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

17 July 2018

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

RE: Site Plan Approval for 140 Court Street; Portsmouth Housing Authority

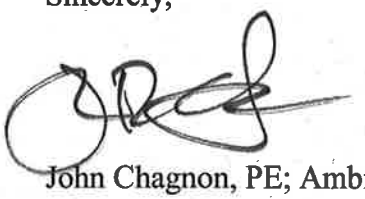
Dear Ms. Walker and TAC Members:

We hereby submit, on behalf of the Portsmouth Housing Authority, this **Response to Comments** for consideration at your July 31 TAC Committee Meeting. The response is based on the comments from the July 3 TAC Committee meeting shown below with responses in **bold text**:

1. The label "Bench (TYP)" needs to be revised to say "Existing Bench to Remain". **Site plans updated to indicate benches to remain.**
2. There needs to be some additional bike parking outside. Perhaps a ½ Zagster with some added spaces for resident bikes. **The Landscape Plans show a smaller (1/2) Zagster rack along Court Street with an additional bicycle rack added to the plan in the south end of the (central) park. The ordinance requires one bicycle space per 5 dwelling units; 33 would be required. We have 30 inside and 10 outside not including the Zagster rack.**
3. Door swings need to be displayed on the plans; especially Basement Plan. **Door swings are shown on the Basement Plan – Sheet C4.**
4. Basement Plan should identify uses in all rooms. **Uses are shown on the Basement Plan – Sheet C4.**
5. Comments about the proposed property line with 152 Court Street with a suggestion we adjust the angle and extend the area a couple of feet. **The property line has been adjusted as requested.**
6. Can we design a more inviting entrance from Court Street? **Plans updated.**
7. The Community Space should not be labelled as Open Space. **Ambit revised plans.**
8. The drainage design/report will need further review and study. **Ambit attended a meeting with Planning and DPW to facilitate a possible solution; which has been shown on the revised plans.**
9. A Code Study should be provided for the roof deck. **CJ provided narrative included in this submission.**

We look forward to continuing the Site Review process at the July 31 TAC Meeting.

Sincerely,



John Chagnon, PE; Ambit Engineering, Inc.

CC (via email): Portsmouth Housing Authority, John Bosen, Peter Roche, CJ Architects

J:\JOBS2\JN2700's\JN 2790's\JN 2790\2017 Site Planning\Applications\Portsmouth Site Plan\TAC Response to Comments Letter 7-17-18.doc

CJ ARCHITECTS

July 12, 2018

Carl Roediger, Deputy Fire Chief
Portsmouth Fire Department
170 Court Street
Portsmouth, NH 03801

Mr. Roediger,

In response to your inquiry during the Technical Advisory (TAC) meeting on July 3, 2018, we are providing the following analysis showing building code compliance as it relates to the 4th floor deck being proposed on the north side of the building at the 140 Court Street Development project.

IBC (2009):
The building will be a fully sprinklered building and complies with IBC 2009 section 1021.1 with 2 exits from each of the building's stories.

The proposed 4th floor deck is 584 square feet. For residential use R-2, the occupant load factor is 200 gross square feet per person, resulting in an occupant load of 3.
(584 square feet / 200 square feet = 2.92.)

Per section 1015.1, Table 1501.1, spaces with one exit are limited to 10 occupants for residential occupancy, so the 4th floor deck would be allowed 1 exit.

If the 4th floor deck is interpreted to be Assembly A-3 (worst-case), the occupant load factor would be 15 net square feet per person, resulting in an occupant load of 39.
(584 square feet / 15 square feet = 38.9.)

Per section 1015.1, Table 1501.1, spaces with one exit are limited to 49 occupants for assembly occupancy, so the 4th floor deck would be allowed 1 exit.

Both interpretations of IBC would allow for the 4th floor deck to have one exit.

NFPA 101 (2015):
Chapter 30/31 *New and Existing Apartment Buildings*, Section 30.2.4 *Number of Means of Egress* does not comment on the number of means of egress from spaces other than dwelling units.

CJ ARCHITECTS

Chapter 12/13 *New and Existing Assembly Occupancies*, Section 12.2.4.5 *Number of Means of Egress* states that balconies and mezzanines having an occupant load not exceeding 50 shall be permitted to be served by a single means of egress, and such means of egress shall be permitted to lead to the floor below.

Both interpretations of NFPA 101 would allow for the 4th floor deck to have one exit.

The common decks located at the first, second, third, and fourth floors on the south side of the building also comply with the above code sections.

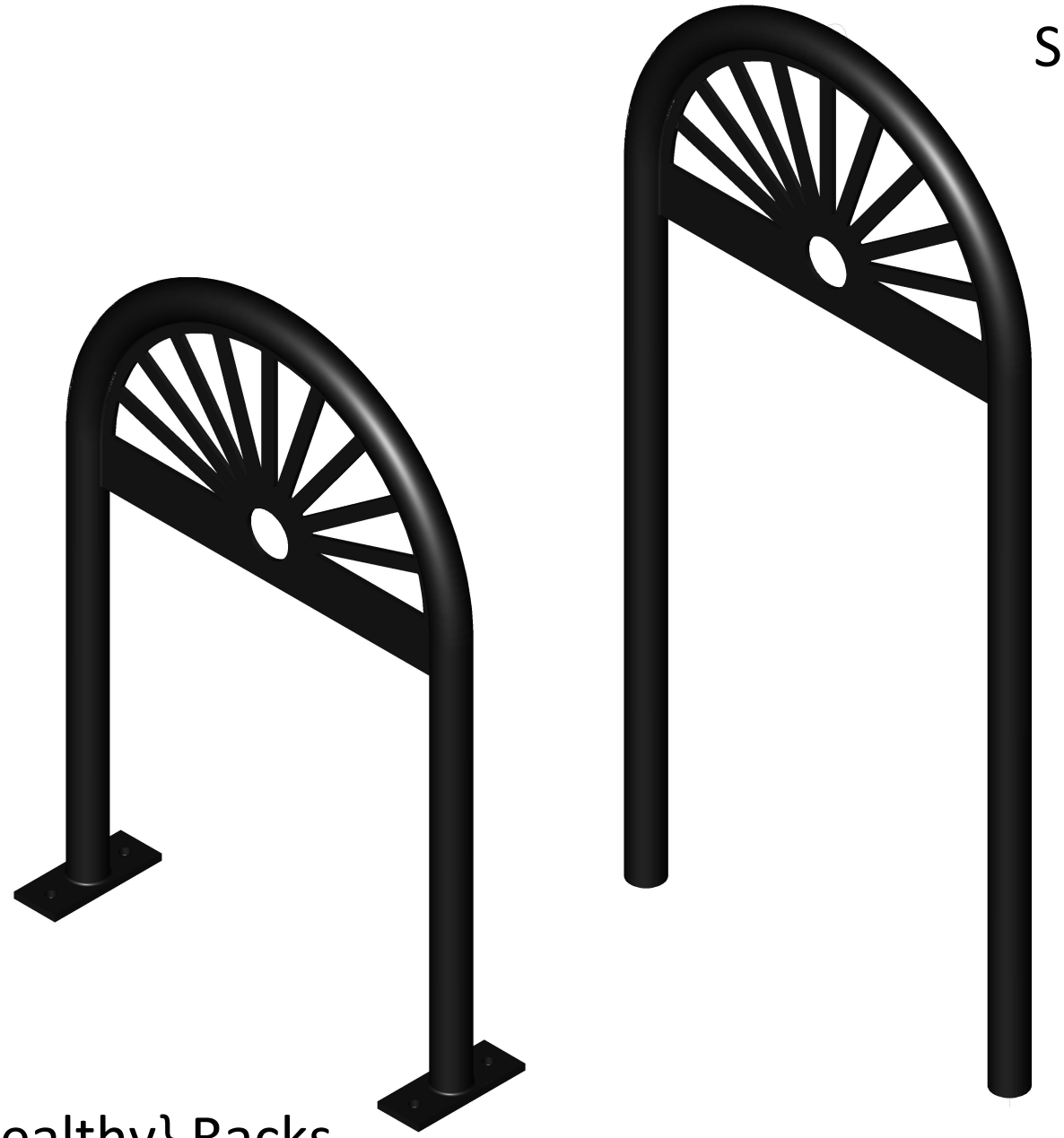
Please let us know if you have any questions.

Thank you,

Carla Goodknight – AIA

Cc: Robert Marsilia, Chief Building Inspector
City of Portsmouth

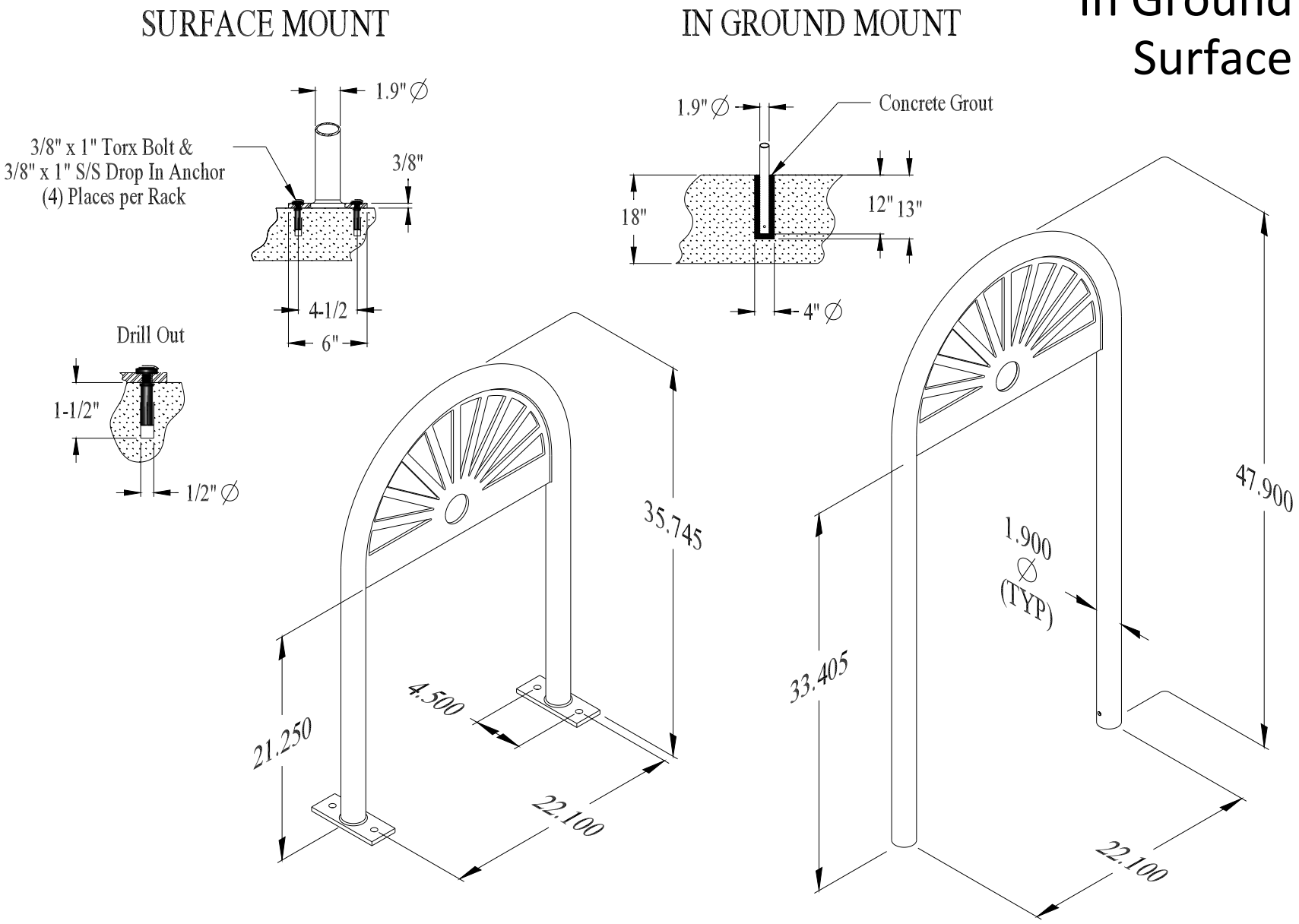
In Ground #12231
Surface #12131



Vintage {Wealthy} Racks
Surface Mount / In Ground Mount

CycleSafe®
SECURE BICYCLE PARKING
www.cyclesafe.com

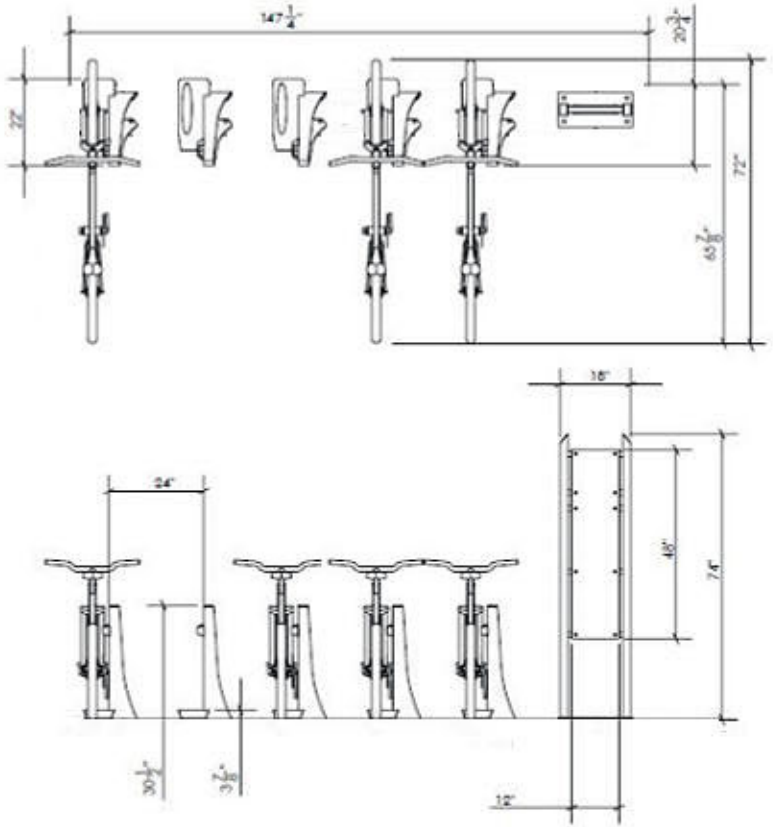
In Ground #12231
Surface #12131

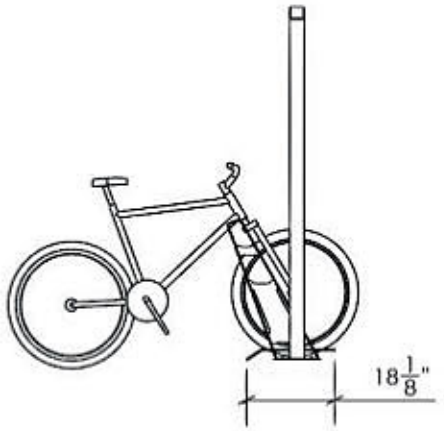


Vintage {Wealthy} Racks
Surface Mount / In Ground Mount {Dims}

CycleSafe
SECURE BICYCLE PARKING
www.cyclesafe.com

Zagster K1 Station- 5 bike





WORKFORCE HOUSING DEVELOPMENT

140 COURT STREET

PORTSMOUTH, NEW HAMPSHIRE

SITE PERMIT PLANS

PERMIT LIST:
NHDES SEWER DISCHARGE PERMIT: TO BE SUBMITTED

OWNERS:
PORTSMOUTH HOUSING AUTHORITY
245 MIDDLE STREET
PORTSMOUTH, NH 03801
TEL. (603) 436-4310

ED PAC, LLC
242 CENTRAL AVENUE
DOVER, NH 03820

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

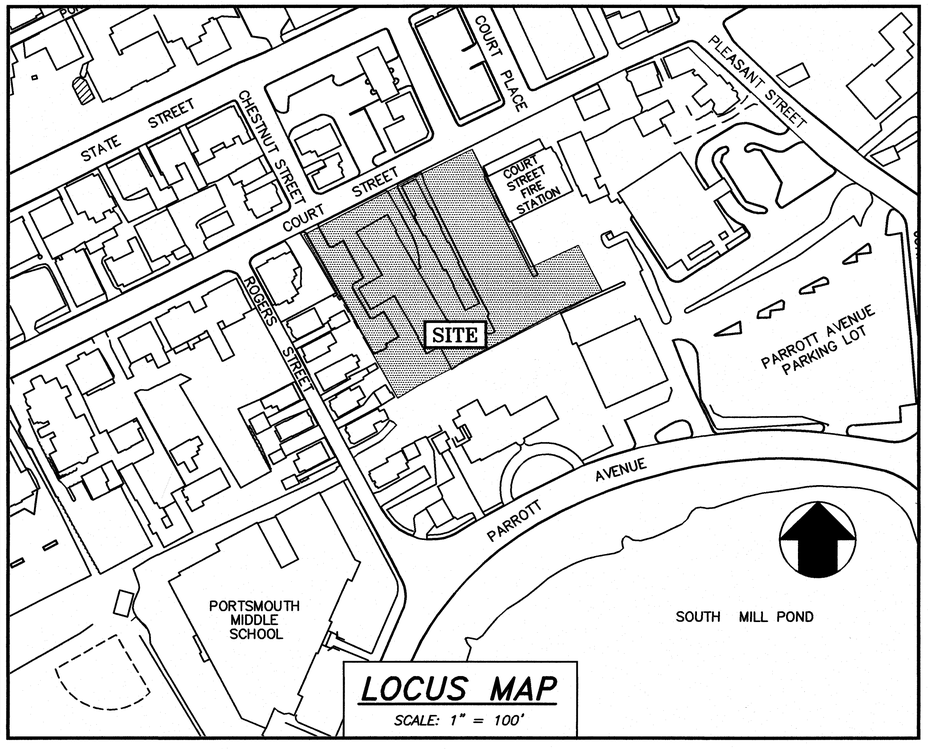
ARCHITECT:
CJ ARCHITECTS
233 VAUGHN STREET
PORTSMOUTH NH, 03801
TEL.(603) 431-2808

LANDSCAPE ARCHITECT:
G2+1 LLC
70 NEW ROAD
SALISBURY, NH 03268
TEL./FAX. (603) 648-6434

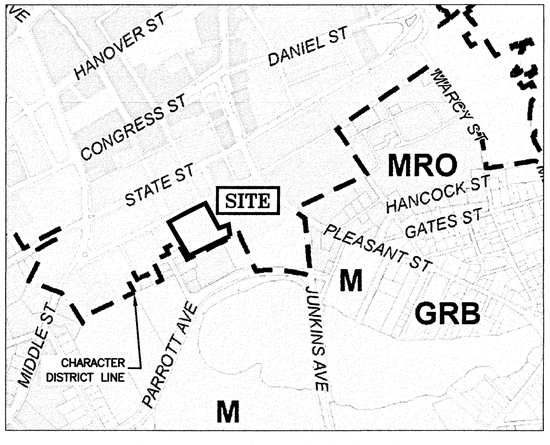
GEOTECHNICAL:
JOHN TURNER CONSULTING
19 DOVER STREET
DOVER, NH 03820
(603) 749-1841

ARCHAEOLOGICAL:
INDEPENDENT ARCHAEOLOGICAL
801 ISLINGTON STREET #31
PORTSMOUTH NH 03801
(603) 430-2970

ATTORNEY:
BOSEN & ASSOCIATES
266 MIDDLE STREET
PORTSMOUTH NH 03801
(603) 427-5500



LOCUS MAP
SCALE: 1" = 100'



Map 10.5A21A
Character Districts and Civic Districts

Legend
- Downtown Overlay District
- Historic District

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

Civic District
- Civic District

Municipal District
- Municipal District

INDEX OF SHEETS

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

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN _____ DATE _____

LEGEND:

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

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UTILITY CONTACTS

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

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

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

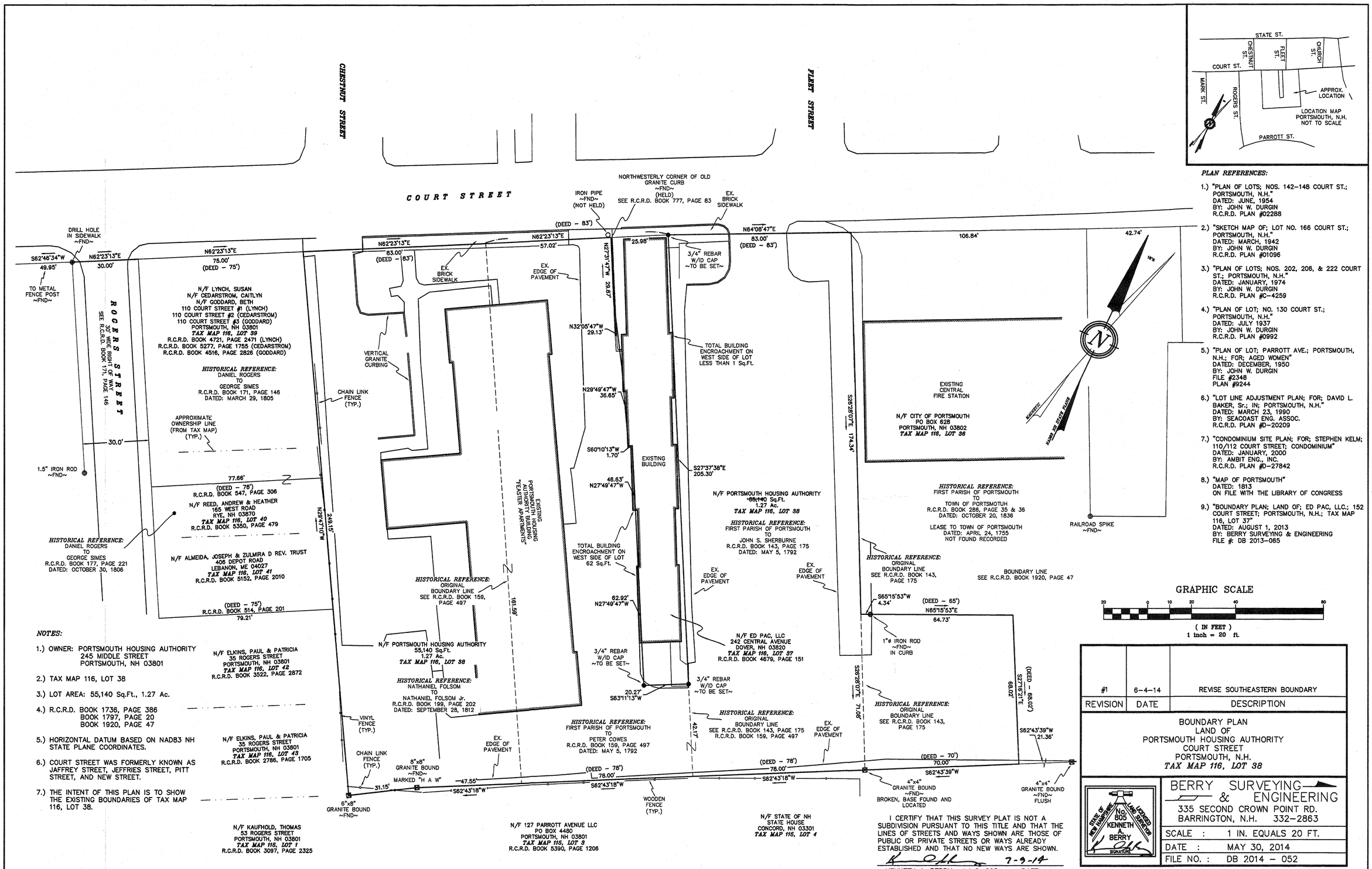
SEWER & WATER:
PORTSMOUTH DEPARTMENT OF PUBLIC WORKS
680 PEVERLY HILL ROAD
PORTSMOUTH, N.H. 03801
Tel. (603) 427-1530
ATTN: JIM TOW

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

SITE PERMIT PLANS
PORTSMOUTH HOUSING AUTHORITY
WORKFORCE HOUSING DEVELOPMENT
140 COURT STREET
PORTSMOUTH, N.H.

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

PLAN SET SUBMITTAL DATE: 17 JULY 2018



PLAN REFERENCES:

1.) "PLAN OF LOTS; NOS. 142–148 COURT ST.; PORTSMOUTH, N.H." DATED: JUNE, 1954 BY: JOHN W. DURGIN R.C.R.D. PLAN #02288

2.) "SKETCH MAP OF; LOT NO. 166 COURT ST.; PORTSMOUTH, N.H." DATED: MARCH, 1942 BY: JOHN W. DURGIN R.C.R.D. PLAN #01096

3.) "PLAN OF LOTS; NOS. 202, 206, & 222 COURT ST.; PORTSMOUTH, N.H." DATED: JANUARY, 1974 BY: JOHN W. DURGIN R.C.R.D. PLAN #C–4259

4.) "PLAN OF LOT; NO. 130 COURT ST.; PORTSMOUTH, N.H." DATED: JULY 1937 BY: JOHN W. DURGIN R.C.R.D. PLAN #0992

5.) "PLAN OF LOT; PARROTT AVE.; PORTSMOUTH, N.H.; FOR; AGED WOMEN" DATED: DECEMBER, 1950 BY: JOHN W. DURGIN FILE #2348 PLAN #9244

6.) "LOT LINE ADJUSTMENT PLAN; FOR; DAVID L. BAKER, Sr.; IN; PORTSMOUTH, N.H." DATED: MARCH 23, 1990 BY: SEACOAST ENG. ASSOC. R.C.R.D. PLAN #D–20209

7.) "CONDOMINIUM SITE PLAN; FOR; STEPHEN KELM; 110/112 COURT STREET; CONDOMINIUM" DATED: JANUARY, 2000 BY: AMBIT ENG., INC. R.C.R.D. PLAN #D–27842

8.) "MAP OF PORTSMOUTH" DATED: 1813 ON FILE WITH THE LIBRARY OF CONGRESS

9.) "BOUNDARY PLAN; LAND OF; ED PAC, LLC.; 152 COURT STREET; PORTSMOUTH, N.H.; TAX MAP 116, LOT 37" DATED: AUGUST 1, 2013 BY: BERRY SURVEYING & ENGINEERING FILE #: DB 2013–065

NOTES:

1.) OWNER: PORTSMOUTH HOUSING AUTHORITY
245 MIDDLE STREET
PORTSMOUTH, NH 03801

2.) TAX MAP 116, LOT 38

3.) LOT AREA: 55,140 Sq.Ft., 1.27 Ac.

4.) R.C.R.D. BOOK 1736, PAGE 386
BOOK 1797, PAGE 20
BOOK 1920, PAGE 47

5.) HORIZONTAL DATUM BASED ON NAD83 NH STATE PLANE COORDINATES.

6.) COURT STREET WAS FORMERLY KNOWN AS JAFFREY STREET, JEFFRIES STREET, PITT STREET, AND NEW STREET.

7.) THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING BOUNDARIES OF TAX MAP 116, LOT 38.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

REVISION	DATE	DESCRIPTION
#1	6–4–14	REVISE SOUTHEASTERN BOUNDARY

BOUNDARY PLAN
LAND OF
PORTSMOUTH HOUSING AUTHORITY
COURT STREET
PORTSMOUTH, N.H.
TAX MAP 116, LOT 38

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

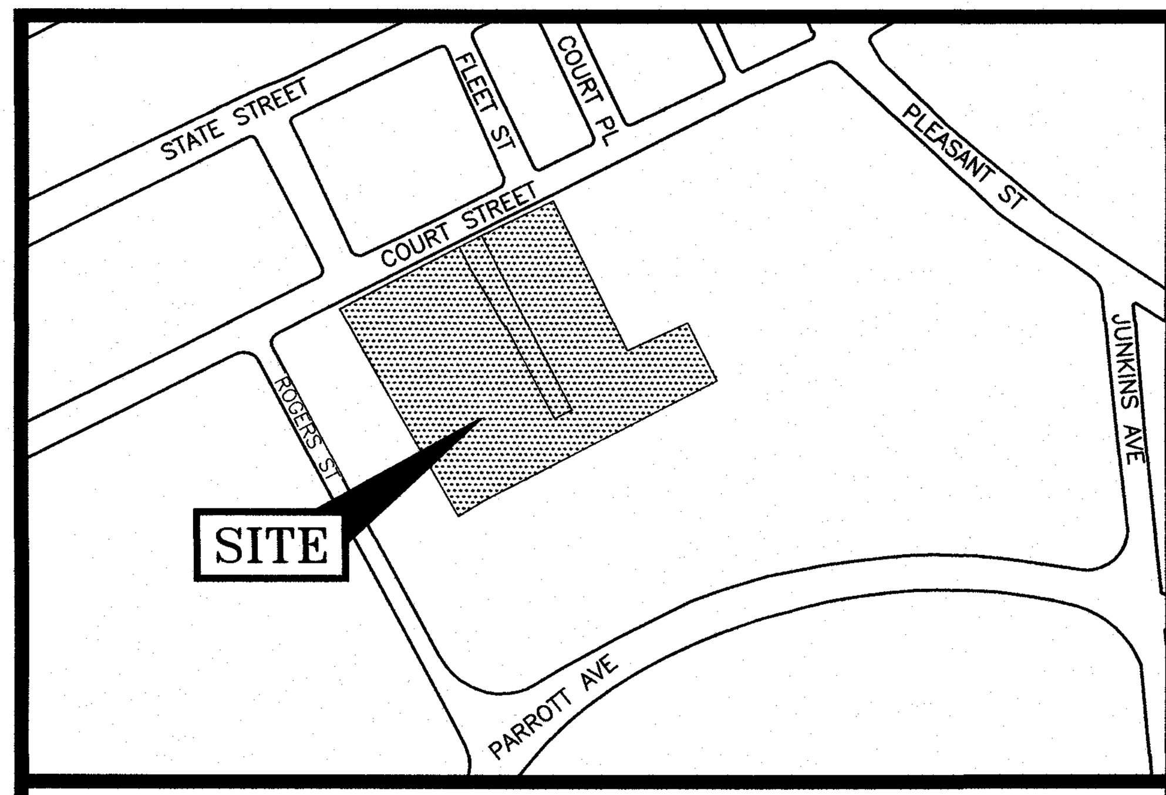
7-9-14
KENNETH A. BERRY L.L.S. 805 DATE

STATE OF NEW HAMPSHIRE No. 805 KENNETH A. BERRY LICENSED LAND SURVEYOR SIGNATURE

BERRY SURVEYING & ENGINEERING
335 SECOND CROWN POINT RD.
BARRINGTON, N.H. 332–2863

SCALE : 1 IN. EQUALS 20 FT.
DATE : MAY 30, 2014
FILE NO. : DB 2014 – 052

JN 2790



LOCATION MAP SCALE: 1"=200'

PLAN REFERENCE:

1) BOUNDARY PLAN LAND OF PORTSMOUTH HOUSING AUTHORITY COURT STREET PORTSMOUTH, N.H. TAX MAP 116, LOT 38. PREPARED BY BERRY SURVEYING & ENGINEERING. DATED MAY 30, 2014, WITH A FINAL REVISION DATE OF JUNE 4, 2014. NOT RECORDED.

LEGEND:

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

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

NOTES:

1) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 116 AS LOT 38 AND LOT 37.

2) OWNERS OF RECORD:
116/38
PORTSMOUTH HOUSING AUTHORITY
245 MIDDLE STREET
PORTSMOUTH, NH 03801
R.C.R.D BK 1736, PG 386, BK 1797 PG 20, AND BK 1920, PG 47

116/37
ED PAC, LLC
242 CENTRAL AVENUE
DOVER, NH 03820
BK 4679, PG 151

3) PARCEL 116/38 AND 116/37 ARE NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 33015C0259E. EFFECTIVE 5/17/2005

4) LOT AREAS:
LOT 11/38
EXISTING: 59,976 (S.F.) 1.3769 ACRES
PROPOSED: 62,450 (S.F.) 1.4337 ACRES

LOT 11/37
EXISTING: 4,587 (S.F.) 0.1053 ACRES
PROPOSED: 2,113 (S.F.) 0.0485 ACRES

5) PARCELS ARE LOCATED IN CHARACTER DISTRICT 4 (CD4).

6) THE PURPOSE OF THIS PLAN IS TO SHOW THE RELOCATION OF LOT LINES BETWEEN TAX MAP 116 LOTS 38 AND 37.

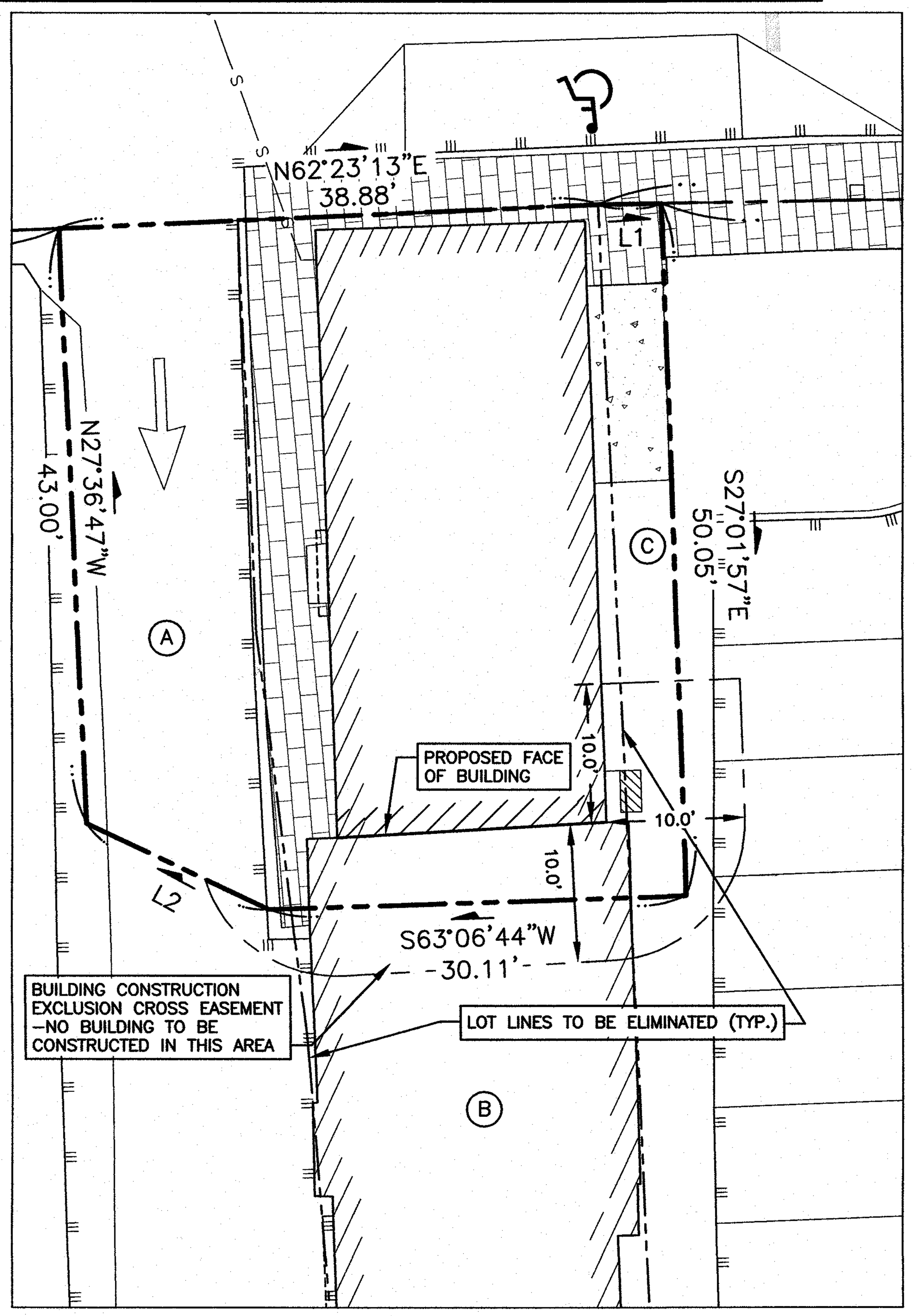
7) EXISTING BOUNDARY LINES FROM PLAN REFERENCE 1.

8) PERMANENT MONUMENTS ON LOT 37 TO BE SET IN ACCORDANCE WITH CITY OF PORTSMOUTH STANDARDS AFTER SITE DEVELOPMENT.

9) PROPOSED 20 FT WIDE SEWER EASEMENT TO BE CONVEYED TO THE CITY OF PORTSMOUTH. LOCATION OF SEWER LINE RUNNING NORTHERLY TO COURT STREET IS APPROXIMATE. EASEMENT IS TO BE 20 FEET WIDE, 10 FEET EITHER SIDE OF THE CENTERLINE OF THE EXISTING SEWER PIPE, WETHER THE LOCATION IS PRECISELY AS SHOWN HEREON OR NOT.

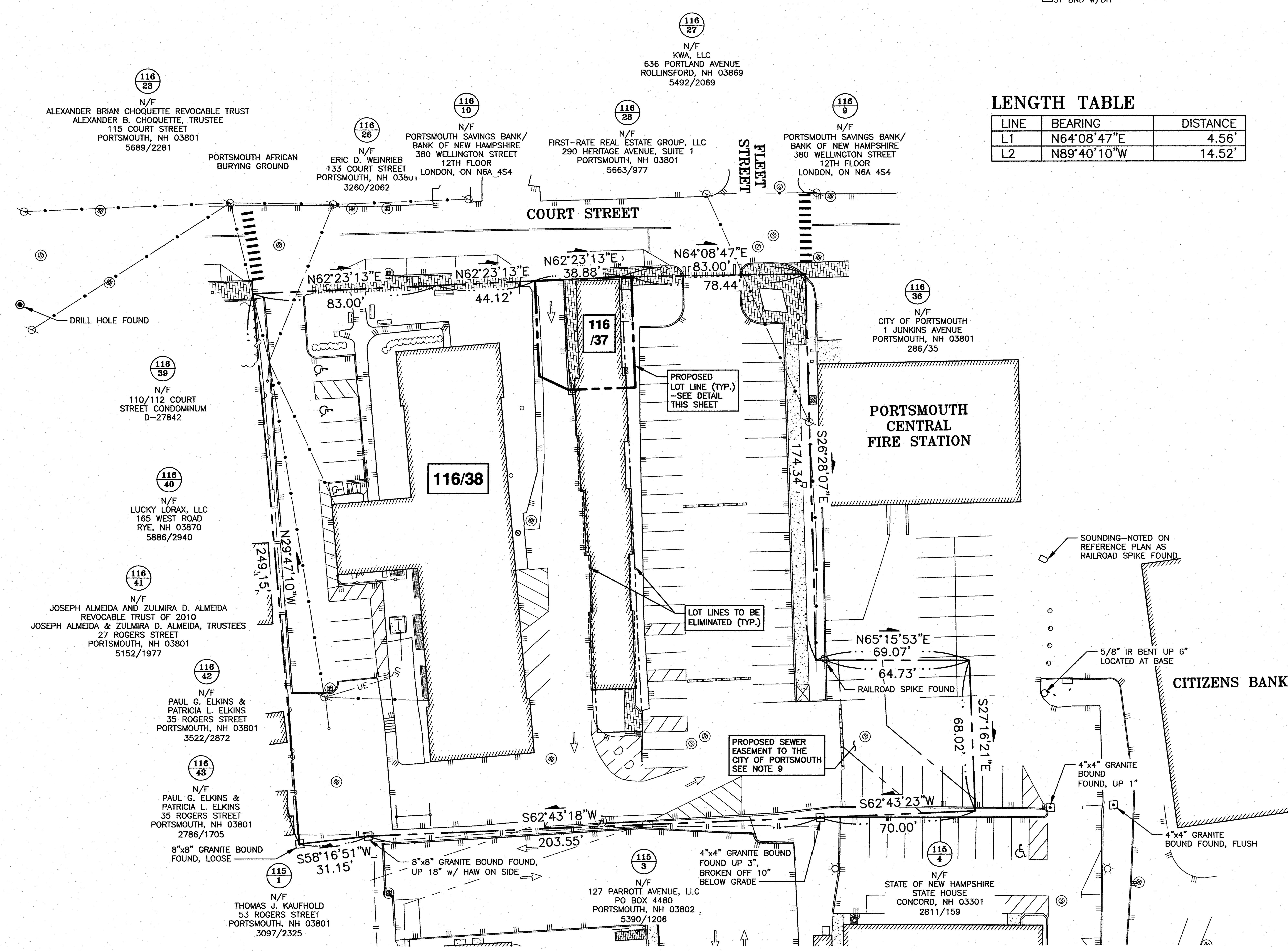
LENGTH TABLE

LINE	BEARING	DISTANCE
L1	N64°08'47"E	4.56'
L2	N89°40'10"W	14.52'



LOT 37
1"=10'

GRAPHIC SCALE (FEET / METERS)



GRAPHIC SCALE (FEET / METERS)

PARCEL CONVEYANCES:

PARCEL A-
PORTSMOUTH HOUSING AUTHORITY TO ED PAC, LLC
613 S.F.

PARCEL B-
ED PAC, LLC TO PORTSMOUTH HOUSING AUTHORITY
3,303 S.F.

PARCEL C-
PORTSMOUTH HOUSING AUTHORITY TO ED PAC, LLC
216 S.F.

APPROVED BY THE PORTSMOUTH PLANNING BOARD

CHAIRMAN DATE

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

NO.	DESCRIPTION	DATE
5	REVISE LOT LINES	7/9/18
4	ADD SEWER EASEMENT	7/3/18
3	LOT LAYOUTS	6/18/18
2	ISSUED TO TAC	5/8/18
1	ISSUED FOR APPROVAL	4/25/18
0	ISSUED FOR COMMENT	3/5/17

REVISIONS

LOT LINE RELOCATION PLAN TAX MAP 116 - LOTS 38 & 37 FOR PORTSMOUTH HOUSING AUTHORITY

OWNERS

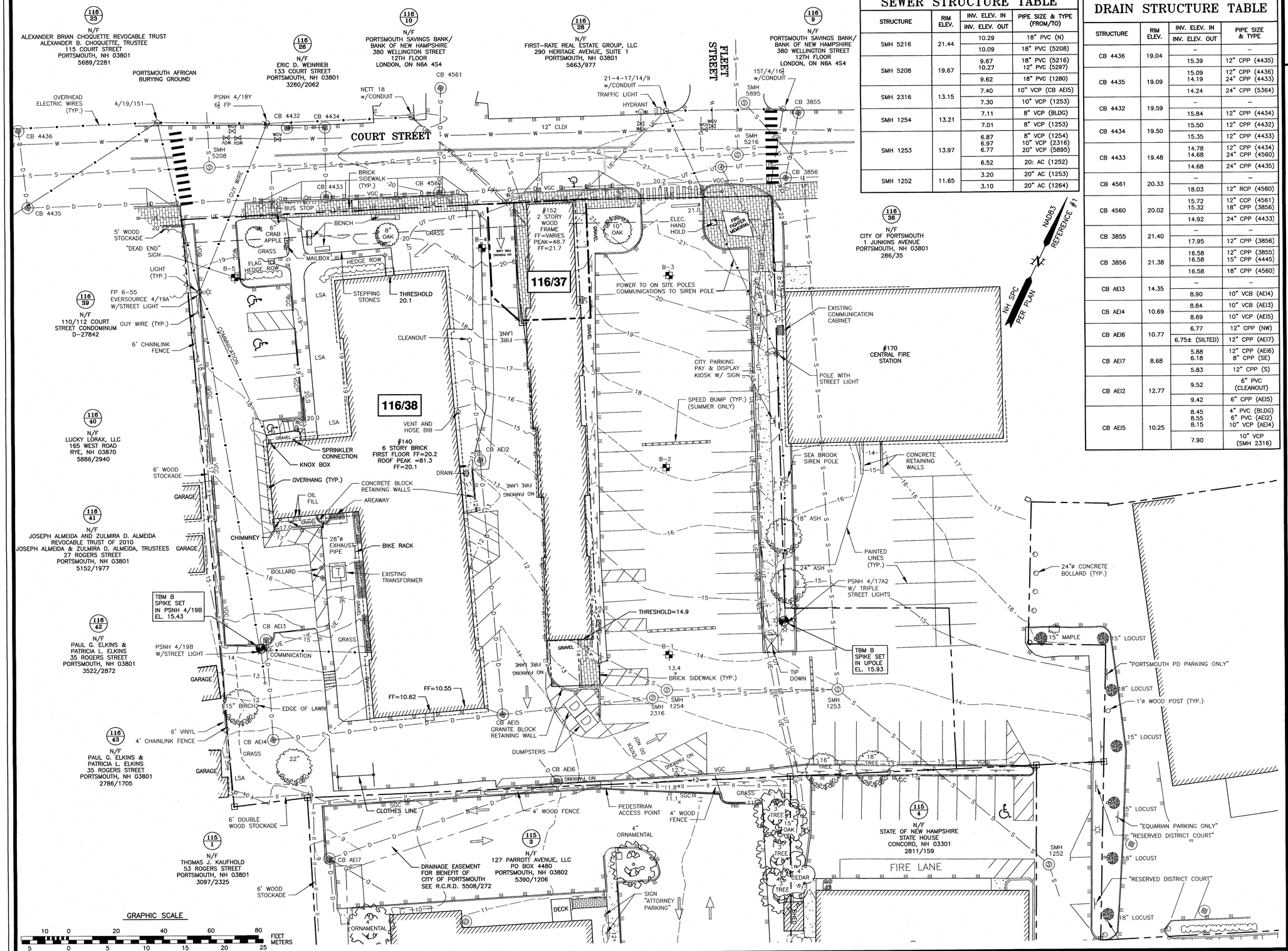
PORTSMOUTH HOUSING AUTHORITY
245 MIDDLE STREET
PORTSMOUTH NH 03801

ED PAC, LLC
242 CENTRAL AVENUE
DOVER NH 03820

PARCEL LOCATION
140 COURT STREET
CITY OF PORTSMOUTH
COUNTY OF ROCKINGHAM
STATE OF NEW HAMPSHIRE

SCALE: 1"=30' FEBRUARY 2018

FB 321 PG 19 2790



SEWER STRUCTURE TABLE

STRUCTURE	RIM ELEV.	INV. ELEV. IN / INV. ELEV. OUT	PIPE SIZE & TYPE (FROM/TO)
SMH 5216	21.44	10.29	18" PVC (N)
		10.09	18" PVC (5208)
SMH 5208	19.67	9.67	18" PVC (5216)
		10.27	12" PVC (5297)
		9.62	18" PVC (1280)
SMH 2316	13.15	7.40	10" VCP (CB AEI5)
		7.30	10" VCP (1253)
SMH 1254	13.21	7.11	8" VCP (BLDG)
		7.01	8" VCP (1253)
SMH 1253	13.97	6.87	8" VCP (1254)
		6.97	10" VCP (2316)
		6.77	20" VCP (5895)
		6.52	20: AC (1252)
SMH 1252	11.65	3.20	20" AC (1253)
		3.10	20" AC (1264)

DRAIN STRUCTURE TABLE

STRUCTURE	RIM ELEV.	INV. ELEV. IN / INV. ELEV. OUT	PIPE SIZE & TYPE
CB 4436	19.04	–	–
		15.39	12" CPP (4435)
CB 4435	19.09	15.09	12" CPP (4436)
		14.19	24" CPP (4433)
		14.24	24" CPP (5364)
CB 4432	19.59	–	–
		15.84	12" CPP (4434)
CB 4434	19.50	15.50	12" CPP (4432)
		15.35	12" CPP (4433)
CB 4433	19.48	14.78	12" CPP (4434)
		14.68	24" CPP (4560)
		14.68	24" CPP (4435)
CB 4561	20.33	–	–
		18.03	12" RCP (4560)
CB 4560	20.02	15.72	12" CCP (4561)
		15.32	18" CPP (3856)
		14.92	24" CPP (4433)
CB 3855	21.40	–	–
		17.95	12" CPP (3856)
CB 3856	21.38	16.58	12" CPP (3855)
		16.58	15" CPP (4445)
		16.58	18" CPP (4560)
CB AEI3	14.35	–	–
		8.90	10" VCB (AEI4)
CB AEI4	10.69	8.84	10" VCB (AEI3)
		8.69	10" VCP (AEI5)
CB AEI6	10.77	6.77	12" CPP (NW)
		6.75± (SILTED)	12" CPP (AEI7)
CB AEI7	8.68	5.88	12" CPP (AEI6)
		6.18	8" CPP (SE)
		5.83	12" CPP (S)
CB AEI2	12.77	9.52	6" PVC (CLEANOUT)
		9.42	6" CPP (AEI5)
CB AEI5	10.25	8.45	4" PVC (BLDG)
		8.55	6" PVC (AEI2)
		8.15	10" VCP (AEI4)
		7.90	10" VCP (SMH 2316)

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

NOTES:

1) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 116 AS LOT 38 AND LOT 37.

2) OWNERS OF RECORD:
116/38
PORTSMOUTH HOUSING AUTHORITY
245 MIDDLE STREET
PORTSMOUTH, NH 03801
R.C.R.D BK 1736, PG 386, BK 1797 PG 20 AND BK 1920, PG 47

116/37
ED PAC, LLC
242 CENTRAL AVENUE
DOVER, NH 03820
BK 4679, PG 151

3) PARCEL 116/38 AND 116/37 ARE NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 3301SC0259E. EFFECTIVE 5/17/2005

4) EXISTING LOT AREA:
11/38: 59,976 (S.F.) 1.3769 ACRES
11/37: 4,587 (S.F.) 0.1053 ACRES

5) PARCELS ARE LOCATED IN CHARACTER DISTRICT 4 (CD4)

6) THE PURPOSE OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS ON THE LOTS.

PORTSMOUTH HOUSING AUTHORITY 140 COURT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	ISSUED FOR APPROVAL	6/18/18
0	ISSUED FOR COMMENT	3/5/18

REVISIONS

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

SCALE: 1'=20' MARCH 2018

EXISTING CONDITIONS PLAN

C1

FB 321 PG 19

2790

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DEMOLITION NOTES

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

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

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

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

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

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

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

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

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

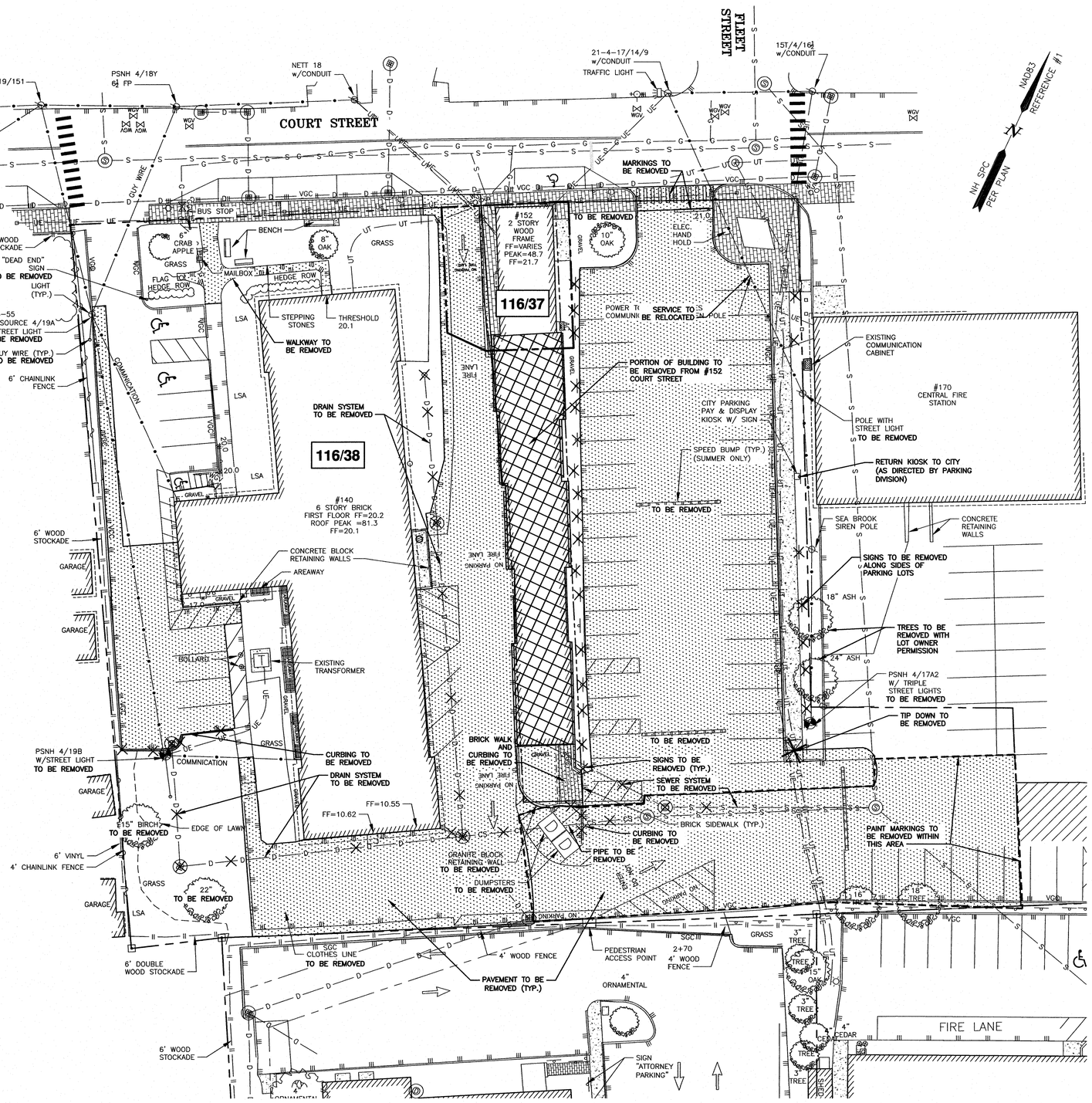
J) REMOVE TREES AND BRUSH AS REQUIRED FOR COMPLETION OF WORK. CONTRACTOR SHALL GRUB AND REMOVE ALL SLUMPS WITHIN LIMITS OF WORK AND DISPOSE OF OFF-SITE IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.

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

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

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

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



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

NOTES:

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

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

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

PORTSMOUTH HOUSING AUTHORITY 140 COURT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
5	ISSUED FOR APPROVAL	7/17/18
4	ISSUED FOR APPROVAL	6/18/18
3	ISSUED FOR TAC	5/8/18
2	ISSUED FOR APPROVAL	4/25/18
1	ISSUED FOR COMMENT	2/20/18

REVISIONS

STATE OF NEW HAMPSHIRE - JOHN R. McMAGNON NO. 9051 LICENSED PROFESSIONAL ENGINEER

SCALE: 1'=20' FEBRUARY 2018

DEMOLITION PLAN C2

FB 321 PG19

2790

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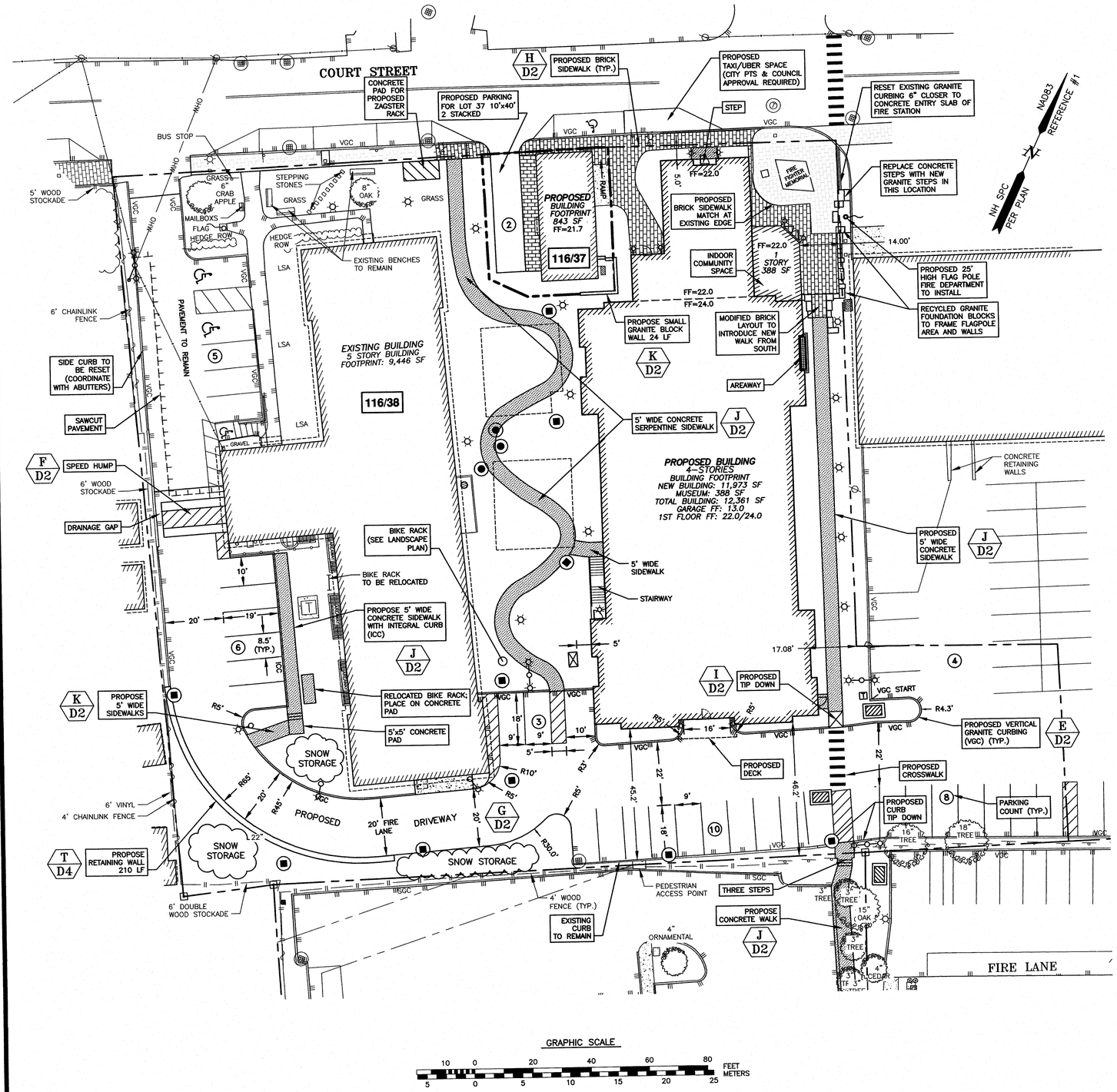


GRANTED VARIANCES

140 COURT STREET

SECTION 10.5A41.10C TO ALLOW A FRONT LOT BUILDOUT OF 12.5%± WHERE 50% IS REQUIRED
SECTION 10.5A41.10C TO ALLOW A 10 FOOT± GROUND FLOOR CEILING HEIGHT WHERE 12 FEET IS REQUIRED
SECTIONS 10.5A43.30 & 10.5A21B TO ALLOW A STRUCTURE WITH FIVE STORIES (58 FEET± IN HEIGHT) WHERE THREE AND A SHORT FOURTH STORIES TO A MAXIMUM HEIGHT OF 45 FEET ARE PERMITTED
SECTION 10.1114.21 TO ALLOW 9 FOOT± X 18 FOOT ± PARKING SPACES WHERE 8.5 FOOT X 19 FOOT ARE REQUIRED AND A 22 FOOT WIDE MANEUVERING AISLE WHERE 24 FEET IS REQUIRED

152 COURT STREET

SECTION 10.5A41.10C TO ALLOW NO ENTRANCE PROPOSED ON THE FRONT BUILDING FAÇADE WHERE AN ENTRANCE IS REQUIRED EVERY 50 FEET

ZONING DEVELOPMENT STANDARD

CD4: CHARACTER DISTRICT 4

BUILDING PLACEMENT (PRINCIPLE):

	REQUIRED	116/38 (140 COURT ST.) EXISTING	116/38 (140 COURT ST.) BUILDING A	116/37 (152 COURT ST.) EXISTING	116/37 (152 COURT ST.) PROPOSED
MAX. PRINCIPLE FRONT YARD:	10 FEET	27 FEET	0 FEET	0.9 FEET	0.9 FEET
MIN. SIDE YARD:	NR	26 FEET	6 FEET	1 FOOT	6 FOOT
MIN. REAR YARD:	>5 FEET	32 FEET	46 FEET	20 FEET	5 FEET
FRONT LOT LINE BUILDOUT:	50% MIN	0%	12.5%	73.0%	46.7%

BUILDING TYPES:

ALLOWED BUILDING TYPES: ROWHOUSE, APARTMENT, LIVE/WORK, SMALL/LARGE COMMERCIAL PROHIBITED: HOUSE & DUPLEX
ALLOWED FACADE TYPE: STOOP, STEP, SHOPFRONT, OFFICEFRONT, RECESSED-ENTRY PROHIBITED: PORCH & FORECOURT

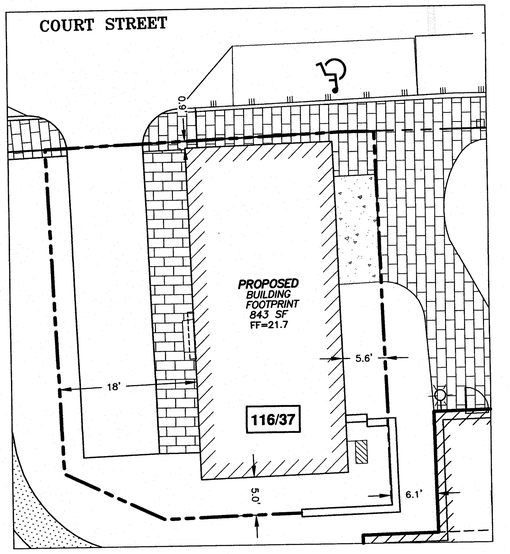
BUILDING FORM:

	REQUIRED	EXISTING	BUILDING A	EXISTING	PROPOSED
MAX STRUCTURE HEIGHT:	35/45 FEET	63 FEET	54 FEET	TO REMAIN	TO REMAIN
MAX. FINISHED FLOOR SURFACE OF GROUND FLOOR ABOVE SIDEWALK GRADE:	36 INCHES	–	<35 INCHES	TO REMAIN	TO REMAIN
MIN. GROUND STORY HEIGHT:	12 FEET	–	12 FEET	TO REMAIN	TO REMAIN
FACADE GLAZING (WINDOW/PERIMETER):	70% SHOP 20-50% OTHER	N/A	TO COMPLY	TO REMAIN	TO REMAIN

ROOF TYPE ALLOWED: FLAT, GABLE, HIP, GAMBREL, MANSARD

LOT OCCUPATION:

	REQUIRED	EXISTING	BUILDING A	EXISTING	PROPOSED
MAX BUILDING BLOCK:	200 FEET	47 FEET	28 FEET	19 FEET	19 FEET
MAX FACADE MOD. LENGTH:	80 FEET	47 FEET	28 FEET	19 FEET	19 FEET
MIN. ENTRANCE SPACING:	50 FEET	47 FEET	28 FEET	19 FEET	19 FEET
MAX BUILDING COVERAGE:	90%	15.7%	20.0%	80.5%	40.4%
MAX BUILDING FOOTPRINT:	15,000 SF	9,446 SF	12,361SF	3,693 SF	843 SF
MIN. LOT AREA:	NR	59,976 SF	62,450 SF	4,587 SF	2,113 SF
MIN. LOT AREA/DWELLING (LOT AREA/# OF UNITS):	NR	–	–	–	–
MIN. OPEN SPACE :	10%	12%	24.0%	1.4%	22.5%



LOT 116/37 SETBACKS:
SCALE: 1"=10'

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

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NOTES:

1) PARCELS ARE SHOWN ON THE CITY OF PORTSMOUTH ASSESSOR'S MAP 116 AS LOT 38 AND LOT 37.

2) OWNERS OF RECORD:
116/38
PORTSMOUTH HOUSING AUTHORITY
245 MIDDLE STREET
PORTSMOUTH, NH 03801
R.C.R.D BK 1736, PG 386, BK 1797 PG 20 AND BK 1920, PG 47

116/37
ED PAC, LLC
242 CENTRAL AVENUE
DOVER, NH 03820
BK 4679, PG 151

3) PARCELS 116/38 AND 116/37 ARE NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 3301SC0259E. EFFECTIVE 5/17/2005

4) LOT AREAS:
LOT 11/38
EXISTING: 59,976 (S.F.) 1.3769 ACRES
PROPOSED: 62,450 (S.F.) 1.4337 ACRES

LOT 11/37
EXISTING: 4,587 (S.F.) 0.1053 ACRES
PROPOSED: 2,113 (S.F.) 0.0485 ACRES

5) PARCELS ARE LOCATED IN CHARACTER DISTRICT 4 (CD4)

6) THE PURPOSE OF THIS PLAN IS TO SHOW THE SITE LAYOUT FOR THE PROJECT.

7) SEE BASEMENT PLAN (C4) FOR TRASH ENCLOSURE AREA. PICK UP SCHEDULE WILL BE AS NEEDED TO MAINTAIN CAPACITY.

8) SITE ELEMENTS SHOWN IN FRONT (NORTH) OF 140 COURT (EXISTING APARMENT BUILDING) TO REMAIN.

PORTSMOUTH HOUSING AUTHORITY 140 COURT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
4	116/37 LOT LINE & PARKING, ZAGSTER	7/17/18
3	PARKING SPACE NOTE, RADIUS, NOTE 8	7/3/18
2	ISSUED FOR APPROVAL	6/18/18
1	ISSUED FOR COMMENT	5/8/18
0	ISSUED FOR COMMENT	4/25/18

REVISIONS

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 739 JOHN R. CHAGNON

SCALE: 1'=20' APRIL 2018

SITE LAYOUT PLAN

C3

FB 321 PG19

2790

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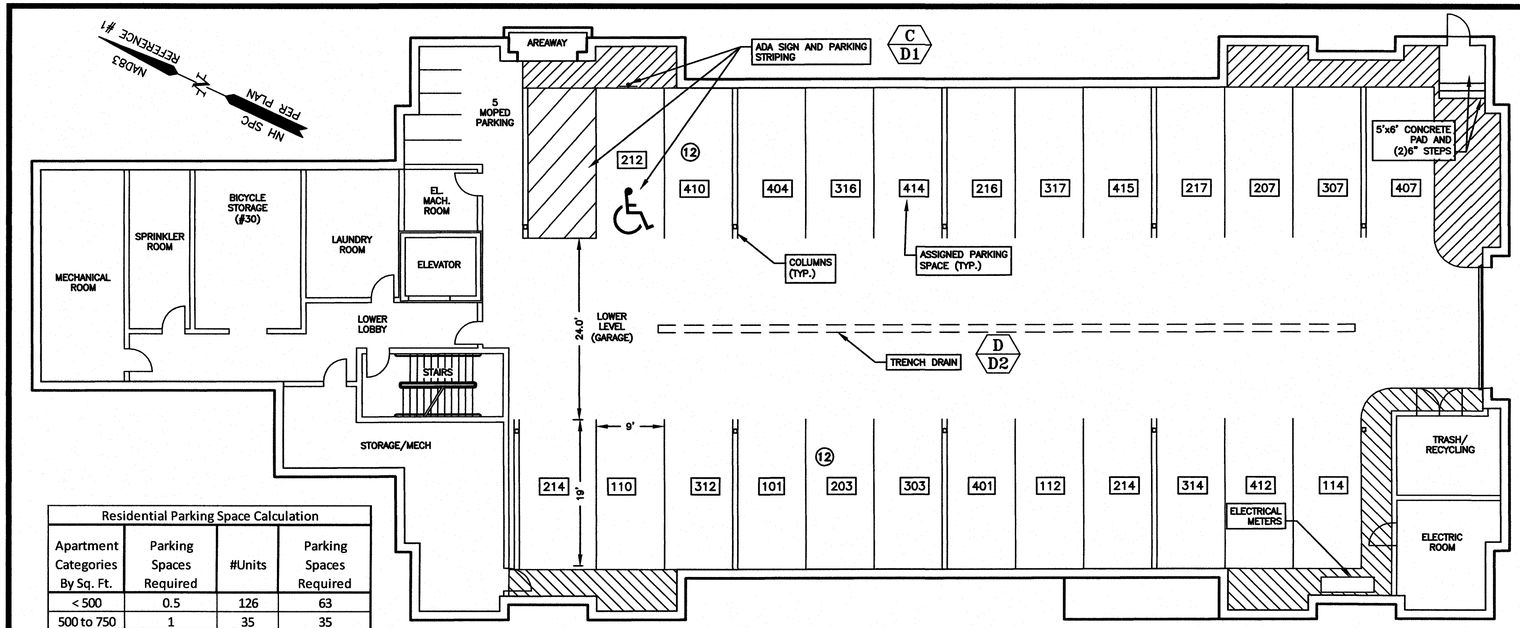


Residential Parking Space Calculation			
Apartment Categories By Sq. Ft.	Parking Spaces Required	#Units	Parking Spaces Required
< 500	0.5	126	63
500 to 750	1	35	35
Over 750	1.3	3	3.9
Visitor Parking = 164/5 =			33
Totals		164	135

Parking Spaces

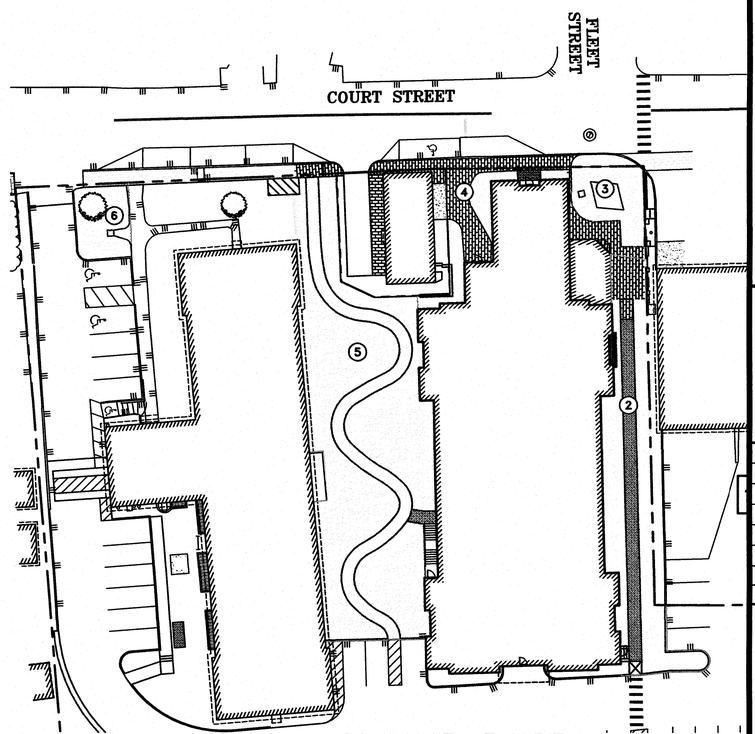
GRAPHIC SCALE

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

GARAGE PARKING

SCALE: 1"=10'

COMMUNITY SPACE AREA LOT 38		
OPEN SPACE	AREA (S.F.)	TYPE OF OPEN SPACE
2	2,968	POCKET PARK
3	1,044	PLAZA
4	876	POCKET PARK
5	7,043	POCKET PARK
6	612	POCKET PARK
TOTAL	12,543	TOTAL OPEN SPACE
LOT SIZE	62,450	
% OPEN SPACE	20%	



COMMUNITY EXHIBIT

SCALE: 1"=30'

GRAPHIC SCALE

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

CJ ARCHITECTS

PORTSMOUTH HOUSING AUTHORITY
COURT STREET DEVELOPMENT

Square Foot Area Summary

Floor	Unit Number	Unit SF Area	1 BR	2 BR	Accessible	<500 SF	>500 SF	Floor GSF
GARAGE	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12,006
FIRST	101	667		1			1	12,373
	102	549	1				1	
	103	593	1				1	
	104	539	1				1	
	105	492	1			1		
	106	492	1			1		
	107	491	1			1		
	108	491	1			1		
	109	491	1			1		
	110	559	1		1		1	
	111	492	1			1		
	112	692		1			1	
	113	593	1				1	
	114	653		1			1	
	115	629		1			1	
SECOND	201	499	1			1		11,916
	202	499	1				1	
	203	667		1			1	
	204	566	1				1	
	205	593	1				1	
	206	602	1				1	
	207	492	1			1		
	208	492	1			1		
	209	491	1			1		
	210	491	1			1		
	211	491	1			1		
	212	559	1		1		1	
	213	492	1			1		
	214	785		1			1	
	215	593	1				1	
	216	653		1			1	
	217	629		1			1	
THIRD	301	499	1			1		11,916
	302	499	1				1	
	303	667		1			1	
	304	566	1				1	
	305	593	1				1	
	306	602	1				1	
	307	492	1			1		
	308	492	1			1		
	309	491	1			1		
	310	491	1			1		
	311	491	1			1		
	312	559	1		1		1	
	313	492	1			1		
	314	785		1			1	
	315	593	1				1	
	316	653		1			1	
	317	629		1			1	
FOURTH	401	667		1			1	10,764
	402	566	1				1	
	403	593	1				1	
	404	602	1				1	
	405	492	1			1		
	406	492	1			1		
	407	491	1			1		
	408	491	1			1		
	409	491	1			1		
	410	559	1		1		1	
	411	492	1			1		
	412	785		1			1	
	413	593	1				1	
	414	653		1			1	
	415	629		1			1	
	TOTALS:		45	16	4	26	33	58,975
			54					

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NOTES:

1) THE PURPOSE OF THIS PLAN IS TO SHOW THE PARKING LAYOUT AT THE SITE.

2) PARKING REQUIREMENTS:
10.5A44.30: PARKING LOCATED 20 FT FROM PRINCIPLE BUILDING
10.544.32: PARKING AND LOADING SCREENED BY BUILDING EXCEPT DRIVEWAY
10.5A44.33: DRIVEWAYS NO WIDER THAN 24 FEET WIDE
10.5A44.35 ABOVE GROUND PARKING OF PARKING GARAGE REQUIRES A LINER BUILDING GROUND FLOOR LEVEL
10.5A44.36: PARKING LOT MORE THAN 75 SPACES SHALL HAVE INTERNAL PEDESTRIAN WALK WAY AT LEAST 8FT. PAVED DIFFERENTLY FROM PARKING LOT

TOTAL PARKING SPACES PROVIDED: 60 SPACES

BUILDING DATA

PROPOSED BUILDING:
11,973 SF FOOTPRINT/ 4 STORIES
64 RESIDENTIAL UNITS
(48 1–BEDROOMS/ 16 2–BEDROOM)
NO COMMERCIAL SPACE
1 LEVEL OF PARKING

EXISTING FEASTER APARTMENTS:
6 STORIES
100 RESIDENTIAL UNITS
(95 1–BEDROOM/5 2–BEDROOM)

EXISTING 152 COURT STREET BUILDING:
2.5 STORIES
EXISTING RESIDENTIAL SINGLE FAMILY TO REMAIN.

LOT 37 OPEN SPACE CALCULATION

PROPOSED OPEN SPACE:
LOT 37 AREA: 2,113 SF
OPEN SPACE AREA: 473 SF
475 SF/2,113 SF = .224 X 100 = 22.4%

PORTSMOUTH HOUSING AUTHORITY 140 COURT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
5	BUILDING, OPEN SPACE	7/17/18
4	BASEMENT AND OPEN SPACE	6/18/18
3	SUBMIT FOR APPROVAL	5/8/18
2	ADDED OPEN SPACE	4/25/18
1	ISSUED FOR APPROVAL	3/5/18
0	ISSUED FOR COMMENT	2/20/17

REVISIONS

SCALE: AS SHOWN APRIL 2018

PARKING PLAN AND OPEN SPACE EXHIBIT

C4

FB 321 PG19

2790

J:\JOBS2\JN2700's\JN 2790's\JN 2790\2017 Site Planning\Plans & Specs\Site\2790SITE3.dwg, C4 PARKING

UTILITY NOTES:

1) SEE EXISTING CONDITIONS PLAN FOR BENCHMARK INFORMATION.

2) COORDINATE ALL UTILITY WORK WITH APPROPRIATE UTILITY.

3) SEE GRADING AND DRAINAGE PLAN FOR PROPOSED GRADING AND EROSION CONTROL MEASURES.

4) ALL WATER MAIN INSTALLATIONS SHALL BE CLASS 52, POLYWRAPPED, CEMENT LINED DUCTILE IRON PIPE.

5) ALL WATERMAIN INSTALLATIONS SHALL BE PRESSURE TESTED AND CHLORINATED AFTER CONSTRUCTION AND BEFORE ACTIVATING THE SYSTEM. CONTRACTOR SHALL COORDINATE WITH THE CITY OF PORTSMOUTH.

6) ALL SEWER PIPE SHALL BE PVC SDR 35 UNLESS OTHERWISE STATED.

7) ALL WORK WITHIN CITY R.O.W. SHALL BE COORDINATED WITH CITY OF PORTSMOUTH

8) CONTRACTOR SHALL MAINTAIN UTILITY SERVICES TO ABUTTING PROPERTIES THROUGHOUT CONSTRUCTION.

9) ANY CONNECTION TO EXISTING WATERMAIN SHALL BE CONSTRUCTED BY THE CITY OF PORTSMOUTH.

10) EXISTING UTILITIES TO BE REMOVED SHALL BE CAPPED AT THE MAIN AND MEET THE DEPARTMENT OF PUBLIC WORKS STANDARDS FOR CAPPING OF WATER AND SEWER SERVICES.

11) ALL ELECTRICAL MATERIAL WORKMANSHIP SHALL CONFORM TO THE NATIONAL ELECTRIC CODE, LATEST EDITION, AND ALL APPLICABLE STATE AND LOCAL CODES.

12) THE EXACT LOCATION OF NEW UTILITY SERVICES AND CONNECTIONS SHALL BE COORDINATED WITH BUILDING DRAWINGS AND UTILITY COMPANIES.

13) ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.

14) ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.

15) THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATED TO THE OWNER PRIOR TO THE COMPLETION OF PROJECT.

16) THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MANHOLES, BOXES, FITTINGS, CONNECTORS, COVER PLATES AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED IN THESE DRAWING TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL.

17) CONTRACTOR SHALL PROVIDE EXCAVATION, BEDDING, BACKFILL AND COMPACTION FOR NATURAL GAS SERVICES.

18) A 10-FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18-INCH MINIMUM OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER/SANITARY SEWER CROSSINGS WATER ABOVE SEWER.

19) SAWCUT AND REMOVE PAVEMENT AND CONSTRUCT PAVEMENT TRENCH PATCH FOR ALL PROPOSED UTILITIES LOCATED IN EXISTING PAVEMENT AREAS TO REMAIN.

20) GATE VALVES, FITTINGS, ETC. SHALL MEET THE REQUIREMENTS OF THE CITY OF PORTSMOUTH.

21) COORDINATE TESTING OF SEWER CONSTRUCTION WITH THE CITY OF PORTSMOUTH.

22) ALL SEWER PIPES WITH LESS THAN 6' COVER SHALL BE INSULATED.

23) CONTRACTOR SHALL COORDINATE ALL ELECTRIC WORK INCLUDING BUT NOT LIMITED TO: CONDUIT CONSTRUCTION, MANHOLE CONSTRUCTION, UTILITY POLE CONSTRUCTION, OVERHEAD WIRE RELOCATION, AND TRANSFORMER CONSTRUCTION WITH POWER COMPANY.

24) CONTRACTOR SHALL PHASE UTILITY CONSTRUCTION, PARTICULARLY WATER MAIN AND GAS MAIN CONSTRUCTION AS TO MAINTAIN CONTINUOUS SERVICE TO ABUTTING PROPERTIES. CONTRACTOR SHALL COORDINATE TEMPORARY SERVICES TO ABUTTERS WITH UTILITY COMPANY AND AFFECTED ABUTTER.

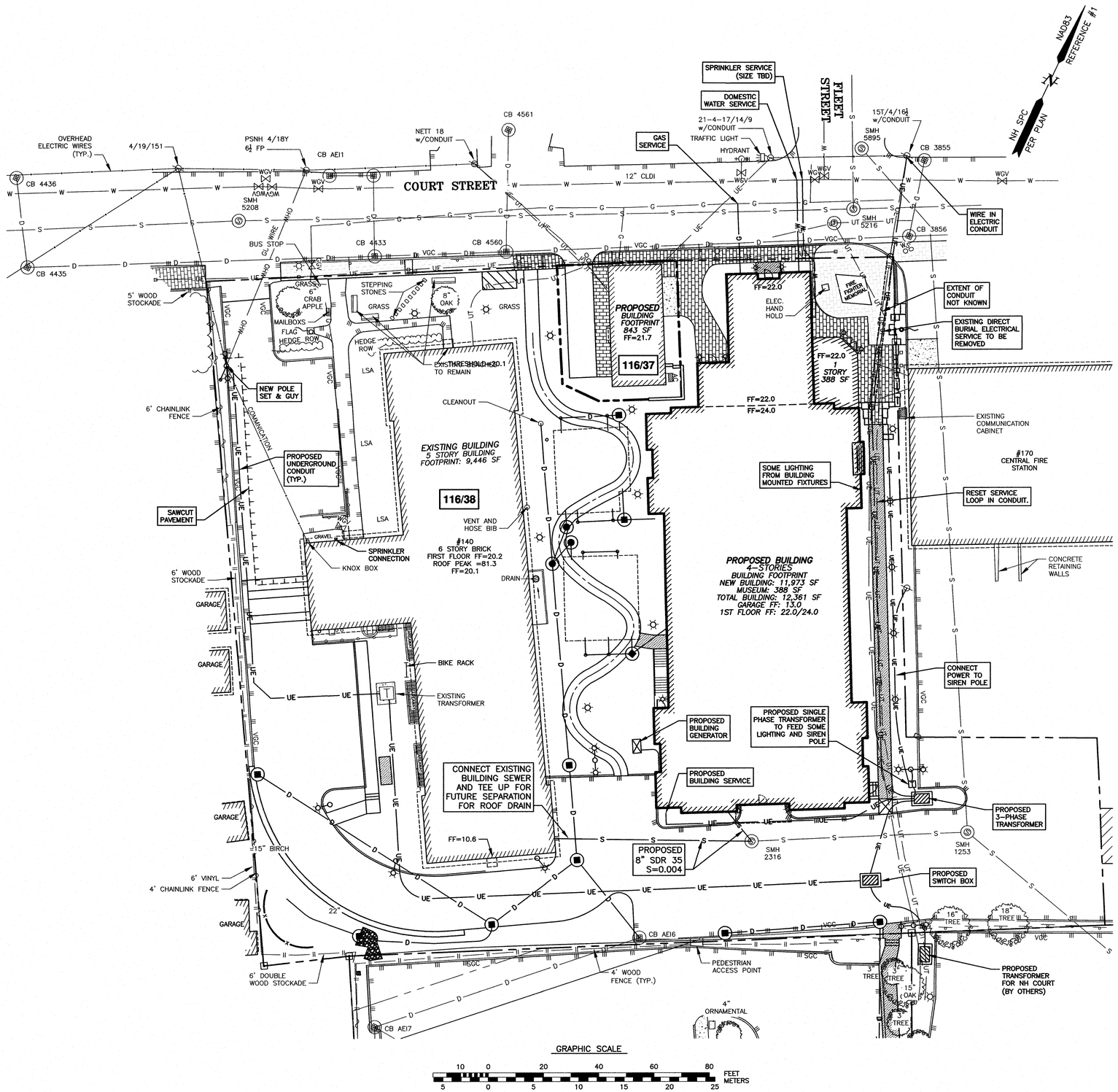
25) SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PROVIDED BY THE PROJECT ELECTRICAL ENGINEER IN COORDINATION WITH THE SITE CIVIL ENGINEER.

26) CONTRACTOR SHALL CONSTRUCT ALL UTILITIES AND DRAINS TO WITHIN 10' OF THE FOUNDATION WALLS AND CONNECT THESE TO SERVICE STUBS FROM THE BUILDING.

27) THE CONTRACTOR SHALL INSTALL THE SEWER LINE AND MANHOLE IN CONSULTATION AND COORDINATION WITH DEPARTMENT OF PUBLIC WORKS.

PROPOSED SEWER CONNECTION

STRUCTURE	RIM ELEV.	INV. ELEV. IN / INV. ELEV. OUT	PIPE SIZE & TYPE (FROM/TO)
SMH 2316 (EXISTING)	12.75	7.40	8" SDR35 (BLDG)
		7.40	10" SDR35 (PSMH 1)
		7.30	10" VCP (1253)
BUILDING			–
		7.45	8" SDR35 (2316)



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

NOTES:

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

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

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

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

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

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

7) EVERSOURCE WORK ORDER #3107781

8) PROPOSED SEWER FLOW:
64 UNITS X 170 GPD/UNITS = 10,880 GPD

PORTSMOUTH HOUSING AUTHORITY 140 COURT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
4	SEWER/DRAIN LINES	6/18/18
3	ELECTRICAL DESIGN	6/3/18
2	ISSUED FOR COMMENT	5/8/18
1	ISSUED FOR APPROVAL	4/25/18
0	ISSUED FOR COMMENT	2/20/18

REVISIONS

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

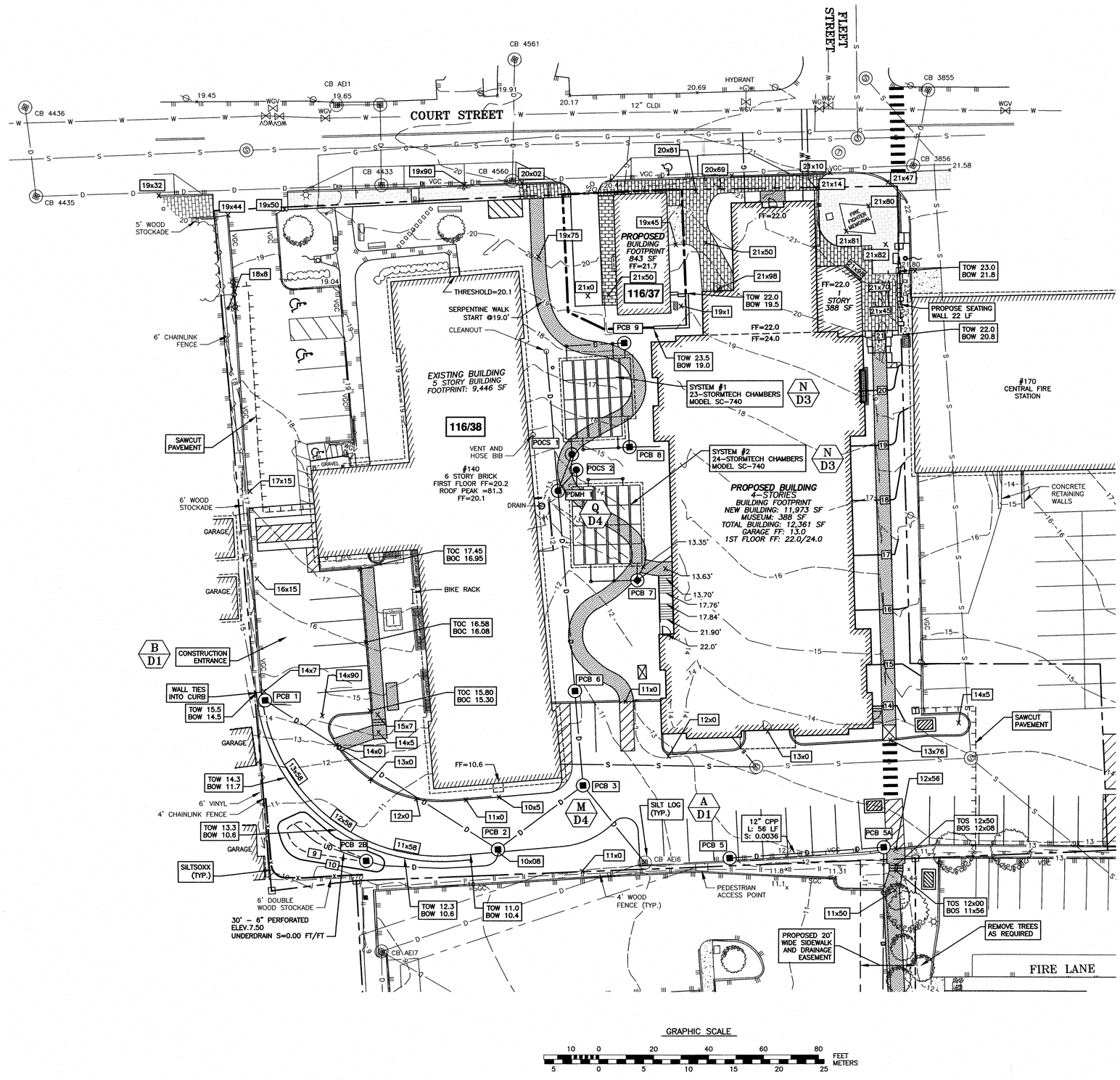
SCALE: 1'=20' FEBRUARY 2018

UTILITY PLAN C5

FB 321 PG19

2790

J:\JOBS2\JN2700's\JN 2790's\JN 2790\2017 Site Planning\Plans & Specs\Site\2790SITE3.dwg, UTILITY_C5



PROPOSED STORM DRAIN TABLE

(SEE SITE PLANS FOR LOCATIONS)

PCB 1
RIM EL. 14.7
INV. OUT 9.70

PCB 1 – PCB 2
12" HDPE (SMOOTH)
L = 95', S = 0.0271 ft./ft.

PCB 2
RIM EL. 10.00
INV. IN 7.13
INV. IN 7.13 (6" UD)
INV. OUT 7.03

PCB 2 – PCB 3
12" HDPE (SMOOTH)
L = 34', S = 0.0041 ft./ft.

PCB 2B (BEE-HIVE GRATE)
RIM EL. 9.50
INV. IN 7.50
OUT 7.39

PCB 2B – PCB 2
6" UNDERDRAIN
L = 53', S = 0.005 ft./ft.

PCB 3
RIM EL.10.4
INV. IN 6.89
INV. IN 6.89
INV. OUT 6.89

CB AE16 EXIST.
RIM EL. 10.77
INV. IN 6.77 (NEW)
INV. OUT 6.77

PCB 3 – CB 4
12" HDPE (SMOOTH)
L = 31', S = 0.0039 ft./ft.

PCB 5
RIM EL. 12.39
INV. OUT 8.06

PCB 5–PCB 5A
12" CPP
L=56', S=0.0036 ft./ft.

PCB 5A
RIM EL. 12.50
INV. IN 7.86
INV. OUT 7.76

PCB 5A–PCB 5B
12" CPP
L=180', S=0.0039 ft./ft.

PCB 6
RIM EL. 11.6
INV. IN 7.04
INV. OUT 7.04

PCB 7
RIM EL. 13.0 +/-
SEE DETAIL N/D3

PCB 8
RIM EL. 16.0 +/-
SEE DETAIL N/D3

PCB 9
RIM EL. 18.5 +/-
SEE DETAIL N/D3

PDMH 1
RIM EL. 13.0 +/-
INV. IN 7.38
INV. IN 7.38
INV. OUT 7.38

POCS 1
RIM EL. 15.0 +/-
INV. OUT 11.40
SEE DETAIL N/D3

POCS 2
RIM EL. 14.0 +/-
INV. OUT 7.40
SEE DETAIL N/D3

POCS 1 – PDMH 1
12" HDPE (SMOOTH)
L = 14', S = 0.005 ft./ft.

POCS 2 – PDMH 1
12" HDPE (SMOOTH)
L = 5', S = 0.004 ft./ft.

PDMH 1 – PCB 6
12" HDPE (SMOOTH)
L = 68', S = 0.005 ft./ft.

PCB 6 – PCB 3
12" HDPE (SMOOTH)
L = 30', S = 0.005 ft./ft.

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

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PORTSMOUTH HOUSING AUTHORITY 140 COURT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	ISSUED FOR APPROVAL	7/17/18
2	ADDED DESIGN	6/18/18
1	ISSUED FOR APPROVAL	4/25/18
0	ISSUED FOR COMMENT	2/20/18

REVISIONS

JOHN R. CHAGNON No. 7861 LICENSED PROFESSIONAL ENGINEER - STATE OF NEW HAMPSHIRE

SCALE: 1'=20' FEBRUARY 2018

DRAINAGE, GRADING AND EROSION CONTROL PLAN

C6

FB 321 PG19

2790

J:\JOBS2\JN2700's\JN 2790's\JN 2790\2017 Site Planning\Plans & Specs\Site\2790SITE3.dwg, C6 GRADE

DRAIN STRUCTURE TABLE

STRUCTURE	RIM ELEV.	INV. ELEV. IN INV. ELEV. OUT	PIPE SIZE & TYPE
CB B	8.28	(2) 4.73 4.58	(2) 24" RCP (N) 24" RCP (E)
		(2) 4.67	(2) 24" RCP (S)
CB A	7.91	5.31	**24" CPP (CB A1)**
		(2) 5.21	24" CPP (CB B)
CB A1	8.49	5.60 5.59	12" CPP (CB AIE7) 12" CPP (CB A2)
		5.52	**24" CPP (CB A)**
CB A2	8.44	6.44	12" CPP (CB A3)
		6.34	12" CPP (CB A1)
CB A3	8.53	5.96	12" CPP (CB A4)
		5.88	12" CPP (CB A2)
CB A4 (WITH SEPARATOR) (TO BE RELOCATED)	8.83	–	–
		6.38 1.23	12" CPP (CB A3) SUMP
PCB 5B (RELOCATED CBA4)	9.00	7.06	12" CPP (PCB5A)
		6.95±	12" CPP (CBA3)

NADB3 REFERENCE #1

NH SPC PER PLAN

ROGERS STREET

4" CHAINLINK FENCE

TOW 13.3
BOW 10.6

GARAGE

SILTSOXX (TYP.)

PCB 2B

PCB 2

6' DOUBLE WOOD STOCKADE

30' – 6" PERFORATED
ELEV.7.50
UNDERDRAIN S=0.00 FT/FT

TOW 12.3
BOW 10.6

TOW 11.0
BOW 10.4

CB AE17

CB AE16

4' WOOD FENCE (TYP.)

PEDESTRIAN ACCESS POINT

12" CPP
L: 56 LF
S: 0.0036

PCB 5

PCB 5A

TOS 12x50
BOS 12x08

TOS 12x00
BOS 11x56

11x50

PROPOSED 20' WIDE SIDEWALK AND DRAINAGE EASEMENT

REMOVE TREES AS REQUIRED

FIRE LANE

SHED TO BE RELOCATED

PROPOSED 6' WIDE CONCRETE SIDEWALK

J
D2

REMOVE TREES AS REQUIRED

PORTSMOUTH
DISTRICT
COURT

115/3

DECK

FIRE ESCAPE

6' WOOD STOCKADE

12" CPP
L: 180 LF
S: 0.0039

RELOCATE PARKING SIGNAGE (TYP.)

RELOCATE CB TO PROPOSED LOCATION AT PCB 5B

NO PARKING FIRE LANE

RESERVED PARKING ONLY"

PCB 5B

CB A4

CB A

CB A1

CB A2

CB A3

CB B

PARROTT AVENUE

72 HOUR PARKING"

"RESTRICTED PARKING TOW ZONE"

15" LOCUST

15" OAK

18" LOCUST

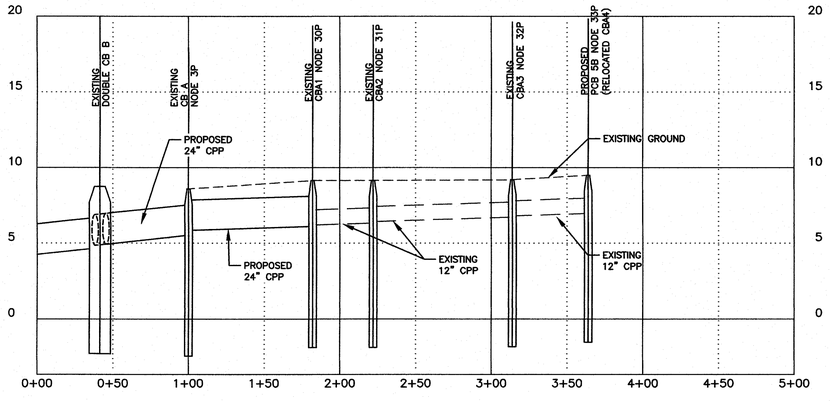
"EQUARIAN RESERVED

"RESERVED D

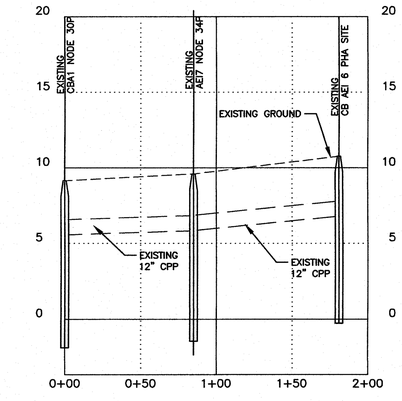
.5'X.5' WOOD POST (TYP.)

