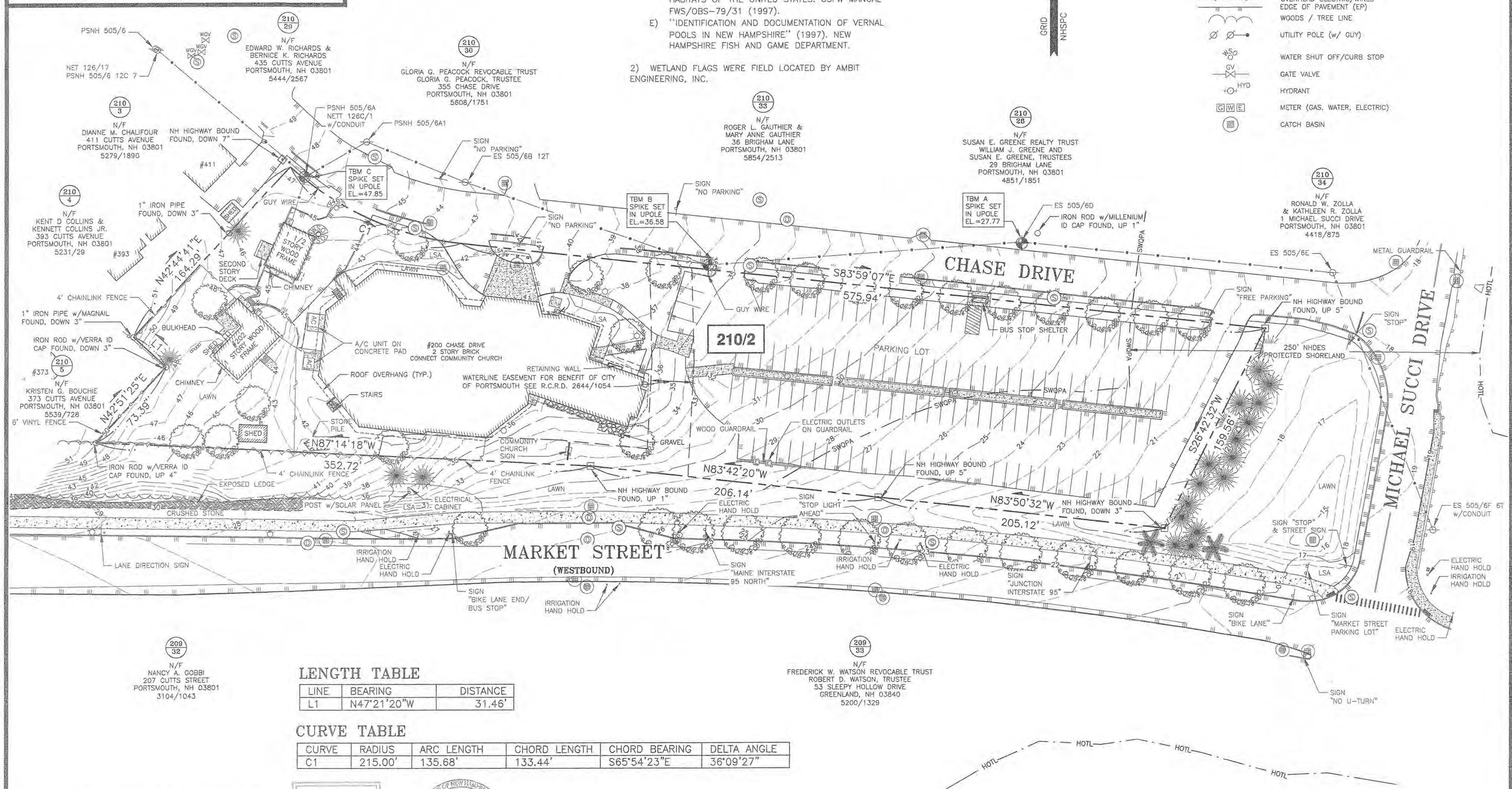
5) PARCEL IS LOCATED IN THE GATEWAY CENTER (G2) ZONING DISTRICT.

6) DIMENSIONAL REQUIREMENTS:
SEE ZONING ORDINANCE

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE 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"

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

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

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

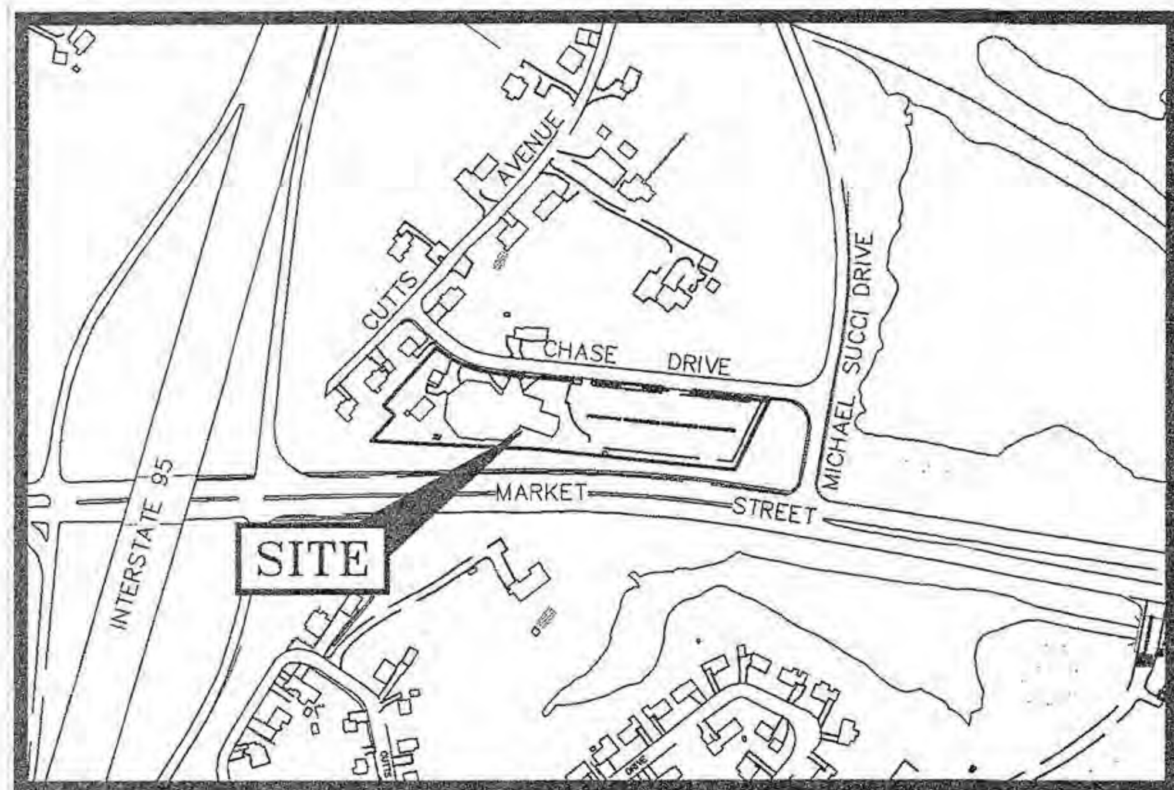
REVISIONS

SCALE 1" = 40' AUGUST 2018

EXISTING CONDITIONS PLAN

C1

FB 287 PG 23 2872



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.

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)

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
SWQPA		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
CPP		CORRUGATED PLASTIC PIPE
CMP		CORRUGATED METAL PIPE
PVC		POLYVINYL CHLORIDE PIPE
RCP		REINFORCED CONCRETE PIPE
CI		CAST IRON PIPE
VCP		VITRIFIED CLAY PIPE

AMBIT ENGINEERING, INC.
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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 NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE DATE 5/17/2005.

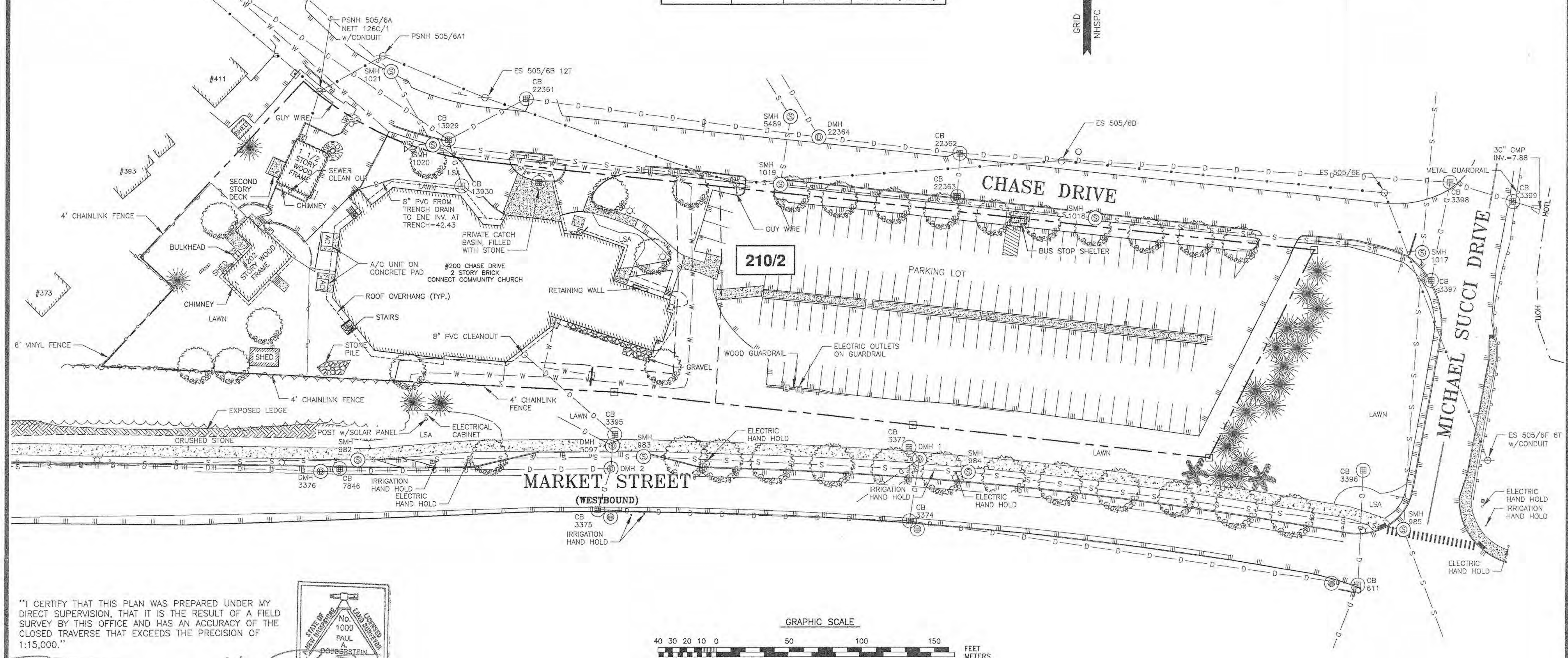
4) EXISTING LOT AREA:
116,591 S.F.
2.6766 ACRES

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').



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2/17/2019
PAUL A DOBBERSTEIN, LLS DATE

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

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

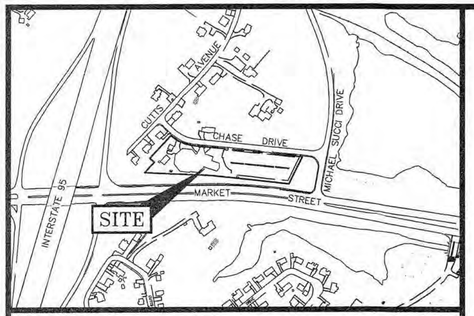
SCALE 1" = 40' FEBRUARY 2019

EXISTING UTILITIES PLAN

C2

FB 287 PG 23

2872



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

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

NORTH NAD83(2011) — GRID NHSPC

LEGEND:

EXISTING

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	UTILITY POLE (w/ GUY)
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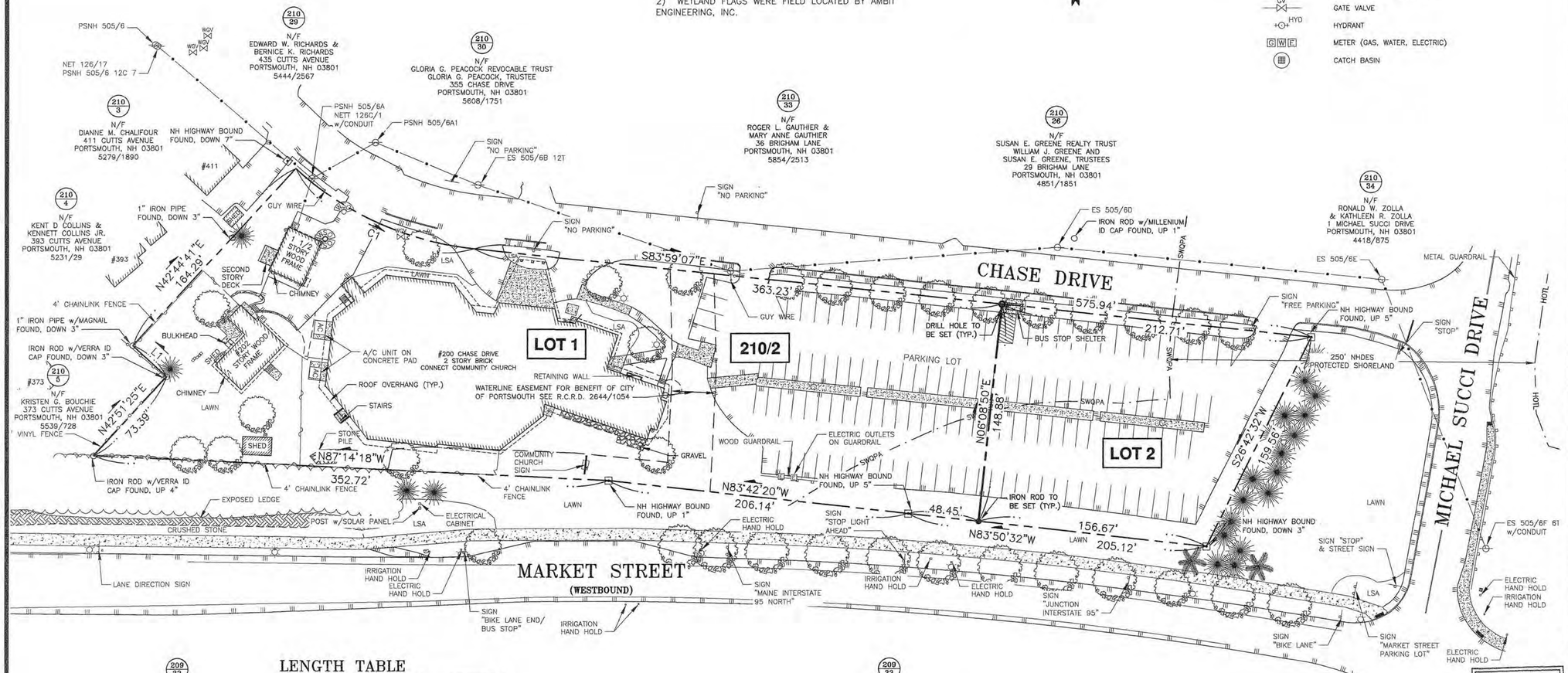

LENGTH TABLE

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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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."

10/15/2019
PAUL A DOBBERSTEIN, LLS DATE

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

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

NOTES:

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BETHEL ASSEMBLY OF GOD
200 CHASE DRIVE
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4) EXISTING LOT AREA:
116,591 S.F.
2.6766 ACRES

PROPOSED LOT 1
89,054 S.F.
2.0444 ACRES

PROPOSED LOT 2
27,537 S.F.
0.6322 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
2	REVISE PROPOSED BOUNDARY LINE LOCATION	10/12/19
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

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 CHURCH AND TWO SINGLE FAMILY RESIDENTIAL BUILDINGS. THE INTENT IS TO DIVIDE THE LOT TO CREATE A NEW LOT OR CONDOMINIUM UNIT. THE NEW LOT/UNIT WILL CONSTRUCT A NEW 22 UNIT APARTMENT BUILDING PER SECTION 10.5B34.40. THE ENTIRE LOT 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 1 FOOT BELOW FINISHED FLOOR BASED ON PROPOSED GRADING.
9. MAXIMUM CAPACITY OF ASSEMBLY AREA IS 545 BASED ON 1986 ZONING VARIANCE. CHURCH PROPOSES TO REDUCE CAPACITY TO 350, WHICH WOULD COMPLY WITH CITY PARKING REGULATIONS FOR PROPOSED PARKING. APPLICANT TO WORK WITH BUILDING AND PLANNING DEPARTMENTS FOR REQUIREMENTS.

ZONING SUMMARY

ZONING DISTRICT G2 (GATEWAY NEIGHBORHOOD MIXED USE CENTER)
TAX MAP 210, LOT 2

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%	24.25%
MINIMUM OPEN SPACE COVERAGE	20%	34.2%
MINIMUM COMMUNITY SPACE	20% REQUIRED	21.5% PROVIDED

No.	DESCRIPTION	AREA
1	GREENWAY #1	3,785 S.F.
2	GREENWAY #2	4,010 S.F.
2	GREENWAY #3	8,310 S.F
1	POCKET PARK #1	4,345 S.F
3	POCKET PARK #2	2,340 S.F.
4	GREENWAY (ENHANCEMENTS)	2,300 S.F.
	TOTAL	25,090 S.F.

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	10.0 FT
CHASE STREET	10–30 FT	10.2± FT
MICHAEL SUCCI DRIVE	10–30 FT	10.2± 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 (ENTIRE LOT)	50%	24.25%
MAXIMUM BUILDING FOOTPRINT	20,000 SF	
NEW BUILDNG		7,660± SF
EXISTING CHURCH		18,600± 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

PARKING CALCULATIONS:

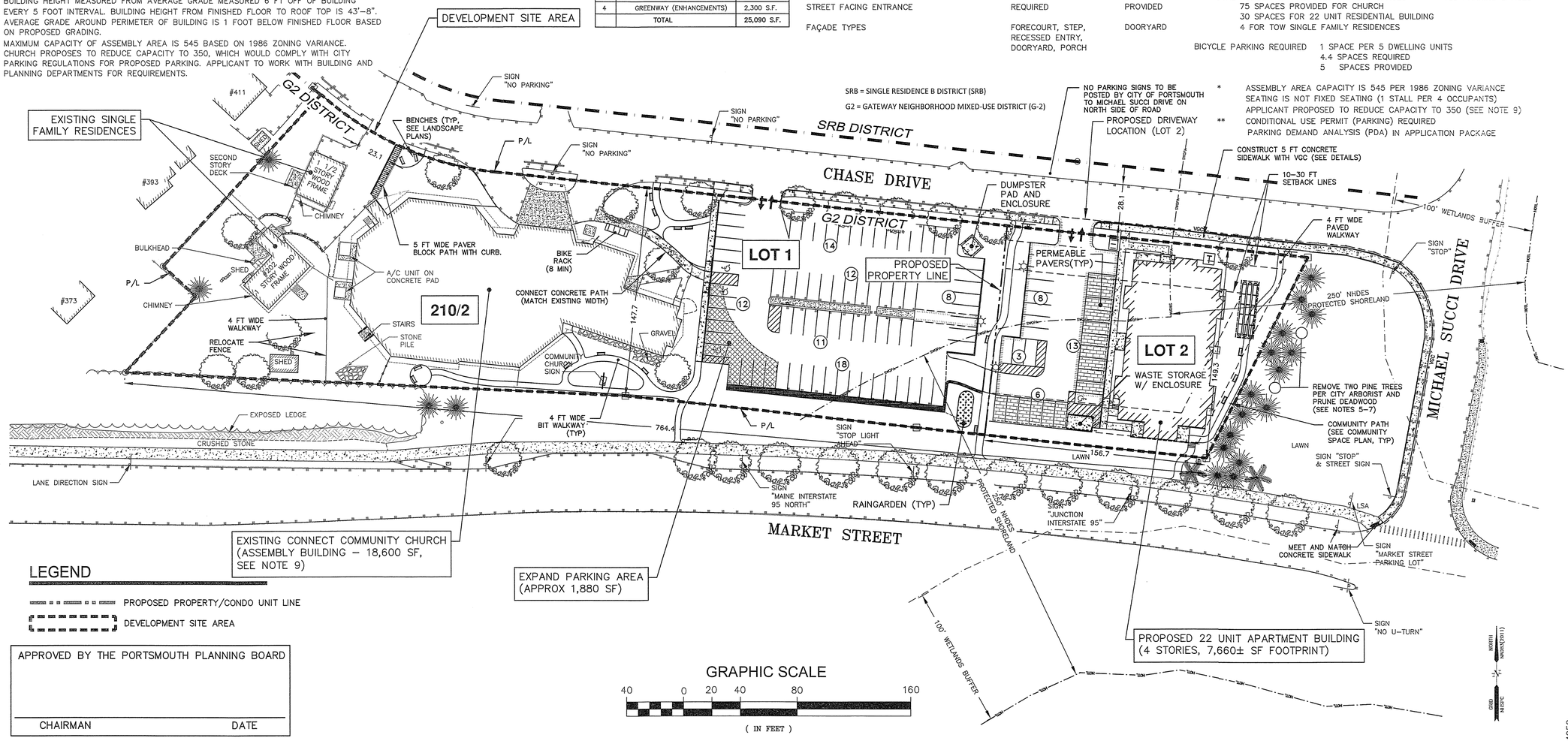
EXISTING CHURCH BASED ON CURRENT ZONING REQUIREMENTS:	REQUIRED SPACES
ASSEMBLY (545 CAPACITY BY ZONING*)	136 SPACES
20% REDUCTION FOR BUS TRANSIT (10.5B82.10) MIN PARKING SPACES REQUIRED	109 SPACES REQUIRED
EXISTING RESIDENTIAL SINGLE FAMILY DWELLINGS	
TWO RESIDENTIAL HOMES	4 SPACES
PROPOSED 22 UNIT 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
TOTAL REQUIRED ON–SITE PARKING SPACES =	140 SPACES

SHARED USE DEMAND ANALYSIS

BASED ON THE SHARED USED DEMAND ANALYSIS FOR THE WEEKEND DAY REQUIRED PARKING CHURCH (100%) =	109 SPACES
RESIDENTIAL 22 UNIT APARTMENT BUILDING AND TWO SINGLE FAMILY HOMES (80% OF 31)	25 SPACES
TOTAL NUMBER OF REQUIRED PARKING SPACES = (BASED ON ZONING REGULATIONS)	134 PARKING SPACES
TOTAL NUMBER OF PROPOSED PARKING SPACES = 75 SPACES PROVIDED FOR CHURCH 30 SPACES FOR 22 UNIT RESIDENTIAL BUILDING 4 FOR TOW SINGLE FAMILY RESIDENCES	109 PARKING SPACES
BICYCLE PARKING REQUIRED 1 SPACE PER 5 DWELLING UNITS 4.4 SPACES REQUIRED 5 SPACES PROVIDED	

* ASSEMBLY AREA CAPACITY IS 545 PER 1986 ZONING VARIANCE SEATING IS NOT FIXED SEATING (1 STALL PER 4 OCCUPANTS) APPLICANT PROPOSED TO REDUCE CAPACITY TO 350 (SEE NOTE 9)

** CONDITIONAL USE PERMIT (PARKING) REQUIRED PARKING DEMAND ANALYSIS (PDA) IN APPLICATION PACKAGE



LEGEND

PROPOSED PROPERTY/CONDO UNIT LINE

DEVELOPMENT SITE AREA

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

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

1/29/2020

ISSUED FOR:

PLANNING BOARD APPROVAL

ISSUE DATE:

JANUARY 29, 2020

REVISIONS

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6	TAC COMMENTS	CDB	01/29/20

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

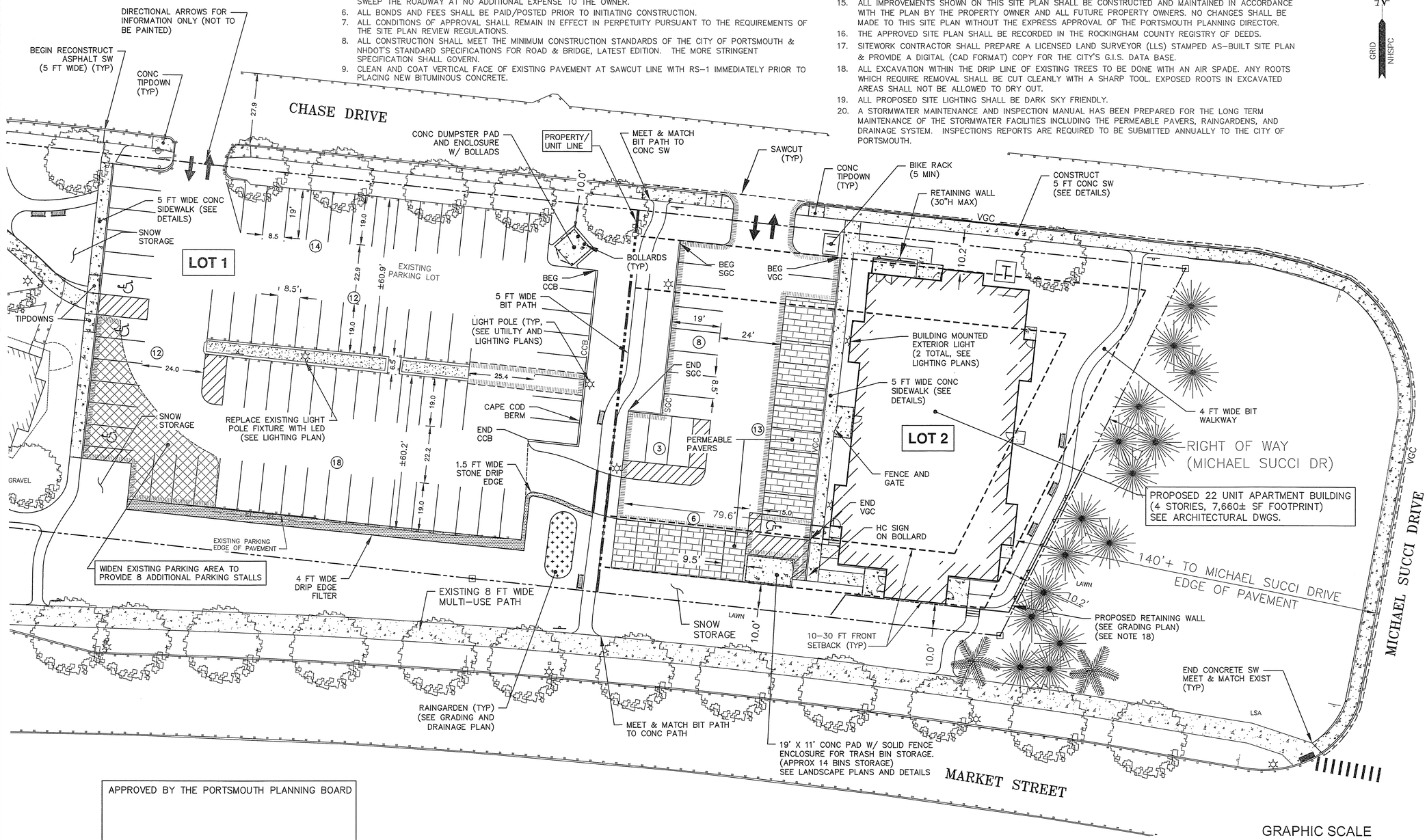
PROPOSED RETAINING WALL

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. THIS PROJECT WILL REQUIRE COVERAGE UNDER EPA NPDES PHASE II CONSTRUCTION GENERAL PERMIT.
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.
20. A STORMWATER MAINTENANCE AND INSPECTION MANUAL HAS BEEN PREPARED FOR THE LONG TERM MAINTENANCE OF THE STORMWATER FACILITIES INCLUDING THE PERMEABLE PAVERS, RAINGARDENS, AND DRAINAGE SYSTEM. INSPECTIONS REPORTS ARE REQUIRED TO BE SUBMITTED ANNUALLY TO THE CITY OF PORTSMOUTH.



NORTH NAD83(2011)

GRID NHSPC

GRAPHIC SCALE

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(IN FEET)

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

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

1/29/2020

ISSUED FOR:

PLANNING BOARD APPROVAL

ISSUE DATE:

JANUARY 29, 2020

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DRAWN BY: CDB

APPROVED BY: EDW

DRAWING FILE: 4950.DWG

SCALE:

22" x 34" - 1" = 20'
11" x 17" - 1" = 40'

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:

SITE PLAN

SHEET NUMBER:

C-4

LEGEND

* SEE SHEET C-1 FOR EXISTING FEATURES

- PROPERTY LINE
- 250 FT SHORELAND BUFFER
- WETLAND SETBACK LINE
- PROPOSED PAVEMENT
- VERTICAL GRANITE CURB/SLOPED GRANITE CURB/ BITUMINOUS CONCRETE CURB (CAPE COD) — VGC SGC BCC
- 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= 250 SF
BOTTOM ELEV = 23.0
BERM ELEV = 24.0

OUTLET STRUCTURE 1 (OS1)
RIM (18" BEEHIVE) = 23.5
6" UD (IN)= 20.25
12" INV IN = 20.35 (OS2)
12" INV (OUT) = 20.25

SUB-SURFACE CHAMBER SYSTEM

STORMTECH SC-310 (OR APPROVED EQUAL)
15 CHAMBERS TOTAL – 3 ROWS OF 5 EACH
CHAMBER BOTTOM ELEV = 20.0
4" UNDERDRAIN INV = 19.4
STORAGE VOLUME = 450 CF
(CONTRACTOR TO COMPLY WITH MANUFACTURER RECOMMENDATIONS FOR INSTALLATION)

DRAINAGE STRUCTURES

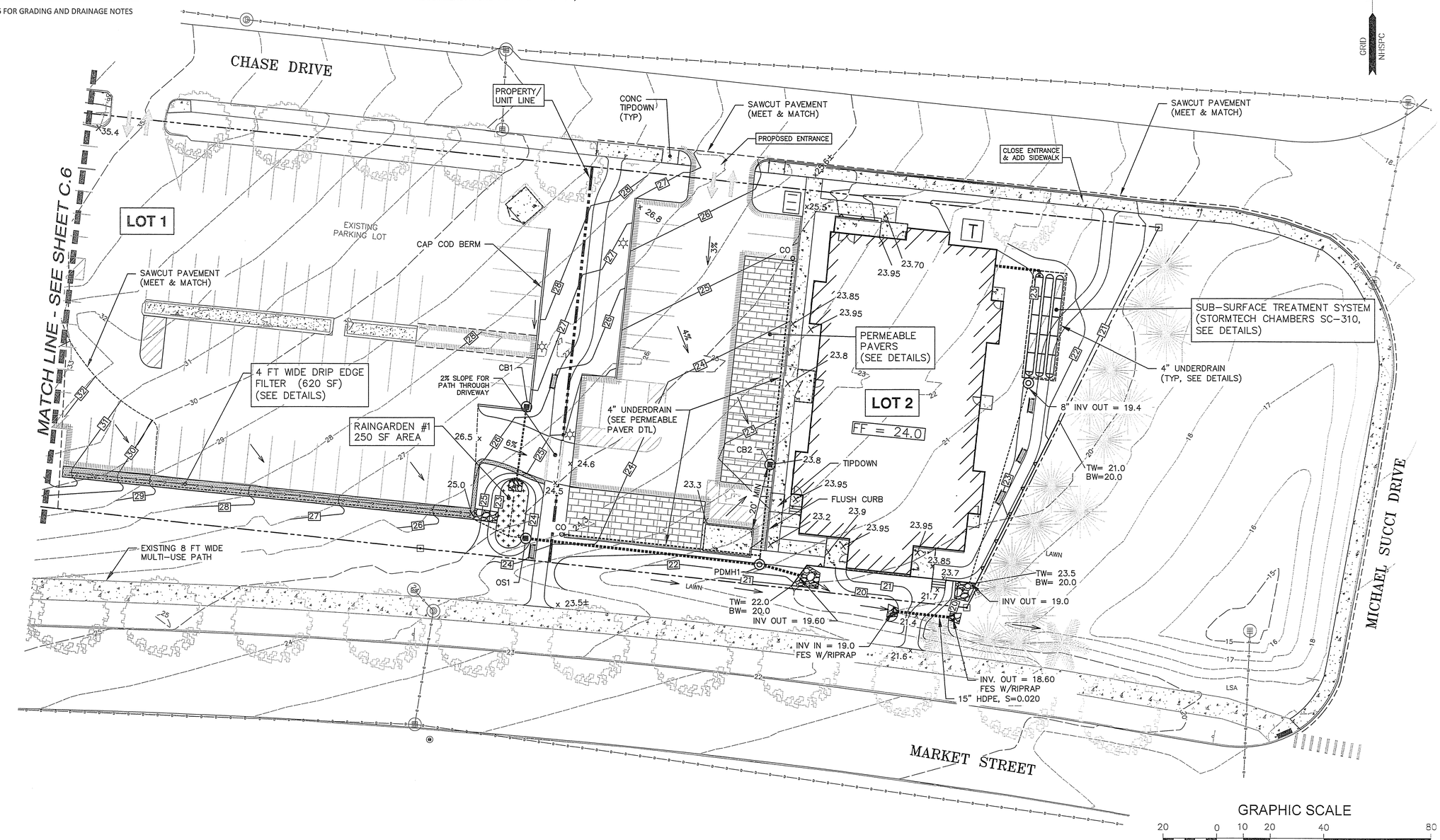
CB #1
RIM = 26.4±
INV. OUT (12" HDPE) =23.20

CB #2
RIM = 22.8±
4" UD IN = 20.2±
6" UD OUT = 20.2±

PDMH #1
COVER = 22.3±
12" INV IN = 19.85 (OS2)
6" INV IN = 20.00
INV. OUT (12" HDPE) = 19.75

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE



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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

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

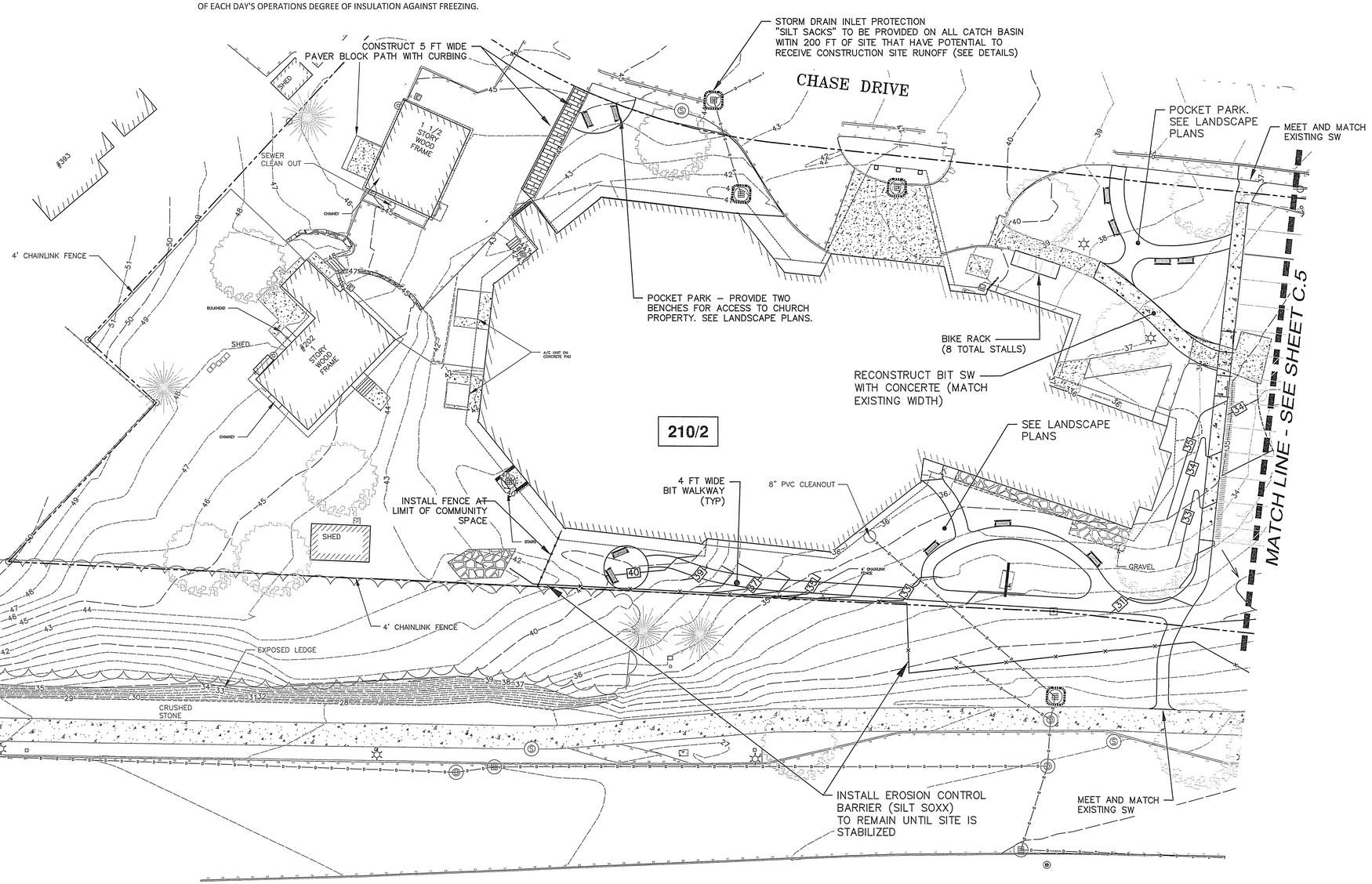
PROPOSED RETAINING WALL

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.
12. A STORMWATER MAINTENANCE AND INSPECTION MANUAL HAS BEEN PREPARED FOR THE LONG TERM MAINTENANCE OF THE STORMWATER FACILITIES INCLUDING THE PERMEABLE PAVERS, RAINGARDENS, AND DRAINAGE SYSTEM. INSPECTIONS REPORTS ARE REQUIRED TO BE SUBMITTED ANNUALLY TO THE CITY OF PORTSMOUTH.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE



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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

1/29/2020

ISSUED FOR:

PLANNING BOARD APPROVAL

ISSUE DATE:

JANUARY 29, 2020

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	CDB	09/16/19
1	TAC COMMENTS	CDB	10/16/19
2	TAC COMMENTS	CDB	11/16/19
3	TAC COMMENTS	CDB	12/23/19
4	TAC COMMENTS	CDB	01/29/20

DRAWN BY: CDB

APPROVED BY: EDW

DRAWING FILE: 4950.DWG

SCALE:

22" x 34" – 1" = 20'
11" x 17" – 1" = 40'

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:

GRADING AND DRAINAGE PLAN

SHEET NUMBER:

C.6

P4950

LEGEND

* SEE SHEET C–1 FOR EXISTING FEATURES

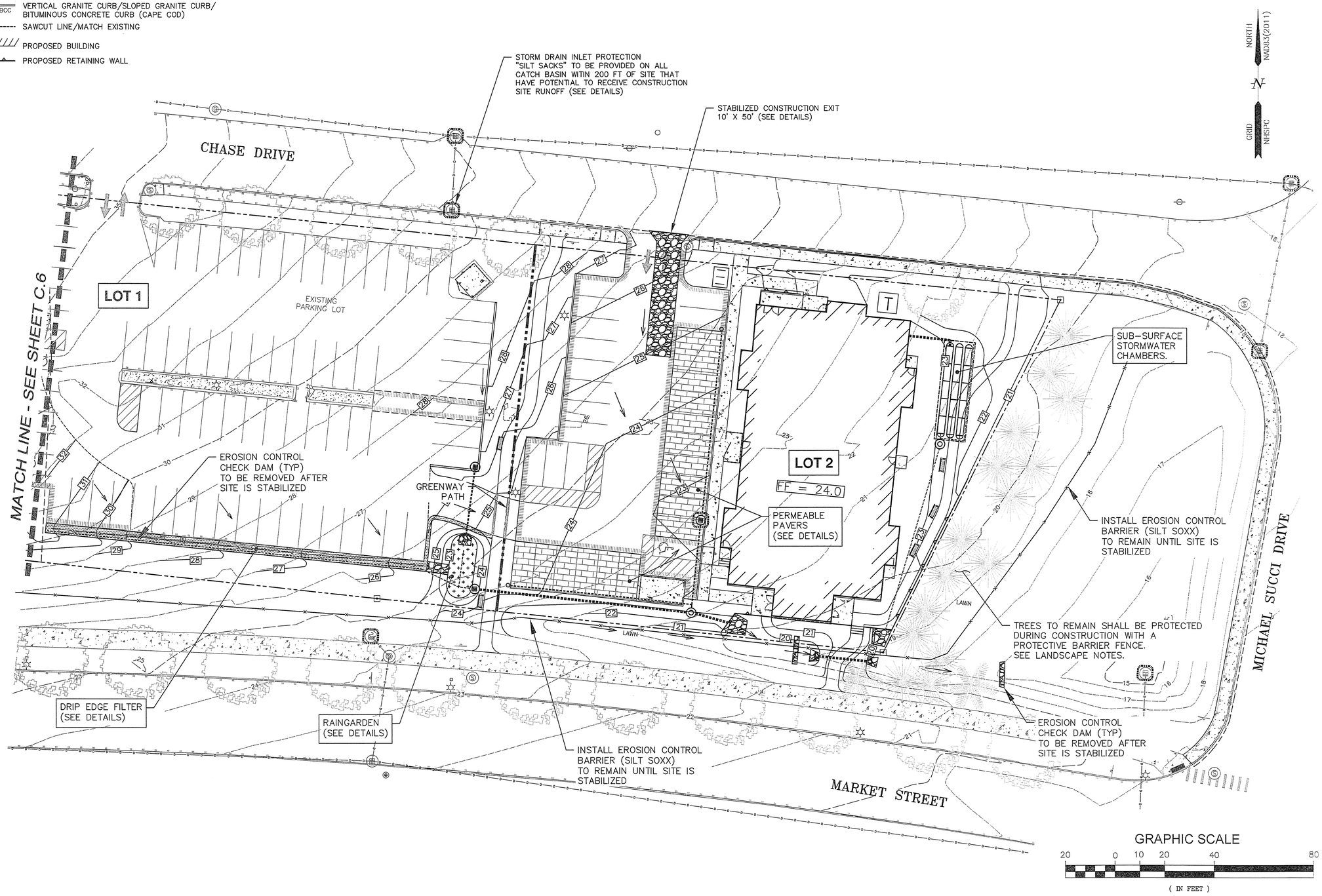
- PROPERTY LINE
- 250 FT SHORELAND BUFFER
- WETLAND SETBACK LINE
- PROPOSED PAVEMENT
- VERTICAL GRANITE CURB/SLOPED GRANITE CURB/ BITUMINOUS CONCRETE CURB (CAPE COD) — VGC SGC BCC
- SAWCUT LINE/MATCH EXISTING
- PROPOSED BUILDING
- PROPOSED RETAINING WALL

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.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

P4950

ENGINEER:

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PORTSMOUTH, NH

ASSESSOR'S PARCEL 210–2

TITLE:

EROSION CONTROL PLAN

SHEET NUMBER:

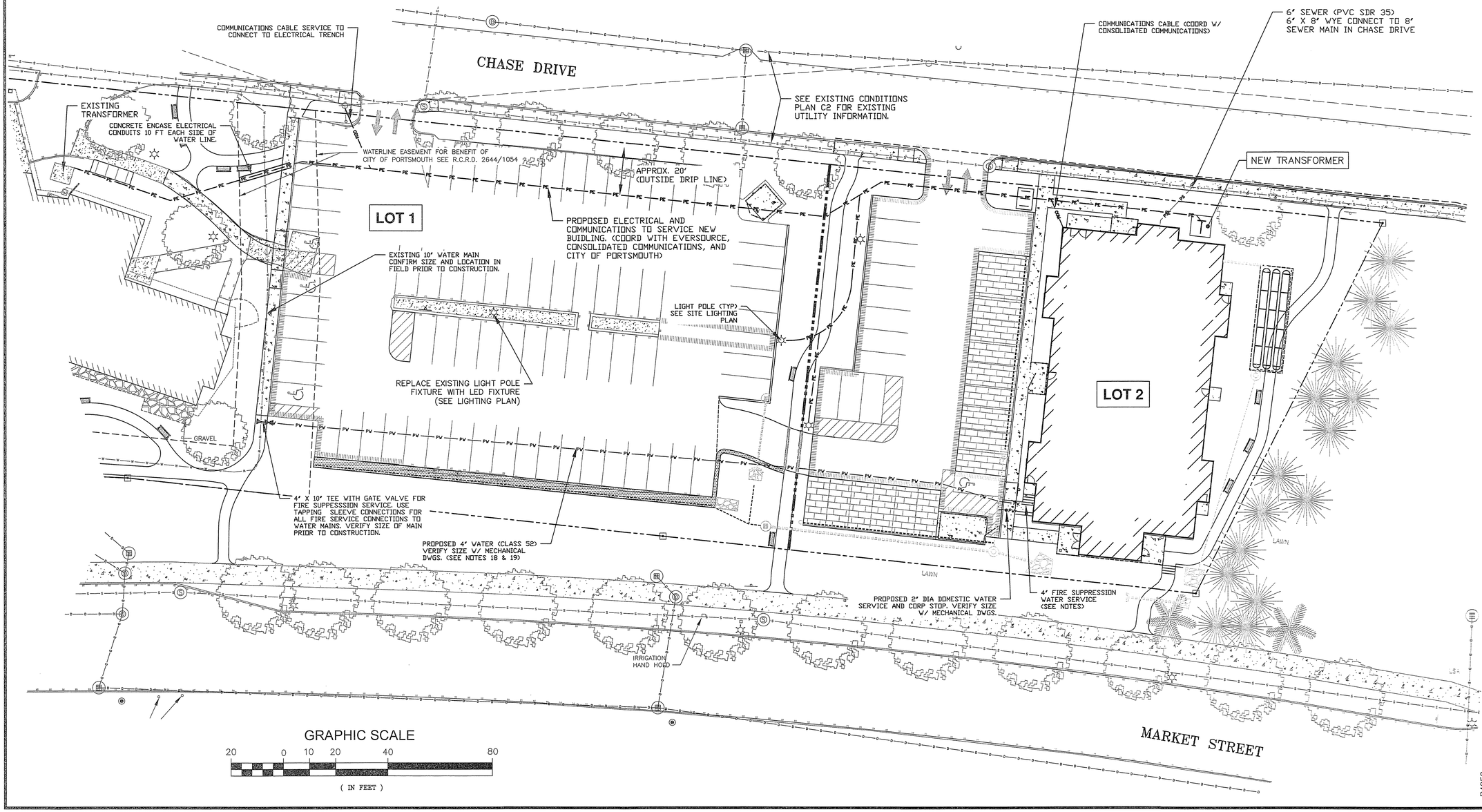
C.7

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. IF 6" WATER MAIN IS REQUIRED FOR FIRE SUPPRESSION, SEPERATE FIRE AND DOMESTIC SERVICE LINES WILL BE REQUIRED FROM THE MAIN WATER CONNECTION AT THE CHURCH TO THE 22 UNIT APARTMENT BUILDING.
19. A BLANKET EASEMENT FOR TEH CITY PORTSMOUTH TO ACCESS WATER AND VALVES WILL BE REQUIRED.
20. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL DISCONNECTIONS/INSTALLATIONS WITH EVERSOURCE.
    CONTACT NICK KOSKO @ 603-332-4227, EXT. 5555334
21. CONTRACTOR SHALL COORDINATE ALL CABLE DISCONNECTIONS/INSTALLATIONS WITH COMCAST.
    CONTACT MIKE COLLINS @ 603-679-5695 EXT 1037
22. 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



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

P4950

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3	TAC COMMENTS	CDB	12/23/19
4	TAC COMMENTS	CDB	01/29/20

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

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CHASE DRIVE GATEWAY DEVELOPMENT SITE

200 CHASE DRIVE
PORTSMOUTH, NH

ASSESSOR'S PARCEL 210-2

TITLE:

UTILITY PLAN

SHEET NUMBER:

C.8

LEGEND

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

NOTE:

1. SEE SITE PLAN FOR ADDITIONAL INFORMATION ON PROPOSED SITE FEATURES.
2. SEE LANDSCAPE PLAN FOR LANDSCAPE ENHANCEMENTS TO COMMUNITY SPACES.

COMMUNITY SPACE SUMMARY

ZONING DISTRICT G2 (GATEWAY NEIGHBORHOOD MIXED USE CENTER)

TAX MAP 210, LOT 2

DEVELOPMENT SITE AREA = 2.68± ACRES (116,591 S.F.)

COMMUNITY SPACE REQUIREMENT = 20% (23,318 S.F.)

COMMUNITY SPACE PROVIDED = 21.5% (25,090 S.F.)

