ENGINEERING REPORT

EASTON CROSSING
SPORT HILL ROAD, SILVER HILL ROAD,
CEDAR HILL ROAD, AND WESTPORT ROAD
EASTON, CONNECTICUT

August 4, 2014

MMI #2683-01-26

Prepared for:

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I. PROJECT OVERVIEW

The descriptions and computations included within this Engineering Report and Appendix are provided in support of the overall Easton Crossing project located within the property bounded by Sport Hill Road (CT Route 59), Silver Hill Road, Cedar Hill Road, and Westport Road (CT Route 136) in the town of Easton, Connecticut. The proposed project will develop approximately 110.5 acres of the overall 124.7-acre property as a 48-lot subdivision with 20 of the proposed homes containing an affordable in-law apartment. The remaining ±14.2 acres located in the northeastern portion of the property will remain as a horse farm. The current permit application is for approval of the residential subdivision by the Easton land use commissions.

The proposed residential subdivision will be accessed via a proposed roadway extending from Sport Hill Road through Cedar Hill Road. Fourteen of the proposed 48 lots will be accessed via individual driveways, which will extend from the proposed main access road. Thirty-two new homes will be accessed via proposed secondary roads, which will extend from the main road and end at cul-de-sacs. One shared access driveway off the main road will provide access to two proposed lots.

All of the new homes will be served by individual on-site subsurface sewage disposal systems. Each individual system was evaluated for compliance with the State of Connecticut Public Health Code. In addition, all of the new homes will be served by individual water supply wells on each lot. All other utilities such as electric, telephone, and cable service will be provided by the existing services adjacent to the project site and shall be located underground. More detailed design information regarding the proposed septic systems can be obtained from the site plans.

The stormwater management system for this site has been designed utilizing Best Management Practices (BMPs) to maintain water quality while attenuating peak flows to prevent increases in the predevelopment runoff rates to the adjacent wetland areas, watercourses, and neighboring properties. The overall stormwater management system will use five proposed on-site

stormwater management areas as well as several other water quality measures before discharging stormwater runoff from the site. For more detailed information regarding stormwater quantity, refer to Sections III and IV of this report. Refer to Section V for stormwater quality management provided in the proposed design. Design computations and other relevant information are provided in the Appendix of this report.

II. EXISTING SITE CONDITIONS

The project site is located in the central portion of Easton to the west of the intersection of Sport Hill Road (CT Route 59) and Westport Road (CT Route 136). The overall parcel is approximately 124.7 acres and is comprised of a single contiguous tract of land. The subject parcel, which is located within a District B residential zone, is bordered by Sport Hill Road and a few residential properties to the east, by residential homes along Silver Hill Road and undeveloped areas to the north, by residential properties along Cedar Hill Road to the west, and by wooded areas and a few homes along Bibbins Road and Westport Road to the south. The vast majority of the site is wooded, with sparse open land in the central portion and grassed and fallow areas associated with the existing horse farm in the northeast corner of the property. An existing pond is located west of the intersection of Sport Hill Road and Westport Road.

The topography of the site is best described as rolling. The project site is located at the top of a ridge, which generally slopes downward to the northwest and southeast, with a relatively small portion sloping to the southwest toward Bibbins Road and Cedar Hill Road. Large wetland areas are located on the northwestern, southwestern, and eastern portions of the site. A few wetland pockets are centrally located on the parcel. The wetland areas on the eastern portion of the site are associated with the existing pond adjacent to Westport Road. At this location, a 36-inch reinforced concrete pipe (RCP) under Sport Hill Road conveys the flow from the pond to an existing channel adjacent to Union Cemetery, which is located on the east side of Sport Hill Road. In addition, stormwater runoff generated on the northwestern portion of the site is collected in an existing channel that is located in the northwesternmost corner of the parcel. From there, runoff flows toward an existing cross culvert under Silver Hill Road. Ultimately, an

existing off-site pond, which is located to the south of Bibbins Road, receives stormwater runoff from the southwestern portion of the property.

The western portion of the overall property is located within the Aspetuck River watershed while the eastern portion lies within the Mill River watershed. The Aspetuck River watershed is located within the Saugatuck Regional Basin, identified as Watershed 7202 on the Connecticut Department of Energy & Environmental Protection (CTDEEP) *Atlas of Public Water Supply Sources and Drainage Basins*. The Mill River watershed is located within the Southwest Eastern Regional Complex, identified as Watershed 7108. Both of these watersheds are located within the Southwest Coast Major Basin. In addition, the 100-year floodplain boundary as delineated on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for the town of Easton extends onto a small portion of the property, specifically in the southeasternmost corner around the perimeter of the existing pond. A portion of the FEMA Flood Insurance Rate Map has been included in the Appendix of this report.

III. STORMWATER MANAGEMENT DESIGN

The proposed stormwater management system has been designed utilizing BMPs design principles to prevent increases in peak rates of runoff while providing means to safely convey runoff from the site and manage stormwater quality. Stormwater management was achieved by collecting stormwater runoff and conveying it to the detention/water quality basins, which have been designed to attenuate the proposed peak flows as well as provide water quality measures before discharging to the existing wetland areas and watercourses. The stormwater management design will also incorporate the use of sediment forebays, deep sump catch basins, grass swales, and retention volume. More information regarding water quantity and quality is provided in the following sections.

The computer program entitled *Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® 2014* by Autodesk, Inc., Version 10.3 was used for designing the proposed storm drainage collection system. Storm drainage computations performed include pipe capacity calculations,

hydraulic grade line calculations, and gutter flow (inlet capacity) computations. The contributing watershed to each individual catch basin inlet was delineated to determine the drainage area and land coverage. These values were used to determine the stormwater runoff to each inlet using the Rational Method. The rainfall intensities utilized in the storm drainage computations were obtained from the Connecticut Department of Transportation (CTDOT) *Drainage Manual* dated October 2000.

The proposed storm drainage systems were designed according to the town's standards to provide adequate pipe capacity to convey the 10-year storm event. In addition, the storm drainage design includes a complete hydraulic grade line computation for the storm drainage systems designed with adequate capacity to meet the 10-year storm event. A gutter flow analysis was performed on the storm drainage systems in the proposed roadway to ensure adequate spacing and inlet capacity for the 10-year storm event. In addition, the outlet pipe from the outlet control structure of the proposed detention basins was sized with adequate capacity to convey the 100-year storm event. All storm drainage computations described in this section are included in the Appendix of this report.

The design of the proposed cross culvert was performed using the computer program entitled *HY-8 Culvert Analysis, Version 7.3*, made available by the Federal Highway Administration (FHWA). The HY-8 software automates the design methods described in *Hydraulics Design Series No. 5, "Hydraulic Design of Highway Culverts,"* developed by the FHWA. The proposed 3-foot by 3-foot concrete box culvert was designed to pass the 50-year storm event preventing overtopping for the 100-year storm event. The HY-8 model input and model results are provided in the Appendix of this report.

The proposed stormwater management system balances the safe conveyance of stormwater runoff with the attenuation of peak rates of runoff while maintaining stormwater quality from the project site. The design of the stormwater management system minimizes potential impacts to existing wetland areas, watercourses, and developed areas downstream of the site.

IV. HYDROLOGIC ANALYSIS

A hydrologic analysis has been conducted to analyze the predevelopment and postdevelopment peak flow rates from the site. Four analysis points consisting of seven subwatershed areas were chosen based on the fact that each area receives stormwater runoff from a portion of the proposed project site. The seven subwatersheds encompassing the entire project area, including the contributing off-site upstream areas, were used to determine the peak flow rates for current site conditions. The existing watersheds were then modified and subdivided further to reflect the proposed changes to the site and analyze the hydrology under proposed conditions. The total combined watershed area delineated is approximately 486 acres under both existing and proposed conditions. A watershed map for both existing and proposed conditions is included in the Appendix of this report. The following table provides a brief description of the four analysis points used in the hydrology study.

Analysis Point:	Description:
B	Southeast – 36" RCP under Sport Hill Road - existing pond outfall (subwatersheds numbered in the 10s)
C	Northwest – Existing channel at the northwest corner of the property (subwatersheds numbered in the 20s)
D	Southwest – Existing pond adjacent to Bibbins Road (subwatersheds numbered in the 30s)
E	West – Westernmost property boundary (subwatersheds numbered in the 40s)

The method utilized to predict the surface water runoff rates in this analysis is a computer program entitled *TR-20 Computer Program for Project Formulation Hydrology*. The United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS), formerly known as the Soil Conservation Service, developed this program for conducting hydrology studies. The TR-20 computer program forecasts the rate of surface water runoff and

river flow rates as a function of time based upon several factors, including the attenuation effect due to dams, lakes, large wetlands, floodplains, and stormwater management basins.

The input data includes information on land use, hydrologic soil type, vegetative cover, contributing watershed area, time of concentration, rainfall data, storage volumes, and the hydraulic capacity of structures. Runoff rates during specific rainstorms may vary due to different assumptions concerning soil moisture, water levels in ponds, snowmelt, and rainfall patterns. The input data for rainfalls with statistical recurrence frequencies of 2, 10, 25, 50, and 100 years were obtained from the U.S. Weather Bureau Technical Papers. The National Weather Service developed four synthetic storms to simulate rainfall patterns around the country. The type III rainfall pattern with a 24-hour duration is appropriate for analysis in Connecticut.

Land use for the site under existing and proposed conditions was determined from field survey, aerial mapping, and United States Geological Survey (USGS) mapping. Land use types used in the analysis included woods, open space/lawn areas, meadow, pasture, fallow bare soil, row crops, orchard trees, gravel, water surface, building, and impervious/paved cover under both existing and proposed conditions. Soil types in the watershed were determined from the CTDEEP GIS (Geographic Information System) database of the USDA-NRCS soil survey for Fairfield County, Connecticut. For the analysis, the study area included areas of hydrologic soil types "A," "B," "C," and "D" as classified by the USDA-NRCS.

The existing conditions were modeled with the TR-20 computer program to determine the flow rates for the various storm events at each analysis point. A revised model was developed incorporating the proposed site conditions, and flows obtained with the revised model were then compared to the results of the existing conditions model. The comparison of the predevelopment and postdevelopment flow rates illustrated whether flow rates had or had not been increased above the existing condition. If flow rates had been increased, stormwater detention was incorporated into the proposed model to attenuate peak flows and meet the existing condition flow rate at each analysis point. The reservoir routing subroutine within the TR-20 computer

program was used to design the detention basin storage and outlet control requirements. All TR-20 input computations and model results are included in the Appendix of this report.

Stormwater management for the project was achieved by routing the stormwater runoff from the proposed developed area to the detention/water quality basins, designated as Detention Basins 140, 150, 210, 220, and 230 as shown on the proposed conditions watershed map. Stormwater flow rates are detained by use of an outlet control structure containing various combinations of a weir and/or a low-flow orifice. The proposed detention basins have been designed to provide a minimum of 1 foot of freeboard during the 100-year storm event. The following peak flows to each of the analysis points were obtained from the TR-20 hydrology results:

Analysis Point B:

	Peak Flow Rates (cfs)*				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Existing Conditions	43	74	81	157	258
Proposed Conditions W/Out Detention	44	74	82	161	262
Proposed Conditions With Detention	43	73	81	152	251

*cfs = cubic feet per second

Analysis Point C:

	Peak Flow Rates (cfs)*				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Existing Conditions	9	42	60	78	110
Proposed Conditions W/Out Detention	13	54	74	103	132
Proposed Conditions With Detention	9	33	48	63	83

*cfs = cubic feet per second

Analysis Point D:

	Peak Flow Rates (cfs)*				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Existing Conditions	28	78	102	126	155
Proposed Conditions	26	75	98	122	152

*cfs = cubic feet per second

Analysis Point E:

	Peak Flow Rates (cfs)*				
Storm Frequency (years)	**2**	**10**	**25**	**50**	**100**
Existing Conditions	0	1	2	2	3
Proposed Conditions	0	0	0	0	0

*cfs = cubic feet per second

The summary of results above shows that no increases in peak rates of runoff are anticipated to any of the points examined in the detailed hydrology analysis. Rather, matching flows or a decrease in flow rate for each of the storm events modeled can be anticipated due to the stormwater management system and the detention provided. The stormwater management system achieves the goal of attenuating the peak rates of runoff from the proposed site, minimizing potential impacts to existing wetland areas, watercourses, and developed areas downstream of the site.

V. WATER QUALITY MANAGEMENT

Several water quality BMPs are incorporated into the stormwater management design to maintain water quality. All of the stormwater control measures described in this section will help maintain the water quality of the stormwater runoff from the proposed development.

Stormwater runoff from the proposed site will be collected and conveyed via a subsurface pipe and catch basin drainage system. The drainage system will include catch basins with 2-foot sumps, which trap coarse sediments. In addition, the stormwater management design also incorporates the use of a sediment forebay at the inlet to each proposed stormwater management area. The sediment forebay will improve water quality by trapping floatables as well as filtering coarse sediment and other pollutants. The forebays will be constructed using a riprap filter berm and a riprap splash pad. Riprap splash pads dissipate the potential erosive velocity of stormwater entering the basin as well as trap sediment while the riprap filter berm will contain the sediment within a small area in the basin, allowing easy maintenance.

The detention basin/water quality basins have been designed in accordance with the CTDEEP *2004 Stormwater Quality Manual* and will enhance water quality by providing additional storage volume in the bottom of the basins to treat the Water Quality Volume (WQV) and provide retention volume, thus creating a water quality feature within the basins. This serves several purposes including stormwater renovation, first flush retention, and infiltration. A more detailed explanation of each of these measures follows.

To address stormwater renovation, the water quality basins will be planted with select vegetation based on the soil moisture conditions expected for each basin. Common plantings include native wetland grass mixes, emergent plantings, and wet meadow vegetation. The plantings will enhance the basins' stormwater renovation characteristics while providing pollutant removal by filtering stormwater runoff and nutrient absorption.

The *Stormwater Quality Manual* (Chapter 7) recommends methods for sizing stormwater treatment measures with the WQV and Groundwater Recharge Volume (GRV) computations. The WQV addresses the initial stormwater runoff also commonly referred to as the "first flush" runoff. The WQV provides adequate volume to store the initial 1 inch of runoff, which tends to contain the highest concentrations of potential pollutants.

The GRV provides adequate volume to maintain the predevelopment annual groundwater recharge and promote infiltration based on the soils found on the site. When provided, the GRV will achieve similar stormwater infiltration capabilities and maintain adequate groundwater recharge. The WQV has been provided within each proposed detention basin while GRV has been provided in the open-bottom plastic chambers attached to roof leaders of each proposed home. Supporting calculations for the volume provided as well as WQV and GRV computations have been included in the Appendix of this report.

Subsurface perforated plastic chambers capable of storing a minimum of 1.0 inch of runoff from the rooftops of the proposed homes have been incorporated into the proposed site design. The units will be placed on a 6-inch crushed stone base and will be surrounded on all sides with crushed stone material, which will allow for additional infiltration of stormwater into the underlying soils, thereby providing an additional opportunity to reduce runoff volume. The computations for the underground plastic chambers are included in the Appendix of this report.

A detailed Sediment and Erosion (S&E) Control Plan has been developed to mitigate the short-term impacts of the development during construction. The S&E Control Plan includes a proposed construction sequence in addition to descriptive specifications concerning land grading, topsoiling, temporary vegetative cover, permanent vegetative cover, vegetative cover selection and mulching, and erosion checks. Details have been provided for all erosion control measures with corresponding labels on the S&E control site plan. In addition, the S&E controls provided are in accordance with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control.*

The construction areas are to be surrounded by geotextile sediment filter fence that will be fortified with staked hay bales upgradient of any wetland areas or watercourses. A construction entrance has been provided at all entrance locations including each individual driveway as well as temporary topsoil stockpile areas encircled with sediment filter fencing on each house lot. In addition, erosion control blankets are proposed on critical slopes to protect the newly created slopes until permanent vegetation can be established.

During the construction of the roadway system, inlet protection is proposed at each of the catch basin inlets to prevent sediment from entering the storm drainage system during construction. Temporary water bars will be provided to prevent erosion of the roadway materials during construction and will direct stormwater runoff to a temporary diversion berm and swales. Furthermore, orange plastic construction fence has been provided around the existing trees that will remain after construction and on the downgradient limits of any disturbance within the upland review area.

The temporary diversion berm and swales are provided to direct the stormwater runoff from the site to temporary sediment traps during construction and will include stone check dams to slow potential erosive velocities. The detention areas are designed to act as temporary sediment traps during construction, and several additional sediment traps will be provided where necessary. The S&E controls are to be modified with the changing grades on site to ensure the protection of the surrounding areas throughout the construction process.

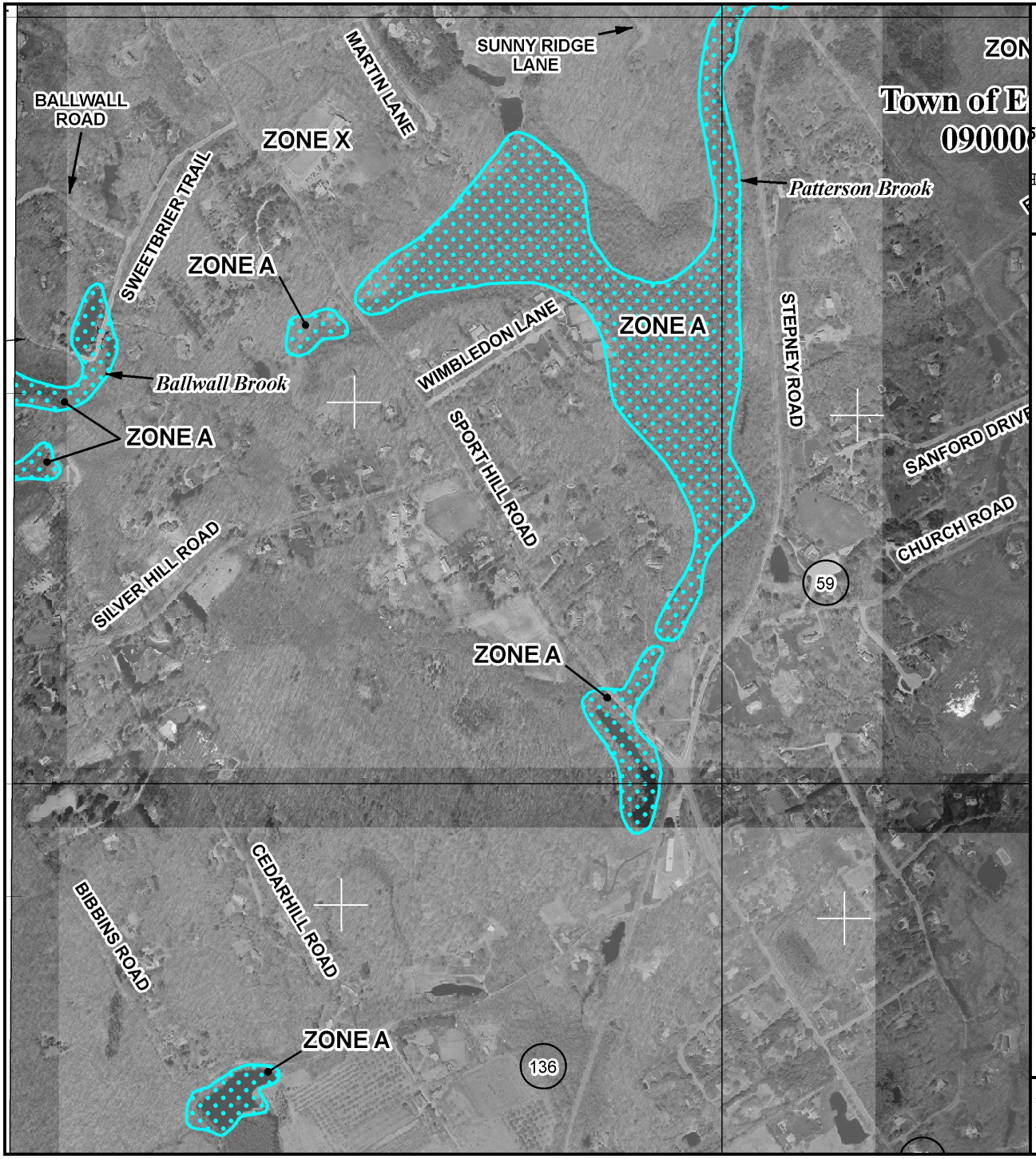
VI. CONCLUSION

The hydrology results indicated that the proposed stormwater management system will achieve no net increase in peak rates of runoff through the use of the on-site stormwater management basins and a designed storm drainage collection system. As a result, the postdevelopment peak flow rates were controlled to or below the predevelopment peak rates for all storm events analyzed for the project.

The provided stormwater control measures include short-term erosion controls to be implemented during the construction phase and long-term total suspended solids removal from stormwater runoff for the completed project. These measures will serve to mitigate water quality impacts during construction and improve the quality of stormwater runoff from the site after the site is developed. The S&E Control Plan will provide protection of the existing wetlands and watercourses by limiting sediment transport to areas downgradient of the site during construction and while the site is permanently established. These measures along with periodic maintenance will serve to maintain the water quality of the stormwater runoff from the proposed project.

2683-01-26-au414-rpt

FEMA FLOOD INSURANCE RATE MAP



MAP SCALE 1" = 1000'

500 0 1000 2000

FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0270F

FIRM

FLOOD INSURANCE RATE MAP

FAIRFIELD COUNTY, CONNECTICUT
(ALL JURISDICTIONS)

PANEL 270 OF 626
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EASTON, TOWN OF	090006	0270	F
REDDING, TOWN OF	090141	0270	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

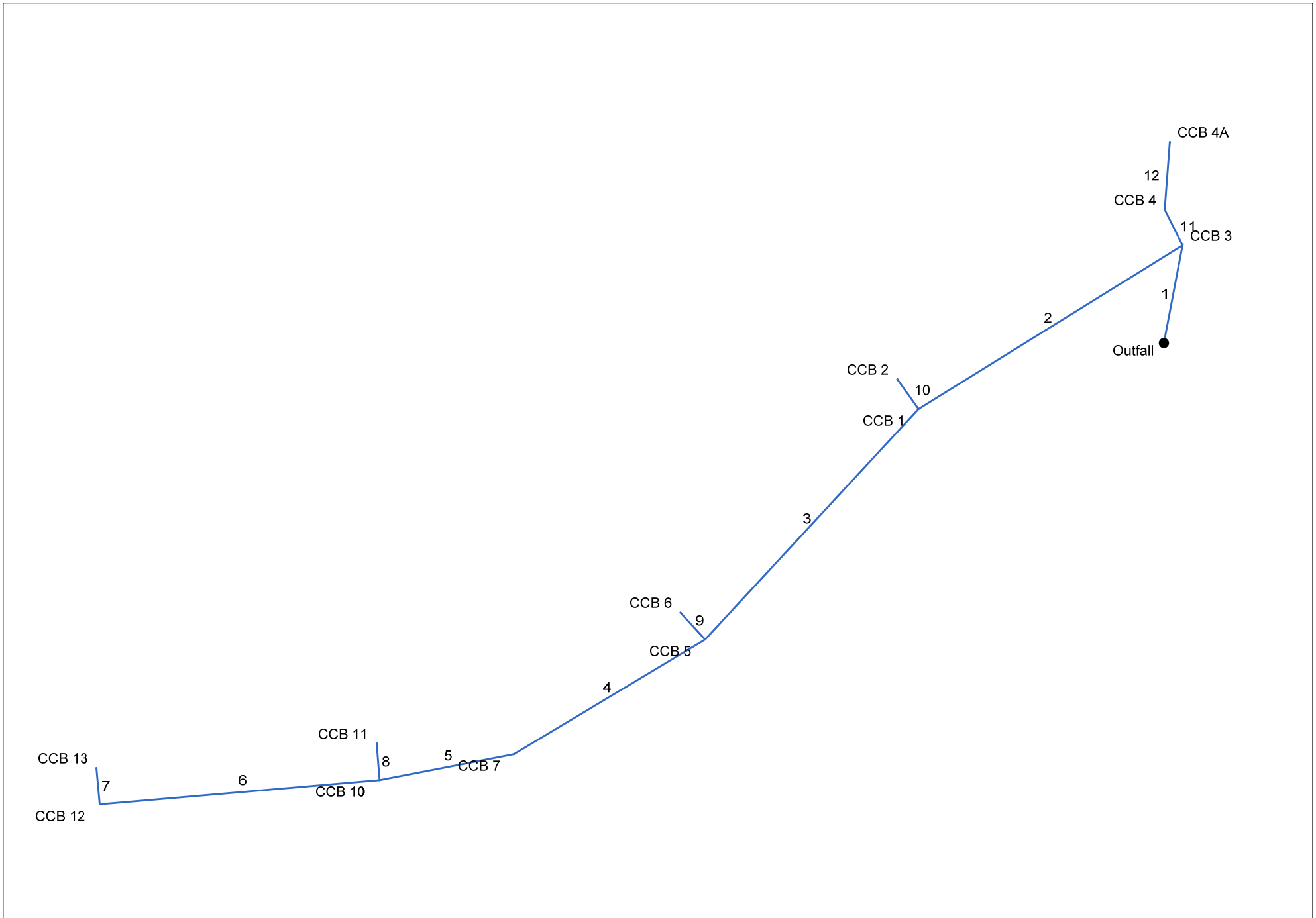
MAP NUMBER
09001C0270F

EFFECTIVE DATE
JUNE 18, 2010

Federal Emergency Management Agency

STORM DRAINAGE COMPUTATIONS

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: System 140.stm	Number of lines: 12	Date: 8/1/2014

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	60.671	-79.253	Comb	0.00	0.05	0.90	5.0	407.00	4.94	410.00	15	Cir	0.013	1.50	415.17	CCB 3-OUTFALL
2	1	188.839	-132.655	Comb	0.00	0.07	0.74	5.0	410.30	1.43	413.00	15	Cir	0.013	1.50	417.55	CCB 1-CCB 3
3	2	191.222	-15.449	Comb	0.00	0.05	0.76	5.0	413.20	2.20	417.40	15	Cir	0.013	1.50	421.41	CCB 5-CCB 1
4	3	135.575	16.321	Comb	0.00	0.10	0.61	5.0	417.80	5.75	425.60	15	Cir	0.013	0.59	429.48	CCB 7-CCB 5
5	4	83.023	20.045	Comb	0.00	0.43	0.36	5.0	426.20	7.11	432.10	15	Cir	0.013	1.50	435.91	CCB 10-CCB 7
6	5	170.575	6.024	Comb	0.00	0.66	0.44	5.0	432.30	5.28	441.30	15	Cir	0.013	1.50	445.61	CCB 12-CCB 10
7	6	22.205	89.728	Comb	0.00	0.12	0.75	5.0	441.50	0.90	441.70	15	Cir	0.013	1.00	445.62	CCB 13- CCB 12
8	5	22.442	96.257	Comb	0.00	0.21	0.65	5.0	432.30	0.89	432.50	15	Cir	0.013	1.00	435.90	CCB 11-CCB 10
9	3	22.225	94.932	Comb	0.00	0.08	0.73	16.0	417.80	0.90	418.00	15	Cir	0.013	1.00	421.39	CCB 6-CCB 5
10	2	22.225	86.569	Comb	0.00	0.38	0.52	5.0	413.20	0.90	413.40	15	Cir	0.013	1.00	417.09	CCB 2-CCB 1
11	1	24.313	-37.114	Comb	0.00	2.08	0.35	5.0	410.30	2.88	411.00	15	Cir	0.013	0.85	415.65	CCB 4-CCB 3
12	11	41.234	30.772	Comb	0.00	0.45	0.90	5.0	411.20	1.70	411.90	15	Cir	0.013	1.00	417.60	CCB 4A- CCB 4

Project File: System 140.stm

Number of lines: 12

Date: 8/1/2014

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	60.671	0.05	4.68	0.90	0.05	2.26	5.0	17.6	3.7	8.45	14.36	9.70	15	4.94	407.00	410.00	407.69	411.13	408.44	415.17	CCB 3-OUTFALL
2	1	188.839	0.07	2.10	0.74	0.05	1.08	5.0	16.9	3.8	4.12	7.72	4.78	15	1.43	410.30	413.00	411.13	413.82	415.17	417.55	CCB 1-CCB 3
3	2	191.222	0.05	1.65	0.76	0.04	0.83	5.0	16.3	3.9	3.23	9.57	4.85	15	2.20	413.20	417.40	413.82	418.12	417.55	421.41	CCB 5-CCB 1
4	3	135.575	0.10	1.52	0.61	0.06	0.73	5.0	6.1	5.7	4.16	15.49	7.77	15	5.75	417.80	425.60	418.24	426.43	421.41	429.48	CCB 7-CCB 5
5	4	83.023	0.43	1.42	0.36	0.15	0.67	5.0	5.9	5.7	3.85	17.21	7.99	15	7.11	426.20	432.10	426.60	432.89	429.48	435.91	CCB 10-CCB 7
6	5	170.575	0.66	0.78	0.44	0.29	0.38	5.0	5.2	5.9	2.26	14.83	3.91	15	5.28	432.30	441.30	432.89	441.90	435.91	445.61	CCB 12-CCB 10
7	6	22.205	0.12	0.12	0.75	0.09	0.09	5.0	5.0	6.0	0.54	6.13	2.07	15	0.90	441.50	441.70	441.90	441.99	445.61	445.62	CCB 13- CCB 12
8	5	22.442	0.21	0.21	0.65	0.14	0.14	5.0	5.0	6.0	0.82	6.10	2.14	15	0.89	432.30	432.50	432.89	432.85	435.91	435.90	CCB 11-CCB 10
9	3	22.225	0.08	0.08	0.73	0.06	0.06	16.0	16.0	3.9	0.23	6.13	1.47	15	0.90	417.80	418.00	418.12	418.18	421.41	421.39	CCB 6-CCB 5
10	2	22.225	0.38	0.38	0.52	0.20	0.20	5.0	5.0	6.0	1.18	6.13	2.56	15	0.90	413.20	413.40	413.82	413.83	417.55	417.09	CCB 2-CCB 1
11	1	24.313	2.08	2.53	0.35	0.73	1.13	5.0	5.2	5.9	6.72	10.96	6.93	15	2.88	410.30	411.00	411.13	412.04	415.17	415.65	CCB 4-CCB 3
12	11	41.234	0.45	0.45	0.90	0.41	0.41	5.0	5.0	6.0	2.43	8.41	3.37	15	1.70	411.20	411.90	412.04	412.52	415.65	417.60	CCB 4A- CCB 4

Project File: System 140.stm

Number of lines: 12

Run Date: 8/1/2014

NOTES:Intensity = 54.74 / (Inlet time + 10.80) ^ 0.80; Return period =Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CCB 3	0.27	4.50	1.92	2.85	Comb	4.0	2.73	0.00	2.31	1.35	0.100	2.53	0.020	0.020	0.013	0.16	7.81	0.16	7.81	0.0	Off
2	CCB 1	0.31	0.29	0.37	0.22	Comb	4.0	2.73	0.00	2.31	1.35	0.010	2.53	0.020	0.020	0.013	0.11	5.56	0.11	5.56	0.0	1
3	CCB 5	0.23	0.52	0.46	0.29	Comb	4.0	2.73	0.00	2.31	1.35	0.045	2.53	0.020	0.020	0.013	0.09	4.56	0.09	4.56	0.0	2
4	CCB 7	0.37	0.85	0.69	0.52	Comb	4.0	2.73	0.00	2.31	1.35	0.080	2.53	0.020	0.020	0.013	0.10	4.91	0.10	4.91	0.0	3
5	CCB 10	0.93	0.84	0.92	0.85	Comb	4.0	2.73	0.00	2.31	1.35	0.080	2.53	0.020	0.020	0.013	0.11	5.66	0.11	5.66	0.0	4
6	CCB 12	1.74	0.00	0.90	0.84	Comb	4.0	2.73	0.00	2.31	1.35	0.070	2.53	0.020	0.020	0.013	0.12	5.76	0.12	5.76	0.0	5
7	CCB 13	0.54	0.00	0.37	0.17	Comb	4.0	2.73	0.00	2.31	1.35	0.070	2.53	0.020	0.020	0.013	0.07	3.70	0.07	3.70	0.0	8
8	CCB 11	0.82	0.17	0.60	0.40	Comb	4.0	2.73	0.00	2.31	1.35	0.080	2.53	0.020	0.020	0.013	0.09	4.56	0.09	4.56	0.0	9
9	CCB 6	0.23	0.40	0.40	0.22	Comb	4.0	2.73	0.00	2.31	1.35	0.045	2.53	0.020	0.020	0.013	0.09	4.26	0.09	4.26	0.0	10
10	CCB 2	1.18	0.22	0.71	0.70	Comb	4.0	2.73	0.00	2.31	1.35	0.010	2.53	0.020	0.020	0.013	0.15	7.61	0.15	7.61	0.0	11
11	CCB 4	4.36	1.94	2.03	4.27	Comb	4.0	2.73	0.00	2.31	1.35	0.010	2.53	0.020	0.020	0.013	0.27	13.36	0.27	13.36	0.0	1
12	CCB 4A	2.43	0.00	1.18	1.24	Comb	4.0	2.73	0.00	2.31	1.35	0.100	2.53	0.020	0.020	0.013	0.12	6.06	0.12	6.06	0.0	11

Project File: System 140.stm | Number of lines: 12 | Run Date: 8/1/2014

NOTES: Inlet N-Values = 0.016; Intensity = 54.74 / (Inlet time + 10.80) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

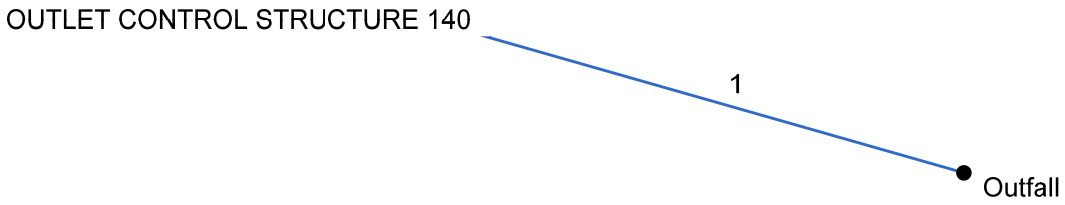
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	15	8.45	407.00	407.69	0.69	0.69	12.17	0.81	408.50	0.000	60.671	410.00	411.13	1.13**	1.17	7.23	0.81	411.95	0.000	0.000	n/a	1.50	1.22
2	15	4.12	410.30	411.13	0.83	0.85	4.73	0.36	411.50	0.000	188.839	413.00	413.82 j	0.82**	0.85	4.82	0.36	414.18	0.000	0.000	n/a	1.50	n/a
3	15	3.23	413.20	413.82	0.62	0.61	5.30	0.30	414.12	0.000	191.222	417.40	418.12	0.72**	0.74	4.39	0.30	418.42	0.000	0.000	n/a	1.50	0.45
4	15	4.16	417.80	418.24	0.44*	0.39	10.70	0.36	418.61	0.000	135.575	425.60	426.43	0.83**	0.86	4.84	0.36	426.79	0.000	0.000	n/a	0.59	0.22
5	15	3.85	426.20	426.60	0.40*	0.34	11.30	0.34	426.94	0.000	83.023	432.10	432.89	0.79**	0.82	4.69	0.34	433.23	0.000	0.000	n/a	1.50	0.51
6	15	2.26	432.30	432.89	0.59	0.57	3.94	0.23	433.13	0.000	170.575	441.30	441.90	0.60**	0.58	3.88	0.23	442.13	0.000	0.000	n/a	1.50	0.35
7	15	0.54	441.50	441.90	0.40	0.21	1.59	0.10	442.00	0.000	22.205	441.70	441.99 j	0.29**	0.21	2.55	0.10	442.09	0.000	0.000	n/a	1.00	n/a
8	15	0.82	432.30	432.89	0.59	0.29	1.43	0.13	433.02	0.000	22.442	432.50	432.85 j	0.35**	0.29	2.86	0.13	432.98	0.000	0.000	n/a	1.00	0.13
9	15	0.23	417.80	418.12	0.32	0.11	0.91	0.06	418.19	0.000	22.225	418.00	418.18 j	0.18**	0.11	2.03	0.06	418.25	0.000	0.000	n/a	1.00	n/a
10	15	1.18	413.20	413.82	0.62	0.37	1.95	0.16	413.98	0.000	22.225	413.40	413.83 j	0.43**	0.37	3.18	0.16	413.99	0.000	0.000	n/a	1.00	0.16
11	15	6.72	410.30	411.13	0.83	0.87	7.72	0.59	411.72	0.000	24.313	411.00	412.04	1.04**	1.09	6.15	0.59	412.63	0.000	0.000	n/a	0.85	0.50
12	15	2.43	411.20	412.04	0.84	0.61	2.76	0.25	412.29	0.000	41.234	411.90	412.52 j	0.62**	0.61	3.97	0.25	412.77	0.000	0.000	n/a	1.00	0.25

Project File: System 140.stm | Number of lines: 12 | Run Date: 8/1/2014

Notes: * depth assumed.; ** Critical depth.; j-Line contains hyd. jump. ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: System 140 Outlet.stm	Number of lines: 1	Date: 8/1/2014

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	76.752	-164.324	MH	7.00	0.00	0.00	0.0	402.00	1.30	403.00	18	Cir	0.013	1.00	409.00	OCS 140-Outfall

Project File: System 140 Outlet.stm | Number of lines: 1 | Date: 8/1/2014

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	76.752	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	7.00	11.99	6.25	18	1.30	402.00	403.00	402.82	404.02	403.71	409.00	OCS 140-Outfall

Project File: System 140 Outlet.stm | Number of lines: 1 | Run Date: 8/1/2014

NOTES:Intensity = 106.59 / (Inlet time + 17.00) ^ 0.85; Return period =Yrs. 100 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	OUTLET CONTR	7.00*	0.00	0.00	7.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: System 140 Outlet.stm | Number of lines: 1 | Run Date: 8/1/2014

NOTES: Inlet N-Values = 0.016; Intensity = 106.59 / (Inlet time + 17.00) ^ 0.85; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

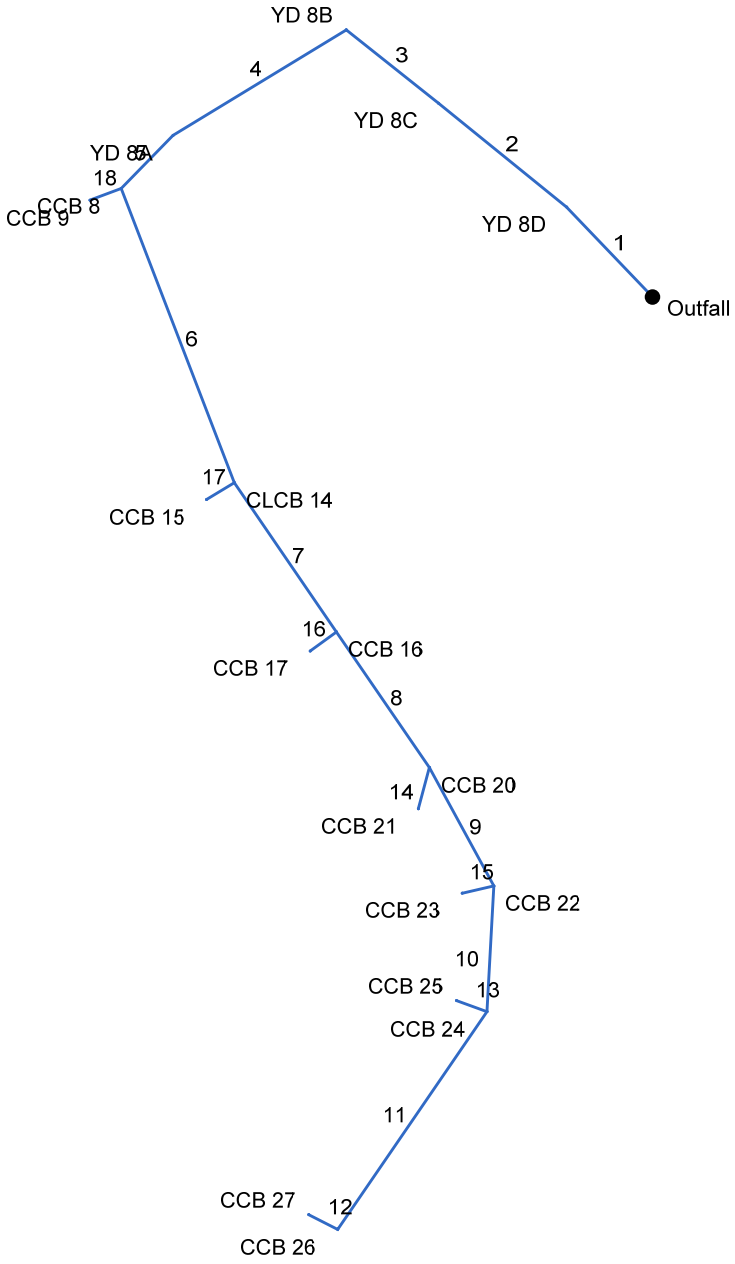
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	18	7.00	402.00	402.82	0.82	0.99	7.04	0.46	403.29	0.000	76.752	403.00	404.02	1.02**	1.28	5.45	0.46	404.49	0.000	0.000	n/a	1.00	n/a

Project File: System 140 Outlet.stm | Number of lines: 1 | Run Date: 8/1/2014

Notes: ; ** Critical depth. ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: System 150.stm	Number of lines: 18	Date: 8/1/2014

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	85.242	-133.574	DrGrt	0.00	0.62	0.34	10.0	405.80	2.35	407.80	18	Cir	0.013	0.50	412.30	YD 8D-OUTFALL
2	1	112.944	-7.277	DrGrt	0.00	0.28	0.28	10.0	408.00	1.59	409.80	18	Cir	0.013	0.50	414.00	YD 8C-YD 8D
3	2	80.676	-0.554	DrGrt	0.00	0.12	0.29	10.0	410.30	4.59	414.00	15	Cir	0.013	1.43	422.30	YD 8B-YD 8C
4	3	138.781	-70.030	DrGrt	0.00	0.12	0.52	5.0	414.00	9.58	427.30	15	Cir	0.013	0.50	431.30	YD-8A-YD 8B
5	4	50.863	-14.413	Comb	0.00	0.24	0.56	5.0	427.30	4.52	429.60	15	Cir	0.013	1.39	433.54	CCB 8-YD 8A
6	5	216.294	-65.112	Grate	0.00	0.14	0.59	5.0	429.60	4.85	440.10	15	Cir	0.013	1.48	444.09	CLCB 14-CCB 8
7	6	123.894	-13.292	Comb	0.00	0.06	0.67	5.0	440.10	2.02	442.60	15	Cir	0.013	1.50	446.57	CCB 16- CLCB 14
8	7	112.750	-0.108	Comb	0.00	0.05	0.66	5.0	442.60	2.13	445.00	15	Cir	0.013	1.19	448.83	CCB 20-CCB 16
9	8	92.474	5.911	Comb	0.00	0.07	0.57	5.0	445.00	1.73	446.60	15	Cir	0.013	1.50	450.60	CCB 22-CCB 20
10	9	86.360	31.544	Comb	0.00	0.30	0.46	5.0	446.60	6.02	451.80	15	Cir	0.013	1.50	455.77	CCB 24-CCB 22
11	10	181.093	31.249	Comb	0.00	0.44	0.50	5.0	451.80	5.91	462.50	15	Cir	0.013	1.49	466.44	CCB 26-CCB 24
12	11	22.185	82.984	Comb	0.00	0.20	0.81	5.0	462.50	0.90	462.70	15	Cir	0.013	1.00	466.45	CCB 27-CCB 26
13	10	22.223	106.853	Comb	0.00	0.18	0.54	5.0	451.80	0.90	452.00	15	Cir	0.013	1.00	455.78	CCB 25- CCB 24
14	8	29.342	49.354	Comb	0.00	0.23	0.34	5.0	445.00	1.36	445.40	15	Cir	0.013	1.00	449.21	CCB 21- CCB 20
15	9	22.272	105.575	Comb	0.00	0.53	0.42	9.0	446.60	0.90	446.80	15	Cir	0.013	1.00	450.61	CCB 23-CCB 22
16	7	22.213	88.002	Comb	0.00	0.73	0.42	5.0	442.60	0.90	442.80	15	Cir	0.013	1.00	446.59	CCB 17- CCB 16
17	6	22.222	79.865	Comb	0.00	0.44	0.47	5.0	440.10	0.90	440.30	15	Cir	0.013	1.00	444.08	CCB 15-CLCB 14
18	5	22.863	25.127	Comb	0.00	1.03	0.39	5.0	429.60	0.87	429.80	15	Cir	0.013	1.00	433.55	CCB 9-CCB 8

Project File: System 150.stm

Number of lines: 18

Date: 8/1/2014

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	85.242	0.62	5.78	0.34	0.21	2.55	10.0	11.5	4.5	11.57	16.09	8.52	18	2.35	405.80	407.80	406.74	409.10	407.24	412.30	YD 8D-OUTFALL
2	1	112.944	0.28	5.16	0.28	0.08	2.34	10.0	11.3	4.6	10.71	13.26	7.27	18	1.59	408.00	409.80	409.10	411.06	412.30	414.00	YD 8C-YD 8D
3	2	80.676	0.12	4.88	0.29	0.03	2.26	10.0	11.1	4.6	10.40	13.83	10.50	15	4.59	410.30	414.00	411.11	415.19	414.00	422.30	YD 8B-YD 8C
4	3	138.781	0.12	4.76	0.52	0.06	2.23	5.0	10.9	4.6	10.34	19.99	8.57	15	9.58	414.00	427.30	415.19	428.49	422.30	431.30	YD-8A-YD 8B
5	4	50.863	0.24	4.64	0.56	0.13	2.16	5.0	10.8	4.7	10.09	13.73	8.38	15	4.52	427.30	429.60	428.49	430.79	431.30	433.54	CCB 8-YD 8A
6	5	216.294	0.14	3.37	0.59	0.08	1.63	5.0	10.2	4.8	7.75	14.23	6.60	15	4.85	429.60	440.10	430.79	441.20	433.54	444.09	CLCB 14-CCB 8
7	6	123.894	0.06	2.79	0.67	0.04	1.34	5.0	9.9	4.8	6.46	9.17	5.82	15	2.02	440.10	442.60	441.20	443.62	444.09	446.57	CCB 16- CLCB 14
8	7	112.750	0.05	2.00	0.66	0.03	0.99	5.0	9.5	4.9	4.86	9.42	4.85	15	2.13	442.60	445.00	443.62	445.89	446.57	448.83	CCB 20-CCB 16
9	8	92.474	0.07	1.72	0.57	0.04	0.88	5.0	9.2	5.0	4.37	8.49	4.80	15	1.73	445.00	446.60	445.89	447.45	448.83	450.60	CCB 22-CCB 20
10	9	86.360	0.30	1.12	0.46	0.14	0.62	5.0	6.0	5.7	3.51	15.85	4.25	15	6.02	446.60	451.80	447.45	452.56	450.60	455.77	CCB 24-CCB 22
11	10	181.093	0.44	0.64	0.50	0.22	0.38	5.0	5.2	5.9	2.27	15.70	3.41	15	5.91	451.80	462.50	452.56	463.10	455.77	466.44	CCB 26-CCB 24
12	11	22.185	0.20	0.20	0.81	0.16	0.16	5.0	5.0	6.0	0.97	6.13	2.33	15	0.90	462.50	462.70	463.10	463.09	466.44	466.45	CCB 27-CCB 26
13	10	22.223	0.18	0.18	0.54	0.10	0.10	5.0	5.0	6.0	0.58	6.13	1.68	15	0.90	451.80	452.00	452.56	452.30	455.77	455.78	CCB 25- CCB 24
14	8	29.342	0.23	0.23	0.34	0.08	0.08	5.0	5.0	6.0	0.47	7.54	1.48	15	1.36	445.00	445.40	445.89	445.67	448.83	449.21	CCB 21- CCB 20
15	9	22.272	0.53	0.53	0.42	0.22	0.22	9.0	9.0	5.0	1.11	6.12	2.19	15	0.90	446.60	446.80	447.45	447.21	450.60	450.61	CCB 23-CCB 22
16	7	22.213	0.73	0.73	0.42	0.31	0.31	5.0	5.0	6.0	1.84	6.13	2.67	15	0.90	442.60	442.80	443.62	443.34	446.57	446.59	CCB 17- CCB 16
17	6	22.222	0.44	0.44	0.47	0.21	0.21	5.0	5.0	6.0	1.24	6.13	2.15	15	0.90	440.10	440.30	441.20	440.74	444.09	444.08	CCB 15-CLCB 14
18	5	22.863	1.03	1.03	0.39	0.40	0.40	5.0	5.0	6.0	2.41	6.04	2.98	15	0.87	429.60	429.80	430.79	430.42	433.54	433.55	CCB 9-CCB 8

