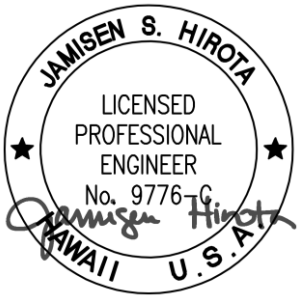
DRAINAGE REPORT AND DETENTION BASIN ANALYSIS
for:
Hawaiian Memorial Park Expansion

October 2024

TMK 4-5-033:001

Kaneohe, Oahu, Hawaii



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1. Introduction

1.1 Project Report Purpose and Scope of Work

The purpose of this report is to provide a drainage analysis and to confirm that the proposed improvements do not have a negative impact on the receiving drainage system, adjacent roadways, and adjacent properties. This report will also confirm that proposed runoff rates will not exceed planned runoff rates for the lots and proposed peak flow runoff rates will not exceed the capacity of the existing storm drainage system. The primary source of methodology and process of this report is based on the Department of Planning and Permitting (DPP) Storm Drainage Standards (Honolulu C&C, August 2017) and the Land Use Commission (LUC) of the State of Hawaii, Decision and Order Docket No. A17-804, dated 13 October 2020 (D&O).

Hawaiian Memorial Park (HMP) is a privately owned cemetery located in the Kaneohe district on the Windward side of Oahu. The proposed site is an expansion of the existing Hawaiian Memorial Park Cemetery situated east of the existing HMP and the Hawaii State Veterans Cemetery. The project site is approximately 35 acres located on a portion of a larger 164.4-acre parcel owned by Hawaiian Memorial Life Plan, Ltd. The site improvements consist of paved access roads, site grading, site retaining structures, storm water collection, treatment & conveyance, and landscaping for future burial plots.

The proposed project area is within the parcel of TMK 4-5-033:001 and this drainage report will only cover the portion of the parcel with drainage basins affected by this project. Drainage basins not affected by this project will be excluded from the report and associated calculations and analysis.

2. General Site Conditions

2.1 Land Use

The City and County of Honolulu (GIS) website identifies the land use zoning of the existing property as AG-1 Restricted Agriculture, P-1 Restricted Preservation, and P-2 General Preservation. The State of Hawaii land use district is Urban.

2.2 Climatology

Temperatures statewide are moderate and equable throughout most of the year. This reflects the small seasonal variation in the energy received from the sun and the tempering effect of the surrounding Pacific Ocean. The mean annual temperature recorded at Honolulu, Oahu, ranges from between the low-70s and high-80s, while occasionally reaching into the +90-degree Fahrenheit (F) range.

2.3 Soil Type and Ground Cover

According to the “Web Soil Survey” by the USDA Natural Resources Conservation Service, the subsurface conditions at the project site generally consist of Kaneohe and Alaeloa soils, both being characteristically well-drained silty clay.

Geolabs, Inc. has been retained to provide geotechnical engineering. Geolabs completed site work for the project in August and September of 2022 and the Geotechnical Engineering Exploration Report for the project was completed on August 10, 2023 which has since been revised and updated in July 2024. The geotechnical report has been provided to the City and County of Honolulu, Department of Permitting for their review and use.

The area is densely forested; however, the ground cover is predominantly bare soil and tree roots with sparse vegetation.

2.4 FEMA Flood Zone Delineation

The Federal Emergency Management Agency (FEMA) classifies flood hazard zones as part of the Flood Insurance Program for the City and County of Honolulu. The project site is designated as Zone D on the Flood Insurance Rate Map, map number 15003C0270J (Nov. 5, 2014). Zone D indicates an area of undetermined flood hazard. See Appendix IV.

3. Hydrologic and Hydraulic Methodologies

The peak runoff rates for the watersheds associated with the project are calculated in conformance with the Honolulu City & County's (City) Storm Drainage Standards dated August 2017 and the LUC D&O. Receiving inlet runoff flow rates and analysis of detention basin requirements are calculated using the Rational Method for a 10-year, 1-hour storm per the City's Storm Drain Standards, and the TR-55 Method for a 10-year, 24-hour storm event per the LUC D&O. Hydraulic calculations for onsite pipe flow analysis were also calculated using the rational method for 50-year, 1-hour storm.

Particular to this report per the LUC D&O, Finding of Fact Item 331 (page 118),

> 331. Hawaiian Memorial Park, Ltd. will prepare a detailed detention basin analysis using appropriate computer modeling software to determine the size of the detention basins to be constructed immediately upstream of each of the existing drainage inlets that will receive runoff from the Project. The inflow will be calculated based on at least a 10-year 24-hour rainfall event, and the basins shall be designed so that the outflow from each basin will be limited to the capacity of the existing downstream drainage improvements. The detention basin analysis shall be submitted to the DPP for approval. After the detention basin analysis is approved, the detention basins shall be constructed as soon as practical after the start of grading for the project.

And LUC D&O, Decision and Order Item 5. (page 143),

5. Detention Basin Analysis. The Petitioner shall prepare a detailed "Detention Basin Analysis", using appropriate computer modeling software, to determine the size of the detention basins to be constructed immediately upstream of each of the existing drainage inlets that will receive runoff from the project. The inflow will be calculated based on at least a 10-year, 24-hour rainfall event and the basins shall be designed so that the outflow from each basin will be limited to the capacity of the existing downstream drainage improvements. The Detention Basin Analysis shall be submitted to DPP for approval. After the Detention Basin Analysis is approved, the detention basins shall be constructed as soon as practical after the start of grading for the project.

A detailed Detention Basin Analysis using Hydrology Studio was completed as part of this report and can be found in Appendix I. A summary of findings from Detention Basin Analysis can be found in Section 6.

AutoDesk Storm & Sanitary Analysis was used to generate hydrographs to perform the hydraulic grade line analysis.

4. Existing Drainage Conditions

4.1 Existing Topography

The parcel is currently undeveloped and densely forested with various ridges, ravines and valleys as topographic features. The ridge line of the parcel separates Kapaa Quarry to the west from the Hawaiian Memorial Park to the east. At the base of the mountain, the parcel is bordered by the Pikoiloa 9, Pikoiloa 10 and Parkway residential subdivisions to the north and west. The parcel is bordered on the north by the Pohai Nani Retirement Community. The Hawaii State Veterans Cemetery is to the southwest.

The grades within the site vary greatly with steep slopes ranging over 100% near the ridgeline to as low as 7%. The site generally slopes from southeast to northwest towards a residential area. Elevations of the parcel range from 100 feet above mean sea level (MSL) near the lower boundary to 945 feet above MSL near the ridgeline.

4.2 Existing Drainage Patterns

Present storm water runoff from the parcel sheet flows downslope in a north-northwesterly direction following natural ephemeral drainageways and low-lying areas following the existing topography. Runoff either discharges into Kawa Stream to the west or makes its way to the Pikoiloa Subdivision. Runoff that heads toward the Pikoiloa Subdivision is collected by a system of private concrete lined channels within resident's property, directing runoff to four MS4 inlets. Inlets C-12 and C-13 are south and west of Ohaha Place, respectively. Inlet A-7 is west of Lipalu Street, and A-6 is the largest inlet structure to the south, at the end of Lipalu Street. Per

the LUC D&O Finding of Fact Item 258, “Site inspections throughout the years have shown these channels have been poorly maintained by property owners. Neighbors have complained about flooding when these swales are overwhelmed.” Analysis of the existing private drainage channels shows that the channels do not provide freeboard that would meet current drainage standards. See Existing Concrete Lined Channels section below. MS4 inlets that collect runoff from the proposed project site are routed through the City's drainage system within the Pikoiloa Subdivision and eventually outlet to Kawa Stream. Kawa stream ultimately discharges to Kaneohe Bay.

Existing runoff is collected from 5 drainage basins. Existing runoff flow rates for each basin are calculated using the 10-year, 1-hour storm event per the City’s design standards and the 10-year, 24-hour storm event to meet the post construction runoff requirements of the D&O. Allowable design flow rates to the existing downstream MS4 system are based on the 10-year, 1-hour storm event, and were obtained from either the Pikoiloa Subdivision as-built drawings (see Appendix V) or from the inlet evaluation performed as part of this report, whichever is less. See the Existing Inlet Evaluation section below. (Existing flow rates may appear to exceed the allowable flow rates to the MS4 system due to the two differing design storm events used for analysis).

Existing Private Concrete Lined Channels

The existing private concrete lined channels were evaluated comparing As-Built design areas to Post-Construction areas. Only contributing areas to the channels were evaluated for comparison (Exhibit 4 and Appendix VI). See Table 2 in Proposed Conditions for area comparisons. Analysis of the existing private drainage channels show that the channels do not provide freeboard that would meet current drainage standards. See Appendix VI for the Pikoiloa 1963 Drainage Analysis.

Existing Inlet Evaluation

Existing inlet structures were evaluated to confirm the structures could accept and convey the flow rates provided by the As-Built drawings. The inlet grates and distribution piping were evaluated, and whichever resulted in the lowest flow rate was used for comparison. A clogging factor of 50 percent was used for horizontal grates and 30 percent for vertical grates. During the evaluation, the As-Built design flow rates were confirmed adequate for inlets A-7, C-12, and C-13. For inlet A-6, the As-Built design flow rate of 204.3 cubic feet per second (cfs) exceeded the calculated flow rate of 159.0 cfs. The limiting condition was found to be the outlet pipe (48” reinforced concrete with grate covering) when evaluated at 30 percent clogged. See Table 1 below for inlet design flow comparisons. See Appendix III for inlet calculations.

Table 1: Inlet Design Flow Comparison

Inlet Designation	Limiting Factor	As-Built Provided Q Design Flow (cfs)	Calculated Flow Capacity (cfs)
C-12	Top Grate	**25.2**	28.7
C-13	Top Grate	**10.9**	23.7
A-6	Outlet Pipe	204.3	**159.0**
A-7	Top Grate	**18.7**	29.0

Existing Drainage Basin Areas

Pre-Construction runoff rates are based on a 10-year, 24-hour storm event for comparison with the Post-Construction runoff rate requirements of the LUC D&O. Calculated flow rates listed in the existing drainage basin area discussion to follow is based upon 10-year, 24-hour storm calculated using the TR-55 method. Q Design flow rates were provided by the Pikoiloa Subdivision Drainage Report and were calculated using the rational method for rainfall intensities for a 10-year, 1-hour storm event.

Drainage Area 1 is located at the most northwest portion of the parcel, bordering the existing HMP Ocean View Garden site. Drainage Area 1 is 4.08 acres and generates approximately 10.45cfs (TR-55, 10-year, 24-hour) of runoff that surface flows until it is collected by the existing private concrete lined channels within the Pikoiloa Subdivision or channelizes along natural topography where it discharges to the existing MS4 inlet C-13 (SWID WKAS 12-17543), south of Ohaha Street, west of Ohaha Place. Inlet C-13 has a Q design flow rate of 10.9 cfs per existing subdivision as-builts.

Drainage Area 2 is south of Drainage Area 1 and 3, east of the existing HMP Ocean View Garden site. Drainage Area 2 is 3.54 acres and generates approximately 11.04 cfs (TR-55, 10-year, 24-hour) of runoff. The runoff surface flows off-site, where it eventually discharges to Kawa stream to the west.

Drainage Area 3 is east of Drainage Area 1 and north of Drainage Area 2. Drainage Area 3 is 8.07 acres and generates approximately 28.71 cfs (TR-55, 10-year, 24-hour) of runoff that surface flows until it is collected by the existing private concrete lined channels within the Pikoiloa Subdivision or channelizes along natural topography where it discharges to the existing MS4 inlet C-12 (SWID WKAS 12-17544), south of Ohaha Place. Inlet C-12 has a Q design flow rate of 25.2 cfs per existing subdivision as-builts.

Drainage Area 4 is east of Drainage Area 3 and west of Lipalu Street. Drainage Area 4 is 3.57 acres and generates approximately 10.01 cfs (TR-55, 10-year, 24-hour) of runoff that surface flows until it is collected by the existing private concrete lined channels within the Pikoiloa Subdivision where it discharges to the existing MS4 inlet A-7 (SWID WKSE 1-17526), south of Ohaha Place. Inlet A-7 has a Q design flow rate of 18.7cfs per existing subdivision as-builts.

Drainage Area 5, consisting of a large portion of the affected area of the parcel, is the east-most area, bordering Drainage Areas 2, 3, and 4 to the northwest, and the ridgelines to the north, east and south. Drainage Area 5 is 72.56 acres and generates 162.32 cfs (TR-55, 10-year, 24-hour) of runoff that surface flows until it is collected by the existing private concrete lined channels within the Pikoiloa Subdivision or channelizes along natural topography where it

discharges to the existing MS4 inlet A-6 (SWID WKSE 1-17538), located at the end of Lipalu Street. Inlet A-6 has a Q design flow rate of 159.0 cfs as noted in the Inlet Design Flow Comparison table (Table 1).

See the attached map (Exhibit 3) for the existing drainage areas.

5. Proposed Drainage Conditions

5.1 Developed Drainage Patterns

The affected portion of the parcel is composed of 5 drainage basins, each consisting of proposed site area and existing/unchanged area. Runoff flow rates for each basin are calculated using the 10-year, 24-hour storm event to meet the requirements of the D&O. The topography and drainage patterns of the areas within the parcel but outside of the proposed improvements will remain unchanged. Existing areas upstream of the proposed site and along the preservation area will be collected by fiber reinforced shotcrete lined channels and conveyed through the site via below grade piping and discharged into the existing collection points to the MS4 system.

The proposed site area within the parcel will continue to be sloped from south to north. Retaining walls, graded slopes, and anchored wired mesh will provide grade changes on the southern and northern borders of the project improvement area to reduce the on-site grades to a maximum of 20%. Fiber reinforced shotcrete lined channels along the top of the fill slope along the northern border of the site will collect runoff from the site and reduce runoff to the downstream residential area to the north.

The collected runoff from the site will be piped to distribute runoff to the discharge points and not exceed their Pikoiloa design flow rates. A proposed detention basin will be installed to handle addition flow to Discharge Point 5. The proposed detention basin is designed to reduce the flow rates to the receiving MS4 system and to help mitigate flooding of the neighboring subdivision to the north during large storm events. See the Detention Basin Analysis section for more information.

A benefit of the proposed improvements to the site will reduce runoff to many of the existing poorly maintained private concrete lined channels in the upslope portion of downstream properties by reducing the size of contributing drainage areas that flow to the existing private channels. See Table 2 for the contributing area comparisons. The reduction in drainage areas is achieved by collecting runoff near the downslope limits of the proposed improvements and transporting it to controlled pathways to the MS4 collection system. It should be noted that some existing natural drainage diversion ditches within the property will be removed as the site is improved. Areas below the retaining walls will largely be left as is and improvements will be provided to ensure drainage is collected by the intended existing drainage structures to the north of the site.

Table 2: Existing Channel Contributing Area/Runoff Comparison

Drainage Area Designation (As-Buit)	As-Built Drainage Area (acre)	Post-Construction Drainage Area (acres)
1 (G)	3.2	1.0
3A (F-1)	2.3	0.8
3B (F-2)	5.1	1.0
4A (E-1)	5.1*	2.2
4B (E-2)	1.4*	1.4
5C (A-3)	5.3	0.8
5D (A-4)	2.9	0.5

**Modified from Pikoiloa Drainage Report figures to match existing conditions.*

The proposed site consists of grassed landscaped area and an access road running east to west connecting to the existing road within the Ocean View Garden area of the existing HMP to the west. The access road has a “bell” shaped bypass on west side of the site and a roundabout at the end of the road on the east side of the site. An on-site piped storm sewer system will be provided within the roadway to collect runoff from the proposed roadway as well as from the proposed site area upstream of the roadway.

Post Construction stormwater quality is achieved utilizing several different methods. In addition to source control BMPs, the LID Site Design Strategy of self-mitigating areas is utilized for the lower portion of the site where runoff generated from vegetated areas is collected prior to mixing with impervious areas. Upslope areas pass runoff through vegetated bio-filters for areas where runoff intermingles from pervious and non-pervious sources to achieve stormwater quality goals. Per Geolabs, Inc., infiltration was not a feasible stormwater quality strategy due to the earthwork occurring onsite.

Drainage Basin Areas

Drainage Area 1 is located at the most northwest portion of the parcel, bordering the existing HMP Ocean View Garden site to the west, Drainage Area 2 to the south and Drainage Areas 3 and 5 to the east, and the Pikoiloa Subdivision (Ohaha Street) to the north. Drainage Area 1 is 3.29 acres, consisting of proposed grassed area split north/south by the access road west of the “bell”, and the existing area bordering the Pikoiloa Subdivision. Drainage Area 1 generates approximately 9.55 cfs (TR-55, 10-year, 24-hour) or 6.77 cfs (Rational Method, 10-year, 1-hour) of runoff that surface flows until it is collected by gutters in the roadway or swales in the grassed areas and conveyed via below grade pipe where it discharges to a natural ravine prior to discharging to existing MS4 inlet C-13. Runoff produced from this area is 4.13 cfs less than the Q design rate of 10.9 cfs per the existing Pikoiloa subdivision as-builts based on a 10-year, 1-hour storm event.

Drainage Area 2 borders Drainage Area 1 and 2 to the south and the existing HMP Ocean View Garden site to the west. Drainage Area 2 is 3.26 acres and consists of grassed landscaped area. Drainage Area 2 generates approximately 8.85 cfs (TR-55, 10-year, 24-hour) or 5.05 cfs

(Rational Method, 10-year, 1-hour) of runoff. The runoff surface flows off-site, where it eventually discharges to Kawa stream to the west. Runoff produced from this area is 2.26 cfs less than the pre-construction runoff rate of 10.99 cfs based on a 10-year, 24-hour storm event.

Drainage Area 3 borders Drainage Area 1 to the west, Drainage Area 5 to the south, Drainage Area 4 to the northeast, and the Pikoiloa Subdivision (Ohaha Street) to the north. Drainage Area 3 is 5.18 acres and consists of grassed landscaped area north of the road “bell” and the existing area bordering the Pikoiloa Subdivision. Drainage Area 3 generates approximately 15.32 cfs (TR-55, 10-year, 24-hour) or 10.91 cfs (Rational Method, 10-year, 1-hour) of runoff that surface flows until it is collected by swales above the proposed retaining walls, natural ravines,h or by the existing concrete lined channel along the Pikoiloa Subdivision where it discharges to the existing MS4 inlet C-12. Runoff produced from this area is 14.29 cfs less than the Q design 25.2 cfs per existing Pikoiloa subdivision as-builts based on a 10-year, 1-hour storm event.

Drainage Area 4 borders Drainage Area 3 to the southwest, Drainage Area 5 to the southeast, and the Pikoiloa Subdivision (Lipalu Street) to the east. Drainage Area 4 is 3.53 acres and consists of the existing area bordering the Pikoiloa Subdivision. Drainage Area 4 generates approximately 9.90 cfs (TR-55, 10-year, 24-hour) or 7.60 cfs (Rational Method, 10-year, 1-hour) of runoff that surface flows until it is collected by the existing concrete lined channel along the Pikoiloa Subdivision where it discharges to the existing MS4 inlet A-7. Runoff produced from this area is 11.10 cfs less than the Q design 18.7 cfs per existing Pikoiloa subdivision as-builts based on a 10-year, 1-hour storm event.

Drainage Area 5, consisting of a large portion of the affected area of the parcel, is the east-most area, bordering Drainage Areas 1 and 2 to the west, Areas 3 and 4 to the northwest, and the ridgelines of the drainage basin to the north, east and south. Drainage Area 5 is 76.61 acres, consisting of the existing upstream area to the south, the existing preservation area to the east, the proposed grassed area split north/south by the access road, including the “bell” and roundabout, and the existing area bordering the Pikoiloa Subdivision to the north. Runoff from the south (Mauka side) of the developed site is collected via fiber reinforced shotcrete lined channels (Rock Catchment Ditch) and runoff from the east of the developed site (Preservation Area) is collected by a fiber reinforced shotcrete lined channel (Preservation Swale). The Rock Catchment Ditch and Preservation Area swales are designed to have a freeboard of 5” and 4”, respectively. See Appendix III for swale calculations. Drainage Area 5 generates approximately 131.13 cfs (TR-55, 10-year, 24-hour) or 130.83 cfs (Rational Method, 10-year, 1-hour) of runoff that surface flows until it is collected by gutters in the roadway, swales in the grassed areas, or fiber reinforced shotcrete lined channels south and east of the proposed site and conveyed via below grade pipe where it discharges to the proposed 63,467 cubic foot detention basin located southeast of Lipalu Street. The detention basin discharges to the existing MS4 inlet A-6. Runoff produced from this area is 28.17 cfs less than the calculated 159.0 cfs per the Existing Inlet Evaluation calculations based on a 10-year, 1-hour storm event.

See the attached map (Exhibit 4) for the proposed drainage areas. See Appendix I for the calculations and hydrographs.

6. Detention Basin Analysis

Detention basins are a standard civil engineering improvement designed to store runoff for a limited period of time. Applied to current site design in the City and County of Honolulu, detention basins are a standard design improvement to control outflow of runoff from a site, most commonly in instances where the outflow of proposed improvements are going to exceed the Q design runoff rate for a given storm event.

An analysis was conducted using the TR-55 Method in Hydrology Studio of the pre-developed and proposed improvements condition for a 10-year, 1-hour storm and a 10-year, 24-hour storm which showed a reduction of flow to the receiving inlets C-13, C-12 and A-7 along the Pikoiloa Subdivision from pre to post construction conditions. In addition, the resulting post construction flow rates for both storm events are less than the design flow rates presented in the Pikoiloa Subdivision As-builts or Existing Inlet Evaluation Calculations. This indicates the requirement for a detention basin is not warranted and detention basins were not provided upstream of the noted inlet structures.

Regarding the Lipalu Drainage Inlet A-6, in accordance with representations made to the Land Use Commission, a detention basin with a capacity of at least 15,554 cubic feet shall be provided adjacent to the Lipalu drainage inlet (existing MS4 inlet A-6, SWID WKSE 1-17538). Analysis conducted for the pre-developed and proposed improvements condition using a 10-year, 1-hour storm event and a 10-year, 24-hour storm event show that a reduction in flow is expected from the pre-development condition to the post development condition for the 10-year, 24-hour storm (162.32 cfs to 131.13 cfs), however an increase in flow is expected for the 10-year, 1-hour storm event (118.49 cfs to 130.83 cfs). Analysis of the Pikoiloa Subdivision As-builts revealed that the Lipalu Street Inlet has a flow capacity of 159.0 cfs, less than the 204.3 cfs stated in the Pikoiloa Subdivision as-builts. Both the post construction flow rates for the 10-year, 1-hour storm event and a 10-year, 24-hour storm event are below the calculated flow capacity of the Lipalu Drainage Inlet A-6.

Understanding the concern of the adjacent neighbors to the project, noting the calculated conservative flow capacity of the A-6 inlet, and in an effort to attenuate high flows from rainfall events larger than the required design storms, the decision was made to increase the minimum required 15,553 cubic feet detention basin per the Land Use Commission representations. The proposed detention basin above Inlet A-6 will provide 44,805 cubic feet of storage with a resulting flow rate of 130.83 cfs during the 10-year, 24-hour design storm event with an additional 14,316 cubic feet of freeboard provided (resulting in the noted 63,647 total volume of the basin). The additional freeboard will allow the basin to attenuate the flow for a 100-year, 1-hour storm event to a resulting flow rate of 154.57 cfs. Since the basin was designed for larger storm events, the basin is less effective at reducing the smaller flow rates of a 10-year, 1-hours storm, and as previously noted, resulting in a post-developed condition flow rate larger than the pre-developed conditions, but less than the conservative receiving capacity of the Lipalu inlet.

The proposed detention basin will regulate outflow through pipe sizing for the 10-year, 24 storm to help mitigate flooding of the downstream MS4 system and neighboring subdivision. The basin is drained via one (1) 24-inch pipe and one (1) 30-inch pipe flowing to a rip-rapped channel

above the existing Lipalu Inlet. Overflow is managed by a 20-foot wide trapezoidal concrete weir with a crest elevation set 10 feet above the basin bottom. The weir is shaped and placed to direct all overflows towards the Lipalu inlet and away from residential properties. The fiber reinforced shotcrete lined detention basin will drain completely within 48 hours when full and 24 to 36 hours when half full. All flows are directed to the existing Lipalu Inlet basin, which currently contains soil and vegetation. It is recommended that the City clean this inlet structure even though future flows from this project will be less than previously-designed flows. An erosion-control mat, such as Flexamat, will be applied to the basin floor below the detention basin outfall.

7. Conclusion

MS4
The improvements for the new Hawaiian Memorial Park Expansion generate a total storm water runoff of 174.75 cfs with 166.88 cfs discharging to the City's MS4 during the 10-year, 24-hour storm (TR-55 Method) and 161.16 cfs with 156.11 cfs discharging to the City's MS4 during the 10-year, 1-hour storm (Rational Method).

Kawa Stream
The improvements for the new Hawaiian Memorial Park Expansion generate a total storm water runoff of 174.75 cfs with 8.73 cfs discharging off site to Kawa Stream during the 10-year, 24-hour storm (TR-55 Method) and 161.16 cfs with 5.05 cfs discharging off site to Kawa Stream during the 10-year, 1-hour storm (Rational Method).

When compared to the existing MS4 with allowable flow rates totaling 213.8 cfs and an existing off-site surface runoff of 10.99 cfs to Kawa Stream, the Hawaiian Memorial Park Expansion decreases the flow rate to each receiving basin based on a 10-year, 24-hour storm event.

The decrease of runoff between the existing and developed condition at basins 1 through 4 are attributed to the reduction in slopes, the establishment of ground cover, and conveyance of storm water to the Drainage Area 5 basin. Reduced runoff from basin 5 is primarily attributed to the addition of the detention basin near Lipalu Street. See Table 3 below for a hydrological data comparison.

Table 3: Hydrological Data Comparison

Drainage Area	Existing Conditions Flow Rate (cfs) (24hr storm) *	Proposed Conditions Flow Rate (cfs) (24hr storm) *	Existing Conditions Flow Rate (cfs) (1hr storm) **	Proposed Conditions Flow Rate (cfs) (1hr storm) **	Existing MS4 Inlet Design Flow Rate (cfs) (1hr storm) **
1	10.45	9.55	7.30	6.77	10.9
2	11.04	8.85	6.80	5.05	(to Kawa Stream)
3	28.71	15.32	18.10	10.91	25.2
4	10.01	9.90	7.79	7.60	18.7
5	162.32	131.13	118.49	130.83	159.0
Totals	222.5	174.75	158.5	161.16	213.8***

** Based on the 10-year, 24-hour storm event as required by the D&O.*

*** Based on the 10-year, 1-hour storm per the City and County of Honolulu Design Standards and as presented in the Pikoiloa Subdivision As-builts and the existing inlet evaluation calculations.*

**** Total Design Runoff to the Pikoiloa Subdivision as presented in the Pikoiloa Subdivision As-builts and the existing inlet evaluation calculations.*

The proposed drainage improvements as part of the Hawaiian Memorial Park Expansion project are intended to help reduce runoff impacts to adjacent properties including the attenuation of large storm events through a proposed detention basin. One benefit of the post-development improvements is the reduction of runoff to the upslope side of downslope properties adjacent to the HMP property. The reduction of runoff was a conscious design decision that is achieved by a decrease in size of the drainage areas that flow to the backside of the properties. The post-development improvements manage stormwater so that runoff collected by all receiving outlet points are within the existing MS4 piped system's allowable capacity and runoff is reduced to Kawa Stream and existing inlets in all but one instance. The increase in runoff for DA5, highlighted in yellow above, during a 10-year, 1-hour storm event is still below the receiving inlet and Pikoiloa Subdivision Drainage System capacity and will not negatively impact the City MS4 system. There are no adverse drainage impacts to roadways, neighboring properties, existing drainage system, and existing drainage pattern, and the proposed drainage improvements meet the storm drain and detention basin requirements of the LUC's D&O.

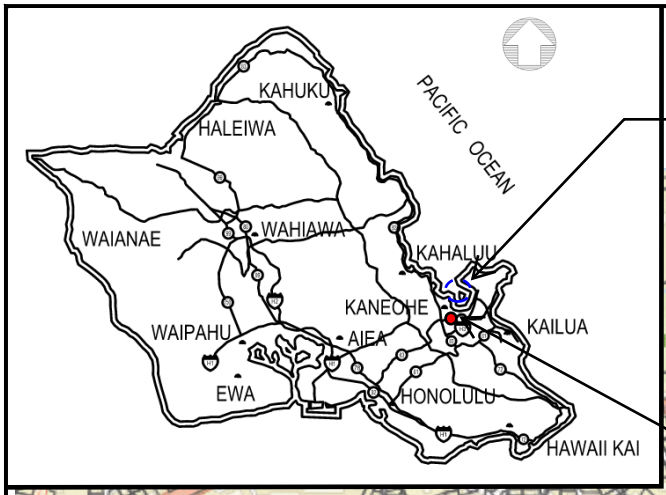
References

"Storm Drainage Standards", Department of Planning and Permitting, City and County of Honolulu, August 2017.

Land Use Commission of the State of Hawaii Decision and Order "Docket No. A17-804", October 13, 2020.

EXHIBITS

- Exhibit 1 – Site Vicinity and Location Map
- Exhibit 2 – Stormwater Discharge Map
- Exhibit 3 – Existing Drainage Conditions
- Exhibit 4 – Proposed Drainage Conditions
- Exhibit 5 – Drainage Overall Plan
- Exhibit 6 – Post Construction BMP Plan



RECEIVING WATERS
Class AA Marine

PROJECT LOCATION
Kaneohe, Oahu, Hawaii

PROJECT LOCATION
Kaneohe, Oahu, Hawaii
TMK: 4-5-033:001

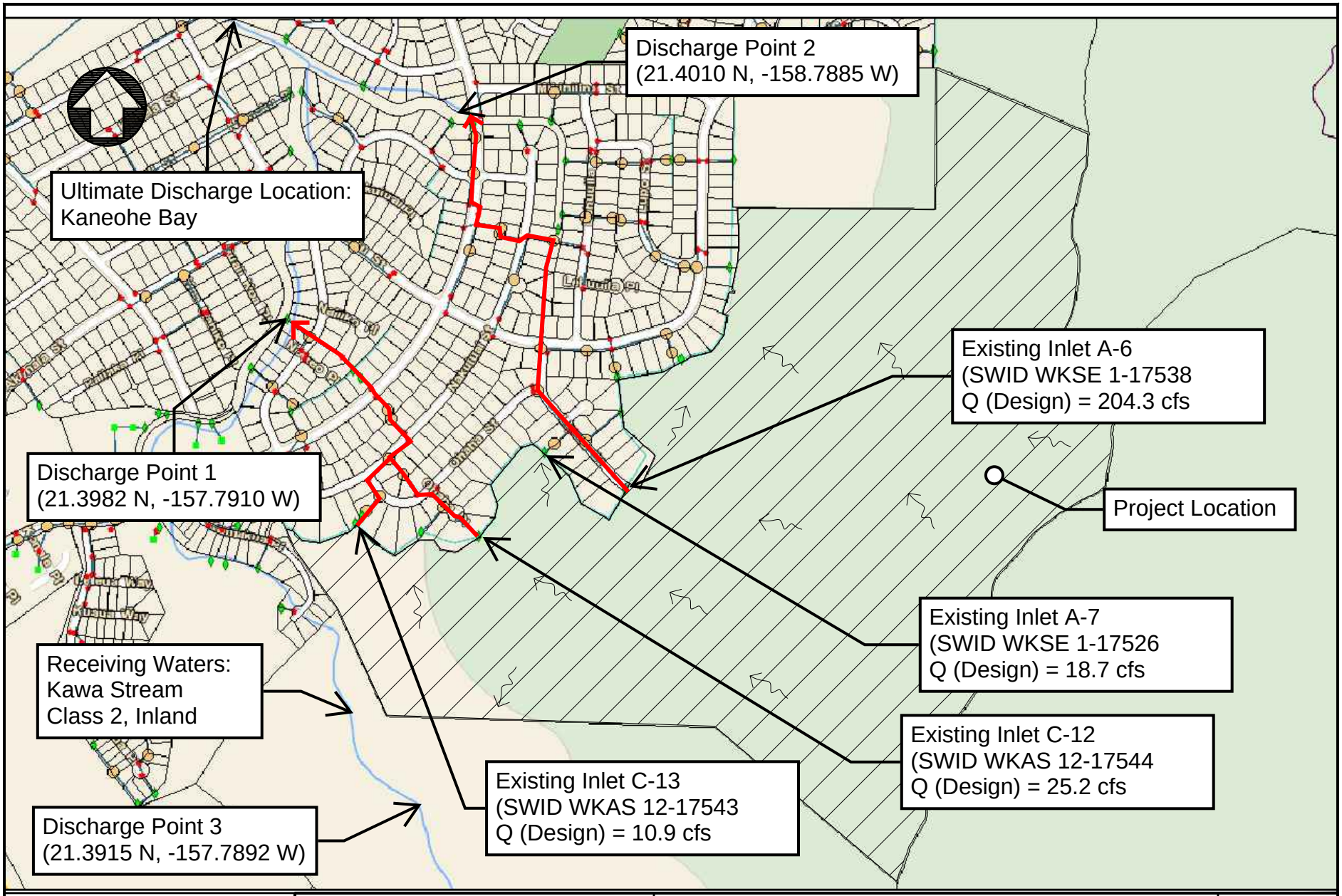
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ph 808.687.8884
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Site Vicinity and Location Map

N.T.S.

PROJECT	Hawaii Memorial Park Expansion	LOCATION	Kaneohe, Oahu, HI
CLIENT	Hawaiian Memorial Life Plan	DATE	March 2025

EXHIBIT NO.
1



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STORMWATER DISCHARGE MAP

PROJECT	Hawaii Memorial Park Expansion	LOCATION	Kaneohe, Oahu, HI
CLIENT	Hawaiian Memorial Life Plan	DATE	January 2024

EXHIBIT NO.
2

DISCHARGE POINT #4
INLET A-7
AREA = 3.57 AC
Q_{DESIGN} = 18.7 CFS
Q_{1HR} = 7.79 CFS
Q_{24HR} = 10.01 CFS

DISCHARGE POINT #5
INLET A-6
AREA = 72.56 AC
Q_{DESIGN} = 159.0 CFS
Q_{1HR} = 118.49 CFS
Q_{24HR} = 162.32 CFS

PRESERVATION AREA

PIKOILOA SUBDIVISION

OHAHA STREET

LIPALU STREET

DISCHARGE POINT #3
INLET C-12
AREA = 8.07AC
Q_{DESIGN} = 25.2 CFS
Q_{1HR} = 18.10 CFS
Q_{24HR} = 28.71 CFS

DRAINAGE AREA #4

DISCHARGE POINT #1
INLET C-13
AREA = 4.08 AC
Q_{DESIGN} = 10.9 CFS
Q_{1HR} = 7.30 CFS
Q_{24HR} = 10.45 CFS

PIKOILOA SUBDIVISION
DIVERSION DITCH SYSTEM

DRAINAGE AREA #3

DRAINAGE AREA #5

DRAINAGE AREA #1

DRAINAGE AREA #2

DISCHARGE POINT #2
EXISTING CHANNEL (KAWA STREAM)
AREA = 3.54 AC
Q_{1HR} = 6.80 CFS
Q_{24HR} = 11.04 CFS

DRAINAGE AREA BOUNDARY, TYPICAL

PROPERTY BOUNDARY, TYPICAL

NOTES:

1. DESIGN FLOW RATE Q_{DESIGN} IS BASED ON THE 10-YEAR, 1-HOUR STORM AND OBTAINED EITHER FROM THE PIKOILOA SUBDIVISION AS-BUILTS OR FROM THE INLET EVALUATION PERFORMED AS PART OF THIS REPORT, WHICHEVER IS LOWEST.
2. PRE-CONSTRUCTION FLOW RATE Q_{1HR} IS BASED ON A 10-YEAR, 1-HOUR STORM AND CALCULATED USING THE RATIONAL METHOD.
3. PRE-CONSTRUCTION FLOW RATE Q_{24HR} IS BASED ON A 10-YEAR, 24-HOUR STORM AND CALCULATED USING THE TR-55 METHOD.

EXHIBIT 3

NORTH

PRE-CONSTRUCTION DRAINAGE AREAS

SCALE: NTS

1" = 300' 0 75 150 300 450

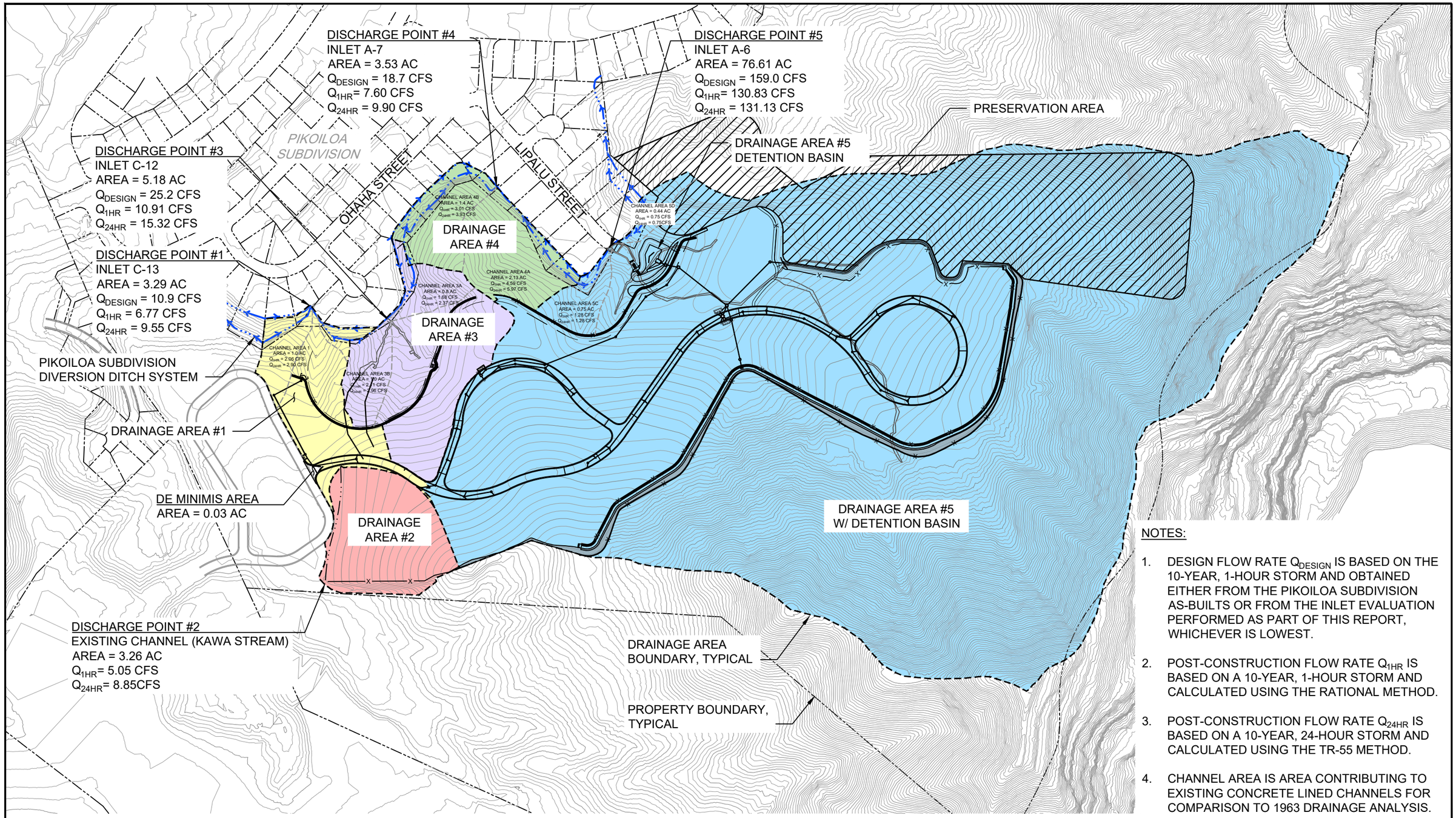
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PROJECT HAWAII MEMORIAL PARK EXPANSION

LOCATION KANEOHE, OAHU, HAWAII

CLIENT HAWAIIAN MEMORIAL LIFE PLAN

DATE 01/16/2024



NOTES:

1. DESIGN FLOW RATE Q_{DESIGN} IS BASED ON THE 10-YEAR, 1-HOUR STORM AND OBTAINED EITHER FROM THE PIKOILOA SUBDIVISION AS-BUILTS OR FROM THE INLET EVALUATION PERFORMED AS PART OF THIS REPORT, WHICHEVER IS LOWEST.
2. POST-CONSTRUCTION FLOW RATE Q_{1HR} IS BASED ON A 10-YEAR, 1-HOUR STORM AND CALCULATED USING THE RATIONAL METHOD.
3. POST-CONSTRUCTION FLOW RATE Q_{24HR} IS BASED ON A 10-YEAR, 24-HOUR STORM AND CALCULATED USING THE TR-55 METHOD.
4. CHANNEL AREA IS AREA CONTRIBUTING TO EXISTING CONCRETE LINED CHANNELS FOR COMPARISON TO 1963 DRAINAGE ANALYSIS.

EXHIBIT 4

NORTH

POST-CONSTRUCTION DRAINAGE AREAS (10-YEAR, 24-HOUR)

SCALE: NTS

1" = 300' 0 75 150 300 450

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PROJECT HAWAII MEMORIAL PARK EXPANSION	
LOCATION KANEOHE, OAHU, HAWAII	
CLIENT HAWAIIAN MEMORIAL LIFE PLAN	DATE 01/16/2024

LEGEND

- 325 EXISTING CONTOUR W/ ELEV
- 310 FINISHED CONTOUR W/ ELEV.
- SETBACK LINE
- DAMSELFLY BUFFER LINE
- LIMITS OF GRADING/DISTURBANCE
- ADDITIONAL LIMITS OF DISTURBANCE
- SUBSURFACE DRAINAGE LINE
- STORM DRAIN LINE
- CULTURAL PRESERVATION AREA
- EXISTING SWALES

NOTE:

FOR SUBSURFACE DRAINAGE PLAN,
SEE SHEET CG121

EXIST PRIVATE DIVERSION DITCH, TYP.