COMMUNITY SPACE TABLE:

No.	DESCRIPTION	AREA
1	GREENWAY #1	3,785 S.F.
2	GREENWAY #2	4,010 S.F.
2	GREENWAY #3	8,310 S.F
1	POCKET PARK #1	4,345 S.F
3	POCKET PARK #2	2,340 S.F.
4	GREENWAY (ENHANCEMENTS)	2,300 S.F.
	TOTAL	25,090 S.F.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

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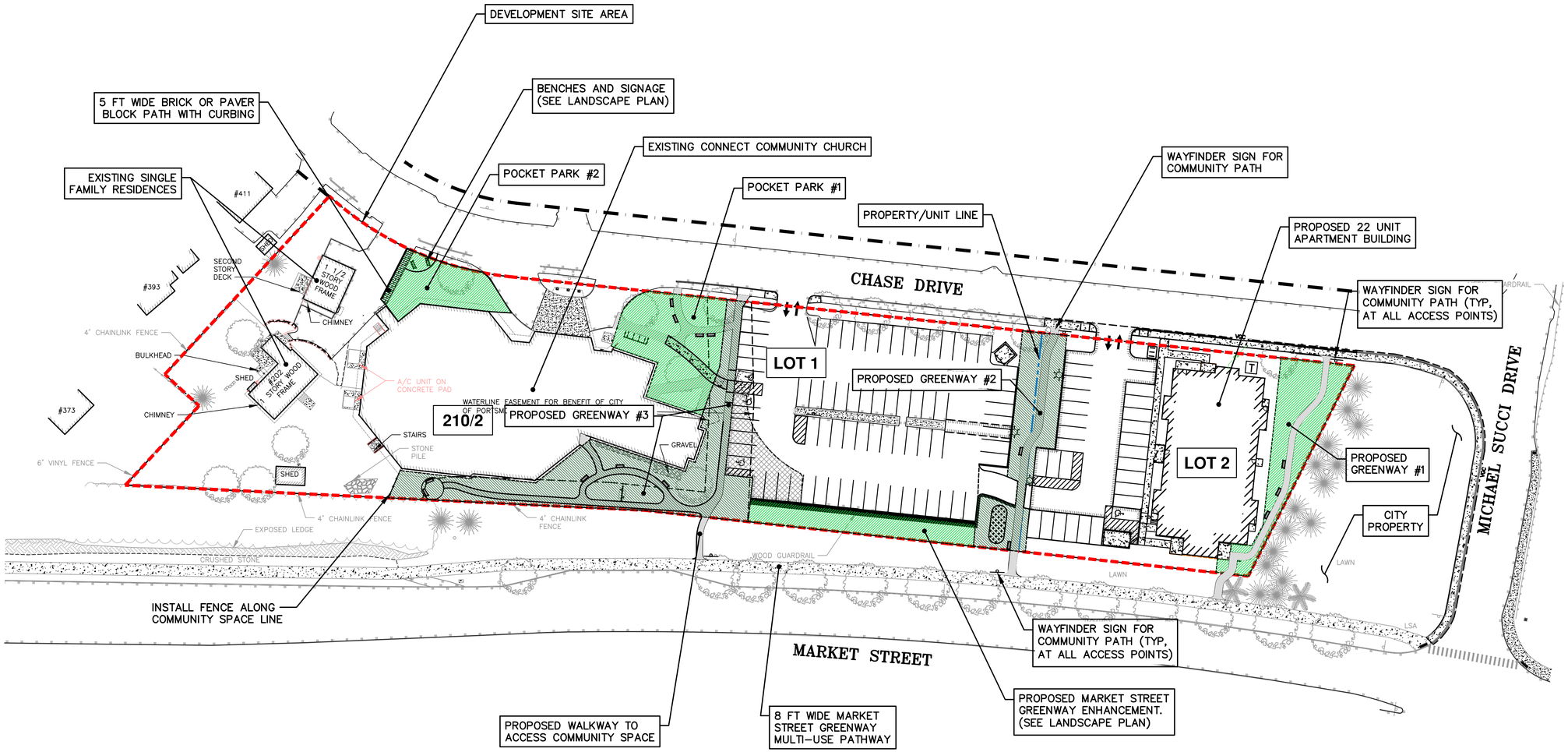

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)

NORTH (NAD83(2011)) — GRID NHSPC

P4950

ENGINEER:

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1	DESIGN REVIEW	CDB	06/26/19
2	TAC	CDB	09/16/19
3	TAC	CDB	10/18/19
4	TAC	CDB	11/18/19
5	TAC	CDB	12/23/19
6	TAC	CDB	01/29/20

DRAWN BY: CDB

APPROVED BY: EDW

DRAWING FILE: 4950-SITE.DWG

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ASSESSOR'S PARCEL 210-2

TITLE:

COMMUNITY SPACE PLAN

SHEET NUMBER:

C.9

LEGEND

- PROPOSED EASEMENT LINE
- ACCESS EASEMENT ONLY
- UTILITY AND ACCESS EASEMENT
- DRAINAGE EASEMENT
- EXISTING WATERLINE EASEMENT

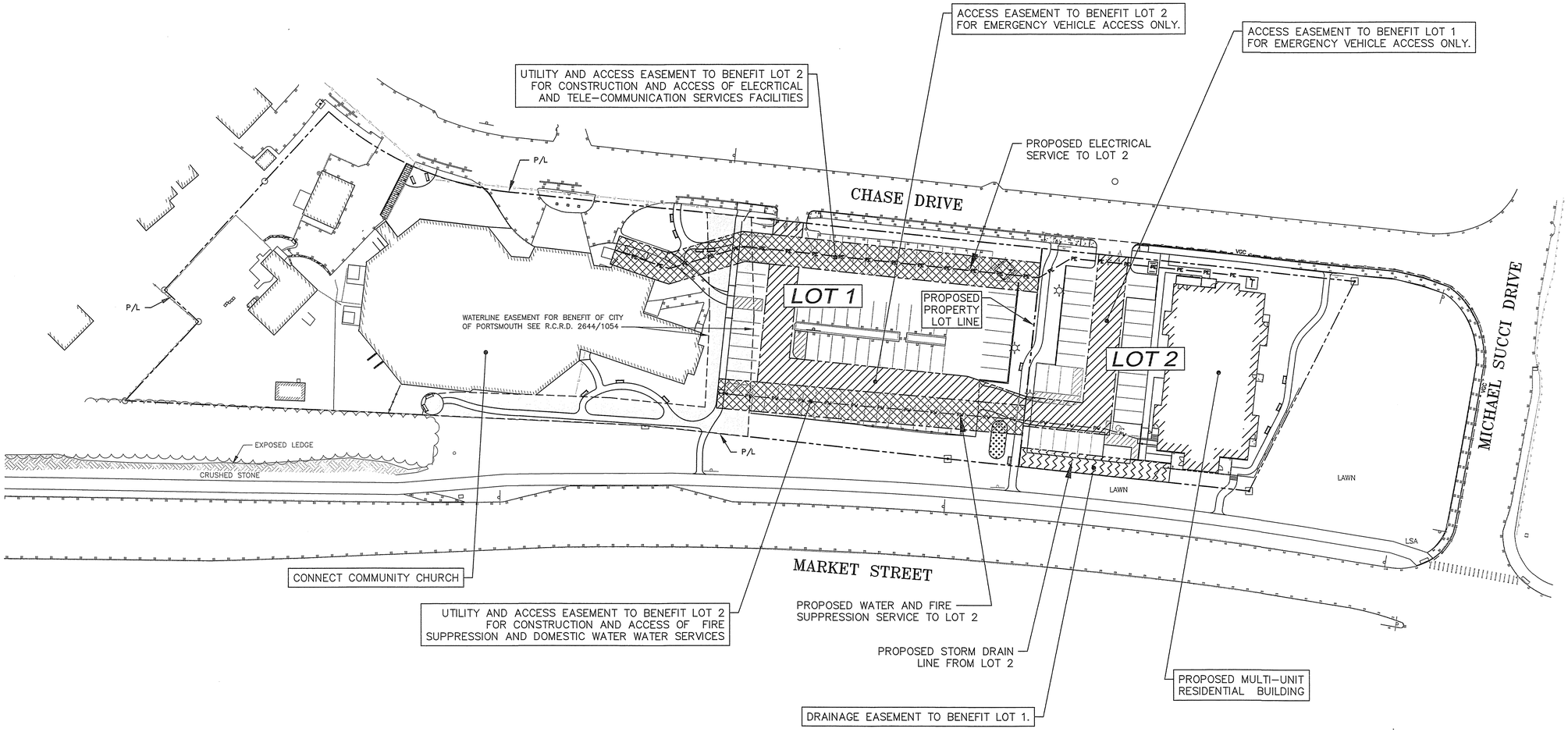
NOTES

1. PROPOSED EASEMENT LINES SHOWN ARE INTENDED TO DEPICT THE REQUIRED CROSS EASEMENTS FOR UTILITY SERVICES AND ACCESS.
2. EASEMENTS SHALL BE RECORDED PRIOR TO CERTIFICATION OF OCCUPANCY OF THE FIRST UNIT IN THE NEW BUILDING, BASED ON THE FINAL UTILITY LOCATIONS.
3. REFERENCE SITE REVIEW APPROVAL PLANS ON FILE WITH THE CITY OF PORTSMOUTH AND SITE PLAN RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

NORTH NAD83(2011)
GRID
NHSPC



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PORTSMOUTH, NH

ASSESSOR'S PARCEL 210-2

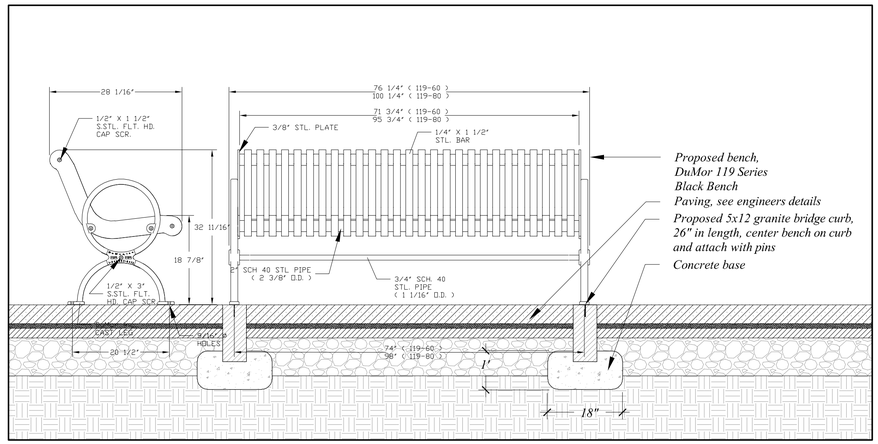
TITLE:

EASEMENT PLAN

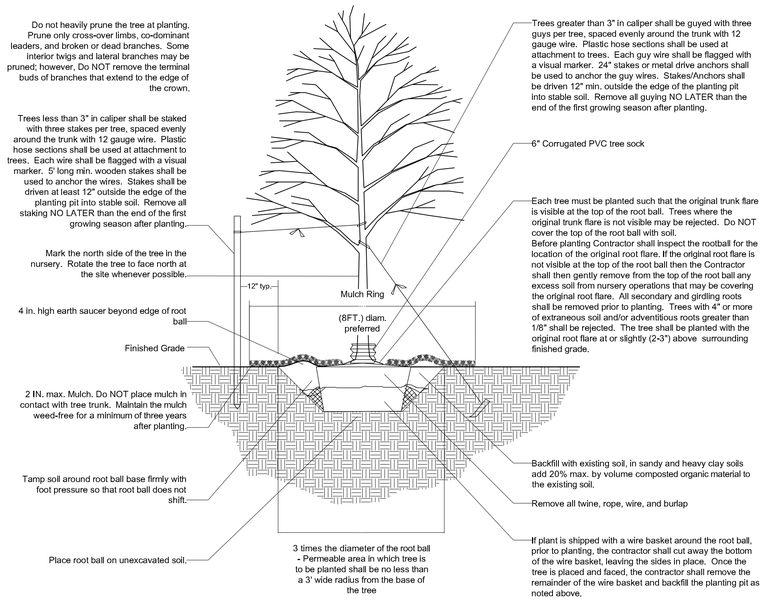
SHEET NUMBER:

C.10

P4950



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



2 Tree Planting Detail
NTS - Not to Scale

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

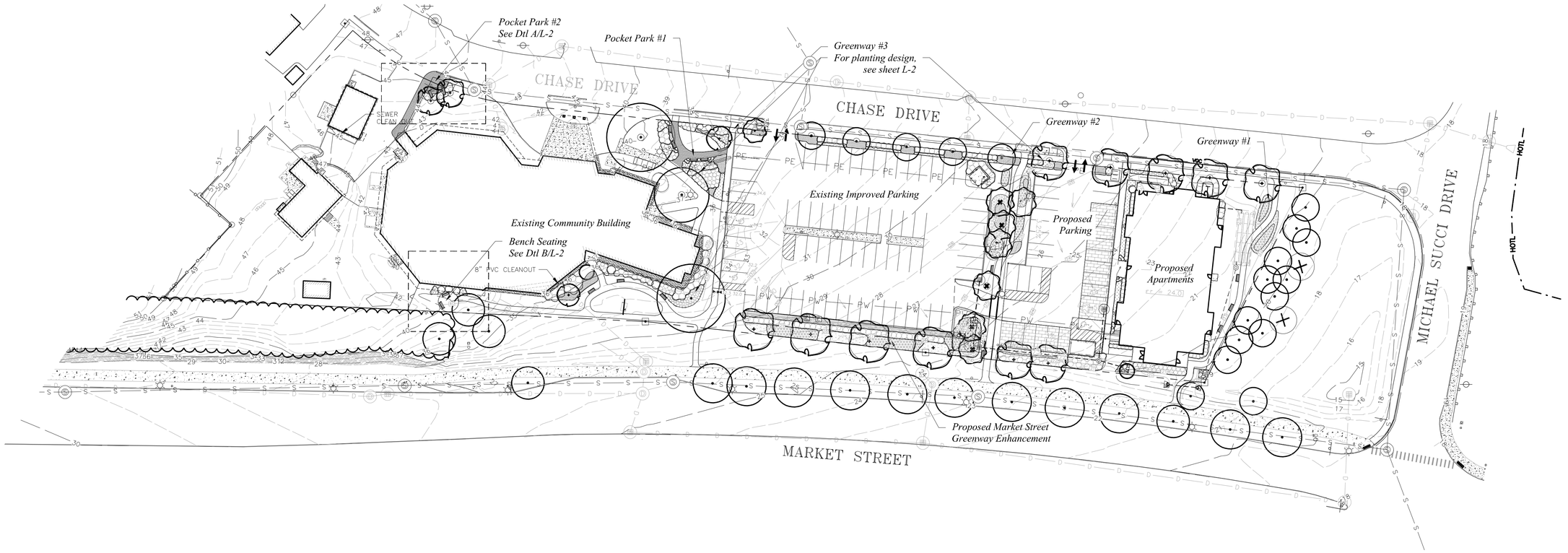
PLANTING HOLES SHALL BE DUG BY HAND - NO MACHINE DIGGING. THE ONLY EXCEPTIONS ARE NEW CONSTRUCTION WHERE NEW PLANTING PIETS, PLANTING BEDS WITH GRANITE CURBING AND PLANTING WITH SILVA CELLS ARE USED.

ALL PLANTINGS SHALL BE BACKFILLED WITH SOIL FROM THE SITE AND AMENDED WITH NO MORE THAN 20% ORGANIC COMPOST. THE ONLY 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.



APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

0 10 20 40 80

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

Bethel Assembly of God

OVERALL SITE LANDSCAPE PLAN & DETAILS

200 Chase Drive, Portsmouth, NH 03801

Drawn By:	LF
Checked By:	RW
Scale:	1" = 40'
Date:	2019-09-19
Revisions:	2019-10-21 2019-11-18 2019-12-16 2019-12-23 2020-01-29

L-1

Sheet 1 of 2

Plant List

TREES

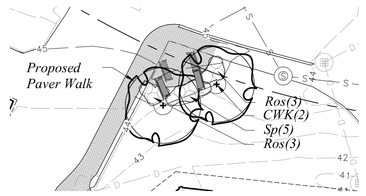
Symbol	Botanical Name	Common Name	Quantity	Size	Min. Size	Comments
Bn	*Betula nigra 'Heritage'*	Heritage River Birch	7	10-12' ht.		BB
Ck	*Cornus kousa*	Kousa Dogwood	1	8-10' ht.		BB multi-stemmed
CWK	*Crataegus 'Winter King'*	Winter King Hawthorn	2	2-2.5" cal.		BB
Mag	*Magnolia 'Butterfly'*	Butterfly magnolia	1	8-10' ht.		BB multi-stemmed
Pc	*Pyrus calleryana 'Chanticleer'*	Chanticleer Flowering Pear	1	2.5-3" cal.		BB matched
PoG	*Picea orientalis 'Gowdy'*	Gowdy Oriental Spruce	2	8-10' ht.		BB matched
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

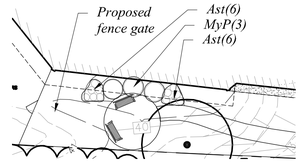
Symbol	Botanical Name	Common Name	Quantity	Size		Comments
Enk	*Enkianthus campanulatus*	Redvein Enkianthus	1	4-5' ht.		BB
HyA	*Hydrangea arborescens 'Incrediball'*	Incrediball Hydrangea	23	5 gal	24"x24"	
HyASB	*Hydrangea macrophylla 'All Summer Beauty'*	All Summer Beauty Hydrangea	5	3 gal.	18"x18"	
Ig	*Ilex glabra 'Shamrock'*	Shamrock Inkberry	59	5 gal	24"x24"	
ImCG	*Ilex meserve 'China Girl'*	China Girl Holly	12	2.5'-3'		BB
JcSG	*Juniperus chinensis 'Seagreen'*	Seagreen Juniper	87	2.5-3' ht.		BB
MyP	*Myrica pensylvanica*	Northern Bayberry	15	3-4' ht.		BB
RhS	*Rhododendron 'Scintillation'*	Scintillation Rhododendron	8	2.5-3' ht.		BB
Rhus	*Rhus aromatica 'Grow-Low'*	Grow Low Sumac	15	3 gal.	18"x18"	
Ros	*Rosa 'Knockout'*	Double Red Knockout Rose	23	2 gal.		
Sp	*Spiraea x bumalda 'Anthony Waterer'*	Anthony Waterer Spirea	46	3 gal.	18"x18"	
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	34	5-6'ht.		BB

PERENNIALS, GROUNDCOVERS, VINES and ANNUALS

Symbol	Botanical Name	Common Name	Quantity	Size	Comments
Ast	*Astilbe 'Fanal'*	Rubyred Astilbe	23	1 gal	
Cal	*Calamagrostis acutifolia 'Karl Foerster'*	Feather Reed Grass	59	1 gal	24" O.C.
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	118	1 gal	18" O.C.
Hem	*Hemerocallis 'Siloam Double Classic'*	Siloam Double Classic Daylily	118	1 gal	18" O.C.
Hem	*Hemerocallis 'Apricot Sparkle'*	Apricot Sparkle Daylily	118	1 gal	18" O.C.
Heu	*Heuchera 'Splendens'*	Coral Bells	25	2qt	
Mol	*Molinia caerulea 'Variegata'*	Variegated Moor Grass	130	1 gal	24" O.C.
Nep	*Nepeta faassenii x 'Walker's Low'*	Walker's Low Catmint	11	1 gal	
Pan1	*Panicum virgatum 'Cheyenne Sky'*	Cheyenne Sky Switch Grass	280	1 gal	18" O.C.
Pan2	*Panicum virgatum 'Heavy Metal*	Heavy Metal Switch Grass	182	1 gal	36" O.C.
VmB	*Vinca minor 'Bowles'*	Bowles Periwinkle	2055	2.5" Pots	8" O.C.



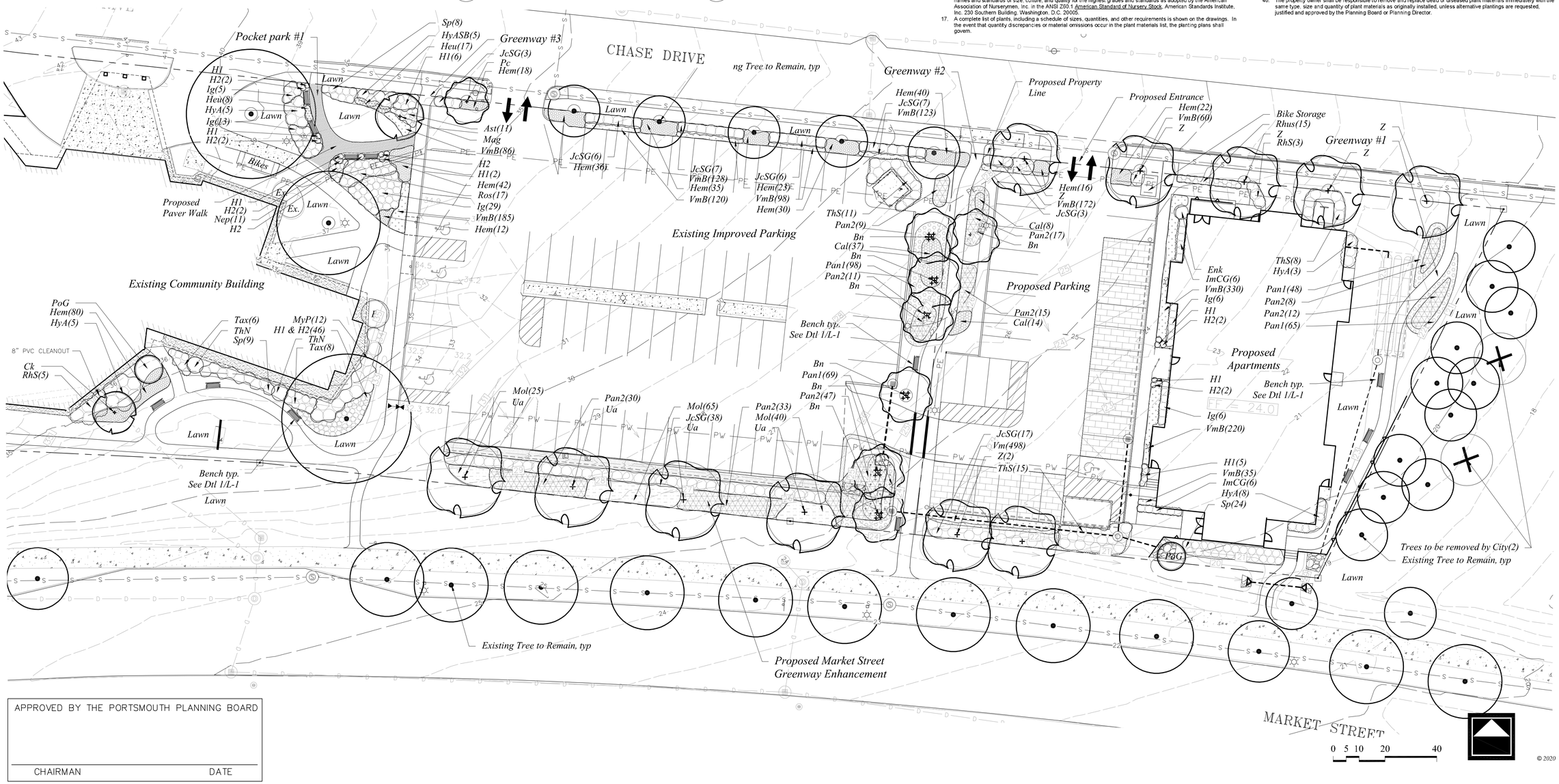
A ***Plan Enlargement - Pocket Park #1***



B ***Plan Enlargement - Greenway #1***

LANDSCAPE NOTES:

1. Design is based on drawings by Altus Engineering, Inc. dated 12-23-2019 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. All landscaping shall be provided with either of the following
    a. An underground sprinkling system
    b. An outside hose attachment within 150 feet
23. If an automatic irrigation system is installed, all irrigation valve boxes shall be located within planting bed areas.
24. 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.
25. 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.
26. 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.
27. 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 ½" 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.
28. Drip strip shall extend to 6" beyond roof overhang and shall be edged with 3/16" thick metal edger.
29. 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.
30. 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.
31. The property owner and all future property owners shall be responsible for the maintenance, repair, and replacement of all required screening and landscape materials.
32. 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.
33. 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.
34. Snow shall be stored a minimum of 5' from shrubs and trunks of trees.
35. Landscape Architect is not responsible for the means and methods of the contractor.
36. This Site Plan shall be recorded in the Rockingham County Registry of Deeds.
37. 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.
38. The property owner and all future property owners shall be responsible for the maintenance, repair and replacement of all required screening and landscape materials.
39. 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.
40. 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.



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

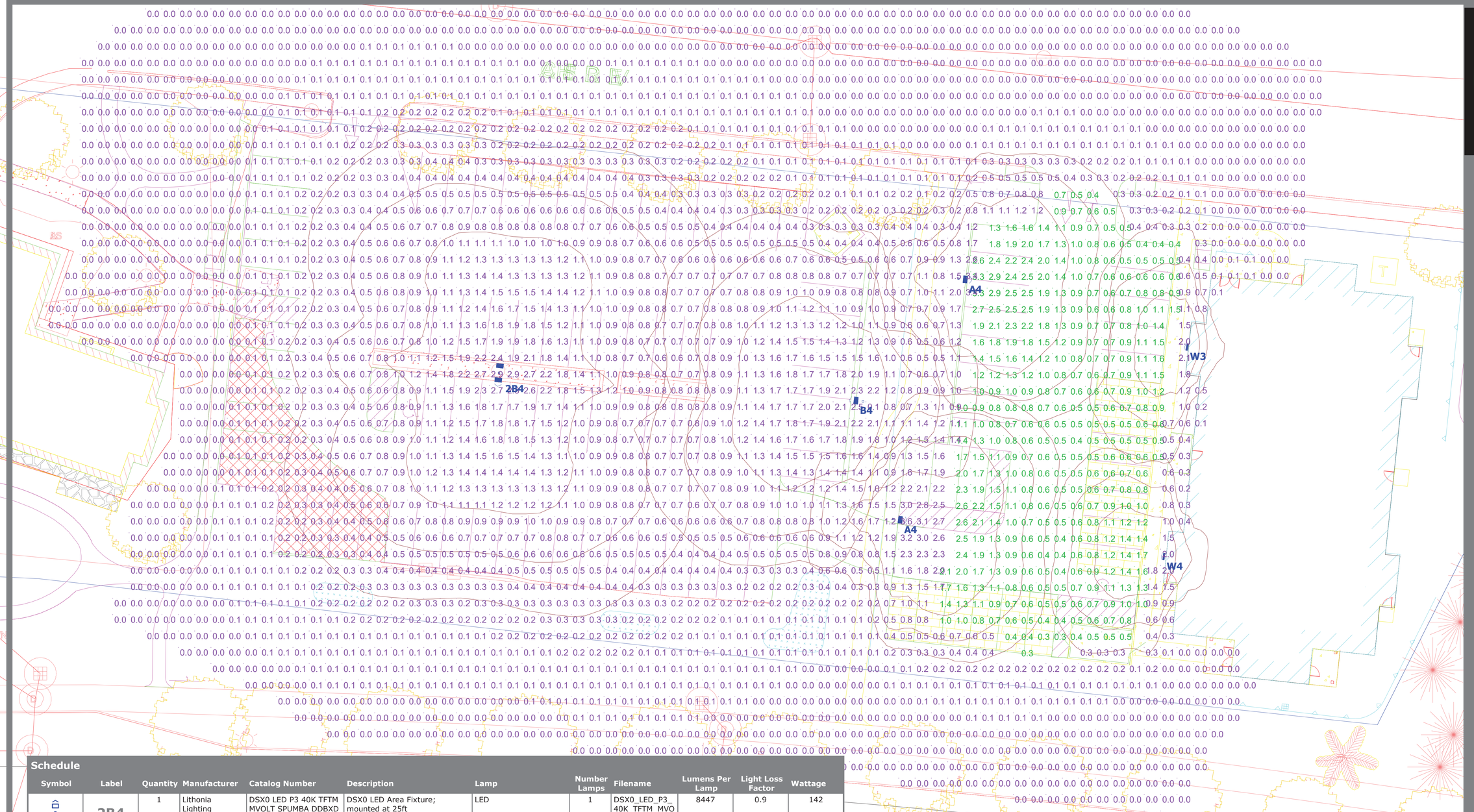
LANDSCAPE PLAN

200 Chase Drive, Portsmouth, NH 03801

Drawn By:	LF
Checked By:	RW
Scale:	1" = 20'
Date:	2019-09-19
Revisions:	2019-10-21 2019-11-18 2019-12-06 2019-12-16 2019-12-23 2020-01-29

L-2

Sheet 2 of 2



Schedule

Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumens Per Lamp	Light Loss Factor	Wattage
	2B4	1	Lithonia Lighting	DSX0 LED P3 40K TFTM MVOLT SPUMBA DDBXD	DSX0 LED Area Fixture; mounted at 25ft	LED	1	DSX0_LED_P3_40K_TFTM_MVOLT.ies	8447	0.9	142
	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	1	Lithonia Lighting	DSXW1 LED 10C 700 40K T3M MVOLT HS DDBXD	DSXW1 LED Wall pack; mounted at 12ft	LED	1	DSXW1_LED_10C_700_40K_T3M_MVOLT_HS.ies	2209	0.9	26.2
	W4	1	Lithonia Lighting	DSXW1 LED 10C 700 40K TFTM MVOLT HS DDBXD	DSXW1 LED Wall pack; mounted at 12ft	LED	1	DSXW1_LED_10C_700_40K_TFTM_MVOLT_HS.ies	2248	0.9	26.2

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
200 Chase Dr Parking Lot	+	1.0 fc	3.3 fc	0.3 fc	11.0:1	3.3:1
Outside of Small Parking Lot	+	0.4 fc	3.6 fc	0.0 fc	N/A	N/A

VISUAL

200 CHASE DR PORTSMOUTH, NH
Site Lighting Layout

Designer
Heidi G. Connors
Visible Light, Inc.
24 Stickney Terrace
Suite 6
Hampton, NH 03842

Date
10/15/2019

Scale
1"=30'

Drawing No.

Summary

Plan View

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. from mold. May be used with plantings.	Must be dry and free
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/in in (min) Standard Strength 30 lb/in 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.

NOTE: SLOW OR CONTROLLED RELEASE FERTILIZE IS REQUIRED WITHIN THE 250 FOOT SHORELAND PROTECTION AREA. SEE PLANS FOR LOCATIONS.

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

1.1. 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.
1.2. Seed mixture shall consist of
    a. 1/3 Kentucky blue,
    b. 1/3 perennial rye, and
    c. 1/3 fine fescue.
1.1. Turf type tall fescue is unacceptable.

2. 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.

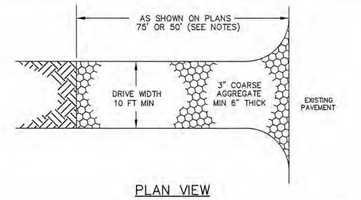
Long Term Inspection & Maintenance Schedule

	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 (normally 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				

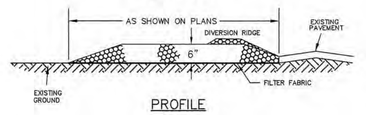
NOTE:
ALL FACILITIES SHOULD BE INSPECTED ON AN ANNUAL BASIS AT A MINIMUM. IN ADDITION, ALL FACILITIES SHOULD BE INSPECTED AFTER A SIGNIFICANT PRECIPITATION EVENT TO ENSURE THE FACILITY IS DRAINING APPROPRIATELY AND TO IDENTIFY ANY DAMAGE THAT OCCURRED AS A RESULT OF THE INCREASED RUNOFF. FOR THE PURPOSE 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

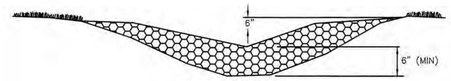


PROFILE

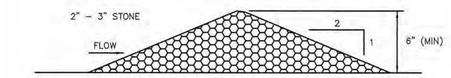
CONSTRUCTION SPECIFICATIONS

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.
9. 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.

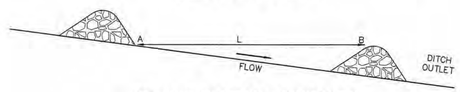
STABILIZED CONSTRUCTION EXIT NOT TO SCALE



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

P4950

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(603) 433–2335 www.ALTUS–ENG.com

CORY D. BELDEN No. 14239 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
11/18/19

ISSUED FOR:
PLANNING BOARD APPROVAL

ISSUE DATE:
NOVEMBER 18, 2019

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	CDB	06/26/19
1	TAC SUBMISSION	CDB	09/16/19
2	TAC COMMENTS	CDB	11/18/19

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

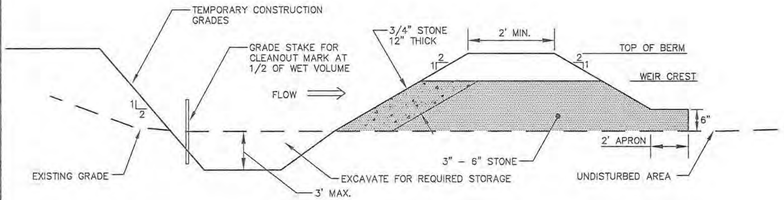
CHASE DRIVE GATEWAY DEVELOPMENT SITE

200 CHASE DRIVE
PORTSMOUTH, NH

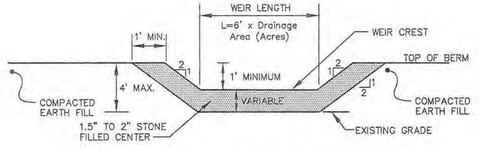
ASSESSOR'S PARCEL 210–2

TITLE:
EROSION CONTROL DETAILS

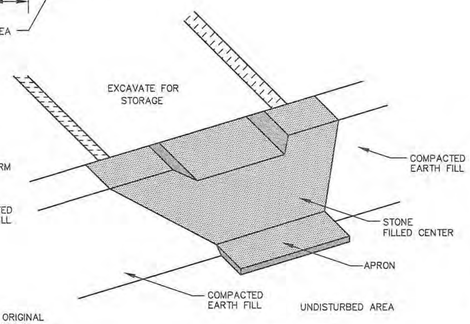
SHEET NUMBER:
D.1



CROSS SECTION



PROFILE

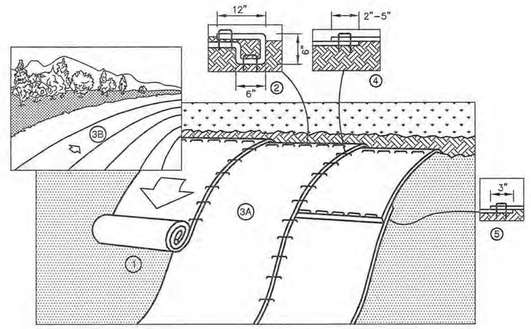


ISOMETRIC VIEW

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

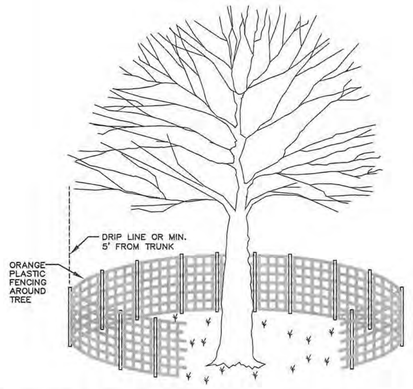
1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET 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

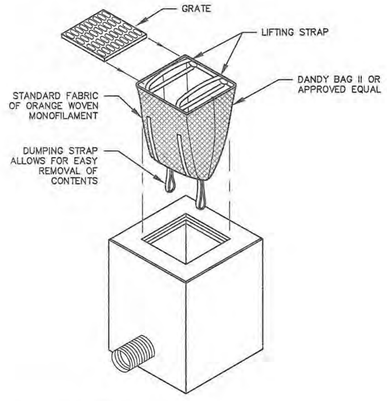
NOTE:
IF SOIL BECOMES COMPACTED OVER THE ROOT ZONE OF ANY TREE, THE GROUND SHOULD BE AERATED BY PUNCHING SMALL HOLES IN IT WITH SUITABLE AERATING EQUIPMENT.

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:

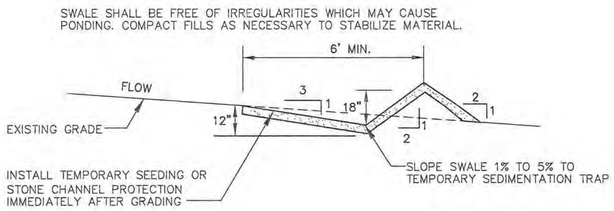
INSTALLATION: REMOVE THE GRATE FROM CATCH BASIN. IF USING OPTIONAL OIL ABSORBENTS; PLACE ABSORBENT PILLOW IN UNIT. STAND GRATE ON END. MOVE THE TOP LIFTING STRAPS OUT OF THE WAY AND PLACE THE GRATE INTO CATCH BASIN INSERT SO THE GRATE IS BELOW THE TOP STRAPS AND ABOVE THE LOWER STRAPS. HOLDING THE LIFTING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

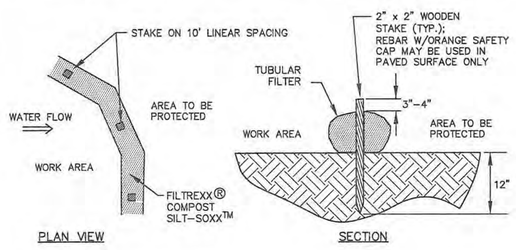
UNACCEPTABLE INLET PROTECTION METHOD:

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

STORM DRAIN INLET PROTECTION NOT TO SCALE

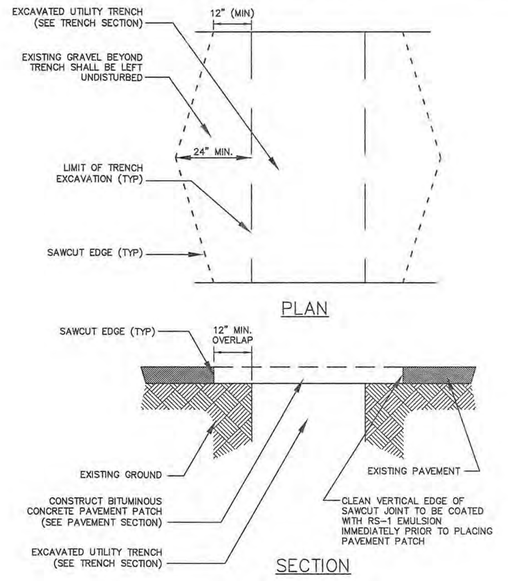


TEMPORARY DIVERSION SWALE NOT TO SCALE



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:
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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

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

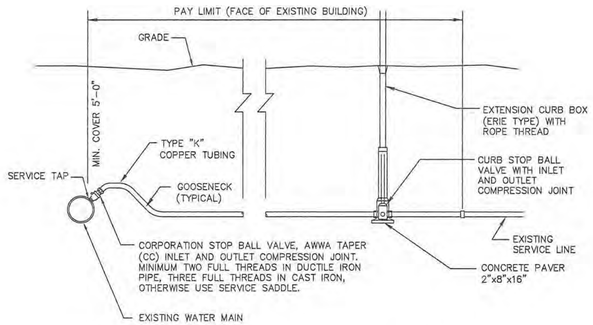
200 CHASE DRIVE
PORTSMOUTH, NH

ASSESSOR'S PARCEL 210-2

TITLE:
CONSTRUCTION DETAILS

SHEET NUMBER:
D.2

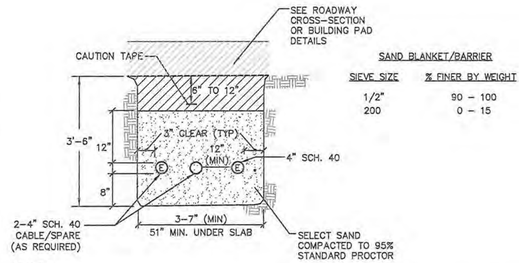
P4950



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



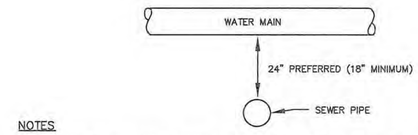
SAND BLANKET/BARRIER

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.

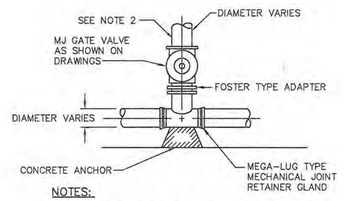
ELECTRIC / COMMUNICATION TRENCH NOT TO SCALE



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.

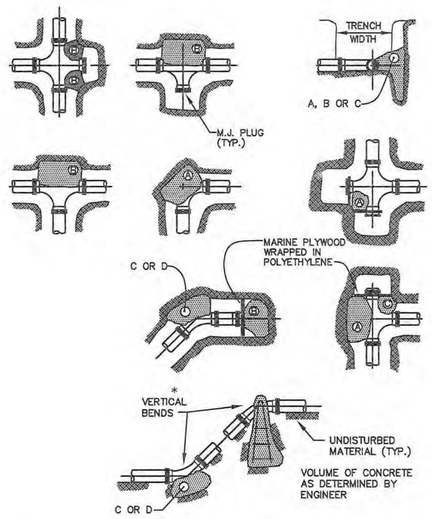
WATER MAIN / SEWER CROSSING NOT TO SCALE



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

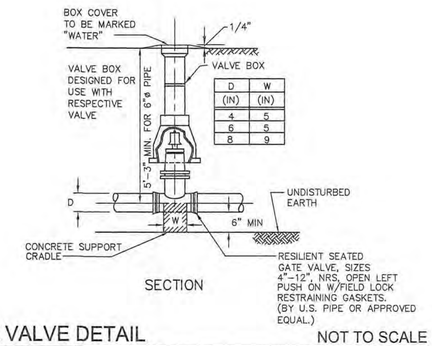


TEST PRESSURE = 150 psi	SQUARE FEET OF CONCRETE THRUST BLOCKING BEARING ON UNDISTURBED MATERIAL					
	REACTION TYPE	PIPE SIZE				
		4"	6"	8"	10"	12"
	A 90°	0.89	2.19	3.82	11.14	17.24
	B 180°	0.65	1.55	2.78	8.38	12.00
	C 45°	0.48	1.19	2.12	6.02	9.32
	D 22-1/2°	0.25	0.60	1.06	3.08	4.74
	E 11-1/4°	0.13	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 (8 MIL) SHALL BE PLACED AROUND FITTINGS PRIOR TO CONCRETE PLACEMENT.

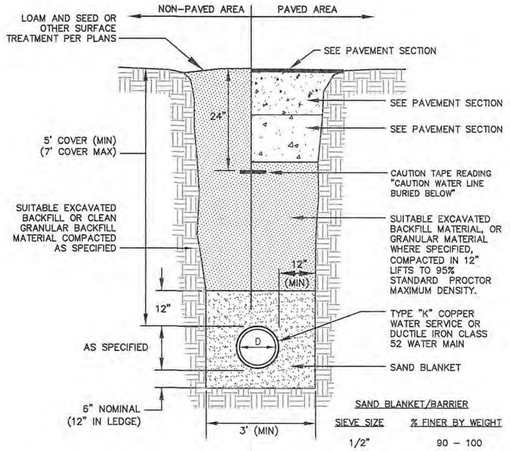
THRUST BLOCKING DETAIL NOT TO SCALE



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

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

ENGINEER:
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(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

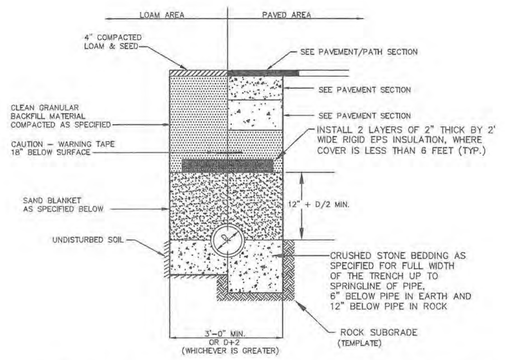
200 CHASE DRIVE
PORTSMOUTH, NH

ASSESSOR'S PARCEL 210-2

TITLE:
CONSTRUCTION DETAILS

SHEET NUMBER:
D.3

P4950



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.

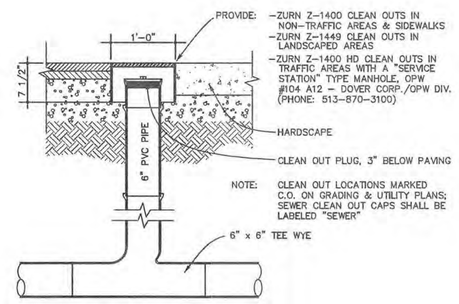
SAND BLANKET		CRUSHED STONE BEDDING *	
SIEVE SIZE	% FINER BY WEIGHT	SIEVE SIZE	% PASSING BY WEIGHT
1/2"	90 – 100	1"	100
200	0 – 15	3/4"	90 – 100
		3/8"	20 – 55
		# 4	0 – 10
		# 8	0 – 5

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

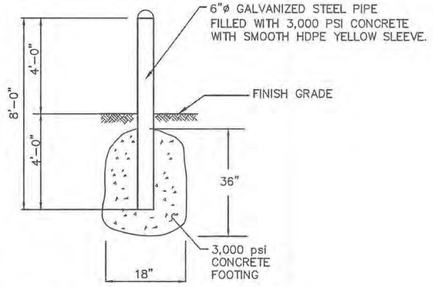
SEWER TRENCH SECTION NOT TO SCALE

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.



CLEANOUT DETAIL NOT TO SCALE



BOLLARD NOT TO SCALE

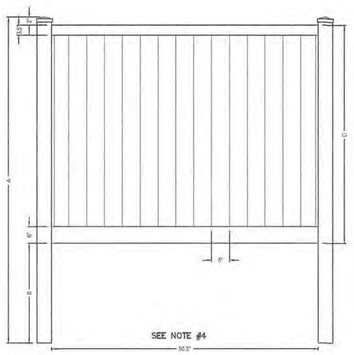
POST CAP STYLE
NEW ENGLAND - V55NE

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

FENCE HEIGHT
6'-0", see height schedule below

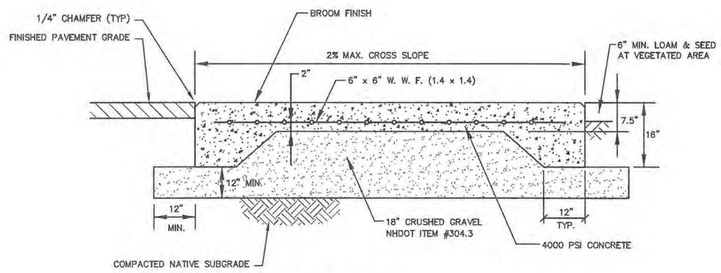
A		B		C		D	
H(FT)	INCHES	H(FT)	INCHES	H(FT)	INCHES	H(FT)	INCHES
3	60	3	22	3	8.5	3	96
4	84	4	34	4	20.5	4	48
5	96	5	34	5	32.5	5	60
6	108	6	34	6	44.5	6	72
8	144	8	46	8	68.5	8	96
10	168	10	46	10	92.5	10	120

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.

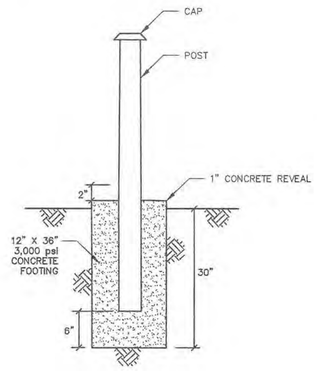


FRONT ELEVATION

DUMPSTER/SOLID WASTE STORAGE SCREENING DETAIL NOT TO SCALE



DUMPSTER SLAB DETAILS NOT TO SCALE



FENCE POST DETAIL NOT TO SCALE

P4950

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. 14236 LICENSED PROFESSIONAL ENGINEER
10/21/19

ISSUED FOR: TAC

ISSUE DATE: OCTOBER 18, 2019

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	CDB	06/26/19
1	TAC SUBMISSION	CDB	09/16/19
2	TAC SUBMISSION	CDB	10/18/19

DRAWN BY: CDB
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DRAWING FILE: 4950DETAILS.DWG

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PORTSMOUTH, NH 03801

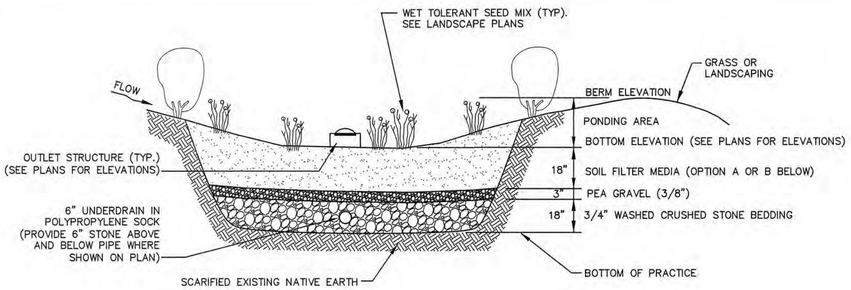
CHASE DRIVE GATEWAY DEVELOPMENT SITE

200 CHASE DRIVE
PORTSMOUTH, NH

ASSESSOR'S PARCEL 210–2

TITLE: CONSTRUCTION DETAILS

SHEET NUMBER: D.4



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

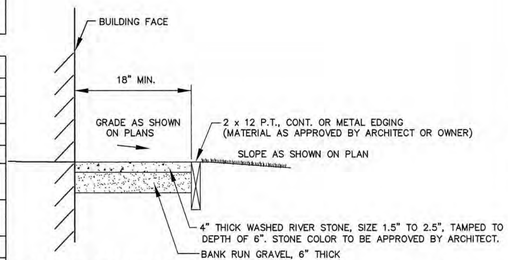
CRUSHED STONE BEDDING *

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

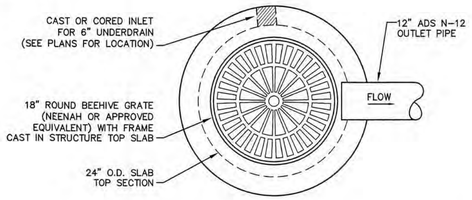
FILTER MEDIA MIXTURES

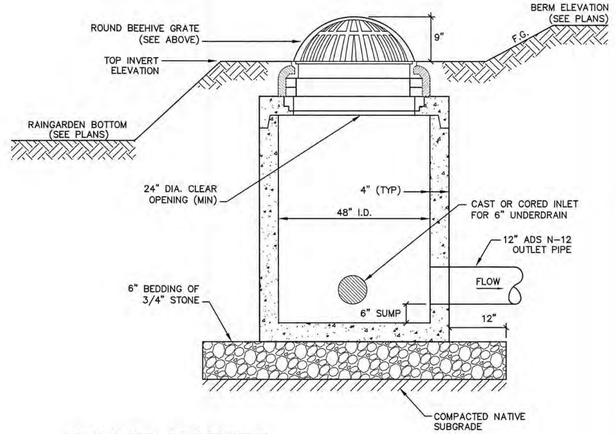
Component Material	Percent of Mixture by Volume	Gradation of material	
		Sieve No.	Percent by Weight Passing Standard Sieve
Filter Media Option A			
ASTM C-33 concrete sand	50 to 55		
Loamy sand topsoil, with fines as indicated	20 to 30	200	15 to 25
Moderately fine shredded bark or wood fiber mulch, 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



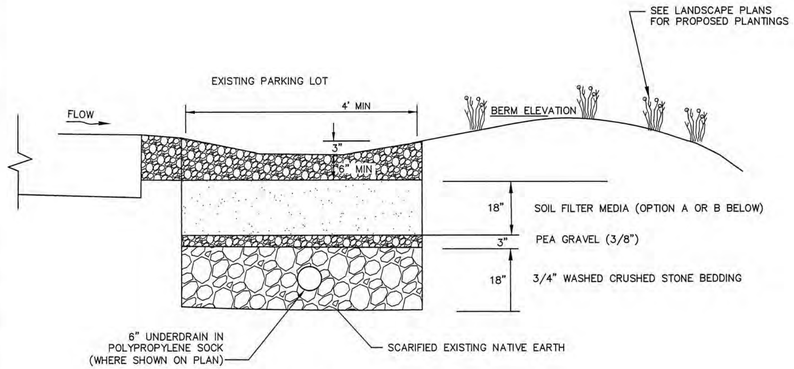


CONSTRUCTION SPECIFICATIONS

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

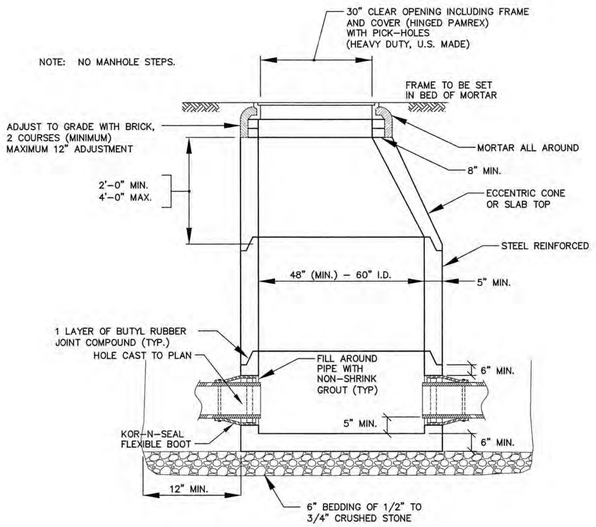


NOTES:

1. SEE RAINGARDEN DETAIL FOR FILTER MEDIA OPTIONS AND AND CRUSHED STONE REQUIREMENT.

DRIP EDGE FILTER DETAIL

NOT TO SCALE



DRAIN MANHOLE 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
12/23/19

ISSUED FOR:
PLANNING BOARD APPROVAL

ISSUE DATE:
DECEMBER 23, 2019

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	CDB	06/26/19
1	TAC SUBMISSION	CDB	09/16/19
2	TAC COMMENTS	CDB	11/18/19
3	TAC COMMENTS	CDB	12/23/19

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

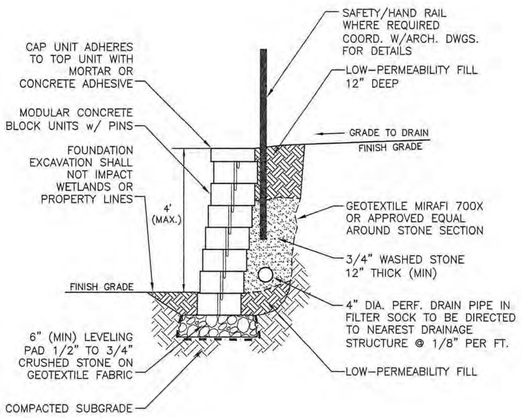
APPLICANT:
200 CHASE DRIVE, LLC
36 MAPLEWOOD AVE.
PORTSMOUTH, NH 03801

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

TITLE:
CONSTRUCTION DETAILS

SHEET NUMBER:
D.5

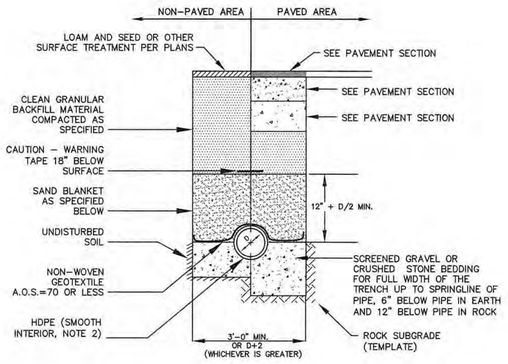
P4950



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 DISCRETION 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



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*

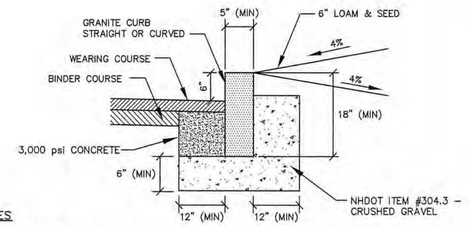
SIEVE SIZE	% PASSING BY WEIGHT
1"	100
3/4"	90 - 100
3/8"	20 - 55
# 4	0 - 10
# 8	0 - 5

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

STORM DRAIN TRENCH NOT TO SCALE

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

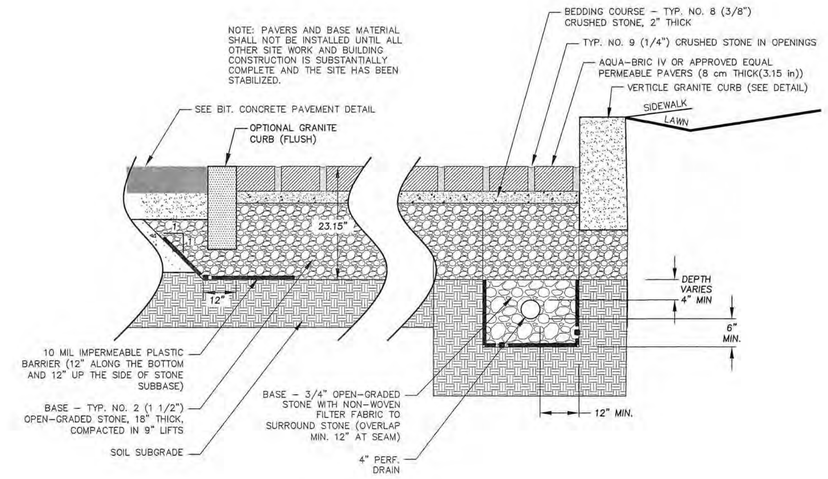


NOTES

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.

