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

6 August 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 August 7 TAC Committee Meeting. The response is based on the July 31 email comments as well as comments from the July 31 TAC meeting. Comments shown below with responses in **bold text**:

1. Sight lines at the site driveway are limited due to the fence on the abutter's property. While it does not affect the sight lines to see oncoming vehicles on Court Street, it does limit the sight lines for oncoming pedestrians on the sidewalk. The applicant should work with the abutter to relocate or modify the fence to increase the visibility for pedestrians on the sidewalk and vehicles exiting the site. This existing situation will be exacerbated with the increase in traffic using this driveway to exit the site. **The applicant is willing to request this modification; and work with the abutter if they are agreeable. See Note 9 on Sheet C3.**
2. The proposed taxi/Uber parking space on Court Street is located beyond the stop line for the emergency signal for the fire station. A vehicle parked in the space would not be able to see the emergency signal when it is activated and could cause a conflict with emergency vehicles exiting or entering the fire station. I would recommend eliminating this proposed space unless the Fire Department is ok with it. **The proposed space has been eliminated – Sheet C3.**
3. The "Proposed UBER / Taxi Space" on Court Street should be eliminated. Public transit busses making a right turn from Fleet onto Court have to make a wide turn which could impact a vehicle in that parking spot. **The proposed space has been eliminated – Sheet C3.**
4. The emergency signal for the fire station is missing the required EMERGENCY SIGNAL sign. With the increase in traffic through this area due to the proposed project, the applicant should consider installing this sign to increase awareness of the purpose of the signal. **PHA will work with the Fire Department to locate the sign as requested. See Note 10 on Sheet C3.**
5. The fire station emergency signal that is currently located at the corner of Fleet Street and Court Street, should be relocated to the other side of Court Street, as the project

will be closing the entrance to the parking lot and there will now be space to properly locate the signal on the right hand side of the roadway. **PHA will work with the Fire Department to locate the signal as requested. See Note 10 on Sheet C3.**

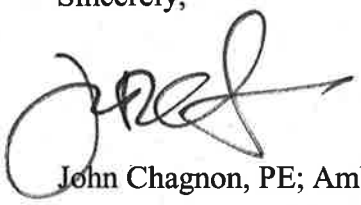
6. Project should be given correct street number as soon as possible. **The Portsmouth GIS Coordinator has issued 160 Court as the proposed building number. Plans have been updated.**
7. To reduce unintended use of the proposed driveway as an access to the Parrott Ave. Parking Lot, the parking lot entry via the driveway on the east side of the District Court building should be closed off. **As discussed at the July 31 TAC Meeting this issue should be dealt with by the PTS Committee.**
8. Sheet LA-3.0 (Note 14). Material to be changed from bark mulch to a noncombustible material. **The drawing has been updated as requested.**
9. Sheet 8.3. Smoking to be prohibited on all decks and balconies. **This is agreeable to the applicant; smoking will also be prohibit in the outside Community Spaces.**
10. There may be conflicts with the proposed drainage pipes. City to be notified of any conflicts. **The plans reflect this in Note 4 on Sheet C6.**
11. Brick Sidewalk detail, there are 4.5 Bricks to the square foot. **Detail H, Note F has been revised.**
12. Wearing course very thick in typical pipe trench detail. Recommend more binder type instead. **Detail O on Sheet D3 has been revised to 2 ½ inch binder; 1 ½ inch wearing.**
13. Is Removal of the trees along the proposed path necessary? It seems like it would be possible to realign the path to keep away from the trees, make the path narrower and/or consider changing the material or elevating the path to keep it clear of the roots. **Due to the conflicts listed above the sidewalk has been eliminated from the development proposal.**
14. Condition of catch basins, CB-B, CB-A, CB-A1 need to be evaluated to determine if they need to be replaced and/or if they can accommodate a 24" pipe. **Correct; those basins will need to be replaced with a larger diameter basin to accommodate pipe size increases.**
15. Cover over proposed 24" pipe appears to be inadequate. Engineer to verify. **The revised proposal is to install twin 12 inch pipes and increase catch basin sizes.**
16. Roadway restoration is required for installation of 24" pipe. Provide permanent trench patch detail. Width of patch to be determined by City. **The Off-site Improvements Plan C7 has been expanded to show street detail and this restoration area / note will be added.**
17. Stormwater connection permit required. **Applicant will submit – propose as a Condition of Approval.**
18. Sheet C2: Why are trees indicated to be removed on the adjacent property? Might need to replace. **Those trees will be impacted by the new building; losing light and space. Also, the trees are Ash trees which are susceptible to disease.**
19. Sheet C5: Sewer easement (20 feet wide) needs to be granted to the City for existing sewer in southeast corner of property. **The easement has been added to Sheet C5.**

20. Sheet C7: Shed indicated to be relocated. Ownership of shed? Where is shed to be relocated? **The shed will remain as the sidewalk has been eliminated from the development proposal.**
21. Sheet C7: Why are trees indicated to be removed? Sidewalk location/width or other adjustments might need to be made. Are trees to be replaced? **Due to the conflicts listed above the sidewalk has been eliminated from the development proposal.**
22. Summary of proposed drainage design comparing hydraulic condition of existing and proposed closed drainage system in Parrot Ave that was provided by Engineer in 7/27 email/letter needs to be included in drainage report. **This document will be added to the Drainage Analysis Report for the Planning Board submission.**
23. Landscaping: Consideration should be given to plant two larger trees along the front of the existing PHA building. Otherwise, I would consider flowering magnolia trees versus the kousa dogwood. The benches should also be replaced with a more appropriate decorative style bench and a small patio should be included at the base. **The accent tree at the entry could be revised to a smaller crown diameter Magnolia. Another Magnolia tree can be added near the two benches. The benches certainly could be upgraded; just adds to project cost.** Consideration for changing the location or width of the proposed walkway to Parrott Ave. in order to preserve more of the existing trees. **Due to the conflicts listed above the sidewalk has been eliminated from the development proposal.**

Additional Comments:

24. The entrance radius should be re-set at the sidewalk. **This is shown on Sheet C3.**
25. There should be a "Yield to Pedestrians" SIGN added at the entrance. **This is shown on Sheet C3.**
26. The Traffic Signal Controller may need to be relocated. **This is shown on Sheet C3.**
27. The brick pattern in Court Street should match the adjacent sidewalk, which is Herringbone. **This is noted in Note 11 on Sheet C3.**

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 8-6-18.doc

WORKFORCE HOUSING DEVELOPMENT

160 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:

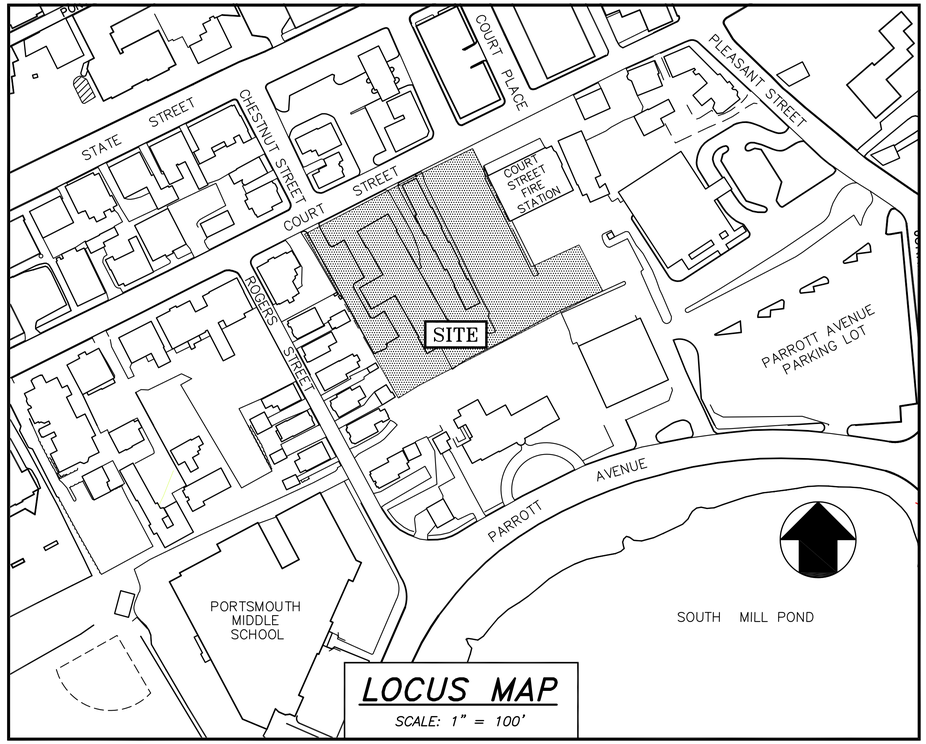
JOHN TURNER CONSULTING
19 DOVER STREET
DOVER, NH 03820
(603) 749-1841

ARCHAEOLOGICAL:

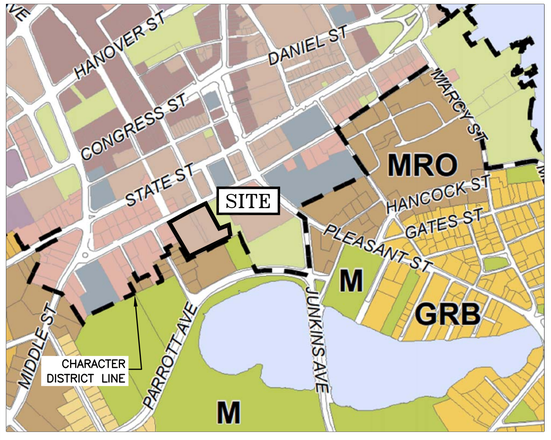
INDEPENDENT ARCHAEOLOGICAL
801 ISLINGTON STREET #31
PORTSMOUTH NH 03801
(603) 430-2970

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 _____

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

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

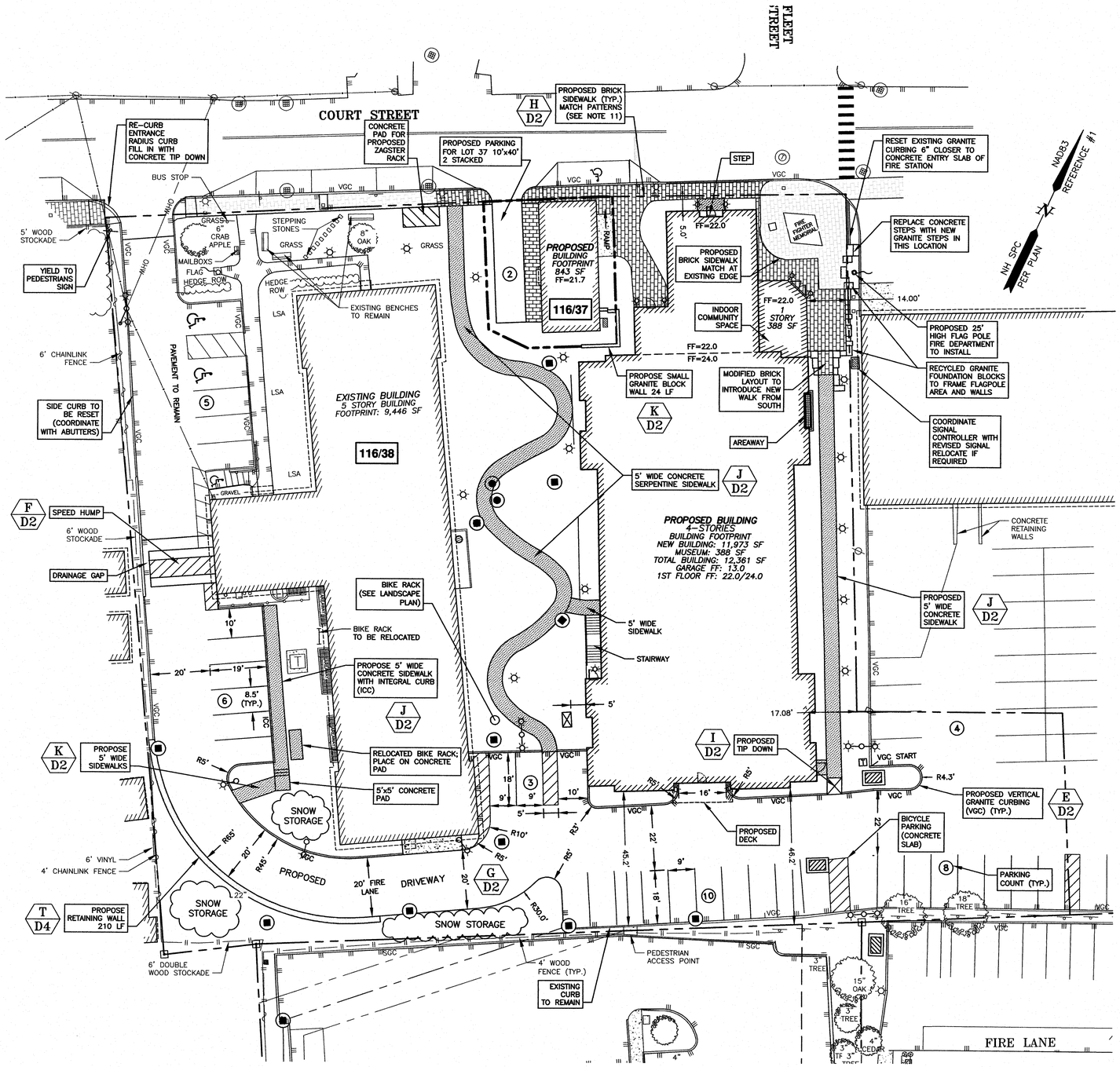
LEGEND:

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
WSO GSO	WSO GSO	SHUT OFFS (WATER/GAS)
	GV	GATE VALVE
	HYD	HYDRANT
CB	CB	CATCH BASIN
S	SMH	SEWER MANHOLE
D	DMH	DRAIN MANHOLE
T	TMH	TELEPHONE MANHOLE
14	14	PARKING SPACE COUNT
PM		PARKING METER
LSA		LANDSCAPED AREA
TBD	TBD	TO BE DETERMINED
CI	CI	CAST IRON PIPE
COP	COP	COPPER PIPE
DI	DI	DUCTILE IRON PIPE
PVC	PVC	POLYVINYL CHLORIDE PIPE
RCP	RCP	REINFORCED CONCRETE PIPE
AC	–	ASBESTOS CEMENT PIPE
VC	VC	VITRIFIED CLAY PIPE
EP	EP	EDGE OF PAVEMENT
EL.	EL.	ELEVATION
FF	FF	FINISHED FLOOR
INV	INV	INVERT
S =	S =	SLOPE FT/FT
TBM	TBM	TEMPORARY BENCH MARK
TYP	TYP	TYPICAL

SITE PERMIT PLANS
PORTSMOUTH HOUSING AUTHORITY
WORKFORCE HOUSING DEVELOPMENT
160 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: 6 AUGUST 2018



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):

		116/38 (140 COURT ST.)		116/37 (152 COURT ST.)	
	REQUIRED	EXISTING	BUILDING A	EXISTING	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

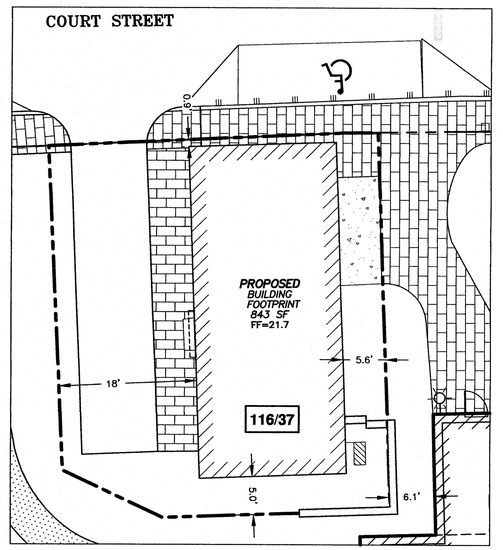
BUILDING FORM:

	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

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) 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.

9) PHA WILL REQUEST ABUTTING OWNERS OF TAX MAP 116 LOT 39 MODIFY EXISTING FENCE AT THE SITE ENTRANCE TO IMPROVE SIGHT LINES.

10) PHA WILL WORK WITH THE FIRE DEPARTMENT TO RELOCATE THE FIRE STATION EMERGENCY SIGNAL AND ASSOCIATED SIGNAGE.

11) COURT STREET BRICK PATTERN IS HERRINGBONE.

PORTSMOUTH HOUSING AUTHORITY 160 COURT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
5	NOTES 9, 10 & 11, ENTRANCE	8/6/18
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. 733 JOHN R. CHAGNON

SCALE: 1'=20' APRIL 2018

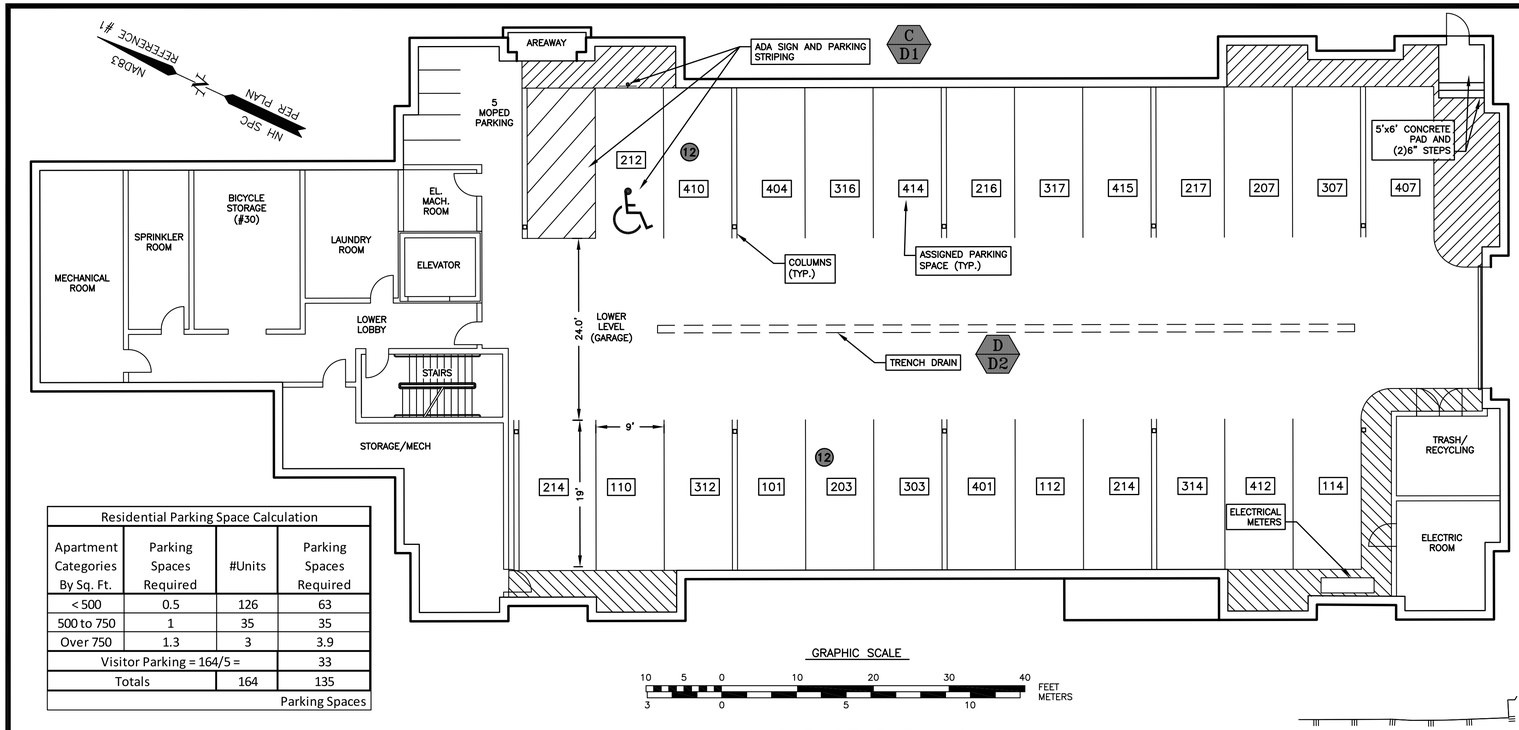
SITE LAYOUT PLAN

C3

FB 321 PG19

2790

J:\JOBS2\JN2700's\JN 2790's\JN 2790\2017 Site Planning\Plans & Specs\Site\2790SITE3.dwg, SITE_C3



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	
	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		
	411	492	1				1	
	412	785		1			1	
	413	593	1				1	
	414	653		1			1	
	415	629		1			1	
	TOTALS:		48	16	4	26	38	58,975
			64					

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Tel (603) 430-9282
Fax (603) 436-2315

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 160 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

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.

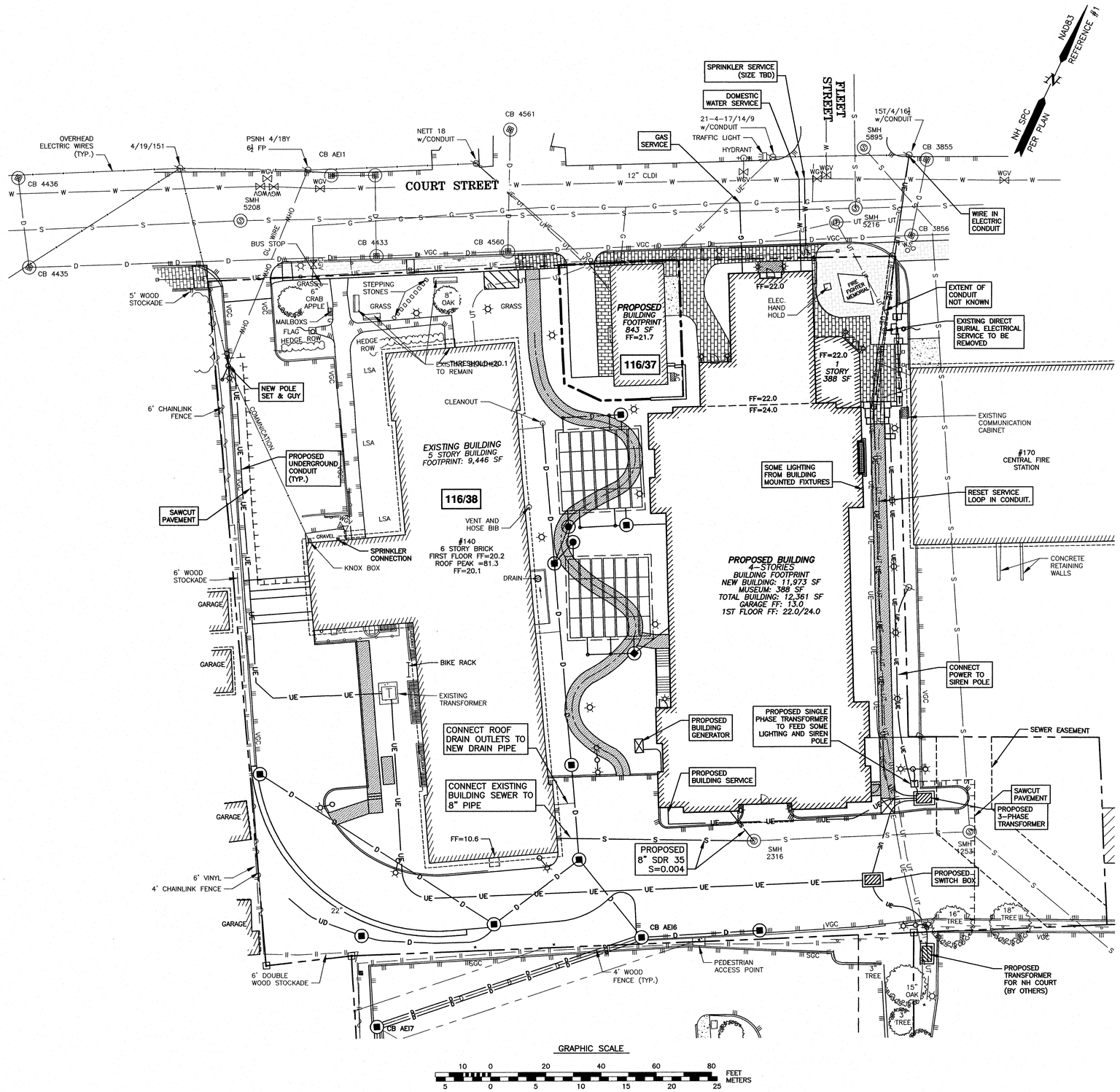
25) SITE LIGHTING SPECIFICATIONS, CONDUIT LAYOUT AND CIRCUITRY FOR PROPOSED SITE LIGHTING AND SIGN ILLUMINATION SHALL BE PROVIDED BY THE PROJECT ELECTRICAL ENGINEER IN COORDINATION WITH THE SITE CIVIL ENGINEER.

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 160 COURT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
5	SEWER EASEMENT, DRAIN NOTE	8/6/18
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

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

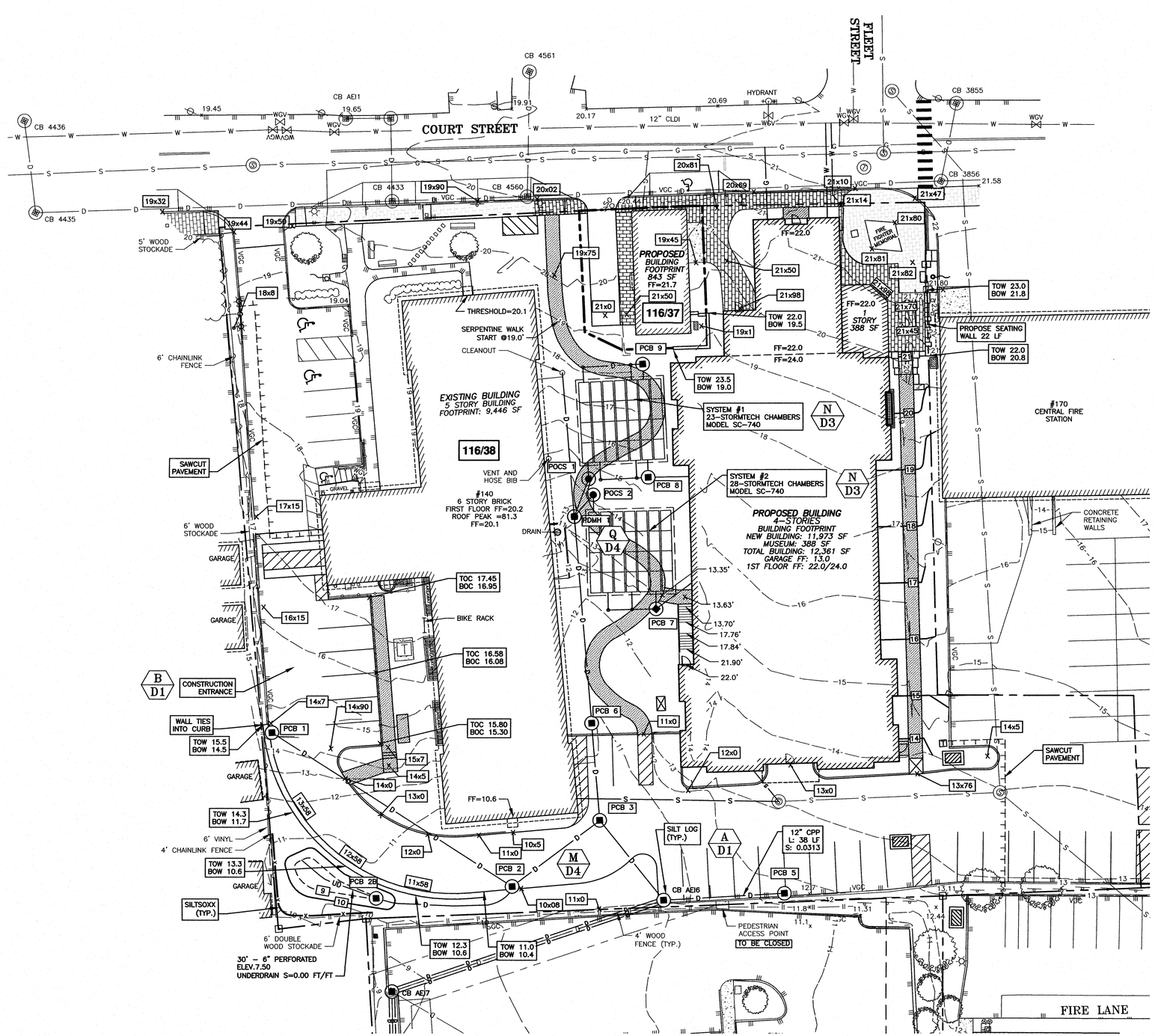
SCALE: 1'=20' FEBRUARY 2018

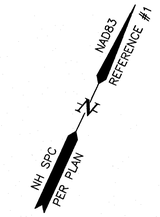
UTILITY PLAN

C5

FB 321 PG19

2790





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 (6" UD)
OUT 7.39

PCB 2B – PCB 2
6" UNDERDRAIN
L = 43', 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)(N)
INV. IN 6.87 (NEW)(E)
INV. OUT 6.77

PCB 3 – CB AE16
12" HDPE (SMOOTH)
L = 31', S = 0.0039 ft./ft.

PCB 5
RIM EL. 12.39
INV. OUT 8.06

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 11.38
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.

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

4) CITY SHALL BE NOTIFIED IF THERE ARE ANY CONFLICTS WITH PROPOSED DRAINAGE PIPES UNCOVERED DURING CONSTRUCTION. REVIEW AND APPROVAL OF REMEDIES, BY THE CITY, REQUIRED.

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

NO.	DESCRIPTION	DATE
4	NOTE 4, DRAINAGE	8/6/18
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

SCALE: 1'=20' FEBRUARY 2018

DRAINAGE, GRADING AND EROSION CONTROL PLAN

C6

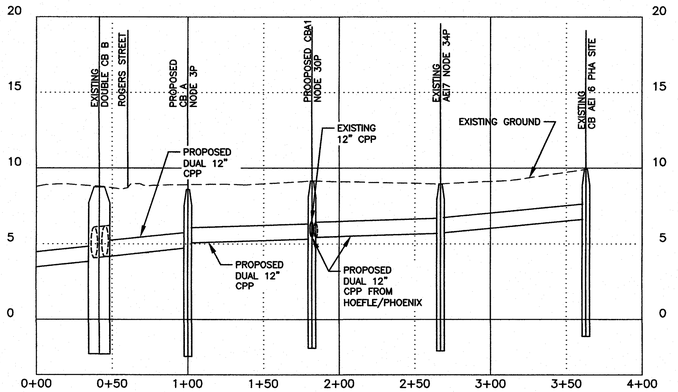
FB 321 PG19

2790

J:\V0852\VN2700's\VN 2790's\VN 2790\2017 Site Planning\Plans & Specs\Site\27905ITE3.dwg, C6 GRADE

DRAIN STRUCTURE TABLE

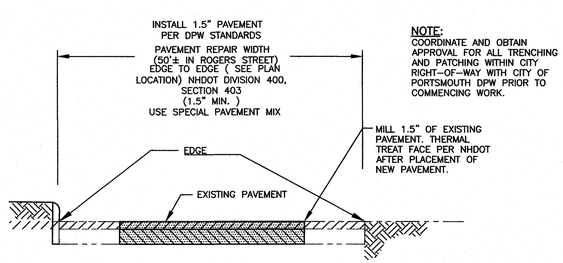
STRUCTURE	RIM ELEV.	INV. ELEV. IN / INV. ELEV. OUT	PIPE SIZE & TYPE
CB B	8.28	(2) 4.73 4.58	(2) 24" RCP (N) 2-12" CPP (E)
		(2) 4.67	(2) 24" RCP (S)
CB A	7.91	5.31	(2) 12" CPP (CB A1)
		(2) 5.21	24" CPP (CB B)
CB A1	8.49	5.60 5.59	12" CPP (CB AIE7) 12" CPP (CB A2)
		5.52	(2) 12" CPP (CB A)
CB A2	8.44	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)
CB AEI6	10.77	6.87	(2) 12" CPP (NW)
		6.75± (SILTED)	(2)12" CPP (AEI7)
CB AEI7	8.68	5.88 6.18	(2) 12" CPP (AEI6) 8" CPP (NE)
		5.83	(2) 12" CPP (S)



PHA SITE TO ROGERS STREET
STORM DRAIN PROFILE

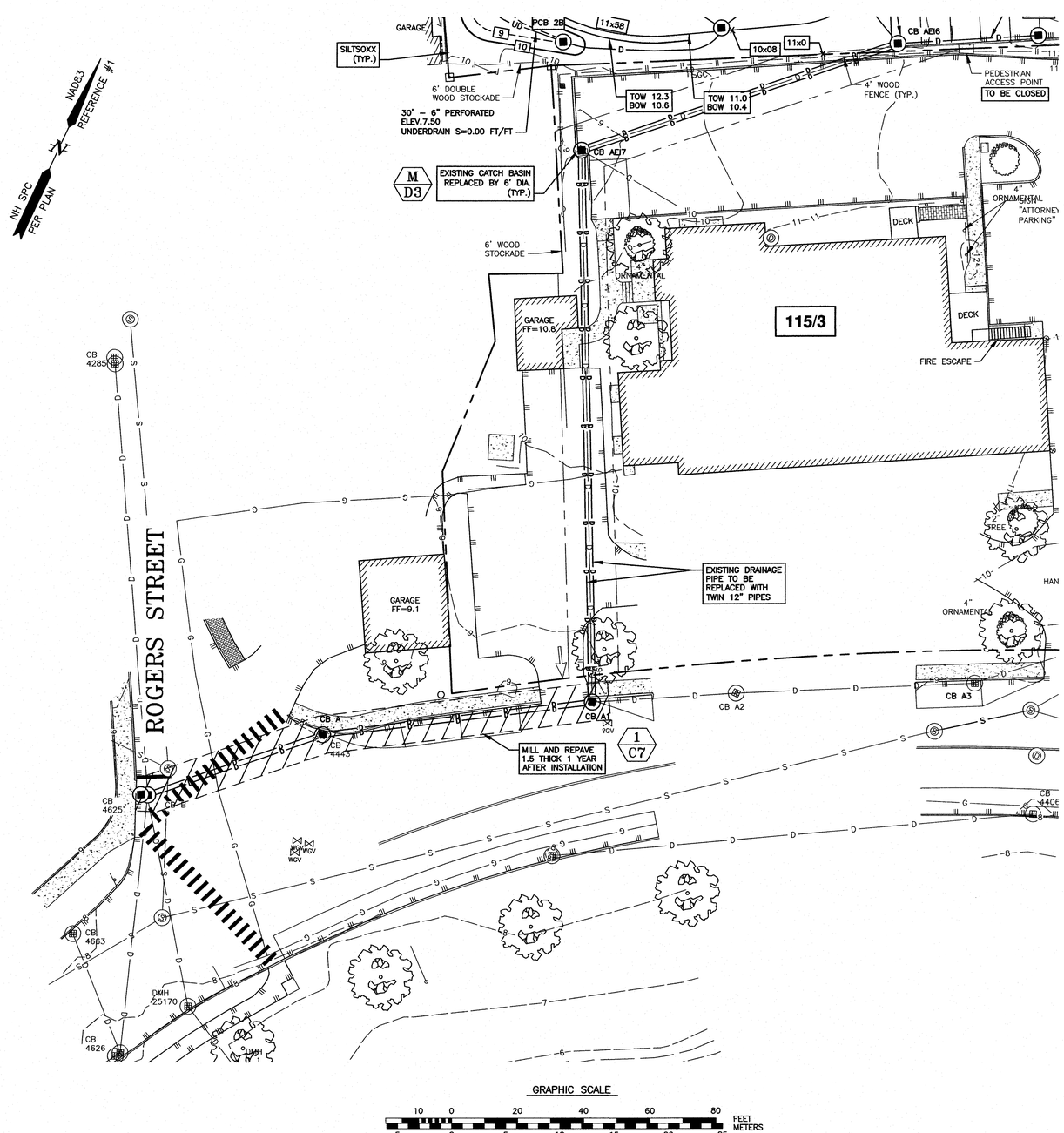
GRAPHIC SCALE

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



NOTE:
COORDINATE AND OBTAIN APPROVAL FOR ALL TRENCHING AND PATCHING WITHIN CITY RIGHT-OF-WAY WITH CITY OF PORTSMOUTH DPW PRIOR TO COMMENCING WORK.

1 / C7 PAVEMENT MILLING AND OVERLAY
NTS



GRAPHIC SCALE

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

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

NO.	DESCRIPTION	DATE
2	DRAIN PATH, REMOVED SIDEWALK	8/6/18
1	ISSUED FOR APPROVAL	7/17/18
0	ISSUED FOR COMMENT	7/12/18

REVISIONS

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

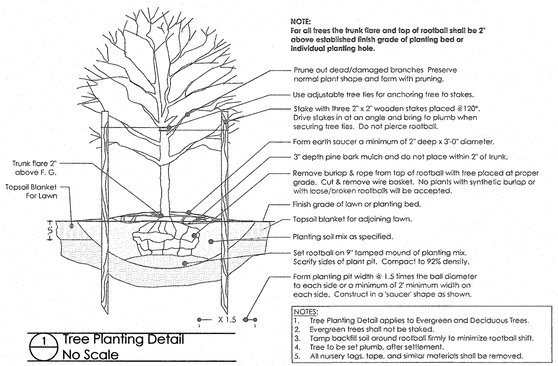
SCALE: 1' = 50' / 20' JULY 2018

OFF-SITE IMPROVEMENTS PLAN C7

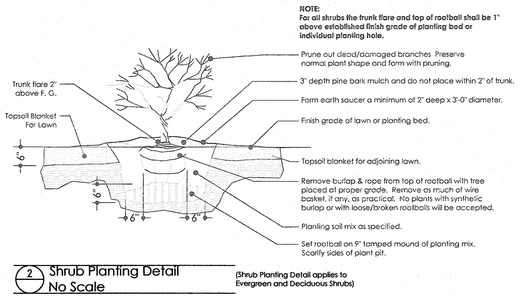
FB 321 PG19

2790

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

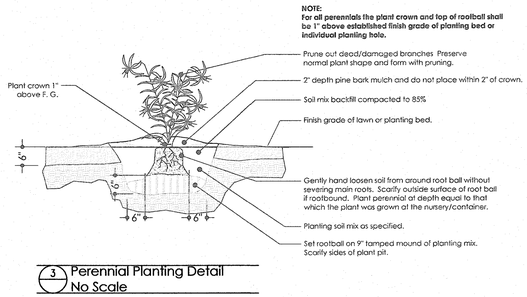


1 Tree Planting Detail
No Scale

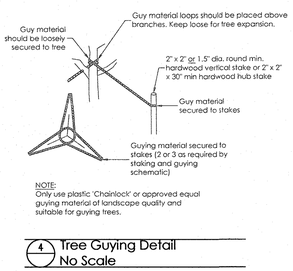


2 Shrub Planting Detail
No Scale

(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
Portsmouth, New Hampshire

REV: 7/17/18

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
MTL4	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 striped 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 Bells	Heuchera 'Bronze Wave'	4			1 yr. potted	1 gal.	18", S/PSh, Sep/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 Cransbill	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 NON COMBUSTABLE 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

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.

CONSTRUCT OFF SITE DRAINAGE IMPROVEMENTS.

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.

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.

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

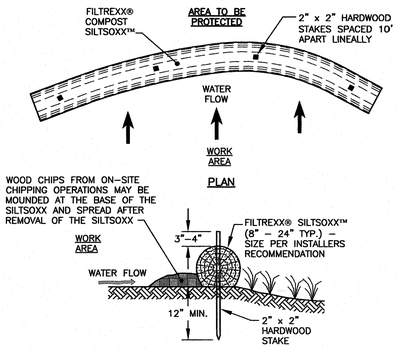
SILT FENCING AND SILTSOXX SHALL BE REMOVED ONCE VEGETATION IS ESTABLISHED, AND DISTURBED AREAS RESULTING FROM SILT FENCE AND SILTSOXX REMOVAL SHALL BE PERMANENTLY SEEDED.

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.

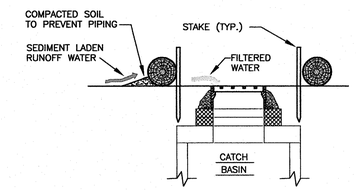
ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.

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.



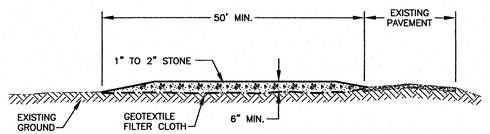
NOTES:
1. ALL MATERIAL TO MEET FILTREXX SPECIFICATIONS.
2. FILLTREXX SYSTEM SHALL BE INSTALLED BY A CERTIFIED FILTREXX INSTALLER.
3. THE CONTRACTOR SHALL MAINTAIN THE COMPOST FILTRATION SYSTEM IN A FUNCTIONAL CONDITION AT ALL TIMES. IT WILL BE ROUTINELY INSPECTED AND REPAIRED WHEN REQUIRED.
4. SILTSOXX 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.

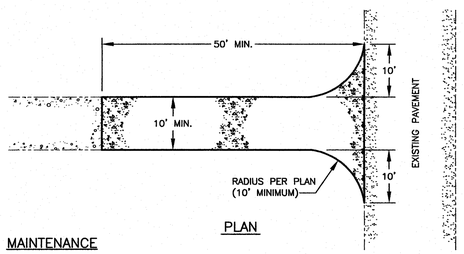
A / C6 FILTREXX® SILTSOXX™ FILTRATION SYSTEM
(AS NEEDED) NTS



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





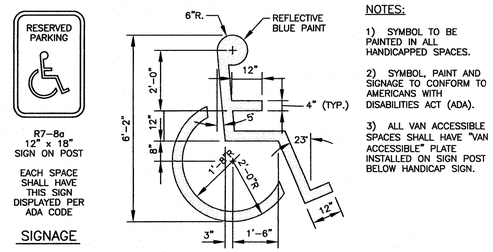
MAINTENANCE

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.

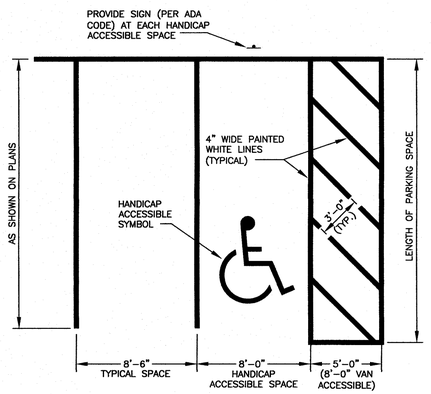
CONSTRUCTION SPECIFICATIONS

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

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.

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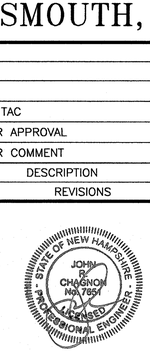
3) CONTRACTOR SHALL INSTALL AND MAINTAIN EROSION CONTROL MEASURES IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION. (NHDES DECEMBER 2008).

PORTSMOUTH HOUSING AUTHORITY 160 COURT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
3	SEQUENCE	8/6/18
2	ISSUED TO TAC	6/18/18
1	ISSUED FOR APPROVAL	4/25/18
0	ISSUED FOR COMMENT	2/20/18

REVISIONS

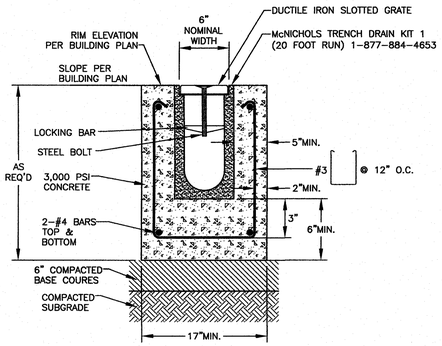


SCALE: AS SHOWN FEBRUARY 2018

EROSION PROTECTION NOTES AND DETAILS — D1

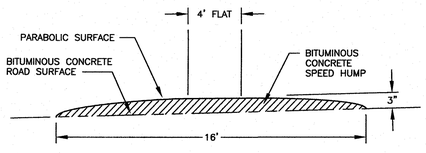
FB 321 PG 19

2790



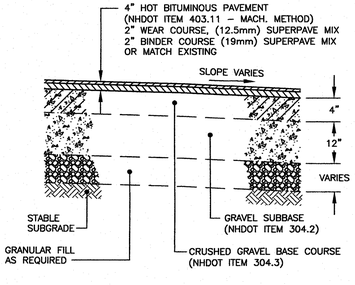
D C4 TRENCH DRAIN DETAIL
NTS

– – RESERVED
NTS



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

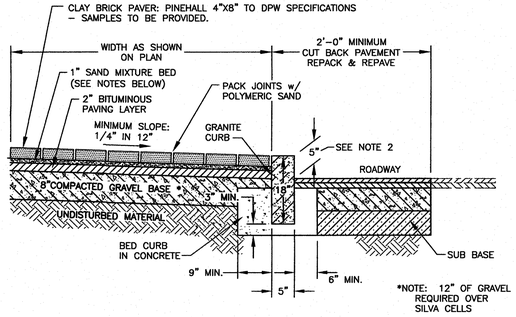
F C3 SPEED HUMP DETAIL
NOTE: STRIPE PER MUTCD STANDARDS
NTS



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.

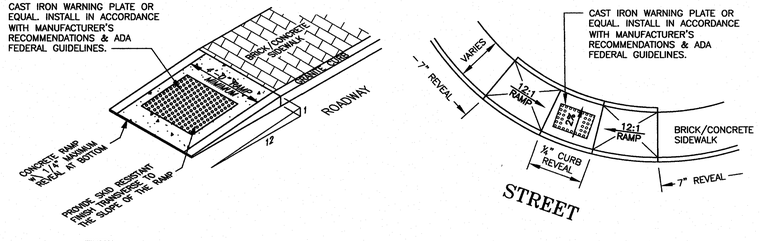
F) THE CONTRACTOR SHALL LAY THE BRICKS SO THAT APPROXIMATELY 4.5 BRICKS SHALL COVER ONE SQUARE FOOT.

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

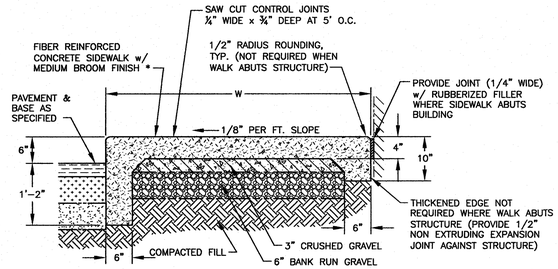
H) IN AREAS WHERE THE FRONT OF THE BRICK SIDEWALK IS NOT ADJACENT TO GRANITE CURBING, THE CONTRACTOR SHALL INSTALL EDGING TO HOLD THE BRICKS IN PLACE. SUCH EDGING SHALL BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS.

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

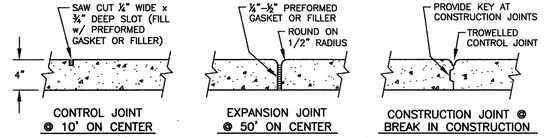


I C3 TYPICAL SIDEWALK TIP DOWNS
NTS

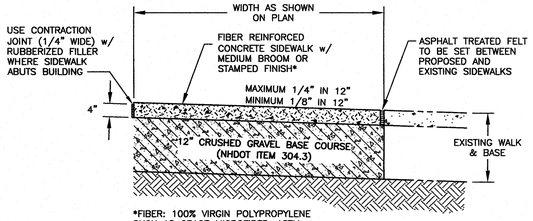


*FIBER: 100% VIRGIN POLYPROPYLENE SUCH AS GRACE MICROFIBER, ASTM C1116, TYPE 111, PAR.4.1.3 OR EQUAL. APPLIED @ 1 LB. PER C.Y.

CROSS SECTION

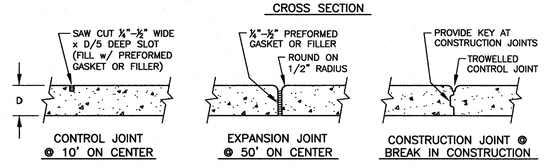


J C3 CONCRETE WALK w/ CONCRETE CURB
NTS



*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



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
Fax (603) 436-2315

NOTES:

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PORTSMOUTH HOUSING AUTHORITY 160 COURT STREET PORTSMOUTH, N.H.

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REVISIONS

SCALE: AS SHOWN FEBRUARY 2018

DETAILS D2

FB 321 PG 19

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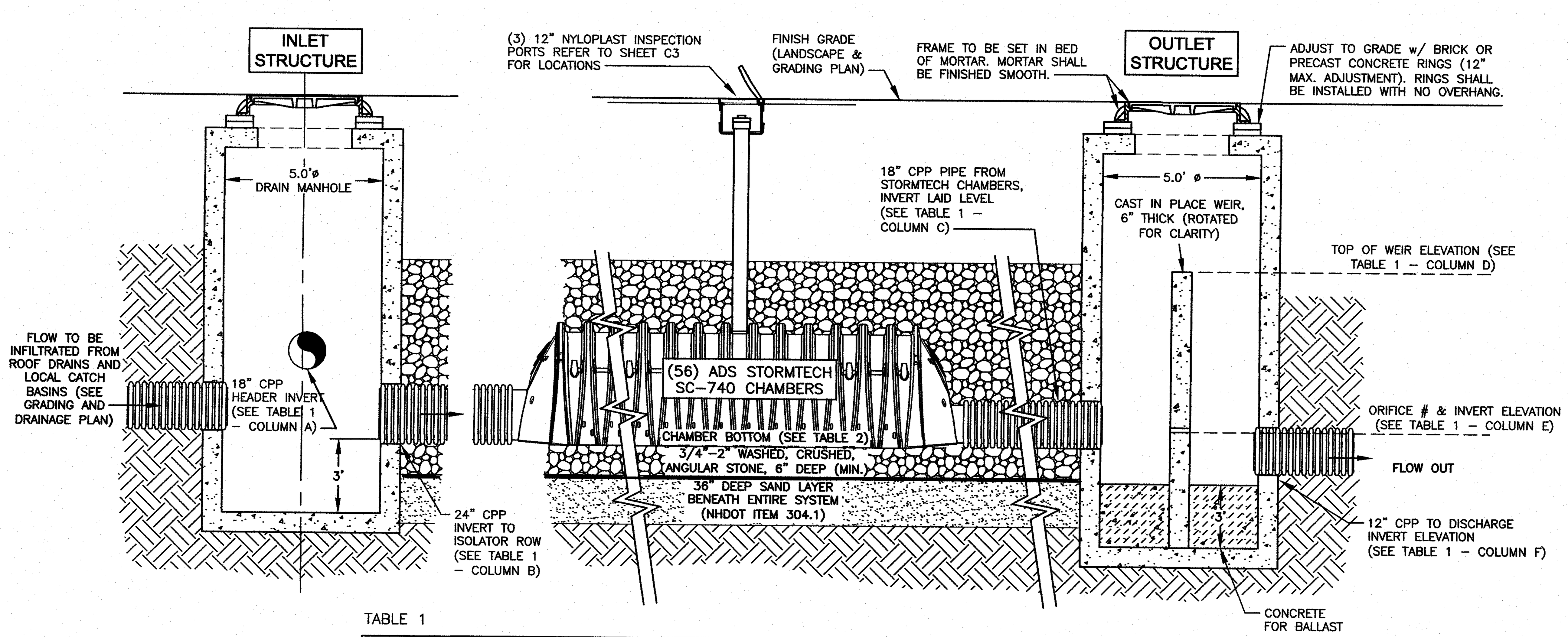
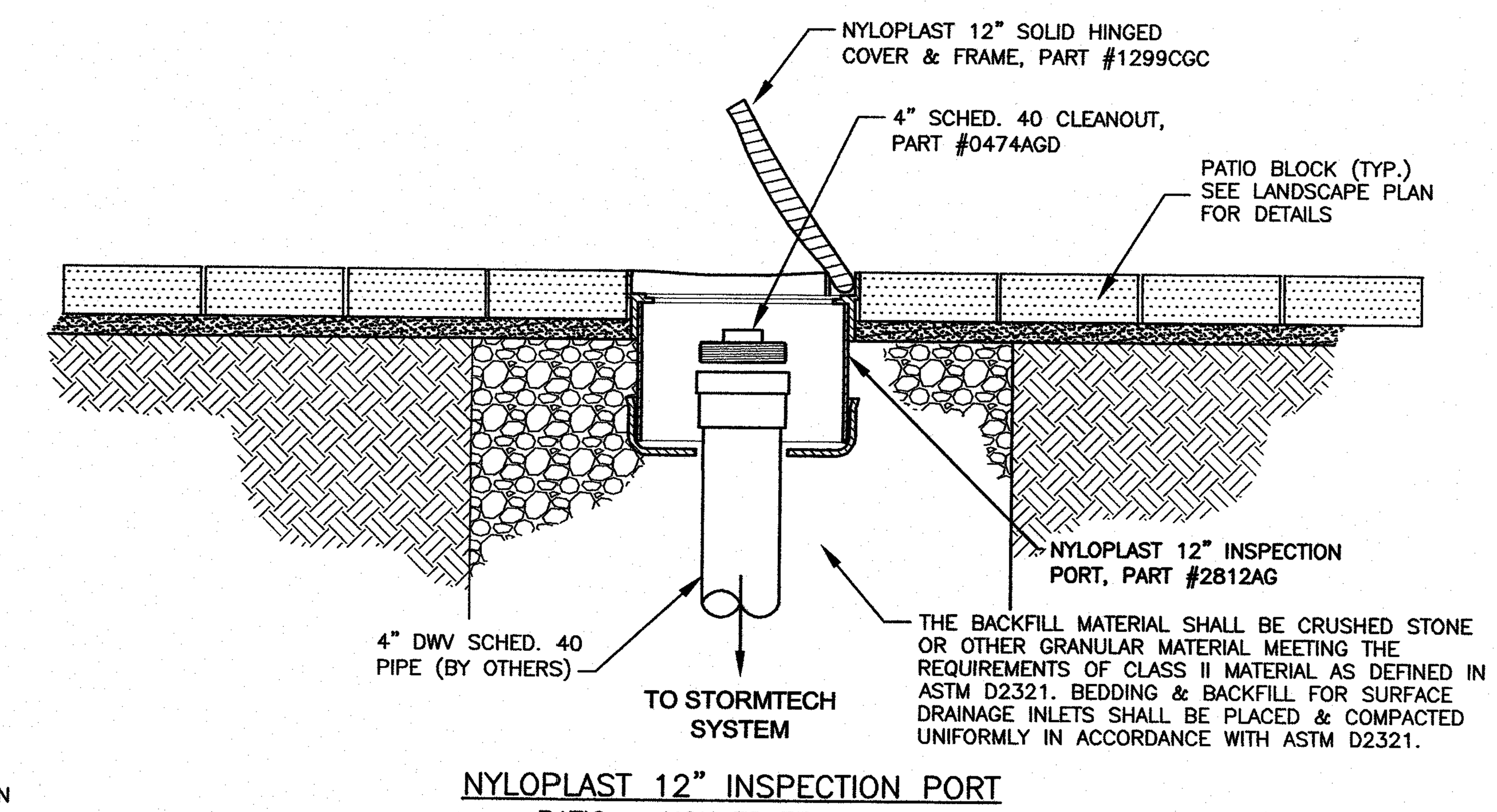


TABLE 1

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

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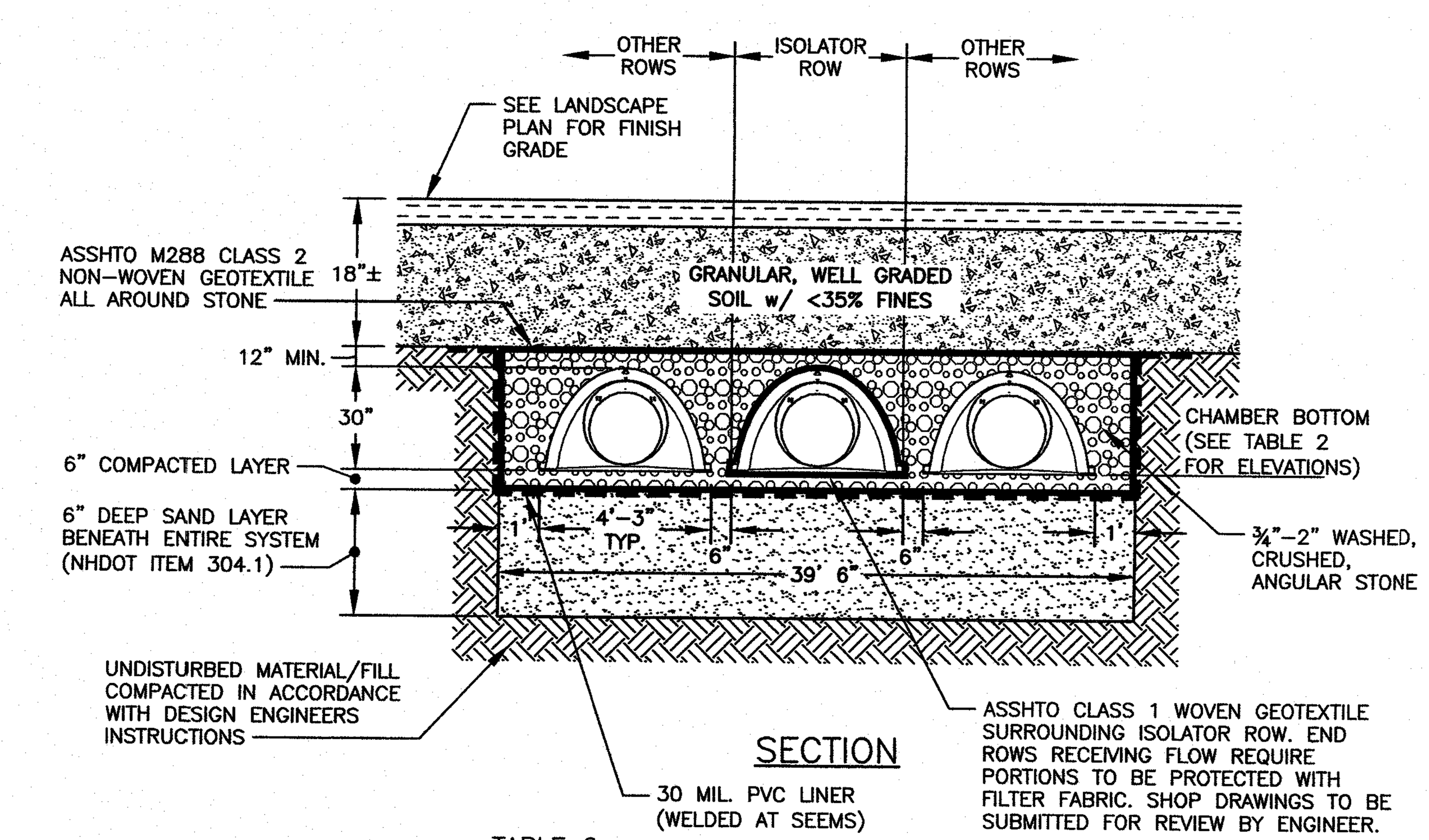


SECTION

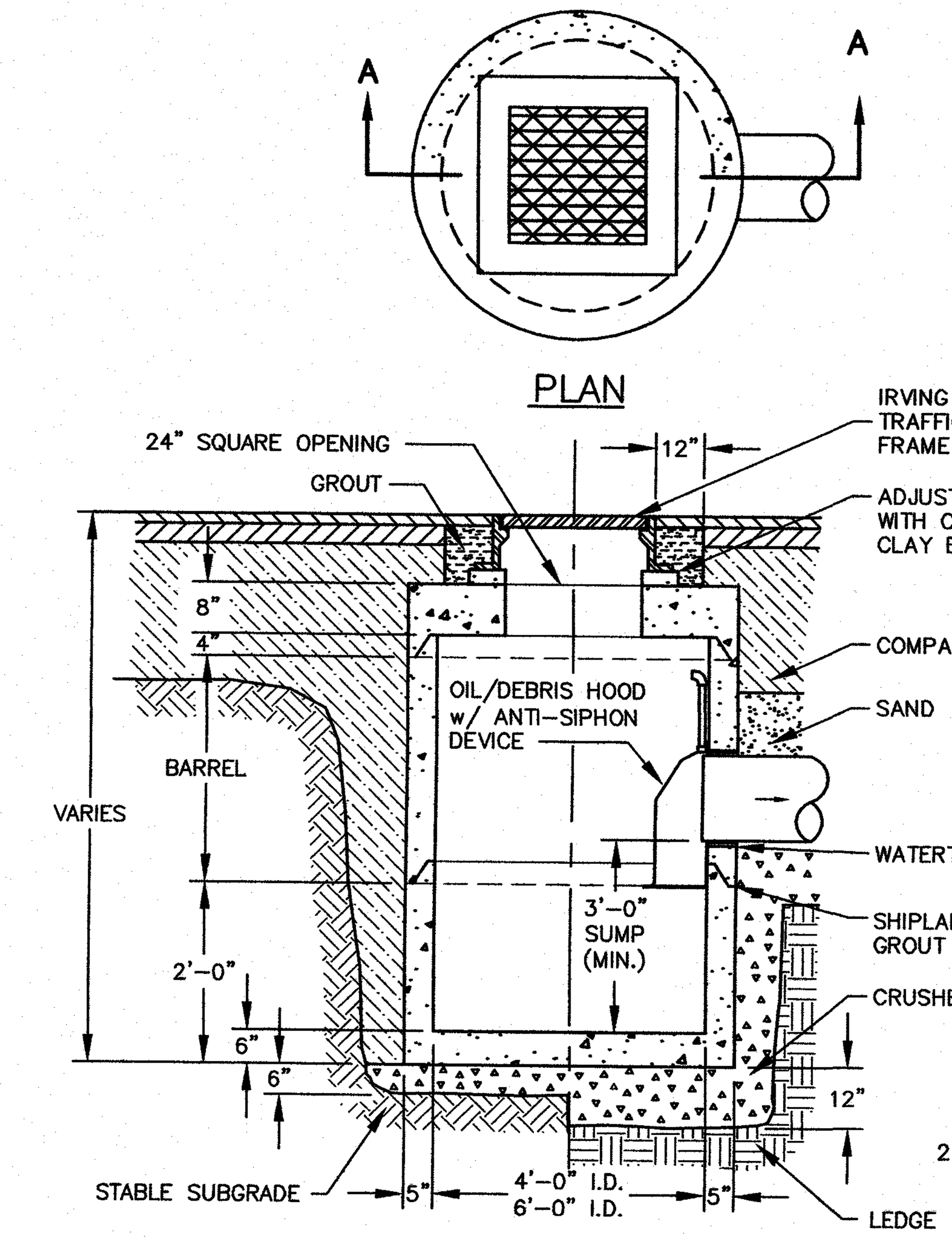
TABLE 2

SYSTEM #	CHAMBER BOTTOM
1	11.00
2	7.00

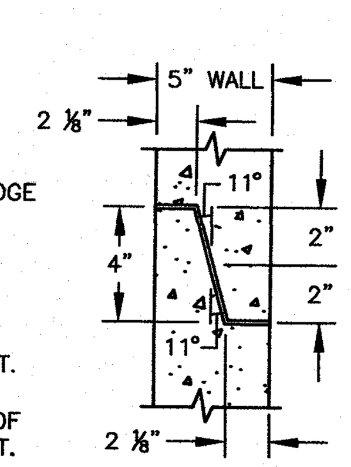
N/C6 STORMTECH SC-740 STORMWATER CHAMBER SYSTEM

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



SECTION A – A

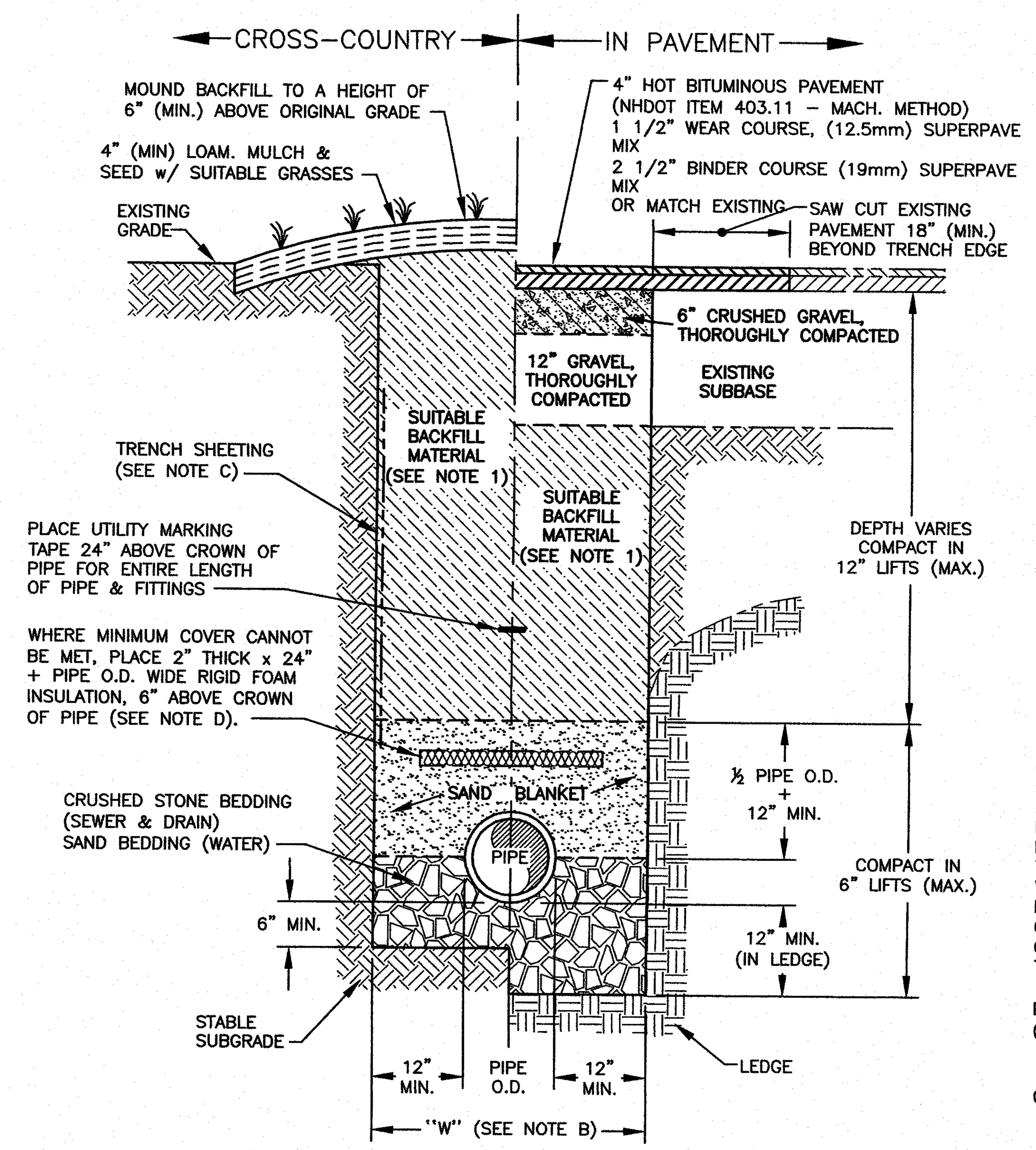


DETAIL OF SHIPLAP JOINT

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.
6) CATCH BASINS RECEIVING TWIN 12" CULVERTS SHALL BE REPLACED WITH 6' DIA. BASINS

M/C5 CATCH BASIN w/ OIL-DEBRIS HOOD

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.

O/C5 TYPICAL PIPE TRENCH

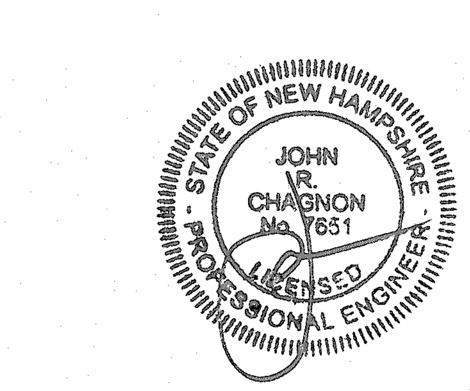
NTS

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

PORTSMOUTH HOUSING AUTHORITY 160 COURT STREET PORTSMOUTH, N.H.

NO.	DESCRIPTION	DATE
4	DETAIL D	8/6/18
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



SCALE: AS SHOWN

FEBRUARY 2018

DETAILS

D3

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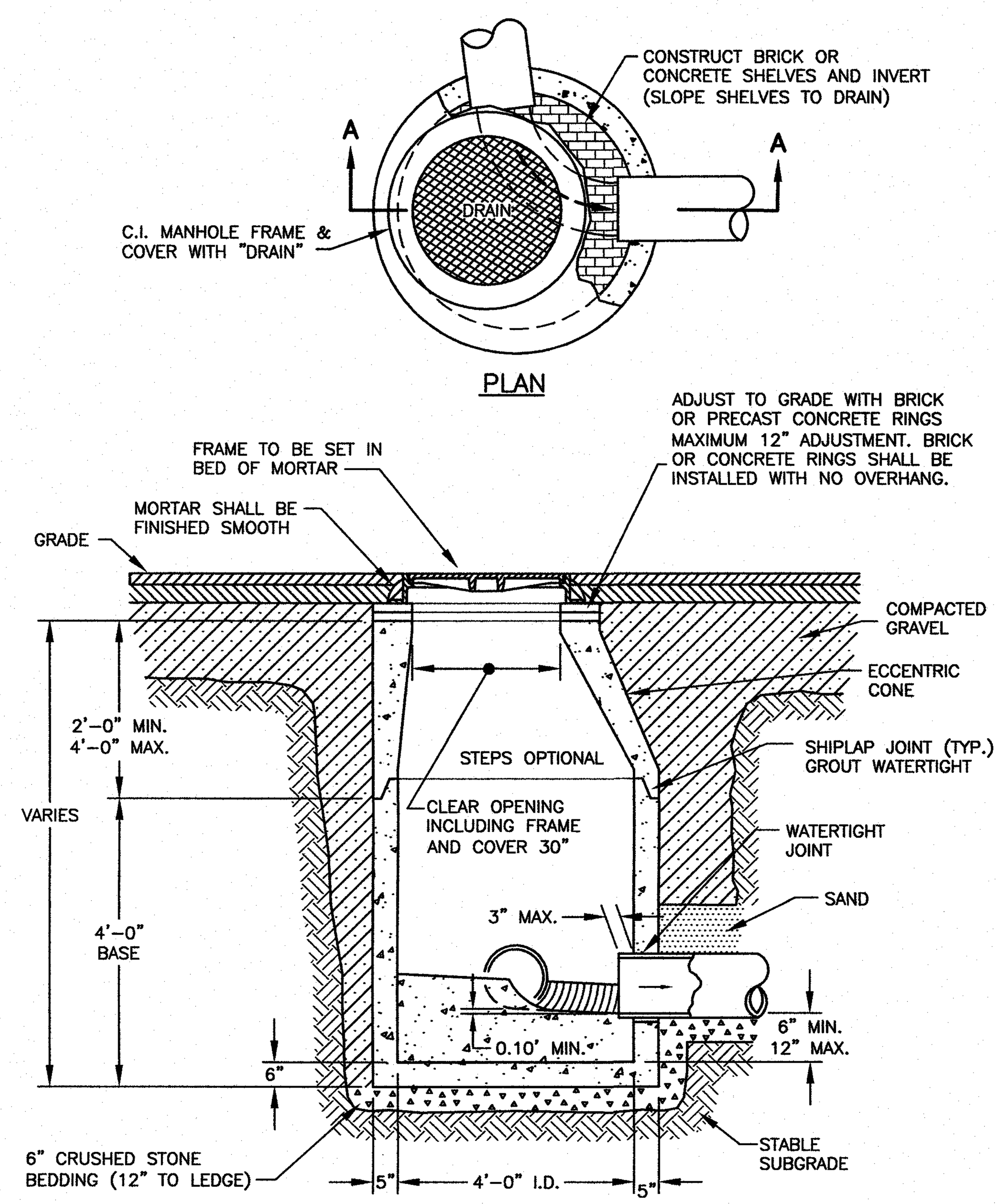


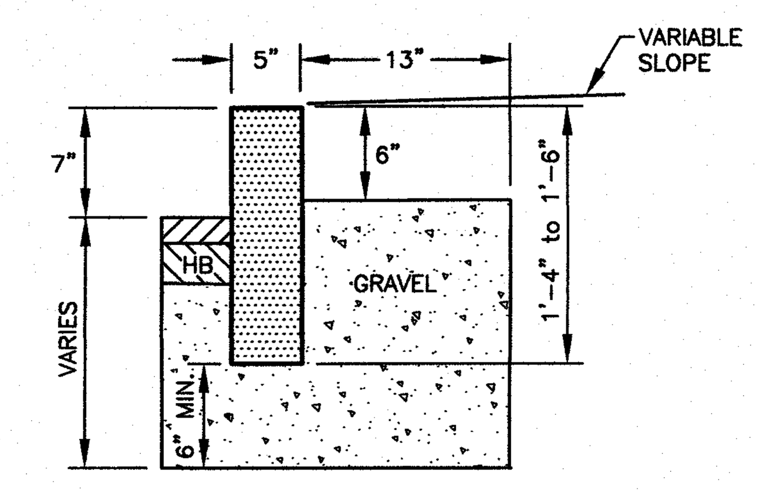
NOTES:
1. CONCRETE SHALL BE 4,000 P.S.I. AFTER 28 DAYS.
2. CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER LINEAR FT. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
3. THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO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

Q / C5 — DRAIN MANHOLE DETAIL
NTS

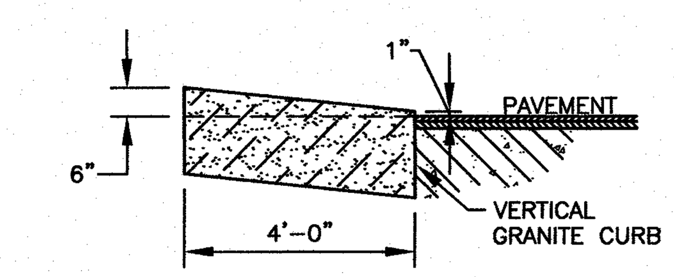
MIN. LENGTH OF CURB STONES 3FT.
MAX. LENGTH OF CURB STONES 10FT.
MAX. LENGTH OF STRAIGHT CURB STONES LAID ON CURVES SEE CHART

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'

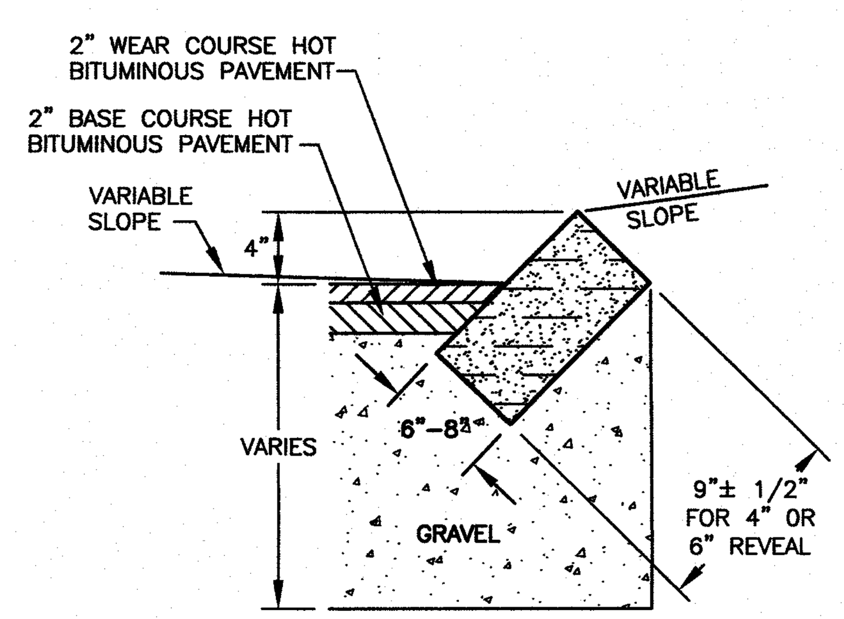


VERTICAL GRANITE CURB



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'

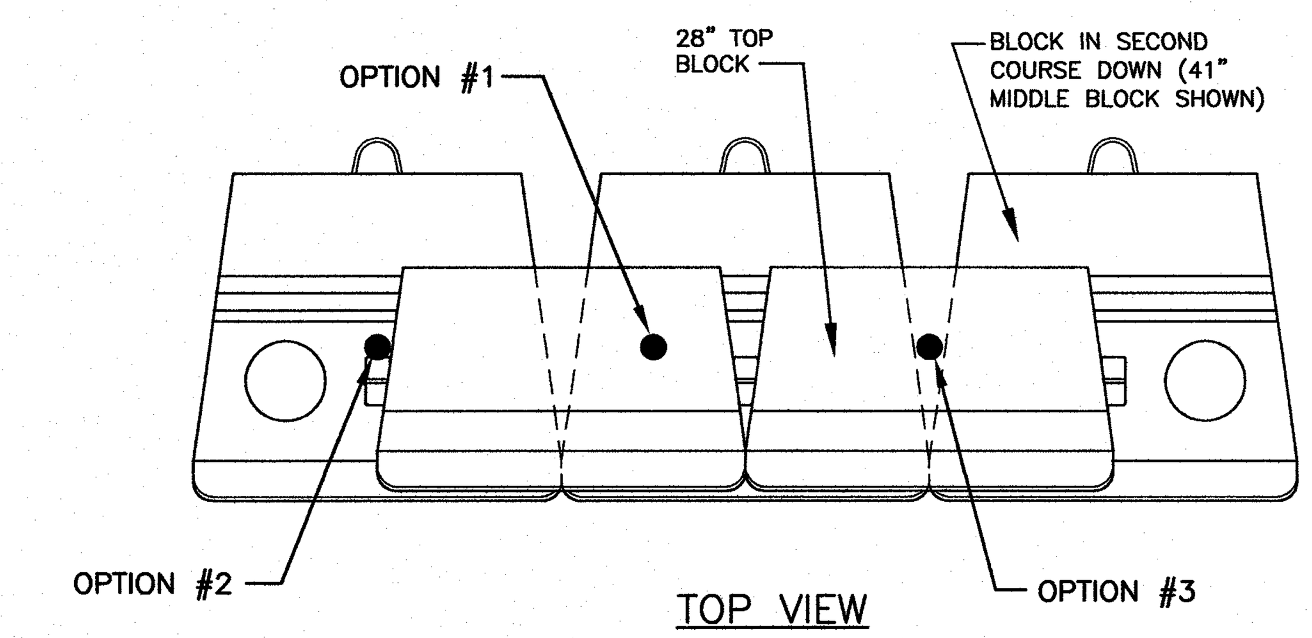
SLOPE GRANITE CURB

– / C3 — GRANITE CURBING DETAILS
NTS

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

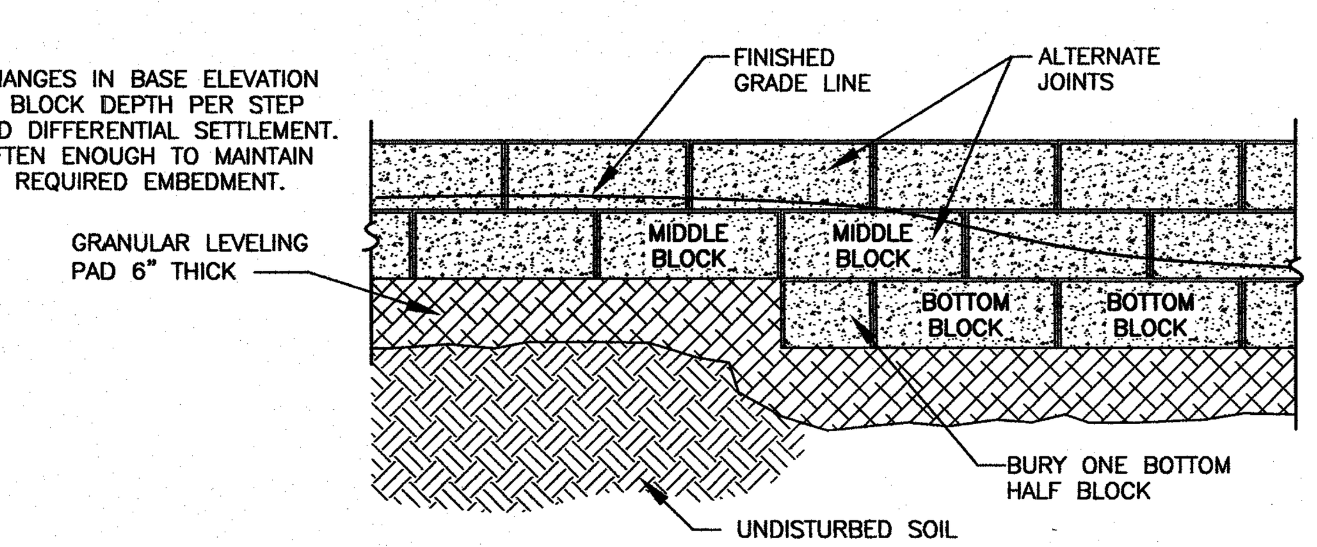
CONNECTION OPTION #2
GROUT POSTS IN V-SHAPED GAP BETWEEN 28" TOP BLOCKS
•SPACING IN MULTIPLES OF 46 1/8" INCREMENTS
•MASS OF 2 ADJACENT BLOCKS AVAILABLE TO RESIST OVERTURNING FORCES

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

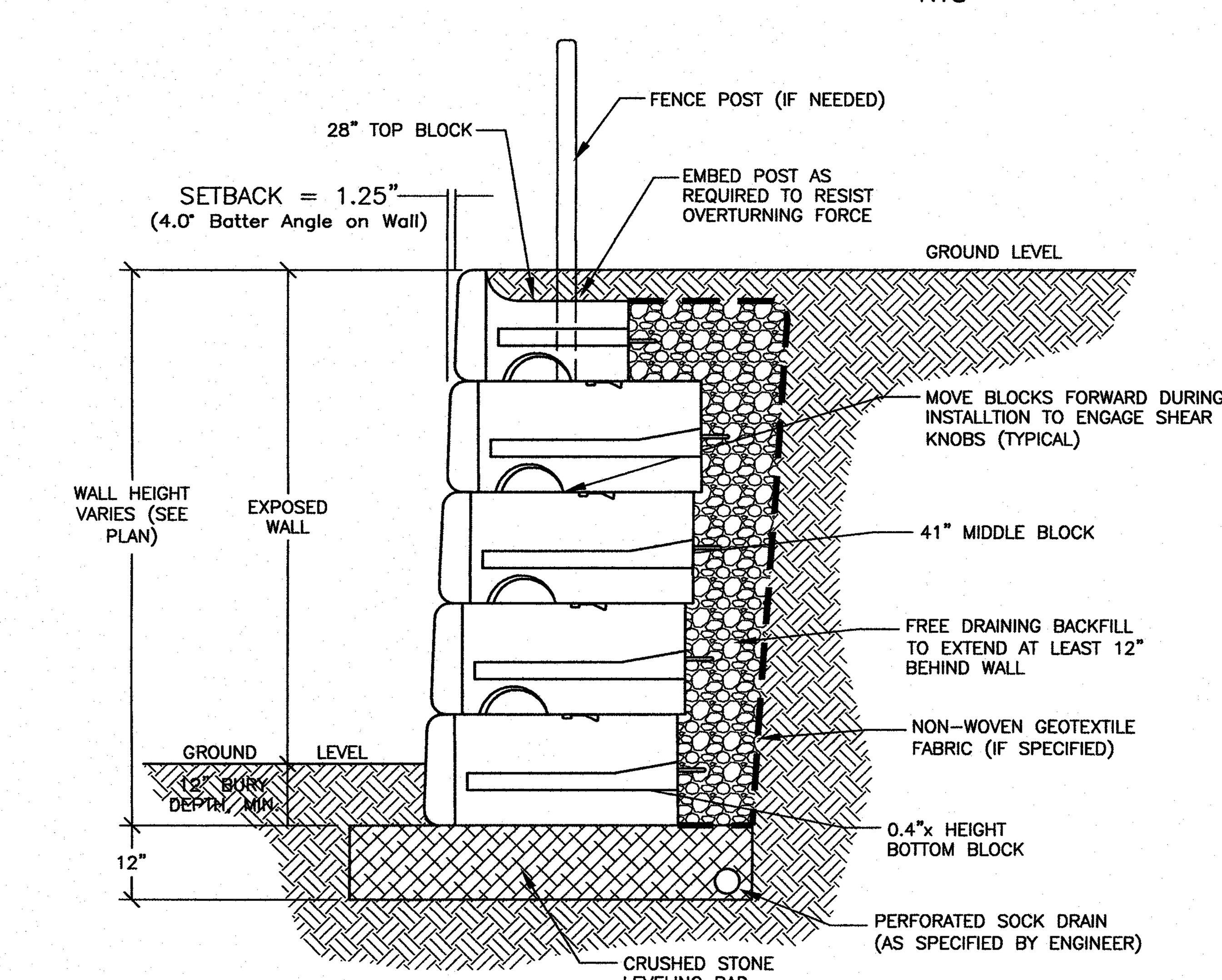


TYPICAL FENCE INSTALLATION ON MODULAR BLOCK WALL
NO SCALE

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



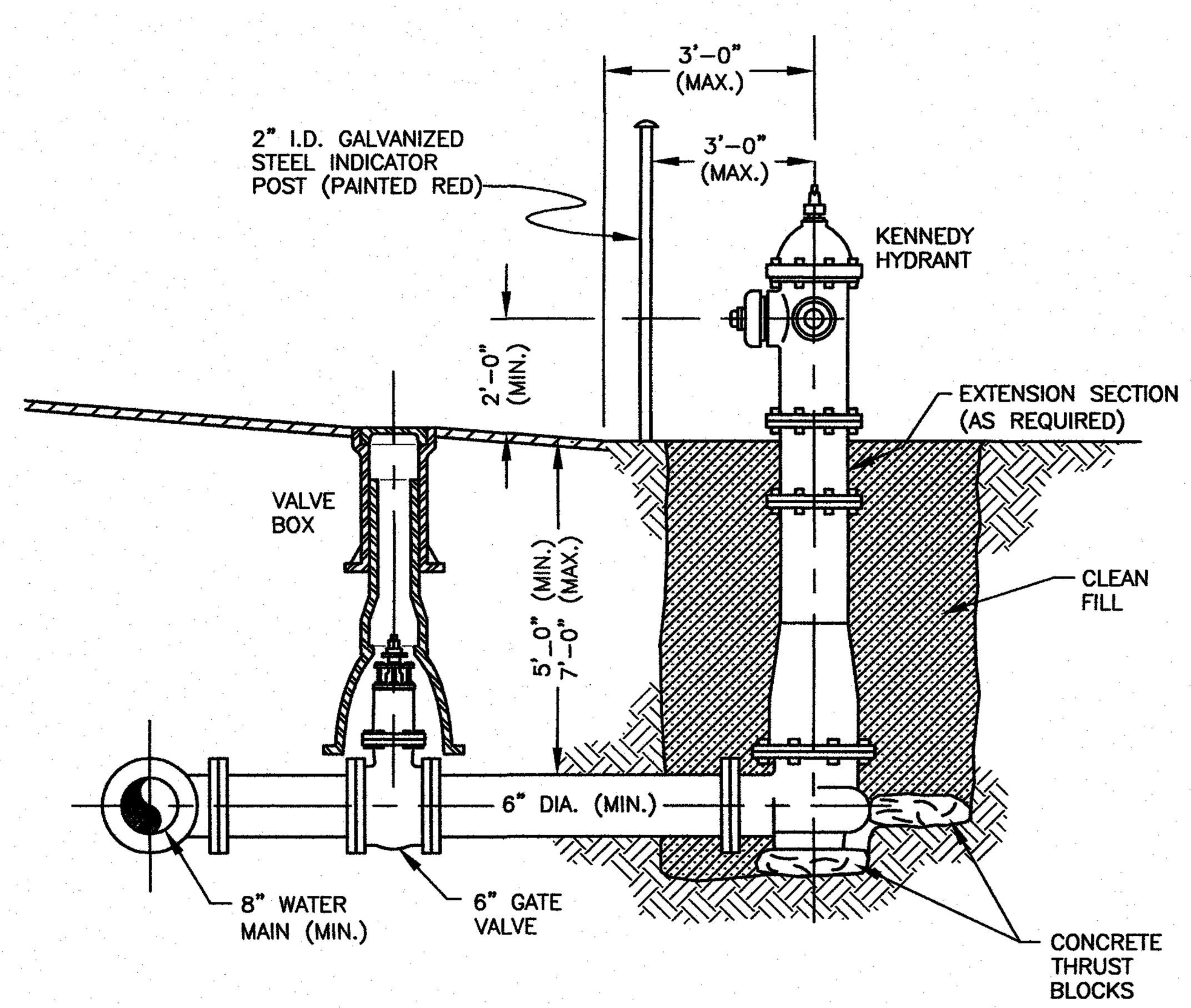
STEPPING BASE DETAIL
NTS



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.