GRAPHIC SCALE

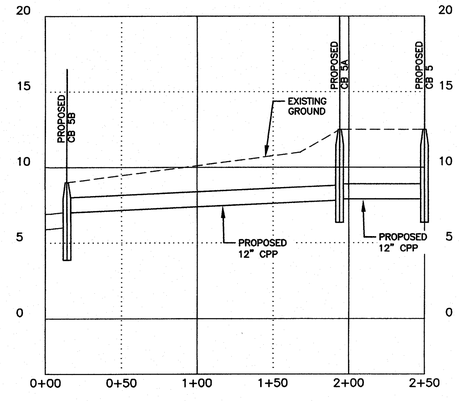
10 0 20 40 60 80 FEET
5 0 5 10 15 20 25 METERS



PARROT AVENUE STORM DRAIN PROFILE



HOEFLE/PHOENIX SITE STORM DRAIN PROFILE



PROPOSED 12" STORM DRAIN PROFILE

GRAPHIC SCALE

50 40 30 20 10 0 50 100 150 200 FEET
15 10 5 0 10 20 30 40 50 60 METERS

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PORTSMOUTH HOUSING AUTHORITY 140 COURT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
1	ISSUED FOR APPROVAL	7/17/18
0	ISSUED FOR COMMENT	7/12/18

REVISIONS

STATE OF NEW HAMPSHIRE
JOHN R. CHAGNON
No. 7981
LICENSED
PROFESSIONAL ENGINEER

SCALE: 1' = 50' / 20' JULY 2018

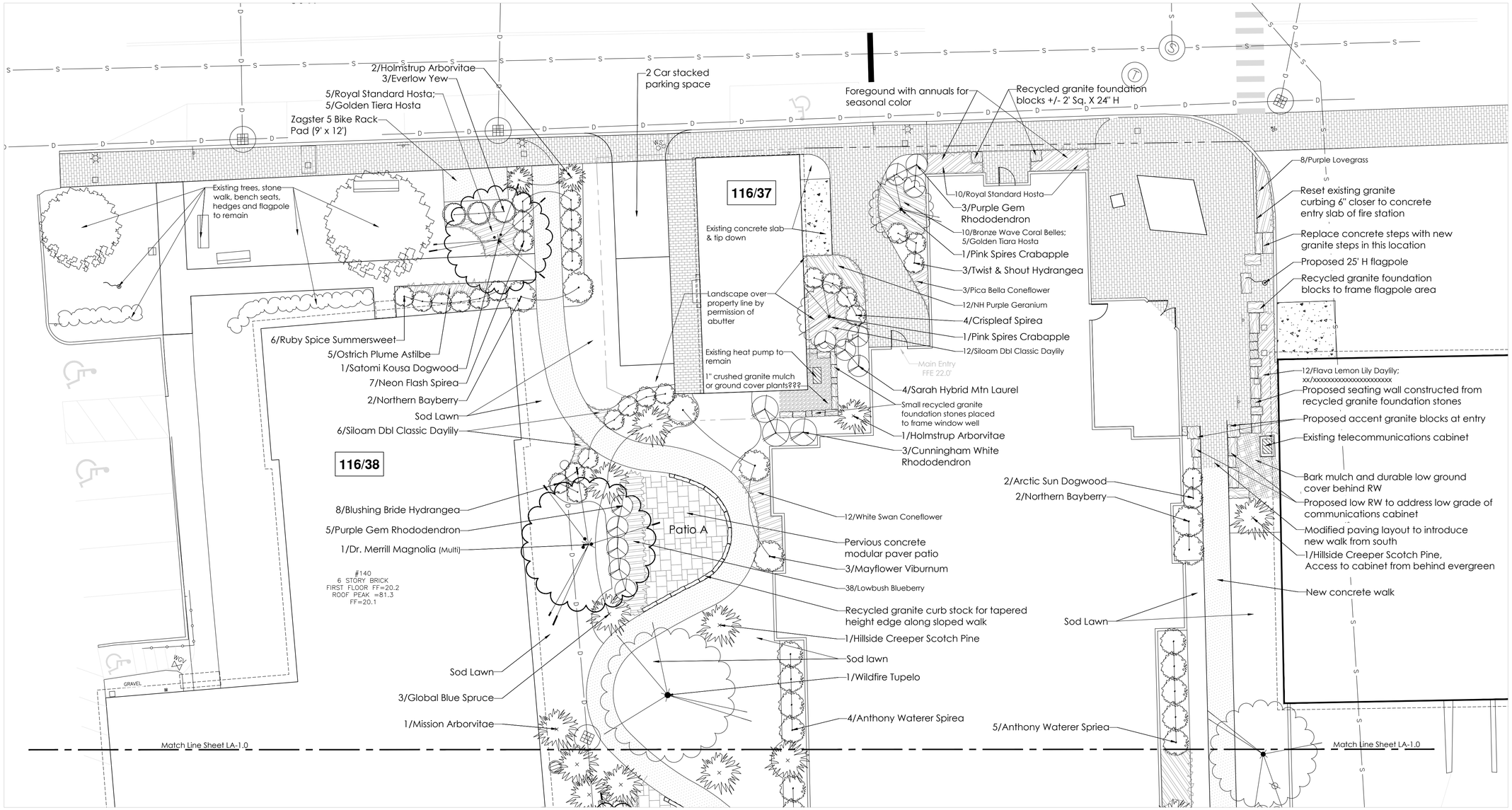
OFF–SITE IMPROVEMENTS PLAN

C7

FB 321 PG19

2790

J:\JOBS2\JN2700's\JN 2790's\JN 2790\2017 Site Planning\Plans & Specs\Site\2790SITE3.dwg, Offsite Drainage C7



g2+1 LLC
Landscape Architecture Site Planning Graphics

70 New Road
Salisbury, NH 03268
tel/fax: 603.648.6434
web: www.g2plus1.com

Project Name:

Workforce Housing Development
140 Court Street
Portsmouth, New Hampshire 03801

Applicant/Owner of Record:

Portsmouth Housing Authority
245 Middle Street
Portsmouth, NH 03801

Ed Pac, LLC
242 Central Avenue
Dover, NH 03820

For City Approval

registration:

revisions:

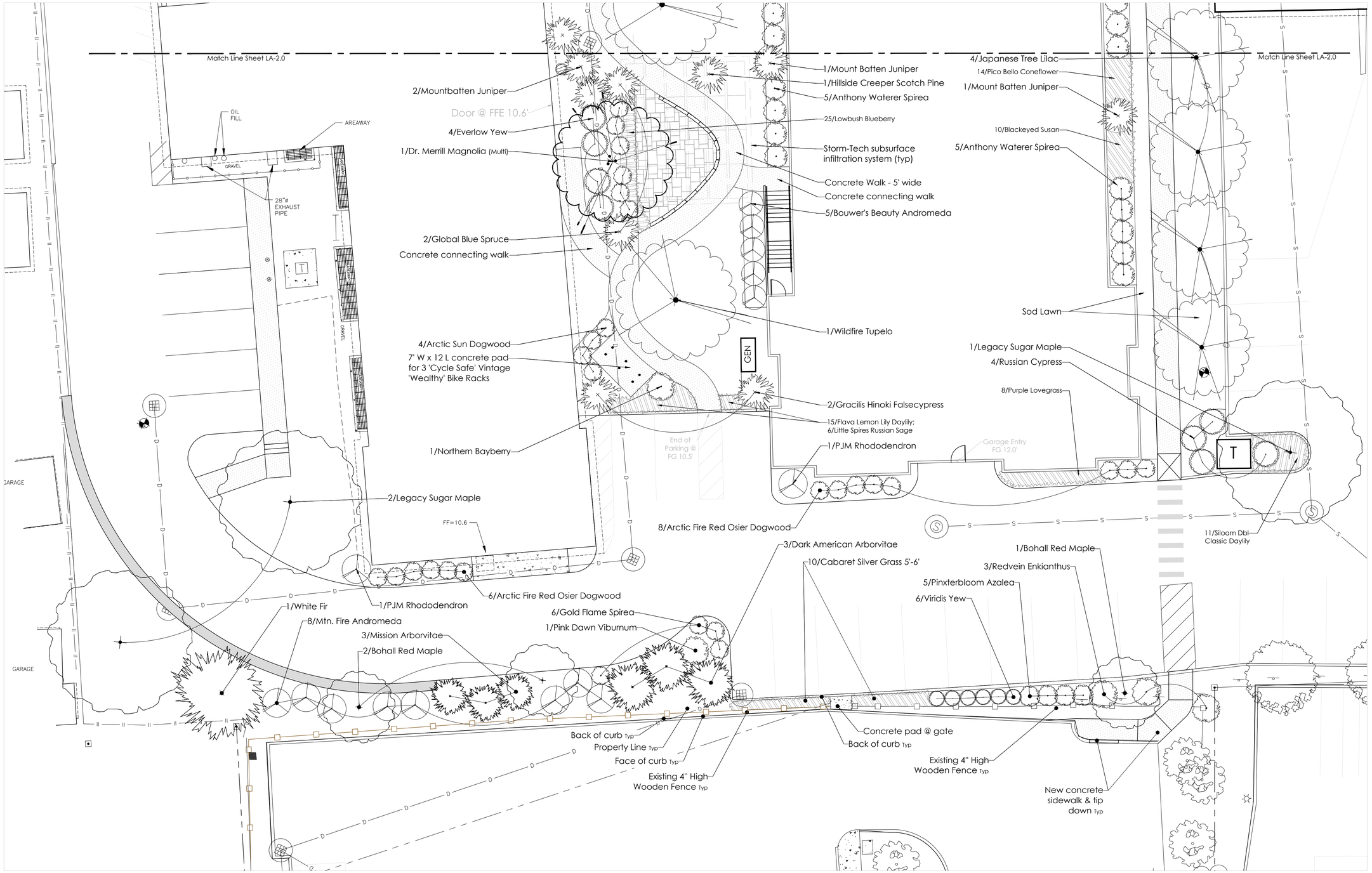
no.	date	issued
1	7/17/18	Revised per TAC hearing & project
2		coordination
3		
4		
5		
6		
7		
8		
9		

project number:	1306.0
scale:	1" = 10'
drawn by:	dhg
date:	6/18/2018

sheet title/number:

Landscape Plan

LA-1.0



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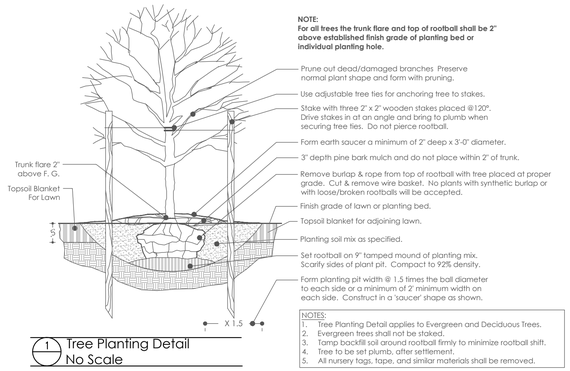
2		coordination
3		
4		
5		
6		
7		
8		
9		

project number:	1306.0
scale:	1" = 10'
drawn by:	dhg
date:	6/18/2018

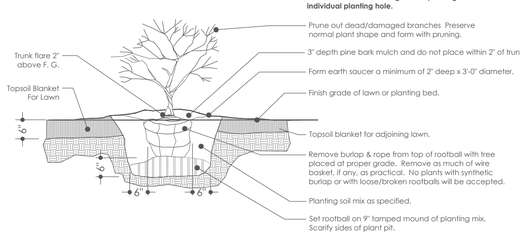
sheet title/number:

Landscape Plan

LA-2.0

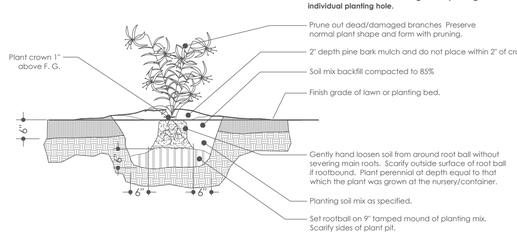


1 Tree Planting Detail
No Scale

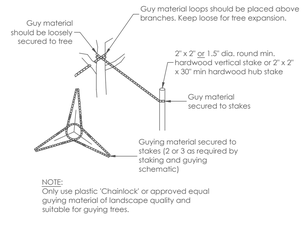


2 Shrub Planting Detail
No Scale

(Shrub Planting Detail applies to Evergreen and Deciduous Shrubs)



3 Perennial Planting Detail
No Scale



4 Tree Guying Detail
No Scale

Typical Planting Details

N. T. S.

Plant Schedule

6/18/2018

PHA Court Street Landscape

REV: 7/17/18

Portsmouth, New Hampshire

Sym	Qty	Common Name	Botanical Name	Zone	Habit of Growth Height	Spread	Installed Size	Type	Notes
Large, Deciduous Trees									
LSM	3	Legacy Sugar Maple	Acer saccharinum 'legacy'	3	50-60'	35-40'	2-1/2-3" cal.	B&B	hardy, vigorous
BWHL	4	Bowhall Columnar Maple	Acer rubrum 'bowhall'	4	40-50'	10-15'	2-1/2" cal.	B&B	Columnar form
TUP	2	Wildfire Tupelo	Nyssa sylvatica 'wildfire'	4	30-40'	20-30'	2-1/2-3" cal.	B&B	Brilliant red leaves in sprint to glossy green, pyramidal
Small, Accent Flowering Trees									
DMM	2	Dr. Merrill Magnolia - MULTI	Magnolia loebneri 'merrill'	3	20-25'	25-30'	8'-10' ht.	B&B	Large 3-4" flowers before leaves, Specimen
JTL	4	Japanese Tree Lilac	Syringa reticulata	3	20-30'	15-25'	2-1/2" cal.	B&B	tough, full sun
PSC	2	Pink Spires Crabapple	Malus 'pink spires'	2	20-25'	12-15'	2-1/2" cal.	B&B	
KD	1	Satomi Kousa Dogwood	Cornus kousa 'satomi'	5	15-20'	10-15'	7'-8' ht.	B&B	Reddish purple fall foliage, exfoliating bark
Evergreen Trees & Accent Evergreens									
CNCF	1	White Fir	Abies concolor	3	30-50'	15-20'	7'-8' ht.	B&B	Soft blue green foliage
DRK	3	Dark American Arborvitae	Thuja occidentalis 'nigra'	4	10-30'	10-12'	6'-7' ht.	B&B	columnar, wide base, shade tolerant
GHFC	2	Gracilis Hinoki Falsecypress	Chamaecyparis obtusa 'gracilis'	4	15-20'	6-8'	6'-7' ht.	B&B	Pyramidal, specimen form
MSA	5	Mission Arborvitae	Thuja occidentalis 'techney'	3	10-15'	6-8'	6'-7' ht.	B&B	columnar, shade tolerant
MTB	4	Mountbatten Juniper	Juniperus chinensis 'mountbatten'	4	15'	6'	6' ht.	B&B	columnar
VRY	6	Viridis Yew	Taxus media 'viridis'	4	10-15'	12-24"	4'-4 1/2' ht.	B&B	Very upright narrow form, great vertical accent
HLMS	2	Holmstrup Arborvitae	Thuja occidentalis 'holmstrup'	2	10'	3-4'	3'-4' ht.	B&B	columnar, shade tolerant
Low, Evergreen Ground Cover									
ELY	4	Ever-Low Yew	Taxus media 'ever-low'	4	1.5'	4-6'	18"-24" spd.	B&B	Hardy, shade tolerant
HSCP	3	Hillside Creeper Scotch Pine	Pinus sylvestris 'hillside creeper'	3	1-2'	6-8'	3' spd.	B&B	
RSCP	4	Russian Cypress	Microbiata decussata	2	1-2'	4-5'	18"-24" spd.	CTN	Sun and shade, arborvitae like foliage
GLS	5	Global Blue Spruce	Picea pungens 'glauca globosa'	2	5-6'	5-6'	10 gal.	CTN	Compact, flat topped rounded form
ELY	3	Ever-Low Yew	Taxus media 'ever-low'	4	1.5'	4-6'	18"-24" spd.	B&B	Hardy, shade tolerant
Accent/Flowering Evergreen Shrubs									
BBA	5	Brouwer's Beauty Andromeda	Pieris 'brouwer's beauty'	5	5'	5'	2'-3' ht.	B&B	
CNW	3	Cunningham White Rhododendron	Rhododendron cat. 'cunningham white'	4	4-5'	4-5'	3'-3 1/2' ht.	B&B	shade, hardy
MFA	8	Mountain Fire Andromeda	Pieris japonica 'mountain fire'	5	9-12'	6-8'	7 gal.	CTN	Upright form, Pendulous white flowers
MTL.4	4	Sarah Hybrid Mountain Laurel	Kalmia latifolia 'sarah'	4	3-1/2'	3-1/2'	5 gal.	CTN	Small Accent
PJM	2	PJM Rhododendron	Rhododendron 'PJM'	4	6-8'	6'	3'-3 1/2' ht.	B&B	full sun, hardy
PRG	8	Purple Gem Rhododendron	Rhododendron 'Purple gem'	4	2'	4'	18"-24" spd.	CTN	full sun, hardy, low
Deciduous Flowering Shrubs									
FLH-2	8	Blushing Bride Hydrangea	Hydrangea 'blushing bride'	4	3-4'	3-4'	5 gal.	CTN	Partial shade, White flowers continuous bloom to fall
FLH-5	3	Twist & Shout Hydrangea	Hydrangea 'twist & shout'	4	3-4'	3-4'	5 gal.	CTN	Partial shade, Lace cap multi color, continuous bloom to fall
GFS	4	Gold Flame Spirea	Spirea x bumalda 'gold flame'	4	2-3'	3-4'	18"-24" spd.	CTN	New foliage mottled with red/copper/orange
CLS	10	Crispleaf Spirea	Spirea x bulmalda 'crispa'	4	3-4'	3-4'	3 gal.	CTN	Compact facer, Serrated & twisted foliage
MFV	3	Mayflower Viburnum	Viburnum carlesi	4	6-8'	6-8'	4'-5' ht.	B&B	shade tolerant, wetland
RVE	3	Redvein Enkianthus	Enkianthus campanulatus	4	8-10'	6-8'	4'-5' ht.	B&B	partial shade
ANWS	19	Anthony Waterer Spirea	Spirea	3	3-4'	4-5'	5 gal.	CTN	Reddish purple new foliage, pink flowers
PNKV	1	Pink Dawn Viburnum	Viburnum bodnantense 'pink dawn'	3	10'	7'	4'-5' ht.	B&B	Upright form
AFROG	14	Arctic Fire Red Osier Dogwood	Cornus sericea 'arctic fire'	3	5-6'	4-5'	5 gal.	CTN	Sun/Shade, Bright red stems for winter interest
PXA	4	Pinxterbloom Azalea	Azalea periclymenoides (nudiflorum)	3	5-6'	4-5'	5 gal.	CTN	Spring blooming densely branched, dry sandy soil
ARSD	6	Arctic Sun Dogwood	Cornus sanguinea 'arctic sun'	4	3-4'	3-4'	4'-5' ht.	B&B	Brilliant yellow stems
RSSMS	6	Ruby Spice Summersweet	Clethra alnifolia 'ruby spice'	3	4-5'	4-5'	5 gal.	CTN	Fragrant and compact, dense plant
NEFS	7	Neon Flash Spirea	Spirea japonica 'neon flash'	4	3'	3'	3 gal.	CTN	Compact facer
BAY	5	Northern Bayberry	Myrica pensylvanica	2	6-8'	6-8'	3'-3-1/2' ht.	B&B	shade tolerant aromatic, Withstands poor soils
Decorative Grasses									
DCGR-4	16	Purple Lovegrass	Eragrostis spectabilis	4	18-24"	30"	1 yr. potted	2 gal.	18"-24", S, Aug/Oct, bronze-red seed heads
DCGR-9	10	Cabaret Silver Grass	Miscanthus sinensis 'cabaret'	4	5-6'	36"	2 gal	CTN	5-6', S, Aug/Oct, wide white/green stripped foliage, White plumes

Perennials/Seasonal Color

S - Sun; S/Sh - Sun/Shade; S/PSh - Sun and Part Shade; PSh - Part Shade; PSh/Sh - Part Shade/Shade

Sym	Qty	Common Name	Botanical Name	Zone	Habit of Growth Height	Spread	Type	Size	Features Ht., Exposure, Bloom Period, Color
GC.A-3	27	Daylily	Hemerocallis flava - 'Lemon Lily'				1 yr. potted	2 qt	36", S/PSh, June/July, Lemon Yellow
GC.A-9	28	Daylily	Hemerocallis flava 'Siloam Dbl. Classic'				1 yr. potted	2 qt	18", S/PSh, June, Double Soft Salmon Pink
GC.C-1	17	Purple Coneflower	Echinacea purpurea 'Pica bella'				1 yr. potted	2 qt	24"-29",S/PSh, July/Sept, Deep Pink
GC.C-3	12	White Coneflower	Echinacea purpurea 'White Swan'				1 yr. potted	2 qt	18"-24",S/PSh, June/Sept, White
GC.D-1	4	Little Spire Russian Sage	Perovskia atriplicifolia 'little spire'	4			1 yr. potted	2 qt	18"-24", S, July/Sept, Medium Violet
GC.G-2	10	Coral Belles	Heuchera 'Bronze Wave'	4			1 yr. potted	1 gal.	18", S/PSh, Sept/Oct, Bronze-Purple foliage, tan flowers
GC.H-5	15	Hosta	Hosta 'Royal Standard'				1 yr. potted	1 gal.	24-28", S/Sh, Aug/Sept, White flower, Rich Grn leaf
GC.H-7	10	Hosta	Hosta 'golden tiara'	3			1 yr. potted	1 gal.	10", S/PSh, July/Aug, dark purple
GC.I	63	Lowbush Blueberry	Vaccinium angustifolium				1 yr. potted	2 qt	12", S, May, Violet-Blue
GC.L-3	5	Astilbe	Astilbe 'ostrich plume'				1 yr. potted	2 qt	24-30", PSh/Sh, June, Dark Foliage w/ Salmon Pink
GC.X-3	12	Bloody Cranbill	Geranium sanguineum 'NH Purple'				1 yr. potted	2 qt	9"-12", S/PSh, May/Sept, Magenta Pink
GC.ZZ	10	Black Eyed Susan	Rudbeckia fulgida 'Goldsturm'				1 yr. potted	1 gal.	24-36", S/PSh, Jul/Aug, golden yellow-black center
0	SF	Seasonal Annual Beds	Mixed selection by Landscape Maintenance Contractor, Directed by Owner						

Lawns/Seeding

0	SF	Soded Fine Lawn	Fine Grade, fertilize, seed and Hydromulch (Kentucky Bluegrass and Creeping Red Fescue Blend)

Notes:

1.) All planting beds shall be mulched with a minimum of 3" of shredded pine bark mulch.
2.) All sod and/or seeded lawn areas to have minimum 6" topsoil blanket.
3.) All native grass seeded areas to have minimum 4" topsoil blanket.
4.) All plant material to conform to current AAN, American Standard for Nursery Stock, ANSI Z60.1-2006.
5.) All mass planted shrub beds and planters around building shall receive a minimum 18" deep topsoil blanket to compensate for the very sandy/granular sub-grade material expected on this site. Topsoil shall meet requirements as called out in specifications.

Planting Notes

1. Design is based on drawings by Ambit Engineering, Inc., dated June 18, 2018 and may require adjustment due to actual field conditions.
2. This project shall comply with the City of Portsmouth, NH Construction Standards and Details.
3. The contractor shall follow best management practices during construction and shall take all means necessary to stabilize and protect the site from erosion
4. Erosion Control shall be in place prior to construction.
5. If discrepancies exist between the number of plants drawn on the planting plan and the number of plants in the plant list, the planting plan shall govern.
6. All new plant material shall conform to the minimum guidelines established for nursery stock published by the American Association of Nurserymen, Inc. In addition all new plant material for the project shall be of specimen quality.
7. All new plants to be balled and burlapped or container - grown, unless otherwise noted on the plant list. All plants shall be legibly tagged with the proper botanical name.
8. The contractor shall supply all new plant material in quantities sufficient to complete the planting shown on the drawings.
9. Any proposed substitutions of plant species shall be made with plants of equivalent overall form, height, branching habit, flower leaf, color, fruit and culture, and only after written approval of the Landscape Architect.
10. Contractor shall locate and verify all existing utility lines prior to planting and shall report any conflicts to the Landscape Architect.
11. Stake the location of all proposed plantings for approval by Landscape Architect prior to the commencement of planting.
12. New shrubs and ground cover shall bear the same relationship to grade as it bore to previous grade at nursery. Trees shall be set 2" higher than previous grade. No tress shall be planted before acceptance of rough grading.
13. Planting Soil Mix shall consist of: 3 parts sandy loam topsoil, 1.0 part 1/4" minus composted pine bark mulch and .5 parts of composted cow manure.
14. All plant beds to receive two inches (3") of bark mulch. Bark mulch shall be 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 perennial shall be no longer than 1" in length. Trees in lawn areas shall be mulched in a 6' diameter minimum saucer. Color of mulch shall be dark brown. Red, orange/red or black colored mulch is not acceptable.
15. Landscape (weed) fabric is not allowed.
16. All existing trees to remain shall be properly protected during construction. Protection techniques shall be reviewed and approved by the Landscape Architect.
17. Prune trees and large shrubs in accordance to guidelines established for nursery stock published by the American Association of Nurserymen, Inc.
18. 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% of ¼" minus composted bark mulch compost.
19. All alterations to these drawings made in the field during construction shall be recorded by the contractor on "as-built drawings."
20. There shall be a full one (1) year replacement guarantee for all trees and shrubs after final acceptance of initial planting.

g2+1 LLC
Landscape Architecture Site Planning Graphics

70 New Road
Salisbury, NH 03268
tel/fax: 603.648.6434
web: www.g2plus1.com

Project Name:

Workforce Housing Development

140 Court Street
Portsmouth, New Hampshire 03801

Applicant/Owner of Record:

Portsmouth Housing Authority

245 Middle Street
Portsmouth, NH 03801

Ed Pac, LLC

242 Central Avenue
Dover, NH 03820

For City Approval

registration:

revisions:

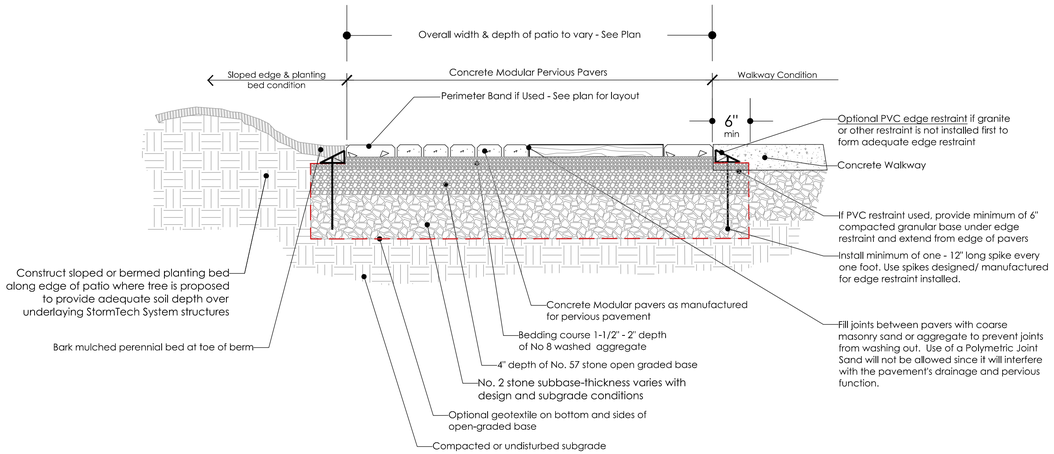
no.	date	issued
1	7/17/18	Revised per TAC hearing & project coordination
2		
3		
4		
5		
6		
7		
8		
9		

project number:	1306.0
scale:	1" = 10'
drawn by:	dhg
date:	6/18/2018

sheet title/number:

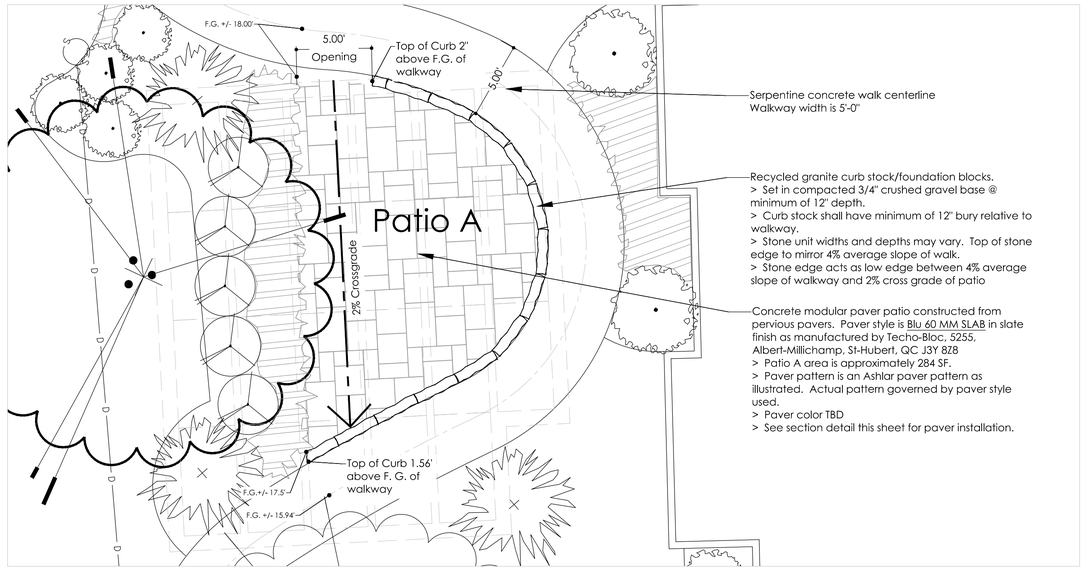
Plant Schedule & Planting Notes

LA-3.0



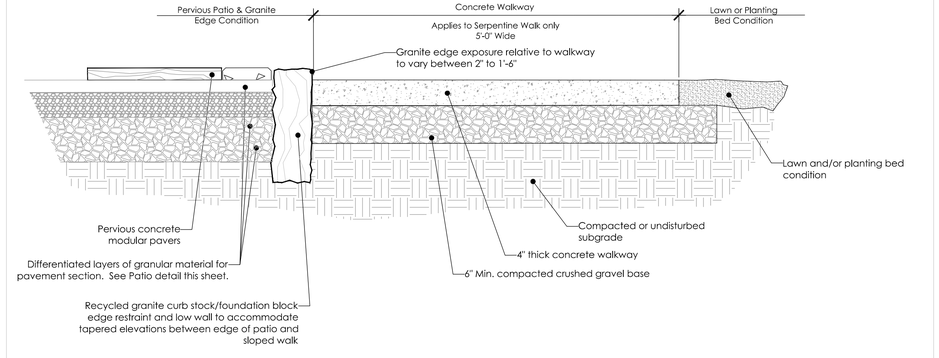
Pervious Pavement Patio Section Detail

Scale: 1" = 1'-0"



Typical Patio Plan Detail

Scale: 1" = 5'-0"



Stabilized Crushed Granite Walk Section Detail

Scale: 1" = 1'-0"

g2+1 LLC
Landscape Architecture Site Planning Graphics

70 New Road
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Project Name:

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project number:	1306.0
scale:	1" = 10'
drawn by:	dhg
date:	6/18/2018

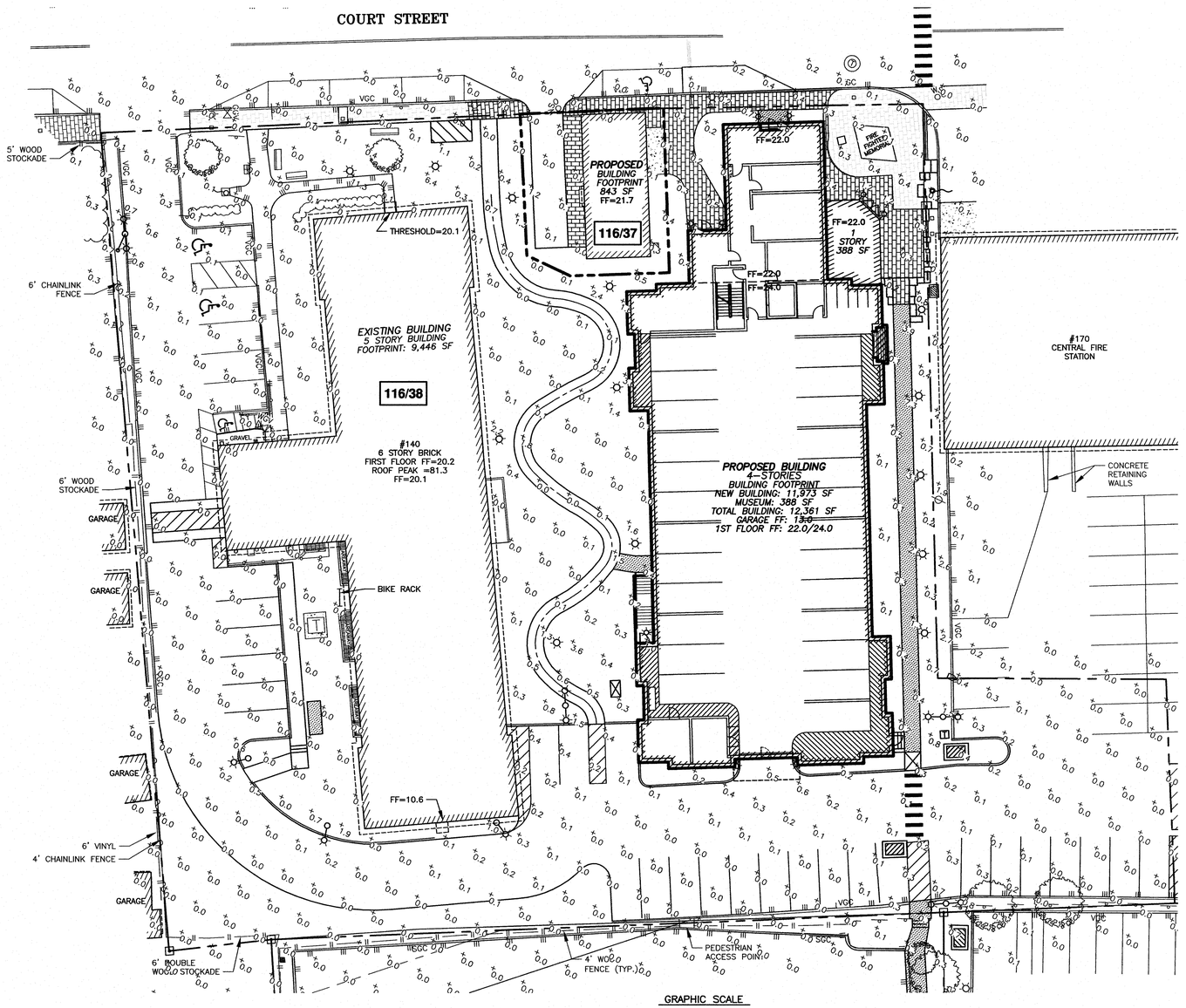
sheet title/number:

Construction Details

LA-4.0

LUMINAIRE SCHEDULE

SYMBOL	LABEL	QTY.	MANUFACTURER	CATALOG NUMBER	DESCRIPTION	LAMP	NUMBER LAMPS	LUMENS PER LAMP	LIGHT LOSS FACTOR	WATTAGE
☼	A	14	AURORALIGHT	LBD 350 C11 GTR NL 12 32 300K	CONICAL 11" STACKED COPPER SHADES WITH NO LOUVERS AND CYLINDRICAL 32" COPPER STEM WITH BRASS BASE; HT 3'	LED	1	395	0.9	12.42
o☼	B	3	AURORALIGHT	LML 350 C11 GRL 30 P	CONICAL 11" STACKED COPPER SHADES WITH LOUVERS, PAINTED WHITE UNDERSIDE AND FROSTED GLASS LENS, HT 10'	LED	1	400	0.9	18.012
☼o☼	C	4	AURORALIGHT	LML 350 C11 GRL 30 P	CONICAL 11" STACKED COPPER SHADES WITH LOUVERS, PAINTED WHITE UNDERSIDE AND FROSTED GLASS LENS, HT 10'	LED	2	800	0.9	36.024
☼	D	9	AURORALIGHT	LML 350 C11 GRL 30 P	CONICAL 11" STACKED COPPER SHADES WITH LOUVERS, PAINTED WHITE UNDERSIDE AND FROSTED GLASS LENS, ARM LENGTH 1'	LED	1	400	0.9	18.012



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

NOTES:

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

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

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

4) POLE MOUNTED LIGHTS SHALL HAVE A MAXIMUM FIXTURE OF HEIGHT OF 20 FEET.

5) ALL LIGHTING SHALL BE SHIELDED TO MINIMIZE LIGHT TRESPASS AND DIRECT GLARE BEYOND THE PROPERTY.

6) ALL LIGHTS SHALL BE DARK SKY COMPLIANT AND DIRECTED DOWNWARD.

7) LIGHTING PLAN PREPARED USING AGI32 SOFTWARE. LIGHTING DESIGN BASED ON .IES FILES THAT WERE LAB-TESTED OR COMPUTER GENERATED. ACTUAL RESULTS MAY VARY DEPENDING ON FIELD CONDITIONS, AREA GEOMETRY OR CHANGES IN ELECTRICAL SUPPLY VOLTAGE.

8) LIGHTS SHALL COMPLY WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.

PORTSMOUTH HOUSING AUTHORITY
140 COURT STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR COMMENT	4/25/18
NO.	DESCRIPTION	DATE
	REVISIONS	

SCALE: 1'=20' FEBRUARY 2018

LIGHTING PLAN LT1

FB 321 PG19 2790

J:\JOBS2\JN2700's\JN 2790's\JN 2790\2017 Site Planning\Plans & Specs\Site\2790SITE3.dwg, LIGHT_C7

EROSION CONTROL NOTES

CONSTRUCTION SEQUENCE

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

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

INSTALL PERIMETER CONTROLS, i.e., SILTSOXX AND CATCH BASIN PROTECTION AROUND THE LIMITS OF DISTURBANCE BEFORE ANY EARTH MOVING OPERATIONS. THE USE OF HAYBALES IS NOT ALLOWED.

CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE.

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

LAYOUT AND INSTALL ALL BURIED UTILITIES AND SERVICES UP TO 10' OF THE PROPOSED BUILDING FOUNDATIONS. CAP AND MARK TERMINATIONS OR LOG SWING TIES.

CONSTRUCT BUILDINGS.

CONNECT UTILITIES.

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

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

AFTER BUILDINGS ARE COMPLETED, FINISH ALL REMAINING LANDSCAPED WORK.

CONSTRUCT ASPHALT WEARING COURSE.

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

GENERAL CONSTRUCTION NOTES

THE EROSION CONTROL PROCEDURES SHALL CONFORM TO SECTION 645 OF THE "STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION" OF THE NHDOT, AND "STORM WATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL HANDBOOK FOR URBAN AND DEVELOPING AREAS IN NEW HAMPSHIRE". THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.

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

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

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

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

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

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

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

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

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

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

FILL MATERIAL SHALL NOT BE PLACED ON FROZEN FOUNDATION SUBGRADE.

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

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

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

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

VEGETATIVE PRACTICE

FOR PERMANENT MEASURES AND PLANTINGS:

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

FERTILIZER SHALL BE SPREAD ON THE TOP LAYER OF LOAM AND WORKED INTO THE SURFACE. FERTILIZER APPLICATION RATE SHALL BE 500 POUNDS PER ACRE OF 10–20–20 FERTILIZER.

SEED SHALL BE SOWN AT THE RATES SHOWN IN THE TABLE BELOW. IMMEDIATELY BEFORE SEEDING, THE SOIL SHALL BE LIGHTLY RAKED. ONE HALF THE SEED SHALL BE SOWN IN ONE DIRECTION AND THE OTHER HALF AT RIGHT ANGLES TO THE ORIGINAL DIRECTION. IT SHALL BE LIGHTLY RAKED INTO THE SOIL TO A DEPTH NOT OVER 1/4 INCH AND ROLLED WITH A HAND ROLLER WEIGHING NOT OVER 100 POUNDS PER LINEAR FOOT OF WIDTH. HAY MULCH SHALL BE APPLIED IMMEDIATELY AFTER SEEDING AT A RATE OF 1.5 TO 2 TONS PER ACRE, AND SHALL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE EROSION AND SEDIMENT CONTROL HANDBOOK.

THE SURFACE SHALL BE WATERED AND KEPT MOIST WITH A FINE SPRAY AS REQUIRED, WITHOUT WASHING AWAY THE SOIL, UNTIL THE GRASS IS WELL ESTABLISHED. ANY AREAS WHICH ARE NOT SATISFACTORILY COVERED SHALL BE RESEEDED, AND ALL NOXIOUS WEEDS REMOVED.

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

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

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

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

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

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

MAINTENANCE AND PROTECTION

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

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

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

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

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

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

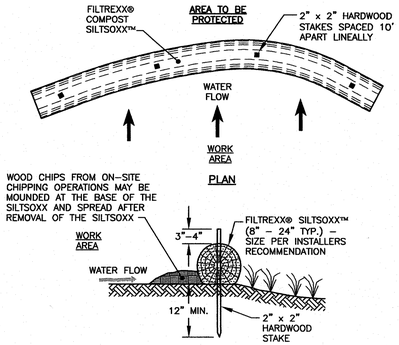
SILT FENCING AND SILTSOXX SHALL BE REMOVED ONCE VEGETATION IS ESTABLISHED, AND DISTURBED AREAS RESULTING FROM SILT FENCE AND SILTSOXX REMOVAL SHALL BE PERMANENTLY SEEDED.

WINTER NOTES

ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.

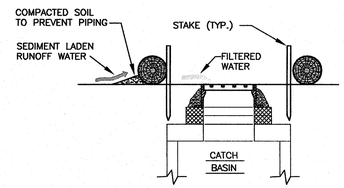
ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.

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



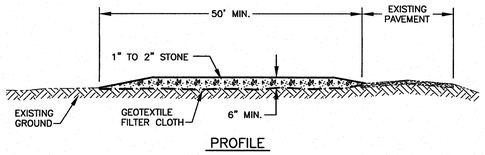
NOTES:
1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
2. FILLTREXX SYSTEM SHALL BE INSTALLED BY A CERTIFIED FILTREXX INSTALLER.
3. THE CONTRACTOR SHALL MAINTAIN THE COMPOST FILTRATION SYSTEM IN A FUNCTIONAL CONDITION AT ALL TIMES. IT WILL BE ROUTINELY INSPECTED AND REPAIRED WHEN REQUIRED.
4. SILTSOXX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

A / C6 FILTREXX® SILTSOXX™ FILTRATION SYSTEM
(AS NEEDED) NTS



NOTE:
1. PRIOR TO INSTALLATION, SILT LOGS SHALL BE KEPT DRY AND STORED IN THEIR ORIGINAL WRAPPING.
2. MINIMUM CROSS SECTIONAL DIAMETER OF SILT LOGS: 12".
3. SILT LOGS MAY BE CUT AND RE–STITCHED AS NEEDED PER MANUFACTURERS RECOMMENDATIONS.
4. SILT LOGS SHALL BE INSPECTED AFTER EACH STORM EVENT.
5. REMOVE ACCUMULATED SILT WHEN DEPTH REACHES ONE HALF OF SILT LOG DIAMETER.
6. IF LOGS ARE TOO STIFF TO BEND AROUND CATCH BASIN INLET, THEY MAY BE CUT AND LAID SQUARE.

"SILT LOG" BARRIER AT CATCH BASIN INLET
(AS NEEDED) NTS



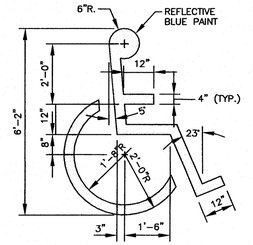
MAINTENANCE

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

CONSTRUCTION SPECIFICATIONS

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

B / C6 STABILIZED CONSTRUCTION ENTRANCE
NTS

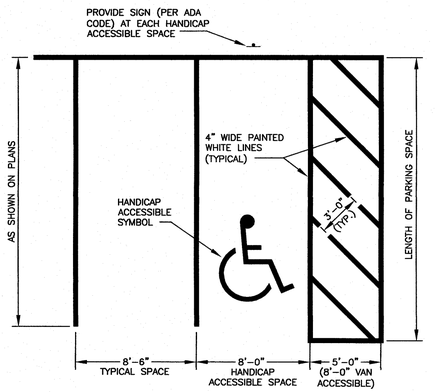


NOTES:

1) SYMBOL TO BE PAINTED IN ALL HANDICAPPED SPACES.

2) SYMBOL, PAINT AND SIGNAGE TO CONFORM TO AMERICANS WITH DISABILITIES ACT (ADA).

3) ALL VAN ACCESSIBLE SPACES SHALL HAVE "VAN ACCESSIBLE" PLATE INSTALLED ON SIGN POST BELOW HANDICAP SIGN.



C / C4 HANDICAP PARKING DETAIL
NTS

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

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PORTSMOUTH HOUSING AUTHORITY
140 COURT STREET
PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	ISSUED TO TAC	6/18/18
1	ISSUED FOR APPROVAL	4/25/18
0	ISSUED FOR COMMENT	2/20/18

REVISIONS

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

SCALE: AS SHOWN FEBRUARY 2018

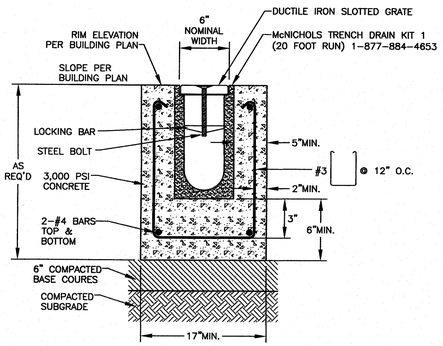
EROSION PROTECTION NOTES AND DETAILS

D1

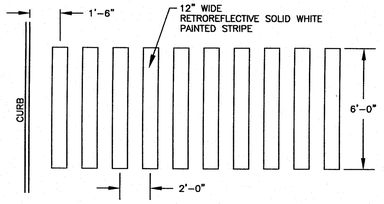
FB 321 PG 19

2790

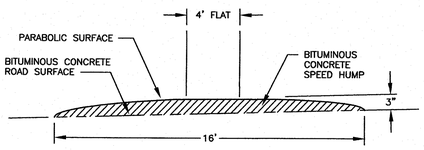
J:\JOBS2\JN2700's\JN 2790's\JN 2790\2017 Site Planning\Plans & Specs\Site\2790D103.dwg, DETAILS D1



D C4 TRENCH DRAIN DETAIL
NTS



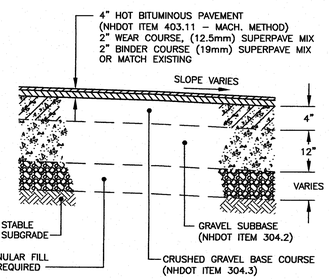
E C3 PAINTED CROSSWALK DETAIL
NTS



REFERENCE:
MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009, REVISED MAY 2012.

F C3 SPEED HUMP DETAIL
NTS

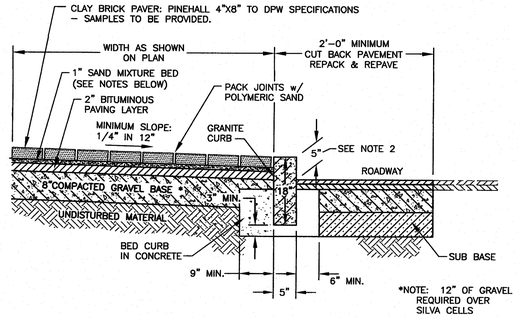
NOTE: STRIPE PER MUTCD STANDARDS



G C3 TYPICAL PAVEMENT CROSS-SECTION
NTS

CONSTRUCTION NOTE:

EXISTING GRANITE CURB DISTURBED BY CONSTRUCTION SHALL BE REUSED AND ANY MISSING CURB SHALL BE REPLACED WITH NEW CURB MATCHING EXISTING CURB SIZE. NO CURB LESS THAN 3' IN LENGTH WILL BE ALLOWED.



BRICK PAVEMENT NOTES

SCOPE OF WORK:

1) THE WORK SHALL CONSIST OF CONSTRUCTING/RECONSTRUCTING THE SUB-BASE AND CONSTRUCTING A NEW BRICK SIDEWALK AS DIRECTED IN THE FIELD BY THE ENGINEER.
2) REVEAL SHALL BE 5" (COORDINATE WITH PORTSMOUTH DPW).

METHODS OF CONSTRUCTION:

A) ALL LABOR AND MATERIALS SHALL CONFORM TO THE STATE OF NEW HAMPSHIRE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 608, AND CITY OF PORTSMOUTH SPECIFICATIONS FOR NEW BRICK SIDEWALK, SECTION 6.

B) ALL BRICKS SHALL CONFORM TO THE REQUIREMENTS OF ASTM STANDARD SPECIFICATIONS FOR BUILDING BRICKS: CLASS SX, TYPE 1, APPLICATION PX. THE BRICKS SHALL BE NO. 1, WIRE CUT TYPE FOR PAVING, WITH A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,000 POUNDS PER SQUARE INCH. THE BRICKS SHALL NOT BE CORED OR HAVE FROGS AND SHALL BE OF A STANDARD SIZE (2.25" X 4 X 8").

C) EXCAVATION FOR SIDEWALKS SHALL BE AT A DEPTH OF 10 INCHES BELOW FINISH GRADE. IN AREAS NOT BUTTING CURBING OR BUILDINGS, THE EXCAVATION SHALL BE 6 INCHES WIDER THAN THE FINISHED SIDEWALK WIDTH. AT ALL DRIVE CROSSINGS, THE DEPTH OF EXCAVATION SHALL BE INCREASED ACCORDINGLY. THE CONTRACTOR SHALL PROVIDE NEAT AND SQUARE CUTTING OF EXISTING ASPHALT ROAD SURFACE AS NEEDED. ALL UNSUITABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF OFF-SITE AT THE CONTRACTOR'S OWN EXPENSE.

D) THE BASE MATERIAL SHALL CONSIST OF A MIXTURE OF STONES OR ROCK FRAGMENTS AND PARTICLES WITH 100% PASSING THE 3 INCH SIEVE, 95% TO 100% PASSING THE 2 INCH SIEVE, 55% TO 85% PASSING THE 1 INCH SIEVE, AND 27% TO 52% PASSING THE NO. 4 SIEVE. AT LEAST 50% OF THE MATERIALS RETAINED ON THE 1 INCH SIEVE SHALL HAVE A FRACTURED FACE. THE BASE MATERIAL SHALL BE THOROUGHLY COMPACTED TO THE DEPTH SPECIFIED OR DIRECTED. IN THE WAY OF ALL DRIVE CROSSINGS THE BASE WILL BE INCREASED TO A COMPACTED DEPTH OF 12 INCHES. GRAVEL REQUIREMENTS FOR RECONSTRUCTION WILL BE AS DIRECTED, BASED ON SITE CONDITIONS. THE WORK INCLUDES BACKING UP ANY AND ALL CURB BEING INSTALLED BY OTHERS ON BOTH SIDES.

E) THE CLAY BRICK PAVERS SHALL BE LAID IN A 1 INCH BED OF A SAND MIXTURE COMPRISED OF: 3 PARTS SAND MIXED WITH 1 PART PORTLAND CEMENT.

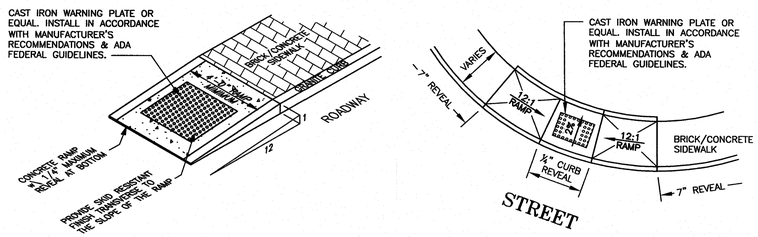
F) THE CONTRACTOR SHALL LAY THE BRICKS SO THAT APPROXIMATELY 5.2 BRICKS SHALL COVER ONE SQUARE FOOT.

G) THE SIDEWALK SHALL PITCH TOWARDS THE STREET AS SHOWN ON THE GRADING PLAN.

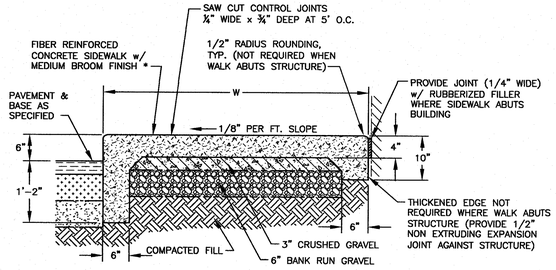
H) IN AREAS WHERE THE FRONT OF THE BRICK SIDEWALK IS NOT ADJACENT TO GRANITE CURBING, THE CONTRACTOR SHALL INSTALL EDGING TO HOLD THE BRICKS IN PLACE. SUCH EDGING SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS.

I) THE CONTRACTOR SHALL SUBMIT A SAMPLE OF THE BRICKS FOR APPROVAL BY THE CITY BEFORE BRICKS ARE INSTALLED.

H C3 BRICK SIDEWALK w/ VERTICAL GRANITE CURB
(STONE DUST BEDDING OVER BITUMINOUS PAVING) NTS

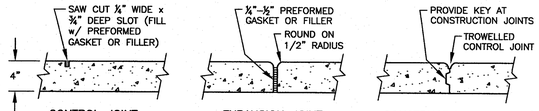


I C3 TYPICAL SIDEWALK TIP DOWNS
NTS



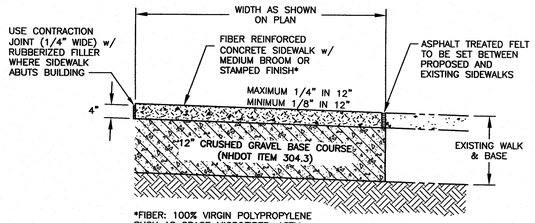
*FIBER: 100% VIRGIN POLYPROPYLENE SUCH AS GRACE MICROFIBER, ASTM C1116, TYPE 111, PAR.4.1.3 OR EQUAL. APPLIED @ 1 LB. PER C.Y.

CROSS SECTION



CONTROL JOINT @ 10' ON CENTER
EXPANSION JOINT @ 50' ON CENTER
CONSTRUCTION JOINT @ BREAK IN CONSTRUCTION

J C3 CONCRETE WALK w/ CONCRETE CURB
NTS



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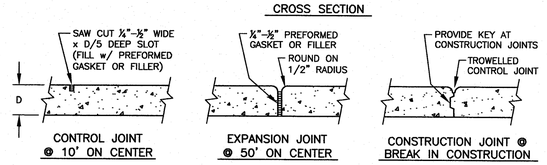
CROSS SECTION



CONTROL JOINT @ 10' ON CENTER
EXPANSION JOINT @ 50' ON CENTER
CONSTRUCTION JOINT @ BREAK IN CONSTRUCTION

K C3 PORTLAND CEMENT CONCRETE SIDEWALK
NTS

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road - Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
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PORTSMOUTH HOUSING AUTHORITY 140 COURT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	ISSUED TO TAC	6/18/18
1	ISSUED FOR APPROVAL	4/25/18
0	ISSUED FOR COMMENT	2/20/18

REVISIONS

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

SCALE: AS SHOWN FEBRUARY 2018

DETAILS D2

FB 321 PG 19

2790

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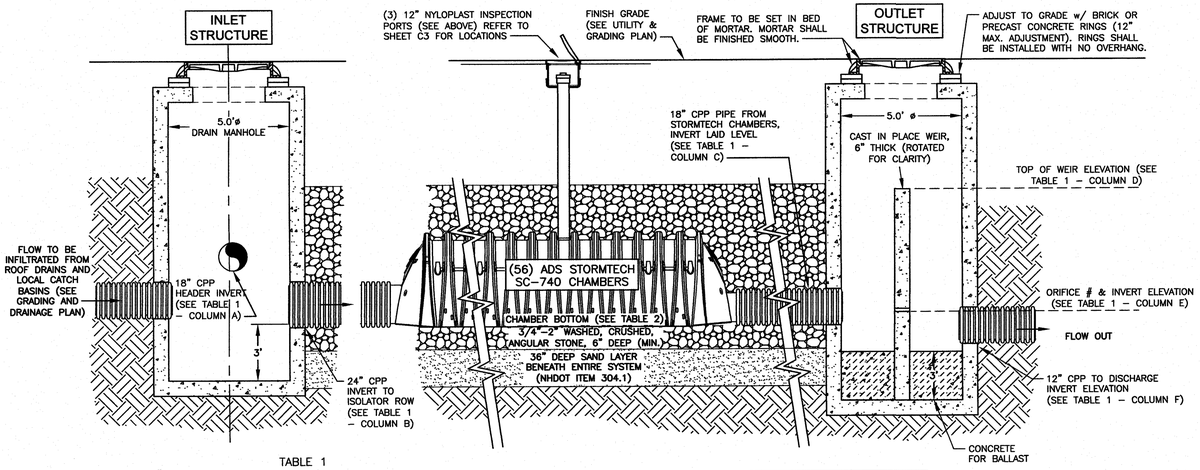
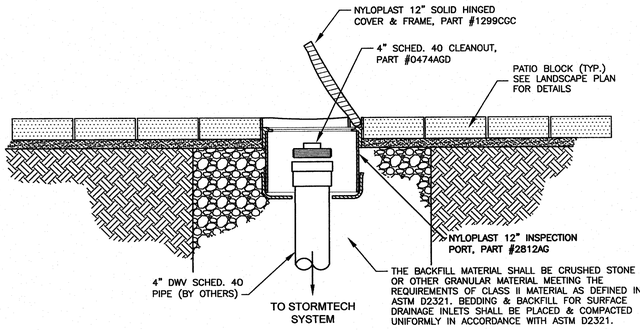


TABLE 1

SYSTEM #	A	B	C	D	E	F
1	11.25	11.00	11.00	14.50	(3) – 2" (EL.–11.50)	11.40
2	7.25	7.00	7.00	10.50	(3) – 2" (EL.–7.50)	7.40

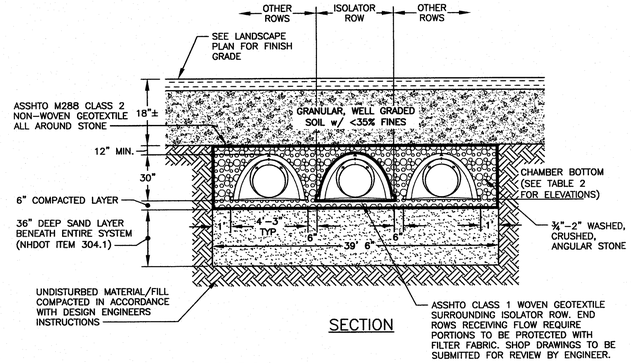
N C3 STORMWATER INLET & OUTLET CONTROL STRUCTURES

NTS



NYLOPLAST 12" INSPECTION PORT

PATIO – NON TRAFFIC RATED



SECTION

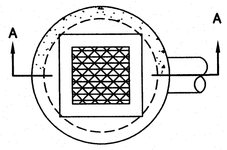
TABLE 2

SYSTEM #	CHAMBER BOTTOM
1	11.00
2	7.00

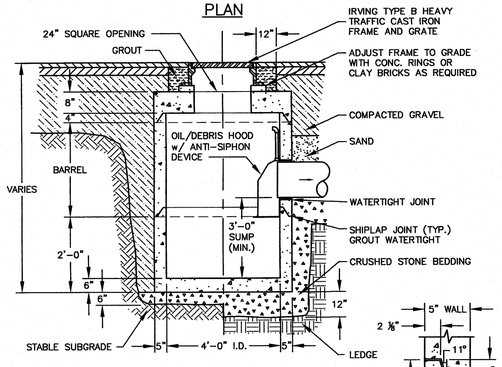
N C6 STORMTECH SC–740 STORMWATER CHAMBER SYSTEM

NTS

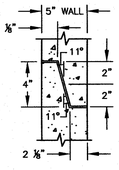
INSTALL PER MANUFACTURER'S INSTRUCTIONS (1–888–892–2694). A STORMTECH REPRESENTATIVE SHALL BE CONSULTED PRIOR TO CONSTRUCTION AND ON SITE DURING CONSTRUCTION OF THE STORMTECH SYSTEM



PLAN



SECTION A – A

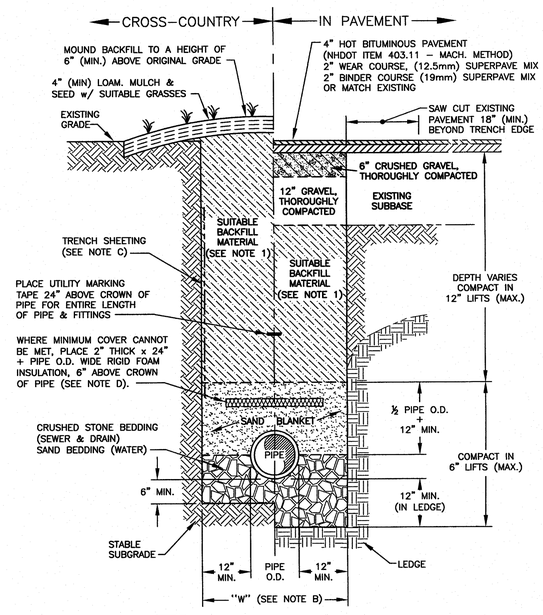


DETAIL OF SHIPLAP JOINT

NOTES:
1) CONCRETE SHALL BE 4,000 P.S.I. AFTER 28 DAYS.
2) CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER LINEAR FT. IN ALL SECTIONS & SHALL BE PLACED IN THE CENTER THIRD OF WALL.
3) THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT.
4) EACH CASTING TO HAVE LIFTING HOLES CAST IN.
5) OUTLET HOOD SHALL BE A "SNOUT" BY BEST MANAGEMENT PRODUCTS, INC. OR APPROVED EQUAL. SIZING AND INSTALLATION PER MANUFACTURER'S RECOMMENDATIONS.

M C5 CATCH BASIN w/ OIL–DEBRIS HOOD

NTS



O C5 TYPICAL PIPE TRENCH

NTS

TRENCH NOTES:

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

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

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

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

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

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

AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801–7114
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PORTSMOUTH HOUSING AUTHORITY 140 COURT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	DETAIL N/C6 – INSPECTION PORT	7/17/18
2	ISSUED TO TAC	6/18/18
1	ISSUED FOR APPROVAL	4/25/18
0	ISSUED FOR COMMENT	2/20/18

REVISIONS

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

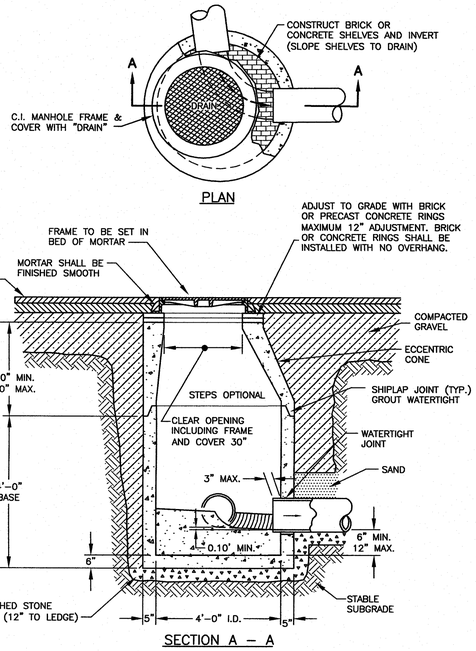
SCALE: AS SHOWN FEBRUARY 2018

DETAILS D3

FB 321 PG 19

2790

J:\JOBS2\2700's\2790's\2017 Site Planning\Plans & Specs\Site\2790DT03.dwg, DETAILS D3



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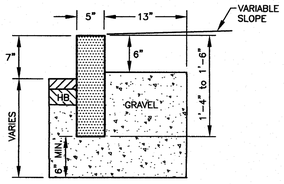
3. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER LINEAR FT..
4. EACH CASTING TO HAVE LIFTING HOLES CAST IN.

Q / C5 DRAIN MANHOLE DETAIL
NTS

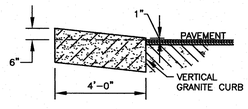
MIN. LENGTH OF CURB STONES 3FT.
MAX. LENGTH OF CURB STONES 10FT.
MAX. LENGTH OF STRAIGHT CURB STONES LAID ON CURVES SEE CHART

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

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

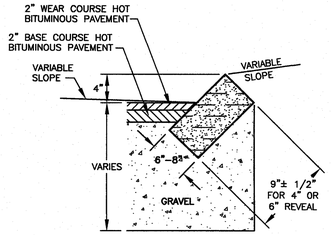


VERTICAL GRANITE CURB



NOTE: JOINTS BETWEEN STONES TO BE MORTARED

GRANITE CURB END

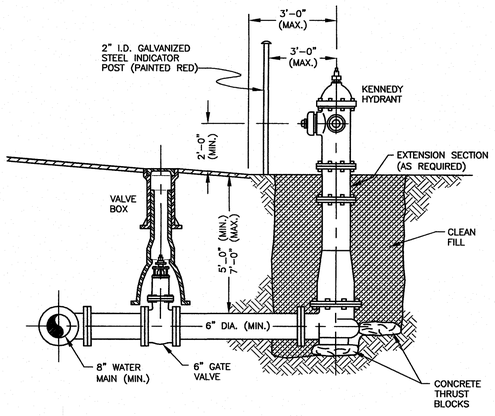


MIN. LENGTH OF STRAIGHT CURB STONES: 18"
MAX. LENGTH OF STRAIGHT CURB STONES: 8FT.
MAX. LENGTH OF STRAIGHT STRAIGHT CURB STONES LAID ON CURVE: SEE CHART

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

SLOPE GRANITE CURB

– / C3 GRANITE CURBING DETAILS
NTS



S / C4 FIRE HYDRANT INSTALLATION DETAIL
NTS

HYDRANT NOTES:
1) HYDRANTS SHALL BE INSTALLED A MAXIMUM DISTANCE OF 3'–0" FROM CURB LINE TO OPERATING NUT.

2) THE PUMPER OUTLET NOZZLE SHALL FACE THE STREET.

3) CENTERLINE OF NOZZLES SHALL BE A MINIMUM OF 2'–0" ABOVE FINISHED GRADE OF STREET.

4) AREA AROUND HYDRANT SHALL BE GRADED TO ALLOW ANY SURFACE WATER TO DRAIN AWAY FROM HYDRANT.

5) HYDRANT SHALL BE FIRMLY SUPPORTED ALL AROUND THE STANDPIPE.

6) EARTH FILL SHALL BE TAMPED TO GIVE FIRM SUPPORT TO THE HYDRANT BARREL.

7) A GATE VALVE SHALL BE INSTALLED BETWEEN THE HYDRANT AND THE MAIN ON THE LATERAL.

8) HYDRANT LATERALS SHALL BE 6" INSIDE DIAMETER (MINIMUM).

9) HYDRANT LATERALS SHALL BE CONNECTED TO WATER MAINS 8" IN DIAMETER OR LARGER.

10) ALL JOINTS AT HYDRANT CONNECTION SHALL BE RESTRAINED MECHANICAL JOINTS.

11) INSTALLATION OF HYDRANTS IN AREAS OF HEAVY VEGETATIVE GROWTH SHALL HAVE A 10' RADIUS CLEAR AREA ALL AROUND THE OPERATING NUT OF THE HYDRANT.

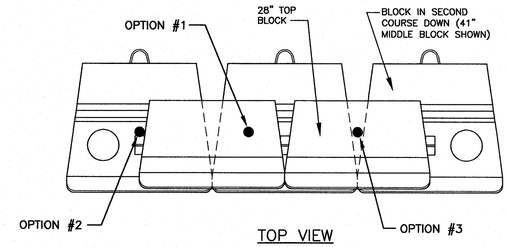
12) THERE SHALL ALSO BE AN INDICATOR POST FABRICATED FROM 2" I.D. GALVANIZED STEEL PIPE, 7' ABOVE FINISHED GRADE, AND SET 2' BELOW GRADE IN CLASS "A" CONCRETE CONCRETE, 6" ALL AROUND POST. THIS POST SHALL BE COATED WITH ZINC CHROMATE PRIMER AND PAINTED WITH HIGH VISIBILITY RED. THE INDICATOR POST SHALL BE NO CLOSER THAN 3' FROM THE OPERATING NUT, AND SET ON THE SIDE OF THE HYDRANT FACING ONCOMING TRAFFIC. TOP OF POST SHALL BE THREADED AND CAPPED.

13) INSTALLATION OF HYDRANTS IN HEAVY GROWTH AREAS SHALL HAVE GATE BOXES RAISED 6" ABOVE GRADE AND SHALL BE PAINTED ORANGE FOR HIGH VISIBILITY.

CONNECTION OPTION #1
EXPANSION ANCHOR INTO THE 28" TOP BLOCK
•SPACING AS REQUIRED FOR APPURTENANCE
•MASS OF SINGLE BLOCK AVAILABLE TO RESIST OVERTURNING FORCES

CONNECTION OPTION #2
GROUT POSTS IN V–SHAPED GAP BETWEEN 28" TOP BLOCKS
•SPACING IN MULTIPLES OF 46 1/8" INCREMENTS
•MASS OF 2 ADJACENT BLOCKS AVAILABLE TO RESIST OVERTURNING FORCES

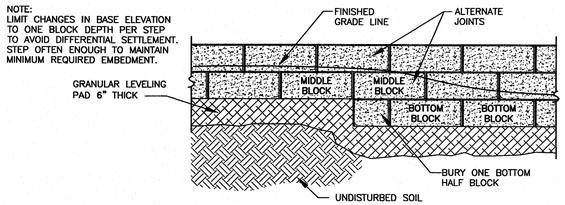
CONNECTION OPTION #3
CORE THROUGH TOP BLOCK & GROUT POSTS IN V–SHAPED GAP BETWEEN BLOCKS IN SECOND COURSE DOWN
•SPACING IN MULTIPLES OF 46 1/8" INCREMENTS
•MASS OF 2 ADJACENT BLOCKS IN SECOND LEVEL DOWN AND 3 TOP ROW BLOCKS AVAILABLE TO RESIST OVERTURNING FORCES



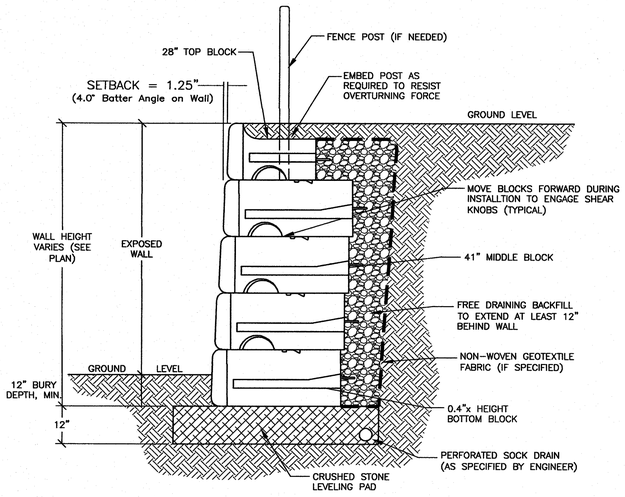
TOP VIEW

TYPICAL FENCE INSTALLATION ON MODULAR BLOCK WALL
NO SCALE

NOTE:
LIMIT CHANGES IN BASE ELEVATION TO ONE BLOCK DEPTH PER STEP TO AVOID DIFFERENTIAL SETTLEMENT. STEP OFTEN ENOUGH TO MAINTAIN MINIMUM REQUIRED EMBEDMENT.



STEPPING BASE DETAIL
NTS



TYPICAL GRAVITY WALL w/ 41" MODULAR BLOCKS
NO SCALE

T / C3 MODULAR BLOCK RETAINING WALL DETAILS (REDI–ROCK) OR APPROVED EQUAL
NTS

NOTE: STAMPED DESIGN DRAWINGS SHALL BE SUBMITTED TO THE CITY OF PORTSMOUTH FOR APPROVAL PRIOR TO CONSTRUCTION.

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

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

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

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

PORTSMOUTH HOUSING AUTHORITY 140 COURT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	ISSUED TO TAC	6/18/18
1	ISSUED FOR APPROVAL	4/25/18
0	ISSUED FOR COMMENT	2/20/18

REVISIONS

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

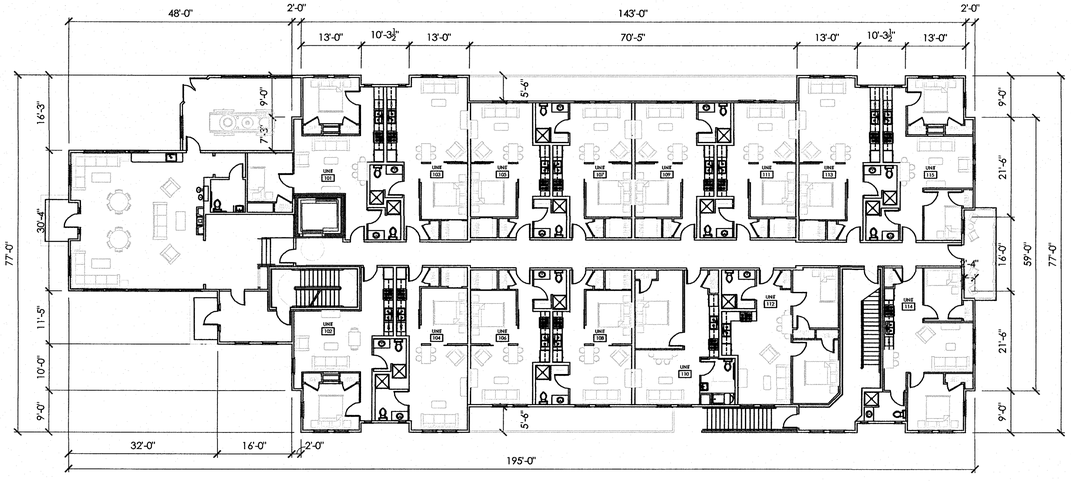
SCALE: AS SHOWN FEBRUARY 2018

DETAILS D4

FB 321 PG 19

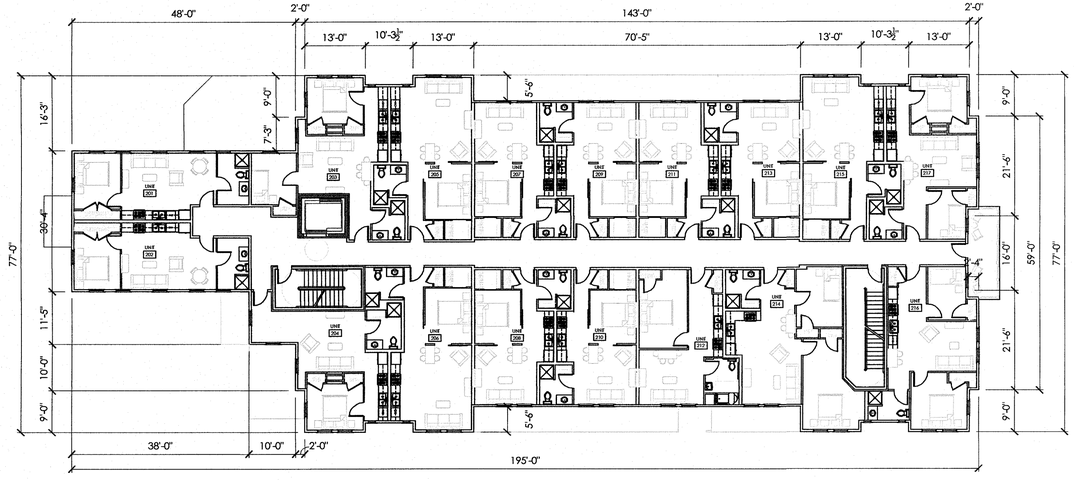
2790

J:\J0852\JN2700's\JN 2790's\JN 2790\2017 Site Planning\Plans & Specs\Site\2790DT03.dwg, DETAILS D4



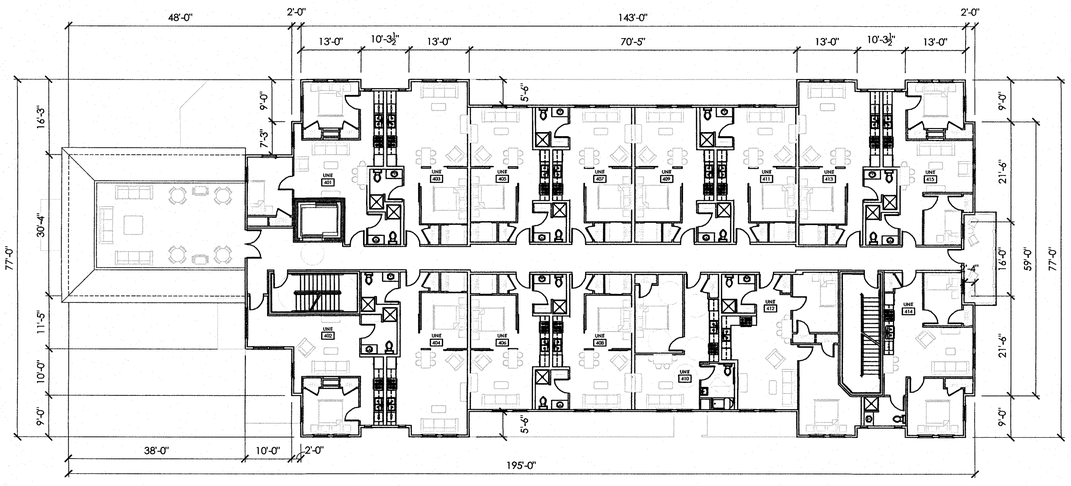
FIRST FLOOR PLAN

1 N.T.S.



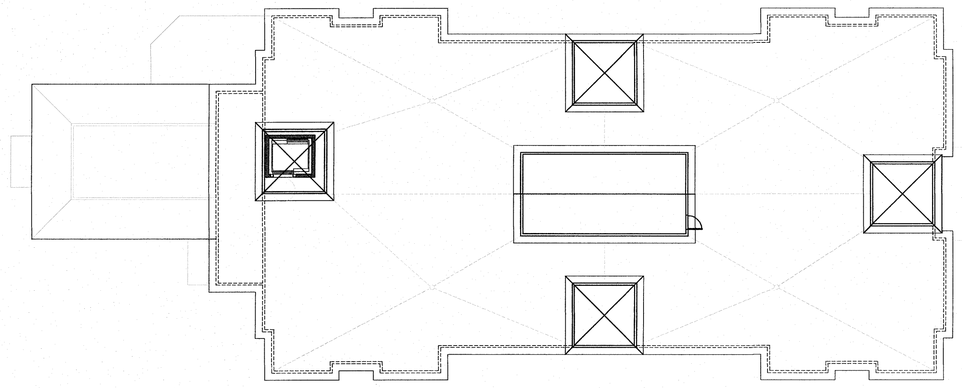
SECOND AND THIRD FLOOR PLAN

2 N.T.S.



FOURTH FLOOR PLAN

3 N.T.S.



ROOF PLAN

4 N.T.S.

COURT STREET DEVELOPMENT

PORTSMOUTH, NEW HAMPSHIRE

FLOOR PLANS AND ROOF PLAN

HISTORIC DISTRICT COMMISSION APPLICATION FOR APPROVAL: JULY 11, 2018

CJ ARCHITECTS

PORTSMOUTH HOUSING

7.0

1 NORTH ELEVATION

SCALE: 1/4" = 1'-0" ON 22 x 34 SHEET

COURT STREET DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

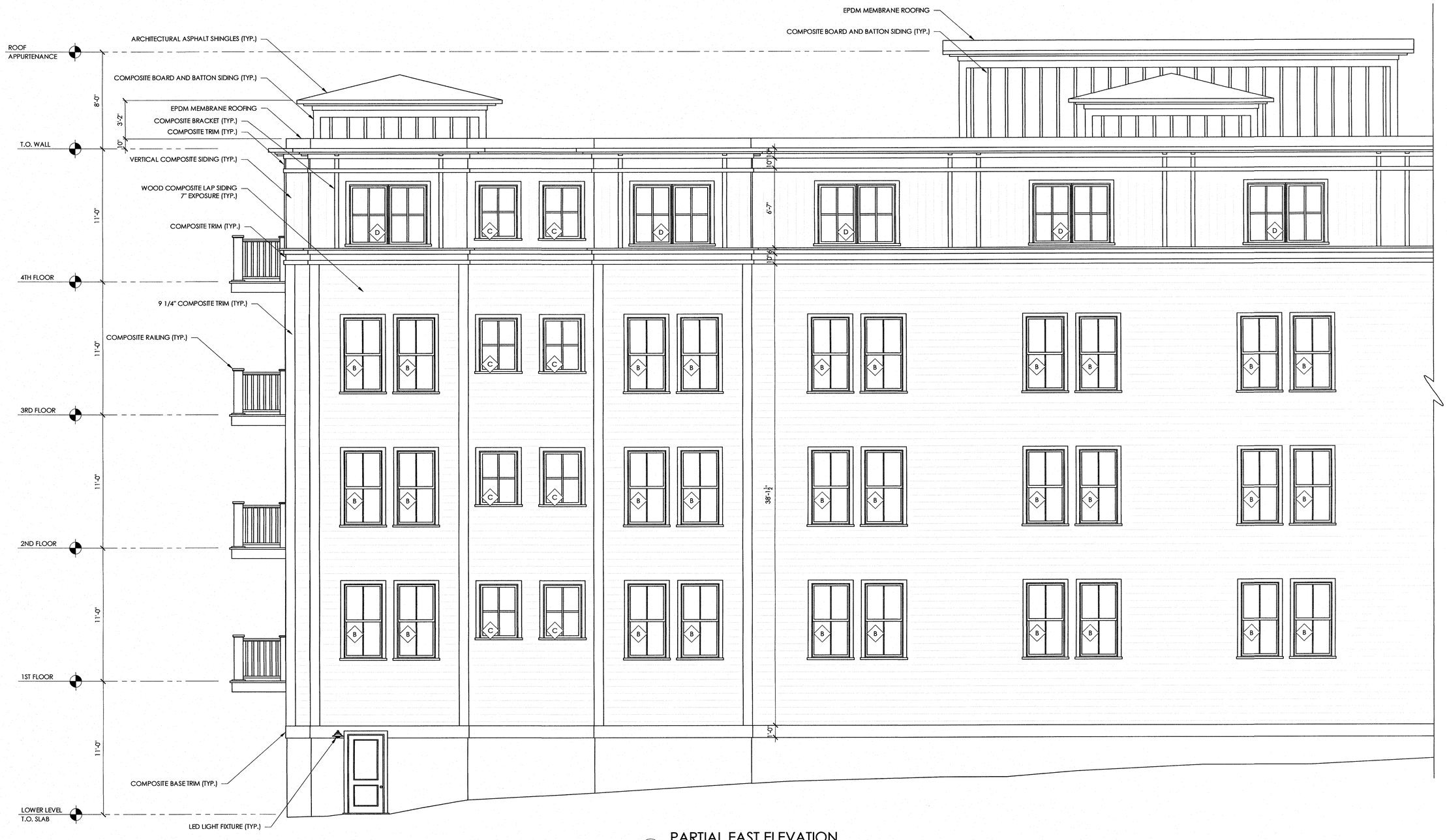
NORTH ELEVATION

HISTORIC DISTRICT COMMISSION APPLICATION FOR APPROVAL: JULY 11, 2018

CJ ARCHITECTS

PORTSMOUTH HOUSING

8.0



1 PARTIAL EAST ELEVATION

SCALE: 1/4" = 1'-0" ON 22 x 34 SHEET

COURT STREET DEVELOPMENT PORTSMOUTH, NEW HAMPSHIRE	EAST ELEVATION HISTORIC DISTRICT COMMISSION APPLICATION FOR APPROVAL: JULY 11, 2018	CJ ARCHITECTS PORTSMOUTH HOUSING	8.1

1 PARTIAL EAST ELEVATION

SCALE: 1/4" = 1'-0" ON 22 x 34 SHEET

COURT STREET DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

EAST ELEVATION

HISTORIC DISTRICT COMMISSION APPLICATION FOR APPROVAL: JULY 11, 2018

CJ ARCHITECTS

PORTSMOUTH HOUSING

8.2

1 SOUTH ELEVATION

SCALE: 1/4" = 1'-0" ON 22 x 34 SHEET

COURT STREET DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

SOUTH ELEVATION

HISTORIC DISTRICT COMMISSION APPLICATION FOR APPROVAL: JULY 11, 2018

CJ ARCHITECTS

PORTSMOUTH HOUSING

8.3

1 PARTIAL WEST ELEVATION

SCALE: 1/4" = 1'-0" ON 22 x 34 SHEET

COURT STREET DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

WEST ELEVATION

HISTORIC DISTRICT COMMISSION APPLICATION FOR APPROVAL: JULY 11, 2018

CJ ARCHITECTS

PORTSMOUTH HOUSING

8.4

1 PARTIAL WEST ELEVATION

SCALE: 1/4" = 1'-0" ON 22 x 34 SHEET

COURT STREET DEVELOPMENT
PORTSMOUTH, NEW HAMPSHIRE

WEST ELEVATION

HISTORIC DISTRICT COMMISSION APPLICATION FOR APPROVAL: JULY 11, 2018

CJ ARCHITECTS

PORTSMOUTH HOUSING

8.5

DRAINAGE ANALYSIS

SITE REDEVELOPMENT

140 COURT STREET

PORTSMOUTH HOUSING AUTHORITY

PORTSMOUTH, NH

18 JUNE, 2018

REVISED 17 JULY, 2018

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

7/17/18

Ambit Engineering, Inc.

Civil Engineers and Land Surveyors
200 Griffin Road, Unit 3
Portsmouth, NH 03801
Phone: 603.430.9282; Fax: 603.436.2315
E-mail: jlm@ambitengineering.com
(Ambit Job Number 2790)

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The hydrologic modeling utilized for this analysis uses the "Extreme Precipitation" values for rainfall from The Northeast Regional Climate Center (Cornell University).

This drainage analysis examines the pre-development (existing) and post-development (proposed) stormwater drainage patterns for the proposed construction of a new 11,973 square foot building and associated site improvements at 140 Court Street in Portsmouth, NH. The site is shown on the City of Portsmouth Assessor's Tax Map 116 as Lots 38 and 37. The project proposes to relocate the lot lines between the two lots. Portsmouth Housing Authority will retain Lot 38 to support the proposed redevelopment. The total proposed size of new lot 38 is 62,500 square-feet. The total proposed size of new lot 37 is 2,113 square-feet.

The new and renovated buildings will be serviced by public water and sewer. The development has the potential to increase stormwater runoff to adjacent properties, and therefore must be designed in a manner to prevent that occurrence. This will be done primarily by capturing stormwater runoff and routing it through appropriate stormwater facilities, designed to ensure that there will be no increase in peak runoff from the site as a result of this project. A significant portion of the site currently drains to a combined sewer system. The project will need to separate the flow and remove the stormwater from the City sewer system. End of pipe treatment is provided in the existing drainage network.

SITE REDEVELOPMENT

140 COURT STREET

PORTSMOUTH HOUSING AUTHORITY

PORTSMOUTH, NH

INTRODUCTION / PROJECT DESCRIPTION

This drainage report is designed to assist the owner, planning board, contractor, regulatory reviewer, and others in understanding the impact of the proposed development project on local surface water runoff and quality. The project site is shown on the City of Portsmouth, NH Assessor's Tax Map 116 as Lots 38 and 37.

Bounding the site to the north and west are single and multi-family residential properties. Bounding the site to the east is the Portsmouth Fire Department. Bounding the site to the south are the Rockingham County Family Court and the Portsmouth District Court. The property is located in the Character District (CD4). A vicinity map is included in the Appendix to this report.

The proposed development will construct a new residential building, new parking area, and other associated improvements such as a utilities and landscaping.

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

METHODOLOGY

This report uses the US Soil Conservation Service (SCS) Method for estimating stormwater runoff. The SCS method is published in The National Engineering Handbook (NEH), Section 4 "Hydrology" and includes the Technical Release No. 20, (TR-20) "Computer Program for Project Formulation Hydrology", and Technical Release No. 55 (TR-55) "Urban Hydrology for Small Watersheds" methods. This report uses the HydroCAD version 10.0 program, written by

HydroCAD Software Solutions LLC, Chocorua, N.H., to apply these methods for the calculation of runoff and for pond modeling.

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

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

SITE SPECIFIC INFORMATION

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

799 – Urban land – Canton Complex (3-15% slopes), well drained with a typical depth to restrictive feature of more than 80 inches. This soil has a Hydrologic Soil Group (HSG) classification of A, with a Low runoff class.

The physical characteristics of the site consist of (3-15%) grades that generally slope from the north to the south. Elevations on the site range from 10 to 20 feet above sea level. The existing site is developed and includes 3 existing buildings with paved parking. Vegetation around the developed portion of the lot consists of established grasses, shrubs and trees.

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

PRE-DEVELOPMENT DRAINAGE

The majority of the existing site drains via overland flow from the front of the lots along Court Street at the north towards the rear of the site to the south. Runoff is collected in a series of catch basins that enter a closed drainage system and then enter the combined sewer system. There is no existing stormwater detention or treatment on the site. There are portions to the rear of the site that flow to an existing catch basin that flow off site to a closed drainage system to the Mill Pond.

In the pre-development condition, the site has been analyzed as eleven subcatchments (ES1, ES1a, ES2, ES2a, ES3, ES4, ES4a, ES5, ES6, ES7 and ES8) based on localized topography and discharge location. Subcatchment ES1 is the western most paved parking and driveway entrance

to the site and flows overland directly to a catch basin located at the end of the driveway. Subcatchment ES2 is the rooftop runoff of the western most building and flows by pipe to a catch basin located at the southeastern corner of this building. Subcatchment ES1a is a small strip of land between an existing curb and the property line to the west. Subcatchment ES2a is a small depressed area within the center driveway between the two existing buildings which flows to a yard drain and into the closed drainage system for the site. Subcatchment ES3 is a combination of grass and paved area in the northeast corner of the western most building and flows to a catch basin within the center driveway which then enters the closed drainage system for the site. Subcatchment ES4 is a grassed yard to the southwest of the western most building and flows to a catch basin within the center driveway which then enters the closed drainage system for the site. Subcatchment ES4a is a small strip of land between an existing curb and the property line to the sothwest. Subcatchment ES5 is the eastern most portion of the paved parking to the south and west of the Central Fire Station which flows to a catch basin along the southern boundary of the site which then leaves the site to a private closed drainage system to the south. Subcatchments ES6, ES7 and ES8 flow along the frontage with Court Street which flows off site to the existing closed drainage system in Court Street. The final outflow from ES8 is Discharge Point 2 (DP2).

Table 1: Pre-Development Watershed Basin Summary

Watershed Basin ID	Basin Area (SF)	Tc (MIN)	CN	10-Year Runoff (CFS)	50-Year Runoff (CFS)	Design Point
ES1	8,698	2.8	87	0.80	1.32	DP1
ES1a	667	5.0	61	0.02	0.05	DP5
ES2	32,053	2.5	97	3.49	5.35	DP1
ES2a	196	5.0	98	0.02	0.03	DP1
ES3	2,371	5.0	68	0.11	0.24	DP1
ES4	2,604	5.0	61	0.08	0.21	DP1
ES4a	491	5.0	61	0.02	0.04	DP4
ES5	33,193	5.0	96	3.58	5.52	DP3
ES6	2,738	5.0	98	0.30	0.46	DP2
ES7	1,263	5.0	98	0.14	0.21	DP2
ES8	4,051	5.0	98	0.44	0.68	DP2

Additionally, eight off site subcatchments and associated closed drainage nodes are included in the model. These represent the off site drainage through 127 Parrot Avenue and along Parrot

Avenue to a point at the southwest corner of Rogers Road. This system was duplicated from a drainage analysis provided by Altus Engineering, Inc. dated July 16, 2012. This system was analyzed for existing and potential flooding as well as for development of a mitigation plan.

POST-DEVELOPMENT DRAINAGE

The proposed development has been designed to match the pre-development drainage patterns to the greatest extent feasible. In the post-development condition, the site has been analyzed as fourteen separate watersheds (PS1, PS1a, PS2, PS4, PS4a PS5, PS5a, PS5aa, PS5aaa, PS5b, PS5bb, PS6, PS7 and PS8 based on localized topography and discharge locations. Basins PS1a and PS4a are small relatively inconsequential areas that drain offsite. PS1 (driveway), PS2 (Existing Rooftop) and PS4 (driveway) are similar in size and area as in the existing condition and discharge to Discharge Point 3 (DP3). Basins PS5a (New Rooftop), PS5aa, PS5aaa (Both Landscaped Areas) all flow to Infiltration System # 1. This system consists of 23 StormTech Chambers (SC-740). Basins PS5b (New Rooftop) and PS5bb (Landscaped Area) flow to Infiltration System # 2. This system consists of 24 StormTech Chambers (SC-740). Outflows from System #1 and System #2 enter a combined system and discharge together with outflows from PS1, PS3 and PS4 to Discharge Point 3 (DP3). Basin PS5 is primarily runoff from the existing Fire Station and parking to the rear of the Fire Station. Basin PS5 flow to Discharge Point 1 (Combined Sewer). Flow from PS6, PS7 and PS8 all flow to a closed drainage system in Court Street and are quantified together at Discharge Point 2 (DP2).

Table 2: Post-Development Watershed Basin Summary

Watershed Basin ID	Basin Area (SF)	Tc (MIN)	CN	10-Year Runoff (CFS)	50-Year Runoff (CFS)	Design Point
PS1	10,582	5.0	80	0.79	1.43	DP3
PS1a	667	5.0	61	0.02	0.05	DP5
PS2	10,300	5.0	98	1.13	1.73	DP3
PS4	7,681	5.0	71	0.41	0.84	DP3
PS4a	1,231	5.0	61	0.04	0.10	DP4
PS5	31,135	5.0	92	3.17	5.02	DP1A
PS5a	6,560	5.0	98	0.72	1.10	DP133
PS5aa	4,139	5.0	60	0.12	0.32	DP3
PS5aaa	1,478	5.0	50	0.02	0.07	DP3
PS5b	5,413	5.0	98	0.59	0.91	DP3
PS5bb	2,809	5.0	47	0.02	0.10	DP3

PS6	2,751	5.0	98	0.30	0.46	DP2
PS7	1,263	5.0	98	0.14	0.21	DP2
PS8	4,051	5.0	98	0.44	0.68	DP2

Since the existing conditions at the site are predominantly impervious surface, and no treatment or dedicated infiltration systems currently exist for the site, providing the proposed treatment by means of the two StormTech Stormwater Chamber and infiltration systems represents a vast improvement on the water quality of the runoff.

Additionally, eight off site subcatchments and associated closed drainage nodes are included in the model. These represent the off site drainage through 127 Parrott Avenue and along Parrott Avenue to a point at the southwest corner of Rogers Road. This system was modelled from a drainage analysis provided by Altus Engineering, Inc. dated July 16, 2012. This system was analyzed for existing and potential flooding as well as for development of a mitigation plan.

The removal of flow from the combined sewer system created a new point discharge to a new catch basin (CB #5) located along the southern boundary of the site. This catch basin will outlet through a corridor presently used as a drainage swale and then to the closed drainage system within Parrot Avenue. Two pipe segment of the closed drainage system along Parrott Avenue will be upgraded from 12" to 24" pipe to accommodate the additional flow while improving the existing system hydraulics.

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

Table 3: Pre-Development to Post-Development Comparison

	Q10 (CFS)		**Q50 (CFS)**		
Design Point	**Pre**	**Post**	**Pre**	**Post**	**Description**
DP 1	4.9	0	7.7	0	Combined Sewer
DP1A	0.00	2.6	0.0	4.3	CB # 5 Southern Boundary of Site
DP2	1.0	1.0	1.5	1.5	Court Street Storm Drain
DP3	3.1	2.5	4.8	4.3	Storm Drain through 127 Parrot Ave
DP4	0.0	0.0	0.0	0.0	Western Property Line
DP5	0.0	0.0	0.1	0.1	Southwest Corner of Property

Note that the increase in run-off at Design Point 1A (DP1A) represents the removal of stormwater from the City sewer system. Improvements in downstream piping will accommodate the increase.

EROSION AND SEDIMENT CONTROL PRACTICES

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

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

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

CONCLUSION

The proposed development has been designed to discharge less runoff than the pre-development runoff for the rain fall events that were analyzed. With the design of two Stormwater infiltration systems to slow the release of storm water, the post-development runoff rates are reduced to be below the pre-development runoff rates and will provide treatment. There is a new discharge due to the removal of stormwater from the combined sewer system. This point is located at the southern boundary of the site and discharges to the existing closed drainage system along Parrott Avenue. Off site improvements are being proposed to ensure that the closed drainage system along Parrott Ave. can handle the additional flow. These improvements include increasing the pipe size from 12" to 24" for the pipe segment across Rogers Road which is then directed to an existing swirl separation technology system before discharge to the Mill Pond. Erosion and sediment control practices will be implemented for both the temporary condition during construction and for final stabilization after construction. Therefore, there are no negative impacts to downstream receptors or adjacent properties anticipated as a result of this project. There is also no negative impact to the City of Portsmouth storm drainage system, rather a significant improvement to the Portsmouth sewer system.

REFERENCES

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

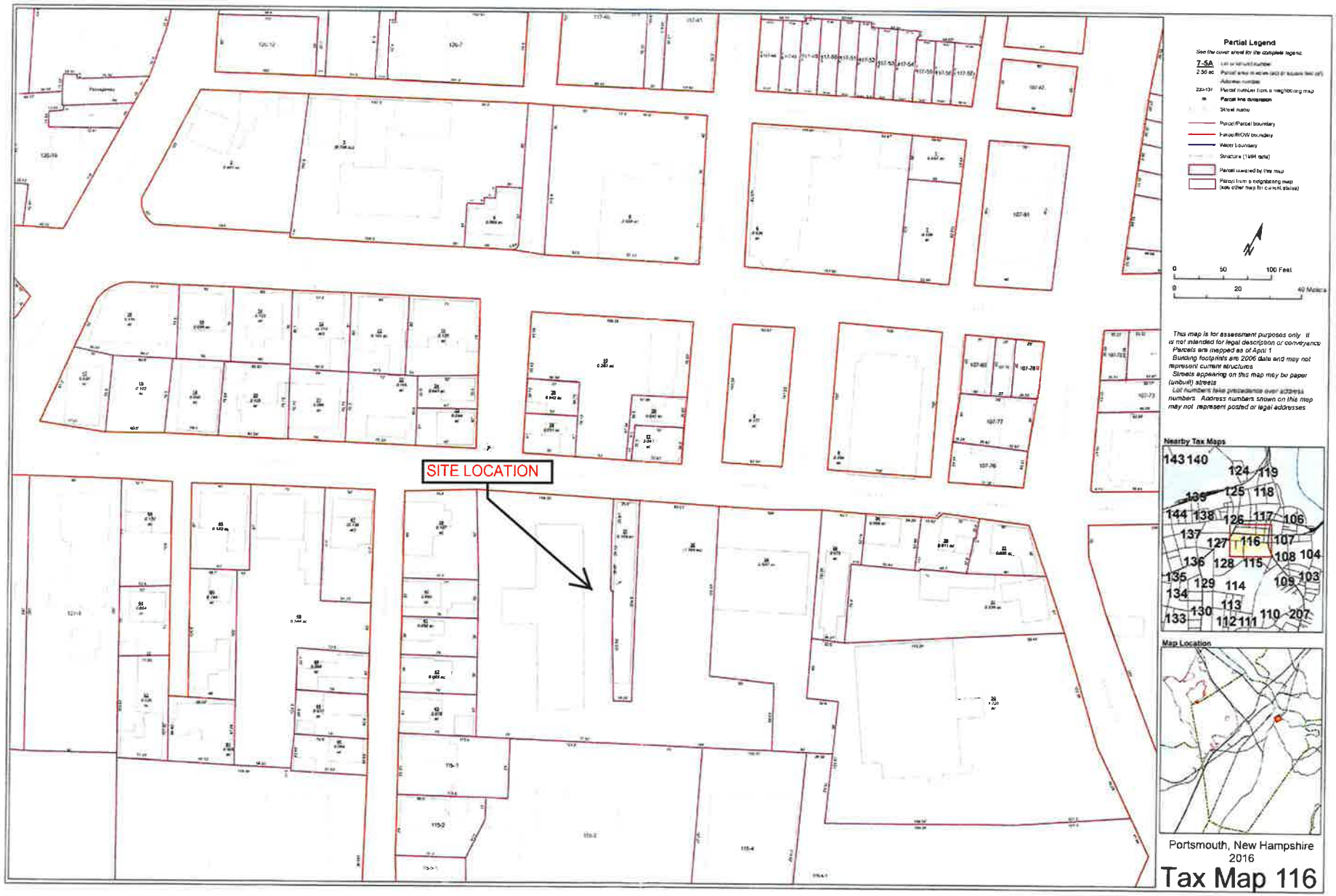
2. Comprehensive Environmental Inc. and New Hampshire Department of Environmental Services. *New Hampshire Stormwater Manual (Volumes 1, 2 and 3)*, December 2008 (Revision 1.0).

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

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

APPENDIX A

VICINITY (TAX) MAP


SITE LOCATION
Partial Legend
See the cover sheet for the complete legend.
7-5A
2.50 ac
Lot or sub-unit number
Parcel area in acres (and in square feet if)
Address number
222-137
Parcel number from a neighboring map
Parcel line dimension
Street name
Parcel/Parcel boundary
Parcel/ROW boundary
Water boundary
Structure (1/64 mile)
Parcel covered by this map
Parcel from a neighboring map
(see other map for current status)
N
0
50
100 Feet
0
20
40 Meters
This map is for assessment purposes only. It is not intended for legal description or conveyance.
Parcels are mapped as of April 1
Building footprints are 2006 data and may not represent current structures
Streets appearing on this map may be paper (unbuilt) streets
Lot numbers take precedence over address numbers. Address numbers shown on this map may not represent posted or legal addresses
Nearby Tax Maps
143 140 124 119 125 118 139 144 138 126 117 106 137 127 116 107 108 104 136 128 115 135 129 114 109 103 134 113 130 112 111 110 207 133
Map Location
Portsmouth, New Hampshire
2016
Tax Map 116

APPENDIX B

TABLES, CHARTS, ETC.

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	Yes
State	New Hampshire
Location	
Longitude	70.758 degrees West
Latitude	43.074 degrees North
Elevation	0 feet
Date/Time	Fri, 08 Jun 2018 09:51:05 -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	2.03	2.66	2.92	**1yr**	2.35	2.81	3.22	3.94	4.55	**1yr**
2yr	0.32	0.50	0.62	0.81	1.02	1.30	**2yr**	0.88	1.18	1.52	1.94	2.49	3.21	3.57	**2yr**	2.84	3.43	3.94	4.68	5.33	**2yr**
5yr	0.37	0.58	0.73	0.98	1.25	1.61	**5yr**	1.08	1.47	1.89	2.43	3.14	4.07	4.58	**5yr**	3.60	4.40	5.04	5.94	6.70	**5yr**
10yr	0.41	0.65	0.82	1.12	1.45	1.89	**10yr**	1.25	1.73	2.23	2.89	3.75	4.86	5.53	**10yr**	4.31	5.32	6.09	7.11	7.98	**10yr**
25yr	0.48	0.76	0.97	1.34	1.78	2.34	**25yr**	1.53	2.14	2.78	3.63	4.74	6.17	7.10	**25yr**	5.46	6.83	7.81	9.03	10.05	**25yr**
50yr	0.54	0.86	1.10	1.54	2.08	2.76	**50yr**	1.79	2.53	3.29	4.33	5.66	7.39	8.58	**50yr**	6.54	8.25	9.43	10.81	11.97	**50yr**
100yr	0.60	0.97	1.25	1.77	2.42	3.26	**100yr**	2.09	2.98	3.91	5.16	6.77	8.85	10.38	**100yr**	7.83	9.98	11.39	12.96	14.27	**100yr**
200yr	0.68	1.10	1.43	2.05	2.83	3.84	**200yr**	2.44	3.52	4.62	6.14	8.08	10.60	12.55	**200yr**	9.38	12.06	13.76	15.55	17.01	**200yr**
500yr	0.80	1.32	1.72	2.49	3.49	4.78	**500yr**	3.01	4.39	5.78	7.71	10.22	13.47	16.14	**500yr**	11.92	15.52	17.68	19.78	21.48	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.36	0.44	0.59	0.72	0.88	**1yr**	0.63	0.86	0.93	1.33	1.69	2.24	2.49	**1yr**	1.98	2.39	2.87	3.19	3.90	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.19	**2yr**	0.86	1.16	1.37	1.82	2.34	3.06	3.45	**2yr**	2.71	3.32	3.82	4.55	5.09	**2yr**
5yr	0.35	0.54	0.67	0.92	1.17	1.40	**5yr**	1.01	1.37	1.61	2.12	2.73	3.78	4.19	**5yr**	3.35	4.03	4.72	5.53	6.24	**5yr**
10yr	0.39	0.59	0.73	1.03	1.33	1.60	**10yr**	1.14	1.56	1.80	2.39	3.05	4.37	4.85	**10yr**	3.87	4.67	5.43	6.41	7.19	**10yr**

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
25yr	0.44	0.67	0.83	1.19	1.56	1.90	**25yr**	1.35	1.86	2.10	2.75	3.53	4.73	5.88	**25yr**	4.19	5.65	6.64	7.78	8.67	**25yr**
50yr	0.48	0.73	0.91	1.31	1.76	2.17	**50yr**	1.52	2.12	2.35	3.06	3.92	5.35	6.78	**50yr**	4.73	6.52	7.71	9.03	10.00	**50yr**
100yr	0.54	0.81	1.01	1.46	2.01	2.47	**100yr**	1.73	2.41	2.62	3.40	4.33	6.02	7.82	**100yr**	5.32	7.52	8.95	10.49	11.55	**100yr**
200yr	0.59	0.89	1.13	1.63	2.27	2.81	**200yr**	1.96	2.75	2.93	3.77	4.77	6.75	9.02	**200yr**	5.97	8.68	10.38	12.20	13.35	**200yr**
500yr	0.68	1.02	1.31	1.90	2.71	3.36	**500yr**	2.33	3.28	3.41	4.30	5.43	7.86	10.89	**500yr**	6.95	10.47	12.63	14.92	16.17	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.44	0.54	0.72	0.89	1.08	**1yr**	0.77	1.06	1.26	1.74	2.20	2.98	3.17	**1yr**	2.64	3.05	3.58	4.37	5.04	**1yr**
2yr	0.34	0.52	0.64	0.87	1.07	1.27	**2yr**	0.92	1.24	1.48	1.96	2.52	3.42	3.71	**2yr**	3.03	3.56	4.09	4.84	5.63	**2yr**
5yr	0.40	0.62	0.77	1.05	1.34	1.62	**5yr**	1.15	1.59	1.89	2.54	3.25	4.34	4.97	**5yr**	3.84	4.78	5.38	6.38	7.16	**5yr**
10yr	0.47	0.72	0.89	1.25	1.61	1.98	**10yr**	1.39	1.93	2.28	3.11	3.96	5.34	6.21	**10yr**	4.72	5.97	6.83	7.85	8.76	**10yr**
25yr	0.58	0.88	1.09	1.56	2.05	2.57	**25yr**	1.77	2.52	2.96	4.08	5.16	7.76	8.36	**25yr**	6.87	8.04	9.17	10.35	11.42	**25yr**
50yr	0.67	1.02	1.27	1.83	2.47	3.13	**50yr**	2.13	3.06	3.60	5.01	6.34	9.71	10.48	**50yr**	8.59	10.08	11.48	12.74	13.98	**50yr**
100yr	0.79	1.20	1.50	2.16	2.97	3.82	**100yr**	2.56	3.73	4.38	6.17	7.79	12.15	13.14	**100yr**	10.75	12.63	14.36	15.72	17.11	**100yr**
200yr	0.93	1.39	1.77	2.56	3.57	4.66	**200yr**	3.08	4.56	5.35	7.60	9.57	15.23	16.48	**200yr**	13.48	15.85	18.00	19.38	20.94	**200yr**
500yr	1.15	1.71	2.20	3.20	4.55	6.06	**500yr**	3.93	5.92	6.94	10.05	12.62	20.58	22.27	**500yr**	18.21	21.41	24.26	25.55	27.37	**500yr**

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Northeast Regional Climate Center

SCS METHODS

Technical Release - 55 Urban Hydrology for Small Watersheds

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

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

SCS TR-55 Graphical Peak Discharge Method

The peak discharge equation used in this method is:

$$q_p = q_u A_m Q F_p$$

where:

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

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

A_m is the drainage area in square miles.

Q is the runoff from the watershed in inches.