Project File: System 150.stm

Number of lines: 18

Run Date: 8/1/2014

NOTES:Intensity = 54.74 / (Inlet time + 10.80) ^ 0.80; Return period =Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	YD 8D	1.01	0.56	0.49	1.08	DrGrt	0.0	0.00	0.00	1.23	1.23	0.050	2.00	0.050	0.050	0.013	0.10	6.04	0.10	6.04	0.0	Off
2	YD 8C	0.38	0.49	0.30	0.56	DrGrt	0.0	0.00	0.00	1.23	1.23	0.050	2.00	0.050	0.050	0.013	0.08	5.24	0.08	5.24	0.0	1
3	YD 8B	0.17	0.61	0.29	0.49	DrGrt	0.0	0.00	0.00	1.23	1.23	0.050	2.00	0.050	0.050	0.013	0.07	4.84	0.07	4.84	0.0	2
4	YD 8A	0.37	0.71	0.48	0.61	DrGrt	0.0	0.00	0.00	1.23	1.23	0.100	2.00	0.100	0.100	0.013	0.08	3.62	0.08	3.62	0.0	3
5	CCB 8	0.81	0.62	0.71	0.71	Comb	4.0	2.31	0.00	2.31	1.35	0.030	2.53	0.020	0.020	0.013	0.13	6.26	0.13	6.26	0.0	4
6	CLCB 14	0.49	0.77	0.64	0.62	Grate	0.0	0.00	0.00	2.31	1.35	0.020	2.53	0.020	0.020	0.013	0.13	6.46	0.13	6.46	0.0	5
7	CCB 16	0.24	1.24	0.71	0.77	Comb	4.0	2.31	0.00	2.31	1.35	0.020	2.53	0.020	0.020	0.013	0.14	6.81	0.14	6.81	0.0	6
8	CCB 20	0.20	1.98	0.95	1.24	Comb	4.0	2.31	0.00	2.31	1.35	0.020	2.53	0.020	0.020	0.013	0.16	7.91	0.16	7.91	0.0	7
9	CCB 22	0.24	0.71	0.54	0.41	Comb	4.0	2.31	0.00	2.31	1.35	0.042	2.53	0.020	0.020	0.013	0.10	5.06	0.10	5.06	0.0	8
10	CCB 24	0.83	0.65	0.77	0.71	Comb	4.0	2.31	0.00	2.31	1.35	0.065	2.53	0.020	0.020	0.013	0.11	5.46	0.11	5.46	0.0	9
11	CCB 26	1.32	0.00	0.67	0.65	Comb	4.0	2.31	0.00	2.31	1.35	0.030	2.53	0.020	0.020	0.013	0.12	6.06	0.12	6.06	0.0	10
12	CCB 27	0.97	0.00	0.53	0.44	Comb	4.0	2.31	0.00	2.31	1.35	0.030	2.53	0.020	0.020	0.013	0.11	5.41	0.11	5.41	0.0	13
13	CCB 25	0.58	0.44	0.58	0.44	Comb	4.0	2.31	0.00	2.31	1.35	0.065	2.53	0.020	0.020	0.013	0.10	4.76	0.10	4.76	0.0	15
14	CCB 21	0.47	0.78	0.63	0.61	Comb	4.0	2.31	0.00	2.31	1.35	0.020	2.53	0.020	0.020	0.013	0.13	6.41	0.13	6.41	0.0	16
15	CCB 23	1.11	0.44	0.77	0.78	Comb	4.0	2.31	0.00	2.31	1.35	0.042	2.53	0.020	0.020	0.013	0.12	6.06	0.12	6.06	0.0	14
16	CCB 17	1.84	0.61	1.03	1.42	Comb	4.0	2.31	0.00	2.31	1.35	0.020	2.53	0.020	0.020	0.013	0.17	8.26	0.17	8.26	0.0	17
17	CCB 15	1.24	1.42	1.09	1.58	Comb	4.0	2.31	0.00	2.31	1.35	0.020	2.53	0.020	0.020	0.013	0.17	8.51	0.17	8.51	0.0	8
18	CCB 9	2.41	0.00	1.04	1.37	Comb	4.0	2.31	0.00	2.31	1.35	0.030	2.53	0.020	0.020	0.013	0.15	7.61	0.15	7.61	0.0	Off

Project File: System 150.stm | Number of lines: 18 | Run Date: 8/1/2014

NOTES: Inlet N-Values = 0.016; Intensity = 54.74 / (Inlet time + 10.80) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

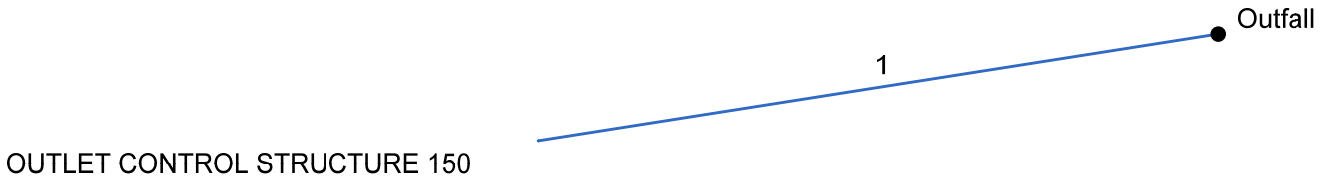
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	18	11.57	405.80	406.74	0.94	1.17	9.91	0.79	407.53	0.000	85.242	407.80	409.10	1.30**	1.62	7.13	0.79	409.89	0.000	0.000	n/a	0.50	0.40
2	18	10.71	408.00	409.10	1.10	1.38	7.75	0.72	409.81	0.000	112.944	409.80	411.06	1.26**	1.58	6.78	0.72	411.77	0.000	0.000	n/a	0.50	n/a
3	15	10.40	410.30	411.11	0.81*	0.84	12.37	1.16	412.26	0.000	80.676	414.00	415.19	1.19**	1.21	8.62	1.16	416.35	0.000	0.000	n/a	1.43	n/a
4	15	10.34	414.00	415.19	1.19	1.21	8.57	1.14	416.34	0.000	138.781	427.30	428.49 j	1.19**	1.21	8.58	1.14	429.63	0.000	0.000	n/a	0.50	n/a
5	15	10.09	427.30	428.49	1.19	1.20	8.37	1.09	429.58	0.000	50.863	429.60	430.79 j	1.19**	1.20	8.39	1.09	431.88	0.000	0.000	n/a	1.39	n/a
6	15	7.75	429.60	430.79	1.19	1.15	6.44	0.71	431.50	0.000	216.294	440.10	441.20 j	1.10**	1.15	6.77	0.71	441.91	0.000	0.000	n/a	1.48	1.05
7	15	6.46	440.10	441.20	1.10	1.08	5.64	0.56	441.76	0.000	123.894	442.60	443.62 j	1.02**	1.08	6.01	0.56	444.18	0.000	0.000	n/a	1.50	n/a
8	15	4.86	442.60	443.62	1.02	0.94	4.52	0.42	444.04	0.000	112.750	445.00	445.89 j	0.89**	0.94	5.18	0.42	446.31	0.000	0.000	n/a	1.19	n/a
9	15	4.37	445.00	445.89	0.89	0.88	4.66	0.38	446.27	0.000	92.474	446.60	447.45 j	0.85**	0.88	4.94	0.38	447.83	0.000	0.000	n/a	1.50	0.57
10	15	3.51	446.60	447.45	0.85	0.78	3.97	0.32	447.76	0.000	86.360	451.80	452.56 j	0.76**	0.78	4.53	0.32	452.87	0.000	0.000	n/a	1.50	0.48
11	15	2.27	451.80	452.56	0.76	0.58	2.93	0.23	452.79	0.000	181.093	462.50	463.10 j	0.60**	0.58	3.89	0.23	463.34	0.000	0.000	n/a	1.49	0.35
12	15	0.97	462.50	463.10	0.60	0.32	1.66	0.14	463.24	0.000	22.185	462.70	463.09 j	0.39**	0.32	3.00	0.14	463.23	0.000	0.000	n/a	1.00	n/a
13	15	0.58	451.80	452.56	0.76	0.22	0.75	0.11	452.66	0.000	22.223	452.00	452.30	0.30**	0.22	2.60	0.11	452.40	0.000	0.000	n/a	1.00	n/a
14	15	0.47	445.00	445.89	0.89	0.19	0.50	0.09	445.99	0.000	29.342	445.40	445.67	0.27**	0.19	2.45	0.09	445.76	0.000	0.000	n/a	1.00	0.09
15	15	1.11	446.60	447.45	0.85	0.36	1.26	0.15	447.60	0.000	22.272	446.80	447.21	0.41**	0.36	3.13	0.15	447.37	0.000	0.000	n/a	1.00	n/a
16	15	1.84	442.60	443.62	1.02	0.51	1.71	0.20	443.83	0.000	22.213	442.80	443.34	0.54**	0.51	3.63	0.20	443.54	0.000	0.000	n/a	1.00	n/a
17	15	1.24	440.10	441.20	1.10	0.38	1.08	0.16	441.36	0.000	22.222	440.30	440.74	0.44**	0.38	3.22	0.16	440.90	0.000	0.000	n/a	1.00	n/a
18	15	2.41	429.60	430.79	1.19	0.61	2.00	0.24	431.03	0.000	22.863	429.80	430.42	0.62**	0.61	3.96	0.24	430.66	0.000	0.000	n/a	1.00	0.24

Project File: System 150.stm | Number of lines: 18 | Run Date: 8/1/2014

Notes: * depth assumed.; ** Critical depth.; j-Line contains hyd. jump. ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: System 150 Outlet.stm	Number of lines: 1	Date: 8/1/2014

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	100.559	170.867	MH	6.00	0.00	0.00	0.0	399.50	0.50	400.00	24	Cir	0.013	1.00	407.00	OCS 150-Outfall

Project File: System 150 Outlet.stm | Number of lines: 1 | Date: 8/1/2014

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	100.559	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	6.00	15.95	4.66	24	0.50	399.50	400.00	400.35	400.87	401.75	407.00	OCS 150-Outfall

Project File: System 150 Outlet.stm | Number of lines: 1 | Run Date: 8/1/2014

NOTES:Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period =Yrs. 100 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	OUTLET CONTR	6.00*	0.00	0.00	6.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: System 150 Outlet.stm | Number of lines: 1 | Run Date: 8/1/2014

NOTES: Inlet N-Values = 0.016; Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

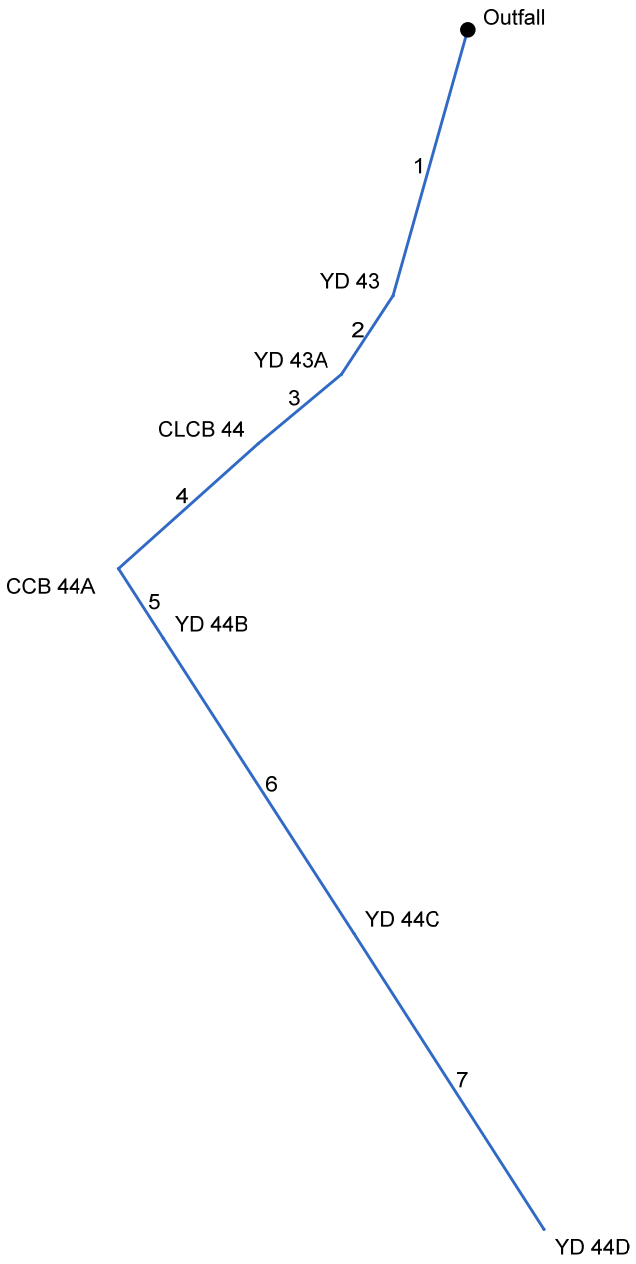
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	24	6.00	399.50	400.35	0.85	1.27	4.72	0.33	400.68	0.000	100.559	400.00	400.87	0.87**	1.30	4.61	0.33	401.20	0.000	0.000	n/a	1.00	0.33

Project File: System 150 Outlet.stm | Number of lines: 1 | Run Date: 8/1/2014

Notes: ; ** Critical depth. ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: System 210.stm	Number of lines: 7	Date: 8/1/2014

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	143.372	105.649	DrGrt	0.00	0.27	0.42	5.0	402.00	6.97	412.00	15	Cir	0.013	0.53	416.50	YD 43-Outfall
2	1	48.621	17.524	DrGrt	0.00	0.16	0.42	5.0	413.20	3.70	415.00	15	Cir	0.013	0.51	419.70	YD 43A-YD 43
3	2	56.223	16.870	Grate	0.00	0.09	0.90	5.0	415.00	7.36	419.14	15	Cir	0.013	0.50	423.10	CLCB 44- YD 43A
4	3	97.014	-1.982	Comb	0.00	0.15	0.73	10.0	418.50	0.52	419.00	15	Cir	0.013	1.48	422.50	CCB 44A-CLCB 44
5	4	42.837	-80.701	DrGrt	0.00	0.91	0.36	5.0	418.70	0.70	419.00	15	Cir	0.013	0.50	423.54	YD 44B-CCB 44A
6	5	182.243	-0.095	DrGrt	0.00	0.18	0.65	5.0	419.00	7.13	432.00	15	Cir	0.013	0.50	436.00	YD 44C-YD 44B
7	6	182.263	0.123	DrGrt	0.00	0.52	0.57	5.0	432.00	7.41	445.50	15	Cir	0.013	1.00	448.50	YD 44D-YD 44C

Project File: System 210.stm

Number of lines: 7

Date: 8/1/2014

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	143.372	0.27	2.28	0.42	0.11	1.11	5.0	10.8	4.7	5.19	17.05	8.76	15	6.97	402.00	412.00	402.47	412.92	403.44	416.50	YD 43-Outfall
2	1	48.621	0.16	2.01	0.42	0.07	1.00	5.0	10.7	4.7	4.68	12.42	7.25	15	3.70	413.20	415.00	413.73	415.88	416.50	419.70	YD 43A-YD 43
3	2	56.223	0.09	1.85	0.90	0.08	0.93	5.0	10.5	4.7	4.39	17.52	4.87	15	7.36	415.00	419.14	415.88	419.99	419.70	423.10	CLCB 44- YD 43A
4	3	97.014	0.15	1.76	0.73	0.11	0.85	10.0	10.0	4.8	4.09	4.64	3.33	15	0.52	418.50	419.00	420.18	420.57	423.10	422.50	CCB 44A-CLCB 4
5	4	42.837	0.91	1.61	0.36	0.33	0.74	5.0	7.0	5.5	4.04	5.40	3.29	15	0.70	418.70	419.00	420.82	420.99	422.50	423.54	YD 44B-CCB 44A
6	5	182.243	0.18	0.70	0.65	0.12	0.41	5.0	5.9	5.7	2.37	17.25	2.93	15	7.13	419.00	432.00	421.08	432.61	423.54	436.00	YD 44C-YD 44B
7	6	182.263	0.52	0.52	0.57	0.30	0.30	5.0	5.0	6.0	1.78	17.57	3.28	15	7.41	432.00	445.50	432.61	446.03	436.00	448.50	YD 44D-YD 44C

Project File: System 210.stm | Number of lines: 7 | Run Date: 8/1/2014

NOTES:Intensity = 54.74 / (Inlet time + 10.80) ^ 0.80; Return period =Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	YD 43	0.68	0.41	0.27	0.81	DrGrt	0.0	0.00	0.00	1.23	1.23	0.090	2.00	0.020	0.020	0.013	0.06	8.10	0.06	8.10	0.0	Off
2	YD 43A	0.40	0.17	0.16	0.41	DrGrt	0.0	0.00	0.00	1.23	1.23	0.090	2.00	0.020	0.020	0.013	0.05	7.10	0.05	7.10	0.0	1
3	CLCB 44	0.49	0.00	0.32	0.17	Grate	0.0	0.00	0.00	2.31	1.35	0.020	2.00	0.020	0.020	0.013	0.09	4.51	0.09	4.51	0.0	2
4	CCB 44A	0.53	3.11	3.63	0.00	Comb	4.0	2.73	3.12	2.31	1.35	Sag	2.00	0.020	0.020	0.000	0.38	19.07	0.38	19.07	0.0	Off
5	YD 44B	1.96	1.69	0.55	3.11	DrGrt	0.0	0.00	0.00	1.23	1.23	0.020	2.00	0.020	0.020	0.013	0.14	16.10	0.14	16.10	0.0	4
6	YD 44C	0.70	1.44	0.45	1.69	DrGrt	0.0	0.00	0.00	1.23	1.23	0.090	2.00	0.020	0.020	0.013	0.08	10.10	0.08	10.10	0.0	5
7	YD 44D	1.78	0.00	0.34	1.44	DrGrt	0.0	0.00	0.00	1.23	1.23	0.030	2.00	0.020	0.020	0.013	0.10	12.10	0.10	12.10	0.0	6

Project File: System 210.stm | Number of lines: 7 | Run Date: 8/1/2014

NOTES: Inlet N-Values = 0.016; Intensity = 54.74 / (Inlet time + 10.80) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

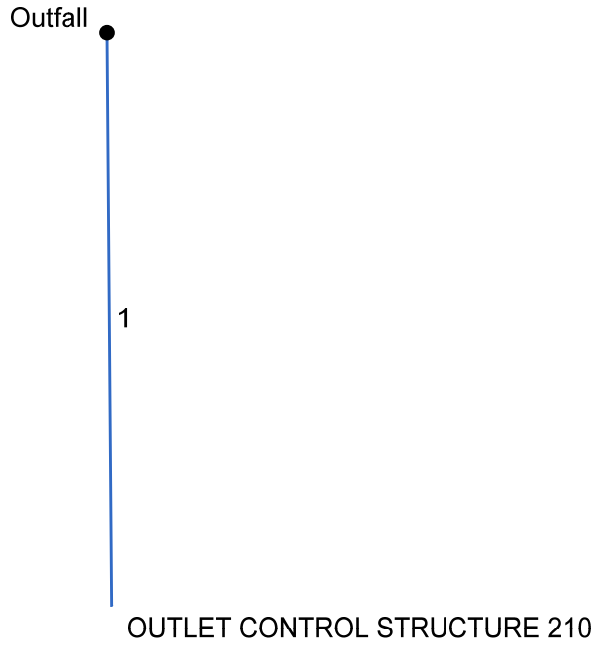
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	15	5.19	402.00	402.47	0.47	0.43	12.18	0.44	402.92	0.000	143.372	412.00	412.92	0.92**	0.97	5.34	0.44	413.37	0.000	0.000	n/a	0.53	n/a
2	15	4.68	413.20	413.73	0.53*	0.50	9.40	0.40	414.13	0.000	48.621	415.00	415.88	0.88**	0.92	5.09	0.40	416.28	0.000	0.000	n/a	0.51	0.21
3	15	4.39	415.00	415.88	0.88	0.89	4.78	0.38	416.26	0.000	56.223	419.14	419.99 j	0.85**	0.89	4.95	0.38	420.37	0.000	0.000	n/a	0.50	0.19
4	15	4.09	418.50	420.18	1.25	1.23	3.33	0.17	420.35	0.401	97.014	419.00	420.57	1.25	1.23	3.33	0.17	420.74	0.401	0.401	0.389	1.48	0.26
5	15	4.04	418.70	420.82	1.25	1.23	3.29	0.17	420.99	0.392	42.837	419.00	420.99	1.25	1.23	3.29	0.17	421.16	0.392	0.392	0.168	0.50	0.08
6	15	2.37	419.00	421.08	1.25	0.60	1.93	0.06	421.13	0.134	182.243	432.00	432.61 j	0.61**	0.60	3.94	0.24	432.86	0.569	0.352	n/a	0.50	0.12
7	15	1.78	432.00	432.61	0.61	0.49	2.96	0.20	432.82	0.000	182.263	445.50	446.03 j	0.53**	0.49	3.59	0.20	446.23	0.000	0.000	n/a	1.00	n/a

Project File: System 210.stm | Number of lines: 7 | Run Date: 8/1/2014

Notes: * depth assumed.; ** Critical depth.; j-Line contains hyd. jump. ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: System 210 Outlet.stm	Number of lines: 1	Date: 8/1/2014

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	71.331	89.551	None	6.00	0.00	0.00	0.0	395.20	2.52	397.00	15	Cir	0.013	1.00	403.00	OCS 210-Outfall

Project File: System 210 Outlet.stm | Number of lines: 1 | Date: 8/1/2014

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	71.331	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	6.00	10.26	7.22	15	2.52	395.20	397.00	395.89	397.99	396.64	403.00	OCS 210-Outfall

Project File: System 210 Outlet.stm | Number of lines: 1 | Run Date: 8/1/2014

NOTES:Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period =Yrs. 100 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	OUTLET CONTR	6.00*	0.00	0.00	6.00	None	0.0	2.31	0.00	2.31	1.35	0.000	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: System 210 Outlet.stm | Number of lines: 1 | Run Date: 8/1/2014

NOTES: Inlet N-Values = 0.016; Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

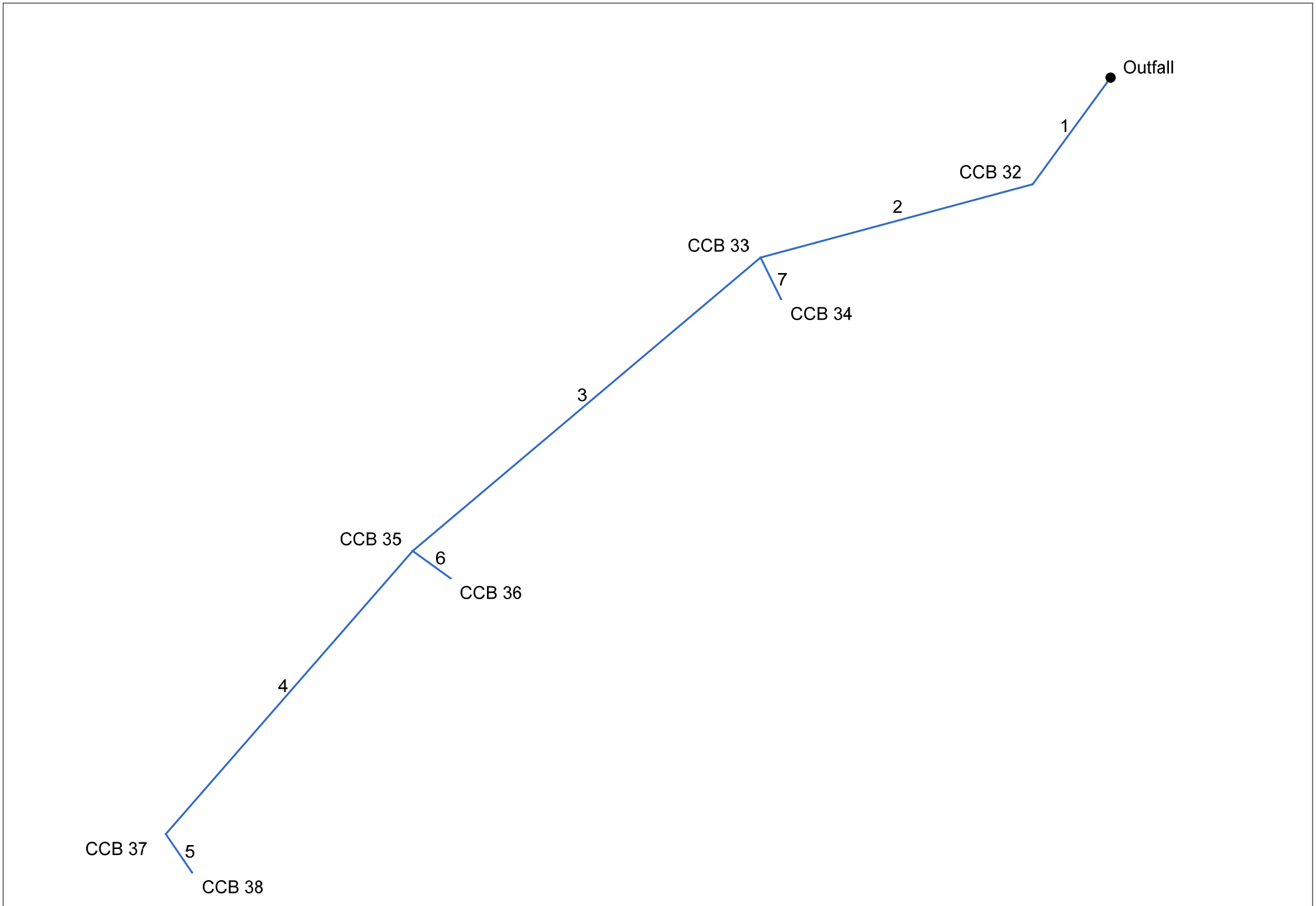
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	15	6.00	395.20	395.89	0.69	0.69	8.68	0.52	396.40	0.000	71.331	397.00	397.99	0.99**	1.04	5.76	0.52	398.51	0.000	0.000	n/a	1.00	0.52

Project File: System 210 Outlet.stm | Number of lines: 1 | Run Date: 8/1/2014

Notes: ; ** Critical depth. ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: System 220A.stm	Number of lines: 7	Date: 8/1/2014

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	63.209	126.040	Comb	0.00	0.04	0.90	5.0	443.00	2.85	444.80	18	Cir	0.013	1.02	451.93	CCB 32-Outfall
2	1	134.655	38.842	Comb	0.00	0.13	0.78	5.0	444.80	1.04	446.20	15	Cir	0.013	1.50	450.51	CCB 33-CCB 32
3	2	217.622	-25.164	Comb	0.00	0.07	0.74	5.0	446.40	1.10	448.80	15	Cir	0.013	1.50	454.27	CCB 35-CCB 33
4	3	179.841	-8.733	Comb	0.00	0.08	0.73	5.0	450.40	4.73	458.90	15	Cir	0.013	1.46	462.88	CCB 37-CCB 35
5	4	22.248	-75.381	Comb	0.00	0.08	0.69	5.0	459.30	0.90	459.50	15	Cir	0.013	1.00	462.87	CCB 38-CCB 37
6	3	22.276	-103.727	Comb	0.00	0.07	0.74	5.0	450.40	0.90	450.60	15	Cir	0.013	1.00	454.30	CCB 36-CCB 35
7	2	22.267	-101.133	Comb	0.00	1.59	0.47	10.0	446.40	0.90	446.60	15	Cir	0.013	1.00	450.50	CCB 34-CCB 33

Project File: System 220A.stm

Number of lines: 7

Date: 8/1/2014

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	63.209	0.04	2.06	0.90	0.04	1.10	5.0	10.5	4.7	5.20	17.72	6.78	18	2.85	443.00	444.80	443.56	445.68	444.71	451.93	CCB 32-Outfall
2	1	134.655	0.13	2.02	0.78	0.10	1.07	5.0	10.1	4.8	5.11	6.58	5.43	15	1.04	444.80	446.20	445.68	447.12	451.93	450.51	CCB 33-CCB 32
3	2	217.622	0.07	0.30	0.74	0.05	0.22	5.0	5.8	5.7	1.25	6.78	2.47	15	1.10	446.40	448.80	447.12	449.24	450.51	454.27	CCB 35-CCB 33
4	3	179.841	0.08	0.16	0.73	0.06	0.11	5.0	5.2	5.9	0.68	14.04	4.30	15	4.73	450.40	458.90	450.59	459.22	454.27	462.88	CCB 37-CCB 35
5	4	22.248	0.08	0.08	0.69	0.06	0.06	5.0	5.0	6.0	0.33	6.12	2.45	15	0.90	459.30	459.50	459.50	459.72	462.88	462.87	CCB 38-CCB 37
6	3	22.276	0.07	0.07	0.74	0.05	0.05	5.0	5.0	6.0	0.31	6.12	2.40	15	0.90	450.40	450.60	450.59	450.82	454.27	454.30	CCB 36-CCB 35
7	2	22.267	1.59	1.59	0.47	0.75	0.75	10.0	10.0	4.8	3.59	6.12	4.76	15	0.90	446.40	446.60	447.12	447.36	450.51	450.50	CCB 34-CCB 33

Project File: System 220A.stm

Number of lines: 7

Run Date: 8/1/2014

NOTES:Intensity = 54.74 / (Inlet time + 10.80) ^ 0.80; Return period =Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CCB 32	0.22	0.00	0.17	0.05	Comb	4.0	2.73	0.00	2.31	1.35	0.025	2.53	0.020	0.020	0.013	0.06	3.20	0.06	3.20	0.0	2
2	CCB 33	0.61	0.17	0.78	0.00	Comb	4.0	2.73	6.24	4.62	1.35	Sag	2.53	0.020	0.020	0.000	0.15	7.28	0.15	7.28	0.0	Off
3	CCB 35	0.31	0.10	0.29	0.12	Comb	4.0	2.73	0.00	2.31	1.35	0.040	2.53	0.020	0.020	0.013	0.07	3.70	0.07	3.70	0.0	2
4	CCB 37	0.35	0.00	0.25	0.10	Comb	4.0	2.73	0.00	2.31	1.35	0.050	2.53	0.020	0.020	0.013	0.07	3.35	0.07	3.35	0.0	3
5	CCB 38	0.33	0.00	0.25	0.08	Comb	4.0	2.73	0.00	2.31	1.35	0.050	2.53	0.020	0.020	0.013	0.07	3.30	0.07	3.30	0.0	6
6	CCB 36	0.31	0.08	0.28	0.12	Comb	4.0	2.73	0.00	2.31	1.35	0.040	2.53	0.020	0.020	0.013	0.07	3.65	0.07	3.65	0.0	7
7	CCB 34	3.59	0.12	3.71	0.00	Comb	4.0	2.73	6.24	4.62	1.35	Sag	2.53	0.020	0.020	0.000	0.39	19.32	0.39	19.32	0.0	Off

Project File: System 220A.stm | Number of lines: 7 | Run Date: 8/1/2014

NOTES: Inlet N-Values = 0.016; Intensity = 54.74 / (Inlet time + 10.80) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

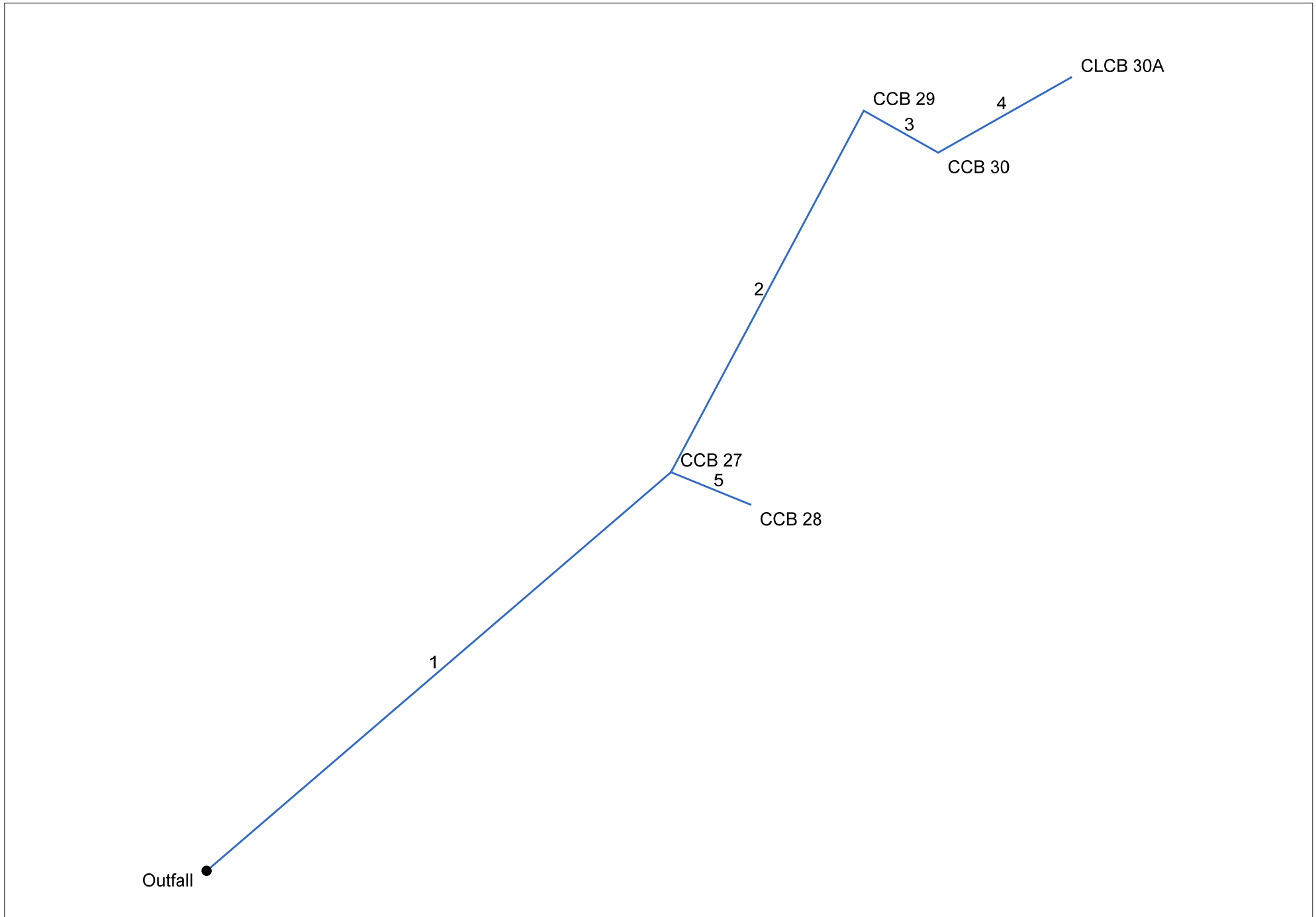
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	18	5.20	443.00	443.56	0.56	0.60	8.71	0.36	443.92	0.000	63.209	444.80	445.68	0.88**	1.07	4.84	0.36	446.04	0.000	0.000	n/a	1.02	0.37
2	15	5.11	444.80	445.68	0.88	0.92	5.55	0.44	446.11	0.000	134.655	446.20	447.12	0.92**	0.96	5.30	0.44	447.55	0.000	0.000	n/a	1.50	n/a
3	15	1.25	446.40	447.12	0.72	0.39	1.72	0.16	447.28	0.000	217.622	448.80	449.24 j	0.44**	0.39	3.23	0.16	449.40	0.000	0.000	n/a	1.50	0.24
4	15	0.68	450.40	450.59	0.19*	0.11	5.89	0.11	450.70	0.000	179.841	458.90	459.22	0.32**	0.25	2.71	0.11	459.34	0.000	0.000	n/a	1.46	0.17
5	15	0.33	459.30	459.50	0.20*	0.12	2.66	0.08	459.58	0.000	22.248	459.50	459.72	0.22**	0.15	2.23	0.08	459.80	0.000	0.000	n/a	1.00	0.08
6	15	0.31	450.40	450.59	0.19*	0.12	2.61	0.08	450.67	0.000	22.276	450.60	450.82	0.22**	0.14	2.20	0.08	450.89	0.000	0.000	n/a	1.00	n/a
7	15	3.59	446.40	447.12	0.72	0.73	4.95	0.32	447.44	0.000	22.267	446.60	447.36	0.76**	0.79	4.57	0.32	447.69	0.000	0.000	n/a	1.00	0.32

Project File: System 220A.stm | Number of lines: 7 | Run Date: 8/1/2014

Notes: * depth assumed.; ** Critical depth.; j-Line contains hyd. jump. ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: System 220B.stm	Number of lines: 5	Date: 8/1/2014

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	159.215	-40.782	Comb	0.00	0.06	0.75	5.0	443.00	1.00	444.60	15	Cir	0.013	1.37	450.98	CCB 27-Outfall
2	1	106.812	-21.259	Comb	0.00	0.04	0.73	5.0	444.80	0.94	445.80	15	Cir	0.013	1.50	449.92	CCB 29-CCB 27
3	2	22.232	91.563	Comb	0.00	0.03	0.90	5.0	446.00	0.90	446.20	15	Cir	0.013	1.32	449.92	CCB 30- CCB 29
4	3	39.664	-59.155	DrGrt	0.00	6.39	0.24	32.0	446.40	0.76	446.70	15	Cir	0.013	1.00	450.20	CLCB 30A-CCB 30
5	1	22.310	63.045	Grate	0.00	0.06	0.75	5.0	445.90	0.90	446.10	15	Cir	0.013	1.00	450.96	CCB 28-CCB 27

Project File: System 220B.stm | Number of lines: 5 | Date: 8/1/2014

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	159.215	0.06	6.58	0.75	0.05	1.68	5.0	32.6	2.7	4.48	6.47	5.35	15	1.00	443.00	444.60	443.76	445.46	444.44	450.98	CCB 27-Outfall
2	1	106.812	0.04	6.46	0.73	0.03	1.59	5.0	32.2	2.7	4.27	6.25	5.19	15	0.94	444.80	445.80	445.56	446.64	450.98	449.92	CCB 29-CCB 27
3	2	22.232	0.03	6.42	0.90	0.03	1.56	5.0	32.1	2.7	4.19	6.12	5.12	15	0.90	446.00	446.20	446.76	447.03	449.92	449.92	CCB 30- CCB 29
4	3	39.664	6.39	6.39	0.24	1.53	1.53	32.0	32.0	2.7	4.13	5.62	4.91	15	0.76	446.40	446.70	447.20	447.52	449.92	450.20	CLCB 30A-CCB 3
5	1	22.310	0.06	0.06	0.75	0.05	0.05	5.0	5.0	6.0	0.27	6.11	2.31	15	0.90	445.90	446.10	446.08	446.30	450.98	450.96	CCB 28-CCB 27

Project File: System 220B.stm

Number of lines: 5

Run Date: 8/1/2014

NOTES:Intensity = 54.74 / (Inlet time + 10.80) ^ 0.80; Return period =Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CCB 27	0.27	0.03	0.22	0.08	Comb	4.0	2.73	0.00	2.31	1.35	0.010	2.53	0.020	0.020	0.013	0.09	4.31	0.09	4.31	0.0	Off
2	CCB 29	0.17	0.00	0.14	0.03	Comb	4.0	2.73	0.00	2.31	1.35	0.010	2.53	0.020	0.020	0.013	0.07	3.50	0.07	3.50	0.0	1
3	CCB 30	0.16	0.00	0.13	0.03	Comb	4.0	2.73	0.00	2.31	1.35	0.010	2.53	0.020	0.020	0.013	0.07	3.40	0.07	3.40	0.0	5
4	CLCB 30A	4.13	0.00	0.81	3.33	DrGrt	0.0	0.00	0.00	2.31	1.35	0.020	2.53	0.020	0.020	0.013	0.15	17.63	0.15	17.63	0.0	Off
5	CCB 28	0.27	0.03	0.21	0.09	Grate	0.0	0.00	0.00	2.31	1.35	0.010	2.53	0.020	0.020	0.013	0.09	4.26	0.09	4.26	0.0	Off

Project File: System 220B.stm | Number of lines: 5 | Run Date: 8/1/2014

NOTES: Inlet N-Values = 0.016; Intensity = 54.74 / (Inlet time + 10.80) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

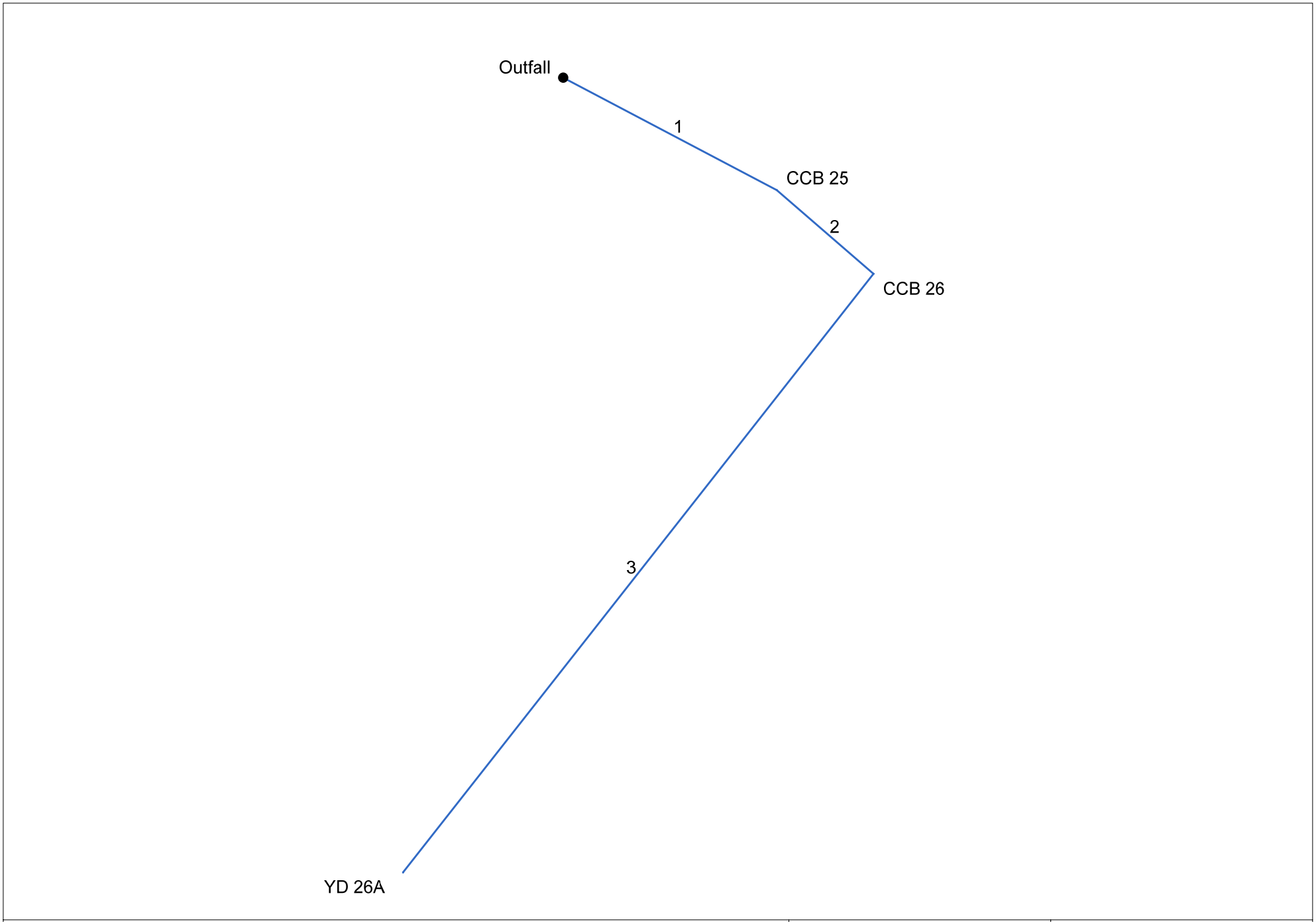
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
1	15	4.48	443.00	443.76	0.76	0.79	5.69	0.39	444.15	0.000	159.215	444.60	445.46	0.86**	0.90	5.00	0.39	445.85	0.000	0.000	n/a	1.37	n/a
2	15	4.27	444.80	445.56	0.76*	0.78	5.48	0.37	445.93	0.000	106.812	445.80	446.64	0.84**	0.87	4.89	0.37	447.01	0.000	0.000	n/a	1.50	0.56
3	15	4.19	446.00	446.76	0.76*	0.78	5.37	0.37	447.13	0.000	22.232	446.20	447.03	0.83**	0.86	4.86	0.37	447.40	0.000	0.000	n/a	1.32	n/a
4	15	4.13	446.40	447.20	0.80*	0.83	5.00	0.36	447.56	0.000	39.664	446.70	447.52	0.82**	0.86	4.83	0.36	447.88	0.000	0.000	n/a	1.00	0.36
5	15	0.27	445.90	446.08	0.18*	0.11	2.50	0.07	446.15	0.000	22.310	446.10	446.30	0.20**	0.13	2.12	0.07	446.37	0.000	0.000	n/a	1.00	0.07

Project File: System 220B.stm | Number of lines: 5 | Run Date: 8/1/2014

Notes: * depth assumed.; ** Critical depth. ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: System 220C.stm	Number of lines: 3	Date: 8/1/2014

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	41.876	27.871	Comb	0.00	0.04	0.90	5.0	443.00	9.55	447.00	15	Cir	0.013	0.50	452.69	CCB 25-Outfall
2	1	22.194	13.179	Comb	0.00	0.10	0.82	5.0	448.10	0.90	448.30	15	Cir	0.013	1.50	452.69	CCB 26-CCB 25
3	2	132.203	87.025	DrGrt	0.00	1.91	0.38	15.0	448.30	0.53	449.00	15	Cir	0.013	1.00	450.00	YD 26A-CCB 26

Project File: System 220C.stm

Number of lines: 3

Date: 8/1/2014

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	41.876	0.04	2.05	0.90	0.04	0.84	5.0	15.8	3.9	3.33	19.96	8.24	15	9.55	443.00	447.00	443.35	447.74	444.44	452.69	CCB 25-Outfall
2	1	22.194	0.10	2.01	0.82	0.08	0.81	5.0	15.7	4.0	3.20	6.13	4.71	15	0.90	448.10	448.30	448.74	449.02	452.69	452.69	CCB 26-CCB 25
3	2	132.203	1.91	1.91	0.38	0.73	0.73	15.0	15.0	4.0	2.93	4.70	3.13	15	0.53	448.30	449.00	449.47	449.75	452.69	450.00	YD 26A-CCB 26

Project File: System 220C.stm

Number of lines: 3

Run Date: 8/1/2014

NOTES:Intensity = 54.74 / (Inlet time + 10.80) ^ 0.80; Return period =Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CCB 25	0.22	0.00	0.17	0.05	Comb	4.0	2.73	0.00	2.31	1.35	0.010	2.53	0.020	0.020	0.013	0.08	3.80	0.08	3.80	0.0	Off
2	CCB 26	0.49	0.00	0.40	0.09	Comb	4.0	2.73	0.00	0.95	2.00	0.010	2.53	0.020	0.020	0.013	0.10	5.16	0.10	5.16	0.0	Off
3	YD 26A	2.93	0.00	2.93	0.00	DrGrt	0.0	0.00	1.51	1.23	1.23	Sag	2.00	0.130	0.130	0.000	0.34	7.24	0.34	7.24	0.0	Off

Project File: System 220C.stm | Number of lines: 3 | Run Date: 8/1/2014

NOTES: Inlet N-Values = 0.016; Intensity = 54.74 / (Inlet time + 10.80) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