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.

S / C4 — FIRE HYDRANT INSTALLATION DETAIL
NTS

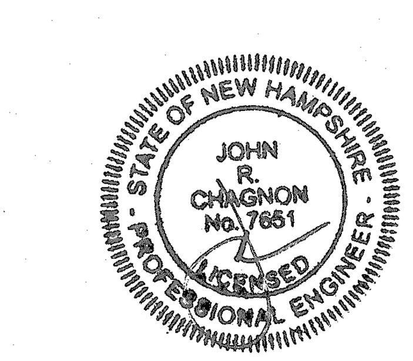
AMBIT ENGINEERING, INC.
Civil Engineers & Land Surveyors
200 Griffin Road – Unit 3
Portsmouth, N.H. 03801-7114
Tel (603) 430-9282
Fax (603) 436-2315

NOTES:
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 160 COURT STREET PORTSMOUTH, N.H.

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

REVISIONS



SCALE: AS SHOWN
FEBRUARY 2018

DETAILS
D4

FB 321 PG 19
2790

TERM SHEET

The following Term Sheet is entered into this 6th day of August, 2018 by and between **The Portsmouth Housing Authority** (hereinafter "PHA") of 245 Middle Street, Portsmouth, N.H.,**127 Parrott Avenue, LL**C and **Hoefle, Phoenix, Gormley & Roberts, P.A**. (hereinafter, collectively, "HPGR") of 127 Parrott Avenue, Portsmouth, New Hampshire 03802.

WHEREAS, the PHA proposes to build a 64 unit workforce housing building on land located at 140 Court street which about land owned by HPGR.

WHEREAS, City approval of PHA's plans may result in a condition to separate storm water flow from a combined sewer pipe. The separation would requires an upgrade to the existing drainage pipes to accept the flow;

WHEREAS, the PHA is willing to upgrade the drainage pipes, if required, and utilize an existing easement in favor of the City of Portsmouth that runs across land owned by HPGR;

WHEREAS, in furtherance of this Agreement, and for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

1. **Upgrade to drainage pipes**: The PHA agrees to utilize the existing Drainage Easement in favor of the City of Portsmouth, recorded at Book 5508, Page 0272, with respect to any upgrading needed to provide the required storm water separation as said upgrade relates to the flow towards and across the HPGR property. HPGR shall not be responsible for any unknown subsurface conditions that may be encountered by the PHA.

2. **Construction**: PHA agrees to use its best efforts to minimize disruption to the business operations at HPGR by completing the drainage pipe upgrade in a timely manner, said construction to be completed within thirty (30) days of commencing the work, unless a force majeure causes delays beyond the control of PHA. PHA shall return parking spaces at HPGR to a serviceable condition during any unforeseen extended delays; such condition may include a properly compacted gravel surface or surface steel plate, as long as care is taken to provide a safe surface for HPGR clients and customers. PHA will make a request to the city of Portsmouth to perform construction on Saturdays. In addition, it is the parties' preference to so do construction in the warm weather months. In the alterative, if it is necessary or desirable to do construction during the cold weather months, construction means and methods will be approved by HPGR. All cost of Construction shall be at the PHA's expense.

3. **Parking**: The PHA agrees to provide offsite parking at the Feaster lot to HPGR for parking spaces disrupted (not available during the weekday between 7 AM and 7 PM) during construction of the drainage pipe upgrade. Said parking offsets will be discussed at least 24 hours in advance.

4. **Infiltration**: As part of its construction, PHA agrees to install detention devices which DO NOT infiltrate storm water runoff into the ground. Said diversions / devices, if required, shall be constructed on PHA property.

5. **Sidewalk/Fence:** PHA agrees to remove the proposed sidewalk and proposed easement shown on its currently submitted Site Plan that runs from PHA property to Parrott Avenue, crossing HPGR property. The PHA will further show the gap in the existing fence in the rear of the HPGR property as "closed" on its revised site plan. PHA will be responsible to repair and /or replace any damage to the HPGR fence that may occur as a result of its snowplowing activities along the common boundary line.

6. **Duty to not to harm:** The parties recognize that the HPGR basement currently experiences water infiltration in is basement and has sump pumps to assist in keeping it dry. The PHA shall not, in their site design and construction, cause there to be an increase in the amount of water directed to subsurface infiltration.

7. **Use of Easement**. PHA will return and restore any areas disturbed by its Construction including pavement and vegetation, to their pre-disturbance condition.

8. **Indemnification**. The PHA shall indemnify and hold HPGR harmless from all damages, including reasonable attorney's fees and costs, associated with its Construction. PHA shall also obtain insurance for said Construction and shall name HPGR as additional insured during Construction.

7. **Mutual Understanding**: The parties understand that this Agreement is subject to the approval of the City of Portsmouth land use boards.

The Portsmouth Housing Authority

_____ _____

WITNESS Craig Welch, Executive Director.

Hoefle, Phoenix, Gormley & Roberts, P.A.

_____ _____

WITNESS Daniel Hoefle, duly authorized

127 Parrott Avenue, LLC.

_____ _____

WITNESS Daniel Hoefle, duly authorized

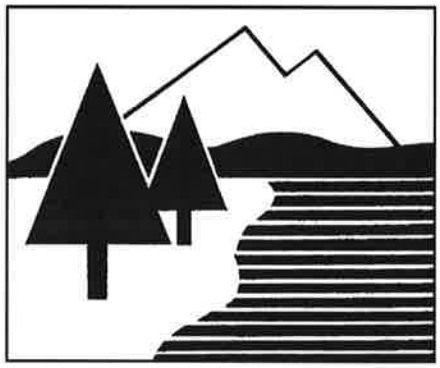
DRAINAGE ANALYSIS

SITE REDEVELOPMENT

160 COURT STREET

PORTSMOUTH HOUSING AUTHORITY

PORTSMOUTH, NH



18 JUNE, 2018

REVISED 17 JULY, 2018

REVISED 4 AUGUST, 2018

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 160 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 separate the flow and remove the stormwater from the City sewer system. An existing private closed drainage system through private property to the south connects to the public closed drainage system along Parrott Avenue. This is a single 12" pipe. This closed drainage system will be up-graded to twin 12" pipes to accommodate the additional flows that are anticipated from the site. End of pipe treatment is provided in the existing drainage network near the intersection of Rogers Road and Parrott Avenue.

SITE REDEVELOPMENT

160 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 private closed drainage then to the public closed drainage system where it receives treatment before discharge 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. Subcatchment ES8 incorporates the larger neighborhood watershed contributing to this segment of closed drainage system. The final outflow from ES6 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	0.90	1.4	DP1
ES1a	667	5.0	61	0.00	0.1	DP5
ES2	32,053	2.5	97	3.8	5.8	DP1
ES2a	196	0.1	98	0.00	0.0	DP1
ES3	2,371	0.9	68	0.10	0.3	DP1
ES4	2,604	0.8	61	0.10	0.2	DP1
ES4a	491	5.0	61	0.0	0.0	DP4
ES5	33,193	2.5	96	3.1	4.8	DP3
ES6	2,738	1.5	98	0.30	0.5	DP2
ES7	1,263	0.6	98	0.20	0.2	DP2
ES8	4,051	2.4	98	14.2	21.7	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 reproduced 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 System # 1. This system consists of 28 StormTech Chambers (SC-740). Basins PS5b (New Rooftop) and PS5bb (Landscaped Area) flow to System # 2. This system consists of 28 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 3. 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	DP3
PS5a	6,560	5.0	98	0.72	1.10	DP3
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 systems currently exist for the site, providing the proposed treatment by means of the two StormTech Stormwater Chamber 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 resulted in additional flow through a private closed drainage system to the south and then to the public closed drainage system along Parrott Avenue. This closed drainage system will be up-graded to twin 12 inch pipes to accommodate the additional flows that are anticipated. Two pipe segments of the closed drainage system along Parrott Avenue will be upgraded from a single 12" to twin 12" pipe,as well as the pipe network on the HFGR property (in a City Easment). It should be noted that there will be an increase of flow through this system at the benefit of removing drainage from the City's sewer system.

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
DP2	14.7	14.7	22.4	22.4	Court Street Storm Drain
DP3	3.1	5.2	4.8	8.4	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 3 (DP3) represents the removal of stormwater from the City sewer system. Improvements in downstream piping are designed to 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, prior to added flow from stormwater separation for the rain fall events that were analyzed. With the design of two Stormwater detention systems to slow the release of storm water, the post-development runoff rates are reduced prior to added flow from stormwater separation. 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 twin 12" for the pipe segments 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.

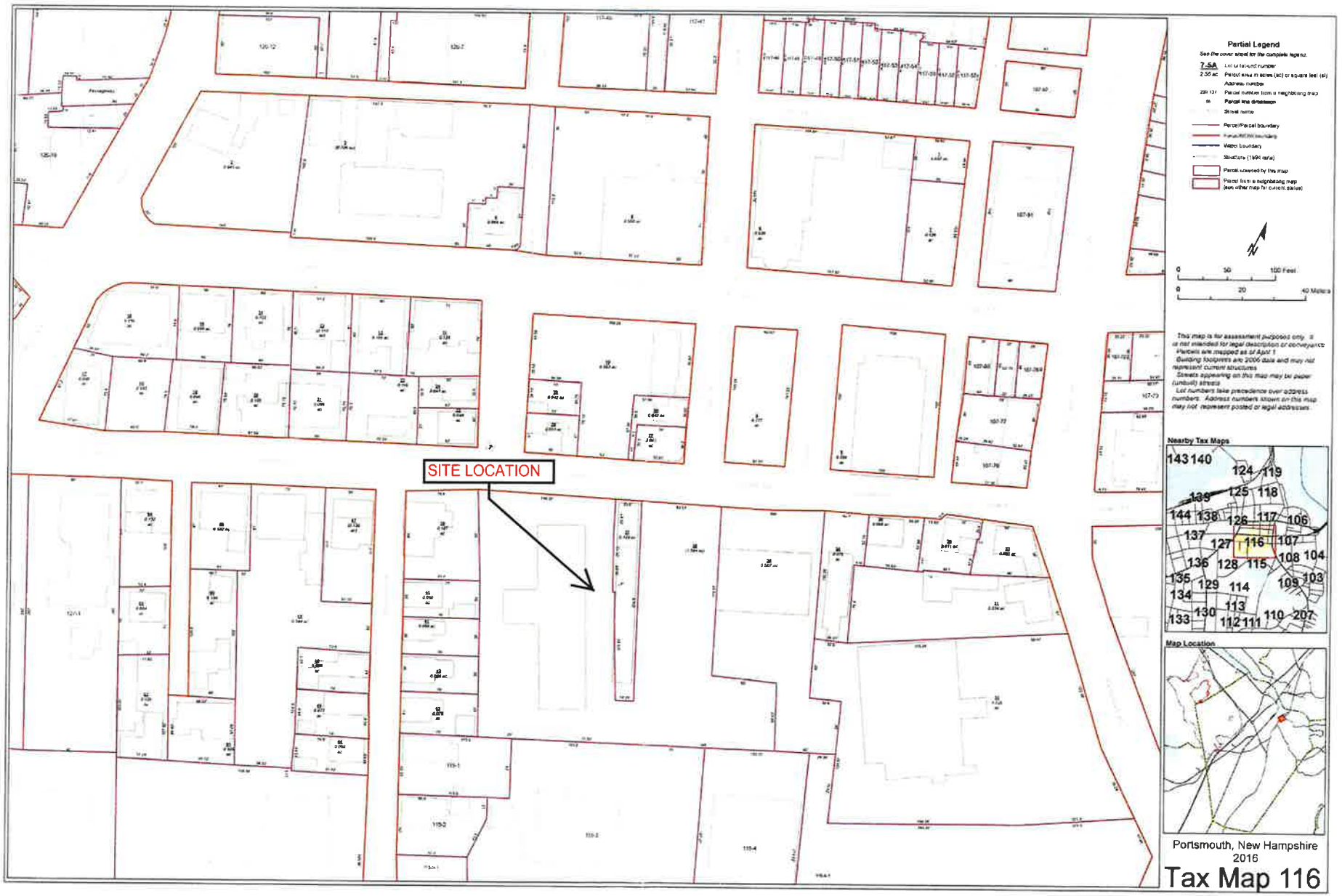
2. Comprehensive Environmental Inc. and New Hampshire Department of Environmental Services. *New Hampshire Stormwater Manual (Volumes 1, 2 and 3)*, December 2008 (Revision 1.0).

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
Parcel Legend
See the cover sheet for the complete legend.
7-5A Lot or condominium number
2.56 ac Parcel size in acres (ac) or square feet (sf)
Address number
220-121 Parcel number from a neighboring map
Parcel line dimension
Street name
Parcel/Parcel boundary
Water boundary
Structure (1996 data)
Parcel covered by this map
Parcel from a neighboring map (see other map for current status)
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
143 140 124 119 139 125 118 144 138 126 117 106 137 127 116 107 136 128 115 108 104 135 129 114 109 103 134 130 113 133 112 111 110 207
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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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 Rotatipn 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

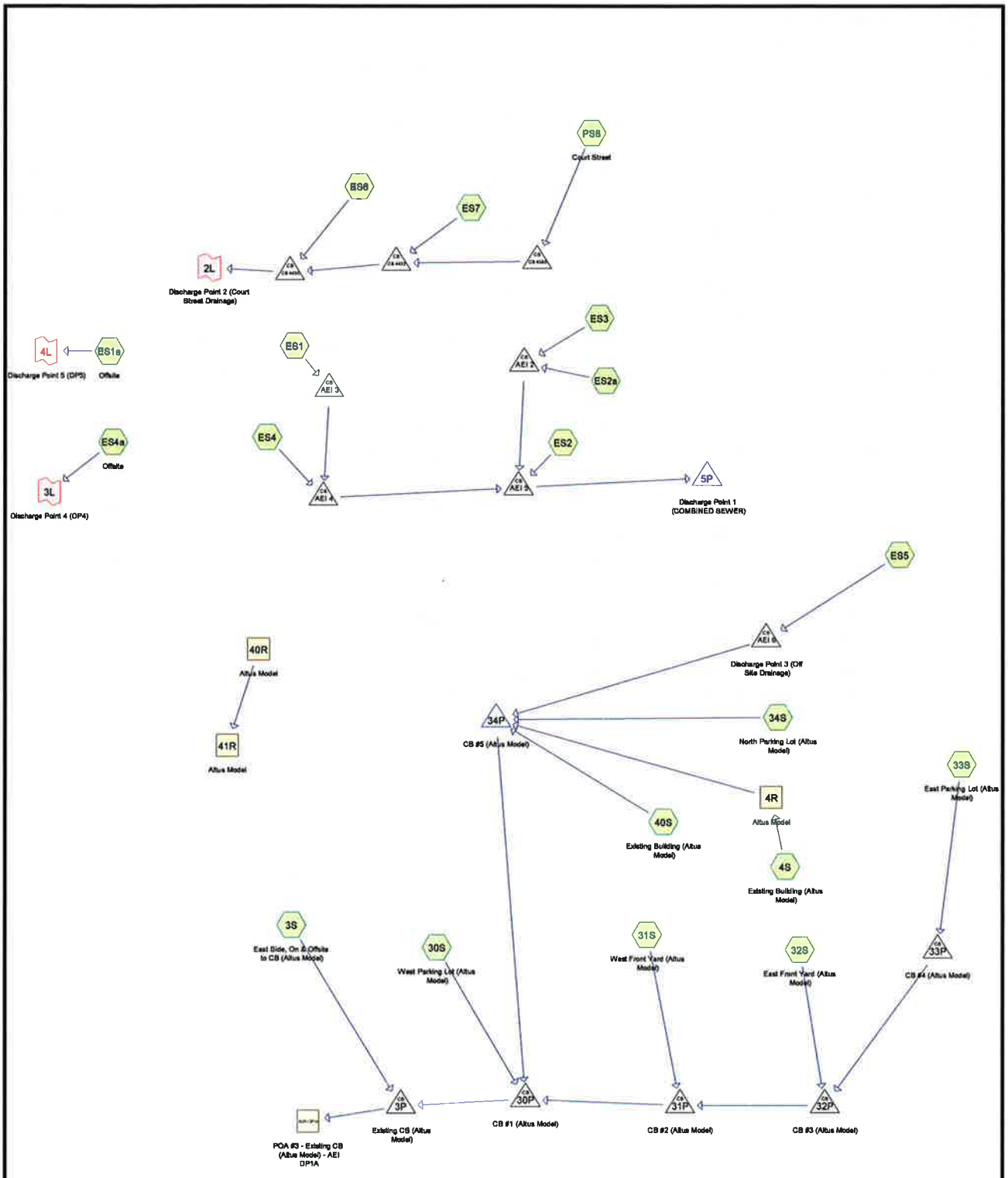
6. Poor hydrologic condition has less than 50 percent ground cover density.
   Fair hydrologic condition has between 50 and 75 percent ground cover density.
   Good hydrologic condition has more than 75 percent ground cover density.

Source: USDA Soil Conservation Service

APPENDIX C

HYDROCAD DRAINAGE

ANALYSIS CALCULATIONS



Routing Diagram for 2790 Existing Conditions
Prepared by Ambit Engineering, Inc., Printed 8/6/2018
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	PS8	0.00	0.00	237.0	0.0050	0.013	18.0	0.0	0.0
2	4R	8.38	7.28	110.0	0.0100	0.012	8.0	0.0	0.0
3	40R	6.82	6.62	10.0	0.0200	0.012	8.0	0.0	0.0
4	41R	6.45	6.21	81.0	0.0030	0.012	12.0	0.0	0.0
5	3P	5.31	4.67	55.0	0.0116	0.012	12.0	0.0	0.0
6	30P	5.52	5.31	82.0	0.0026	0.013	12.0	0.0	0.0
7	31P	6.34	5.60	40.0	0.0185	0.012	12.0	0.0	0.0
8	32P	5.88	6.44	92.0	-0.0061	0.012	12.0	0.0	0.0
9	33P	6.38	5.96	50.0	0.0084	0.012	12.0	0.0	0.0
10	34P	5.83	5.58	85.0	0.0029	0.013	12.0	0.0	0.0
11	AEI 2	9.42	8.55	102.8	0.0085	0.010	6.0	0.0	0.0
12	AEI 3	8.90	8.84	37.5	0.0016	0.013	10.0	0.0	0.0
13	AEI 4	8.69	8.15	92.4	0.0058	0.013	10.0	0.0	0.0
14	AEI 5	7.90	7.40	58.5	0.0085	0.013	10.0	0.0	0.0
15	AEI 6	6.77	5.88	96.0	0.0093	0.013	12.0	0.0	0.0
16	CB 4433	14.68	14.19	121.0	0.0040	0.013	24.0	0.0	0.0
17	CB 4435	14.19	13.69	100.0	0.0050	0.013	24.0	0.0	0.0
18	CB 4560	14.92	14.68	42.8	0.0056	0.013	24.0	0.0	0.0

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

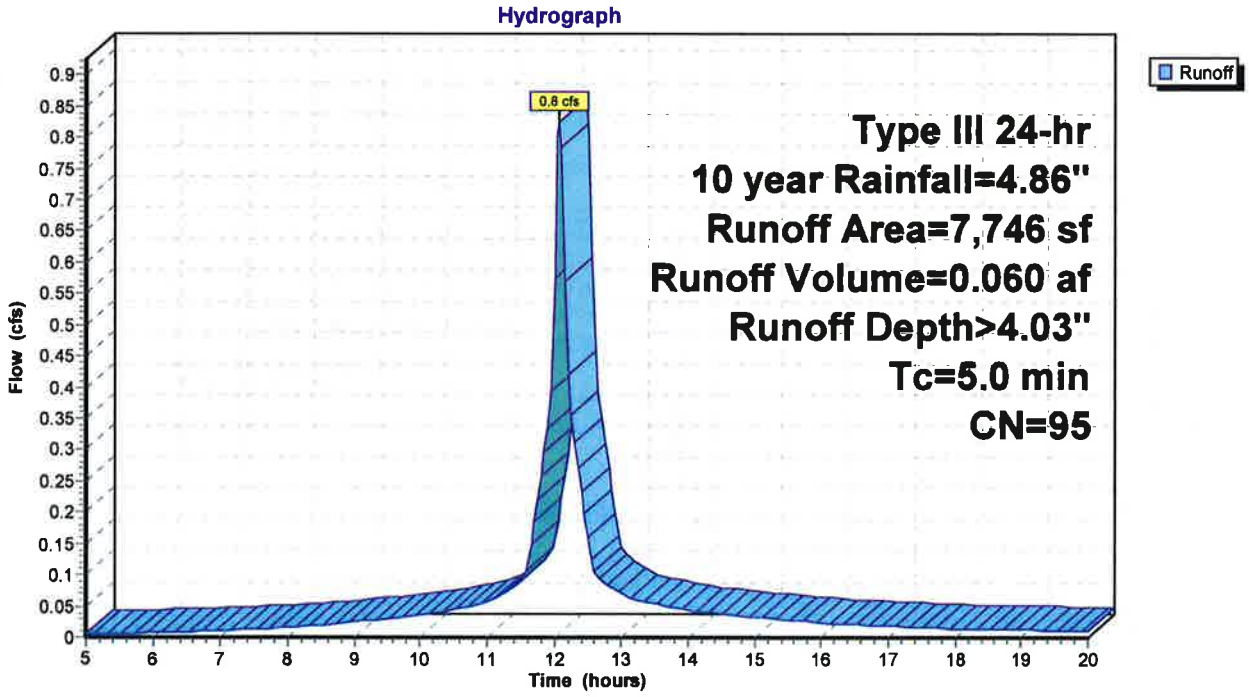
Runoff = 0.8 cfs @ 12.07 hrs, Volume= 0.060 af, Depth> 4.03"

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)

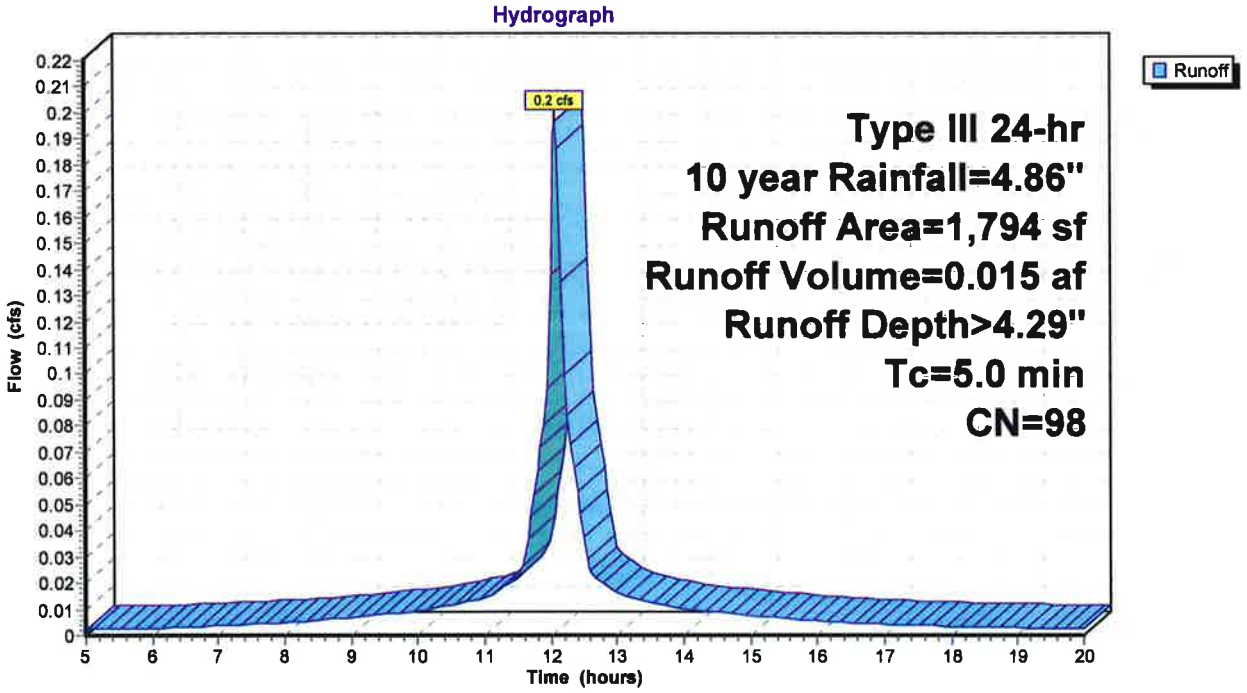
Runoff = 0.2 cfs @ 12.07 hrs, Volume= 0.015 af, Depth> 4.29"

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)

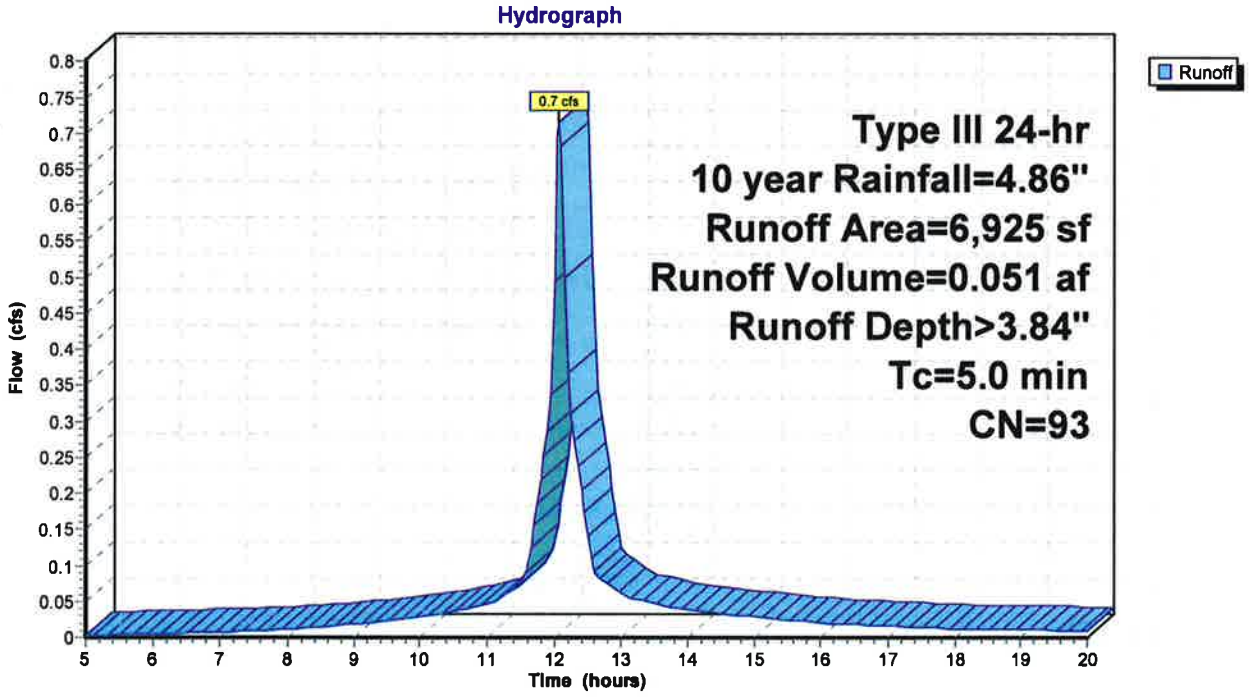
Runoff = 0.7 cfs @ 12.07 hrs, Volume= 0.051 af, Depth> 3.84"

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)

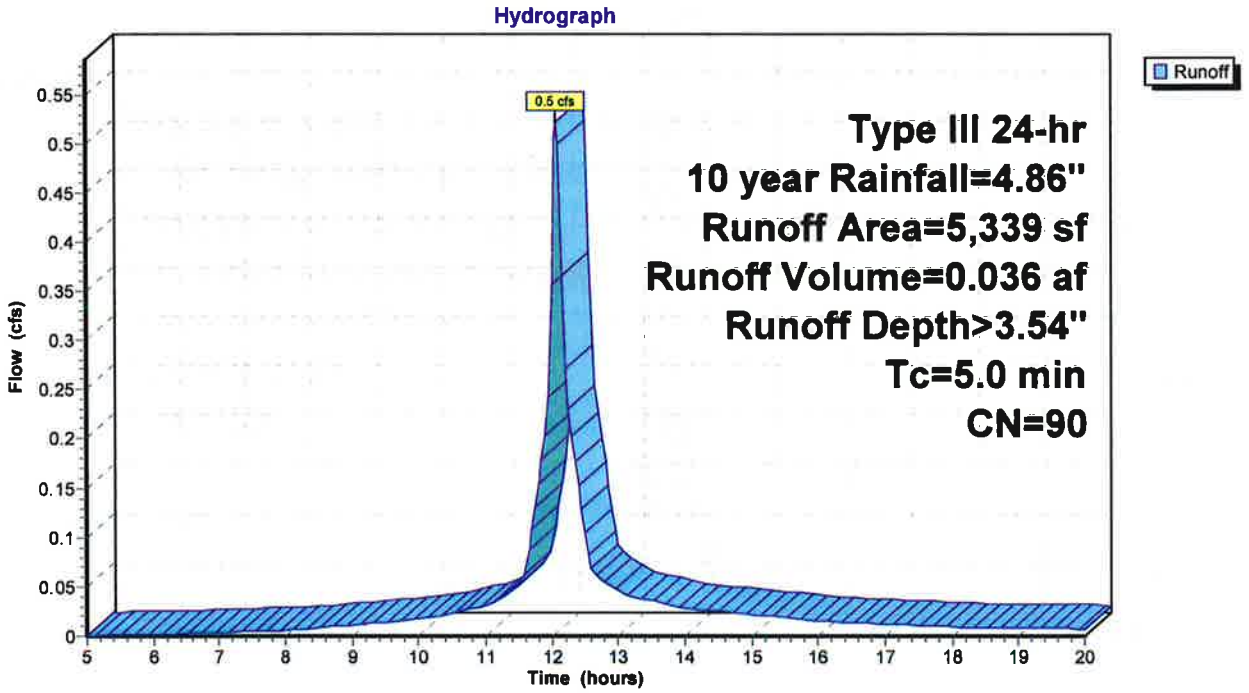
Runoff = 0.5 cfs @ 12.07 hrs, Volume= 0.036 af, Depth> 3.54"

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)

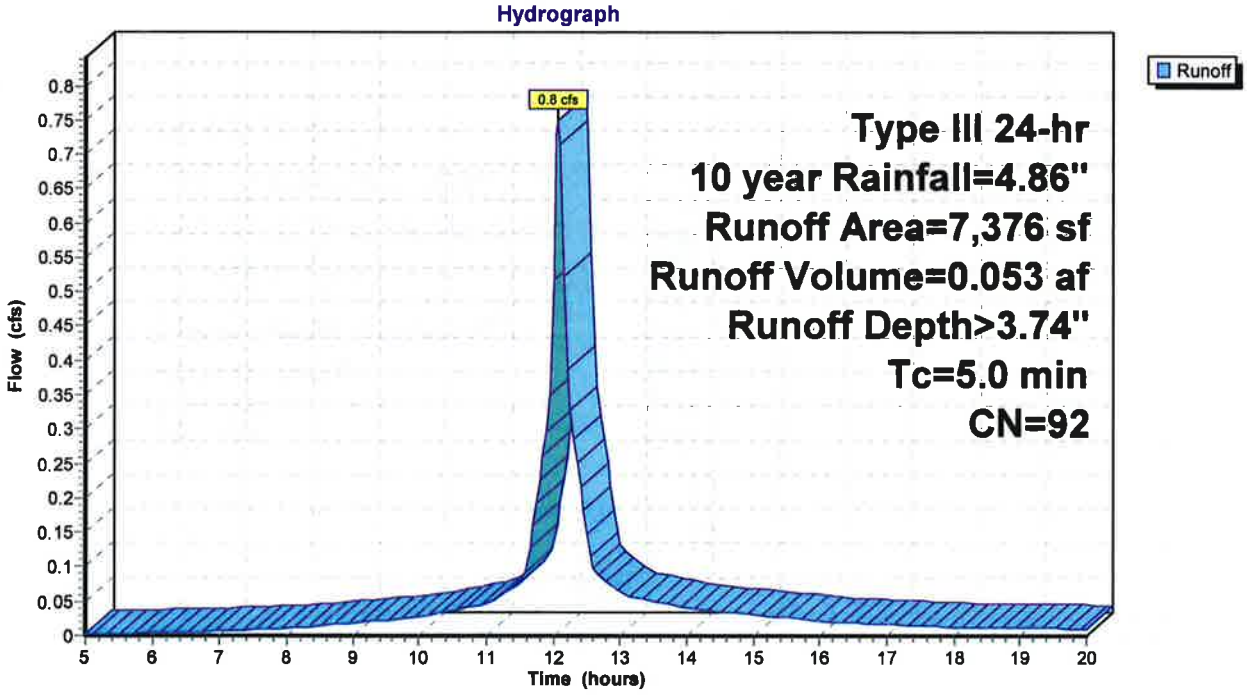
Runoff = 0.8 cfs @ 12.07 hrs, Volume= 0.053 af, Depth> 3.74"

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)

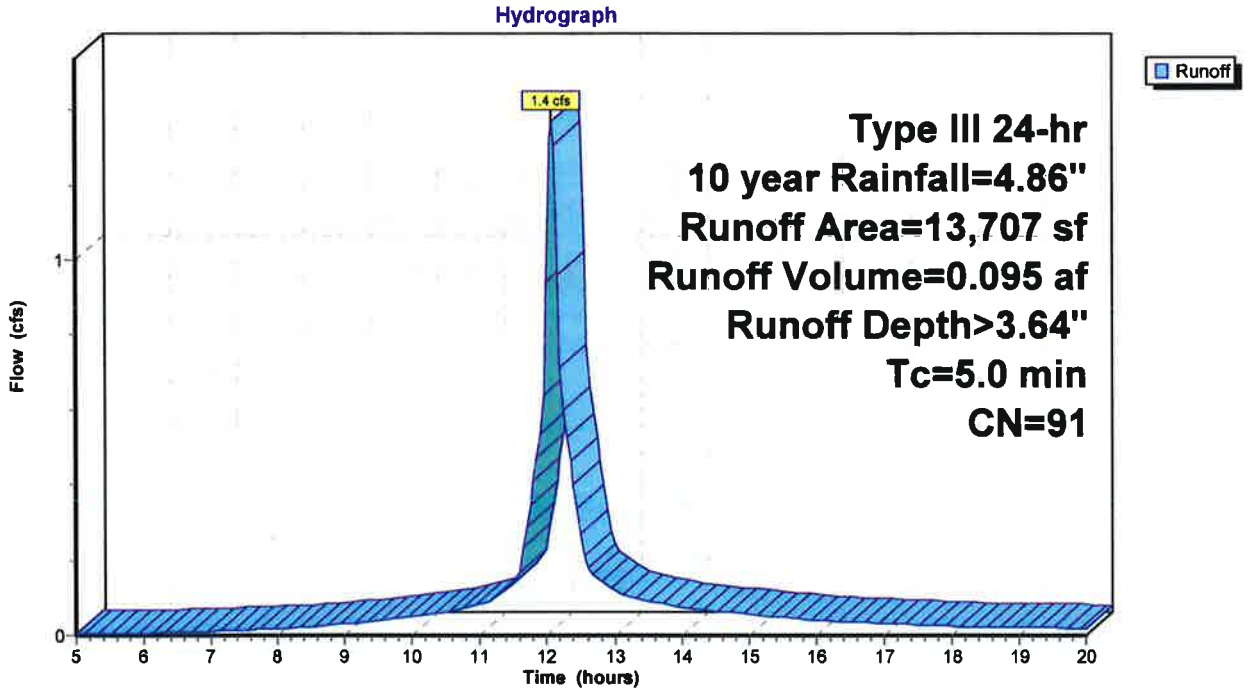
Runoff = 1.4 cfs @ 12.07 hrs, Volume= 0.095 af, Depth> 3.64"

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)

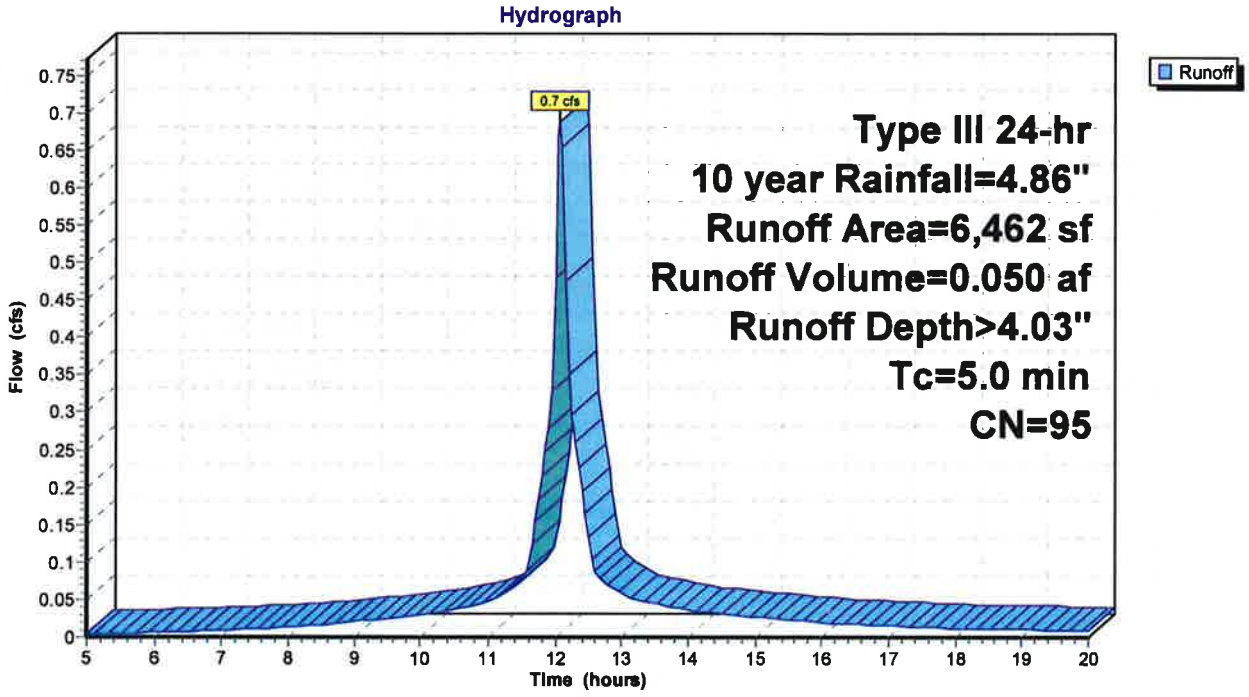
Runoff = 0.7 cfs @ 12.07 hrs, Volume= 0.050 af, Depth> 4.03"

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)

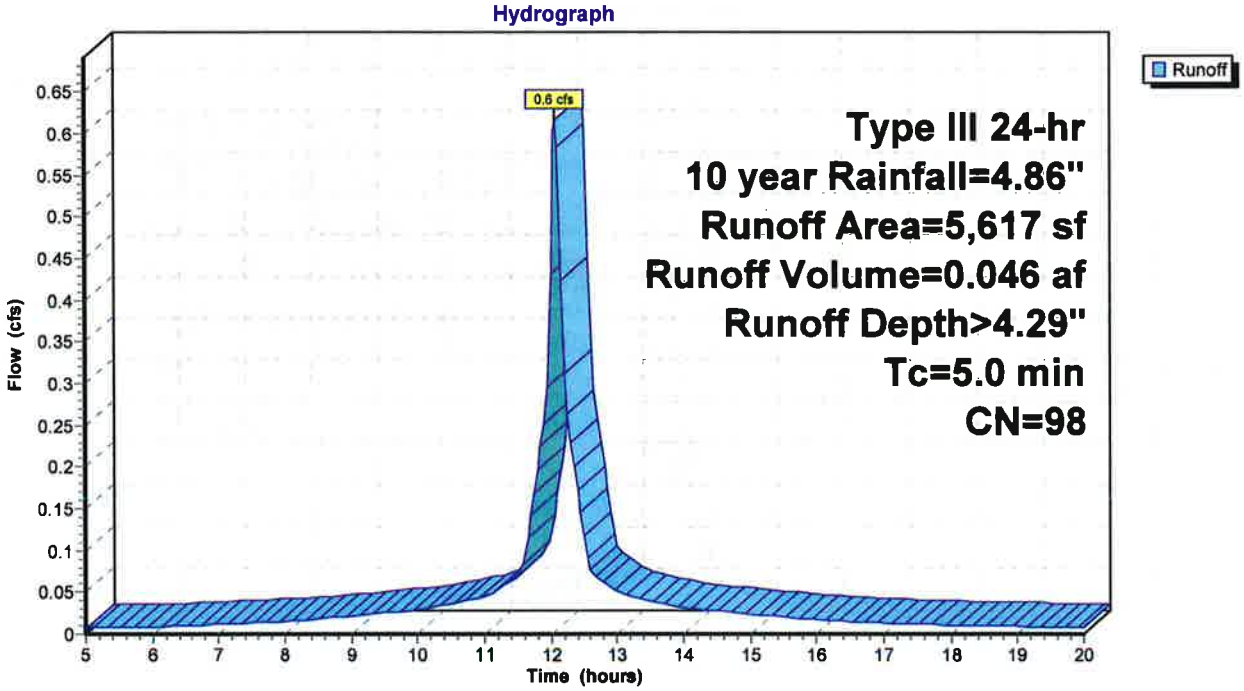
Runoff = 0.6 cfs @ 12.07 hrs, Volume= 0.046 af, Depth> 4.29"

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:

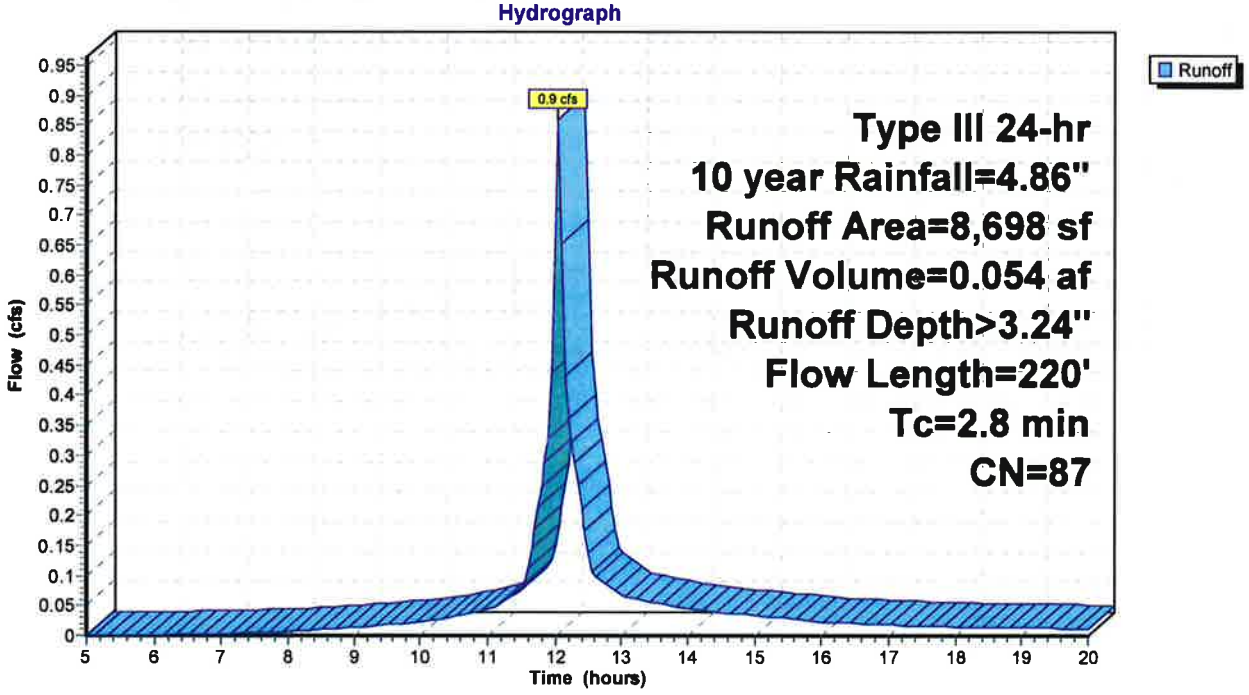
Runoff = 0.9 cfs @ 12.05 hrs, Volume= 0.054 af, Depth> 3.24"

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

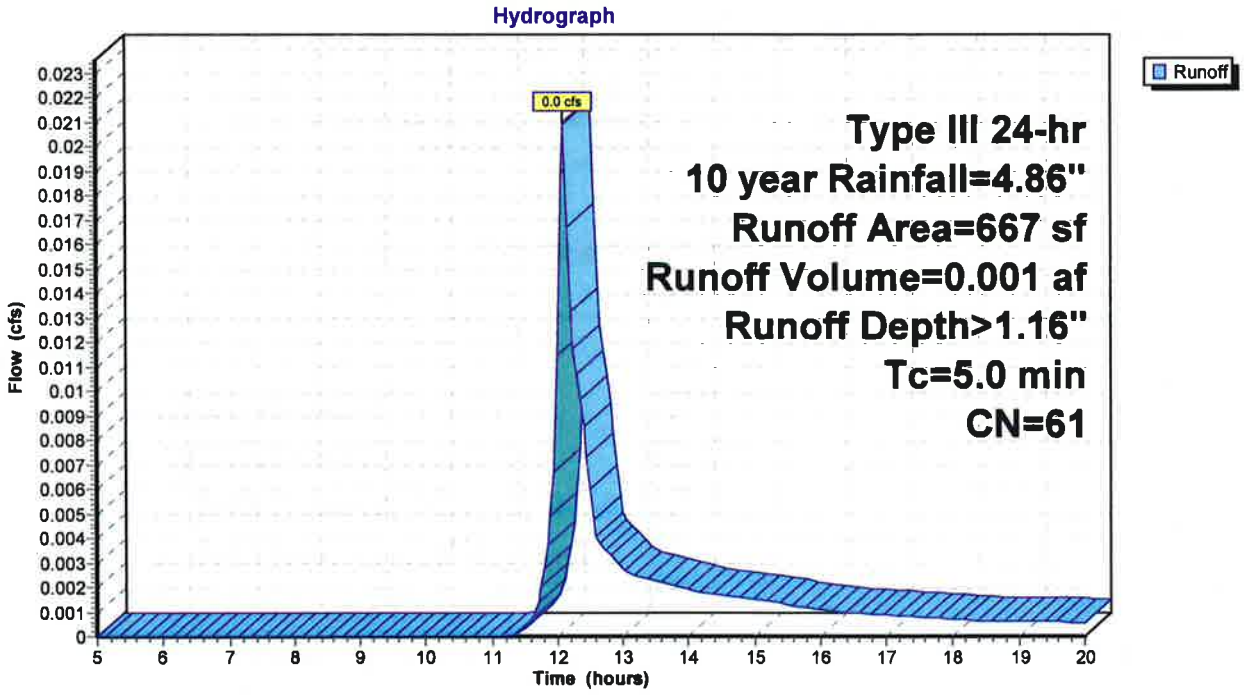
Runoff = 0.0 cfs @ 12.09 hrs, Volume= 0.001 af, Depth> 1.16"

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:

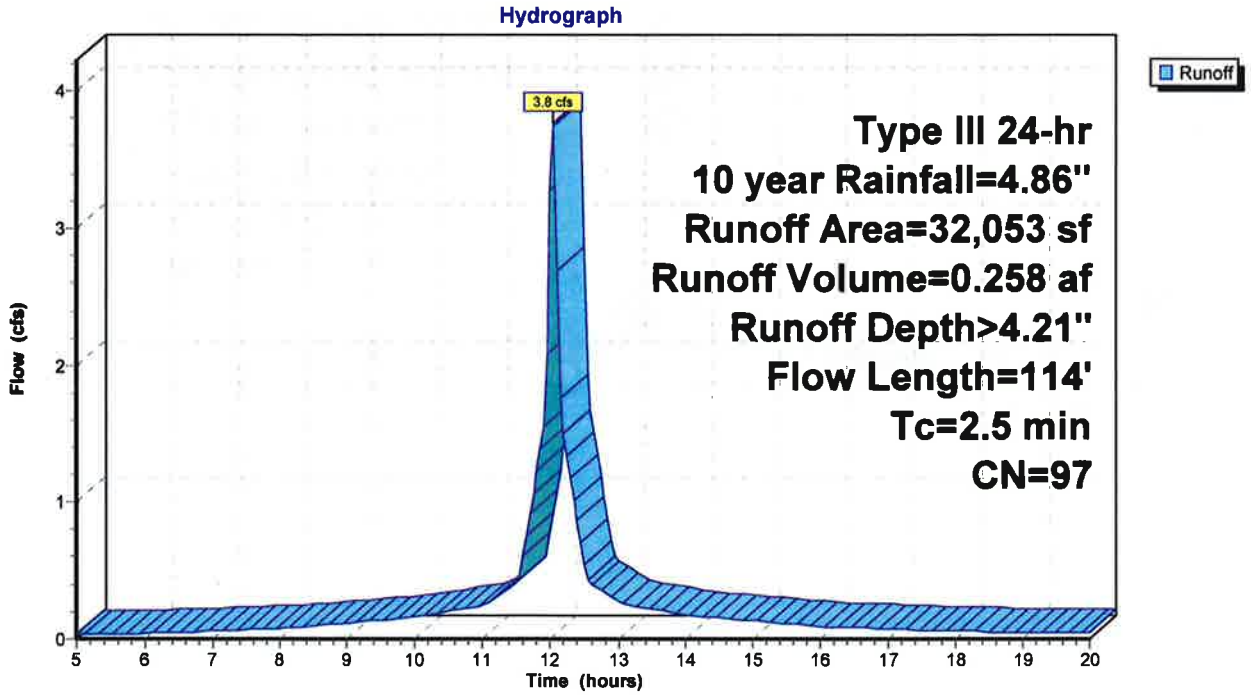
Runoff = 3.8 cfs @ 12.04 hrs, Volume= 0.258 af, Depth> 4.21"

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:

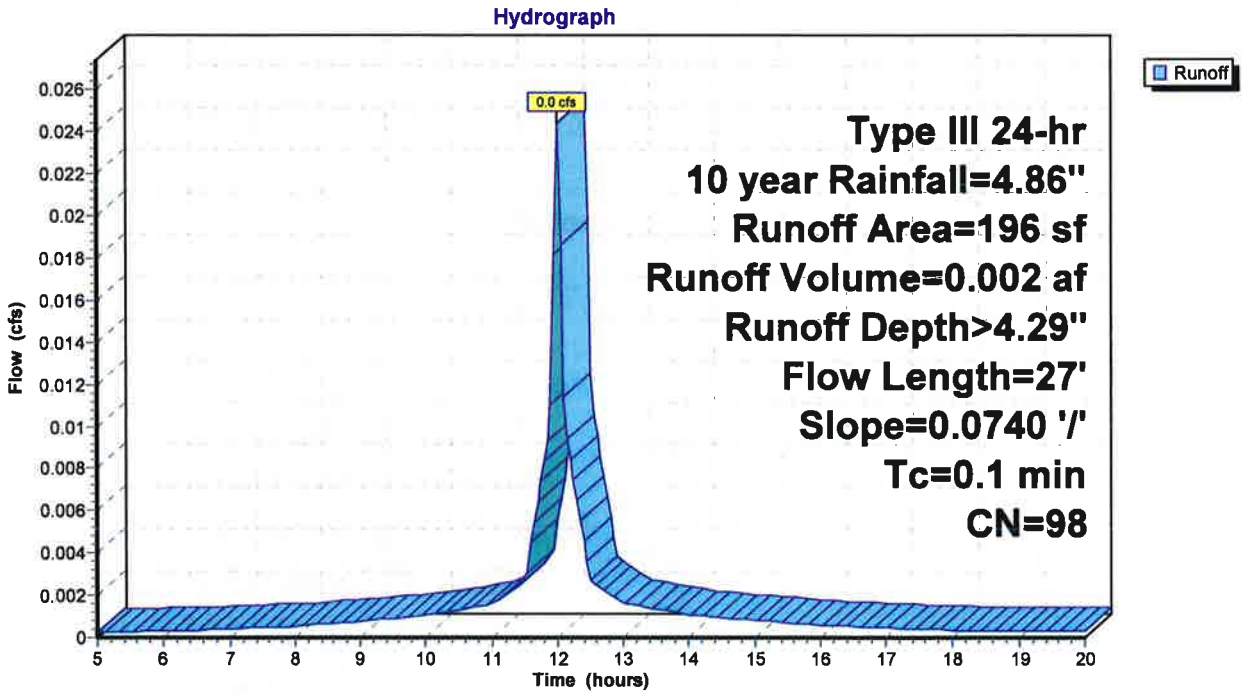
Runoff = 0.0 cfs @ 12.00 hrs, Volume= 0.002 af, Depth> 4.29"

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:

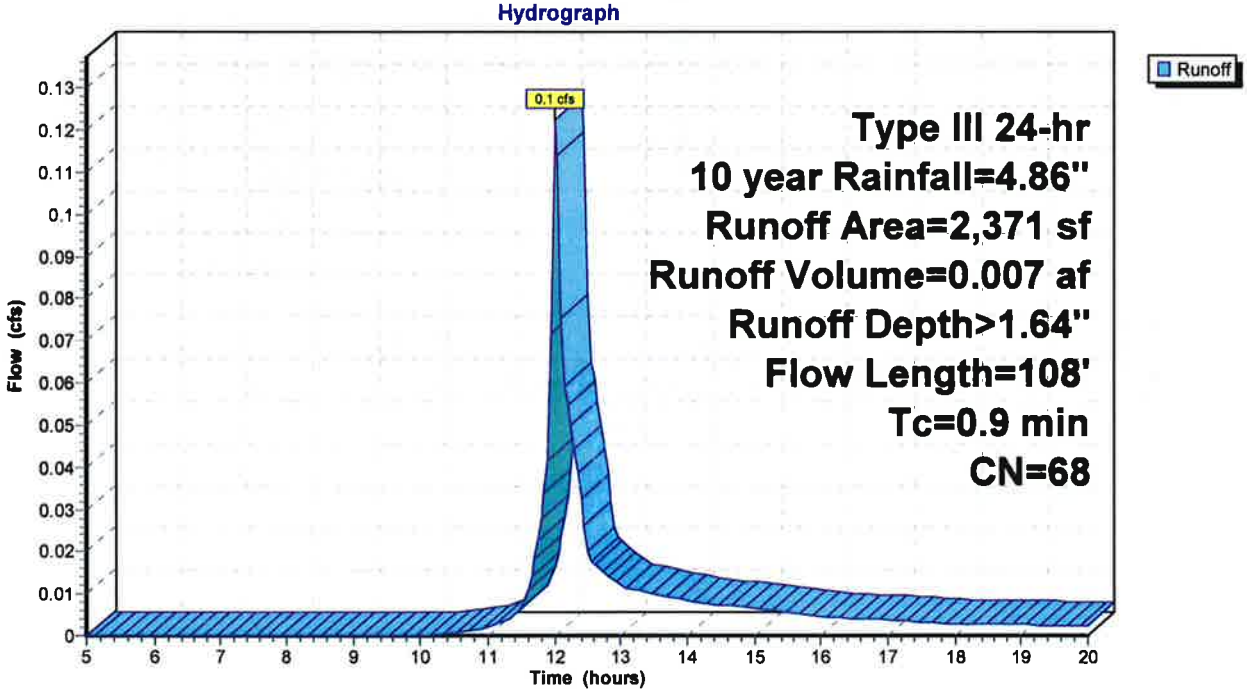
Runoff = 0.1 cfs @ 12.02 hrs, Volume= 0.007 af, Depth> 1.64"

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:

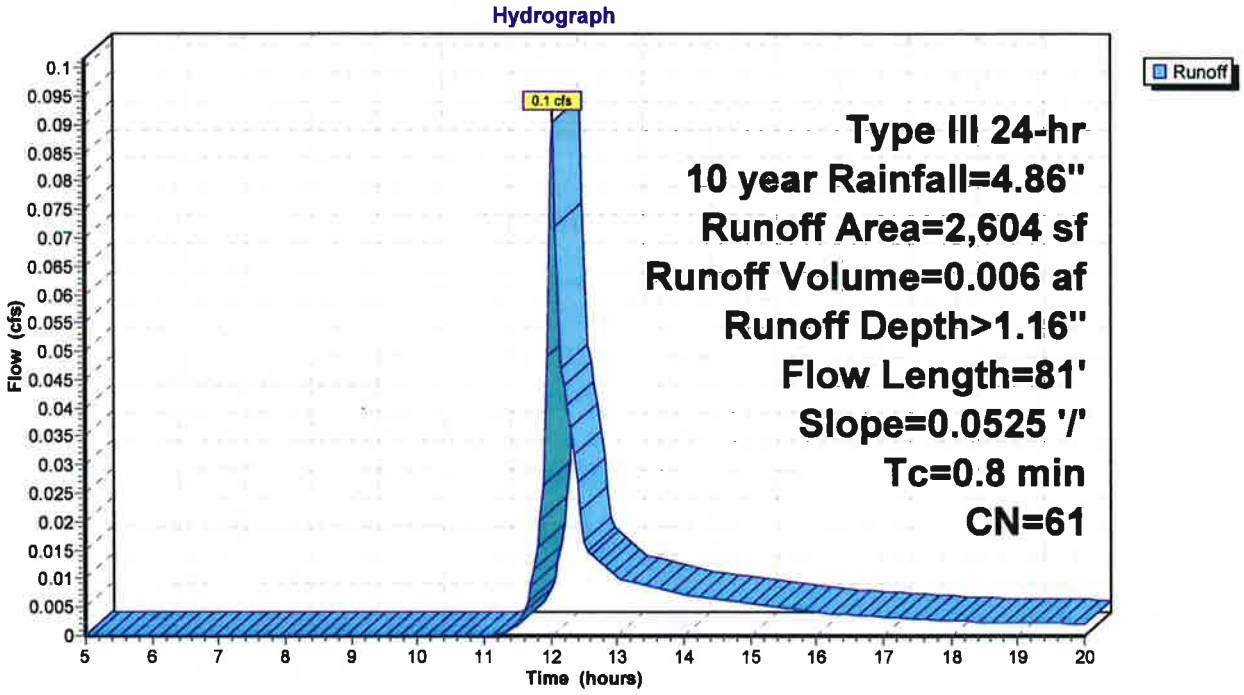
Runoff = 0.1 cfs @ 12.02 hrs, Volume= 0.006 af, Depth> 1.16"

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

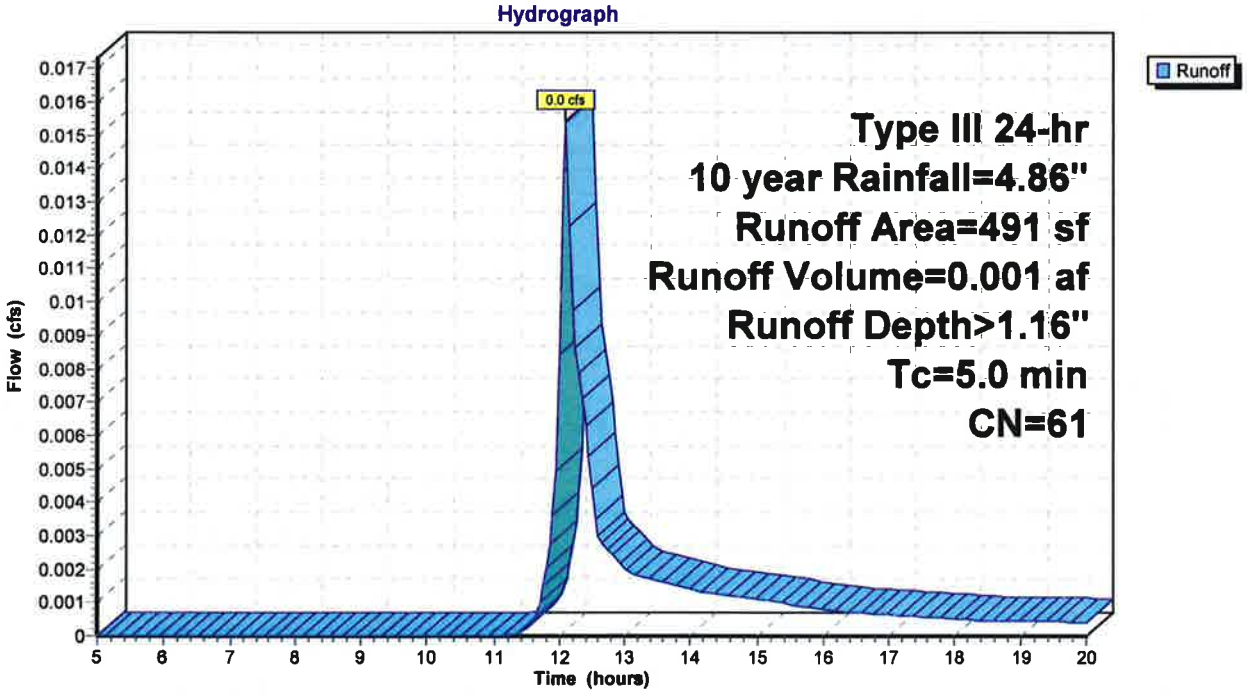
Runoff = 0.0 cfs @ 12.09 hrs, Volume= 0.001 af, Depth> 1.16"

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:

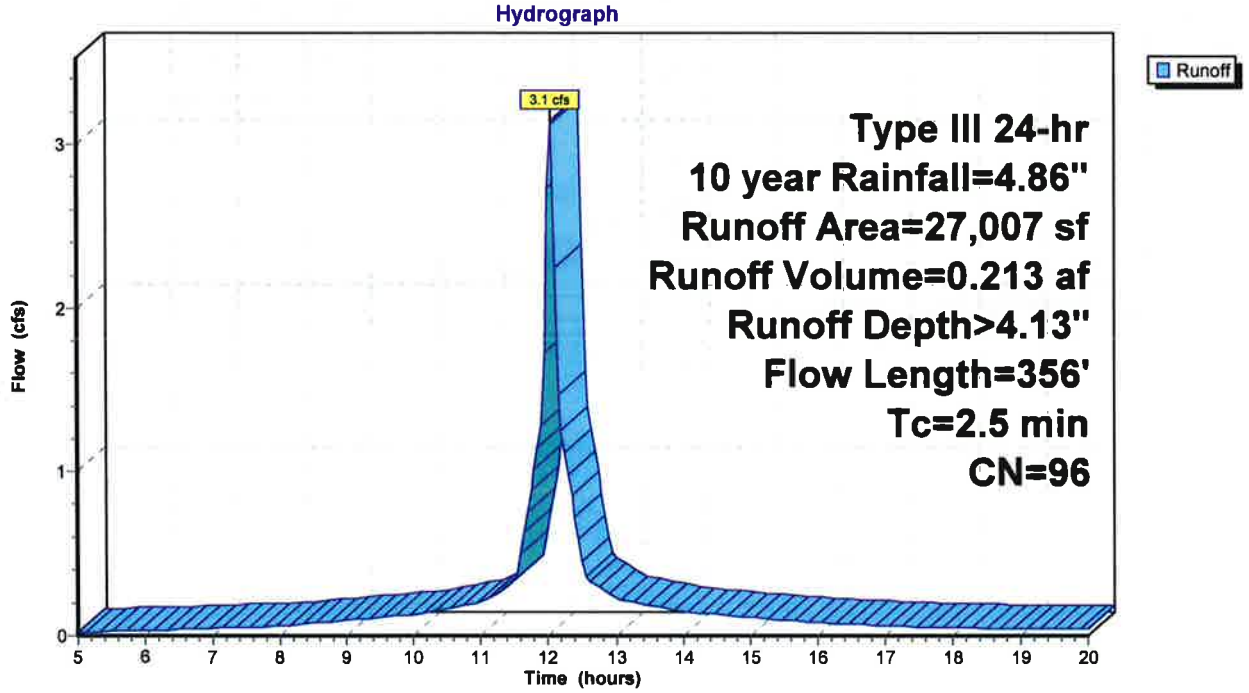
Runoff = 3.1 cfs @ 12.04 hrs, Volume= 0.213 af, Depth> 4.13"

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:

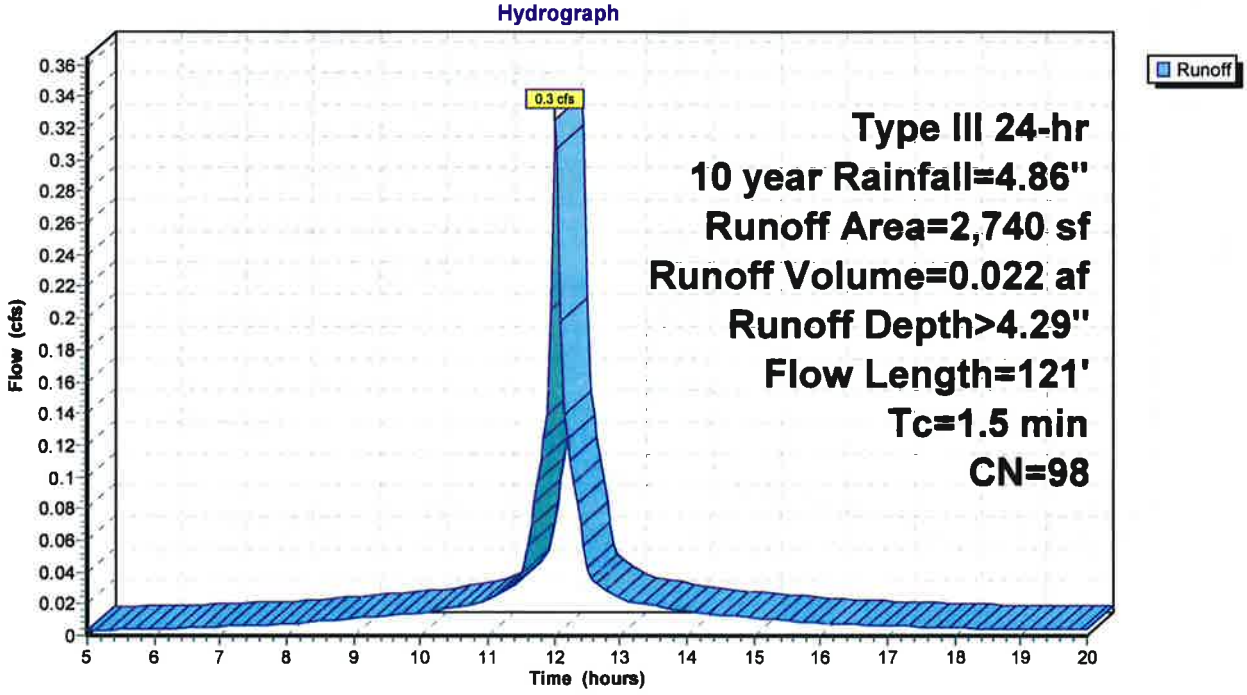
Runoff = 0.3 cfs @ 12.02 hrs, Volume= 0.022 af, Depth> 4.29"

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:

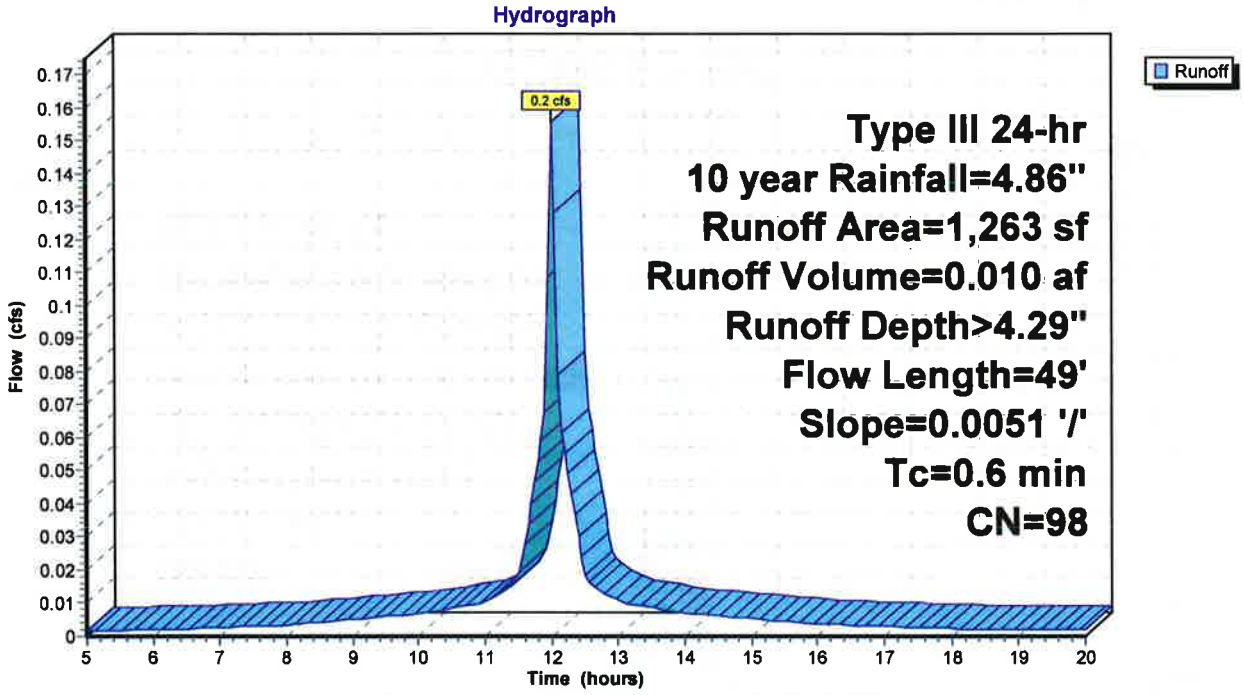
Runoff = 0.2 cfs @ 12.01 hrs, Volume= 0.010 af, Depth> 4.29"