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

Technical Release-20 Computer Program for Project Formulation Hydrology

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

Input Data Required

The following information is required to use TR-20:

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

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

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

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

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

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

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

Output Data

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

Runoff Curve Number (RCN)

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

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

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

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

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

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

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

2. Includes paved streets.

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

Source: USDA Soil Conservation Service

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

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

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

Source: USDA Soil Conservation Service

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

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

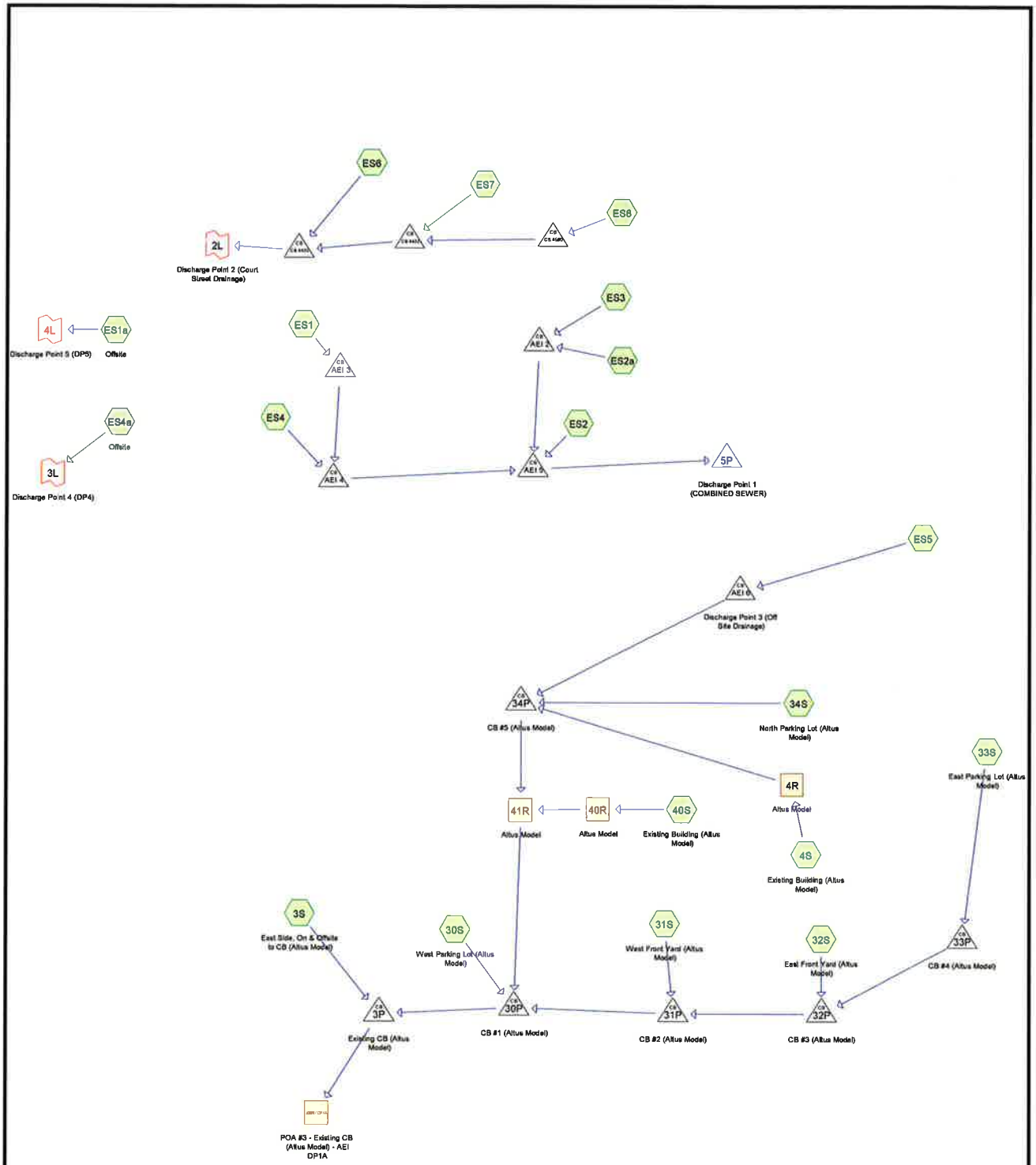
6. Poor hydrologic condition has less than 50 percent ground cover density.
   Fair hydrologic condition has between 50 and 75 percent ground cover density.
   Good hydrologic condition has more than 75 percent ground cover density.

Source: USDA Soil Conservation Service

APPENDIX C

HYDROCAD DRAINAGE

ANALYSIS CALCULATIONS



Routing Diagram for 2790 Existing Conditions
Prepared by Ambit Engineering, Inc., Printed 7/17/2018
HydroCAD® 10.00 s/n 00801 © 2013 HydroCAD Software Solutions LLC

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	4R	8.38	7.28	110.0	0.0100	0.012	8.0	0.0	0.0
2	40R	6.82	6.62	10.0	0.0200	0.012	8.0	0.0	0.0
3	41R	6.45	6.21	81.0	0.0030	0.012	12.0	0.0	0.0
4	3P	5.76	5.21	55.0	0.0100	0.012	12.0	0.0	0.0
5	30P	6.11	5.86	82.0	0.0030	0.013	12.0	0.0	0.0
6	31P	6.33	6.21	40.0	0.0030	0.012	12.0	0.0	0.0
7	32P	6.71	6.43	92.0	0.0030	0.012	12.0	0.0	0.0
8	33P	6.96	6.81	50.0	0.0030	0.012	12.0	0.0	0.0
9	34P	5.83	5.58	85.0	0.0029	0.013	12.0	0.0	0.0
10	AEI 2	9.42	8.55	102.8	0.0085	0.010	6.0	0.0	0.0
11	AEI 3	8.90	8.84	37.5	0.0016	0.013	10.0	0.0	0.0
12	AEI 4	8.69	8.15	92.4	0.0058	0.013	10.0	0.0	0.0
13	AEI 5	7.90	7.40	58.5	0.0085	0.013	10.0	0.0	0.0
14	AEI 6	6.77	5.88	96.0	0.0093	0.013	12.0	0.0	0.0
15	CB 4433	14.38	13.99	121.0	0.0032	0.013	24.0	0.0	0.0
16	CB 4435	13.99	15.41	100.0	-0.0142	0.013	24.0	0.0	0.0
17	CB 4560	14.92	14.38	42.8	0.0126	0.013	24.0	0.0	0.0

Summary for Subcatchment 3S: East Side, On & Offsite to CB (Altus Model)

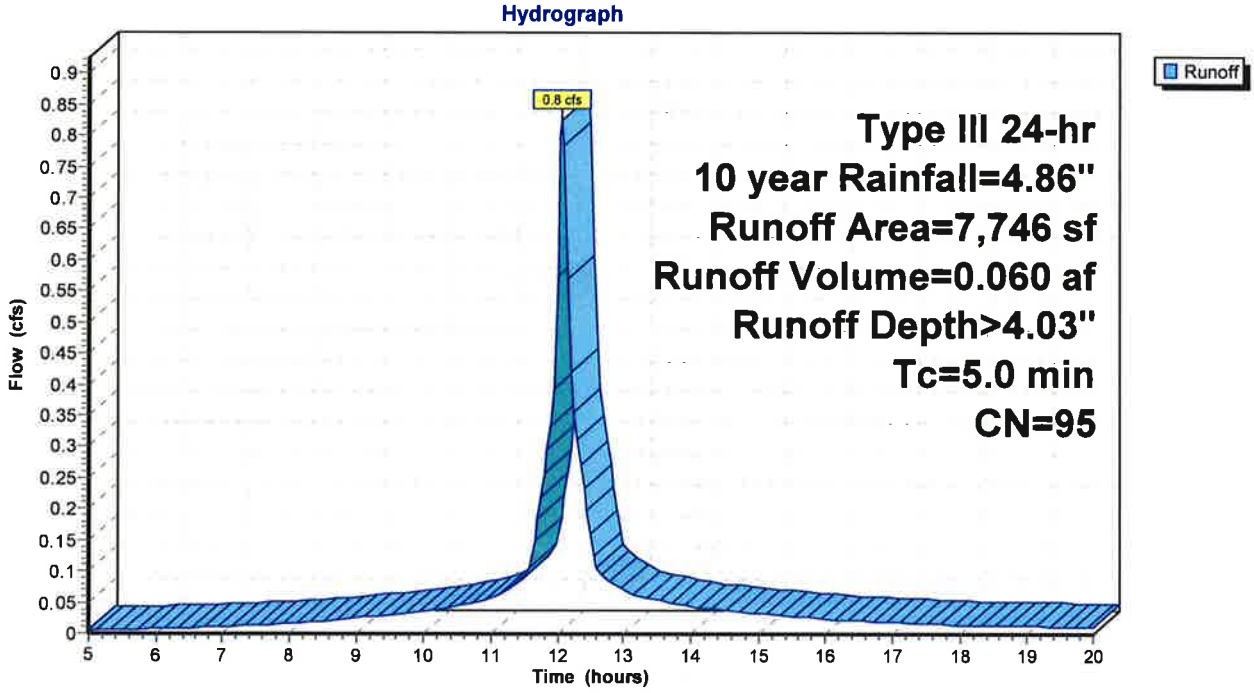
Runoff = 0.8 cfs @ 12.07 hrs, Volume= 0.060 af, Depth> 4.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
*	7,746	95	
	7,746		100.00% Pervious Area

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

Subcatchment 3S: East Side, On & Offsite to CB (Altus Model)



Summary for Subcatchment 4S: Existing Building (Altus Model)

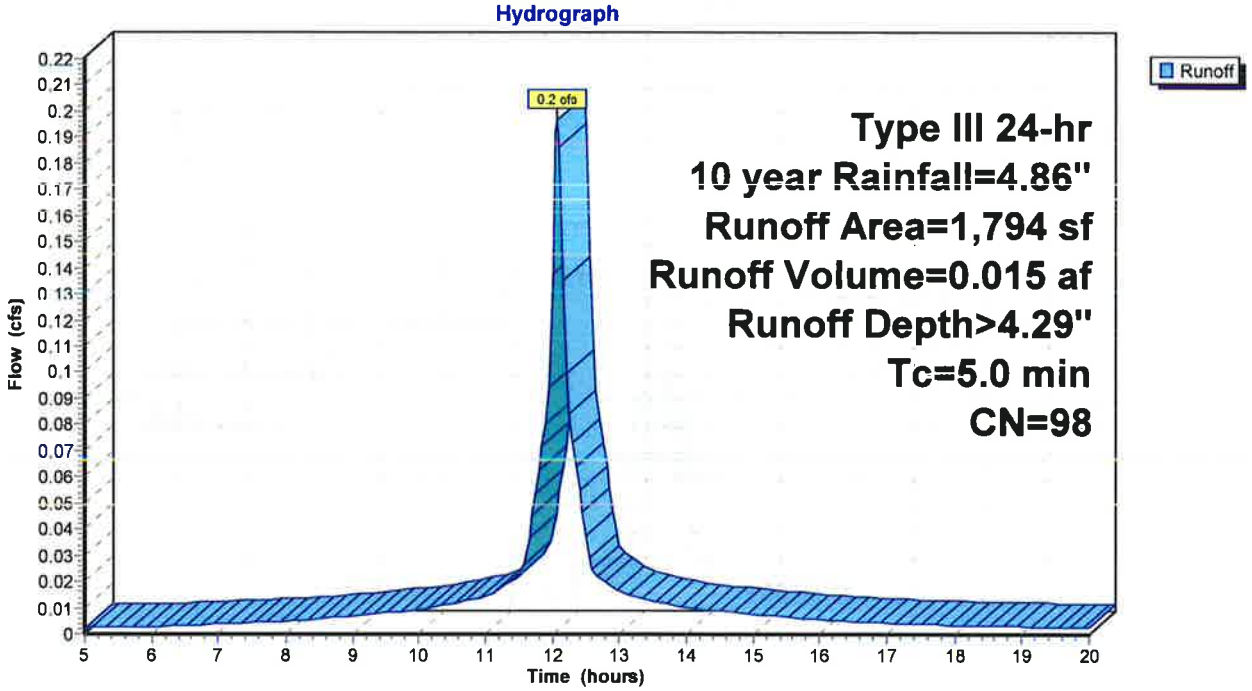
Runoff = 0.2 cfs @ 12.07 hrs, Volume= 0.015 af, Depth> 4.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
*	1,794	98	
	1,794		100.00% Impervious Area

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

Subcatchment 4S: Existing Building (Altus Model)



Summary for Subcatchment 30S: West Parking Lot (Altus Model)

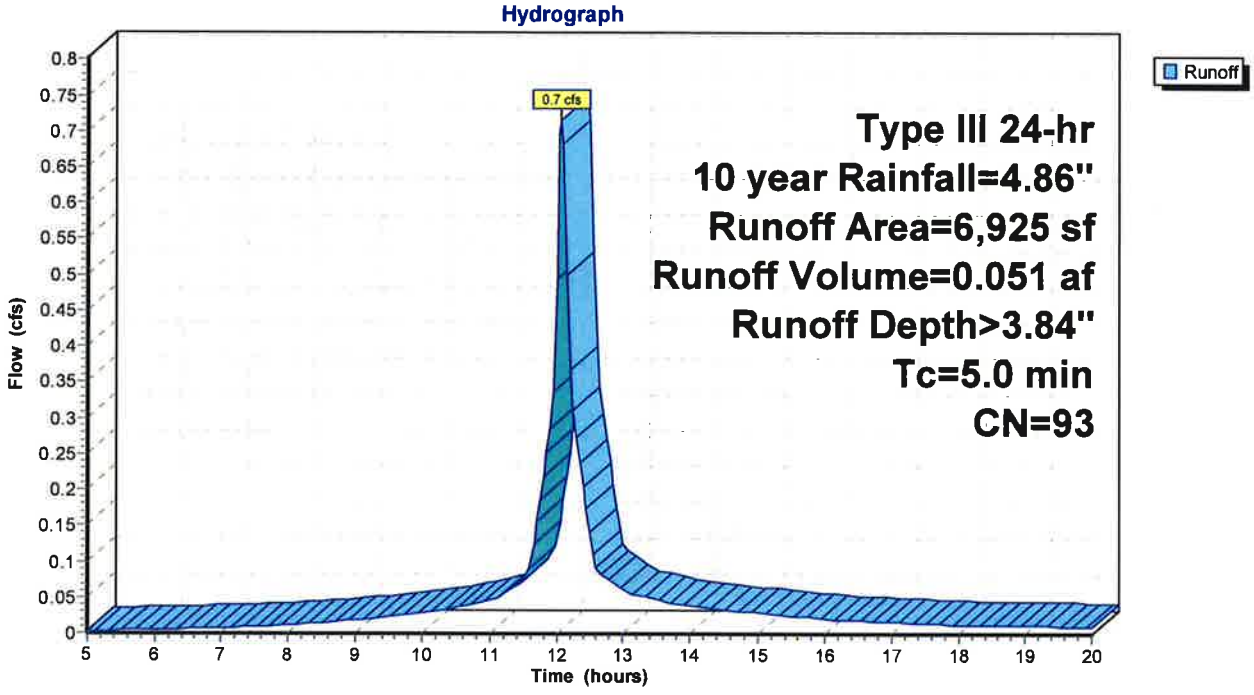
Runoff = 0.7 cfs @ 12.07 hrs, Volume= 0.051 af, Depth> 3.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
*	6,925	93	
	6,925		100.00% Pervious Area

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

Subcatchment 30S: West Parking Lot (Altus Model)



Summary for Subcatchment 31S: West Front Yard (Altus Model)

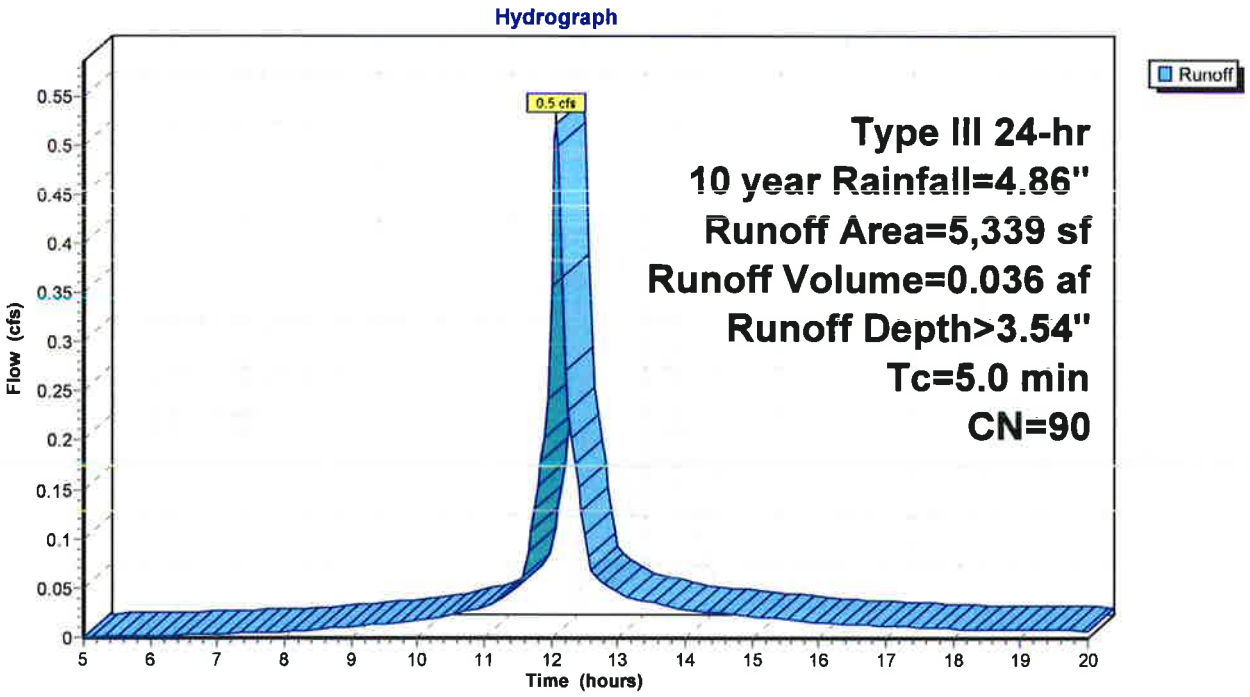
Runoff = 0.5 cfs @ 12.07 hrs, Volume= 0.036 af, Depth> 3.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
*	5,339	90	
	5,339		100.00% Pervious Area

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

Subcatchment 31S: West Front Yard (Altus Model)



Summary for Subcatchment 32S: East Front Yard (Altus Model)

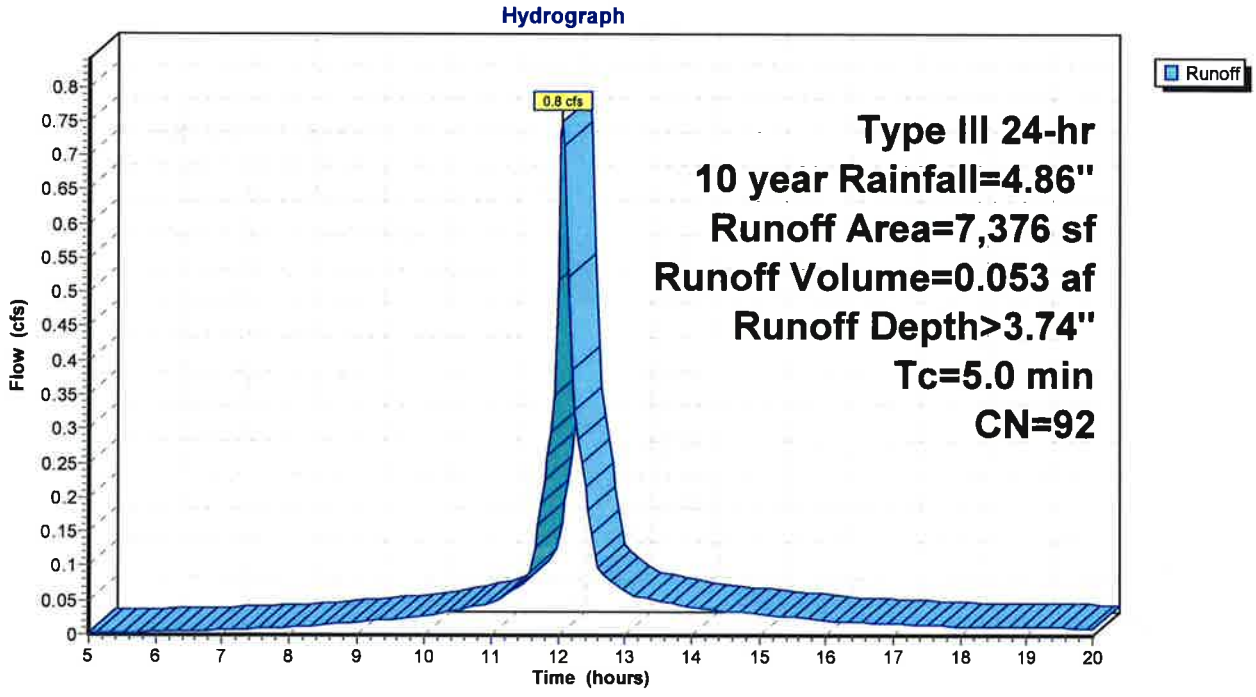
Runoff = 0.8 cfs @ 12.07 hrs, Volume= 0.053 af, Depth> 3.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
*	7,376	92	
	7,376		100.00% Pervious Area

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

Subcatchment 32S: East Front Yard (Altus Model)



Summary for Subcatchment 33S: East Parking Lot (Altus Model)

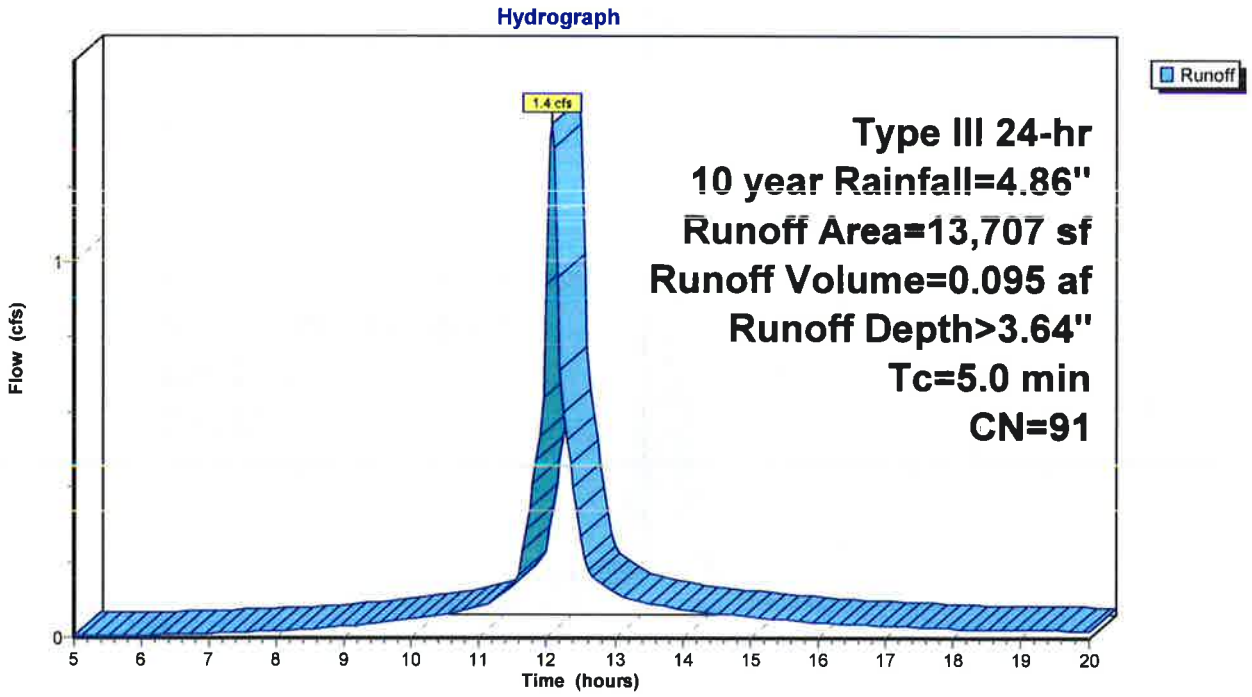
Runoff = 1.4 cfs @ 12.07 hrs, Volume= 0.095 af, Depth> 3.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
*	13,707	91	
	13,707		100.00% Pervious Area

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

Subcatchment 33S: East Parking Lot (Altus Model)



Summary for Subcatchment 34S: North Parking Lot (Altus Model)

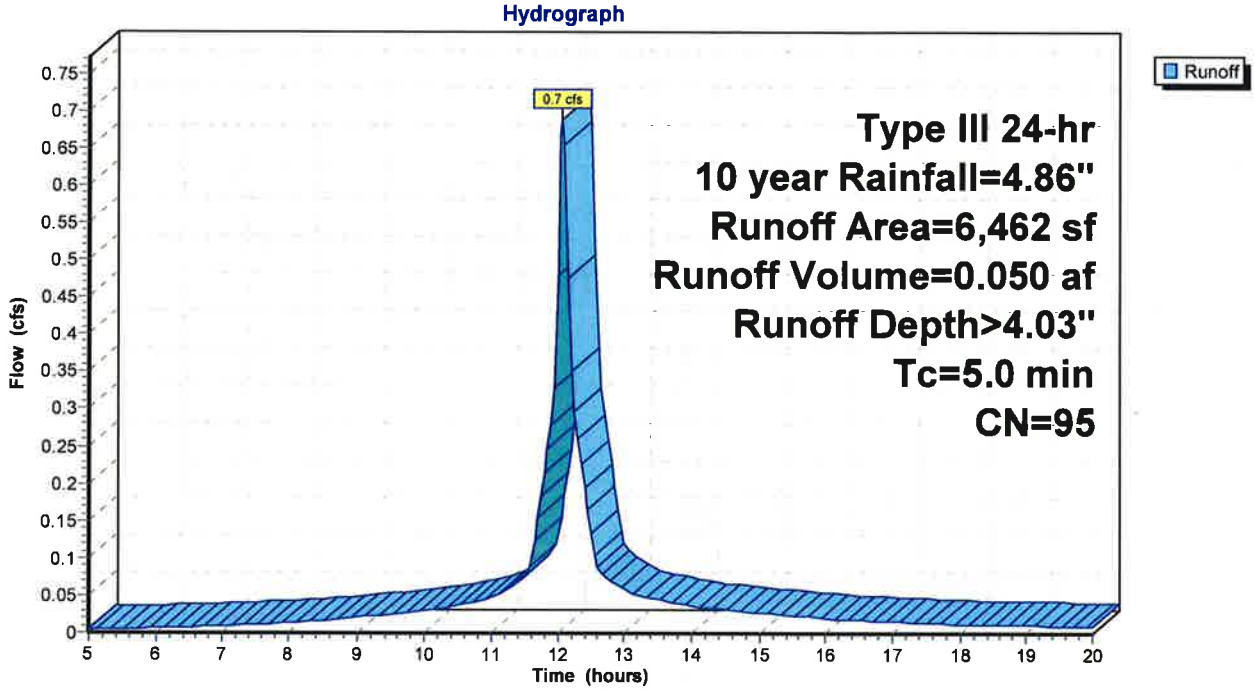
Runoff = 0.7 cfs @ 12.07 hrs, Volume= 0.050 af, Depth> 4.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
*	6,462	95	
	6,462		100.00% Pervious Area

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

Subcatchment 34S: North Parking Lot (Altus Model)



Summary for Subcatchment 40S: Existing Building (Altus Model)

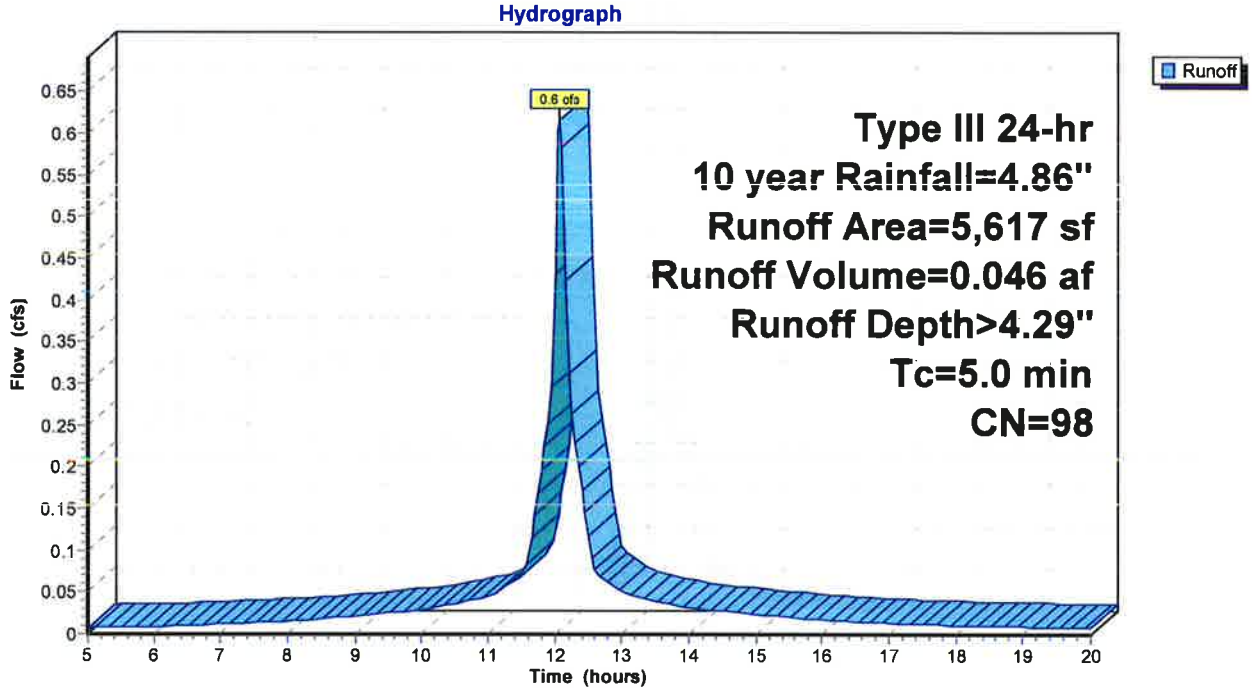
Runoff = 0.6 cfs @ 12.07 hrs, Volume= 0.046 af, Depth> 4.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
*	5,617	98	
	5,617		100.00% Impervious Area

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

Subcatchment 40S: Existing Building (Altus Model)



Summary for Subcatchment ES1:

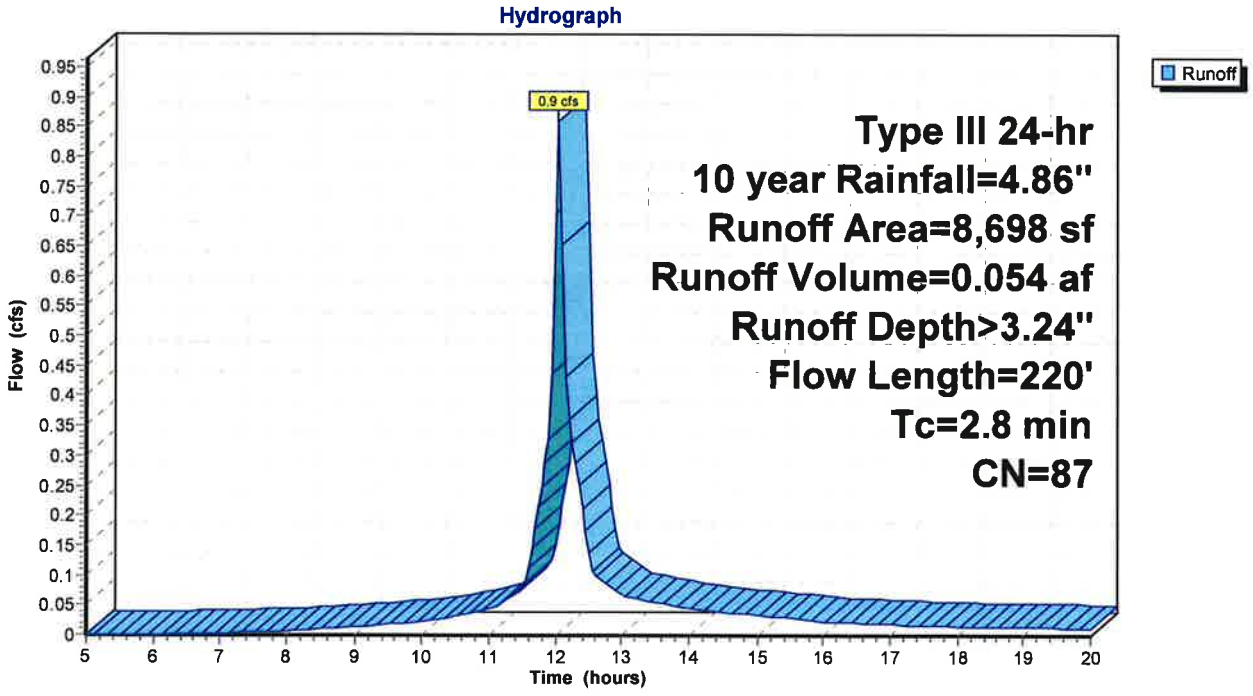
Runoff = 0.9 cfs @ 12.05 hrs, Volume= 0.054 af, Depth> 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
	5,487	98	Paved parking, HSG B
*	658	98	Unconnected pavement, sidewalk, HSG B
	2,553	61	>75% Grass cover, Good, HSG B
	8,698	87	Weighted Average
	2,553		29.35% Pervious Area
	6,145		70.65% Impervious Area
	658		10.71% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	84	0.0089	0.66		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	136	0.0239	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.8	220	Total			

Subcatchment ES1:



Summary for Subcatchment ES1a: Offsite

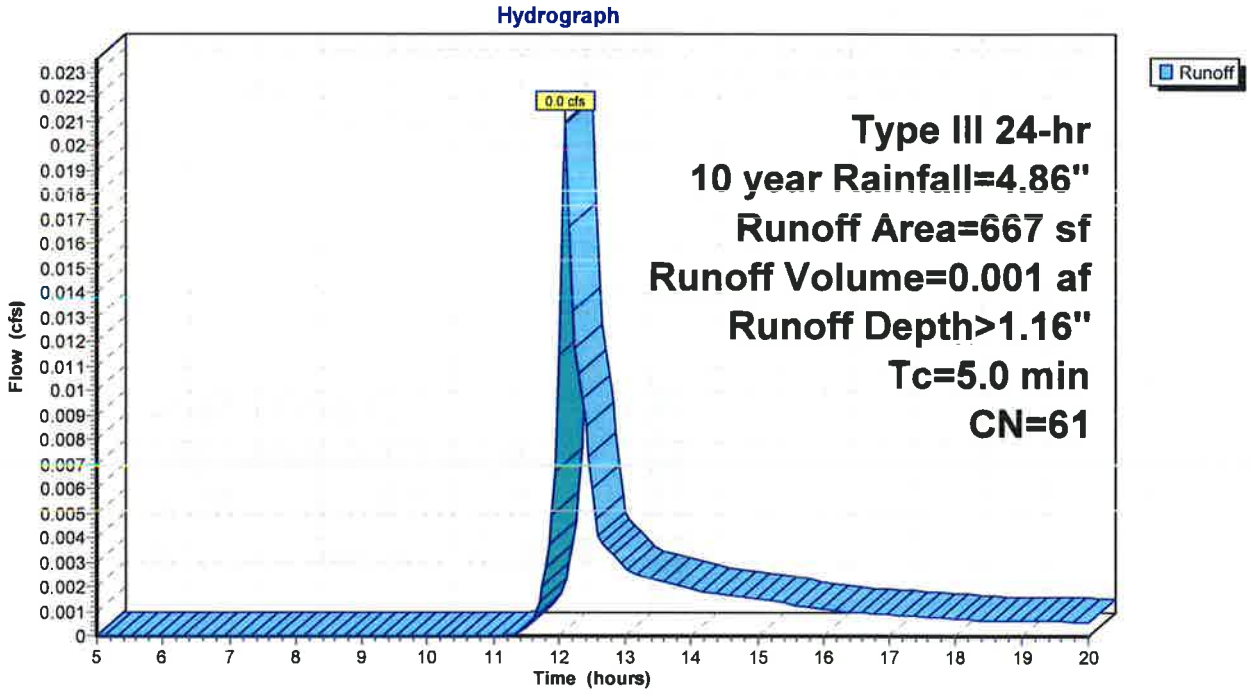
Runoff = 0.0 cfs @ 12.09 hrs, Volume= 0.001 af, Depth> 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

Area (sf)	CN	Description
667	61	>75% Grass cover, Good, HSG B
667		100.00% Pervious Area

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

Subcatchment ES1a: Offsite



Summary for Subcatchment ES2:

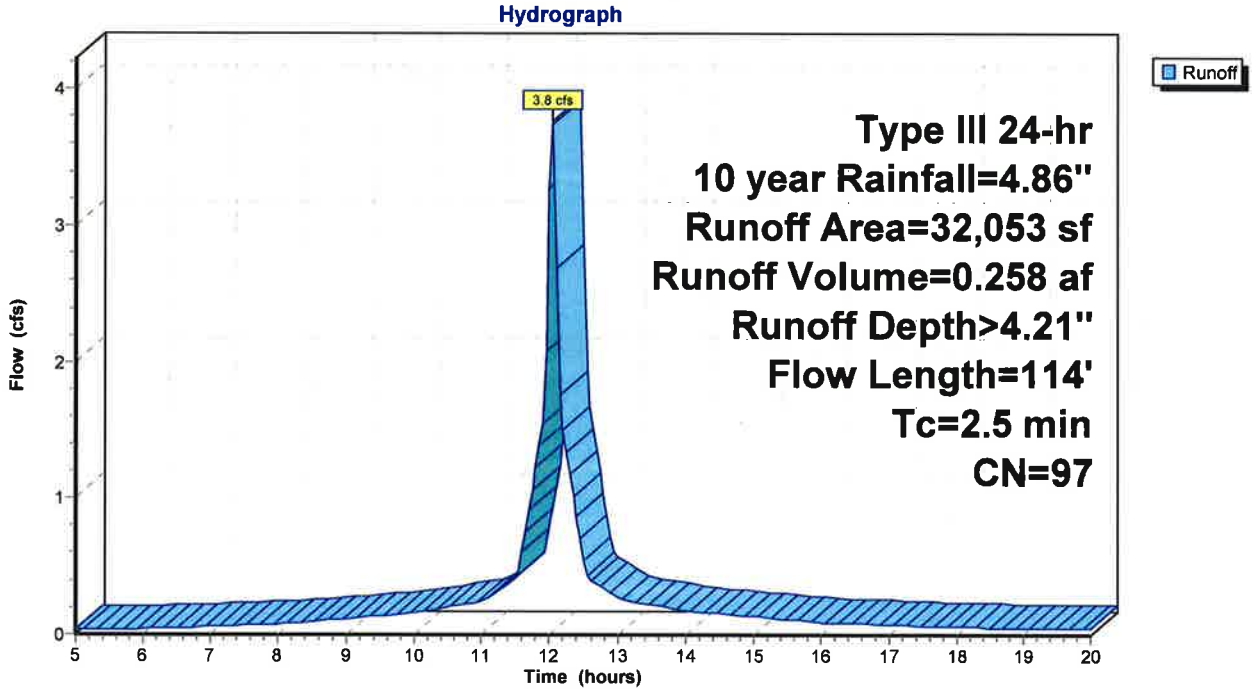
Runoff = 3.8 cfs @ 12.04 hrs, Volume= 0.258 af, Depth> 4.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
	10,300	98	Roofs, HSG B
	3,910	98	Roofs, HSG B
	641	61	>75% Grass cover, Good, HSG B
*	480	98	Unconnected pavement,sidewalks , HSG B
	9,865	98	Paved parking, HSG B
*	6,857	98	Gravel surface, HSG B
	32,053	97	Weighted Average
	641		2.00% Pervious Area
	31,412		98.00% Impervious Area
	480		1.53% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	35	0.0071	0.74		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.21"
1.7	79	0.0050	0.75		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.21"
2.5	114	Total			

Subcatchment ES2:



Summary for Subcatchment ES2a:

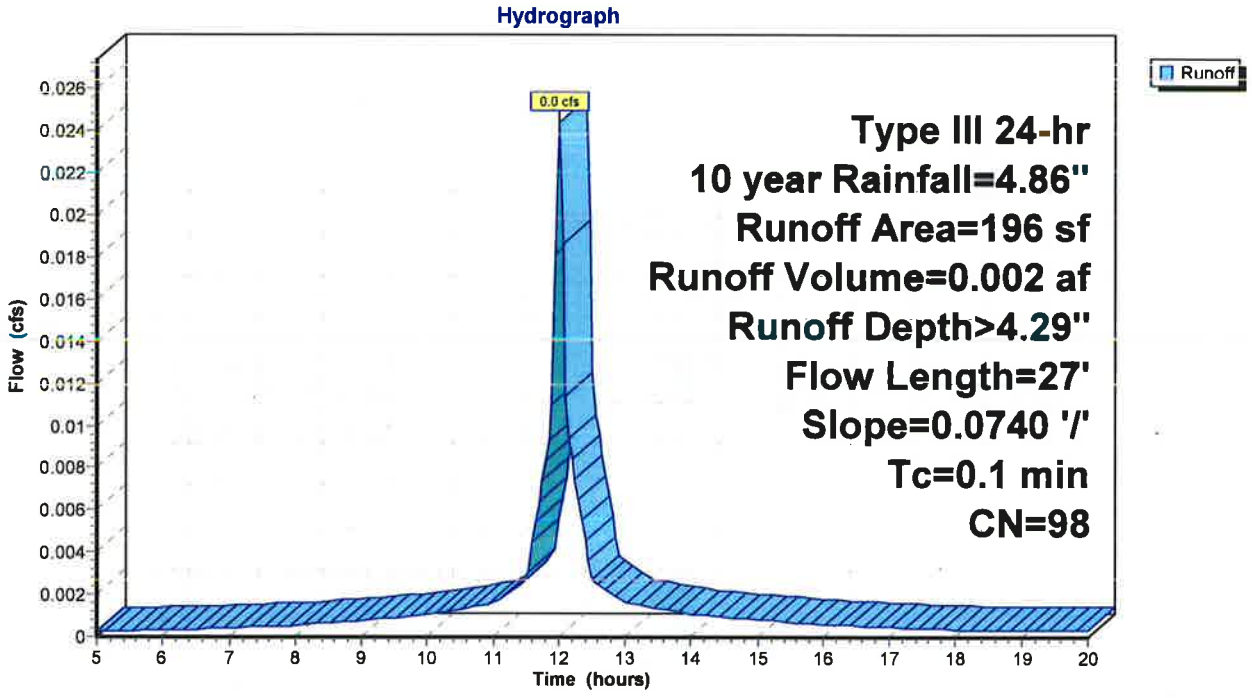
Runoff = 0.0 cfs @ 12.00 hrs, Volume= 0.002 af, Depth> 4.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
	102	98	Paved parking, HSG B
*	94	98	Unconnected pavement, sidewalk, HSG B
	196	98	Weighted Average
	196		100.00% Impervious Area
	94		47.96% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	27	0.0740	5.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps

Subcatchment ES2a:



Summary for Subcatchment ES3:

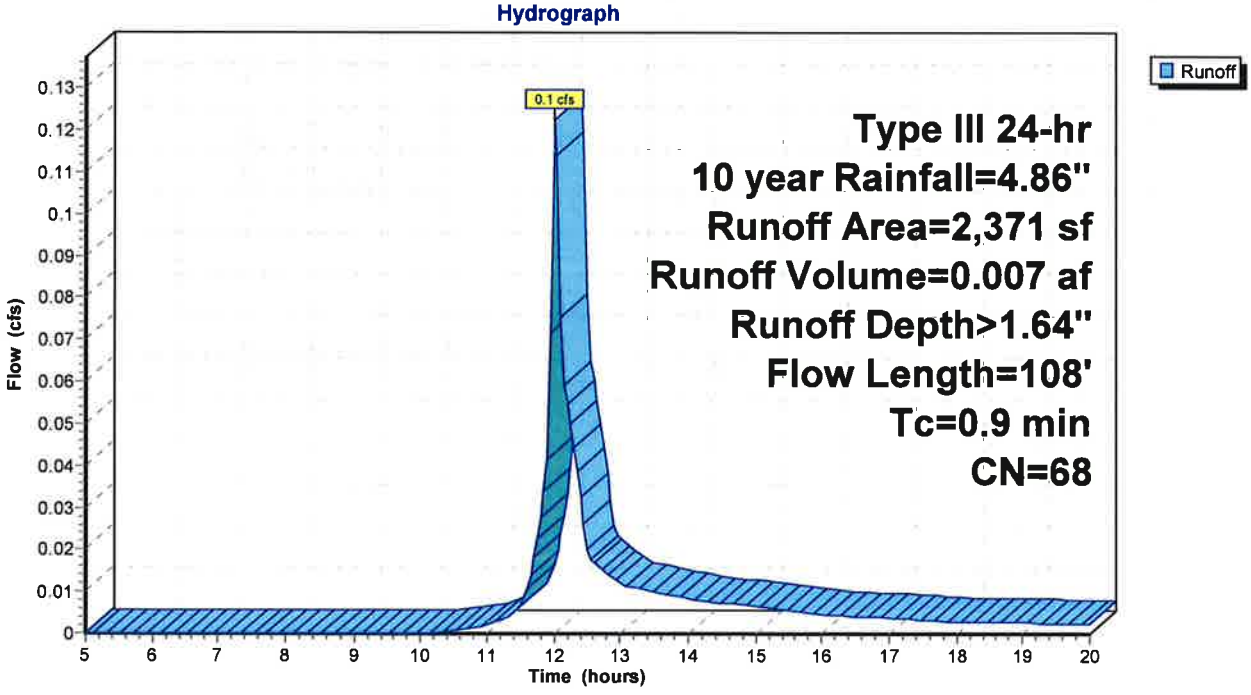
Runoff = 0.1 cfs @ 12.02 hrs, Volume= 0.007 af, Depth> 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
*	414	98	Gravel surface, HSG B
*	33	98	Unconnected pavement, sidewalk, HSG B
	1,924	61	>75% Grass cover, Good, HSG B
	2,371	68	Weighted Average
	1,924		81.15% Pervious Area
	447		18.85% Impervious Area
	33		7.38% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	58	0.0819	5.81		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	50	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	108	Total			

Subcatchment ES3:



Summary for Subcatchment ES4:

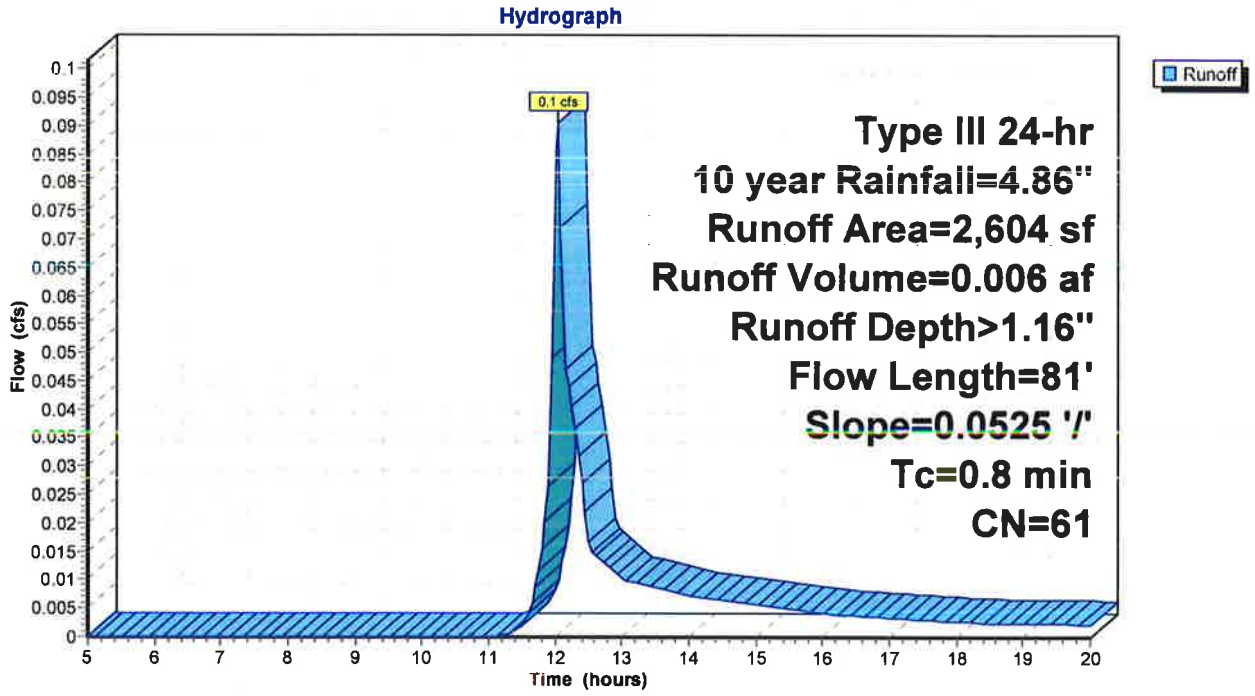
Runoff = 0.1 cfs @ 12.02 hrs, Volume= 0.006 af, Depth> 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

Area (sf)	CN	Description
2,604	61	>75% Grass cover, Good, HSG B
2,604		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	81	0.0525	1.60		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps

Subcatchment ES4:



Summary for Subcatchment ES4a: Offsite

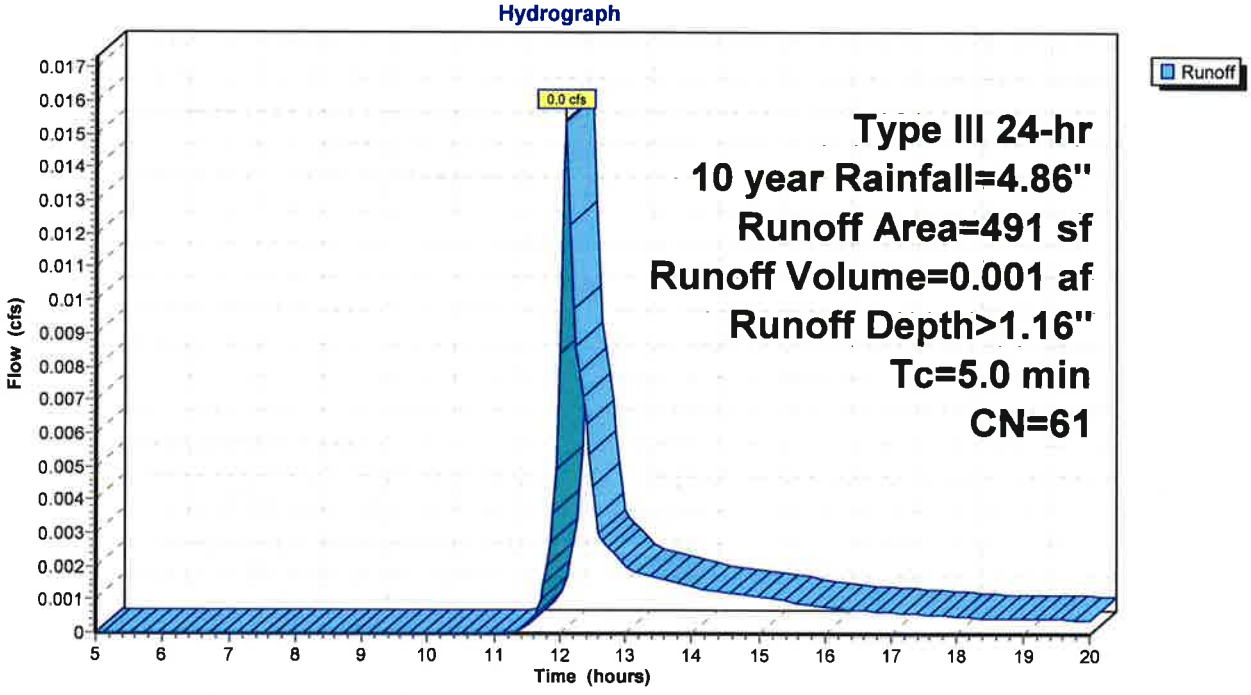
Runoff = 0.0 cfs @ 12.09 hrs, Volume= 0.001 af, Depth> 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

Area (sf)	CN	Description
491	61	>75% Grass cover, Good, HSG B
491		100.00% Pervious Area

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

Subcatchment ES4a: Offsite



Summary for Subcatchment ES5:

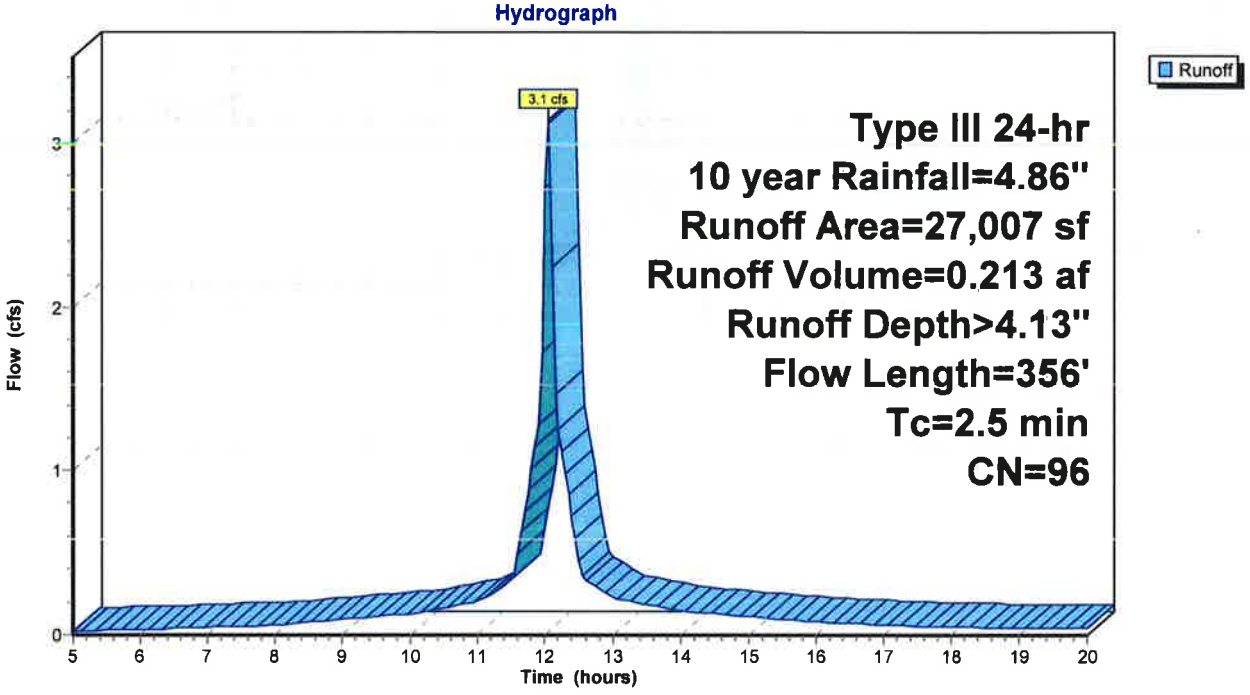
Runoff = 3.1 cfs @ 12.04 hrs, Volume= 0.213 af, Depth> 4.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
	23,335	98	Paved parking, HSG B
*	1,456	98	Unconnected pavement, sidewalk, HSG B
	1,658	61	>75% Grass cover, Good, HSG B
*	558	98	Gravel surface, HSG B
	27,007	96	Weighted Average
	1,658		6.14% Pervious Area
	25,349		93.86% Impervious Area
	1,456		5.74% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	56	0.0050	0.70		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.21"
1.2	300	0.0417	4.15		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	356	Total			

Subcatchment ES5:



Summary for Subcatchment ES6:

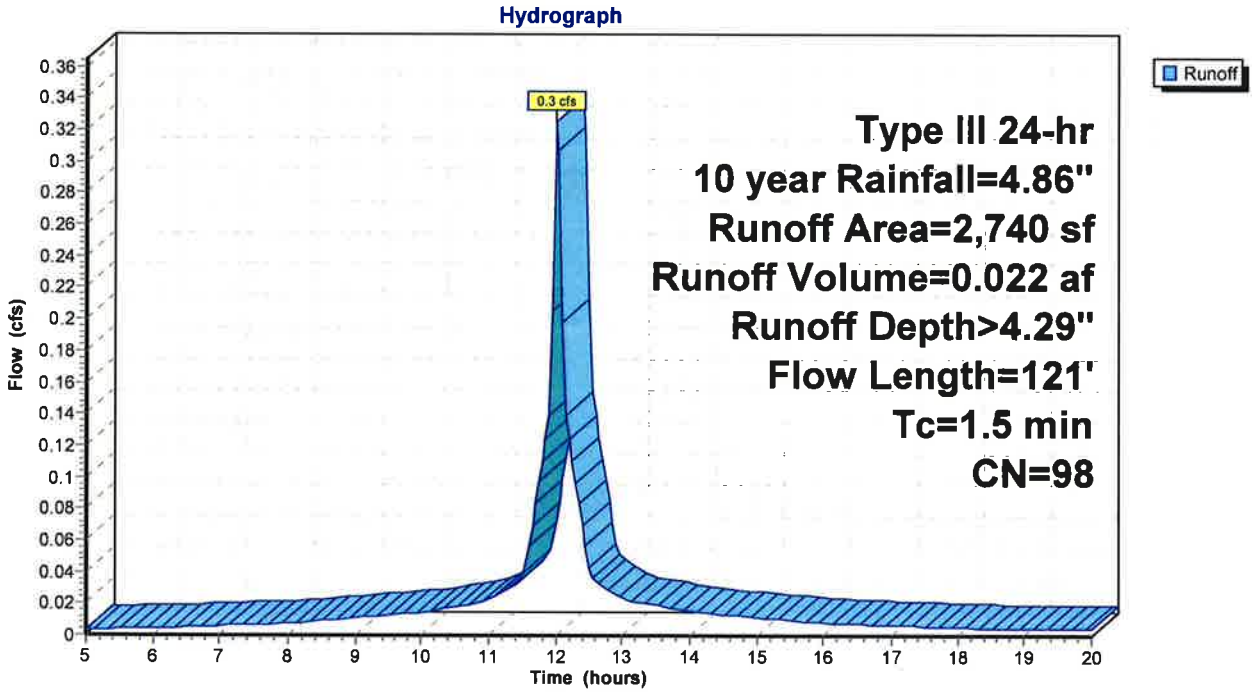
Runoff = 0.3 cfs @ 12.02 hrs, Volume= 0.022 af, Depth> 4.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
	2,330	98	Paved parking, HSG B
*	410	98	Unconnected pavement, sidewalk, HSG B
	2,740	98	Weighted Average
	2,740		100.00% Impervious Area
	410		14.96% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	26	0.0096	0.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	95	0.0078	1.79		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	121	Total			

Subcatchment ES6:



Summary for Subcatchment ES7:

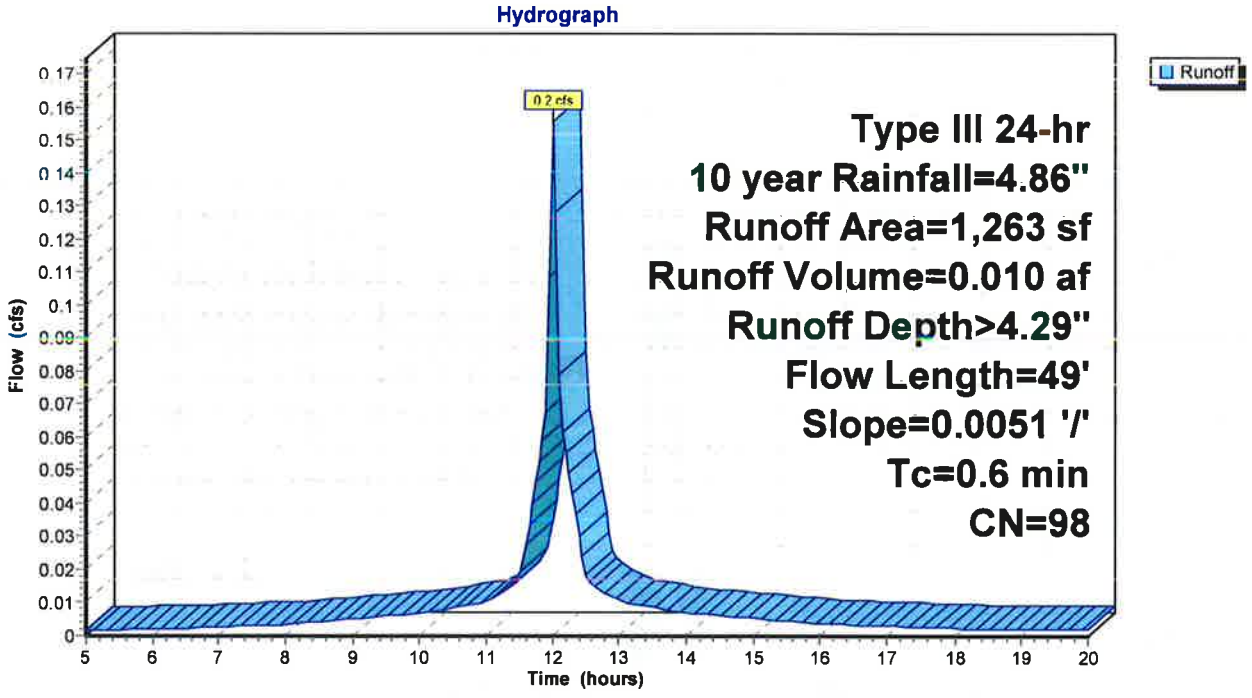
Runoff = 0.2 cfs @ 12.01 hrs, Volume= 0.010 af, Depth> 4.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
	922	98	Paved parking, HSG B
*	341	98	Unconnected pavement, sidewalk, HSG B
	1,263	98	Weighted Average
	1,263		100.00% Impervious Area
	341		27.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	49	0.0051	1.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps

Subcatchment ES7:



Summary for Subcatchment ES8:

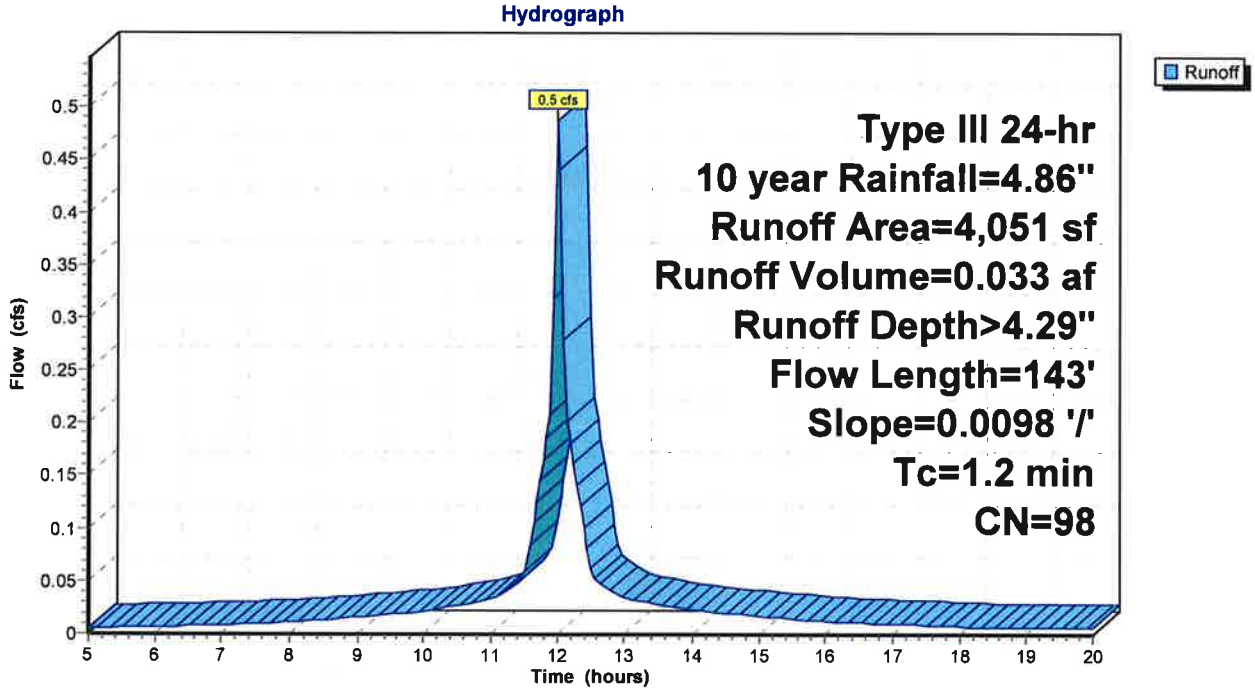
Runoff = 0.5 cfs @ 12.02 hrs, Volume= 0.033 af, Depth> 4.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
	2,607	98	Paved parking, HSG B
*	1,444	98	Unconnected pavement,sidewalk, HSG B
	4,051	98	Weighted Average
	4,051		100.00% Impervious Area
	1,444		35.65% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	143	0.0098	2.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps

Subcatchment ES8:



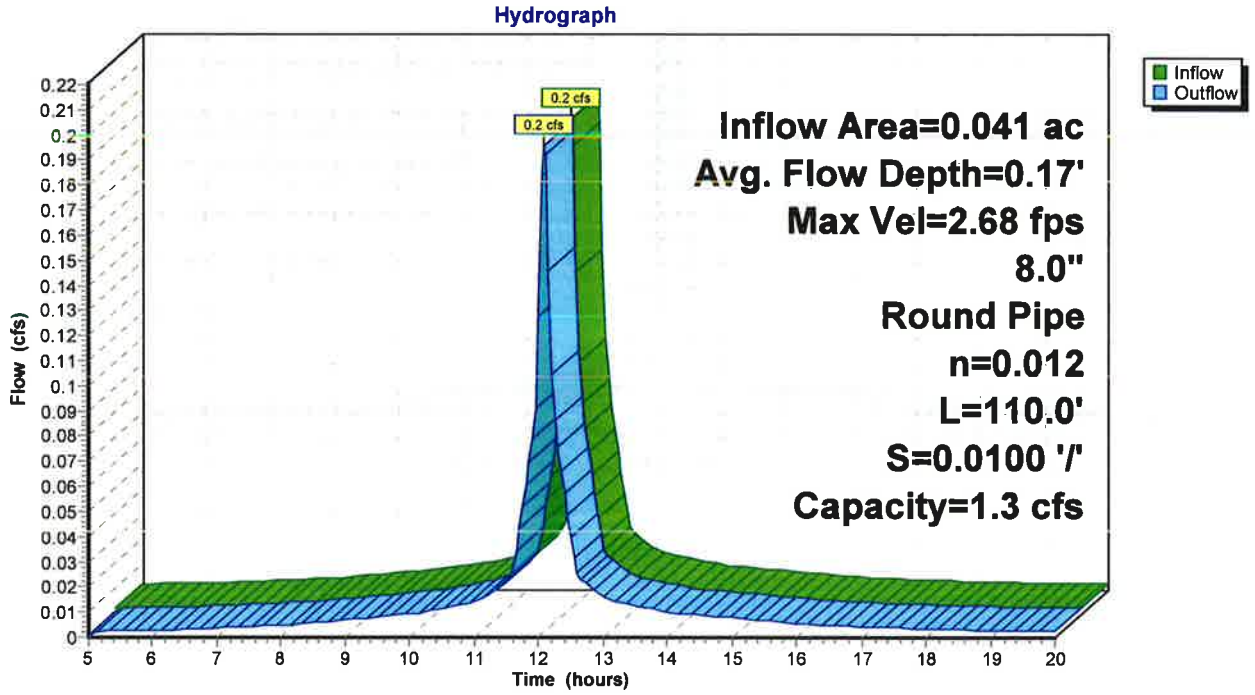
Summary for Reach 4R: Altus Model

Inflow Area = 0.041 ac,100.00% Impervious, Inflow Depth > 4.29" for 10 year event
Inflow = 0.2 cfs @ 12.07 hrs, Volume= 0.015 af
Outflow = 0.2 cfs @ 12.08 hrs, Volume= 0.015 af, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.68 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.02 fps, Avg. Travel Time= 1.8 min

Peak Storage= 8 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.3 cfs

8.0" Round Pipe
n= 0.012
Length= 110.0' Slope= 0.0100 '/'
Inlet Invert= 8.38', Outlet Invert= 7.28'



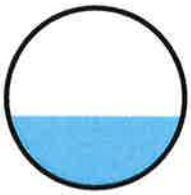
Summary for Reach 40R: Altus Model

Inflow Area = 0.129 ac,100.00% Impervious, Inflow Depth > 4.29" for 10 year event
Inflow = 0.6 cfs @ 12.07 hrs, Volume= 0.046 af
Outflow = 0.6 cfs @ 12.07 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min

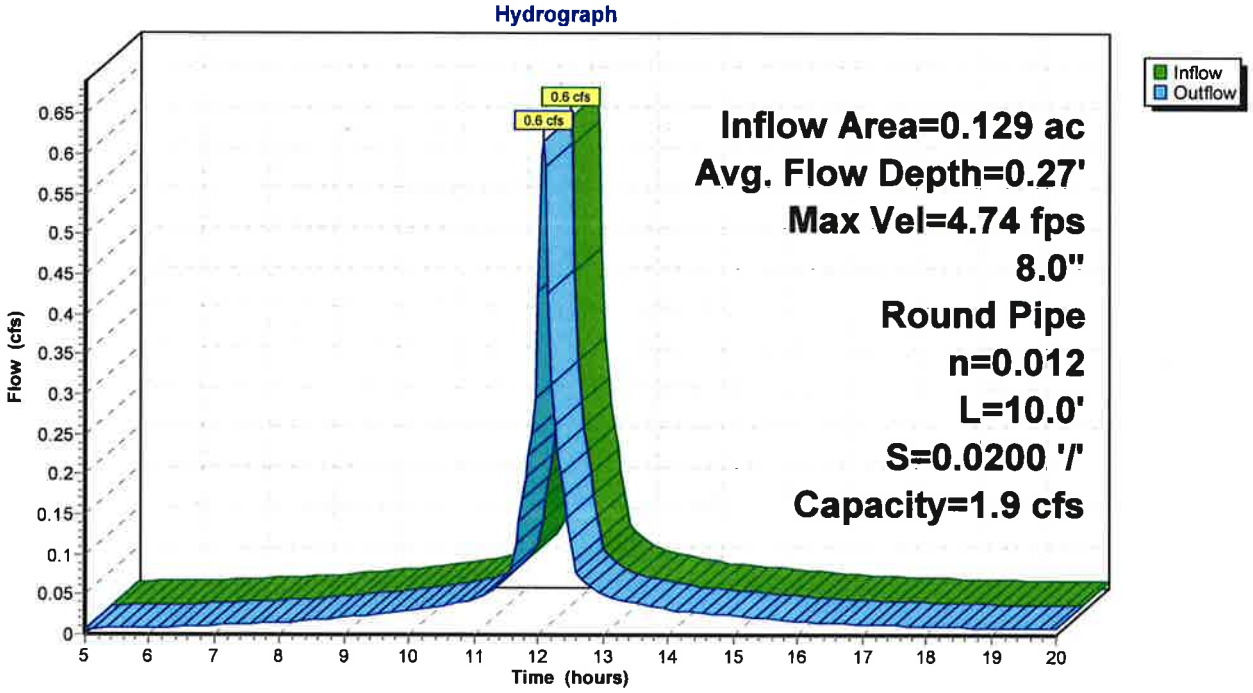
Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.74 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.84 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.9 cfs

8.0" Round Pipe
n= 0.012
Length= 10.0' Slope= 0.0200 '/'
Inlet Invert= 6.82', Outlet Invert= 6.62'



Reach 40R: Altus Model



Summary for Reach 41R: Altus Model

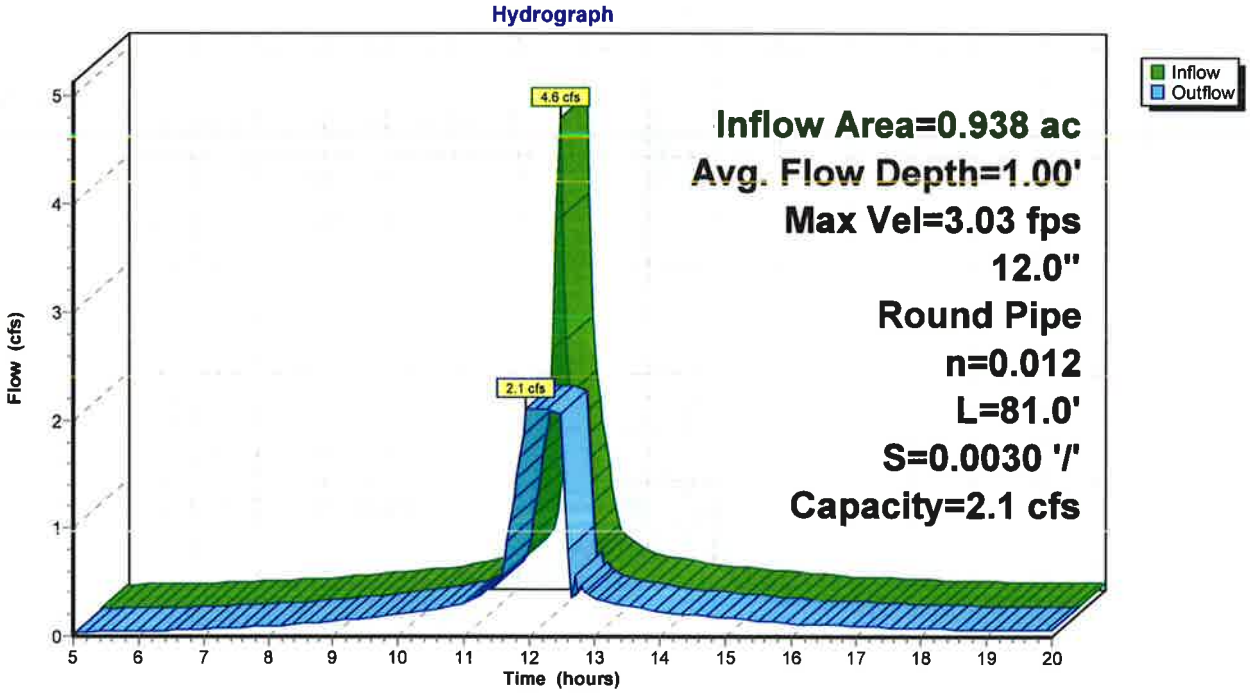
Inflow Area = 0.938 ac, 80.14% Impervious, Inflow Depth > 4.14" for 10 year event
Inflow = 4.6 cfs @ 12.05 hrs, Volume= 0.324 af
Outflow = 2.1 cfs @ 11.95 hrs, Volume= 0.324 af, Atten= 54%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.03 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.56 fps, Avg. Travel Time= 0.9 min

Peak Storage= 64 cf @ 11.95 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.1 cfs

12.0" Round Pipe
n= 0.012
Length= 81.0' Slope= 0.0030 '/'
Inlet Invert= 6.45', Outlet Invert= 6.21'

Reach 41R: Altus Model

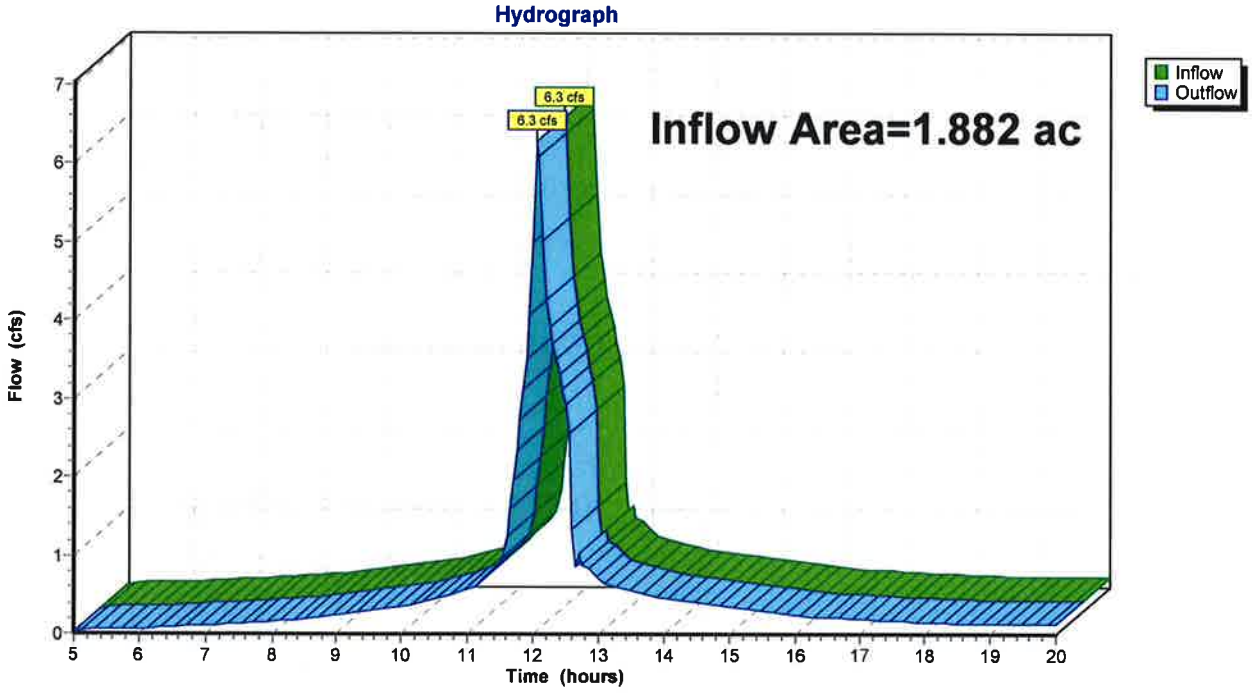


Summary for Reach 300R / DP1A: POA #3 - Existing CB (Altus Model) - AEI DP1A

Inflow Area = 1.882 ac, 39.96% Impervious, Inflow Depth > 3.94" for 10 year event
Inflow = 6.3 cfs @ 12.07 hrs, Volume= 0.619 af
Outflow = 6.3 cfs @ 12.07 hrs, Volume= 0.619 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 300R / DP1A: POA #3 - Existing CB (Altus Model) - AEI DP1A



Summary for Pond 3P: Existing CB (Altus Model)

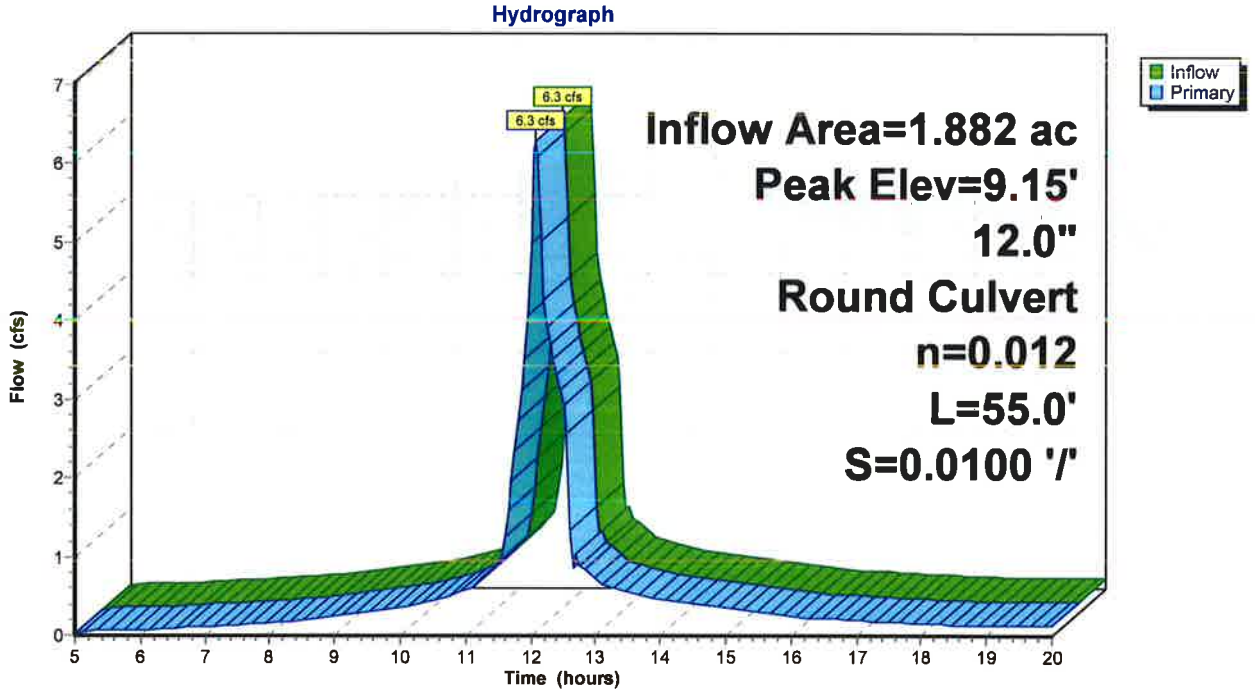
Inflow Area = 1.882 ac, 39.96% Impervious, Inflow Depth > 3.94" for 10 year event
Inflow = 6.3 cfs @ 12.07 hrs, Volume= 0.619 af
Outflow = 6.3 cfs @ 12.07 hrs, Volume= 0.619 af, Atten= 0%, Lag= 0.0 min
Primary = 6.3 cfs @ 12.07 hrs, Volume= 0.619 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 9.15' @ 12.07 hrs
Flood Elev= 8.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.76'	**12.0" Round Culvert** L= 55.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.76' / 5.21' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=6.1 cfs @ 12.07 hrs HW=9.02' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 6.1 cfs @ 7.81 fps)

Pond 3P: Existing CB (Altus Model)

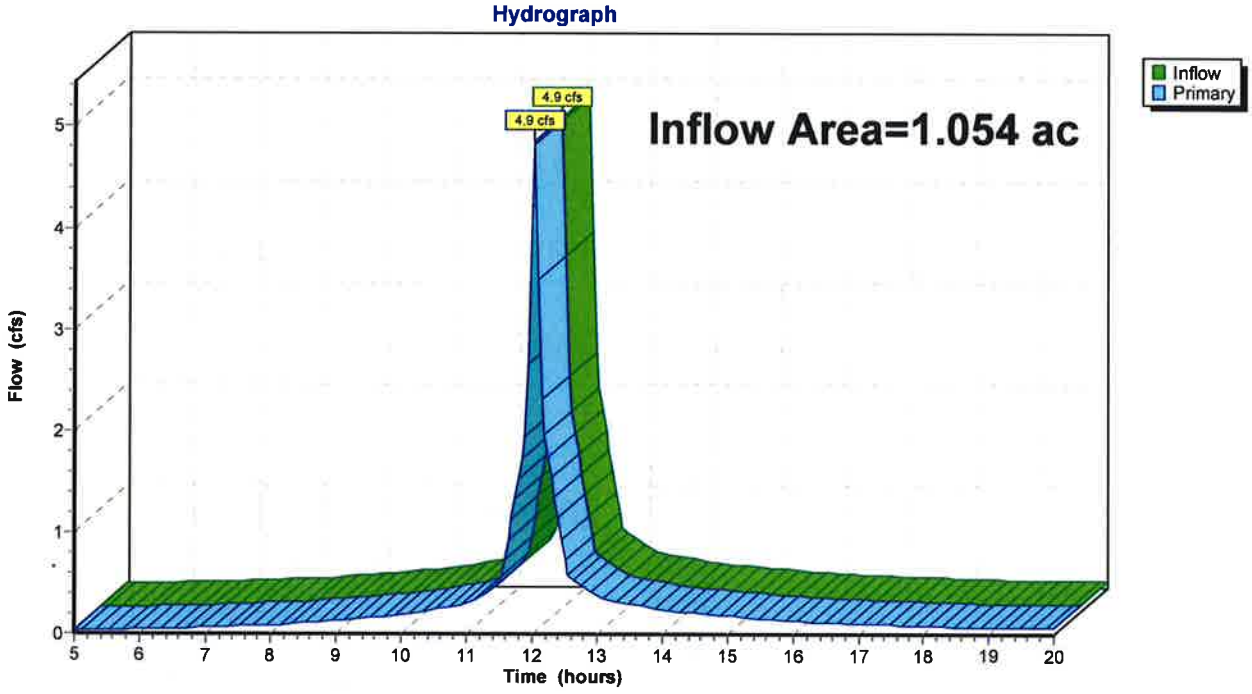


Summary for Pond 5P: Discharge Point 1 (COMBINED SEWER)

Inflow Area = 1.054 ac, 83.18% Impervious, Inflow Depth > 3.72" for 10 year event
Inflow = 4.9 cfs @ 12.04 hrs, Volume= 0.327 af
Primary = 4.9 cfs @ 12.04 hrs, Volume= 0.327 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 5P: Discharge Point 1 (COMBINED SEWER)



Summary for Pond 30P: CB #1 (Altus Model)

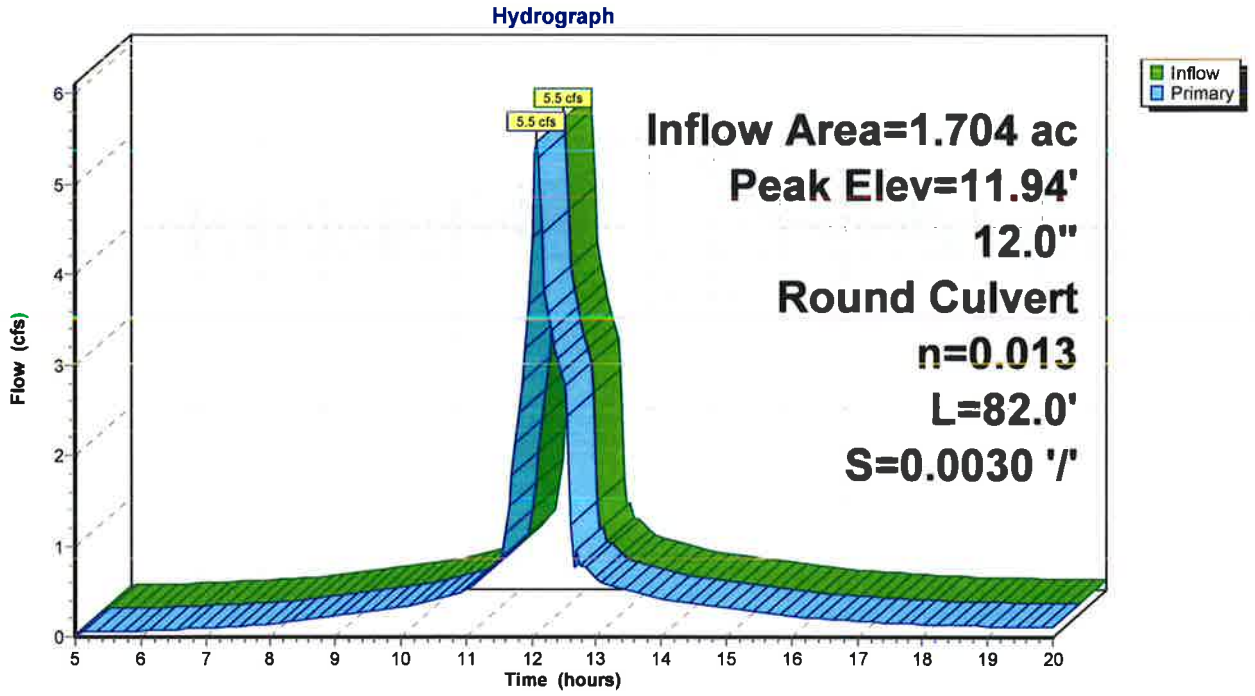
Inflow Area = 1.704 ac, 44.13% Impervious, Inflow Depth > 3.94" for 10 year event
Inflow = 5.5 cfs @ 12.07 hrs, Volume= 0.559 af
Outflow = 5.5 cfs @ 12.07 hrs, Volume= 0.559 af, Atten= 0%, Lag= 0.0 min
Primary = 5.5 cfs @ 12.07 hrs, Volume= 0.559 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 11.94' @ 12.10 hrs
Flood Elev= 9.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.11'	**12.0" Round Culvert** L= 82.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.11' / 5.86' S= 0.0030 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.8 cfs @ 12.07 hrs HW=11.42' TW=9.02' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 4.8 cfs @ 6.16 fps)

Pond 30P: CB #1 (Altus Model)



Summary for Pond 31P: CB #2 (Altus Model)

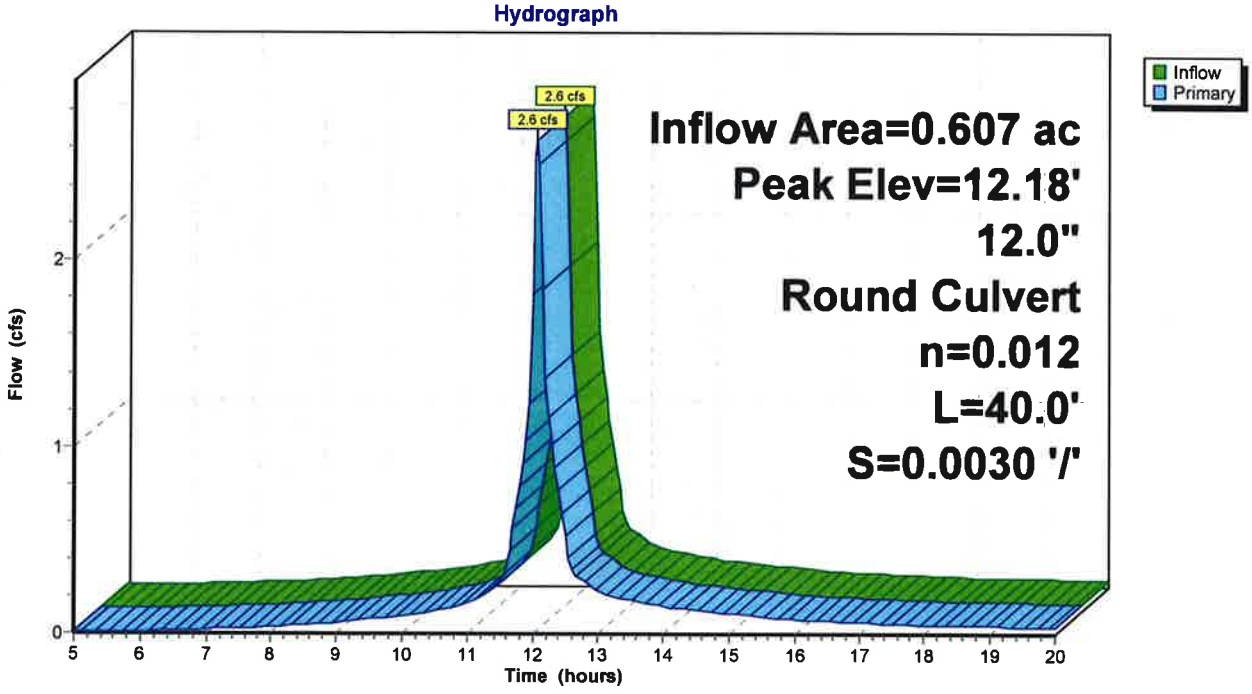
Inflow Area = 0.607 ac, 0.00% Impervious, Inflow Depth > 3.64" for 10 year event
Inflow = 2.6 cfs @ 12.07 hrs, Volume= 0.184 af
Outflow = 2.6 cfs @ 12.07 hrs, Volume= 0.184 af, Atten= 0%, Lag= 0.0 min
Primary = 2.6 cfs @ 12.07 hrs, Volume= 0.184 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 12.18' @ 12.15 hrs
Flood Elev= 9.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.33'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.33' / 6.21' S= 0.0030 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.07 hrs HW=10.59' TW=11.43' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond 31P: CB #2 (Altus Model)



Summary for Pond 32P: CB #3 (Altus Model)

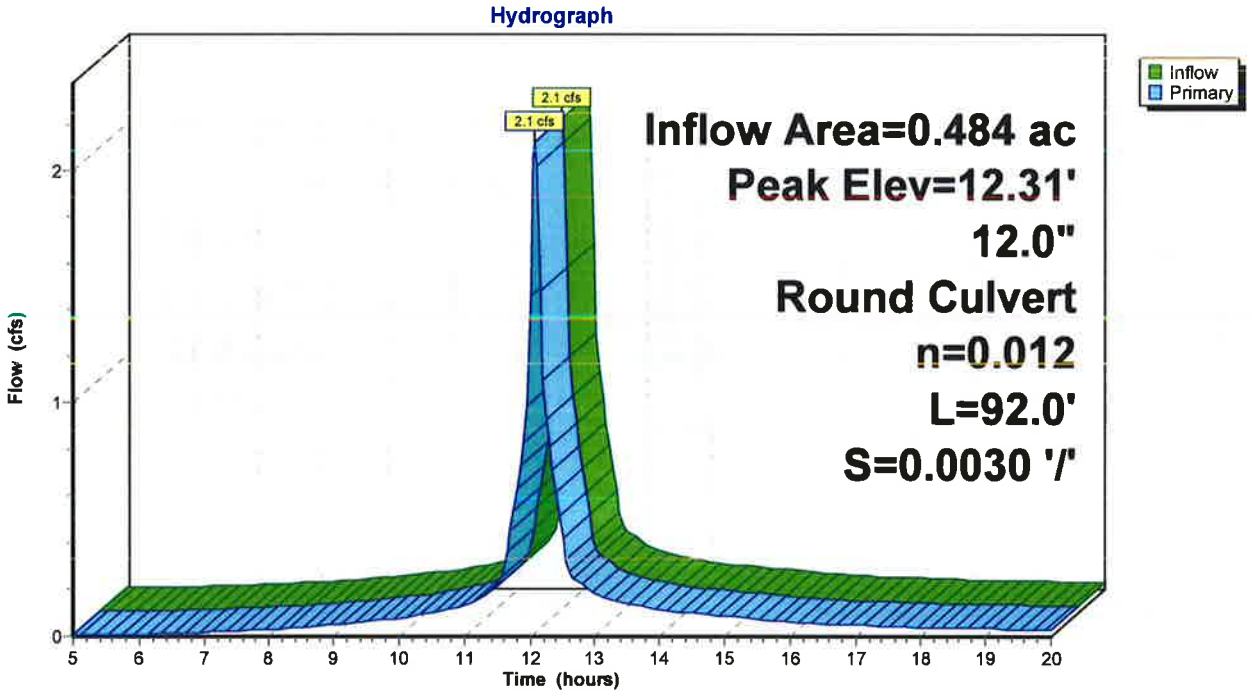
Inflow Area = 0.484 ac, 0.00% Impervious, Inflow Depth > 3.67" for 10 year event
Inflow = 2.1 cfs @ 12.07 hrs, Volume= 0.148 af
Outflow = 2.1 cfs @ 12.07 hrs, Volume= 0.148 af, Atten= 0%, Lag= 0.0 min
Primary = 2.1 cfs @ 12.07 hrs, Volume= 0.148 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 12.31' @ 12.19 hrs
Flood Elev= 9.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.71'	**12.0" Round Culvert** L= 92.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.71' / 6.43' S= 0.0030 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.07 hrs HW=9.67' TW=10.59' (Dynamic Tailwater)
↳**1=Culvert** (Controls 0.0 cfs)

Pond 32P: CB #3 (Altus Model)



Summary for Pond 33P: CB #4 (Altus Model)

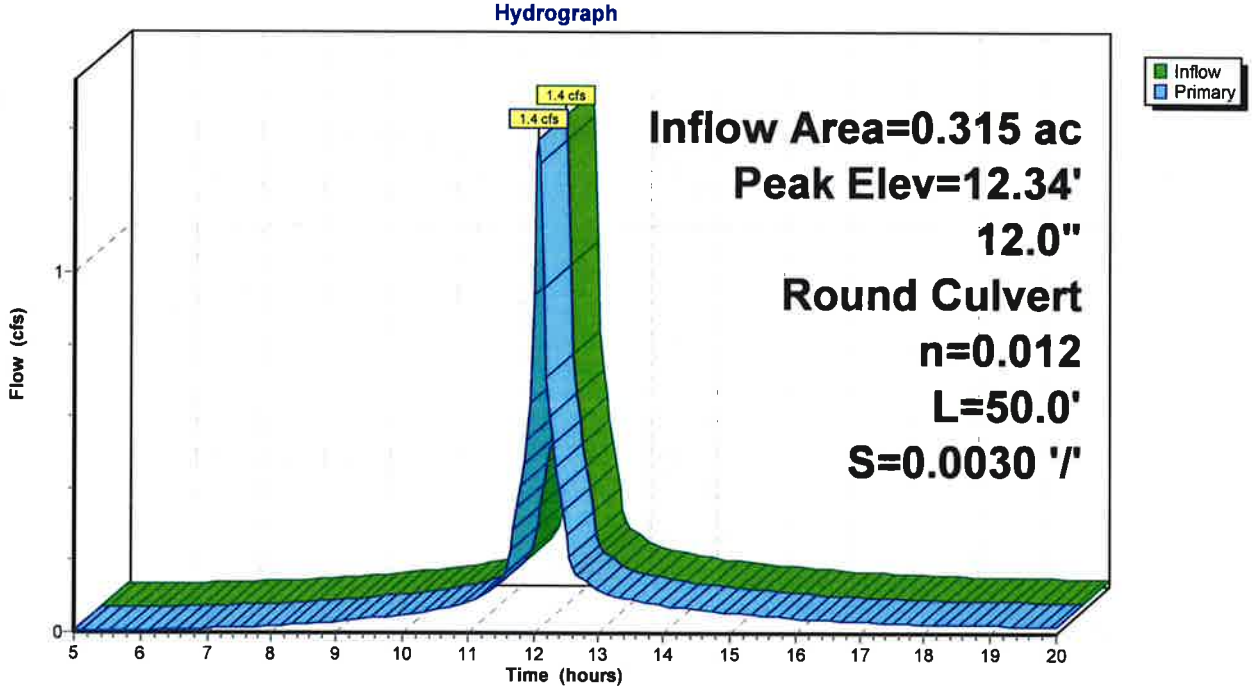
Inflow Area = 0.315 ac, 0.00% Impervious, Inflow Depth > 3.64" for 10 year event
Inflow = 1.4 cfs @ 12.07 hrs, Volume= 0.095 af
Outflow = 1.4 cfs @ 12.07 hrs, Volume= 0.095 af, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.07 hrs, Volume= 0.095 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 12.34' @ 12.24 hrs
Flood Elev= 9.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.96'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.96' / 6.81' S= 0.0030 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.07 hrs HW=8.81' TW=9.67' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond 33P: CB #4 (Altus Model)



Summary for Pond 34P: CB #5 (Altus Model)

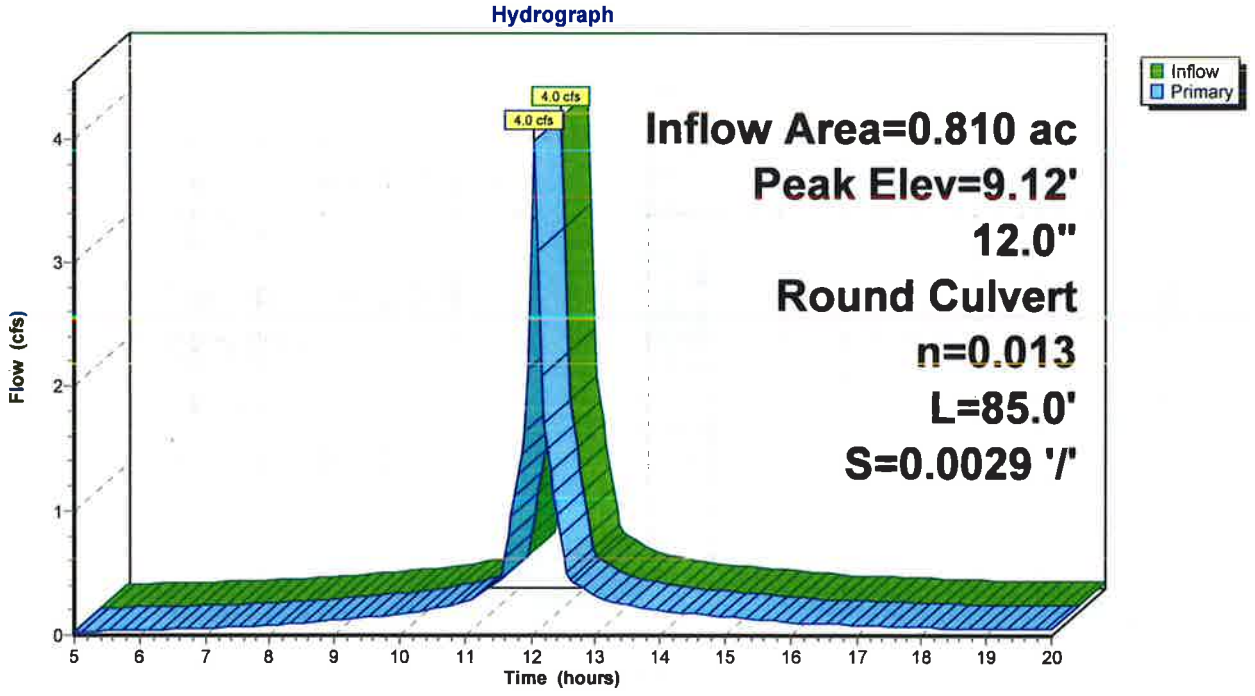
Inflow Area = 0.810 ac, 76.97% Impervious, Inflow Depth > 4.12" for 10 year event
Inflow = 4.0 cfs @ 12.05 hrs, Volume= 0.278 af
Outflow = 4.0 cfs @ 12.05 hrs, Volume= 0.278 af, Atten= 0%, Lag= 0.0 min
Primary = 4.0 cfs @ 12.05 hrs, Volume= 0.278 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 9.12' @ 12.05 hrs
Flood Elev= 8.68'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.83'	**12.0" Round Culvert** L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.83' / 5.58' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.9 cfs @ 12.05 hrs HW=9.07' TW=7.45' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 3.9 cfs @ 5.01 fps)

Pond 34P: CB #5 (Altus Model)



Summary for Pond AEI 2:

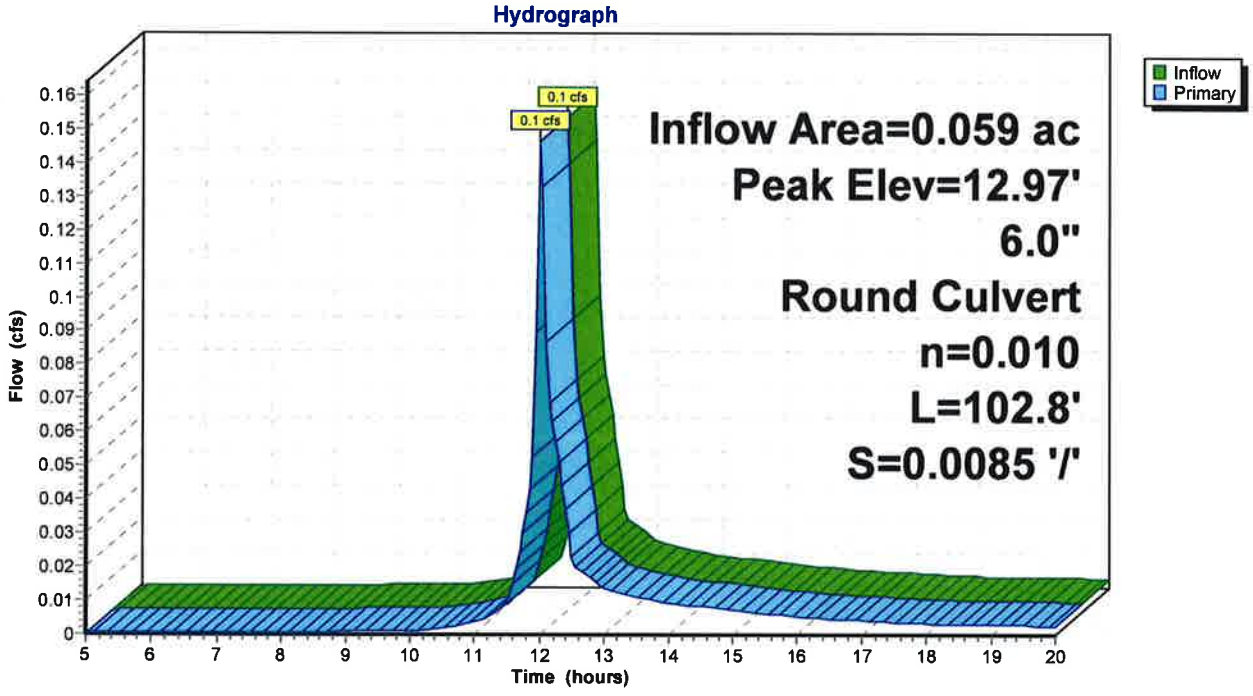
Inflow Area = 0.059 ac, 25.05% Impervious, Inflow Depth > 1.84" for 10 year event
Inflow = 0.1 cfs @ 12.02 hrs, Volume= 0.009 af
Outflow = 0.1 cfs @ 12.02 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min
Primary = 0.1 cfs @ 12.02 hrs, Volume= 0.009 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 12.97' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	9.42'	**6.0" Round Culvert** L= 102.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 9.42' / 8.55' S= 0.0085 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.0 cfs @ 12.02 hrs HW=10.49' TW=12.17' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Pond AEI 2:



Summary for Pond AEI 3:

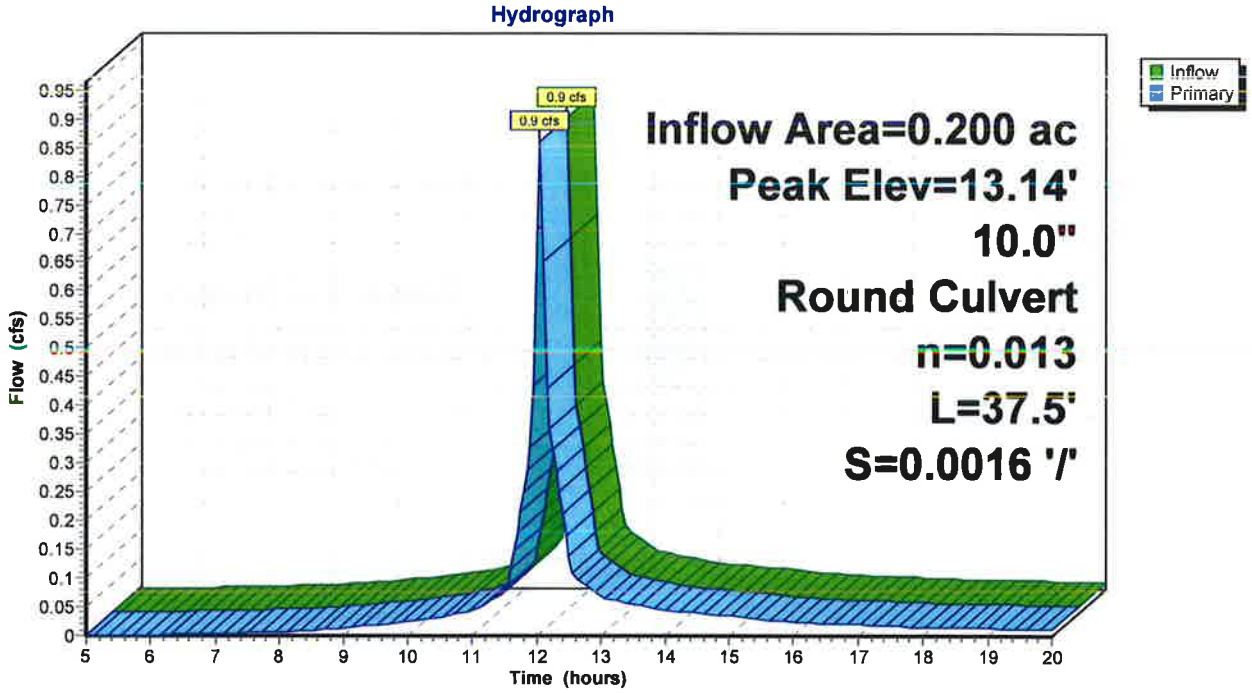
Inflow Area = 0.200 ac, 70.65% Impervious, Inflow Depth > 3.24" for 10 year event
Inflow = 0.9 cfs @ 12.05 hrs, Volume= 0.054 af
Outflow = 0.9 cfs @ 12.05 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min
Primary = 0.9 cfs @ 12.05 hrs, Volume= 0.054 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 13.14' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.90'	**10.0" Round Culvert** L= 37.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.90' / 8.84' S= 0.0016 '/' Cc= 0.900 n= 0.013 Clay tile, Flow Area= 0.55 sf

Primary OutFlow Max=0.0 cfs @ 12.05 hrs HW=9.90' TW=11.87' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond AEI 3:



Summary for Pond AEI 4:

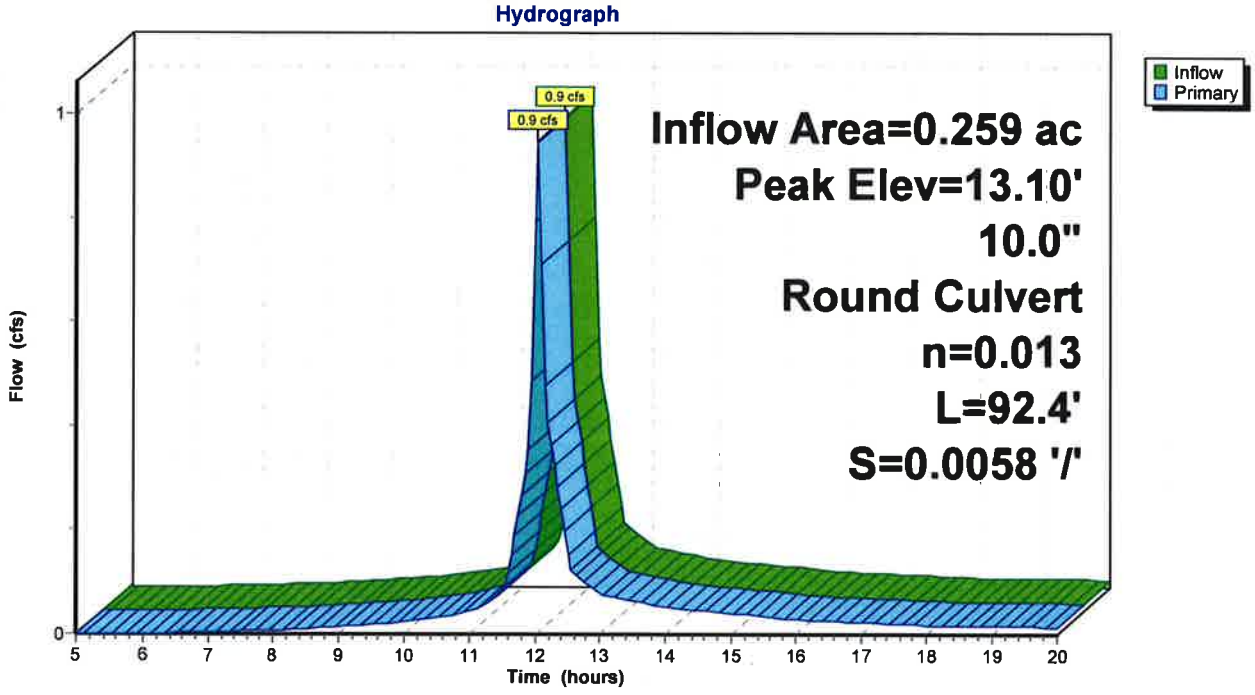
Inflow Area = 0.259 ac, 54.37% Impervious, Inflow Depth > 2.76" for 10 year event
Inflow = 0.9 cfs @ 12.04 hrs, Volume= 0.060 af
Outflow = 0.9 cfs @ 12.04 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min
Primary = 0.9 cfs @ 12.04 hrs, Volume= 0.060 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 13.10' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.69'	**10.0" Round Culvert** L= 92.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.69' / 8.15' S= 0.0058 '/' Cc= 0.900 n= 0.013 Clay tile, Flow Area= 0.55 sf

Primary OutFlow Max=0.0 cfs @ 12.04 hrs HW=11.80' TW=12.78' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond AEI 4:



Summary for Pond AEI 5:

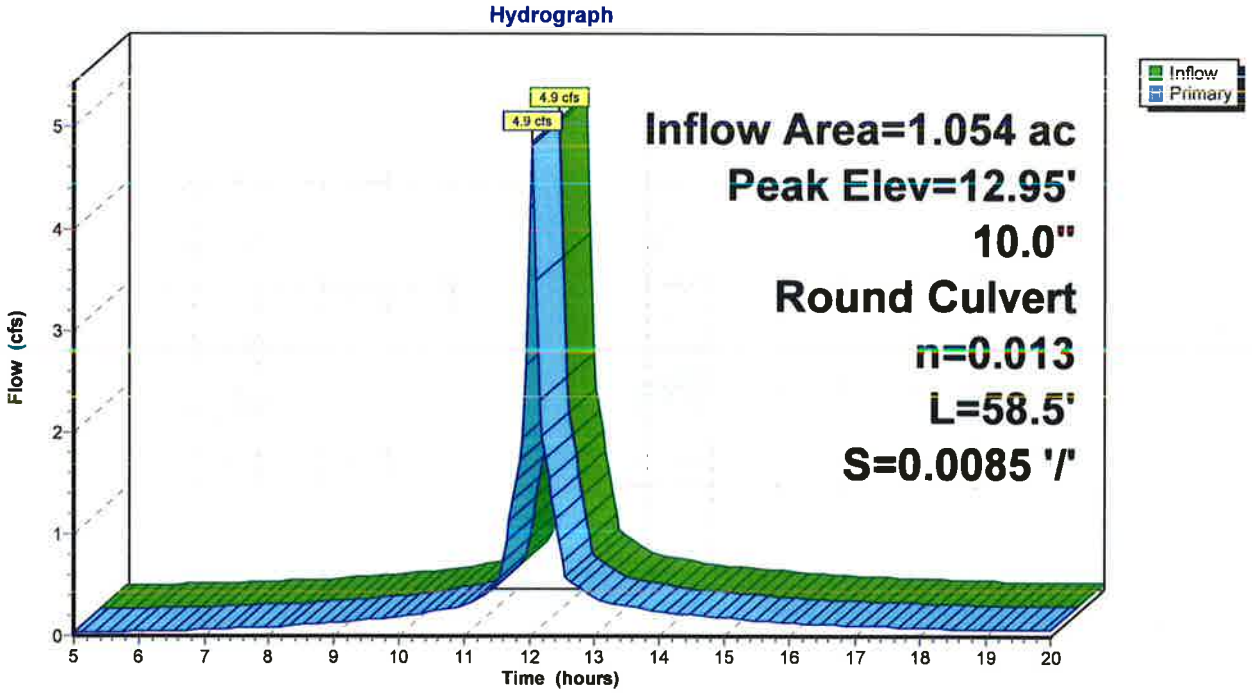
Inflow Area = 1.054 ac, 83.18% Impervious, Inflow Depth > 3.72" for 10 year event
Inflow = 4.9 cfs @ 12.04 hrs, Volume= 0.327 af
Outflow = 4.9 cfs @ 12.04 hrs, Volume= 0.327 af, Atten= 0%, Lag= 0.0 min
Primary = 4.9 cfs @ 12.04 hrs, Volume= 0.327 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 12.95' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.90'	**10.0" Round Culvert** L= 58.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.90' / 7.40' S= 0.0085 '/' Cc= 0.900 n= 0.013 Clay tile, Flow Area= 0.55 sf

Primary OutFlow Max=4.7 cfs @ 12.04 hrs HW=12.69' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 4.7 cfs @ 8.65 fps)

Pond AEI 5:



Summary for Pond AEI 6: Discharge Point 3 (Off Site Drainage)

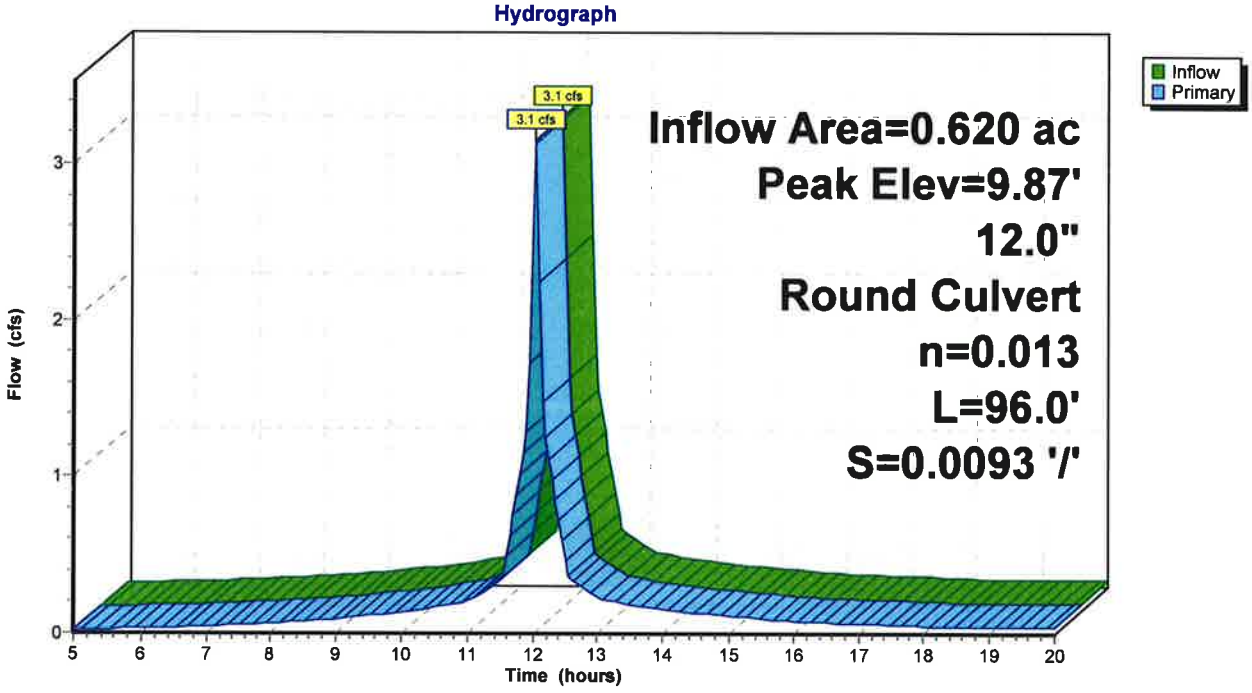
Inflow Area = 0.620 ac, 93.86% Impervious, Inflow Depth > 4.13" for 10 year event
Inflow = 3.1 cfs @ 12.04 hrs, Volume= 0.213 af
Outflow = 3.1 cfs @ 12.04 hrs, Volume= 0.213 af, Atten= 0%, Lag= 0.0 min
Primary = 3.1 cfs @ 12.04 hrs, Volume= 0.213 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 9.87' @ 12.07 hrs
Flood Elev= 10.77'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.77'	**12.0" Round Culvert** L= 96.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.77' / 5.88' S= 0.0093 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=2.1 cfs @ 12.04 hrs HW=9.50' TW=9.02' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 2.1 cfs @ 2.62 fps)

Pond AEI 6: Discharge Point 3 (Off Site Drainage)



Summary for Pond CB 4433:

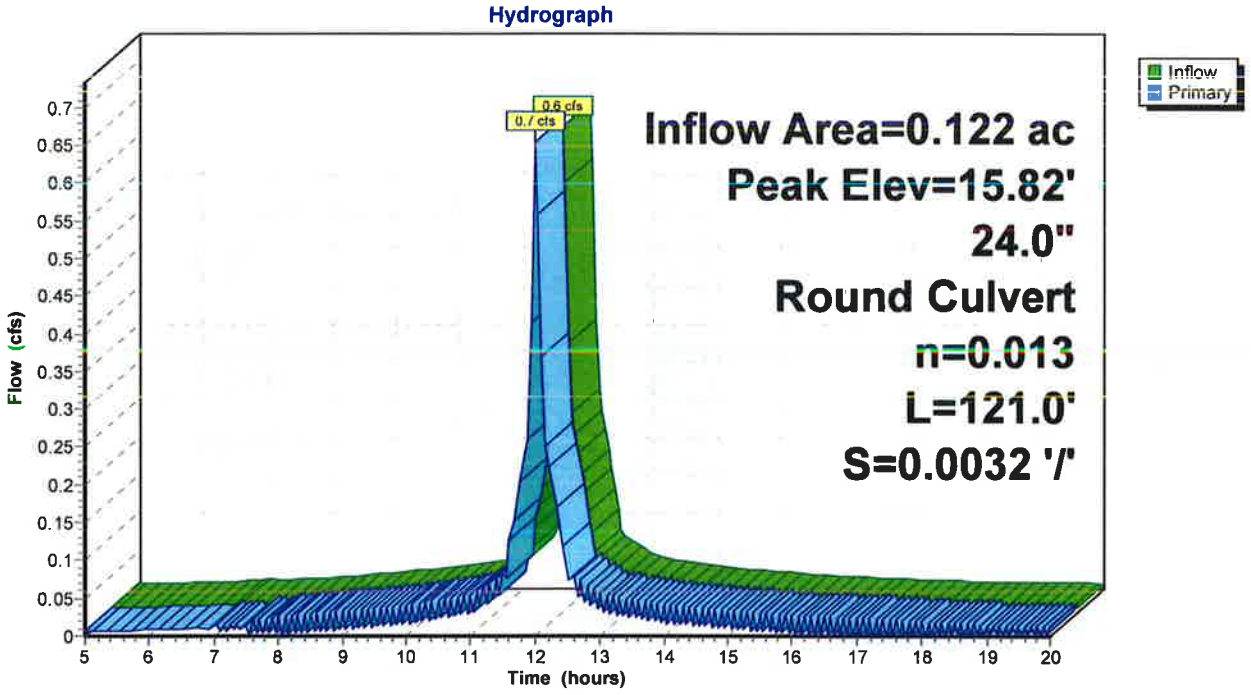
Inflow Area = 0.122 ac,100.00% Impervious, Inflow Depth > 4.29" for 10 year event
Inflow = 0.6 cfs @ 12.01 hrs, Volume= 0.044 af
Outflow = 0.7 cfs @ 12.01 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.01 hrs, Volume= 0.044 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 15.82' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	14.38'	**24.0" Round Culvert** L= 121.0' CPP. square edge headwall. Ke= 0.500 Inlet / Outlet Invert= 14.38' / 13.99' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.0 cfs @ 12.01 hrs HW=15.75' TW=15.80' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond CB 4433:



Summary for Pond CB 4435:

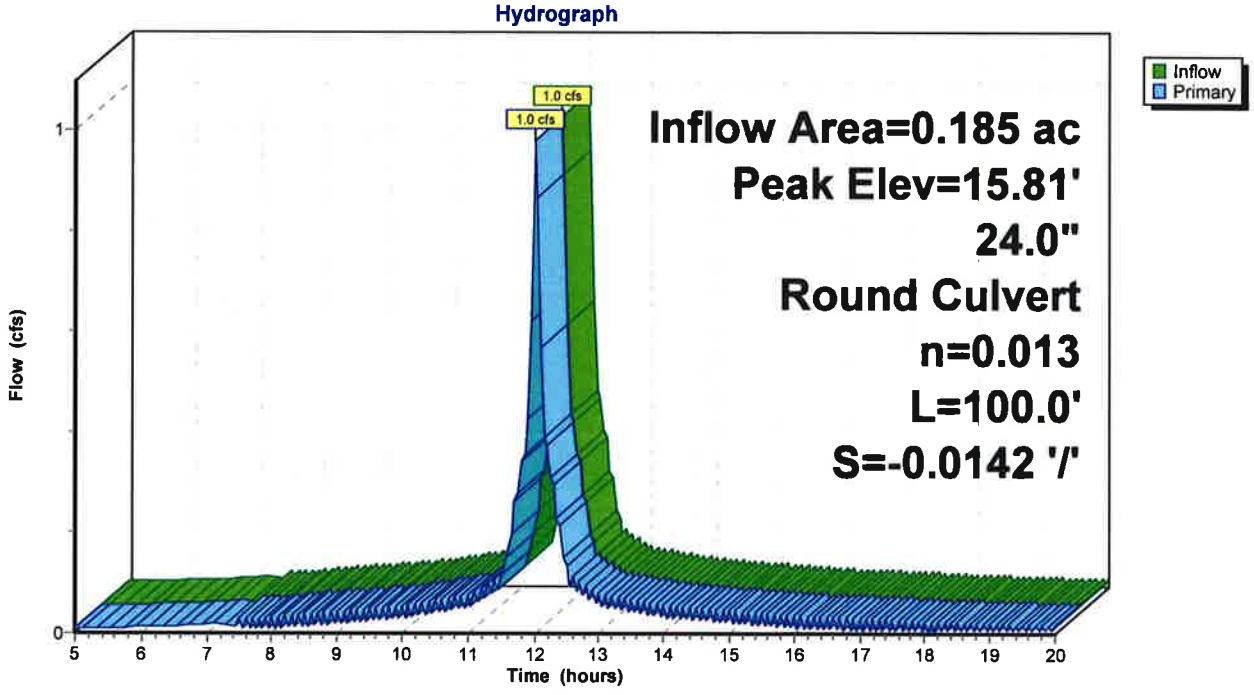
Inflow Area = 0.185 ac,100.00% Impervious, Inflow Depth > 4.29" for 10 year event
Inflow = 1.0 cfs @ 12.01 hrs, Volume= 0.066 af
Outflow = 1.0 cfs @ 12.01 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min
Primary = 1.0 cfs @ 12.01 hrs, Volume= 0.066 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 15.81' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	15.41'	**24.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.99' / 15.41' S= -0.0142 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.9 cfs @ 12.01 hrs HW=15.80' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.9 cfs @ 2.14 fps)

Pond CB 4435:



Summary for Pond CB 4560:

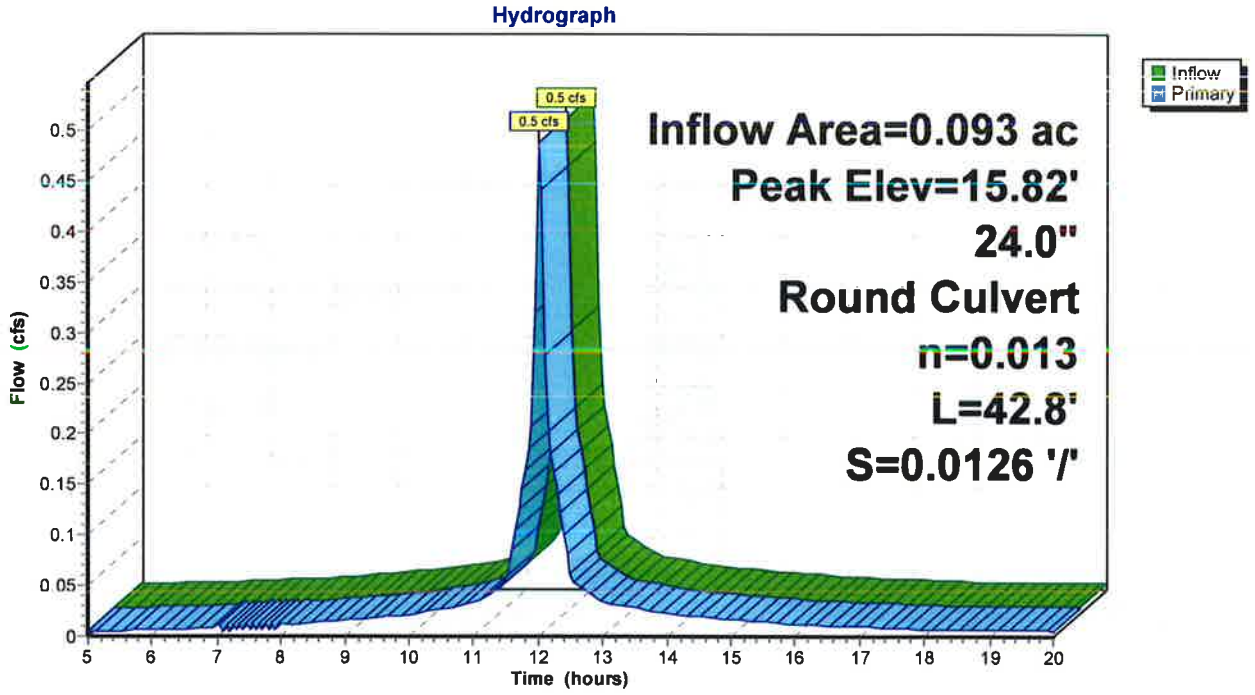
Inflow Area = 0.093 ac,100.00% Impervious, Inflow Depth > 4.29" for 10 year event
Inflow = 0.5 cfs @ 12.02 hrs, Volume= 0.033 af
Outflow = 0.5 cfs @ 12.02 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.02 hrs, Volume= 0.033 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 15.82' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	14.92'	**24.0" Round Culvert** L= 42.8' CPP. square edge headwall. Ke= 0.500 Inlet / Outlet Invert= 14.92' / 14.38' S= 0.0126 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.0 cfs @ 12.02 hrs HW=15.71' TW=15.76' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond CB 4560:

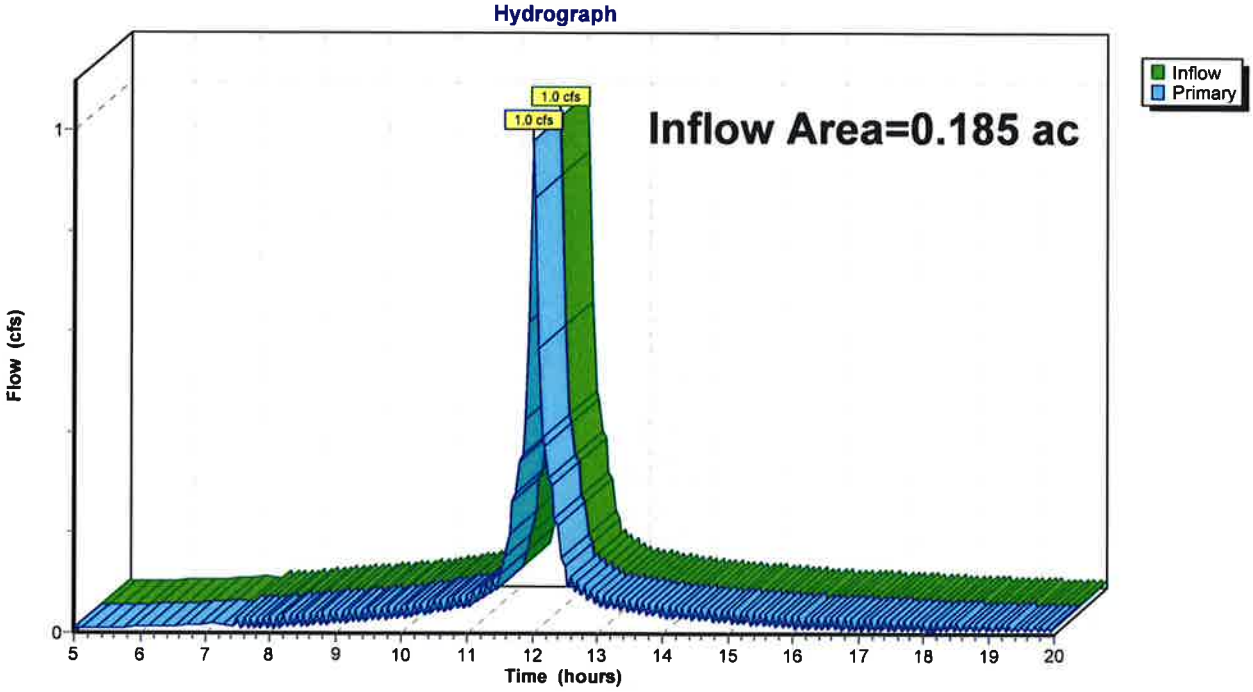


Summary for Link 2L: Discharge Point 2 (Court Street Drainage)

Inflow Area = 0.185 ac,100.00% Impervious, Inflow Depth > 4.29" for 10 year event
Inflow = 1.0 cfs @ 12.01 hrs, Volume= 0.066 af
Primary = 1.0 cfs @ 12.01 hrs, Volume= 0.066 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 2L: Discharge Point 2 (Court Street Drainage)

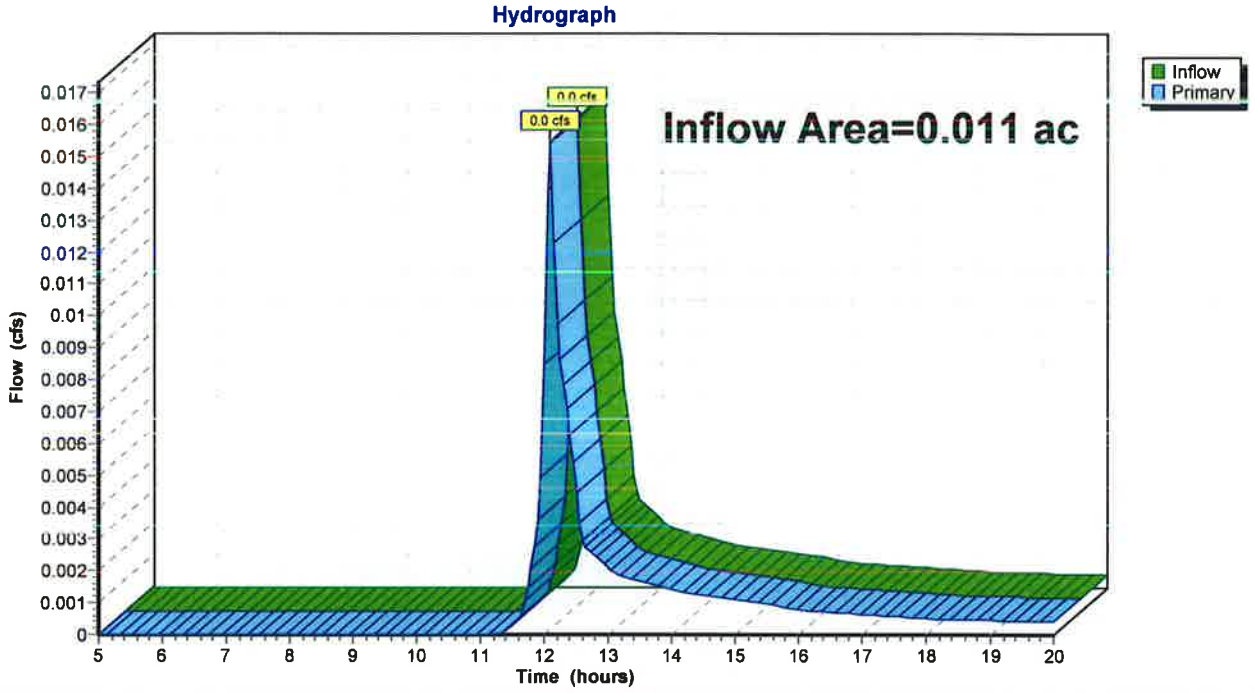


Summary for Link 3L: Discharge Point 4 (DP4)

Inflow Area = 0.011 ac, 0.00% Impervious, Inflow Depth > 1.16" for 10 year event
Inflow = 0.0 cfs @ 12.09 hrs, Volume= 0.001 af
Primary = 0.0 cfs @ 12.09 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 3L: Discharge Point 4 (DP4)

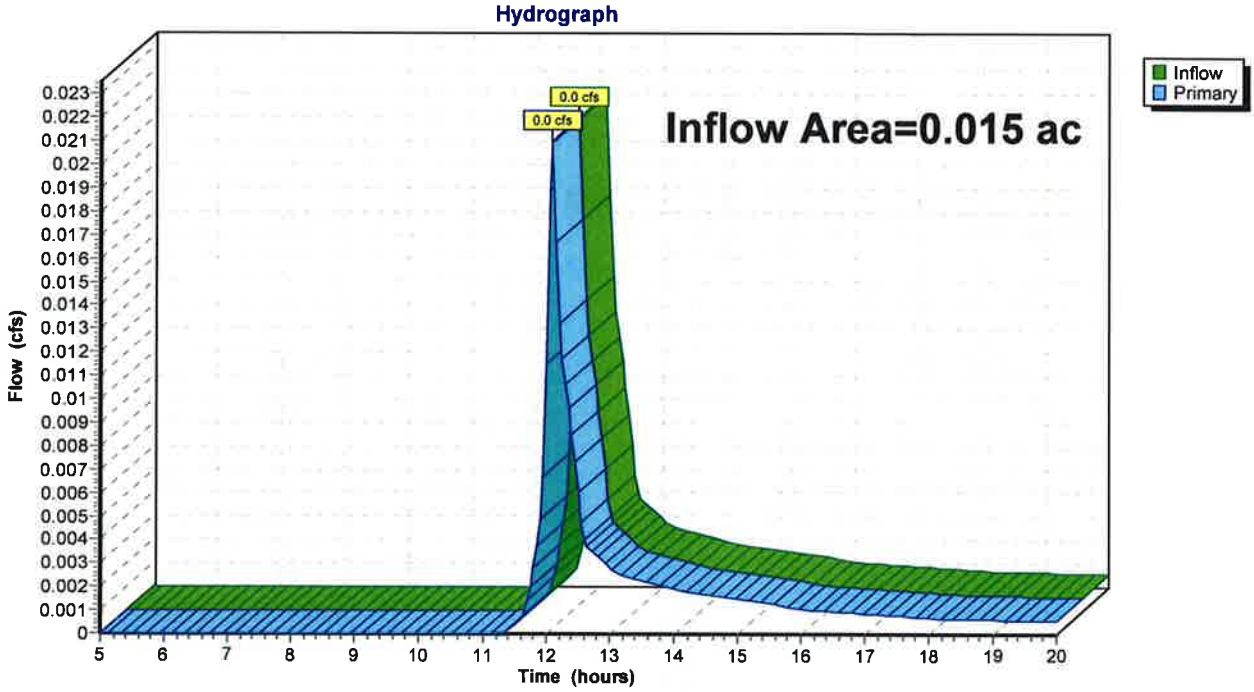


Summary for Link 4L: Discharge Point 5 (DP5)

Inflow Area = 0.015 ac, 0.00% Impervious, Inflow Depth > 1.16" for 10 year event
Inflow = 0.0 cfs @ 12.09 hrs, Volume= 0.001 af
Primary = 0.0 cfs @ 12.09 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 4L: Discharge Point 5 (DP5)



Summary for Subcatchment 3S: East Side, On & Offsite to CB (Altus Model)

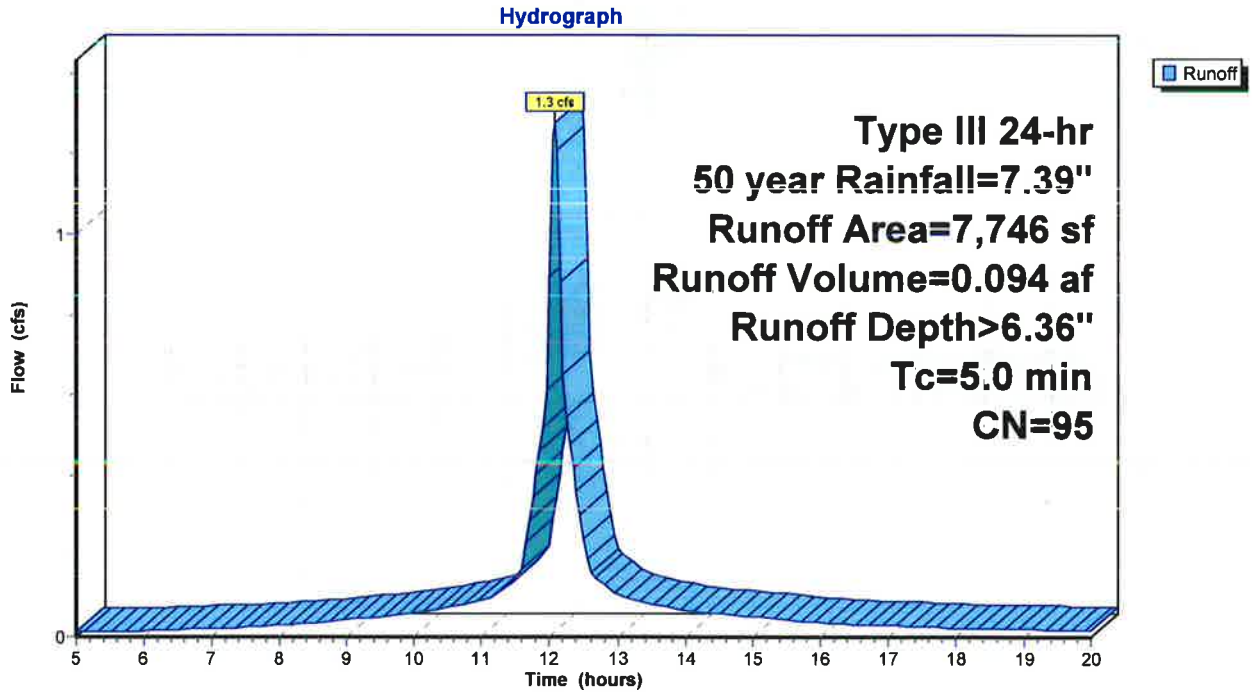
Runoff = 1.3 cfs @ 12.07 hrs, Volume= 0.094 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
*	7,746	95	
	7,746		100.00% Pervious Area

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

Subcatchment 3S: East Side, On & Offsite to CB (Altus Model)



Summary for Subcatchment 4S: Existing Building (Altus Model)

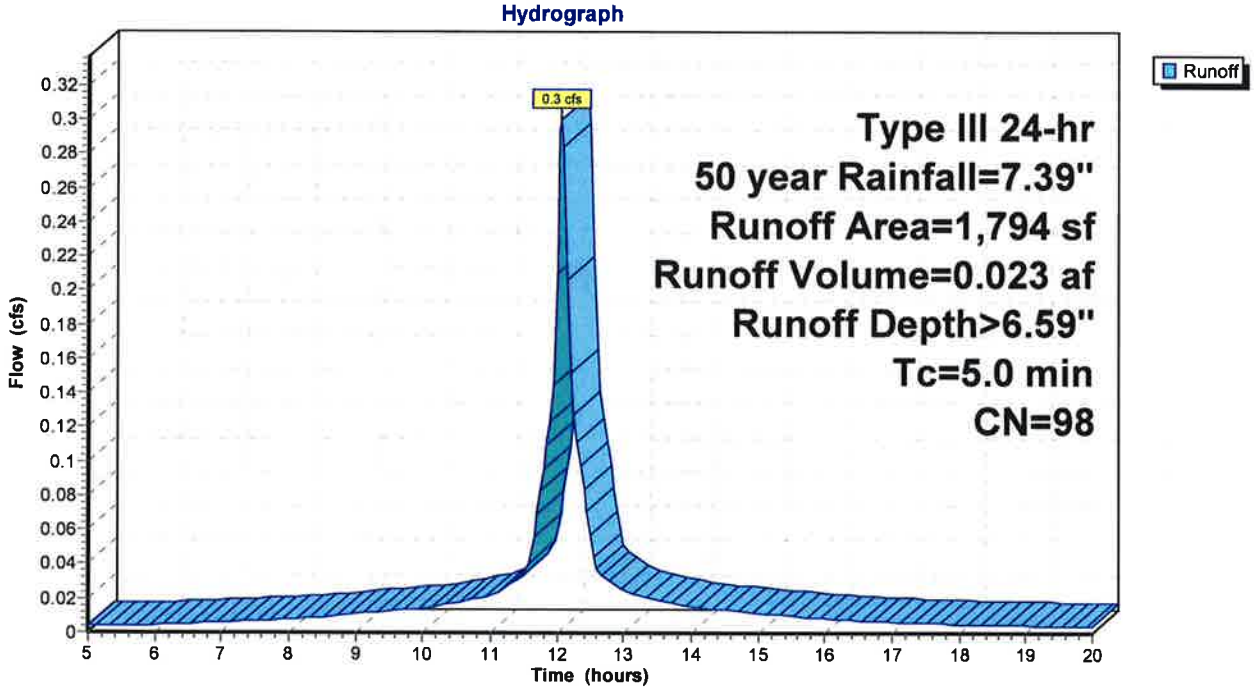
Runoff = 0.3 cfs @ 12.07 hrs, Volume= 0.023 af, Depth> 6.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
*	1,794	98	
	1,794		100.00% Impervious Area

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

Subcatchment 4S: Existing Building (Altus Model)



Summary for Subcatchment 30S: West Parking Lot (Altus Model)

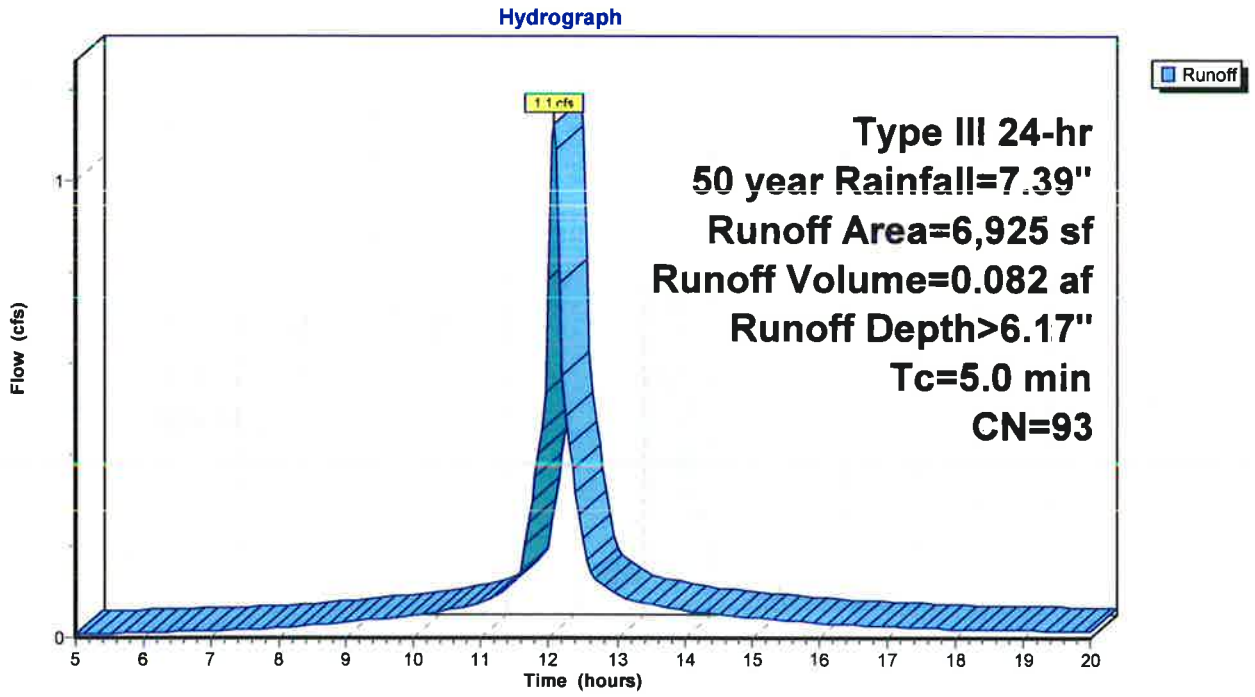
Runoff = 1.1 cfs @ 12.07 hrs, Volume= 0.082 af, Depth> 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
*	6,925	93	
	6,925		100.00% Pervious Area

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

Subcatchment 30S: West Parking Lot (Altus Model)



Summary for Subcatchment 31S: West Front Yard (Altus Model)

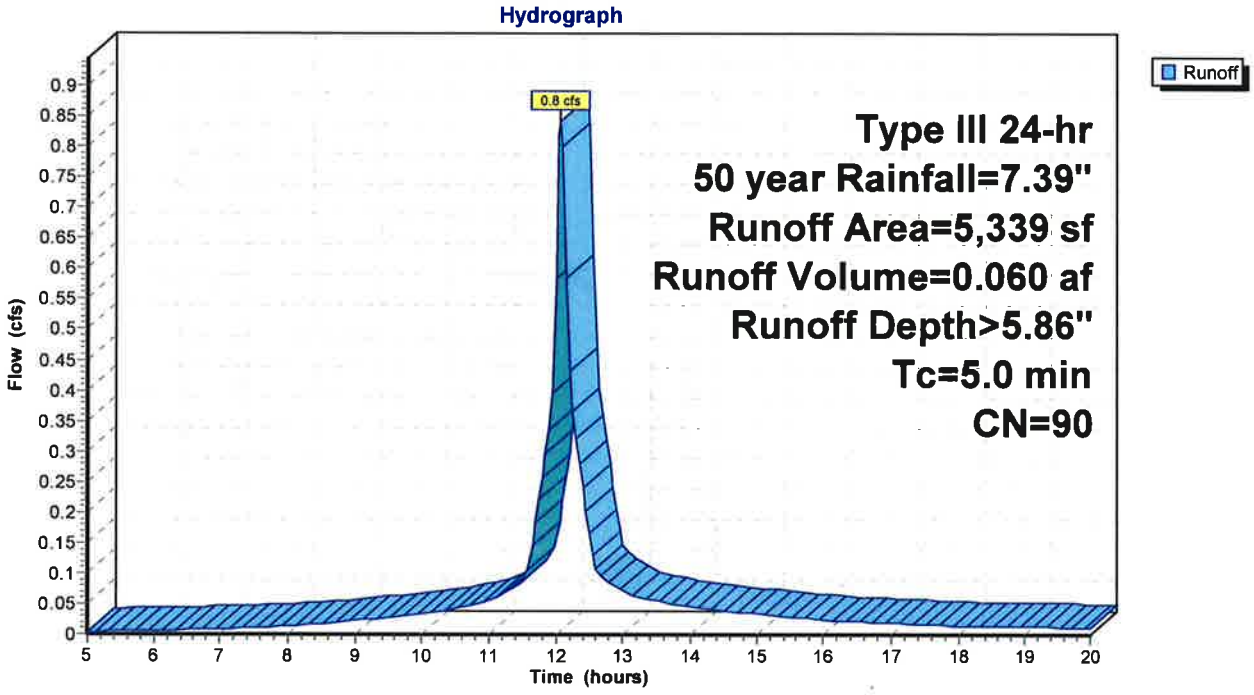
Runoff = 0.8 cfs @ 12.07 hrs, Volume= 0.060 af, Depth> 5.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
*	5,339	90	
	5,339		100.00% Pervious Area

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

Subcatchment 31S: West Front Yard (Altus Model)



Summary for Subcatchment 32S: East Front Yard (Altus Model)

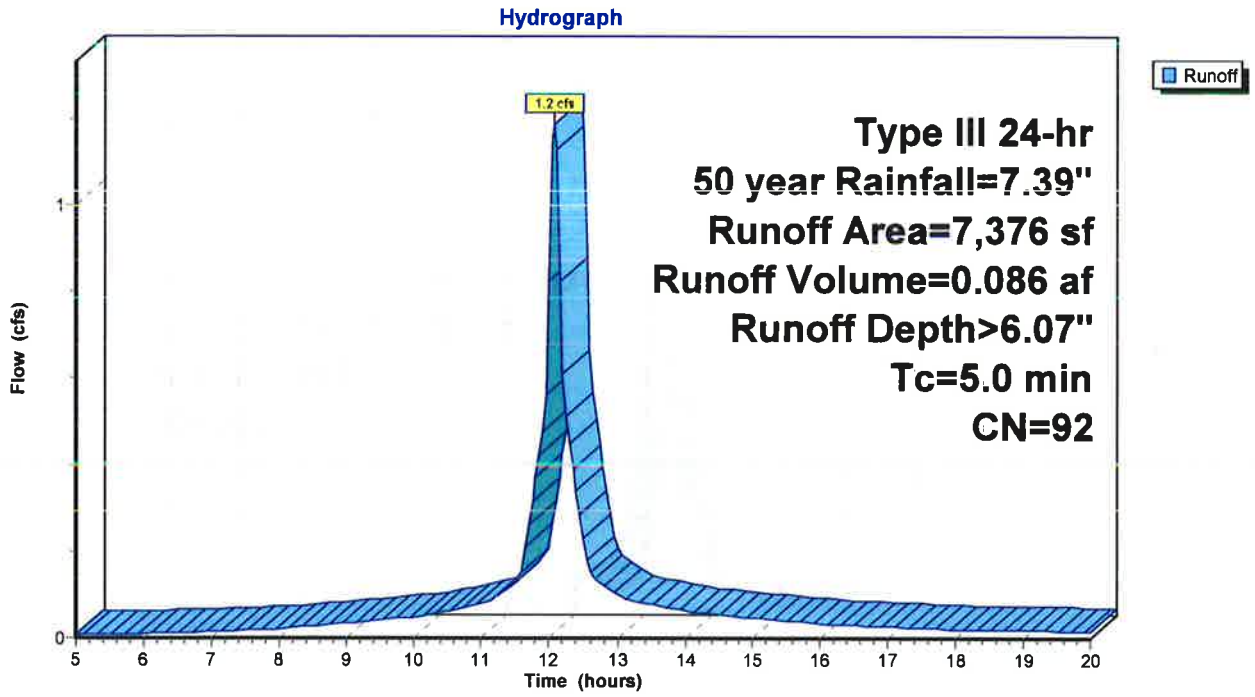
Runoff = 1.2 cfs @ 12.07 hrs, Volume= 0.086 af, Depth> 6.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
*	7,376	92	
	7,376		100.00% Pervious Area

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

Subcatchment 32S: East Front Yard (Altus Model)



Summary for Subcatchment 33S: East Parking Lot (Altus Model)

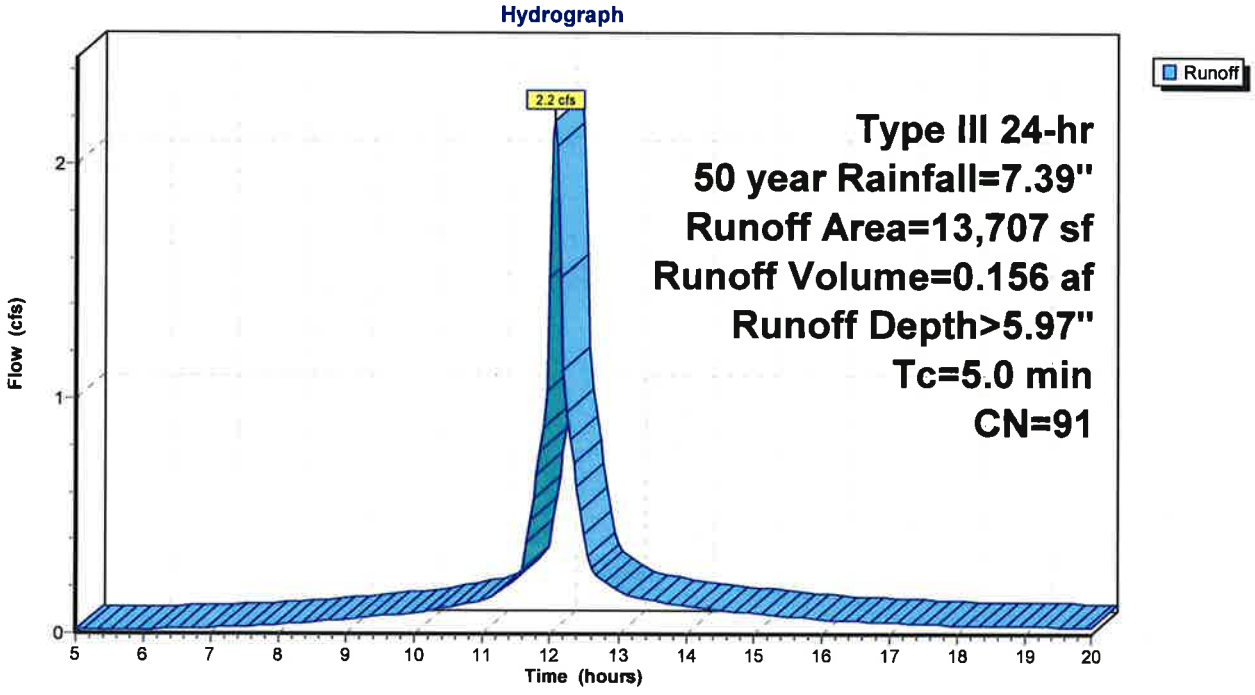
Runoff = 2.2 cfs @ 12.07 hrs, Volume= 0.156 af, Depth> 5.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
*	13,707	91	
	13,707		100.00% Pervious Area

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

Subcatchment 33S: East Parking Lot (Altus Model)



Summary for Subcatchment 34S: North Parking Lot (Altus Model)

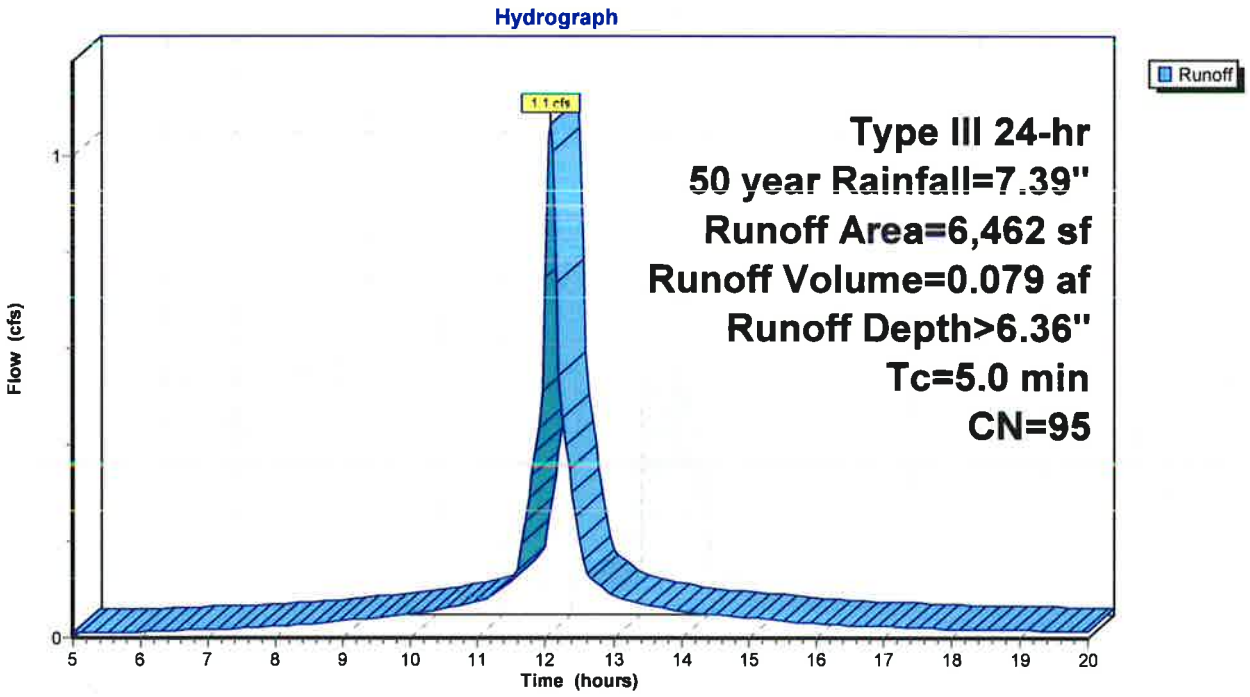
Runoff = 1.1 cfs @ 12.07 hrs, Volume= 0.079 af, Depth> 6.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
*	6,462	95	
	6,462		100.00% Pervious Area

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

Subcatchment 34S: North Parking Lot (Altus Model)



Summary for Subcatchment 40S: Existing Building (Altus Model)

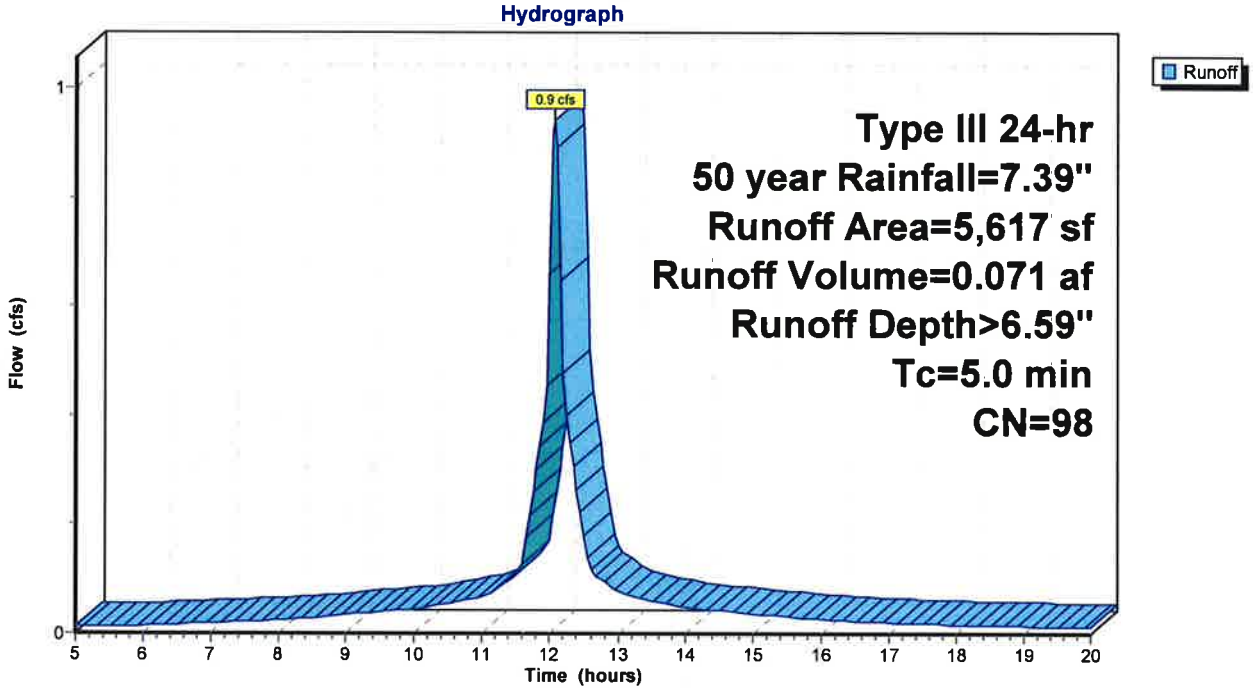
Runoff = 0.9 cfs @ 12.07 hrs, Volume= 0.071 af, Depth> 6.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
*	5,617	98	
	5,617		100.00% Impervious Area

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

Subcatchment 40S: Existing Building (Altus Model)



Summary for Subcatchment ES1:

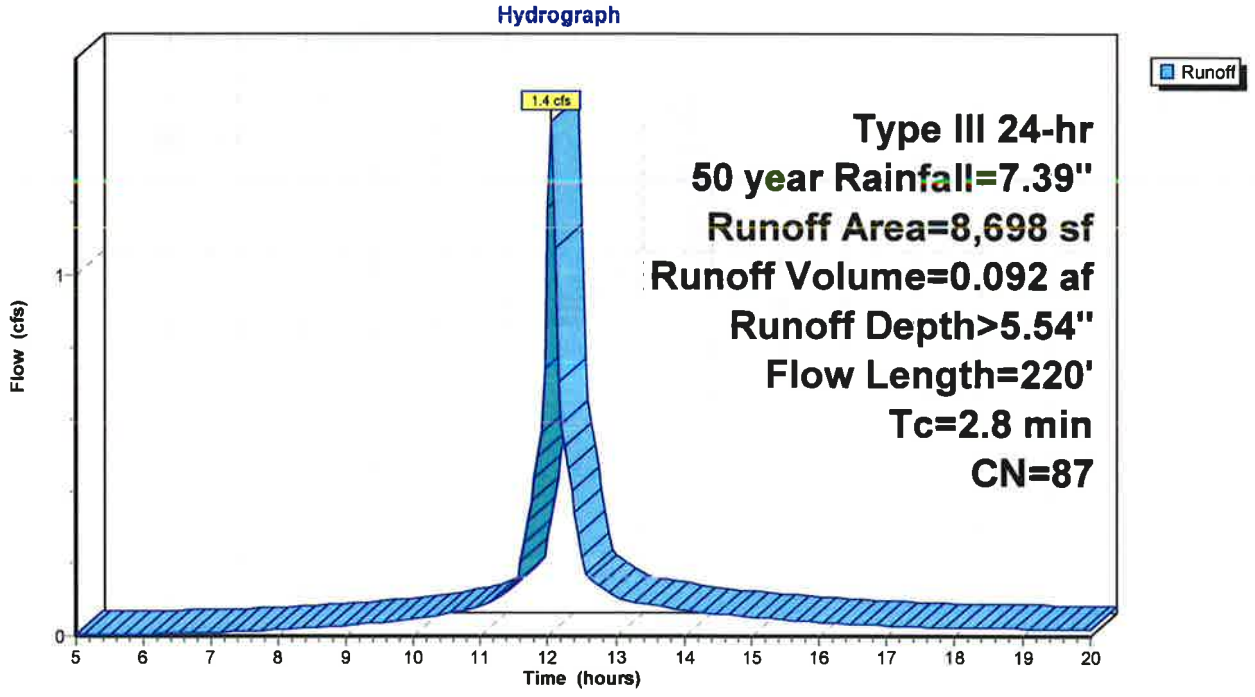
Runoff = 1.4 cfs @ 12.05 hrs, Volume= 0.092 af, Depth> 5.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
	5,487	98	Paved parking, HSG B
*	658	98	Unconnected pavement, sidewalk, HSG B
	2,553	61	>75% Grass cover, Good, HSG B
	8,698	87	Weighted Average
	2,553		29.35% Pervious Area
	6,145		70.65% Impervious Area
	658		10.71% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	84	0.0089	0.66		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.7	136	0.0239	3.14		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.8	220	Total			

Subcatchment ES1:



Summary for Subcatchment ES1a: Offsite

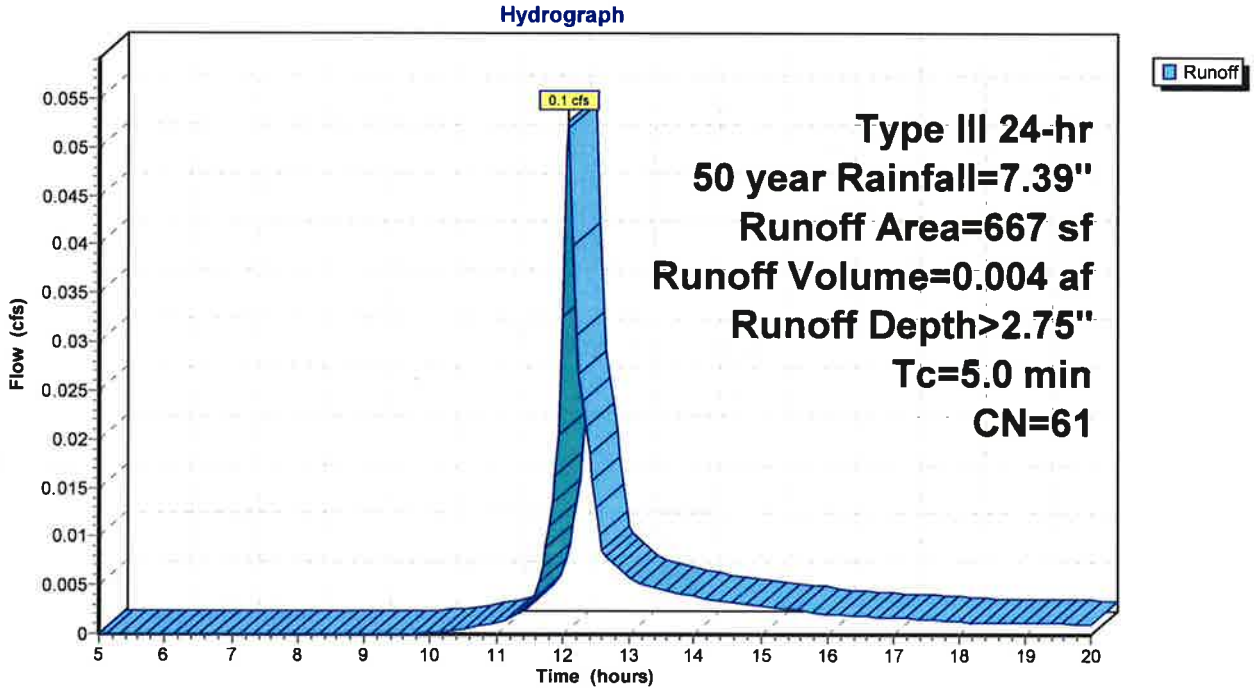
Runoff = 0.1 cfs @ 12.08 hrs, Volume= 0.004 af, Depth> 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

Area (sf)	CN	Description
667	61	>75% Grass cover, Good, HSG B
667		100.00% Pervious Area

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

Subcatchment ES1a: Offsite



Summary for Subcatchment ES2:

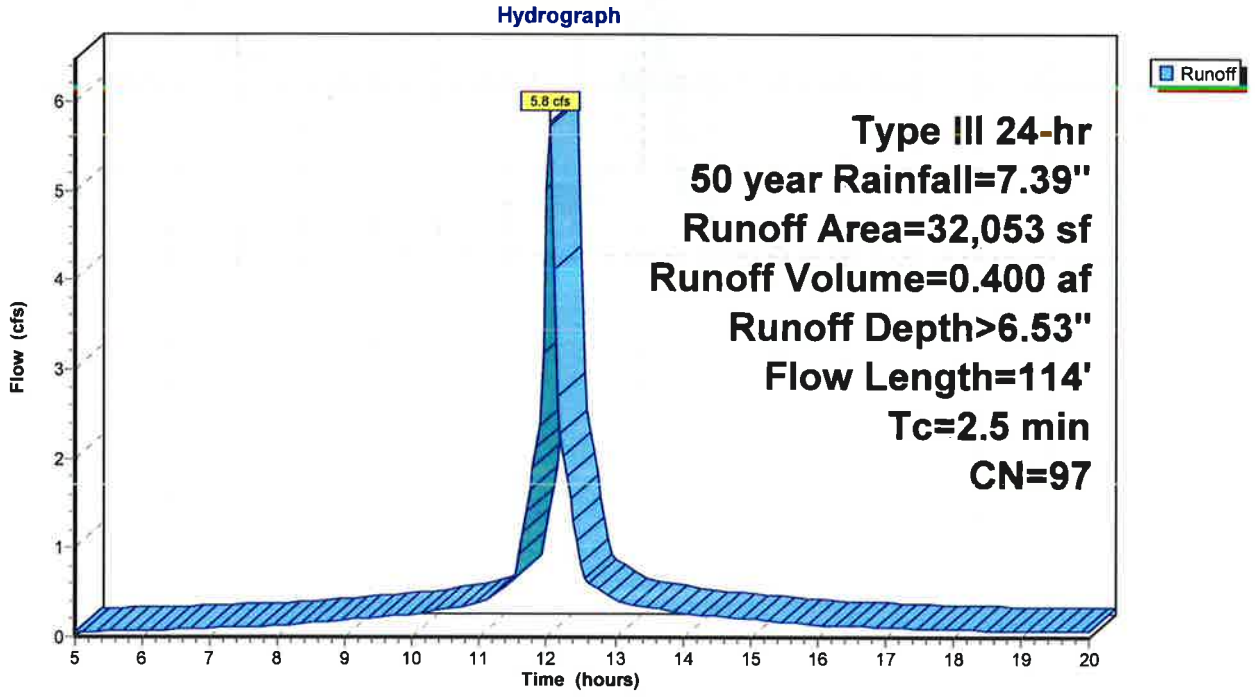
Runoff = 5.8 cfs @ 12.04 hrs, Volume= 0.400 af, Depth> 6.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
	10,300	98	Roofs, HSG B
	3,910	98	Roofs, HSG B
	641	61	>75% Grass cover, Good, HSG B
*	480	98	Unconnected pavement,sidewalks , HSG B
	9,865	98	Paved parking, HSG B
*	6,857	98	Gravel surface, HSG B
	32,053	97	Weighted Average
	641		2.00% Pervious Area
	31,412		98.00% Impervious Area
	480		1.53% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	35	0.0071	0.74		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.21"
1.7	79	0.0050	0.75		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.21"
2.5	114	Total			

Subcatchment ES2:



Summary for Subcatchment ES2a:

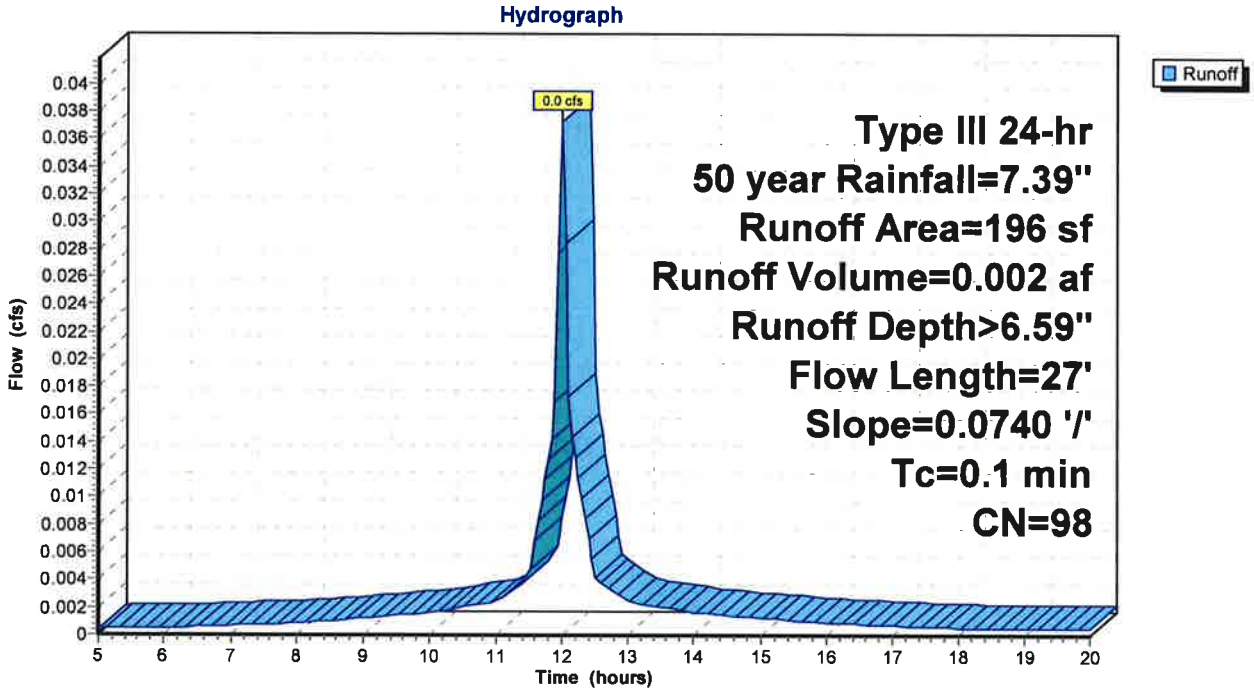
Runoff = 0.0 cfs @ 12.00 hrs, Volume= 0.002 af, Depth> 6.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
	102	98	Paved parking, HSG B
*	94	98	Unconnected pavement, sidewalk, HSG B
	196	98	Weighted Average
	196		100.00% Impervious Area
	94		47.96% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.1	27	0.0740	5.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps

Subcatchment ES2a:



Summary for Subcatchment ES3:

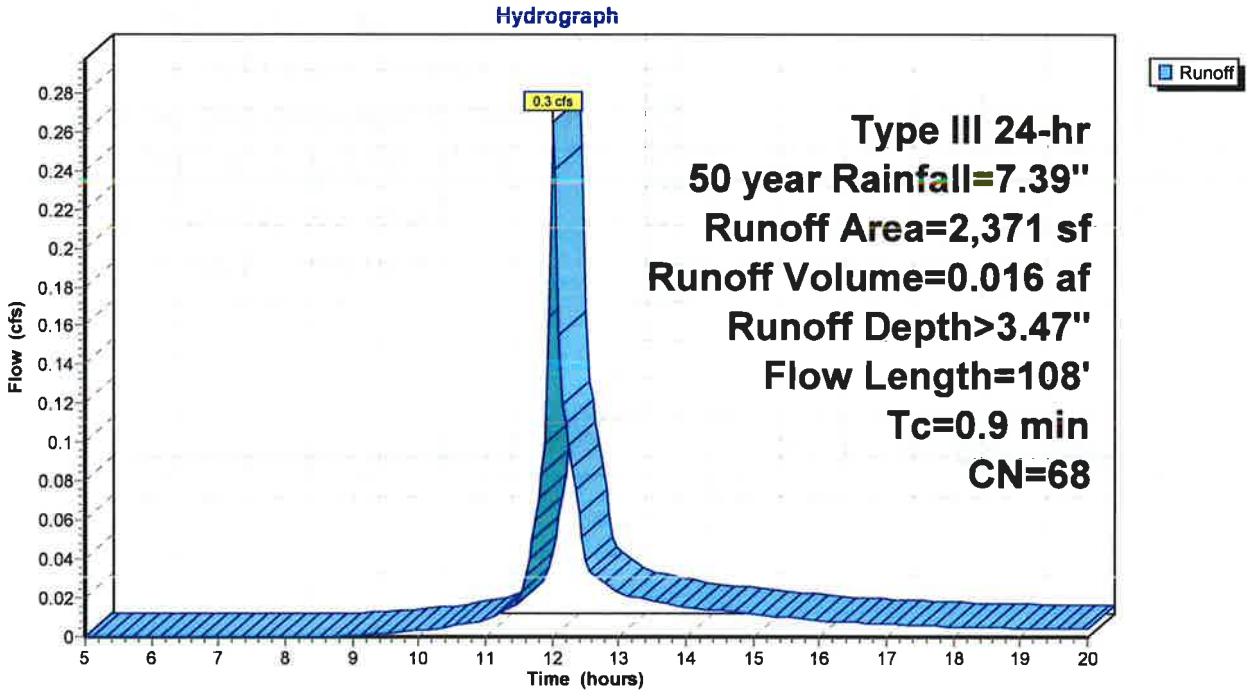
Runoff = 0.3 cfs @ 12.02 hrs, Volume= 0.016 af, Depth> 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
*	414	98	Gravel surface, HSG B
*	33	98	Unconnected pavement, sidewalk, HSG B
	1,924	61	>75% Grass cover, Good, HSG B
	2,371	68	Weighted Average
	1,924		81.15% Pervious Area
	447		18.85% Impervious Area
	33		7.38% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	58	0.0819	5.81		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	50	0.0300	1.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	108	Total			

Subcatchment ES3:



Summary for Subcatchment ES4:

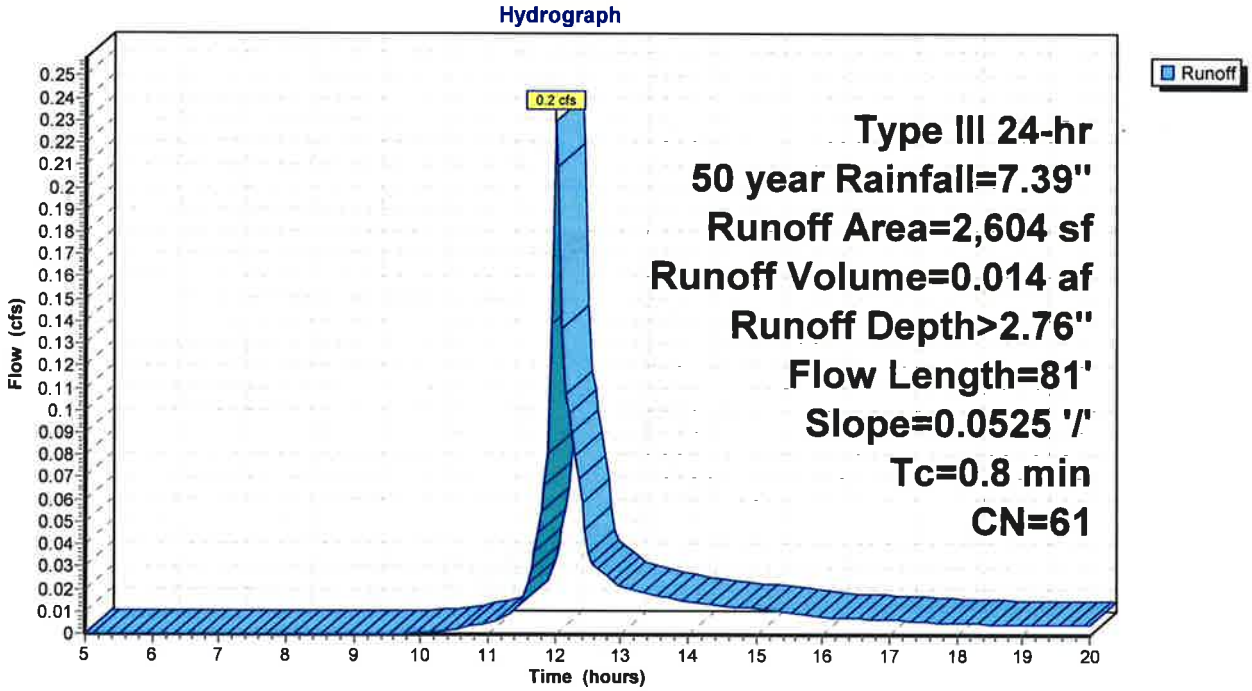
Runoff = 0.2 cfs @ 12.02 hrs, Volume= 0.014 af, Depth> 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

Area (sf)	CN	Description
2,604	61	>75% Grass cover, Good, HSG B
2,604		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	81	0.0525	1.60		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps

Subcatchment ES4:



Summary for Subcatchment ES4a: Offsite

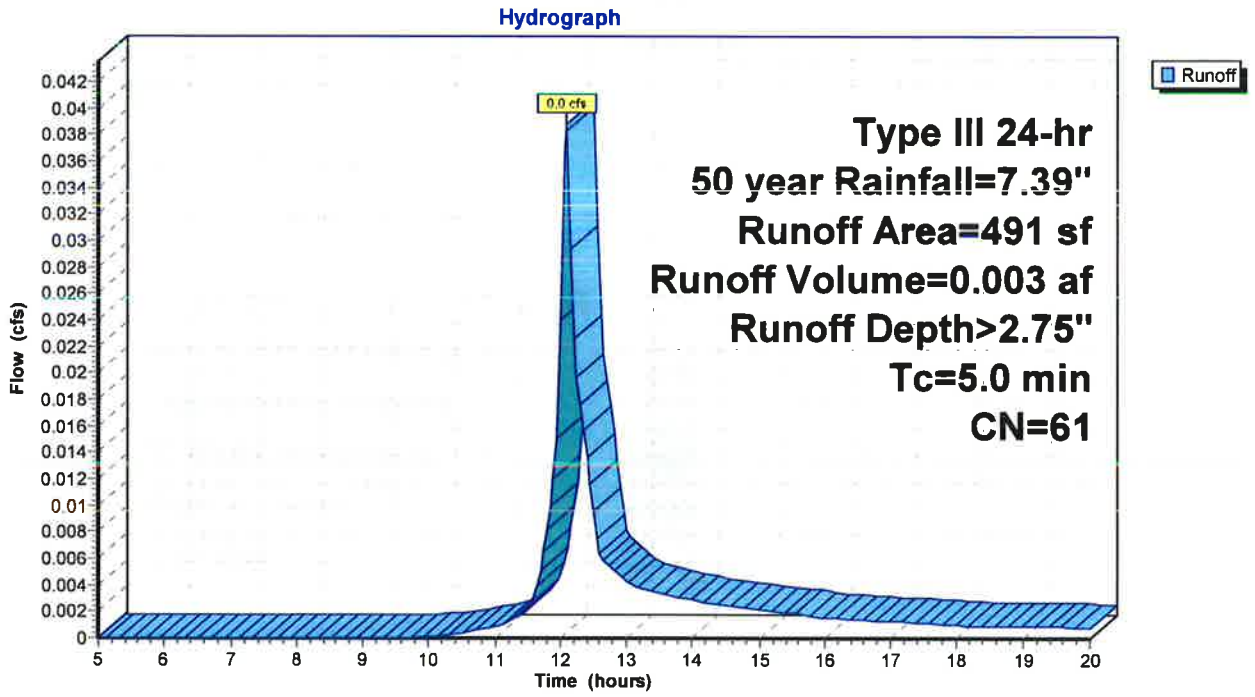
Runoff = 0.0 cfs @ 12.08 hrs, Volume= 0.003 af, Depth> 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

Area (sf)	CN	Description
491	61	>75% Grass cover, Good, HSG B
491		100.00% Pervious Area

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

Subcatchment ES4a: Offsite



Summary for Subcatchment ES5:

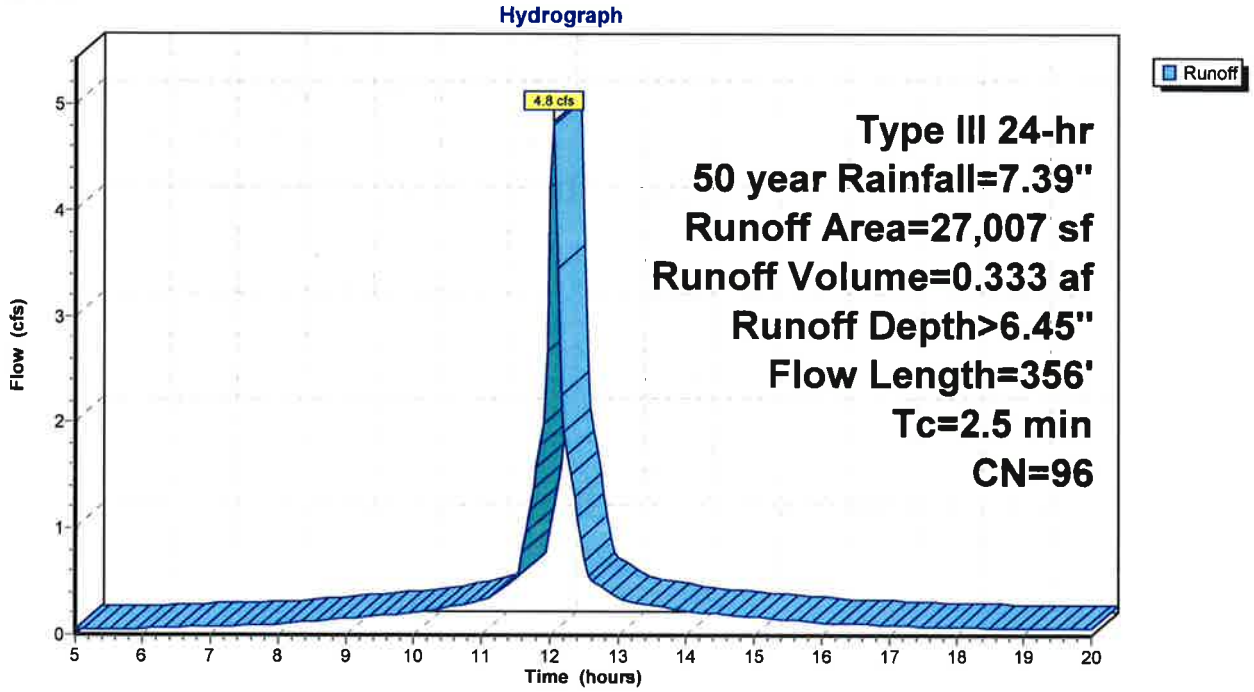
Runoff = 4.8 cfs @ 12.04 hrs, Volume= 0.333 af, Depth> 6.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
	23,335	98	Paved parking, HSG B
*	1,456	98	Unconnected pavement, sidewalk, HSG B
	1,658	61	>75% Grass cover, Good, HSG B
*	558	98	Gravel surface, HSG B
	27,007	96	Weighted Average
	1,658		6.14% Pervious Area
	25,349		93.86% Impervious Area
	1,456		5.74% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	56	0.0050	0.70		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 3.21"
1.2	300	0.0417	4.15		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	356	Total			

Subcatchment ES5:



Summary for Subcatchment ES6:

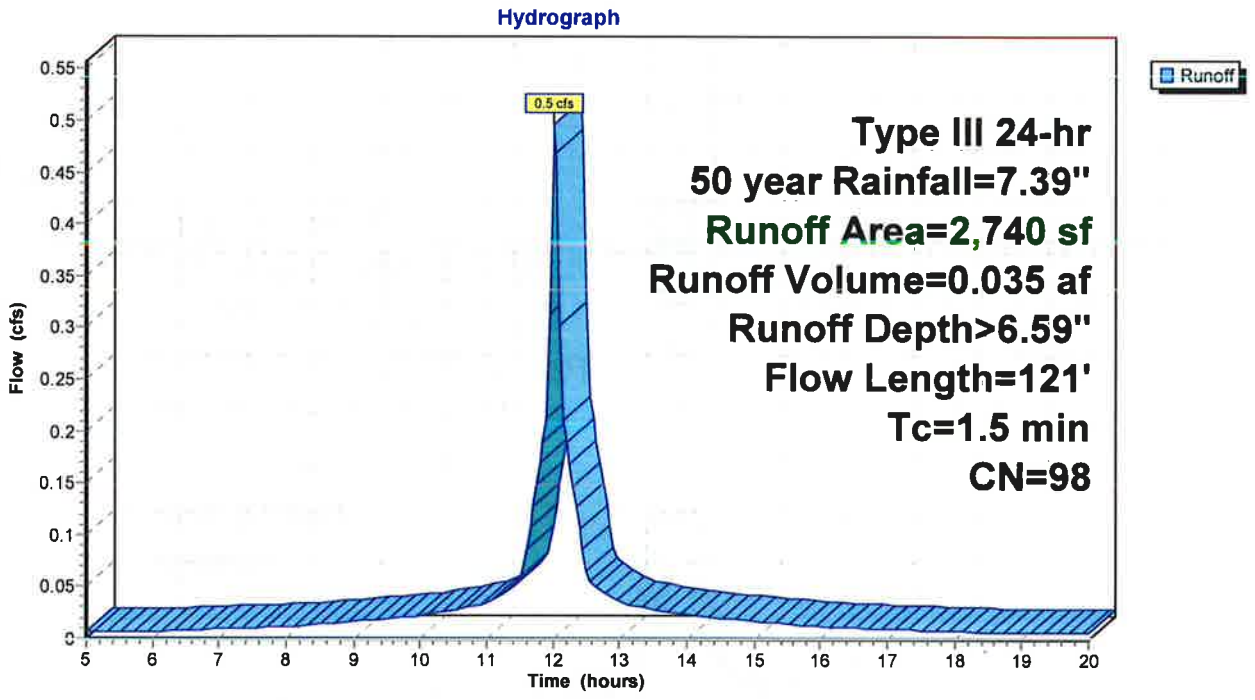
Runoff = 0.5 cfs @ 12.02 hrs, Volume= 0.035 af, Depth> 6.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
	2,330	98	Paved parking, HSG B
*	410	98	Unconnected pavement, sidewalk, HSG B
	2,740	98	Weighted Average
	2,740		100.00% Impervious Area
	410		14.96% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	26	0.0096	0.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	95	0.0078	1.79		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	121	Total			

Subcatchment ES6:



Summary for Subcatchment ES7:

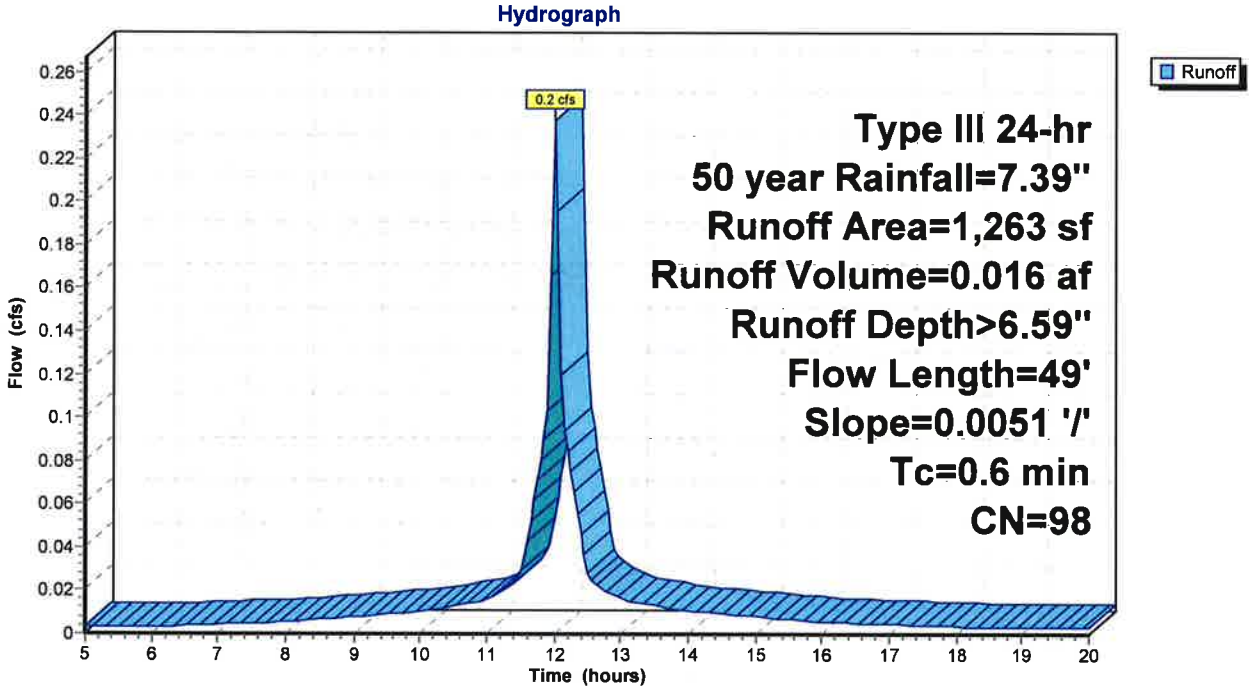
Runoff = 0.2 cfs @ 12.01 hrs, Volume= 0.016 af, Depth> 6.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
	922	98	Paved parking, HSG B
*	341	98	Unconnected pavement, sidewalk, HSG B
	1,263	98	Weighted Average
	1,263		100.00% Impervious Area
	341		27.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	49	0.0051	1.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps

Subcatchment ES7:



Summary for Subcatchment ES8:

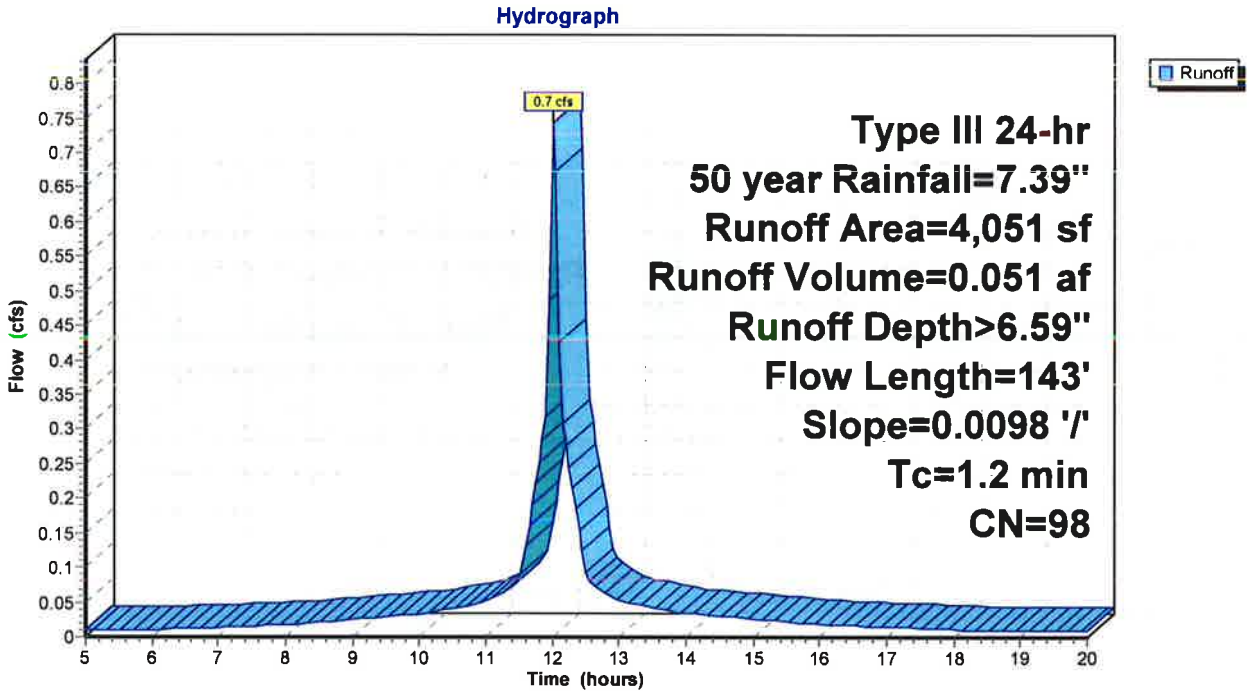
Runoff = 0.7 cfs @ 12.02 hrs, Volume= 0.051 af, Depth> 6.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
	2,607	98	Paved parking, HSG B
*	1,444	98	Unconnected pavement,sidewalk, HSG B
	4,051	98	Weighted Average
	4,051		100.00% Impervious Area
	1,444		35.65% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	143	0.0098	2.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps

Subcatchment ES8:



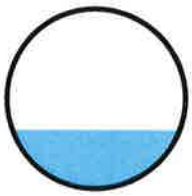
Summary for Reach 4R: Altus Model

Inflow Area = 0.041 ac,100.00% Impervious, Inflow Depth > 6.59" for 50 year event
Inflow = 0.3 cfs @ 12.07 hrs, Volume= 0.023 af
Outflow = 0.3 cfs @ 12.08 hrs, Volume= 0.023 af, Atten= 1%, Lag= 0.7 min

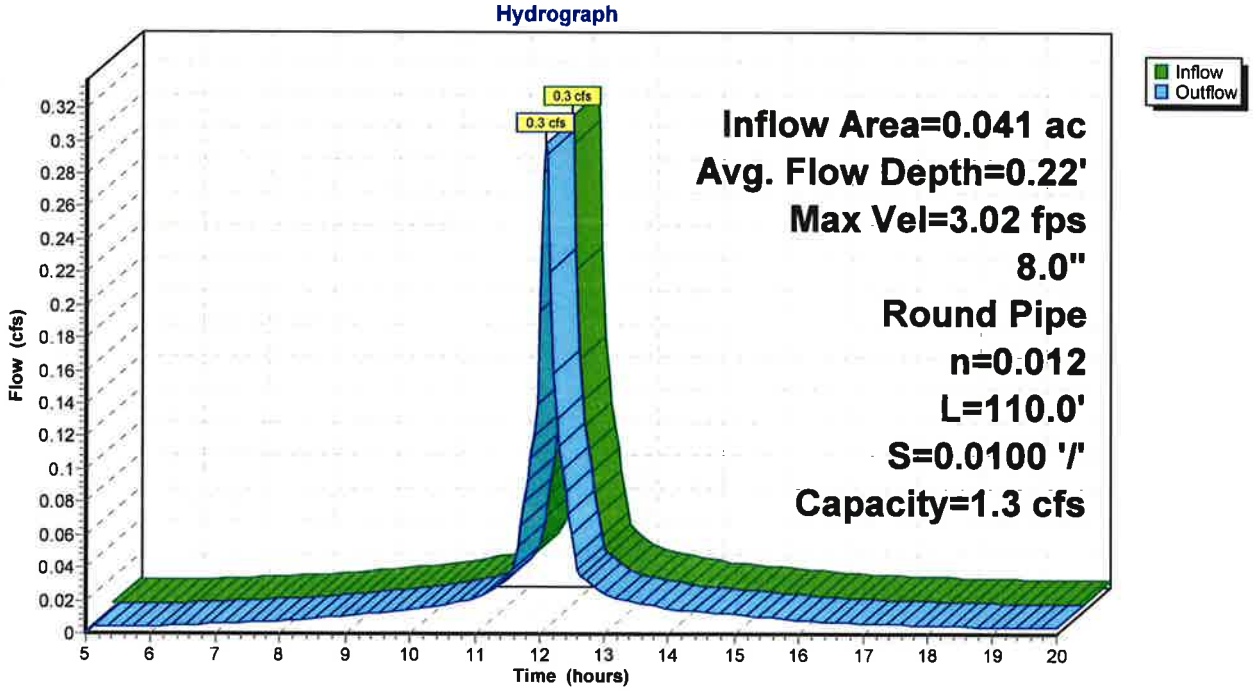
Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.02 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.17 fps, Avg. Travel Time= 1.6 min

Peak Storage= 11 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.3 cfs

8.0" Round Pipe
n= 0.012
Length= 110.0' Slope= 0.0100 '/'
Inlet Invert= 8.38', Outlet Invert= 7.28'



Reach 4R: Altus Model



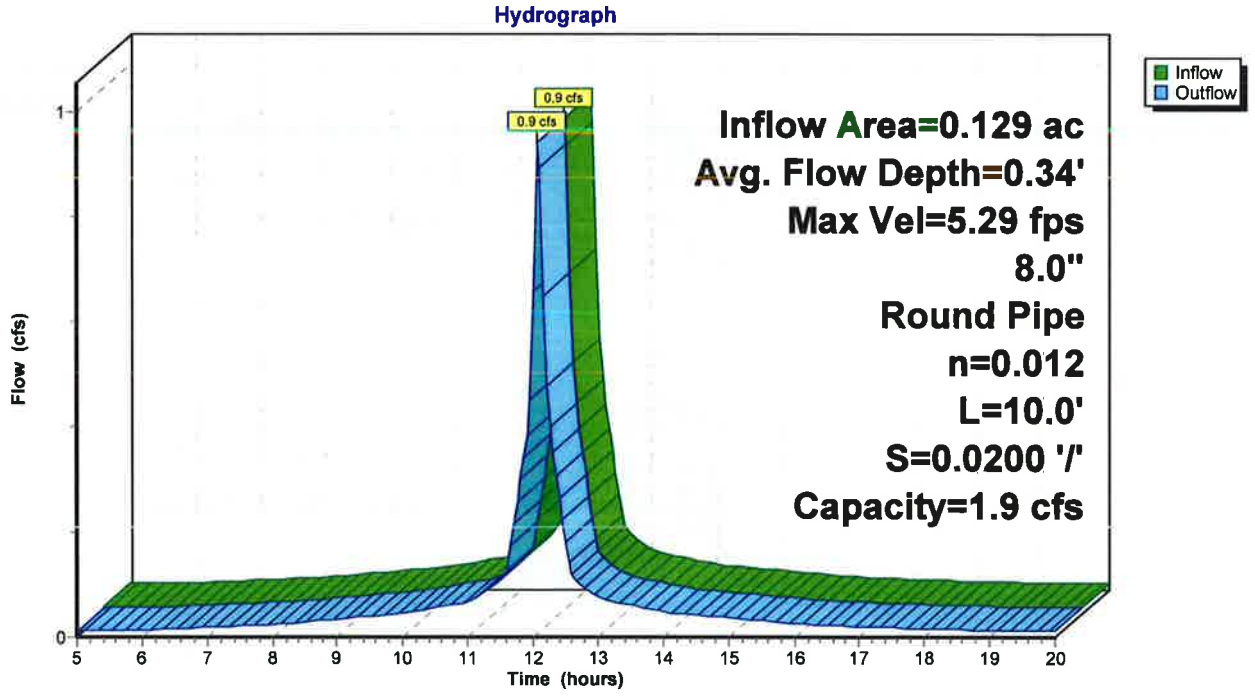
Summary for Reach 40R: Altus Model

Inflow Area = 0.129 ac,100.00% Impervious, Inflow Depth > 6.59" for 50 year event
Inflow = 0.9 cfs @ 12.07 hrs, Volume= 0.071 af
Outflow = 0.9 cfs @ 12.07 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.29 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 2.10 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.9 cfs

8.0" Round Pipe
n= 0.012
Length= 10.0' Slope= 0.0200 '/'
Inlet Invert= 6.82', Outlet Invert= 6.62'



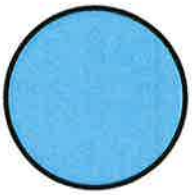
Summary for Reach 41R: Altus Model

Inflow Area = 0.938 ac, 80.14% Impervious, Inflow Depth > 6.46" for 50 year event
Inflow = 7.1 cfs @ 12.05 hrs, Volume= 0.505 af
Outflow = 2.3 cfs @ 11.81 hrs, Volume= 0.505 af, Atten= 68%, Lag= 0.0 min

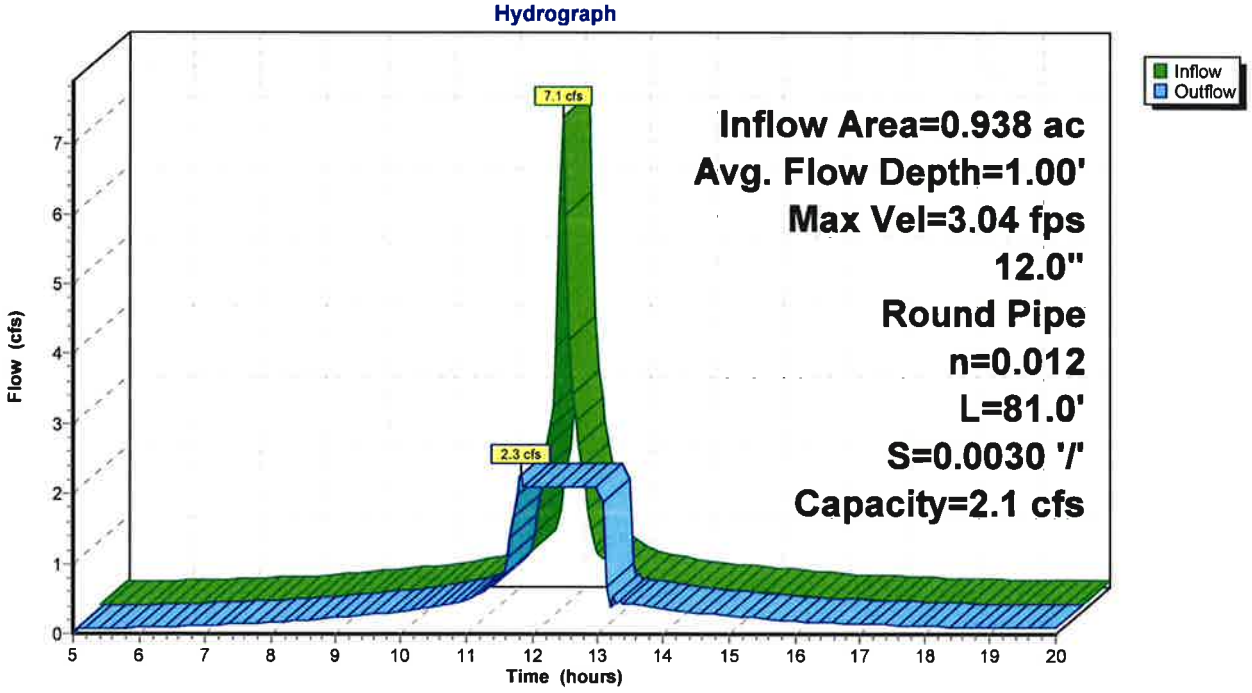
Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.04 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.78 fps, Avg. Travel Time= 0.8 min

