

# **STORMWATER MANAGEMENT REPORT**

**CHARLESTON PLACE  
1103 AURORA AVENUE  
NAPERVILLE, ILLINOIS 60540**

**Prepared For:  
CHARLESTON INVESTMENTS, LLC  
933 EAST OGDEN AVENUE  
NAPERVILLE, ILLINOIS 60563**

**Prepared By:  
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NAPERVILLE, ILLINOIS**

**CEC Project 333-244**

**FEBRUARY 2025**



**Civil & Environmental Consultants, Inc.**

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## 1.0 INTRODUCTION

Charleston Investments, LLC (Charleston) is the contract purchaser of the easterly 7.33± acres of the All Saints property located at 1155 Aurora Avenue, Naperville, Illinois. The property, which is currently zoned R1A - Low Density Single Family Residential District, is vacant with turf grass and mature trees and most recently has been used for youth soccer. It is Charleston's intent to rezone the 7.33± acre parcel under the City of Naperville's TU - Transitional Use District and subdivide the same into thirty single-family residential lots with a minimum lot area of 6,000 square feet.

The following report outlines the criteria used to design Charleston Place subdivision's stormwater management infrastructure as well as other proposed site improvements.

## 2.0 PROJECT BACKGROUND AND EVALUATION

Existing and proposed conditions of the subject site as well as the All Saints/Jefferson Estates watershed is described below.

### 2.1 EXISTING CONDITIONS

The 39.0± acre All Saints campus (formerly Calvary Temple), located north of Aurora Avenue and south of Jefferson Street, was developed sometime in the 1970s and included an existing detention basin on the northerly portion of the site. The basin was designed using stormwater ordinances that were in effect at that time (i.e., 6-inch, 24-hour storm event, Soil Conservation Service (SCS) type II distribution).

In 2003, Roake and Associates, Inc. prepared the site development plans for Jefferson Estates, a thirty-seven lot residential subdivision located on the northerly 21.57± acres of the All Saints site. Roake and Associates, Inc. performed a drainage analysis of the entire 39± acre watershed as part of the Jefferson Estates development. The residential re-development portion of the site (Jefferson Estates - 21.57± acres) was designed using ordinances in effect in 2003, that is a 7.58-inch, 24-hour storm event with a Huff third quartile distribution. Since the southerly portion of the All Saints school site remained in its existing condition, the 17.41± acre school site was analyzed using the 6.00-inch, 24-hour storm event, SCS type II rainfall. The existing detention basin was reconfigured as part of the Jefferson Estates improvements so that the required stormwater detention volume could be provided. Note that the as-built survey information shown in the Jefferson Estates record drawings (basin contours, outfall structure inverts) was used when recreating the existing hydrograph for the Jefferson Estates-All Saints watershed.

As was the case during the redevelopment of Jefferson Estates, the site generally drains from south to north. Off-site drainage areas from the Meson Sabika parking lot to the east and Willoway Subdivision to the west are routed through the site and into the Jefferson Estates detention facility. No floodplain or wetlands are present on the site.

For your reference, a copy of the Jefferson Estates, Final Design Narrative and Storm Water Management Plan dated August 1, 2003 and As-Built Record Drawings dated December 27, 2004 have been included in this report as Appendix 1.

### 2.2 PROPOSED CONDITIONS

As stated above, Charleston intends to purchase the easterly 7.33± acres of the 17.41± acre All Saints school site and develop Charleston Place, a 30-lot residential subdivision. The overall All Saints/Calvary Temple 39± acre watershed has been re-analyzed to account for the redevelopment

of the 7.3± acre Charleston Place subdivision and to insure that the stormwater release rate at the Jefferson Avenue outfall is approximately the same as pre-redevelopment.

Proposed condition hydrographs were developed for the contributing subcatchments that totaled the overall site area of 39.0± acres. The existing Jefferson Estates hydrograph remained the same in existing and proposed condition, that is a 7.58-inch, 24-hour storm event with a Huff third quartile distribution. The proposed hydrograph for the 7.3± Charleston Place development utilizes an 8.57-inch, 24-hour storm event with a Huff third quartile distribution. The hydrograph for the 10.08± acre All Saints School Site that will remain in its existing condition utilizes a 6.00-inch, 24-hour storm event, SCS Type II. The proposed stormwater management design will look to mitigate runoff increase from the increased rainfall events. The following tables summarize the existing and proposed conditions.

<b>EXISTING CONDITIONS</b>		
Drainage subcatchment	Jefferson Estates	All Saints School site (no re-development)
Area (acres)	21.57	17.41
Storm event	Huffman Distribution, 7.58-inch Storm	Type II, 6.00-inch Storm
<b>Existing Basin Results</b>		
Peak Elevation - 689.21		
Peak Flow - 4.17 cubic feet per second		
Storage - 11.42 acre-feet		

<b>PROPOSED CONDITIONS</b>			
Drainage subcatchment	Jefferson Estates	School site (no re-development)	Charleston Place including Aurora Avenue right of way
Area (acres)	21.57	10.08	7.33
Storm event	Huff Distribution, 7.58-inch Storm	Type II, 6.00-inch Storm	Huff Distribution, 8.57-inch Storm
<b>Existing Basin Results</b>		<b>Storm Trap Results</b>	
Peak Elevation - 689.51		Peak Elevation - 696.29	
Peak Flow - 4.20 cubic feet per second		Peak Flow - 4.29 cubic feet per second	
Storage - 12.28 acre-feet		Storage - 1.01 acre-feet	

Prior to discharging into the existing Jefferson Estates detention basin, Charleston Place runoff will be collected in proposed storm sewers and attenuated in an underground StormTrap system located at the northwest corner of the site. The emergency surface overland flow route designed into the subdivision's master grading plan conveys runoff exceeding the capacity of the storm sewers into the StormTrap.

The StormTrap system provides both PCBMP volume and stormwater attenuation volume. Attenuation provided by the StormTrap system limits the discharge rate of the Jefferson Estates basin outfall to that closely of the existing condition for the 100-year 24-hour rainfall event. Please see the existing and proposed conditions HydroCAD models and calculations for details in the appendices.

The DuPage County Countywide Stormwater & Floodplain Ordinance requires post construction best management practices (PCBMP) volume control as part of new developments. The volume is calculated as the product of the new impervious area times 1.25 inch of rainfall. The new impervious area is approximately 3.0 acres yielding a PCBMP volume of 13,557 cubic feet. The proposed StormTrap outfall invert of 691.60 provides the required PCBMP volume without credit taken for voids in the CA-1 aggregate base. Catchbasins have been incorporated into the upstream storm sewer system to capture and reduce sediment, trash, and debris prior to runoff entering the vault. Note that a 4-inch perforated underdrain was incorporated into the StormTrap system to ensure the PCBMP volume will drain down over time. This will be beneficial when storm events reoccur within a short period.

The proposed storm sewer system has been designed to accommodate the 10-year storm event without surcharging above proposed rim elevations. Runoff exceeding the 10-year storm will be directed to the StormTrap system via emergency surface overland routes. The calculations are contained in a table (see Appendix 5) utilizing the rational method to calculate the stormwater runoff for the catchments and Manning's Equation to calculate the pipe flows. A five-minute time of concentration was assumed for on-site drainage catchments and ten-minute time of concentration for off-site drainage from the Meson Sabika parking lot. The catchment areas are depicted on the drainage map HYD-3.0 in Appendix 4.

Please note that during the design of the Jefferson Estates, safeguards were implemented to insure un-detained runoff from the south (All Saints property) could be routed through the subdivision. This includes oversized slope box inlets (one is position immediately north of the StormTrap system) and emergency surface overland flow routes.

### 3.0 REFERENCES

#### 3.1 ILLINOIS STATE WATER SURVEY BULLETIN 75

The Illinois State Water Survey Bulletin 75, “Precipitation Frequency Study for Illinois”, by James Angel and Momcilo Markus, dated March 2020, was used to obtain the rainfall data required for the evaluation.

Table 1 below represents the required rainfall depths for various storm events to be used in the evaluation.

**Table 1: Illinois State Water Survey Bulletin 75 Rainfall Depths for Northeast Illinois (inches)**

Storm Duration	Rainfall Depth (in) per Storm Event Duration and Recurrence Interval						
	1-year	2-year	5-year	10-year	25-year	50-year	100-year
5-min	0.33	0.40	0.52	0.62	0.77	0.90	1.03
10-min	0.58	0.70	0.90	1.08	1.35	1.58	1.80
15-min	0.75	0.90	1.16	1.39	1.74	2.03	2.32
30-min	1.03	1.24	1.59	1.91	2.39	2.78	3.17
1-hour	1.30	1.57	2.02	2.42	3.03	3.53	4.03
2-hour	1.61	1.94	2.49	2.99	3.74	4.35	4.97
3-hour	1.77	2.14	2.75	3.30	4.13	4.80	5.49
6-hour	2.08	2.51	3.23	3.86	4.84	5.63	6.43
12-hour	2.41	2.91	3.74	4.48	5.61	6.53	7.46
18-hour	2.61	3.14	4.04	4.84	6.06	7.05	8.06
24-hour	2.77	3.34	4.30	5.15	6.45	7.50	8.57
48-hour	3.04	3.66	4.71	5.62	6.99	8.13	9.28
72-hour	3.30	3.97	5.08	6.05	7.49	8.64	9.85
120-hour	3.67	4.42	5.63	6.68	8.16	9.39	10.66
240-hour	4.65	5.60	7.09	8.25	9.90	11.26	12.65

Because storms will vary in intensity throughout the event, the ordinance requires use of specific distributions of storm events, depending on the duration of the storm. Table 2 below represents the required distribution to be used for various storm durations. Note: there are four possible distributions, also referred to as Huff Quartiles.

**Table 2: Huff Rainfall Distributions**

Rainfall Duration (hours)	Huff Distribution
1	1 <sup>st</sup>
2	1 <sup>st</sup>
3	1 <sup>st</sup>
6	1 <sup>st</sup>
12	2 <sup>nd</sup>
18	3 <sup>rd</sup>
24	3 <sup>rd</sup>
48	4 <sup>th</sup>
72	4 <sup>th</sup>
120	4 <sup>th</sup>
240	4 <sup>th</sup>

Table 3 below provides the percent of total rainfall that will fall for each 5% of a particular storm event for each of the four possible Huff Quartiles.

**Table 3: Huff Quartile Distributions\***

Cumulative Storm Percentage	Percent of Total Rainfall			
	1 <sup>st</sup> Quartile	2 <sup>nd</sup> Quartile	3 <sup>rd</sup> Quartile	4 <sup>th</sup> Quartile
05	16	03	03	02
10	33	08	06	05
15	43	12	09	08
20	52	16	12	10
25	60	22	15	13
30	66	29	19	16
35	71	39	23	19
40	75	51	27	22
45	79	62	32	25
50	82	70	38	28
55	84	76	45	32
60	86	81	57	35
65	88	85	70	39
70	90	88	79	45
75	92	91	85	51
80	94	93	89	59
85	96	95	92	72
90	97	97	95	84
95	98	98	97	92

\*Applies to drainage areas less than 10 square miles

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**APPENDIX 1**

**JEFFERSON ESTATES FINAL DESIGN NARRATIVE AND  
STORMWATER MANAGEMENT PLAN**

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# JEFFERSON ESTATES

Proposed Single-Family Residential Subdivision

Naperville, Illinois

## Final Design Narrative and Storm Water Management Plan

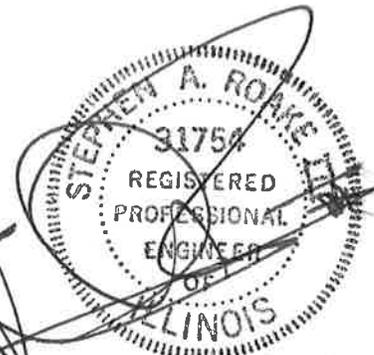
August 1, 2003

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(630) 355-3232  
(Illinois Professional Design Firm No. 807)  
(License Expires April 30, 2005)



License Expires Nov. 30, 2003

**Jefferson Estates  
Naperville, Illinois**

**Final Design Narrative  
and  
Storm Water Management Plan**

**August 1, 2003**

The proposed Jefferson Estates single-family residential subdivision is situated on the northerly 19.6± acres of the 39.0± acre Calvary Temple site in Naperville, IL. The site is bounded on the west by Will-O-Way Park Subdivision; on the south by an existing private school; on the north by Jefferson St.; and to the east by Will-O-Way East Subdivision and the River Bend Condominiums. The site is currently within the corporate limits of the City of Naperville and zoned R-1-A (single-family).

The project will contain 37 single-family residential lots. The average lot size exceeds 14,600 sf. The minimum lot size is 11,360 sf., and the net density is approximately 1.89 dwelling units/acre. Access will be from Jefferson St. via Claremont Dr. and Willoway Dr. There will be no access from Aurora Ave. The current school will remain in place. The school site will be reduced to approximately 19.45 acres. The school is not included as part of this development. School and Park Contributions will be met with cash in lieu of land.

**General Design Criteria**

This project has been designed in accordance with the design standards established by the City of Naperville "Design Manual For Public Improvements" adopted June 4, 2002 as Ordinance No. 02-137.

**Roadways**

All of the roadways within the project will be publicly owned and maintained. All pavements will be edged with a 3" high mountable curb and integral 12" wide gutter (M3.12 curb and gutter). Pavements will consist of 2" of bituminous surface over 2" of bituminous binder on 12" of aggregate base. Internal roadways are typically 28' in width to back-of-curb. Five-foot wide concrete sidewalks will be provided along both sides of all internal street frontages and through the 20-foot pedestrian right-of-way connecting Claremont Dr. with the school site. The existing sidewalk along Jefferson St. will remain. No improvements to Jefferson St. are contemplated.

### **Roadway Lighting**

Street lights will be provided within the subdivision in accordance with City standards. No additional street lighting for Jefferson St. is contemplated.

### **Water Supply**

Public water supply for domestic and fire protection uses will be provided by the City of Naperville. Currently, there is an 8" watermain in Willoway Dr. and a 12" watermain in Jefferson St. The on-site water system will consist of 8" water mains connected to both the 12" main in Jefferson St. and the 8" main in Willoway Dr. All water mains, hydrants and hydrant leads exclusive of the individual residential services will be publicly owned and maintained after construction and acceptance. All residential water services will be 1½" copper water services. The 8" water main crossing Jefferson St. to connect to the 12" main will be augered under the street. It is anticipated that this project will place an additional average day demand of 12,950 gallons/day (0.01MGD) on the City's water supply system.

### **Sanitary Sewers**

This project is tributary to the existing sanitary sewer in Will-O-Way Park Unit 8. An 8" sanitary sewer is proposed to connect to the existing sewer in Stauffer Dr. near the intersection of Jefferson St. The sanitary sewer will be augered under Jefferson St. All remaining sanitary sewers will be 8" and all individual house services will be 6". It is estimated that the project will contribute an additional 129.5 PE (population equivalents), or 12,950 gallons per day (average), to the City wastewater collection system.

### **Storm Water Management**

Storm water facilities are generally designed based on a storm recurrence period. This period is indicative of the probability of an event occurring with a certain period of time. As an example, a 100-year storm has a one-percent chance of occurring in a given year and a 10-year storm has a ten-percent chance of occurring in a given year. Flood overflow routes have been designed to accommodate the 100-year peak event, and the storm sewers have been designed for the 10-year or 100-year storm, as deemed appropriate. The storm water management release control structure has been designed to accommodate a release rate of 0.10 cfs/acre for the 100-year design storm.

### Methodology

Rainfall data for the various design storms was obtained from the Illinois State Water Survey Circular 172 (1989) for the 24-hour storm event during various recurrence periods.

10-Year Recurrence	-	4.47-Inch Rainfall
100-Year Recurrence	-	7.58-Inch Rainfall

All storm events were analyzed assuming average soil moisture conditions (antecedent moisture condition = 2).

Hydrology for this project was developed based on the U. S. Soil Conservation Service TR-20 computer simulation model. This model is the basis for the TR-55 hydrologic approximation widely used to analyze storm water runoff. The model provides the designer with the ability to not only estimate runoff, but also to route runoff through reaches, detention ponds, etc. Although not a hydraulic model, TR-20 does provide some water surface elevation estimating capability based on level pool routing methods.

The designer has estimated the times of concentration for the various subcatchments based on land use. The time of concentration estimates were based on methods outlined in the TR-55 manual.

Curve Numbers (CN's) determine the rate of runoff from a given rainfall. They are a function of soils type and cover. For this project, CN values were obtained from Table 2-2A of the TR-55 manual. The soils that exist on the project site were found to have varying hydrologic properties and are all assumed to be disturbed soils. Table 2-2A provides typical values for curve numbers the various soils groups. For impervious areas, a curve number of 98 was used. For landscaped areas, a curve number of 80 was used. The composite curve number used for the residential portion of this project was 86 and for the school site, 90, which is based on the actual percentages of pervious, and impervious areas for the project.

The final variable in the hydrologic model is the distribution of rainfall over the storm period. The Huff Rainfall Distribution was used.

For the purposes of re-evaluating the existing stormwater management facility, TR-20 methods using a 6" SCS Type II rainfall event was used. This methodology was in effect at the time that the existing facility was constructed.

### Existing Conditions

The Jefferson Estates site currently exists as open mowed lawn and a school building with parking areas, internal roadways, etc. There is an existing detention basin on the site that was sized for the existing school development under the storm water ordinance in existence at the time of the school construction using a 6" rainfall. There is no flood plain or wetland on the site. The existing detention basin discharges to a storm sewer system in Willoway Dr. with overflow occurring into Jefferson St. Any surface flow from the site travels east on Jefferson St. to the West Branch of the DuPage River.

Residents of Willoway Dr. have reported flooding problems in their street and rear yards. This appears to be due, in part, to inadequate storm sewer sizing. The existing Calvary Temple detention basin discharges into the Willoway Dr. storm sewer system.

A portion of the restaurant site, including its parking lot, located to the east of the school site and north of Aurora Ave. is intended to drain towards the subject development. It appears that the storm sewer system for the parking lot discharges onto the school property along the east line. It also appears that there is a minor ridge on the open playing field that causes this discharge to collect along the east property line, rather than flow towards the detention basin. For the purposes of analysis, it is assumed that this runoff will eventually flow towards the subject project, and has been included in the existing and proposed conditions evaluations.

It has been reported by local residents that a portion of Green Valley Rd. and Garden Court, located to the west of the subject project, was subject to periodic flooding. This intersection is located in a depression that is drained by a 30" storm sewer that eventually drains to the 78" storm sewer in Jefferson St. at River Rd. The surface relief route is located in the side yard common to lots 82-83. The surface overflow elevation was field verified at an elevation of 694.0. This would indicate that water in the intersection might pond to a depth in excess of two feet if the storm sewer were to fail to convey the entire runoff tributary to this intersection. ROAKE AND ASSOCIATES, INC. has performed a cursory analysis of this catchment, using TR-20 methodology, to determine whether there is overtopping flow directed towards the subject property. There appears to be a slight potential for overtopping during the 25-year storm event and a greater potential for overtopping during the 50-year and 100-year events. The greatest possibility occurs during short duration storms (two hours, more or less) with total rainfalls exceeding 3" during that period. (It was assumed that the existing Will-O-Way storm sewer system capacity was limited to 15 cfs at this location, which we believe to be a conservative assumption).

### Proposed Conditions

The existing stormwater management facility will be expanded to accommodate the site development requirements. The existing berm along the outside of the basin will remain as is on the outer (east) side to minimize landscaping disruption and soil erosion problems. Within the basin, the slopes will be flattened to meet the City's current 6:1 slope criteria. The existing outlet will be relocated to discharge into the Jefferson St. 78" storm sewer system in an effort to alleviate some of the flooding problems experienced by the residents on Willoway Dr.

ROAKE AND ASSOCIATES, INC.. investigated the project site under a series of proposed drainage conditions. Since the school site will remain essentially in its current state after development of the proposed residences, the stormwater storage requirement for this portion of the tributary area will remain as is without modification. ROAKE AND ASSOCIATES, INC. analyzed the existing detention basin based on the older design criteria of a 6" 100-year 24-hour SCS Type II rainfall with an allowable release rate of 0.15 cfs/acre and found that the basin would fill and overtop during the design event. ROAKE AND ASSOCIATES, INC. proposes to provide sufficient storage for the school site in the residential detention basin, based on the 6" 100-year, 24-hour Type II rainfall event with an allowable release rate of 0.15 cfs per acre. ROAKE AND ASSOCIATES, INC. has computed the storage volume necessary to meet the criteria in effect at the time that the school was constructed and found that 3.27 acre-feet would be required with an allowable release rate of 2.61 cfs.

The residential re-development portion of the site will have its stormwater managed in the same detention basin based on the current 100-year, 7.58" 100-year storm event with a Huff third quartile rainfall distribution.

The total watershed tributary to the stormwater management facilities is 39.0± acres (original site area) for the purpose of establishing volume requirements. Separate computations for storage were made for the two criteria outlined above. It was determined that the residential development would require 7.76 acre-feet of storage with an allowable release rate of 2.16 cfs. The volume requirements were then summed to determine the total storage volume required. A total of 11.03 acre-feet, with an allowable release rate of 4.77 cfs were necessary to meet the criteria outlined above. It was found that this volume met the City's design criteria for depth of six feet, or less, with 6:1 side slopes (maximum) within the basin.

Jefferson Estates  
Naperville, IL.  
August 1, 2003  
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The basin was then checked using a composite allowable release rate based on the current design criteria of 0.10 cfs per acre allowable release for the residential development and a 0.15 cfs/acre allowable release for the school site, which yields a composite allowable release rate of 4.77 cfs. A 7.58" 100-year, 24-hour rainfall for the entire 39.0 acres, including the school site was used for the analysis. The analysis included flows in excess of the 15 cfs assumed for the Will-O-Way storm sewer capacity from the Green Valley Rd. / Garden Ct. intersection.

Two analyses were performed. Because the 78" storm sewer to which the stormwater management facility discharges may surcharge during major storm events, one analysis was performed assuming a tailwater elevation of 678.8. This elevation is approximately 0.8 feet above the 100-year flood elevation of the West Branch of the DuPage River below Jefferson St. (the point at which the 78" storm sewer discharges). The results of this analysis indicate that the high water elevation rises to 690.07 (maximum ponded depth of 7.07') with a peak discharge of 4.23 cfs. The basin overflow elevation has been established at 691.0, so there should be no by-pass flow.

The second analysis assumed that the 78" storm sewer was empty. This condition demonstrates the basin operation under maximum discharge conditions. The results of this analysis indicate that the design high water elevation rises to 689.65 (maximum ponded depth of 6.65') with a peak release rate of 4.87 cfs.

It should be noted that the high water elevations and peak discharges exceed the design parameters outlined in the initial paragraphs of this discussion. This is due to the fact that the design criteria combined information from two different rainfall events. The analysis is based on a "real-life" 7.58" 100-year, 24-hour rainfall event, so the existing school component is exceeded.

Storm sewers for the subdivision improvements will generally be sized for the 10-year event. The 10-year runoff totals will be calculated utilizing the Rational Method. At certain locations where the grading does not permit overland channelization of runoff to the detention basin, storm sewers have been sized for the 100-year event. For this project, most of the storm sewer system was sized for the 100-year event due to limitations on surface overflow routes towards the stormwater management facility. Storm sewer design spreadsheets are included as part of this final design narrative.

A summary of the results of the TR-20 analysis for the proposed stormwater management facility is as follows:

**Theoretical Composite Pond (6" & 7.58" Rainfall)**

Computed HWL :	688.87 (100-year, 24 hour)
Computed theoretical max. depth	5.87 ft.
Spillway Elevation :	691.0±
Computed Allowable Discharge	4.77 cfs
Computed Discharge :	4.57± cfs (100-year, 24 hour)
Required Storm Water	
Storage (Provided) @ 688.87	11.03 acre-ft. (0.27 ac.-ft./acre)

**Design Check (7.58" Rainfall)**  
**(Includes off-site areas)**

Computed HWL :	689.65 - 690.07 (100-year, 24 hour)
Spillway Elevation :	691.0±
Computed Discharge :	4.23 – 4.87± cfs (100-year, 24 hour)
Allowable Discharge :	3.90± cfs (100-year, 24-hour)
Required Storm Water	
Storage (Provided) @ 690.07:	14.63 acre-ft. (0.38 ac.-ft./acre)
Max. Ponded Depth:	7.07 ft.

(Discharges and high water elevations exceed the design criteria due to the fact that approximately half of the project must only meet the 6" storm criteria)

**Summary and Conclusions**

- Sufficient storm water storage is proposed for the Storm Water Management Facility, based on a release rate of 0.12± cfs/acre for the entire tributary area.
- Existing discharge into Jefferson St. will be eliminated using the proposed design for the basin with a maximum ponded depth of 7.07 feet.
- Storm sewers will convey the 10-year and/or 100-year rainfall event and overflow routes adequate to accommodate the excess from the 100-year design event have been provided.
- The project will meet all of the City's design and zoning requirements without variance.

(END)

g:/533/002/03-08-01Final Design Narrative.doc

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JOB NO. 533,002 SHEET      OF       
 PROJECT Jefferson Estates  
 SUBJECT Final Drainage Design  
 CALCULATED BY SL DATE 30 July '03  
 CHECKED BY      DATE     

Stormwater Management Storage Volume Based On:

21.57 Acres of Redevelopment  
 0.10 cfs/Ac. Release Rate @ 7.58" - 24hr Rainfall

17.41 Acres Existing  
 0.15 cfs/Ac. Release Rate @ 6.00" Type II 24hr Rainfall

Total Area = 38.98 Ac.

Composite Release Rate:

$$(0.10 \text{ cfs/Ac}) (21.57 \text{ Ac}) + (0.15 \text{ cfs/Ac}) (17.41 \text{ Ac}) = 4.77 \text{ cfs}$$

(0.122 cfs/Ac.)

Storage Req'd. for Residential Development

Area = 21.57 Ac Allowable Release - 0.10 cfs/Ac x 21.57 Ac = 2.16 cfs

CN = 86 T<sub>c</sub> = 20 min. @ 0.33 hr. 7.58" - 24hr Rainfall

04 687.81 2.01 cfs 7.76 Ac-FT Req'd.

Storage Req'd. for Existing School Site

Area = 17.41 Ac. Allowable Release - 0.15 cfs/Ac x 17.41 Ac = 2.61 cfs

CN = 90 T<sub>c</sub> = 20 min. @ 0.33 hr. 6.00" - 24hr Type II Rainfall

05 686.00 2.56 cfs 3.27 Ac-FT Req'd.

TOTAL STORAGE VOLUME REQ'D.: 7.76 Ac-FT + 3.27 Ac-FT = 11.03

11.03 Ac-FT Req'd. 4.77 cfs max. Release Rate

POND-2 Version: 5.21  
S/N:

JEFFERSON ESTATES  
PROPOSED (EXPANDED) STORAGE VOLUME  
4 SEPTEMBER 2002  
533.002

CALCULATED 07-30-2003 11:13:33  
DISK FILE: g:\533\002\020904-P.VOL

Planimeter scale: 1 inch = 1 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (acres)	A1+A2+sq(A1*A2) (acres)	* Volume (acre-ft)	Volume Sum (acre-ft)
683.00	0.00	0.00	0.00	0.00	0.00
684.00	23,472.00	0.54	0.54	0.18	0.18
685.00	75,329.00	1.73	3.23	1.08	1.26
685.96	*I*	2.29	6.01	1.92	3.18
686.00	100,900.00	2.32	6.05	2.02	3.27
687.00	108,827.00	2.50	7.22	2.41	5.68
687.72	*I*	2.63	7.70	1.85	7.53
687.81	*I*	2.65	7.72	2.09	7.76
688.00	117,044.00	2.69	7.78	2.59	8.27
688.47	*I*	2.78	8.20	1.28	9.56
688.88	*I*	2.86	8.32	2.44	10.71
689.00	125,493.00	2.88	8.35	2.78	11.06
690.00	134,187.00	3.08	8.94	2.98	14.04
690.03	*I*	3.09	9.25	0.09	14.13
690.13	*I*	3.11	9.28	0.40	14.44
691.00	143,089.00	3.28	9.55	3.18	17.22
692.00	152,219.00	3.49	10.17	3.39	20.61

\*I\* ---> Interpolated area from closest two planimeter readings.

$$IA = (\text{sq.rt}(\text{Area1}) + ((E_i - E_1) / (E_2 - E_1)) * (\text{sq.rt}(\text{Area2}) - \text{sq.rt}(\text{Area1})))^2$$

where: E1, E2 = Closest two elevations with planimeter data  
Ei = Elevation at which to interpolate area  
Area1, Area2 = Areas computed for E1, E2, respectively  
IA = Interpolated area for Ei

\* Incremental volume computed by the Conic Method for Reservoir Volumes.

$$\text{Volume} = (1/3) * (EL2 - EL1) * (\text{Area1} + \text{Area2} + \text{sq.rt.}(\text{Area1} * \text{Area2}))$$

where: EL1, EL2 = Lower and upper elevations of the increment  
Area1, Area2 = Areas computed for EL1, EL2, respectively  
Volume = Incremental volume between EL1 and EL2





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

8				684.0	1.33	0.18			
8				685.0	1.54	1.26			R
8				686.0	1.72	3.27			E
8				687.0	1.89	5.68			S
8				688.0	2.04	8.27			
8				689.0	2.18	11.06			
8				690.0	2.31	14.04			
8				691.0	2.44	17.22			
9	ENDTBL								
3	STRUCT	05							Q
8				683.0	0.0	0.0			
8				684.0	1.99	0.18			S
8				685.0	2.29	1.26			C
8				686.0	2.56	3.27			H
8				687.0	1.58	5.68			O
8				688.0	3.03	8.27			O
8				689.0	3.24	11.06			L
8				690.0	3.44	14.04			
8				691.0	3.63	17.22			
9	ENDTBL								
3	STRUCT	06							Q
8				683.0	0.0	0.0			
8				684.0	2.85	0.18			C
8				685.0	3.29	1.26			O
8				686.0	3.68	3.27			M
8				687.0	4.03	5.68			B
8				688.0	4.35	8.27			I
8				689.0	4.66	11.06			N
8				690.0	4.94	14.04			E
8				691.0	5.19	17.22			D
9	ENDTBL								
6	RUNOFF	1 001	5	0.0609	84.3	0.33	1	EXIST	
6	RESVOR	2 02 5	7	683.5			1	EXIST	
6	RUNOFF	1 002	5	0.0609	87.3	0.33	1	PROP	
6	RESVOR	2 03 5	7	683.0			1	PROP	
6	RUNOFF	1 003	3	.0337	86.0	0.33	1	RES	
6	RESVOR	2 04 3	7	683.0			1	RES	
6	RUNOFF	1 005	4	0.0272	90.0	0.33	1	SCHOOL	
6	RESVOR	2 05 4	7	683.0			1	SCHOOL	
6	ADDHYD	4 004 3 4 5							
6	RESVOR	2 06 5	7	683.0			1	COMBINED	
	ENDATA								
7	INCREM	6		.1					
7	COMPUT	7 001	06	0.0	3.04	24.08 2	1 1	2yr-24h	
	ENDCMP	1							
7	COMPUT	7 001	06	0.0	3.80	24.08 2	1 2	5YR-24HR	

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

ENDCMP	1									
7 COMPUT	7 001	06	0.0	4.47	24.08 2	1	3	10Y-24HR		
ENDCMP	1									
7 COMPUT	7 001	06	0.0	5.51	24.08 2	1	4	25Y-24HR		
ENDCMP	1									
7 COMPUT	7 001	06	0.0	6.46	24.08 2	1	5	50Y-24HR		
ENDCMP	1									
7 COMPUT	7 001	06	0.0	7.58	24.08 2	1	6	100Y-24H		
ENDCMP	1									
7 COMPUT	7 001	06	0.0	6.0	1.02 2	1	7	100Y-24H		
ENDJOB	2									

\*\*\*\*\*END OF 80-80 LIST\*\*\*\*\*

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE				
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE 1 STORM 1														
XSECTION	1	RUNOFF	.06	8	2	.10	.0	3.04	24.00	1.57	---	14.37	9.33	153.3
STRUCTURE	2	RESVOR	.06	8	2	.10	.0	3.04	24.00	1.57	688.19	16.90*	4.58*	75.2
XSECTION	2	RUNOFF	.06	8	2	.10	.0	3.04	24.00	1.80	---	14.37	10.27	168.7
STRUCTURE	3	RESVOR	.06	8	2	.10	.0	3.04	24.00	1.45	685.70	18.40?	2.67?	43.9
XSECTION	3	RUNOFF	.03	8	2	.10	.0	3.04	24.00	1.70	---	14.37	5.46	162.1
STRUCTURE	4	RESVOR	.03	8	2	.10	.0	3.04	24.00	1.46	685.05	18.30?	1.55?	45.9
XSECTION	5	RUNOFF	.03	8	2	.10	.0	3.04	24.00	2.02	---	14.36	4.95	182.0
STRUCTURE	5	RESVOR	.03	8	2	.10	.0	3.04	24.00	2.02	684.60	17.00*	2.17*	79.8
XSECTION	4	ADDHYD	.06	8	2	.10	.0	3.04	24.00	1.84	---	14.36	10.41	171.0
STRUCTURE	6	RESVOR	.06	8	2	.10	.0	3.04	24.00	1.82	685.47	17.40*	3.47*	57.0
ALTERNATE 1 STORM 2														
XSECTION	1	RUNOFF	.06	8	2	.10	.0	3.80	24.00	2.22	---	14.37	12.74	209.2
STRUCTURE	2	RESVOR	.06	8	2	.10	.0	3.80	24.00	2.22	689.15	17.10*	5.06*	83.1
XSECTION	2	RUNOFF	.06	8	2	.10	.0	3.80	24.00	2.48	---	14.36	13.70	225.0
STRUCTURE	3	RESVOR	.06	8	2	.10	.0	3.80	24.00	1.63	686.43	20.60	2.87	47.2
XSECTION	3	RUNOFF	.03	8	2	.10	.0	3.80	24.00	2.36	---	14.36	7.36	218.3
STRUCTURE	4	RESVOR	.03	8	2	.10	.0	3.80	24.00	1.63	685.48	20.60	1.63	48.2
XSECTION	5	RUNOFF	.03	8	2	.10	.0	3.80	24.00	2.73	---	14.36	6.48	238.1
STRUCTURE	5	RESVOR	.03	8	2	.10	.0	3.80	24.00	2.71	685.06	17.10*	2.31*	84.8
XSECTION	4	ADDHYD	.06	8	2	.10	.0	3.80	24.00	2.53	---	14.36	13.83	227.1
STRUCTURE	6	RESVOR	.06	8	2	.10	.0	3.80	24.00	2.09	686.15	18.30?	3.73?	61.3
ALTERNATE 1 STORM 3														
XSECTION	1	RUNOFF	.06	8	2	.10	.0	4.47	24.00	2.81	---	14.36	15.76	258.8
STRUCTURE	2	RESVOR	.06	8	2	.10	.0	4.47	24.00	2.76	689.83	17.30*	5.38*	88.3
XSECTION	2	RUNOFF	.06	8	2	.10	.0	4.47	24.00	3.10	---	14.36	16.72	274.5
STRUCTURE	3	RESVOR	.06	8	2	.10	.0	4.47	24.00	1.77	687.11	23.00?	3.05?	50.0
XSECTION	3	RUNOFF	.03	8	2	.10	.0	4.47	24.00	2.97	---	14.36	9.03	267.9
STRUCTURE	4	RESVOR	.03	8	2	.10	.0	4.47	24.00	1.77	685.92	22.90?	1.70?	50.6
XSECTION	5	RUNOFF	.03	8	2	.10	.0	4.47	24.00	3.36	---	14.35	7.81	287.3
STRUCTURE	5	RESVOR	.03	8	2	.10	.0	4.47	24.00	3.06	685.34	18.10?	2.38?	87.6
XSECTION	4	ADDHYD	.06	8	2	.10	.0	4.47	24.00	3.15	---	14.36	16.84	276.5
STRUCTURE	6	RESVOR	.06	8	2	.10	.0	4.47	24.00	2.28	686.74	20.50	3.94	64.7

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 1 STORM 4													
XSECTION 1	RUNOFF	.06	8	2	.10	.0	5.51	24.00	3.77	---	14.36	20.45	335.8
STRUCTURE 2	RESVOR	.06	8	2	.10	.0	5.51	24.00	3.18	690.70	18.20?	5.76?	94.6
XSECTION 2	RUNOFF	.06	8	2	.10	.0	5.51	24.00	4.08	---	14.36	21.38	351.1
STRUCTURE 3	RESVOR	.06	8	2	.10	.0	5.51	24.00	1.95	688.16	23.00?	3.30?	54.1
XSECTION 3	RUNOFF	.03	8	2	.10	.0	5.51	24.00	3.94	---	14.36	11.62	344.7
STRUCTURE 4	RESVOR	.03	8	2	.10	.0	5.51	24.00	1.93	686.55	23.00?	1.81?	53.8
XSECTION 5	RUNOFF	.03	8	2	.10	.0	5.51	24.00	4.37	---	14.35	9.88	363.1
STRUCTURE 5	RESVOR	.03	8	2	.10	.0	5.51	24.00	3.38	685.83	18.30?	2.51?	92.4
XSECTION 4	ADDHYD	.06	8	2	.10	.0	5.51	24.00	4.13	---	14.35	21.49	352.9
STRUCTURE 6	RESVOR	.06	8	2	.10	.0	5.51	24.00	2.52	687.72	22.90?	4.26?	69.9
ALTERNATE 1 STORM 5													
XSECTION 1	RUNOFF	.06	8	2	.10	.0	6.46	24.00	4.66	---	14.36	24.71	405.8
STRUCTURE 2	RESVOR	.06	8	2	.10	.0	6.46	24.00	3.47	691.52	18.50?	6.11?	100.4
XSECTION 2	RUNOFF	.06	8	2	.10	.0	6.46	24.00	4.99	---	14.35	25.61	420.5
STRUCTURE 3	RESVOR	.06	8	2	.10	.0	6.46	24.00	2.10	689.08	23.00?	3.51?	57.6
XSECTION 3	RUNOFF	.03	8	2	.10	.0	6.46	24.00	4.84	---	14.35	13.97	414.4
STRUCTURE 4	RESVOR	.03	8	2	.10	.0	6.46	24.00	2.07	687.14	23.00?	1.91?	56.7
XSECTION 5	RUNOFF	.03	8	2	.10	.0	6.46	24.00	5.29	---	14.35	11.75	431.8
STRUCTURE 5	RESVOR	.03	8	2	.10	.0	6.46	24.00	3.44	686.00	27.10?	2.56?	94.1
XSECTION 4	ADDHYD	.06	8	2	.10	.0	6.46	24.00	5.04	---	14.35	25.71	422.2
STRUCTURE 6	RESVOR	.06	8	2	.10	.0	6.46	24.00	2.72	688.62	23.00?	4.54?	74.6
ALTERNATE 1 STORM 6													
XSECTION 1	RUNOFF	.06	8	2	.10	.0	7.58	24.00	5.72	---	14.35	29.72	488.0
STRUCTURE 2	RESVOR	.06	8	2	.10	.0	7.58	24.00	3.79	692.58	20.50	6.57	107.9
XSECTION 2	RUNOFF	.06	8	2	.10	.0	7.58	24.00	6.07	---	14.35	30.57	501.9
STRUCTURE 3	RESVOR	.06	8	2	.10	.0	7.58	24.00	2.25	690.13	23.00?	3.73?	61.2
XSECTION 3	RUNOFF	.03	8	2	.10	.0	7.58	24.00	5.92	---	14.35	16.72	496.2
STRUCTURE 4	RESVOR	.03	8	2	.10	.0	7.58	24.00	2.21	687.81	23.00?	2.01?	59.7
XSECTION 5	RUNOFF	.03	8	2	.10	.0	7.58	24.00	6.39	---	14.35	13.94	512.4
STRUCTURE 5	RESVOR	.03	8	2	.10	.0	7.58	24.00	3.02	685.99	14.00	2.56	94.0
XSECTION 4	ADDHYD	.06	8	2	.10	.0	7.58	24.00	6.13	---	14.35	30.66	503.4
STRUCTURE 6	RESVOR	.06	8	2	.10	.0	7.58	24.00	2.93	689.66	23.00?	4.84?	79.6

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE				
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE	1	STORM	7											
XSECTION	1	RUNOFF	.06	2	2	.10	.0	6.00	24.00	4.23	---	12.09	168.77	2771.3
STRUCTURE	2	RESVOR	.06	2	2	.10	.0	6.00	24.00	3.07	691.95	14.90?	6.30?	103.4
XSECTION	2	RUNOFF	.06	2	2	.10	.0	6.00	24.00	4.55	---	12.09	178.98	2938.9
STRUCTURE	3	RESVOR	.06	2	2	.10	.0	6.00	24.00	1.82	688.88	19.90?	3.46?	56.8
XSECTION	3	RUNOFF	.03	2	2	.10	.0	6.00	24.00	4.41	---	12.09	96.65	2868.0
STRUCTURE	4	RESVOR	.03	2	2	.10	.0	6.00	24.00	1.77	687.03	19.90?	1.89?	56.2
XSECTION	5	RUNOFF	.03	2	2	.10	.0	6.00	24.00	4.85	---	12.09	83.66	3075.6
STRUCTURE	5	RESVOR	.03	2	2	.10	.0	6.00	24.00	2.68	686.00	29.30?	2.56?	94.1
XSECTION	4	ADDHYD	.06	2	2	.10	.0	6.00	24.00	4.61	---	12.09	180.30	2960.6
STRUCTURE	6	RESVOR	.06	2	2	.10	.0	6.00	24.00	2.37	688.65	17.00?	4.55?	74.7

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

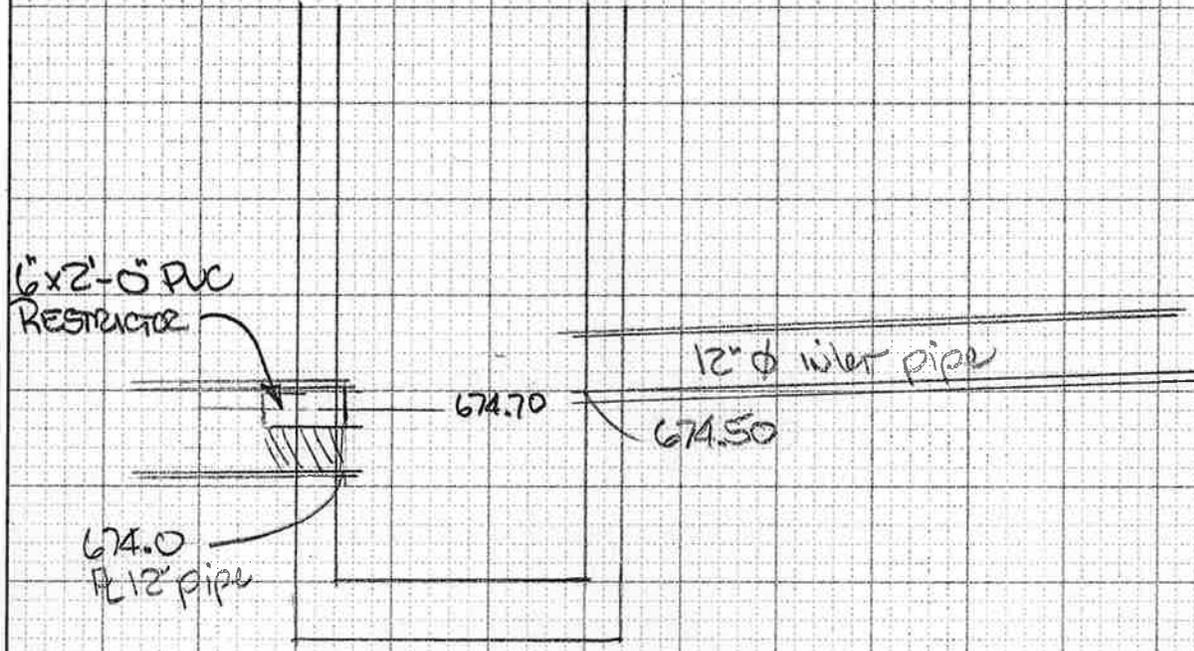
XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....						
		1	2	3	4	5	6	7
STRUCTURE 6	.06							
ALTERNATE 1		3.47	3.73	3.94	4.26	4.54	4.84	4.55
STRUCTURE 5	.03							
ALTERNATE 1		2.17	2.31	2.38	2.51	2.56	2.56	2.56
STRUCTURE 4	.03							
ALTERNATE 1		1.55	1.63	1.70	1.81	1.91	2.01	1.89
STRUCTURE 3	.06							
ALTERNATE 1		2.67	2.87	3.05	3.30	3.51	3.73	3.46
STRUCTURE 2	.06							
ALTERNATE 1		4.58	5.06	5.38	5.76	6.11	6.57	6.30
XSECTION 1	.06							
ALTERNATE 1		9.33	12.74	15.76	20.45	24.71	29.72	168.77
XSECTION 2	.06							
ALTERNATE 1		10.27	13.70	16.72	21.38	25.61	30.57	178.98
XSECTION 3	.03							
ALTERNATE 1		5.46	7.36	9.03	11.62	13.97	16.72	96.65
XSECTION 4	.06							
ALTERNATE 1		10.41	13.83	16.84	21.49	25.71	30.66	180.30
XSECTION 5	.03							
ALTERNATE 1		4.95	6.48	7.81	9.88	11.75	13.94	83.66

**ROAKE AND ASSOCIATES, INC.**

1887 HIGH GROVE LANE  
 NAPERVILLE, ILLINOIS 60540  
 TEL: (630) 355-3232  
 FAX: (630) 355-3267

JOB NO. 533,002 SHEET      OF       
 PROJECT Jederson Estates  
 SUBJECT Revised Outlet Design  
 CALCULATED BY SL DATE 29 July '03  
 CHECKED BY      DATE     

Outlet Design Assumptions - 6" orifice



$\phi$  ORIFICE = 673.50  $\pm$   $Q = C A \sqrt{2gh}$   $C = 0.80$   $A = 0.1963 \text{ ft}^2$   
 $C_d = 0.1571$

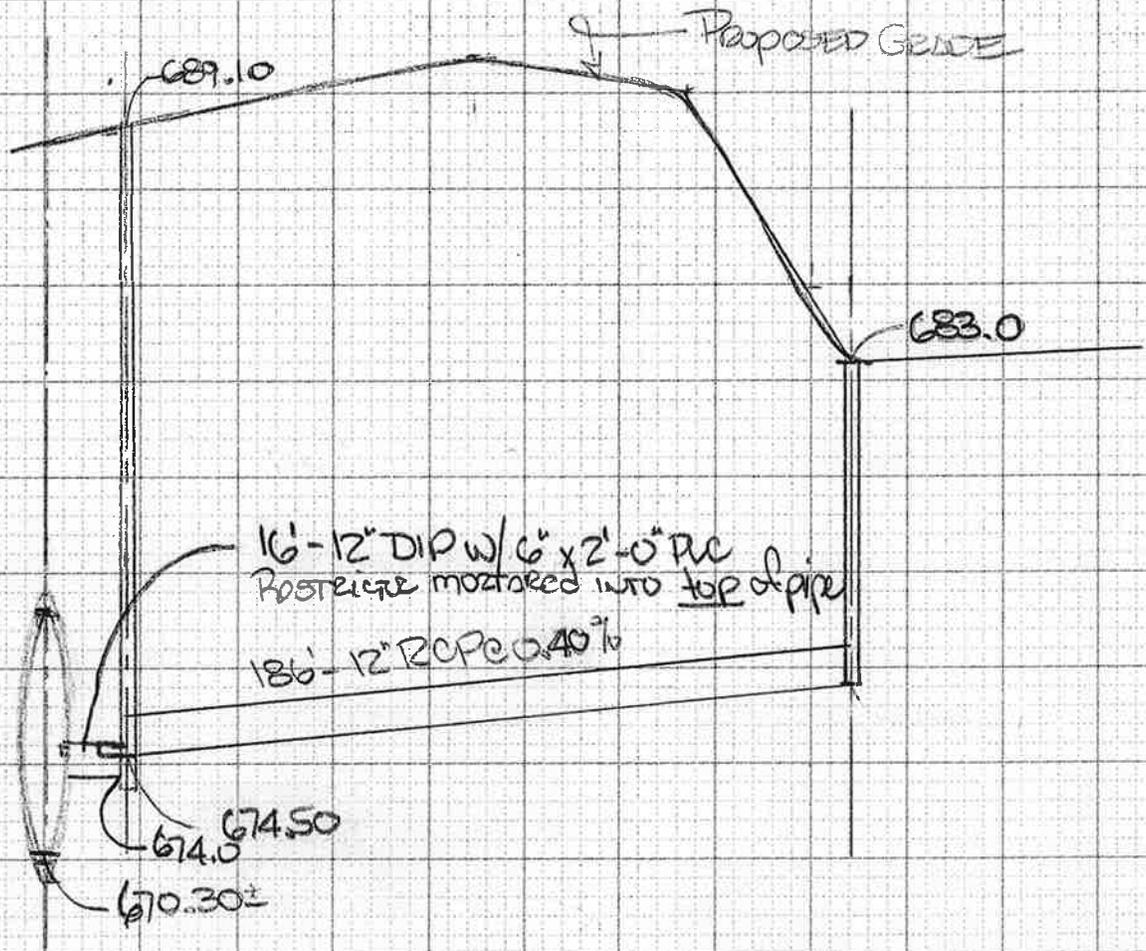
DOWNSTREAM PIPE Empty Condition W/TW = 678.8  $\pm$

STAGE	H	Q	Q	H	Q	
683.0	—	—	0 cfs	—	—	
684.0	9.3'	3.84		5.20	2.87	
685.0	10.3'	4.05		6.20	3.14	
686.0	11.3'	4.24		7.20	3.38	
687.0	12.3'	4.42		8.20	3.61	
688.0	13.3'	4.60		9.20	3.82	
689.0	14.3'	4.77		10.2	4.03	
690.0	15.3'	4.93		11.2	4.22	
691.0	16.3'	5.10		12.3	4.42	
692.0	17.3'	5.24 cfs		13.2	4.58 cfs	
DHW <sub>100(24)</sub> = 689.65		4.87 cfs		DHW <sub>100(24)</sub> = 690.07		4.23 cfs

**ROAKE AND ASSOCIATES, INC.**

1887 HIGH GROVE LANE  
NAPERVILLE, ILLINOIS 60540  
TEL: (630) 355-3232  
FAX: (630) 355-3267

JOB NO. 533,002 SHEET \_\_\_ OF \_\_\_  
PROJECT Jalilovson Estates  
SUBJECT Release Structure Design  
CALCULATED BY SR DATE 29 July '03  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_



Revised Release Structure for Dry Bottom w/ Underdrain

For peak discharge (allowable) assume 78" SS is empty

For peak storage, assume 78" SS surcharged 2' or TW = 678.80

Orifice = 674.70

Jefferson Estates  
Naperville, IL  
533.002  
07/28/03 (enlarged basin)

CALCULATED 07-31-2003 10:49:58  
DISK FILE: g:\533\002\030728-2.VOL

Planimeter scale: 1 inch = 1 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (acres)	A1+A2+sq.r(A1*A2) (acres)	* Volume (acre-ft)	Volume Sum (acre-ft)
683.00	0.00	0.00	0.00	0.00	0.00
684.00	34,555.00	0.79	0.79	0.26	0.26
685.00	77,831.00	1.79	3.77	1.26	1.52
686.00	101,687.00	2.33	6.16	2.05	3.58
687.00	109,713.00	2.52	7.28	2.43	6.00
688.00	117,810.00	2.70	7.83	2.61	8.61
688.87	*I*	2.87	8.35	2.42	11.04
689.00	125,896.00	2.89	8.39	2.80	11.41
689.65	*I*	3.03	8.88	1.92	13.33
690.00	135,361.00	3.11	8.99	3.00	14.41
690.07	*I*	3.13	9.35	0.22	14.63
691.00	146,726.00	3.37	9.71	3.24	17.64
692.00	164,618.00	3.78	10.72	3.57	21.22

\*I\* ---> Interpolated area from closest two planimeter readings.

$$IA = (\text{sq. rt}(\text{Area1}) + ((E_i - E_1) / (E_2 - E_1)) * (\text{sq. rt}(\text{Area2}) - \text{sq. rt}(\text{Area1})))^2$$

where: E1, E2 = Closest two elevations with planimeter data  
Ei = Elevation at which to interpolate area  
Area1, Area2 = Areas computed for E1, E2, respectively  
IA = Interpolated area for Ei

\* Incremental volume computed by the Conic Method for Reservoir Volumes.

$$\text{Volume} = (1/3) * (EL2 - EL1) * (\text{Area1} + \text{Area2} + \text{sq. rt.}(\text{Area1} * \text{Area2}))$$

where: EL1, EL2 = Lower and upper elevations of the increment  
Area1, Area2 = Areas computed for EL1, EL2, respectively  
Volume = Incremental volume between EL1 and EL2

**ROAKE AND ASSOCIATES, INC.**

1887 HIGH GROVE LANE  
NAPERVILLE, ILLINOIS 60540  
TEL: (630) 355-3232  
FAX: (630) 355-3267

JOB NO. 533,002 SHEET      OF       
PROJECT JEFFERSON ESTATES  
SUBJECT OFF-SITE DRAINAGE  
CALCULATED BY SL DATE 24 Nov 03  
CHECKED BY      DATE     

OFF-SITE DRAINAGE

GREEN VALLEY DR. OVEEFLOW

CATCHMENT AREA - Tributary to INTERSECTION OF 15.4 AC  
Green Valley Dr. & Garden Cr.

SURFACE OVEEFLOW @ LOTS 82-83 OCCURS @ 694.0

DEPRESSIONAL STORAGE VOLUME BELOW 694.0  
IN STREET INTERSECTION  $\approx 0.8$  AC-Ft.

30" STORM SEWER DRAINING INTERSECTION

ASSUMED CAPACITY  $\approx 15$  cfs (PEAK)

ASSUME COMPOSITE CN = 85.0  $T_c = 12$  min.

ASSUME SIDEYARD SWALE IS 1.0% DITCH

U-bottom 25:1 Side Slopes

d = 0.2'	Q = 0.85
0.4'	5.42
0.6'	16.00

Overtopping - Expected @ 25 yr - 2hr Storm

Critical Overtop = 100 yr - 2 hr 694.53  $Q = 27.15 =$   
12 ± cfs

For the peak rainfall event - (4.47" in 2hrs)

ONE might expect up to 3' water in  
Green Valley / Garden Cr. Street intersection

Int. Storage Capacity is exceeded for rainfall  
in excess of: 3" in 2hrs  
24" in 30min  
3" in 1hr

POND-2 Version: 5.21

S/N:

JEFFERSON ESTATES - OFFSITE  
NAPERVILLE, IL.  
GREEN VALLEY DR. DEPRESSION  
533.002

CALCULATED 03-24-2003 13:10:41  
DISK FILE: G:\533\002\OFFSITE .VOL

Planimeter scale: 1 inch = 1 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (acres)	A1+A2+sq(A1*A2) (acres)	* Volume (acre-ft)	Volume Sum (acre-ft)
692.00	0.00	0.00	0.00	0.00	0.00
694.00	54,702.00	1.26	1.26	0.84	0.84
694.20	60,000.00	1.38	3.95	0.26	1.10

\* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume =  $(1/3) * (EL2-EL1) * (Area1 + Area2 + \text{sq.rt.}(Area1*Area2))$

where: EL1, EL2 = Lower and upper elevations of the increment  
Area1, Area2 = Areas computed for EL1, EL2, respectively  
Volume = Incremental volume between EL1 and EL2

**ROAKE AND ASSOCIATES, INC.**

1887 HIGH GROVE LANE  
 NAPERVILLE, ILLINOIS 60540  
 TEL: (630) 355-3232  
 FAX: (630) 355-3267

JOB NO. 533.002 SHEET      OF       
 PROJECT Jefferson Estates  
 SUBJECT Drainage  
 CALCULATED BY SL DATE 22 Apr 03  
 CHECKED BY      DATE     

OFF-SITE TRIB. AREA C-11

COMPOSITE CN

PERVIOUS AREA : 5.34 Ac @ 80  
 IMPERVIOUS AREA: 4.32 Ac @ 98  
 TOTAL 9.66 Ac. 88.04 USE: 88

STAGE	Discharge (cfs)	STORAGE (Ac-Ft.)	
691.0	-0-	-0-	357'-42" ROP @ 1.00%
692.0	60	0.01	USPL = 689.0
693.0	72	0.06	DSPL = 685.43
694.0	82	0.28	

Premit	d	S	
Premit	2'	1.00%	63
	3'	1.00%	104
Subchan	4'	1.14%	107
	5'	1.42%	120

692.0	60 cfs
692.5	62 cfs
693.0	72 cfs
694.0	82 cfs

OFF-SITE TRIB. AREA D-16

COMPOSITE CN

PERVIOUS AREA : 1.62 Ac. @ 80  
 IMPERVIOUS AREA: 2.18 Ac. @ 98  
 TOTAL: 3.80 Ac. @ 90.32 USE: 90

OFF-SITE TRIB AREA D-17

COMPOSITE CN

PERVIOUS AREA : 8.04 Ac. @ 77  
 IMPERVIOUS AREA : 2.01 Ac @ 98  
 TOTAL: 10.05 Ac @ 81.2 USE: 81



POND-2 Version: 5.21  
S/N:

JEFFERSON ESTATES  
NAPERVILLE, IL.  
VOLUME @ 42" RCP  
23 April 2003

CALCULATED 04-23-2003 13:17:00  
DISK FILE: g:\533\002\VOLAT42 .VOL

Planimeter scale: 1 inch = 1 ft.

Elevation (ft)	Planimeter (sq.in.)	Area (acres)	A1+A2+sqrt(A1*A2) (acres)	* Volume (acre-ft)	Volume Sum (acre-ft)
691.00	0.00	0.00	0.00	0.00	0.00
692.00	860.00	0.02	0.02	0.01	0.01
693.00	4,100.00	0.09	0.16	0.05	0.06
694.00	16,800.00	0.39	0.67	0.22	0.28

\* Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) \* (EL2-EL1) \* (Area1 + Area2 + sq.rt.(Area1\*Area2))

where: EL1, EL2 = Lower and upper elevations of the increment  
Area1, Area2 = Areas computed for EL1, EL2, respectively  
Volume = Incremental volume between EL1 and EL2

**ROAKE AND ASSOCIATES, INC.**

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NAPERVILLE, ILLINOIS 60540  
TEL: (630) 355-3232  
FAX: (630) 355-3267

JOB NO. 532,002 SHEET      OF       
PROJECT Jefferson Estates  
SUBJECT Inlet Capacities  
CALCULATED BY SE DATE       
CHECKED BY      DATE     

Inlet Capacity Analysis

Inlet # D<sub>16</sub> Q = 26.9 cfs

Inlet # D<sub>17</sub> Q = 31.8 cfs

Neenah R-3807 Fe&Ge. (IDOT STD 2240)

GRATE type - K SF opening - 6.0 Weir Perimeter - 13.4 LF

Ponded depth - 1.5'

Capacity - 35 cfs

Neenah R4340A Fe&Ge. SF opening - 1.5 Weir Perimeter 6.2

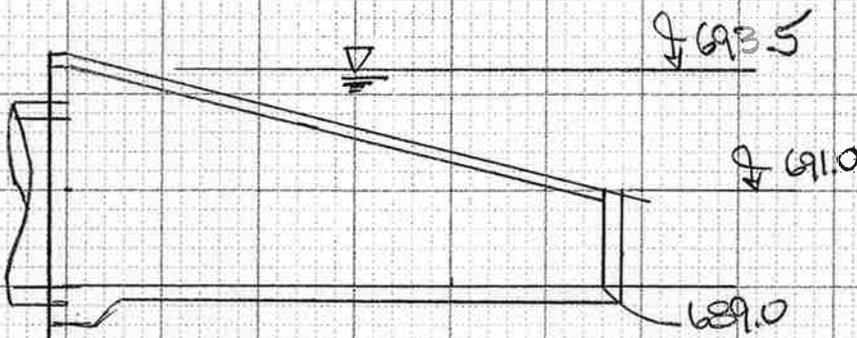
Capacity 8.8 cfs

Neenah R 6118 Fe&Ge SF = 2.6 Per. 9.9 LF

Capacity 15.2 cfs

USE: IDOT 2240-6 w/ Neenah R3807 Fe&Ge.

For Structure C-11 (Slope box) Ponded depth = 2.5' max.  
Q = 62.2 cfs



Assume: Avg. Ponded depth = 1.25'

R3808-2 SF = 10.3 L = 19.9 Capacity = 57 cfs (28' wide)

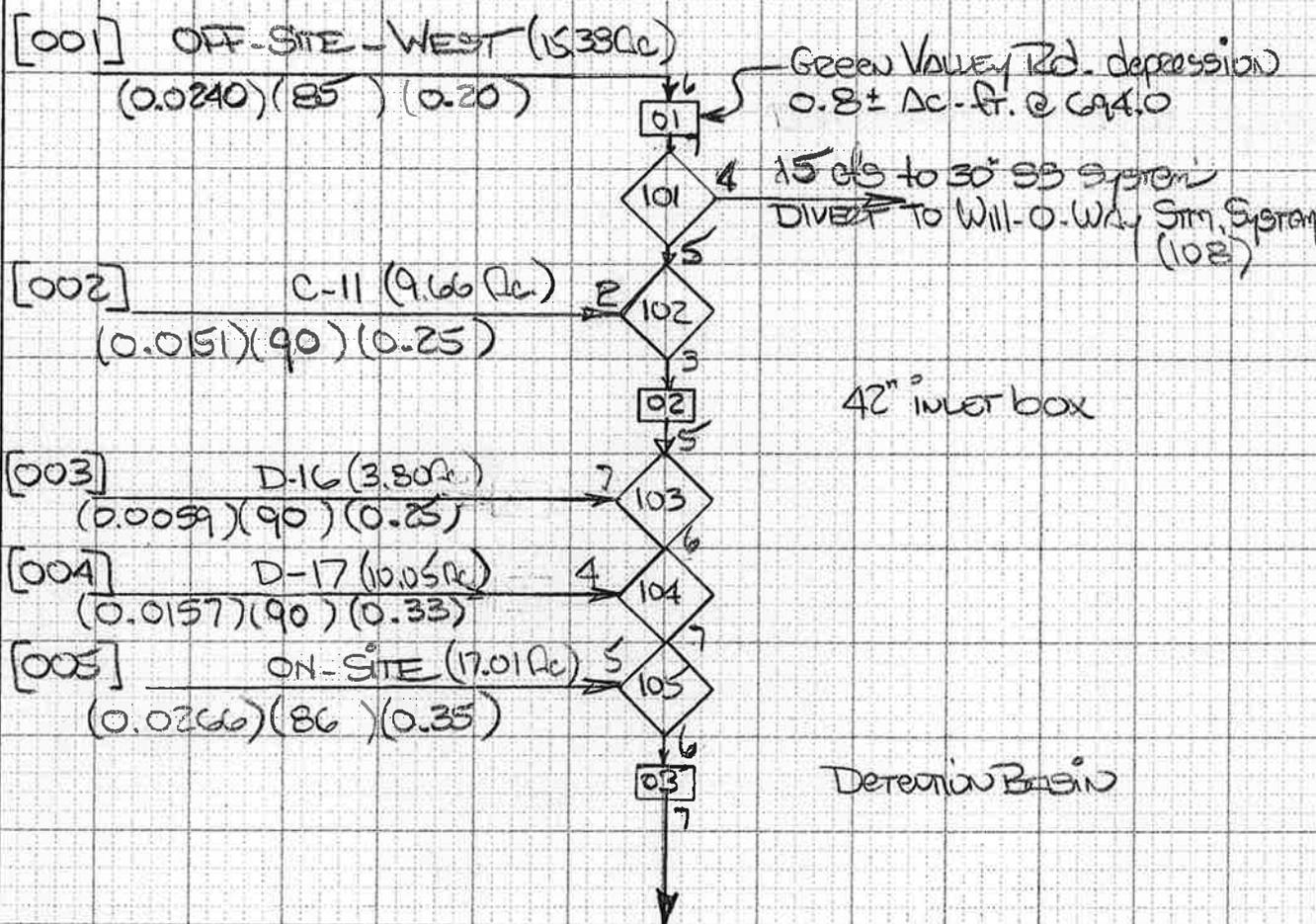
USE: 3801-8 Series

**ROAKE AND ASSOCIATES, INC.**

1887 HIGH GROVE LANE  
 NAPERVILLE, ILLINOIS 60540  
 TEL: (630) 355-3232  
 FAX: (630) 355-3267

JOB NO. 533.002 SHEET      OF       
 PROJECT Jefferson Estates  
 SUBJECT Final Stormwater Plan  
 CALCULATED BY SL DATE 21 Apr 03  
 CHECKED BY      DATE     

DESCRIPTION of Catchment  
AREA-SM (CN) To-hrs



TOTAL Direct Tributary Area = 40.52 Ac.  
 Indirect Area (Will-o-Way) = 15.38 Ac.



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

JOB TR-20  
 TITLE 000 ROAKE AND ASSOCIATES, INC. PASS= 1 SUMMARY NOPLOTS  
 TITLE Jefferson Estates, Naperville, IL. G:\533\002\PROP-1.T20

5	RAINFL 6		0.05				
8		0.00	0.16	0.33	0.43	0.52	H
8		0.60	0.66	0.71	0.75	0.79	U
8		0.82	0.84	0.86	0.88	0.90	F
8		0.92	0.94	0.96	0.97	0.98	F
8		1.00	1.00	1.00	1.00	1.00	1
9	ENDTBL						
5	RAINFL 7		0.05				
8		0.00	0.03	0.08	0.12	0.16	H
8		0.22	0.29	0.39	0.51	0.62	U
8		0.70	0.76	0.81	0.85	0.88	F
8		0.91	0.93	0.95	0.97	0.98	F
8		1.00	1.00	1.00	1.00	1.00	2
9	ENDTBL						
5	RAINFL 8		0.05				
8		0.00	0.03	0.06	0.09	0.12	H
8		0.15	0.19	0.23	0.27	0.32	U
8		0.38	0.45	0.57	0.70	0.79	F
8		0.85	0.89	0.92	0.95	0.97	F
8		1.00	1.00	1.00	1.00	1.00	3
9	ENDTBL						
5	RAINFL 9		0.05				
8		0.00	0.02	0.05	0.08	0.10	H
8		0.13	0.16	0.19	0.22	0.25	U
8		0.28	0.32	0.35	0.39	0.45	F
8		0.51	0.59	0.72	0.84	0.92	F
8		1.00	1.00	1.00	1.00	1.00	4
9	ENDTBL						
3	STRUCT 02						
8			691.0	0.0	0.0		
8			692.0	60.0	0.01		
8			693.0	72.0	0.06		
8			694.0	82.0	0.28		
9	ENDTBL						
3	STRUCT 01						
8			692.0	0.0	0.0		
8			694.0	15.0	0.80		
8			694.2	15.9	1.0		
8			694.4	20.4	1.2		
8			694.6	31.0	1.4		
9	ENDTBL						
3	STRUCT 03						
8			683.0	0.0	0.0		

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

8				684.0	3.84			0.26	
8				685.0	4.05			1.52	
8				686.0	4.24			3.58	
8				687.0	4.42			6.00	
8				688.0	4.60			8.61	
8				689.0	4.77			11.41	
8				690.0	4.93			14.41	
8				691.0	5.10			17.64	
8				692.0	5.24			21.22	
9	ENDTBL								
6	RUNOFF	1	001	6	0.0240	85.0		0.20	1
6	RESVOR	2		01 6 7	692.0				1
6	DIVERT	6	101	7 4 5	15.0			108.	1
6	RUNOFF	1	002	2	0.0151	90.		0.25	1
6	ADDHYD	4	102	5 2 3					1
6	RESVOR	2		02 3 5	691.0				1
6	RUNOFF	1	003	7	0.0059	90.		0.25	1
6	ADDHYD	4	103	5 7 6					1
6	RUNOFF	1	004	4	0.0157	90.		0.33	1
6	ADDHYD	4	104	4 6 7					1
6	RUNOFF	1	005	5	0.0266	86.		0.35	1
6	ADDHYD	4	105	5 7 6					1
6	RESVOR	2		03 6 7	683.0				1
	ENDATA								
7	INCREM	6			0.10				
7	COMPUT	7	001	03	0.0	0.36	0.08336 2	5 2	2YR-5MN
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	0.67	0.16676 2	10 2	2YR-10MN
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	0.82	0.256 2	15 2	2YR-15MN
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	1.12	0.56 2	30 2	2YR-30MN
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	1.43	1.06 2	1 2	2YR-1HR
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	1.79	2.06 2	2 2	2YR-2HR
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	1.94	3.06 2	3 2	2YR-3HR
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	2.28	6.06 2	6 2	2YR-6HR
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	2.64	12.07 2	12 2	2YR-12HR
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	2.79	18.07 2	18 2	2YR-18HR
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	3.04	24.08 2	24 2	2YR-24HR





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

ENDCMP 1										
7 COMPUT 7 001	03	0.0	2.05	0.256 2	15	99	100Y-15M			
ENDCMP 1										
7 COMPUT 7 001	03	0.0	2.80	0.56 2	30	99	100Y-30M			
ENDCMP 1										
7 COMPUT 7 001	03	0.0	3.56	1.06 2	1	99	100Y-1HR			
ENDCMP 1										
7 COMPUT 7 001	03	0.0	4.47	2.06 2	2	99	100Y-2HR			
ENDCMP 1										
7 COMPUT 7 001	03	0.0	4.85	3.06 2	3	99	100Y-3HR			
ENDCMP 1										
7 COMPUT 7 001	03	0.0	5.68	6.06 2	6	99	100Y-6HR			
ENDCMP 1										
7 COMPUT 7 001	03	0.0	6.59	12.07 2	12	99	100Y-12H			
ENDCMP 1										
7 COMPUT 7 001	03	0.0	6.97	18.07 2	18	99	100Y-18H			
ENDCMP 1										
7 COMPUT 7 001	03	0.0	7.58	24.08 2	24	99	100Y-24H			
ENDCMP 1										
7 INCREM 6		0.2								
7 COMPUT 7 001	03	0.0	8.16	48.09 2	48	99	100Y-48H			
ENDCMP 1										
7 INCREM 6		0.3								
7 COMPUT 7 001	03	0.0	8.78	72.09 2	72	99	100Y-72H			
ENDCMP 1										
ENDJOB 2										

\*\*\*\*\*END OF 80-80 LIST\*\*\*\*\*

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 5 STORM 2													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	.36	.08	.00	---	.00	.00	.0
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.36	.08	.00	---	.00	.00	.0
XSECTION 101	DIVERT	.00	6	2	.10	.0	.36	.08	.00	---	.00	.00	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	.36	.08	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	.36	.08	.01	---	.20?	.64?	42.2
XSECTION 102	ADDHYD	.04	6	2	.10	.0	.36	.08	.01	---	.20?	.64?	16.3
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.36	.08	.01	691.01	.20	.62	15.9
XSECTION 3	RUNOFF	.01	6	2	.10	.0	.36	.08	.01	---	.20?	.25?	42.2
XSECTION 103	ADDHYD	.04	6	2	.10	.0	.36	.08	.01	---	.20?	.87?	19.4
XSECTION 4	RUNOFF	.02	6	2	.10	.0	.36	.08	.02	---	.30?	.50?	32.2
XSECTION 104	ADDHYD	.06	6	2	.10	.0	.36	.08	.01	---	.24	1.36	22.5
XSECTION 5	RUNOFF	.03	6	2	.10	.0	.36	.08	.00	---	.30?	.04?	1.5
XSECTION 105	ADDHYD	.09	6	2	.10	.0	.36	.08	.01	---	.24	1.39	16.0
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.36	.08	.01	683.08	.50?	.32?	3.6
ALTERNATE 10 STORM 2													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	.67	.17	.05	---	.23	3.41	142.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.67	.17	.05	692.11	.40?	.82?	34.2
XSECTION 101	DIVERT	.00	6	2	.10	.0	.67	.17	.05	---	.40?	.82?	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	.67	.17	.00	---	.00?	.00?	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	.67	.17	.13	---	.26	4.66	308.6
XSECTION 102	ADDHYD	.04	6	2	.10	.0	.67	.17	.05	---	.26	4.66	119.2
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.67	.17	.05	691.08	.26	4.71	120.4
XSECTION 3	RUNOFF	.01	6	2	.10	.0	.67	.17	.13	---	.26	1.82	308.6
XSECTION 103	ADDHYD	.04	6	2	.10	.0	.67	.17	.06	---	.26	6.53	145.0
XSECTION 4	RUNOFF	.02	6	2	.10	.0	.67	.17	.13	---	.31	4.16	265.1
XSECTION 104	ADDHYD	.06	6	2	.10	.0	.67	.17	.08	---	.28	10.50	172.9
XSECTION 5	RUNOFF	.03	6	2	.10	.0	.67	.17	.06	---	.33	3.17	119.0
XSECTION 105	ADDHYD	.09	6	2	.10	.0	.67	.17	.07	---	.29	13.46	154.2
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.67	.17	.07	683.89	.54	3.43	39.3
ALTERNATE 15 STORM 2													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	.82	.25	.10	---	.28	5.89	245.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.82	.25	.10	692.22	.48	1.62	67.6

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR (\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 15 STORM 2													
XSECTION 101	DIVERT	.00	6	2	.10	.0	.82	.25	.10	---	.48	1.62	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	.82	.25	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	.82	.25	.21	---	.29	6.96	461.0
XSECTION 102	ADDHYD	.04	6	2	.10	.0	.82	.25	.08	---	.29	6.96	178.0
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.82	.25	.08	691.12	.29	7.02	179.6
XSECTION 3	RUNOFF	.01	6	2	.10	.0	.82	.25	.21	---	.29	2.72	461.0
XSECTION 103	ADDHYD	.04	6	2	.10	.0	.82	.25	.10	---	.29	9.74	216.5
XSECTION 4	RUNOFF	.02	6	2	.10	.0	.82	.25	.21	---	.34	6.11	389.4
XSECTION 104	ADDHYD	.06	6	2	.10	.0	.82	.25	.13	---	.31	15.63	257.4
XSECTION 5	RUNOFF	.03	6	2	.10	.0	.82	.25	.12	---	.38	5.52	207.6
XSECTION 105	ADDHYD	.09	6	2	.10	.0	.82	.25	.12	---	.32	20.69	237.0
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.82	.25	.12	684.12	.60*	3.87*	44.3
ALTERNATE 30 STORM 2													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.12	.50	.23	---	.32	9.37	390.5
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.12	.50	.23	692.47	.63	3.49	145.6
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.12	.50	.23	---	.63	3.49	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.12	.50	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.12	.50	.40	---	.33	9.65	639.4
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.12	.50	.15	---	.33	9.65	246.9
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.12	.50	.15	691.16	.33	9.69	247.7
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.12	.50	.40	---	.33	3.77	639.4
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.12	.50	.19	---	.33	13.46	299.1
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.12	.50	.40	---	.40	8.63	549.8
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.12	.50	.24	---	.35	21.68	357.2
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.12	.50	.26	---	.44	9.23	346.9
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.12	.50	.25	---	.39	29.27	335.3
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.12	.50	.25	684.52	.87	3.95	45.2
ALTERNATE 1 STORM 2													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.43	1.00	.41	---	.42	10.35	431.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.43	1.00	.41	692.62	.93	4.66	194.0
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.43	1.00	.41	---	.93	4.66	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.43	1.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.43	1.00	.63	---	.41	9.96	659.6
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.43	1.00	.24	---	.41	9.96	254.7
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.43	1.00	.24	691.17	.41	9.97	255.1
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.43	1.00	.63	---	.41	3.89	659.6

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 1		STORM 2											
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.43	1.00	.29	---	.41	13.87	308.1
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.43	1.00	.63	---	.47	9.36	595.9
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.43	1.00	.38	---	.43	23.18	381.8
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.43	1.00	.45	---	.53	10.73	403.3
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.43	1.00	.40	---	.46	32.73	374.9
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.43	1.00	.40	684.97	1.31	4.04	46.3
ALTERNATE 2		STORM 2											
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.79	2.00	.65	---	.58	9.57	398.5
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.79	2.00	.64	692.71	1.09	5.33	222.2
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.79	2.00	.64	---	1.09	5.33	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.79	2.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.79	2.00	.92	---	.56	8.75	579.8
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.79	2.00	.35	---	.56	8.75	223.9
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.79	2.00	.35	691.15	.56	8.77	224.4
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.79	2.00	.92	---	.56	3.42	579.8
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.79	2.00	.43	---	.56	12.19	270.9
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.79	2.00	.92	---	.62	8.65	551.0
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.79	2.00	.55	---	.59	20.75	341.9
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.79	2.00	.69	---	.69	10.47	393.7
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.79	2.00	.60	---	.62	30.85	353.4
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.79	2.00	.60	685.28	2.20*	4.10*	47.0
ALTERNATE 3		STORM 2											
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.94	3.00	.75	---	.78	7.88	328.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.94	3.00	.75	692.66	1.38	4.95	206.4
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.94	3.00	.75	---	1.38	4.95	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.94	3.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.94	3.00	1.04	---	.73	6.95	460.0
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.94	3.00	.40	---	.73	6.95	177.6
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.94	3.00	.40	691.12	.73	6.95	177.8
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.94	3.00	1.04	---	.73	2.71	460.0
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.94	3.00	.49	---	.73	9.67	214.8
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.94	3.00	1.04	---	.78	7.08	450.7
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.94	3.00	.63	---	.75	16.74	275.7
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.94	3.00	.80	---	.87	8.84	332.2
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.94	3.00	.68	---	.80	25.35	290.4
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.94	3.00	.68	685.33	3.20*	4.11*	47.1