TMK: 4-5-093:016
TMK: 4-5-093:018
TMK: 4-5-093:019
TMK: 4-5-093:017
TMK: 4-5-093:020
TMK: 4-5-093:021
TMK: 4-5-093:022
TMK: 4-5-092:002
TMK: 4-5-092:003
TMK:4-5-092:001
TMK:4-5-092:004
TMK:4-5-092:005
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TMK: 4-5-092:016
TMK:4-5-092:015
TMK:4-5-092:017
TMK:4-5-092:018
TMK:4-5-092:019
TMK:4-5-092:020

OHAHA STREET (CITY)
OHAHA PLACE (CITY)
LIPALU STREET (CITY)

EXIST DRAIN INLET
PROPERTY LINE
DAMSELFLY BUFFER
LIMITS OF GRADING/DISTURBANCE
ADDITIONAL LIMITS OF DISTURBANCE
MAKAI WALL SWALE
HMP MAKAI WALL 2 OUTFALL WITH STILLING BASIN
HMP MAKAI WALL 1 OUTFALL WITH LEVELING POOL
EXISTING LIPALU ST. DRAIN INLET
LIPALU OUTFALL DETENTION AND STILLING BASIN
PRESERVATION ACCESS
PRESERVATION SWALE
STORM DRAIN A
STORM DRAIN B
STORM DRAIN C
STORM DRAIN D
STORM DRAIN E
STORM DRAIN F
STORM DRAIN G
STORM DRAIN H
DRIVEWAY A
DRIVEWAY B
ROCKFALL CATCHMENT DITCH
OCEAN VIEW ROAD (PRIVATE)
GRASS SWALE SEE DET. 1 C-505
KAWA STREAM OUTFALL
PROPERTY LINE, TYP
PROPERTY LINE

CG109 CG110 CG111 CG112 CG113 CG114 CG115 CG116 CG117 CG118 CG119

TMK:4-5-033: 001
TMK:4-5-033: 002
TMK:4-2-015: 001

HYDRAULIC DATA LEGEND:

60" HDPE/RCP	PIPE DIAMETER & TYPE
A	DRAINAGE AREA ACRES
Q_{10}	SURFACE RUNOFF, cfs, FOR TM = 10 YRS
Q_{50}	SURFACE RUNOFF, cfs, FOR TM = 50 YRS
V	FULL FLOW VELOCITY, FPS
D_N	NORMAL DEPTH OF FLOW, FT

HYDROLOGIC DATA*:

	TM=10 YEARS	TM=50 YEARS
RUNOFF COEFFICENT	C=0.30 (AVERAGE)	C=0.30 (AVERAGE)
1-HOUR RAINFALL INTENSITY	I=2.96 IN/HR	I=4.11 IN/HR
TIME IN CONCENTRATION	TC=13 MINUTES	TC=13 MINUTES
CORRECTION FACTOR	CF=2.08	CF=2.08
RAINFALL INTENSITY	I_{10}=6.16 IN/HR	I_{50}=8.55 IN/HR
UNIT DISCHARGE	Q_{10}/A=1.85 CFS/AC	Q_{50}/A=2.56 CFS/AC

* HYDROLOGIC DATA FOR NEW WORK ONLY.

PLAN NORTH

DRAINAGE OVERALL PLAN

SCALE: 1" = 100'-0"

1"=100'-0" 0 50 100 200 300

EXHIBIT 5

Revisions

COFFMAN ENGINEERS
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THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

WARREN S. HIROTA LICENSED PROFESSIONAL ENGINEER No. 9776-C HAWAII U.S.A.

APRIL 30, 2026
Expiration Date of the License

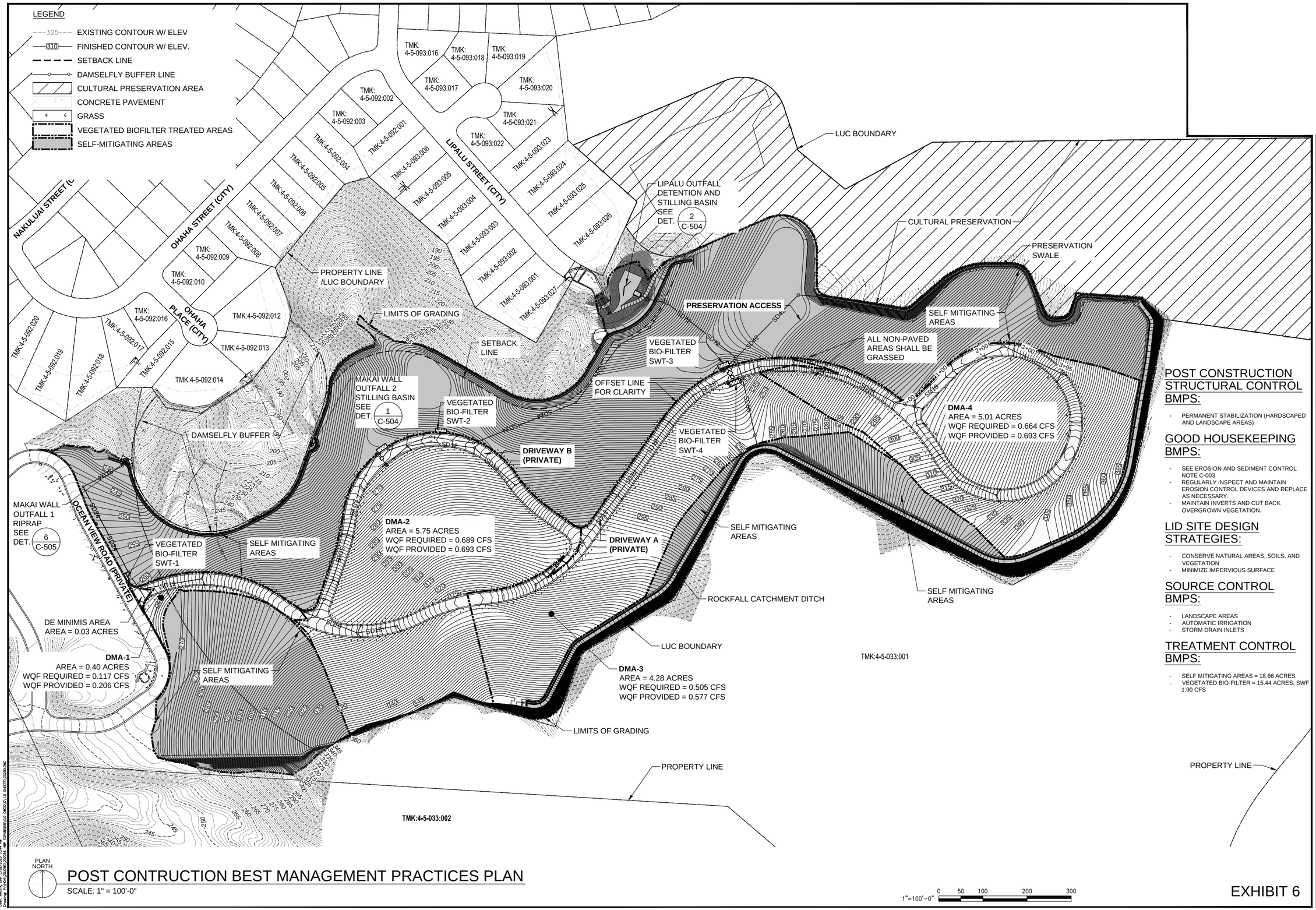
OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION
45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

DRAINAGE OVERALL PLAN

Date	11/08/2024
Design	JH/MKU
Drawn	LYY
Job No.	202056
Sheet No.	CG108

User: WRIGHTA, DAN 3/28/2025 8:39 AM
Date: J:\2020\202056\CIVIL\DWG\CG108.DWG



POST CONSTRUCTION STRUCTURAL CONTROL BMPS:

- PERMANENT STABILIZATION (HARDSCAPED AND LANDSCAPE AREAS)

GOOD HOUSEKEEPING BMPS:

- SEE EROSION AND SEDIMENT CONTROL NOTE C-003
- REGULARLY INSPECT AND MAINTAIN EROSION CONTROL DEVICES AND REPLACE AS NECESSARY.
- MAINTAIN INVERTS AND CUT BACK OVERGROWN VEGETATION.

LID SITE DESIGN STRATEGIES:

- CONSERVE NATURAL AREAS, SOILS, AND VEGETATION
- MINIMIZE IMPERVIOUS SURFACE

SOURCE CONTROL BMPS:

- LANDSCAPE AREAS
- AUTOMATIC IRRIGATION
- STORM DRAIN INLETS

TREATMENT CONTROL BMPS:

- SELF MITIGATING AREAS = 18.66 ACRES
- VEGETATED BIO-FILTER = 15.44 ACRES, SWF 1.90 CFS

PLAN NORTH

POST CONTRUCTION BEST MANAGEMENT PRACTICES PLAN

SCALE: 1" = 100'-0"

1"=100'-0" 0 50 100 200 300

EXHIBIT 6

Revisions	

COFFMAN ENGINEERS
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Signature

APRIL 30, 2026

Expiration Date of the License

JAMES B. HIROTA LICENSED PROFESSIONAL ENGINEER No. 9776-C HAWAII U.S.A.

OWNER / DEVELOPER
HAWAIIAN MEMORIAL LIFE PLAN
1330 MAUNAKEA ST.
HONOLULU, HI 96817

HAWAIIAN MEMORIAL PARK EXPANSION

45-425 Kamehameha Highway, Kaneohe, HI
TMK 4-5-033:001

POST CONTRUCTION BEST MANAGEMENT PRACTICES PLAN

Date	11/08/2024
Design	JH/MKU
Drawn	DH
Job No.	202056
Sheet No.	CG200

User: HIROTA, DAN 3/28/2025, 10:44 AM
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APPENDIX I

Hydrology Calculations & Hydrographs

- 10-Year, 1-Hour Storm, Pre and Post-developed
- 10-Year, 24-Hour Storm, Pre and Post-developed

Prepared By:
Jonathan Hartford

Reviewed By:
Kimo Unten

10-Year, 1-Hour Storm, Pre and Post-developed

COFFMAN ENGINEERS

Project Description

File Name	2023.01.10 CURRENT Ratl & Mod Ratl.SPF
Description	Drainage Report (Rational 10-yr 1-hr Storm)

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	Rational
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	00:00:00	0:00:00
End Analysis On	00:00:00	1:00:00
Start Reporting On	00:00:00	0:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	1
Subbasins	58
Nodes	104
Junctions	55
Outfalls	4
Flow Diversions	0
Inlets	44
Storage Nodes	1
Links	139
Channels	44
Pipes	94
Pumps	0
Orifices	0
Weirs	1
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period	10 year(s)

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Subbasin Summary

Subbasin ID	Area (ac)	Weighted Runoff Coefficient	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ft^3)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
A5	0.06	0.9500	0.86	0.82	165.67	0.55	0 00:05:00
A5.1	0.25	0.5500	0.86	0.47	426.63	1.41	0 00:05:00
A6.1	0.08	0.9500	0.86	0.82	224.84	0.74	0 00:05:00
A6.2	0.08	0.8400	0.86	0.72	201.25	0.67	0 00:05:00
B10.1	0.14	0.5400	0.86	0.46	235.30	0.78	0 00:05:00
B11.1	0.58	0.3200	1.32	0.42	880.26	1.41	0 00:10:18
B11.2	0.02	0.9500	0.86	0.82	68.04	0.23	0 00:05:00
B12.1	0.57	0.2900	1.06	0.31	632.03	1.46	0 00:07:13
B12.2	0.07	0.9500	0.86	0.82	210.05	0.69	0 00:05:00
B13.1	0.58	0.2900	1.20	0.35	726.80	1.36	0 00:08:52
B8.1	0.61	0.3000	1.32	0.40	877.52	1.40	0 00:10:16
B9.1	0.46	0.3000	1.09	0.33	545.54	1.20	0 00:07:31
B9.2	0.06	0.9500	0.86	0.82	171.59	0.57	0 00:05:00
B-C1	0.56	0.4800	1.30	0.62	1270.96	2.07	0 00:10:13
B-C2	0.64	0.2900	1.42	0.41	953.48	1.33	0 00:11:49
C1.1	0.58	0.3200	1.43	0.46	967.60	1.33	0 00:12:01
C2.1	0.55	0.3100	1.32	0.41	821.54	1.30	0 00:10:32
C2.2	0.10	0.5700	0.86	0.49	168.63	0.56	0 00:05:00
C3.1	0.56	0.3800	1.15	0.44	881.55	1.79	0 00:08:05
C3.2	0.05	0.9500	0.86	0.82	139.05	0.46	0 00:05:00
D1.1	0.37	0.2800	1.59	0.44	589.89	0.69	0 00:14:05
D2.1	0.59	0.3200	1.52	0.49	1033.81	1.30	0 00:13:06
D2.2	0.06	0.9500	0.86	0.82	189.34	0.63	0 00:05:00
D3.1	0.52	0.3300	1.22	0.40	756.31	1.37	0 00:09:12
D3.2	0.05	0.9500	0.86	0.82	147.92	0.49	0 00:05:00
D4.1	0.61	0.2900	1.22	0.36	789.94	1.42	0 00:09:12
D4.2	0.07	0.9500	0.86	0.82	198.22	0.66	0 00:05:00
D5.1	0.58	0.3100	1.22	0.38	786.89	1.44	0 00:08:55
D-E1	1.28	0.2700	1.39	0.38	1746.48	2.54	0 00:11:19
D-E2	0.80	0.4100	1.97	0.81	2337.63	1.72	0 00:22:28
E1.1	0.31	0.3200	1.25	0.40	446.88	0.78	0 00:09:28
E2.1	0.40	0.3700	1.42	0.53	765.66	1.07	0 00:11:50
E2.2	0.08	0.9500	0.86	0.82	230.76	0.76	0 00:05:00
E4.1	0.63	0.3800	1.61	0.61	1397.42	1.58	0 00:14:40
E4.2	0.05	0.9500	0.86	0.82	136.09	0.45	0 00:05:00
E5.1	0.71	0.2900	1.43	0.42	1074.10	1.48	0 00:12:02
E5.2	0.04	0.9500	0.86	0.82	109.46	0.36	0 00:05:00
E6.1	0.45	0.3900	1.40	0.55	899.82	1.29	0 00:11:27
E8.1	0.68	0.3200	1.18	0.38	937.17	1.79	0 00:08:43
E8.2	0.05	0.9500	0.86	0.82	144.96	0.48	0 00:05:00
F1.1	0.22	0.5500	1.20	0.66	535.85	1.00	0 00:08:50
F1.2	0.01	0.3500	1.35	0.47	11.16	0.02	0 00:10:48
F3.1	0.56	0.3000	0.97	0.29	589.51	1.58	0 00:06:12
F3.2	0.04	0.9500	0.86	0.82	112.42	0.37	0 00:05:00
H_POND	1.57	0.4000	1.90	0.76	4319.92	3.46	0 00:20:39
H2	0.26	0.4000	0.86	0.34	328.70	1.09	0 00:05:00
H-3	1.30	0.2400	1.39	0.33	1571.43	2.29	0 00:11:18
MAUKA_NORTH	20.06	0.4200	1.66	0.70	50681.19	54.08	0 00:15:31
MAUKA_SOUTH	5.66	0.4100	1.40	0.57	11772.74	16.91	0 00:11:32
PRESERV_1	2.89	0.3400	1.14	0.39	4070.39	8.24	0 00:08:12
PRESERV_2	1.10	0.3300	1.89	0.62	2490.42	2.03	0 00:20:15
PRESERV_3	3.81	0.3600	2.13	0.77	10607.84	6.57	0 00:26:42
PRESERV_4	0.44	0.4000	1.75	0.70	1119.64	1.06	0 00:17:33
PRESERV_5	0.17	0.2400	1.09	0.26	161.68	0.36	0 00:07:27
PRESERV_6	0.42	0.2400	1.06	0.25	385.72	0.89	0 00:07:14
PRESERV_7	9.79	0.4000	1.68	0.67	23881.34	24.69	0 00:16:03
PRESERV_8	6.24	0.4000	1.66	0.66	15017.75	16.02	0 00:15:32
PRESERV_9	1.09	0.3100	2.27	0.70	2785.52	1.50	0 00:30:37

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Node Summary

Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Diameter or Width (in)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ft^3)	Total Time Flooded (min)
SDFC D (STORM)	Junction	229.40	237.42	96.00	17.30	231.17	0 00:00	0.00	0.00
SDFC-A (STORM)	Junction	252.88	258.84	48.00	2.27	253.31	0 00:00	0.00	0.00
SDFC-BC (STORM)	Junction	255.76	263.76	72.00	13.02	258.53	0 00:00	0.00	0.00
SDFC-E(STORM)	Junction	231.93	237.65	72.00	8.83	233.16	0 00:00	0.00	0.00
SDHW-G1 (STORM)	Junction	233.00	237.00		47.63	236.08	0 00:00	0.00	0.00
SDHW-H2	Junction	246.54	251.54		65.09	248.81	0 00:00	0.00	0.00
SDMH-A1 (STORM)	Junction	217.50	239.13	48.00	2.25	220.96	0 00:00	0.00	0.00
SDMH-A2 (STORM)	Junction	233.07	246.59	48.00	2.25	236.29	0 00:00	0.00	0.00
SDMH-A3 (STORM)	Junction	243.28	258.09	48.00	2.27	246.59	0 00:00	0.00	0.00
SDMH-A5 (STORM)	Junction	265.11	274.77	48.00	1.30	268.35	0 00:00	0.00	0.00
SDMH-B1 (STORM)	Junction	212.90	222.77	48.00	12.95	216.91	0 00:00	0.00	0.00
SDMH-B10 (STORM)	Junction	288.00	299.48	48.00	3.84	291.47	0 00:00	0.00	0.00
SDMH-B11 (STORM)	Junction	298.46	306.18	48.00	2.59	301.78	0 00:00	0.00	0.00
SDMH-B12 (STORM)	Junction	306.23	314.37	48.00	1.08	309.42	0 00:00	0.00	0.00
SDMH-B2 (STORM)	Junction	218.98	227.86	48.00	12.95	222.65	0 00:00	0.00	0.00
SDMH-B3 (STORM)	Junction	238.89	248.68	48.00	12.95	242.46	0 00:00	0.00	0.00
SDMH-B4 (STORM)	Junction	252.24	269.51	48.00	12.96	255.99	0 00:00	0.00	0.00
SDMH-B5 (STORM)	Junction	252.76	266.49	48.00	12.98	257.30	0 00:00	0.00	0.00
SDMH-B6 (STORM)	Junction	252.54	263.83	48.00	13.00	258.07	0 00:00	0.00	0.00
SDMH-B7 (STORM)	Junction	257.38	265.79	48.00	6.64	261.26	0 00:00	0.00	0.00
SDMH-B8 (STORM)	Junction	266.72	276.34	48.00	5.25	270.15	0 00:00	0.00	0.00
SDMH-B9 (STORM)	Junction	283.30	291.00	48.00	4.16	286.66	0 00:00	0.00	0.00
SDMH-C1 (STORM)	Junction	256.00	265.00	48.00	4.06	259.45	0 00:00	0.00	0.00
SDMH-C2 (STORM)	Junction	259.28	266.56	48.00	2.92	262.81	0 00:00	0.00	0.00
SDMH-C3 (STORM)	Junction	262.48	270.00	48.00	2.93	266.00	0 00:00	0.00	0.00
SDMH-C4 (STORM)	Junction	271.00	281.00	48.00	1.21	274.24	0 00:00	0.00	0.00
SDMH-D1 (STORM)	Junction	235.43	244.00	48.00	5.88	238.89	0 00:00	0.00	0.00
SDMH-D2 (STORM)	Junction	249.50	257.09	48.00	5.37	252.96	0 00:00	0.00	0.00
SDMH-D3 (STORM)	Junction	282.53	290.10	48.00	3.77	285.87	0 00:00	0.00	0.00
SDMH-D4 (STORM)	Junction	299.50	306.95	48.00	2.33	302.83	0 00:00	0.00	0.00
SDMH-D5 (STORM)	Junction	305.50	314.00	48.00	0.91	308.71	0 00:00	0.00	0.00
SDMH-E1 (STORM)	Junction	232.75	242.43	48.00	8.83	236.40	0 00:00	0.00	0.00
SDMH-E2 (STORM)	Junction	246.13	255.60	48.00	8.10	249.53	0 00:00	0.00	0.00
SDMH-E3 (STORM)	Junction	269.66	278.00	48.00	6.93	273.04	0 00:00	0.00	0.00
SDMH-E4 (STORM)	Junction	286.50	295.57	48.00	6.93	289.92	0 00:00	0.00	0.00
SDMH-E5 (STORM)	Junction	288.69	297.87	60.00	5.42	292.27	0 00:00	0.00	0.00
SDMH-E6 (STORM)	Junction	291.15	299.42	48.00	2.14	294.52	0 00:00	0.00	0.00
SDMH-E7 (STORM)	Junction	303.26	314.53	48.00	1.18	306.49	0 00:00	0.00	0.00
SDMH-E8 (STORM)	Junction	318.27	326.00	48.00	1.18	321.47	0 00:00	0.00	0.00
SDMH-F1 (STORM)	Junction	290.93	300.47	48.00	2.55	294.41	0 00:00	0.00	0.00
SDMH-F2 (STORM)	Junction	293.34	303.31	48.00	1.21	296.68	0 00:00	0.00	0.00
SDMH-F3 (STORM)	Junction	312.09	323.59	48.00	1.21	315.30	0 00:00	0.00	0.00
SDMH-G1 (STORM)	Junction	228.94	249.00	60.00	47.27	233.62	0 00:00	0.00	0.00
SDMH-H1 (STORM)	Junction	179.49	193.34	96.00	131.24	187.17	0 00:00	0.00	0.00
SDMH-H2 (STORM)	Junction	184.28	219.21	96.00	131.19	189.36	0 00:00	0.00	0.00
SDMH-H3 (STORM)	Junction	210.82	240.96	96.00	121.81	215.69	0 00:00	0.00	0.00
SDMH-H4 (STORM)	Junction	217.45	239.00	72.00	64.93	222.93	0 00:00	0.00	0.00
SDMH-H5 (STORM)	Junction	224.14	253.00	72.00	65.05	228.82	0 00:00	0.00	0.00
OUTFALL__DET_WEIR	Outfall	175.00			0.00	175.00			
OUTFALL_DET_PIPE_24	Outfall	180.00			44.48	181.52			
OUTFALL_DET_PIPE_30	Outfall	180.00			69.41	181.68			
SDHW-A1 (STORM)	Outfall	220.29			2.25	220.63			
DETENTION_POND	Storage Node	182.00	192.00		133.01	186.81		0.00	0.00

Link Summary

Element ID	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow Velocity	Peak Flow Depth	Total Time Surcharged	Reported Condition
			(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)	(ft/sec)	(ft)	(min)	
{STORM}.A-0 (STORM)	SDHW-A1 (STORM)	SDMH-A1 (STORM)	10.71	220.29	220.50	-1.9600	30.000	0.0130	2.25	57.43	4.45	0.40	0.00	Calculated
{STORM}.A-1 (STORM)	SDMH-A1 (STORM)	SDMH-A2 (STORM)	100.70	220.50	236.07	-15.4600	24.000	0.0130	2.25	88.96	10.74	0.34	0.00	Calculated
{STORM}.A-2 (STORM)	SDMH-A2 (STORM)	SDMH-A3 (STORM)	218.68	236.07	246.28	-4.6700	24.000	0.0130	2.25	48.89	7.75	0.30	0.00	Calculated
{STORM}.A-3 (STORM)	SDMH-A3 (STORM)	SDFC-A (STORM)	14.06	251.62	252.88	-8.9600	12.000	0.0130	2.27	10.67	8.42	0.38	0.00	Calculated
{STORM}.A-4 (STORM)	SDFC-A (STORM)	SDMH-A4 (STORM)	29.04	252.88	253.84	-3.3100	12.000	0.0130	2.27	6.48	6.09	0.49	0.00	Calculated
{STORM}.A-5 (STORM)	SDMH-A4 (STORM)	SDMH-A5 (STORM)	143.05	254.34	268.11	-9.6300	12.000	0.0130	1.29	11.06	9.16	0.23	0.00	Calculated
{STORM}.B-0 (STORM)	SDMH-B1 (STORM)	SDMH-H2 (STORM)	69.39	215.90	213.00	4.1700	24.000	0.0130	12.95	46.22	9.92	0.87	0.00	Calculated
{STORM}.B-1 (STORM)	SDMH-B2 (STORM)	SDMH-B1 (STORM)	78.08	221.98	215.90	7.7900	24.000	0.0130	12.95	63.13	11.52	0.84	0.00	Calculated
{STORM}.B-10 (STORM)	SDMH-B8 (STORM)	SDMH-B9 (STORM)	106.44	271.47	286.30	-13.9300	18.000	0.0130	4.16	39.20	13.50	0.35	0.00	Calculated
{STORM}.B-11 (STORM)	SDMH-B9 (STORM)	SDMH-B10 (STORM)	92.10	286.80	291.00	-4.5600	18.000	0.0130	3.83	22.43	8.80	0.44	0.00	Calculated
{STORM}.B-12 (STORM)	SDMH-B10 (STORM)	SDMH-B11 (STORM)	100.47	292.50	301.46	-8.9200	18.000	0.0130	2.59	31.37	10.10	0.30	0.00	Calculated
{STORM}.B-13 (STORM)	SDMH-B11 (STORM)	SDMH-B12 (STORM)	80.79	301.46	309.23	-9.6200	18.000	0.0130	1.08	32.57	5.90	0.25	0.00	Calculated
{STORM}.B-2 (STORM)	SDMH-B2 (STORM)	SDMH-B3 (STORM)	163.81	221.98	241.89	-12.1600	24.000	0.0130	12.95	78.88	15.53	0.62	0.00	Calculated
{STORM}.B-3 (STORM)	SDMH-B3 (STORM)	SDMH-B4 (STORM)	249.48	242.86	255.24	-4.9700	24.000	0.0130	12.95	50.41	12.75	0.72	0.00	Calculated
{STORM}.B-4 (STORM)	SDMH-B4 (STORM)	SDMH-B5 (STORM)	98.43	255.14	255.76	-0.6300	24.000	0.0130	12.96	17.90	5.50	1.40	0.00	Calculated
{STORM}.B-5 (STORM)	SDMH-B5 (STORM)	SDMH-B6 (STORM)	99.98	255.76	256.49	-0.7400	24.000	0.0130	12.98	19.41	4.96	1.56	0.00	Calculated
{STORM}.B-6 (STORM)	SDMH-B6 (STORM)	SDFC-BC (STORM)	24.21	256.49	256.84	-1.4400	24.000	0.0130	13.00	27.16	5.18	1.63	0.00	Calculated
{STORM}.B-7 (STORM)	SDCB-B1 (STORM)	SDFC-BC (STORM)	10.44	257.00	256.84	1.5500	24.000	0.0130	8.23	28.18	3.21	1.71	0.00	Calculated
{STORM}.B-8 (STORM)	SDCB-B1 (STORM)	SDMH-B7 (STORM)	79.04	258.86	260.38	-1.9200	18.000	0.0130	6.63	14.56	6.96	0.80	0.00	Calculated
{STORM}.B-9 (STORM)	SDMH-B7 (STORM)	SDMH-B8 (STORM)	115.90	260.38	269.72	-8.0600	18.000	0.0130	5.25	29.81	7.89	0.65	0.00	Calculated
{STORM}.C-0 (STORM)	SDCB-C1 (STORM)	SDFC-BC (STORM)	17.61	257.37	256.84	2.9800	24.000	0.0130	5.34	39.02	2.71	1.48	0.00	Calculated
{STORM}.C-1 (STORM)	SDMH-C1 (STORM)	SDCB-C1 (STORM)	63.57	259.00	257.37	2.5700	24.000	0.0130	4.05	36.28	4.94	0.86	0.00	Calculated
{STORM}.C-2 (STORM)	SDMH-C1 (STORM)	SDMH-C2 (STORM)	54.84	260.00	262.28	-4.1600	12.000	0.0130	2.91	7.27	7.68	0.49	0.00	Calculated
{STORM}.C-3 (STORM)	SDMH-C2 (STORM)	SDMH-C3 (STORM)	99.30	262.28	265.48	-3.2200	12.000	0.0130	2.92	6.39	6.99	0.52	0.00	Calculated
{STORM}.C-4 (STORM)	SDMH-C3 (STORM)	SDMH-C4 (STORM)	125.09	265.48	274.00	-6.8100	12.000	0.0130	1.21	9.30	5.49	0.38	0.00	Calculated
{STORM}.D-0 (STORM)	SDFC D (STORM)	SDMH-H3 (STORM)	37.25	229.40	228.67	1.9500	24.000	0.0130	17.29	31.67	7.29	1.41	0.00	Calculated
{STORM}.D-1 (STORM)	SDMH-D1 (STORM)	SDFC D (STORM)	98.20	238.43	230.40	8.1800	18.000	0.0130	5.88	30.04	11.25	0.61	0.00	Calculated
{STORM}.D-2 (STORM)	SDMH-D2 (STORM)	SDMH-D1 (STORM)	80.60	252.50	238.43	17.4600	12.000	0.0130	5.37	14.89	15.40	0.46	0.00	Calculated
{STORM}.D-3 (STORM)	SDMH-D3 (STORM)	SDMH-D2 (STORM)	203.16	285.53	252.50	16.2600	12.000	0.0130	3.75	14.36	12.68	0.40	0.00	Calculated
{STORM}.D-4 (STORM)	SDMH-D4 (STORM)	SDMH-D3 (STORM)	192.04	302.50	285.53	8.8400	12.000	0.0130	2.32	10.59	9.95	0.34	0.00	Calculated
{STORM}.D-5 (STORM)	SDMH-D5 (STORM)	SDMH-D4 (STORM)	85.24	308.50	302.50	7.0400	12.000	0.0130	0.91	9.45	5.37	0.27	0.00	Calculated
{STORM}.D-E.1 (STORM)	SDCB-D2 (STORM)	SDFC D (STORM)	19.30	232.82	233.09	-1.4000	18.000	0.0150	1.71	4.07	2.60	0.60	0.00	Calculated
{STORM}.D-E.2 (STORM)	SDCB-D1 (STORM)	SDFC D (STORM)	15.15	233.49	233.25	1.5800	18.000	0.0130	2.49	13.22	4.25	0.55	0.00	Calculated
{STORM}.E-1 (STORM)	SDFC-E(STORM)	SDFC D (STORM)	10.39	231.93	231.63	2.8900	24.000	0.0130	8.83	38.45	6.11	0.94	0.00	Calculated
{STORM}.E-2 (STORM)	SDFC-E(STORM)	SDMH-E1 (STORM)	64.97	232.03	235.75	-5.7300	24.000	0.0130	8.83	54.13	7.12	0.88	0.00	Calculated
{STORM}.E-3 (STORM)	SDMH-E1 (STORM)	SDMH-E2 (STORM)	77.50	235.75	249.13	-17.2600	24.000	0.0130	8.10	93.98	12.46	0.52	0.00	Calculated
{STORM}.E-4 (STORM)	SDMH-E2 (STORM)	SDMH-E3 (STORM)	125.26	249.13	272.66	-18.7800	24.000	0.0130	6.92	98.05	15.89	0.39	0.00	Calculated
{STORM}.E-5 (STORM)	SDMH-E3 (STORM)	SDMH-E4 (STORM)	121.85	272.66	289.50	-13.8200	24.000	0.0130	6.93	84.11	15.32	0.40	0.00	Calculated
{STORM}.E-6 (STORM)	SDMH-E4 (STORM)	SDMH-E5 (STORM)	45.09	289.50	291.69	-4.8600	24.000	0.0130	5.42	49.87	8.55	0.51	0.00	Calculated
{STORM}.E-7 (STORM)	SDMH-E5 (STORM)	SDMH-E6 (STORM)	41.79	292.16	294.15	-4.7500	18.000	0.0130	2.14	22.91	7.06	0.34	0.00	Calculated
{STORM}.E-8 (STORM)	SDMH-E6 (STORM)	SDMH-E7 (STORM)	155.55	294.15	306.26	-7.7900	12.000	0.0130	1.17	9.94	6.35	0.30	0.00	Calculated
{STORM}.E-9 (STORM)	SDMH-E7 (STORM)	SDMH-E8 (STORM)	94.31	306.26	321.27	-15.9200	12.000	0.0130	1.18	14.22	9.61	0.21	0.00	Calculated
{STORM}.F-0 (STORM)	SDMH-E5 (STORM)	SDMH-F1 (STORM)	120.28	291.88	293.93	-1.7000	18.000	0.0130	2.52	13.71	5.48	0.46	0.00	Calculated
{STORM}.F-1 (STORM)	SDMH-F1 (STORM)	SDMH-F2 (STORM)	127.59	293.93	296.34	-1.8900	12.000	0.0130	1.20	4.90	3.97	0.41	0.00	Calculated

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Link Summary

Element ID	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow Velocity	Peak Flow Depth	Total Time Surcharged	Reported Condition
			(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)	(ft/sec)	(ft)	(min)	
{STORM}.F-2 (STORM)	SDMH-F2 (STORM)	SDMH-F3 (STORM)	143.28	296.34	315.09	-13.0900	12.000	0.0130	1.21	12.89	9.04	0.28	0.00	Calculated
{STORM}.G-1 (STORM)	SDMH-G1 (STORM)	SDHW-G1 (STORM)	44.33	231.94	233.00	-2.3900	42.000	0.0130	47.27	155.58	6.84	2.38	0.00	Calculated
{STORM}.G-2 (STORM)	SDMH-H3 (STORM)	SDMH-G1 (STORM)	200.57	227.17	231.94	-2.3800	42.000	0.0130	47.21	155.16	11.95	1.50	0.00	Calculated
{STORM}.H-0 (STORM)	SDMH-H1 (STORM)	DETENTION_POND	16.29	182.49	182.00	3.0000	72.000	0.0130	130.35	733.76	9.99	4.74	0.00	Calculated
{STORM}.H-3 (STORM)	SDMH-H2 (STORM)	SDMH-H1 (STORM)	43.53	187.28	182.49	11.0000	72.000	0.0130	131.24	1404.59	10.54	3.31	0.00	Calculated
{STORM}.H-4 (STORM)	SDMH-H3 (STORM)	SDMH-H2 (STORM)	201.47	213.82	203.76	4.9900	72.000	0.0130	121.79	946.36	19.08	1.66	0.00	Calculated
{STORM}.H-5 (STORM)	SDMH-H4 (STORM)	SDMH-H3 (STORM)	49.07	220.45	219.96	1.0000	72.000	0.0130	64.91	423.22	7.70	2.03	0.00	Calculated
{STORM}.H-6 (STORM)	SDMH-H5 (STORM)	SDMH-H4 (STORM)	131.86	227.14	223.19	3.0000	60.000	0.0130	64.93	450.77	13.38	1.48	0.00	Calculated
{STORM}.H-7 (STORM)	SDHW-H2	SDMH-H5 (STORM)	28.58	246.54	246.00	1.8900	60.000	0.0130	65.05	358.00	9.78	1.86	0.00	Calculated
DET_BASIN_OUT_24	DETENTION_POND	OUTFALL_DET_PIPE_24	44.00	182.00	180.00	4.5500	24.000	0.0130	44.48	48.23	15.21	1.76	0.00	Calculated
DET_BASIN_OUT_30	DETENTION_POND	OUTFALL_DET_PIPE_30	44.00	182.00	180.00	4.5500	30.000	0.0130	69.41	87.45	15.83	2.09	0.00	Calculated
WEIR_LIPALU	DETENTION_POND	OUTFALL__DET_WEIR		182.00	175.00				0.00					

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Inlet Summary

Element ID	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Allowable Spread (ft)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)
DI-A4.1 (STORM)	2	255.71	260.68	1.47	N/A	N/A	N/A	7.00	3.47	261.25
DI-A5.1 (STORM)	1	269.47	274.85	0.75	0.00	0.75	0.43	7.00	2.08	274.89
DI-A5.2 (STORM)	1	270.40	275.30	0.73	0.00	0.72	0.43	7.00	2.05	275.34
DI-B10.1 (STORM)	1	292.48	297.48	1.53	1.19	0.34	78.01	7.00	4.05	297.65
DI-B10.2 (STORM)	1	292.48	297.39	0.22	0.22	0.00	100.00	7.00	1.32	297.47
DI-B11.1 (STORM)	1	301.55	306.54	1.63	1.25	0.38	76.83	7.00	4.24	306.71
DI-B11.2 (STORM)	1	301.55	306.55	0.69	0.00	0.69	0.44	7.00	2.01	306.59
DI-B12.1 (STORM)	1	309.67	314.69	1.36	1.09	0.26	80.61	7.00	3.75	314.85
DI-B7.1 (STORM)	1	260.75	265.75	1.62	1.35	0.26	83.64	7.00	5.19	265.94
DI-B8.1 (STORM)	1	271.34	276.34	1.29	0.00	1.29	0.21	7.00	2.24	276.38
DI-B8.2 (STORM)	1	271.34	276.34	0.57	0.45	0.12	78.72	7.00	1.65	276.44
DI-B9.1 (STORM)	1	286.00	291.00	0.84	0.61	0.24	71.78	7.00	1.91	291.12
DI-C1.1 (STORM)	1	260.00	265.00	1.54	1.31	0.23	84.83	7.00	5.06	265.19
DI-C3.1 (STORM)	1	265.00	270.00	1.74	1.31	0.43	75.21	7.00	4.42	270.17
DI-C3.2 (STORM)	1	265.00	270.00	0.65	0.59	0.06	90.79	7.00	1.97	270.12
DI-C4.1 (STORM)	1	276.00	281.00	1.78	1.08	0.70	60.69	7.00	3.57	281.16
DI-C4.2 (STORM)	1	276.00	281.00	0.46	0.37	0.08	81.61	7.00	1.52	281.09
DI-D1.1 (STORM)	1	239.00	244.00	0.81	0.01	0.81	0.66	7.00	2.45	244.05
DI-D2.1 (STORM)	1	252.12	257.15	1.57	1.32	0.25	84.24	7.00	5.09	257.34
DI-D2.2 (STORM)	1	252.12	257.13	0.76	0.01	0.75	0.68	7.00	2.37	257.17
DI-D3.1 (STORM)	1	285.10	290.11	1.98	1.16	0.82	58.69	7.00	3.84	290.27
DI-D3.2 (STORM)	1	285.10	290.15	0.65	0.49	0.16	75.95	7.00	1.72	290.26
DI-D4.1 (STORM)	1	301.90	306.90	1.94	1.14	0.80	58.71	7.00	3.76	307.06
DI-D4.2 (STORM)	1	301.90	306.91	0.65	0.50	0.15	76.36	7.00	1.74	307.01
DI-D5.1 (STORM)	1	309.60	314.60	1.44	0.00	1.44	0.20	7.00	2.33	314.64
DI-E1.1 (STORM)	1	237.48	242.48	0.81	0.01	0.81	0.67	7.00	2.45	242.53
DI-E2.1 (STORM)	1	250.60	255.60	1.33	1.18	0.16	88.31	7.00	4.61	255.78
DI-E2.2 (STORM)	1	250.60	255.60	0.79	0.01	0.79	0.67	7.00	2.42	255.65
DI-E4.1 (STORM)	1	290.70	295.70	1.71	1.29	0.41	75.72	7.00	4.36	295.87
DI-E4.2 (STORM)	1	290.93	295.94	0.45	0.43	0.02	94.93	7.00	1.71	296.05
DI-E5.1 (STORM)	1	292.96	298.02	1.62	N/A	N/A	N/A	7.00	8.82	298.38
DI-E5.2 (STORM)	1	293.02	297.96	0.36	0.36	0.00	100.00	7.00	1.80	298.07
DI-E6.1 (STORM)	1	294.56	299.56	1.30	1.16	0.14	89.24	7.00	4.57	299.73
DI-E8.1 (STORM)	1	321.43	326.43	1.79	1.08	0.70	60.65	7.00	3.57	326.58
DI-E8.2 (STORM)	1	321.56	326.56	0.48	0.39	0.09	81.05	7.00	1.54	326.66
DI-F1.1 (STORM)	1	295.37	300.37	1.31	1.17	0.15	88.78	7.00	4.59	300.54
DI-F1.2 (STORM)	1	295.27	300.27	0.08	0.08	0.00	100.00	7.00	1.02	300.34
DI-F3.1 (STORM)	1	319.00	325.00	1.58	0.00	1.58	0.19	7.00	2.41	325.05
DI-F3.2 (STORM)	1	319.00	325.00	0.37	0.31	0.06	84.48	7.00	1.40	325.09
SDCB-B1 (STORM)	2	257.00	263.87	2.08	N/A	N/A	N/A	7.00	3.71	264.13
SDCB-C1 (STORM)	2	257.36	264.52	1.61	N/A	N/A	N/A	7.00	3.44	264.78
SDCB-D1 (STORM)	2	233.49	235.30	2.56	N/A	N/A	N/A	7.00	3.97	235.57
SDCB-D2 (STORM)	2	233.09	234.90	1.72	N/A	N/A	N/A	7.00	3.51	235.16
SDMH-A4 (STORM)	2	250.84	260.33	0.63	N/A	N/A	N/A	7.00	2.40	260.57

Subbasin Hydrology

Subbasin : A5

Input Data

Area (ac) 0.06
Weighted Runoff Coefficient 0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.06		0.95

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where :

Tc = Time of Concentration (hr)
n = Manning's roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation :

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where :

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft^2)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's roughness