Peak Storage= 64 cf @ 11.85 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.1 cfs

12.0" Round Pipe
n= 0.012
Length= 81.0' Slope= 0.0030 '/'
Inlet Invert= 6.45', Outlet Invert= 6.21'



Reach 41R: Altus Model

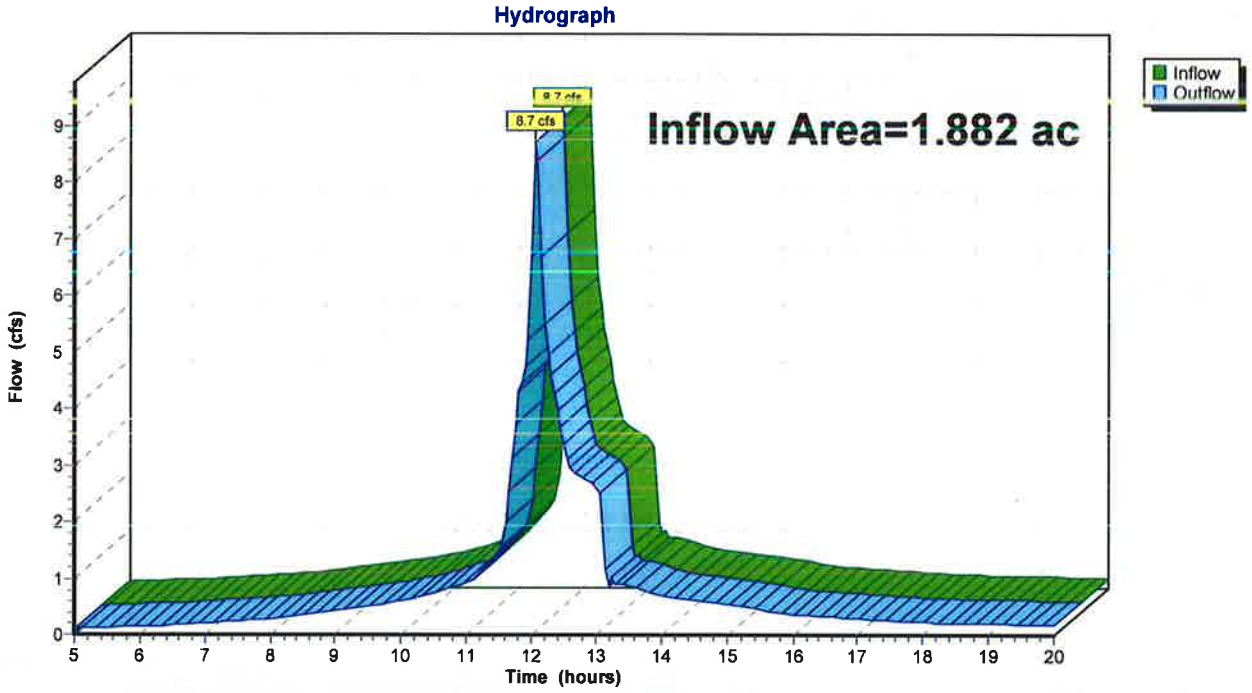


Summary for Reach 300R / DP1A: POA #3 - Existing CB (Altus Model) - AEI DP1A

Inflow Area = 1.882 ac, 39.96% Impervious, Inflow Depth > 6.27" for 50 year event
Inflow = 8.7 cfs @ 12.07 hrs, Volume= 0.983 af
Outflow = 8.7 cfs @ 12.07 hrs, Volume= 0.983 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 300R / DP1A: POA #3 - Existing CB (Altus Model) - AEI DP1A



Summary for Pond 3P: Existing CB (Altus Model)

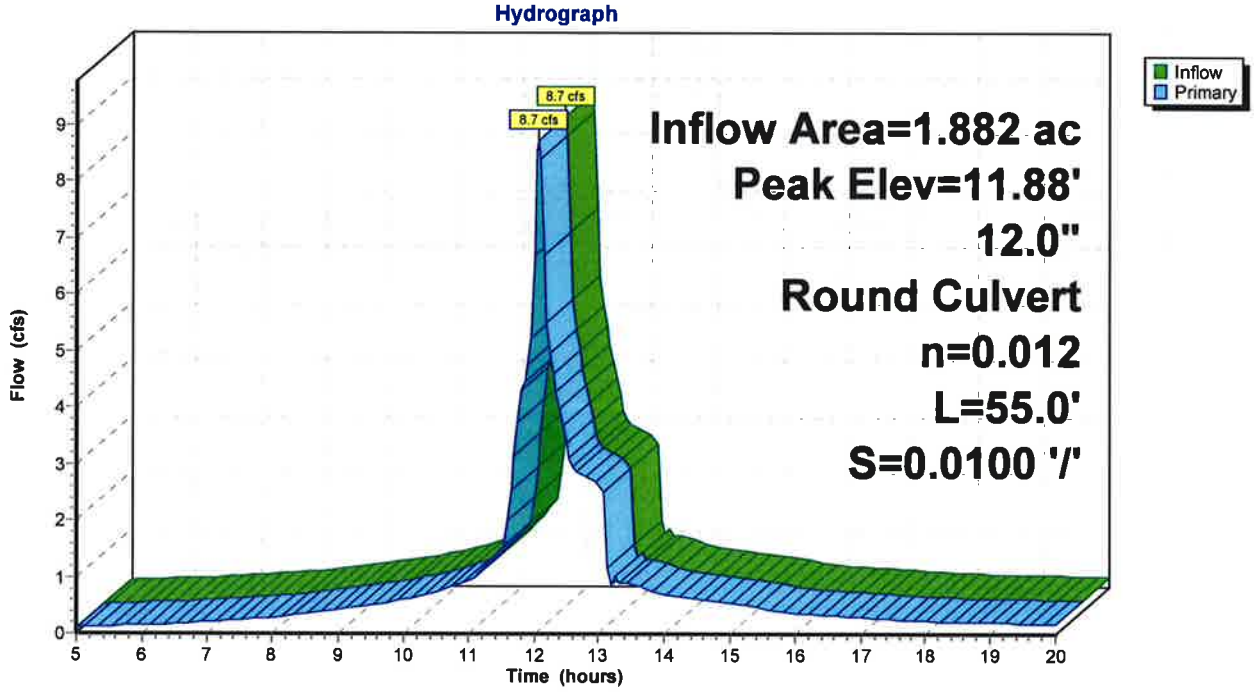
Inflow Area = 1.882 ac, 39.96% Impervious, Inflow Depth > 6.27" for 50 year event
Inflow = 8.7 cfs @ 12.07 hrs, Volume= 0.983 af
Outflow = 8.7 cfs @ 12.07 hrs, Volume= 0.983 af, Atten= 0%, Lag= 0.0 min
Primary = 8.7 cfs @ 12.07 hrs, Volume= 0.983 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 11.88' @ 12.07 hrs
Flood Elev= 8.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.76'	**12.0" Round Culvert** L= 55.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.76' / 5.21' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=8.5 cfs @ 12.07 hrs HW=11.60' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 8.5 cfs @ 10.80 fps)

Pond 3P: Existing CB (Altus Model)

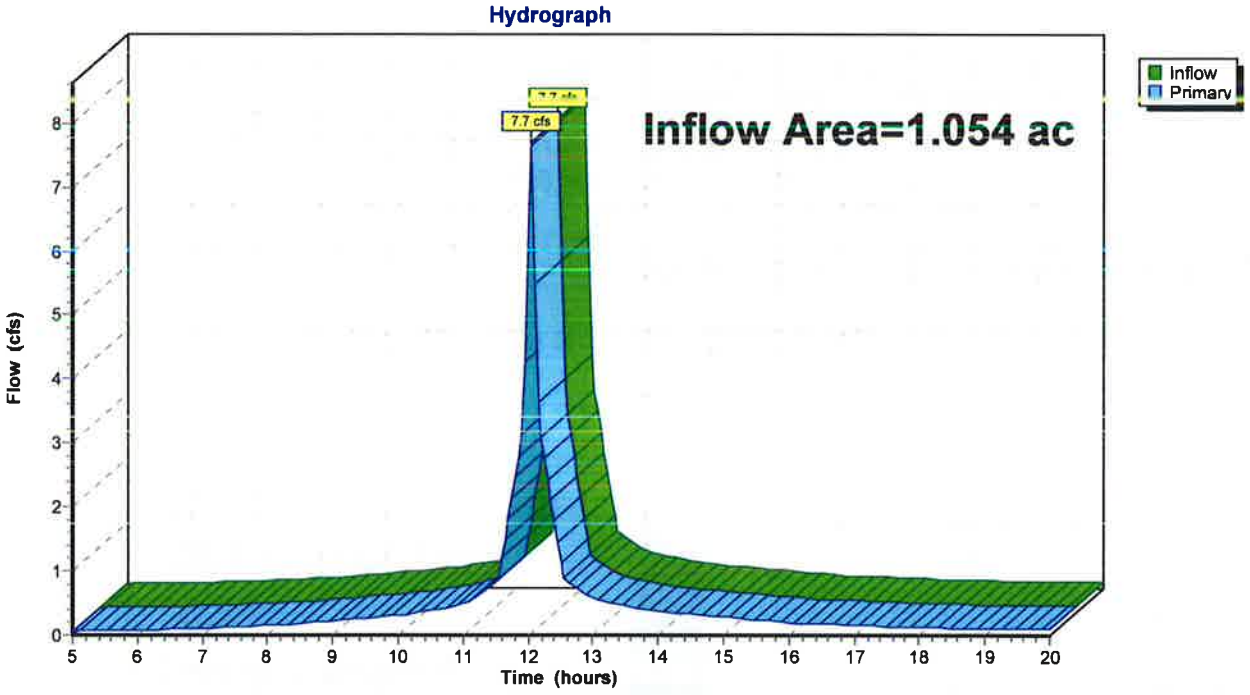


Summary for Pond 5P: Discharge Point 1 (COMBINED SEWER)

Inflow Area = 1.054 ac, 83.18% Impervious, Inflow Depth > 5.97" for 50 year event
Inflow = 7.7 cfs @ 12.04 hrs, Volume= 0.524 af
Primary = 7.7 cfs @ 12.04 hrs, Volume= 0.524 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond 5P: Discharge Point 1 (COMBINED SEWER)



Summary for Pond 30P: CB #1 (Altus Model)

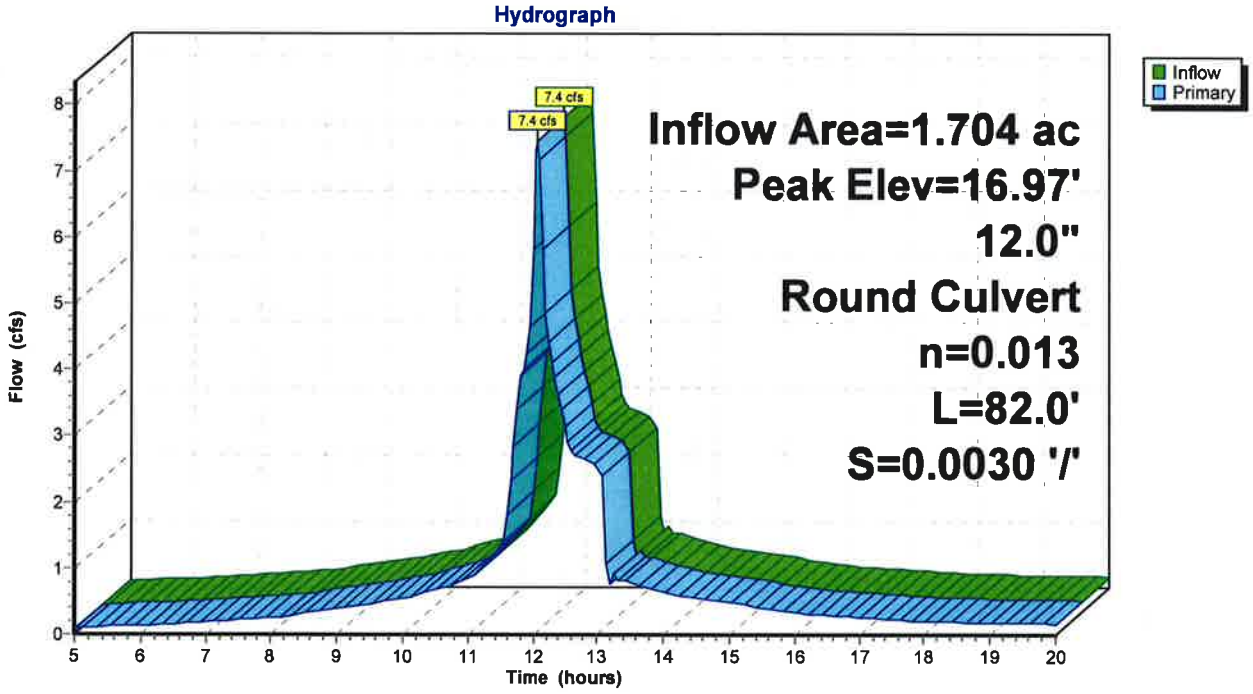
Inflow Area = 1.704 ac, 44.13% Impervious, Inflow Depth > 6.26" for 50 year event
Inflow = 7.4 cfs @ 12.07 hrs, Volume= 0.889 af
Outflow = 7.4 cfs @ 12.07 hrs, Volume= 0.889 af, Atten= 0%, Lag= 0.0 min
Primary = 7.4 cfs @ 12.07 hrs, Volume= 0.889 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 16.97' @ 12.10 hrs
Flood Elev= 9.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.11'	**12.0" Round Culvert** L= 82.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.11' / 5.86' S= 0.0030 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=6.4 cfs @ 12.07 hrs HW=15.86' TW=11.60' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 6.4 cfs @ 8.21 fps)

Pond 30P: CB #1 (Altus Model)



Summary for Pond 31P: CB #2 (Altus Model)

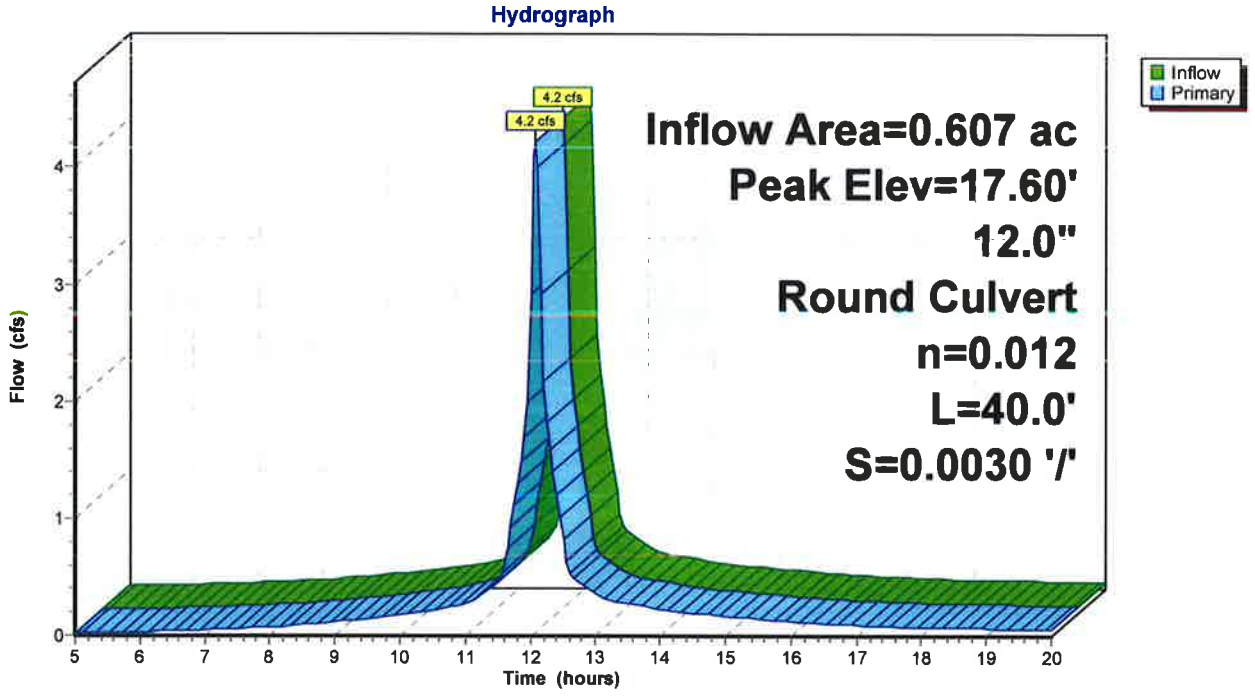
Inflow Area = 0.607 ac, 0.00% Impervious, Inflow Depth > 5.98" for 50 year event
Inflow = 4.2 cfs @ 12.07 hrs, Volume= 0.302 af
Outflow = 4.2 cfs @ 12.07 hrs, Volume= 0.302 af, Atten= 0%, Lag= 0.0 min
Primary = 4.2 cfs @ 12.07 hrs, Volume= 0.302 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 17.60' @ 12.14 hrs
Flood Elev= 9.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.33'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.33' / 6.21' S= 0.0030 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.07 hrs HW=14.30' TW=15.86' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond 31P: CB #2 (Altus Model)



Summary for Pond 32P: CB #3 (Altus Model)

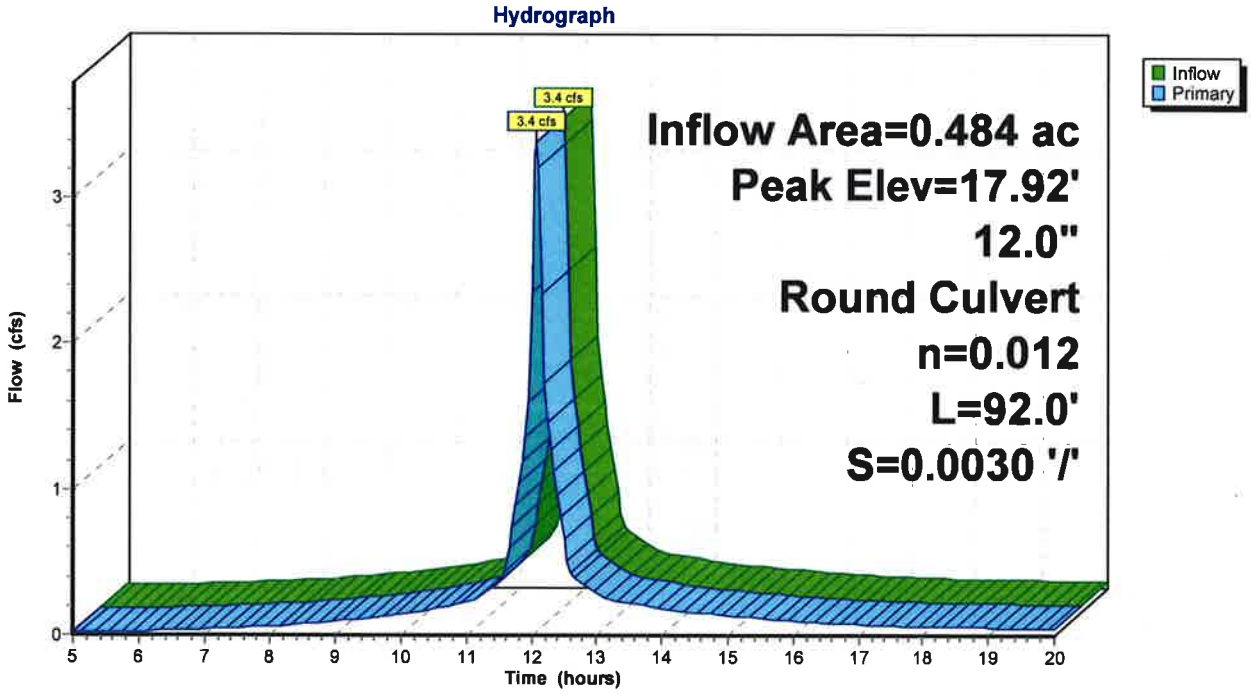
Inflow Area = 0.484 ac, 0.00% Impervious, Inflow Depth > 6.00" for 50 year event
Inflow = 3.4 cfs @ 12.07 hrs, Volume= 0.242 af
Outflow = 3.4 cfs @ 12.07 hrs, Volume= 0.242 af, Atten= 0%, Lag= 0.0 min
Primary = 3.4 cfs @ 12.07 hrs, Volume= 0.242 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 17.92' @ 12.19 hrs
Flood Elev= 9.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.71'	**12.0" Round Culvert** L= 92.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.71' / 6.43' S= 0.0030 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.07 hrs HW=12.70' TW=14.29' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Pond 32P: CB #3 (Altus Model)



Summary for Pond 33P: CB #4 (Altus Model)

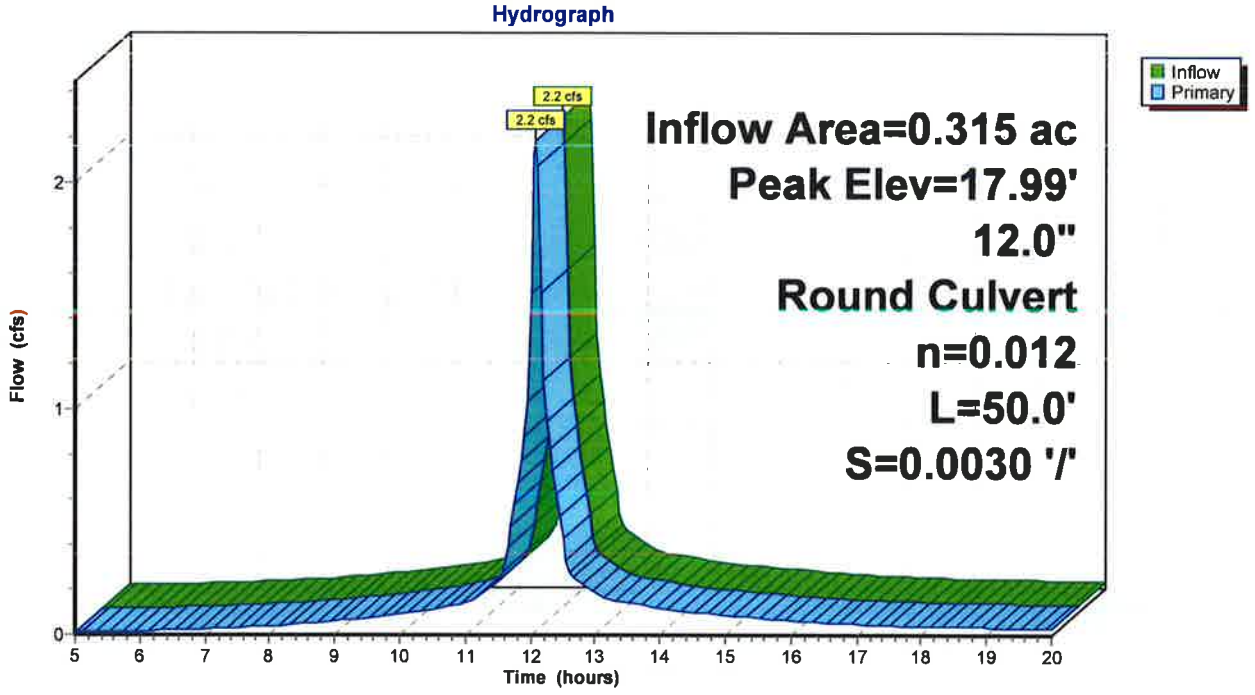
Inflow Area = 0.315 ac, 0.00% Impervious, Inflow Depth > 5.97" for 50 year event
Inflow = 2.2 cfs @ 12.07 hrs, Volume= 0.156 af
Outflow = 2.2 cfs @ 12.07 hrs, Volume= 0.156 af, Atten= 0%, Lag= 0.0 min
Primary = 2.2 cfs @ 12.07 hrs, Volume= 0.156 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 17.99' @ 12.24 hrs
Flood Elev= 9.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.96'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.96' / 6.81' S= 0.0030 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.07 hrs HW=11.29' TW=12.70' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond 33P: CB #4 (Altus Model)



Summary for Pond 34P: CB #5 (Altus Model)

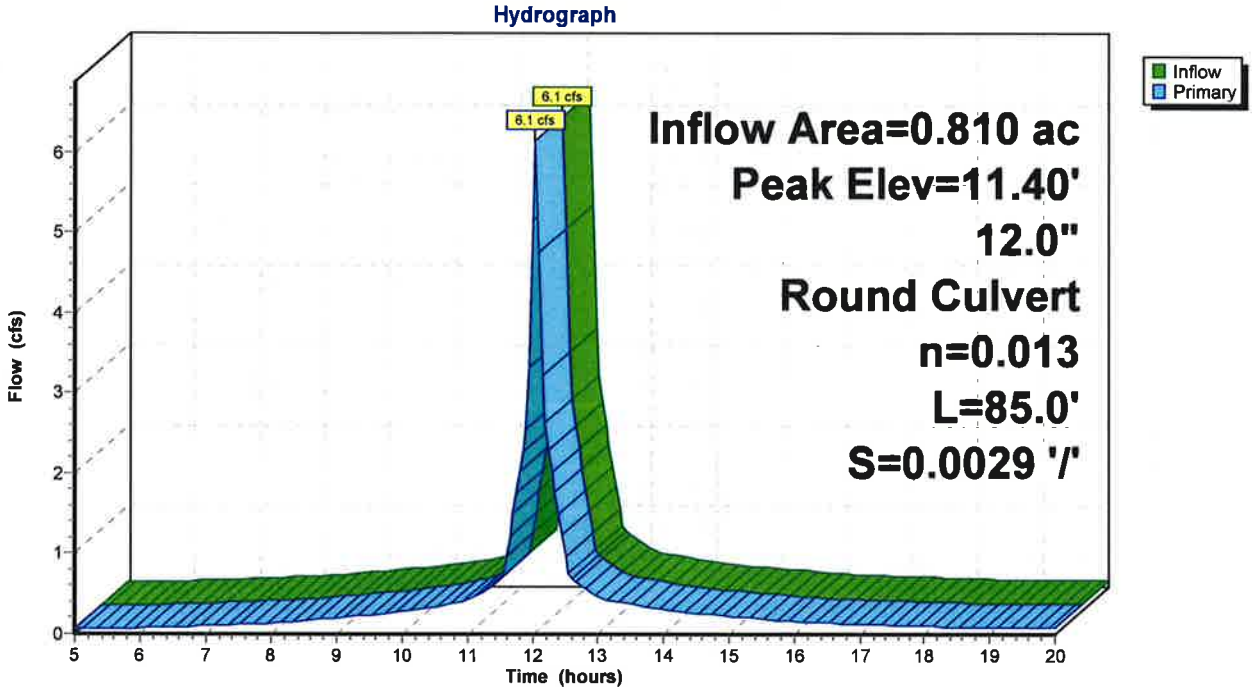
Inflow Area = 0.810 ac, 76.97% Impervious, Inflow Depth > 6.44" for 50 year event
Inflow = 6.1 cfs @ 12.05 hrs, Volume= 0.434 af
Outflow = 6.1 cfs @ 12.05 hrs, Volume= 0.434 af, Atten= 0%, Lag= 0.0 min
Primary = 6.1 cfs @ 12.05 hrs, Volume= 0.434 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 11.40' @ 12.05 hrs
Flood Elev= 8.68'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.83'	**12.0" Round Culvert** L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.83' / 5.58' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=6.1 cfs @ 12.05 hrs HW=11.30' TW=7.45' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 6.1 cfs @ 7.71 fps)

Pond 34P: CB #5 (Altus Model)



Summary for Pond AEI 2:

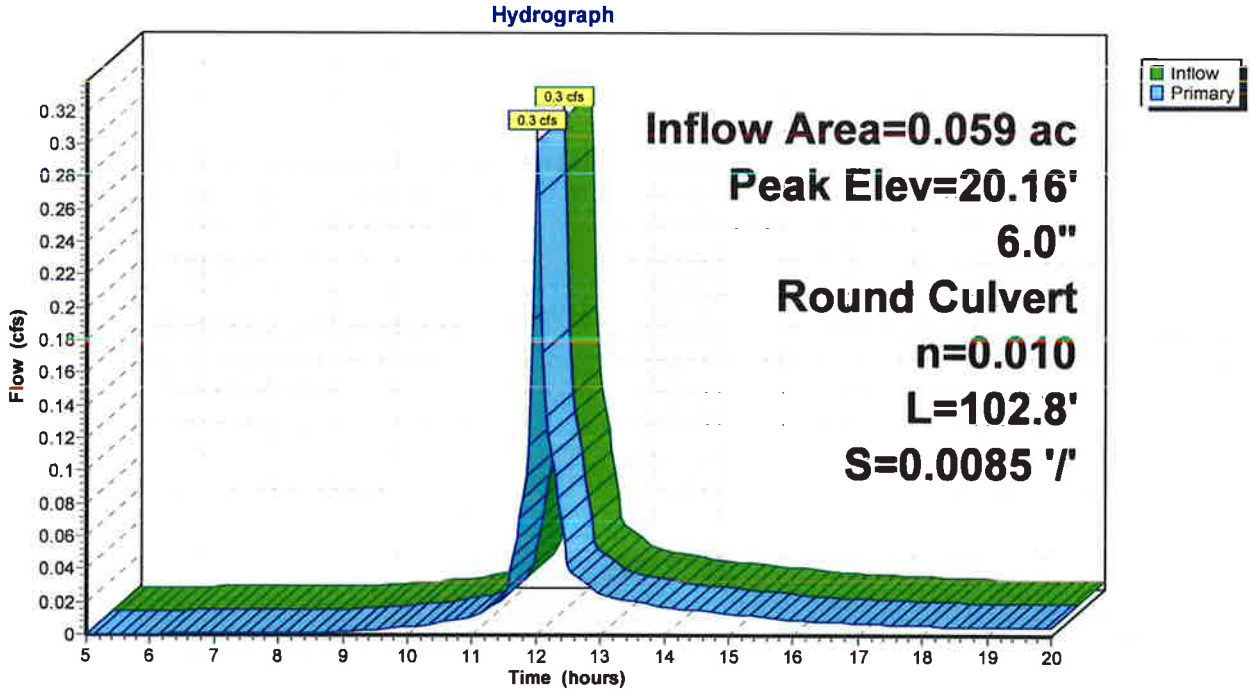
Inflow Area = 0.059 ac, 25.05% Impervious, Inflow Depth > 3.71" for 50 year event
Inflow = 0.3 cfs @ 12.01 hrs, Volume= 0.018 af
Outflow = 0.3 cfs @ 12.01 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 12.01 hrs, Volume= 0.018 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 20.16' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	9.42'	**6.0" Round Culvert** L= 102.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 9.42' / 8.55' S= 0.0085 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.0 cfs @ 12.01 hrs HW=13.67' TW=18.08' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond AEI 2:



Summary for Pond AEI 3:

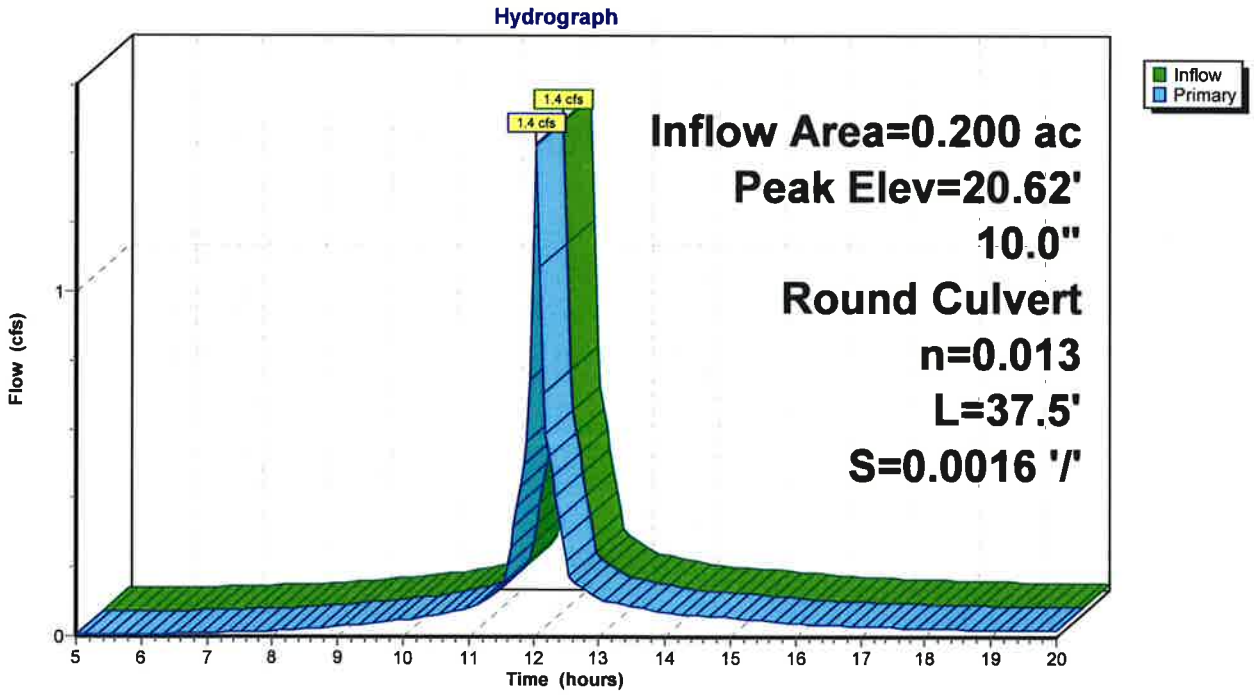
Inflow Area = 0.200 ac, 70.65% Impervious, Inflow Depth > 5.54" for 50 year event
Inflow = 1.4 cfs @ 12.05 hrs, Volume= 0.092 af
Outflow = 1.4 cfs @ 12.05 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.05 hrs, Volume= 0.092 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 20.62' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.90'	**10.0" Round Culvert** L= 37.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.90' / 8.84' S= 0.0016 '/' Cc= 0.900 n= 0.013 Clay tile, Flow Area= 0.55 sf

Primary OutFlow Max=0.0 cfs @ 12.05 hrs HW=12.54' TW=17.51' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond AEI 3:



Summary for Pond AEI 4:

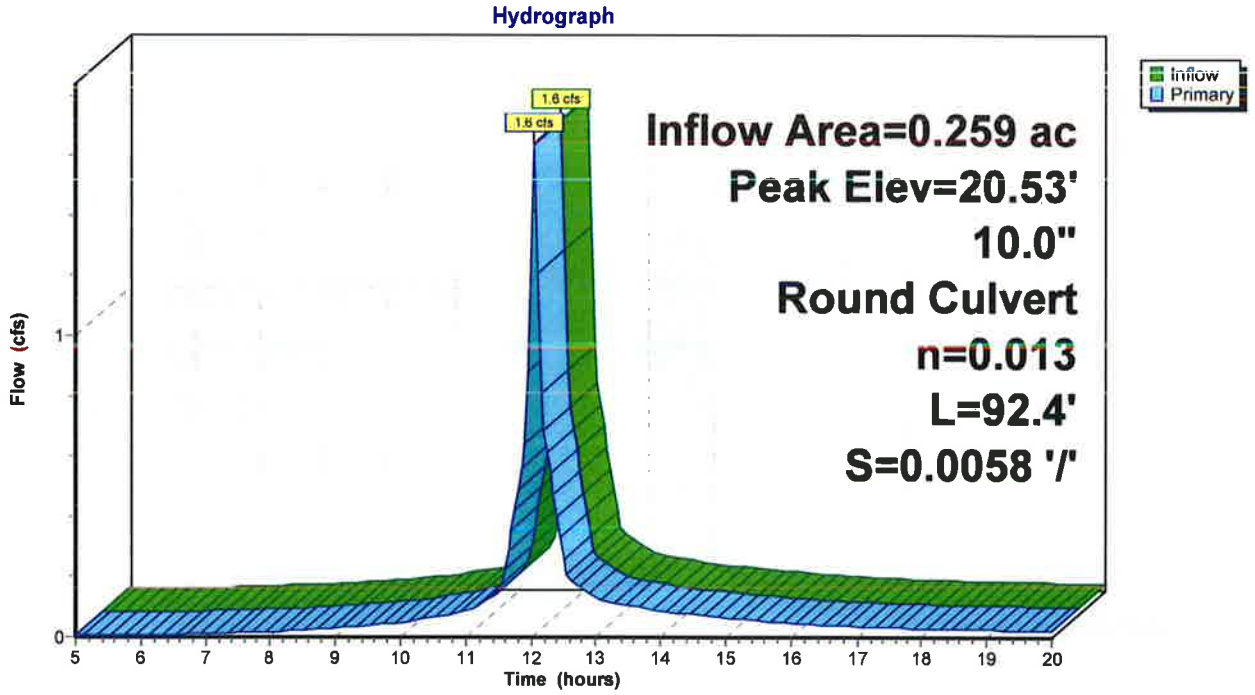
Inflow Area = 0.259 ac, 54.37% Impervious, Inflow Depth > 4.90" for 50 year event
Inflow = 1.6 cfs @ 12.04 hrs, Volume= 0.106 af
Outflow = 1.6 cfs @ 12.04 hrs, Volume= 0.106 af, Atten= 0%, Lag= 0.0 min
Primary = 1.6 cfs @ 12.04 hrs, Volume= 0.106 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 20.53' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.69'	**10.0" Round Culvert** L= 92.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.69' / 8.15' S= 0.0058 '/' Cc= 0.900 n= 0.013 Clay tile, Flow Area= 0.55 sf

Primary OutFlow Max=0.0 cfs @ 12.04 hrs HW=17.18' TW=19.53' (Dynamic Tailwater)
↑1=Culvert (Controls 0.0 cfs)

Pond AEI 4:



Summary for Pond AEI 5:

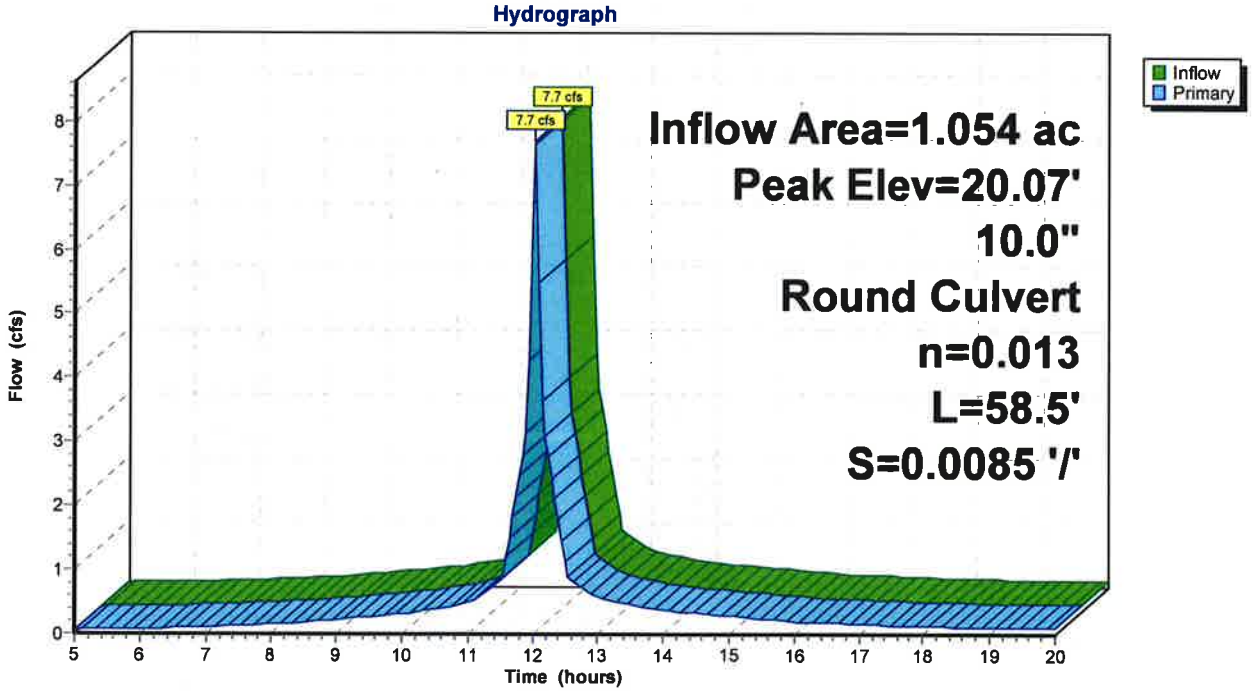
Inflow Area = 1.054 ac, 83.18% Impervious, Inflow Depth > 5.97" for 50 year event
Inflow = 7.7 cfs @ 12.04 hrs, Volume= 0.524 af
Outflow = 7.7 cfs @ 12.04 hrs, Volume= 0.524 af, Atten= 0%, Lag= 0.0 min
Primary = 7.7 cfs @ 12.04 hrs, Volume= 0.524 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 20.07' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.90'	**10.0" Round Culvert** L= 58.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.90' / 7.40' S= 0.0085 '/' Cc= 0.900 n= 0.013 Clay tile, Flow Area= 0.55 sf

Primary OutFlow Max=7.5 cfs @ 12.04 hrs HW=19.41' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 7.5 cfs @ 13.68 fps)

Pond AEI 5:



Summary for Pond AEI 6: Discharge Point 3 (Off Site Drainage)

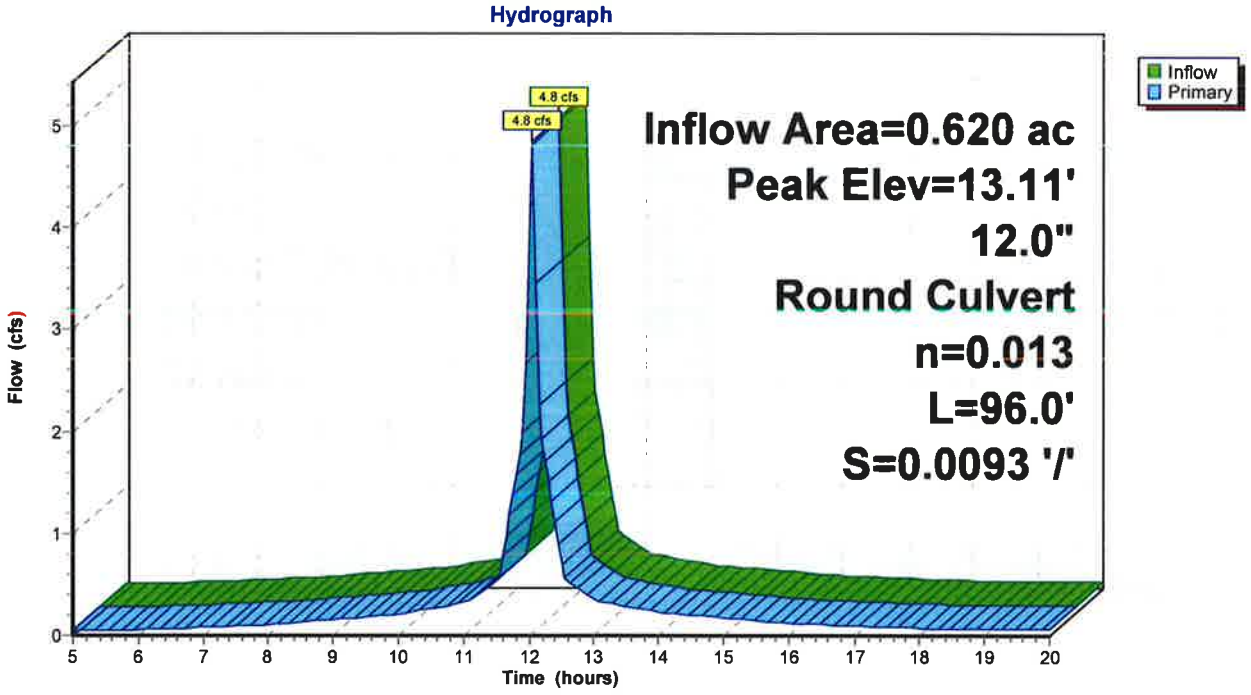
Inflow Area = 0.620 ac, 93.86% Impervious, Inflow Depth > 6.45" for 50 year event
Inflow = 4.8 cfs @ 12.04 hrs, Volume= 0.333 af
Outflow = 4.8 cfs @ 12.04 hrs, Volume= 0.333 af, Atten= 0%, Lag= 0.0 min
Primary = 4.8 cfs @ 12.04 hrs, Volume= 0.333 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 13.11' @ 12.07 hrs
Flood Elev= 10.77'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.77'	**12.0" Round Culvert** L= 96.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.77' / 5.88' S= 0.0093 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.3 cfs @ 12.04 hrs HW=12.43' TW=11.17' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 3.3 cfs @ 4.24 fps)

Pond AEI 6: Discharge Point 3 (Off Site Drainage)



Summary for Pond CB 4433:

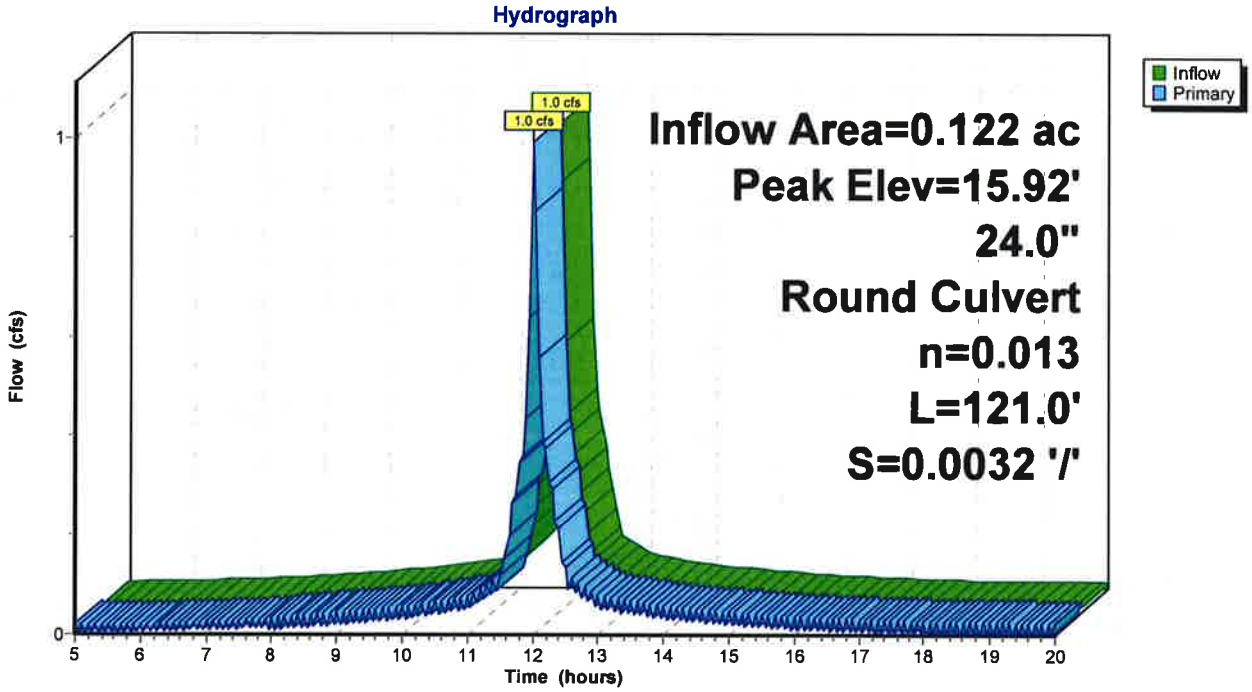
Inflow Area = 0.122 ac,100.00% Impervious, Inflow Depth > 6.59" for 50 year event
Inflow = 1.0 cfs @ 12.01 hrs, Volume= 0.067 af
Outflow = 1.0 cfs @ 12.01 hrs, Volume= 0.067 af, Atten= 0%, Lag= 0.0 min
Primary = 1.0 cfs @ 12.01 hrs, Volume= 0.067 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 15.92' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	14.38'	**24.0" Round Culvert** L= 121.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.38' / 13.99' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.0 cfs @ 12.01 hrs HW=15.84' TW=15.90' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond CB 4433:



Summary for Pond CB 4435:

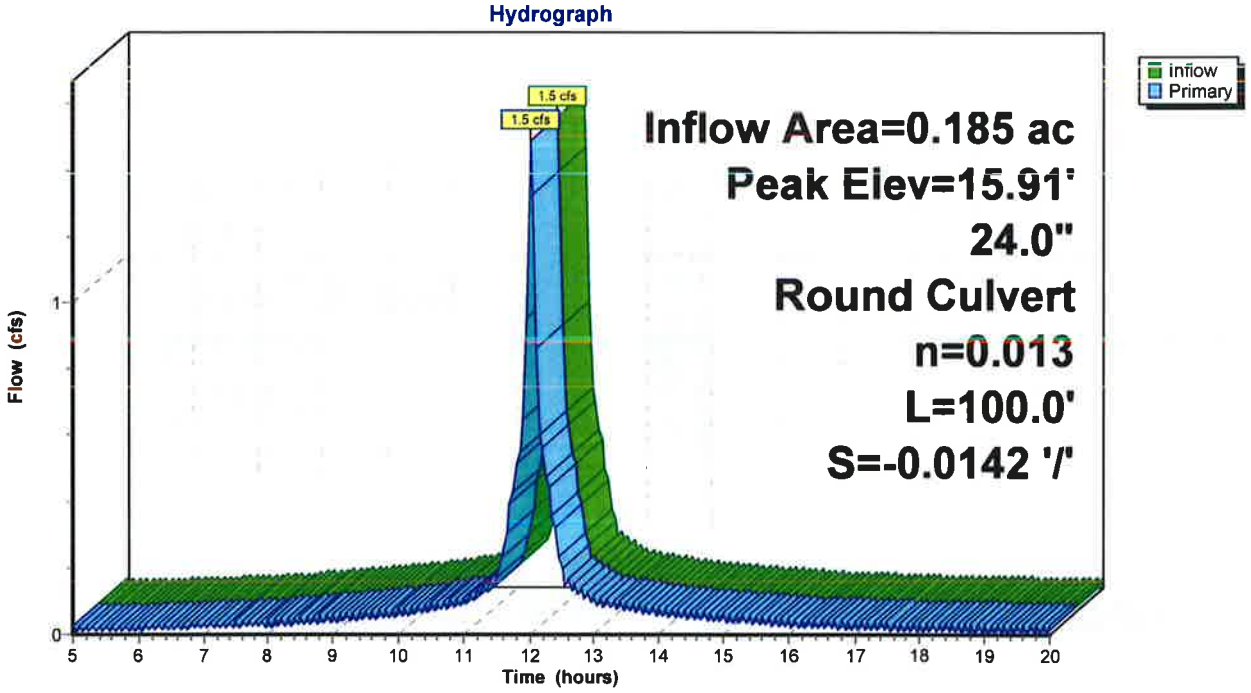
Inflow Area = 0.185 ac,100.00% Impervious, Inflow Depth > 6.59" for 50 year event
Inflow = 1.5 cfs @ 12.01 hrs, Volume= 0.102 af
Outflow = 1.5 cfs @ 12.01 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
Primary = 1.5 cfs @ 12.01 hrs, Volume= 0.102 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 15.91' @ 12.01 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	15.41'	**24.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.99' / 15.41' S= -0.0142 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=1.4 cfs @ 12.01 hrs HW=15.90' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.4 cfs @ 2.38 fps)

Pond CB 4435:



Summary for Pond CB 4560:

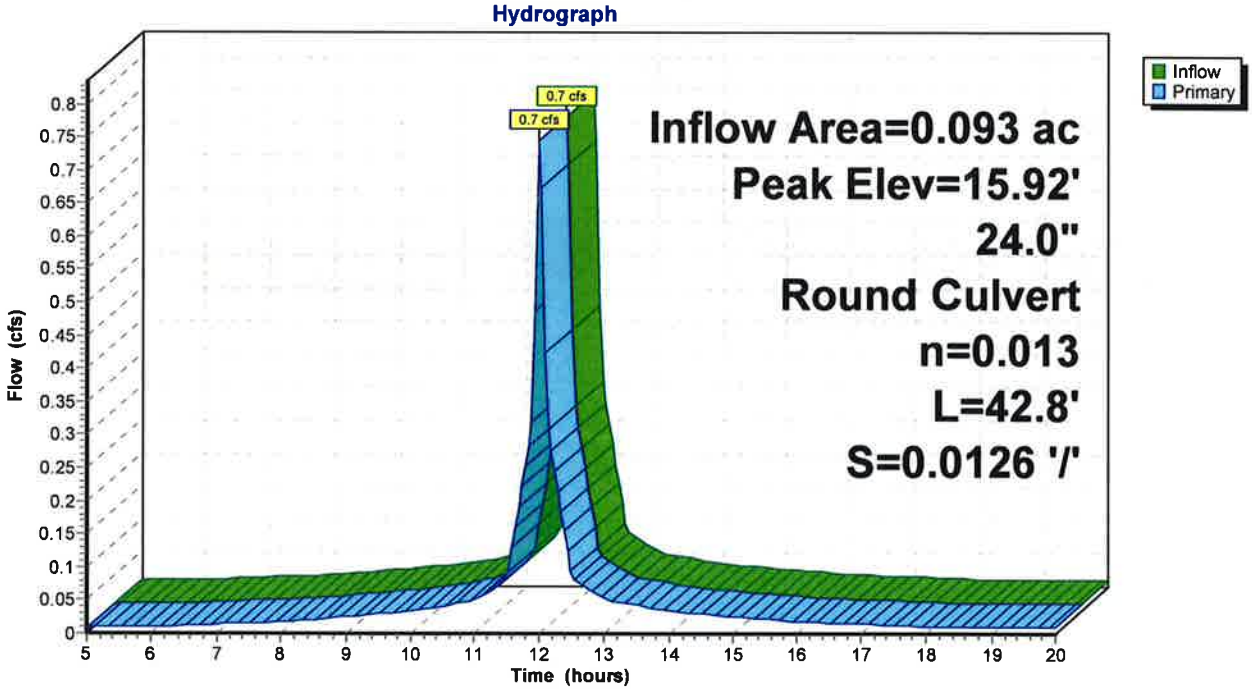
Inflow Area = 0.093 ac,100.00% Impervious, Inflow Depth > 6.59" for 50 year event
Inflow = 0.7 cfs @ 12.02 hrs, Volume= 0.051 af
Outflow = 0.7 cfs @ 12.02 hrs, Volume= 0.051 af, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.02 hrs, Volume= 0.051 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 15.92' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	14.92'	**24.0" Round Culvert** L= 42.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.92' / 14.38' S= 0.0126 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.0 cfs @ 12.02 hrs HW=15.79' TW=15.85' (Dynamic Tailwater)
└**1=Culvert** (Controls 0.0 cfs)

Pond CB 4560:

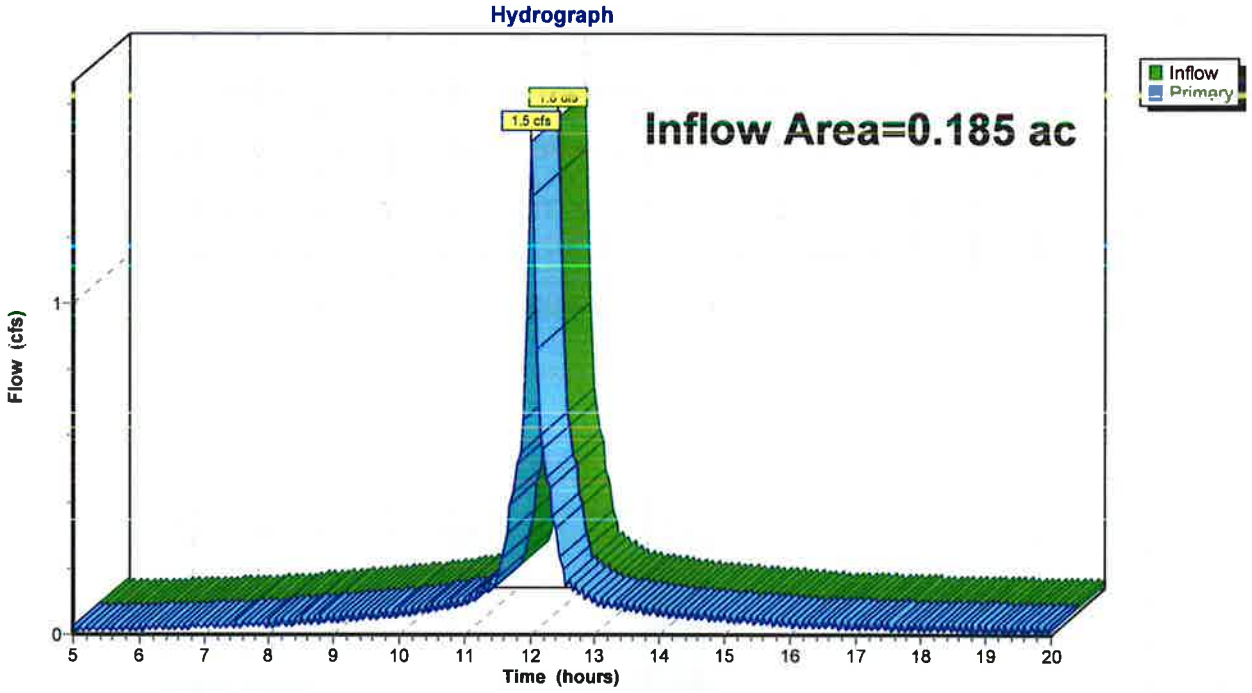


Summary for Link 2L: Discharge Point 2 (Court Street Drainage)

Inflow Area = 0.185 ac,100.00% Impervious, Inflow Depth > 6.59" for 50 year event
Inflow = 1.5 cfs @ 12.01 hrs, Volume= 0.102 af
Primary = 1.5 cfs @ 12.01 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 2L: Discharge Point 2 (Court Street Drainage)

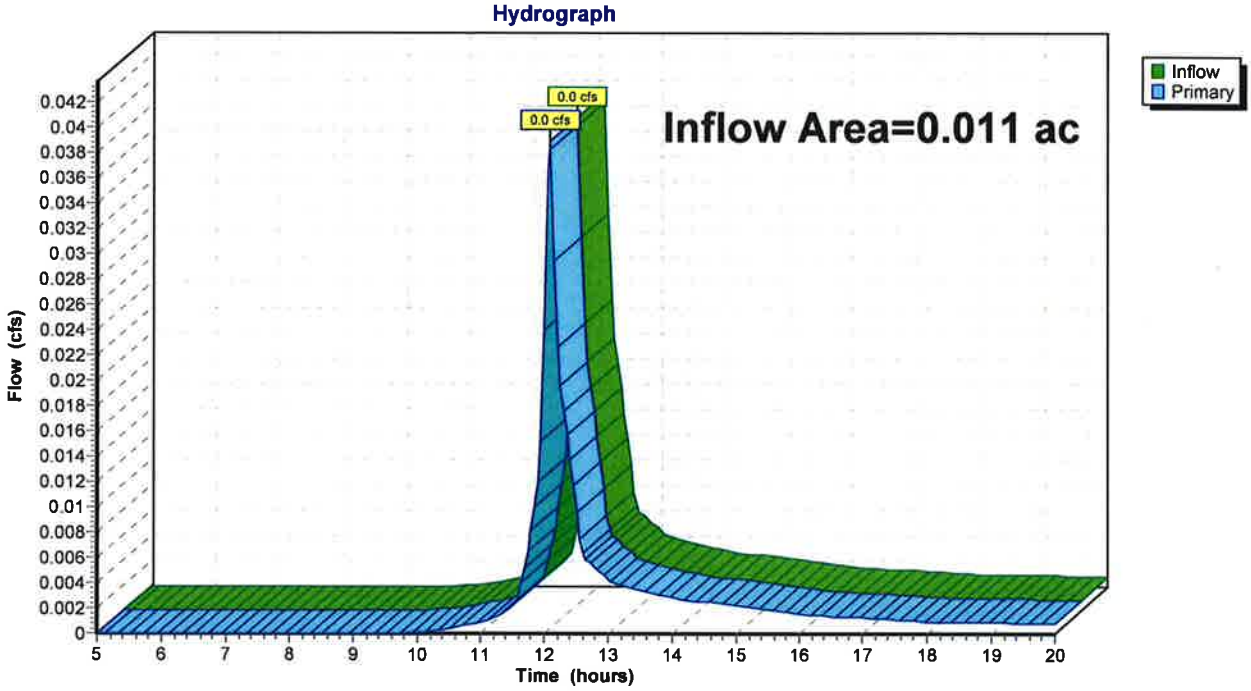


Summary for Link 3L: Discharge Point 4 (DP4)

Inflow Area = 0.011 ac, 0.00% Impervious, Inflow Depth > 2.75" for 50 year event
Inflow = 0.0 cfs @ 12.08 hrs, Volume= 0.003 af
Primary = 0.0 cfs @ 12.08 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 3L: Discharge Point 4 (DP4)

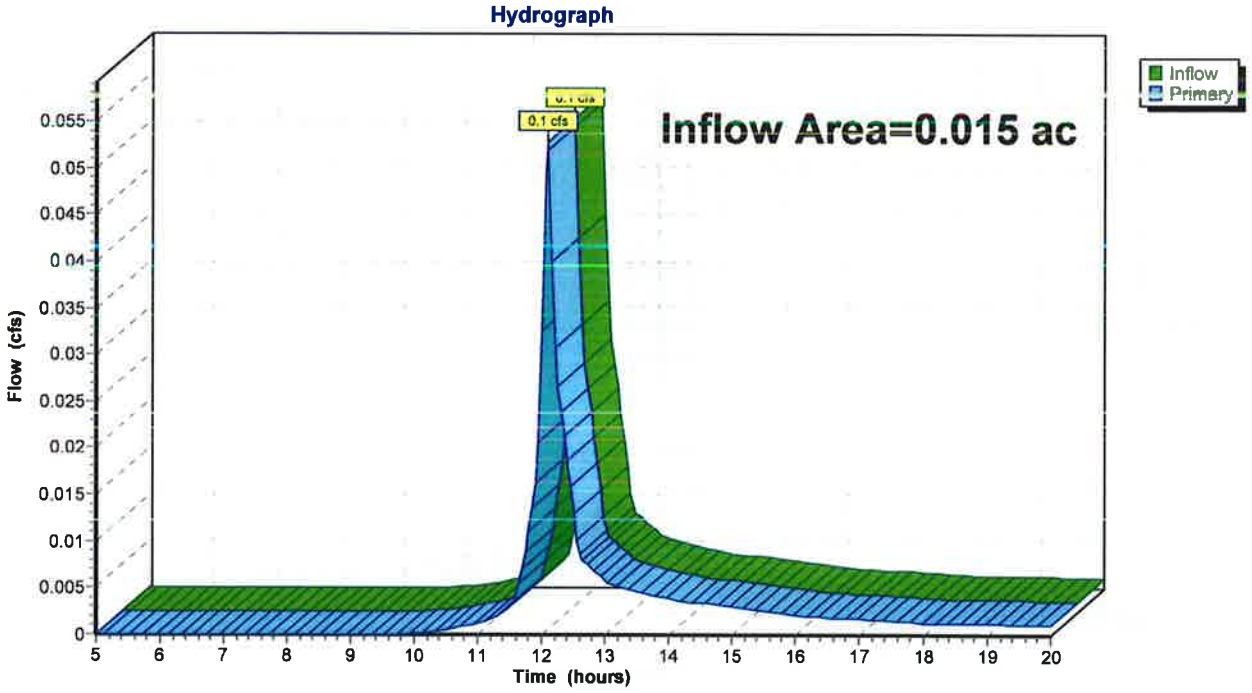


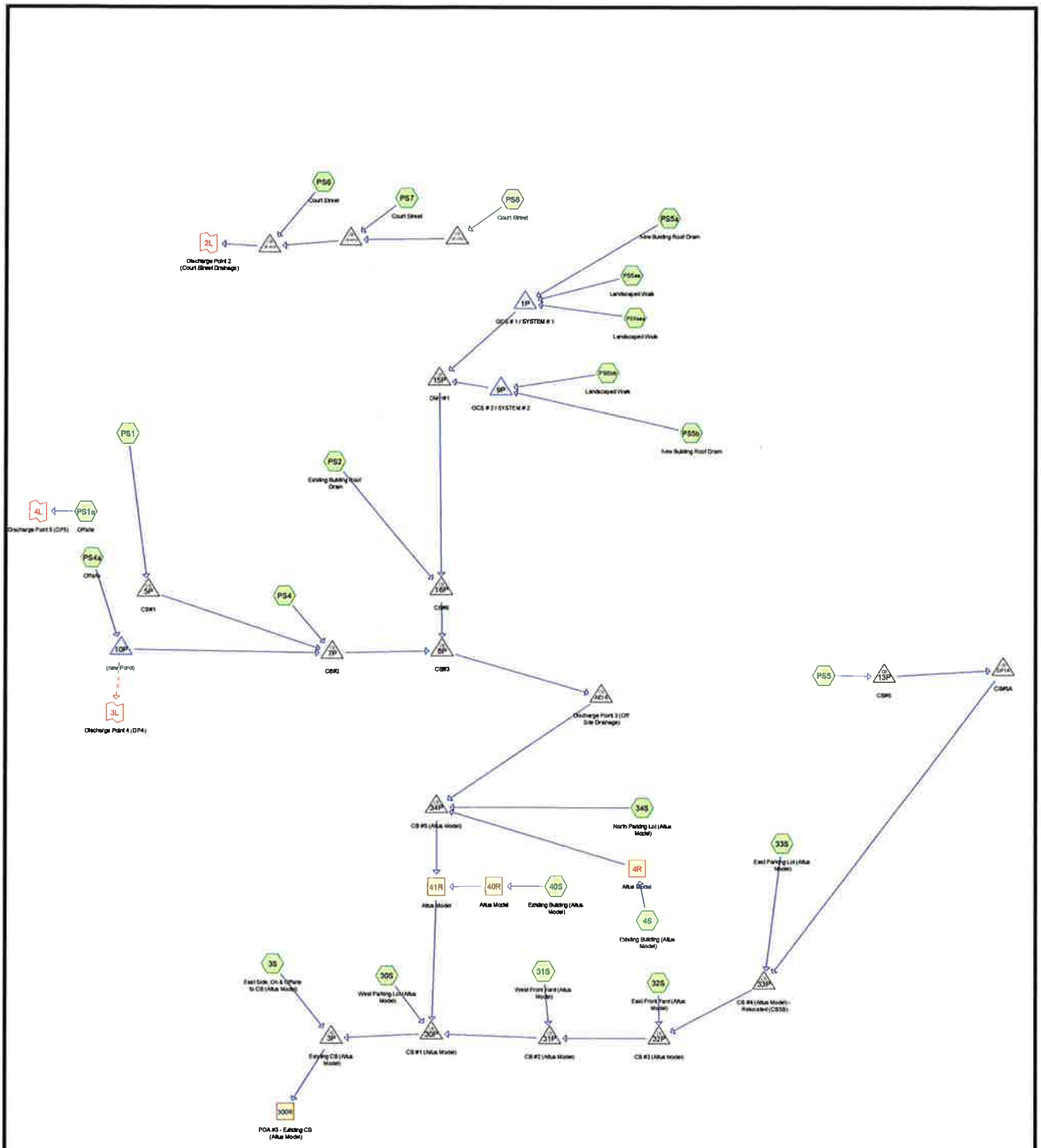
Summary for Link 4L: Discharge Point 5 (DP5)

Inflow Area = 0.015 ac, 0.00% Impervious, Inflow Depth > 2.75" for 50 year event
Inflow = 0.1 cfs @ 12.08 hrs, Volume= 0.004 af
Primary = 0.1 cfs @ 12.08 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 4L: Discharge Point 5 (DP5)





Subcat Reach Pond Link

Routing Diagram for 2790 Developed Conditions
Prepared by Ambit Engineering, Inc., Printed 7/17/2018
HydroCAD® 10.00 s/n 00801 © 2013 HydroCAD Software Solutions LLC

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	4R	8.38	7.28	110.0	0.0100	0.012	8.0	0.0	0.0
2	40R	6.82	6.62	10.0	0.0200	0.012	8.0	0.0	0.0
3	41R	6.45	6.21	81.0	0.0030	0.012	12.0	0.0	0.0
4	1P	11.40	11.33	14.0	0.0050	0.013	12.0	0.0	0.0
5	3P	5.76	5.21	55.0	0.0100	0.012	24.0	0.0	0.0
6	5P	9.70	7.13	95.0	0.0271	0.013	12.0	0.0	0.0
7	7P	7.03	6.89	34.0	0.0041	0.013	12.0	0.0	0.0
8	8P	6.89	6.77	31.0	0.0039	0.013	12.0	0.0	0.0
9	9P	7.40	7.38	5.0	0.0040	0.013	12.0	0.0	0.0
10	10P	7.39	7.13	53.0	0.0049	0.013	6.0	0.0	0.0
11	13P	8.06	7.86	50.0	0.0040	0.013	12.0	0.0	0.0
12	15P	7.38	7.04	68.0	0.0050	0.013	12.0	0.0	0.0
13	16P	7.04	6.89	30.0	0.0050	0.013	12.0	0.0	0.0
14	30P	6.11	5.86	82.0	0.0030	0.013	24.0	0.0	0.0
15	31P	6.33	6.21	40.0	0.0030	0.012	12.0	0.0	0.0
16	32P	6.71	6.43	92.0	0.0030	0.012	12.0	0.0	0.0
17	33P	6.96	6.81	50.0	0.0030	0.012	12.0	0.0	0.0
18	34P	5.83	5.58	85.0	0.0029	0.013	12.0	0.0	0.0
19	AEI 6	6.77	5.88	96.0	0.0093	0.013	12.0	0.0	0.0
20	CB 4433	14.38	13.99	121.0	0.0032	0.013	24.0	0.0	0.0
21	CB 4435	13.99	15.41	100.0	-0.0142	0.013	24.0	0.0	0.0
22	CB 4560	14.92	14.38	42.8	0.0126	0.013	24.0	0.0	0.0
23	DP1A	7.76	7.06	175.0	0.0040	0.013	12.0	0.0	0.0

Summary for Subcatchment 3S: East Side, On & Offsite to CB (Altus Model)

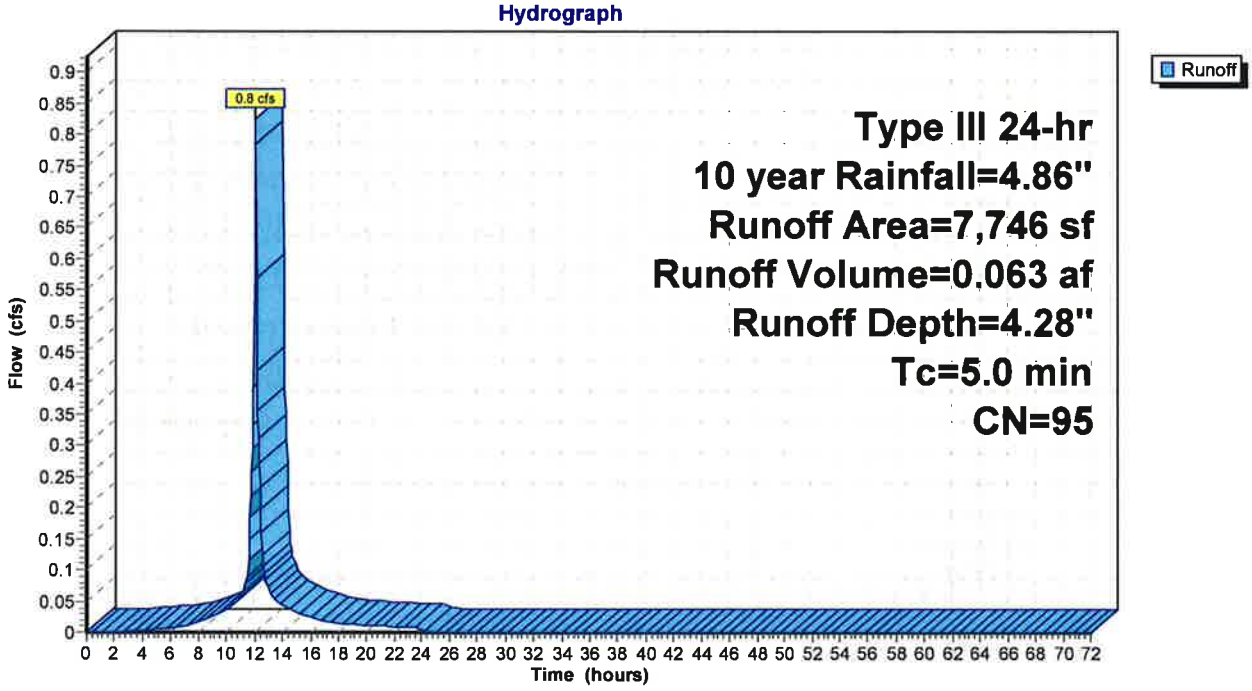
Runoff = 0.8 cfs @ 12.07 hrs, Volume= 0.063 af, Depth= 4.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
*	7,746	95	
	7,746		100.00% Pervious Area

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

Subcatchment 3S: East Side, On & Offsite to CB (Altus Model)



Summary for Subcatchment 4S: Existing Building (Altus Model)

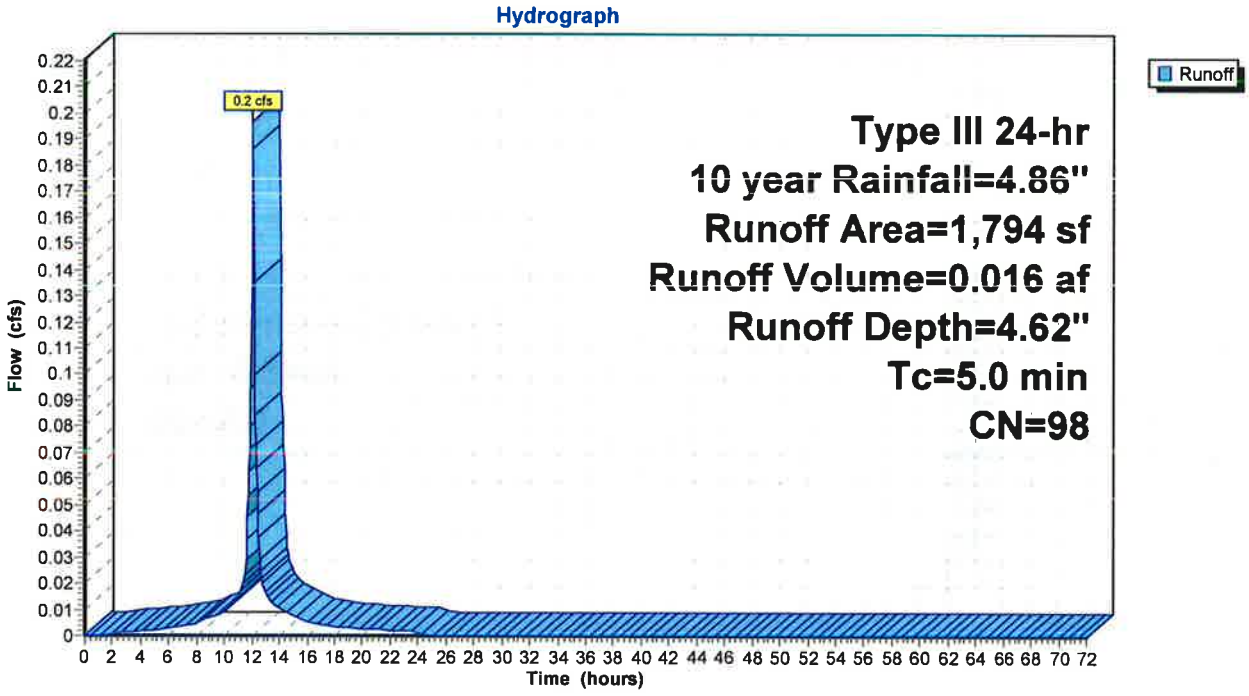
Runoff = 0.2 cfs @ 12.07 hrs, Volume= 0.016 af, Depth= 4.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
*	1,794	98	
	1,794		100.00% Impervious Area

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

Subcatchment 4S: Existing Building (Altus Model)



Summary for Subcatchment 30S: West Parking Lot (Altus Model)

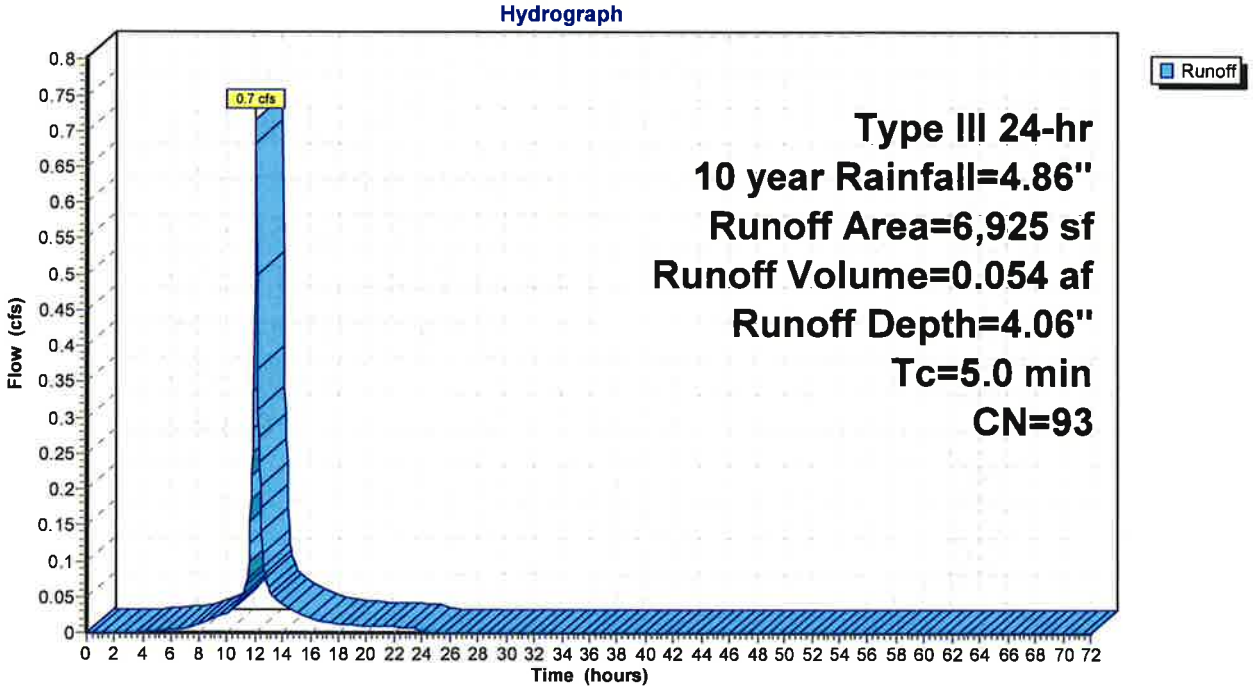
Runoff = 0.7 cfs @ 12.07 hrs, Volume= 0.054 af, Depth= 4.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
*	6,925	93	
	6,925		100.00% Pervious Area

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

Subcatchment 30S: West Parking Lot (Altus Model)



Summary for Subcatchment 31S: West Front Yard (Altus Model)

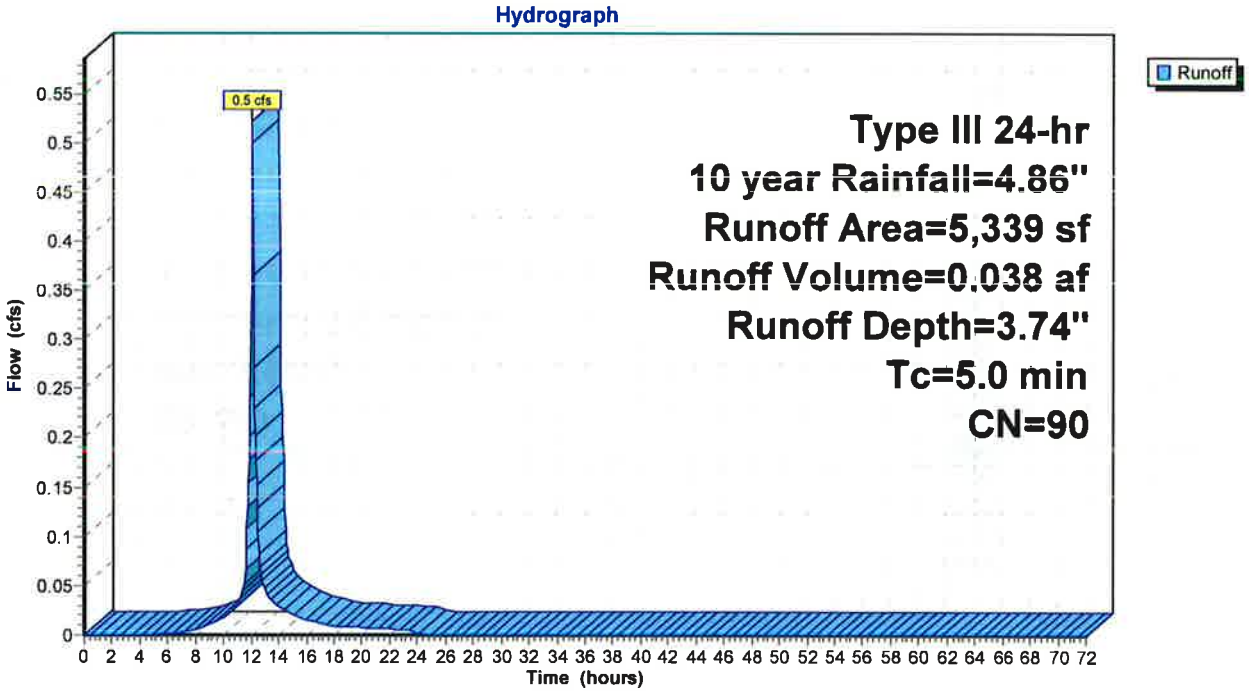
Runoff = 0.5 cfs @ 12.07 hrs, Volume= 0.038 af, Depth= 3.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
*	5,339	90	
	5,339		100.00% Pervious Area

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

Subcatchment 31S: West Front Yard (Altus Model)



Summary for Subcatchment 32S: East Front Yard (Altus Model)

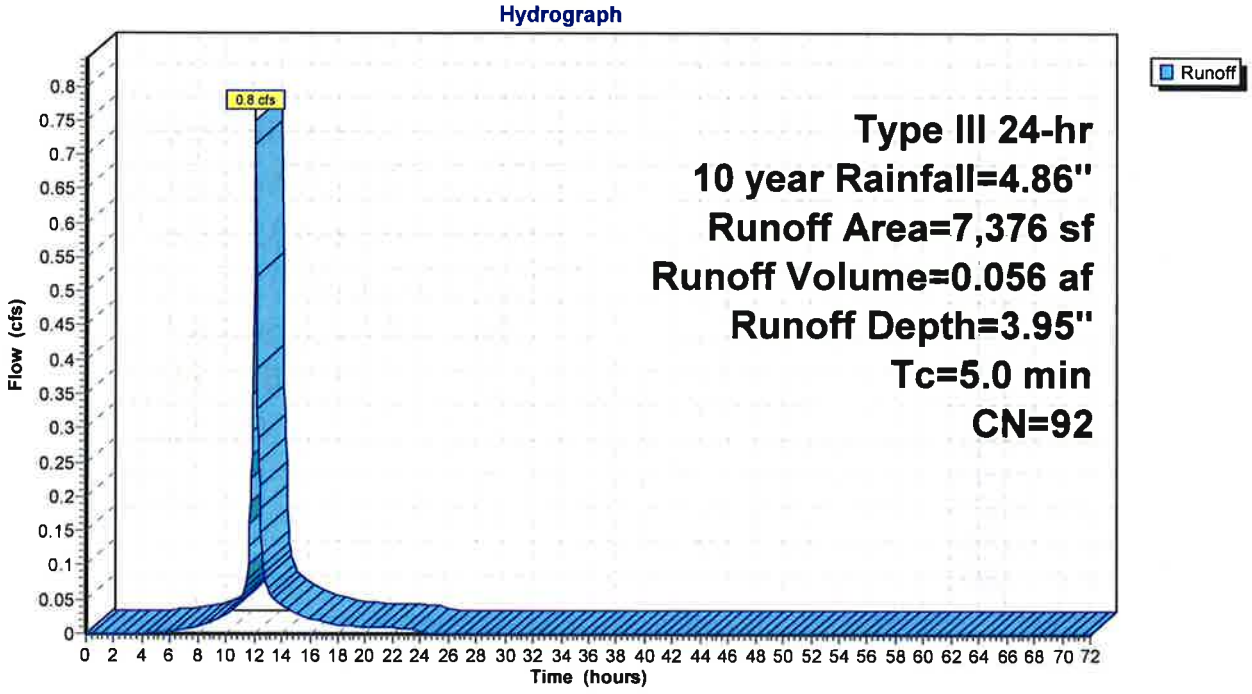
Runoff = 0.8 cfs @ 12.07 hrs, Volume= 0.056 af, Depth= 3.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
*	7,376	92	
	7,376		100.00% Pervious Area

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

Subcatchment 32S: East Front Yard (Altus Model)



Summary for Subcatchment 33S: East Parking Lot (Altus Model)

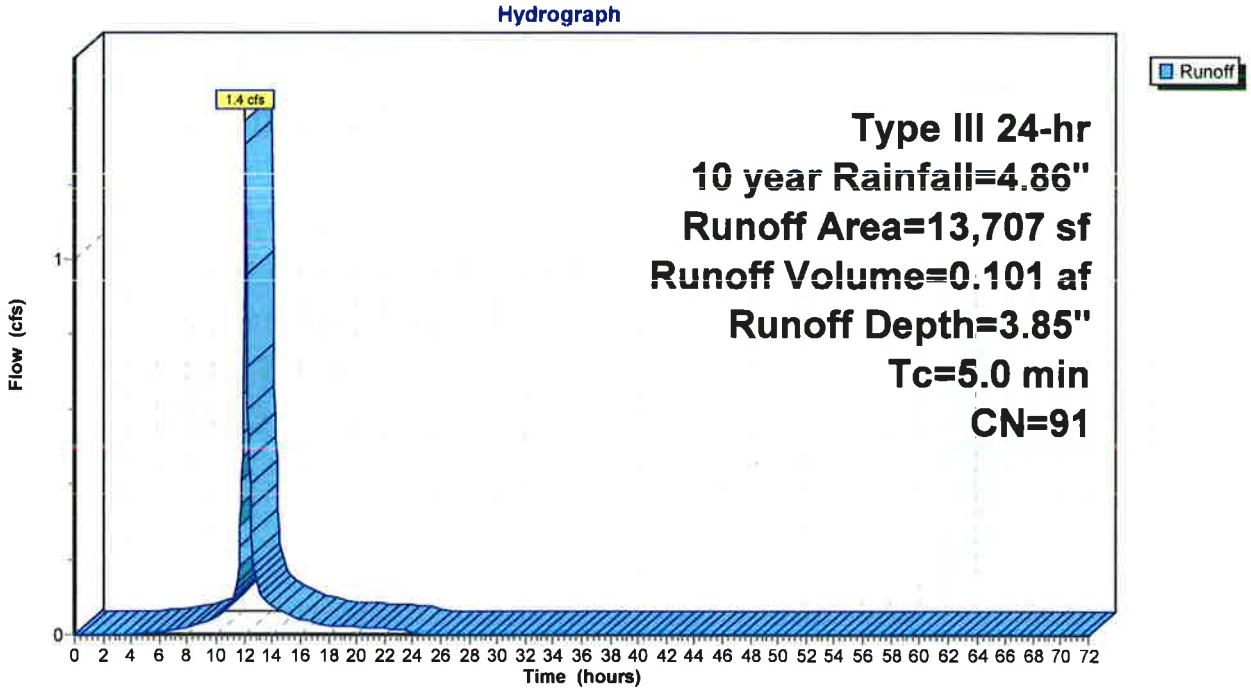
Runoff = 1.4 cfs @ 12.07 hrs, Volume= 0.101 af, Depth= 3.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
*	13,707	91	
	13,707		100.00% Pervious Area

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

Subcatchment 33S: East Parking Lot (Altus Model)



Summary for Subcatchment 34S: North Parking Lot (Altus Model)

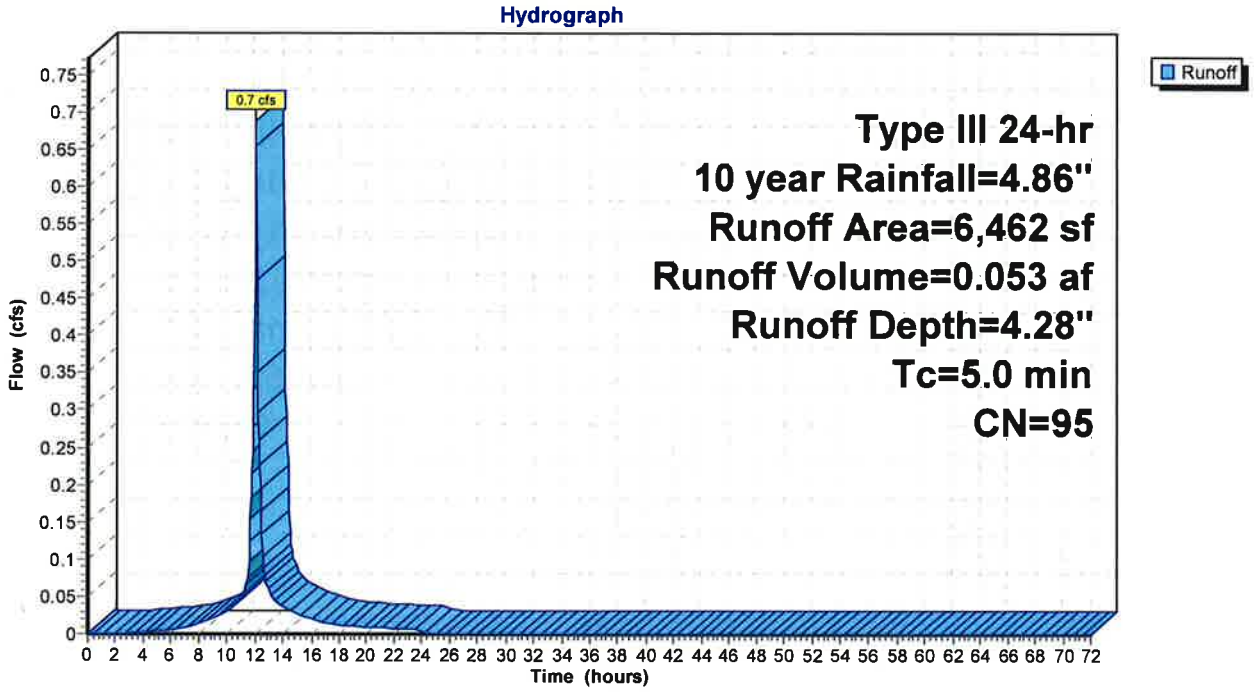
Runoff = 0.7 cfs @ 12.07 hrs, Volume= 0.053 af, Depth= 4.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
*	6,462	95	
	6,462		100.00% Pervious Area

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

Subcatchment 34S: North Parking Lot (Altus Model)



Summary for Subcatchment 40S: Existing Building (Altus Model)

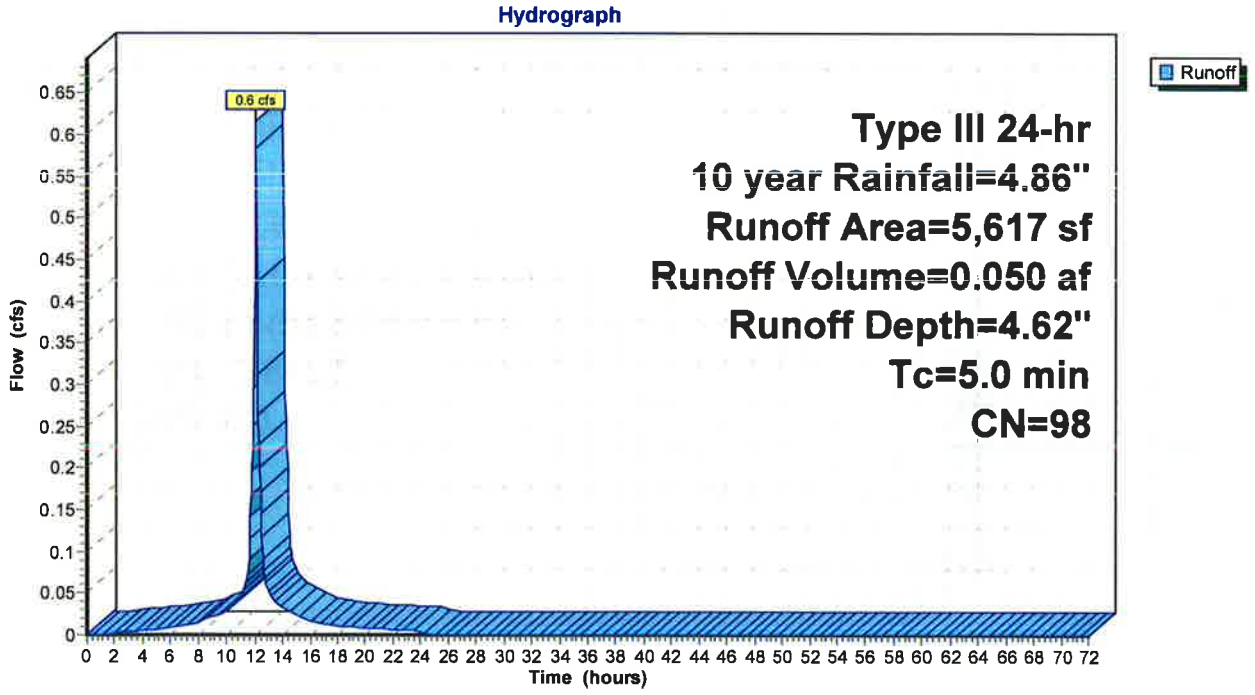
Runoff = 0.6 cfs @ 12.07 hrs, Volume= 0.050 af, Depth= 4.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
*	5,617	98	
	5,617		100.00% Impervious Area

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

Subcatchment 40S: Existing Building (Altus Model)



Summary for Subcatchment PS1:

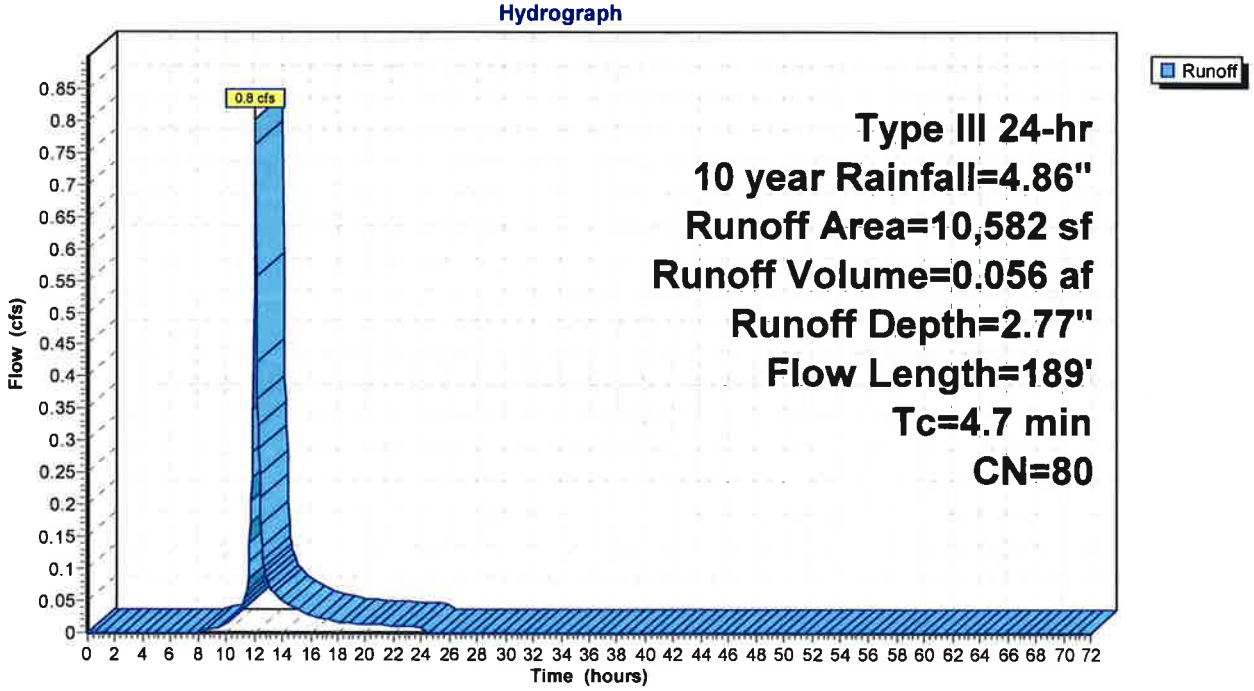
Runoff = 0.8 cfs @ 12.07 hrs, Volume= 0.056 af, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
	6,399	98	Paved parking, HSG A
*	939	98	Paved sidewalks w/curbs & sewers, HSG A
	3,244	39	>75% Grass cover, Good, HSG A
	10,582	80	Weighted Average
	3,244		30.66% Pervious Area
	7,338		69.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	32	0.0200	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.8	157	0.0287	3.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.7	189	Total			

Subcatchment PS1:



Summary for Subcatchment PS1a: Offsite

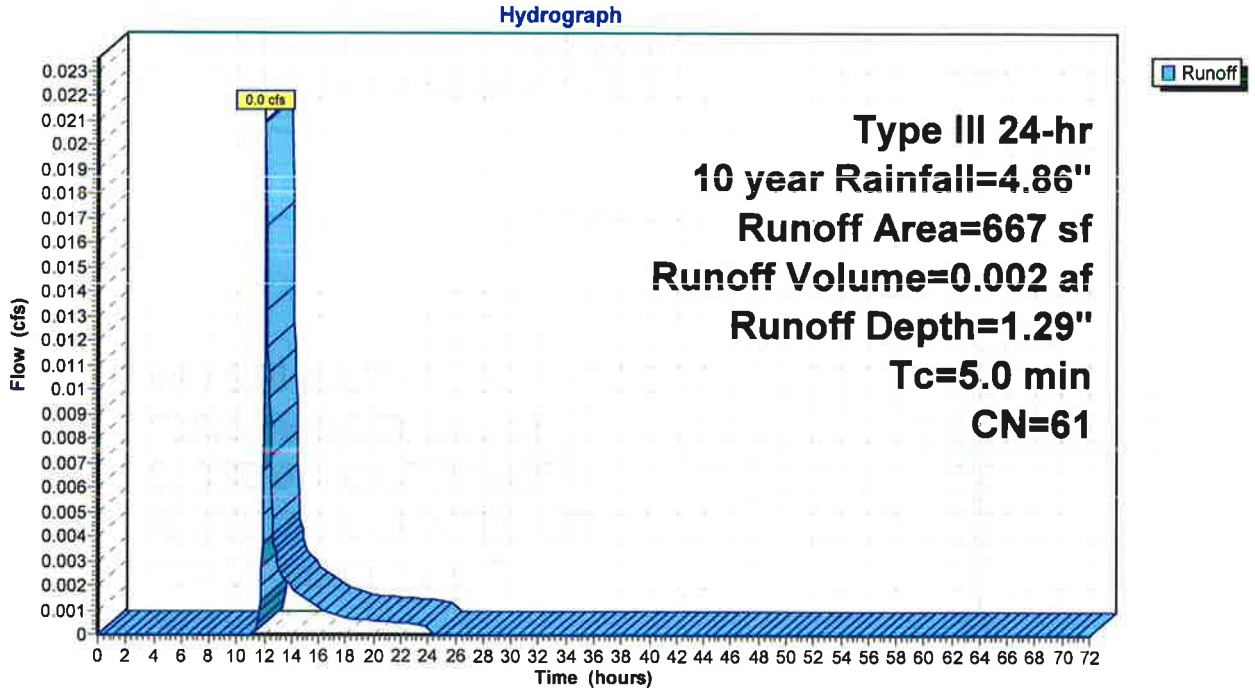
Runoff = 0.0 cfs @ 12.09 hrs, Volume= 0.002 af, Depth= 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

Area (sf)	CN	Description
667	61	>75% Grass cover, Good, HSG B
667		100.00% Pervious Area

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

Subcatchment PS1a: Offsite



Summary for Subcatchment PS2: Existing Building Roof Drain

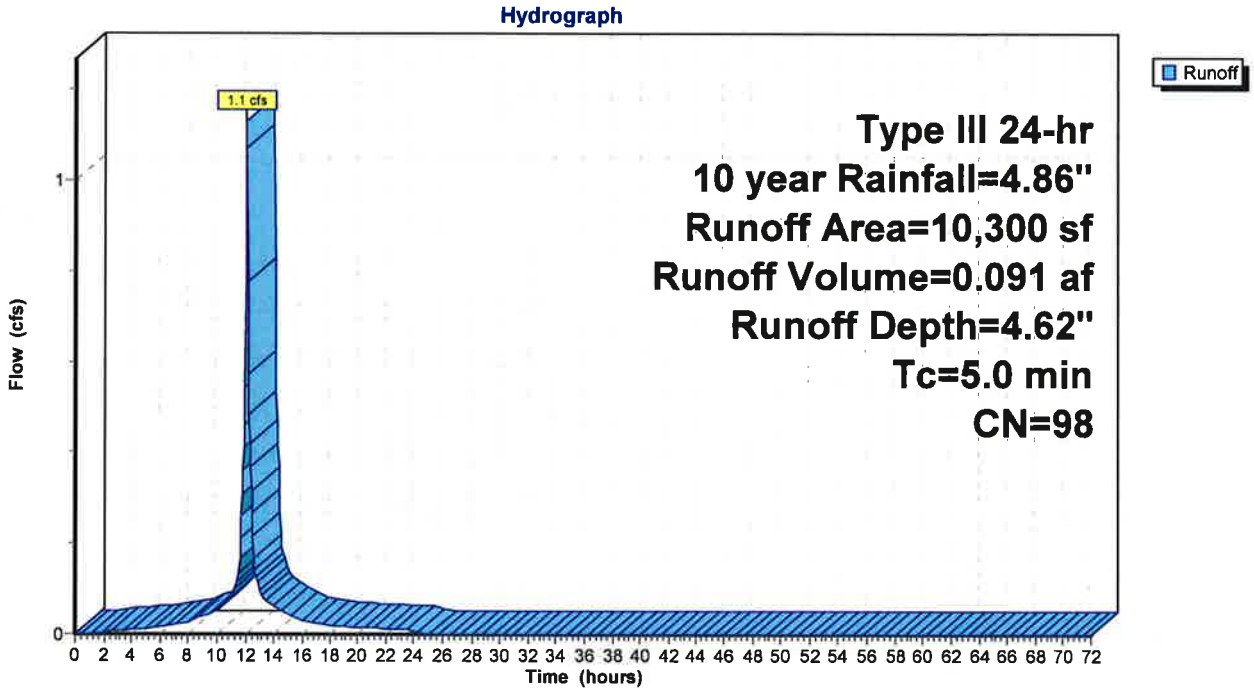
Runoff = 1.1 cfs @ 12.07 hrs, Volume= 0.091 af, Depth= 4.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