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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 6 STORM 2													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	2.28	6.00	1.01	---	1.48	5.38	224.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.28	6.00	1.00	692.57	1.87	4.30	179.3
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.28	6.00	1.00	---	1.87	4.30	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.28	6.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.28	6.00	1.34	---	.70	5.15	341.1
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.28	6.00	.52	---	.70	5.15	131.7
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.28	6.00	.52	691.09	.70	5.15	131.6
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.28	6.00	1.34	---	.70	2.01	341.1
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.28	6.00	.62	---	.70	7.16	159.1
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.28	6.00	1.34	---	.80	4.94	314.9
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.28	6.00	.81	---	.70	11.86	195.4
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.28	6.00	1.07	---	1.46	6.26	235.3
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.28	6.00	.89	---	1.30	17.26	197.7
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.28	6.00	.89	685.36	5.30	4.12	47.2
ALTERNATE 12 STORM 2													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	2.64	12.00	1.29	---	5.37	4.86	202.3
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	2.64	12.00	1.29	692.56	5.57	4.20	175.1
XSECTION 101	DIVERT	.00	7	2	.10	.0	2.64	12.00	1.29	---	5.57	4.20	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	2.64	12.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	2.64	12.00	1.66	---	4.90	3.75	248.5
XSECTION 102	ADDHYD	.04	7	2	.10	.0	2.64	12.00	.64	---	4.90	3.75	96.0
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	2.64	12.00	.64	691.06	4.90	3.76	96.1
XSECTION 3	RUNOFF	.01	7	2	.10	.0	2.64	12.00	1.66	---	4.90	1.47	248.5
XSECTION 103	ADDHYD	.04	7	2	.10	.0	2.64	12.00	.77	---	4.90	5.22	116.1
XSECTION 4	RUNOFF	.02	7	2	.10	.0	2.64	12.00	1.66	---	4.90	3.87	246.6
XSECTION 104	ADDHYD	.06	7	2	.10	.0	2.64	12.00	1.00	---	4.90	9.09	149.8
XSECTION 5	RUNOFF	.03	7	2	.10	.0	2.64	12.00	1.36	---	5.42	5.51	207.3
XSECTION 105	ADDHYD	.09	7	2	.10	.0	2.64	12.00	1.11	---	5.39	14.55	166.7
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	2.64	12.00	1.11	685.44	9.20*	4.13*	47.3
ALTERNATE 18 STORM 2													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	2.79	18.00	1.41	---	8.10	3.55	147.9
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	2.79	18.00	1.41	692.44	8.20	3.30	137.4

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SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 18 STORM 2													
XSECTION 101	DIVERT	.00	7	2	.10	.0	2.79	18.00	1.41	---	8.20	3.30	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	2.79	18.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	2.79	18.00	1.79	---	7.20	2.73	180.7
XSECTION 102	ADDHYD	.04	7	2	.10	.0	2.79	18.00	.69	---	7.20	2.73	69.8
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	2.79	18.00	.69	691.05	7.20	2.73	69.8
XSECTION 3	RUNOFF	.01	7	2	.10	.0	2.79	18.00	1.79	---	7.20	1.07	180.7
XSECTION 103	ADDHYD	.04	7	2	.10	.0	2.79	18.00	.84	---	7.20	3.79	84.3
XSECTION 4	RUNOFF	.02	7	2	.10	.0	2.79	18.00	1.79	---	7.30	2.82	179.9
XSECTION 104	ADDHYD	.06	7	2	.10	.0	2.79	18.00	1.08	---	7.20	6.61	108.9
XSECTION 5	RUNOFF	.03	7	2	.10	.0	2.79	18.00	1.48	---	8.10	4.05	152.2
XSECTION 105	ADDHYD	.09	7	2	.10	.0	2.79	18.00	1.20	---	8.07	10.58	121.2
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	2.79	18.00	1.20	685.22	11.80*	4.09*	46.9
ALTERNATE 24 STORM 2													
XSECTION 1	RUNOFF	.02	8	2	.10	.0	3.04	24.00	1.62	---	15.56	3.82	159.1
STRUCTURE 1	RESVOR	.02	8	2	.10	.0	3.04	24.00	1.62	692.47	15.68	3.54	147.4
XSECTION 101	DIVERT	.00	8	2	.10	.0	3.04	24.00	1.62	---	15.68	3.54	*****
XSECTION 108	DIVERT	.02	8	2	.10	.0	3.04	24.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	8	2	.10	.0	3.04	24.00	2.02	---	15.60	2.75	182.2
XSECTION 102	ADDHYD	.04	8	2	.10	.0	3.04	24.00	.78	---	15.60	2.75	70.4
STRUCTURE 2	RESVOR	.04	8	2	.10	.0	3.04	24.00	.78	691.05	15.60	2.75	70.4
XSECTION 3	RUNOFF	.01	8	2	.10	.0	3.04	24.00	2.02	---	15.60	1.08	182.2
XSECTION 103	ADDHYD	.04	8	2	.10	.0	3.04	24.00	.94	---	15.56	3.84	85.4
XSECTION 4	RUNOFF	.02	8	2	.10	.0	3.04	24.00	2.02	---	15.60	2.85	181.6
XSECTION 104	ADDHYD	.06	8	2	.10	.0	3.04	24.00	1.22	---	15.56	6.70	110.4
XSECTION 5	RUNOFF	.03	8	2	.10	.0	3.04	24.00	1.70	---	15.57	4.30	161.8
XSECTION 105	ADDHYD	.09	8	2	.10	.0	3.04	24.00	1.37	---	15.56	11.00	126.1
STRUCTURE 3	RESVOR	.09	8	2	.10	.0	3.04	24.00	1.36	685.25	18.30*	4.10*	46.9
ALTERNATE 5 STORM 5													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	.46	.08	.01	---	.20?	.52?	21.8
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.46	.08	.01	692.01	.40?	.10?	4.3
XSECTION 101	DIVERT	.00	6	2	.10	.0	.46	.08	.01	---	.40?	.10?*****	.0
XSECTION 108	DIVERT	.02	6	2	.10	.0	.46	.08	.00	---	.00?	.00?	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	.46	.08	.04	---	.22	1.81	119.8
XSECTION 102	ADDHYD	.04	6	2	.10	.0	.46	.08	.02	---	.22	1.81	46.3
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.46	.08	.02	691.03	.22	1.78	45.6
XSECTION 3	RUNOFF	.01	6	2	.10	.0	.46	.08	.04	---	.20?	.69?	117.5

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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 5 STORM 5													
XSECTION 103	ADDHYD	.04	6	2	.10	.0	.46	.08	.02	---	.22	2.49	55.3
XSECTION 4	RUNOFF	.02	6	2	.10	.0	.46	.08	.04	---	.28	1.39	88.4
XSECTION 104	ADDHYD	.06	6	2	.10	.0	.46	.08	.03	---	.23	3.78	62.3
XSECTION 5	RUNOFF	.03	6	2	.10	.0	.46	.08	.01	---	.30?	.56?	21.1
XSECTION 105	ADDHYD	.09	6	2	.10	.0	.46	.08	.02	---	.24	4.24	48.6
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.46	.08	.02	683.26	.50?	.99?	11.3
ALTERNATE 10 STORM 5													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	.84	.17	.10	---	.22	7.56	314.8
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.84	.17	.10	692.24	.42	1.80	74.9
XSECTION 101	DIVERT	.00	6	2	.10	.0	.84	.17	.10	---	.42	1.80	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	.84	.17	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	.84	.17	.22	---	.25	8.23	545.0
XSECTION 102	ADDHYD	.04	6	2	.10	.0	.84	.17	.08	---	.25	8.23	210.5
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.84	.17	.09	691.13	.25	7.97	204.0
XSECTION 3	RUNOFF	.01	6	2	.10	.0	.84	.17	.22	---	.25	3.22	545.0
XSECTION 103	ADDHYD	.04	6	2	.10	.0	.84	.17	.10	---	.25	11.38	252.8
XSECTION 4	RUNOFF	.02	6	2	.10	.0	.84	.17	.22	---	.30	7.10	452.3
XSECTION 104	ADDHYD	.06	6	2	.10	.0	.84	.17	.13	---	.27	17.78	292.9
XSECTION 5	RUNOFF	.03	6	2	.10	.0	.84	.17	.12	---	.32	6.47	243.3
XSECTION 105	ADDHYD	.09	6	2	.10	.0	.84	.17	.13	---	.29	23.88	273.5
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.84	.17	.13	684.15	.60	3.87	44.3
ALTERNATE 15 STORM 5													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.03	.25	.18	---	.26	10.90	454.1
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.03	.25	.19	692.41	.46	3.10	129.0
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.03	.25	.19	---	.46	3.10	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.03	.25	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.03	.25	.34	---	.28	11.17	739.4
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.03	.25	.13	---	.28	11.17	285.6
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.03	.25	.13	691.19	.28	11.28	288.4
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.03	.25	.34	---	.28	4.36	739.4
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.03	.25	.16	---	.28	15.64	347.5
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.03	.25	.34	---	.33	9.94	632.9
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.03	.25	.20	---	.30	25.20	415.2
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.03	.25	.21	---	.36	10.04	377.6
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.03	.25	.21	---	.32	34.68	397.2
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.03	.25	.21	684.40	.70	3.92	45.0

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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 30 STORM 5													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.41	.50	.39	---	.31	16.03	668.1
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.41	.50	.39	692.79	.61	5.90	245.7
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.41	.50	.39	---	.61	5.90	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.41	.50	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.41	.50	.61	---	.32	14.95	989.8
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.41	.50	.24	---	.32	14.95	382.3
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.41	.50	.24	691.25	.32	15.02	384.3
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.41	.50	.61	---	.32	5.84	989.8
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.41	.50	.29	---	.32	20.86	463.6
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.41	.50	.61	---	.39	13.25	843.9
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.41	.50	.37	---	.34	33.71	555.3
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.41	.50	.43	---	.43	15.41	579.5
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.41	.50	.39	---	.37	46.30	530.4
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.41	.50	.39	685.01	.90*	4.05*	46.4
ALTERNATE 1 STORM 5													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.79	1.00	.65	---	.39	16.62	692.6
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.79	1.00	.64	692.97	.87	7.29	303.9
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.79	1.00	.64	---	.87	7.29	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.79	1.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.79	1.00	.92	---	.39	14.76	977.2
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.79	1.00	.35	---	.39	14.76	377.4
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.79	1.00	.35	691.25	.39	14.76	377.6
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.79	1.00	.92	---	.39	5.77	977.2
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.79	1.00	.43	---	.39	20.53	456.2
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.79	1.00	.92	---	.45	14.17	902.3
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.79	1.00	.55	---	.42	34.40	566.6
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.79	1.00	.69	---	.51	16.93	636.5
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.79	1.00	.60	---	.44	50.55	579.0
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.79	1.00	.60	685.41	1.30*	4.13*	47.3
ALTERNATE 2 STORM 5													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	2.24	2.00	.98	---	.55	14.85	618.7
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.24	2.00	.97	693.09	1.05	8.17	340.4

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 2 STORM 5													
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.24	2.00	.97	---	1.05	8.17	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.24	2.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.24	2.00	1.30	---	.52	12.66	838.4
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.24	2.00	.50	---	.52	12.66	323.8
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.24	2.00	.50	691.21	.53	12.62	322.8
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.24	2.00	1.30	---	.52	4.95	838.4
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.24	2.00	.61	---	.53	17.57	390.4
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.24	2.00	1.30	---	.59	12.53	798.0
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.24	2.00	.79	---	.56	30.02	494.6
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.24	2.00	1.03	---	.66	16.01	601.9
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.24	2.00	.86	---	.59	45.57	522.0
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.24	2.00	.86	685.86	2.30*	4.21*	48.3
ALTERNATE 3 STORM 5													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	2.43	3.00	1.12	---	.75	11.93	497.0
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.43	3.00	1.12	693.00	1.25	7.53	313.9
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.43	3.00	1.12	---	1.25	7.53	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.43	3.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.43	3.00	1.47	---	.65	9.95	659.1
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.43	3.00	.57	---	.65	9.95	254.6
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.43	3.00	.57	691.17	.66	9.96	254.7
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.43	3.00	1.47	---	.65	3.89	659.1
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.43	3.00	.68	---	.66	13.85	307.7
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.43	3.00	1.47	---	.74	10.12	644.9
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.43	3.00	.89	---	.69	23.92	394.1
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.43	3.00	1.19	---	.83	13.35	502.1
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.43	3.00	.98	---	.76	37.00	423.8
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.43	3.00	.98	685.97	3.20*	4.23*	48.5
ALTERNATE 6 STORM 5													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	2.85	6.00	1.46	---	.70	8.23	342.7
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.85	6.00	1.46	692.86	1.75	6.43	268.1
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.85	6.00	1.46	---	1.75	6.43	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.85	6.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.85	6.00	1.85	---	.71	7.81	517.5
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.85	6.00	.71	---	.71	7.81	199.9
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.85	6.00	.71	691.13	.71	7.82	199.9
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.85	6.00	1.85	---	.71	3.05	517.5

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR (\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK (?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 6 STORM 5													
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.85	6.00	.86	---	.71	10.87	241.5
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.85	6.00	1.85	---	.77	7.45	474.2
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.85	6.00	1.12	---	.73	18.30	301.4
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.85	6.00	1.53	---	1.32	9.13	343.1
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.85	6.00	1.24	---	.75	26.69	305.8
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.85	6.00	1.24	686.08	6.20*	4.26*	48.7
ALTERNATE 12 STORM 5													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	3.31	12.00	1.85	---	5.37	6.83	284.6
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	3.31	12.00	1.85	692.81	5.54	6.05	252.0
XSECTION 101	DIVERT	.00	7	2	.10	.0	3.31	12.00	1.85	---	5.54	6.05	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	3.31	12.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	3.31	12.00	2.27	---	4.90	5.11	338.3
XSECTION 102	ADDHYD	.04	7	2	.10	.0	3.31	12.00	.88	---	4.90	5.11	130.7
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	3.31	12.00	.88	691.09	4.90	5.11	130.8
XSECTION 3	RUNOFF	.01	7	2	.10	.0	3.31	12.00	2.27	---	4.90	2.00	338.3
XSECTION 103	ADDHYD	.04	7	2	.10	.0	3.31	12.00	1.06	---	4.90	7.11	158.0
XSECTION 4	RUNOFF	.02	7	2	.10	.0	3.31	12.00	2.27	---	4.90	5.28	336.6
XSECTION 104	ADDHYD	.06	7	2	.10	.0	3.31	12.00	1.37	---	4.90	12.39	204.2
XSECTION 5	RUNOFF	.03	7	2	.10	.0	3.31	12.00	1.93	---	5.40	7.70	289.6
XSECTION 105	ADDHYD	.09	7	2	.10	.0	3.31	12.00	1.54	---	4.90	20.01	229.3
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	3.31	12.00	1.54	686.19	9.40*	4.27*	49.0
ALTERNATE 18 STORM 5													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	3.50	18.00	2.01	---	8.06	4.97	207.3
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	3.50	18.00	2.01	692.62	8.18	4.67	194.7
XSECTION 101	DIVERT	.00	7	2	.10	.0	3.50	18.00	2.01	---	8.18	4.67	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	3.50	18.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	3.50	18.00	2.45	---	7.20	3.70	245.1
XSECTION 102	ADDHYD	.04	7	2	.10	.0	3.50	18.00	.94	---	7.20	3.70	94.6
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	3.50	18.00	.94	691.06	7.20	3.70	94.6
XSECTION 3	RUNOFF	.01	7	2	.10	.0	3.50	18.00	2.45	---	7.20	1.45	245.1
XSECTION 103	ADDHYD	.04	7	2	.10	.0	3.50	18.00	1.14	---	7.20	5.15	114.4
XSECTION 4	RUNOFF	.02	7	2	.10	.0	3.50	18.00	2.45	---	7.30	3.83	243.8
XSECTION 104	ADDHYD	.06	7	2	.10	.0	3.50	18.00	1.48	---	7.20	8.97	147.8
XSECTION 5	RUNOFF	.03	7	2	.10	.0	3.50	18.00	2.10	---	7.30	5.61	210.8
XSECTION 105	ADDHYD	.09	7	2	.10	.0	3.50	18.00	1.67	---	7.30	14.55	166.7
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	3.50	18.00	1.67	685.95	13.50*	4.23*	48.5

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 24		STORM 5											
XSECTION 1	RUNOFF	.02	8	2	.10	.0	3.80	24.00	2.28	---	15.56	5.17	215.6
STRUCTURE 1	RESVOR	.02	8	2	.10	.0	3.80	24.00	2.28	692.64	15.67	4.84	201.5
XSECTION 101	DIVERT	.00	8	2	.10	.0	3.80	24.00	2.28	---	15.67	4.84	*****
XSECTION 108	DIVERT	.02	8	2	.10	.0	3.80	24.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	8	2	.10	.0	3.80	24.00	2.73	---	15.56	3.61	239.3
XSECTION 102	ADDHYD	.04	8	2	.10	.0	3.80	24.00	1.05	---	15.56	3.61	92.4
STRUCTURE 2	RESVOR	.04	8	2	.10	.0	3.80	24.00	1.05	691.06	15.55	3.61	92.4
XSECTION 3	RUNOFF	.01	8	2	.10	.0	3.80	24.00	2.73	---	15.60	1.41	238.2
XSECTION 103	ADDHYD	.04	8	2	.10	.0	3.80	24.00	1.27	---	15.55	5.02	111.7
XSECTION 4	RUNOFF	.02	8	2	.10	.0	3.80	24.00	2.73	---	15.56	3.74	238.1
XSECTION 104	ADDHYD	.06	8	2	.10	.0	3.80	24.00	1.65	---	15.56	8.76	144.4
XSECTION 5	RUNOFF	.03	8	2	.10	.0	3.80	24.00	2.36	---	15.57	5.80	218.0
XSECTION 105	ADDHYD	.09	8	2	.10	.0	3.80	24.00	1.87	---	15.56	14.56	166.8
STRUCTURE 3	RESVOR	.09	8	2	.10	.0	3.80	24.00	1.61	685.95	19.40?	4.23?	48.5
ALTERNATE 5		STORM 10											
XSECTION 1	RUNOFF	.02	6	2	.10	.0	.54	.08	.02	---	.20	1.50	62.6
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.54	.08	.02	692.04	.40?	.30?	12.6
XSECTION 101	DIVERT	.00	6	2	.10	.0	.54	.08	.02	---	.40?	.30?	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	.54	.08	.00	---	.00?	.00?	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	.54	.08	.07	---	.22	3.05	201.8
XSECTION 102	ADDHYD	.04	6	2	.10	.0	.54	.08	.03	---	.22	3.05	77.9
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.54	.08	.03	691.05	.22	3.01	76.9
XSECTION 3	RUNOFF	.01	6	2	.10	.0	.54	.08	.07	---	.22	1.19	201.8
XSECTION 103	ADDHYD	.04	6	2	.10	.0	.54	.08	.03	---	.22	4.20	93.3
XSECTION 4	RUNOFF	.02	6	2	.10	.0	.54	.08	.07	---	.27	2.33	148.5
XSECTION 104	ADDHYD	.06	6	2	.10	.0	.54	.08	.04	---	.23	6.39	105.3
XSECTION 5	RUNOFF	.03	6	2	.10	.0	.54	.08	.02	---	.30	1.35	50.9
XSECTION 105	ADDHYD	.09	6	2	.10	.0	.54	.08	.04	---	.24	7.55	86.5
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.54	.08	.04	683.46	.50	1.77	20.3
ALTERNATE 10		STORM 10											
XSECTION 1	RUNOFF	.02	6	2	.10	.0	.98	.17	.16	---	.22	11.84	493.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.98	.17	.16	692.37	.42	2.80	116.6

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 10		STORM 10											
XSECTION 101	DIVERT	.00	6	2	.10	.0	.98	.17	.16	---	.42	2.80	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	.98	.17	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	.98	.17	.30	---	.24	11.51	762.3
XSECTION 102	ADDHYD	.04	6	2	.10	.0	.98	.17	.12	---	.24	11.51	294.4
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.98	.17	.12	691.19	.25	11.41	291.8
XSECTION 3	RUNOFF	.01	6	2	.10	.0	.98	.17	.30	---	.24	4.50	762.3
XSECTION 103	ADDHYD	.04	6	2	.10	.0	.98	.17	.14	---	.24	15.90	353.4
XSECTION 4	RUNOFF	.02	6	2	.10	.0	.98	.17	.31	---	.30	9.85	627.5
XSECTION 104	ADDHYD	.06	6	2	.10	.0	.98	.17	.18	---	.27	24.58	405.0
XSECTION 5	RUNOFF	.03	6	2	.10	.0	.98	.17	.19	---	.32	9.80	368.5
XSECTION 105	ADDHYD	.09	6	2	.10	.0	.98	.17	.19	---	.28	33.83	387.5
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.98	.17	.19	684.34	.60*	3.91*	44.8
ALTERNATE 15		STORM 10											
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.21	.25	.27	---	.25	16.70	696.0
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.21	.25	.28	692.61	.45	4.61	192.1
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.21	.25	.28	---	.45	4.61	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.21	.25	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.21	.25	.46	---	.27	15.15	1003.5
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.21	.25	.18	---	.27	15.15	387.5
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.21	.25	.18	691.26	.28	15.31	391.5
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.21	.25	.46	---	.27	5.92	1003.5
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.21	.25	.22	---	.28	21.23	471.7
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.21	.25	.46	---	.33	13.58	865.2
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.21	.25	.28	---	.30	34.29	564.9
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.21	.25	.31	---	.35	14.59	548.3
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.21	.25	.29	---	.31	48.24	552.6
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.21	.25	.29	684.69	.70*	3.99*	45.6
ALTERNATE 30		STORM 10											
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.65	.50	.54	---	.30	22.28	928.5
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.65	.50	.55	693.09	.61	8.14	339.2
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.65	.50	.55	---	.61	8.14	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.65	.50	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.65	.50	.80	---	.31	19.69	1303.6
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.65	.50	.31	---	.31	19.69	503.5
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.65	.50	.31	691.33	.31	19.81	506.7
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.65	.50	.80	---	.31	7.69	1303.6

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 30 STORM 10													
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.65	.50	.37	---	.31	27.50	611.2
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.65	.50	.80	---	.38	17.39	1107.8
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.65	.50	.48	---	.33	44.52	733.5
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.65	.50	.59	---	.42	21.19	796.5
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.65	.50	.52	---	.35	61.95	709.6
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.65	.50	.52	685.29	.90*	4.10*	47.0
ALTERNATE 1 STORM 10													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	2.10	1.00	.87	---	.37	22.68	945.1
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.10	1.00	.87	693.31	.81	9.81	408.7
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.10	1.00	.87	---	.81	9.81	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.10	1.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.10	1.00	1.18	---	.38	19.19	1270.7
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.10	1.00	.46	---	.38	19.19	490.7
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.10	1.00	.46	691.32	.38	19.18	490.6
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.10	1.00	1.18	---	.38	7.50	1270.7
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.10	1.00	.55	---	.38	26.68	592.9
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.10	1.00	1.18	---	.44	18.46	1176.0
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.10	1.00	.71	---	.41	44.70	736.4
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.10	1.00	.92	---	.49	22.83	858.2
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.10	1.00	.78	---	.43	66.74	764.5
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.10	1.00	.78	685.81	1.40*	4.20*	48.1
ALTERNATE 2 STORM 10													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	2.64	2.00	1.29	---	.52	19.96	831.5
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.64	2.00	1.29	693.45	1.02	10.91	454.7
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.64	2.00	1.29	---	1.02	10.91	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.64	2.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.64	2.00	1.66	---	.50	16.36	1083.6
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.64	2.00	.64	---	.50	16.36	418.5
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.64	2.00	.64	691.27	.50	16.31	417.0
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.64	2.00	1.66	---	.50	6.39	1083.6
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.64	2.00	.77	---	.50	22.70	504.4
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.64	2.00	1.66	---	.57	16.19	1031.1
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.64	2.00	1.00	---	.53	38.77	638.7
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.64	2.00	1.36	---	.64	21.48	807.4
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.64	2.00	1.11	---	.57	59.56	682.2
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.64	2.00	1.11	686.35	2.30*	4.30*	49.3

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 3 STORM 10													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	2.86	3.00	1.47	---	.71	15.64	651.6
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.86	3.00	1.47	693.33	1.20	10.00	416.9
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.86	3.00	1.47	---	1.20	10.00	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.86	3.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.86	3.00	1.85	---	.53	13.08	866.5
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.86	3.00	.72	---	.53	13.08	334.6
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.86	3.00	.72	691.22	.53	13.10	335.2
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.86	3.00	1.85	---	.53	5.11	866.5
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.86	3.00	.87	---	.53	18.22	404.8
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.86	3.00	1.85	---	.67	13.00	828.2
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.86	3.00	1.12	---	.61	30.75	506.6
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.86	3.00	1.54	---	.80	17.62	662.6
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.86	3.00	1.25	---	.72	47.77	547.2
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.86	3.00	1.25	686.48	3.30*	4.33*	49.6
ALTERNATE 6 STORM 10													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	3.35	6.00	1.88	---	.70	11.56	481.6
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	3.35	6.00	1.88	693.13	1.71	8.44	351.9
XSECTION 101	DIVERT	.00	6	2	.10	.0	3.35	6.00	1.88	---	1.71	8.44	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	3.35	6.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	3.35	6.00	2.31	---	.70	10.28	680.8
XSECTION 102	ADDHYD	.04	6	2	.10	.0	3.35	6.00	.89	---	.70	10.28	262.9
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	3.35	6.00	.89	691.17	.70	10.28	263.0
XSECTION 3	RUNOFF	.01	6	2	.10	.0	3.35	6.00	2.31	---	.70	4.02	680.8
XSECTION 103	ADDHYD	.04	6	2	.10	.0	3.35	6.00	1.08	---	.70	14.30	317.7
XSECTION 4	RUNOFF	.02	6	2	.10	.0	3.35	6.00	2.31	---	.75	9.96	634.2
XSECTION 104	ADDHYD	.06	6	2	.10	.0	3.35	6.00	1.39	---	.72	24.12	397.4
XSECTION 5	RUNOFF	.03	6	2	.10	.0	3.35	6.00	1.97	---	.80	12.18	457.7
XSECTION 105	ADDHYD	.09	6	2	.10	.0	3.35	6.00	1.57	---	.74	35.91	411.4
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	3.35	6.00	1.57	686.68	6.20*	4.36*	50.0
ALTERNATE 12 STORM 10													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	3.89	12.00	2.36	---	5.36	8.57	357.1
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	3.89	12.00	2.36	693.03	5.52	7.69	320.6

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
<u>ALTERNATE 12</u>		<u>STORM 10</u>											
XSECTION 101	DIVERT	.00	7	2	.10	.0	3.89	12.00	2.36	---	5.52	7.69	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	3.89	12.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	3.89	12.00	2.81	---	4.80	6.30	417.1
XSECTION 102	ADDHYD	.04	7	2	.10	.0	3.89	12.00	1.09	---	4.80	6.30	161.1
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	3.89	12.00	1.09	691.10	4.90	6.29	160.9
XSECTION 3	RUNOFF	.01	7	2	.10	.0	3.89	12.00	2.81	---	4.80	2.46	417.1
XSECTION 103	ADDHYD	.04	7	2	.10	.0	3.89	12.00	1.31	---	4.80	8.75	194.5
XSECTION 4	RUNOFF	.02	7	2	.10	.0	3.89	12.00	2.81	---	4.90	6.51	414.9
XSECTION 104	ADDHYD	.06	7	2	.10	.0	3.89	12.00	1.70	---	4.90	15.26	251.4
XSECTION 5	RUNOFF	.03	7	2	.10	.0	3.89	12.00	2.44	---	4.90	9.67	363.4
XSECTION 105	ADDHYD	.09	7	2	.10	.0	3.89	12.00	1.93	---	4.90	24.93	285.6
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	3.89	12.00	1.92	686.82	10.90	4.39	50.3
<u>ALTERNATE 18</u>		<u>STORM 10</u>											
XSECTION 1	RUNOFF	.02	7	2	.10	.0	4.11	18.00	2.55	---	7.20	6.22	259.3
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	4.11	18.00	2.55	692.78	8.17	5.88	245.1
XSECTION 101	DIVERT	.00	7	2	.10	.0	4.11	18.00	2.55	---	8.17	5.88	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	4.11	18.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	4.11	18.00	3.02	---	7.20	4.54	300.5
XSECTION 102	ADDHYD	.04	7	2	.10	.0	4.11	18.00	1.17	---	7.20	4.54	116.1
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	4.11	18.00	1.17	691.08	7.20	4.54	116.1
XSECTION 3	RUNOFF	.01	7	2	.10	.0	4.11	18.00	3.02	---	7.20	1.77	300.5
XSECTION 103	ADDHYD	.04	7	2	.10	.0	4.11	18.00	1.41	---	7.20	6.31	140.2
XSECTION 4	RUNOFF	.02	7	2	.10	.0	4.11	18.00	3.02	---	7.20	4.69	299.0
XSECTION 104	ADDHYD	.06	7	2	.10	.0	4.11	18.00	1.83	---	7.20	11.01	181.3
XSECTION 5	RUNOFF	.03	7	2	.10	.0	4.11	18.00	2.64	---	7.30	7.06	265.3
XSECTION 105	ADDHYD	.09	7	2	.10	.0	4.11	18.00	2.08	---	7.20	18.03	206.5
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	4.11	18.00	1.96	686.57	13.70?	4.34?	49.7
<u>ALTERNATE 24</u>		<u>STORM 10</u>											
XSECTION 1	RUNOFF	.02	8	2	.10	.0	4.47	24.00	2.88	---	15.55	6.37	265.6
STRUCTURE 1	RESVOR	.02	8	2	.10	.0	4.47	24.00	2.88	692.80	15.66	5.99	249.6
XSECTION 101	DIVERT	.00	8	2	.10	.0	4.47	24.00	2.88	---	15.66	5.99	*****
XSECTION 108	DIVERT	.02	8	2	.10	.0	4.47	24.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	8	2	.10	.0	4.47	24.00	3.36	---	15.55	4.36	288.6
XSECTION 102	ADDHYD	.04	8	2	.10	.0	4.47	24.00	1.30	---	15.55	4.36	111.5
STRUCTURE 2	RESVOR	.04	8	2	.10	.0	4.47	24.00	1.30	691.07	15.55	4.36	111.4
XSECTION 3	RUNOFF	.01	8	2	.10	.0	4.47	24.00	3.36	---	15.60	1.69	287.2

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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 24 STORM 10													
XSECTION 103	ADDHYD	.04	8	2	.10	.0	4.47	24.00	1.57	---	15.55	6.06	134.7
XSECTION 4	RUNOFF	.02	8	2	.10	.0	4.47	24.00	3.36	---	15.55	4.51	287.2
XSECTION 104	ADDHYD	.06	8	2	.10	.0	4.47	24.00	2.03	---	15.55	10.57	174.1
XSECTION 5	RUNOFF	.03	8	2	.10	.0	4.47	24.00	2.97	---	15.56	7.12	267.6
XSECTION 105	ADDHYD	.09	8	2	.10	.0	4.47	24.00	2.32	---	15.56	17.69	202.6
STRUCTURE 3	RESVOR	.09	8	2	.10	.0	4.47	24.00	1.73	686.55	19.70?	4.34?	49.7
ALTERNATE 5 STORM 25													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	.66	.08	.04	---	.20	3.72	154.9
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.66	.08	.04	692.10	.40?	.77?	31.9
XSECTION 101	DIVERT	.00	6	2	.10	.0	.66	.08	.04	---	.40?	.77?*****	
XSECTION 108	DIVERT	.02	6	2	.10	.0	.66	.08	.00	---	.00?	.00?	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	.66	.08	.12	---	.21	5.33	352.7
XSECTION 102	ADDHYD	.04	6	2	.10	.0	.66	.08	.05	---	.21	5.33	136.2
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.66	.08	.05	691.09	.22	5.26	134.6
XSECTION 3	RUNOFF	.01	6	2	.10	.0	.66	.08	.12	---	.21	2.08	352.7
XSECTION 103	ADDHYD	.04	6	2	.10	.0	.66	.08	.06	---	.22	7.34	163.1
XSECTION 4	RUNOFF	.02	6	2	.10	.0	.66	.08	.12	---	.27	4.07	259.1
XSECTION 104	ADDHYD	.06	6	2	.10	.0	.66	.08	.07	---	.23	11.21	184.7
XSECTION 5	RUNOFF	.03	6	2	.10	.0	.66	.08	.06	---	.29	3.07	115.3
XSECTION 105	ADDHYD	.09	6	2	.10	.0	.66	.08	.07	---	.24	13.92	159.5
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.66	.08	.07	683.86	.50	3.29	37.7
ALTERNATE 10 STORM 25													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.21	.17	.27	---	.22	20.21	842.1
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.21	.17	.28	692.63	.41	4.76	198.3
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.21	.17	.28	---	.41	4.76	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.21	.17	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.21	.17	.46	---	.24	17.52	1160.6
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.21	.17	.18	---	.24	17.52	448.2
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.21	.17	.18	691.29	.24	17.36	443.9
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.21	.17	.46	---	.24	6.85	1160.6
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.21	.17	.22	---	.24	24.20	537.8
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.21	.17	.46	---	.30	14.85	946.0
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.21	.17	.28	---	.26	36.94	608.6
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.21	.17	.31	---	.32	16.21	609.3
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.21	.17	.29	---	.28	52.24	598.4
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.21	.17	.29	684.69	.69	3.99	45.7

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE				
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)	
ALTERNATE 15		STORM	25											
XSECTION	1	RUNOFF	.02	6	2	.10	.0	1.49	.25	.43	---	.24	26.88	1120.0
STRUCTURE	1	RESVOR	.02	6	2	.10	.0	1.49	.25	.44	692.99	.45	7.44	309.8
XSECTION	101	DIVERT	.00	6	2	.10	.0	1.49	.25	.44	---	.45	7.44	*****
XSECTION	108	DIVERT	.02	6	2	.10	.0	1.49	.25	.00	---	.00	.00	.0
XSECTION	2	RUNOFF	.02	6	2	.10	.0	1.49	.25	.66	---	.27	21.87	1448.6
XSECTION	102	ADDHYD	.04	6	2	.10	.0	1.49	.25	.26	---	.27	21.87	559.4
STRUCTURE	2	RESVOR	.04	6	2	.10	.0	1.49	.25	.26	691.37	.27	22.09	565.0
XSECTION	3	RUNOFF	.01	6	2	.10	.0	1.49	.25	.66	---	.27	8.55	1448.6
XSECTION	103	ADDHYD	.04	6	2	.10	.0	1.49	.25	.31	---	.27	30.64	680.8
XSECTION	4	RUNOFF	.02	6	2	.10	.0	1.49	.25	.67	---	.32	19.75	1258.1
XSECTION	104	ADDHYD	.06	6	2	.10	.0	1.49	.25	.41	---	.29	49.59	816.9
XSECTION	5	RUNOFF	.03	6	2	.10	.0	1.49	.25	.48	---	.35	23.00	864.8
XSECTION	105	ADDHYD	.09	6	2	.10	.0	1.49	.25	.43	---	.31	71.46	818.6
STRUCTURE	3	RESVOR	.09	6	2	.10	.0	1.49	.25	.43	685.12	.80*	4.07*	46.6
ALTERNATE 30		STORM	25											
XSECTION	1	RUNOFF	.02	6	2	.10	.0	2.04	.50	.81	---	.28	33.55	1397.7
STRUCTURE	1	RESVOR	.02	6	2	.10	.0	2.04	.50	.82	693.62	.59	12.16	506.5
XSECTION	101	DIVERT	.00	6	2	.10	.0	2.04	.50	.82	---	.59	12.16	*****
XSECTION	108	DIVERT	.02	6	2	.10	.0	2.04	.50	.00	---	.00	.00	.0
XSECTION	2	RUNOFF	.02	6	2	.10	.0	2.04	.50	1.12	---	.31	27.85	1844.6
XSECTION	102	ADDHYD	.04	6	2	.10	.0	2.04	.50	.43	---	.31	27.85	712.3
STRUCTURE	2	RESVOR	.04	6	2	.10	.0	2.04	.50	.44	691.47	.31	28.07	717.8
XSECTION	3	RUNOFF	.01	6	2	.10	.0	2.04	.50	1.12	---	.31	10.88	1844.6
XSECTION	103	ADDHYD	.04	6	2	.10	.0	2.04	.50	.52	---	.31	38.95	865.5
XSECTION	4	RUNOFF	.02	6	2	.10	.0	2.04	.50	1.13	---	.36	24.57	1564.7
XSECTION	104	ADDHYD	.06	6	2	.10	.0	2.04	.50	.68	---	.32	63.23	1041.6
XSECTION	5	RUNOFF	.03	6	2	.10	.0	2.04	.50	.88	---	.40	31.50	1184.2
XSECTION	105	ADDHYD	.09	6	2	.10	.0	2.04	.50	.74	---	.34	92.74	1062.3
STRUCTURE	3	RESVOR	.09	6	2	.10	.0	2.04	.50	.74	685.78	1.00*	4.20*	48.1
ALTERNATE 1		STORM	25											
XSECTION	1	RUNOFF	.02	6	2	.10	.0	2.59	1.00	1.25	---	.35	34.40	1433.3
STRUCTURE	1	RESVOR	.02	6	2	.10	.0	2.59	1.00	1.25	693.90	.74	14.22	592.5

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 1 STORM 25													
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.59	1.00	1.25	---	.74	14.22	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.59	1.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.59	1.00	1.61	---	.36	26.63	1763.3
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.59	1.00	.62	---	.36	26.63	681.0
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.59	1.00	.62	691.44	.36	26.60	680.4
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.59	1.00	1.61	---	.36	10.40	1763.3
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.59	1.00	.75	---	.36	37.01	822.4
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.59	1.00	1.61	---	.43	25.61	1631.1
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.59	1.00	.97	---	.39	61.83	1018.6
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.59	1.00	1.31	---	.47	32.95	1238.7
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.59	1.00	1.08	---	.42	93.99	1076.6
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.59	1.00	1.08	686.40	1.40*	4.31*	49.4
ALTERNATE 2 STORM 25													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	3.25	2.00	1.80	---	.49	28.35	1181.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	3.25	2.00	1.80	694.02	.99	15.10	629.2
XSECTION 101	DIVERT	.00	6	2	.10	.0	3.25	2.00	1.80	---	.90*	15.00	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	3.25	2.00	.00	---	1.00?	.10?	4.2
XSECTION 2	RUNOFF	.02	6	2	.10	.0	3.25	2.00	2.22	---	.45	22.37	1481.3
XSECTION 102	ADDHYD	.04	6	2	.10	.0	3.25	2.00	.86	---	.45	22.37	572.1
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	3.25	2.00	.86	691.38	.45	22.71	580.8
XSECTION 3	RUNOFF	.01	6	2	.10	.0	3.25	2.00	2.22	---	.45	8.74	1481.3
XSECTION 103	ADDHYD	.04	6	2	.10	.0	3.25	2.00	1.03	---	.45	31.56	701.4
XSECTION 4	RUNOFF	.02	6	2	.10	.0	3.25	2.00	2.22	---	.54	22.16	1411.3
XSECTION 104	ADDHYD	.06	6	2	.10	.0	3.25	2.00	1.34	---	.50	52.80	869.9
XSECTION 5	RUNOFF	.03	6	2	.10	.0	3.25	2.00	1.88	---	.61	30.27	1138.1
XSECTION 105	ADDHYD	.09	6	2	.10	.0	3.25	2.00	1.50	---	.55	82.26	942.2
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	3.25	2.00	1.50	687.08	2.30*	4.43*	50.8
ALTERNATE 3 STORM 25													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	3.53	3.00	2.04	---	.61	21.94	914.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	3.53	3.00	2.04	693.88	1.15	14.14	589.0
XSECTION 101	DIVERT	.00	6	2	.10	.0	3.53	3.00	2.04	---	1.15	14.14	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	3.53	3.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	3.53	3.00	2.47	---	.49	18.25	1208.8
XSECTION 102	ADDHYD	.04	6	2	.10	.0	3.53	3.00	.96	---	.49	18.25	466.8
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	3.53	3.00	.96	691.30	.49	18.28	467.6
XSECTION 3	RUNOFF	.01	6	2	.10	.0	3.53	3.00	2.47	---	.49	7.13	1208.8

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 3 STORM 25													
XSECTION 103	ADDHYD	.04	6	2	.10	.0	3.53	3.00	1.15	---	.49	25.42	564.8
XSECTION 4	RUNOFF	.02	6	2	.10	.0	3.53	3.00	2.47	---	.60	17.89	1139.7
XSECTION 104	ADDHYD	.06	6	2	.10	.0	3.53	3.00	1.50	---	.53	43.22	712.1
XSECTION 5	RUNOFF	.03	6	2	.10	.0	3.53	3.00	2.12	---	.75	24.71	928.9
XSECTION 105	ADDHYD	.09	6	2	.10	.0	3.53	3.00	1.69	---	.63	66.02	756.3
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	3.53	3.00	1.69	687.28	3.30*	4.47*	51.2
ALTERNATE 6 STORM 25													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	4.13	6.00	2.57	---	.68	17.22	717.3
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	4.13	6.00	2.57	693.57	1.66	11.75	489.7
XSECTION 101	DIVERT	.00	6	2	.10	.0	4.13	6.00	2.57	---	1.66	11.75	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	4.13	6.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	4.13	6.00	3.04	---	.68	14.31	947.6
XSECTION 102	ADDHYD	.04	6	2	.10	.0	4.13	6.00	1.17	---	.68	14.31	365.9
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	4.13	6.00	1.17	691.24	.69	14.31	365.9
XSECTION 3	RUNOFF	.01	6	2	.10	.0	4.13	6.00	3.04	---	.68	5.59	947.6
XSECTION 103	ADDHYD	.04	6	2	.10	.0	4.13	6.00	1.42	---	.69	19.90	442.1
XSECTION 4	RUNOFF	.02	6	2	.10	.0	4.13	6.00	3.04	---	.73	13.92	886.6
XSECTION 104	ADDHYD	.06	6	2	.10	.0	4.13	6.00	1.84	---	.70	33.64	554.3
XSECTION 5	RUNOFF	.03	6	2	.10	.0	4.13	6.00	2.66	---	.80	17.93	674.0
XSECTION 105	ADDHYD	.09	6	2	.10	.0	4.13	6.00	2.09	---	.73	51.23	586.8
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	4.13	6.00	2.09	687.60	6.20*	4.53*	51.9
ALTERNATE 12 STORM 25													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	4.79	12.00	3.17	---	4.80	11.45	477.1
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	4.79	12.00	3.17	693.37	5.51	10.29	429.0
XSECTION 101	DIVERT	.00	7	2	.10	.0	4.79	12.00	3.17	---	5.51	10.29	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	4.79	12.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	4.79	12.00	3.67	---	4.80	8.15	539.6
XSECTION 102	ADDHYD	.04	7	2	.10	.0	4.79	12.00	1.42	---	4.80	8.15	208.4
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	4.79	12.00	1.42	691.14	4.80	8.14	208.2
XSECTION 3	RUNOFF	.01	7	2	.10	.0	4.79	12.00	3.67	---	4.80	3.18	539.6
XSECTION 103	ADDHYD	.04	7	2	.10	.0	4.79	12.00	1.71	---	4.80	11.32	251.6
XSECTION 4	RUNOFF	.02	7	2	.10	.0	4.79	12.00	3.67	---	4.90	8.42	536.2
XSECTION 104	ADDHYD	.06	7	2	.10	.0	4.79	12.00	2.22	---	4.80	19.71	324.7
XSECTION 5	RUNOFF	.03	7	2	.10	.0	4.79	12.00	3.27	---	4.90	12.88	484.3
XSECTION 105	ADDHYD	.09	7	2	.10	.0	4.79	12.00	2.54	---	4.87	32.62	373.6
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	4.79	12.00	2.15	687.81	11.00	4.57	52.3

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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
<u>ALTERNATE 18 STORM 25</u>													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	5.06	18.00	3.42	---	7.20	8.29	345.2
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	5.06	18.00	3.42	693.04	8.15	7.78	324.3
XSECTION 101	DIVERT	.00	7	2	.10	.0	5.06	18.00	3.42	---	8.15	7.78	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	5.06	18.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	5.06	18.00	3.93	---	7.20	5.84	386.7
XSECTION 102	ADDHYD	.04	7	2	.10	.0	5.06	18.00	1.52	---	7.20	5.84	149.3
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	5.06	18.00	1.52	691.10	7.20	5.84	149.3
XSECTION 3	RUNOFF	.01	7	2	.10	.0	5.06	18.00	3.93	---	7.20	2.28	386.7
XSECTION 103	ADDHYD	.04	7	2	.10	.0	5.06	18.00	1.83	---	7.20	8.12	180.4
XSECTION 4	RUNOFF	.02	7	2	.10	.0	5.06	18.00	3.93	---	7.20	6.05	385.1
XSECTION 104	ADDHYD	.06	7	2	.10	.0	5.06	18.00	2.38	---	7.20	14.17	233.4
XSECTION 5	RUNOFF	.03	7	2	.10	.0	5.06	18.00	3.52	---	7.30	9.33	350.8
XSECTION 105	ADDHYD	.09	7	2	.10	.0	5.06	18.00	2.72	---	7.22	23.48	269.0
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	5.06	18.00	2.08	687.54	14.00?	4.52?	51.7
<u>ALTERNATE 24 STORM 25</u>													
XSECTION 1	RUNOFF	.02	8	2	.10	.0	5.51	24.00	3.84	---	15.55	8.23	343.1
STRUCTURE 1	RESVOR	.02	8	2	.10	.0	5.51	24.00	3.84	693.04	15.66	7.78	324.2
XSECTION 101	DIVERT	.00	8	2	.10	.0	5.51	24.00	3.84	---	15.66	7.78	*****
XSECTION 108	DIVERT	.02	8	2	.10	.0	5.51	24.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	8	2	.10	.0	5.51	24.00	4.37	---	15.55	5.51	364.7
XSECTION 102	ADDHYD	.04	8	2	.10	.0	5.51	24.00	1.69	---	15.55	5.51	140.8
STRUCTURE 2	RESVOR	.04	8	2	.10	.0	5.51	24.00	1.69	691.09	15.55	5.50	140.8
XSECTION 3	RUNOFF	.01	8	2	.10	.0	5.51	24.00	4.37	---	15.60	2.14	362.7
XSECTION 103	ADDHYD	.04	8	2	.10	.0	5.51	24.00	2.04	---	15.55	7.66	170.1
XSECTION 4	RUNOFF	.02	8	2	.10	.0	5.51	24.00	4.37	---	15.55	5.70	363.0
XSECTION 104	ADDHYD	.06	8	2	.10	.0	5.51	24.00	2.64	---	15.55	13.35	220.0
XSECTION 5	RUNOFF	.03	8	2	.10	.0	5.51	24.00	3.94	---	15.56	9.16	344.3
XSECTION 105	ADDHYD	.09	8	2	.10	.0	5.51	24.00	3.04	---	15.55	22.51	257.9
STRUCTURE 3	RESVOR	.09	8	2	.10	.0	5.51	24.00	1.87	687.57	21.80	4.52	51.8
<u>ALTERNATE 5 STORM 50</u>													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	.78	.08	.08	---	.20	6.68	278.5
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.78	.08	.08	692.19	.37	1.41	58.8

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SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 5 STORM 50													
XSECTION 101	DIVERT	.00	6	2	.10	.0	.78	.08	.08	---	.37	1.41	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	.78	.08	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	.78	.08	.18	---	.21	8.01	530.5
XSECTION 102	ADDHYD	.04	6	2	.10	.0	.78	.08	.07	---	.21	8.01	204.9
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.78	.08	.07	691.13	.22	7.92	202.6
XSECTION 3	RUNOFF	.01	6	2	.10	.0	.78	.08	.18	---	.21	3.13	530.5
XSECTION 103	ADDHYD	.04	6	2	.10	.0	.78	.08	.09	---	.22	11.05	245.6
XSECTION 4	RUNOFF	.02	6	2	.10	.0	.78	.08	.18	---	.27	6.12	389.5
XSECTION 104	ADDHYD	.06	6	2	.10	.0	.78	.08	.11	---	.23	16.91	278.5
XSECTION 5	RUNOFF	.03	6	2	.10	.0	.78	.08	.10	---	.29	5.32	199.9
XSECTION 105	ADDHYD	.09	6	2	.10	.0	.78	.08	.11	---	.24	21.69	248.4
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.78	.08	.11	684.08	.50*	3.86*	44.2
ALTERNATE 10 STORM 50													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.42	.17	.39	---	.21	28.99	1207.9
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.42	.17	.40	692.91	.41	6.83	284.4
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.42	.17	.40	---	.41	6.83	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.42	.17	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.42	.17	.61	---	.23	23.52	1557.9
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.42	.17	.23	---	.23	23.52	601.7
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.42	.17	.24	691.39	.24	23.30	595.8
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.42	.17	.61	---	.23	9.19	1557.9
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.42	.17	.29	---	.24	32.48	721.9
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.42	.17	.62	---	.30	19.81	1261.7
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.42	.17	.37	---	.26	49.20	810.5
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.42	.17	.44	---	.31	22.85	859.1
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.42	.17	.39	---	.28	70.75	810.4
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.42	.17	.39	685.04	.70*	4.06*	46.5
ALTERNATE 15 STORM 50													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.75	.25	.60	---	.23	37.55	1564.4
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.75	.25	.62	693.37	.44	10.29	428.8
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.75	.25	.62	---	.44	10.29	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.75	.25	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.75	.25	.87	---	.26	28.54	1889.8
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.75	.25	.34	---	.26	28.54	729.8
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.75	.25	.34	691.48	.27	28.80	736.7
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.75	.25	.87	---	.26	11.15	1889.8

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 15 STORM 50													
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.75	.25	.41	---	.27	39.95	887.7
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.75	.25	.88	---	.32	25.87	1647.7
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.75	.25	.53	---	.29	64.70	1065.9
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.75	.25	.66	---	.34	31.50	1184.3
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.75	.25	.57	---	.30	94.74	1085.3
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.75	.25	.57	685.43	.80*	4.13*	47.3
ALTERNATE 30 STORM 50													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	2.39	.50	1.08	---	.27	44.58	1857.5
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.39	.50	1.09	694.06	.59	15.28	636.5
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.39	.50	1.09	---	.50*	15.00*****	
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.39	.50	.00	---	.60?	.28?	11.5
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.39	.50	1.42	---	.30	35.53	2353.0
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.39	.50	.55	---	.30	35.53	908.7
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.39	.50	.55	691.60	.30	35.83	916.3
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.39	.50	1.42	---	.30	13.88	2353.0
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.39	.50	.67	---	.30	49.71	1104.7
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.39	.50	1.43	---	.35	31.35	1997.0
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.39	.50	.87	---	.32	80.85	1331.9
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.39	.50	1.15	---	.40	41.48	1559.5
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.39	.50	.95	---	.34	120.19	1376.7
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.39	.50	.95	686.22	1.00*	4.28*	49.0
ALTERNATE 1 STORM 50													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	3.04	1.00	1.62	---	.34	45.38	1891.0
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	3.04	1.00	1.62	694.23	.81	16.50	687.7
XSECTION 101	DIVERT	.00	6	2	.10	.0	3.04	1.00	1.62	---	.50*	15.00*****	
XSECTION 108	DIVERT	.02	6	2	.10	.0	3.04	1.00	.05	---	.81	1.50	62.7
XSECTION 2	RUNOFF	.02	6	2	.10	.0	3.04	1.00	2.02	---	.35	34.85	2308.2
XSECTION 102	ADDHYD	.04	6	2	.10	.0	3.04	1.00	.81	---	.35	34.85	891.4
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	3.04	1.00	.81	691.58	.35	34.94	893.6
XSECTION 3	RUNOFF	.01	6	2	.10	.0	3.04	1.00	2.02	---	.35	13.62	2308.2
XSECTION 103	ADDHYD	.04	6	2	.10	.0	3.04	1.00	.97	---	.35	48.56	1079.1
XSECTION 4	RUNOFF	.02	6	2	.10	.0	3.04	1.00	2.02	---	.42	32.43	2065.6
XSECTION 104	ADDHYD	.06	6	2	.10	.0	3.04	1.00	1.24	---	.38	78.21	1288.5
XSECTION 5	RUNOFF	.03	6	2	.10	.0	3.04	1.00	1.69	---	.45	42.91	1613.0
XSECTION 105	ADDHYD	.09	6	2	.10	.0	3.04	1.00	1.38	---	.41	120.28	1377.7
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	3.04	1.00	1.38	686.97	1.40*	4.41*	50.6

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
<u>ALTERNATE 2 STORM 50</u>													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	3.82	2.00	2.30	---	.46	36.73	1530.4
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	3.82	2.00	2.29	694.31	1.01	18.39	766.3
XSECTION 101	DIVERT	.00	6	2	.10	.0	3.82	2.00	2.29	---	.60*	15.00*****	
XSECTION 108	DIVERT	.02	6	2	.10	.0	3.82	2.00	.12	---	1.01	3.39	141.3
XSECTION 2	RUNOFF	.02	6	2	.10	.0	3.82	2.00	2.75	---	.44	28.67	1898.8
XSECTION 102	ADDHYD	.04	6	2	.10	.0	3.82	2.00	1.13	---	.44	28.67	733.3
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	3.82	2.00	1.13	691.48	.44	28.76	735.5
XSECTION 3	RUNOFF	.01	6	2	.10	.0	3.82	2.00	2.75	---	.44	11.20	1898.8
XSECTION 103	ADDHYD	.04	6	2	.10	.0	3.82	2.00	1.35	---	.44	39.96	888.1
XSECTION 4	RUNOFF	.02	6	2	.10	.0	3.82	2.00	2.75	---	.52	27.89	1776.5
XSECTION 104	ADDHYD	.06	6	2	.10	.0	3.82	2.00	1.71	---	.48	66.53	1096.1
XSECTION 5	RUNOFF	.03	6	2	.10	.0	3.82	2.00	2.38	---	.59	38.96	1464.7
XSECTION 105	ADDHYD	.09	6	2	.10	.0	3.82	2.00	1.91	---	.53	104.45	1196.5
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	3.82	2.00	1.91	687.80	2:40*	4.56*	52.3
<u>ALTERNATE 3 STORM 50</u>													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	4.14	3.00	2.58	---	.45	30.36	1264.9
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	4.14	3.00	2.58	694.22	1.21	16.28	678.3
XSECTION 101	DIVERT	.00	6	2	.10	.0	4.14	3.00	2.58	---	.80*	15.00*****	
XSECTION 108	DIVERT	.02	6	2	.10	.0	4.14	3.00	.05	---	1.21	1.28	53.3
XSECTION 2	RUNOFF	.02	6	2	.10	.0	4.14	3.00	3.05	---	.45	24.15	1599.6
XSECTION 102	ADDHYD	.04	6	2	.10	.0	4.14	3.00	1.21	---	.45	24.15	617.7
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	4.14	3.00	1.21	691.39	.45	23.33	596.8
XSECTION 3	RUNOFF	.01	6	2	.10	.0	4.14	3.00	3.05	---	.45	9.44	1599.6
XSECTION 103	ADDHYD	.04	6	2	.10	.0	4.14	3.00	1.45	---	.45	32.44	721.0
XSECTION 4	RUNOFF	.02	6	2	.10	.0	4.14	3.00	3.05	---	.55	23.00	1464.8
XSECTION 104	ADDHYD	.06	6	2	.10	.0	4.14	3.00	1.86	---	.51	54.83	903.3
XSECTION 5	RUNOFF	.03	6	2	.10	.0	4.14	3.00	2.67	---	.70	31.50	1184.1
XSECTION 105	ADDHYD	.09	6	2	.10	.0	4.14	3.00	2.11	---	.56	83.98	962.0
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	4.14	3.00	2.11	688.02	3.30*	4.60*	52.7
<u>ALTERNATE 6 STORM 50</u>													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	4.85	6.00	3.23	---	.67	22.81	950.5
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	4.85	6.00	3.23	693.99	1.63	14.94	622.5

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 6 STORM 50													
XSECTION 101	DIVERT	.00	6	2	.10	.0	4.85	6.00	3.23	---	1.63	14.94	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	4.85	6.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	4.85	6.00	3.73	---	.68	18.15	1202.0
XSECTION 102	ADDHYD	.04	6	2	.10	.0	4.85	6.00	1.44	---	.68	18.15	464.2
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	4.85	6.00	1.44	691.30	.68	18.14	464.0
XSECTION 3	RUNOFF	.01	6	2	.10	.0	4.85	6.00	3.73	---	.68	7.09	1202.0
XSECTION 103	ADDHYD	.04	6	2	.10	.0	4.85	6.00	1.74	---	.68	25.24	560.8
XSECTION 4	RUNOFF	.02	6	2	.10	.0	4.85	6.00	3.73	---	.73	17.71	1128.3
XSECTION 104	ADDHYD	.06	6	2	.10	.0	4.85	6.00	2.25	---	.70	42.74	704.2
XSECTION 5	RUNOFF	.03	6	2	.10	.0	4.85	6.00	3.33	---	.77	23.59	886.8
XSECTION 105	ADDHYD	.09	6	2	.10	.0	4.85	6.00	2.58	---	.72	66.06	756.7
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	4.85	6.00	2.30	688.42	6.30?	4.67?	53.5
ALTERNATE 12 STORM 50													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	5.62	12.00	3.94	---	4.80	14.16	590.2
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	5.62	12.00	3.94	693.70	5.49	12.72	529.9
XSECTION 101	DIVERT	.00	7	2	.10	.0	5.62	12.00	3.94	---	5.49	12.72	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	5.62	12.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	5.62	12.00	4.47	---	4.80	9.85	652.0
XSECTION 102	ADDHYD	.04	7	2	.10	.0	5.62	12.00	1.73	---	4.80	9.85	251.8
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	5.62	12.00	1.73	691.16	4.80	9.84	251.6
XSECTION 3	RUNOFF	.01	7	2	.10	.0	5.62	12.00	4.47	---	4.80	3.85	652.0
XSECTION 103	ADDHYD	.04	7	2	.10	.0	5.62	12.00	2.09	---	4.80	13.68	304.1
XSECTION 4	RUNOFF	.02	7	2	.10	.0	5.62	12.00	4.47	---	4.90	10.17	647.5
XSECTION 104	ADDHYD	.06	7	2	.10	.0	5.62	12.00	2.70	---	4.84	23.85	392.8
XSECTION 5	RUNOFF	.03	7	2	.10	.0	5.62	12.00	4.05	---	4.90	15.86	596.3
XSECTION 105	ADDHYD	.09	7	2	.10	.0	5.62	12.00	3.11	---	4.86	39.71	454.9
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	5.62	12.00	2.24	688.71	12.20?	4.72?	54.1
ALTERNATE 18 STORM 50													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	5.95	18.00	4.25	---	7.20	10.23	426.1
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	5.95	18.00	4.25	693.28	8.13	9.56	398.5
XSECTION 101	DIVERT	.00	7	2	.10	.0	5.95	18.00	4.25	---	8.13	9.56	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	5.95	18.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	5.95	18.00	4.79	---	7.20	7.05	466.9
XSECTION 102	ADDHYD	.04	7	2	.10	.0	5.95	18.00	1.85	---	7.20	7.05	180.3
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	5.95	18.00	1.85	691.12	7.20	7.05	180.3
XSECTION 3	RUNOFF	.01	7	2	.10	.0	5.95	18.00	4.79	---	7.20	2.75	466.9

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SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 18 STORM 50													
XSECTION 103	ADDHYD	.04	7	2	.10	.0	5.95	18.00	2.24	---	7.20	9.81	217.9
XSECTION 4	RUNOFF	.02	7	2	.10	.0	5.95	18.00	4.79	---	7.20	7.31	465.3
XSECTION 104	ADDHYD	.06	7	2	.10	.0	5.95	18.00	2.90	---	7.19	17.11	281.9
XSECTION 5	RUNOFF	.03	7	2	.10	.0	5.95	18.00	4.36	---	7.30	11.47	431.1
XSECTION 105	ADDHYD	.09	7	2	.10	.0	5.95	18.00	3.34	---	7.21	28.58	327.3
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	5.95	18.00	2.18	688.45	16.30	4.68	53.6
ALTERNATE 24 STORM 50													
XSECTION 1	RUNOFF	.02	8	2	.10	.0	6.46	24.00	4.73	---	15.55	9.92	413.5
STRUCTURE 1	RESVOR	.02	8	2	.10	.0	6.46	24.00	4.73	693.26	15.65	9.41	392.2
XSECTION 101	DIVERT	.00	8	2	.10	.0	6.46	24.00	4.73	---	15.65	9.41	*****
XSECTION 108	DIVERT	.02	8	2	.10	.0	6.46	24.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	8	2	.10	.0	6.46	24.00	5.29	---	15.55	6.55	433.6
XSECTION 102	ADDHYD	.04	8	2	.10	.0	6.46	24.00	2.04	---	15.55	6.55	167.5
STRUCTURE 2	RESVOR	.04	8	2	.10	.0	6.46	24.00	2.04	691.11	15.55	6.54	167.4
XSECTION 3	RUNOFF	.01	8	2	.10	.0	6.46	24.00	5.29	---	15.60	2.54	431.2
XSECTION 103	ADDHYD	.04	8	2	.10	.0	6.46	24.00	2.47	---	15.55	9.10	202.3
XSECTION 4	RUNOFF	.02	8	2	.10	.0	6.46	24.00	5.29	---	15.55	6.78	431.8
XSECTION 104	ADDHYD	.06	8	2	.10	.0	6.46	24.00	3.20	---	15.55	15.88	261.6
XSECTION 5	RUNOFF	.03	8	2	.10	.0	6.46	24.00	4.84	---	15.56	11.01	414.1
XSECTION 105	ADDHYD	.09	8	2	.10	.0	6.46	24.00	3.70	---	15.55	26.90	308.1
STRUCTURE 3	RESVOR	.09	8	2	.10	.0	6.46	24.00	1.98	688.54	24.10?	4.69?	53.8
ALTERNATE 5 STORM 99													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	.91	.08	.13	---	.20	10.60	441.7
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.91	.08	.13	692.30	.36	2.27	94.7
XSECTION 101	DIVERT	.00	6	2	.10	.0	.91	.08	.13	---	.36	2.27	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	.91	.08	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	.91	.08	.25	---	.21	11.28	747.2
XSECTION 102	ADDHYD	.04	6	2	.10	.0	.91	.08	.10	---	.21	11.28	288.6
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.91	.08	.10	691.19	.21	11.16	285.5
XSECTION 3	RUNOFF	.01	6	2	.10	.0	.91	.08	.25	---	.21	4.41	747.2
XSECTION 103	ADDHYD	.04	6	2	.10	.0	.91	.08	.12	---	.21	15.57	346.0
XSECTION 4	RUNOFF	.02	6	2	.10	.0	.91	.08	.26	---	.26	8.61	548.6
XSECTION 104	ADDHYD	.06	6	2	.10	.0	.91	.08	.16	---	.23	23.87	393.2
XSECTION 5	RUNOFF	.03	6	2	.10	.0	.91	.08	.15	---	.29	8.25	310.2
XSECTION 105	ADDHYD	.09	6	2	.10	.0	.91	.08	.16	---	.24	31.38	359.4
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.91	.08	.16	684.24	.57	3.89	44.6

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(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 10 STORM 99													
SECTION 1	RUNOFF	.02	6	2	.10	.0	1.67	.17	.54	---	.21	40.53	1688.9
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.67	.17	.56	693.27	.41	9.55	397.9
SECTION 101	DIVERT	.00	6	2	.10	.0	1.67	.17	.56	---	.41	9.55	*****
SECTION 108	DIVERT	.02	6	2	.10	.0	1.67	.17	.00	---	.00	.00	.0
SECTION 2	RUNOFF	.02	6	2	.10	.0	1.67	.17	.80	---	.23	31.13	2061.7
SECTION 102	ADDHYD	.04	6	2	.10	.0	1.67	.17	.31	---	.23	31.13	796.2
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.67	.17	.32	691.51	.24	30.83	788.5
SECTION 3	RUNOFF	.01	6	2	.10	.0	1.67	.17	.80	---	.23	12.16	2061.7
SECTION 103	ADDHYD	.04	6	2	.10	.0	1.67	.17	.38	---	.23	42.99	955.3
SECTION 4	RUNOFF	.02	6	2	.10	.0	1.67	.17	.82	---	.29	26.06	1660.0
SECTION 104	ADDHYD	.06	6	2	.10	.0	1.67	.17	.49	---	.25	64.67	1065.5
SECTION 5	RUNOFF	.03	6	2	.10	.0	1.67	.17	.61	---	.31	31.52	1185.0
SECTION 105	ADDHYD	.09	6	2	.10	.0	1.67	.17	.53	---	.28	94.37	1080.9
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.67	.17	.53	685.33	.80*	4.11*	47.1
ALTERNATE 15 STORM 99													
SECTION 1	RUNOFF	.02	6	2	.10	.0	2.05	.25	.81	---	.23	50.96	2123.3
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.05	.25	.83	693.85	.44	13.86	577.4
SECTION 101	DIVERT	.00	6	2	.10	.0	2.05	.25	.83	---	.44	13.86	*****
SECTION 108	DIVERT	.02	6	2	.10	.0	2.05	.25	.00	---	.00	.00	.0
SECTION 2	RUNOFF	.02	6	2	.10	.0	2.05	.25	1.12	---	.26	36.60	2423.6
SECTION 102	ADDHYD	.04	6	2	.10	.0	2.05	.25	.43	---	.26	36.60	936.0
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.05	.25	.44	691.62	.26	36.91	943.9
SECTION 3	RUNOFF	.01	6	2	.10	.0	2.05	.25	1.12	---	.26	14.30	2423.6
SECTION 103	ADDHYD	.04	6	2	.10	.0	2.05	.25	.53	---	.26	51.20	1137.7
SECTION 4	RUNOFF	.02	6	2	.10	.0	2.05	.25	1.13	---	.32	33.26	2118.3
SECTION 104	ADDHYD	.06	6	2	.10	.0	2.05	.25	.68	---	.28	82.93	1366.2
SECTION 5	RUNOFF	.03	6	2	.10	.0	2.05	.25	.88	---	.34	42.07	1581.4
SECTION 105	ADDHYD	.09	6	2	.10	.0	2.05	.25	.74	---	.30	123.11	1410.2
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.05	.25	.75	685.81	.80*	4.20*	48.2
ALTERNATE 30 STORM 99													
SECTION 1	RUNOFF	.02	6	2	.10	.0	2.80	.50	1.40	---	.26	58.39	2432.8
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.80	.50	1.42	694.35	.59	19.29	803.6

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
<u>ALTERNATE 30 STORM 99</u>													
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.80	.50	1.42	---	.40*	15.00*****	
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.80	.50	.08	---	.59	4.29	178.6
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.80	.50	1.79	---	.30	44.81	2967.8
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.80	.50	.74	---	.30	44.80	1145.9
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.80	.50	.74	691.75	.30	45.21	1156.3
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.80	.50	1.79	---	.30	17.51	2967.8
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.80	.50	.88	---	.30	62.72	1393.7
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.80	.50	1.80	---	.35	40.81	2599.1
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.80	.50	1.12	---	.32	102.26	1684.6
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.80	.50	1.49	---	.39	53.81	2023.0
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.80	.50	1.23	---	.34	153.92	1763.1
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.80	.50	1.23	686.74	1.00*	4.37*	50.1
<u>ALTERNATE 1 STORM 99</u>													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	3.56	1.00	2.06	---	.33	58.73	2447.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	3.56	1.00	2.06	694.48	.70	24.78	1032.5
XSECTION 101	DIVERT	.00	6	2	.10	.0	3.56	1.00	2.06	---	.40*	15.00*****	
XSECTION 108	DIVERT	.02	6	2	.10	.0	3.56	1.00	.32	---	.70	9.78	407.5
XSECTION 2	RUNOFF	.02	6	2	.10	.0	3.56	1.00	2.50	---	.34	43.78	2899.3
XSECTION 102	ADDHYD	.04	6	2	.10	.0	3.56	1.00	1.16	---	.34	43.89	1122.5
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	3.56	1.00	1.16	691.73	.34	44.04	1126.2
XSECTION 3	RUNOFF	.01	6	2	.10	.0	3.56	1.00	2.50	---	.34	17.11	2899.3
XSECTION 103	ADDHYD	.04	6	2	.10	.0	3.56	1.00	1.34	---	.34	61.14	1358.7
XSECTION 4	RUNOFF	.02	6	2	.10	.0	3.56	1.00	2.50	---	.41	40.52	2581.2
XSECTION 104	ADDHYD	.06	6	2	.10	.0	3.56	1.00	1.64	---	.38	97.75	1610.4
XSECTION 5	RUNOFF	.03	6	2	.10	.0	3.56	1.00	2.15	---	.44	55.96	2103.7
XSECTION 105	ADDHYD	.09	6	2	.10	.0	3.56	1.00	1.79	---	.41	152.18	1743.2
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	3.56	1.00	1.79	687.71	1.40*	4.55*	52.1
<u>ALTERNATE 2 STORM 99</u>													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	4.47	2.00	2.88	---	.44	46.95	1956.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	4.47	2.00	2.88	694.53	.88	27.15	1131.1
XSECTION 101	DIVERT	.00	6	2	.10	.0	4.47	2.00	2.88	---	.50*	15.00*****	
XSECTION 108	DIVERT	.02	6	2	.10	.0	4.47	2.00	.49	---	.88	12.15	506.1
XSECTION 2	RUNOFF	.02	6	2	.10	.0	4.47	2.00	3.37	---	.42	35.74	2366.9
XSECTION 102	ADDHYD	.04	6	2	.10	.0	4.47	2.00	1.60	---	.43	35.80	915.6
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	4.47	2.00	1.60	691.60	.43	35.92	918.5
XSECTION 3	RUNOFF	.01	6	2	.10	.0	4.47	2.00	3.37	---	.42	13.96	2366.9

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
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SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 2 STORM 99													
XSECTION 103	ADDHYD	.04	6	2	.10	.0	4.47	2.00	1.83	---	.43	49.88	1108.4
XSECTION 4	RUNOFF	.02	6	2	.10	.0	4.47	2.00	3.37	---	.51	34.61	2204.7
XSECTION 104	ADDHYD	.06	6	2	.10	.0	4.47	2.00	2.23	---	.46	82.74	1363.0
XSECTION 5	RUNOFF	.03	6	2	.10	.0	4.47	2.00	2.97	---	.57	49.29	1853.2
XSECTION 105	ADDHYD	.09	6	2	.10	.0	4.47	2.00	2.46	---	.53	131.31	1504.1
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	4.47	2.00	2.31	688.70	2.40?	4.72?	54.1
ALTERNATE 3 STORM 99													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	4.85	3.00	3.22	---	.44	39.83	1659.7
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	4.85	3.00	3.22	694.46	1.08	23.48	978.2
XSECTION 101	DIVERT	.00	6	2	.10	.0	4.85	3.00	3.22	---	.60*	15.00*****	
XSECTION 108	DIVERT	.02	6	2	.10	.0	4.85	3.00	.38	---	1.08	8.48	353.2
XSECTION 2	RUNOFF	.02	6	2	.10	.0	4.85	3.00	3.73	---	.44	30.55	2023.1
XSECTION 102	ADDHYD	.04	6	2	.10	.0	4.85	3.00	1.67	---	.44	30.55	781.3
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	4.85	3.00	1.67	691.51	.44	30.57	781.7
XSECTION 3	RUNOFF	.01	6	2	.10	.0	4.85	3.00	3.73	---	.44	11.94	2023.1
XSECTION 103	ADDHYD	.04	6	2	.10	.0	4.85	3.00	1.94	---	.44	42.50	944.5
XSECTION 4	RUNOFF	.02	6	2	.10	.0	4.85	3.00	3.73	---	.54	28.86	1838.5
XSECTION 104	ADDHYD	.06	6	2	.10	.0	4.85	3.00	2.41	---	.49	68.84	1134.1
XSECTION 5	RUNOFF	.03	6	2	.10	.0	4.85	3.00	3.32	---	.64	40.14	1509.0
XSECTION 105	ADDHYD	.09	6	2	.10	.0	4.85	3.00	2.69	---	.54	107.74	1234.2
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	4.85	3.00	2.34	688.96	3.30?	4.76?	54.6
ALTERNATE 6 STORM 99													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	5.68	6.00	4.00	---	.66	29.57	1232.1
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	5.68	6.00	4.00	694.28	1.66	17.60	733.2
XSECTION 101	DIVERT	.00	6	2	.10	.0	5.68	6.00	4.00	---	1.00*	15.00*****	
XSECTION 108	DIVERT	.02	6	2	.10	.0	5.68	6.00	.13	---	1.66	2.60	108.2
XSECTION 2	RUNOFF	.02	6	2	.10	.0	5.68	6.00	4.53	---	.67	22.67	1501.2
XSECTION 102	ADDHYD	.04	6	2	.10	.0	5.68	6.00	1.83	---	.67	22.67	579.7
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	5.68	6.00	1.83	691.38	.67	22.66	579.5
XSECTION 3	RUNOFF	.01	6	2	.10	.0	5.68	6.00	4.53	---	.67	8.86	1501.2
XSECTION 103	ADDHYD	.04	6	2	.10	.0	5.68	6.00	2.18	---	.67	31.52	700.4
XSECTION 4	RUNOFF	.02	6	2	.10	.0	5.68	6.00	4.53	---	.72	22.19	1413.4
XSECTION 104	ADDHYD	.06	6	2	.10	.0	5.68	6.00	2.79	---	.69	53.46	880.8
XSECTION 5	RUNOFF	.03	6	2	.10	.0	5.68	6.00	4.10	---	.75	30.84	1159.4
XSECTION 105	ADDHYD	.09	6	2	.10	.0	5.68	6.00	3.19	---	.71	83.69	958.6
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	5.68	6.00	2.40	689.37	6.30?	4.83?	55.3

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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
<u>ALTERNATE 12 STORM 99</u>													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	6.59	12.00	4.86	---	4.80	17.34	722.4
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	6.59	12.00	4.86	694.04	5.51	15.16	631.8
XSECTION 101	DIVERT	.00	7	2	.10	.0	6.59	12.00	4.86	---	5.20*	15.00*****	
XSECTION 108	DIVERT	.02	7	2	.10	.0	6.59	12.00	.00	---	5.50?	.16?	6.8
XSECTION 2	RUNOFF	.02	7	2	.10	.0	6.59	12.00	5.42	---	4.80	11.82	782.7
XSECTION 102	ADDHYD	.04	7	2	.10	.0	6.59	12.00	2.09	---	4.80	11.82	302.3
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	6.59	12.00	2.09	691.20	4.80	11.81	302.0
XSECTION 3	RUNOFF	.01	7	2	.10	.0	6.59	12.00	5.42	---	4.80	4.62	782.7
XSECTION 103	ADDHYD	.04	7	2	.10	.0	6.59	12.00	2.53	---	4.80	16.43	365.0
XSECTION 4	RUNOFF	.02	7	2	.10	.0	6.59	12.00	5.42	---	4.85	12.22	778.5
XSECTION 104	ADDHYD	.06	7	2	.10	.0	6.59	12.00	3.28	---	4.83	28.63	471.6
XSECTION 5	RUNOFF	.03	7	2	.10	.0	6.59	12.00	4.97	---	4.90	19.34	727.2
XSECTION 105	ADDHYD	.09	7	2	.10	.0	6.59	12.00	3.79	---	4.85	47.98	549.6
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	6.59	12.00	2.34	689.72	12.20?	4.88?	56.0
<u>ALTERNATE 18 STORM 99</u>													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	6.97	18.00	5.22	---	7.20	12.45	518.8
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	6.97	18.00	5.22	693.55	8.11	11.61	483.8
XSECTION 101	DIVERT	.00	7	2	.10	.0	6.97	18.00	5.22	---	8.11	11.61	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	6.97	18.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	6.97	18.00	5.79	---	7.20	8.43	558.4
XSECTION 102	ADDHYD	.04	7	2	.10	.0	6.97	18.00	2.24	---	7.20	8.43	215.6
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	6.97	18.00	2.24	691.14	7.20	8.43	215.6
XSECTION 3	RUNOFF	.01	7	2	.10	.0	6.97	18.00	5.79	---	7.20	3.29	558.4
XSECTION 103	ADDHYD	.04	7	2	.10	.0	6.97	18.00	2.70	---	7.20	11.73	260.6
XSECTION 4	RUNOFF	.02	7	2	.10	.0	6.97	18.00	5.79	---	7.20	8.74	556.8
XSECTION 104	ADDHYD	.06	7	2	.10	.0	6.97	18.00	3.50	---	7.18	20.47	337.2
XSECTION 5	RUNOFF	.03	7	2	.10	.0	6.97	18.00	5.33	---	7.20	13.92	523.4
XSECTION 105	ADDHYD	.09	7	2	.10	.0	6.97	18.00	4.06	---	7.20	34.39	393.9
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	6.97	18.00	2.28	689.48	16.40	4.85	55.5
<u>ALTERNATE 24 STORM 99</u>													
XSECTION 1	RUNOFF	.02	8	2	.10	.0	7.58	24.00	5.80	---	15.55	11.90	496.0
STRUCTURE 1	RESVOR	.02	8	2	.10	.0	7.58	24.00	5.80	693.51	15.65	11.33	471.9