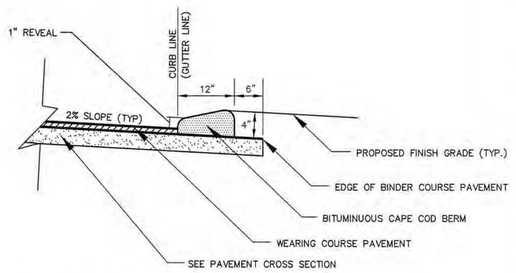
RADIUS	MAX. LENGTH
21'	3'
22'-28'	4'
29'-35'	5'
36'-42'	6'
43'-49'	7'
50'-56'	8'
57'-60'	9'
OVER 60'	10'

VERTICAL GRANITE CURB NOT TO SCALE

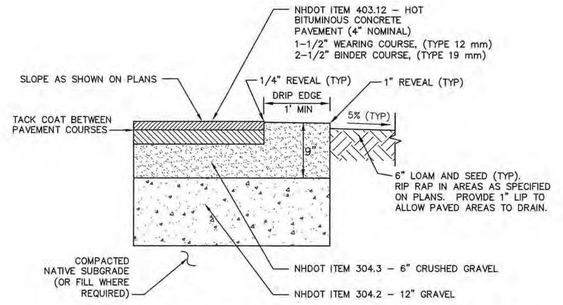


PERMEABLE PAVERS DETAIL

NOT TO SCALE

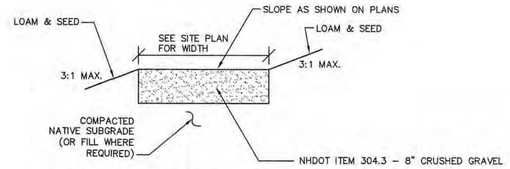


CAPE COD BERM NOT TO SCALE



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

PAVEMENT CROSS SECTION NOT TO SCALE



GRAVEL PATH CROSS SECTION 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
11/17/19

ISSUED FOR:
PLANNING BOARD APPROVAL

ISSUE DATE:
NOVEMBER 18, 2019

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	CDB	06/26/19
1	TAC SUBMISSION	CDB	09/16/19
2	TAC SUBMISSION	CDB	10/18/19
3	TAC COMMENTS	CDB	11/18/19

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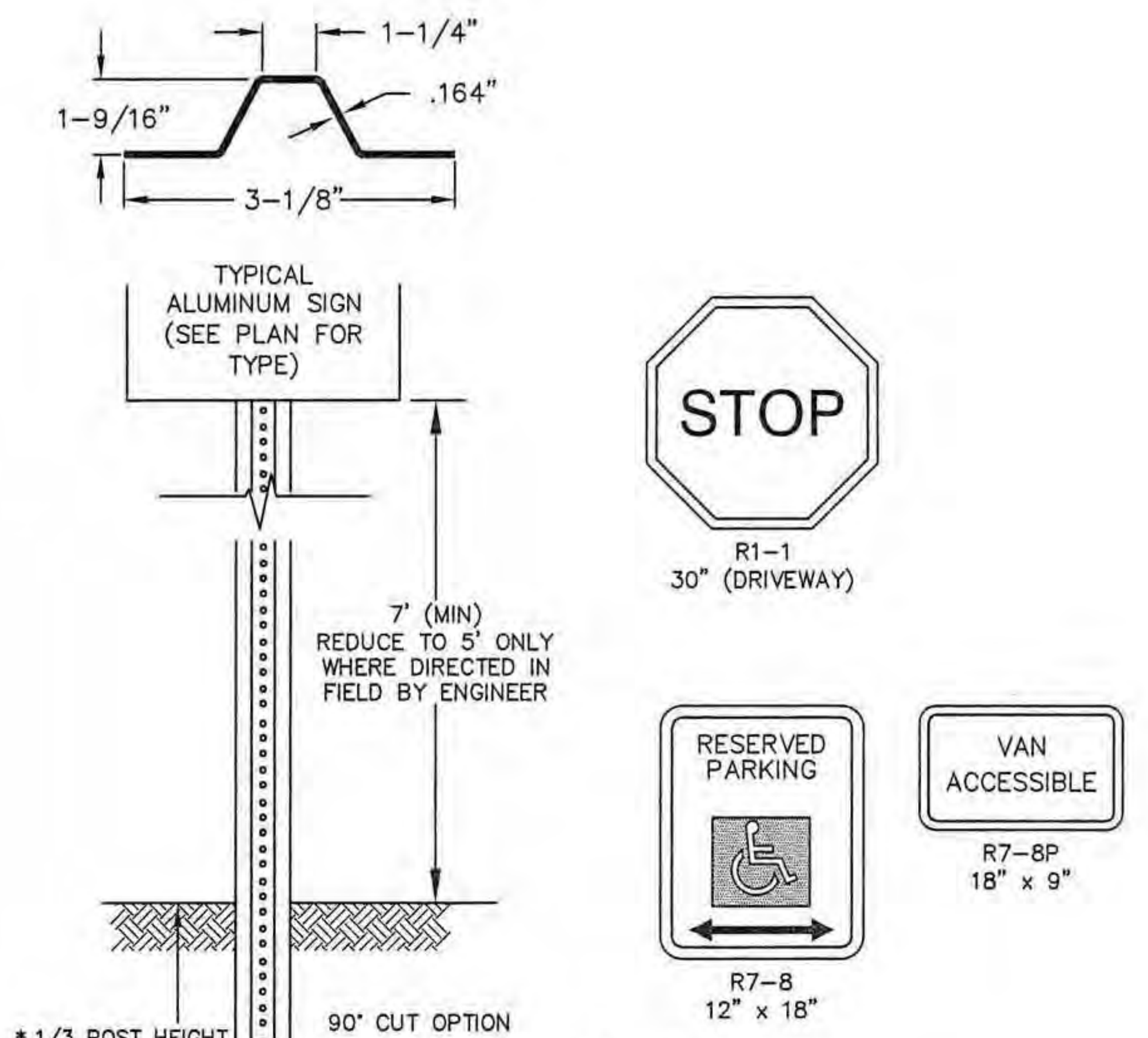
PROJECT:
CHASE DRIVE GATEWAY DEVELOPMENT SITE
200 CHASE DRIVE
PORTSMOUTH, NH
ASSESSOR'S PARCEL 210-2

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.

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

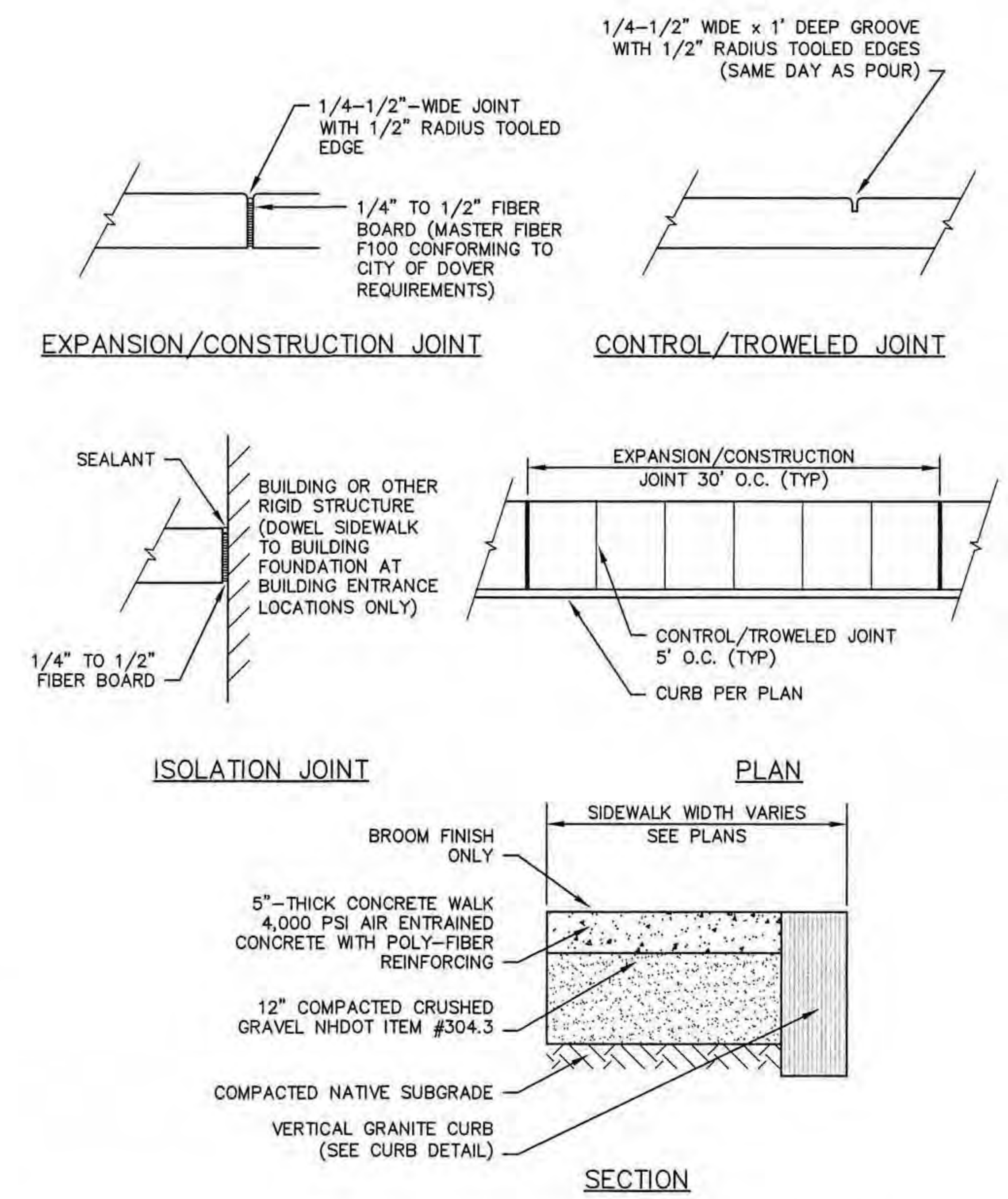
LENGTH: AS REQUIRED

WEIGHT PER LINEAR FOOT: 2.50 LBS (MIN.)

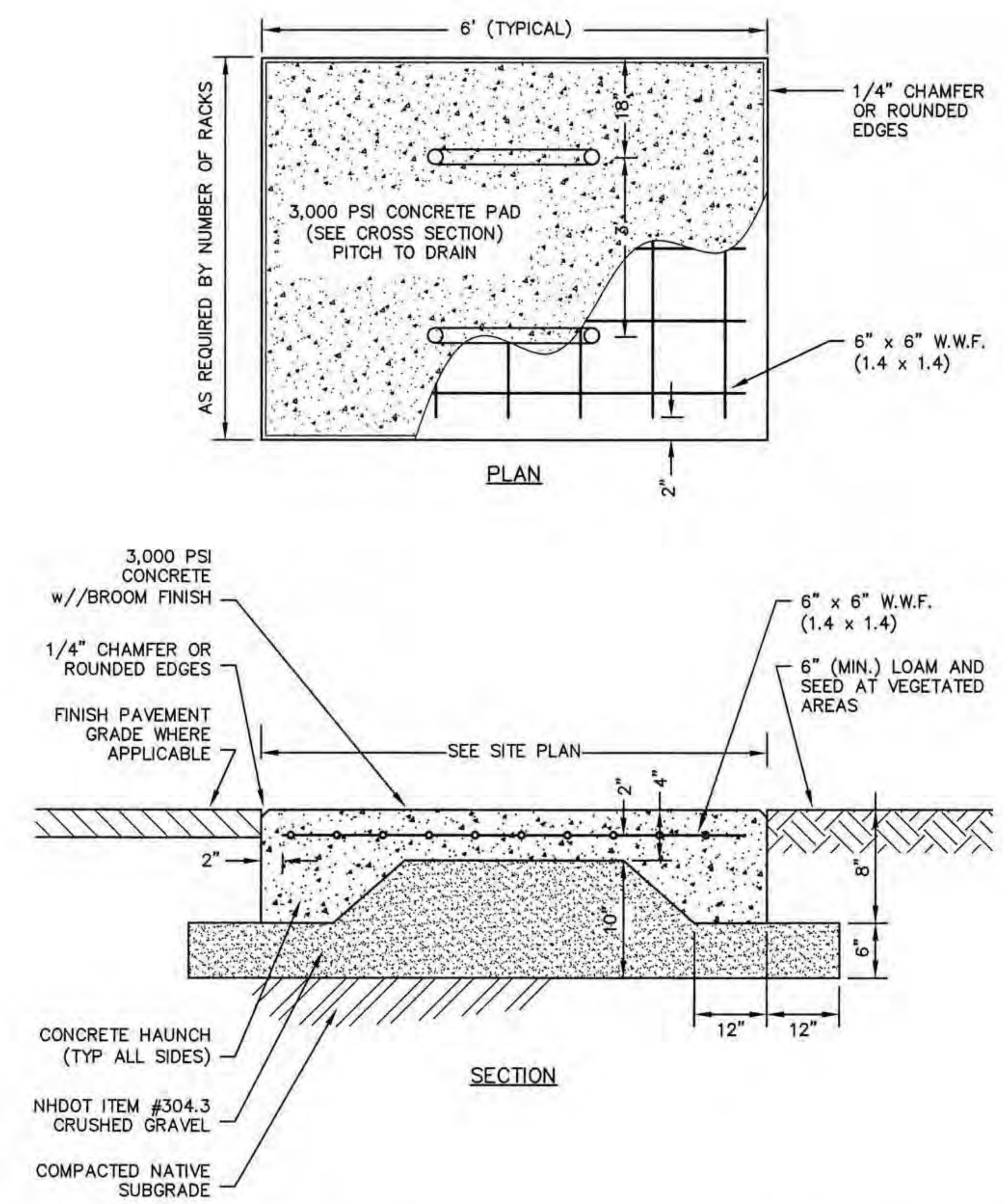
HOLES: 3/8" DIAMETER, 1" C-C FULL LENGTH

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

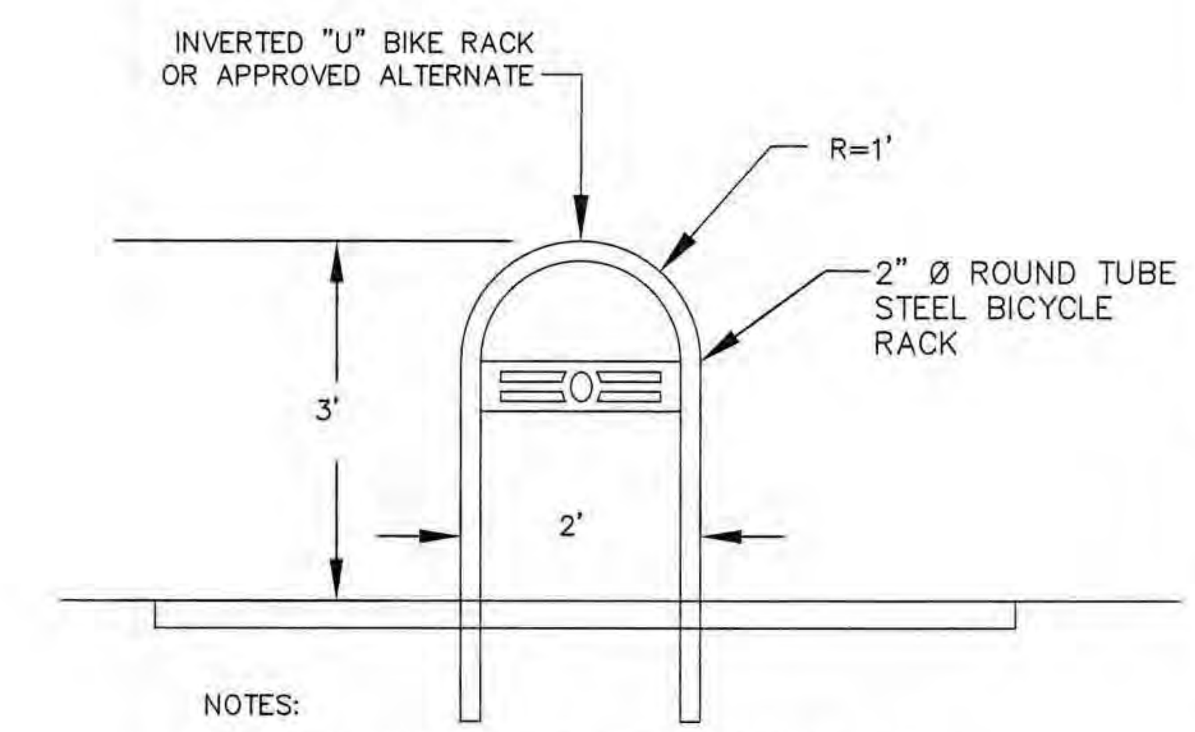
SIGN DETAILS NOT TO SCALE



CONCRETE SIDEWALK DETAIL NOT TO SCALE



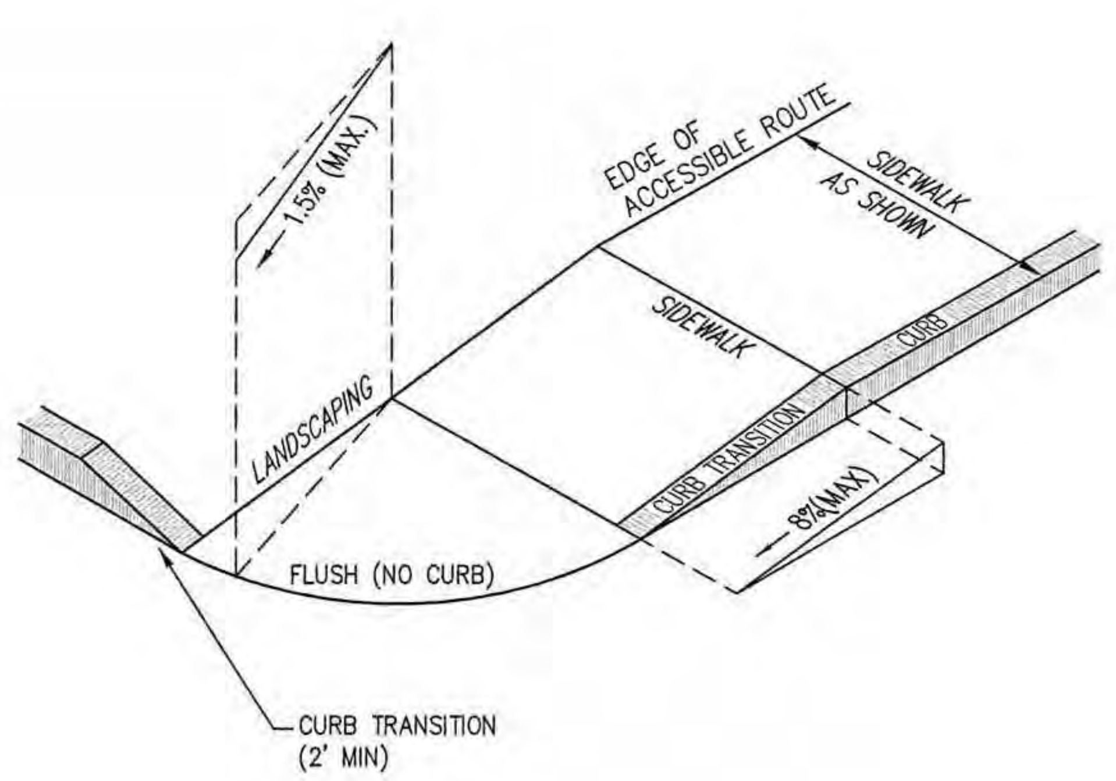
BICYCLE RACK PAD NOT TO SCALE

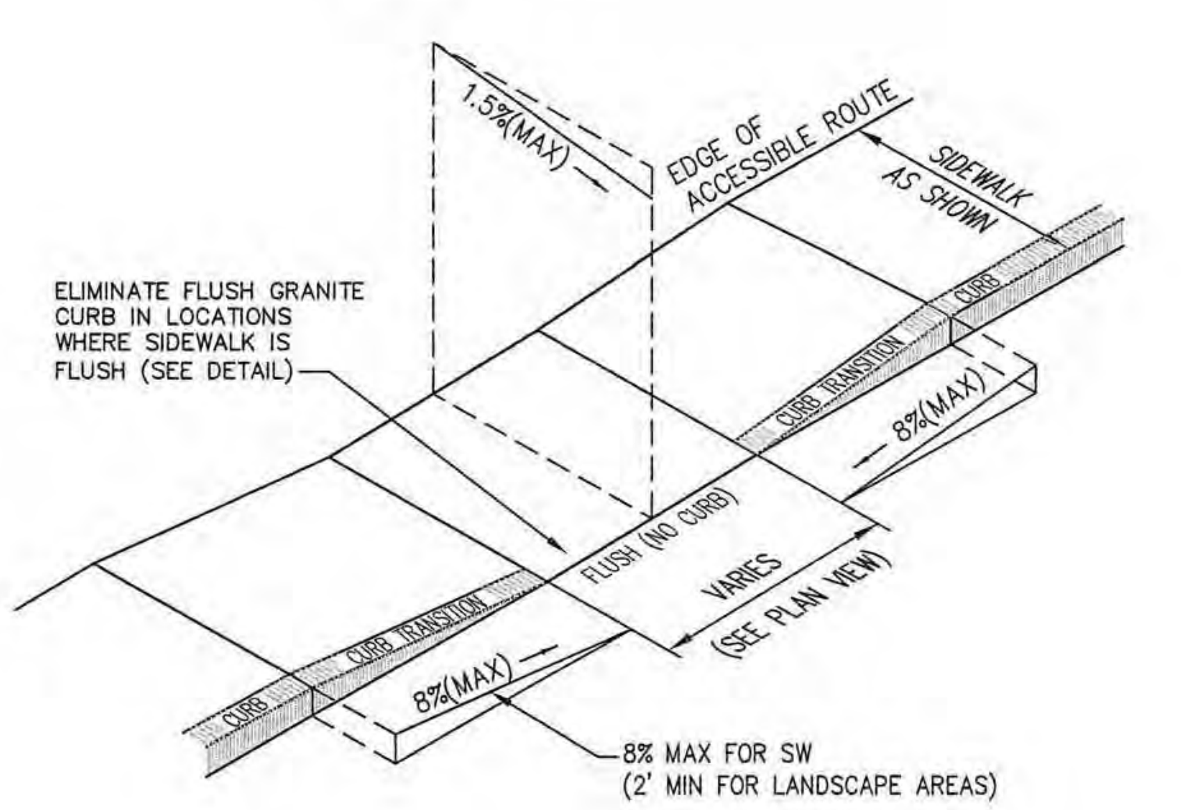


NOTES:

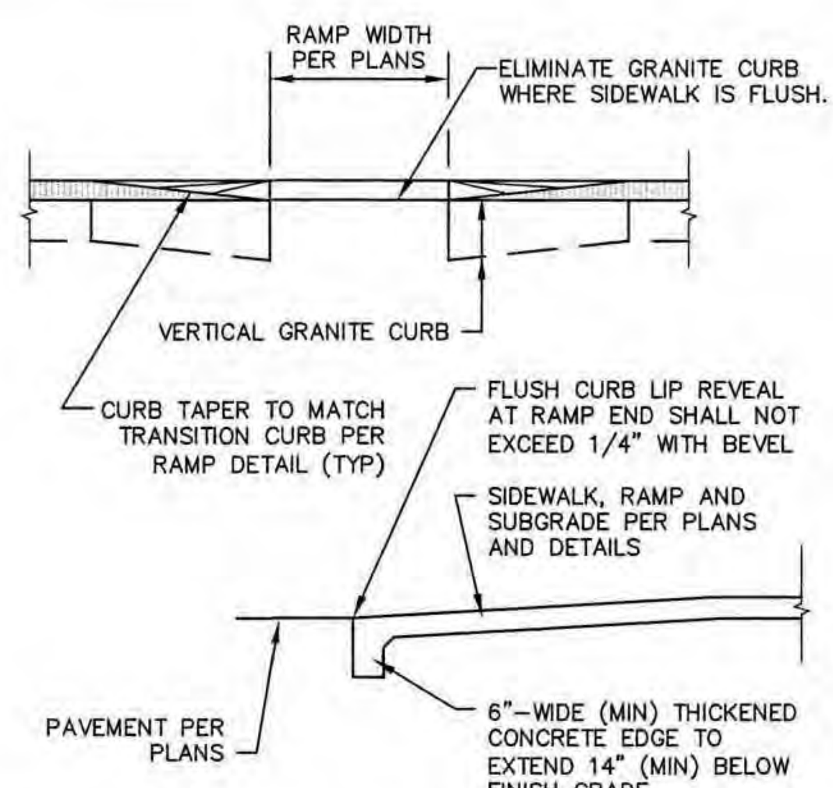
1. INSTALL BICYCLE RACK IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. DETAIL DEPICTS IN-GROUND MOUNT. USE SURFACE MOUNT BICYCLE RACK FOR INSTALLATIONS ON CONCRETE PADS.
3. SEE SITE PLAN FOR CONCRETE PAD LAYOUT & REQUIRED NUMBER OF STALLS. PROVIDE RACKS AS SHOWN ON SITE PLAN. THERE SHALL BE A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

BICYCLE RACK DETAIL NOT TO SCALE





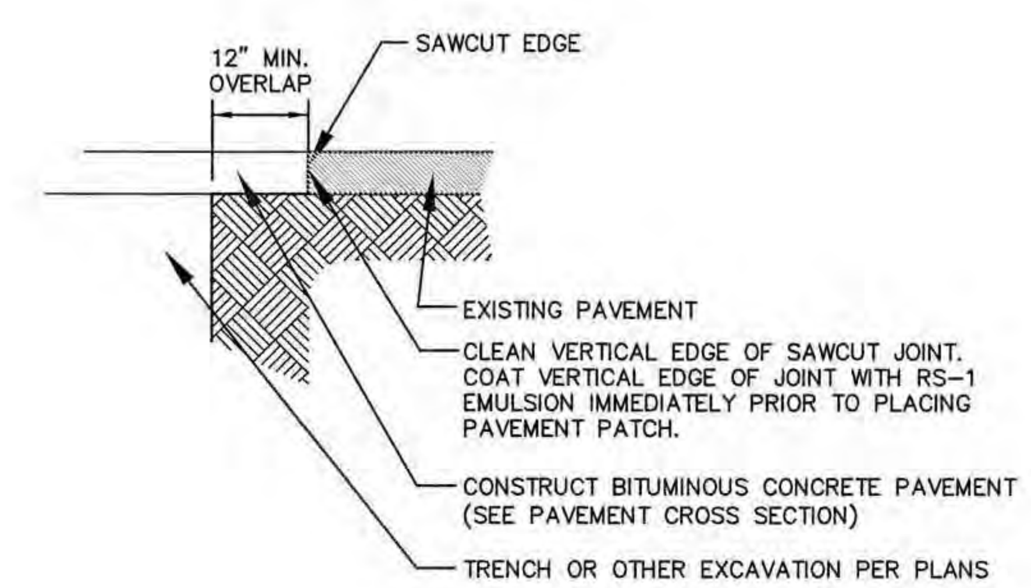
CURB RAMP NOT TO SCALE



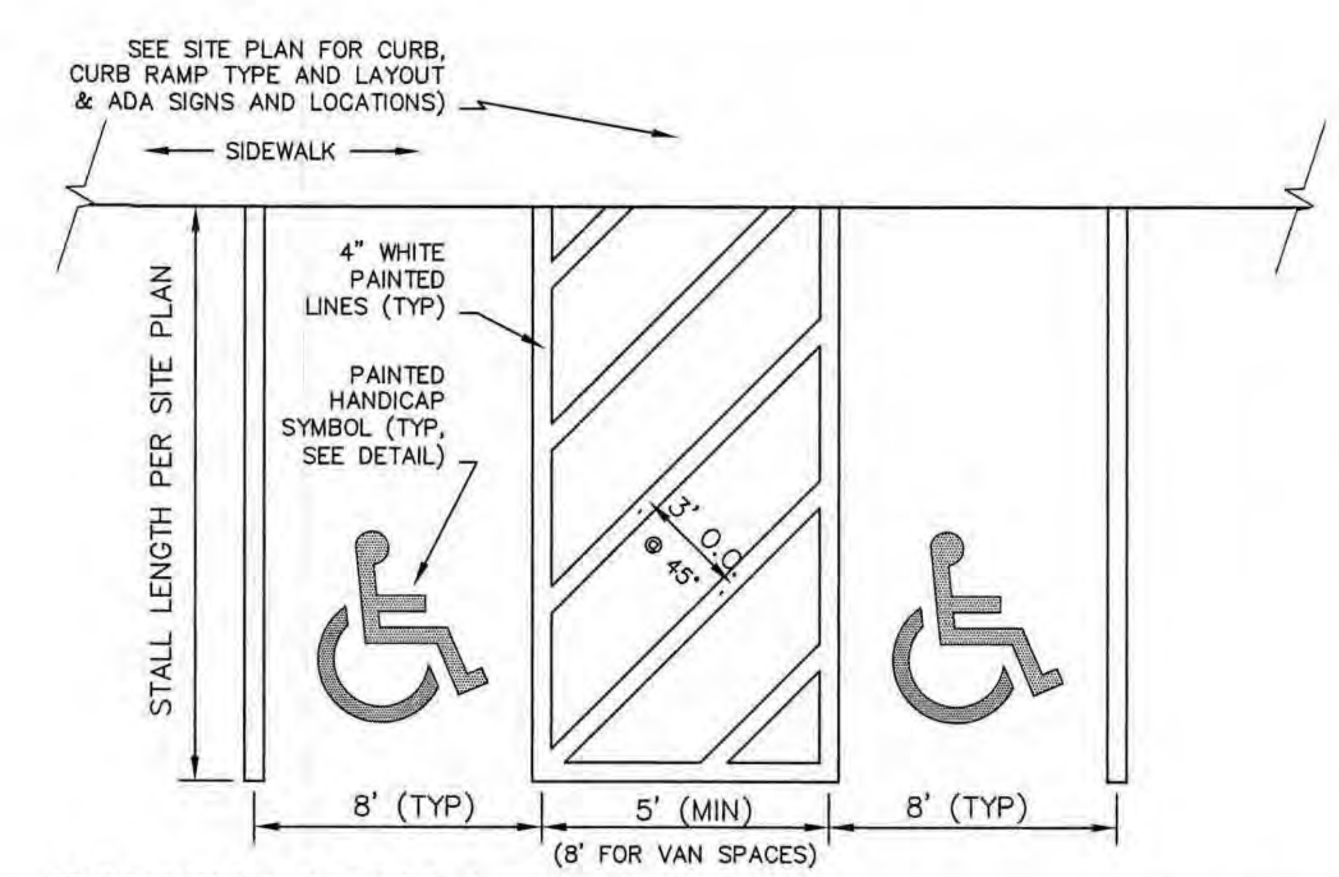
FLUSH CURB AT RAMP DETAIL NOT TO SCALE

ADDITIONAL NOTES APPLICABLE TO ALL CURB RAMPS:

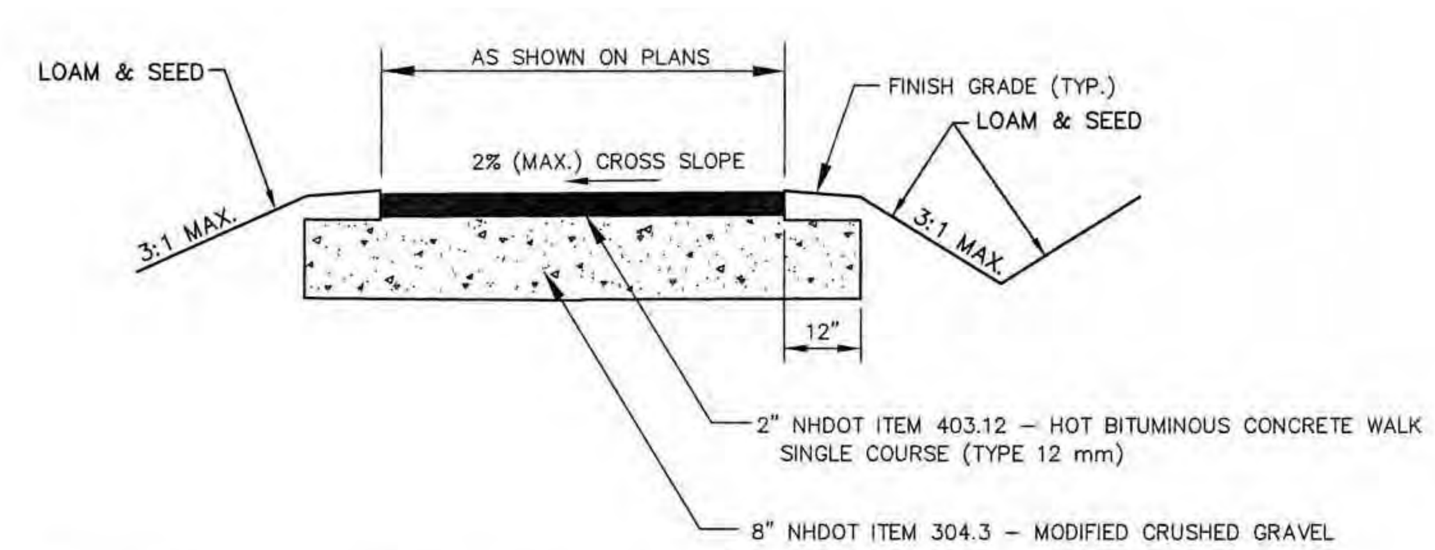
1. ALL CURB RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH AMERICANS WITH DISABILITIES ACT (ADA) AND ALL APPLICABLE CODES.
2. THE MAXIMUM ALLOWABLE CROSS SLOPE OF AN ACCESSIBLE ROUTE (SIDEWALK) AND CURB SHALL BE 2%.
3. THE MAXIMUM ALLOWABLE RUNNING SLOPE OF AN ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL 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.



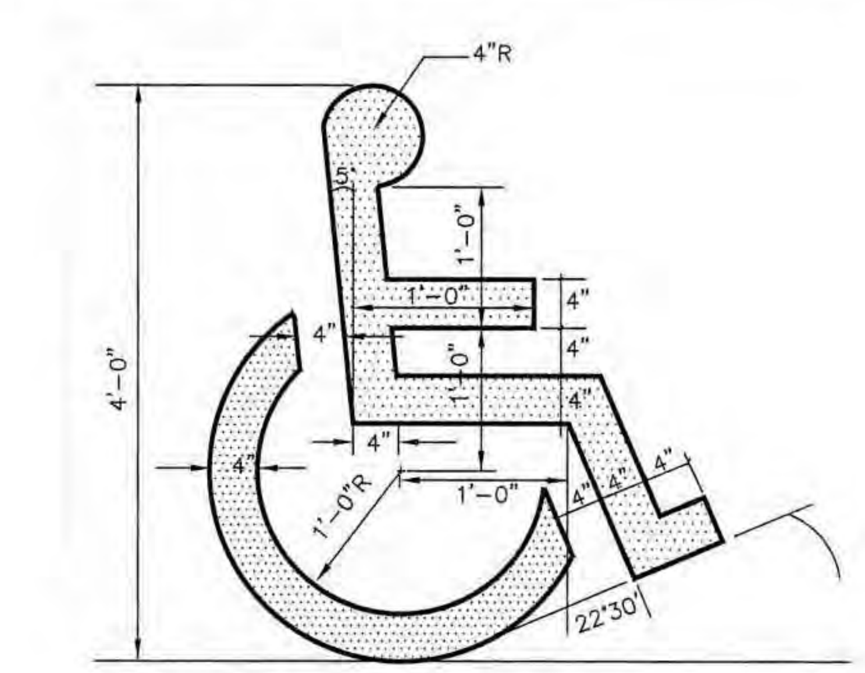
TYPICAL PAVEMENT SAWCUT NOT TO SCALE



PARKING STALL LAYOUT 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

P4950

ENGINEER:

ALTUS ENGINEERING, INC.

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

ISSUED FOR: PLANNING BOARD APPROVAL

ISSUE DATE: NOVEMBER 18, 2019

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	CDB	06/26/19
1	TAC SUBMISSION	CDB	09/16/19
2	TAC COMMENTS	CDB	11/18/19

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

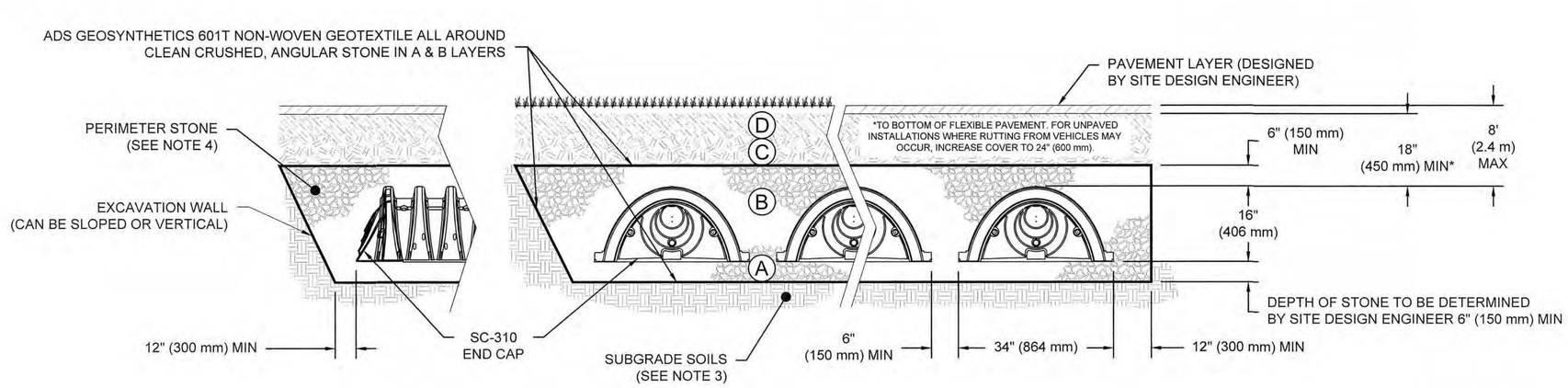
TITLE: CONSTRUCTION DETAILS

SHEET NUMBER: D.7

ACCEPTABLE FILL MATERIALS: STORMTECH SC-310 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR **#4** STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLETHYLENE) OR ASTM F2418-16a (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-310 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2922 SHALL BE GREATER THAN OR EQUAL TO 400 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

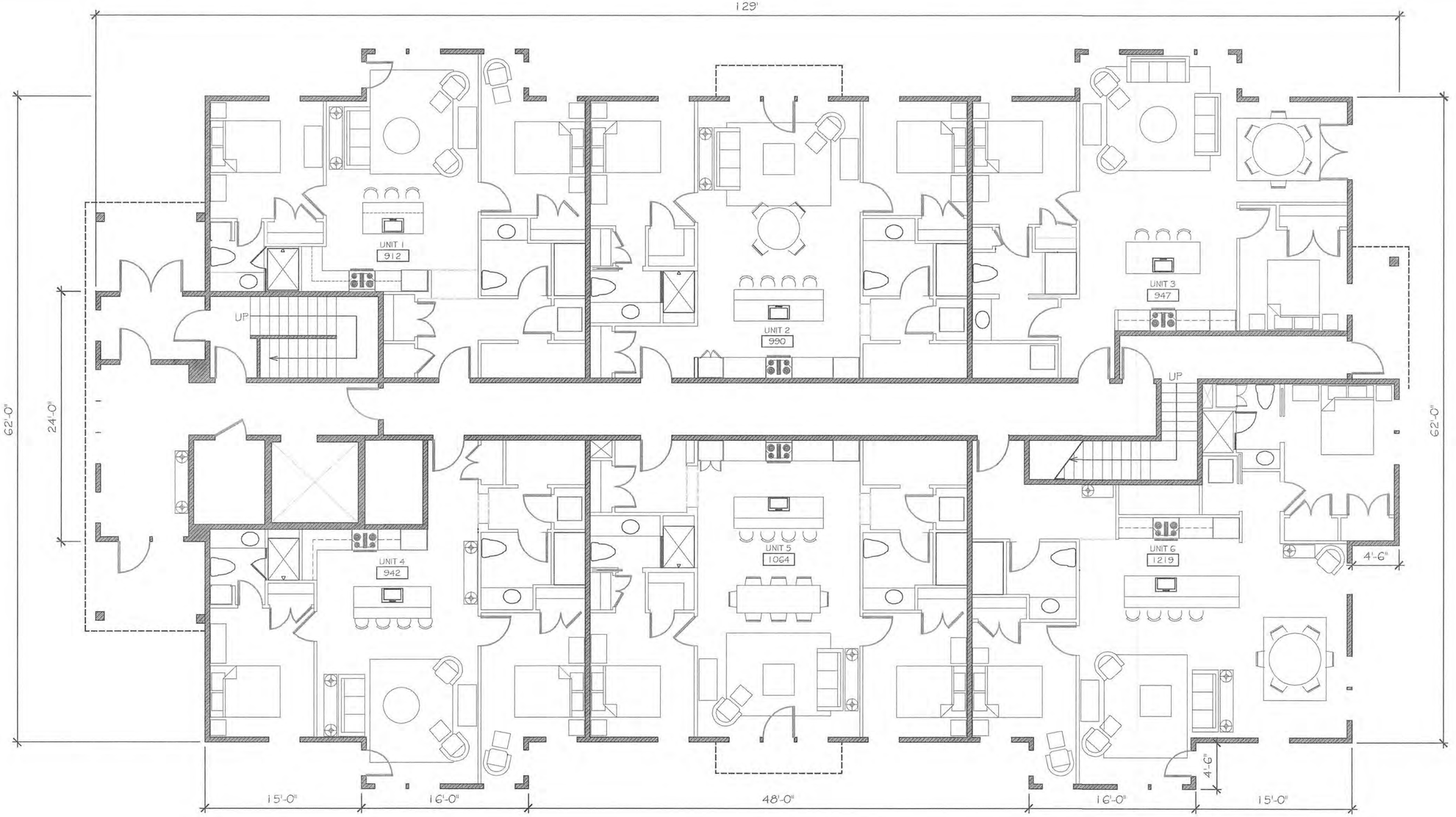
SC-310
STANDARD CROSS SECTION

DATE: 05-10-19 | DRAWN: KR | CHECKED: KR | PROJECT #:

DATE	DRWN	CHKD	DESCRIPTION

StormTech®
Detention • Retention • Water Quality
70 INWOOD ROAD, SUITE 3 | ROCKY HILL | CT | 06067
860-529-8188 | 888-892-2694 | WWW.STORMTECH.COM

ADS®
ADVANCED DRAINAGE SYSTEMS, INC.
4640 TRUEMAN BLVD
HILLIARD, OH 43026



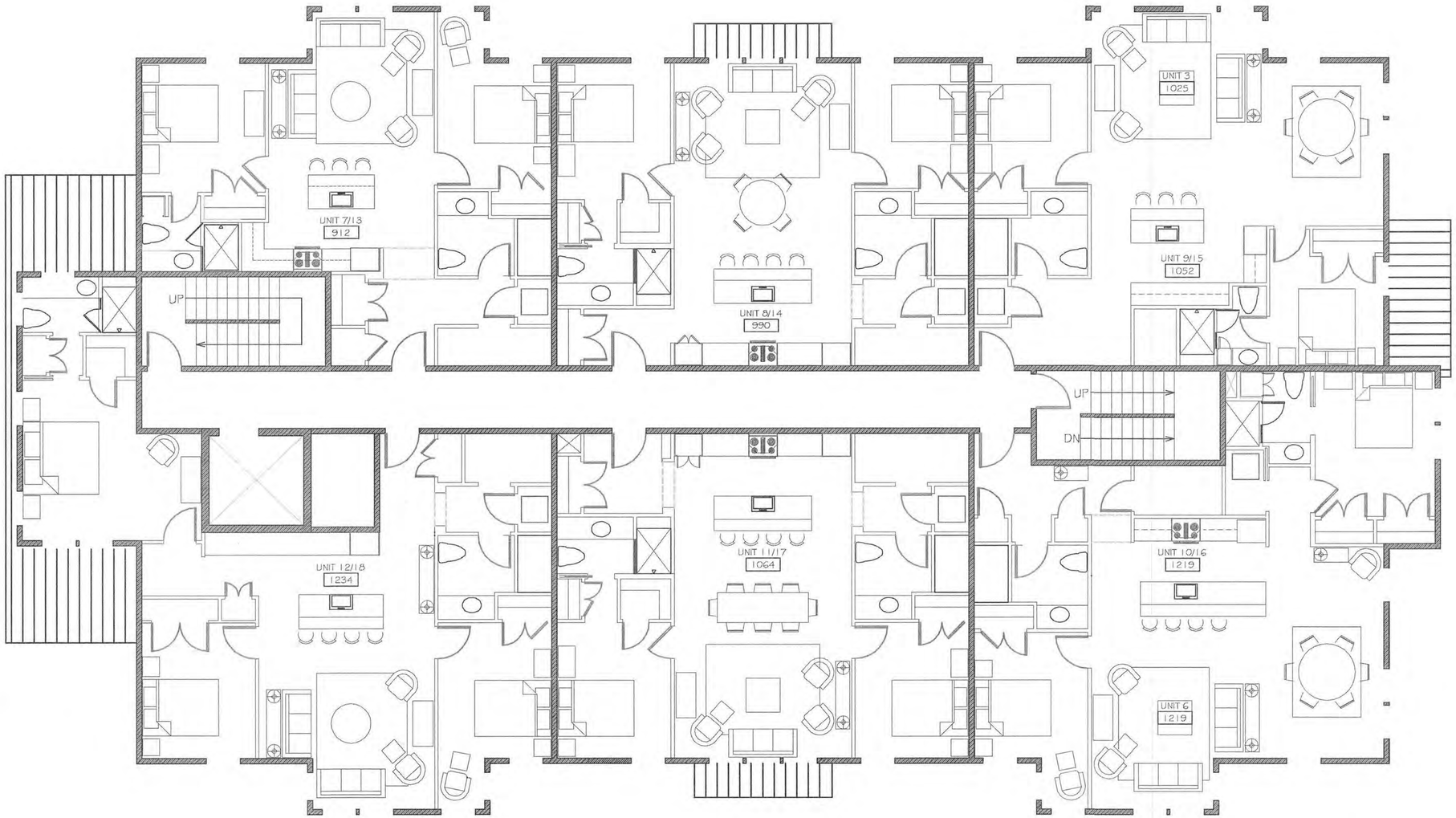
TOTAL FLOOR AREA: 28,727sf
NUMBER OF USABLE FLOORS: 4
GROSS FLOOR AREA/FLOOR [& USE]:
FIRST FLOOR- 7432sf [RESIDENTIAL]
SECOND FLOOR- 7432sf [RESIDENTIAL]
THIRD FLOOR- 7432sf [RESIDENTIAL]
FOURTH FLOOR- 6431sf [RESIDENTIAL]