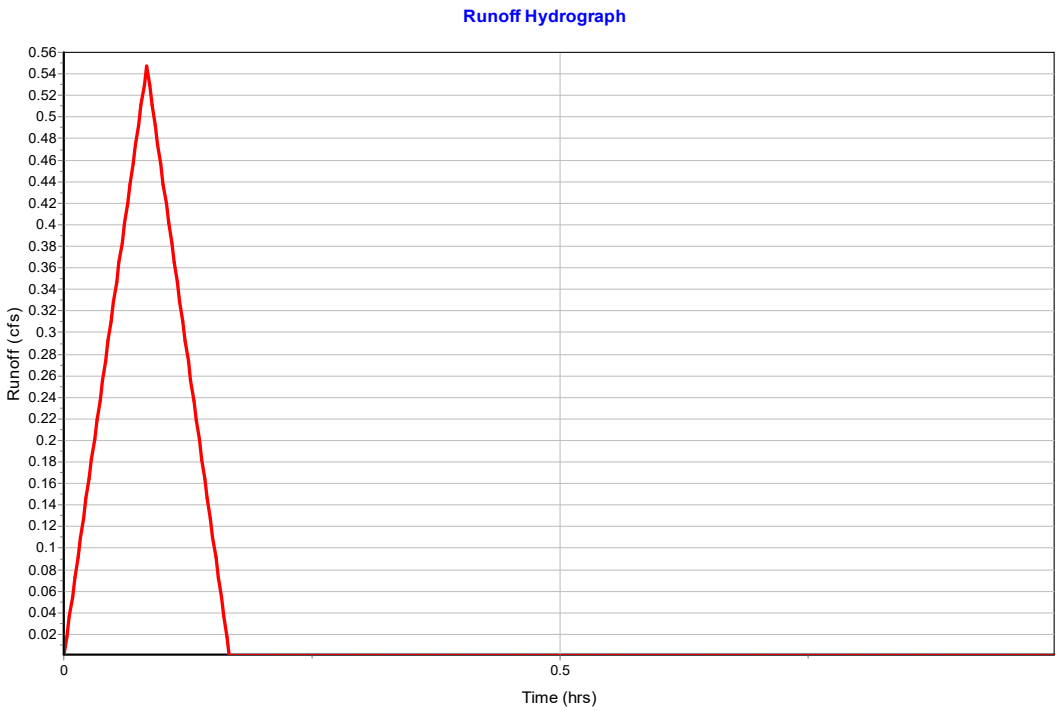
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in) 0.86
Total Runoff (in) 0.82
Peak Runoff (cfs) 0.55
Rainfall Intensity 10.29
Weighted Runoff Coefficient 0.95

Time of Concentration (days hh:mm:ss) 0 00:05:00

Subbasin : A5


Runoff Hydrograph
Runoff (cfs)
0.56
0.54
0.52
0.5
0.48
0.46
0.44
0.42
0.4
0.38
0.36
0.34
0.32
0.3
0.28
0.26
0.24
0.22
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0.5
Time (hrs)

Subbasin : A5.1

Input Data

Area (ac)	0.25
Weighted Runoff Coefficient	0.55

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.14	-	0.25
-	0.11	-	0.95
Composite Area & Weighted Runoff Coeff.	0.25		0.55

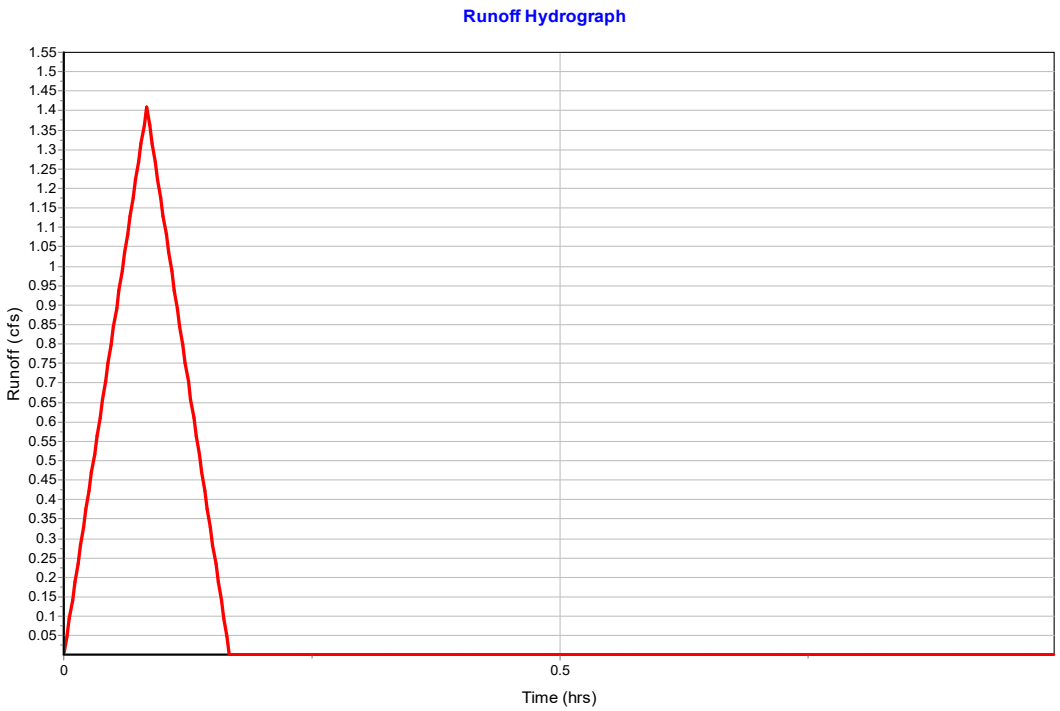
Time of Concentration

User-Defined TOC override (minutes): 5.00

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.47
Peak Runoff (cfs)	1.41
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.55
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : A5.1



Subbasin : A6.1

Input Data

Area (ac)	0.08
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.08	-	0.95
Composite Area & Weighted Runoff Coeff.	0.08		0.95

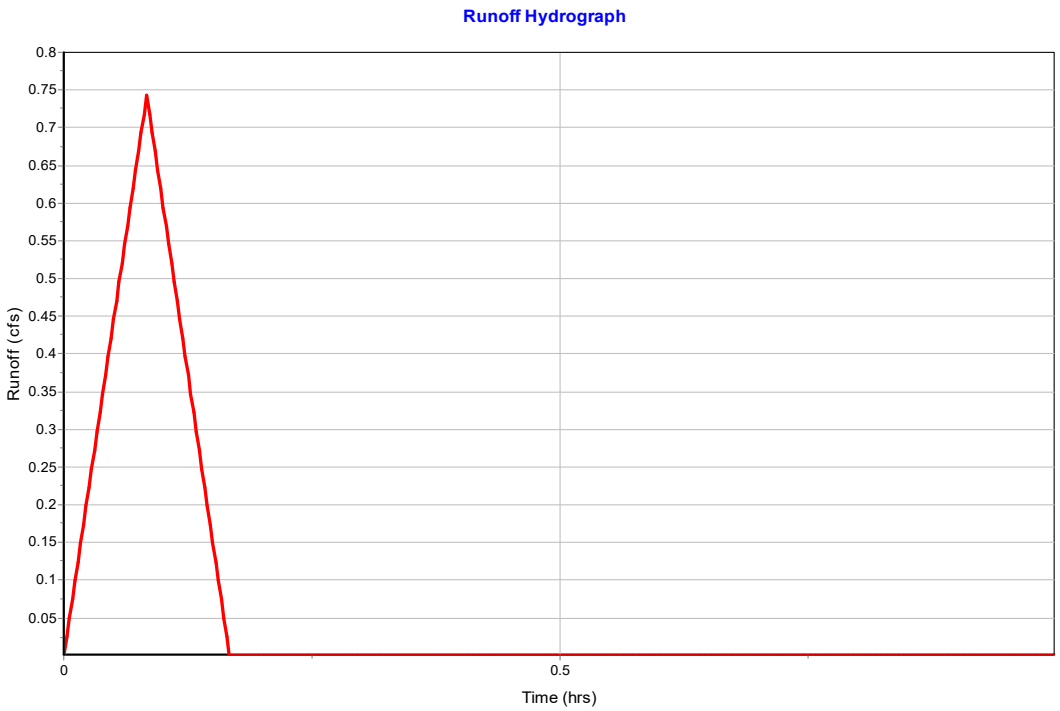
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.74
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : A6.1



Subbasin : A6.2

Input Data

Area (ac)	0.08
Weighted Runoff Coefficient	0.84

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.01	-	0.25
-	0.07	-	0.95
Composite Area & Weighted Runoff Coeff.	0.08		0.84

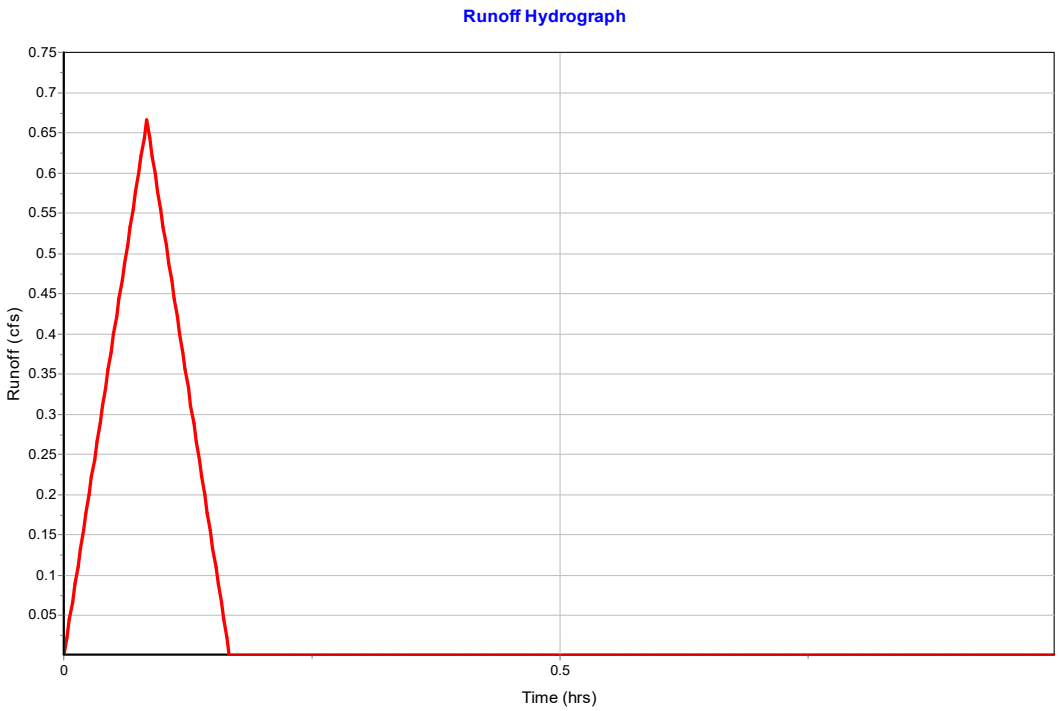
Time of Concentration

User-Defined TOC override (minutes): 5.00

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.72
Peak Runoff (cfs)	0.67
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.84
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : A6.2



Subbasin : B10.1

Input Data

Area (ac)	0.14
Weighted Runoff Coefficient	0.54

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.08	-	0.25
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.14		0.54

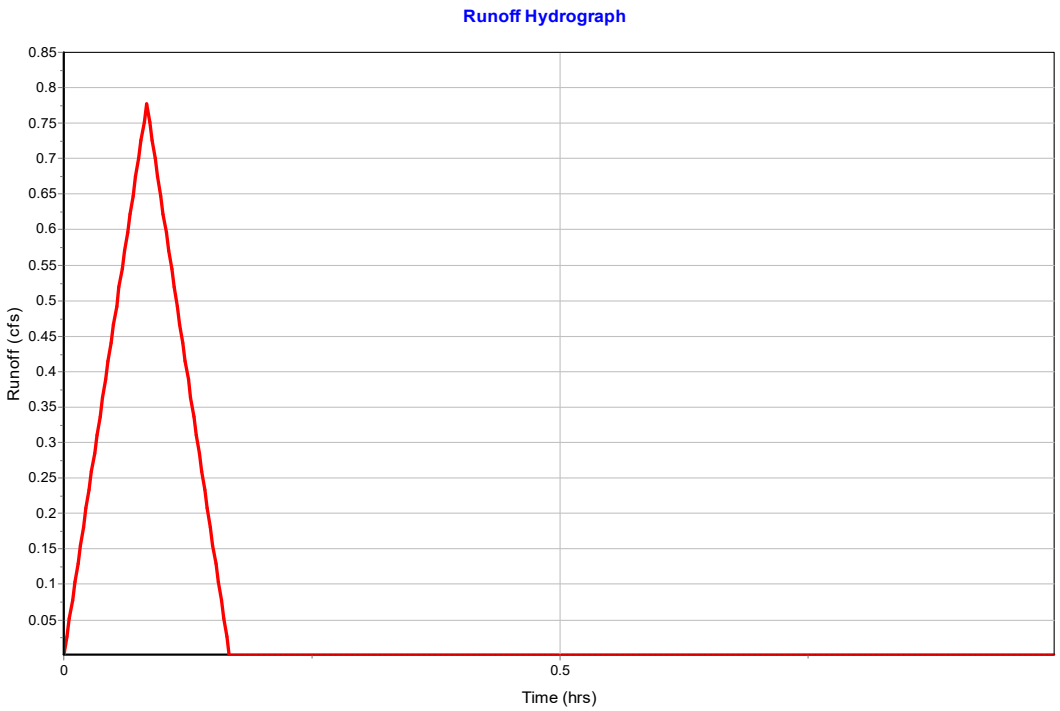
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.46
Peak Runoff (cfs)	0.78
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.54
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : B10.1



COFFMAN ENGINEERS

Subbasin : B11.1

Input Data

Area (ac)	0.58
Weighted Runoff Coefficient	0.32

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.52	-	0.25
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.58		0.32

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	290	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.5	0	0
Computed Flow Time (min) :	9.74	0	0

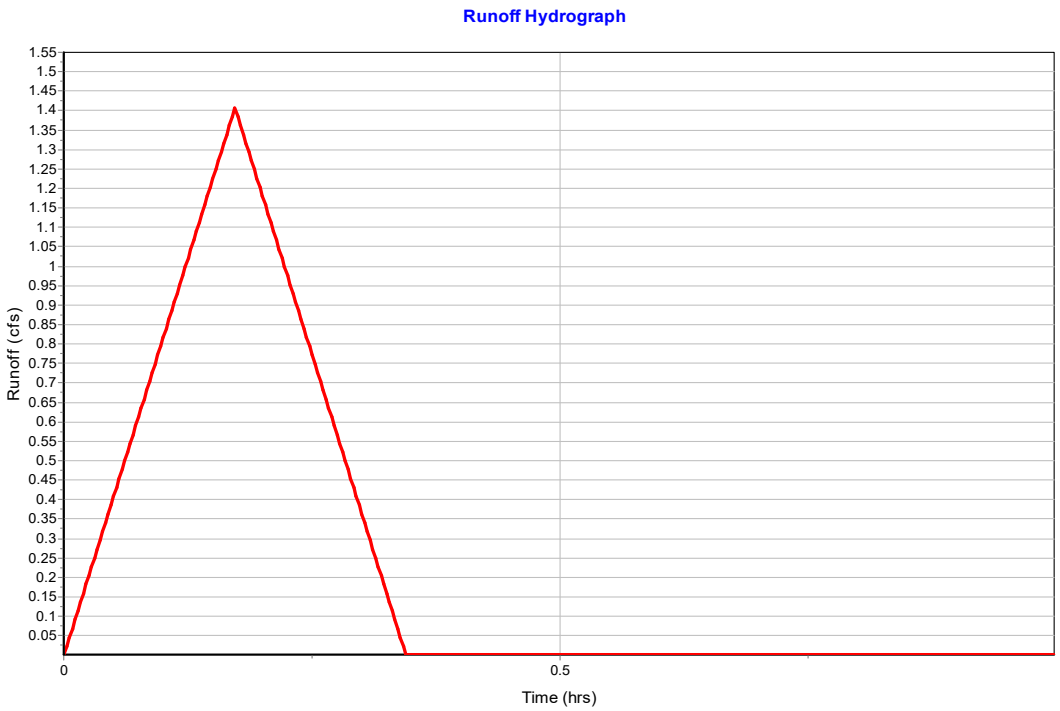
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.017	0	0
Flow Length (ft) :	157	0	0
Channel Slope (%) :	5.5	0	0
Cross Section Area (ft^2) :	0.2	0	0
Wetted Perimeter (ft) :	1.9	0	0
Velocity (ft/sec) :	4.58	0	0
Computed Flow Time (min) :	0.57	0	0

Total TOC (min) 10.31

Subbasin Runoff Results

Total Rainfall (in)	1.32
Total Runoff (in)	0.42
Peak Runoff (cfs)	1.41
Rainfall Intensity	7.634
Weighted Runoff Coefficient	0.32
Time of Concentration (days hh:mm:ss)	0 00:10:19

Subbasin : B11.1



Subbasin : B11.2

Input Data

Area (ac)	0.02
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.02	-	0.95
Composite Area & Weighted Runoff Coeff.	0.02		0.95

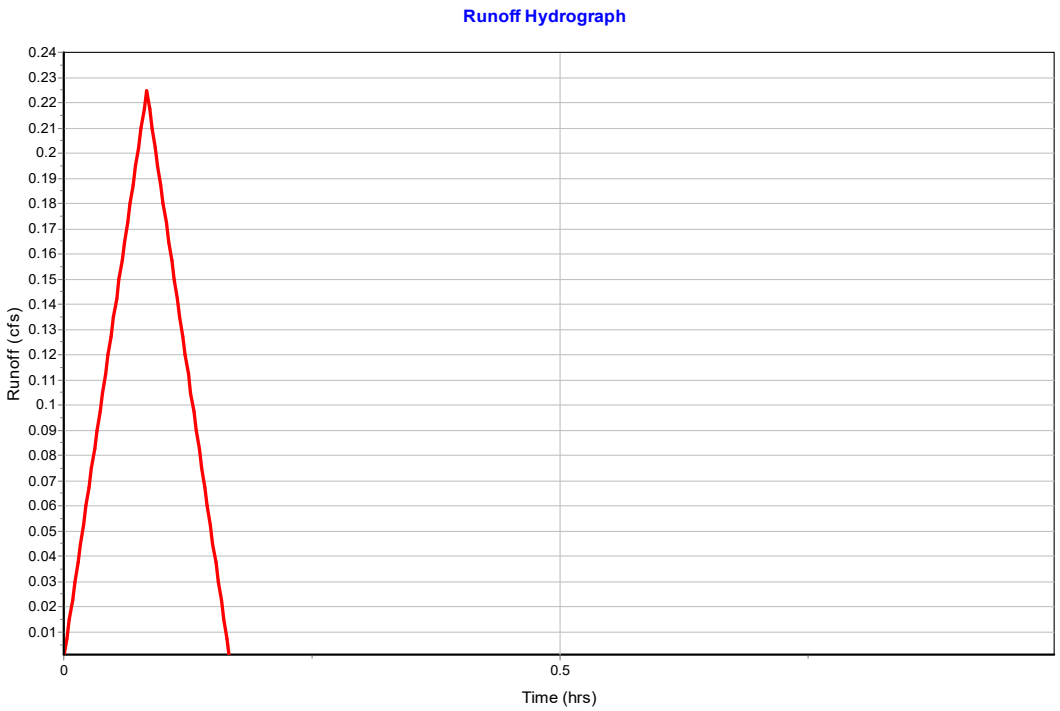
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.23
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : B11.2



COFFMAN ENGINEERS

Subbasin : B12.1

Input Data

Area (ac)	0.57
Weighted Runoff Coefficient	0.29

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.53	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	0.57		0.29

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	190	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.46	0	0
Computed Flow Time (min) :	6.94	0	0

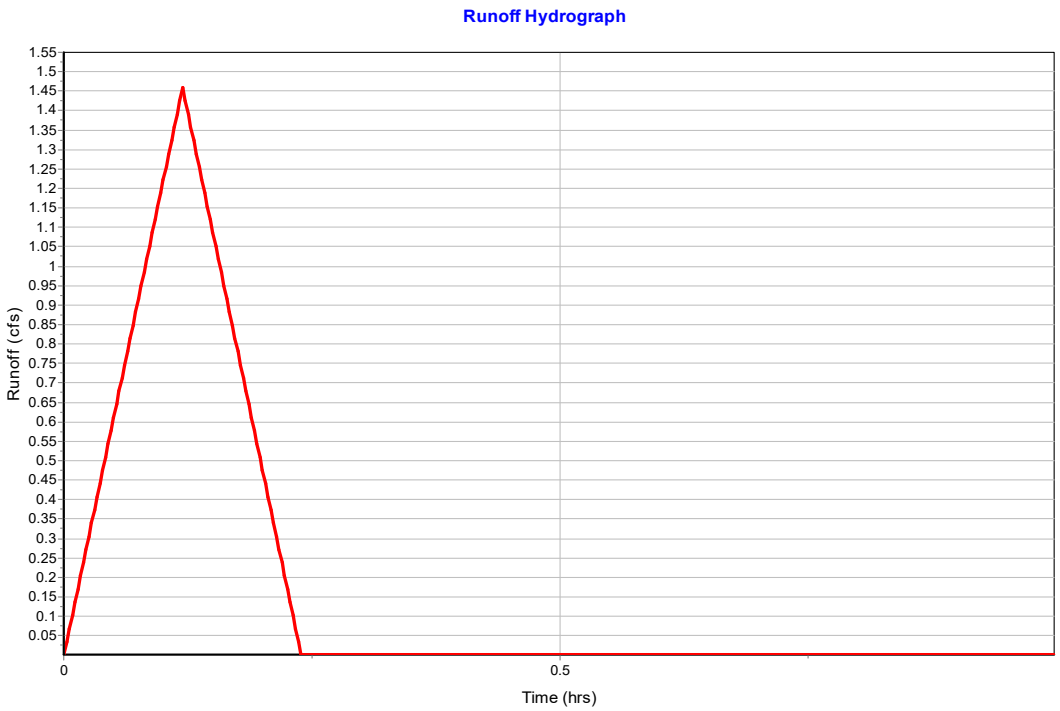
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.017	0	0
Flow Length (ft) :	90	0	0
Channel Slope (%) :	7.8	0	0
Cross Section Area (ft^2) :	0.2	0	0
Wetted Perimeter (ft) :	1.9	0	0
Velocity (ft/sec) :	5.46	0	0
Computed Flow Time (min) :	0.27	0	0

Total TOC (min) 7.22

Subbasin Runoff Results

Total Rainfall (in)	1.06
Total Runoff (in)	0.31
Peak Runoff (cfs)	1.46
Rainfall Intensity	8.843
Weighted Runoff Coefficient	0.29
Time of Concentration (days hh:mm:ss)	0 00:07:13

Subbasin : B12.1



Subbasin : B12.2

Input Data

Area (ac)	0.07
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.07	-	0.95
Composite Area & Weighted Runoff Coeff.	0.07		0.95

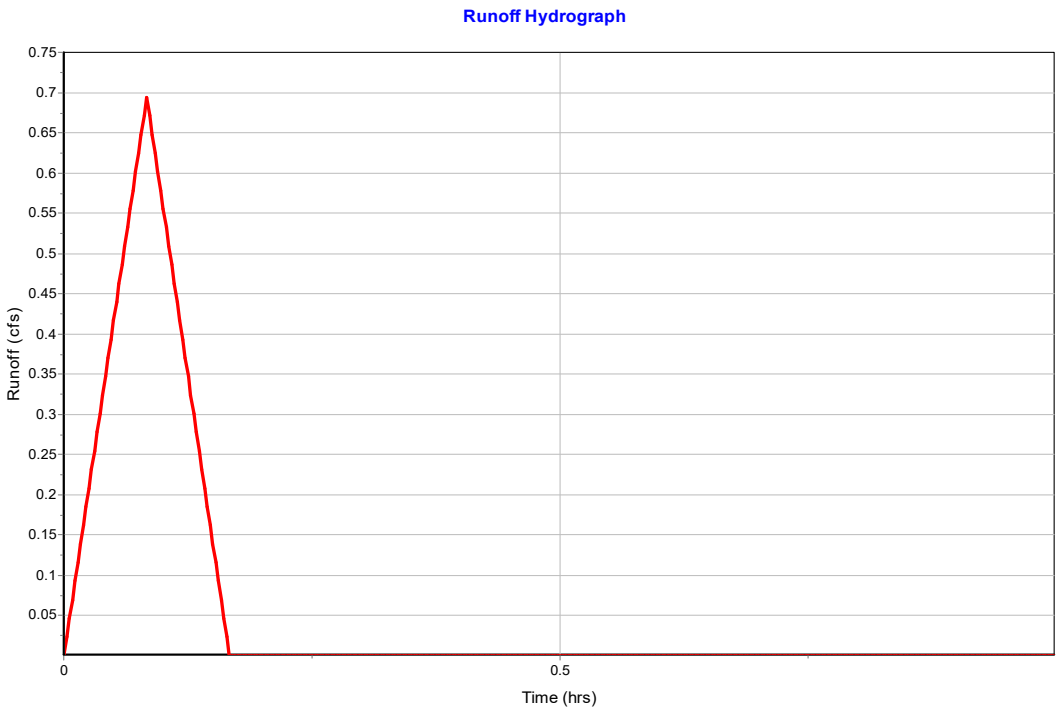
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.69
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : B12.2



COFFMAN ENGINEERS

Subbasin : B13.1

Input Data

Area (ac)	0.58
Weighted Runoff Coefficient	0.29

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.53	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	0.57		0.29

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	220	0	0
Slope (%) :	17	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.44	0	0
Computed Flow Time (min) :	8.33	0	0

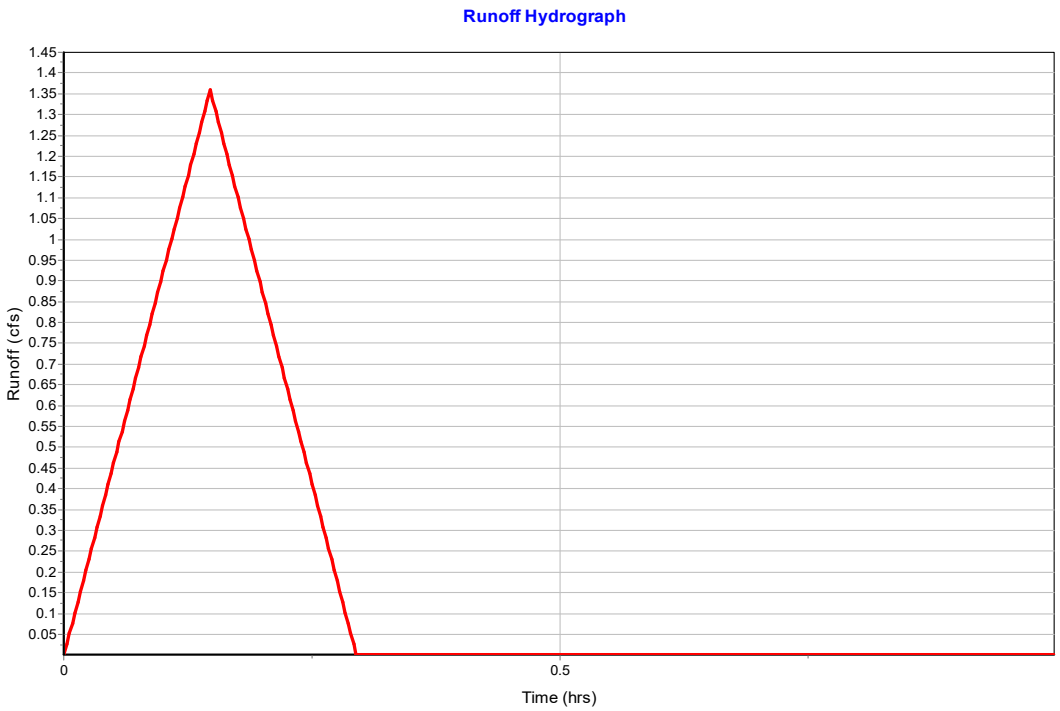
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.017	0	0
Flow Length (ft) :	160	0	0
Channel Slope (%) :	6.5	0	0
Cross Section Area (ft^2) :	0.2	0	0
Wetted Perimeter (ft) :	1.9	0	0
Velocity (ft/sec) :	4.98	0	0
Computed Flow Time (min) :	0.54	0	0

Total TOC (min) 8.87

Subbasin Runoff Results

Total Rainfall (in)	1.2
Total Runoff (in)	0.35
Peak Runoff (cfs)	1.36
Rainfall Intensity	8.123
Weighted Runoff Coefficient	0.29
Time of Concentration (days hh:mm:ss)	0 00:08:52

Subbasin : B13.1



COFFMAN ENGINEERS

Subbasin : B8.1

Input Data

Area (ac)	0.61
Weighted Runoff Coefficient	0.3

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.57	-	0.25
-	0.05	-	0.95
Composite Area & Weighted Runoff Coeff.	0.62		0.3

Time of Concentration

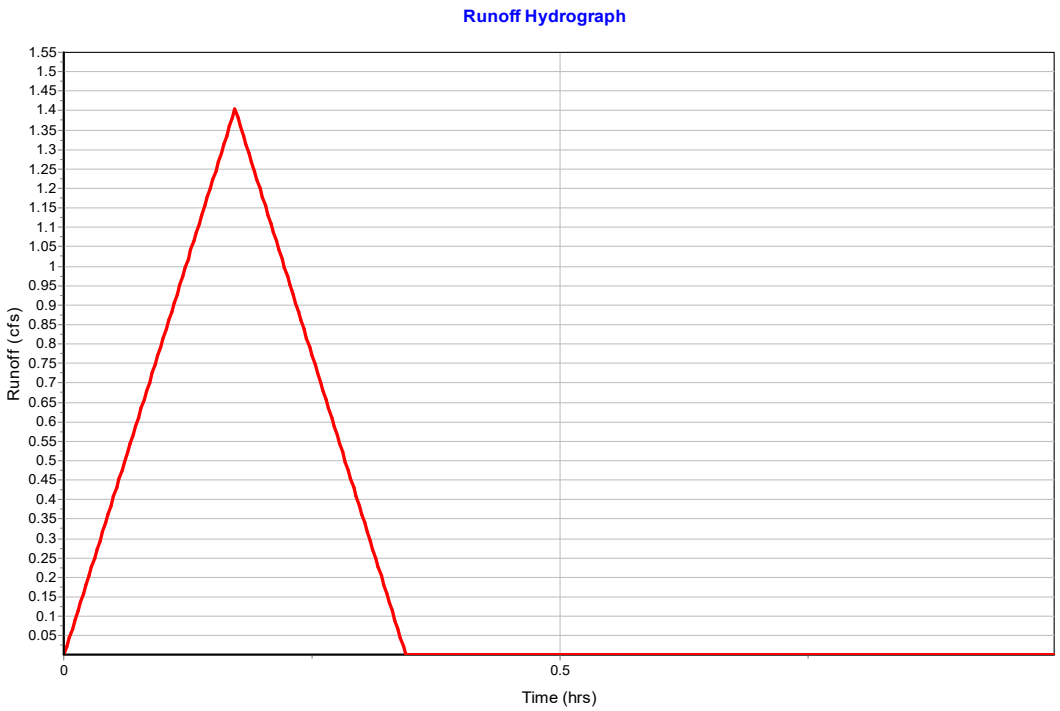
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	310	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.5	0	0
Computed Flow Time (min) :	10.27	0	0

Total TOC (min) 10.27

Subbasin Runoff Results

Total Rainfall (in)	1.32
Total Runoff (in)	0.4
Peak Runoff (cfs)	1.4
Rainfall Intensity	7.646
Weighted Runoff Coefficient	0.3
Time of Concentration (days hh:mm:ss)	0 00:10:16

Subbasin : B8.1



COFFMAN ENGINEERS

Subbasin : B9.1

Input Data

Area (ac)	0.46
Weighted Runoff Coefficient	0.3

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.43	-	0.25
-	0.03	-	0.95
Composite Area & Weighted Runoff Coeff.	0.46		0.3

Time of Concentration

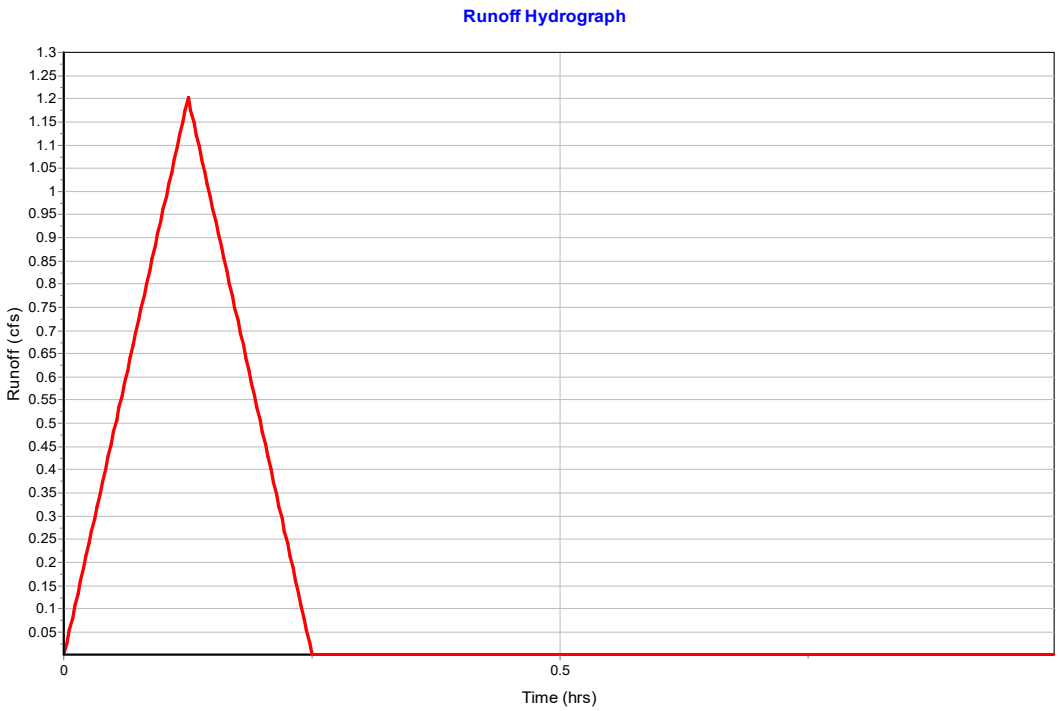
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	210	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.47	0	0
Computed Flow Time (min) :	7.52	0	0

Total TOC (min) 7.52

Subbasin Runoff Results

Total Rainfall (in)	1.09
Total Runoff (in)	0.33
Peak Runoff (cfs)	1.2
Rainfall Intensity	8.695
Weighted Runoff Coefficient	0.3
Time of Concentration (days hh:mm:ss)	0 00:07:31

Subbasin : B9.1



Subbasin : B9.2

Input Data

Area (ac)	0.06
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0	-	0.25
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.06		0.95

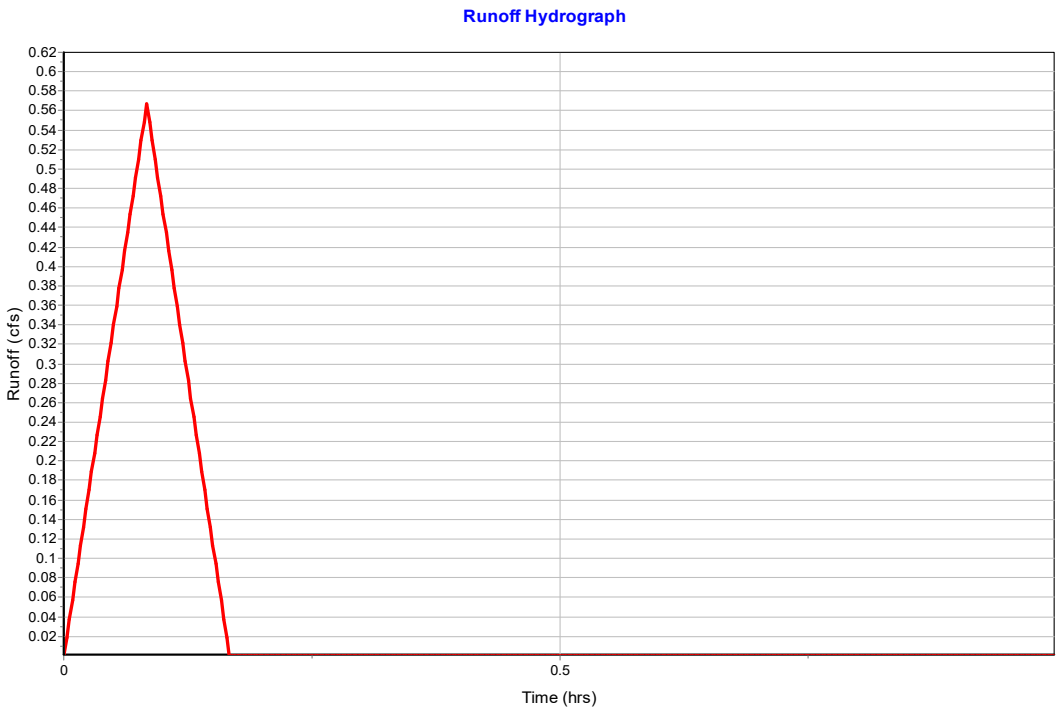
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.57
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : B9.2



COFFMAN ENGINEERS

Subbasin : B-C1

Input Data

Area (ac)	0.56
Weighted Runoff Coefficient	0.48

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.38	-	0.25
-	0.19	-	0.95
Composite Area & Weighted Runoff Coeff.	0.57		0.48

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	140	0	0
Slope (%) :	5.7	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.26	0	0
Computed Flow Time (min) :	8.99	0	0

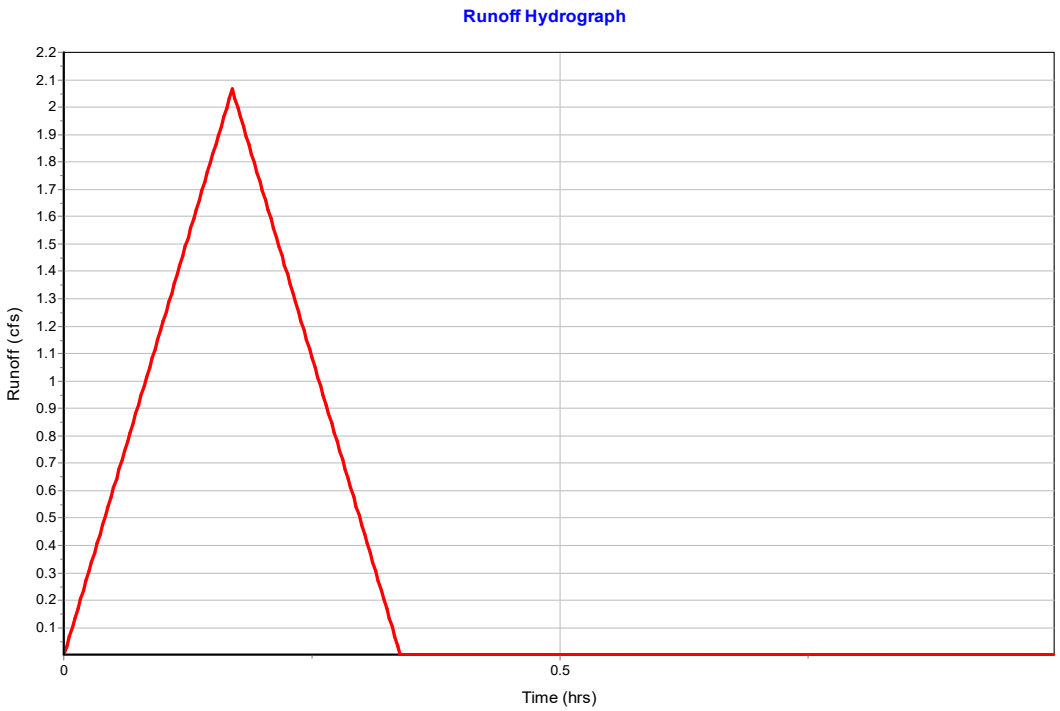
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.017	0	0
Flow Length (ft) :	240	0	0
Channel Slope (%) :	2.7	0	0
Cross Section Area (ft^2) :	0.2	0	0
Wetted Perimeter (ft) :	1.9	0	0
Velocity (ft/sec) :	3.21	0	0
Computed Flow Time (min) :	1.25	0	0

Total TOC (min) 10.23

Subbasin Runoff Results

Total Rainfall (in)	1.3
Total Runoff (in)	0.62
Peak Runoff (cfs)	2.07
Rainfall Intensity	7.659
Weighted Runoff Coefficient	0.48
Time of Concentration (days hh:mm:ss)	0 00:10:14

Subbasin : B-C1



COFFMAN ENGINEERS

Subbasin : B-C2

Input Data

Area (ac)	0.64
Weighted Runoff Coefficient	0.29

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.6	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	0.64		0.29

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	350	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.52	0	0
Computed Flow Time (min) :	11.32	0	0