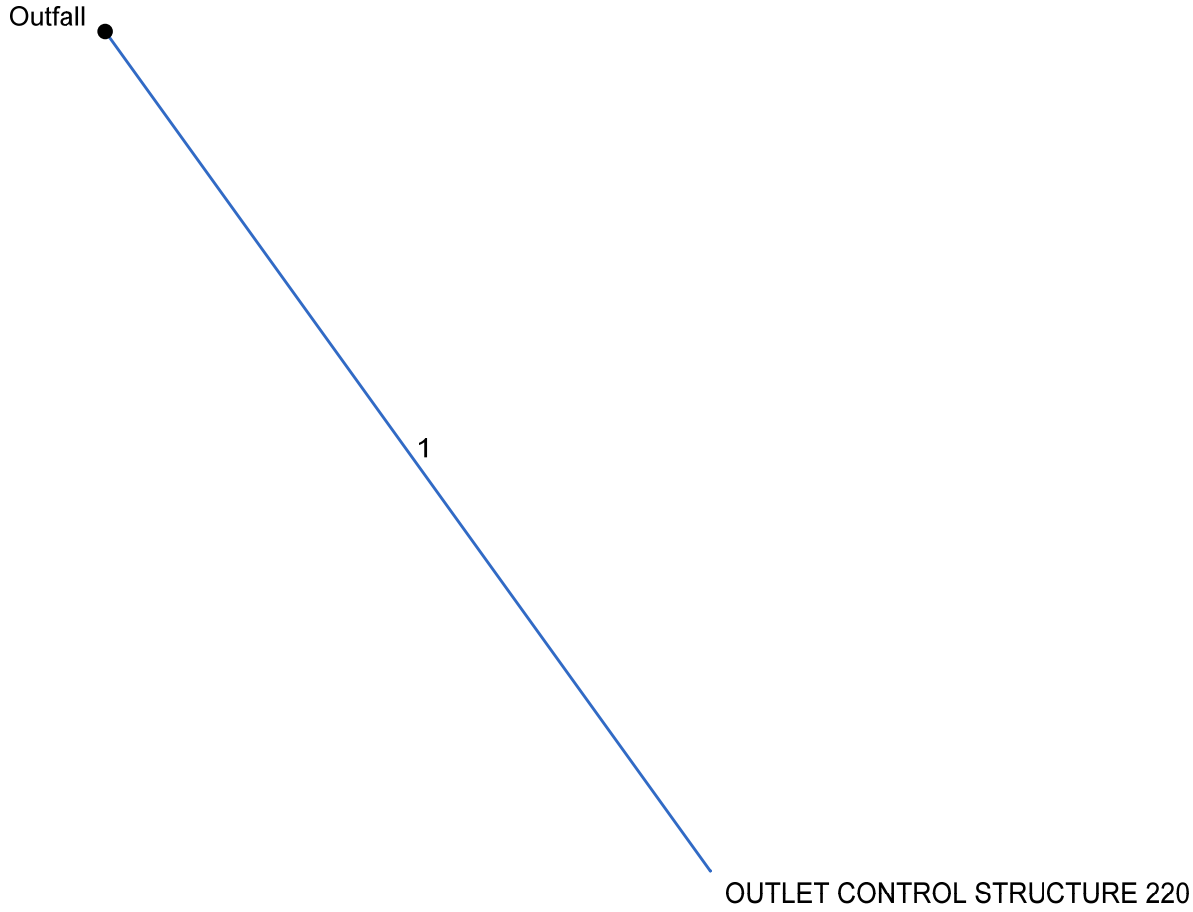
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	15	3.33	443.00	443.35	0.35	0.28	12.05	0.31	443.65	0.000	41.876	447.00	447.74	0.74**	0.75	4.44	0.31	448.04	0.000	0.000	n/a	0.50	n/a
2	15	3.20	448.10	448.74	0.64*	0.63	5.04	0.30	449.04	0.000	22.194	448.30	449.02	0.72**	0.73	4.37	0.30	449.32	0.000	0.000	n/a	1.50	n/a
3	15	2.93	448.30	449.47	1.17	1.19	2.46	0.09	449.56	0.179	132.203	449.00	449.75	0.75	0.77	3.80	0.22	449.98	0.452	0.315	0.417	1.00	0.22

Project File: System 220C.stm | Number of lines: 3 | Run Date: 8/1/2014

Notes: * depth assumed.; ** Critical depth. ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: System 220 Outlet.stm	Number of lines: 1	Date: 8/1/2014

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	102.964	54.151	MH	6.00	0.00	0.00	0.0	441.40	0.58	442.00	24	Cir	0.013	1.00	447.00	OCS 220-Outfall

Project File: System 220 Outlet.stm | Number of lines: 1 | Date: 8/1/2014

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	102.964	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	6.00	17.27	4.80	24	0.58	441.40	442.00	442.21	442.87	441.50	447.00	OCS 220-Outfall

Project File: System 220 Outlet.stm | Number of lines: 1 | Run Date: 8/1/2014

NOTES:Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period =Yrs. 100 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	OUTLET CONTR	6.00*	0.00	0.00	6.00	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: System 220 Outlet.stm

Number of lines: 1

Run Date: 8/1/2014

NOTES: Inlet N-Values = 0.016; Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

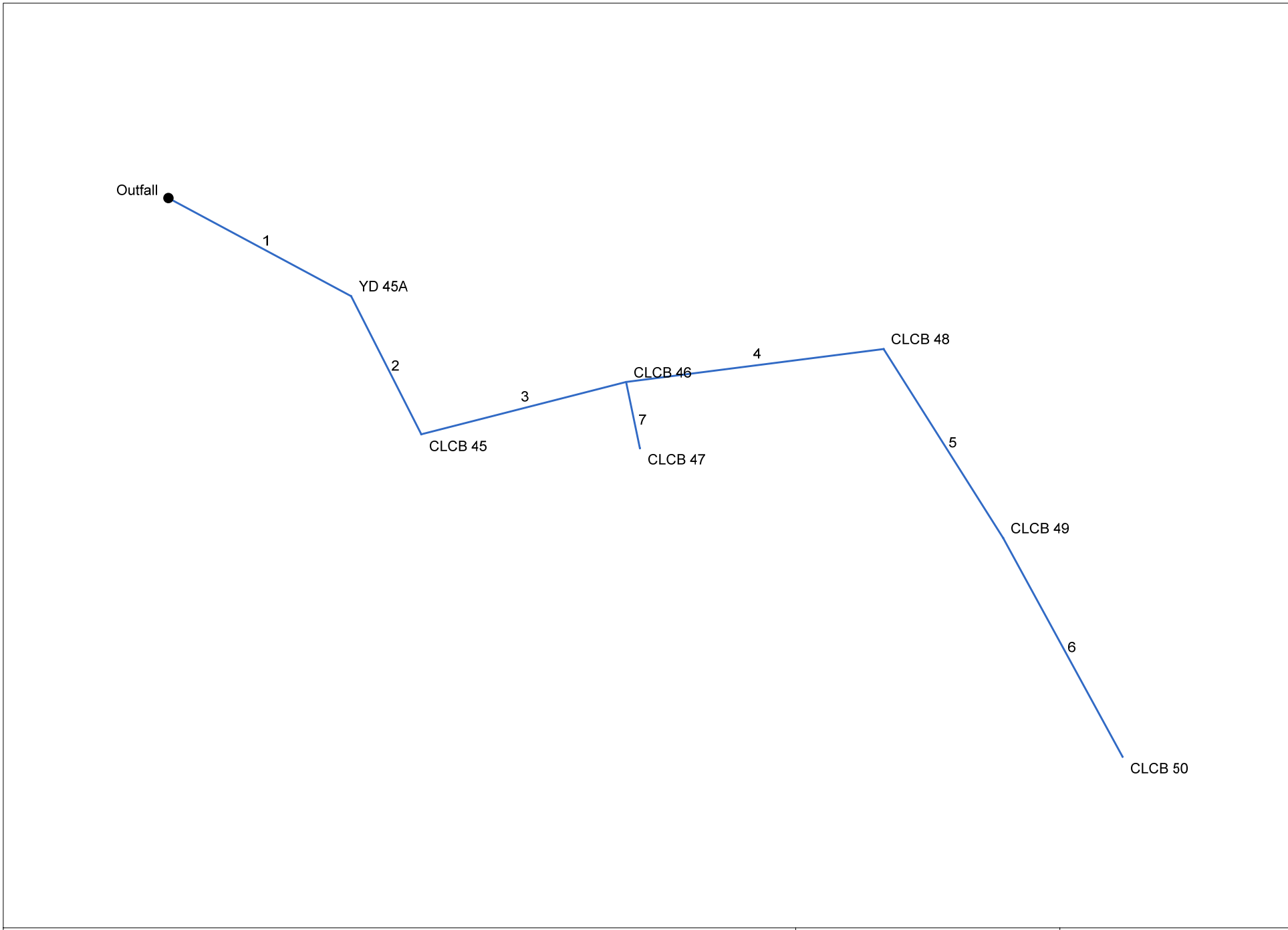
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	24	6.00	441.40	442.21	0.81	1.20	5.00	0.33	442.54	0.000	102.96	442.00	442.87	0.87**	1.30	4.61	0.33	443.20	0.000	0.000	n/a	1.00	0.33

Project File: System 220 Outlet.stm | Number of lines: 1 | Run Date: 8/1/2014

Notes: ; ** Critical depth. ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: System 230.stm	Number of lines: 7	Date: 8/1/2014

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	110.694	28.257	DrGrt	0.00	0.09	0.30	5.0	406.00	7.41	414.20	15	Cir	0.013	0.94	419.24	YD 45A-Outfall
2	1	82.728	34.814	Grate	0.00	0.39	0.49	5.0	415.20	9.91	423.40	15	Cir	0.013	1.47	430.60	CLCB 45-YD 45A
3	2	112.807	-77.395	Grate	0.00	0.30	0.57	5.0	423.40	0.53	424.00	15	Cir	0.013	1.50	427.00	CLCB 46-CLCB 45
4	3	138.581	7.011	Grate	0.00	0.26	0.61	5.0	424.00	2.74	427.80	15	Cir	0.013	1.38	430.80	CLCB 48-CLCB 46
5	4	119.377	65.004	Grate	0.00	0.56	0.55	5.0	427.80	4.36	433.00	15	Cir	0.013	0.50	438.00	CLCB 49-CLCB 48
6	5	133.027	3.722	Grate	0.00	0.31	0.71	5.0	433.00	4.36	438.80	15	Cir	0.013	1.00	444.30	CLCB 50- CLCB 49
7	3	36.079	92.517	Grate	0.00	0.91	0.28	14.0	424.00	0.83	424.30	15	Cir	0.013	1.00	427.30	CLCB 47- CLCB 46

Project File: System 230.stm

Number of lines: 7

Date: 8/1/2014

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	110.694	0.09	2.82	0.30	0.03	1.33	5.0	15.3	4.0	5.32	17.58	8.98	15	7.41	406.00	414.20	406.47	415.13	407.44	419.24	YD 45A-Outfall
2	1	82.728	0.39	2.73	0.49	0.19	1.30	5.0	15.2	4.0	5.24	20.33	9.62	15	9.91	415.20	423.40	415.63	424.33	419.24	430.60	CLCB 45-YD 45A
3	2	112.807	0.30	2.34	0.57	0.17	1.11	5.0	14.7	4.1	4.54	4.71	3.70	15	0.53	423.40	424.00	424.99	425.54	430.60	427.00	CLCB 46-CLCB 4
4	3	138.581	0.26	1.13	0.61	0.16	0.69	5.0	6.4	5.6	3.85	10.69	3.91	15	2.74	424.00	427.80	425.86	428.59	427.00	430.80	CLCB 48-CLCB 4
5	4	119.377	0.56	0.87	0.55	0.31	0.53	5.0	5.9	5.7	3.03	13.48	3.99	15	4.36	427.80	433.00	428.59	433.70	430.80	438.00	CLCB 49-CLCB 4
6	5	133.027	0.31	0.31	0.71	0.22	0.22	5.0	5.0	6.0	1.32	13.48	2.57	15	4.36	433.00	438.80	433.70	439.25	438.00	444.30	CLCB 50- CLCB 4
7	3	36.079	0.91	0.91	0.28	0.25	0.25	14.0	14.0	4.2	1.06	5.89	0.87	15	0.83	424.00	424.30	425.86	425.87	427.00	427.30	CLCB 47- CLCB 4

Project File: System 230.stm

Number of lines: 7

Run Date: 8/1/2014

NOTES:Intensity = 54.74 / (Inlet time + 10.80) ^ 0.80; Return period =Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	YD 45A	0.16	0.53	0.19	0.50	DrGrt	0.0	0.00	0.00	1.23	1.23	0.120	2.00	0.020	0.020	0.013	0.05	7.10	0.05	7.10	0.0	Off
2	CLCB 45	1.14	0.00	0.62	0.53	Grate	0.0	0.00	0.00	2.31	1.35	0.040	2.53	0.020	0.020	0.013	0.11	5.46	0.11	5.46	0.0	1
3	CLCB 46	1.02	1.27	2.29	0.00	Grate	0.0	0.00	3.12	2.31	1.35	Sag	2.53	0.020	0.020	0.000	0.30	14.93	0.30	14.93	0.0	Off
4	CLCB 48	0.95	1.38	1.06	1.27	Grate	0.0	0.00	0.00	2.31	1.35	0.055	2.53	0.020	0.020	0.013	0.13	6.71	0.13	6.71	0.0	3
5	CLCB 49	1.84	0.64	1.11	1.38	Grate	0.0	0.00	0.00	2.31	1.35	0.055	2.53	0.020	0.020	0.013	0.14	6.86	0.14	6.86	0.0	4
6	CLCB 50	1.32	0.00	0.67	0.64	Grate	0.0	0.00	0.00	2.31	1.35	0.037	2.53	0.020	0.020	0.013	0.12	5.81	0.12	5.81	0.0	5
7	CLCB 47	1.06	0.00	1.06	0.00	Grate	0.0	0.00	3.12	2.31	1.35	Sag	2.53	0.020	0.020	0.000	0.18	9.22	0.18	9.22	0.0	Off

Project File: System 230.stm | Number of lines: 7 | Run Date: 8/1/2014

NOTES: Inlet N-Values = 0.016; Intensity = 54.74 / (Inlet time + 10.80) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

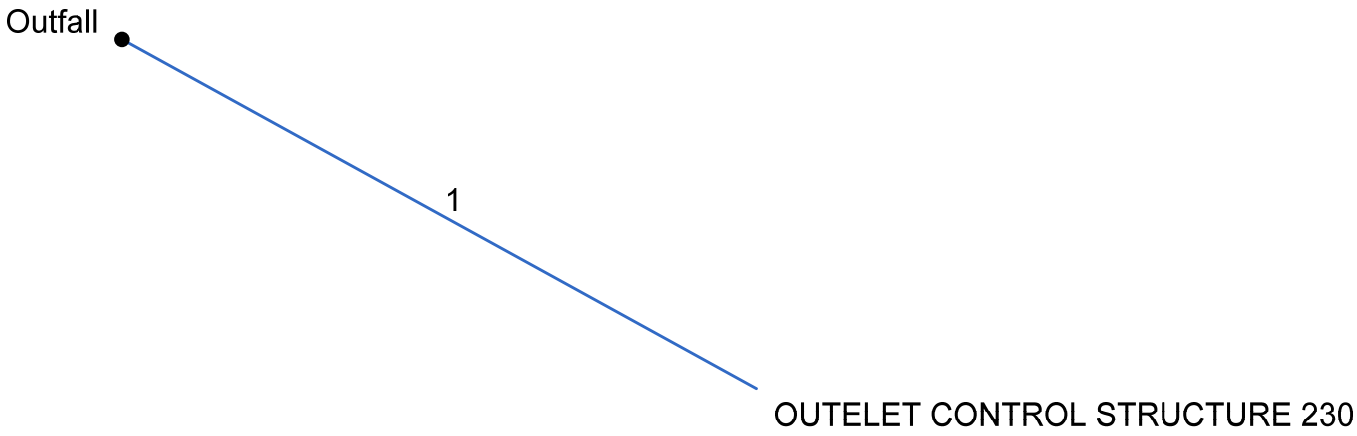
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	15	5.32	406.00	406.47	0.47	0.42	12.55	0.45	406.93	0.000	110.694	414.20	415.13	0.93**	0.98	5.41	0.45	415.59	0.000	0.000	n/a	0.94	n/a
2	15	5.24	415.20	415.63	0.43*	0.38	13.88	0.45	416.08	0.000	82.728	423.40	424.33	0.93**	0.98	5.37	0.45	424.77	0.000	0.000	n/a	1.47	n/a
3	15	4.54	423.40	424.99	1.25	1.23	3.70	0.21	425.20	0.495	112.807	424.00	425.54	1.25	1.23	3.70	0.21	425.76	0.495	0.495	0.558	1.50	0.32
4	15	3.85	424.00	425.86	1.25	0.82	3.14	0.15	426.02	0.356	138.581	427.80	428.59 j	0.79**	0.82	4.69	0.34	428.93	0.667	0.511	n/a	1.38	n/a
5	15	3.03	427.80	428.59	0.79	0.71	3.69	0.29	428.88	0.000	119.377	433.00	433.70 j	0.70**	0.71	4.29	0.29	433.99	0.000	0.000	n/a	0.50	n/a
6	15	1.32	433.00	433.70	0.70	0.40	1.86	0.17	433.87	0.000	133.027	438.80	439.25 j	0.45**	0.40	3.28	0.17	439.42	0.000	0.000	n/a	1.00	0.17
7	15	1.06	424.00	425.86	1.25	1.23	0.87	0.01	425.87	0.027	36.079	424.30	425.87	1.25	1.23	0.87	0.01	425.88	0.027	0.027	0.010	1.00	0.01

Project File: System 230.stm | Number of lines: 7 | Run Date: 8/1/2014

Notes: * depth assumed.; ** Critical depth.; j-Line contains hyd. jump. ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: System 230 Outlet.stm	Number of lines: 1	Date: 8/1/2014

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	45.390	27.914	None	8.00	0.00	0.00	0.0	397.50	2.20	398.50	15	Cir	0.013	1.00	405.00	OCS 230-Outfall

Project File: System 230 Outlet.stm

Number of lines: 1

Date: 8/1/2014

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	45.390	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	8.00	9.58	7.83	15	2.20	397.50	398.50	398.37	399.61	399.00	405.00	OCS 230-Outfall

Project File: System 230 Outlet.stm | Number of lines: 1 | Run Date: 8/1/2014

NOTES:Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period =Yrs. 100 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	OUTELET CONT	8.00*	0.00	0.00	8.00	None	0.0	2.31	0.00	2.31	1.35	0.000	0.00	0.000	0.000	0.000	0.00	0.00	0.00	0.00	0.0	Off

Project File: System 230 Outlet.stm | Number of lines: 1 | Run Date: 8/1/2014

NOTES: Inlet N-Values = 0.016; Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period = 100 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

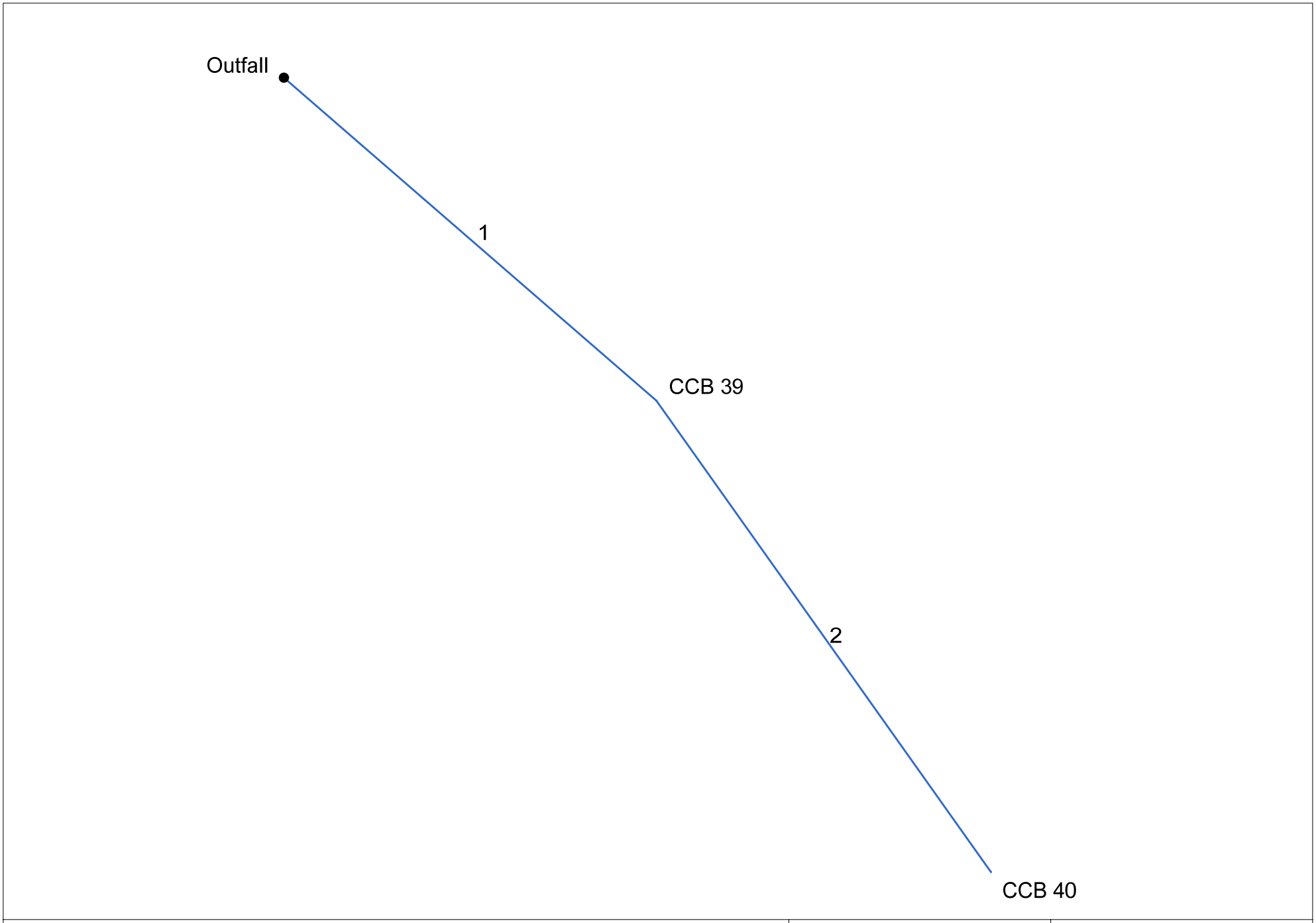
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	15	8.00	397.50	398.37	0.87	0.92	8.74	0.75	399.12	0.000	45.390	398.50	399.61	1.11**	1.16	6.93	0.75	400.36	0.000	0.000	n/a	1.00	n/a

Project File: System 230 Outlet.stm | Number of lines: 1 | Run Date: 8/1/2014

Notes: ; ** Critical depth. ; c = cir e = ellip b = box

Hydraflow Storm Sewers Extension for Autodesk® AutoCAD® Civil 3D® Plan



Project File: System 310.stm	Number of lines: 2	Date: 8/1/2014

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	18.826	41.039	Comb	0.00	0.20	0.49	5.0	458.50	2.66	459.00	15	Cir	0.013	0.50	462.88	CCB 39-Outfall
2	1	22.151	13.851	Comb	0.00	0.78	0.44	5.0	459.00	1.81	459.40	15	Cir	0.013	1.00	462.88	CCB 40-CCB 39

Project File: System 310.stm

Number of lines: 2

Date: 8/1/2014

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	18.826	0.20	0.98	0.49	0.10	0.44	5.0	5.1	6.0	2.63	10.52	5.60	15	2.66	458.50	459.00	458.93	459.65	0.00	462.88	CCB 39-Outfall
2	1	22.151	0.78	0.78	0.44	0.34	0.34	5.0	5.0	6.0	2.06	8.68	3.48	15	1.81	459.00	459.40	459.65	459.97	462.88	462.88	CCB 40-CCB 39

Project File: System 310.stm

Number of lines: 2

Run Date: 8/1/2014

NOTES:Intensity = 54.74 / (Inlet time + 10.80) ^ 0.80; Return period =Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CCB 39	0.59	0.00	0.37	0.21	Comb	4.0	2.73	0.00	2.31	1.35	0.030	2.53	0.020	0.020	0.013	0.09	4.51	0.09	4.51	0.0	Off
2	CCB 40	2.06	0.00	0.95	1.10	Comb	4.0	2.73	0.00	2.31	1.35	0.030	2.53	0.020	0.020	0.013	0.14	7.16	0.14	7.16	0.0	Off

Project File: System 310.stm | Number of lines: 2 | Run Date: 8/1/2014

NOTES: Inlet N-Values = 0.016; Intensity = 54.74 / (Inlet time + 10.80) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are throat.

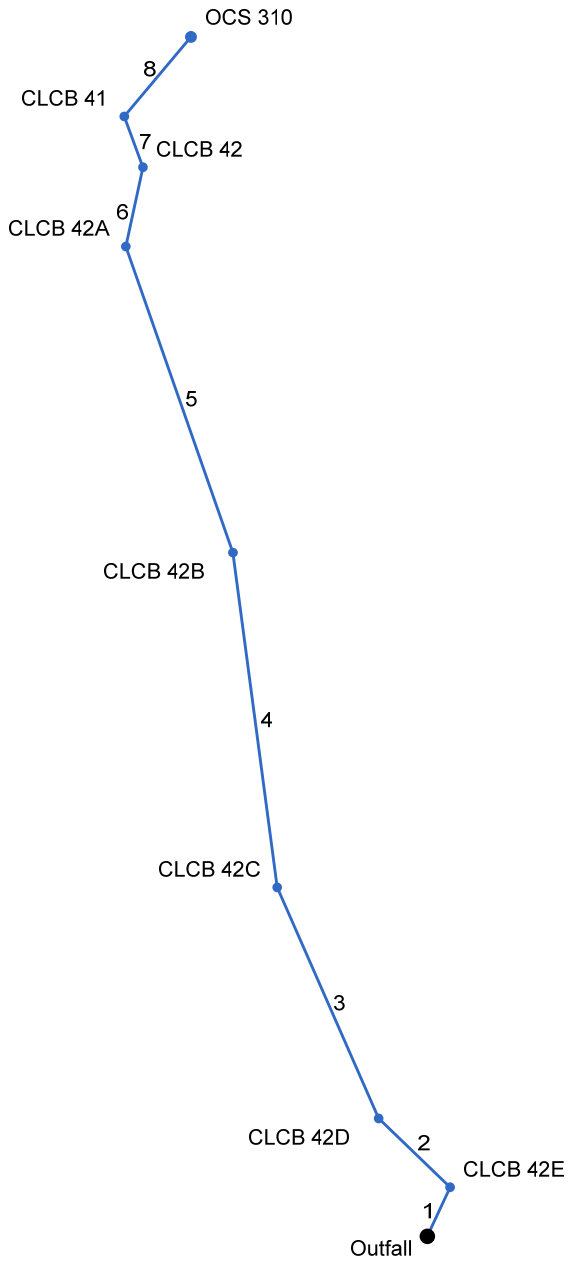
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	15	2.63	458.50	458.93	0.43	0.37	7.13	0.26	459.18	0.000	18.826	459.00	459.65	0.65**	0.64	4.08	0.26	459.91	0.000	0.000	n/a	0.50	n/a
2	15	2.06	459.00	459.65	0.65	0.55	3.19	0.22	459.87	0.000	22.151	459.40	459.97 j	0.57**	0.55	3.76	0.22	460.19	0.000	0.000	n/a	1.00	0.22

Project File: System 310.stm | Number of lines: 2 | Run Date: 8/1/2014

Notes: ; ** Critical depth.; j-Line contains hyd. jump. ; c = cir e = ellip b = box

System 310-OUT



Project File: System 310 Outlet.stm	Number of lines: 8	Date: 8/1/2014

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	24.000	-65.200	Grate	0.00	0.02	0.90	5.0	434.39	5.25	435.65	15	Cir	0.013	1.43	438.50	OUT-CLCB42E
2	1	44.000	-70.800	Grate	0.00	0.39	0.40	9.0	435.65	1.02	436.10	15	Cir	0.013	0.65	439.40	CLCB42E-CLCB42D
3	2	112.000	22.400	Grate	0.00	0.49	0.30	14.0	436.30	7.95	445.20	15	Cir	0.013	0.50	450.20	CLCB42D-CLCB42C
4	3	150.000	16.100	Grate	0.00	0.35	0.62	5.0	445.40	5.20	453.20	15	Cir	0.013	0.50	458.70	CLCB42C-CLCB42B
5	4	144.000	-11.700	Comb	0.00	0.14	0.41	5.0	453.40	1.04	454.90	15	Cir	0.013	0.86	460.20	CLCB42B-CLCB42A
6	5	36.000	31.300	Comb	0.00	0.88	0.31	5.0	455.10	1.11	455.50	15	Cir	0.013	0.88	459.50	CLCB42A-CLCB42
7	6	24.000	-32.200	Comb	0.09	0.07	0.51	5.0	455.70	1.25	456.00	15	Cir	0.013	1.33	459.50	CLCB42-CLCB41
8	7	46.000	60.000	MH	2.63	0.00	0.00	0.0	456.20	1.74	457.00	15	Cir	0.013	1.00	464.00	CLCB41-OCS310

System 310-OUT | Number of lines: 8 | Date: 8/1/2014

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	24.000	0.02	2.34	0.90	0.02	0.90	5.0	14.4	4.1	6.44	14.80	8.81	15	5.25	434.39	435.65	434.97	436.67	435.64	438.50	OUT-CLCB42E
2	1	44.000	0.39	2.32	0.40	0.16	0.89	9.0	14.3	4.1	6.38	6.53	5.95	15	1.02	435.65	436.10	436.67	437.12	438.50	439.40	CLCB42E-CLCB4
3	2	112.000	0.49	1.93	0.30	0.15	0.73	14.0	14.0	4.2	5.77	18.20	6.21	15	7.95	436.30	445.20	437.12	446.17	439.40	450.20	CLCB42D-CLCB4
4	3	150.000	0.35	1.44	0.62	0.22	0.58	5.0	5.6	5.8	6.10	14.73	6.75	15	5.20	445.40	453.20	446.17	454.20	450.20	458.70	CLCB42C-CLCB4
5	4	144.000	0.14	1.09	0.41	0.06	0.37	5.0	5.2	5.9	4.89	6.59	5.54	15	1.04	453.40	454.90	454.20	455.80	458.70	460.20	CLCB42B-CLCB4
6	5	36.000	0.88	0.95	0.31	0.27	0.31	5.0	5.1	6.0	4.56	6.81	5.49	15	1.11	455.10	455.50	455.85	456.36	460.20	459.50	CLCB42A-CLCB4
7	6	24.000	0.07	0.07	0.51	0.04	0.04	5.0	5.0	6.0	2.93	7.22	4.33	15	1.25	455.70	456.00	456.36	456.69	459.50	459.50	CLCB42-CLCB41
8	7	46.000	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	2.63	8.52	5.01	15	1.74	456.20	457.00	456.69	457.65	459.50	464.00	CLCB41-OCS310

System 310-OUT | Number of lines: 8 | Run Date: 8/1/2014

NOTES:Intensity = 54.74 / (Inlet time + 10.80) ^ 0.80; Return period =Yrs. 10 ; c = cir e = ellip b = box

Inlet Report

Line No	Inlet ID	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q Byp (cfs)	Junc Type	Curb Inlet		Grate Inlet			Gutter							Inlet			Byp Line No
							Ht (in)	L (ft)	Area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	n	Depth (ft)	Spread (ft)	Depth (ft)	Spread (ft)	Depr (in)	
1	CLCB 42E	0.11	0.24	0.33	0.02	Grate	0.0	0.00	0.00	3.15	1.64	0.067	2.53	0.031	0.031	0.013	0.08	2.42	0.08	2.42	0.0	Off
2	CLCB 42D	0.78	0.24	0.78	0.24	Grate	0.0	0.00	0.00	3.15	1.64	0.040	2.53	0.031	0.031	0.013	0.12	3.97	0.12	3.97	0.0	1
3	CLCB 42C	0.61	0.45	0.82	0.24	Grate	0.0	0.00	0.00	3.15	1.64	0.050	2.53	0.031	0.031	0.013	0.12	3.87	0.12	3.87	0.0	2
4	CLCB 42B	1.30	0.18	1.03	0.45	Grate	0.0	0.00	0.00	3.15	1.64	0.015	2.53	0.031	0.031	0.013	0.17	5.49	0.17	5.49	0.0	3
5	CLCB 42A	0.34	0.48	0.64	0.18	Comb	4.0	2.73	0.00	3.15	1.64	0.010	2.53	0.031	0.031	0.013	0.15	4.75	0.15	4.75	0.0	4
6	CLCB 42	1.63	0.02	1.17	0.48	Comb	4.0	2.73	0.00	3.15	1.64	0.067	2.53	0.031	0.031	0.013	0.13	4.29	0.13	4.29	0.0	5
7	CLCB 41	0.30*	0.00	0.29	0.02	Comb	4.0	2.73	0.00	3.15	1.64	0.067	2.53	0.031	0.031	0.013	0.07	2.29	0.07	2.29	0.0	6
8	OCS 310	2.63*	0.00	0.00	2.63	MH	0.0	0.00	0.00	0.00	0.00	Sag	0.00	0.000	0.000	0.013	0.00	0.00	0.00	0.00	0.0	Off

System 310-OUT | Number of lines: 8 | Run Date: 8/1/2014

NOTES: Inlet N-Values = 0.016; Intensity = 54.74 / (Inlet time + 10.80) ^ 0.80; Return period = 10 Yrs. ; * Indicates Known Q added. All curb inlets are Horiz throat.

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
1	15	6.44	434.39	434.97	0.58	0.55	11.63	0.56	435.53	0.000	24.000	435.65	436.67	1.02**	1.07	6.00	0.56	437.23	0.000	0.000	n/a	1.43	0.80
2	15	6.38	435.65	436.67	1.02	1.07	5.94	0.55	437.23	0.000	44.000	436.10	437.12	1.02**	1.07	5.96	0.55	437.67	0.000	0.000	n/a	0.65	0.36
3	15	5.77	436.30	437.12	0.82	0.85	6.78	0.49	437.61	0.000	112.000	445.20	446.17	0.97**	1.02	5.64	0.49	446.67	0.000	0.000	n/a	0.50	0.25
4	15	6.10	445.40	446.17	0.77	0.79	7.68	0.53	446.70	0.000	150.000	453.20	454.20	1.00**	1.05	5.81	0.53	454.72	0.000	0.000	n/a	0.50	n/a
5	15	4.89	453.40	454.20	0.80*	0.83	5.88	0.42	454.62	0.000	144.000	454.90	455.80	0.90**	0.94	5.20	0.42	456.22	0.000	0.000	n/a	0.86	0.36
6	15	4.56	455.10	455.85	0.75*	0.77	5.94	0.39	456.24	0.000	36.000	455.50	456.36	0.86**	0.91	5.03	0.39	456.76	0.000	0.000	n/a	0.88	n/a
7	15	2.93	455.70	456.36	0.66	0.66	4.42	0.28	456.64	0.000	24.000	456.00	456.69	0.69**	0.69	4.24	0.28	456.97	0.000	0.000	n/a	1.33	n/a
8	15	2.63	456.20	456.69	0.49	0.44	5.93	0.26	456.95	0.000	46.000	457.00	457.65	0.65**	0.64	4.08	0.26	457.91	0.000	0.000	n/a	1.00	n/a

System 310-OUT | Number of lines: 8 | Run Date: 8/1/2014

Notes: * Normal depth assumed.; ** Critical depth. ; c = cir e = ellip b = box

Outlet Protection Calculations

Project:	Easton Crossing		By: ADS	Date:	08/01/14
Location:	Easton, Connecticut		Checked: FAB	Date:	08/01/14
Outlet I.D.		**FES 140 IN**			

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Flared End Sectoin outlet to Storm Water Basin 140

Design Criteria 10-yr Storm Event):

Q=	8.45	R_p=	1.25
D=	15	S_p=	1.25
V=	9.7	Tw=	0.69

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter in inches (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise in feet (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections in feet (ft)
T_w= Tailwater depth in feet (ft)

Based on **Table 11.13.1,** A *Preformed Scour Hole* is used *One Half Pipe Rise Depression*

Stone Size:

D_{50}= [(0.0125 Rp^2)/Tw] x (Q/(Rp^2.5)^1.33
D_{50} (ft)= 0.230 (Requires Modified Riprap)

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	0.625
C(ft)=3.0(S_p)+6.0(F)	=	7.5
B(ft)=2.0(S_p)+6.0(F)	=	6.25
Depth of Stone	=	12" Modified Riprap

Rip Rap Splash Pad Dimensions:

L_a (ft)	=	n/a
W1 (ft)=3.0(S_p) min.	=	n/a
W2 (ft)=3.0(S_p)+0.7(L_a) min.	=	n/a

Outlet Protection Calculations

Project:	Easton Crossing	By:	ADS	Date:	08/01/14
Location:	Easton, Connecticut	Checked:	FAB	Date:	08/01/14
Outlet I.D.	**FES 140 OUT**				

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Flared End Sectoin outlet from Storm Water Basin 140

Design Criteria 10-yr Storm Event):

Q=	7	R_p=	1.5
D=	18	S_p=	1.5
V=	6.26	Tw=	0.82

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter in inches (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise in feet (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections in feet (ft)
T_w= Tailwater depth in feet (ft)

Based on **Table 11.13.1,** A Flared End Section is used *One Half Pipe Rise Depression*

Stone Size:

D_{50}= [(0.0125 Rp^2)/Tw] x (Q/(Rp^2.5)^1.33
D_{50} (ft)= 0.119 (Requires Modified Riprap)

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a
Depth of Stone	=	n/a

Rip Rap Splash Pad Dimensions:

L_a (ft)	=	12
W1 (ft)=3.0(S_p) min.	=	4.5
W2 (ft)=3.0(S_p)+0.7(L_a) min.	=	11.5

Outlet Protection Calculations

Project:	Easton Crossing	By:	ADS	Date:	08/01/14
Location:	Easton, Connecticut	Checked:	FAB	Date:	08/01/14
Outlet I.D.	**FES 150 IN**				

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Flared End Sectoin outlet to Storm Water Basin 150

Design Criteria 10-yr Storm Event):

Q=	11.57	R_p=	1.5
D=	18	S_p=	1.5
V=	8.52	Tw=	0.94

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter in inches (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise in feet (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections in feet (ft)
T_w= Tailwater depth in feet (ft)

Based on **Table 11.13.1,** A Preformed Score Hole is used *One Half Pipe Rise Depression*

Stone Size:

D_{50}= [(0.0125 Rp^2)/Tw] x (Q/(Rp^2.5)^1.33
D_{50} (ft)= 0.202 (Requires Modified Riprap)

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	0.75
C(ft)=3.0(S_p)+6.0(F)	=	9
B(ft)=2.0(S_p)+6.0(F)	=	7.5
Depth of Stone	=	12" Modified Riprap

Rip Rap Splash Pad Dimensions:

L_a (ft)	=	n/a
W1 (ft)=3.0(S_p) min.	=	n/a
W2 (ft)=3.0(S_p)+0.7(L_a) min.	=	n/a

Outlet Protection Calculations

Project:	Easton Crossing	By:	ADS	Date:	08/01/14
Location:	Easton, Connecticut	Checked:	FAB	Date:	08/01/14
Outlet I.D.	**FES 150 OUT**				

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Flared End Sectoin outlet from Storm Water Basin 150

Design Criteria 10-yr Storm Event):

Q=	6	R_p=	2
D=	24	S_p=	2
V=	4.66	Tw=	0.85

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter in inches (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise in feet (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections in feet (ft)
T_w= Tailwater depth in feet (ft)

Based on **Table 11.13.1,** A Flared End Section is used *One Half Pipe Rise Depression*

Stone Size:

D_{50}= [(0.0125 Rp^2)/Tw] x (Q/(Rp^2.5)^1.33
D_{50} (ft)= 0.064 (Requires Modified Riprap)

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a
Depth of Stone	=	n/a

Rip Rap Splash Pad Dimensions:

L_a (ft)	=	12
W1 (ft)=3.0(S_p) min.	=	6
W2 (ft)=3.0(S_p)+0.7(L_a) min.	=	14.4

Outlet Protection Calculations

Project:	Easton Crossing	By:	ADS	Date:	08/01/14
Location:	Easton, Connecticut	Checked:	FAB	Date:	08/01/14
Outlet I.D.	**FES 210 IN**				

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Flared End Sectoin outlet to Storm Water Basin 210

Design Criteria 10-yr Storm Event):

Q=	5.19	R_p=	1.25
D=	15	S_p=	1.25
V=	8.76	Tw=	0.47

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter in inches (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise in feet (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections in feet (ft)
T_w= Tailwater depth in feet (ft)

Based on **Table 11.13.1,** A Flared End Section is used *One Half Pipe Rise Depression*

Stone Size:

D_{50}= [(0.0125 Rp^2)/Tw] x (Q/(Rp^2.5)^1.33
D_{50} (ft)= 0.177 (Requires Modified Riprap)

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a
Depth of Stone	=	n/a

Rip Rap Splash Pad Dimensions:

L_a (ft)	=	10
W1 (ft)=3.0(S_p) min.	=	3.75
W2 (ft)=3.0(S_p)+0.7(L_a) min.	=	10.75

Outlet Protection Calculations

Project:	Easton Crossing	By:	ADS	Date:	08/01/14
Location:	Easton, Connecticut	Checked:	FAB	Date:	08/01/14
Outlet I.D.	**FES 210 OUT**				

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Flared End Sectoin outlet from Storm Water Basin 210

Design Criteria 10-yr Storm Event):

Q=	6	R_p=	1.25
D=	15	S_p=	1.25
V=	7.22	Tw=	0.69

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter in inches (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise in feet (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections in feet (ft)
T_w= Tailwater depth in feet (ft)

Based on **Table 11.13.1,** A Flared End Section is used *One Half Pipe Rise Depression*

Stone Size:

D_{50}= [(0.0125 Rp^2)/Tw] x (Q/(Rp^2.5)^1.33
D_{50} (ft)= 0.146 (Requires Modified Riprap)

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a
Depth of Stone	=	n/a

Rip Rap Splash Pad Dimensions:

L_a (ft)	=	11
W1 (ft)=3.0(S_p) min.	=	3.75
W2 (ft)=3.0(S_p)+0.7(L_a) min.	=	11.45

Outlet Protection Calculations

Project:	Easton Crossing	By:	ADS	Date:	08/01/14
Location:	Easton, Connecticut	Checked:	FAB	Date:	08/01/14
Outlet I.D.	**FES 220A IN**				

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Flared End Sectoin outlet to Storm Water Basin 220

Design Criteria 10-yr Storm Event):

Q=	5.2	R_p=	1.5
D=	18	S_p=	1.5
V=	6.78	Tw=	0.56

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter in inches (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise in feet (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections in feet (ft)
T_w= Tailwater depth in feet (ft)

Based on **Table 11.13.1,** A Flared End Section is used *One Half Pipe Rise Depression*

Stone Size:

D_{50}= [(0.0125 Rp^2)/Tw] x (Q/(Rp^2.5)^1.33
D_{50} (ft)= 0.117 (Requires Modified Riprap)

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a
Depth of Stone	=	n/a

Rip Rap Splash Pad Dimensions:

L_a (ft)	=	12
W1 (ft)=3.0(S_p) min.	=	4.5
W2 (ft)=3.0(S_p)+0.7(L_a) min.	=	12.9

Outlet Protection Calculations

Project:	Easton Crossing	By:	ADS	Date:	08/01/14
Location:	Easton, Connecticut	Checked:	FAB	Date:	08/01/14
Outlet I.D.	**FES 220B IN**				

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Flared End Sectoin outlet to Storm Water Basin 220

Design Criteria 10-yr Storm Event):

Q=	4.48	R_p=	1.25
D=	15	S_p=	1.25
V=	5.35	Tw=	0.76

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter in inches (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise in feet (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections in feet (ft)
T_w= Tailwater depth in feet (ft)

Based on **Table 11.13.1,** A Flared End Section is used *One Half Pipe Rise Depression*

Stone Size:

D_{50}= [(0.0125 Rp^2)/Tw] x (Q/(Rp^2.5)^1.33
D_{50} (ft)= 0.090 (Requires Modified Riprap)

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a
Depth of Stone	=	n/a

Rip Rap Splash Pad Dimensions:

L_a (ft)	=	10
W1 (ft)=3.0(S_p) min.	=	3.75
W2 (ft)=3.0(S_p)+0.7(L_a) min.	=	10.75

Outlet Protection Calculations

Project:	Easton Crossing	By:	ADS	Date:	08/01/14
Location:	Easton, Connecticut	Checked:	FAB	Date:	08/01/14
Outlet I.D.	**FES 220C IN**				

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Flared End Sectoin outlet to Storm Water Basin 220

Design Criteria 10-yr Storm Event):

Q=	3.33	R_p=	1.25
D=	15	S_p=	1.25
V=	8.24	Tw=	0.35

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter in inches (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise in feet (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections in feet (ft)
T_w= Tailwater depth in feet (ft)

Based on **Table 11.13.1,** A Flared End Section is used *One Half Pipe Rise Depression*

Stone Size:

D_{50}= [(0.0125 Rp^2)/Tw] x (Q/(Rp^2.5)^1.33
D_{50} (ft)= 0.132 (Requires Modified Riprap)

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a
Depth of Stone	=	n/a

Rip Rap Splash Pad Dimensions:

L_a (ft)	=	10
W1 (ft)=3.0(S_p) min.	=	3.75
W2 (ft)=3.0(S_p)+0.7(L_a) min.	=	10.75

Outlet Protection Calculations

Project:	Easton Crossing	By:	ADS	Date:	08/01/14
Location:	Easton, Connecticut	Checked:	FAB	Date:	08/01/14
Outlet I.D.	**FES 220 OUT**				

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Flared End Sectoin outlet from Storm Water Basin 220

Design Criteria 10-yr Storm Event):

Q=	6	R_p=	2
D=	24	S_p=	2
V=	4.8	Tw=	0.87

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter in inches (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise in feet (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections in feet (ft)
T_w= Tailwater depth in feet (ft)

Based on **Table 11.13.1,** A Flared End Section is used *One Half Pipe Rise Depression*

Stone Size:

D_{50}= [(0.0125 Rp^2)/Tw] x (Q/(Rp^2.5)^1.33
D_{50} (ft)= 0.062 (Requires Modified Riprap)

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a
Depth of Stone	=	n/a

Rip Rap Splash Pad Dimensions:

L_a (ft)	=	12
W1 (ft)=3.0(S_p) min.	=	6
W2 (ft)=3.0(S_p)+0.7(L_a) min.	=	14.4

Outlet Protection Calculations

Project:	Easton Crossing	By:	ADS	Date:	08/01/14
Location:	Easton, Connecticut	Checked:	FAB	Date:	08/01/14
Outlet I.D.	**FES 230 IN**				

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Flared End Sectoin outlet to Storm Water Basin 220

Design Criteria 10-yr Storm Event):

Q=	5.32	R_p=	1.25
D=	15	S_p=	1.25
V=	8.98	Tw=	0.47

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter in inches (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise in feet (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections in feet (ft)
T_w= Tailwater depth in feet (ft)

Based on **Table 11.13.1,** A Flared End Section is used *One Half Pipe Rise Depression*

Stone Size:

D_{50}= [(0.0125 Rp^2)/Tw] x (Q/(Rp^2.5)^1.33
D_{50} (ft)= 0.183 (Requires Modified Riprap)

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a
Depth of Stone	=	n/a

Rip Rap Splash Pad Dimensions:

L_a (ft)	=	11
W1 (ft)=3.0(S_p) min.	=	3.75
W2 (ft)=3.0(S_p)+0.7(L_a) min.	=	11.45

Outlet Protection Calculations

Project:	Easton Crossing	By:	ADS	Date:	08/01/14
Location:	Easton, Connecticut	Checked:	FAB	Date:	08/01/14
Outlet I.D.	**FES 230 OUT**				

*Based on Connecticut DOT Drainage Manual, Section 11.13

Description:

Flared End Sectoin outlet from Storm Water Basin 230

Design Criteria 10-yr Storm Event):

Q=	8	R_p=	1.25
D=	15	S_p=	1.25
V=	7.71	Tw=	1.23

Q= Flow rate at discharge point in cubic feet per second (cfs)
D= Outlet pipe diameter in inches (in)
V= Flow velocity at discharge point (ft/s)
R_p= Maximum inside pipe rise in feet (ft)
S_p= inside diametere for circular sections of maximum inside pipe span for non-circular sections in feet (ft)
T_w= Tailwater depth in feet (ft)

Based on **Table 11.13.1,** A Flared End Section is used *One Half Pipe Rise Depression*

Stone Size:

D_{50}= [(0.0125 Rp^2)/Tw] x (Q/(Rp^2.5)^1.33
D_{50} (ft)= 0.120 (Requires Modified Riprap)

Preformed Scour Hole Dimensions:

F(ft)=0.5(R_p)	=	n/a
C(ft)=3.0(S_p)+6.0(F)	=	n/a
B(ft)=2.0(S_p)+6.0(F)	=	n/a
Depth of Stone	=	n/a

Rip Rap Splash Pad Dimensions:

L_a (ft)	=	14
W1 (ft)=3.0(S_p) min.	=	3.75
W2 (ft)=3.0(S_p)+0.7(L_a) min.	=	13.55

TEMPORARY SEDIMENT TRAP COMPUTATIONS

Temporary Sediment Trap Design Worksheet

Project:	Easton Crossing	By:	ADS	Date:	08/04/14
Location:	Easton, Connecticut	Checked:	CEH	Date:	08/04/14
Temporary Sediment Trap I.D.			**Trap 1**		

*From CT Guidelines for Soil Erosion and Sediment Control, Ch. 5, Sec. 11, pages 5-11-25 to 5-11-29
*Initial Storage Volume Required Based on 1" of Runoff

Assumptions

1. Wet Storage is equal to one half of the overall volume
2. Dry Storage is equal to one half of the overall volume
3. Depth of Wet Storage is 2.0 feet
4. Depth of Dry Storage is 1.5 feet

Approximate Sediment Trap Design

Wet Storage Volume (Vw)=0.85*Aw*Dw ⇨ Aw=Vw(0.85*Dw)
Aw=the surface area of the flooded area at the base of the outlet in square feet
Dw=the maximum depth in feet, measure from the low point in the trap to the base of the outlet
Dry Storage Volume (Vd)=[(Aw+Ad)/2]*Dd ⇨Ad=(Vd*2)/Dw-Aw
Aw=the surface area of the flooded area at the base of the stone outlet in square feet
Ad=the surface area of the flooded area at the top of the outlet (overflow mechanism), in square feet
Dd=the depth in feet, measure from the base of the outlet to the to of the stone outlet

Typical Temporary Sediment Trap Design

Drainage Area (Ac)= *3.82*

Volume Required (cu.yd.)= 134 cu yd/Ac*Drainage Area = 512
(cu.ft.)= 13833
(ac.-ft.)= 0.32

Vw (cu.ft.)= 6916 Aw=Vw/(0.85*Dw) = 2712
Vd (cu.ft.)= 6916 Ad=(Vd*2)/Dd - Aw = 4204

Approximate Dimensions:

Length (ft)	Width (ft)	Depth (ft)
85	*60*	3.5
		2 ft Wet Storage
		1.5 ft Dry Storage

Volume Provided (cu.ft.)