Area (sf)	CN	Description
10,300	98	Roofs, HSG A
10,300		100.00% Impervious Area

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

Subcatchment PS2: Existing Building Roof Drain



Summary for Subcatchment PS4:

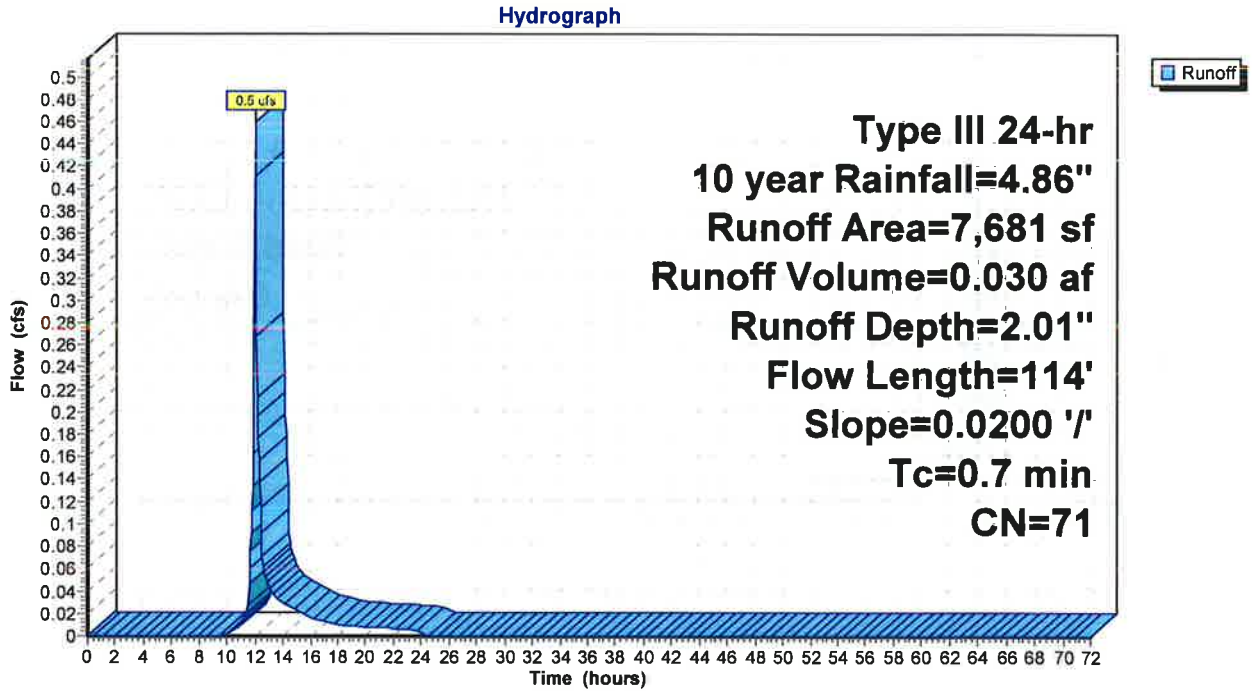
Runoff = 0.5 cfs @ 12.02 hrs, Volume= 0.030 af, Depth= 2.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

Area (sf)	CN	Description
3,513	39	>75% Grass cover, Good, HSG A
4,168	98	Paved roads w/curbs & sewers, HSG A
7,681	71	Weighted Average
3,513		45.74% Pervious Area
4,168		54.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	114	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps

Subcatchment PS4:



Summary for Subcatchment PS4a: Offsite

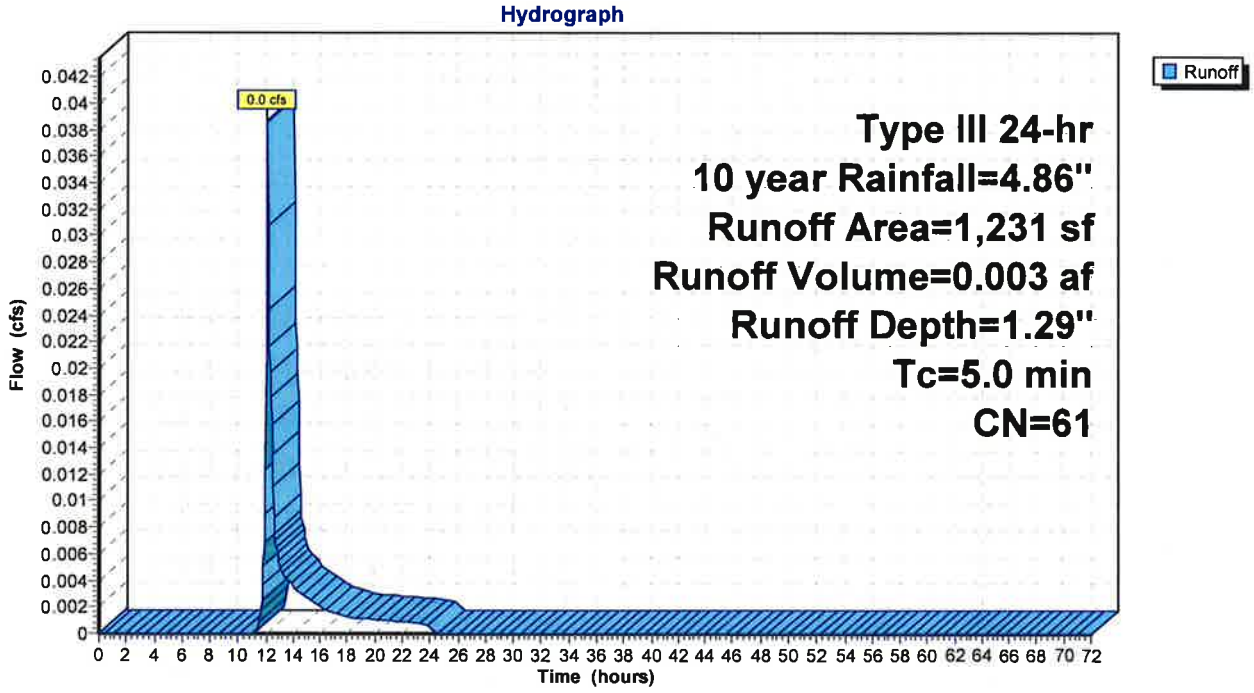
Runoff = 0.0 cfs @ 12.09 hrs, Volume= 0.003 af, Depth= 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

Area (sf)	CN	Description
1,231	61	>75% Grass cover, Good, HSG B
1,231		100.00% Pervious Area

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

Subcatchment PS4a: Offsite



Summary for Subcatchment PS5:

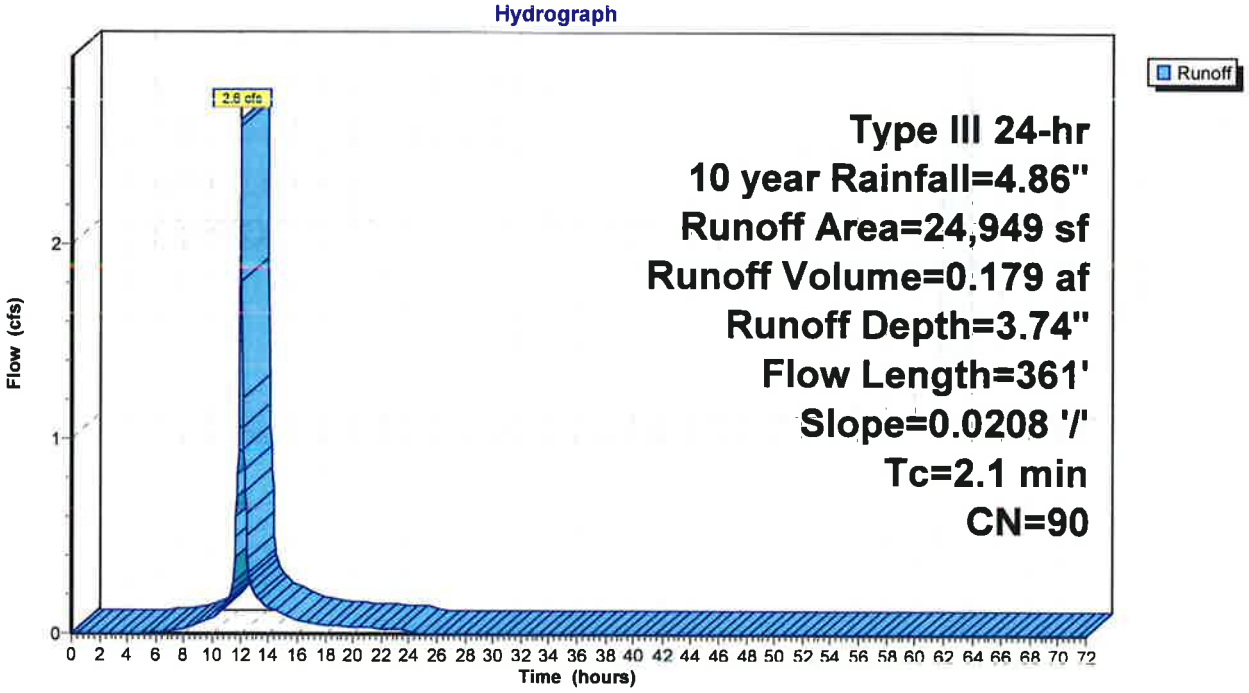
Runoff = 2.6 cfs @ 12.04 hrs, Volume= 0.179 af, Depth= 3.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
	19,373	98	Paved roads w/curbs & sewers, HSG A
*	1,796	98	Paved sidewalks w/curbs & sewers, HSG A
	388	98	Roofs, HSG A
	3,392	39	>75% Grass cover, Good, HSG A
	24,949	90	Weighted Average
	3,392		13.60% Pervious Area
	21,557		86.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	361	0.0208	2.93		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps

Subcatchment PS5:



Summary for Subcatchment PS5a: New Building Roof Drain

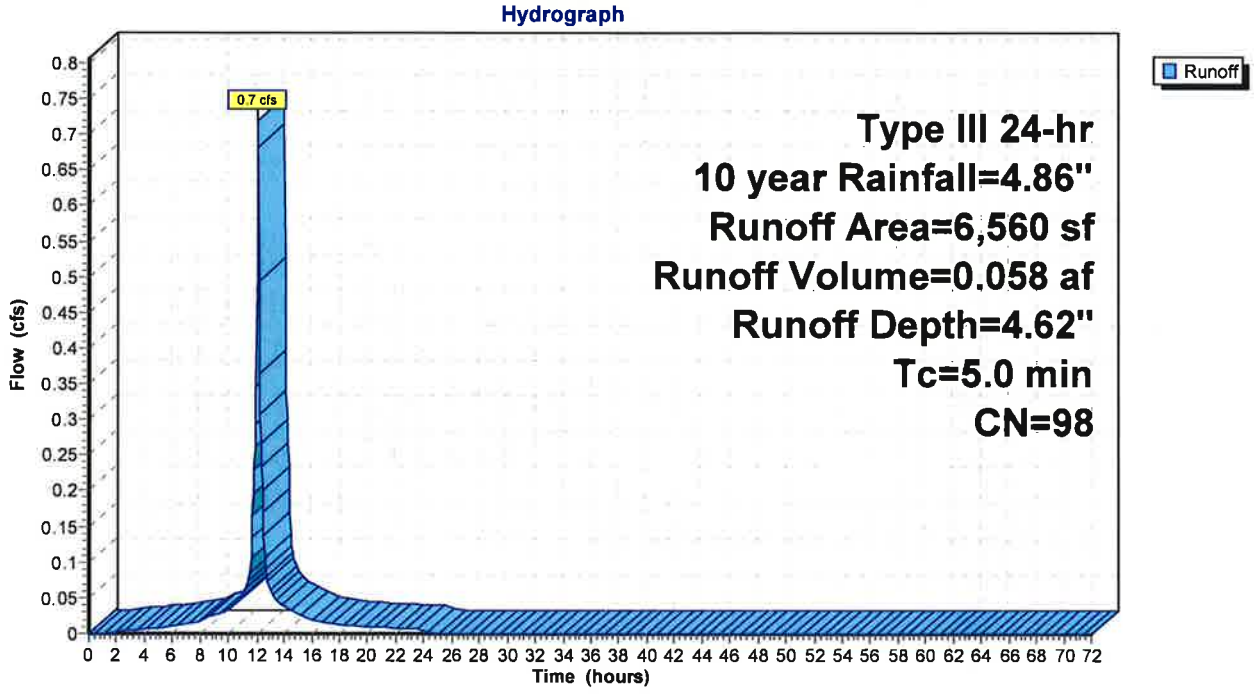
Runoff = 0.7 cfs @ 12.07 hrs, Volume= 0.058 af, Depth= 4.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

Area (sf)	CN	Description
6,560	98	Roofs, HSG A
6,560		100.00% Impervious Area

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

Subcatchment PS5a: New Building Roof Drain



Summary for Subcatchment PS5aa: Landscaped Walk

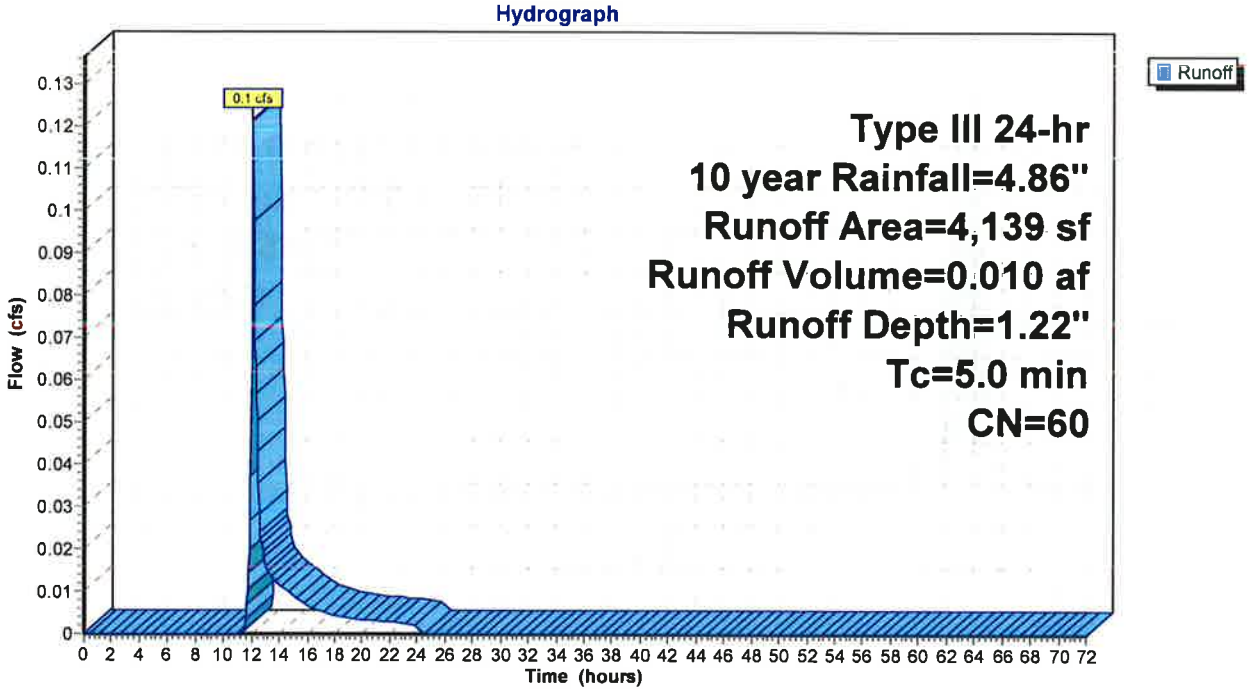
Runoff = 0.1 cfs @ 12.09 hrs, Volume= 0.010 af, Depth= 1.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
	2,666	39	>75% Grass cover, Good, HSG A
	852	98	Roofs, HSG A
*	621	98	Paved sidewalks w/curbs & sewers, HSG A
	4,139	60	Weighted Average
	2,666		64.41% Pervious Area
	1,473		35.59% Impervious Area

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

Subcatchment PS5aa: Landscaped Walk



Summary for Subcatchment PS5aaa: Landscaped Walk

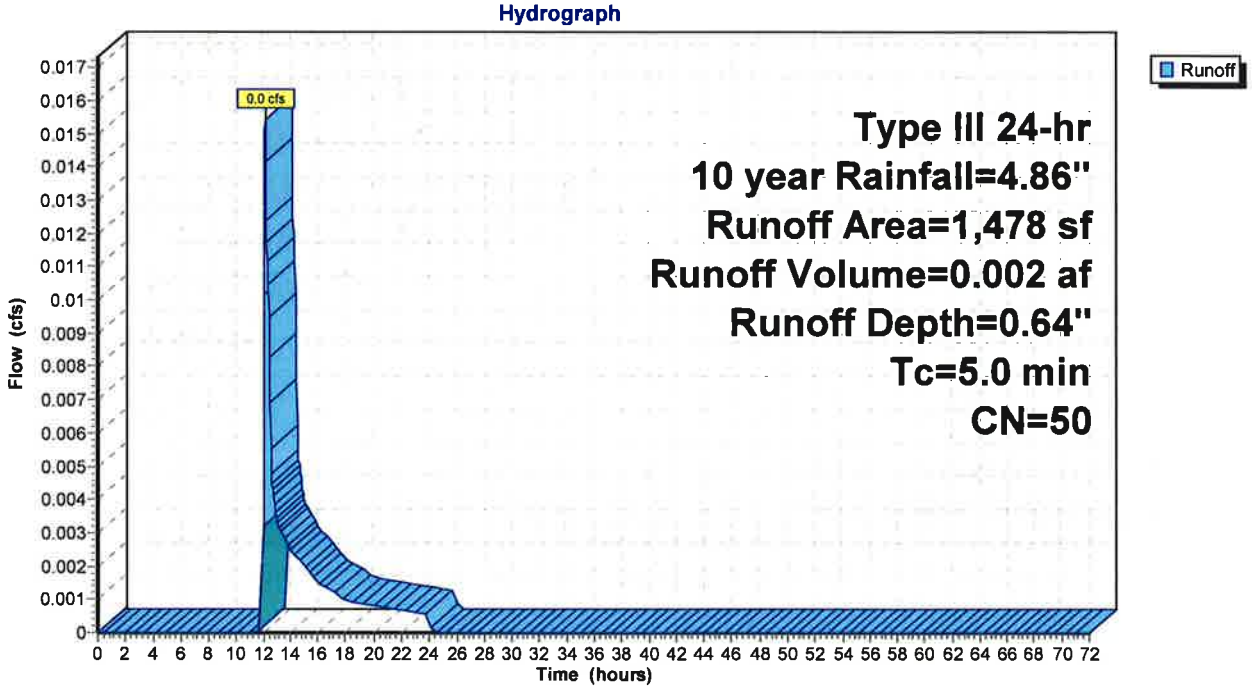
Runoff = 0.0 cfs @ 12.12 hrs, Volume= 0.002 af, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
	1,200	39	>75% Grass cover, Good, HSG A
*	278	98	Paved sidewalk w/curbs & sewers, HSG A
	1,478	50	Weighted Average
	1,200		81.19% Pervious Area
	278		18.81% Impervious Area

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

Subcatchment PS5aaa: Landscaped Walk



Summary for Subcatchment PS5b: New Building Roof Drain

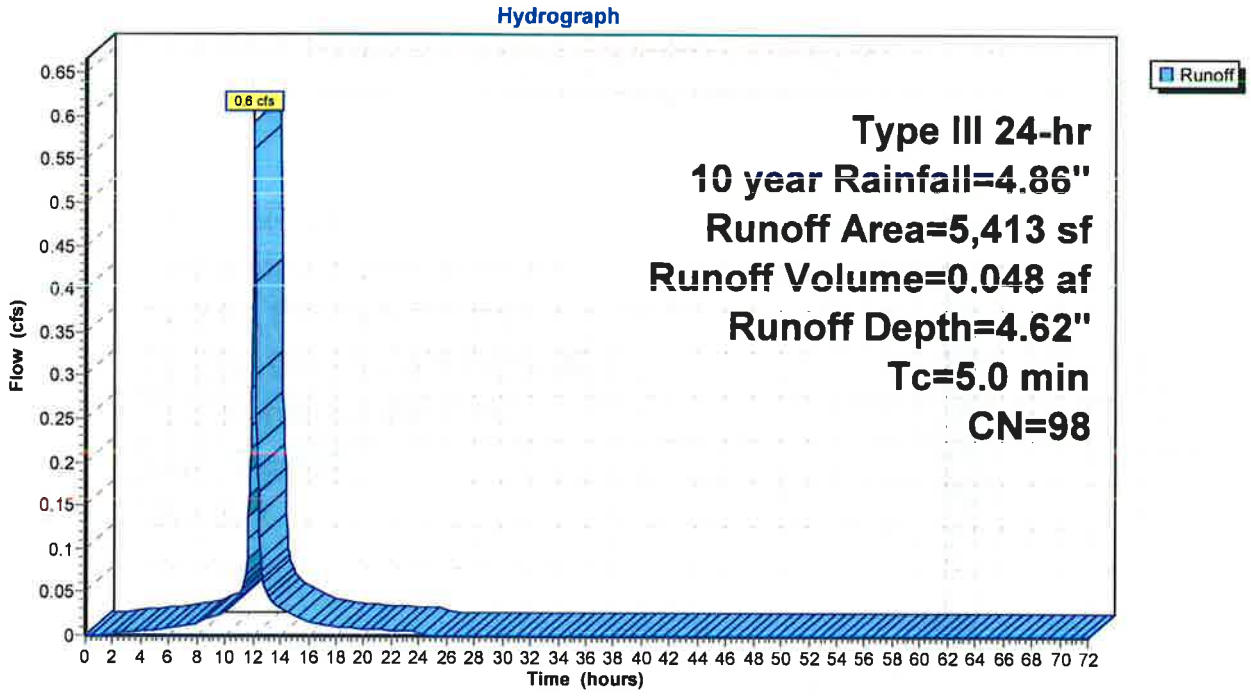
Runoff = 0.6 cfs @ 12.07 hrs, Volume= 0.048 af, Depth= 4.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

Area (sf)	CN	Description
5,413	98	Roofs, HSG A
5,413		100.00% Impervious Area

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

Subcatchment PS5b: New Building Roof Drain



Summary for Subcatchment PS5bb: Landscaped Walk

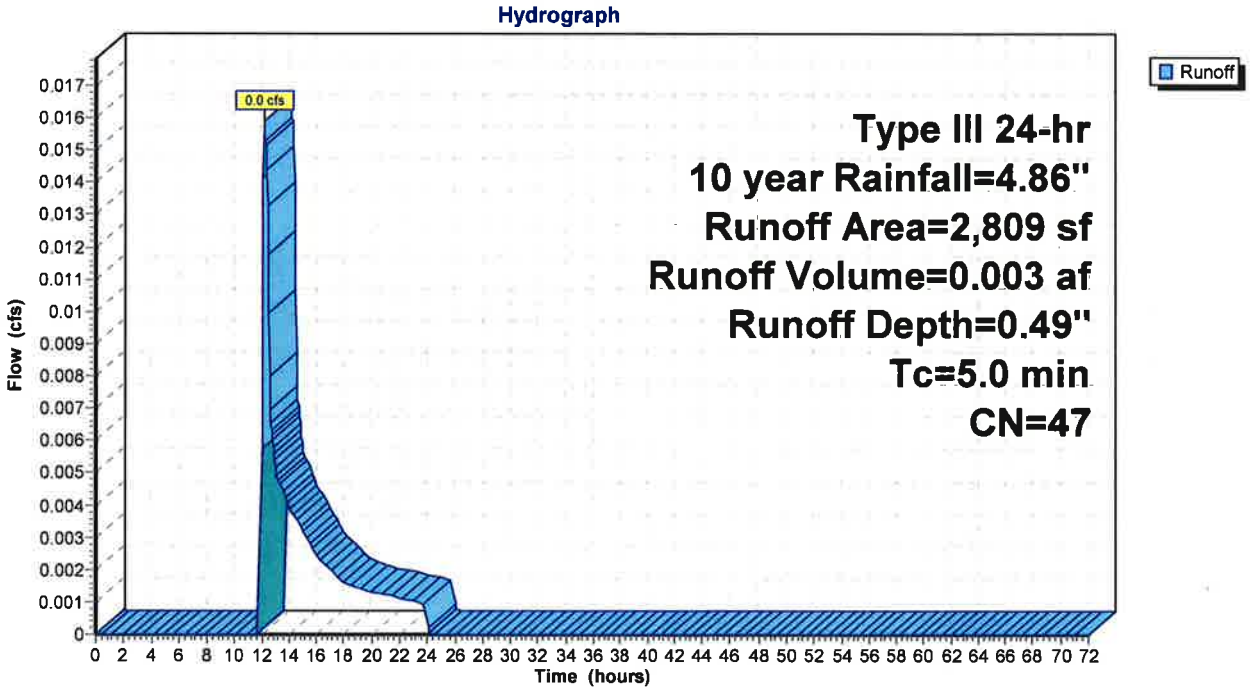
Runoff = 0.0 cfs @ 12.16 hrs, Volume= 0.003 af, Depth= 0.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
	2,409	39	>75% Grass cover, Good, HSG A
*	400	98	Paved sidewalk w/curbs & sewers, HSG A
	2,809	47	Weighted Average
	2,409		85.76% Pervious Area
	400		14.24% Impervious Area

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

Subcatchment PS5bb: Landscaped Walk



Summary for Subcatchment PS6: Court Street

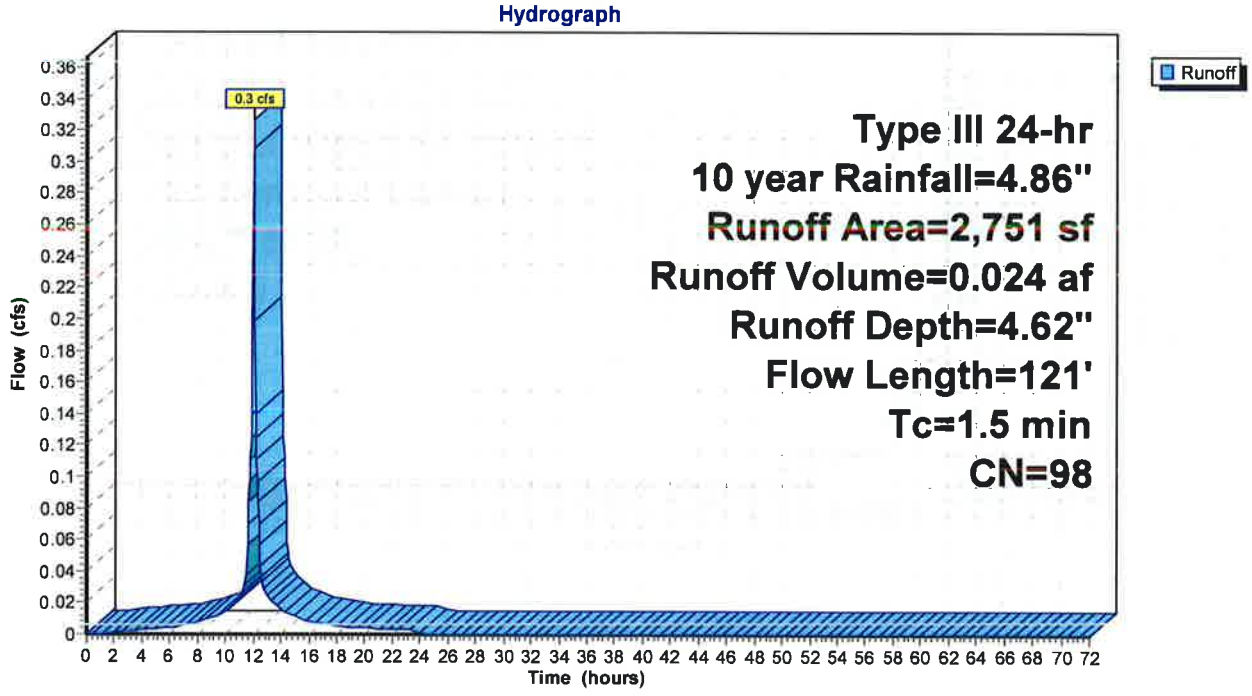
Runoff = 0.3 cfs @ 12.02 hrs, Volume= 0.024 af, Depth= 4.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
	2,556	98	Paved parking, HSG B
*	195	98	Unconnected pavement, sidewalk, HSG B
	2,751	98	Weighted Average
	2,751		100.00% Impervious Area
	195		7.09% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	26	0.0096	0.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	95	0.0078	1.79		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	121	Total			

Subcatchment PS6: Court Street



Summary for Subcatchment PS7: Court Street

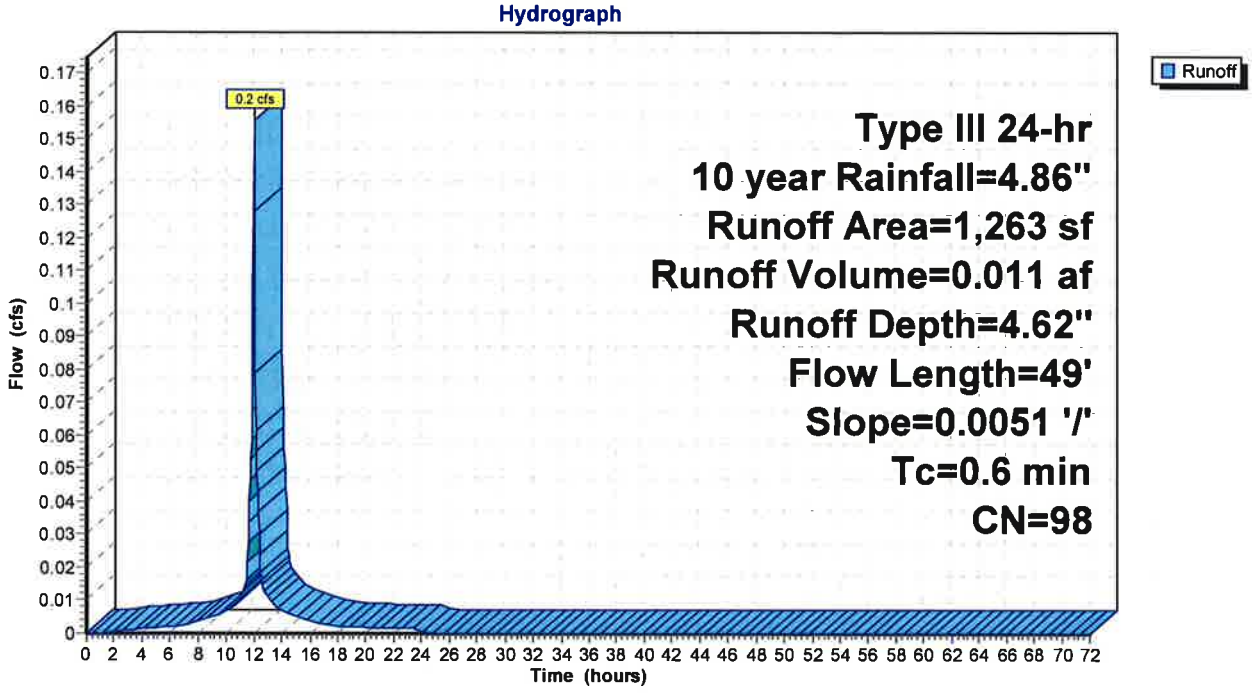
Runoff = 0.2 cfs @ 12.01 hrs, Volume= 0.011 af, Depth= 4.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
	922	98	Paved parking, HSG B
*	341	98	Unconnected pavement, sidewalk, HSG B
	1,263	98	Weighted Average
	1,263		100.00% Impervious Area
	341		27.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	49	0.0051	1.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps

Subcatchment PS7: Court Street



Summary for Subcatchment PS8: Court Street

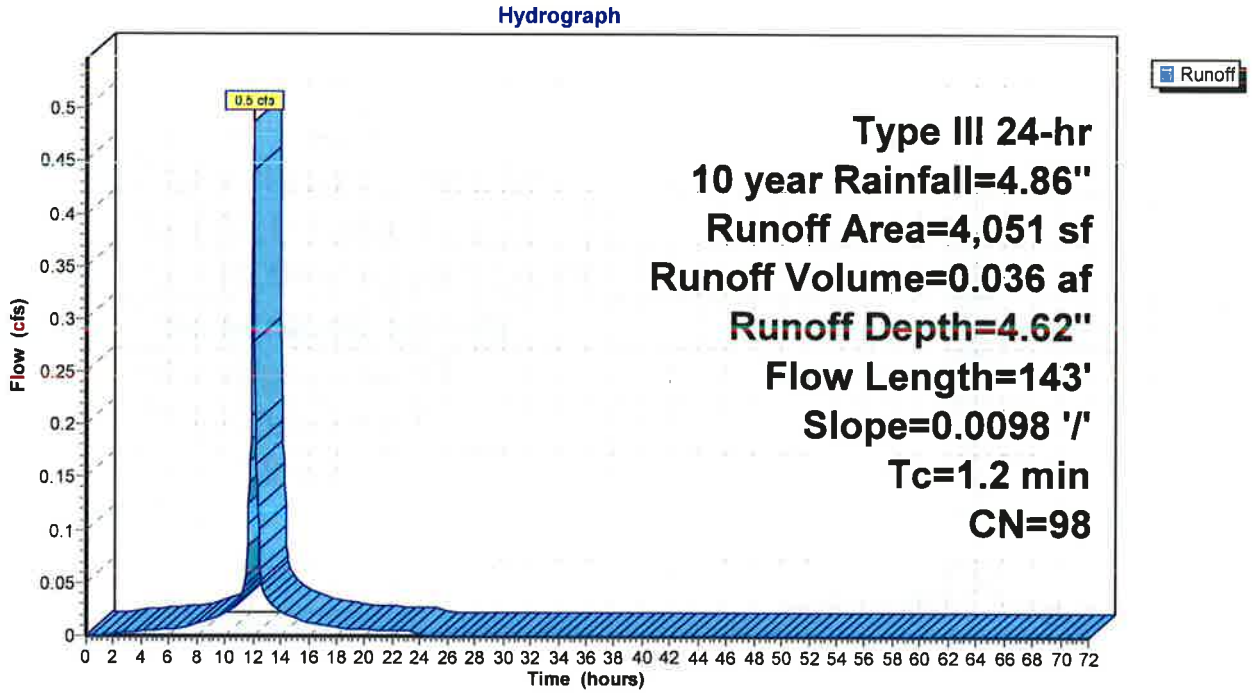
Runoff = 0.5 cfs @ 12.02 hrs, Volume= 0.036 af, Depth= 4.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 year Rainfall=4.86"

	Area (sf)	CN	Description
	1,014	98	Paved parking, HSG B
*	3,037	98	Unconnected pavement,sidewalk, HSG B
	4,051	98	Weighted Average
	4,051		100.00% Impervious Area
	3,037		74.97% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	143	0.0098	2.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps

Subcatchment PS8: Court Street



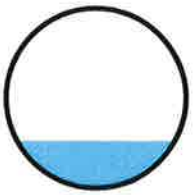
Summary for Reach 4R: Altus Model

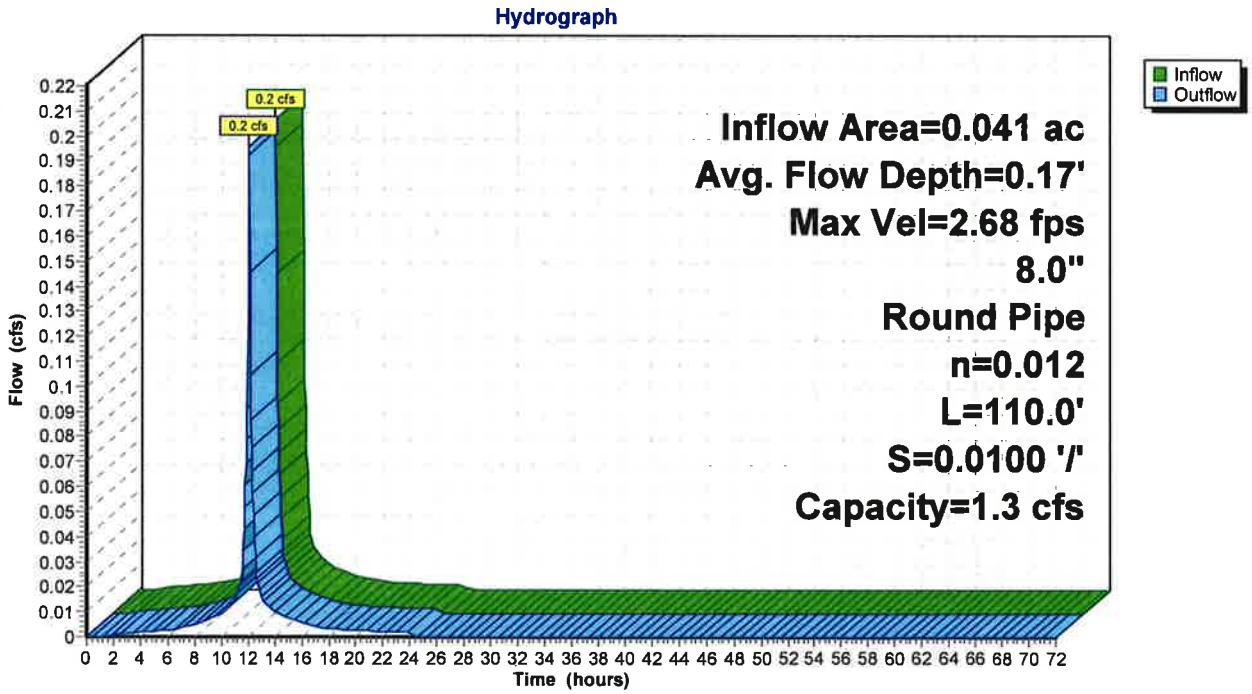
Inflow Area = 0.041 ac,100.00% Impervious, Inflow Depth = 4.62" for 10 year event
Inflow = 0.2 cfs @ 12.07 hrs, Volume= 0.016 af
Outflow = 0.2 cfs @ 12.08 hrs, Volume= 0.016 af, Atten= 1%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.68 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.88 fps, Avg. Travel Time= 2.1 min

Peak Storage= 8 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.17'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.3 cfs

8.0" Round Pipe
n= 0.012
Length= 110.0' Slope= 0.0100 '/'
Inlet Invert= 8.38', Outlet Invert= 7.28'





Summary for Reach 40R: Altus Model

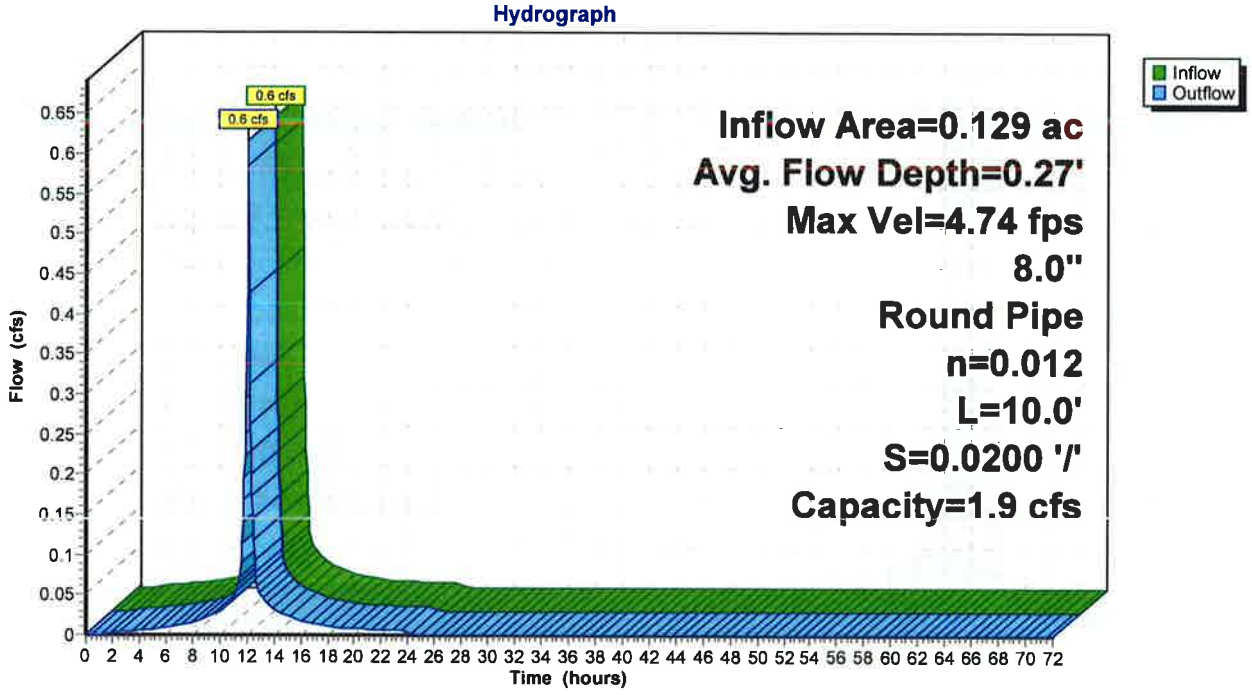
Inflow Area = 0.129 ac,100.00% Impervious, Inflow Depth = 4.62" for 10 year event
Inflow = 0.6 cfs @ 12.07 hrs, Volume= 0.050 af
Outflow = 0.6 cfs @ 12.07 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.74 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.59 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.9 cfs

8.0" Round Pipe
n= 0.012
Length= 10.0' Slope= 0.0200 '/'
Inlet Invert= 6.82', Outlet Invert= 6.62'

Reach 40R: Altus Model



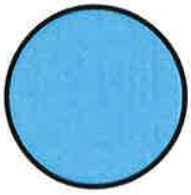
Summary for Reach 41R: Altus Model

Inflow Area = 1.471 ac, 67.65% Impervious, Inflow Depth = 2.83" for 10 year event
Inflow = 4.0 cfs @ 12.07 hrs, Volume= 0.347 af
Outflow = 2.1 cfs @ 12.00 hrs, Volume= 0.347 af, Atten= 48%, Lag= 0.0 min

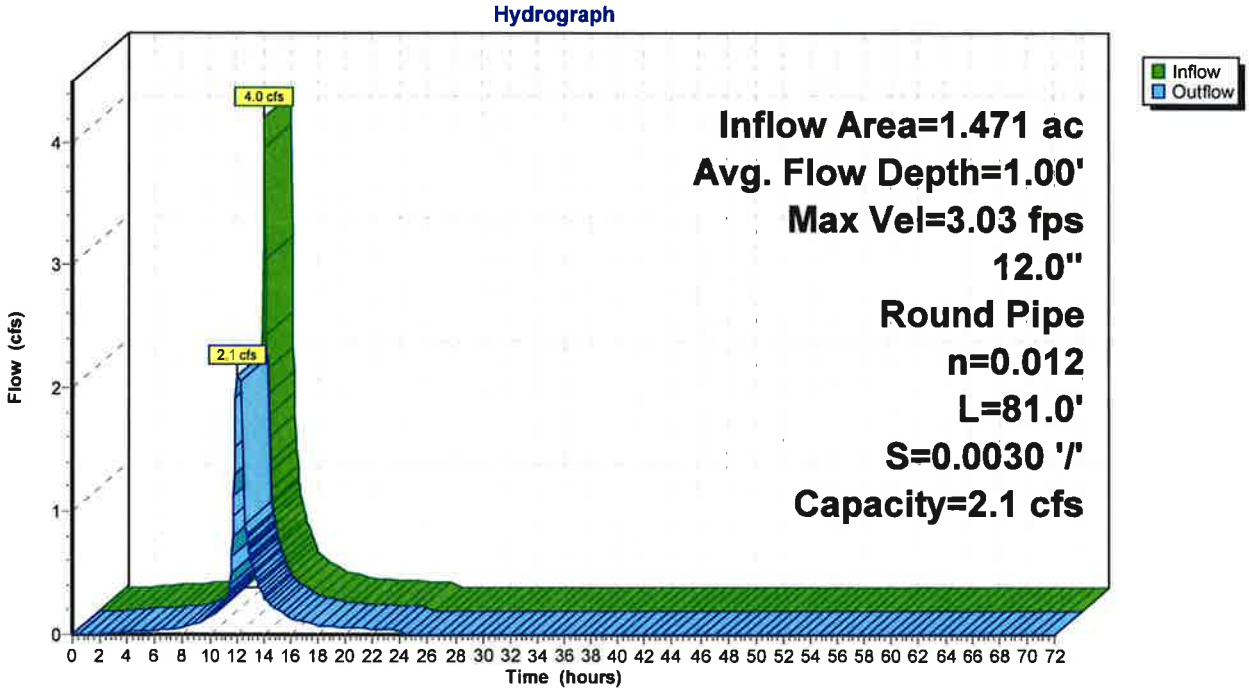
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.03 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.29 fps, Avg. Travel Time= 1.0 min

Peak Storage= 64 cf @ 12.00 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.1 cfs

12.0" Round Pipe
n= 0.012
Length= 81.0' Slope= 0.0030 '/'
Inlet Invert= 6.45', Outlet Invert= 6.21'



Reach 41R: Altus Model

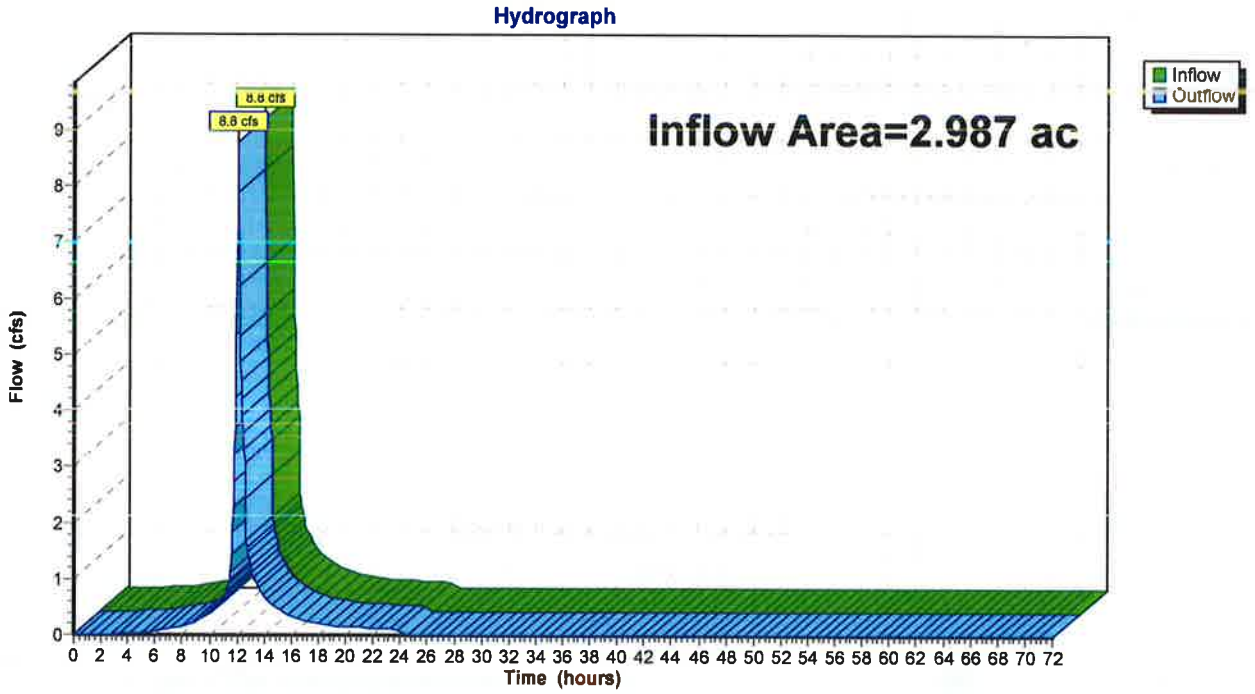


Summary for Reach 300R: POA #3 - Existing CB (Altus Model)

Inflow Area = 2.987 ac, 49.88% Impervious, Inflow Depth = 3.37" for 10 year event
Inflow = 8.8 cfs @ 12.06 hrs, Volume= 0.838 af
Outflow = 8.8 cfs @ 12.06 hrs, Volume= 0.838 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach 300R: POA #3 - Existing CB (Altus Model)



Summary for Pond 1P: OCS # 1 / SYSTEM # 1

Inflow Area = 0.280 ac, 68.25% Impervious, Inflow Depth = 2.98" for 10 year event
Inflow = 0.9 cfs @ 12.07 hrs, Volume= 0.069 af
Outflow = 0.3 cfs @ 12.35 hrs, Volume= 0.069 af, Atten= 64%, Lag= 16.4 min
Discarded = 0.0 cfs @ 8.55 hrs, Volume= 0.033 af
Primary = 0.3 cfs @ 12.35 hrs, Volume= 0.036 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 12.43' @ 12.35 hrs Surf.Area= 0.015 ac Storage= 0.022 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 156.8 min (926.7 - 769.9)

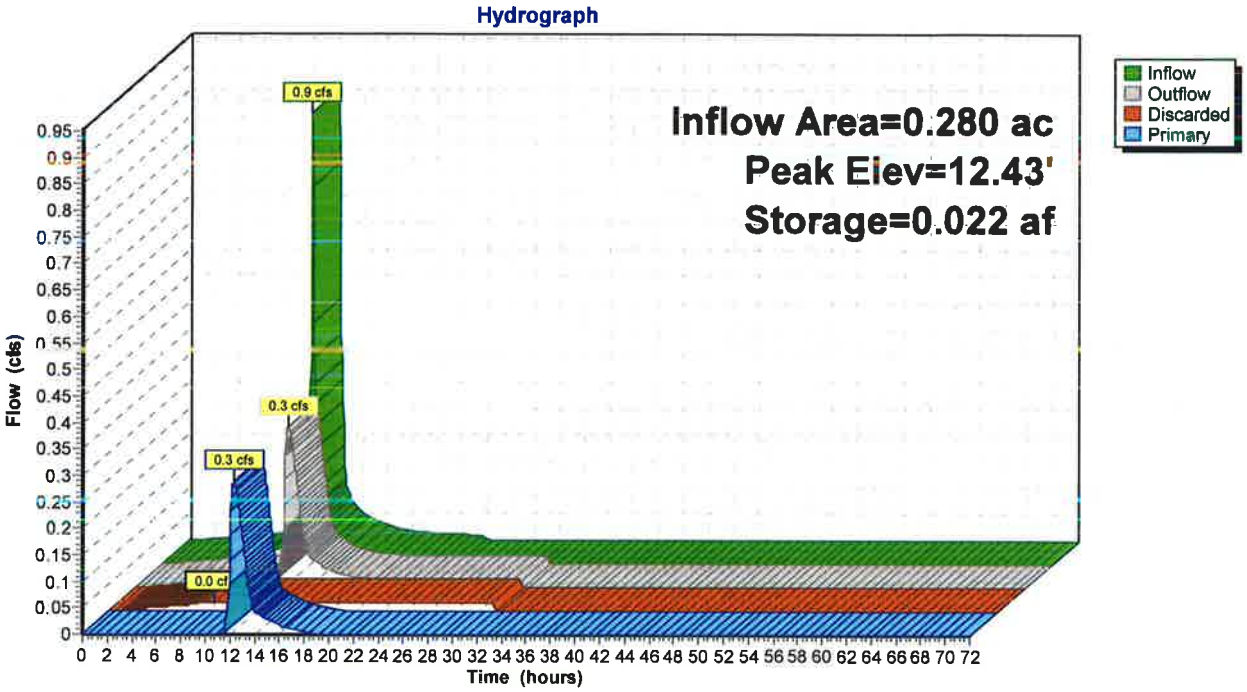
Volume	Invert	Avail.Storage	Storage Description
#1	10.50'	0.014 af	**24.00'W x 27.00'L x 4.00'H Prismatoid** 0.060 af Overall - 0.025 af Embedded = 0.035 af x 40.0% Voids
#2	11.00'	0.025 af	**ADS_StormTech SC-740** x 23 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 6 rows
		0.039 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	11.40'	**12.0" Round Culvert** L= 14.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 11.40' / 11.33' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	11.50'	**2.0" Vert. Orifice/Grate X 3.00** C= 0.600
#3	Device 1	14.50'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#4	Discarded	10.50'	**1.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.0 cfs @ 8.55 hrs HW=10.54' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.3 cfs @ 12.35 hrs HW=12.43' TW=8.50' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.3 cfs of 2.2 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.3 cfs @ 4.42 fps)
  └**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 1P: OCS # 1 / SYSTEM # 1



Summary for Pond 3P: Existing CB (Altus Model)

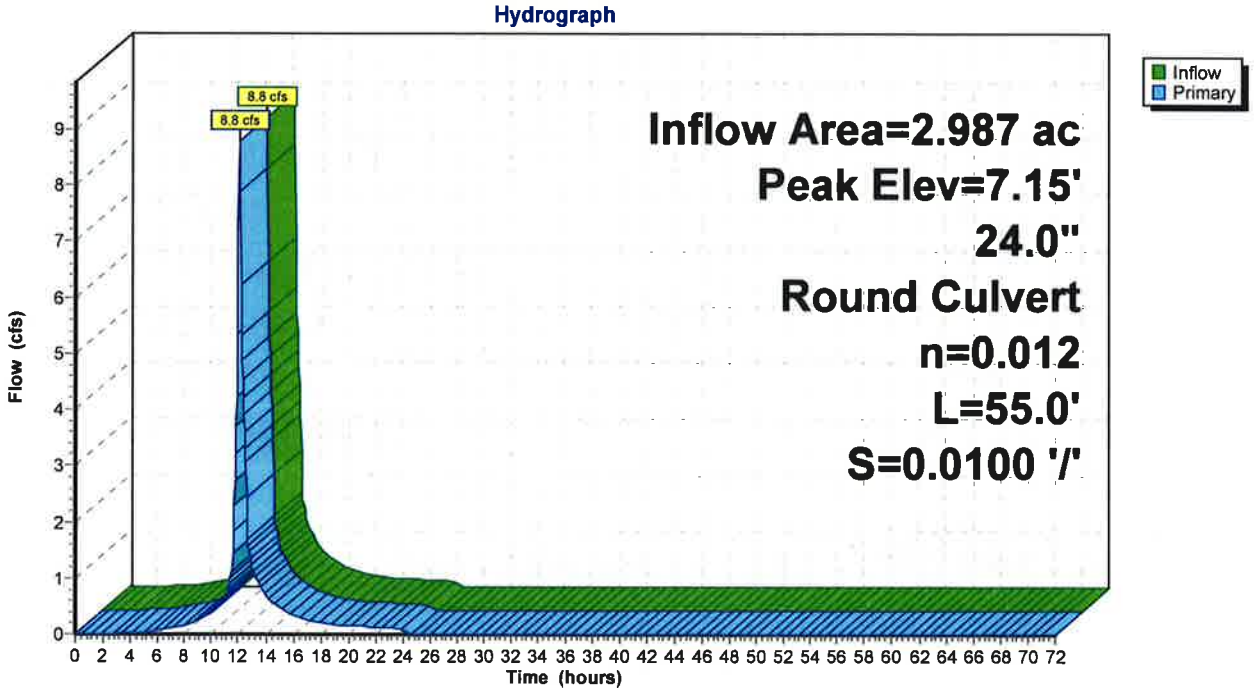
Inflow Area = 2.987 ac, 49.88% Impervious, Inflow Depth = 3.37" for 10 year event
Inflow = 8.8 cfs @ 12.06 hrs, Volume= 0.838 af
Outflow = 8.8 cfs @ 12.06 hrs, Volume= 0.838 af, Atten= 0%, Lag= 0.0 min
Primary = 8.8 cfs @ 12.06 hrs, Volume= 0.838 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 7.15' @ 12.06 hrs
Flood Elev= 8.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.76'	**24.0" Round Culvert** L= 55.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.76' / 5.21' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=8.7 cfs @ 12.06 hrs HW=7.14' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 8.7 cfs @ 5.28 fps)

Pond 3P: Existing CB (Altus Model)



Summary for Pond 5P: CB#1

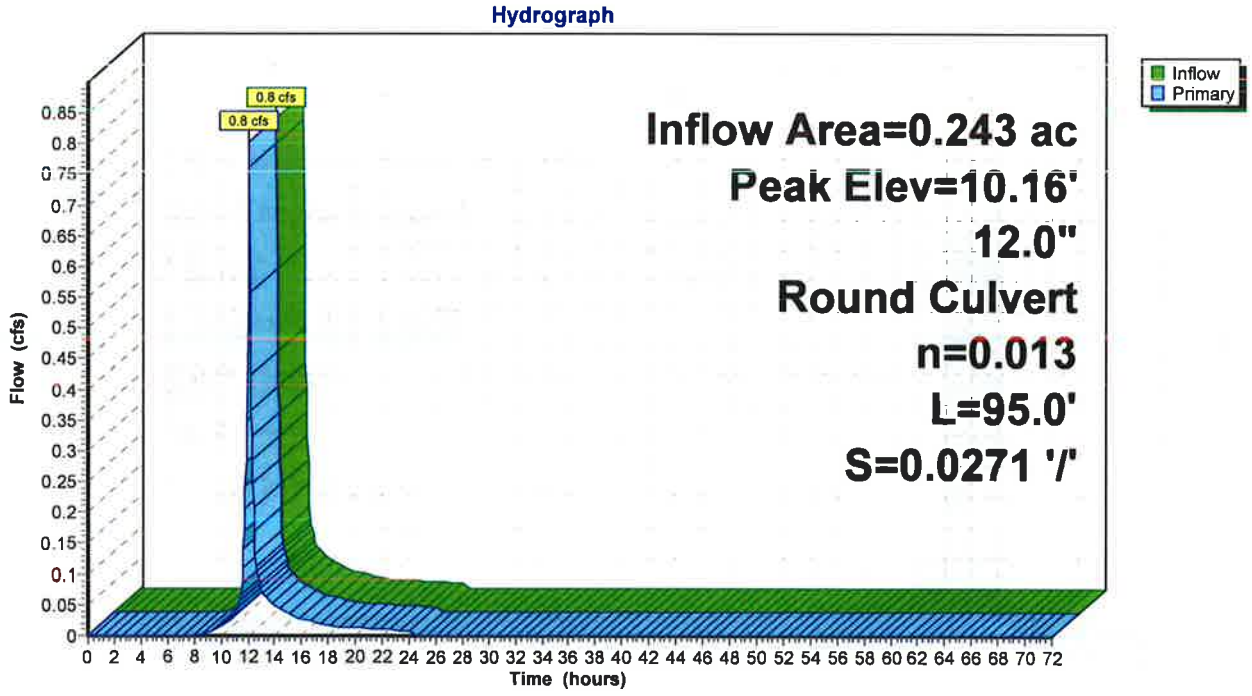
Inflow Area = 0.243 ac, 69.34% Impervious, Inflow Depth = 2.77" for 10 year event
Inflow = 0.8 cfs @ 12.07 hrs, Volume= 0.056 af
Outflow = 0.8 cfs @ 12.07 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min
Primary = 0.8 cfs @ 12.07 hrs, Volume= 0.056 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 10.16' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	9.70'	**12.0" Round Culvert** L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 9.70' / 7.13' S= 0.0271 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.8 cfs @ 12.07 hrs HW=10.15' TW=8.18' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.8 cfs @ 2.28 fps)

Pond 5P: CB#1



Summary for Pond 7P: CB#2

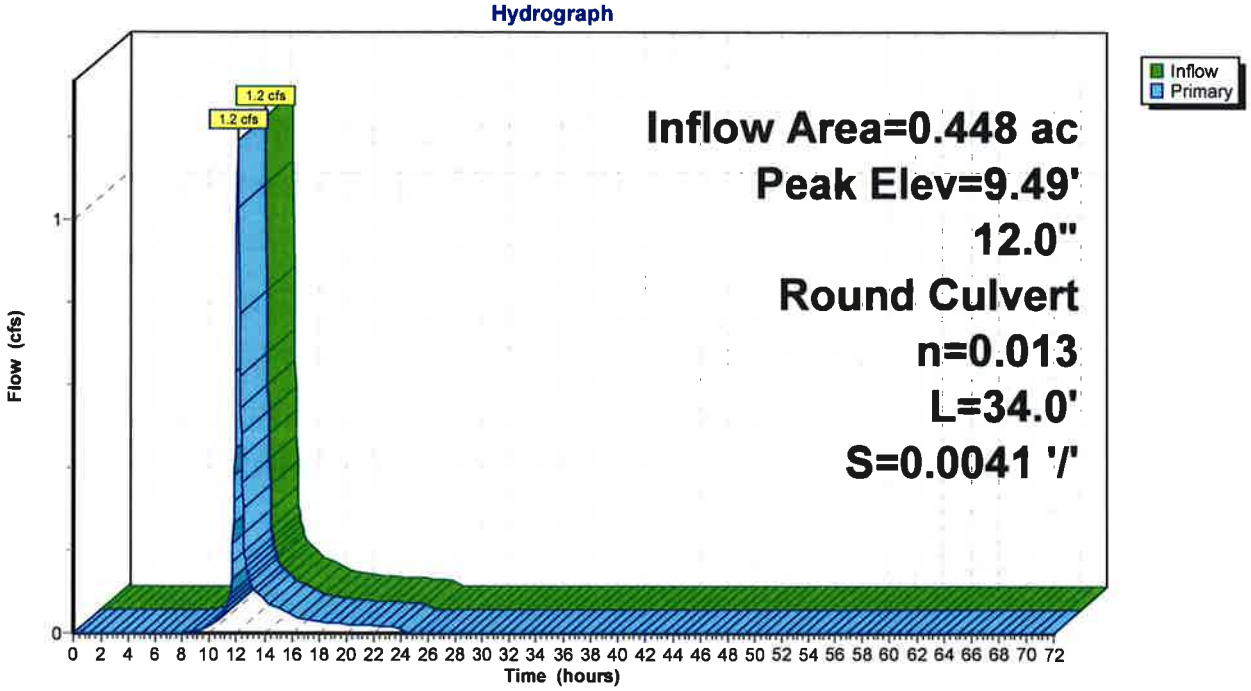
Inflow Area = 0.448 ac, 59.02% Impervious, Inflow Depth = 2.30" for 10 year event
Inflow = 1.2 cfs @ 12.05 hrs, Volume= 0.086 af
Outflow = 1.2 cfs @ 12.05 hrs, Volume= 0.086 af, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.05 hrs, Volume= 0.086 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 9.49' @ 12.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.03'	**12.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.03' / 6.89' S= 0.0041 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.05 hrs HW=8.05' TW=8.32' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Pond 7P: CB#2



Summary for Pond 8P: CB#3

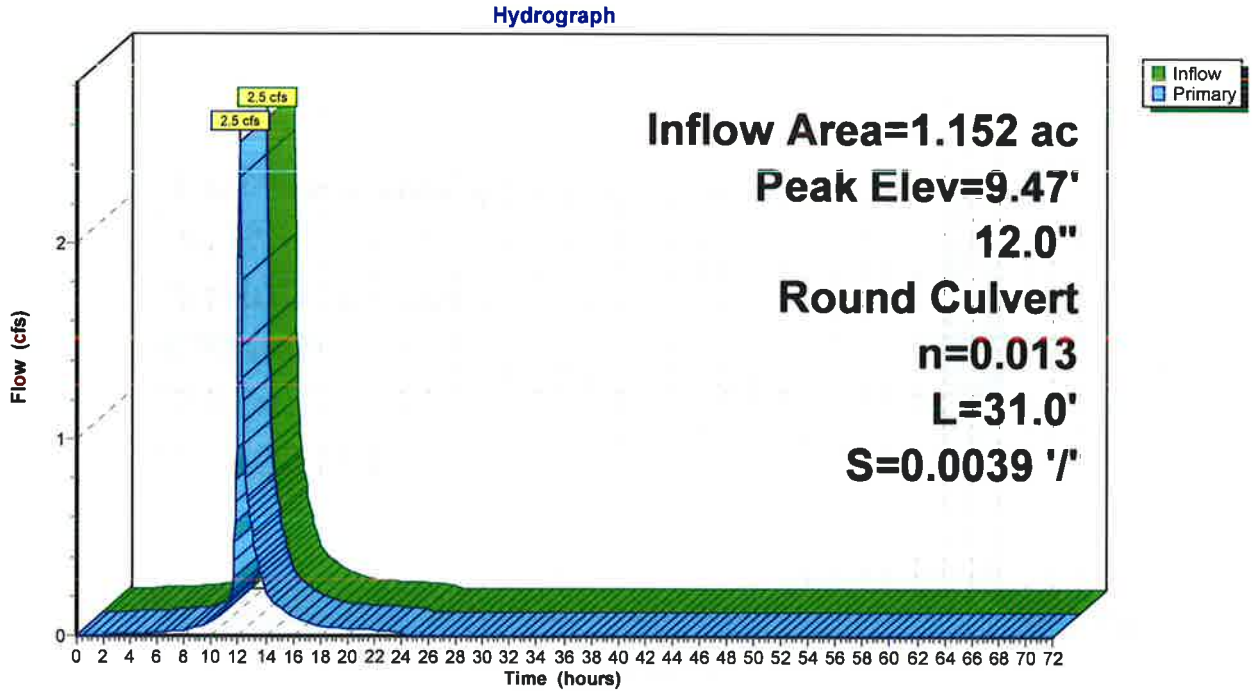
Inflow Area = 1.152 ac, 71.58% Impervious, Inflow Depth = 2.38" for 10 year event
Inflow = 2.5 cfs @ 12.06 hrs, Volume= 0.228 af
Outflow = 2.5 cfs @ 12.06 hrs, Volume= 0.228 af, Atten= 0%, Lag= 0.0 min
Primary = 2.5 cfs @ 12.06 hrs, Volume= 0.228 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 9.47' @ 12.15 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.89'	**12.0" Round Culvert** L= 31.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.89' / 6.77' S= 0.0039 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.06 hrs HW=8.48' TW=8.77' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond 8P: CB#3



Summary for Pond 9P: OCS # 2 / SYSTEM # 2

Inflow Area = 0.189 ac, 70.70% Impervious, Inflow Depth = 3.21" for 10 year event
Inflow = 0.6 cfs @ 12.07 hrs, Volume= 0.051 af
Outflow = 0.2 cfs @ 12.91 hrs, Volume= 0.051 af, Atten= 73%, Lag= 50.4 min
Discarded = 0.0 cfs @ 9.70 hrs, Volume= 0.035 af
Primary = 0.1 cfs @ 12.91 hrs, Volume= 0.016 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 8.17' @ 12.51 hrs Surf.Area= 0.019 ac Storage= 0.022 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 187.7 min (945.1 - 757.4)

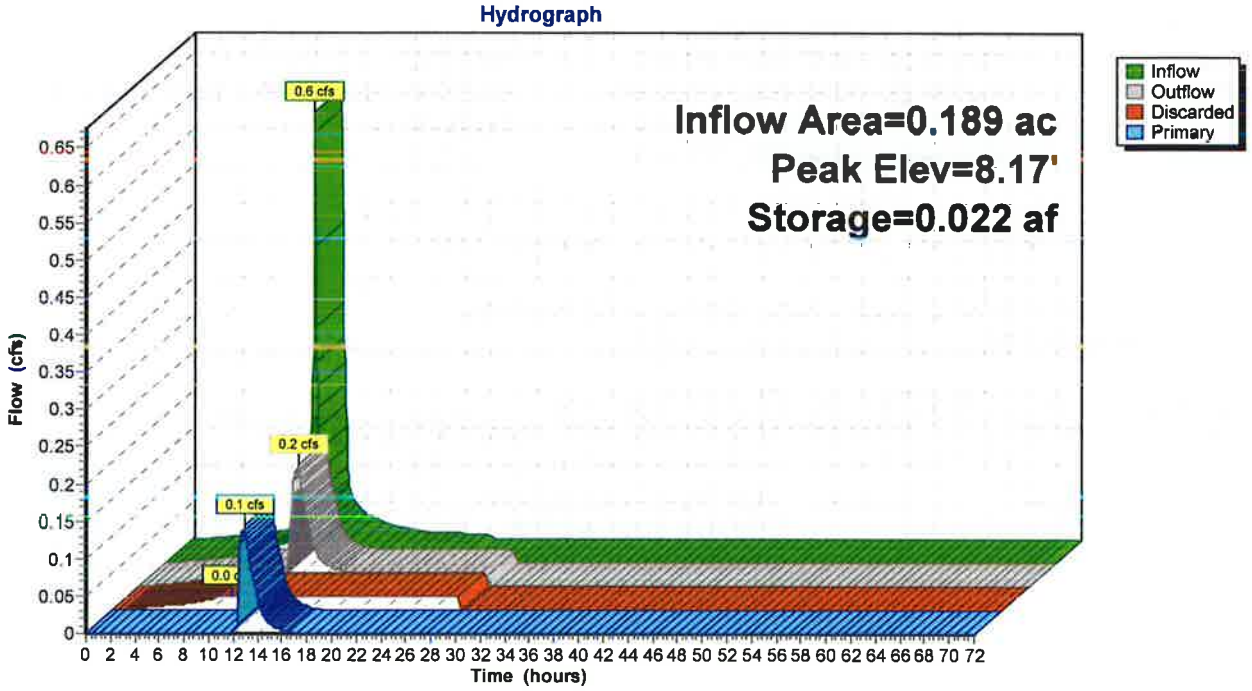
Volume	Invert	Avail.Storage	Storage Description
#1	6.50'	0.019 af	**27.00'W x 30.00'L x 4.00'H Prismatoid** 0.074 af Overall - 0.026 af Embedded = 0.049 af x 40.0% Voids
#2	7.00'	0.026 af	**ADS_StormTech SC-740** x 24 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 7 rows
		0.045 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	7.40'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.40' / 7.38' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	7.50'	**2.0" Vert. Orifice/Grate X 3.00** C= 0.600
#3	Device 1	10.50'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#4	Discarded	6.50'	**1.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.0 cfs @ 9.70 hrs HW=6.54' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.1 cfs @ 12.91 hrs HW=8.00' TW=7.79' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.1 cfs of 0.9 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 2.24 fps)
  └**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 9P: OCS # 2 / SYSTEM # 2



Summary for Pond 10P: (new Pond)

Inflow Area = 0.028 ac, 0.00% Impervious, Inflow Depth = 1.29" for 10 year event
Inflow = 0.0 cfs @ 12.09 hrs, Volume= 0.003 af
Outflow = 0.0 cfs @ 13.04 hrs, Volume= 0.003 af, Atten= 87%, Lag= 57.1 min
Discarded = 0.0 cfs @ 13.04 hrs, Volume= 0.003 af
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 9.22' @ 13.04 hrs Surf.Area= 214 sf Storage= 42 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 79.8 min (953.2 - 873.5)

Volume	Invert	Avail.Storage	Storage Description
#1	9.00'	290 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
9.00	164	77.4	0	0	164
10.00	438	103.9	290	290	557

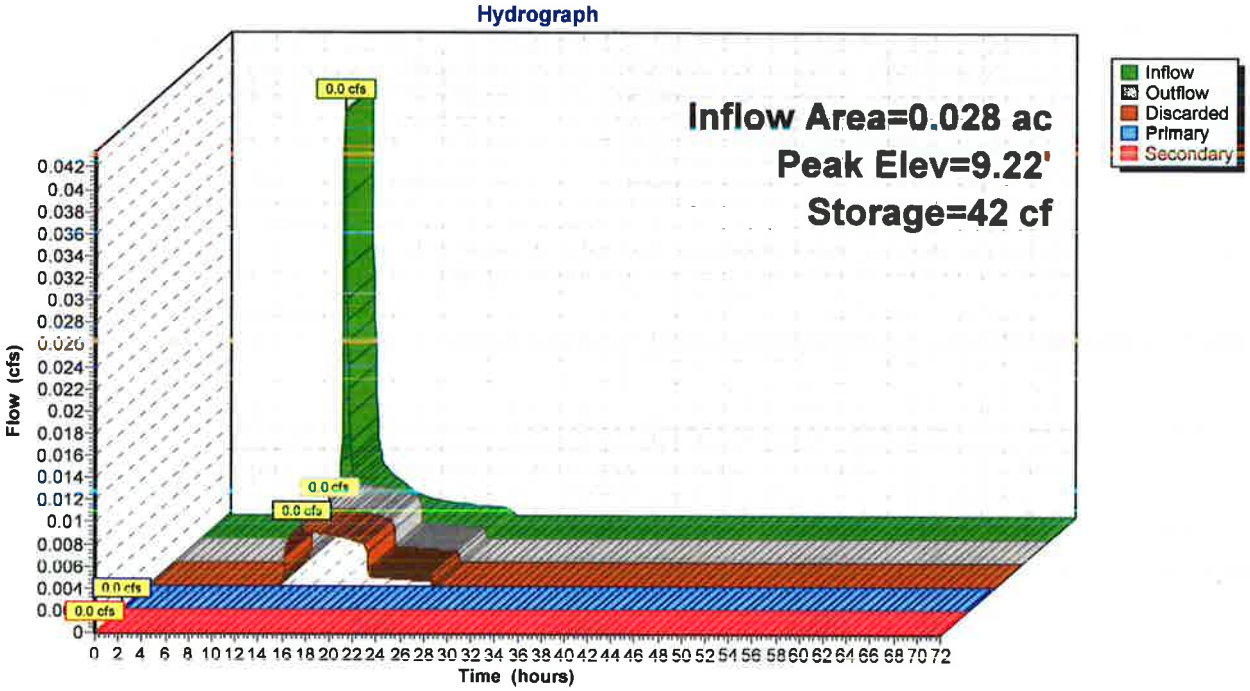
Device	Routing	Invert	Outlet Devices
#1	Primary	7.39'	**6.0" Round Culvert** L= 53.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.39' / 7.13' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	9.50'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	9.75'	**10.0' 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
#4	Discarded	9.00'	**1.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.0 cfs @ 13.04 hrs HW=9.22' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=9.00' TW=7.03' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.0 cfs of 0.8 cfs potential flow)
└**2=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=9.00' TW=0.00' (Dynamic Tailwater)
└**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 10P: (new Pond)



Summary for Pond 13P: CB#5

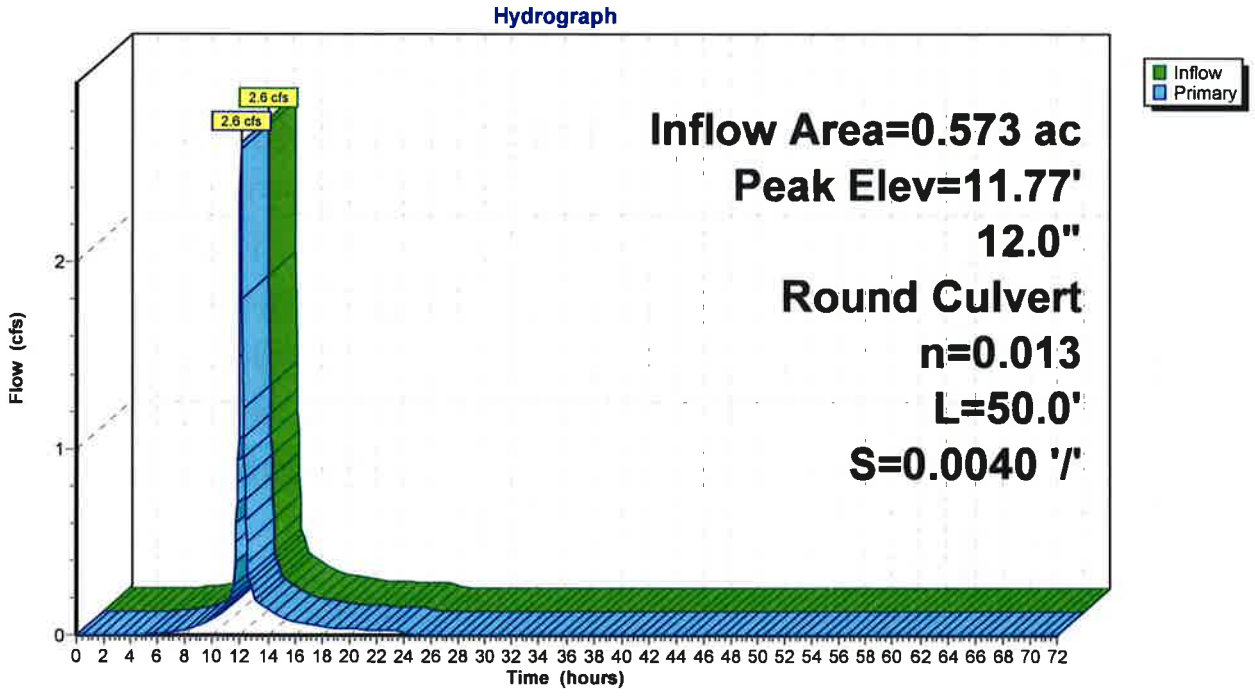
Inflow Area = 0.573 ac, 86.40% Impervious, Inflow Depth = 3.74" for 10 year event
Inflow = 2.6 cfs @ 12.04 hrs, Volume= 0.179 af
Outflow = 2.6 cfs @ 12.04 hrs, Volume= 0.179 af, Atten= 0%, Lag= 0.0 min
Primary = 2.6 cfs @ 12.04 hrs, Volume= 0.179 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 11.77' @ 12.21 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.06'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.06' / 7.86' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.04 hrs HW=9.43' TW=9.70' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Pond 13P: CB#5



Summary for Pond 15P: DMH#1

Inflow Area = 0.468 ac, 69.24% Impervious, Inflow Depth = 1.33" for 10 year event
Inflow = 0.4 cfs @ 12.58 hrs, Volume= 0.052 af
Outflow = 0.4 cfs @ 12.58 hrs, Volume= 0.052 af, Atten= 0%, Lag= 0.0 min
Primary = 0.4 cfs @ 12.58 hrs, Volume= 0.052 af

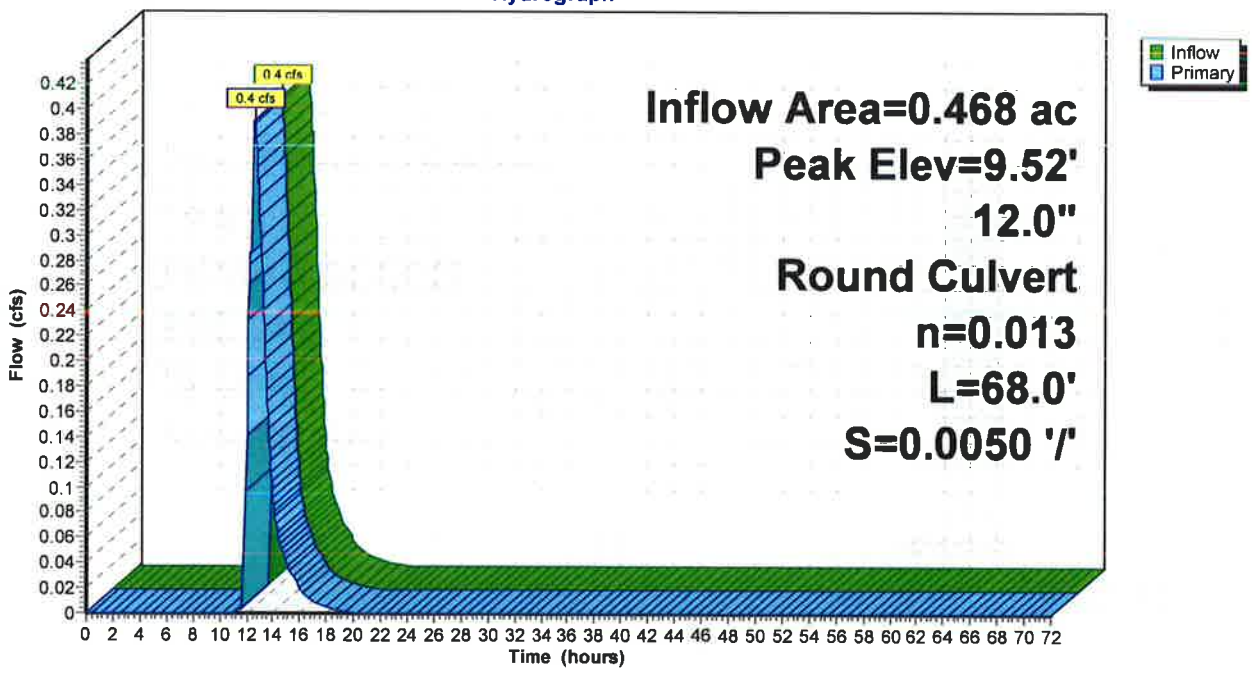
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 9.52' @ 12.25 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.38'	**12.0" Round Culvert** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.38' / 7.04' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.5 cfs @ 12.58 hrs HW=7.96' TW=7.83' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.5 cfs @ 1.47 fps)

Pond 15P: DMH#1

Hydrograph



Summary for Pond 16P: CB#6

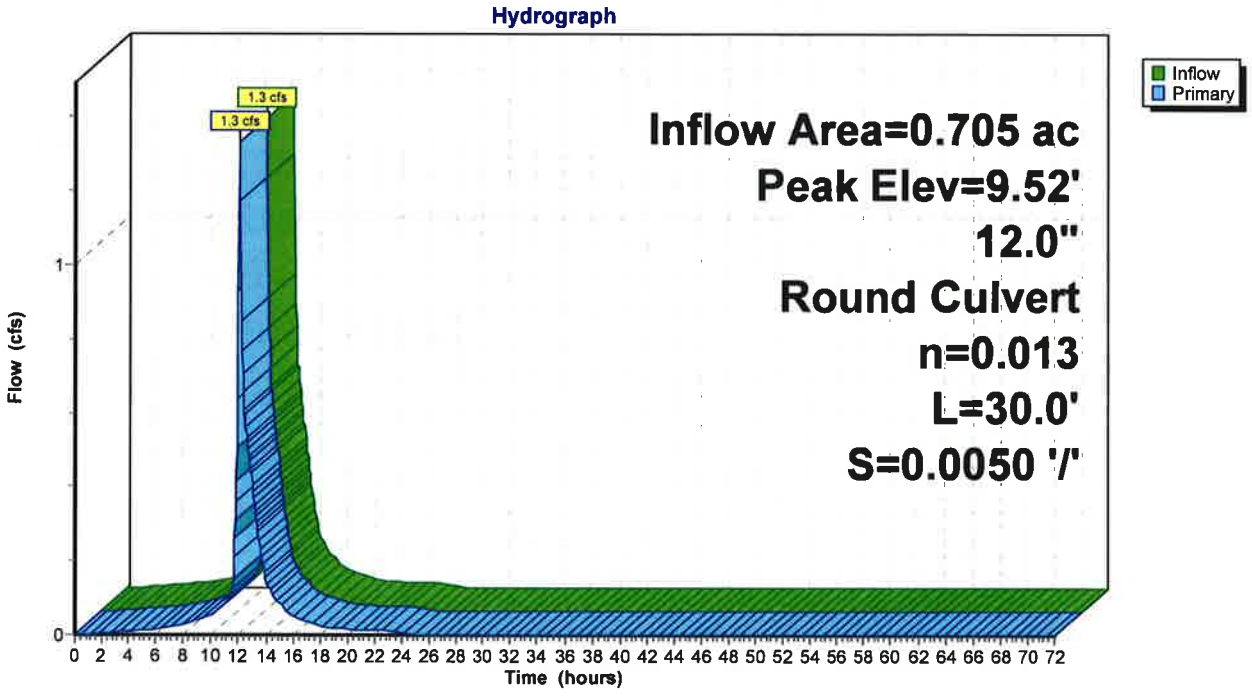
Inflow Area = 0.705 ac, 79.56% Impervious, Inflow Depth = 2.43" for 10 year event
Inflow = 1.3 cfs @ 12.08 hrs, Volume= 0.143 af
Outflow = 1.3 cfs @ 12.08 hrs, Volume= 0.143 af, Atten= 0%, Lag= 0.0 min
Primary = 1.3 cfs @ 12.08 hrs, Volume= 0.143 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 9.52' @ 12.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.04'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.04' / 6.89' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.08 hrs HW=8.24' TW=8.65' (Dynamic Tailwater)
↳**1=Culvert** (Controls 0.0 cfs)

Pond 16P: CB#6



Summary for Pond 30P: CB #1 (Altus Model)

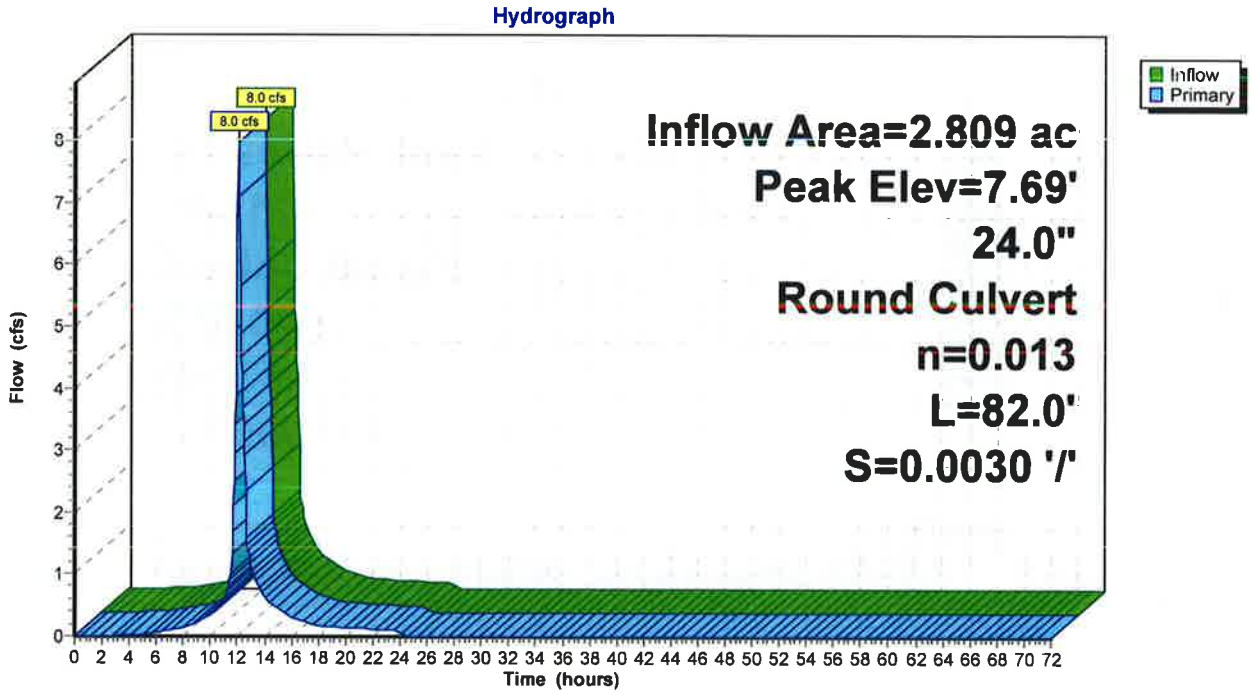
Inflow Area = 2.809 ac, 53.04% Impervious, Inflow Depth = 3.31" for 10 year event
Inflow = 8.0 cfs @ 12.05 hrs, Volume= 0.774 af
Outflow = 8.0 cfs @ 12.05 hrs, Volume= 0.774 af, Atten= 0%, Lag= 0.0 min
Primary = 8.0 cfs @ 12.05 hrs, Volume= 0.774 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 7.69' @ 12.07 hrs
Flood Elev= 9.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.11'	**24.0" Round Culvert** L= 82.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.11' / 5.86' S= 0.0030 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.3 cfs @ 12.05 hrs HW=7.68' TW=7.14' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 7.3 cfs @ 3.78 fps)

Pond 30P: CB #1 (Altus Model)



Summary for Pond 31P: CB #2 (Altus Model)

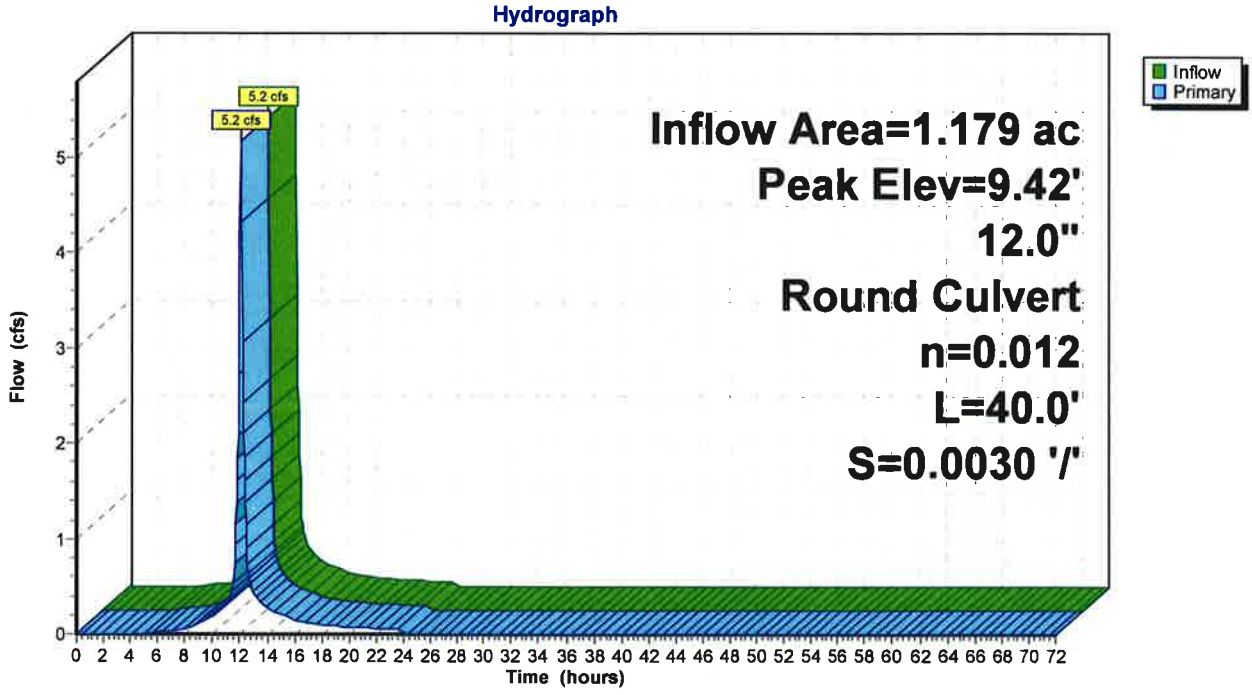
Inflow Area = 1.179 ac, 41.96% Impervious, Inflow Depth = 3.80" for 10 year event
Inflow = 5.2 cfs @ 12.05 hrs, Volume= 0.373 af
Outflow = 5.2 cfs @ 12.05 hrs, Volume= 0.373 af, Atten= 0%, Lag= 0.0 min
Primary = 5.2 cfs @ 12.05 hrs, Volume= 0.373 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 9.42' @ 12.06 hrs
Flood Elev= 9.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.33'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.33' / 6.21' S= 0.0030 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=4.9 cfs @ 12.05 hrs HW=9.39' TW=7.68' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.9 cfs @ 6.30 fps)

Pond 31P: CB #2 (Altus Model)



Summary for Pond 32P: CB #3 (Altus Model)

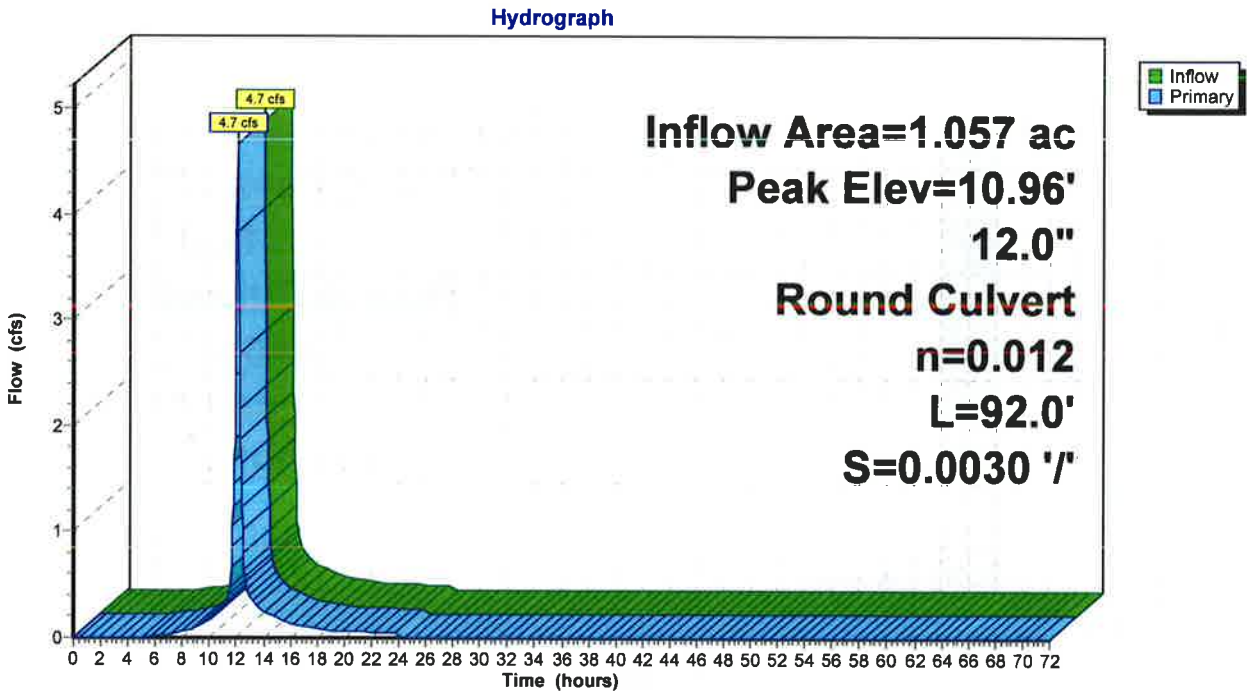
Inflow Area = 1.057 ac, 46.83% Impervious, Inflow Depth = 3.81" for 10 year event
Inflow = 4.7 cfs @ 12.05 hrs, Volume= 0.335 af
Outflow = 4.7 cfs @ 12.05 hrs, Volume= 0.335 af, Atten= 0%, Lag= 0.0 min
Primary = 4.7 cfs @ 12.05 hrs, Volume= 0.335 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 10.96' @ 12.08 hrs
Flood Elev= 9.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.71'	**12.0" Round Culvert** L= 92.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.71' / 6.43' S= 0.0030 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=3.6 cfs @ 12.05 hrs HW=10.70' TW=9.40' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 3.6 cfs @ 4.59 fps)

Pond 32P: CB #3 (Altus Model)



Summary for Pond 33P: CB #4 (Altus Model) - Relocated (CB5B)

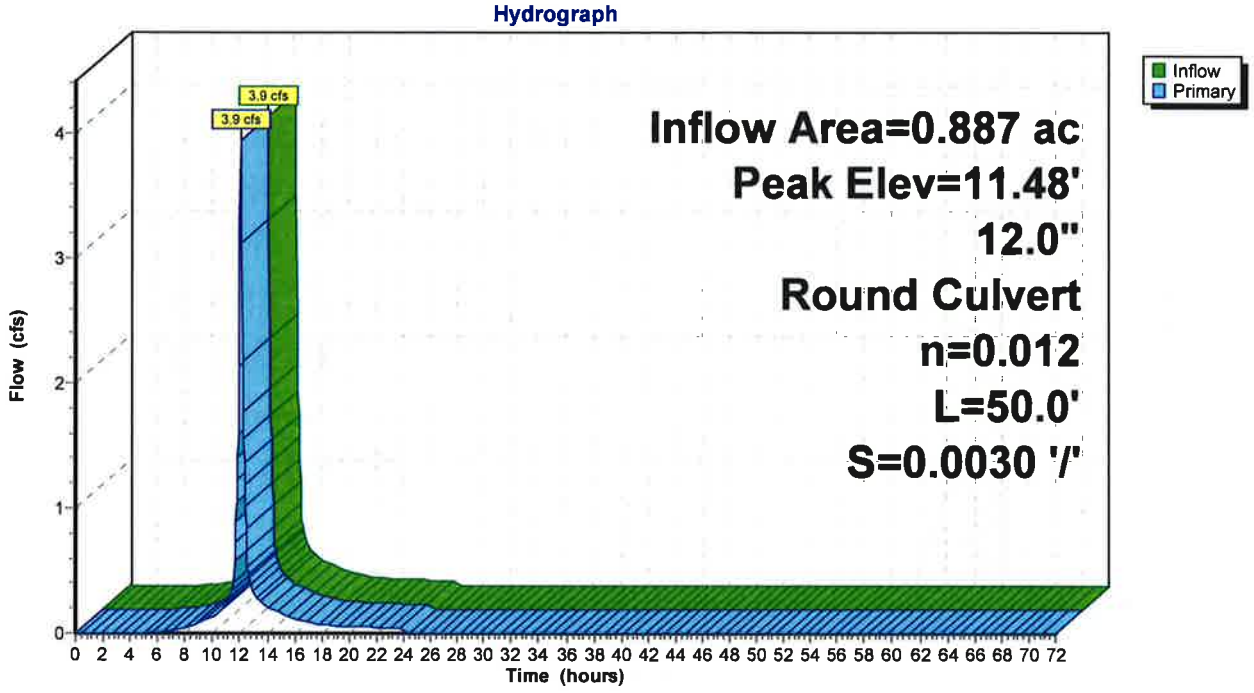
Inflow Area = 0.887 ac, 55.77% Impervious, Inflow Depth = 3.78" for 10 year event
Inflow = 3.9 cfs @ 12.05 hrs, Volume= 0.279 af
Outflow = 3.9 cfs @ 12.05 hrs, Volume= 0.279 af, Atten= 0%, Lag= 0.0 min
Primary = 3.9 cfs @ 12.05 hrs, Volume= 0.279 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 11.48' @ 12.12 hrs
Flood Elev= 9.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.96'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.96' / 6.81' S= 0.0030 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.05 hrs HW=10.16' TW=10.59' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Pond 33P: CB #4 (Altus Model) - Relocated (CB5B)



Summary for Pond 34P: CB #5 (Altus Model)

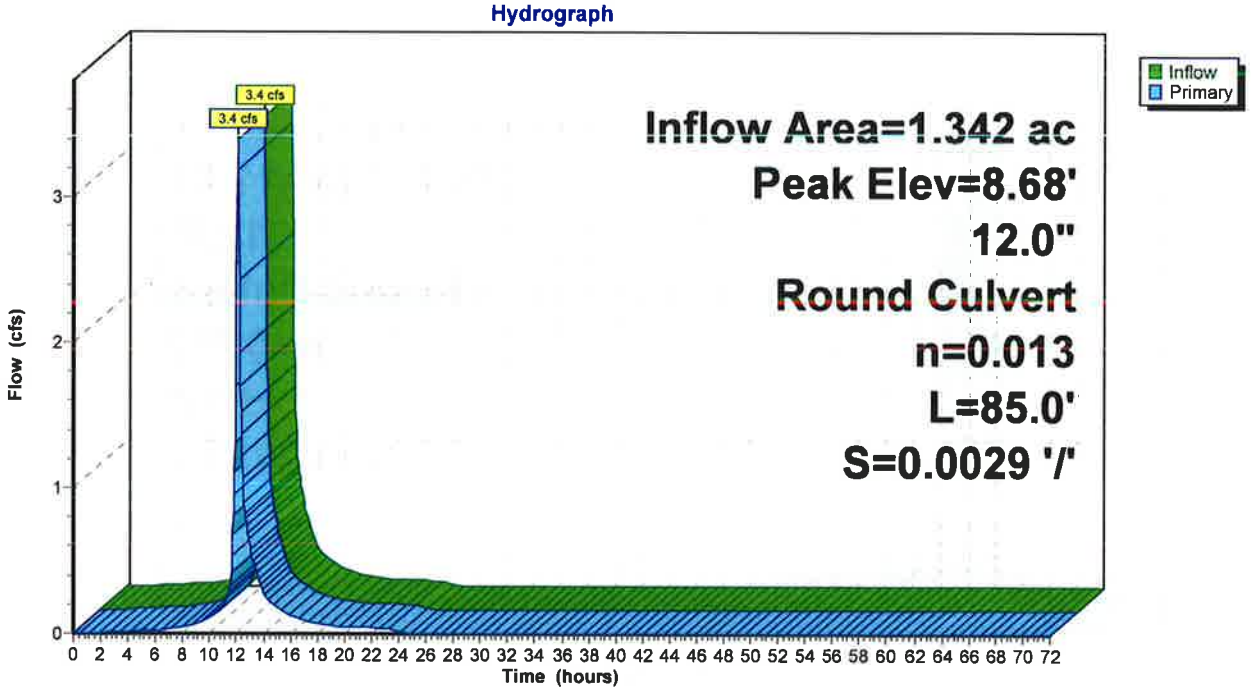
Inflow Area = 1.342 ac, 64.54% Impervious, Inflow Depth = 2.66" for 10 year event
Inflow = 3.4 cfs @ 12.07 hrs, Volume= 0.297 af
Outflow = 3.4 cfs @ 12.07 hrs, Volume= 0.297 af, Atten= 0%, Lag= 0.0 min
Primary = 3.4 cfs @ 12.07 hrs, Volume= 0.297 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 8.68' @ 12.07 hrs
Flood Elev= 8.68'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.83'	**12.0" Round Culvert** L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.83' / 5.58' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.3 cfs @ 12.07 hrs HW=8.58' TW=7.45' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 3.3 cfs @ 4.18 fps)

Pond 34P: CB #5 (Altus Model)



Summary for Pond AEI 6: Discharge Point 3 (Off Site Drainage)