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 PS8: Court Street

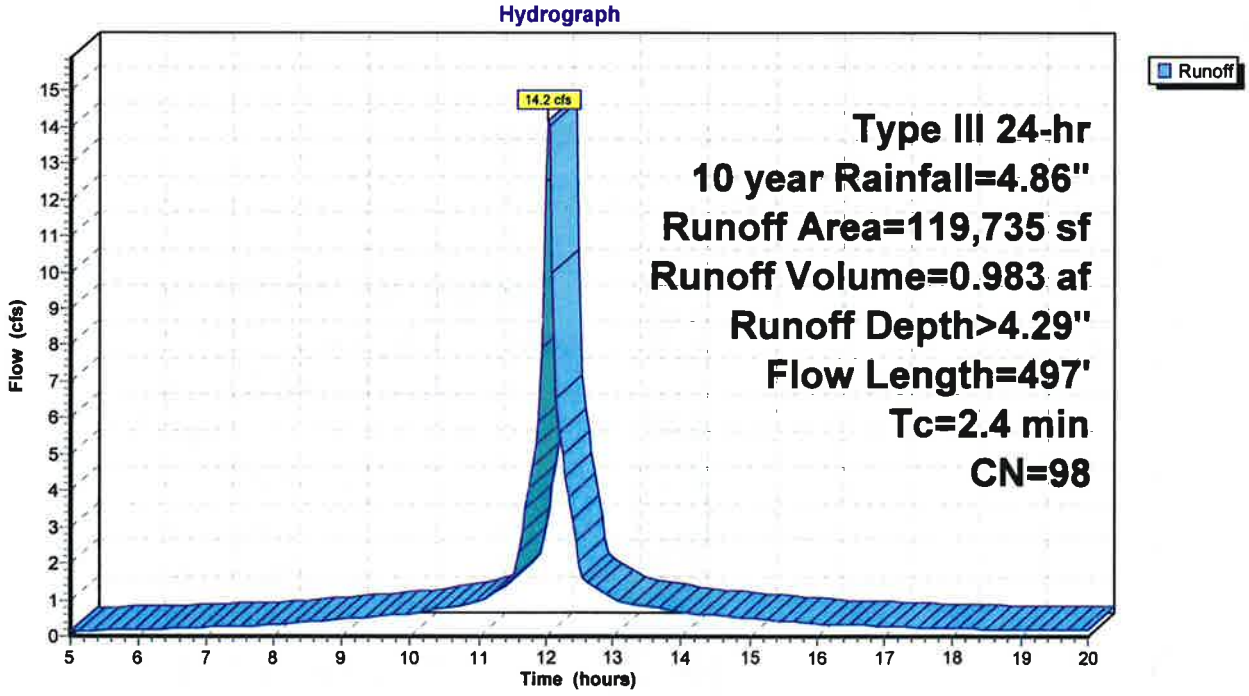
Runoff = 14.2 cfs @ 12.04 hrs, Volume= 0.983 af, Depth> 4.29"

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
119,735	98	Paved parking, HSG B
119,735		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	260	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	237	0.0050	4.20	7.43	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
2.4	497	Total			

Subcatchment PS8: Court Street



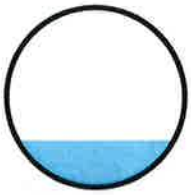
Summary for Reach 4R: Altus Model

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

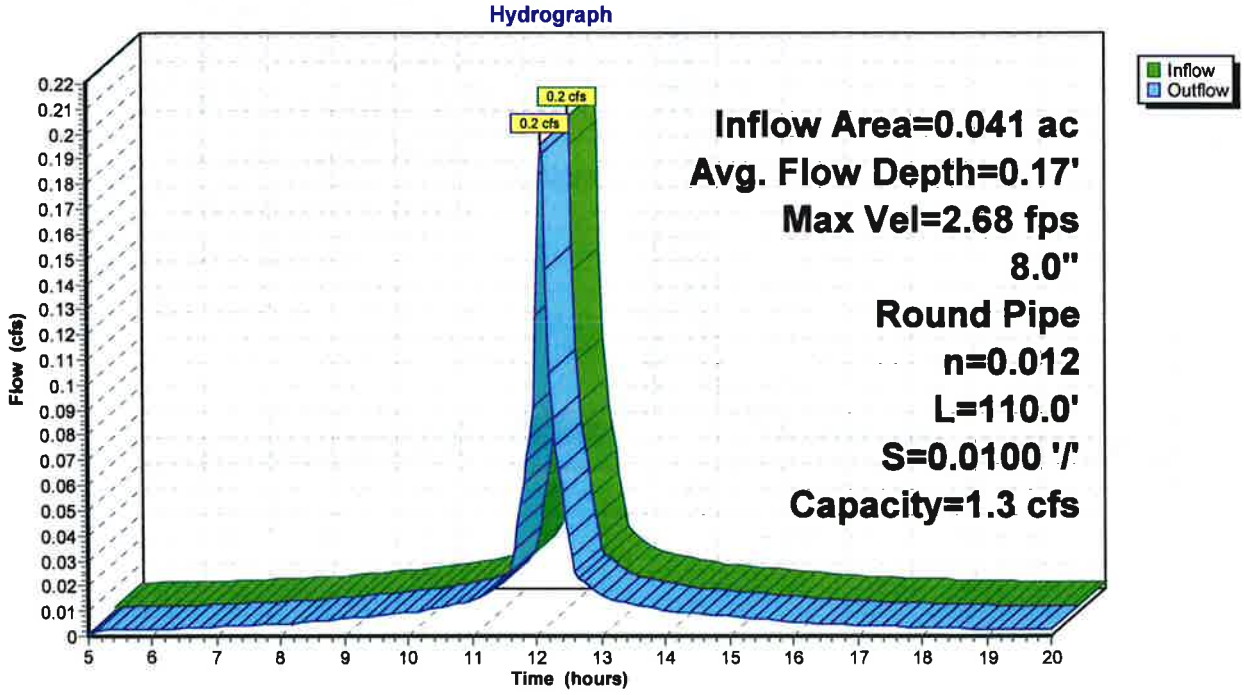
Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.68 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.02 fps, Avg. Travel Time= 1.8 min

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'



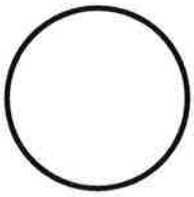
Reach 4R: Altus Model



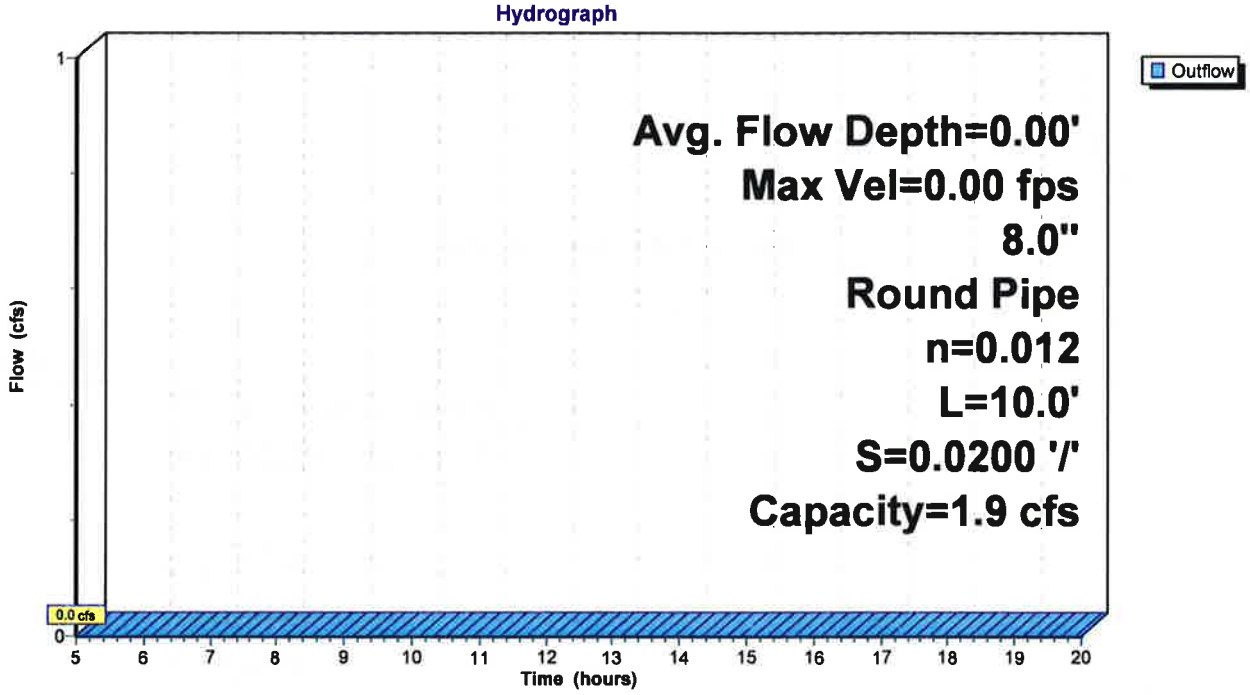
Summary for Reach 40R: Altus Model

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



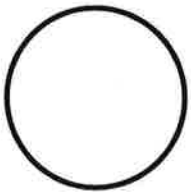
Summary for Reach 41R: Altus Model

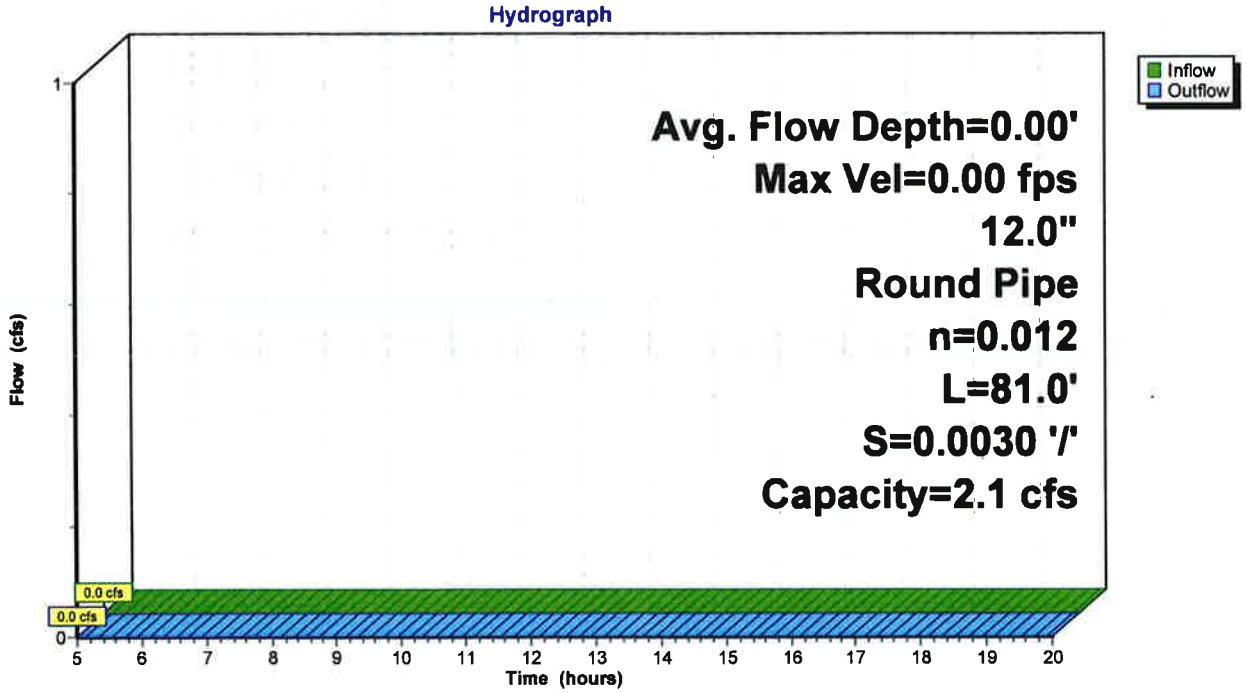
Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
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'



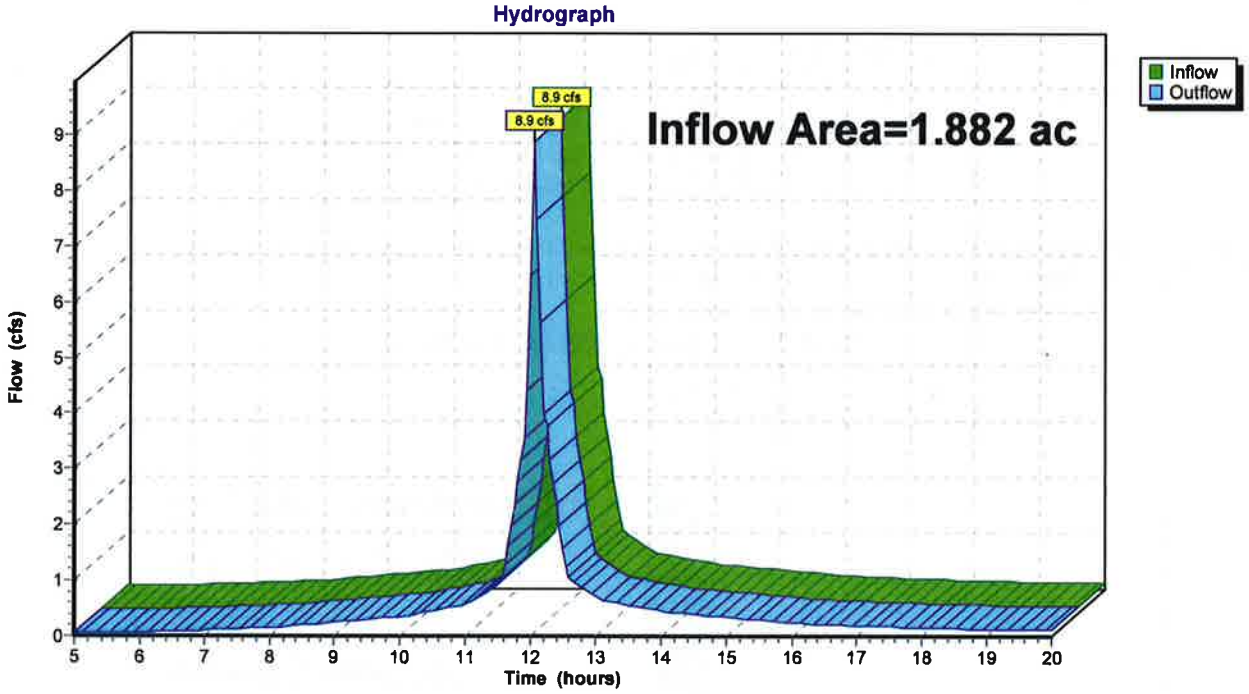


Summary for Reach 300R / DP1A: POA #3 - Existing CB (Altus Model) - AEI DP1A

Inflow Area = 1.882 ac, 39.96% Impervious, Inflow Depth > 3.94" for 10 year event
Inflow = 8.9 cfs @ 12.06 hrs, Volume= 0.619 af
Outflow = 8.9 cfs @ 12.06 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)

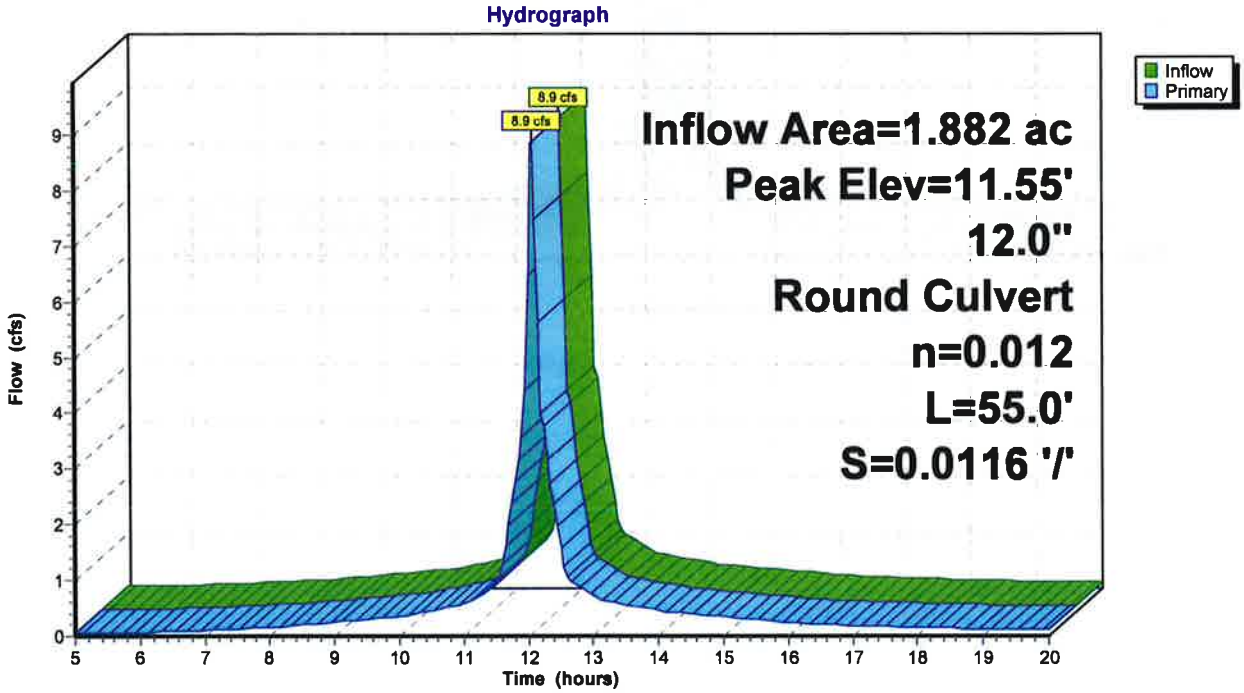
Inflow Area = 1.882 ac, 39.96% Impervious, Inflow Depth > 3.94" for 10 year event
Inflow = 8.9 cfs @ 12.06 hrs, Volume= 0.619 af
Outflow = 8.9 cfs @ 12.06 hrs, Volume= 0.619 af, Atten= 0%, Lag= 0.0 min
Primary = 8.9 cfs @ 12.06 hrs, Volume= 0.619 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 11.55' @ 12.06 hrs
Flood Elev= 7.91'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.31'	**12.0" Round Culvert** L= 55.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.31' / 4.67' S= 0.0116 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=8.7 cfs @ 12.06 hrs HW=11.29' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 8.7 cfs @ 11.04 fps)

Pond 3P: Existing CB (Altus Model)

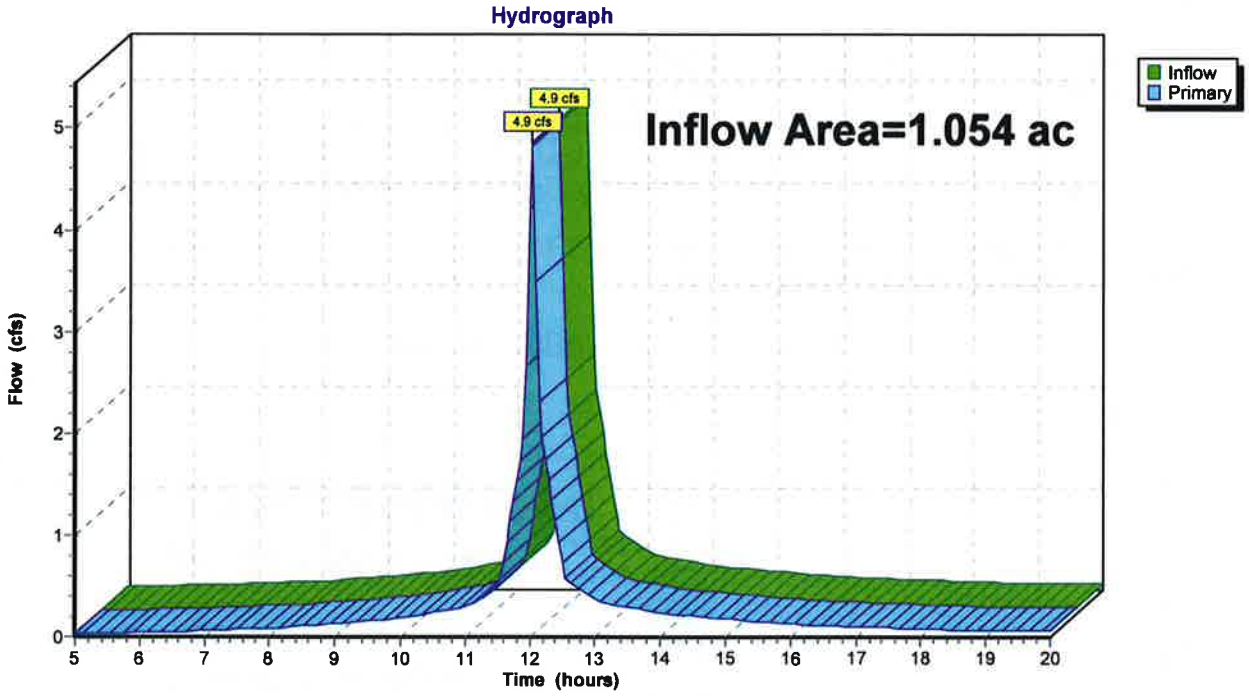


Summary for Pond 5P: Discharge Point 1 (COMBINED SEWER)

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)

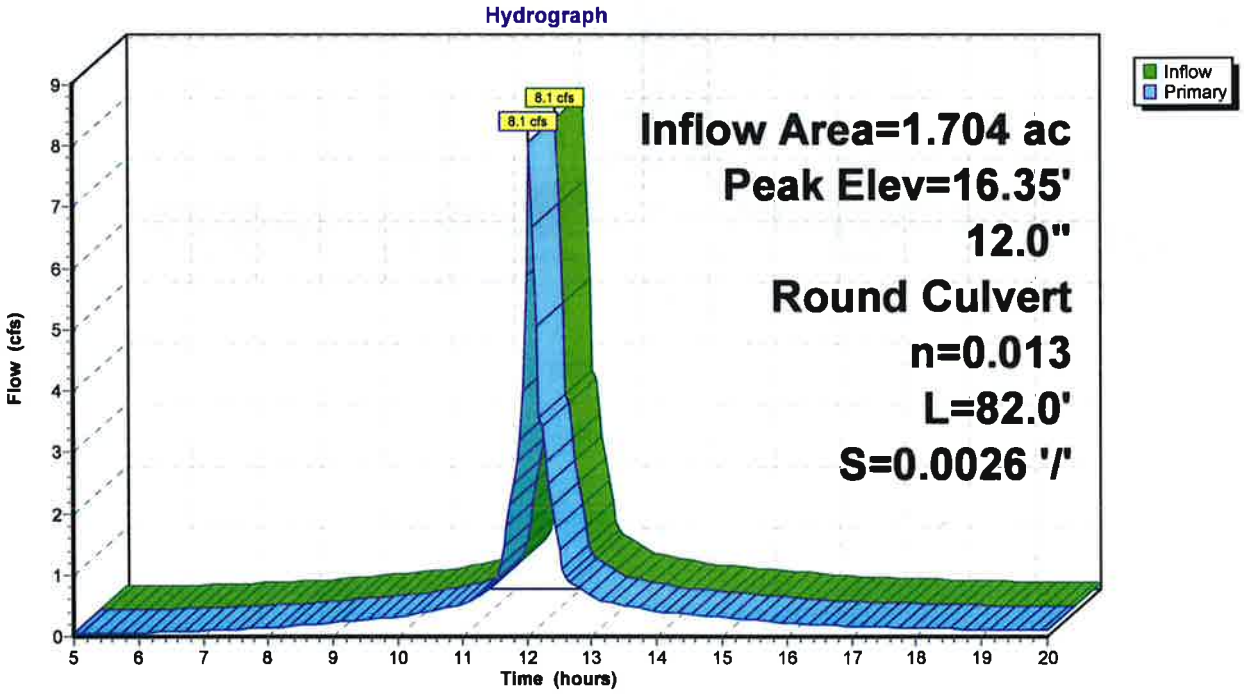
Inflow Area = 1.704 ac, 44.13% Impervious, Inflow Depth > 3.94" for 10 year event
Inflow = 8.1 cfs @ 12.06 hrs, Volume= 0.559 af
Outflow = 8.1 cfs @ 12.06 hrs, Volume= 0.559 af, Atten= 0%, Lag= 0.0 min
Primary = 8.1 cfs @ 12.06 hrs, Volume= 0.559 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 16.35' @ 12.08 hrs
Flood Elev= 8.49'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.52'	**12.0" Round Culvert** L= 82.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.52' / 5.31' S= 0.0026 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=6.4 cfs @ 12.06 hrs HW=15.50' TW=11.33' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 6.4 cfs @ 8.12 fps)

Pond 30P: CB #1 (Altus Model)



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

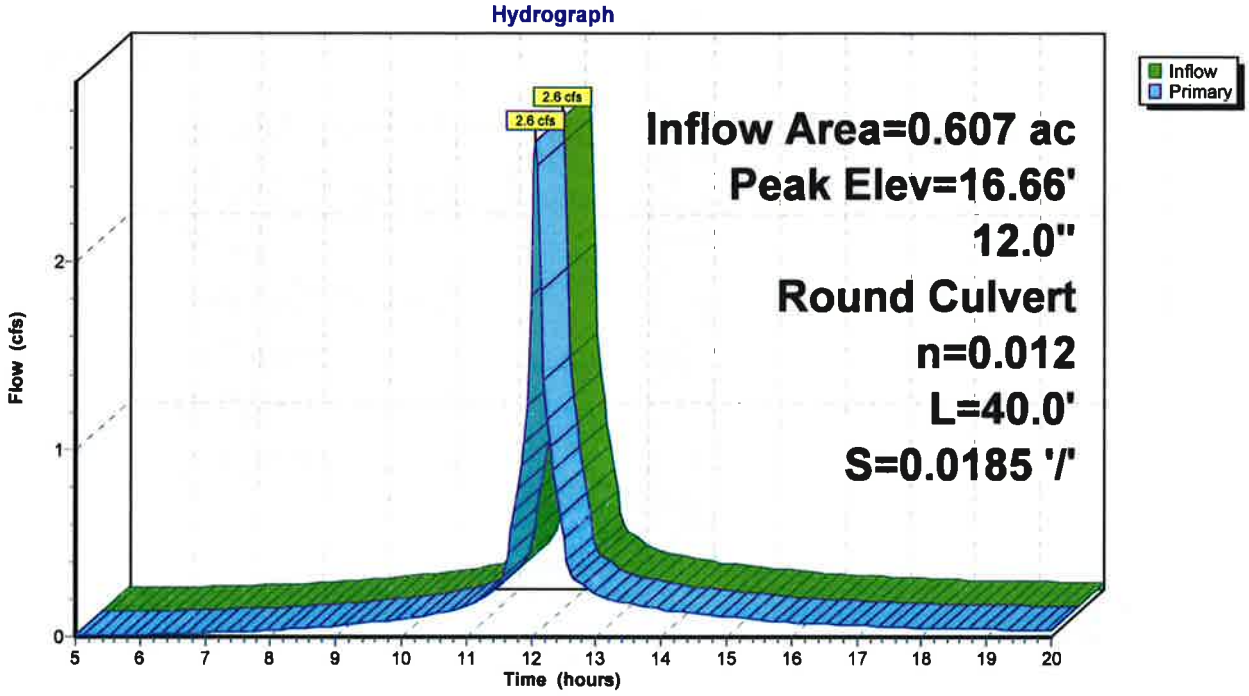
Inflow Area = 0.607 ac, 0.00% Impervious, Inflow Depth > 3.64" for 10 year event
Inflow = 2.6 cfs @ 12.07 hrs, Volume= 0.184 af
Outflow = 2.6 cfs @ 12.07 hrs, Volume= 0.184 af, Atten= 0%, Lag= 0.0 min
Primary = 2.6 cfs @ 12.07 hrs, Volume= 0.184 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 16.66' @ 12.13 hrs
Flood Elev= 8.44'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.34'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.34' / 5.60' S= 0.0185 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.07 hrs HW=13.25' TW=15.72' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond 31P: CB #2 (Altus Model)



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

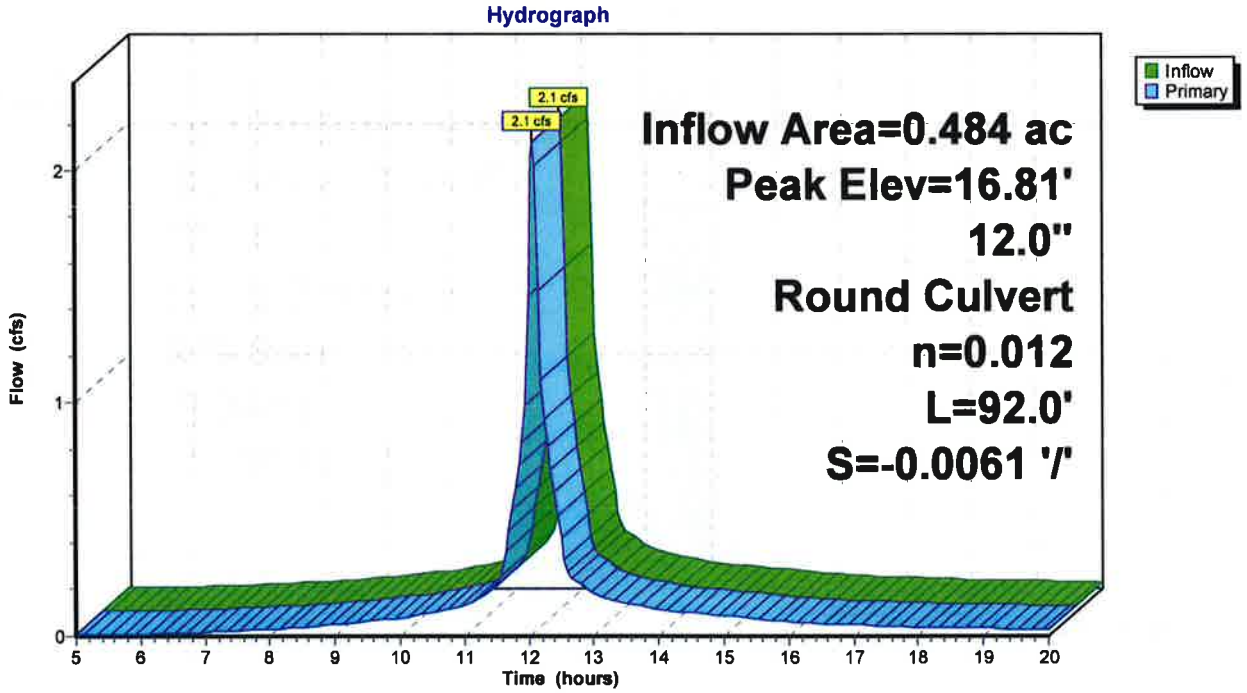
Inflow Area = 0.484 ac, 0.00% Impervious, Inflow Depth > 3.67" for 10 year event
Inflow = 2.1 cfs @ 12.07 hrs, Volume= 0.148 af
Outflow = 2.1 cfs @ 12.07 hrs, Volume= 0.148 af, Atten= 0%, Lag= 0.0 min
Primary = 2.1 cfs @ 12.07 hrs, Volume= 0.148 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 16.81' @ 12.18 hrs
Flood Elev= 8.53'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.44'	**12.0" Round Culvert** L= 92.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.88' / 6.44' S= -0.0061 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.07 hrs HW=10.14' TW=13.24' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Pond 32P: CB #3 (Altus Model)



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

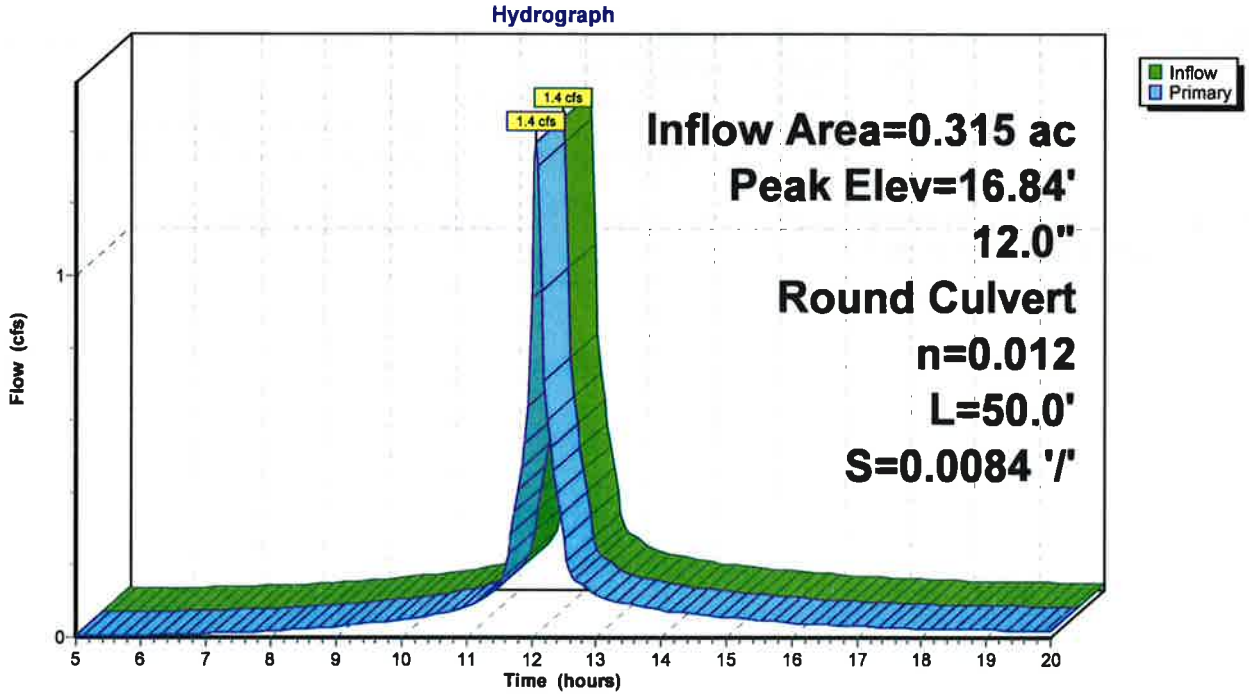
Inflow Area = 0.315 ac, 0.00% Impervious, Inflow Depth > 3.64" for 10 year event
Inflow = 1.4 cfs @ 12.07 hrs, Volume= 0.095 af
Outflow = 1.4 cfs @ 12.07 hrs, Volume= 0.095 af, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.07 hrs, Volume= 0.095 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 16.84' @ 12.23 hrs
Flood Elev= 8.83'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.38'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.38' / 5.96' S= 0.0084 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.07 hrs HW=8.50' TW=10.14' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond 33P: CB #4 (Altus Model)



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

Inflow Area = 0.938 ac, 80.14% Impervious, Inflow Depth > 4.14" for 10 year event
Inflow = 4.6 cfs @ 12.05 hrs, Volume= 0.324 af
Outflow = 4.8 cfs @ 12.05 hrs, Volume= 0.324 af, Atten= 0%, Lag= 0.0 min
Primary = 4.8 cfs @ 12.05 hrs, Volume= 0.324 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 17.32' @ 12.13 hrs Surf.Area= 164 sf Storage= 17 cf
Flood Elev= 8.68' Surf.Area= 0 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (739.3 - 739.3)

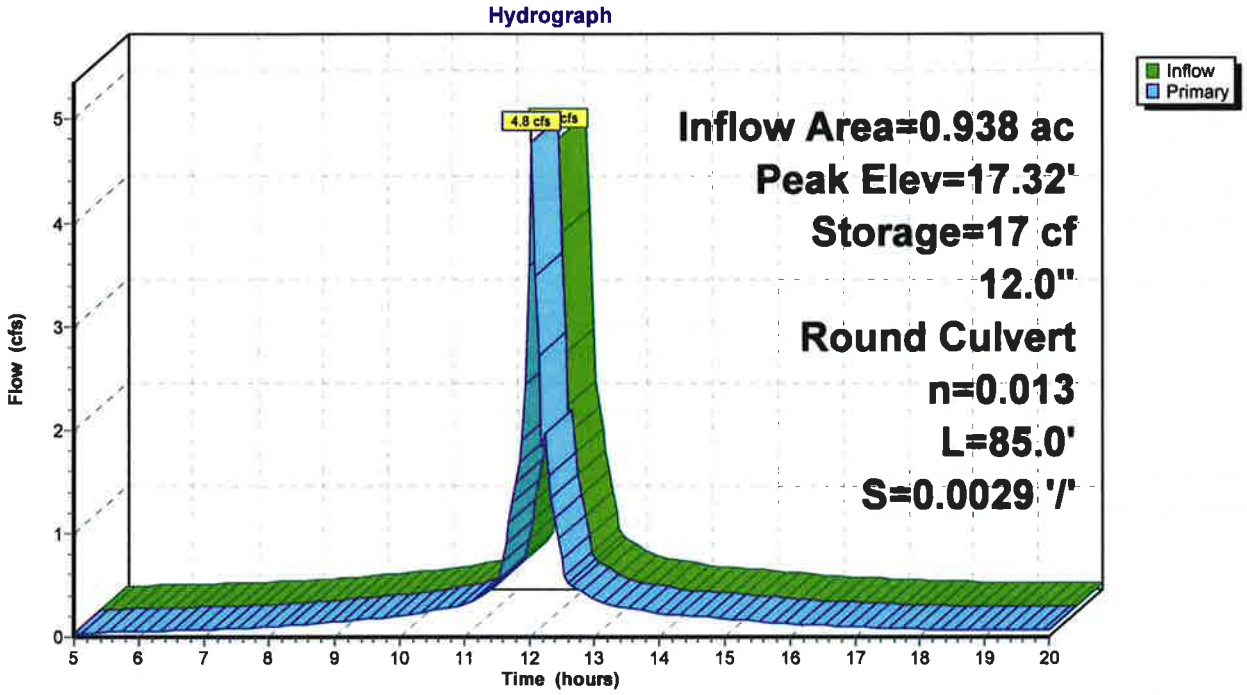
Volume	Invert	Avail.Storage	Storage Description
#1	8.68'	17 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
8.68	0	0.0	0	0	0
9.00	164	70.2	17	17	392

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=0.0 cfs @ 12.05 hrs HW=13.05' TW=15.33' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond 34P: CB #5 (Altus Model)



Summary for Pond AEI 2:

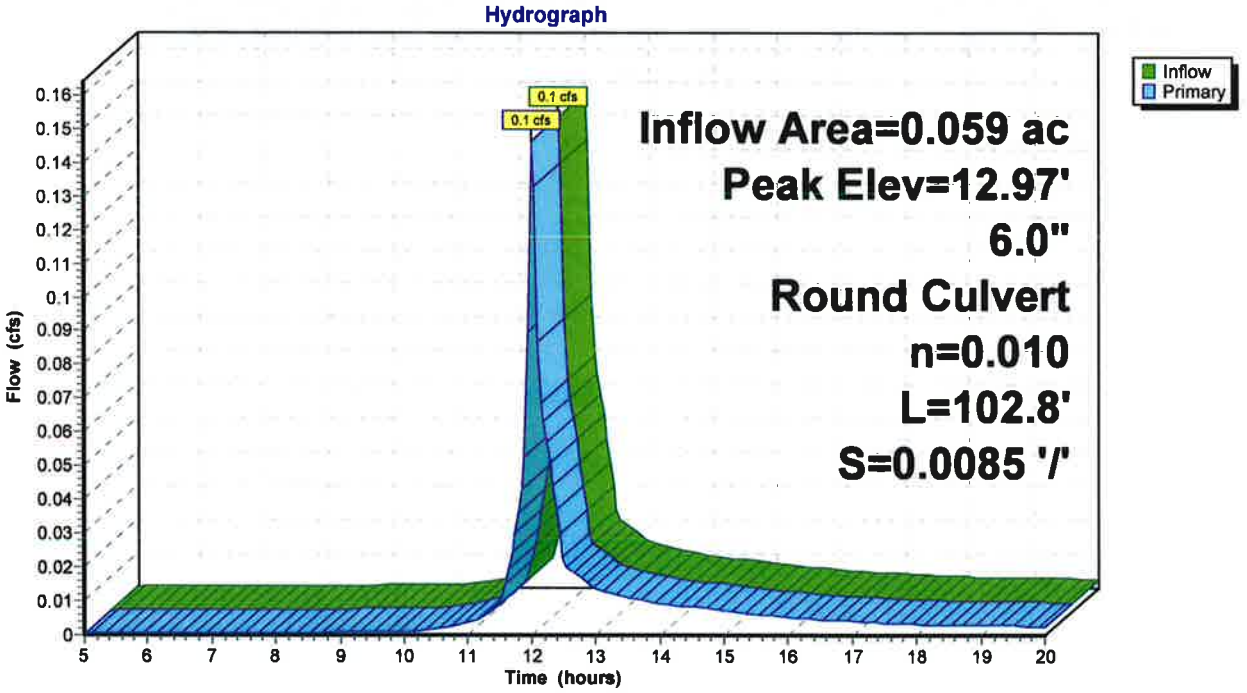
Inflow Area = 0.059 ac, 25.05% Impervious, Inflow Depth > 1.84" for 10 year event
Inflow = 0.1 cfs @ 12.02 hrs, Volume= 0.009 af
Outflow = 0.1 cfs @ 12.02 hrs, Volume= 0.009 af, Atten= 0%, Lag= 0.0 min
Primary = 0.1 cfs @ 12.02 hrs, Volume= 0.009 af

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:

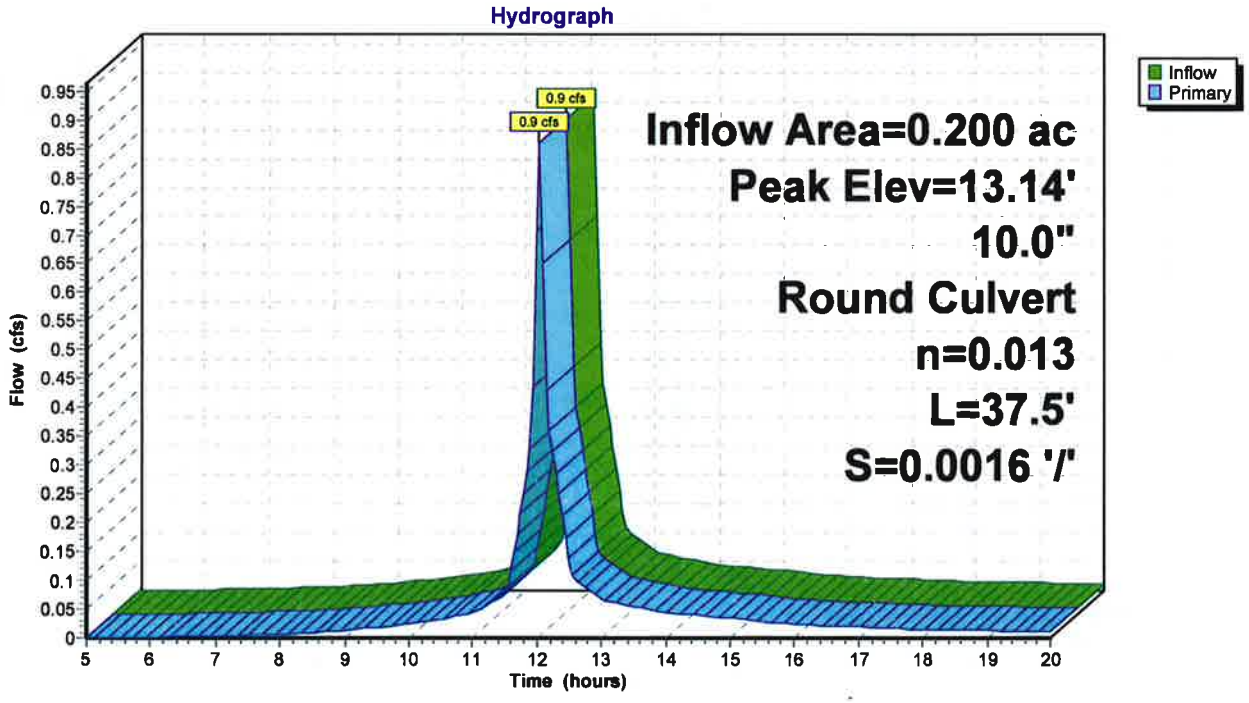
Inflow Area = 0.200 ac, 70.65% Impervious, Inflow Depth > 3.24" for 10 year event
Inflow = 0.9 cfs @ 12.05 hrs, Volume= 0.054 af
Outflow = 0.9 cfs @ 12.05 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min
Primary = 0.9 cfs @ 12.05 hrs, Volume= 0.054 af

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:

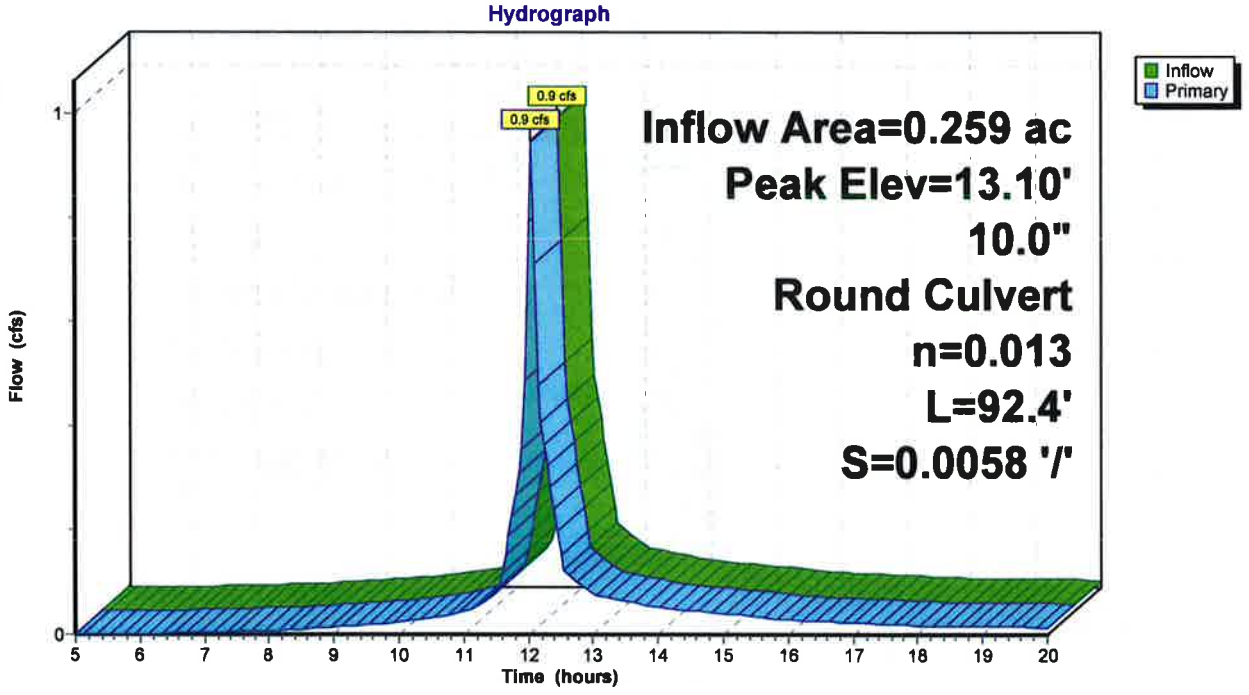
Inflow Area = 0.259 ac, 54.37% Impervious, Inflow Depth > 2.76" for 10 year event
Inflow = 0.9 cfs @ 12.04 hrs, Volume= 0.060 af
Outflow = 0.9 cfs @ 12.04 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min
Primary = 0.9 cfs @ 12.04 hrs, Volume= 0.060 af

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:

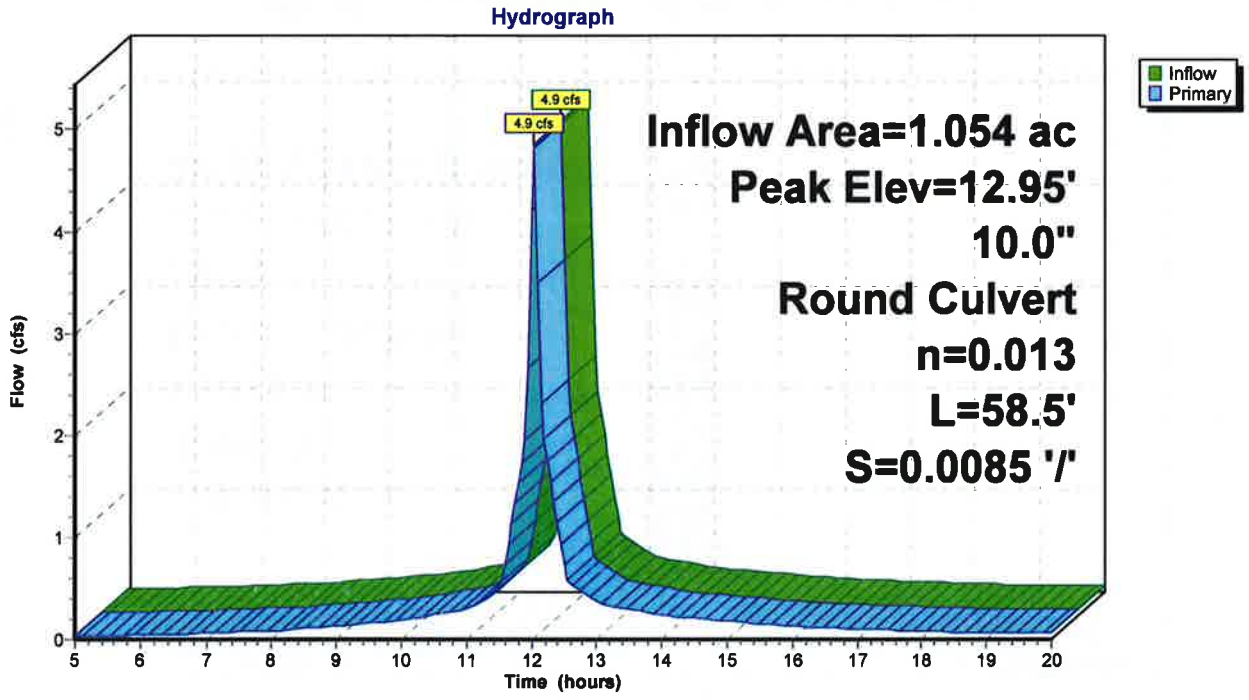
Inflow Area = 1.054 ac, 83.18% Impervious, Inflow Depth > 3.72" for 10 year event
Inflow = 4.9 cfs @ 12.04 hrs, Volume= 0.327 af
Outflow = 4.9 cfs @ 12.04 hrs, Volume= 0.327 af, Atten= 0%, Lag= 0.0 min
Primary = 4.9 cfs @ 12.04 hrs, Volume= 0.327 af

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)

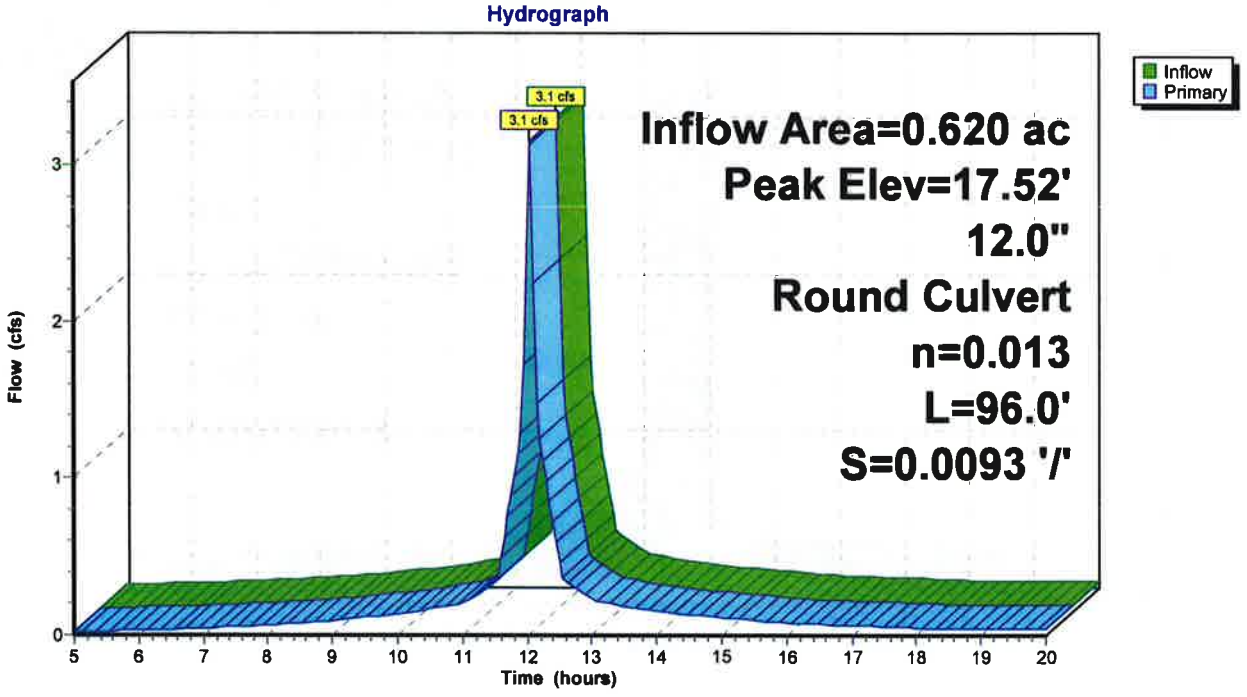
Inflow Area = 0.620 ac, 93.86% Impervious, Inflow Depth > 4.13" for 10 year event
Inflow = 3.1 cfs @ 12.04 hrs, Volume= 0.213 af
Outflow = 3.1 cfs @ 12.04 hrs, Volume= 0.213 af, Atten= 0%, Lag= 0.0 min
Primary = 3.1 cfs @ 12.04 hrs, Volume= 0.213 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 17.52' @ 12.18 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=0.0 cfs @ 12.04 hrs HW=10.55' TW=12.46' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

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



Summary for Pond CB 4433:

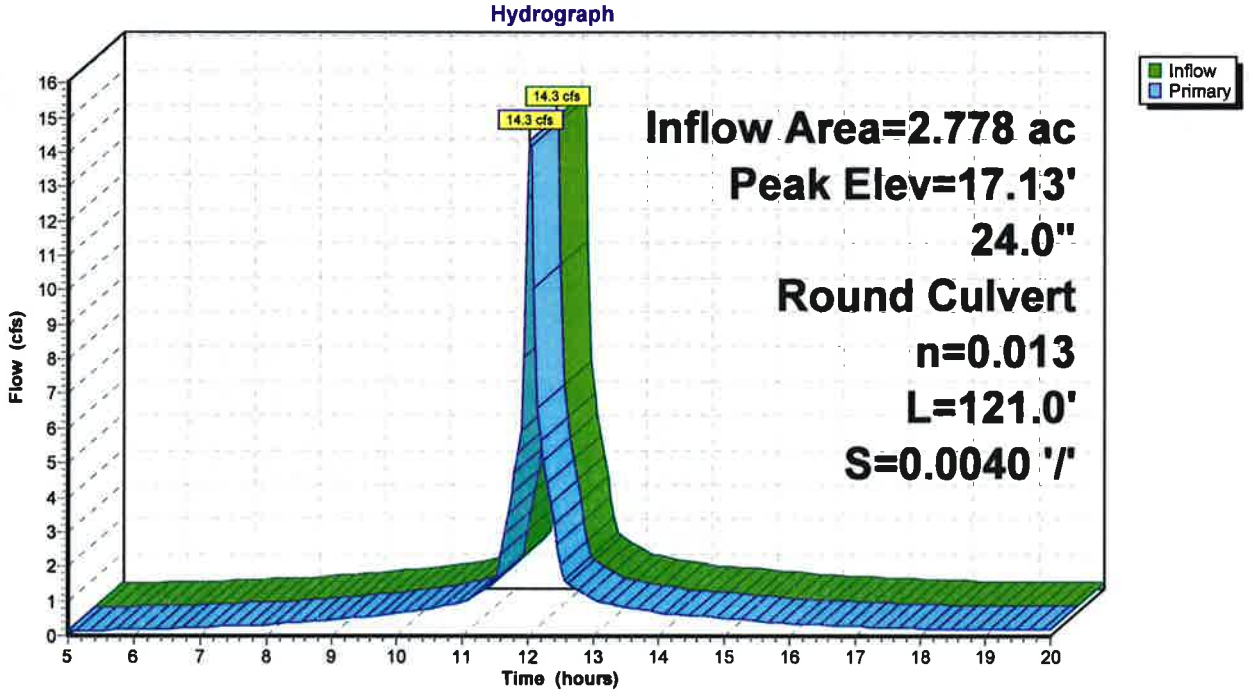
Inflow Area = 2.778 ac,100.00% Impervious, Inflow Depth > 4.29" for 10 year event
Inflow = 14.3 cfs @ 12.04 hrs, Volume= 0.993 af
Outflow = 14.3 cfs @ 12.04 hrs, Volume= 0.993 af, Atten= 0%, Lag= 0.0 min
Primary = 14.3 cfs @ 12.04 hrs, Volume= 0.993 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 17.13' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	14.68'	**24.0" Round Culvert** L= 121.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.68' / 14.19' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.0 cfs @ 12.04 hrs HW=17.03' TW=16.34' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 12.0 cfs @ 4.08 fps)

Pond CB 4433:



Summary for Pond CB 4435:

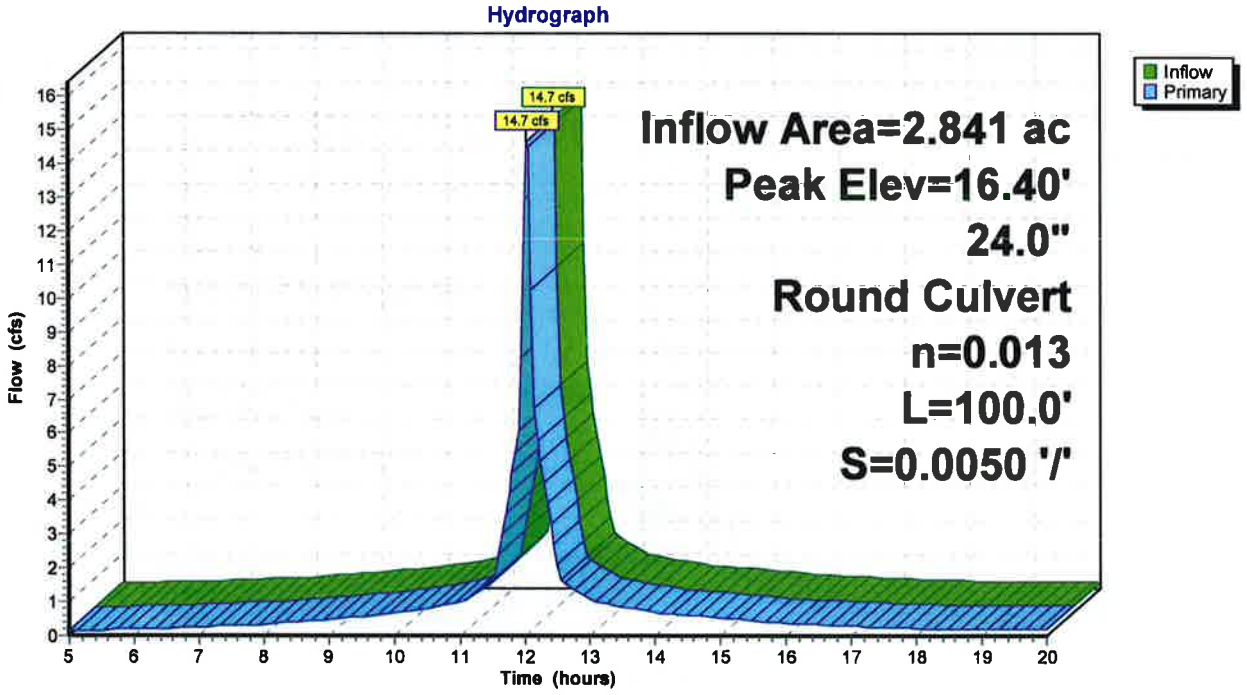
Inflow Area = 2.841 ac,100.00% Impervious, Inflow Depth > 4.29" for 10 year event
Inflow = 14.7 cfs @ 12.04 hrs, Volume= 1.016 af
Outflow = 14.7 cfs @ 12.04 hrs, Volume= 1.016 af, Atten= 0%, Lag= 0.0 min
Primary = 14.7 cfs @ 12.04 hrs, Volume= 1.016 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 16.40' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	14.19'	**24.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.19' / 13.69' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=14.2 cfs @ 12.04 hrs HW=16.34' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 14.2 cfs @ 5.21 fps)

Pond CB 4435:



Summary for Pond CB 4560:

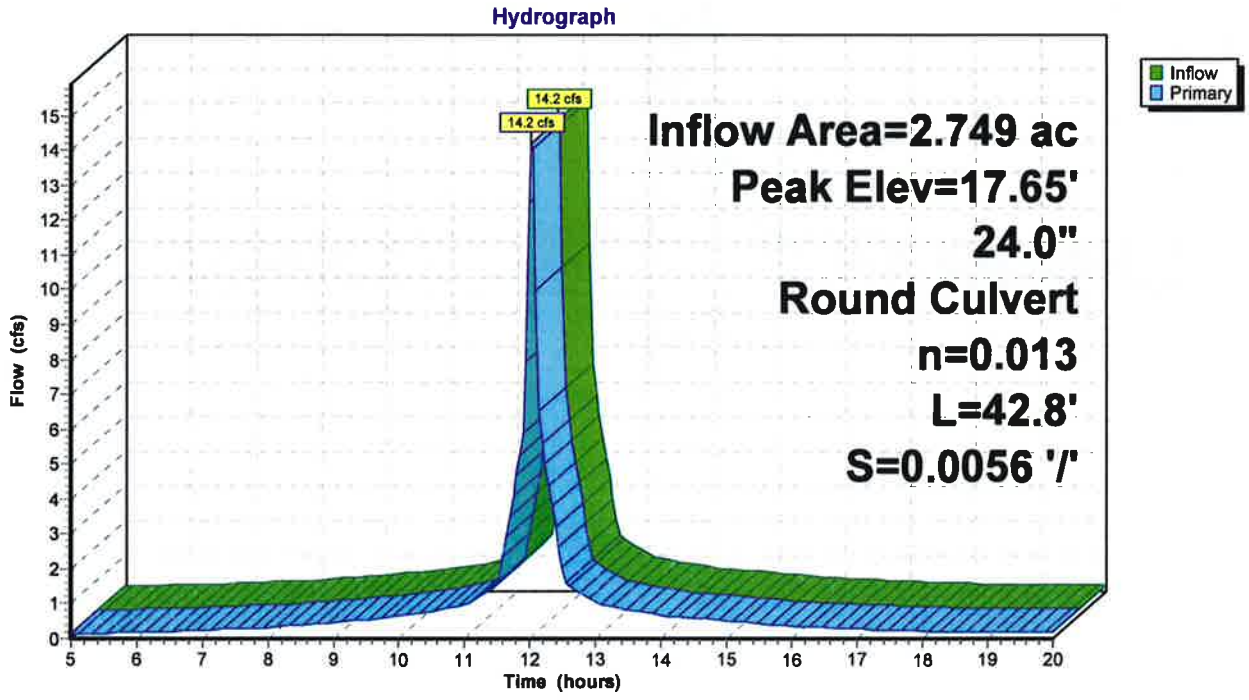
Inflow Area = 2.749 ac,100.00% Impervious, Inflow Depth > 4.29" for 10 year event
Inflow = 14.2 cfs @ 12.04 hrs, Volume= 0.983 af
Outflow = 14.2 cfs @ 12.04 hrs, Volume= 0.983 af, Atten= 0%, Lag= 0.0 min
Primary = 14.2 cfs @ 12.04 hrs, Volume= 0.983 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 17.65' @ 12.07 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' / 14.68' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=9.6 cfs @ 12.04 hrs HW=17.44' TW=17.04' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 9.6 cfs @ 3.05 fps)

Pond CB 4560:

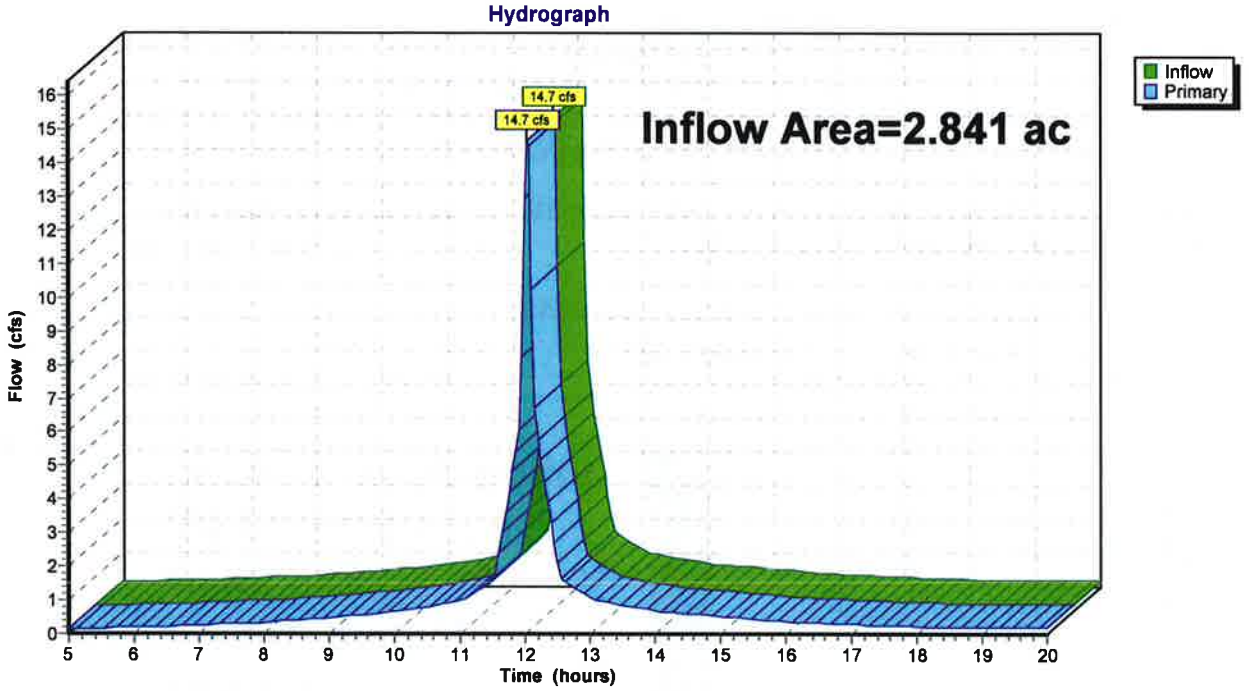


Summary for Link 2L: Discharge Point 2 (Court Street Drainage)

Inflow Area = 2.841 ac,100.00% Impervious, Inflow Depth > 4.29" for 10 year event
Inflow = 14.7 cfs @ 12.04 hrs, Volume= 1.016 af
Primary = 14.7 cfs @ 12.04 hrs, Volume= 1.016 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)

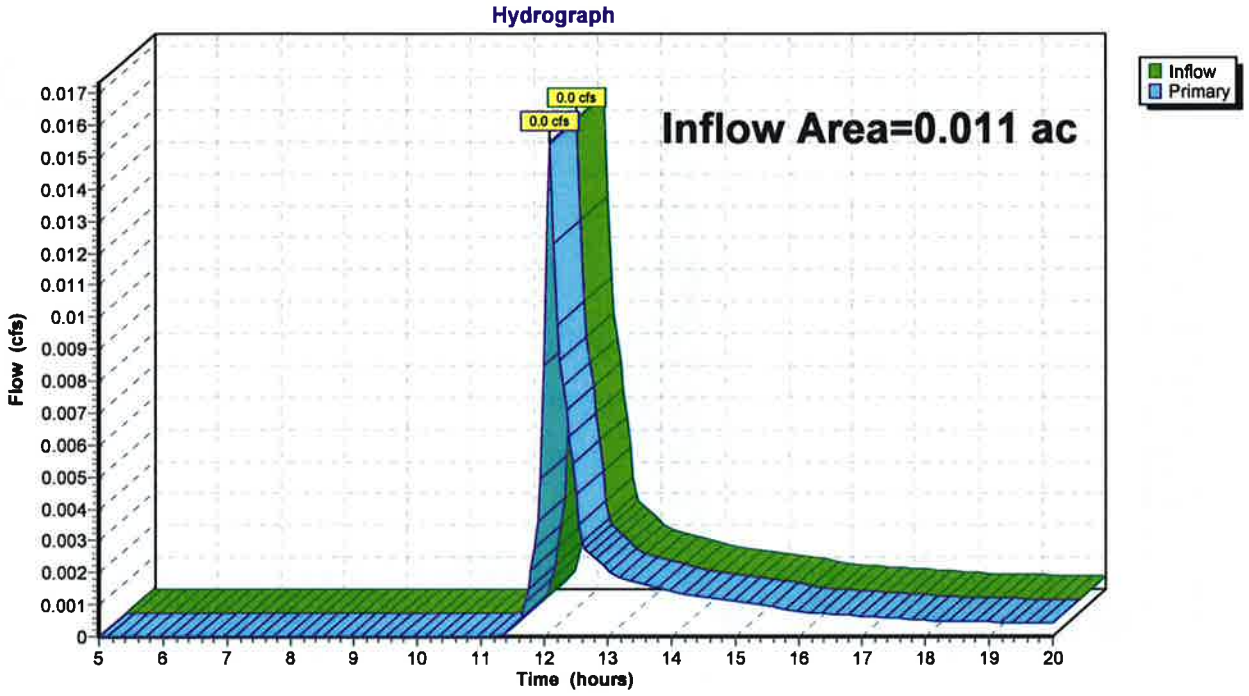


Summary for Link 3L: Discharge Point 4 (DP4)

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)

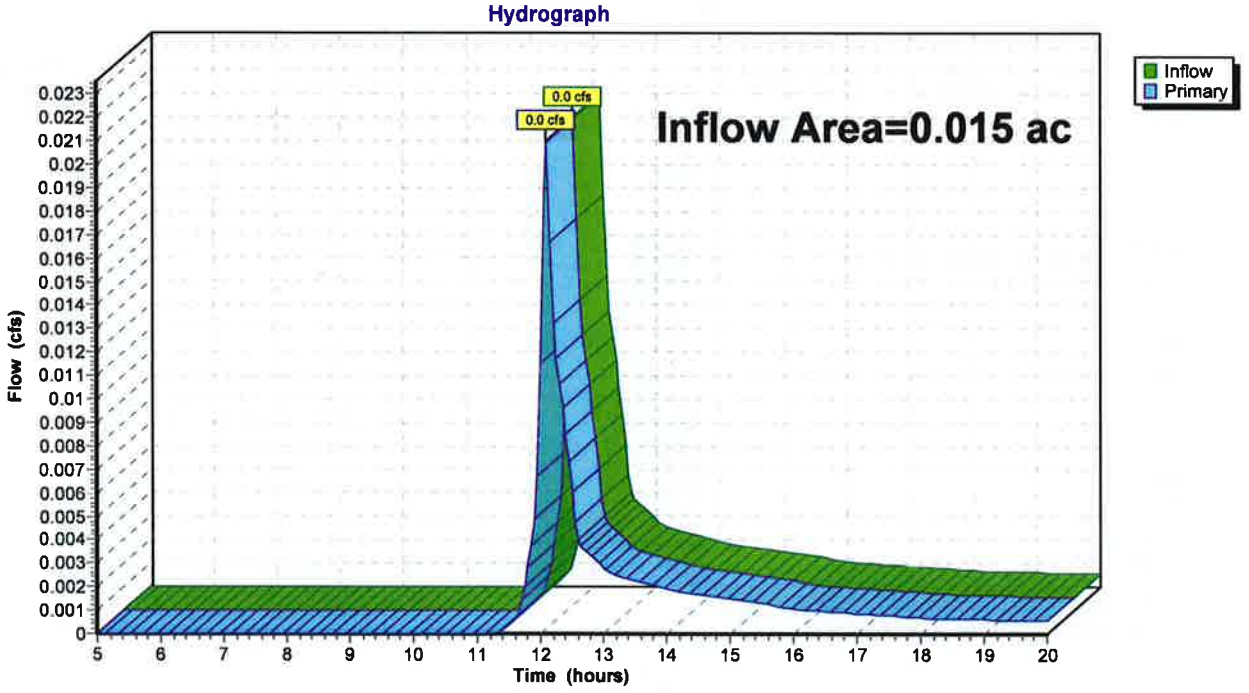


Summary for Link 4L: Discharge Point 5 (DP5)

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)

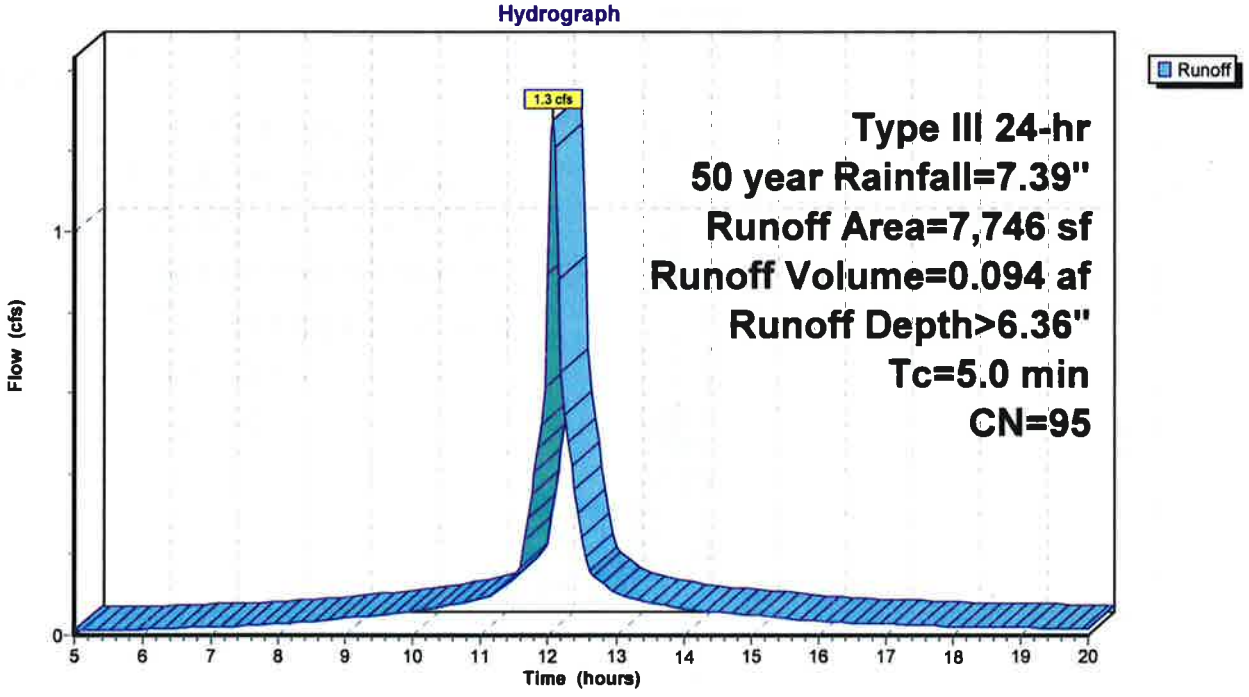
Runoff = 1.3 cfs @ 12.07 hrs, Volume= 0.094 af, Depth> 6.36"

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)

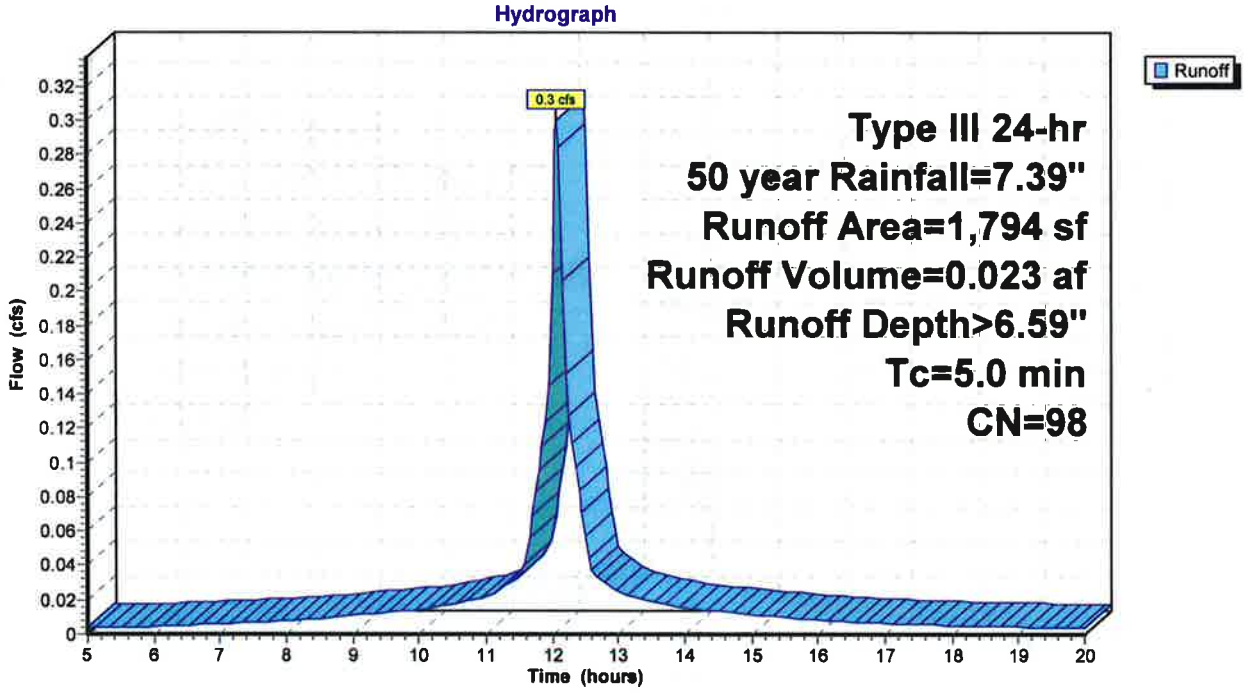
Runoff = 0.3 cfs @ 12.07 hrs, Volume= 0.023 af, Depth> 6.59"

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)