Vw=	**7532**	≥	6916
Vd=	**7025**	≥	6916

Temporary Sediment Trap Design Worksheet

Project:	Easton Crossing	By:	ADS	Date:	08/04/14
Location:	Easton, Connecticut	Checked:	CEH	Date:	08/04/14
Temporary Sediment Trap I.D.			**Trap 2**		

*From CT Guidelines for Soil Erosion and Sediment Control, Ch. 5, Sec. 11, pages 5-11-25 to 5-11-29
*Initial Storage Volume Required Based on 1" of Runoff

Assumptions

1. Wet Storage is equal to one half of the overall volume
2. Dry Storage is equal to one half of the overall volume
3. Depth of Wet Storage is 2.0 feet
4. Depth of Dry Storage is 1.5 feet

Approximate Sediment Trap Design

Wet Storage Volume (Vw)=0.85*Aw*Dw ⇨ Aw=Vw(0.85*Dw)
Aw=the surface area of the flooded area at the base of the outlet in square feet
Dw=the maximum depth in feet, measure from the low point in the trap to the base of the outlet
Dry Storage Volume (Vd)=[(Aw+Ad)/2]*Dd ⇨Ad=(Vd*2)/Dw-Aw
Aw=the surface area of the flooded area at the base of the stone outlet in square feet
Ad=the surface area of the flooded area at the top of the outlet (overflow mechanism), in square feet
Dd=the depth in feet, measure from the base of the outlet to the to of the stone outlet

Typical Temporary Sediment Trap Design

Drainage Area (Ac)=	*3.26*		
Volume Required (cu.yd.)=	134 cu yd/Ac*Drainage Area =		437
(cu.ft.)=	11804		
(ac.-ft.)=	0.27		
Vw (cu.ft.)=	5902	Aw=Vw/(0.85*Dw) =	2314
Vd (cu.ft.)=	5902	Ad=(Vd*2)/Dd - Aw =	3587

Approximate Dimensions:

Length (ft)	Width (ft)	Depth (ft)
75	*60*	3.5
		2 ft Wet Storage
		1.5 ft Dry Storage

Volume Provided (cu.ft.)

Vw=	**6532**	≥	5902
Vd=	**6170**	≥	5902

Temporary Sediment Trap Design Worksheet

Project:	Easton Crossing	By:	ADS	Date:	08/04/14
Location:	Easton, Connecticut	Checked:	CEH	Date:	08/04/14
Temporary Sediment Trap I.D.			**Trap 3**		

*From CT Guidelines for Soil Erosion and Sediment Control, Ch. 5, Sec. 11, pages 5-11-25 to 5-11-29
*Initial Storage Volume Required Based on 1" of Runoff

Assumptions

1. Wet Storage is equal to one half of the overall volume
2. Dry Storage is equal to one half of the overall volume
3. Depth of Wet Storage is 2.0 feet
4. Depth of Dry Storage is 1.5 feet

Approximate Sediment Trap Design

Wet Storage Volume (Vw)=0.85*Aw*Dw ⇨ Aw=Vw(0.85*Dw)
Aw=the surface area of the flooded area at the base of the outlet in square feet
Dw=the maximum depth in feet, measure from the low point in the trap to the base of the outlet
Dry Storage Volume (Vd)=[(Aw+Ad)/2]*Dd ⇨Ad=(Vd*2)/Dw-Aw
Aw=the surface area of the flooded area at the base of the stone outlet in square feet
Ad=the surface area of the flooded area at the top of the outlet (overflow mechanism), in square feet
Dd=the depth in feet, measure from the base of the outlet to the to of the stone outlet

Typical Temporary Sediment Trap Design

Drainage Area (Ac)= *4.36*

Volume Required (cu.yd.)= 134 cu yd/Ac*Drainage Area = 584
(cu.ft.)= 15781
(ac.-ft.)= 0.36

Vw (cu.ft.)= 7890 Aw=Vw/(0.85*Dw) = 3094
Vd (cu.ft.)= 7890 Ad=(Vd*2)/Dd - Aw = 4796

Approximate Dimensions:

Length (ft)	Width (ft)	Depth (ft)
90	*65*	3.5
		2 ft Wet Storage
		1.5 ft Dry Storage

Volume Provided (cu.ft.)

Vw=	**8832**	≥	7890
Vd=	**8105**	≥	7890

Temporary Sediment Trap Design Worksheet

Project:	Easton Crossing	By:	ADS	Date:	08/04/14
Location:	Easton, Connecticut	Checked:	CEH	Date:	08/04/14
Temporary Sediment Trap I.D.			**Trap 4**		

*From CT Guidelines for Soil Erosion and Sediment Control, Ch. 5, Sec. 11, pages 5-11-25 to 5-11-29
*Initial Storage Volume Required Based on 1" of Runoff

Assumptions

1. Wet Storage is equal to one half of the overall volume
2. Dry Storage is equal to one half of the overall volume
3. Depth of Wet Storage is 2.0 feet
4. Depth of Dry Storage is 1.5 feet

Approximate Sediment Trap Design

Wet Storage Volume (Vw)=0.85*Aw*Dw ⇨ Aw=Vw(0.85*Dw)
Aw=the surface area of the flooded area at the base of the outlet in square feet
Dw=the maximum depth in feet, measure from the low point in the trap to the base of the outlet
Dry Storage Volume (Vd)=[(Aw+Ad)/2]*Dd ⇨Ad=(Vd*2)/Dw-Aw
Aw=the surface area of the flooded area at the base of the stone outlet in square feet
Ad=the surface area of the flooded area at the top of the outlet (overflow mechanism), in square feet
Dd=the depth in feet, measure from the base of the outlet to the to of the stone outlet

Typical Temporary Sediment Trap Design

Drainage Area (Ac)= *1.32*

Volume Required (cu.yd.)= 134 cu yd/Ac*Drainage Area = 177
(cu.ft.)= 4792
(ac.-ft.)= 0.11

Vw (cu.ft.)= 2396 Aw=Vw/(0.85*Dw) = 940
Vd (cu.ft.)= 2396 Ad=(Vd*2)/Dd - Aw = 1456

Approximate Dimensions:

Length (ft)	Width (ft)	Depth (ft)
50	*40*	3.5 2 ft Wet Storage 1.5 ft Dry Storage

Volume Provided (cu.ft.)

Vw=	**2432**	≥	2396
Vd=	**2622**	≥	2396

Temporary Sediment Trap Design Worksheet

Project:	Easton Crossing	By:	ADS	Date:	08/04/14
Location:	Easton, Connecticut	Checked:	CEH	Date:	08/04/14
Temporary Sediment Trap I.D.			**Trap 5**		

*From CT Guidelines for Soil Erosion and Sediment Control, Ch. 5, Sec. 11, pages 5-11-25 to 5-11-29
*Initial Storage Volume Required Based on 1" of Runoff

Assumptions

1. Wet Storage is equal to one half of the overall volume
2. Dry Storage is equal to one half of the overall volume
3. Depth of Wet Storage is 2.0 feet
4. Depth of Dry Storage is 1.5 feet

Approximate Sediment Trap Design

Wet Storage Volume (Vw)=0.85*Aw*Dw ⇨ Aw=Vw(0.85*Dw)
Aw=the surface area of the flooded area at the base of the outlet in square feet
Dw=the maximum depth in feet, measure from the low point in the trap to the base of the outlet
Dry Storage Volume (Vd)=[(Aw+Ad)/2]*Dd ⇨Ad=(Vd*2)/Dw-Aw
Aw=the surface area of the flooded area at the base of the stone outlet in square feet
Ad=the surface area of the flooded area at the top of the outlet (overflow mechanism), in square feet
Dd=the depth in feet, measure from the base of the outlet to the to of the stone outlet

Typical Temporary Sediment Trap Design

Drainage Area (Ac)=	*3.45*		
Volume Required (cu.yd.)=	134 cu yd/Ac*Drainage Area =		462
(cu.ft.)=	12472		
(ac.-ft.)=	0.29		
Vw (cu.ft.)=	6236	Aw=Vw/(0.85*Dw) =	2446
Vd (cu.ft.)=	6236	Ad=(Vd*2)/Dd - Aw =	3791

Approximate Dimensions:

Length (ft)	Width (ft)	Depth (ft)
85	*55*	3.5
		2 ft Wet Storage
		1.5 ft Dry Storage

Volume Provided (cu.ft.)

Vw=	**6782**	≥	6236
Vd=	**6410**	≥	6236

Temporary Sediment Trap Design Worksheet

Project:	Easton Crossing	By:	ADS	Date:	08/04/14
Location:	Easton, Connecticut	Checked:	CEH	Date:	08/04/14
Temporary Sediment Trap I.D.			**Trap 6**		

*From CT Guidelines for Soil Erosion and Sediment Control, Ch. 5, Sec. 11, pages 5-11-25 to 5-11-29
*Initial Storage Volume Required Based on 1" of Runoff

Assumptions

1. Wet Storage is equal to one half of the overall volume
2. Dry Storage is equal to one half of the overall volume
3. Depth of Wet Storage is 2.0 feet
4. Depth of Dry Storage is 1.5 feet

Approximate Sediment Trap Design

Wet Storage Volume (Vw)=0.85*Aw*Dw ⇨ Aw=Vw(0.85*Dw)
Aw=the surface area of the flooded area at the base of the outlet in square feet
Dw=the maximum depth in feet, measure from the low point in the trap to the base of the outlet
Dry Storage Volume (Vd)=[(Aw+Ad)/2]*Dd ⇨Ad=(Vd*2)/Dw-Aw
Aw=the surface area of the flooded area at the base of the stone outlet in square feet
Ad=the surface area of the flooded area at the top of the outlet (overflow mechanism), in square feet
Dd=the depth in feet, measure from the base of the outlet to the to of the stone outlet

Typical Temporary Sediment Trap Design

Drainage Area (Ac)= *3.32*

Volume Required (cu.yd.)= 134 cu yd/Ac*Drainage Area = 445
(cu.ft.)= 12008
(ac.-ft.)= 0.28

Vw (cu.ft.)= 6004 Aw=Vw/(0.85*Dw) = 2354
Vd (cu.ft.)= 6004 Ad=(Vd*2)/Dd - Aw = 3649

Approximate Dimensions:

Length (ft)	Width (ft)	Depth (ft)
80	*55*	3.5
		2 ft Wet Storage
		1.5 ft Dry Storage

Volume Provided (cu.ft.)

Vw=	**6332**	≥	6004
Vd=	**6020**	≥	6004

HY-8 CULVERT ANALYSIS

HY-8 Culvert Analysis Report

Saddle Ridge Subdivision
Easton, CT
MMI#2683-01-26

3'span x 3'rise Concrete Box Culvert
Invert in = 411.0
Invert out = 408.5

Culvert imbedded 12" into existing grade. Effective opening 3'span x 2'rise

Design Storm: 50-year storm =24 cfs
Checked against 100-year storm = 28 cfs

Headwater Elevation @ 100-year storm event = 413.63 ft

Discharge at overtopping elevation of 418.0 feet = 58 cfs

Crossing Discharge Data

Discharge Selection Method: Specify Minimum, Design, and Maximum Flow

Minimum Flow: 6 cfs

Design Flow: 24 cfs

Maximum Flow: 28 cfs

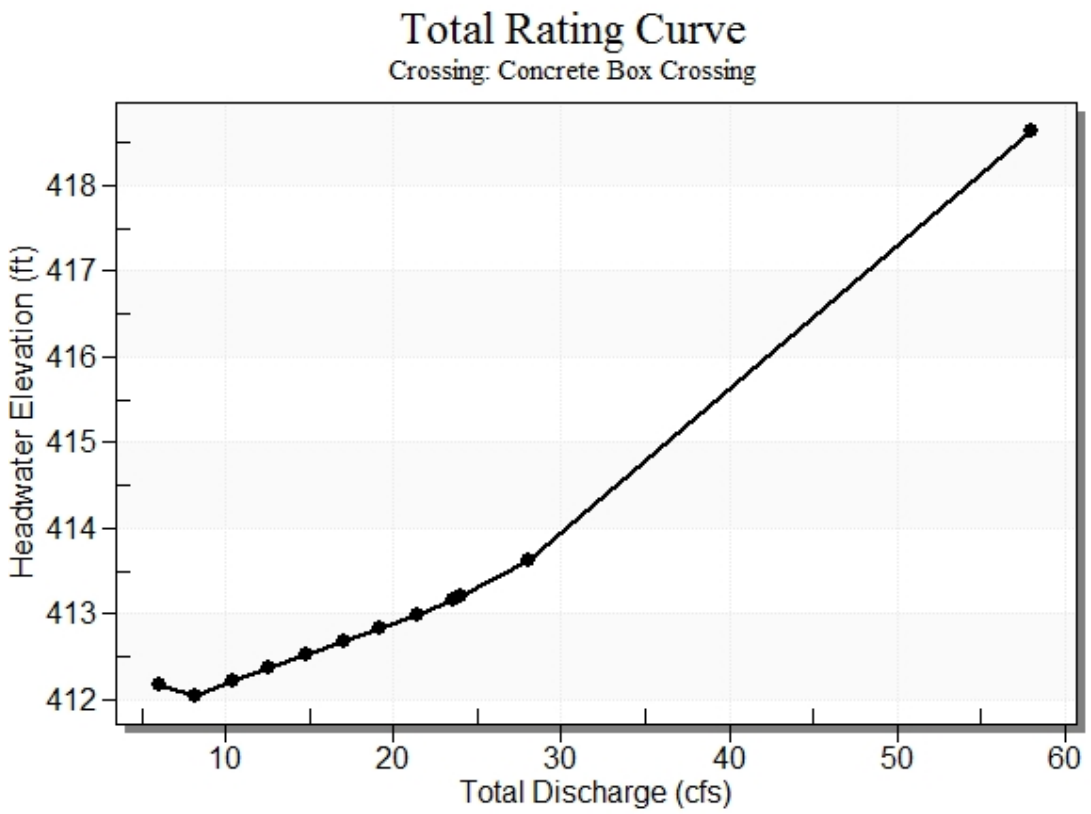
Table 1 - Summary of Culvert Flows at Crossing: Concrete Box Crossing

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
412.18	6.00	6.00	0.00	1
412.05	8.20	8.20	0.00	1
412.21	10.40	10.40	0.00	1
412.37	12.60	12.60	0.00	1
412.53	14.80	14.80	0.00	1
412.69	17.00	17.00	0.00	1
412.84	19.20	19.20	0.00	1
413.00	21.40	21.40	0.00	1
413.17	23.60	23.60	0.00	1
413.21	24.00	24.00	0.00	1
413.63	28.00	28.00	0.00	1
418.00	58.04	58.04	0.00	Overtopping

Table 2 - Culvert Summary Table: Culvert 1

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
6.00	6.00	412.18	1.184	0.916	2-M2c	0.510	0.504	0.504	0.329	3.966	3.046
8.20	8.20	412.05	1.053	0.0*	1-S2n	0.615	0.623	0.615	0.393	4.442	3.375
10.40	10.40	412.21	1.212	0.0*	1-S2n	0.713	0.729	0.713	0.450	4.859	3.642
12.60	12.60	412.37	1.372	0.0*	1-S2n	0.798	0.826	0.798	0.501	5.260	3.871
14.80	14.80	412.53	1.532	0.0*	1-S2n	0.881	0.920	0.881	0.548	5.598	4.069
17.00	17.00	412.69	1.687	0.0*	1-S2n	0.957	0.999	0.957	0.591	5.919	4.246
19.20	19.20	412.84	1.841	0.0*	1-S2n	1.030	1.078	1.030	0.632	6.215	4.406
21.40	21.40	413.00	1.995	0.0*	1-S2n	1.101	1.158	1.101	0.670	6.478	4.553
23.60	23.60	413.17	2.166	0.0*	5-S2n	1.166	1.238	1.166	0.707	6.747	4.689
24.00	24.00	413.21	2.208	0.0*	5-S2n	1.178	1.251	1.178	0.713	6.793	4.712
28.00	28.00	413.63	2.634	0.0*	5-S2n	1.294	1.388	1.294	0.775	7.215	4.932

Rating Curve Plot for Crossing: Concrete Box Crossing



* Full Flow Headwater elevation is below inlet invert.

****

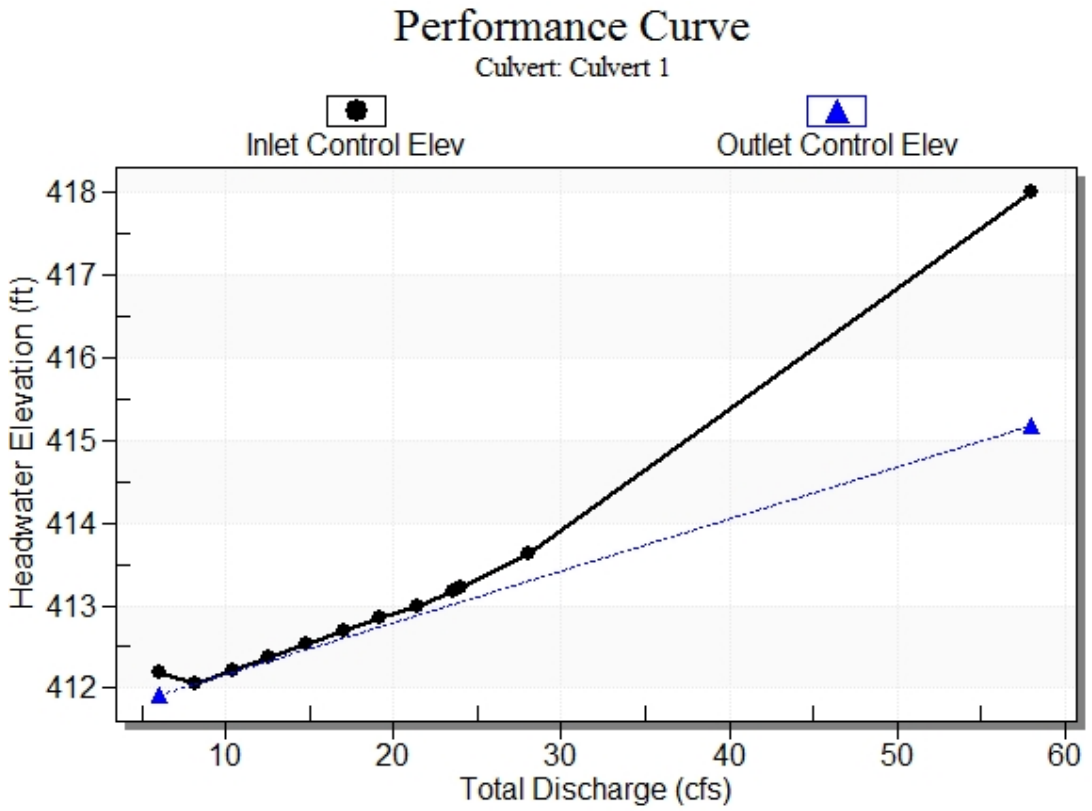
Straight Culvert

Inlet Elevation (invert): 411.00 ft, Outlet Elevation (invert): 408.50 ft

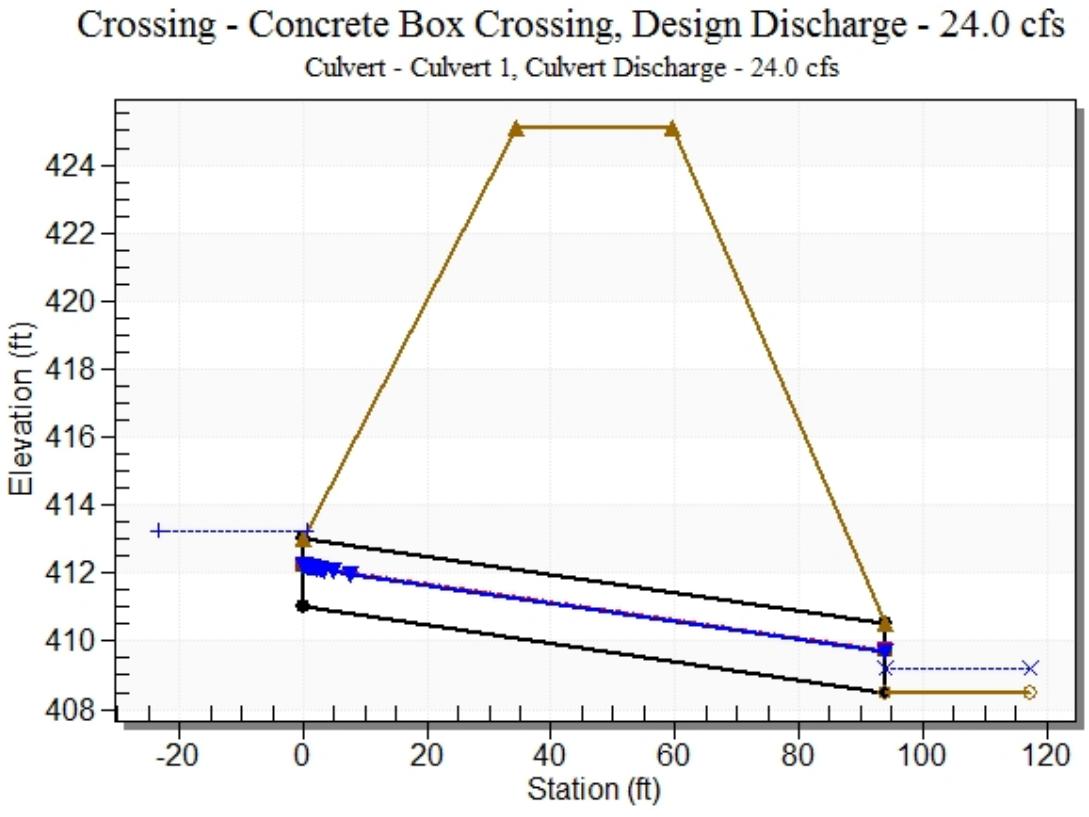
Culvert Length: 94.03 ft, Culvert Slope: 0.0266

****

Culvert Performance Curve Plot: Culvert 1



Water Surface Profile Plot for Culvert: Culvert 1



Site Data - Culvert 1

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 411.00 ft

Outlet Station: 94.00 ft

Outlet Elevation: 408.50 ft

Number of Barrels: 1

Culvert Data Summary - Culvert 1

Barrel Shape: User Defined

Barrel Span: 3.00 ft

Barrel Rise: 2.00 ft

Barrel Material: Concrete

Embedment: 0.00 in

Barrel Manning's n: 0.0120 (top and sides)

Manning's n: 0.0400 (bottom)

Culvert Type: Straight

Inlet Configuration: Mitered to Conform to Slope

Inlet Depression: NONE

Table 3 - Downstream Channel Rating Curve (Crossing: Concrete Box Crossing)

Flow (cfs)	Water Surface Elev (ft)	Depth (ft)	Velocity (ft/s)	Shear (psf)	Froude Number
6.00	408.83	0.33	3.05	0.76	1.01
8.20	408.89	0.39	3.37	0.91	1.03
10.40	408.95	0.45	3.64	1.04	1.05
12.60	409.00	0.50	3.87	1.16	1.07
14.80	409.05	0.55	4.07	1.26	1.08
17.00	409.09	0.59	4.25	1.36	1.09
19.20	409.13	0.63	4.41	1.46	1.10
21.40	409.17	0.67	4.55	1.55	1.11
23.60	409.21	0.71	4.69	1.63	1.12
24.00	409.21	0.71	4.71	1.65	1.12
28.00	409.28	0.78	4.93	1.79	1.13

Tailwater Channel Data - Concrete Box Crossing

Tailwater Channel Option: Trapezoidal Channel

Bottom Width: 5.00 ft

Side Slope (H:V): 3.00 (_:1)

Channel Slope: 0.0370

Channel Manning's n: 0.0400

Channel Invert Elevation: 408.50 ft

Roadway Data for Crossing: Concrete Box Crossing

Roadway Profile Shape: Irregular Roadway Shape (coordinates)

Irregular Roadway Cross-Section:

Coord No.	Station (ft)	Elevation (ft)
0	0.00	425.11
1	50.00	422.37
2	100.00	420.25
3	150.00	418.76
4	200.00	418.00
5	250.00	418.00

Roadway Surface: Paved

Roadway Top Width: 25.00 ft

WATER QUALITY COMPUTATIONS

STORMWATER QUALITY CALCULATIONS:
Water Quality Volume

Basin ID	Total Area (ac.)	Impervious Area (ac.)	Percent Impervious	Volumetric Runoff Coeff., R	WQV (ac-ft)	Total Volume Required (ac-ft)	Total Volume Provided (ac-ft)
DET 140	5.20	1.30	25%	0.28	0.119	**0.119**	*0.233*
DET 150	11.00	1.97	18%	0.21	0.194	**0.194**	*0.323*
DET 210	11.20	1.25	11%	0.15	0.140	**0.140**	*0.185*
DET 220	11.38	1.57	14%	0.17	0.165	**0.165**	*0.257*
DET 230	4.72	0.98	21%	0.24	0.093	**0.093**	*0.125*

$$\mathbf{WQV} = \frac{(1.0 \text{ inches}) \times A \times R}{12}$$

Where: WQV = Water Quality Volume in acre-feet

A = Contributing Area in acres

R = 0.05 + 0.009 (I)

I = Site Imperviousness as percent

STORMWATER QUALITY CALCULATIONS
Total Storage Volume Provided

Detention Basin 140:

Elevation (ft)	Surface Area (ft2)	Volume (ft3)	Volume (ac-ft)	Cumulative Volume (ac-ft)
403.0	4,100	0.0	0.000	**0.000**
404.0	4,950	4,525.0	0.104	**0.104**
405.0	6,275	5,612.5	0.129	**0.233**

Detention Basin 150:

Elevation (ft)	Surface Area (ft2)	Volume (ft3)	Volume (ac-ft)	Cumulative Volume (ac-ft)
400.0	950	0.0	0.000	**0.000**
401.0	1,450	1,200.0	0.028	**0.028**
402.0	2,125	1,787.5	0.041	**0.069**
403.0	2,975	2,550.0	0.059	**0.127**
404.0	4,275	3,625.0	0.083	**0.210**
405.0	5,525	4,900.0	0.112	**0.323**

Detention Basin 210:

Elevation (ft)	Surface Area (ft2)	Volume (ft3)	Volume (ac-ft)	Cumulative Volume (ac-ft)
397.0	7,325	0.0	0.000	**0.000**
398.0	8,800	8,062.5	0.185	**0.185**

Retention Basin 210:

Elevation (ft)	Surface Area (ft2)	Volume (ft3)	Volume (ac-ft)	Cumulative Volume (ac-ft)
417.0	575	0.0	0.000	**0.000**
418.0	1,550	1,062.5	0.024	**0.024**
419.0	1,700	1,625.0	0.037	**0.062**
420.0	1,875	1,787.5	0.041	**0.103**
421.0	2,025	1,950.0	0.045	**0.147**
422.0	2,225	2,125.0	0.049	**0.196**

STORMWATER QUALITY CALCULATIONS
Total Storage Volume Provided

Detention Basin 220:

Elevation (ft)	Surface Area (ft2)	Volume (ft3)	Volume (ac-ft)	Cumulative Volume (ac-ft)
442.0	10,400	0.0	0.000	**0.000**
443.0	11,950	11,175.0	0.257	**0.257**

Detention Basin 230:

Elevation (ft)	Surface Area (ft2)	Volume (ft3)	Volume (ac-ft)	Cumulative Volume (ac-ft)
398.5	600	0.0	0.000	**0.000**
399.0	1,525	531.3	0.012	**0.012**
400.0	2,400	1,962.5	0.045	**0.057**
401.0	3,525	2,962.5	0.068	**0.125**

STORMWATER QUALITY CALCULATIONS:
Groundwater Recharge Volume

Area ID	Total Site Area (ac.)	Pr Impervious Area (ac.)	Percent Impervious	Recharge Depth[1.], D (in.)	GRV (ac-ft)	Total Volume Provided[2.] (ac-ft)
Total Site	124.70	8.19	7%	0.165	0.113	*0.329*

[1.] - A weighted recharge value was computed for the entire site.

[2.] - Groundwater recharge volume is provided within the perforated plastic chambers attached to the proposed rooftop areas.

Each building rooftop will discharge to 3 chambers surrounded by stone, providing 298.68 cf of storage volume (99.56 cf each chamber)

$$\textbf{GRV} = \frac{D \times A \times I}{12}$$

Where: GRV = Groundwater Recharge Volume in acre-feet
D = Depth of Runoff to be Recharged in inches
A = Contributing Area in acres
I = Site Imperviousness as decimal

Weighted Recharge Value (D)

A soil = 6.01 acres
B soil = 68.87 acres
C soil = 9.85 acres
D soil = 39.97 acres

$$\text{D Comp} = \frac{(6.01 \times 0.40) + (68.87 \times 0.25) + (9.85 \times 0.10) + (39.97 \times 0)}{124.70}$$

D Comp = 0.165

Technical Information

CULTEC Recharger® V8HD

The Recharger® V8HD is a 32" (813 mm) tall, high capacity chamber. The Recharger® V8HD has the side portal internal manifold feature. HVLV™ Feed Connectors are inserted into the side portals to create the internal manifold.

The Recharger V8 SHD Starter and EHD End sections are **shorter** in length than the Recharger V8 IHD Intermediate section. These differences must be considered during product specification, calculation and design.

Recharger V8SHD Starter

Recharger V8IHD Intermediate

Recharger V8EHD End

	Recharger V8SHD Starter or V8EHD End Section	Recharger V8IHD Intermediate Section
Size (L x W x H)	5.08' x 60" x 32"	8' x 60" x 32"
	1.55 m x 1524 mm x 813 mm	2.44 m x 1524 mm x 813 mm
Installed Length	4.58'	7.5'
	1.40 m	2.29 m
Length Adjustment per Run	-5.83'	-5.83'
	-1.78 m	-1.78 m
Chamber Storage	8.68 ft^3/ft	8.68 ft^3/ft
	0.81 m^3/m	0.81 m^3/m
	39.78 ft^3/unit	65.09 ft^3/unit
	1.13 m^3/unit	1.84 m^3/unit
Min. Installed Storage	13.27 ft^3/ft	13.27 ft^3/ft
	1.23 m^3/m	1.23 m^3/m
	60.84 ft^3/unit	99.56 ft^3/unit
	1.72 m^3/unit	2.82 m^3/unit
Min. Area Required	25.21 ft^2	41.25 ft^2
	2.34 m^2	3.83 m^2
Min. Center to Center Spacing	5.5'	5.5'
	1.68 m	1.68 m
Max. Allowable Cover	8'	8'
	2.44 m	2.44 m
Max. Inlet Opening in Endwall	24"	n/a
	600 mm	n/a
Side Portal Dimensions (H x W)	16" x 21"	10.5" x 12"
	406 mm x 533 mm	267 mm x 305 mm
Max. Allowable Pipe Size in Side Portal	12"	10"
	300 mm	250 mm
Compatible Feed Connector	HVLV F-110x4 Feed Connector	HVLV FC-24 Feed Connector

Recharger V8SHD Starter or V8EHD End	Stone Foundation Depth 6" 152 mm	12" 305 mm	18" 457 mm
Chamber and Stone Storage Per Chamber	60.84 ft^3	65.88 ft^3	70.92 ft^3
	1.72 m^3	1.87 m^3	2.01 m^3
Min. Effective Depth	3.67'	4.17'	4.67'
	1.12 m	1.27 m	1.42 m
Stone Required Per Chamber	1.95 yd^3	2.42 yd^3	2.88 yd^3
	1.49 m^3	1.85 m^3	2.20 m^3

Recharger V8IHD Intermediate	Stone Foundation Depth 6" 152 mm	12" 305 mm	18" 457 mm
Chamber and Stone Storage Per Chamber	99.56 ft^3	107.81 ft^3	116.06 ft^3
	2.82 m^3	3.05 m^3	3.29 m^3
Min. Effective Depth	3.67'	4.17'	4.67'
	1.12 m	1.27 m	1.42 m
Stone Required Per Chamber	3.19 yd^3	3.95 yd^3	4.72 yd^3
	2.44 m^3	3.02 m^3	3.61 m^3

Includes 6" (152 mm) stone above crown of chamber and typical stone surround. Stone void calculated at 40%.

Engineering, Planning,
Landscape Architecture
and Environmental Science

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Cheshire, Connecticut 06410
(203) 271-1773 Fax (203) 272-9733

JOB Saddle Ridge Subdivision (2683-01-26)
SHEET NO. 1 OF 1
CALCULATED BY FAB DATE 8/4/14
CHECKED BY _____ DATE _____
SCALE Underground chambers Design

- The proposed underground chambers located adjacent to Cedar Hill Road to the west, were sized with a storage volume to retain runoff from a minimum 1" of rainfall.

- Drainage Area = 0.98 acres
- Impervious Area = 0.24 acres

$\Rightarrow I = 25\%$

$$WQV = \frac{1'' \times A \times R}{12}$$

$R = 0.05 + 0.009(I)$

$R = 0.05 + 0.009(25) = 0.275$

$$WQV = \frac{1'' \times 0.98 \times 0.275}{12} = 0.023 \text{ ac-ft} = 978 \text{ ft}^3$$

Each chamber provides 99.56 ft^3 surrounded by stone.

total provided = 10 chambers = 996 ft^3

996 ft^3 > 978 ft^3 OK

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JOB Saddle Ridge Subdivision (2683-01-26)
SHEET NO. 1 OF 2
CALCULATED BY FAB DATE 8/4/14
CHECKED BY EAH DATE 8/4/14
SCALE WQV Retention Computations

- WQV retention computations were performed in response to SWGP requirement to retain the full WQV for new development sites.

-Total WQV required for WS's 14, 15, 21, 22 and 23

0.712 ac-ft

- 1" runoff volume over proposed impervious from WS's 10, 11, 20, 24, 30 and 31

$$1.12 \text{ ac} \times \frac{1}{12} \frac{\text{in}}{\text{ft}} = 0.093 \text{ ac-ft}$$

- Retention volume to be provided:
  - 0.805 ac-ft

- Recharger units from buildings (3 units/bld)

48 lots ⇒ $48 \times 298.68 \text{ ft}^3/\text{bld} = 14.337 \text{ ft}^3 \approx 0.329$ ac-ft //

- Basin 140

WQV = 0.233 ac-ft //

- Basin 150 ⇒ no credit for infiltration due to restrictive layer
- Retention Basin 210

Volume = 0.147 ac-ft @ overflow elev. 421.0 //

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JOB Saddle Ridge Subdivision (2683-01-26)
SHEET NO. 2 OF 2
CALCULATED BY FAB DATE 8/4/14
CHECKED BY EAH DATE 8/4/14
SCALE WQV Retention Computations

- Basin 220 ⇒ no credit for infiltration due to restrictive layer
- Basin 230

  WQV = 0.125 ac-ft //

- Underground retention 310 (adjacent to Cedar Hill Road)

  0.023 ac-ft

- Provided WQV retention:

  0.859 ac-ft > 0.805 ac-ft OK //

TR-20 INPUT COMPUTATIONS

Worksheet 2: Runoff curve number and runoff

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: ***Present*** Developed Watershed: WS 10 - Existing Conditions

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
A	WOODS (GOOD)	30			6.06	181.74
A	OPEN SPACE / LAWN AREA (GOOD)	39			0.62	24.25
B	WOODS (GOOD)	55			17.27	949.66
B	OPEN SPACE / LAWN AREA (GOOD)	61			3.28	200.19
B	PASTURE, GRASSLAND	61			1.23	74.79
B	ROW CROPS (SR+CR) - GOOD	75			0.41	30.95
B	FALLOW - BARE SOIL	83			5.30	440.29
C	WOODS (GOOD)	70			1.57	109.86
C	OPEN SPACE / LAWN AREA (GOOD)	74			1.10	81.09
C	PASTURE, GRASSLAND	74			0.02	1.60
C	FALLOW - BARE SOIL	88			0.90	79.54
D	WOODS (GOOD)	77			7.96	612.93
D	OPEN SPACE / LAWN AREA (GOOD)	80			0.03	2.34
D	FALLOW - BARE SOIL	90			0.26	23.43
N/A	EXISTING BUILDING	98			0.38	37.56
N/A	EXISTING PAVED / IMPERVIOUS	98			2.37	232.73
W	WATER	98			2.29	224.53
				Totals =	51.06	3307.46
					(0.07978	sq mi)

[1.] Use only one CN value source per line.

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{3307.46}{51.06}$$ Use CN = 65

Worksheet 2: Runoff curve number and runoff

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: ***Present*** Developed Watershed: WS 12 - Existing Conditions

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
A	WOODS (GOOD)	30			3.51	105.41
A	OPEN SPACE / LAWN AREA (GOOD)	39			0.80	31.31
A	GRAVEL ROAD	76			0.03	2.38
B	WOODS (GOOD)	55			85.29	4,691.18
B	MEADOW	58			2.62	152.04
B	OPEN SPACE / LAWN AREA (GOOD)	61			18.92	1,154.10
B	ROW CROPS (SR+CR) - GOOD	75			0.91	68.56
B	FALLOW - BARE SOIL	83			0.22	18.11
B	GRAVEL ROAD	85			1.19	101.06
C	WOODS (GOOD)	70			9.57	669.78
C	OPEN SPACE / LAWN AREA (GOOD)	74			2.39	177.01
D	WOODS (GOOD)	77			27.88	2,146.49
D	OPEN SPACE / LAWN AREA (GOOD)	80			9.52	761.60
D	ROW CROPS (SR+CR) - GOOD	85			0.61	51.70
N/A	EXISTING BUILDING	98			5.40	529.31
N/A	EXISTING PAVED / IMPERVIOUS	98			14.53	1,423.80
W	WATER	98			3.55	347.45
				Totals =	186.94	12431.29
					(0.29210	sq mi)

[1.] Use only one CN value source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{12431.29}{186.94}$ Use CN = 66

Worksheet 2: Runoff curve number and runoff

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: ***Present*** Developed Watershed: WS 13 - Existing Conditions

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	WOODS (GOOD)	55			45.72	2,514.87
B	ORCHARD (GOOD)	58			6.37	369.19
B	OPEN SPACE / LAWN AREA (GOOD)	61			5.36	326.90
B	ROW CROPS (SR+CR) - GOOD	75			5.66	424.21
B	GRAVEL ROAD	85			0.07	6.08
C	WOODS (GOOD)	70			1.59	111.08
C	ORCHARD (GOOD)	72			1.18	85.05
C	OPEN SPACE / LAWN AREA (GOOD)	74			0.23	17.00
C	ROW CROPS (SR+CR) - GOOD	82			0.26	21.32
D	WOODS (GOOD)	77			14.53	1,118.43
D	OPEN SPACE / LAWN AREA (GOOD)	80			2.43	194.55
D	ROW CROPS (SR+CR) - GOOD	85			0.41	35.21
D	GRAVEL ROAD	91			0.16	14.58
N/A	EXISTING BUILDING	98			1.55	151.97
N/A	EXISTING PAVED / IMPERVIOUS	98			8.84	866.16
W	EXISTING POND	98			1.28	125.53
				Totals =	95.64	6382.11
					(0.14943	sq mi)

[1.] Use only one CN value source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{6382.11}{95.64}$ Use CN = **67**

Worksheet 2: Runoff curve number and runoff

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: ***Present*** Developed Watershed: WS 20 - Existing Conditions

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	WOODS (GOOD)	55			29.81	1,639.72
B	OPEN SPACE / LAWN AREA (GOOD)	61			0.90	54.63
B	MEADOW	58			0.67	38.65
B	FALLOW - BARE SOIL	83			1.15	95.55
C	WOODS (GOOD)	70			3.06	214.52
C	MEADOW	71			0.78	55.28
C	OPEN SPACE / LAWN AREA (GOOD)	74			3.50	258.87
C	FALLOW - BARE SOIL	88			2.35	207.23
D	WOODS (GOOD)	77			20.58	1,585.04
D	MEADOW	78			0.08	6.09
D	OPEN SPACE / LAWN AREA (GOOD)	80			0.56	44.87
D	FALLOW - BARE SOIL	90			0.12	10.75
N/A	EXISTING BUILDING	98			0.37	36.48
N/A	EXISTING PAVED / IMPERVIOUS	98			0.68	66.64
[1.] Use only one CN value source per line.				Totals =	64.62	4314.33
					(0.10097	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{4314.33}{64.62}$ Use CN = 67

Worksheet 2: Runoff curve number and runoff

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: ***Present*** Developed Watershed: WS 24 - Existing Conditions

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	WOODS (GOOD)	55			1.92	105.76
B	OPEN SPACE / LAWN AREA (GOOD)	61			0.43	26.52
D	WOODS (GOOD)	77			0.89	68.52
D	OPEN SPACE / LAWN AREA (GOOD)	80			0.05	3.94
N/A	EXISTING BUILDING	98			0.03	3.41
N/A	EXISTING PAVED / IMPERVIOUS	98			0.05	5.25

[1.] Use only one CN value source per line. Totals = 3.39 213.40

(0.00529 sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}}$ = $\frac{213.40}{3.39}$ Use CN = 63

Worksheet 2: Runoff curve number and runoff

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: ***Present*** Developed Watershed: WS 30 - Existing Conditions

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
A	WOODS (GOOD)	30			1.49	44.80
B	WOODS (GOOD)	55			32.83	1,805.71
B	ORCHARD OR TREE FARM	58			5.20	301.82
B	OPEN SPACE / LAWN AREA (GOOD)	61			5.98	364.62
B	ROW CROPS (SR+CR) - GOOD	75			0.49	36.44
B	FALLOW - BARE SOIL	83			0.48	39.95
B	GRAVEL ROAD	85			0.38	32.56
C	WOODS (GOOD)	70			0.84	58.96
C	OPEN SPACE / LAWN AREA (GOOD)	74			0.27	19.90
C	FALLOW - BARE SOIL	88			0.01	1.30
D	WOODS (GOOD)	77			26.20	2,017.24
D	OPEN SPACE / LAWN AREA (GOOD)	80			1.90	152.02
D	GRAVEL ROAD	91			0.11	10.44
N/A	EXISTING BUILDING	98			1.00	98.19
N/A	EXISTING PAVED / IMPERVIOUS	98			4.46	437.46
W	EXISTING POND	98			0.58	56.64
				Totals =	82.24	5478.06
					(0.12850	sq mi)

[1.] Use only one CN value source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{5478.06}{82.24}$ Use CN = 67

Worksheet 2: Runoff curve number and runoff

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: ***Present*** Developed Watershed: WS 40 - Existing Conditions

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.]			Area (Acres / Sq. Ft. / %)	Product of CN x Area
		Table 2-2	Figure 2-3	Figure 2-4		
B	WOODS (GOOD)	55			1.59	87.38
				Totals =	1.59	87.38
					(0.00248	sq mi)

[1.] Use only one CN value source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{87.38}{1.59}$ Use CN = **55**

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: ***Present*** Developed Watershed: WS 10 - Existing Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			FRST		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.400		
3. Flow Length, L (< 300ft)	ft.		100.0		
4. Two-year 24-hr rainfall, P_2	in.		3.30		
5. Land slope, s	ft./ft.		0.009		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.475	=	0.475

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D			
7. Surface description			FRST	FRST			
8. Manning's roughness coeff., n			0.100	0.100			
9. Paved or unpaved			UNPVD	UNPVD			
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40	0.40			
11. Flow Length, L	ft.		295.0	260.0			
12. Watercourse slope, s	ft./ft.		0.0100	0.0231			
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		0.81	1.23			
14. $T_t = \frac{L}{3600 * V}$	hr.		0.101	+ 0.059	+	+ 0.000	= 0.160

Channel flow

		Segment ID	D-E				
15. Channel Bottom width, b	ft.		5.00				
16. Horizontal side slope component, z (z horiz:1 vert)	ft.		3.00				
17. Depth of flow, d	ft.		1.00				
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$		8.00				
19. Wetted perimeter, P_w	ft.		11.32				
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.		0.71				
21. Channel slope, s	ft./ft.		0.0370				
22. Manning's roughness coeff., n			0.040				
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.		5.68				
24. Flow length, L	ft.		540.0				
25. $T_t = \frac{L}{3600 * V}$	hr.		0.026	+ 0.000	+ 0.000	+ 0.000	= 0.026

26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25) hr. 0.662

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: ***Present*** Developed Watershed: WS 12 - Existing Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			FRST		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.400		
3. Flow Length, L (< 300ft)	ft.		100.0		
4. Two-year 24-hr rainfall, P_2	in.		3.30		
5. Land slope, s	ft./ft.		0.010		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.465	=	0.465

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D	D-E		
7. Surface description			FRST	FRST	FRST		
8. Manning's roughness coeff., n			0.100	0.100	0.100		
9. Paved or unpaved			UNPVD	UNPVD	UNPVD		
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40	0.40	0.40		
11. Flow Length, L	ft.		170.0	175.0	530.0		
12. Watercourse slope, s	ft./ft.		0.0200	0.0570	0.0120		
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		1.14	1.93	0.89		
14. $T_t = \frac{L}{3600 * V}$	hr.		0.041	+ 0.025	+ 0.166	+ 0.000	= 0.233

Channel flow

		Segment ID	E-F	F-G			
15. Channel Bottom width, b	ft.		3.00	5.00			
16. Horizontal side slope component, z (z horiz:1 vert)	ft.		3.00	3.00			
17. Depth of flow, d	ft.		1.00	1.50			
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$		6.00	14.25	0.00	0.00	
19. Wetted perimeter, P_w	ft.		9.32	14.49	0.00	0.00	
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.		0.64	0.98	0.00	0.00	
21. Channel slope, s	ft./ft.		0.0052	0.0080			
22. Manning's roughness coeff., n			0.040	0.040			
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.		2.00	3.30	0.00	0.00	
24. Flow length, L	ft.		1935.0	1305.0			
25. $T_t = \frac{L}{3600 * V}$	hr.		0.269	+ 0.110	+ 0.000	+ 0.000	= 0.379

26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25) hr. 1.077

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: ***Present*** Developed Watershed: WS 13 - Existing Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			FRST		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.400		
3. Flow Length, L (< 300ft)	ft.		100.0		
4. Two-year 24-hr rainfall, P_2	in.		3.30		
5. Land slope, s	ft./ft.		0.020		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.352	=	0.352

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D			
7. Surface description			FRST	FRST			
8. Manning's roughness coeff., n			0.100	0.100			
9. Paved or unpaved			UNPVD	UNPVD			
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40	0.40			
11. Flow Length, L	ft.		65.0	470.0			
12. Watercourse slope, s	ft./ft.		0.1539	0.0128			
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		3.17	0.91			
14. $T_t = \frac{L}{3600 * V}$	hr.		0.006	+ 0.143	+ 0.000	+ 0.000	= 0.149

Channel flow

		Segment ID	D-E	E-F	F-G		
15. Channel Bottom width, b	ft.		4.00	6.00	30" RCP		
16. Horizontal side slope component, z (z horiz:1 vert)	ft.		3.00	3.00	---		
17. Depth of flow, d	ft.		0.50	1.00	FULL		
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$		2.75	9.00	4.91	0.00	
19. Wetted perimeter, P_w	ft.		7.16	12.32	7.85	0.00	
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.		0.38	0.73	0.63	0.00	
21. Channel slope, s	ft./ft.		0.0050	0.0050	0.005		
22. Manning's roughness coeff., n			0.040	0.040	0.012		
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.		1.39	2.14	6.42	0.00	
24. Flow length, L	ft.		250.0	1450.0	1015.0		
25. $T_t = \frac{L}{3600 * V}$	hr.		0.050	+ 0.189	+ 0.044	+ 0.000	= 0.282

26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25) hr. 0.783

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: ***Present*** Developed Watershed: WS 20 - Existing Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			FRST		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.400		
3. Flow Length, L (< 300ft)	ft.		100.0		
4. Two-year 24-hr rainfall, P_2	in.		3.30		
5. Land slope, s	ft./ft.		0.018		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.368	=	0.368