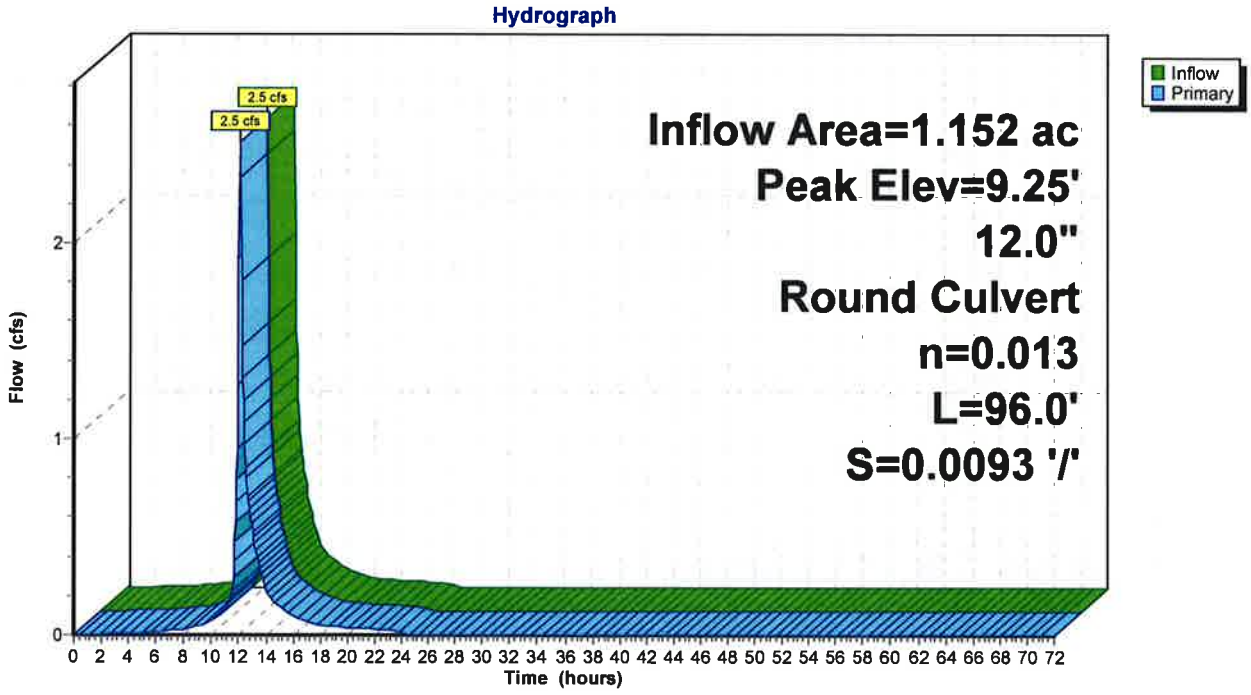
Inflow Area = 1.152 ac, 71.58% Impervious, Inflow Depth = 2.38" for 10 year event
Inflow = 2.5 cfs @ 12.06 hrs, Volume= 0.228 af
Outflow = 2.5 cfs @ 12.06 hrs, Volume= 0.228 af, Atten= 0%, Lag= 0.0 min
Primary = 2.5 cfs @ 12.06 hrs, Volume= 0.228 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 9.25' @ 12.11 hrs
Flood Elev= 10.77'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.77'	**12.0" Round Culvert** L= 96.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.77' / 5.88' S= 0.0093 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.3 cfs @ 12.06 hrs HW=8.77' TW=8.59' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 1.3 cfs @ 1.59 fps)

Pond AEI 6: Discharge Point 3 (Off Site Drainage)



Summary for Pond CB 4433:

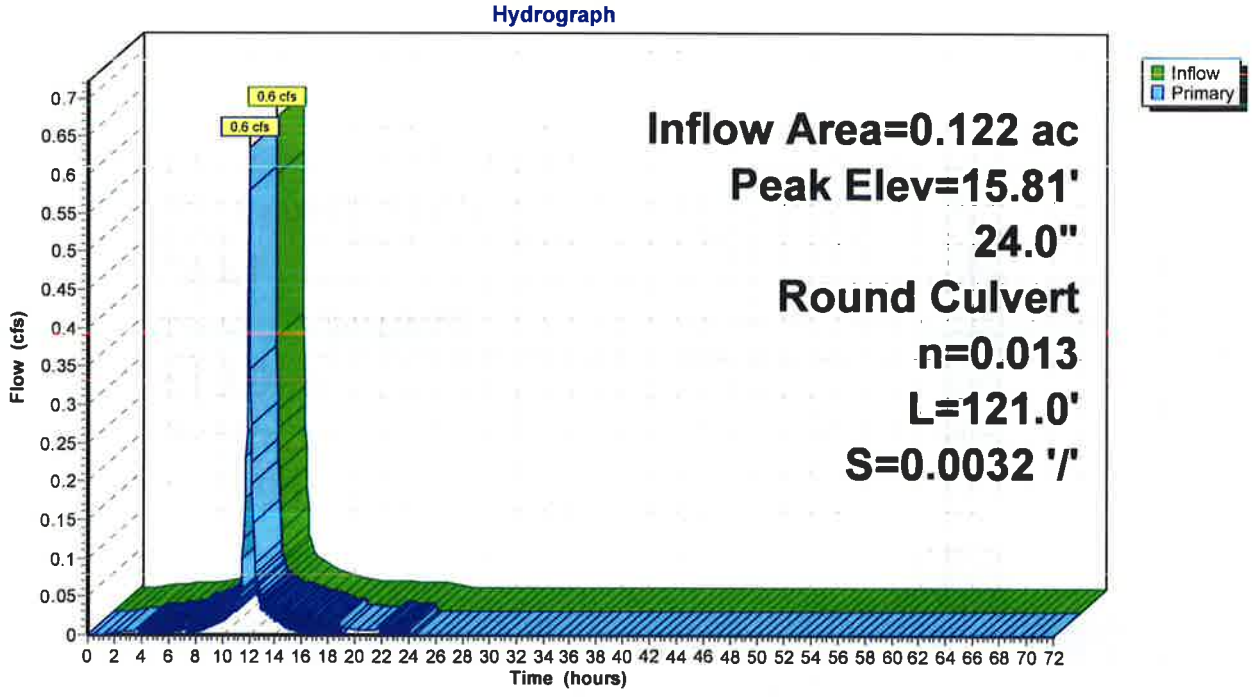
Inflow Area = 0.122 ac,100.00% Impervious, Inflow Depth = 4.62" for 10 year event
Inflow = 0.6 cfs @ 12.01 hrs, Volume= 0.047 af
Outflow = 0.6 cfs @ 12.02 hrs, Volume= 0.047 af, Atten= 2%, Lag= 0.2 min
Primary = 0.6 cfs @ 12.02 hrs, Volume= 0.047 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 15.81' @ 12.07 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	14.38'	**24.0" Round Culvert** L= 121.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.38' / 13.99' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.0 cfs @ 12.02 hrs HW=15.76' TW=15.80' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond CB 4433:



Summary for Pond CB 4435:

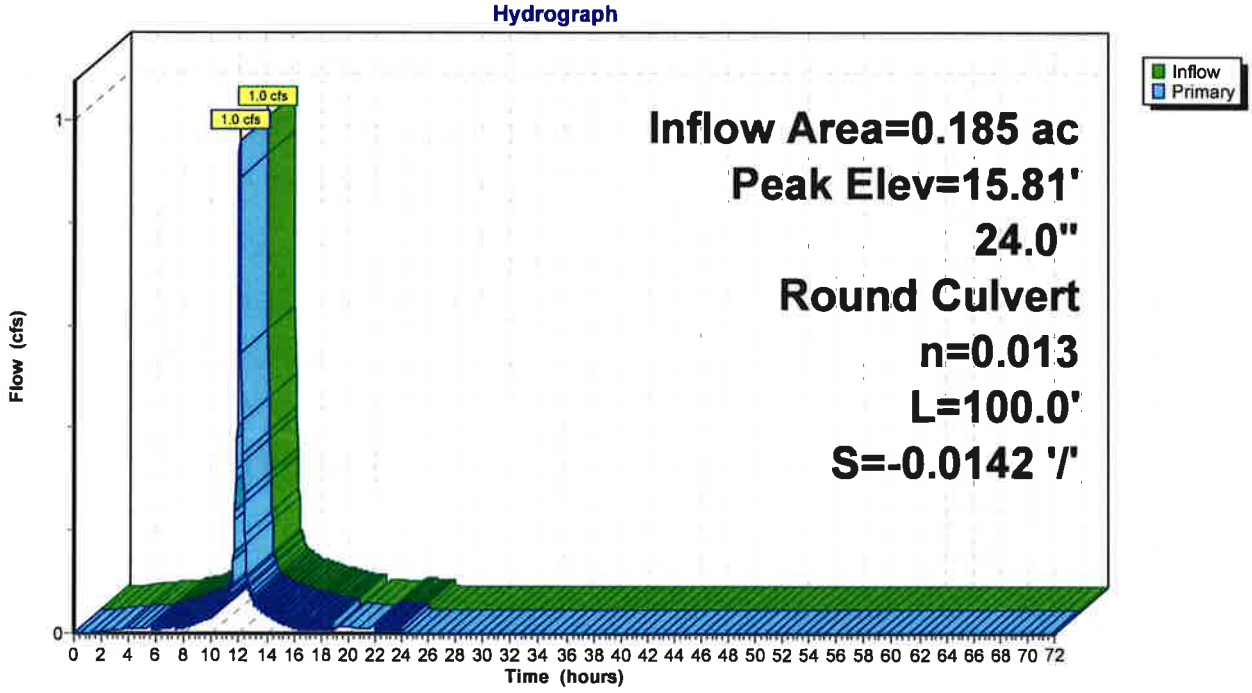
Inflow Area = 0.185 ac,100.00% Impervious, Inflow Depth = 4.62" for 10 year event
Inflow = 1.0 cfs @ 12.02 hrs, Volume= 0.071 af
Outflow = 1.0 cfs @ 12.02 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min
Primary = 1.0 cfs @ 12.02 hrs, Volume= 0.071 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 15.81' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	15.41'	**24.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.99' / 15.41' S= -0.0142 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.9 cfs @ 12.02 hrs HW=15.80' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.9 cfs @ 2.13 fps)

Pond CB 4435:



Summary for Pond CB 4560:

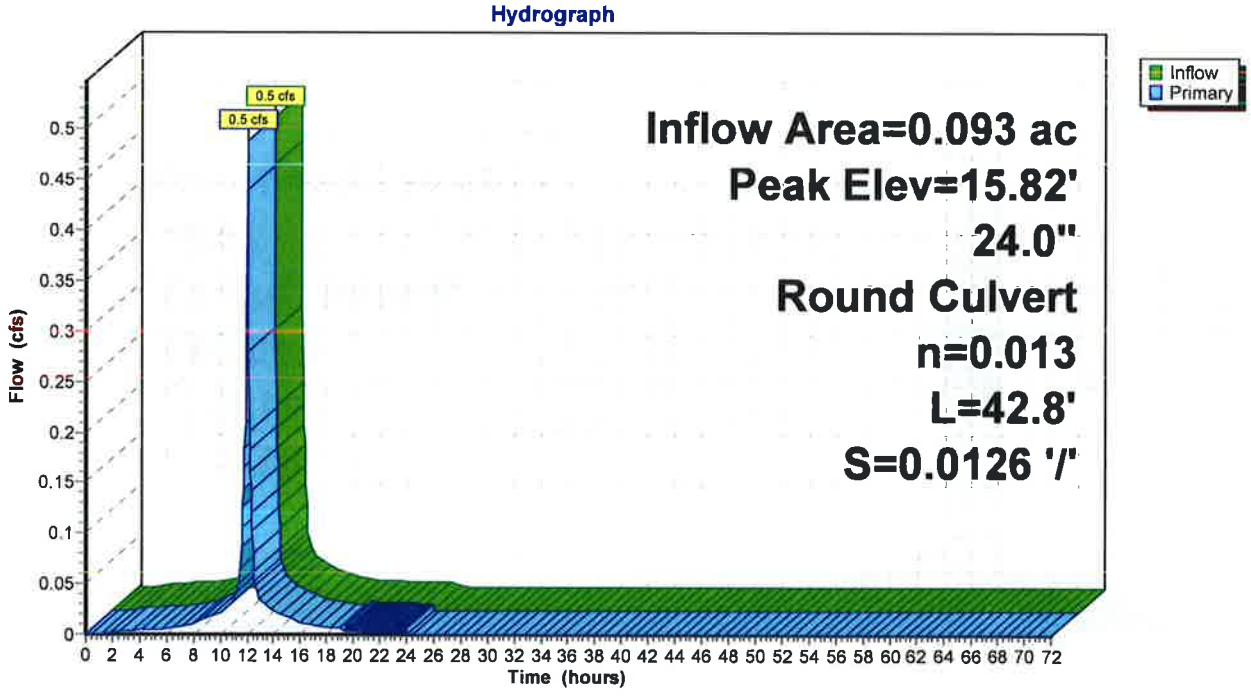
Inflow Area = 0.093 ac,100.00% Impervious, Inflow Depth = 4.62" for 10 year event
Inflow = 0.5 cfs @ 12.02 hrs, Volume= 0.036 af
Outflow = 0.5 cfs @ 12.02 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.0 min
Primary = 0.5 cfs @ 12.02 hrs, Volume= 0.036 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 15.82' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	14.92'	**24.0" Round Culvert** L= 42.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.92' / 14.38' S= 0.0126 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.0 cfs @ 12.02 hrs HW=15.71' TW=15.76' (Dynamic Tailwater)
1=Culvert (Controls 0.0 cfs)

Pond CB 4560:



Summary for Pond DP1A: CB#5A

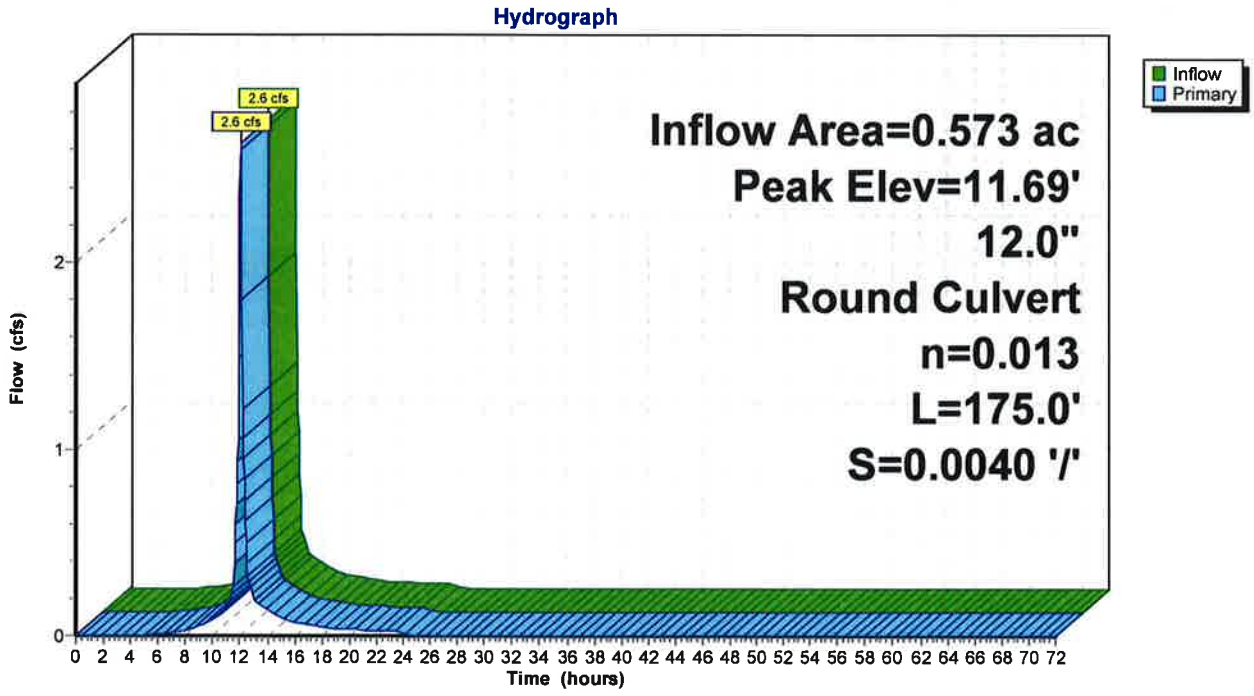
Inflow Area = 0.573 ac, 86.40% Impervious, Inflow Depth = 3.74" for 10 year event
Inflow = 2.6 cfs @ 12.04 hrs, Volume= 0.179 af
Outflow = 2.6 cfs @ 12.04 hrs, Volume= 0.179 af, Atten= 0%, Lag= 0.0 min
Primary = 2.6 cfs @ 12.04 hrs, Volume= 0.179 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 11.69' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.76'	**12.0" Round Culvert** L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.76' / 7.06' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.04 hrs HW=9.70' TW=9.85' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Pond DP1A: CB#5A

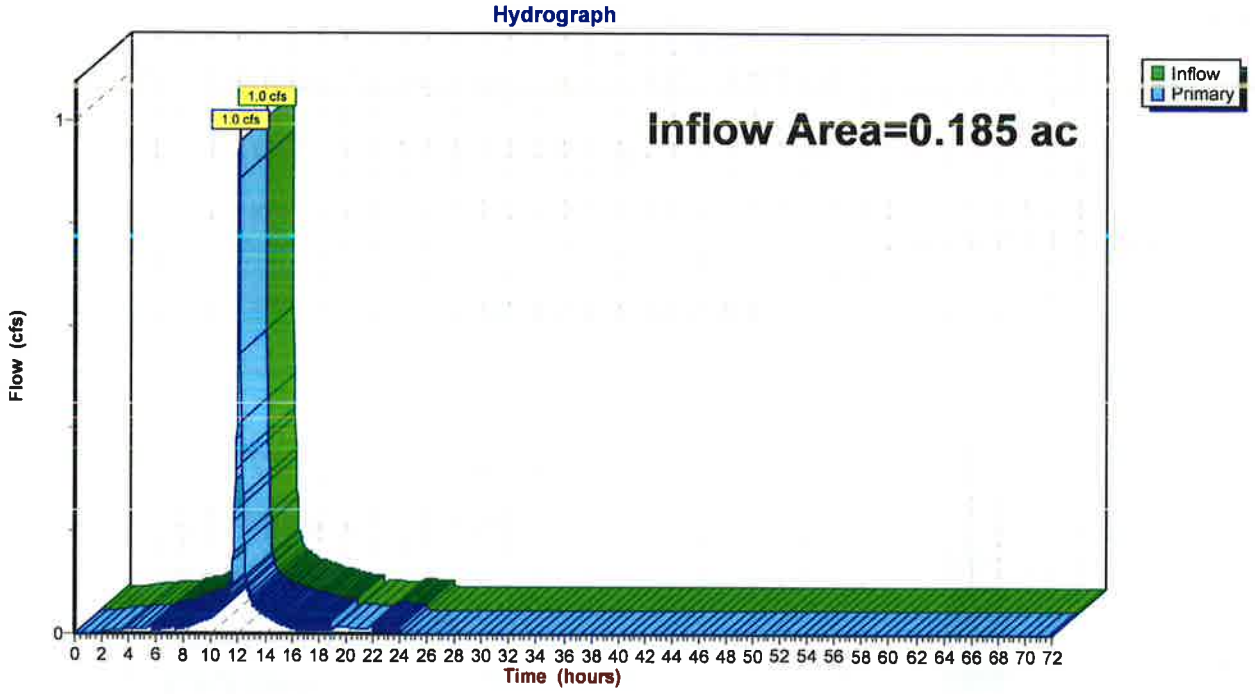


Summary for Link 2L: Discharge Point 2 (Court Street Drainage)

Inflow Area = 0.185 ac,100.00% Impervious, Inflow Depth = 4.62" for 10 year event
Inflow = 1.0 cfs @ 12.02 hrs, Volume= 0.071 af
Primary = 1.0 cfs @ 12.02 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 2L: Discharge Point 2 (Court Street Drainage)

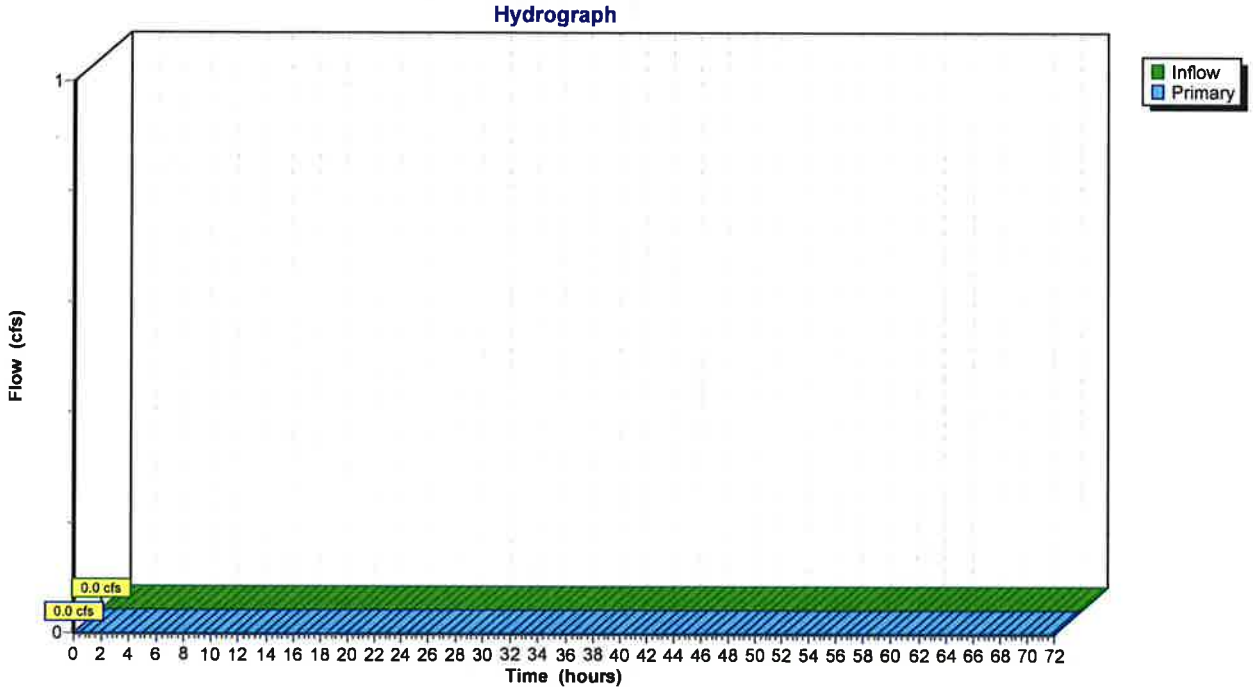


Summary for Link 3L: Discharge Point 4 (DP4)

Inflow	=	0.0 cfs @	0.00 hrs, Volume=	0.000 af
Primary	=	0.0 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 3L: Discharge Point 4 (DP4)

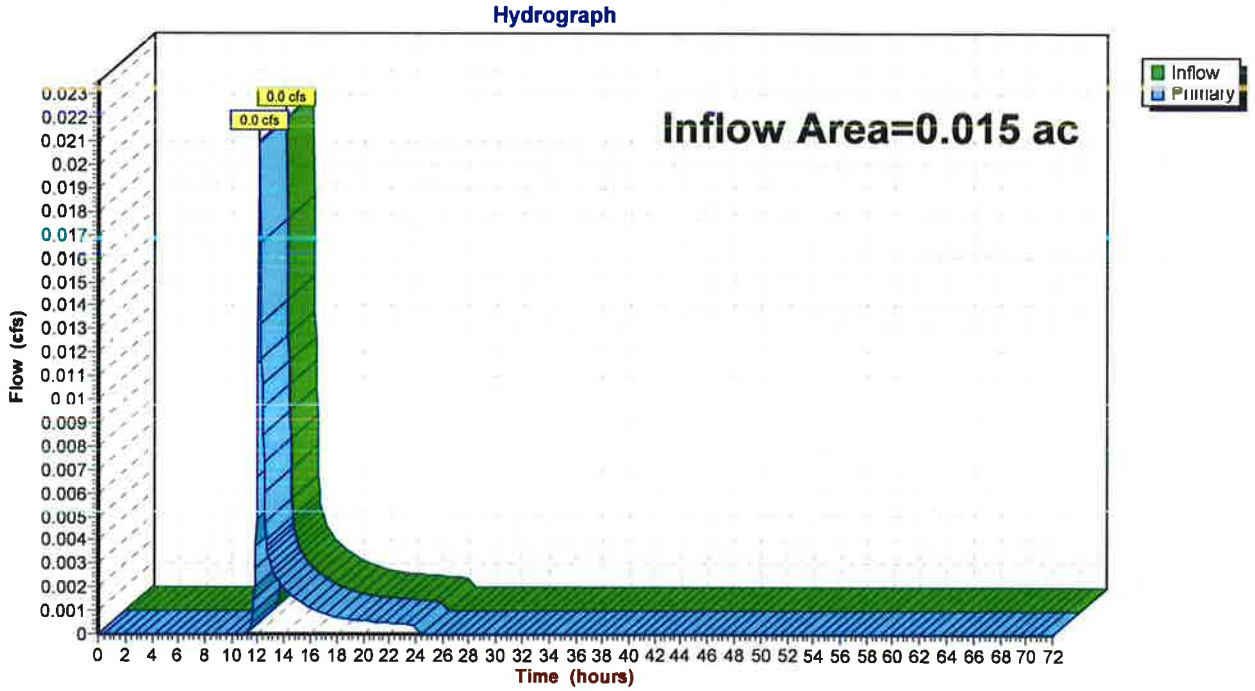


Summary for Link 4L: Discharge Point 5 (DP5)

Inflow Area = 0.015 ac, 0.00% Impervious, Inflow Depth = 1.29" for 10 year event
Inflow = 0.0 cfs @ 12.09 hrs, Volume= 0.002 af
Primary = 0.0 cfs @ 12.09 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 4L: Discharge Point 5 (DP5)



Summary for Subcatchment 3S: East Side, On & Offsite to CB (Altus Model)

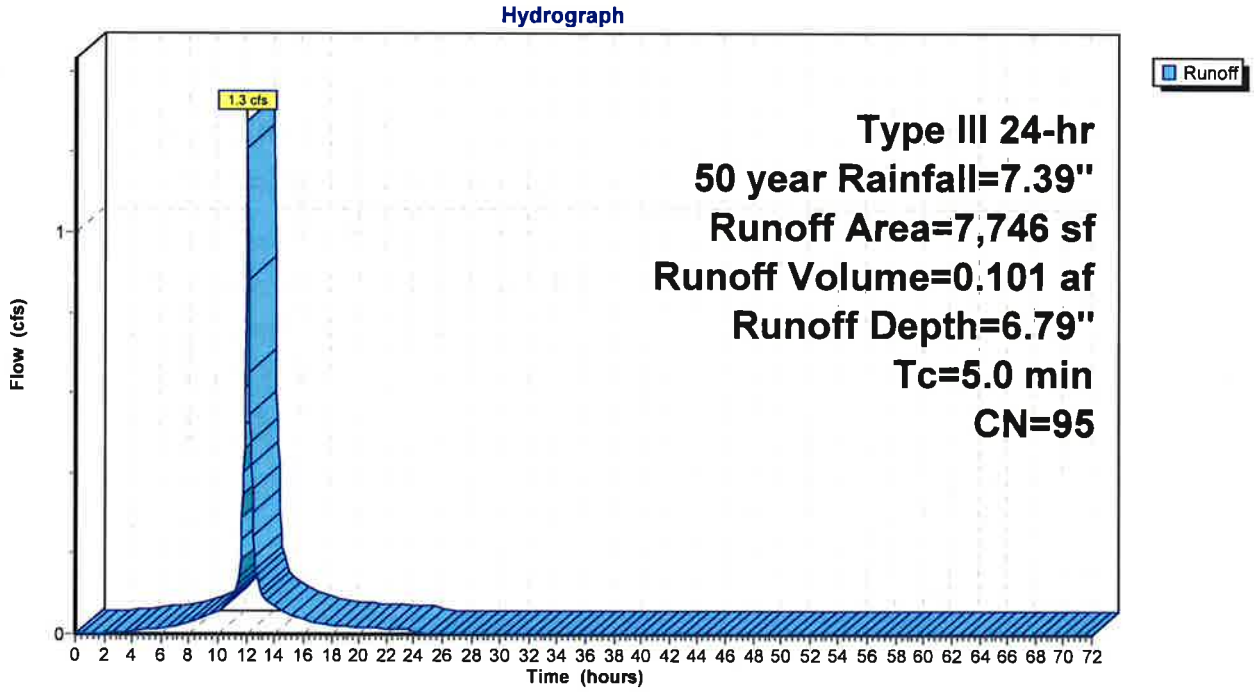
Runoff = 1.3 cfs @ 12.07 hrs, Volume= 0.101 af, Depth= 6.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
*	7,746	95	
	7,746		100.00% Pervious Area

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

Subcatchment 3S: East Side, On & Offsite to CB (Altus Model)



Summary for Subcatchment 4S: Existing Building (Altus Model)

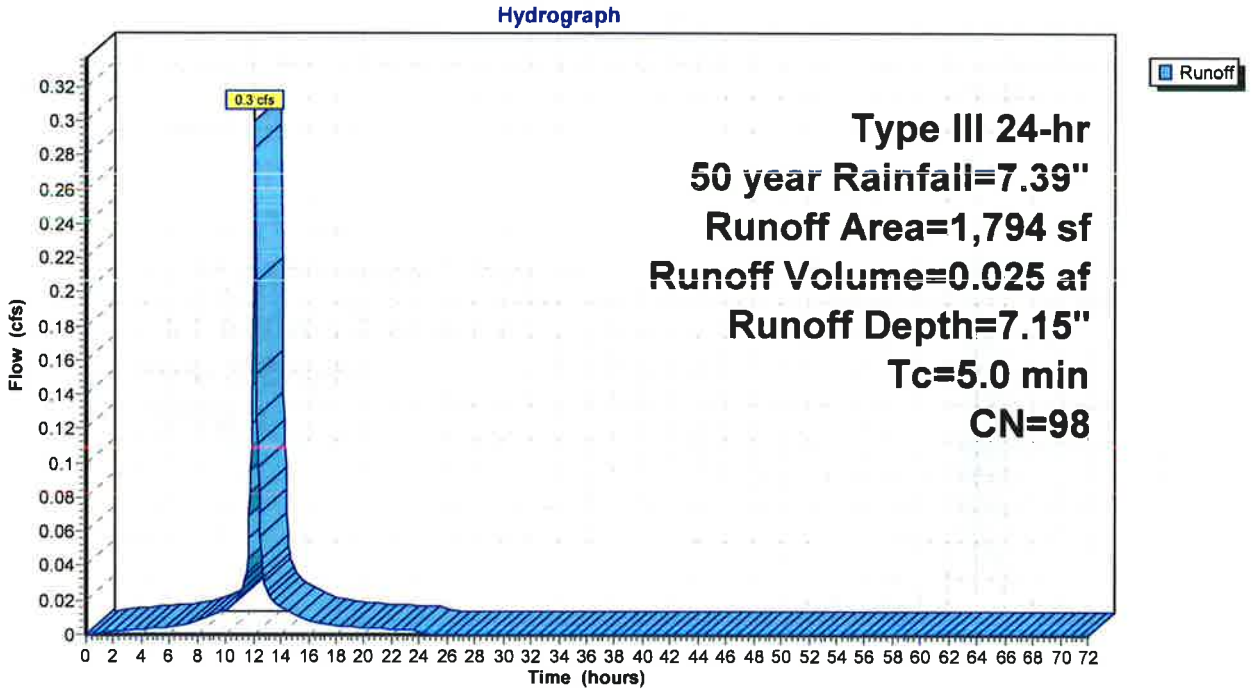
Runoff = 0.3 cfs @ 12.07 hrs, Volume= 0.025 af, Depth= 7.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
*	1,794	98	
	1,794		100.00% Impervious Area

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

Subcatchment 4S: Existing Building (Altus Model)



Summary for Subcatchment 30S: West Parking Lot (Altus Model)

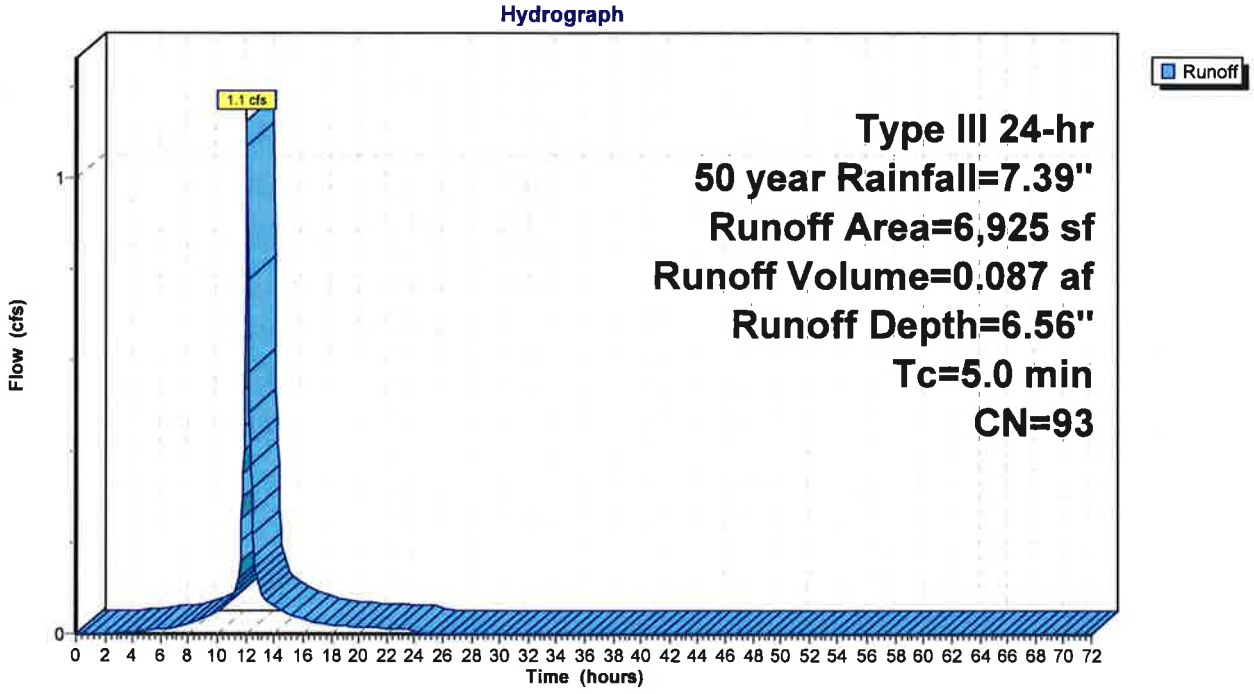
Runoff = 1.1 cfs @ 12.07 hrs, Volume= 0.087 af, Depth= 6.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
*	6,925	93	
	6,925		100.00% Pervious Area

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

Subcatchment 30S: West Parking Lot (Altus Model)



Summary for Subcatchment 31S: West Front Yard (Altus Model)

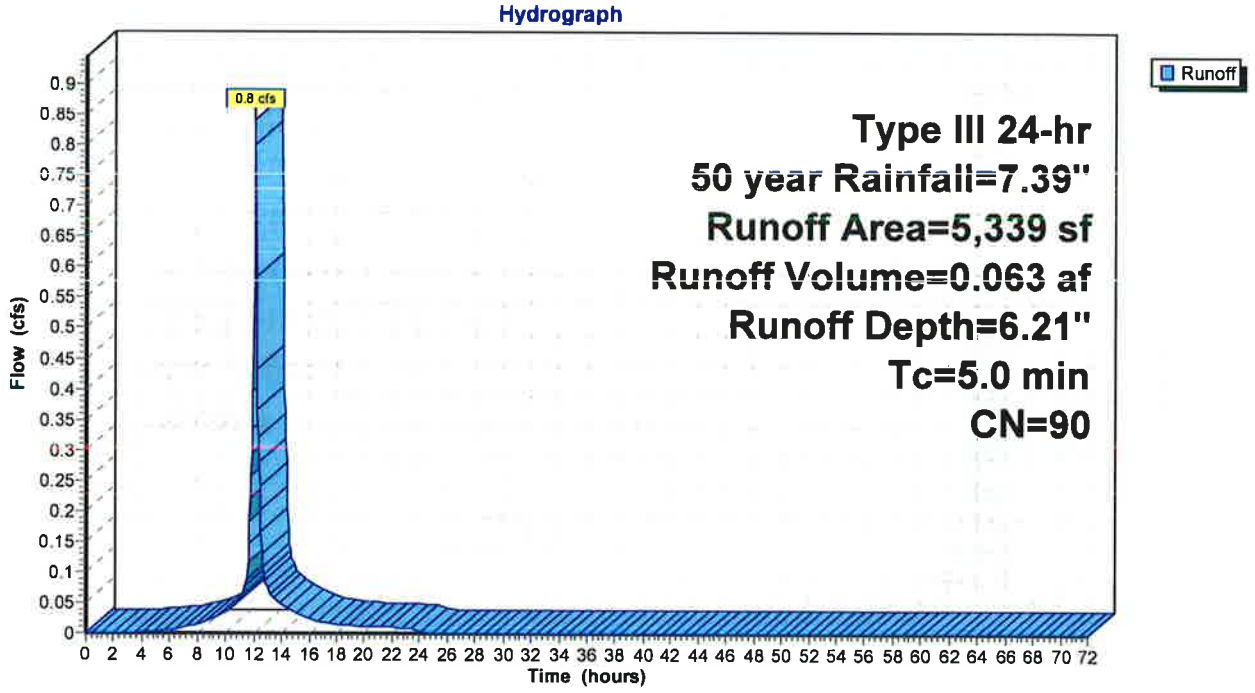
Runoff = 0.8 cfs @ 12.07 hrs, Volume= 0.063 af, Depth= 6.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7 39"

	Area (sf)	CN	Description
*	5,339	90	
	5,339		100.00% Pervious Area

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

Subcatchment 31S: West Front Yard (Altus Model)



Summary for Subcatchment 32S: East Front Yard (Altus Model)

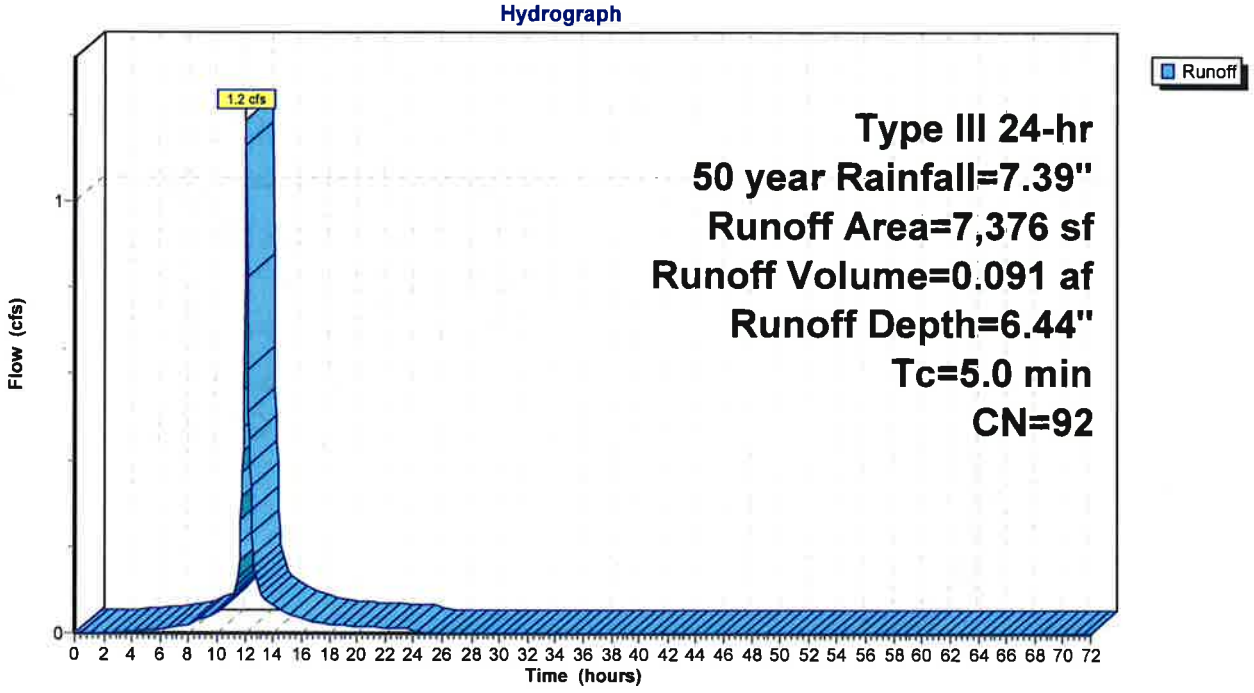
Runoff = 1.2 cfs @ 12.07 hrs, Volume= 0.091 af, Depth= 6.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
*	7,376	92	
	7,376		100.00% Pervious Area

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

Subcatchment 32S: East Front Yard (Altus Model)



Summary for Subcatchment 33S: East Parking Lot (Altus Model)

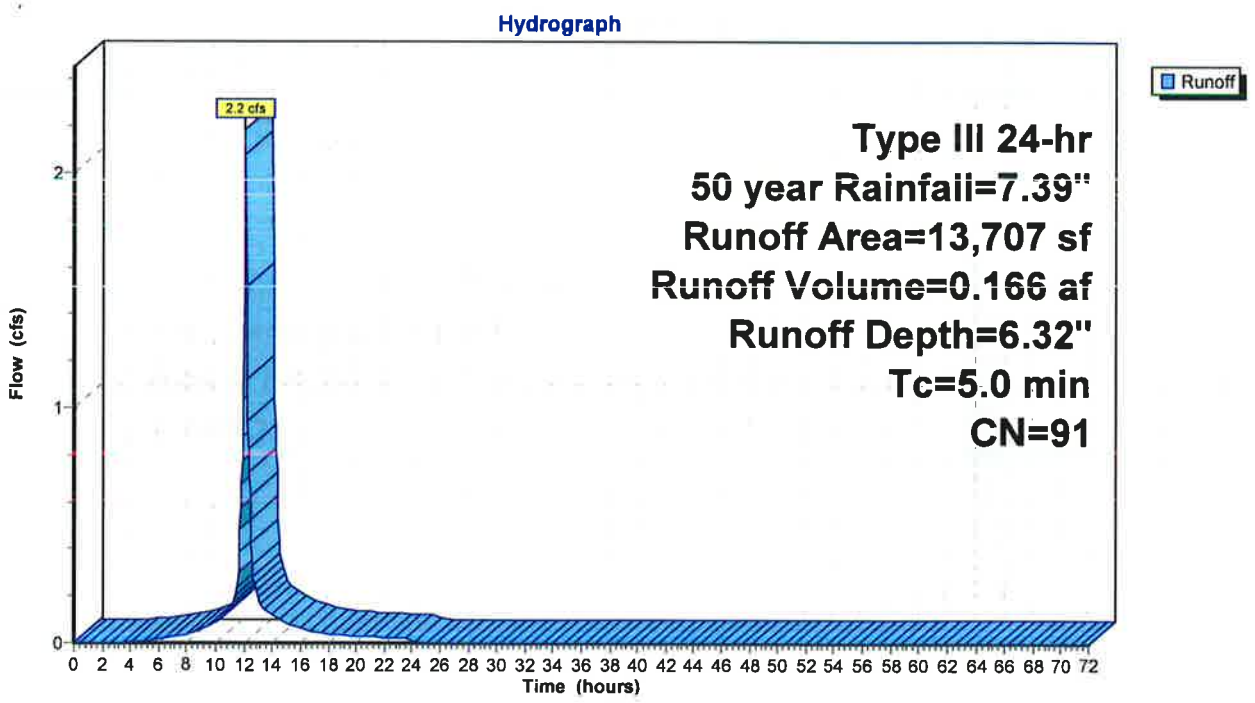
Runoff = 2.2 cfs @ 12.07 hrs, Volume= 0.166 af, Depth= 6.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
*	13,707	91	
	13,707		100.00% Pervious Area

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

Subcatchment 33S: East Parking Lot (Altus Model)



Summary for Subcatchment 34S: North Parking Lot (Altus Model)

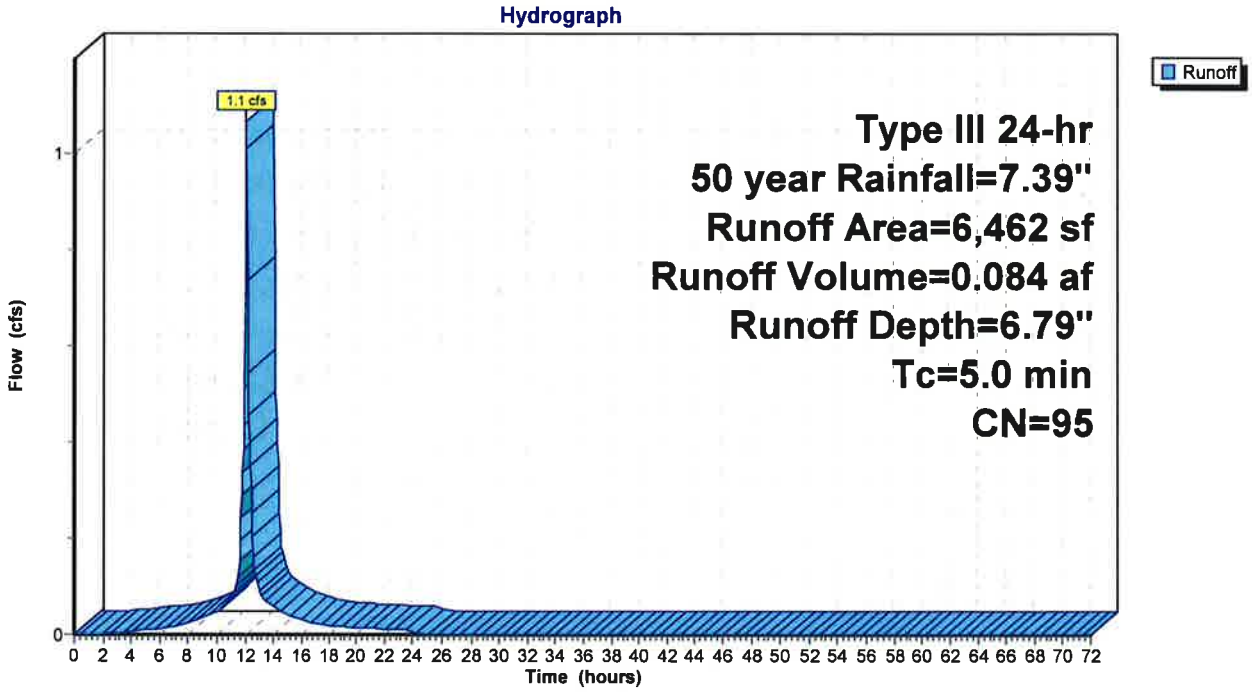
Runoff = 1.1 cfs @ 12.07 hrs, Volume= 0.084 af, Depth= 6.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
*	6,462	95	
	6,462		100.00% Pervious Area

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

Subcatchment 34S: North Parking Lot (Altus Model)



Summary for Subcatchment 40S: Existing Building (Altus Model)

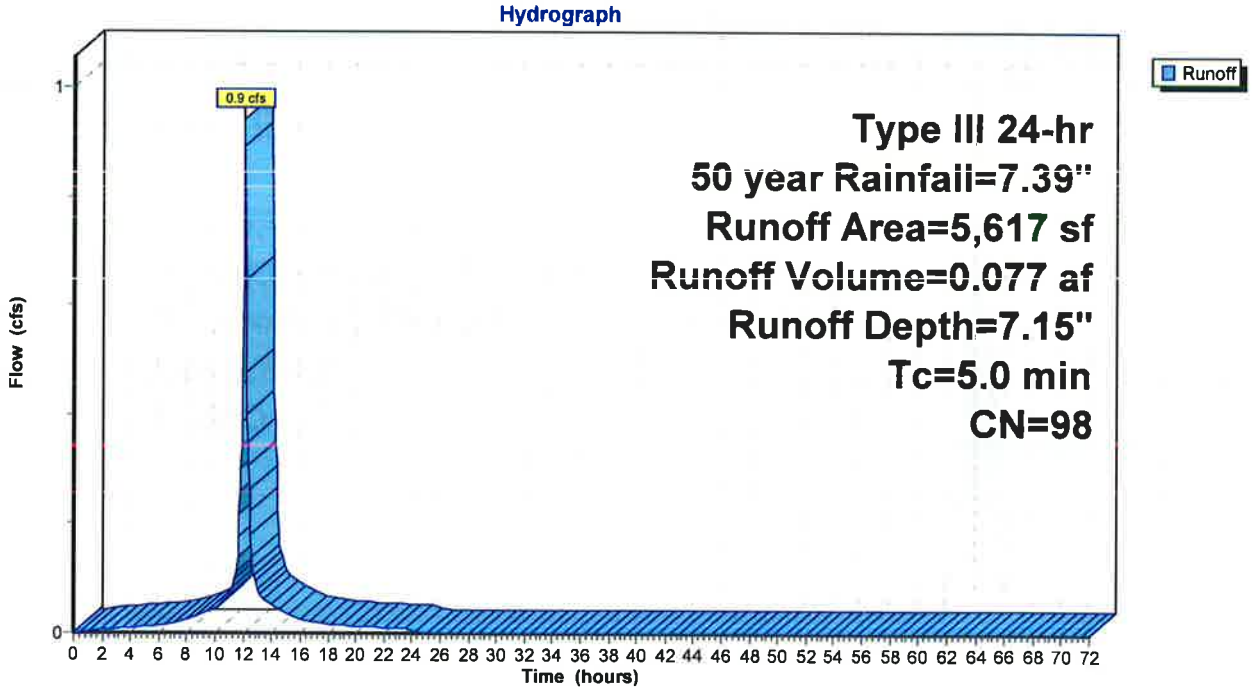
Runoff = 0.9 cfs @ 12.07 hrs, Volume= 0.077 af, Depth= 7.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
*	5,617	98	
	5,617		100.00% Impervious Area

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

Subcatchment 40S: Existing Building (Altus Model)



Summary for Subcatchment PS1:

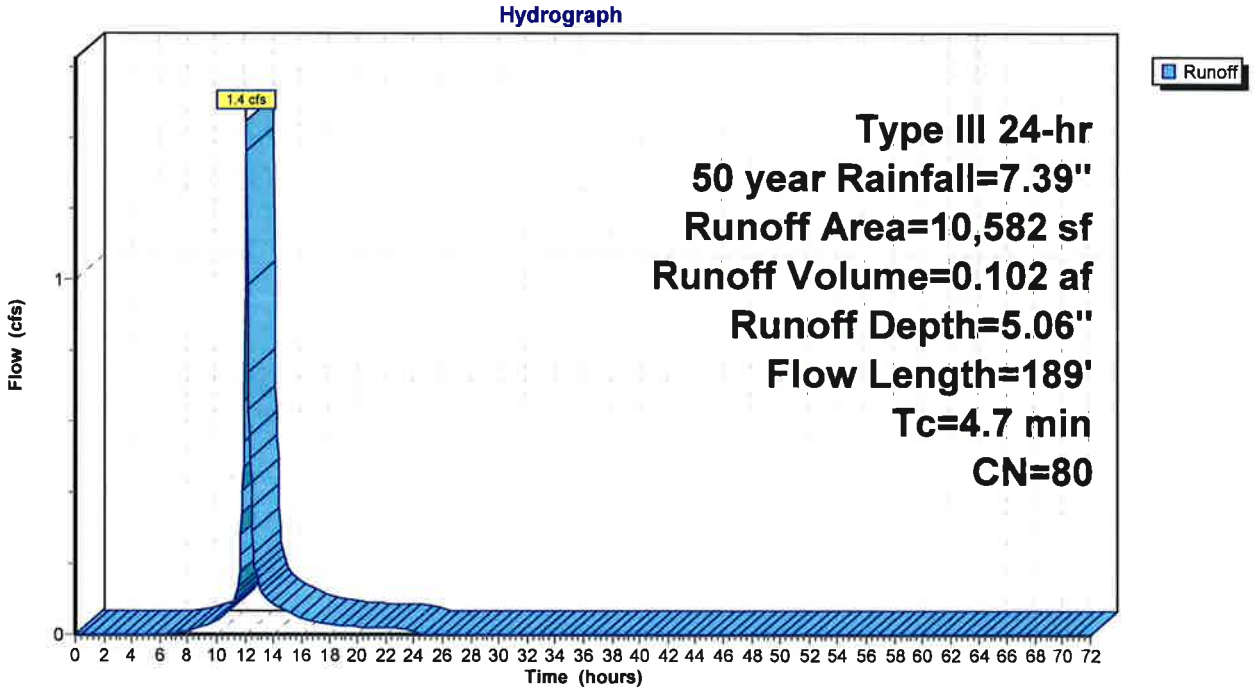
Runoff = 1.4 cfs @ 12.07 hrs, Volume= 0.102 af, Depth= 5.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
	6,399	98	Paved parking, HSG A
*	939	98	Paved sidewalks w/curbs & sewers, HSG A
	3,244	39	>75% Grass cover, Good, HSG A
	10,582	80	Weighted Average
	3,244		30.66% Pervious Area
	7,338		69.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	32	0.0200	0.14		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.21"
0.8	157	0.0287	3.44		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.7	189	Total			

Subcatchment PS1:



Summary for Subcatchment PS1a: Offsite

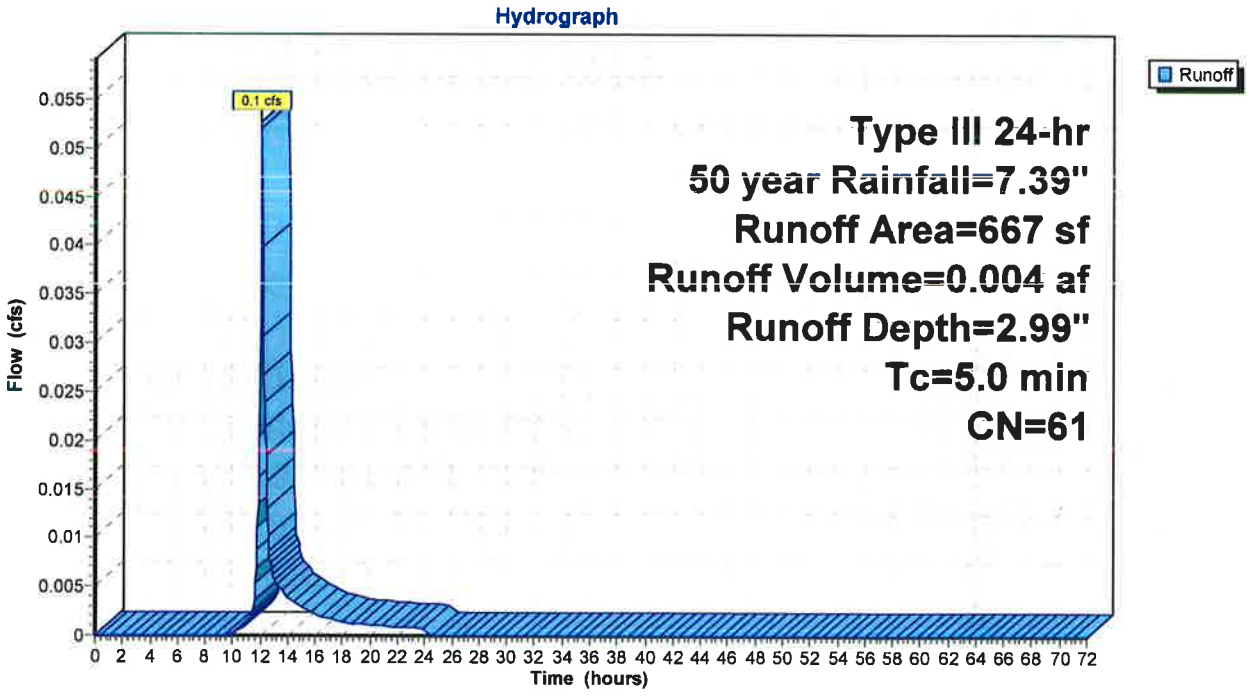
Runoff = 0.1 cfs @ 12.08 hrs, Volume= 0.004 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

Area (sf)	CN	Description
667	61	>75% Grass cover, Good, HSG B
667		100.00% Pervious Area

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

Subcatchment PS1a: Offsite



Summary for Subcatchment PS2: Existing Building Roof Drain

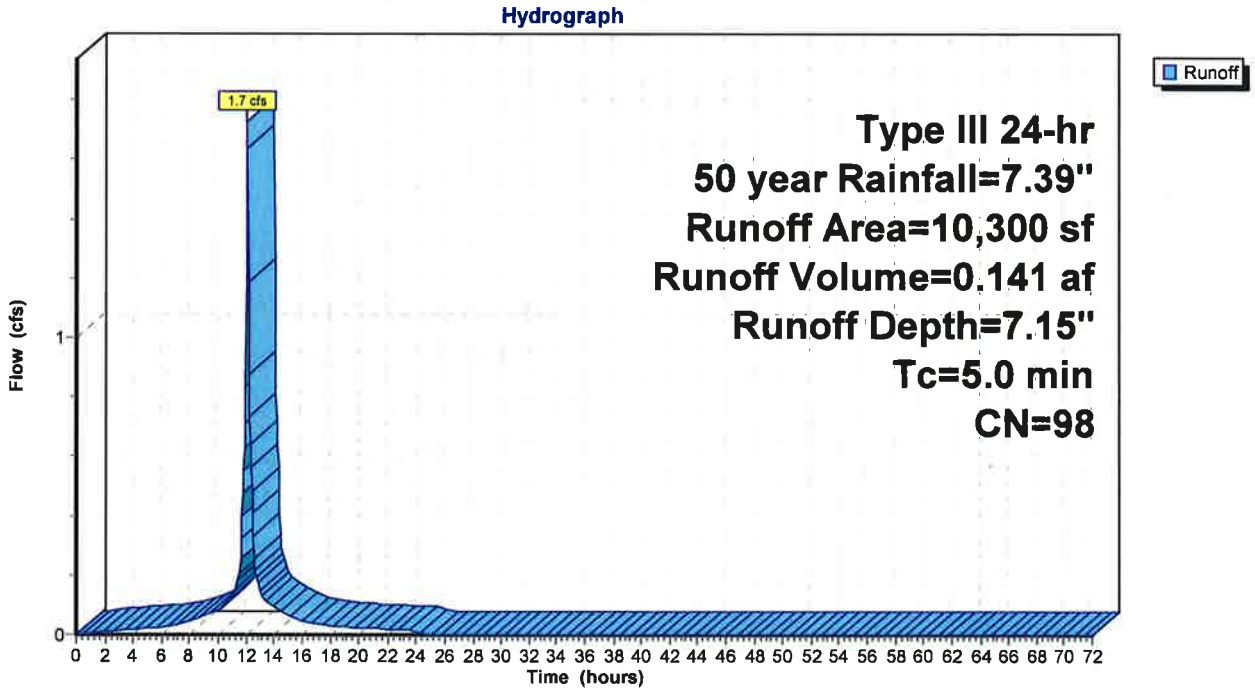
Runoff = 1.7 cfs @ 12.07 hrs, Volume= 0.141 af, Depth= 7.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

Area (sf)	CN	Description
10,300	98	Roofs, HSG A
10,300		100.00% Impervious Area

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

Subcatchment PS2: Existing Building Roof Drain



Summary for Subcatchment PS4:

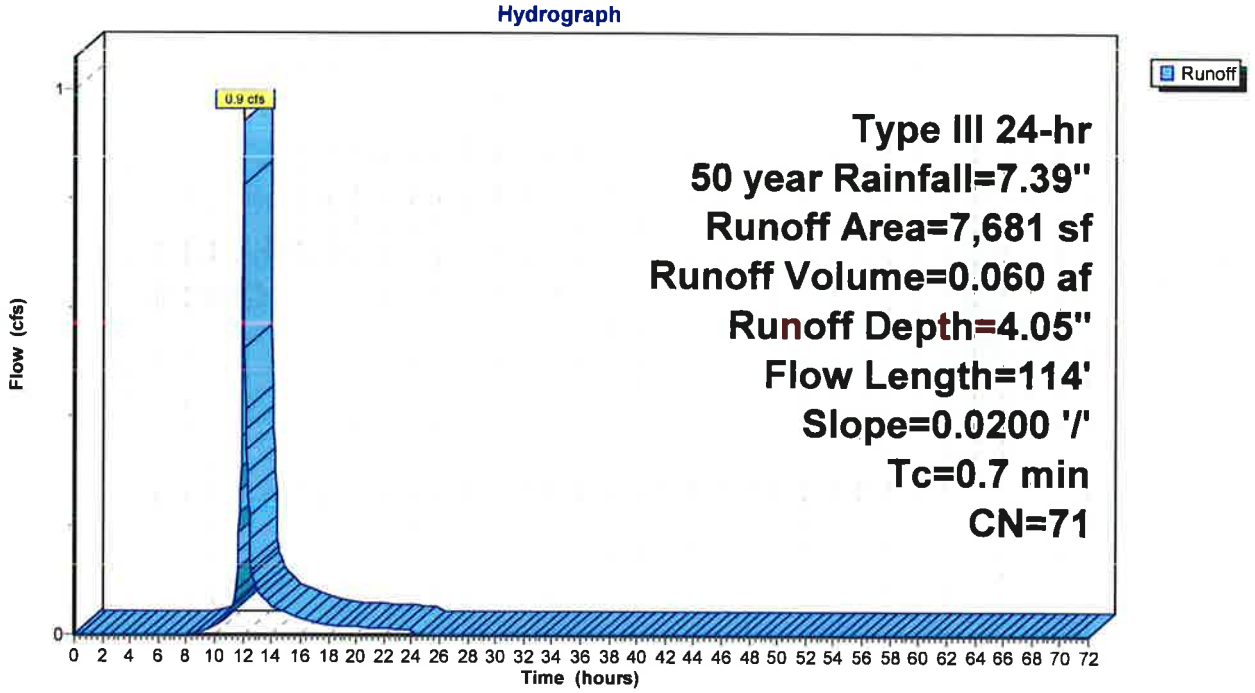
Runoff = 0.9 cfs @ 12.01 hrs, Volume= 0.060 af, Depth= 4.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

Area (sf)	CN	Description
3,513	39	>75% Grass cover, Good, HSG A
4,168	98	Paved roads w/curbs & sewers, HSG A
7,681	71	Weighted Average
3,513		45.74% Pervious Area
4,168		54.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	114	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps

Subcatchment PS4:



Summary for Subcatchment PS4a: Offsite

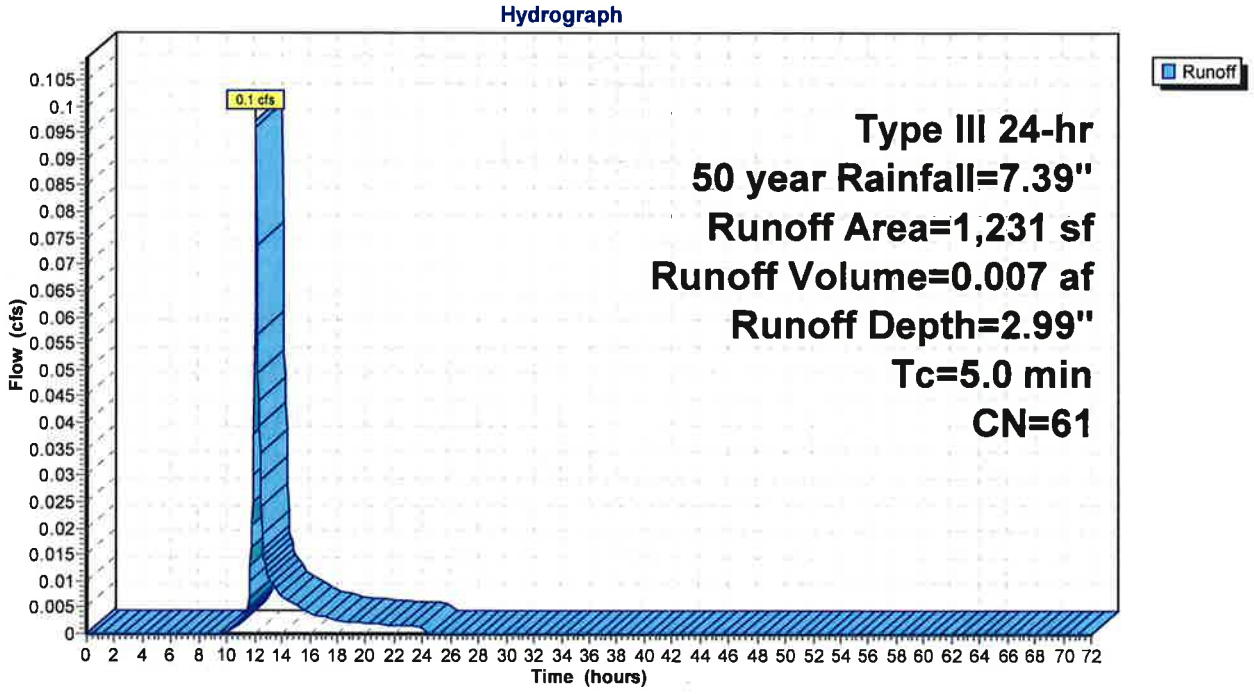
Runoff = 0.1 cfs @ 12.08 hrs, Volume= 0.007 af, Depth= 2.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

Area (sf)	CN	Description
1,231	61	>75% Grass cover, Good, HSG B
1,231		100.00% Pervious Area

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

Subcatchment PS4a: Offsite



Summary for Subcatchment PS5:

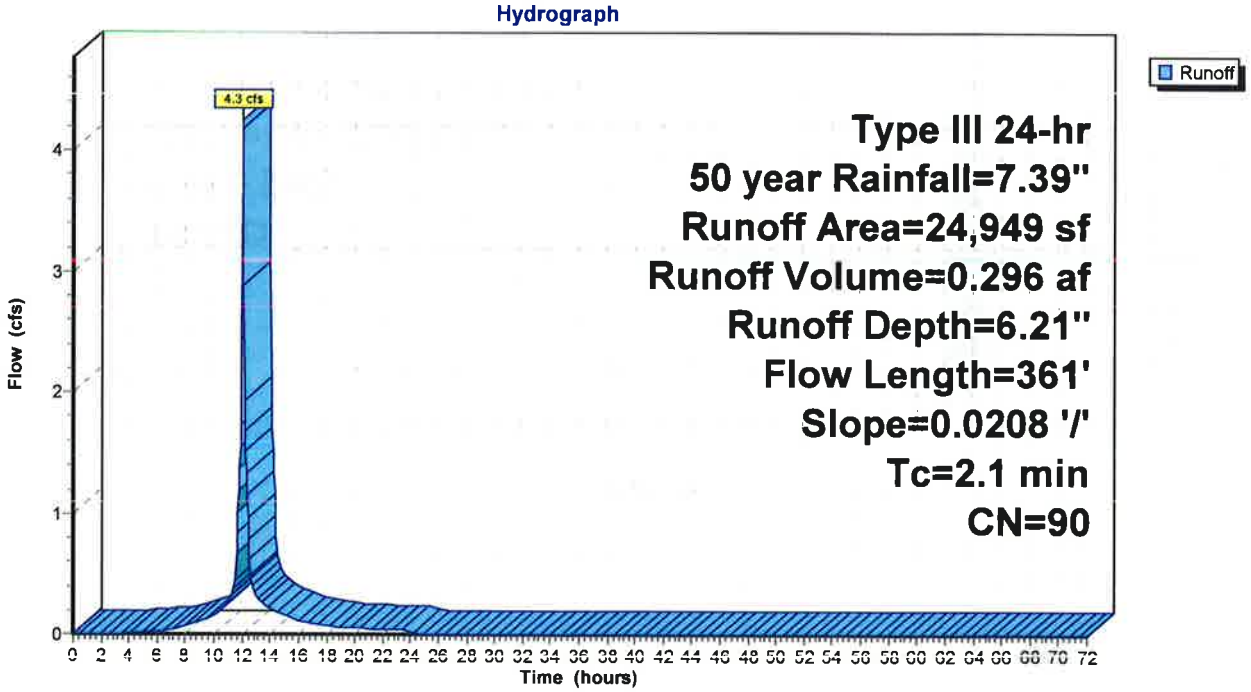
Runoff = 4.3 cfs @ 12.04 hrs, Volume= 0.296 af, Depth= 6.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
	19,373	98	Paved roads w/curbs & sewers, HSG A
*	1,796	98	Paved sidewalks w/curbs & sewers, HSG A
	388	98	Roofs, HSG A
	3,392	39	>75% Grass cover, Good, HSG A
	24,949	90	Weighted Average
	3,392		13.60% Pervious Area
	21,557		86.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.1	361	0.0208	2.93		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps

Subcatchment PS5:



Summary for Subcatchment PS5a: New Building Roof Drain

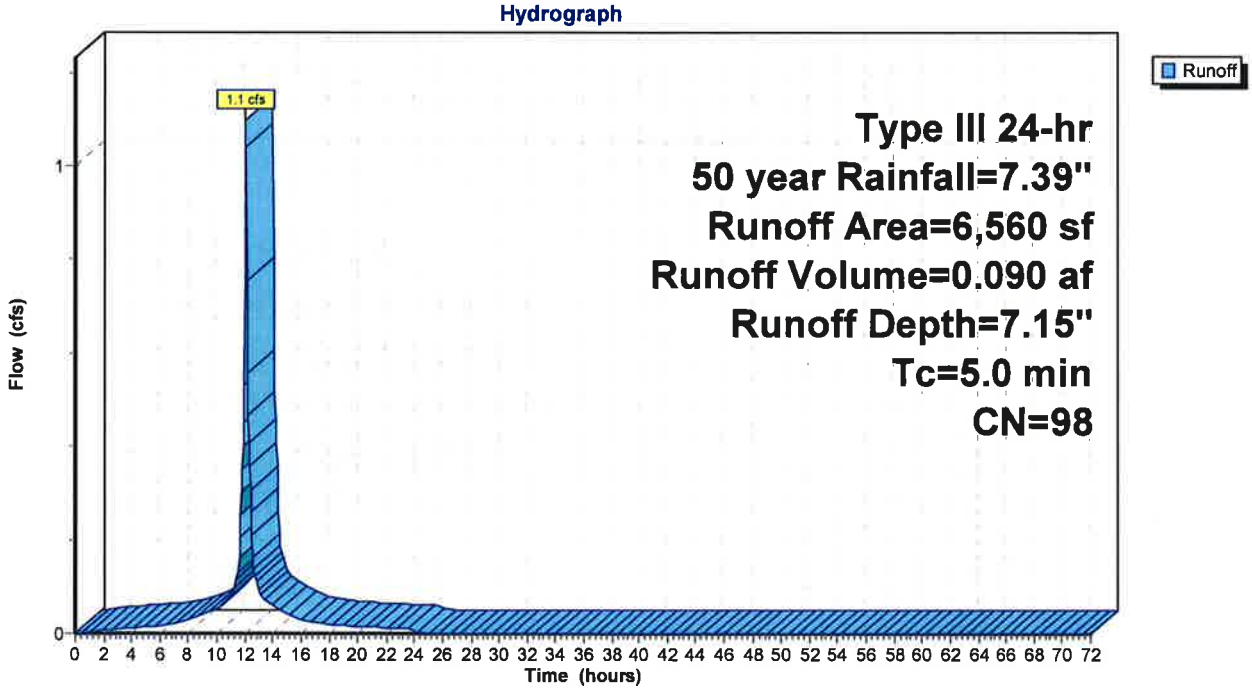
Runoff = 1.1 cfs @ 12.07 hrs, Volume= 0.090 af, Depth= 7.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

Area (sf)	CN	Description
6,560	98	Roofs, HSG A
6,560		100.00% Impervious Area

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

Subcatchment PS5a: New Building Roof Drain



Summary for Subcatchment PS5aa: Landscaped Walk

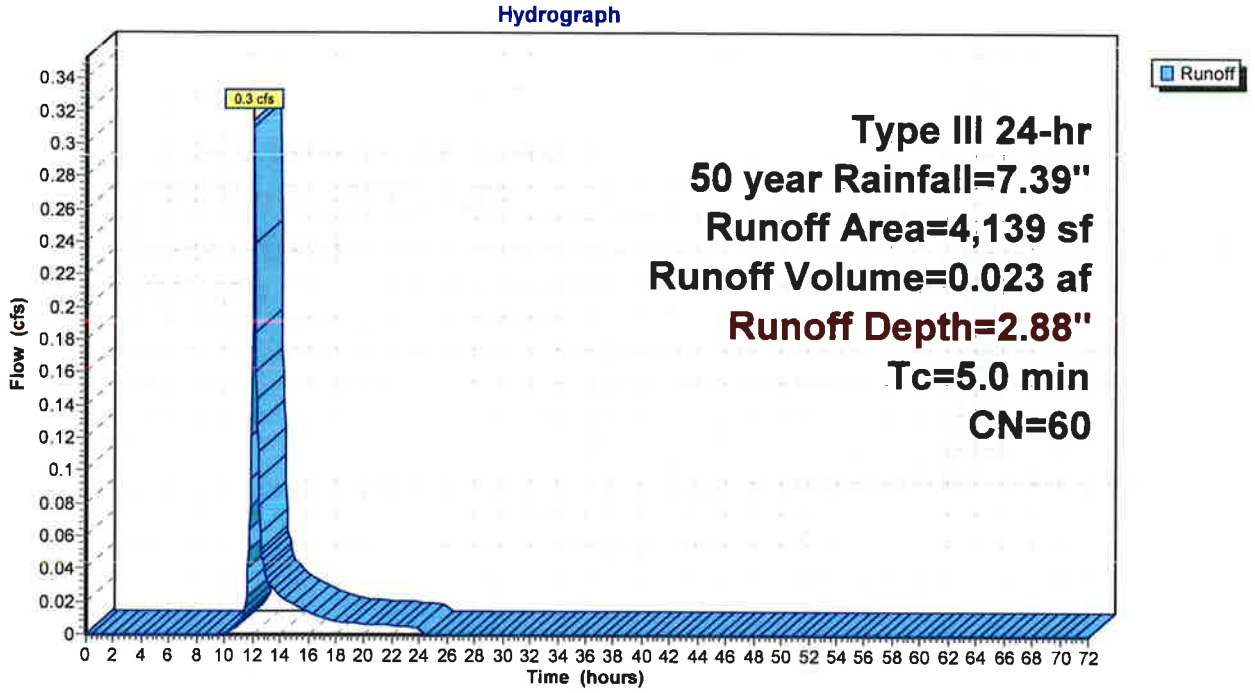
Runoff = 0.3 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 2.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
	2,666	39	>75% Grass cover, Good, HSG A
	852	98	Roofs, HSG A
*	621	98	Paved sidewalks w/curbs & sewers, HSG A
	4,139	60	Weighted Average
	2,666		64.41% Pervious Area
	1,473		35.59% Impervious Area

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

Subcatchment PS5aa: Landscaped Walk



Summary for Subcatchment PS5aaa: Landscaped Walk

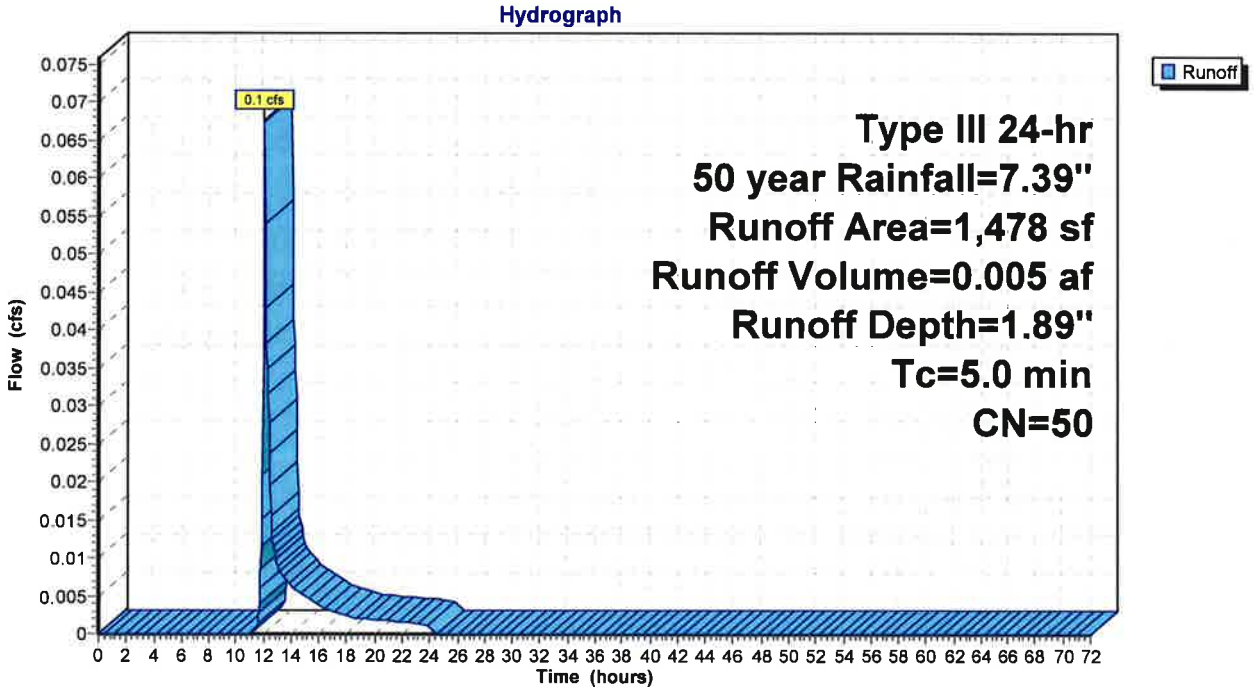
Runoff = 0.1 cfs @ 12.09 hrs, Volume= 0.005 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
	1,200	39	>75% Grass cover, Good, HSG A
*	278	98	Paved sidewalk w/curbs & sewers, HSG A
	1,478	50	Weighted Average
	1,200		81.19% Pervious Area
	278		18.81% Impervious Area

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

Subcatchment PS5aaa: Landscaped Walk



Summary for Subcatchment PS5b: New Building Roof Drain

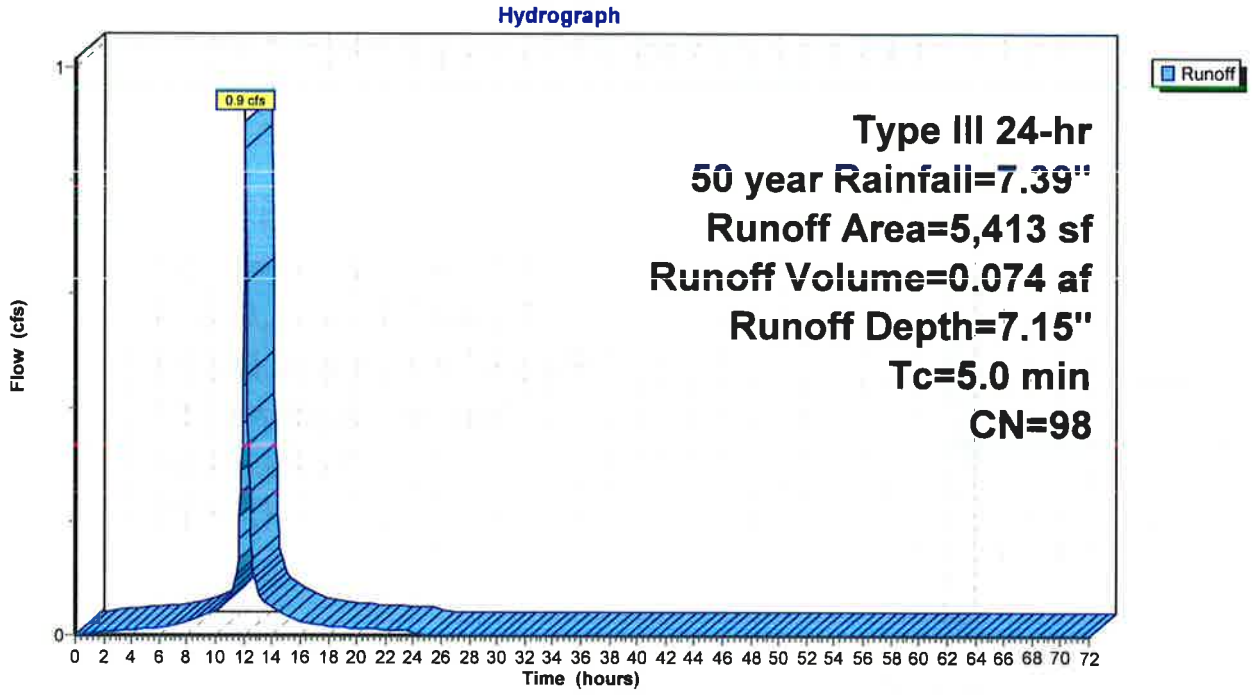
Runoff = 0.9 cfs @ 12.07 hrs, Volume= 0.074 af, Depth= 7.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

Area (sf)	CN	Description
5,413	98	Roofs, HSG A
5,413		100.00% Impervious Area

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

Subcatchment PS5b: New Building Roof Drain



Summary for Subcatchment PS5bb: Landscaped Walk

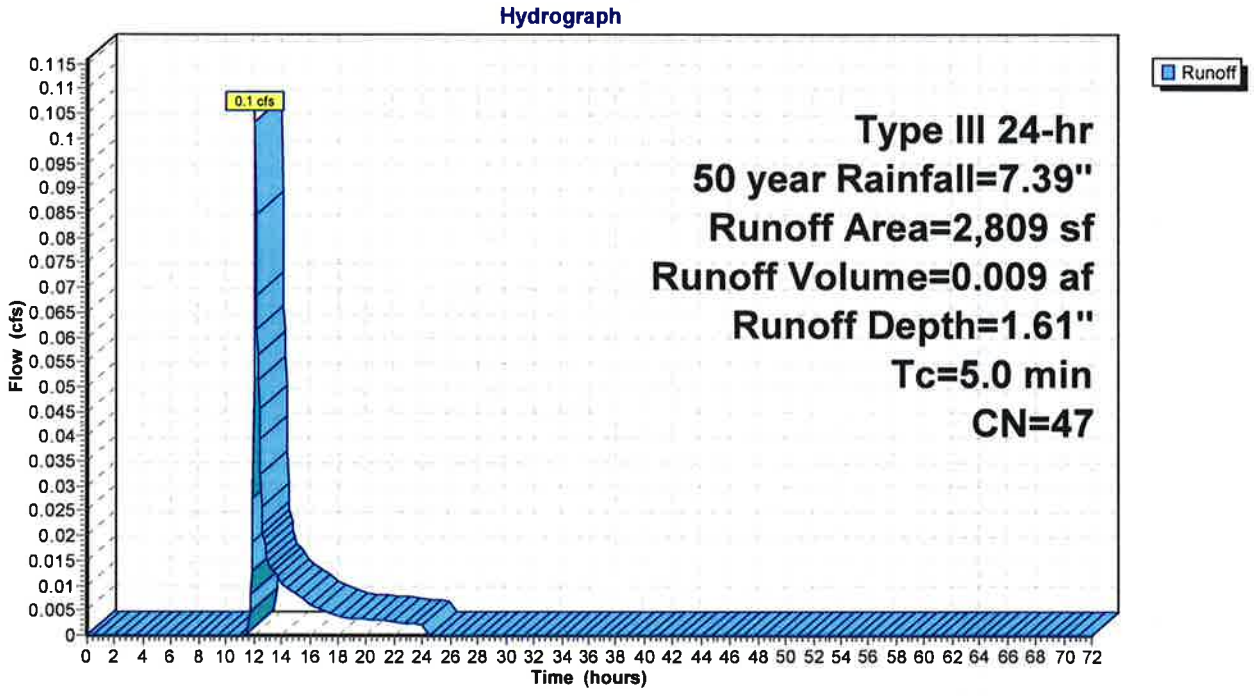
Runoff = 0.1 cfs @ 12.10 hrs, Volume= 0.009 af, Depth= 1.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
	2,409	39	>75% Grass cover, Good, HSG A
*	400	98	Paved sidewalk w/curbs & sewers, HSG A
	2,809	47	Weighted Average
	2,409		85.76% Pervious Area
	400		14.24% Impervious Area

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

Subcatchment PS5bb: Landscaped Walk



Summary for Subcatchment PS6: Court Street

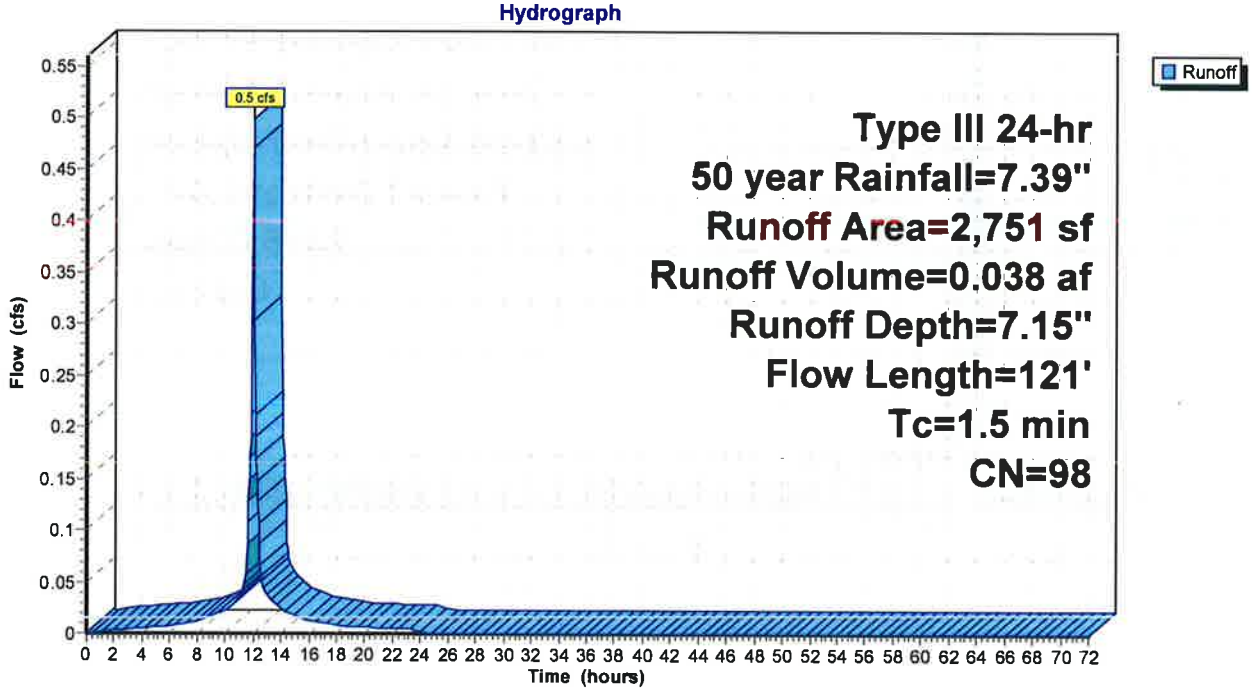
Runoff = 0.5 cfs @ 12.02 hrs, Volume= 0.038 af, Depth= 7.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
	2,556	98	Paved parking, HSG B
*	195	98	Unconnected pavement, sidewalk, HSG B
	2,751	98	Weighted Average
	2,751		100.00% Impervious Area
	195		7.09% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	26	0.0096	0.69		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	95	0.0078	1.79		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
1.5	121	Total			

Subcatchment PS6: Court Street



Summary for Subcatchment PS7: Court Street

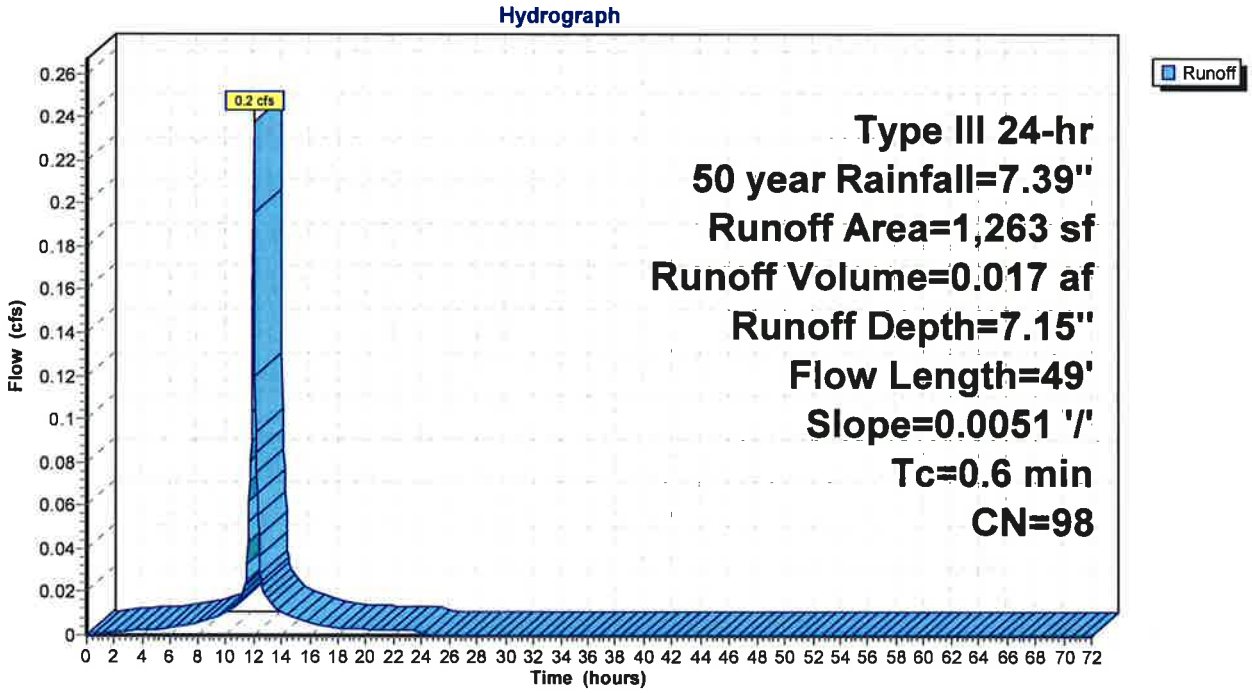
Runoff = 0.2 cfs @ 12.01 hrs, Volume= 0.017 af, Depth= 7.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
	922	98	Paved parking, HSG B
*	341	98	Unconnected pavement, sidewalk, HSG B
	1,263	98	Weighted Average
	1,263		100.00% Impervious Area
	341		27.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	49	0.0051	1.45		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps

Subcatchment PS7: Court Street



Summary for Subcatchment PS8: Court Street

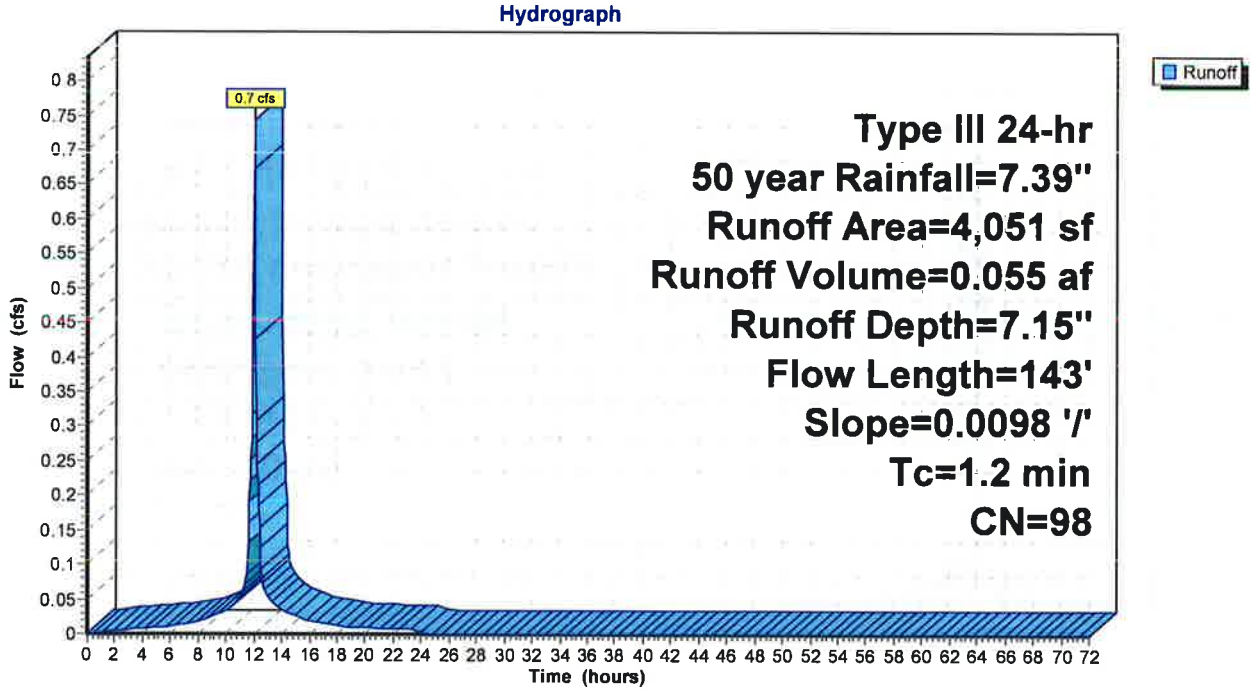
Runoff = 0.7 cfs @ 12.02 hrs, Volume= 0.055 af, Depth= 7.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 50 year Rainfall=7.39"

	Area (sf)	CN	Description
	1,014	98	Paved parking, HSG B
*	3,037	98	Unconnected pavement,sidewalk, HSG B
	4,051	98	Weighted Average
	4,051		100.00% Impervious Area
	3,037		74.97% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	143	0.0098	2.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps

Subcatchment PS8: Court Street



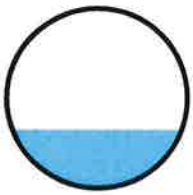
Summary for Reach 4R: Altus Model

Inflow Area = 0.041 ac,100.00% Impervious, Inflow Depth = 7.15" for 50 year event
Inflow = 0.3 cfs @ 12.07 hrs, Volume= 0.025 af
Outflow = 0.3 cfs @ 12.08 hrs, Volume= 0.025 af, Atten= 1%, Lag= 0.7 min

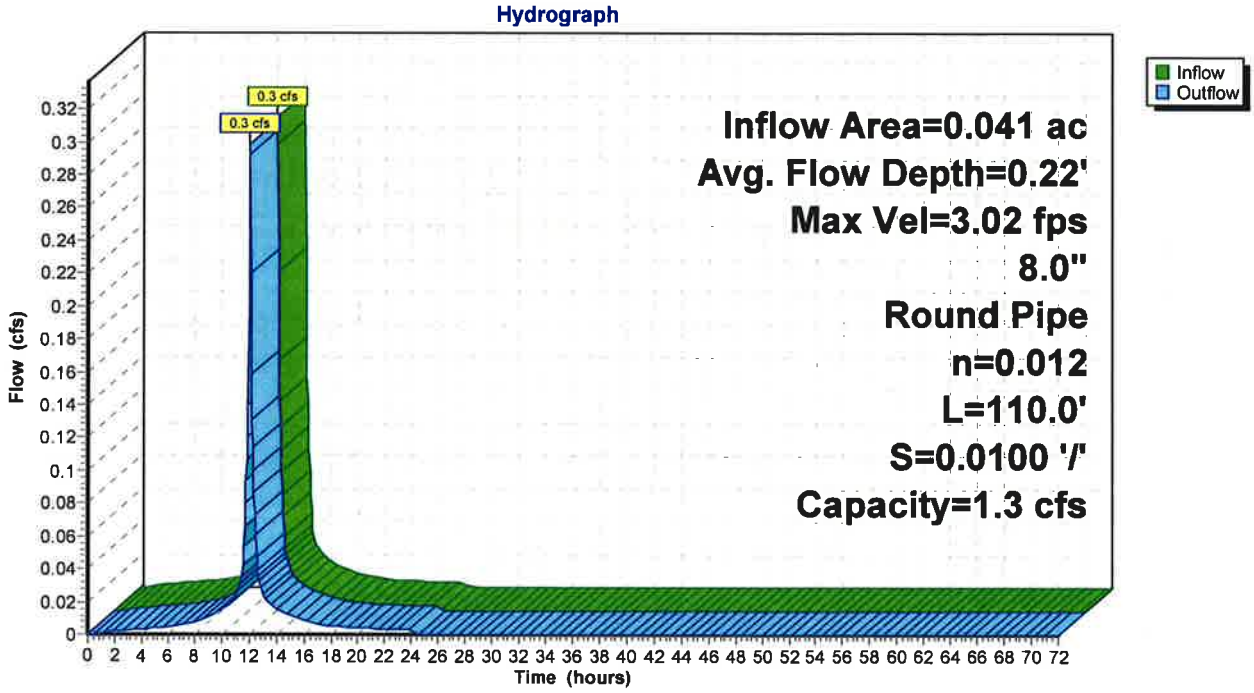
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.02 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.01 fps, Avg. Travel Time= 1.8 min

Peak Storage= 11 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.3 cfs

8.0" Round Pipe
n= 0.012
Length= 110.0' Slope= 0.0100 '/'
Inlet Invert= 8.38', Outlet Invert= 7.28'



Reach 4R: Altus Model



Summary for Reach 40R: Altus Model

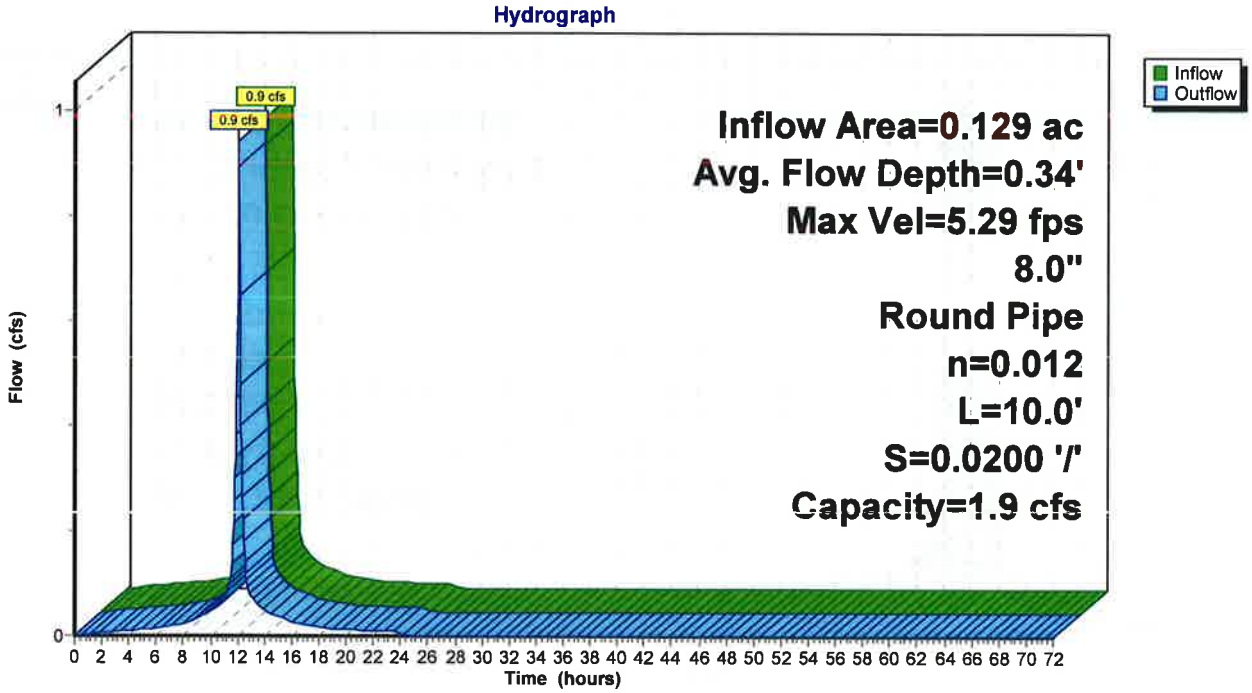
Inflow Area = 0.129 ac,100.00% Impervious, Inflow Depth = 7.15" for 50 year event
Inflow = 0.9 cfs @ 12.07 hrs, Volume= 0.077 af
Outflow = 0.9 cfs @ 12.07 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.29 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.81 fps, Avg. Travel Time= 0.1 min

Peak Storage= 2 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.34'
Bank-Full Depth= 0.67' Flow Area= 0.3 sf, Capacity= 1.9 cfs

8.0" Round Pipe
n= 0.012
Length= 10.0' Slope= 0.0200 '/'
Inlet Invert= 6.82', Outlet Invert= 6.62'

Reach 40R: Altus Model



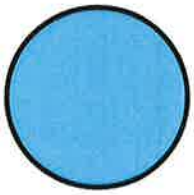
Summary for Reach 41R: Altus Model

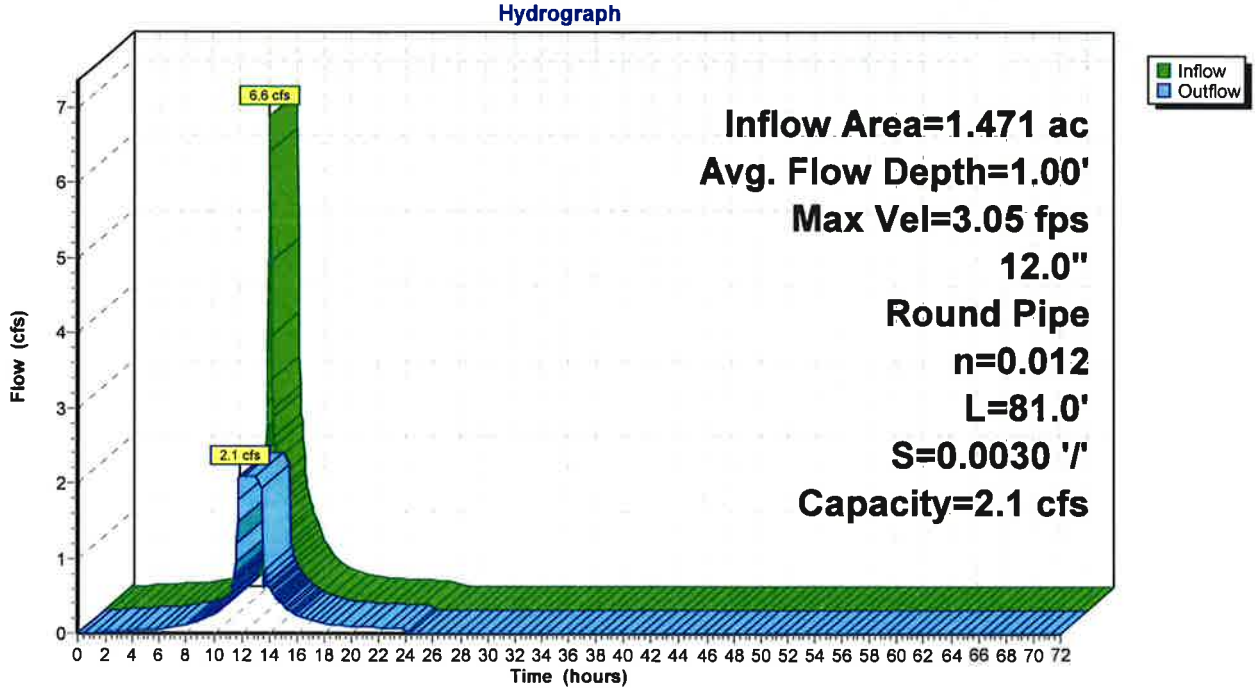
Inflow Area = 1.471 ac, 67.65% Impervious, Inflow Depth = 4.99" for 50 year event
Inflow = 6.6 cfs @ 12.06 hrs, Volume= 0.611 af
Outflow = 2.1 cfs @ 11.85 hrs, Volume= 0.611 af, Atten= 68%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.05 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.50 fps, Avg. Travel Time= 0.9 min

Peak Storage= 64 cf @ 11.85 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.1 cfs

12.0" Round Pipe
n= 0.012
Length= 81.0' Slope= 0.0030 '/'
Inlet Invert= 6.45', Outlet Invert= 6.21'