SUBDIVISION at 200 CHASE DRIVE

PORTSMOUTH, NEW HAMPSHIRE

FIRST FLOOR SKETCH PLAN

11.2019

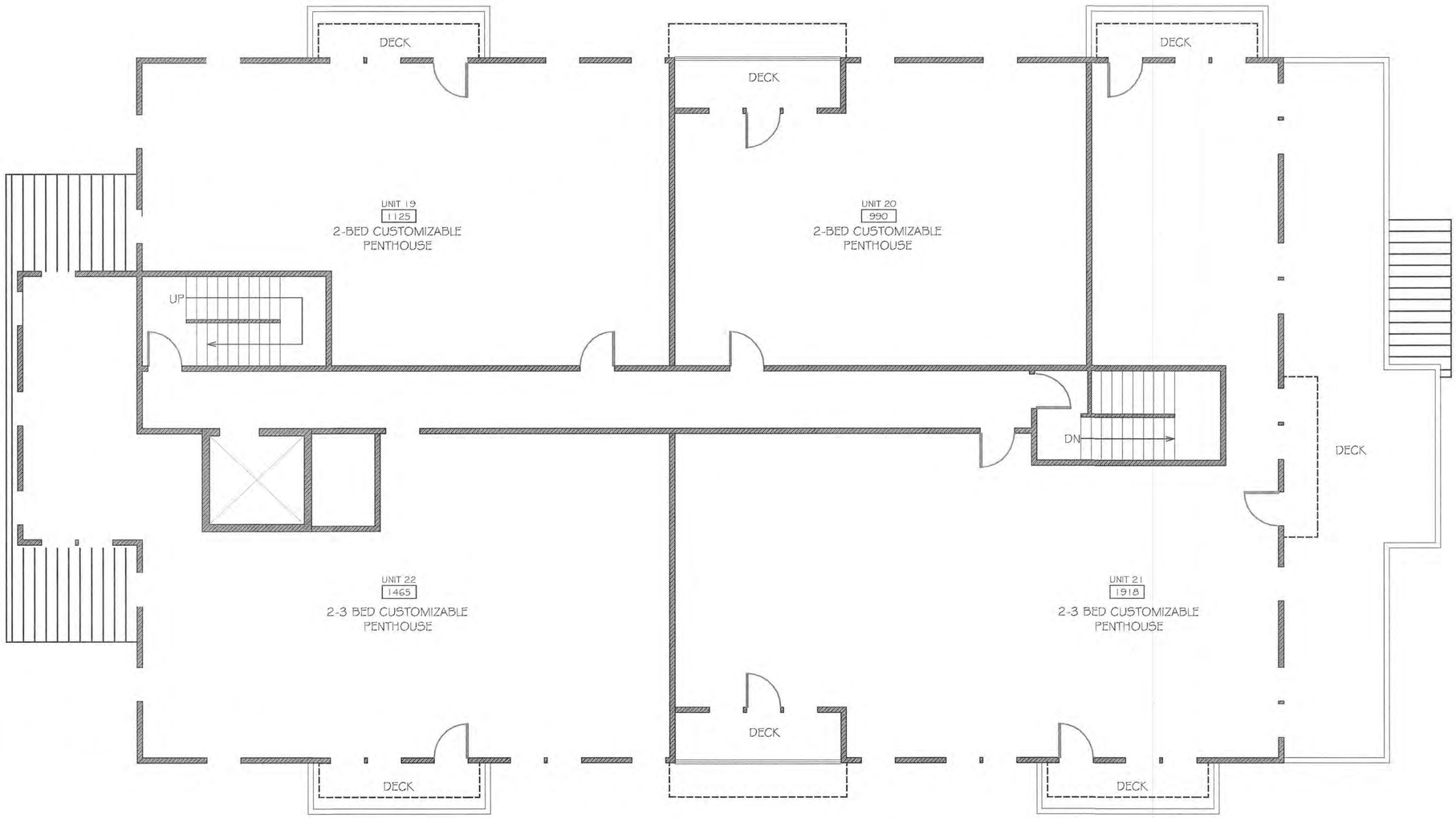


SUBDIVISION at 200 CHASE DRIVE

PORTSMOUTH, NEW HAMPSHIRE

SECOND AND THIRD FLOOR SKETCH PLANS

11.2019

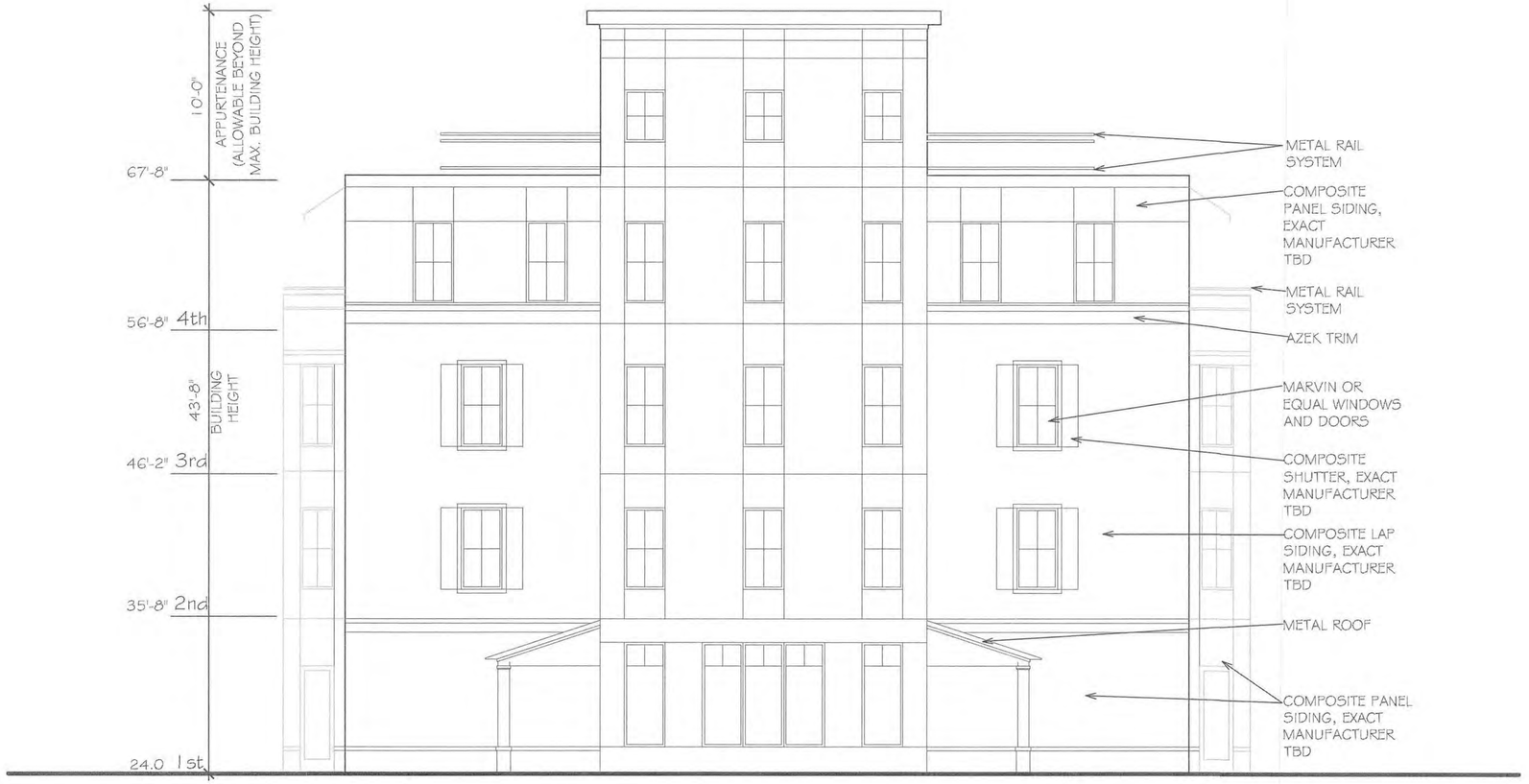


SUBDIVISION at 200 CHASE DRIVE

PORTSMOUTH, NEW HAMPSHIRE

FOURTH FLOOR SKETCH PLAN

11.2019



SUBDIVISION at 200 CHASE DRIVE MARKET STREET ELEVATION SKETCH 11.2019

PORTSMOUTH, NEW HAMPSHIRE

SUBDIVISION at 200 CHASE DRIVE

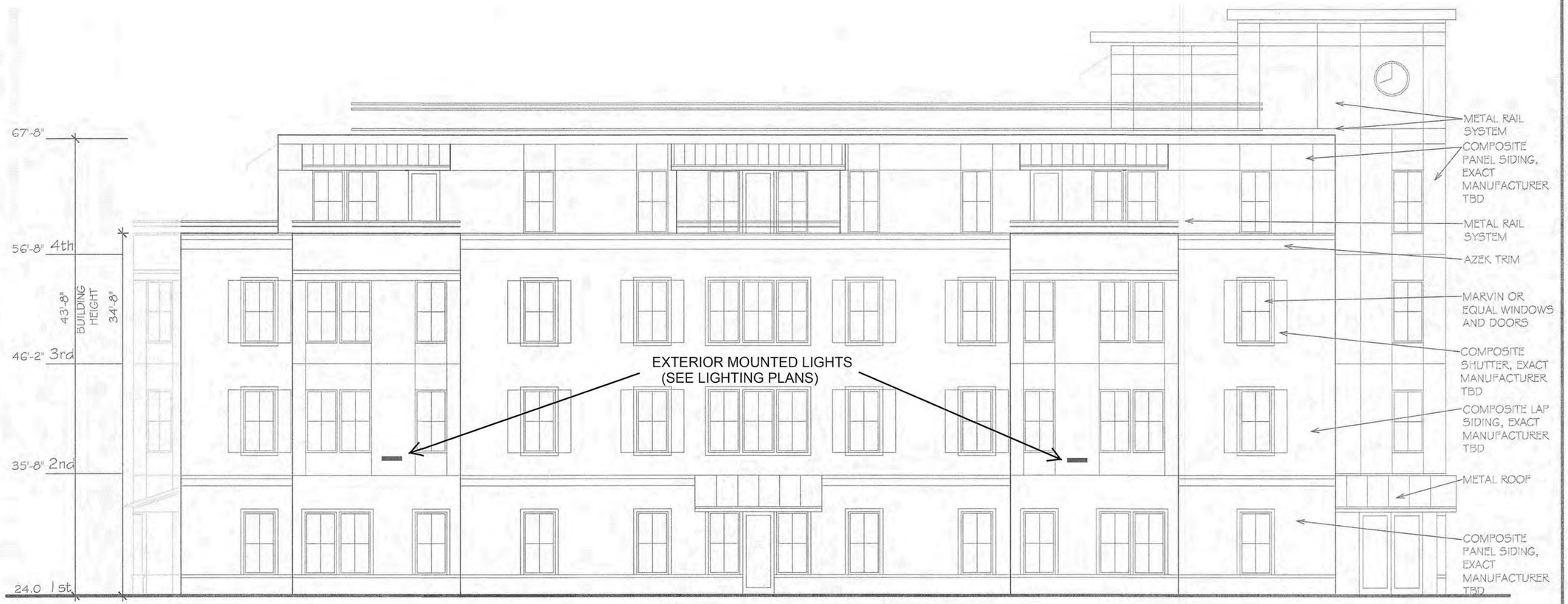
PORTSMOUTH, NEW HAMPSHIRE

MICHAEL SUCCI DR. ELEVATION

11.2019

SUBDIVISION at 200 CHASE DRIVE CHASE ELEVATION SKETCH 11.2019

PORTSMOUTH, NEW HAMPSHIRE

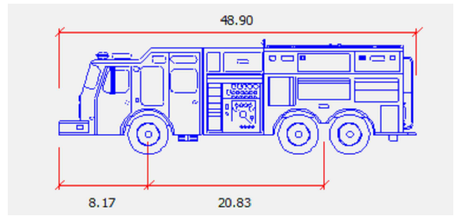


SUBDIVISION at 200 CHASE DRIVE — CHURCH FACING ELEVATION SKETCH — 11.2019

PORTSMOUTH, NEW HAMPSHIRE

200 Chase Ave, Portsmouth, NH
June 2019

Artist Renderings of Michael Succi Drive Elevation



PORTSMOUTH LADDER TRUCK

12 FT WIDE ACCESS AISLE WITH 8 FT PARKING EACH SIDE (28 FT WIDE ROADWAY)

CHASE DRIVE

PROPOSED PROPERTY LINE

210/2

EXISTING PARKING LOT

REAR TIRES (GREEN)

FRONT TIRES (BLUE)

FRONT TIRES (BLUE)

REAR TIRES (GREEN)

VEHICLE BODY (RED)

VEHICLE BODY (RED)

LOT 2

PROPOSED 22 UNIT APARTMENT BUILDING
(4 STORIES, 7,660± SF FOOTPRINT)
SEE ARCHITECTURAL DWGS.

LAWN

LAWN

LSA

MICHAEL SUCCI DRIVE

MARKET STREET

Portsmouth-Inferno Custom

NORTH NAD83(2011)

GRID NHSPC

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

P4950

ENGINEER:

ALTUS ENGINEERING, INC.

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

ISSUED FOR:
PLANNING BOARD APPROVAL

ISSUE DATE:
NOVEMBER 18, 2019

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	CDB	10/18/19
1	TAC COMMENTS	CDB	11/18/19

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

SCALE:
22" x 34" - 1" = 20'
11" x 17" - 1" = 40'

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:
AUTOTURN TURNING TEMPLATE (PORTSMOUTH LADDER TRUCK)

SHEET NUMBER:
AT-1

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:** _____

ALTUS ENGINEERING, INC.

Civil
Site Planning
Environmental
Engineering

133 Court Street
Portsmouth, NH
03801-4413

Waiver Request

Assessor's Map 210, Lot 02
200 Chase Drive, Portsmouth, NH
Altus Project #P4950

November 5, 2019

Waiver Request #1: **Article 9, Section 9.3 -Location and Disposal**

The project proposal is to place the dumpster and waste container pads as shown on the proposed project plans. The existing church does not have access to the rear of the building (Market St side) so a side location was selected, using the parking lot side instead of the single family residential side. The new 22-Unit apartment building has three frontages and a side, so the side location was selected for waste disposal. The pads are located a minimum of 10 feet from the property line, where 20 feet is required. No drainage inlets will be within 20 feet of the waste disposal pads. The proposed waste storage areas will be enclosed with solid fencing to screen dumpster and waste storage as shown on the project plans and details.

Ecopy: Stephen Kelm, 200 Chase Drive, LLC
Pastor Chad Lynn, Connect Community Church

wde/4950-Waiver Request_110119.doc

200 Chase Drive
Community Space Narrative
2019-12-22

Character Based Zoning for the Portsmouth Gateway District allows and encourages the use of community space to be provided as part of a development (in accordance with Sections 10.5A42, 10.5A43 or 10.5A46.10).

The proposed development of 200 Chase Drive designates 21.5 % of the site as community space designated as greenway space with publicly accessible pathways that connect to two pocket parks and provide cross site connections to Market Street and provides more direct access to the newly created Park along the waterfront on Market St.

Greenways are defined in the Portsmouth Zoning Ordinance as *"A linear community space that may follow natural corridors providing unstructured and limited amounts of structured recreation. A greenway may be spatially defined by landscaping rather than buildings. Its landscape shall consist of paths and trails, waterbodies, and trees, naturally disposed."*

Pocket Parks are defined as "*a community space available for informal activities in close proximity to neighborhood residences. A pocket park is spatially defined by buildings. Its landscape shall consist of paths, lawns and trees, formally disposed. The minimum size shall be 500sf*."

The 200 Chase site lies between the Cutts Avenue and Brigham Lane residential neighborhoods and Market Street. By designating portions of the site area as community space and creating greenways with landscaped access paths through the site that connect to the tree lined City owned Market Street greenway, neighbors and the general public experience a more fluid connection towards downtown and the newly created waterfront Park. It enhances the pedestrian experience and is of benefit to the neighborhood and the general public.

Three greenways will cross the site from north to south, providing varied access through the property and create a looped system of pathways when accessed from City

sidewalks. The entrances to the greenways will be signed to inform users of the access welcoming them to use the greenway.

Greenway #1 runs along the eastern side of the proposed residential building and provides a curving path that connects the Chase Drive sidewalk through the site, connecting to the Market Street Greenway. Benches are oriented out towards river, the new park and the City beyond.

A second pathway, Greenway #2, will separate the existing church parking lot from the new residential parking area. A raingarden is located at the southern end of this greenway.

Linear garden beds flank this path, planted with ornamental grasses, will create a soft, natural garden feel. The plantings of ornamental grasses and Birch trees create an enhanced landscape along this corridor.

Greenway #3 connects Chase Drive to the Market Street Greenway along the side of the church. Two small park areas are included in the greenway space. One, labeled as Pocket Park #1, is located along the western edge of the parking lot and has a looping path from the existing sidewalk which invites pedestrians into the space. Benches are oriented toward the street and River beyond with a garden of low shrubs and perennials providing seasonal interest. The pathway proceeds out of the small park and through the site, connecting with the Market Street Greenway to the south. The second park space is located on the sloping lawn on the Market Street side of the church, just off the connecting path described above. It is a larger garden space that could be used for small gatherings or contemplation. A small seating area with two benches is located at a high point above the ledge along Market Street. This seating area has great views looking down the Market Street corridor towards town.

At the west end of the church, along Chase Drive is a small pocket park labeled “Pocket Park #2”. This space provides a small, 500sf resting space for pedestrians along Chase Street and designating the beginning of the community space.

Layered planting is proposed between the parking areas and Market Street. This enhanced planting will separate the parking from the street and enhance the existing Market Street Greenway by providing a varied mix of trees, evergreen shrubs, and ornamental grasses layered along its north side.

The proposed site improvements and landscape enhancements will mark a major improvement to the existing site, complementing the proposed building and providing publicly accessible community space connecting to Market Street and the downtown. These connections provide access and Park like garden spaces that will be seen from and enhance the gateway of Market Street. The added community space more than doubles the pathways available to the community when combined with the newly created waterfront Park along Market St.

103 KENT PLACE
NEWMARKET, NH 03857
603.659.5949
woodburnandcompany.com

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
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Civil
Site Planning
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Engineering

133 Court Street
Portsmouth, NH
03801-4413

DRAINAGE MEMO

200 Chase Drive Gateway Development Site

Assessor's Map 210 Lot 02

Altus Project P4950

This supplemental Drainage Memo provides a summary of the changes and results from the original Drainage Report that was submitted for the proposing development site located at 200 Chase Drive (Assessor's Map 210, Lot 02). The proposed project will subdivide the existing lot that is owned by the Bethel Assembly of God and is the current home to the Connect Community Church. The new lot will provide a new multi-family building that will provide 22 housing units as well as additional site improvements.

On December 3, 2019 the proposed development was heard by the City of Portsmouth Technical Advisory Committee (TAC). During this meeting TAC provided design comments for the proposes development. The following revisions have been made to the drainage plans as a result of the comments:

1) The existing conditions model has been revised to reflect the entire parking lot flowing to CB 3396 at the corner of Michael Succi Drive and Market St. An existing grass berm along the south side of the parking lot convey keep the flows from the Market Street Drainage.
2) The raingarden on the west side (Michael Succi Drive) of the proposed building has been removed in lieu on of a subsurface chamber system. The chamber system will allow the outlet to be located on in the southeast corner of the property.
3) The two small raingardens along the south side of the existing parking lot have been remove in lieu of a drip edge filter along the entire parking lot. This drip edge filter will be a minimum of 4 ft wide and have a 6" layer of rock over an 18" thick filter media layer (similar to a raingarden. The filter will have an 18" rock layer under the filter media with an underdrain.
4) The overflow ditch to the catch basin along Market Street CB 3377 has been removed. All flows from the existing parking lot and new site development will be conveyed to CB 3396 at the corner of Michael Succi Dr and Market St.

December 23, 2019

The attached Pre-Development Drainage Plan and Post-Development Drainage Plan illustrate the pre-development and proposed post-development drainage conditions. Also reference the revised site plans dated December 23, 2019 for detailed grading and drainage information. The following table compares the revised pre- and post-development peak rates at the 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	5.9	11.1	15.2	17.6
Post	4.4	8.3	11.7	14.7
Net Change	**-1.5**	**-2.8**	**-3.5**	**-2.9**

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. Upon acceptance of the proposed design, a complete revised Drainage Report with all supporting modeling results will be provided the City

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 reduce the total impervious area on site by approximately 2,800 square feet, but will provide treatment to approximately 42,700 square feet of impervious area, reducing the effective (untreated) 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 off-site discharge for all storm events.

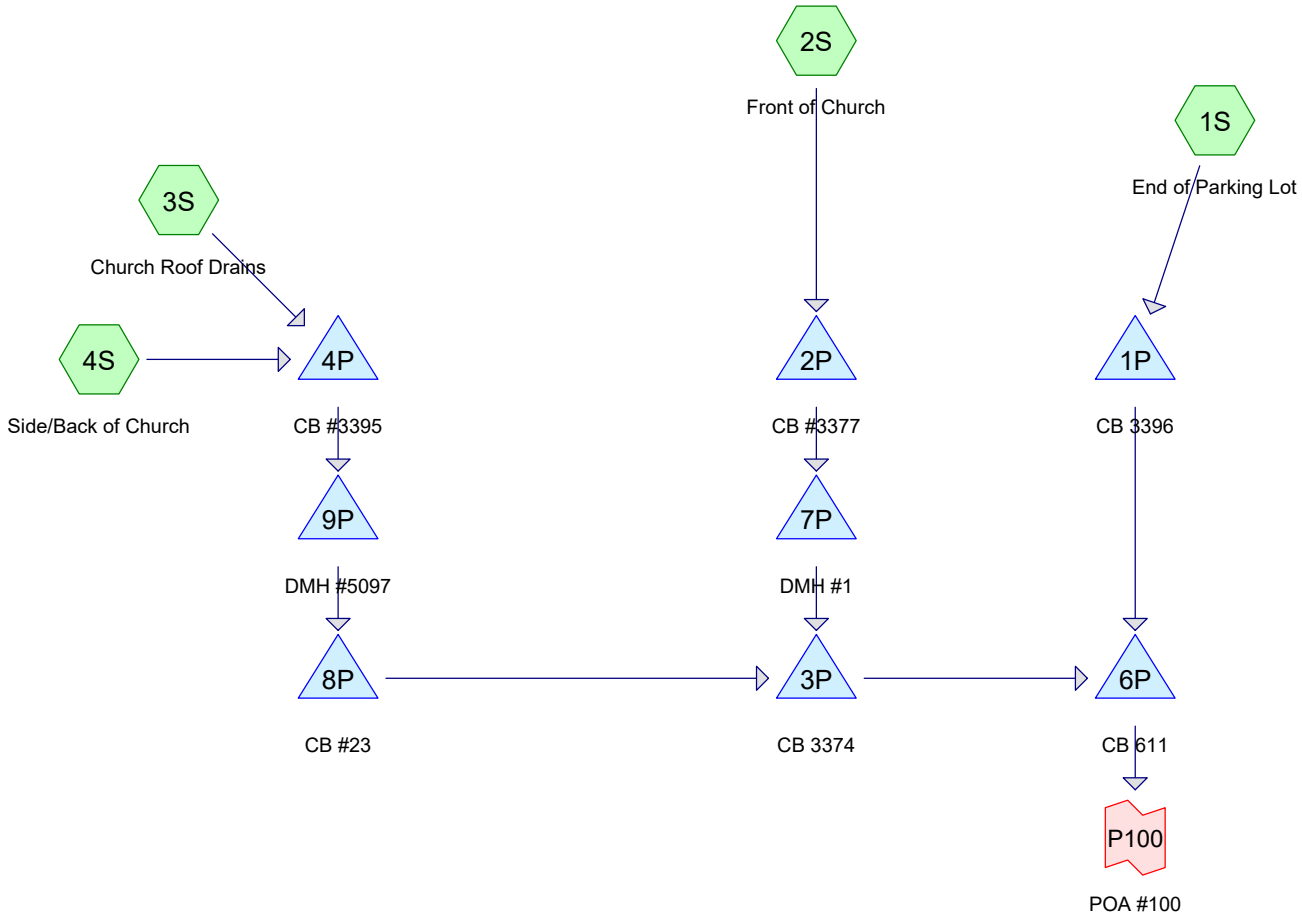
ATTACHMENTS

- Pre-Development Drainage Plan
- Post-Development Drainage Plan

Sincerely,
ALTUS ENGINEERING, INC.

Cory Belden, PE, Project Manager

Enclosure
Ecopy: Stephen Kelm, 200 Chase Drive, LLC
Pastor Chad Lynn, Connect Community Church



Subcat Reach Pond Link

Routing Diagram for 4950-PRE_122319
Prepared by Altus Engineering, Inc., Printed 12/23/2019

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.472	61	>75% Grass cover, Good, HSG B (1S, 2S, 4S)
1.065	98	Paved parking, HSG B (1S)
0.033	98	Paved parking, HSG C (4S)
0.383	98	Roofs, HSG B (2S, 3S, 4S)
0.032	98	Unconnected pavement, HSG B (1S, 2S)
0.016	98	Unconnected pavement, HSG C (4S)
3.003	**80**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
2.953	HSG B	1S, 2S, 3S, 4S
0.050	HSG C	4S
0.000	HSG D	
0.000	Other	
3.003		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	1.472	0.000	0.000	0.000	1.472	>75% Grass cover, Good	1S, 2S, 4S
0.000	1.065	0.033	0.000	0.000	1.099	Paved parking	1S, 4S
0.000	0.383	0.000	0.000	0.000	0.383	Roofs	2S, 3S, 4S
0.000	0.032	0.016	0.000	0.000	0.049	Unconnected pavement	1S, 2S, 4S
0.000	**2.953**	**0.050**	**0.000**	**0.000**	**3.003**	**TOTAL AREA**	

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

Link P100: POA #100

Inflow=5.85 cfs 0.454 af
Primary=5.85 cfs 0.454 af

Summary for Link P100: POA #100

Inflow Area = 3.003 ac, 50.96% Impervious, Inflow Depth > 1.81" for 2-Year event
Inflow = 5.85 cfs @ 12.10 hrs, Volume= 0.454 af
Primary = 5.85 cfs @ 12.10 hrs, Volume= 0.454 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

Link P100: POA #100 Inflow=11.06 cfs 0.850 af
Primary=11.06 cfs 0.850 af

Summary for Link P100: POA #100

Inflow Area = 3.003 ac, 50.96% Impervious, Inflow Depth > 3.40" for 10-Year event
Inflow = 11.06 cfs @ 12.10 hrs, Volume= 0.850 af
Primary = 11.06 cfs @ 12.10 hrs, Volume= 0.850 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

Link P100: POA #100 Inflow=15.16 cfs 1.183 af
Primary=15.16 cfs 1.183 af

Summary for Link P100: POA #100

Inflow Area = 3.003 ac, 50.96% Impervious, Inflow Depth > 4.73" for 25-Year event
Inflow = 15.16 cfs @ 12.11 hrs, Volume= 1.183 af
Primary = 15.16 cfs @ 12.11 hrs, Volume= 1.183 af, Atten= 0%, Lag= 0.0 min

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

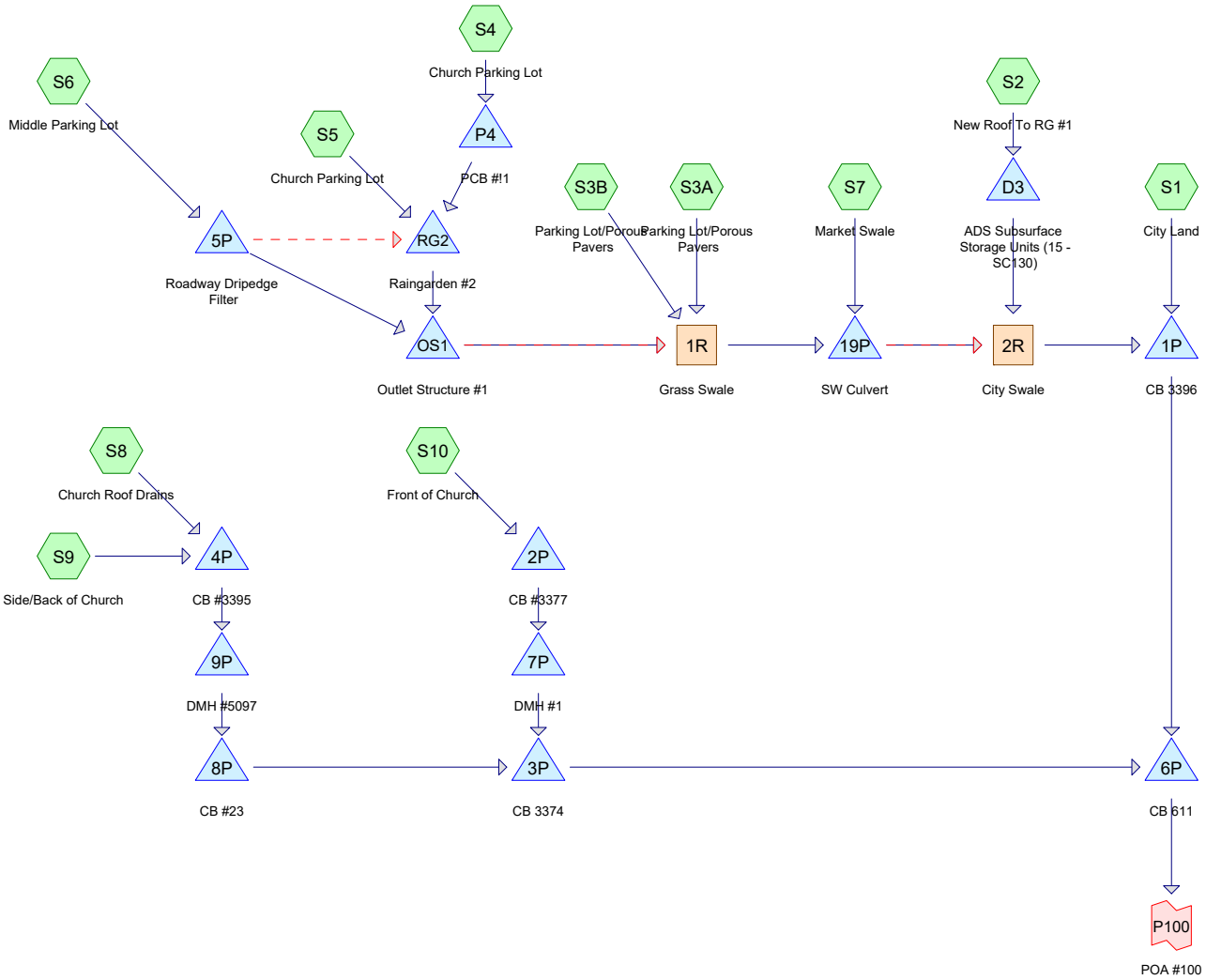
Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Link P100: POA #100 Inflow=17.61 cfs 1.502 af
Primary=17.61 cfs 1.502 af

Summary for Link P100: POA #100

Inflow Area = 3.003 ac, 50.96% Impervious, Inflow Depth > 6.00" for 50-Year event
Inflow = 17.61 cfs @ 12.13 hrs, Volume= 1.502 af
Primary = 17.61 cfs @ 12.13 hrs, Volume= 1.502 af, Atten= 0%, Lag= 0.0 min

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



Subcat Reach Pond Link

Routing Diagram for 4950-POST_122319
Prepared by Altus Engineering, Inc., Printed 12/23/2019
HydroCAD® 10.00-22 s/n 01222 © 2018 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.517	61	>75% Grass cover, Good, HSG B (S1, S10, S3A, S3B, S4, S5, S6, S7, S9)
0.641	98	Paved parking, HSG B (S3A, S3B, S4, S5, S6)
0.033	98	Paved parking, HSG C (S9)
0.013	98	Paved roads w/curbs & sewers, HSG B (S7)
0.059	85	Porous Pavers, HSG B (S3A, S3B)
0.559	98	Roofs, HSG B (S10, S2, S8, S9)
0.125	98	Unconnected pavement, HSG B (S1, S10, S3A, S3B, S4, S6, S7)
0.054	98	Unconnected pavement, HSG C (S9)
3.003	**79**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
2.915	HSG B	S1, S10, S2, S3A, S3B, S4, S5, S6, S7, S8, S9
0.088	HSG C	S9
0.000	HSG D	
0.000	Other	
3.003		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	1.517	0.000	0.000	0.000	1.517	>75% Grass cover, Good	S1, S10, S3A, S3B, S4, S5, S6, S7, S9
0.000	0.641	0.033	0.000	0.000	0.675	Paved parking	S3A, S3B, S4, S5, S6, S9
0.000	0.013	0.000	0.000	0.000	0.013	Paved roads w/curbs & sewers	S7
0.000	0.059	0.000	0.000	0.000	0.059	Porous Pavers	S3A, S3B
0.000	0.559	0.000	0.000	0.000	0.559	Roofs	S10, S2, S8, S9
0.000	0.125	0.054	0.000	0.000	0.179	Unconnected pavement	S1, S10, S3A, S3B, S4, S6, S7, S9
0.000	**2.915**	**0.088**	**0.000**	**0.000**	**3.003**	**TOTAL AREA**	

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

Link P100: POA #100

Inflow=4.35 cfs 0.359 af
Primary=4.35 cfs 0.359 af

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

Link P100: POA #100

Inflow=8.31 cfs 0.707 af
Primary=8.31 cfs 0.707 af

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

Link P100: POA #100 Inflow=11.67 cfs 1.007 af
Primary=11.67 cfs 1.007 af

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

Link P100: POA #100 Inflow=14.70 cfs 1.298 af
Primary=14.70 cfs 1.298 af

NORTH NAD83(2011)

GRID NHSPC

SOLS CLASSIFICATION

SYMBOL	DESCRIPTION	HSG
799	URBAN LAND – CANTON COMPLEX (ENTIRE SITE)	B

SLOPE PHASES

SYMBOL	PHASE
A	0–3%
B	3–8%
C	8–15%
D	15–25%
E	25–50%
F	50%+

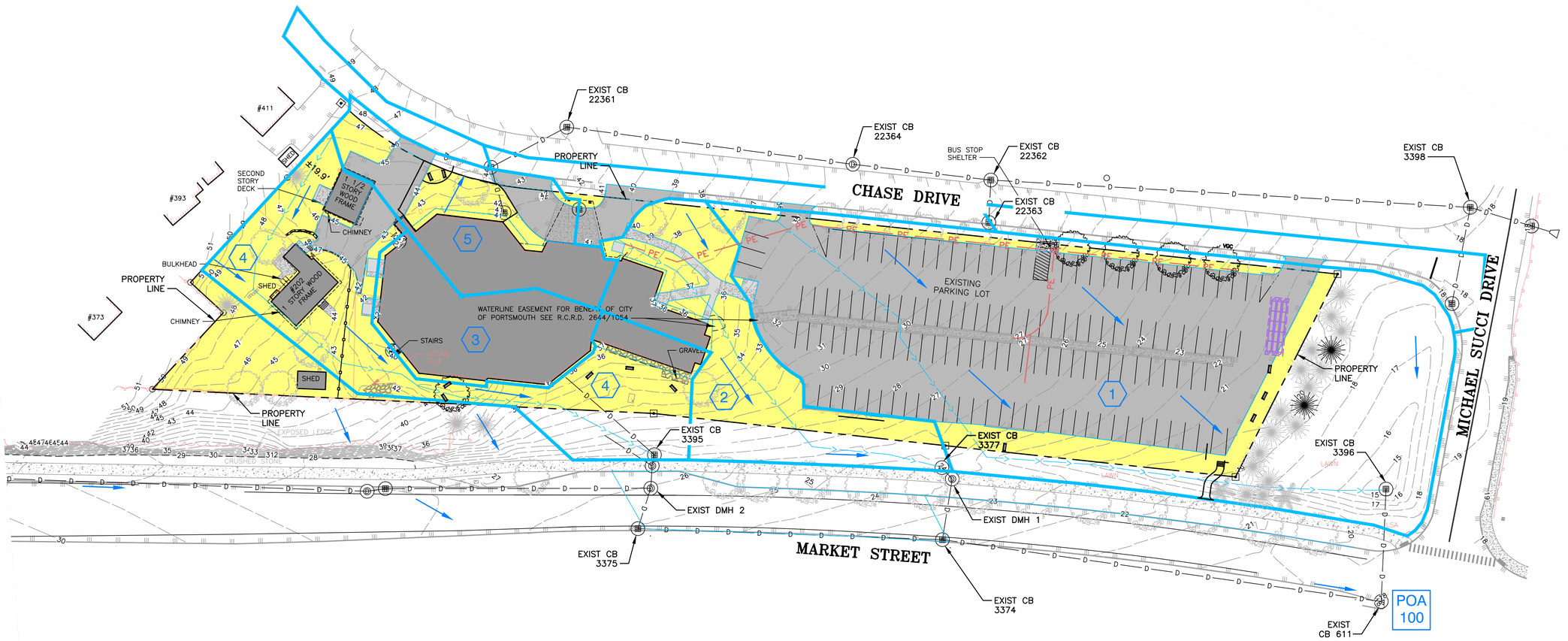
SOILS LEGEND

HYDROLOGIC GROUP

- SOILS – HSG A
- SOILS – HSG B
- SOILS – HSG C
- SOILS – HSG D
- IMPERVIOUS (BLDGS/ROADS/MISC)

LEGEND

- PROPERTY LINE
- WETLAND/SOILS BOUNDARY
- 60 EXISTING CONTOUR
- EXISTING PAVEMENT/CURB
- EXISTING TREELINE
- WATERSHED BOUNDARY
- Tc PATH
- SURFACE FLOW DIRECTION
- 1 1 1 SUBCATCHMENT/POND/REACH
- POA POINT OF ANALYSIS



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:
DRAINAGE REPORT

ISSUE DATE:
DECEMBER 23, 2019

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	CDB	09/16/19
0	REVISION 1	CDB	12/23/19

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4950.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:
PRE-DEVELOPMENT DRAINAGE PLAN

SHEET NUMBER:
DA-1

NORTH
NAD83(2011)
N
GRID
NHSPC

SOLS CLASSIFICATION

SYMBOL	DESCRIPTION	HSG
799	URBAN LAND – CANTON COMPLEX (ENTIRE SITE)	B

SLOPE PHASES

SYMBOL	PHASE
A	0–3%
B	3–8%
C	8–15%
D	15–25%
E	25–50%
F	50%+

SOILS LEGEND

HYDROLOGIC GROUP

- SOILS – HSG A
- SOILS – HSG B
- SOILS – HSG C
- SOILS – HSG D
- IMPERVIOUS (BLDGS/ROADS/MISC)

LEGEND

- PROPERTY LINE
- WETLAND/SOILS BOUNDARY
- 60 EXISTING CONTOUR
- EXISTING PAVEMENT/CURB
- EXISTING TREELINE
- WATERSHED BOUNDARY
- Tc PATH
- SURFACE FLOW DIRECTION
- 1 1 1 SUBCATCHMENT/POND/REACH
- POA POINT OF ANALYSIS

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:
DRAINAGE REPORT

ISSUE DATE:
DECEMBER 23, 2019

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	CDB	09/16/19
1	REVISED PARKING LOT	CDB	10/21/19
2	REVISION 2	CDB	12/23/19

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4950.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:
POST-DEVELOPMENT DRAINAGE PLAN

SHEET NUMBER:
DA-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

January 2020

Prepared for:

200 Chase Drive, LLC
36 Maplewood Ave
Portsmouth, NH

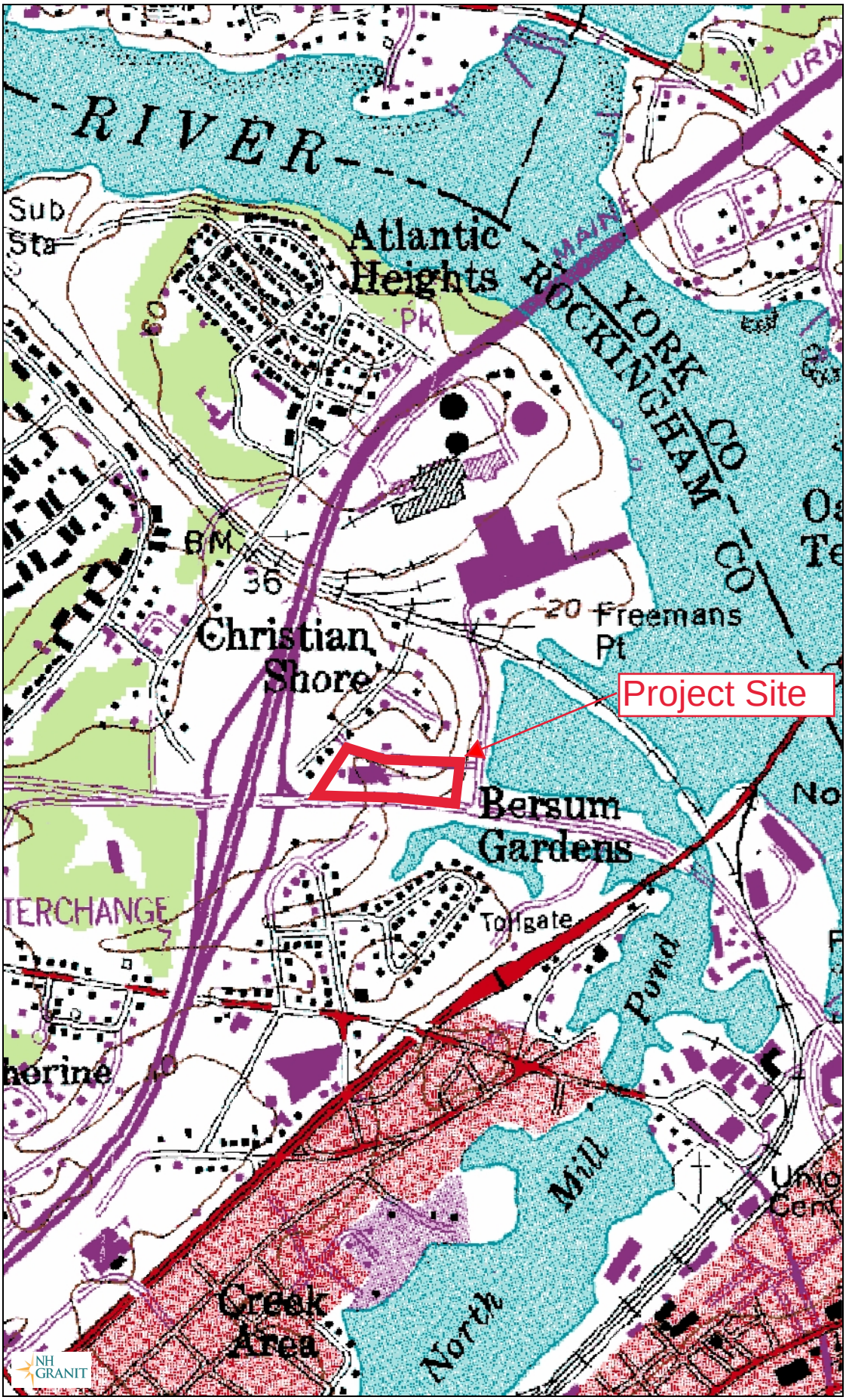
Prepared By:

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

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 a 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".

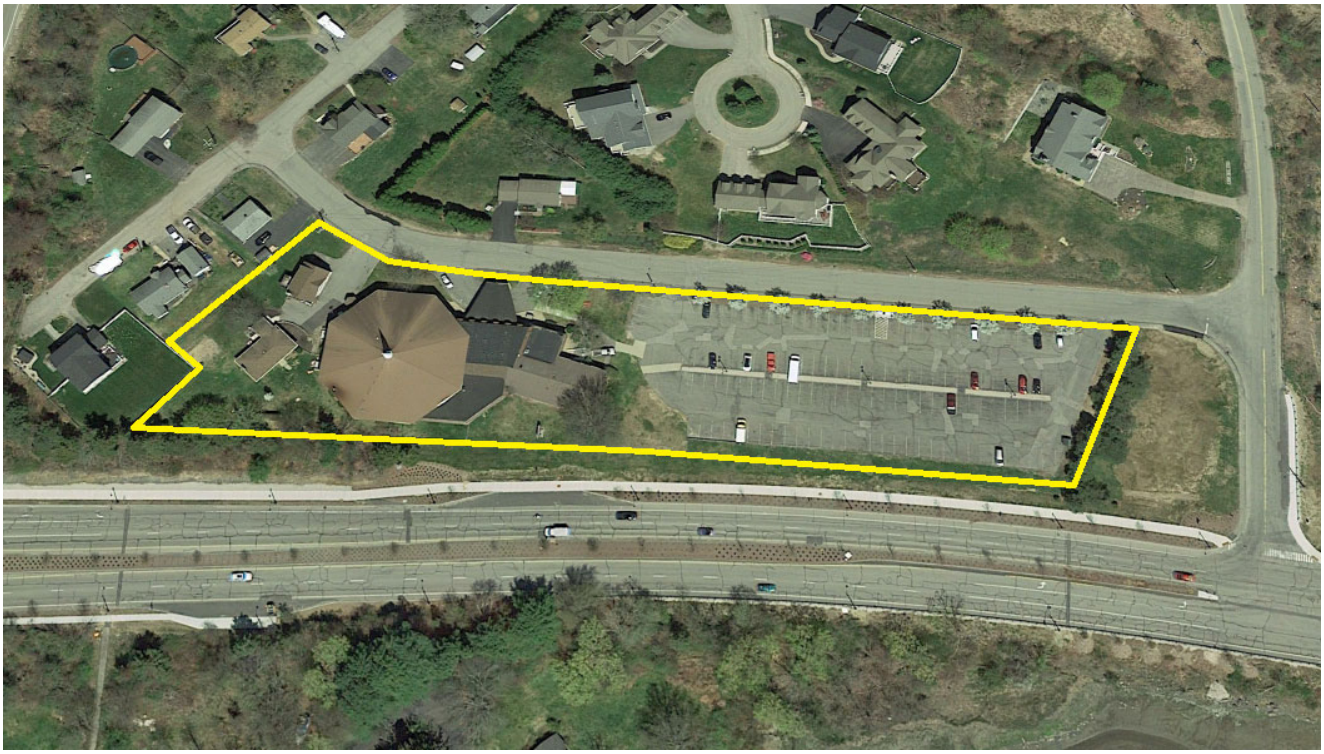
The proposed project will sub-divide the existing 2.7 acre lot into two lots (by subdivision or condominium) and develop the lots under the Gateway Neighborhood Mixed-Use (G2) Development Site regulations. A new 22-Unit residential apartment building will be constructed on east side of the lot, closest to Michael Succi Drive. The existing site was constructed prior to stormwater regulations and does not have treatment on site for the existing 133 stall parking lot that consists of approximately 1.1 acres of pavement. The parking lot sheet flows to the municipal storm drain system and drains to the tidal marsh without treatment or retention. The proposed project will provide treatment through the use of a raingarden, sub-surface (Stormtech) treatment system, porous pavers, and a edge-line drip edge filter to meet the intent of Low Impact development (LID). The development area eventually drains to the Piscataqua River 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 Northeast Regional Climate Center (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 and tidal marshes.

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 primarily discharges to the municipal storm drain system in Market Street through a catch basin located in the open field area to the east of the project owned by the City, identified as the Points of Analysis #1 (POA1) on the plans. The existing parking lot and portions of the existing church drain to the catch basin in this area as untreated sheet flow. The majority of eth church roof runoff drains to the municipal collection system in Market Street. The Pre-Development analysis models the existing conditions and existing drain systems for the 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 four watersheds for the project site. The watersheds discharge to POA #1 as identified above. The point of analysis is the same for the pre and post development models 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 new 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 lot 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 stormwater treatment will be provided to the site where none currently exists. The new parking lot will be constructed with porous pavers in the parking areas to infiltrate the surface water from the lot and a raingarden, sub-surface (Stormtech) treatment system, and an edge-line drip edge filter will be constructed 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 point of analysis that was used in the Pre-Development model was used for comparison of the Pre and Post development conditions.