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SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
<u>ALTERNATE 24 STORM 99</u>													
XSECTION 101	DIVERT	.00	8	2	.10	.0	7.58	24.00	5.80	---	15.65	11.33	*****
XSECTION 108	DIVERT	.02	8	2	.10	.0	7.58	24.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	8	2	.10	.0	7.58	24.00	6.39	---	15.55	7.77	514.4
XSECTION 102	ADDHYD	.04	8	2	.10	.0	7.58	24.00	2.47	---	15.55	7.77	198.7
STRUCTURE 2	RESVOR	.04	8	2	.10	.0	7.58	24.00	2.47	691.13	15.55	7.76	198.6
XSECTION 3	RUNOFF	.01	8	2	.10	.0	7.58	24.00	6.39	---	15.60	3.02	511.5
XSECTION 103	ADDHYD	.04	8	2	.10	.0	7.58	24.00	2.98	---	15.55	10.80	240.0
XSECTION 4	RUNOFF	.02	8	2	.10	.0	7.58	24.00	6.39	---	15.54	8.02	510.7
XSECTION 104	ADDHYD	.06	8	2	.10	.0	7.58	24.00	3.86	---	15.55	18.84	310.4
XSECTION 5	RUNOFF	.03	8	2	.10	.0	7.58	24.00	5.92	---	15.55	13.19	495.8
XSECTION 105	ADDHYD	.09	8	2	.10	.0	7.58	24.00	4.49	---	15.55	32.03	366.9
STRUCTURE 3	RESVOR	.09	8	2	.10	.0	7.58	24.00	2.10	689.65	24.20?	4.87?	55.8
<u>ALTERNATE 48 STORM 99</u>													
XSECTION 1	RUNOFF	.02	9	2	.20	.0	8.16	48.00	6.36	---	40.80	6.43	267.9
STRUCTURE 1	RESVOR	.02	9	2	.20	.0	8.16	48.00	6.36	692.84	40.80	6.32	263.3
XSECTION 101	DIVERT	.00	9	2	.20	.0	8.16	48.00	6.36	---	40.80	6.32	*****
XSECTION 108	DIVERT	.02	9	2	.20	.0	8.16	48.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	9	2	.20	.0	8.16	48.00	6.96	---	40.80	4.18	277.1
XSECTION 102	ADDHYD	.04	9	2	.20	.0	8.16	48.00	2.69	---	40.80	4.18	107.0
STRUCTURE 2	RESVOR	.04	9	2	.20	.0	8.16	48.00	2.69	691.07	40.80	4.19	107.2
XSECTION 3	RUNOFF	.01	9	2	.20	.0	8.16	48.00	6.96	---	40.80	1.63	277.1
XSECTION 103	ADDHYD	.04	9	2	.20	.0	8.16	48.00	3.25	---	40.80	5.83	129.5
XSECTION 4	RUNOFF	.02	9	2	.20	.0	8.16	48.00	6.96	---	40.80	4.35	277.0
XSECTION 104	ADDHYD	.06	9	2	.20	.0	8.16	48.00	4.21	---	40.80	10.17	167.6
XSECTION 5	RUNOFF	.03	9	2	.20	.0	8.16	48.00	6.48	---	40.80	7.18	269.8
XSECTION 105	ADDHYD	.09	9	2	.20	.0	8.16	48.00	4.90	---	40.71	17.41	199.4
STRUCTURE 3	RESVOR	.09	9	2	.20	.0	8.16	48.00	3.56	688.69	48.20?	4.72?	54.0
<u>ALTERNATE 72 STORM 99</u>													
XSECTION 1	RUNOFF	.02	9	2	.30	.0	8.78	72.00	6.96	---	61.20	4.65	193.6
STRUCTURE 1	RESVOR	.02	9	2	.30	.0	8.78	72.00	6.96	692.62	61.20	4.62	192.7
XSECTION 101	DIVERT	.00	9	2	.30	.0	8.78	72.00	6.96	---	61.20	4.62	*****
XSECTION 108	DIVERT	.02	9	2	.30	.0	8.78	72.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	9	2	.30	.0	8.78	72.00	7.56	---	61.20	3.01	199.5
XSECTION 102	ADDHYD	.04	9	2	.30	.0	8.78	72.00	2.92	---	61.20	3.01	77.0
STRUCTURE 2	RESVOR	.04	9	2	.30	.0	8.78	72.00	2.92	691.05	61.20	3.02	77.3
XSECTION 3	RUNOFF	.01	9	2	.30	.0	8.78	72.00	7.56	---	61.20	1.18	199.5

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
 (A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
 A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
	ALTERNATE	72	STORM	99									
XSECTION 103	ADDHYD	.04	9	2	.30	.0	8.78	72.00	3.53	---	61.20	4.20	93.4
XSECTION 4	RUNOFF	.02	9	2	.30	.0	8.78	72.00	7.57	---	61.20	3.13	199.5
XSECTION 104	ADDHYD	.06	9	2	.30	.0	8.78	72.00	4.57	---	61.20	7.33	120.8
XSECTION 5	RUNOFF	.03	9	2	.30	.0	8.78	72.00	7.08	---	61.20	5.18	194.8
XSECTION 105	ADDHYD	.09	9	2	.30	.0	8.78	72.00	5.34	---	61.20	12.52	143.4
STRUCTURE 3	RESVOR	.09	9	2	.30	.0	8.78	72.00	4.81	688.04	72.30?	4.61?	52.8

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....					
		2	5	10	25	50	99
<u>STRUCTURE 3 .09</u>							
ALTERNATE 1		4.04	4.13	4.20	4.31	4.41	4.55
ALTERNATE 2		4.10	4.21	4.30	4.43	4.56	4.72
ALTERNATE 3		4.11	4.23	4.33	4.47	4.60	4.76
ALTERNATE 5		.32	.99	1.77	3.29	3.86	3.89
ALTERNATE 6		4.12	4.26	4.36	4.53	4.67	4.83
ALTERNATE 10		3.43	3.87	3.91	3.99	4.06	4.11
ALTERNATE 12		4.13	4.27	4.39	4.57	4.72	4.88
ALTERNATE 15		3.87	3.92	3.99	4.07	4.13	4.20
ALTERNATE 18		4.09	4.23	4.34	4.52	4.68	4.85
ALTERNATE 24		4.10	4.23	4.34	4.52	4.69	4.87
ALTERNATE 30		3.95	4.05	4.10	4.20	4.28	4.37
ALTERNATE 48		.00	.00	.00	.00	.00	4.72
ALTERNATE 72		.00	.00	.00	.00	.00	4.61
<u>STRUCTURE 2 .04</u>							
ALTERNATE 1		9.97	14.76	19.18	26.60	34.94	44.04
ALTERNATE 2		8.77	12.62	16.31	22.71	28.76	35.92
ALTERNATE 3		6.95	9.96	13.10	18.28	23.33	30.57
ALTERNATE 5		.62	1.78	3.01	5.26	7.92	11.16
ALTERNATE 6		5.15	7.82	10.28	14.31	18.14	22.66
ALTERNATE 10		4.71	7.97	11.41	17.36	23.30	30.83
ALTERNATE 12		3.76	5.11	6.29	8.14	9.84	11.81
ALTERNATE 15		7.02	11.28	15.31	22.09	28.80	36.91
ALTERNATE 18		2.73	3.70	4.54	5.84	7.05	8.43
ALTERNATE 24		2.75	3.61	4.36	5.50	6.54	7.76
ALTERNATE 30		9.69	15.02	19.81	28.07	35.83	45.21
ALTERNATE 48		.00	.00	.00	.00	.00	4.19
ALTERNATE 72		.00	.00	.00	.00	.00	3.02
<u>STRUCTURE 1 .02</u>							
ALTERNATE 1		4.66	7.29	9.81	14.22	16.50	24.78
ALTERNATE 2		5.33	8.17	10.91	15.10	18.39	27.15
ALTERNATE 3		4.95	7.53	10.00	14.14	16.28	23.48
ALTERNATE 5		.00	.10	.30	.77	1.41	2.27
ALTERNATE 6		4.30	6.43	8.44	11.75	14.94	17.60



SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....					
		2	5	10	25	50	99
XSECTION 2	.02						
ALTERNATE 72		.00	.00	.00	.00	.00	3.01
XSECTION 3	.01						
ALTERNATE 1		3.89	5.77	7.50	10.40	13.62	17.11
ALTERNATE 2		3.42	4.95	6.39	8.74	11.20	13.96
ALTERNATE 3		2.71	3.89	5.11	7.13	9.44	11.94
ALTERNATE 5		.25	.69	1.19	2.08	3.13	4.41
ALTERNATE 6		2.01	3.05	4.02	5.59	7.09	8.86
ALTERNATE 10		1.82	3.22	4.50	6.85	9.19	12.16
ALTERNATE 12		1.47	2.00	2.46	3.18	3.85	4.62
ALTERNATE 15		2.72	4.36	5.92	8.55	11.15	14.30
ALTERNATE 18		1.07	1.45	1.77	2.28	2.75	3.29
ALTERNATE 24		1.08	1.41	1.69	2.14	2.54	3.02
ALTERNATE 30		3.77	5.84	7.69	10.88	13.88	17.51
ALTERNATE 48		.00	.00	.00	.00	.00	1.63
ALTERNATE 72		.00	.00	.00	.00	.00	1.18
XSECTION 4	.02						
ALTERNATE 1		9.36	14.17	18.46	25.61	32.43	40.52
ALTERNATE 2		8.65	12.53	16.19	22.16	27.89	34.61
ALTERNATE 3		7.08	10.12	13.00	17.89	23.00	28.86
ALTERNATE 5		.50	1.39	2.33	4.07	6.12	8.61
ALTERNATE 6		4.94	7.45	9.96	13.92	17.71	22.19
ALTERNATE 10		4.16	7.10	9.85	14.85	19.81	26.06
ALTERNATE 12		3.87	5.28	6.51	8.42	10.17	12.22
ALTERNATE 15		6.11	9.94	13.58	19.75	25.87	33.26
ALTERNATE 18		2.82	3.83	4.69	6.05	7.31	8.74
ALTERNATE 24		2.85	3.74	4.51	5.70	6.78	8.02
ALTERNATE 30		8.63	13.25	17.39	24.57	31.35	40.81
ALTERNATE 48		.00	.00	.00	.00	.00	4.35
ALTERNATE 72		.00	.00	.00	.00	.00	3.13
XSECTION 5	.03						
ALTERNATE 1		10.73	16.93	22.83	32.95	42.91	55.96
ALTERNATE 2		10.47	16.01	21.48	30.27	38.96	49.29
ALTERNATE 3		8.84	13.35	17.62	24.71	31.50	40.14
ALTERNATE 5		.04	.56	1.35	3.07	5.32	8.25
ALTERNATE 6		6.26	9.13	12.18	17.93	23.59	30.84



SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....					
		2	5	10	25	50	99
<u>XSECTION 102</u> .04							
ALTERNATE 72		.00	.00	.00	.00	.00	3.01
<u>XSECTION 103</u> .04							
ALTERNATE 1		13.87	20.53	26.68	37.01	48.56	61.14
ALTERNATE 2		12.19	17.57	22.70	31.56	39.96	49.88
ALTERNATE 3		9.67	13.85	18.22	25.42	32.44	42.50
ALTERNATE 5		.87	2.49	4.20	7.34	11.05	15.57
ALTERNATE 6		7.16	10.87	14.30	19.90	25.24	31.52
ALTERNATE 10		6.53	11.38	15.90	24.20	32.48	42.99
ALTERNATE 12		5.22	7.11	8.75	11.32	13.68	16.43
ALTERNATE 15		9.74	15.64	21.23	30.64	39.95	51.20
ALTERNATE 18		3.79	5.15	6.31	8.12	9.81	11.73
ALTERNATE 24		3.84	5.02	6.06	7.66	9.10	10.80
ALTERNATE 30		13.46	20.86	27.50	38.95	49.71	62.72
ALTERNATE 48		.00	.00	.00	.00	.00	5.83
ALTERNATE 72		.00	.00	.00	.00	.00	4.20
<u>XSECTION 104</u> .06							
ALTERNATE 1		23.18	34.40	44.70	61.83	78.21	97.75
ALTERNATE 2		20.75	30.02	38.77	52.80	66.53	82.74
ALTERNATE 3		16.74	23.92	30.75	43.22	54.83	68.84
ALTERNATE 5		1.36	3.78	6.39	11.21	16.91	23.87
ALTERNATE 6		11.86	18.30	24.12	33.64	42.74	53.46
ALTERNATE 10		10.50	17.78	24.58	36.94	49.20	64.67
ALTERNATE 12		9.09	12.39	15.26	19.71	23.85	28.63
ALTERNATE 15		15.63	25.20	34.29	49.59	64.70	82.93
ALTERNATE 18		6.61	8.97	11.01	14.17	17.11	20.47
ALTERNATE 24		6.70	8.76	10.57	13.35	15.88	18.84
ALTERNATE 30		21.68	33.71	44.52	63.23	80.85	102.26
ALTERNATE 48		.00	.00	.00	.00	.00	10.17
ALTERNATE 72		.00	.00	.00	.00	.00	7.33
<u>XSECTION 105</u> .09							
ALTERNATE 1		32.73	50.55	66.74	93.99	120.28	152.18
ALTERNATE 2		30.85	45.57	59.56	82.26	104.45	131.31
ALTERNATE 3		25.35	37.00	47.77	66.02	83.98	107.74
ALTERNATE 5		1.39	4.24	7.55	13.92	21.69	31.38
ALTERNATE 6		17.26	26.69	35.91	51.23	66.06	83.69

TR20 XEQ 7/30/\*\*  
REV 09/01/83

ROAKE AND ASSOCIATES, INC.  
Jefferson Estates, Naperville, IL. G:\533\002\PROP-1.T20

JOB 1 SUMMARY  
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SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....					
		2	5	10	25	50	99
<u>XSECTION 105 .09</u>							
ALTERNATE 10		13.46	23.88	33.83	52.24	70.75	94.37
ALTERNATE 12		14.55	20.01	24.93	32.62	39.71	47.98
ALTERNATE 15		20.69	34.68	48.24	71.46	94.74	123.11
ALTERNATE 18		10.58	14.55	18.03	23.48	28.58	34.39
ALTERNATE 24		11.00	14.56	17.69	22.51	26.90	32.03
ALTERNATE 30		29.27	46.30	61.95	92.74	120.19	153.92
ALTERNATE 48		.00	.00	.00	.00	.00	17.41
ALTERNATE 72		.00	.00	.00	.00	.00	12.52
<u>XSECTION 108 .02</u>							
ALTERNATE 1		.00	.00	.00	.00	1.50	9.78
ALTERNATE 2		.00	.00	.00	.10	3.39	12.15
ALTERNATE 3		.00	.00	.00	.00	1.28	8.48
ALTERNATE 6		.00	.00	.00	.00	.00	2.60
ALTERNATE 12		.00	.00	.00	.00	.00	.16
ALTERNATE 30		.00	.00	.00	.00	.28	4.29



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

JOB TR-20  
 TITLE 000 ROAKE AND ASSOCIATES, INC.  
 TITLE Jefferson Estates, Naperville, IL. G:\533\002\PROPOSED.T20  
 PASS= 1 SUMMARY NOPLOTS

5	RAINFL 6		0.05				
8		0.00	0.16	0.33	0.43	0.52	H
8		0.60	0.66	0.71	0.75	0.79	U
8		0.82	0.84	0.86	0.88	0.90	F
8		0.92	0.94	0.96	0.97	0.98	F
8		1.00	1.00	1.00	1.00	1.00	1
9	ENDTBL						
5	RAINFL 7		0.05				
8		0.00	0.03	0.08	0.12	0.16	H
8		0.22	0.29	0.39	0.51	0.62	U
8		0.70	0.76	0.81	0.85	0.88	F
8		0.91	0.93	0.95	0.97	0.98	F
8		1.00	1.00	1.00	1.00	1.00	2
9	ENDTBL						
5	RAINFL 8		0.05				
8		0.00	0.03	0.06	0.09	0.12	H
8		0.15	0.19	0.23	0.27	0.32	U
8		0.38	0.45	0.57	0.70	0.79	F
8		0.85	0.89	0.92	0.95	0.97	F
8		1.00	1.00	1.00	1.00	1.00	3
9	ENDTBL						
5	RAINFL 9		0.05				
8		0.00	0.02	0.05	0.08	0.10	H
8		0.13	0.16	0.19	0.22	0.25	U
8		0.28	0.32	0.35	0.39	0.45	F
8		0.51	0.59	0.72	0.84	0.92	F
8		1.00	1.00	1.00	1.00	1.00	4
9	ENDTBL						
3	STRUCT	02					
8			691.0	0.0	0.0		
8			692.0	60.0	0.01		
8			693.0	72.0	0.06		
8			694.0	82.0	0.28		
9	ENDTBL						
3	STRUCT	01					
8			692.0	0.0	0.0		
8			694.0	15.0	0.80		
8			694.2	15.9	1.0		
8			694.4	20.4	1.2		
8			694.6	31.0	1.4		
9	ENDTBL						
3	STRUCT	03					
8			683.0	0.0	0.0		

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

8				684.0	2.87			0.26	
8				685.0	3.14			1.52	
8				686.0	3.38			3.58	
8				687.0	3.61			6.00	
8				688.0	3.82			8.61	
8				689.0	4.03			11.41	
8				690.0	4.22			14.41	
8				691.0	4.42			17.64	
8				692.0	4.58			21.22	
9	ENDTBL								
6	RUNOFF	1	001	6	0.0240	85.0		0.20	1
6	RESVOR	2		01 6 7	692.0				1
6	DIVERT	6	101	7 4 5	15.0			108.	1
6	RUNOFF	1	002	2	0.0151	90.		0.25	1
6	ADDHYD	4	102	5 2 3					1
6	RESVOR	2		02 3 5	691.0				1
6	RUNOFF	1	003	7	0.0059	90.		0.25	1
6	ADDHYD	4	103	5 7 6					1
6	RUNOFF	1	004	4	0.0157	90.		0.33	1
6	ADDHYD	4	104	4 6 7					1
6	RUNOFF	1	005	5	0.0266	86.		0.35	1
6	ADDHYD	4	105	5 7 6					1
6	RESVOR	2		03 6 7	683.0				1
	ENDATA								
7	INCREM	6			0.10				
7	COMPUT	7	001	03	0.0	0.36	0.08336	2 5 2	2YR-5MN
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	0.67	0.16676	2 10 2	2YR-10MN
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	0.82	0.256	2 15 2	2YR-15MN
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	1.12	0.56	2 30 2	2YR-30MN
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	1.43	1.06	2 1 2	2YR-1HR
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	1.79	2.06	2 2 2	2YR-2HR
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	1.94	3.06	2 3 2	2YR-3HR
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	2.28	6.06	2 6 2	2YR-6HR
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	2.64	12.07	2 12 2	2YR-12HR
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	2.79	18.07	2 18 2	2YR-18HR
	ENDCMP	1							
7	COMPUT	7	001	03	0.0	3.04	24.08	2 24 2	2YR-24HR



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

7	ENDCMP 1	7	001	03	0.0	1.21	0.16676	2	10	25	25Y-10MN
7	ENDCMP 1	7	001	03	0.0	1.49	0.256	2	15	25	25Y-15MN
7	ENDCMP 1	7	001	03	0.0	2.04	0.56	2	30	25	25Y-30MN
7	ENDCMP 1	7	001	03	0.0	2.59	1.06	2	1	25	25YR-1HR
7	ENDCMP 1	7	001	03	0.0	3.25	2.06	2	2	25	25YR-2HR
7	ENDCMP 1	7	001	03	0.0	3.53	3.06	2	3	25	25YR-3HR
7	ENDCMP 1	7	001	03	0.0	4.13	6.06	2	6	25	25YR-6HR
7	ENDCMP 1	7	001	03	0.0	4.79	12.07	2	12	25	25Y-12HR
7	ENDCMP 1	7	001	03	0.0	5.06	18.07	2	18	25	25Y-18HR
7	ENDCMP 1	7	001	03	0.0	5.51	24.08	2	24	25	25Y-24HR
7	ENDCMP 1	7	001	03	0.0	0.78	0.08336	2	5	50	50YR-5MN
7	ENDCMP 1	7	001	03	0.0	1.42	0.16676	2	10	50	50Y-10MN
7	ENDCMP 1	7	001	03	0.0	1.75	0.256	2	15	50	50Y-15MN
7	ENDCMP 1	7	001	03	0.0	2.39	0.56	2	30	50	50Y-30MN
7	ENDCMP 1	7	001	03	0.0	3.04	1.06	2	1	50	50YR-1HR
7	ENDCMP 1	7	001	03	0.0	3.82	2.06	2	2	50	50YR-2HR
7	ENDCMP 1	7	001	03	0.0	4.14	3.06	2	3	50	50YR-3HR
7	ENDCMP 1	7	001	03	0.0	4.85	6.06	2	6	50	50YR-6HR
7	ENDCMP 1	7	001	03	0.0	5.62	12.07	2	12	50	50Y-12HR
7	ENDCMP 1	7	001	03	0.0	5.95	18.07	2	18	50	50Y-18HR
7	ENDCMP 1	7	001	03	0.0	6.46	24.08	2	24	50	50Y-24HR
7	ENDCMP 1	7	001	03	0.0	0.91	0.08336	2	5	99	100Y-5MN
7	ENDCMP 1	7	001	03	0.0	1.67	0.16676	2	10	99	100Y-10M



SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 5 STORM 2													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	.36	.08	.00	---	.00	.00	.0
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.36	.08	.00	---	.00	.00	.0
XSECTION 101	DIVERT	.00	6	2	.10	.0	.36	.08	.00	---	.00	.00	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	.36	.08	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	.36	.08	.01	---	.20?	.64?	42.2
XSECTION 102	ADDHYD	.04	6	2	.10	.0	.36	.08	.01	---	.20?	.64?	16.3
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.36	.08	.01	691.01	.20	.62	15.9
XSECTION 3	RUNOFF	.01	6	2	.10	.0	.36	.08	.01	---	.20?	.25?	42.2
XSECTION 103	ADDHYD	.04	6	2	.10	.0	.36	.08	.01	---	.20?	.87?	19.4
XSECTION 4	RUNOFF	.02	6	2	.10	.0	.36	.08	.02	---	.30?	.50?	32.2
XSECTION 104	ADDHYD	.06	6	2	.10	.0	.36	.08	.01	---	.24	1.36	22.5
XSECTION 5	RUNOFF	.03	6	2	.10	.0	.36	.08	.00	---	.30?	.04?	1.5
XSECTION 105	ADDHYD	.09	6	2	.10	.0	.36	.08	.01	---	.24	1.39	16.0
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.36	.08	.01	683.09	.50?	.25?	2.9
ALTERNATE 10 STORM 2													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	.67	.17	.05	---	.23	3.41	142.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.67	.17	.05	692.11	.40?	.82?	34.2
XSECTION 101	DIVERT	.00	6	2	.10	.0	.67	.17	.05	---	.40?	.82?	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	.67	.17	.00	---	.00?	.00?	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	.67	.17	.13	---	.26	4.66	308.6
XSECTION 102	ADDHYD	.04	6	2	.10	.0	.67	.17	.05	---	.26	4.66	119.2
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.67	.17	.05	691.08	.26	4.71	120.4
XSECTION 3	RUNOFF	.01	6	2	.10	.0	.67	.17	.13	---	.26	1.82	308.6
XSECTION 103	ADDHYD	.04	6	2	.10	.0	.67	.17	.06	---	.26	6.53	145.0
XSECTION 4	RUNOFF	.02	6	2	.10	.0	.67	.17	.13	---	.31	4.16	265.1
XSECTION 104	ADDHYD	.06	6	2	.10	.0	.67	.17	.08	---	.28	10.50	172.9
XSECTION 5	RUNOFF	.03	6	2	.10	.0	.67	.17	.06	---	.33	3.17	119.0
XSECTION 105	ADDHYD	.09	6	2	.10	.0	.67	.17	.07	---	.29	13.46	154.2
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.67	.17	.07	683.95	.56	2.73	31.2
ALTERNATE 15 STORM 2													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	.82	.25	.10	---	.28	5.89	245.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.82	.25	.10	692.22	.48	1.62	67.6

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 15 STORM 2													
XSECTION 101	DIVERT	.00	6	2	.10	.0	.82	.25	.10	---	.48	1.62	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	.82	.25	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	.82	.25	.21	---	.29	6.96	461.0
XSECTION 102	ADDHYD	.04	6	2	.10	.0	.82	.25	.08	---	.29	6.96	178.0
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.82	.25	.08	691.12	.29	7.02	179.6
XSECTION 3	RUNOFF	.01	6	2	.10	.0	.82	.25	.21	---	.29	2.72	461.0
XSECTION 103	ADDHYD	.04	6	2	.10	.0	.82	.25	.10	---	.29	9.74	216.5
XSECTION 4	RUNOFF	.02	6	2	.10	.0	.82	.25	.21	---	.34	6.11	389.4
XSECTION 104	ADDHYD	.06	6	2	.10	.0	.82	.25	.13	---	.31	15.63	257.4
XSECTION 5	RUNOFF	.03	6	2	.10	.0	.82	.25	.12	---	.38	5.52	207.6
XSECTION 105	ADDHYD	.09	6	2	.10	.0	.82	.25	.12	---	.32	20.69	237.0
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.82	.25	.12	684.15	.67	2.91	33.3
ALTERNATE 30 STORM 2													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.12	.50	.23	---	.32	9.37	390.5
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.12	.50	.23	692.47	.63	3.49	145.6
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.12	.50	.23	---	.63	3.49	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.12	.50	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.12	.50	.40	---	.33	9.65	639.4
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.12	.50	.15	---	.33	9.65	246.9
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.12	.50	.15	691.16	.33	9.69	247.7
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.12	.50	.40	---	.33	3.77	639.4
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.12	.50	.19	---	.33	13.46	299.1
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.12	.50	.40	---	.40	8.63	549.8
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.12	.50	.24	---	.35	21.68	357.2
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.12	.50	.26	---	.44	9.23	346.9
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.12	.50	.25	---	.39	29.27	335.3
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.12	.50	.25	684.56	.91	3.02	34.6
ALTERNATE 1 STORM 2													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.43	1.00	.41	---	.42	10.35	431.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.43	1.00	.41	692.62	.93	4.66	194.0
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.43	1.00	.41	---	.93	4.66	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.43	1.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.43	1.00	.63	---	.41	9.96	659.6
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.43	1.00	.24	---	.41	9.96	254.7
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.43	1.00	.24	691.17	.41	9.97	255.1
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.43	1.00	.63	---	.41	3.89	659.6

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 1 STORM 2													
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.43	1.00	.29	---	.41	13.87	308.1
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.43	1.00	.63	---	.47	9.36	595.9
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.43	1.00	.38	---	.43	23.18	381.8
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.43	1.00	.45	---	.53	10.73	403.3
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.43	1.00	.40	---	.46	32.73	374.9
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.43	1.00	.40	685.02	1.30*	3.15*	36.0
ALTERNATE 2 STORM 2													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.79	2.00	.65	---	.58	9.57	398.5
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.79	2.00	.64	692.71	1.09	5.33	222.2
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.79	2.00	.64	---	1.09	5.33	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.79	2.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.79	2.00	.92	---	.56	8.75	579.8
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.79	2.00	.35	---	.56	8.75	223.9
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.79	2.00	.35	691.15	.56	8.77	224.4
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.79	2.00	.92	---	.56	3.42	579.8
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.79	2.00	.43	---	.56	12.19	270.9
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.79	2.00	.92	---	.62	8.65	551.0
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.79	2.00	.55	---	.59	20.75	341.9
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.79	2.00	.69	---	.69	10.47	393.7
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.79	2.00	.60	---	.62	30.85	353.4
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.79	2.00	.60	685.35	2.30*	3.22*	36.9
ALTERNATE 3 STORM 2													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.94	3.00	.75	---	.78	7.88	328.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.94	3.00	.75	692.66	1.38	4.95	206.4
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.94	3.00	.75	---	1.38	4.95	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.94	3.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.94	3.00	1.04	---	.73	6.95	460.0
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.94	3.00	.40	---	.73	6.95	177.6
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.94	3.00	.40	691.12	.73	6.95	177.8
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.94	3.00	1.04	---	.73	2.71	460.0
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.94	3.00	.49	---	.73	9.67	214.8
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.94	3.00	1.04	---	.78	7.08	450.7
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.94	3.00	.63	---	.75	16.74	275.7
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.94	3.00	.80	---	.87	8.84	332.2
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.94	3.00	.68	---	.80	25.35	290.4
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.94	3.00	.68	685.43	3.20*	3.24*	37.2

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
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SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 6 STORM 2													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	2.28	6.00	1.01	---	1.48	5.38	224.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.28	6.00	1.00	692.57	1.87	4.30	179.3
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.28	6.00	1.00	---	1.87	4.30	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.28	6.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.28	6.00	1.34	---	.70	5.15	341.1
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.28	6.00	.52	---	.70	5.15	131.7
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.28	6.00	.52	691.09	.70	5.15	131.6
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.28	6.00	1.34	---	.70	2.01	341.1
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.28	6.00	.62	---	.70	7.16	159.1
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.28	6.00	1.34	---	.80	4.94	314.9
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.28	6.00	.81	---	.70	11.86	195.4
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.28	6.00	1.07	---	1.46	6.26	235.3
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.28	6.00	.89	---	1.30	17.26	197.7
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.28	6.00	.89	685.53	6.20*	3.27*	37.4
ALTERNATE 12 STORM 2													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	2.64	12.00	1.29	---	5.37	4.86	202.3
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	2.64	12.00	1.29	692.56	5.57	4.20	175.1
XSECTION 101	DIVERT	.00	7	2	.10	.0	2.64	12.00	1.29	---	5.57	4.20	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	2.64	12.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	2.64	12.00	1.66	---	4.90	3.75	248.5
XSECTION 102	ADDHYD	.04	7	2	.10	.0	2.64	12.00	.64	---	4.90	3.75	96.0
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	2.64	12.00	.64	691.06	4.90	3.76	96.1
XSECTION 3	RUNOFF	.01	7	2	.10	.0	2.64	12.00	1.66	---	4.90	1.47	248.5
XSECTION 103	ADDHYD	.04	7	2	.10	.0	2.64	12.00	.77	---	4.90	5.22	116.1
XSECTION 4	RUNOFF	.02	7	2	.10	.0	2.64	12.00	1.66	---	4.90	3.87	246.6
XSECTION 104	ADDHYD	.06	7	2	.10	.0	2.64	12.00	1.00	---	4.90	9.09	149.8
XSECTION 5	RUNOFF	.03	7	2	.10	.0	2.64	12.00	1.36	---	5.42	5.51	207.3
XSECTION 105	ADDHYD	.09	7	2	.10	.0	2.64	12.00	1.11	---	5.39	14.55	166.7
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	2.64	12.00	1.11	685.65	9.40*	3.30*	37.8
ALTERNATE 18 STORM 2													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	2.79	18.00	1.41	---	8.10	3.55	147.9
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	2.79	18.00	1.41	692.44	8.20	3.30	137.4

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
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SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
<u>ALTERNATE 18 STORM 2</u>													
XSECTION 101	DIVERT	.00	7	2	.10	.0	2.79	18.00	1.41	---	8.20	3.30	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	2.79	18.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	2.79	18.00	1.79	---	7.20	2.73	180.7
XSECTION 102	ADDHYD	.04	7	2	.10	.0	2.79	18.00	.69	---	7.20	2.73	69.8
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	2.79	18.00	.69	691.05	7.20	2.73	69.8
XSECTION 3	RUNOFF	.01	7	2	.10	.0	2.79	18.00	1.79	---	7.20	1.07	180.7
XSECTION 103	ADDHYD	.04	7	2	.10	.0	2.79	18.00	.84	---	7.20	3.79	84.3
XSECTION 4	RUNOFF	.02	7	2	.10	.0	2.79	18.00	1.79	---	7.30	2.82	179.9
XSECTION 104	ADDHYD	.06	7	2	.10	.0	2.79	18.00	1.08	---	7.20	6.61	108.9
XSECTION 5	RUNOFF	.03	7	2	.10	.0	2.79	18.00	1.48	---	8.10	4.05	152.2
XSECTION 105	ADDHYD	.09	7	2	.10	.0	2.79	18.00	1.20	---	8.07	10.58	121.2
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	2.79	18.00	1.20	685.46	13.50*	3.25*	37.2
<u>ALTERNATE 24 STORM 2</u>													
XSECTION 1	RUNOFF	.02	8	2	.10	.0	3.04	24.00	1.62	---	15.56	3.82	159.1
STRUCTURE 1	RESVOR	.02	8	2	.10	.0	3.04	24.00	1.62	692.47	15.68	3.54	147.4
XSECTION 101	DIVERT	.00	8	2	.10	.0	3.04	24.00	1.62	---	15.68	3.54	*****
XSECTION 108	DIVERT	.02	8	2	.10	.0	3.04	24.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	8	2	.10	.0	3.04	24.00	2.02	---	15.60	2.75	182.2
XSECTION 102	ADDHYD	.04	8	2	.10	.0	3.04	24.00	.78	---	15.60	2.75	70.4
STRUCTURE 2	RESVOR	.04	8	2	.10	.0	3.04	24.00	.78	691.05	15.60	2.75	70.4
XSECTION 3	RUNOFF	.01	8	2	.10	.0	3.04	24.00	2.02	---	15.60	1.08	182.2
XSECTION 103	ADDHYD	.04	8	2	.10	.0	3.04	24.00	.94	---	15.56	3.84	85.4
XSECTION 4	RUNOFF	.02	8	2	.10	.0	3.04	24.00	2.02	---	15.60	2.85	181.6
XSECTION 104	ADDHYD	.06	8	2	.10	.0	3.04	24.00	1.22	---	15.56	6.70	110.4
XSECTION 5	RUNOFF	.03	8	2	.10	.0	3.04	24.00	1.70	---	15.57	4.30	161.8
XSECTION 105	ADDHYD	.09	8	2	.10	.0	3.04	24.00	1.37	---	15.56	11.00	126.1
STRUCTURE 3	RESVOR	.09	8	2	.10	.0	3.04	24.00	1.18	685.52	19.40?	3.26?	37.4
<u>ALTERNATE 5 STORM 5</u>													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	.46	.08	.01	---	.20?	.52?	21.8
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.46	.08	.01	692.01	.40?	.10?	4.3
XSECTION 101	DIVERT	.00	6	2	.10	.0	.46	.08	.01	---	.40?	.10?*****	.0
XSECTION 108	DIVERT	.02	6	2	.10	.0	.46	.08	.00	---	.00?	.00?	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	.46	.08	.04	---	.22	1.81	119.8
XSECTION 102	ADDHYD	.04	6	2	.10	.0	.46	.08	.02	---	.22	1.81	46.3
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.46	.08	.02	691.03	.22	1.78	45.6
XSECTION 3	RUNOFF	.01	6	2	.10	.0	.46	.08	.04	---	.20?	.69?	117.5

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 5 STORM 5													
XSECTION 103	ADDHYD	.04	6	2	.10	.0	.46	.08	.02	---	.22	2.49	55.3
XSECTION 4	RUNOFF	.02	6	2	.10	.0	.46	.08	.04	---	.28	1.39	88.4
XSECTION 104	ADDHYD	.06	6	2	.10	.0	.46	.08	.03	---	.23	3.78	62.3
XSECTION 5	RUNOFF	.03	6	2	.10	.0	.46	.08	.01	---	.30?	.56?	21.1
XSECTION 105	ADDHYD	.09	6	2	.10	.0	.46	.08	.02	---	.24	4.24	48.6
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.46	.08	.02	683.28	.50?	.79?	9.1
ALTERNATE 10 STORM 5													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	.84	.17	.10	---	.22	7.56	314.8
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.84	.17	.10	692.24	.42	1.80	74.9
XSECTION 101	DIVERT	.00	6	2	.10	.0	.84	.17	.10	---	.42	1.80	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	.84	.17	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	.84	.17	.22	---	.25	8.23	545.0
XSECTION 102	ADDHYD	.04	6	2	.10	.0	.84	.17	.08	---	.25	8.23	210.5
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.84	.17	.09	691.13	.25	7.97	204.0
XSECTION 3	RUNOFF	.01	6	2	.10	.0	.84	.17	.22	---	.25	3.22	545.0
XSECTION 103	ADDHYD	.04	6	2	.10	.0	.84	.17	.10	---	.25	11.38	252.8
XSECTION 4	RUNOFF	.02	6	2	.10	.0	.84	.17	.22	---	.30	7.10	452.3
XSECTION 104	ADDHYD	.06	6	2	.10	.0	.84	.17	.13	---	.27	17.78	292.9
XSECTION 5	RUNOFF	.03	6	2	.10	.0	.84	.17	.12	---	.32	6.47	243.3
XSECTION 105	ADDHYD	.09	6	2	.10	.0	.84	.17	.13	---	.29	23.88	273.5
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.84	.17	.13	684.17	.60*	2.92*	33.4
ALTERNATE 15 STORM 5													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.03	.25	.18	---	.26	10.90	454.1
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.03	.25	.19	692.41	.46	3.10	129.0
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.03	.25	.19	---	.46	3.10	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.03	.25	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.03	.25	.34	---	.28	11.17	739.4
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.03	.25	.13	---	.28	11.17	285.6
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.03	.25	.13	691.19	.28	11.28	288.4
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.03	.25	.34	---	.28	4.36	739.4
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.03	.25	.16	---	.28	15.64	347.5
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.03	.25	.34	---	.33	9.94	632.9
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.03	.25	.20	---	.30	25.20	415.2
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.03	.25	.21	---	.36	10.04	377.6
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.03	.25	.21	---	.32	34.68	397.2
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.03	.25	.21	684.44	.70*	2.99*	34.2

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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 30 STORM 5													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.41	.50	.39	---	.31	16.03	668.1
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.41	.50	.39	692.79	.61	5.90	245.7
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.41	.50	.39	---	.61	5.90	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.41	.50	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.41	.50	.61	---	.32	14.95	989.8
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.41	.50	.24	---	.32	14.95	382.3
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.41	.50	.24	691.25	.32	15.02	384.3
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.41	.50	.61	---	.32	5.84	989.8
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.41	.50	.29	---	.32	20.86	463.6
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.41	.50	.61	---	.39	13.25	843.9
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.41	.50	.37	---	.34	33.71	555.3
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.41	.50	.43	---	.43	15.41	579.5
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.41	.50	.39	---	.37	46.30	530.4
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.41	.50	.39	685.04	.90*	3.15*	36.1
ALTERNATE 1 STORM 5													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.79	1.00	.65	---	.39	16.62	692.6
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.79	1.00	.64	692.97	.87	7.29	303.9
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.79	1.00	.64	---	.87	7.29	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.79	1.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.79	1.00	.92	---	.39	14.76	977.2
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.79	1.00	.35	---	.39	14.76	377.4
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.79	1.00	.35	691.25	.39	14.76	377.6
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.79	1.00	.92	---	.39	5.77	977.2
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.79	1.00	.43	---	.39	20.53	456.2
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.79	1.00	.92	---	.45	14.17	902.3
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.79	1.00	.55	---	.42	34.40	566.6
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.79	1.00	.69	---	.51	16.93	636.5
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.79	1.00	.60	---	.44	50.55	579.0
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.79	1.00	.60	685.45	1.40*	3.25*	37.2
ALTERNATE 2 STORM 5													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	2.24	2.00	.98	---	.55	14.85	618.7
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.24	2.00	.97	693.09	1.05	8.17	340.4

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 2 STORM 5													
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.24	2.00	.97	---	1.05	8.17	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.24	2.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.24	2.00	1.30	---	.52	12.66	838.4
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.24	2.00	.50	---	.52	12.66	323.8
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.24	2.00	.50	691.21	.53	12.62	322.8
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.24	2.00	1.30	---	.52	4.95	838.4
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.24	2.00	.61	---	.53	17.57	390.4
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.24	2.00	1.30	---	.59	12.53	798.0
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.24	2.00	.79	---	.56	30.02	494.6
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.24	2.00	1.03	---	.66	16.01	601.9
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.24	2.00	.86	---	.59	45.57	522.0
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.24	2.00	.86	685.93	2.30*	3.36*	38.5
ALTERNATE 3 STORM 5													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	2.43	3.00	1.12	---	.75	11.93	497.0
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.43	3.00	1.12	693.00	1.25	7.53	313.9
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.43	3.00	1.12	---	1.25	7.53	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.43	3.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.43	3.00	1.47	---	.65	9.95	659.1
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.43	3.00	.57	---	.65	9.95	254.6
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.43	3.00	.57	691.17	.66	9.96	254.7
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.43	3.00	1.47	---	.65	3.89	659.1
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.43	3.00	.68	---	.66	13.85	307.7
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.43	3.00	1.47	---	.74	10.12	644.9
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.43	3.00	.89	---	.69	23.92	394.1
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.43	3.00	1.19	---	.83	13.35	502.1
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.43	3.00	.98	---	.76	37.00	423.8
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.43	3.00	.98	686.06	3.30*	3.39*	38.9
ALTERNATE 6 STORM 5													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	2.85	6.00	1.46	---	.70	8.23	342.7
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.85	6.00	1.46	692.86	1.75	6.43	268.1
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.85	6.00	1.46	---	1.75	6.43	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.85	6.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.85	6.00	1.85	---	.71	7.81	517.5
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.85	6.00	.71	---	.71	7.81	199.9
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.85	6.00	.71	691.13	.71	7.82	199.9
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.85	6.00	1.85	---	.71	3.05	517.5

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 6 STORM 5													
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.85	6.00	.86	---	.71	10.87	241.5
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.85	6.00	1.85	---	.77	7.45	474.2
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.85	6.00	1.12	---	.73	18.30	301.4
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.85	6.00	1.53	---	1.32	9.13	343.1
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.85	6.00	1.24	---	.75	26.69	305.8
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.85	6.00	1.24	686.25	6.20*	3.44*	39.4
ALTERNATE 12 STORM 5													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	3.31	12.00	1.85	---	5.37	6.83	284.6
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	3.31	12.00	1.85	692.81	5.54	6.05	252.0
XSECTION 101	DIVERT	.00	7	2	.10	.0	3.31	12.00	1.85	---	5.54	6.05	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	3.31	12.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	3.31	12.00	2.27	---	4.90	5.11	338.3
XSECTION 102	ADDHYD	.04	7	2	.10	.0	3.31	12.00	.88	---	4.90	5.11	130.7
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	3.31	12.00	.88	691.09	4.90	5.11	130.8
XSECTION 3	RUNOFF	.01	7	2	.10	.0	3.31	12.00	2.27	---	4.90	2.00	338.3
XSECTION 103	ADDHYD	.04	7	2	.10	.0	3.31	12.00	1.06	---	4.90	7.11	158.0
XSECTION 4	RUNOFF	.02	7	2	.10	.0	3.31	12.00	2.27	---	4.90	5.28	336.6
XSECTION 104	ADDHYD	.06	7	2	.10	.0	3.31	12.00	1.37	---	4.90	12.39	204.2
XSECTION 5	RUNOFF	.03	7	2	.10	.0	3.31	12.00	1.93	---	5.40	7.70	289.6
XSECTION 105	ADDHYD	.09	7	2	.10	.0	3.31	12.00	1.54	---	4.90	20.01	229.3
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	3.31	12.00	1.53	686.41	11.00	3.47	39.8
ALTERNATE 18 STORM 5													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	3.50	18.00	2.01	---	8.06	4.97	207.3
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	3.50	18.00	2.01	692.62	8.18	4.67	194.7
XSECTION 101	DIVERT	.00	7	2	.10	.0	3.50	18.00	2.01	---	8.18	4.67	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	3.50	18.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	3.50	18.00	2.45	---	7.20	3.70	245.1
XSECTION 102	ADDHYD	.04	7	2	.10	.0	3.50	18.00	.94	---	7.20	3.70	94.6
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	3.50	18.00	.94	691.06	7.20	3.70	94.6
XSECTION 3	RUNOFF	.01	7	2	.10	.0	3.50	18.00	2.45	---	7.20	1.45	245.1
XSECTION 103	ADDHYD	.04	7	2	.10	.0	3.50	18.00	1.14	---	7.20	5.15	114.4
XSECTION 4	RUNOFF	.02	7	2	.10	.0	3.50	18.00	2.45	---	7.30	3.83	243.8
XSECTION 104	ADDHYD	.06	7	2	.10	.0	3.50	18.00	1.48	---	7.20	8.97	147.8
XSECTION 5	RUNOFF	.03	7	2	.10	.0	3.50	18.00	2.10	---	7.30	5.61	210.8
XSECTION 105	ADDHYD	.09	7	2	.10	.0	3.50	18.00	1.67	---	7.30	14.55	166.7
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	3.50	18.00	1.51	686.23	13.80?	3.43?	39.3

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(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 24 STORM 5													
XSECTION 1	RUNOFF	.02	8	2	.10	.0	3.80	24.00	2.28	---	15.56	5.17	215.6
STRUCTURE 1	RESVOR	.02	8	2	.10	.0	3.80	24.00	2.28	692.64	15.67	4.84	201.5
XSECTION 101	DIVERT	.00	8	2	.10	.0	3.80	24.00	2.28	---	15.67	4.84	*****
XSECTION 108	DIVERT	.02	8	2	.10	.0	3.80	24.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	8	2	.10	.0	3.80	24.00	2.73	---	15.56	3.61	239.3
XSECTION 102	ADDHYD	.04	8	2	.10	.0	3.80	24.00	1.05	---	15.56	3.61	92.4
STRUCTURE 2	RESVOR	.04	8	2	.10	.0	3.80	24.00	1.05	691.06	15.55	3.61	92.4
XSECTION 3	RUNOFF	.01	8	2	.10	.0	3.80	24.00	2.73	---	15.60	1.41	238.2
XSECTION 103	ADDHYD	.04	8	2	.10	.0	3.80	24.00	1.27	---	15.55	5.02	111.7
XSECTION 4	RUNOFF	.02	8	2	.10	.0	3.80	24.00	2.73	---	15.56	3.74	238.1
XSECTION 104	ADDHYD	.06	8	2	.10	.0	3.80	24.00	1.65	---	15.56	8.76	144.4
XSECTION 5	RUNOFF	.03	8	2	.10	.0	3.80	24.00	2.36	---	15.57	5.80	218.0
XSECTION 105	ADDHYD	.09	8	2	.10	.0	3.80	24.00	1.87	---	15.56	14.56	166.8
STRUCTURE 3	RESVOR	.09	8	2	.10	.0	3.80	24.00	1.32	686.25	21.70	3.44	39.4
ALTERNATE 5 STORM 10													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	.54	.08	.02	---	.20	1.50	62.6
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.54	.08	.02	692.04	.40?	.30?	12.6
XSECTION 101	DIVERT	.00	6	2	.10	.0	.54	.08	.02	---	.40?	.30?*****	
XSECTION 108	DIVERT	.02	6	2	.10	.0	.54	.08	.00	---	.00?	.00?	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	.54	.08	.07	---	.22	3.05	201.8
XSECTION 102	ADDHYD	.04	6	2	.10	.0	.54	.08	.03	---	.22	3.05	77.9
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.54	.08	.03	691.05	.22	3.01	76.9
XSECTION 3	RUNOFF	.01	6	2	.10	.0	.54	.08	.07	---	.22	1.19	201.8
XSECTION 103	ADDHYD	.04	6	2	.10	.0	.54	.08	.03	---	.22	4.20	93.3
XSECTION 4	RUNOFF	.02	6	2	.10	.0	.54	.08	.07	---	.27	2.33	148.5
XSECTION 104	ADDHYD	.06	6	2	.10	.0	.54	.08	.04	---	.23	6.39	105.3
XSECTION 5	RUNOFF	.03	6	2	.10	.0	.54	.08	.02	---	.30	1.35	50.9
XSECTION 105	ADDHYD	.09	6	2	.10	.0	.54	.08	.04	---	.24	7.55	86.5
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.54	.08	.04	683.50	.52	1.42	16.3
ALTERNATE 10 STORM 10													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	.98	.17	.16	---	.22	11.84	493.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.98	.17	.16	692.37	.42	2.80	116.6

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 10 STORM 10													
XSECTION 101	DIVERT	.00	6	2	.10	.0	.98	.17	.16	---	.42	2.80	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	.98	.17	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	.98	.17	.30	---	.24	11.51	762.3
XSECTION 102	ADDHYD	.04	6	2	.10	.0	.98	.17	.12	---	.24	11.51	294.4
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.98	.17	.12	691.19	.25	11.41	291.8
XSECTION 3	RUNOFF	.01	6	2	.10	.0	.98	.17	.30	---	.24	4.50	762.3
XSECTION 103	ADDHYD	.04	6	2	.10	.0	.98	.17	.14	---	.24	15.90	353.4
XSECTION 4	RUNOFF	.02	6	2	.10	.0	.98	.17	.31	---	.30	9.85	627.5
XSECTION 104	ADDHYD	.06	6	2	.10	.0	.98	.17	.18	---	.27	24.58	405.0
XSECTION 5	RUNOFF	.03	6	2	.10	.0	.98	.17	.19	---	.32	9.80	368.5
XSECTION 105	ADDHYD	.09	6	2	.10	.0	.98	.17	.19	---	.28	33.83	387.5
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.98	.17	.19	684.37	.67	2.97	34.0
ALTERNATE 15 STORM 10													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.21	.25	.27	---	.25	16.70	696.0
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.21	.25	.28	692.61	.45	4.61	192.1
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.21	.25	.28	---	.45	4.61	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.21	.25	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.21	.25	.46	---	.27	15.15	1003.5
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.21	.25	.18	---	.27	15.15	387.5
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.21	.25	.18	691.26	.28	15.31	391.5
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.21	.25	.46	---	.27	5.92	1003.5
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.21	.25	.22	---	.28	21.23	471.7
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.21	.25	.46	---	.33	13.58	865.2
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.21	.25	.28	---	.30	34.29	564.9
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.21	.25	.31	---	.35	14.59	548.3
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.21	.25	.29	---	.31	48.24	552.6
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.21	.25	.29	684.73	.77	3.07	35.1
ALTERNATE 30 STORM 10													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.65	.50	.54	---	.30	22.28	928.5
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.65	.50	.55	693.09	.61	8.14	339.2
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.65	.50	.55	---	.61	8.14	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.65	.50	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.65	.50	.80	---	.31	19.69	1303.6
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.65	.50	.31	---	.31	19.69	503.5
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.65	.50	.31	691.33	.31	19.81	506.7
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.65	.50	.80	---	.31	7.69	1303.6

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 30 STORM 10													
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.65	.50	.37	---	.31	27.50	611.2
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.65	.50	.80	---	.38	17.39	1107.8
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.65	.50	.48	---	.33	44.52	733.5
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.65	.50	.59	---	.42	21.19	796.5
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.65	.50	.52	---	.35	61.95	709.6
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.65	.50	.52	685.32	1.00*	3.22*	36.8
ALTERNATE 1 STORM 10													
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.10	1.00	.87	---	.37	22.68	945.1
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.10	1.00	.87	693.31	.81	9.81	408.7
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.10	1.00	.87	---	.81	9.81	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.10	1.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.10	1.00	1.18	---	.38	19.19	1270.7
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.10	1.00	.46	---	.38	19.19	490.7
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.10	1.00	.46	691.32	.38	19.18	490.6
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.10	1.00	1.18	---	.38	7.50	1270.7
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.10	1.00	.55	---	.38	26.68	592.9
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.10	1.00	1.18	---	.44	18.46	1176.0
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.10	1.00	.71	---	.41	44.70	736.4
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.10	1.00	.92	---	.49	22.83	858.2
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.10	1.00	.78	---	.43	66.74	764.5
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.10	1.00	.78	685.85	1.40*	3.34*	38.3
ALTERNATE 2 STORM 10													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	2.64	2.00	1.29	---	.52	19.96	831.5
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.64	2.00	1.29	693.45	1.02	10.91	454.7
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.64	2.00	1.29	---	1.02	10.91	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.64	2.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.64	2.00	1.66	---	.50	16.36	1083.6
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.64	2.00	.64	---	.50	16.36	418.5
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.64	2.00	.64	691.27	.50	16.31	417.0
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.64	2.00	1.66	---	.50	6.39	1083.6
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.64	2.00	.77	---	.50	22.70	504.4
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.64	2.00	1.66	---	.57	16.19	1031.1
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.64	2.00	1.00	---	.53	38.77	638.7
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.64	2.00	1.36	---	.64	21.48	807.4
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.64	2.00	1.11	---	.57	59.56	682.2
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.64	2.00	1.11	686.41	2.30*	3.47*	39.8

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 3 STORM 10													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	2.86	3.00	1.47	---	.71	15.64	651.6
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.86	3.00	1.47	693.33	1.20	10.00	416.9
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.86	3.00	1.47	---	1.20	10.00	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.86	3.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.86	3.00	1.85	---	.53	13.08	866.5
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.86	3.00	.72	---	.53	13.08	334.6
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.86	3.00	.72	691.22	.53	13.10	335.2
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.86	3.00	1.85	---	.53	5.11	866.5
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.86	3.00	.87	---	.53	18.22	404.8
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.86	3.00	1.85	---	.67	13.00	828.2
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.86	3.00	1.12	---	.61	30.75	506.6
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.86	3.00	1.54	---	.80	17.62	662.6
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.86	3.00	1.25	---	.72	47.77	547.2
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.86	3.00	1.25	686.57	3:30*	3.51*	40.2
ALTERNATE 6 STORM 10													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	3.35	6.00	1.88	---	.70	11.56	481.6
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	3.35	6.00	1.88	693.13	1.71	8.44	351.9
XSECTION 101	DIVERT	.00	6	2	.10	.0	3.35	6.00	1.88	---	1.71	8.44	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	3.35	6.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	3.35	6.00	2.31	---	.70	10.28	680.8
XSECTION 102	ADDHYD	.04	6	2	.10	.0	3.35	6.00	.89	---	.70	10.28	262.9
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	3.35	6.00	.89	691.17	.70	10.28	263.0
XSECTION 3	RUNOFF	.01	6	2	.10	.0	3.35	6.00	2.31	---	.70	4.02	680.8
XSECTION 103	ADDHYD	.04	6	2	.10	.0	3.35	6.00	1.08	---	.70	14.30	317.7
XSECTION 4	RUNOFF	.02	6	2	.10	.0	3.35	6.00	2.31	---	.75	9.96	634.2
XSECTION 104	ADDHYD	.06	6	2	.10	.0	3.35	6.00	1.39	---	.72	24.12	397.4
XSECTION 5	RUNOFF	.03	6	2	.10	.0	3.35	6.00	1.97	---	.80	12.18	457.7
XSECTION 105	ADDHYD	.09	6	2	.10	.0	3.35	6.00	1.57	---	.74	35.91	411.4
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	3.35	6.00	1.57	686.85	6:20*	3.57*	40.9
ALTERNATE 12 STORM 10													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	3.89	12.00	2.36	---	5.36	8.57	357.1
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	3.89	12.00	2.36	693.03	5.52	7.69	320.6

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
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SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 12 STORM 10													
XSECTION 101	DIVERT	.00	7	2	.10	.0	3.89	12.00	2.36	---	5.52	7.69	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	3.89	12.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	3.89	12.00	2.81	---	4.80	6.30	417.1
XSECTION 102	ADDHYD	.04	7	2	.10	.0	3.89	12.00	1.09	---	4.80	6.30	161.1
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	3.89	12.00	1.09	691.10	4.90	6.29	160.9
XSECTION 3	RUNOFF	.01	7	2	.10	.0	3.89	12.00	2.81	---	4.80	2.46	417.1
XSECTION 103	ADDHYD	.04	7	2	.10	.0	3.89	12.00	1.31	---	4.80	8.75	194.5
XSECTION 4	RUNOFF	.02	7	2	.10	.0	3.89	12.00	2.81	---	4.90	6.51	414.9
XSECTION 104	ADDHYD	.06	7	2	.10	.0	3.89	12.00	1.70	---	4.90	15.26	251.4
XSECTION 5	RUNOFF	.03	7	2	.10	.0	3.89	12.00	2.44	---	4.90	9.67	363.4
XSECTION 105	ADDHYD	.09	7	2	.10	.0	3.89	12.00	1.93	---	4.90	24.93	285.6
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	3.89	12.00	1.66	687.06	11.00	3.62	41.5
ALTERNATE 18 STORM 10													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	4.11	18.00	2.55	---	7.20	6.22	259.3
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	4.11	18.00	2.55	692.78	8.17	5.88	245.1
XSECTION 101	DIVERT	.00	7	2	.10	.0	4.11	18.00	2.55	---	8.17	5.88	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	4.11	18.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	4.11	18.00	3.02	---	7.20	4.54	300.5
XSECTION 102	ADDHYD	.04	7	2	.10	.0	4.11	18.00	1.17	---	7.20	4.54	116.1
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	4.11	18.00	1.17	691.08	7.20	4.54	116.1
XSECTION 3	RUNOFF	.01	7	2	.10	.0	4.11	18.00	3.02	---	7.20	1.77	300.5
XSECTION 103	ADDHYD	.04	7	2	.10	.0	4.11	18.00	1.41	---	7.20	6.31	140.2
XSECTION 4	RUNOFF	.02	7	2	.10	.0	4.11	18.00	3.02	---	7.20	4.69	299.0
XSECTION 104	ADDHYD	.06	7	2	.10	.0	4.11	18.00	1.83	---	7.20	11.01	181.3
XSECTION 5	RUNOFF	.03	7	2	.10	.0	4.11	18.00	2.64	---	7.30	7.06	265.3
XSECTION 105	ADDHYD	.09	7	2	.10	.0	4.11	18.00	2.08	---	7.20	18.03	206.5
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	4.11	18.00	1.60	686.86	14.00?	3.58?	41.0
ALTERNATE 24 STORM 10													
XSECTION 1	RUNOFF	.02	8	2	.10	.0	4.47	24.00	2.88	---	15.55	6.37	265.6
STRUCTURE 1	RESVOR	.02	8	2	.10	.0	4.47	24.00	2.88	692.80	15.66	5.99	249.6
XSECTION 101	DIVERT	.00	8	2	.10	.0	4.47	24.00	2.88	---	15.66	5.99	*****
XSECTION 108	DIVERT	.02	8	2	.10	.0	4.47	24.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	8	2	.10	.0	4.47	24.00	3.36	---	15.55	4.36	288.6
XSECTION 102	ADDHYD	.04	8	2	.10	.0	4.47	24.00	1.30	---	15.55	4.36	111.5
STRUCTURE 2	RESVOR	.04	8	2	.10	.0	4.47	24.00	1.30	691.07	15.55	4.36	111.4
XSECTION 3	RUNOFF	.01	8	2	.10	.0	4.47	24.00	3.36	---	15.60	1.69	287.2

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 24 STORM 10													
SECTION 103	ADDHYD	.04	8	2	.10	.0	4.47	24.00	1.57	---	15.55	6.06	134.7
SECTION 4	RUNOFF	.02	8	2	.10	.0	4.47	24.00	3.36	---	15.55	4.51	287.2
SECTION 104	ADDHYD	.06	8	2	.10	.0	4.47	24.00	2.03	---	15.55	10.57	174.1
SECTION 5	RUNOFF	.03	8	2	.10	.0	4.47	24.00	2.97	---	15.56	7.12	267.6
SECTION 105	ADDHYD	.09	8	2	.10	.0	4.47	24.00	2.32	---	15.56	17.69	202.6
STRUCTURE 3	RESVOR	.09	8	2	.10	.0	4.47	24.00	1.42	686.93	21.80	3.59	41.2
ALTERNATE 5 STORM 25													
SECTION 1	RUNOFF	.02	6	2	.10	.0	.66	.08	.04	---	.20	3.72	154.9
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.66	.08	.04	692.10	.40?	.77?	31.9
SECTION 101	DIVERT	.00	6	2	.10	.0	.66	.08	.04	---	.40?	.77?*****	
SECTION 108	DIVERT	.02	6	2	.10	.0	.66	.08	.00	---	.00?	.00?	.0
SECTION 2	RUNOFF	.02	6	2	.10	.0	.66	.08	.12	---	.21	5.33	352.7
SECTION 102	ADDHYD	.04	6	2	.10	.0	.66	.08	.05	---	.21	5.33	136.2
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.66	.08	.05	691.09	.22	5.26	134.6
SECTION 3	RUNOFF	.01	6	2	.10	.0	.66	.08	.12	---	.21	2.08	352.7
SECTION 103	ADDHYD	.04	6	2	.10	.0	.66	.08	.06	---	.22	7.34	163.1
SECTION 4	RUNOFF	.02	6	2	.10	.0	.66	.08	.12	---	.27	4.07	259.1
SECTION 104	ADDHYD	.06	6	2	.10	.0	.66	.08	.07	---	.23	11.21	184.7
SECTION 5	RUNOFF	.03	6	2	.10	.0	.66	.08	.06	---	.29	3.07	115.3
SECTION 105	ADDHYD	.09	6	2	.10	.0	.66	.08	.07	---	.24	13.92	159.5
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.66	.08	.07	683.92	.52	2.64	30.2
ALTERNATE 10 STORM 25													
SECTION 1	RUNOFF	.02	6	2	.10	.0	1.21	.17	.27	---	.22	20.21	842.1
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.21	.17	.28	692.63	.41	4.76	198.3
SECTION 101	DIVERT	.00	6	2	.10	.0	1.21	.17	.28	---	.41	4.76	*****
SECTION 108	DIVERT	.02	6	2	.10	.0	1.21	.17	.00	---	.00	.00	.0
SECTION 2	RUNOFF	.02	6	2	.10	.0	1.21	.17	.46	---	.24	17.52	1160.6
SECTION 102	ADDHYD	.04	6	2	.10	.0	1.21	.17	.18	---	.24	17.52	448.2
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.21	.17	.18	691.29	.24	17.36	443.9
SECTION 3	RUNOFF	.01	6	2	.10	.0	1.21	.17	.46	---	.24	6.85	1160.6
SECTION 103	ADDHYD	.04	6	2	.10	.0	1.21	.17	.22	---	.24	24.20	537.8
SECTION 4	RUNOFF	.02	6	2	.10	.0	1.21	.17	.46	---	.30	14.85	946.0
SECTION 104	ADDHYD	.06	6	2	.10	.0	1.21	.17	.28	---	.26	36.94	608.6
SECTION 5	RUNOFF	.03	6	2	.10	.0	1.21	.17	.31	---	.32	16.21	609.3
SECTION 105	ADDHYD	.09	6	2	.10	.0	1.21	.17	.29	---	.28	52.24	598.4
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.21	.17	.29	684.73	.70*	3.07*	35.1

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR (\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK (?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 15 STORM 25													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.49	.25	.43	---	.24	26.88	1120.0
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.49	.25	.44	692.99	.45	7.44	309.8
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.49	.25	.44	---	.45	7.44	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.49	.25	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.49	.25	.66	---	.27	21.87	1448.6
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.49	.25	.26	---	.27	21.87	559.4
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.49	.25	.26	691.37	.27	22.09	565.0
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.49	.25	.66	---	.27	8.55	1448.6
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.49	.25	.31	---	.27	30.64	680.8
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.49	.25	.67	---	.32	19.75	1258.1
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.49	.25	.41	---	.29	49.59	816.9
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.49	.25	.48	---	.35	23.00	864.8
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.49	.25	.43	---	.31	71.46	818.6
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.49	.25	.43	685.14	.80*	3.17*	36.4
ALTERNATE 30 STORM 25													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	2.04	.50	.81	---	.28	33.55	1397.7
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.04	.50	.82	693.62	.59	12.16	506.5
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.04	.50	.82	---	.59	12.16	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.04	.50	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.04	.50	1.12	---	.31	27.85	1844.6
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.04	.50	.43	---	.31	27.85	712.3
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.04	.50	.44	691.47	.31	28.07	717.8
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.04	.50	1.12	---	.31	10.88	1844.6
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.04	.50	.52	---	.31	38.95	865.5
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.04	.50	1.13	---	.36	24.57	1564.7
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.04	.50	.68	---	.32	63.23	1041.6
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.04	.50	.88	---	.40	31.50	1184.2
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.04	.50	.74	---	.34	92.74	1062.3
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.04	.50	.74	685.81	1.00*	3.33*	38.2
ALTERNATE 1 STORM 25													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	2.59	1.00	1.25	---	.35	34.40	1433.3
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.59	1.00	1.25	693.90	.74	14.22	592.5

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 1		STORM	25										
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.59	1.00	1.25	---	.74	14.22	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.59	1.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.59	1.00	1.61	---	.36	26.63	1763.3
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.59	1.00	.62	---	.36	26.63	681.0
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.59	1.00	.62	691.44	.36	26.60	680.4
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.59	1.00	1.61	---	.36	10.40	1763.3
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.59	1.00	.75	---	.36	37.01	822.4
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.59	1.00	1.61	---	.43	25.61	1631.1
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.59	1.00	.97	---	.39	61.83	1018.6
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.59	1.00	1.31	---	.47	32.95	1238.7
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.59	1.00	1.08	---	.42	93.99	1076.6
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.59	1.00	1.08	686.44	1.40*	3.48*	39.9
ALTERNATE 2		STORM	25										
XSECTION 1	RUNOFF	.02	6	2	.10	.0	3.25	2.00	1.80	---	.49	28.35	1181.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	3.25	2.00	1.80	694.02	.99	15.10	629.2
XSECTION 101	DIVERT	.00	6	2	.10	.0	3.25	2.00	1.80	---	.90*	15.00*****	
XSECTION 108	DIVERT	.02	6	2	.10	.0	3.25	2.00	.00	---	1.00*	.10?	4.2
XSECTION 2	RUNOFF	.02	6	2	.10	.0	3.25	2.00	2.22	---	.45	22.37	1481.3
XSECTION 102	ADDHYD	.04	6	2	.10	.0	3.25	2.00	.86	---	.45	22.37	572.1
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	3.25	2.00	.86	691.38	.45	22.71	580.8
XSECTION 3	RUNOFF	.01	6	2	.10	.0	3.25	2.00	2.22	---	.45	8.74	1481.3
XSECTION 103	ADDHYD	.04	6	2	.10	.0	3.25	2.00	1.03	---	.45	31.56	701.4
XSECTION 4	RUNOFF	.02	6	2	.10	.0	3.25	2.00	2.22	---	.54	22.16	1411.3
XSECTION 104	ADDHYD	.06	6	2	.10	.0	3.25	2.00	1.34	---	.50	52.80	869.9
XSECTION 5	RUNOFF	.03	6	2	.10	.0	3.25	2.00	1.88	---	.61	30.27	1138.1
XSECTION 105	ADDHYD	.09	6	2	.10	.0	3.25	2.00	1.50	---	.55	82.26	942.2
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	3.25	2.00	1.50	687.14	2.40*	3.64*	41.7
ALTERNATE 3		STORM	25										
XSECTION 1	RUNOFF	.02	6	2	.10	.0	3.53	3.00	2.04	---	.61	21.94	914.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	3.53	3.00	2.04	693.88	1.15	14.14	589.0
XSECTION 101	DIVERT	.00	6	2	.10	.0	3.53	3.00	2.04	---	1.15	14.14	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	3.53	3.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	3.53	3.00	2.47	---	.49	18.25	1208.8
XSECTION 102	ADDHYD	.04	6	2	.10	.0	3.53	3.00	.96	---	.49	18.25	466.8
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	3.53	3.00	.96	691.30	.49	18.28	467.6
XSECTION 3	RUNOFF	.01	6	2	.10	.0	3.53	3.00	2.47	---	.49	7.13	1208.8

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 3 STORM 25													
XSECTION 103	ADDHYD	.04	6	2	.10	.0	3.53	3.00	1.15	---	.49	25.42	564.8
XSECTION 4	RUNOFF	.02	6	2	.10	.0	3.53	3.00	2.47	---	.60	17.89	1139.7
XSECTION 104	ADDHYD	.06	6	2	.10	.0	3.53	3.00	1.50	---	.53	43.22	712.1
XSECTION 5	RUNOFF	.03	6	2	.10	.0	3.53	3.00	2.12	---	.75	24.71	928.9
XSECTION 105	ADDHYD	.09	6	2	.10	.0	3.53	3.00	1.69	---	.63	66.02	756.3
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	3.53	3.00	1.68	687.36	3.30*	3.69*	42.2
ALTERNATE 6 STORM 25													
XSECTION 103	ADDHYD	.04	6	2	.10	.0	4.13	6.00	2.57	---	.68	17.22	717.3
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	4.13	6.00	2.57	693.57	1.66	11.75	489.7
XSECTION 101	DIVERT	.00	6	2	.10	.0	4.13	6.00	2.57	---	1.66	11.75	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	4.13	6.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	4.13	6.00	3.04	---	.68	14.31	947.6
XSECTION 102	ADDHYD	.04	6	2	.10	.0	4.13	6.00	1.17	---	.68	14.31	365.9
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	4.13	6.00	1.17	691.24	.69	14.31	365.9
XSECTION 3	RUNOFF	.01	6	2	.10	.0	4.13	6.00	3.04	---	.68	5.59	947.6
XSECTION 103	ADDHYD	.04	6	2	.10	.0	4.13	6.00	1.42	---	.69	19.90	442.1
XSECTION 4	RUNOFF	.02	6	2	.10	.0	4.13	6.00	3.04	---	.73	13.92	886.6
XSECTION 104	ADDHYD	.06	6	2	.10	.0	4.13	6.00	1.84	---	.70	33.64	554.3
XSECTION 5	RUNOFF	.03	6	2	.10	.0	4.13	6.00	2.66	---	.80	17.93	674.0
XSECTION 105	ADDHYD	.09	6	2	.10	.0	4.13	6.00	2.09	---	.73	51.23	586.8
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	4.13	6.00	1.82	687.75	6.30?	3.77?	43.2
ALTERNATE 12 STORM 25													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	4.79	12.00	3.17	---	4.80	11.45	477.1
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	4.79	12.00	3.17	693.37	5.51	10.29	429.0
XSECTION 101	DIVERT	.00	7	2	.10	.0	4.79	12.00	3.17	---	5.51	10.29	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	4.79	12.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	4.79	12.00	3.67	---	4.80	8.15	539.6
XSECTION 102	ADDHYD	.04	7	2	.10	.0	4.79	12.00	1.42	---	4.80	8.15	208.4
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	4.79	12.00	1.42	691.14	4.80	8.14	208.2
XSECTION 3	RUNOFF	.01	7	2	.10	.0	4.79	12.00	3.67	---	4.80	3.18	539.6
XSECTION 103	ADDHYD	.04	7	2	.10	.0	4.79	12.00	1.71	---	4.80	11.32	251.6
XSECTION 4	RUNOFF	.02	7	2	.10	.0	4.79	12.00	3.67	---	4.90	8.42	536.2
XSECTION 104	ADDHYD	.06	7	2	.10	.0	4.79	12.00	2.22	---	4.80	19.71	324.7
XSECTION 5	RUNOFF	.03	7	2	.10	.0	4.79	12.00	3.27	---	4.90	12.88	484.3
XSECTION 105	ADDHYD	.09	7	2	.10	.0	4.79	12.00	2.54	---	4.87	32.62	373.6
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	4.79	12.00	1.78	688.06	12.20?	3.83?	43.9

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 18 STORM 25													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	5.06	18.00	3.42	---	7.20	8.29	345.2
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	5.06	18.00	3.42	693.04	8.15	7.78	324.3
XSECTION 101	DIVERT	.00	7	2	.10	.0	5.06	18.00	3.42	---	8.15	7.78	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	5.06	18.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	5.06	18.00	3.93	---	7.20	5.84	386.7
XSECTION 102	ADDHYD	.04	7	2	.10	.0	5.06	18.00	1.52	---	7.20	5.84	149.3
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	5.06	18.00	1.52	691.10	7.20	5.84	149.3
XSECTION 3	RUNOFF	.01	7	2	.10	.0	5.06	18.00	3.93	---	7.20	2.28	386.7
XSECTION 103	ADDHYD	.04	7	2	.10	.0	5.06	18.00	1.83	---	7.20	8.12	180.4
XSECTION 4	RUNOFF	.02	7	2	.10	.0	5.06	18.00	3.93	---	7.20	6.05	385.1
XSECTION 104	ADDHYD	.06	7	2	.10	.0	5.06	18.00	2.38	---	7.20	14.17	233.4
XSECTION 5	RUNOFF	.03	7	2	.10	.0	5.06	18.00	3.52	---	7.30	9.33	350.8
XSECTION 105	ADDHYD	.09	7	2	.10	.0	5.06	18.00	2.72	---	7.22	23.48	269.0
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	5.06	18.00	1.72	687.86	16.30	3.79	43.4
ALTERNATE 24 STORM 25													
XSECTION 1	RUNOFF	.02	8	2	.10	.0	5.51	24.00	3.84	---	15.55	8.23	343.1
STRUCTURE 1	RESVOR	.02	8	2	.10	.0	5.51	24.00	3.84	693.04	15.66	7.78	324.2
XSECTION 101	DIVERT	.00	8	2	.10	.0	5.51	24.00	3.84	---	15.66	7.78	*****
XSECTION 108	DIVERT	.02	8	2	.10	.0	5.51	24.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	8	2	.10	.0	5.51	24.00	4.37	---	15.55	5.51	364.7
XSECTION 102	ADDHYD	.04	8	2	.10	.0	5.51	24.00	1.69	---	15.55	5.51	140.8
STRUCTURE 2	RESVOR	.04	8	2	.10	.0	5.51	24.00	1.69	691.09	15.55	5.50	140.8
XSECTION 3	RUNOFF	.01	8	2	.10	.0	5.51	24.00	4.37	---	15.60	2.14	362.7
XSECTION 103	ADDHYD	.04	8	2	.10	.0	5.51	24.00	2.04	---	15.55	7.66	170.1
XSECTION 4	RUNOFF	.02	8	2	.10	.0	5.51	24.00	4.37	---	15.55	5.70	363.0
XSECTION 104	ADDHYD	.06	8	2	.10	.0	5.51	24.00	2.64	---	15.55	13.35	220.0
XSECTION 5	RUNOFF	.03	8	2	.10	.0	5.51	24.00	3.94	---	15.56	9.16	344.3
XSECTION 105	ADDHYD	.09	8	2	.10	.0	5.51	24.00	3.04	---	15.55	22.51	257.9
STRUCTURE 3	RESVOR	.09	8	2	.10	.0	5.51	24.00	1.55	688.02	24.20?	3.82?	43.8
ALTERNATE 5 STORM 50													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	.78	.08	.08	---	.20	6.68	278.5
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.78	.08	.08	692.19	.37	1.41	58.8