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D				
7. Surface description			FRST	FRST				
8. Manning's roughness coeff., n			0.100	0.100				
9. Paved or unpaved			UNPVD	UNPVD				
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40	0.40				
11. Flow Length, L	ft.		485.0	1055.0				
12. Watercourse slope, s	ft./ft.		0.0125	0.0530				
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		0.90	1.86				
14. $T_t = \frac{L}{3600 * V}$	hr.		0.149	+ 0.157	+	+	=	0.306

Channel flow

		Segment ID	D-E					
15. Channel Bottom width, b	ft.		3.00					
16. Horizontal side slope component, z (z horiz:1 vert)	ft.		3.00					
17. Depth of flow, d	ft.		1.00					
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$		6.00					
19. Wetted perimeter, P_w	ft.		9.32					
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.		0.64					
21. Channel slope, s	ft./ft.		0.0050					
22. Manning's roughness coeff., n			0.040					
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.		1.96					
24. Flow length, L	ft.		255.0					
25. $T_t = \frac{L}{3600 * V}$	hr.		0.036	+	+	0.000	+ 0.000	= 0.036

26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25) hr. 0.710

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: ***Present*** Developed Watershed: WS 24 - Existing Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			GRSS		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.300		
3. Flow Length, L (< 300ft)	ft.		65.0		
4. Two-year 24-hr rainfall, P_2	in.		3.30		
5. Land slope, s	ft./ft.		0.020		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.198	=	0.198

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C		C-D		D-E			
7. Surface description			GRSS		FRST		FRST			
8. Manning's roughness coeff., n			0.080		0.100		0.100			
9. Paved or unpaved			UNPVD		UNPVD		UNPVD			
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40		0.40		0.40			
11. Flow Length, L	ft.		50.0		150.0		270.0			
12. Watercourse slope, s	ft./ft.		0.0200		0.0200		0.0741			
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		1.43		1.14		2.20			
14. $T_t = \frac{L}{3600 * V}$	hr.		0.010	+	0.036	+	0.034		=	0.080

Channel flow

		Segment ID	E-F							
15. Channel Bottom width, b	ft.		1.00							
16. Horizontal side slope component, z (z horiz:1 vert)	ft.		2.00							
17. Depth of flow, d	ft.		1.00							
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$		3.00							
19. Wetted perimeter, P_w	ft.		5.47							
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.		0.55							
21. Channel slope, s	ft./ft.		0.0100							
22. Manning's roughness coeff., n			0.040							
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.		2.50							
24. Flow length, L	ft.		135.0							
25. $T_t = \frac{L}{3600 * V}$	hr.		0.015	+		+	0.000	+	0.000	= 0.015

26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25) hr. 0.294

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: ***Present*** Developed Watershed: WS 30 - Existing Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			FRST		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.400		
3. Flow Length, L (< 300ft)	ft.		100.0		
4. Two-year 24-hr rainfall, P_2	in.		3.30		
5. Land slope, s	ft./ft.		0.015		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.395	=	0.395

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D			
7. Surface description			FRST	FRST			
8. Manning's roughness coeff., n			0.100	0.100			
9. Paved or unpaved			UNPVD	UNPVD			
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40	0.40			
11. Flow Length, L	ft.		540.0	410.0			
12. Watercourse slope, s	ft./ft.		0.0417	0.0080			
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		1.65	0.72			
14. $T_t = \frac{L}{3600 * V}$	hr.		0.091	+ 0.157	+	+ 0.000	= 0.248

Channel flow

		Segment ID	D-E	E-F			
15. Channel Bottom width, b	ft.		3.00	18" RCP			
16. Horizontal side slope component, z (z horiz:1 vert)	ft.		2.00	---			
17. Depth of flow, d	ft.		0.50	FULL			
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$		2.00	1.77		0.00	
19. Wetted perimeter, P_w	ft.		5.24	4.71		0.00	
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.		0.38	0.38		0.00	
21. Channel slope, s	ft./ft.		0.0367	0.042			
22. Manning's roughness coeff., n			0.040	0.012			
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.		3.76	13.25		0.00	
24. Flow length, L	ft.		545.0	1085.0			
25. $T_t = \frac{L}{3600 * V}$	hr.		0.040	+ 0.023	+	+ 0.000	= 0.063

26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25) hr. 0.707

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: ***Present*** Developed Watershed: WS 40 - Existing Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			FRST		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.400		
3. Flow Length, L (< 300ft)	ft.		30.0		
4. Two-year 24-hr rainfall, P_2	in.		3.30		
5. Land slope, s	ft./ft.		0.032		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.111	=	0.111

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C							
7. Surface description			FRST							
8. Manning's roughness coeff., n			0.100							
9. Paved or unpaved			UNPVD							
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40							
11. Flow Length, L	ft.		250.0							
12. Watercourse slope, s	ft./ft.		0.0600							
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		1.98							
14. $T_t = \frac{L}{3600 * V}$	hr.		0.035	+					=	0.035

Channel flow

		Segment ID								
15. Channel Bottom width, b	ft.									
16. Horizontal side slope component, z (z horiz:1 vert)	ft.									
17. Depth of flow, d	ft.									
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$									
19. Wetted perimeter, P_w	ft.									
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.									
21. Channel slope, s	ft./ft.									
22. Manning's roughness coeff., n										
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.									
24. Flow length, L	ft.									
25. $T_t = \frac{L}{3600 * V}$	hr.			+		+	0.000	+	0.000	= 0.000
26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)									hr.	0.147

Worksheet 2: Runoff curve number and runoff

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 10 - Proposed Conditions

** Adjusted for roofdrain leaders connected to infiltration galleries capable of storing 1.0" of runoff. See attached calculations.*

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
A	WOODS (GOOD)	30			2.72	81.50
A	OPEN SPACE / LAWN AREA (GOOD)	39			1.43	55.92
B	WOODS (GOOD)	55			4.55	250.06
B	OPEN SPACE / LAWN AREA (GOOD)	61			3.08	187.98
B	ROW CROPS (SR+CR) - GOOD	75			0.41	30.95
B	GRAVEL	85			0.01	1.05
C	OPEN SPACE / LAWN AREA (GOOD)	74			1.05	77.99
D	WOODS (GOOD)	77			5.86	451.31
D	OPEN SPACE / LAWN AREA (GOOD)	80			0.40	32.20
N/A	EXISTING BUILDING	98			0.23	22.78
N/A	EXISTING PAVED / IMPERVIOUS	98			1.76	172.54
W	WATER	98			2.29	224.53
N/A	PROPOSED PAVED / IMPERVIOUS	98			0.10	9.38
N/A	PROPOSED IMPERVIOUS (BUILDING) *	90			0.05	4.13
[1.] Use only one CN value source per line.				Totals =	23.95	1602.32
					(0.03742	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{1602.32}{23.95}$ Use CN = **67**

Worksheet 2: Runoff curve number and runoff

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 11 - Proposed Conditions

** Adjusted for roofdrain leaders connected to infiltration galleries capable of storing 1.0" of runoff. See attached calculations.*

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	WOODS (GOOD)	55			1.78	98.04
B	OPEN SPACE / LAWN AREA (GOOD)	61			2.44	149.12
B	PASTURE, GRASSLAND	61			0.95	57.83
B	FALLOW - BARE SOIL	83			1.89	156.47
C	WOODS (GOOD)	70			0.80	55.86
C	OPEN SPACE / LAWN AREA (GOOD)	74			0.47	34.42
C	PASTURE, GRASSLAND	74			0.01	0.69
C	FALLOW - BARE SOIL	88			0.90	79.53
D	WOODS (GOOD)	77			1.48	113.99
D	OPEN SPACE / LAWN AREA (GOOD)	80			0.06	4.98
D	FALLOW - BARE SOIL	90			0.25	22.91
N/A	EXISTING BUILDING	98			0.09	8.73
N/A	EXISTING PAVED / IMPERVIOUS	98			0.38	37.14
N/A	PROPOSED PAVED / IMPERVIOUS	98			0.04	3.44
N/A	PROPOSED IMPERVIOUS (BUILDING) *	90			0.05	4.13
[1.] Use only one CN value source per line.				Totals =	11.58	827.30
					(0.01810	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{827.30}{11.58}$ Use CN = 71

Worksheet 2: Runoff curve number and runoff

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 12 - Proposed Conditions

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
A	WOODS (GOOD)	30			3.51	105.41
A	OPEN SPACE / LAWN AREA (GOOD)	39			0.80	31.31
A	GRAVEL ROAD	76			0.03	2.38
B	WOODS (GOOD)	55			85.29	4,691.18
B	MEADOW	58			2.62	152.04
B	OPEN SPACE / LAWN AREA (GOOD)	61			18.92	1,154.10
B	ROW CROPS (SR+CR) - GOOD	75			0.91	68.56
B	FALLOW - BARE SOIL	83			0.22	18.11
B	GRAVEL ROAD	85			1.19	101.06
C	WOODS (GOOD)	70			9.57	669.78
C	OPEN SPACE / LAWN AREA (GOOD)	74			2.39	177.01
D	WOODS (GOOD)	77			27.88	2,146.49
D	OPEN SPACE / LAWN AREA (GOOD)	80			9.52	761.60
D	ROW CROPS (SR+CR) - GOOD	85			0.61	51.70
N/A	EXISTING BUILDING	98			5.40	529.31
N/A	EXISTING PAVED / IMPERVIOUS	98			14.53	1,423.80
W	WATER	98			3.55	347.45
				Totals =	186.94	12431.29
					(0.29210	sq mi)

[1.] Use only one CN value source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{12431.29}{186.94}$ Use CN = 66

Worksheet 2: Runoff curve number and runoff

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 13 - Proposed Conditions

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	WOODS (GOOD)	55			45.72	2,514.87
B	ORCHARD (GOOD)	58			6.37	369.19
B	OPEN SPACE / LAWN AREA (GOOD)	61			5.36	326.90
B	ROW CROPS (SR+CR) - GOOD	75			5.66	424.21
B	GRAVEL ROAD	85			0.07	6.08
C	WOODS (GOOD)	70			1.59	111.08
C	ORCHARD (GOOD)	72			1.18	85.05
C	OPEN SPACE / LAWN AREA (GOOD)	74			0.23	17.00
C	ROW CROPS (SR+CR) - GOOD	82			0.26	21.32
D	WOODS (GOOD)	77			14.53	1,118.43
D	OPEN SPACE / LAWN AREA (GOOD)	80			2.43	194.55
D	ROW CROPS (SR+CR) - GOOD	85			0.41	35.21
D	GRAVEL ROAD	91			0.16	14.58
N/A	EXISTING BUILDING	98			1.55	151.97
N/A	EXISTING PAVED / IMPERVIOUS	98			8.84	866.16
W	EXISTING POND	98			1.28	125.53
				Totals =	95.64	6382.11
					(0.14943	sq mi)

[1.] Use only one CN value source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{6382.11}{95.64}$ Use CN = 67

Worksheet 2: Runoff curve number and runoff

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 14 - Proposed Conditions

** Adjusted for roofdrain leaders connected to infiltration galleries capable of storing 1.0" of runoff. See attached calculations.*

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	WOODS (GOOD)	55			0.17	9.34
B	OPEN SPACE / LAWN AREA (GOOD)	61			2.89	176.50
B	PASTURE, GRASSLAND	61			0.28	16.95
B	FALLOW - BARE SOIL	83			0.16	13.07
B	GRAVEL	85			0.02	1.78
C	WOODS (GOOD)	70			0.02	1.62
C	OPEN SPACE / LAWN AREA (GOOD)	74			0.32	23.47
C	PASTURE, GRASSLAND	74			0.01	0.91
C	FALLOW - BARE SOIL	88			0.02	1.55
D	OPEN SPACE / LAWN AREA (GOOD)	80			0.02	1.41
N/A	EXISTING BUILDING	98			0.04	3.72
N/A	EXISTING PAVED / IMPERVIOUS	98			0.26	25.26
N/A	PROPOSED PAVED / IMPERVIOUS	98			0.86	84.39
N/A	PROPOSED IMPERVIOUS (BUILDING) *	90			0.14	12.40
[1.] Use only one CN value source per line.				Totals =	5.20	372.37
					(0.00813	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}}$ = $\frac{372.37}{5.20}$ Use CN = **72**

Worksheet 2: Runoff curve number and runoff

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 15 - Proposed Conditions

** Adjusted for roofdrain leaders connected to infiltration galleries capable of storing 1.0" of runoff. See attached calculations.*

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
A	WOODS (GOOD)	30			1.00	29.92
A	OPEN SPACE / LAWN AREA (GOOD)	39			1.52	59.27
A	GRAVEL	76			0.03	2.28
B	WOODS (GOOD)	55			0.57	31.60
B	OPEN SPACE / LAWN AREA (GOOD)	61			5.80	353.57
B	GRAVEL	85			0.08	6.71
D	OPEN SPACE / LAWN AREA (GOOD)	80			0.02	1.37
D	GRAVEL	91			0.02	1.43
N/A	PROPOSED PAVED / IMPERVIOUS	98			1.33	130.27
N/A	PROPOSED IMPERVIOUS (BUILDING) *	90			0.64	57.85
[1.] Use only one CN value source per line.				Totals =	11.00	674.26
					(0.01719	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{674.26}{11.00}$ Use CN = **61**

Worksheet 2: Runoff curve number and runoff

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 20 - Proposed Conditions

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	WOODS (GOOD)	55			5.84	320.95
B	MEADOW	58			0.67	38.65
B	OPEN SPACE / LAWN AREA (GOOD)	61			2.31	140.71
B	FALLOW - BARE SOIL	83			1.15	95.55
B	GRAVEL	85			0.04	3.51
C	WOODS (GOOD)	70			2.90	203.12
C	MEADOW	71			0.78	55.28
C	OPEN SPACE / LAWN AREA (GOOD)	74			3.07	226.99
C	FALLOW - BARE SOIL	88			2.59	227.59
D	WOODS (GOOD)	77			16.96	1,305.91
D	MEADOW	78			0.08	6.09
D	OPEN SPACE / LAWN AREA (GOOD)	80			0.67	53.38
D	FALLOW - BARE SOIL	90			0.12	10.75
N/A	EXISTING BUILDING	98			0.37	36.47
N/A	EXISTING PAVED / IMPERVIOUS	98			0.68	66.65
N/A	PROPOSED PAVED / IMPERVIOUS	98			0.06	5.67
				Totals =	38.27	2797.28
					(0.05980	sq mi)

[1.] Use only one CN value source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{2797.28}{38.27}$ Use CN = 73

Worksheet 2: Runoff curve number and runoff

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 21 - Proposed Conditions

** Adjusted for roofdrain leaders connected to infiltration galleries capable of storing 1.0" of runoff. See attached calculations.*

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	WOODS (GOOD)	55			3.61	198.81
B	OPEN SPACE / LAWN AREA (GOOD)	61			4.52	275.71
B	GRAVEL	85			0.09	7.43
D	WOODS (GOOD)	77			1.58	121.52
D	OPEN SPACE / LAWN AREA (GOOD)	80			0.14	11.37
N/A	PROPOSED PAVED / IMPERVIOUS	98			0.84	82.47
N/A	PROPOSED IMPERVIOUS (BUILDING) *	90			0.41	37.19
[1.] Use only one CN value source per line.				Totals =	11.20	734.49
					(0.01750	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{734.49}{11.20}$ Use CN = **66**

Worksheet 2: Runoff curve number and runoff

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 22 - Proposed Conditions

** Adjusted for roofdrain leaders connected to infiltration galleries capable of storing 1.0" of runoff. See attached calculations.*

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	WOODS (GOOD)	55			4.92	270.53
B	OPEN SPACE / LAWN AREA (GOOD)	61			4.68	285.59
B	GRAVEL	85			0.05	4.66
D	OPEN SPACE / LAWN AREA (GOOD)	80			0.15	12.23
N/A	PROPOSED PAVED / IMPERVIOUS	98			1.25	122.23
N/A	PROPOSED IMPERVIOUS (BUILDING) *	90			0.32	28.93
Totals =					11.38	724.17
					(0.01778	sq mi)

[1.] Use only one CN value source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{724.17}{11.38}$ Use CN = 64

Worksheet 2: Runoff curve number and runoff

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 23 - Proposed Conditions

** Adjusted for roofdrain leaders connected to infiltration galleries capable of storing 1.0" of runoff. See attached calculations.*

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres / Sq. Ft. / %	Product of CN x Area
B	WOODS (GOOD)	55			0.40	22.20
B	OPEN SPACE / LAWN AREA (GOOD)	61			1.95	118.81
B	GRAVEL	85			0.07	5.96
D	WOODS (GOOD)	77			0.82	63.23
D	OPEN SPACE / LAWN AREA (GOOD)	80			0.50	39.71
N/A	PROPOSED PAVED / IMPERVIOUS	98			0.66	64.96
N/A	PROPOSED IMPERVIOUS (BUILDING) *	90			0.32	28.93
[1.] Use only one CN value source per line.				Totals =	4.72	343.80
					(0.00738	sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{343.80}{4.72}$ Use CN = **73**

Worksheet 2: Runoff curve number and runoff

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 24 - Proposed Conditions

** Adjusted for roofdrain leaders connected to infiltration galleries capable of storing 1.0" of runoff. See attached calculations.*

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres / Sq. Ft. / %	Product of CN x Area
B	WOODS (GOOD)	55			1.45	79.82
B	OPEN SPACE / LAWN AREA (GOOD)	61			0.84	51.18
D	WOODS (GOOD)	77			0.79	61.08
D	OPEN SPACE / LAWN AREA (GOOD)	80			0.15	11.67
N/A	EXISTING BUILDING	98			0.03	3.41
N/A	EXISTING PAVED / IMPERVIOUS	98			0.05	5.25
N/A	PROPOSED IMPERVIOUS (BUILDING) *	90			0.05	4.13

[1.] Use only one CN value source per line.

Totals = 3.36 216.54

(0.00526 sq mi)

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{216.54}{3.36}$ Use CN = 64

Worksheet 2: Runoff curve number and runoff

Project: Saddle Ridge Subdivision (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 30 - Proposed Conditions

** Adjusted for roofdrain leaders connected to infiltration galleries capable of storing 1.0" of runoff. See attached calculations.*

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres / Sq. Ft. / %	Product of CN x Area
A	WOODS (GOOD)	30			1.49	44.80
B	WOODS (GOOD)	55			32.18	1,770.06
B	ORCHARD OR TREE FARM	58			5.20	301.82
B	OPEN SPACE / LAWN AREA (GOOD)	61			9.05	551.89
B	ROW CROPS (SR+CR) - GOOD	75			0.49	36.44
B	FALLOW - BARE SOIL	83			0.48	39.95
B	GRAVEL ROAD	85			0.38	32.56
C	WOODS (GOOD)	70			0.84	58.96
C	OPEN SPACE / LAWN AREA (GOOD)	74			0.27	19.90
C	FALLOW - BARE SOIL	88			0.01	1.30
D	WOODS (GOOD)	77			23.42	1,802.99
D	OPEN SPACE / LAWN AREA (GOOD)	80			2.48	198.47
D	GRAVEL ROAD	91			0.11	10.44
N/A	EXISTING BUILDING	98			1.00	98.19
N/A	EXISTING PAVED / IMPERVIOUS	98			4.46	437.46
W	EXISTING POND	98			0.54	53.34
N/A	PROPOSED IMPERVIOUS (BUILDING) *	90			0.23	20.66
N/A	PROPOSED PAVED / IMPERVIOUS	98			0.54	53.02
				Totals =	83.20	5532.24
					(0.12999	sq mi)

[1.] Use only one CN value source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{5532.24}{83.20}$ Use CN = **66**

Worksheet 2: Runoff curve number and runoff

Project: Saddle Ridge Subdivision (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 40 - Proposed Conditions

1.) Runoff curve number (CN)

Soil Name and Hydrologic Group (appendix A)	Cover Description (cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN Value [1.] Table 2-2	Figure 2-3	Figure 2-4	Area Acres Sq. Ft. %	Product of CN x Area
B	WOODS (GOOD)	55			0.20	11.23
B	OPEN SPACE / LAWN AREA (GOOD)	61			0.15	8.96
	Totals =				0.35	20.19
					(0.00055	sq mi)

[1.] Use only one CN value source per line.

CN (weighted) = $\frac{\text{total product}}{\text{total area}} = \frac{20.19}{0.35}$ Use CN = 58

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JOB Saddle Ridge Subdivision - Easton, CT
SHEET NO. 1 OF 1
CALCULATED BY FAB DATE 8/4/14
CHECKED BY _____ DATE _____
SCALE Adjusted CN for Rooftops

- The purpose of this calculation is to adjust the CN-value applied to the building rooftops in order to account for infiltration chambers provided for each home.

- Standard Runoff Curve Number

  Rooftop → 98

- Design volume for 1" of rainfall from a rooftop area of 2,000 ft^2.

$$V_{design} = (1\,in)\left(\frac{1\,ft}{12\,in}\right)(2{,}000\,ft^2) = 167\,ft^3$$

- Storage capacity per chamber (Cultec Recharge V8 surrounded by stone)

  99.56 ft^3/unit

$$V_{provided/home} = 99.56\,ft^3 \times 3\ units/bld = 298.68\,ft^3$$

- Although the provided chambers will provide runoff reduction in excess of 1 inch, the calculations accounted for 1-inch of runoff to be subtracted from the total rooftop runoff.

- Adjusted CN-value for rooftops, using Table 2.1 from TR-55 Manual:

Storm Event	Rainfall (in)	Runoff Depth (CN = 98)	Runoff Depth minus 1-in	Adjusted CN-value
2-yr	3.3	3.07	2.07	88
10-yr	5.0	4.76	3.76	89
25-yr	5.7	5.46	4.46	90
50-yr	6.4	6.16	5.16	90
100-yr	7.2	6.96	5.96	**90**

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 10 - Proposed Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

Segment ID		A-B			
1. Surface description (Table 3-1)		FRST			
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)		0.400			
3. Flow Length, L (< 300ft)	ft.	50.0			
4. Two-year 24-hr rainfall, P_2	in.	3.30			
5. Land slope, s	ft./ft.	0.110			
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.	0.102	=	0.102	

Shallow concentrated flow (assume hyd. radius = depth of flow)

Segment ID		B-C							
7. Surface description		FRST							
8. Manning's roughness coeff., n		0.100							
9. Paved or unpaved		UNPVD							
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.	0.40							
11. Flow Length, L	ft.	335.0							
12. Watercourse slope, s	ft./ft.	0.0400							
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.	1.62							
14. $T_t = \frac{L}{3600 * V}$	hr.	0.058	+		+		+	=	0.058

Channel flow

Segment ID		C-D							
15. Channel Bottom width, b	ft.	5.00							
16. Horizontal side slope component, z (z horiz:1 vert)	ft.	3.00							
17. Depth of flow, d	ft.	1.00							
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$	8.00							
19. Wetted perimeter, P_w	ft.	11.32							
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.	0.71							
21. Channel slope, s	ft./ft.	0.0400							
22. Manning's roughness coeff., n		0.040							
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.	5.91							
24. Flow length, L	ft.	90.0							
25. $T_t = \frac{L}{3600 * V}$	hr.	0.004	+	0.000	+	0.000	+	0.000	= 0.004
26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)								hr.	0.164

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 11 - Proposed Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			FRST		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.400		
3. Flow Length, L (< 300ft)	ft.		65.0		
4. Two-year 24-hr rainfall, P_2	in.		3.30		
5. Land slope, s	ft./ft.		0.009		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.337	=	0.337

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D			
7. Surface description			FRST	FRST			
8. Manning's roughness coeff., n			0.100	0.100			
9. Paved or unpaved			UNPVD	UNPVD			
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40	0.40			
11. Flow Length, L	ft.		330.0	260.0			
12. Watercourse slope, s	ft./ft.		0.0100	0.0231			
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		0.81	1.23			
14. $T_t = \frac{L}{3600 * V}$	hr.		0.113	+ 0.059	+	+ 0.000	= 0.172

Channel flow

		Segment ID					
15. Channel Bottom width, b	ft.						
16. Horizontal side slope component, z (z horiz:1 vert)	ft.						
17. Depth of flow, d	ft.						
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$						
19. Wetted perimeter, P_w	ft.						
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.						
21. Channel slope, s	ft./ft.						
22. Manning's roughness coeff., n							
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.						
24. Flow length, L	ft.						
25. $T_t = \frac{L}{3600 * V}$	hr.				+	+	= 0.000
26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)						hr.	0.509

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 12 - Proposed Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			FRST		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.400		
3. Flow Length, L (< 300ft)	ft.		100.0		
4. Two-year 24-hr rainfall, P_2	in.		3.30		
5. Land slope, s	ft./ft.		0.015		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.395	=	0.395

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D	D-E		
7. Surface description			FRST	FRST	FRST		
8. Manning's roughness coeff., n			0.100	0.100	0.100		
9. Paved or unpaved			UNPVD	UNPVD	UNPVD		
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40	0.40	0.40		
11. Flow Length, L	ft.		170.0	175.0	530.0		
12. Watercourse slope, s	ft./ft.		0.0200	0.0570	0.0120		
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		1.14	1.93	0.89		
14. $T_t = \frac{L}{3600 * V}$	hr.		0.041	+ 0.025	+ 0.166	+ 0.000	= 0.233

Channel flow

		Segment ID	E-F	F-G			
15. Channel Bottom width, b	ft.		3.00	5.00			
16. Horizontal side slope component, z (z horiz:1 vert)	ft.		3.00	3.00			
17. Depth of flow, d	ft.		1.00	1.50			
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$		6.00	14.25	0.00	0.00	
19. Wetted perimeter, P_w	ft.		9.32	14.49	0.00	0.00	
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.		0.64	0.98	0.00	0.00	
21. Channel slope, s	ft./ft.		0.0052	0.0080			
22. Manning's roughness coeff., n			0.040	0.040			
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.		2.00	3.30	0.00	0.00	
24. Flow length, L	ft.		1935.0	1305.0			
25. $T_t = \frac{L}{3600 * V}$	hr.		0.269	+ 0.110	+ 0.000	+ 0.000	= 0.379

26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25) hr. 1.007

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 13 - Proposed Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1.	Surface description (Table 3-1)		FRST		
2.	Manning's roughness coeff. for sheet flow, n (Table 3-1)		0.400		
3.	Flow Length, L (< 300ft)	ft.	100.0		
4.	Two-year 24-hr rainfall, P_2	in.	3.30		
5.	Land slope, s	ft./ft.	0.020		
6.	$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.	0.352	=	0.352

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C		C-D					
7.	Surface description		FRST		FRST					
8.	Manning's roughness coeff., n		0.100		0.100					
9.	Paved or unpaved		UNPVD		UNPVD					
10.	Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.	0.40		0.40					
11.	Flow Length, L	ft.	65.0		470.0					
12.	Watercourse slope, s	ft./ft.	0.1539		0.0128					
13.	Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.	3.17		0.91					
14.	$T_t = \frac{L}{3600 * V}$	hr.	0.006	+	0.143	+	0.000	+	0.000	= 0.149

Channel flow

		Segment ID	D-E		E-F		F-G			
15.	Channel Bottom width, b	ft.	4.00		6.00		30" RCP			
16.	Horizontal side slope component, z (z horiz:1 vert)	ft.	3.00		3.00		---			
17.	Depth of flow, d	ft.	0.50		1.00		FULL			
18.	Cross sectional flow area, A (assume trapazoidal)	$ft.^2$	2.75		9.00		4.91		0.00	
19.	Wetted perimeter, P_w	ft.	7.16		12.32		7.85		0.00	
20.	Hydraulic Radius, $R = \frac{A}{P_w}$	ft.	0.38		0.73		0.63		0.00	
21.	Channel slope, s	ft./ft.	0.0050		0.0050		0.005			
22.	Manning's roughness coeff., n		0.040		0.040		0.012			
23.	$V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.	1.39		2.14		6.42		0.00	
24.	Flow length, L	ft.	250.0		1450.0		1015.0			
25.	$T_t = \frac{L}{3600 * V}$	hr.	0.050	+	0.189	+	0.044	+	0.000	= 0.282

26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25) hr. 0.783

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 14 - Proposed Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			FRST		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.400		
3. Flow Length, L (< 300ft)	ft.		100.0		
4. Two-year 24-hr rainfall, P_2	in.		3.30		
5. Land slope, s	ft./ft.		0.045		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.255	=	0.255

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D	D-E		
7. Surface description			FRST	GRSS	BIT		
8. Manning's roughness coeff., n			0.100	0.080	0.015		
9. Paved or unpaved			UNPVD	UNPVD	PVD		
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40	0.40	0.20		
11. Flow Length, L	ft.		30.0	35.0	100.0		
12. Watercourse slope, s	ft./ft.		0.0450	0.0200	0.0240		
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		1.72	1.43	5.26		
14. $T_t = \frac{L}{3600 * V}$	hr.		0.005	+ 0.007	+ 0.005	+	= 0.017

Channel flow

		Segment ID	E-F				
15. Channel Bottom width, b	ft.		15" CPP				
16. Horizontal side slope component, z (z horiz:1 vert)	ft.		---				
17. Depth of flow, d	ft.		FULL				
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$		1.23				
19. Wetted perimeter, P_w	ft.		3.93				
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.		0.31				
21. Channel slope, s	ft./ft.		0.050				
22. Manning's roughness coeff., n			0.012				
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.		12.80				
24. Flow length, L	ft.		885.0				
25. $T_t = \frac{L}{3600 * V}$	hr.		0.019	+		+	= 0.019

26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25) hr. 0.291

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 15 - Proposed Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			GRSS		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.300		
3. Flow Length, L (< 300ft)	ft.		40.0		
4. Two-year 24-hr rainfall, P_2	in.		3.30		
5. Land slope, s	ft./ft.		0.020		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.135	=	0.135

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C							
7. Surface description			GRSS							
8. Manning's roughness coeff., n			0.080							
9. Paved or unpaved			UNPVD							
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40							
11. Flow Length, L	ft.		250.0							
12. Watercourse slope, s	ft./ft.		0.0760							
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		2.79							
14. $T_t = \frac{L}{3600 * V}$	hr.		0.025	+		+		+	=	0.025

Channel flow

		Segment ID	F-G							
15. Channel Bottom width, b	ft.		15" CPP							
16. Horizontal side slope component, z (z horiz:1 vert)	ft.		---							
17. Depth of flow, d	ft.		FULL							
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$		1.23							
19. Wetted perimeter, P_w	ft.		3.93							
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.		0.31							
21. Channel slope, s	ft./ft.		0.040							
22. Manning's roughness coeff., n			0.012							
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.		11.45							
24. Flow length, L	ft.		760.0							
25. $T_t = \frac{L}{3600 * V}$	hr.		0.018	+		+		+	=	0.018
26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)									hr.	0.178

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 20 - Proposed Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			FRST		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.400		
3. Flow Length, L (< 300ft)	ft.		100.0		
4. Two-year 24-hr rainfall, P_2	in.		3.30		
5. Land slope, s	ft./ft.		0.007		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.536	=	0.536

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D	D-E		
7. Surface description			FRST	FRST	FRST		
8. Manning's roughness coeff., n			0.100	0.100	0.100		
9. Paved or unpaved			UNPVD	UNPVD	UNPVD		
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40	0.40	0.40		
11. Flow Length, L	ft.		335.0	320.0	145.0		
12. Watercourse slope, s	ft./ft.		0.0319	0.0875	0.0414		
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		1.45	2.39	1.09		
14. $T_t = \frac{L}{3600 * V}$	hr.		0.064	+ 0.037	+ 0.037	+	= 0.138

Channel flow

		Segment ID	E-F				
15. Channel Bottom width, b	ft.		3.00				
16. Horizontal side slope component, z (z horiz:1 vert)	ft.		3.00				
17. Depth of flow, d	ft.		1.00				
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$		6.00				
19. Wetted perimeter, P_w	ft.		9.32				
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.		0.64				
21. Channel slope, s	ft./ft.		0.0050				
22. Manning's roughness coeff., n			0.040				
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.		1.96				
24. Flow length, L	ft.		130.0				
25. $T_t = \frac{L}{3600 * V}$	hr.		0.018	+	+ 0.000	+ 0.000	= 0.018

26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25) hr. 0.693

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 21 - Proposed Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			GRSS		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.300		
3. Flow Length, L (< 300ft)	ft.		90.0		
4. Two-year 24-hr rainfall, P_2	in.		3.30		
5. Land slope, s	ft./ft.		0.050		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.178	=	0.178

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C		C-D		D-E		E-F		
7. Surface description			GRSS		FRST		FRST		GRSS		
8. Manning's roughness coeff., n			0.080		0.100		0.100		0.080		
9. Paved or unpaved			UNPVD		UNPVD		UNPVD		UNPVD		
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40		0.40		0.40		0.40		
11. Flow Length, L	ft.		205.0		360.0		350.0		45.0		
12. Watercourse slope, s	ft./ft.		0.0350		0.0690		0.0083		0.3000		
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		1.89		2.12		0.74		5.54		
14. $T_t = \frac{L}{3600 * V}$	hr.		0.030	+	0.047	+	0.132	+	0.002	=	0.211

Channel flow

		Segment ID									
15. Channel Bottom width, b	ft.										
16. Horizontal side slope component, z (z horiz:1 vert)	ft.										
17. Depth of flow, d	ft.										
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$										
19. Wetted perimeter, P_w	ft.										
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.										
21. Channel slope, s	ft./ft.										
22. Manning's roughness coeff., n											
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.										
24. Flow length, L	ft.										
25. $T_t = \frac{L}{3600 * V}$	hr.			+	0.000	+	0.000	+	0.000	=	0.000
26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)									hr.		0.389

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 22 - Proposed Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			FRST		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.400		
3. Flow Length, L (< 300ft)	ft.		100.0		
4. Two-year 24-hr rainfall, P_2	in.		3.30		
5. Land slope, s	ft./ft.		0.018		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.368	=	0.368

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D				
7. Surface description			FRST	GRSS				
8. Manning's roughness coeff., n			0.100	0.080				
9. Paved or unpaved			UNPVD	UNPVD				
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40	0.40				
11. Flow Length, L	ft.		555.0	10.0				
12. Watercourse slope, s	ft./ft.		0.0125	0.0125				
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		0.90	1.13				
14. $T_t = \frac{L}{3600 * V}$	hr.		0.170	+ 0.002	+	+	=	0.173

Channel flow

		Segment ID	D-E					
15. Channel Bottom width, b	ft.		15" RCP					
16. Horizontal side slope component, z (z horiz:1 vert)	ft.		---					
17. Depth of flow, d	ft.		FULL					
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$		1.23					
19. Wetted perimeter, P_w	ft.		3.93					
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.		0.31					
21. Channel slope, s	ft./ft.		0.010					
22. Manning's roughness coeff., n			0.012					
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.		5.72					
24. Flow length, L	ft.		325.0					
25. $T_t = \frac{L}{3600 * V}$	hr.		0.016	+	+	+	=	0.016

26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25) hr. 0.556

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 23 - Proposed Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			FRST		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.400		
3. Flow Length, L (< 300ft)	ft.		55.0		
4. Two-year 24-hr rainfall, P_2	in.		3.30		
5. Land slope, s	ft./ft.		0.025		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.200	=	0.200

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D	D-E		
7. Surface description			FRST	GRSS	BIT		
8. Manning's roughness coeff., n			0.100	0.080	0.015		
9. Paved or unpaved			UNPVD	UNPVD	PVD		
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40	0.40	0.20		
11. Flow Length, L	ft.		110.0	90.0	40.0		
12. Watercourse slope, s	ft./ft.		0.0455	0.0400	0.0400		
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		1.72	2.02	6.79		
14. $T_t = \frac{L}{3600 * V}$	hr.		0.018	+ 0.012	+ 0.002	+	= 0.032

Channel flow

		Segment ID	E-F				
15. Channel Bottom width, b	ft.		15" RCP				
16. Horizontal side slope component, z (z horiz:1 vert)	ft.		---				
17. Depth of flow, d	ft.		FULL				
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$		1.23				
19. Wetted perimeter, P_w	ft.		3.93				
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.		0.31				
21. Channel slope, s	ft./ft.		0.100				
22. Manning's roughness coeff., n			0.012				
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.		18.10				
24. Flow length, L	ft.		305.0				
25. $T_t = \frac{L}{3600 * V}$	hr.		0.005	+	+ 0.000	+ 0.000	= 0.005

26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25) hr. 0.236

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 24 - Proposed Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			GRSS		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.300		
3. Flow Length, L (< 300ft)	ft.		65.0		
4. Two-year 24-hr rainfall, P_2	in.		3.30		
5. Land slope, s	ft./ft.		0.020		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.198	=	0.198

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C		C-D		D-E			
7. Surface description			GRSS		FRST		FRST			
8. Manning's roughness coeff., n			0.080		0.100		0.100			
9. Paved or unpaved			UNPVD		UNPVD		UNPVD			
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40		0.40		0.40			
11. Flow Length, L	ft.		50.0		150.0		270.0			
12. Watercourse slope, s	ft./ft.		0.0200		0.0200		0.0741			
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		1.43		1.14		2.20			
14. $T_t = \frac{L}{3600 * V}$	hr.		0.010	+	0.036	+	0.034		=	0.080

Channel flow

		Segment ID	E-F							
15. Channel Bottom width, b	ft.		1.00							
16. Horizontal side slope component, z (z horiz:1 vert)	ft.		2.00							
17. Depth of flow, d	ft.		1.00							
18. Cross sectional flow area, A (assume trapazoidal)	$ft.^2$		3.00							
19. Wetted perimeter, P_w	ft.		5.47							
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.		0.55							
21. Channel slope, s	ft./ft.		0.0100							
22. Manning's roughness coeff., n			0.040							
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.		2.50							
24. Flow length, L	ft.		135.0							
25. $T_t = \frac{L}{3600 * V}$	hr.		0.015	+		+	0.000	+	0.000	= 0.015

26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25) hr. 0.294

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 30 - Proposed Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B				
1.	Surface description (Table 3-1)		FRST				
2.	Manning's roughness coeff. for sheet flow, n (Table 3-1)		0.400				
3.	Flow Length, L (< 300ft)	ft.	100.0				
4.	Two-year 24-hr rainfall, P_2	in.	3.30				
5.	Land slope, s	ft./ft.	0.015				
6.	$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.	0.395	=	0.395		

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C	C-D					
7.	Surface description		FRST	FRST					
8.	Manning's roughness coeff., n		0.100	0.100					
9.	Paved or unpaved		UNPVD	UNPVD					
10.	Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.	0.40	0.40					
11.	Flow Length, L	ft.	540.0	410.0					
12.	Watercourse slope, s	ft./ft.	0.0417	0.0080					
13.	Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.	1.65	0.72					
14.	$T_t = \frac{L}{3600 * V}$	hr.	0.091	+ 0.157	+	+ 0.000	=	0.248	

Channel flow

		Segment ID	D-E	E-F					
15.	Channel Bottom width, b	ft.	3.00	18" RCP					
16.	Horizontal side slope component, z (z horiz:1 vert)	ft.	2.00	---					
17.	Depth of flow, d	ft.	0.50	FULL					
18.	Cross sectional flow area, A (assume trapazoidal)	$ft.^2$	2.00	1.77		0.00			
19.	Wetted perimeter, P_w	ft.	5.24	4.71		0.00			
20.	Hydraulic Radius, $R = \frac{A}{P_w}$	ft.	0.38	0.38		0.00			
21.	Channel slope, s	ft./ft.	0.0367	0.042					
22.	Manning's roughness coeff., n		0.040	0.012					
23.	$V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.	3.76	13.25		0.00			
24.	Flow length, L	ft.	545.0	1085.0					
25.	$T_t = \frac{L}{3600 * V}$	hr.	0.040	+ 0.023	+	+ 0.000	=	0.063	
26.	Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)						hr.		0.707

Worksheet 3: Time of Concentration (T_c) or Travel Time (T_t)

Project: Easton Crossing (2683-01-26) By: FAB Date: 08/04/14
Location: Easton, CT Checked: Date:
Circle one: Present ***Developed*** Watershed: WS 40 - Proposed Conditions
Circle one: ***Tc*** T_t Subwatershed:

Sheet flow (applicable to T_c only)

		Segment ID	A-B		
1. Surface description (Table 3-1)			FRST		
2. Manning's roughness coeff. for sheet flow, n (Table 3-1)			0.400		
3. Flow Length, L (< 300ft)	ft.		15.0		
4. Two-year 24-hr rainfall, P_2	in.		3.30		
5. Land slope, s	ft./ft.		0.050		
6. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}(s^{0.4})}$	hr.		0.054	=	0.054

Shallow concentrated flow (assume hyd. radius = depth of flow)

		Segment ID	B-C							
7. Surface description			FRST							
8. Manning's roughness coeff., n			0.100							
9. Paved or unpaved			UNPVD							
10. Depth of flow, d (default values: d=.4 unpaved, d=.2 paved)	ft.		0.40							
11. Flow Length, L	ft.		135.0							
12. Watercourse slope, s	ft./ft.		0.0500							
13. Average velocity, $V = \frac{1.49}{n}(d^{2/3})(s^{1/2})$	fps.		1.81							
14. $T_t = \frac{L}{3600 * V}$	hr.		0.021	+		+		+	0.000	= 0.021

Channel flow

		Segment ID								
15. Channel Bottom width, b	ft.									
16. Horizontal side slope component, z (z horiz:1 vert)	ft.									
17. Depth of flow, d	ft.									
18. Cross sectional flow area, A (assume trapazoidal)	ft.^{2}									
19. Wetted perimeter, P_w	ft.									
20. Hydraulic Radius, $R = \frac{A}{P_w}$	ft.									
21. Channel slope, s	ft./ft.									
22. Manning's roughness coeff., n										
23. $V = \frac{1.49}{n}(R^{2/3})(s^{1/2})$	fps.									
24. Flow length, L	ft.									
25. $T_t = \frac{L}{3600 * V}$	hr.			+		+		+		= 0.000
26. Watershed or subarea T_c or T_t (add T_t in steps 6, 14 & 25)										hr. 0.074

TC MIN = 0.10 HRS.

Existing Pond (RESV. 100)

Elevation (ft)	Surface Area (ft2)	Volume (ft3)	Volume (ac-ft)	Cumulative Volume (ac-ft)
387.6	0.0	0.0	0.000	**0.000**
389.0	75.0	52.5	0.001	**0.001**
389.7	600.0	236.2	0.005	**0.007**
390.0	96,750.0	14,602.5	0.335	**0.342**
391.0	135,950.0	116,350.0	2.671	**3.013**
392.0	167,525.0	151,737.5	3.483	**6.496**
393.0	211,300.0	189,412.5	4.348	**10.845**
394.0	264,450.0	237,875.0	5.461	**16.305**
395.0	306,925.0	285,687.5	6.558	**22.864**
395.3	322,270.0	94,379.3	2.167	**25.031**
396.0	358,075.0	238,120.7	5.467	**30.497**
396.5	384,450.0	185,631.3	4.262	**34.759**

Existing wetland area: (RESV. 200)

Elevation (ft)	Surface Area (ft2)	Volume (ft3)	Volume (ac-ft)	Cumulative Volume (ac-ft)
390.0	57,400.0	0.0	0.000	**0.000**
390.5	85,050.0	35,612.5	0.818	**0.818**
391.0	112,700.0	49,437.5	1.135	**1.952**
391.5	140,250.0	63,237.5	1.452	**3.404**
392.0	167,800.0	77,012.5	1.768	**5.172**

Existing Pond: (RESV. 100)

Elevation (ft)	36" RCP [1.]			BERM [2.]		Q_{TOT} (CFS)
	H (ft)	H/D	Q_{SCW} (cfs)	H_{BCW} (ft)	Q_{BCW} (cfs)	
387.6	0.0	0.00	*0.00*	0.0	*0.00*	**0.00**
389.0	1.4	0.47	*10.30*	0.0	*0.00*	**10.30**
389.7	2.1	0.70	*20.50*	0.0	*0.00*	**20.50**
390.0	2.4	0.80	*25.00*	0.0	*0.00*	**25.00**
391.0	3.4	1.13	*40.00*	0.0	*0.00*	**40.00**
392.0	4.4	1.47	*53.00*	0.0	*0.00*	**53.00**
393.0	5.4	1.80	*64.00*	0.0	*0.00*	**64.00**
394.0	6.4	2.13	*73.00*	0.0	*0.00*	**73.00**
395.0	7.4	2.47	*80.00*	0.0	*0.00*	**80.00**
395.3	7.7	2.57	*82.00*	0.0	*0.00*	**82.00**
396.0	8.4	2.80	*86.00*	0.7	*114.79*	**200.79**
396.5	8.9	2.97	*90.00*	1.2	*257.65*	**347.65**

Existing wetland area: (RESV. 200)

Elevation (ft)	TRAPEZOIDAL CHANNEL [3.]		TRAPEZOIDAL CHANNEL [3.]		Q_{TOT} (CFS)
	D_{CHNNL} (ft)	Q_{SCW} (cfs)	D_{CHNNL} (ft)	Q_{SCW} (cfs)	
390.0	0.00	0.00	0.00	0.00	**0.00**
390.5	0.50	3.79	0.00	0.00	**3.79**
391.0	1.00	16.69	0.00	0.00	**16.69**
391.5	1.50	42.17	0.50	36.27	**78.44**
392.0	2.00	83.38	1.00	193.95	**277.33**

NOTES:

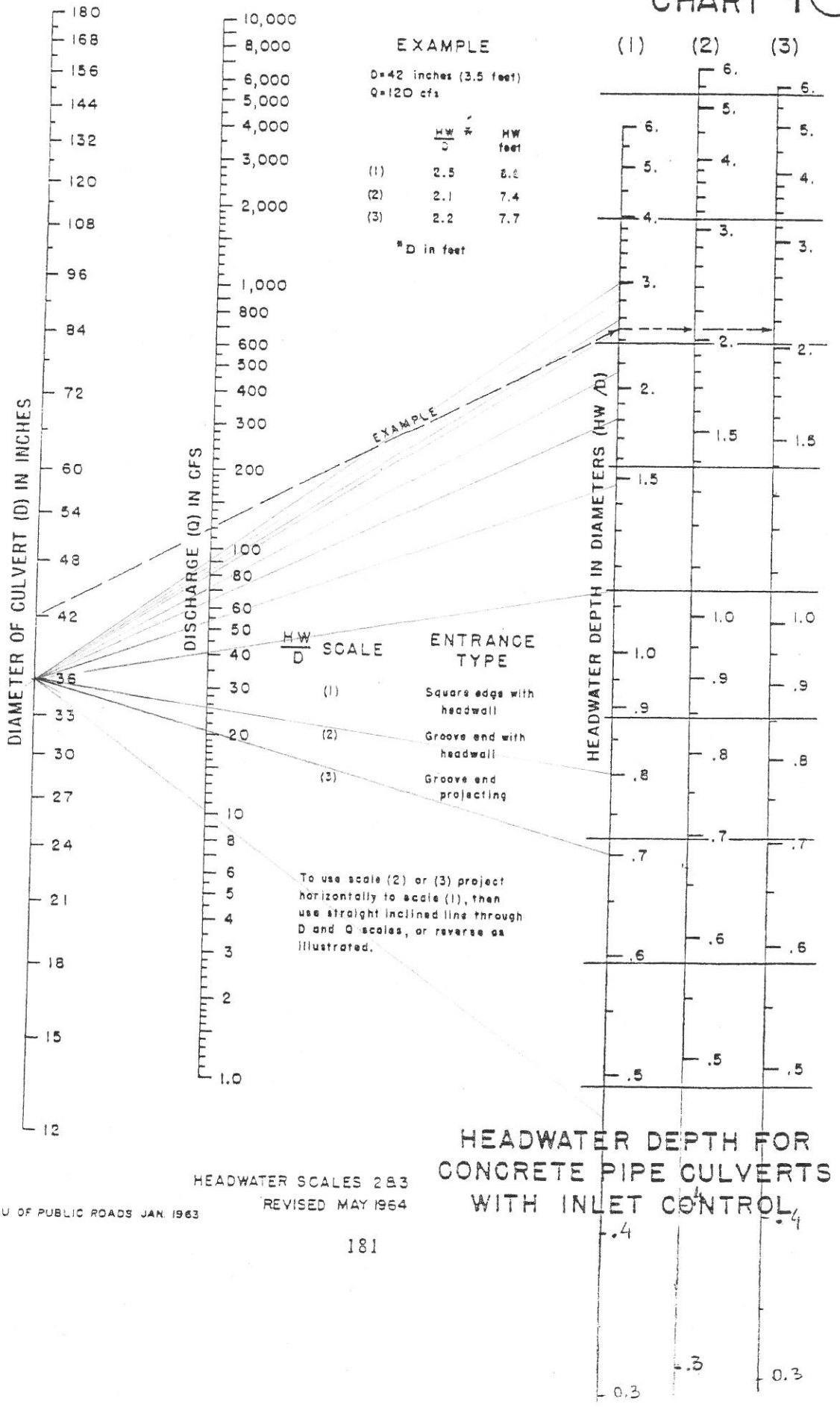
1. The stage vs. discharge information for the 36" RCP was obtained using the inlet control nomograph for a concrete pipe culvert (Chart 1) from the FHWA Hydraulic Design of Highway Culverts (FHWA-IP-85-15) manual assuming varying depths. See attached Nomograph.