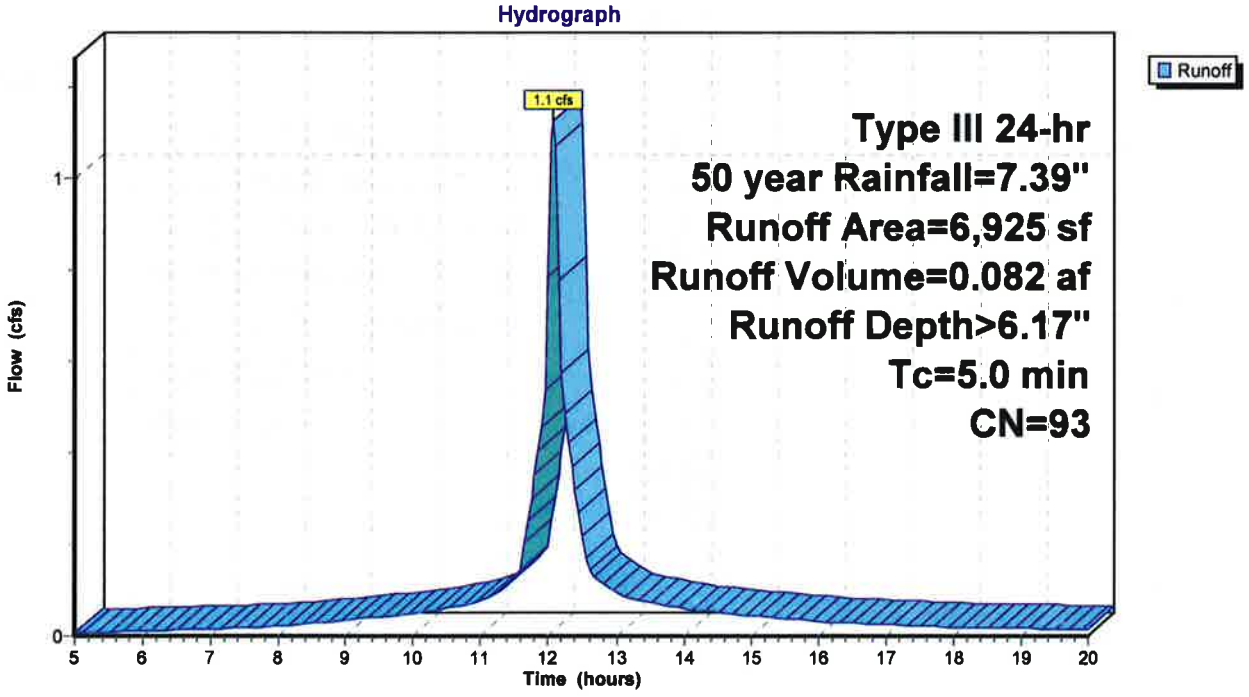
Runoff = 1.1 cfs @ 12.07 hrs, Volume= 0.082 af, Depth> 6.17"

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)

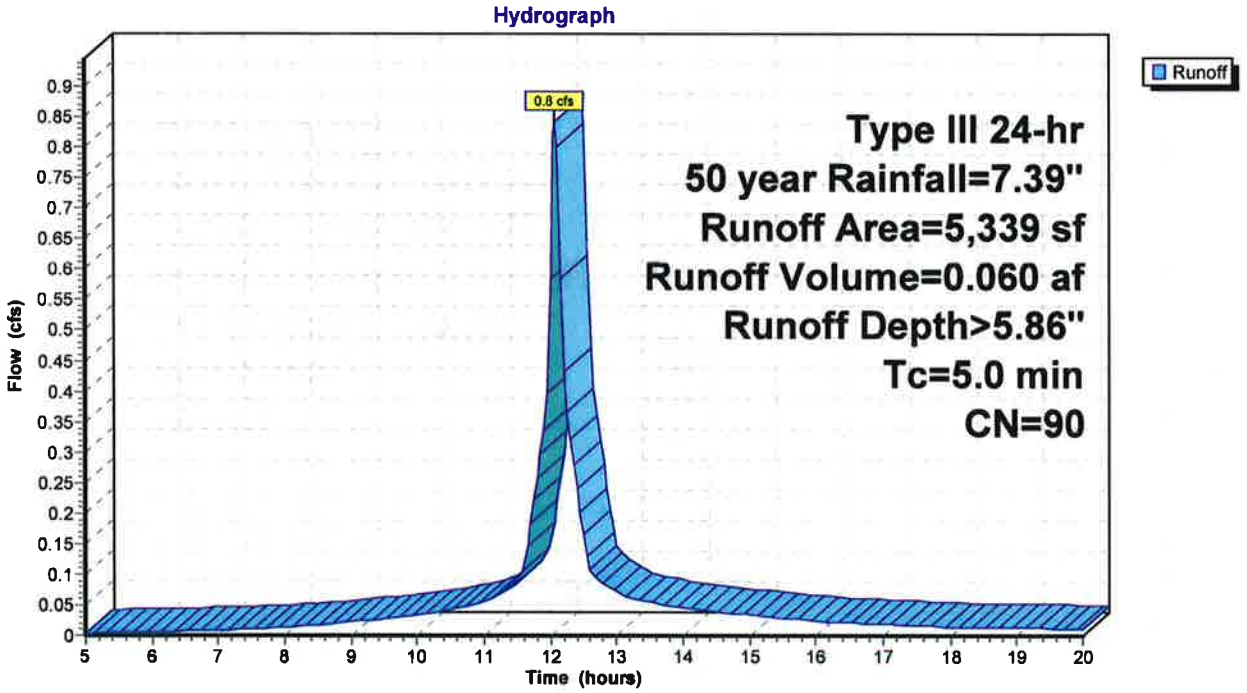
Runoff = 0.8 cfs @ 12.07 hrs, Volume= 0.060 af, Depth> 5.86"

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)

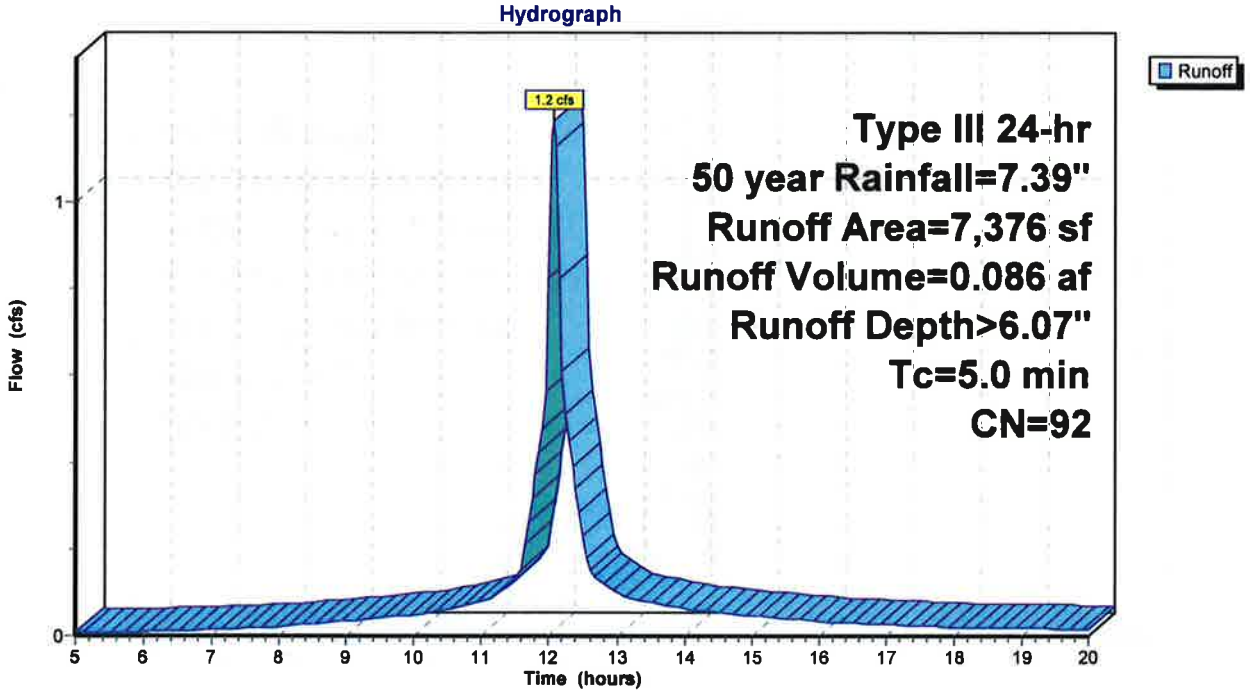
Runoff = 1.2 cfs @ 12.07 hrs, Volume= 0.086 af, Depth> 6.07"

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)

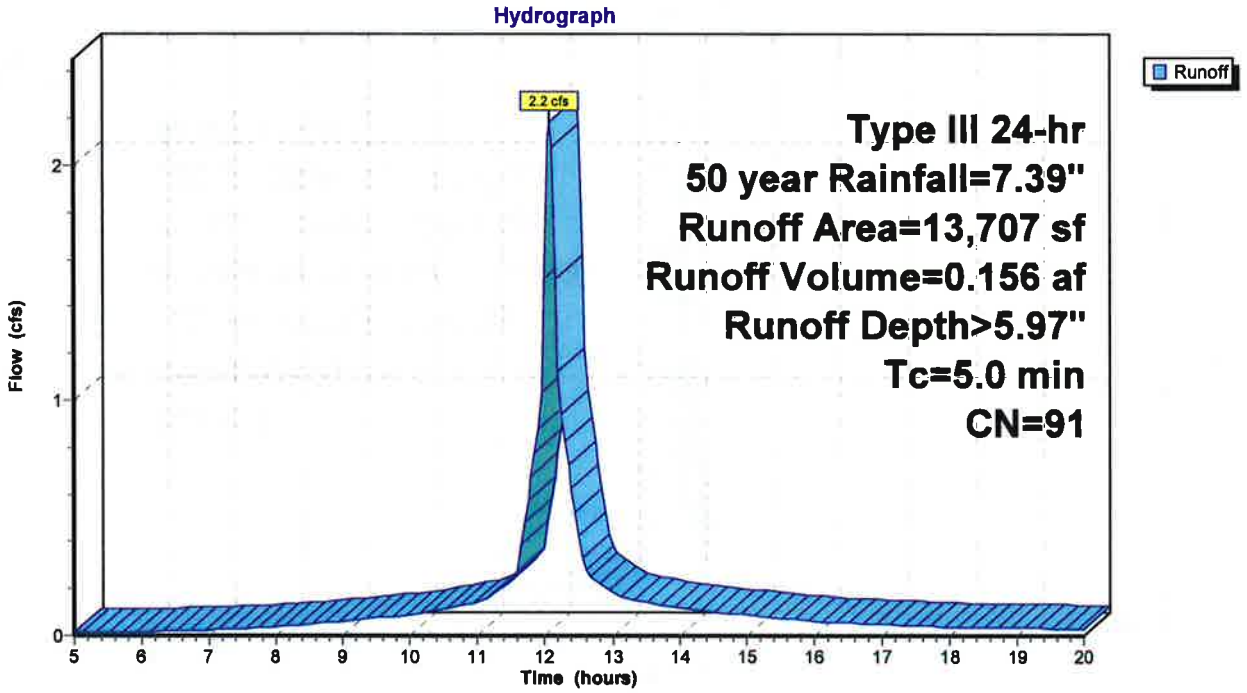
Runoff = 2.2 cfs @ 12.07 hrs, Volume= 0.156 af, Depth> 5.97"

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)

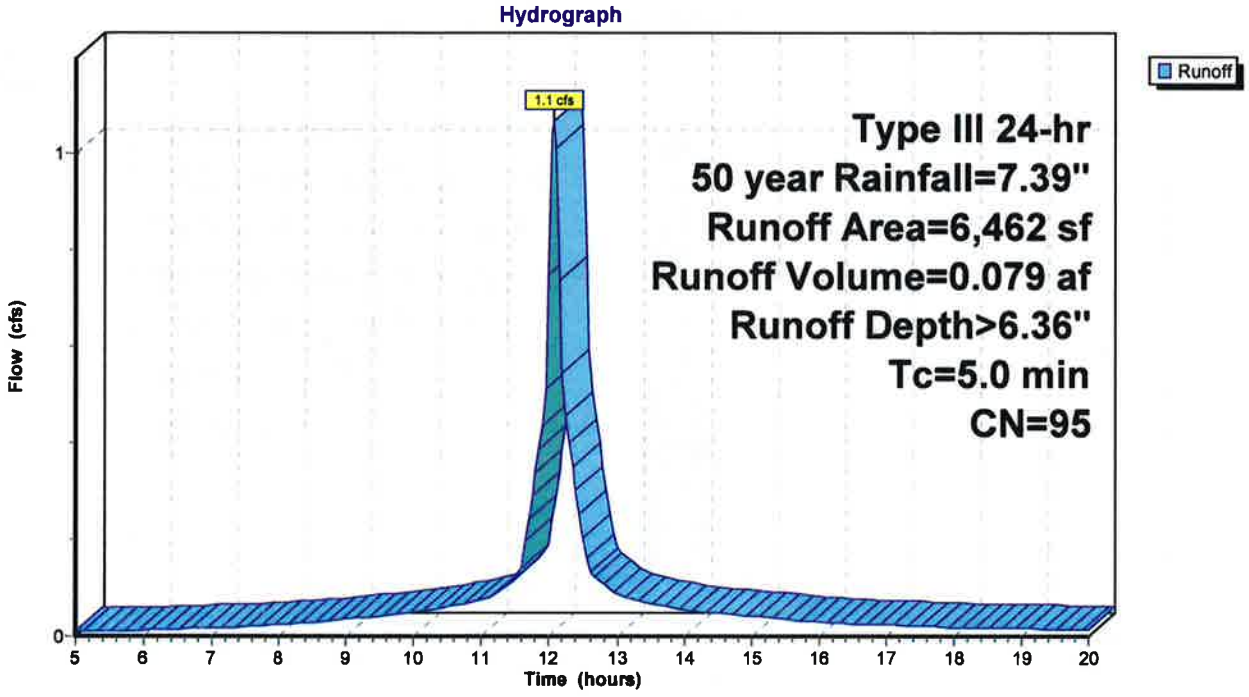
Runoff = 1.1 cfs @ 12.07 hrs, Volume= 0.079 af, Depth> 6.36"

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)

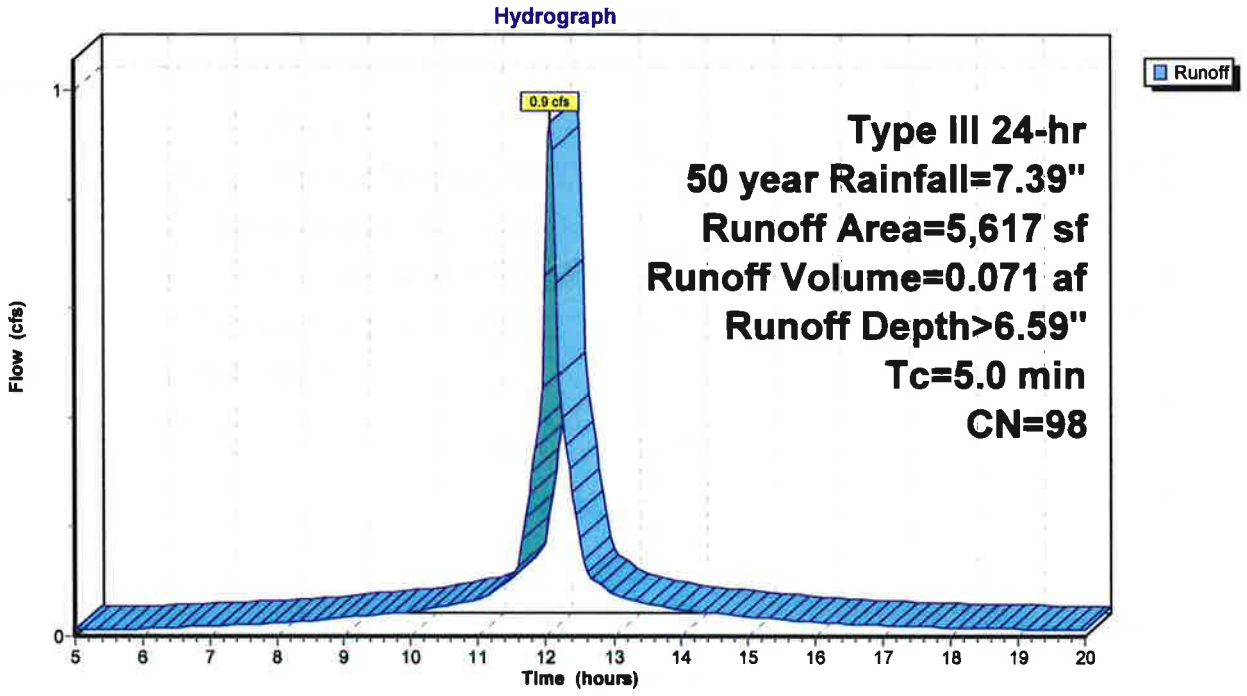
Runoff = 0.9 cfs @ 12.07 hrs, Volume= 0.071 af, Depth> 6.59"

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:

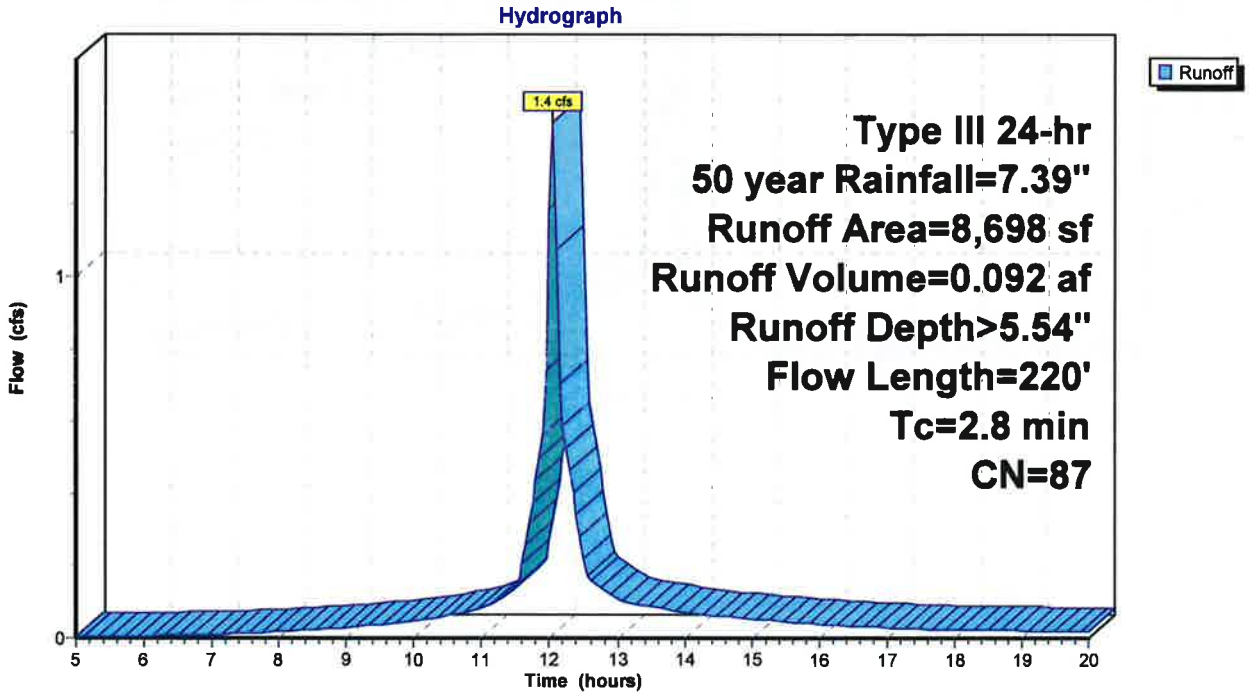
Runoff = 1.4 cfs @ 12.05 hrs, Volume= 0.092 af, Depth> 5.54"

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

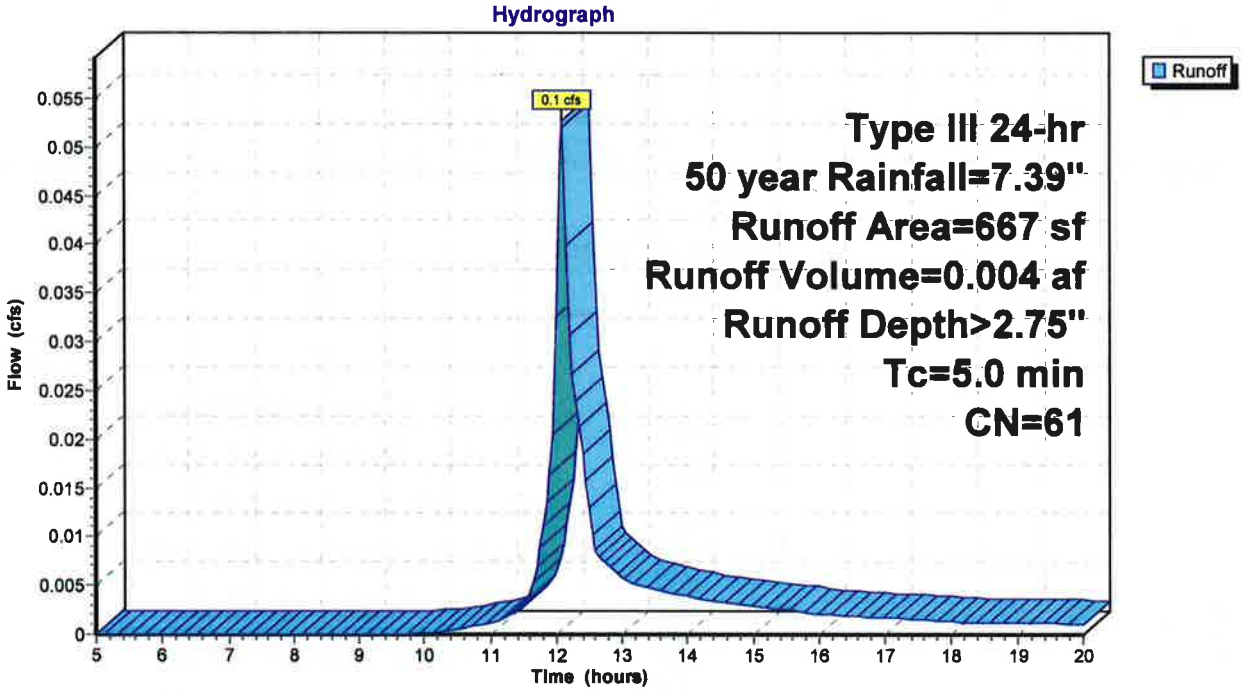
Runoff = 0.1 cfs @ 12.08 hrs, Volume= 0.004 af, Depth> 2.75"

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:

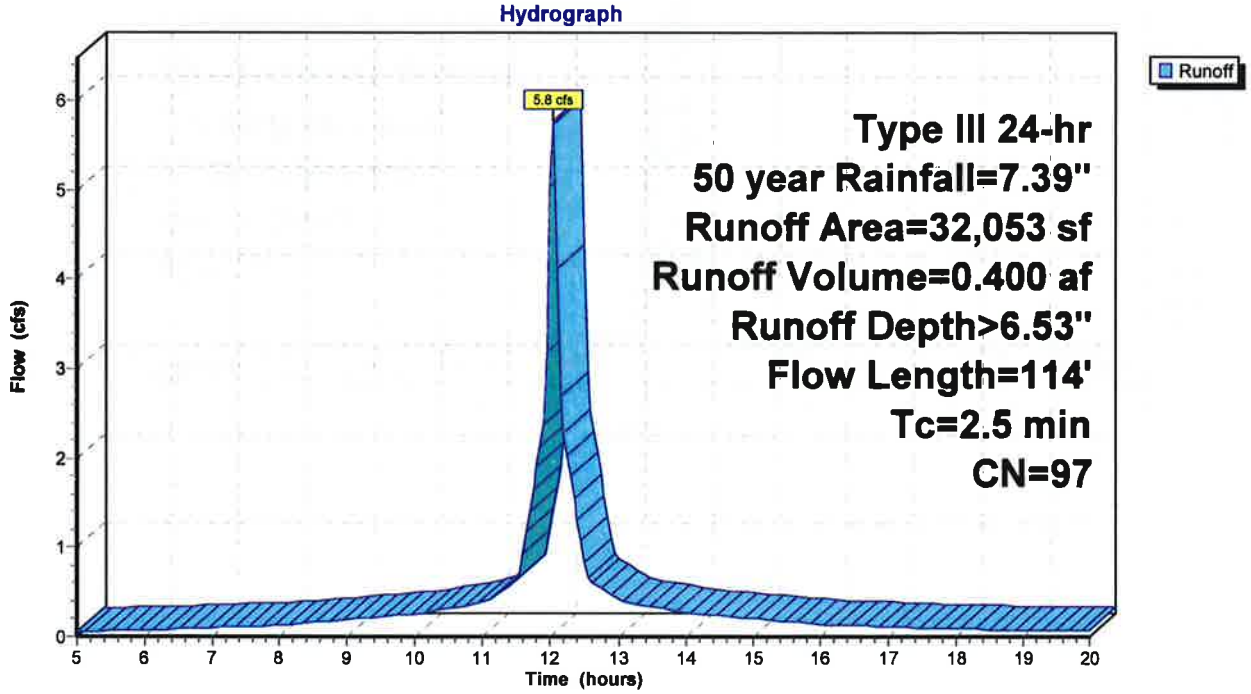
Runoff = 5.8 cfs @ 12.04 hrs, Volume= 0.400 af, Depth> 6.53"

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:

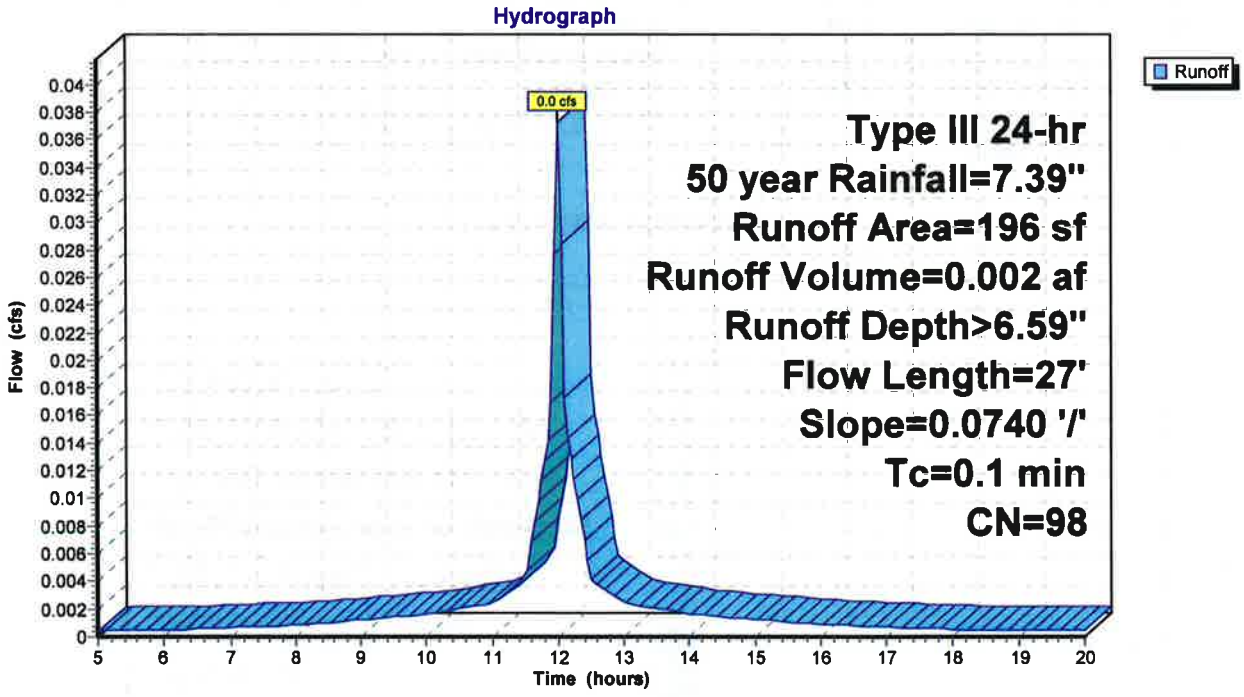
Runoff = 0.0 cfs @ 12.00 hrs, Volume= 0.002 af, Depth> 6.59"

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:

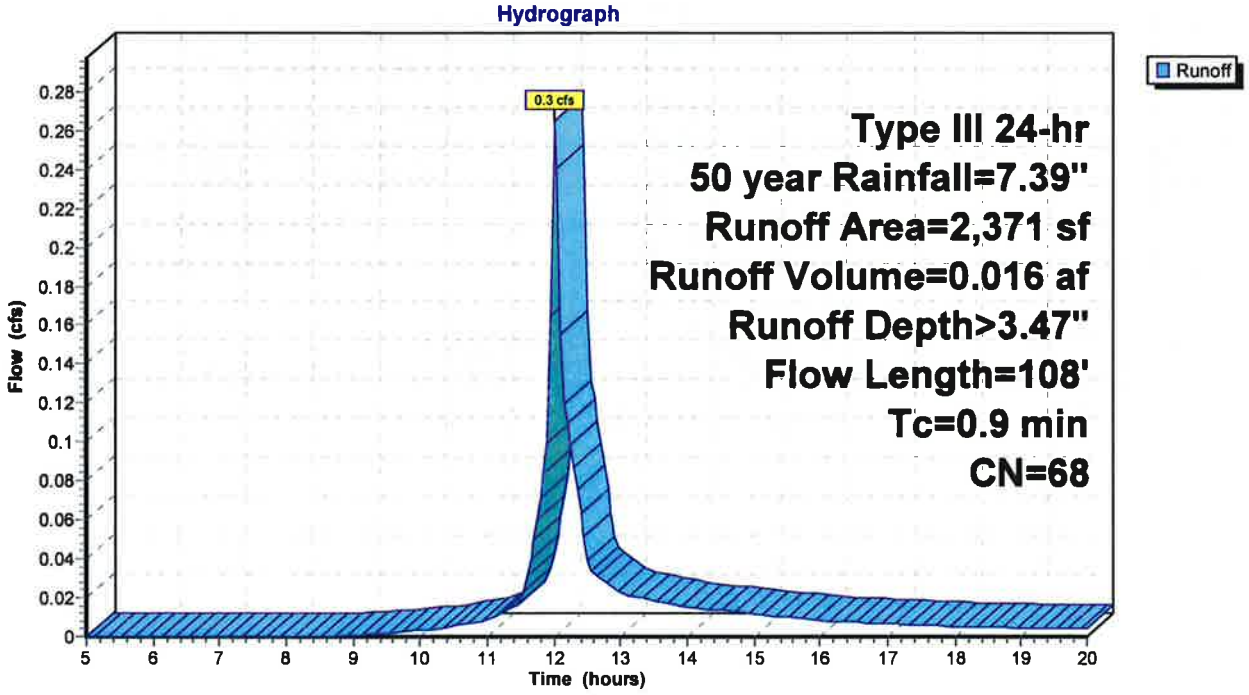
Runoff = 0.3 cfs @ 12.02 hrs, Volume= 0.016 af, Depth> 3.47"

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:

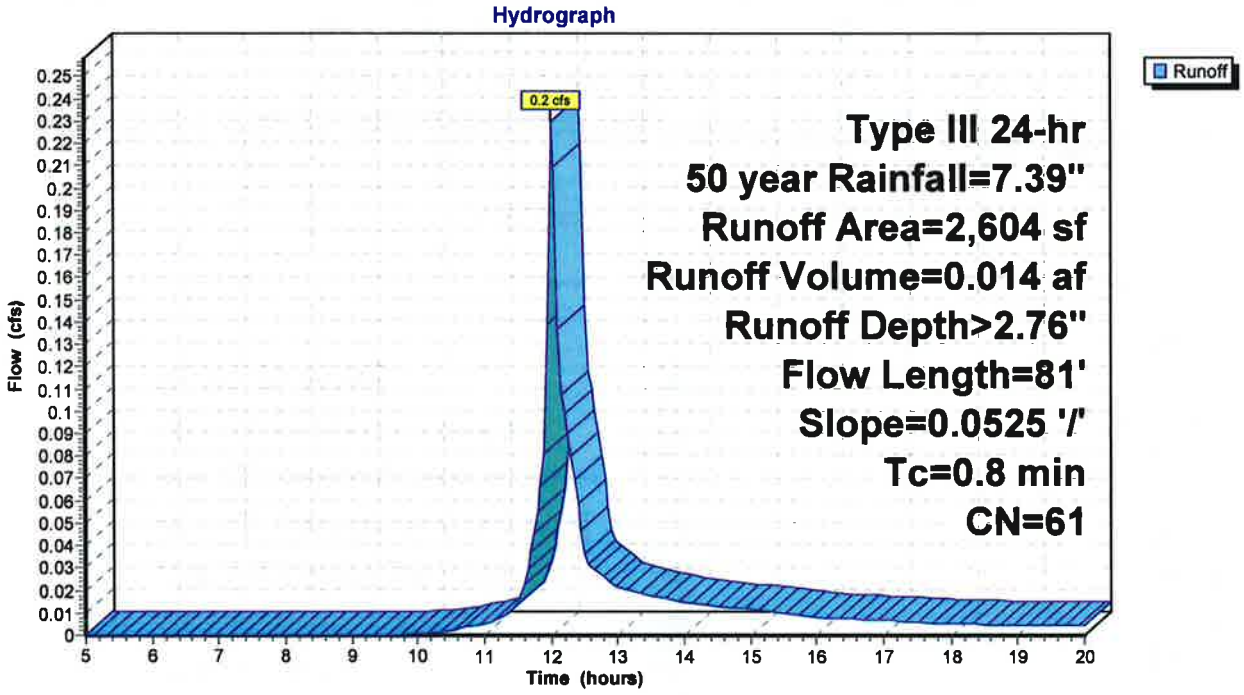
Runoff = 0.2 cfs @ 12.02 hrs, Volume= 0.014 af, Depth> 2.76"

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

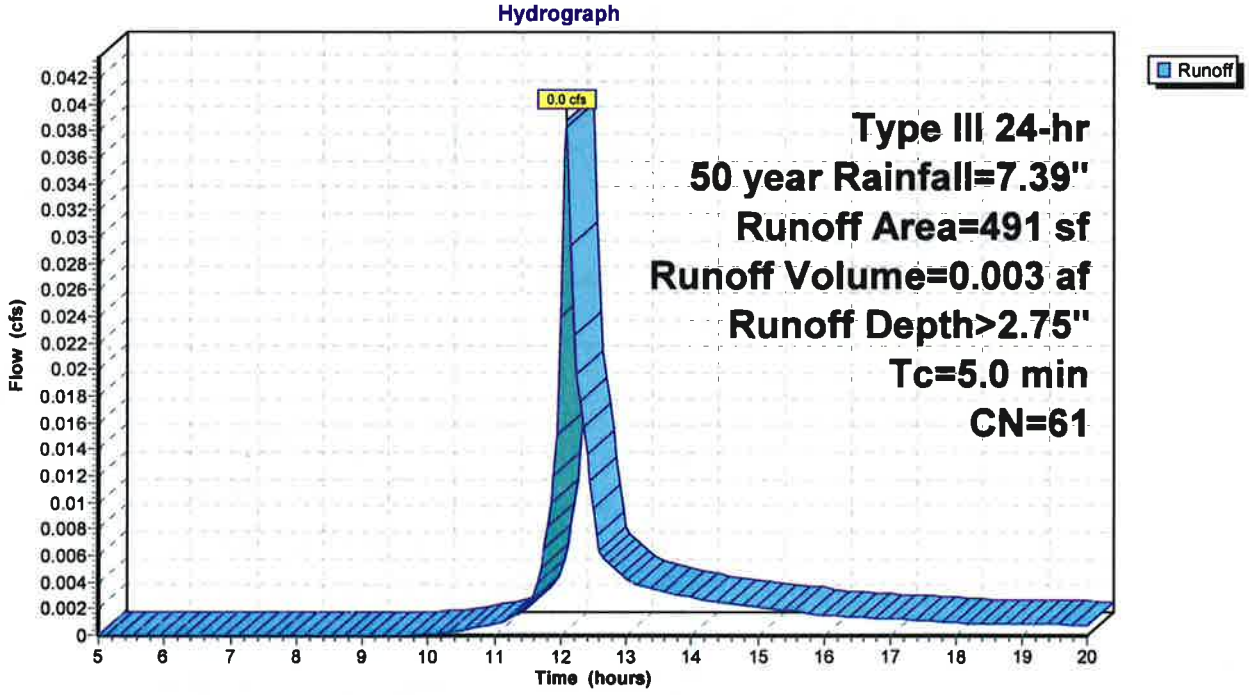
Runoff = 0.0 cfs @ 12.08 hrs, Volume= 0.003 af, Depth> 2.75"

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:

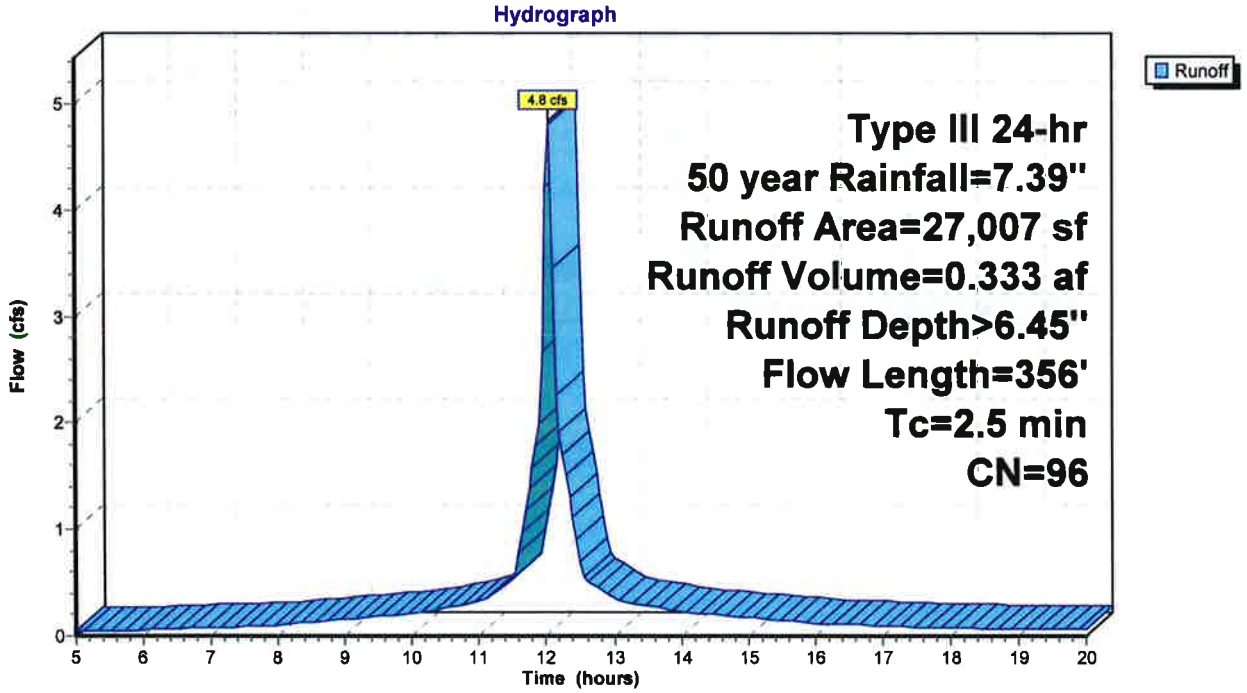
Runoff = 4.8 cfs @ 12.04 hrs, Volume= 0.333 af, Depth> 6.45"

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:

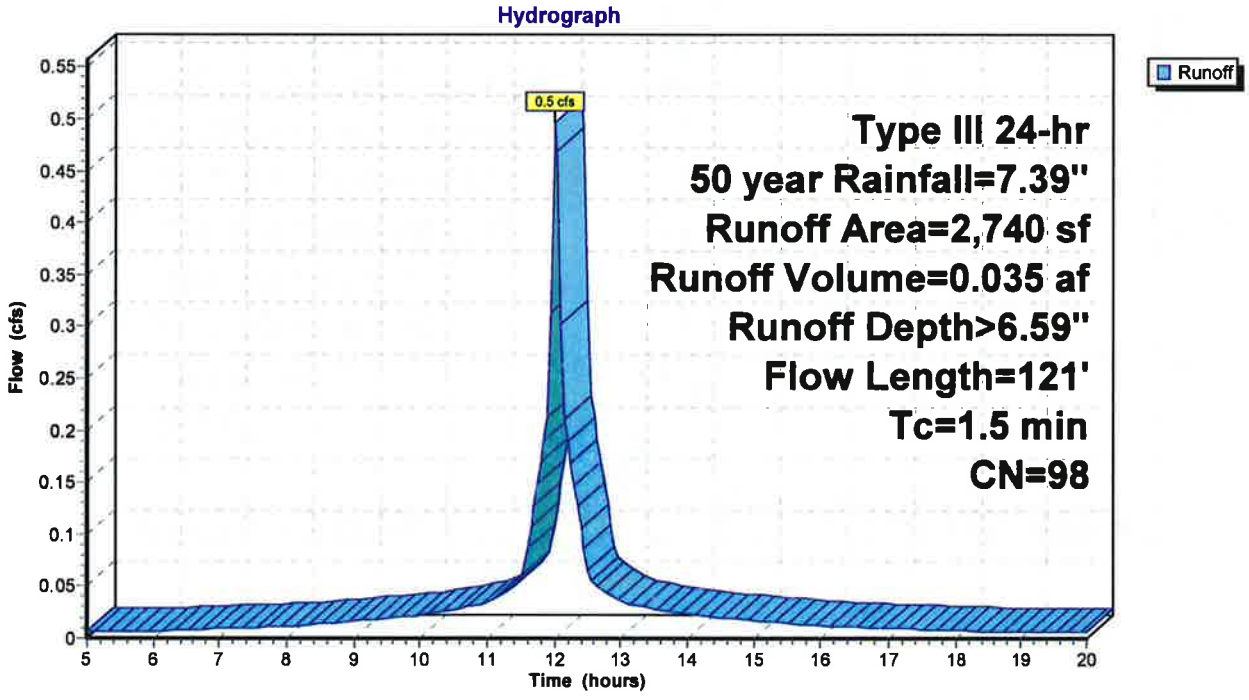
Runoff = 0.5 cfs @ 12.02 hrs, Volume= 0.035 af, Depth> 6.59"

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:

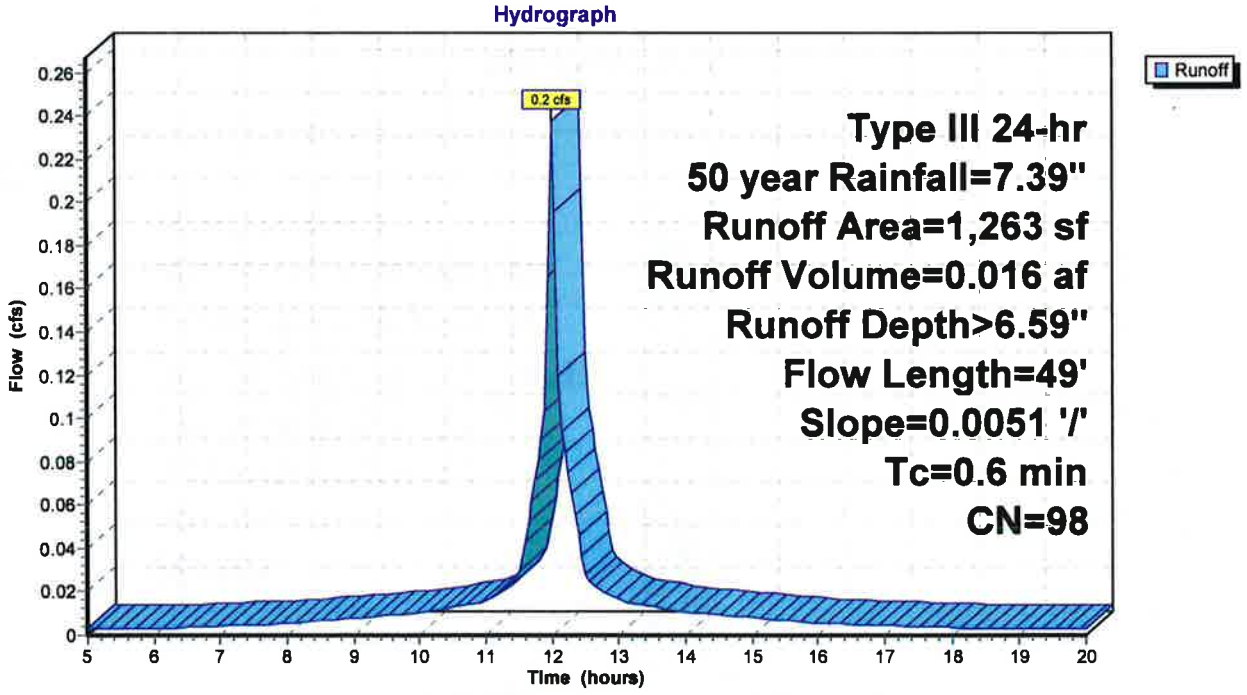
Runoff = 0.2 cfs @ 12.01 hrs, Volume= 0.016 af, Depth> 6.59"

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 PS8: Court Street

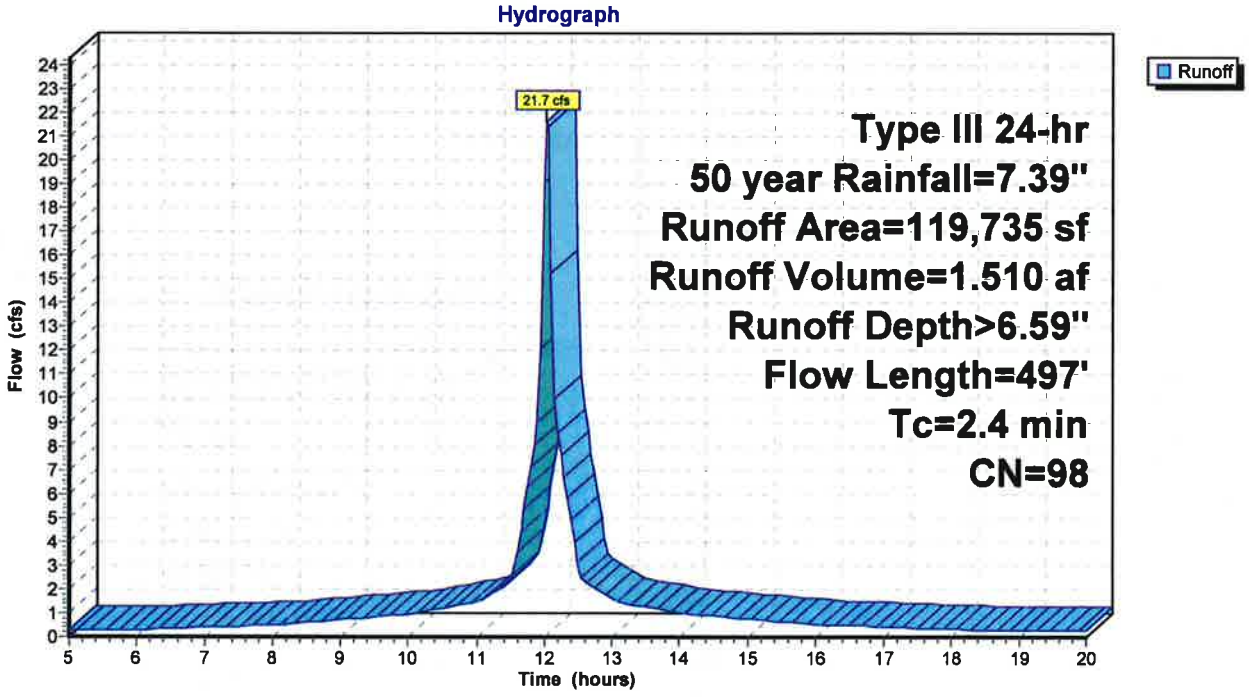
Runoff = 21.7 cfs @ 12.04 hrs, Volume= 1.510 af, Depth> 6.59"

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
119,735	98	Paved parking, HSG B
119,735		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	260	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	237	0.0050	4.20	7.43	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
2.4	497	Total			

Subcatchment PS8: Court Street



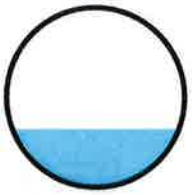
Summary for Reach 4R: Altus Model

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

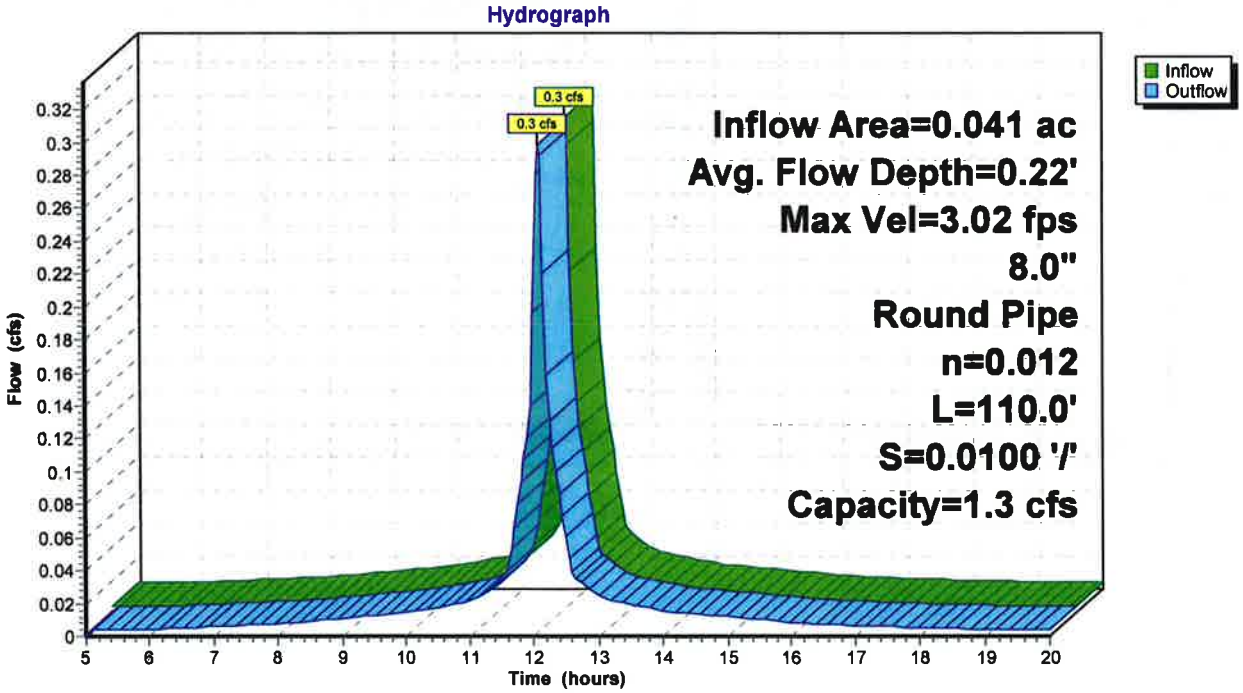
Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.02 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.17 fps, Avg. Travel Time= 1.6 min

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'



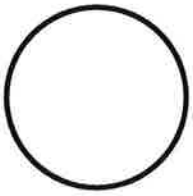
Reach 4R: Altus Model



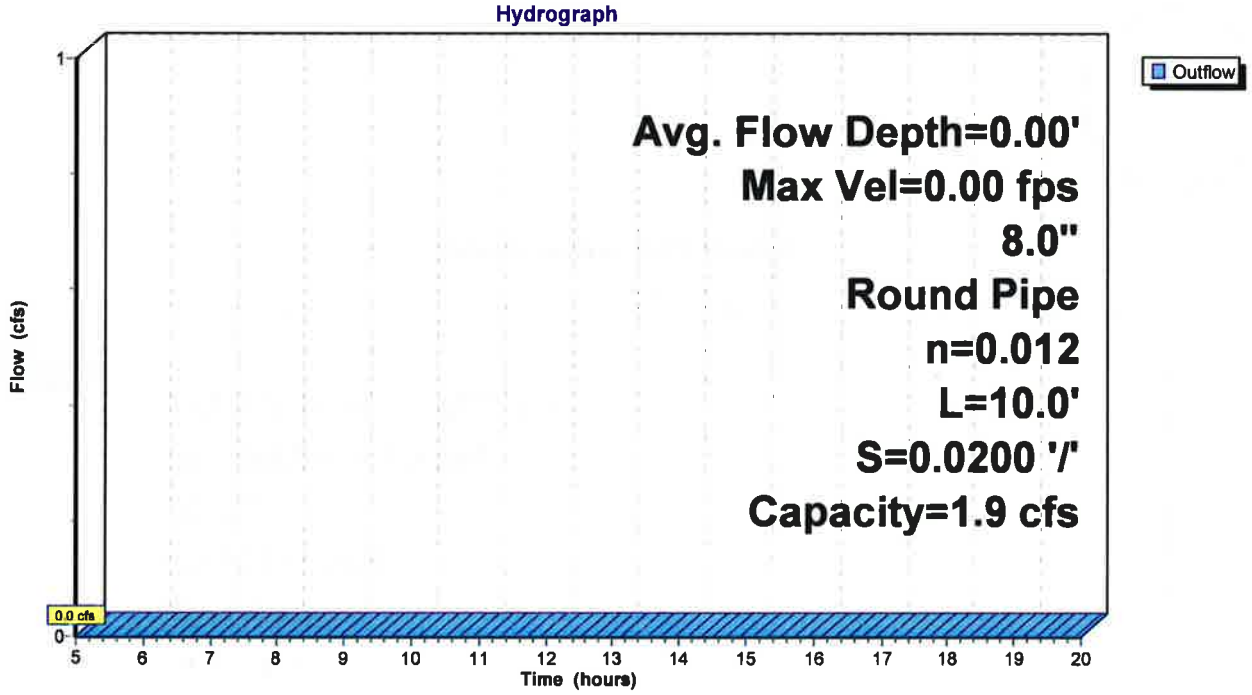
Summary for Reach 40R: Altus Model

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



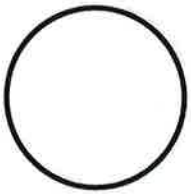
Summary for Reach 41R: Altus Model

Inflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

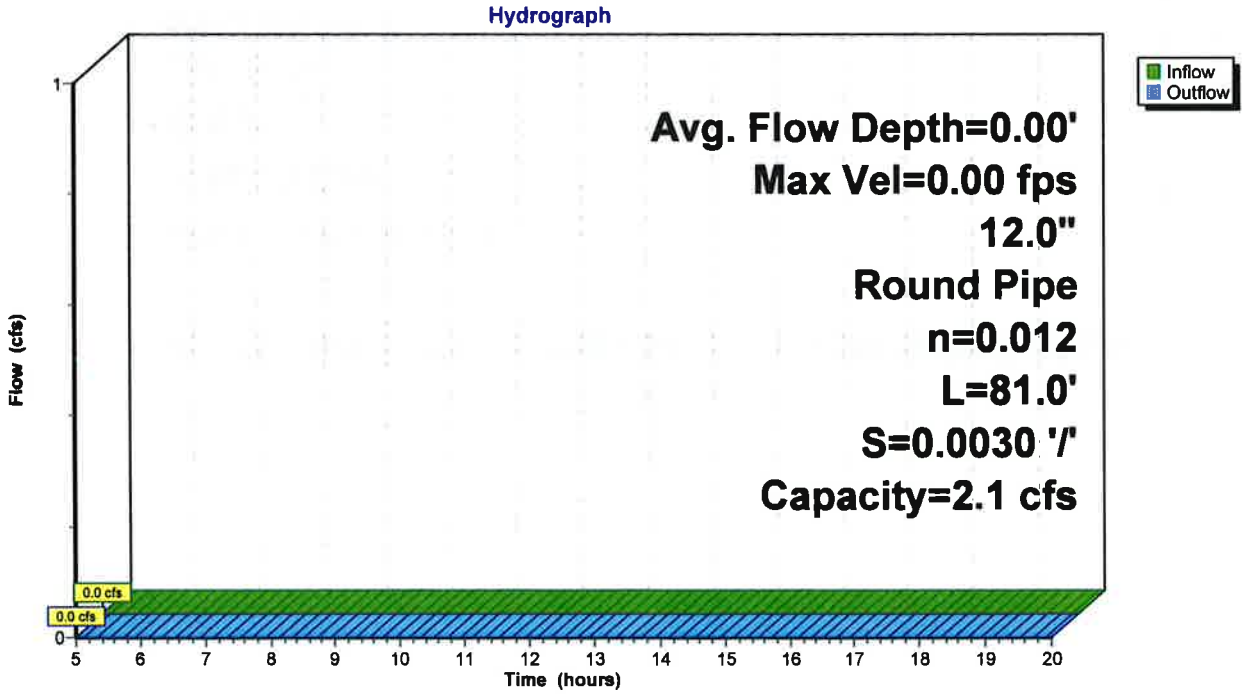
Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 5.00 hrs
Average Depth at Peak Storage= 0.00'
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

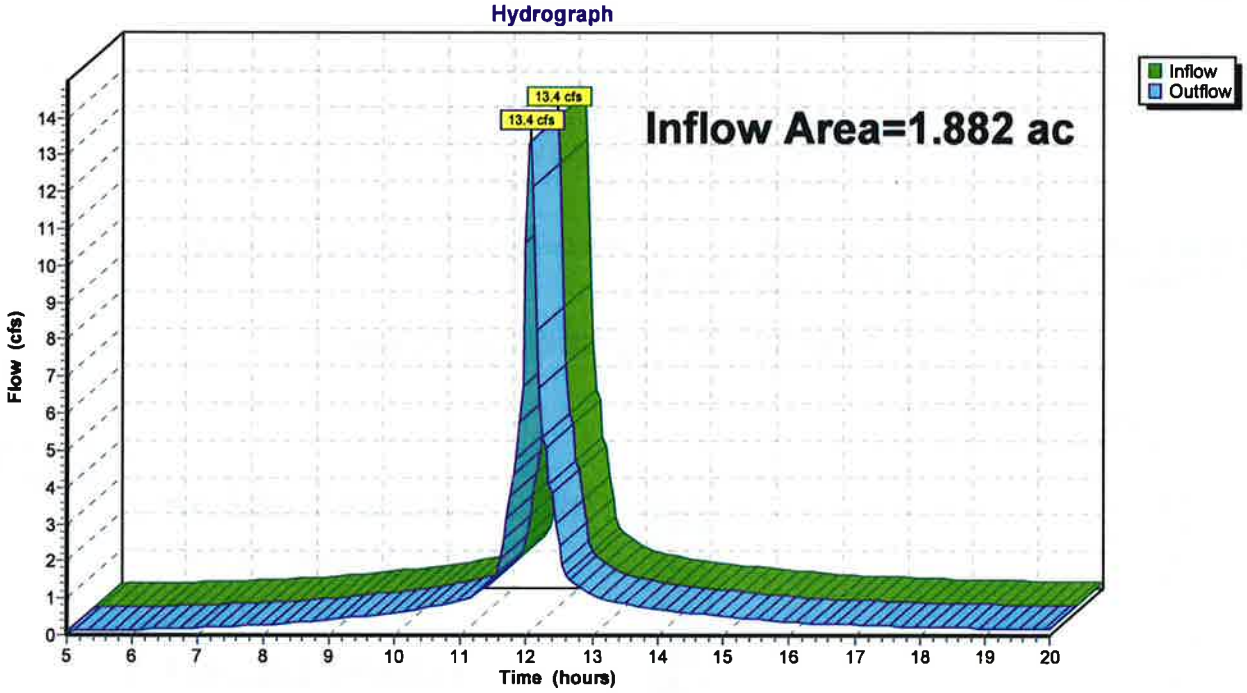


Summary for Reach 300R / DP1A: POA #3 - Existing CB (Altus Model) - AEI DP1A

Inflow Area = 1.882 ac, 39.96% Impervious, Inflow Depth > 6.27" for 50 year event
Inflow = 13.4 cfs @ 12.06 hrs, Volume= 0.983 af
Outflow = 13.4 cfs @ 12.06 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)

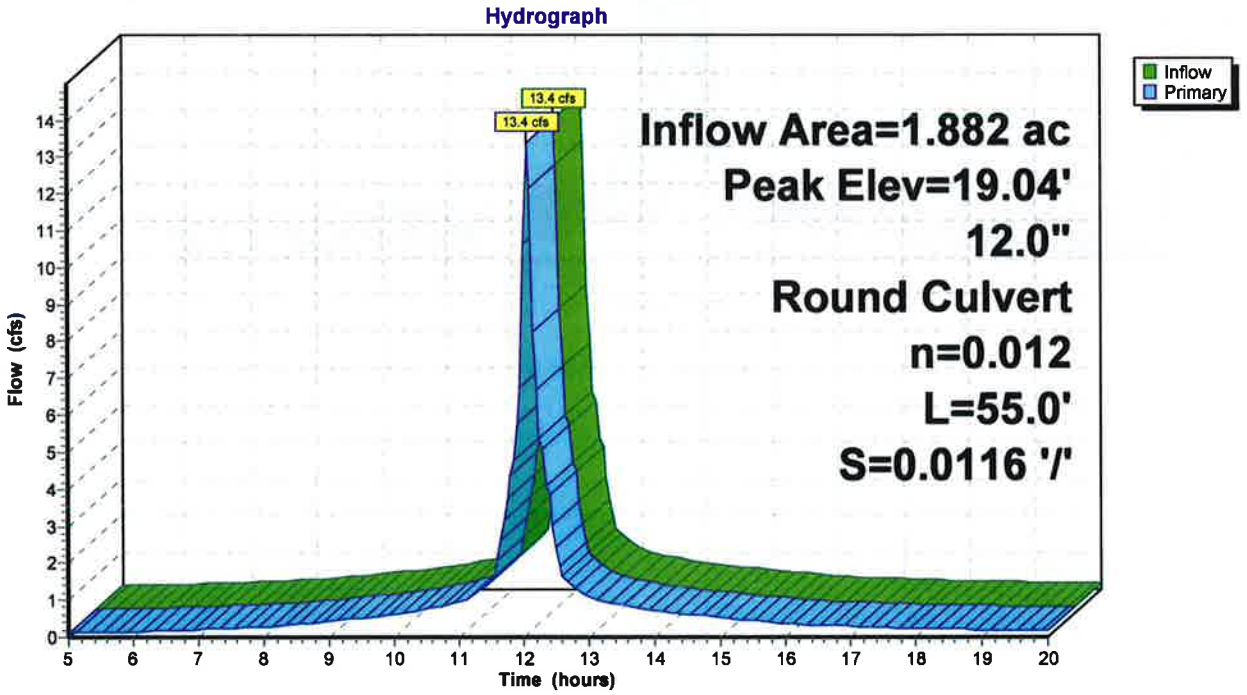
Inflow Area = 1.882 ac, 39.96% Impervious, Inflow Depth > 6.27" for 50 year event
Inflow = 13.4 cfs @ 12.06 hrs, Volume= 0.983 af
Outflow = 13.4 cfs @ 12.06 hrs, Volume= 0.983 af, Atten= 0%, Lag= 0.0 min
Primary = 13.4 cfs @ 12.06 hrs, Volume= 0.983 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 19.04' @ 12.06 hrs
Flood Elev= 7.91'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.31'	**12.0" Round Culvert** L= 55.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.31' / 4.67' S= 0.0116 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=13.1 cfs @ 12.06 hrs HW=18.48' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 13.1 cfs @ 16.66 fps)

Pond 3P: Existing CB (Altus Model)

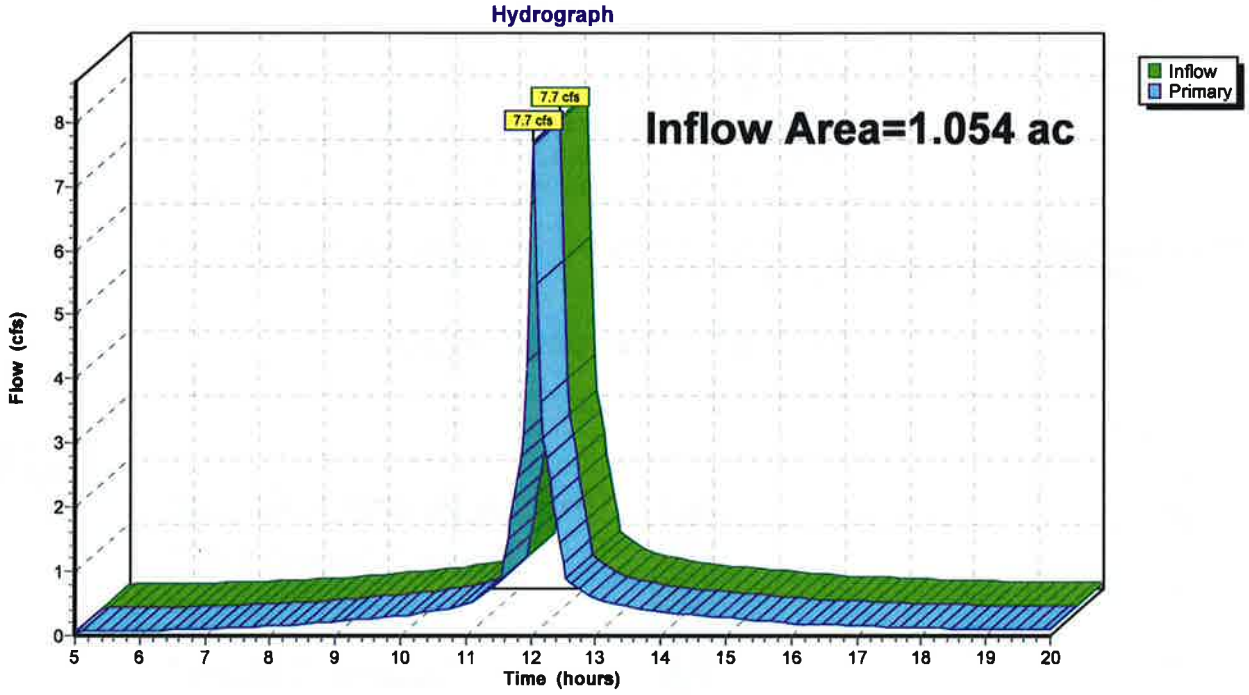


Summary for Pond 5P: Discharge Point 1 (COMBINED SEWER)

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)

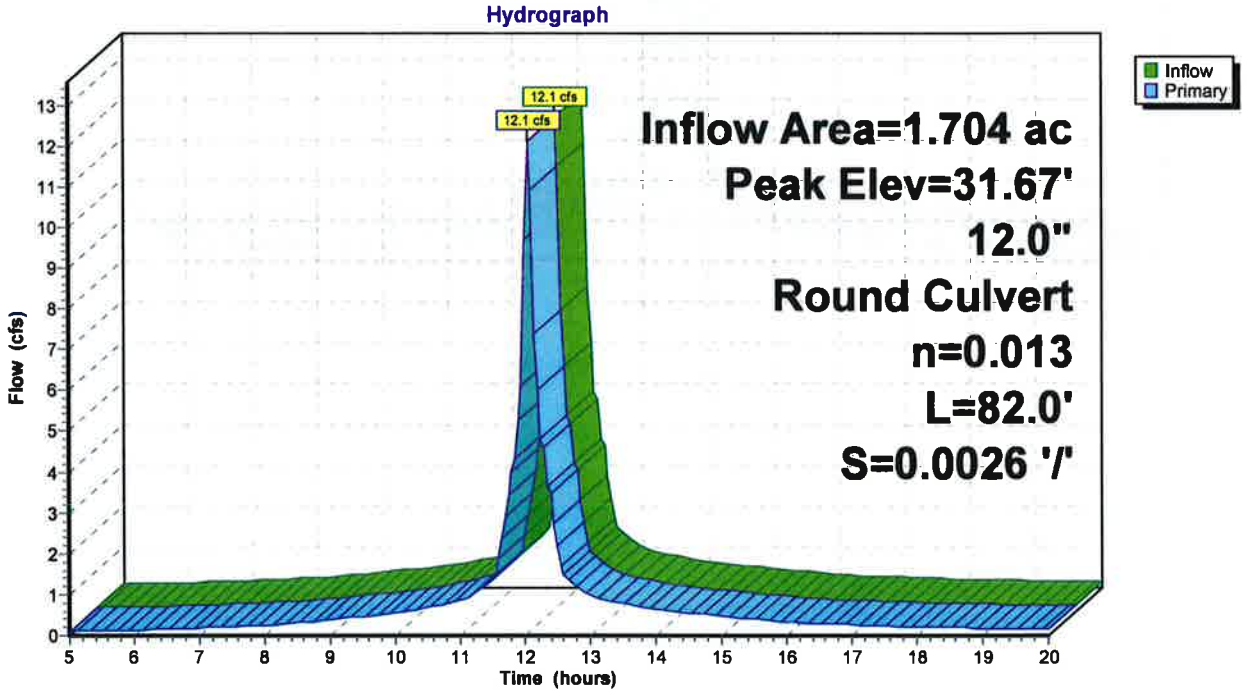
Inflow Area = 1.704 ac, 44.13% Impervious, Inflow Depth > 6.26" for 50 year event
Inflow = 12.1 cfs @ 12.06 hrs, Volume= 0.889 af
Outflow = 12.1 cfs @ 12.06 hrs, Volume= 0.889 af, Atten= 0%, Lag= 0.0 min
Primary = 12.1 cfs @ 12.06 hrs, Volume= 0.889 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 31.67' @ 12.08 hrs
Flood Elev= 8.49'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.52'	**12.0" Round Culvert** L= 82.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.52' / 5.31' S= 0.0026 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=10.3 cfs @ 12.06 hrs HW=29.38' TW=18.53' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 10.3 cfs @ 13.10 fps)

Pond 30P: CB #1 (Altus Model)



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

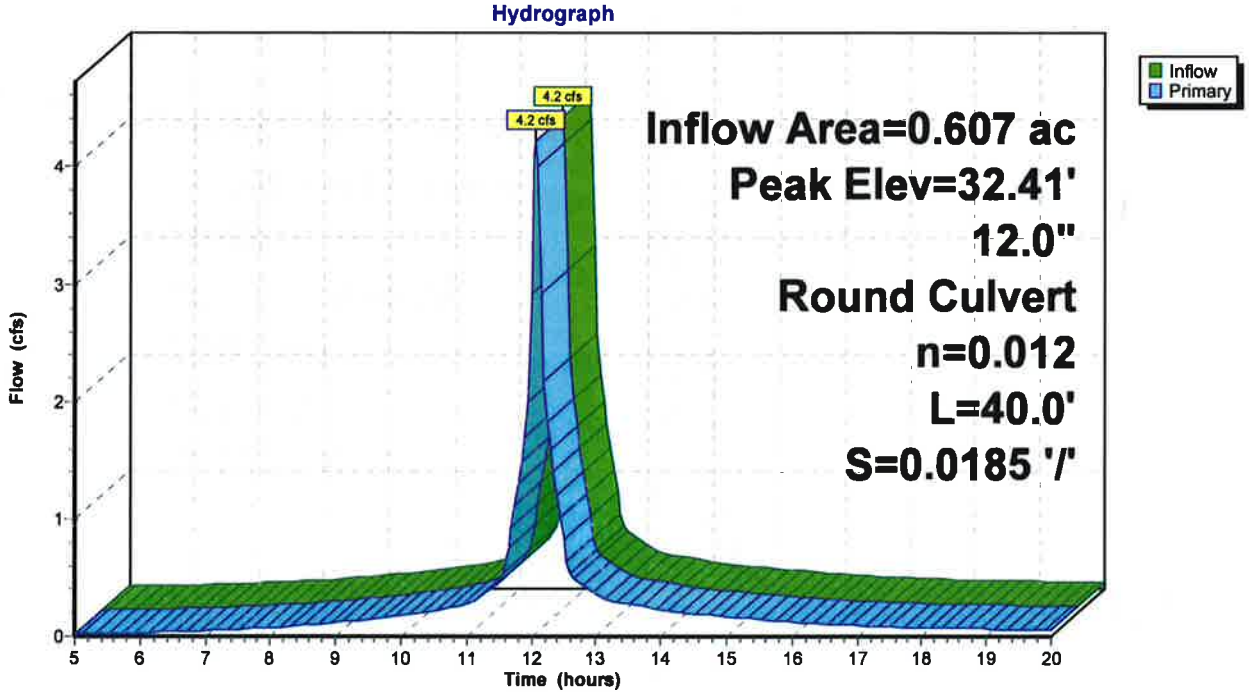
Inflow Area = 0.607 ac, 0.00% Impervious, Inflow Depth > 5.98" for 50 year event
Inflow = 4.2 cfs @ 12.07 hrs, Volume= 0.302 af
Outflow = 4.2 cfs @ 12.07 hrs, Volume= 0.302 af, Atten= 0%, Lag= 0.0 min
Primary = 4.2 cfs @ 12.07 hrs, Volume= 0.302 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 32.41' @ 12.13 hrs
Flood Elev= 8.44'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.34'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.34' / 5.60' S= 0.0185 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.07 hrs HW=24.26' TW=29.92' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond 31P: CB #2 (Altus Model)



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

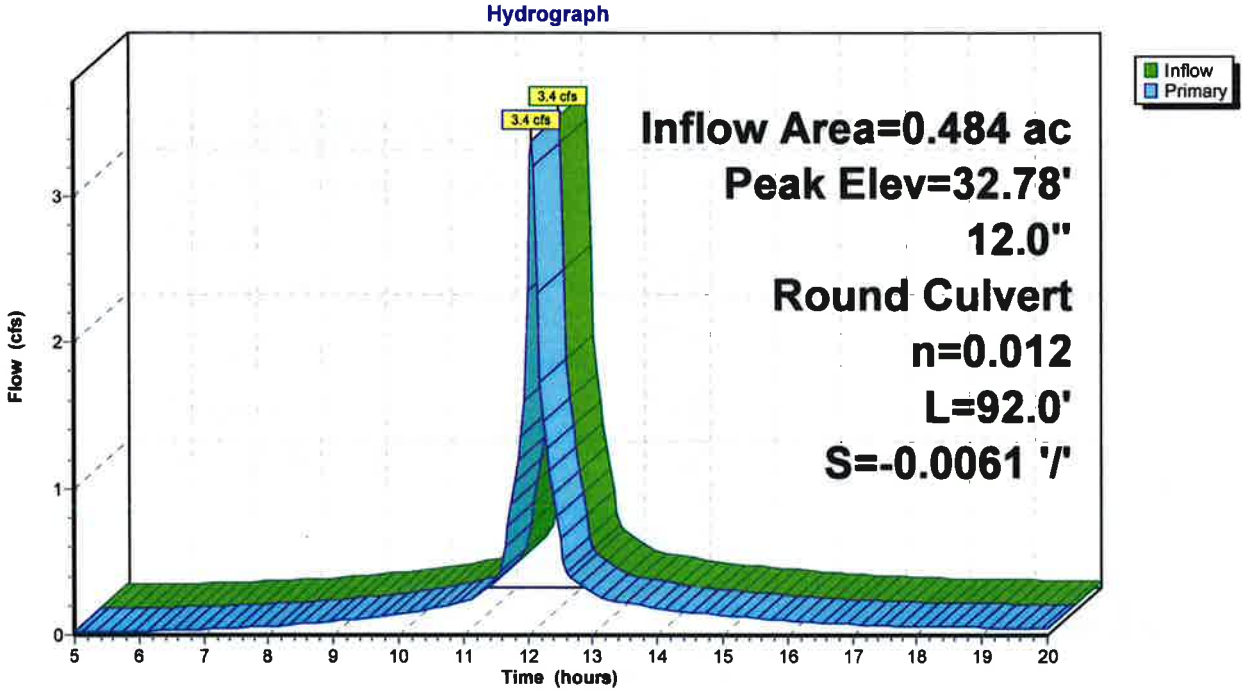
Inflow Area = 0.484 ac, 0.00% Impervious, Inflow Depth > 6.00" for 50 year event
Inflow = 3.4 cfs @ 12.07 hrs, Volume= 0.242 af
Outflow = 3.4 cfs @ 12.07 hrs, Volume= 0.242 af, Atten= 0%, Lag= 0.0 min
Primary = 3.4 cfs @ 12.07 hrs, Volume= 0.242 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 32.78' @ 12.18 hrs
Flood Elev= 8.53'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.44'	**12.0" Round Culvert** L= 92.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.88' / 6.44' S= -0.0061 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.07 hrs HW=16.76' TW=24.25' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond 32P: CB #3 (Altus Model)



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

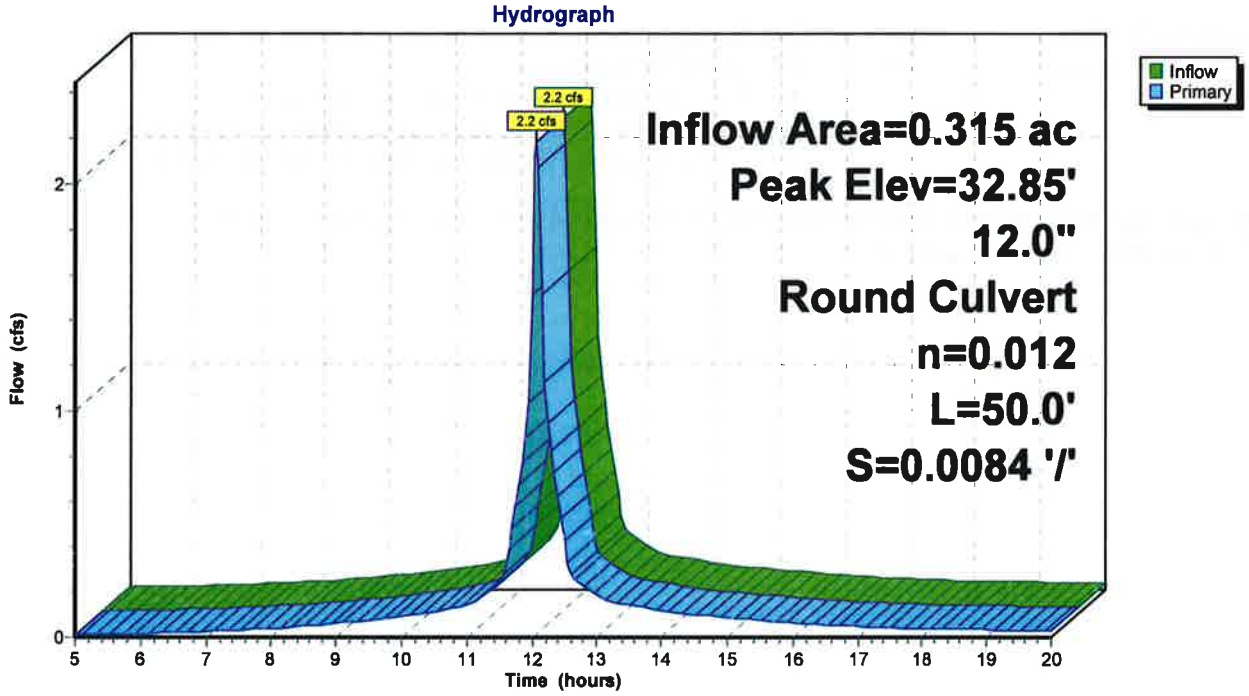
Inflow Area = 0.315 ac, 0.00% Impervious, Inflow Depth > 5.97" for 50 year event
Inflow = 2.2 cfs @ 12.07 hrs, Volume= 0.156 af
Outflow = 2.2 cfs @ 12.07 hrs, Volume= 0.156 af, Atten= 0%, Lag= 0.0 min
Primary = 2.2 cfs @ 12.07 hrs, Volume= 0.156 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 32.85' @ 12.23 hrs
Flood Elev= 8.83'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.38'	**12.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.38' / 5.96' S= 0.0084 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.07 hrs HW=12.51' TW=16.77' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond 33P: CB #4 (Altus Model)



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

Inflow Area = 0.938 ac, 80.14% Impervious, Inflow Depth > 6.46" for 50 year event
Inflow = 7.1 cfs @ 12.05 hrs, Volume= 0.505 af
Outflow = 6.9 cfs @ 12.05 hrs, Volume= 0.505 af, Atten= 3%, Lag= 0.0 min
Primary = 6.9 cfs @ 12.05 hrs, Volume= 0.505 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 33.70' @ 12.12 hrs Surf.Area= 164 sf Storage= 17 cf
Flood Elev= 8.68' Surf.Area= 0 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.0 min (735.1 - 735.1)