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 7660 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 access and community use. 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 new development area as well as the existing church parking lot, which will provide treatment to approximately 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 approximately 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	5.9	11.1	15.2	17.6
Post	4.4	8.3	11.7	14.7
Net Change	**-1.5**	**-2.8**	**-3.5**	**-2.9**

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
- 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)
Legend
Approximate Property Line
Google Earth
N
300 ft

Drainage Analysis

- **Extreme Precipitation Tables**
- **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**

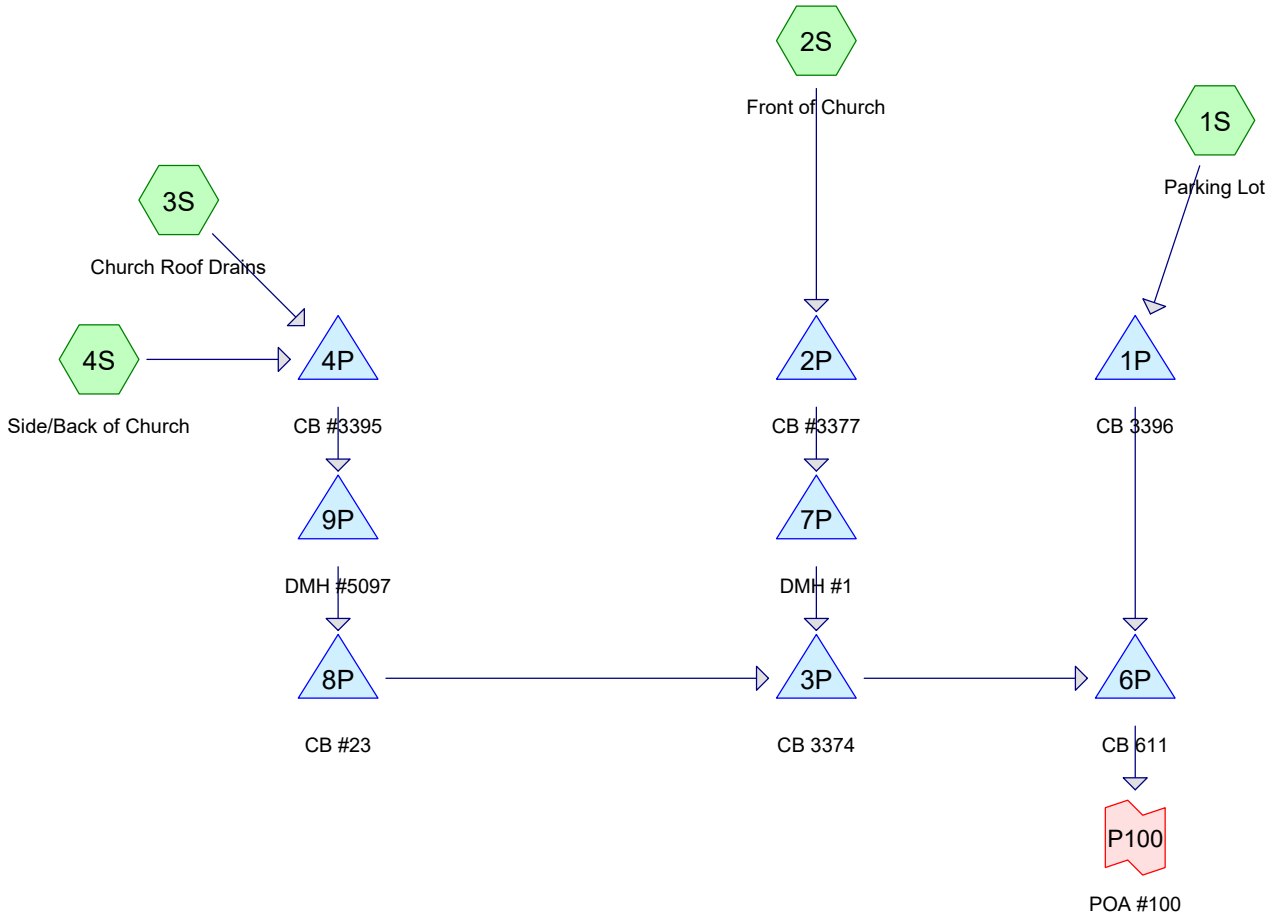
Lower Confidence Limits

	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**

Powered by ACIS
Northeast Regional Climate Center



Subcat Reach Pond Link

Routing Diagram for 4950-PRE_122319
Prepared by Altus Engineering, Inc., Printed 1/29/2020

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.472	61	>75% Grass cover, Good, HSG B (1S, 2S, 4S)
1.065	98	Paved parking, HSG B (1S)
0.033	98	Paved parking, HSG C (4S)
0.383	98	Roofs, HSG B (2S, 3S, 4S)
0.032	98	Unconnected pavement, HSG B (1S, 2S)
0.016	98	Unconnected pavement, HSG C (4S)
3.003	**80**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
2.953	HSG B	1S, 2S, 3S, 4S
0.050	HSG C	4S
0.000	HSG D	
0.000	Other	
3.003		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	1.472	0.000	0.000	0.000	1.472	>75% Grass cover, Good	1S, 2S, 4S
0.000	1.065	0.033	0.000	0.000	1.099	Paved parking	1S, 4S
0.000	0.383	0.000	0.000	0.000	0.383	Roofs	2S, 3S, 4S
0.000	0.032	0.016	0.000	0.000	0.049	Unconnected pavement	1S, 2S, 4S
0.000	**2.953**	**0.050**	**0.000**	**0.000**	**3.003**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	10.57	9.10	75.0	0.0196	0.012	15.0	0.0	0.0
2	2P	18.00	17.67	10.0	0.0330	0.012	15.0	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

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: Parking Lot Runoff Area=78,487 sf 59.32% Impervious Runoff Depth>2.01"
Flow Length=480' Tc=6.0 min CN=83 Runoff=4.25 cfs 0.302 af

Subcatchment 2S: Front of Church Runoff Area=18,095 sf 20.56% Impervious Runoff Depth>0.95"
Tc=6.0 min UI Adjusted CN=67 Runoff=0.42 cfs 0.033 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

Pond 1P: CB 3396 Peak Elev=11.71' Storage=14 cf Inflow=4.25 cfs 0.302 af
15.0" Round Culvert n=0.012 L=75.0' S=0.0196 '/' Outflow=4.25 cfs 0.302 af

Pond 2P: CB #3377 Peak Elev=18.30' Storage=4 cf Inflow=0.42 cfs 0.033 af
15.0" Round Culvert n=0.012 L=10.0' S=0.0330 '/' Outflow=0.42 cfs 0.033 af

Pond 3P: CB 3374 Peak Elev=13.54' Storage=7 cf Inflow=1.72 cfs 0.152 af
24.0" Round Culvert n=0.012 L=306.0' S=0.0127 '/' Outflow=1.72 cfs 0.152 af

Pond 4P: CB #3395 Peak Elev=21.41' Storage=9 cf Inflow=1.34 cfs 0.119 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0200 '/' Outflow=1.34 cfs 0.119 af

Pond 6P: CB 611 Peak Elev=10.25' Storage=16 cf Inflow=5.85 cfs 0.454 af
24.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=5.85 cfs 0.454 af

Pond 7P: DMH #1 Peak Elev=13.85' Storage=4 cf Inflow=0.42 cfs 0.033 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0058 '/' Outflow=0.42 cfs 0.033 af

Pond 8P: CB #23 Peak Elev=20.47' Storage=6 cf Inflow=1.33 cfs 0.119 af
24.0" Round Culvert n=0.012 L=210.0' S=0.0329 '/' Outflow=1.33 cfs 0.119 af

Pond 9P: DMH #5097 Peak Elev=21.16' Storage=8 cf Inflow=1.34 cfs 0.119 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0096 '/' Outflow=1.33 cfs 0.119 af

Link P100: POA #100 Inflow=5.85 cfs 0.454 af
Primary=5.85 cfs 0.454 af

Total Runoff Area = 3.003 ac Runoff Volume = 0.454 af Average Runoff Depth = 1.81"
49.04% Pervious = 1.472 ac 50.96% Impervious = 1.530 ac

Summary for Subcatchment 1S: Parking Lot

Runoff = 4.25 cfs @ 12.09 hrs, Volume= 0.302 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
46,400	98	Paved parking, HSG B
31,927	61	>75% Grass cover, Good, HSG B
160	98	Unconnected pavement, HSG B
78,487	83	Weighted Average
31,927		40.68% Pervious Area
46,560		59.32% Impervious Area
160		0.34% 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 = 0.42 cfs @ 12.10 hrs, Volume= 0.033 af, Depth> 0.95"

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 2-Year Rainfall=3.68"

Area (sf)	CN	Adj	Description
2,480	98		Roofs, HSG B
1,240	98		Unconnected pavement, HSG B
14,375	61		>75% Grass cover, Good, HSG B
18,095	69	67	Weighted Average, UI Adjusted
14,375			79.44% Pervious Area
3,720			20.56% Impervious Area
1,240			33.33% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, T'c Min**

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 Pond 1P: CB 3396

Inflow Area = 1.802 ac, 59.32% Impervious, Inflow Depth > 2.01" for 2-Year event
Inflow = 4.25 cfs @ 12.09 hrs, Volume= 0.302 af
Outflow = 4.25 cfs @ 12.09 hrs, Volume= 0.302 af, Atten= 0%, Lag= 0.0 min
Primary = 4.25 cfs @ 12.09 hrs, Volume= 0.302 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 11.71' @ 12.09 hrs Surf.Area= 13 sf Storage= 14 cf
Flood Elev= 89.86' Surf.Area= 9,251 sf Storage= 11,412 cf

Plug-Flow detention time= 0.2 min calculated for 0.301 af (100% of inflow)

Center-of-Mass det. time= 0.1 min (825.9 - 825.8)

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=4.25 cfs @ 12.09 hrs HW=11.71' TW=10.24' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.25 cfs @ 3.63 fps)

Summary for Pond 2P: CB #3377

Inflow Area = 0.415 ac, 20.56% Impervious, Inflow Depth > 0.95" for 2-Year event
Inflow = 0.42 cfs @ 12.10 hrs, Volume= 0.033 af
Outflow = 0.42 cfs @ 12.10 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.1 min
Primary = 0.42 cfs @ 12.10 hrs, Volume= 0.033 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 18.30' @ 12.10 hrs Surf.Area= 13 sf Storage= 4 cf

Plug-Flow detention time= 0.5 min calculated for 0.033 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (875.0 - 874.7)

Volume	Invert	Avail.Storage	Storage Description
#1	18.00'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	18.00'	**15.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.00' / 17.67' S= 0.0330 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.42 cfs @ 12.10 hrs HW=18.30' TW=13.85' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.42 cfs @ 1.86 fps)

Summary for Pond 3P: CB 3374

Inflow Area = 1.201 ac, 38.42% Impervious, Inflow Depth > 1.52" for 2-Year event
Inflow = 1.72 cfs @ 12.13 hrs, Volume= 0.152 af
Outflow = 1.72 cfs @ 12.13 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.0 min
Primary = 1.72 cfs @ 12.13 hrs, Volume= 0.152 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.54' @ 12.13 hrs Surf.Area= 13 sf Storage= 7 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.2 min calculated for 0.152 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (820.1 - 819.9)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	63 cf	**4.00'D x 5.00'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=1.72 cfs @ 12.13 hrs HW=13.54' TW=10.20' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.72 cfs @ 2.50 fps)

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 = 1.34 cfs @ 12.14 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.1 min
Primary = 1.34 cfs @ 12.14 hrs, Volume= 0.119 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.41' @ 12.14 hrs Surf.Area= 13 sf Storage= 9 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= 0.3 min calculated for 0.119 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (804.2 - 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=1.33 cfs @ 12.14 hrs HW=21.41' TW=21.16' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.33 cfs @ 3.15 fps)

Summary for Pond 6P: CB 611

Inflow Area = 3.003 ac, 50.96% Impervious, Inflow Depth > 1.81" for 2-Year event
Inflow = 5.85 cfs @ 12.10 hrs, Volume= 0.454 af
Outflow = 5.85 cfs @ 12.10 hrs, Volume= 0.454 af, Atten= 0%, Lag= 0.0 min
Primary = 5.85 cfs @ 12.10 hrs, Volume= 0.454 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 10.25' @ 12.10 hrs Surf.Area= 13 sf Storage= 16 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 112 cf

Plug-Flow detention time= 0.1 min calculated for 0.453 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (824.0 - 823.9)

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=5.85 cfs @ 12.10 hrs HW=10.25' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 5.85 cfs @ 4.06 fps)

Summary for Pond 7P: DMH #1

Inflow Area = 0.415 ac, 20.56% Impervious, Inflow Depth > 0.95" for 2-Year event
Inflow = 0.42 cfs @ 12.10 hrs, Volume= 0.033 af
Outflow = 0.42 cfs @ 12.10 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.1 min
Primary = 0.42 cfs @ 12.10 hrs, Volume= 0.033 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.85' @ 12.10 hrs Surf.Area= 13 sf Storage= 4 cf

Plug-Flow detention time= 0.5 min calculated for 0.033 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (875.3 - 875.0)

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=0.41 cfs @ 12.10 hrs HW=13.85' TW=13.53' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.41 cfs @ 2.37 fps)

Summary for Pond 8P: CB #23

Inflow Area = 0.786 ac, 47.87% Impervious, Inflow Depth > 1.82" for 2-Year event
Inflow = 1.33 cfs @ 12.14 hrs, Volume= 0.119 af
Outflow = 1.33 cfs @ 12.14 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.0 min
Primary = 1.33 cfs @ 12.14 hrs, Volume= 0.119 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.47' @ 12.14 hrs Surf.Area= 13 sf Storage= 6 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 61 cf

Plug-Flow detention time= 0.3 min calculated for 0.119 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (804.6 - 804.5)

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=1.33 cfs @ 12.14 hrs HW=20.47' TW=13.54' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.33 cfs @ 2.34 fps)

Summary for Pond 9P: DMH #5097

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 = 1.33 cfs @ 12.14 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.1 min
Primary = 1.33 cfs @ 12.14 hrs, Volume= 0.119 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.16' @ 12.14 hrs Surf.Area= 13 sf Storage= 8 cf

Plug-Flow detention time= 0.3 min calculated for 0.119 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (804.5 - 804.2)

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=1.33 cfs @ 12.14 hrs HW=21.16' TW=20.47' (Dynamic Tailwater)
1=Culvert (Barrel Controls 1.33 cfs @ 3.69 fps)

Summary for Link P100: POA #100

Inflow Area = 3.003 ac, 50.96% Impervious, Inflow Depth > 1.81" for 2-Year event
Inflow = 5.85 cfs @ 12.10 hrs, Volume= 0.454 af
Primary = 5.85 cfs @ 12.10 hrs, Volume= 0.454 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: Parking Lot Runoff Area=78,487 sf 59.32% Impervious Runoff Depth>3.70"
Flow Length=480' Tc=6.0 min CN=83 Runoff=7.76 cfs 0.555 af

Subcatchment 2S: Front of Church Runoff Area=18,095 sf 20.56% Impervious Runoff Depth>2.21"
Tc=6.0 min UI Adjusted CN=67 Runoff=1.06 cfs 0.077 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

Pond 1P: CB 3396 Peak Elev=12.92' Storage=30 cf Inflow=7.76 cfs 0.555 af
15.0" Round Culvert n=0.012 L=75.0' S=0.0196 '/' Outflow=7.76 cfs 0.555 af

Pond 2P: CB #3377 Peak Elev=18.49' Storage=6 cf Inflow=1.06 cfs 0.077 af
15.0" Round Culvert n=0.012 L=10.0' S=0.0330 '/' Outflow=1.06 cfs 0.077 af

Pond 3P: CB 3374 Peak Elev=13.79' Storage=10 cf Inflow=3.49 cfs 0.295 af
24.0" Round Culvert n=0.012 L=306.0' S=0.0127 '/' Outflow=3.49 cfs 0.295 af

Pond 4P: CB #3395 Peak Elev=21.93' Storage=15 cf Inflow=2.53 cfs 0.218 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0200 '/' Outflow=2.52 cfs 0.218 af

Pond 6P: CB 611 Peak Elev=10.84' Storage=23 cf Inflow=11.06 cfs 0.850 af
24.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=11.06 cfs 0.850 af

Pond 7P: DMH #1 Peak Elev=14.09' Storage=7 cf Inflow=1.06 cfs 0.077 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0058 '/' Outflow=1.06 cfs 0.077 af

Pond 8P: CB #23 Peak Elev=20.66' Storage=8 cf Inflow=2.52 cfs 0.218 af
24.0" Round Culvert n=0.012 L=210.0' S=0.0329 '/' Outflow=2.52 cfs 0.218 af

Pond 9P: DMH #5097 Peak Elev=21.48' Storage=12 cf Inflow=2.52 cfs 0.218 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0096 '/' Outflow=2.52 cfs 0.218 af

Link P100: POA #100 Inflow=11.06 cfs 0.850 af
Primary=11.06 cfs 0.850 af

Total Runoff Area = 3.003 ac Runoff Volume = 0.851 af Average Runoff Depth = 3.40"
49.04% Pervious = 1.472 ac 50.96% Impervious = 1.530 ac

Summary for Subcatchment 1S: Parking Lot

Runoff = 7.76 cfs @ 12.09 hrs, Volume= 0.555 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
46,400	98	Paved parking, HSG B
31,927	61	>75% Grass cover, Good, HSG B
160	98	Unconnected pavement, HSG B
78,487	83	Weighted Average
31,927		40.68% Pervious Area
46,560		59.32% Impervious Area
160		0.34% 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 = 1.06 cfs @ 12.09 hrs, Volume= 0.077 af, Depth> 2.21"

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 10-Year Rainfall=5.58"

Area (sf)	CN	Adj	Description
2,480	98		Roofs, HSG B
1,240	98		Unconnected pavement, HSG B
14,375	61		>75% Grass cover, Good, HSG B
18,095	69	67	Weighted Average, UI Adjusted
14,375			79.44% Pervious Area
3,720			20.56% Impervious Area
1,240			33.33% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, T'c Min**

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 Pond 1P: CB 3396

Inflow Area = 1.802 ac, 59.32% Impervious, Inflow Depth > 3.70" for 10-Year event
Inflow = 7.76 cfs @ 12.09 hrs, Volume= 0.555 af
Outflow = 7.76 cfs @ 12.09 hrs, Volume= 0.555 af, Atten= 0%, Lag= 0.1 min
Primary = 7.76 cfs @ 12.09 hrs, Volume= 0.555 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 12.92' @ 12.09 hrs Surf.Area= 13 sf Storage= 30 cf
Flood Elev= 89.86' Surf.Area= 9,251 sf Storage= 11,412 cf

Plug-Flow detention time= 0.1 min calculated for 0.555 af (100% of inflow)

Center-of-Mass det. time= 0.1 min (808.5 - 808.4)

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=7.75 cfs @ 12.09 hrs HW=12.91' TW=10.84' (Dynamic Tailwater)
1=Culvert (Inlet Controls 7.75 cfs @ 6.31 fps)

Summary for Pond 2P: CB #3377

Inflow Area = 0.415 ac, 20.56% Impervious, Inflow Depth > 2.21" for 10-Year event
Inflow = 1.06 cfs @ 12.09 hrs, Volume= 0.077 af
Outflow = 1.06 cfs @ 12.09 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.1 min
Primary = 1.06 cfs @ 12.09 hrs, Volume= 0.077 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 18.49' @ 12.09 hrs Surf.Area= 13 sf Storage= 6 cf

Plug-Flow detention time= 0.3 min calculated for 0.077 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (848.6 - 848.4)

Volume	Invert	Avail.Storage	Storage Description
#1	18.00'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	18.00'	**15.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.00' / 17.67' S= 0.0330 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.06 cfs @ 12.09 hrs HW=18.49' TW=14.09' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.06 cfs @ 2.38 fps)

Summary for Pond 3P: CB 3374

Inflow Area = 1.201 ac, 38.42% Impervious, Inflow Depth > 2.95" for 10-Year event
Inflow = 3.49 cfs @ 12.12 hrs, Volume= 0.295 af
Outflow = 3.49 cfs @ 12.12 hrs, Volume= 0.295 af, Atten= 0%, Lag= 0.0 min
Primary = 3.49 cfs @ 12.12 hrs, Volume= 0.295 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.79' @ 12.12 hrs Surf.Area= 13 sf Storage= 10 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.2 min calculated for 0.295 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (811.7 - 811.6)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	63 cf	**4.00'D x 5.00'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=3.48 cfs @ 12.12 hrs HW=13.79' TW=10.79' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.48 cfs @ 3.02 fps)

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 = 2.52 cfs @ 12.14 hrs, Volume= 0.218 af, Atten= 0%, Lag= 0.1 min
Primary = 2.52 cfs @ 12.14 hrs, Volume= 0.218 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.93' @ 12.14 hrs Surf.Area= 13 sf Storage= 15 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= 0.2 min calculated for 0.218 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (798.2 - 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=2.51 cfs @ 12.14 hrs HW=21.93' TW=21.48' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.51 cfs @ 3.20 fps)

Summary for Pond 6P: CB 611

Inflow Area = 3.003 ac, 50.96% Impervious, Inflow Depth > 3.40" for 10-Year event
Inflow = 11.06 cfs @ 12.10 hrs, Volume= 0.850 af
Outflow = 11.06 cfs @ 12.10 hrs, Volume= 0.850 af, Atten= 0%, Lag= 0.0 min
Primary = 11.06 cfs @ 12.10 hrs, Volume= 0.850 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 10.84' @ 12.10 hrs Surf.Area= 13 sf Storage= 23 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 112 cf

Plug-Flow detention time= 0.1 min calculated for 0.850 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (809.7 - 809.6)

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=11.05 cfs @ 12.10 hrs HW=10.84' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 11.05 cfs @ 4.77 fps)

Summary for Pond 7P: DMH #1

Inflow Area = 0.415 ac, 20.56% Impervious, Inflow Depth > 2.21" for 10-Year event
Inflow = 1.06 cfs @ 12.09 hrs, Volume= 0.077 af
Outflow = 1.06 cfs @ 12.09 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min
Primary = 1.06 cfs @ 12.09 hrs, Volume= 0.077 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.09' @ 12.11 hrs Surf.Area= 13 sf Storage= 7 cf

Plug-Flow detention time= 0.4 min calculated for 0.077 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (848.8 - 848.6)

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=1.03 cfs @ 12.09 hrs HW=14.09' TW=13.77' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.03 cfs @ 2.81 fps)

Summary for Pond 8P: CB #23

Inflow Area = 0.786 ac, 47.87% Impervious, Inflow Depth > 3.34" for 10-Year event
Inflow = 2.52 cfs @ 12.14 hrs, Volume= 0.218 af
Outflow = 2.52 cfs @ 12.14 hrs, Volume= 0.218 af, Atten= 0%, Lag= 0.0 min
Primary = 2.52 cfs @ 12.14 hrs, Volume= 0.218 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.66' @ 12.14 hrs Surf.Area= 13 sf Storage= 8 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 61 cf

Plug-Flow detention time= 0.2 min calculated for 0.218 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (798.5 - 798.4)

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=2.52 cfs @ 12.14 hrs HW=20.66' TW=13.78' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.52 cfs @ 2.77 fps)

Summary for Pond 9P: DMH #5097

Inflow Area = 0.786 ac, 47.87% Impervious, Inflow Depth > 3.34" for 10-Year event
Inflow = 2.52 cfs @ 12.14 hrs, Volume= 0.218 af
Outflow = 2.52 cfs @ 12.14 hrs, Volume= 0.218 af, Atten= 0%, Lag= 0.1 min
Primary = 2.52 cfs @ 12.14 hrs, Volume= 0.218 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.48' @ 12.14 hrs Surf.Area= 13 sf Storage= 12 cf

Plug-Flow detention time= 0.2 min calculated for 0.218 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (798.4 - 798.2)

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=2.52 cfs @ 12.14 hrs HW=21.48' TW=20.66' (Dynamic Tailwater)
1=Culvert (Barrel Controls 2.52 cfs @ 4.19 fps)

Summary for Link P100: POA #100

Inflow Area = 3.003 ac, 50.96% Impervious, Inflow Depth > 3.40" for 10-Year event
Inflow = 11.06 cfs @ 12.10 hrs, Volume= 0.850 af
Primary = 11.06 cfs @ 12.10 hrs, Volume= 0.850 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: Parking Lot Runoff Area=78,487 sf 59.32% Impervious Runoff Depth>5.09"
Flow Length=480' Tc=6.0 min CN=83 Runoff=10.55 cfs 0.764 af

Subcatchment 2S: Front of Church Runoff Area=18,095 sf 20.56% Impervious Runoff Depth>3.36"
Tc=6.0 min UI Adjusted CN=67 Runoff=1.63 cfs 0.116 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

Pond 1P: CB 3396 Peak Elev=14.52' Storage=91 cf Inflow=10.55 cfs 0.764 af
15.0" Round Culvert n=0.012 L=75.0' S=0.0196 '/' Outflow=10.24 cfs 0.764 af

Pond 2P: CB #3377 Peak Elev=18.62' Storage=8 cf Inflow=1.63 cfs 0.116 af
15.0" Round Culvert n=0.012 L=10.0' S=0.0330 '/' Outflow=1.63 cfs 0.116 af

Pond 3P: CB 3374 Peak Elev=13.96' Storage=12 cf Inflow=4.98 cfs 0.419 af
24.0" Round Culvert n=0.012 L=306.0' S=0.0127 '/' Outflow=4.98 cfs 0.419 af

Pond 4P: CB #3395 Peak Elev=22.81' Storage=26 cf Inflow=3.53 cfs 0.303 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0200 '/' Outflow=3.52 cfs 0.303 af

Pond 6P: CB 611 Peak Elev=11.31' Storage=29 cf Inflow=15.16 cfs 1.183 af
24.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=15.16 cfs 1.183 af

Pond 7P: DMH #1 Peak Elev=14.27' Storage=9 cf Inflow=1.63 cfs 0.116 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0058 '/' Outflow=1.63 cfs 0.116 af

Pond 8P: CB #23 Peak Elev=20.79' Storage=10 cf Inflow=3.52 cfs 0.303 af
24.0" Round Culvert n=0.012 L=210.0' S=0.0329 '/' Outflow=3.51 cfs 0.303 af

Pond 9P: DMH #5097 Peak Elev=21.94' Storage=18 cf Inflow=3.52 cfs 0.303 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0096 '/' Outflow=3.52 cfs 0.303 af

Link P100: POA #100 Inflow=15.16 cfs 1.183 af
Primary=15.16 cfs 1.183 af

Total Runoff Area = 3.003 ac Runoff Volume = 1.183 af Average Runoff Depth = 4.73"
49.04% Pervious = 1.472 ac 50.96% Impervious = 1.530 ac

Summary for Subcatchment 1S: Parking Lot

Runoff = 10.55 cfs @ 12.09 hrs, Volume= 0.764 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
46,400	98	Paved parking, HSG B
31,927	61	>75% Grass cover, Good, HSG B
160	98	Unconnected pavement, HSG B
78,487	83	Weighted Average
31,927		40.68% Pervious Area
46,560		59.32% Impervious Area
160		0.34% 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 = 1.63 cfs @ 12.09 hrs, Volume= 0.116 af, Depth> 3.36"

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
2,480	98		Roofs, HSG B
1,240	98		Unconnected pavement, HSG B
14,375	61		>75% Grass cover, Good, HSG B
18,095	69	67	Weighted Average, UI Adjusted
14,375			79.44% Pervious Area
3,720			20.56% Impervious Area
1,240			33.33% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, T'c Min**

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 Pond 1P: CB 3396

Inflow Area = 1.802 ac, 59.32% Impervious, Inflow Depth > 5.09" for 25-Year event
Inflow = 10.55 cfs @ 12.09 hrs, Volume= 0.764 af
Outflow = 10.24 cfs @ 12.10 hrs, Volume= 0.764 af, Atten= 3%, Lag= 0.9 min
Primary = 10.24 cfs @ 12.10 hrs, Volume= 0.764 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.52' @ 12.11 hrs Surf.Area= 191 sf Storage= 91 cf
Flood Elev= 89.86' Surf.Area= 9,251 sf Storage= 11,412 cf

Plug-Flow detention time= 0.1 min calculated for 0.764 af (100% of inflow)

Center-of-Mass det. time= 0.1 min (799.5 - 799.4)

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=10.21 cfs @ 12.10 hrs HW=14.51' TW=11.30' (Dynamic Tailwater)
1=Culvert (Outlet Controls 10.21 cfs @ 8.32 fps)

Summary for Pond 2P: CB #3377

Inflow Area = 0.415 ac, 20.56% Impervious, Inflow Depth > 3.36" for 25-Year event
Inflow = 1.63 cfs @ 12.09 hrs, Volume= 0.116 af
Outflow = 1.63 cfs @ 12.09 hrs, Volume= 0.116 af, Atten= 0%, Lag= 0.0 min
Primary = 1.63 cfs @ 12.09 hrs, Volume= 0.116 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 18.62' @ 12.09 hrs Surf.Area= 13 sf Storage= 8 cf

Plug-Flow detention time= 0.3 min calculated for 0.116 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (836.4 - 836.2)

Volume	Invert	Avail.Storage	Storage Description
#1	18.00'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	18.00'	**15.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.00' / 17.67' S= 0.0330 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.63 cfs @ 12.09 hrs HW=18.62' TW=14.26' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.63 cfs @ 2.68 fps)

Summary for Pond 3P: CB 3374

Inflow Area = 1.201 ac, 38.42% Impervious, Inflow Depth > 4.18" for 25-Year event
Inflow = 4.98 cfs @ 12.13 hrs, Volume= 0.419 af
Outflow = 4.98 cfs @ 12.13 hrs, Volume= 0.419 af, Atten= 0%, Lag= 0.0 min
Primary = 4.98 cfs @ 12.13 hrs, Volume= 0.419 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.96' @ 12.13 hrs Surf.Area= 13 sf Storage= 12 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.1 min calculated for 0.419 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (806.0 - 805.9)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	63 cf	**4.00'D x 5.00'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=4.97 cfs @ 12.13 hrs HW=13.96' TW=11.28' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.97 cfs @ 3.33 fps)

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 = 3.52 cfs @ 12.14 hrs, Volume= 0.303 af, Atten= 0%, Lag= 0.3 min
Primary = 3.52 cfs @ 12.14 hrs, Volume= 0.303 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.81' @ 12.14 hrs Surf.Area= 13 sf Storage= 26 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= 0.2 min calculated for 0.303 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (793.9 - 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=3.51 cfs @ 12.14 hrs HW=22.80' TW=21.94' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.51 cfs @ 4.47 fps)

Summary for Pond 6P: CB 611

Inflow Area = 3.003 ac, 50.96% Impervious, Inflow Depth > 4.73" for 25-Year event
Inflow = 15.16 cfs @ 12.11 hrs, Volume= 1.183 af
Outflow = 15.16 cfs @ 12.11 hrs, Volume= 1.183 af, Atten= 0%, Lag= 0.0 min
Primary = 15.16 cfs @ 12.11 hrs, Volume= 1.183 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 11.31' @ 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= 0.1 min calculated for 1.182 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (801.9 - 801.8)

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=15.16 cfs @ 12.11 hrs HW=11.31' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 15.16 cfs @ 5.25 fps)

Summary for Pond 7P: DMH #1

Inflow Area = 0.415 ac, 20.56% Impervious, Inflow Depth > 3.36" for 25-Year event
Inflow = 1.63 cfs @ 12.09 hrs, Volume= 0.116 af
Outflow = 1.63 cfs @ 12.09 hrs, Volume= 0.116 af, Atten= 0%, Lag= 0.1 min
Primary = 1.63 cfs @ 12.09 hrs, Volume= 0.116 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.27' @ 12.11 hrs Surf.Area= 13 sf Storage= 9 cf

Plug-Flow detention time= 0.3 min calculated for 0.116 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (836.6 - 836.4)

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=1.58 cfs @ 12.09 hrs HW=14.26' TW=13.94' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.58 cfs @ 2.99 fps)

Summary for Pond 8P: CB #23

Inflow Area = 0.786 ac, 47.87% Impervious, Inflow Depth > 4.62" for 25-Year event
Inflow = 3.52 cfs @ 12.15 hrs, Volume= 0.303 af
Outflow = 3.51 cfs @ 12.14 hrs, Volume= 0.303 af, Atten= 0%, Lag= 0.0 min
Primary = 3.51 cfs @ 12.14 hrs, Volume= 0.303 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.79' @ 12.14 hrs Surf.Area= 13 sf Storage= 10 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 61 cf

Plug-Flow detention time= 0.2 min calculated for 0.302 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (794.2 - 794.0)

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=3.51 cfs @ 12.14 hrs HW=20.79' TW=13.95' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.51 cfs @ 3.03 fps)

Summary for Pond 9P: DMH #5097

Inflow Area = 0.786 ac, 47.87% Impervious, Inflow Depth > 4.62" for 25-Year event
Inflow = 3.52 cfs @ 12.14 hrs, Volume= 0.303 af
Outflow = 3.52 cfs @ 12.15 hrs, Volume= 0.303 af, Atten= 0%, Lag= 0.3 min
Primary = 3.52 cfs @ 12.15 hrs, Volume= 0.303 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.94' @ 12.15 hrs Surf.Area= 13 sf Storage= 18 cf

Plug-Flow detention time= 0.2 min calculated for 0.303 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (794.0 - 793.9)

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=3.51 cfs @ 12.15 hrs HW=21.94' TW=20.79' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.51 cfs @ 4.47 fps)

Summary for Link P100: POA #100

Inflow Area = 3.003 ac, 50.96% Impervious, Inflow Depth > 4.73" for 25-Year event
Inflow = 15.16 cfs @ 12.11 hrs, Volume= 1.183 af
Primary = 15.16 cfs @ 12.11 hrs, Volume= 1.183 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: Parking Lot Runoff Area=78,487 sf 59.32% Impervious Runoff Depth>6.41"
Flow Length=480' Tc=6.0 min CN=83 Runoff=13.15 cfs 0.963 af

Subcatchment 2S: Front of Church Runoff Area=18,095 sf 20.56% Impervious Runoff Depth>4.50"
Tc=6.0 min UI Adjusted CN=67 Runoff=2.20 cfs 0.156 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

Pond 1P: CB 3396 Peak Elev=15.54' Storage=588 cf Inflow=13.15 cfs 0.963 af
15.0" Round Culvert n=0.012 L=75.0' S=0.0196 '/' Outflow=11.18 cfs 0.963 af

Pond 2P: CB #3377 Peak Elev=18.74' Storage=9 cf Inflow=2.20 cfs 0.156 af
15.0" Round Culvert n=0.012 L=10.0' S=0.0330 '/' Outflow=2.20 cfs 0.156 af

Pond 3P: CB 3374 Peak Elev=14.11' Storage=14 cf Inflow=6.44 cfs 0.540 af
24.0" Round Culvert n=0.012 L=306.0' S=0.0127 '/' Outflow=6.44 cfs 0.540 af

Pond 4P: CB #3395 Peak Elev=23.85' Storage=40 cf Inflow=4.49 cfs 0.384 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0200 '/' Outflow=4.48 cfs 0.384 af

Pond 6P: CB 611 Peak Elev=11.68' Storage=34 cf Inflow=17.61 cfs 1.502 af
24.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=17.61 cfs 1.502 af

Pond 7P: DMH #1 Peak Elev=14.43' Storage=11 cf Inflow=2.20 cfs 0.156 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0058 '/' Outflow=2.19 cfs 0.156 af

Pond 8P: CB #23 Peak Elev=20.90' Storage=11 cf Inflow=4.47 cfs 0.384 af
24.0" Round Culvert n=0.012 L=210.0' S=0.0329 '/' Outflow=4.47 cfs 0.384 af

Pond 9P: DMH #5097 Peak Elev=22.46' Storage=24 cf Inflow=4.48 cfs 0.384 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0096 '/' Outflow=4.47 cfs 0.384 af

Link P100: POA #100 Inflow=17.61 cfs 1.502 af
Primary=17.61 cfs 1.502 af

Total Runoff Area = 3.003 ac Runoff Volume = 1.503 af Average Runoff Depth = 6.00"
49.04% Pervious = 1.472 ac 50.96% Impervious = 1.530 ac

Summary for Subcatchment 1S: Parking Lot

Runoff = 13.15 cfs @ 12.09 hrs, Volume= 0.963 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
46,400	98	Paved parking, HSG B
31,927	61	>75% Grass cover, Good, HSG B
160	98	Unconnected pavement, HSG B
78,487	83	Weighted Average
31,927		40.68% Pervious Area
46,560		59.32% Impervious Area
160		0.34% 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 = 2.20 cfs @ 12.09 hrs, Volume= 0.156 af, Depth> 4.50"

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
2,480	98		Roofs, HSG B
1,240	98		Unconnected pavement, HSG B
14,375	61		>75% Grass cover, Good, HSG B
18,095	69	67	Weighted Average, UI Adjusted
14,375			79.44% Pervious Area
3,720			20.56% Impervious Area
1,240			33.33% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, T'c Min**

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 Pond 1P: CB 3396

Inflow Area = 1.802 ac, 59.32% Impervious, Inflow Depth > 6.41" for 50-Year event
Inflow = 13.15 cfs @ 12.09 hrs, Volume= 0.963 af
Outflow = 11.18 cfs @ 12.13 hrs, Volume= 0.963 af, Atten= 15%, Lag= 2.9 min
Primary = 11.18 cfs @ 12.13 hrs, Volume= 0.963 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 15.54' @ 12.13 hrs Surf.Area= 1,064 sf Storage= 588 cf
Flood Elev= 89.86' Surf.Area= 9,251 sf Storage= 11,412 cf

Plug-Flow detention time= 0.2 min calculated for 0.962 af (100% of inflow)

Center-of-Mass det. time= 0.2 min (793.2 - 793.0)

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=11.18 cfs @ 12.13 hrs HW=15.54' TW=11.68' (Dynamic Tailwater)
1=Culvert (Outlet Controls 11.18 cfs @ 9.11 fps)

Summary for Pond 2P: CB #3377

Inflow Area = 0.415 ac, 20.56% Impervious, Inflow Depth > 4.50" for 50-Year event
Inflow = 2.20 cfs @ 12.09 hrs, Volume= 0.156 af
Outflow = 2.20 cfs @ 12.09 hrs, Volume= 0.156 af, Atten= 0%, Lag= 0.0 min
Primary = 2.20 cfs @ 12.09 hrs, Volume= 0.156 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 18.74' @ 12.09 hrs Surf.Area= 13 sf Storage= 9 cf

Plug-Flow detention time= 0.2 min calculated for 0.156 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (828.0 - 827.8)

Volume	Invert	Avail.Storage	Storage Description
#1	18.00'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	18.00'	**15.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.00' / 17.67' S= 0.0330 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.20 cfs @ 12.09 hrs HW=18.74' TW=14.42' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.20 cfs @ 2.92 fps)

Summary for Pond 3P: CB 3374

Inflow Area = 1.201 ac, 38.42% Impervious, Inflow Depth > 5.39" for 50-Year event
Inflow = 6.44 cfs @ 12.12 hrs, Volume= 0.540 af
Outflow = 6.44 cfs @ 12.12 hrs, Volume= 0.540 af, Atten= 0%, Lag= 0.1 min
Primary = 6.44 cfs @ 12.12 hrs, Volume= 0.540 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.11' @ 12.12 hrs Surf.Area= 13 sf Storage= 14 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.1 min calculated for 0.540 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (801.5 - 801.4)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	63 cf	**4.00'D x 5.00'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=6.43 cfs @ 12.12 hrs HW=14.11' TW=11.68' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.43 cfs @ 3.59 fps)

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 = 4.48 cfs @ 12.14 hrs, Volume= 0.384 af, Atten= 0%, Lag= 0.2 min
Primary = 4.48 cfs @ 12.14 hrs, Volume= 0.384 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.85' @ 12.14 hrs Surf.Area= 13 sf Storage= 40 cf
Flood Elev= 90.16' Surf.Area= 13 sf Storage= 74 cf

Plug-Flow detention time= 0.2 min calculated for 0.384 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (790.3 - 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=4.45 cfs @ 12.14 hrs HW=23.84' TW=22.46' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.45 cfs @ 5.67 fps)

Summary for Pond 6P: CB 611

Inflow Area = 3.003 ac, 50.96% Impervious, Inflow Depth > 6.00" for 50-Year event
Inflow = 17.61 cfs @ 12.13 hrs, Volume= 1.502 af
Outflow = 17.61 cfs @ 12.13 hrs, Volume= 1.502 af, Atten= 0%, Lag= 0.0 min
Primary = 17.61 cfs @ 12.13 hrs, Volume= 1.502 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 11.68' @ 12.13 hrs Surf.Area= 13 sf Storage= 34 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 112 cf

Plug-Flow detention time= 0.1 min calculated for 1.502 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (796.2 - 796.2)

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=17.60 cfs @ 12.13 hrs HW=11.68' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 17.60 cfs @ 5.60 fps)

Summary for Pond 7P: DMH #1

Inflow Area = 0.415 ac, 20.56% Impervious, Inflow Depth > 4.50" for 50-Year event
Inflow = 2.20 cfs @ 12.09 hrs, Volume= 0.156 af
Outflow = 2.19 cfs @ 12.09 hrs, Volume= 0.156 af, Atten= 0%, Lag= 0.1 min
Primary = 2.19 cfs @ 12.09 hrs, Volume= 0.156 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.43' @ 12.11 hrs Surf.Area= 13 sf Storage= 11 cf

Plug-Flow detention time= 0.3 min calculated for 0.156 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (828.1 - 828.0)

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=2.12 cfs @ 12.09 hrs HW=14.42' TW=14.08' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.12 cfs @ 3.14 fps)

Summary for Pond 8P: CB #23

Inflow Area = 0.786 ac, 47.87% Impervious, Inflow Depth > 5.87" for 50-Year event
Inflow = 4.47 cfs @ 12.14 hrs, Volume= 0.384 af
Outflow = 4.47 cfs @ 12.14 hrs, Volume= 0.384 af, Atten= 0%, Lag= 0.1 min
Primary = 4.47 cfs @ 12.14 hrs, Volume= 0.384 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.90' @ 12.14 hrs Surf.Area= 13 sf Storage= 11 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 61 cf

Plug-Flow detention time= 0.1 min calculated for 0.384 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (790.6 - 790.5)

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=4.47 cfs @ 12.14 hrs HW=20.90' TW=14.10' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.47 cfs @ 3.24 fps)

Summary for Pond 9P: DMH #5097

Inflow Area = 0.786 ac, 47.87% Impervious, Inflow Depth > 5.87" for 50-Year event
Inflow = 4.48 cfs @ 12.14 hrs, Volume= 0.384 af
Outflow = 4.47 cfs @ 12.14 hrs, Volume= 0.384 af, Atten= 0%, Lag= 0.1 min
Primary = 4.47 cfs @ 12.14 hrs, Volume= 0.384 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.46' @ 12.14 hrs Surf.Area= 13 sf Storage= 24 cf

Plug-Flow detention time= 0.2 min calculated for 0.384 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (790.5 - 790.3)

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

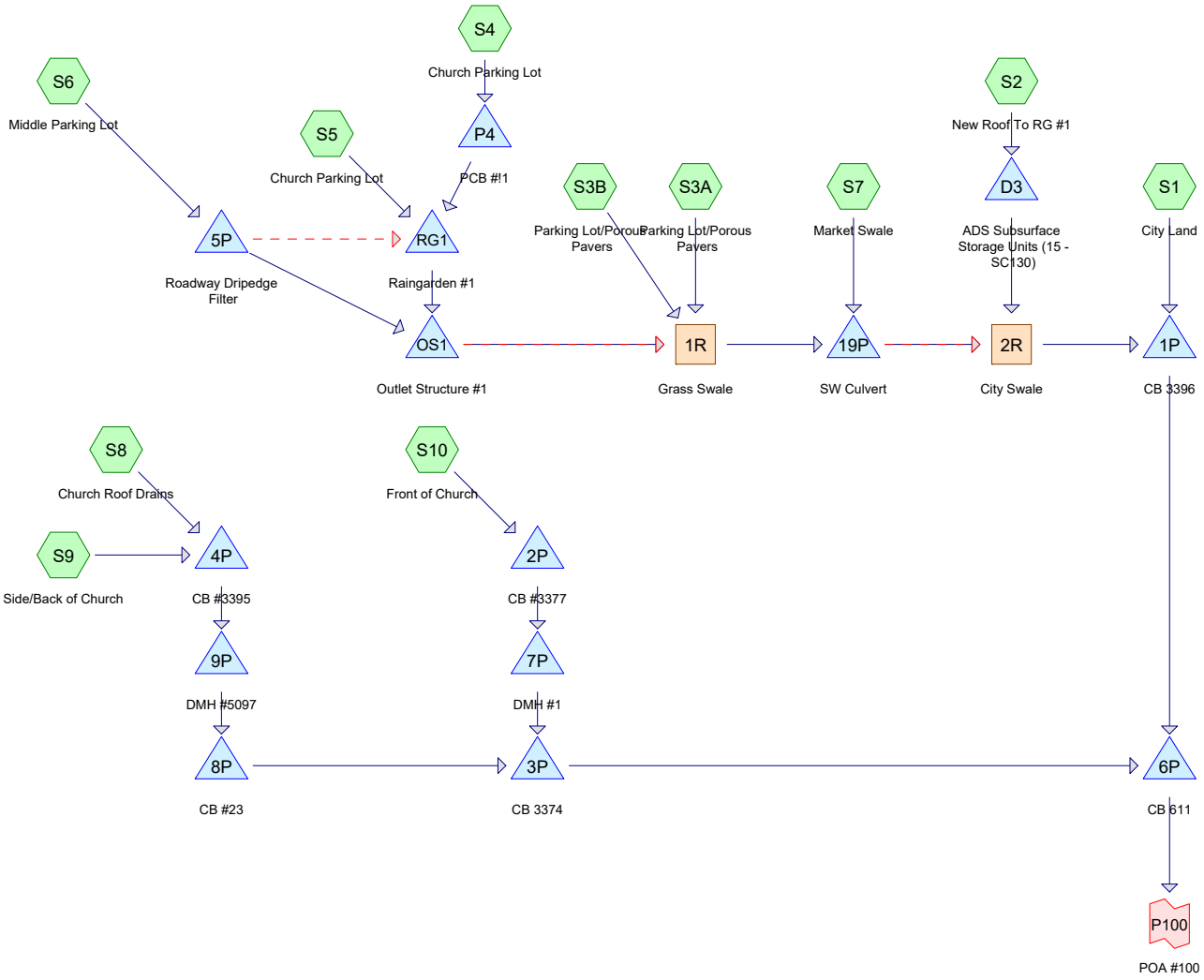
Device	Routing	Invert	Outlet Devices
#1	Primary	20.53'	**12.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.53' / 20.10' S= 0.0096 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=4.47 cfs @ 12.14 hrs HW=22.46' TW=20.90' (Dynamic Tailwater)
1=Culvert (Barrel Controls 4.47 cfs @ 5.69 fps)

Summary for Link P100: POA #100

Inflow Area = 3.003 ac, 50.96% Impervious, Inflow Depth > 6.00" for 50-Year event
Inflow = 17.61 cfs @ 12.13 hrs, Volume= 1.502 af
Primary = 17.61 cfs @ 12.13 hrs, Volume= 1.502 af, Atten= 0%, Lag= 0.0 min

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



Subcat Reach Pond Link

Routing Diagram for 4950-POST_122319
Prepared by Altus Engineering, Inc., Printed 1/29/2020
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Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.517	61	>75% Grass cover, Good, HSG B (S1, S10, S3A, S3B, S4, S5, S6, S7, S9)
0.641	98	Paved parking, HSG B (S3A, S3B, S4, S5, S6)
0.033	98	Paved parking, HSG C (S9)
0.013	98	Paved roads w/curbs & sewers, HSG B (S7)
0.059	85	Porous Pavers, HSG B (S3A, S3B)
0.559	98	Roofs, HSG B (S10, S2, S8, S9)
0.125	98	Unconnected pavement, HSG B (S1, S10, S3A, S3B, S4, S6, S7)
0.054	98	Unconnected pavement, HSG C (S9)
3.003	**79**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
2.915	HSG B	S1, S10, S2, S3A, S3B, S4, S5, S6, S7, S8, S9
0.088	HSG C	S9
0.000	HSG D	
0.000	Other	
3.003		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	1.517	0.000	0.000	0.000	1.517	>75% Grass cover, Good	S1, S10, S3A, S3B, S4, S5, S6, S7, S9
0.000	0.641	0.033	0.000	0.000	0.675	Paved parking	S3A, S3B, S4, S5, S6, S9
0.000	0.013	0.000	0.000	0.000	0.013	Paved roads w/curbs & sewers	S7
0.000	0.059	0.000	0.000	0.000	0.059	Porous Pavers	S3A, S3B
0.000	0.559	0.000	0.000	0.000	0.559	Roofs	S10, S2, S8, S9
0.000	0.125	0.054	0.000	0.000	0.179	Unconnected pavement	S1, S10, S3A, S3B, S4, S6, S7, S9
0.000	**2.915**	**0.088**	**0.000**	**0.000**	**3.003**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	10.57	9.10	75.0	0.0196	0.012	15.0	0.0	0.0
2	2P	18.00	17.67	10.0	0.0330	0.012	15.0	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	23.00	20.25	15.0	0.1833	0.012	6.0	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	19P	19.00	18.60	20.0	0.0200	0.012	15.0	0.0	0.0
11	D3	19.40	19.35	2.0	0.0250	0.012	4.0	0.0	0.0
12	D3	19.40	19.00	75.0	0.0053	0.012	8.0	0.0	0.0
13	OS1	20.24	19.85	80.0	0.0049	0.012	15.0	0.0	0.0
14	P4	23.20	23.00	30.0	0.0067	0.012	12.0	0.0	0.0
15	RG1	20.25	20.24	1.0	0.0100	0.012	15.0	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 S1: City Land Runoff Area=26,215 sf 4.01% Impervious Runoff Depth>0.70"
Flow Length=480' Tc=6.0 min CN=62 Runoff=0.39 cfs 0.035 af

Subcatchment S10: Front of Church Runoff Area=16,045 sf 23.18% Impervious Runoff Depth>1.01"
Tc=6.0 min UI Adjusted CN=68 Runoff=0.40 cfs 0.031 af

Subcatchment S2: New Roof To RG #1 Runoff Area=7,660 sf 100.00% Impervious Runoff Depth>3.44"
Tc=6.0 min CN=98 Runoff=0.63 cfs 0.050 af

Subcatchment S3A: Parking Lot/Porous Runoff Area=11,300 sf 55.93% Impervious Runoff Depth>1.01"
Tc=790.0 min CN=85 Runoff=0.04 cfs 0.022 af

Subcatchment S3B: Parking Lot/Porous Runoff Area=2,435 sf 50.31% Impervious Runoff Depth>1.22"
Tc=790.0 min CN=89 Runoff=0.01 cfs 0.006 af

Subcatchment S4: Church Parking Lot Runoff Area=5,765 sf 52.30% Impervious Runoff Depth>1.78"
Tc=6.0 min CN=80 Runoff=0.28 cfs 0.020 af

Subcatchment S5: Church Parking Lot Runoff Area=5,425 sf 77.42% Impervious Runoff Depth>2.61"
Tc=6.0 min CN=90 Runoff=0.38 cfs 0.027 af

Subcatchment S6: Middle Parking Lot Runoff Area=16,276 sf 93.92% Impervious Runoff Depth>3.22"
Tc=6.0 min CN=96 Runoff=1.30 cfs 0.100 af

Subcatchment S7: Market Swale Runoff Area=5,460 sf 29.49% Impervious Runoff Depth>1.01"
Flow Length=480' Tc=6.0 min UI Adjusted CN=68 Runoff=0.13 cfs 0.011 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=0.25' Max Vel=2.72 fps Inflow=1.76 cfs 0.125 af
n=0.022 L=50.0' S=0.0200 '/' Capacity=46.79 cfs Outflow=1.76 cfs 0.124 af

Reach 2R: City Swale Avg. Flow Depth=0.12' Max Vel=2.72 fps Inflow=2.22 cfs 0.166 af
n=0.022 L=100.0' S=0.0300 '/' Capacity=425.64 cfs Outflow=2.22 cfs 0.166 af

Pond 1P: CB 3396 Peak Elev=11.38' Storage=10 cf Inflow=2.56 cfs 0.201 af
15.0" Round Culvert n=0.012 L=75.0' S=0.0196 '/' Outflow=2.56 cfs 0.201 af

Pond 2P: CB #3377 Peak Elev=18.29' Storage=4 cf Inflow=0.40 cfs 0.031 af
15.0" Round Culvert n=0.012 L=10.0' S=0.0330 '/' Outflow=0.40 cfs 0.031 af

Pond 3P: CB 3374 Peak Elev=13.56' Storage=7 cf Inflow=1.82 cfs 0.158 af
24.0" Round Culvert n=0.012 L=306.0' S=0.0127 '/' Outflow=1.82 cfs 0.158 af

Pond 4P: CB #3395 Peak Elev=21.45' Storage=9 cf Inflow=1.45 cfs 0.127 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0200 '/' Outflow=1.45 cfs 0.127 af

Pond 5P: Roadway Dripedge Filter Peak Elev=25.79' Storage=562 cf Inflow=1.30 cfs 0.100 af
Discarded=0.03 cfs 0.031 af Primary=0.09 cfs 0.031 af Secondary=1.18 cfs 0.033 af Outflow=1.29 cfs 0.095 af

Pond 6P: CB 611 Peak Elev=10.05' Storage=13 cf Inflow=4.35 cfs 0.359 af
24.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=4.35 cfs 0.359 af

Pond 7P: DMH #1 Peak Elev=13.85' Storage=4 cf Inflow=0.40 cfs 0.031 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0058 '/' Outflow=0.40 cfs 0.031 af

Pond 8P: CB #23 Peak Elev=20.50' Storage=6 cf Inflow=1.45 cfs 0.127 af
24.0" Round Culvert n=0.012 L=210.0' S=0.0329 '/' Outflow=1.45 cfs 0.127 af