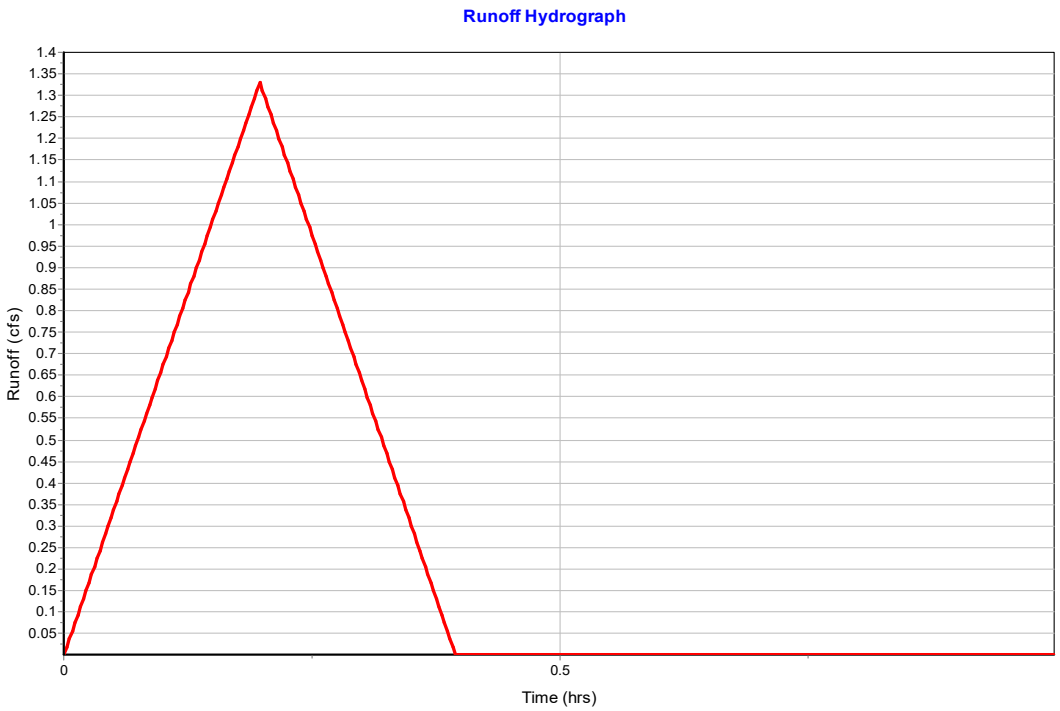
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.017	0	0
Flow Length (ft) :	65	0	0
Channel Slope (%) :	1.2	0	0
Cross Section Area (ft^2) :	0.2	0	0
Wetted Perimeter (ft) :	1.9	0	0
Velocity (ft/sec) :	2.14	0	0
Computed Flow Time (min) :	0.51	0	0

Total TOC (min) 11.83

Subbasin Runoff Results

Total Rainfall (in)	1.42
Total Runoff (in)	0.41
Peak Runoff (cfs)	1.33
Rainfall Intensity	7.213
Weighted Runoff Coefficient	0.29
Time of Concentration (days hh:mm:ss)	0 00:11:50

Subbasin : B-C2



COFFMAN ENGINEERS

Subbasin : C1.1

Input Data

Area (ac)	0.58
Weighted Runoff Coefficient	0.32

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.53	-	0.25
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.59		0.32

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	350	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.52	0	0
Computed Flow Time (min) :	11.32	0	0

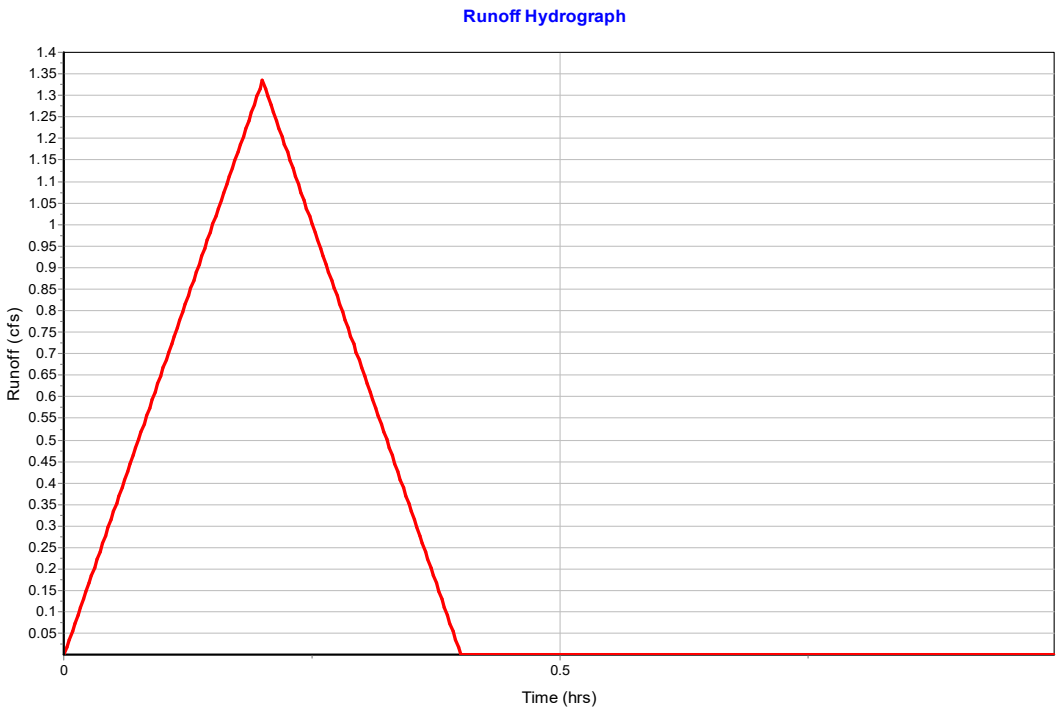
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.017	0	0
Flow Length (ft) :	143	0	0
Channel Slope (%) :	2.95	0	0
Cross Section Area (ft^2) :	0.2	0	0
Wetted Perimeter (ft) :	1.9	0	0
Velocity (ft/sec) :	3.36	0	0
Computed Flow Time (min) :	0.71	0	0

Total TOC (min) 12.03

Subbasin Runoff Results

Total Rainfall (in)	1.43
Total Runoff (in)	0.46
Peak Runoff (cfs)	1.33
Rainfall Intensity	7.163
Weighted Runoff Coefficient	0.32
Time of Concentration (days hh:mm:ss)	0 00:12:02

Subbasin : C1.1



COFFMAN ENGINEERS

Subbasin : C2.1

Input Data

Area (ac)	0.55
Weighted Runoff Coefficient	0.31

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.51	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	0.55		0.31

Time of Concentration

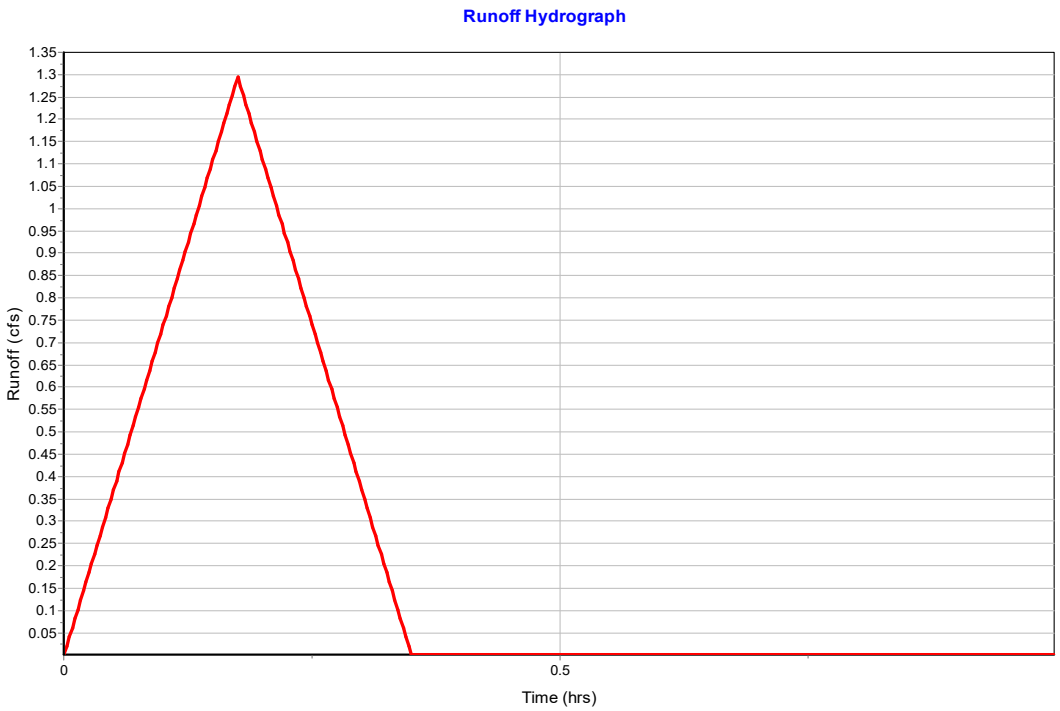
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	320	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.51	0	0
Computed Flow Time (min) :	10.54	0	0

Total TOC (min) 10.54

Subbasin Runoff Results

Total Rainfall (in)	1.32
Total Runoff (in)	0.41
Peak Runoff (cfs)	1.3
Rainfall Intensity	7.565
Weighted Runoff Coefficient	0.31
Time of Concentration (days hh:mm:ss)	0 00:10:32

Subbasin : C2.1



COFFMAN ENGINEERS

Subbasin : C2.2

Input Data

Area (ac)	0.1
Weighted Runoff Coefficient	0.57

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.05	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	0.09		0.57

Time of Concentration

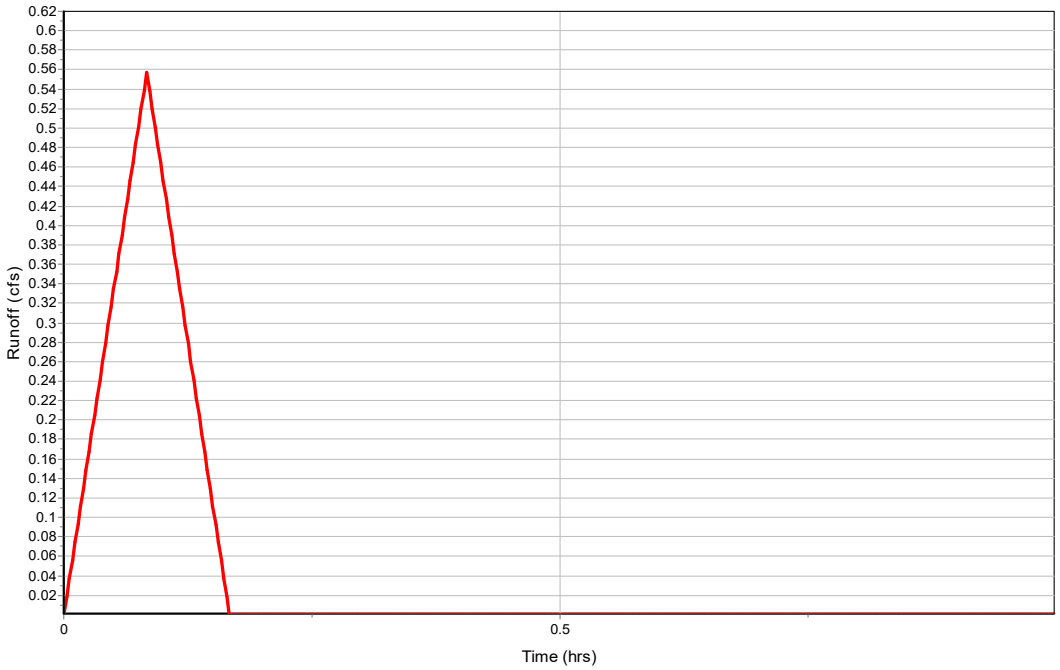
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.49
Peak Runoff (cfs)	0.56
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.57
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : C2.2

Runoff Hydrograph



COFFMAN ENGINEERS

Subbasin : C3.1

Input Data

Area (ac)	0.56
Weighted Runoff Coefficient	0.38

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.45	-	0.25
-	0.1	-	0.95
Composite Area & Weighted Runoff Coeff.	0.55		0.38

Time of Concentration

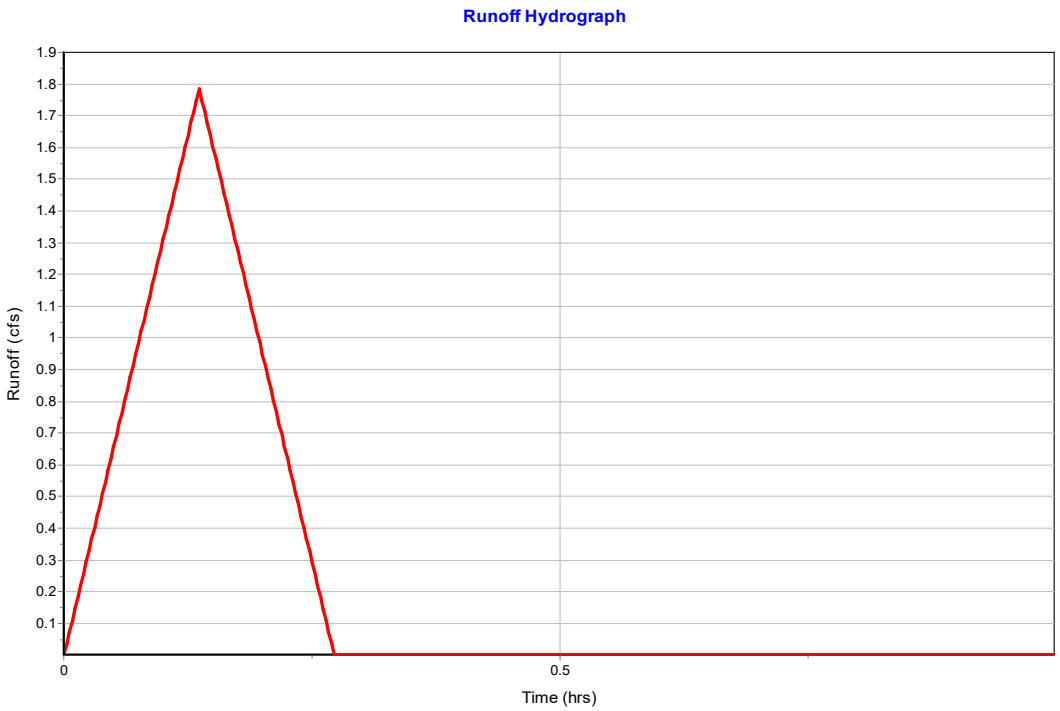
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	230	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.47	0	0
Computed Flow Time (min) :	8.09	0	0

Total TOC (min) 8.09

Subbasin Runoff Results

Total Rainfall (in)	1.15
Total Runoff (in)	0.44
Peak Runoff (cfs)	1.79
Rainfall Intensity	8.437
Weighted Runoff Coefficient	0.38
Time of Concentration (days hh:mm:ss)	0 00:08:05

Subbasin : C3.1



Subbasin : C3.2

Input Data

Area (ac)	0.05
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0	-	0.25
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.06		0.95

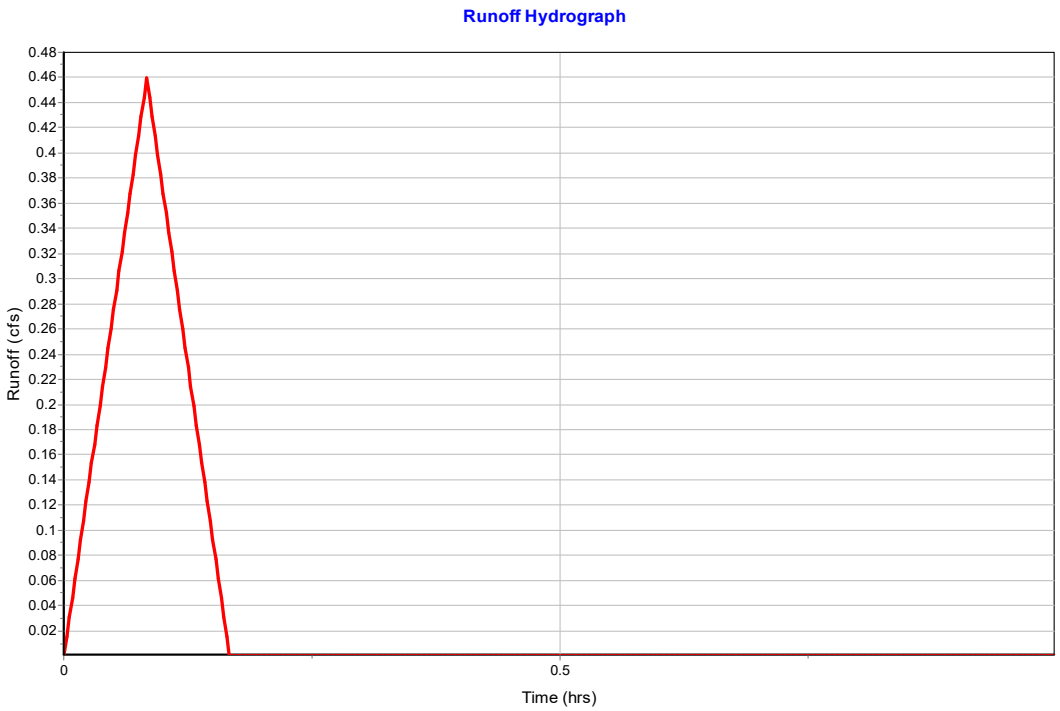
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.46
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : C3.2



COFFMAN ENGINEERS

Subbasin : D1.1

Input Data

Area (ac)	0.37
Weighted Runoff Coefficient	0.28

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.35	-	0.25
-	0.01	-	0.95
Composite Area & Weighted Runoff Coeff.	0.36		0.28

Time of Concentration

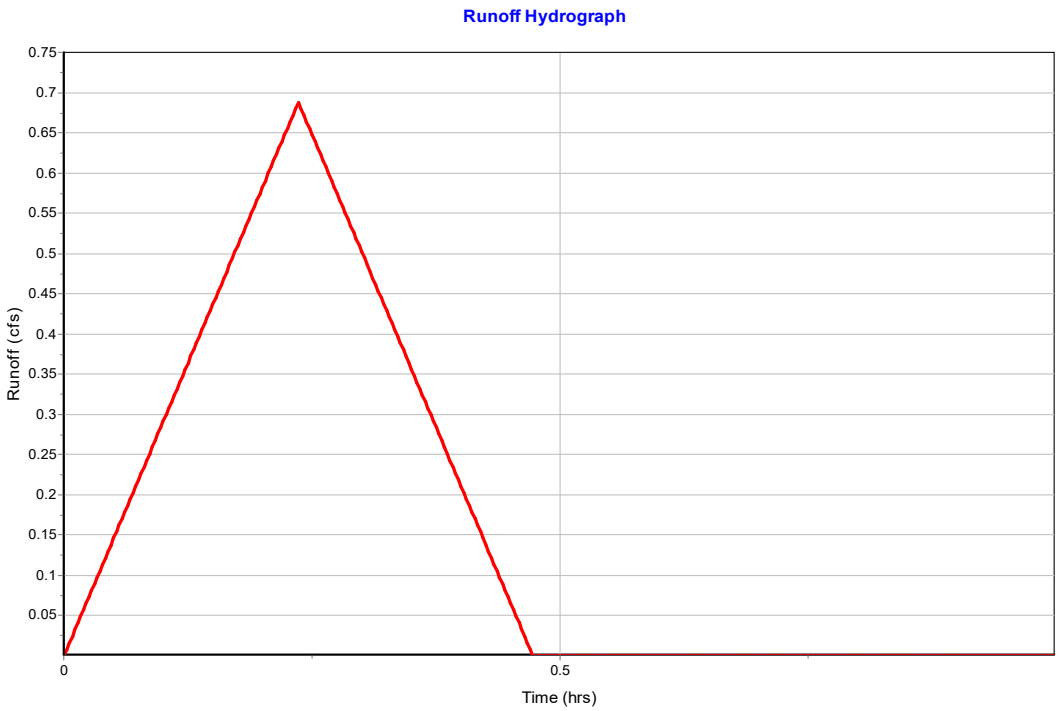
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	460	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.54	0	0
Computed Flow Time (min) :	14.09	0	0

Total TOC (min) 14.09

Subbasin Runoff Results

Total Rainfall (in)	1.59
Total Runoff (in)	0.44
Peak Runoff (cfs)	0.69
Rainfall Intensity	6.711
Weighted Runoff Coefficient	0.28
Time of Concentration (days hh:mm:ss)	0 00:14:05

Subbasin : D1.1



COFFMAN ENGINEERS

Subbasin : D2.1

Input Data

Area (ac)	0.59
Weighted Runoff Coefficient	0.32

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.52	-	0.25
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.58		0.32

Time of Concentration

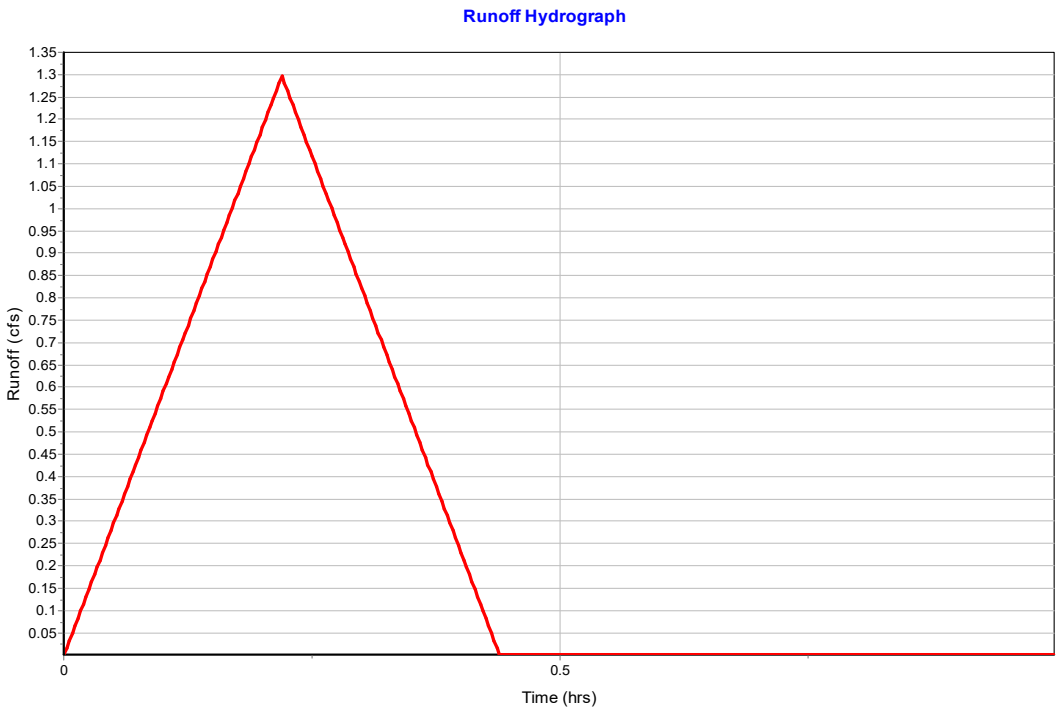
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	420	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.53	0	0
Computed Flow Time (min) :	13.1	0	0

Total TOC (min) 13.10

Subbasin Runoff Results

Total Rainfall (in)	1.52
Total Runoff (in)	0.49
Peak Runoff (cfs)	1.3
Rainfall Intensity	6.916
Weighted Runoff Coefficient	0.32
Time of Concentration (days hh:mm:ss)	0 00:13:06

Subbasin : D2.1



Subbasin : D2.2

Input Data

Area (ac)	0.06
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0	-	0.25
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.06		0.95

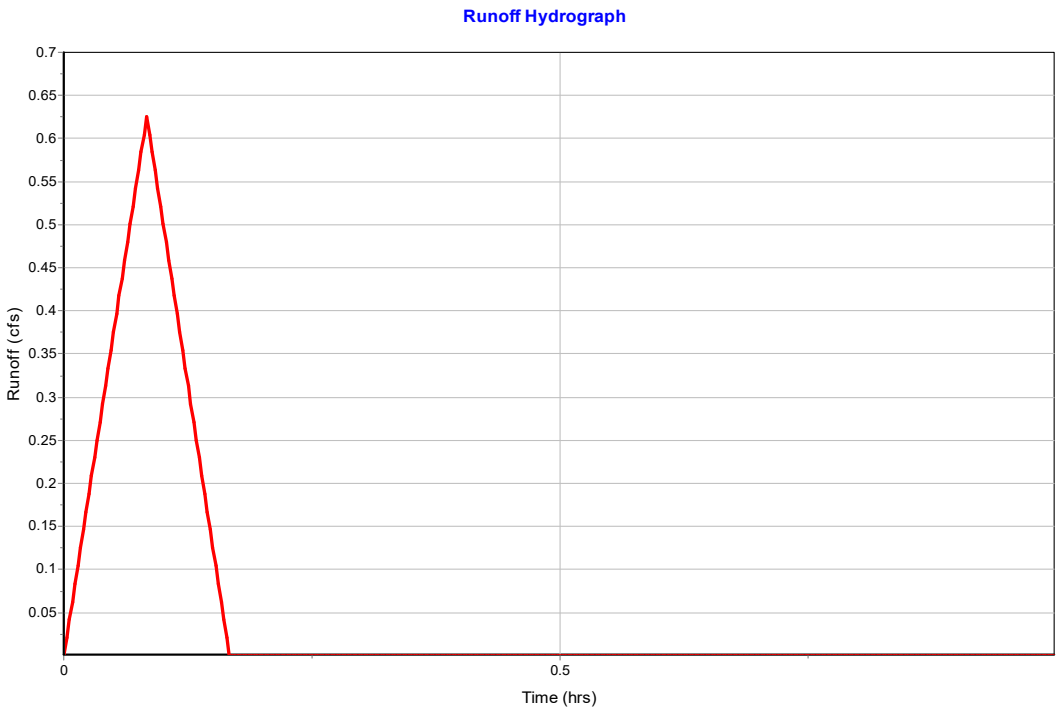
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.63
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : D2.2



COFFMAN ENGINEERS

Subbasin : D3.1

Input Data

Area (ac)	0.52
Weighted Runoff Coefficient	0.33

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.46	-	0.25
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.52		0.33

Time of Concentration

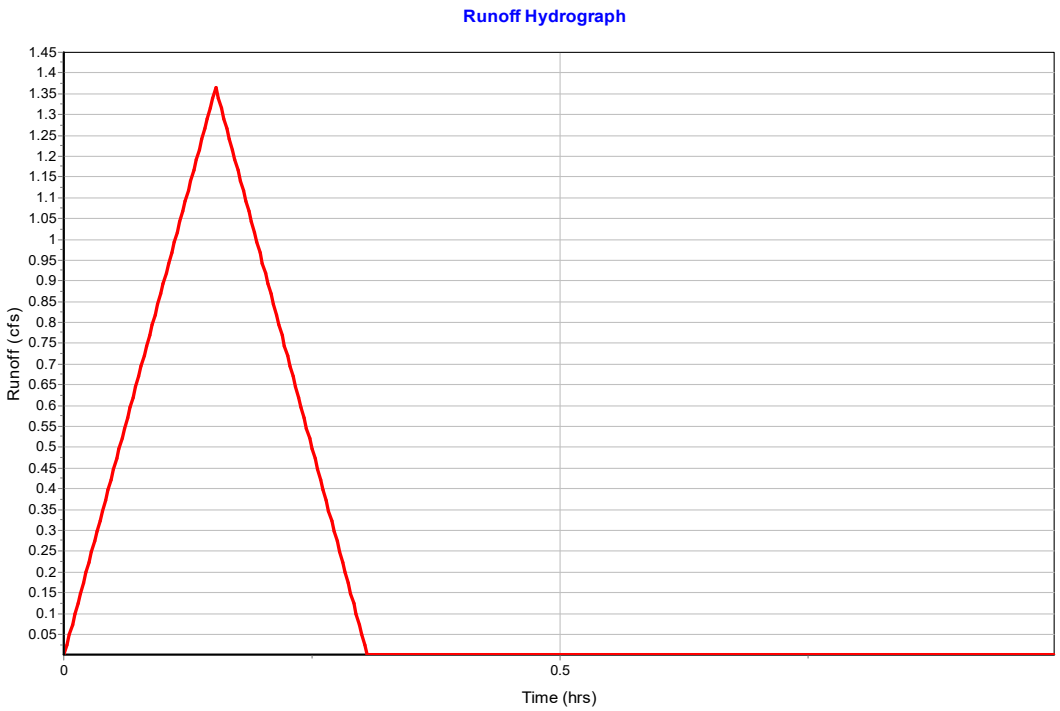
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	270	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.49	0	0
Computed Flow Time (min) :	9.2	0	0

Total TOC (min) 9.20

Subbasin Runoff Results

Total Rainfall (in)	1.22
Total Runoff (in)	0.4
Peak Runoff (cfs)	1.37
Rainfall Intensity	8.001
Weighted Runoff Coefficient	0.33
Time of Concentration (days hh:mm:ss)	0 00:09:12

Subbasin : D3.1



COFFMAN ENGINEERS

Subbasin : D3.2

Input Data

Area (ac)	0.05
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0	-	0.25
-	0.05	-	0.95
Composite Area & Weighted Runoff Coeff.	0.05		0.95

Time of Concentration

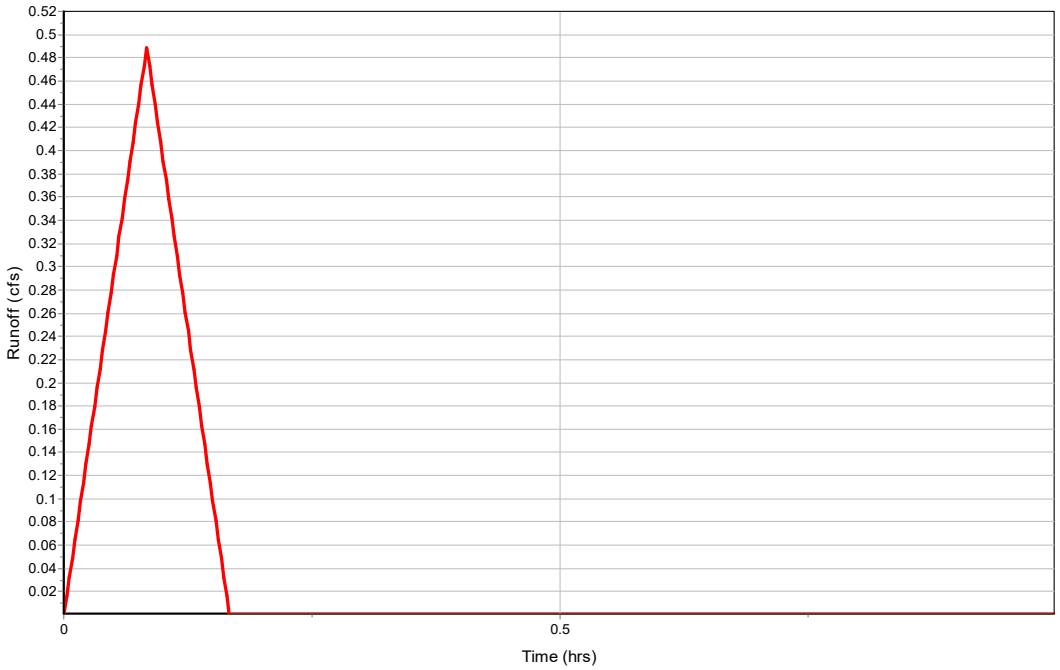
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.49
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : D3.2

Runoff Hydrograph



COFFMAN ENGINEERS

Subbasin : D4.1

Input Data

Area (ac)	0.61
Weighted Runoff Coefficient	0.29

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.58	-	0.25
-	0.03	-	0.95
Composite Area & Weighted Runoff Coeff.	0.61		0.29

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	260	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.49	0	0
Computed Flow Time (min) :	8.93	0	0

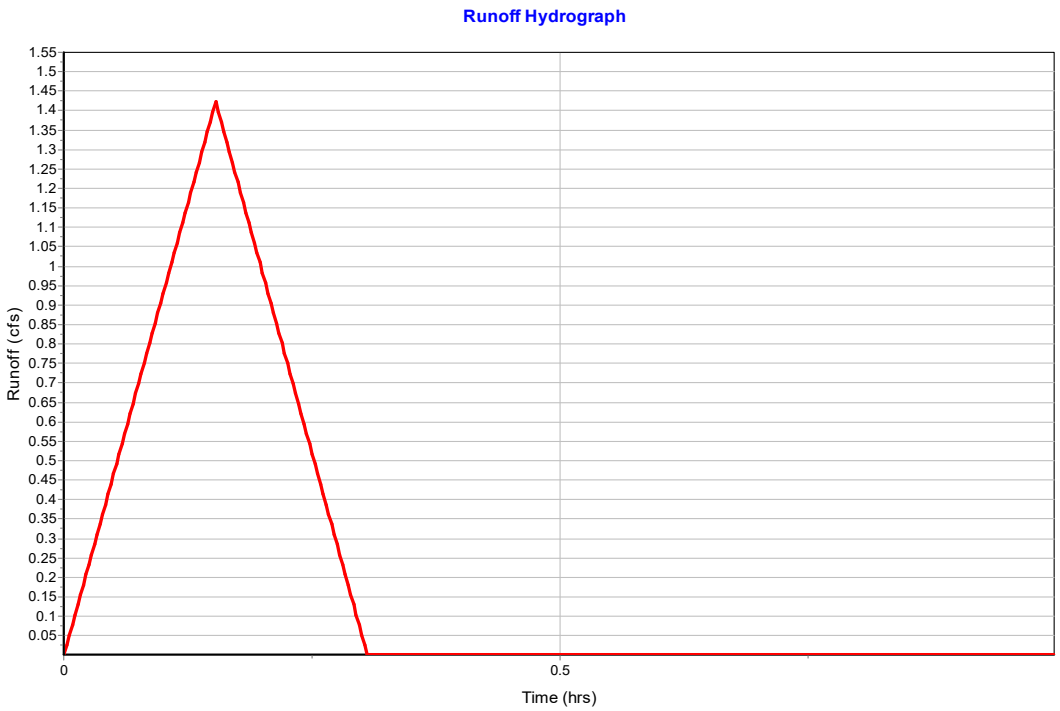
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.017	0	0
Flow Length (ft) :	90	0	0
Channel Slope (%) :	8.1	0	0
Cross Section Area (ft^2) :	0.2	0	0
Wetted Perimeter (ft) :	1.9	0	0
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.27	0	0

Total TOC (min) 9.20

Subbasin Runoff Results

Total Rainfall (in)	1.22
Total Runoff (in)	0.36
Peak Runoff (cfs)	1.42
Rainfall Intensity	8.001
Weighted Runoff Coefficient	0.29
Time of Concentration (days hh:mm:ss)	0 00:09:12

Subbasin : D4.1



Subbasin : D4.2

Input Data

Area (ac)	0.07
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0	-	0.25
-	0.07	-	0.95
Composite Area & Weighted Runoff Coeff.	0.07		0.95

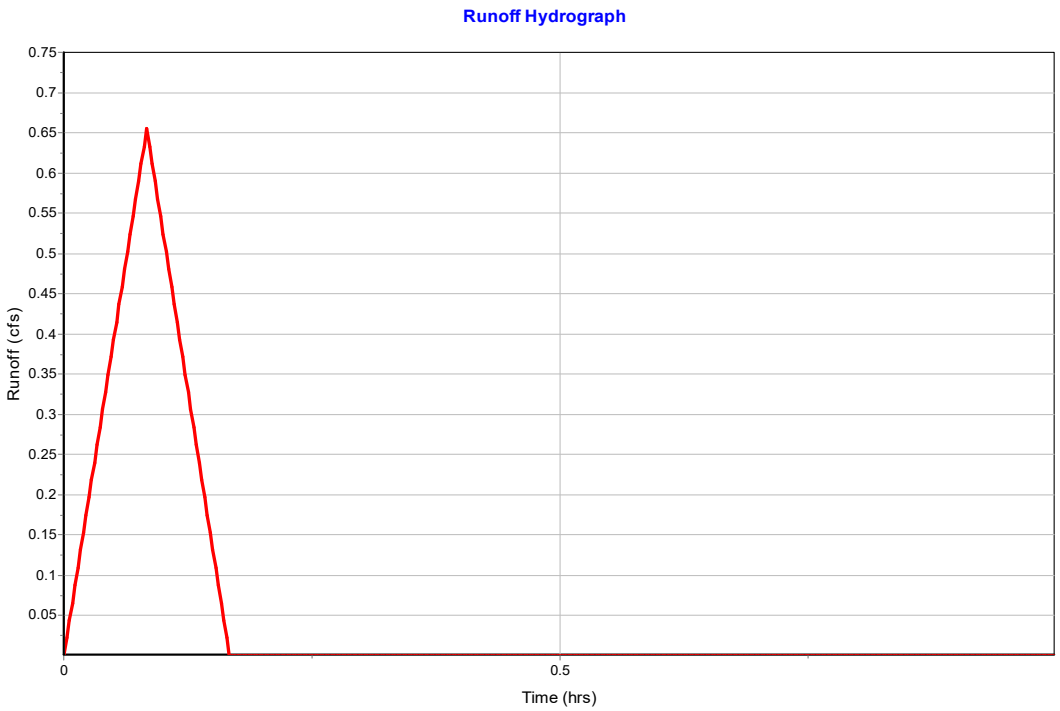
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.66
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : D4.2



COFFMAN ENGINEERS

Subbasin : D5.1

Input Data

Area (ac)	0.58
Weighted Runoff Coefficient	0.31

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.53	-	0.25
-	0.05	-	0.95
Composite Area & Weighted Runoff Coeff.	0.58		0.31

Time of Concentration

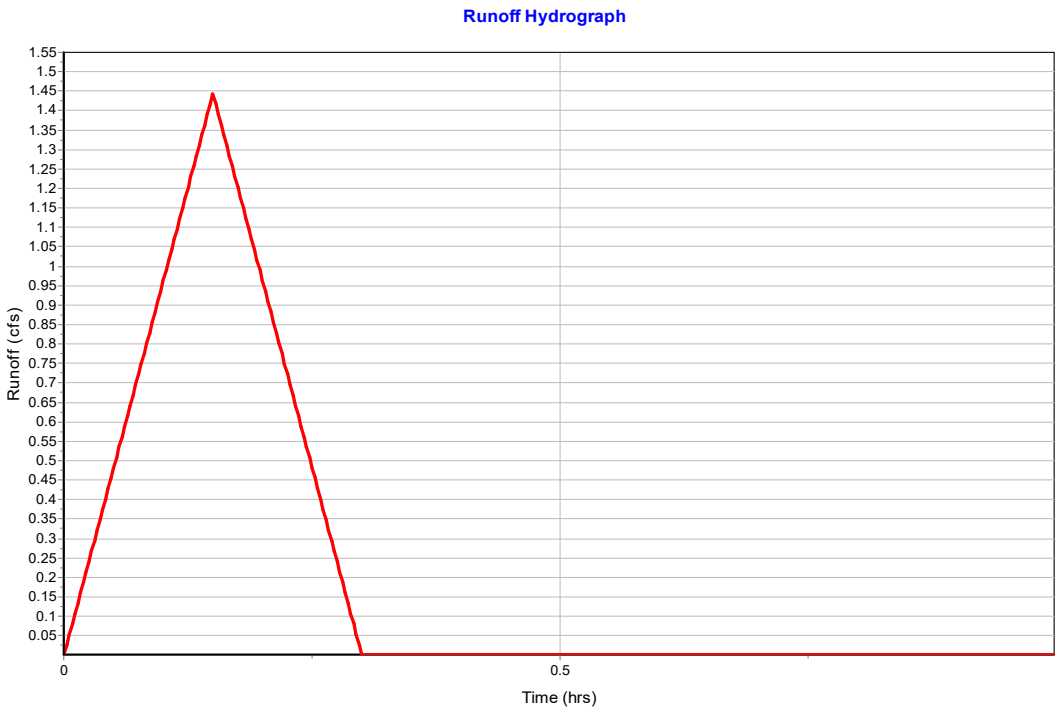
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	260	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.49	0	0
Computed Flow Time (min) :	8.93	0	0

Total TOC (min) 8.93

Subbasin Runoff Results

Total Rainfall (in)	1.22
Total Runoff (in)	0.38
Peak Runoff (cfs)	1.44
Rainfall Intensity	8.1
Weighted Runoff Coefficient	0.31
Time of Concentration (days hh:mm:ss)	0 00:08:56

Subbasin : D5.1



COFFMAN ENGINEERS

Subbasin : D-E1

Input Data

Area (ac)	1.28
Weighted Runoff Coefficient	0.27

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.25	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	1.29		0.27

Time of Concentration

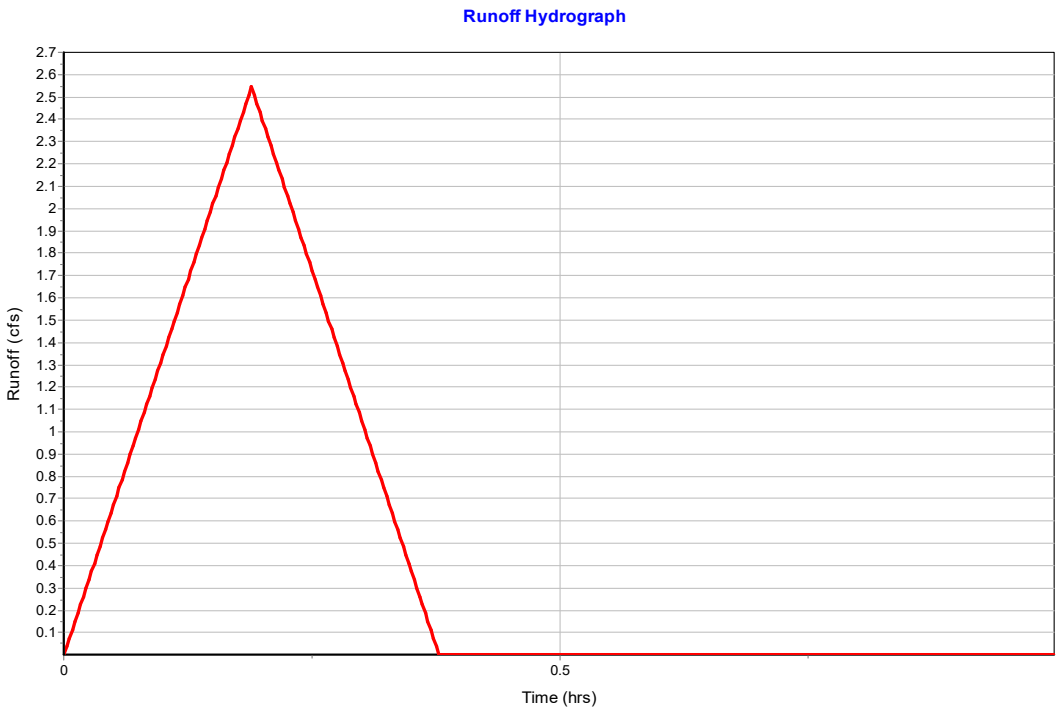
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	350	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.52	0	0
Computed Flow Time (min) :	11.32	0	0