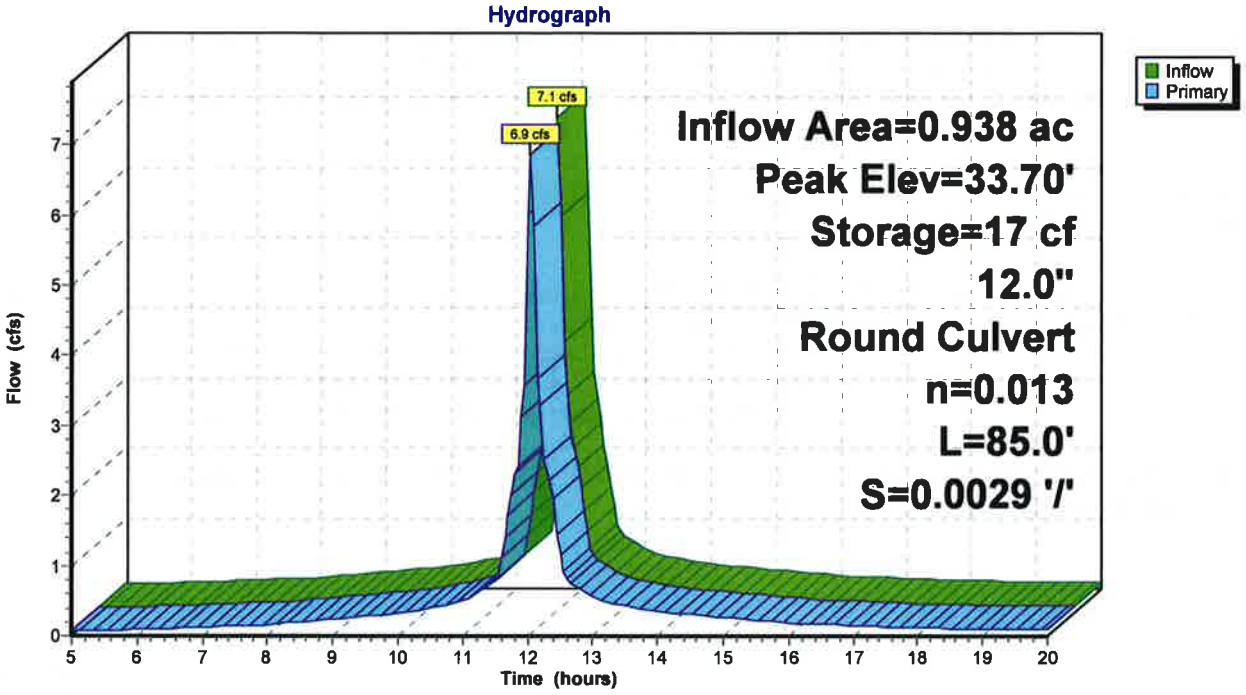
Volume	Invert	Avail.Storage	Storage Description
#1	8.68'	17 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
8.68	0	0.0	0	0	0
9.00	164	70.2	17	17	392

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=0.0 cfs @ 12.05 hrs HW=23.33' TW=28.56' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Pond 34P: CB #5 (Altus Model)



Summary for Pond AEI 2:

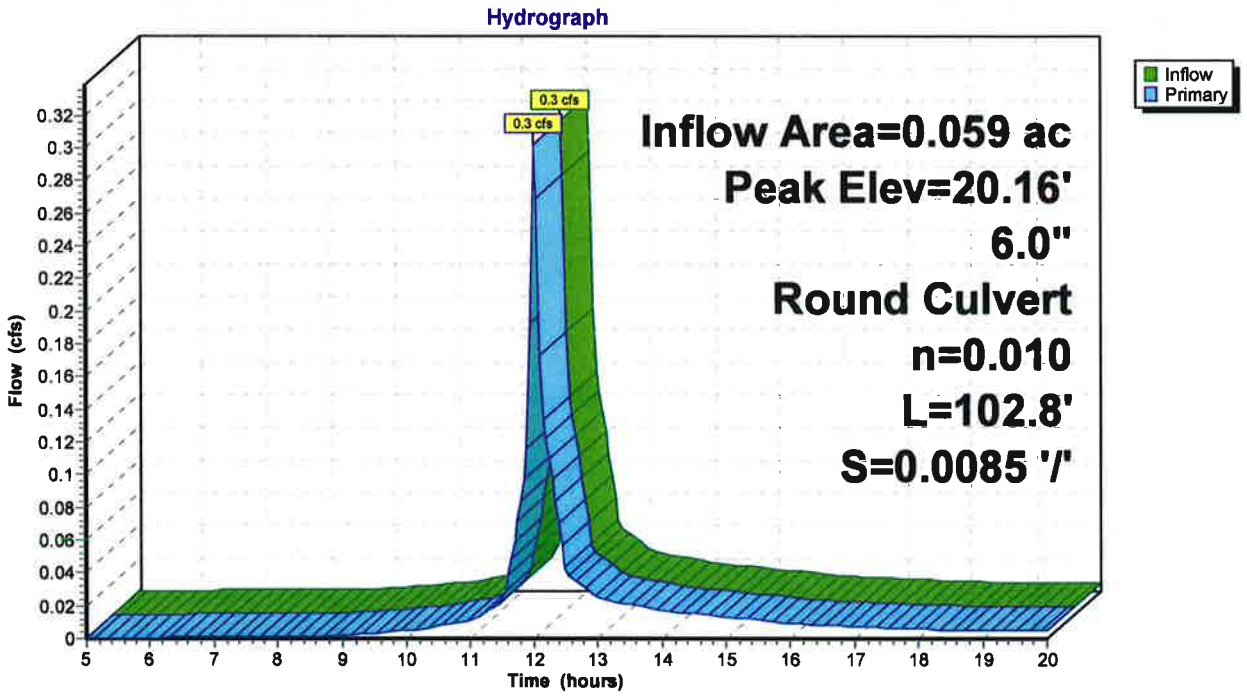
Inflow Area = 0.059 ac, 25.05% Impervious, Inflow Depth > 3.71" for 50 year event
Inflow = 0.3 cfs @ 12.01 hrs, Volume= 0.018 af
Outflow = 0.3 cfs @ 12.01 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 12.01 hrs, Volume= 0.018 af

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:

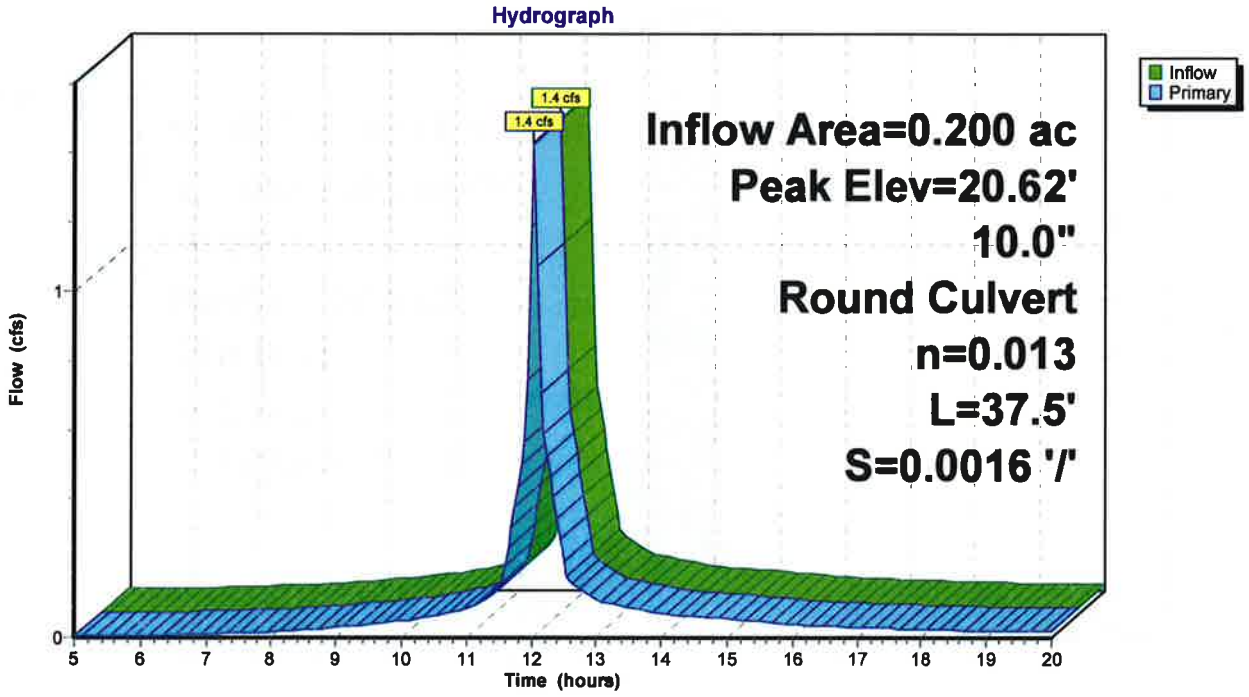
Inflow Area = 0.200 ac, 70.65% Impervious, Inflow Depth > 5.54" for 50 year event
Inflow = 1.4 cfs @ 12.05 hrs, Volume= 0.092 af
Outflow = 1.4 cfs @ 12.05 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.05 hrs, Volume= 0.092 af

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:

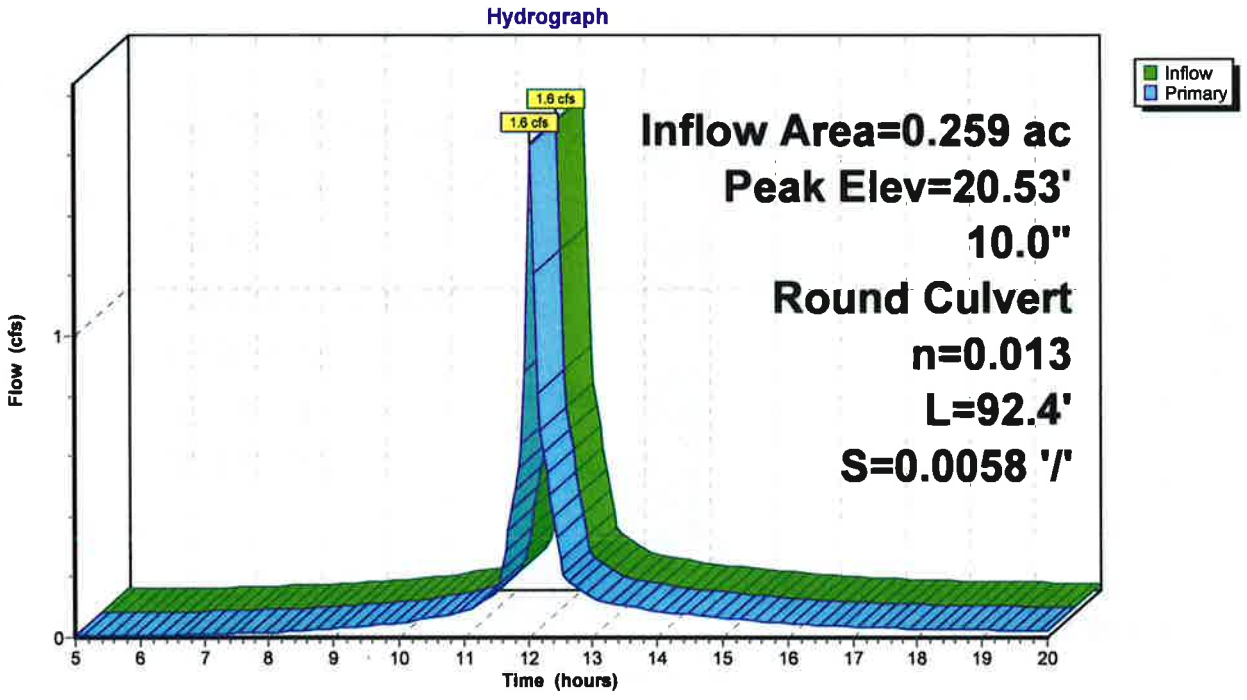
Inflow Area = 0.259 ac, 54.37% Impervious, Inflow Depth > 4.90" for 50 year event
Inflow = 1.6 cfs @ 12.04 hrs, Volume= 0.106 af
Outflow = 1.6 cfs @ 12.04 hrs, Volume= 0.106 af, Atten= 0%, Lag= 0.0 min
Primary = 1.6 cfs @ 12.04 hrs, Volume= 0.106 af

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:

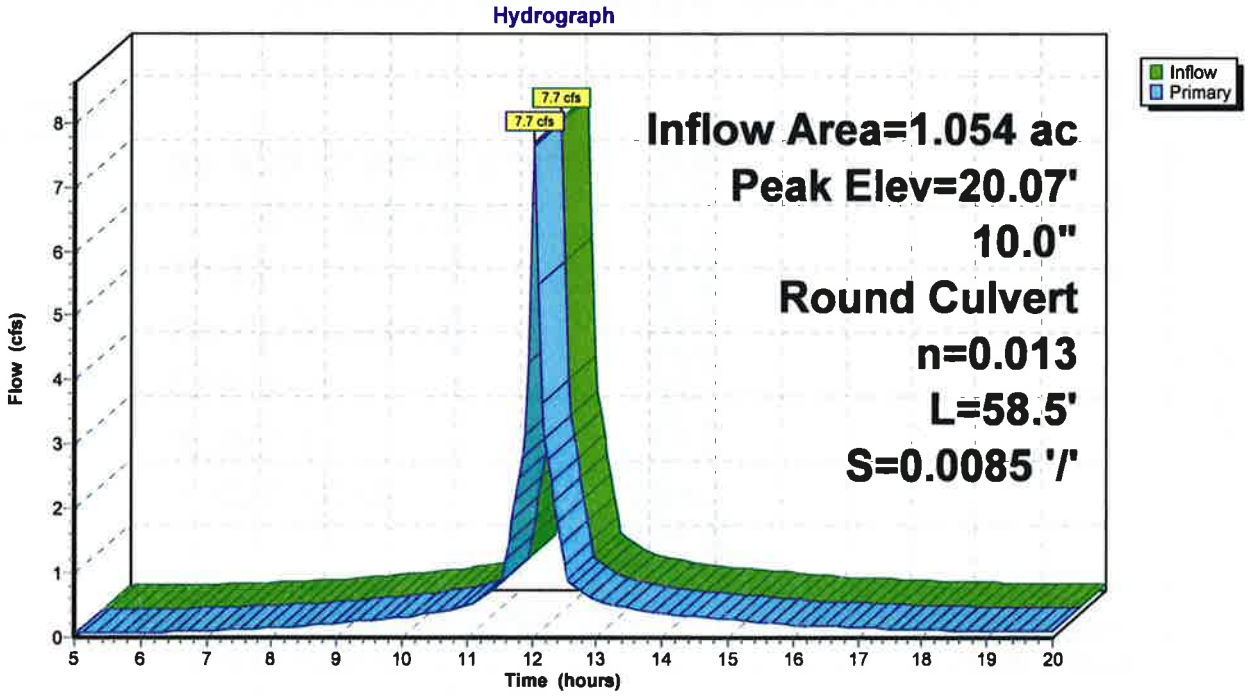
Inflow Area = 1.054 ac, 83.18% Impervious, Inflow Depth > 5.97" for 50 year event
Inflow = 7.7 cfs @ 12.04 hrs, Volume= 0.524 af
Outflow = 7.7 cfs @ 12.04 hrs, Volume= 0.524 af, Atten= 0%, Lag= 0.0 min
Primary = 7.7 cfs @ 12.04 hrs, Volume= 0.524 af

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)

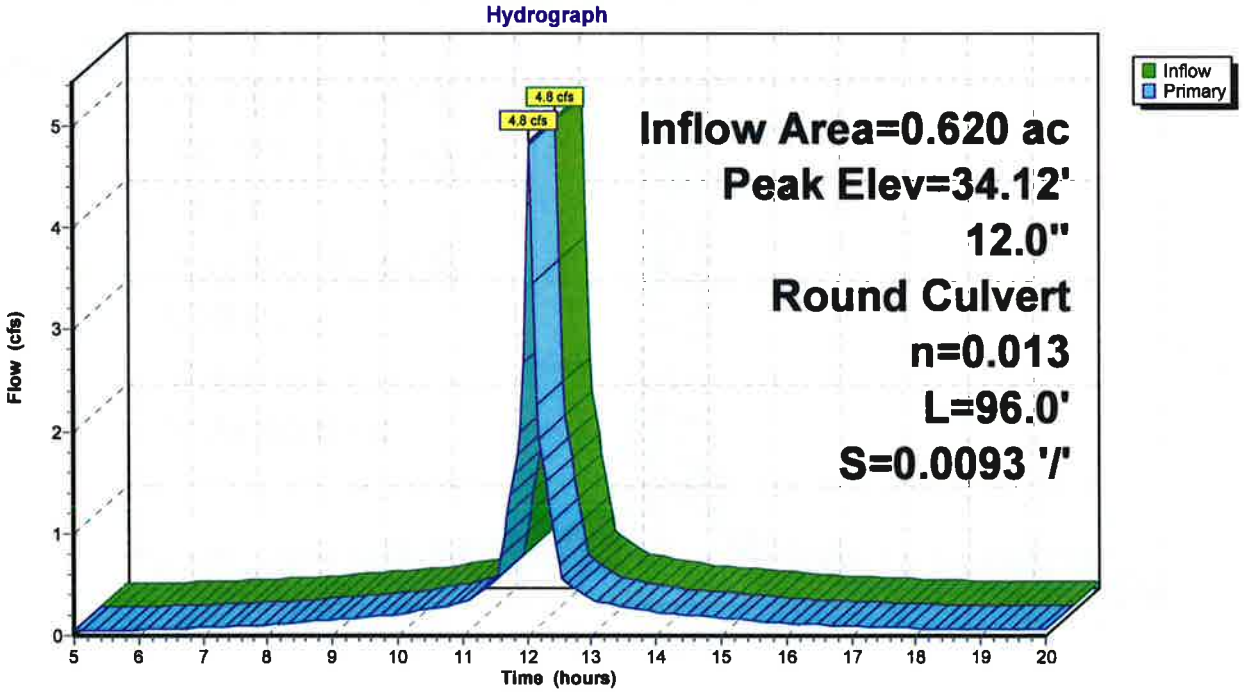
Inflow Area = 0.620 ac, 93.86% Impervious, Inflow Depth > 6.45" for 50 year event
Inflow = 4.8 cfs @ 12.04 hrs, Volume= 0.333 af
Outflow = 4.8 cfs @ 12.04 hrs, Volume= 0.333 af, Atten= 0%, Lag= 0.0 min
Primary = 4.8 cfs @ 12.04 hrs, Volume= 0.333 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 34.12' @ 12.17 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=0.0 cfs @ 12.04 hrs HW=17.50' TW=22.15' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.0 cfs)

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



Summary for Pond CB 4433:

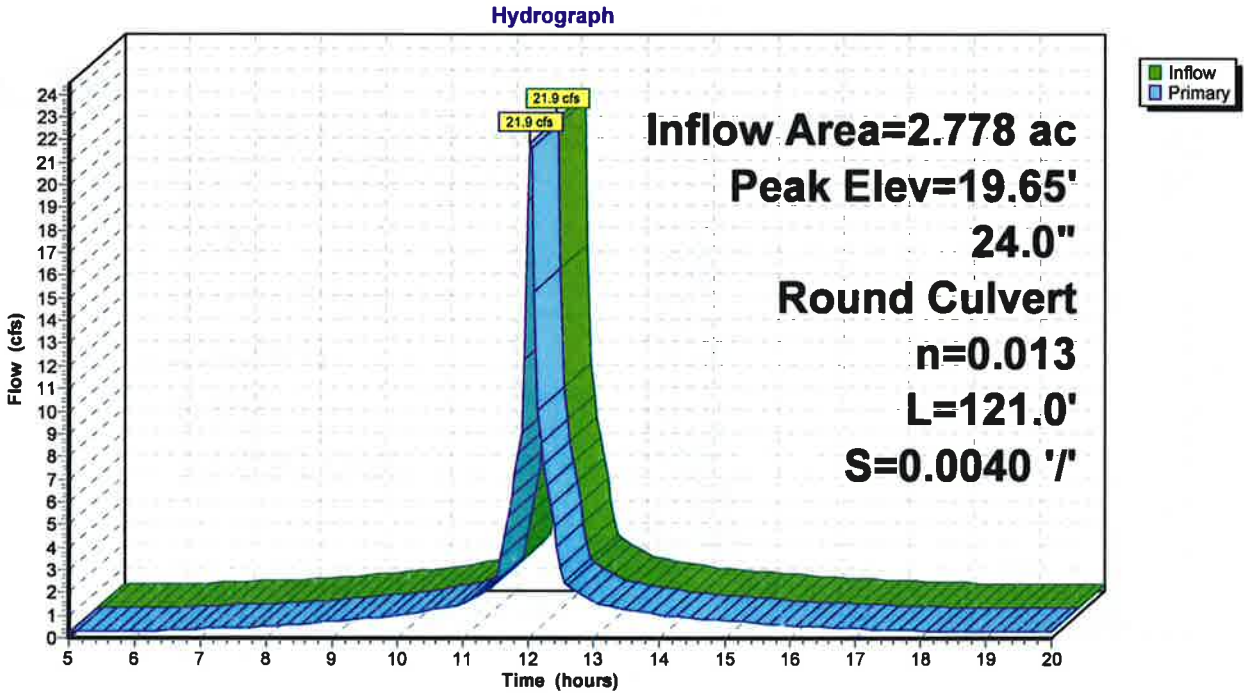
Inflow Area = 2.778 ac,100.00% Impervious, Inflow Depth > 6.59" for 50 year event
Inflow = 21.9 cfs @ 12.04 hrs, Volume= 1.526 af
Outflow = 21.9 cfs @ 12.04 hrs, Volume= 1.526 af, Atten= 0%, Lag= 0.0 min
Primary = 21.9 cfs @ 12.04 hrs, Volume= 1.526 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 19.65' @ 12.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	14.68'	**24.0" Round Culvert** L= 121.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.68' / 14.19' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=17.9 cfs @ 12.04 hrs HW=19.22' TW=17.71' (Dynamic Tailwater)
↳**1=Culvert** (Outlet Controls 17.9 cfs @ 5.69 fps)

Pond CB 4433:



Summary for Pond CB 4435:

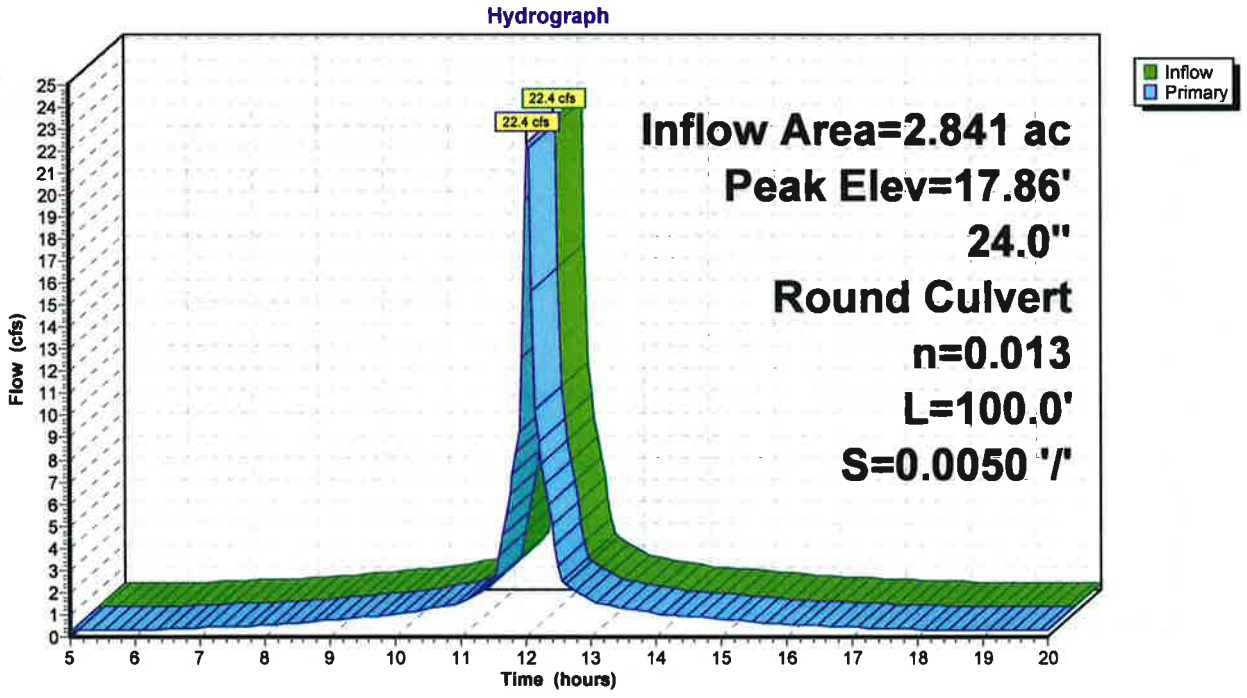
Inflow Area = 2.841 ac,100.00% Impervious, Inflow Depth > 6.59" for 50 year event
Inflow = 22.4 cfs @ 12.04 hrs, Volume= 1.560 af
Outflow = 22.4 cfs @ 12.04 hrs, Volume= 1.560 af, Atten= 0%, Lag= 0.0 min
Primary = 22.4 cfs @ 12.04 hrs, Volume= 1.560 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 17.86' @ 12.04 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	14.19'	**24.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.19' / 13.69' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=21.6 cfs @ 12.04 hrs HW=17.70' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 21.6 cfs @ 6.87 fps)

Pond CB 4435:



Summary for Pond CB 4560:

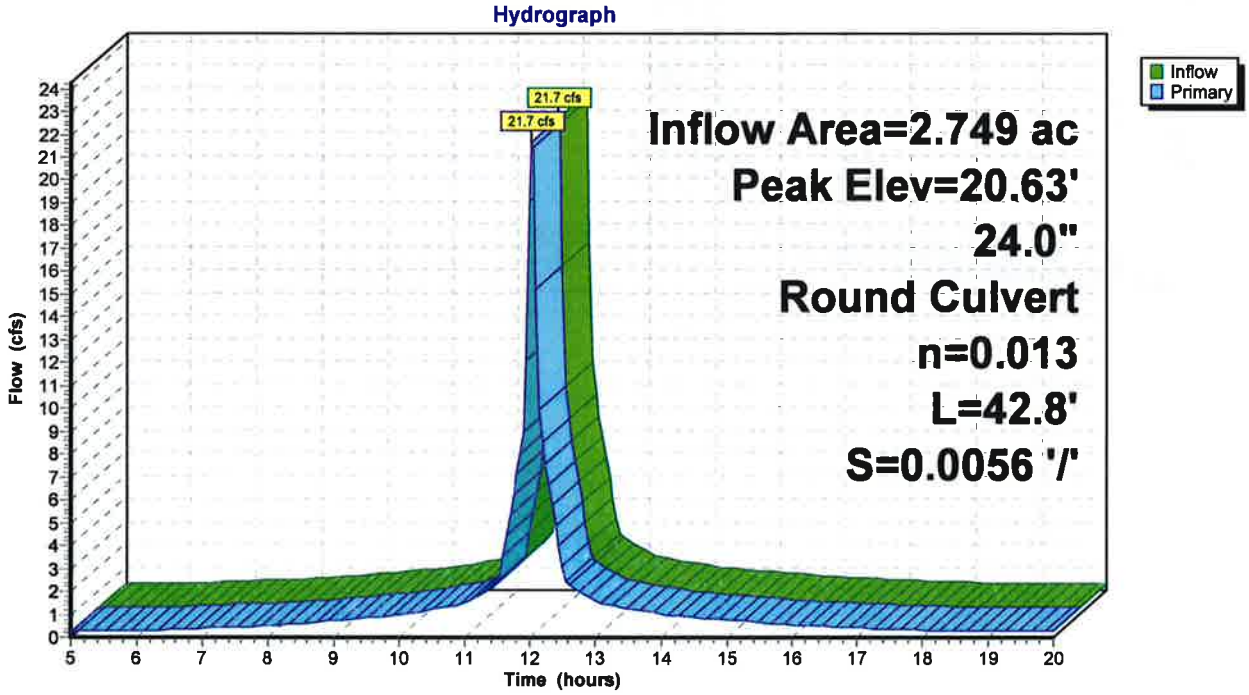
Inflow Area = 2.749 ac,100.00% Impervious, Inflow Depth > 6.59" for 50 year event
Inflow = 21.7 cfs @ 12.04 hrs, Volume= 1.510 af
Outflow = 21.7 cfs @ 12.04 hrs, Volume= 1.510 af, Atten= 0%, Lag= 0.0 min
Primary = 21.7 cfs @ 12.04 hrs, Volume= 1.510 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 20.63' @ 12.09 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' / 14.68' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=9.1 cfs @ 12.04 hrs HW=19.59' TW=19.23' (Dynamic Tailwater)
↳**1=Culvert** (Inlet Controls 9.1 cfs @ 2.91 fps)

Pond CB 4560:

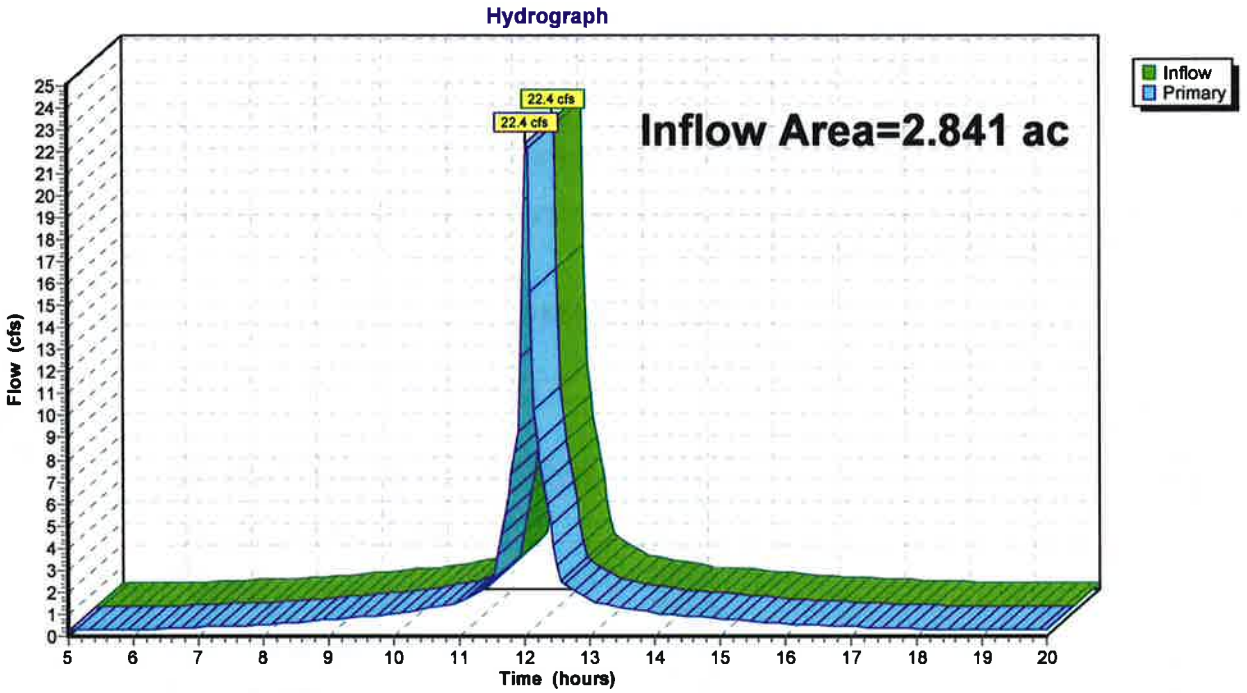


Summary for Link 2L: Discharge Point 2 (Court Street Drainage)

Inflow Area = 2.841 ac,100.00% Impervious, Inflow Depth > 6.59" for 50 year event
Inflow = 22.4 cfs @ 12.04 hrs, Volume= 1.560 af
Primary = 22.4 cfs @ 12.04 hrs, Volume= 1.560 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)

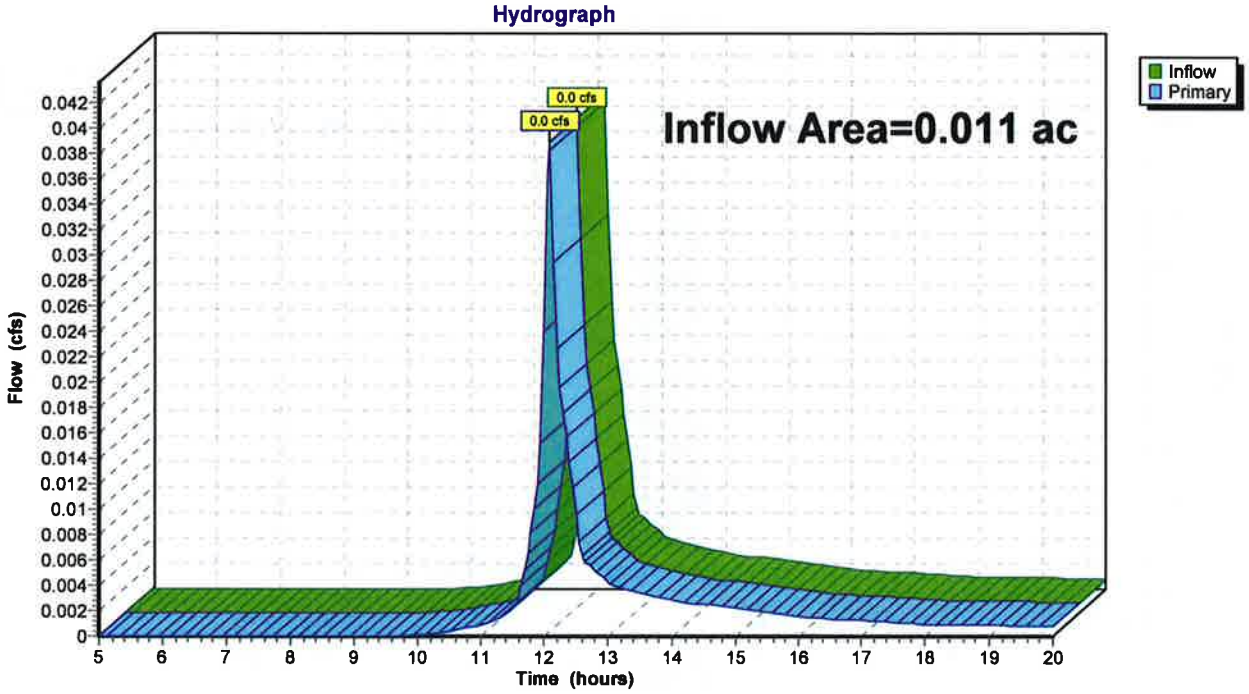


Summary for Link 3L: Discharge Point 4 (DP4)

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)

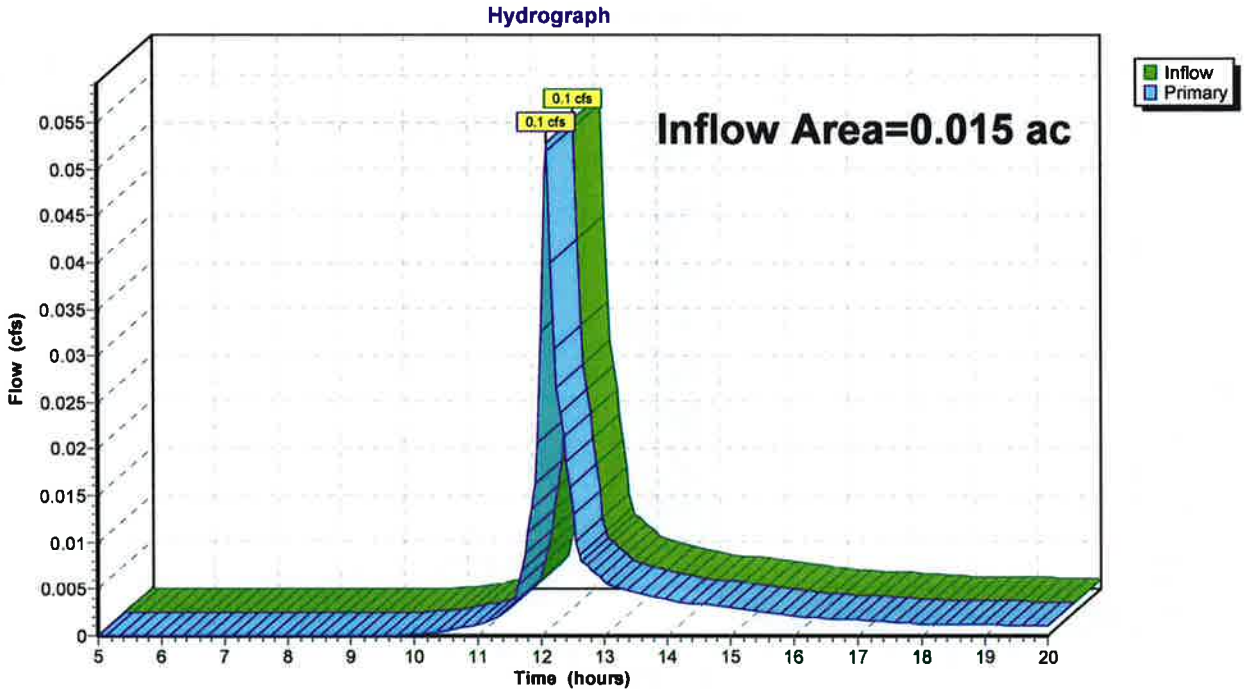


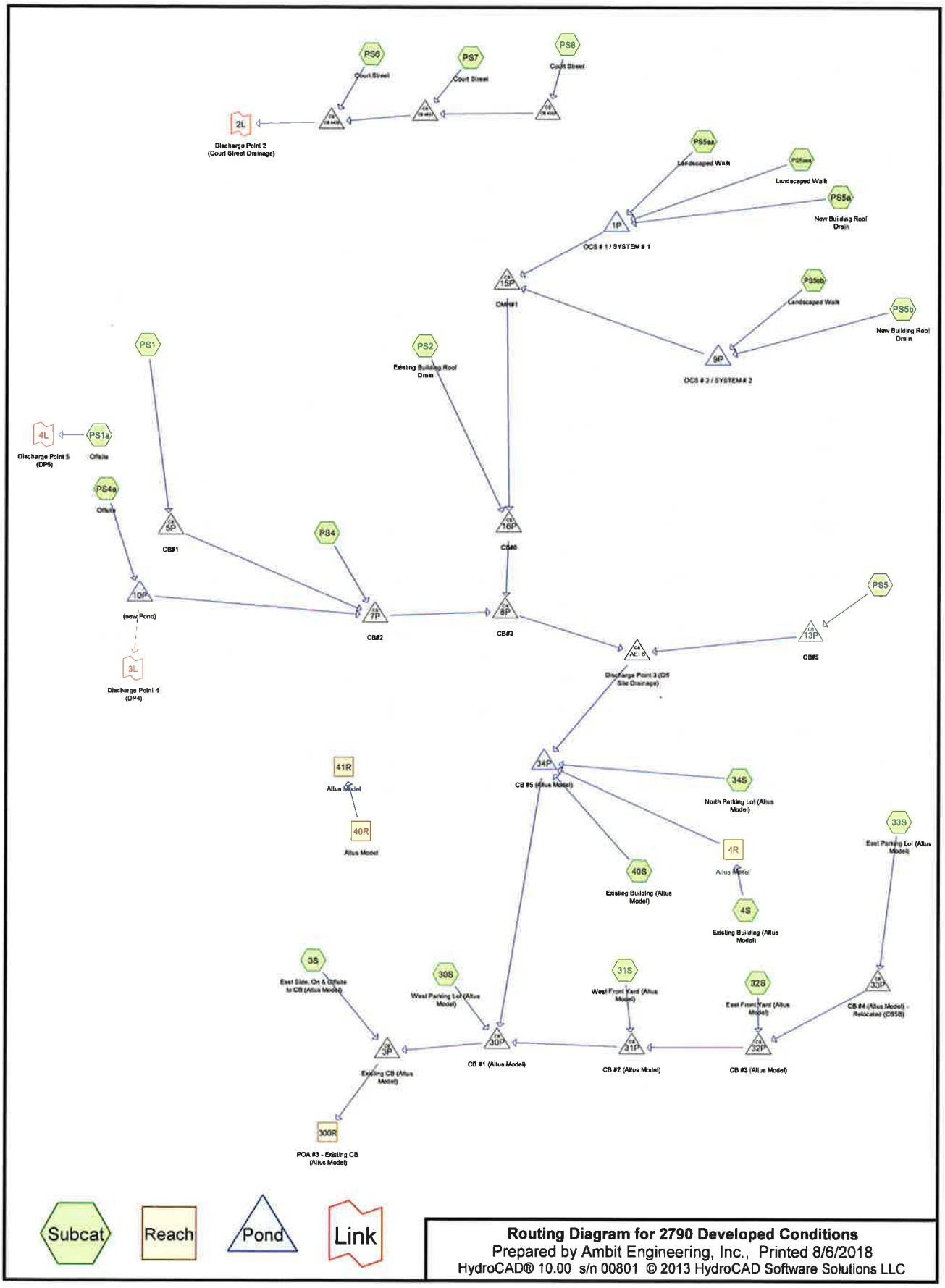
Summary for Link 4L: Discharge Point 5 (DP5)

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)





Routing Diagram for 2790 Developed Conditions
Prepared by Ambit Engineering, Inc., Printed 8/6/2018
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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	PS8	0.00	0.00	237.0	0.0050	0.013	18.0	0.0	0.0
2	4R	8.38	7.28	110.0	0.0100	0.012	8.0	0.0	0.0
3	40R	6.82	6.62	10.0	0.0200	0.012	8.0	0.0	0.0
4	41R	6.45	6.21	81.0	0.0030	0.012	12.0	0.0	0.0
5	1P	11.40	11.33	14.0	0.0050	0.013	12.0	0.0	0.0
6	3P	5.31	4.67	55.0	0.0116	0.012	12.0	0.0	0.0
7	5P	9.70	7.13	95.0	0.0271	0.013	12.0	0.0	0.0
8	7P	7.03	6.89	34.0	0.0041	0.013	12.0	0.0	0.0
9	8P	6.89	6.87	31.0	0.0006	0.013	12.0	0.0	0.0
10	9P	7.40	7.38	5.0	0.0040	0.013	12.0	0.0	0.0
11	10P	7.39	7.13	53.0	0.0049	0.013	6.0	0.0	0.0
12	13P	8.06	6.87	38.0	0.0313	0.013	12.0	0.0	0.0
13	15P	7.38	7.04	68.0	0.0050	0.013	12.0	0.0	0.0
14	16P	7.04	6.89	30.0	0.0050	0.013	12.0	0.0	0.0
15	30P	5.52	5.31	82.0	0.0026	0.013	12.0	0.0	0.0
16	31P	6.34	5.60	40.0	0.0185	0.012	12.0	0.0	0.0
17	32P	5.88	6.44	92.0	-0.0061	0.012	12.0	0.0	0.0
18	33P	6.96	5.96	50.0	0.0200	0.012	12.0	0.0	0.0
19	34P	5.83	5.58	85.0	0.0029	0.013	12.0	0.0	0.0
20	AEI 6	6.77	5.88	96.0	0.0093	0.013	12.0	0.0	0.0
21	CB 4433	14.68	14.19	121.0	0.0040	0.013	24.0	0.0	0.0
22	CB 4435	14.19	13.69	100.0	0.0050	0.013	24.0	0.0	0.0
23	CB 4560	14.92	14.68	42.8	0.0056	0.013	18.0	0.0	0.0

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

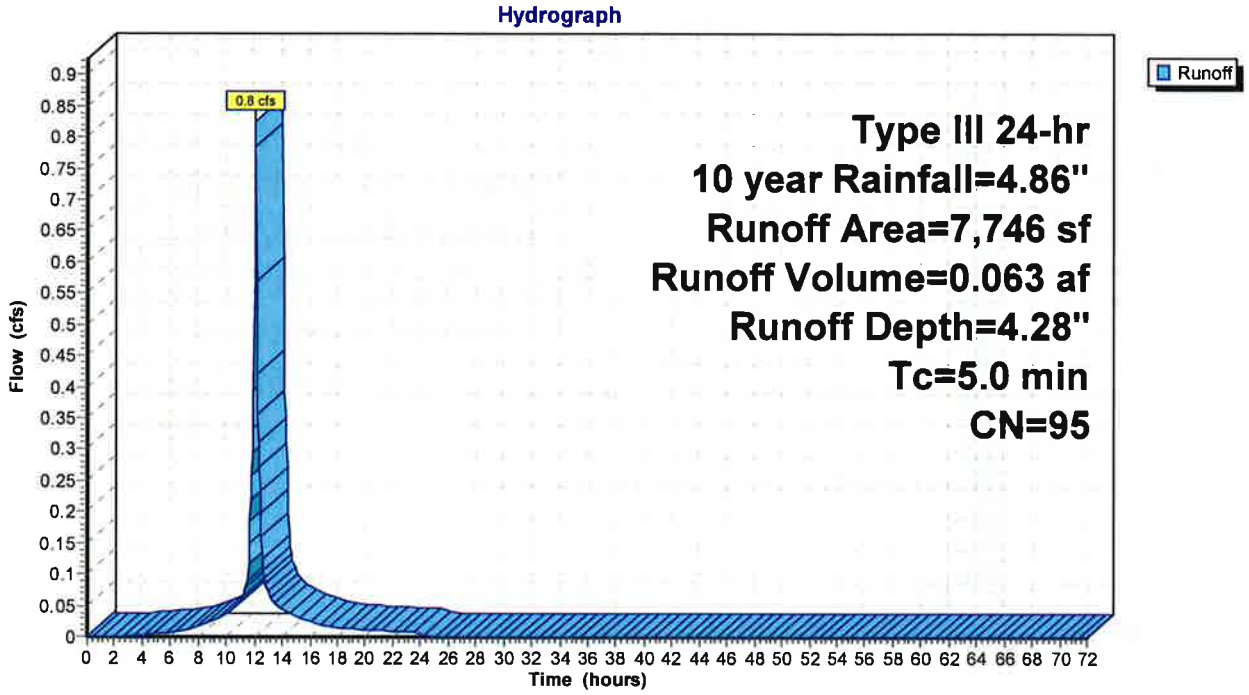
Runoff = 0.8 cfs @ 12.07 hrs, Volume= 0.063 af, Depth= 4.28"

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)

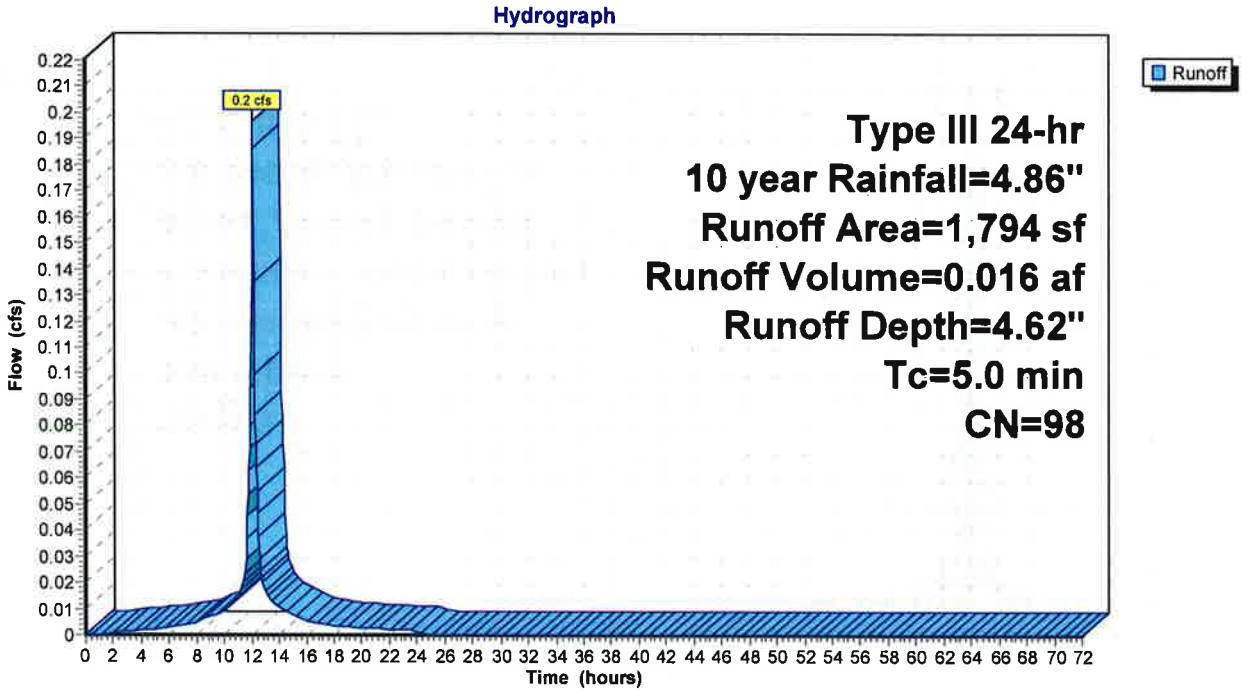
Runoff = 0.2 cfs @ 12.07 hrs, Volume= 0.016 af, Depth= 4.62"

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)

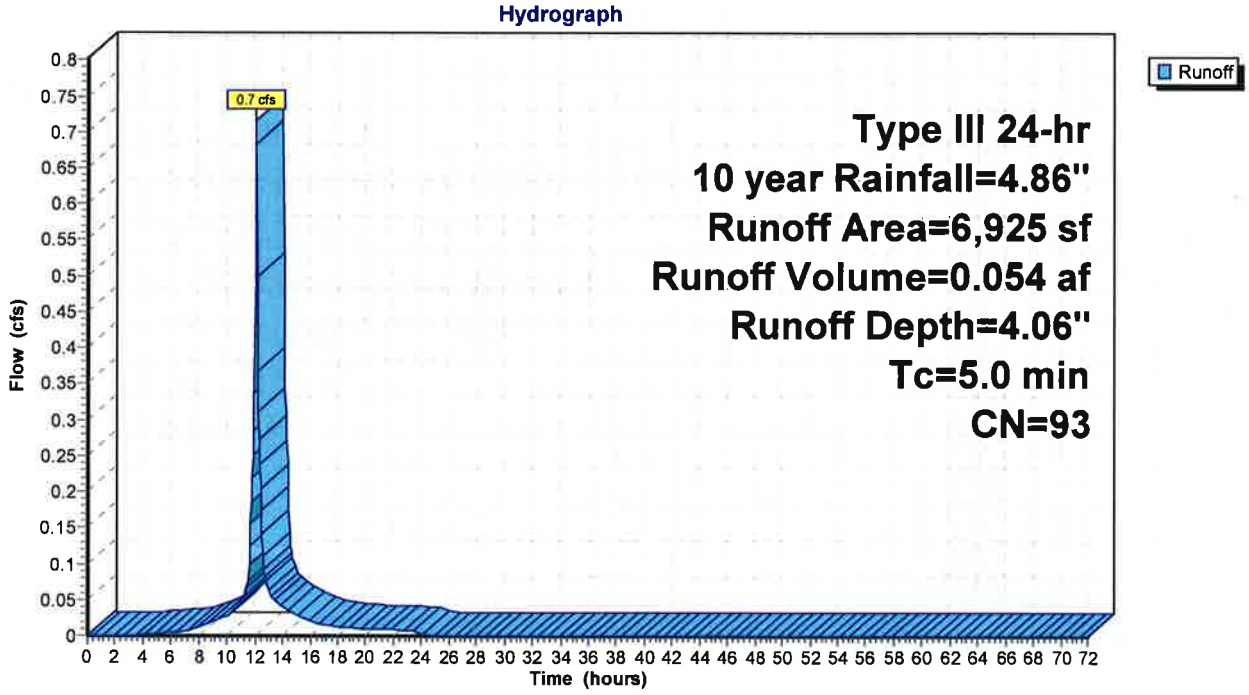
Runoff = 0.7 cfs @ 12.07 hrs, Volume= 0.054 af, Depth= 4.06"

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)

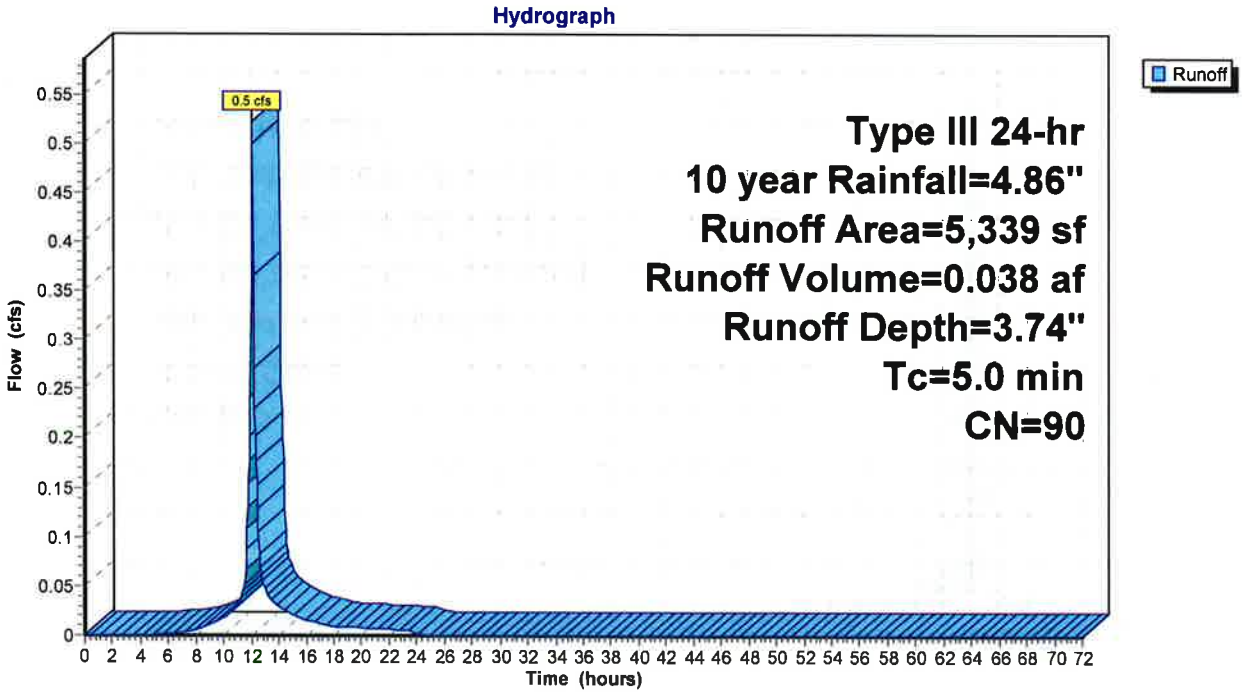
Runoff = 0.5 cfs @ 12.07 hrs, Volume= 0.038 af, Depth= 3.74"

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)

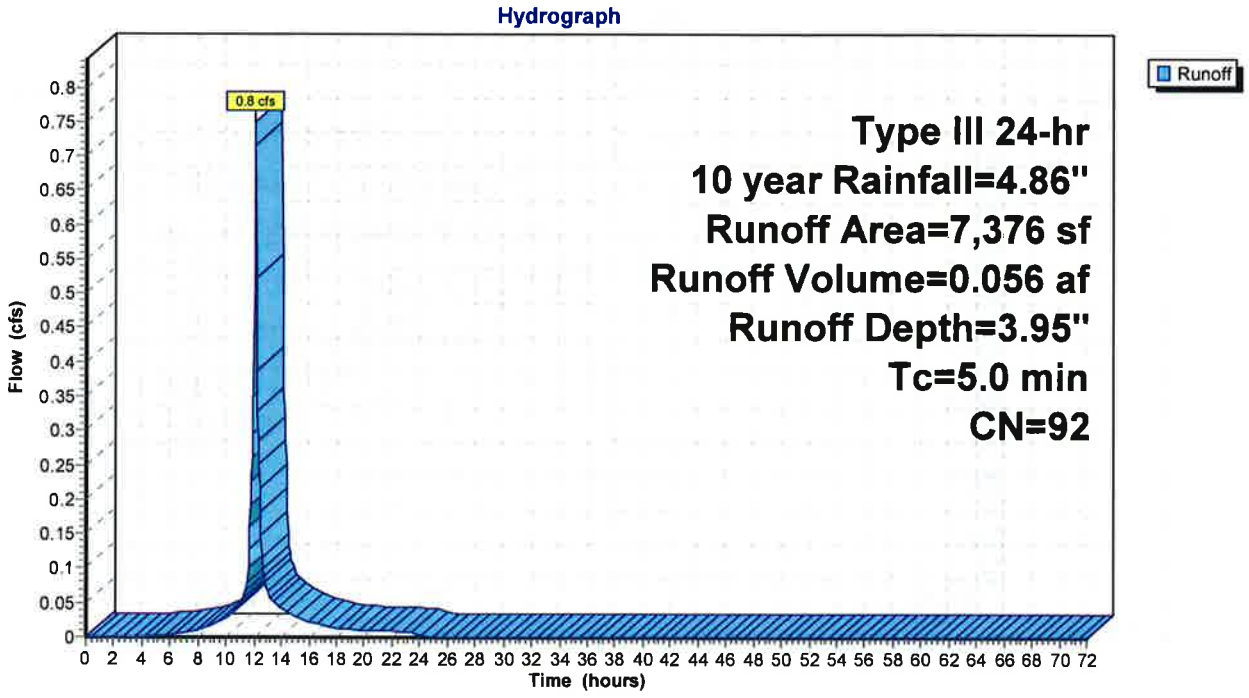
Runoff = 0.8 cfs @ 12.07 hrs, Volume= 0.056 af, Depth= 3.95"

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)

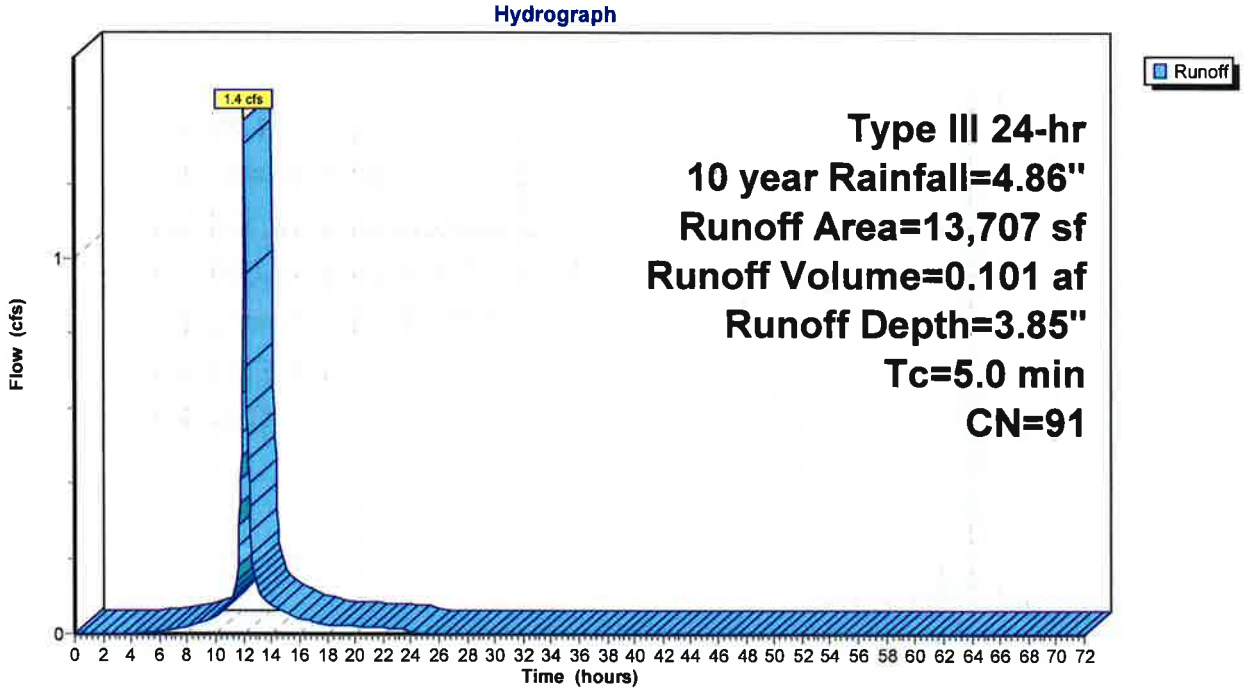
Runoff = 1.4 cfs @ 12.07 hrs, Volume= 0.101 af, Depth= 3.85"

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)

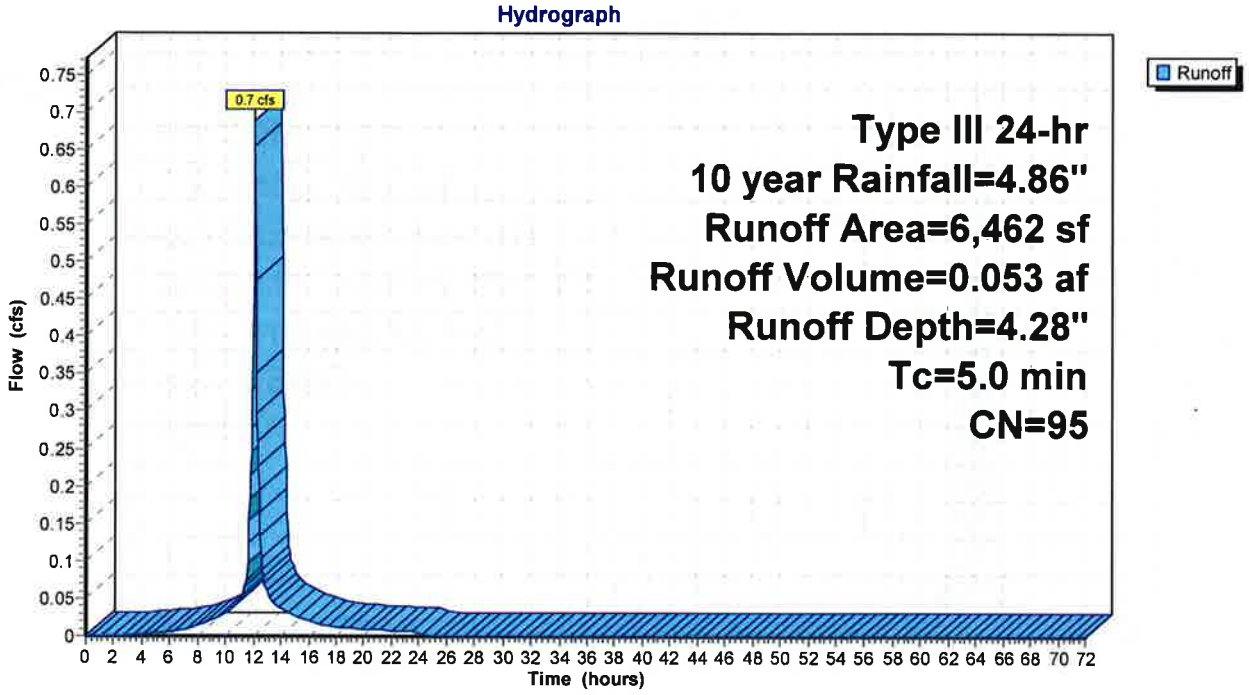
Runoff = 0.7 cfs @ 12.07 hrs, Volume= 0.053 af, Depth= 4.28"

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)

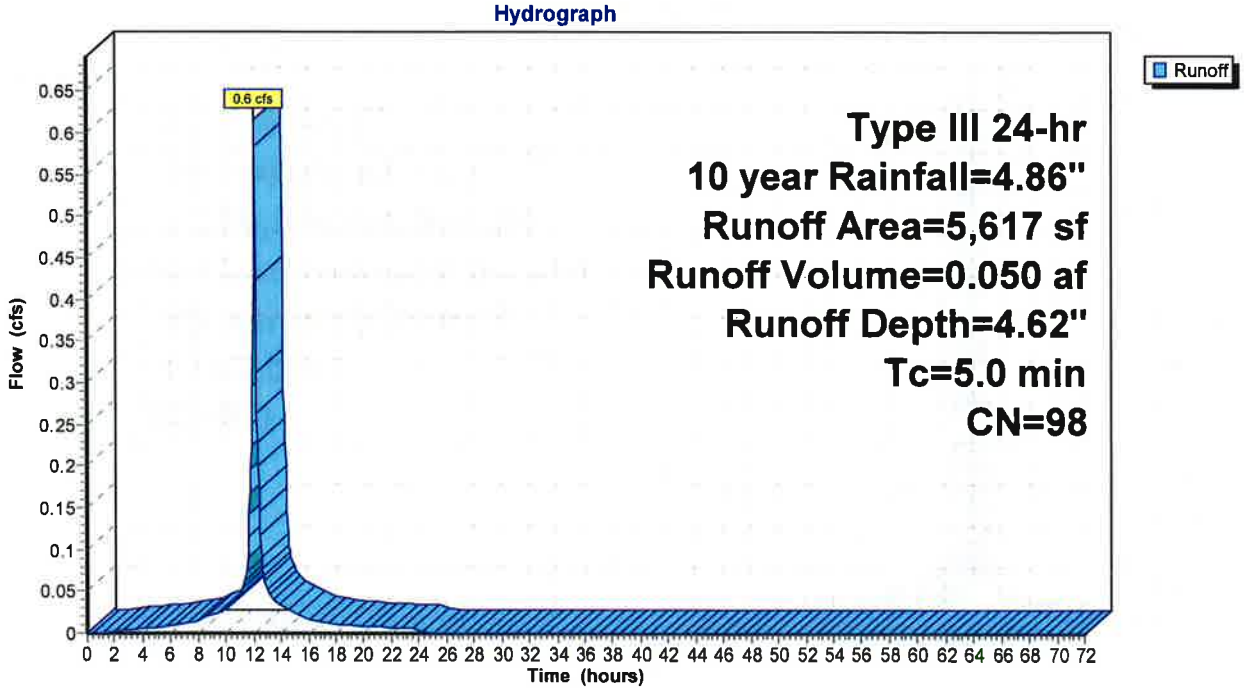
Runoff = 0.6 cfs @ 12.07 hrs, Volume= 0.050 af, Depth= 4.62"

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:

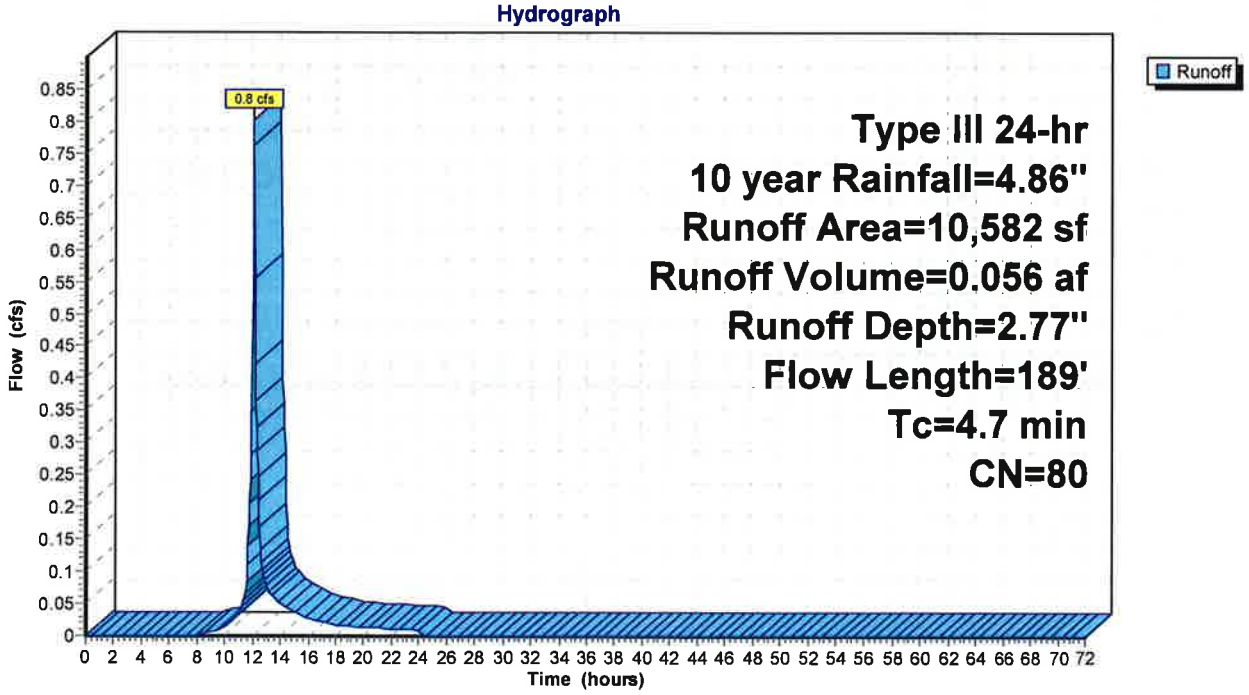
Runoff = 0.8 cfs @ 12.07 hrs, Volume= 0.056 af, Depth= 2.77"

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

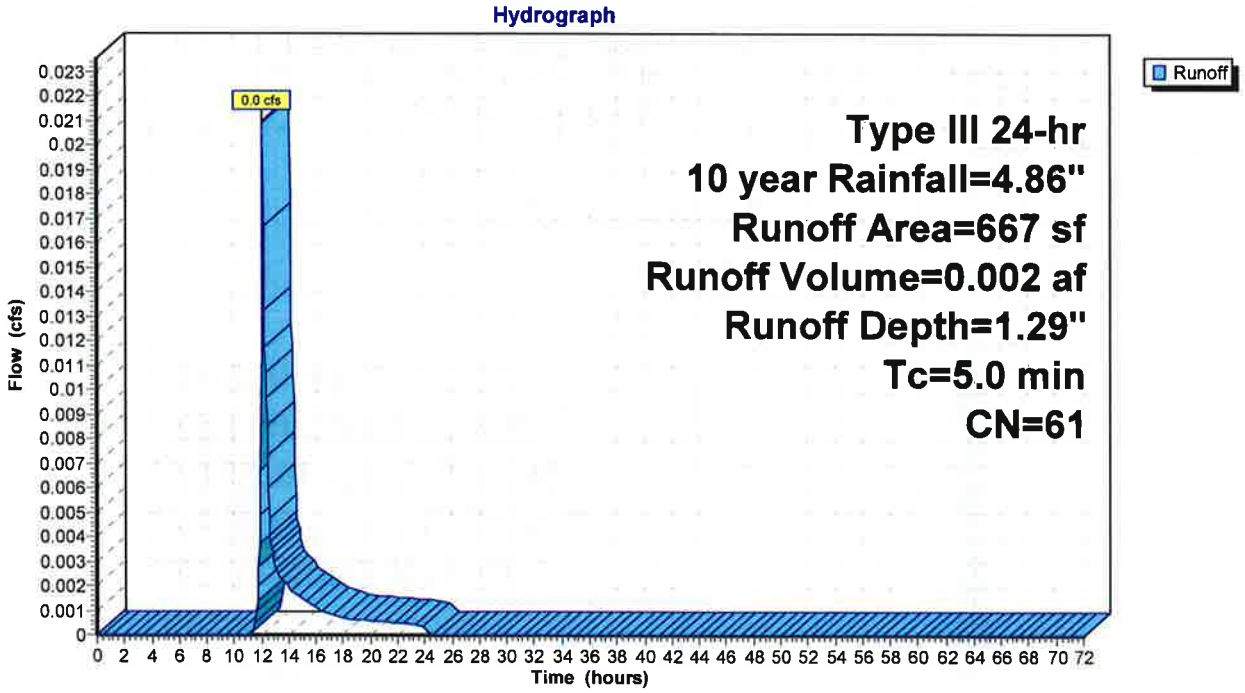
Runoff = 0.0 cfs @ 12.09 hrs, Volume= 0.002 af, Depth= 1.29"

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

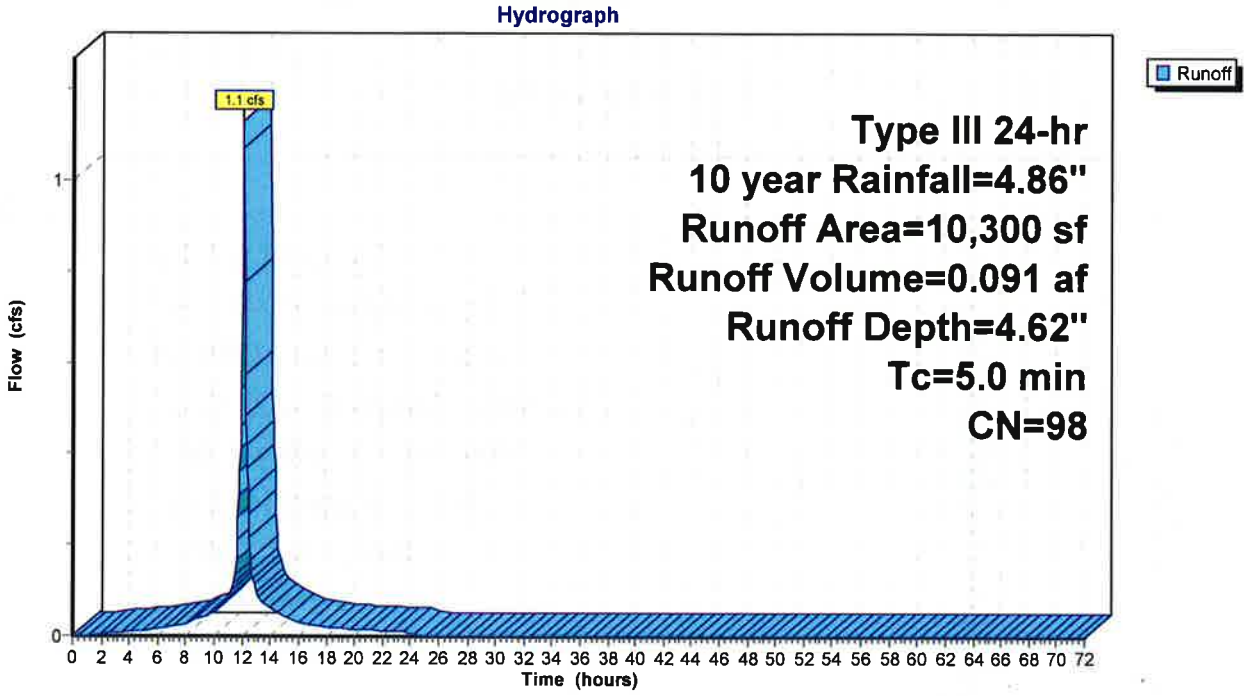
Runoff = 1.1 cfs @ 12.07 hrs, Volume= 0.091 af, Depth= 4.62"

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:

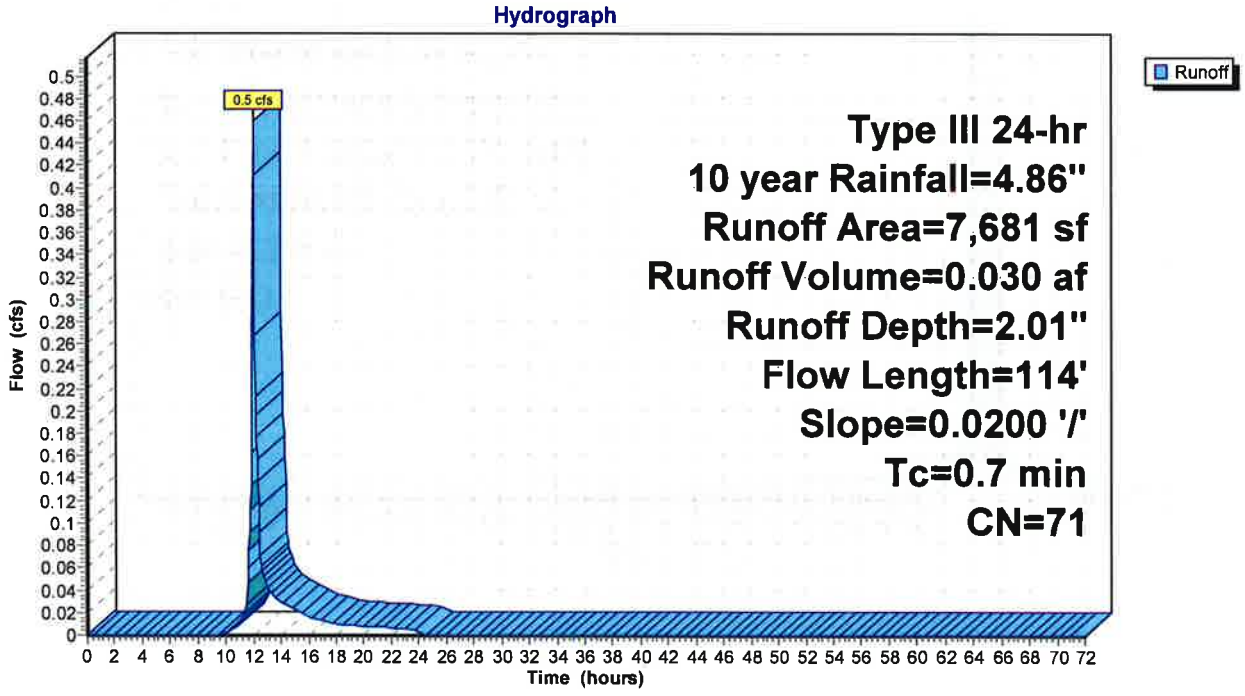
Runoff = 0.5 cfs @ 12.02 hrs, Volume= 0.030 af, Depth= 2.01"

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

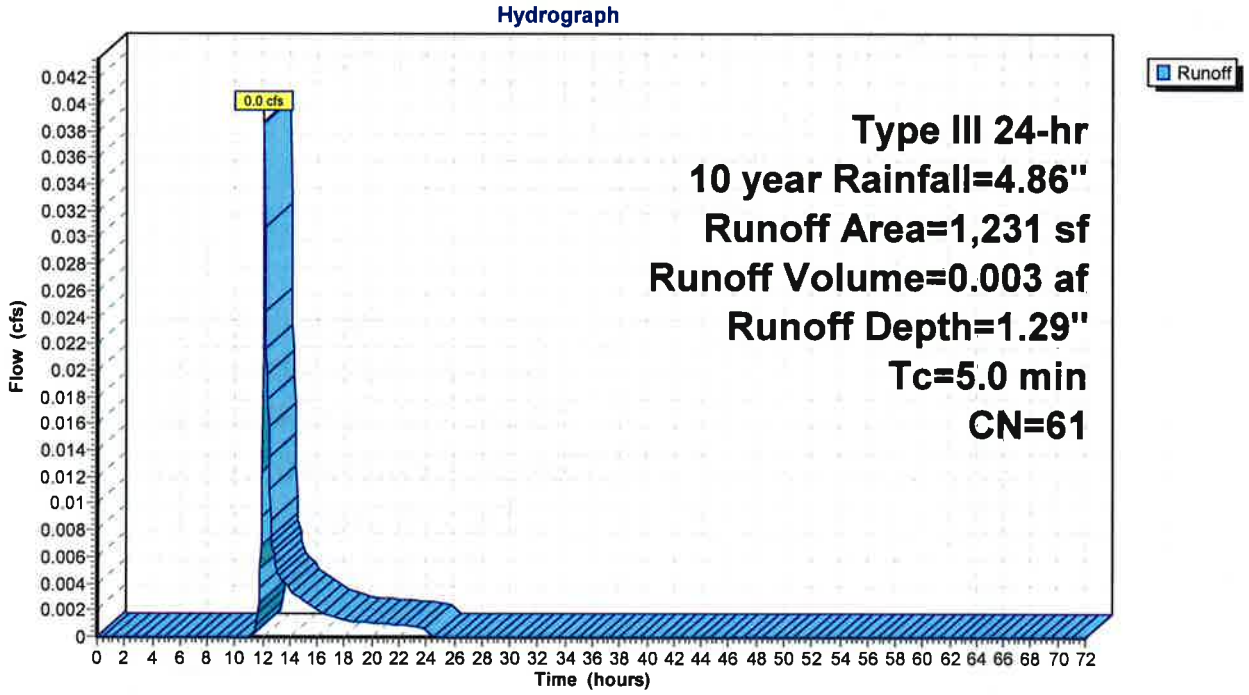
Runoff = 0.0 cfs @ 12.09 hrs, Volume= 0.003 af, Depth= 1.29"