Pond 9P: DMH #5097 Peak Elev=21.19' Storage=8 cf Inflow=1.45 cfs 0.127 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0096 '/' Outflow=1.45 cfs 0.127 af

Pond 19P: SW Culvert Peak Elev=19.66' Storage=139 cf Inflow=1.89 cfs 0.135 af
15.0" Round Culvert n=0.012 L=20.0' S=0.0200 '/' Outflow=1.84 cfs 0.135 af

Pond D3: ADS Subsurface Storage Units (15 - Peak Elev=20.41' Storage=204 cf Inflow=0.63 cfs 0.050 af
Discarded=0.01 cfs 0.020 af Primary=0.39 cfs 0.031 af Outflow=0.40 cfs 0.050 af

Pond OS1: Outlet Structure #1 Peak Elev=23.73' Storage=191 cf Inflow=1.79 cfs 0.098 af
Primary=1.76 cfs 0.097 af Secondary=0.00 cfs 0.000 af Outflow=1.76 cfs 0.097 af

Pond P4: PCB #!1 Peak Elev=32.20' Storage=0 cf Inflow=0.28 cfs 0.020 af
12.0" Round Culvert n=0.012 L=30.0' S=0.0067 '/' Outflow=0.28 cfs 0.020 af

Pond RG1: Raingarden #1 Peak Elev=23.81' Storage=729 cf Inflow=1.83 cfs 0.079 af
Outflow=1.70 cfs 0.067 af

Link P100: POA #100 Inflow=4.35 cfs 0.359 af
Primary=4.35 cfs 0.359 af

Total Runoff Area = 3.003 ac Runoff Volume = 0.429 af Average Runoff Depth = 1.71"
52.51% Pervious = 1.577 ac 47.49% Impervious = 1.426 ac

Summary for Subcatchment S1: City Land

Runoff = 0.39 cfs @ 12.11 hrs, Volume= 0.035 af, Depth> 0.70"

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 2-Year Rainfall=3.68"

Area (sf)	CN	Description
25,165	61	>75% Grass cover, Good, HSG B
1,050	98	Unconnected pavement, HSG B
26,215	62	Weighted Average
25,165		95.99% Pervious Area
1,050		4.01% Impervious Area
1,050		100.00% 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: Front of Church

Runoff = 0.40 cfs @ 12.10 hrs, Volume= 0.031 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
2,480	98		Roofs, HSG B
1,240	98		Unconnected pavement, HSG B
12,325	61		>75% Grass cover, Good, HSG B
16,045	70	68	Weighted Average, UI Adjusted
12,325			76.82% Pervious Area
3,720			23.18% Impervious Area
1,240			33.33% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, T'c Min**

Summary for Subcatchment S2: New Roof To RG #1

Runoff = 0.63 cfs @ 12.08 hrs, Volume= 0.050 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
7,660	98	Roofs, HSG B
7,660		100.00% Impervious Area

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

Summary for Subcatchment S3A: Parking Lot/Porous Pavers

Runoff = 0.04 cfs @ 21.95 hrs, Volume= 0.022 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	Description
	3,365	61	>75% Grass cover, Good, HSG B
	5,170	98	Paved parking, HSG B
*	1,615	85	Porous Pavers, HSG B
	1,150	98	Unconnected pavement, HSG B
	11,300	85	Weighted Average
	4,980		44.07% Pervious Area
	6,320		55.93% Impervious Area
	1,150		18.20% Unconnected

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

Summary for Subcatchment S3B: Parking Lot/Porous Pavers

Runoff = 0.01 cfs @ 21.95 hrs, Volume= 0.006 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
	240	61	>75% Grass cover, Good, HSG B
	1,100	98	Paved parking, HSG B
*	970	85	Porous Pavers, HSG B
	125	98	Unconnected pavement, HSG B
	2,435	89	Weighted Average
	1,210		49.69% Pervious Area
	1,225		50.31% Impervious Area
	125		10.20% 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 = 0.28 cfs @ 12.09 hrs, Volume= 0.020 af, Depth> 1.78"

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
2,835	98	Paved parking, HSG B
2,750	61	>75% Grass cover, Good, HSG B
180	98	Unconnected pavement, HSG B
5,765	80	Weighted Average
2,750		47.70% Pervious Area
3,015		52.30% Impervious Area
180		5.97% 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 = 0.38 cfs @ 12.09 hrs, Volume= 0.027 af, Depth> 2.61"

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
4,200	98	Paved parking, HSG B
1,225	61	>75% Grass cover, Good, HSG B
5,425	90	Weighted Average
1,225		22.58% Pervious Area
4,200		77.42% Impervious Area

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 = 1.30 cfs @ 12.08 hrs, Volume= 0.100 af, Depth> 3.22"

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
14,636	98	Paved parking, HSG B
990	61	>75% Grass cover, Good, HSG B
650	98	Unconnected pavement, HSG B
16,276	96	Weighted Average
990		6.08% Pervious Area
15,286		93.92% Impervious Area
650		4.25% Unconnected

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

Summary for Subcatchment S7: Market Swale

Runoff = 0.13 cfs @ 12.10 hrs, Volume= 0.011 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
3,850	61		>75% Grass cover, Good, HSG B
1,050	98		Unconnected pavement, HSG B
560	98		Paved roads w/curbs & sewers, HSG B
5,460	72	68	Weighted Average, UI Adjusted
3,850			70.51% Pervious Area
1,610			29.49% Impervious Area
1,050			65.22% 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 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			

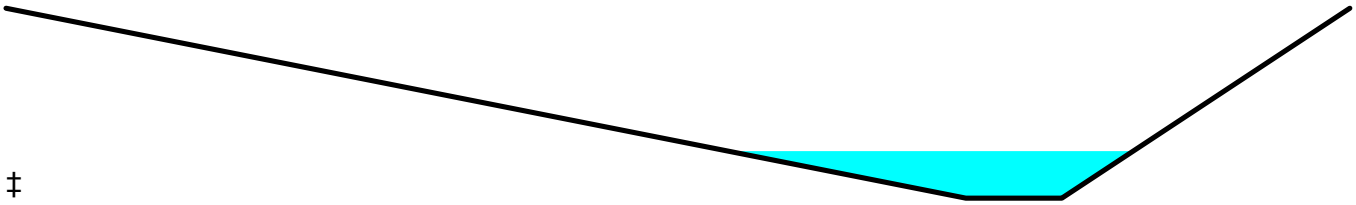
Summary for Reach 1R: Grass Swale

Inflow Area = 0.946 ac, 72.93% Impervious, Inflow Depth > 1.58" for 2-Year event
Inflow = 1.76 cfs @ 12.13 hrs, Volume= 0.125 af
Outflow = 1.76 cfs @ 12.13 hrs, Volume= 0.124 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.72 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 0.95 fps, Avg. Travel Time= 0.9 min

Peak Storage= 32 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 1.00' Flow Area= 7.5 sf, Capacity= 46.79 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= 50.0' Slope= 0.0200 '/'
Inlet Invert= 20.00', Outlet Invert= 19.00'



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Summary for Reach 2R: City Swale

Inflow Area = 1.247 ac, 72.38% Impervious, Inflow Depth > 1.60" for 2-Year event
Inflow = 2.22 cfs @ 12.15 hrs, Volume= 0.166 af
Outflow = 2.22 cfs @ 12.16 hrs, Volume= 0.166 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.72 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.94 fps, Avg. Travel Time= 1.8 min

Peak Storage= 81 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 425.64 cfs

6.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 5.0 '/' Top Width= 26.00'
Length= 100.0' Slope= 0.0300 '/'
Inlet Invert= 18.00', Outlet Invert= 15.00'

‡

Summary for Pond 1P: CB 3396

Inflow Area = 1.849 ac, 50.12% Impervious, Inflow Depth > 1.30" for 2-Year event
Inflow = 2.56 cfs @ 12.15 hrs, Volume= 0.201 af
Outflow = 2.56 cfs @ 12.15 hrs, Volume= 0.201 af, Atten= 0%, Lag= 0.0 min
Primary = 2.56 cfs @ 12.15 hrs, Volume= 0.201 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 11.38' @ 12.15 hrs Surf.Area= 13 sf Storage= 10 cf
Flood Elev= 89.86' Surf.Area= 9,251 sf Storage= 11,412 cf

Plug-Flow detention time= 0.2 min calculated for 0.201 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (871.7 - 871.6)

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=2.55 cfs @ 12.15 hrs HW=11.38' TW=10.05' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.55 cfs @ 3.06 fps)

Summary for Pond 2P: CB #3377

Inflow Area = 0.368 ac, 23.18% Impervious, Inflow Depth > 1.01" for 2-Year event
Inflow = 0.40 cfs @ 12.10 hrs, Volume= 0.031 af
Outflow = 0.40 cfs @ 12.10 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.1 min
Primary = 0.40 cfs @ 12.10 hrs, Volume= 0.031 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 18.29' @ 12.10 hrs Surf.Area= 13 sf Storage= 4 cf

Plug-Flow detention time= 0.5 min calculated for 0.031 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (871.7 - 871.4)

Volume	Invert	Avail.Storage	Storage Description
#1	18.00'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	18.00'	**15.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.00' / 17.67' S= 0.0330 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.40 cfs @ 12.10 hrs HW=18.29' TW=13.85' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.40 cfs @ 1.83 fps)

Summary for Pond 3P: CB 3374

Inflow Area = 1.154 ac, 43.27% Impervious, Inflow Depth > 1.65" for 2-Year event
Inflow = 1.82 cfs @ 12.13 hrs, Volume= 0.158 af
Outflow = 1.82 cfs @ 12.13 hrs, Volume= 0.158 af, Atten= 0%, Lag= 0.0 min
Primary = 1.82 cfs @ 12.13 hrs, Volume= 0.158 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.56' @ 12.13 hrs Surf.Area= 13 sf Storage= 7 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.2 min calculated for 0.158 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (817.8 - 817.7)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	63 cf	**4.00'D x 5.00'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=1.82 cfs @ 12.13 hrs HW=13.56' TW=10.05' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 1.82 cfs @ 2.54 fps)

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 = 1.45 cfs @ 12.14 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.1 min
Primary = 1.45 cfs @ 12.14 hrs, Volume= 0.127 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.45' @ 12.14 hrs Surf.Area= 13 sf Storage= 9 cf
Flood Elev= 90.16' Surf.Area= 213 sf Storage= 120 cf

Plug-Flow detention time= 0.3 min calculated for 0.127 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (804.1 - 803.9)

Volume	Invert	Avail.Storage	Storage Description
#1	20.70'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**
#2	26.55'	46 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		120 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.55	5	0	0
27.00	200	46	46

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=1.45 cfs @ 12.14 hrs HW=21.45' TW=21.19' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 1.45 cfs @ 3.20 fps)

Summary for Pond 5P: Roadway Dripedge Filter

Inflow Area = 0.374 ac, 93.92% Impervious, Inflow Depth > 3.22" for 2-Year event
Inflow = 1.30 cfs @ 12.08 hrs, Volume= 0.100 af
Outflow = 1.29 cfs @ 12.09 hrs, Volume= 0.095 af, Atten= 1%, Lag= 0.5 min
Discarded = 0.03 cfs @ 12.09 hrs, Volume= 0.031 af
Primary = 0.09 cfs @ 12.09 hrs, Volume= 0.031 af
Secondary = 1.18 cfs @ 12.09 hrs, Volume= 0.033 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.79' @ 12.09 hrs Surf.Area= 620 sf Storage= 562 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 31.0 min (800.6 - 769.6)

Volume	Invert	Avail.Storage	Storage Description
#1	22.00'	656 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.00	620	0.0	0	0
23.50	620	33.0	307	307
25.00	620	10.0	93	400
26.25	620	33.0	256	656

Device	Routing	Invert	Outlet Devices
#1	Primary	23.00'	**6.0" Round Culvert** L= 15.0' Ke= 0.500 Inlet / Outlet Invert= 23.00' / 20.25' S= 0.1833 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Secondary	25.50'	**3.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#3	Device 1	22.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 18.50'
#4	Discarded	22.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 18.00'

Discarded OutFlow Max=0.03 cfs @ 12.09 hrs HW=25.79' (Free Discharge)
└**4=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.09 cfs @ 12.09 hrs HW=25.79' TW=23.72' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.09 cfs of 1.36 cfs potential flow)
└**3=Exfiltration** (Controls 0.09 cfs)

Secondary OutFlow Max=1.18 cfs @ 12.09 hrs HW=25.79' TW=23.79' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 1.18 cfs @ 1.35 fps)

Summary for Pond 6P: CB 611

Inflow Area = 3.003 ac, 47.49% Impervious, Inflow Depth > 1.43" for 2-Year event
Inflow = 4.35 cfs @ 12.14 hrs, Volume= 0.359 af
Outflow = 4.35 cfs @ 12.14 hrs, Volume= 0.359 af, Atten= 0%, Lag= 0.0 min
Primary = 4.35 cfs @ 12.14 hrs, Volume= 0.359 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 10.05' @ 12.14 hrs Surf.Area= 13 sf Storage= 13 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 112 cf

Plug-Flow detention time= 0.2 min calculated for 0.359 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (848.0 - 847.9)

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=4.35 cfs @ 12.14 hrs HW=10.05' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 4.35 cfs @ 3.78 fps)

Summary for Pond 7P: DMH #1

Inflow Area = 0.368 ac, 23.18% Impervious, Inflow Depth > 1.01" for 2-Year event
Inflow = 0.40 cfs @ 12.10 hrs, Volume= 0.031 af
Outflow = 0.40 cfs @ 12.10 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.1 min
Primary = 0.40 cfs @ 12.10 hrs, Volume= 0.031 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.85' @ 12.10 hrs Surf.Area= 13 sf Storage= 4 cf

Plug-Flow detention time= 0.6 min calculated for 0.031 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (872.0 - 871.7)

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=0.40 cfs @ 12.10 hrs HW=13.85' TW=13.54' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.40 cfs @ 2.34 fps)

Summary for Pond 8P: CB #23

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 = 1.45 cfs @ 12.14 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.0 min
Primary = 1.45 cfs @ 12.14 hrs, Volume= 0.127 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.50' @ 12.14 hrs Surf.Area= 13 sf Storage= 6 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 61 cf

Plug-Flow detention time= 0.2 min calculated for 0.127 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (804.5 - 804.3)

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=1.45 cfs @ 12.14 hrs HW=20.50' TW=13.56' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.45 cfs @ 2.40 fps)

Summary for Pond 9P: DMH #5097

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 = 1.45 cfs @ 12.14 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.1 min
Primary = 1.45 cfs @ 12.14 hrs, Volume= 0.127 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.19' @ 12.14 hrs Surf.Area= 13 sf Storage= 8 cf

Plug-Flow detention time= 0.3 min calculated for 0.127 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (804.3 - 804.1)

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=1.45 cfs @ 12.14 hrs HW=21.19' TW=20.50' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 1.45 cfs @ 3.76 fps)

Summary for Pond 19P: SW Culvert

Inflow Area = 1.071 ac, 67.84% Impervious, Inflow Depth > 1.51" for 2-Year event
Inflow = 1.89 cfs @ 12.13 hrs, Volume= 0.135 af
Outflow = 1.84 cfs @ 12.15 hrs, Volume= 0.135 af, Atten= 3%, Lag= 1.4 min
Primary = 1.84 cfs @ 12.15 hrs, Volume= 0.135 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 19.66' @ 12.15 hrs Surf.Area= 408 sf Storage= 139 cf

Plug-Flow detention time= 1.3 min calculated for 0.135 af (100% of inflow)
Center-of-Mass det. time= 0.8 min (895.7 - 894.9)

Volume	Invert	Avail.Storage	Storage Description
#1	19.00'	1,752 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
19.00	10	0.0	0	0
21.40	1,450	100.0	1,752	1,752

Device	Routing	Invert	Outlet Devices
#1	Primary	19.00'	**15.0" Round Culvert** L= 20.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 19.00' / 18.60' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.83 cfs @ 12.15 hrs HW=19.66' TW=18.12' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.83 cfs @ 2.77 fps)

Summary for Pond D3: ADS Subsurface Storage Units (15 - SC130)

Inflow Area = 0.176 ac,100.00% Impervious, Inflow Depth > 3.44" for 2-Year event
Inflow = 0.63 cfs @ 12.08 hrs, Volume= 0.050 af
Outflow = 0.40 cfs @ 12.18 hrs, Volume= 0.050 af, Atten= 36%, Lag= 5.6 min
Discarded = 0.01 cfs @ 8.51 hrs, Volume= 0.020 af
Primary = 0.39 cfs @ 12.18 hrs, Volume= 0.031 af

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

Peak Elev= 20.41' @ 12.18 hrs Surf.Area= 308 sf Storage= 204 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 9.1 min (762.1 - 753.0)

Volume	Invert	Avail.Storage	Storage Description
#1	19.25'	251 cf	**8.20'W x 37.60'L x 2.75'H Prismatoid** 848 cf Overall - 221 cf Embedded = 627 cf x 40.0% Voids
#2	20.00'	221 cf	**ADS_StormTech SC-310 +Cap** x 15 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 3 Rows of 5 Chambers
		472 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Device 4	20.66'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	19.40'	**4.0" Round Culvert** L= 2.0' Ke= 0.500 Inlet / Outlet Invert= 19.40' / 19.35' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 0.09 sf
#3	Discarded	19.25'	**2.000 in/hr Exfiltration over Surface area**
#4	Primary	19.40'	**8.0" Round Culvert** L= 75.0' Ke= 0.500 Inlet / Outlet Invert= 19.40' / 19.00' S= 0.0053 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Discarded OutFlow Max=0.01 cfs @ 8.51 hrs HW=19.28' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.39 cfs @ 12.18 hrs HW=20.41' TW=18.12' (Dynamic Tailwater)
├**2=Culvert** (Inlet Controls 0.39 cfs @ 4.43 fps)
└**4=Culvert** (Passes 0.00 cfs of 1.09 cfs potential flow)
└**1=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond OS1: Outlet Structure #1

Inflow Area = 0.631 ac, 81.92% Impervious, Inflow Depth > 1.86" for 2-Year event
Inflow = 1.79 cfs @ 12.11 hrs, Volume= 0.098 af
Outflow = 1.76 cfs @ 12.13 hrs, Volume= 0.097 af, Atten= 1%, Lag= 0.9 min
Primary = 1.76 cfs @ 12.13 hrs, Volume= 0.097 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.73' @ 12.13 hrs Surf.Area= 667 sf Storage= 191 cf

Plug-Flow detention time= 9.6 min calculated for 0.097 af (99% of inflow)
Center-of-Mass det. time= 3.9 min (805.1 - 801.2)

Volume	Invert	Avail.Storage	Storage Description
#1	23.50'	705 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
#2	20.25'	295 cf	**4.00'D x 23.50'H Vertical Cone/Cylinder**
		1,000 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.50	610	0.0	0	0
24.50	800	100.0	705	705

Device	Routing	Invert	Outlet Devices
#1	Primary	20.24'	**15.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.24' / 19.85' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	23.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	20.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 15.00'
#4	Secondary	24.00'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=1.76 cfs @ 12.13 hrs HW=23.73' TW=20.25' (Dynamic Tailwater)
└─**1=Culvert** (Passes 1.76 cfs of 9.09 cfs potential flow)
  └─**2=Orifice/Grate** (Weir Controls 1.73 cfs @ 1.58 fps)
  └─**3=Exfiltration** (Controls 0.03 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=20.25' TW=20.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond P4: PCB #!1

Inflow Area = 0.132 ac, 52.30% Impervious, Inflow Depth > 1.78" for 2-Year event
Inflow = 0.28 cfs @ 12.09 hrs, Volume= 0.020 af
Outflow = 0.28 cfs @ 12.09 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min
Primary = 0.28 cfs @ 12.09 hrs, Volume= 0.020 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 32.20' @ 0.00 hrs Surf.Area= 18 sf Storage= 0 cf
Flood Elev= 89.86' Surf.Area= 213 sf Storage= 91 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (835.0 - 835.0)

Volume	Invert	Avail.Storage	Storage Description
#1	32.20'	40 cf	**4.00'D x 3.20'H Vertical Cone/Cylinder**
#2	32.20'	51 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		91 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
32.20	5	0	0
32.70	200	51	51

Device	Routing	Invert	Outlet Devices
#1	Primary	23.20'	**12.0" Round Culvert** L= 30.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.20' / 23.00' S= 0.0067 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=32.20' TW=23.79' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.00 cfs of 10.97 cfs potential flow)

Summary for Pond RG1: Raingarden #1

Inflow Area = 0.257 ac, 64.48% Impervious, Inflow Depth > 3.71" for 2-Year event
Inflow = 1.83 cfs @ 12.09 hrs, Volume= 0.079 af
Outflow = 1.70 cfs @ 12.11 hrs, Volume= 0.067 af, Atten= 7%, Lag= 1.4 min
Primary = 1.70 cfs @ 12.11 hrs, Volume= 0.067 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.81' @ 12.12 hrs Surf.Area= 561 sf Storage= 729 cf

Plug-Flow detention time= 77.3 min calculated for 0.067 af (84% of inflow)
Center-of-Mass det. time= 24.4 min (804.5 - 780.1)

Volume	Invert	Avail.Storage	Storage Description
#1	20.25'	1,191 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
20.25	350	0.0	0	0
21.25	350	40.0	140	140
21.50	350	10.0	9	149
23.00	350	40.0	210	359
24.00	610	100.0	480	839
24.50	800	100.0	353	1,191

Device	Routing	Invert	Outlet Devices
#1	Primary	20.25'	**15.0" Round Culvert** L= 1.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.25' / 20.24' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	23.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	20.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 15.00'

Primary OutFlow Max=1.66 cfs @ 12.11 hrs HW=23.81' TW=23.73' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 1.66 cfs @ 1.35 fps)
├**2=Orifice/Grate** (Passes < 1.79 cfs potential flow)
└**3=Exfiltration** (Passes < 0.04 cfs potential flow)

Summary for Link P100: POA #100

Inflow Area = 3.003 ac, 47.49% Impervious, Inflow Depth > 1.43" for 2-Year event
Inflow = 4.35 cfs @ 12.14 hrs, Volume= 0.359 af
Primary = 4.35 cfs @ 12.14 hrs, Volume= 0.359 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 S1: City Land Runoff Area=26,215 sf 4.01% Impervious Runoff Depth>1.81"
Flow Length=480' Tc=6.0 min CN=62 Runoff=1.21 cfs 0.091 af

Subcatchment S10: Front of Church Runoff Area=16,045 sf 23.18% Impervious Runoff Depth>2.30"
Tc=6.0 min UI Adjusted CN=68 Runoff=0.98 cfs 0.071 af

Subcatchment S2: New Roof To RG #1 Runoff Area=7,660 sf 100.00% Impervious Runoff Depth>5.34"
Tc=6.0 min CN=98 Runoff=0.96 cfs 0.078 af

Subcatchment S3A: Parking Lot/Porous Runoff Area=11,300 sf 55.93% Impervious Runoff Depth>1.89"
Tc=790.0 min CN=85 Runoff=0.07 cfs 0.041 af

Subcatchment S3B: Parking Lot/Porous Runoff Area=2,435 sf 50.31% Impervious Runoff Depth>2.15"
Tc=790.0 min CN=89 Runoff=0.02 cfs 0.010 af

Subcatchment S4: Church Parking Lot Runoff Area=5,765 sf 52.30% Impervious Runoff Depth>3.40"
Tc=6.0 min CN=80 Runoff=0.53 cfs 0.038 af

Subcatchment S5: Church Parking Lot Runoff Area=5,425 sf 77.42% Impervious Runoff Depth>4.43"
Tc=6.0 min CN=90 Runoff=0.62 cfs 0.046 af

Subcatchment S6: Middle Parking Lot Runoff Area=16,276 sf 93.92% Impervious Runoff Depth>5.11"
Tc=6.0 min CN=96 Runoff=2.01 cfs 0.159 af

Subcatchment S7: Market Swale Runoff Area=5,460 sf 29.49% Impervious Runoff Depth>2.30"
Flow Length=480' Tc=6.0 min UI Adjusted CN=68 Runoff=0.33 cfs 0.024 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=0.31' Max Vel=3.07 fps Inflow=2.83 cfs 0.237 af
n=0.022 L=50.0' S=0.0200 '/' Capacity=46.79 cfs Outflow=2.83 cfs 0.237 af

Reach 2R: City Swale Avg. Flow Depth=0.17' Max Vel=3.29 fps Inflow=3.77 cfs 0.316 af
n=0.022 L=100.0' S=0.0300 '/' Capacity=425.64 cfs Outflow=3.77 cfs 0.315 af

Pond 1P: CB 3396 Peak Elev=11.85' Storage=16 cf Inflow=4.77 cfs 0.406 af
15.0" Round Culvert n=0.012 L=75.0' S=0.0196 '/' Outflow=4.78 cfs 0.406 af

Pond 2P: CB #3377 Peak Elev=18.47' Storage=6 cf Inflow=0.98 cfs 0.071 af
15.0" Round Culvert n=0.012 L=10.0' S=0.0330 '/' Outflow=0.98 cfs 0.071 af

Pond 3P: CB 3374 Peak Elev=13.80' Storage=10 cf Inflow=3.57 cfs 0.301 af
24.0" Round Culvert n=0.012 L=306.0' S=0.0127 '/' Outflow=3.57 cfs 0.301 af

Pond 4P: CB #3395 Peak Elev=22.03' Storage=17 cf Inflow=2.69 cfs 0.231 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0200 '/' Outflow=2.68 cfs 0.231 af

Pond 5P: Roadway Dripedge Filter Peak Elev=25.89' Storage=582 cf Inflow=2.01 cfs 0.159 af
Discarded=0.03 cfs 0.035 af Primary=0.09 cfs 0.052 af Secondary=1.89 cfs 0.065 af Outflow=2.01 cfs 0.152 af

Pond 6P: CB 611 Peak Elev=10.54' Storage=19 cf Inflow=8.31 cfs 0.707 af
24.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=8.31 cfs 0.707 af

Pond 7P: DMH #1 Peak Elev=14.08' Storage=7 cf Inflow=0.98 cfs 0.071 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0058 '/' Outflow=0.98 cfs 0.071 af

Pond 8P: CB #23 Peak Elev=20.69' Storage=9 cf Inflow=2.68 cfs 0.231 af
24.0" Round Culvert n=0.012 L=210.0' S=0.0329 '/' Outflow=2.68 cfs 0.231 af

Pond 9P: DMH #5097 Peak Elev=21.53' Storage=13 cf Inflow=2.68 cfs 0.231 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0096 '/' Outflow=2.68 cfs 0.231 af

Pond 19P: SW Culvert Peak Elev=19.90' Storage=250 cf Inflow=3.13 cfs 0.261 af
15.0" Round Culvert n=0.012 L=20.0' S=0.0200 '/' Outflow=3.03 cfs 0.261 af

Pond D3: ADS Subsurface Storage Units (15 - Peak Elev=20.94' Storage=327 cf Inflow=0.96 cfs 0.078 af
Discarded=0.01 cfs 0.024 af Primary=0.74 cfs 0.054 af Outflow=0.76 cfs 0.078 af

Pond OS1: Outlet Structure #1 Peak Elev=23.82' Storage=250 cf Inflow=2.86 cfs 0.187 af
Primary=2.83 cfs 0.187 af Secondary=0.00 cfs 0.000 af Outflow=2.83 cfs 0.187 af

Pond P4: PCB #!1 Peak Elev=32.20' Storage=0 cf Inflow=0.53 cfs 0.038 af
12.0" Round Culvert n=0.012 L=30.0' S=0.0067 '/' Outflow=0.53 cfs 0.038 af

Pond RG1: Raingarden #1 Peak Elev=24.04' Storage=861 cf Inflow=3.03 cfs 0.149 af
Outflow=2.77 cfs 0.136 af

Link P100: POA #100 Inflow=8.31 cfs 0.707 af
Primary=8.31 cfs 0.707 af

Total Runoff Area = 3.003 ac Runoff Volume = 0.787 af Average Runoff Depth = 3.15"
52.51% Pervious = 1.577 ac 47.49% Impervious = 1.426 ac

Summary for Subcatchment S1: City Land

Runoff = 1.21 cfs @ 12.10 hrs, Volume= 0.091 af, Depth> 1.81"

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
25,165	61	>75% Grass cover, Good, HSG B
1,050	98	Unconnected pavement, HSG B
26,215	62	Weighted Average
25,165		95.99% Pervious Area
1,050		4.01% Impervious Area
1,050		100.00% 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: Front of Church

Runoff = 0.98 cfs @ 12.09 hrs, Volume= 0.071 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
2,480	98		Roofs, HSG B
1,240	98		Unconnected pavement, HSG B
12,325	61		>75% Grass cover, Good, HSG B
16,045	70	68	Weighted Average, UI Adjusted
12,325			76.82% Pervious Area
3,720			23.18% Impervious Area
1,240			33.33% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, T'c Min**

Summary for Subcatchment S2: New Roof To RG #1

Runoff = 0.96 cfs @ 12.08 hrs, Volume= 0.078 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
7,660	98	Roofs, HSG B
7,660		100.00% Impervious Area

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

Summary for Subcatchment S3A: Parking Lot/Porous Pavers

Runoff = 0.07 cfs @ 21.95 hrs, Volume= 0.041 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	Description
	3,365	61	>75% Grass cover, Good, HSG B
	5,170	98	Paved parking, HSG B
*	1,615	85	Porous Pavers, HSG B
	1,150	98	Unconnected pavement, HSG B
	11,300	85	Weighted Average
	4,980		44.07% Pervious Area
	6,320		55.93% Impervious Area
	1,150		18.20% Unconnected

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

Summary for Subcatchment S3B: Parking Lot/Porous Pavers

Runoff = 0.02 cfs @ 21.95 hrs, Volume= 0.010 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
	240	61	>75% Grass cover, Good, HSG B
	1,100	98	Paved parking, HSG B
*	970	85	Porous Pavers, HSG B
	125	98	Unconnected pavement, HSG B
	2,435	89	Weighted Average
	1,210		49.69% Pervious Area
	1,225		50.31% Impervious Area
	125		10.20% 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 = 0.53 cfs @ 12.09 hrs, Volume= 0.038 af, Depth> 3.40"

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
2,835	98	Paved parking, HSG B
2,750	61	>75% Grass cover, Good, HSG B
180	98	Unconnected pavement, HSG B
5,765	80	Weighted Average
2,750		47.70% Pervious Area
3,015		52.30% Impervious Area
180		5.97% 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 = 0.62 cfs @ 12.08 hrs, Volume= 0.046 af, Depth> 4.43"

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 10-Year Rainfall=5.58"

Area (sf)	CN	Description
4,200	98	Paved parking, HSG B
1,225	61	>75% Grass cover, Good, HSG B
5,425	90	Weighted Average
1,225		22.58% Pervious Area
4,200		77.42% Impervious Area

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 = 2.01 cfs @ 12.08 hrs, Volume= 0.159 af, Depth> 5.11"

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
14,636	98	Paved parking, HSG B
990	61	>75% Grass cover, Good, HSG B
650	98	Unconnected pavement, HSG B
16,276	96	Weighted Average
990		6.08% Pervious Area
15,286		93.92% Impervious Area
650		4.25% Unconnected

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

Summary for Subcatchment S7: Market Swale

Runoff = 0.33 cfs @ 12.09 hrs, Volume= 0.024 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
3,850	61		>75% Grass cover, Good, HSG B
1,050	98		Unconnected pavement, HSG B
560	98		Paved roads w/curbs & sewers, HSG B
5,460	72	68	Weighted Average, UI Adjusted
3,850			70.51% Pervious Area
1,610			29.49% Impervious Area
1,050			65.22% 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 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			

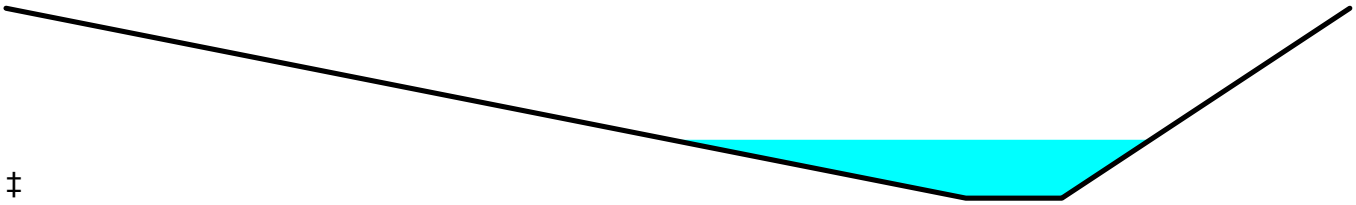
Summary for Reach 1R: Grass Swale

Inflow Area = 0.946 ac, 72.93% Impervious, Inflow Depth > 3.01" for 10-Year event
Inflow = 2.83 cfs @ 12.13 hrs, Volume= 0.237 af
Outflow = 2.83 cfs @ 12.14 hrs, Volume= 0.237 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.07 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.11 fps, Avg. Travel Time= 0.7 min

Peak Storage= 46 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.00' Flow Area= 7.5 sf, Capacity= 46.79 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= 50.0' Slope= 0.0200 '/'
Inlet Invert= 20.00', Outlet Invert= 19.00'



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Summary for Reach 2R: City Swale

Inflow Area = 1.247 ac, 72.38% Impervious, Inflow Depth > 3.04" for 10-Year event
Inflow = 3.77 cfs @ 12.15 hrs, Volume= 0.316 af
Outflow = 3.77 cfs @ 12.16 hrs, Volume= 0.315 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.29 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.02 fps, Avg. Travel Time= 1.6 min

Peak Storage= 115 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 425.64 cfs

6.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 5.0 '/' Top Width= 26.00'
Length= 100.0' Slope= 0.0300 '/'
Inlet Invert= 18.00', Outlet Invert= 15.00'

‡

Summary for Pond 1P: CB 3396

Inflow Area = 1.849 ac, 50.12% Impervious, Inflow Depth > 2.64" for 10-Year event
Inflow = 4.77 cfs @ 12.14 hrs, Volume= 0.406 af
Outflow = 4.78 cfs @ 12.14 hrs, Volume= 0.406 af, Atten= 0%, Lag= 0.0 min
Primary = 4.78 cfs @ 12.14 hrs, Volume= 0.406 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 11.85' @ 12.14 hrs Surf.Area= 13 sf Storage= 16 cf
Flood Elev= 89.86' Surf.Area= 9,251 sf Storage= 11,412 cf

Plug-Flow detention time= 0.1 min calculated for 0.406 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (858.7 - 858.6)

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=4.77 cfs @ 12.14 hrs HW=11.85' TW=10.54' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.77 cfs @ 3.89 fps)

Summary for Pond 2P: CB #3377

Inflow Area = 0.368 ac, 23.18% Impervious, Inflow Depth > 2.30" for 10-Year event
Inflow = 0.98 cfs @ 12.09 hrs, Volume= 0.071 af
Outflow = 0.98 cfs @ 12.09 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.1 min
Primary = 0.98 cfs @ 12.09 hrs, Volume= 0.071 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 18.47' @ 12.09 hrs Surf.Area= 13 sf Storage= 6 cf

Plug-Flow detention time= 0.3 min calculated for 0.071 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (846.2 - 846.0)

Volume	Invert	Avail.Storage	Storage Description
#1	18.00'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	18.00'	**15.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.00' / 17.67' S= 0.0330 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.98 cfs @ 12.09 hrs HW=18.47' TW=14.07' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.98 cfs @ 2.33 fps)

Summary for Pond 3P: CB 3374

Inflow Area = 1.154 ac, 43.27% Impervious, Inflow Depth > 3.13" for 10-Year event
Inflow = 3.57 cfs @ 12.13 hrs, Volume= 0.301 af
Outflow = 3.57 cfs @ 12.13 hrs, Volume= 0.301 af, Atten= 0%, Lag= 0.0 min
Primary = 3.57 cfs @ 12.13 hrs, Volume= 0.301 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.80' @ 12.13 hrs Surf.Area= 13 sf Storage= 10 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.2 min calculated for 0.301 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (808.7 - 808.6)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	63 cf	**4.00'D x 5.00'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=3.57 cfs @ 12.13 hrs HW=13.80' TW=10.53' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 3.57 cfs @ 3.04 fps)

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 = 2.68 cfs @ 12.14 hrs, Volume= 0.231 af, Atten= 0%, Lag= 0.1 min
Primary = 2.68 cfs @ 12.14 hrs, Volume= 0.231 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.03' @ 12.14 hrs Surf.Area= 13 sf Storage= 17 cf
Flood Elev= 90.16' Surf.Area= 213 sf Storage= 120 cf

Plug-Flow detention time= 0.2 min calculated for 0.231 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (796.7 - 796.6)

Volume	Invert	Avail.Storage	Storage Description
#1	20.70'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**
#2	26.55'	46 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		120 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.55	5	0	0
27.00	200	46	46

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=2.67 cfs @ 12.14 hrs HW=22.03' TW=21.53' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 2.67 cfs @ 3.40 fps)

Summary for Pond 5P: Roadway Dripedge Filter

Inflow Area = 0.374 ac, 93.92% Impervious, Inflow Depth > 5.11" for 10-Year event
Inflow = 2.01 cfs @ 12.08 hrs, Volume= 0.159 af
Outflow = 2.01 cfs @ 12.09 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.4 min
Discarded = 0.03 cfs @ 12.09 hrs, Volume= 0.035 af
Primary = 0.09 cfs @ 12.09 hrs, Volume= 0.052 af
Secondary = 1.89 cfs @ 12.09 hrs, Volume= 0.065 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.89' @ 12.09 hrs Surf.Area= 620 sf Storage= 582 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 21.6 min (780.9 - 759.3)

Volume	Invert	Avail.Storage	Storage Description
#1	22.00'	656 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.00	620	0.0	0	0
23.50	620	33.0	307	307
25.00	620	10.0	93	400
26.25	620	33.0	256	656

Device	Routing	Invert	Outlet Devices
#1	Primary	23.00'	**6.0" Round Culvert** L= 15.0' Ke= 0.500 Inlet / Outlet Invert= 23.00' / 20.25' S= 0.1833 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Secondary	25.50'	**3.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#3	Device 1	22.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 18.50'
#4	Discarded	22.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 18.00'

Discarded OutFlow Max=0.03 cfs @ 12.09 hrs HW=25.89' (Free Discharge)
└**4=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.09 cfs @ 12.09 hrs HW=25.89' TW=23.80' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.09 cfs of 1.37 cfs potential flow)
└**3=Exfiltration** (Controls 0.09 cfs)

Secondary OutFlow Max=1.89 cfs @ 12.09 hrs HW=25.89' TW=24.00' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 1.89 cfs @ 1.61 fps)

Summary for Pond 6P: CB 611

Inflow Area = 3.003 ac, 47.49% Impervious, Inflow Depth > 2.83" for 10-Year event
Inflow = 8.31 cfs @ 12.14 hrs, Volume= 0.707 af
Outflow = 8.31 cfs @ 12.14 hrs, Volume= 0.707 af, Atten= 0%, Lag= 0.0 min
Primary = 8.31 cfs @ 12.14 hrs, Volume= 0.707 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 10.54' @ 12.14 hrs Surf.Area= 13 sf Storage= 19 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 112 cf

Plug-Flow detention time= 0.1 min calculated for 0.707 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (837.5 - 837.4)

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=8.30 cfs @ 12.14 hrs HW=10.54' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 8.30 cfs @ 4.42 fps)

Summary for Pond 7P: DMH #1

Inflow Area = 0.368 ac, 23.18% Impervious, Inflow Depth > 2.30" for 10-Year event
Inflow = 0.98 cfs @ 12.09 hrs, Volume= 0.071 af
Outflow = 0.98 cfs @ 12.09 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.1 min
Primary = 0.98 cfs @ 12.09 hrs, Volume= 0.071 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.08' @ 12.11 hrs Surf.Area= 13 sf Storage= 7 cf

Plug-Flow detention time= 0.4 min calculated for 0.071 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (846.4 - 846.2)

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=0.95 cfs @ 12.09 hrs HW=14.07' TW=13.78' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.95 cfs @ 2.68 fps)

Summary for Pond 8P: CB #23

Inflow Area = 0.786 ac, 52.69% Impervious, Inflow Depth > 3.52" for 10-Year event
Inflow = 2.68 cfs @ 12.14 hrs, Volume= 0.231 af
Outflow = 2.68 cfs @ 12.14 hrs, Volume= 0.231 af, Atten= 0%, Lag= 0.0 min
Primary = 2.68 cfs @ 12.14 hrs, Volume= 0.231 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.69' @ 12.14 hrs Surf.Area= 13 sf Storage= 9 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 61 cf

Plug-Flow detention time= 0.2 min calculated for 0.231 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (797.0 - 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=2.68 cfs @ 12.14 hrs HW=20.69' TW=13.80' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.68 cfs @ 2.82 fps)

Summary for Pond 9P: DMH #5097

Inflow Area = 0.786 ac, 52.69% Impervious, Inflow Depth > 3.52" for 10-Year event
Inflow = 2.68 cfs @ 12.14 hrs, Volume= 0.231 af
Outflow = 2.68 cfs @ 12.14 hrs, Volume= 0.231 af, Atten= 0%, Lag= 0.1 min
Primary = 2.68 cfs @ 12.14 hrs, Volume= 0.231 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 21.53' @ 12.14 hrs Surf.Area= 13 sf Storage= 13 cf

Plug-Flow detention time= 0.2 min calculated for 0.231 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (796.9 - 796.7)

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=2.68 cfs @ 12.14 hrs HW=21.53' TW=20.69' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.68 cfs @ 3.42 fps)

Summary for Pond 19P: SW Culvert

Inflow Area = 1.071 ac, 67.84% Impervious, Inflow Depth > 2.93" for 10-Year event
Inflow = 3.13 cfs @ 12.13 hrs, Volume= 0.261 af
Outflow = 3.03 cfs @ 12.16 hrs, Volume= 0.261 af, Atten= 3%, Lag= 1.6 min
Primary = 3.03 cfs @ 12.16 hrs, Volume= 0.261 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 19.90' @ 12.16 hrs Surf.Area= 548 sf Storage= 250 cf

Plug-Flow detention time= 1.3 min calculated for 0.261 af (100% of inflow)
Center-of-Mass det. time= 0.9 min (882.0 - 881.1)

Volume	Invert	Avail.Storage	Storage Description
#1	19.00'	1,752 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
19.00	10	0.0	0	0
21.40	1,450	100.0	1,752	1,752

Device	Routing	Invert	Outlet Devices
#1	Primary	19.00'	**15.0" Round Culvert** L= 20.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 19.00' / 18.60' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.03 cfs @ 12.16 hrs HW=19.90' TW=18.17' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.03 cfs @ 3.22 fps)

Summary for Pond D3: ADS Subsurface Storage Units (15 - SC130)

Inflow Area = 0.176 ac,100.00% Impervious, Inflow Depth > 5.34" for 10-Year event
Inflow = 0.96 cfs @ 12.08 hrs, Volume= 0.078 af
Outflow = 0.76 cfs @ 12.14 hrs, Volume= 0.078 af, Atten= 21%, Lag= 3.7 min
Discarded = 0.01 cfs @ 6.81 hrs, Volume= 0.024 af
Primary = 0.74 cfs @ 12.14 hrs, Volume= 0.054 af

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

Peak Elev= 20.94' @ 12.14 hrs Surf.Area= 308 sf Storage= 327 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 9.7 min (755.4 - 745.7)

Volume	Invert	Avail.Storage	Storage Description
#1	19.25'	251 cf	**8.20'W x 37.60'L x 2.75'H Prismatoid** 848 cf Overall - 221 cf Embedded = 627 cf x 40.0% Voids
#2	20.00'	221 cf	**ADS_StormTech SC-310 +Cap** x 15 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 3 Rows of 5 Chambers
		472 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Device 4	20.66'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	19.40'	**4.0" Round Culvert** L= 2.0' Ke= 0.500 Inlet / Outlet Invert= 19.40' / 19.35' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 0.09 sf
#3	Discarded	19.25'	**2.000 in/hr Exfiltration over Surface area**
#4	Primary	19.40'	**8.0" Round Culvert** L= 75.0' Ke= 0.500 Inlet / Outlet Invert= 19.40' / 19.00' S= 0.0053 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Discarded OutFlow Max=0.01 cfs @ 6.81 hrs HW=19.28' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.74 cfs @ 12.14 hrs HW=20.94' TW=18.17' (Dynamic Tailwater)
├**2=Culvert** (Inlet Controls 0.49 cfs @ 5.64 fps)
└**4=Culvert** (Passes 0.25 cfs of 1.42 cfs potential flow)
└**1=Orifice/Grate** (Orifice Controls 0.25 cfs @ 1.80 fps)

Summary for Pond OS1: Outlet Structure #1

Inflow Area = 0.631 ac, 81.92% Impervious, Inflow Depth > 3.57" for 10-Year event
Inflow = 2.86 cfs @ 12.12 hrs, Volume= 0.187 af
Outflow = 2.83 cfs @ 12.13 hrs, Volume= 0.187 af, Atten= 1%, Lag= 0.9 min
Primary = 2.83 cfs @ 12.13 hrs, Volume= 0.187 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.82' @ 12.13 hrs Surf.Area= 683 sf Storage= 250 cf

Plug-Flow detention time= 6.4 min calculated for 0.186 af (99% of inflow)
Center-of-Mass det. time= 3.3 min (795.3 - 792.0)

Volume	Invert	Avail.Storage	Storage Description
#1	23.50'	705 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
#2	20.25'	295 cf	**4.00'D x 23.50'H Vertical Cone/Cylinder**
		1,000 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.50	610	0.0	0	0
24.50	800	100.0	705	705

Device	Routing	Invert	Outlet Devices
#1	Primary	20.24'	**15.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.24' / 19.85' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	23.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	20.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 15.00'
#4	Secondary	24.00'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=2.83 cfs @ 12.13 hrs HW=23.82' TW=20.31' (Dynamic Tailwater)
└**1=Culvert** (Passes 2.83 cfs of 9.24 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 2.80 cfs @ 1.85 fps)
└**3=Exfiltration** (Controls 0.03 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=20.25' TW=20.00' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond P4: PCB #!1

Inflow Area = 0.132 ac, 52.30% Impervious, Inflow Depth > 3.40" for 10-Year event
Inflow = 0.53 cfs @ 12.09 hrs, Volume= 0.038 af
Outflow = 0.53 cfs @ 12.09 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min
Primary = 0.53 cfs @ 12.09 hrs, Volume= 0.038 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 32.20' @ 0.00 hrs Surf.Area= 18 sf Storage= 0 cf
Flood Elev= 89.86' Surf.Area= 213 sf Storage= 91 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	32.20'	40 cf	**4.00'D x 3.20'H Vertical Cone/Cylinder**
#2	32.20'	51 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		91 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
32.20	5	0	0
32.70	200	51	51

Device	Routing	Invert	Outlet Devices
#1	Primary	23.20'	**12.0" Round Culvert** L= 30.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.20' / 23.00' S= 0.0067 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=32.20' TW=23.99' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.00 cfs of 10.84 cfs potential flow)

Summary for Pond RG1: Raingarden #1

Inflow Area = 0.257 ac, 64.48% Impervious, Inflow Depth > 6.95" for 10-Year event
Inflow = 3.03 cfs @ 12.09 hrs, Volume= 0.149 af
Outflow = 2.77 cfs @ 12.12 hrs, Volume= 0.136 af, Atten= 9%, Lag= 1.7 min
Primary = 2.77 cfs @ 12.12 hrs, Volume= 0.136 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.04' @ 12.13 hrs Surf.Area= 624 sf Storage= 861 cf

Plug-Flow detention time= 53.9 min calculated for 0.136 af (91% of inflow)
Center-of-Mass det. time= 16.9 min (786.2 - 769.2)

Volume	Invert	Avail.Storage	Storage Description
#1	20.25'	1,191 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
20.25	350	0.0	0	0
21.25	350	40.0	140	140
21.50	350	10.0	9	149
23.00	350	40.0	210	359
24.00	610	100.0	480	839
24.50	800	100.0	353	1,191

Device	Routing	Invert	Outlet Devices
#1	Primary	20.25'	**15.0" Round Culvert** L= 1.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.25' / 20.24' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	23.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	20.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 15.00'

Primary OutFlow Max=2.74 cfs @ 12.12 hrs HW=24.03' TW=23.82' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.74 cfs @ 2.23 fps)
├**2=Orifice/Grate** (Passes < 3.95 cfs potential flow)
└**3=Exfiltration** (Passes < 0.04 cfs potential flow)

Summary for Link P100: POA #100

Inflow Area = 3.003 ac, 47.49% Impervious, Inflow Depth > 2.83" for 10-Year event
Inflow = 8.31 cfs @ 12.14 hrs, Volume= 0.707 af
Primary = 8.31 cfs @ 12.14 hrs, Volume= 0.707 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 S1: City Land Runoff Area=26,215 sf 4.01% Impervious Runoff Depth>2.85"
Flow Length=480' Tc=6.0 min CN=62 Runoff=1.98 cfs 0.143 af

Subcatchment S10: Front of Church Runoff Area=16,045 sf 23.18% Impervious Runoff Depth>3.46"
Tc=6.0 min UI Adjusted CN=68 Runoff=1.49 cfs 0.106 af

Subcatchment S2: New Roof To RG #1 Runoff Area=7,660 sf 100.00% Impervious Runoff Depth>6.83"
Tc=6.0 min CN=98 Runoff=1.22 cfs 0.100 af

Subcatchment S3A: Parking Lot/Porous Runoff Area=11,300 sf 55.93% Impervious Runoff Depth>2.62"
Tc=790.0 min CN=85 Runoff=0.10 cfs 0.057 af

Subcatchment S3B: Parking Lot/Porous Runoff Area=2,435 sf 50.31% Impervious Runoff Depth>2.92"
Tc=790.0 min CN=89 Runoff=0.02 cfs 0.014 af

Subcatchment S4: Church Parking Lot Runoff Area=5,765 sf 52.30% Impervious Runoff Depth>4.75"
Tc=6.0 min CN=80 Runoff=0.73 cfs 0.052 af

Subcatchment S5: Church Parking Lot Runoff Area=5,425 sf 77.42% Impervious Runoff Depth>5.89"
Tc=6.0 min CN=90 Runoff=0.81 cfs 0.061 af

Subcatchment S6: Middle Parking Lot Runoff Area=16,276 sf 93.92% Impervious Runoff Depth>6.59"
Tc=6.0 min CN=96 Runoff=2.57 cfs 0.205 af

Subcatchment S7: Market Swale Runoff Area=5,460 sf 29.49% Impervious Runoff Depth>3.46"
Flow Length=480' Tc=6.0 min UI Adjusted CN=68 Runoff=0.51 cfs 0.036 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=0.34' Max Vel=3.27 fps Inflow=3.62 cfs 0.331 af
n=0.022 L=50.0' S=0.0200 '/' Capacity=46.79 cfs Outflow=3.62 cfs 0.331 af

Reach 2R: City Swale Avg. Flow Depth=0.20' Max Vel=3.60 fps Inflow=4.91 cfs 0.441 af
n=0.022 L=100.0' S=0.0300 '/' Capacity=425.64 cfs Outflow=4.91 cfs 0.440 af