Total TOC (min) 11.32

Subbasin Runoff Results

Total Rainfall (in)	1.39
Total Runoff (in)	0.38
Peak Runoff (cfs)	2.54
Rainfall Intensity	7.345
Weighted Runoff Coefficient	0.27
Time of Concentration (days hh:mm:ss)	0 00:11:19

Subbasin : D-E1



COFFMAN ENGINEERS

Subbasin : D-E2

Input Data

Area (ac)	0.8
Weighted Runoff Coefficient	0.41

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.62	-	0.25
-	0.18	-	0.95
Composite Area & Weighted Runoff Coeff.	0.8		0.41

Time of Concentration

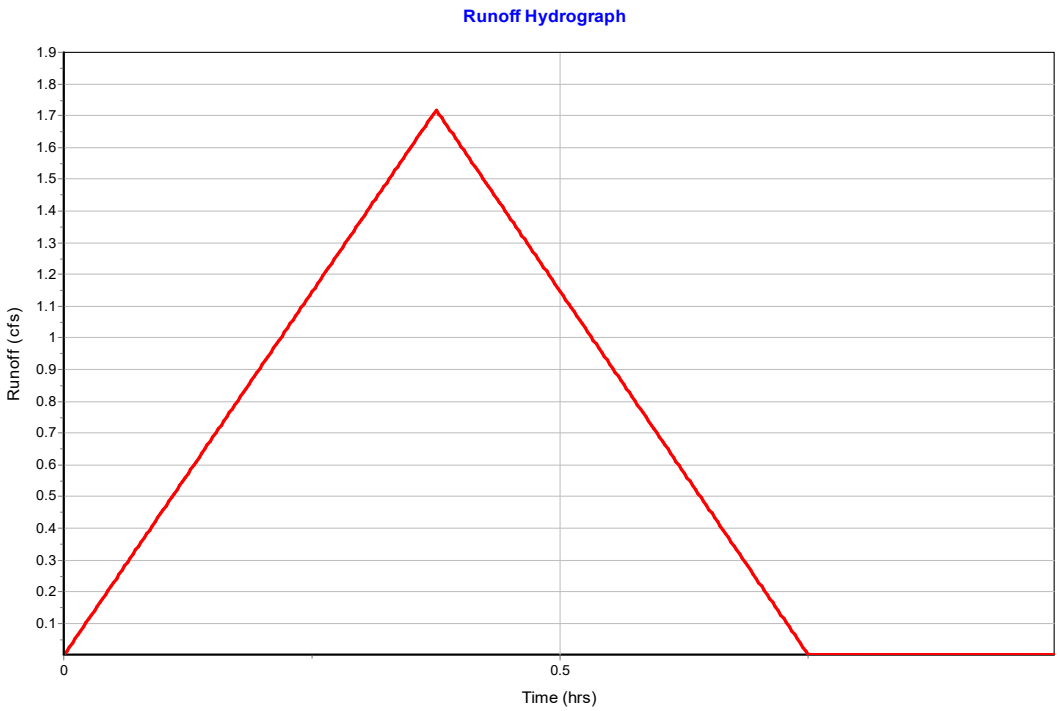
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	350	0	0
Slope (%) :	3.6	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.26	0	0
Computed Flow Time (min) :	22.48	0	0

Total TOC (min) 22.48

Subbasin Runoff Results

Total Rainfall (in)	1.97
Total Runoff (in)	0.81
Peak Runoff (cfs)	1.72
Rainfall Intensity	5.258
Weighted Runoff Coefficient	0.41
Time of Concentration (days hh:mm:ss)	0 00:22:29

Subbasin : D-E2



COFFMAN ENGINEERS

Subbasin : E1.1

Input Data

Area (ac)	0.31
Weighted Runoff Coefficient	0.32

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.28	-	0.25
-	0.03	-	0.95
Composite Area & Weighted Runoff Coeff.	0.31		0.32

Time of Concentration

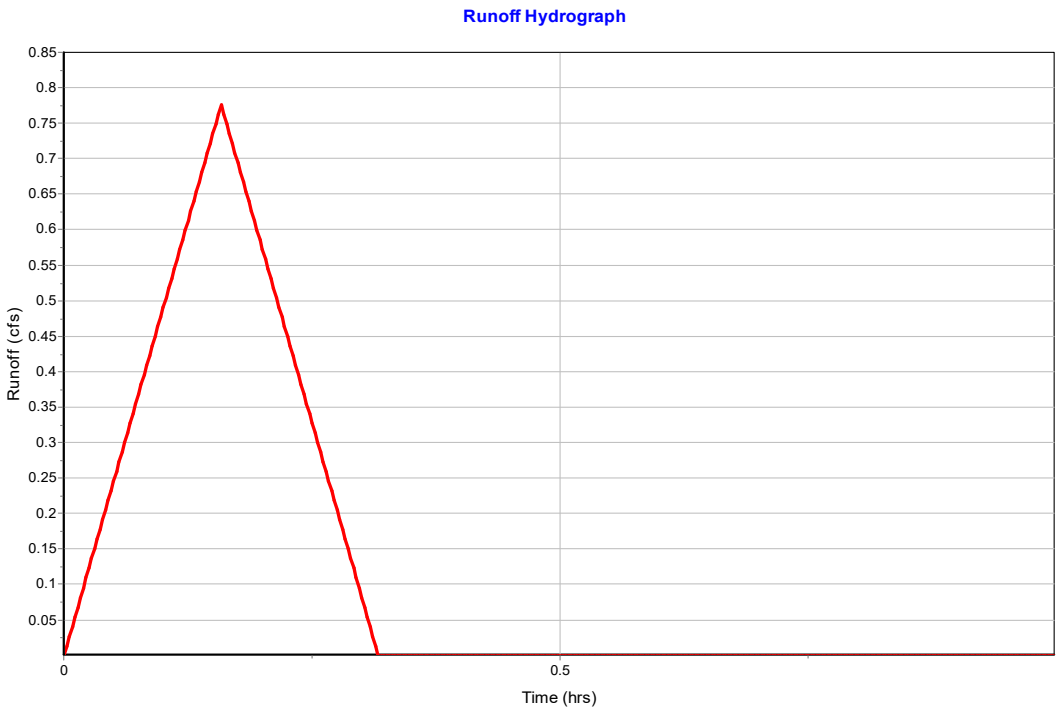
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	280	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.49	0	0
Computed Flow Time (min) :	9.47	0	0

Total TOC (min) 9.47

Subbasin Runoff Results

Total Rainfall (in)	1.25
Total Runoff (in)	0.4
Peak Runoff (cfs)	0.78
Rainfall Intensity	7.906
Weighted Runoff Coefficient	0.32
Time of Concentration (days hh:mm:ss)	0 00:09:28

Subbasin : E1.1



COFFMAN ENGINEERS

Subbasin : E2.1

Input Data

Area (ac)	0.4
Weighted Runoff Coefficient	0.37

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.33	-	0.25
-	0.07	-	0.95
Composite Area & Weighted Runoff Coeff.	0.4		0.37

Time of Concentration

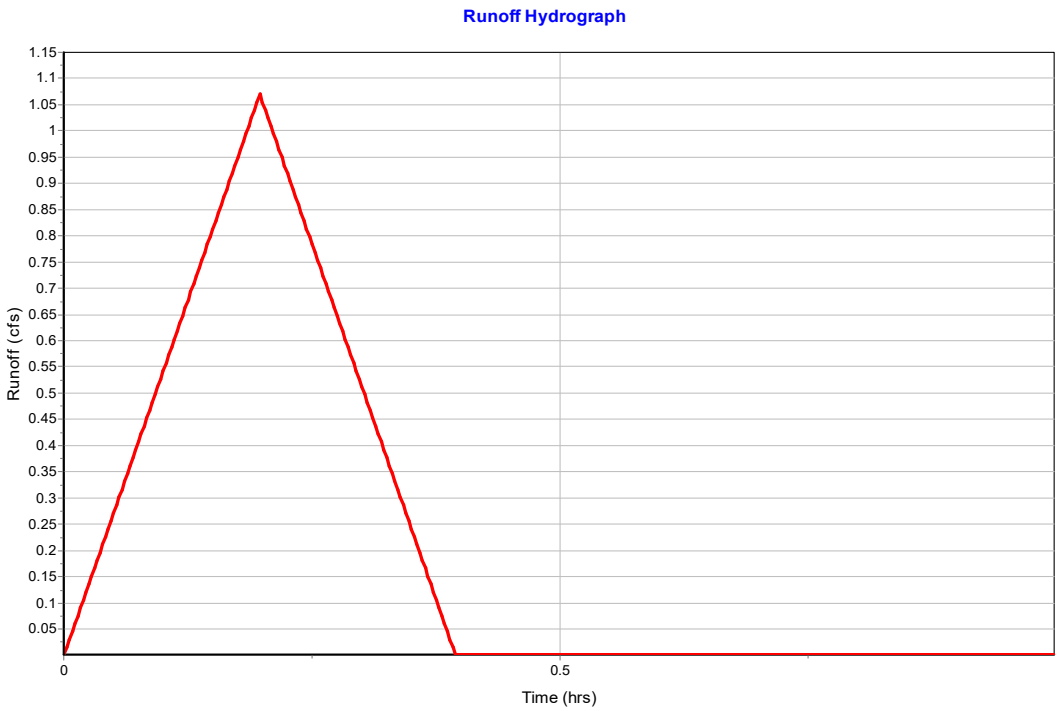
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	370	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.52	0	0
Computed Flow Time (min) :	11.84	0	0

Total TOC (min) 11.84

Subbasin Runoff Results

Total Rainfall (in)	1.42
Total Runoff (in)	0.53
Peak Runoff (cfs)	1.07
Rainfall Intensity	7.21
Weighted Runoff Coefficient	0.37
Time of Concentration (days hh:mm:ss)	0 00:11:50

Subbasin : E2.1



COFFMAN ENGINEERS

Subbasin : E2.2

Input Data

Area (ac)	0.08
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.08	-	0.95
Composite Area & Weighted Runoff Coeff.	0.08		0.95

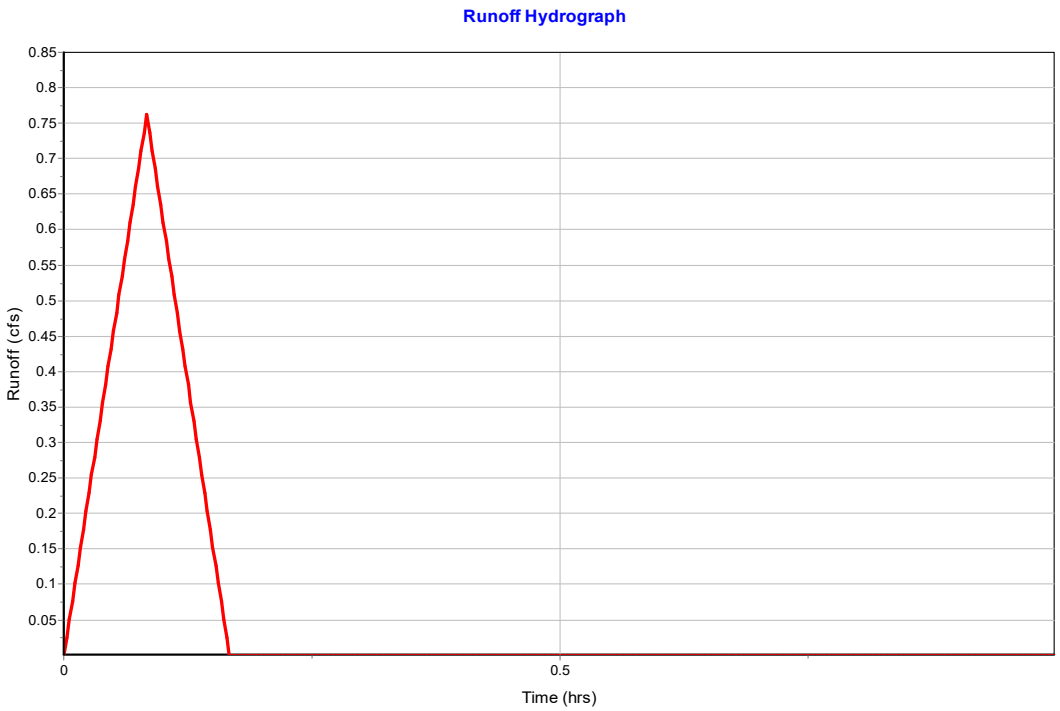
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.76
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : E2.2



COFFMAN ENGINEERS

Subbasin : E4.1

Input Data

Area (ac)	0.63
Weighted Runoff Coefficient	0.38

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.52	-	0.25
-	0.11	-	0.95
Composite Area & Weighted Runoff Coeff.	0.63		0.38

Time of Concentration

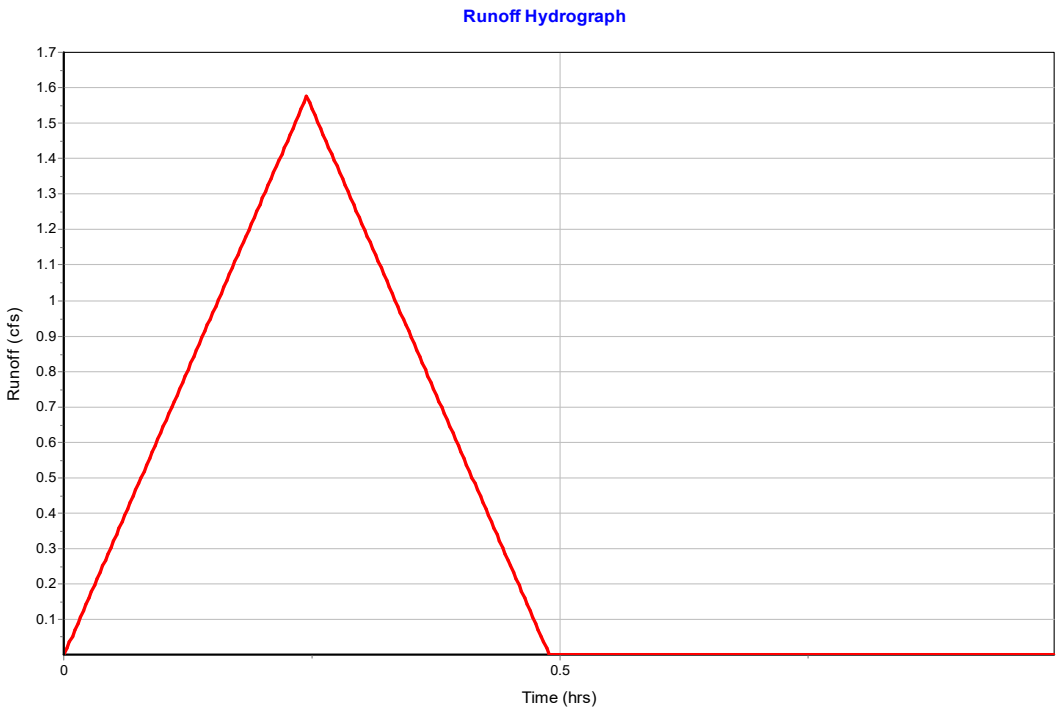
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	370	0	0
Slope (%) :	11.7	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.42	0	0
Computed Flow Time (min) :	14.67	0	0

Total TOC (min) 14.67

Subbasin Runoff Results

Total Rainfall (in)	1.61
Total Runoff (in)	0.61
Peak Runoff (cfs)	1.58
Rainfall Intensity	6.6
Weighted Runoff Coefficient	0.38
Time of Concentration (days hh:mm:ss)	0 00:14:40

Subbasin : E4.1



COFFMAN ENGINEERS

Subbasin : E4.2

Input Data

Area (ac)	0.05
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0	-	0.25
-	0.05	-	0.95
Composite Area & Weighted Runoff Coeff.	0.05		0.95

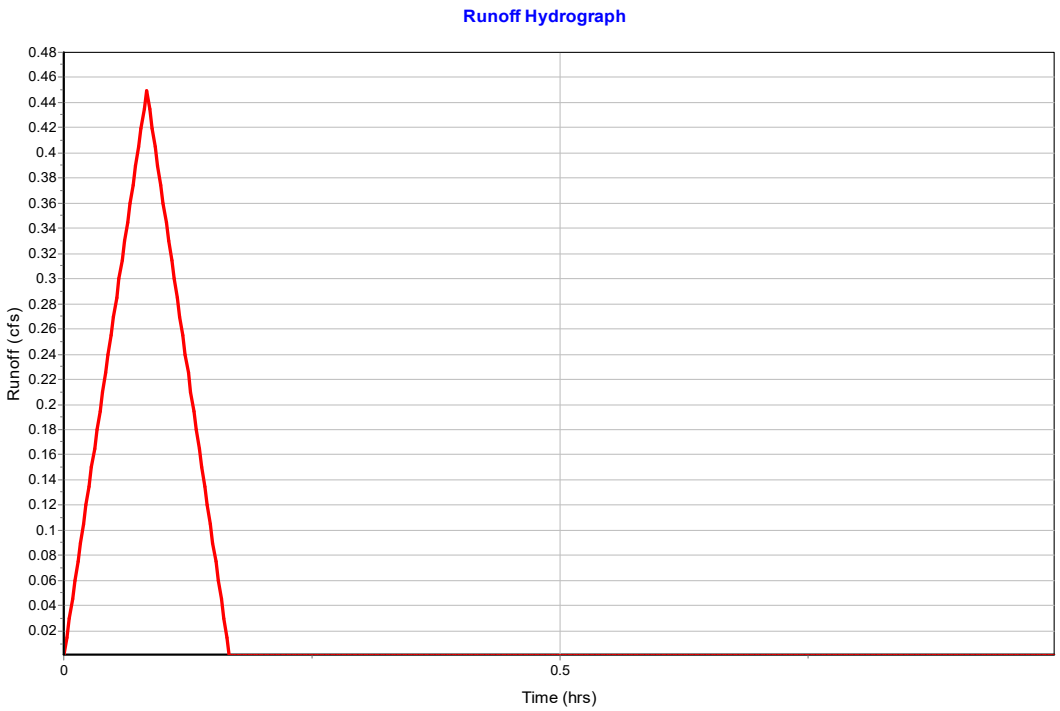
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.45
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : E4.2



COFFMAN ENGINEERS

Subbasin : E5.1

Input Data

Area (ac)	0.71
Weighted Runoff Coefficient	0.29

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.68	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	0.72		0.29

Time of Concentration

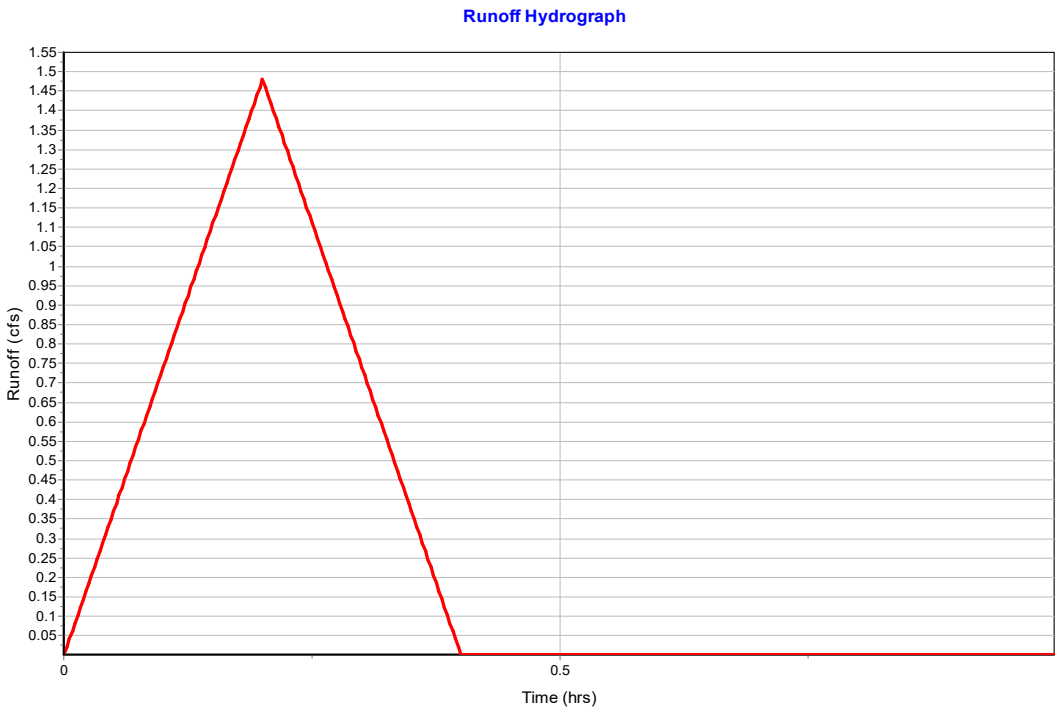
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	325	0	0
Slope (%) :	14.8	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.45	0	0
Computed Flow Time (min) :	12.04	0	0

Total TOC (min) 12.04

Subbasin Runoff Results

Total Rainfall (in)	1.43
Total Runoff (in)	0.42
Peak Runoff (cfs)	1.48
Rainfall Intensity	7.161
Weighted Runoff Coefficient	0.29
Time of Concentration (days hh:mm:ss)	0 00:12:02

Subbasin : E5.1



COFFMAN ENGINEERS

Subbasin : E5.2

Input Data

Area (ac)	0.04
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	0.04		0.95

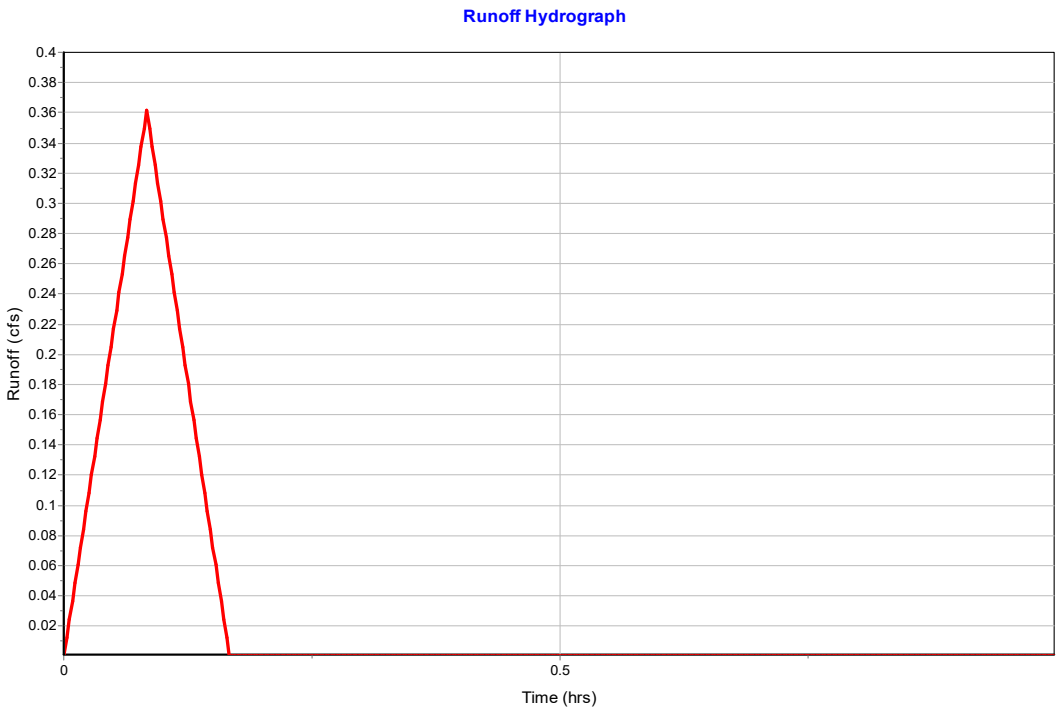
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.36
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : E5.2



COFFMAN ENGINEERS

Subbasin : E6.1

Input Data

Area (ac)	0.45
Weighted Runoff Coefficient	0.39

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.37	-	0.25
-	0.09	-	0.95
Composite Area & Weighted Runoff Coeff.	0.46		0.39

Time of Concentration

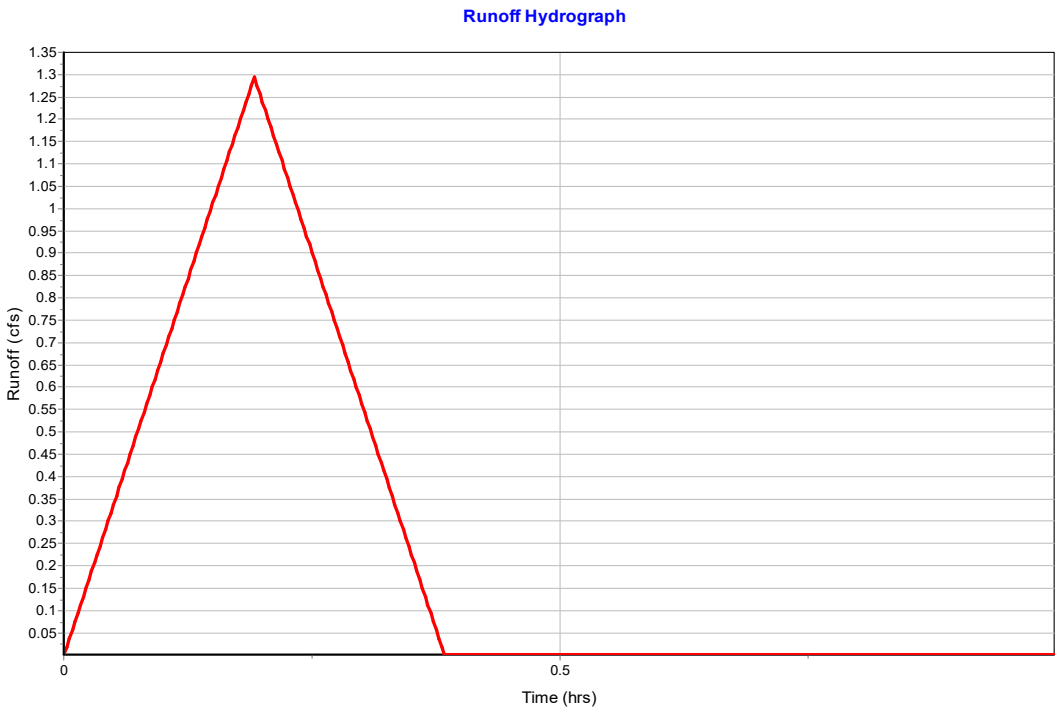
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	300	0	0
Slope (%) :	14.3	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.44	0	0
Computed Flow Time (min) :	11.45	0	0

Total TOC (min) 11.45

Subbasin Runoff Results

Total Rainfall (in)	1.4
Total Runoff (in)	0.55
Peak Runoff (cfs)	1.29
Rainfall Intensity	7.311
Weighted Runoff Coefficient	0.39
Time of Concentration (days hh:mm:ss)	0 00:11:27

Subbasin : E6.1



COFFMAN ENGINEERS

Subbasin : E8.1

Input Data

Area (ac)	0.68
Weighted Runoff Coefficient	0.32

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.62	-	0.25
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.68		0.32

Time of Concentration

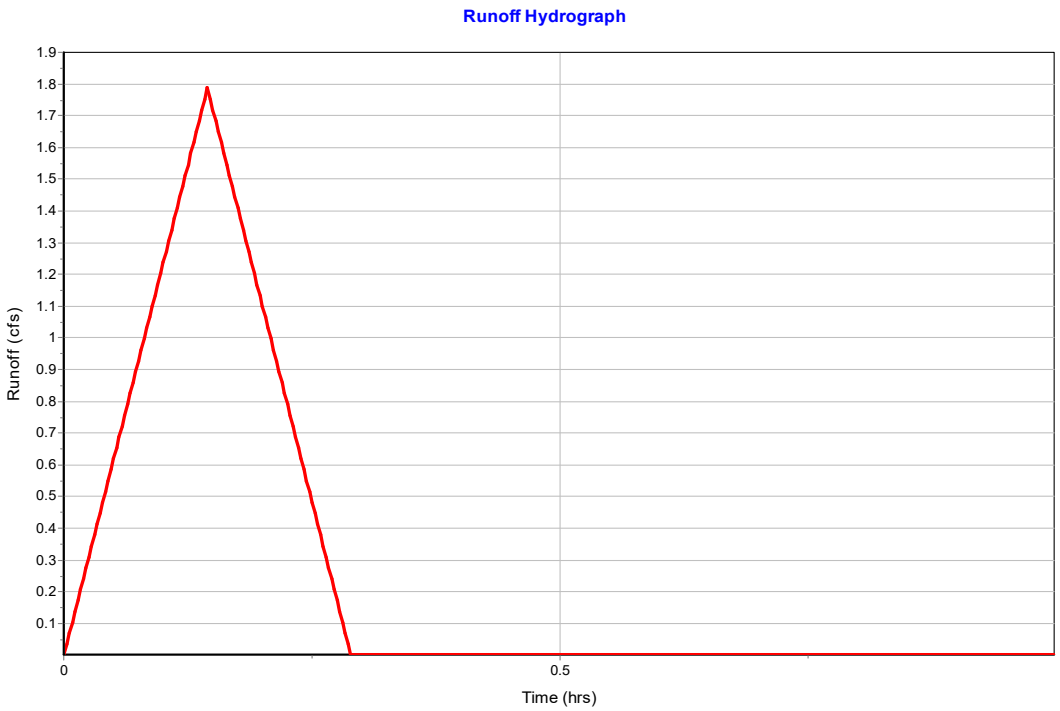
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	200	0	0
Slope (%) :	12.5	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.38	0	0
Computed Flow Time (min) :	8.73	0	0

Total TOC (min) 8.73

Subbasin Runoff Results

Total Rainfall (in)	1.18
Total Runoff (in)	0.38
Peak Runoff (cfs)	1.79
Rainfall Intensity	8.176
Weighted Runoff Coefficient	0.32
Time of Concentration (days hh:mm:ss)	0 00:08:44

Subbasin : E8.1



COFFMAN ENGINEERS

Subbasin : E8.2

Input Data

Area (ac)	0.05
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0	-	0.25
-	0.05	-	0.95
Composite Area & Weighted Runoff Coeff.	0.05		0.95

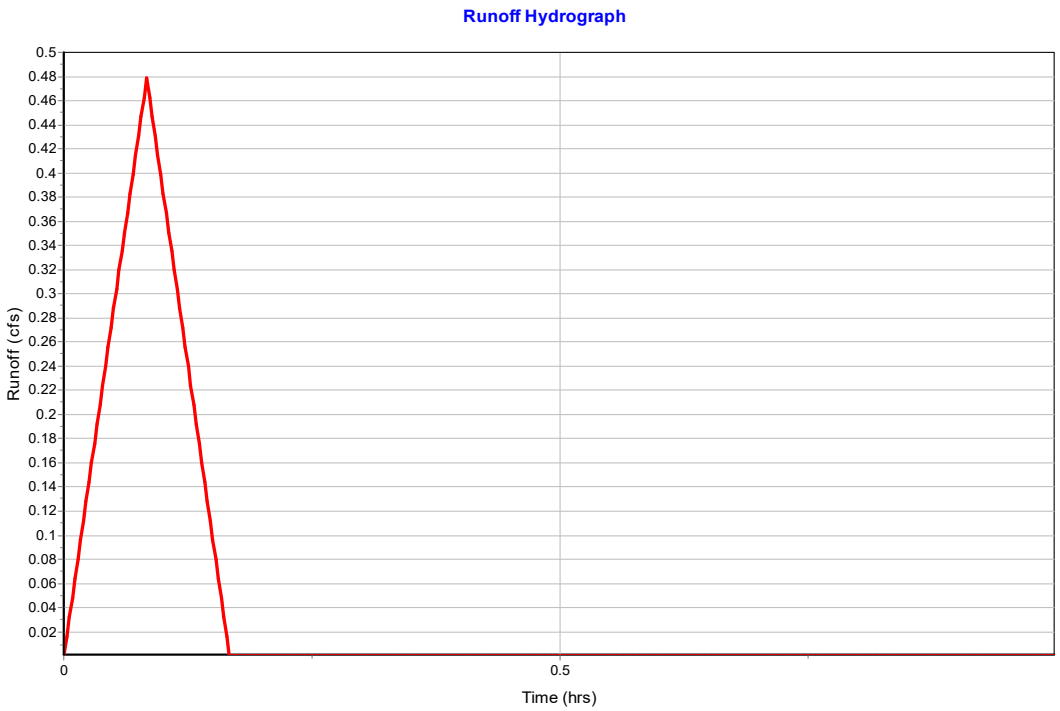
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.48
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : E8.2



COFFMAN ENGINEERS

Subbasin : F1.1

Input Data

Area (ac)	0.22
Weighted Runoff Coefficient	0.55

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.13	-	0.25
-	0.1	-	0.95
Composite Area & Weighted Runoff Coeff.	0.23		0.55

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	230	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.47	0	0
Computed Flow Time (min) :	8.09	0	0

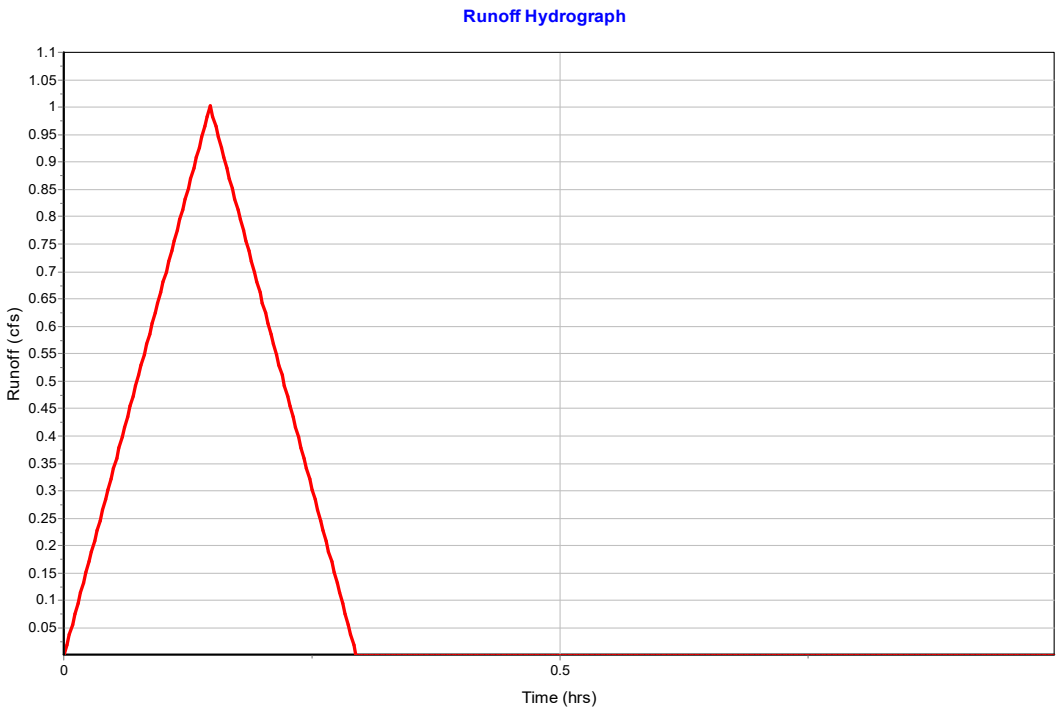
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.017	0	0
Flow Length (ft) :	210	0	0
Channel Slope (%) :	5.7	0	0
Cross Section Area (ft^2) :	0.2	0	0
Wetted Perimeter (ft) :	1.9	0	0
Velocity (ft/sec) :	4.67	0	0
Computed Flow Time (min) :	0.75	0	0

Total TOC (min) 8.84

Subbasin Runoff Results

Total Rainfall (in)	1.2
Total Runoff (in)	0.66
Peak Runoff (cfs)	1
Rainfall Intensity	8.134
Weighted Runoff Coefficient	0.55
Time of Concentration (days hh:mm:ss)	0 00:08:50

Subbasin : F1.1



COFFMAN ENGINEERS

Subbasin : F1.2

Input Data

Area (ac)	0.01
Weighted Runoff Coefficient	0.35

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.66	-	0.25
-	0.11	-	0.95
Composite Area & Weighted Runoff Coeff.	0.77		0.35

Time of Concentration

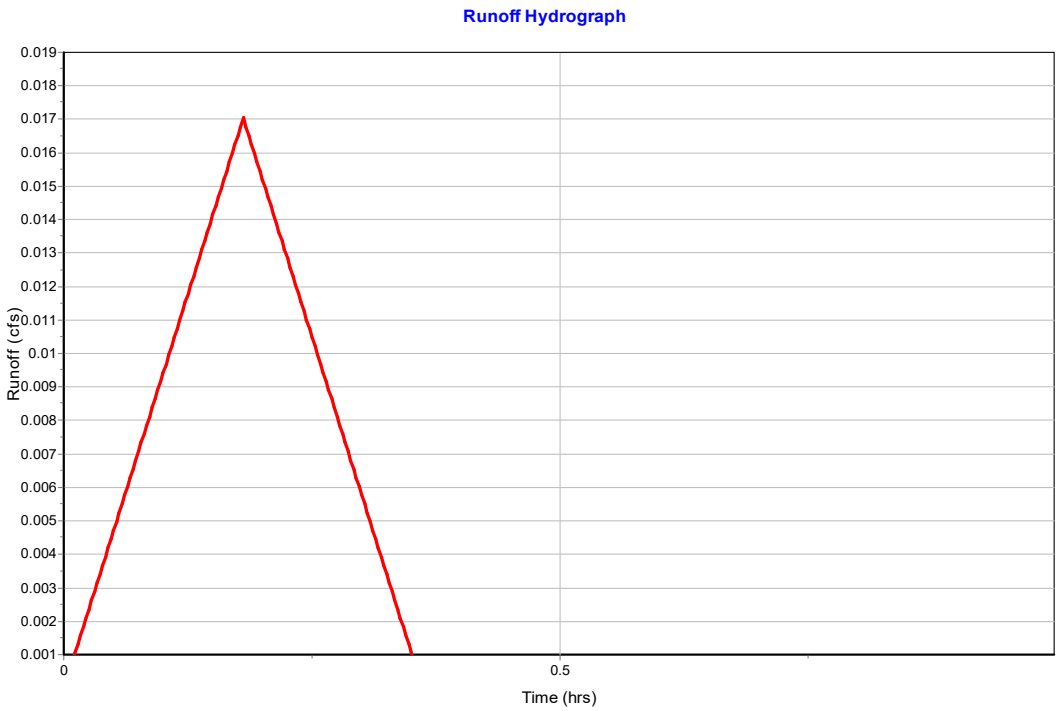
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	290	0	0
Slope (%) :	15.4	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.45	0	0
Computed Flow Time (min) :	10.81	0	0

Total TOC (min) 10.81

Subbasin Runoff Results

Total Rainfall (in)	1.35
Total Runoff (in)	0.47
Peak Runoff (cfs)	0.02
Rainfall Intensity	7.486
Weighted Runoff Coefficient	0.35
Time of Concentration (days hh:mm:ss)	0 00:10:49

Subbasin : F1.2



COFFMAN ENGINEERS

Subbasin : F3.1

Input Data

Area (ac)	0.56
Weighted Runoff Coefficient	0.3

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.52	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	0.56		0.3

Time of Concentration

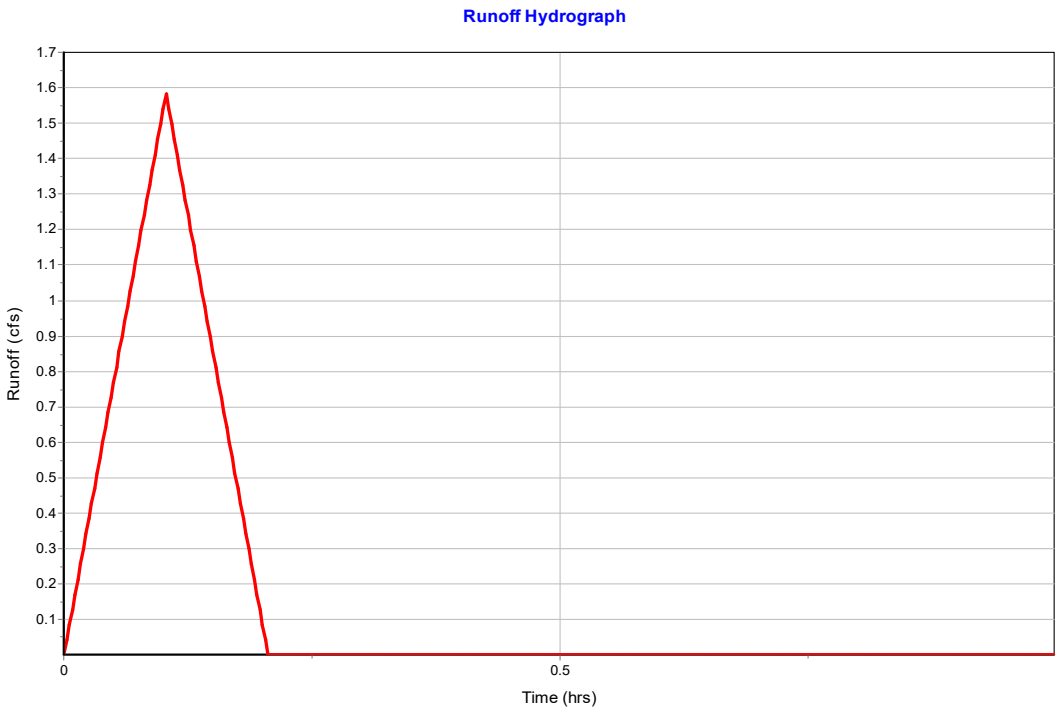
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	165	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.44	0	0
Computed Flow Time (min) :	6.2	0	0