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:

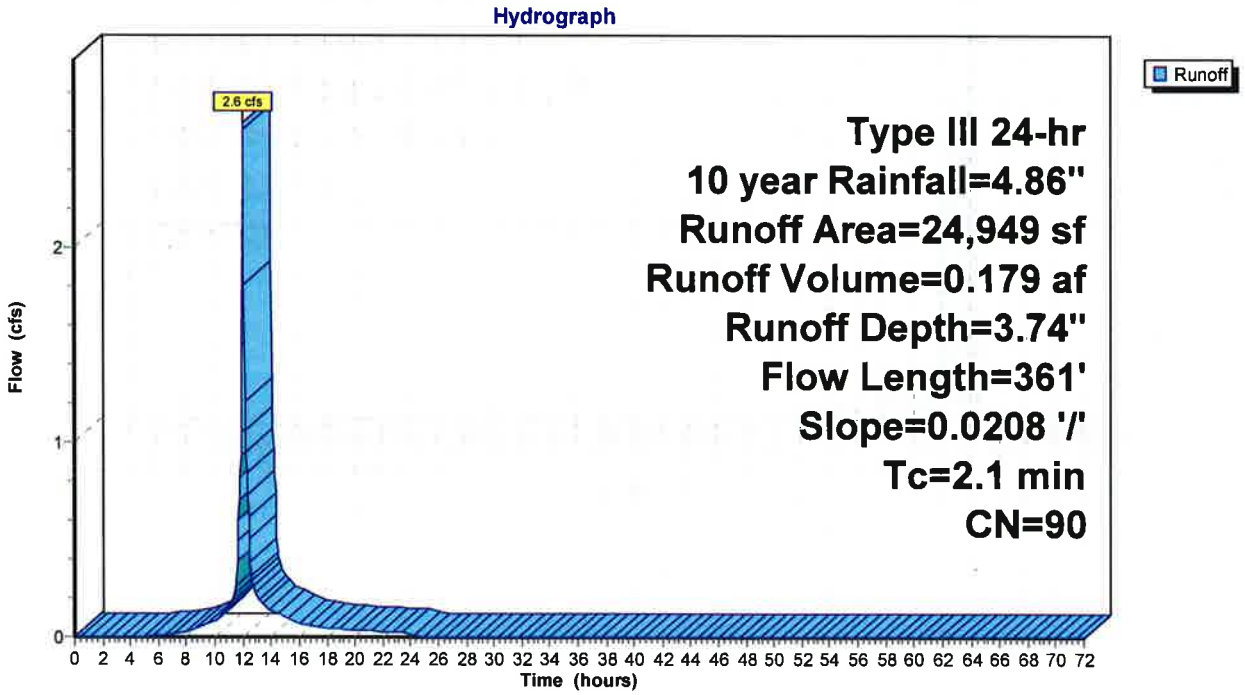
Runoff = 2.6 cfs @ 12.04 hrs, Volume= 0.179 af, Depth= 3.74"

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

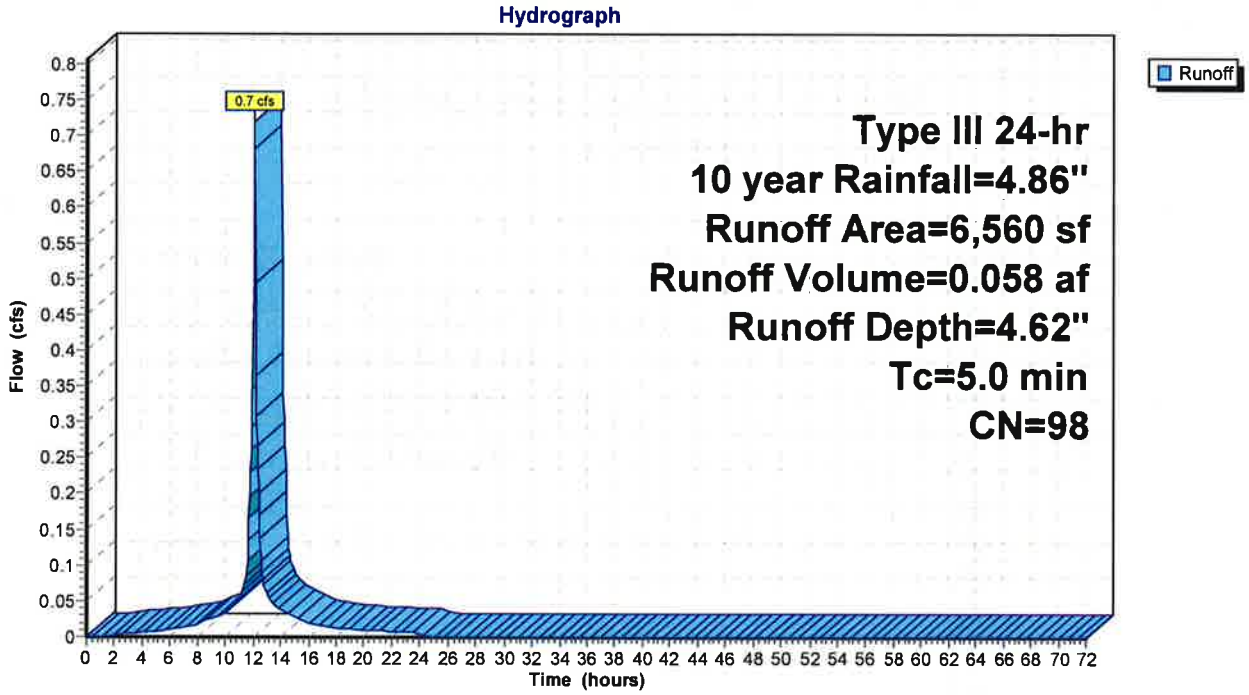
Runoff = 0.7 cfs @ 12.07 hrs, Volume= 0.058 af, Depth= 4.62"

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

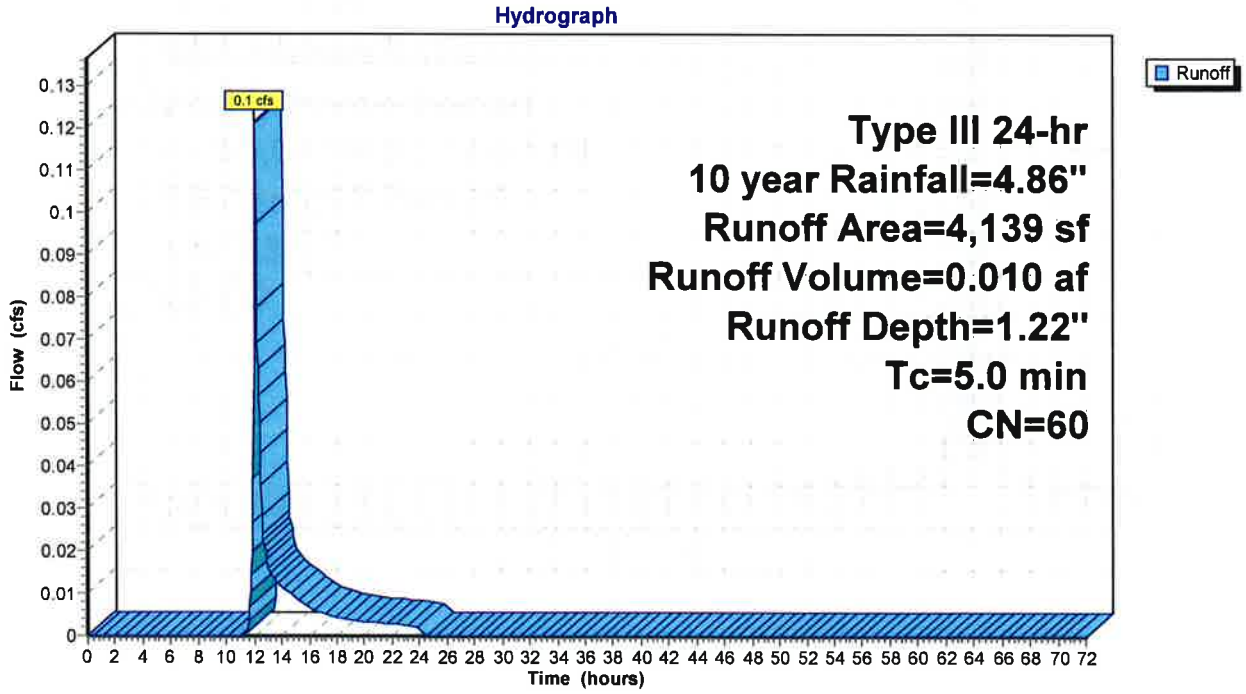
Runoff = 0.1 cfs @ 12.09 hrs, Volume= 0.010 af, Depth= 1.22"

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

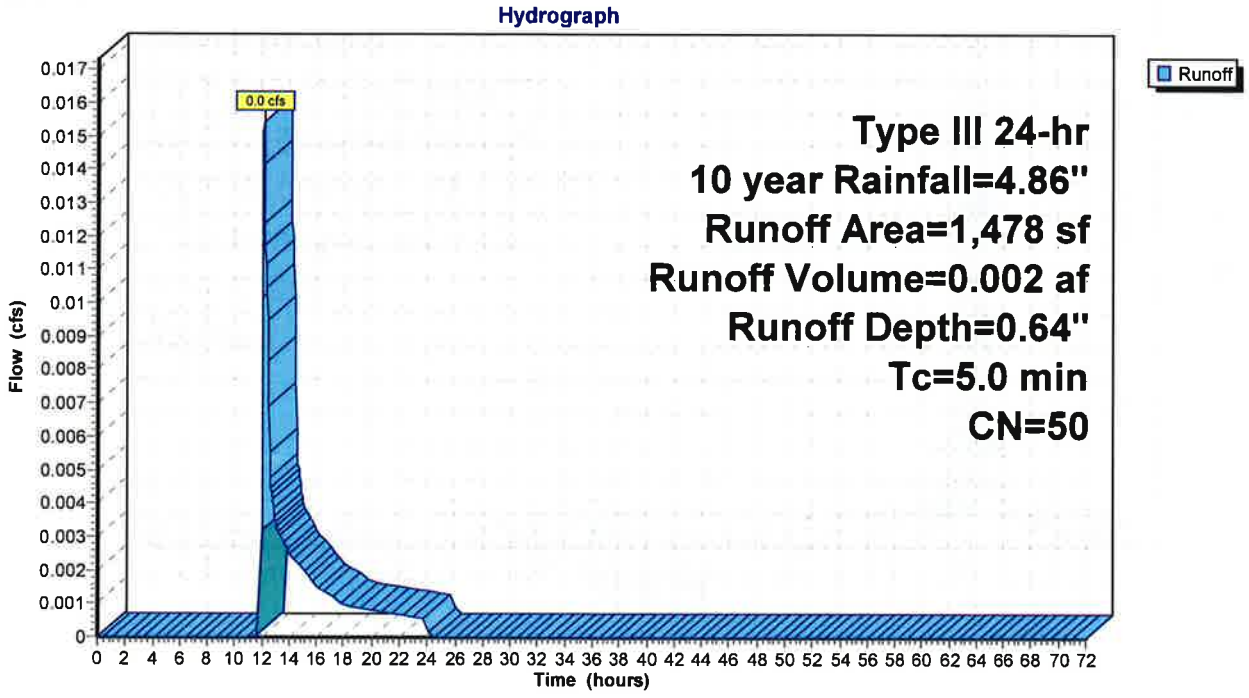
Runoff = 0.0 cfs @ 12.12 hrs, Volume= 0.002 af, Depth= 0.64"

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

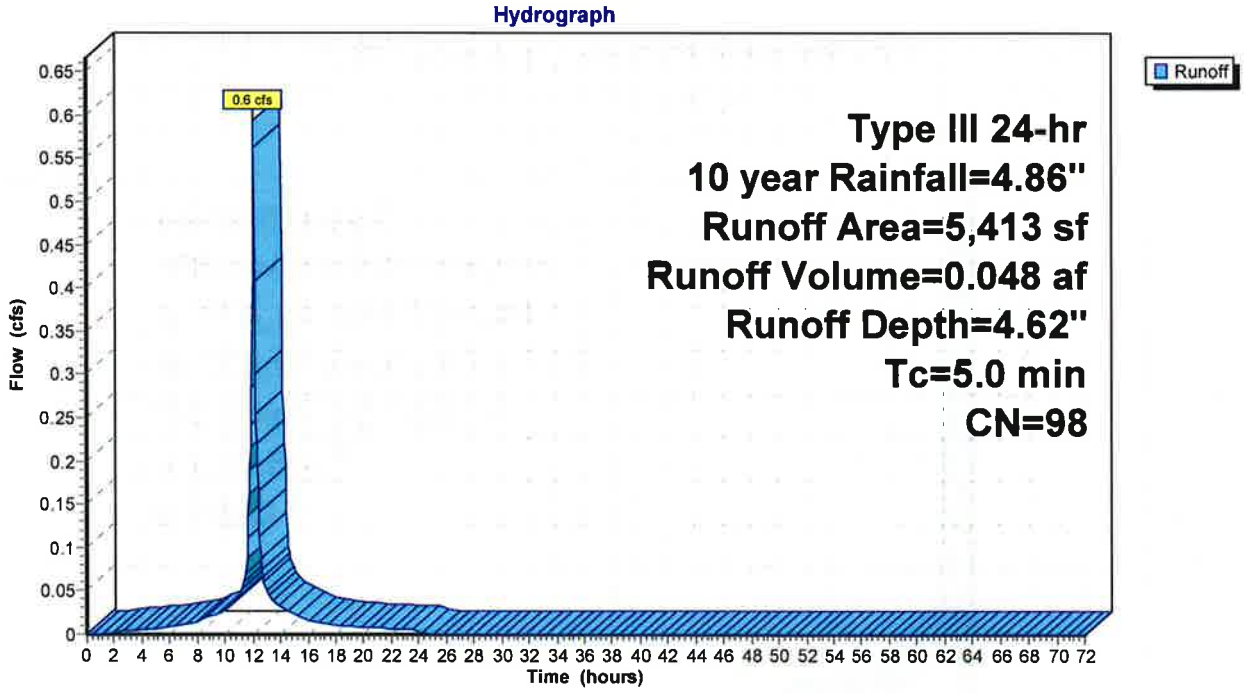
Runoff = 0.6 cfs @ 12.07 hrs, Volume= 0.048 af, Depth= 4.62"

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

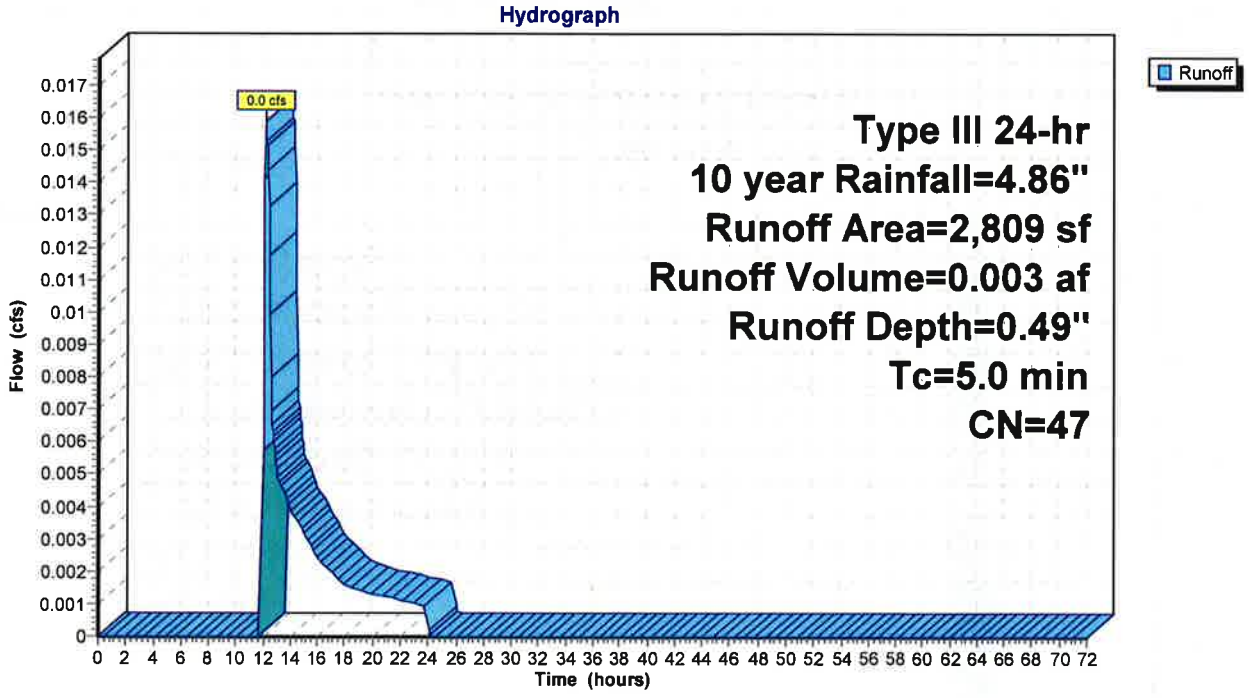
Runoff = 0.0 cfs @ 12.16 hrs, Volume= 0.003 af, Depth= 0.49"

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

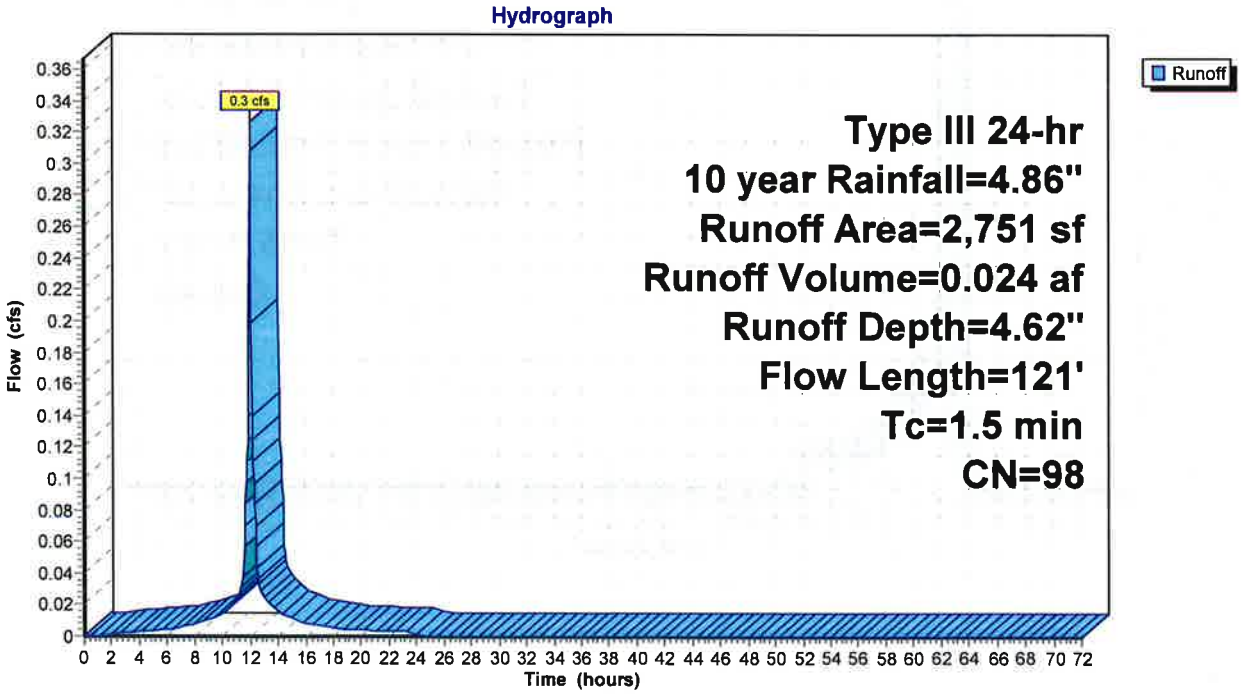
Runoff = 0.3 cfs @ 12.02 hrs, Volume= 0.024 af, Depth= 4.62"

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

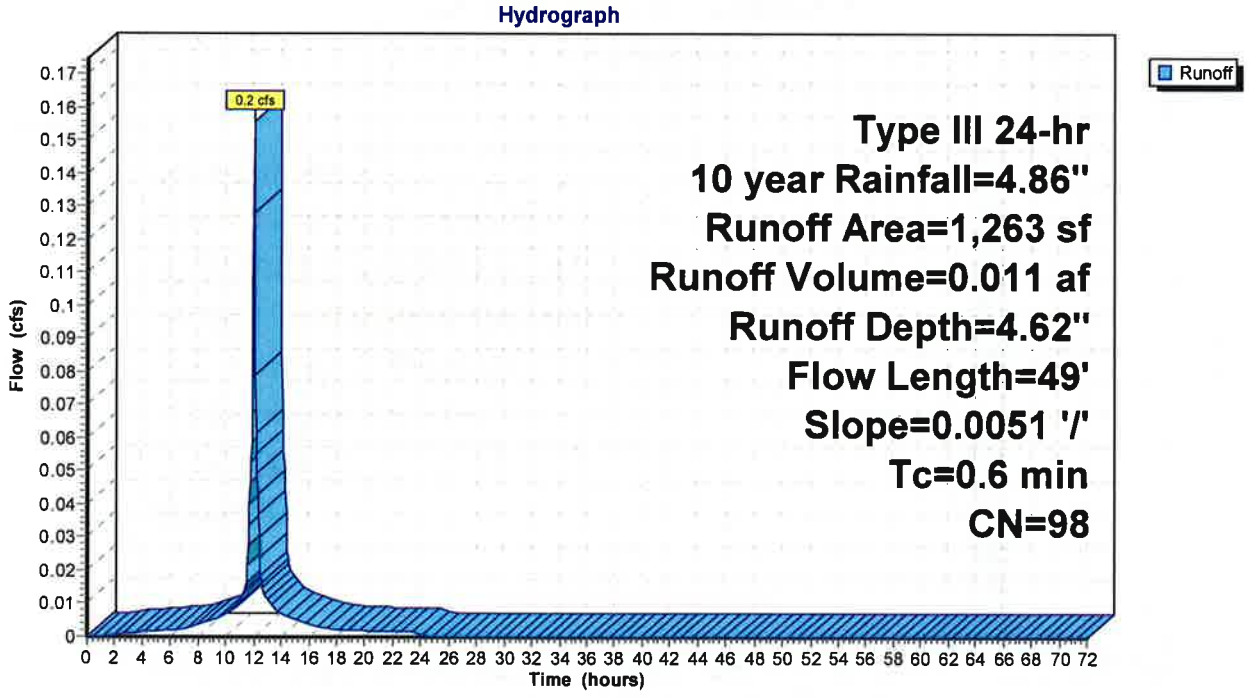
Runoff = 0.2 cfs @ 12.01 hrs, Volume= 0.011 af, Depth= 4.62"

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

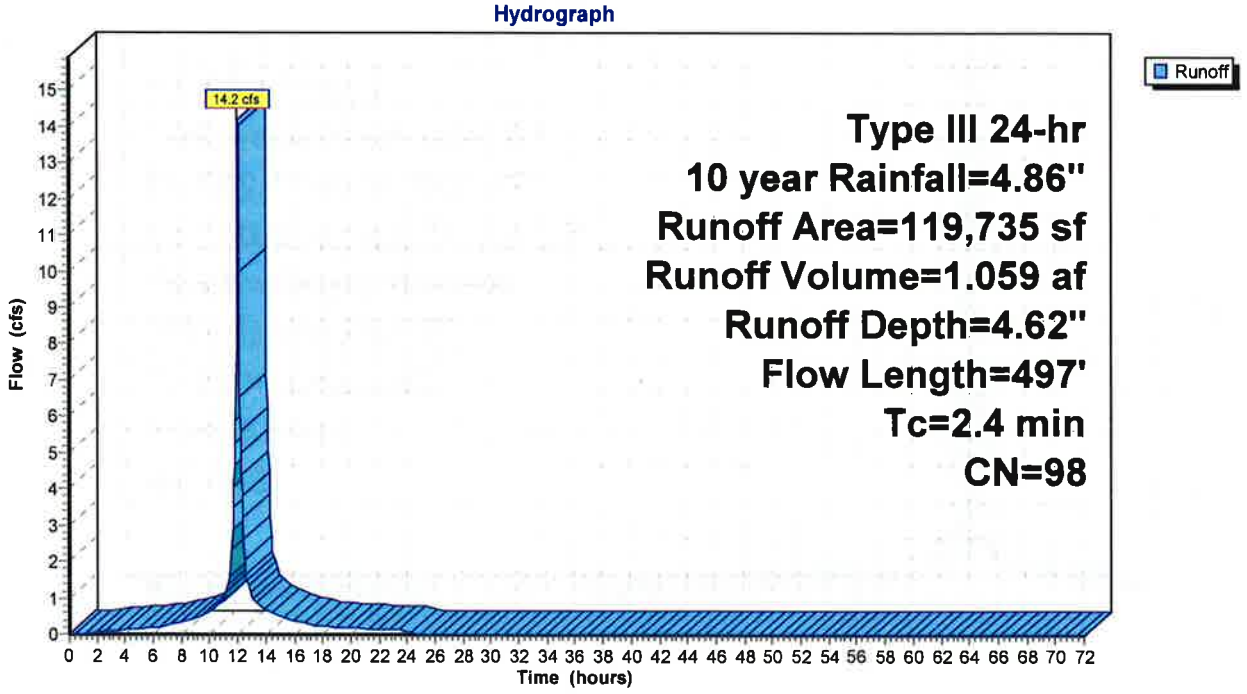
Runoff = 14.2 cfs @ 12.04 hrs, Volume= 1.059 af, Depth= 4.62"

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
119,735	98	Paved parking, HSG B
119,735		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	260	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	237	0.0050	4.20	7.43	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
2.4	497	Total			

Subcatchment PS8: Court Street



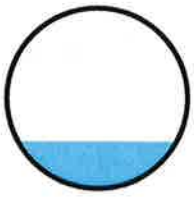
Summary for Reach 4R: Altus Model

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

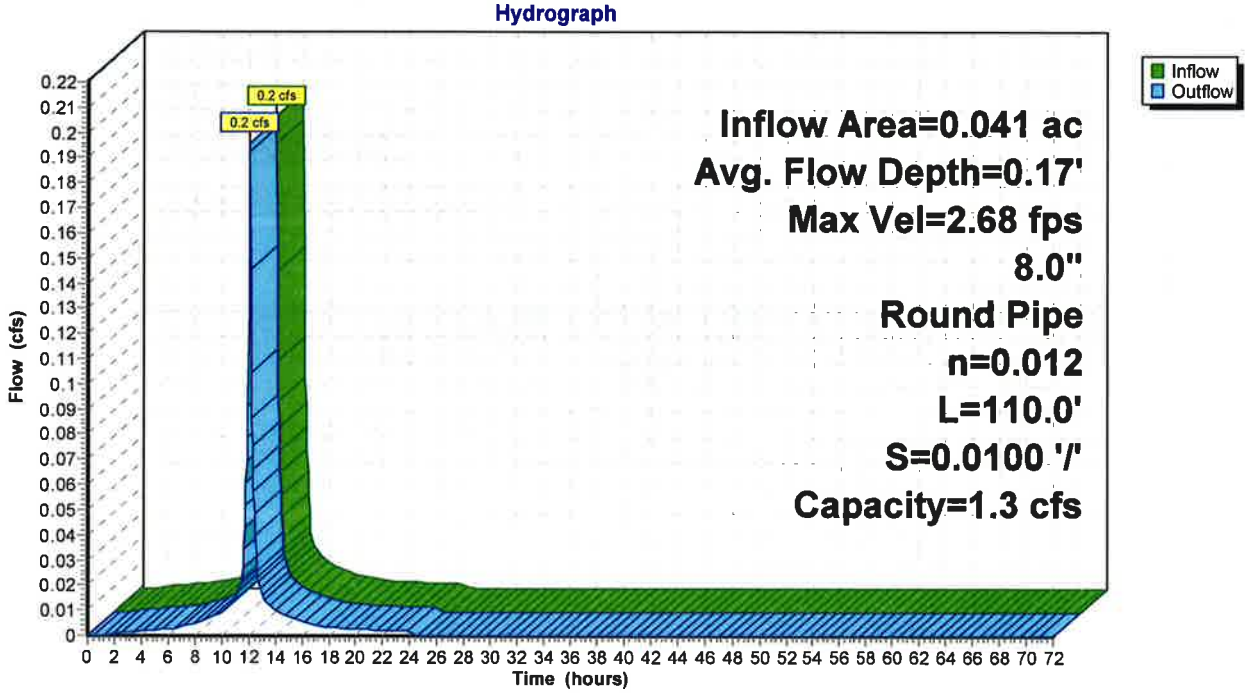
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.68 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.88 fps, Avg. Travel Time= 2.1 min

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'



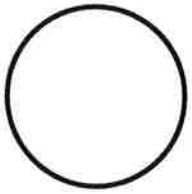
Reach 4R: Altus Model



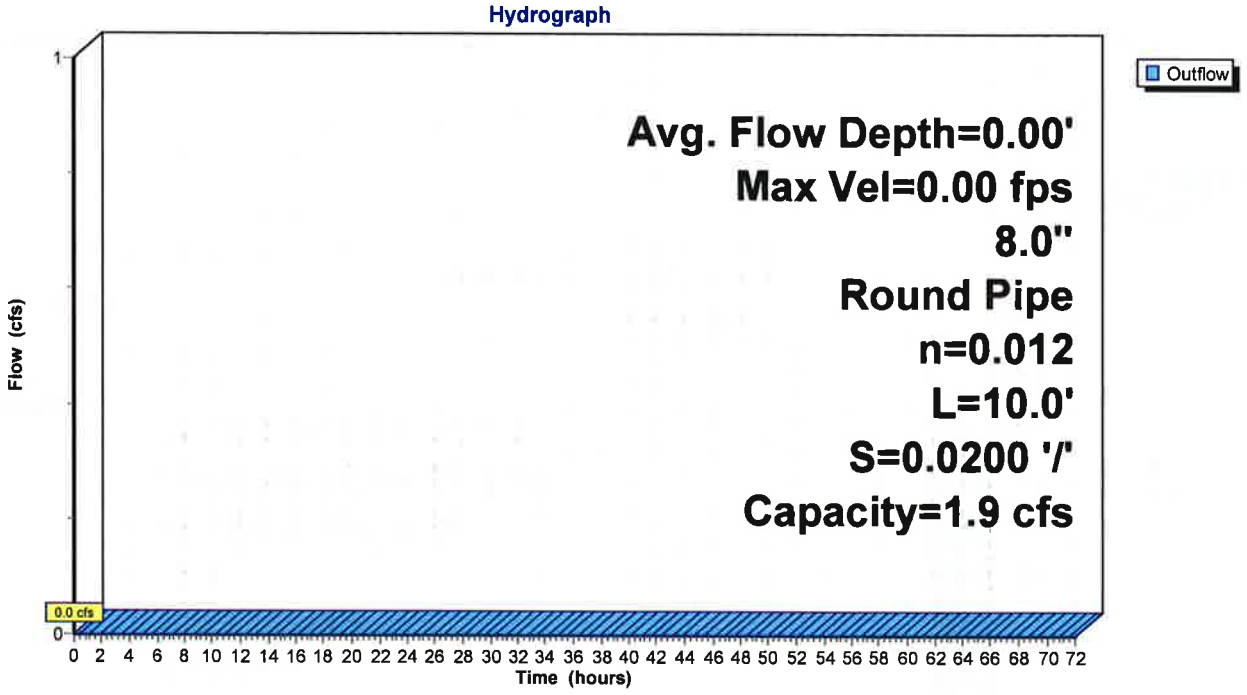
Summary for Reach 40R: Altus Model

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



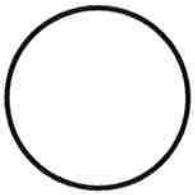
Summary for Reach 41R: Altus Model

Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

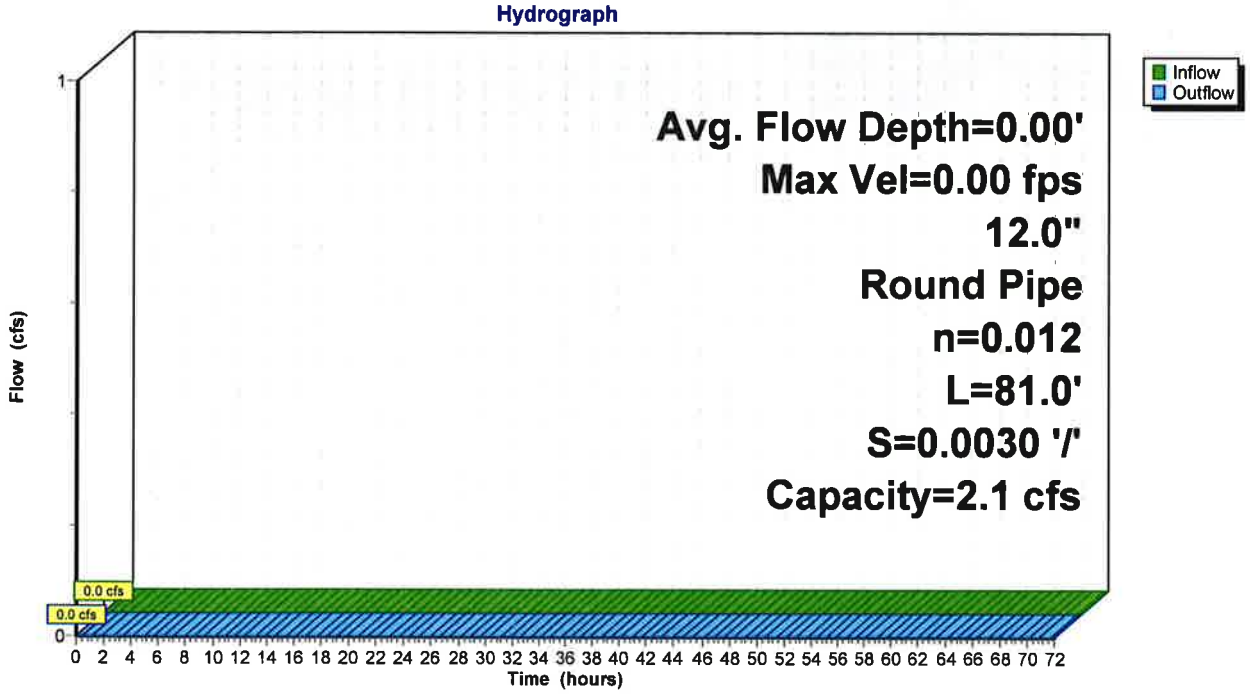
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
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

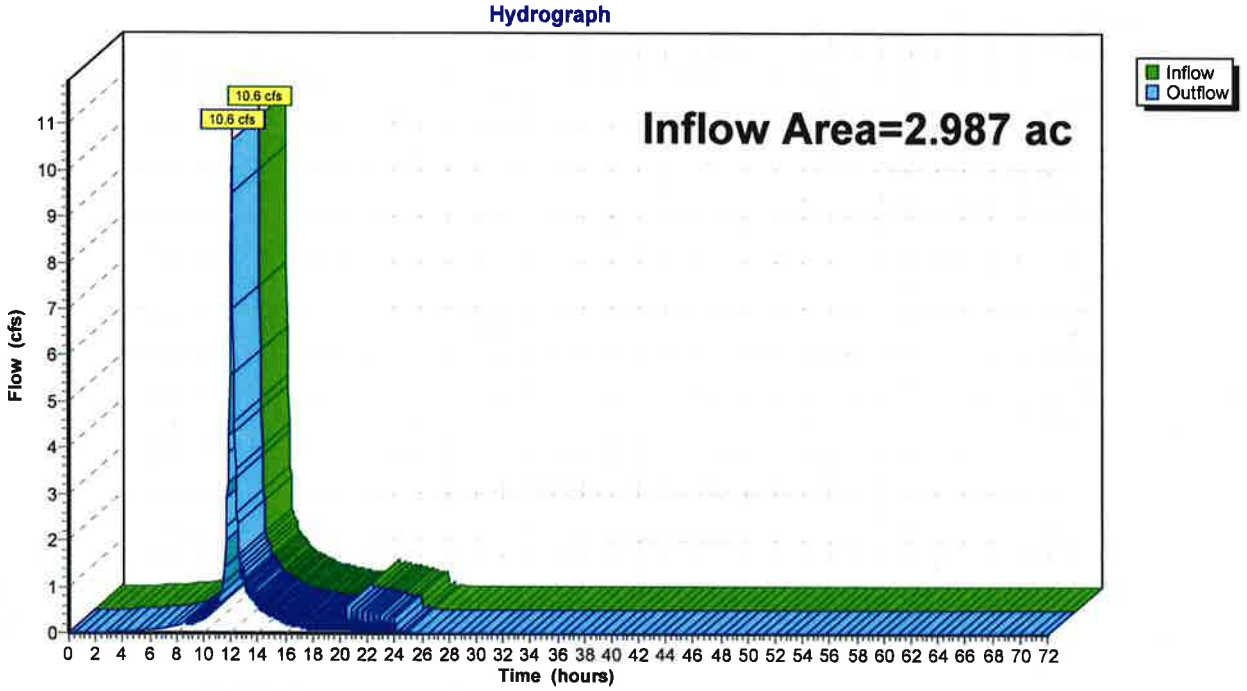


Summary for Reach 300R: POA #3 - Existing CB (Altus Model)

Inflow Area = 2.987 ac, 49.88% Impervious, Inflow Depth = 3.53" for 10 year event
Inflow = 10.6 cfs @ 12.06 hrs, Volume= 0.879 af
Outflow = 10.6 cfs @ 12.06 hrs, Volume= 0.879 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 @ 12.37 hrs, Volume= 0.056 af, Atten= 67%, Lag= 17.9 min
Primary = 0.3 cfs @ 12.37 hrs, Volume= 0.056 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 12.39' @ 12.37 hrs Surf.Area= 0.022 ac Storage= 0.029 af

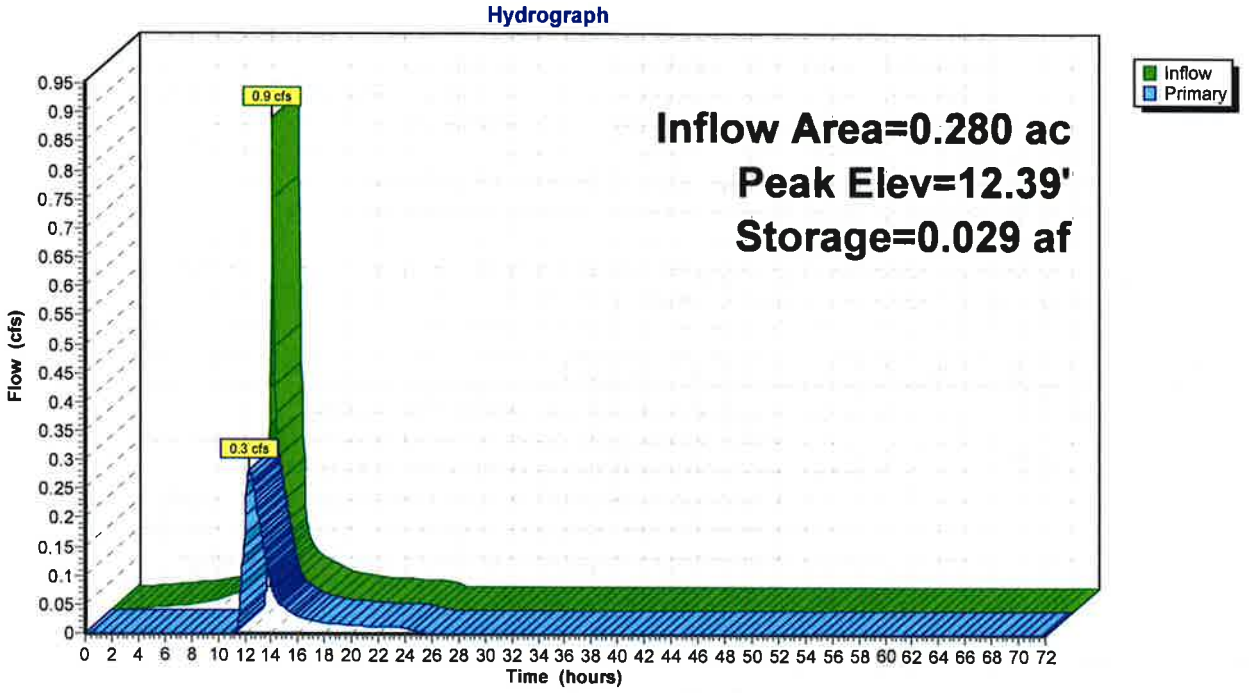
Plug-Flow detention time= 179.6 min calculated for 0.056 af (80% of inflow)
Center-of-Mass det. time= 100.3 min (870.3 - 769.9)

Volume	Invert	Avail.Storage	Storage Description
#1	10.50'	0.023 af	**31.00'W x 30.50'L x 4.00'H Prismatoid** 0.087 af Overall - 0.030 af Embedded = 0.057 af x 40.0% Voids
#2	11.00'	0.030 af	**ADS_StormTech SC-740** x 28 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
		0.053 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

Primary OutFlow Max=0.3 cfs @ 12.37 hrs HW=12.39' TW=9.83' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.3 cfs of 2.1 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.3 cfs @ 4.33 fps)
  └─**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 1P: OCS # 1 / SYSTEM # 1



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

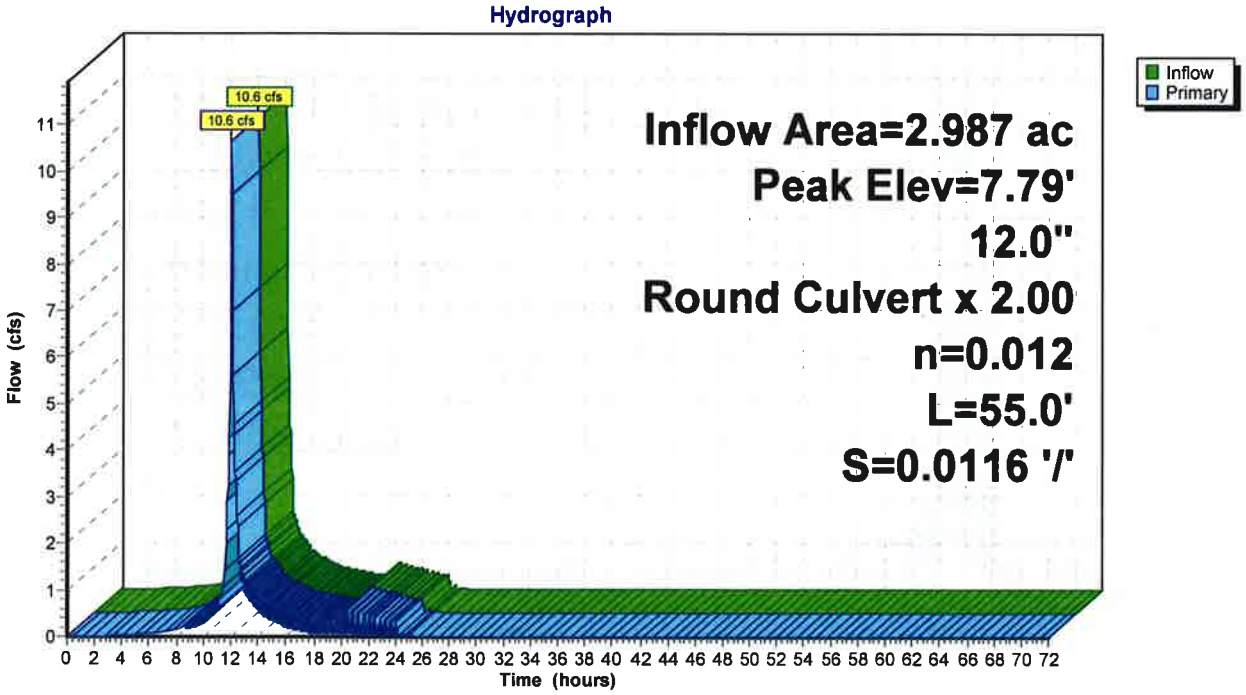
Inflow Area = 2.987 ac, 49.88% Impervious, Inflow Depth = 3.53" for 10 year event
Inflow = 10.6 cfs @ 12.06 hrs, Volume= 0.879 af
Outflow = 10.6 cfs @ 12.06 hrs, Volume= 0.879 af, Atten= 0%, Lag= 0.0 min
Primary = 10.6 cfs @ 12.06 hrs, Volume= 0.879 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 7.79' @ 12.06 hrs
Flood Elev= 7.91'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.31'	**12.0" Round Culvert X 2.00** L= 55.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.31' / 4.67' S= 0.0116 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=10.4 cfs @ 12.06 hrs HW=7.70' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 10.4 cfs @ 6.61 fps)

Pond 3P: Existing CB (Altus Model)



Summary for Pond 5P: CB#1

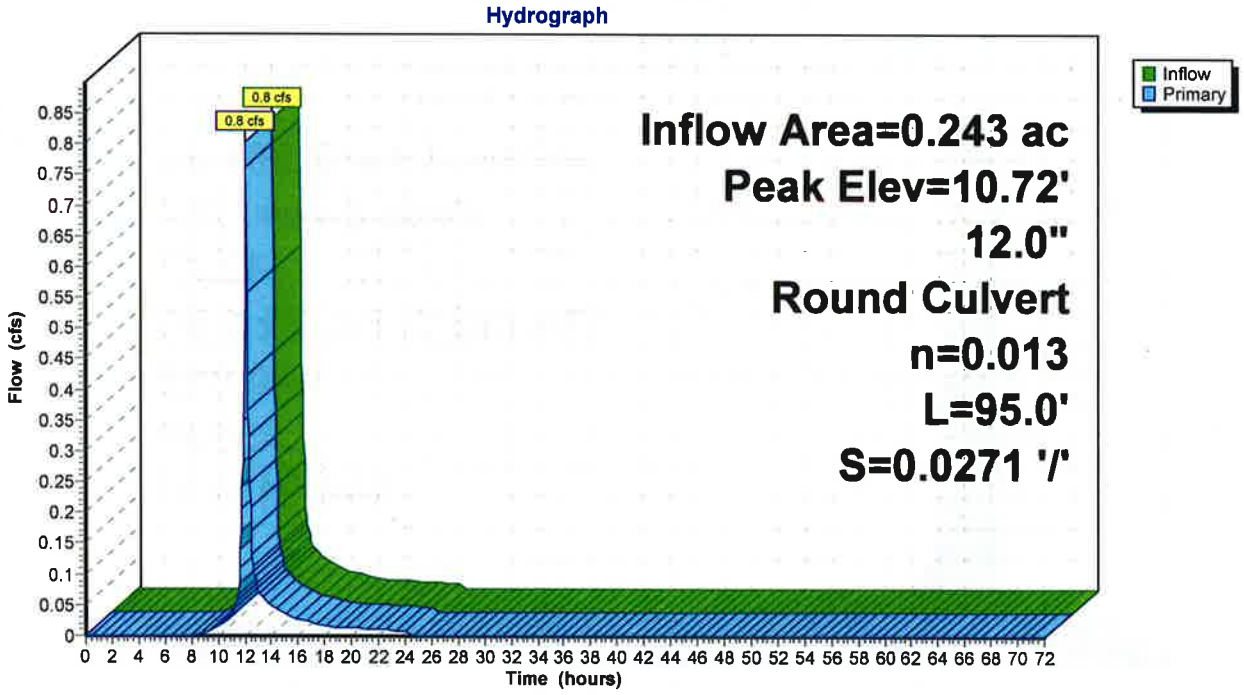
Inflow Area = 0.243 ac, 69.34% Impervious, Inflow Depth = 2.77" for 10 year event
Inflow = 0.8 cfs @ 12.07 hrs, Volume= 0.056 af
Outflow = 0.8 cfs @ 12.07 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min
Primary = 0.8 cfs @ 12.07 hrs, Volume= 0.056 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 10.72' @ 12.31 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=0.7 cfs @ 12.07 hrs HW=10.16' TW=9.47' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.7 cfs @ 2.76 fps)

Pond 5P: CB#1



Summary for Pond 7P: CB#2

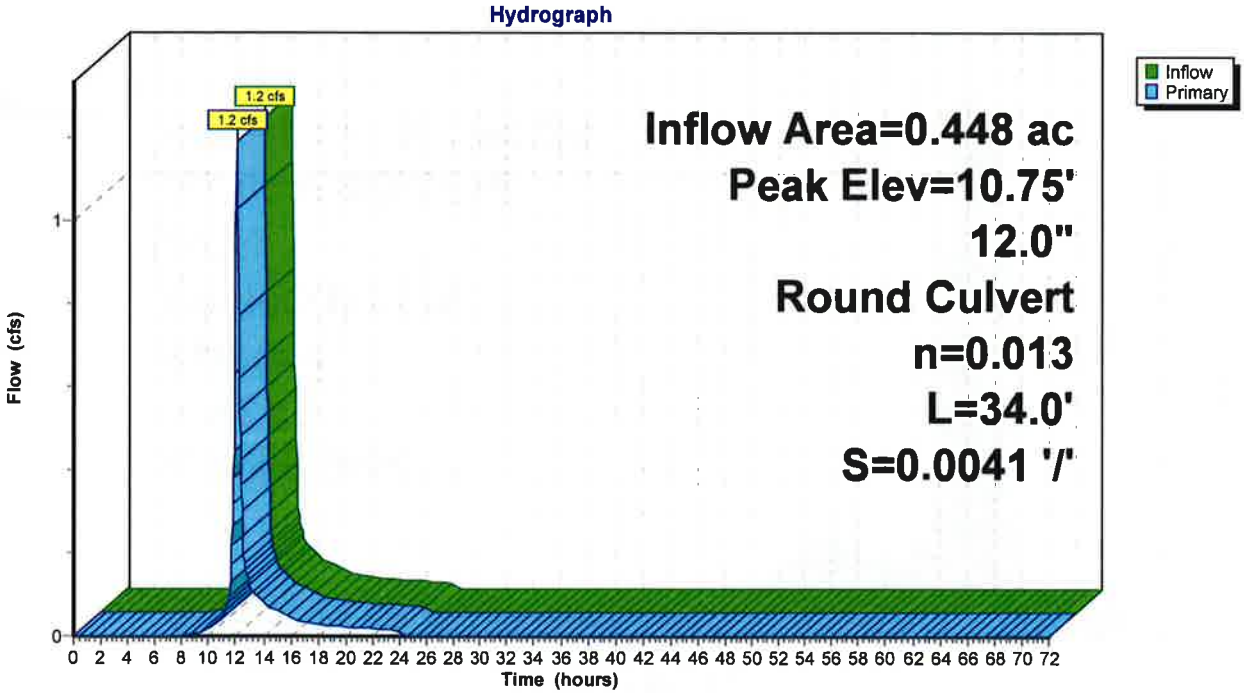
Inflow Area = 0.448 ac, 59.02% Impervious, Inflow Depth = 2.30" for 10 year event
Inflow = 1.2 cfs @ 12.05 hrs, Volume= 0.086 af
Outflow = 1.2 cfs @ 12.05 hrs, Volume= 0.086 af, Atten= 0%, Lag= 0.0 min
Primary = 1.2 cfs @ 12.05 hrs, Volume= 0.086 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 10.75' @ 12.27 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=9.31' TW=9.64' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond 7P: CB#2



Summary for Pond 8P: CB#3

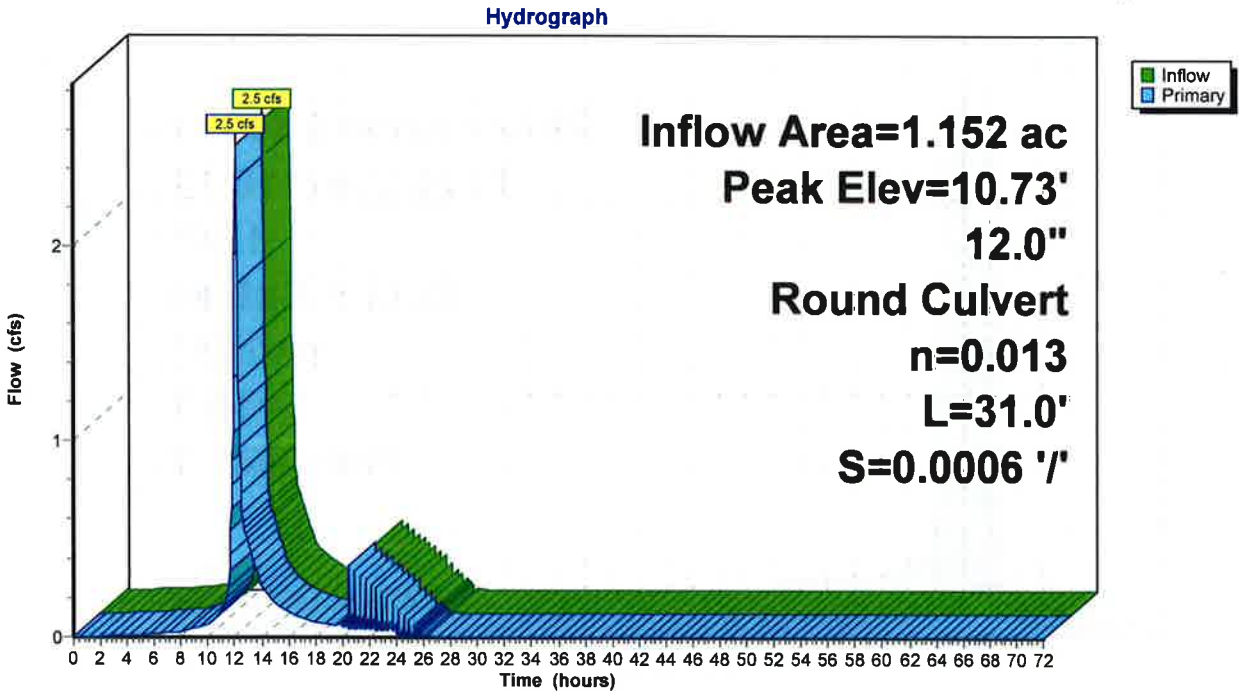
Inflow Area = 1.152 ac, 71.58% Impervious, Inflow Depth = 2.80" for 10 year event
Inflow = 2.5 cfs @ 12.06 hrs, Volume= 0.269 af
Outflow = 2.5 cfs @ 12.06 hrs, Volume= 0.269 af, Atten= 0%, Lag= 0.0 min
Primary = 2.5 cfs @ 12.06 hrs, Volume= 0.269 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 10.73' @ 12.22 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' / 6.87' S= 0.0006 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.9 cfs @ 12.06 hrs HW=9.68' TW=9.44' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 1.9 cfs @ 2.40 fps)

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 = 0.3 cfs @ 20.40 hrs, Volume= 0.037 af, Atten= 46%, Lag= 499.6 min
Primary = 0.3 cfs @ 20.40 hrs, Volume= 0.037 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 8.76' @ 13.02 hrs Surf.Area= 0.022 ac Storage= 0.035 af

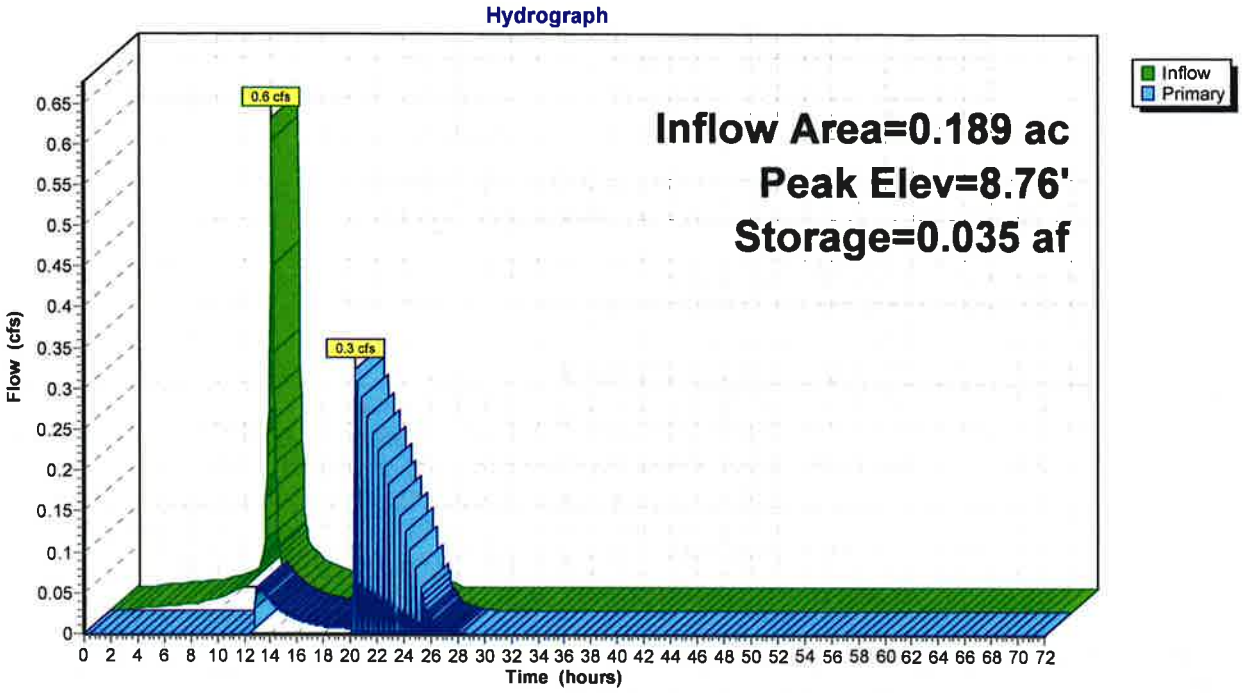
Plug-Flow detention time= 529.4 min calculated for 0.037 af (73% of inflow)
Center-of-Mass det. time= 434.6 min (1,192.0 - 757.4)

Volume	Invert	Avail.Storage	Storage Description
#1	6.50'	0.023 af	**31.00'W x 30.50'L x 4.00'H Prismatoid** 0.087 af Overall - 0.030 af Embedded = 0.057 af x 40.0% Voids
#2	7.00'	0.030 af	**ADS_StormTech SC-740** x 28 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
		0.053 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

Primary OutFlow Max=0.0 cfs @ 20.40 hrs HW=8.64' TW=8.69' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)
↑**2=Orifice/Grate** (Controls 0.0 cfs)
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

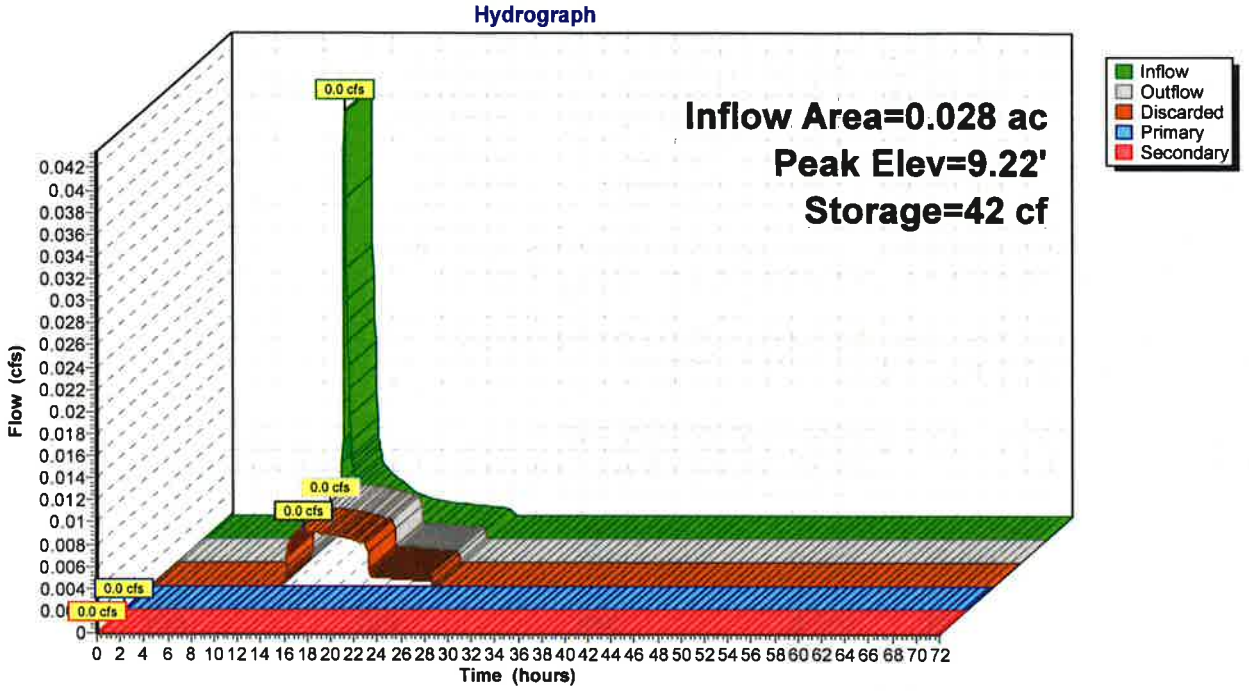
Device	Routing	Invert	Outlet Devices
#1	Primary	7.39'	**6.0" Round Culvert** L= 53.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.39' / 7.13' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	9.50'	**24.0" Horiz. Orifice/Grate** C= 0.600 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

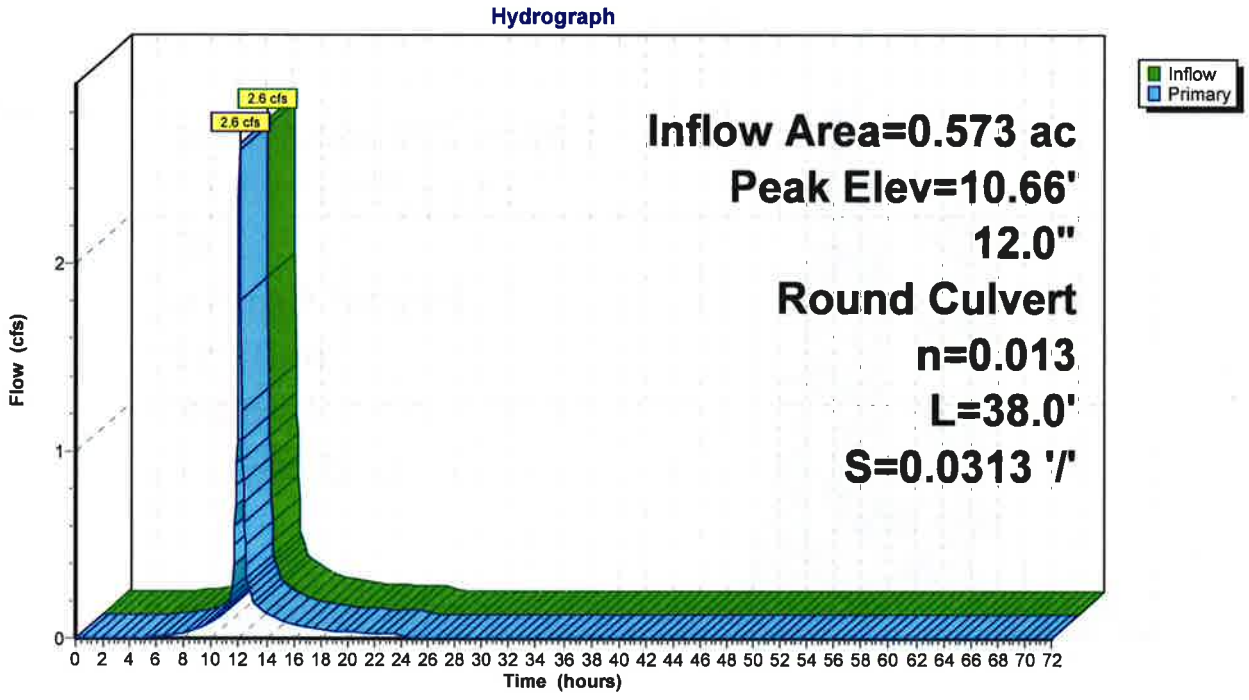
Inflow Area = 0.573 ac, 86.40% Impervious, Inflow Depth = 3.74" for 10 year event
Inflow = 2.6 cfs @ 12.04 hrs, Volume= 0.179 af
Outflow = 2.6 cfs @ 12.04 hrs, Volume= 0.179 af, Atten= 0%, Lag= 0.0 min
Primary = 2.6 cfs @ 12.04 hrs, Volume= 0.179 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 10.66' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.06'	**12.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.06' / 6.87' S= 0.0313 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.7 cfs @ 12.04 hrs HW=9.57' TW=9.37' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 1.7 cfs @ 2.14 fps)

Pond 13P: CB#5



Summary for Pond 15P: DMH#1

Inflow Area = 0.468 ac, 69.24% Impervious, Inflow Depth = 2.37" for 10 year event
Inflow = 0.3 cfs @ 20.40 hrs, Volume= 0.092 af
Outflow = 0.3 cfs @ 20.40 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 20.40 hrs, Volume= 0.092 af

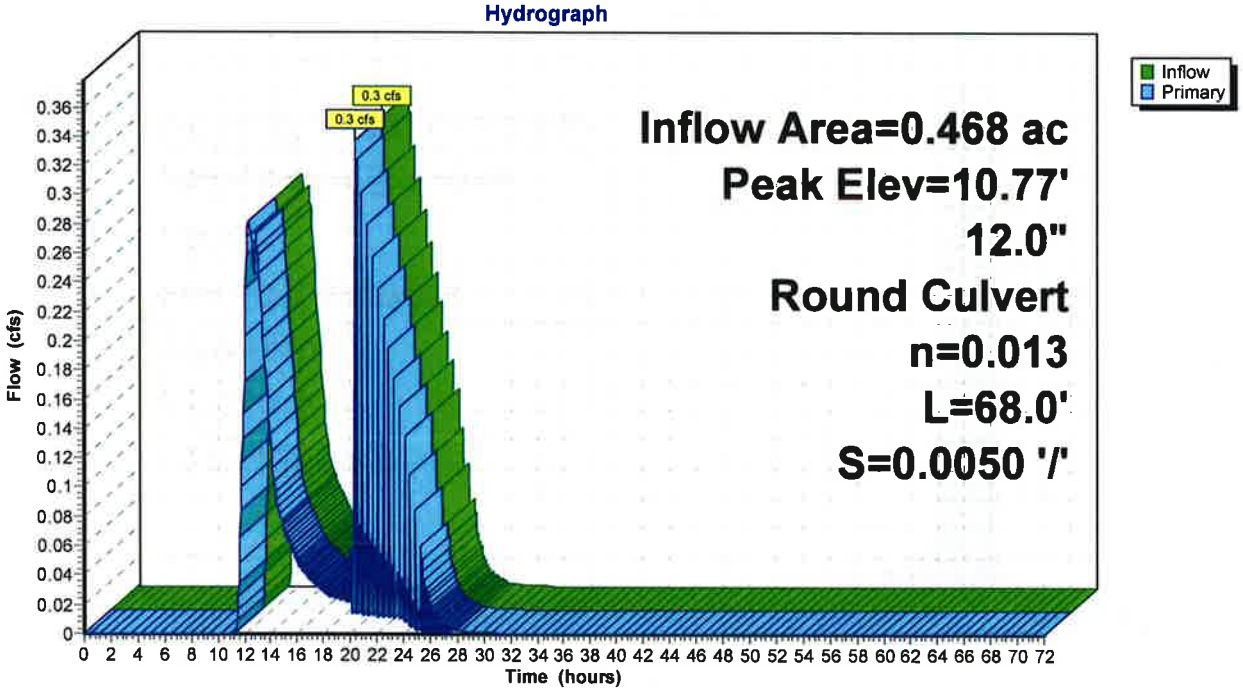
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 10.77' @ 12.32 hrs

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=2.8 cfs @ 20.40 hrs HW=8.69' TW=7.39' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 2.8 cfs @ 3.55 fps)

Pond 15P: DMH#1

Hydrograph



Summary for Pond 16P: CB#6

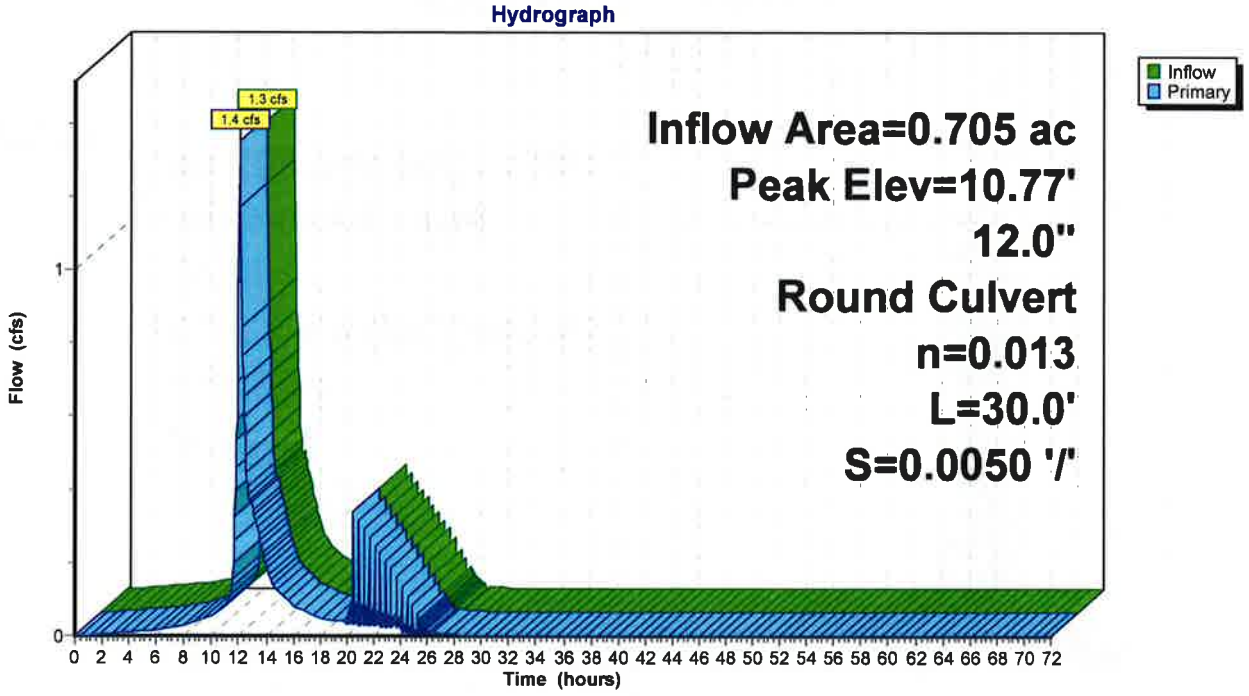
Inflow Area = 0.705 ac, 79.56% Impervious, Inflow Depth = 3.12" for 10 year event
Inflow = 1.3 cfs @ 12.08 hrs, Volume= 0.184 af
Outflow = 1.4 cfs @ 12.07 hrs, Volume= 0.184 af, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.07 hrs, Volume= 0.184 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 10.77' @ 12.27 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 @ 12.07 hrs HW=9.52' TW=9.73' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Pond 16P: CB#6



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

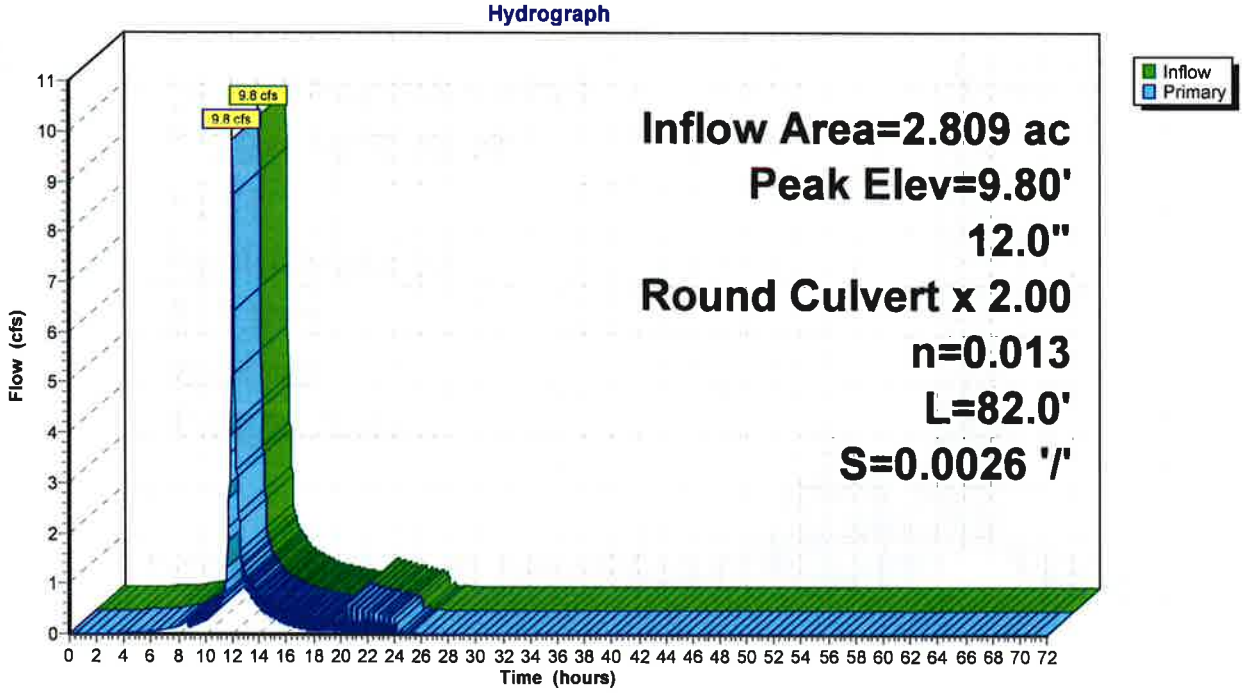
Inflow Area = 2.809 ac, 53.04% Impervious, Inflow Depth = 3.48" for 10 year event
Inflow = 9.8 cfs @ 12.06 hrs, Volume= 0.815 af
Outflow = 9.8 cfs @ 12.06 hrs, Volume= 0.815 af, Atten= 0%, Lag= 0.0 min
Primary = 9.8 cfs @ 12.06 hrs, Volume= 0.815 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 9.80' @ 12.08 hrs
Flood Elev= 8.49'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.52'	**12.0" Round Culvert X 2.00** L= 82.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.52' / 5.31' S= 0.0026 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=8.3 cfs @ 12.06 hrs HW=9.48' TW=7.70' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 8.3 cfs @ 5.31 fps)

Pond 30P: CB #1 (Altus Model)



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

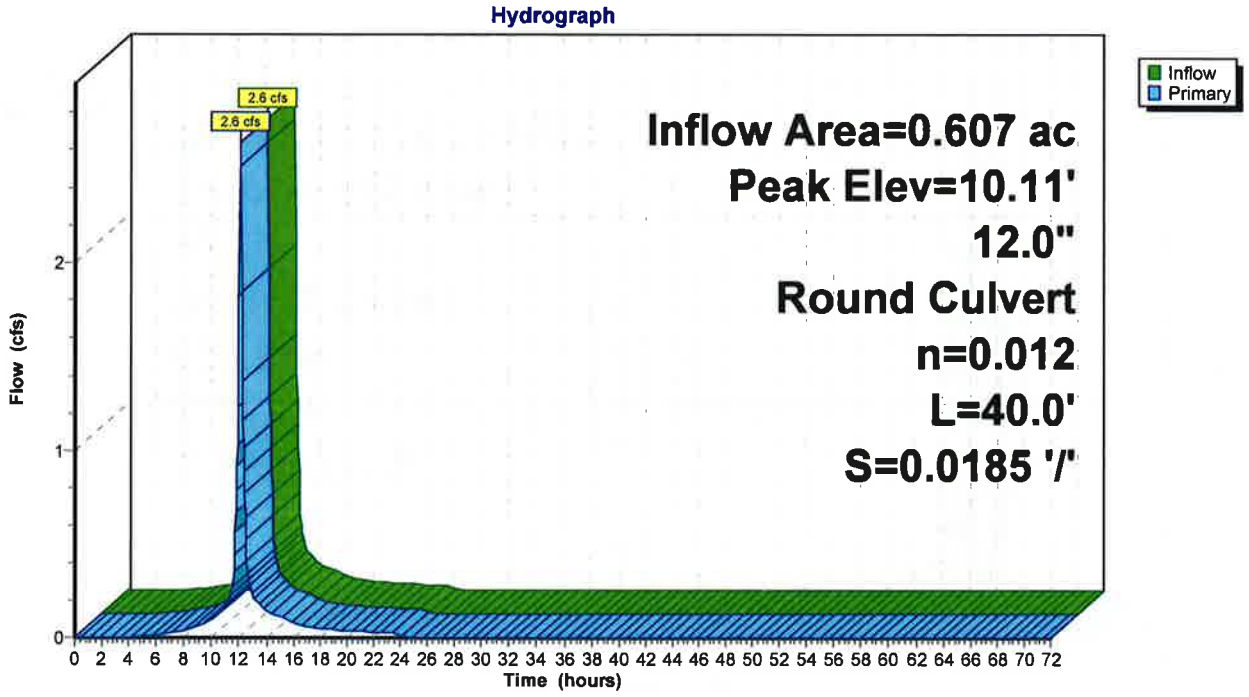
Inflow Area = 0.607 ac, 0.00% Impervious, Inflow Depth = 3.85" for 10 year event
Inflow = 2.6 cfs @ 12.07 hrs, Volume= 0.195 af
Outflow = 2.6 cfs @ 12.07 hrs, Volume= 0.195 af, Atten= 0%, Lag= 0.0 min
Primary = 2.6 cfs @ 12.07 hrs, Volume= 0.195 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 10.11' @ 12.13 hrs
Flood Elev= 8.44'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.34'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.34' / 5.60' S= 0.0185 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.07 hrs HW=8.99' TW=9.56' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Pond 31P: CB #2 (Altus Model)