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
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A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 5 STORM 50													
SECTION 101	DIVERT	.00	6	2	.10	.0	.78	.08	.08	---	.37	1.41	*****
SECTION 108	DIVERT	.02	6	2	.10	.0	.78	.08	.00	---	.00	.00	.0
SECTION 2	RUNOFF	.02	6	2	.10	.0	.78	.08	.18	---	.21	8.01	530.5
SECTION 102	ADDHYD	.04	6	2	.10	.0	.78	.08	.07	---	.21	8.01	204.9
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.78	.08	.07	691.13	.22	7.92	202.6
SECTION 3	RUNOFF	.01	6	2	.10	.0	.78	.08	.18	---	.21	3.13	530.5
SECTION 103	ADDHYD	.04	6	2	.10	.0	.78	.08	.09	---	.22	11.05	245.6
SECTION 4	RUNOFF	.02	6	2	.10	.0	.78	.08	.18	---	.27	6.12	389.5
SECTION 104	ADDHYD	.06	6	2	.10	.0	.78	.08	.11	---	.23	16.91	278.5
SECTION 5	RUNOFF	.03	6	2	.10	.0	.78	.08	.10	---	.29	5.32	199.9
SECTION 105	ADDHYD	.09	6	2	.10	.0	.78	.08	.11	---	.24	21.69	248.4
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.78	.08	.11	684.10	.56	2.90	33.2
ALTERNATE 10 STORM 50													
SECTION 1	RUNOFF	.02	6	2	.10	.0	1.42	.17	.39	---	.21	28.99	1207.9
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.42	.17	.40	692.91	.41	6.83	284.4
SECTION 101	DIVERT	.00	6	2	.10	.0	1.42	.17	.40	---	.41	6.83	*****
SECTION 108	DIVERT	.02	6	2	.10	.0	1.42	.17	.00	---	.00	.00	.0
SECTION 2	RUNOFF	.02	6	2	.10	.0	1.42	.17	.61	---	.23	23.52	1557.9
SECTION 102	ADDHYD	.04	6	2	.10	.0	1.42	.17	.23	---	.23	23.52	601.7
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.42	.17	.24	691.39	.24	23.30	595.8
SECTION 3	RUNOFF	.01	6	2	.10	.0	1.42	.17	.61	---	.23	9.19	1557.9
SECTION 103	ADDHYD	.04	6	2	.10	.0	1.42	.17	.29	---	.24	32.48	721.9
SECTION 4	RUNOFF	.02	6	2	.10	.0	1.42	.17	.62	---	.30	19.81	1261.7
SECTION 104	ADDHYD	.06	6	2	.10	.0	1.42	.17	.37	---	.26	49.20	810.5
SECTION 5	RUNOFF	.03	6	2	.10	.0	1.42	.17	.44	---	.31	22.85	859.1
SECTION 105	ADDHYD	.09	6	2	.10	.0	1.42	.17	.39	---	.28	70.75	810.4
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.42	.17	.39	685.06	.80*	3.15*	36.1
ALTERNATE 15 STORM 50													
SECTION 1	RUNOFF	.02	6	2	.10	.0	1.75	.25	.60	---	.23	37.55	1564.4
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.75	.25	.62	693.37	.44	10.29	428.8
SECTION 101	DIVERT	.00	6	2	.10	.0	1.75	.25	.62	---	.44	10.29	*****
SECTION 108	DIVERT	.02	6	2	.10	.0	1.75	.25	.00	---	.00	.00	.0
SECTION 2	RUNOFF	.02	6	2	.10	.0	1.75	.25	.87	---	.26	28.54	1889.8
SECTION 102	ADDHYD	.04	6	2	.10	.0	1.75	.25	.34	---	.26	28.54	729.8
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.75	.25	.34	691.48	.27	28.80	736.7
SECTION 3	RUNOFF	.01	6	2	.10	.0	1.75	.25	.87	---	.26	11.15	1889.8

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
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SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 15 STORM 50													
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.75	.25	.41	---	.27	39.95	887.7
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.75	.25	.88	---	.32	25.87	1647.7
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.75	.25	.53	---	.29	64.70	1065.9
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.75	.25	.66	---	.34	31.50	1184.3
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.75	.25	.57	---	.30	94.74	1085.3
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.75	.25	.57	685.45	.80*	3.25*	37.2
ALTERNATE 30 STORM 50													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	2.39	.50	1.08	---	.27	44.58	1857.5
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.39	.50	1.09	694.06	.59	15.28	636.5
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.39	.50	1.09	---	.50*	15.00*****	
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.39	.50	.00	---	.60?	.28?	11.5
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.39	.50	1.42	---	.30	35.53	2353.0
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.39	.50	.55	---	.30	35.53	908.7
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.39	.50	.55	691.60	.30	35.83	916.3
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.39	.50	1.42	---	.30	13.88	2353.0
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.39	.50	.67	---	.30	49.71	1104.7
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.39	.50	1.43	---	.35	31.35	1997.0
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.39	.50	.87	---	.32	80.85	1331.9
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.39	.50	1.15	---	.40	41.48	1559.5
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.39	.50	.95	---	.34	120.19	1376.7
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.39	.50	.95	686.24	1.00*	3.44*	39.4
ALTERNATE 1 STORM 50													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	3.04	1.00	1.62	---	.34	45.38	1891.0
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	3.04	1.00	1.62	694.23	.81	16.50	687.7
XSECTION 101	DIVERT	.00	6	2	.10	.0	3.04	1.00	1.62	---	.50*	15.00*****	
XSECTION 108	DIVERT	.02	6	2	.10	.0	3.04	1.00	.05	---	.81	1.50	62.7
XSECTION 2	RUNOFF	.02	6	2	.10	.0	3.04	1.00	2.02	---	.35	34.85	2308.2
XSECTION 102	ADDHYD	.04	6	2	.10	.0	3.04	1.00	.81	---	.35	34.85	891.4
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	3.04	1.00	.81	691.58	.35	34.94	893.6
XSECTION 3	RUNOFF	.01	6	2	.10	.0	3.04	1.00	2.02	---	.35	13.62	2308.2
XSECTION 103	ADDHYD	.04	6	2	.10	.0	3.04	1.00	.97	---	.35	48.56	1079.1
XSECTION 4	RUNOFF	.02	6	2	.10	.0	3.04	1.00	2.02	---	.42	32.43	2065.6
XSECTION 104	ADDHYD	.06	6	2	.10	.0	3.04	1.00	1.24	---	.38	78.21	1288.5
XSECTION 5	RUNOFF	.03	6	2	.10	.0	3.04	1.00	1.69	---	.45	42.91	1613.0
XSECTION 105	ADDHYD	.09	6	2	.10	.0	3.04	1.00	1.38	---	.41	120.28	1377.7
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	3.04	1.00	1.38	687.01	1.40*	3.61*	41.4

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SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 2 STORM 50													
XSECTION STRUCTURE 1	RUNOFF RESVOR	.02	6	2	.10	.0	3.82	2.00	2.30	---	.46	36.73	1530.4
XSECTION 101	DIVERT	.00	6	2	.10	.0	3.82	2.00	2.29	694.31	1.01	18.39	766.3
XSECTION 108	DIVERT	.02	6	2	.10	.0	3.82	2.00	2.29	---	.60*	15.00*****	
XSECTION 2	RUNOFF	.02	6	2	.10	.0	3.82	2.00	.12	---	1.01	3.39	141.3
XSECTION 102	ADDHYD	.04	6	2	.10	.0	3.82	2.00	2.75	---	.44	28.67	1898.8
XSECTION 2	RESVOR	.04	6	2	.10	.0	3.82	2.00	1.13	---	.44	28.67	733.3
XSECTION 3	RUNOFF	.01	6	2	.10	.0	3.82	2.00	1.13	691.48	.44	28.76	735.5
XSECTION 103	ADDHYD	.04	6	2	.10	.0	3.82	2.00	2.75	---	.44	11.20	1898.8
XSECTION 4	RUNOFF	.02	6	2	.10	.0	3.82	2.00	1.35	---	.44	39.96	888.1
XSECTION 104	ADDHYD	.06	6	2	.10	.0	3.82	2.00	2.75	---	.52	27.89	1776.5
XSECTION 5	RUNOFF	.03	6	2	.10	.0	3.82	2.00	1.71	---	.48	66.53	1096.1
XSECTION 105	ADDHYD	.09	6	2	.10	.0	3.82	2.00	2.38	---	.59	38.96	1464.7
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	3.82	2.00	1.91	---	.53	104.45	1196.5
									1.81	687.85	2.40?	3.79?	43.4
ALTERNATE 3 STORM 50													
XSECTION STRUCTURE 1	RUNOFF RESVOR	.02	6	2	.10	.0	4.14	3.00	2.58	---	.45	30.36	1264.9
XSECTION 101	DIVERT	.00	6	2	.10	.0	4.14	3.00	2.58	694.22	1.21	16.28	678.3
XSECTION 108	DIVERT	.02	6	2	.10	.0	4.14	3.00	2.58	---	.80*	15.00*****	
XSECTION 2	RUNOFF	.02	6	2	.10	.0	4.14	3.00	.05	---	1.21	1.28	53.3
XSECTION 102	ADDHYD	.04	6	2	.10	.0	4.14	3.00	3.05	---	.45	24.15	1599.6
XSECTION 2	RESVOR	.04	6	2	.10	.0	4.14	3.00	1.21	---	.45	24.15	617.7
XSECTION 3	RUNOFF	.01	6	2	.10	.0	4.14	3.00	1.21	691.39	.45	23.33	596.8
XSECTION 103	ADDHYD	.04	6	2	.10	.0	4.14	3.00	3.05	---	.45	9.44	1599.6
XSECTION 4	RUNOFF	.02	6	2	.10	.0	4.14	3.00	1.45	---	.45	32.44	721.0
XSECTION 104	ADDHYD	.06	6	2	.10	.0	4.14	3.00	3.05	---	.55	23.00	1464.8
XSECTION 5	RUNOFF	.03	6	2	.10	.0	4.14	3.00	1.86	---	.51	54.83	903.3
XSECTION 105	ADDHYD	.09	6	2	.10	.0	4.14	3.00	2.67	---	.70	31.50	1184.1
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	4.14	3.00	2.11	---	.56	83.98	962.0
									1.84	688.09	3.30?	3.84?	44.0
ALTERNATE 6 STORM 50													
XSECTION STRUCTURE 1	RUNOFF RESVOR	.02	6	2	.10	.0	4.85	6.00	3.23	---	.67	22.81	950.5
		.02	6	2	.10	.0	4.85	6.00	3.23	693.99	1.63	14.94	622.5

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SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 6 STORM 50													
XSECTION 101	DIVERT	.00	6	2	.10	.0	4.85	6.00	3.23	---	1.63	14.94	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	4.85	6.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	4.85	6.00	3.73	---	.68	18.15	1202.0
XSECTION 102	ADDHYD	.04	6	2	.10	.0	4.85	6.00	1.44	---	.68	18.15	464.2
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	4.85	6.00	1.44	691.30	.68	18.14	464.0
XSECTION 3	RUNOFF	.01	6	2	.10	.0	4.85	6.00	3.73	---	.68	7.09	1202.0
XSECTION 103	ADDHYD	.04	6	2	.10	.0	4.85	6.00	1.74	---	.68	25.24	560.8
XSECTION 4	RUNOFF	.02	6	2	.10	.0	4.85	6.00	3.73	---	.73	17.71	1128.3
XSECTION 104	ADDHYD	.06	6	2	.10	.0	4.85	6.00	2.25	---	.70	42.74	704.2
XSECTION 5	RUNOFF	.03	6	2	.10	.0	4.85	6.00	3.33	---	.77	23.59	886.8
XSECTION 105	ADDHYD	.09	6	2	.10	.0	4.85	6.00	2.58	---	.72	66.06	756.7
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	4.85	6.00	1.92	688.56	6.30?	3.94?	45.1
ALTERNATE 12 STORM 50													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	5.62	12.00	3.94	---	4.80	14.16	590.2
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	5.62	12.00	3.94	693.70	5.49	12.72	529.9
XSECTION 101	DIVERT	.00	7	2	.10	.0	5.62	12.00	3.94	---	5.49	12.72	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	5.62	12.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	5.62	12.00	4.47	---	4.80	9.85	652.0
XSECTION 102	ADDHYD	.04	7	2	.10	.0	5.62	12.00	1.73	---	4.80	9.85	251.8
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	5.62	12.00	1.73	691.16	4.80	9.84	251.6
XSECTION 3	RUNOFF	.01	7	2	.10	.0	5.62	12.00	4.47	---	4.80	3.85	652.0
XSECTION 103	ADDHYD	.04	7	2	.10	.0	5.62	12.00	2.09	---	4.80	13.68	304.1
XSECTION 4	RUNOFF	.02	7	2	.10	.0	5.62	12.00	4.47	---	4.90	10.17	647.5
XSECTION 104	ADDHYD	.06	7	2	.10	.0	5.62	12.00	2.70	---	4.84	23.85	392.8
XSECTION 5	RUNOFF	.03	7	2	.10	.0	5.62	12.00	4.05	---	4.90	15.86	596.3
XSECTION 105	ADDHYD	.09	7	2	.10	.0	5.62	12.00	3.11	---	4.86	39.71	454.9
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	5.62	12.00	1.88	688.95	12.20?	4.02?	46.0
ALTERNATE 18 STORM 50													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	5.95	18.00	4.25	---	7.20	10.23	426.1
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	5.95	18.00	4.25	693.28	8.13	9.56	398.5
XSECTION 101	DIVERT	.00	7	2	.10	.0	5.95	18.00	4.25	---	8.13	9.56	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	5.95	18.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	5.95	18.00	4.79	---	7.20	7.05	466.9
XSECTION 102	ADDHYD	.04	7	2	.10	.0	5.95	18.00	1.85	---	7.20	7.05	180.3
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	5.95	18.00	1.85	691.12	7.20	7.05	180.3
XSECTION 3	RUNOFF	.01	7	2	.10	.0	5.95	18.00	4.79	---	7.20	2.75	466.9

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 18 STORM 50													
SECTION 103	ADDHYD	.04	7	2	.10	.0	5.95	18.00	2.24	---	7.20	9.81	217.9
STRUCTURE 4	RUNOFF	.02	7	2	.10	.0	5.95	18.00	4.79	---	7.20	7.31	465.3
SECTION 104	ADDHYD	.06	7	2	.10	.0	5.95	18.00	2.90	---	7.19	17.11	281.9
SECTION 5	RUNOFF	.03	7	2	.10	.0	5.95	18.00	4.36	---	7.30	11.47	431.1
SECTION 105	ADDHYD	.09	7	2	.10	.0	5.95	18.00	3.34	---	7.21	28.58	327.3
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	5.95	18.00	1.82	688.77	16.40	3.98	45.6
ALTERNATE 24 STORM 50													
SECTION 1	RUNOFF	.02	8	2	.10	.0	6.46	24.00	4.73	---	15.55	9.92	413.5
STRUCTURE 1	RESVOR	.02	8	2	.10	.0	6.46	24.00	4.73	693.26	15.65	9.41	392.2
SECTION 101	DIVERT	.00	8	2	.10	.0	6.46	24.00	4.73	---	15.65	9.41	*****
SECTION 108	DIVERT	.02	8	2	.10	.0	6.46	24.00	.00	---	.00	.00	.0
SECTION 2	RUNOFF	.02	8	2	.10	.0	6.46	24.00	5.29	---	15.55	6.55	433.6
SECTION 102	ADDHYD	.04	8	2	.10	.0	6.46	24.00	2.04	---	15.55	6.55	167.5
STRUCTURE 2	RESVOR	.04	8	2	.10	.0	6.46	24.00	2.04	691.11	15.55	6.54	167.4
SECTION 3	RUNOFF	.01	8	2	.10	.0	6.46	24.00	5.29	---	15.60	2.54	431.2
SECTION 103	ADDHYD	.04	8	2	.10	.0	6.46	24.00	2.47	---	15.55	9.10	202.3
SECTION 4	RUNOFF	.02	8	2	.10	.0	6.46	24.00	5.29	---	15.55	6.78	431.8
SECTION 104	ADDHYD	.06	8	2	.10	.0	6.46	24.00	3.20	---	15.55	15.88	261.6
SECTION 5	RUNOFF	.03	8	2	.10	.0	6.46	24.00	4.84	---	15.56	11.01	414.1
SECTION 105	ADDHYD	.09	8	2	.10	.0	6.46	24.00	3.70	---	15.55	26.90	308.1
STRUCTURE 3	RESVOR	.09	8	2	.10	.0	6.46	24.00	1.65	688.98	24.20?	4.03?	46.1
ALTERNATE 5 STORM 99													
SECTION 1	RUNOFF	.02	6	2	.10	.0	.91	.08	.13	---	.20	10.60	441.7
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	.91	.08	.13	692.30	.36	2.27	94.7
SECTION 101	DIVERT	.00	6	2	.10	.0	.91	.08	.13	---	.36	2.27	*****
SECTION 108	DIVERT	.02	6	2	.10	.0	.91	.08	.00	---	.00	.00	.0
SECTION 2	RUNOFF	.02	6	2	.10	.0	.91	.08	.25	---	.21	11.28	747.2
SECTION 102	ADDHYD	.04	6	2	.10	.0	.91	.08	.10	---	.21	11.28	288.6
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	.91	.08	.10	691.19	.21	11.16	285.5
SECTION 3	RUNOFF	.01	6	2	.10	.0	.91	.08	.25	---	.21	4.41	747.2
SECTION 103	ADDHYD	.04	6	2	.10	.0	.91	.08	.12	---	.21	15.57	346.0
SECTION 4	RUNOFF	.02	6	2	.10	.0	.91	.08	.26	---	.26	8.61	548.6
SECTION 104	ADDHYD	.06	6	2	.10	.0	.91	.08	.16	---	.23	23.87	393.2
SECTION 5	RUNOFF	.03	6	2	.10	.0	.91	.08	.15	---	.29	8.25	310.2
SECTION 105	ADDHYD	.09	6	2	.10	.0	.91	.08	.16	---	.24	31.38	359.4
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	.91	.08	.16	684.27	.61	2.94	33.7

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
<u>ALTERNATE 10</u>		<u>STORM</u>	<u>99</u>										
XSECTION 1	RUNOFF	.02	6	2	.10	.0	1.67	.17	.54	---	.21	40.53	1688.9
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	1.67	.17	.56	693.27	.41	9.55	397.9
XSECTION 101	DIVERT	.00	6	2	.10	.0	1.67	.17	.56	---	.41	9.55	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	1.67	.17	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	1.67	.17	.80	---	.23	31.13	2061.7
XSECTION 102	ADDHYD	.04	6	2	.10	.0	1.67	.17	.31	---	.23	31.13	796.2
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	1.67	.17	.32	691.51	.24	30.83	788.5
XSECTION 3	RUNOFF	.01	6	2	.10	.0	1.67	.17	.80	---	.23	12.16	2061.7
XSECTION 103	ADDHYD	.04	6	2	.10	.0	1.67	.17	.38	---	.23	42.99	955.3
XSECTION 4	RUNOFF	.02	6	2	.10	.0	1.67	.17	.82	---	.29	26.06	1660.0
XSECTION 104	ADDHYD	.06	6	2	.10	.0	1.67	.17	.49	---	.25	64.67	1065.5
XSECTION 5	RUNOFF	.03	6	2	.10	.0	1.67	.17	.61	---	.31	31.52	1185.0
XSECTION 105	ADDHYD	.09	6	2	.10	.0	1.67	.17	.53	---	.28	94.37	1080.9
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	1.67	.17	.53	685.36	.80*	3.23*	37.0
<u>ALTERNATE 15</u>		<u>STORM</u>	<u>99</u>										
XSECTION 1	RUNOFF	.02	6	2	.10	.0	2.05	.25	.81	---	.23	50.96	2123.3
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.05	.25	.83	693.85	.44	13.86	577.4
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.05	.25	.83	---	.44	13.86	*****
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.05	.25	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.05	.25	1.12	---	.26	36.60	2423.6
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.05	.25	.43	---	.26	36.60	936.0
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.05	.25	.44	691.62	.26	36.91	943.9
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.05	.25	1.12	---	.26	14.30	2423.6
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.05	.25	.53	---	.26	51.20	1137.7
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.05	.25	1.13	---	.32	33.26	2118.3
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.05	.25	.68	---	.28	82.93	1366.2
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.05	.25	.88	---	.34	42.07	1581.4
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.05	.25	.74	---	.30	123.11	1410.2
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.05	.25	.75	685.84	.90*	3.34*	38.3
<u>ALTERNATE 30</u>		<u>STORM</u>	<u>99</u>										
XSECTION 1	RUNOFF	.02	6	2	.10	.0	2.80	.50	1.40	---	.26	58.39	2432.8
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	2.80	.50	1.42	694.35	.59	19.29	803.6

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SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 30 STORM 99													
XSECTION 101	DIVERT	.00	6	2	.10	.0	2.80	.50	1.42	---	.40*	15.00*****	
XSECTION 108	DIVERT	.02	6	2	.10	.0	2.80	.50	.08	---	.59	4.29	178.6
XSECTION 2	RUNOFF	.02	6	2	.10	.0	2.80	.50	1.79	---	.30	44.81	2967.8
XSECTION 102	ADDHYD	.04	6	2	.10	.0	2.80	.50	.74	---	.30	44.80	1145.9
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	2.80	.50	.74	691.75	.30	45.21	1156.3
XSECTION 3	RUNOFF	.01	6	2	.10	.0	2.80	.50	1.79	---	.30	17.51	2967.8
XSECTION 103	ADDHYD	.04	6	2	.10	.0	2.80	.50	.88	---	.30	62.72	1393.7
XSECTION 4	RUNOFF	.02	6	2	.10	.0	2.80	.50	1.80	---	.35	40.81	2599.1
XSECTION 104	ADDHYD	.06	6	2	.10	.0	2.80	.50	1.12	---	.32	102.26	1684.6
XSECTION 5	RUNOFF	.03	6	2	.10	.0	2.80	.50	1.49	---	.39	53.81	2023.0
XSECTION 105	ADDHYD	.09	6	2	.10	.0	2.80	.50	1.23	---	.34	153.92	1763.1
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	2.80	.50	1.23	686.77	1.10*	3.56*	40.8
ALTERNATE 1 STORM 99													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	3.56	1.00	2.06	---	.33	58.73	2447.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	3.56	1.00	2.06	694.48	.70	24.78	1032.5
XSECTION 101	DIVERT	.00	6	2	.10	.0	3.56	1.00	2.06	---	.40*	15.00*****	
XSECTION 108	DIVERT	.02	6	2	.10	.0	3.56	1.00	.32	---	.70	9.78	407.5
XSECTION 2	RUNOFF	.02	6	2	.10	.0	3.56	1.00	2.50	---	.34	43.78	2899.3
XSECTION 102	ADDHYD	.04	6	2	.10	.0	3.56	1.00	1.16	---	.34	43.89	1122.5
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	3.56	1.00	1.16	691.73	.34	44.04	1126.2
XSECTION 3	RUNOFF	.01	6	2	.10	.0	3.56	1.00	2.50	---	.34	17.11	2899.3
XSECTION 103	ADDHYD	.04	6	2	.10	.0	3.56	1.00	1.34	---	.34	61.14	1358.7
XSECTION 4	RUNOFF	.02	6	2	.10	.0	3.56	1.00	2.50	---	.41	40.52	2581.2
XSECTION 104	ADDHYD	.06	6	2	.10	.0	3.56	1.00	1.64	---	.38	97.75	1610.4
XSECTION 5	RUNOFF	.03	6	2	.10	.0	3.56	1.00	2.15	---	.44	55.96	2103.7
XSECTION 105	ADDHYD	.09	6	2	.10	.0	3.56	1.00	1.79	---	.41	152.18	1743.2
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	3.56	1.00	1.77	687.74	1.50*	3.77*	43.1
ALTERNATE 2 STORM 99													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	4.47	2.00	2.88	---	.44	46.95	1956.2
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	4.47	2.00	2.88	694.53	.88	27.15	1131.1
XSECTION 101	DIVERT	.00	6	2	.10	.0	4.47	2.00	2.88	---	.50*	15.00*****	
XSECTION 108	DIVERT	.02	6	2	.10	.0	4.47	2.00	.49	---	.88	12.15	506.1
XSECTION 2	RUNOFF	.02	6	2	.10	.0	4.47	2.00	3.37	---	.42	35.74	2366.9
XSECTION 102	ADDHYD	.04	6	2	.10	.0	4.47	2.00	1.60	---	.43	35.80	915.6
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	4.47	2.00	1.60	691.60	.43	35.92	918.5
XSECTION 3	RUNOFF	.01	6	2	.10	.0	4.47	2.00	3.37	---	.42	13.96	2366.9

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SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 2 STORM 99													
XSECTION 103	ADDHYD	.04	6	2	.10	.0	4.47	2.00	1.83	---	.43	49.88	1108.4
XSECTION 4	RUNOFF	.02	6	2	.10	.0	4.47	2.00	3.37	---	.51	34.61	2204.7
XSECTION 104	ADDHYD	.06	6	2	.10	.0	4.47	2.00	2.23	---	.46	82.74	1363.0
XSECTION 5	RUNOFF	.03	6	2	.10	.0	4.47	2.00	2.97	---	.57	49.29	1853.2
XSECTION 105	ADDHYD	.09	6	2	.10	.0	4.47	2.00	2.46	---	.53	131.31	1504.1
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	4.47	2.00	1.92	688.75	2.40?	3.98?	45.6
ALTERNATE 3 STORM 99													
XSECTION 103	ADDHYD	.04	6	2	.10	.0	4.85	3.00	3.22	---	.44	39.83	1659.7
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	4.85	3.00	3.22	694.46	1.08	23.48	978.2
XSECTION 101	DIVERT	.00	6	2	.10	.0	4.85	3.00	3.22	---	.60*	15.00*****	
XSECTION 108	DIVERT	.02	6	2	.10	.0	4.85	3.00	.38	---	1.08	8.48	353.2
XSECTION 2	RUNOFF	.02	6	2	.10	.0	4.85	3.00	3.73	---	.44	30.55	2023.1
XSECTION 102	ADDHYD	.04	6	2	.10	.0	4.85	3.00	1.67	---	.44	30.55	781.3
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	4.85	3.00	1.67	691.51	.44	30.57	781.7
XSECTION 3	RUNOFF	.01	6	2	.10	.0	4.85	3.00	3.73	---	.44	11.94	2023.1
XSECTION 103	ADDHYD	.04	6	2	.10	.0	4.85	3.00	1.94	---	.44	42.50	944.5
XSECTION 4	RUNOFF	.02	6	2	.10	.0	4.85	3.00	3.73	---	.54	28.86	1838.5
XSECTION 104	ADDHYD	.06	6	2	.10	.0	4.85	3.00	2.41	---	.49	68.84	1134.1
XSECTION 5	RUNOFF	.03	6	2	.10	.0	4.85	3.00	3.32	---	.64	40.14	1509.0
XSECTION 105	ADDHYD	.09	6	2	.10	.0	4.85	3.00	2.69	---	.54	107.74	1234.2
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	4.85	3.00	1.96	689.03	3.40?	4.04?	46.2
ALTERNATE 6 STORM 99													
XSECTION 1	RUNOFF	.02	6	2	.10	.0	5.68	6.00	4.00	---	.66	29.57	1232.1
STRUCTURE 1	RESVOR	.02	6	2	.10	.0	5.68	6.00	4.00	694.28	1.66	17.60	733.2
XSECTION 101	DIVERT	.00	6	2	.10	.0	5.68	6.00	4.00	---	1.00*	15.00*****	
XSECTION 108	DIVERT	.02	6	2	.10	.0	5.68	6.00	.13	---	1.66	2.60	108.2
XSECTION 2	RUNOFF	.02	6	2	.10	.0	5.68	6.00	4.53	---	.67	22.67	1501.2
XSECTION 102	ADDHYD	.04	6	2	.10	.0	5.68	6.00	1.83	---	.67	22.67	579.7
STRUCTURE 2	RESVOR	.04	6	2	.10	.0	5.68	6.00	1.83	691.38	.67	22.66	579.5
XSECTION 3	RUNOFF	.01	6	2	.10	.0	5.68	6.00	4.53	---	.67	8.86	1501.2
XSECTION 103	ADDHYD	.04	6	2	.10	.0	5.68	6.00	2.18	---	.67	31.52	700.4
XSECTION 4	RUNOFF	.02	6	2	.10	.0	5.68	6.00	4.53	---	.72	22.19	1413.4
XSECTION 104	ADDHYD	.06	6	2	.10	.0	5.68	6.00	2.79	---	.69	53.46	880.8
XSECTION 5	RUNOFF	.03	6	2	.10	.0	5.68	6.00	4.10	---	.75	30.84	1159.4
XSECTION 105	ADDHYD	.09	6	2	.10	.0	5.68	6.00	3.19	---	.71	83.69	958.6
STRUCTURE 3	RESVOR	.09	6	2	.10	.0	5.68	6.00	2.02	689.50	6.30?	4.13?	47.3

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 12 STORM 99													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	6.59	12.00	4.86	---	4.80	17.34	722.4
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	6.59	12.00	4.86	694.04	5.51	15.16	631.8
XSECTION 101	DIVERT	.00	7	2	.10	.0	6.59	12.00	4.86	---	5.20*	15.00*****	
XSECTION 108	DIVERT	.02	7	2	.10	.0	6.59	12.00	.00	---	5.50?	.16?	6.8
XSECTION 2	RUNOFF	.02	7	2	.10	.0	6.59	12.00	5.42	---	4.80	11.82	782.7
XSECTION 102	ADDHYD	.04	7	2	.10	.0	6.59	12.00	2.09	---	4.80	11.82	302.3
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	6.59	12.00	2.09	691.20	4.80	11.81	302.0
XSECTION 3	RUNOFF	.01	7	2	.10	.0	6.59	12.00	5.42	---	4.80	4.62	782.7
XSECTION 103	ADDHYD	.04	7	2	.10	.0	6.59	12.00	2.53	---	4.80	16.43	365.0
XSECTION 4	RUNOFF	.02	7	2	.10	.0	6.59	12.00	5.42	---	4.85	12.22	778.5
XSECTION 104	ADDHYD	.06	7	2	.10	.0	6.59	12.00	3.28	---	4.83	28.63	471.6
XSECTION 5	RUNOFF	.03	7	2	.10	.0	6.59	12.00	4.97	---	4.90	19.34	727.2
XSECTION 105	ADDHYD	.09	7	2	.10	.0	6.59	12.00	3.79	---	4.85	47.98	549.6
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	6.59	12.00	1.98	689.94	12.20?	4.21?	48.2
ALTERNATE 18 STORM 99													
XSECTION 1	RUNOFF	.02	7	2	.10	.0	6.97	18.00	5.22	---	7.20	12.45	518.8
STRUCTURE 1	RESVOR	.02	7	2	.10	.0	6.97	18.00	5.22	693.55	8.11	11.61	483.8
XSECTION 101	DIVERT	.00	7	2	.10	.0	6.97	18.00	5.22	---	8.11	11.61	*****
XSECTION 108	DIVERT	.02	7	2	.10	.0	6.97	18.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	7	2	.10	.0	6.97	18.00	5.79	---	7.20	8.43	558.4
XSECTION 102	ADDHYD	.04	7	2	.10	.0	6.97	18.00	2.24	---	7.20	8.43	215.6
STRUCTURE 2	RESVOR	.04	7	2	.10	.0	6.97	18.00	2.24	691.14	7.20	8.43	215.6
XSECTION 3	RUNOFF	.01	7	2	.10	.0	6.97	18.00	5.79	---	7.20	3.29	558.4
XSECTION 103	ADDHYD	.04	7	2	.10	.0	6.97	18.00	2.70	---	7.20	11.73	260.6
XSECTION 4	RUNOFF	.02	7	2	.10	.0	6.97	18.00	5.79	---	7.20	8.74	556.8
XSECTION 104	ADDHYD	.06	7	2	.10	.0	6.97	18.00	3.50	---	7.18	20.47	337.2
XSECTION 5	RUNOFF	.03	7	2	.10	.0	6.97	18.00	5.33	---	7.20	13.92	523.4
XSECTION 105	ADDHYD	.09	7	2	.10	.0	6.97	18.00	4.06	---	7.20	34.39	393.9
STRUCTURE 3	RESVOR	.09	7	2	.10	.0	6.97	18.00	1.93	689.80	18.20?	4.18?	47.9
ALTERNATE 24 STORM 99													
XSECTION 1	RUNOFF	.02	8	2	.10	.0	7.58	24.00	5.80	---	15.55	11.90	496.0
STRUCTURE 1	RESVOR	.02	8	2	.10	.0	7.58	24.00	5.80	693.51	15.65	11.33	471.9

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR(\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK(?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 24 STORM 99													
XSECTION 101	DIVERT	.00	8	2	.10	.0	7.58	24.00	5.80	---	15.65	11.33	*****
XSECTION 108	DIVERT	.02	8	2	.10	.0	7.58	24.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	8	2	.10	.0	7.58	24.00	6.39	---	15.55	7.77	514.4
XSECTION 102	ADDHYD	.04	8	2	.10	.0	7.58	24.00	2.47	---	15.55	7.77	198.7
STRUCTURE 2	RESVOR	.04	8	2	.10	.0	7.58	24.00	2.47	691.13	15.55	7.76	198.6
XSECTION 3	RUNOFF	.01	8	2	.10	.0	7.58	24.00	6.39	---	15.60	3.02	511.5
XSECTION 103	ADDHYD	.04	8	2	.10	.0	7.58	24.00	2.98	---	15.55	10.80	240.0
XSECTION 4	RUNOFF	.02	8	2	.10	.0	7.58	24.00	6.39	---	15.54	8.02	510.7
XSECTION 104	ADDHYD	.06	8	2	.10	.0	7.58	24.00	3.86	---	15.55	18.84	310.4
XSECTION 5	RUNOFF	.03	8	2	.10	.0	7.58	24.00	5.92	---	15.55	13.19	495.8
XSECTION 105	ADDHYD	.09	8	2	.10	.0	7.58	24.00	4.49	---	15.55	32.03	366.9
STRUCTURE 3	RESVOR	.09	8	2	.10	.0	7.58	24.00	1.76	690.07	24.20?	4.23?	48.5
ALTERNATE 48 STORM 99													
XSECTION 1	RUNOFF	.02	9	2	.20	.0	8.16	48.00	6.36	---	40.80	6.43	267.9
STRUCTURE 1	RESVOR	.02	9	2	.20	.0	8.16	48.00	6.36	692.84	40.80	6.32	263.3
XSECTION 101	DIVERT	.00	9	2	.20	.0	8.16	48.00	6.36	---	40.80	6.32	*****
XSECTION 108	DIVERT	.02	9	2	.20	.0	8.16	48.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	9	2	.20	.0	8.16	48.00	6.96	---	40.80	4.18	277.1
XSECTION 102	ADDHYD	.04	9	2	.20	.0	8.16	48.00	2.69	---	40.80	4.18	107.0
STRUCTURE 2	RESVOR	.04	9	2	.20	.0	8.16	48.00	2.69	691.07	40.80	4.19	107.2
XSECTION 3	RUNOFF	.01	9	2	.20	.0	8.16	48.00	6.96	---	40.80	1.63	277.1
XSECTION 103	ADDHYD	.04	9	2	.20	.0	8.16	48.00	3.25	---	40.80	5.83	129.5
XSECTION 4	RUNOFF	.02	9	2	.20	.0	8.16	48.00	6.96	---	40.80	4.35	277.0
XSECTION 104	ADDHYD	.06	9	2	.20	.0	8.16	48.00	4.21	---	40.80	10.17	167.6
XSECTION 5	RUNOFF	.03	9	2	.20	.0	8.16	48.00	6.48	---	40.80	7.18	269.8
XSECTION 105	ADDHYD	.09	9	2	.20	.0	8.16	48.00	4.90	---	40.71	17.41	199.4
STRUCTURE 3	RESVOR	.09	9	2	.20	.0	8.16	48.00	3.05	689.31	48.20?	4.09?	46.8
ALTERNATE 72 STORM 99													
XSECTION 1	RUNOFF	.02	9	2	.30	.0	8.78	72.00	6.96	---	61.20	4.65	193.6
STRUCTURE 1	RESVOR	.02	9	2	.30	.0	8.78	72.00	6.96	692.62	61.20	4.62	192.7
XSECTION 101	DIVERT	.00	9	2	.30	.0	8.78	72.00	6.96	---	61.20	4.62	*****
XSECTION 108	DIVERT	.02	9	2	.30	.0	8.78	72.00	.00	---	.00	.00	.0
XSECTION 2	RUNOFF	.02	9	2	.30	.0	8.78	72.00	7.56	---	61.20	3.01	199.5
XSECTION 102	ADDHYD	.04	9	2	.30	.0	8.78	72.00	2.92	---	61.20	3.01	77.0
STRUCTURE 2	RESVOR	.04	9	2	.30	.0	8.78	72.00	2.92	691.05	61.20	3.02	77.3
XSECTION 3	RUNOFF	.01	9	2	.30	.0	8.78	72.00	7.56	---	61.20	1.18	199.5

SUMMARY TABLE 1 - SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL INSTRUCTIONS IN THE ORDER PERFORMED  
(A STAR (\*) AFTER THE PEAK DISCHARGE TIME AND RATE (CFS) VALUES INDICATES A FLAT TOP HYDROGRAPH  
A QUESTION MARK (?) INDICATES A HYDROGRAPH WITH PEAK AS LAST POINT.)

SECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RAIN TABLE #	ANTEC MOIST COND	MAIN TIME INCREM (HR)	PRECIPITATION			RUNOFF AMOUNT (IN)	PEAK DISCHARGE			
						BEGIN (HR)	AMOUNT (IN)	DURATION (HR)		ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
	ALTERNATE	72	STORM	99									
XSECTION 103	ADDHYD	.04	9	2	.30	.0	8.78	72.00	3.53	---	61.20	4.20	93.4
XSECTION 4	RUNOFF	.02	9	2	.30	.0	8.78	72.00	7.57	---	61.20	3.13	199.5
XSECTION 104	ADDHYD	.06	9	2	.30	.0	8.78	72.00	4.57	---	61.20	7.33	120.8
XSECTION 5	RUNOFF	.03	9	2	.30	.0	8.78	72.00	7.08	---	61.20	5.18	194.8
XSECTION 105	ADDHYD	.09	9	2	.30	.0	8.78	72.00	5.34	---	61.20	12.52	143.4
STRUCTURE 3	RESVOR	.09	9	2	.30	.0	8.78	72.00	4.22	688.70	72.30?	3.97?	45.4

SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....					
		2	5	10	25	50	99
<u>STRUCTURE 3 .09</u>							
ALTERNATE 1		3.15	3.25	3.34	3.48	3.61	3.77
ALTERNATE 2		3.22	3.36	3.47	3.64	3.79	3.98
ALTERNATE 3		3.24	3.39	3.51	3.69	3.84	4.04
ALTERNATE 5		.25	.79	1.42	2.64	2.90	2.94
ALTERNATE 6		3.27	3.44	3.57	3.77	3.94	4.13
ALTERNATE 10		2.73	2.92	2.97	3.07	3.15	3.23
ALTERNATE 12		3.30	3.47	3.62	3.83	4.02	4.21
ALTERNATE 15		2.91	2.99	3.07	3.17	3.25	3.34
ALTERNATE 18		3.25	3.43	3.58	3.79	3.98	4.18
ALTERNATE 24		3.26	3.44	3.59	3.82	4.03	4.23
ALTERNATE 30		3.02	3.15	3.22	3.33	3.44	3.56
ALTERNATE 48		.00	.00	.00	.00	.00	4.09
ALTERNATE 72		.00	.00	.00	.00	.00	3.97
<u>STRUCTURE 2 .04</u>							
ALTERNATE 1		9.97	14.76	19.18	26.60	34.94	44.04
ALTERNATE 2		8.77	12.62	16.31	22.71	28.76	35.92
ALTERNATE 3		6.95	9.96	13.10	18.28	23.33	30.57
ALTERNATE 5		.62	1.78	3.01	5.26	7.92	11.16
ALTERNATE 6		5.15	7.82	10.28	14.31	18.14	22.66
ALTERNATE 10		4.71	7.97	11.41	17.36	23.30	30.83
ALTERNATE 12		3.76	5.11	6.29	8.14	9.84	11.81
ALTERNATE 15		7.02	11.28	15.31	22.09	28.80	36.91
ALTERNATE 18		2.73	3.70	4.54	5.84	7.05	8.43
ALTERNATE 24		2.75	3.61	4.36	5.50	6.54	7.76
ALTERNATE 30		9.69	15.02	19.81	28.07	35.83	45.21
ALTERNATE 48		.00	.00	.00	.00	.00	4.19
ALTERNATE 72		.00	.00	.00	.00	.00	3.02
<u>STRUCTURE 1 .02</u>							
ALTERNATE 1		4.66	7.29	9.81	14.22	16.50	24.78
ALTERNATE 2		5.33	8.17	10.91	15.10	18.39	27.15
ALTERNATE 3		4.95	7.53	10.00	14.14	16.28	23.48
ALTERNATE 5		.00	.10	.30	.77	1.41	2.27
ALTERNATE 6		4.30	6.43	8.44	11.75	14.94	17.60



SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....					
		2	5	10	25	50	99
<u>XSECTION 2</u>	<u>.02</u>						
ALTERNATE 72		.00	.00	.00	.00	.00	3.01
<u>XSECTION 3</u>	<u>.01</u>						
ALTERNATE 1		3.89	5.77	7.50	10.40	13.62	17.11
ALTERNATE 2		3.42	4.95	6.39	8.74	11.20	13.96
ALTERNATE 3		2.71	3.89	5.11	7.13	9.44	11.94
ALTERNATE 5		.25	.69	1.19	2.08	3.13	4.41
ALTERNATE 6		2.01	3.05	4.02	5.59	7.09	8.86
ALTERNATE 10		1.82	3.22	4.50	6.85	9.19	12.16
ALTERNATE 12		1.47	2.00	2.46	3.18	3.85	4.62
ALTERNATE 15		2.72	4.36	5.92	8.55	11.15	14.30
ALTERNATE 18		1.07	1.45	1.77	2.28	2.75	3.29
ALTERNATE 24		1.08	1.41	1.69	2.14	2.54	3.02
ALTERNATE 30		3.77	5.84	7.69	10.88	13.88	17.51
ALTERNATE 48		.00	.00	.00	.00	.00	1.63
ALTERNATE 72		.00	.00	.00	.00	.00	1.18
<u>XSECTION 4</u>	<u>.02</u>						
ALTERNATE 1		9.36	14.17	18.46	25.61	32.43	40.52
ALTERNATE 2		8.65	12.53	16.19	22.16	27.89	34.61
ALTERNATE 3		7.08	10.12	13.00	17.89	23.00	28.86
ALTERNATE 5		.50	1.39	2.33	4.07	6.12	8.61
ALTERNATE 6		4.94	7.45	9.96	13.92	17.71	22.19
ALTERNATE 10		4.16	7.10	9.85	14.85	19.81	26.06
ALTERNATE 12		3.87	5.28	6.51	8.42	10.17	12.22
ALTERNATE 15		6.11	9.94	13.58	19.75	25.87	33.26
ALTERNATE 18		2.82	3.83	4.69	6.05	7.31	8.74
ALTERNATE 24		2.85	3.74	4.51	5.70	6.78	8.02
ALTERNATE 30		8.63	13.25	17.39	24.57	31.35	40.81
ALTERNATE 48		.00	.00	.00	.00	.00	4.35
ALTERNATE 72		.00	.00	.00	.00	.00	3.13
<u>XSECTION 5</u>	<u>.03</u>						
ALTERNATE 1		10.73	16.93	22.83	32.95	42.91	55.96
ALTERNATE 2		10.47	16.01	21.48	30.27	38.96	49.29
ALTERNATE 3		8.84	13.35	17.62	24.71	31.50	40.14
ALTERNATE 5		.04	.56	1.35	3.07	5.32	8.25
ALTERNATE 6		6.26	9.13	12.18	17.93	23.59	30.84



SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....					
		2	5	10	25	50	99
<u>XSECTION 102 .04</u>							
ALTERNATE 72		.00	.00	.00	.00	.00	3.01
<u>XSECTION 103 .04</u>							
ALTERNATE 1		13.87	20.53	26.68	37.01	48.56	61.14
ALTERNATE 2		12.19	17.57	22.70	31.56	39.96	49.88
ALTERNATE 3		9.67	13.85	18.22	25.42	32.44	42.50
ALTERNATE 5		.87	2.49	4.20	7.34	11.05	15.57
ALTERNATE 6		7.16	10.87	14.30	19.90	25.24	31.52
ALTERNATE 10		6.53	11.38	15.90	24.20	32.48	42.99
ALTERNATE 12		5.22	7.11	8.75	11.32	13.68	16.43
ALTERNATE 15		9.74	15.64	21.23	30.64	39.95	51.20
ALTERNATE 18		3.79	5.15	6.31	8.12	9.81	11.73
ALTERNATE 24		3.84	5.02	6.06	7.66	9.10	10.80
ALTERNATE 30		13.46	20.86	27.50	38.95	49.71	62.72
ALTERNATE 48		.00	.00	.00	.00	.00	5.83
ALTERNATE 72		.00	.00	.00	.00	.00	4.20
<u>XSECTION 104 .06</u>							
ALTERNATE 1		23.18	34.40	44.70	61.83	78.21	97.75
ALTERNATE 2		20.75	30.02	38.77	52.80	66.53	82.74
ALTERNATE 3		16.74	23.92	30.75	43.22	54.83	68.84
ALTERNATE 5		1.36	3.78	6.39	11.21	16.91	23.87
ALTERNATE 6		11.86	18.30	24.12	33.64	42.74	53.46
ALTERNATE 10		10.50	17.78	24.58	36.94	49.20	64.67
ALTERNATE 12		9.09	12.39	15.26	19.71	23.85	28.63
ALTERNATE 15		15.63	25.20	34.29	49.59	64.70	82.93
ALTERNATE 18		6.61	8.97	11.01	14.17	17.11	20.47
ALTERNATE 24		6.70	8.76	10.57	13.35	15.88	18.84
ALTERNATE 30		21.68	33.71	44.52	63.23	80.85	102.26
ALTERNATE 48		.00	.00	.00	.00	.00	10.17
ALTERNATE 72		.00	.00	.00	.00	.00	7.33
<u>XSECTION 105 .09</u>							
ALTERNATE 1		32.73	50.55	66.74	93.99	120.28	152.18
ALTERNATE 2		30.85	45.57	59.56	82.26	104.45	131.31
ALTERNATE 3		25.35	37.00	47.77	66.02	83.98	107.74
ALTERNATE 5		1.39	4.24	7.55	13.92	21.69	31.38
ALTERNATE 6		17.26	26.69	35.91	51.23	66.06	83.69

TR20 XEQ 7/30/\*\*  
 REV 09/01/83

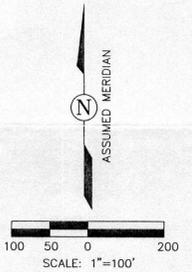
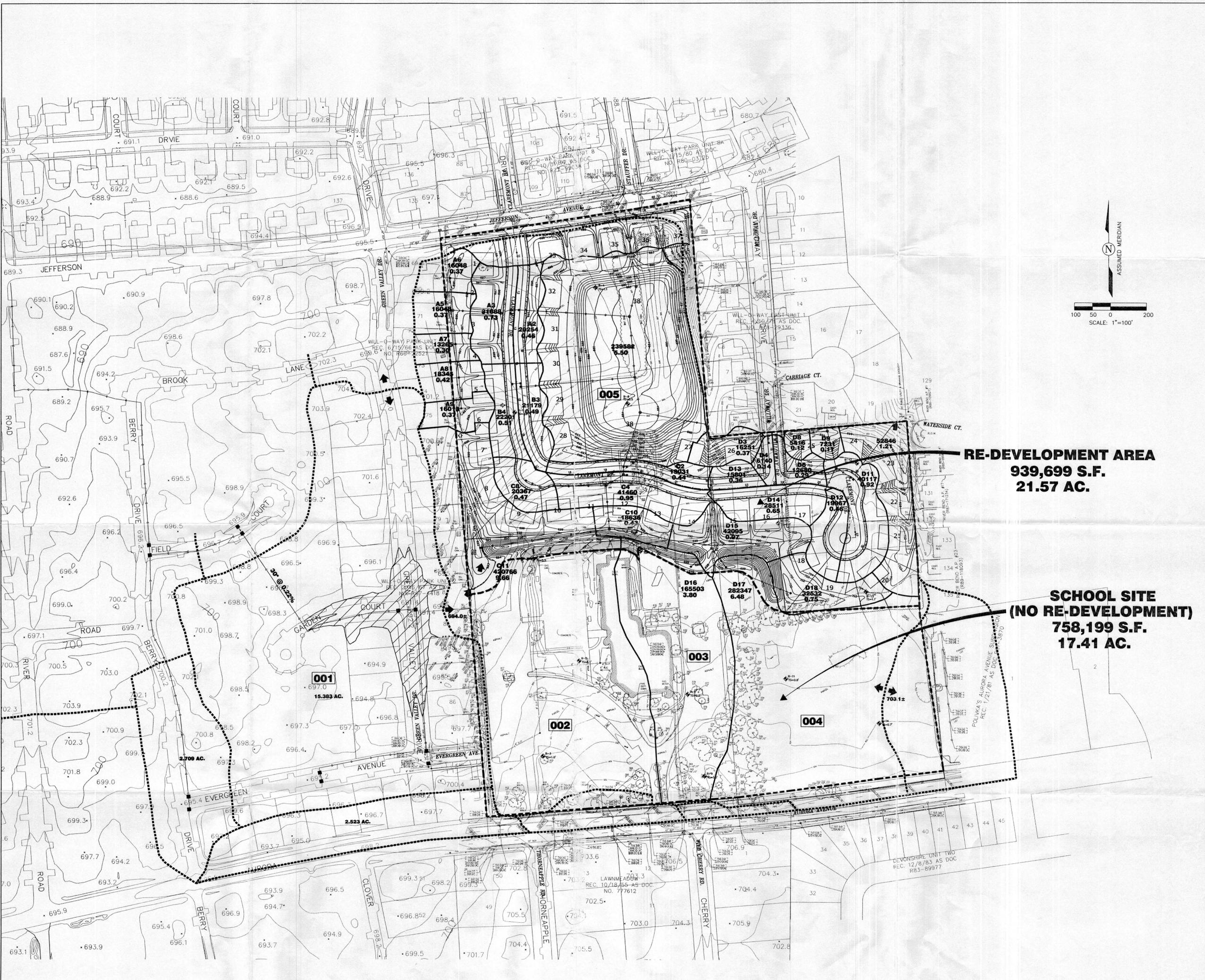
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JOB 1 SUMMARY  
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SUMMARY TABLE 3 - DISCHARGE (CFS) AT XSECTIONS AND STRUCTURES FOR ALL STORMS AND ALTERNATES

XSECTION/ STRUCTURE ID	DRAINAGE AREA (SQ MI)	STORM NUMBERS.....					
		2	5	10	25	50	99
<u>XSECTION 105 .09</u>							
ALTERNATE 10		13.46	23.88	33.83	52.24	70.75	94.37
ALTERNATE 12		14.55	20.01	24.93	32.62	39.71	47.98
ALTERNATE 15		20.69	34.68	48.24	71.46	94.74	123.11
ALTERNATE 18		10.58	14.55	18.03	23.48	28.58	34.39
ALTERNATE 24		11.00	14.56	17.69	22.51	26.90	32.03
ALTERNATE 30		29.27	46.30	61.95	92.74	120.19	153.92
ALTERNATE 48		.00	.00	.00	.00	.00	17.41
ALTERNATE 72		.00	.00	.00	.00	.00	12.52
<u>XSECTION 108 .02</u>							
ALTERNATE 1		.00	.00	.00	.00	1.50	9.78
ALTERNATE 2		.00	.00	.00	.10	3.39	12.15
ALTERNATE 3		.00	.00	.00	.00	1.28	8.48
ALTERNATE 6		.00	.00	.00	.00	.00	2.60
ALTERNATE 12		.00	.00	.00	.00	.00	.16
ALTERNATE 30		.00	.00	.00	.00	.28	4.29





**RE-DEVELOPMENT AREA**  
**939,699 S.F.**  
**21.57 AC.**

**SCHOOL SITE**  
**(NO RE-DEVELOPMENT)**  
**758,199 S.F.**  
**17.41 AC.**

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**ROAKE AND ASSOCIATES, INC.**  
 CONSULTING ENGINEERS • LAND SURVEYORS • PLANNERS  
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PREPARED FOR:  
**CHARLESTON CLASSIC HOMES, INC.**  
 407 E. GARTNER  
 NAPERVILLE, ILLINOIS 60540  
 PH. (630) 640-1713  
 FX. (630) 420-0936

REVISIONS					
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

JEFFERSON ESTATES					
PROPOSED DRAINAGE MAP					
DRN./CKD. BY:	PRS/SAR	FILE:	5332DM	FLD. BK./PG.:	166
SCALE:	1"=100'	DATE:	03/28/03	JOB NO.:	533.002
					SHEET NO.
					2 OF 2

WARNING



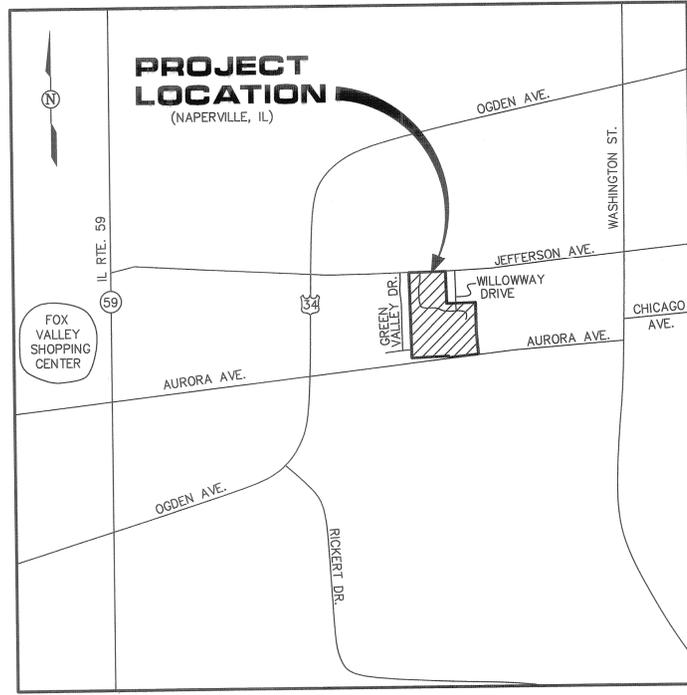
CALL  
JULIE  
BEFORE YOU DIG

# RECORD DRAWINGS FOR JEFFERSON ESTATES IN NAPERVILLE, ILLINOIS

RECORD PLAN FOR:		
TYPE	DATE	P.E. INITIALS
WATERMAIN	12/21/04	SS
SANITARY SEWER	12/21/04	SS
STORM SEWER	12/21/04	SS
STORMWATER MANAGEMENT	12/21/04	SS
OUTDOOR LIGHTING	12/21/04	SS

**LEGEND**

AS BUILT	PROPOSED	DESCRIPTION
●	○	MANHOLE
○	●	CATCH BASIN
□	■	INLET
→	→	STORM SEWER
→	→	SANITARY SEWER
→	→	WATERMAIN
●	●	VALVE & VAULT
●	●	VALVE & BOX
△	△	FIRE HYDRANT
✱	✱	STREET LIGHT
—	—	POWER POLE
—	—	CONTOURS
—	—	ELEVATIONS
—	—	SIDEWALK
—	—	CURB
—	—	GUTTER FLAG W/REVERSE PITCH
—	—	CENTERLINE
—	—	30' BUILDING LINE
—	—	TRENCH BACKFILL
—	—	SILT FENCE
—	—	STRUCTURE CALLOUT
—	—	FIRE HYDRANT CALLOUT
—	—	STRAW BALE SEDIMENT TRAP



LOCATION MAP

BENCHMARKS

BM#1 CITY OF NAPERVILLE CONTROL MONUMENT NO. 19  
BERNSTEIN 3D TOP SECURITY GPS MONUMENT  
(390'± EAST OF C.L. WILD CHERRY LN., 5' NORTH OF SIDEWALK  
ON SOUTH SIDE OF AURORA AVE.) ELEV. 707.682

BM#2 CITY OF NAPERVILLE CONTROL MONUMENT NO. 219  
BERNSTEIN 3D TOP SECURITY GPS MONUMENT  
(SOUTH SIDE OF JEFFERSON AVE. ON EAST SIDE OF  
CLAREMONT DRIVE) ELEV. 692.515

INDEX TO DRAWINGS

1. TITLE SHEET
2. SPECIFICATIONS, SPECIAL PROVISIONS, & GENERAL NOTES
3. OVERALL UTILITY PLAN
4. DEMOLITION AND TREE REMOVAL AND PRESERVATION PLAN
5. STORM WATER POLLUTION PREVENTION PLAN – SPECIFICATIONS & DETAILS
6. SOIL EROSION CONTROL PLAN
7. GRADING PLAN NORTH
8. GRADING PLAN SOUTH
9. JEFFERSON AVENUE. PLAN AND PROFILE
10. CLAREMONT DR. PLAN AND PROFILE (STA. 10+00 TO 17+00)
11. CLAREMONT COURT PLAN AND PROFILE (STA. 17+00 TO END)  
WILLOWWAY DR. PLAN AND PROFILE (STA. 50+00 TO END)
- 12-14. DETAILS
- 15-17. FINAL PLAT OF SUBDIVISION – JEFFERSON ESTATES

RECORD DRAWING  
DATE: 11-12-04  
12-23-04

STATE OF ILLINOIS }  
COUNTY OF DUPAGE }SS

I, STEPHEN A. ROAKE, III, AN ILLINOIS LICENSED PROFESSIONAL ENGINEER, HERBY CERTIFY THAT THESE PLANS HAVE BEEN PREPARED BY ROAKE AND ASSOCIATES, INC., ILLINOIS LICENSED PROFESSIONAL DESIGN FIRM NO. 807, LICENSE EXPIRES APRIL 30, 2005, UNDER MY PERSONAL DIRECTION FOR THE EXCLUSIVE USE OF THE CLIENT NOTED BELOW, REPRODUCTION OR USE BY THIRD PARTIES IS STRICTLY PROHIBITED WITHOUT THE WRITTEN PERMISSION OF THE UNDERSIGNED.

GIVEN UNDER MY HAND AND SEAL THIS 27th DAY OF December, 2004.

ILLINOIS LICENSED PROFESSIONAL ENGINEER NO. 31754  
REGISTRATION VALID THROUGH NOVEMBER 30, 2005  
(NOT VALID WITHOUT ORIGINAL SIGNATURE)



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REVISIONS					
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

**JEFFERSON ESTATES**

TITLE SHEET – RECORD DRAWINGS

DRN/CKD BY: NW/SAR	DISC NO.: AB5332TS	FLD. BK./PG. 166	SHEET NO. 1 OF 14
SCALE: NONE	DATE: 11-12-04	JOB NO.: 533.002	

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# SPECIFICATIONS, SPECIAL PROVISIONS, & GENERAL NOTES

## GENERAL NOTES

1. Definition of terms:
  - a. The CONTRACTOR is the individual, firm, partnership or corporation contracting with the OWNER for performance of the prescribed work.
  - b. The OWNER is the individual, firm, partnership or corporation having the authority to award the contract for the prescribed work.
  - c. The ENGINEER shall be the OWNER's representative, and/or the designated representative from the local jurisdictional agency having authority over the prosecution of the prescribed work.
2. All CONTRACTORS shall be responsible for the following, which shall also be incidental to the cost of construction:
  - a. Examination of the Engineering Plans and Specifications prior to submitting a bid, and notifying the ENGINEER at once of any discrepancies.
  - b. The obtaining of any necessary permits not previously applied for by the OWNER, and posting of the necessary bonds.
  - c. The notification of the start of construction to all jurisdictional agencies, utility companies, and the ENGINEER, at least two (2) working days prior to said start. All existing utilities must be staked prior to construction.
  - d. Calling attention to the OWNER of any errors or discrepancies which may be suspected on lines and grades which are established by the OWNER. The CONTRACTOR shall not proceed with the work until the location of lines and grades which are believed to be in error have been verified or corrected by the OWNER. Additional staking that may be required due to CONTRACTOR'S negligence, shall be paid for by the CONTRACTOR.
  - e. The providing of safe and healthful work conditions throughout the prosecution of the construction work. This shall include, but not be limited to; the removal of debris, the protection of construction hazards with barricades, and the keeping of public street pavement clean of construction dirt and debris.
  - f. The restoration to the original condition or better of any off-site areas that are damaged by CONTRACTOR during construction.
  - g. The testing of materials, if required by the jurisdictional agencies.
  - h. The guarantee of all materials and workmanship for a period of one (1) year upon final acceptance by the OWNER and the jurisdictional agencies.
3. Construction equipment and/or materials shall not be stored within the right of way at any time.
4. The existing and new pavement shall be kept free of debris at all times.
5. The CONTRACTOR shall not conduct any generation, transportation, or recycling of construction or demolition debris, clean or general or un-contaminated soil generated during construction, remodeling, repairs and demolition of utilities, structures, and roads that is not commingled with any waste, within the maintenance jurisdiction of the jurisdictional agency, generator, place of origin of the debris or soil, the weight or volume of the debris or soil, and the location, owner, and operator of the facility where the debris or soil was transferred, disposed, recycled or treated. This documentation must be maintained by the CONTRACTOR for 3 years.
6. The OWNER shall be responsible for the following:
  - a. Scheduling the necessary pre-construction meeting(s) with the jurisdictional agencies with all SUB-CONTRACTORS present.
  - b. Providing the CONTRACTOR with one (1) set of control line and grade stakes (at offsets mutually agreed upon) for the proper prosecution and control of the work.
7. The ENGINEER shall be responsible for the following:
  - a. To visit the construction site in order to better carry out the duties and responsibilities assigned by the OWNER and undertaken by the ENGINEER. The ENGINEER shall not, during such visits or as a result of such observations of the CONTRACTOR'S work in progress, supervise, direct or control the CONTRACTOR'S work nor shall the ENGINEER have authority over the responsibility for the means, methods, techniques, sequences or procedures of construction selected by the CONTRACTOR(S), for safety precautions and programs incident to the work of the CONTRACTOR(S) or for any failure of the CONTRACTOR(S) to comply with laws, rules, regulations, ordinances, codes or orders applicable to the CONTRACTOR(S) furnishing and performing their work. Accordingly, the ENGINEER can neither guarantee the performance of the construction contracts by the CONTRACTOR(S) nor assume responsibility for the CONTRACTOR(S)' failure to furnish and perform their work in accordance with the Contract Documents.

## GENERAL SPECIFICATIONS

1. The General Specifications which apply to the construction work as shown on the Engineering Plans, are contained in the following documents:
  - a. Standard Specifications for Road and Bridge Construction as adopted Jan. 1, 2002 by the State of Illinois, Department of Transportation.
  - b. Standard Specifications for Water and Sewer Main Construction in Illinois, as adopted May 1996 by the Illinois Society of Professional Engineers, et al.
  - c. Illinois Urban Manual, dated 1995, by USDA, NRCS, Champaign, IL (revised Jan 1999)
  - d. Standards and Specifications of the City of Naperville latest version.
2. In the event of conflict between statements which apply to the construction work, the statement contained within the document first enumerated below shall govern:
  - a. Special Provisions
  - b. General Notes
  - c. Notes and Details on the Engineering Plans
  - d. General Specifications

## SPECIAL PROVISIONS

1. **EARTHWORK IMPROVEMENTS**
  - a. **Topsoil Excavation**
    1. Excavation of topsoil and other structurally unsuitable materials from areas that will require earth excavation or compacted earth fill material, in order to achieve the plan sub-grade elevations.
    2. Placement of the excavated material shall be in OWNER'S designated areas that will require earth excavation or compacted earth fill material, in order to achieve the plan sub-grade elevations.
    3. Compaction of the excavated material where placed in areas not requiring structural fill material, shall be moderate.
    4. Excess materials, if not utilized as fill or if not stockpiled for future landscaping, shall be completely removed from the construction site and disposed of by the CONTRACTOR.
  - b. **Earth Excavation**
    1. Excavation of earth and other materials which are suitable for use as structural fill. The excavation shall be to within the tolerance of 0.3 feet (plus or minus) of the plan sub-grade elevations. The (plus or minus) tolerance within pavement areas shall be such that the earth material shall "balance" as part of the fine grading operation.
    2. Placement of the earth and other suitable materials shall be within those areas requiring structural fill in order to achieve the plan sub-grade elevations to within a tolerance of 0.3 feet (plus or minus). The fill material shall be placed in loose lifts that shall not exceed eight (8) inches in thickness, and the water content shall be adjusted in order to achieve the required compaction. Earth material may be placed within those portions of the building site not requiring structural fill, to within six (6) inches of the plan finished grade elevation. In areas requiring structural fill, however, the earth material shall not be placed over topsoil or other unsuitable materials unless specifically directed by the Sole ENGINEER with the concurrence of the OWNER.

3. Compaction of the earth and other suitable materials, shall be to at least 95% of the Standard Proctor Dry density, ASTM 698 within proposed pavement and building areas. Moderate (90%) compaction is required elsewhere.
4. Excess materials, if not utilized as fill, shall be completely removed from the construction site and disposed of by the CONTRACTOR.
5. **Unsuitable Material**
  1. Unsuitable material shall be considered as material which is not suitable for the support of pavement and building construction, and is encountered below normal topsoil depths and the proposed sub-grade elevation. The decision to remove said material, and to what extent, shall be made by a Sole ENGINEER with the concurrence of the OWNER.
6. **Construction Entrance**
  1. This item shall consist of the construction of a temporary construction entrance and mud track at a location designated by the ENGINEER. Generally, the new roadway sub-grade adjacent to the existing roadway shall be over-excavated to allow the placement of the existing pavement of 50 feet. The surface elevation of length perpendicular to the existing pavement will be at the sub-grade elevation of the proposed roadway to allow future placement of the roadway base course without disturbing the temporary construction entrance.
7. **General**
  1. The Grading CONTRACTOR shall:
    1. Maintain proper site drainage at all times during the course of construction, and prevent storm water from running into or standing in excavated areas.
    2. Spread and compact uniformly to the degree specified all excess trench spoil after completion of the underground improvements. (Earthwork CONTRACTOR to make appropriate adjustments in his rough grading to accommodate trench spoil).
    3. Scarify and compact to the degree specified the upper twelve (12) inches of the suitable sub-grade material, in all areas that may be soft due to excess moisture content. This applies to cut areas as well as fill areas.
    4. Provide water to add to dry material in order to adjust the moisture content for the purpose of achieving the specified compaction.
    5. Backfill the curb and gutter after its construction and prior to the placement of the base course material.
8. **Testing and Final Acceptance**
  1. The CONTRACTOR shall provide as a minimum, a fully loaded six-wheel truck or similar vehicle, with a minimum of 12" CA-1 aggregate, for a width of 30 feet and minimum length perpendicular to the existing pavement will be at the sub-grade elevation of the proposed roadway to allow future placement of the roadway base course without disturbing the temporary construction entrance.
  2. Specific compaction testing may be required by the OWNER in selected fill areas. The CONTRACTOR shall bear the cost of compaction testing as well as the responsibility for the necessary correction(s).
  3. Approval of the pavement sub-grade by the jurisdictional agency shall be required prior to the placement of the pavement materials.
9. **Method of Measurement**
  1. As-built measurements of earthwork for the purpose of payment shall not apply. The quantities shown in the ENGINEER'S "Quantity Estimate" shall be utilized unless such quantities are adjusted by mutual consent of the OWNER and CONTRACTOR.
  2. The quantities as shown in the ENGINEER'S "Quantity Estimate" are those estimated by the ENGINEER and are provided solely for the convenience of the CONTRACTOR. The CONTRACTOR by choosing to utilize these quantities in the preparation of his "Lump Sum" bid, also accepts their accuracy. The CONTRACTOR is therefore encouraged to make his own independent earthwork calculation, and to visit the site.

10. **Method of Measurement**
  1. As-built measurements of earthwork for the purpose of payment shall not apply. The quantities shown in the ENGINEER'S "Quantity Estimate" shall be utilized unless such quantities are adjusted by mutual consent of the OWNER and CONTRACTOR.
  2. The quantities as shown in the ENGINEER'S "Quantity Estimate" are those estimated by the ENGINEER and are provided solely for the convenience of the CONTRACTOR. The CONTRACTOR by choosing to utilize these quantities in the preparation of his "Lump Sum" bid, also accepts their accuracy. The CONTRACTOR is therefore encouraged to make his own independent earthwork calculation, and to visit the site.

11. **Method of Measurement**
  1. As-built measurements of earthwork for the purpose of payment shall not apply. The quantities shown in the ENGINEER'S "Quantity Estimate" shall be utilized unless such quantities are adjusted by mutual consent of the OWNER and CONTRACTOR.
  2. The quantities as shown in the ENGINEER'S "Quantity Estimate" are those estimated by the ENGINEER and are provided solely for the convenience of the CONTRACTOR. The CONTRACTOR by choosing to utilize these quantities in the preparation of his "Lump Sum" bid, also accepts their accuracy. The CONTRACTOR is therefore encouraged to make his own independent earthwork calculation, and to visit the site.

12. **Method of Measurement**
  1. As-built measurements of earthwork for the purpose of payment shall not apply. The quantities shown in the ENGINEER'S "Quantity Estimate" shall be utilized unless such quantities are adjusted by mutual consent of the OWNER and CONTRACTOR.
  2. The quantities as shown in the ENGINEER'S "Quantity Estimate" are those estimated by the ENGINEER and are provided solely for the convenience of the CONTRACTOR. The CONTRACTOR by choosing to utilize these quantities in the preparation of his "Lump Sum" bid, also accepts their accuracy. The CONTRACTOR is therefore encouraged to make his own independent earthwork calculation, and to visit the site.

## Basis of Payment

1. Curb and gutter shall be paid for at the contract unit price per LINEAL FOOT.
2. Prime coat material shall be paid for at the contract unit price per GALLON.
3. Base Course shall be paid for at the contract unit price per SQUARE YARD.
4. Bituminous Concrete shall be paid for at the contract unit price per TON.

## UNDERGROUND IMPROVEMENTS

- a. **Sanitary Sewer Mains and Services**
  1. **Material** shall be PVC sewer pipe, which shall meet or exceed the performance requirements of ASTM D-2241 SDR 26.
  2. **Joints** shall be compression type, ASTM D-3139.
  3. **Bedding** shall be constructed with 1/4 inch to 3/4 inch size crushed stone, with a minimum thickness of twelve (12) inches above the crown of the pipe. See trench section detail on plans. (Class IA, ASTM D-2321) (CA-11)
  4. **Backfill** over the pipe shall be a minimum of four (4) feet.
  5. **Slope** for an 8 inch diameter pipe shall be a minimum of 0.40%. For a 6 inch diameter pipe, a minimum of 1.0%.
  6. **Wells or Tees** shall be provided on the new sanitary sewers for proposed building services. All connections to existing sanitary sewers not having wells shall be made with a "shower top" for building services and with a manhole for sewer extensions. All tops shall include a properly installed hub wye saddle.
  7. **Band Seal** or similar coupling shall be used when joining pipes of dissimilar materials.
  8. **Services** shall extend five (5) feet inside the property line of a lot being served (single family development), or to within five (5) feet from the face of a proposed building being served (multi-family and commercial development). The termination points shall be clearly located with a green-topped 4 inch x 4 inch stake.
  9. **Size** shall be as indicated on the Engineering Plans.
  10. **Polyethylene Encasement** all D.I.P. not enclosed in steel casing pipe shall be encased in polyethylene conforming to AWWA C-105.
- b. **Water Main and Services**
  1. **Material** for the water main shall be ductile iron pipe, which shall meet or exceed the performance requirements of ASA A21.51, Class 52 cement-lined. Water service material shall be type "K" copper.
  2. **Joints** for the ductile iron pipe shall be the push-on (bell-tite) type, which shall meet or exceed ASA 21.11 (AWWA C111). All valves and fittings shall be mechanical joints with retaining glands, which shall meet or exceed ASA 21.10 (AWWA C110). Retainer for MEGALUG 1100 Series, as manufactured by EBAA Iron, Inc., or Uni-Flange Blocker 1400 Series from Ford Meter Box Co.
  3. **Cover** over the pipe shall be a minimum of 5 feet.
  4. **Polyethylene Encasement** all D.I.P. not enclosed in steel casing pipe shall be encased in polyethylene conforming to AWWA C-105.
  5. **Services** shall extend to the "B-Box" of a lot being served (single family development), or to within five (5) feet from the face of a proposed building being served (multi-family or commercial development), except where noted otherwise on the plans. The termination points shall be clearly located with a blue-topped 4 inch x 4 inch stake.
  6. **Size** shall be as indicated on the Engineering Plans.
- c. **Storm Sewer**
  1. **Material** shall be as indicated on the Engineering Plan. Reinforced Concrete Pipe where indicated shall meet or exceed the performance requirements of ASTM C-76, Class IV; Ductile Iron Pipe where indicated shall meet or exceed the performance requirements of ASA A21.51, Class 51 cement lined; PVC Pipe ASTM D-2241, SDR-26.
  2. **Joints** for Reinforced Concrete Pipe shall be bell and spigot type with bituminous mastic; for Ductile Iron Pipe shall be the push-on (bell-tite) type; and for PVC Pipe shall be ring-tite type.
  3. **Bedding** shall be constructed with 1/4 inch to 3/4 inch size stone, with a minimum thickness of four (4) inches.
  4. **Size** shall be as indicated on the Engineering Plans.
  5. **Trench Backfill Material**
    1. Trench backfill material shall consist of CA-6 aggregate.
  6. **Incidental to Construction**
    1. Adhere to the criteria for the separation between water mains and the storm and sanitary sewer lines as described in the "Technical Policy Statement", Division of Public Water Supplies, Illinois Environmental Protection Agency.
    2. Be responsible to place on grade, and coordinate with other CONTRACTORS, all underground utility structure frames such as manholes, catch basins, and inlets.
    3. Be aware of potential conflicts with existing utilities. The CONTRACTOR shall excavate around the existing utilities to determine their exact location and elevation prior to the construction of the proposed utility improvements.
    4. Provide poured concrete filets conforming to the shape of the pipe in all sanitary and storm manholes, and inlets.
    5. Be responsible for maintaining the top of any utility trench of less than two (2) feet away from any existing or proposed curb or pavement. In those instances where the trench runs parallel to said curb or pavement.
    6. Be responsible for the de-watering of utility trenches during construction and providing the necessary trench bracing that may be required in order to adhere to the current OSHA safety standards.
    7. Remove soil materials that may be encountered at the pipe invert elevation to a depth of at least (1) foot below the bottom of the pipe, and backfill with compacted bedding material.
    8. Not damage the rock sub-grade with excessive water saturation from hydrant hushing, or from leaks in the water distribution system. The cost of repair for such damage shall be borne by the CONTRACTOR. Hoses should be used to direct the water from hydrant flushing into the storm sewer system (if available).
    9. Repair any existing drainage lines damaged during construction and properly encased in concrete to tie to the nearest storm sewer outlet. All locations "As-Built" drawing.
    10. Maintain proper site drainage as established by the earthwork CONTRACTOR to assure the integrity of the roadway sub-grade.
    11. Remove all excess materials to locations designated by the OWNER.
    12. Furnish one (1) set of Record Drawings to the ENGINEER upon completion of the sanitary sewer and water mains. Drawings shall show the location of all sanitary sewer lines (measured from the nearest downstream manhole), hydrants, valves, fittings, and individual service boxes.
    13. Provide geotextile fabric beneath all open lid structures to minimize intrusion of debris into the storm sewer system.
    14. Any existing utility structures requiring adjustment or reconstruction shall be completed by the CONTRACTOR to the satisfaction of the utility owner. Adjustments and/or reconstructions not called for on the plans shall be considered incidental to the contract. No more than a total of 12 inches of adjusting rings and/or 2 adjusting rings shall be allowed.

15. Existing watermain valves shall only be operated by the City of Naperville CEE and CM Division with 48 hour notice (Monday-Friday).
16. Operation-New watermain valves, including pressure tap valves, adjacent to an existing watermain, and existing watermain valves shall be operated by the City of Naperville CEE and CM Division personnel with 48 hour notice (Monday-Friday).

## Testing and Final Acceptance

1. **Sanitary sewer mains and services** shall be tested for leakage and deflection in accordance with the requirements of the "Standard Specifications for Water and Sewer Main Construction in Illinois" unless local requirements are more restrictive. Allowable testing limits shall be as described in the "General Specifications" unless the local requirements are more restrictive. "Service stubs must be properly plugged and sealed and clearly located at their termination points prior to testing. All sewer prior to their final acceptance. The pressure and leakage tests in accordance with ASTM C969-94. "Standard Practice for Infiltration and Line" Test, Vol. 04.05, Chemical Resistant Materials, Vitriified Clay, Concrete, and Cement Products; Mortars; Masonry (1996) (no later editions or amendments) or ASTM C1244-93 "Standard Test Method for Concrete Sewer Manholes by the Negative Pressure (Vacuum) Test" Test, Vol. 04.05 Products; Mortars; Masonry (1996) (no later editions or amendments) prior to placing into service.
2. Storm sewer and all storm structures shall be clean and free of debris prior to their final acceptance. The pressure and leakage tests in accordance with ASTM C969-94. "Standard Practice for Infiltration and Line" Test, Vol. 04.05, Chemical Resistant Materials, Vitriified Clay, Concrete, and Cement Products; Mortars; Masonry (1996) (no later editions or amendments) prior to their final acceptance.
3. Water main shall be tested in accordance with the local jurisdictional requirements prior to its final acceptance. The pressure and leakage tests in accordance with ASTM C969-94. "Standard Practice for Infiltration and Line" Test, Vol. 04.05, Chemical Resistant Materials, Vitriified Clay, Concrete, and Cement Products; Mortars; Masonry (1996) (no later editions or amendments) prior to their final acceptance.