Total TOC (min) 6.20

Subbasin Runoff Results

Total Rainfall (in)	0.97
Total Runoff (in)	0.29
Peak Runoff (cfs)	1.58
Rainfall Intensity	9.416
Weighted Runoff Coefficient	0.3
Time of Concentration (days hh:mm:ss)	0 00:06:12

Subbasin : F3.1



Subbasin : F3.2

Input Data

Area (ac)	0.04
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	0.04		0.95

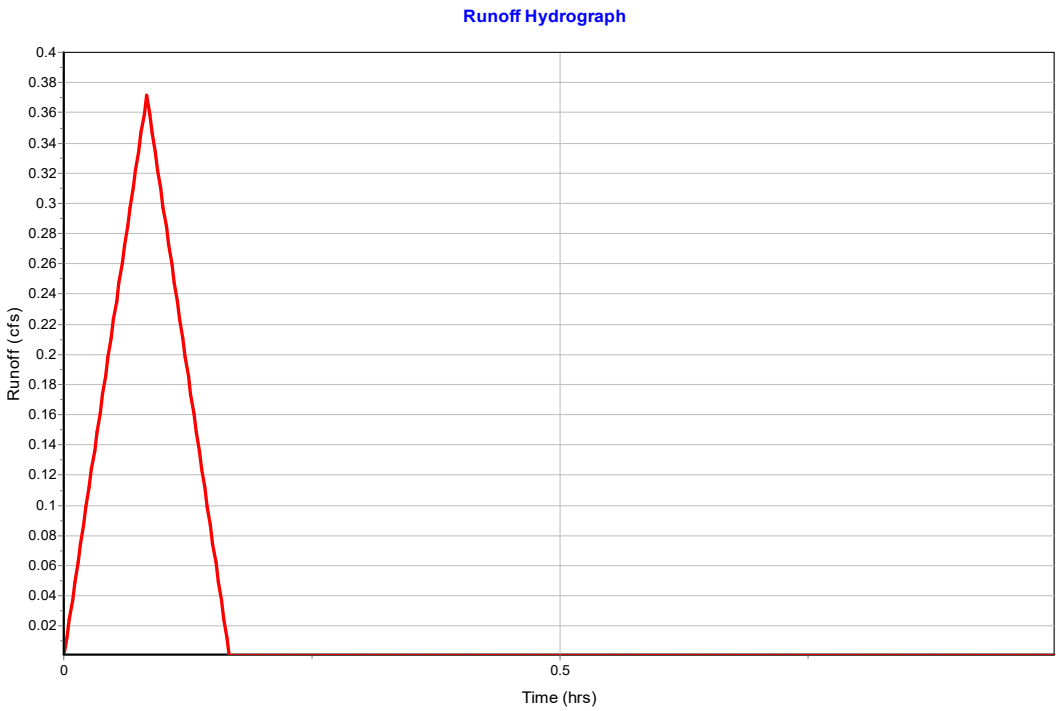
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.37
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : F3.2



COFFMAN ENGINEERS

Subbasin : H_POND

Input Data

Area (ac)	1.57
Weighted Runoff Coefficient	0.4

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.57	-	0.4
Composite Area & Weighted Runoff Coeff.	1.57		0.4

Time of Concentration

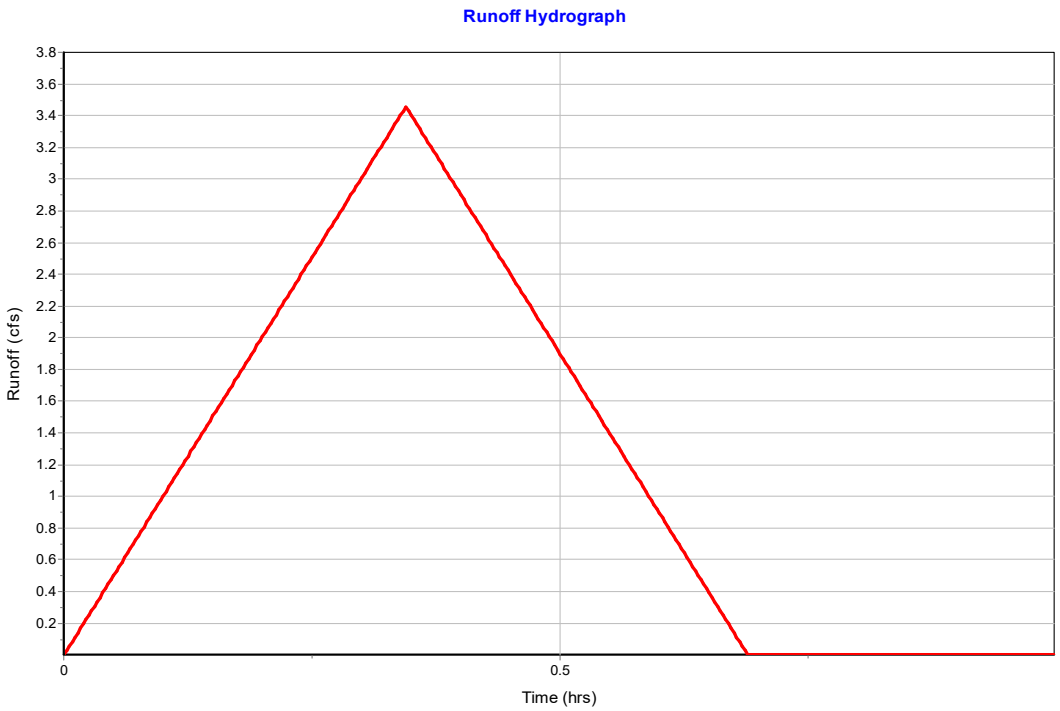
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	266	0	0
Slope (%) :	7.14	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.21	0	0
Computed Flow Time (min) :	20.65	0	0

Total TOC (min) 20.65

Subbasin Runoff Results

Total Rainfall (in)	1.9
Total Runoff (in)	0.76
Peak Runoff (cfs)	3.46
Rainfall Intensity	5.504
Weighted Runoff Coefficient	0.4
Time of Concentration (days hh:mm:ss)	0 00:20:39

Subbasin : H_POND



COFFMAN ENGINEERS

Subbasin : H2

Input Data

Area (ac)	0.26
Weighted Runoff Coefficient	0.4

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.26	-	0.4
Composite Area & Weighted Runoff Coeff.	0.26		0.4

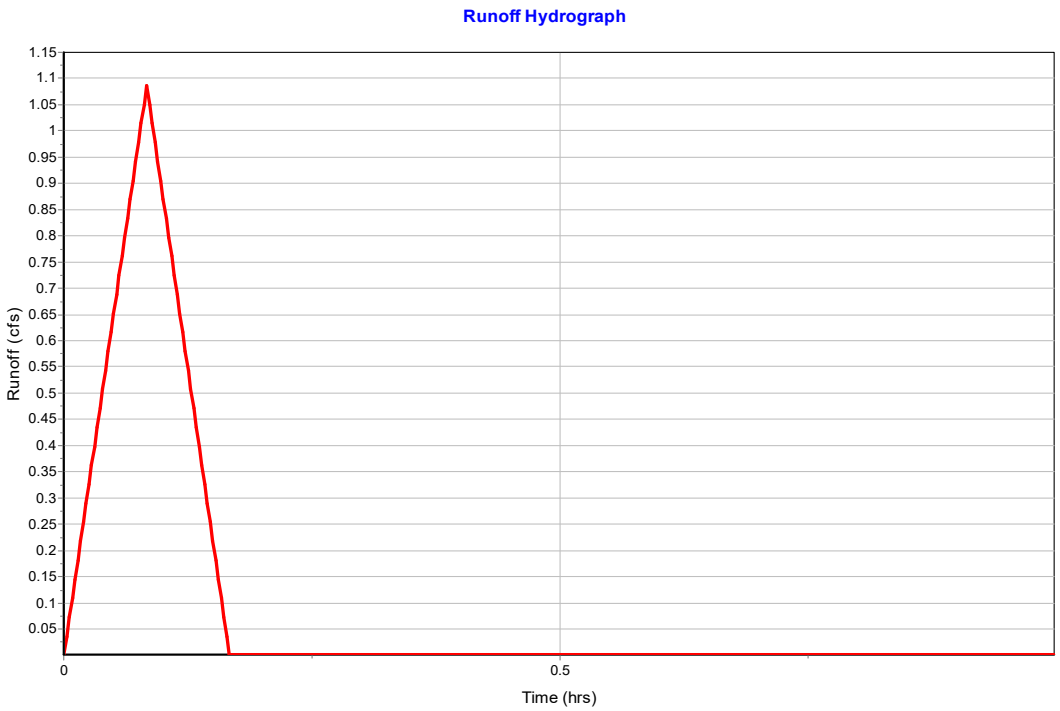
Time of Concentration

User-Defined TOC override (minutes): 5.00

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.34
Peak Runoff (cfs)	1.09
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.4
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : H2


Runoff Hydrograph
Runoff (cfs)
1.15
1.1
1.05
1
0.95
0.9
0.85
0.8
0.75
0.7
0.65
0.6
0.55
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
0.5
Time (hrs)

COFFMAN ENGINEERS

Subbasin : H-3

Input Data

Area (ac)	1.3
Weighted Runoff Coefficient	0.24

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.3	-	0.24
Composite Area & Weighted Runoff Coeff.	1.3		0.24

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	260	0	0
Slope (%) :	12	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.4	0	0
Computed Flow Time (min) :	10.95	0	0

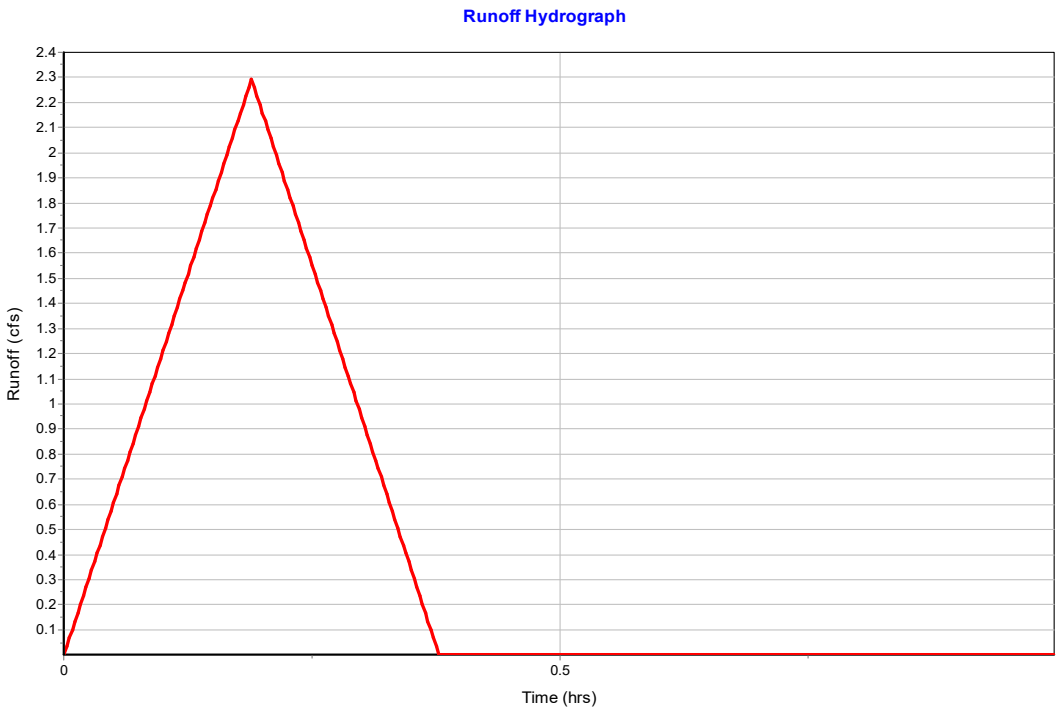
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.017	0	0
Flow Length (ft) :	90	0	0
Channel Slope (%) :	1	0	0
Cross Section Area (ft^2) :	1.2	0	0
Wetted Perimeter (ft) :	3.5	0	0
Velocity (ft/sec) :	4.29	0	0
Computed Flow Time (min) :	0.35	0	0

Total TOC (min) 11.30

Subbasin Runoff Results

Total Rainfall (in)	1.39
Total Runoff (in)	0.33
Peak Runoff (cfs)	2.29
Rainfall Intensity	7.351
Weighted Runoff Coefficient	0.24
Time of Concentration (days hh:mm:ss)	0 00:11:18

Subbasin : H-3


Runoff Hydrograph
Runoff (cfs)
2.4
2.3
2.2
2.1
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0.5
Time (hrs)

COFFMAN ENGINEERS

Subbasin : MAUKA_NORTH

Input Data

Area (ac)	20.06
Weighted Runoff Coefficient	0.42

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	19.22	-	0.4
-	0.67	-	0.95
-	0.17	-	0.24
Composite Area & Weighted Runoff Coeff.	20.06		0.42

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	200	0	0
Slope (%) :	22.6	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.32	0	0
Computed Flow Time (min) :	10.37	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	668	0	0
Slope (%) :	20	0	0
Surface Type :	Woodland	Unpaved	Unpaved
Velocity (ft/sec) :	2.24	0	0
Computed Flow Time (min) :	4.97	0	0

Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.02	0	0
Flow Length (ft) :	680	0	0
Channel Slope (%) :	16.64	0	0
Cross Section Area (ft^2) :	52.5	0	0
Wetted Perimeter (ft) :	19.18	0	0
Velocity (ft/sec) :	59.47	0	0
Computed Flow Time (min) :	0.19	0	0

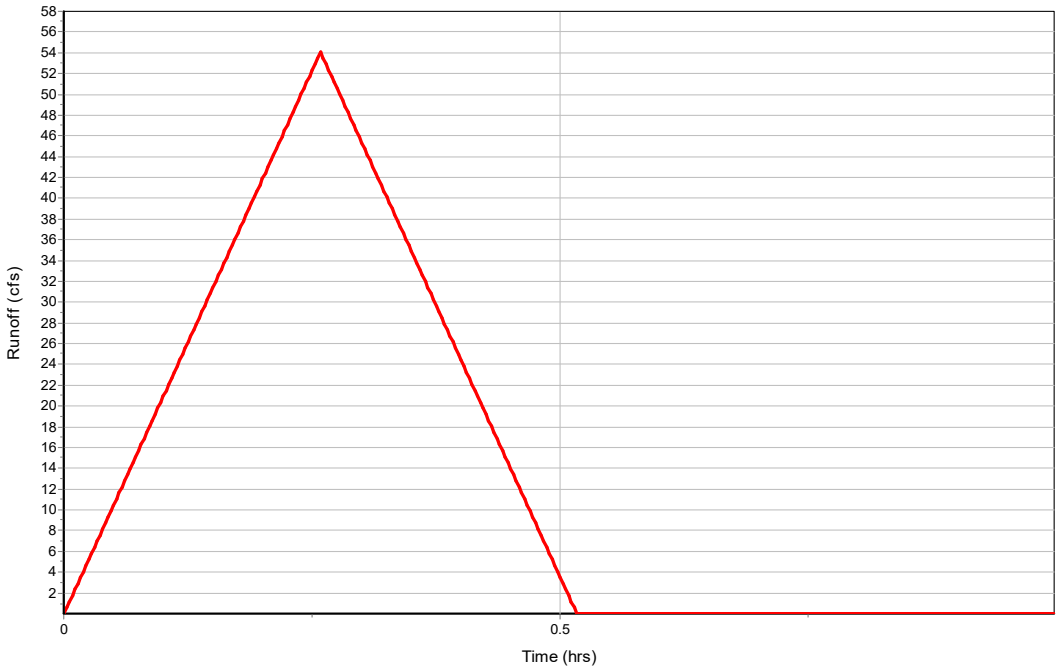
Total TOC (min) 15.53

Subbasin Runoff Results

Total Rainfall (in)	1.66
Total Runoff (in)	0.7
Peak Runoff (cfs)	54.08
Rainfall Intensity	6.419
Weighted Runoff Coefficient	0.42
Time of Concentration (days hh:mm:ss)	0 00:15:32

Subbasin : MAUKA_NORTH

Runoff Hydrograph



COFFMAN ENGINEERS

Subbasin : MAUKA_SOUTH

Input Data

Area (ac)	5.66
Weighted Runoff Coefficient	0.41

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	26.05	-	0.4
-	0.64	-	0.95
-	0.6	-	0.25
Composite Area & Weighted Runoff Coeff.	27.29		0.41

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	200	0	0
Slope (%) :	23	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.49	0	0
Computed Flow Time (min) :	6.84	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	630	0	0
Slope (%) :	20	0	0
Surface Type :	Woodland	Unpaved	Unpaved
Velocity (ft/sec) :	2.24	0	0
Computed Flow Time (min) :	4.69	0	0

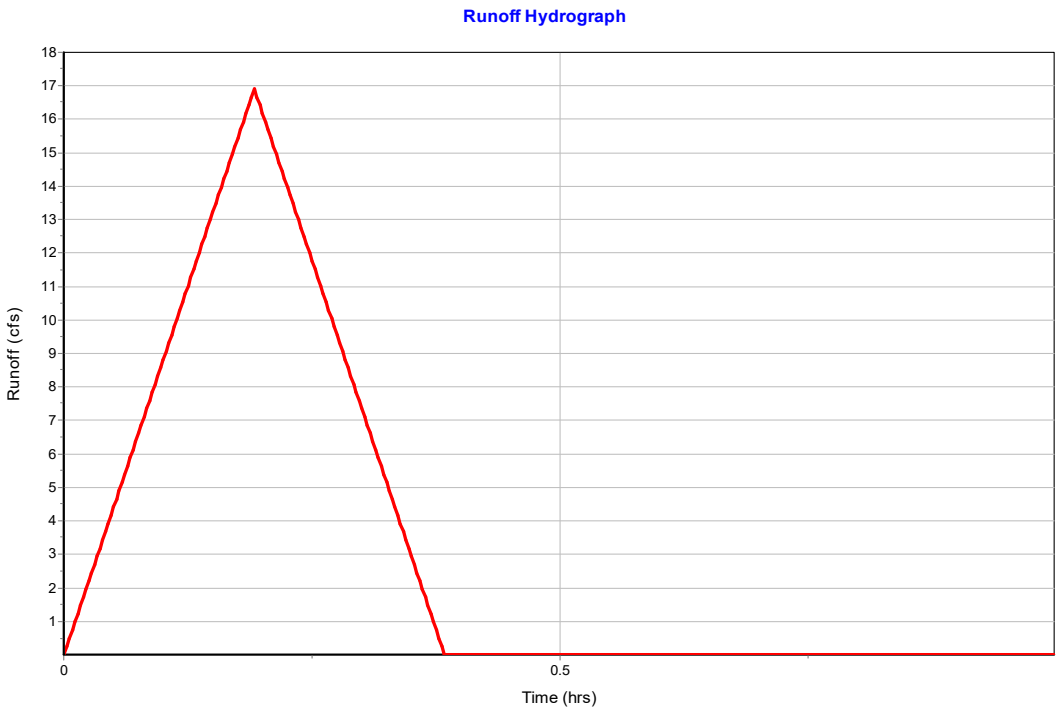
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.02	0	0
Flow Length (ft) :	34	0	0
Channel Slope (%) :	10	0	0
Cross Section Area (ft^2) :	52.5	0	0
Wetted Perimeter (ft) :	19.18	0	0
Velocity (ft/sec) :	46.1	0	0
Computed Flow Time (min) :	0.01	0	0

Total TOC (min) 11.54

Subbasin Runoff Results

Total Rainfall (in)	1.4
Total Runoff (in)	0.57
Peak Runoff (cfs)	16.91
Rainfall Intensity	7.287
Weighted Runoff Coefficient	0.41
Time of Concentration (days hh:mm:ss)	0 00:11:32

Subbasin : MAUKA_SOUTH



COFFMAN ENGINEERS

Subbasin : PRESERV_1

Input Data

Area (ac)	2.89
Weighted Runoff Coefficient	0.34

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.8	-	0.4
-	1.09	-	0.24
Composite Area & Weighted Runoff Coeff.	2.89		0.34

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	20	0	0
Slope (%) :	5	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.11	0	0
Computed Flow Time (min) :	3	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	339	0	0
Slope (%) :	5	0	0
Surface Type :	Woodland	Unpaved	Unpaved
Velocity (ft/sec) :	1.12	0	0
Computed Flow Time (min) :	5.04	0	0

Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.02	0	0
Flow Length (ft) :	84	0	0
Channel Slope (%) :	5	0	0
Cross Section Area (ft^2) :	3.5	0	0
Wetted Perimeter (ft) :	9	0	0
Velocity (ft/sec) :	8.88	0	0
Computed Flow Time (min) :	0.16	0	0

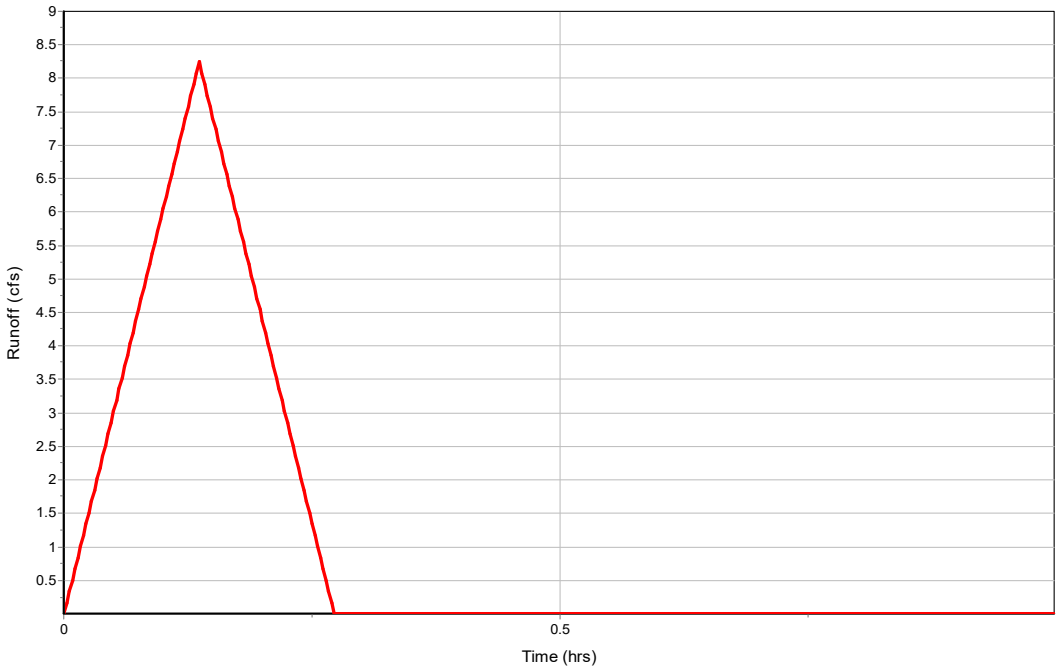
Total TOC (min) 8.21

Subbasin Runoff Results

Total Rainfall (in)	1.14
Total Runoff (in)	0.39
Peak Runoff (cfs)	8.24
Rainfall Intensity	8.386
Weighted Runoff Coefficient	0.34
Time of Concentration (days hh:mm:ss)	0 00:08:13

Subbasin : PRESERV_1

Runoff Hydrograph



COFFMAN ENGINEERS

Subbasin : PRESERV_2

Input Data

Area (ac)	1.1
Weighted Runoff Coefficient	0.33

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.64	-	0.4
-	0.46	-	0.24
Composite Area & Weighted Runoff Coeff.	1.1		0.33

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	200	0	0
Slope (%) :	7.6	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.21	0	0
Computed Flow Time (min) :	16.03	0	0

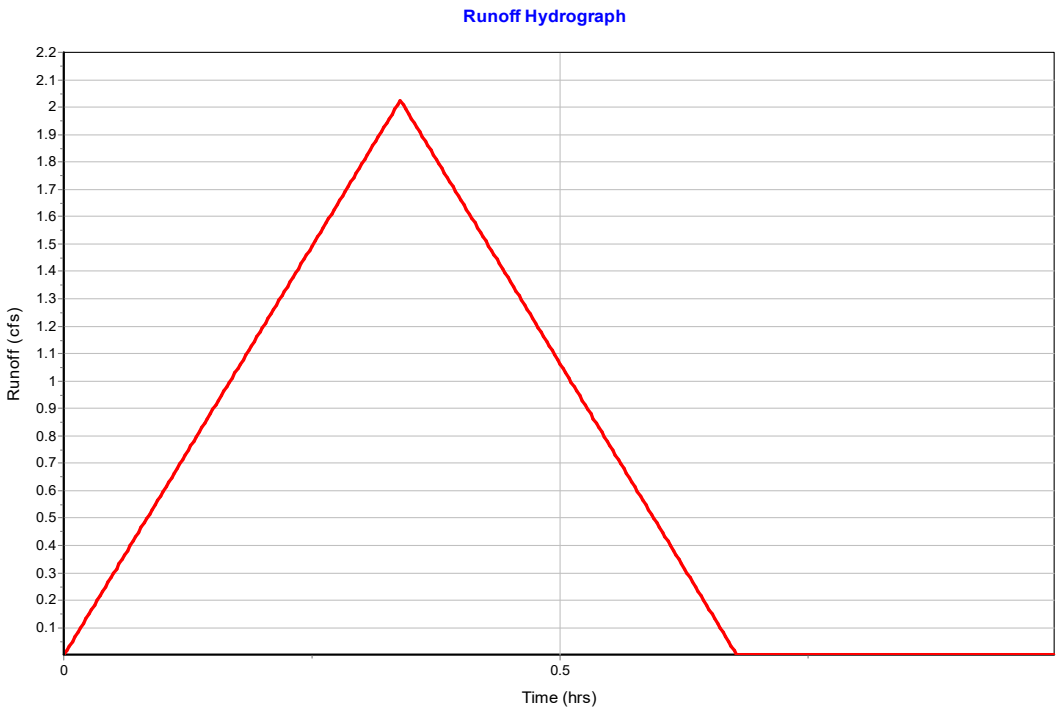
Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	93	148	0
Slope (%) :	4.26	3.3	0
Surface Type :	Woodland	Woodland	Unpaved
Velocity (ft/sec) :	1.03	0.91	0
Computed Flow Time (min) :	1.5	2.71	0

Total TOC (min) 20.25

Subbasin Runoff Results

Total Rainfall (in)	1.89
Total Runoff (in)	0.62
Peak Runoff (cfs)	2.03
Rainfall Intensity	5.563
Weighted Runoff Coefficient	0.33
Time of Concentration (days hh:mm:ss)	0 00:20:15

Subbasin : PRESERV_2



COFFMAN ENGINEERS

Subbasin : PRESERV_3

Input Data

Area (ac)	3.81
Weighted Runoff Coefficient	0.36

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	2.91	-	0.4
-	0.9	-	0.24
Composite Area & Weighted Runoff Coeff.	3.81		0.36

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.4	0.4
Flow Length (ft) :	100	100	100
Slope (%) :	12.5	12.8	14.7
2 yr, 24 hr Rainfall (in) :	5.98	5.98	5.98
Velocity (ft/sec) :	0.22	0.22	0.24
Computed Flow Time (min) :	7.55	7.48	7.07

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	160	600	0
Slope (%) :	13.2	3.94	0
Surface Type :	Woodland	Unpaved	Unpaved
Velocity (ft/sec) :	1.82	3.2	0
Computed Flow Time (min) :	1.47	3.13	0

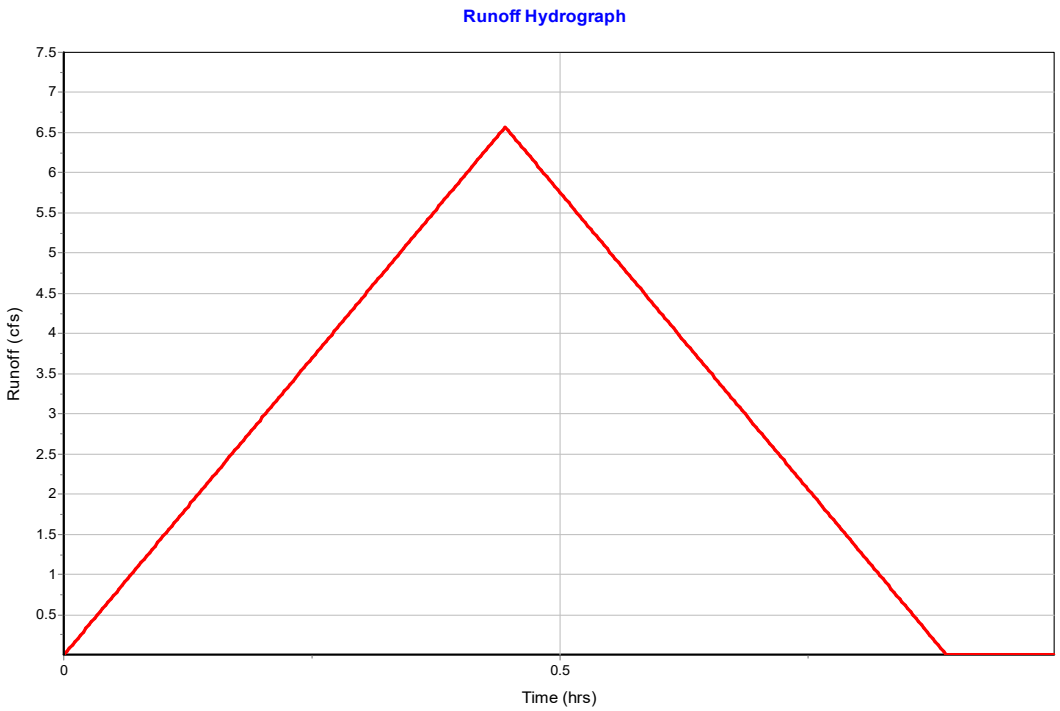
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.02	0	0
Flow Length (ft) :	20	0	0
Channel Slope (%) :	20	0	0
Cross Section Area (ft^2) :	3.5	0	0
Wetted Perimeter (ft) :	9	0	0
Velocity (ft/sec) :	17.75	0	0
Computed Flow Time (min) :	0.02	0	0

Total TOC (min) 26.71

Subbasin Runoff Results

Total Rainfall (in)	2.13
Total Runoff (in)	0.77
Peak Runoff (cfs)	6.57
Rainfall Intensity	4.791
Weighted Runoff Coefficient	0.36
Time of Concentration (days hh:mm:ss)	0 00:26:43

Subbasin : PRESERV_3



COFFMAN ENGINEERS

Subbasin : PRESERV_4

Input Data

Area (ac)	0.44
Weighted Runoff Coefficient	0.4

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.4
Composite Area & Weighted Runoff Coeff.	0.44		0.4

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	200	0	0
Slope (%) :	6.67	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	16.89	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	68	0	0
Slope (%) :	6.67	0	0
Surface Type :	Grass pasture	Unpaved	Unpaved
Velocity (ft/sec) :	1.81	0	0
Computed Flow Time (min) :	0.63	0	0

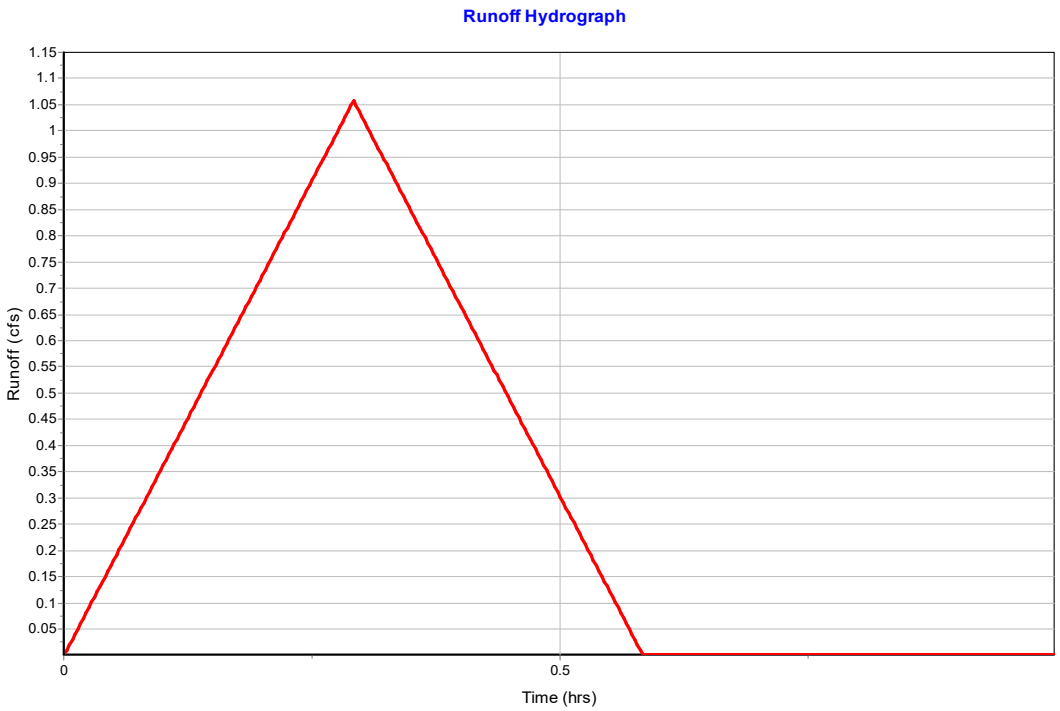
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.02	0	0
Flow Length (ft) :	38	0	0
Channel Slope (%) :	20	0	0
Cross Section Area (ft^2) :	3.5	0	0
Wetted Perimeter (ft) :	9	0	0
Velocity (ft/sec) :	17.75	0	0
Computed Flow Time (min) :	0.04	0	0

Total TOC (min) 17.56

Subbasin Runoff Results

Total Rainfall (in)	1.75
Total Runoff (in)	0.7
Peak Runoff (cfs)	1.06
Rainfall Intensity	6.007
Weighted Runoff Coefficient	0.4
Time of Concentration (days hh:mm:ss)	0 00:17:34

Subbasin : PRESERV_4



COFFMAN ENGINEERS

Subbasin : PRESERV_5

Input Data

Area (ac)	0.17
Weighted Runoff Coefficient	0.24

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.17	-	0.24
Composite Area & Weighted Runoff Coeff.	0.17		0.24

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	200	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.46	0	0
Computed Flow Time (min) :	7.24	0	0

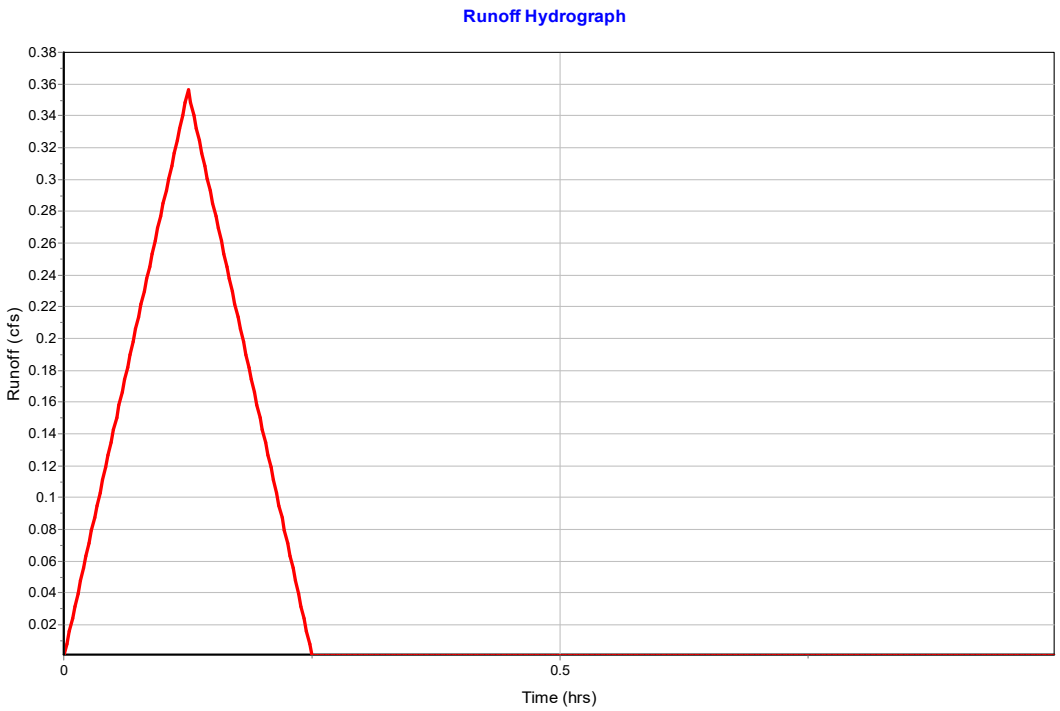
Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	40	0	0
Slope (%) :	20	0	0
Surface Type :	Grass pasture	Unpaved	Unpaved
Velocity (ft/sec) :	3.13	0	0
Computed Flow Time (min) :	0.21	0	0

Total TOC (min) 7.45

Subbasin Runoff Results

Total Rainfall (in)	1.09
Total Runoff (in)	0.26
Peak Runoff (cfs)	0.36
Rainfall Intensity	8.729
Weighted Runoff Coefficient	0.24
Time of Concentration (days hh:mm:ss)	0 00:07:27

Subbasin : PRESERV_5



COFFMAN ENGINEERS

Subbasin : PRESERV_6

Input Data

Area (ac)	0.42
Weighted Runoff Coefficient	0.24

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.42	-	0.24
Composite Area & Weighted Runoff Coeff.	0.42		0.24

Time of Concentration

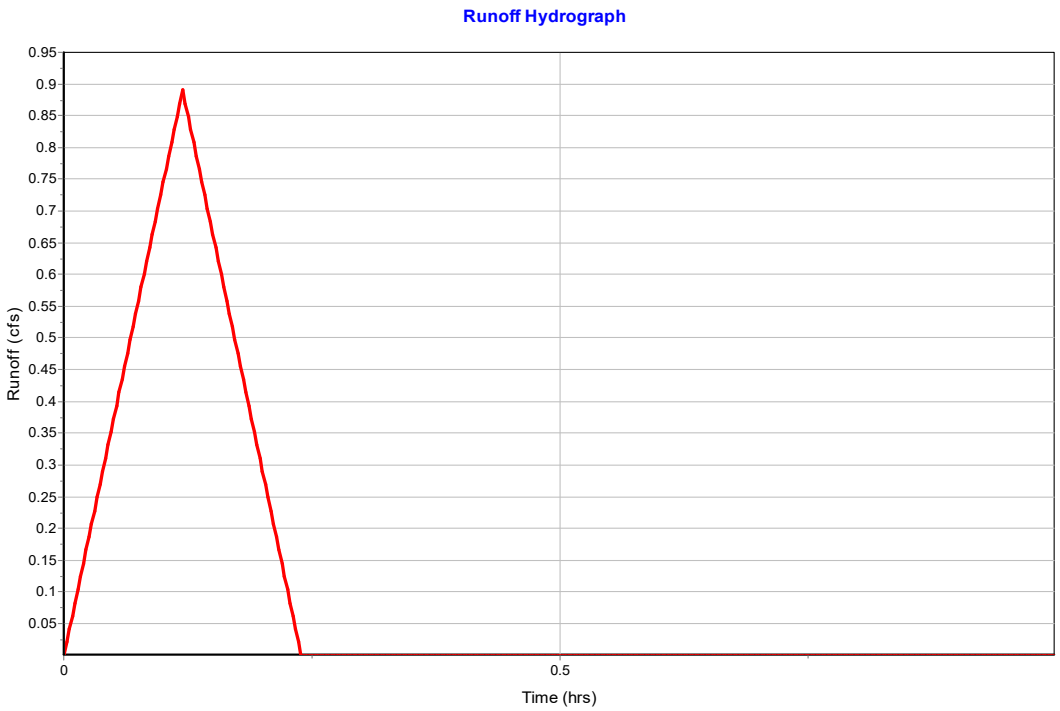
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	200	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.46	0	0
Computed Flow Time (min) :	7.24	0	0

Total TOC (min) 7.24

Subbasin Runoff Results

Total Rainfall (in)	1.06
Total Runoff (in)	0.25
Peak Runoff (cfs)	0.89
Rainfall Intensity	8.833
Weighted Runoff Coefficient	0.24
Time of Concentration (days hh:mm:ss)	0 00:07:14

Subbasin : PRESERV_6



COFFMAN ENGINEERS

Subbasin : PRESERV_7

Input Data

Area (ac)	9.79
Weighted Runoff Coefficient	0.4

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	9.79	-	0.4
Composite Area & Weighted Runoff Coeff.	9.79		0.4

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.4	0.4
Flow Length (ft) :	100	100	100
Slope (%) :	90	80	70
2 yr, 24 hr Rainfall (in) :	5.98	5.98	5.98
Velocity (ft/sec) :	0.49	0.46	0.44
Computed Flow Time (min) :	3.43	3.59	3.79

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	991	0	0
Slope (%) :	40	0	0
Surface Type :	Woodland	Unpaved	Unpaved
Velocity (ft/sec) :	3.16	0	0
Computed Flow Time (min) :	5.23	0	0

Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.02	0	0
Flow Length (ft) :	20	0	0
Channel Slope (%) :	15	0	0
Cross Section Area (ft^2) :	3.5	0	0
Wetted Perimeter (ft) :	9	0	0
Velocity (ft/sec) :	15.37	0	0
Computed Flow Time (min) :	0.02	0	0