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

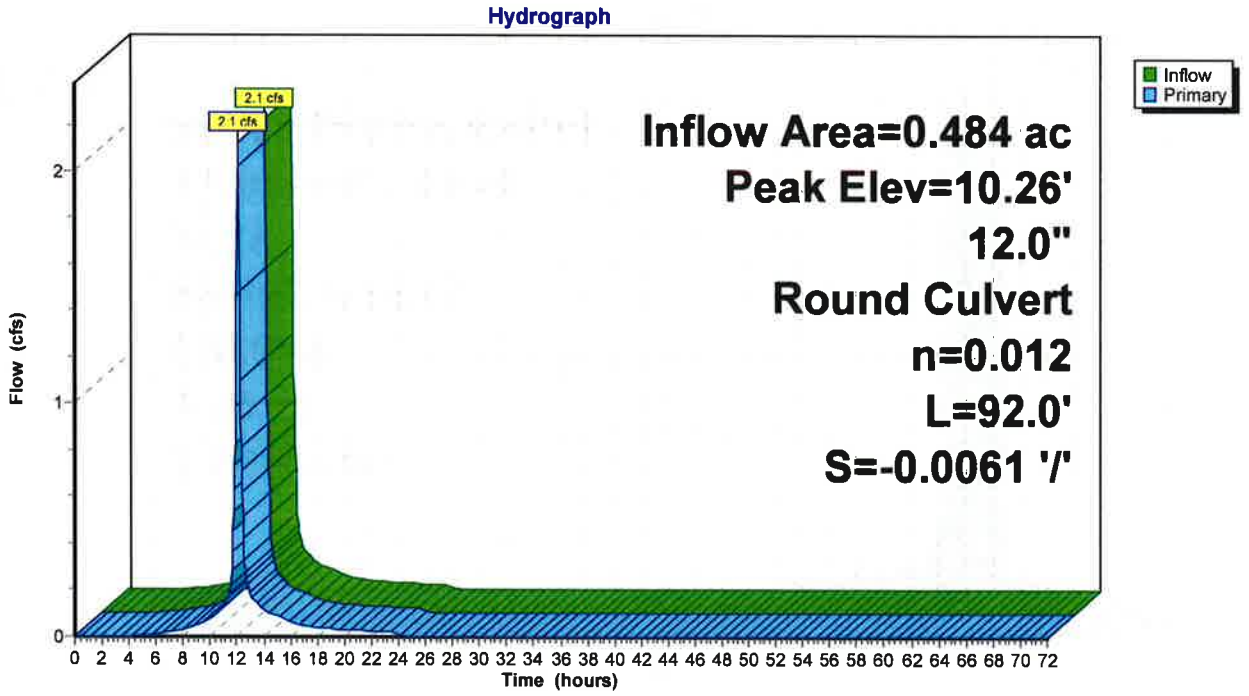
Inflow Area = 0.484 ac, 0.00% Impervious, Inflow Depth = 3.88" for 10 year event
Inflow = 2.1 cfs @ 12.07 hrs, Volume= 0.157 af
Outflow = 2.1 cfs @ 12.07 hrs, Volume= 0.157 af, Atten= 0%, Lag= 0.0 min
Primary = 2.1 cfs @ 12.07 hrs, Volume= 0.157 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 10.26' @ 12.17 hrs
Flood Elev= 8.53'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.44'	**12.0" Round Culvert** L= 92.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.88' / 6.44' S= -0.0061 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.07 hrs HW=8.16' TW=8.99' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Pond 32P: CB #3 (Altus Model)



Summary for Pond 33P: CB #4 (Altus Model) - Relocated (CB5B)

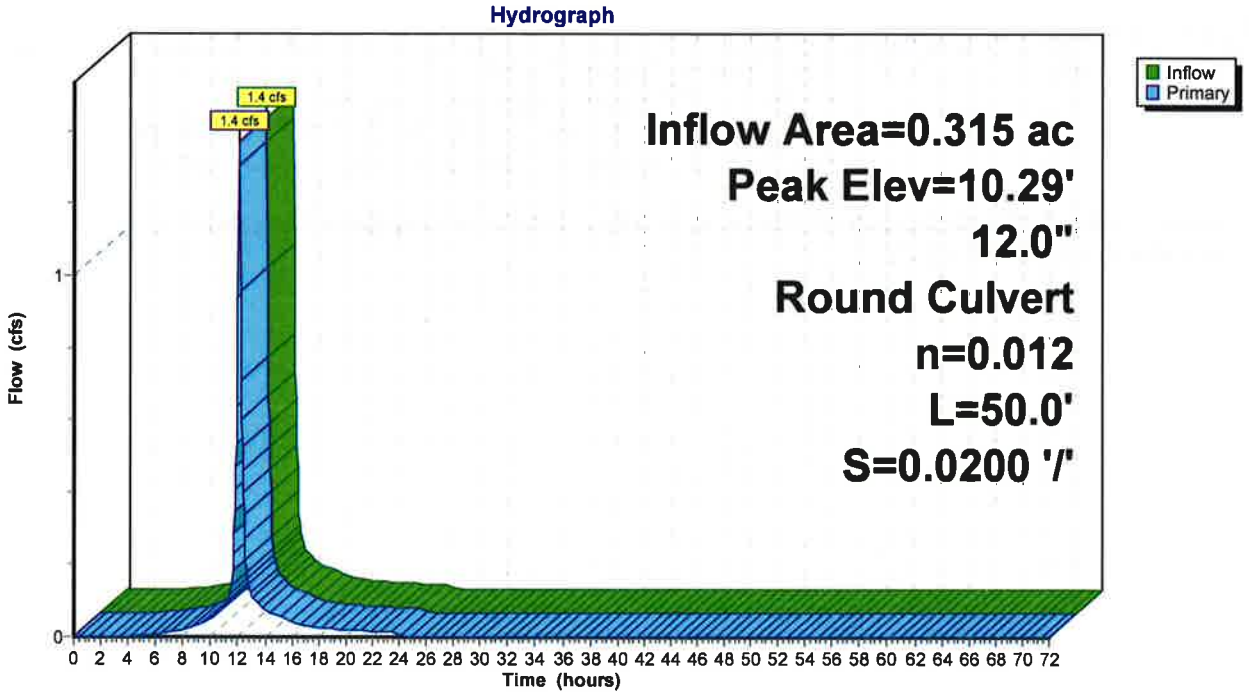
Inflow Area = 0.315 ac, 0.00% Impervious, Inflow Depth = 3.85" for 10 year event
Inflow = 1.4 cfs @ 12.07 hrs, Volume= 0.101 af
Outflow = 1.4 cfs @ 12.07 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.07 hrs, Volume= 0.101 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 10.29' @ 12.22 hrs
Flood Elev= 9.00'

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' / 5.96' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.07 hrs HW=7.77' TW=8.16' (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 = 2.044 ac, 72.91% Impervious, Inflow Depth = 3.32" for 10 year event
Inflow = 6.6 cfs @ 12.05 hrs, Volume= 0.566 af
Outflow = 6.5 cfs @ 12.05 hrs, Volume= 0.567 af, Atten= 2%, Lag= 0.0 min
Primary = 6.5 cfs @ 12.05 hrs, Volume= 0.567 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 10.37' @ 12.12 hrs Surf.Area= 164 sf Storage= 17 cf
Flood Elev= 8.68' Surf.Area= 0 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.5 min (816.2 - 815.8)

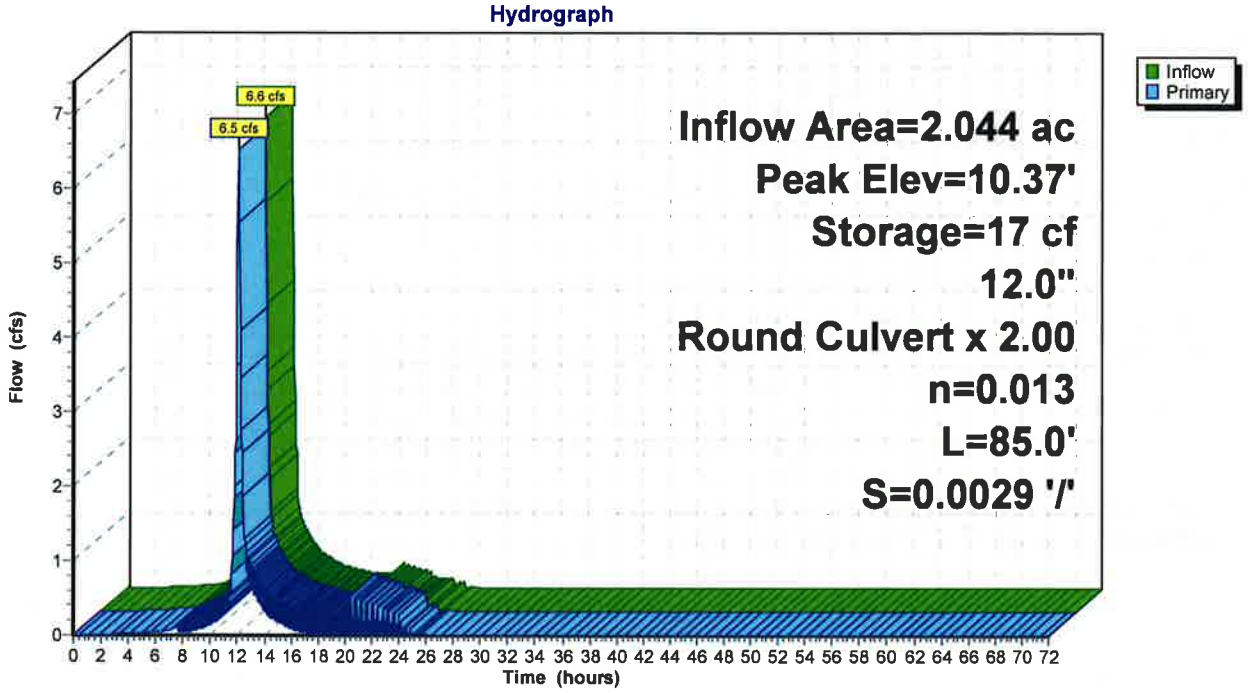
Volume	Invert	Avail.Storage	Storage Description
#1	8.68'	17 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
8.68	0	0.0	0	0	0
9.00	164	70.2	17	17	392

Device	Routing	Invert	Outlet Devices
#1	Primary	5.83'	**12.0" Round Culvert X 2.00** 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=0.0 cfs @ 12.05 hrs HW=9.02' TW=9.45' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond 34P: CB #5 (Altus Model)



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

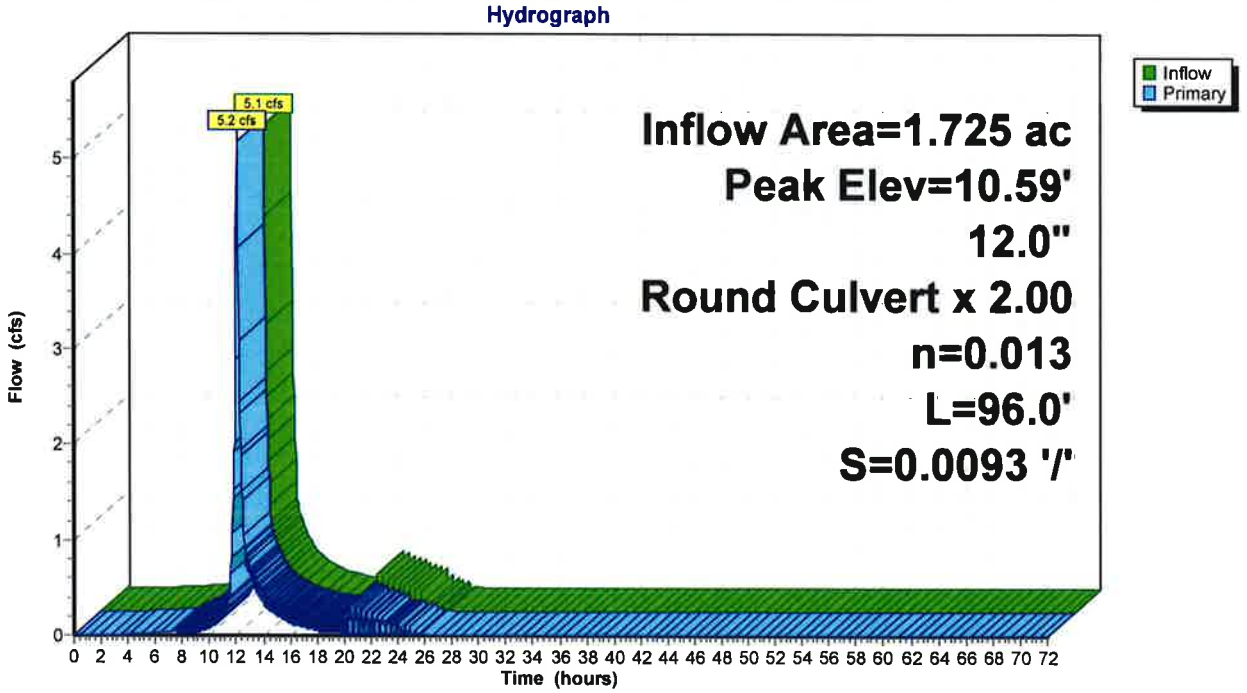
Inflow Area = 1.725 ac, 76.50% Impervious, Inflow Depth = 3.11" for 10 year event
Inflow = 5.1 cfs @ 12.05 hrs, Volume= 0.448 af
Outflow = 5.2 cfs @ 12.05 hrs, Volume= 0.448 af, Atten= 0%, Lag= 0.0 min
Primary = 5.2 cfs @ 12.05 hrs, Volume= 0.448 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 10.59' @ 12.17 hrs
Flood Elev= 10.77'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.77'	**12.0" Round Culvert X 2.00** 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=4.2 cfs @ 12.05 hrs HW=9.43' TW=8.94' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 4.2 cfs @ 2.65 fps)

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



Summary for Pond CB 4433:

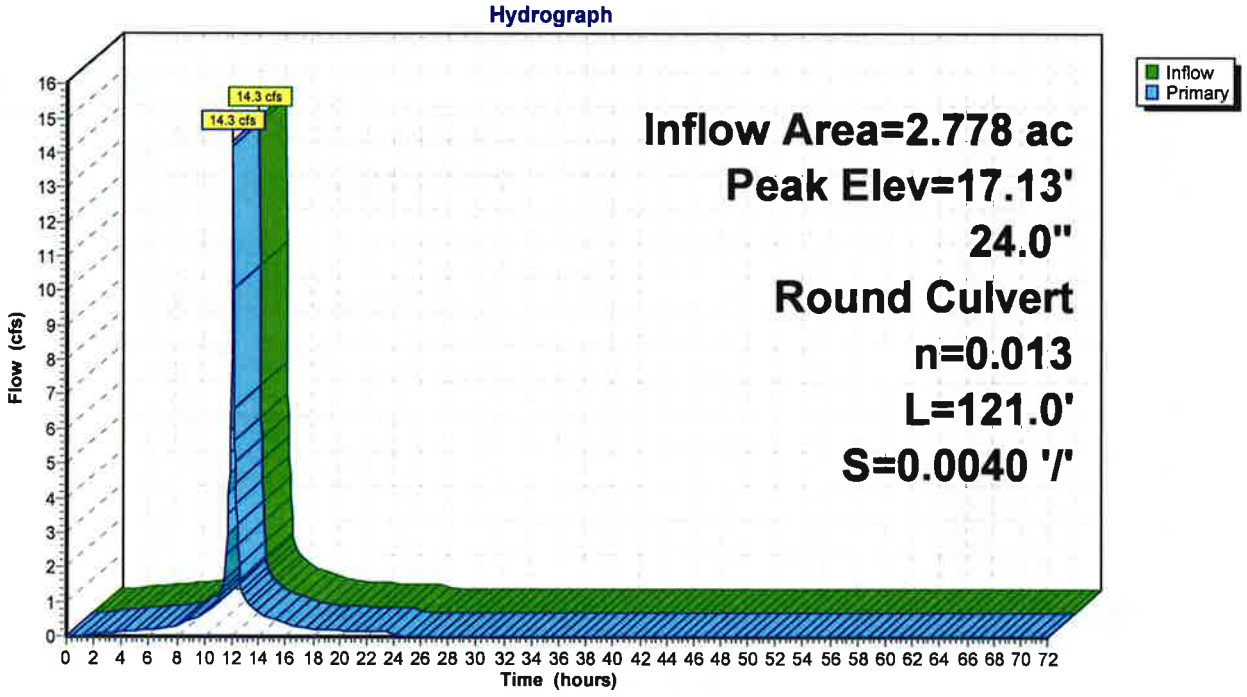
Inflow Area = 2.778 ac,100.00% Impervious, Inflow Depth = 4.62" for 10 year event
Inflow = 14.3 cfs @ 12.04 hrs, Volume= 1.070 af
Outflow = 14.3 cfs @ 12.04 hrs, Volume= 1.070 af, Atten= 0%, Lag= 0.0 min
Primary = 14.3 cfs @ 12.04 hrs, Volume= 1.070 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 17.13' @ 12.06 hrs
Flood Elev= 20.02'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.68'	**24.0" Round Culvert** L= 121.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.68' / 14.19' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=12.0 cfs @ 12.04 hrs HW=17.03' TW=16.34' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 12.0 cfs @ 4.08 fps)

Pond CB 4433:



Summary for Pond CB 4435:

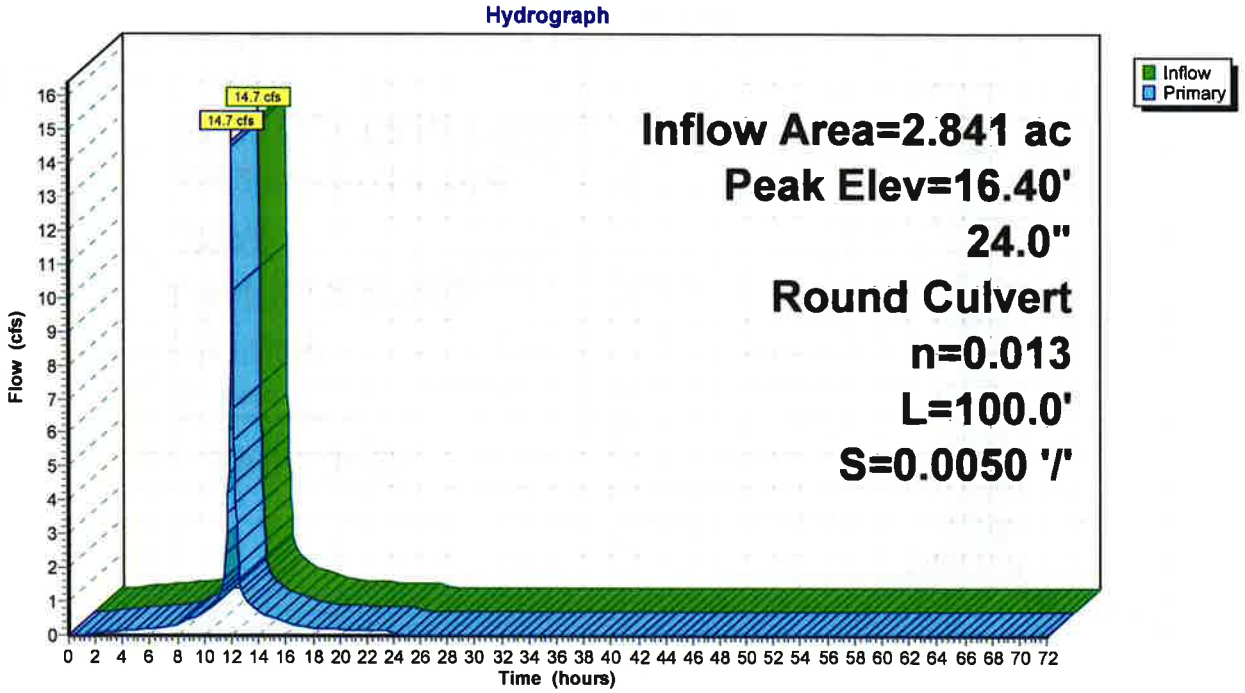
Inflow Area = 2.841 ac,100.00% Impervious, Inflow Depth = 4.62" for 10 year event
Inflow = 14.7 cfs @ 12.04 hrs, Volume= 1.095 af
Outflow = 14.7 cfs @ 12.04 hrs, Volume= 1.095 af, Atten= 0%, Lag= 0.0 min
Primary = 14.7 cfs @ 12.04 hrs, Volume= 1.095 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 16.40' @ 12.04 hrs
Flood Elev= 19.48'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.19'	**24.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.19' / 13.69' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=14.2 cfs @ 12.04 hrs HW=16.34' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 14.2 cfs @ 5.21 fps)

Pond CB 4435:



Summary for Pond CB 4560:

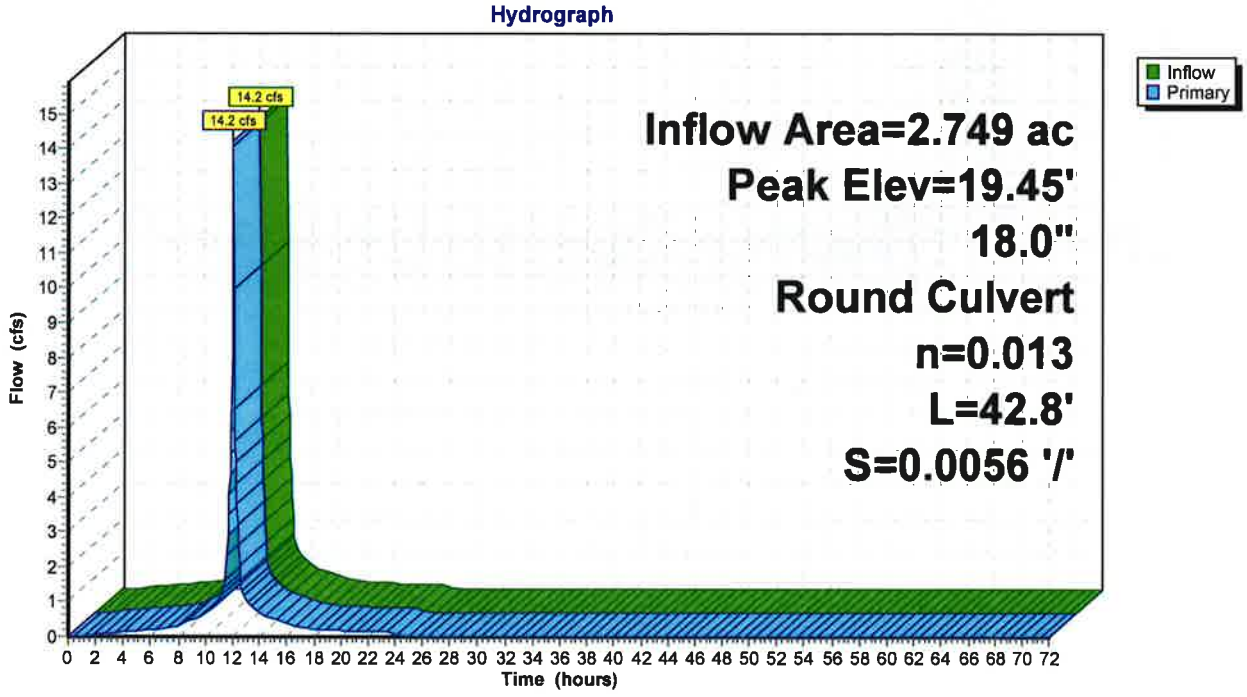
Inflow Area = 2.749 ac,100.00% Impervious, Inflow Depth = 4.62" for 10 year event
Inflow = 14.2 cfs @ 12.04 hrs, Volume= 1.059 af
Outflow = 14.2 cfs @ 12.04 hrs, Volume= 1.059 af, Atten= 0%, Lag= 0.0 min
Primary = 14.2 cfs @ 12.04 hrs, Volume= 1.059 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 19.45' @ 12.05 hrs
Flood Elev= 21.38'

Device	Routing	Invert	Outlet Devices
#1	Primary	14.92'	**18.0" Round Culvert** L= 42.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 14.92' / 14.68' S= 0.0056 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=12.5 cfs @ 12.04 hrs HW=19.21' TW=17.04' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 12.5 cfs @ 7.10 fps)

Pond CB 4560:

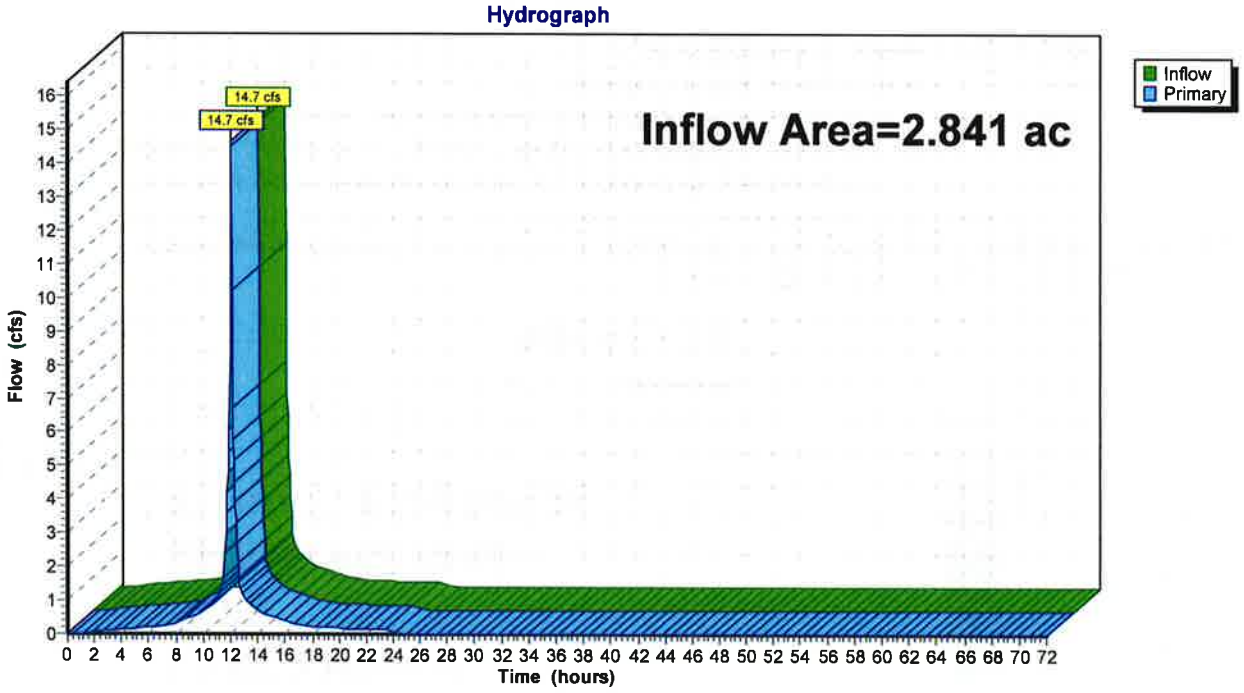


Summary for Link 2L: Discharge Point 2 (Court Street Drainage)

Inflow Area = 2.841 ac,100.00% Impervious, Inflow Depth = 4.62" for 10 year event
Inflow = 14.7 cfs @ 12.04 hrs, Volume= 1.095 af
Primary = 14.7 cfs @ 12.04 hrs, Volume= 1.095 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)

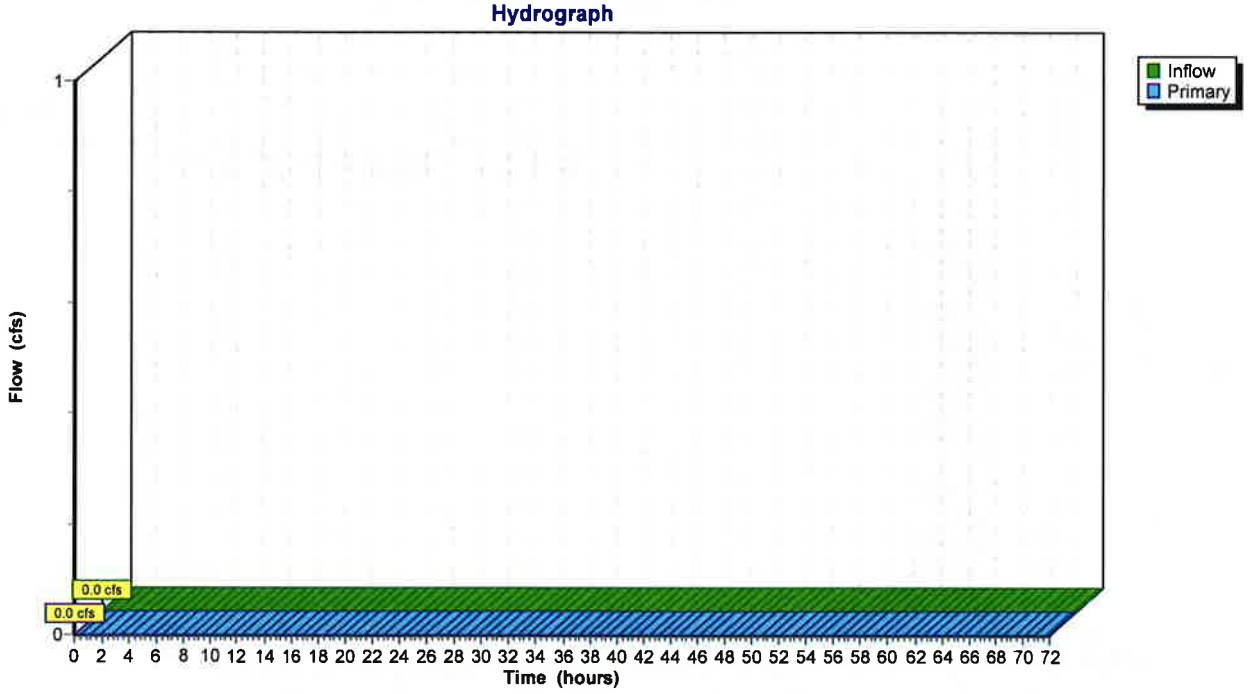


Summary for Link 3L: Discharge Point 4 (DP4)

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)

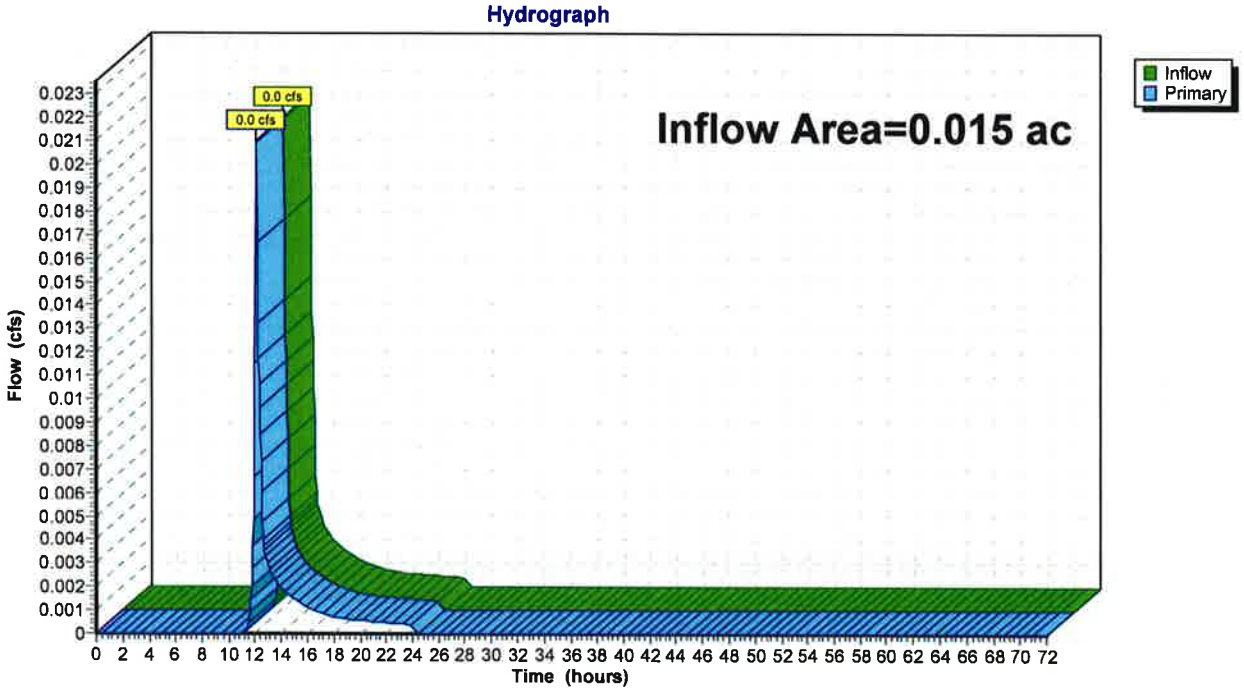


Summary for Link 4L: Discharge Point 5 (DP5)

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)

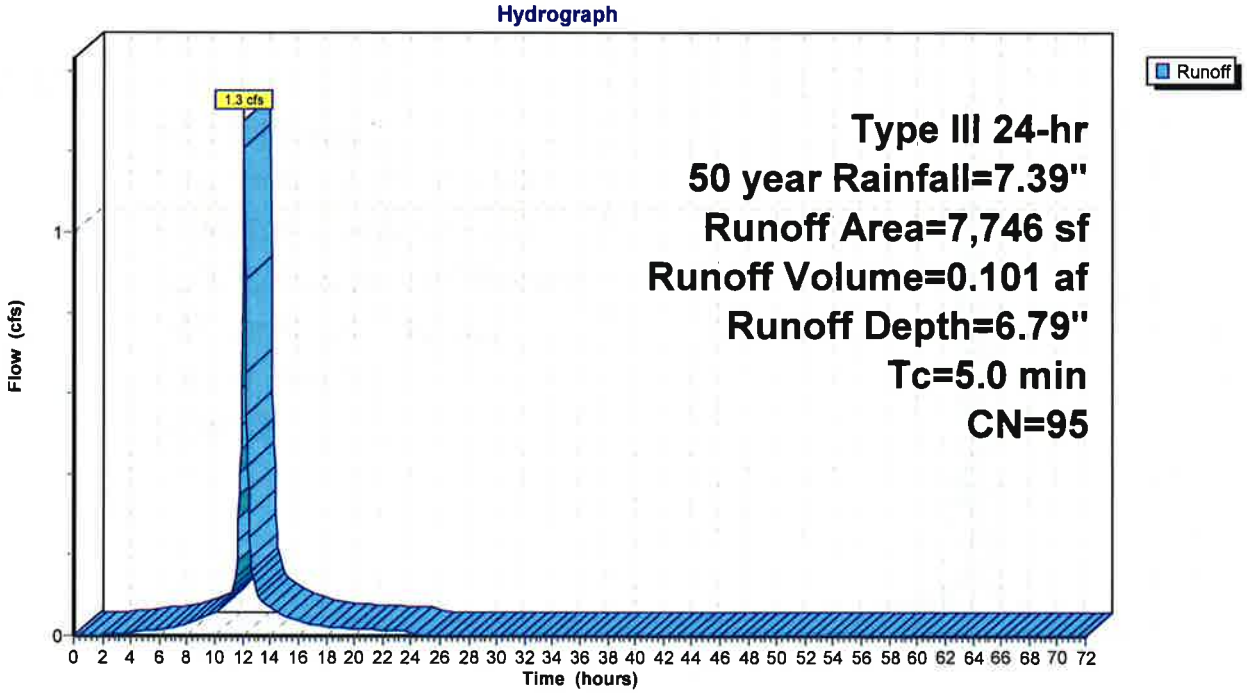
Runoff = 1.3 cfs @ 12.07 hrs, Volume= 0.101 af, Depth= 6.79"

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)

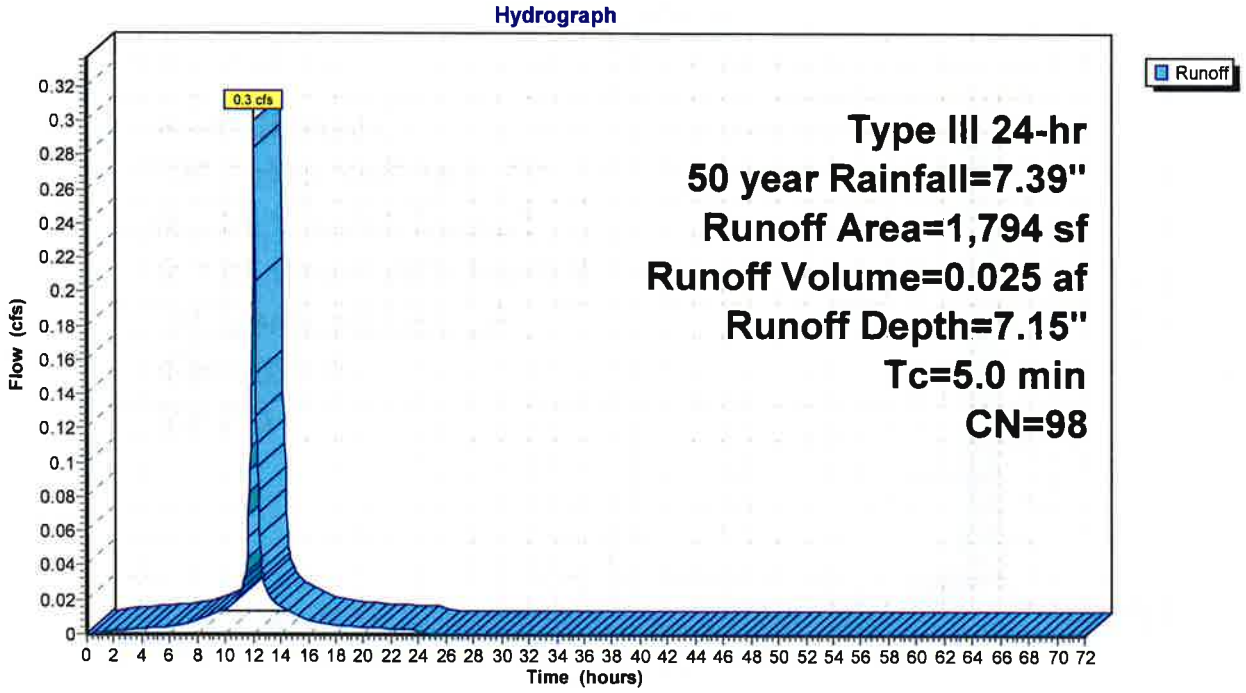
Runoff = 0.3 cfs @ 12.07 hrs, Volume= 0.025 af, Depth= 7.15"

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)

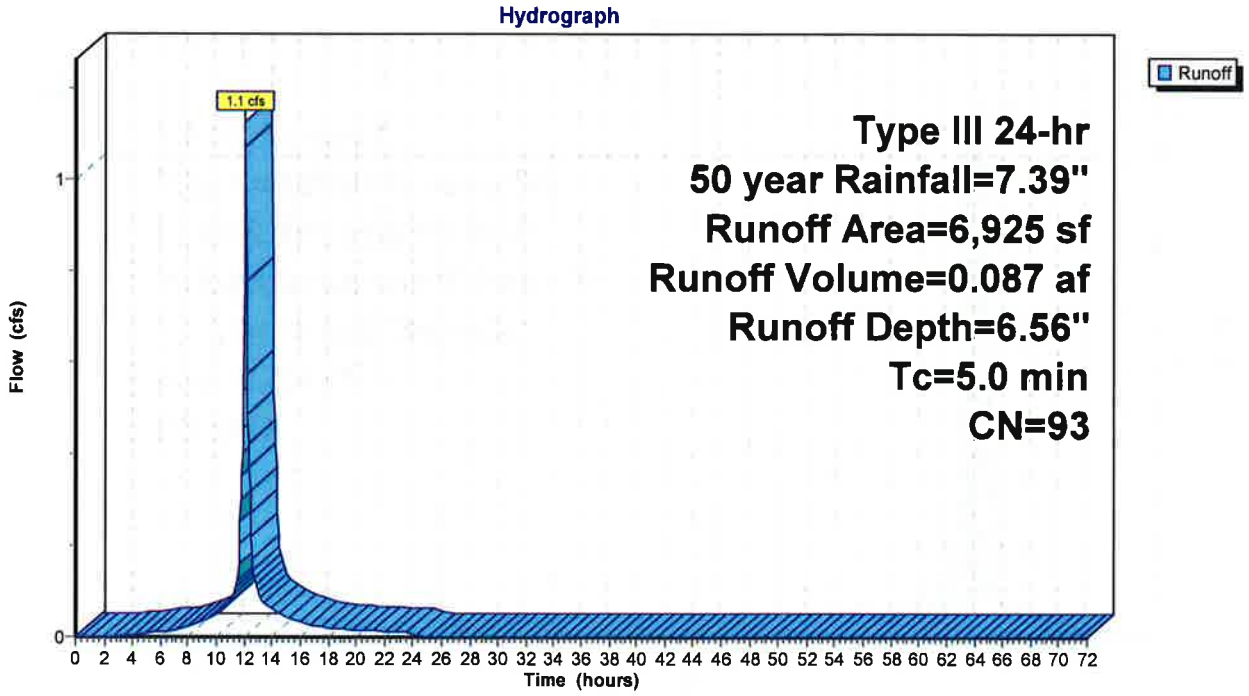
Runoff = 1.1 cfs @ 12.07 hrs, Volume= 0.087 af, Depth= 6.56"

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)

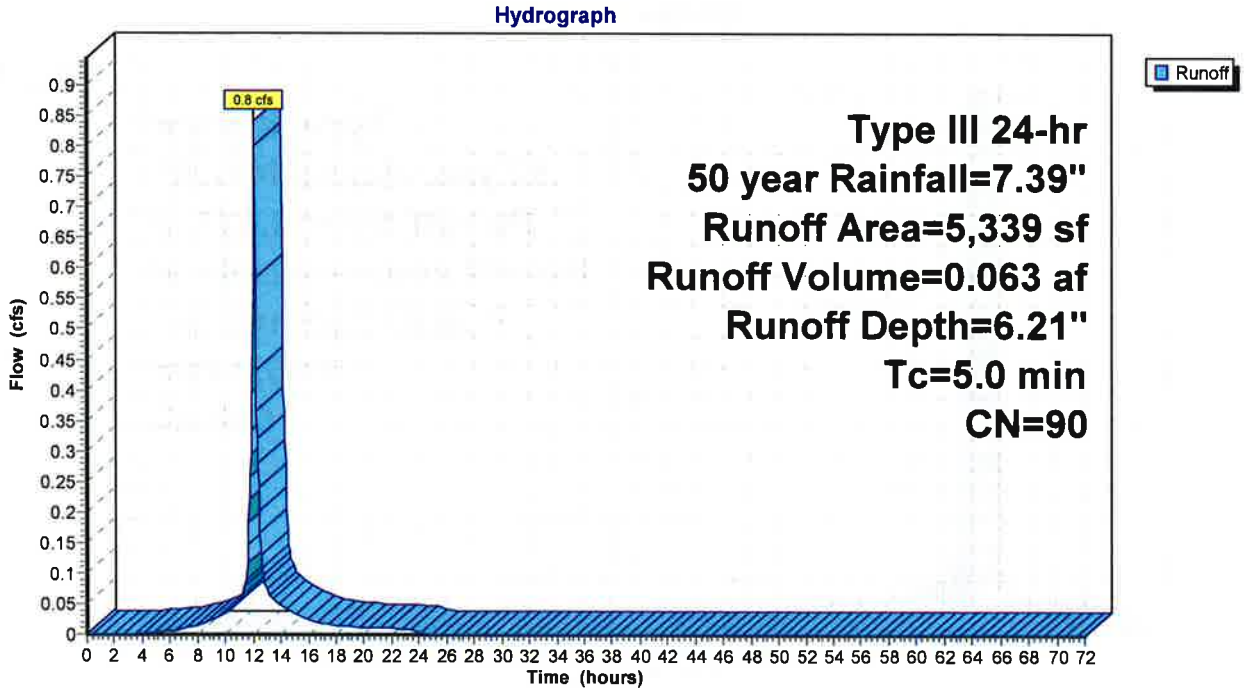
Runoff = 0.8 cfs @ 12.07 hrs, Volume= 0.063 af, Depth= 6.21"

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)

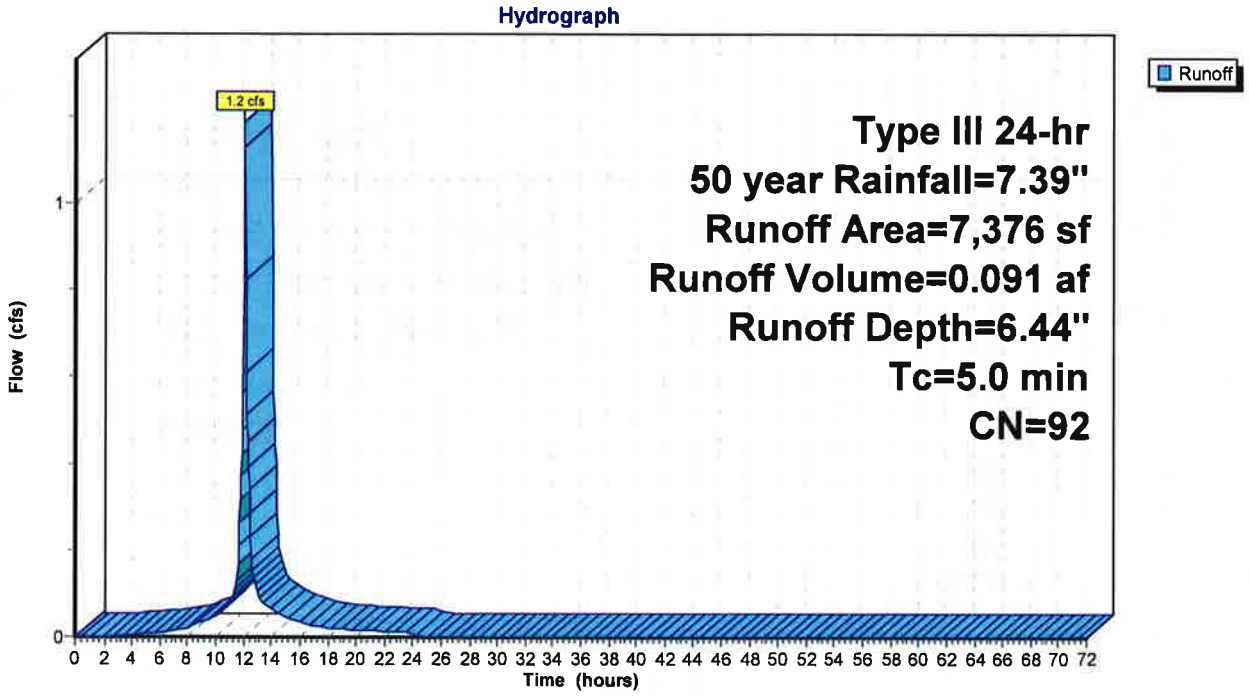
Runoff = 1.2 cfs @ 12.07 hrs, Volume= 0.091 af, Depth= 6.44"

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)

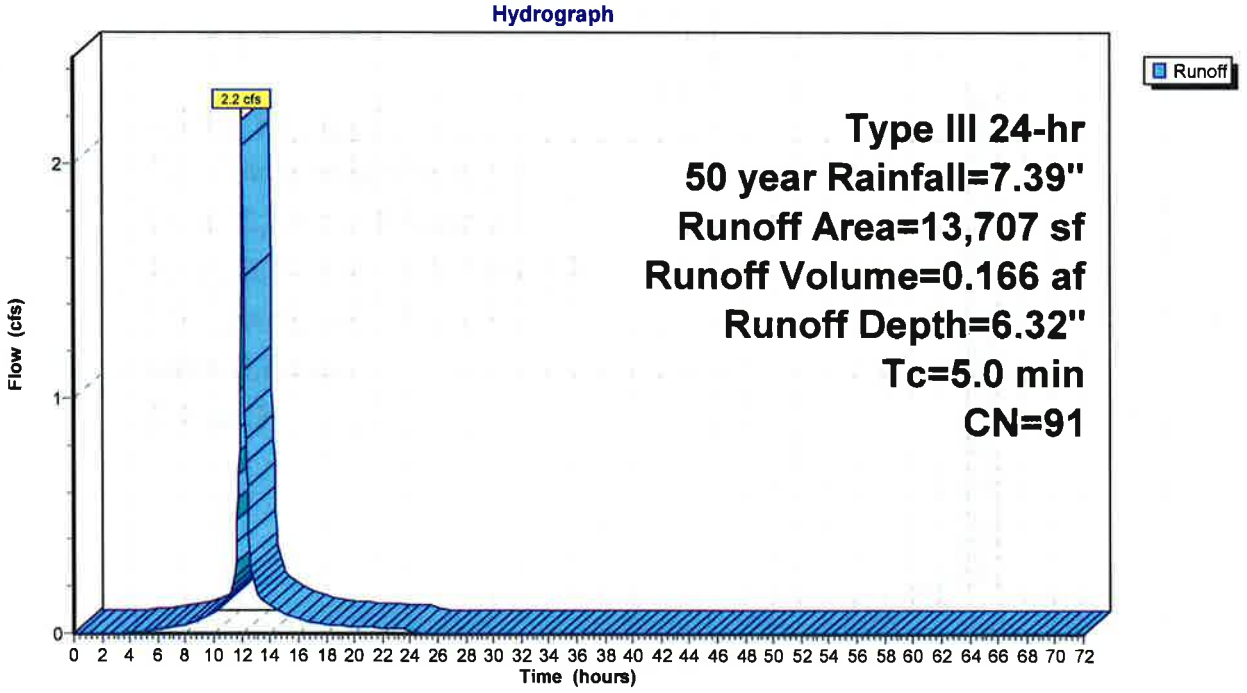
Runoff = 2.2 cfs @ 12.07 hrs, Volume= 0.166 af, Depth= 6.32"

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)

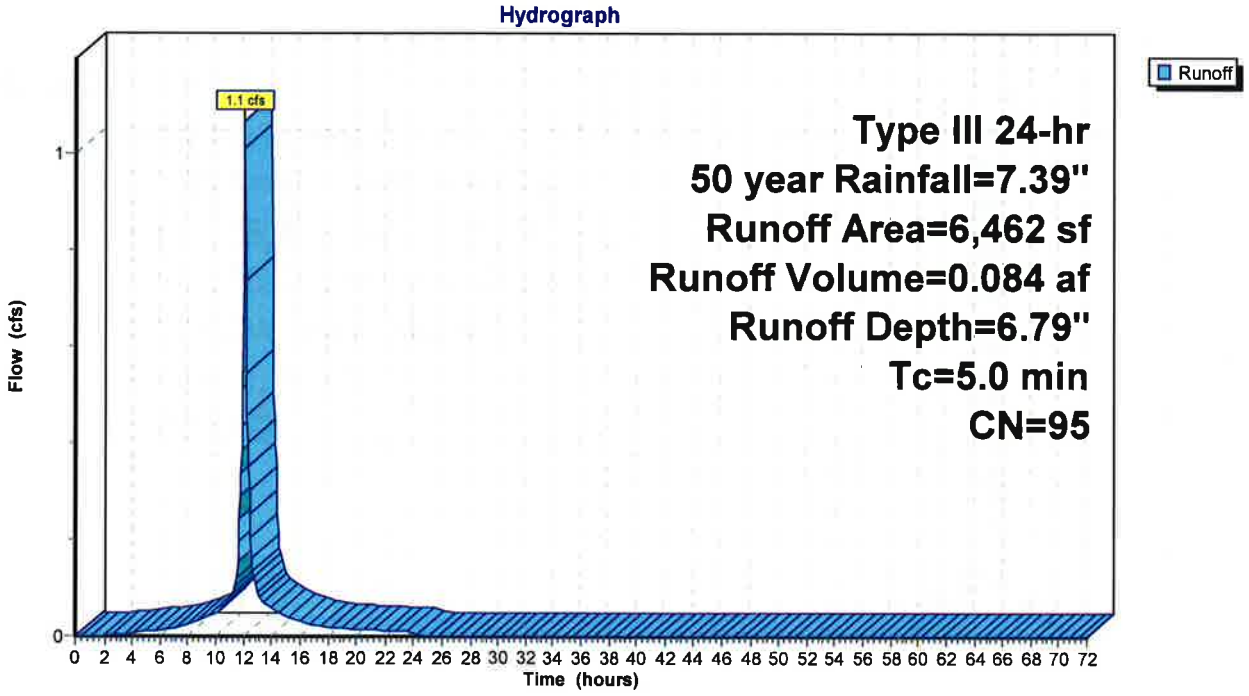
Runoff = 1.1 cfs @ 12.07 hrs, Volume= 0.084 af, Depth= 6.79"

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)

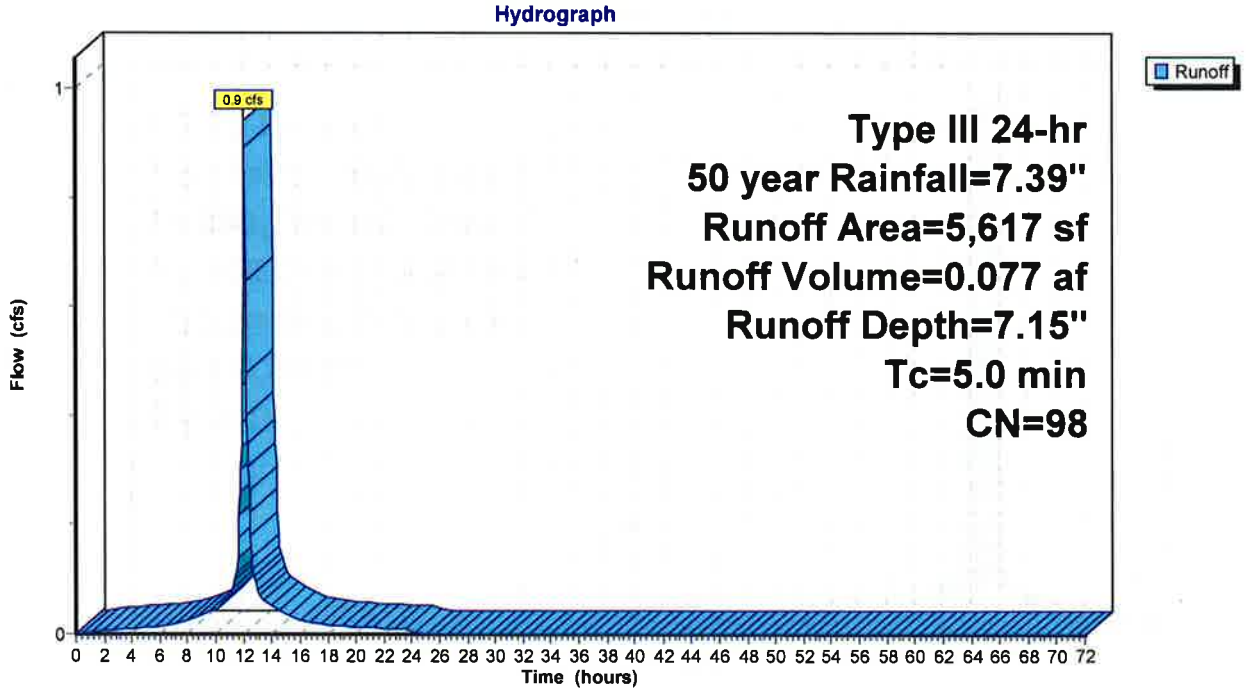
Runoff = 0.9 cfs @ 12.07 hrs, Volume= 0.077 af, Depth= 7.15"

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:

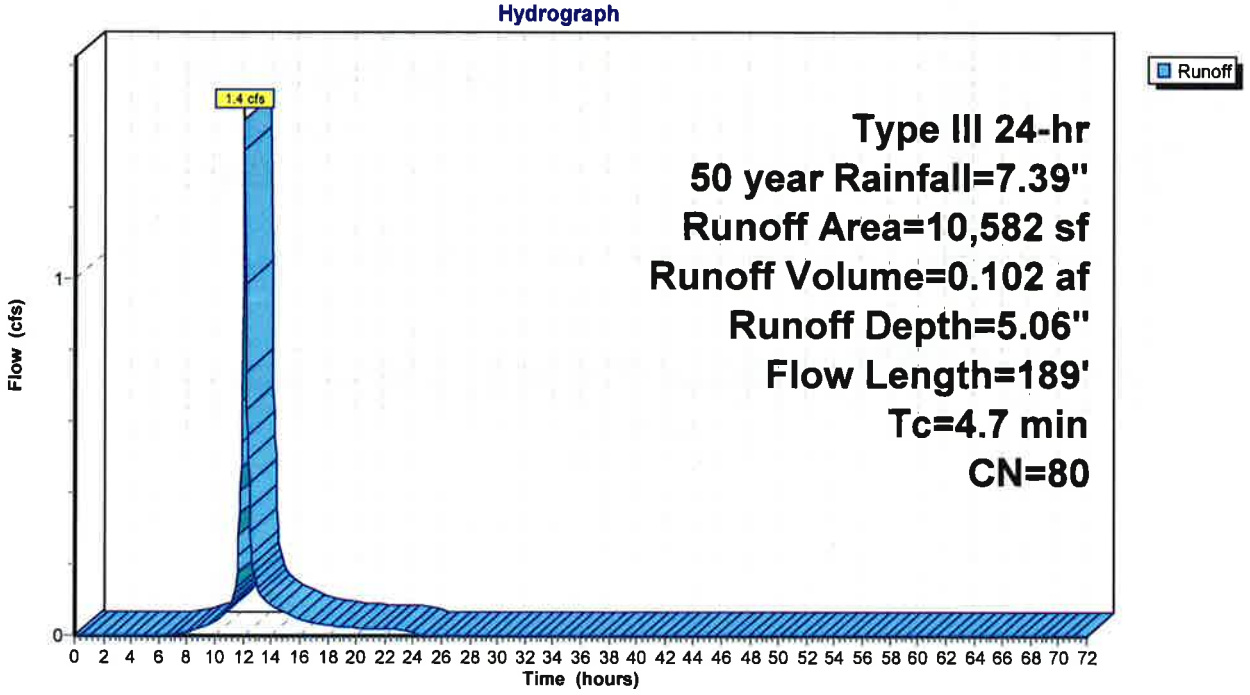
Runoff = 1.4 cfs @ 12.07 hrs, Volume= 0.102 af, Depth= 5.06"

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

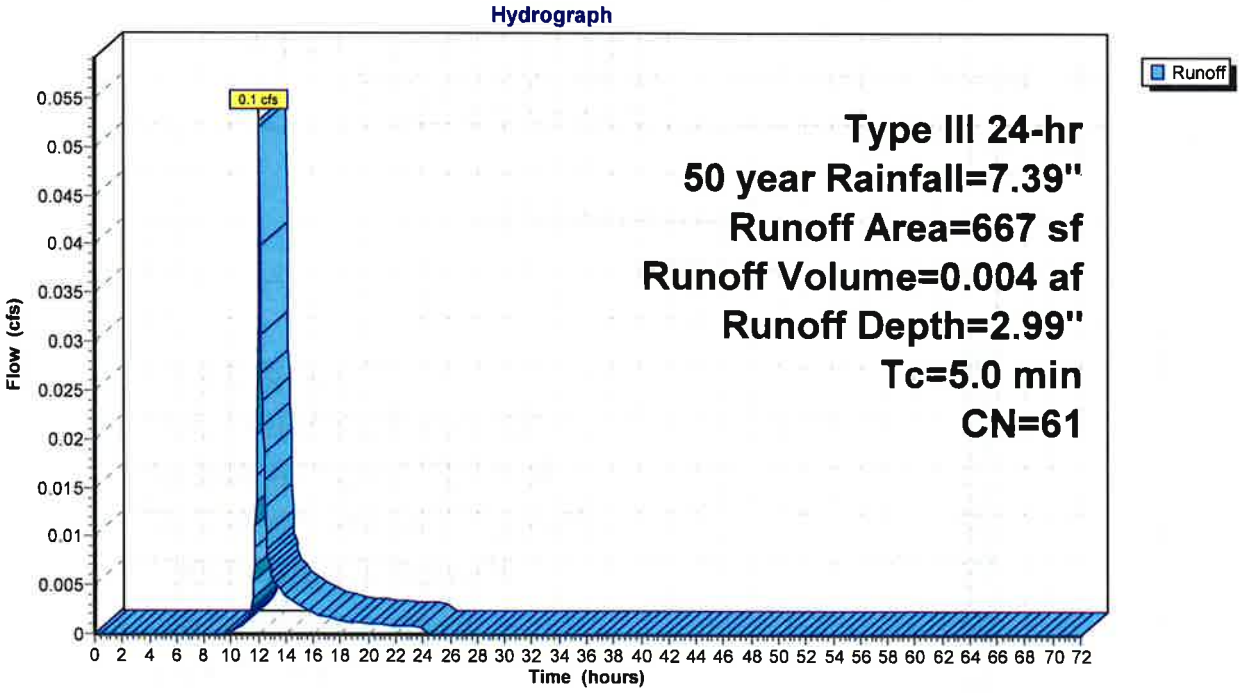
Runoff = 0.1 cfs @ 12.08 hrs, Volume= 0.004 af, Depth= 2.99"

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

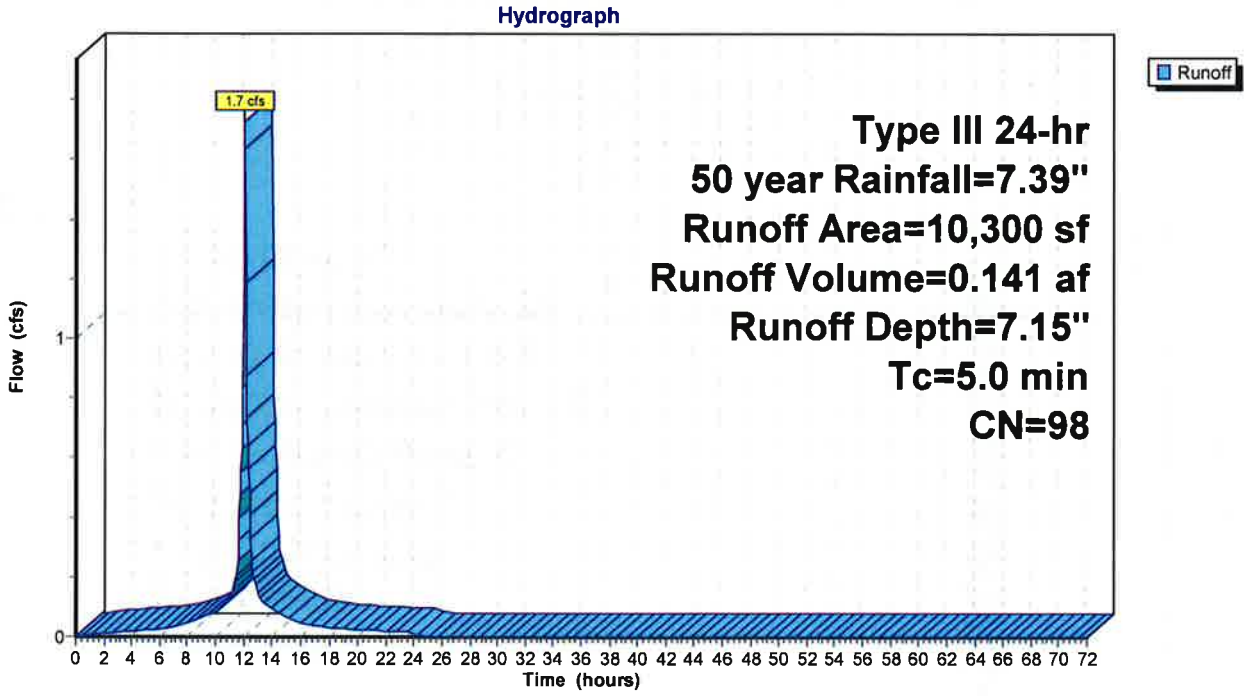
Runoff = 1.7 cfs @ 12.07 hrs, Volume= 0.141 af, Depth= 7.15"

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:

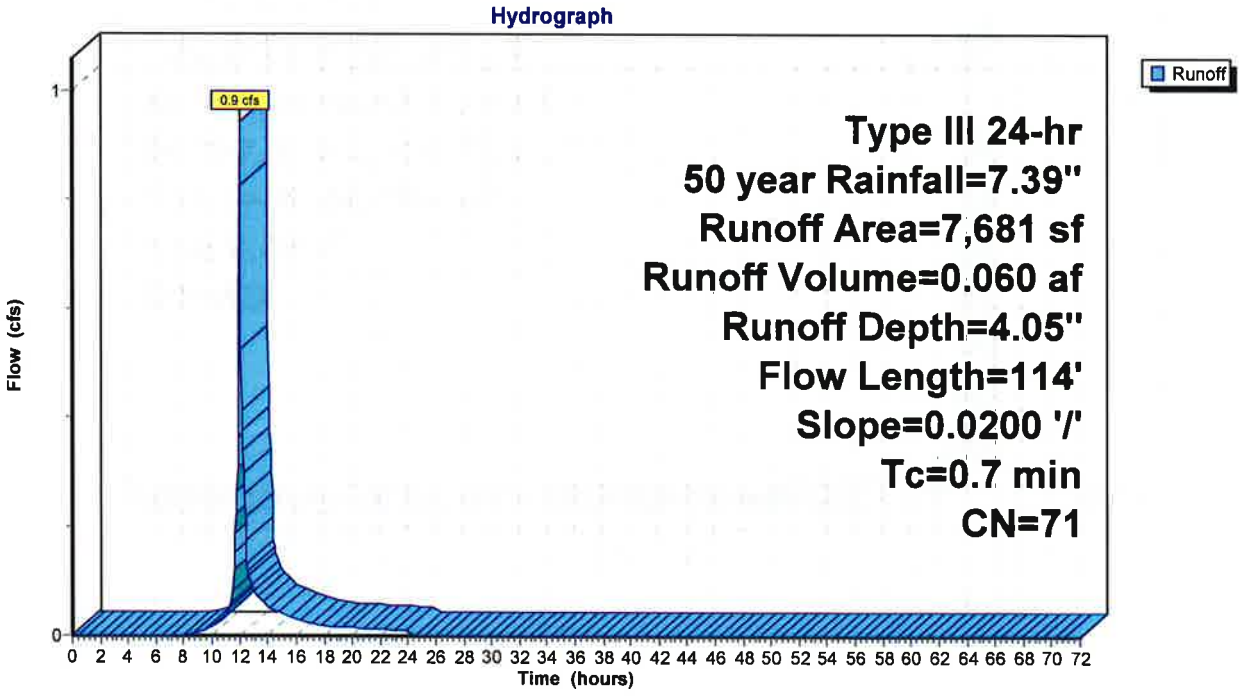
Runoff = 0.9 cfs @ 12.01 hrs, Volume= 0.060 af, Depth= 4.05"

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

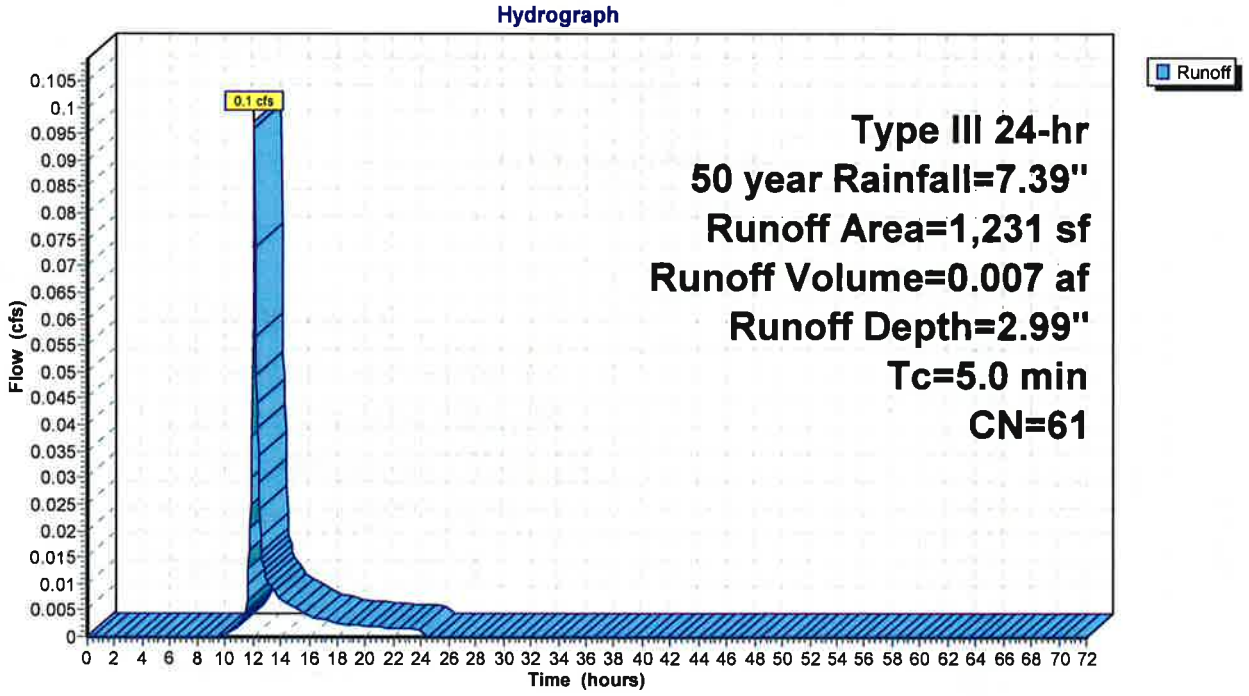
Runoff = 0.1 cfs @ 12.08 hrs, Volume= 0.007 af, Depth= 2.99"

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:

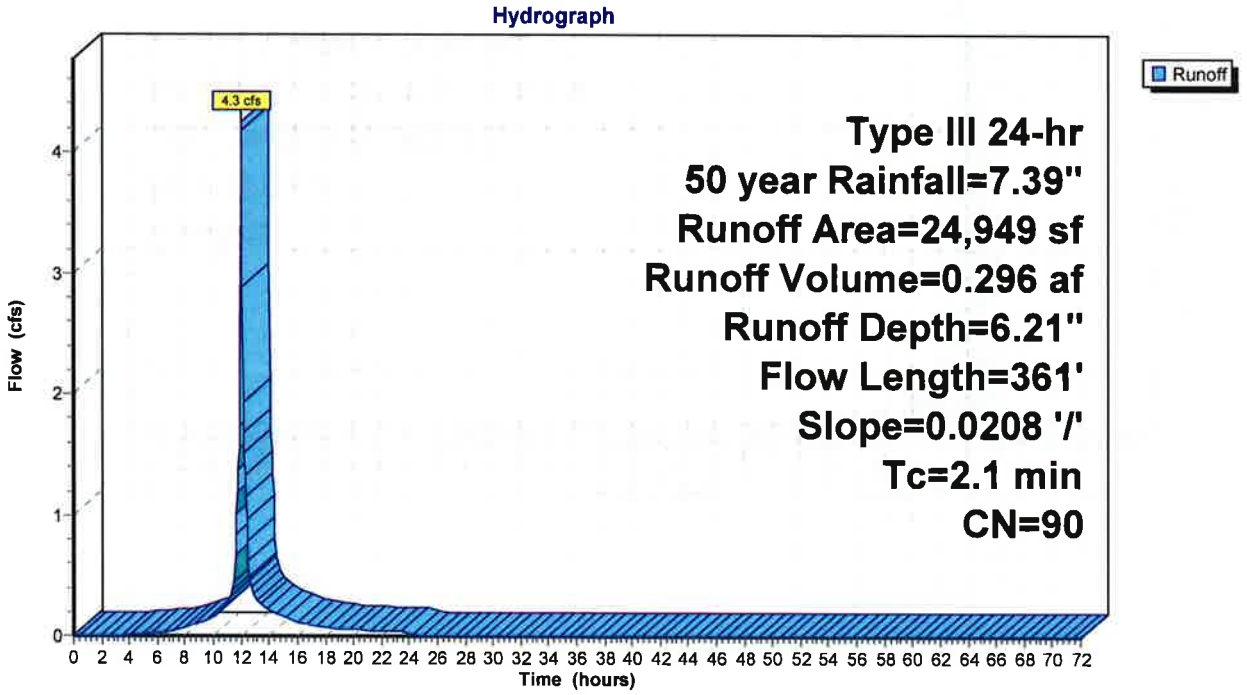
Runoff = 4.3 cfs @ 12.04 hrs, Volume= 0.296 af, Depth= 6.21"

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

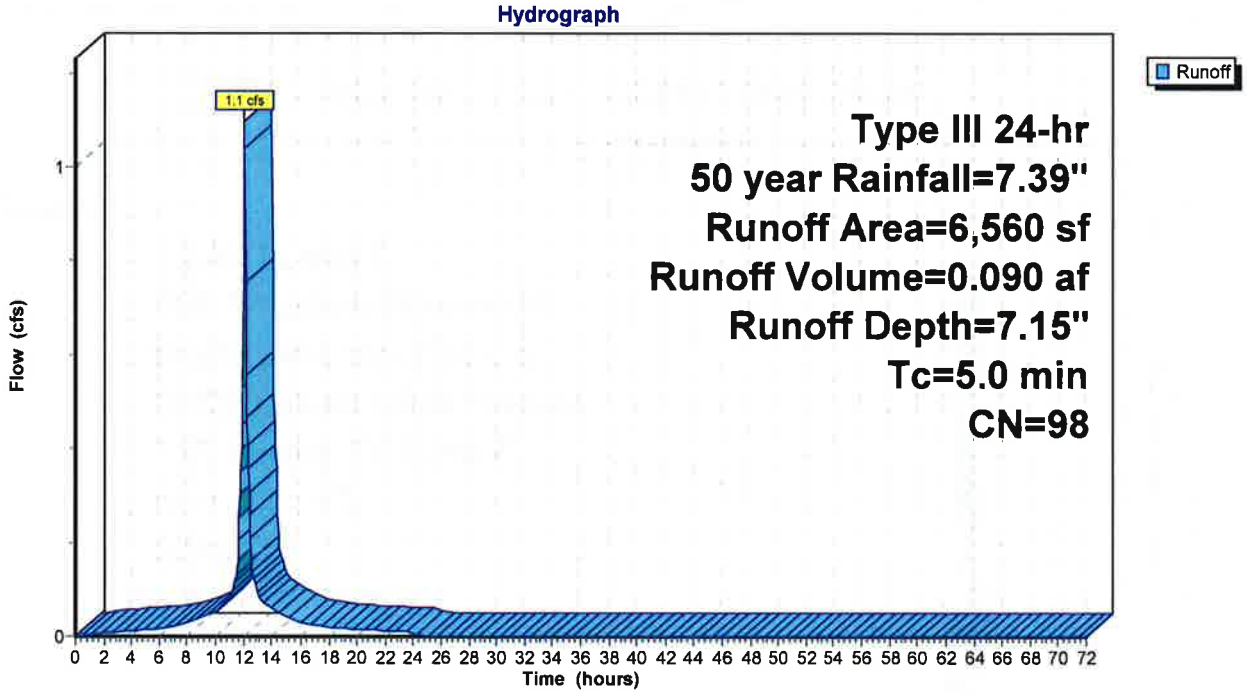
Runoff = 1.1 cfs @ 12.07 hrs, Volume= 0.090 af, Depth= 7.15"

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

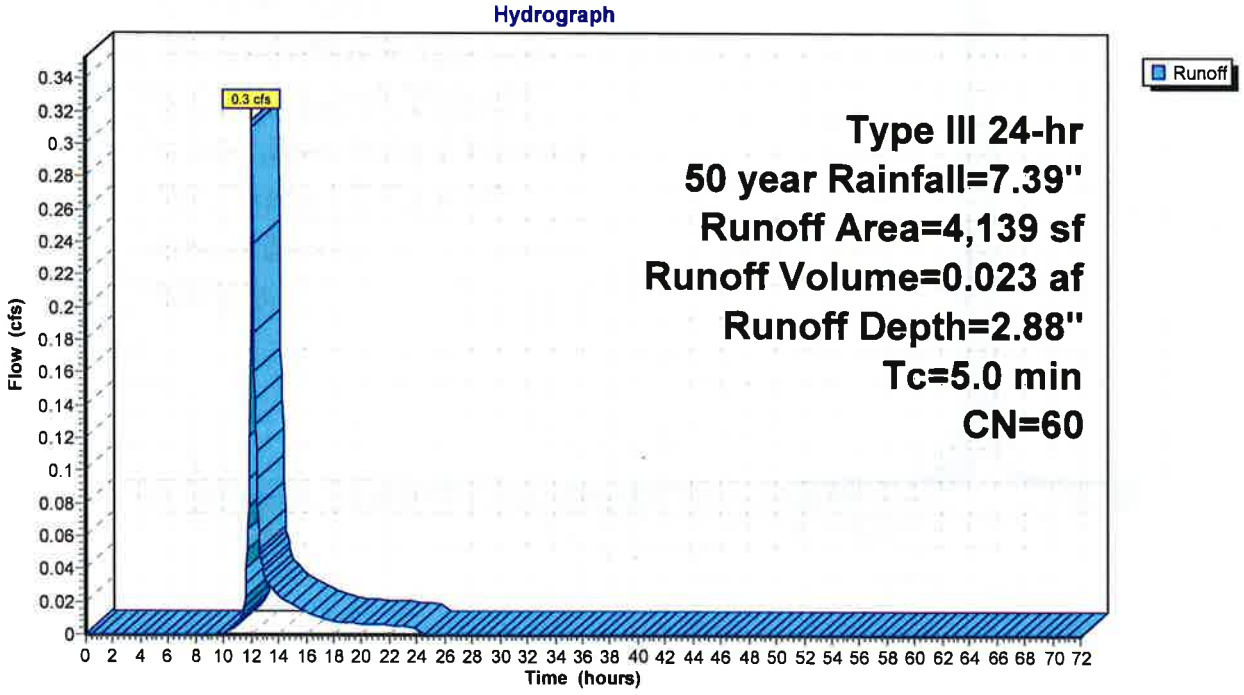
Runoff = 0.3 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 2.88"

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

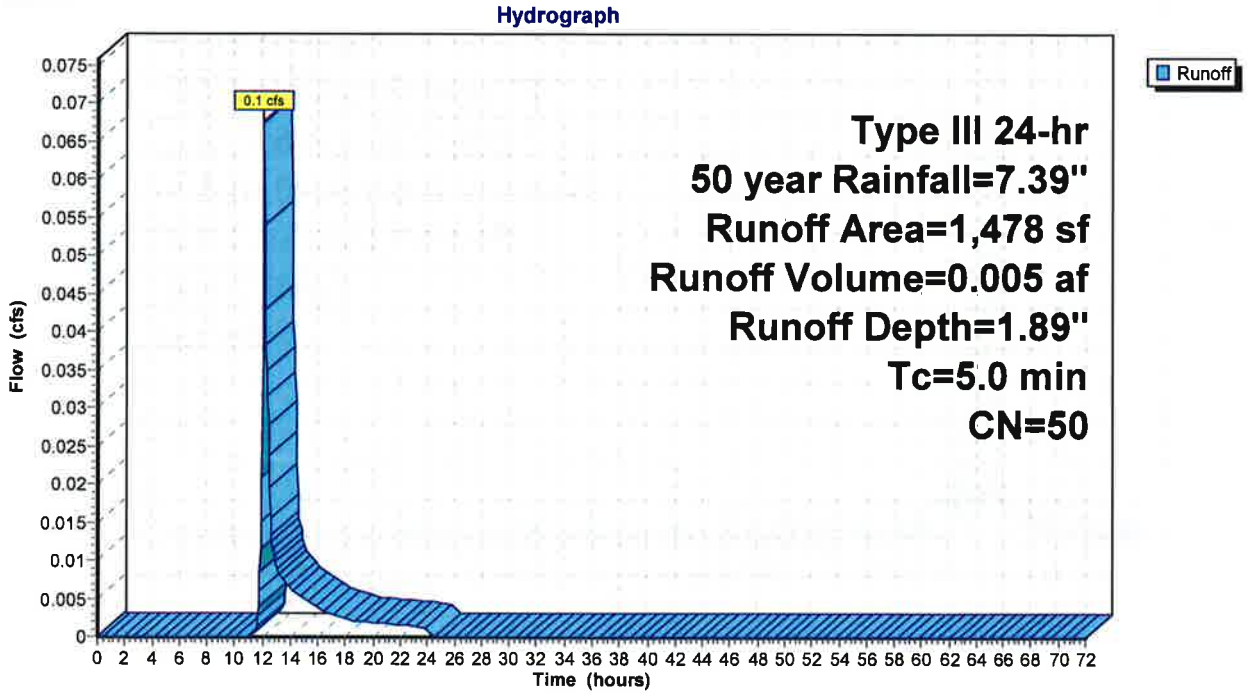
Runoff = 0.1 cfs @ 12.09 hrs, Volume= 0.005 af, Depth= 1.89"