## Method of Measurement

1. All sanitary sewer, storm sewer, and water main pipe shall be measured in the field after their installation. Payment shall be based on these field measurements.
2. All appurtenances such as: manholes, catch basins, inlets, valves and valve vaults, pipe shall be measured on the basis of in-place quantities.
3. Water services, where indicated on the "Quantity Estimate" as "long" or "short", shall include the necessary length of type "K" copper water tube of the size shown on the plans, corporation stop, curb stop, and service box, and all necessary labor, tools, equipment, excavation and backfill, for a complete installation as shown on the Engineering Plans. Trench backfill will be paid for separately, when required.
4. Trench backfill material shall be measured by multiplying the maximum width of trench (which shall not exceed that indicated in the General Specifications - depth of the trench backfill above the center of pipe or bedding, with a deduction for the volume of one-half of the pipe, if necessary, with a deduction for voids located to the ENGINEER for verification of the trench backfill material delivered to the construction site. Load tickets for bedding material shall be submitted separately.

## Basis of Payment

1. All sanitary sewer, water main, and storm sewer pipe shall be paid for at the contract unit price per LINEAL FOOT. The price shall include the necessary labor and material for the complete in-place installation, as well as all incidental construction, testing, bedding material, and connections to existing utilities.
2. All appurtenances for the underground improvements shall be paid for at the contract unit price EACH, sold price to include the necessary labor and material for a complete in-place installation. The price for manholes, inlets, and catch basins, backfill and bedding material, and connections to existing utilities shall be paid for separately.
3. Trench backfill material shall be paid for at the contract unit price per CUBIC YARD, and shall include the jetting of the in-place material.

## PROTECTION OF WATERMAIN AND WATER SERVICE LINES

Watermain and water service lines shall be protected from sanitary sewers, storm sewers, combined sewers, house sewer service connections and drains as follows:

- a. **Watermains**
  1. Horizontal Separation:
    - a. Water mains shall be laid at least ten (10) feet horizontally from any existing or proposed drain, storm sewer, sanitary sewer, combined sewer or sewer service connection.
    - b. Water mains may be laid closer than ten (10) feet to a sewer line when:
      - i) Local conditions prevent a lateral separation of ten feet.
      - ii) The water main invert is at least 18 inches above the crown of the sewer, and
      - iii) The water main is either in a separate trench or in the same trench on an undisturbed earth shell located to one side of the sewer.
  2. Vertical Separation:
    - a. A water main shall be laid so that its invert is 18 inches above the crown of the drain or sewer wherever water mains cross storm sewers, sanitary sewers or sewer service connections. The vertical separation shall be maintained for that portion of the water main located within ten (10) feet horizontally of any sewer or drain crossed. A length of water main pipe shall be centered over the sewer to be crossed with joints equidistant from the sewer or drain. Provided gasketed joints with reinforced concrete sewer pipe.
    - b. Both the water main and sewer shall be constructed of slip-on or mechanical joint cast or ductile iron pipe, or PVC pipe, SDR 26 meeting the requirements for watermain. The drain or sewer shall be pressure tested to the maximum expected surcharge head before backfilling.

3. Both the water main and drain or sewer shall be constructed of slip-on or mechanical joint cast or ductile iron pipe, or PVC pipe, SDR 26 meeting the requirements for watermain. The drain or sewer shall be pressure tested to the maximum expected surcharge head before backfilling.
4. Payment for the street lights shall be at the contract unit price EACH, for a complete in-place installation, which shall include luminaires, poles, cable, trenching, granular backfill and all necessary connections and appurtenances materials.

## SOIL EROSION AND SEDIMENTATION CONTROL MEASURES

1. All work shall be done in general accordance with the standards and requirements contained in the Municipal "Soil Erosion and Sedimentation Control" ordinance and the Illinois Urban Manual.
2. All open lid drainage structures located in yard and storm water detention areas will have staked straw bales around their frames during construction, until such a time that the landscaping is in place and effectively preventing potential siltation of these structures. Geotextile fabric shall be placed beneath all open lids.
3. The proposed storm water detention area shall be graded in such a manner that it will shed into a sedimentation basin during the site grading operations. This initial work function shall include the construction and seeding of the earthen berms which contain the watermain.
4. Construction shall extend on each side of the crossing until the normal distance from the watermain to the sewer or drain line is at least ten (10) feet.

## Water Service Lines

1. The horizontal and vertical separation between water service lines and all storm sewers, sanitary sewers, combined sewers or any drain or sewer service connection shall be the same as watermain separation described in (a) above.
2. Water pipe described in (a) above shall be used for sewer service lines when minimum, horizontal and vertical separation cannot be maintained.
3. Special conditions - Alternate solutions shall be presented to the IEPA when extreme topographical, geological or existing construction conditions make strict compliance with (a) or (b) above technically not economically practical. Alternate solutions will be approved provided watertight construction structurally equivalent to approved watermain material is proposed.
4. Watermains shall be separated from septic tanks, disposal fields and seepage beds by a minimum of 25 feet.
5. Watermains and water service lines shall be protected against entrance of hydrocarbons through diffusion through any material used in construction of the line.

1. The CONTRACTOR shall have the option of providing a steel sleeve (sch.40 pipe) for the watermain being protected or replacing the sewer with watermain quality pipe as ductile iron pipe or PVC watermain (SDR 26) may be used within landscaped areas, regardless of whether the CONTRACTOR elects to sleeve the watermain. No watermain protection shall include all incremental costs of substitute materials, and sleeves shall have exterior bituminous coating and worktop bulkheads at each end. All sleeves to be filled with sand or pea gravel.
2. **Auger Bored Steel Casing Pipe for Sanitary Sewers, Storm Sewers and Watermain**
  1. **Material** All casing pipe shall be new welded steel casing pipe of the thickness shown on the plans. The pipe shall meet or exceed the performance requirements of ASTM A-139 Grade "B". The pipe shall have a bituminous paint coating on both the inside and outside surfaces.
  2. **Joints** All joints shall be continuously welded.
  3. **Working and Receiving Pits** All jacking and receiving pits and other excavations associated with this work shall be properly shored and braced in accordance with OSHA/Sub-Part "P" excavation requirements. No excavation shall be within 20 feet of any existing pavements.
  4. **Installation** The steel casing pipe shall be carefully advanced to assure accurate maintenance of line and grade. Any hand mining during the first 20 feet shall be considered incidental to set up work and not paid for separately unless rock or clustered boulders are encountered. Hand mining beyond the initial 20 feet shall be paid for as extra work upon prior authorization by the Engineer. De-watering of the casing and pits shall be considered a SUB-CONTRACTOR responsibility. After installation and inspection of the casing pipe, the vertical alignment of the casing pipe shall be surveyed by use of a transit or laser so that blocking sizes can be determined which, when installed, will place the carrier pipe on the proposed gradient. The carrier pipe shall be carefully installed using spacers and shims approved by the Engineer. Cascade casing spacers accurately attached to the pipe shall be used unless other methods are approved by the Engineer. Timber shall not be used unless specifically approved by the Engineer. Care shall be taken to ensure that the carrier pipe does not come in contact with the casing pipe. The carrier pipe shall be carefully worked to ensure that the integrity of the joint. After installation of the carrier pipe, the annular space between the casing and carrier pipe, shall be filled with sand or pea gravel. The ends of the casing pipe shall be sealed with a concrete or brick and mortar bulkhead. All pits shall be backfilled with select compacted backfill meeting the approval of the Engineer. Compact trench backfill shall be used in areas to be paved or within two feet + 1.5x1 time the depth of existing pavements or where shown on the plans. Excess material shall be stockpiled on-site at locations designated by the Engineer.

5. **Measurement and Payment** Steel casing pipe of the size specified shall be measured in place in lineal feet. Steel casing pipe shall be paid for at the contract unit price per lineal foot for the size specified. Solid price shall include all excavation, backfill, including granular trench backfill, sheeting, shoring, jacking equipment and accessories, materials and equipment necessary to complete the work. Hand mining shall be paid for separately beyond the initial twenty feet of penetration. The cost of the carrier pipe shall be paid for separately.

## SUPPLEMENTAL SPECIFICATIONS

- a. **Street Lighting**
  1. Street lighting shall be installed in accordance with the current service rules and policies of the Electric Utility Company.
  2. Street crossings of electrical conduit for the street lighting system shall be subject to the following requirements:
    - a. All street crossings of conductor and/or cable will be installed in Schedule 40, galvanized steel conduit of size required by the Electric Utility Company to accommodate conductor.
    - b. Conduit shall extend a minimum of four (4) feet beyond the back of curb on each side of street.
    - c. Conduit shall be laid at an absolute minimum of 48 inches below the bottom of the curb.
    - d. Conduit shall be capped at both ends.
    - e. Expense to locate inadequately marked crossings and to extend crossings that end up under the street, will be the responsibility of the CONTRACTOR.
  3. Yellow standard warning tape shall be installed one (1) foot above the street light conductor.
  4. Electrical CONTRACTOR will submit specifications, drawings and catalog cuts for all materials to the ENGINEER for approval before ordering.
  5. The Electric Utility Company must be given thirty (30) days written notice to install road crossings once the roadway is brought within one-tenth of a foot of sub-grade.
  6. The electrical CONTRACTOR shall furnish one set of record drawings to the ENGINEER upon completion of the street lighting. The drawings shall show the location of the lights along the street relative to property corners and also the location of all underground wiring.
  7. Payment for the street lights shall be at the contract unit price EACH, for a complete in-place installation, which shall include luminaires, poles, cable, trenching, granular backfill and all necessary connections and appurtenances materials.

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## SUPPLEMENTAL SPECIFICATIONS

# SPECIFICATIONS, SPECIAL PROVISIONS, & GENERAL NOTES

## GENERAL NOTES

1. Definition of terms:
  - a. The CONTRACTOR is the individual, firm, partnership or corporation contracting with the OWNER for performance of the prescribed work.
  - b. The OWNER is the individual, firm, partnership or corporation having the authority to award the contract for the prescribed work.
  - c. The ENGINEER shall be the OWNER's representative, and/or the designated representative from the local jurisdictional agency having authority over the prosecution of the prescribed work.
2. All CONTRACTORS shall be responsible for the following, which shall also be incidental to the cost of construction:
  - a. Examination of the Engineering Plans and Specifications prior to submitting a bid, and notifying the ENGINEER at once of any discrepancies.
  - b. The obtaining of any necessary permits not previously applied for by the OWNER, and posting of the necessary bonds.
  - c. The notification of the start of construction to all jurisdictional agencies, utility companies, and the ENGINEER, at least two (2) working days prior to said start. All existing utilities must be staked prior to construction.
  - d. Calling attention to the OWNER of any errors or discrepancies which may be suggested on lines and grades which are established by the OWNER. The CONTRACTOR shall not be held responsible for errors or omissions on the part of the OWNER. Additional staking that may be required due to CONTRACTOR'S negligence, shall be paid for by the CONTRACTOR.
  - e. The providing of safe and healthful work conditions throughout the prosecution of the construction work. This shall include, but not be limited to, the removal of debris, the protection of construction hazards with barricades, and the keeping of public street pavement clean of construction dirt and debris.
  - f. The restoration to the original condition or better of any off-site areas that are damaged by CONTRACTOR during construction.
  - g. The testing of materials, if required by the jurisdictional agencies.
  - h. The guarantee of all materials and workmanship for a period of one (1) year upon final acceptance by the OWNER and the jurisdictional agencies.
3. Construction equipment and/or materials shall not be stored within the right of way at any time.
4. The existing and new pavement shall be kept free of debris at all times.
5. \*The CONTRACTOR shall not conduct any generation, transportation, or recycling of construction or demolition debris, clean or general or un-contaminated soil generated during construction, remodeling, repair, or demolition of utilities, structures, and roads that is not commingled with generator, place of origin of the debris or soil, the weight or volume of the debris or soil, and the location, owner, and operator of the facility where the debris or soil was transferred, disposed, recycled or treated. This documentation must be maintained by the CONTRACTOR for 3 years.\*
6. The OWNER shall be responsible for the following:
  - a. Scheduling the necessary pre-construction meeting(s) with the jurisdictional agencies with all SUB-CONTRACTORS present.
  - b. Providing the CONTRACTOR with one (1) set of control line and grade stakes (at offsets mutually agreed upon) for the proper construction and control of the work.
  - c. The ENGINEER shall be responsible for the following:
    - a. To visit the construction site in order to better carry out the duties and responsibilities assigned by the OWNER and undertaken by the ENGINEER. The ENGINEER shall not, during such visits or as a result of such observations of the CONTRACTOR(S)' work nor shall the ENGINEER have authority over the responsibility for the means, methods, techniques, sequences or procedures of construction selected by the CONTRACTOR(S), for safety precautions and programs incident to the work of the CONTRACTOR(S) or for any failure of the CONTRACTOR(S) to comply with laws, rules, regulations, ordinances, codes or other orders applicable to the CONTRACTOR(S) furnishing and performing their work. Accordingly, the ENGINEER can neither guarantee the performance of the construction contracts by the CONTRACTOR(S) nor assume responsibility for the CONTRACTOR(S) failure to furnish and perform their work in accordance with the Contract Documents.

## GENERAL SPECIFICATIONS

1. The General Specifications which apply to the construction work as shown on the Engineering Plans, are contained in the following documents:
  - a. Standard Specifications for Road and Bridge Construction as adopted Jan. 1, 2002 by the State of Illinois, Department of Transportation.
  - b. Standard Specifications for Water and Sewer Main Construction in Illinois, as adopted May 1996 by the Illinois Society of Professional Engineers, et al.
  - c. Illinois Urban Manual, dated 1995, by USDA, NRCS, Champaign, IL (amended Jan 1998)
  - d. Standards and Specifications of the City of Naperville latest version.
2. In the event of conflict between statements which apply to the construction work, the statement contained within the document first enumerated below shall govern:
  - a. Special Provisions
  - b. General Notes
  - c. Notes and Details on the Engineering Plans
  - d. General Specifications

## SPECIAL PROVISIONS

1. **EARTHWORK IMPROVEMENTS**
  - a. **Topsoil Excavation**
    1. Excavation of topsoil and other structurally unsuitable materials from areas that will require earth excavation or compacted earth fill material, in order to achieve the plan sub-grade elevations.
    2. Placement of the excavated material shall be in OWNERS designated areas for future use within areas to be landscaped, and those areas not requiring structural fill material, shall be moderate.
  3. Compaction of the excavated material where placed in areas not requiring structural fill material, shall be moderate.
  4. Excess materials, if not utilized as fill or if not stockpiled for future landscaping, shall be completely removed from the construction site and disposed of by the CONTRACTOR.
- b. **Earth Excavation**
  1. Excavation of earth and other materials which are suitable for use as structural fill. The excavation shall be to within the tolerance of 0.3 feet (plus or minus) of the plan sub-grade elevations. The (plus or minus) tolerance within pavement areas shall be such that the earth material shall "balance" as part of the grading operation.
  2. Placement of the earth and other suitable materials shall be within those areas requiring structural fill in order to achieve the plan sub-grade elevations to within a tolerance of 0.3 feet (plus or minus). The fill material shall be placed in lifts adjusted in order to achieve the required compaction. Earth material may be placed within those portions of the building site not requiring structural fill, to within six (6) inches of the plan finished grade elevation. In areas requiring structural materials unless specifically directed by the Soils ENGINEER with the concurrence of the OWNER.

3. Compaction of the earth and other suitable materials, shall be to at least 95% of the Standard Proctor Dry density, ASTM 696 with proposed pavement and building areas. Moderate (90%) compaction is required elsewhere.
4. Excess materials, if not utilized as fill, shall be completely removed from the construction site and disposed of by the CONTRACTOR.
- c. **Unsuitable Material**
  1. Unsuitable material shall be considered as material which is not suitable for the support of pavement and building construction, and is encountered below normal topsoil depths and the proposed sub-grade elevation. The decision to remove said material, and to what extent, shall be made by a Soils ENGINEER with the concurrence of the OWNER.
- d. **Construction Entrance**
  1. This item shall consist of the construction of a temporary construction entrance and mud track at a location designated by the ENGINEER. Generally, the new roadway sub-grade adjacent to the existing roadway shall be over-excavated to length perpendicular to the existing pavement of 60 feet. The surface elevation of the temporary construction entrance will be at the sub-grade elevation for the proposed roadway to allow future placement of the roadway base course without disturbing the temporary construction entrance.
- e. **General**
  1. The Grading CONTRACTOR shall:
    1. Maintain proper site drainage at all times during the course of construction, and prevent storm water from running into or standing in excavated areas.
    2. Spread and compact uniformly to the degree specified all excess trench spoil after make appropriate adjustments in its rough grading to accommodate trench spoil.
    3. Scarify and compact to the degree specified the upper twelve (12) inches of the suitable sub-grade material, in all areas that may be soft due to excess moisture content. This applies to cut areas as well as fill areas.
    4. Provide water to add to dry areas in order to adjust the moisture content for the purpose of achieving the specified compaction.
  2. Backfill for the curb and gutter after its construction and prior to the placement of the base course material.

9. **Method of Measurement**
  1. As-built measurements of earthwork for the purpose of payment shall not apply. The quantities shown in the ENGINEER'S "Quantity Estimate" shall be utilized unless said quantities are adjusted by mutual consent of the OWNER and CONTRACTOR.
  2. The quantities as shown in the ENGINEER'S "Quantity Estimate" are those estimated by the ENGINEER and are provided solely for the convenience of the CONTRACTOR. The CONTRACTOR shall verify the accuracy of the quantities in the preparation of his "Lump Sum" bid, and accept its accuracy. The CONTRACTOR is therefore encouraged to make his own independent earthwork calculation, and to visit the site.
  3. Prior to the removal of unsuitable material, the CONTRACTOR shall notify the OWNER for authorization to remove said material. Upon authorization and completion, the unsuitable material shall be field measured by the ENGINEER in place.

- b. **Basis of Payment**
  1. Payment for all earthwork shall be "lump sum". The CONTRACTOR shall provide unit prices for earthwork for the purpose of contract adjustment, if required.
  2. Payment for the removal of unsuitable material shall be based on the quantities as field measured by the ENGINEER. The CONTRACTOR shall provide as part of his price list include the complete removal of the material, replacement with a suitable material obtained by the CONTRACTOR from a borrow source, and compaction to the required specification.

2. **PAVING IMPROVEMENTS**
  - a. **Base Grading**
    1. Prior to the construction of the curb and gutter and the placement of the base material, the streets shall be fine graded to within 0.1 feet plus or minus of final sub-grade elevation, to a point two (2) feet beyond the back of curb.

- b. **Curb and Gutter**
  1. The curb and gutter shall be the type as detailed on the Engineering Plans.
  2. The curbs shall be backfilled after their construction and prior to the placement of the base course.
  3. All services shall be stamped on the curb with a "W" and a "S" for sewer.

- c. **Pavement**
  1. The pavement material shall be as detailed on the Engineering Plans.

- d. **General**
  1. Repair any base course and binder course failures prior to the installation of the final bituminous concrete surface course.
  2. Sweep clean the binder course prior to the installation of the final bituminous concrete surface course. Excessive cleaning of the binder course that may be required, and is not the fault of the Paving CONTRACTOR, shall be paid for on a time and material basis by prior agreement with the OWNER.

- e. **Testing and Final Acceptance**
  1. Prior to placement of the base course and binder course within the public right of way, the sub-grade must be approved by the jurisdictional authority. (See "Testing and Final Acceptance for Earthwork")
  2. Prior to placement of the bituminous concrete surface course, the CONTRACTOR, when required, shall obtain specimens of the binder course with a core drill where directed, for the purpose of thickness verification, in accordance with the General Specification entitled, "Standard Specification for Road and Bridge Construction", ART-406.16.
  3. Final acceptance of the total pavement installation shall be subject to the testing and checking requirements cited above.

- f. **Method of Measurement**
  1. Curb and gutter, and base course shall be measured in the field by the CONTRACTOR. The quantities shall be submitted to the ENGINEER for verification.
  2. Documentation for the base course, and the bituminous concrete binder and surface course shall be submitted to the ENGINEER for verification. When required, the CONTRACTOR shall obtain specimens of the bituminous concrete with a core drill where directed, in order to confirm the thickness. Deficiencies in thickness shall be adjusted for by the method described in the General Specifications entitled, "Standard Specifications for Road and Bridge Construction".

9. **Basis of Payment**
  1. Curb and gutter shall be paid for at the contract unit price per LINEAL FOOT.
  2. Prime coat material shall be paid for at the contract unit price per GALLON.
  3. Base Course shall be paid for at the contract unit price per SQUARE YARD.
  4. Bituminous Concrete shall be paid for at the contract unit price per TON.

3. **UNDERGROUND IMPROVEMENTS**
  - a. **Sanitary Sewer Mains and Services**
    1. **Material** shall be PVC sewer pipe, which shall meet or exceed the performance requirements of ASTM D-2241 SDR 26.
    2. **Joints** shall be compression type, ASTM D-3139.
    3. **Bedding** shall be constructed with 1/4 inch to 3/4 inch size crushed stone, with a minimum thickness of twelve (12) inches above the crown of the pipe. See trench section detail on plans. (Class IA, ASTM D-2321) (CA-11)
    4. **Cover** over the pipe shall be a minimum of four (4) feet.
    5. **Stops** for an 8 inch diameter pipe shall be a minimum of 0.04%. For a 6 inch diameter pipe, a minimum of 1.0%.
    6. **Wyes or Tees** shall be provided on the new sanitary sewers for proposed building services. All connections to existing sanitary sewers not having wyes shall be made with a "shower top" for building services and with a manhole for sewer extensions. All tops shall include a properly installed haw eye saddle.
    7. "Band Seal" or similar coupling shall be used when joining pipes of dissimilar materials.
    8. **Services** shall extend five (5) feet inside the property line of a lot being served (single family development), or to within five (5) feet from the face of a proposed building being served (multi-family and commercial development). The termination points shall be clearly located with a green-topped 4 inch x 4 inch stake.
    9. **Size** shall be as indicated on the Engineering Plans.
    10. **Polyethylene Encasement** all D.I.P. not enclosed in steel casing pipe shall be encased in polyethylene conforming to AWWA C-105.

- b. **Water Main and Services**
  1. **Material** for the water main shall be ductile iron pipe, which shall meet or exceed service material shall be type "K" copper.
  2. **Joints** for the ductile iron pipe shall be the push-on (bell-tite) type, which shall meet or exceed ASA 21.11 (AWWA C111). All valve and fittings shall be mechanical joints gaskets that are installed to restrain valves, fittings, hydrants and pipe joints shall be METALGAL 1100 Series as manufactured by ESEA Iron, Inc., or Uni-Flange Blockbuster 1400 Series from Ford Motor Block Co.
  3. **Cover** over the pipe shall be a minimum of 5 feet.
  4. **Polyethylene Encasement** all D.I.P. not enclosed in steel casing pipe shall be encased in polyethylene conforming to AWWA C-105.
  5. **Services** shall extend to the "B-Box" of a lot being served (single family development), or to within five (5) feet from the face of a proposed building being served (multi-family or commercial development), except where noted otherwise on the plans. The termination points shall be clearly located with a blue-topped 4 inch x 4 inch stake.
  6. **Size** shall be as indicated on the Engineering Plans.

- c. **Storm Sewer**
  1. **Material** shall be as indicated on the Engineering Plan. Reinforced Concrete Pipe C-76, Class W, Ductile Iron Pipe, and all necessary hardware, shall be installed to restrain valves, fittings, hydrants and pipe joints shall be METALGAL 1100 Series as manufactured by ESEA Iron, Inc., or Uni-Flange Blockbuster 1400 Series from Ford Motor Block Co.
  2. **Joints** for Reinforced Concrete Pipe shall be bell and spigot type with bituminous mastic; for Ductile Iron Pipe shall be the push-on (bell-tite) type; and for PVC Pipe shall be ring-tite type.
  3. **Bedding** shall be constructed with 1/4 inch to 3/4 inch size stone, with a minimum thickness of four (4) inches.
  4. **Size** shall be as indicated on the Engineering Plans.

- d. **Trench Backfill Material**
  1. Trench backfill material shall consist of CA-6 aggregate.
  2. All trenches under or within 2' of an existing or proposed sidewalk, curb, pavement, or driveway are to be backfilled with trench backfill.

- e. **Incidental to Construction**
  1. Adhere to the criteria for the separation between water mains and the storm and sanitary sewer lines as described in the "Typical Policy Statement", Division of Public Water Supplies, Illinois Environmental Protection Agency.
  2. Be responsible to place on grade, and coordinate with other CONTRACTORS, all underground utility structure frames such as manholes, catch basins, and inlets.
  3. Be aware of potential conflicts with existing utilities. The CONTRACTOR shall coordinate with all utilities to determine their exact location and elevation prior to the construction of the proposed utility improvements.
  4. Provide poured concrete filets conforming to the shape of the pipe in all sanitary and storm manholes, and inlets.
  5. Be responsible for maintaining the top of any utility trench at least two (2) feet away from any existing or proposed curb or pavement, in those instances where the trench runs parallel to said curb or pavement.
  6. Be responsible for the de-watering of utility trenches during construction and providing the necessary trench bracing that may be required in order to adhere to the current OSHA safety standards.
  7. Remove soil materials that may be encountered at the pipe invert elevation to a depth of at least (1) foot below the bottom of the pipe, and backfill with compacted bedding material.
  8. Not damage the road sub-grade with excessive water saturation from hydrant flushing, or from leaks in the water distribution system. The cost of repair for such damage shall be borne by the CONTRACTOR. Hoses should be used to direct the water from hydrant flushing into the storm sewer system (if available).
  9. Repair any existing drainage ties damaged during construction and properly restore and/or connect said tie to the nearest storm water outlet. All locations of encroached drainage tie shall be properly indicated on the CONTRACTOR'S "As-Built" drawing.
  10. Maintain proper site drainage as established by the earthwork CONTRACTOR to assure the integrity of the roadway sub-grade.

11. Remove all excess materials to locations designated by the OWNER.
12. Furnish one (1) set of Record Drawings to the ENGINEER upon completion of the sanitary sewer and water mains. Drawings shall show the location of all sanitary fittings, and individual service boxes.
13. Provide geotextile fabric beneath all open lid structures to minimize intrusion of debris into the storm sewer system.
14. Any existing utility structures requiring adjustment or reconstruction shall be completed by the CONTRACTOR to the satisfaction of the utility owner. Adjustments and/or reconstructions not called for on the plans shall be considered incidental to the contract. No more than a total of 12 inches of adjusting rings and/or 2 adjusting rings shall be allowed.

15. Existing watermain valves shall only be operated by the City of Naperville CEE and CM Division with 48 hour notice (Monday-Friday).
16. Operation-New watermain valves, including pressure top valves, adjacent to an existing watermain, and existing watermain valves shall be operated by the City of Naperville CEE and CM Division personnel with 48 hour notice (Monday-Friday).

- f. **Testing and Final Acceptance**
  1. Sanitary sewer mains and services shall be tested for leakage and deflection in accordance with the requirements of the "Standard Specifications for Water and Sewer Main Construction in Illinois" unless as described in the "General Specifications" unless the local requirements are more restrictive. Service stubs must be properly plugged and sealed and clearly located at their termination points prior to testing. All sewer prior to their final acceptance and manholes shall be clean and free of debris 370.30C(2). Leakage testing of all manholes for water tightness shall be in accordance with ASTM C869-94. "Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Precast Concrete Pipe Sewer Fiber-Cement Products; Mortars; Mortar; Mortar, Vitrifed Clay, Concrete, (amendments) or ASTM C1244-93 "Standard Test Method for Concrete Fiber-Manholes by the Negative Pressure (Vacuum) Test", Vol. 04.05 Products; Mortars; Mortar; Mortar; Mortar, Vitrifed Clay, Concrete, Fiber-Cement prior to placing into service.
  2. Storm sewer and all storm structures shall be clean and free of debris prior to their final acceptance.
  3. Water main shall be tested in accordance with the local jurisdictional requirements prior to its final acceptance. The pressure and leakage tests and disinfection of the requirements are more restrictive. All valve vaults shall be clean and free of debris and water, the individual service boxes shall be visible and clearly located prior to their final acceptance.

- g. **Method of Measurement**
  1. All sanitary sewer, storm sewer, and watermain pipe shall be measured in the field after their installation. Payment shall be based on these field measurements.
  2. All appurtenances such as: manholes, catch basins, inlets, valves and valve vaults, or valve boxes, and fire hydrants, shall be paid for on the basis of in-place quantities.
  3. Water services, where indicated on the "Quantity Estimate" as "long" or "short", shall include the necessary length of type "K" copper water tube of the size shown on the plans, corporation stop, curb stop, and service box, and all necessary hardware, tools, equipment, excavation and backfill, for a complete installation as shown on the Engineering Plans. Trench backfill will be paid for separately, when required.
  4. Trench backfill material shall be measured by multiplying the maximum width of trench (which shall not exceed that indicated in the General Specifications - depth of the trench backfill above the center of pipe or bedding, with a deduction for the volume of one-half of the pipe, if necessary. The CONTRACTOR shall provide load tickets to the ENGINEER for verification of the trench backfill material submitted separately.

- h. **Basis of Payment**
  1. All sanitary sewer, water main, and storm sewer pipe shall be paid for at the contract unit price per LINEAL FOOT. The price shall include the necessary labor, construction, testing, bedding material, and connections to existing utilities.
  2. All appurtenances for the underground improvements shall be paid for at the contract unit price EACH, said price to include the necessary labor and material for the complete in-place installation. The price for manholes, inlets, and catch basins shall also include the frame and apron in place construction. The price for fire hydrants shall also include a six (6) inch valve and box, and all incidental materials.
  3. Trench backfill material shall be paid for at the contract unit price per CUBIC YARD, and shall include the jetting of the in-place material.

4. **PROTECTION OF WATERMAIN AND WATER SERVICE LINES**
  1. Watermains and water service lines shall be protected from sanitary sewers, storm sewers, combined sewers, house sewer service connections and drains as follows:
    - a. **Watermains**
      1. Horizontal Separation:
        - a. Water mains shall be laid at least ten (10) feet horizontally from any existing or proposed drain, storm sewer, sanitary sewer, combined sewer or sewer service connection.
        - b. Water mains may be laid closer than ten (10) feet to a sewer line when:
          - i) Local conditions prevent a lateral separation of ten feet;
          - ii) The water main invert is at least 18 inches above the crown of the sewer; and
          - iii) The water main is either in a separate trench or in the same trench on an undisturbed earth surface located to one side of the sewer.
      2. Vertical Separation:
        - a. A water main shall be laid so that its invert is 18 inches above the crown of the drain or sewer whenever water mains cross storm sewers, sanitary sewers or portion of the water main located within ten (10) feet horizontally of any sewer or crossed with joints equipment from the sewer or drain. Provide gasketed joints with reinforced concrete sewer pipe.
        - b. Both the water main and drain or sewer shall be constructed of slip-on mechanical joint cast or ductile iron pipe, or PVC pipe, SDR 26 meeting the requirements for watermain. The drain or sewer shall be pressure tested to the maximum expected surcharge head before backfilling.

2. **Water Service Lines**
  1. The horizontal and vertical separation between water service lines and all storm sewers, sanitary sewers, combined sewers or any drain or sewer service connection shall be the same as watermain separation described in (a) above.
  2. Water pipe described in (a) above shall be used for sewer service lines when minimum, horizontal and vertical separation cannot be maintained.
  3. Special conditions - Alternate solutions shall be presented to the IEPA when extreme topographical, geological or existing structural conditions make strict compliance with (a) or (b) above technically and economically impractical. Alternate solutions will be approved provided watertight construction structurally equivalent to approved watermain material is proposed.

- d. **Watermains shall be separated from septic tanks, disposal fields and seepage beds by a minimum of 25 feet.**
4. Watermains and water service lines shall be protected against entrance of hydrocarbons through diffusion through any material used in construction of the line.

- f. The CONTRACTOR shall have the option of providing a steel sleeve (sch.40 pipe) for the watermain being protected or replacing the sewer with watermain quality pipe as ductile iron pipe or PVC watermain (SDR 26) may be used within paved areas. Either measurement will be made in lineal feet for the diameter of sewer being replaced regardless of whether the CONTRACTOR elects to sleeve the watermain. No deduction in length of the normal sewer pipe materials will be made. Payment for additional labor, fittings, etc. necessary to complete the sleeve, and steel sleeves shall have exterior bituminous coating and waterproof bulkheads at each end. All sleeves to be filled with sand or pea gravel.

- g. **Auger-Bored Steel Casing Pipe for Sanitary Sewers, Storm Sewers and Watermains**
  1. Material: All casing pipe shall be new welded steel casing pipe of the thickness shown on the plans. The pipe shall meet or exceed the performance requirements of ASTM A-139 Grade "A". The pipe shall have a bituminous paint coating on both the inside and outside surfaces.
  2. Joints: All joints shall be continuously welded.

- h. **Shoring and Receiving Pits** All jacking and receiving pits and other excavations associated with this work shall be properly sheeted and shored in accordance with OSHA Sub-Part "I" excavation requirements. No excavation shall be within 10 feet of any existing pavements.

- i. **Installation** The steel casing pipe shall be carefully advanced to assure accurate maintenance of line and grade. Any hand mining during the first 20 feet shall be considered incidental to set up work and not paid for separately, unless rock or clustered boulders are encountered. Hand mining beyond the initial 20 feet shall be paid for as extra work upon prior authorization by the Engineer. De-watering of the casing and pits shall be considered incidental to the work and not paid for separately. After installation and inspection of the casing pipe, the vertical alignment of the casing pipe shall be surveyed by use of a transit or laser so that blocking sizes can be determined which, when installed, will place the carrier pipe on the proposed gradient. The carrier pipe shall be carefully installed using spacers and shims approved by the Engineer. Cascode casing spacers securely attached to the pipe and located at the center and each end of each section of the casing pipe, shall be used unless other methods are approved by the Engineer. Timber shall not be used unless specifically approved by the Engineer. Care shall be taken to assure that the carrier pipe joints shall be in contact with the casing pipe. The carrier pipe joints shall be carefully made up to assure the integrity of the joint. After installation of the casing and carrier pipe, filled with sand or gravel, concrete bulkheads, and labor, backfill material shall be measured by multiplying the maximum width of trench (which shall not exceed that indicated in the General Specifications - depth of the trench backfill above the center of pipe or bedding, with a deduction for the volume of one-half of the pipe, if necessary. The CONTRACTOR shall provide load tickets to the ENGINEER for verification of the trench backfill material submitted separately.

5. **Measurement and Payment** Steel casing pipe of the size specified shall be measured in place in lineal feet. Steel casing pipe shall be paid for at the contract unit price per lineal foot for the size specified. Said price shall include all excavation, backfill, including shims, spacers and gravel fill, concrete bulkheads, and labor, materials and equipment necessary to complete the trench backfill material shall be measured by multiplying the maximum width of trench (which shall not exceed that indicated in the General Specifications - depth of the trench backfill above the center of pipe or bedding, with a deduction for the volume of one-half of the pipe, if necessary. The CONTRACTOR shall provide load tickets to the ENGINEER for verification of the trench backfill material submitted separately.

6. **SUPPLEMENTAL SPECIFICATIONS**
  - a. **Street Lighting**
    1. Street lighting shall be installed in accordance with the current service rules and policies of the Electric Utility Company.
    2. Street crossings of electrical conductors for the street lighting system shall be subject to the following requirements:
      - a. All street crossings of conductor and/or cable will be installed in Schedule 40, galvanized steel conduit of size required by the Electric Utility Company, to accommodate conductor.
      - b. Conduit shall extend a minimum of four (4) feet beyond the back of curb on each side of street.
      - c. Conduit shall be laid at an absolute minimum of 48 inches below the bottom of the curb.
      - d. Conduit shall be capped at both ends.
      - e. Expense to locate inadequately marked crossings and to extend crossings that end up under the street, will be the responsibility of the CONTRACTOR.
    3. Yellow standard warning tape shall be installed one (1) foot above the street light conductor wire for the full length of all trenches.
    4. Electrical CONTRACTOR will submit specifications, drawings and catalog cuts for all materials to the ENGINEER for approval before ordering.
    5. The Electric Utility Company must be given thirty (30) days written notice to install road crossings once the roadway is brought within one-tenth of a foot of sub-grade.
    6. The electrical CONTRACTOR shall furnish one set of record drawings to the ENGINEER upon completion of the street lighting. The drawings shall show the location of the lights along the street relative to property corners and also the location of all underground wiring.
    7. Payment for the street lights shall be at the contract unit price EACH, for a complete in-place installation, which shall include luminaries, poles, cable, trenching, granular backfill and all necessary connections and appurtenant materials.

- b. **SOIL EROSION AND SEDIMENTATION CONTROL MEASURES**
  - a. All work shall be done in general accordance with the standards and requirements contained in the Municipal "Soil Erosion and Sedimentation Control" ordinance and the Illinois Urban Manual.
  - b. All open lid drainage structures located in yard and storm water detention areas will have staked straw bales around their frames during construction, until such a time that the landscaping is in place and effectively preventing potential siltation of these structures. Geotextile fabric shall be placed beneath all open lids.
  - c. The proposed storm water detention area shall be graded in such a manner that it will function as a sedimentation basin during the site grading operations. This initial work shall include the construction and seeding of the earthen berms which contain the pond and the installation of the release pipe.
  - d. Seeding shall consist of the following mixture, to be applied during the period of March through September.
 

Class I Seeding	Weight
Kentucky Blue Grass	40 lbs./ac.
Perennial Ryegrass	30 lbs./ac.
Manhattan Perennial Ryegrass	30 lbs./ac.
  - e. The seedbed (which includes all areas to be landscaped) shall be prepared for receiving seed. All foreign materials shall be removed and lumps shall be pulverized and graded in an acceptable workmanlike manner.
  - f. Fertilizer shall consist of 12% Nitrogen, 12% Phosphorus, and 12% Potassium, unless otherwise approved by the ENGINEER and shall be spread at a rate of application of 250 lbs. per acre.
  - g. Mulch shall consist of straw material and be free of materials harmful to plants.
  - h. Erosion control blankets shall be furnished and installed in accordance with the Standard Specifications for Road and Bridge Construction, Section 26.01. Silt filter fence shall be furnished and installed in accordance with the Standard Specifications for Road and Bridge Construction, Section 26.01.
  - i. The estimated construction schedule is as follows:
 

Topsoil stripping	SUMMER 2004
Grading	SUMMER 2004
Paving	FALL 2004
Landscaping	FALL 2004

- j. **Procedure**
  1. Detention area. Grade and seed/sod within 15 days of grading completion.
  2. Storm sewer outfalls. Install Inlet Boxes. Grade the area within four (4) feet of the structure one foot lower to serve as a sedimentation basin during construction. Stake structure bales. Clean as necessary.
  3. Open lid storm structures in grass areas.
    - a. Grade the area within four (4) feet radius around structures one (1) foot below rim to serve as sedimentation basin during construction. Stake straw bales around the rims.
    - b. Place a section of geotextile material beneath the lid in order to reduce the potential for debris and other material from entering the storm system.
  4. Stake in-place spray bales along all the property lines where site drains towards alternate. No adjacent property of right-of-way. CONTRACTOR may use geotextile silt fence as an alternate.
  5. Provide minimum 6" topsoil and seed areas disturbed during construction or landscaping in accordance with landscaping plan.

8. **TRAFFIC CONTROL AND PROTECTION**
  - a. All work conducted within public right-of-ways shall be governed by the following applicable articles of sections 107 and 700 of the "Standard Specifications for Road and Bridge Construction", the latest edition of the Illinois Manual on Uniform Traffic Control Devices for Streets and Highways" and special details of Illinois Highway Standards listed herein.
  - b. Special attention is called to articles 107.09 of the Standard Specifications and the following highway standards, details and supplemental specifications and mimeographed special provisions contained herein, relating to traffic control.
  - c. The CONTRACTOR shall contact the local agency at least 72 hours in advance of beginning work.
  - d. Standards 702001

9. At the pre-construction meeting the CONTRACTOR shall furnish the name of the individual in his direct employ who is to be responsible for the installation and maintenance of the traffic control devices. If the actual installation and maintenance are to be accomplished by a SUB-CONTRACTOR, consent shall be given by the ENGINEER at the time of the pre-construction meeting in accordance with Article 108.01 of the Standard Specifications. This shall not relieve the CONTRACTOR of the foregoing requirements for a responsible individual in his direct employ to supervise this work. The CONTRACTOR will provide the name of its representative who will be responsible for the administration of the traffic control plan.

10. This item of work shall include furnishing, installing, maintaining, relocating and removing all traffic control devices used for the purpose of regulating, warning or directing traffic during the construction or maintenance of this improvement.

11. Traffic control and protection shall be provided as called for in the plans, these specifications, or as directed by the ENGINEER.

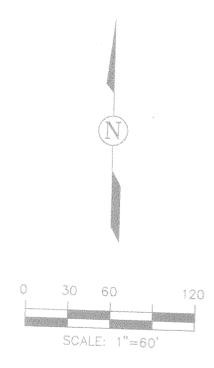
12. The following traffic control requirements are of special importance. Conformance with these requirements, however, shall not relieve the CONTRACTOR from conforming to all other applicable requirements of the Standard Specifications for Road and Bridge Construction.

13. The governing factor in the execution and staging of work for this project is to provide the motoring public with the safest possible travel conditions along the roadway as to keep the closing of any lane of the roadway to a minimum.

14. All traffic control devices used on this project shall conform to the plans, special provisions, traffic control standards, (Standard Specifications for Traffic Control Devices) and the Illinois Manual on Uniform Traffic Control Devices for Streets and Highways. No modification of these requirements will be

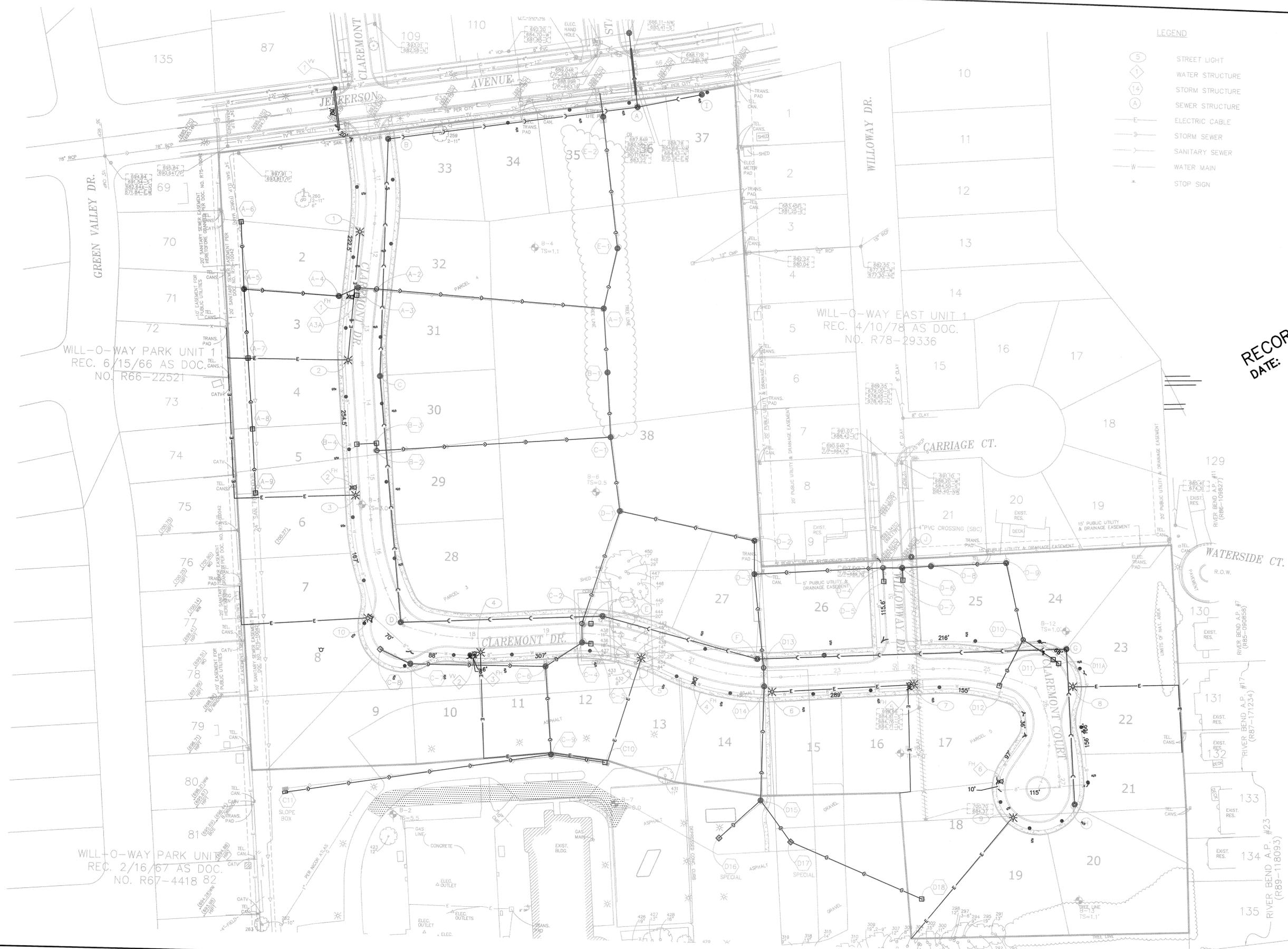
LEGEND

- (S) STREET LIGHT
- (I) WATER STRUCTURE
- (14) STORM STRUCTURE
- (A) SEWER STRUCTURE
- E — ELECTRIC CABLE
- S — STORM SEWER
- W — SANITARY SEWER
- W — WATER MAIN
- ▲ STOP SIGN



**RECORD DRAWING**  
 DATE: 11-12-04  
 12-23-04

RECORD PLAN FOR:		
TYPE	DATE	P.E. INITIALS
WATER MAIN		
SANITARY SEWER		
STORM SEWER		
MANAGEMENT		
OUTDOOR LIGHTING		



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REVISIONS					
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

**JEFFERSON ESTATES**  
 OVERALL UTILITY PLAN - RECORD DRAWINGS  
 DRN/CKD BY: NW/SAR    DISC NO.: AB53320U    FLD. BK./PG. 166



**Storm Water Pollution Prevention Plan Specifications and General Notes**

This stormwater pollution prevention plan (SWPPP) has been prepared to comply with the provisions of NPDES ILR10 Construction General Permit (CGP) issued by the Illinois Environmental Protection Agency for stormwater discharges from construction site activities.

**1. Site Description.**  
The following is a description of the construction activity that is the subject of this plan.

A. The proposed improvement consists of the construction of a single family subdivision.

The construction site activities for the site improvements will include: topsoil excavation and stockpiling, earth excavation and the placement of embankment materials, installation of sanitary sewers, storm sewers, watermain, and other municipal infrastructure such as telecommunications, gas and electric services, curb & gutter, base course and asphalt and/or concrete pavement, re-spread of topsoil over all disturbed pervious areas, stabilization of pervious areas with seed and/or other landscaping materials, soil erosion and sedimentation control measures and other activities that may be necessary to protect adjacent properties and downstream watercourses from damage.

B. The expected sequence of activities that will cause significant disturbance / disruption of the site are as follows: site clearing and tree removal; topsoil excavation and stockpiling; earth excavation and placement of earth embankment; and restoration of disturbed surfaces.

Prior to commencement of any site disruption activity, silt fence, any required down-slope protection and the stabilized construction entrance must be installed. Additional soil erosion and sediment control measures shall be installed as construction activity progresses, as noted on the plans.

C. The total area of the construction site is approximately 19,566 acres. The total area of the site to be disturbed is estimated to be 21.5 acres. The total site disturbance shall not exceed 20 acres at any time. An additional 20 acres (40 acres total) may be disturbed to balance site cut and fill.

D. The estimated stormwater runoff coefficients are contained in the project design narrative on file with the local agency having jurisdiction over this project. Information regarding soil classifications, estimated runoff and detailed computations for the management of stormwater runoff are contained in the project design narrative, which is incorporated by reference and made a part of this plan.

**2. Controls**

The plan addresses various controls that must be implemented for each of the major construction activities described above. For each of the controls described below, the contractor(s) shall be responsible for its implementation. Each contractor has signed this plan acknowledging responsibility for the implementation and on-going maintenance of this plan.

**A. Soil Erosion and Sediment Controls.**

1. **Stabilization Practices.** Existing vegetation should be preserved as long as possible. Disturbed areas should be stabilized as soon as possible. Stabilization measures shall be implemented as soon as practical in portions of the site where construction activities have temporarily or permanently ceased, but in no case longer than 14 days in areas where construction activity will not resume for 21 days, or more. Where snow cover precludes stabilization activities, or other conditions preventing implementation, stabilization measures shall be implemented as soon as conditions permit.

The following interim and permanent stabilization practices, as a minimum, shall be employed to stabilize disturbed areas of the site: Permanent Seeding; Vegetative Filters; Vegetative Channels and Swales; Stabilized Construction Entrance(s); Ditch Checks; and Barrier Filters.

2. **Structural Practices.** The following structural practices shall be implemented to the extent possible to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from the exposed areas of the site: Detention Basins; Siltation Basins; Storm Sewer Systems; Vegetated Drainage Swales; Permanent Seeding.

**B. Storm Water Management.**

1. The following measures will be installed during the construction process to control pollutants in storm water discharges that may occur after construction operations have been completed. The installation of some of these devices may be subject to the provisions of Section 404 of the Clean Water Act. The practices being implemented by this plan were selected on the basis of the technical guidance contained in the EPA's Standard Specifications for Soil Erosion and Sediment Control, as well as other documents and ordinances listed in the specifications.

The storm water pollutant control measures include: Silt Filter Fence, Barrier Filters, Vegetated Drainage Swales; Storm Sewer Systems; Siltation Basins; and Detention / Retention Ponds.

2. Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channels, as necessary, to assure a non-erosive velocity in flows from any structure to a watercourse, so that the natural, physical, and biological characteristics and functions of the watercourse are maintained and protected.

**C. Other Controls.**

1. **Waste Disposal.** Solid waste material, including trash, construction debris, excess construction materials, machinery, tools and other items shall be collected and disposed of off-site by the contractor in an approved manner. The contractor is responsible for all permits required for such disposal. On-site burning shall not be permitted. No solid materials, including building materials, shall be discharged into the waters of the state, except as authorized by appropriate permits. This plan shall comply with all applicable state and/or local waste disposal, sanitary sewer and/or septic system regulations.

2. **Sanitary Waste.** Sanitary waste shall be collected from portable units provided by the contractor a minimum of two times per week to avoid overflowing and maintain sanitary conditions around the unit.

3. **Petroleum Products.** All petroleum products stored on-site shall be stored in approved containers. All fueling sources shall have spill kits immediately available.

4. **Concrete Trucks.** Concrete trucks shall not be permitted to wash out or discharge surplus concrete or drum wash water on the site. Specific areas for this activity shall be designated by the contractor and provided with adequate siltation basins and other facilities to assure that discharge is contained and cleaned before entering the site storm water system.

5. **De-watering.** De-watering of excavations and other spaces, using pumps or other means, shall be done in a manner that All discharges of water contaminated with silt or sediment shall be made to a portable or permanent sediment basin to assure that all suspended solids are removed prior to flows leaving the construction site.

**D. Approved State or Local Plans.**

The management practices, controls and other provisions of this plan shall be at least as protective as the requirements contained in the EPA's Standard Specifications for Soil Erosion and Sediment Control, current edition, Illinois Procedures and Standards for Urban Soil Erosion and Sedimentation Control, and any governing local agency ordinances. Requirements for sediment management site plans or site permits approved by local agencies that are applicable to protecting surface water resources are, upon submittal of an NOI, to be authorized to discharge under this permit, incorporated by reference and enforceable under this permit even though they may not be specifically included in the plan.

**3. Maintenance.**

The following procedures shall be used to maintain, in good condition, vegetation, erosion and sedimentation control measures, and other protective measures identified in this plan and the standard specifications.

a) **Stabilized Construction Entrance.** The entrance shall be maintained to prevent tracking of sediment onto public streets. Maintenance shall include top-dressing with additional stone, removal and replacement of the top layer of stone, or washing the entrance. Any sediment deposited on public right-of-way shall be removed immediately. Adjacent public streets shall be swept frequently, if not daily, to eliminate dust and sediment.

b) **Vegetative Control Measures:** The vegetative growth associated with temporary and permanent seeding, sodding, vegetative channels, vegetative filters, etc. shall be maintained periodically and supplied with adequate water and fertilizer nutrients. If necessary, the vegetative cover shall be removed and re-seeded, as required.

c) **Sediment Basins and Sediment Traps:** Sediments shall be removed when the sediment occupies 40-50% of the original capacity. In no instance shall the sediment be allowed to build up to within one-foot of the outlet elevation. Basins shall be cleared to restore their original capacity.

d) **Silt Filter Fence:** Any damaged silt fence shall be repaired to meet the original design intent or removed and replaced, as necessary.

e) **Straw Bale Filter Barriers:** Straw Bale Filter Barriers shall be inspected frequently and repaired or replaced, as necessary.

f) **Barrier Filters:** Barrier Filters (geotextile fabric) shall be placed in all open-lid storm structures to prevent silt and other construction materials from entering the storm sewer system. Barrier Filters shall be inspected after each rainfall event and immediately repaired or replaced, as necessary.

g) **Riprap Outlet Protection:** Riprap outlet protection shall be inspected after experiencing high flows for any scouring beneath or along the edges of the riprap, or for any of the riprap material that may have become dislodged. Repairs shall be implemented immediately.

**4. Inspections.**

The Contractor, or Contractor's Representative, shall provide qualified personnel to inspect disturbed areas of the construction site, which have not been finally stabilized and accepted, structural control measures, and locations where vehicles enter and exit the site. Such inspections shall be conducted at least once every seven days and within 24 hours of the end of a 1/2" or greater rainfall or equivalent snowfall.

a) Disturbed areas and areas used for storage of materials and equipment that are exposed to precipitation shall be inspected for evidence of, or the potential for pollutants entering the drainage system. Erosion and sedimentation control measures identified in the plan shall be observed to assure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impact to receiving waters and adjacent properties. Locations where vehicles enter or leave the site shall be inspected for evidence of off-site sediment tracking.

b) Based on the results of the inspection, the description of potential pollutant sources identified in section 1 and pollution prevention measures identified in section 2 shall be revised as appropriate as soon as practicable after such inspection. Any changes to this plan resulting from the required inspections shall be implemented within seven (7) calendar days following the inspection.

c) A report summarizing the scope of the inspection, names and qualifications of the personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of this storm water pollution prevention plan, and actions taken in accordance with (b) above shall be made and retained as part of the plan for at least three (3) years after the date of the inspection. The report shall be signed by the contractor's designated "qualified individual" and copies forwarded to the Engineer and Owner.

d) If any violation of the provisions of this plan is identified during the conduct of the construction work covered by this plan, the Contractor shall complete and file an "Incidence Of Non-compliance" (ION) Report for the identified violation. The Contractor shall use forms provided by EPA and shall include specific information on the cause of non-compliance, actions which were taken to prevent any further causes of non-compliance and a statement detailing any environmental impact which may have resulted from the non-compliance. All reports of non-compliance shall be signed by a responsible authority (Contractor) in accordance with the General Permit. The report shall be mailed to the following address:

Illinois Environmental Protection Agency  
Division of Water Pollution Control  
Attn: Compliance Assurance Section  
1021 North Grand Avenue East  
P.O. Box 19276  
Springfield, IL 62794-9276  
(WITH COPIES SENT TO THE OWNER AND ENGINEER)

**5. Non-Storm Water Discharges.**

Except for flows from fire-fighting activities, sources of non-storm water that may be combined with storm water discharges associated with the activity addressed in this plan are as follows:

1. Water main flushing
2. Fire hydrant flushing
3. Uncontaminated groundwater (from de-watering activities)
4. Watering for dust control
5. Irrigation drainage for vegetative growth for seeding, etc.

The pollution measures specified in the plan shall be implemented for non-storm-water components of the discharge except that erosion due to irrigation of seeding shall be considered minor.

**Detailed Requirements**

**Construction Entrance**

1. This item shall consist of the construction of a temporary construction entrance and mud track at a location designated by the ENGINEER. Generally, the new roadway sub-grade adjacent to the existing roadway shall be over-excavated to allow the placement of 12" CA-1 aggregate, to a width of 30 feet and minimum length perpendicular to the existing pavement of 80 feet. The surface elevation of the temporary construction entrance will be at the sub-grade elevation for the proposed roadway to allow future placement of the roadway base course without disturbing the temporary construction entrance.

2. Soil erosion and sedimentation control.  
a) All open lid drainage structures located in yard and storm water detention areas will have staked straw bales around their frames during construction, until such a time that the landscaping is in place and effectively preventing potential siltation of these structures. Geotextile fabric shall be placed beneath all open lids.

b) The proposed storm water detention area shall be graded in such a manner that it will function as a sedimentation basin during the site grading operations. This initial work shall include the construction and seeding of the earthen berms which contain the pond and the installation of the release pipe.

c) Seeding shall consist of the mixtures contained in the Soil Protection Chart, General Specifications and Schedule of Prices.

1. The seeded (which includes all areas to be landscaped) shall be adequately prepared for receiving seed. All foreign materials shall be disposed of, and lumps shall be pulverized and graded in an acceptable workmanlike manner.

2. Fertilizer shall consist of 12 % Nitrogen, 12% Phosphorus, and 12% Potassium, unless otherwise approved by the ENGINEER and shall be spread at a rate of application of 250 lbs. per acre.

3. Mulch shall consist of straw material and be free of materials harmful to seed growth.

4. Erosion control blankets shall be furnished and installed in accordance with Section 250 of the Standard Specifications for Road and Bridge Construction - Excelsior Blanket. Silt filter fence shall be furnished and installed in accordance with Section 280 of the Standard Specifications for Road and Bridge Construction.

d) The estimated construction schedule is as follows:

Topsoil stripping SPRING 2004  
Grading SPRING 2004  
Paving SUMMER 2004  
Landscaping FALL 2004

**PROCEDURES**

1. Detention area. Grade and seed/sod within 15 days of grading completion.

2. Storm sewer outfalls. Install Inlet Boxes. Grade the area within four (4) feet of the structure one-foot lower to serve as a sedimentation basin during construction. Stake straw bales. Install Silt Filter Fence. Clean as necessary.

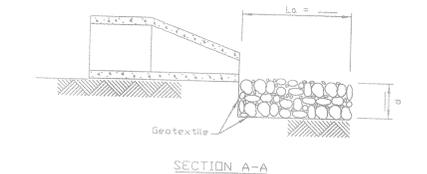
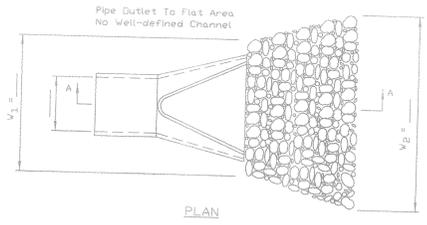
3. Open lid storm structures in grass areas.

1. Grade the area within four (4) feet radius around structures one (1) foot below rim to serve as sedimentation basins during construction. Stake straw bales around the rims.

2. Place a section of geotextile material beneath the lid in order to reduce the potential for debris and other material from entering the storm system.

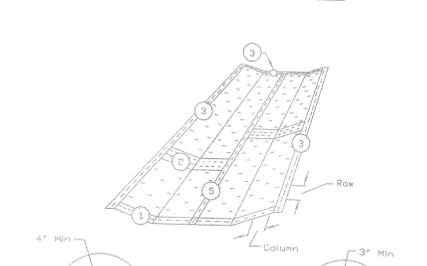
3. Install Silt Filter Fence along all the property lines where site drains towards adjacent property of right-of-ways.

4. Provide minimum 6" topsoil and seed areas disturbed during construction or landscape in accordance with landscaping plan.

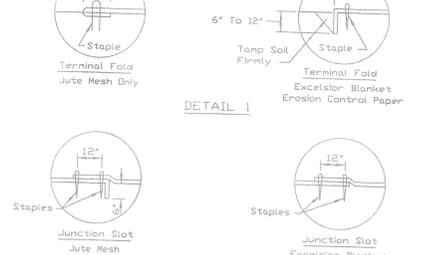


**NOTES:**  
1. The filter fabric shall meet the requirements in material specifications 592 GEOTEXTILE Table I or 2, class I, II or III.  
2. The rock riprap shall meet the 100T requirements for A-3 BR A-4 following gradation A-3 BR A-4.  
3. The riprap shall be placed according to construction specification 61 LODGE ROCK RIPRAP. The rock may be equipment placed.

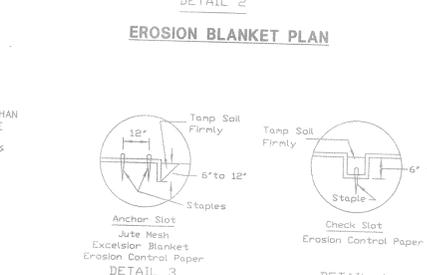
**PIPE OUTLET TO FLAT AREA**



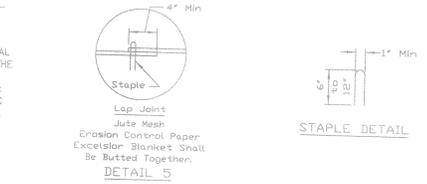
**EROSION BLANKET PLAN**



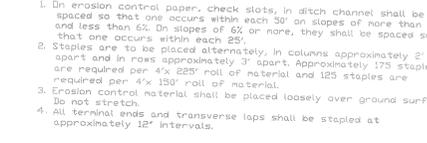
**SILT FENCE PLAN**



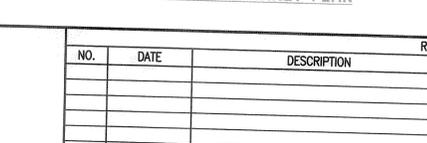
**STABILIZED CONSTRUCTION ENTRANCE PLAN**



**HAY OR STRAW DITCH CHECK**



**AGGREGATE DITCH CHECK**



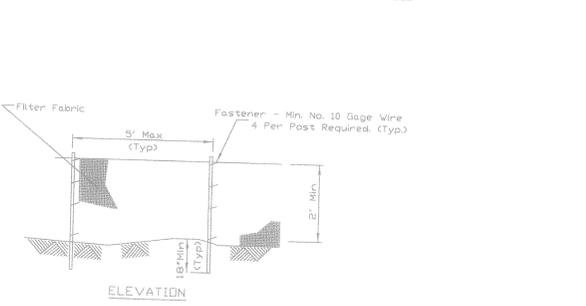
**STRAW BALE SEDIMENT TRAP**

STABILIZATION TYPE	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
PERMANENT SEEDING			A									
DORMANT SEEDING	D											
TEMPORARY SEEDING			C			D						
SODDING												
MULCHING	F											

- A. KENTUCKY BLUEGRASS 90 LBS/AC MIXED WITH PERENNIAL RYEGRASS 30 LBS/AC  
 B. KENTUCKY BLUEGRASS 135 LBS/AC MIXED WITH PERENNIAL RYEGRASS 46 LBS/AC +2 TONS STRAW MULCH/AC  
 C. SPRING OATS 100 LBS/ACRE  
 D. WHEAT OR CEREAL RYE 150 LBS./ACRE  
 E. SOD  
 F. STRAW MULCH 2 TONS/ACRE

\* IRRIGATION NEEDED DURING JUNE AND JULY  
 \*\* IRRIGATION NEEDED FOR 2 TO 3 WEEKS AFTER APPLYING SOD

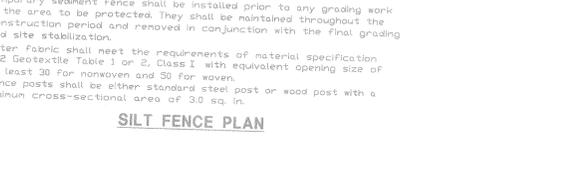
**SOIL PROTECTION CHART**



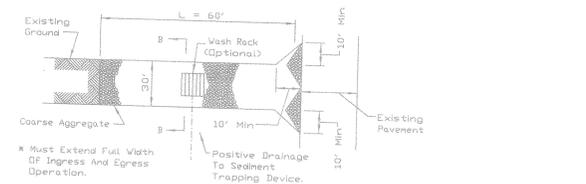
**FABRIC ANCHOR DETAIL**



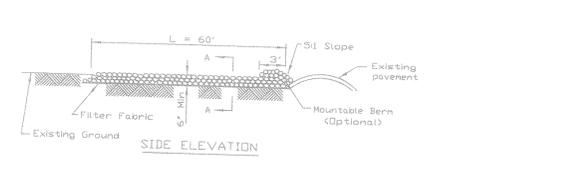
**HAY OR STRAW DITCH CHECK**



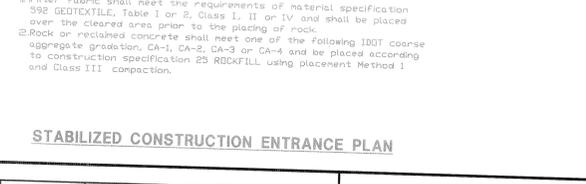
**AGGREGATE DITCH CHECK**



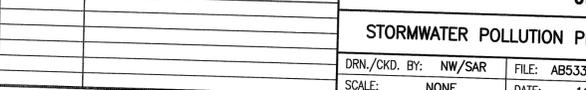
**STRAW BALE SEDIMENT TRAP**



**STABILIZED CONSTRUCTION ENTRANCE PLAN**



**HAY OR STRAW DITCH CHECK**



**AGGREGATE DITCH CHECK**



**STRAW BALE SEDIMENT TRAP**

**Grading Contractor Certification:**

(Company Name)  
 I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit that authorizes the storm water discharges associated with the industrial activity from the construction site identified as part of this certification.

(Name)  
 (Title) (Date)

**Underground Contractor Certification:**

(Company Name)  
 I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit that authorizes the storm water discharges associated with the industrial activity from the construction site identified as part of this certification.

(Name)  
 (Title) (Date)

**Paving Contractor Certification:**

(Company Name)  
 I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit that authorizes the storm water discharges associated with the industrial activity from the construction site identified as part of this certification.

(Name)  
 (Title) (Date)

**Landscaping Contractor Certification:**

(Company Name)  
 I certify under penalty of law that I understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit that authorizes the storm water discharges associated with the industrial activity from the construction site identified as part of this certification.

(Name)  
 (Title) (Date)

**RECORD DRAWING**

DATE: 11-12-04  
 12-23-04

TYPE	DATE	FOR:
WATERMAIN		
SANITARY SEWER		
STORM SEWER		
STORMWATER MANAGEMENT		
LANDSCAPING		

**RECORD PLAN FOR:**

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

**REVISIONS**

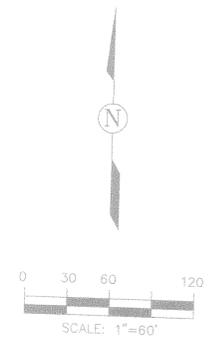
NO.	DATE	DESCRIPTION

**JEFFERSON ESTATES**

**STORMWATER POLLUTION PREVENTION PLAN (SWPPP) - RECORD DRAWINGS**

DRN./CKD. BY: NW/SAR FILE: AB5332SWPPP-SPC FLD. BK./PG: -

SCALE: NONE DATE: 11-12-04 SHEET NO.



- LEGEND**
- STORM SEWER
  - PROPOSED CONTOUR
  - EXISTING CONTOUR
  - SILT FENCE
  - STRAW BALE DITCH CHECK
  - STRAW BALE GRATE CHECK
  - HYDRO-SEED

**PUMPING NOTE:**

ALL CONTRACTORS ARE CAUTIONED THAT THE DISCHARGE OF SURFACE WATERS DURING CONSTRUCTION MAY POLLUTE DOWNSTREAM WATERCOURSES IF DISCHARGES ARE NOT PROPERLY PROTECTED. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE SILT FILTERS AND SILT TRAPS AT ALL POINTS OF DISCHARGE, INCLUDING TEMPORARY PUMP DISCHARGES, TO PREVENT SILT FROM ENTERING DOWNSTREAM SYSTEMS. VIOLATIONS MAY BE SUBJECT TO PROSECUTION AND FINES.

SEE LANDSCAPE PLAN FOR SEEDING REQUIREMENTS

**RECORD DRAWING**  
 DATE: 11-12-04  
 12-23-04

RECORD PLAN FOR:		
TYPE	DATE	P.E. INITIALS
WATERMAIN		
SANITARY-SEWER		
STORM-SEWER		
STORMWATER-MANAGEMENT		
OUTDOOR-LIGHTING		

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 1887 HIGH GROVE LN • NAPERVILLE, IL 60540  
 (630) 366-3232 • FAX (630) 366-3287

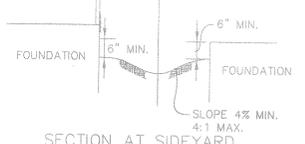
PREPARED FOR:  
**CHARLESTON CLASSIC HOMES, INC.**  
 407 E. GARTNER  
 NAPERVILLE, ILLINOIS 60540  
 PH. (630) 420-8084  
 FX. (630) 420-8087

REVISIONS					
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

**JEFFERSON ESTATES**  
 SOIL EROSION CONTROL PLAN - RECORD DRAWINGS  
 DRN/CKD BY: NW/SAR    DISC NO.: AB5332EROS    FLD. BK./PG. 166

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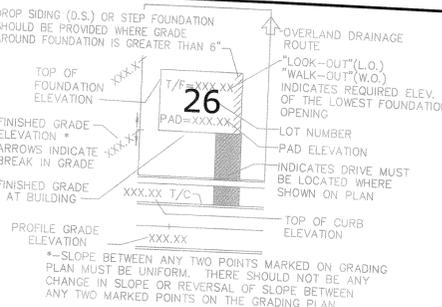
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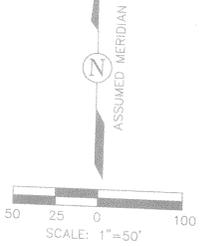
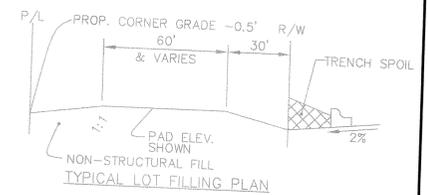
**SECTION AT SIDEYARD**  
 WHEN TOP OF FOUNDATION IS MORE THAN 6"± ABOVE FINISHED GRADE, SIDING MATERIAL SHALL BE EXTENDED DOWN TO WITHIN 6" OF FINISHED GRADE.  
 AREAS DESIGNATED WITH ↗ DENOTE OVERLAND DRAINAGE ROUTES. NO FOUNDATION OPENINGS INCLUDING WINDOW WELLS SHALL BE MORE THAN 6" BELOW THE TOP OF FOUNDATION IN THESE AREAS.

- DRAINAGE AND GRADING NOTES**
- ELEVATIONS SHOWN FOR ALL CURB INLETS, CATCH BASINS, AND MANHOLES ARE TOP OF CURB.
  - ALL CURBS SHALL BE BACKFILLED TO WITHIN 6" OF THE TOP OF CURB.
  - ALL BACK YARD SWALES SHALL BE CUT OR FILLED SIX (6) INCHES BELOW FINISHED GRADE.
  - TOPSOIL SHALL BE REMOVED FROM ALL AREAS THAT RECEIVE CLAY FILL.
  - T/F - INDICATES PROPOSED TOP OF FOUNDATION ELEVATION AND THE LOWEST OPENING IN A CONVENTIONAL FOUNDATION WHERE SURFACE RUNOFF CAN ENTER THE FOUNDATION.
  - THE TOP OF WINDOW WELLS SHALL BE CONSTRUCTED NO LOWER THAN 6 INCHES BELOW THE TOP OF FOUNDATION ELEVATION (T/F).
  - THE FINISHED TOPSOIL ELEVATION AT THE FOUNDATION SHOULD GENERALLY BE 6 INCHES BELOW THE TOP OF FOUNDATION ELEVATION, UNLESS INDICATED OTHERWISE.
  - G.F. - INDICATES THE PROPOSED GARAGE FLOOR ELEVATION. THE PLACEMENT OF THE GARAGE/DRIVEWAY IS CRITICAL WHEN AND WHERE SHOWN ON THIS PLAN. IT IS MANDATORY THAT THE GARAGE BE CONSTRUCTED ON THE SIDE INDICATED.
  - L.O. OR W.O. - INDICATES THOSE LOTS WHERE A "LOOK-OUT" (L.O.) OR "WALK-OUT" (W.O.) BASEMENT CAN BE CONSTRUCTED. THE REQUIRED ELEVATION OF THE LOWEST FOUNDATION OPENING IS GIVEN. IF A LOOK-OUT OR WALK-OUT BASEMENT IS NOT DESIRED, A DETAILED GRADING PLAN OF ALTERNATE DESIGN MUST BE SUBMITTED TO THE CITY OF NAPERVILLE.

- ACCENTED SIDES OF PROPOSED HOUSE FOUNDATIONS ARE INTENDED TO INDICATE THE APPROXIMATE LOCATION WHERE A LOOK-OUT OR WALK-OUT BASEMENT MAY BE CONSTRUCTED OR INDICATE THAT SPECIAL CONSTRUCTION MEASURES MUST BE EMPLOYED IN ORDER TO MINIMIZE SIDE YARD, REAR YARD, AND/OR FRONT YARD GRADIENTS (E.G. DROPPED SIDING, STEPPED FOUNDATION, RETAINING WALL, ETC.) - SEE NOTES ABOVE FOR FURTHER DETAILS.
- THE GRADING ON ALL LOTS IS TYPE 2 (NON-CRITICAL), UNLESS OTHERWISE INDICATED BY A "TYPE 1" (CRITICAL). A DETAILED GRADING PLAN MUST BE SUBMITTED TO THE CITY OF NAPERVILLE FOR ALL "TYPE 1" LOTS PRIOR TO A BUILDING PERMIT BEING ISSUED.



- RECOMMENDED MIN. TOP OF FOUNDATION ELEVATION.
- RECOMMENDED BUILDING PAD ELEVATION BY MASS GRADING CONTRACTOR. WHERE NO PAD ELEVATION IS SHOWN, LOT HAS NOT BEEN MASS GRADED.
- RECOMMENDED MAX. GARAGE FLOOR ELEVATION TO MAINTAIN DRIVEWAY GRADE OF 8%-10%. WHERE NO ELEVATION IS SHOWN, GARAGE FLOOR IS ASSUMED TO BE 6" BELOW TOP OF FOUNDATION.
- RECOMMENDED LOCATION OF DRIVEWAY/GARAGE. WHERE NO DRIVEWAY IS SHOWN DRIVE MAY BE ON EITHER SIDE OF HOUSE.



**NOTE:**  
 THERE SHALL BE NO FOUNDATION OPENINGS OR WINDOW WELL LEDGES BELOW ELEV. 691.6 FOR LOTS 28 THROUGH 37.

DETENTION VOLUME TABLE		
STAGE	DESIGN STORAGE (ACRE-FT.)	RECORD STORAGE (ACRE-FT.)
683.0	-0-	0.01
684.0	0.24	0.34
685.0	1.42	1.37
686.0	3.41	3.17
687.0	5.76	5.46
688.0	8.30	8.16
689.0	11.02	11.13
689.01	11.05	11.16
690.0	13.95	
691.0	17.12	
692.0	20.63	

RECORD PLAN FOR:		
TYPE	DATE	P.E. INITIALS
WATERMAIN-SANITARY-SEWER-STORM-SEWER		
STORMWATER MANAGEMENT		
OUTDOOR LIGHTING		

**RECORD DRAWING**  
 DATE: 11-12-04  
 12-23-04



FOR CONTINUATION SEE SHEET 8 OF 14

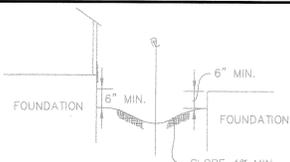
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 407 E. GARTNER  
 NAPERVILLE, ILLINOIS 60540  
 PH. (630) 420-8084  
 FX. (630) 420-8087

NO.		DATE		DESCRIPTION	

**JEFFERSON ESTATES**  
 GRADING PLAN NORTH - RECORD DRAWINGS  
 DRN./CKD. BY: PRS/SAR FILE: 5332E FLD. BK./PG.: 166 SHEET NO.