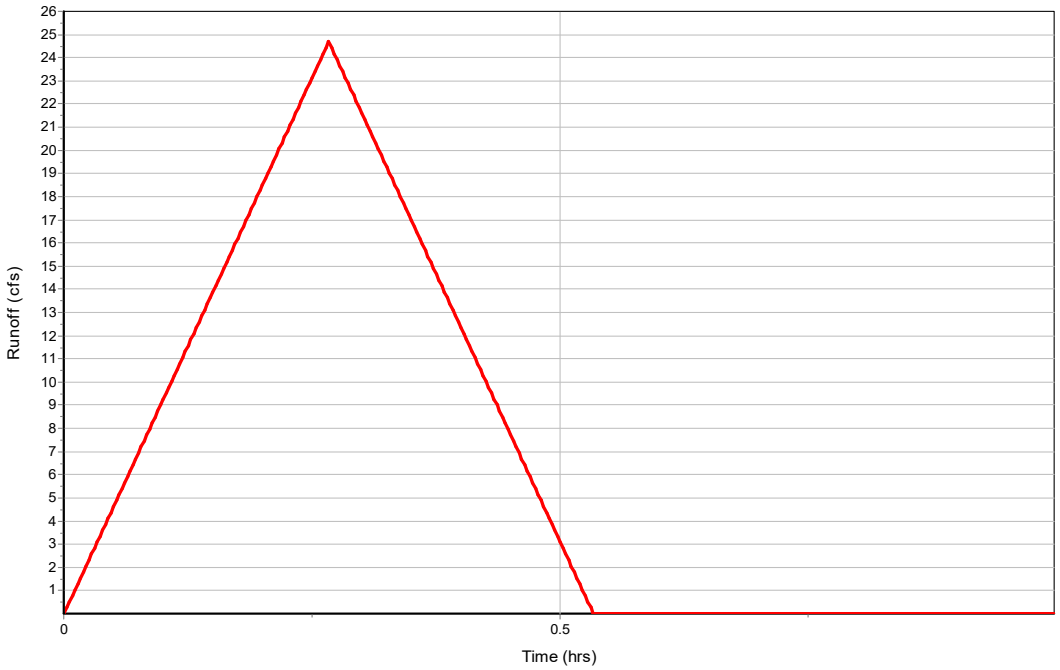
Total TOC (min) 16.06

Subbasin Runoff Results

Total Rainfall (in)	1.68
Total Runoff (in)	0.67
Peak Runoff (cfs)	24.69
Rainfall Intensity	6.304
Weighted Runoff Coefficient	0.4
Time of Concentration (days hh:mm:ss)	0 00:16:04

Subbasin : PRESERV_7

Runoff Hydrograph



COFFMAN ENGINEERS

Subbasin : PRESERV_8

Input Data

Area (ac)	6.24
Weighted Runoff Coefficient	0.4

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	6.24	-	0.4
Composite Area & Weighted Runoff Coeff.	6.24		0.4

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	200	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.31	0	0
Computed Flow Time (min) :	10.89	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	450	50	0
Slope (%) :	20	1.67	0
Surface Type :	Woodland	Woodland	Unpaved
Velocity (ft/sec) :	2.24	0.65	0
Computed Flow Time (min) :	3.35	1.28	0

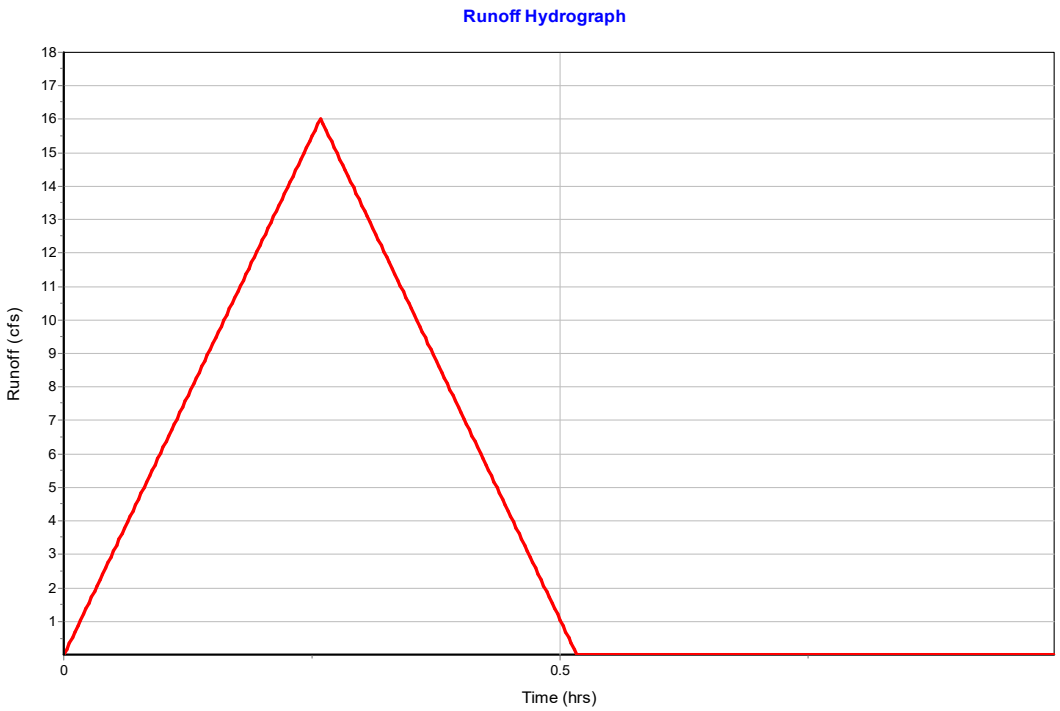
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.02	0	0
Flow Length (ft) :	20	0	0
Channel Slope (%) :	15	0	0
Cross Section Area (ft^2) :	3.5	0	0
Wetted Perimeter (ft) :	9	0	0
Velocity (ft/sec) :	15.37	0	0
Computed Flow Time (min) :	0.02	0	0

Total TOC (min) 15.54

Subbasin Runoff Results

Total Rainfall (in)	1.66
Total Runoff (in)	0.66
Peak Runoff (cfs)	16.02
Rainfall Intensity	6.416
Weighted Runoff Coefficient	0.4
Time of Concentration (days hh:mm:ss)	0 00:15:32

Subbasin : PRESERV_8



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Subbasin : PRESERV_9

Input Data

Area (ac)	1.09
Weighted Runoff Coefficient	0.31

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.6	-	0.24
-	0.49	-	0.4
Composite Area & Weighted Runoff Coeff.	1.09		0.31

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.4	0.4
Flow Length (ft) :	100	100	100
Slope (%) :	5.3	12	10.2
2 yr, 24 hr Rainfall (in) :	5.98	5.98	5.98
Velocity (ft/sec) :	0.16	0.22	0.2
Computed Flow Time (min) :	10.64	7.67	8.19

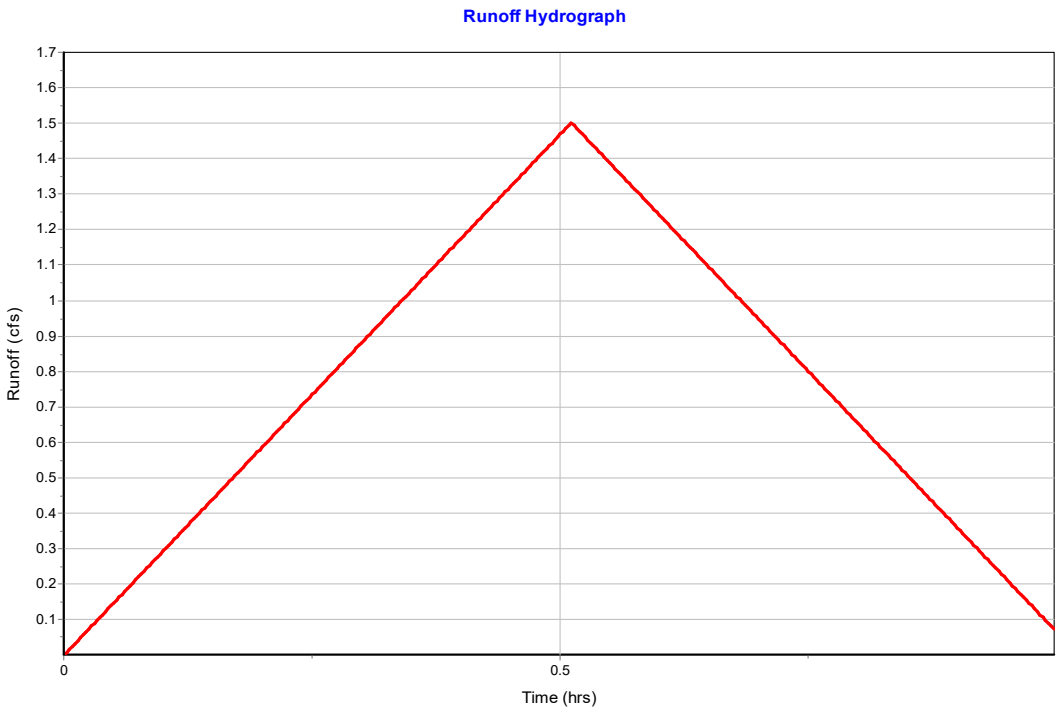
Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	175	186	0
Slope (%) :	4.26	2.17	0
Surface Type :	Woodland	Unpaved	Unpaved
Velocity (ft/sec) :	1.03	2.38	0
Computed Flow Time (min) :	2.83	1.3	0

Total TOC (min) 30.63

Subbasin Runoff Results

Total Rainfall (in)	2.27
Total Runoff (in)	0.7
Peak Runoff (cfs)	1.5
Rainfall Intensity	4.444
Weighted Runoff Coefficient	0.31
Time of Concentration (days hh:mm:ss)	0 00:30:38

Subbasin : PRESERV_9



Junction Input

Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft^2)
4-Jun	253.00	254.25	-254.25	0.00
5-Jun	270.00	271.25	-271.25	0.00
6-Jun	290.00	291.25	-291.25	0.00
7-Jun	305.00	306.25	-306.25	0.00
8-Jun	310.00	311.25	-311.25	0.00
9-Jun	313.00	314.25	-314.25	0.00
10-Jun	340.00	341.25	-341.25	0.00
SDFC D (STORM)	229.40	237.42	0.00	0.00
SDFC-A (STORM)	252.88	258.84	0.00	0.00
SDFC-BC (STORM)	255.76	263.76	0.00	0.00
SDFC-E(STORM)	231.93	237.65	0.00	0.00
SDHW-G1 (STORM)	233.00	237.00	0.00	0.00
SDHW-H2	246.54	251.54	0.00	0.00
SDMH-A1 (STORM)	217.50	239.13	0.00	0.00
SDMH-A2 (STORM)	233.07	246.59	0.00	0.00
SDMH-A3 (STORM)	243.28	258.09	0.00	0.00
SDMH-A5 (STORM)	265.11	274.77	0.05	0.00
SDMH-B1 (STORM)	212.90	222.77	0.00	0.00
SDMH-B10 (STORM)	288.00	299.48	0.00	0.00
SDMH-B11 (STORM)	298.46	306.18	0.00	0.00
SDMH-B12 (STORM)	306.23	314.37	0.01	0.00
SDMH-B2 (STORM)	218.98	227.86	0.01	0.00
SDMH-B3 (STORM)	238.89	248.68	0.00	0.00
SDMH-B4 (STORM)	252.24	269.51	0.00	0.00
SDMH-B5 (STORM)	252.76	266.49	0.00	0.00
SDMH-B6 (STORM)	252.54	263.83	0.00	0.00
SDMH-B7 (STORM)	257.38	265.79	0.00	0.00
SDMH-B8 (STORM)	266.72	276.34	0.00	0.00
SDMH-B9 (STORM)	283.30	291.00	0.00	0.00
SDMH-C1 (STORM)	256.00	265.00	0.00	0.00
SDMH-C2 (STORM)	259.28	266.56	0.00	0.00
SDMH-C3 (STORM)	262.48	270.00	0.00	0.00
SDMH-C4 (STORM)	271.00	281.00	0.00	0.00
SDMH-D1 (STORM)	235.43	244.00	0.00	0.00
SDMH-D2 (STORM)	249.50	257.09	0.00	0.00
SDMH-D3 (STORM)	282.53	290.10	0.00	0.00
SDMH-D4 (STORM)	299.50	306.95	0.00	0.00
SDMH-D5 (STORM)	305.50	314.00	0.00	0.00
SDMH-E1 (STORM)	232.75	242.43	0.00	0.00
SDMH-E2 (STORM)	246.13	255.60	0.00	0.00
SDMH-E3 (STORM)	269.66	278.00	0.00	0.00
SDMH-E4 (STORM)	286.50	295.57	0.00	0.00
SDMH-E5 (STORM)	288.69	297.87	0.00	0.00
SDMH-E6 (STORM)	291.15	299.42	0.00	0.00
SDMH-E7 (STORM)	303.26	314.53	0.00	0.00
SDMH-E8 (STORM)	318.27	326.00	0.00	0.00
SDMH-F1 (STORM)	290.93	300.47	0.00	0.00
SDMH-F2 (STORM)	293.34	303.31	0.00	0.00
SDMH-F3 (STORM)	312.09	323.59	0.01	0.00
SDMH-G1 (STORM)	228.94	249.00	0.00	0.00
SDMH-H1 (STORM)	179.49	193.34	-0.21	0.00
SDMH-H2 (STORM)	184.28	219.21	0.00	0.00
SDMH-H3 (STORM)	210.82	240.96	0.00	0.00
SDMH-H4 (STORM)	217.45	239.00	0.00	0.00
SDMH-H5 (STORM)	224.14	253.00	0.00	0.00

COFFMAN ENGINEERS

Junction Results

Element ID	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
4-Jun	47.66	253.83	0.00	0 00:16	0 00:00	0.00	0.00
5-Jun	45.21	270.86	0.00	0 00:16	0 00:00	0.00	0.00
6-Jun	41.20	290.67	0.00	0 00:16	0 00:00	0.00	0.00
7-Jun	40.22	305.82	0.00	0 00:16	0 00:00	0.00	0.00
8-Jun	40.23	310.93	0.00	0 00:16	0 00:00	0.00	0.00
9-Jun	40.26	314.13	0.00	0 00:16	0 00:00	0.00	0.00
10-Jun	16.01	340.58	0.00	0 00:15	0 00:00	0.00	0.00
SDFC D (STORM)	17.30	231.17	0.00	0 00:09	0 00:00	0.00	0.00
SDFC-A (STORM)	2.27	253.31	0.00	0 00:06	0 00:00	0.00	0.00
SDFC-BC (STORM)	13.02	258.53	0.00	0 00:09	0 00:00	0.00	0.00
SDFC-E(STORM)	8.83	233.16	0.00	0 00:09	0 00:00	0.00	0.00
SDHW-G1 (STORM)	47.63	236.08	0.00	0 00:16	0 00:00	0.00	0.00
SDHW-H2	65.09	248.81	0.00	0 00:15	0 00:00	0.00	0.00
SDMH-A1 (STORM)	2.25	220.96	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-A2 (STORM)	2.25	236.29	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-A3 (STORM)	2.27	246.59	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-A5 (STORM)	1.30	268.35	0.00	0 00:05	0 00:00	0.00	0.00
SDMH-B1 (STORM)	12.95	216.91	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B10 (STORM)	3.84	291.47	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-B11 (STORM)	2.59	301.78	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-B12 (STORM)	1.08	309.42	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-B2 (STORM)	12.95	222.65	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B3 (STORM)	12.95	242.46	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B4 (STORM)	12.96	255.99	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B5 (STORM)	12.98	257.30	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-B6 (STORM)	13.00	258.07	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B7 (STORM)	6.64	261.26	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-B8 (STORM)	5.25	270.15	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-B9 (STORM)	4.16	286.66	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-C1 (STORM)	4.06	259.45	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-C2 (STORM)	2.92	262.81	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-C3 (STORM)	2.93	266.00	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-C4 (STORM)	1.21	274.24	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-D1 (STORM)	5.88	238.89	0.00	0 00:05	0 00:00	0.00	0.00
SDMH-D2 (STORM)	5.37	252.96	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-D3 (STORM)	3.77	285.87	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-D4 (STORM)	2.33	302.83	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-D5 (STORM)	0.91	308.71	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E1 (STORM)	8.83	236.40	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E2 (STORM)	8.10	249.53	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-E3 (STORM)	6.93	273.04	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E4 (STORM)	6.93	289.92	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E5 (STORM)	5.42	292.27	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-E6 (STORM)	2.14	294.52	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E7 (STORM)	1.18	306.49	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-E8 (STORM)	1.18	321.47	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-F1 (STORM)	2.55	294.41	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-F2 (STORM)	1.21	296.68	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-F3 (STORM)	1.21	315.30	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-G1 (STORM)	47.27	233.62	0.00	0 00:17	0 00:00	0.00	0.00
SDMH-H1 (STORM)	131.24	187.17	0.00	0 00:18	0 00:00	0.00	0.00
SDMH-H2 (STORM)	131.19	189.36	0.00	0 00:14	0 00:00	0.00	0.00
SDMH-H3 (STORM)	121.81	215.69	0.00	0 00:16	0 00:00	0.00	0.00
SDMH-H4 (STORM)	64.93	222.93	0.00	0 00:15	0 00:00	0.00	0.00
SDMH-H5 (STORM)	65.05	228.82	0.00	0 00:15	0 00:00	0.00	0.00

Pipe Input

Element ID	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses
{STORM}.A-0 (STORM)	10.71	220.29	220.50	-1.9600	30.000	0.0130	0.5000	0.5000	0.0000
{STORM}.A-1 (STORM)	100.70	220.50	236.07	-15.4600	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.A-2 (STORM)	218.68	236.07	246.28	-4.6700	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.A-3 (STORM)	14.06	251.62	252.88	-8.9600	12.000	0.0130	0.5000	0.5000	0.0000
{STORM}.A-4 (STORM)	29.04	252.88	253.84	-3.3100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.A-5 (STORM)	143.05	254.34	268.11	-9.6300	12.000	0.0130	0.5000	0.7000	0.0000
{STORM}.A-5.1 (STORM)	31.77	256.72	256.04	2.1200	12.000	0.0130	0.5000	0.7000	0.0000
{STORM}.A-6.1 (STORM)	11.49	270.47	270.33	1.2200	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.A-6.2 (STORM)	14.21	271.40	270.61	5.5700	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.B-0 (STORM)	69.39	215.90	213.00	4.1700	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-1 (STORM)	78.08	221.98	215.90	7.7900	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-10 (STORM)	106.44	271.47	286.30	-13.9300	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-10.1 (STORM)	12.09	287.00	286.80	1.6500	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-11 (STORM)	92.10	286.80	291.00	-4.5600	18.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-11.1 (STORM)	47.87	293.48	293.00	1.0000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-11.2 (STORM)	40.03	293.48	291.50	4.9500	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-12 (STORM)	100.47	292.50	301.46	-8.9200	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-12.1 (STORM)	10.82	302.55	302.30	2.3000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-12.2 (STORM)	17.38	302.55	302.30	1.4400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-13 (STORM)	80.79	301.46	309.23	-9.6200	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-13.1 (STORM)	13.80	310.67	310.47	1.4600	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-2 (STORM)	163.81	221.98	241.89	-12.1600	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-3 (STORM)	249.48	242.86	255.24	-4.9700	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-4 (STORM)	98.43	255.14	255.76	-0.6300	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-5 (STORM)	99.98	255.76	256.49	-0.7400	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-6 (STORM)	24.21	256.49	256.84	-1.4400	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-7 (STORM)	10.44	257.00	256.84	1.5500	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-8 (STORM)	79.04	258.86	260.38	-1.9200	18.000	0.0130	0.5000	0.8000	0.0000
{STORM}.B-8.1 (STORM)	12.46	261.75	261.55	1.6000	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.B-9 (STORM)	115.90	260.38	269.72	-8.0600	18.000	0.0130	0.5000	0.8000	0.0000
{STORM}.B-9.1 (STORM)	12.98	272.34	272.14	1.5400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-9.2 (STORM)	11.49	272.34	272.14	1.7400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-0 (STORM)	17.61	257.37	256.84	2.9800	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-1 (STORM)	63.57	259.00	257.37	2.5700	24.000	0.0130	0.5000	0.9000	0.0000
{STORM}.C-1.1 (STORM)	11.15	261.00	260.80	1.8000	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-2 (STORM)	54.84	260.00	262.28	-4.1600	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-2.1 (STORM)	12.79	266.00	265.80	1.6000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-2.2 (STORM)	12.89	266.00	265.80	1.5500	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-3 (STORM)	99.30	262.28	265.48	-3.2200	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.C-3.1 (STORM)	12.20	277.00	276.80	1.6400	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-3.2 (STORM)	12.12	277.00	276.80	1.6500	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-4 (STORM)	125.09	265.48	274.00	-6.8100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-0 (STORM)	37.25	229.40	228.67	1.9500	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-1 (STORM)	98.20	238.43	230.40	8.1800	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-1.1 (STORM)	12.67	240.00	239.80	1.5900	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.D-2 (STORM)	80.60	252.50	238.43	17.4600	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.D-2.1 (STORM)	12.16	253.12	252.92	1.6400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-2.2 (STORM)	12.13	253.12	252.92	1.6500	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-3 (STORM)	203.16	285.53	252.50	16.2600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-3.1 (STORM)	12.04	286.10	285.90	1.6700	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-3.2 (STORM)	12.19	286.10	285.90	1.6600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-4 (STORM)	192.04	302.50	285.53	8.8400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-4.1 (STORM)	12.74	302.90	302.63	2.1100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-4.2 (STORM)	12.42	302.90	302.63	2.1700	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-5 (STORM)	85.24	308.50	302.50	7.0400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-5.1 (STORM)	13.99	310.60	310.40	1.4300	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.D-E.2 (STORM)	15.15	233.49	233.25	1.5800	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-1 (STORM)	10.39	231.93	231.63	2.8900	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-1.1 (STORM)	12.39	238.48	238.28	1.6200	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-2 (STORM)	64.97	232.03	235.75	-5.7300	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-2.1 (STORM)	12.20	251.60	251.40	1.6300	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-2.2 (STORM)	11.94	251.60	251.40	1.6700	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-3 (STORM)	77.50	235.75	249.13	-17.2600	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-4 (STORM)	125.26	249.13	272.66	-18.7800	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-4.1 (STORM)	14.65	291.70	291.50	1.3600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-4.2 (STORM)	13.05	291.93	291.50	3.3000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-5 (STORM)	121.85	272.66	289.50	-13.8200	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-5.1 (STORM)	19.76	293.97	293.50	2.3600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-5.2 (STORM)	13.36	294.02	293.50	3.8900	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-6 (STORM)	45.09	289.50	291.69	-4.8600	24.000	0.0130	0.5000	1.0000	0.0000

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Pipe Input

Element ID	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses
{STORM}.E-6.1 (STORM)	13.50	295.56	295.36	1.4800	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-7 (STORM)	41.79	292.16	294.15	-4.7500	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-8 (STORM)	155.55	294.15	306.26	-7.7900	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-8.1 (STORM)	13.32	322.43	322.23	1.5100	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.E-8.2 (STORM)	13.61	322.56	322.23	2.4200	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.E-9 (STORM)	94.31	306.26	321.27	-15.9200	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.F-0 (STORM)	120.28	291.88	293.93	-1.7000	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-1 (STORM)	127.59	293.93	296.34	-1.8900	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-1.1 (STORM)	14.25	296.37	296.07	2.1100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-1.2 (STORM)	10.90	296.27	296.07	1.8300	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-2 (STORM)	143.28	296.34	315.09	-13.0900	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.F-3.1 (STORM)	10.94	320.00	319.55	4.1100	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.F-3.2 (STORM)	20.93	320.00	319.55	2.1500	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.G-1 (STORM)	44.33	231.94	233.00	-2.3900	42.000	0.0130	0.5000	0.6000	0.0000
{STORM}.G-2 (STORM)	200.57	227.17	231.94	-2.3800	42.000	0.0130	0.5000	1.0000	0.0000
{STORM}.H-4 (STORM)	201.47	213.82	203.76	4.9900	72.000	0.0130	0.5000	0.7000	0.0000
{STORM}.H-5 (STORM)	49.07	220.45	219.96	1.0000	72.000	0.0130	0.5000	1.0000	0.0000
{STORM}.H-6	131.86	227.14	223.19	3.0000	60.000	0.0130	0.5000	0.6000	0.0000
D-E.1	19.30	232.82	233.09	-1.4000	18.000	0.0150	0.5000	1.0000	0.0000
DET_BASIN_OUT_24	44.00	182.00	180.00	4.5500	24.000	0.0130	0.5000	0.5000	0.0000
DET_BASIN_OUT_30	44.00	182.00	180.00	4.5500	30.000	0.0130	0.5000	0.5000	0.0000
H-0	16.29	182.49	182.00	3.0000	72.000	0.0130	0.5000	0.5000	0.0000
H-3	43.53	187.28	182.49	11.0000	72.000	0.0130	0.5000	0.5000	0.0000
H-7	28.58	246.54	246.00	1.8900	60.000	0.0130	0.5000	0.5000	0.0000

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Pipe Results

Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow Velocity	Travel Time	Peak Flow Depth	Total Time Surcharged	Froude Number	Reported Condition
(cfs)	(days hh:mm)	(cfs)	(ft/sec)	(min)	(ft)	(min)		
2.25	0 00:06	57.43	4.45	0.04	0.40	0.00		Calculated
2.25	0 00:06	88.96	10.74	0.16	0.34	0.00		Calculated
2.25	0 00:06	48.89	7.75	0.47	0.30	0.00		Calculated
2.27	0 00:06	10.67	8.42	0.03	0.38	0.00		Calculated
2.27	0 00:05	6.48	6.09	0.08	0.49	0.00		Calculated
1.29	0 00:05	11.06	9.16	0.26	0.23	0.00		Calculated
0.66	0 00:08	5.19	4.09	0.13	0.26	0.00		Calculated
0.66	0 00:05	3.93	2.99	0.06	0.32	0.00		Calculated
0.65	0 00:05	8.41	5.17	0.05	0.22	0.00		Calculated
12.95	0 00:10	46.22	9.92	0.12	0.87	0.00		Calculated
12.95	0 00:10	63.13	11.52	0.11	0.84	0.00		Calculated
4.16	0 00:07	39.20	13.50	0.13	0.35	0.00		Calculated
0.61	0 00:05	4.58	3.40	0.06	0.28	0.00		Calculated
3.83	0 00:07	22.43	8.80	0.17	0.44	0.00		Calculated
1.23	0 00:10	3.57	3.62	0.22	0.45	0.00		Calculated
0.20	0 00:05	7.92	4.12	0.16	0.12	0.00		Calculated
2.59	0 00:07	31.37	10.10	0.17	0.30	0.00		Calculated
1.31	0 00:07	5.40	4.11	0.04	0.42	0.00		Calculated
0.61	0 00:05	4.27	3.18	0.09	0.29	0.00		Calculated
1.08	0 00:09	32.57	5.90	0.23	0.25	0.00		Calculated
1.08	0 00:09	4.30	3.77	0.06	0.39	0.00		Calculated
12.95	0 00:10	78.88	15.53	0.18	0.62	0.00		Calculated
12.95	0 00:10	50.41	12.75	0.33	0.72	0.00		Calculated
12.96	0 00:10	17.90	5.50	0.30	1.40	0.00		Calculated
12.98	0 00:09	19.41	4.96	0.34	1.56	0.00		Calculated
13.00	0 00:09	27.16	5.18	0.08	1.63	0.00		Calculated
8.23	0 00:08	28.18	3.21	0.05	1.71	0.00		Calculated
6.63	0 00:08	14.56	6.96	0.19	0.80	0.00		Calculated
1.43	0 00:10	4.50	3.97	0.05	0.47	0.00		Calculated
5.25	0 00:07	29.81	7.89	0.24	0.65	0.00		Calculated
0.86	0 00:07	4.42	3.41	0.06	0.36	0.00		Calculated
0.43	0 00:05	4.70	3.00	0.06	0.24	0.00		Calculated
5.34	0 00:11	39.02	2.71	0.11	1.48	0.00		Calculated
4.05	0 00:09	36.28	4.94	0.21	0.86	0.00		Calculated
1.38	0 00:12	4.78	4.04	0.05	0.45	0.00		Calculated
2.91	0 00:08	7.27	7.68	0.12	0.49	0.00		Calculated
1.50	0 00:08	4.51	3.90	0.05	0.49	0.00		Calculated
0.59	0 00:05	4.44	3.14	0.07	0.29	0.00		Calculated
2.92	0 00:08	6.39	6.99	0.24	0.52	0.00		Calculated
1.07	0 00:08	4.56	3.73	0.05	0.39	0.00		Calculated
0.36	0 00:05	4.58	2.92	0.07	0.21	0.00		Calculated
1.21	0 00:08	9.30	5.49	0.38	0.38	0.00		Calculated
17.29	0 00:09	31.67	7.29	0.09	1.41	0.00		Calculated
5.88	0 00:09	30.04	11.25	0.15	0.61	0.00		Calculated
0.79	0 00:14	4.49	3.57	0.06	0.33	0.00		Calculated
5.37	0 00:09	14.89	15.40	0.09	0.46	0.00		Calculated
1.49	0 00:09	4.57	3.90	0.05	0.49	0.00		Calculated
0.73	0 00:05	4.58	3.33	0.06	0.32	0.00		Calculated
3.75	0 00:09	14.36	12.68	0.27	0.40	0.00		Calculated
1.34	0 00:09	4.60	3.83	0.05	0.46	0.00		Calculated
0.51	0 00:05	4.59	3.08	0.07	0.26	0.00		Calculated
2.32	0 00:09	10.59	9.95	0.32	0.34	0.00		Calculated
1.31	0 00:09	5.18	4.09	0.05	0.43	0.00		Calculated
0.48	0 00:05	5.24	3.34	0.06	0.24	0.00		Calculated
0.91	0 00:09	9.45	5.37	0.26	0.27	0.00		Calculated
0.91	0 00:09	4.26	3.60	0.06	0.36	0.00		Calculated
2.49	0 00:11	13.22	4.25	0.06	0.55	0.00		Calculated
8.83	0 00:09	38.45	6.11	0.03	0.94	0.00		Calculated
0.78	0 00:09	4.54	3.58	0.06	0.32	0.00		Calculated
8.83	0 00:09	54.13	7.12	0.15	0.88	0.00		Calculated
1.25	0 00:12	4.55	3.75	0.05	0.44	0.00		Calculated
0.76	0 00:05	4.60	3.36	0.06	0.33	0.00		Calculated
8.10	0 00:09	93.98	12.46	0.10	0.52	0.00		Calculated
6.92	0 00:09	98.05	15.89	0.13	0.39	0.00		Calculated
1.44	0 00:09	4.16	3.74	0.07	0.49	0.00		Calculated
0.41	0 00:05	6.47	3.77	0.06	0.20	0.00		Calculated
6.93	0 00:09	84.11	15.32	0.13	0.40	0.00		Calculated
1.60	0 00:12	5.48	4.66	0.07	0.45	0.00		Calculated
0.36	0 00:05	7.02	3.91	0.06	0.17	0.00		Calculated

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Pipe Results

Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow Velocity	Travel Time	Peak Flow Depth	Total Time Surcharged	Froude Number	Reported Condition
(cfs)	(days hh:mm)	(cfs)	(ft/sec)	(min)	(ft)	(min)		
5.42	0 00:07	49.87	8.55	0.09	0.51	0.00		Calculated
1.14	0 00:11	4.34	3.83	0.06	0.40	0.00		Calculated
2.14	0 00:09	22.91	7.06	0.10	0.34	0.00		Calculated
1.17	0 00:09	9.94	6.35	0.41	0.30	0.00		Calculated
1.07	0 00:08	4.38	3.61	0.06	0.40	0.00		Calculated
0.38	0 00:05	5.55	3.36	0.07	0.20	0.00		Calculated
1.18	0 00:08	14.22	9.61	0.16	0.21	0.00		Calculated
2.52	0 00:07	13.71	5.48	0.37	0.46	0.00		Calculated
1.20	0 00:06	4.90	3.97	0.54	0.41	0.00		Calculated
1.28	0 00:06	5.17	4.11	0.06	0.42	0.00		Calculated
0.08	0 00:05	4.83	2.04	0.09	0.10	0.00		Calculated
1.21	0 00:06	12.89	9.04	0.26	0.28	0.00		Calculated
0.98	0 00:06	7.23	4.76	0.04	0.31	0.00		Calculated
0.29	0 00:05	5.22	3.19	0.11	0.17	0.00		Calculated
47.27	0 00:16	155.58	6.84	0.11	2.38	0.00		Calculated
47.21	0 00:17	155.16	11.95	0.28	1.50	0.00		Calculated
121.79	0 00:16	946.36	19.08	0.18	1.66	0.00		Calculated
64.91	0 00:15	423.22	7.70	0.11	2.03	0.00		Calculated
64.93	0 00:15	450.77	13.38	0.16	1.48	0.00		Calculated
1.71	0 00:22	4.07	2.60	0.12	0.60	0.00		Calculated
44.48	0 00:18	48.23	15.21	0.05	1.76	0.00		Calculated
69.41	0 00:18	87.45	15.83	0.05	2.09	0.00		Calculated
130.35	0 00:16	733.76	9.99	0.03	4.74	0.00		Calculated
131.24	0 00:16	1404.59	10.54	0.07	3.31	0.00		Calculated
65.05	0 00:15	358.00	9.78	0.05	1.86	0.00		Calculated

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Inlet Input

Element ID	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Inlet Depth (ft)	Grate Clogging Factor (%)
DI-A4.1 (STORM)	2	255.71	260.68	4.97	30.00
DI-A5.1 (STORM)	1	269.47	274.85	5.38	30.00
DI-A5.2 (STORM)	1	270.40	275.30	4.90	30.00
DI-B10.1 (STORM)	1	292.48	297.48	5.00	30.00
DI-B10.2 (STORM)	1	292.48	297.39	4.91	30.00
DI-B11.1 (STORM)	1	301.55	306.54	4.99	30.00
DI-B11.2 (STORM)	1	301.55	306.55	5.00	30.00
DI-B12.1 (STORM)	1	309.67	314.69	5.02	30.00
DI-B7.1 (STORM)	1	260.75	265.75	5.00	30.00
DI-B8.1 (STORM)	1	271.34	276.34	5.00	30.00
DI-B8.2 (STORM)	1	271.34	276.34	5.00	30.00
DI-B9.1 (STORM)	1	286.00	291.00	5.00	30.00
DI-C1.1 (STORM)	1	260.00	265.00	5.00	30.00
DI-C3.1 (STORM)	1	265.00	270.00	5.00	30.00
DI-C3.2 (STORM)	1	265.00	270.00	5.00	30.00
DI-C4.1 (STORM)	1	276.00	281.00	5.00	30.00
DI-C4.2 (STORM)	1	276.00	281.00	5.00	30.00
DI-D1.1 (STORM)	1	239.00	244.00	5.00	30.00
DI-D2.1 (STORM)	1	252.12	257.15	5.03	30.00
DI-D2.2 (STORM)	1	252.12	257.13	5.01	30.00
DI-D3.1 (STORM)	1	285.10	290.11	5.01	30.00
DI-D3.2 (STORM)	1	285.10	290.15	5.05	30.00
DI-D4.1 (STORM)	1	301.90	306.90	5.00	30.00
DI-D4.2 (STORM)	1	301.90	306.91	5.01	30.00
DI-D5.1 (STORM)	1	309.60	314.60	5.00	30.00
DI-E1.1 (STORM)	1	237.48	242.48	5.00	30.00
DI-E2.1 (STORM)	1	250.60	255.60	5.00	30.00
DI-E2.2 (STORM)	1	250.60	255.60	5.00	30.00
DI-E4.1 (STORM)	1	290.70	295.70	5.00	30.00
DI-E4.2 (STORM)	1	290.93	295.94	5.01	30.00
DI-E5.1 (STORM)	1	292.96	298.02	5.06	30.00
DI-E5.2 (STORM)	1	293.02	297.96	4.94	30.00
DI-E6.1 (STORM)	1	294.56	299.56	5.00	30.00
DI-E8.1 (STORM)	1	321.43	326.43	5.00	30.00
DI-E8.2 (STORM)	1	321.56	326.56	5.00	30.00
DI-F1.1 (STORM)	1	295.37	300.37	5.00	30.00
DI-F1.2 (STORM)	1	295.27	300.27	5.00	30.00
DI-F3.1 (STORM)	1	319.00	325.00	6.00	30.00
DI-F3.2 (STORM)	1	319.00	325.00	6.00	30.00
SDCB-B1 (STORM)	2	257.00	263.87	6.87	30.00
SDCB-C1 (STORM)	2	257.36	264.52	7.16	30.00
SDCB-D1 (STORM)	2	233.49	235.30	1.81	30.00
SDCB-D2 (STORM)	2	233.09	234.90	1.81	30.00
SDMH-A4 (STORM)	2	250.84	260.33	9.49	30.00

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Inlet Results

Element ID	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Max Depth Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
DI-A4.1 (STORM)	1.47	N/A	N/A	N/A	3.47	261.25	0.57	0 00:08	0.00	0.00
DI-A5.1 (STORM)	0.75	0.00	0.75	0.43	2.08	274.89	0.04	0 00:05	0.00	0.00
DI-A5.2 (STORM)	0.73	0.00	0.72	0.43	2.05	275.34	0.04	0 00:05	0.00	0.00
DI-B10.1 (STORM)	1.53	1.19	0.34	78.01	4.05	297.65	0.17	0 00:10	0.00	0.00
DI-B10.2 (STORM)	0.22	0.22	0.00	100.00	1.32	297.47	0.08	0 00:05	0.00	0.00
DI-B11.1 (STORM)	1.63	1.25	0.38	76.83	4.24	306.71	0.17	0 00:07	0.00	0.00
DI-B11.2 (STORM)	0.69	0.00	0.69	0.44	2.01	306.59	0.04	0 00:05	0.00	0.00
DI-B12.1 (STORM)	1.36	1.09	0.26	80.61	3.75	314.85	0.16	0 00:09	0.00	0.00
DI-B7.1 (STORM)	1.62	1.35	0.26	83.64	5.19	265.94	0.19	0 00:10	0.00	0.00
DI-B8.1 (STORM)	1.29	0.00	1.29	0.21	2.24	276.38	0.04	0 00:07	0.00	0.00
DI-B8.2 (STORM)	0.57	0.45	0.12	78.72	1.65	276.44	0.10	0 00:05	0.00	0.00
DI-B9.1 (STORM)	0.84	0.61	0.24	71.78	1.91	291.12	0.12	0 00:05	0.00	0.00
DI-C1.1 (STORM)	1.54	1.31	0.23	84.83	5.06	265.19	0.19	0 00:12	0.00	0.00
DI-C3.1 (STORM)	1.74	1.31	0.43	75.21	4.42	270.17	0.17	0 00:08	0.00	0.00
DI-C3.2 (STORM)	0.65	0.59	0.06	90.79	1.97	270.12	0.12	0 00:05	0.00	0.00
DI-C4.1 (STORM)	1.78	1.08	0.70	60.69	3.57	281.16	0.16	0 00:08	0.00	0.00
DI-C4.2 (STORM)	0.46	0.37	0.08	81.61	1.52	281.09	0.09	0 00:05	0.00	0.00
DI-D1.1 (STORM)	0.81	0.01	0.81	0.66	2.45	244.05	0.05	0 00:14	0.00	0.00
DI-D2.1 (STORM)	1.57	1.32	0.25	84.24	5.09	257.34	0.19	0 00:09	0.00	0.00
DI-D2.2 (STORM)	0.76	0.01	0.75	0.68	2.37	257.17	0.05	0 00:05	0.00	0.00
DI-D3.1 (STORM)	1.98	1.16	0.82	58.69	3.84	290.27	0.16	0 00:09	0.00	0.00
DI-D3.2 (STORM)	0.65	0.49	0.16	75.95	1.72	290.26	0.11	0 00:05	0.00	0.00
DI-D4.1 (STORM)	1.94	1.14	0.80	58.71	3.76	307.06	0.16	0 00:09	0.00	0.00
DI-D4.2 (STORM)	0.65	0.50	0.15	76.36	1.74	307.01	0.11	0 00:05	0.00	0.00
DI-D5.1 (STORM)	1.44	0.00	1.44	0.20	2.33	314.64	0.05	0 00:09	0.00	0.00
DI-E1.1 (STORM)	0.81	0.01	0.81	0.67	2.45	242.53	0.05	0 00:09	0.00	0.00
DI-E2.1 (STORM)	1.33	1.18	0.16	88.31	4.61	255.78	0.18	0 00:12	0.00	0.00
DI-E2.2 (STORM)	0.79	0.01	0.79	0.67	2.42	255.65	0.05	0 00:05	0.00	0.00
DI-E4.1 (STORM)	1.71	1.29	0.41	75.72	4.36	295.87	0.17	0 00:09	0.00	0.00
DI-E4.2 (STORM)	0.45	0.43	0.02	94.93	1.71	296.05	0.11	0 00:05	0.00	0.00
DI-E5.1 (STORM)	1.62	N/A	N/A	N/A	8.82	298.38	0.36	0 00:12	0.00	0.00
DI-E5.2 (STORM)	0.36	0.36	0.00	100.00	1.80	298.07	0.11	0 00:05	0.00	0.00
DI-E6.1 (STORM)	1.30	1.16	0.14	89.24	4.57	299.73	0.18	0 00:11	0.00	0.00
DI-E8.1 (STORM)	1.79	1.08	0.70	60.65	3.57	326.58	0.16	0 00:08	0.00	0.00
DI-E8.2 (STORM)	0.48	0.39	0.09	81.05	1.54	326.66	0.10	0 00:05	0.00	0.00
DI-F1.1 (STORM)	1.31	1.17	0.15	88.78	4.59	300.54	0.18	0 00:06	0.00	0.00
DI-F1.2 (STORM)	0.08	0.08	0.00	100.00	1.02	300.34	0.06	0 00:05	0.00	0.00
DI-F3.1 (STORM)	1.58	0.00	1.58	0.19	2.41	325.05	0.05	0 00:06	0.00	0.00
DI-F3.2 (STORM)	0.37	0.31	0.06	84.48	1.40	325.09	0.09	0 00:05	0.00	0.00
SDCB-B1 (STORM)	2.08	N/A	N/A	N/A	3.71	264.13	0.26	0 00:09	0.00	0.00
SDCB-C1 (STORM)	1.61	N/A	N/A	N/A	3.44	264.78	0.26	0 00:10	0.00	0.00
SDCB-D1 (STORM)	2.56	N/A	N/A	N/A	3.97	235.57	0.27	0 00:11	0.00	0.00
SDCB-D2 (STORM)	1.72	N/A	N/A	N/A	3.51	235.16	0.26	0 00:22	0.00	0.00
SDMH-A4 (STORM)	0.63	N/A	N/A	N/A	2.40	260.57	0.24	0 00:05	0.00	0.00