2. The roadway was modeled as a broad-crested weir. The equation used to calculate the discharge capacity is equation 10.22 of the CT DOT Manual.

3. The outlet control of the existing wetland was modeled as a combination of two trapezoidal channels using the Manning's Equation with the following input parameters: Low flow channel: B = 1ft; S = 0.050 ft/ft; n = 0.04; Z = 0.5 V/H left; Z = 0.5 V/H right. Overflow channel: B = 5 ft, S = 0.050 ft/ft, n = 0.04; Z = 0.033 V/H left; Z = 0.033 V/H right. The discharge capacity was calculated using varying depths corresponding to the depth above the invert elevation of 390.0.

36" RCP outlet from existing pond adjacent to Spout Hill Road

CHART 1



HEADWATER DEPTH FOR CONCRETE PIPE CULVERTS WITH INLET CONTROL

HEADWATER SCALES 2&3
REVISED MAY 1964

BUREAU OF PUBLIC ROADS JAN. 1963

Detention Basin 140: 2.0'w by 2.5'h V-notch Weir w/ 4.0" Orifice at Elev. 405.0

Elevation (ft)	H_{OR} (ft)	Q_{OR} (cfs)	H_V (ft)	Q_V (cfs)	H_{OV} (ft)	Q_{OV} (cfs)	Q_{TOT} (cfs)
405.0	0.00	0.00	0.0	0.00	0.0	0.00	**0.00**
406.0	0.83	0.38	0.0	0.00	0.0	0.00	**0.38**
407.0	1.83	0.57	0.5	0.18	0.0	0.00	**0.75**
408.0	2.83	0.71	1.5	2.76	0.0	0.00	**3.46**
409.0	3.83	0.82	2.5	9.88	0.0	0.00	**10.70**
410.0	4.83	0.92	3.5	22.92	1.0	24.78	**48.62**

Detention Basin 150: 2.5'w by 2.0'h V-notch Weir

Elevation (ft)	H_{OR} (ft)	Q_{OR} (cfs)	H_V (ft)	Q_V (cfs)	H_{OV} (ft)	Q_{OV} (cfs)	Q_{TOT} (cfs)
401.0	0.00	0.00	0.0	0.00	0.0	0.00	**0.00**
402.0	0.00	0.00	0.0	0.00	0.0	0.00	**0.00**
403.0	0.00	0.00	0.0	0.00	0.0	0.00	**0.00**
404.0	0.00	0.00	0.0	0.00	0.0	0.00	**0.00**
405.0	0.00	0.00	0.0	0.00	0.0	0.00	**0.00**
406.0	0.00	0.00	1.0	1.56	0.0	0.00	**1.56**
407.0	0.00	0.00	2.0	8.84	0.0	0.00	**8.84**
408.0	0.00	0.00	3.0	24.36	1.0	24.78	**49.14**

Detention Basin 210: 1.5'w by 2.0'h V-notch Weir w/ 4.0" Orifice at Elev. 398.0

Elevation (ft)	H_{OR} (ft)	Q_{OR} (cfs)	H_V (ft)	Q_V (cfs)	H_{OV} (ft)	Q_{OV} (cfs)	Q_{TOT} (cfs)
398.0	0.00	0.00	0.0	0.00	0.0	0.00	**0.00**
399.0	0.83	0.38	0.0	0.00	0.0	0.00	**0.38**
400.0	1.83	0.57	0.0	0.00	0.0	0.00	**0.57**
401.0	2.83	0.71	0.0	0.00	0.0	0.00	**0.71**
402.0	3.83	0.82	1.0	0.94	0.0	0.00	**1.76**
403.0	4.83	0.92	2.0	5.30	0.0	0.00	**6.23**
404.0	5.83	1.01	3.0	14.61	1.0	24.78	**40.41**

Detention Basin 220: 1.5'w by 2.0'h V-notch Weir w/ 4.0" Orifice at Elev. 443.0

Elevation (ft)	H_{OR} (ft)	Q_{OR} (cfs)	H_V (ft)	Q_V (cfs)	H_{OV} (ft)	Q_{OV} (cfs)	Q_{TOT} (cfs)
443.0	0.00	0.00	0.00	0.00	0.0	0.00	**0.00**
444.0	0.83	0.38	0.00	0.00	0.0	0.00	**0.38**
445.0	1.83	0.57	0.00	0.00	0.0	0.00	**0.57**
446.0	2.83	0.71	1.00	0.94	0.0	0.00	**1.64**
447.0	3.83	0.82	2.00	5.30	0.0	0.00	**6.13**
448.0	4.83	0.92	3.00	14.61	1.0	24.78	**40.32**

Detention Basin 230: 1.5'w by 2.5'h V-notch Weir w/ 4.0" Orifice at Elev. 401.0

Elevation (ft)	H_{OR} (ft)	Q_{OR} (cfs)	H_V (ft)	Q_V (cfs)	H_{OV} (ft)	Q_{OV} (cfs)	Q_{TOT} (cfs)
401.0	0.00	0.00	0.0	0.00	0.0	0.00	**0.00**
402.0	0.83	0.38	0.0	0.00	0.0	0.00	**0.38**
403.0	1.83	0.57	0.5	0.13	0.0	0.00	**0.70**
404.0	2.83	0.71	1.5	2.07	0.0	0.00	**2.77**
405.0	3.83	0.82	2.5	7.41	0.0	0.00	**8.23**
406.0	4.83	0.92	3.5	17.19	1.0	24.78	**42.89**

Detention Basin 140:

Elevation (ft)	Surface Area (ft2)	Volume (ft3)	Volume (ac-ft)	Cumulative Volume (ac-ft)
405.0	6,275.0	0.0	0.000	**0.000**
406.0	7,325.0	6,800.0	0.156	**0.156**
407.0	8,750.0	8,037.5	0.185	**0.341**
408.0	10,075.0	9,412.5	0.216	**0.557**
409.0	11,550.0	10,812.5	0.248	**0.805**
410.0	13,075.0	12,312.5	0.283	**1.088**

Detention Basin 150:

Elevation (ft)	Surface Area (ft2)	Volume (ft3)	Volume (ac-ft)	Cumulative Volume (ac-ft)
401.0	2,900.0	0.0	0.000	**0.000**
402.0	3,725.0	3,312.5	0.076	**0.076**
403.0	4,625.0	4,175.0	0.096	**0.172**
404.0	5,625.0	5,125.0	0.118	**0.290**
405.0	12,300.0	8,962.5	0.206	**0.495**
406.0	16,750.0	14,525.0	0.333	**0.829**
407.0	21,300.0	19,025.0	0.437	**1.265**
408.0	25,450.0	23,375.0	0.537	**1.802**

Detention Basin 210:

Elevation (ft)	Surface Area (ft2)	Volume (ft3)	Volume (ac-ft)	Cumulative Volume (ac-ft)
398.0	8,800.0	0.0	0.000	**0.000**
399.0	10,450.0	9,625.0	0.221	**0.221**
399.5	11,325.0	5,443.8	0.125	**0.346**
400.0	12,175.0	5,875.0	0.135	**0.481**
401.0	13,925.0	13,050.0	0.300	**0.780**
402.0	15,675.0	14,800.0	0.340	**1.120**
403.0	17,500.0	16,587.5	0.381	**1.501**
404.0	19,375.0	18,437.5	0.423	**1.924**

Detention Basin 220:

Elevation (ft)	Surface Area (ft2)	Volume (ft3)	Volume (ac-ft)	Cumulative Volume (ac-ft)
443.0	11,950.0	0.0	0.000	**0.000**
443.5	12,525.0	6,118.8	0.140	**0.140**
444.0	13,100.0	6,406.3	0.147	**0.288**
445.0	14,650.0	13,875.0	0.319	**0.606**
446.0	16,050.0	15,350.0	0.352	**0.958**
447.0	17,600.0	16,825.0	0.386	**1.345**
448.0	19,175.0	18,387.5	0.422	**1.767**

Detention Basin 230:

Elevation (ft)	Surface Area (ft2)	Volume (ft3)	Volume (ac-ft)	Cumulative Volume (ac-ft)
401.0	3,525.0	0.0	0.000	**0.000**
401.7	4,350.0	2,756.2	0.063	**0.063**
402.0	4,725.0	1,361.3	0.031	**0.095**
403.0	6,050.0	5,387.5	0.124	**0.218**
404.0	7,575.0	6,812.5	0.156	**0.375**
405.0	9,375.0	8,475.0	0.195	**0.569**
406.0	11,450.0	10,412.5	0.239	**0.808**

TR-20 SUMMARY TABLE

TR-20 Peak Flowrate (cfs) Summary
Existing vs. Proposed Conditions

Study Area	2yr Storm		10yr Storm		25yr Storm		50yr Storm		100yr Storm	
	Ex	Pr	Ex	Pr	Ex	Pr	Ex	Pr	Ex	Pr
B	43	43	74	73	81	81	157	152	258	251
C	9	9	42	33	60	48	78	63	110	83
D	28	26	78	75	102	98	126	122	155	152
E	0	0	1	0	2	0	2	0	3	0

Study Area:	Description:
B	Southeast - 36" RCP under Sport Hill Road - Existing pond outfall
C	Northwest - Existing channel at the northwest corner of the property
D	Southwest - Existing pond adjacent to Bibbins Road
E	West - Western most property boundary

TR-20 COMPUTER MODELS AND RESULTS

1

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 *****************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY*****************

 JOB TR-20                                                SUMMARY   NOPLOTS
 TITLE     SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26):          EX COND
 TITLE     MILONE & MACBROOM INC., CHESHIRE, CT                         8/04/14
  5 RAINFL 3              0.25
  8          0.0         0.0025      0.005       0.0075      0.010
  8          0.0125      0.015       0.0175      0.020       0.023
  8          0.026       0.0285      0.031       0.034       0.037
  8          0.040       0.043       0.0465      0.050       0.0535
  8          0.057       0.0605      0.064       0.068       0.072
  8          0.076       0.080       0.084       0.089       0.094
  8          0.100       0.107       0.115       0.122       0.130
  8          0.139       0.148       0.157       0.167       0.178
  8          0.189       0.202       0.216       0.231       0.250
  8          0.271       0.298       0.345       0.500       0.655
  8          0.702       0.729       0.751       0.769       0.785
  8          0.798       0.811       0.823       0.834       0.844
  8          0.853       0.862       0.870       0.878       0.886
  8          0.893       0.900       0.906       0.911       0.916
  8          0.920       0.924       0.928       0.932       0.936
  8          0.940       0.944       0.9475      0.951       0.954
  8          0.957       0.960       0.963       0.966       0.969
  8          0.972       0.975       0.978       0.981       0.9835
  8          0.986       0.9885      0.991       0.9935      0.996
  8          0.998       1.000       1.000       1.000       1.000
  9 ENDTBL
  3 STRUCT      10
  8                      387.6       0.00        0.000                   RESV 100
  8                      389.0       10.30       0.001                   EXIST.
  8                      389.7       20.50       0.007                   POND
  8                      390.0       25.00       0.342
  8                      391.0       40.00       3.013
  8                      392.0       53.00       6.496
  8                      393.0       64.00       10.845
  8                      394.0       73.00       16.305
  8                      395.0       80.00       22.864
  8                      395.3       82.00       25.031
  8                      396.0       200.79      30.497
  8                      396.5       347.65      34.759
  9 ENDTBL
  3 STRUCT      20
  8                      390.0       0.00        0.000                   RESV 200
  8                      390.5       3.79        0.818                   EXIST.
  8                      391.0       16.69       1.952                   POND
  8                      391.5       78.44       3.404
  8                      392.0       277.33      5.172
  9 ENDTBL
1

 ********************80-80 LIST OF INPUT DATA (CONTINUED)**********************

  6 RUNOFF 1 001       1 0.07978     65.0        0.662                    WS 10
  6 RUNOFF 1 002       2 0.29210     66.0        1.007                    WS 12
  6 RUNOFF 1 003       3 0.14943     67.0        0.783                    WS 13
  6 ADDHYD 4 004   2 3 4
  6 ADDHYD 4 005   1 4 5
  6 RESVOR 2    10 5   1                                    1 1          RV100/B
  6 RUNOFF 1 006       2 0.10097     67.0        0.710                    WS 20
  6 RESVOR 2    20 2   3                                                 RV 200
  6 RUNOFF 1 007       4 0.00529     63.0        0.294                    WS 24
  6 ADDHYD 4 008   3 4 5                                    1 1          POA C
  6 RUNOFF 1 009       6 0.12850     67.0        0.707       1 1          WS 30/D
  6 RUNOFF 1 010       7 0.00248     55.0        0.147       1 1          WS 40/E
    ENDATA
  7 INCREM 6             0.10
  7 COMPUT 7 001   010   0.0          3.3         1.0        3 2  01  02
    ENDCMP 1
  7 COMPUT 7 001   010   0.0          5.0         1.0        3 2  01  10
    ENDCMP 1
  7 COMPUT 7 001   010   0.0          5.7         1.0        3 2  01  25
    ENDCMP 1
  7 COMPUT 7 001   010   0.0          6.4         1.0        3 2  01  50
```

```
   ENDCMP 1
 7 COMPUT 7 001   010   0.0          7.2         1.0        3 2  01  99
   ENDCMP 1
   ENDJOB 2

 ******************************END OF 80-80 LIST*******************************
1
 TR20 ----------------------------------------------------------------------
         SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26):          E VERSION
 07/31/** MILONE & MACBROOM INC., CHESHIRE, CT                        810/01/90
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 EXECUTIVE CONTROL INCREM    MAIN TIME INCREMENT =   .10 HOURS


 EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION  10
    STARTING TIME =   .00         RAIN DEPTH =  3.30       RAIN DURATION=  1.00
    ANT. MOIST. COND. = 2         MAIN TIME INCREMENT =   .10 HOURS
    ALTERNATE NO.= 1              STORM NO.= 2             RAIN TABLE NO.= 3


 OPERATION RESVOR   STRUCTURE 10

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       13.61                          43.1                         391.24
       17.60                          12.3                         389.14
       17.79                          11.1                         389.05
       17.99                          10.2                         388.99
       18.19                           9.7                         388.92
       18.40                           9.5                         388.88
       18.60                           9.3                         388.86
       18.80                           9.2                         388.85
       19.00                           9.1                         388.84
       19.20                           9.0                         388.83
                   HYDROGRAPH POINTS FOR   ALTERNATE = 1,   STORM = 2
     HRS      MAIN TIME INCREMENT =  .10 hr,      DRAINAGE AREA =    .52 SQ.MI.
    11.70 CFS         0       1       3       8      17      21      23      26
    12.50 CFS        28      31      33      36      38      40      41      42
    13.30 CFS        42      43      43      43      43      43      43      42
    14.10 CFS        42      42      41      41      40      40      39      39
    14.90 CFS        38      37      37      36      35      34      34      33
    15.70 CFS        32      32      31      31      30      29      29      28
    16.50 CFS        28      27      27      26      26      25      24      23
    17.30 CFS        22      21      10      12      10      11       9      10
    18.10 CFS         9      10       9       9       8       9       8       9
    18.90 CFS         8       9       8       9       8       9       8       9
    19.70 CFS         8       8       8       8       7       7       7       7
    20.50 CFS         7       7       7       7       7       7       7       7
    21.30 CFS         7       7       7       7       7       7       7       7
    22.10 CFS         7       7       7       7       6       6       6       6
    22.90 CFS         6       6       6       6       6       6       6       6
    23.70 CFS         6       6       5       5       5       5       4       4
    24.50 CFS         3       3       2       2       1       1       1       1
    25.30 CFS         0

    RUNOFF ABOVE BASEFLOW OF    .00 CFS
                  .70 WATERSHED INCHES;     236 CFS-HRS;      19.5 ACRE-FEET.
1
 TR20 ----------------------------------------------------------------------
         SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26):          E VERSION
 07/31/** MILONE & MACBROOM INC., CHESHIRE, CT                        810/01/90
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 *** WARNING - XSECTION   7, HYDROGRAPH VOLUME TRUNCATED AT      0 CFS
                           ( 38. % OF MAX. HYDROGRAPH COORDINATE)
                           MAIN TIME INCREMENT TOO SMALL.                  ***


 OPERATION ADDHYD   XSECTION   8

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       13.47                          8.7                          (NULL)
                   HYDROGRAPH POINTS FOR   ALTERNATE = 1,   STORM = 2
     HRS      MAIN TIME INCREMENT =  .10 hr,      DRAINAGE AREA =    .11 SQ.MI.
    12.00 CFS         0       1       1       2       3       3       4       4
    12.80 CFS         6       7       7       8       8       9       9       9
```

13.60 CFS	9	9	8	8	8	8	8	7
14.40 CFS	7	7	7	7	7	6	6	6
15.20 CFS	6	6	6	5	5	5	5	5
16.00 CFS	5	5	5	4	4	4	4	4
16.80 CFS	4	4	4	4	4	4	4	4
17.60 CFS	4	3	3	3	3	3	3	3
18.40 CFS	3	3	3	3	3	3	3	3
19.20 CFS	3	3	3	3	3	3	3	3
20.00 CFS	2	2	2	2	2	2	2	2
20.80 CFS	2	2	2	2	2	2	2	2
21.60 CFS	2	2	2	2	2	2	2	2
22.40 CFS	2	2	2	2	2	2	2	2
23.20 CFS	2	2	2	2	2	2	2	2
24.00 CFS	2	2	1	1	1	1	1	1
24.80 CFS	1	1	1	1	1	1	1	1
25.60 CFS	1	1	1	1	1	1	1	1
26.40 CFS	1	1	1	1	1	1	1	1
27.20 CFS	1	0						

RUNOFF ABOVE BASEFLOW OF .00 CFS
.73 WATERSHED INCHES; 50 CFS-HRS; 4.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.58	28.3	(RUNOFF)
18.96	2.2	(RUNOFF)
21.96	1.7	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2
MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .13 SQ.MI.

HRS								
11.70 CFS	0	1	2	4	8	13	19	24
12.50 CFS	28	28	27	24	21	18	16	14
13.30 CFS	13	12	11	10	9	8	8	7
14.10 CFS	7	7	7	6	6	6	6	6
14.90 CFS	6	5	5	5	5	5	5	5
15.70 CFS	5	4	4	4	4	4	4	4

1
TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): E VERSION
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16.50 CFS	4	4	4	4	4	3	3	3
17.30 CFS	3	3	3	3	3	2	2	2
18.10 CFS	2	2	2	2	2	2	2	2
18.90 CFS	2	2	2	2	2	2	2	2
19.70 CFS	2	2	2	2	2	2	2	2
20.50 CFS	2	2	2	2	2	2	2	2
21.30 CFS	2	2	2	2	2	2	2	2
22.10 CFS	2	2	2	2	2	2	2	2
22.90 CFS	1	1	1	1	1	1	1	1
23.70 CFS	1	1	1	1	1	1	1	1
24.50 CFS	1	0						

RUNOFF ABOVE BASEFLOW OF .00 CFS
.74 WATERSHED INCHES; 61 CFS-HRS; 5.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 10

RUNOFF ABOVE BASEFLOW OF .00 CFS
.00 WATERSHED INCHES; 0 CFS-HRS; .0 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 10
STARTING TIME = .00 RAIN DEPTH = 5.00 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .10 HOURS
ALTERNATE NO.= 1 STORM NO.=10 RAIN TABLE NO.= 3

OPERATION RESVOR STRUCTURE 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
14.00	73.6	394.09

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10

HRS	MAIN TIME INCREMENT = .10 hr,				DRAINAGE AREA = .52 SQ.MI.			
10.70 CFS	0	1	1	2	3	4	5	7
11.50 CFS	9	12	15	21	21	24	27	30
12.30 CFS	36	42	48	54	58	62	65	67
13.10 CFS	69	70	71	72	73	73	73	74
13.90 CFS	74	74	74	74	73	73	73	73
14.70 CFS	73	73	72	72	72	71	71	70
15.50 CFS	70	70	69	69	68	68	67	67
16.30 CFS	67	66	66	65	65	64	64	63
17.10 CFS	62	62	61	60	60	59	58	57

1

17.90 CFS	57	56	55	54	54	53	52	51
18.70 CFS	50	49	48	47	46	45	44	43
19.50 CFS	43	42	41	40	39	38	37	36
20.30 CFS	35	34	33	33	32	31	30	29
21.10 CFS	29	28	27	27	26	26	25	24
21.90 CFS	23	22	21	14	13	13	13	13
22.70 CFS	12	12	12	12	12	12	12	12
23.50 CFS	12	11	11	11	11	11	10	10
24.30 CFS	9	8	6	5	4	3	2	2
25.10 CFS	1	1	1	1	0			

RUNOFF ABOVE BASEFLOW OF .00 CFS
1.74 WATERSHED INCHES; 584 CFS-HRS; 48.3 ACRE-FEET.

*** WARNING - XSECTION 7, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(13. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

OPERATION ADDHYD XSECTION 8

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.92	41.6	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10

HRS	MAIN TIME INCREMENT = .10 hr,				DRAINAGE AREA = .11 SQ.MI.			
11.50 CFS	0	1	1	1	2	3	5	6
12.30 CFS	9	13	17	24	34	40	41	41
13.10 CFS	39	36	33	30	27	24	22	20
13.90 CFS	18	17	17	16	16	15	15	15
14.70 CFS	14	14	13	13	13	12	12	12
15.50 CFS	11	11	11	10	10	10	10	9
16.30 CFS	9	9	9	9	8	8	8	8
17.10 CFS	8	7	7	7	7	7	6	6
17.90 CFS	6	6	6	5	5	5	5	5
18.70 CFS	5	5	5	5	4	4	4	4
19.50 CFS	4	4	4	4	4	4	4	4
20.30 CFS	4	4	4	4	4	4	4	4
21.10 CFS	4	3	3	3	3	3	3	3
21.90 CFS	3	3	3	3	3	3	3	3
22.70 CFS	3	3	3	3	3	3	3	3
23.50 CFS	3	3	3	3	3	3	3	3
24.30 CFS	3	3	3	2	2	2	2	2
25.10 CFS	2	2	2	2	2	2	2	2
25.90 CFS	2	1	1	1	1	1	1	1
26.70 CFS	1	1	1	1	1	1	1	1
27.50 CFS	1	1	1	1	1	1	1	1
28.30 CFS	1	1	1	1	1	1	0	

RUNOFF ABOVE BASEFLOW OF .00 CFS
1.78 WATERSHED INCHES; 122 CFS-HRS; 10.1 ACRE-FEET.

1

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.54	77.9	(RUNOFF)
21.95	3.4	(RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10

HRS	MAIN TIME INCREMENT = .10 hr,			DRAINAGE AREA =			.13 SQ.MI.
10.80 CFS	0	1	1	1	2	2	3	3
11.60 CFS	4	5	8	12	20	31	45	60
12.40 CFS	72	77	76	70	62	53	45	39
13.20 CFS	34	30	26	24	22	20	18	17
14.00 CFS	16	15	15	14	14	13	13	12
14.80 CFS	12	12	11	11	11	10	10	10
15.60 CFS	10	9	9	9	9	9	9	9
16.40 CFS	8	8	8	8	8	7	7	7
17.20 CFS	6	6	6	6	5	5	5	5
18.00 CFS	5	5	5	5	5	4	4	4
18.80 CFS	4	4	4	4	4	4	4	4
19.60 CFS	4	4	4	4	4	4	4	4
20.40 CFS	3	3	3	3	3	3	3	3
21.20 CFS	3	3	3	3	3	3	3	3
22.00 CFS	3	3	3	3	3	3	3	3
22.80 CFS	3	3	3	3	3	3	3	3
23.60 CFS	3	3	3	3	3	2	2	2
24.40 CFS	2	1	1	1	0			

RUNOFF ABOVE BASEFLOW OF .00 CFS
1.80 WATERSHED INCHES; 149 CFS-HRS; 12.3 ACRE-FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.24	1.2	(RUNOFF)

*** WARNING - XSECTION 10, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(35. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10

HRS	MAIN TIME INCREMENT = .10 hr,			DRAINAGE AREA =			.00 SQ.MI.
11.90 CFS	0	1	1	1	1	1	1	0

RUNOFF ABOVE BASEFLOW OF .00 CFS
.97 WATERSHED INCHES; 2 CFS-HRS; .1 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

1
TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): E VERSION
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EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 10
STARTING TIME = .00 RAIN DEPTH = 5.70 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .10 HOURS
ALTERNATE NO.= 1 STORM NO.=25 RAIN TABLE NO.= 3

OPERATION RESVOR STRUCTURE 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
14.20	81.2	395.19
24.38	10.8	389.03
24.57	7.7	388.64
24.78	5.0	388.28
24.98	3.2	388.04
25.19	2.2	387.89
25.39	1.5	387.81
25.60	1.1	387.76

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25

HRS	MAIN TIME INCREMENT = .10 hr,			DRAINAGE AREA =			.52 SQ.MI.
10.20 CFS	0	1	1	2	2	3	4	5
11.00 CFS	7	8	10	12	15	18	21	21
11.80 CFS	22	24	27	30	35	42	49	56
12.60 CFS	61	66	70	73	75	76	77	78
13.40 CFS	79	80	80	81	81	81	81	81
14.20 CFS	81	81	81	81	81	81	81	81
15.00 CFS	80	80	80	80	80	79	79	79
15.80 CFS	79	78	78	78	77	77	77	76
16.60 CFS	76	76	75	75	75	74	74	74
17.40 CFS	73	73	72	72	71	71	70	69

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18.20 CFS	69	68	67	67	66	66	65	64
19.00 CFS	64	63	62	61	60	60	59	58
19.80 CFS	57	56	56	55	54	53	52	51
20.60 CFS	50	49	48	47	46	45	45	44
21.40 CFS	43	42	41	41	40	39	38	37
22.20 CFS	36	35	34	33	32	32	31	30
23.00 CFS	29	29	28	27	27	26	26	25
23.80 CFS	24	23	22	21	14	9	11	7
24.60 CFS	7	4	5	2	3	1	2	0
25.40 CFS	2	0	1	0	1	0	1	0
26.20 CFS	1	0	1	0				

RUNOFF ABOVE BASEFLOW OF .00 CFS
2.23 WATERSHED INCHES; 751 CFS-HRS; 62.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 8

1
TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): E VERSION
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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.84 59.8 (NULL)
HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25

HRS	MAIN TIME INCREMENT = .10 hr,				DRAINAGE AREA =			.11 SQ.MI.
11.10 CFS	0	1	1	1	1	1	2	2
11.90 CFS	3	5	7	11	16	20	35	48
12.70 CFS	56	60	59	56	52	47	43	39
13.50 CFS	35	31	28	26	23	21	20	18
14.30 CFS	17	17	17	16	16	16	15	15
15.10 CFS	15	14	14	13	13	13	13	12
15.90 CFS	12	12	11	11	11	11	10	10
16.70 CFS	10	10	10	9	9	9	9	8
17.50 CFS	8	8	8	7	7	7	7	7
18.30 CFS	6	6	6	6	6	6	6	5
19.10 CFS	5	5	5	5	5	5	5	5
19.90 CFS	5	5	5	4	4	4	4	4
20.70 CFS	4	4	4	4	4	4	4	4
21.50 CFS	4	4	4	4	4	4	4	4
22.30 CFS	4	4	4	4	4	4	4	4
23.10 CFS	4	3	3	3	3	3	3	3
23.90 CFS	3	3	3	3	3	3	3	3
24.70 CFS	3	3	3	3	2	2	2	2
25.50 CFS	2	2	2	2	2	2	2	2
26.30 CFS	2	2	1	1	1	1	1	1
27.10 CFS	1	1	1	1	1	1	1	1
27.90 CFS	1	1	1	1	1	1	1	1
28.70 CFS	1	1	1	1	1	1	0	

RUNOFF ABOVE BASEFLOW OF .00 CFS
2.29 WATERSHED INCHES; 157 CFS-HRS; 13.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.53 101.7 (RUNOFF)
21.94 4.1 (RUNOFF)
HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25

HRS	MAIN TIME INCREMENT = .10 hr,				DRAINAGE AREA =			.13 SQ.MI.
10.30 CFS	0	1	1	1	1	2	2	3
11.10 CFS	3	4	4	5	6	7	9	12
11.90 CFS	18	28	43	62	80	95	101	99
12.70 CFS	91	79	67	57	49	42	37	33
13.50 CFS	30	27	25	23	21	20	19	18
14.30 CFS	17	17	16	16	15	15	14	14
15.10 CFS	13	13	13	12	12	12	11	11
15.90 CFS	11	11	11	11	10	10	10	10
16.70 CFS	10	9	9	9	8	8	8	7
17.50 CFS	7	7	6	6	6	6	6	6
18.30 CFS	6	5	5	5	5	5	5	5

1
TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): E VERSION
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19.10 CFS	5	5	5	5	5	5	5	5
19.90 CFS	5	5	4	4	4	4	4	4
20.70 CFS	4	4	4	4	4	4	4	4
21.50 CFS	4	4	4	4	4	4	4	4
22.30 CFS	4	4	4	4	4	4	4	4
23.10 CFS	4	4	3	3	3	3	3	3
23.90 CFS	3	3	3	3	2	2	1	1
24.70 CFS	1	1	0					

RUNOFF ABOVE BASEFLOW OF .00 CFS
2.31 WATERSHED INCHES; 191 CFS-HRS; 15.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.24	1.7	(RUNOFF)

*** WARNING - XSECTION 10, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(26. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***
HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25
MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .00 SQ.MI.

HRS							
11.80 CFS	0	1	1	2	2	1	1
12.60 CFS	1	0					

RUNOFF ABOVE BASEFLOW OF .00 CFS
1.34 WATERSHED INCHES; 2 CFS-HRS; .2 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 10
STARTING TIME = .00 RAIN DEPTH = 6.40 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .10 HOURS
ALTERNATE NO.= 1 STORM NO.=50 RAIN TABLE NO.= 3

OPERATION RESVOR STRUCTURE 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.60	156.7	395.74
25.10	14.2	389.27
25.30	11.7	389.09
25.50	10.1	388.97
25.70	9.0	388.82
25.90	8.0	388.69
26.10	7.2	388.58
26.30	6.5	388.49
26.50	5.9	388.40
26.70	5.4	388.33

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50
MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .52 SQ.MI.

HRS								
9.70 CFS	0	1	1	1	2	3	4	5
10.50 CFS	6	7	8	10	11	13	15	18
11.30 CFS	21	21	21	22	24	25	27	30
12.10 CFS	35	41	48	56	63	68	73	76
12.90 CFS	79	81	92	120	139	150	155	157
13.70 CFS	155	152	148	142	136	130	124	119
14.50 CFS	113	108	103	99	95	91	87	84
15.30 CFS	82	82	82	81	81	81	81	81
16.10 CFS	80	80	80	80	79	79	79	79
16.90 CFS	78	78	78	77	77	77	76	76
17.70 CFS	76	75	75	74	74	74	73	73
18.50 CFS	72	71	71	70	69	69	68	68
19.30 CFS	67	67	66	65	65	64	64	63
20.10 CFS	62	61	60	59	59	58	57	56
20.90 CFS	56	55	54	53	52	51	50	50
21.70 CFS	49	48	47	46	45	44	44	43
22.50 CFS	42	41	41	40	39	38	37	36
23.30 CFS	35	34	34	33	32	31	31	30

24.10 CFS	29	29	28	27	26	26	24	22
24.90 CFS	18	-10	14	-9	12	-8	10	-7
25.70 CFS	9	-7	8	-6	7	-6	7	-5
26.50 CFS	6	-5	5	-4	5	-4	4	-3
27.30 CFS	4	-3	4	-3	3	-2	3	-2
28.10 CFS	3	-2	3	-1	2	-1	2	-1
28.90 CFS	2	-1	2	-1	2	-1	1	0
29.70 CFS	1	0	1	0	1	0	1	0
30.50 CFS	1	0	1	0	1	0	1	0
31.30 CFS	1	0	1	0	1	0		

RUNOFF ABOVE BASEFLOW OF .00 CFS
2.73 WATERSHED INCHES; 917 CFS-HRS; 75.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 8

1
TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): E VERSION
07/31/** MILONE & MACBROOM INC., CHESHIRE, CT 810/01/90
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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.80 78.4 (NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50
HRS MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .11 SQ.MI.

10.70 CFS	0	1	1	1	1	1	1	2
11.50 CFS	2	2	3	3	5	7	11	16
12.30 CFS	22	40	57	69	76	78	76	72
13.10 CFS	66	60	53	48	43	38	34	31
13.90 CFS	28	26	24	22	21	19	18	18
14.70 CFS	17	17	17	16	16	16	15	15
15.50 CFS	15	14	14	14	14	13	13	13
16.30 CFS	13	12	12	12	12	11	11	11
17.10 CFS	11	10	10	10	10	9	9	9
17.90 CFS	8	8	8	8	8	7	7	7
18.70 CFS	7	7	7	6	6	6	6	6
19.50 CFS	6	6	6	6	6	5	5	5
20.30 CFS	5	5	5	5	5	5	5	5
21.10 CFS	5	4	4	4	4	4	4	4
21.90 CFS	4	4	4	4	4	4	4	4
22.70 CFS	4	4	4	4	4	4	4	4
23.50 CFS	4	4	4	4	4	4	4	4
24.30 CFS	3	3	3	3	3	3	3	3
25.10 CFS	3	3	3	2	2	2	2	2
25.90 CFS	2	2	2	2	2	2	2	2
26.70 CFS	2	1	1	1	1	1	1	1
27.50 CFS	1	1	1	1	1	1	1	1
28.30 CFS	1	1	1	1	1	1	1	1
29.10 CFS	1	1	1	1	1	0		

RUNOFF ABOVE BASEFLOW OF .00 CFS
2.82 WATERSHED INCHES; 193 CFS-HRS; 16.0 ACRE-FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.52 126.1 (RUNOFF)
21.96 4.9 (RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50
HRS MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .13 SQ.MI.

9.80 CFS	0	1	1	1	1	1	2	2
10.60 CFS	3	3	3	4	4	5	6	7
11.40 CFS	8	9	11	13	17	24	37	56
12.20 CFS	78	101	119	126	123	112	97	83
13.00 CFS	70	60	51	45	40	36	33	30
13.80 CFS	27	25	24	23	21	21	20	19
14.60 CFS	19	18	17	17	16	16	15	15
15.40 CFS	15	14	14	14	13	13	13	13
16.20 CFS	13	12	12	12	12	11	11	11
17.00 CFS	10	10	9	9	9	8	8	8

1
TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): E VERSION
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17.80 CFS	7	7	7	7	7	7	6	6
18.60 CFS	6	6	6	6	6	6	6	6
19.40 CFS	6	6	6	6	6	5	5	5
20.20 CFS	5	5	5	5	5	5	5	5
21.00 CFS	5	5	5	5	5	5	5	5
21.80 CFS	5	5	5	5	5	5	5	4
22.60 CFS	4	4	4	4	4	4	4	4
23.40 CFS	4	4	4	4	4	4	4	4
24.20 CFS	3	3	2	2	1	1	1	0

RUNOFF ABOVE BASEFLOW OF .00 CFS
2.84 WATERSHED INCHES; 235 CFS-HRS; 19.4 ACRE-FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.23	2.2	(RUNOFF)

*** WARNING - XSECTION 10, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(20. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***
HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50

HRS	MAIN TIME INCREMENT = .10 hr,				DRAINAGE AREA =			.00 SQ.MI.
11.80 CFS	0	1	1	2	2	2	1	1
12.60 CFS	1	1	1	0				

RUNOFF ABOVE BASEFLOW OF .00 CFS
1.75 WATERSHED INCHES; 3 CFS-HRS; .2 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 10
STARTING TIME = .00 RAIN DEPTH = 7.20 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .10 HOURS
ALTERNATE NO.= 1 STORM NO.=99 RAIN TABLE NO.= 3

OPERATION RESVOR STRUCTURE 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.33	257.9	396.19
25.60	9.7	388.91
25.80	8.6	388.77
26.00	7.7	388.65
26.20	6.9	388.54
26.40	6.3	388.45
26.60	5.7	388.37
26.80	5.2	388.30
27.00	4.7	388.24
27.20	4.3	388.18

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99

HRS	MAIN TIME INCREMENT = .10 hr,				DRAINAGE AREA =			.52 SQ.MI.
9.20 CFS	0	1	1	1	2	2	3	4
10.00 CFS	5	6	7	9	10	12	13	15
10.80 CFS	17	19	21	21	21	22	24	25
11.60 CFS	26	27	29	31	35	41	47	55
12.40 CFS	63	69	74	78	82	142	187	225
13.20 CFS	249	257	255	247	235	221	207	195
14.00 CFS	186	176	167	158	150	142	135	128
14.80 CFS	122	116	111	106	101	97	93	89
15.60 CFS	86	83	82	82	82	81	81	81
16.40 CFS	81	81	81	80	80	80	80	80
17.20 CFS	79	79	79	78	78	78	77	77
18.00 CFS	77	76	76	75	75	75	74	74
18.80 CFS	73	73	73	72	71	71	70	70
19.60 CFS	69	69	68	67	67	66	66	65
20.40 CFS	65	64	63	63	62	61	60	59
21.20 CFS	59	58	57	56	56	55	54	54
22.00 CFS	53	52	51	50	50	49	48	47
22.80 CFS	46	46	45	44	43	43	42	41

23.60 CFS	40	40	39	38	37	36	35	34
24.40 CFS	33	32	31	30	29	28	27	26
25.20 CFS	25	22	11	-8	10	-7	9	-7
26.00 CFS	8	-6	7	-5	6	-5	6	-4
26.80 CFS	5	-4	5	-3	4	-3	4	-3
27.60 CFS	4	-2	3	-2	3	-2	3	-2
28.40 CFS	2	-1	2	-1	2	-1	2	-1
29.20 CFS	2	-1	2	0	1	0	1	0
30.00 CFS	1	0	1	0	1	0	1	0
30.80 CFS	1	0	1	0	1	0	1	0
31.60 CFS	1	0						

RUNOFF ABOVE BASEFLOW OF .00 CFS
3.39 WATERSHED INCHES; 1141 CFS-HRS; 94.3 ACRE-FEET.

OPERATION ADDHYD XSECTION 8

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TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): E VERSION
07/31/** MILONE & MACBROOM INC., CHESHIRE, CT 810/01/90
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PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.71 110.2 (NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99

HRS	MAIN TIME INCREMENT = .10 hr,				DRAINAGE AREA =			.11 SQ.MI.
10.30 CFS	0	1	1	1	1	1	1	1
11.10 CFS	2	2	2	2	3	3	4	5
11.90 CFS	7	11	16	23	42	62	79	102
12.70 CFS	110	105	94	82	75	69	62	56
13.50 CFS	50	45	41	37	33	31	28	26
14.30 CFS	24	23	22	21	20	19	18	18
15.10 CFS	17	17	17	17	16	16	16	16
15.90 CFS	15	15	15	15	14	14	14	14
16.70 CFS	13	13	13	13	12	12	12	11
17.50 CFS	11	11	10	10	10	10	9	9
18.30 CFS	9	9	8	8	8	8	8	8
19.10 CFS	7	7	7	7	7	7	7	7
19.90 CFS	6	6	6	6	6	6	6	6
20.70 CFS	6	6	5	5	5	5	5	5
21.50 CFS	5	5	5	5	5	5	5	5
22.30 CFS	5	5	5	5	5	5	5	5
23.10 CFS	4	4	4	4	4	4	4	4
23.90 CFS	4	4	4	4	4	4	4	4
24.70 CFS	3	3	3	3	3	3	3	3
25.50 CFS	3	3	2	2	2	2	2	2
26.30 CFS	2	2	2	2	2	2	2	1
27.10 CFS	1	1	1	1	1	1	1	1
27.90 CFS	1	1	1	1	1	1	1	1
28.70 CFS	1	1	1	1	1	1	1	1
29.50 CFS	1	1	1	1	0			

RUNOFF ABOVE BASEFLOW OF .00 CFS
3.44 WATERSHED INCHES; 236 CFS-HRS; 19.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 9

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.52 154.6 (RUNOFF)
21.95 5.7 (RUNOFF)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99

HRS	MAIN TIME INCREMENT = .10 hr,				DRAINAGE AREA =			.13 SQ.MI.
9.40 CFS	0	1	1	1	1	2	2	2
10.20 CFS	3	3	3	4	4	5	5	6
11.00 CFS	7	8	9	10	11	13	15	17
11.80 CFS	22	32	48	71	99	125	146	154
12.60 CFS	150	136	118	100	84	72	62	54
13.40 CFS	48	43	39	36	33	30	28	27
14.20 CFS	25	24	24	23	22	21	21	20
15.00 CFS	19	19	18	18	17	17	16	16
15.80 CFS	16	15	15	15	15	15	14	14

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TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): E VERSION
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16.60 CFS	14	13	13	12	12	11	11	10
17.40 CFS	10	10	9	9	8	8	8	8
18.20 CFS	8	8	8	8	8	8	8	8
19.00 CFS	8	8	7	7	7	7	7	7
19.80 CFS	7	6	6	6	6	6	6	6
20.60 CFS	6	6	6	6	6	6	6	6
21.40 CFS	6	6	6	6	6	6	6	6
22.20 CFS	6	6	5	5	5	5	5	5
23.00 CFS	5	5	5	5	5	5	5	5
23.80 CFS	5	4	4	4	4	3	3	2
24.60 CFS	1	1	1	1	0			

RUNOFF ABOVE BASEFLOW OF .00 CFS
3.46 WATERSHED INCHES; 287 CFS-HRS; 23.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.23	2.9	(RUNOFF)

*** WARNING - XSECTION 10, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(17. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***
HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99

HRS	MAIN TIME INCREMENT = .10 hr,			DRAINAGE AREA =			.00 SQ.MI.
11.70 CFS	0	1	2	2	2	3	3	2
12.50 CFS	1	1	1	1	1	1	0	

RUNOFF ABOVE BASEFLOW OF .00 CFS
2.24 WATERSHED INCHES; 4 CFS-HRS; .3 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 5

1
TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): E VERSION
07/31/** MILONE & MACBROOM INC., CHESHIRE, CT 810/01/90
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 3.30 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 3, AMC 2							
MAIN TIME INCREMENT .10 HOURS							
ALTERNATE 1 STORM 2							
XSECTION 1	RUNOFF	.08	.65	---	12.57	15	187.5
XSECTION 2	RUNOFF	.29	.69	---	12.80	49	169.0
XSECTION 3	RUNOFF	.15	.74	---	12.64	31	206.7
XSECTION 4	ADDHYD	.44	.71	---	12.74	79	179.5
XSECTION 5	ADDHYD	.52	.70	---	12.71	93	178.8
STRUCTURE 10	RESVOR	.52	.70	391.24	13.61	43	82.7
XSECTION 6	RUNOFF	.10	.74	---	12.59	22	220.0
STRUCTURE 20	RESVOR	.10	.74	390.68	13.49	8	80.0
XSECTION 7	RUNOFF	.01	.56	---	12.33T	1T	100.0
XSECTION 8	ADDHYD	.11	.73	---	13.47	9	81.8
XSECTION 9	RUNOFF	.13	.74	---	12.58	28	215.4
XSECTION 10	RUNOFF	.00	.00	---	.00	0	********
RAINFALL OF 5.00 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 1 STORM 10							
XSECTION 1	RUNOFF	.08	1.65	---	12.52	45	562.5

XSECTION	2	RUNOFF	.29	1.73	---	12.73	141	486.2
XSECTION	3	RUNOFF	.15	1.80	---	12.58	86	573.3
XSECTION	4	ADDHYD	.44	1.75	---	12.67	224	509.1
XSECTION	5	ADDHYD	.52	1.74	---	12.64	266	511.5
STRUCTURE	10	RESVOR	.52	1.74	394.09	14.00	74	142.3
XSECTION	6	RUNOFF	.10	1.80	---	12.54	61	610.0
STRUCTURE	20	RESVOR	.10	1.80	391.19	12.93	41	410.0
XSECTION	7	RUNOFF	.01	1.51	---	12.30T	4T	400.0
XSECTION	8	ADDHYD	.11	1.78	---	12.92	42	381.8
XSECTION	9	RUNOFF	.13	1.80	---	12.54	78	600.0

1

TR20 ----------

SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): E VERSION
07/31/** MILONE & MACBROOM INC., CHESHIRE, CT 810/01/90
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 1 STORM 10							
XSECTION 10	RUNOFF	.00	.97	---	12.24T	1T********	
RAINFALL OF 5.70 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 1 STORM 25							
XSECTION 1	RUNOFF	.08	2.14	---	12.50	60	750.0
XSECTION 2	RUNOFF	.29	2.22	---	12.72	186	641.4
XSECTION 3	RUNOFF	.15	2.30	---	12.58	111	740.0
XSECTION 4	ADDHYD	.44	2.25	---	12.66	292	663.6
XSECTION 5	ADDHYD	.52	2.23	---	12.63	348	669.2
STRUCTURE 10	RESVOR	.52	2.23	395.19	14.20	81	155.8
XSECTION 6	RUNOFF	.10	2.30	---	12.53	80	800.0
STRUCTURE 20	RESVOR	.10	2.30	391.34	12.85	59	590.0
XSECTION 7	RUNOFF	.01	1.97	---	12.30	5	500.0
XSECTION 8	ADDHYD	.11	2.29	---	12.84	60	545.5
XSECTION 9	RUNOFF	.13	2.31	---	12.53	102	784.6
XSECTION 10	RUNOFF	.00	1.34	---	12.24T	2T********	
RAINFALL OF 6.40 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 1 STORM 50							
XSECTION 1	RUNOFF	.08	2.65	---	12.50	75	937.5
XSECTION 2	RUNOFF	.29	2.74	---	12.71	233	803.4
XSECTION 3	RUNOFF	.15	2.83	---	12.57	138	920.0
XSECTION 4	ADDHYD	.44	2.77	---	12.65	365	829.5
XSECTION 5	ADDHYD	.52	2.75	---	12.62	435	836.5
STRUCTURE 10	RESVOR	.52	2.73	395.74	13.60	157	301.9
XSECTION 6	RUNOFF	.10	2.84	---	12.52	99	990.0
STRUCTURE 20	RESVOR	.10	2.84	391.49	12.81	77	770.0

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TR20 ----------

SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): E VERSION
07/31/** MILONE & MACBROOM INC., CHESHIRE, CT 810/01/90
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:

F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 1 STORM 50							
XSECTION 7	RUNOFF	.01	2.46	---	12.29	6	600.0
XSECTION 8	ADDHYD	.11	2.82	---	12.80	78	709.1
XSECTION 9	RUNOFF	.13	2.84	---	12.52	126	969.2
XSECTION 10	RUNOFF	.00	1.75	---	12.23T	2T	********
RAINFALL OF 7.20 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 1 STORM 99							
XSECTION 1	RUNOFF	.08	3.25	---	12.49	93	1162.5
XSECTION 2	RUNOFF	.29	3.36	---	12.71	287	989.7
XSECTION 3	RUNOFF	.15	3.46	---	12.56	171	1140.0
XSECTION 4	ADDHYD	.44	3.39	---	12.64	451	1025.0
XSECTION 5	ADDHYD	.52	3.37	---	12.62	537	1032.7
STRUCTURE 10	RESVOR	.52	3.39	396.19	13.33	258	496.2
XSECTION 6	RUNOFF	.10	3.46	---	12.52	121	1210.0
STRUCTURE 20	RESVOR	.10	3.46	391.57	12.72	108	1080.0
XSECTION 7	RUNOFF	.01	3.05	---	12.29	8	800.0
XSECTION 8	ADDHYD	.11	3.44	---	12.71	110	1000.0
XSECTION 9	RUNOFF	.13	3.46	---	12.52	155	1192.3
XSECTION 10	RUNOFF	.00	2.24	---	12.23T	3T	********

1

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 2	10	25	50	99
STRUCTURE 20	.10					
ALTERNATE 1		8	41	59	77	108
STRUCTURE 10	.52					
ALTERNATE 1		43	74	81	157	258
XSECTION 1	.08					
ALTERNATE 1		15	45	60	75	93
XSECTION 2	.29					
ALTERNATE 1		49	141	186	233	287
XSECTION 3	.15					
ALTERNATE 1		31	86	111	138	171
XSECTION 4	.44					
ALTERNATE 1		79	224	292	365	451
XSECTION 5	.52					
ALTERNATE 1		93	266	348	435	537
XSECTION 6	.10					

ALTERNATE	1		22	61	80	99	121
XSECTION	7	.01					
ALTERNATE	1		1	4	5	6	8
XSECTION	8	.11					
ALTERNATE	1		9	42	60	78	110
XSECTION	9	.13					
ALTERNATE	1		28	78	102	126	155
XSECTION	10	.00					
ALTERNATE	1		0	1	2	2	3

END OF 1 JOBS IN THIS RUN
1

SCS TR-20, VERSION 10/01/90
FILES

INPUT = srexcd04.in
OUTPUT = srexcd04.out , DATED 07/31/**,13:31:11

FILES GENERATED - DATED 07/31/**,13:31:11

NONE!

*** TR-20 RUN COMPLETED ***

1

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 ****************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY*****************

 JOB TR-20                                                SUMMARY   NOPLOTS
 TITLE     SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26):   PR COND W/O DET
 TITLE     MILONE & MACBROOM INC., CHESHIRE, CT                          08/04/14
  5 RAINFL 3              0.25
  8          0.0         0.0025      0.005       0.0075      0.010
  8          0.0125      0.015       0.0175      0.020       0.023
  8          0.026       0.0285      0.031       0.034       0.037
  8          0.040       0.043       0.0465      0.050       0.0535
  8          0.057       0.0605      0.064       0.068       0.072
  8          0.076       0.080       0.084       0.089       0.094
  8          0.100       0.107       0.115       0.122       0.130
  8          0.139       0.148       0.157       0.167       0.178
  8          0.189       0.202       0.216       0.231       0.250
  8          0.271       0.298       0.345       0.500       0.655
  8          0.702       0.729       0.751       0.769       0.785
  8          0.798       0.811       0.823       0.834       0.844
  8          0.853       0.862       0.870       0.878       0.886
  8          0.893       0.900       0.906       0.911       0.916
  8          0.920       0.924       0.928       0.932       0.936
  8          0.940       0.944       0.9475      0.951       0.954
  8          0.957       0.960       0.963       0.966       0.969
  8          0.972       0.975       0.978       0.981       0.9835
  8          0.986       0.9885      0.991       0.9935      0.996
  8          0.998       1.000       1.000       1.000       1.000
  9 ENDTBL
  3 STRUCT      10
  8                      387.6       0.00        0.000                   RESV 100
  8                      389.0       10.30       0.001                   EXIST.
  8                      389.7       20.50       0.007                   POND
  8                      390.0       25.00       0.342
  8                      391.0       40.00       3.013
  8                      392.0       53.00       6.496
  8                      393.0       64.00       10.845
  8                      394.0       73.00       16.305
  8                      395.0       80.00       22.864
  8                      395.3       82.00       25.031
  8                      396.0       200.79      30.497
  8                      396.5       347.65      34.759
  9 ENDTBL
  3 STRUCT      20
  8                      390.0       0.00        0.000                   RESV 200
  8                      390.5       3.79        0.818                   EXIST.
  8                      391.0       16.69       1.952                   POND
  8                      391.5       78.44       3.404
  8                      392.0       277.33      5.172
  9 ENDTBL
1

 ********************80-80 LIST OF INPUT DATA (CONTINUED)**********************

  6 RUNOFF 1 001       1 0.01810     71.0        0.509                   WS 11
  6 RUNOFF 1 002       2 0.00806     72.0        0.291                   WS 14
  6 RUNOFF 1 003       3 0.01719     61.0        0.178                   WS 15
  6 ADDHYD 4 004   2 3 4
  6 ADDHYD 4 005   1 4 5
  6 RUNOFF 1 006       6 0.03742     67.0        0.164                   WS 10
  6 ADDHYD 4 007   5 6 7
  6 RUNOFF 1 008       1 0.29210     66.0        1.007                   WS 12
  6 RUNOFF 1 009       2 0.14943     67.0        0.783                   WS 13
  6 ADDHYD 4 010   1 2 3
  6 ADDHYD 4 011   7 3 4
  6 RESVOR 2    10 4   5                                  1 1           RV100/B
  6 RUNOFF 1 012       6 0.00738     73.0        0.236                   WS 23
  6 RUNOFF 1 013       7 0.01778     64.0        0.556                   WS 22
  6 RUNOFF 1 014       1 0.01750     66.0        0.389                   WS 21
  6 ADDHYD 4 015   6 7 2
  6 ADDHYD 4 016   1 2 3
  6 RUNOFF 1 017       4 0.05980     73.0        0.693                   WS 20
  6 ADDHYD 4 018   3 4 5
  6 RESVOR 2    20 5   6                                                RV200
  6 RUNOFF 1 019       7 0.00526     64.0        0.294                   WS 24
```