Pond 1P: CB 3396 Peak Elev=12.46' Storage=24 cf Inflow=6.63 cfs 0.583 af
15.0" Round Culvert n=0.012 L=75.0' S=0.0196 '/' Outflow=6.63 cfs 0.583 af

Pond 2P: CB #3377 Peak Elev=18.59' Storage=7 cf Inflow=1.49 cfs 0.106 af
15.0" Round Culvert n=0.012 L=10.0' S=0.0330 '/' Outflow=1.49 cfs 0.106 af

Pond 3P: CB 3374 Peak Elev=13.97' Storage=12 cf Inflow=5.04 cfs 0.423 af
24.0" Round Culvert n=0.012 L=306.0' S=0.0127 '/' Outflow=5.04 cfs 0.423 af

Pond 4P: CB #3395 Peak Elev=22.99' Storage=29 cf Inflow=3.71 cfs 0.317 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0200 '/' Outflow=3.70 cfs 0.317 af

Pond 5P: Roadway Dripedge Filter Peak Elev=25.96' Storage=596 cf Inflow=2.57 cfs 0.205 af
Discarded=0.03 cfs 0.037 af Primary=0.09 cfs 0.066 af Secondary=2.44 cfs 0.095 af Outflow=2.56 cfs 0.198 af

Pond 6P: CB 611 Peak Elev=10.91' Storage=24 cf Inflow=11.67 cfs 1.007 af
24.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=11.67 cfs 1.007 af

Pond 7P: DMH #1 Peak Elev=14.24' Storage=9 cf Inflow=1.49 cfs 0.106 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0058 '/' Outflow=1.49 cfs 0.106 af

Pond 8P: CB #23 Peak Elev=20.82' Storage=10 cf Inflow=3.69 cfs 0.317 af
24.0" Round Culvert n=0.012 L=210.0' S=0.0329 '/' Outflow=3.70 cfs 0.317 af

Pond 9P: DMH #5097 Peak Elev=22.03' Storage=19 cf Inflow=3.70 cfs 0.317 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0096 '/' Outflow=3.69 cfs 0.317 af

Pond 19P: SW Culvert Peak Elev=20.07' Storage=351 cf Inflow=4.07 cfs 0.367 af
15.0" Round Culvert n=0.012 L=20.0' S=0.0200 '/' Outflow=3.91 cfs 0.366 af

Pond D3: ADS Subsurface Storage Units (15 - Peak Elev=21.12' Storage=361 cf Inflow=1.22 cfs 0.100 af
Discarded=0.01 cfs 0.026 af Primary=1.13 cfs 0.074 af Outflow=1.14 cfs 0.100 af

Pond OS1: Outlet Structure #1 Peak Elev=23.88' Storage=290 cf Inflow=3.65 cfs 0.261 af
Primary=3.62 cfs 0.260 af Secondary=0.00 cfs 0.000 af Outflow=3.62 cfs 0.260 af

Pond P4: PCB #!1 Peak Elev=32.20' Storage=0 cf Inflow=0.73 cfs 0.052 af
12.0" Round Culvert n=0.012 L=30.0' S=0.0067 '/' Outflow=0.73 cfs 0.052 af

Pond RG1: Raingarden #1 Peak Elev=24.24' Storage=994 cf Inflow=3.98 cfs 0.208 af
Outflow=3.56 cfs 0.195 af

Link P100: POA #100 Inflow=11.67 cfs 1.007 af
Primary=11.67 cfs 1.007 af

Total Runoff Area = 3.003 ac Runoff Volume = 1.092 af Average Runoff Depth = 4.36"
52.51% Pervious = 1.577 ac 47.49% Impervious = 1.426 ac

Summary for Subcatchment S1: City Land

Runoff = 1.98 cfs @ 12.09 hrs, Volume= 0.143 af, Depth> 2.85"

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 25-Year Rainfall=7.07"

Area (sf)	CN	Description
25,165	61	>75% Grass cover, Good, HSG B
1,050	98	Unconnected pavement, HSG B
26,215	62	Weighted Average
25,165		95.99% Pervious Area
1,050		4.01% Impervious Area
1,050		100.00% 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: Front of Church

Runoff = 1.49 cfs @ 12.09 hrs, Volume= 0.106 af, Depth> 3.46"

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
2,480	98		Roofs, HSG B
1,240	98		Unconnected pavement, HSG B
12,325	61		>75% Grass cover, Good, HSG B
16,045	70	68	Weighted Average, UI Adjusted
12,325			76.82% Pervious Area
3,720			23.18% Impervious Area
1,240			33.33% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, T'c Min**

Summary for Subcatchment S2: New Roof To RG #1

Runoff = 1.22 cfs @ 12.08 hrs, Volume= 0.100 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
7,660	98	Roofs, HSG B
7,660		100.00% Impervious Area

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

Summary for Subcatchment S3A: Parking Lot/Porous Pavers

Runoff = 0.10 cfs @ 21.95 hrs, Volume= 0.057 af, Depth> 2.62"

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 25-Year Rainfall=7.07"

	Area (sf)	CN	Description
	3,365	61	>75% Grass cover, Good, HSG B
	5,170	98	Paved parking, HSG B
*	1,615	85	Porous Pavers, HSG B
	1,150	98	Unconnected pavement, HSG B
	11,300	85	Weighted Average
	4,980		44.07% Pervious Area
	6,320		55.93% Impervious Area
	1,150		18.20% Unconnected

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

Summary for Subcatchment S3B: Parking Lot/Porous Pavers

Runoff = 0.02 cfs @ 21.95 hrs, Volume= 0.014 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
	240	61	>75% Grass cover, Good, HSG B
	1,100	98	Paved parking, HSG B
*	970	85	Porous Pavers, HSG B
	125	98	Unconnected pavement, HSG B
	2,435	89	Weighted Average
	1,210		49.69% Pervious Area
	1,225		50.31% Impervious Area
	125		10.20% 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 = 0.73 cfs @ 12.09 hrs, Volume= 0.052 af, Depth> 4.75"

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 25-Year Rainfall=7.07"

Area (sf)	CN	Description
2,835	98	Paved parking, HSG B
2,750	61	>75% Grass cover, Good, HSG B
180	98	Unconnected pavement, HSG B
5,765	80	Weighted Average
2,750		47.70% Pervious Area
3,015		52.30% Impervious Area
180		5.97% 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 = 0.81 cfs @ 12.08 hrs, Volume= 0.061 af, Depth> 5.89"

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 25-Year Rainfall=7.07"

Area (sf)	CN	Description
4,200	98	Paved parking, HSG B
1,225	61	>75% Grass cover, Good, HSG B
5,425	90	Weighted Average
1,225		22.58% Pervious Area
4,200		77.42% Impervious Area

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 = 2.57 cfs @ 12.08 hrs, Volume= 0.205 af, Depth> 6.59"

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
14,636	98	Paved parking, HSG B
990	61	>75% Grass cover, Good, HSG B
650	98	Unconnected pavement, HSG B
16,276	96	Weighted Average
990		6.08% Pervious Area
15,286		93.92% Impervious Area
650		4.25% Unconnected

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

Summary for Subcatchment S7: Market Swale

Runoff = 0.51 cfs @ 12.09 hrs, Volume= 0.036 af, Depth> 3.46"

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
3,850	61		>75% Grass cover, Good, HSG B
1,050	98		Unconnected pavement, HSG B
560	98		Paved roads w/curbs & sewers, HSG B
5,460	72	68	Weighted Average, UI Adjusted
3,850			70.51% Pervious Area
1,610			29.49% Impervious Area
1,050			65.22% 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 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			

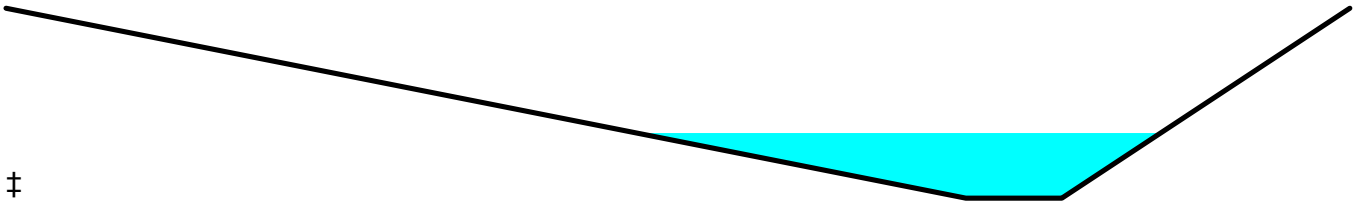
Summary for Reach 1R: Grass Swale

Inflow Area = 0.946 ac, 72.93% Impervious, Inflow Depth > 4.20" for 25-Year event
Inflow = 3.62 cfs @ 12.14 hrs, Volume= 0.331 af
Outflow = 3.62 cfs @ 12.14 hrs, Volume= 0.331 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.27 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.22 fps, Avg. Travel Time= 0.7 min

Peak Storage= 55 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 1.00' Flow Area= 7.5 sf, Capacity= 46.79 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= 50.0' Slope= 0.0200 '/'
Inlet Invert= 20.00', Outlet Invert= 19.00'



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Summary for Reach 2R: City Swale

Inflow Area = 1.247 ac, 72.38% Impervious, Inflow Depth > 4.24" for 25-Year event
Inflow = 4.91 cfs @ 12.14 hrs, Volume= 0.441 af
Outflow = 4.91 cfs @ 12.15 hrs, Volume= 0.440 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.60 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 1.13 fps, Avg. Travel Time= 1.5 min

Peak Storage= 136 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 425.64 cfs

6.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 5.0 '/' Top Width= 26.00'
Length= 100.0' Slope= 0.0300 '/'
Inlet Invert= 18.00', Outlet Invert= 15.00'

‡

Summary for Pond 1P: CB 3396

Inflow Area = 1.849 ac, 50.12% Impervious, Inflow Depth > 3.79" for 25-Year event
Inflow = 6.63 cfs @ 12.13 hrs, Volume= 0.583 af
Outflow = 6.63 cfs @ 12.13 hrs, Volume= 0.583 af, Atten= 0%, Lag= 0.1 min
Primary = 6.63 cfs @ 12.13 hrs, Volume= 0.583 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 12.46' @ 12.13 hrs Surf.Area= 13 sf Storage= 24 cf
Flood Elev= 89.86' Surf.Area= 9,251 sf Storage= 11,412 cf

Plug-Flow detention time= 0.1 min calculated for 0.583 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (852.6 - 852.5)

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=6.63 cfs @ 12.13 hrs HW=12.46' TW=10.91' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.63 cfs @ 5.41 fps)

Summary for Pond 2P: CB #3377

Inflow Area = 0.368 ac, 23.18% Impervious, Inflow Depth > 3.46" for 25-Year event
Inflow = 1.49 cfs @ 12.09 hrs, Volume= 0.106 af
Outflow = 1.49 cfs @ 12.09 hrs, Volume= 0.106 af, Atten= 0%, Lag= 0.0 min
Primary = 1.49 cfs @ 12.09 hrs, Volume= 0.106 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 18.59' @ 12.09 hrs Surf.Area= 13 sf Storage= 7 cf

Plug-Flow detention time= 0.3 min calculated for 0.106 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (834.2 - 834.0)

Volume	Invert	Avail.Storage	Storage Description
#1	18.00'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	18.00'	**15.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.00' / 17.67' S= 0.0330 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=1.49 cfs @ 12.09 hrs HW=18.59' TW=14.24' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.49 cfs @ 2.62 fps)

Summary for Pond 3P: CB 3374

Inflow Area = 1.154 ac, 43.27% Impervious, Inflow Depth > 4.40" for 25-Year event
Inflow = 5.04 cfs @ 12.13 hrs, Volume= 0.423 af
Outflow = 5.04 cfs @ 12.13 hrs, Volume= 0.423 af, Atten= 0%, Lag= 0.0 min
Primary = 5.04 cfs @ 12.13 hrs, Volume= 0.423 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.97' @ 12.13 hrs Surf.Area= 13 sf Storage= 12 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.1 min calculated for 0.423 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (802.8 - 802.8)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	63 cf	**4.00'D x 5.00'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=5.03 cfs @ 12.13 hrs HW=13.97' TW=10.91' (Dynamic Tailwater)
1=Culvert (Inlet Controls 5.03 cfs @ 3.35 fps)

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 = 3.70 cfs @ 12.14 hrs, Volume= 0.317 af, Atten= 0%, Lag= 0.2 min
Primary = 3.70 cfs @ 12.14 hrs, Volume= 0.317 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.99' @ 12.14 hrs Surf.Area= 13 sf Storage= 29 cf
Flood Elev= 90.16' Surf.Area= 213 sf Storage= 120 cf

Plug-Flow detention time= 0.2 min calculated for 0.317 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (791.9 - 791.7)

Volume	Invert	Avail.Storage	Storage Description
#1	20.70'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**
#2	26.55'	46 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		120 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.55	5	0	0
27.00	200	46	46

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=3.69 cfs @ 12.14 hrs HW=22.98' TW=22.03' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 3.69 cfs @ 4.69 fps)

Summary for Pond 5P: Roadway Dripedge Filter

Inflow Area = 0.374 ac, 93.92% Impervious, Inflow Depth > 6.59" for 25-Year event
Inflow = 2.57 cfs @ 12.08 hrs, Volume= 0.205 af
Outflow = 2.56 cfs @ 12.09 hrs, Volume= 0.198 af, Atten= 0%, Lag= 0.4 min
Discarded = 0.03 cfs @ 12.09 hrs, Volume= 0.037 af
Primary = 0.09 cfs @ 12.09 hrs, Volume= 0.066 af
Secondary = 2.44 cfs @ 12.09 hrs, Volume= 0.095 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 25.96' @ 12.09 hrs Surf.Area= 620 sf Storage= 596 cf

Plug-Flow detention time= 41.7 min calculated for 0.198 af (97% of inflow)
Center-of-Mass det. time= 20.8 min (775.1 - 754.2)

Volume	Invert	Avail.Storage	Storage Description
#1	22.00'	656 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.00	620	0.0	0	0
23.50	620	33.0	307	307
25.00	620	10.0	93	400
26.25	620	33.0	256	656

Device	Routing	Invert	Outlet Devices
#1	Primary	23.00'	**6.0" Round Culvert** L= 15.0' Ke= 0.500 Inlet / Outlet Invert= 23.00' / 20.25' S= 0.1833 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Secondary	25.50'	**3.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#3	Device 1	22.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 18.50'
#4	Discarded	22.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 18.00'

Discarded OutFlow Max=0.03 cfs @ 12.09 hrs HW=25.96' (Free Discharge)
└**4=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.09 cfs @ 12.09 hrs HW=25.96' TW=23.86' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.09 cfs of 1.37 cfs potential flow)
└**3=Exfiltration** (Controls 0.09 cfs)

Secondary OutFlow Max=2.44 cfs @ 12.09 hrs HW=25.96' TW=24.17' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 2.44 cfs @ 1.77 fps)

Summary for Pond 6P: CB 611

Inflow Area = 3.003 ac, 47.49% Impervious, Inflow Depth > 4.02" for 25-Year event
Inflow = 11.67 cfs @ 12.13 hrs, Volume= 1.007 af
Outflow = 11.67 cfs @ 12.13 hrs, Volume= 1.007 af, Atten= 0%, Lag= 0.0 min
Primary = 11.67 cfs @ 12.13 hrs, Volume= 1.007 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 10.91' @ 12.13 hrs Surf.Area= 13 sf Storage= 24 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 112 cf

Plug-Flow detention time= 0.1 min calculated for 1.006 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (831.7 - 831.7)

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=11.66 cfs @ 12.13 hrs HW=10.91' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 11.66 cfs @ 4.85 fps)

Summary for Pond 7P: DMH #1

Inflow Area = 0.368 ac, 23.18% Impervious, Inflow Depth > 3.46" for 25-Year event
Inflow = 1.49 cfs @ 12.09 hrs, Volume= 0.106 af
Outflow = 1.49 cfs @ 12.09 hrs, Volume= 0.106 af, Atten= 0%, Lag= 0.1 min
Primary = 1.49 cfs @ 12.09 hrs, Volume= 0.106 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.24' @ 12.11 hrs Surf.Area= 13 sf Storage= 9 cf

Plug-Flow detention time= 0.3 min calculated for 0.106 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (834.4 - 834.2)

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=1.44 cfs @ 12.09 hrs HW=14.24' TW=13.94' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.44 cfs @ 2.86 fps)

Summary for Pond 8P: CB #23

Inflow Area = 0.786 ac, 52.69% Impervious, Inflow Depth > 4.84" for 25-Year event
Inflow = 3.69 cfs @ 12.14 hrs, Volume= 0.317 af
Outflow = 3.70 cfs @ 12.14 hrs, Volume= 0.317 af, Atten= 0%, Lag= 0.2 min
Primary = 3.70 cfs @ 12.14 hrs, Volume= 0.317 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.82' @ 12.14 hrs Surf.Area= 13 sf Storage= 10 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 61 cf

Plug-Flow detention time= 0.2 min calculated for 0.317 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (792.1 - 792.0)

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=3.70 cfs @ 12.14 hrs HW=20.82' TW=13.96' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.70 cfs @ 3.07 fps)

Summary for Pond 9P: DMH #5097

Inflow Area = 0.786 ac, 52.69% Impervious, Inflow Depth > 4.84" for 25-Year event
Inflow = 3.70 cfs @ 12.14 hrs, Volume= 0.317 af
Outflow = 3.69 cfs @ 12.14 hrs, Volume= 0.317 af, Atten= 0%, Lag= 0.0 min
Primary = 3.69 cfs @ 12.14 hrs, Volume= 0.317 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.03' @ 12.14 hrs Surf.Area= 13 sf Storage= 19 cf

Plug-Flow detention time= 0.2 min calculated for 0.317 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (792.0 - 791.9)

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=3.69 cfs @ 12.14 hrs HW=22.03' TW=20.81' (Dynamic Tailwater)
1=Culvert (Barrel Controls 3.69 cfs @ 4.70 fps)

Summary for Pond 19P: SW Culvert

Inflow Area = 1.071 ac, 67.84% Impervious, Inflow Depth > 4.11" for 25-Year event
Inflow = 4.07 cfs @ 12.13 hrs, Volume= 0.367 af
Outflow = 3.91 cfs @ 12.16 hrs, Volume= 0.366 af, Atten= 4%, Lag= 1.9 min
Primary = 3.91 cfs @ 12.16 hrs, Volume= 0.366 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.07' @ 12.16 hrs Surf.Area= 649 sf Storage= 351 cf

Plug-Flow detention time= 1.3 min calculated for 0.366 af (100% of inflow)
Center-of-Mass det. time= 0.9 min (876.7 - 875.8)

Volume	Invert	Avail.Storage	Storage Description
#1	19.00'	1,752 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
19.00	10	0.0	0	0
21.40	1,450	100.0	1,752	1,752

Device	Routing	Invert	Outlet Devices
#1	Primary	19.00'	**15.0" Round Culvert** L= 20.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 19.00' / 18.60' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.91 cfs @ 12.16 hrs HW=20.06' TW=18.19' (Dynamic Tailwater)
1=Culvert (Inlet Controls 3.91 cfs @ 3.51 fps)

Summary for Pond D3: ADS Subsurface Storage Units (15 - SC130)

Inflow Area = 0.176 ac,100.00% Impervious, Inflow Depth > 6.83" for 25-Year event
Inflow = 1.22 cfs @ 12.08 hrs, Volume= 0.100 af
Outflow = 1.14 cfs @ 12.11 hrs, Volume= 0.100 af, Atten= 7%, Lag= 1.9 min
Discarded = 0.01 cfs @ 5.35 hrs, Volume= 0.026 af
Primary = 1.13 cfs @ 12.11 hrs, Volume= 0.074 af

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

Peak Elev= 21.12' @ 12.11 hrs Surf.Area= 308 sf Storage= 361 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 9.1 min (751.4 - 742.3)

Volume	Invert	Avail.Storage	Storage Description
#1	19.25'	251 cf	**8.20'W x 37.60'L x 2.75'H Prismatoid** 848 cf Overall - 221 cf Embedded = 627 cf x 40.0% Voids
#2	20.00'	221 cf	**ADS_StormTech SC-310 +Cap** x 15 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 3 Rows of 5 Chambers
		472 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Device 4	20.66'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	19.40'	**4.0" Round Culvert** L= 2.0' Ke= 0.500 Inlet / Outlet Invert= 19.40' / 19.35' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 0.09 sf
#3	Discarded	19.25'	**2.000 in/hr Exfiltration over Surface area**
#4	Primary	19.40'	**8.0" Round Culvert** L= 75.0' Ke= 0.500 Inlet / Outlet Invert= 19.40' / 19.00' S= 0.0053 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Discarded OutFlow Max=0.01 cfs @ 5.35 hrs HW=19.28' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=1.12 cfs @ 12.11 hrs HW=21.12' TW=18.19' (Dynamic Tailwater)
├**2=Culvert** (Inlet Controls 0.52 cfs @ 6.01 fps)
└**4=Culvert** (Passes 0.60 cfs of 1.52 cfs potential flow)
└**1=Orifice/Grate** (Orifice Controls 0.60 cfs @ 2.31 fps)

Summary for Pond OS1: Outlet Structure #1

Inflow Area = 0.631 ac, 81.92% Impervious, Inflow Depth > 4.97" for 25-Year event
Inflow = 3.65 cfs @ 12.12 hrs, Volume= 0.261 af
Outflow = 3.62 cfs @ 12.14 hrs, Volume= 0.260 af, Atten= 1%, Lag= 0.8 min
Primary = 3.62 cfs @ 12.14 hrs, Volume= 0.260 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.88' @ 12.14 hrs Surf.Area= 694 sf Storage= 290 cf

Plug-Flow detention time= 5.4 min calculated for 0.260 af (100% of inflow)
Center-of-Mass det. time= 3.1 min (792.1 - 789.0)

Volume	Invert	Avail.Storage	Storage Description
#1	23.50'	705 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
#2	20.25'	295 cf	**4.00'D x 23.50'H Vertical Cone/Cylinder**
		1,000 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.50	610	0.0	0	0
24.50	800	100.0	705	705

Device	Routing	Invert	Outlet Devices
#1	Primary	20.24'	**15.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.24' / 19.85' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	23.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	20.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 15.00'
#4	Secondary	24.00'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=3.62 cfs @ 12.14 hrs HW=23.88' TW=20.34' (Dynamic Tailwater)
└─**1=Culvert** (Passes 3.62 cfs of 9.34 cfs potential flow)
  └─**2=Orifice/Grate** (Weir Controls 3.58 cfs @ 2.01 fps)
  └─**3=Exfiltration** (Controls 0.03 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=20.25' TW=20.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond P4: PCB #!1

Inflow Area = 0.132 ac, 52.30% Impervious, Inflow Depth > 4.75" for 25-Year event
Inflow = 0.73 cfs @ 12.09 hrs, Volume= 0.052 af
Outflow = 0.73 cfs @ 12.09 hrs, Volume= 0.052 af, Atten= 0%, Lag= 0.0 min
Primary = 0.73 cfs @ 12.09 hrs, Volume= 0.052 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 32.20' @ 0.00 hrs Surf.Area= 18 sf Storage= 0 cf
Flood Elev= 89.86' Surf.Area= 213 sf Storage= 91 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	32.20'	40 cf	**4.00'D x 3.20'H Vertical Cone/Cylinder**
#2	32.20'	51 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		91 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
32.20	5	0	0
32.70	200	51	51

Device	Routing	Invert	Outlet Devices
#1	Primary	23.20'	**12.0" Round Culvert** L= 30.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.20' / 23.00' S= 0.0067 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=32.20' TW=24.16' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.00 cfs of 10.72 cfs potential flow)

Summary for Pond RG1: Raingarden #1

Inflow Area = 0.257 ac, 64.48% Impervious, Inflow Depth > 9.72" for 25-Year event
Inflow = 3.98 cfs @ 12.09 hrs, Volume= 0.208 af
Outflow = 3.56 cfs @ 12.12 hrs, Volume= 0.195 af, Atten= 11%, Lag= 2.0 min
Primary = 3.56 cfs @ 12.12 hrs, Volume= 0.195 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.24' @ 12.13 hrs Surf.Area= 700 sf Storage= 994 cf

Plug-Flow detention time= 45.0 min calculated for 0.195 af (94% of inflow)
Center-of-Mass det. time= 15.6 min (779.5 - 763.9)

Volume	Invert	Avail.Storage	Storage Description
#1	20.25'	1,191 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
20.25	350	0.0	0	0
21.25	350	40.0	140	140
21.50	350	10.0	9	149
23.00	350	40.0	210	359
24.00	610	100.0	480	839
24.50	800	100.0	353	1,191

Device	Routing	Invert	Outlet Devices
#1	Primary	20.25'	**15.0" Round Culvert** L= 1.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.25' / 20.24' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	23.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	20.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 15.00'

Primary OutFlow Max=3.54 cfs @ 12.12 hrs HW=24.23' TW=23.88' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.54 cfs @ 2.88 fps)
├**2=Orifice/Grate** (Passes < 5.09 cfs potential flow)
└**3=Exfiltration** (Passes < 0.05 cfs potential flow)

Summary for Link P100: POA #100

Inflow Area = 3.003 ac, 47.49% Impervious, Inflow Depth > 4.02" for 25-Year event
Inflow = 11.67 cfs @ 12.13 hrs, Volume= 1.007 af
Primary = 11.67 cfs @ 12.13 hrs, Volume= 1.007 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 S1: City Land Runoff Area=26,215 sf 4.01% Impervious Runoff Depth>3.91"
Flow Length=480' Tc=6.0 min CN=62 Runoff=2.75 cfs 0.196 af

Subcatchment S10: Front of Church Runoff Area=16,045 sf 23.18% Impervious Runoff Depth>4.62"
Tc=6.0 min UI Adjusted CN=68 Runoff=2.00 cfs 0.142 af

Subcatchment S2: New Roof To RG #1 Runoff Area=7,660 sf 100.00% Impervious Runoff Depth>8.21"
Tc=6.0 min CN=98 Runoff=1.46 cfs 0.120 af

Subcatchment S3A: Parking Lot/Porous Runoff Area=11,300 sf 55.93% Impervious Runoff Depth>3.33"
Tc=790.0 min CN=85 Runoff=0.12 cfs 0.072 af

Subcatchment S3B: Parking Lot/Porous Runoff Area=2,435 sf 50.31% Impervious Runoff Depth>3.64"
Tc=790.0 min CN=89 Runoff=0.03 cfs 0.017 af

Subcatchment S4: Church Parking Lot Runoff Area=5,765 sf 52.30% Impervious Runoff Depth>6.05"
Tc=6.0 min CN=80 Runoff=0.92 cfs 0.067 af

Subcatchment S5: Church Parking Lot Runoff Area=5,425 sf 77.42% Impervious Runoff Depth>7.25"
Tc=6.0 min CN=90 Runoff=0.99 cfs 0.075 af

Subcatchment S6: Middle Parking Lot Runoff Area=16,276 sf 93.92% Impervious Runoff Depth>7.97"
Tc=6.0 min CN=96 Runoff=3.08 cfs 0.248 af

Subcatchment S7: Market Swale Runoff Area=5,460 sf 29.49% Impervious Runoff Depth>4.62"
Flow Length=480' Tc=6.0 min UI Adjusted CN=68 Runoff=0.68 cfs 0.048 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=0.37' Max Vel=3.42 fps Inflow=4.32 cfs 0.419 af
n=0.022 L=50.0' S=0.0200 '/' Capacity=46.79 cfs Outflow=4.32 cfs 0.419 af

Reach 2R: City Swale Avg. Flow Depth=0.21' Max Vel=3.81 fps Inflow=5.80 cfs 0.561 af
n=0.022 L=100.0' S=0.0300 '/' Capacity=425.64 cfs Outflow=5.80 cfs 0.560 af

Pond 1P: CB 3396 Peak Elev=13.34' Storage=35 cf Inflow=8.25 cfs 0.756 af
15.0" Round Culvert n=0.012 L=75.0' S=0.0196 '/' Outflow=8.25 cfs 0.756 af

Pond 2P: CB #3377 Peak Elev=18.70' Storage=9 cf Inflow=2.00 cfs 0.142 af
15.0" Round Culvert n=0.012 L=10.0' S=0.0330 '/' Outflow=2.00 cfs 0.142 af

Pond 3P: CB 3374 Peak Elev=14.11' Storage=14 cf Inflow=6.45 cfs 0.542 af
24.0" Round Culvert n=0.012 L=306.0' S=0.0127 '/' Outflow=6.45 cfs 0.542 af

Pond 4P: CB #3395 Peak Elev=24.10' Storage=43 cf Inflow=4.69 cfs 0.400 af
12.0" Round Culvert n=0.012 L=5.0' S=0.0200 '/' Outflow=4.67 cfs 0.400 af

Pond 5P: Roadway Dripedge Filter Peak Elev=26.02' Storage=608 cf Inflow=3.08 cfs 0.248 af
Discarded=0.03 cfs 0.039 af Primary=0.09 cfs 0.078 af Secondary=2.95 cfs 0.125 af Outflow=3.08 cfs 0.241 af

Pond 6P: CB 611 Peak Elev=11.25' Storage=28 cf Inflow=14.70 cfs 1.298 af
24.0" Round Culvert n=0.012 L=10.0' S=0.0100 '/' Outflow=14.70 cfs 1.298 af

Pond 7P: DMH #1 Peak Elev=14.40' Storage=11 cf Inflow=2.00 cfs 0.142 af
15.0" Round Culvert n=0.012 L=38.0' S=0.0058 '/' Outflow=1.99 cfs 0.142 af

Pond 8P: CB #23 Peak Elev=20.93' Storage=12 cf Inflow=4.67 cfs 0.400 af
24.0" Round Culvert n=0.012 L=210.0' S=0.0329 '/' Outflow=4.67 cfs 0.400 af

Pond 9P: DMH #5097 Peak Elev=22.58' Storage=26 cf Inflow=4.67 cfs 0.400 af
12.0" Round Culvert n=0.012 L=45.0' S=0.0096 '/' Outflow=4.67 cfs 0.400 af

Pond 19P: SW Culvert Peak Elev=20.23' Storage=469 cf Inflow=4.90 cfs 0.467 af
15.0" Round Culvert n=0.012 L=20.0' S=0.0200 '/' Outflow=4.63 cfs 0.467 af

Pond D3: ADS Subsurface Storage Units (15 - Peak Elev=21.25' Storage=379 cf Inflow=1.46 cfs 0.120 af
Discarded=0.01 cfs 0.026 af Primary=1.40 cfs 0.094 af Outflow=1.42 cfs 0.120 af

Pond OS1: Outlet Structure #1 Peak Elev=23.93' Storage=323 cf Inflow=4.34 cfs 0.331 af
Primary=4.31 cfs 0.330 af Secondary=0.00 cfs 0.000 af Outflow=4.31 cfs 0.330 af

Pond P4: PCB #!1 Peak Elev=32.20' Storage=0 cf Inflow=0.92 cfs 0.067 af
12.0" Round Culvert n=0.012 L=30.0' S=0.0067 '/' Outflow=0.92 cfs 0.067 af

Pond RG1: Raingarden #1 Peak Elev=24.44' Storage=1,143 cf Inflow=4.86 cfs 0.267 af
Outflow=4.25 cfs 0.254 af

Link P100: POA #100 Inflow=14.70 cfs 1.298 af
Primary=14.70 cfs 1.298 af

Total Runoff Area = 3.003 ac Runoff Volume = 1.386 af Average Runoff Depth = 5.54"
52.51% Pervious = 1.577 ac 47.49% Impervious = 1.426 ac

Summary for Subcatchment S1: City Land

Runoff = 2.75 cfs @ 12.09 hrs, Volume= 0.196 af, Depth> 3.91"

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
25,165	61	>75% Grass cover, Good, HSG B
1,050	98	Unconnected pavement, HSG B
26,215	62	Weighted Average
25,165		95.99% Pervious Area
1,050		4.01% Impervious Area
1,050		100.00% 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: Front of Church

Runoff = 2.00 cfs @ 12.09 hrs, Volume= 0.142 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
2,480	98		Roofs, HSG B
1,240	98		Unconnected pavement, HSG B
12,325	61		>75% Grass cover, Good, HSG B
16,045	70	68	Weighted Average, UI Adjusted
12,325			76.82% Pervious Area
3,720			23.18% Impervious Area
1,240			33.33% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, T'c Min**

Summary for Subcatchment S2: New Roof To RG #1

Runoff = 1.46 cfs @ 12.08 hrs, Volume= 0.120 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
7,660	98	Roofs, HSG B
7,660		100.00% Impervious Area

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

Summary for Subcatchment S3A: Parking Lot/Porous Pavers

Runoff = 0.12 cfs @ 21.95 hrs, Volume= 0.072 af, Depth> 3.33"

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
	3,365	61	>75% Grass cover, Good, HSG B
	5,170	98	Paved parking, HSG B
*	1,615	85	Porous Pavers, HSG B
	1,150	98	Unconnected pavement, HSG B
	11,300	85	Weighted Average
	4,980		44.07% Pervious Area
	6,320		55.93% Impervious Area
	1,150		18.20% Unconnected

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

Summary for Subcatchment S3B: Parking Lot/Porous Pavers

Runoff = 0.03 cfs @ 21.95 hrs, Volume= 0.017 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
	240	61	>75% Grass cover, Good, HSG B
	1,100	98	Paved parking, HSG B
*	970	85	Porous Pavers, HSG B
	125	98	Unconnected pavement, HSG B
	2,435	89	Weighted Average
	1,210		49.69% Pervious Area
	1,225		50.31% Impervious Area
	125		10.20% 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 = 0.92 cfs @ 12.09 hrs, Volume= 0.067 af, Depth> 6.05"

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
2,835	98	Paved parking, HSG B
2,750	61	>75% Grass cover, Good, HSG B
180	98	Unconnected pavement, HSG B
5,765	80	Weighted Average
2,750		47.70% Pervious Area
3,015		52.30% Impervious Area
180		5.97% 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 = 0.99 cfs @ 12.08 hrs, Volume= 0.075 af, Depth> 7.25"

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
4,200	98	Paved parking, HSG B
1,225	61	>75% Grass cover, Good, HSG B
5,425	90	Weighted Average
1,225		22.58% Pervious Area
4,200		77.42% Impervious Area

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 = 3.08 cfs @ 12.08 hrs, Volume= 0.248 af, Depth> 7.97"

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
14,636	98	Paved parking, HSG B
990	61	>75% Grass cover, Good, HSG B
650	98	Unconnected pavement, HSG B
16,276	96	Weighted Average
990		6.08% Pervious Area
15,286		93.92% Impervious Area
650		4.25% Unconnected

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

Summary for Subcatchment S7: Market Swale

Runoff = 0.68 cfs @ 12.09 hrs, Volume= 0.048 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
3,850	61		>75% Grass cover, Good, HSG B
1,050	98		Unconnected pavement, HSG B
560	98		Paved roads w/curbs & sewers, HSG B
5,460	72	68	Weighted Average, UI Adjusted
3,850			70.51% Pervious Area
1,610			29.49% Impervious Area
1,050			65.22% 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 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			

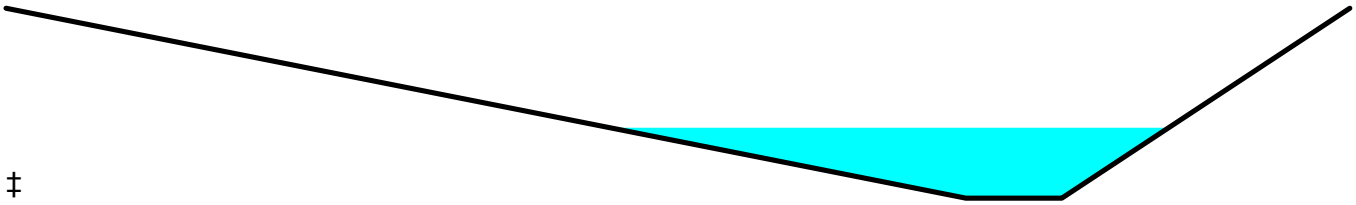
Summary for Reach 1R: Grass Swale

Inflow Area = 0.946 ac, 72.93% Impervious, Inflow Depth > 5.32" for 50-Year event
Inflow = 4.32 cfs @ 12.14 hrs, Volume= 0.419 af
Outflow = 4.32 cfs @ 12.14 hrs, Volume= 0.419 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.42 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 1.30 fps, Avg. Travel Time= 0.6 min

Peak Storage= 63 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 1.00' Flow Area= 7.5 sf, Capacity= 46.79 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= 50.0' Slope= 0.0200 '/'
Inlet Invert= 20.00', Outlet Invert= 19.00'



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Summary for Reach 2R: City Swale

Inflow Area = 1.247 ac, 72.38% Impervious, Inflow Depth > 5.39" for 50-Year event
Inflow = 5.80 cfs @ 12.14 hrs, Volume= 0.561 af
Outflow = 5.80 cfs @ 12.15 hrs, Volume= 0.560 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.81 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.21 fps, Avg. Travel Time= 1.4 min

Peak Storage= 152 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 2.00' Flow Area= 32.0 sf, Capacity= 425.64 cfs

6.00' x 2.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 5.0 '/' Top Width= 26.00'
Length= 100.0' Slope= 0.0300 '/'
Inlet Invert= 18.00', Outlet Invert= 15.00'

‡

Summary for Pond 1P: CB 3396

Inflow Area = 1.849 ac, 50.12% Impervious, Inflow Depth > 4.91" for 50-Year event
Inflow = 8.25 cfs @ 12.12 hrs, Volume= 0.756 af
Outflow = 8.25 cfs @ 12.12 hrs, Volume= 0.756 af, Atten= 0%, Lag= 0.1 min
Primary = 8.25 cfs @ 12.12 hrs, Volume= 0.756 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 13.34' @ 12.13 hrs Surf.Area= 13 sf Storage= 35 cf
Flood Elev= 89.86' Surf.Area= 9,251 sf Storage= 11,412 cf

Plug-Flow detention time= 0.1 min calculated for 0.756 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (847.6 - 847.6)

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=8.22 cfs @ 12.12 hrs HW=13.33' TW=11.25' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 8.22 cfs @ 6.70 fps)

Summary for Pond 2P: CB #3377

Inflow Area = 0.368 ac, 23.18% Impervious, Inflow Depth > 4.62" for 50-Year event
Inflow = 2.00 cfs @ 12.09 hrs, Volume= 0.142 af
Outflow = 2.00 cfs @ 12.09 hrs, Volume= 0.142 af, Atten= 0%, Lag= 0.0 min
Primary = 2.00 cfs @ 12.09 hrs, Volume= 0.142 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 18.70' @ 12.09 hrs Surf.Area= 13 sf Storage= 9 cf

Plug-Flow detention time= 0.2 min calculated for 0.142 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (825.9 - 825.8)

Volume	Invert	Avail.Storage	Storage Description
#1	18.00'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	18.00'	**15.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 18.00' / 17.67' S= 0.0330 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.00 cfs @ 12.09 hrs HW=18.70' TW=14.39' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 2.00 cfs @ 2.84 fps)

Summary for Pond 3P: CB 3374

Inflow Area = 1.154 ac, 43.27% Impervious, Inflow Depth > 5.64" for 50-Year event
Inflow = 6.45 cfs @ 12.12 hrs, Volume= 0.542 af
Outflow = 6.45 cfs @ 12.12 hrs, Volume= 0.542 af, Atten= 0%, Lag= 0.0 min
Primary = 6.45 cfs @ 12.12 hrs, Volume= 0.542 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.11' @ 12.12 hrs Surf.Area= 13 sf Storage= 14 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 63 cf

Plug-Flow detention time= 0.1 min calculated for 0.542 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (798.3 - 798.2)

Volume	Invert	Avail.Storage	Storage Description
#1	13.00'	63 cf	**4.00'D x 5.00'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=6.44 cfs @ 12.12 hrs HW=14.11' TW=11.25' (Dynamic Tailwater)
1=Culvert (Inlet Controls 6.44 cfs @ 3.59 fps)

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 = 4.67 cfs @ 12.14 hrs, Volume= 0.400 af, Atten= 0%, Lag= 0.2 min
Primary = 4.67 cfs @ 12.14 hrs, Volume= 0.400 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.10' @ 12.14 hrs Surf.Area= 13 sf Storage= 43 cf
Flood Elev= 90.16' Surf.Area= 213 sf Storage= 120 cf

Plug-Flow detention time= 0.2 min calculated for 0.400 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (788.1 - 787.9)

Volume	Invert	Avail.Storage	Storage Description
#1	20.70'	74 cf	**4.00'D x 5.85'H Vertical Cone/Cylinder**
#2	26.55'	46 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		120 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
26.55	5	0	0
27.00	200	46	46

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=4.63 cfs @ 12.14 hrs HW=24.08' TW=22.58' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 4.63 cfs @ 5.89 fps)

Summary for Pond 5P: Roadway Dripedge Filter

Inflow Area =	0.374 ac, 93.92% Impervious, Inflow Depth > 7.97" for 50-Year event			
Inflow =	3.08 cfs @	12.08 hrs, Volume=	0.248 af	
Outflow =	3.08 cfs @	12.09 hrs, Volume=	0.241 af, Atten= 0%, Lag= 0.4 min	
Discarded =	0.03 cfs @	12.09 hrs, Volume=	0.039 af	
Primary =	0.09 cfs @	12.09 hrs, Volume=	0.078 af	
Secondary =	2.95 cfs @	12.09 hrs, Volume=	0.125 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 26.02' @ 12.09 hrs Surf.Area= 620 sf Storage= 608 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 20.0 min (770.8 - 750.8)

Volume	Invert	Avail.Storage	Storage Description
#1	22.00'	656 cf	**Custom Stage Data (Prismatic)**Listed below

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
22.00	620	0.0	0	0
23.50	620	33.0	307	307
25.00	620	10.0	93	400
26.25	620	33.0	256	656

Device	Routing	Invert	Outlet Devices
#1	Primary	23.00'	**6.0" Round Culvert** L= 15.0' Ke= 0.500 Inlet / Outlet Invert= 23.00' / 20.25' S= 0.1833 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Secondary	25.50'	**3.0' long x 3.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#3	Device 1	22.00'	**3.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 18.50'
#4	Discarded	22.00'	**1.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 18.00'

Discarded OutFlow Max=0.03 cfs @ 12.09 hrs HW=26.02' (Free Discharge)
└**4=Exfiltration** (Controls 0.03 cfs)

Primary OutFlow Max=0.09 cfs @ 12.09 hrs HW=26.02' TW=23.90' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.09 cfs of 1.38 cfs potential flow)
└**3=Exfiltration** (Controls 0.09 cfs)

Secondary OutFlow Max=2.95 cfs @ 12.09 hrs HW=26.02' TW=24.35' (Dynamic Tailwater)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 2.95 cfs @ 1.90 fps)

Summary for Pond 6P: CB 611

Inflow Area = 3.003 ac, 47.49% Impervious, Inflow Depth > 5.19" for 50-Year event
Inflow = 14.70 cfs @ 12.12 hrs, Volume= 1.298 af
Outflow = 14.70 cfs @ 12.12 hrs, Volume= 1.298 af, Atten= 0%, Lag= 0.0 min
Primary = 14.70 cfs @ 12.12 hrs, Volume= 1.298 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 11.25' @ 12.12 hrs Surf.Area= 13 sf Storage= 28 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 112 cf

Plug-Flow detention time= 0.1 min calculated for 1.298 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (827.1 - 827.0)

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=14.68 cfs @ 12.12 hrs HW=11.25' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 14.68 cfs @ 5.19 fps)

Summary for Pond 7P: DMH #1

Inflow Area = 0.368 ac, 23.18% Impervious, Inflow Depth > 4.62" for 50-Year event
Inflow = 2.00 cfs @ 12.09 hrs, Volume= 0.142 af
Outflow = 1.99 cfs @ 12.09 hrs, Volume= 0.142 af, Atten= 0%, Lag= 0.0 min
Primary = 1.99 cfs @ 12.09 hrs, Volume= 0.142 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 14.40' @ 12.11 hrs Surf.Area= 13 sf Storage= 11 cf

Plug-Flow detention time= 0.3 min calculated for 0.142 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (826.1 - 825.9)

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=1.92 cfs @ 12.09 hrs HW=14.39' TW=14.08' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.92 cfs @ 2.98 fps)

Summary for Pond 8P: CB #23

Inflow Area = 0.786 ac, 52.69% Impervious, Inflow Depth > 6.12" for 50-Year event
Inflow = 4.67 cfs @ 12.14 hrs, Volume= 0.400 af
Outflow = 4.67 cfs @ 12.14 hrs, Volume= 0.400 af, Atten= 0%, Lag= 0.0 min
Primary = 4.67 cfs @ 12.14 hrs, Volume= 0.400 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.93' @ 12.14 hrs Surf.Area= 13 sf Storage= 12 cf
Flood Elev= 89.86' Surf.Area= 13 sf Storage= 61 cf

Plug-Flow detention time= 0.1 min calculated for 0.400 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (788.3 - 788.2)

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=4.67 cfs @ 12.14 hrs HW=20.93' TW=14.10' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.67 cfs @ 3.28 fps)

Summary for Pond 9P: DMH #5097

Inflow Area = 0.786 ac, 52.69% Impervious, Inflow Depth > 6.12" for 50-Year event
Inflow = 4.67 cfs @ 12.14 hrs, Volume= 0.400 af
Outflow = 4.67 cfs @ 12.14 hrs, Volume= 0.400 af, Atten= 0%, Lag= 0.2 min
Primary = 4.67 cfs @ 12.14 hrs, Volume= 0.400 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 22.58' @ 12.14 hrs Surf.Area= 13 sf Storage= 26 cf

Plug-Flow detention time= 0.2 min calculated for 0.400 af (100% of inflow)
Center-of-Mass det. time= 0.1 min (788.2 - 788.1)

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=4.67 cfs @ 12.14 hrs HW=22.58' TW=20.93' (Dynamic Tailwater)
1=Culvert (Barrel Controls 4.67 cfs @ 5.94 fps)

Summary for Pond 19P: SW Culvert

Inflow Area = 1.071 ac, 67.84% Impervious, Inflow Depth > 5.23" for 50-Year event
Inflow = 4.90 cfs @ 12.13 hrs, Volume= 0.467 af
Outflow = 4.63 cfs @ 12.17 hrs, Volume= 0.467 af, Atten= 5%, Lag= 2.5 min
Primary = 4.63 cfs @ 12.17 hrs, Volume= 0.467 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 20.23' @ 12.17 hrs Surf.Area= 750 sf Storage= 469 cf

Plug-Flow detention time= 1.3 min calculated for 0.467 af (100% of inflow)
Center-of-Mass det. time= 0.9 min (872.3 - 871.3)

Volume	Invert	Avail.Storage	Storage Description
#1	19.00'	1,752 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
19.00	10	0.0	0	0
21.40	1,450	100.0	1,752	1,752

Device	Routing	Invert	Outlet Devices
#1	Primary	19.00'	**15.0" Round Culvert** L= 20.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 19.00' / 18.60' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=4.63 cfs @ 12.17 hrs HW=20.23' TW=18.21' (Dynamic Tailwater)
1=Culvert (Inlet Controls 4.63 cfs @ 3.78 fps)

Summary for Pond D3: ADS Subsurface Storage Units (15 - SC130)

Inflow Area = 0.176 ac,100.00% Impervious, Inflow Depth > 8.21" for 50-Year event
Inflow = 1.46 cfs @ 12.08 hrs, Volume= 0.120 af
Outflow = 1.42 cfs @ 12.10 hrs, Volume= 0.120 af, Atten= 3%, Lag= 1.2 min
Discarded = 0.01 cfs @ 4.14 hrs, Volume= 0.026 af
Primary = 1.40 cfs @ 12.10 hrs, Volume= 0.094 af

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

Peak Elev= 21.25' @ 12.10 hrs Surf.Area= 308 sf Storage= 379 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 7.0 min (747.0 - 740.0)

Volume	Invert	Avail.Storage	Storage Description
#1	19.25'	251 cf	**8.20'W x 37.60'L x 2.75'H Prismatoid** 848 cf Overall - 221 cf Embedded = 627 cf x 40.0% Voids
#2	20.00'	221 cf	**ADS_StormTech SC-310 +Cap** x 15 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 3 Rows of 5 Chambers
		472 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Device 4	20.66'	**8.0" Vert. Orifice/Grate** C= 0.600
#2	Primary	19.40'	**4.0" Round Culvert** L= 2.0' Ke= 0.500 Inlet / Outlet Invert= 19.40' / 19.35' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 0.09 sf
#3	Discarded	19.25'	**2.000 in/hr Exfiltration over Surface area**
#4	Primary	19.40'	**8.0" Round Culvert** L= 75.0' Ke= 0.500 Inlet / Outlet Invert= 19.40' / 19.00' S= 0.0053 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

Discarded OutFlow Max=0.01 cfs @ 4.14 hrs HW=19.28' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=1.40 cfs @ 12.10 hrs HW=21.25' TW=18.21' (Dynamic Tailwater)
├**2=Culvert** (Inlet Controls 0.55 cfs @ 6.25 fps)
└**4=Culvert** (Passes 0.86 cfs of 1.59 cfs potential flow)
└**1=Orifice/Grate** (Orifice Controls 0.86 cfs @ 2.62 fps)

Summary for Pond OS1: Outlet Structure #1

Inflow Area = 0.631 ac, 81.92% Impervious, Inflow Depth > 6.30" for 50-Year event
Inflow = 4.34 cfs @ 12.13 hrs, Volume= 0.331 af
Outflow = 4.31 cfs @ 12.14 hrs, Volume= 0.330 af, Atten= 1%, Lag= 0.8 min
Primary = 4.31 cfs @ 12.14 hrs, Volume= 0.330 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 23.93' @ 12.14 hrs Surf.Area= 703 sf Storage= 323 cf

Plug-Flow detention time= 4.8 min calculated for 0.330 af (100% of inflow)
Center-of-Mass det. time= 3.0 min (788.5 - 785.6)

Volume	Invert	Avail.Storage	Storage Description
#1	23.50'	705 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
#2	20.25'	295 cf	**4.00'D x 23.50'H Vertical Cone/Cylinder**
		1,000 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
23.50	610	0.0	0	0
24.50	800	100.0	705	705

Device	Routing	Invert	Outlet Devices
#1	Primary	20.24'	**15.0" Round Culvert** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.24' / 19.85' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	23.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	20.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 15.00'
#4	Secondary	24.00'	**5.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=4.31 cfs @ 12.14 hrs HW=23.93' TW=20.37' (Dynamic Tailwater)
└─**1=Culvert** (Passes 4.31 cfs of 9.42 cfs potential flow)
  └─**2=Orifice/Grate** (Weir Controls 4.28 cfs @ 2.13 fps)
  └─**3=Exfiltration** (Controls 0.03 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=20.25' TW=20.00' (Dynamic Tailwater)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond P4: PCB #!1

Inflow Area = 0.132 ac, 52.30% Impervious, Inflow Depth > 6.05" for 50-Year event
Inflow = 0.92 cfs @ 12.09 hrs, Volume= 0.067 af
Outflow = 0.92 cfs @ 12.09 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.0 min
Primary = 0.92 cfs @ 12.09 hrs, Volume= 0.067 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 32.20' @ 0.00 hrs Surf.Area= 18 sf Storage= 0 cf
Flood Elev= 89.86' Surf.Area= 213 sf Storage= 91 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (800.2 - 800.2)

Volume	Invert	Avail.Storage	Storage Description
#1	32.20'	40 cf	**4.00'D x 3.20'H Vertical Cone/Cylinder**
#2	32.20'	51 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)
		91 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
32.20	5	0	0
32.70	200	51	51

Device	Routing	Invert	Outlet Devices
#1	Primary	23.20'	**12.0" Round Culvert** L= 30.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 23.20' / 23.00' S= 0.0067 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.09 hrs HW=32.20' TW=24.33' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.00 cfs of 10.61 cfs potential flow)

Summary for Pond RG1: Raingarden #1

Inflow Area = 0.257 ac, 64.48% Impervious, Inflow Depth > 12.46" for 50-Year event
Inflow = 4.86 cfs @ 12.09 hrs, Volume= 0.267 af
Outflow = 4.25 cfs @ 12.13 hrs, Volume= 0.254 af, Atten= 13%, Lag= 2.4 min
Primary = 4.25 cfs @ 12.13 hrs, Volume= 0.254 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 24.44' @ 12.13 hrs Surf.Area= 777 sf Storage= 1,143 cf

Plug-Flow detention time= 39.1 min calculated for 0.254 af (95% of inflow)
Center-of-Mass det. time= 14.6 min (774.8 - 760.1)

Volume	Invert	Avail.Storage	Storage Description
#1	20.25'	1,191 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
20.25	350	0.0	0	0
21.25	350	40.0	140	140
21.50	350	10.0	9	149
23.00	350	40.0	210	359
24.00	610	100.0	480	839
24.50	800	100.0	353	1,191

Device	Routing	Invert	Outlet Devices
#1	Primary	20.25'	**15.0" Round Culvert** L= 1.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 20.25' / 20.24' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	23.50'	**18.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	20.25'	**2.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 15.00'

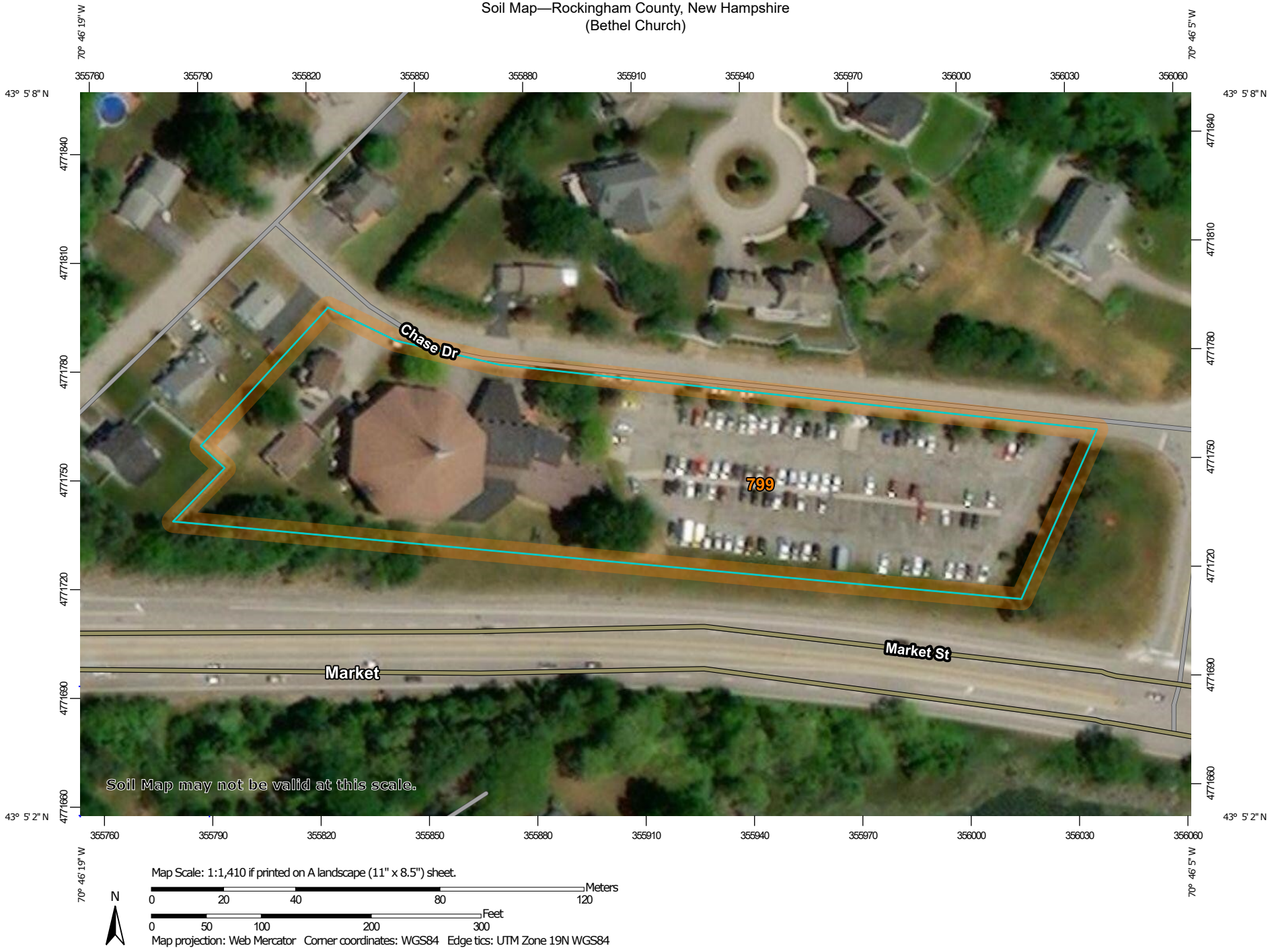
Primary OutFlow Max=4.23 cfs @ 12.13 hrs HW=24.44' TW=23.92' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 4.23 cfs @ 3.45 fps)
├**2=Orifice/Grate** (Passes < 6.09 cfs potential flow)
└**3=Exfiltration** (Passes < 0.05 cfs potential flow)

Summary for Link P100: POA #100

Inflow Area = 3.003 ac, 47.49% Impervious, Inflow Depth > 5.19" for 50-Year event
Inflow = 14.70 cfs @ 12.12 hrs, Volume= 1.298 af
Primary = 14.70 cfs @ 12.12 hrs, Volume= 1.298 af, Atten= 0%, Lag= 0.0 min

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

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.