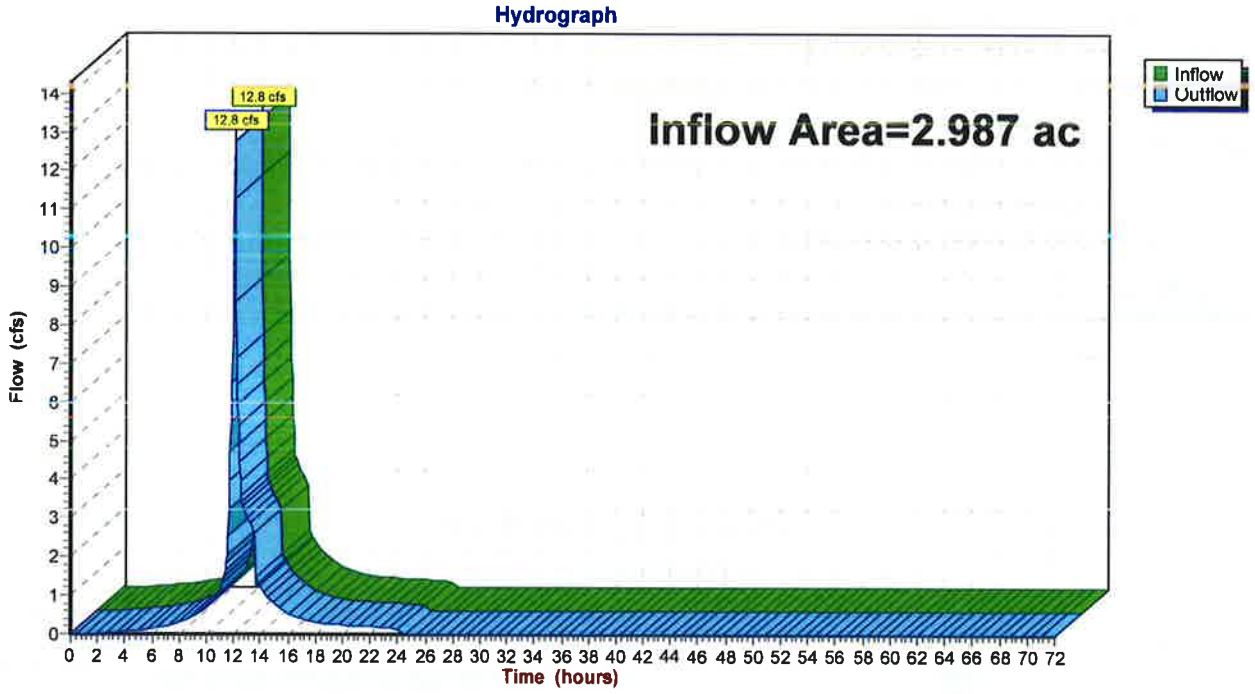


Summary for Reach 300R: POA #3 - Existing CB (Altus Model)

Inflow Area = 2.987 ac, 49.88% Impervious, Inflow Depth = 5.69" for 50 year event
Inflow = 12.8 cfs @ 12.05 hrs, Volume= 1.415 af
Outflow = 12.8 cfs @ 12.05 hrs, Volume= 1.415 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Reach 300R: POA #3 - Existing CB (Altus Model)



Summary for Pond 1P: OCS # 1 / SYSTEM # 1

Inflow Area = 0.280 ac, 68.25% Impervious, Inflow Depth = 5.06" for 50 year event
Inflow = 1.5 cfs @ 12.07 hrs, Volume= 0.118 af
Outflow = 0.5 cfs @ 12.41 hrs, Volume= 0.118 af, Atten= 64%, Lag= 20.3 min
Discarded = 0.0 cfs @ 6.80 hrs, Volume= 0.037 af
Primary = 0.5 cfs @ 12.41 hrs, Volume= 0.081 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 14.33' @ 12.36 hrs Surf.Area= 0.015 ac Storage= 0.038 af

Plug-Flow detention time= 118.1 min calculated for 0.118 af (100% of inflow)
Center-of-Mass det. time= 118.5 min (886.8 - 768.3)

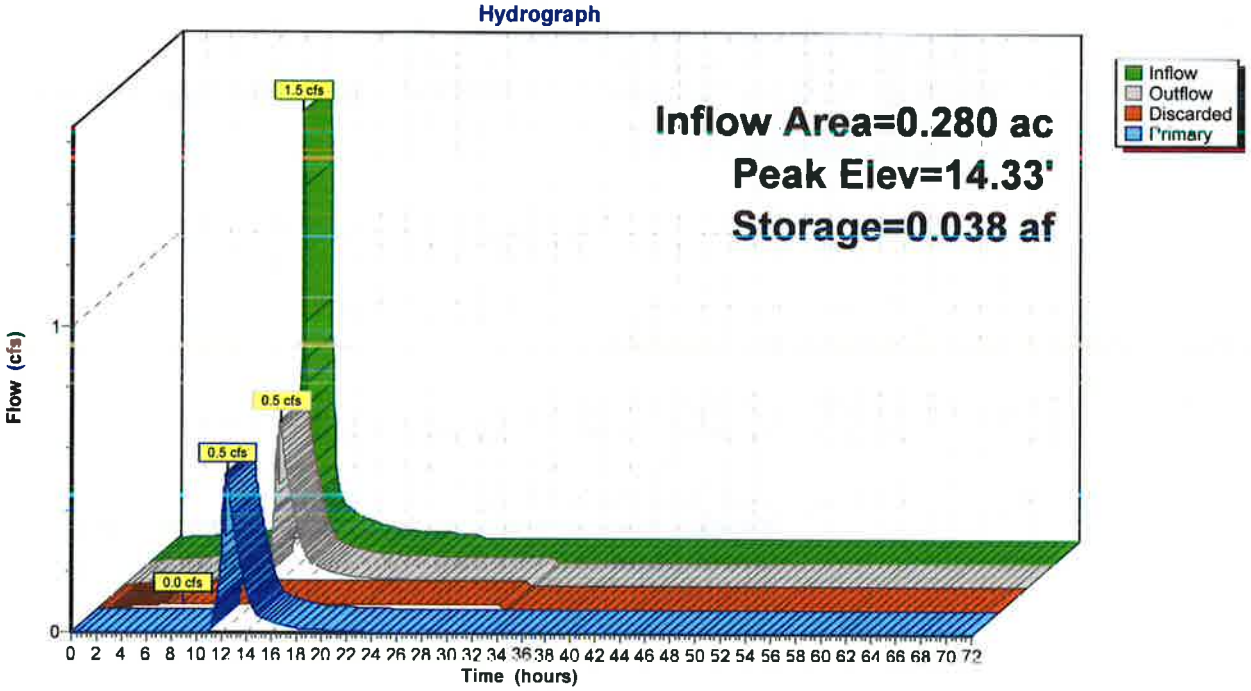
Volume	Invert	Avail.Storage	Storage Description
#1	10.50'	0.014 af	**24.00'W x 27.00'L x 4.00'H Prismatoid** 0.060 af Overall - 0.025 af Embedded = 0.035 af x 40.0% Voids
#2	11.00'	0.025 af	**ADS_StormTech SC-740** x 23 Inside **#1** Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 6 rows
		0.039 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	11.40'	**12.0" Round Culvert** L= 14.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 11.40' / 11.33' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	11.50'	**2.0" Vert. Orifice/Grate X 3.00** C= 0.600
#3	Device 1	14.50'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#4	Discarded	10.50'	**1.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.0 cfs @ 6.80 hrs HW=10.54' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.5 cfs @ 12.41 hrs HW=14.28' TW=9.22' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.5 cfs of 5.8 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.5 cfs @ 7.91 fps)
  └**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 1P: OCS # 1 / SYSTEM # 1



Summary for Pond 3P: Existing CB (Altus Model)

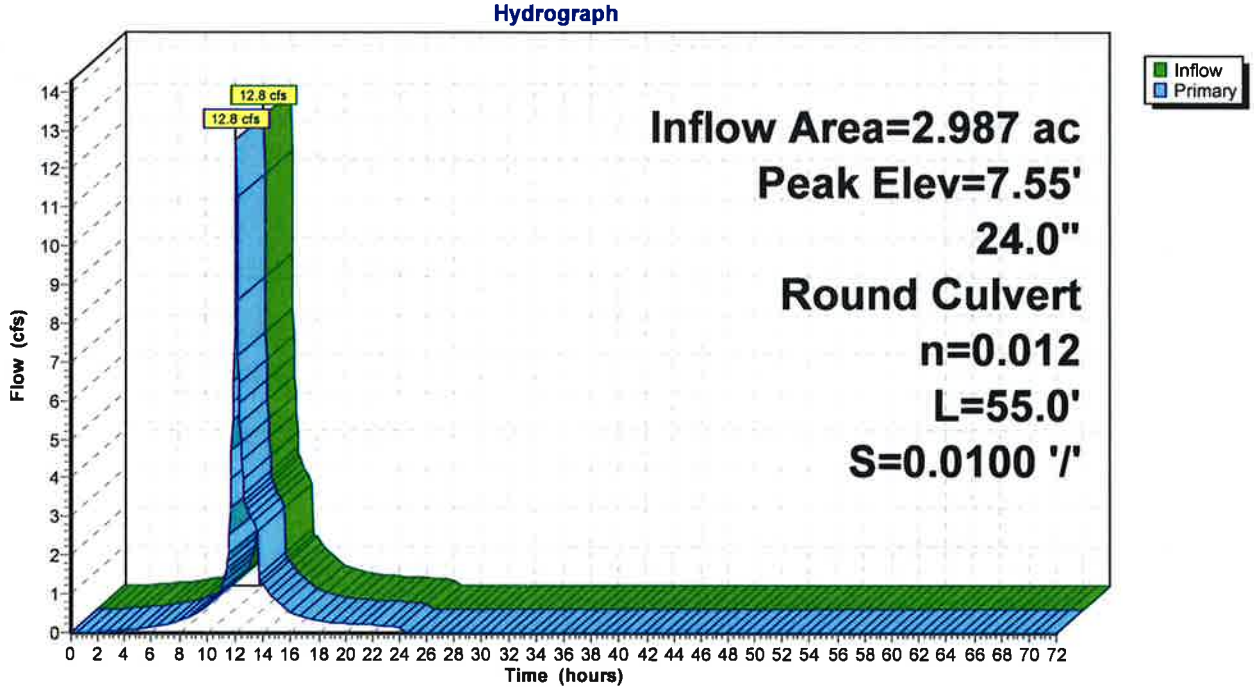
Inflow Area = 2.987 ac, 49.88% Impervious, Inflow Depth = 5.69" for 50 year event
Inflow = 12.8 cfs @ 12.05 hrs, Volume= 1.415 af
Outflow = 12.8 cfs @ 12.05 hrs, Volume= 1.415 af, Atten= 0%, Lag= 0.0 min
Primary = 12.8 cfs @ 12.05 hrs, Volume= 1.415 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 7.55' @ 12.05 hrs
Flood Elev= 8.59'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.76'	**24.0" Round Culvert** L= 55.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.76' / 5.21' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=12.6 cfs @ 12.05 hrs HW=7.53' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 12.6 cfs @ 5.69 fps)

Pond 3P: Existing CB (Altus Model)



Summary for Pond 5P: CB#1

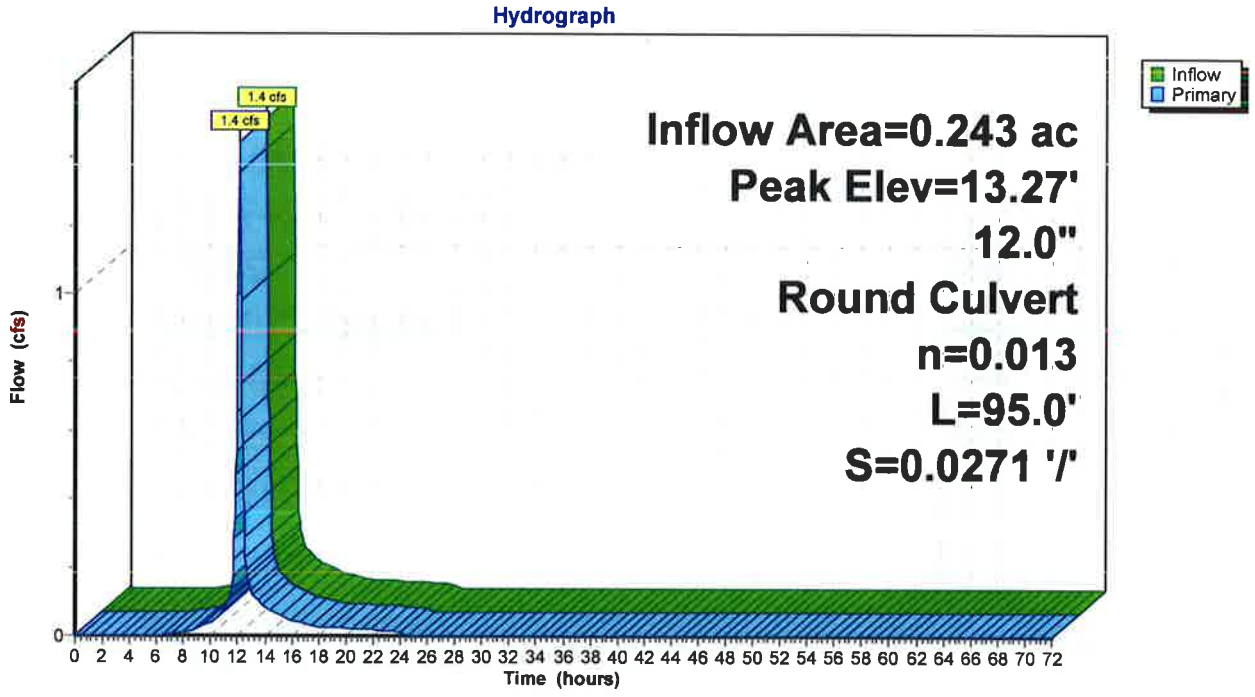
Inflow Area = 0.243 ac, 69.34% Impervious, Inflow Depth = 5.06" for 50 year event
Inflow = 1.4 cfs @ 12.07 hrs, Volume= 0.102 af
Outflow = 1.4 cfs @ 12.07 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.07 hrs, Volume= 0.102 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 13.27' @ 12.24 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	9.70'	**12.0" Round Culvert** L= 95.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 9.70' / 7.13' S= 0.0271 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.1 cfs @ 12.07 hrs HW=10.37' TW=10.37' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.1 cfs @ 0.17 fps)

Pond 5P: CB#1



Summary for Pond 7P: CB#2

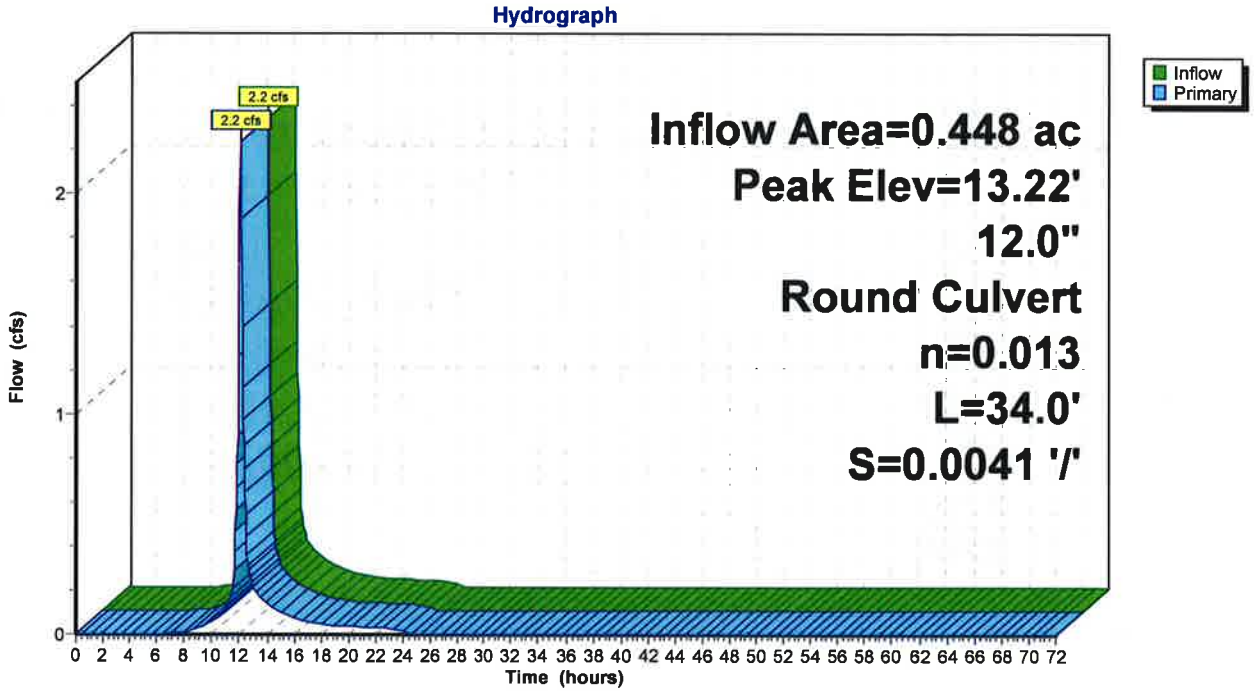
Inflow Area = 0.448 ac, 59.02% Impervious, Inflow Depth = 4.36" for 50 year event
Inflow = 2.2 cfs @ 12.05 hrs, Volume= 0.163 af
Outflow = 2.2 cfs @ 12.05 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.0 min
Primary = 2.2 cfs @ 12.05 hrs, Volume= 0.163 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 13.22' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.03'	**12.0" Round Culvert** L= 34.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.03' / 6.89' S= 0.0041 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.05 hrs HW=9.79' TW=10.93' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond 7P: CB#2



Summary for Pond 8P: CB#3

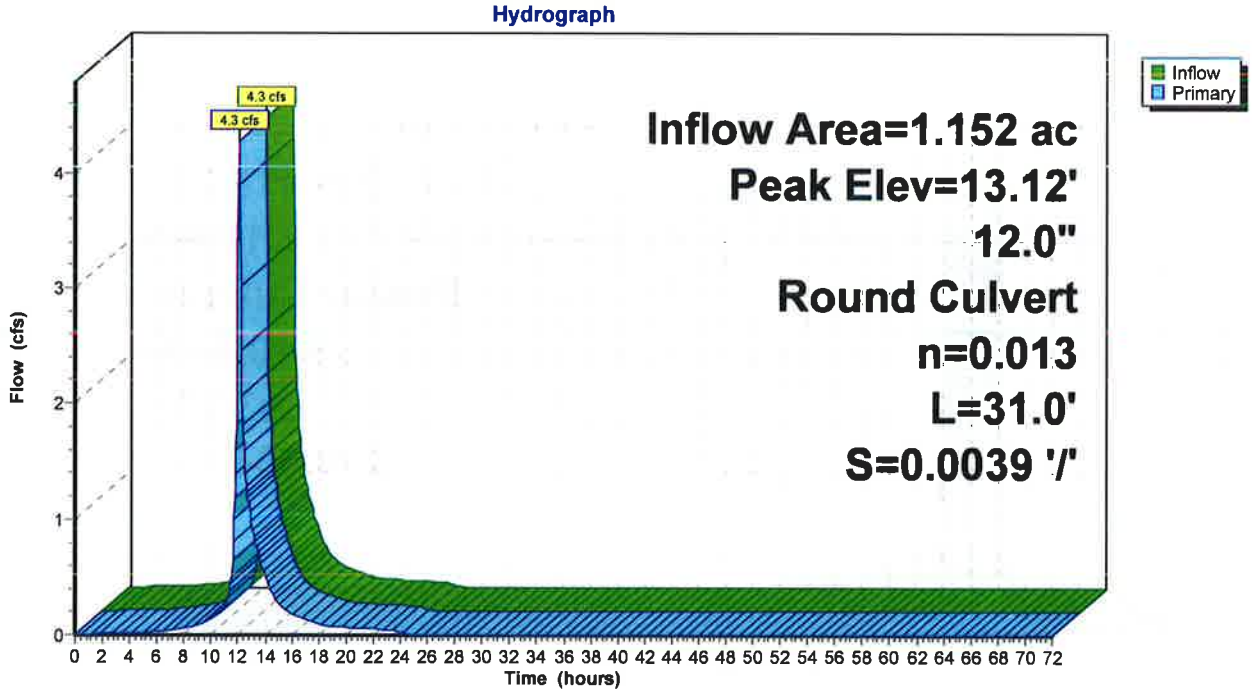
Inflow Area = 1.152 ac, 71.58% Impervious, Inflow Depth = 4.44" for 50 year event
Inflow = 4.3 cfs @ 12.06 hrs, Volume= 0.426 af
Outflow = 4.3 cfs @ 12.06 hrs, Volume= 0.426 af, Atten= 0%, Lag= 0.0 min
Primary = 4.3 cfs @ 12.06 hrs, Volume= 0.426 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 13.12' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	6.89'	**12.0" Round Culvert** L= 31.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.89' / 6.77' S= 0.0039 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.06 hrs HW=11.30' TW=11.69' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond 8P: CB#3



Summary for Pond 9P: OCS # 2 / SYSTEM # 2

Inflow Area =	0.189 ac, 70.70% Impervious, Inflow Depth =	5.26"	for	50 year event
Inflow =	1.0 cfs @	12.07 hrs, Volume=	0.083 af	
Outflow =	0.3 cfs @	12.76 hrs, Volume=	0.083 af, Atten= 68%, Lag= 41.5 min	
Discarded =	0.0 cfs @	8.40 hrs, Volume=	0.041 af	
Primary =	0.3 cfs @	12.76 hrs, Volume=	0.042 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 9.65' @ 12.47 hrs Surf.Area= 0.019 ac Storage= 0.039 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 164.3 min (920.6 - 756.3)

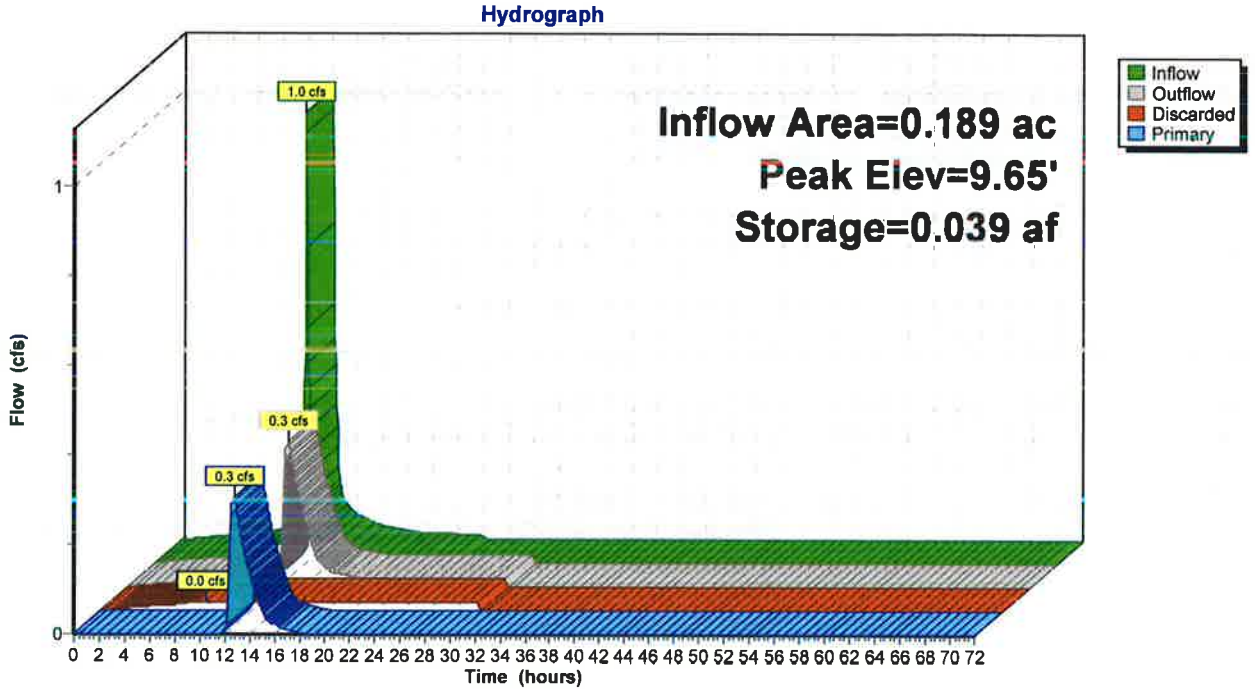
Volume	Invert	Avail.Storage	Storage Description
#1	6.50'	0.019 af	**27.00'W x 30.00'L x 4.00'H Prismatoid** 0.074 af Overall - 0.026 af Embedded = 0.049 af x 40.0% Voids
#2	7.00'	0.026 af	**ADS_StormTech SC-740** x 24 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap Row Length Adjustment= +0.44' x 6.45 sf x 7 rows
		0.045 af	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Primary	7.40'	**12.0" Round Culvert** L= 5.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.40' / 7.38' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	7.50'	**2.0" Vert. Orifice/Grate X 3.00** C= 0.600
#3	Device 1	10.50'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#4	Discarded	6.50'	**1.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.0 cfs @ 8.40 hrs HW=6.54' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.3 cfs @ 12.76 hrs HW=9.17' TW=8.18' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.3 cfs of 3.8 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.3 cfs @ 4.80 fps)
  └**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 9P: OCS # 2 / SYSTEM # 2



Summary for Pond 10P: (new Pond)

Inflow Area = 0.028 ac, 0.00% Impervious, Inflow Depth = 2.99" for 50 year event
Inflow = 0.1 cfs @ 12.08 hrs, Volume= 0.007 af
Outflow = 0.0 cfs @ 12.49 hrs, Volume= 0.007 af, Atten= 73%, Lag= 24.7 min
Discarded = 0.0 cfs @ 12.49 hrs, Volume= 0.006 af
Primary = 0.0 cfs @ 12.49 hrs, Volume= 0.001 af
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 9.51' @ 12.49 hrs Surf.Area= 287 sf Storage= 114 cf

Plug-Flow detention time= 176.3 min calculated for 0.007 af (100% of inflow)
Center-of-Mass det. time= 176.2 min (1,023.5 - 847.2)

Volume	Invert	Avail.Storage	Storage Description
#1	9.00'	290 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
9.00	164	77.4	0	0	164
10.00	438	103.9	290	290	557

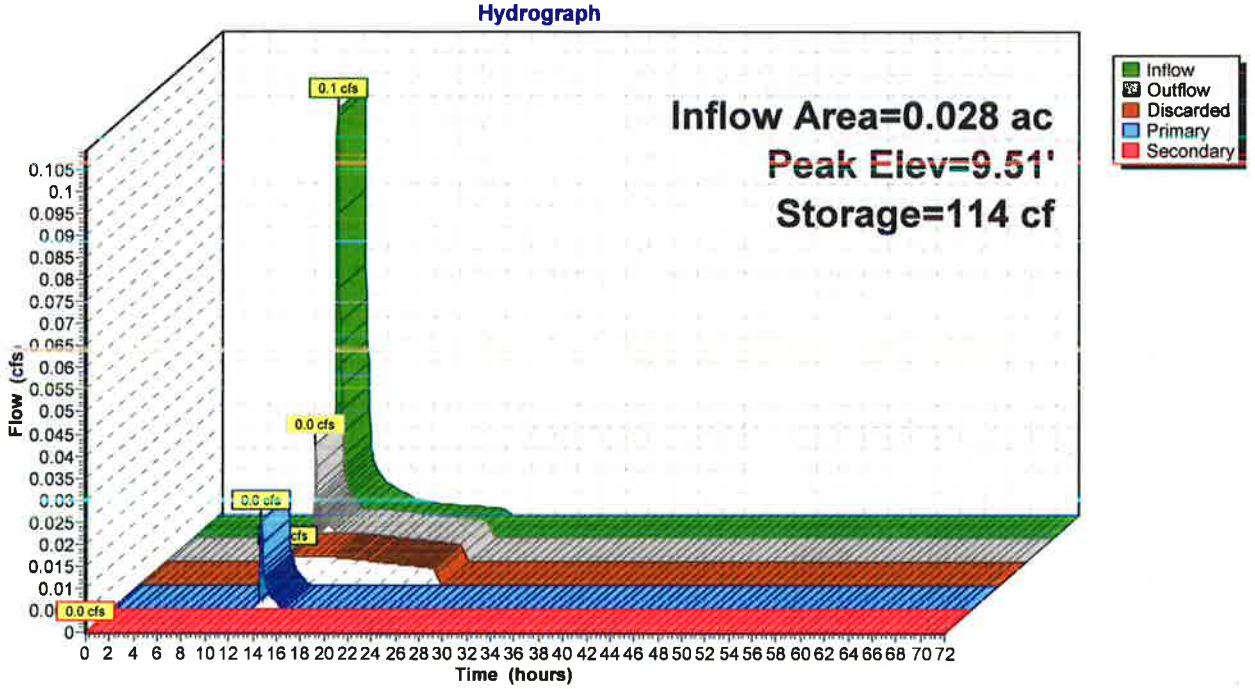
Device	Routing	Invert	Outlet Devices
#1	Primary	7.39'	**6.0" Round Culvert** L= 53.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.39' / 7.13' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	9.50'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	9.75'	**10.0' 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
#4	Discarded	9.00'	**1.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.0 cfs @ 12.49 hrs HW=9.51' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 12.49 hrs HW=9.51' TW=8.51' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.0 cfs of 0.7 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 0.0 cfs @ 0.32 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=9.00' TW=0.00' (Dynamic Tailwater)
└**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 10P: (new Pond)



Summary for Pond 13P: CB#5

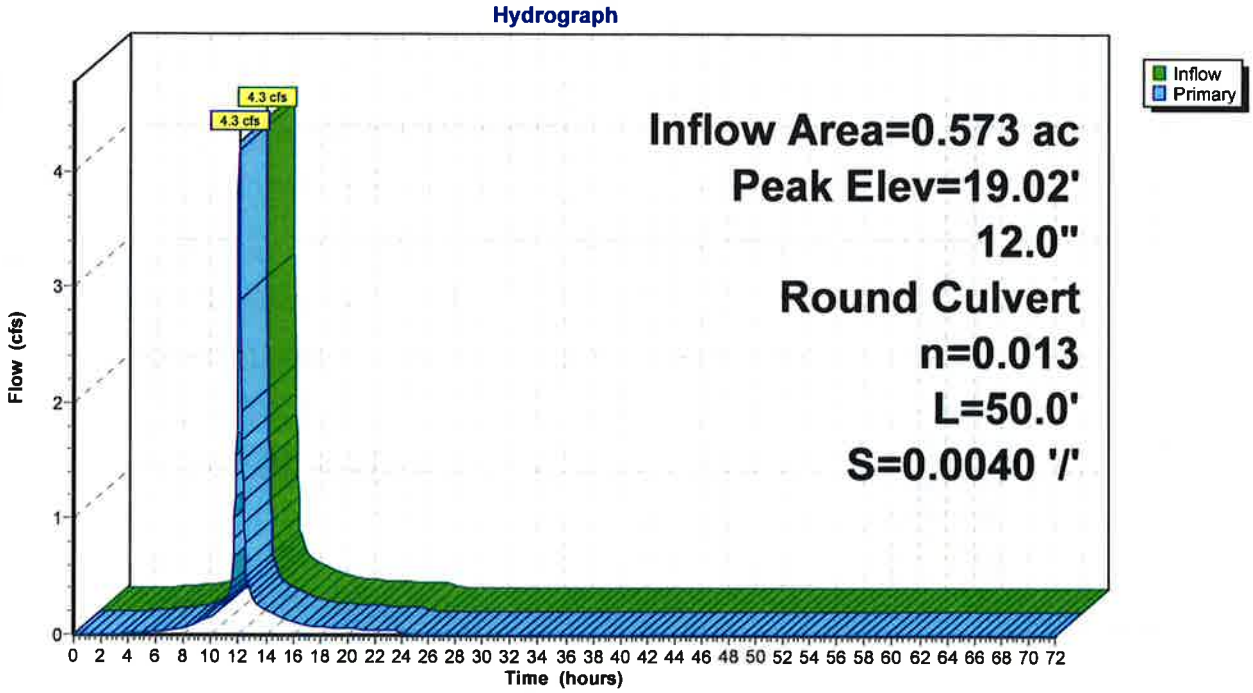
Inflow Area = 0.573 ac, 86.40% Impervious, Inflow Depth = 6.21" for 50 year event
Inflow = 4.3 cfs @ 12.04 hrs, Volume= 0.296 af
Outflow = 4.3 cfs @ 12.04 hrs, Volume= 0.296 af, Atten= 0%, Lag= 0.0 min
Primary = 4.3 cfs @ 12.04 hrs, Volume= 0.296 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 19.02' @ 12.21 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.06'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.06' / 7.86' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.04 hrs HW=12.98' TW=14.21' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond 13P: CB#5



Summary for Pond 15P: DMH#1

Inflow Area = 0.468 ac, 69.24% Impervious, Inflow Depth = 3.14" for 50 year event
Inflow = 0.8 cfs @ 12.54 hrs, Volume= 0.123 af
Outflow = 0.8 cfs @ 12.54 hrs, Volume= 0.123 af, Atten= 0%, Lag= 0.0 min
Primary = 0.8 cfs @ 12.54 hrs, Volume= 0.123 af

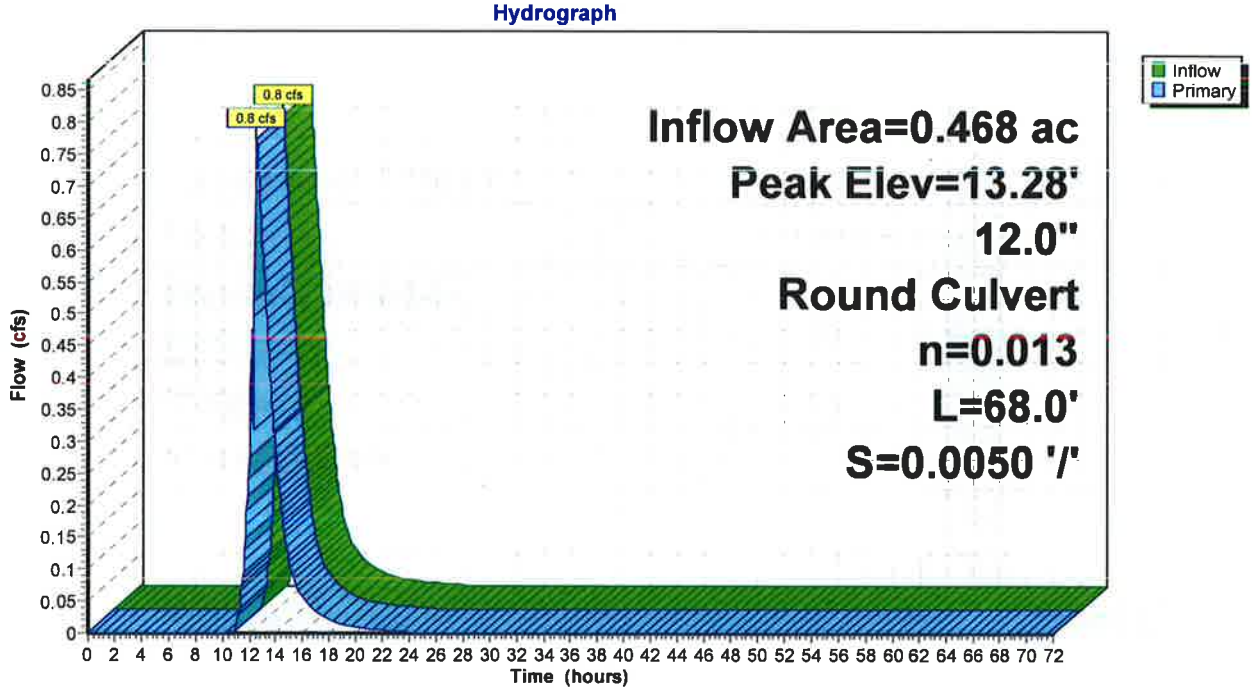
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 13.28' @ 12.24 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.38'	**12.0" Round Culvert** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.38' / 7.04' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.4 cfs @ 12.54 hrs HW=8.64' TW=8.47' (Dynamic Tailwater)
↑1=Culvert (Outlet Controls 1.4 cfs @ 1.87 fps)

Pond 15P: DMH#1

Hydrograph



Summary for Pond 16P: CB#6

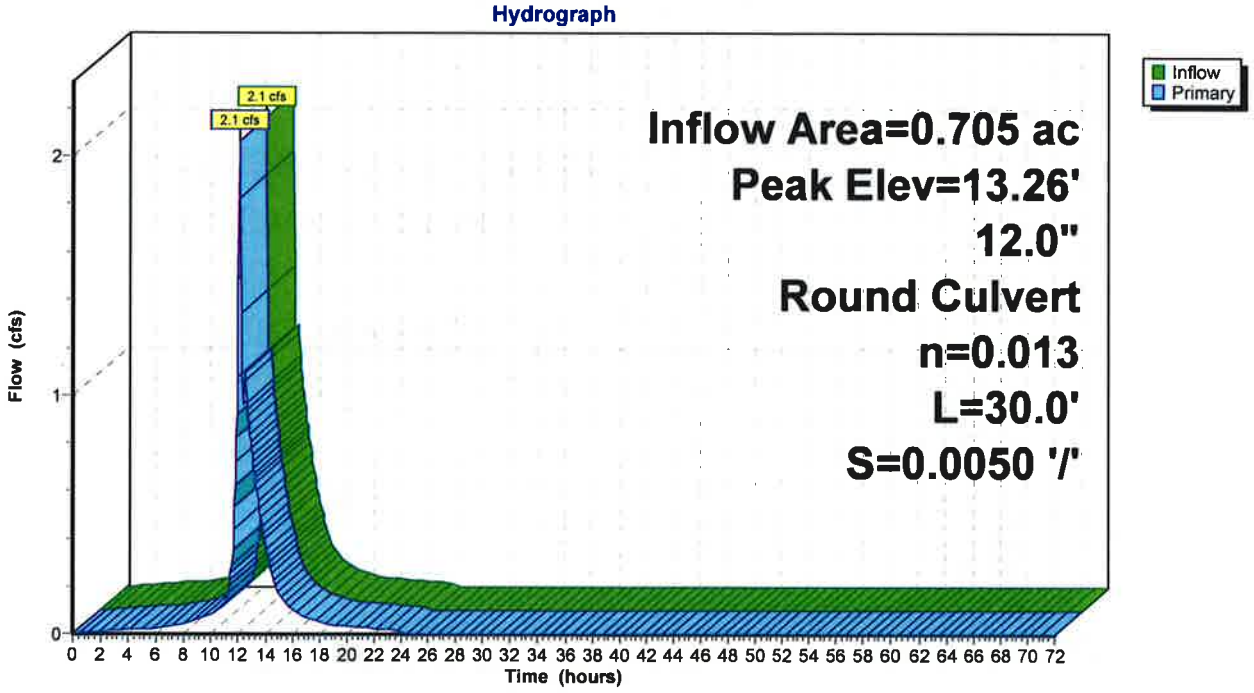
Inflow Area = 0.705 ac, 79.56% Impervious, Inflow Depth = 4.49" for 50 year event
Inflow = 2.1 cfs @ 12.08 hrs, Volume= 0.264 af
Outflow = 2.1 cfs @ 12.08 hrs, Volume= 0.264 af, Atten= 0%, Lag= 0.0 min
Primary = 2.1 cfs @ 12.08 hrs, Volume= 0.264 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 13.26' @ 12.19 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.04'	**12.0" Round Culvert** L= 30.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.04' / 6.89' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.08 hrs HW=10.53' TW=11.79' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Pond 16P: CB#6



Summary for Pond 30P: CB #1 (Altus Model)

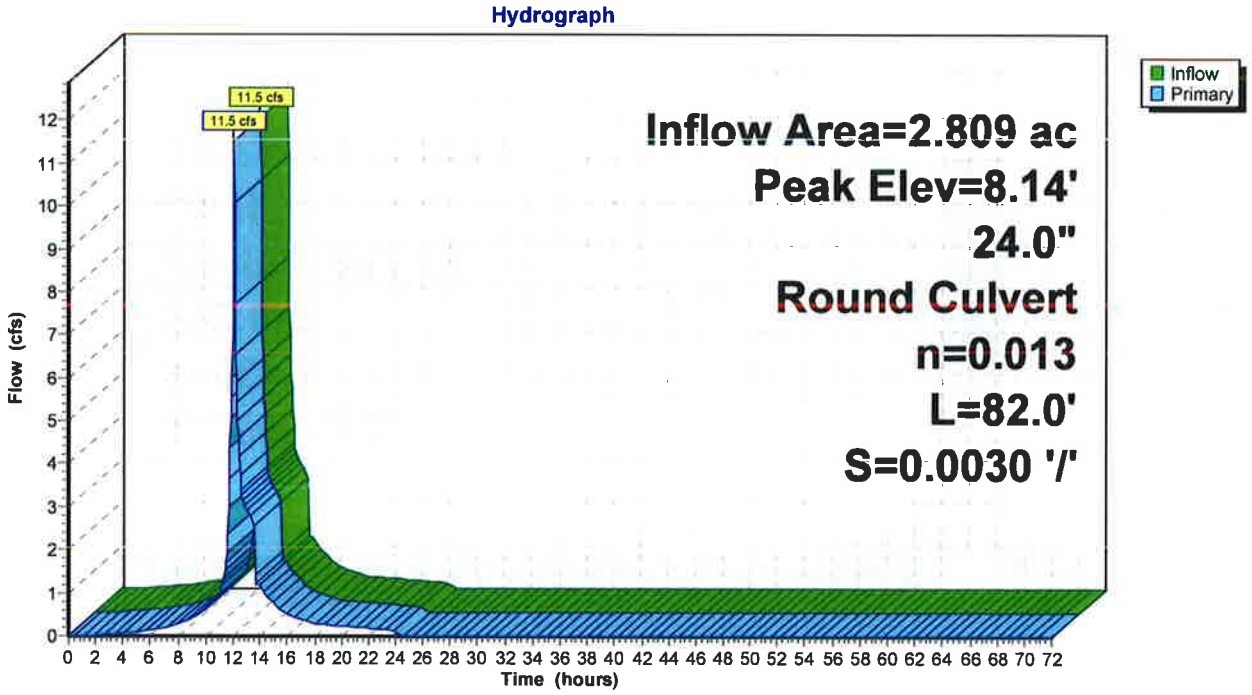
Inflow Area = 2.809 ac, 53.04% Impervious, Inflow Depth = 5.62" for 50 year event
Inflow = 11.5 cfs @ 12.05 hrs, Volume= 1.315 af
Outflow = 11.5 cfs @ 12.05 hrs, Volume= 1.315 af, Atten= 0%, Lag= 0.0 min
Primary = 11.5 cfs @ 12.05 hrs, Volume= 1.315 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 8.14' @ 12.08 hrs
Flood Elev= 9.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.11'	**24.0" Round Culvert** L= 82.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.11' / 5.86' S= 0.0030 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=10.0 cfs @ 12.05 hrs HW=8.10' TW=7.54' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 10.0 cfs @ 3.97 fps)

Pond 30P: CB #1 (Altus Model)



Summary for Pond 31P: CB #2 (Altus Model)

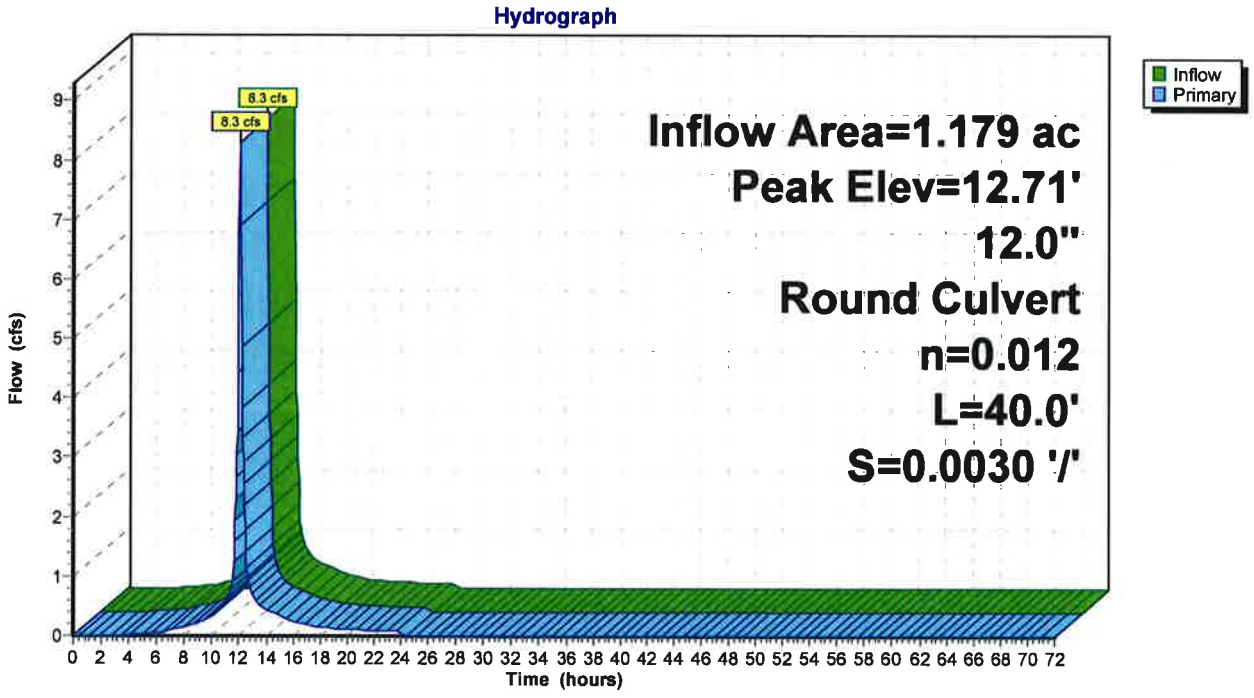
Inflow Area = 1.179 ac, 41.96% Impervious, Inflow Depth = 6.27" for 50 year event
Inflow = 8.3 cfs @ 12.05 hrs, Volume= 0.616 af
Outflow = 8.3 cfs @ 12.05 hrs, Volume= 0.616 af, Atten= 0%, Lag= 0.0 min
Primary = 8.3 cfs @ 12.05 hrs, Volume= 0.616 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 12.71' @ 12.06 hrs
Flood Elev= 9.15'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.33'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.33' / 6.21' S= 0.0030 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=8.1 cfs @ 12.05 hrs HW=12.67' TW=8.10' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 8.1 cfs @ 10.29 fps)

Pond 31P: CB #2 (Altus Model)



Summary for Pond 32P: CB #3 (Altus Model)

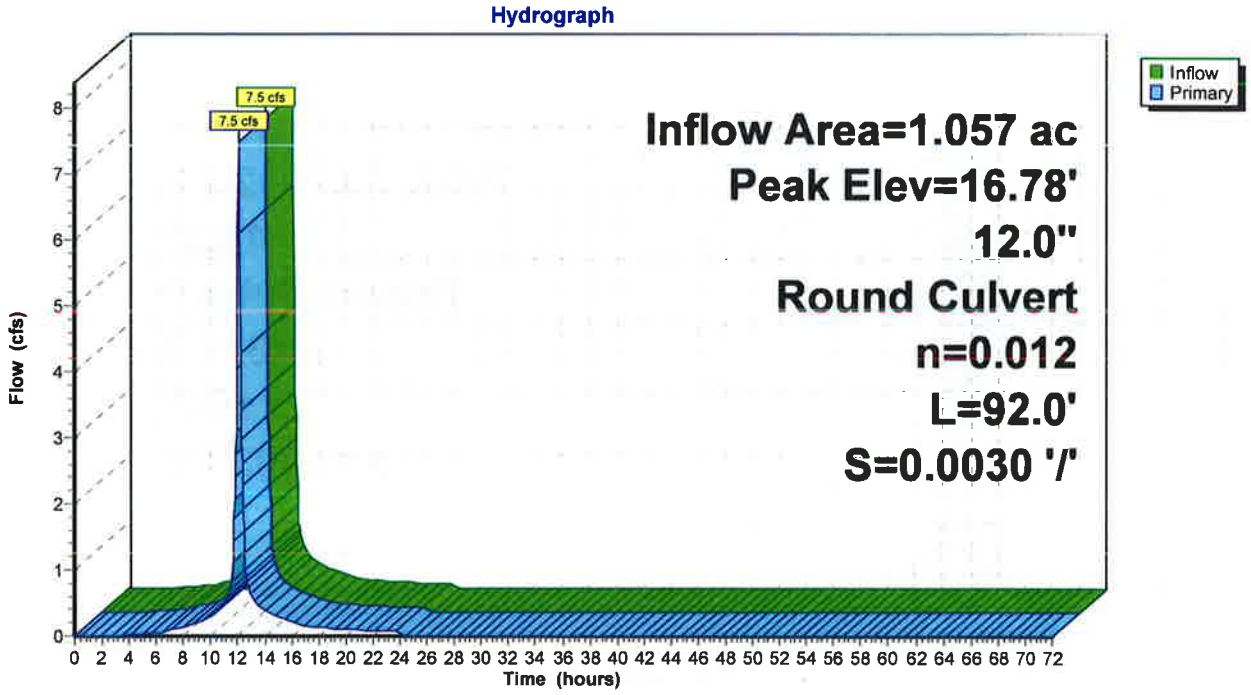
Inflow Area = 1.057 ac, 46.83% Impervious, Inflow Depth = 6.28" for 50 year event
Inflow = 7.5 cfs @ 12.05 hrs, Volume= 0.553 af
Outflow = 7.5 cfs @ 12.05 hrs, Volume= 0.553 af, Atten= 0%, Lag= 0.0 min
Primary = 7.5 cfs @ 12.05 hrs, Volume= 0.553 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 16.78' @ 12.08 hrs
Flood Elev= 9.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.71'	**12.0" Round Culvert** L= 92.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.71' / 6.43' S= 0.0030 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=6.0 cfs @ 12.05 hrs HW=16.29' TW=12.66' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 6.0 cfs @ 7.68 fps)

Pond 32P: CB #3 (Altus Model)



Summary for Pond 33P: CB #4 (Altus Model) - Relocated (CB5B)

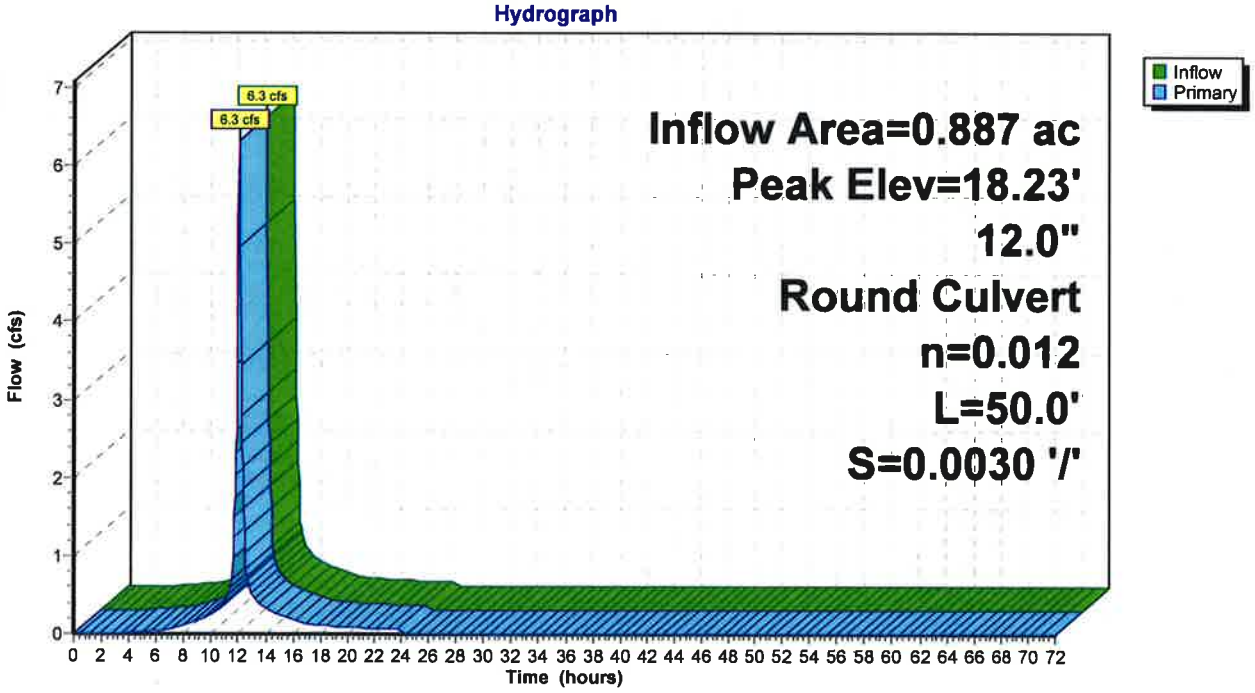
Inflow Area = 0.887 ac, 55.77% Impervious, Inflow Depth = 6.25" for 50 year event
Inflow = 6.3 cfs @ 12.05 hrs, Volume= 0.462 af
Outflow = 6.3 cfs @ 12.05 hrs, Volume= 0.462 af, Atten= 0%, Lag= 0.0 min
Primary = 6.3 cfs @ 12.05 hrs, Volume= 0.462 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 18.23' @ 12.11 hrs
Flood Elev= 9.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.96'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.96' / 6.81' S= 0.0030 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.05 hrs HW=15.18' TW=16.03' (Dynamic Tailwater)
1=Culvert (Controls 0.0 cfs)

Pond 33P: CB #4 (Altus Model) - Relocated (CB5B)



Summary for Pond 34P: CB #5 (Altus Model)

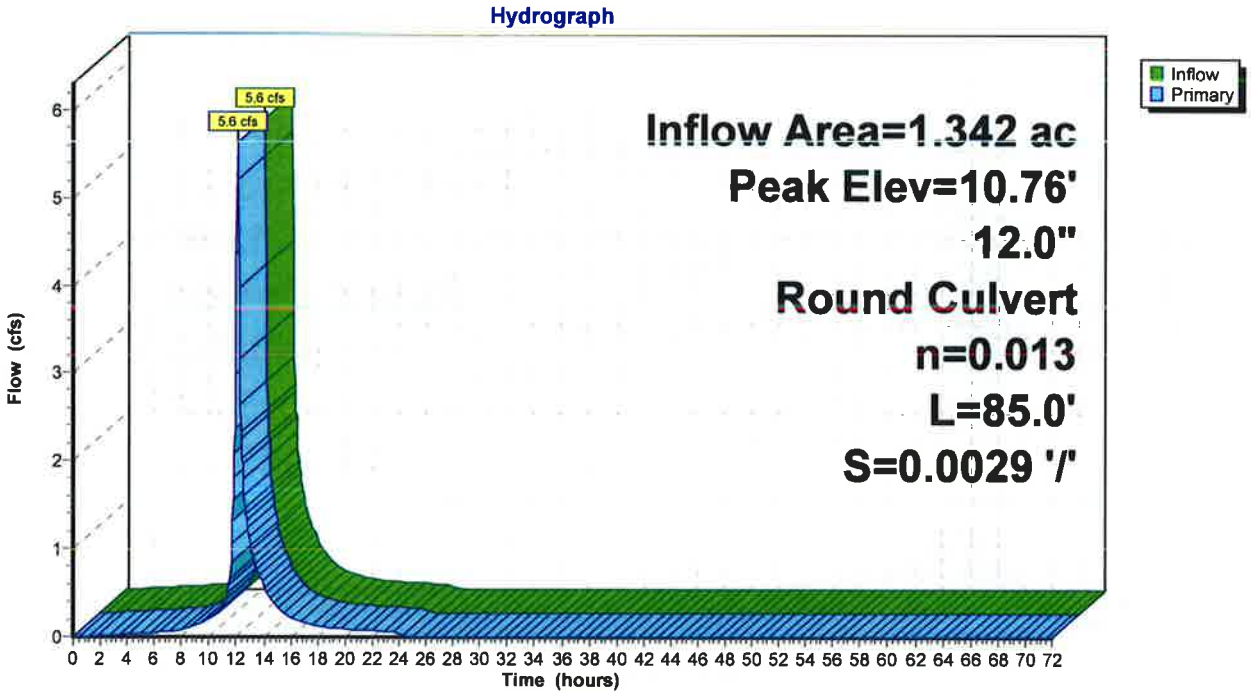
Inflow Area = 1.342 ac, 64.54% Impervious, Inflow Depth = 4.78" for 50 year event
Inflow = 5.6 cfs @ 12.06 hrs, Volume= 0.535 af
Outflow = 5.6 cfs @ 12.06 hrs, Volume= 0.535 af, Atten= 0%, Lag= 0.0 min
Primary = 5.6 cfs @ 12.06 hrs, Volume= 0.535 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 10.76' @ 12.06 hrs
Flood Elev= 8.68'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.83'	**12.0" Round Culvert** L= 85.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.83' / 5.58' S= 0.0029 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=5.5 cfs @ 12.06 hrs HW=10.60' TW=7.45' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 5.5 cfs @ 6.97 fps)

Pond 34P: CB #5 (Altus Model)



Summary for Pond AEI 6: Discharge Point 3 (Off Site Drainage)

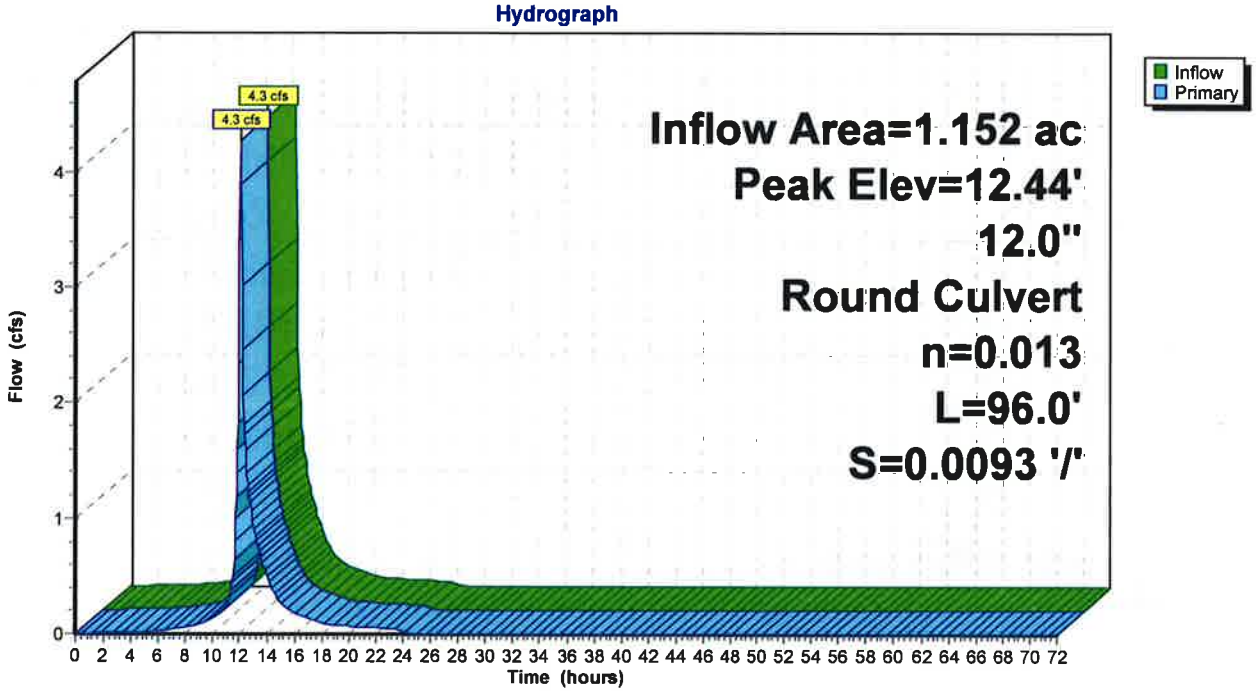
Inflow Area = 1.152 ac, 71.58% Impervious, Inflow Depth = 4.44" for 50 year event
Inflow = 4.3 cfs @ 12.06 hrs, Volume= 0.426 af
Outflow = 4.3 cfs @ 12.06 hrs, Volume= 0.426 af, Atten= 0%, Lag= 0.0 min
Primary = 4.3 cfs @ 12.06 hrs, Volume= 0.426 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 12.44' @ 12.10 hrs
Flood Elev= 10.77'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.77'	**12.0" Round Culvert** L= 96.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.77' / 5.88' S= 0.0093 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=3.1 cfs @ 12.06 hrs HW=11.69' TW=10.63' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 3.1 cfs @ 3.90 fps)

Pond AEI 6: Discharge Point 3 (Off Site Drainage)



Summary for Pond CB 4433:

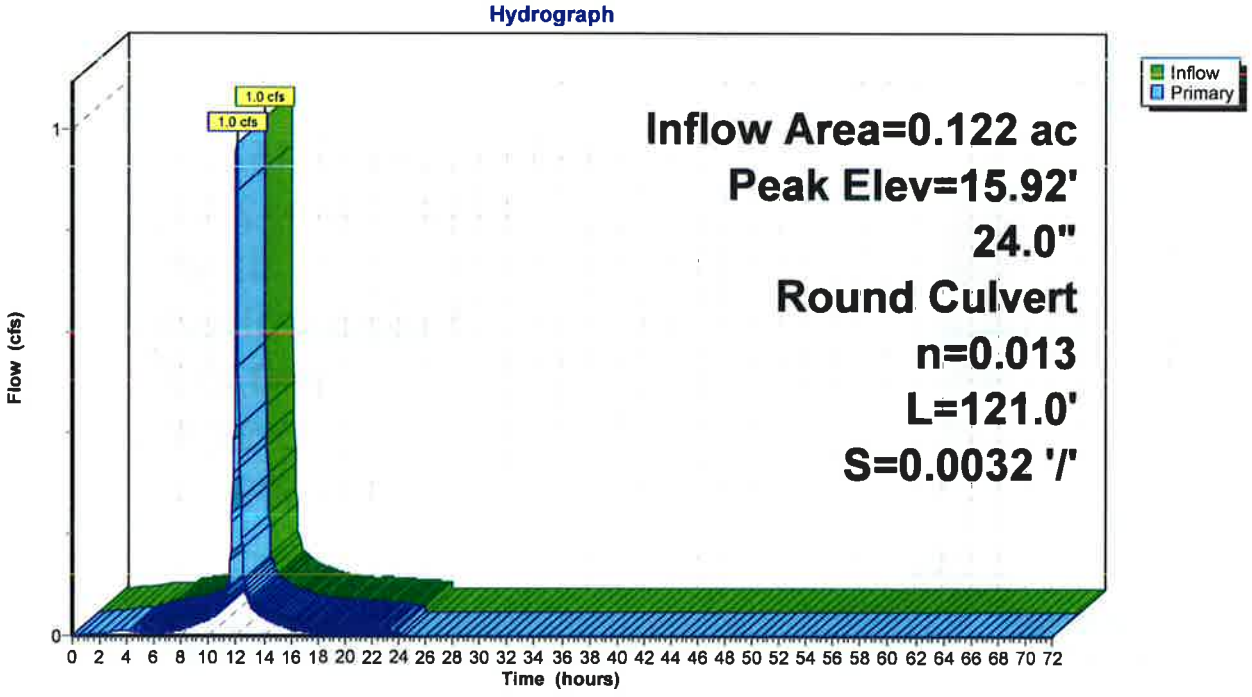
Inflow Area = 0.122 ac,100.00% Impervious, Inflow Depth = 7.15" for 50 year event
Inflow = 1.0 cfs @ 12.01 hrs, Volume= 0.073 af
Outflow = 1.0 cfs @ 12.01 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.0 min
Primary = 1.0 cfs @ 12.01 hrs, Volume= 0.073 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 15.92' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	14.38'	**24.0" Round Culvert** L= 121.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.38' / 13.99' S= 0.0032 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.0 cfs @ 12.01 hrs HW=15.85' TW=15.90' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond CB 4433:



Summary for Pond CB 4435:

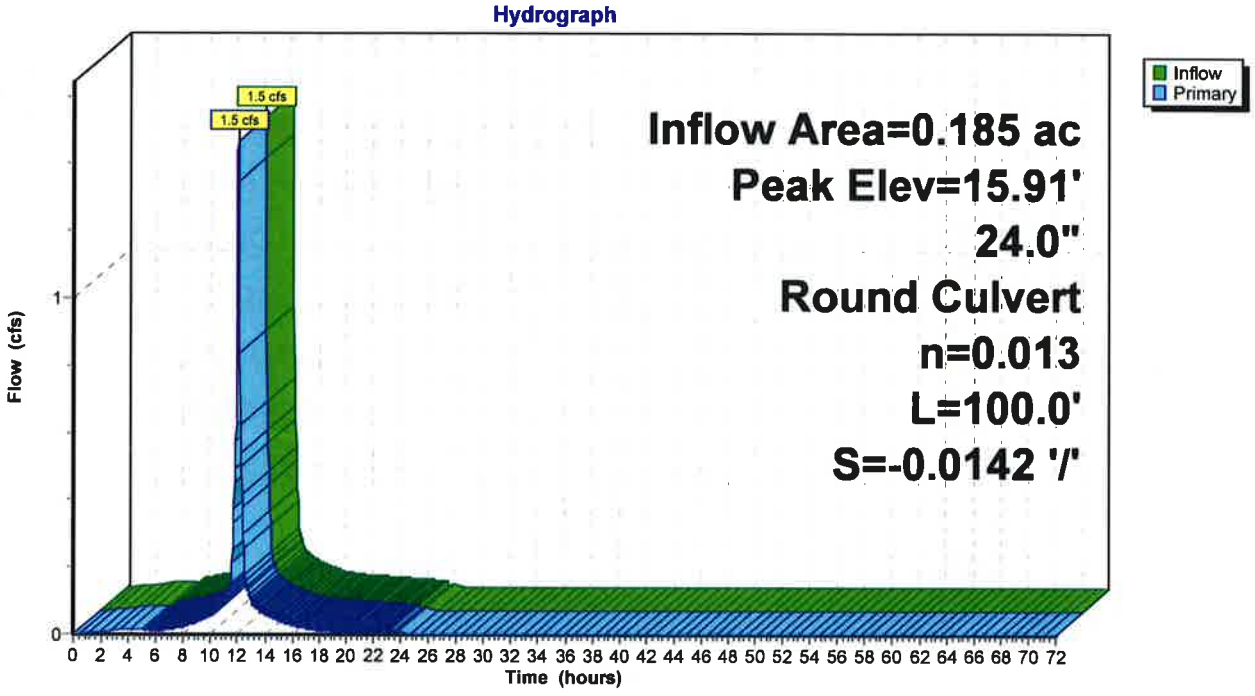
Inflow Area = 0.185 ac,100.00% Impervious, Inflow Depth = 7.15" for 50 year event
Inflow = 1.5 cfs @ 12.02 hrs, Volume= 0.110 af
Outflow = 1.5 cfs @ 12.02 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.0 min
Primary = 1.5 cfs @ 12.02 hrs, Volume= 0.110 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 15.91' @ 12.02 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	15.41'	**24.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 13.99' / 15.41' S= -0.0142 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=1.4 cfs @ 12.02 hrs HW=15.90' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 1.4 cfs @ 2.38 fps)

Pond CB 4435:



Summary for Pond CB 4560:

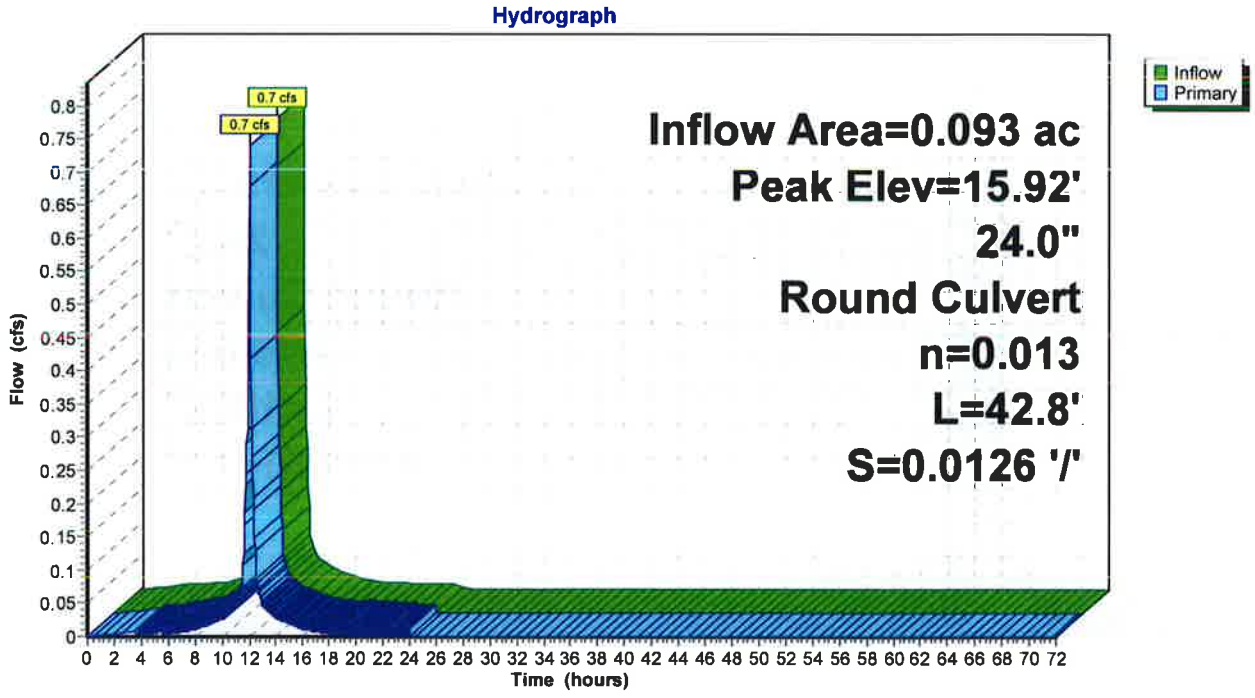
Inflow Area = 0.093 ac,100.00% Impervious, Inflow Depth = 7.15" for 50 year event
Inflow = 0.7 cfs @ 12.02 hrs, Volume= 0.055 af
Outflow = 0.7 cfs @ 12.02 hrs, Volume= 0.055 af, Atten= 1%, Lag= 0.1 min
Primary = 0.7 cfs @ 12.02 hrs, Volume= 0.055 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 15.92' @ 12.11 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	14.92'	**24.0" Round Culvert** L= 42.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.92' / 14.38' S= 0.0126 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.0 cfs @ 12.02 hrs HW=15.79' TW=15.86' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond CB 4560:



Summary for Pond DP1A: CB#5A

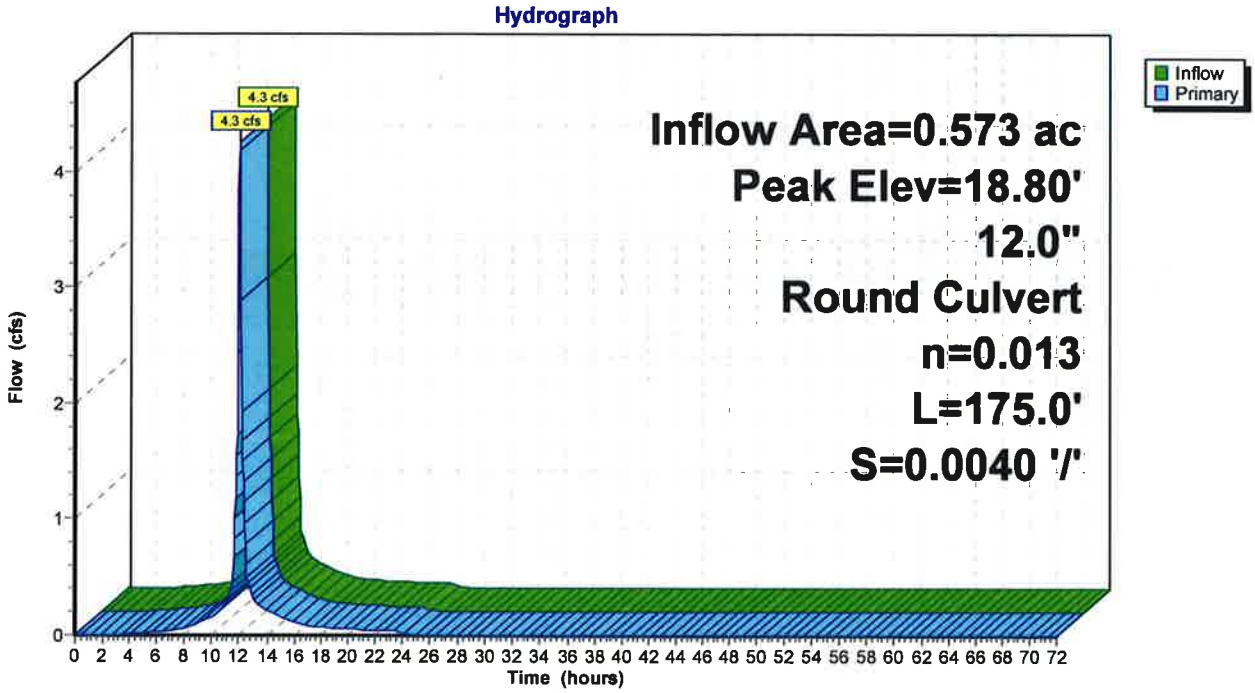
Inflow Area = 0.573 ac, 86.40% Impervious, Inflow Depth = 6.21" for 50 year event
Inflow = 4.3 cfs @ 12.04 hrs, Volume= 0.296 af
Outflow = 4.3 cfs @ 12.04 hrs, Volume= 0.296 af, Atten= 0%, Lag= 0.0 min
Primary = 4.3 cfs @ 12.04 hrs, Volume= 0.296 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 18.80' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	7.76'	**12.0" Round Culvert** L= 175.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.76' / 7.06' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.04 hrs HW=14.21' TW=14.43' (Dynamic Tailwater)
1=Culvert (Controls 0.0 cfs)

Pond DP1A: CB#5A

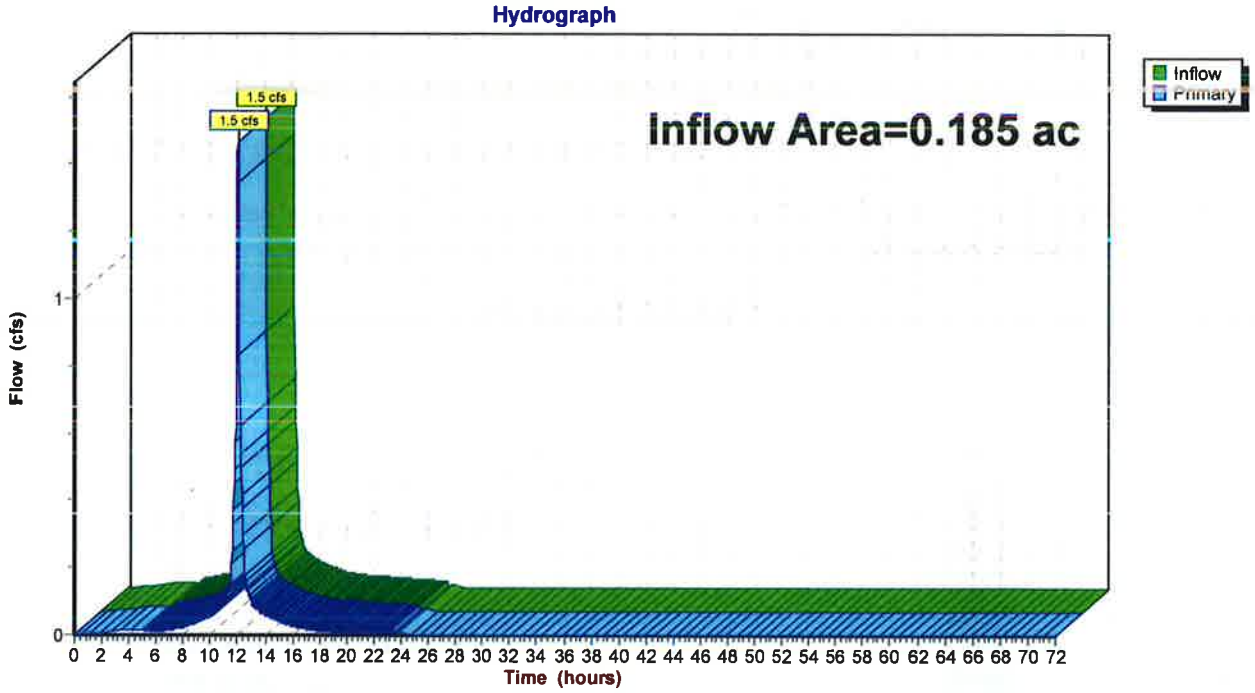


Summary for Link 2L: Discharge Point 2 (Court Street Drainage)

Inflow Area = 0.185 ac,100.00% Impervious, Inflow Depth = 7.15" for 50 year event
Inflow = 1.5 cfs @ 12.02 hrs, Volume= 0.110 af
Primary = 1.5 cfs @ 12.02 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 2L: Discharge Point 2 (Court Street Drainage)

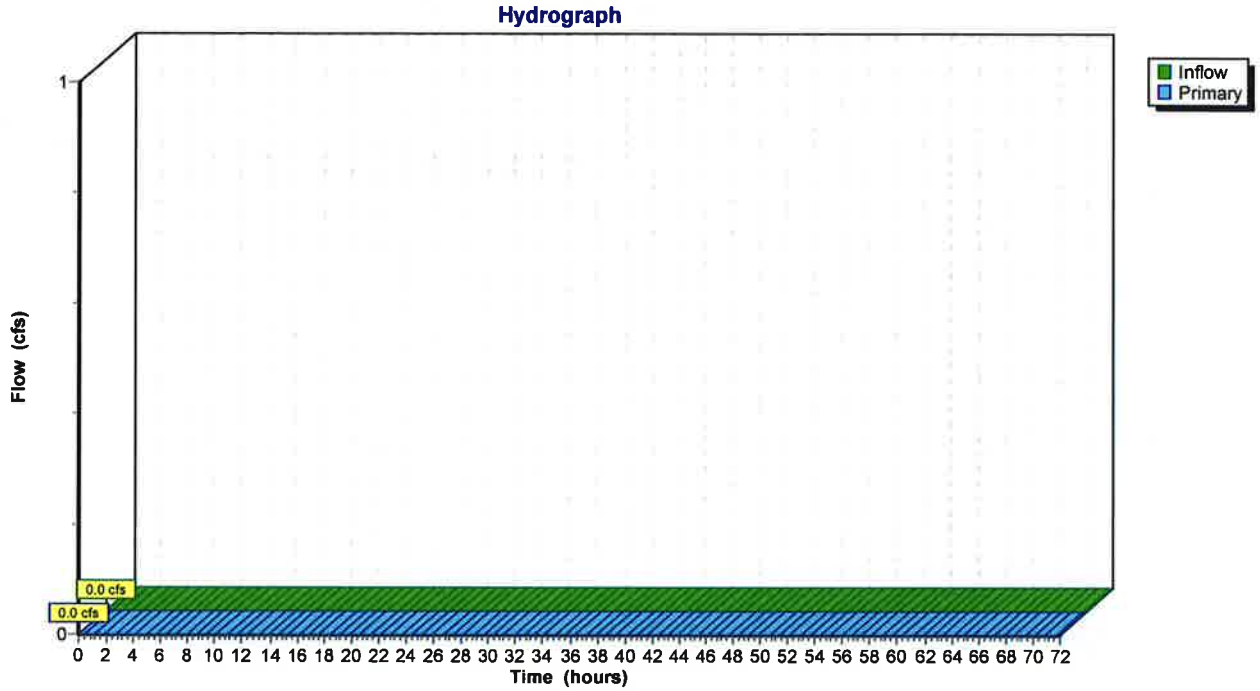


Summary for Link 3L: Discharge Point 4 (DP4)

Inflow	=	0.0 cfs @	0.00 hrs, Volume=	0.000 af
Primary	=	0.0 cfs @	0.00 hrs, Volume=	0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 3L: Discharge Point 4 (DP4)

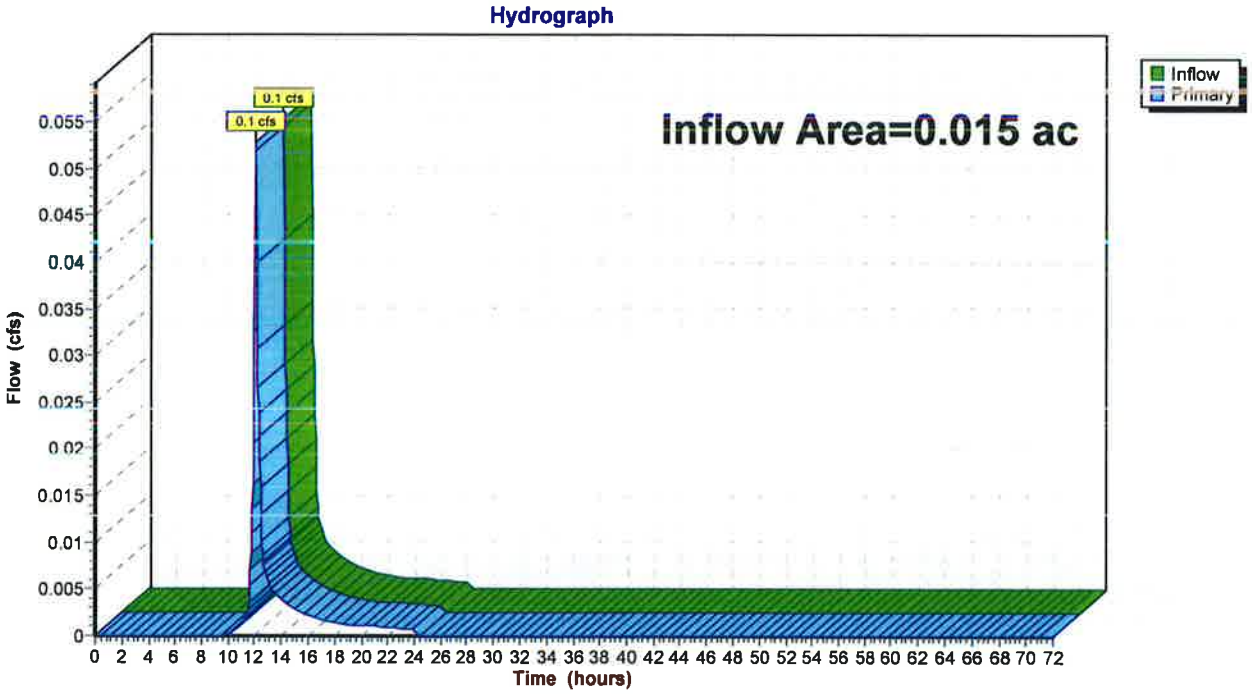


Summary for Link 4L: Discharge Point 5 (DP5)

Inflow Area = 0.015 ac, 0.00% Impervious, Inflow Depth = 2.99" for 50 year event
Inflow = 0.1 cfs @ 12.08 hrs, Volume= 0.004 af
Primary = 0.1 cfs @ 12.08 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 4L: Discharge Point 5 (DP5)



APPENDIX D

SOIL SURVEY INFORMATION

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Rockingham County, New Hampshire

June 15, 2018

Preface

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

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

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

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

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

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

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Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

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

Soil Map

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

Custom Soil Resource Report
Soil Map

Map Scale: 1:877 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 10 20 40 60

Feet
0 40 80 160 240

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 19, Sep 11, 2017

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

Date(s) aerial images were photographed Dec 31, 2009—Jun 26, 2016

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
699	Urban land	2.0	100.0%
Totals for Area of Interest		**2.0**	**100.0%**

Map Unit Descriptions

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

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

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

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

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

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

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

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

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

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

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

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

Rockingham County, New Hampshire

699—Urban land

Map Unit Composition

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

Minor Components

Not named

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

References

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APPENDIX E

FEMA FIRM MAP

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

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

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

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

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

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

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988 (NAVD 88), visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

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

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

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

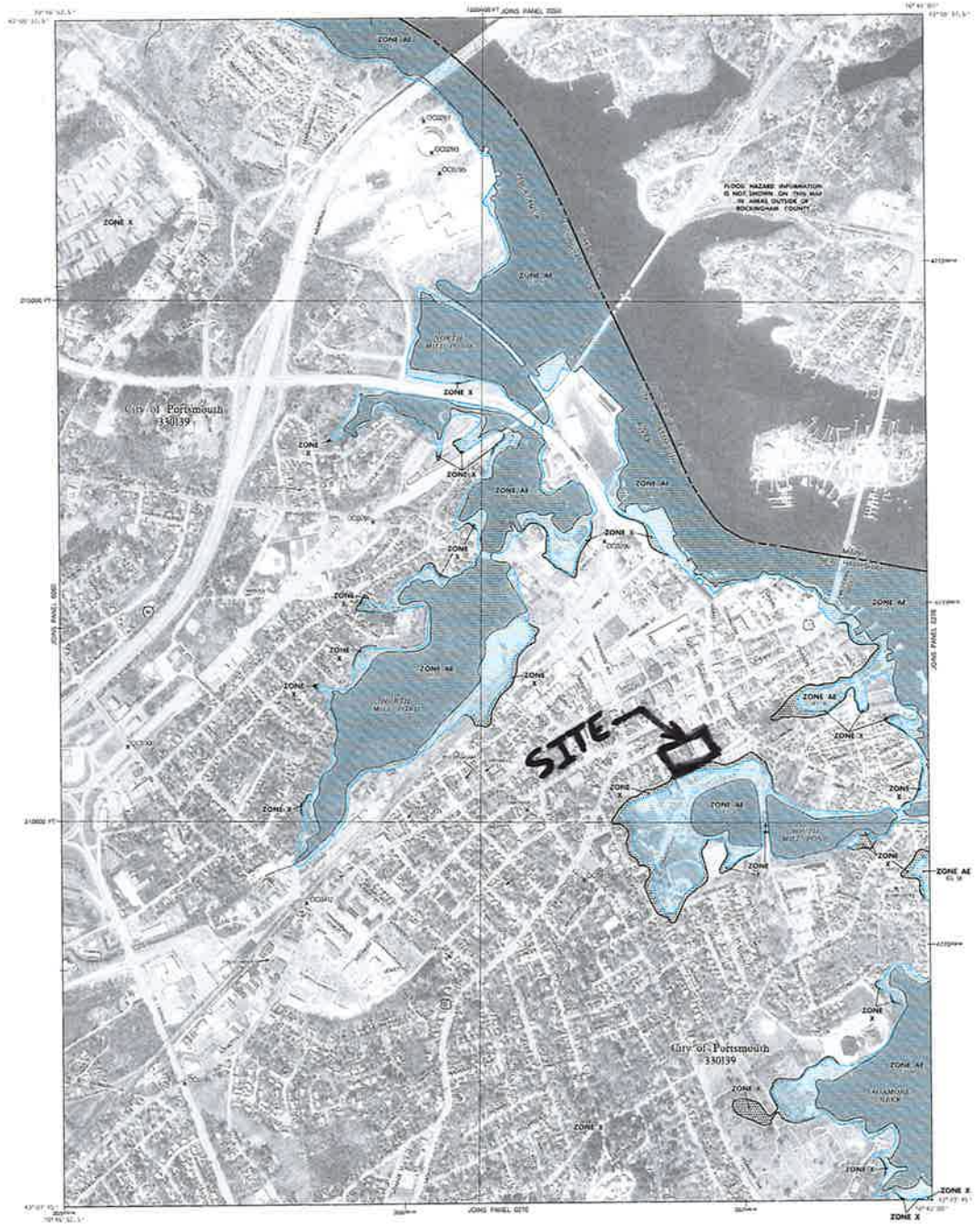
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result,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

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

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

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

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



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

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

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

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

OTHER FLOOD AREAS

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

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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

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

*Referenced to the National Geodetic Vertical Datum of 1929

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 1000-meter Universal Transverse Mercator grid tick values, zone 19
- 4000000 FT — 1000-foot grid: New Hampshire State Plane coordinate system, (FIPSZONE 2800), Transverse Mercator projection.
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MAY 17 2005

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

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

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

MAP SCALE 1" = 500'
300 0 300 600 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0259E

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

PANEL 259 OF 681

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
PORTSMOUTH, CITY OF	330139	0259	E

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

MAP NUMBER
33015C0259E

EFFECTIVE DATE
MAY 17, 2005

Federal Emergency Management Agency

APPENDIX F

INSPECTION & MAINTENANCE PLAN

STORMWATER MANAGEMENT
INSPECTION & MAINTENANCE PLAN
FOR
PORTSMOUTH HOUSING AUTHORITY
140 COURT STREET, PORTSMOUTH, NH

Introduction

The intent of this plan is to provide Portsmouth Housing Authority located at 140 Court Street, Portsmouth, NH with a list of procedures that cover the inspection and maintenance requirements of the stormwater management system for the proposed redevelopment at the site.

The following inspection and maintenance program is necessary to keep the stormwater management system functioning properly. These measures will also help minimize potential environmental impacts. By following the enclosed procedures, Portsmouth Housing Authority will be able to maintain the functional design of the stormwater management system. By installing and maintaining the drainage as shown on the approved site plan, Portsmouth Housing Authority will be able to maximize the system's ability to control the volume of runoff and remove sediment from site generated stormwater runoff.

Stormwater Management System Components

The Stormwater Management System is designed to comply with RSA 483 – B:9 V(g)(2). As a result, the design includes the following elements:

StormTech Subsurface Stormwater System

Roof runoff from the proposed structure and a portion of the parking lot will be captured in catch basins and directed to the proposed StormTech Subsurface Stormwater System located between the existing Portsmouth Housing Authority Building located at 140 Court Street and a new building to be constructed to the east. The design calls for two separate systems (System # 1 and System #2) that utilize 24 and 23 StormTech SC-740 chambers respectively with a single isolator row as recommended by StormTech design criteria. The system will release the stormwater to infiltrate 100% of the Water Quality Volume (WQV, also referred to as the "first flush") into the ground. It is also designed to attenuate peak flows for the Q10 and Q50 storm events as required by the City of Portsmouth.

Non-Structural BMP's

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

Structural BMP's

Structural BMP's are more labor and capital intensive structures or installations that require more specialized personnel to install. Examples on this project include but are not limited to: The rain garden located to the rear of Lot 3,associated inlet/outlet pipes, headwalls/end sections and emergency outlet/rip rap apron.

Inspection & Maintenance Checklist/Log

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

STORMTECH SUBSURFACE STORMWATER SYSTEM MAINTENANCE

In general, the intent of a subsurface leaching system is to provide for infiltration of runoff from developed areas, in this case the roof and driveway runoff. This system is designed to accept and infiltrate the first inch of rainfall from a storm event. The system is also designed to slow the peak runoff from a 50 year frequency rainfall event (7.39" of rain in a 24 hour period). In order to keep the subsurface leaching system functioning properly, it is important to keep the system porous and unplugged by debris. Installation of a StormTech subsurface leaching systems would typically include an "Isolator Row". This is a row of chambers dedicated to settling out particulate matter in the stormwater run-off stream before the water reaches the rest of the subsurface system. The system should perform for many years without clogging. Regular inspection of the Isolator Row should be performed to avoid the need for system cleaning beyond the Isolator Row.

Specific Maintenance Procedures

Inspections- The subsurface leaching system is designed to infiltrate site generated stormwater runoff in to the ground. The bottom of the subsurface leaching system may become clogged with sediment, and organic matter with time. The receiving layer (bottom) of the subsurface leaching system may be ineffective if sediment buildup is occurring and infiltration is being diminished.

Twice per year, during regular rains (less than 1 inch in 24 hours) inspect the overflow outlet to see if water is exiting the system. Run off exiting the system would indicate that the system is clogged and in need of replacement. Review the pipe outlet for any signs of erosion and stabilize if necessary. Some water may be exiting the system, which is not designed for heavy rain events, though heavy rains after long periods of drought may infiltrate into the soil and not show up. Lack of water exiting the system may indicate that the overflow pipe is clogged and not functioning. Check for animal activity and / or vegetation blockages. Extended periods of wetness at the ground surface above the chambers can also be a sign of system failure.

If the subsurface leaching system is not functioning the system would be repaired by the removal of accumulated debris including sand and silt(s) to return the subsurface leaching system to a functioning condition. Accumulated sediment can be removed with culvert cleaning device which will allow the removal of the accumulated debris by power washing the material back to the open end of the system for removal.

Stormwater Management System
for
Portsmouth Housing Authority
140 Court Street, Portsmouth, NH

Inspection & Maintenance Checklist

BMP/System Component	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance/Cleanout Threshold
Stormtech Subsurface Chamber System	2 times per year	During Light Rains Inspect Outlet Functioning	Repair / Clean as needed
Detention Basin	Monthly	Check for sediment clogging; leaks, excessive weed growth and sloughing of berms. Check plant vitality. Check for scouring near pipe inlet. Check for invasive	Repair leaks, scouring or sloughs, remove weeds and trash/debris; remove sediments regularly near pipe inlet.

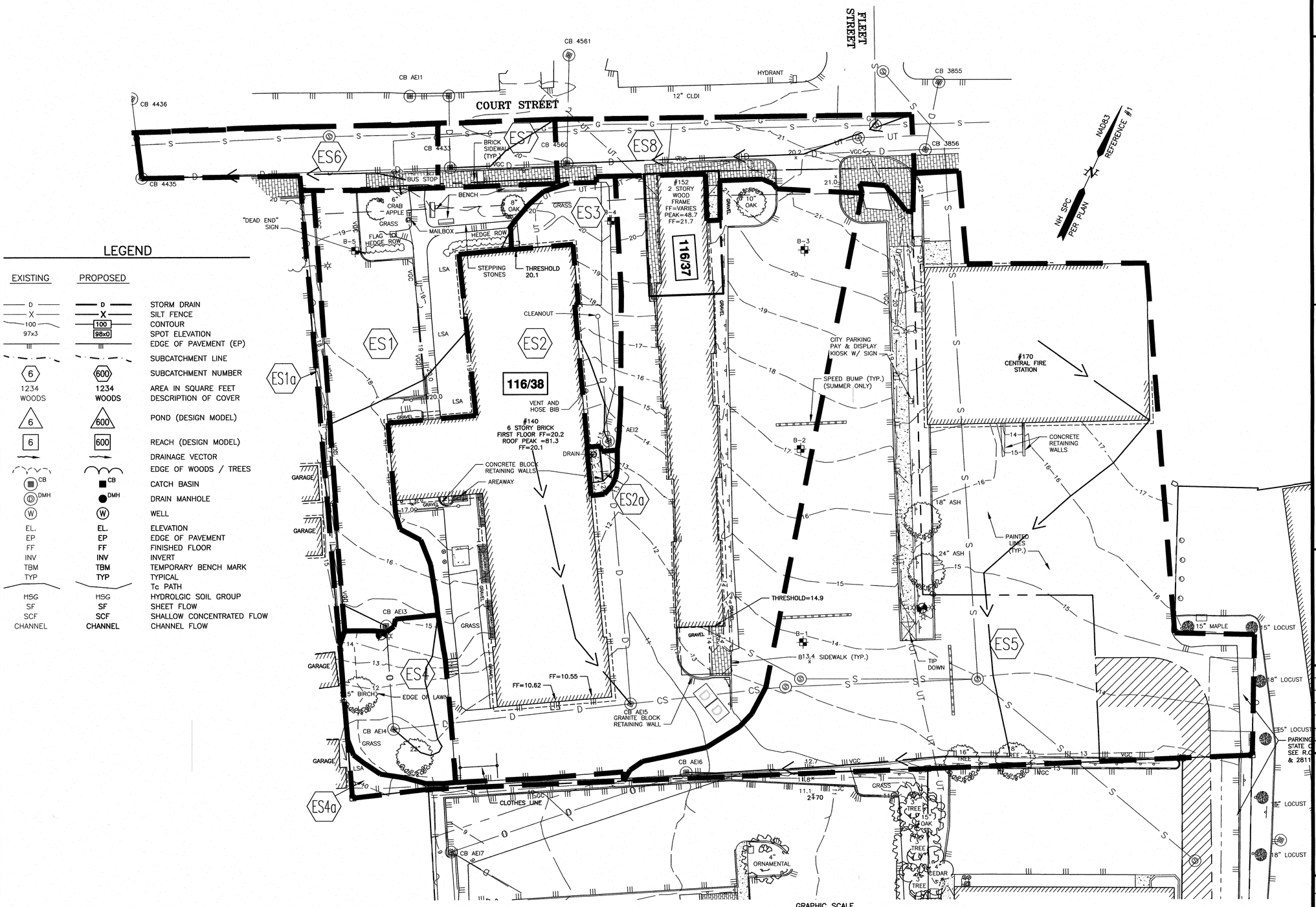
		species.	Replant dead or dying wetlands vegetation.
Catch Basins	Twice Yearly	Remove sediment and debris	Sediment within 6" of outlet pipe
Street Sweeping and Litter / Trash Removal	Twice Yearly	Visual Determination of Surface Conditions	Mechanical or Manual Sweeping as Needed

Stormwater Management System
for
Portsmouth Housing Authority
140 Court Street, Portsmouth, NH

Inspection & Maintenance Log

(This log is to be submitted to the City of Dover Engineering Department on an annual basis, not later than December 15th of each year. The owner of record will be responsible for this ongoing maintenance and reporting.)

BMP/System Component	Date Inspected	Inspector	Cleaning/Repair Needed *(List Items/Comments)*	Date of Cleaning/Repair	Performed By



LEGEND

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

GRAPHIC SCALE

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

J:\JOBS2\N2700's\JN 2790's\2017 Site Planning\Plans & Specs\Site\Engineering\2790 SW_EXIST.dwg, W1

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

PROJECT LOCATION
140 COURT STREET
PORTSMOUTH, NH

PARCEL ID:
CITY OF PORTSMOUTH ASSESSOR'S MAP 116, LOTS 38 AND LOT 37.

OWNERS OF RECORD:
116/38
PORTSMOUTH HOUSING AUTHORITY
245 MIDDLE STREET
PORTSMOUTH, NH 03801
R.C.R.D BK 1736, PG 386, BK 1797 PG 20 AND BK 1920, PG 47

116/37
ED PAC, LLC
242 CENTRAL AVENUE
DOVER, NH 03820
BK 4679, PG 151

PARCEL 116/38 AND 116/37 ARE NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 3301SC0259E. EFFECTIVE 5/17/2005

NOTES:

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

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

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

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

PORTSMOUTH HOUSING AUTHORITY 140 COURT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
0	ISSUED FOR REVIEW	6/18/18

REVISIONS

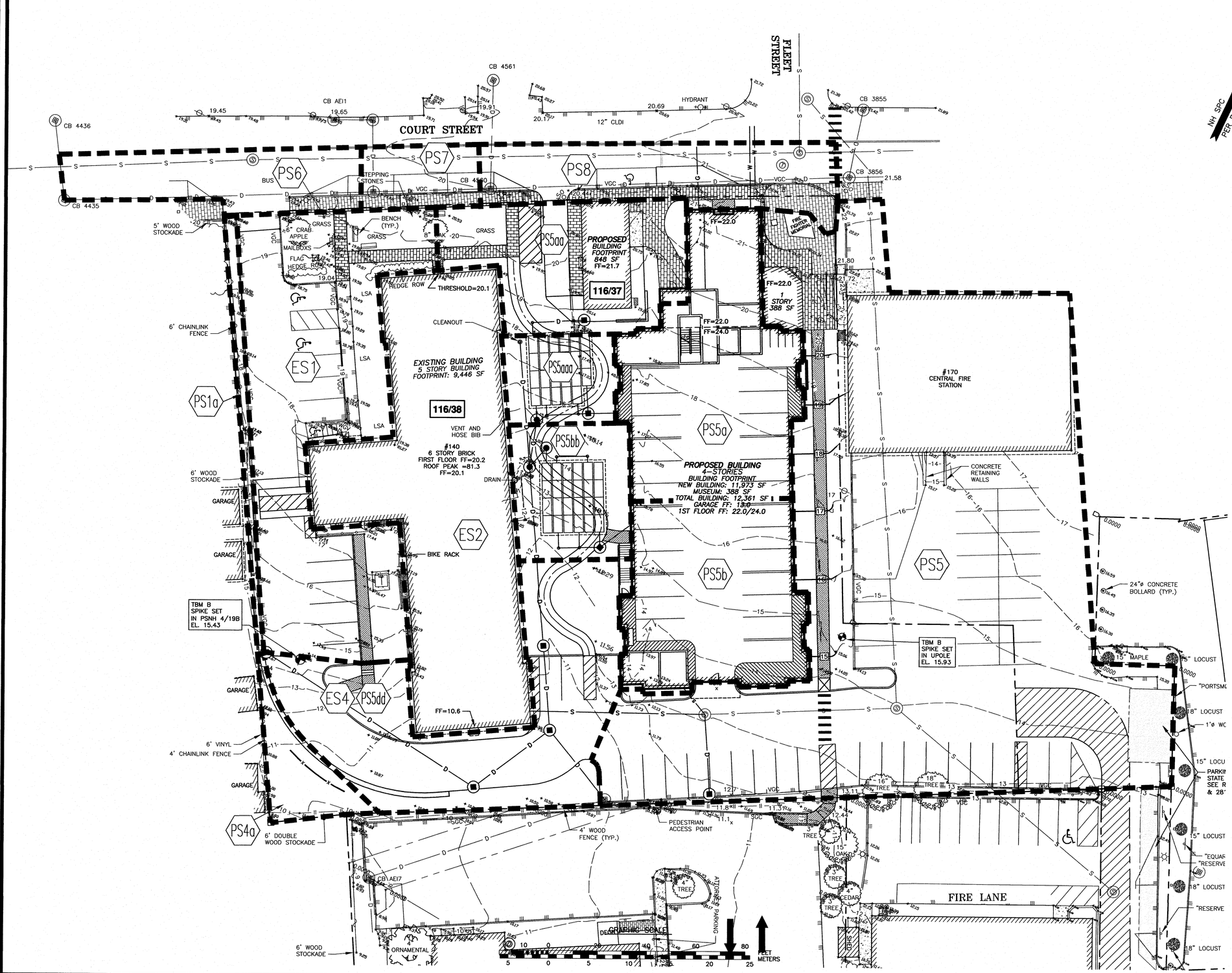
JOHN R CHAGNON No. 7551 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SCALE: 1" = 20'

PLAN OF EXISTING SUBCATCHMENTS

W1

2790



AMBIT ENGINEERING, INC.
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200 Griffin Road - Unit 3
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Tel (603) 430-9282
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PORTSMOUTH HOUSING AUTHORITY 140 COURT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
2	ISSUED FOR APPROVAL	6/18/18
1	ISSUED FOR REVIEW	4/25/18
0	ISSUED FOR COMMENT	2/20/18

REVISIONS

JOHN R. CHRISTON NO. 7891 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

SCALE: 1"=20' FEBRUARY 2018

DRAINAGE, GRADING AND EROSION CONTROL PLAN

W2

FB 321 PG19

2790

J:\JOBS2\JN2700's\JN 2790's\JN 2790\2017 Site Planning\Plans & Specs\Site\2790SITE3.dwg, W2