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  6 ADDHYD 4 020   6 7 1                                  1 1         POA C
  6 RUNOFF 1 021       2 0.12999     66.0        0.707                WS 30/D
  6 RUNOFF 1 022       3 0.00055     58.0        0.118       1 1      WS 40/E
    ENDATA
  7 INCREM 6             0.10
  7 COMPUT 7 001   022   0.0          3.3         1.0        3 2  01  02
    ENDCMP 1
  7 COMPUT 7 001   022   0.0          5.0         1.0        3 2  01  10
    ENDCMP 1
  7 COMPUT 7 001   022   0.0          5.7         1.0        3 2  01  25
    ENDCMP 1
  7 COMPUT 7 001   022   0.0          6.4         1.0        3 2  01  50
    ENDCMP 1
  7 COMPUT 7 001   022   0.0          7.2         1.0        3 2  01  99
    ENDCMP 1
    ENDJOB 2

 ******************************END OF 80-80 LIST*****************************
1
 TR20 ---------------------------------------------------------------------------
          SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26):   PR COND  VERSION
 08/01/** MILONE & MACBROOM INC., CHESHIRE, CT                        010/01/90
 12:20:47                            PASS   1                          PAGE   1


 EXECUTIVE CONTROL INCREM    MAIN TIME INCREMENT =   .10 HOURS


 EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION  22
    STARTING TIME =   .00         RAIN DEPTH =  3.30       RAIN DURATION=  1.00
    ANT. MOIST. COND. = 2         MAIN TIME INCREMENT =   .10 HOURS
    ALTERNATE NO.= 1              STORM NO.= 2             RAIN TABLE NO.= 3

 *** WARNING - XSECTION   2, HYDROGRAPH VOLUME TRUNCATED AT      0 CFS
                           ( 13. % OF MAX. HYDROGRAPH COORDINATE)
                           MAIN TIME INCREMENT TOO SMALL.                  ***

 *** WARNING - XSECTION   3, HYDROGRAPH VOLUME TRUNCATED AT      0 CFS
                           ( 14. % OF MAX. HYDROGRAPH COORDINATE)
                           MAIN TIME INCREMENT TOO SMALL.                  ***


 OPERATION RESVOR   STRUCTURE 10

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       13.58                         43.5                         391.27
       17.70                         12.8                         389.17
       17.90                         11.5                         389.08
       18.10                         10.7                         389.02
       18.30                         10.2                         388.99
       18.50                          9.9                         388.95
       18.70                          9.8                         388.93
       18.90                          9.7                         388.91
       19.10                          9.5                         388.90
       19.30                          9.3                         388.86
                  HYDROGRAPH POINTS FOR   ALTERNATE = 1,   STORM = 2
     HRS      MAIN TIME INCREMENT =  .10 hr,      DRAINAGE AREA =    .52 SQ.MI.
    11.50 CFS         0       1       1       3       10      17      21      23
    12.30 CFS        26      28      30      32       35      37      40      41
    13.10 CFS        42      43      43      43       44      44      43      43
    13.90 CFS        43      43      42      42       42      41      41      40
    14.70 CFS        40      39      38      38       37      36      35      35
    15.50 CFS        34      33      33      32       31      31      30      30
    16.30 CFS        29      28      28      27       27      26      26      25
    17.10 CFS        24      23      22      21       15       9      13       9
    17.90 CFS        11       9      11       8       10       8      10       8
    18.70 CFS        10       8      10       8       10       8       9       8
    19.50 CFS         9       8       9       7        8       7       8       7
    20.30 CFS         8       7       7       7        7       7       7       7
    21.10 CFS         7       7       7       7        7       7       7       7
    21.90 CFS         7       7       7       7        7       6       7       6
    22.70 CFS         6       6       6       6        6       6       6       6
    23.50 CFS         6       6       6       6        6       5       5       4
1
 TR20 ---------------------------------------------------------------------------
          SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26):   PR COND  VERSION
 08/01/** MILONE & MACBROOM INC., CHESHIRE, CT                        010/01/90
 12:20:47                            PASS   1                          PAGE   2
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24.30 CFS	4	3	3	2	2	1	1	1
25.10 CFS	1	0						

RUNOFF ABOVE BASEFLOW OF .00 CFS
.71 WATERSHED INCHES; 240 CFS-HRS; 19.9 ACRE-FEET.

*** WARNING - XSECTION 12, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(13. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

*** WARNING - XSECTION 13, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(15. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

*** WARNING - XSECTION 14, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(11. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

*** WARNING - XSECTION 19, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(37. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
13.20 12.5 (NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2
MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .11 SQ.MI.

HRS								
11.90 CFS	0	1	2	3	4	5	6	8
12.70 CFS	10	11	12	12	12	13	12	12
13.50 CFS	12	12	11	11	11	10	10	10
14.30 CFS	9	9	9	9	8	8	8	7
15.10 CFS	7	7	7	7	6	6	6	6
15.90 CFS	6	6	5	5	5	5	5	5
16.70 CFS	5	5	4	4	4	4	4	4
17.50 CFS	4	4	4	4	4	4	3	3
18.30 CFS	3	3	3	3	3	3	3	3
19.10 CFS	3	3	3	3	3	3	3	3
19.90 CFS	3	3	3	3	3	3	3	2
20.70 CFS	2	2	2	2	2	2	2	2
21.50 CFS	2	2	2	2	2	2	2	2
22.30 CFS	2	2	2	2	2	2	2	2
23.10 CFS	2	2	2	2	2	2	2	2
23.90 CFS	2	2	2	2	2	2	2	1
24.70 CFS	1	1	1	1	1	1	1	1
25.50 CFS	1	1	1	1	1	1	1	1
26.30 CFS	1	1	1	1	1	1	1	1
27.10 CFS	1	1	1	1	0			

1
TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND VERSION
08/01/** MILONE & MACBROOM INC., CHESHIRE, CT 010/01/90
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RUNOFF ABOVE BASEFLOW OF .00 CFS
.89 WATERSHED INCHES; 62 CFS-HRS; 5.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 22

RUNOFF ABOVE BASEFLOW OF .00 CFS
.00 WATERSHED INCHES; 0 CFS-HRS; .0 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 22
STARTING TIME = .00 RAIN DEPTH = 5.00 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .10 HOURS
ALTERNATE NO.= 1 STORM NO.=10 RAIN TABLE NO.= 3

OPERATION RESVOR STRUCTURE 10

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)

13.98	73.9	394.13
22.40	17.4	389.49
22.60	15.2	389.34
22.80	13.7	389.23
23.00	12.7	389.17
23.20	12.2	389.13
23.75	11.2	389.06

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10

MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .52 SQ.MI.

HRS								
10.40 CFS	0	1	1	1	2	2	3	4
11.20 CFS	6	7	9	11	15	20	21	23
12.00 CFS	26	30	35	41	46	52	56	60
12.80 CFS	64	66	68	70	71	72	73	73
13.60 CFS	74	74	74	74	74	74	74	74
14.40 CFS	74	73	73	73	73	73	72	72
15.20 CFS	72	71	71	70	70	70	69	69
16.00 CFS	68	68	67	67	66	66	66	65
16.80 CFS	65	64	64	63	62	61	61	60
17.60 CFS	59	58	58	57	56	55	55	54
18.40 CFS	53	52	51	50	49	48	47	46
19.20 CFS	46	45	44	43	42	41	41	40
20.00 CFS	39	38	37	36	35	34	33	32
20.80 CFS	31	30	30	29	28	28	27	26

1

TR20 ----------

SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND VERSION

08/01/** MILONE & MACBROOM INC., CHESHIRE, CT 010/01/90

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21.60 CFS	26	25	24	23	22	21	20	8
22.40 CFS	17	9	15	10	14	11	13	11
23.20 CFS	12	11	12	11	12	11	11	11
24.00 CFS	11	10	9	8	7	6	5	4
24.80 CFS	3	2	2	1	1	1	1	0

RUNOFF ABOVE BASEFLOW OF .00 CFS

1.76 WATERSHED INCHES; 594 CFS-HRS; 49.1 ACRE-FEET.

*** WARNING - XSECTION 19, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(13. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.76	54.2	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10

MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .11 SQ.MI.

HRS								
11.00 CFS	0	1	1	1	1	1	1	2
11.80 CFS	2	3	5	7	12	17	27	41
12.60 CFS	50	54	54	52	48	43	39	35
13.40 CFS	31	28	25	23	21	19	18	17
14.20 CFS	17	16	16	15	15	15	14	14
15.00 CFS	14	13	13	12	12	12	12	11
15.80 CFS	11	11	10	10	10	10	10	9
16.60 CFS	9	9	9	8	8	8	8	8
17.40 CFS	7	7	7	7	7	6	6	6
18.20 CFS	6	6	5	5	5	5	5	5
19.00 CFS	5	5	5	5	5	4	4	4
19.80 CFS	4	4	4	4	4	4	4	4
20.60 CFS	4	4	4	4	4	4	4	4
21.40 CFS	4	4	4	4	4	3	3	3
22.20 CFS	3	3	3	3	3	3	3	3
23.00 CFS	3	3	3	3	3	3	3	3
23.80 CFS	3	3	3	3	3	3	3	3
24.60 CFS	3	2	2	2	2	2	2	2
25.40 CFS	2	2	2	2	2	2	2	1
26.20 CFS	1	1	1	1	1	1	1	1
27.00 CFS	1	1	1	1	1	1	1	1
27.80 CFS	1	1	1	1	1	1	1	1
28.60 CFS	1	1	1	1	0			

RUNOFF ABOVE BASEFLOW OF .00 CFS

2.04 WATERSHED INCHES; 142 CFS-HRS; 11.7 ACRE-FEET.

OPERATION RUNOFF XSECTION 22

1

TR20 ----------

SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND VERSION
08/01/** MILONE & MACBROOM INC., CHESHIRE, CT 010/01/90
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RUNOFF ABOVE BASEFLOW OF .00 CFS
.00 WATERSHED INCHES; 0 CFS-HRS; .0 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 22
STARTING TIME = .00 RAIN DEPTH = 5.70 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .10 HOURS
ALTERNATE NO.= 1 STORM NO.=25 RAIN TABLE NO.= 3

OPERATION RESVOR STRUCTURE 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
14.18	81.6	395.24
24.40	13.8	389.24
24.59	10.3	389.00
24.80	7.7	388.64
25.00	5.8	388.39
25.20	4.6	388.22
25.40	3.8	388.11
25.60	3.2	388.04
25.80	2.8	387.98
26.00	2.4	387.93

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25
MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .52 SQ.MI.

HRS								
9.90	CFS	0	1	1	1	2	2	3	4
10.70	CFS	5	6	7	9	10	12	15	18
11.50	CFS	21	21	22	24	26	30	35	41
12.30	CFS	48	54	60	65	68	71	74	76
13.10	CFS	77	78	79	80	80	81	81	81
13.90	CFS	81	82	82	82	82	82	81	81
14.70	CFS	81	81	81	81	81	80	80	80
15.50	CFS	80	79	79	79	79	78	78	78
16.30	CFS	77	77	77	76	76	76	75	75
17.10	CFS	75	74	74	74	73	73	72	71
17.90	CFS	71	70	70	69	68	68	67	67
18.70	CFS	66	65	65	64	63	63	62	61
19.50	CFS	60	59	58	58	57	56	55	54
20.30	CFS	54	53	52	51	50	49	48	47
21.10	CFS	46	45	44	43	43	42	41	40
21.90	CFS	39	38	37	36	35	35	34	33
22.70	CFS	32	31	31	30	29	28	28	27

1

TR20 ----------

SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND VERSION
08/01/** MILONE & MACBROOM INC., CHESHIRE, CT 010/01/90
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23.50	CFS	27	26	25	25	24	22	21	18
24.30	CFS	4	14	2	10	0	8	0	6
25.10	CFS	-1	5	-1	4	-1	3	-1	3
25.90	CFS	-1	2	-1	2	-1	2	-1	2
26.70	CFS	-1	2	-1	1	0	1	0	1
27.50	CFS	0	1	0	1	0	1	0	1
28.30	CFS	0	1	0	1	0	1	0	1
29.10	CFS	0	1	0					

RUNOFF ABOVE BASEFLOW OF .00 CFS
2.27 WATERSHED INCHES; 765 CFS-HRS; 63.2 ACRE-FEET.

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.71	73.9	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25
MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .11 SQ.MI.

HRS								
10.50	CFS	0	1	1	1	1	1	1	1
11.30	CFS	1	2	2	2	3	3	5	8
12.10	CFS	13	19	33	51	64	72	74	72

12.90 CFS	68	62	56	50	44	39	35	32
13.70 CFS	28	26	24	22	20	19	18	17
14.50 CFS	17	17	16	16	16	15	15	15
15.30 CFS	14	14	14	13	13	13	12	12
16.10 CFS	12	12	11	11	11	11	11	10
16.90 CFS	10	10	10	9	9	9	9	8
17.70 CFS	8	8	8	7	7	7	7	7
18.50 CFS	6	6	6	6	6	6	6	6
19.30 CFS	6	5	5	5	5	5	5	5
20.10 CFS	5	5	5	5	4	4	4	4
20.90 CFS	4	4	4	4	4	4	4	4
21.70 CFS	4	4	4	4	4	4	4	4
22.50 CFS	4	4	4	4	4	4	4	4
23.30 CFS	4	4	4	4	4	4	3	3
24.10 CFS	3	3	3	3	3	3	3	3
24.90 CFS	3	3	3	2	2	2	2	2
25.70 CFS	2	2	2	2	2	2	2	2
26.50 CFS	1	1	1	1	1	1	1	1
27.30 CFS	1	1	1	1	1	1	1	1
28.10 CFS	1	1	1	1	1	1	1	1
28.90 CFS	1	1	1	1	1	0		

RUNOFF ABOVE BASEFLOW OF .00 CFS
2.57 WATERSHED INCHES; 179 CFS-HRS; 14.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 22

1
TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND VERSION
08/01/** MILONE & MACBROOM INC., CHESHIRE, CT 010/01/90
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RUNOFF ABOVE BASEFLOW OF .00 CFS
.00 WATERSHED INCHES; 0 CFS-HRS; .0 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 22
STARTING TIME = .00 RAIN DEPTH = 6.40 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .10 HOURS
ALTERNATE NO.= 1 STORM NO.=50 RAIN TABLE NO.= 3

OPERATION RESVOR STRUCTURE 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.55	160.7	395.76
25.10	7.9	388.67
25.30	6.5	388.49
25.50	5.6	388.36
25.70	4.9	388.26
25.90	4.3	388.19
26.10	3.9	388.12
26.30	3.5	388.07
26.50	3.1	388.03
26.70	2.8	387.99

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50

HRS	MAIN TIME INCREMENT = .10 hr,			DRAINAGE AREA =			.52 SQ.MI.
9.40 CFS	0	1	1	1	2	2	3
10.20 CFS	4	5	6	7	8	10	11	13
11.00 CFS	16	18	21	21	21	22	24	25
11.80 CFS	27	30	34	41	47	55	61	66
12.60 CFS	71	75	77	80	82	110	134	149
13.40 CFS	157	160	160	158	154	149	143	137
14.20 CFS	131	125	119	113	108	103	99	94
15.00 CFS	90	87	83	82	82	82	81	81
15.80 CFS	81	81	81	80	80	80	80	79
16.60 CFS	79	79	79	78	78	78	77	77
17.40 CFS	77	76	76	75	75	75	74	74
18.20 CFS	73	73	72	72	71	71	70	69
19.00 CFS	69	68	68	67	67	66	65	65
19.80 CFS	64	64	63	62	61	60	59	59
20.60 CFS	58	57	56	55	55	54	53	52
21.40 CFS	51	50	49	49	48	47	46	45
22.20 CFS	44	44	43	42	41	41	40	39

1
TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND VERSION
08/01/** MILONE & MACBROOM INC., CHESHIRE, CT 010/01/90
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23.00 CFS	38	37	36	35	34	34	33	32
23.80 CFS	31	31	30	29	29	28	27	26
24.60 CFS	25	24	22	10	-3	8	-3	7
25.40 CFS	-3	6	-3	5	-3	4	-3	4
26.20 CFS	-2	3	-2	3	-2	3	-2	3
27.00 CFS	-1	2	-1	2	-1	2	-1	2
27.80 CFS	-1	2	-1	1	0	1	0	1
28.60 CFS	0	1	0	1	0	1	0	1
29.40 CFS	0	1	0	1	0	1	0	1
30.20 CFS	0	1	0					

RUNOFF ABOVE BASEFLOW OF .00 CFS
2.77 WATERSHED INCHES; 934 CFS-HRS; 77.1 ACRE-FEET.

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.63 102.8 (NULL)
HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50
HRS MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .11 SQ.MI.

10.10 CFS	0	1	1	1	1	1	1	1
10.90 CFS	1	2	2	2	2	3	3	3
11.70 CFS	4	5	8	13	18	32	55	73
12.50 CFS	89	102	99	89	78	72	65	59
13.30 CFS	52	47	42	37	34	31	28	26
14.10 CFS	24	22	21	20	19	18	17	17
14.90 CFS	17	17	16	16	16	15	15	15
15.70 CFS	15	14	14	14	14	13	13	13
16.50 CFS	13	12	12	12	12	11	11	11
17.30 CFS	10	10	10	10	9	9	9	8
18.10 CFS	8	8	8	8	7	7	7	7
18.90 CFS	7	7	7	7	6	6	6	6
19.70 CFS	6	6	6	6	6	5	5	5
20.50 CFS	5	5	5	5	5	5	5	5
21.30 CFS	5	5	5	5	5	5	5	4
22.10 CFS	4	4	4	4	4	4	4	4
22.90 CFS	4	4	4	4	4	4	4	4
23.70 CFS	4	4	4	4	4	4	4	3
24.50 CFS	3	3	3	3	3	3	3	3
25.30 CFS	3	2	2	2	2	2	2	2
26.10 CFS	2	2	2	2	2	2	2	1
26.90 CFS	1	1	1	1	1	1	1	1
27.70 CFS	1	1	1	1	1	1	1	1
28.50 CFS	1	1	1	1	1	1	1	1
29.30 CFS	1	1	1	0				

RUNOFF ABOVE BASEFLOW OF .00 CFS
3.12 WATERSHED INCHES; 217 CFS-HRS; 17.9 ACRE-FEET.

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TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND VERSION
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OPERATION RUNOFF XSECTION 22

*** MESSAGE - NO PEAK FOUND, MAX DISCHARGE 1 CFS. ***

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)

*** WARNING - XSECTION 22, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(45. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***
HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50
HRS MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .00 SQ.MI.

12.00 CFS	0	1	1	1	0

RUNOFF ABOVE BASEFLOW OF .00 CFS
2.01 WATERSHED INCHES; 1 CFS-HRS; .1 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 22
STARTING TIME = .00 RAIN DEPTH = 7.20 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .10 HOURS
ALTERNATE NO.= 1 STORM NO.=99 RAIN TABLE NO.= 3

OPERATION RESVOR STRUCTURE 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.29	262.0	396.21
25.49	1.2	387.76

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99
MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .52 SQ.MI.

HRS								
8.90	CFS	0	1	1	1	1	2	2	3
9.70	CFS	4	4	5	6	8	9	10	12
10.50	CFS	13	15	17	19	21	21	21	22
11.30	CFS	24	25	26	27	29	31	35	41
12.10	CFS	47	54	61	67	73	77	80	113
12.90	CFS	166	206	242	259	262	257	246	233
13.70	CFS	219	204	193	184	174	165	156	148
14.50	CFS	141	133	127	121	115	110	105	100
15.30	CFS	96	92	89	85	82	82	82	82
16.10	CFS	81	81	81	81	81	81	80	80
16.90	CFS	80	80	79	79	79	79	78	78
17.70	CFS	78	77	77	76	76	76	75	75
18.50	CFS	75	74	74	73	73	72	72	71

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TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND VERSION
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19.30	CFS	71	70	70	69	69	68	67	67
20.10	CFS	66	66	65	65	64	63	62	62
20.90	CFS	61	60	59	59	58	57	56	56
21.70	CFS	55	54	54	53	52	51	50	50
22.50	CFS	49	48	47	46	45	45	44	43
23.30	CFS	42	42	41	40	40	39	38	37
24.10	CFS	36	35	34	33	32	31	30	29
24.90	CFS	28	27	26	24	22	1	1	0
25.70	CFS	1	0	1	0				

RUNOFF ABOVE BASEFLOW OF .00 CFS
3.40 WATERSHED INCHES; 1148 CFS-HRS; 94.8 ACRE-FEET.

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.56	132.5	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99
MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .11 SQ.MI.

HRS								
9.60	CFS	0	1	1	1	1	1	1	1
10.40	CFS	1	1	2	2	2	2	3	3
11.20	CFS	3	3	4	4	5	7	9	13
12.00	CFS	18	30	53	77	109	130	132	122
12.80	CFS	108	92	79	73	66	60	54	48
13.60	CFS	43	39	36	33	30	28	26	25
14.40	CFS	23	22	21	20	20	19	18	18
15.20	CFS	17	17	17	17	16	16	16	16
16.00	CFS	15	15	15	15	15	14	14	14
16.80	CFS	14	13	13	13	12	12	12	11
17.60	CFS	11	11	10	10	10	10	9	9
18.40	CFS	9	9	8	8	8	8	8	8
19.20	CFS	8	7	7	7	7	7	7	7
20.00	CFS	7	6	6	6	6	6	6	6
20.80	CFS	6	6	6	6	6	5	5	5
21.60	CFS	5	5	5	5	5	5	5	5
22.40	CFS	5	5	5	5	5	5	5	5
23.20	CFS	5	5	5	5	4	4	4	4
24.00	CFS	4	4	4	4	4	4	4	3
24.80	CFS	3	3	3	3	3	3	3	3
25.60	CFS	2	2	2	2	2	2	2	2
26.40	CFS	2	2	2	2	2	2	1	1
27.20	CFS	1	1	1	1	1	1	1	1

```
   28.00 CFS         1       1       1       1       1       1       1       1
   28.80 CFS         1       1       1       1       1       1       1       1
   29.60 CFS         1       1       0

   RUNOFF ABOVE BASEFLOW OF    .00 CFS
                3.78 WATERSHED INCHES;     263 CFS-HRS;      21.7 ACRE-FEET.
1
 TR20 ---------------------------------------------------------------------------
         SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26):   PR COND  VERSION
 08/01/** MILONE & MACBROOM INC., CHESHIRE, CT                        010/01/90
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 OPERATION RUNOFF   XSECTION  22

 *** MESSAGE - NO PEAK FOUND, MAX DISCHARGE      1 CFS.                     ***

   PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)

 *** WARNING - XSECTION  22, HYDROGRAPH VOLUME TRUNCATED AT      0 CFS
                          ( 44. % OF MAX. HYDROGRAPH COORDINATE)
                          MAIN TIME INCREMENT TOO SMALL.                  ***
                    HYDROGRAPH POINTS FOR   ALTERNATE = 1,   STORM =99
    HRS      MAIN TIME INCREMENT =  .10 hr,       DRAINAGE AREA =    .00 SQ.MI.
   11.90 CFS         0       1       1       1       1       0

   RUNOFF ABOVE BASEFLOW OF    .00 CFS
                2.52 WATERSHED INCHES;       1 CFS-HRS;        .1 ACRE-FEET.


 EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS   5
1
 TR20 ---------------------------------------------------------------------------
         SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26):   PR COND  VERSION
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                           SUMMARY TABLE 1
                           ---------------
   SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
   A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
 F-FLAT TOP HYDROGRAPH   T-TRUNCATED HYDROGRAPH   R-RISING TRUNCATED HYDROGRAPH

 XSECTION/  STANDARD                                    PEAK DISCHARGE
 STRUCTURE   CONTROL    DRAINAGE   RUNOFF   ------------------------------------
    ID      OPERATION     AREA     AMOUNT   ELEVATION   TIME     RATE    RATE
                         (SQ MI)    (IN)      (FT)      (HR)     (CFS)   (CSM)

 RAINFALL OF   3.30 inches AND  24.00 hr DURATION, BEGINS AT    .0 hrs.
 RAINTABLE NUMBER  3,    AMC 2
 MAIN TIME INCREMENT   .10 HOURS

    ALTERNATE    1   STORM    2
    --------------------------
 XSECTION   1  RUNOFF      .02      .94        ---     12.43        6    300.0
 XSECTION   2  RUNOFF      .01      .99        ---     12.30T       4T   400.0
 XSECTION   3  RUNOFF      .02      .48        ---     12.27T       4T   200.0
 XSECTION   4  ADDHYD      .03      .65        ---     12.28        7    233.3
 XSECTION   5  ADDHYD      .04      .77        ---     12.32       13    325.0

 XSECTION   6  RUNOFF      .04      .74        ---     12.25       14    350.0
 XSECTION   7  ADDHYD      .08      .75        ---     12.28       26    325.0
 XSECTION   8  RUNOFF      .29      .69        ---     12.80       49    169.0
 XSECTION   9  RUNOFF      .15      .74        ---     12.64       31    206.7
 XSECTION  10  ADDHYD      .44      .71        ---     12.74       79    179.5

 XSECTION  11  ADDHYD      .52      .72        ---     12.68       90    173.1
 STRUCTURE 10  RESVOR      .52      .71     391.27     13.58       44     84.6
 XSECTION  12  RUNOFF      .01     1.05        ---     12.27T       4T   400.0
 XSECTION  13  RUNOFF      .02      .61        ---     12.51T       3T   150.0
 XSECTION  14  RUNOFF      .02      .69        ---     12.38T       5T   250.0

 XSECTION  15  ADDHYD      .03      .73        ---     12.34        6    200.0
 XSECTION  16  ADDHYD      .04      .72        ---     12.36       11    275.0
 XSECTION  17  RUNOFF      .06     1.05        ---     12.54       21    350.0
 XSECTION  18  ADDHYD      .10      .91        ---     12.47       30    300.0
 STRUCTURE 20  RESVOR      .10      .91     390.83     13.22       12    120.0
```

XSECTION	19	RUNOFF	.01	.61	---	12.33T	1T	100.0
XSECTION	20	ADDHYD	.11	.89	---	13.20	13	118.2
XSECTION	21	RUNOFF	.13	.69	---	12.59	26	200.0
XSECTION	22	RUNOFF	.00	.00	---	.00	0	********

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TR20 ----------

SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND VERSION
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

RAINFALL OF 5.00 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 10

XSECTION	1	RUNOFF	.02	2.11	---	12.40	15	750.0
XSECTION	2	RUNOFF	.01	2.20	---	12.29	8	800.0
XSECTION	3	RUNOFF	.02	1.37	---	12.25	12	600.0
XSECTION	4	ADDHYD	.03	1.63	---	12.26	20	666.7
XSECTION	5	ADDHYD	.04	1.83	---	12.29	34	850.0
XSECTION	6	RUNOFF	.04	1.80	---	12.24	35	875.0
XSECTION	7	ADDHYD	.08	1.81	---	12.26	69	862.5
XSECTION	8	RUNOFF	.29	1.73	---	12.73	141	486.2
XSECTION	9	RUNOFF	.15	1.80	---	12.58	86	573.3
XSECTION	10	ADDHYD	.44	1.75	---	12.67	224	509.1
XSECTION	11	ADDHYD	.52	1.76	---	12.62	252	484.6
STRUCTURE	10	RESVOR	.52	1.76	394.13	13.98	74	142.3
XSECTION	12	RUNOFF	.01	2.28	---	12.26	8	800.0
XSECTION	13	RUNOFF	.02	1.58	---	12.46	10	500.0
XSECTION	14	RUNOFF	.02	1.73	---	12.35	13	650.0
XSECTION	15	ADDHYD	.03	1.78	---	12.32	17	566.7
XSECTION	16	ADDHYD	.04	1.76	---	12.33	30	750.0
XSECTION	17	RUNOFF	.06	2.28	---	12.51	48	800.0
XSECTION	18	ADDHYD	.10	2.06	---	12.43	75	750.0
STRUCTURE	20	RESVOR	.10	2.06	391.29	12.77	53	530.0
XSECTION	19	RUNOFF	.01	1.58	---	12.30T	4T	400.0
XSECTION	20	ADDHYD	.11	2.04	---	12.76	54	490.9
XSECTION	21	RUNOFF	.13	1.73	---	12.54	75	576.9
XSECTION	22	RUNOFF	.00	.00	---	.00	0	********

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TR20 ----------

SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND VERSION
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

RAINFALL OF 5.70 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 25

XSECTION	1	RUNOFF	.02	2.66	---	12.40	19	950.0
XSECTION	2	RUNOFF	.01	2.75	---	12.28	11	1100.0
XSECTION	3	RUNOFF	.02	1.81	---	12.25	16	800.0
XSECTION	4	ADDHYD	.03	2.11	---	12.26	27	900.0
XSECTION	5	ADDHYD	.04	2.34	---	12.29	44	1100.0
XSECTION	6	RUNOFF	.04	2.30	---	12.23	44	1100.0
XSECTION	7	ADDHYD	.08	2.32	---	12.26	89	1112.5
XSECTION	8	RUNOFF	.29	2.22	---	12.72	186	641.4
XSECTION	9	RUNOFF	.15	2.30	---	12.58	111	740.0
XSECTION	10	ADDHYD	.44	2.25	---	12.66	292	663.6
XSECTION	11	ADDHYD	.52	2.26	---	12.61	329	632.7
STRUCTURE	10	RESVOR	.52	2.27	395.24	14.18	82	157.7
XSECTION	12	RUNOFF	.01	2.84	---	12.26	10	1000.0
XSECTION	13	RUNOFF	.02	2.05	---	12.44	14	700.0
XSECTION	14	RUNOFF	.02	2.22	---	12.35	17	850.0
XSECTION	15	ADDHYD	.03	2.28	---	12.32	23	766.7
XSECTION	16	ADDHYD	.04	2.26	---	12.33	39	975.0
XSECTION	17	RUNOFF	.06	2.84	---	12.50	60	1000.0
XSECTION	18	ADDHYD	.10	2.60	---	12.42	95	950.0
STRUCTURE	20	RESVOR	.10	2.60	391.45	12.72	72	720.0
XSECTION	19	RUNOFF	.01	2.05	---	12.30	5	500.0
XSECTION	20	ADDHYD	.11	2.57	---	12.71	74	672.7
XSECTION	21	RUNOFF	.13	2.22	---	12.53	98	753.8
XSECTION	22	RUNOFF	.00	.00	---	.00	0	********

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

RAINFALL OF 6.40 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 50

XSECTION	1	RUNOFF	.02	3.22	---	12.40	24	1200.0
XSECTION	2	RUNOFF	.01	3.32	---	12.28	13	1300.0
XSECTION	3	RUNOFF	.02	2.28	---	12.25	20	1000.0
XSECTION	4	ADDHYD	.03	2.61	---	12.26	33	1100.0
XSECTION	5	ADDHYD	.04	2.86	---	12.29	55	1375.0
XSECTION	6	RUNOFF	.04	2.83	---	12.23	54	1350.0
XSECTION	7	ADDHYD	.08	2.85	---	12.26	109	1362.5
XSECTION	8	RUNOFF	.29	2.74	---	12.71	233	803.4
XSECTION	9	RUNOFF	.15	2.83	---	12.57	138	920.0
XSECTION	10	ADDHYD	.44	2.77	---	12.65	365	829.5
XSECTION	11	ADDHYD	.52	2.78	---	12.60	410	788.5
STRUCTURE	10	RESVOR	.52	2.77	395.76	13.55	161	309.6
XSECTION	12	RUNOFF	.01	3.42	---	12.26	13	1300.0
XSECTION	13	RUNOFF	.02	2.55	---	12.43	17	850.0
XSECTION	14	RUNOFF	.02	2.74	---	12.34	21	1050.0
XSECTION	15	ADDHYD	.03	2.80	---	12.32	28	933.3
XSECTION	16	ADDHYD	.04	2.78	---	12.33	49	1225.0
XSECTION	17	RUNOFF	.06	3.42	---	12.50	72	1200.0
XSECTION	18	ADDHYD	.10	3.15	---	12.42	117	1170.0
STRUCTURE	20	RESVOR	.10	3.15	391.55	12.63	100	1000.0
XSECTION	19	RUNOFF	.01	2.55	---	12.29	6	600.0
XSECTION	20	ADDHYD	.11	3.12	---	12.63	103	936.4
XSECTION	21	RUNOFF	.13	2.74	---	12.52	122	938.5
XSECTION	22	RUNOFF	.00	2.01	---	12.20R	1R	********

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TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND VERSION
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 7.20 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 1 STORM 99							
XSECTION 1	RUNOFF	.02	3.89	---	12.39	28	1400.0
XSECTION 2	RUNOFF	.01	4.00	---	12.28	15	1500.0
XSECTION 3	RUNOFF	.02	2.85	---	12.24	25	1250.0
XSECTION 4	ADDHYD	.03	3.21	---	12.26	41	1366.7
XSECTION 5	ADDHYD	.04	3.49	---	12.28	67	1675.0
XSECTION 6	RUNOFF	.04	3.46	---	12.22	66	1650.0
XSECTION 7	ADDHYD	.08	3.47	---	12.26	133	1662.5
XSECTION 8	RUNOFF	.29	3.36	---	12.71	287	989.7
XSECTION 9	RUNOFF	.15	3.46	---	12.56	171	1140.0
XSECTION 10	ADDHYD	.44	3.39	---	12.64	451	1025.0
XSECTION 11	ADDHYD	.52	3.41	---	12.59	505	971.2
STRUCTURE 10	RESVOR	.52	3.40	396.21	13.29	262	503.8
XSECTION 12	RUNOFF	.01	4.10	---	12.26	15	1500.0
XSECTION 13	RUNOFF	.02	3.15	---	12.43	22	1100.0
XSECTION 14	RUNOFF	.02	3.36	---	12.33	26	1300.0
XSECTION 15	ADDHYD	.03	3.43	---	12.32	34	1133.3
XSECTION 16	ADDHYD	.04	3.40	---	12.33	60	1500.0
XSECTION 17	RUNOFF	.06	4.11	---	12.49	87	1450.0
XSECTION 18	ADDHYD	.10	3.81	---	12.41	142	1420.0
STRUCTURE 20	RESVOR	.10	3.81	391.63	12.57	128	1280.0
XSECTION 19	RUNOFF	.01	3.15	---	12.29	8	800.0
XSECTION 20	ADDHYD	.11	3.78	---	12.56	132	1200.0
XSECTION 21	RUNOFF	.13	3.36	---	12.52	152	1169.2
XSECTION 22	RUNOFF	.00	2.52	---	12.20R	1R********	

1
TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND VERSION
08/01/** MILONE & MACBROOM INC., CHESHIRE, CT 010/01/90
12:20:47 PAGE 17

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 2	10	25	50	99
STRUCTURE 20	.10					
ALTERNATE 1		12	53	72	100	128
STRUCTURE 10	.52					
ALTERNATE 1		44	74	82	161	262
XSECTION 1	.02					
ALTERNATE 1		6	15	19	24	28

XSECTION	2	.01					
ALTERNATE	1		4	8	11	13	15
XSECTION	3	.02					
ALTERNATE	1		4	12	16	20	25
XSECTION	4	.03					
ALTERNATE	1		7	20	27	33	41
XSECTION	5	.04					
ALTERNATE	1		13	34	44	55	67
XSECTION	6	.04					
ALTERNATE	1		14	35	44	54	66
XSECTION	7	.08					
ALTERNATE	1		26	69	89	109	133
XSECTION	8	.29					
ALTERNATE	1		49	141	186	233	287
XSECTION	9	.15					
ALTERNATE	1		31	86	111	138	171
XSECTION	10	.44					
ALTERNATE	1		79	224	292	365	451
XSECTION	11	.52					
ALTERNATE	1		90	252	329	410	505
XSECTION	12	.01					
ALTERNATE	1		4	8	10	13	15

1
TR20 ----------

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 2	10	25	50	99
XSECTION	13	.02					
ALTERNATE	1		3	10	14	17	22
XSECTION	14	.02					
ALTERNATE	1		5	13	17	21	26
XSECTION	15	.03					
ALTERNATE	1		6	17	23	28	34
XSECTION	16	.04					
ALTERNATE	1		11	30	39	49	60
XSECTION	17	.06					
ALTERNATE	1		21	48	60	72	87

XSECTION	18	.10					
ALTERNATE	1		30	75	95	117	142
XSECTION	19	.01					
ALTERNATE	1		1	4	5	6	8
XSECTION	20	.11					
ALTERNATE	1		13	54	74	103	132
XSECTION	21	.13					
ALTERNATE	1		26	75	98	122	152
XSECTION	22	.00					
ALTERNATE	1		0	0	0	0	0

END OF 1 JOBS IN THIS RUN
1

SCS TR-20, VERSION 10/01/90
FILES

INPUT = srnodt29.in
OUTPUT = srnodt29.out , DATED 08/01/**,12:20:47

FILES GENERATED - DATED 08/01/**,12:20:47

NONE!

*** TR-20 RUN COMPLETED ***

1

**********80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY**********

```
JOB TR-20                                                SUMMARY   NOPLOTS
TITLE     SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26):  PR COND WITH DET
TITLE     MILONE & MACBROOM INC., CHESHIRE, CT                          08/04/14
 5 RAINFL 3              0.25
 8          0.0         0.0025      0.005       0.0075      0.010
 8          0.0125      0.015       0.0175      0.020       0.023
 8          0.026       0.0285      0.031       0.034       0.037
 8          0.040       0.043       0.0465      0.050       0.0535
 8          0.057       0.0605      0.064       0.068       0.072
 8          0.076       0.080       0.084       0.089       0.094
 8          0.100       0.107       0.115       0.122       0.130
 8          0.139       0.148       0.157       0.167       0.178
 8          0.189       0.202       0.216       0.231       0.250
 8          0.271       0.298       0.345       0.500       0.655
 8          0.702       0.729       0.751       0.769       0.785
 8          0.798       0.811       0.823       0.834       0.844
 8          0.853       0.862       0.870       0.878       0.886
 8          0.893       0.900       0.906       0.911       0.916
 8          0.920       0.924       0.928       0.932       0.936
 8          0.940       0.944       0.9475      0.951       0.954
 8          0.957       0.960       0.963       0.966       0.969
 8          0.972       0.975       0.978       0.981       0.9835
 8          0.986       0.9885      0.991       0.9935      0.996
 8          0.998       1.000       1.000       1.000       1.000
 9 ENDTBL
 3 STRUCT      10
 8                      387.6       0.00        0.000                   RESV 100
 8                      389.0       10.30       0.001                   EXIST.
 8                      389.7       20.50       0.007                   POND
 8                      390.0       25.00       0.342
 8                      391.0       40.00       3.013
 8                      392.0       53.00       6.496
 8                      393.0       64.00       10.845
 8                      394.0       73.00       16.305
 8                      395.0       80.00       22.864
 8                      395.3       82.00       25.031
 8                      396.0       200.79      30.497
 8                      396.5       347.65      34.759
 9 ENDTBL
 3 STRUCT      14
 8                      405.0       0.00        0.000                   DET 140
 8                      406.0       0.38        0.156                   2.0 x
 8                      407.0       0.75        0.341                   2.5 V
 8                      408.0       3.46        0.557                   4" OR
 8                      409.0       10.70       0.805                   @405.0
 8                      410.0       48.62       1.088
```

1

**********80-80 LIST OF INPUT DATA (CONTINUED)**********

```
 9 ENDTBL
 3 STRUCT      15
 8                      401.0       0.00        0.000                   DET 150
 8                      402.0       0.0001      0.076                   2.5 x
 8                      403.0       0.0002      0.172                   2.0 V
 8                      404.0       0.0003      0.290                   NO OR
 8                      405.0       0.0004      0.495
 8                      406.0       1.56        0.829
 8                      407.0       8.84        1.265
 8                      408.0       49.14       1.802
 9 ENDTBL
 3 STRUCT      20
 8                      390.0       0.00        0.000                   RESV 200
 8                      390.5       3.79        0.818                   EXIST.
 8                      391.0       16.69       1.952                   POND
 8                      391.5       78.44       3.404
 8                      392.0       277.33      5.172
 9 ENDTBL
 3 STRUCT      21
 8                      398.0       0.00        0.000                   DET 210
 8                      399.0       0.38        0.221                   1.5 x
```

```
                                                SRPRCD29
  8                      400.0       0.57        0.481                   2.0 V
  8                      401.0       0.71        0.780                   4" OR
  8                      402.0       1.76        1.120                   @398.0
  8                      403.0       6.23        1.501
  8                      404.0       40.41       1.924
  9 ENDTBL
  3 STRUCT      22
  8                      443.0       0.00        0.000                   DET 220
  8                      444.0       0.38        0.288                   1.5 x
  8                      445.0       0.57        0.606                   2.0 V
  8                      446.0       1.64        0.958                   4" OR
  8                      447.0       6.13        1.345                   @403.0
  8                      448.0       40.32       1.767
  9 ENDTBL
  3 STRUCT      23
  8                      401.0       0.00        0.000                   DET 230
  8                      402.0       0.38        0.095                   1.5 x
  8                      403.0       0.70        0.218                   2.5 V
  8                      404.0       2.77        0.375                   4" OR
  8                      405.0       8.23        0.569                   @401.0
  8                      406.0       42.89       0.808
  9 ENDTBL
  6 RUNOFF 1 001       1 0.01810     71.0        0.509                   WS 11
  6 RUNOFF 1 002       2 0.00806     72.0        0.291                   WS 14
  6 RESVOR 2    14 2   3                                                 DET 140
1


 ********************80-80 LIST OF INPUT DATA (CONTINUED)*********************

  6 RUNOFF 1 003       4 0.01719     61.0        0.178                   WS 15
  6 RESVOR 2    15 4   5                                                 DET 150
  6 ADDHYD 4 004   3 5 6
  6 ADDHYD 4 005   1 6 4
  6 RUNOFF 1 006       5 0.03742     67.0        0.164                   WS 10
  6 ADDHYD 4 007   4 5 6
  6 RUNOFF 1 008       7 0.29210     66.0        1.007                   WS 12
  6 RUNOFF 1 009       1 0.14943     67.0        0.783                   WS 13
  6 ADDHYD 4 010   7 1 2
  6 ADDHYD 4 011   6 2 3
  6 RESVOR 2    10 3   4                                   1 1           RV100/B
  6 RUNOFF 1 012       5 0.00738     73.0        0.236                   WS 23
  6 RESVOR 2    23 5   6                                                 DET 230
  6 RUNOFF 1 013       7 0.01778     64.0        0.556                   WS 22
  6 RESVOR 2    22 7   1                                                 DET 220
  6 RUNOFF 1 014       2 0.01750     66.0        0.389                   WS 21
  6 RESVOR 2    21 2   3                                                 DET 210
  6 ADDHYD 4 015   1 3 4
  6 ADDHYD 4 016   6 4 5
  6 RUNOFF 1 017       6 0.05980     73.0        0.693                   WS 20
  6 ADDHYD 4 018   5 6 7
  6 RESVOR 2    20 7   1                                                 RV200
  6 RUNOFF 1 019       2 0.00526     64.0        0.294                   WS 24
  6 ADDHYD 4 020   1 2 4                                   1 1           POA C
  6 RUNOFF 1 021       5 0.12999     66.0        0.707                   WS 30/D
  6 RUNOFF 1 022       6 0.00055     58.0        0.118       1 1         WS 40/E
    ENDATA
  7 INCREM 6             0.10
  7 COMPUT 7 001   022   0.0          3.3         1.0        3 2  01  02
    ENDCMP 1
  7 COMPUT 7 001   022   0.0          5.0         1.0        3 2  01  10
    ENDCMP 1
  7 COMPUT 7 001   022   0.0          5.7         1.0        3 2  01  25
    ENDCMP 1
  7 COMPUT 7 001   022   0.0          6.4         1.0        3 2  01  50
    ENDCMP 1
  7 COMPUT 7 001   022   0.0          7.2         1.0        3 2  01  99
    ENDCMP 1
    ENDJOB 2

 ******************************END OF 80-80 LIST*******************************
1
 TR20 ------------------------------------------------------------------------
          SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26):  PR COND W VERSION
 08/01/** MILONE & MACBROOM INC., CHESHIRE, CT                      010/01/90
 12:21:01                          PASS   1                          PAGE   1
```

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .10 HOURS

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 22
  STARTING TIME = .00 RAIN DEPTH = 3.30 RAIN DURATION= 1.00
  ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .10 HOURS
  ALTERNATE NO.= 1 STORM NO.= 2 RAIN TABLE NO.= 3

*** WARNING - XSECTION 2, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(13. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

*** WARNING - XSECTION 3, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(14. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

OPERATION RESVOR STRUCTURE 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.58	42.7	391.20
17.60	13.5	389.22
17.80	11.9	389.11
18.00	10.9	389.04
18.20	10.3	389.00
18.40	10.0	388.96
18.60	9.8	388.93
18.80	9.6	388.91
19.00	9.5	388.90
19.20	9.3	388.87

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2
HRS MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .52 SQ.MI.