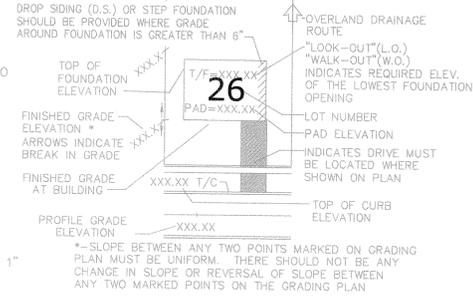


**SECTION AT SIDEYARD**  
 WHEN TOP OF FOUNDATION IS MORE THAN 6" ABOVE FINISHED GRADE, SIDING MATERIAL SHALL BE EXTENDED DOWN TO WITHIN 6" OF FINISHED GRADE.  
 AREAS DESIGNATED WITH DENOTE OVERLAND DRAINAGE ROUTES. NO FOUNDATION OPENINGS INCLUDING WINDOW WELLS SHALL BE MORE THAN 6" BELOW THE TOP OF FOUNDATION IN THESE AREAS.

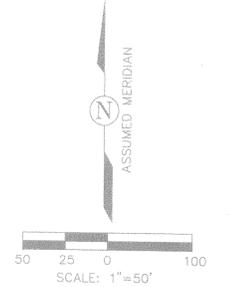
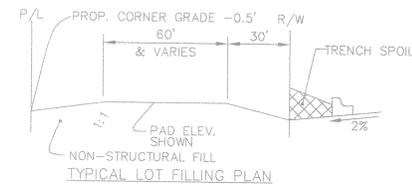
**DRAINAGE AND GRADING NOTES**

- ELEVATIONS SHOWN FOR ALL CURB INLETS, CATCH BASINS, AND MANHOLES ARE TOP OF CURB.
- ALL CURBS SHALL BE BACKFILLED TO WITHIN 6" OF THE TOP OF CURB.
- ALL BACK YARD SWALES SHALL BE CUT OR FILLED SIX (6) INCHES BELOW FINISHED GRADE.
- TOPSOIL SHALL BE REMOVED FROM ALL AREAS THAT RECEIVE CLAY FILL.
- T/F - INDICATES PROPOSED TOP OF FOUNDATION ELEVATION AND THE LOWEST OPENING IN A CONVENTIONAL FOUNDATION WHERE SURFACE RUNOFF CAN ENTER THE FOUNDATION.
- THE TOP OF WINDOW WELLS SHALL BE CONSTRUCTED NO LOWER THAN 6 INCHES BELOW THE TOP OF FOUNDATION ELEVATION (T/F).
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- L.O. OR W.O. - INDICATES THOSE LOTS WHERE A "LOOK-OUT" (L.O.) OR "WALK-OUT" (W.O.) BASEMENT CAN BE CONSTRUCTED. THE REQUIRED ELEVATION OF THE LOWEST FOUNDATION OPENING IS GIVEN. IF A LOOK-OUT OR WALK-OUT BASEMENT IS NOT DESIRED, A DETAILED GRADING PLAN OF ALTERNATE DESIGN MUST BE SUBMITTED TO THE CITY OF NAPERVILLE.

- ACCENTED SIDES OF PROPOSED HOUSE FOUNDATIONS ARE INTENDED TO INDICATE THE APPROXIMATE LOCATION WHERE A LOOK-OUT OR WALK-OUT BASEMENT MAY BE CONSTRUCTED OR TO INDICATE THAT SPECIAL CONSTRUCTION MEASURES MUST BE EMPLOYED IN ORDER TO MINIMIZE SIDE YARD, REAR YARD, AND/OR FRONT YARD GRADIENTS (E.G. DROPPED SIDING, STEPPED FOUNDATION, RETAINING WALL, ETC.) - SEE NOTES ABOVE FOR FURTHER DETAILS.
- INDICATES THE LOCATION AND DIRECTION OF AN OVERLAND DRAINAGE ROUTE THAT MUST BE RESERVED IN ALL FINAL GRADING OPERATIONS (SEE DETAIL).
- THE GRADING ON ALL LOTS IS TYPE 2 (NON-CRITICAL), UNLESS OTHERWISE INDICATED BY A "TYPE 1" (CRITICAL). A DETAILED GRADING PLAN MUST BE SUBMITTED TO THE CITY OF NAPERVILLE FOR ALL "TYPE 1" LOTS PRIOR TO A BUILDING PERMIT BEING ISSUED.



- RECOMMENDED MIN. TOP OF FOUNDATION ELEVATION.
- RECOMMENDED BUILDING PAD ELEVATION BY MASS GRADING CONTRACTOR. WHERE NO PAD ELEVATION IS SHOWN, LOT HAS NOT BEEN MASS GRADED.
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- RECOMMENDED LOCATION OF DRIVEWAY/ GARAGE. WHERE NO DRIVEWAY IS SHOWN DRIVE MAY BE ON EITHER SIDE OF HOUSE.



NOTE:  
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DETENTION VOLUME TABLE		
STAGE	DESIGN STORAGE (ACRE-FT.)	RECORD STORAGE (ACRE-FT.)
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685.0	1.42	1.37
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689.0	11.02	11.13
689.01	11.05	11.16
690.0	13.95	
691.0	17.12	
692.0	20.63	

RECORD PLAN FOR:		
TYPE	DATE	P.E. INITIALS
WATERMAIN		
SANITARY-SEWER		
STORM-SEWER	11-12-04	[Signature]
STORMWATER MANAGEMENT		
OUTDOOR-LIGHTING		

**RECORD DRAWING**  
 DATE: 11-12-04  
 12-23-04

FOR CONTINUATION SEE SHEET 8 OF 14

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 407 E. GARTNER  
 NAPERVILLE, ILLINOIS 60540  
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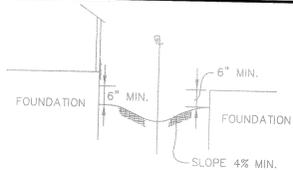
REVISIONS					
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

**JEFFERSON ESTATES**

**GRADING PLAN NORTH - RECORD DRAWINGS**

DRN./CKD. BY: PRS/SAR	FILE: 5332E	FLD. BK./PG.: 166	SHEET NO. 7 OF 14
SCALE: 1"=50'	DATE: 11-12-04	JOB NO.: 533.002	

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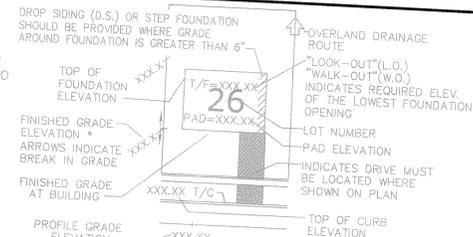
SECTION AT SIDEYARD

WHEN TOP OF FOUNDATION IS MORE THAN 6" ABOVE FINISHED GRADE, SIDING MATERIAL SHALL BE EXTENDED DOWN TO WITHIN 6" OF FINISHED GRADE.

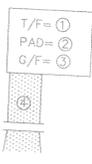
AREAS DESIGNATED WITH DENOTE OVERLAND DRAINAGE ROUTES. NO FOUNDATION OPENINGS INCLUDING WINDOW WELLS SHALL BE MORE THAN 6" BELOW THE TOP OF FOUNDATION IN THESE AREAS.

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- G.F. - INDICATES THE PROPOSED GARAGE FLOOR ELEVATION. THE PLACEMENT OF THE GARAGE/DRIVEWAY IS CRITICAL WHEN AND WHERE SHOWN ON THIS PLAN. IT IS MANDATORY THAT THE GARAGE BE CONSTRUCTED ON THE SIDE INDICATED.
- L.O. OR W.O. - INDICATES THOSE LOTS WHERE A "LOOK-OUT" (L.O.) OR "WALK-OUT" (W.O.) BASEMENT CAN BE CONSTRUCTED. THE REQUIRED ELEVATION OF THE LOWEST FOUNDATION OPENING IS GIVEN. IF A LOOK-OUT OR WALK-OUT BASEMENT IS NOT DESIRED, A DETAILED GRADING PLAN OF ALTERNATE DESIGN MUST BE SUBMITTED TO THE CITY OF NAPERVILLE.
- ACCENTED SIDES OF PROPOSED HOUSE FOUNDATIONS ARE INTENDED TO INDICATE THE APPROXIMATE LOCATION WHERE A LOOK-OUT OR WALK-OUT BASEMENT MAY BE CONSTRUCTED OR TO INDICATE THAT SPECIAL CONSTRUCTION MEASURES MUST BE EMPLOYED IN ORDER TO MINIMIZE SIDE YARD, REAR YARD, AND/OR FRONT YARD GRADIENTS (E.G. DROPPED SIDING, STEPPED FOUNDATION, RETAINING WALL, ETC.) - SEE NOTES ABOVE FOR FURTHER DETAILS.
- INDICATES THE LOCATION AND DIRECTION OF AN OVERLAND DRAINAGE ROUTE THAT MUST BE RESERVED IN ALL FINAL GRADING OPERATIONS (SEE DETAIL.)
- THE GRADING ON ALL LOTS IS TYPE 2 (NON-CRITICAL), UNLESS OTHERWISE INDICATED BY A "TYPE 1" (CRITICAL). A DETAILED GRADING PLAN MUST BE SUBMITTED TO THE CITY OF NAPERVILLE FOR ALL "TYPE 1" LOTS PRIOR TO A BUILDING PERMIT BEING ISSUED.

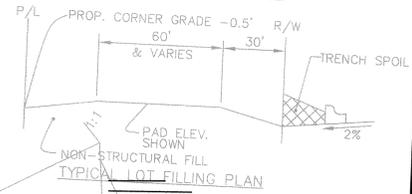


- RECOMMENDED MIN. TOP OF FOUNDATION ELEVATION.
- RECOMMENDED BUILDING PAD ELEVATION BY MASS GRADING CONTRACTOR. WHERE NO PAD ELEVATION IS SHOWN, LOT HAS NOT BEEN MASS GRADED.
- RECOMMENDED MAX. GARAGE FLOOR ELEVATION TO MAINTAIN DRIVEWAY GRADE OF 8%-10%. WHERE NO ELEVATION IS SHOWN, GARAGE FLOOR IS ASSUMED TO BE 6" BELOW TOP OF FOUNDATION.
- RECOMMENDED LOCATION OF DRIVEWAY/GARAGE. WHERE NO DRIVEWAY IS SHOWN, DRIVE MAY BE ON EITHER SIDE OF HOUSE.



FOR CONTINUATION SEE SHEET 7 OF 14

NOTE: THERE SHALL BE NO FOUNDATION OPENINGS OR WINDOW WELLS EDGES BELOW ELEV. 691.615 FOR LOTS 28 THROUGH 37.



**RECORD DRAWING**  
DATE: 11-12-04  
12-23-04

RECORD PLAN FOR:		
TYPE	DATE	P.E. INITIALS
WATERMAN-SANITARY-SEWER		
STORMWATER MANAGEMENT		
OUTDOOR-LIGHTING		

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PREPARED FOR:  
**CHARLESTON CLASSIC HOMES, INC.**  
407 E. GARTNER  
NAPERVILLE, ILLINOIS 60540  
PH. (630) 420-8084  
FX. (630) 420-8087

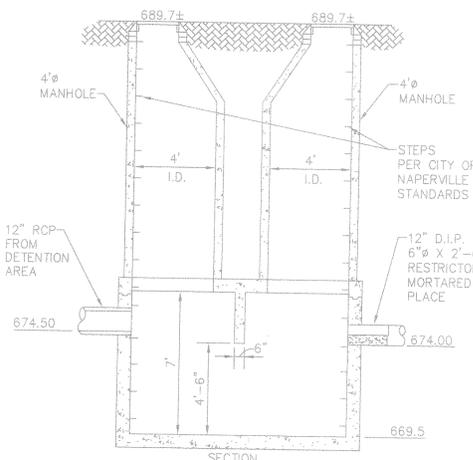
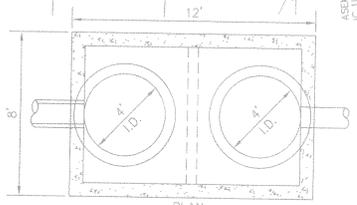
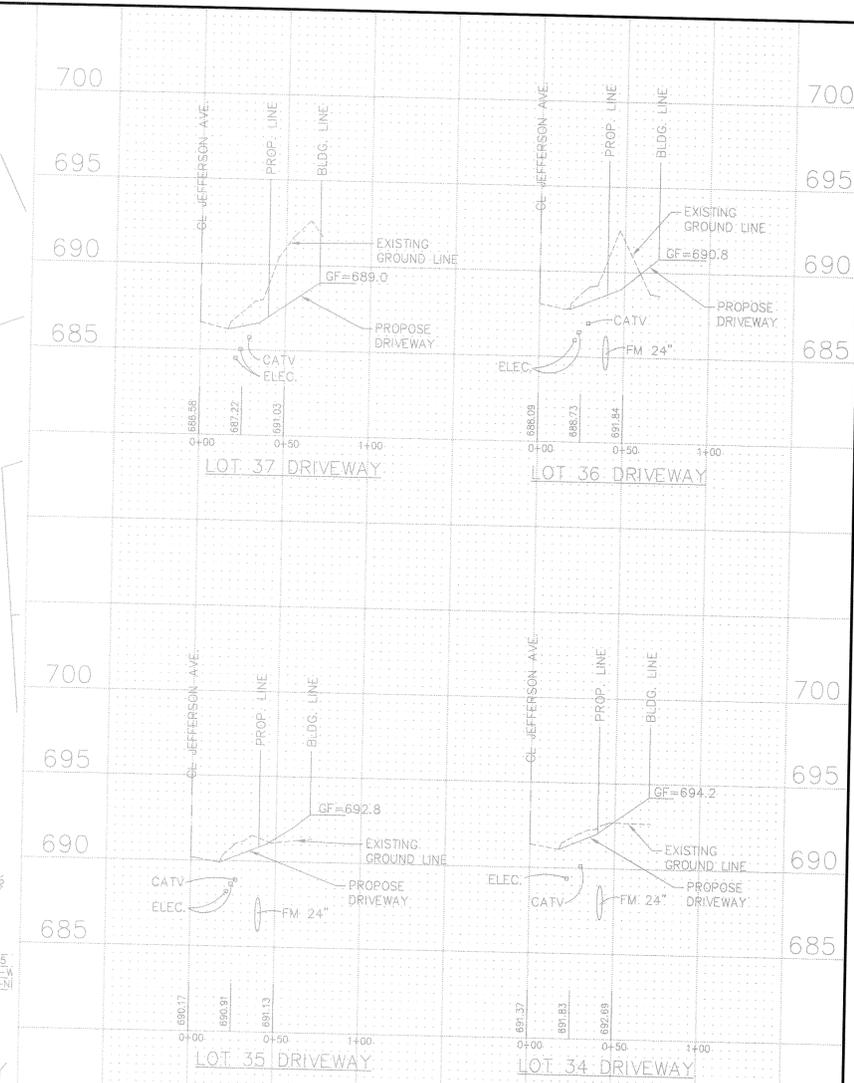
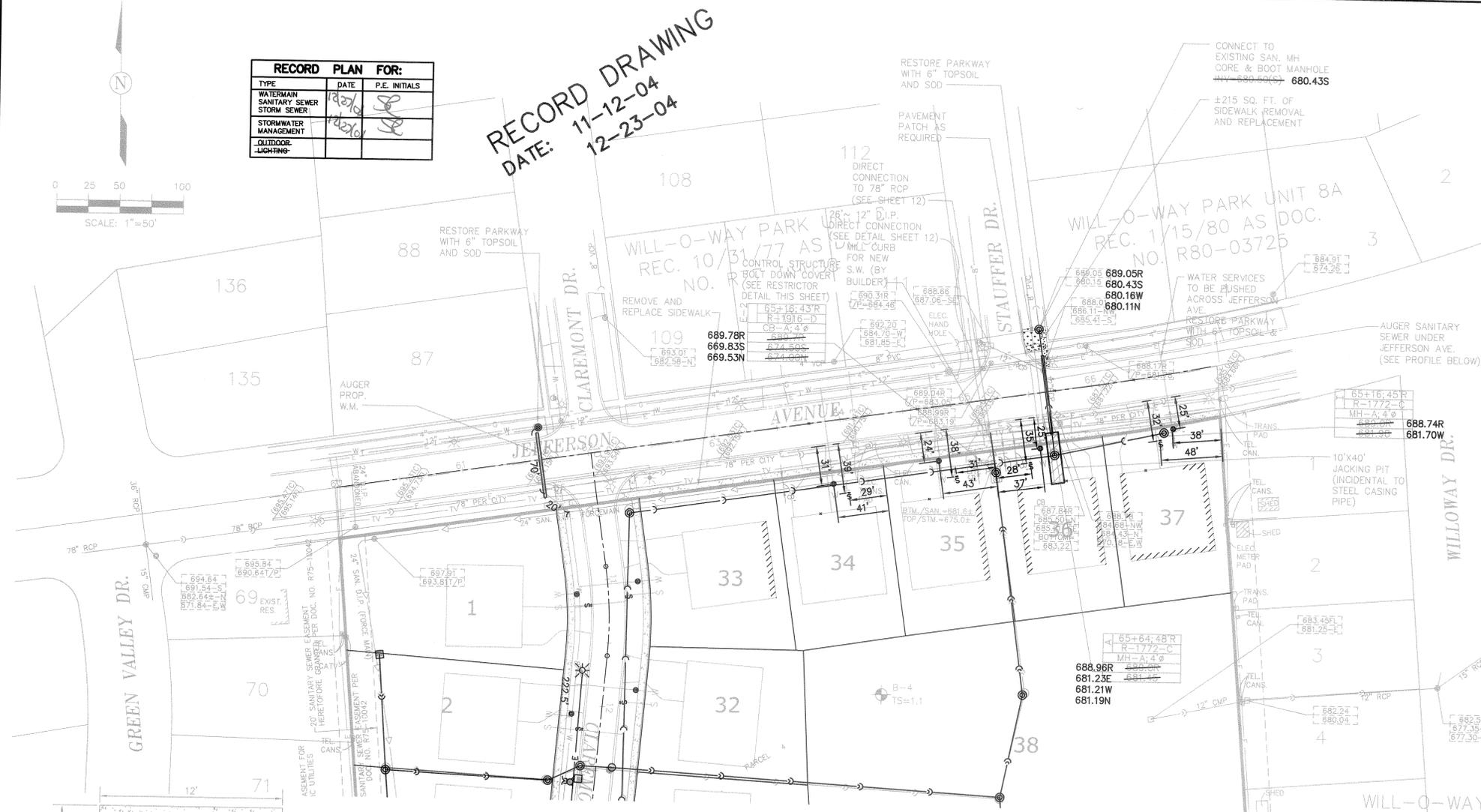
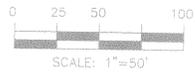
NO.	DATE	DESCRIPTION	REVISIONS		
			NO.	DATE	DESCRIPTION

**JEFFERSON ESTATES**  
GRADING PLAN SOUTH - RECORD DRAWINGS  
DRN./CKD. BY: PPS/SAR

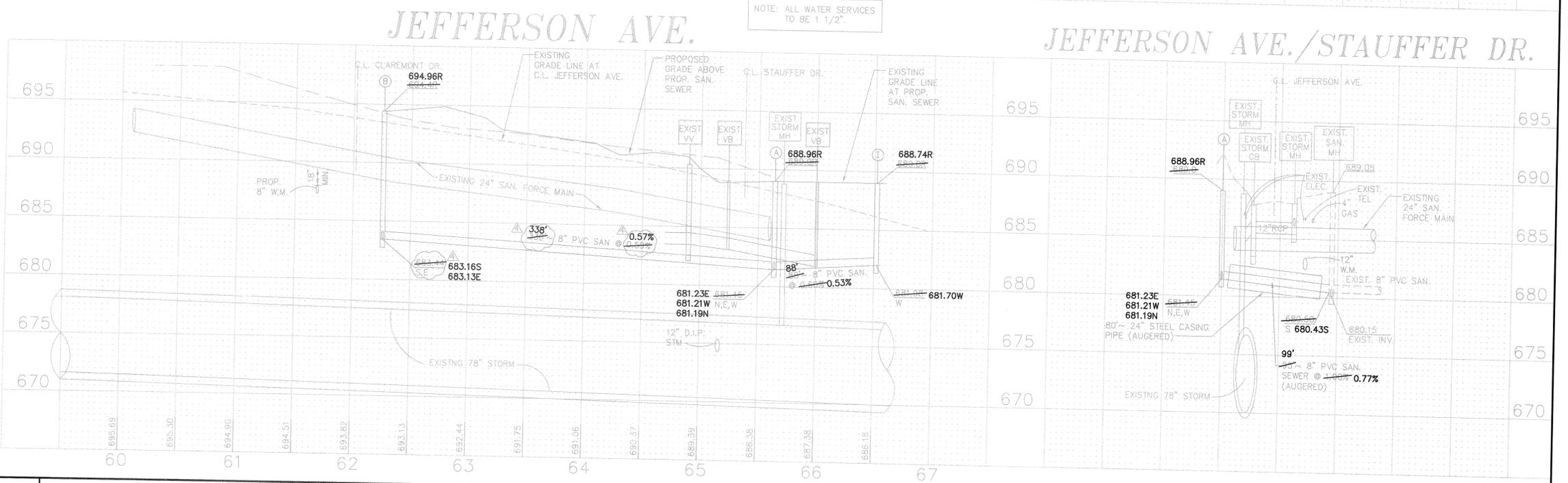
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RECORD PLAN FOR:		
TYPE	DATE	P.E. INITIALS
WATERMAIN		
SANITARY SEWER		
STORM SEWER		
STORMWATER MANAGEMENT		
OUTDOOR LIGHTING		

**RECORD DRAWING**  
DATE: 11-12-04  
12-23-04



SPECIAL CATCH BASIN(E-2)/RESTRICTOR DETAIL  
SILT/TRASH TRAP  
N.T.S.



NOTE: ALL WATER SERVICES TO BE 1 1/2"

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PREPARED FOR:  
**CHARLESTON CLASSIC HOMES, INC.**  
407 E. GARTNER  
NAPERVILLE, ILLINOIS 60540  
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FX. (630) 420-8087

REVISIONS					
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

**JEFFERSON ESTATES**  
JEFFERSON AVE. PLAN AND PROFILE - RECORD DRAWINGS  
DRN/CKD BY: PRS/SAR    DISC NO.: ABJEFFERSONAVEPP    FLD. BK./PG. 166  
SCALE: 1"=50' HORIZ.    DATE: 11-12-04    JOB NO.: 533.002    SHEET NO. 9 OF 14

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RECORD STRUCTURE COORDINATE TABLE

LETTER/NO.	TYPE	NORTHING	EASTING
A	MANHOLE	1,029,256	1,859,641
B	MANHOLE	1,029,252	1,859,590
C	MANHOLE	1,028,919	1,859,274
D	MANHOLE	1,028,955	1,858,946
E	MANHOLE	1,028,436	1,858,910
F	MANHOLE	1,029,277	1,859,981
G	MANHOLE	1,029,639	1,859,052
H	MANHOLE	1,029,851	1,858,935
I	MANHOLE	1,029,442	1,859,650
J	MANHOLE	1,029,867	1,859,728
K	MANHOLE	1,029,242	1,859,739

WATER

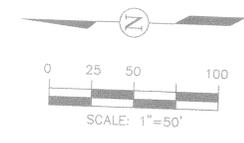
NUMBER	TYPE	NORTHING	EASTING
VV1	VALVE VAULT	1,029,849	1,859,655
VV2	VALVE VAULT	1,029,049	1,859,905
1	FIRE HYDRANT	1,028,879	1,859,378
2	FIRE HYDRANT	1,028,889	1,859,124
3	FIRE HYDRANT	1,029,056	1,858,907
4	FIRE HYDRANT	1,029,553	1,858,882
5	FIRE HYDRANT	1,029,640	1,858,882
6	FIRE HYDRANT	1,029,768	1,858,756

STORM SEWER

LETTER/NO.	TYPE	NORTHING	EASTING
A1	MANHOLE	1,029,218	1,859,372
A2	CATCH BASIN	1,028,911	1,859,391
A3	MANHOLE	1,028,886	1,859,391
A3A	INLET	1,028,886	1,859,391
A4	MANHOLE	1,028,861	1,859,379
A5	MANHOLE	1,028,133	1,859,386
A6	INLET	1,028,227	1,859,475
A7	INLET	1,029,749	1,859,199
A8	INLET	1,028,758	1,859,114
A9	INLET	1,029,918	1,859,287
B1	MANHOLE	1,028,817	1,859,184
B2	CATCH BASIN	1,028,890	1,859,182
B3	INLET	1,029,200	1,859,294
B4	MANHOLE	1,029,199	1,858,901
C1	MANHOLE	1,029,211	1,858,951
C2	CATCH BASIN	1,029,212	1,858,926
C3	INLET	1,029,211	1,858,926
C4	MANHOLE	1,029,212	1,858,924
C5	INLET	1,029,151	1,858,893
C6	MANHOLE	1,028,970	1,858,891
C7	MANHOLE	1,029,029	1,858,910
C8	INLET	1,029,162	1,858,775
C9	MANHOLE	1,029,235	1,858,767
C10	INLET	1,028,808	1,858,716
D1	MANHOLE	1,029,246	1,859,102
D2	MANHOLE	1,029,428	1,859,067
D3	MANHOLE	1,029,299	1,859,023
D4	CATCH BASIN	1,029,601	1,859,036
D5	INLET	1,029,603	1,859,018
D6	MANHOLE	1,029,627	1,859,037
D7	INLET	1,029,629	1,859,020
D8	MANHOLE	1,029,686	1,859,040
D9	MANHOLE	1,029,767	1,859,047
D10	CATCH BASIN	1,029,792	1,859,346
D11	INLET	1,029,833	1,859,571
D12	INLET	1,029,841	1,859,916
D13	MANHOLE	1,029,762	1,859,884
D14	MANHOLE	1,029,446	1,858,874
D15	CATCH BASIN	1,029,445	1,858,899
D16	INLET (SPEC)	1,029,391	1,858,689
D17	INLET (SPEC)	1,029,787	1,858,667
D18	INLET	1,029,685	1,858,596
E1	MANHOLE	1,029,234	1,859,452
E2	MANHOLE	1,029,210	1,859,629

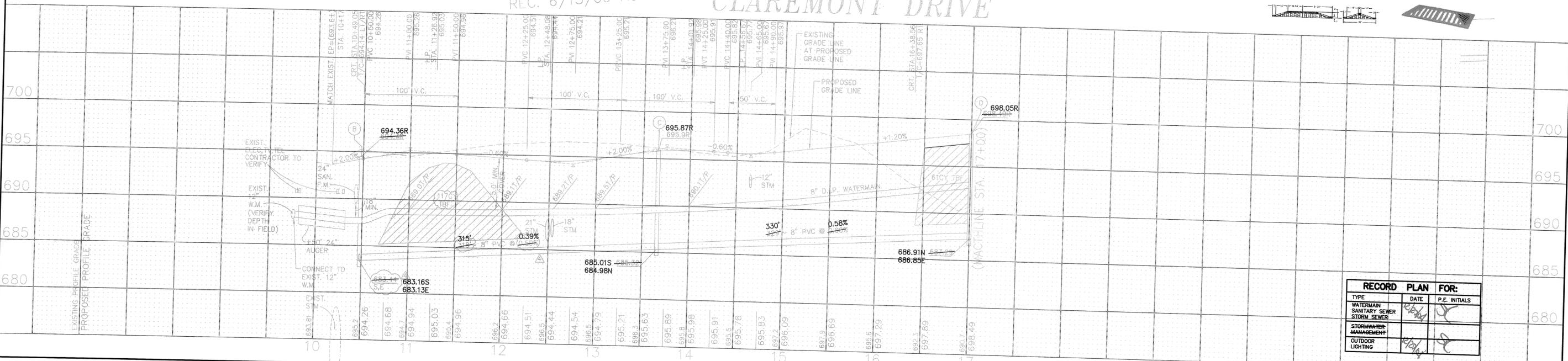
LIGHT POLES

NUMBER	TYPE	NORTHING	EASTING
1	STANDARD	1,028,887	1,859,466
2	STANDARD	1,028,878	1,859,295
3	STANDARD	1,028,890	1,859,114
4	STANDARD	1,029,064	1,859,306
5	STANDARD	1,029,280	1,859,907
6	STANDARD	1,029,457	1,859,867
7	STANDARD	1,029,647	1,859,867
8	STANDARD	1,029,861	1,858,885
9	STANDARD	1,029,785	1,858,708
10	STANDARD	1,028,911	1,858,951



**RECORD DRAWING**  
 DATE: 11-12-04  
 12-23-04

NOTE:  
 ALL WATER SERVICES  
 TO BE 1-1/2".



RECORD PLAN FOR:

TYPE	DATE	P.E. INITIALS
WATERMAN		
SANITARY SEWER		
STORM SEWER		
STORMWATER MANAGEMENT		
OUTDOOR LIGHTING		

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 407 E. GARTNER  
 NAPERVILLE, ILLINOIS 60540  
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 FX. (630) 420-8087

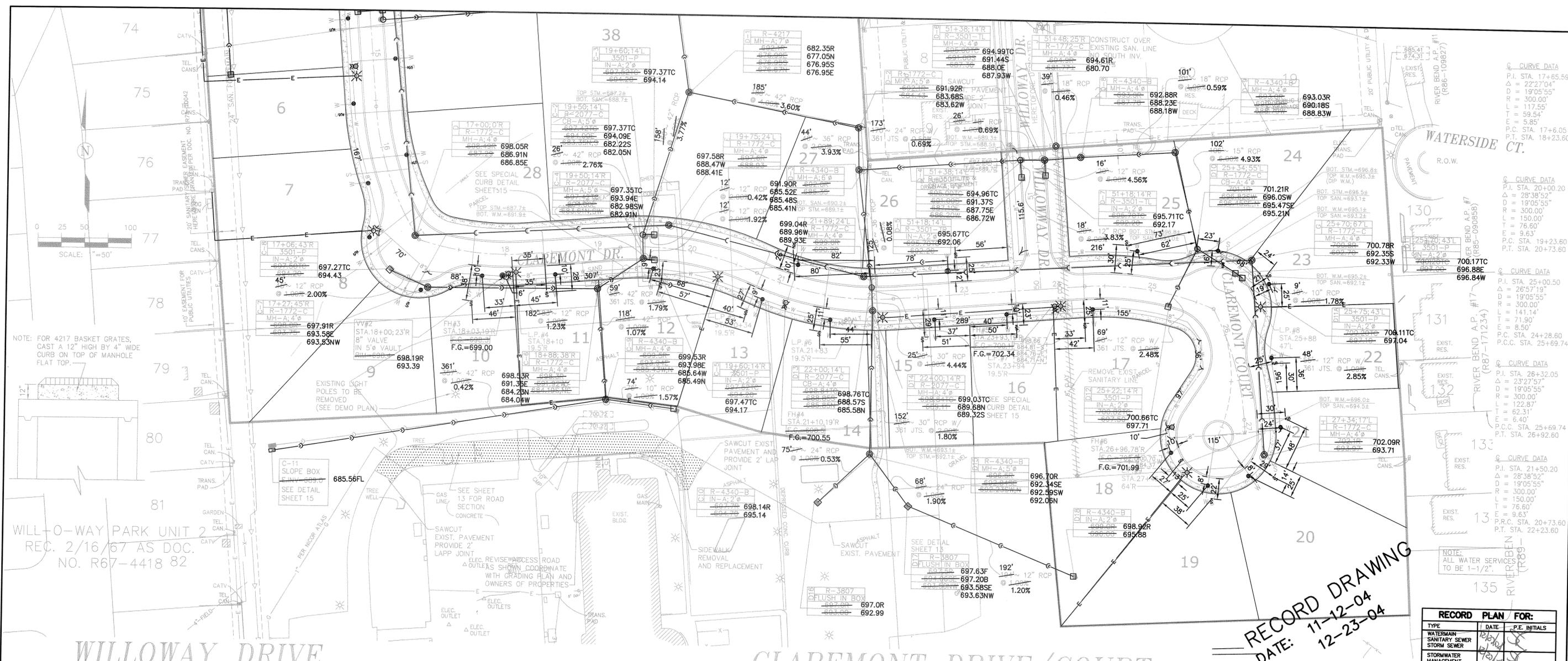
REVISIONS

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION
1	09/25/03				

**JEFFERSON ESTATES**  
 CLAREMONT DR. PLAN AND PROFILE (STA. 10+00 TO 17+00) - RECORD DRAWINGS

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DATE PLOTTED: 12/22/2004 02:53:16 PM, Iomg



**RECORD DRAWING**  
 DATE: 11-12-04  
 12-23-04

RECORD PLAN FOR:		
TYPE	DATE	P.E. INITIALS
WATERMAIN		
SANITARY SEWER		
STORM SEWER		
STORMWATER MANAGEMENT		
OUTDOOR LIGHTING		



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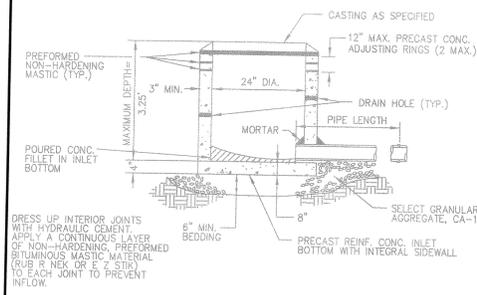
PREPARED FOR:  
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 FX. (630) 420-8087

REVISIONS					
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

**JEFFERSON ESTATES**  
 WILLOWWAY DR. PLAN AND PROFILE STA 50+00 TO END) - RECORD  
 CLAREMONT DRIVE/COURT PLAN AND PROFILE STA 17+00 TO END) - DRAWINGS  
 DRN/CKD BY: PRS/SAR DISC NO.: CLAREMONTPP2 FLD. BK./PG. 166  
 SCALE: 1" = 50' HORIZ DATE: 11-12-04 JOB NO.: 533.002 SHEET NO. 14  
 1" = 5' VERT

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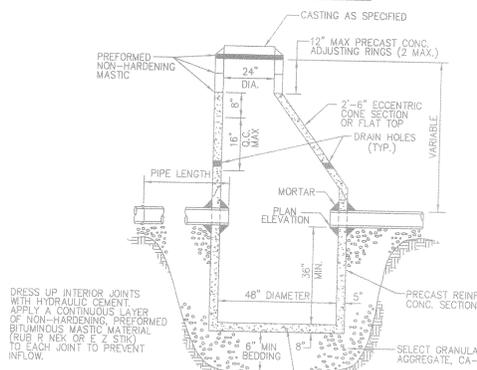
**INLET TYPE A**



**NOTES**

1. PROVIDE SELECT GRANULAR BACKFILL, CA-11 AROUND INLET TO SUBGRADE ELEVATION IN PAVED AREAS.
2. ALTERNATE INLET BOTTOM - PRECAST REINFORCED CONCRETE BASE.
3. CONCRETE FILLETS SHALL BE MADE WITH NON-SHRINK MORTAR TO PROVIDE A SMOOTH TRANSITION BETWEEN THE CASTING AND ADJUSTING RING (OR TOP OF STRUCTURE).
4. WHEN ADJUSTMENTS ARE NECESSARY, THEY WILL BE PERFORMED WITH THE MAXIMUM OF TWO PRECAST CONCRETE RINGS SET IN A BED OF PREFORMED NON-HARDENING MASTIC (RUB-B-NEX OR APPROVED EQUAL) TO A MAXIMUM HEIGHT OF TWELVE INCHES. TWO INCH RINGS SHALL ONLY BE USED WHEN ADJUSTMENT IS LESS THAN THREE INCHES.
5. NO MORTAR SHALL BE USED TO DRESS UP INSIDE ADJUSTING RINGS.
6. A MINIMUM OF FOUR (4), TWO (2) INCH DIAMETER HOLES SHALL BE PROVIDED WITHIN ONE (1) FOOT OF THE LOWEST PIPE INVERT. THE HOLES SHALL BE DISTRIBUTED EQUIDISTANT AROUND THE PERIMETER OF THE STRUCTURE. A ONE (1) FOOT BY ONE (1) FOOT SECTION OF UNDERDRAIN FILTER CLOTH MATERIAL SHALL BE SUFFICIENTLY FIXED TO THE OUTSIDE OF THE INLET WITH MASTIC MATERIALS TO PREVENT SURFACE DURING BACKFILLING. THE HOLES SHALL BE EITHER PRE-CAST OR DRILLED. DRAIN HOLES ARE REQUIRED FOR ALL INLETS IN PAVED AREAS.

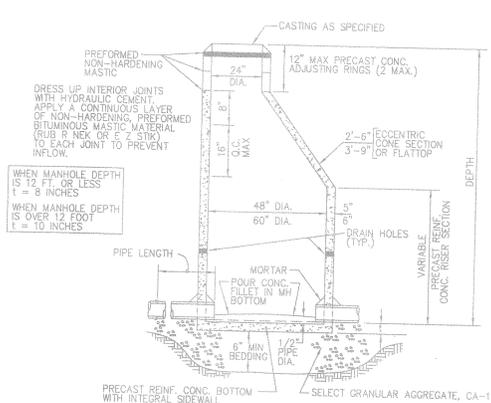
**CATCHBASIN TYPE A**



**NOTES**

1. PROVIDE SELECT GRANULAR BACKFILL, CA-11 AROUND CATCH BASIN TO SUBGRADE ELEVATION IN PAVED AREAS.
2. ALTERNATE CATCH BASIN BOTTOM - PRECAST REINFORCED CONCRETE BASE.
3. CONCRETE FILLETS SHALL BE MADE WITH NON-SHRINK MORTAR TO PROVIDE A SMOOTH TRANSITION BETWEEN THE CASTING AND ADJUSTING RING (OR TOP OF STRUCTURE).
4. WHEN ADJUSTMENTS ARE NECESSARY, THEY WILL BE PERFORMED WITH THE MAXIMUM OF TWO PRECAST CONCRETE RINGS SET IN A BED OF PREFORMED NON-HARDENING MASTIC (RUB-B-NEX OR APPROVED EQUAL) TO A MAXIMUM HEIGHT OF TWELVE INCHES. TWO INCH RINGS SHALL ONLY BE USED WHEN ADJUSTMENT IS LESS THAN THREE INCHES.
5. NO MORTAR SHALL BE USED TO DRESS UP INSIDE ADJUSTING RINGS.
6. A MINIMUM OF FOUR (4), TWO (2) INCH DIAMETER HOLES SHALL BE PROVIDED WITHIN ONE (1) FOOT OF THE LOWEST PIPE INVERT. THE HOLES SHALL BE DISTRIBUTED EQUIDISTANT AROUND THE PERIMETER OF THE STRUCTURE. A ONE (1) FOOT BY ONE (1) FOOT SECTION OF UNDERDRAIN FILTER CLOTH MATERIAL SHALL BE SUFFICIENTLY FIXED TO THE OUTSIDE OF THE CATCH BASIN WITH MASTIC MATERIALS TO PREVENT SURFACE DURING BACKFILLING. THE HOLES SHALL BE EITHER PRE-CAST OR DRILLED. DRAIN HOLES ARE REQUIRED FOR ALL CATCH BASINS IN PAVED AREAS.
7. SEE STEP DETAIL.

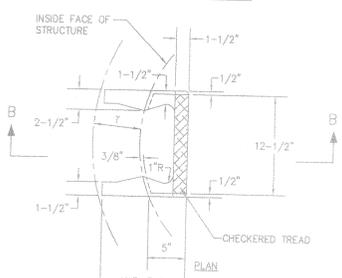
**MANHOLE TYPE A**



**NOTES**

1. PROVIDE SELECT GRANULAR BACKFILL, CA-11 AROUND MANHOLE TO SUBGRADE ELEVATION IN PAVED AREAS.
2. ALTERNATE MANHOLE BOTTOM - PRECAST REINFORCED CONCRETE BASE.
3. CONCRETE FILLETS SHALL BE MADE WITH NON-SHRINK MORTAR TO PROVIDE A SMOOTH TRANSITION BETWEEN THE CASTING AND ADJUSTING RING (OR TOP OF STRUCTURE).
4. WHEN ADJUSTMENTS ARE NECESSARY, THEY WILL BE PERFORMED WITH THE MAXIMUM OF TWO PRECAST CONCRETE RINGS SET IN A BED OF PREFORMED NON-HARDENING MASTIC (RUB-B-NEX OR APPROVED EQUAL) TO A MAXIMUM HEIGHT OF TWELVE INCHES. TWO INCH RINGS SHALL ONLY BE USED WHEN ADJUSTMENT IS LESS THAN THREE INCHES.
5. NO MORTAR SHALL BE USED TO DRESS UP INSIDE ADJUSTING RINGS.
6. A MINIMUM OF FOUR (4), TWO (2) INCH DIAMETER HOLES SHALL BE PROVIDED WITHIN ONE (1) FOOT OF THE LOWEST PIPE INVERT. THE HOLES SHALL BE DISTRIBUTED EQUIDISTANT AROUND THE PERIMETER OF THE STRUCTURE. A ONE (1) FOOT BY ONE (1) FOOT SECTION OF UNDERDRAIN FILTER CLOTH MATERIAL SHALL BE SUFFICIENTLY FIXED TO THE OUTSIDE OF THE MANHOLE WITH MASTIC MATERIALS TO PREVENT SURFACE DURING BACKFILLING. THE HOLES SHALL BE EITHER PRE-CAST OR DRILLED. DRAIN HOLES ARE REQUIRED FOR ALL MANHOLES IN PAVED AREAS.
7. SEE STEP DETAIL.

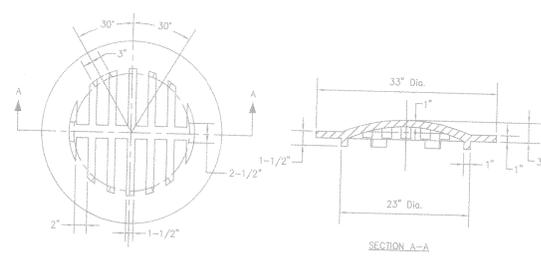
**CAST IRON STEPS**



**NOTES**

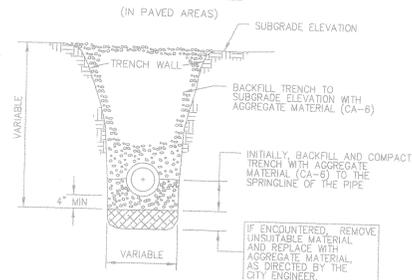
1. CAST IRON STEPS SHALL BE GRAY IRON CONFORMING TO THE REQUIREMENTS OF ARTICLE 17.17 OF THE STANDARD SPECIFICATIONS.
2. STEPS SHALL BE EMBEDDED INTO WALL A MINIMUM OF 4 INCHES. STEPS SHALL NOT BE EXTENDED ON THE OUTSIDE.
3. IF PLASTIC POLYMER STEPS ARE USED, THEY SHALL BE CONSTRUCTED IN CONFORMANCE WITH I.D.O.T. STANDARDS.
4. STEPS SHALL BE NEATLY GROUTED IN PLACE WITH A NON-SHRINK HYDRAULIC CEMENT.

**BEEHIVE GRATE**

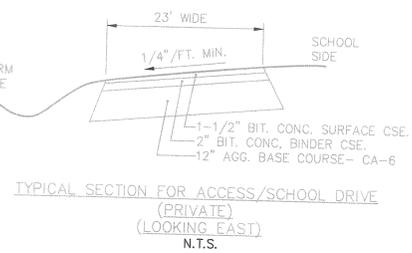


1. THE CAST GRATE MAY BE MADE FROM EITHER GRAY IRON OR DUCTILE IRON CONFORMING TO THE STANDARD SPECIFICATIONS.
2. DUCTILE IRON CASTINGS SHALL BE GRADE 65-45-12.
3. THIS TYPE OF GRATE SHALL BE USED IN GRASSY AREAS.
4. DIMENSIONS ARE COMPARABLE TO NEENAH R4300R OR EAST JORDAN 6527 OR EQUAL, AS APPROVED BY THE CITY ENGINEER.
5. ALL CASTINGS MUST BE SHOP PAINTED WITH AN ASPHALTIC BASE PAINT.

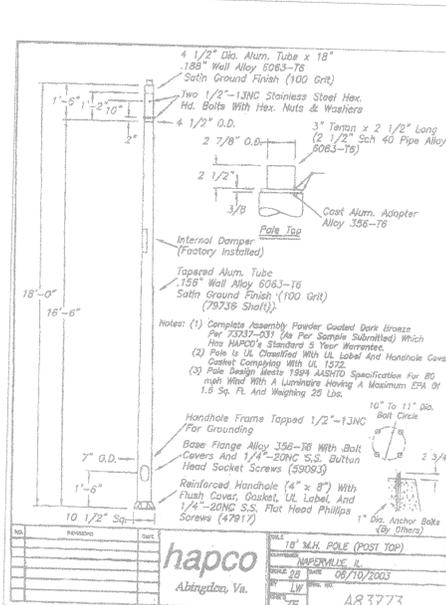
**STORM SEWER TRENCH SECTION (IN PAVED AREAS)**



ALL TRENCHES SHALL BE SET IN CONFORMANCE WITH SECTION 550.07 (METHOD 3) OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.



**N.T.S.**



MATERIAL	MANUFACTURER	CATALOG #
100 W-HPS POST TOP LUMINAIRE, DARK BRONZE	GENERAL ELECTRIC	TRC101SH26MC2DB
METAL LIGHT POLE, ALUMINUM, DARK BRONZE POWDER COAT, 18" MOUNTING HEIGHT, POST TOP MT.	HAPCO	DRWG# AB3773
HELIX LIGHT POLE FOUNDATION, METAL 5"	A.B. CHANCE	T112-0568

1. THE OPEN AND CLOSED LIDS MAY BE MADE OF EITHER GRAY IRON OR DUCTILE IRON, CONFORMING TO THE STANDARD SPECIFICATIONS. DUCTILE IRON CASTING SHALL BE GRADE 60-40-18, AND SHALL BE PROOF LOADED IN ACCORDANCE WITH FEDERAL SPECIFICATIONS FOR RR-F-621 B, SECTION 3.8. THE PROOF LOAD SHALL BE 25,000 LBS. ON A 9" X 9" CAST BLOCK. NEENAH R-2077-C FOR OPEN GRATES R-1772-C FOR CLOSED LIDS OR EAST JORDAN 1022-2 WITH M-1 GRATE OR TYPE A SOLID COVER.
2. ALL LIDS AND COVERS SHALL HAVE MACHINED SURFACES AND SEATS.
3. ALL CASTINGS MUST BE SHOP PAINTED WITH AN ASPHALTIC BASE PAINT.



DATE	REVISIONS
1-1-97	Revised Standard 2240-s.
8-15-94	Moved C.N. to Specs. Added Metric.

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

**RECORD DRAWING**  
DATE: 11-12-04  
12-23-04

RECORD PLAN FOR:		
TYPE	DATE	P.E. INITIALS
WATERMAIN-SANITARY-SEWER		
STORMWATER-MANAGEMENT		
OUTDOOR-LIGHTING		

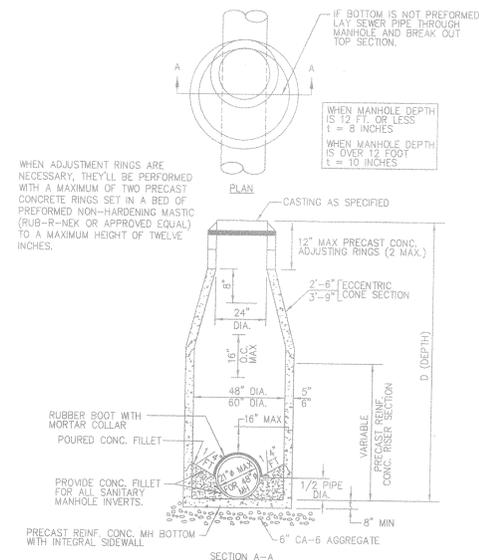
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407 E. GARTNER  
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FX. (630) 420-8087

**JEFFERSON ESTATES**  
DETAILS - RECORD DRAWINGS

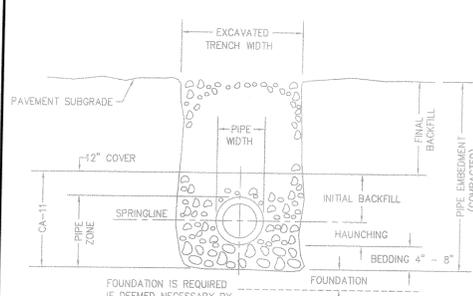
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SCALE: NONE	DATE:		

**SANITARY MANHOLE**



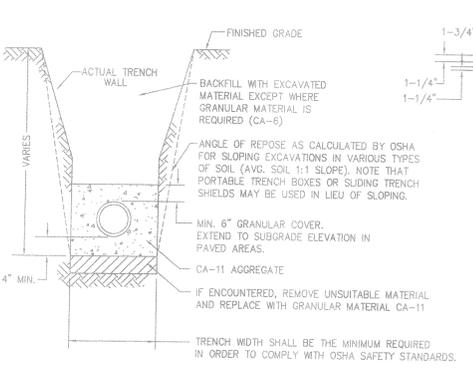
- NOTES:**
- SEE STEP DETAIL.
  - ALTERNATE MANHOLE BOTTOM - PRECAST REINFORCED CONCRETE BASE.
  - PROVIDE CA-6 AGGREGATE BACKFILL AROUND MANHOLE TO SUBGRADE ELEVATION IN PAVED AREAS.
  - A CONTINUOUS JOINT OF NON-HARDENING BUTYLIUM MASTIC SHALL BE INSTALLED AT ALL JOINTS OF THE MANHOLE TO PREVENT INFLOW.

**PVC TRENCH CROSS SECTION**



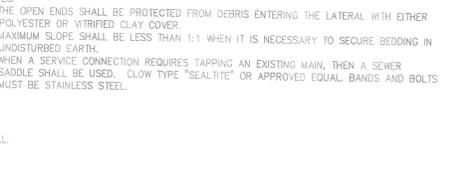
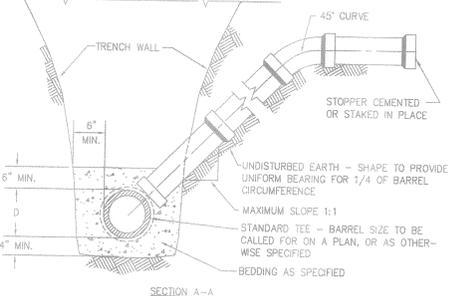
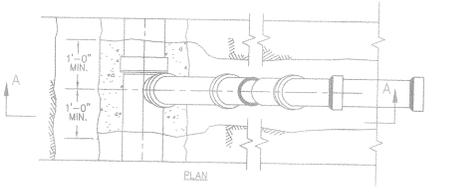
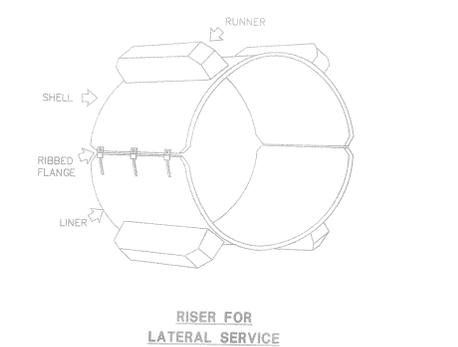
- NOTES:**
- PAY LINE: I.D./O.D. OF PIPE PLUS 20"/24"
  - PIPE SIZES UP TO 24" USE I.D. PLUS 20", OVER 24" USE O.D. PLUS 24"
  - FINAL BACKFILL: UNDER PAVED AREAS - CA-6 COMPACTED, UNDER UNPAVED AREAS - EARTH BACKFILL.
  - INITIAL BACKFILL - SAME MATERIAL AS HAUNCHING, MINIMUM COVER ABOVE TOP OF PIPE 12"
  - HAUNCHING - SAME MATERIAL AS BEDDING
  - BEDDING - CRUSHED GRAVEL OR CRUSHED STONE WITH A GRADATION WHICH SHALL CONFORM TO CA-11; SEE THE JAN. 1, 1997 I.D.O.T. ROAD & BRIDGE SPECIFICATIONS. THICKNESS EQUAL TO 1/4 THE O.D. OF THE SEWER PIPE BUT SHALL NOT BE LESS THAN 4"
  - PVC PIPE - SDR26, HIGHER SDR NUMBER NOT ALLOWED. PROJECT ENGINEER MUST VERIFY NEED FOR GIVEN SDR NUMBER.
  - PVC PIPE MUST HAVE AT LEAST 5' OF COVER UNDER PAVED AREAS.
  - IN PAVED AREAS ALL TRENCHES MUST BE JETTED IN CONFORMANCE WITH SECTION 603.08 (METHOD 3) OF THE STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION.

**TRENCH SECTION FOR SANITARY SEWER (E.S.V.C.P. OR D.I.P.)**

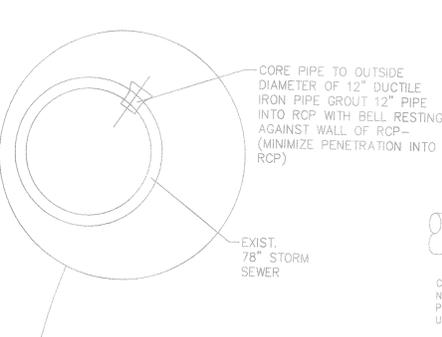
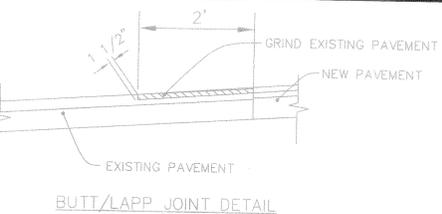


- DUCTILE IRON CASTING SHALL BE GRADE 60-40-18 AND SHALL BE TESTED IN ACCORDANCE WITH FEDERAL SPECIFICATIONS.
- ALL FRAMES AND COVERS SHALL HAVE MACHINED HORIZONTAL AND VERTICAL BEARING SURFACES. PICK HOLES SHALL NOT CREATE OPENINGS IN THE COVER.
- THE MANHOLE COVERS SHALL HAVE RAISED LETTERS AS SHOWN.
- ALTERNATIVE TO DUCTILE IRON LID, IRON LID MAY BE USED.
- MINIMUM WEIGHTS FOR CASTINGS AS SHOWN.
- DIMENSIONS FOR CASTINGS ARE COMPARABLE TO EAST JORDAN 1022-3 (STANDARD DUTY) OR NEENAH R1772C.
- WATERPROOF, BOLDOWN FRAME AND COVER SHALL BE USED IN ANY LOCATION SUBJECT TO INUNDATION, NEENAH R-1916-C OR EAST JORDAN IRON WORKS 1022-3PT (OR APPROVED EQUAL).
- ALL CASTINGS MUST BE SHOP PAINTED WITH AN ASPHALTIC BASE PAINT.

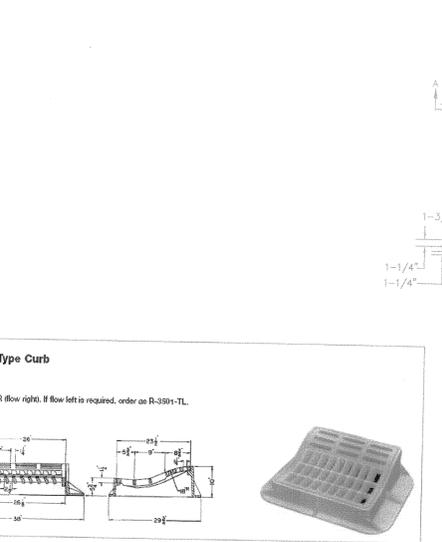
**STAINLESS STEEL CASING SPACERS FOR CARRIER SUPPORTS AND BLOCKING**



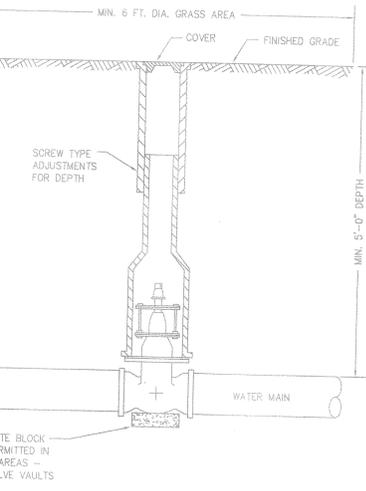
- PIPE TO MANHOLE DETAIL (LOOKING EAST)**
- 1" = 50" HORIZ.  
1" = 5' VERT.
- 670.2±
- 674.0 NORTH
- 674.50 SOUTH
- EXIST. 78" STORM
- 12" RCP (FROM DETENTION)
- RESTRICTOR
- 8" SAN
- 690
- 685
- 680
- 675
- 670



**PIPE TO MANHOLE DETAIL (LOOKING EAST)**

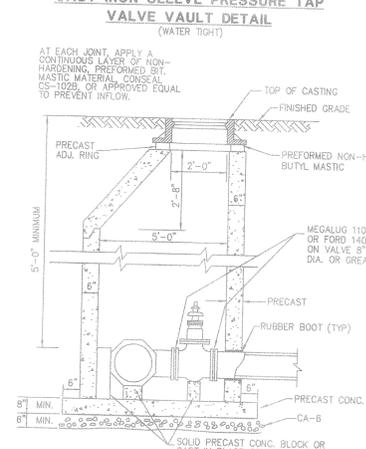


**VALVE BOX INSTALLATION**



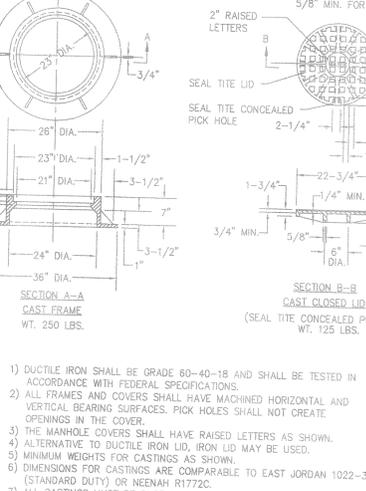
- NOTES:**
- ALL VALVES IN PAVED AREAS OR VALVES CLOSER THAN 5' FROM A PAVED AREA SHALL BE VAULTED.
  - VALVES LARGER THAN 6" SHALL BE VAULTED.

**CAST IRON SLEEVE PRESSURE TAP VALVE VAULT DETAIL (WATER TIGHT)**



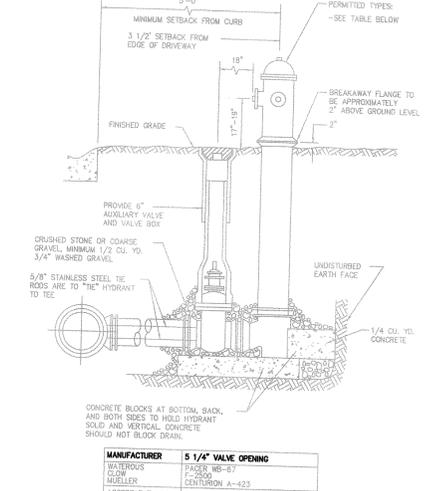
- NO MORE THAN 12 INCHES OF ADJUSTMENT RINGS MAY BE USED, HOWEVER NO MORE THAN ONE TWO INCH ADJUSTMENT RING OR NO MORE THAN TWO RINGS IN TOTAL MAY BE USED.
- VALVE MUST ALIGN WITH CENTER OF VAULT OPENING
- CONES SHALL BE ECCENTRIC
- BUTTERFLY VALVES REQUIRE ECCENTRIC CONES
- WHEN ADJUSTMENTS ARE NECESSARY THEY WILL BE PERFORMED WITH A MAXIMUM MASTIC CONICAL CS-102B (OR APPROVED EQUAL) TO A MAXIMUM HEIGHT OF TWELVE INCHES (12")
- USE MEGALOX SERIES 1100 OR FORD UNIFLANGE SERIES 1400 RETAINER GLANDS
- TAPPING SLEEVES SHALL BE CAST IRON MECHANICAL JOINT (CLOW F-5205 OR EQUAL)

**VALVE VAULT FRAME & COVER**



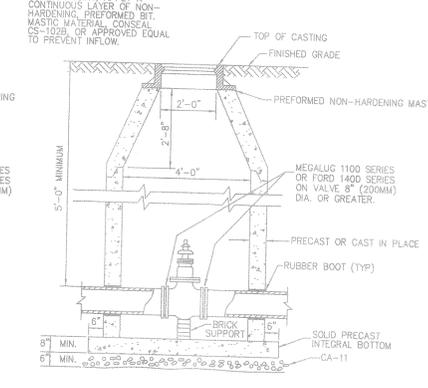
- DUCTILE IRON SHALL BE GRADE 60-40-18 AND SHALL BE TESTED IN ACCORDANCE WITH FEDERAL SPECIFICATIONS.
- ALL FRAMES AND COVERS SHALL HAVE MACHINED HORIZONTAL AND VERTICAL BEARING SURFACES. PICK HOLES SHALL NOT CREATE OPENINGS IN THE COVER.
- THE MANHOLE COVERS SHALL HAVE RAISED LETTERS AS SHOWN.
- ALTERNATIVE TO DUCTILE IRON LID, IRON LID MAY BE USED.
- MINIMUM WEIGHTS FOR CASTINGS AS SHOWN.
- DIMENSIONS FOR CASTINGS ARE COMPARABLE TO EAST JORDAN 1022-3 (STANDARD DUTY) OR NEENAH R1772C.
- ALL CASTINGS MUST BE SHOP PAINTED WITH AN ASPHALTIC BASE PAINT.

**HYDRANT SETTING**



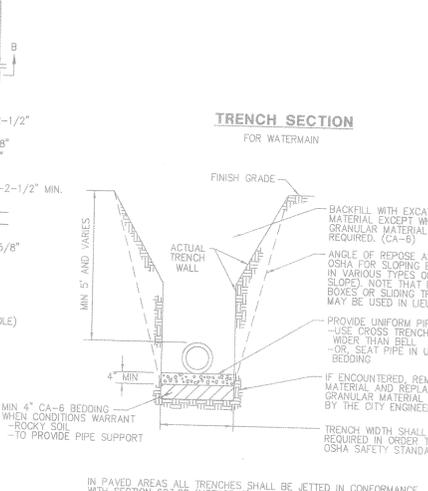
- MANUFACTURER** 5 1/4" VALVE OPENING
- WATERLOO PAPER WE-67
- MUELLER 250 CENTURION A-423
- ACCEPTABLE USE NON-RES & RES DEVELOPMENTS
- CLASS PRESSURES - FULL RANGE
- WATER MAIN SIZES - FULL RANGE

**VALVE VAULT (WATER TIGHT)**



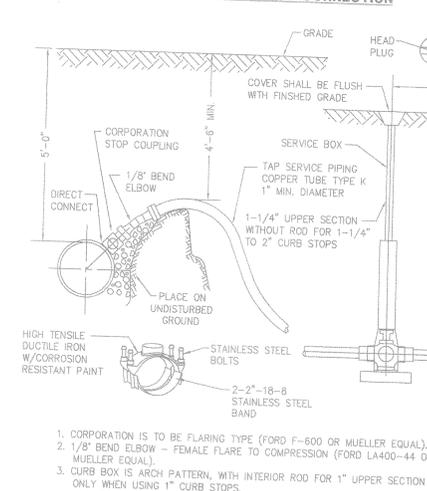
- NO MORE THAN 12 INCHES OF ADJUSTMENT RINGS MAY BE USED, HOWEVER NO MORE THAN ONE TWO INCH ADJUSTMENT RING OR NO MORE THAN TWO RINGS IN TOTAL MAY BE USED.
- VALVE MUST ALIGN WITH CENTER OF VAULT OPENING
- CONES MUST BE CONCENTRIC WITH VALVES 1" AND SMALLER
- BUTTERFLY VALVES AND PRESSURE TAP VALVES REQUIRE ECCENTRIC CONES
- WHEN ADJUSTMENTS ARE NECESSARY THEY WILL BE PERFORMED WITH A MAXIMUM MASTIC CONICAL CS-102B (OR APPROVED EQUAL) TO A MAXIMUM HEIGHT OF TWELVE INCHES (12")

**TRENCH SECTION FOR WATERMAIN**



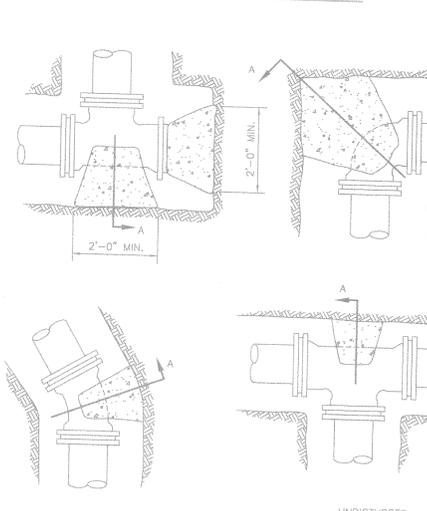
- IN PAVED AREAS ALL TRENCHES SHALL BE JETTED IN CONFORMANCE WITH SECTION 603.08 (METHOD 3) OF THE STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION.

**SERVICE TAP AND CONNECTION**



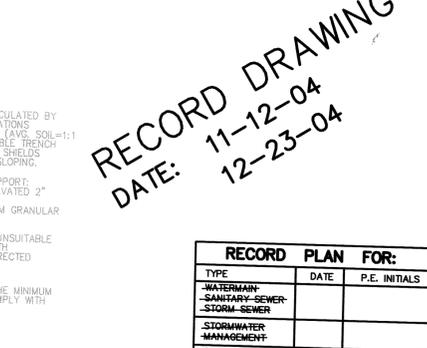
- CORPORATION IS TO BE FLARING TYPE (FORD F-600 OR MUELLER EQUAL).
- 1/8" BEND ELBOW - FEMALE FLARE TO COMPRESSION (FORD LA400-44 OR MUELLER EQUAL).
- CURB BOX IS ARCH PATTERN, WITH INTERIOR ROD FOR 1" UPPER SECTION ONLY WHEN USING 1" CURB STOPS.
- CURB BOX IS ARCH PATTERN WITHOUT ROD WITH 1-1/2" UPPER SECTION 2" CURB STOP.
- CURB STOP IS WITH COMPRESSION COUPLINGS - FORD B44-444 (1" CURB STOP) ETC. OR MUELLER EQUAL.
- B-BOX CAP HAS 1" THREADED BRASS PENTAGON PLUG WITH WORD "WATER" IN RAISED LETTERS.
- SERVICE TAPS GREATER THAN 1" IN DIAMETER MUST HAVE A STAINLESS STEEL BANDED DUCTILE IRON SADDLE (FORD 1015, 2025 OR MUELLER EQUAL).
- CORPORATION STOPS SHALL BE INSTALLED A MINIMUM OF 18" FROM PIPE ENDS AND MULTIPLE INSTALLATIONS SHOULD BE STAGGERED AROUND THE MAIN BY 90° AND SEPARATED BY 18".

**THRUST BLOCK INSTALLATION**



- THRUST BLOCKING TO PREVENT MOVEMENT OF LINES UNDER PRESSURE AT BENDS, TEES, CAPS, VALVES, HYDRANTS, & AT POINTS SPECIFIED BY ENGINEER SHALL BE CLASS "X" CONCRETE A MINIMUM OF 12" THICK, PLACED BETWEEN SOLID GROUND & FITTING, AND SHALL BE ANCHORED IN SUCH A MANNER THAT PIPE AND FITTING WILL BE ACCESSIBLE FOR REPAIRS. THRUST BLOCK SHALL BE PLACED AT BENDS OF 1 1/4 DEGREES OR MORE.

**TRENCH SECTION FOR WATERMAIN**



- IN PAVED AREAS ALL TRENCHES SHALL BE JETTED IN CONFORMANCE WITH SECTION 603.08 (METHOD 3) OF THE STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION.

**RECORD DRAWING**  
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12-23-04

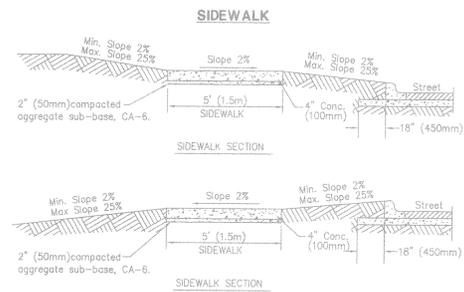
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TYPE	DATE	P.E. INITIALS
-WATERMAIN		
-SANITARY SEWER		
-STORM SEWER		
-MANAGEMENT		
-OUTDOOR LIGHTING		

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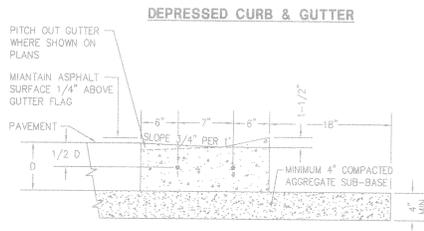
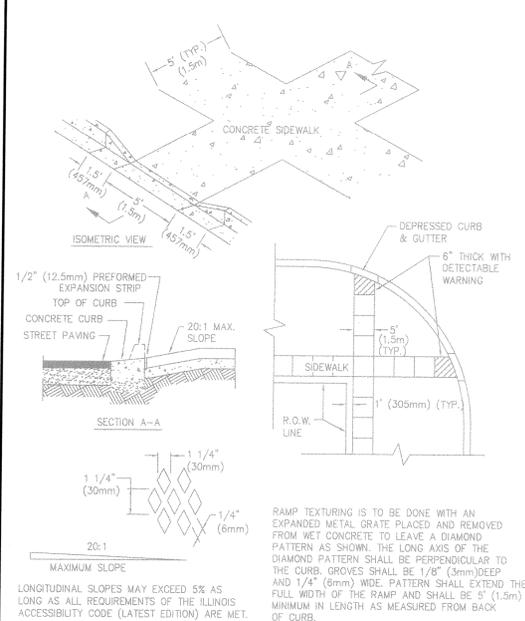
REVISIONS					
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

**JEFFERSON ESTATES**  
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SCALE: NONE DATE: 11-12-04 JDR. NO.: 533000 SHEET NO. 13

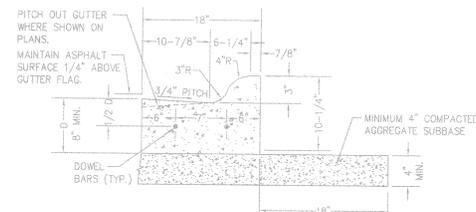


- NOTES:
1. CONCRETE SHALL BE I.D.O.T. CLASS S1.
  2. MINIMUM SIDEWALK THICKNESS SHALL BE 4" (100mm).
  3. SIDEWALK THICKNESS ACROSS DRIVEWAYS SHALL BE AT A MINIMUM 6" (150mm) FOR RESIDENTIAL DRIVEWAYS AND 8" (200mm) FOR COMMERCIAL DRIVEWAYS.
  4. MAXIMUM LONGITUDINAL SLOPE SHALL NOT EXCEED 5% (20:1) FOR ANY SLOPE IN EXCESS OF 5% ALL REQUIREMENTS OF THE ILLINOIS ACCESSIBILITY CODE (LATEST EDITION) SHALL BE MET.
  5. MINIMUM TRANSVERSE SLOPE SHALL BE 1/4" PER FOOT, (2%)
  6. A MINIMUM 2" (50mm) AGGREGATE SUB-BASE (CA-6) SHALL BE PROVIDED.
  7. 4" (100mm) INCH THROUGH COMMERCIAL DRIVEWAYS.
  8. AGGREGATE SUB-BASE COURSE SHALL BE MECHANICALLY COMPACTED.
  9. ALL SIDEWALKS SHALL BE PROMPTLY BACKFILLED AND PROTECTED FROM DAMAGE.
  10. BRICK SERVICE OR CARRIAGE WALK SHALL BE A MINIMUM OF 2-3/8" (60mm) OF 8000 P.S.I. CONCRETE ON 4" (100mm) COMPACTED AGGREGATE BASE, 5" (125mm) THICK EXPOSED AGGREGATE OR EMBOSSED CONCRETE.

**SIDEWALK RAMPS FOR WHEELCHAIRS**

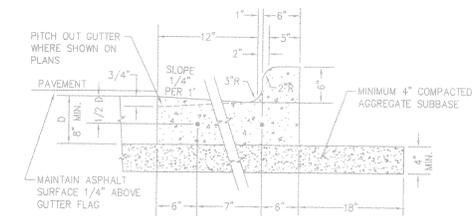


**MOUNTABLE CURB & GUTTER**

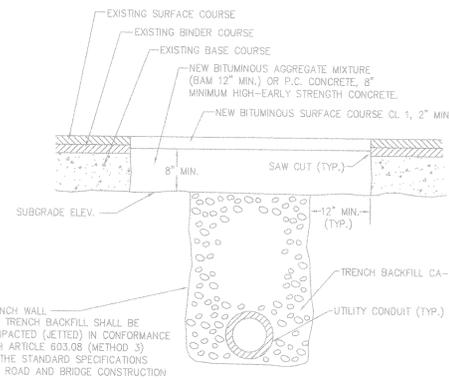


- NOTES:
1. 3/4" PREFORMED BITUMINOUS EXPANSION JOINT MATERIAL WITH TWO (2) NUMBER 6 COATED SMOOTH DOWEL BARS (3/4" DIAMETER X 18") WITH GREASE CAPS SHALL BE PLACED EVERY 150', 10' EITHER SIDE OF DRAINAGE STRUCTURES, P.C.'S, RADIUS POINTS AND BACK OF CUL-DE-SACS. WHEN EXPANSION JOINTS ARE CONSTRUCTED ADJACENT TO EXISTING CURB & GUTTER THE EXISTING CURB SHALL BE DRILLED AND TWO (2) NUMBER 6 COATED SMOOTH DOWEL BARS (3/4" DIAMETER X 18") GROUTED IN PLACE. GREASE CAPS SHALL BE PLACED ON THE SIDE OF THE NEW CURB AND GUTTER SHALL HAVE A PINCHED STOP THAT WILL PROVIDE A MINIMUM 1" EXPANSION.
  2. TOOLED CONTROL JOINTS OR SAWCUTS SHALL BE MADE EVERY 15'.
  3. SAWCUTS SHALL BE MADE WITHIN TWENTY-FOUR (24) HOURS AND SEALED WITH A CITY APPROVED JOINT SEALANT. JOINTS SHALL BE CLEAN AND DRY PRIOR TO APPLICATION OF SEALANT.

**B6.12 BARRIER CURB**



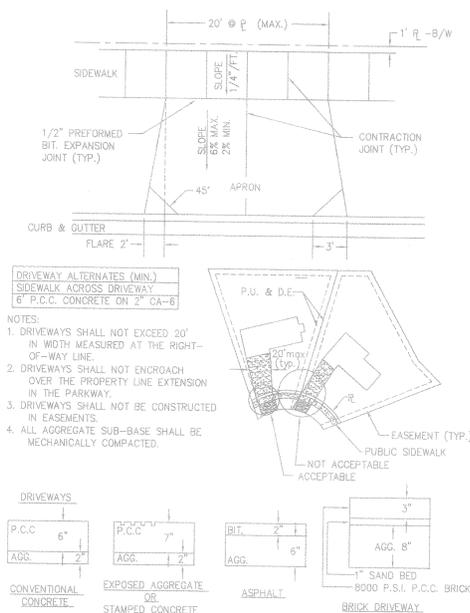
**UTILITY TRENCH PAVING SECTION THRU EXISTING FLEXIBLE PAVEMENTS**



TRENCH WALL THE TRENCH BACKFILL SHALL BE COMPACTED (JETTED) IN CONFORMANCE WITH ARTICLE 603.08 (METHOD 3) OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION

- NOTES:
1. THE OPENING OF PAVEMENTS SHALL NOT BE ALLOWED WITHOUT FIRST RECEIVING A PERMIT FROM THE DEPARTMENT OF PUBLIC WORKS PER SECTION 9-1A-6 OF THE NAPERVILLE MUNICIPAL CODE.
  2. THE TRENCH SHALL BE BACKFILLED WITH AGGREGATE (CA-6) AND COMPACTED TO 95% OF THE STANDARD PROCTOR DENSITY. TRENCH SPOILS OR EXCAVATED MATERIAL SHALL BE DISCARDED BY THE CONTRACTOR, AT THEIR EXPENSE, AT DUMP SITES OR IN A SUITABLE FASHION AS APPROVED BY THE CITY ENGINEER.
  3. PRIOR TO PLACING OF P.C.C. CONCRETE, THE EXPOSED EDGES OF ALL EXISTING PAVEMENT SHALL BE SAW CUT TO PROVIDE A SMOOTH, CLEAN EDGE, FREE OF LOOSE MATERIAL.
  4. EXCAVATIONS SHALL BE PROTECTED BY BARRICADES WITH FLASHING LIGHTS. A ONE (1) INCH STEEL PLATE SHALL BE PROVIDED AND MAINTAINED BY THE CONTRACTOR AT LOCATIONS WHERE ADJUSTMENTS ARE LOCATED IN TRAVEL LANES UNTIL THE SURFACE RESTORATION IS COMPLETE. THE PLATE SHALL BE PROTECTED FROM SLIDING AND PROVIDED WITH BITUMINOUS RAMPS AS REQUIRED.