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

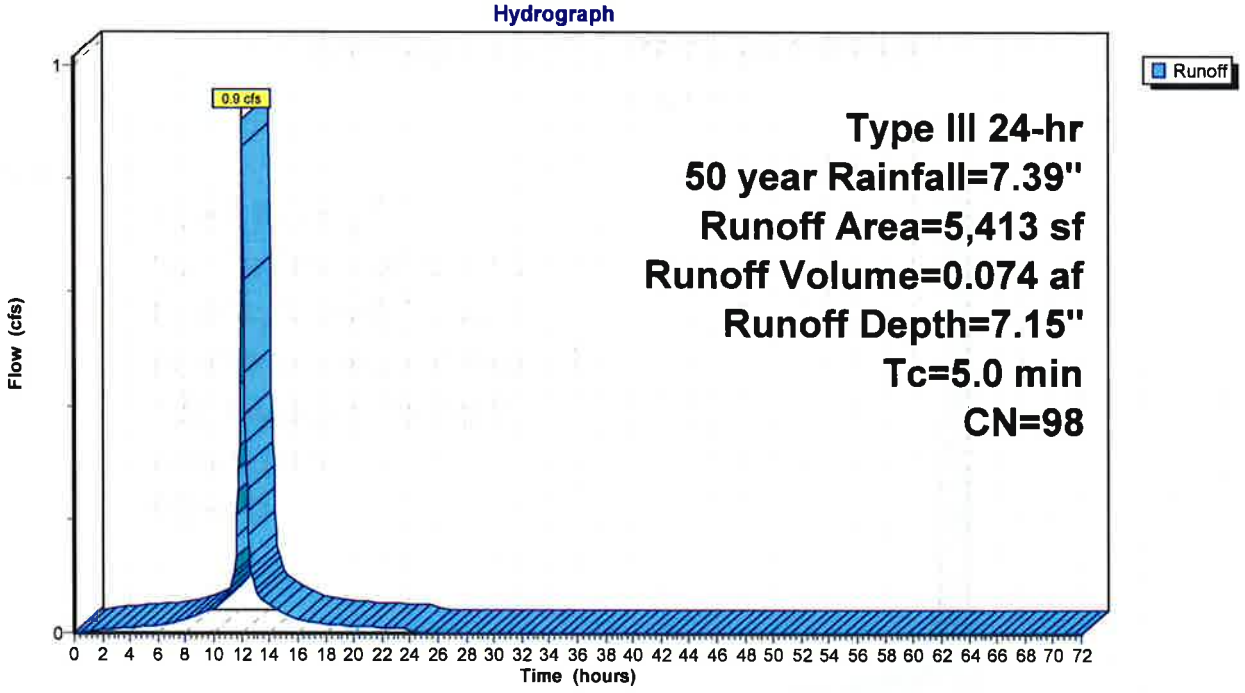
Runoff = 0.9 cfs @ 12.07 hrs, Volume= 0.074 af, Depth= 7.15"

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

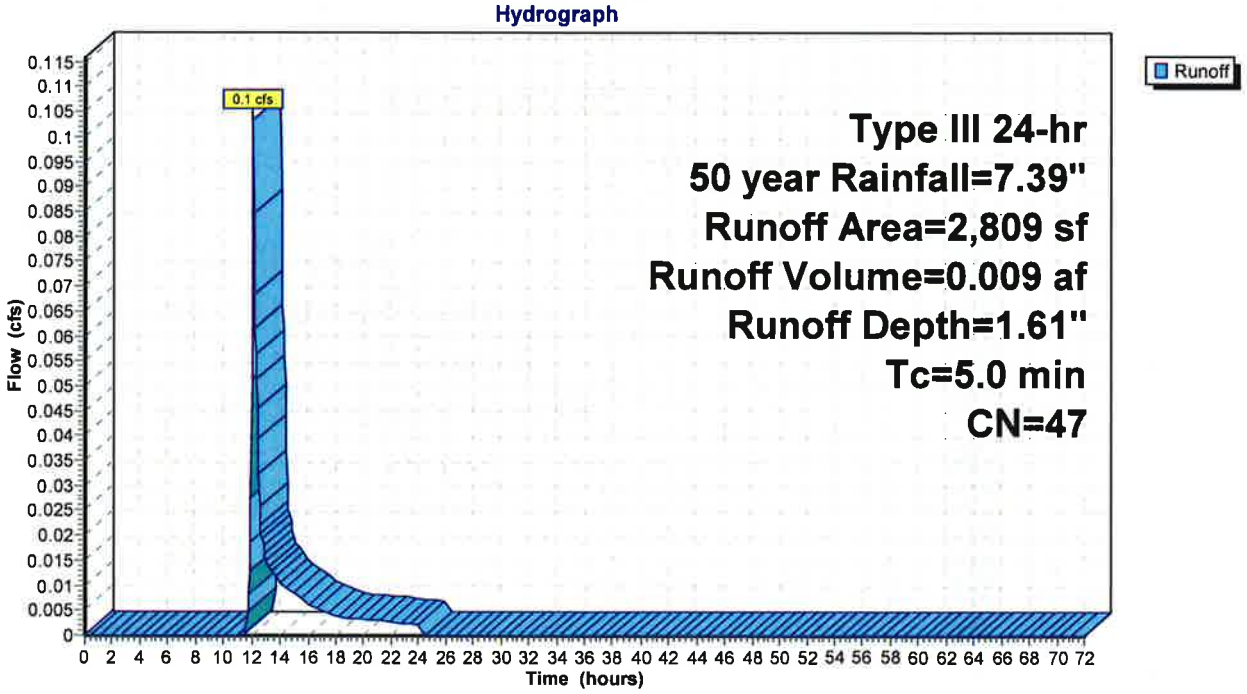
Runoff = 0.1 cfs @ 12.10 hrs, Volume= 0.009 af, Depth= 1.61"

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

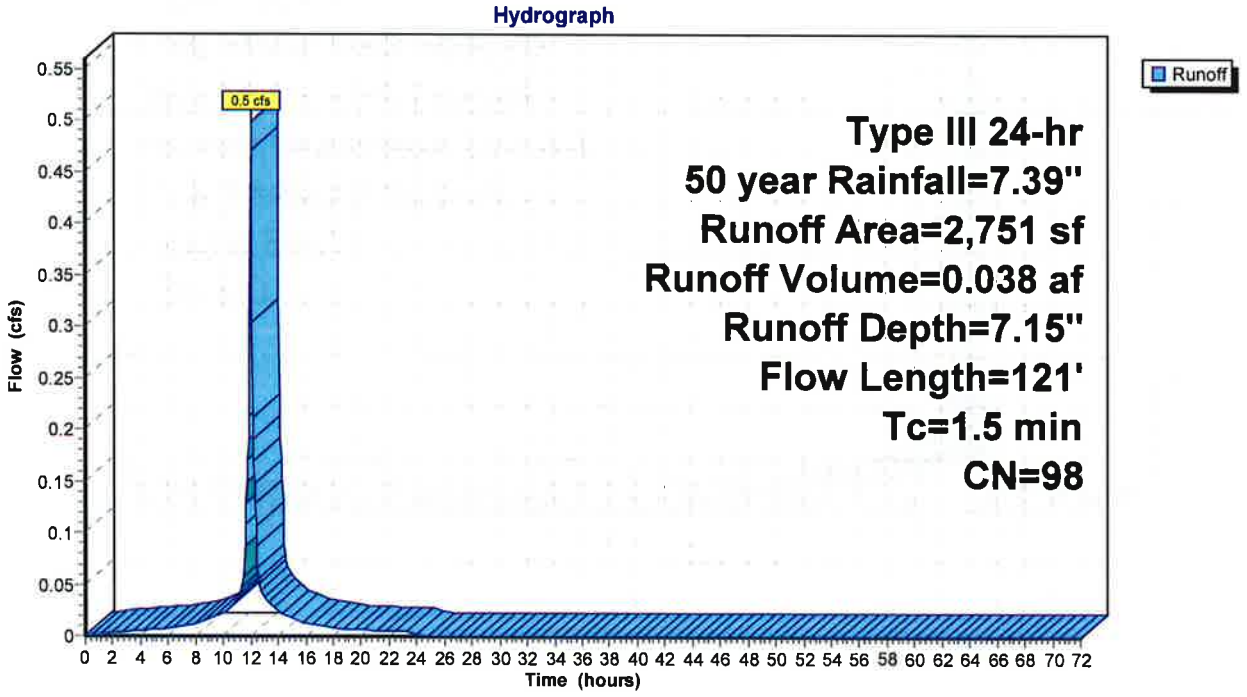
Runoff = 0.5 cfs @ 12.02 hrs, Volume= 0.038 af, Depth= 7.15"

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

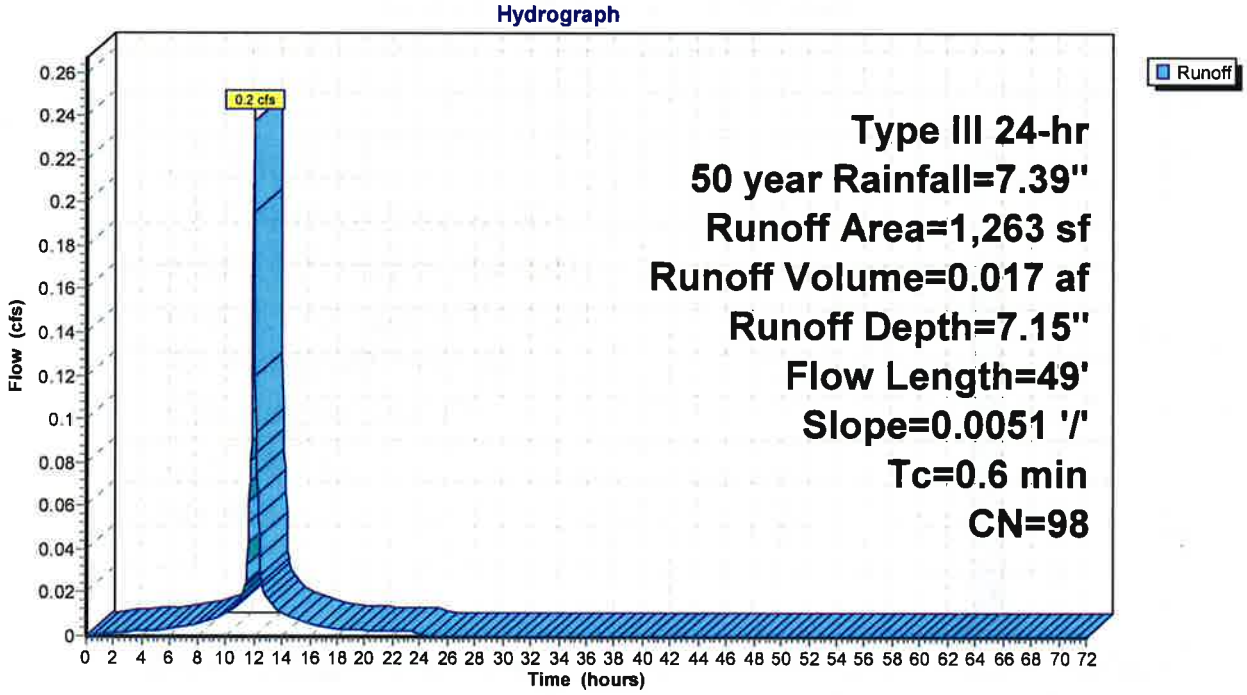
Runoff = 0.2 cfs @ 12.01 hrs, Volume= 0.017 af, Depth= 7.15"

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

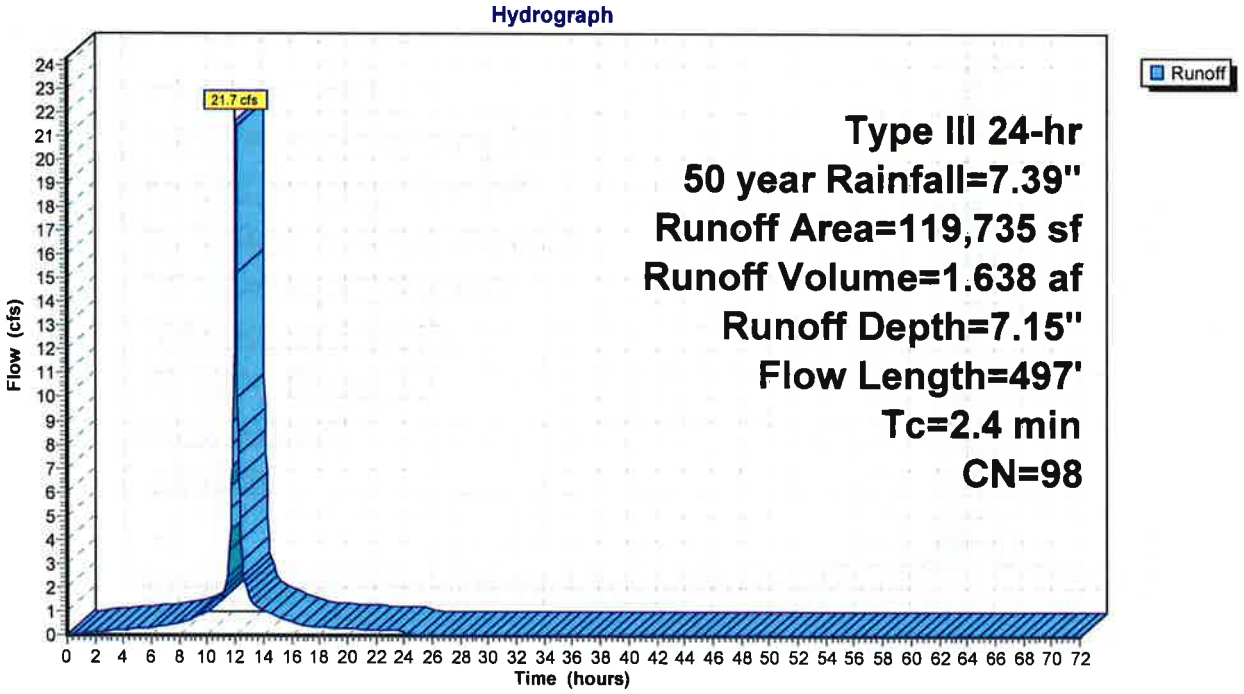
Runoff = 21.7 cfs @ 12.04 hrs, Volume= 1.638 af, Depth= 7.15"

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
119,735	98	Paved parking, HSG B
119,735		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	260	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.9	237	0.0050	4.20	7.43	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
2.4	497	Total			

Subcatchment PS8: Court Street



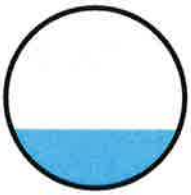
Summary for Reach 4R: Altus Model

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

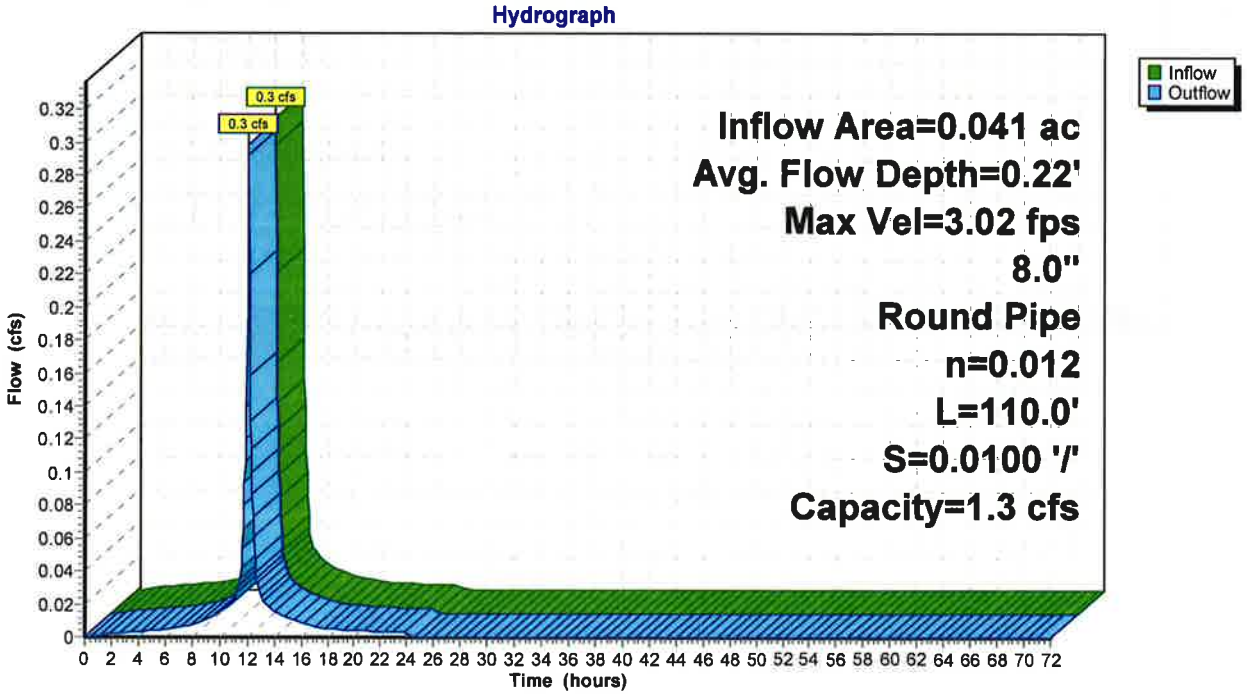
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.02 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.01 fps, Avg. Travel Time= 1.8 min

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'



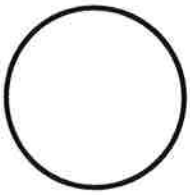
Reach 4R: Altus Model



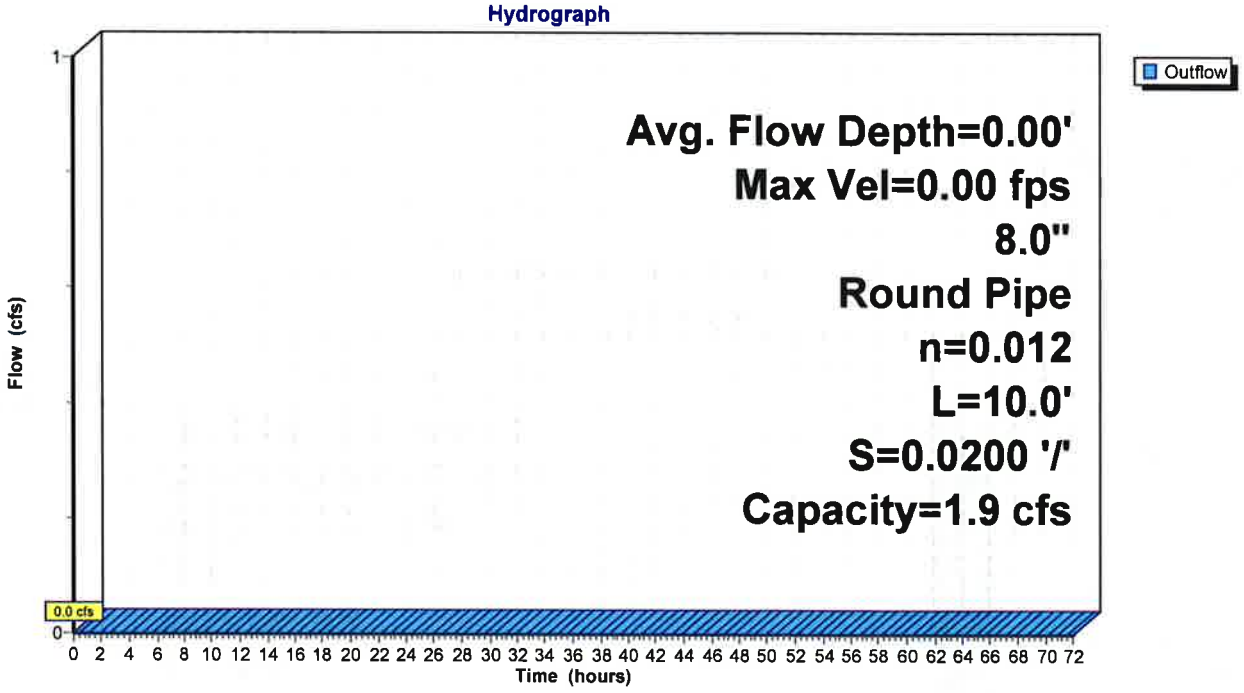
Summary for Reach 40R: Altus Model

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



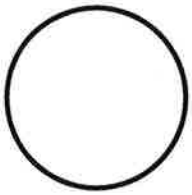
Summary for Reach 41R: Altus Model

Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

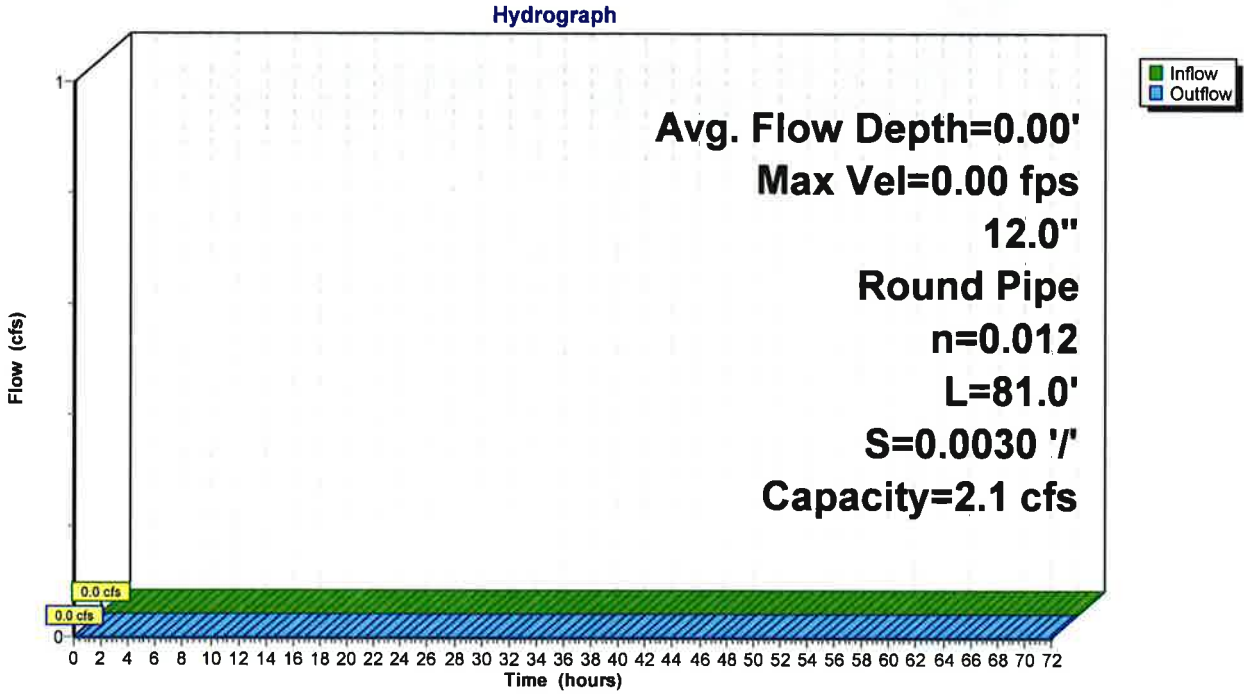
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
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

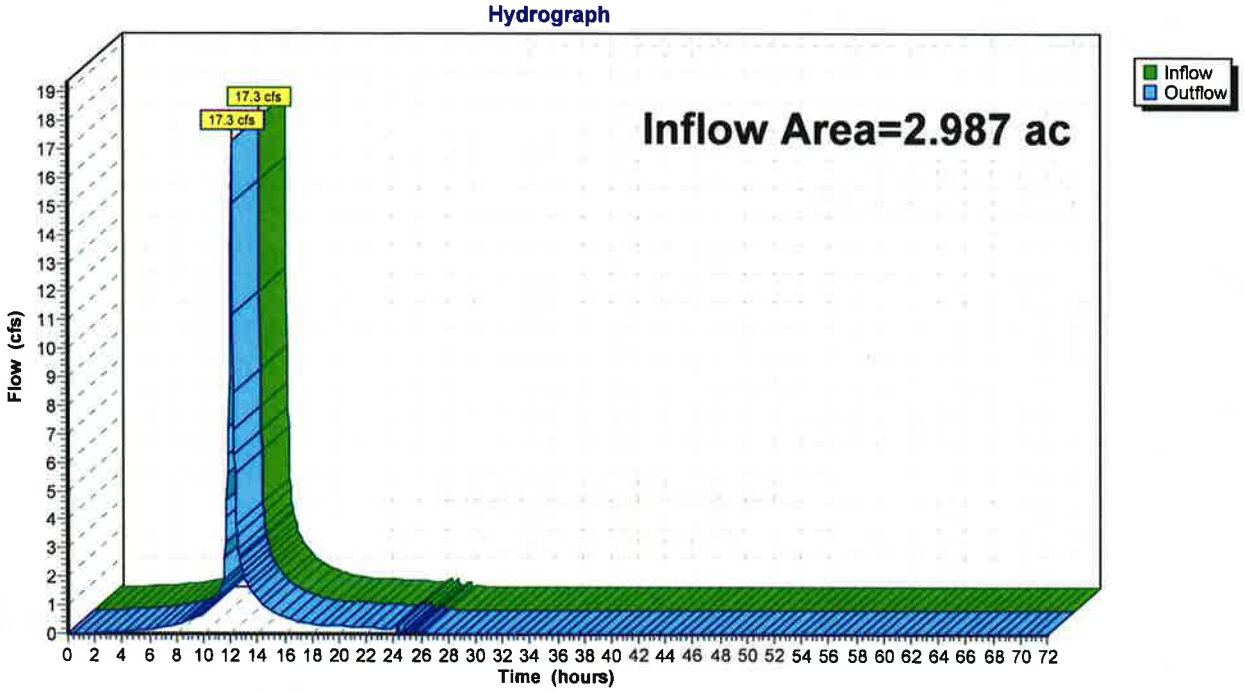


Summary for Reach 300R: POA #3 - Existing CB (Altus Model)

Inflow Area = 2.987 ac, 49.88% Impervious, Inflow Depth = 5.89" for 50 year event
Inflow = 17.3 cfs @ 12.06 hrs, Volume= 1.466 af
Outflow = 17.3 cfs @ 12.06 hrs, Volume= 1.466 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 = 0.6 cfs @ 12.52 hrs, Volume= 0.104 af, Atten= 63%, Lag= 27.0 min
Primary = 0.6 cfs @ 12.52 hrs, Volume= 0.104 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 14.03' @ 12.49 hrs Surf.Area= 0.022 ac Storage= 0.049 af

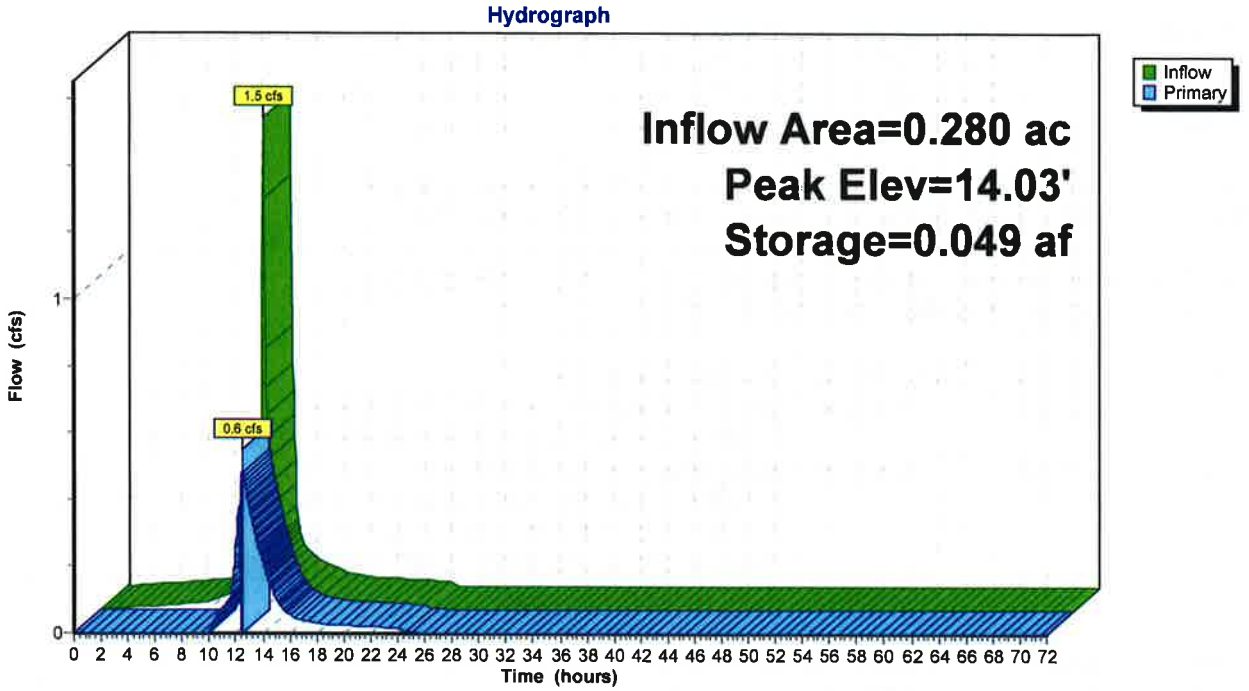
Plug-Flow detention time= 145.9 min calculated for 0.104 af (88% of inflow)
Center-of-Mass det. time= 88.5 min (856.9 - 768.3)

Volume	Invert	Avail.Storage	Storage Description
#1	10.50'	0.023 af	**31.00'W x 30.50'L x 4.00'H Prismatoid** 0.087 af Overall - 0.030 af Embedded = 0.057 af x 40.0% Voids
#2	11.00'	0.030 af	**ADS_StormTech SC-740** x 28 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
		0.053 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

Primary OutFlow Max=0.5 cfs @ 12.52 hrs HW=13.98' TW=9.20' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.5 cfs of 5.4 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.5 cfs @ 7.45 fps)
  └─**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Pond 1P: OCS # 1 / SYSTEM # 1



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

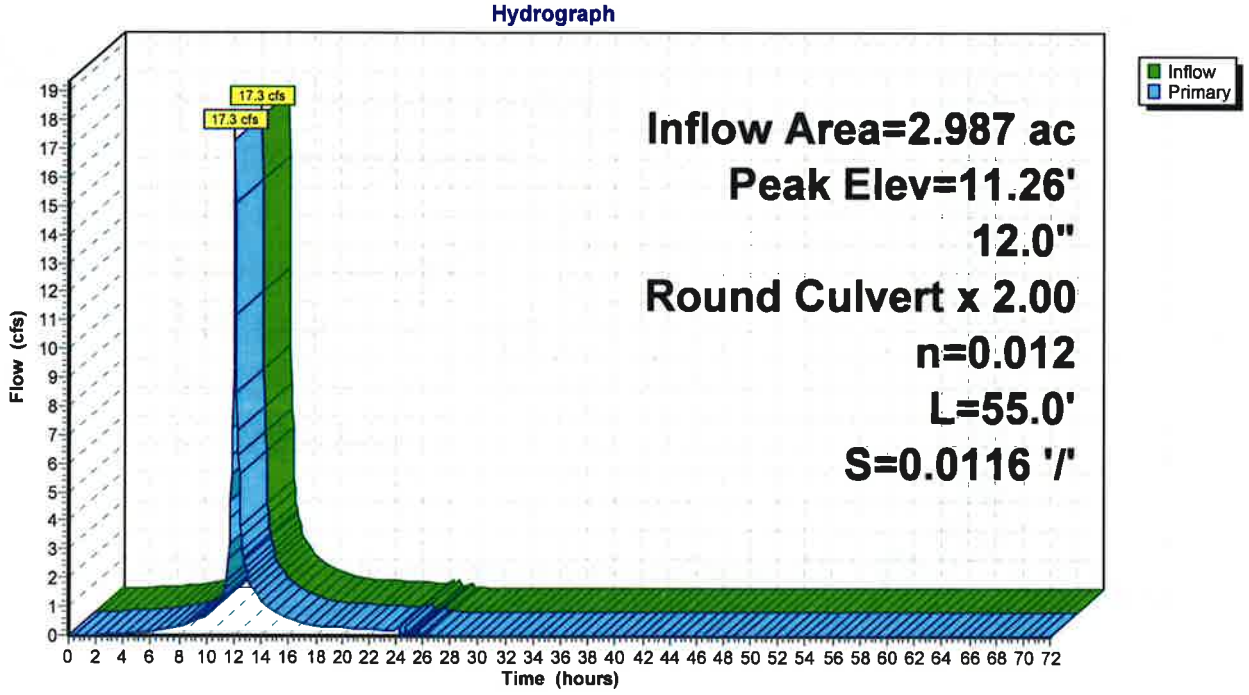
Inflow Area = 2.987 ac, 49.88% Impervious, Inflow Depth = 5.89" for 50 year event
Inflow = 17.3 cfs @ 12.06 hrs, Volume= 1.466 af
Outflow = 17.3 cfs @ 12.06 hrs, Volume= 1.466 af, Atten= 0%, Lag= 0.0 min
Primary = 17.3 cfs @ 12.06 hrs, Volume= 1.466 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 11.26' @ 12.06 hrs
Flood Elev= 7.91'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.31'	**12.0" Round Culvert X 2.00** L= 55.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.31' / 4.67' S= 0.0116 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=16.9 cfs @ 12.06 hrs HW=11.04' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 16.9 cfs @ 10.78 fps)

Pond 3P: Existing CB (Altus Model)



Summary for Pond 5P: CB#1

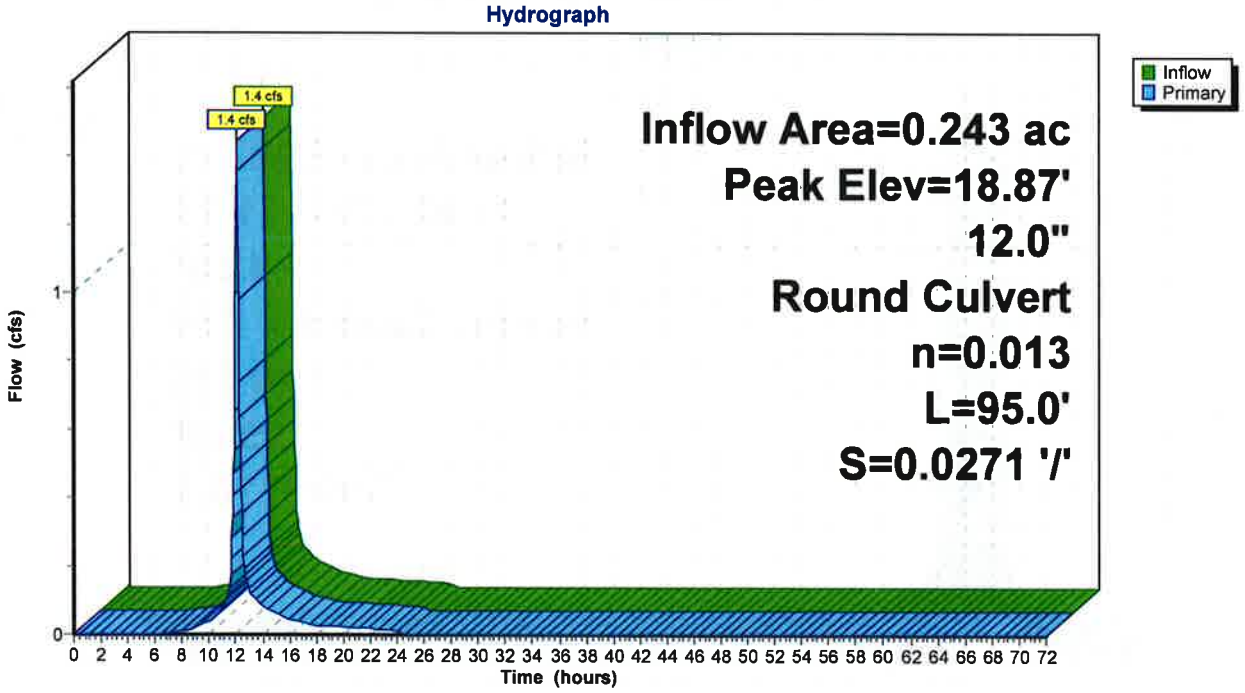
Inflow Area = 0.243 ac, 69.34% Impervious, Inflow Depth = 5.06" for 50 year event
Inflow = 1.4 cfs @ 12.07 hrs, Volume= 0.102 af
Outflow = 1.4 cfs @ 12.07 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
Primary = 1.4 cfs @ 12.07 hrs, Volume= 0.102 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 18.87' @ 12.31 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=0.0 cfs @ 12.07 hrs HW=10.54' TW=10.94' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond 5P: CB#1



Summary for Pond 7P: CB#2

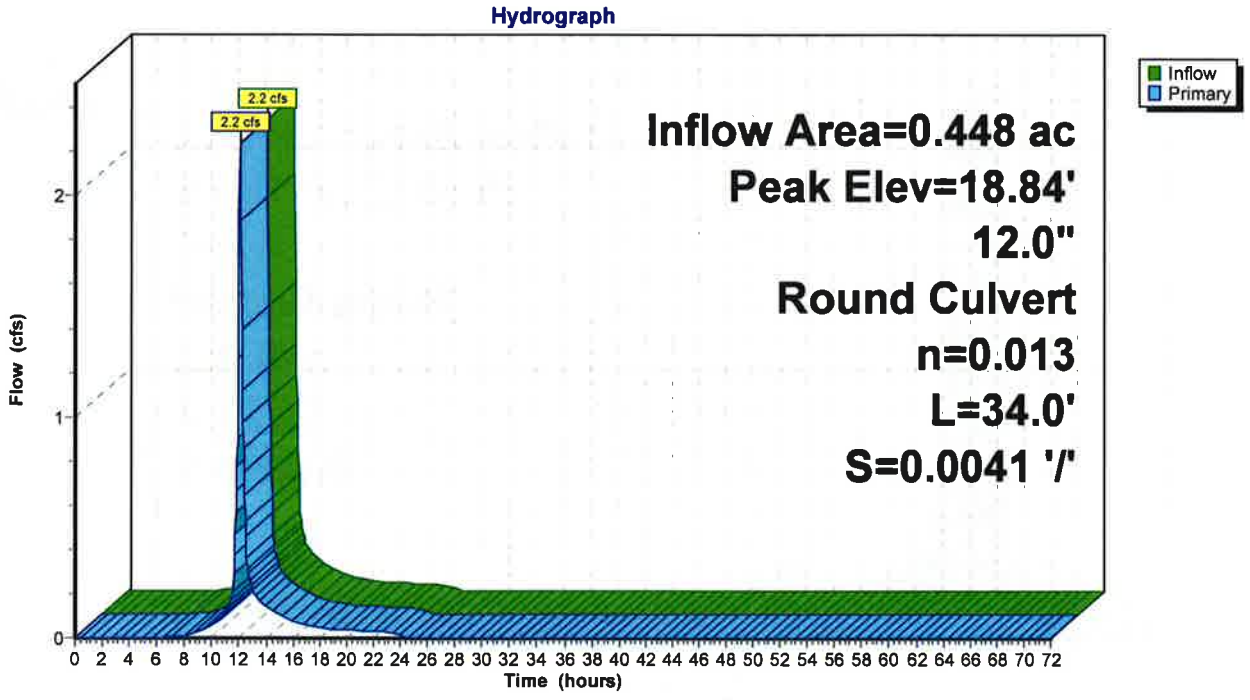
Inflow Area = 0.448 ac, 59.02% Impervious, Inflow Depth = 4.36" for 50 year event
Inflow = 2.2 cfs @ 12.05 hrs, Volume= 0.163 af
Outflow = 2.2 cfs @ 12.05 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.0 min
Primary = 2.2 cfs @ 12.05 hrs, Volume= 0.163 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 18.84' @ 12.26 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=10.44' TW=11.40' (Dynamic Tailwater)
1=Culvert (Controls 0.0 cfs)

Pond 7P: CB#2



Summary for Pond 8P: CB#3

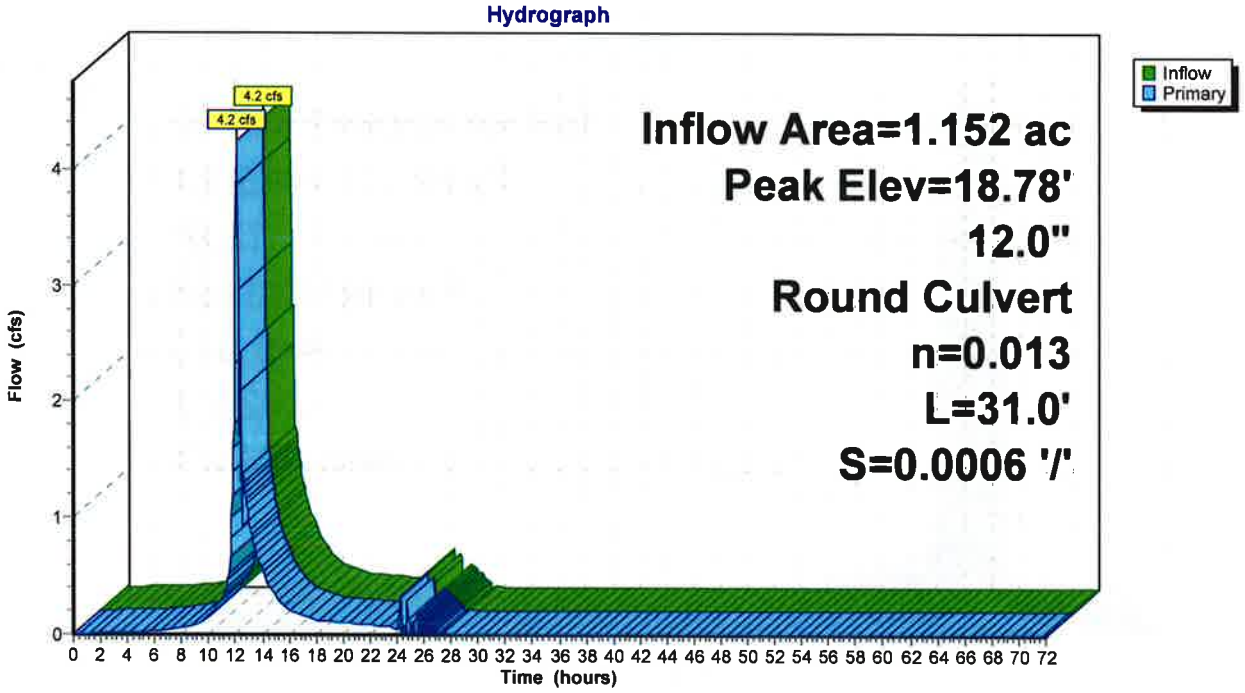
Inflow Area = 1.152 ac, 71.58% Impervious, Inflow Depth = 4.96" for 50 year event
Inflow = 4.2 cfs @ 12.06 hrs, Volume= 0.477 af
Outflow = 4.2 cfs @ 12.06 hrs, Volume= 0.477 af, Atten= 0%, Lag= 0.0 min
Primary = 4.2 cfs @ 12.06 hrs, Volume= 0.477 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 18.78' @ 12.21 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' / 6.87' S= 0.0006 '/' 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=11.86' TW=13.09' (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 = 0.5 cfs @ 12.40 hrs, Volume= 0.069 af, Atten= 51%, Lag= 19.6 min
Primary = 0.5 cfs @ 12.40 hrs, Volume= 0.069 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 10.14' @ 12.54 hrs Surf.Area= 0.022 ac Storage= 0.050 af

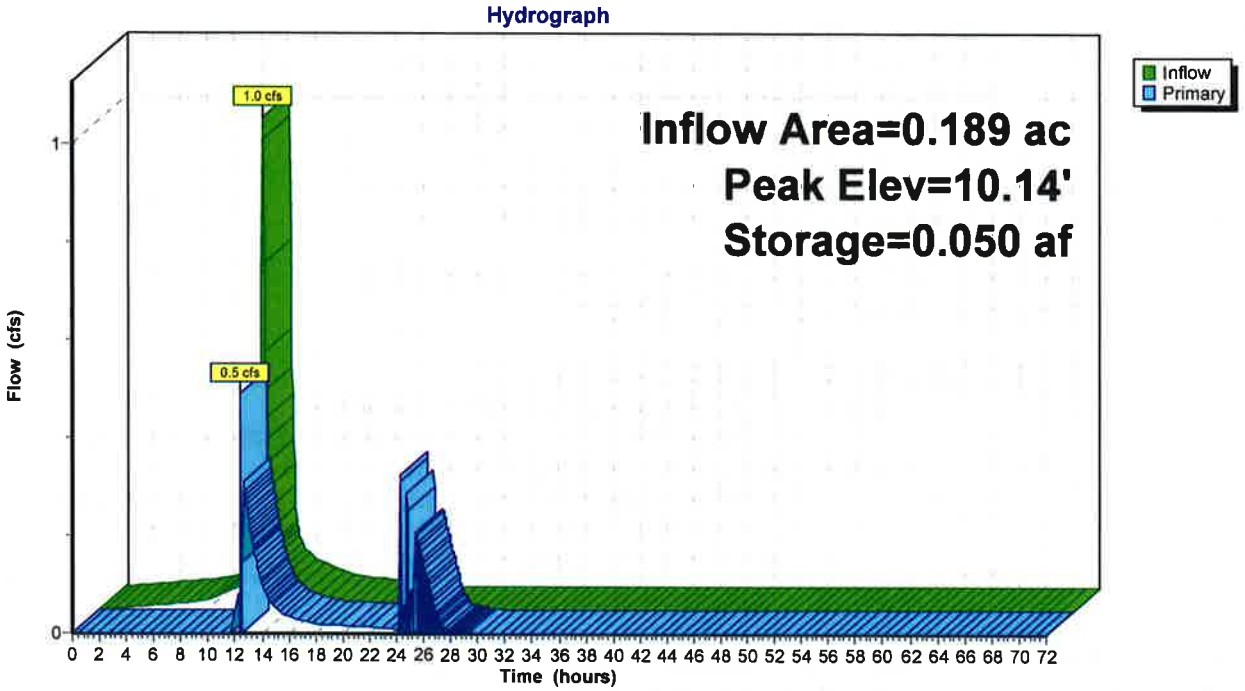
Plug-Flow detention time= 398.2 min calculated for 0.069 af (83% of inflow)
Center-of-Mass det. time= 326.0 min (1,082.3 - 756.3)

Volume	Invert	Avail.Storage	Storage Description
#1	6.50'	0.023 af	**31.00'W x 30.50'L x 4.00'H Prismatoid** 0.087 af Overall - 0.030 af Embedded = 0.057 af x 40.0% Voids
#2	7.00'	0.030 af	**ADS_StormTech SC-740** x 28 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
		0.053 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

Primary OutFlow Max=0.0 cfs @ 12.40 hrs HW=9.99' TW=14.16' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)
↑**2=Orifice/Grate** (Controls 0.0 cfs)
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 @ 12.51 hrs, Volume= 0.007 af, Atten= 55%, Lag= 25.4 min
Discarded = 0.0 cfs @ 12.48 hrs, Volume= 0.006 af
Primary = 0.0 cfs @ 12.51 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= 9.52' @ 12.48 hrs Surf.Area= 289 sf Storage= 115 cf

Plug-Flow detention time= 176.3 min calculated for 0.007 af (100% of inflow)
Center-of-Mass det. time= 176.3 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

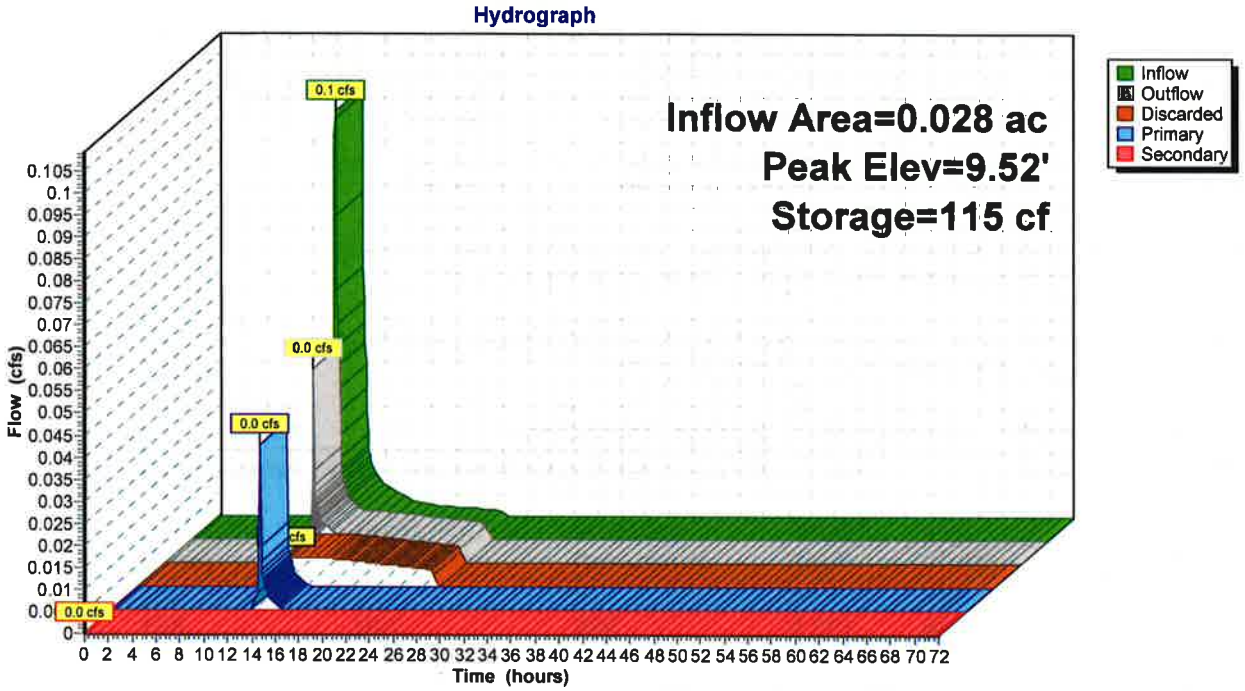
Device	Routing	Invert	Outlet Devices
#1	Primary	7.39'	**6.0" Round Culvert** L= 53.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 7.39' / 7.13' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf
#2	Device 1	9.50'	**24.0" Horiz. Orifice/Grate** C= 0.600 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 @ 12.48 hrs HW=9.51' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=0.0 cfs @ 12.51 hrs HW=9.51' TW=9.02' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.0 cfs of 0.5 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 0.0 cfs @ 0.39 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

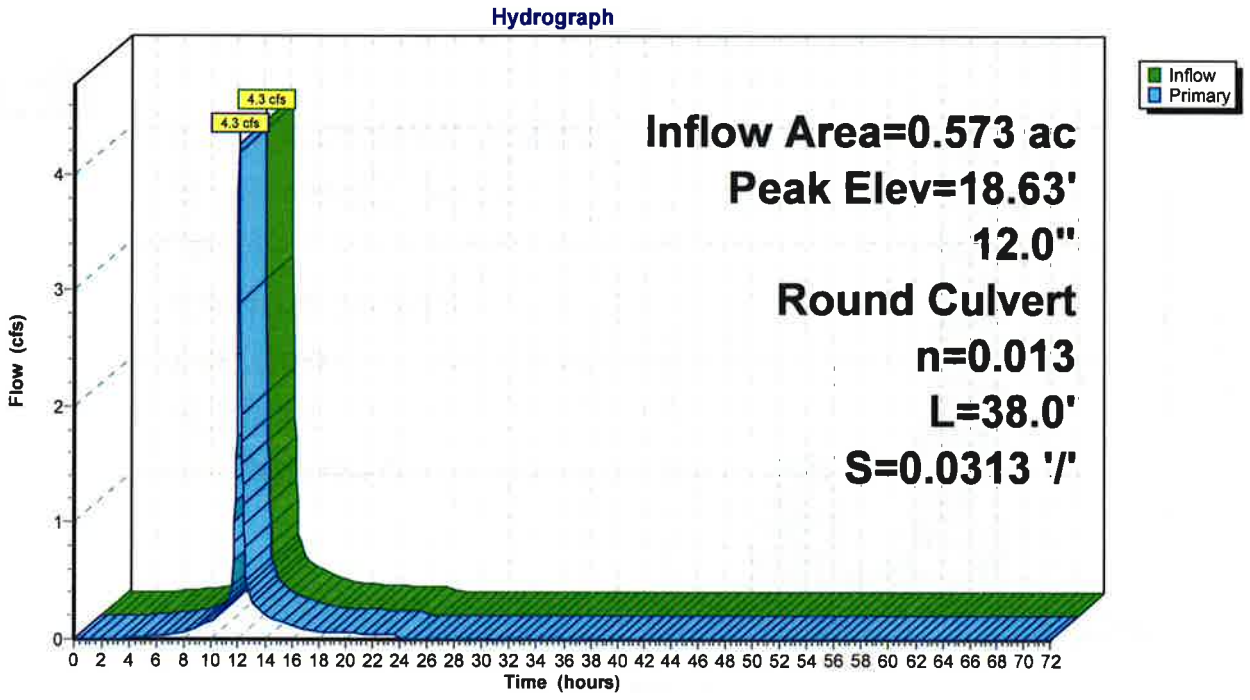
Inflow Area = 0.573 ac, 86.40% Impervious, Inflow Depth = 6.21" for 50 year event
Inflow = 4.3 cfs @ 12.04 hrs, Volume= 0.296 af
Outflow = 4.3 cfs @ 12.04 hrs, Volume= 0.296 af, Atten= 0%, Lag= 0.0 min
Primary = 4.3 cfs @ 12.04 hrs, Volume= 0.296 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 18.63' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	8.06'	**12.0" Round Culvert** L= 38.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 8.06' / 6.87' S= 0.0313 '/' 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=11.10' TW=11.80' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Pond 13P: CB#5



Summary for Pond 15P: DMH#1

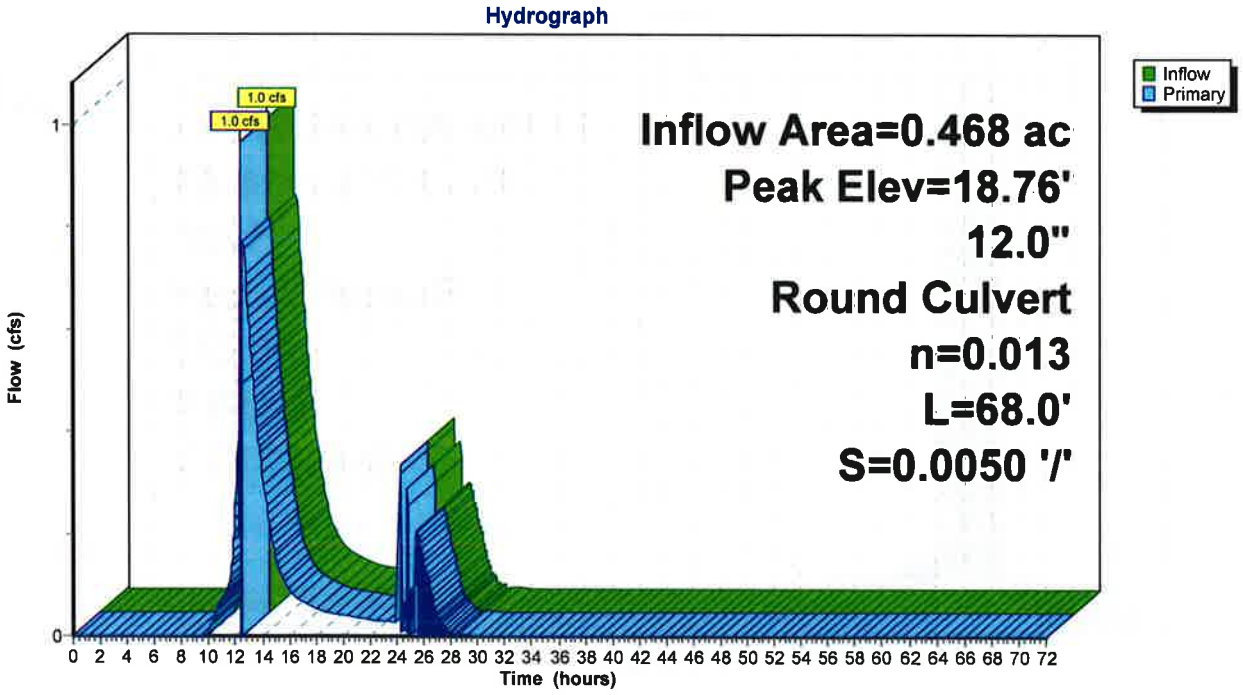
Inflow Area = 0.468 ac, 69.24% Impervious, Inflow Depth = 4.43" for 50 year event
Inflow = 1.0 cfs @ 12.40 hrs, Volume= 0.173 af
Outflow = 1.0 cfs @ 12.40 hrs, Volume= 0.173 af, Atten= 0%, Lag= 0.0 min
Primary = 1.0 cfs @ 12.40 hrs, Volume= 0.173 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 18.76' @ 12.30 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=6.1 cfs @ 12.40 hrs HW=14.16' TW=10.77' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 6.1 cfs @ 7.75 fps)

Pond 15P: DMH#1



Summary for Pond 16P: CB#6

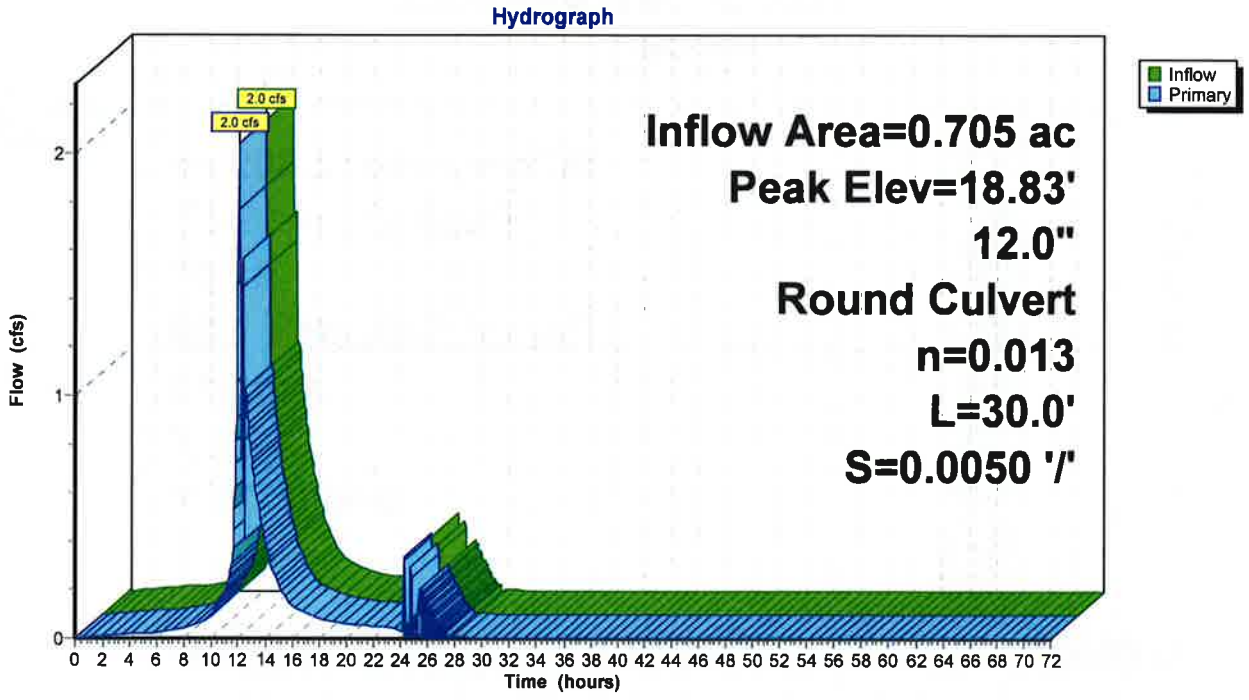
Inflow Area = 0.705 ac, 79.56% Impervious, Inflow Depth = 5.35" for 50 year event
Inflow = 2.0 cfs @ 12.07 hrs, Volume= 0.314 af
Outflow = 2.0 cfs @ 12.07 hrs, Volume= 0.314 af, Atten= 0%, Lag= 0.0 min
Primary = 2.0 cfs @ 12.07 hrs, Volume= 0.314 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 18.83' @ 12.27 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 @ 12.07 hrs HW=11.04' TW=12.47' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond 16P: CB#6



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

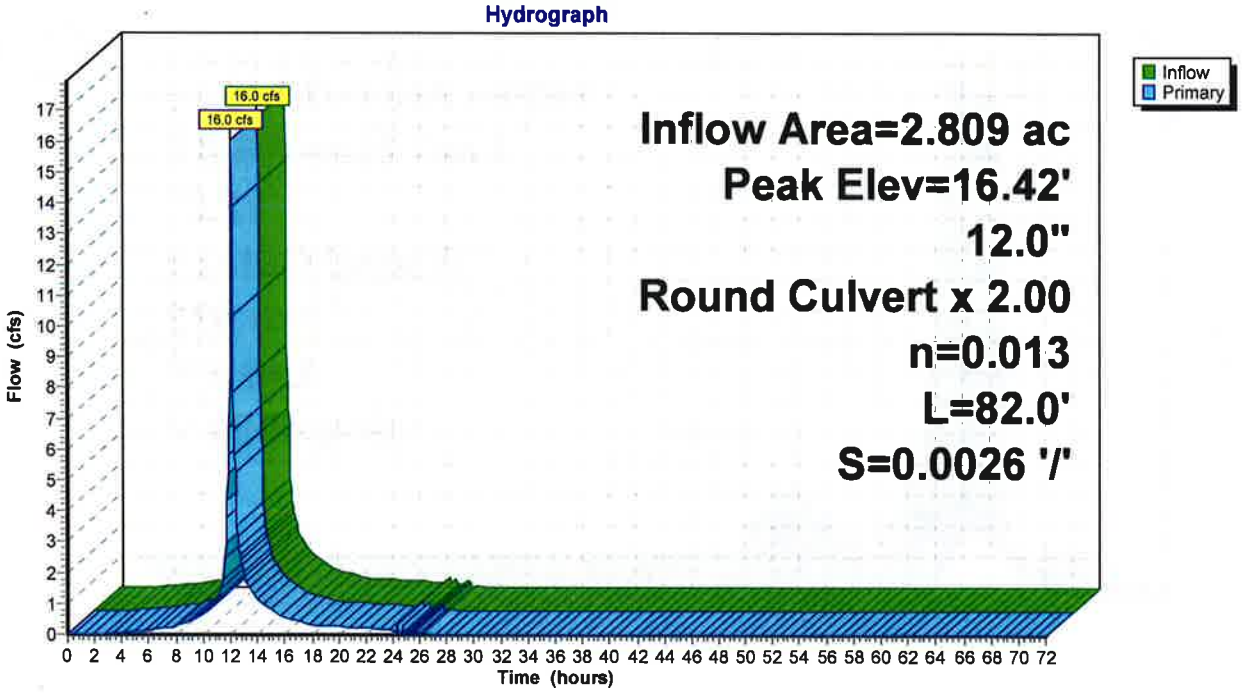
Inflow Area = 2.809 ac, 53.04% Impervious, Inflow Depth = 5.83" for 50 year event
Inflow = 16.0 cfs @ 12.06 hrs, Volume= 1.365 af
Outflow = 16.0 cfs @ 12.06 hrs, Volume= 1.365 af, Atten= 0%, Lag= 0.0 min
Primary = 16.0 cfs @ 12.06 hrs, Volume= 1.365 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 16.42' @ 12.08 hrs
Flood Elev= 8.49'

Device	Routing	Invert	Outlet Devices
#1	Primary	5.52'	**12.0" Round Culvert X 2.00** L= 82.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.52' / 5.31' S= 0.0026 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=13.3 cfs @ 12.06 hrs HW=15.63' TW=11.06' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 13.3 cfs @ 8.50 fps)

Pond 30P: CB #1 (Altus Model)



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

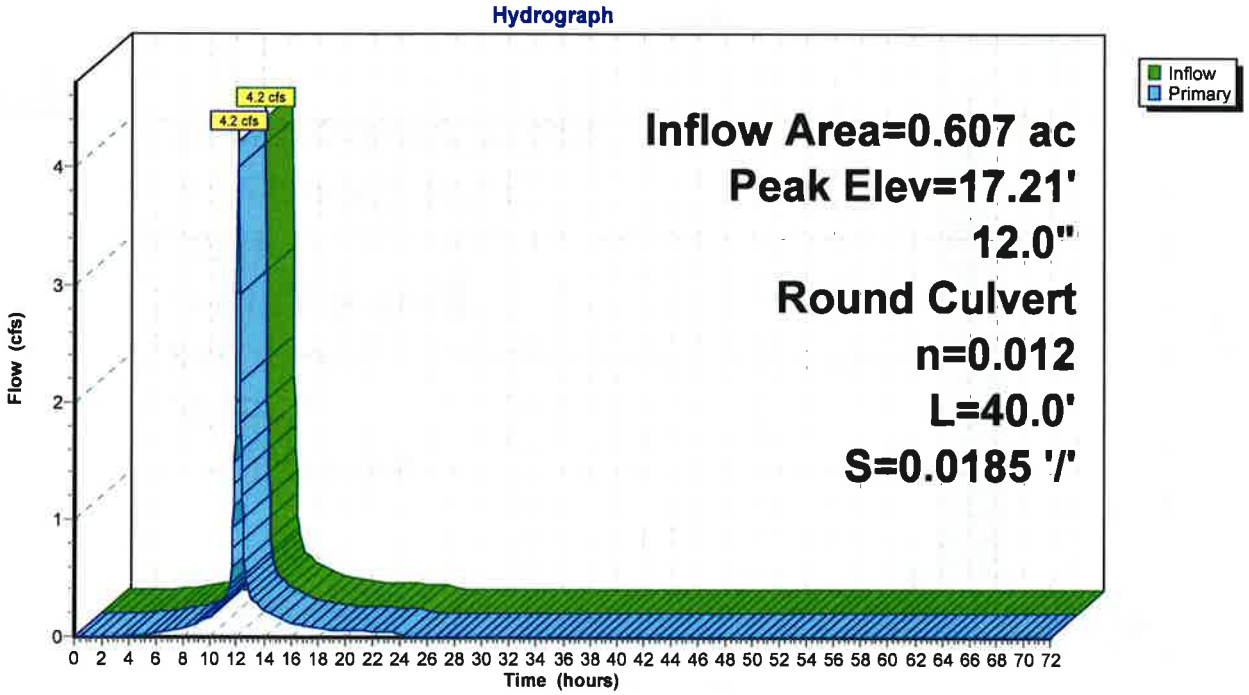
Inflow Area = 0.607 ac, 0.00% Impervious, Inflow Depth = 6.33" for 50 year event
Inflow = 4.2 cfs @ 12.07 hrs, Volume= 0.320 af
Outflow = 4.2 cfs @ 12.07 hrs, Volume= 0.320 af, Atten= 0%, Lag= 0.0 min
Primary = 4.2 cfs @ 12.07 hrs, Volume= 0.320 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 17.21' @ 12.13 hrs
Flood Elev= 8.44'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.34'	**12.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 6.34' / 5.60' S= 0.0185 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.07 hrs HW=14.18' TW=15.81' (Dynamic Tailwater)
↑**1=Culvert** (Controls 0.0 cfs)

Pond 31P: CB #2 (Altus Model)



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

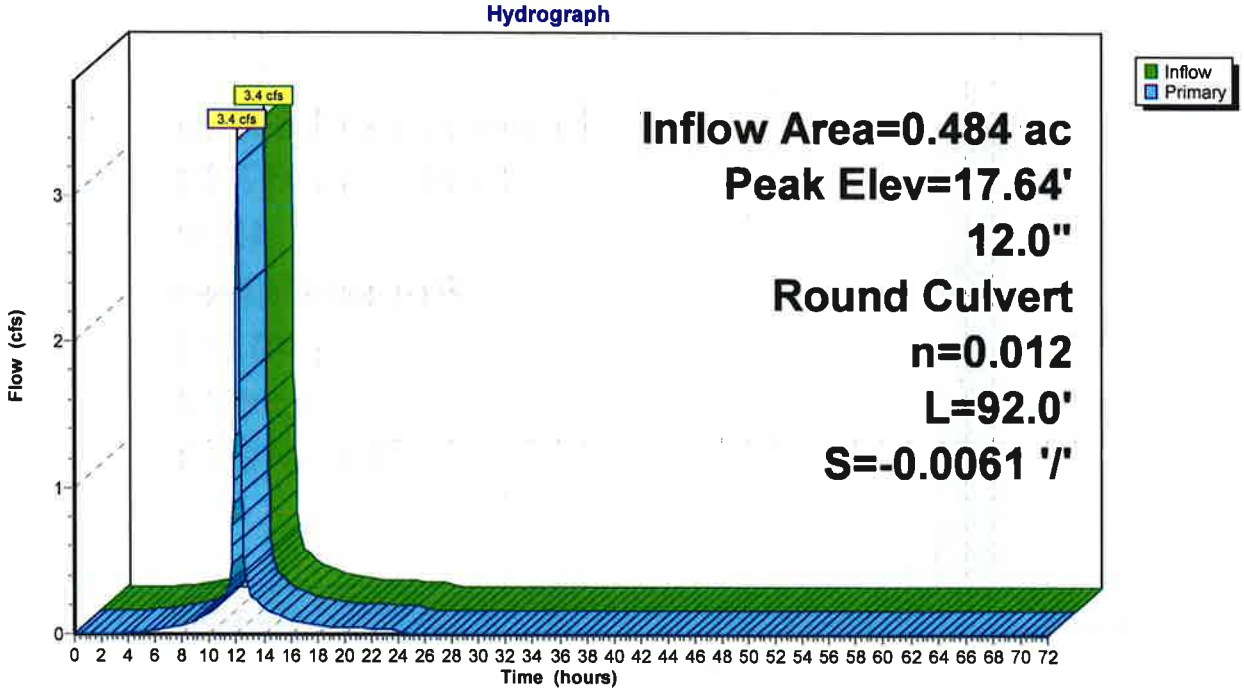
Inflow Area = 0.484 ac, 0.00% Impervious, Inflow Depth = 6.36" for 50 year event
Inflow = 3.4 cfs @ 12.07 hrs, Volume= 0.257 af
Outflow = 3.4 cfs @ 12.07 hrs, Volume= 0.257 af, Atten= 0%, Lag= 0.0 min
Primary = 3.4 cfs @ 12.07 hrs, Volume= 0.257 af

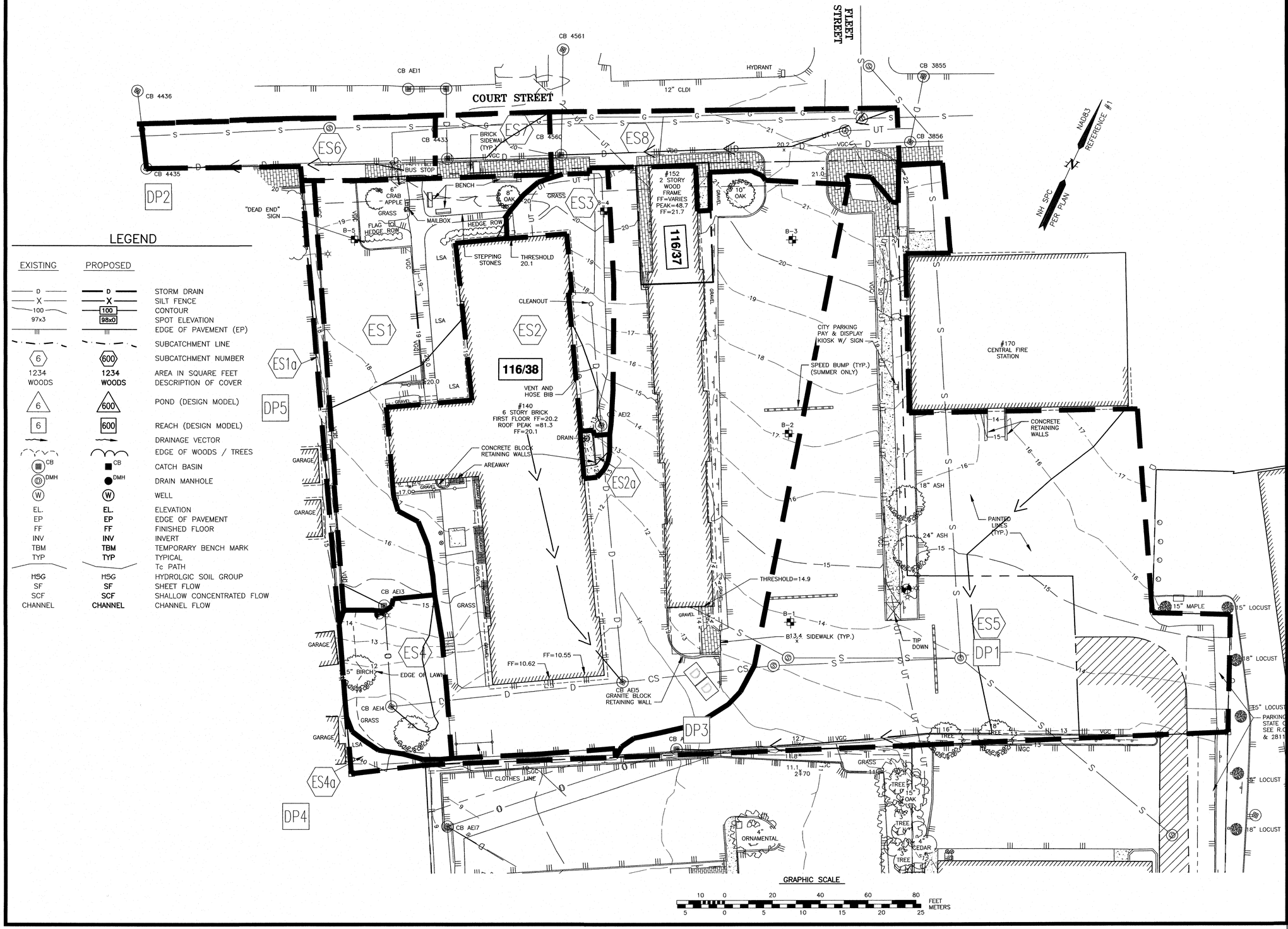
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 17.64' @ 12.17 hrs
Flood Elev= 8.53'

Device	Routing	Invert	Outlet Devices
#1	Primary	6.44'	**12.0" Round Culvert** L= 92.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 5.88' / 6.44' S= -0.0061 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.0 cfs @ 12.07 hrs HW=11.53' TW=14.18' (Dynamic Tailwater)
↑—**1=Culvert** (Controls 0.0 cfs)

Pond 32P: CB #3 (Altus Model)





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

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
1	REMOVED FIRE STATION FROM ES5	7/17/18
0	ISSUED FOR REVIEW	6/18/18

REVISIONS

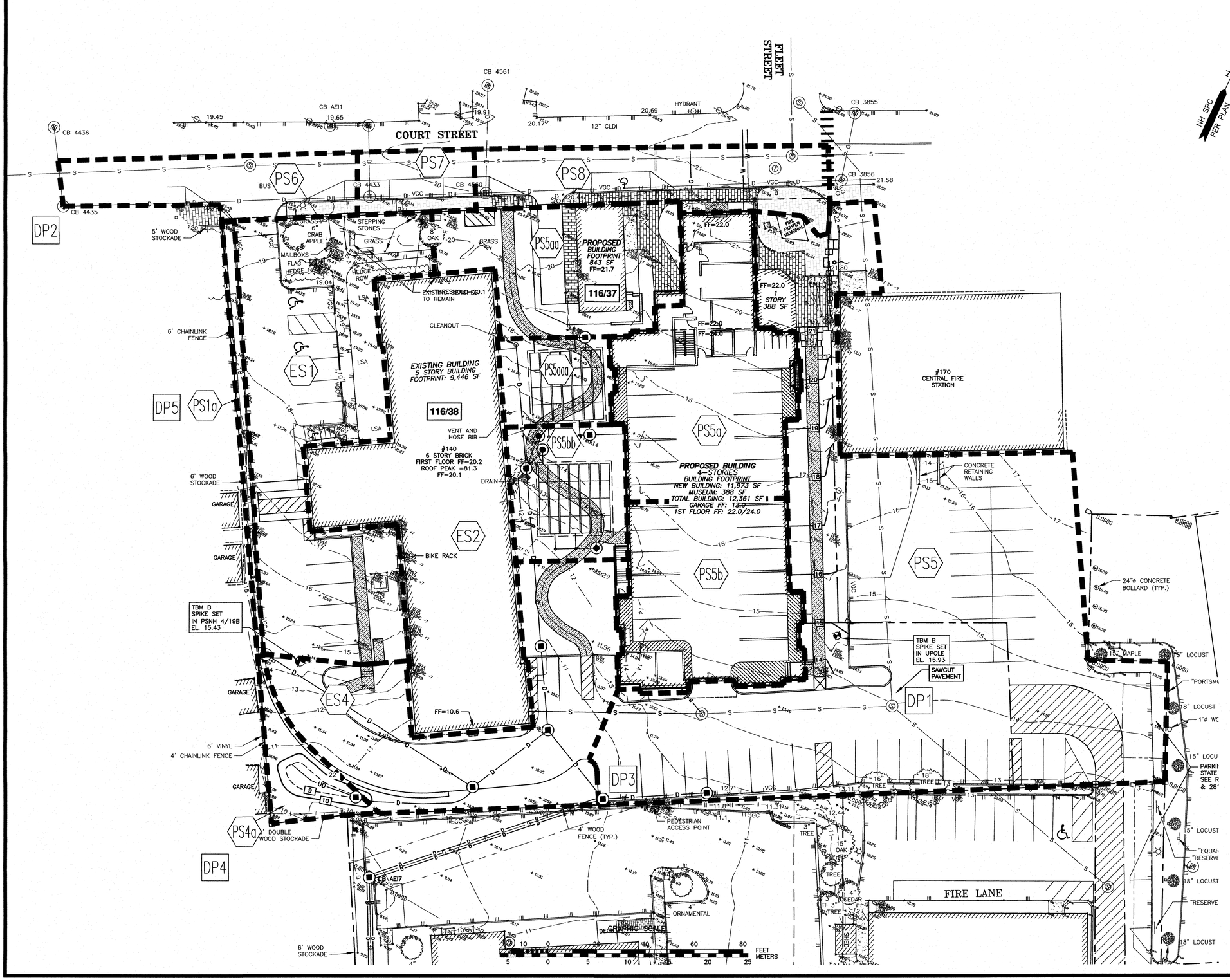
STATE OF NEW HAMPSHIRE – JOSEPH L. MULLEDY No. 11502 LICENSED PROFESSIONAL ENGINEER
6/4/18

SCALE: 1" = 20'

PLAN OF EXISTING SUBCATCHMENTS

W1

2790



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PORTSMOUTH HOUSING AUTHORITY 160 COURT STREET PORTSMOUTH, N.H.

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

REVISIONS

STATE OF NEW HAMPSHIRE - JOSEPH L. MULLEDY No. 11502 LICENSED PROFESSIONAL ENGINEER
6/6/18

SCALE: 1'=20' FEBRUARY 2018

DRAINAGE, GRADING AND EROSION CONTROL PLAN

W2

FB 321 PG19

2790