11.60 CFS	0	1	2	9	15	21	22	25
12.40 CFS	27	29	31	34	36	38	40	41
13.20 CFS	42	42	42	43	43	43	42	42
14.00 CFS	42	42	41	41	40	40	39	39
14.80 CFS	38	37	37	36	35	34	34	33
15.60 CFS	32	32	31	31	30	29	29	28
16.40 CFS	28	27	27	26	26	25	24	23
17.20 CFS	22	21	16	9	13	9	12	9
18.00 CFS	11	8	10	8	10	8	10	8
18.80 CFS	10	8	10	8	9	8	9	8
19.60 CFS	9	8	8	7	8	7	8	7
20.40 CFS	7	7	7	7	7	7	7	7
21.20 CFS	7	7	7	7	7	7	7	7
22.00 CFS	7	7	7	6	7	6	6	6
22.80 CFS	6	6	6	6	6	6	6	6
23.60 CFS	6	6	6	5	5	5	5	4
24.40 CFS	4	3	3	2	2	1	1	1
25.20 CFS	1	1	0					

1
TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND W VERSION
08/01/** MILONE & MACBROOM INC., CHESHIRE, CT 010/01/90
12:21:01 PASS 1 PAGE 2

RUNOFF ABOVE BASEFLOW OF .00 CFS
.70 WATERSHED INCHES; 237 CFS-HRS; 19.6 ACRE-FEET.

*** WARNING - XSECTION 12, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(13. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

*** MESSAGE - NO PEAK FOUND, MAX DISCHARGE 1 CFS. ***

*** WARNING - STRUCTURE 23, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(86. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

*** WARNING - XSECTION 13, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(15. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

*** WARNING - XSECTION 14, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(11. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

*** MESSAGE - NO PEAK FOUND, MAX DISCHARGE 1 CFS. ***

*** WARNING - XSECTION 15, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(58. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

*** WARNING - XSECTION 16, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(36. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

*** WARNING - XSECTION 19, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(37. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.40	8.7	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM = 2

HRS	MAIN TIME INCREMENT = .10 hr,			DRAINAGE AREA = .11 SQ.MI.				
11.90 CFS	0	1	1	2	3	3	4	4
12.70 CFS	5	6	7	8	8	9	9	9
13.50 CFS	9	9	8	8	8	8	8	8
14.30 CFS	7	7	7	7	7	7	6	6
15.10 CFS	6	6	6	6	6	5	5	5

1
TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND W VERSION
08/01/** MILONE & MACBROOM INC., CHESHIRE, CT 010/01/90
12:21:01 PASS 1 PAGE 3

15.90 CFS	5	5	5	5	5	5	5	4
16.70 CFS	4	4	4	4	4	4	4	4
17.50 CFS	4	4	4	4	4	4	4	4
18.30 CFS	4	4	3	3	3	3	3	3
19.10 CFS	3	3	3	3	3	3	3	3
19.90 CFS	3	3	3	3	3	3	3	3
20.70 CFS	3	3	3	3	3	3	3	3
21.50 CFS	3	3	3	3	3	2	2	2
22.30 CFS	2	2	2	2	2	2	2	2
23.10 CFS	2	2	2	2	2	2	2	2
23.90 CFS	2	2	2	2	2	2	2	2
24.70 CFS	2	2	2	2	2	2	2	2
25.50 CFS	2	2	2	1	1	1	1	1
26.30 CFS	1	1	1	1	1	1	1	1
27.10 CFS	1	1	1	1	1	1	1	1
27.90 CFS	1	1	1	1	1	1	1	1
28.70 CFS	1	1	1	1	1	1	1	1
29.50 CFS	1	1	1	1	1	1	1	1
30.30 CFS	1	1	1	1	1	1	1	1
31.10 CFS	1	1	1	1	1	1	0	

RUNOFF ABOVE BASEFLOW OF .00 CFS
.89 WATERSHED INCHES; 62 CFS-HRS; 5.1 ACRE-FEET.

OPERATION RUNOFF XSECTION 22

RUNOFF ABOVE BASEFLOW OF .00 CFS
.00 WATERSHED INCHES; 0 CFS-HRS; .0 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 22
STARTING TIME = .00 RAIN DEPTH = 5.00 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .10 HOURS
ALTERNATE NO.= 1 STORM NO.=10 RAIN TABLE NO.= 3

*** WARNING - STRUCTURE 14, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(28. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

1
TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND W VERSION
08/01/** MILONE & MACBROOM INC., CHESHIRE, CT 010/01/90
12:21:01 PASS 2 PAGE 4

```
 *** WARNING - STRUCTURE 15, HYDROGRAPH VOLUME TRUNCATED AT      0 CFS
                           ( 49. % OF MAX. HYDROGRAPH COORDINATE)
                           MAIN TIME INCREMENT TOO SMALL.                  ***

 *** WARNING - XSECTION   4, HYDROGRAPH VOLUME TRUNCATED AT      0 CFS
                           ( 21. % OF MAX. HYDROGRAPH COORDINATE)
                           MAIN TIME INCREMENT TOO SMALL.                  ***


 OPERATION RESVOR   STRUCTURE 10

    PEAK TIME(HRS)             PEAK DISCHARGE(CFS)          PEAK ELEVATION(FEET)
       14.00                          73.1                         394.02
       22.41                          16.5                         389.42
       22.60                          14.7                         389.30
       22.80                          13.5                         389.22
       23.00                          12.8                         389.17
       23.20                          12.4                         389.14
       23.40                          12.1                         389.13
       23.58                          11.9                         389.11
                  HYDROGRAPH POINTS FOR   ALTERNATE = 1,   STORM =10
     HRS      MAIN TIME INCREMENT =  .10 hr,       DRAINAGE AREA =    .52 SQ.MI.
    10.50 CFS         0       1       1       1       2       3       4       5
    11.30 CFS         7       9      11      14      19      21      23      26
    12.10 CFS        29      33      39      44      50      55      59      62
    12.90 CFS        65      67      68      70      71      71      72      73
    13.70 CFS        73      73      73      73      73      73      73      73
    14.50 CFS        73      72      72      72      71      71      71      70
    15.30 CFS        70      70      69      69      69      68      68      67
    16.10 CFS        67      66      66      66      65      65      64      64
    16.90 CFS        63      62      62      61      60      60      59      58
    17.70 CFS        57      57      56      55      55      54      53      52
    18.50 CFS        51      50      49      48      47      47      46      45
    19.30 CFS        44      43      42      42      41      40      39      38
    20.10 CFS        37      36      35      34      33      33      32      31
    20.90 CFS        30      29      29      28      27      27      26      26
    21.70 CFS        25      24      23      22      21      21      10      16
    22.50 CFS        11      15      11      14      12      13      12      12
    23.30 CFS        12      12      12      12      12      12      11      11
    24.10 CFS        10      10       9       8       7       5       4       4
    24.90 CFS         3       2       2       2       1       1       1       1
    25.70 CFS         1       1       1       1       1       0

    RUNOFF ABOVE BASEFLOW OF    .00 CFS
                  1.75 WATERSHED INCHES;     589 CFS-HRS;      48.6 ACRE-FEET.

 *** WARNING - STRUCTURE 23, HYDROGRAPH VOLUME TRUNCATED AT      0 CFS
                           ( 20. % OF MAX. HYDROGRAPH COORDINATE)
                           MAIN TIME INCREMENT TOO SMALL.                  ***
1
 TR20 ---------------------------------------------------------------------------
          SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26):  PR COND W VERSION
 08/01/** MILONE & MACBROOM INC., CHESHIRE, CT                        010/01/90
 12:21:01                          PASS   2                            PAGE   5


 *** WARNING - STRUCTURE 22, HYDROGRAPH VOLUME TRUNCATED AT      0 CFS
                           ( 41. % OF MAX. HYDROGRAPH COORDINATE)
                           MAIN TIME INCREMENT TOO SMALL.                  ***

 *** WARNING - STRUCTURE 21, HYDROGRAPH VOLUME TRUNCATED AT      0 CFS
                           ( 43. % OF MAX. HYDROGRAPH COORDINATE)
                           MAIN TIME INCREMENT TOO SMALL.                  ***

 *** WARNING - XSECTION  15, HYDROGRAPH VOLUME TRUNCATED AT      0 CFS
                           ( 21. % OF MAX. HYDROGRAPH COORDINATE)
                           MAIN TIME INCREMENT TOO SMALL.                  ***

 *** WARNING - XSECTION  16, HYDROGRAPH VOLUME TRUNCATED AT      0 CFS
                           ( 13. % OF MAX. HYDROGRAPH COORDINATE)
                           MAIN TIME INCREMENT TOO SMALL.                  ***

 *** WARNING - XSECTION  19, HYDROGRAPH VOLUME TRUNCATED AT      0 CFS
                           ( 13. % OF MAX. HYDROGRAPH COORDINATE)
                           MAIN TIME INCREMENT TOO SMALL.                  ***
```

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.93	33.3	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =10

HRS	MAIN TIME INCREMENT = .10 hr,			DRAINAGE AREA = .11 SQ.MI.				
11.10 CFS	0	1	1	1	1	1	1	2
11.90 CFS	3	4	5	7	10	13	16	18
12.70 CFS	26	31	33	33	31	29	27	25
13.50 CFS	23	21	19	18	17	17	16	16
14.30 CFS	16	15	15	14	14	14	13	13
15.10 CFS	13	12	12	12	12	11	11	11
15.90 CFS	11	10	10	10	10	10	9	9
16.70 CFS	9	9	9	9	8	8	8	8
17.50 CFS	8	8	7	7	7	7	7	7
18.30 CFS	7	6	6	6	6	6	6	6
19.10 CFS	6	6	6	5	5	5	5	5
19.90 CFS	5	5	5	5	5	5	5	5
20.70 CFS	5	5	4	4	4	4	4	4
21.50 CFS	4	4	4	4	4	4	4	4
22.30 CFS	4	4	4	4	4	4	4	4
23.10 CFS	4	4	4	4	4	4	4	4
23.90 CFS	4	4	4	3	3	3	3	3
24.70 CFS	3	3	3	3	3	3	3	3
25.50 CFS	3	3	3	3	3	3	2	2
26.30 CFS	2	2	2	2	2	2	2	2
27.10 CFS	2	2	2	2	2	2	2	2
27.90 CFS	2	2	2	2	2	2	2	2

1

28.70 CFS	2	2	2	2	2	2	2	2
29.50 CFS	1	1	1	1	1	1	1	1
30.30 CFS	1	1	1	1	1	1	1	1
31.10 CFS	1	1	1	1	1	1	1	1
31.90 CFS	1	1	1	1	1	1	1	1
32.70 CFS	1	1	1	1	1	1	1	1
33.50 CFS	1	1	1	1	1	1	1	1
34.30 CFS	1	1	1	1	1	1	1	1
35.10 CFS	1	1	1	1	1	1	1	1
35.90 CFS	1	1	1	1	1	1	1	1
36.70 CFS	1	1	1	1	1	1	1	1
37.50 CFS	1	1	1	1	1	1	1	1
38.30 CFS	1	1	1	1	1	1	1	1
39.10 CFS	1	1	1	1	1	1	1	1
39.90 CFS	1	1	1	1	1	1	0	

RUNOFF ABOVE BASEFLOW OF .00 CFS
2.01 WATERSHED INCHES; 140 CFS-HRS; 11.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 22

RUNOFF ABOVE BASEFLOW OF .00 CFS
.00 WATERSHED INCHES; 0 CFS-HRS; .0 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 22
STARTING TIME = .00 RAIN DEPTH = 5.70 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .10 HOURS
ALTERNATE NO.= 1 STORM NO.=25 RAIN TABLE NO.= 3

*** WARNING - STRUCTURE 14, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(17. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

*** WARNING - STRUCTURE 15, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(28. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

*** WARNING - XSECTION 4, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(12. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

1
TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND W VERSION
08/01/** MILONE & MACBROOM INC., CHESHIRE, CT 010/01/90
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OPERATION RESVOR STRUCTURE 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
14.21	80.7	395.11
24.40	14.0	389.26
24.59	10.6	389.02
24.79	7.9	388.67
25.00	6.0	388.42
25.20	4.8	388.26
25.40	4.0	388.15
25.60	3.4	388.07
25.80	3.0	388.01
26.00	2.7	387.96

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25
HRS MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .52 SQ.MI.

10.00 CFS	0	1	1	1	2	3	3	4
10.80 CFS	5	7	8	10	12	14	17	20
11.60 CFS	21	21	23	26	29	33	39	45
12.40 CFS	52	57	62	66	70	73	75	76
13.20 CFS	77	78	79	79	80	80	80	81
14.00 CFS	81	81	81	81	81	81	81	80
14.80 CFS	80	80	80	80	80	79	79	79
15.60 CFS	79	78	78	78	78	77	77	77
16.40 CFS	76	76	76	75	75	75	74	74
17.20 CFS	74	73	73	72	72	71	71	70
18.00 CFS	69	69	68	68	67	66	66	65
18.80 CFS	65	64	63	63	62	61	60	59
19.60 CFS	58	58	57	56	55	55	54	53
20.40 CFS	52	51	50	49	48	47	46	45
21.20 CFS	45	44	43	42	41	41	40	39
22.00 CFS	38	37	36	35	34	33	33	32
22.80 CFS	31	30	30	29	28	28	27	27
23.60 CFS	26	25	25	24	23	22	21	5
24.40 CFS	14	4	11	2	8	0	6	0
25.20 CFS	5	0	4	0	3	0	3	0
26.00 CFS	3	0	2	0	2	0	2	0
26.80 CFS	2	0	2	0	2	0	1	0
27.60 CFS	1	0	1	0	1	0	1	0
28.40 CFS	1	0	1	0	1	0	1	0
29.20 CFS	1	0	1	0	1	0	1	0

RUNOFF ABOVE BASEFLOW OF .00 CFS
2.25 WATERSHED INCHES; 759 CFS-HRS; 62.7 ACRE-FEET.

*** WARNING - STRUCTURE 23, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(12. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

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TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND W VERSION
08/01/** MILONE & MACBROOM INC., CHESHIRE, CT 010/01/90
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*** WARNING - STRUCTURE 22, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(24. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

*** WARNING - STRUCTURE 21, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(27. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

*** WARNING - XSECTION 15, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(13. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.85	48.2	(NULL)

SRPRCD29

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =25

HRS MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .11 SQ.MI.

10.60 CFS	0	1	1	1	1	1	1	1
11.40 CFS	1	2	2	2	3	4	6	7
12.20 CFS	11	15	19	27	38	45	48	48
13.00 CFS	46	43	39	36	33	30	27	25
13.80 CFS	23	22	20	19	18	17	17	17
14.60 CFS	17	16	16	16	16	15	15	15
15.40 CFS	14	14	14	14	13	13	13	13
16.20 CFS	12	12	12	12	12	11	11	11
17.00 CFS	11	10	10	10	10	10	9	9
17.80 CFS	9	9	9	8	8	8	8	8
18.60 CFS	8	8	7	7	7	7	7	7
19.40 CFS	7	7	7	7	6	6	6	6
20.20 CFS	6	6	6	6	6	6	6	5
21.00 CFS	5	5	5	5	5	5	5	5
21.80 CFS	5	5	5	5	5	5	5	5
22.60 CFS	5	5	5	5	4	4	4	4
23.40 CFS	4	4	4	4	4	4	4	4
24.20 CFS	4	4	4	4	4	4	4	3
25.00 CFS	3	3	3	3	3	3	3	3
25.80 CFS	3	3	3	3	3	3	3	3
26.60 CFS	2	2	2	2	2	2	2	2
27.40 CFS	2	2	2	2	2	2	2	2
28.20 CFS	2	2	2	2	2	2	2	2
29.00 CFS	2	2	2	2	2	2	2	2
29.80 CFS	2	2	2	2	1	1	1	1
30.60 CFS	1	1	1	1	1	1	1	1
31.40 CFS	1	1	1	1	1	1	1	1
32.20 CFS	1	1	1	1	1	1	1	1
33.00 CFS	1	1	1	1	1	1	1	1
33.80 CFS	1	1	1	1	1	1	1	1

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TR20 ----------

SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND W VERSION
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34.60 CFS	1	1	1	1	1	1	1	1
35.40 CFS	1	1	1	1	1	1	1	1
36.20 CFS	1	1	1	1	1	1	1	1
37.00 CFS	1	1	1	1	1	1	1	1
37.80 CFS	1	1	1	1	1	1	1	1
38.60 CFS	1	1	1	1	1	1	1	1
39.40 CFS	1	1	1	1	1	1	1	1
40.20 CFS	1	1	1	1	1	1	1	1
41.00 CFS	1	1	1	1	1	0		

RUNOFF ABOVE BASEFLOW OF .00 CFS
2.54 WATERSHED INCHES; 177 CFS-HRS; 14.6 ACRE-FEET.

OPERATION RUNOFF XSECTION 22

RUNOFF ABOVE BASEFLOW OF .00 CFS
.00 WATERSHED INCHES; 0 CFS-HRS; .0 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 22
STARTING TIME = .00 RAIN DEPTH = 6.40 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .10 HOURS
ALTERNATE NO.= 1 STORM NO.=50 RAIN TABLE NO.= 3

*** WARNING - STRUCTURE 14, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(11. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

*** WARNING - STRUCTURE 15, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(14. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

OPERATION RESVOR STRUCTURE 10

1

TR20 ----------

SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND W VERSION

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.63	151.6	395.71
25.20	4.9	388.26
25.40	4.0	388.14
25.60	3.4	388.06
25.80	2.9	388.00
26.00	2.6	387.95
26.20	2.3	387.91
26.40	2.1	387.88
26.60	1.9	387.86
26.80	1.7	387.84

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50

HRS	MAIN TIME INCREMENT = .10 hr,				DRAINAGE AREA =			.52 SQ.MI.
9.50 CFS	0	1	1	1	2	2	3	4
10.30 CFS	5	6	7	8	9	11	13	15
11.10 CFS	17	19	21	21	22	23	25	26
11.90 CFS	29	33	38	44	52	58	64	69
12.70 CFS	73	76	78	81	86	114	132	143
13.50 CFS	149	152	151	148	144	139	134	129
14.30 CFS	123	118	113	108	103	99	95	91
15.10 CFS	87	84	82	82	82	81	81	81
15.90 CFS	81	81	80	80	80	80	79	79
16.70 CFS	79	79	78	78	78	77	77	77
17.50 CFS	76	76	76	75	75	74	74	74
18.30 CFS	73	73	72	72	71	70	70	69
19.10 CFS	69	68	67	67	66	66	65	65
19.90 CFS	64	63	62	62	61	60	59	58
20.70 CFS	58	57	56	55	55	54	53	52
21.50 CFS	51	50	49	48	48	47	46	45
22.30 CFS	44	44	43	42	41	41	40	39
23.10 CFS	38	37	36	35	34	34	33	32
23.90 CFS	31	31	30	29	29	28	27	26
24.70 CFS	25	24	22	6	0	5	0	4
25.50 CFS	0	3	0	3	0	3	0	2
26.30 CFS	0	2	0	2	0	2	0	2
27.10 CFS	0	1	0	1	0	1	0	1
27.90 CFS	0	1	0	1	0	1	0	1
28.70 CFS	0	1	0	1	0	1	0	1
29.50 CFS	0	1	0	1	0			

RUNOFF ABOVE BASEFLOW OF .00 CFS
2.77 WATERSHED INCHES; 934 CFS-HRS; 77.2 ACRE-FEET.

*** WARNING - STRUCTURE 22, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(13. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

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TR20 ----------

*** WARNING - STRUCTURE 21, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(14. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
12.81	63.0	(NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50

HRS	MAIN TIME INCREMENT = .10 hr,				DRAINAGE AREA =			.11 SQ.MI.
10.20 CFS	0	1	1	1	1	1	1	1
11.00 CFS	1	1	2	2	2	2	3	3
11.80 CFS	4	5	8	11	16	21	31	45
12.60 CFS	55	61	63	62	59	55	51	46
13.40 CFS	42	39	36	33	31	29	27	25
14.20 CFS	24	23	22	21	20	19	19	18
15.00 CFS	17	17	17	17	17	16	16	16
15.80 CFS	16	15	15	15	15	14	14	14
16.60 CFS	14	13	13	13	12	12	12	12
17.40 CFS	11	11	11	11	10	10	10	10
18.20 CFS	9	9	9	9	9	9	8	8

19.00 CFS	8	8	8	8	8	8	8	7
19.80 CFS	7	7	7	7	7	7	7	7
20.60 CFS	6	6	6	6	6	6	6	6
21.40 CFS	6	6	6	6	6	6	6	6
22.20 CFS	6	5	5	5	5	5	5	5
23.00 CFS	5	5	5	5	5	5	5	5
23.80 CFS	5	5	5	5	4	4	4	4
24.60 CFS	4	4	4	4	4	4	3	3
25.40 CFS	3	3	3	3	3	3	3	3
26.20 CFS	3	3	3	3	3	3	3	2
27.00 CFS	2	2	2	2	2	2	2	2
27.80 CFS	2	2	2	2	2	2	2	2
28.60 CFS	2	2	2	2	2	2	2	2
29.40 CFS	2	2	2	2	2	2	2	2
30.20 CFS	2	2	2	2	1	1	1	1
31.00 CFS	1	1	1	1	1	1	1	1
31.80 CFS	1	1	1	1	1	1	1	1
32.60 CFS	1	1	1	1	1	1	1	1
33.40 CFS	1	1	1	1	1	1	1	1
34.20 CFS	1	1	1	1	1	1	1	1
35.00 CFS	1	1	1	1	1	1	1	1
35.80 CFS	1	1	1	1	1	1	1	1
36.60 CFS	1	1	1	1	1	1	1	1
37.40 CFS	1	1	1	1	1	1	1	1
38.20 CFS	1	1	1	1	1	1	1	1
39.00 CFS	1	1	1	1	1	1	1	1
39.80 CFS	1	1	1	1	1	1	1	1

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40.60 CFS	1	1	1	1	1	1	1	1
41.40 CFS	1	1	1	1	1	1	1	0

RUNOFF ABOVE BASEFLOW OF .00 CFS
3.09 WATERSHED INCHES; 215 CFS-HRS; 17.8 ACRE-FEET.

OPERATION RUNOFF XSECTION 22

*** MESSAGE - NO PEAK FOUND, MAX DISCHARGE 1 CFS. ***

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)

*** WARNING - XSECTION 22, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(45. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***
HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =50
HRS MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .00 SQ.MI.

12.00 CFS	0	1	1	1	0

RUNOFF ABOVE BASEFLOW OF .00 CFS
2.01 WATERSHED INCHES; 1 CFS-HRS; .1 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 22
STARTING TIME = .00 RAIN DEPTH = 7.20 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .10 HOURS
ALTERNATE NO.= 1 STORM NO.=99 RAIN TABLE NO.= 3

OPERATION RESVOR STRUCTURE 10

PEAK TIME(HRS)	PEAK DISCHARGE(CFS)	PEAK ELEVATION(FEET)
13.33	250.8	396.17
25.60	3.9	388.13
25.80	3.4	388.06
26.00	3.0	388.01
26.20	2.7	387.96
26.40	2.4	387.93
26.60	2.2	387.90
26.80	2.0	387.87
27.00	1.8	387.85
27.20	1.7	387.83

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TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND W VERSION
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HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99
HRS MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .52 SQ.MI.

9.00 CFS	0	1	1	1	2	2	3	3
9.80 CFS	4	5	6	7	8	10	11	13
10.60 CFS	14	16	18	21	21	21	22	23
11.40 CFS	24	25	26	28	30	33	38	44
12.20 CFS	51	58	65	71	75	79	83	142
13.00 CFS	185	219	242	250	249	241	230	217
13.80 CFS	203	193	184	175	166	158	149	142
14.60 CFS	135	128	122	116	111	106	102	98
15.40 CFS	94	90	87	83	82	82	82	82
16.20 CFS	81	81	81	81	81	81	80	80
17.00 CFS	80	80	79	79	79	78	78	78
17.80 CFS	77	77	77	76	76	75	75	75
18.60 CFS	74	74	74	73	73	72	72	71
19.40 CFS	71	70	69	69	68	68	67	67
20.20 CFS	66	66	65	64	64	63	62	61
21.00 CFS	61	60	59	58	58	57	56	56
21.80 CFS	55	54	54	53	52	51	50	49
22.60 CFS	49	48	47	46	45	45	44	43
23.40 CFS	42	42	41	40	40	39	38	37
24.20 CFS	36	35	34	33	32	31	30	29
25.00 CFS	28	27	25	24	21	0	4	0
25.80 CFS	3	0	3	0	3	0	2	0
26.60 CFS	2	0	2	0	2	0	2	0
27.40 CFS	2	0	1	0	1	0	1	0
28.20 CFS	1	0	1	0	1	0	1	0
29.00 CFS	1	0	1	0	1	0	1	0
29.80 CFS	1	0	1	0	1	0		

RUNOFF ABOVE BASEFLOW OF .00 CFS
3.39 WATERSHED INCHES; 1144 CFS-HRS; 94.5 ACRE-FEET.

OPERATION ADDHYD XSECTION 20

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)
12.80 83.2 (NULL)

HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99
HRS MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .11 SQ.MI.

9.70 CFS	0	1	1	1	1	1	1	1
10.50 CFS	1	1	1	2	2	2	2	2
11.30 CFS	3	3	3	4	4	5	8	12
12.10 CFS	16	21	33	50	64	74	80	83
12.90 CFS	80	76	71	65	60	55	50	46
13.70 CFS	42	39	36	34	32	30	28	27
14.50 CFS	26	25	24	23	22	21	21	20
15.30 CFS	19	19	18	18	17	17	17	17
16.10 CFS	17	16	16	16	16	15	15	15
16.90 CFS	15	14	14	14	13	13	13	12
17.70 CFS	12	12	12	11	11	11	10	10

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TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND W VERSION
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18.50 CFS	10	10	10	10	9	9	9	9
19.30 CFS	9	9	9	8	8	8	8	8
20.10 CFS	8	8	8	7	7	7	7	7
20.90 CFS	7	7	7	7	7	7	7	7
21.70 CFS	6	6	6	6	6	6	6	6
22.50 CFS	6	6	6	6	6	6	6	6
23.30 CFS	6	6	6	5	5	5	5	5
24.10 CFS	5	5	5	5	5	4	4	4
24.90 CFS	4	4	4	4	4	4	3	3
25.70 CFS	3	3	3	3	3	3	3	3
26.50 CFS	3	3	3	3	3	3	3	3
27.30 CFS	2	2	2	2	2	2	2	2
28.10 CFS	2	2	2	2	2	2	2	2
28.90 CFS	2	2	2	2	2	2	2	2
29.70 CFS	2	2	2	2	2	2	2	2
30.50 CFS	2	2	2	2	1	1	1	1

31.30 CFS	1	1	1	1	1	1	1	1
32.10 CFS	1	1	1	1	1	1	1	1
32.90 CFS	1	1	1	1	1	1	1	1
33.70 CFS	1	1	1	1	1	1	1	1
34.50 CFS	1	1	1	1	1	1	1	1
35.30 CFS	1	1	1	1	1	1	1	1
36.10 CFS	1	1	1	1	1	1	1	1
36.90 CFS	1	1	1	1	1	1	1	1
37.70 CFS	1	1	1	1	1	1	1	1
38.50 CFS	1	1	1	1	1	1	1	1
39.30 CFS	1	1	1	1	1	1	1	1
40.10 CFS	1	1	1	1	1	1	1	1
40.90 CFS	1	1	1	1	1	1	1	1
41.70 CFS	1	1	1	1	1	1	1	1
42.50 CFS	0							

RUNOFF ABOVE BASEFLOW OF .00 CFS
3.75 WATERSHED INCHES; 261 CFS-HRS; 21.5 ACRE-FEET.

OPERATION RUNOFF XSECTION 22

*** MESSAGE - NO PEAK FOUND, MAX DISCHARGE 1 CFS. ***

PEAK TIME(HRS) PEAK DISCHARGE(CFS) PEAK ELEVATION(FEET)

*** WARNING - XSECTION 22, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(44. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***
HYDROGRAPH POINTS FOR ALTERNATE = 1, STORM =99
HRS MAIN TIME INCREMENT = .10 hr, DRAINAGE AREA = .00 SQ.MI.

11.90 CFS	0	1	1	1	1	0

1
TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND W VERSION
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RUNOFF ABOVE BASEFLOW OF .00 CFS
2.52 WATERSHED INCHES; 1 CFS-HRS; .1 ACRE-FEET.

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 5

1
TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND W VERSION
08/01/** MILONE & MACBROOM INC., CHESHIRE, CT 010/01/90
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 3.30 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 3, AMC 2							
MAIN TIME INCREMENT .10 HOURS							
ALTERNATE 1 STORM 2							
XSECTION 1	RUNOFF	.02	.94	---	12.43	6	300.0
XSECTION 2	RUNOFF	.01	.99	---	12.30T	4T	400.0
STRUCTURE 14	RESVOR	.01	.00	---	.00	0	.0
XSECTION 3	RUNOFF	.02	.48	---	12.27T	4T	200.0
STRUCTURE 15	RESVOR	.02	.00	---	.00	0	.0
XSECTION 4	ADDHYD	.03	.00	---	.00	0	.0
XSECTION 5	ADDHYD	.04	.57	---	12.44	7	175.0
XSECTION 6	RUNOFF	.04	.74	---	12.25	14	350.0
XSECTION 7	ADDHYD	.08	.65	---	12.27	19	237.5
XSECTION 8	RUNOFF	.29	.69	---	12.80	49	169.0

XSECTION	9	RUNOFF	.15	.74	---	12.64	31	206.7
XSECTION	10	ADDHYD	.44	.71	---	12.74	79	179.5
XSECTION	11	ADDHYD	.52	.70	---	12.70	87	167.3
STRUCTURE	10	RESVOR	.52	.70	391.20	13.58	43	82.7
XSECTION	12	RUNOFF	.01	1.05	---	12.27T	4T	400.0
STRUCTURE	23	RESVOR	.01	1.04	402.62	13.50R	1R	100.0
XSECTION	13	RUNOFF	.02	.61	---	12.51T	3T	150.0
STRUCTURE	22	RESVOR	.02	.00	---	.00	0	.0
XSECTION	14	RUNOFF	.02	.69	---	12.38T	5T	250.0
STRUCTURE	21	RESVOR	.02	.00	---	.00	0	.0
XSECTION	15	ADDHYD	.04	.64	---	16.90R	1R	25.0
XSECTION	16	ADDHYD	.04	.71	---	14.90F	1F	25.0
XSECTION	17	RUNOFF	.06	1.05	---	12.54	21	350.0
XSECTION	18	ADDHYD	.10	.91	---	12.54	22	220.0
STRUCTURE	20	RESVOR	.10	.90	390.68	13.42	8	80.0
XSECTION	19	RUNOFF	.01	.61	---	12.33T	1T	100.0
XSECTION	20	ADDHYD	.11	.89	---	13.40	9	81.8
XSECTION	21	RUNOFF	.13	.69	---	12.59	26	200.0

1

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 1 STORM 2							
XSECTION 22	RUNOFF	.00	.00	---	.00	0	********

RAINFALL OF 5.00 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE	1	STORM	10					
XSECTION	1	RUNOFF	.02	2.11	---	12.40	15	750.0
XSECTION	2	RUNOFF	.01	2.20	---	12.29	8	800.0
STRUCTURE	14	RESVOR	.01	2.19	407.38	12.98T	2T	200.0
XSECTION	3	RUNOFF	.02	1.37	---	12.25	12	600.0
STRUCTURE	15	RESVOR	.02	.83	405.65	15.40F	1F	50.0
XSECTION	4	ADDHYD	.03	1.26	---	13.43T	2T	66.7
XSECTION	5	ADDHYD	.04	1.62	---	12.42	16	400.0
XSECTION	6	RUNOFF	.04	1.80	---	12.24	35	875.0
XSECTION	7	ADDHYD	.08	1.70	---	12.26	49	612.5
XSECTION	8	RUNOFF	.29	1.73	---	12.73	141	486.2
XSECTION	9	RUNOFF	.15	1.80	---	12.58	86	573.3
XSECTION	10	ADDHYD	.44	1.75	---	12.67	224	509.1
XSECTION	11	ADDHYD	.52	1.74	---	12.64	246	473.1
STRUCTURE	10	RESVOR	.52	1.75	394.02	14.00	73	140.4
XSECTION	12	RUNOFF	.01	2.28	---	12.26	8	800.0
STRUCTURE	23	RESVOR	.01	2.27	403.88	12.69T	3T	300.0
XSECTION	13	RUNOFF	.02	1.58	---	12.46	10	500.0
STRUCTURE	22	RESVOR	.02	1.53	445.60	15.50F	1F	50.0
XSECTION	14	RUNOFF	.02	1.73	---	12.35	13	650.0
STRUCTURE	21	RESVOR	.02	1.69	401.43	15.70F	1F	50.0
XSECTION	15	ADDHYD	.04	1.61	---	15.60F	2F	50.0
XSECTION	16	ADDHYD	.04	1.72	---	13.41T	4T	100.0
XSECTION	17	RUNOFF	.06	2.28	---	12.51	48	800.0
XSECTION	18	ADDHYD	.10	2.04	---	12.52	51	510.0
STRUCTURE	20	RESVOR	.10	2.03	391.13	12.94	32	320.0

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TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND W VERSION
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 10							
XSECTION 19	RUNOFF	.01	1.58	---	12.30T	4T	400.0
XSECTION 20	ADDHYD	.11	2.01	---	12.93	33	300.0
XSECTION 21	RUNOFF	.13	1.73	---	12.54	75	576.9
XSECTION 22	RUNOFF	.00	.00	---	.00	0	********

RAINFALL OF 5.70 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 25							
XSECTION 1	RUNOFF	.02	2.66	---	12.40	19	950.0
XSECTION 2	RUNOFF	.01	2.75	---	12.28	11	1100.0
STRUCTURE 14	RESVOR	.01	2.74	407.78	12.81T	3T	300.0
XSECTION 3	RUNOFF	.02	1.81	---	12.25	16	800.0
STRUCTURE 15	RESVOR	.02	1.26	406.03	14.15T	2T	100.0
XSECTION 4	ADDHYD	.03	1.73	---	12.99T	4T	133.3
XSECTION 5	ADDHYD	.04	2.12	---	12.44	22	550.0
XSECTION 6	RUNOFF	.04	2.30	---	12.23	44	1100.0
XSECTION 7	ADDHYD	.08	2.20	---	12.26	63	787.5
XSECTION 8	RUNOFF	.29	2.22	---	12.72	186	641.4
XSECTION 9	RUNOFF	.15	2.30	---	12.58	111	740.0
XSECTION 10	ADDHYD	.44	2.25	---	12.66	292	663.6
XSECTION 11	ADDHYD	.52	2.24	---	12.63	323	621.2
STRUCTURE 10	RESVOR	.52	2.25	395.11	14.21	81	155.8
XSECTION 12	RUNOFF	.01	2.84	---	12.26	10	1000.0
STRUCTURE 23	RESVOR	.01	2.83	404.25	12.59T	4T	400.0
XSECTION 13	RUNOFF	.02	2.05	---	12.44	14	700.0
STRUCTURE 22	RESVOR	.02	2.00	446.10	14.30T	2T	100.0
XSECTION 14	RUNOFF	.02	2.22	---	12.35	17	850.0
STRUCTURE 21	RESVOR	.02	2.18	402.02	14.69T	2T	100.0
XSECTION 15	ADDHYD	.04	2.08	---	14.52T	4T	100.0
XSECTION 16	ADDHYD	.04	2.21	---	13.70	6	150.0

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TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND W VERSION
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 1 STORM 25							

XSECTION	17	RUNOFF	.06	2.84	---	12.50	60	1000.0
XSECTION	18	ADDHYD	.10	2.58	---	12.51	65	650.0
STRUCTURE	20	RESVOR	.10	2.57	391.24	12.86	47	470.0
XSECTION	19	RUNOFF	.01	2.05	---	12.30	5	500.0
XSECTION	20	ADDHYD	.11	2.54	---	12.85	48	436.4
XSECTION	21	RUNOFF	.13	2.22	---	12.53	98	753.8
XSECTION	22	RUNOFF	.00	.00	---	.00	0	********

RAINFALL OF 6.40 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 50

XSECTION	1	RUNOFF	.02	3.22	---	12.40	24	1200.0
XSECTION	2	RUNOFF	.01	3.32	---	12.28	13	1300.0
STRUCTURE	14	RESVOR	.01	3.31	408.14	12.70T	5T	500.0
XSECTION	3	RUNOFF	.02	2.28	---	12.25	20	1000.0
STRUCTURE	15	RESVOR	.02	1.73	406.27	13.05T	4T	200.0
XSECTION	4	ADDHYD	.03	2.24	---	12.77	8	266.7
XSECTION	5	ADDHYD	.04	2.65	---	12.45	28	700.0
XSECTION	6	RUNOFF	.04	2.83	---	12.23	54	1350.0
XSECTION	7	ADDHYD	.08	2.73	---	12.27	78	975.0
XSECTION	8	RUNOFF	.29	2.74	---	12.71	233	803.4
XSECTION	9	RUNOFF	.15	2.83	---	12.57	138	920.0
XSECTION	10	ADDHYD	.44	2.77	---	12.65	365	829.5
XSECTION	11	ADDHYD	.52	2.76	---	12.62	406	780.8
STRUCTURE	10	RESVOR	.52	2.77	395.71	13.63	152	292.3
XSECTION	12	RUNOFF	.01	3.42	---	12.26	13	1300.0
STRUCTURE	23	RESVOR	.01	3.41	404.58	12.53	6	600.0
XSECTION	13	RUNOFF	.02	2.55	---	12.43	17	850.0
STRUCTURE	22	RESVOR	.02	2.49	446.48	13.53T	4T	200.0
XSECTION	14	RUNOFF	.02	2.74	---	12.34	21	1050.0

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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)

ALTERNATE 1 STORM 50

STRUCTURE	21	RESVOR	.02	2.69	402.40	13.47T	4T	200.0
XSECTION	15	ADDHYD	.04	2.59	---	13.51	7	175.0
XSECTION	16	ADDHYD	.04	2.73	---	13.14	10	250.0
XSECTION	17	RUNOFF	.06	3.42	---	12.50	72	1200.0
XSECTION	18	ADDHYD	.10	3.13	---	12.51	80	800.0
STRUCTURE	20	RESVOR	.10	3.12	391.36	12.82	61	610.0
XSECTION	19	RUNOFF	.01	2.55	---	12.29	6	600.0
XSECTION	20	ADDHYD	.11	3.09	---	12.81	63	572.7
XSECTION	21	RUNOFF	.13	2.74	---	12.52	122	938.5
XSECTION	22	RUNOFF	.00	2.01	---	12.20R	1R	********

RAINFALL OF 7.20 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 1 STORM 99

XSECTION	1	RUNOFF	.02	3.89	---	12.39	28	1400.0
XSECTION	2	RUNOFF	.01	4.00	---	12.28	15	1500.0
STRUCTURE	14	RESVOR	.01	3.99	408.47	12.61	7	700.0
XSECTION	3	RUNOFF	.02	2.85	---	12.24	25	1250.0
STRUCTURE	15	RESVOR	.02	2.30	406.65	12.71	6	300.0

XSECTION	4	ADDHYD	.03	2.84	---	12.64	13	433.3
XSECTION	5	ADDHYD	.04	3.28	---	12.46	39	975.0
XSECTION	6	RUNOFF	.04	3.46	---	12.22	66	1650.0
XSECTION	7	ADDHYD	.08	3.36	---	12.27	97	1212.5
XSECTION	8	RUNOFF	.29	3.36	---	12.71	287	989.7
XSECTION	9	RUNOFF	.15	3.46	---	12.56	171	1140.0
XSECTION	10	ADDHYD	.44	3.39	---	12.64	451	1025.0
XSECTION	11	ADDHYD	.52	3.39	---	12.61	504	969.2
STRUCTURE	10	RESVOR	.52	3.39	396.17	13.33	251	482.7
XSECTION	12	RUNOFF	.01	4.10	---	12.26	15	1500.0
STRUCTURE	23	RESVOR	.01	4.10	404.95	12.50	8	800.0

1

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE	1	STORM 99					
XSECTION	13	RUNOFF	.02	3.15	---	12.43	22	1100.0
STRUCTURE	22	RESVOR	.02	3.09	446.97	13.26	6	300.0
XSECTION	14	RUNOFF	.02	3.36	---	12.33	26	1300.0
STRUCTURE	21	RESVOR	.02	3.30	402.92	13.11	6	300.0
XSECTION	15	ADDHYD	.04	3.19	---	13.20	12	300.0
XSECTION	16	ADDHYD	.04	3.34	---	12.93	17	425.0
XSECTION	17	RUNOFF	.06	4.11	---	12.49	87	1450.0
XSECTION	18	ADDHYD	.10	3.79	---	12.52	99	990.0
STRUCTURE	20	RESVOR	.10	3.78	391.51	12.80	81	810.0
XSECTION	19	RUNOFF	.01	3.15	---	12.29	8	800.0
XSECTION	20	ADDHYD	.11	3.75	---	12.80	83	754.5
XSECTION	21	RUNOFF	.13	3.36	---	12.52	152	1169.2
XSECTION	22	RUNOFF	.00	2.52	---	12.20R	1R	********

1

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 2	10	25	50	99
STRUCTURE 23	.01					
ALTERNATE 1		0	3	4	6	8
STRUCTURE 22	.02					
ALTERNATE 1		0	1	2	4	6
STRUCTURE 21	.02					
ALTERNATE 1		0	1	2	4	6
STRUCTURE 20	.10					

ALTERNATE	1	8	32	47	61	81

STRUCTURE 15 .02

ALTERNATE	1	0	1	2	4	6

STRUCTURE 14 .01

ALTERNATE	1	0	2	3	5	7

STRUCTURE 10 .52

ALTERNATE	1	43	73	81	152	251

XSECTION 1 .02

ALTERNATE	1	6	15	19	24	28

XSECTION 2 .01

ALTERNATE	1	4	8	11	13	15

XSECTION 3 .02

ALTERNATE	1	4	12	16	20	25

XSECTION 4 .03

ALTERNATE	1	0	2	4	8	13

XSECTION 5 .04

ALTERNATE	1	7	16	22	28	39

XSECTION 6 .04

ALTERNATE	1	14	35	44	54	66

XSECTION 7 .08

ALTERNATE	1	19	49	63	78	97

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TR20 ----------
SADDLE RIDGE SUBDIVISION - EASTON, CT (2683-01-26): PR COND W VERSION
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SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 2	10	25	50	99
XSECTION 8		.29					
ALTERNATE	1		49	141	186	233	287
XSECTION 9		.15					
ALTERNATE	1		31	86	111	138	171
XSECTION 10		.44					
ALTERNATE	1		79	224	292	365	451
XSECTION 11		.52					
ALTERNATE	1		87	246	323	406	504
XSECTION 12		.01					
ALTERNATE	1		4	8	10	13	15

XSECTION 13 .02

ALTERNATE	1	3	10	14	17	22

XSECTION 14 .02

ALTERNATE	1	5	13	17	21	26

XSECTION 15 .04

ALTERNATE	1	0	2	4	7	12

XSECTION 16 .04

ALTERNATE	1	1	4	6	10	17

XSECTION 17 .06

ALTERNATE	1	21	48	60	72	87

XSECTION 18 .10

ALTERNATE	1	22	51	65	80	99

XSECTION 19 .01

ALTERNATE	1	1	4	5	6	8

XSECTION 20 .11

ALTERNATE	1	9	33	48	63	83

XSECTION 21 .13

1
TR20 ----------

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 2	10	25	50	99
XSECTION 21 .13						
ALTERNATE 1		26	75	98	122	152
XSECTION 22 .00						
ALTERNATE 1		0	0	0	0	0

END OF 1 JOBS IN THIS RUN
1

SCS TR-20, VERSION 10/01/90
FILES

INPUT = srprcd29.in
OUTPUT = srprcd29.out , DATED 08/01/**,12:21:01

FILES GENERATED - DATED 08/01/**,12:21:01

NONE!

*** TR-20 RUN COMPLETED ***

WATERSHED MAPS

Engineering, Landscape Architecture and Environmental Sciences

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REVISIONS

SITE PLAN - EXISTING CONDITIONS TR-20 WATERSHED MAP

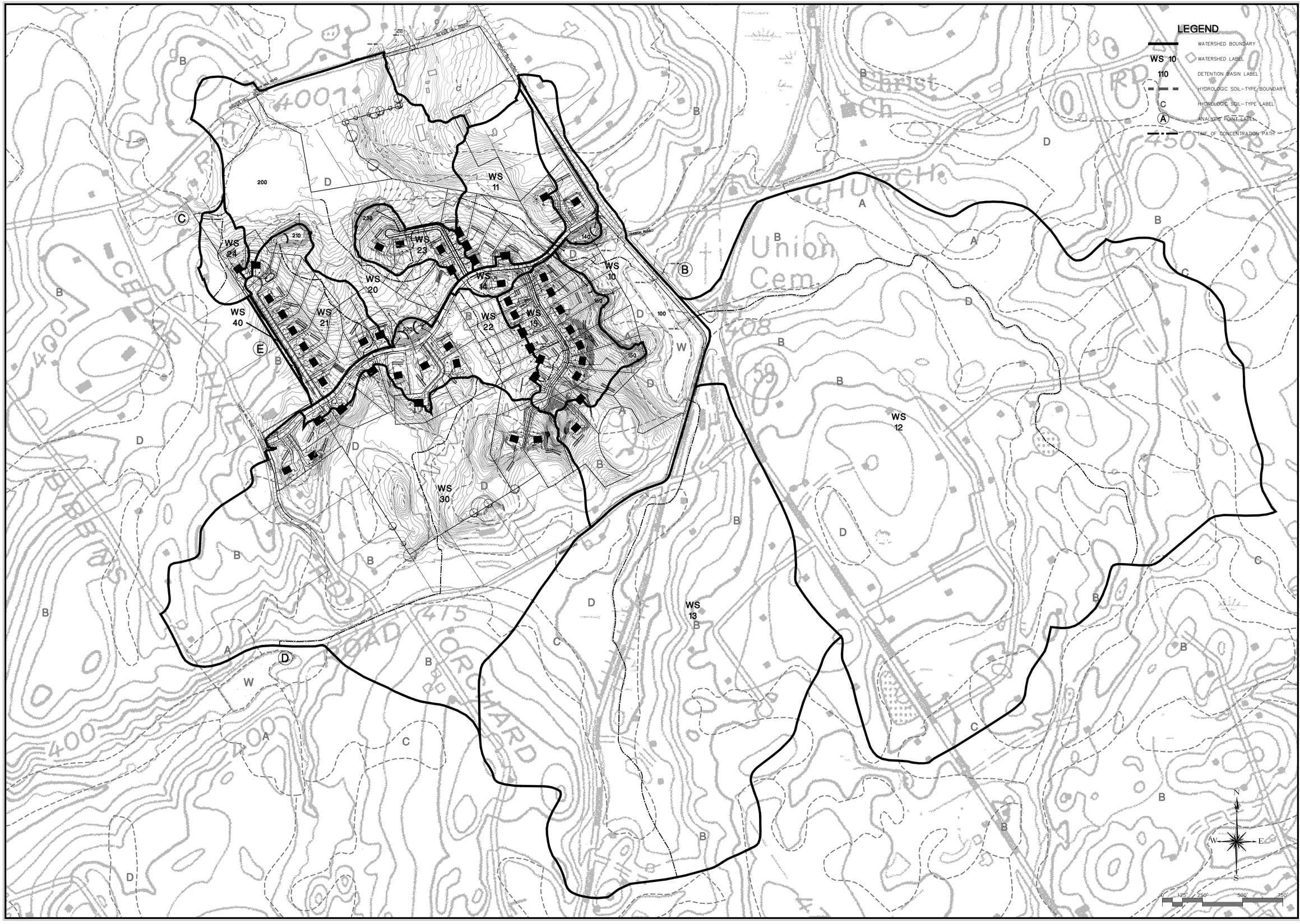
EASTON CROSSING

SPORT HILL ROAD, SILVER HILL ROAD
CEDAR HILL ROAD, AND WESTPORT ROAD
EASTON, CONNETICUT

DESIGNED	DRAWN	CHECKED
FAB	FAB	EAH

SCALE	1" = 250'
DATE	AUGUST 4, 2014
PROJECT NO.	2683-01-26
DWG NAME	SR-TR20-14.dwg

1 OF 2
SHEET NO.



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REVISIONS

SITE PLAN - PROPOSED CONDITIONS TR-20 WATERSHED MAP

EASTON CROSSING

SPORT HILL ROAD, SILVER HILL ROAD
CEDAR HILL ROAD, AND WESTPORT ROAD
EASTON, CONNETICUT

DESIGNED	DRAWN	CHECKED
FAB	FAB	EAH

SCALE: 1" = 250'

DATE: AUGUST 4, 2014

PROJECT NO.: 2683-01-26

DWG NAME: SR-TR20-14.dwg

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SHEET NO.