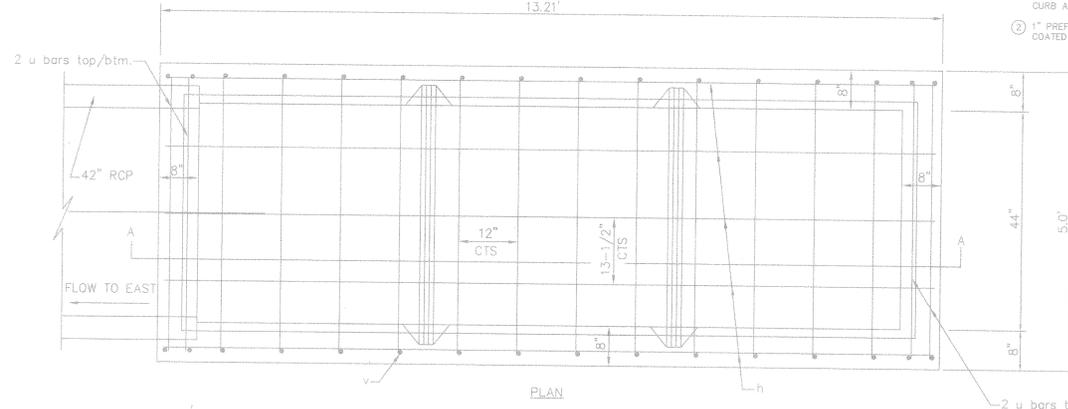
**TYPICAL RESIDENTIAL DRIVEWAY DETAIL**



- NOTES:
1. DRIVEWAYS SHALL NOT EXCEED 20' IN WIDTH MEASURED AT THE RIGHT-OF-WAY LINE.
  2. DRIVEWAYS SHALL NOT ENROACH OVER THE PROPERTY LINE EXTENSION IN THE PARKWAY.
  3. DRIVEWAYS SHALL NOT BE CONSTRUCTED IN EASEMENTS.
  4. ALL AGGREGATE SUB-BASE SHALL BE MECHANICALLY COMPACTED.

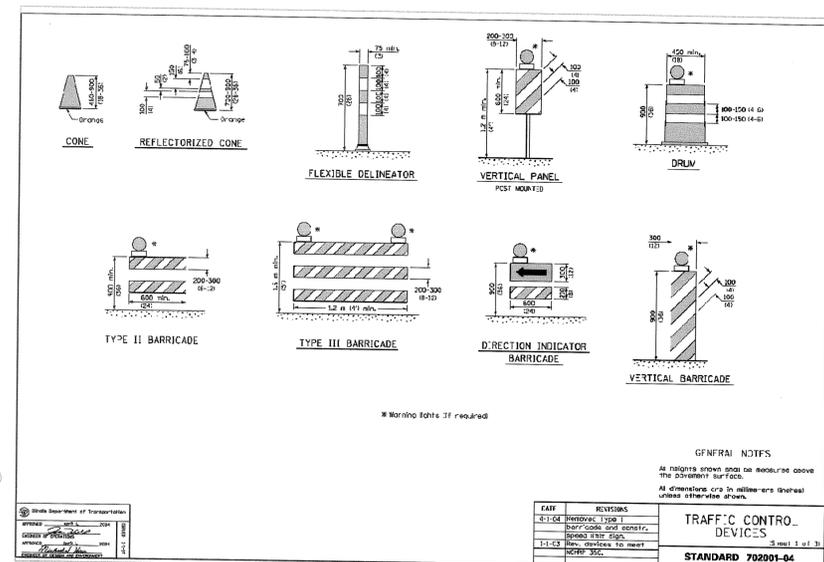


- NOTES:
1. THE COST OF MATERIALS AND LABOR FOR THE ABOVE CURB AND GUTTER CONSTRUCTION WILL BE INCLUDED IN THE CONTRACT UNIT PRICE PER LINEAL FOOT FOR COMBINATION CONCRETE CURB AND GUTTER, ROLL TYPE.
  2. 1" PREFORMED EXPANSION JOINT WITH 1" DIA. X 18" COATED DOWEL BAR - I.D.O.T. CURRENT STANDARD



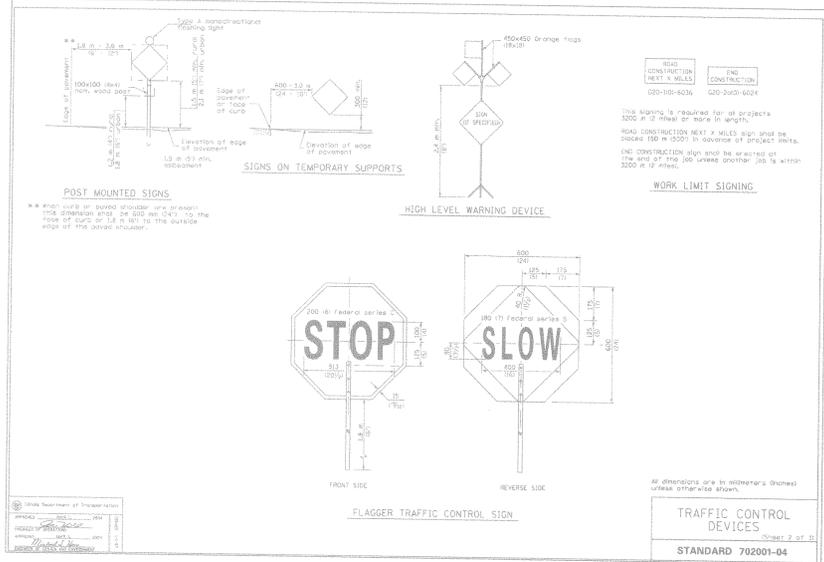
REBAR QUANTITIES (APPROX.)

BAR TYPE	COUNT	SIZE	LENGTH
V BARS	10	#4	48"
V1 BARS	6	#4	38"
V2 BARS	6	#4	29"
V3 BARS	10	#4	20"
U BARS	20	#4	101" TOT.
h BARS	11	#4	156"



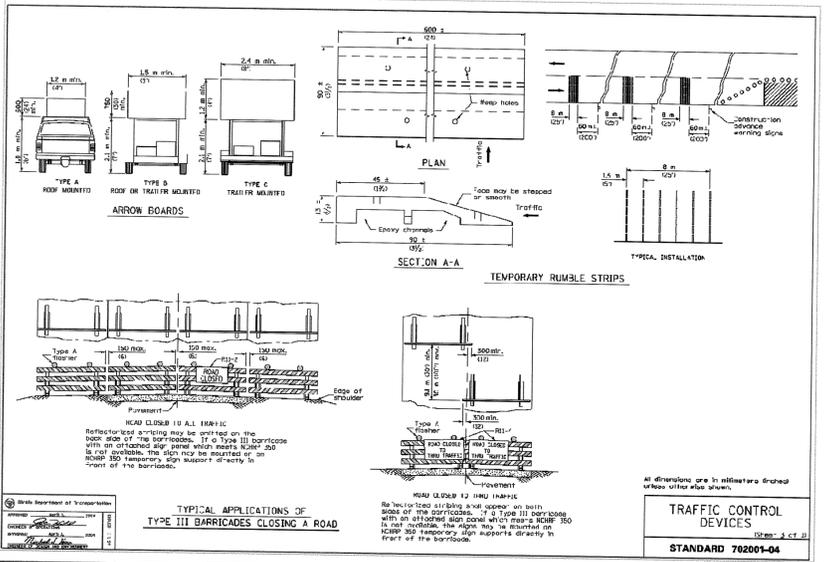
TRAFFIC CONTROL DEVICES

DATE	REVISIONS



TRAFFIC CONTROL DEVICES

DATE	REVISIONS



TRAFFIC CONTROL DEVICES

DATE	REVISIONS

RECORD PLAN FOR:

TYPE	DATE	P.E. INITIALS
WATERMAIN		
SANITARY SEWER		
STORM SEWER		
STORMWATER MANAGEMENT		
OUTDOOR LIGHTING		

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NO.	DATE	DESCRIPTION	REVISIONS	
			NO.	DATE

**JEFFERSON ESTATES**  
DETAILS - RECORD DRAWINGS

DRN/CKD. BY: NW/SAR	FILE: ABS332D	FLD. BK./PG.:	SHEET NO. 14 OF 14
SCALE: NONE	DATE: 11-12-04	JOB NO.: 533.002	

**RECORD DRAWING**  
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12-23-04

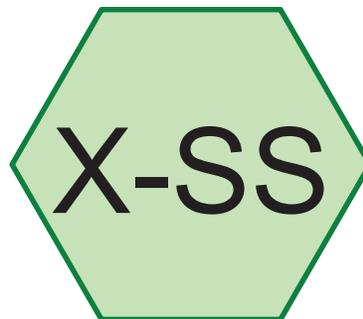
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**APPENDIX 2**

**EXISTING CONDITIONS STORMWATER MODEL**

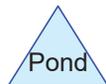
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# *EXISTING FLOW*



SCHOOL SITE  
(NO RE-DEV'L)

Prepared by: MEO 01/31/2025  
Checked by: DRAFT



**Routing Diagram for 333244-X-HYD**  
Prepared by CEC Inc, Printed 1/31/2025  
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**Project Reports**

- 1 Routing Diagram
- 2 Rainfall Events Listing
- 3 Area Listing (selected nodes)

**100-YR 6" Event**

- 4 Node Listing
- 5 Subcat X-SS: SCHOOL SITE (NO RE-DEV'L)

**Multi-Event Tables**

- 7 Subcat X-SS: SCHOOL SITE (NO RE-DEV'L)

**333244-X-HYD**

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Page 2

**Rainfall Events Listing**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	100-YR 6"	Type II 24-hr		Default	24.00	1	6.00	2

**333244-X-HYD**

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Page 3

**Area Listing (selected nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
17.4100	90	SCHOOL SITE (X-SS)

**333244-X-HYD**

Type II 24-hr 100-YR 6" Rainfall=6.00"

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Page 4

Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment X-SS: SCHOOL SITE**

Runoff Area=17.4100 ac 0.00% Impervious Runoff Depth=4.85"  
Tc=20.0 min CN=90 Runoff=89.870 cfs 7.031 af

### Summary for Subcatchment X-SS: SCHOOL SITE (NO RE-DEV'L)

Runoff = 89.870 cfs @ 12.12 hrs, Volume= 7.031 af, Depth= 4.85"

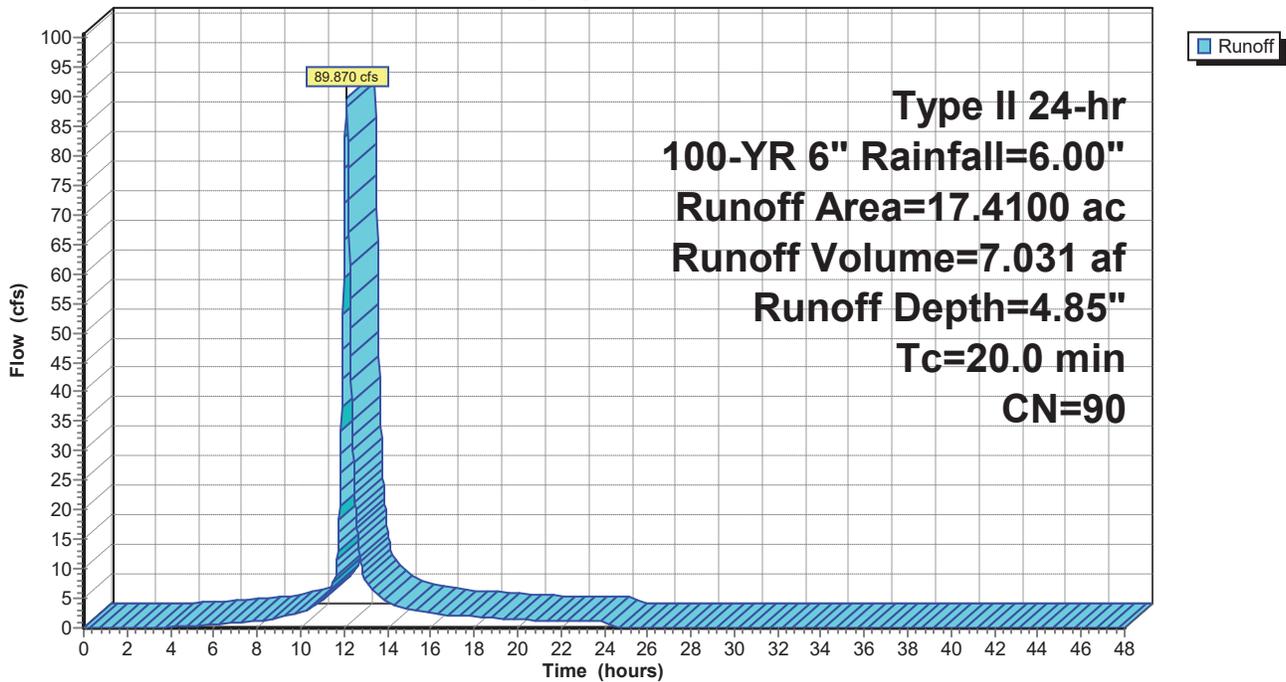
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs  
Type II 24-hr 100-YR 6" Rainfall=6.00"

Area (ac)	CN	Description
* 17.4100	90	SCHOOL SITE
17.4100		100.00% Pervious Area

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

### Subcatchment X-SS: SCHOOL SITE (NO RE-DEV'L)

Hydrograph



**333244-X-HYD**

Type II 24-hr 100-YR 6" Rainfall=6.00"

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**Hydrograph for Subcatchment X-SS: SCHOOL SITE (NO RE-DEV'L)**

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.000
1.00	0.06	0.00	0.000
2.00	0.13	0.00	0.000
3.00	0.21	0.00	0.000
4.00	0.29	0.00	0.099
5.00	0.38	0.02	0.315
6.00	0.48	0.05	0.565
7.00	0.59	0.09	0.837
8.00	0.72	0.15	1.122
9.00	0.88	0.25	1.769
10.00	1.09	0.38	2.452
11.00	1.41	0.61	4.671
12.00	3.98	2.90	<b>65.713</b>
13.00	4.63	3.52	<b>8.096</b>
14.00	4.92	3.80	4.386
15.00	5.12	3.99	3.271
16.00	5.28	4.15	2.562
17.00	5.41	4.27	2.171
18.00	5.53	4.39	1.917
19.00	5.63	4.48	1.664
20.00	5.71	4.57	1.409
21.00	5.79	4.64	1.296
22.00	5.86	4.71	1.245
23.00	5.93	4.78	1.195
24.00	<b>6.00</b>	<b>4.85</b>	1.144
25.00	6.00	4.85	0.002
26.00	6.00	4.85	0.000
27.00	6.00	4.85	0.000
28.00	6.00	4.85	0.000
29.00	6.00	4.85	0.000
30.00	6.00	4.85	0.000
31.00	6.00	4.85	0.000
32.00	6.00	4.85	0.000
33.00	6.00	4.85	0.000
34.00	6.00	4.85	0.000
35.00	6.00	4.85	0.000
36.00	6.00	4.85	0.000
37.00	6.00	4.85	0.000
38.00	6.00	4.85	0.000
39.00	6.00	4.85	0.000
40.00	6.00	4.85	0.000
41.00	6.00	4.85	0.000
42.00	6.00	4.85	0.000
43.00	6.00	4.85	0.000
44.00	6.00	4.85	0.000
45.00	6.00	4.85	0.000
46.00	6.00	4.85	0.000
47.00	6.00	4.85	0.000
48.00	6.00	4.85	0.000

**333244-X-HYD**

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*Multi-Event Tables*

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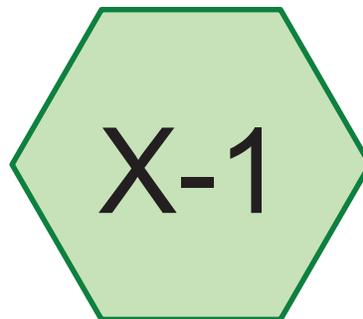
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**Events for Subcatchment X-SS: SCHOOL SITE**

**(NO RE-DEV'L)**

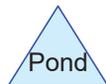
Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
100-YR 6"	<b>6.00</b>	<b>89.870</b>	<b>7.031</b>	<b>4.85</b>

# *EXISTING FLOW*



# JEFFERSON ESTATES

Prepared by: MEO 02/11/2025  
Checked by: DRAFT



**Routing Diagram for 333244-P-HYD-REV3**  
Prepared by CEC Inc, Printed 2/11/2025  
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**100-YR 24-HR 7.58" Event**

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**Multi-Event Tables**

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**333244-P-HYD-REV3**

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**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	100-YR 24-HR 7.58"	Huff 0-10sm	3Q	Scale	24.00	1	7.58	2

**Area Listing (selected nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
21.5700	86	JEFFERSON ESATES (X-1)

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment X-1: JEFFERSON ESTATES** Runoff Area=21.5700 ac 0.00% Impervious Runoff Depth=5.92"  
Tc=20.0 min CN=86 Runoff=16.657 cfs 10.650 af

**Summary for Subcatchment X-1: JEFFERSON ESTATES**

Runoff = 16.657 cfs @ 15.81 hrs, Volume= 10.650 af, Depth= 5.92"

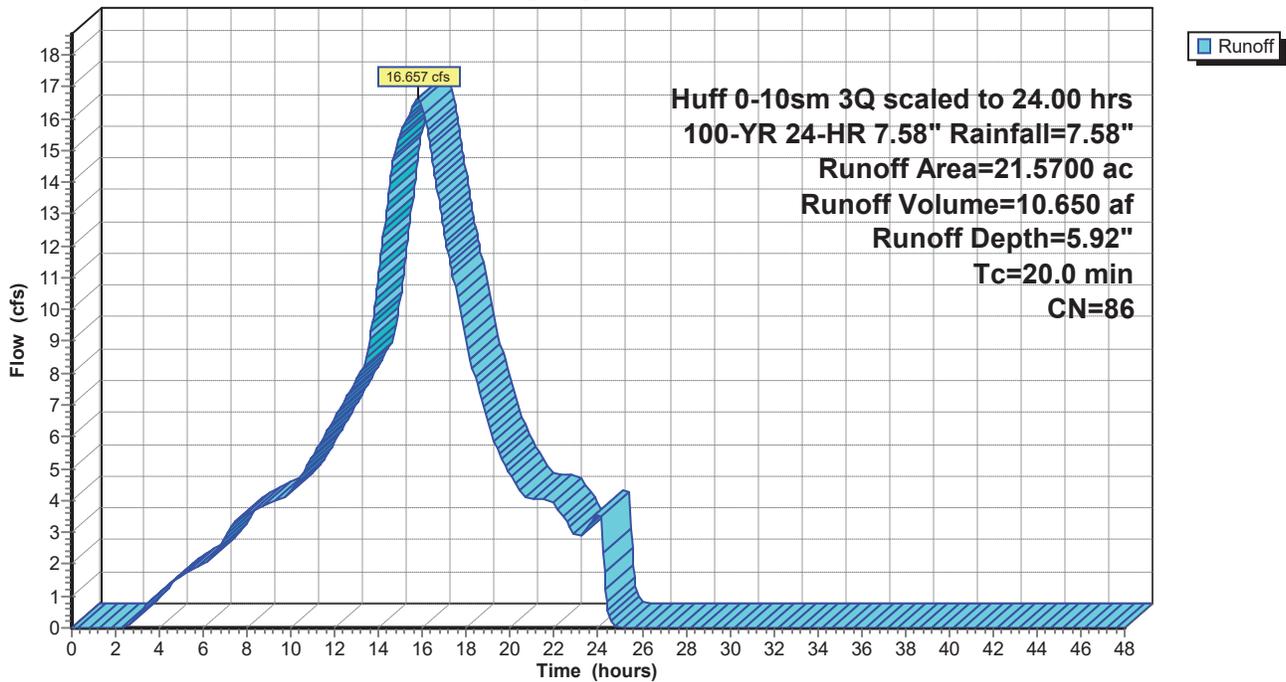
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm 3Q scaled to 24.00 hrs 100-YR 24-HR 7.58" Rainfall=7.58"

Area (ac)	CN	Description
* 21.5700	86	JEFFERSON ESATES
21.5700		100.00% Pervious Area

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

**Subcatchment X-1: JEFFERSON ESTATES**

Hydrograph



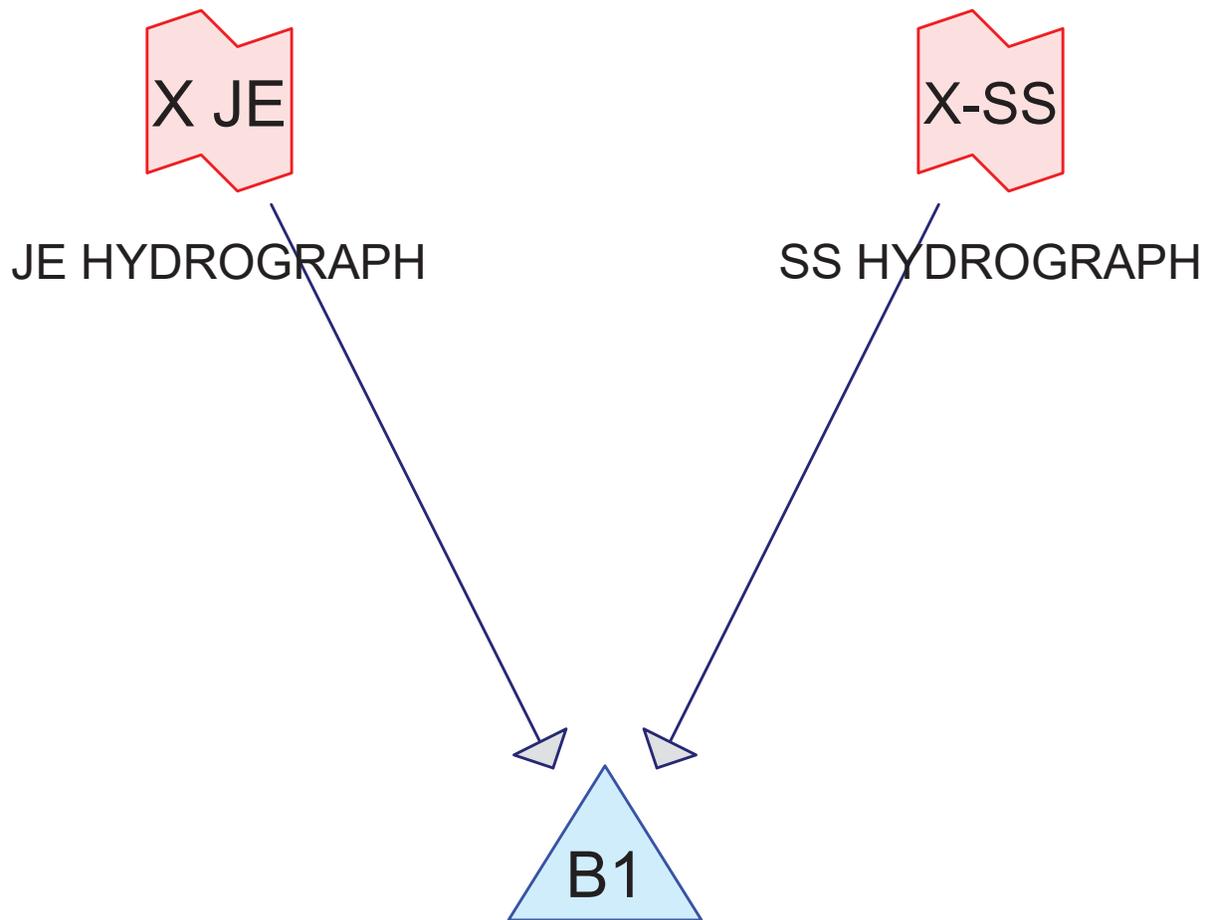
**Hydrograph for Subcatchment X-1: JEFFERSON ESTATES**

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.000	26.00	7.58	5.92	0.000
0.50	0.02	0.00	0.000	26.50	7.58	5.92	0.000
1.00	0.08	0.00	0.000	27.00	7.58	5.92	0.000
1.50	0.17	0.00	0.000	27.50	7.58	5.92	0.000
2.00	0.27	0.00	0.000	28.00	7.58	5.92	0.000
2.50	0.37	0.00	0.013	28.50	7.58	5.92	0.000
3.00	0.46	0.01	0.367	29.00	7.58	5.92	0.000
3.50	0.56	0.03	0.762	29.50	7.58	5.92	0.000
4.00	0.65	0.06	1.101	30.00	7.58	5.92	0.000
4.50	0.75	0.09	1.391	30.50	7.58	5.92	0.000
5.00	0.85	0.13	1.643	31.00	7.58	5.92	0.000
5.50	0.94	0.17	1.862	31.50	7.58	5.92	0.000
6.00	1.04	0.22	2.054	32.00	7.58	5.92	0.000
6.50	1.14	0.27	2.352	32.50	7.58	5.92	0.000
7.00	1.26	0.34	2.852	33.00	7.58	5.92	0.000
7.50	1.39	0.42	3.364	33.50	7.58	5.92	0.000
8.00	1.51	0.50	3.603	34.00	7.58	5.92	0.000
8.50	1.64	0.59	3.777	34.50	7.58	5.92	0.000
9.00	1.77	0.68	3.927	35.00	7.58	5.92	0.000
9.50	1.90	0.77	4.061	35.50	7.58	5.92	0.000
10.00	2.03	0.87	4.284	36.00	7.58	5.92	0.000
10.50	2.18	0.98	4.820	36.50	7.58	5.92	0.000
11.00	2.34	1.11	5.398	37.00	7.58	5.92	0.000
11.50	2.51	1.25	5.992	37.50	7.58	5.92	0.000
12.00	2.69	1.40	6.600	38.00	7.58	5.92	0.000
12.50	2.89	1.57	7.217	38.50	7.58	5.92	0.000
13.00	3.10	1.75	7.841	39.00	7.58	5.92	0.000
13.50	3.34	1.96	8.679	39.50	7.58	5.92	0.000
14.00	3.64	2.22	11.143	40.00	7.58	5.92	0.000
14.50	4.00	2.55	13.924	40.50	7.58	5.92	0.000
15.00	4.40	2.91	15.526	41.00	7.58	5.92	0.000
15.50	4.80	3.28	<b>16.289</b>	41.50	7.58	5.92	0.000
16.00	5.20	3.66	<b>16.359</b>	42.00	7.58	5.92	0.000
16.50	5.55	3.98	14.457	42.50	7.58	5.92	0.000
17.00	5.85	4.26	12.358	43.00	7.58	5.92	0.000
17.50	6.10	4.50	10.627	43.50	7.58	5.92	0.000
18.00	6.31	4.70	9.000	44.00	7.58	5.92	0.000
18.50	6.49	4.88	7.583	44.50	7.58	5.92	0.000
19.00	6.64	5.02	6.471	45.00	7.58	5.92	0.000
19.50	6.77	5.14	5.425	45.50	7.58	5.92	0.000
20.00	6.88	5.25	4.809	46.00	7.58	5.92	0.000
20.50	6.98	5.35	4.255	46.50	7.58	5.92	0.000
21.00	7.08	5.44	4.031	47.00	7.58	5.92	0.000
21.50	7.18	5.54	4.028	47.50	7.58	5.92	0.000
22.00	7.27	5.62	3.898	48.00	7.58	5.92	0.000
22.50	7.35	5.70	3.372				
23.00	7.41	5.76	2.840				
23.50	7.49	5.84	3.137				
24.00	<b>7.58</b>	<b>5.92</b>	3.695				
24.50	7.58	5.92	0.395				
25.00	7.58	5.92	0.005				
25.50	7.58	5.92	0.000				

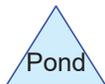
**Events for Subcatchment X-1: JEFFERSON ESTATES**

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
100-YR 24-HR 7.58"	<b>7.58</b>	<b>16.657</b>	<b>10.650</b>	<b>5.92</b>

# EXISTING



Prepared by: MEO 02/13/2025  
Checked by: DRAFT



## **Project Notes**

Rainfall events imported from "NRCS-Rain.txt" for 1644 IL Kane

**333244-P-HYD-REV3-ALT**

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**Area Listing (selected nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
<b>0.0000</b>	<b>0</b>	<b>TOTAL AREA</b>

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**Soil Listing (selected nodes)**

Area (acres)	Soil Group	Subcatchment Numbers
0.0000	HSG A	
0.0000	HSG B	
0.0000	HSG C	
0.0000	HSG D	
0.0000	Other	
<b>0.0000</b>		<b>TOTAL AREA</b>

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**Ground Covers (selected nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>TOTAL AREA</b>	

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Pond B1: EXISTING BASIN**

Peak Elev=689.21' Storage=497,390 cf Inflow=96.561 cfs 17.759 af  
Outflow=4.168 cfs 14.119 af

\\HYDROLOG\HYDROGRAPH FILES\333244-P-HYD-REV3 Subcat X-1 Hydrograph Table.csv Inflow=16.372 cfs 10.728 af  
Primary=16.372 cfs 10.728 af

\\HYDROLOG\HYDROGRAPH FILES\333244-X-HYD Subcat X-SS Hydrograph Table.csv Inflow=89.816 cfs 7.031 af  
Primary=89.816 cfs 7.031 af

**Summary for Pond B1: EXISTING BASIN**

[44] Hint: Outlet device #1 is below defined storage

Inflow = 96.561 cfs @ 12.12 hrs, Volume= 17.759 af  
 Outflow = 4.168 cfs @ 24.15 hrs, Volume= 14.119 af, Atten= 96%, Lag= 721.8 min  
**Primary = 4.168 cfs @ 24.15 hrs, Volume= 14.119 af**

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

**Peak Elev= 689.21' @ 24.15 hrs Surf.Area= 124,890 sf Storage= 497,390 cf**

Plug-Flow detention time= 827.8 min calculated for 14.105 af (79% of inflow)

Center-of-Mass det. time= 735.5 min ( 1,597.3 - 861.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	683.00'	735,927 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
683.00	3,919	0	0
684.00	31,264	17,592	17,592
685.00	63,409	47,337	64,928
686.00	94,420	78,915	143,843
687.00	104,848	99,634	243,477
688.00	113,712	109,280	352,757
689.00	122,845	118,279	471,035
690.00	132,457	127,651	598,686
691.00	142,025	137,241	735,927

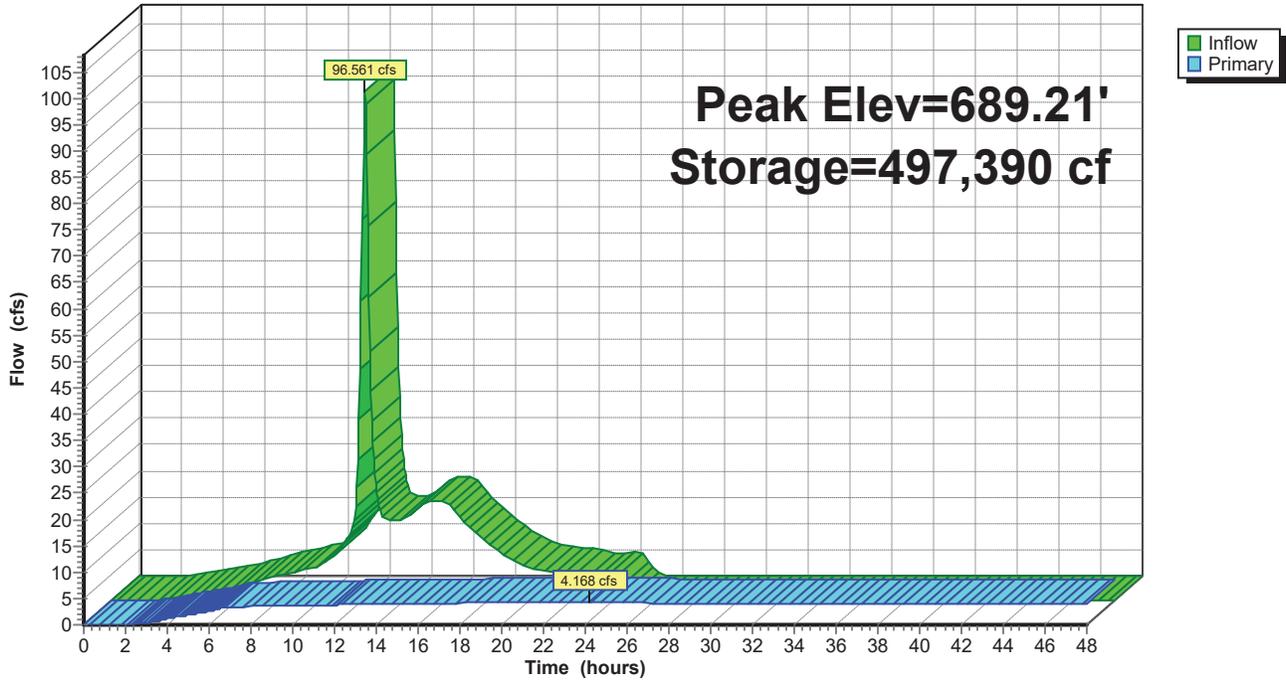
Device	Routing	Invert	Outlet Devices
#1	Primary	669.53'	<b>6.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=4.168 cfs @ 24.15 hrs HW=689.21' (Free Discharge)

↑**1=Orifice/Grate** (Orifice Controls 4.168 cfs @ 21.23 fps)

### Pond B1: EXISTING BASIN

Hydrograph



**Hydrograph for Pond B1: EXISTING BASIN**

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.000	0	683.00	0.000
1.00	0.000	0	683.00	0.000
2.00	0.000	0	683.00	0.000
3.00	0.367	41	683.01	0.355
4.00	1.200	136	683.03	1.170
5.00	1.958	225	683.04	1.933
6.00	2.619	302	683.06	2.597
7.00	3.689	496	683.09	3.450
8.00	4.725	3,166	683.36	3.484
9.00	5.696	9,110	683.68	3.525
10.00	6.736	18,638	684.03	3.569
11.00	10.069	35,268	684.46	3.622
12.00	<b>72.313</b>	94,863	685.43	3.740
13.00	<b>15.937</b>	237,188	686.94	3.916
14.00	15.529	278,150	687.33	3.960
15.00	18.797	325,133	687.75	4.008
16.00	18.921	378,503	688.22	4.060
17.00	14.529	423,858	688.61	4.103
18.00	10.917	454,837	688.87	4.130
19.00	8.135	474,228	689.03	4.148
20.00	6.218	485,114	689.11	4.157
21.00	5.327	490,849	689.16	4.162
22.00	5.143	494,706	689.19	4.165
23.00	4.035	496,228	689.20	4.167
24.00	4.839	<b>497,200</b>	<b>689.21</b>	<b>4.167</b>
25.00	0.007	<b>490,130</b>	<b>689.15</b>	<b>4.161</b>
26.00	0.000	475,182	689.03	4.148
27.00	0.000	460,271	688.91	4.135
28.00	0.000	445,408	688.79	4.122
29.00	0.000	430,593	688.67	4.109
30.00	0.000	415,826	688.54	4.095
31.00	0.000	401,108	688.42	4.082
32.00	0.000	386,439	688.29	4.068
33.00	0.000	371,820	688.17	4.054
34.00	0.000	357,251	688.04	4.040
35.00	0.000	342,733	687.91	4.026
36.00	0.000	328,266	687.78	4.011
37.00	0.000	313,851	687.65	3.997
38.00	0.000	299,488	687.52	3.982
39.00	0.000	285,179	687.39	3.968
40.00	0.000	270,922	687.26	3.953
41.00	0.000	256,720	687.13	3.937
42.00	0.000	242,573	686.99	3.922
43.00	0.000	228,481	686.86	3.907
44.00	0.000	214,444	686.72	3.891
45.00	0.000	200,465	686.58	3.875
46.00	0.000	186,543	686.44	3.859
47.00	0.000	172,680	686.30	3.843
48.00	0.000	158,877	686.16	3.826

**Stage-Area-Storage for Pond B1: EXISTING BASIN**

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
683.00	3,919	0	688.20	115,539	375,682
683.10	6,654	529	688.30	116,452	387,281
683.20	9,388	1,331	688.40	117,365	398,972
683.30	12,122	2,406	688.50	118,279	410,754
683.40	14,857	3,755	688.60	119,192	422,628
683.50	17,592	5,378	688.70	120,105	434,592
683.60	20,326	7,274	688.80	121,018	446,649
683.70	23,061	9,443	688.90	121,932	458,796
683.80	25,795	11,886	689.00	122,845	471,035
683.90	28,529	14,602	689.10	123,806	483,368
684.00	31,264	17,592	689.20	124,767	495,796
684.10	34,479	20,879	689.30	125,729	508,321
684.20	37,693	24,487	689.40	126,690	520,942
684.30	40,907	28,417	689.50	127,651	533,659
684.40	44,122	32,669	689.60	128,612	546,472
684.50	47,337	37,242	689.70	129,573	559,381
684.60	50,551	42,136	689.80	130,535	572,387
684.70	53,766	47,352	689.90	131,496	585,488
684.80	56,980	52,889	690.00	132,457	598,686
684.90	60,194	58,748	690.10	133,414	611,980
685.00	63,409	64,928	690.20	134,371	625,369
685.10	66,510	71,424	690.30	135,327	638,854
685.20	69,611	78,230	690.40	136,284	652,434
685.30	72,712	85,346	690.50	137,241	666,111
685.40	75,813	92,772	690.60	138,198	679,882
685.50	78,915	100,509	690.70	139,155	693,750
685.60	82,016	108,555	690.80	140,111	707,713
685.70	85,117	116,912	690.90	141,068	721,772
685.80	88,218	125,579	691.00	<b>142,025</b>	<b>735,927</b>
685.90	91,319	134,556			
686.00	94,420	143,843			
686.10	95,463	153,337			
686.20	96,506	162,935			
686.30	97,548	172,638			
686.40	98,591	182,445			
686.50	99,634	192,356			
686.60	100,677	202,372			
686.70	101,720	212,491			
686.80	102,762	222,715			
686.90	103,805	233,044			
687.00	104,848	243,477			
687.10	105,734	254,006			
687.20	106,621	264,623			
687.30	107,507	275,330			
687.40	108,394	286,125			
687.50	109,280	297,009			
687.60	110,166	307,981			
687.70	111,053	319,042			
687.80	111,939	330,191			
687.90	112,826	341,430			
688.00	113,712	352,757			
688.10	114,625	364,173			

### Summary for Link X JE: JE HYDROGRAPH

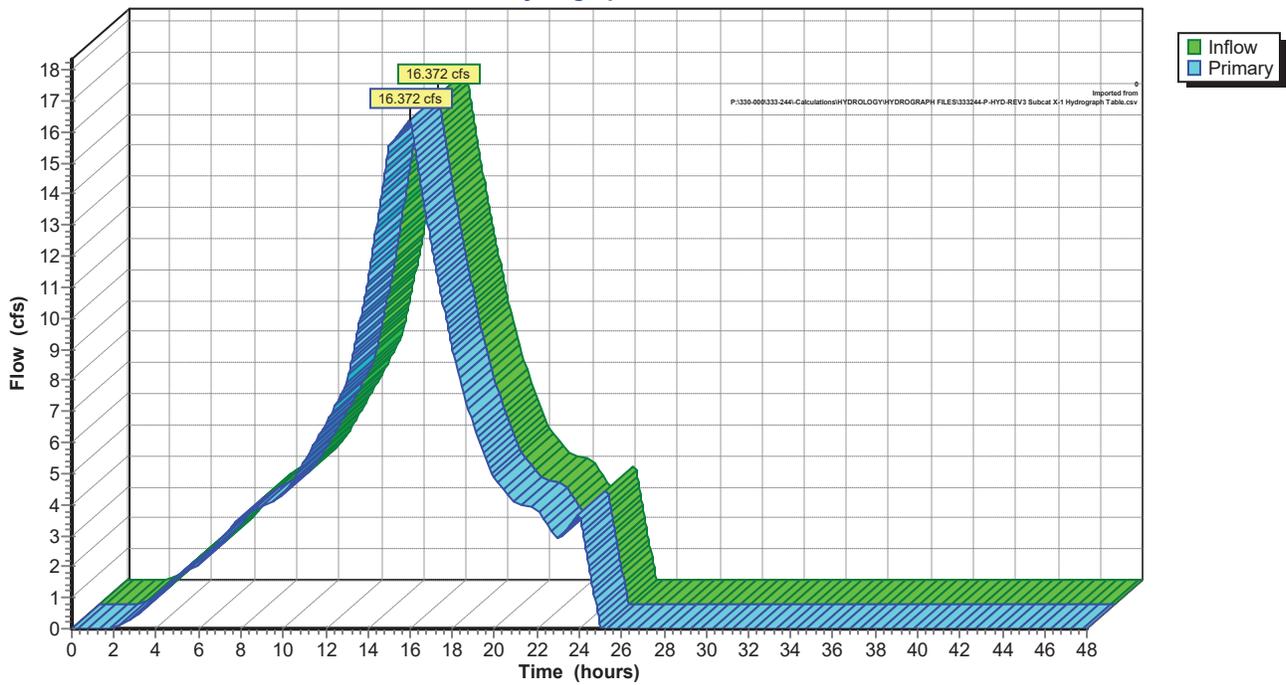
Inflow = 16.372 cfs @ 15.98 hrs, Volume= 10.728 af  
 Primary = 16.372 cfs @ 15.98 hrs, Volume= 10.728 af, Atten= 0%, Lag= 0.0 min  
 Routed to Pond B1 : EXISTING BASIN

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

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### Link X JE: JE HYDROGRAPH

Hydrograph



**Hydrograph for Link X JE: JE HYDROGRAPH**

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.000	0.00	0.000	26.00	0.000	0.00	0.000
0.50	0.000	0.00	0.000	26.50	0.000	0.00	0.000
1.00	0.000	0.00	0.000	27.00	0.000	0.00	0.000
1.50	0.000	0.00	0.000	27.50	0.000	0.00	0.000
2.00	0.000	0.00	0.000	28.00	0.000	0.00	0.000
2.50	0.183	0.00	0.183	28.50	0.000	0.00	0.000
3.00	0.367	0.00	0.367	29.00	0.000	0.00	0.000
3.50	0.734	0.00	0.734	29.50	0.000	0.00	0.000
4.00	1.101	0.00	1.101	30.00	0.000	0.00	0.000
4.50	1.372	0.00	1.372	30.50	0.000	0.00	0.000
5.00	1.643	0.00	1.643	31.00	0.000	0.00	0.000
5.50	1.849	0.00	1.849	31.50	0.000	0.00	0.000
6.00	2.054	0.00	2.054	32.00	0.000	0.00	0.000
6.50	2.453	0.00	2.453	32.50	0.000	0.00	0.000
7.00	2.852	0.00	2.852	33.00	0.000	0.00	0.000
7.50	3.228	0.00	3.228	33.50	0.000	0.00	0.000
8.00	3.603	0.00	3.603	34.00	0.000	0.00	0.000
8.50	3.765	0.00	3.765	34.50	0.000	0.00	0.000
9.00	3.927	0.00	3.927	35.00	0.000	0.00	0.000
9.50	4.106	0.00	4.106	35.50	0.000	0.00	0.000
10.00	4.284	0.00	4.284	36.00	0.000	0.00	0.000
10.50	4.841	0.00	4.841	36.50	0.000	0.00	0.000
11.00	5.398	0.00	5.398	37.00	0.000	0.00	0.000
11.50	5.999	0.00	5.999	37.50	0.000	0.00	0.000
12.00	6.600	0.00	6.600	38.00	0.000	0.00	0.000
12.50	7.220	0.00	7.220	38.50	0.000	0.00	0.000
13.00	7.841	0.00	7.841	39.00	0.000	0.00	0.000
13.50	9.492	0.00	9.492	39.50	0.000	0.00	0.000
14.00	11.143	0.00	11.143	40.00	0.000	0.00	0.000
14.50	13.335	0.00	13.335	40.50	0.000	0.00	0.000
15.00	15.526	0.00	15.526	41.00	0.000	0.00	0.000
15.50	15.943	0.00	15.943	41.50	0.000	0.00	0.000
16.00	<b>16.359</b>	0.00	<b>16.359</b>	42.00	0.000	0.00	0.000
16.50	14.359	0.00	14.359	42.50	0.000	0.00	0.000
17.00	12.358	0.00	12.358	43.00	0.000	0.00	0.000
17.50	10.679	0.00	10.679	43.50	0.000	0.00	0.000
18.00	9.000	0.00	9.000	44.00	0.000	0.00	0.000
18.50	7.736	0.00	7.736	44.50	0.000	0.00	0.000
19.00	6.471	0.00	6.471	45.00	0.000	0.00	0.000
19.50	5.640	0.00	5.640	45.50	0.000	0.00	0.000
20.00	4.809	0.00	4.809	46.00	0.000	0.00	0.000
20.50	4.420	0.00	4.420	46.50	0.000	0.00	0.000
21.00	4.031	0.00	4.031	47.00	0.000	0.00	0.000
21.50	3.965	0.00	3.965	47.50	0.000	0.00	0.000
22.00	3.898	0.00	3.898	48.00	0.000	0.00	0.000
22.50	3.369	0.00	3.369				
23.00	2.840	0.00	2.840				
23.50	3.268	0.00	3.268				
24.00	3.695	0.00	3.695				
24.50	1.850	0.00	1.850				
25.00	0.005	0.00	0.005				
25.50	0.003	0.00	0.003				

### Summary for Link X-SS: SS HYDROGRAPH

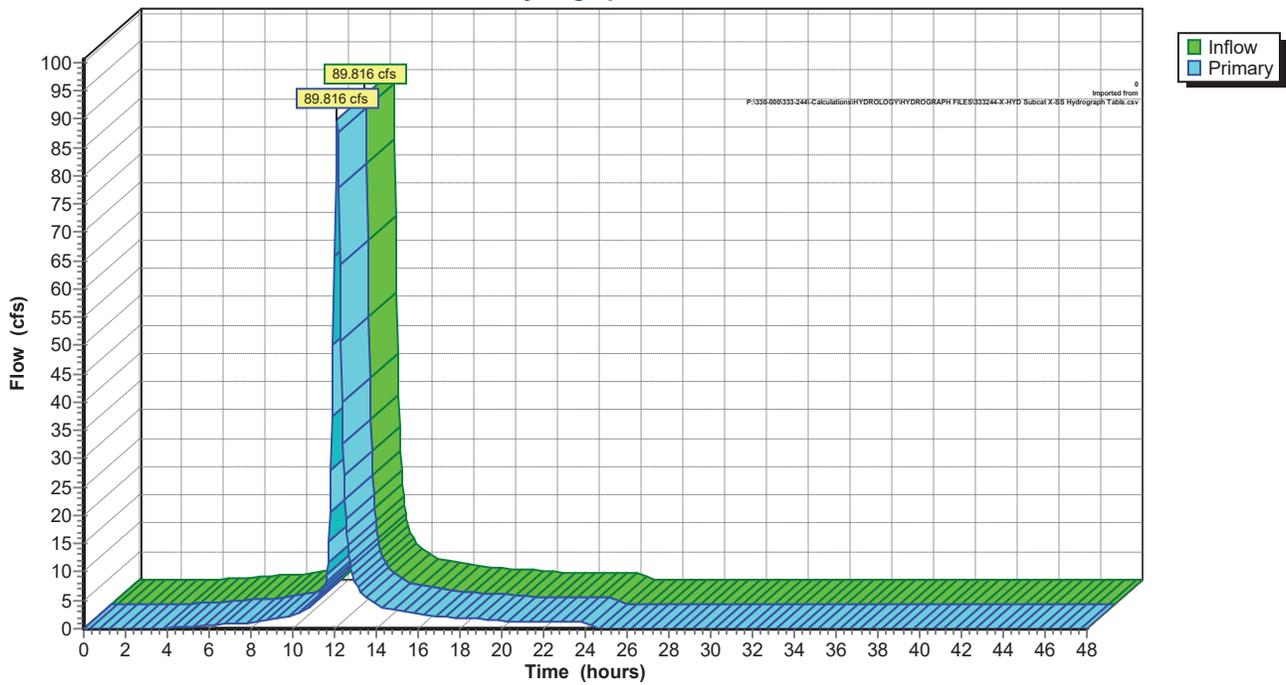
Inflow = 89.816 cfs @ 12.12 hrs, Volume= 7.031 af  
 Primary = 89.816 cfs @ 12.12 hrs, Volume= 7.031 af, Atten= 0%, Lag= 0.0 min  
 Routed to Pond B1 : EXISTING BASIN

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

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### Link X-SS: SS HYDROGRAPH

Hydrograph



**Hydrograph for Link X-SS: SS HYDROGRAPH**

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.000	0.00	0.000	26.00	0.000	0.00	0.000
0.50	0.000	0.00	0.000	26.50	0.000	0.00	0.000
1.00	0.000	0.00	0.000	27.00	0.000	0.00	0.000
1.50	0.000	0.00	0.000	27.50	0.000	0.00	0.000
2.00	0.000	0.00	0.000	28.00	0.000	0.00	0.000
2.50	0.000	0.00	0.000	28.50	0.000	0.00	0.000
3.00	0.000	0.00	0.000	29.00	0.000	0.00	0.000
3.50	0.011	0.00	0.011	29.50	0.000	0.00	0.000
4.00	0.099	0.00	0.099	30.00	0.000	0.00	0.000
4.50	0.202	0.00	0.202	30.50	0.000	0.00	0.000
5.00	0.315	0.00	0.315	31.00	0.000	0.00	0.000
5.50	0.437	0.00	0.437	31.50	0.000	0.00	0.000
6.00	0.565	0.00	0.565	32.00	0.000	0.00	0.000
6.50	0.699	0.00	0.699	32.50	0.000	0.00	0.000
7.00	0.837	0.00	0.837	33.00	0.000	0.00	0.000
7.50	0.978	0.00	0.978	33.50	0.000	0.00	0.000
8.00	1.122	0.00	1.122	34.00	0.000	0.00	0.000
8.50	1.363	0.00	1.363	34.50	0.000	0.00	0.000
9.00	1.769	0.00	1.769	35.00	0.000	0.00	0.000
9.50	2.088	0.00	2.088	35.50	0.000	0.00	0.000
10.00	2.452	0.00	2.452	36.00	0.000	0.00	0.000
10.50	3.292	0.00	3.292	36.50	0.000	0.00	0.000
11.00	4.671	0.00	4.671	37.00	0.000	0.00	0.000
11.50	7.543	0.00	7.543	37.50	0.000	0.00	0.000
12.00	<b>65.713</b>	0.00	<b>65.713</b>	38.00	0.000	0.00	0.000
12.50	<b>22.768</b>	0.00	<b>22.768</b>	38.50	0.000	0.00	0.000
13.00	8.096	0.00	8.096	39.00	0.000	0.00	0.000
13.50	5.663	0.00	5.663	39.50	0.000	0.00	0.000
14.00	4.386	0.00	4.386	40.00	0.000	0.00	0.000
14.50	3.638	0.00	3.638	40.50	0.000	0.00	0.000
15.00	3.271	0.00	3.271	41.00	0.000	0.00	0.000
15.50	2.917	0.00	2.917	41.50	0.000	0.00	0.000
16.00	2.562	0.00	2.562	42.00	0.000	0.00	0.000
16.50	2.302	0.00	2.302	42.50	0.000	0.00	0.000
17.00	2.171	0.00	2.171	43.00	0.000	0.00	0.000
17.50	2.044	0.00	2.044	43.50	0.000	0.00	0.000
18.00	1.917	0.00	1.917	44.00	0.000	0.00	0.000
18.50	1.791	0.00	1.791	44.50	0.000	0.00	0.000
19.00	1.664	0.00	1.664	45.00	0.000	0.00	0.000
19.50	1.537	0.00	1.537	45.50	0.000	0.00	0.000
20.00	1.409	0.00	1.409	46.00	0.000	0.00	0.000
20.50	1.324	0.00	1.324	46.50	0.000	0.00	0.000
21.00	1.296	0.00	1.296	47.00	0.000	0.00	0.000
21.50	1.271	0.00	1.271	47.50	0.000	0.00	0.000
22.00	1.245	0.00	1.245	48.00	0.000	0.00	0.000
22.50	1.220	0.00	1.220				
23.00	1.195	0.00	1.195				
23.50	1.169	0.00	1.169				
24.00	1.144	0.00	1.144				
24.50	0.115	0.00	0.115				
25.00	0.002	0.00	0.002				
25.50	0.000	0.00	0.000				

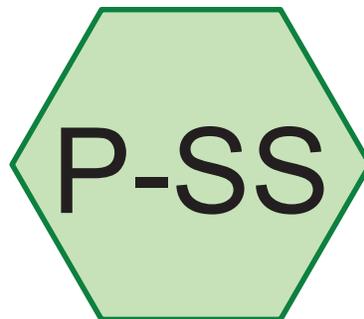
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**APPENDIX 3**

**PROPOSED CONDITIONS STORMWATER MODEL**

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# PROPOSED FLOW



SCHOOL SITE  
(NO RE-DEV'L)

Prepared by: MEO 01/31/2025  
Checked by: DRAFT



Routing Diagram for 333244-X-HYD  
Prepared by CEC Inc, Printed 1/31/2025  
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- 3 Area Listing (selected nodes)

**100-YR 6" Event**

- 4 Node Listing
- 5 Subcat P-SS: SCHOOL SITE (NO RE-DEV'L)

**Multi-Event Tables**

- 7 Subcat P-SS: SCHOOL SITE (NO RE-DEV'L)

**333244-X-HYD**

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**Rainfall Events Listing**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	100-YR 6"	Type II 24-hr		Default	24.00	1	6.00	2

**Area Listing (selected nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
10.0800	90	SCHOOL SITE (P-SS)

Subject property area removed for proposed conditions. (7.33 ac)  
Proposed conditions to use Huff Distribution 8.57" storm.

**333244-X-HYD**

Type II 24-hr 100-YR 6" Rainfall=6.00"

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Time span=0.00-48.00 hrs, dt=0.02 hrs, 2401 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment P-SS: SCHOOL SITE**

Runoff Area=10.0800 ac 0.00% Impervious Runoff Depth=4.85"  
Tc=20.0 min CN=90 Runoff=52.033 cfs 4.071 af

### Summary for Subcatchment P-SS: SCHOOL SITE (NO RE-DEV'L)

Runoff = 52.033 cfs @ 12.12 hrs, Volume= 4.071 af, Depth= 4.85"

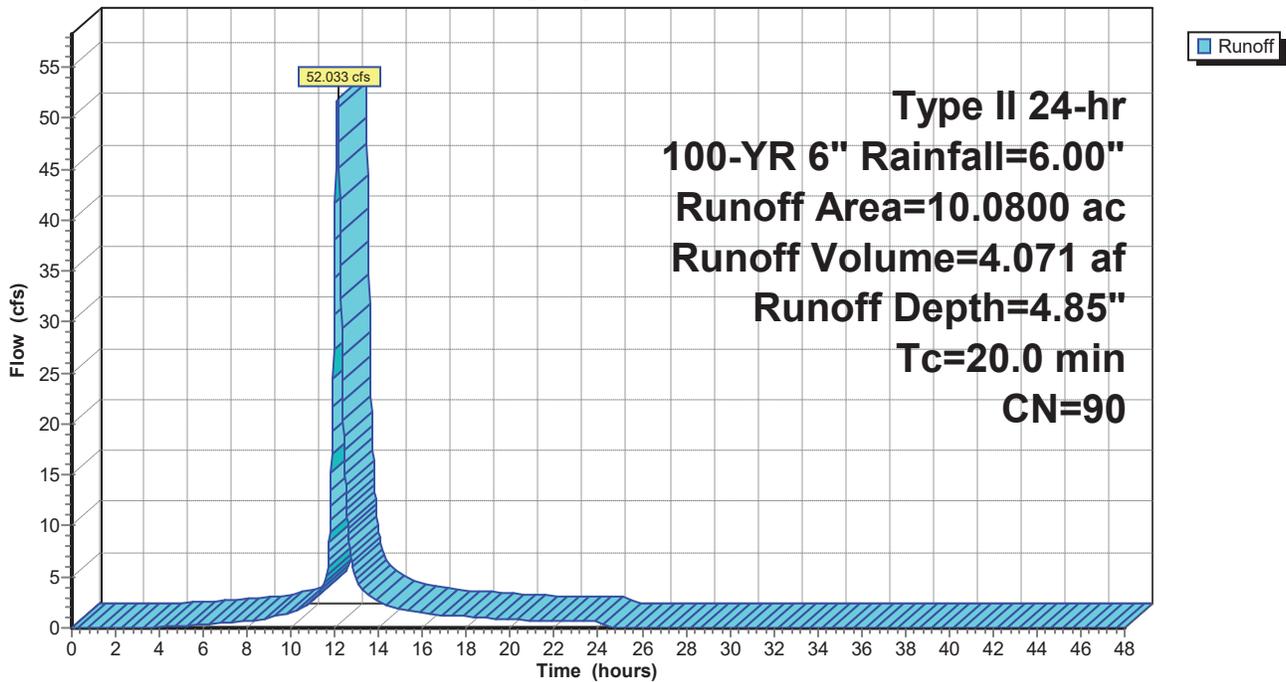
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.02 hrs  
Type II 24-hr 100-YR 6" Rainfall=6.00"

Area (ac)	CN	Description
* 10.0800	90	SCHOOL SITE
10.0800		100.00% Pervious Area

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

### Subcatchment P-SS: SCHOOL SITE (NO RE-DEV'L)

Hydrograph



**333244-X-HYD**

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Type II 24-hr 100-YR 6" Rainfall=6.00"

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**Hydrograph for Subcatchment P-SS: SCHOOL SITE (NO RE-DEV'L)**

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.000
1.00	0.06	0.00	0.000
2.00	0.13	0.00	0.000
3.00	0.21	0.00	0.000
4.00	0.29	0.00	0.057
5.00	0.38	0.02	0.182
6.00	0.48	0.05	0.327
7.00	0.59	0.09	0.485
8.00	0.72	0.15	0.649
9.00	0.88	0.25	1.024
10.00	1.09	0.38	1.420
11.00	1.41	0.61	2.705
12.00	3.98	2.90	<b>38.047</b>
13.00	4.63	3.52	<b>4.687</b>
14.00	4.92	3.80	2.539
15.00	5.12	3.99	1.894
16.00	5.28	4.15	1.483
17.00	5.41	4.27	1.257
18.00	5.53	4.39	1.110
19.00	5.63	4.48	0.964
20.00	5.71	4.57	0.816
21.00	5.79	4.64	0.751
22.00	5.86	4.71	0.721
23.00	5.93	4.78	0.692
24.00	<b>6.00</b>	<b>4.85</b>	0.662
25.00	6.00	4.85	0.001
26.00	6.00	4.85	0.000
27.00	6.00	4.85	0.000
28.00	6.00	4.85	0.000
29.00	6.00	4.85	0.000
30.00	6.00	4.85	0.000
31.00	6.00	4.85	0.000
32.00	6.00	4.85	0.000
33.00	6.00	4.85	0.000
34.00	6.00	4.85	0.000
35.00	6.00	4.85	0.000
36.00	6.00	4.85	0.000
37.00	6.00	4.85	0.000
38.00	6.00	4.85	0.000
39.00	6.00	4.85	0.000
40.00	6.00	4.85	0.000
41.00	6.00	4.85	0.000
42.00	6.00	4.85	0.000
43.00	6.00	4.85	0.000
44.00	6.00	4.85	0.000
45.00	6.00	4.85	0.000
46.00	6.00	4.85	0.000
47.00	6.00	4.85	0.000
48.00	6.00	4.85	0.000

**333244-X-HYD**

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*Multi-Event Tables*

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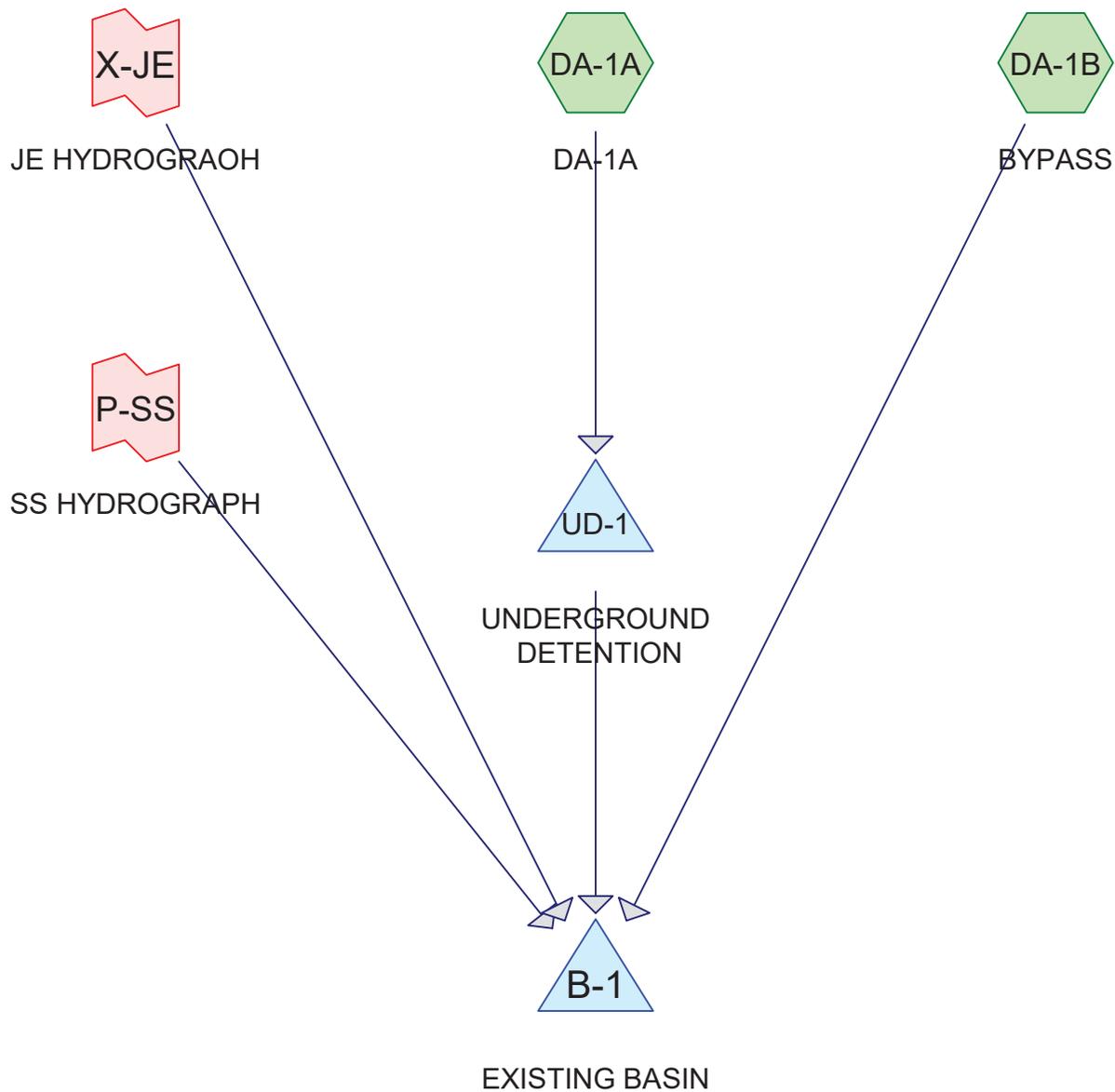
Page 7

**Events for Subcatchment P-SS: SCHOOL SITE**

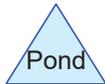
**(NO RE-DEV'L)**

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
100-YR 6"	<b>6.00</b>	<b>52.033</b>	<b>4.071</b>	<b>4.85</b>

# CHARLESTON PLACE



Prepared by: MEO 02/13/2025  
Checked by: DRAFT



## **Project Notes**

Rainfall events imported from "NRCS-Rain.txt" for 1644 IL Kane

**333244-P-HYD-REV3**

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**Rainfall Events Listing (selected events)**

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	100-YR 24-HR 8.57"	Huff 0-10sm	3Q	Scale	24.00	1	8.57	2

**Area Listing (selected nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
0.6700	90	EAST-LOT (DA-1B)
6.6600	86	Proposed Development (DA-1A)
<b>7.3300</b>	<b>86</b>	<b>TOTAL AREA</b>

**333244-P-HYD-REV3**

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**Soil Listing (selected nodes)**

Area (acres)	Soil Group	Subcatchment Numbers
0.0000	HSG A	
0.0000	HSG B	
0.0000	HSG C	
0.0000	HSG D	
7.3300	Other	DA-1A, DA-1B
<b>7.3300</b>		<b>TOTAL AREA</b>

**333244-P-HYD-REV3**

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**Ground Covers (selected nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.0000	0.0000	0.0000	0.0000	0.6700	0.6700	EAST-LOT	DA -1B
0.0000	0.0000	0.0000	0.0000	6.6600	6.6600	Proposed Development	DA -1A
<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>7.3300</b>	<b>7.3300</b>	<b>TOTAL AREA</b>	

**333244-P-HYD-REV3**

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**Pipe Listing (selected nodes)**

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	UD-1	688.60	685.40	250.0	0.0128	0.011	0.0	10.0	0.0	
2	UD-1	691.60	691.50	10.0	0.0100	0.012	0.0	10.0	0.0	

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**Subcatchment DA-1A: DA-1A** Runoff Area=6.6600 ac 0.00% Impervious Runoff Depth=6.88"  
Tc=10.0 min CN=86 Runoff=5.932 cfs 3.821 af

**Subcatchment DA-1B: BYPASS** Runoff Area=0.6700 ac 0.00% Impervious Runoff Depth=7.37"  
Tc=20.0 min CN=90 Runoff=0.610 cfs 0.411 af

**Pond B-1: EXISTING BASIN** Peak Elev=689.51' Storage=535,224 cf Inflow=60.977 cfs 18.716 af  
Outflow=4.200 cfs 14.170 af

**Pond UD-1: UNDERGROUND DETENTION** Peak Elev=696.29' Storage=44,160 cf Inflow=5.932 cfs 3.821 af  
Outflow=4.288 cfs 3.507 af

lations\HYDROLOGY\HYDROGRAPH FILES\333244-X-HYD Subcat P-SS Hydrograph Table.csv Inflow=52.001 cfs 4.071 af  
Primary=52.001 cfs 4.071 af

\HYDROLOGY\HYDROGRAPH FILES\333244-P-HYD-REV3 Subcat X-1 Hydrograph Table.csv Inflow=16.372 cfs 10.728 af  
Primary=16.372 cfs 10.728 af

**Total Runoff Area = 7.3300 ac Runoff Volume = 4.232 af Average Runoff Depth = 6.93"**  
**100.00% Pervious = 7.3300 ac 0.00% Impervious = 0.0000 ac**

### Summary for Subcatchment DA-1A: DA-1A

Runoff = 5.932 cfs @ 15.70 hrs, Volume= 3.821 af, Depth= 6.88"  
 Routed to Pond UD-1 : UNDERGROUND DETENTION

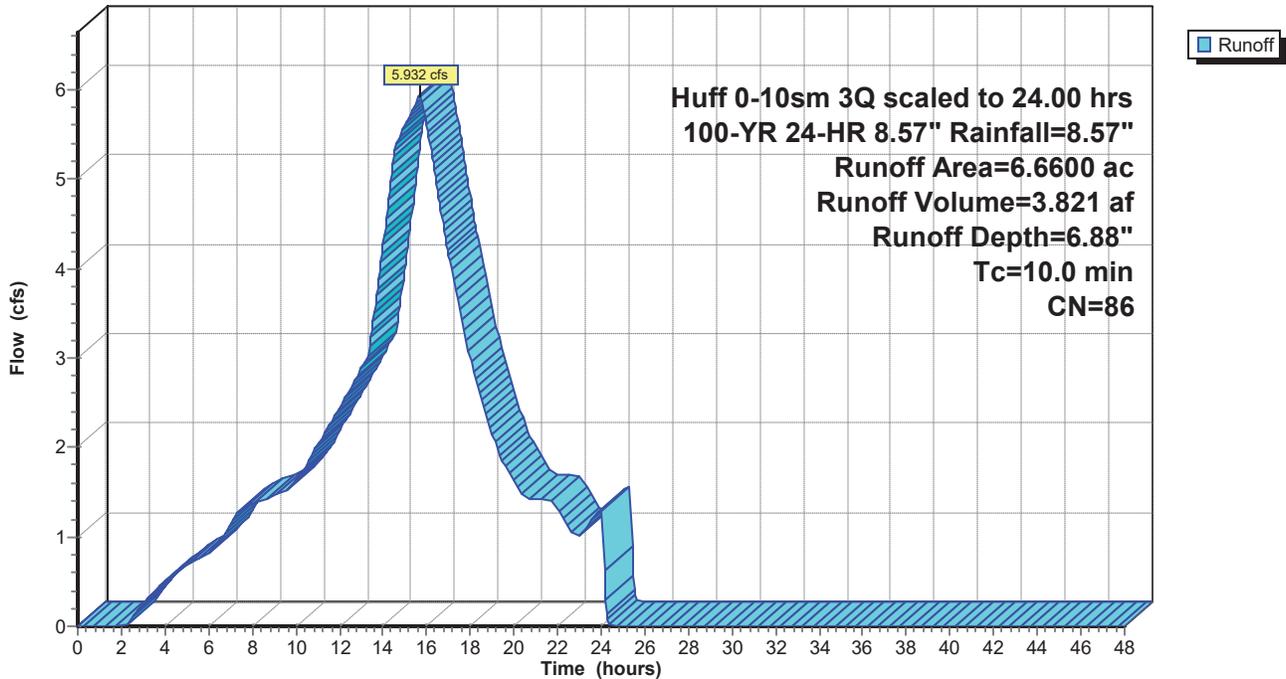
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm 3Q scaled to 24.00 hrs 100-YR 24-HR 8.57" Rainfall=8.57"

Area (ac)	CN	Description
* 6.6600	86	Proposed Development
6.6600		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					<b>Direct Entry, Tc</b>

### Subcatchment DA-1A: DA-1A

Hydrograph



**Hydrograph for Subcatchment DA-1A: DA-1A**

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.000	26.00	8.57	6.88	0.000
0.50	0.02	0.00	0.000	26.50	8.57	6.88	0.000
1.00	0.09	0.00	0.000	27.00	8.57	6.88	0.000
1.50	0.20	0.00	0.000	27.50	8.57	6.88	0.000
2.00	0.30	0.00	0.000	28.00	8.57	6.88	0.000
2.50	0.41	0.00	0.092	28.50	8.57	6.88	0.000
3.00	0.52	0.02	0.253	29.00	8.57	6.88	0.000
3.50	0.63	0.05	0.388	29.50	8.57	6.88	0.000
4.00	0.74	0.08	0.501	30.00	8.57	6.88	0.000
4.50	0.85	0.13	0.597	30.50	8.57	6.88	0.000
5.00	0.96	0.18	0.679	31.00	8.57	6.88	0.000
5.50	1.07	0.23	0.750	31.50	8.57	6.88	0.000
6.00	1.17	0.29	0.812	32.00	8.57	6.88	0.000
6.50	1.29	0.36	0.952	32.50	8.57	6.88	0.000
7.00	1.42	0.44	1.139	33.00	8.57	6.88	0.000
7.50	1.57	0.54	1.299	33.50	8.57	6.88	0.000
8.00	1.71	0.64	1.362	34.00	8.57	6.88	0.000
8.50	1.86	0.74	1.415	34.50	8.57	6.88	0.000
9.00	2.00	0.85	1.461	35.00	8.57	6.88	0.000
9.50	2.15	0.96	1.502	35.50	8.57	6.88	0.000
10.00	2.30	1.08	1.617	36.00	8.57	6.88	0.000
10.50	2.46	1.21	1.817	36.50	8.57	6.88	0.000
11.00	2.64	1.36	2.022	37.00	8.57	6.88	0.000
11.50	2.84	1.52	2.232	37.50	8.57	6.88	0.000
12.00	3.05	1.70	2.445	38.00	8.57	6.88	0.000
12.50	3.27	1.90	2.661	38.50	8.57	6.88	0.000
13.00	3.51	2.11	2.879	39.00	8.57	6.88	0.000
13.50	3.78	2.34	3.314	39.50	8.57	6.88	0.000
14.00	4.11	2.65	4.273	40.00	8.57	6.88	0.000
14.50	4.52	3.03	5.254	40.50	8.57	6.88	0.000
15.00	4.97	3.44	5.599	41.00	8.57	6.88	0.000
15.50	5.43	3.87	<b>5.847</b>	41.50	8.57	6.88	0.000
16.00	5.88	4.30	<b>5.614</b>	42.00	8.57	6.88	0.000
16.50	6.28	4.67	4.876	42.50	8.57	6.88	0.000
17.00	6.61	4.99	4.144	43.00	8.57	6.88	0.000
17.50	6.89	5.26	3.569	43.50	8.57	6.88	0.000
18.00	7.13	5.50	2.992	44.00	8.57	6.88	0.000
18.50	7.34	5.69	2.546	44.50	8.57	6.88	0.000
19.00	7.51	5.86	2.158	45.00	8.57	6.88	0.000
19.50	7.65	6.00	1.827	45.50	8.57	6.88	0.000
20.00	7.78	6.12	1.631	46.00	8.57	6.88	0.000
20.50	7.90	6.23	1.439	46.50	8.57	6.88	0.000
21.00	8.00	6.34	1.416	47.00	8.57	6.88	0.000
21.50	8.11	6.44	1.417	47.50	8.57	6.88	0.000
22.00	8.22	6.54	1.321	48.00	8.57	6.88	0.000
22.50	8.31	6.63	1.125				
23.00	8.38	6.70	0.975				
23.50	8.47	6.79	1.162				
24.00	<b>8.57</b>	<b>6.88</b>	1.360				
24.50	8.57	6.88	0.002				
25.00	8.57	6.88	0.000				
25.50	8.57	6.88	0.000				

### Summary for Subcatchment DA-1B: BYPASS

Runoff = 0.610 cfs @ 15.80 hrs, Volume= 0.411 af, Depth= 7.37"  
 Routed to Pond B-1 : EXISTING BASIN

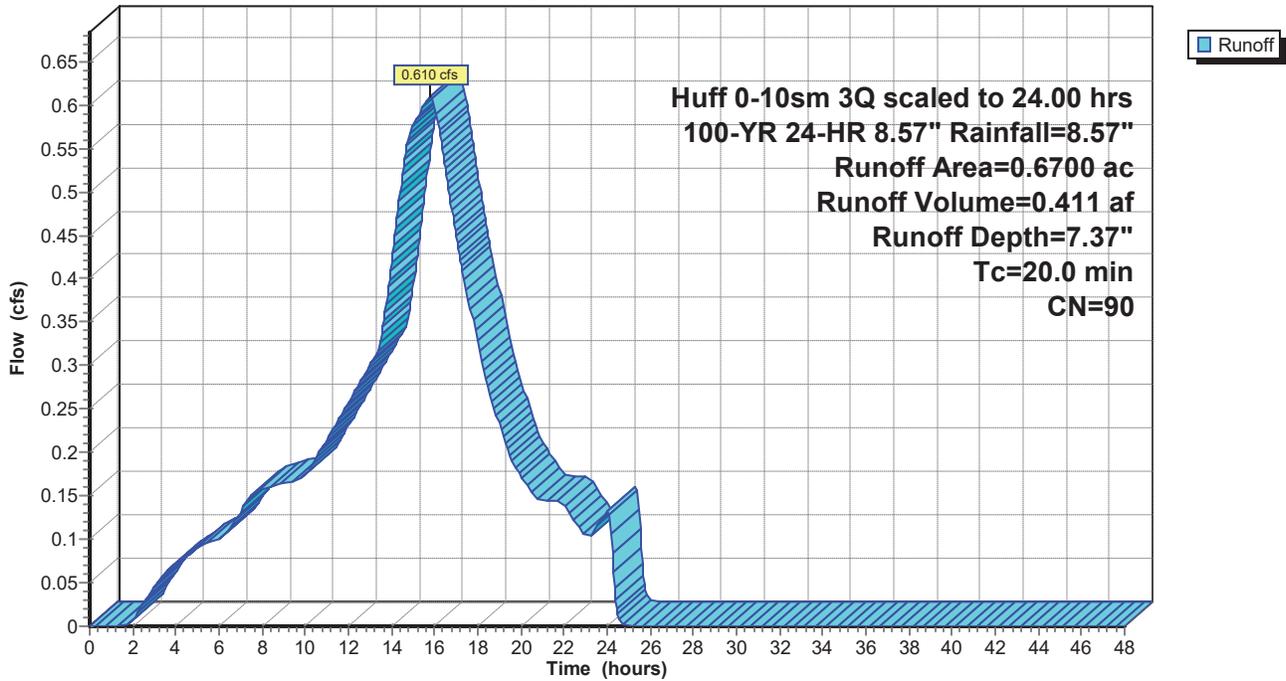
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
 Huff 0-10sm 3Q scaled to 24.00 hrs 100-YR 24-HR 8.57" Rainfall=8.57"