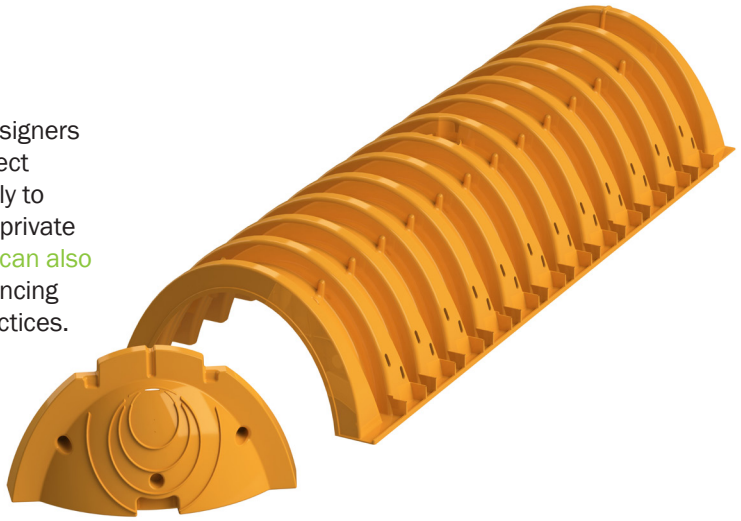
Map Unit Legend

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

SC-310 CHAMBER

Designed to meet the most stringent industry performance standards for superior structural integrity while providing designers with a cost-effective method to save valuable land and protect water resources. The StormTech system is designed primarily to be used under parking lots, thus maximizing land usage for private (commercial) and public applications. StormTech chambers can also be used in conjunction with Green Infrastructure, thus enhancing the performance and extending the service life of these practices.



STORMTECH SC-310 CHAMBER
(not to scale)

Nominal Chamber Specifications

Size (L x W x H)
85.4" x 34.0" x 16.0"
2,170 mm x 864 mm x 406 mm

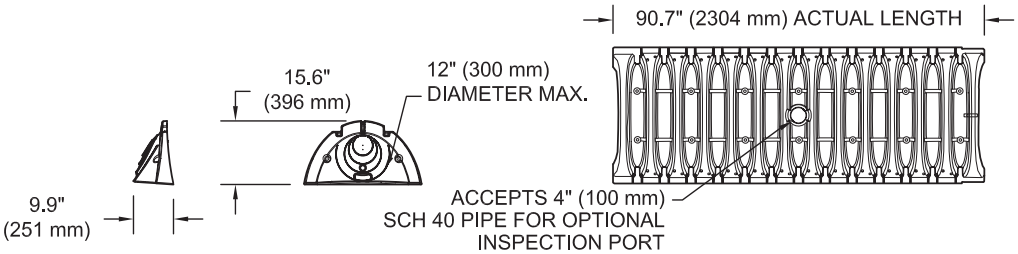
Chamber Storage
14.7 ft³ (0.42 m³)

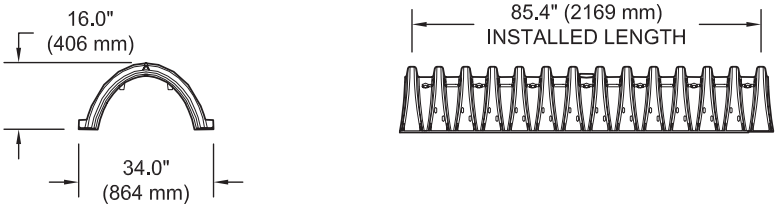
Min. Installed Storage*
31.0 ft³ (0.88 m³)

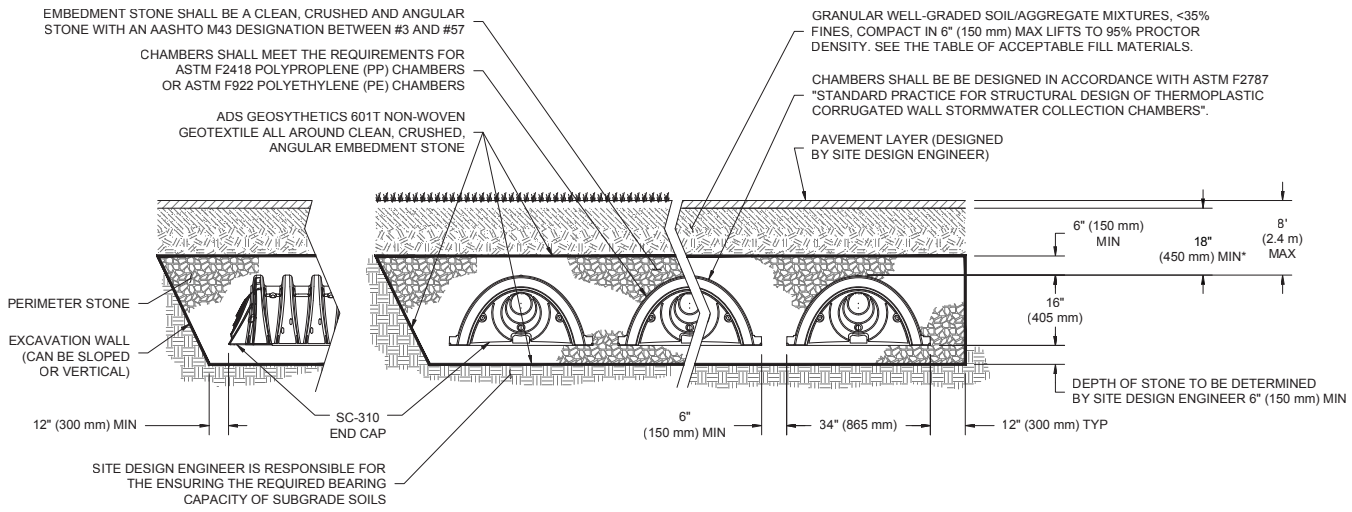
Weight
37.0 lbs (16.8 kg)

Shipping
41 chambers/pallet
108 end caps/pallet
18 pallets/truck

*Assumes 6" (150 mm) stone above and below chambers and 40% stone porosity.







*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm).

SC-310 CUMULATIVE STORAGE VOLUMES PER CHAMBER

Assumes 40% Stone Porosity. Calculations are Based Upon a 6" (150 mm) Stone Base Under Chambers.

Depth of Water in System Inches (mm)		Cumulative Chamber Storage ft³ (m³)	Total System Cumulative Storage ft³ (m³)
28 (711)		14.70 (0.416)	31.00 (0.878)
27 (686)		14.70 (0.416)	30.21 (0.855)
26 (680)	Stone	14.70 (0.416)	29.42 (0.833)
25 (610)	Cover	14.70 (0.416)	28.63 (0.811)
24 (609)		14.70 (0.416)	27.84 (0.788)
23 (584)		14.70 (0.416)	27.05 (0.766)
22 (559)		14.70 (0.416)	26.26 (0.748)
21 (533)		14.64 (0.415)	25.43 (0.720)
20 (508)		14.49 (0.410)	24.54 (0.695)
19 (483)		14.22 (0.403)	23.58 (0.668)
18 (457)		13.68 (0.387)	22.47 (0.636)
17 (432)		12.99 (0.368)	21.25 (0.602)
16 (406)		12.17 (0.345)	19.97 (0.566)
15 (381)		11.25 (0.319)	18.62 (0.528)
14 (356)		10.23 (0.290)	17.22 (0.488)
13 (330)		9.15 (0.260)	15.78 (0.447)
12 (305)		7.99 (0.227)	14.29 (0.425)
11 (279)		6.78 (0.192)	12.77 (0.362)
10 (254)		5.51 (0.156)	11.22 (0.318)
9 (229)		4.19 (0.119)	9.64 (0.278)
8 (203)		2.83 (0.081)	8.03 (0.227)
7 (178)		1.43 (0.041)	6.40 (0.181)
6 (152)		0	4.74 (0.134)
5 (127)		0	3.95 (0.112)
4(102)	Stone Foundation	0	3.16 (0.090)
3 (76)		0	2.37 (0.067)
2 (51)		0	1.58 (0.046)
1 (25)		0	0.79 (0.022)

Note: Add 0.79 ft³ (0.022 m³) of storage for each additional inch. (25 mm) of stone foundation.

STORAGE VOLUME PER CHAMBER FT³ (M³)

	Bare Chamber Storage ft³ (m³)	Chamber and Stone Foundation Depth in. (mm)		
		6 (150)	12 (300)	18 (450)
StormTech SC-310	14.7 (0.4)	31.0 (0.9)	35.7 (1.0)	40.4 (1.1)

Note: Assumes 6" (150 mm) of stone above chambers, 6" (150 mm) row spacing and 40% stone porosity.

AMOUNT OF STONE PER CHAMBER

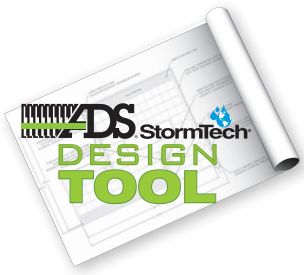
ENGLISH TONS (yds³)	Stone Foundation Depth		
	6"	12"	18"
StormTech SC-310	2.1 (1.5 yd³)	2.7 (1.9 yd³)	3.4 (2.4 yd³)
METRIC KILOGRAMS (m³)	**150 mm**	**300 mm**	**450 mm**
StormTech SC-310	1830 (1.1 m³)	2490 (1.5 m³)	2990 (1.8 m³)

Note: Assumes 6" (150 mm) of stone above, and between chambers.

VOLUME EXCAVATION PER CHAMBER YD³ (M³)

	Stone Foundation Depth		
	6" (150 mm)	12" (300 mm)	18" (450 mm)
StormTech SC-310	2.9 (2.2)	3.4 (2.6)	3.8 (2.9)

Note: Assumes 6" (150 mm) of row separation and 18" (450 mm) of cover. The volume of excavation will vary as the depth of the cover increases.



Working on a project?
Visit us at www.stormtech.com
and utilize the StormTech Design Tool

For more information on the StormTech SC-310 Chamber and other ADS products, please contact our Customer Service Representatives at 1-800-821-6710

*THE MOST **ADVANCED** NAME IN WATER MANAGEMENT SOLUTIONS™*

Advanced Drainage Systems, Inc.
4640 Trueman Blvd., Hilliard, OH 43026
1-800-821-6710 www.ads-pipe.com

ST-310 Chamber Calcualtions

	inches	ft	
Chamber depth	16	1.333333	
below	8	0.666667	
above	6	0.5	
Total	30	2.5	
length	85.4	7.116667	
Rows	3		
# of chambers	5	35.58333	
width	34	2.833333	
Volume			
Length	37.58333		
Width	12.5		
height	2.5		
Volume	1174.479		
Total Chambers	15		
Open volume per chamber	14.7		
Chambers Volume	220.5		
Rock Volume	953.9792		
40 voids	381.5917		
TOTAL STORAGE VOLUME	602.0917	cubic feet	

NORTH NAD83(2011)

GRID NHSPC

SOLS CLASSIFICATION

SYMBOL	DESCRIPTION	HSG
799	URBAN LAND – CANTON COMPLEX (ENTIRE SITE)	B

SLOPE PHASES

SYMBOL	PHASE
A	0–3%
B	3–8%
C	8–15%
D	15–25%
E	25–50%
F	50%+

SOILS LEGEND

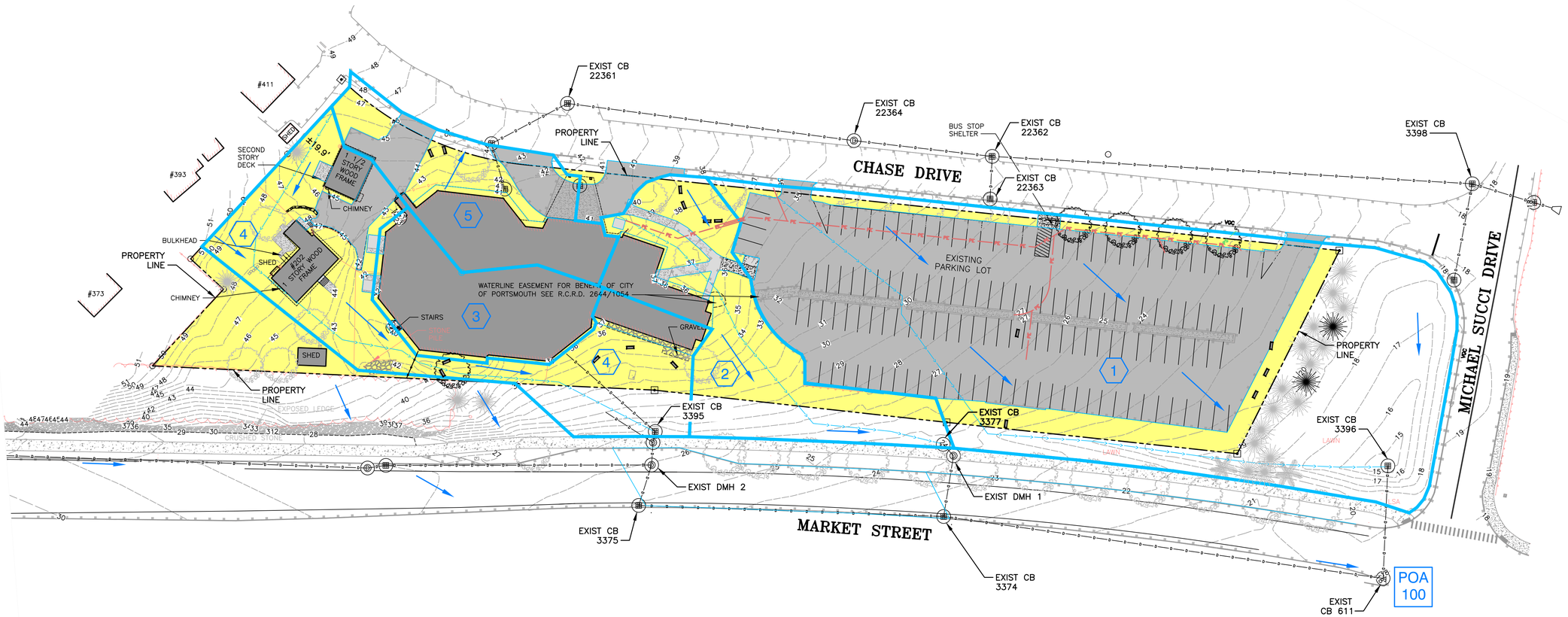
HYDROLOGIC GROUP

- SOILS – HSG A
- SOILS – HSG B
- SOILS – HSG C
- SOILS – HSG D
- IMPERVIOUS (BLDGS/ROADS/MISC)

LEGEND

- PROPERTY LINE
- WETLAND/SOILS BOUNDARY
- 60 EXISTING CONTOUR
- EXISTING PAVEMENT/CURB
- EXISTING TREELINE
- WATERSHED BOUNDARY
- Tc PATH
- SURFACE FLOW DIRECTION
- 1 / 1 / 1 SUBCATCHMENT/POND/REACH
- POA POINT OF ANALYSIS

5 SUBCATCHMENT 5 DRAINS TO CHASE DRIVE DRAINAGE AND IS NOT INCLUDED IN THE MODELING AS THERE ARE NO SIGNIFICANT IMPROVEMENTS OR INCREASES TO IMPERVIOUS AREAS.



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: DRAINAGE REPORT

ISSUE DATE: JANUARY 29, 2020

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	CDB	09/16/19
0	REVISION 1	CDB	12/23/19

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4950.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:
PRE-DEVELOPMENT DRAINAGE PLAN

SHEET NUMBER:
DA-1

NORTH
NAD83(2011)
GRID
NHSPC

SOLS CLASSIFICATION

SYMBOL	DESCRIPTION	HSG
799	URBAN LAND – CANTON COMPLEX (ENTIRE SITE)	B

SLOPE PHASES

SYMBOL	PHASE
A	0–3%
B	3–8%
C	8–15%
D	15–25%
E	25–50%
F	50%+

SOILS LEGEND

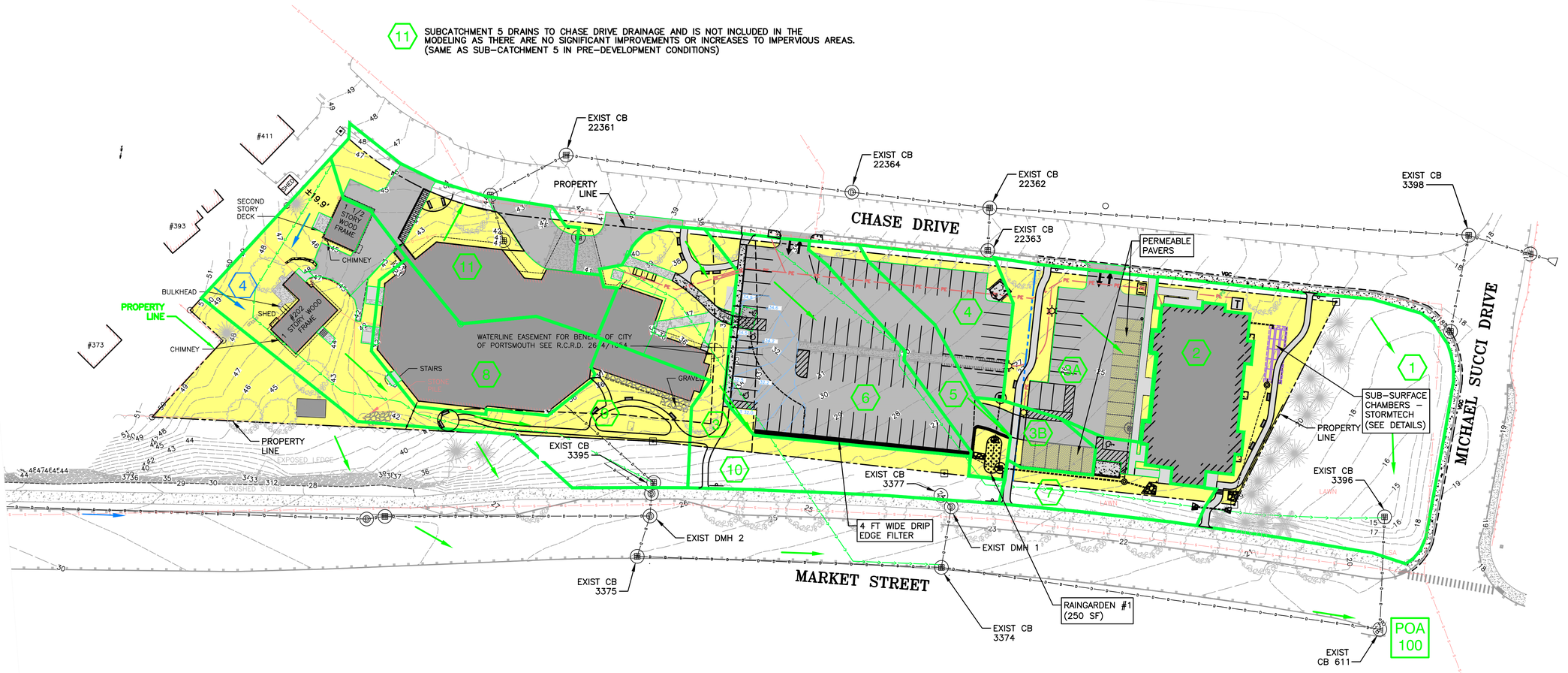
HYDROLOGIC GROUP

- SOILS – HSG A
- SOILS – HSG B
- SOILS – HSG C
- SOILS – HSG D
- IMPERVIOUS (BLDGS/ROADS/MISC)

LEGEND

- PROPERTY LINE
- WETLAND/SOILS BOUNDARY
- 60 EXISTING CONTOUR
- EXISTING PAVEMENT/CURB
- EXISTING TREELINE
- WATERSHED BOUNDARY
- Tc PATH
- SURFACE FLOW DIRECTION
- 1 1 1 SUBCATCHMENT/POND/REACH
- POA POINT OF ANALYSIS

11 SUBCATCHMENT 5 DRAINS TO CHASE DRIVE DRAINAGE AND IS NOT INCLUDED IN THE MODELING AS THERE ARE NO SIGNIFICANT IMPROVEMENTS OR INCREASES TO IMPERVIOUS AREAS. (SAME AS SUB-CATCHMENT 5 IN PRE-DEVELOPMENT CONDITIONS)



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:
DRAINAGE REPORT

ISSUE DATE:
JANUARY 29, 2020

REVISIONS

NO.	DESCRIPTION	BY	DATE
0	INITIAL SUBMISSION	CDB	09/16/19
1	REVISED PARKING LOT	CDB	10/21/19
2	REVISION 2	CDB	12/23/19
3	STORMTECH	CDB	01/29/20

DRAWN BY: CDB
APPROVED BY: EDW
DRAWING FILE: 4950.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:
POST-DEVELOPMENT DRAINAGE PLAN

SHEET NUMBER:
DA-2

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
- Regular Inspection and Maintenance Guidance for Permeable Pavements and Bioretention Systems
- Checklists for Inspection of Bioretention Systems and Permeable Pavements
- 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 by July 15 of each year for duration required.

RAINGARDENS AND INFILTRATION BASINS (BIORETENTION SYSTEMS)

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

- Reference attached "Regular Inspection and Maintenance Guidance for Bioretention Systems / Tree Filters
- 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.

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

- Reference attached "Regular Inspection and Maintenance Guidance for Permeable Pavements
- 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.

SUB-SURFACE STORMWATER TREATMENT SYSTEM

Function – Sub-Surface treatment systems treat runoff prior to directing it to surface stormwater systems by filtering sediment and suspended solids, trapping them in the isolation rows and in the filter rock. Stormwater detention and infiltration can also be provided as the filtering process slows runoff, decreases the peak rate of discharge and promotes groundwater recharge.

The Sub-Surface Stormwater Treatment System shall be inspected and maintained at m a minimum of every 6 months for the first year and annually thereafter. Inspections shall comply with to the requirements of the manufacturer. At a minimum, the following inspection and maintenance requirements are included:

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT

A. Inspection ports (if present)
   - a.1. Remove/open lid on nyloplast inline drain
   - a.2. Remove and clean flexstorm filter if installed
   - a.3. Using a flashlight and stadia rod, measure depth of sediment and record on maintenance log
   - a.4. Lower a camera into isolator row for visual inspection of sediment levels (optional)
   - a.5. If sediment is at, or above, 3" (80 mm) proceed to step 2. if not, proceed to step 3.

B. All isolator rows
   - b.1. Remove cover from structure at upstream end of isolator row
   - b.2. using a flashlight, inspect down the isolator row through outlet pipe
     - i) Mirrors on poles or cameras may be used to avoid a confined space entry
     - ii) Follow osha regulations for confined space entry if entering manhole
   - b.3. If sediment is at, or above, 3" (80 mm) proceed to step 2. if not, proceed to step 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS

A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION AND ANNUALLY EVERY YEAR THEREAFTER. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.

2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

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.

NOTE: SLOW OR CONTROLLED RELEASE FERTILIZE IS REQUIRED WITHIN THE 250 FOOT SHORELAND PROTECTION AREA. SEE PLANS FOR LOCATIONS.

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. PERMEABLE PAVEMENTS
    a. REGULAR INSPECTION AND MAINTENANCE GUIDANCE
    b. CHECKLIST FOR INSPECTION

B. BIORETENTION SYSETMS
    a. REGULAR INSPECTION AND MAINTENANCE GUIDANCE
    b. CHECKLIST FOR INSPECTION

C. STORMWATER SYSTEM OPERATIONS AND MAINTENANCE REPORT

D. 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.

Regular Inspection and Maintenance Guidance for Permeable Pavements

Regular inspection and maintenance is critical to the effective operation of permeable pavement. It is the responsibility of the owner to maintain the pavement in accordance with the minimum design standards. This page provides guidance on maintenance activities that are typically required for these systems, along with the suggested frequency for each activity. Individual systems may have more, or less, frequent maintenance needs, depending on a variety of factors including the occurrence of large storm events, seasonal changes, and traffic conditions.

ACTIVITIES

Visual inspections are an integral part of system maintenance. This includes monitoring pavement to ensure water drainage, debris accumulation, and surface deterioration.

ACTIVITY	FREQUENCY
CLOGGING AND SYSTEM PERFORMANCE	
Adjacent vegetated areas show no signs of erosion and run-on to permeable pavement. **Remedy:** Repair or replace any damaged structural parts.	Whenever vacuuming adjacent permeable pavements
Adjacent non-permeable sections of pavement are clean of debris to prevent debris tracking. **Remedy:** Vacuuming adjacent pavement non-permeable pavement can be effective at minimizing run-on.	
Check for standing water remaining on the surface of the pavement after a precipitation event within 30 minutes. **Remedy:** Use of a power washer or compressed air blower at an angle of 30 degrees or less can be effective, particularly in combination with a vacuum or vacuum sweeper.	1-2 times per year, more frequently for high-use sites or sites with higher potential for run-on
Check for debris accumulation, particularly in the winter. **Remedy:** Loose debris such as leaves or trash can be removed using a power/leaf blower or gutter broom. Fall and spring cleanup should be accompanied by pavement vacuuming.	
Accumulation of sediment and organic debris on the pavement surface. **Remedy:** Regular use of a vacuum sweeper can remove sediment and organic debris. The sweeper may be fitted with water jets.	
PAVEMENT CONDITION	
Check for accumulation of snow or other stockpiles of materials such as sand/salt, mulch, soil, yard waste, etc. Stockpiling of these materials on permeable pavements can lead to premature clogging. **Remedy:** Remove stockpile if possible and check for clogging in storage area.	As Needed
Damage to pavement **Remedy:** Repairs should be repaired as they are identified	

CHECKLIST FOR INSPECTION OF PERMEABLE PAVEMENT

Location:
Inspector:
Date:
Time:
Site Conditions:
Date Since Last Rain Event:

Inspection Items	Satisfactory (S) or Unsatisfactory (U)	Comments/Corrective Action
1. Salt / Deicing (Winter/Spring)		
Use salt only for ice management	**S U**	
Accumulated salt removed in spring	**S U**	
2. Debris Cleanup (1-2 times per year minimum, Spring/Fall)		
Remove sediment and organic debris using vacuum street sweeper	**S U**	
Clean catch basins (if available)	**S U**	
3. Controlling Run-On		
Adjacent vegetated areas show no signs of erosion and run-on to permeable pavement	**S U**	
4. Outlet / Catch Basin Inspection (if available) (1-2 times per year, after large storm events)		
No evidence of blockage	**S U**	
Good condition, no need for cleaning/repair	**S U**	
5. Poorly Drained Pavement		
Recently cleaned and vacuumed	**S U**	
6. Pavement Condition		
No evidence of deterioration	**S U**	
7. Signage / Stockpiling (As Needed)		
No evidence of damage	**S U**	
Proper signage posted indicating usage for traffic load	**S U**	
No stockpiling of materials and other unauthorized uses	**S U**	

Corrective Action Needed	Due Date
1.	
2.	
3.	
Inspector's Signature	Date

Regular Inspection and Maintenance Guidance for Bioretention Systems / Tree Filters

Maintenance of bioretention systems and tree filters can typically be performed as part of standard landscaping. Regular inspection and maintenance is critical to the effective operation of bioretention systems and tree filters to insure they remain clear of leaves and debris and free draining. This page provides guidance on maintenance activities that are typically required for these systems, along with the suggested frequency for each activity. Individual systems may have more, or less frequent maintenance needs depending on a variety of factors including but not limited to: the occurrence of large storm events, overly wet or dry periods, regional hydrologic conditions, and the upstream land use.

ACTIVITIES

The most common maintenance activity is the removal of sediment and organic debris from the system and bypass structures. Visual inspections are routine for system maintenance. This includes looking for standing water, accumulated leaves, holes in the soil media, signs of plant distress, and debris and sediment accumulation in the system. Vegetation coverage is integral to the performance of the system, including infiltration rate and nutrient uptake. Vegetation care is important to system productivity and health.

ACTIVITY	FREQUENCY
CLOGGING AND SYSTEM PERFORMANCE	
A record should be kept of the time to drain for the system completely after a storm event. The system should drain completely within 72 hours.	After every major storm in the first few months, then annually at minimum.
Check to insure the filter surface remains well draining after storm events. **Remedy**: If filter bed is clogged, draining poorly, or standing water covers more than 50% of the surface 48 hours after a precipitation event, then remove top few inches of discolored material. Till, or rake remaining material as needed.	
Check inlets and outlets for leaves and debris. **Remedy**: Rake in and around the system to clear it of debris. Also, clear the inlet and overflow if obstructed.	Quarterly initially, annually as a minimum thereafter.
Check for animal burrows and short-circuiting in the system. **Remedy:** Soil erosion from short circuiting or animal boroughs should be repaired when they occur. The holes should be filled and lightly compacted	
Inspect inlets and outlets to ensure good condition and no evidence of deterioration. Check to see if high-flow bypass is functioning. **Remedy:** Repair or replace any damaged structural parts, inlets, outlets, sidewalls.	
VEGETATION	
Check for robust vegetation coverage throughout the system and dead or dying plants. **Remedy:** Vegetation should cover > 75% of the system and should be cared for as needed.	Annually or as needed

CHECKLIST FOR INSPECTION OF BIORETENTION SYSTEM / TREE FILTERS

Location:
Inspector:
Date:
Time:
Site Conditions:
Days Since Last Rain Event:

Inspection Items	Satisfactory (S) or Unsatisfactory (U)	Comments/Corrective Action
1. Initial Inspection After Planting and Mulching		
Plants are stable, roots not exposed	**S** **U**	
Surface is at design level, no evidence of preferential flow/shoving	**S** **U**	
Inlet and outlet/bypass are functional	**S** **U**	
2. Debris Cleanup (1 time/year minimum, Spring/Fall)		
Litter, leaves, and dead vegetation removed from the system	**S** **U**	
Prune/mow vegetation	**S** **U**	
3. Standing Water (1 time/year and/or after large storm events)		
No evidence of standing water after 24-48 hours since rainfall	**S** **U**	
4. Vegetation Condition and Coverage		
Vegetation condition good with good coverage (typically > 75%)	**S** **U**	
5. Other Issues		
Note any additional issues not previously covered.	**S** **U**	

Corrective Action Needed	Due Date
1.	
2.	
3.	
Inspector Signature	**Date**

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		

LEGEND

* SEE SHEET C-1 FOR EXISTING FEATURES

- PROPERTY LINE
- 250 FT SHORELAND BUFFER
- WETLAND SETBACK LINE
- PROPOSED PAVEMENT
- VERTICAL GRANITE CURB/SLOPED GRANITE CURB/ BITUMINOUS CONCRETE CURB (CAPE COD) (VGC, SGC, BCC)
- 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= 250 SF
BOTTOM ELEV = 23.0
BERM ELEV = 24.0

OUTLET STRUCTURE 1 (OS1)
RIM (18" BEEHIVE) = 23.5
6" UD (IN)= 20.25
12" INV IN = 20.35 (OS2)
12" INV (OUT) = 20.25

SUB-SURFACE CHAMBER SYSTEM

STORMTECH SC-310 (OR APPROVED EQUAL)
15 CHAMBERS TOTAL - 3 ROWS OF 5 EACH
CHAMBER BOTTOM ELEV = 20.0
4" UNDERDRAIN INV = 19.4
STORAGE VOLUME = 450 CF
(CONTRACTOR TO COMPLY WITH MANUFACTURER RECOMMENDATIONS FOR INSTALLATION)

DRAINAGE STRUCTURES

CB #1
RIM = 26.4±
INV. OUT (12" HDPE) =23.20

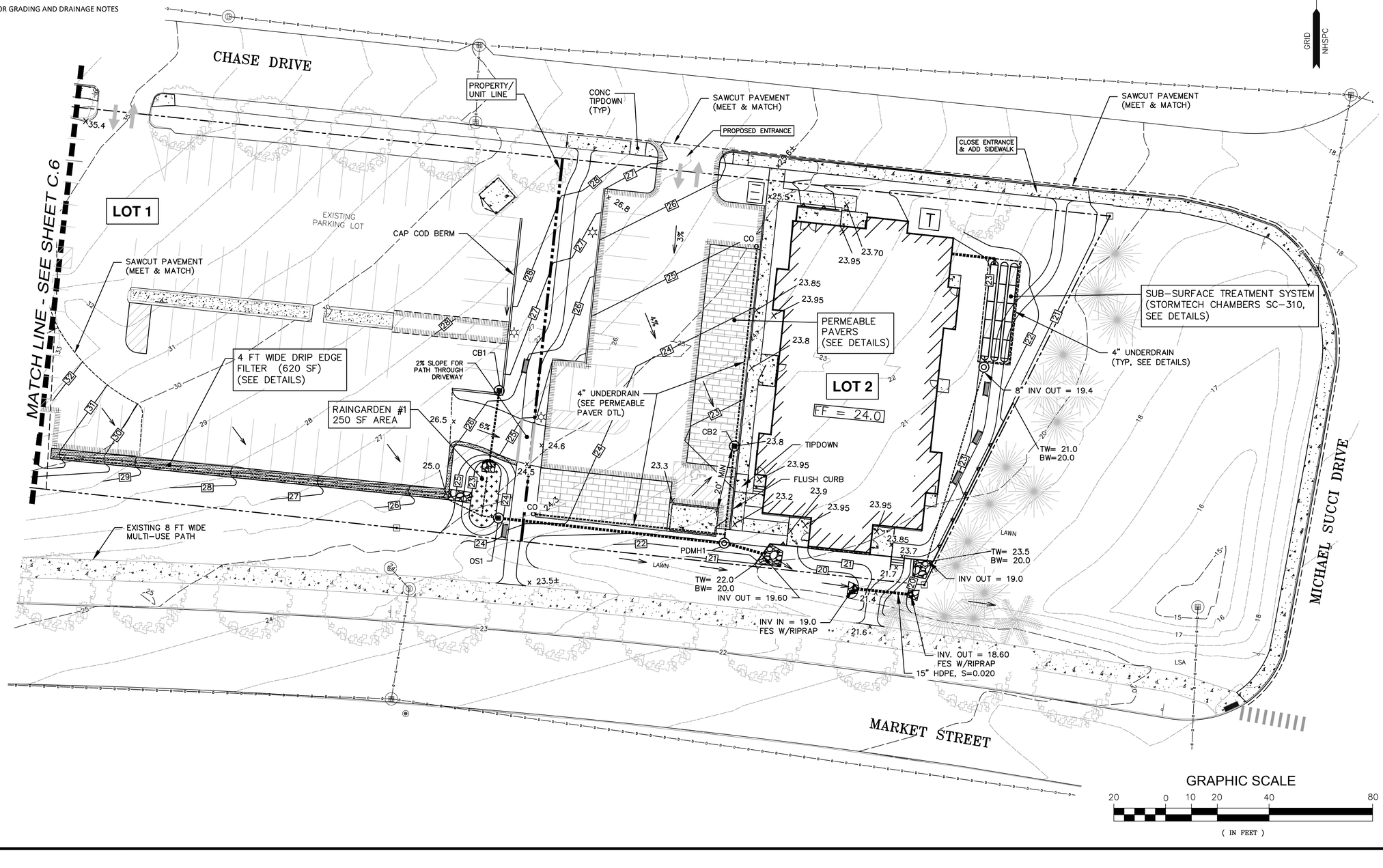
CB #2
RIM = 22.8±
4" UD IN = 20.2±
6" UD OUT = 20.2±

PDMH #1
COVER = 22.3±
12" INV IN = 19.85 (OS2)
6" INV IN = 20.00
INV. OUT (12" HDPE) = 19.75

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

NORTH NAD83(2011) N GRID NHSPC



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)

P4950

ENGINEER:

ALTUS ENGINEERING, INC.

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

ISSUED FOR:
PLANNING BOARD APPROVAL

ISSUE DATE:
JANUARY 29, 2020

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
3	TAC COMMENTS	CDB	10/18/19
4	TAC COMMENTS	CDB	11/18/19
5	TAC COMMENTS	CDB	12/23/19
6	TAC COMMENTS	CDB	01/29/20

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

SCALE:
22" x 34" - 1" = 20'
11" x 17" - 1" = 40'

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:

GRADING AND DRAINAGE PLAN

SHEET NUMBER:

C.5

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

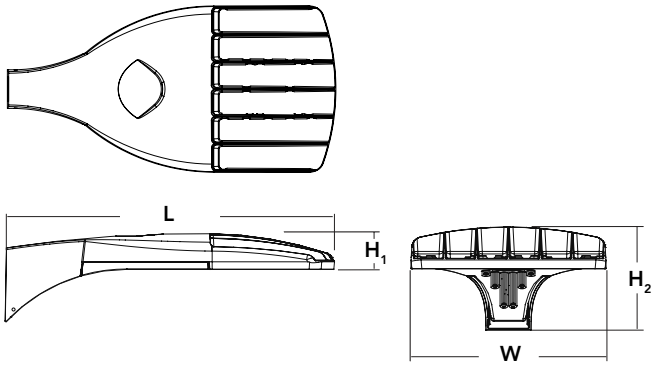
Hit the Tab key or mouse over the page to see all interactive elements.

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.

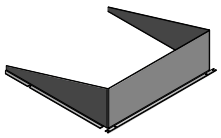
DLL127F 1.5 JU	Photocell - SSL twist-lock (120-277V) [18]
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (347V) [18]
DLL480F 1.5 CUL JU	Photocell - SSL twist-lock (480V) [18]
DSHORT SBK U	Shorting cap [18]
DSX0HS 20C U	House-side shield for P1,P2,P3 and P4 [16]
DSX0HS 30C U	House-side shield for P10,P11,P12 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]

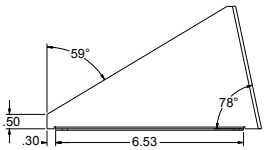
For more control options, visit DTL and ROAM online. Link to nLight Air 2

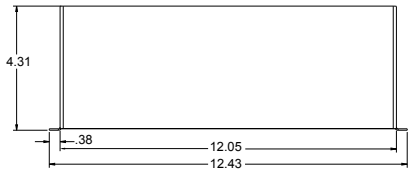
NOTES

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

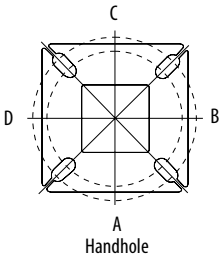




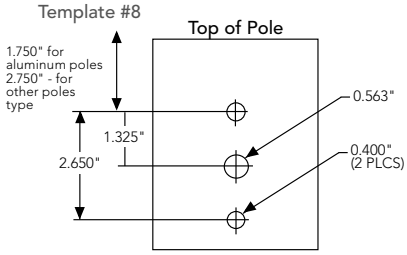


Drilling

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"

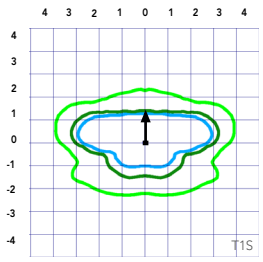
Photometric Diagrams

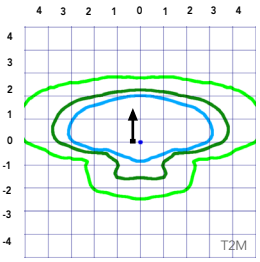
To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Area Size 0 homepage.

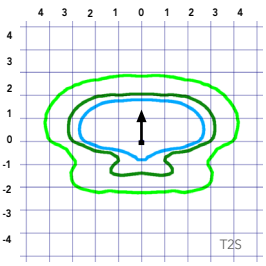
Isofootcandle plots for the DSX0 LED 40C 1000 40K. Distances are in units of mounting height (20').

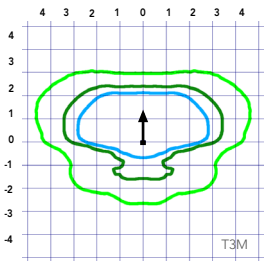
LEGEND

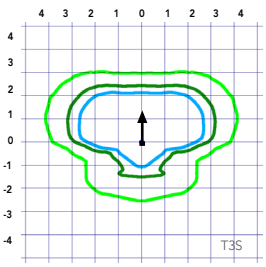
- 0.1 fc
- 0.5 fc
- 1.0 fc

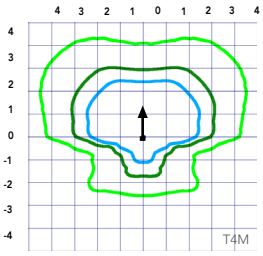


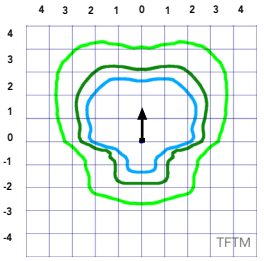


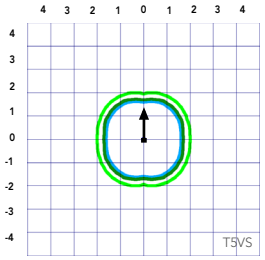


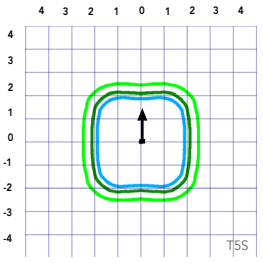


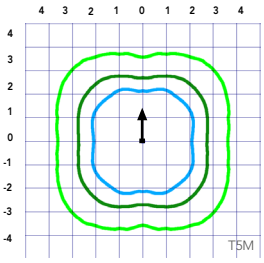


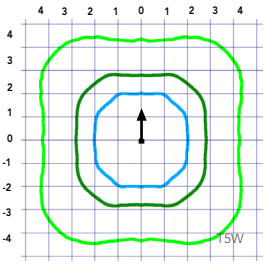


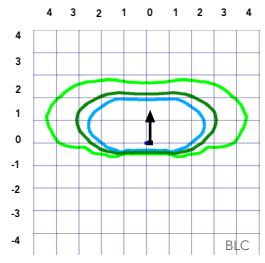


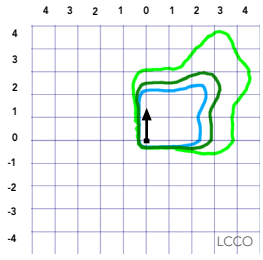


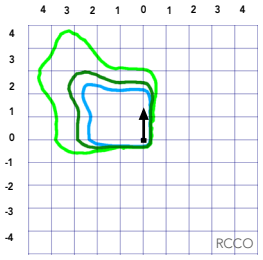












One Lithonia Way • Conyers, Georgia 30012 • Phone: 800.705.7378 • www.lithonia.com

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

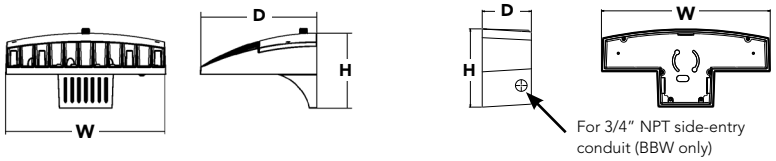
Specifications

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

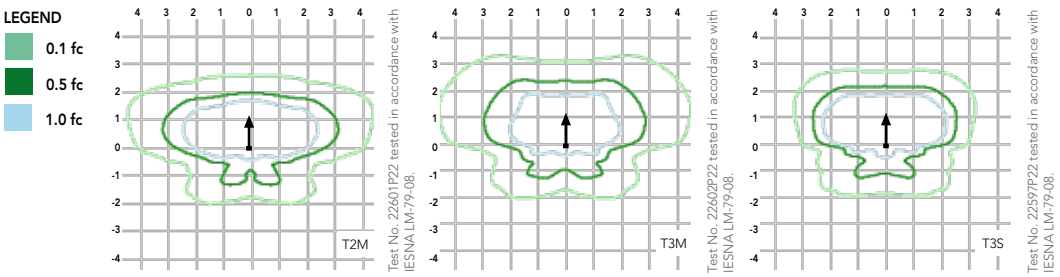
Option	Dimmed State	High Level (when triggered)	Photocell Operation	Dwell Time	Ramp-up Time	Ramp-down Time
*PIR or PIRH	3V (37%) Output	10V (100%) Output	Enabled @ 5FC	5 min	3 sec	5 min
PIR1FC3V or PIRH1FC3V	3V (37%) Output	10V (100%) Output	Enabled @ 1FC	5 min	3 sec	5 min

*for use with Inline Dusk to Dawn or timer

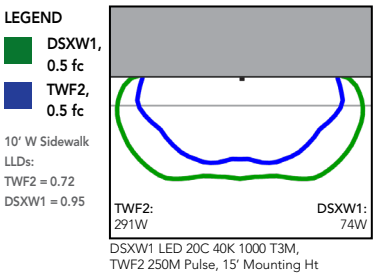
Photometric Diagrams

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

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