Area (ac)	CN	Description
* 0.6700	90	EAST-LOT
0.6700		100.00% Pervious Area

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

### Subcatchment DA-1B: BYPASS

Hydrograph



**Hydrograph for Subcatchment DA-1B: BYPASS**

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.000	26.00	8.57	7.37	0.000
0.50	0.02	0.00	0.000	26.50	8.57	7.37	0.000
1.00	0.09	0.00	0.000	27.00	8.57	7.37	0.000
1.50	0.20	0.00	0.000	27.50	8.57	7.37	0.000
2.00	0.30	0.01	0.006	28.00	8.57	7.37	0.000
2.50	0.41	0.03	0.028	28.50	8.57	7.37	0.000
3.00	0.52	0.06	0.046	29.00	8.57	7.37	0.000
3.50	0.63	0.11	0.061	29.50	8.57	7.37	0.000
4.00	0.74	0.16	0.072	30.00	8.57	7.37	0.000
4.50	0.85	0.23	0.082	30.50	8.57	7.37	0.000
5.00	0.96	0.29	0.090	31.00	8.57	7.37	0.000
5.50	1.07	0.36	0.096	31.50	8.57	7.37	0.000
6.00	1.17	0.44	0.101	32.00	8.57	7.37	0.000
6.50	1.29	0.52	0.112	32.50	8.57	7.37	0.000
7.00	1.42	0.62	0.132	33.00	8.57	7.37	0.000
7.50	1.57	0.74	0.151	33.50	8.57	7.37	0.000
8.00	1.71	0.85	0.157	34.00	8.57	7.37	0.000
8.50	1.86	0.97	0.162	34.50	8.57	7.37	0.000
9.00	2.00	1.09	0.165	35.00	8.57	7.37	0.000
9.50	2.15	1.22	0.168	35.50	8.57	7.37	0.000
10.00	2.30	1.35	0.175	36.00	8.57	7.37	0.000
10.50	2.46	1.50	0.194	36.50	8.57	7.37	0.000
11.00	2.64	1.66	0.215	37.00	8.57	7.37	0.000
11.50	2.84	1.83	0.236	37.50	8.57	7.37	0.000
12.00	3.05	2.03	0.257	38.00	8.57	7.37	0.000
12.50	3.27	2.23	0.279	38.50	8.57	7.37	0.000
13.00	3.51	2.46	0.300	39.00	8.57	7.37	0.000
13.50	3.78	2.71	0.329	39.50	8.57	7.37	0.000
14.00	4.11	3.03	0.419	40.00	8.57	7.37	0.000
14.50	4.52	3.42	0.520	40.50	8.57	7.37	0.000
15.00	4.97	3.85	0.575	41.00	8.57	7.37	0.000
15.50	5.43	4.29	<b>0.599</b>	41.50	8.57	7.37	0.000
16.00	5.88	4.73	<b>0.598</b>	42.00	8.57	7.37	0.000
16.50	6.28	5.11	0.526	42.50	8.57	7.37	0.000
17.00	6.61	5.44	0.448	43.00	8.57	7.37	0.000
17.50	6.89	5.72	0.385	43.50	8.57	7.37	0.000
18.00	7.13	5.95	0.325	44.00	8.57	7.37	0.000
18.50	7.34	6.15	0.274	44.50	8.57	7.37	0.000
19.00	7.51	6.32	0.233	45.00	8.57	7.37	0.000
19.50	7.65	6.46	0.195	45.50	8.57	7.37	0.000
20.00	7.78	6.59	0.173	46.00	8.57	7.37	0.000
20.50	7.90	6.70	0.153	46.50	8.57	7.37	0.000
21.00	8.00	6.81	0.145	47.00	8.57	7.37	0.000
21.50	8.11	6.92	0.145	47.50	8.57	7.37	0.000
22.00	8.22	7.02	0.140	48.00	8.57	7.37	0.000
22.50	8.31	7.11	0.121				
23.00	8.38	7.18	0.102				
23.50	8.47	7.27	0.113				
24.00	<b>8.57</b>	<b>7.37</b>	0.132				
24.50	8.57	7.37	0.014				
25.00	8.57	7.37	0.000				
25.50	8.57	7.37	0.000				

**Summary for Pond B-1: EXISTING BASIN**

[44] Hint: Outlet device #1 is below defined storage  
 [79] Warning: Submerged Pond UD-1 Primary device # 1 INLET by 0.91'

Inflow Area = 7.3300 ac, 0.00% Impervious, Inflow Depth = 30.64" for 100-YR 24-HR 8.57" event  
 Inflow = 60.977 cfs @ 12.12 hrs, Volume= 18.716 af  
 Outflow = 4.200 cfs @ 24.29 hrs, Volume= 14.170 af, Atten= 93%, Lag= 730.3 min  
**Primary = 4.200 cfs @ 24.29 hrs, Volume= 14.170 af**  
 Routed to nonexistent node O-1

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
**Peak Elev= 689.51' @ 24.29 hrs Surf.Area= 127,769 sf Storage= 535,224 cf**

Plug-Flow detention time= 808.2 min calculated for 14.170 af (76% of inflow)  
 Center-of-Mass det. time= 698.7 min ( 1,602.9 - 904.2 )

Volume	Invert	Avail.Storage	Storage Description
#1	683.00'	735,927 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

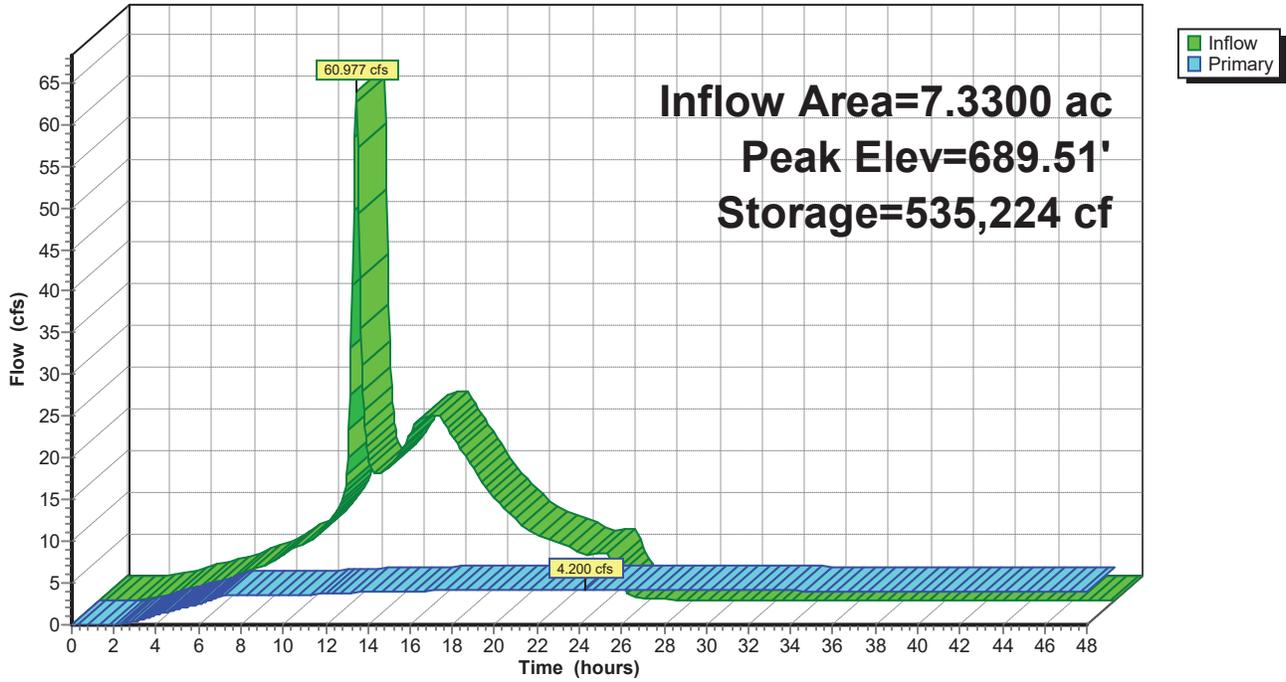
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
683.00	3,919	0	0
684.00	31,264	17,592	17,592
685.00	63,409	47,337	64,928
686.00	94,420	78,915	143,843
687.00	104,848	99,634	243,477
688.00	113,712	109,280	352,757
689.00	122,845	118,279	471,035
690.00	132,457	127,651	598,686
691.00	142,025	137,241	735,927

Device	Routing	Invert	Outlet Devices
#1	Primary	669.53'	<b>6.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

**Primary OutFlow** Max=4.200 cfs @ 24.29 hrs HW=689.51' (Free Discharge)  
 ↑1=Orifice/Grate (Orifice Controls 4.200 cfs @ 21.39 fps)

### Pond B-1: EXISTING BASIN

Hydrograph



**Hydrograph for Pond B-1: EXISTING BASIN**

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.000	0	683.00	0.000
1.00	0.000	0	683.00	0.000
2.00	0.006	1	683.00	0.004
3.00	0.413	47	683.01	0.400
4.00	1.230	140	683.03	1.202
5.00	1.915	220	683.04	1.892
6.00	2.482	287	683.06	2.464
7.00	3.469	400	683.08	3.436
8.00	4.478	2,165	683.28	3.473
9.00	6.039	8,436	683.65	3.522
10.00	7.221	19,600	684.06	3.573
11.00	9.941	37,135	684.50	3.627
12.00	<b>46.834</b>	82,420	685.26	3.720
13.00	<b>15.083</b>	178,644	686.36	3.850
14.00	16.815	221,061	686.78	3.898
15.00	21.482	275,635	687.30	3.958
16.00	22.544	340,625	687.89	4.024
17.00	18.349	399,701	688.41	4.080
18.00	14.537	444,206	688.78	4.121
19.00	11.355	475,956	689.04	4.149
20.00	8.938	497,515	689.21	4.168
21.00	7.494	511,998	689.33	4.180
22.00	6.856	522,734	689.41	4.189
23.00	5.258	529,465	689.47	4.195
24.00	5.868	<b>534,237</b>	<b>689.50</b>	<b>4.199</b>
25.00	0.523	<b>530,086</b>	<b>689.47</b>	<b>4.195</b>
26.00	0.213	516,215	689.36	4.184
27.00	0.109	501,726	689.25	4.171
28.00	0.063	487,030	689.13	4.159
29.00	0.043	472,272	689.01	4.146
30.00	0.030	457,500	688.89	4.133
31.00	0.020	442,734	688.77	4.120
32.00	0.016	427,991	688.64	4.106
33.00	0.014	413,288	688.52	4.093
34.00	0.013	398,627	688.40	4.079
35.00	0.011	384,008	688.27	4.066
36.00	0.010	369,435	688.15	4.052
37.00	0.008	354,907	688.02	4.038
38.00	0.007	340,425	687.89	4.023
39.00	0.006	325,992	687.76	4.009
40.00	0.006	311,607	687.63	3.995
41.00	0.005	297,271	687.50	3.980
42.00	0.004	282,987	687.37	3.965
43.00	0.004	268,753	687.24	3.950
44.00	0.003	254,572	687.11	3.935
45.00	0.003	240,445	686.97	3.920
46.00	0.003	226,371	686.84	3.904
47.00	0.002	212,352	686.70	3.889
48.00	0.002	198,388	686.56	3.873

**Stage-Area-Storage for Pond B-1: EXISTING BASIN**

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
683.00	3,919	0	688.20	115,539	375,682
683.10	6,654	529	688.30	116,452	387,281
683.20	9,388	1,331	688.40	117,365	398,972
683.30	12,122	2,406	688.50	118,279	410,754
683.40	14,857	3,755	688.60	119,192	422,628
683.50	17,592	5,378	688.70	120,105	434,592
683.60	20,326	7,274	688.80	121,018	446,649
683.70	23,061	9,443	688.90	121,932	458,796
683.80	25,795	11,886	689.00	122,845	471,035
683.90	28,529	14,602	689.10	123,806	483,368
684.00	31,264	17,592	689.20	124,767	495,796
684.10	34,479	20,879	689.30	125,729	508,321
684.20	37,693	24,487	689.40	126,690	520,942
684.30	40,907	28,417	689.50	127,651	533,659
684.40	44,122	32,669	689.60	128,612	546,472
684.50	47,337	37,242	689.70	129,573	559,381
684.60	50,551	42,136	689.80	130,535	572,387
684.70	53,766	47,352	689.90	131,496	585,488
684.80	56,980	52,889	690.00	132,457	598,686
684.90	60,194	58,748	690.10	133,414	611,980
685.00	63,409	64,928	690.20	134,371	625,369
685.10	66,510	71,424	690.30	135,327	638,854
685.20	69,611	78,230	690.40	136,284	652,434
685.30	72,712	85,346	690.50	137,241	666,111
685.40	75,813	92,772	690.60	138,198	679,882
685.50	78,915	100,509	690.70	139,155	693,750
685.60	82,016	108,555	690.80	140,111	707,713
685.70	85,117	116,912	690.90	141,068	721,772
685.80	88,218	125,579	691.00	<b>142,025</b>	<b>735,927</b>
685.90	91,319	134,556			
686.00	94,420	143,843			
686.10	95,463	153,337			
686.20	96,506	162,935			
686.30	97,548	172,638			
686.40	98,591	182,445			
686.50	99,634	192,356			
686.60	100,677	202,372			
686.70	101,720	212,491			
686.80	102,762	222,715			
686.90	103,805	233,044			
687.00	104,848	243,477			
687.10	105,734	254,006			
687.20	106,621	264,623			
687.30	107,507	275,330			
687.40	108,394	286,125			
687.50	109,280	297,009			
687.60	110,166	307,981			
687.70	111,053	319,042			
687.80	111,939	330,191			
687.90	112,826	341,430			
688.00	113,712	352,757			
688.10	114,625	364,173			

**Summary for Pond UD-1: UNDERGROUND DETENTION**

Inflow Area = 6.6600 ac, 0.00% Impervious, Inflow Depth = 6.88" for 100-YR 24-HR 8.57" event  
 Inflow = 5.932 cfs @ 15.70 hrs, Volume= 3.821 af  
 Outflow = 4.288 cfs @ 16.89 hrs, Volume= 3.507 af, Atten= 28%, Lag= 71.6 min  
**Primary = 4.288 cfs @ 16.89 hrs, Volume= 3.507 af**  
 Routed to Pond B-1 : EXISTING BASIN

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs  
**Peak Elev= 696.29' @ 16.89 hrs Surf.Area= 6,500 sf Storage= 44,160 cf**

Plug-Flow detention time= 185.2 min calculated for 3.507 af (92% of inflow)  
 Center-of-Mass det. time= 143.3 min ( 1,029.6 - 886.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	689.50'	48,750 cf	<b>Custom StormTrap (Prismatic)</b> Listed below (Recalc)

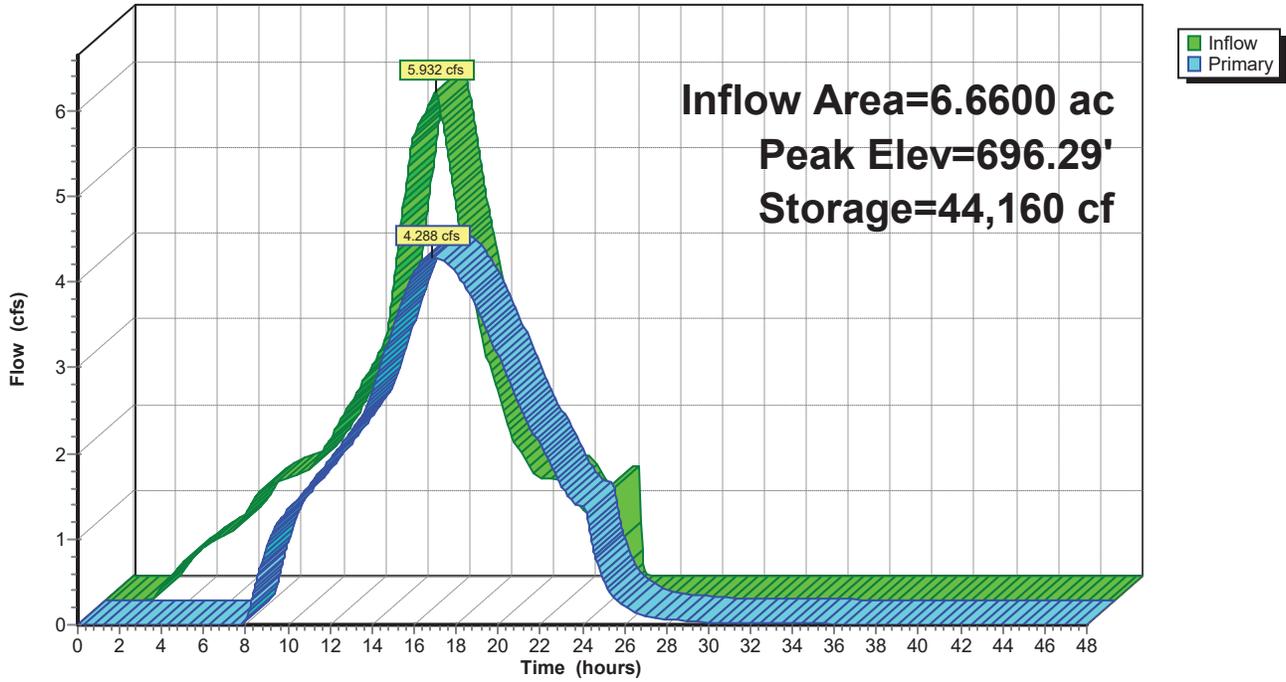
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
689.50	6,500	0	0
697.00	6,500	48,750	48,750

Device	Routing	Invert	Outlet Devices
#1	Primary	688.60'	<b>10.0" Round Culvert</b> L= 250.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 688.60' / 685.40' S= 0.0128 '/' Cc= 0.900 n= 0.011, Flow Area= 0.55 sf
#2	Device 1	691.60'	<b>10.0" Round Culvert</b> L= 10.0' Ke= 0.900 Inlet / Outlet Invert= 691.60' / 691.50' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.55 sf

**Primary OutFlow** Max=4.288 cfs @ 16.89 hrs HW=696.29' (Free Discharge)  
 1=Culvert (Passes 4.288 cfs of 4.611 cfs potential flow)  
 2=Culvert (Inlet Controls 4.288 cfs @ 7.86 fps)

### Pond UD-1: UNDERGROUND DETENTION

Hydrograph



**Hydrograph for Pond UD-1: UNDERGROUND DETENTION**

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.000	0	689.50	0.000
1.00	0.000	0	689.50	0.000
2.00	0.000	0	689.50	0.000
3.00	0.253	361	689.56	0.000
4.00	0.501	1,744	689.77	0.000
5.00	0.679	3,884	690.10	0.000
6.00	0.812	6,580	690.51	0.000
7.00	1.139	10,026	691.04	0.000
8.00	1.362	14,620	691.75	0.069
9.00	1.461	17,886	692.25	0.923
10.00	1.617	19,133	692.44	1.343
11.00	2.022	20,343	692.63	1.623
12.00	2.445	21,993	692.88	1.930
13.00	2.879	24,046	693.20	2.254
14.00	4.273	27,497	693.73	2.714
15.00	<b>5.599</b>	34,750	694.85	3.487
16.00	<b>5.614</b>	<b>41,828</b>	<b>695.94</b>	<b>4.104</b>
17.00	4.144	<b>44,132</b>	<b>696.29</b>	<b>4.286</b>
18.00	2.992	41,795	695.93	4.101
19.00	2.158	36,913	695.18	3.687
20.00	1.631	31,268	694.31	3.140
21.00	1.416	26,321	693.55	2.567
22.00	1.321	23,012	693.04	2.097
23.00	0.975	20,352	692.63	1.625
24.00	1.360	19,268	692.46	1.379
25.00	0.000	16,619	692.06	0.517
26.00	0.000	15,416	691.87	0.213
27.00	0.000	14,867	691.79	0.109
28.00	0.000	14,568	691.74	0.063
29.00	0.000	14,378	691.71	0.043
30.00	0.000	14,248	691.69	0.030
31.00	0.000	14,160	691.68	0.020
32.00	0.000	14,096	691.67	0.016
33.00	0.000	14,041	691.66	0.014
34.00	0.000	13,992	691.65	0.013
35.00	0.000	13,950	691.65	0.011
36.00	0.000	13,913	691.64	0.010
37.00	0.000	13,880	691.64	0.008
38.00	0.000	13,852	691.63	0.007
39.00	0.000	13,827	691.63	0.006
40.00	0.000	13,805	691.62	0.006
41.00	0.000	13,786	691.62	0.005
42.00	0.000	13,769	691.62	0.004
43.00	0.000	13,754	691.62	0.004
44.00	0.000	13,741	691.61	0.003
45.00	0.000	13,730	691.61	0.003
46.00	0.000	13,720	691.61	0.003
47.00	0.000	13,711	691.61	0.002
48.00	0.000	13,704	691.61	0.002

**Stage-Area-Storage for Pond UD-1: UNDERGROUND DETENTION**

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
689.50	6,500	0	694.70	6,500	33,800
689.60	6,500	650	694.80	6,500	34,450
689.70	6,500	1,300	694.90	6,500	35,100
689.80	6,500	1,950	695.00	6,500	35,750
689.90	6,500	2,600	695.10	6,500	36,400
690.00	6,500	3,250	695.20	6,500	37,050
690.10	6,500	3,900	695.30	6,500	37,700
690.20	6,500	4,550	695.40	6,500	38,350
690.30	6,500	5,200	695.50	6,500	39,000
690.40	6,500	5,850	695.60	6,500	39,650
690.50	6,500	6,500	695.70	6,500	40,300
690.60	6,500	7,150	695.80	6,500	40,950
690.70	6,500	7,800	695.90	6,500	41,600
690.80	6,500	8,450	696.00	6,500	42,250
690.90	6,500	9,100	696.10	6,500	42,900
691.00	6,500	9,750	696.20	6,500	43,550
691.10	6,500	10,400	696.30	6,500	44,200
691.20	6,500	11,050	696.40	6,500	44,850
691.30	6,500	11,700	696.50	6,500	45,500
691.40	6,500	12,350	696.60	6,500	46,150
691.50	6,500	13,000	696.70	6,500	46,800
691.60	6,500	13,650	696.80	6,500	47,450
691.70	6,500	14,300	696.90	6,500	48,100
691.80	6,500	14,950	697.00	6,500	<b>48,750</b>
691.90	6,500	15,600			
692.00	6,500	16,250			
692.10	6,500	16,900			
692.20	6,500	17,550			
692.30	6,500	18,200			
692.40	6,500	18,850			
692.50	6,500	19,500			
692.60	6,500	20,150			
692.70	6,500	20,800			
692.80	6,500	21,450			
692.90	6,500	22,100			
693.00	6,500	22,750			
693.10	6,500	23,400			
693.20	6,500	24,050			
693.30	6,500	24,700			
693.40	6,500	25,350			
693.50	6,500	26,000			
693.60	6,500	26,650			
693.70	6,500	27,300			
693.80	6,500	27,950			
693.90	6,500	28,600			
694.00	6,500	29,250			
694.10	6,500	29,900			
694.20	6,500	30,550			
694.30	6,500	31,200			
694.40	6,500	31,850			
694.50	6,500	32,500			
694.60	6,500	33,150			

### Summary for Link P-SS: SS HYDROGRAPH

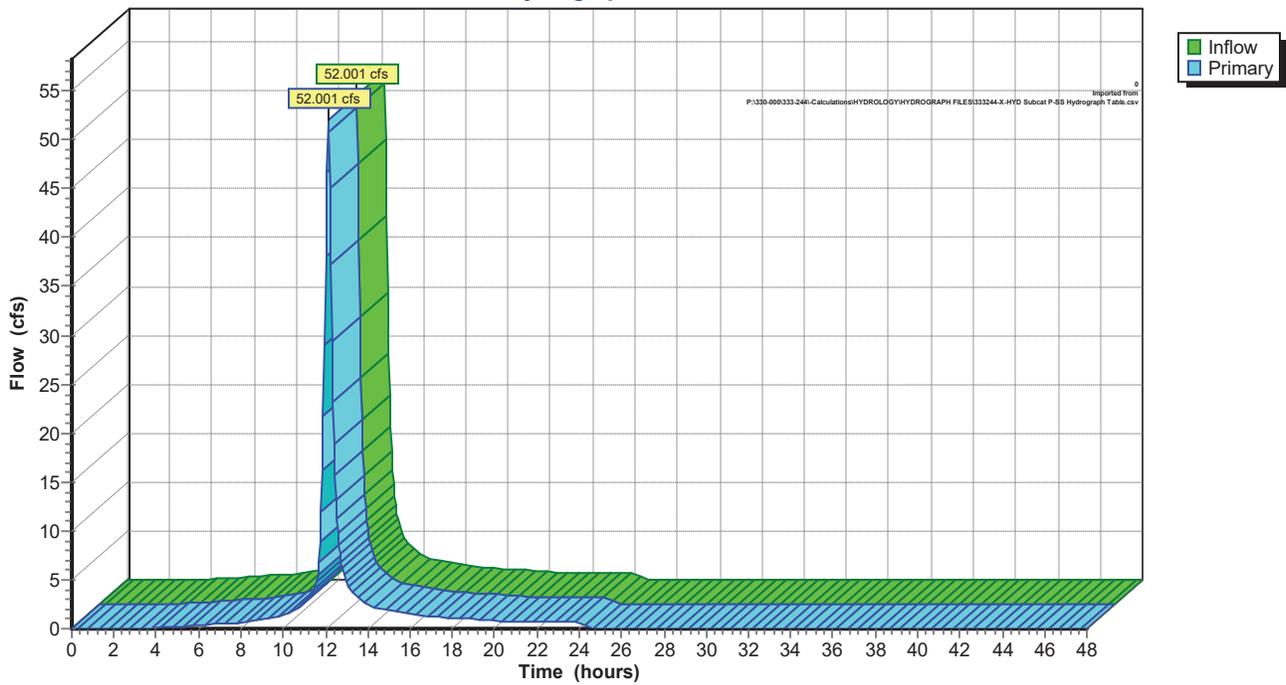
Inflow = 52.001 cfs @ 12.12 hrs, Volume= 4.071 af  
Primary = 52.001 cfs @ 12.12 hrs, Volume= 4.071 af, Atten= 0%, Lag= 0.0 min  
Routed to Pond B-1 : EXISTING BASIN

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

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### Link P-SS: SS HYDROGRAPH

Hydrograph



**Hydrograph for Link P-SS: SS HYDROGRAPH**

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.000	0.00	0.000	26.00	0.000	0.00	0.000
0.50	0.000	0.00	0.000	26.50	0.000	0.00	0.000
1.00	0.000	0.00	0.000	27.00	0.000	0.00	0.000
1.50	0.000	0.00	0.000	27.50	0.000	0.00	0.000
2.00	0.000	0.00	0.000	28.00	0.000	0.00	0.000
2.50	0.000	0.00	0.000	28.50	0.000	0.00	0.000
3.00	0.000	0.00	0.000	29.00	0.000	0.00	0.000
3.50	0.006	0.00	0.006	29.50	0.000	0.00	0.000
4.00	0.057	0.00	0.057	30.00	0.000	0.00	0.000
4.50	0.117	0.00	0.117	30.50	0.000	0.00	0.000
5.00	0.182	0.00	0.182	31.00	0.000	0.00	0.000
5.50	0.253	0.00	0.253	31.50	0.000	0.00	0.000
6.00	0.327	0.00	0.327	32.00	0.000	0.00	0.000
6.50	0.405	0.00	0.405	32.50	0.000	0.00	0.000
7.00	0.485	0.00	0.485	33.00	0.000	0.00	0.000
7.50	0.566	0.00	0.566	33.50	0.000	0.00	0.000
8.00	0.649	0.00	0.649	34.00	0.000	0.00	0.000
8.50	0.789	0.00	0.789	34.50	0.000	0.00	0.000
9.00	1.024	0.00	1.024	35.00	0.000	0.00	0.000
9.50	1.209	0.00	1.209	35.50	0.000	0.00	0.000
10.00	1.420	0.00	1.420	36.00	0.000	0.00	0.000
10.50	1.906	0.00	1.906	36.50	0.000	0.00	0.000
11.00	2.705	0.00	2.705	37.00	0.000	0.00	0.000
11.50	4.367	0.00	4.367	37.50	0.000	0.00	0.000
12.00	<b>38.047</b>	0.00	<b>38.047</b>	38.00	0.000	0.00	0.000
12.50	<b>13.182</b>	0.00	<b>13.182</b>	38.50	0.000	0.00	0.000
13.00	4.687	0.00	4.687	39.00	0.000	0.00	0.000
13.50	3.279	0.00	3.279	39.50	0.000	0.00	0.000
14.00	2.539	0.00	2.539	40.00	0.000	0.00	0.000
14.50	2.106	0.00	2.106	40.50	0.000	0.00	0.000
15.00	1.894	0.00	1.894	41.00	0.000	0.00	0.000
15.50	1.689	0.00	1.689	41.50	0.000	0.00	0.000
16.00	1.483	0.00	1.483	42.00	0.000	0.00	0.000
16.50	1.333	0.00	1.333	42.50	0.000	0.00	0.000
17.00	1.257	0.00	1.257	43.00	0.000	0.00	0.000
17.50	1.183	0.00	1.183	43.50	0.000	0.00	0.000
18.00	1.110	0.00	1.110	44.00	0.000	0.00	0.000
18.50	1.037	0.00	1.037	44.50	0.000	0.00	0.000
19.00	0.964	0.00	0.964	45.00	0.000	0.00	0.000
19.50	0.890	0.00	0.890	45.50	0.000	0.00	0.000
20.00	0.816	0.00	0.816	46.00	0.000	0.00	0.000
20.50	0.766	0.00	0.766	46.50	0.000	0.00	0.000
21.00	0.751	0.00	0.751	47.00	0.000	0.00	0.000
21.50	0.736	0.00	0.736	47.50	0.000	0.00	0.000
22.00	0.721	0.00	0.721	48.00	0.000	0.00	0.000
22.50	0.706	0.00	0.706				
23.00	0.692	0.00	0.692				
23.50	0.677	0.00	0.677				
24.00	0.662	0.00	0.662				
24.50	0.066	0.00	0.066				
25.00	0.001	0.00	0.001				
25.50	0.000	0.00	0.000				

### Summary for Link X-JE: JE HYDROGRAOH

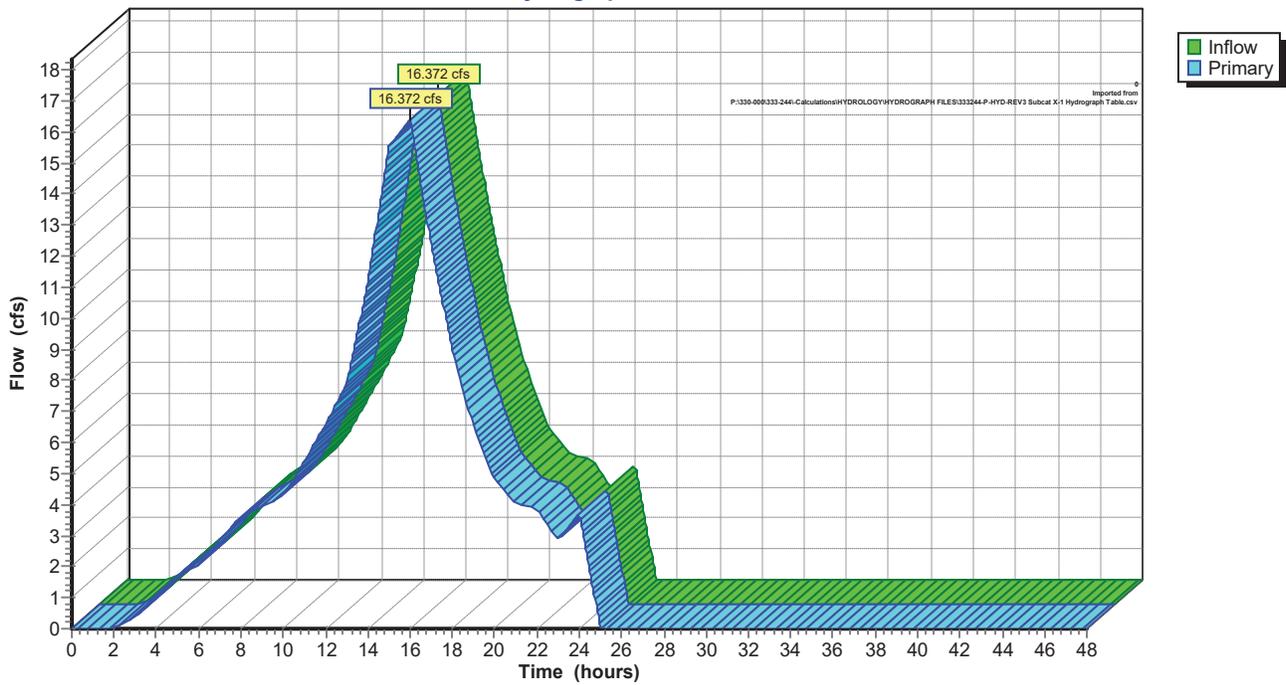
Inflow = 16.372 cfs @ 15.98 hrs, Volume= 10.728 af  
 Primary = 16.372 cfs @ 15.98 hrs, Volume= 10.728 af, Atten= 0%, Lag= 0.0 min  
 Routed to Pond B-1 : EXISTING BASIN

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

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### Link X-JE: JE HYDROGRAOH

Hydrograph



**Hydrograph for Link X-JE: JE HYDROGRAOH**

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.000	0.00	0.000	26.00	0.000	0.00	0.000
0.50	0.000	0.00	0.000	26.50	0.000	0.00	0.000
1.00	0.000	0.00	0.000	27.00	0.000	0.00	0.000
1.50	0.000	0.00	0.000	27.50	0.000	0.00	0.000
2.00	0.000	0.00	0.000	28.00	0.000	0.00	0.000
2.50	0.183	0.00	0.183	28.50	0.000	0.00	0.000
3.00	0.367	0.00	0.367	29.00	0.000	0.00	0.000
3.50	0.734	0.00	0.734	29.50	0.000	0.00	0.000
4.00	1.101	0.00	1.101	30.00	0.000	0.00	0.000
4.50	1.372	0.00	1.372	30.50	0.000	0.00	0.000
5.00	1.643	0.00	1.643	31.00	0.000	0.00	0.000
5.50	1.849	0.00	1.849	31.50	0.000	0.00	0.000
6.00	2.054	0.00	2.054	32.00	0.000	0.00	0.000
6.50	2.453	0.00	2.453	32.50	0.000	0.00	0.000
7.00	2.852	0.00	2.852	33.00	0.000	0.00	0.000
7.50	3.228	0.00	3.228	33.50	0.000	0.00	0.000
8.00	3.603	0.00	3.603	34.00	0.000	0.00	0.000
8.50	3.765	0.00	3.765	34.50	0.000	0.00	0.000
9.00	3.927	0.00	3.927	35.00	0.000	0.00	0.000
9.50	4.106	0.00	4.106	35.50	0.000	0.00	0.000
10.00	4.284	0.00	4.284	36.00	0.000	0.00	0.000
10.50	4.841	0.00	4.841	36.50	0.000	0.00	0.000
11.00	5.398	0.00	5.398	37.00	0.000	0.00	0.000
11.50	5.999	0.00	5.999	37.50	0.000	0.00	0.000
12.00	6.600	0.00	6.600	38.00	0.000	0.00	0.000
12.50	7.220	0.00	7.220	38.50	0.000	0.00	0.000
13.00	7.841	0.00	7.841	39.00	0.000	0.00	0.000
13.50	9.492	0.00	9.492	39.50	0.000	0.00	0.000
14.00	11.143	0.00	11.143	40.00	0.000	0.00	0.000
14.50	13.335	0.00	13.335	40.50	0.000	0.00	0.000
15.00	15.526	0.00	15.526	41.00	0.000	0.00	0.000
15.50	15.943	0.00	15.943	41.50	0.000	0.00	0.000
16.00	<b>16.359</b>	0.00	<b>16.359</b>	42.00	0.000	0.00	0.000
16.50	14.359	0.00	14.359	42.50	0.000	0.00	0.000
17.00	12.358	0.00	12.358	43.00	0.000	0.00	0.000
17.50	10.679	0.00	10.679	43.50	0.000	0.00	0.000
18.00	9.000	0.00	9.000	44.00	0.000	0.00	0.000
18.50	7.736	0.00	7.736	44.50	0.000	0.00	0.000
19.00	6.471	0.00	6.471	45.00	0.000	0.00	0.000
19.50	5.640	0.00	5.640	45.50	0.000	0.00	0.000
20.00	4.809	0.00	4.809	46.00	0.000	0.00	0.000
20.50	4.420	0.00	4.420	46.50	0.000	0.00	0.000
21.00	4.031	0.00	4.031	47.00	0.000	0.00	0.000
21.50	3.965	0.00	3.965	47.50	0.000	0.00	0.000
22.00	3.898	0.00	3.898	48.00	0.000	0.00	0.000
22.50	3.369	0.00	3.369				
23.00	2.840	0.00	2.840				
23.50	3.268	0.00	3.268				
24.00	3.695	0.00	3.695				
24.50	1.850	0.00	1.850				
25.00	0.005	0.00	0.005				
25.50	0.003	0.00	0.003				

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**APPENDIX 4**

**STORM SEWER SIZING CALCULATIONS**

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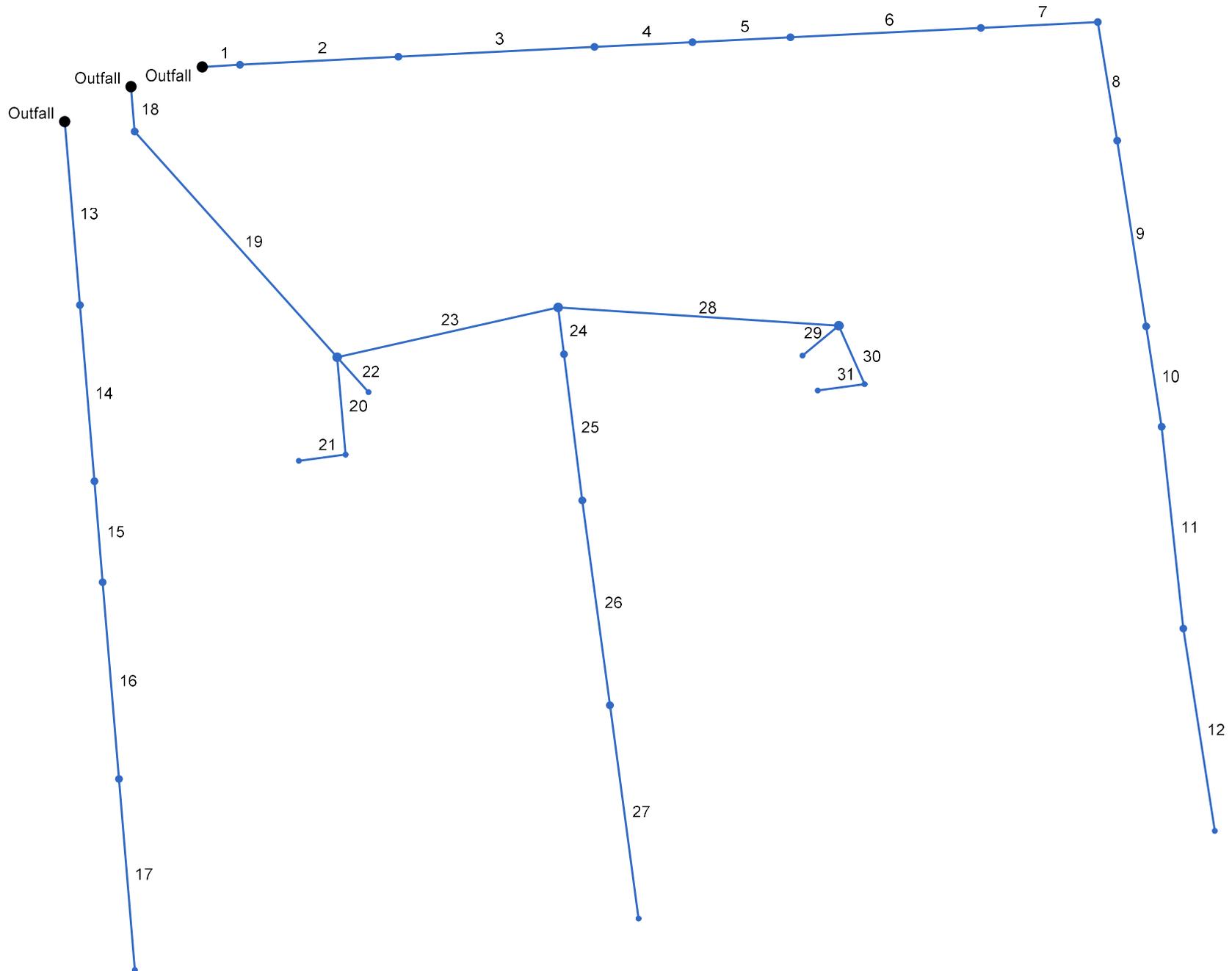
**STORMWATER INLET AREA SUMMARY****ALL SAINTS DEV'L**

CEC PROJECT #333-244

PREPARED BY: MEO 02/06/2025 CHECKED BY: DRAFT

DA	TYPE	TOTAL AREA (SF)	T <sub>c</sub> (MIN)	C	TOTAL AREA (AC)
1	INLET	7883	5	0.55	0.18
2	INLET	10652	5	0.55	0.24
3	INLET	7547	5	0.55	0.17
4	INLET	4700	5	0.55	0.11
5	INLET	6983	5	0.55	0.16
6	INLET	6686	5	0.55	0.15
7	INLET	4291	10	0.60	0.10
8	INLET	38902	10	0.60	0.89
9	INLET	16993	10	0.60	0.39
10	INLET	36760	10	0.60	0.84
11	INLET	33113	10	0.60	0.76
12	INLET	23422	10	0.60	0.54
13	INLET	6826	5	0.55	0.16
14	INLET	5530	5	0.55	0.13
15	INLET	10400	5	0.55	0.24
16	INLET	4801	5	0.55	0.11
17	INLET	10216	5	0.55	0.23
18	INLET	9640	5	0.55	0.22
19	INLET	12865	5	0.60	0.30
20	INLET	20000	5	0.60	0.46
21	INLET	16966	5	0.60	0.39
22	INLET	5511	5	0.60	0.13
23	INLET	5012	5	0.60	0.12
24	INLET	3850	5	0.60	0.09
25	INLET	22751	5	0.60	0.52
26	INLET	16111	5	0.60	0.37
27	INLET	13804	5	0.60	0.32
28	INLET	9154	5	0.60	0.21
29	INLET	1987	5	0.60	0.05
30	INLET	17858	5	0.60	0.41
31	INLET	18547	5	0.60	0.43

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



Project File: 333244-CV01-StormSewers-REV1.stm

Number of lines: 31

Date: 2/7/2025

# 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	20.000	-3.298	Grate	0.00	0.18	0.55	5.0	692.00	0.80	692.16	21	Cir	0.013	0.50	699.00	001
2	1	84.000	0.431	Grate	0.00	0.24	0.55	5.0	692.16	0.80	692.83	21	Cir	0.013	0.50	699.60	002
3	2	104.000	0.000	Grate	0.00	0.17	0.55	5.0	692.83	0.80	693.66	21	Cir	0.013	0.50	700.50	003
4	3	52.000	0.000	Grate	0.00	0.11	0.55	5.0	693.66	0.81	694.08	21	Cir	0.013	0.50	701.10	004
5	4	52.000	0.000	Grate	0.00	0.16	0.55	5.0	694.08	0.81	694.50	21	Cir	0.013	0.50	701.60	005
6	5	101.000	0.015	Grate	0.00	0.15	0.55	5.0	694.50	0.79	695.30	21	Cir	0.013	0.50	702.70	006
7	6	62.000	0.000	Grate	0.00	0.10	0.60	10.0	695.30	0.81	695.80	21	Cir	0.013	1.49	705.10	007
8	7	64.000	83.626	Grate	0.00	0.89	0.60	10.0	695.80	0.80	696.31	21	Cir	0.013	0.50	702.70	008
9	8	100.000	0.447	Grate	0.00	0.39	0.60	10.0	696.31	0.80	697.11	18	Cir	0.013	0.50	702.70	009
10	9	54.000	0.000	Grate	0.00	0.84	0.60	10.0	697.11	0.81	697.55	18	Cir	0.013	0.50	702.00	010
11	10	108.000	2.665	Grate	0.00	0.76	0.60	10.0	697.55	1.11	698.75	15	Cir	0.013	0.50	703.30	011
12	11	109.000	-2.665	Grate	0.00	0.54	0.60	10.0	698.75	2.20	701.15	12	Cir	0.013	1.00	704.40	012
13	End	98.000	85.302	Grate	0.00	0.16	0.55	5.0	693.69	1.60	695.26	12	Cir	0.013	0.50	701.30	013
14	13	94.000	0.000	Grate	0.00	0.13	0.55	5.0	695.26	1.40	696.58	12	Cir	0.013	0.50	701.80	014
15	14	54.000	0.000	Grate	0.00	0.24	0.55	5.0	696.58	1.61	697.45	12	Cir	0.013	0.50	702.00	015
16	15	105.000	0.000	Grate	0.00	0.11	0.55	5.0	697.45	1.60	699.13	12	Cir	0.013	0.50	703.70	016
17	16	102.000	0.000	Grate	0.00	0.23	0.55	5.0	699.13	1.00	700.15	12	Cir	0.013	1.00	703.40	017
18	End	24.000	85.302	Grate	0.00	0.22	0.55	5.0	692.04	1.00	692.28	21	Cir	0.012	0.98	699.60	018
19	18	161.000	-37.063	Grate	0.00	0.30	0.60	5.0	692.28	1.19	694.20	21	Cir	0.013	1.34	701.40	019
20	19	52.000	36.823	Grate	0.00	0.46	0.60	5.0	697.89	1.31	698.57	12	Cir	0.013	1.50	702.07	020
21	20	25.000	87.316	Grate	0.00	0.39	0.60	5.0	698.57	1.00	698.82	12	Cir	0.013	1.00	702.07	021
22	19	25.000	0.000	Grate	0.00	0.13	0.60	5.0	697.65	2.00	698.15	12	Cir	0.013	1.00	701.40	022
23	19	120.000	-60.983	Grate	0.00	0.12	0.60	5.0	694.20	0.40	694.68	18	Cir	0.013	1.68	702.55	023

# 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)	
24	23	25.000	95.615	Grate	0.00	0.09	0.60	5.0	694.68	0.40	694.78	15	Cir	0.013	0.50	702.55	024
25	24	78.503	0.000	Grate	0.00	0.52	0.60	5.0	694.78	0.60	695.25	15	Cir	0.013	0.50	701.80	025
26	25	110.000	-0.493	Grate	0.00	0.37	0.60	5.0	697.28	1.40	698.82	12	Cir	0.013	0.50	703.30	026
27	26	114.531	0.000	Grate	0.00	0.32	0.60	5.0	698.82	1.20	700.20	12	Cir	0.013	1.00	704.20	027
28	23	149.000	16.473	Grate	0.00	0.21	0.60	5.0	697.11	1.00	698.60	15	Cir	0.013	2.04	702.97	028
29	28	25.000	136.640	Grate	0.00	0.05	0.60	5.0	699.22	2.00	699.72	12	Cir	0.013	1.00	702.97	029
30	28	34.000	62.644	Grate	0.00	0.41	0.60	5.0	698.60	1.00	698.94	12	Cir	0.012	1.50	702.69	030
31	30	25.000	106.004	Grate	0.00	0.43	0.55	5.0	698.94	2.00	699.44	12	Cir	0.012	1.00	702.69	031

# Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	1	Grate	699.00	Cir	3.00	3.00	21	Cir	692.16	21	Cir	692.16
2	2	Grate	699.60	Cir	3.00	3.00	21	Cir	692.83	21	Cir	692.83
3	3	Grate	700.50	Cir	3.00	3.00	21	Cir	693.66	21	Cir	693.66
4	4	Grate	701.10	Cir	3.00	3.00	21	Cir	694.08	21	Cir	694.08
5	5	Grate	701.60	Cir	3.00	3.00	21	Cir	694.50	21	Cir	694.50
6	New	Grate	702.70	Cir	3.00	3.00	21	Cir	695.30	21	Cir	695.30
7	6	Grate	705.10	Cir	3.00	3.00	21	Cir	695.80	21	Cir	695.80
8	7	Grate	702.70	Cir	3.00	3.00	21	Cir	696.31	18	Cir	696.31
9	New	Grate	702.70	Cir	3.00	3.00	18	Cir	697.11	18	Cir	697.11
10	8	Grate	702.00	Cir	3.00	3.00	18	Cir	697.55	15	Cir	697.55
11	9	Grate	703.30	Cir	3.00	3.00	15	Cir	698.75	12	Cir	698.75
12	10	Grate	704.40	Cir	2.00	2.00	12	Cir	701.15			
13	11	Grate	701.30	Cir	3.00	3.00	12	Cir	695.26	12	Cir	695.26
14	12	Grate	701.80	Cir	3.00	3.00	12	Cir	696.58	12	Cir	696.58
15	13	Grate	702.00	Cir	3.00	3.00	12	Cir	697.45	12	Cir	697.45
16	14	Grate	703.70	Cir	3.00	3.00	12	Cir	699.13	12	Cir	699.13
17	15	Grate	703.40	Cir	2.00	2.00	12	Cir	700.15			
18	71	Grate	699.60	Cir	3.00	3.00	21	Cir	692.28	21	Cir	692.28
19	16	Grate	701.40	Cir	4.00	4.00	21	Cir	694.20	12 12 18	Cir Cir Cir	697.89 697.65 694.20
20	17	Grate	702.07	Cir	2.00	2.00	12	Cir	698.57	12	Cir	698.57
21	18	Grate	702.07	Cir	2.00	2.00	12	Cir	698.82			
22	19	Grate	701.40	Cir	2.00	2.00	12	Cir	698.15			

# Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
23	20	Grate	702.55	Cir	4.00	4.00	18	Cir	694.68	15 15	Cir Cir	694.68 697.11
24	21	Grate	702.55	Cir	3.00	3.00	15	Cir	694.78	15	Cir	694.78
25	22	Grate	701.80	Cir	3.00	3.00	15	Cir	695.25	12	Cir	697.28
26	23	Grate	703.30	Cir	3.00	3.00	12	Cir	698.82	12	Cir	698.82
27	24	Grate	704.20	Cir	2.00	2.00	12	Cir	700.20			
28	25	Grate	702.97	Cir	4.00	4.00	15	Cir	698.60	12 12	Cir Cir	699.22 698.60
29	26	Grate	702.97	Cir	2.00	2.00	12	Cir	699.72			
30	27	Grate	702.69	Cir	2.00	2.00	12	Cir	698.94	12	Cir	698.94
31	29	Grate	702.69	Cir	2.00	2.00	12	Cir	699.44			

# Storm Sewer Tabulation

Station		Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	20.000	0.18	4.53	0.55	0.10	2.67	5.0	13.2	5.9	15.67	14.17	6.52	21	0.80	692.00	692.16	693.75	693.91	0.00	699.00	001
2	1	84.000	0.24	4.35	0.55	0.13	2.57	5.0	13.0	5.9	15.19	14.15	6.31	21	0.80	692.16	692.83	694.24	695.01	699.00	699.60	002
3	2	104.000	0.17	4.11	0.55	0.09	2.44	5.0	12.7	6.0	14.53	14.15	6.04	21	0.80	692.83	693.66	695.32	696.20	699.60	700.50	003
4	3	52.000	0.11	3.94	0.55	0.06	2.34	5.0	12.5	6.0	14.03	14.24	5.83	21	0.81	693.66	694.08	696.48	696.89	700.50	701.10	004
5	4	52.000	0.16	3.83	0.55	0.09	2.28	5.0	12.4	6.0	13.72	14.24	5.71	21	0.81	694.08	694.50	697.15	697.54	701.10	701.60	005
6	5	101.000	0.15	3.67	0.55	0.08	2.19	5.0	12.1	6.1	13.31	14.10	5.53	21	0.79	694.50	695.30	697.80	698.51	701.60	702.70	006
7	6	62.000	0.10	3.52	0.60	0.06	2.11	10.0	11.9	6.1	12.88	14.23	5.36	21	0.81	695.30	695.80	698.75	699.16	702.70	705.10	007
8	7	64.000	0.89	3.42	0.60	0.53	2.05	10.0	11.6	6.1	12.59	14.14	5.23	21	0.80	695.80	696.31	699.82	700.23	705.10	702.70	008
9	8	100.000	0.39	2.53	0.60	0.23	1.52	10.0	11.3	6.2	9.39	9.39	5.32	18	0.80	696.31	697.11	700.44	701.24	702.70	702.70	009
10	9	54.000	0.84	2.14	0.60	0.50	1.28	10.0	11.1	6.2	7.99	9.48	4.52	18	0.81	697.11	697.55	701.46	701.77	702.70	702.00	010
11	10	108.000	0.76	1.30	0.60	0.46	0.78	10.0	10.7	6.3	4.92	6.81	4.01	15	1.11	697.55	698.75	701.93	702.56	702.00	703.30	011
12	11	109.000	0.54	0.54	0.60	0.32	0.32	10.0	10.0	6.4	2.08	5.28	2.65	12	2.20	698.75	701.15	702.68	703.05	703.30	704.40	012
13	End	98.000	0.16	0.87	0.55	0.09	0.48	5.0	8.2	6.8	3.24	4.51	4.93	12	1.60	693.69	695.26	694.48	696.03	0.00	701.30	013
14	13	94.000	0.13	0.71	0.55	0.07	0.39	5.0	7.7	6.9	2.68	4.22	4.34	12	1.40	695.26	696.58	696.03	697.28	701.30	701.80	014
15	14	54.000	0.24	0.58	0.55	0.13	0.32	5.0	7.4	6.9	2.21	4.52	3.98	12	1.61	696.58	697.45	697.28	698.08	701.80	702.00	015
16	15	105.000	0.11	0.34	0.55	0.06	0.19	5.0	6.4	7.1	1.33	4.50	3.02	12	1.60	697.45	699.13	698.08	699.62	702.00	703.70	016
17	16	102.000	0.23	0.23	0.55	0.13	0.13	5.0	5.0	7.4	0.94	3.56	2.81	12	1.00	699.13	700.15	699.62	700.56	703.70	703.40	017
18	End	24.000	0.22	4.02	0.55	0.12	2.38	5.0	7.9	6.8	16.26	17.16	7.79	21	1.00	692.04	692.28	693.40	693.76	0.00	699.60	018
19	18	161.000	0.30	3.80	0.60	0.18	2.26	5.0	7.5	6.9	15.62	17.30	7.24	21	1.19	692.28	694.20	693.76	695.66	699.60	701.40	019
20	19	52.000	0.46	0.85	0.60	0.28	0.51	5.0	5.2	7.4	3.77	4.07	5.66	12	1.31	697.89	698.57	698.65	699.40	701.40	702.07	020
21	20	25.000	0.39	0.39	0.60	0.23	0.23	5.0	5.0	7.4	1.74	3.56	3.18	12	1.00	698.57	698.82	699.40	699.38	702.07	702.07	021
22	19	25.000	0.13	0.13	0.60	0.08	0.08	5.0	5.0	7.4	0.58	5.04	3.50	12	2.00	697.65	698.15	697.88	698.47	701.40	701.40	022

Project File: 333244-CV01-StormSewers-REV1.stm

Number of lines: 31

Run Date: 2/7/2025

NOTES: Intensity = 3472819.00 / (Inlet time + 90.40) ^ 2.86; Return period = Yrs. 10 ; c = cir e = ellip b = box

# Storm Sewer Tabulation

Station		Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
23	19	120.000	0.12	2.52	0.60	0.07	1.49	5.0	7.1	7.0	10.41	6.64	5.89	18	0.40	694.20	694.68	695.70	696.88	701.40	702.55	023
24	23	25.000	0.09	1.30	0.60	0.05	0.78	5.0	6.8	7.0	5.49	4.08	4.48	15	0.40	694.68	694.78	697.79	697.97	702.55	702.55	024
25	24	78.503	0.52	1.21	0.60	0.31	0.73	5.0	6.5	7.1	5.16	5.00	4.21	15	0.60	694.78	695.25	698.12	698.63	702.55	701.80	025
26	25	110.000	0.37	0.69	0.60	0.22	0.41	5.0	6.0	7.2	2.98	4.21	4.30	12	1.40	697.28	698.82	698.76	699.56	701.80	703.30	026
27	26	114.531	0.32	0.32	0.60	0.19	0.19	5.0	5.0	7.4	1.43	3.91	2.94	12	1.20	698.82	700.20	699.56	700.71	703.30	704.20	027
28	23	149.000	0.21	1.10	0.60	0.13	0.64	5.0	6.5	7.1	4.55	6.46	5.36	15	1.00	697.11	698.60	697.88	699.46	702.55	702.97	028
29	28	25.000	0.05	0.05	0.60	0.03	0.03	5.0	5.0	7.4	0.22	5.04	1.80	12	2.00	699.22	699.72	699.46	699.91	702.97	702.97	029
30	28	34.000	0.41	0.84	0.60	0.25	0.48	5.0	5.2	7.4	3.57	3.86	5.11	12	1.00	698.60	698.94	699.46	699.75	702.97	702.69	030
31	30	25.000	0.43	0.43	0.55	0.24	0.24	5.0	5.0	7.4	1.76	5.46	3.22	12	2.00	698.94	699.44	699.75	700.00	702.69	702.69	031

Project File: 333244-CV01-StormSewers-REV1.stm

Number of lines: 31

Run Date: 2/7/2025

NOTES: Intensity = 3472819.00 / (Inlet time + 90.40) ^ 2.86; 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			By 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	1	0.74	0.00	0.74	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.14	6.93	0.14	6.93	0.0	Off
2	2	0.98	0.00	0.98	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.16	8.19	0.16	8.19	0.0	Off
3	3	0.70	0.00	0.70	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.13	6.71	0.13	6.71	0.0	Off
4	4	0.45	0.00	0.45	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.11	5.27	0.11	5.27	0.0	Off
5	5	0.65	0.00	0.65	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.13	6.48	0.13	6.48	0.0	Off
6	New	0.61	0.00	0.61	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.13	6.25	0.13	6.25	0.0	Off
7	6	0.39	0.00	0.39	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.10	4.85	0.10	4.85	0.0	6
8	7	3.43	0.00	3.43	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.35	17.55	0.35	17.55	0.0	Off
9	New	1.50	0.00	1.50	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.21	10.55	0.21	10.55	0.0	Off
10	8	3.24	0.00	3.24	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.34	16.93	0.34	16.93	0.0	9
11	9	2.93	0.00	2.93	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.32	15.90	0.32	15.90	0.0	Off
12	10	2.08	0.00	2.08	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.26	12.86	0.26	12.86	0.0	Off
13	11	0.65	0.00	0.65	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.13	6.48	0.13	6.48	0.0	Off
14	12	0.53	0.00	0.53	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.12	5.77	0.12	5.77	0.0	Off
15	13	0.98	0.00	0.98	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.16	8.19	0.16	8.19	0.0	Off
16	14	0.45	0.00	0.45	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.11	5.27	0.11	5.27	0.0	Off
17	15	0.94	0.00	0.94	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.16	7.98	0.16	7.98	0.0	Off
18	71	0.90	0.00	0.90	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.16	7.78	0.16	7.78	0.0	Off
19	16	1.34	0.00	1.34	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.20	9.84	0.20	9.84	0.0	Off
20	17	2.05	0.00	2.05	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.26	12.75	0.26	12.75	0.0	Off
21	18	1.74	0.00	1.74	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.23	11.53	0.23	11.53	0.0	Off
22	19	0.58	0.00	0.58	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.12	6.06	0.12	6.06	0.0	Off
23	20	0.54	0.00	0.54	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.12	5.80	0.12	5.80	0.0	Off

Project File: 333244-CV01-StormSewers-REV1.stm

Number of lines: 31

Run Date: 2/7/2025

NOTES: Inlet N-Values = 0.016; Intensity = 3472819.00 / (Inlet time + 90.40) ^ 2.86; Return period = 10 Yrs. ; \* Indicates Known Q added. All curb inlets are throat.

# 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)
24	21	0.40	0.00	0.40	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.10	4.96	0.10	4.96	0.0	Off
25	22	2.32	0.00	2.32	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.28	13.75	0.28	13.75	0.0	Off
26	23	1.65	0.00	1.65	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.22	11.16	0.22	11.16	0.0	Off
27	24	1.43	0.00	1.43	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.20	10.23	0.20	10.23	0.0	Off
28	25	0.94	0.00	0.94	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.16	7.97	0.16	7.97	0.0	Off
29	26	0.22	0.00	0.22	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.07	3.67	0.07	3.67	0.0	Off
30	27	1.83	0.00	1.83	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.24	11.88	0.24	11.88	0.0	Off
31	29	1.76	0.00	1.76	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.23	11.60	0.23	11.60	0.0	Off

Project File: 333244-CV01-StormSewers-REV1.stm

Number of lines: 31

Run Date: 2/7/2025

NOTES: Inlet N-Values = 0.016; Intensity = 3472819.00 / (Inlet time + 90.40) ^ 2.86; Return period = 10 Yrs. ; \* Indicates Known Q added. All curb inlets are throat.



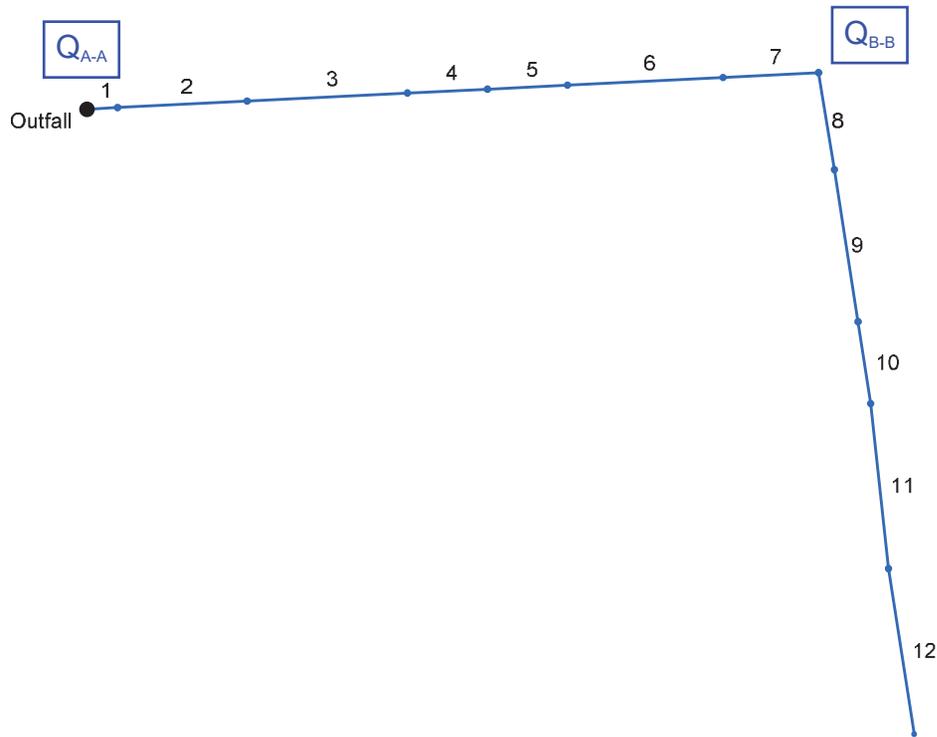
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**APPENDIX 5**

**EMERGENCY OVERFLOW CALCULATIONS**

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



100-YR RESULTS

# 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 EI Dn (ft)	Line Slope (%)	Invert EI Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim EI (ft)	
1	End	20.000	-3.298	Grate	0.00	0.18	0.55	5.0	692.00	0.80	692.16	21	Cir	0.013	0.50	699.00	001
2	1	84.000	0.431	Grate	0.00	0.24	0.55	5.0	692.16	0.80	692.83	21	Cir	0.013	0.50	699.60	002
3	2	104.000	0.000	Grate	0.00	0.17	0.55	5.0	692.83	0.80	693.66	21	Cir	0.013	0.50	700.50	003
4	3	52.000	0.000	Grate	0.00	0.11	0.55	5.0	693.66	0.81	694.08	21	Cir	0.013	0.50	701.10	004
5	4	52.000	0.000	Grate	0.00	0.16	0.55	5.0	694.08	0.81	694.50	21	Cir	0.013	0.50	701.60	005
6	5	101.000	0.015	Grate	0.00	0.15	0.55	5.0	694.50	0.79	695.30	21	Cir	0.013	0.50	702.70	006
7	6	62.000	0.000	Grate	0.00	0.10	0.60	10.0	695.30	0.81	695.80	21	Cir	0.013	1.49	705.10	007
8	7	64.000	83.626	Grate	0.00	0.89	0.60	10.0	695.80	0.80	696.31	21	Cir	0.013	0.50	702.70	008
9	8	100.000	0.447	Grate	0.00	0.39	0.60	10.0	696.31	0.80	697.11	18	Cir	0.013	0.50	702.70	009
10	9	54.000	0.000	Grate	0.00	0.84	0.60	10.0	697.11	0.81	697.55	18	Cir	0.013	0.50	702.00	010
11	10	108.000	2.665	Grate	0.00	0.76	0.60	10.0	697.55	1.11	698.75	15	Cir	0.013	0.50	703.30	011
12	11	109.000	-2.665	Grate	0.00	0.54	0.60	10.0	698.75	2.20	701.15	12	Cir	0.013	1.00	704.40	012

# Structure Report

Struct No.	Structure ID	Junction Type	Rim Elev (ft)	Structure			Line Out			Line In		
				Shape	Length (ft)	Width (ft)	Size (in)	Shape	Invert (ft)	Size (in)	Shape	Invert (ft)
1	1	Grate	699.00	Cir	3.00	3.00	21	Cir	692.16	21	Cir	692.16
2	2	Grate	699.60	Cir	3.00	3.00	21	Cir	692.83	21	Cir	692.83
3	3	Grate	700.50	Cir	3.00	3.00	21	Cir	693.66	21	Cir	693.66
4	4	Grate	701.10	Cir	3.00	3.00	21	Cir	694.08	21	Cir	694.08
5	5	Grate	701.60	Cir	3.00	3.00	21	Cir	694.50	21	Cir	694.50
6	New	Grate	702.70	Cir	3.00	3.00	21	Cir	695.30	21	Cir	695.30
7	6	Grate	705.10	Cir	3.00	3.00	21	Cir	695.80	21	Cir	695.80
8	7	Grate	702.70	Cir	3.00	3.00	21	Cir	696.31	18	Cir	696.31
9	New	Grate	702.70	Cir	3.00	3.00	18	Cir	697.11	18	Cir	697.11
10	8	Grate	702.00	Cir	3.00	3.00	18	Cir	697.55	15	Cir	697.55
11	9	Grate	703.30	Cir	3.00	3.00	15	Cir	698.75	12	Cir	698.75
12	10	Grate	704.40	Cir	2.00	2.00	12	Cir	701.15			

# Storm Sewer Tabulation

Station		Len (ft)	Drng Area		Rnoff coeff (C)	Area x C		Tc		Rain (l) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line		Incr (ac)	Total (ac)		Incr	Total	Inlet (min)	Syst (min)					Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	20.000	0.18	4.53	0.55	0.10	2.67	5.0	12.0	9.7	26.00	14.17	10.81	21	0.80	692.00	692.16	693.75	694.29	0.00	699.00	001
2	1	84.000	0.24	4.35	0.55	0.13	2.57	5.0	11.8	9.8	25.15	14.15	10.46	21	0.80	692.16	692.83	695.20	697.32	699.00	699.60	002
3	2	104.000	0.17	4.11	0.55	0.09	2.44	5.0	11.7	9.8	23.99	14.15	9.97	21	0.80	692.83	693.66	698.17	700.55	699.60	700.50	003
4	3	52.000	0.11	3.94	0.55	0.06	2.34	5.0	11.6	9.9	23.13	14.24	9.62	21	0.81	693.66	694.08	701.32	702.43	700.50	701.10	004
5	4	52.000	0.16	3.83	0.55	0.09	2.28	5.0	11.5	9.9	22.60	14.24	9.40	21	0.81	694.08	694.50	703.15	704.21	701.10	701.60	005
6	5	101.000	0.15	3.67	0.55	0.08	2.19	5.0	11.3	10.0	21.86	14.10	9.09	21	0.79	694.50	695.30	704.90	706.82	701.60	702.70	006
7	6	62.000	0.10	3.52	0.60	0.06	2.11	10.0	11.2	10.0	21.12	14.23	8.78	21	0.81	695.30	695.80	707.47	708.57	702.70	705.10	007
8	7	64.000	0.89	3.42	0.60	0.53	2.05	10.0	11.0	10.0	20.60	14.14	8.57	21	0.80	695.80	696.31	710.36	711.44	705.10	702.70	008
9	8	100.000	0.39	2.53	0.60	0.23	1.52	10.0	10.8	10.1	15.33	9.39	8.68	18	0.80	696.31	697.11	712.01	714.14	702.70	702.70	009
10	9	54.000	0.84	2.14	0.60	0.50	1.28	10.0	10.7	10.1	13.02	9.48	7.37	18	0.81	697.11	697.55	714.73	715.56	702.70	702.00	010
11	10	108.000	0.76	1.30	0.60	0.46	0.78	10.0	10.4	10.2	7.98	6.81	6.50	15	1.11	697.55	698.75	715.98	717.63	702.00	703.30	011
12	11	109.000	0.54	0.54	0.60	0.32	0.32	10.0	10.0	10.4	3.36	5.28	4.28	12	2.20	698.75	701.15	717.96	718.93	703.30	704.40	012

Project File: 333244-CV01-StormSewers-REV1.stm

Number of lines: 12

Run Date: 2/13/2025

NOTES: Intensity =  $277.62 / (\text{Inlet time} + 20.10)^{0.97}$ ; 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	1	1.22	0.00	1.22	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.19	9.32	0.19	9.32	0.0	Off
2	2	1.63	0.00	1.63	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.22	11.08	0.22	11.08	0.0	Off
3	3	1.16	0.00	1.16	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.18	9.01	0.18	9.01	0.0	Off
4	4	0.75	0.00	0.75	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.14	6.99	0.14	6.99	0.0	Off
5	5	1.09	0.00	1.09	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.17	8.69	0.17	8.69	0.0	Off
6	New	1.02	0.00	1.02	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.17	8.37	0.17	8.37	0.0	Off
7	6	0.62	0.00	0.62	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.13	6.30	0.13	6.30	0.0	6
8	7	5.54	0.00	5.54	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.76	37.87	0.76	37.87	0.0	Off
9	New	2.43	0.00	2.43	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.28	14.14	0.28	14.14	0.0	Off
10	8	5.23	0.00	5.23	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.68	33.85	0.68	33.85	0.0	9
11	9	4.73	0.00	4.73	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.56	27.89	0.56	27.89	0.0	Off
12	10	3.36	0.00	3.36	0.00	Grate	0.0	0.00	1.20	2.00	2.00	Sag	2.00	0.020	0.020	0.013	0.35	17.32	0.35	17.32	0.0	Off

Project File: 333244-CV01-StormSewers-REV1.stm

Number of lines: 12

Run Date: 2/13/2025

NOTES: Inlet N-Values = 0.016; Intensity = 277.62 / (Inlet time + 20.10) ^ 0.97; Return period = 100 Yrs. ; \* Indicates Known Q added. All curb inlets are throat.

## EMEGERNCY OVERFLOW A-A

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

---

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.007 ft/ft
Left Side Slope	25.000 H:V
Right Side Slope	10.000 H:V
Discharge	10.33 cfs

---

Results	
Normal Depth	7.3 in
Flow Area	6.5 ft <sup>2</sup>
Wetted Perimeter	21.3 ft
Hydraulic Radius	3.6 in
Top Width	21.25 ft
Critical Depth	5.6 in
Critical Slope	0.029 ft/ft
Velocity	1.60 ft/s
Velocity Head	0.04 ft
Specific Energy	0.65 ft
Froude Number	0.512
Flow Type	Subcritical

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GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

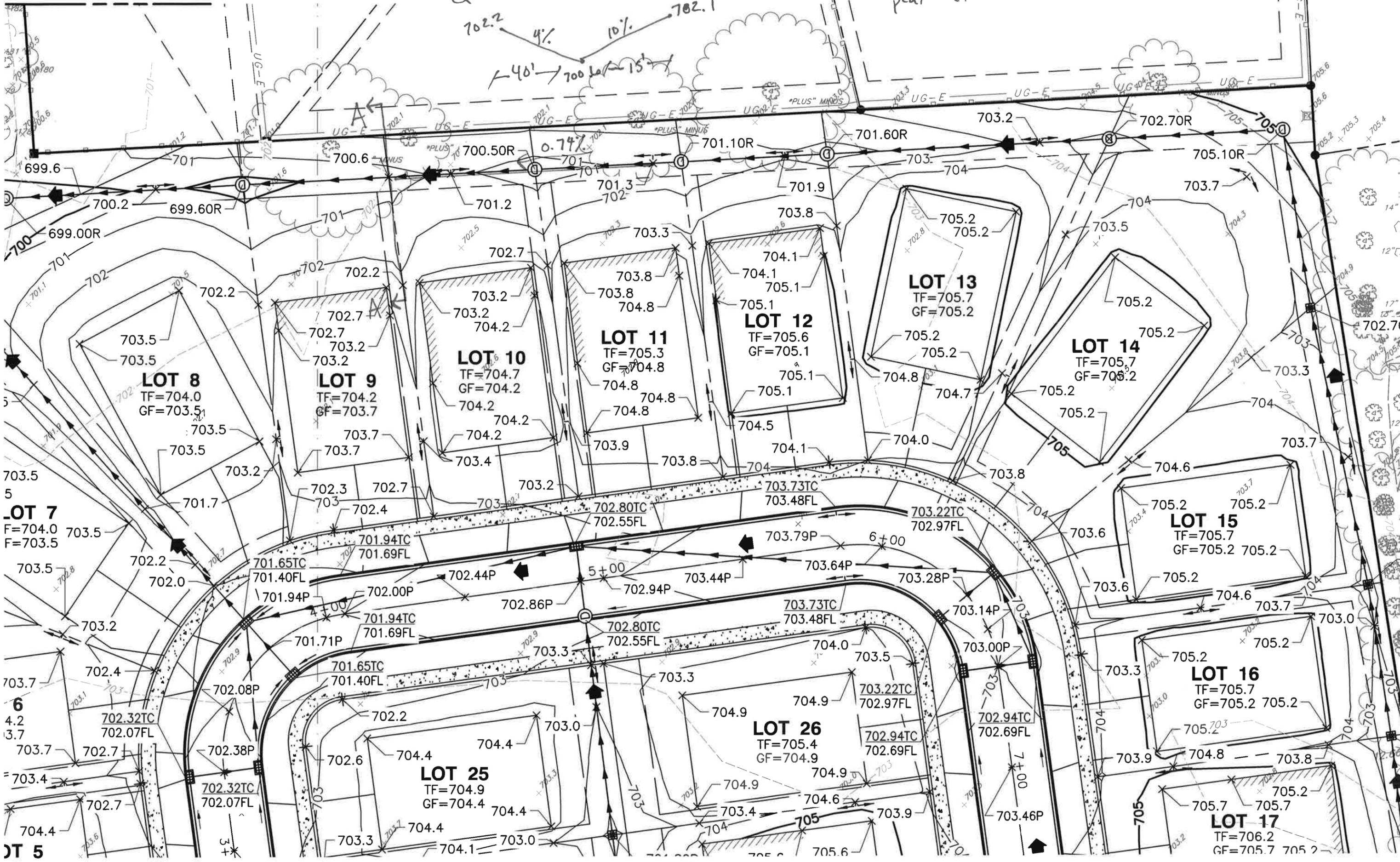
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GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	7.3 in
Critical Depth	5.6 in
Channel Slope	0.007 ft/ft
Critical Slope	0.029 ft/ft

301

$Q = 26.0 - 15.67 \Rightarrow 10.33 \text{ cfs}$

peak elev = 701.2



## EMERGENCY OVERFLOW B-B

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

---

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.012 ft/ft
Left Side Slope	13.330 H:V
Right Side Slope	10.000 H:V
Discharge	5.45 cfs

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Results	
Normal Depth	6.1 in
Flow Area	3.0 ft <sup>2</sup>
Wetted Perimeter	11.9 ft
Hydraulic Radius	3.0 in
Top Width	11.81 ft
Critical Depth	5.1 in
Critical Slope	0.030 ft/ft
Velocity	1.82 ft/s
Velocity Head	0.05 ft
Specific Energy	0.56 ft
Froude Number	0.639
Flow Type	Subcritical

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GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

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GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	6.1 in
Critical Depth	5.1 in
Channel Slope	0.012 ft/ft
Critical Slope	0.030 ft/ft