Storage Nodes

Storage Node : DETENTION_POND

Input Data

Invert Elevation (ft)	182.00
Max (Rim) Elevation (ft)	192.00
Max (Rim) Offset (ft)	10.00
Initial Water Elevation (ft)	0.00
Initial Water Depth (ft)	-182.00
Ponded Area (ft^2)	100.00
Evaporation Loss	0.00

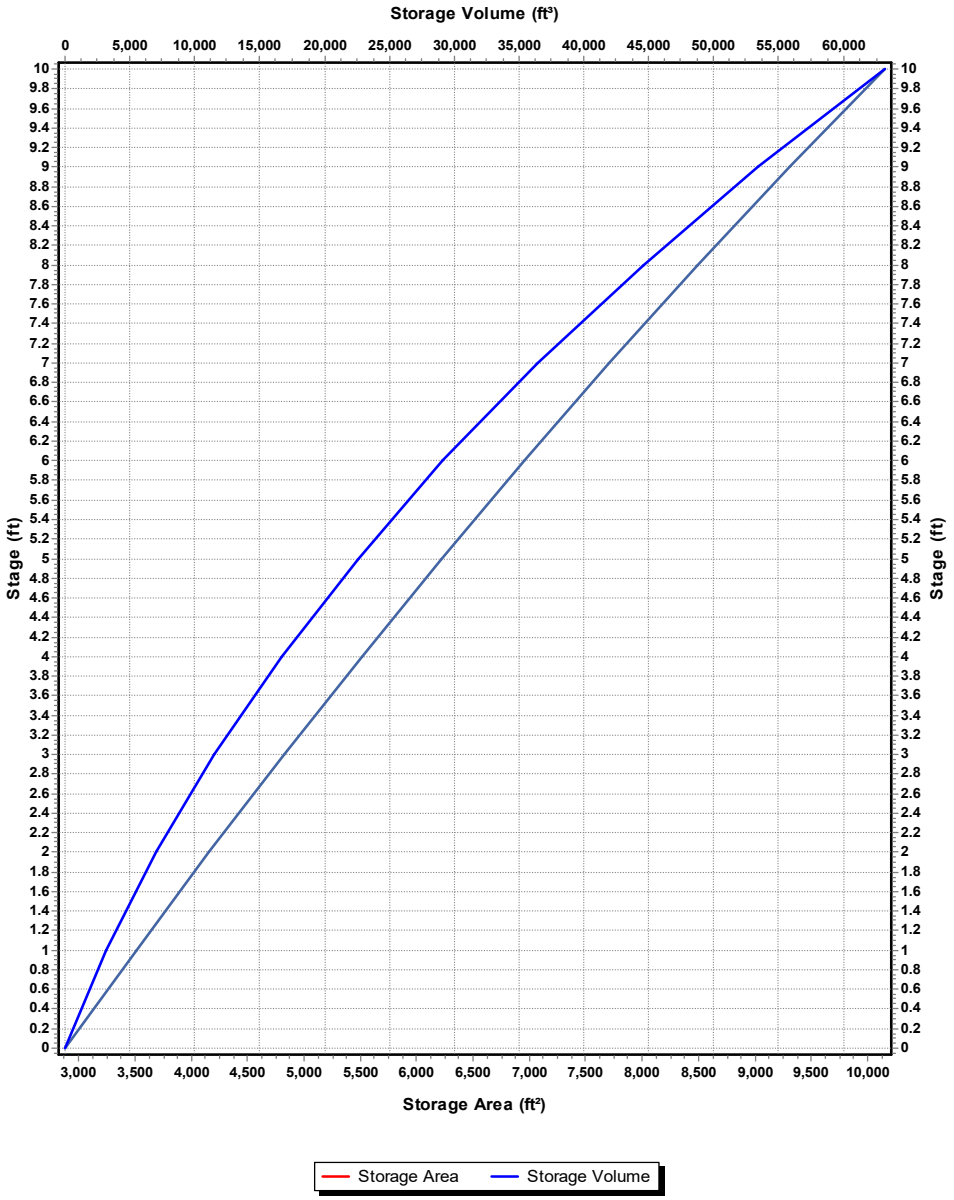
Storage Area Volume Curves

Storage Curve : New_Lipalu_Basin

Stage (ft)	Storage Area (ft^2)	Storage Volume (ft^3)
0	2879.03	0
1	3508.41	3193.72
2	4155.91	7025.88
3	4824.19	11515.93
4	5511.1	16683.58
5	6219.64	22548.95
6	6950.31	29133.93
7	7708.08	36463.13
8	8494.11	44564.23
9	9308.36	53465.47
10	10153.61	63196.46

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Storage Area Volume Curves



Storage Node : DETENTION_POND (continued)

Outflow Weirs

SN	Element ID	Weir Type	Flap Gate	Crest Elevation (ft)	Crest Offset (ft)	Length (ft)	Weir Total Height (ft)	Discharge Coefficient
1	WEIR_LIPALU	Trapezoidal	No	190.50	8.50	20.00	1.25	3.37

Output Summary Results

Peak Inflow (cfs)	133.01
Peak Lateral Inflow (cfs)	3.46
Peak Outflow (cfs)	113.89
Peak Exfiltration Flow Rate (cfm)	0
Max HGL Elevation Attained (ft)	186.81
Max HGL Depth Attained (ft)	4.81
Average HGL Elevation Attained (ft)	183.59
Average HGL Depth Attained (ft)	1.59
Time of Max HGL Occurrence (days hh:mm)	0 00:18
Total Exfiltration Volume (1000-ft³)	0
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0

10-Year, 24-Hour Storm, Pre and Post-developed

Project Description

File Name	2023.01.10 CURRENT Ratl & Mod Ratl.SPF
Description	Drainage Report (Rational 10-yr 24-hr Storm)

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	Rational
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	00:00:00	0:00:00
End Analysis On	00:00:00	0:00:00
Start Reporting On	00:00:00	0:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	1
Subbasins	58
Nodes	104
Junctions	55
Outfalls	4
Flow Diversions	0
Inlets	44
Storage Nodes	1
Links	139
Channels	44
Pipes	94
Pumps	0
Orifices	0
Weirs	1
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period	10 year(s)

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Subbasin Summary

Subbasin ID	Area (ac)	Weighted Runoff Coefficient	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ft^3)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
A5	0.06	0.9500	0.86	0.82	165.67	0.55	0 00:05:00
A5.1	0.25	0.5500	0.86	0.47	426.63	1.41	0 00:05:00
A6.1	0.08	0.9500	0.86	0.82	224.84	0.74	0 00:05:00
A6.2	0.08	0.8400	0.86	0.72	201.25	0.67	0 00:05:00
B10.1	0.14	0.5400	0.86	0.46	235.30	0.78	0 00:05:00
B11.1	0.58	0.3200	1.32	0.42	880.26	1.41	0 00:10:18
B11.2	0.02	0.9500	0.86	0.82	68.04	0.23	0 00:05:00
B12.1	0.57	0.2900	1.06	0.31	632.03	1.46	0 00:07:13
B12.2	0.07	0.9500	0.86	0.82	210.05	0.69	0 00:05:00
B13.1	0.58	0.2900	1.20	0.35	726.80	1.36	0 00:08:52
B8.1	0.61	0.3000	1.32	0.40	877.52	1.40	0 00:10:16
B9.1	0.46	0.3000	1.09	0.33	545.54	1.20	0 00:07:31
B9.2	0.06	0.9500	0.86	0.82	171.59	0.57	0 00:05:00
B-C1	0.56	0.4800	1.30	0.62	1270.96	2.07	0 00:10:13
B-C2	0.64	0.2900	1.42	0.41	953.48	1.33	0 00:11:49
C1.1	0.58	0.3200	1.43	0.46	967.60	1.33	0 00:12:01
C2.1	0.55	0.3100	1.32	0.41	821.54	1.30	0 00:10:32
C2.2	0.10	0.5700	0.86	0.49	168.63	0.56	0 00:05:00
C3.1	0.56	0.3800	1.15	0.44	881.55	1.79	0 00:08:05
C3.2	0.05	0.9500	0.86	0.82	139.05	0.46	0 00:05:00
D1.1	0.37	0.2800	1.59	0.44	589.89	0.69	0 00:14:05
D2.1	0.59	0.3200	1.52	0.49	1033.81	1.30	0 00:13:06
D2.2	0.06	0.9500	0.86	0.82	189.34	0.63	0 00:05:00
D3.1	0.52	0.3300	1.22	0.40	756.31	1.37	0 00:09:12
D3.2	0.05	0.9500	0.86	0.82	147.92	0.49	0 00:05:00
D4.1	0.61	0.2900	1.22	0.36	789.94	1.42	0 00:09:12
D4.2	0.07	0.9500	0.86	0.82	198.22	0.66	0 00:05:00
D5.1	0.58	0.3100	1.22	0.38	786.89	1.44	0 00:08:55
D-E1	1.28	0.2700	1.39	0.38	1746.48	2.54	0 00:11:19
D-E2	0.80	0.4100	1.97	0.81	2337.63	1.72	0 00:22:28
E1.1	0.31	0.3200	1.25	0.40	446.88	0.78	0 00:09:28
E2.1	0.40	0.3700	1.42	0.53	765.66	1.07	0 00:11:50
E2.2	0.08	0.9500	0.86	0.82	230.76	0.76	0 00:05:00
E4.1	0.63	0.3800	1.61	0.61	1397.42	1.58	0 00:14:40
E4.2	0.05	0.9500	0.86	0.82	136.09	0.45	0 00:05:00
E5.1	0.71	0.2900	1.43	0.42	1074.10	1.48	0 00:12:02
E5.2	0.04	0.9500	0.86	0.82	109.46	0.36	0 00:05:00
E6.1	0.45	0.3900	1.40	0.55	899.82	1.29	0 00:11:27
E8.1	0.68	0.3200	1.18	0.38	937.17	1.79	0 00:08:43
E8.2	0.05	0.9500	0.86	0.82	144.96	0.48	0 00:05:00
F1.1	0.22	0.5500	1.20	0.66	535.85	1.00	0 00:08:50
F1.2	0.01	0.3500	1.35	0.47	11.16	0.02	0 00:10:48
F3.1	0.56	0.3000	0.97	0.29	589.51	1.58	0 00:06:12
F3.2	0.04	0.9500	0.86	0.82	112.42	0.37	0 00:05:00
H_POND	1.57	0.4000	1.90	0.76	4319.92	3.46	0 00:20:39
H2	0.26	0.4000	0.86	0.34	328.70	1.09	0 00:05:00
H-3	1.30	0.2400	1.39	0.33	1571.43	2.29	0 00:11:18
MAUKA_NORTH	20.06	0.4200	1.66	0.70	50681.19	54.08	0 00:15:31
MAUKA_SOUTH	5.66	0.4100	1.40	0.57	11772.74	16.91	0 00:11:32
PRESERV_1	2.89	0.3400	1.14	0.39	4070.39	8.24	0 00:08:12
PRESERV_2	1.10	0.3300	1.89	0.62	2490.42	2.03	0 00:20:15
PRESERV_3	3.81	0.3600	2.13	0.77	10607.84	6.57	0 00:26:42
PRESERV_4	0.44	0.4000	1.75	0.70	1119.64	1.06	0 00:17:33
PRESERV_5	0.17	0.2400	1.09	0.26	161.68	0.36	0 00:07:27
PRESERV_6	0.42	0.2400	1.06	0.25	385.72	0.89	0 00:07:14
PRESERV_7	9.79	0.4000	1.68	0.67	23881.34	24.69	0 00:16:03
PRESERV_8	6.24	0.4000	1.66	0.66	15017.75	16.02	0 00:15:32
PRESERV_9	1.09	0.3100	2.27	0.70	2785.52	1.50	0 00:30:37

Node Summary

Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Diameter or Width (in)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ft^3)	Total Time Flooded (min)
SDFC D (STORM)	Junction	229.40	237.42	96.00	17.30	231.17	0 00:00	0.00	0.00
SDFC-A (STORM)	Junction	252.88	258.84	48.00	2.27	253.31	0 00:00	0.00	0.00
SDFC-BC (STORM)	Junction	255.76	263.76	72.00	13.02	258.53	0 00:00	0.00	0.00
SDFC-E(STORM)	Junction	231.93	237.65	72.00	8.83	233.16	0 00:00	0.00	0.00
SDHW-G1 (STORM)	Junction	233.00	237.00		47.63	236.08	0 00:00	0.00	0.00
SDHW-H2	Junction	246.54	251.54		65.09	248.81	0 00:00	0.00	0.00
SDMH-A1 (STORM)	Junction	217.50	239.13	48.00	2.25	220.96	0 00:00	0.00	0.00
SDMH-A2 (STORM)	Junction	233.07	246.59	48.00	2.25	236.29	0 00:00	0.00	0.00
SDMH-A3 (STORM)	Junction	243.28	258.09	48.00	2.27	246.59	0 00:00	0.00	0.00
SDMH-A5 (STORM)	Junction	265.11	274.77	48.00	1.30	268.35	0 00:00	0.00	0.00
SDMH-B1 (STORM)	Junction	212.90	222.77	48.00	12.95	216.91	0 00:00	0.00	0.00
SDMH-B10 (STORM)	Junction	288.00	299.48	48.00	3.84	291.47	0 00:00	0.00	0.00
SDMH-B11 (STORM)	Junction	298.46	306.18	48.00	2.59	301.78	0 00:00	0.00	0.00
SDMH-B12 (STORM)	Junction	306.23	314.37	48.00	1.08	309.42	0 00:00	0.00	0.00
SDMH-B2 (STORM)	Junction	218.98	227.86	48.00	12.95	222.65	0 00:00	0.00	0.00
SDMH-B3 (STORM)	Junction	238.89	248.68	48.00	12.95	242.46	0 00:00	0.00	0.00
SDMH-B4 (STORM)	Junction	252.24	269.51	48.00	12.96	255.99	0 00:00	0.00	0.00
SDMH-B5 (STORM)	Junction	252.76	266.49	48.00	12.98	257.30	0 00:00	0.00	0.00
SDMH-B6 (STORM)	Junction	252.54	263.83	48.00	13.00	258.07	0 00:00	0.00	0.00
SDMH-B7 (STORM)	Junction	257.38	265.79	48.00	6.64	261.26	0 00:00	0.00	0.00
SDMH-B8 (STORM)	Junction	266.72	276.34	48.00	5.25	270.15	0 00:00	0.00	0.00
SDMH-B9 (STORM)	Junction	283.30	291.00	48.00	4.16	286.66	0 00:00	0.00	0.00
SDMH-C1 (STORM)	Junction	256.00	265.00	48.00	4.06	259.45	0 00:00	0.00	0.00
SDMH-C2 (STORM)	Junction	259.28	266.56	48.00	2.92	262.81	0 00:00	0.00	0.00
SDMH-C3 (STORM)	Junction	262.48	270.00	48.00	2.93	266.00	0 00:00	0.00	0.00
SDMH-C4 (STORM)	Junction	271.00	281.00	48.00	1.21	274.24	0 00:00	0.00	0.00
SDMH-D1 (STORM)	Junction	235.43	244.00	48.00	5.88	238.89	0 00:00	0.00	0.00
SDMH-D2 (STORM)	Junction	249.50	257.09	48.00	5.37	252.96	0 00:00	0.00	0.00
SDMH-D3 (STORM)	Junction	282.53	290.10	48.00	3.77	285.87	0 00:00	0.00	0.00
SDMH-D4 (STORM)	Junction	299.50	306.95	48.00	2.33	302.83	0 00:00	0.00	0.00
SDMH-D5 (STORM)	Junction	305.50	314.00	48.00	0.91	308.71	0 00:00	0.00	0.00
SDMH-E1 (STORM)	Junction	232.75	242.43	48.00	8.83	236.40	0 00:00	0.00	0.00
SDMH-E2 (STORM)	Junction	246.13	255.60	48.00	8.10	249.53	0 00:00	0.00	0.00
SDMH-E3 (STORM)	Junction	269.66	278.00	48.00	6.93	273.04	0 00:00	0.00	0.00
SDMH-E4 (STORM)	Junction	286.50	295.57	48.00	6.93	289.92	0 00:00	0.00	0.00
SDMH-E5 (STORM)	Junction	288.69	297.87	60.00	5.42	292.27	0 00:00	0.00	0.00
SDMH-E6 (STORM)	Junction	291.15	299.42	48.00	2.14	294.52	0 00:00	0.00	0.00
SDMH-E7 (STORM)	Junction	303.26	314.53	48.00	1.18	306.49	0 00:00	0.00	0.00
SDMH-E8 (STORM)	Junction	318.27	326.00	48.00	1.18	321.47	0 00:00	0.00	0.00
SDMH-F1 (STORM)	Junction	290.93	300.47	48.00	2.55	294.41	0 00:00	0.00	0.00
SDMH-F2 (STORM)	Junction	293.34	303.31	48.00	1.21	296.68	0 00:00	0.00	0.00
SDMH-F3 (STORM)	Junction	312.09	323.59	48.00	1.21	315.30	0 00:00	0.00	0.00
SDMH-G1 (STORM)	Junction	228.94	249.00	60.00	47.27	233.62	0 00:00	0.00	0.00
SDMH-H1 (STORM)	Junction	179.49	193.34	96.00	131.24	187.17	0 00:00	0.00	0.00
SDMH-H2 (STORM)	Junction	184.28	219.21	96.00	131.19	189.36	0 00:00	0.00	0.00
SDMH-H3 (STORM)	Junction	210.82	240.96	96.00	121.81	215.69	0 00:00	0.00	0.00
SDMH-H4 (STORM)	Junction	217.45	239.00	72.00	64.93	222.93	0 00:00	0.00	0.00
SDMH-H5 (STORM)	Junction	224.14	253.00	72.00	65.05	228.82	0 00:00	0.00	0.00
OUTFALL__DET_WEIR	Outfall	175.00			0.00	175.00			
OUTFALL_DET_PIPE_24	Outfall	180.00			44.48	181.52			
OUTFALL_DET_PIPE_30	Outfall	180.00			69.41	181.68			
SDHW-A1 (STORM)	Outfall	220.29			2.25	220.63			
DETENTION_POND	Storage Node	182.00	192.00		133.01	186.81		0.00	0.00

Link Summary

Element ID	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow Velocity	Peak Flow Depth	Total Time Surcharged	Reported Condition
			(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)	(ft/sec)	(ft)	(min)	
{STORM}.A-0 (STORM)	SDHW-A1 (STORM)	SDMH-A1 (STORM)	10.71	220.29	220.50	-1.9600	30.000	0.0130	2.25	57.43	4.45	0.40	0.00	Calculated
{STORM}.A-1 (STORM)	SDMH-A1 (STORM)	SDMH-A2 (STORM)	100.70	220.50	236.07	-15.4600	24.000	0.0130	2.25	88.96	10.74	0.34	0.00	Calculated
{STORM}.A-2 (STORM)	SDMH-A2 (STORM)	SDMH-A3 (STORM)	218.68	236.07	246.28	-4.6700	24.000	0.0130	2.25	48.89	7.75	0.30	0.00	Calculated
{STORM}.A-3 (STORM)	SDMH-A3 (STORM)	SDFC-A (STORM)	14.06	251.62	252.88	-8.9600	12.000	0.0130	2.27	10.67	8.42	0.38	0.00	Calculated
{STORM}.A-4 (STORM)	SDFC-A (STORM)	SDMH-A4 (STORM)	29.04	252.88	253.84	-3.3100	12.000	0.0130	2.27	6.48	6.09	0.49	0.00	Calculated
{STORM}.A-5 (STORM)	SDMH-A4 (STORM)	SDMH-A5 (STORM)	143.05	254.34	268.11	-9.6300	12.000	0.0130	1.29	11.06	9.16	0.23	0.00	Calculated
{STORM}.B-0 (STORM)	SDMH-B1 (STORM)	SDMH-H2 (STORM)	69.39	215.90	213.00	4.1700	24.000	0.0130	12.95	46.22	9.92	0.87	0.00	Calculated
{STORM}.B-1 (STORM)	SDMH-B2 (STORM)	SDMH-B1 (STORM)	78.08	221.98	215.90	7.7900	24.000	0.0130	12.95	63.13	11.52	0.84	0.00	Calculated
{STORM}.B-10 (STORM)	SDMH-B8 (STORM)	SDMH-B9 (STORM)	106.44	271.47	286.30	-13.9300	18.000	0.0130	4.16	39.20	13.50	0.35	0.00	Calculated
{STORM}.B-11 (STORM)	SDMH-B9 (STORM)	SDMH-B10 (STORM)	92.10	286.80	291.00	-4.5600	18.000	0.0130	3.83	22.43	8.80	0.44	0.00	Calculated
{STORM}.B-12 (STORM)	SDMH-B10 (STORM)	SDMH-B11 (STORM)	100.47	292.50	301.46	-8.9200	18.000	0.0130	2.59	31.37	10.10	0.30	0.00	Calculated
{STORM}.B-13 (STORM)	SDMH-B11 (STORM)	SDMH-B12 (STORM)	80.79	301.46	309.23	-9.6200	18.000	0.0130	1.08	32.57	5.90	0.25	0.00	Calculated
{STORM}.B-2 (STORM)	SDMH-B2 (STORM)	SDMH-B3 (STORM)	163.81	221.98	241.89	-12.1600	24.000	0.0130	12.95	78.88	15.53	0.62	0.00	Calculated
{STORM}.B-3 (STORM)	SDMH-B3 (STORM)	SDMH-B4 (STORM)	249.48	242.86	255.24	-4.9700	24.000	0.0130	12.95	50.41	12.75	0.72	0.00	Calculated
{STORM}.B-4 (STORM)	SDMH-B4 (STORM)	SDMH-B5 (STORM)	98.43	255.14	255.76	-0.6300	24.000	0.0130	12.96	17.90	5.50	1.40	0.00	Calculated
{STORM}.B-5 (STORM)	SDMH-B5 (STORM)	SDMH-B6 (STORM)	99.98	255.76	256.49	-0.7400	24.000	0.0130	12.98	19.41	4.96	1.56	0.00	Calculated
{STORM}.B-6 (STORM)	SDMH-B6 (STORM)	SDFC-BC (STORM)	24.21	256.49	256.84	-1.4400	24.000	0.0130	13.00	27.16	5.18	1.63	0.00	Calculated
{STORM}.B-7 (STORM)	SDCB-B1 (STORM)	SDFC-BC (STORM)	10.44	257.00	256.84	1.5500	24.000	0.0130	8.23	28.18	3.21	1.71	0.00	Calculated
{STORM}.B-8 (STORM)	SDCB-B1 (STORM)	SDMH-B7 (STORM)	79.04	258.86	260.38	-1.9200	18.000	0.0130	6.63	14.56	6.96	0.80	0.00	Calculated
{STORM}.B-9 (STORM)	SDMH-B7 (STORM)	SDMH-B8 (STORM)	115.90	260.38	269.72	-8.0600	18.000	0.0130	5.25	29.81	7.89	0.65	0.00	Calculated
{STORM}.C-0 (STORM)	SDCB-C1 (STORM)	SDFC-BC (STORM)	17.61	257.37	256.84	2.9800	24.000	0.0130	5.34	39.02	2.71	1.48	0.00	Calculated
{STORM}.C-1 (STORM)	SDMH-C1 (STORM)	SDCB-C1 (STORM)	63.57	259.00	257.37	2.5700	24.000	0.0130	4.05	36.28	4.94	0.86	0.00	Calculated
{STORM}.C-2 (STORM)	SDMH-C1 (STORM)	SDMH-C2 (STORM)	54.84	260.00	262.28	-4.1600	12.000	0.0130	2.91	7.27	7.68	0.49	0.00	Calculated
{STORM}.C-3 (STORM)	SDMH-C2 (STORM)	SDMH-C3 (STORM)	99.30	262.28	265.48	-3.2200	12.000	0.0130	2.92	6.39	6.99	0.52	0.00	Calculated
{STORM}.C-4 (STORM)	SDMH-C3 (STORM)	SDMH-C4 (STORM)	125.09	265.48	274.00	-6.8100	12.000	0.0130	1.21	9.30	5.49	0.38	0.00	Calculated
{STORM}.D-0 (STORM)	SDFC D (STORM)	SDMH-H3 (STORM)	37.25	229.40	228.67	1.9500	24.000	0.0130	17.29	31.67	7.29	1.41	0.00	Calculated
{STORM}.D-1 (STORM)	SDMH-D1 (STORM)	SDFC D (STORM)	98.20	238.43	230.40	8.1800	18.000	0.0130	5.88	30.04	11.25	0.61	0.00	Calculated
{STORM}.D-2 (STORM)	SDMH-D2 (STORM)	SDMH-D1 (STORM)	80.60	252.50	238.43	17.4600	12.000	0.0130	5.37	14.89	15.40	0.46	0.00	Calculated
{STORM}.D-3 (STORM)	SDMH-D3 (STORM)	SDMH-D2 (STORM)	203.16	285.53	252.50	16.2600	12.000	0.0130	3.75	14.36	12.68	0.40	0.00	Calculated
{STORM}.D-4 (STORM)	SDMH-D4 (STORM)	SDMH-D3 (STORM)	192.04	302.50	285.53	8.8400	12.000	0.0130	2.32	10.59	9.95	0.34	0.00	Calculated
{STORM}.D-5 (STORM)	SDMH-D5 (STORM)	SDMH-D4 (STORM)	85.24	308.50	302.50	7.0400	12.000	0.0130	0.91	9.45	5.37	0.27	0.00	Calculated
{STORM}.D-E.1 (STORM)	SDCB-D2 (STORM)	SDFC D (STORM)	19.30	232.82	233.09	-1.4000	18.000	0.0150	1.71	4.07	2.60	0.60	0.00	Calculated
{STORM}.D-E.2 (STORM)	SDCB-D1 (STORM)	SDFC D (STORM)	15.15	233.49	233.25	1.5800	18.000	0.0130	2.49	13.22	4.25	0.55	0.00	Calculated
{STORM}.E-1 (STORM)	SDFC-E(STORM)	SDFC D (STORM)	10.39	231.93	231.63	2.8900	24.000	0.0130	8.83	38.45	6.11	0.94	0.00	Calculated
{STORM}.E-2 (STORM)	SDFC-E(STORM)	SDMH-E1 (STORM)	64.97	232.03	235.75	-5.7300	24.000	0.0130	8.83	54.13	7.12	0.88	0.00	Calculated
{STORM}.E-3 (STORM)	SDMH-E1 (STORM)	SDMH-E2 (STORM)	77.50	235.75	249.13	-17.2600	24.000	0.0130	8.10	93.98	12.46	0.52	0.00	Calculated
{STORM}.E-4 (STORM)	SDMH-E2 (STORM)	SDMH-E3 (STORM)	125.26	249.13	272.66	-18.7800	24.000	0.0130	6.92	98.05	15.89	0.39	0.00	Calculated
{STORM}.E-5 (STORM)	SDMH-E3 (STORM)	SDMH-E4 (STORM)	121.85	272.66	289.50	-13.8200	24.000	0.0130	6.93	84.11	15.32	0.40	0.00	Calculated
{STORM}.E-6 (STORM)	SDMH-E4 (STORM)	SDMH-E5 (STORM)	45.09	289.50	291.69	-4.8600	24.000	0.0130	5.42	49.87	8.55	0.51	0.00	Calculated
{STORM}.E-7 (STORM)	SDMH-E5 (STORM)	SDMH-E6 (STORM)	41.79	292.16	294.15	-4.7500	18.000	0.0130	2.14	22.91	7.06	0.34	0.00	Calculated
{STORM}.E-8 (STORM)	SDMH-E6 (STORM)	SDMH-E7 (STORM)	155.55	294.15	306.26	-7.7900	12.000	0.0130	1.17	9.94	6.35	0.30	0.00	Calculated
{STORM}.E-9 (STORM)	SDMH-E7 (STORM)	SDMH-E8 (STORM)	94.31	306.26	321.27	-15.9200	12.000	0.0130	1.18	14.22	9.61	0.21	0.00	Calculated
{STORM}.F-0 (STORM)	SDMH-E5 (STORM)	SDMH-F1 (STORM)	120.28	291.88	293.93	-1.7000	18.000	0.0130	2.52	13.71	5.48	0.46	0.00	Calculated
{STORM}.F-1 (STORM)	SDMH-F1 (STORM)	SDMH-F2 (STORM)	127.59	293.93	296.34	-1.8900	12.000	0.0130	1.20	4.90	3.97	0.41	0.00	Calculated

Link Summary

Element ID	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow Velocity	Peak Flow Depth	Total Time Surcharged	Reported Condition
			(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)	(ft/sec)	(ft)	(min)	
{STORM}.F-2 (STORM)	SDMH-F2 (STORM)	SDMH-F3 (STORM)	143.28	296.34	315.09	-13.0900	12.000	0.0130	1.21	12.89	9.04	0.28	0.00	Calculated
{STORM}.G-1 (STORM)	SDMH-G1 (STORM)	SDHW-G1 (STORM)	44.33	231.94	233.00	-2.3900	42.000	0.0130	47.27	155.58	6.84	2.38	0.00	Calculated
{STORM}.G-2 (STORM)	SDMH-H3 (STORM)	SDMH-G1 (STORM)	200.57	227.17	231.94	-2.3800	42.000	0.0130	47.21	155.16	11.95	1.50	0.00	Calculated
{STORM}.H-0 (STORM)	SDMH-H1 (STORM)	DETENTION_POND	16.29	182.49	182.00	3.0000	72.000	0.0130	130.35	733.76	9.99	4.74	0.00	Calculated
{STORM}.H-3 (STORM)	SDMH-H2 (STORM)	SDMH-H1 (STORM)	43.53	187.28	182.49	11.0000	72.000	0.0130	131.24	1404.59	10.54	3.31	0.00	Calculated
{STORM}.H-4 (STORM)	SDMH-H3 (STORM)	SDMH-H2 (STORM)	201.47	213.82	203.76	4.9900	72.000	0.0130	121.79	946.36	19.08	1.66	0.00	Calculated
{STORM}.H-5 (STORM)	SDMH-H4 (STORM)	SDMH-H3 (STORM)	49.07	220.45	219.96	1.0000	72.000	0.0130	64.91	423.22	7.70	2.03	0.00	Calculated
{STORM}.H-6 (STORM)	SDMH-H5 (STORM)	SDMH-H4 (STORM)	131.86	227.14	223.19	3.0000	60.000	0.0130	64.93	450.77	13.38	1.48	0.00	Calculated
{STORM.}H-7 (STORM)	SDHW-H2	SDMH-H5 (STORM)	28.58	246.54	246.00	1.8900	60.000	0.0130	65.05	358.00	9.78	1.86	0.00	Calculated
DET_BASIN_OUT_24	DETENTION_POND	OUTFALL_DET_PIPE_24	44.00	182.00	180.00	4.5500	24.000	0.0130	44.48	48.23	15.21	1.76	0.00	Calculated
DET_BASIN_OUT_30	DETENTION_POND	OUTFALL_DET_PIPE_30	44.00	182.00	180.00	4.5500	30.000	0.0130	69.41	87.45	15.83	2.09	0.00	Calculated
WEIR_LIPALU	DETENTION_POND	OUTFALL__DET_WEIR		182.00	175.00				0.00					

COFFMAN ENGINEERS

Inlet Summary

Element ID	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Allowable Spread (ft)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)
DI-A4.1 (STORM)	2	255.71	260.68	1.47	N/A	N/A	N/A	7.00	3.47	261.25
DI-A5.1 (STORM)	1	269.47	274.85	0.75	0.00	0.75	0.43	7.00	2.08	274.89
DI-A5.2 (STORM)	1	270.40	275.30	0.73	0.00	0.72	0.43	7.00	2.05	275.34
DI-B10.1 (STORM)	1	292.48	297.48	1.53	1.19	0.34	78.01	7.00	4.05	297.65
DI-B10.2 (STORM)	1	292.48	297.39	0.22	0.22	0.00	100.00	7.00	1.32	297.47
DI-B11.1 (STORM)	1	301.55	306.54	1.63	1.25	0.38	76.83	7.00	4.24	306.71
DI-B11.2 (STORM)	1	301.55	306.55	0.69	0.00	0.69	0.44	7.00	2.01	306.59
DI-B12.1 (STORM)	1	309.67	314.69	1.36	1.09	0.26	80.61	7.00	3.75	314.85
DI-B7.1 (STORM)	1	260.75	265.75	1.62	1.35	0.26	83.64	7.00	5.19	265.94
DI-B8.1 (STORM)	1	271.34	276.34	1.29	0.00	1.29	0.21	7.00	2.24	276.38
DI-B8.2 (STORM)	1	271.34	276.34	0.57	0.45	0.12	78.72	7.00	1.65	276.44
DI-B9.1 (STORM)	1	286.00	291.00	0.84	0.61	0.24	71.78	7.00	1.91	291.12
DI-C1.1 (STORM)	1	260.00	265.00	1.54	1.31	0.23	84.83	7.00	5.06	265.19
DI-C3.1 (STORM)	1	265.00	270.00	1.74	1.31	0.43	75.21	7.00	4.42	270.17
DI-C3.2 (STORM)	1	265.00	270.00	0.65	0.59	0.06	90.79	7.00	1.97	270.12
DI-C4.1 (STORM)	1	276.00	281.00	1.78	1.08	0.70	60.69	7.00	3.57	281.16
DI-C4.2 (STORM)	1	276.00	281.00	0.46	0.37	0.08	81.61	7.00	1.52	281.09
DI-D1.1 (STORM)	1	239.00	244.00	0.81	0.01	0.81	0.66	7.00	2.45	244.05
DI-D2.1 (STORM)	1	252.12	257.15	1.57	1.32	0.25	84.24	7.00	5.09	257.34
DI-D2.2 (STORM)	1	252.12	257.13	0.76	0.01	0.75	0.68	7.00	2.37	257.17
DI-D3.1 (STORM)	1	285.10	290.11	1.98	1.16	0.82	58.69	7.00	3.84	290.27
DI-D3.2 (STORM)	1	285.10	290.15	0.65	0.49	0.16	75.95	7.00	1.72	290.26
DI-D4.1 (STORM)	1	301.90	306.90	1.94	1.14	0.80	58.71	7.00	3.76	307.06
DI-D4.2 (STORM)	1	301.90	306.91	0.65	0.50	0.15	76.36	7.00	1.74	307.01
DI-D5.1 (STORM)	1	309.60	314.60	1.44	0.00	1.44	0.20	7.00	2.33	314.64
DI-E1.1 (STORM)	1	237.48	242.48	0.81	0.01	0.81	0.67	7.00	2.45	242.53
DI-E2.1 (STORM)	1	250.60	255.60	1.33	1.18	0.16	88.31	7.00	4.61	255.78
DI-E2.2 (STORM)	1	250.60	255.60	0.79	0.01	0.79	0.67	7.00	2.42	255.65
DI-E4.1 (STORM)	1	290.70	295.70	1.71	1.29	0.41	75.72	7.00	4.36	295.87
DI-E4.2 (STORM)	1	290.93	295.94	0.45	0.43	0.02	94.93	7.00	1.71	296.05
DI-E5.1 (STORM)	1	292.96	298.02	1.62	N/A	N/A	N/A	7.00	8.82	298.38
DI-E5.2 (STORM)	1	293.02	297.96	0.36	0.36	0.00	100.00	7.00	1.80	298.07
DI-E6.1 (STORM)	1	294.56	299.56	1.30	1.16	0.14	89.24	7.00	4.57	299.73
DI-E8.1 (STORM)	1	321.43	326.43	1.79	1.08	0.70	60.65	7.00	3.57	326.58
DI-E8.2 (STORM)	1	321.56	326.56	0.48	0.39	0.09	81.05	7.00	1.54	326.66
DI-F1.1 (STORM)	1	295.37	300.37	1.31	1.17	0.15	88.78	7.00	4.59	300.54
DI-F1.2 (STORM)	1	295.27	300.27	0.08	0.08	0.00	100.00	7.00	1.02	300.34
DI-F3.1 (STORM)	1	319.00	325.00	1.58	0.00	1.58	0.19	7.00	2.41	325.05
DI-F3.2 (STORM)	1	319.00	325.00	0.37	0.31	0.06	84.48	7.00	1.40	325.09
SDCB-B1 (STORM)	2	257.00	263.87	2.08	N/A	N/A	N/A	7.00	3.71	264.13
SDCB-C1 (STORM)	2	257.36	264.52	1.61	N/A	N/A	N/A	7.00	3.44	264.78
SDCB-D1 (STORM)	2	233.49	235.30	2.56	N/A	N/A	N/A	7.00	3.97	235.57
SDCB-D2 (STORM)	2	233.09	234.90	1.72	N/A	N/A	N/A	7.00	3.51	235.16
SDMH-A4 (STORM)	2	250.84	260.33	0.63	N/A	N/A	N/A	7.00	2.40	260.57

Subbasin Hydrology

Subbasin : A5

Input Data

Area (ac) 0.06
Weighted Runoff Coefficient 0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.06		0.95

Time of Concentration

TOC Method : SCS TR-55

Sheet Flow Equation :

Tc = (0.007 * ((n * Lf)^0.8)) / ((P^0.5) * (Sf^0.4))

Where :

Tc = Time of Concentration (hr)
n = Manning's roughness
Lf = Flow Length (ft)
P = 2 yr, 24 hr Rainfall (inches)
Sf = Slope (ft/ft)

Shallow Concentrated Flow Equation :

V = 16.1345 * (Sf^0.5) (unpaved surface)
V = 20.3282 * (Sf^0.5) (paved surface)
V = 15.0 * (Sf^0.5) (grassed waterway surface)
V = 10.0 * (Sf^0.5) (nearly bare & untilled surface)
V = 9.0 * (Sf^0.5) (cultivated straight rows surface)
V = 7.0 * (Sf^0.5) (short grass pasture surface)
V = 5.0 * (Sf^0.5) (woodland surface)
V = 2.5 * (Sf^0.5) (forest w/heavy litter surface)
Tc = (Lf / V) / (3600 sec/hr)

Where:

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)

Channel Flow Equation :

V = (1.49 * (R^(2/3)) * (Sf^0.5)) / n
R = Aq / Wp
Tc = (Lf / V) / (3600 sec/hr)

Where :

Tc = Time of Concentration (hr)
Lf = Flow Length (ft)
R = Hydraulic Radius (ft)
Aq = Flow Area (ft^2)
Wp = Wetted Perimeter (ft)
V = Velocity (ft/sec)
Sf = Slope (ft/ft)
n = Manning's roughness

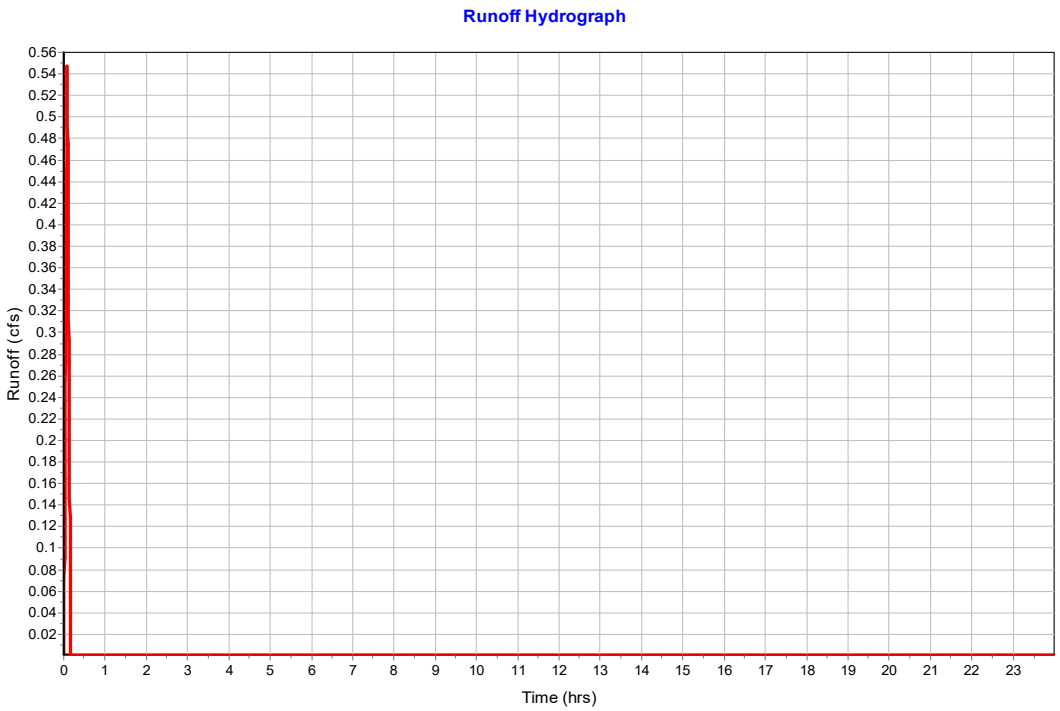
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in) 0.86
Total Runoff (in) 0.82
Peak Runoff (cfs) 0.55
Rainfall Intensity 10.29
Weighted Runoff Coefficient 0.95

Time of Concentration (days hh:mm:ss) 0 00:05:00

Subbasin : A5


Runoff Hydrograph
Runoff (cfs)
0.56
0.54
0.52
0.5
0.48
0.46
0.44
0.42
0.4
0.38
0.36
0.34
0.32
0.3
0.28
0.26
0.24
0.22
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Time (hrs)

Subbasin : A5.1

Input Data

Area (ac)	0.25
Weighted Runoff Coefficient	0.55

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.14	-	0.25
-	0.11	-	0.95
Composite Area & Weighted Runoff Coeff.	0.25		0.55

Time of Concentration

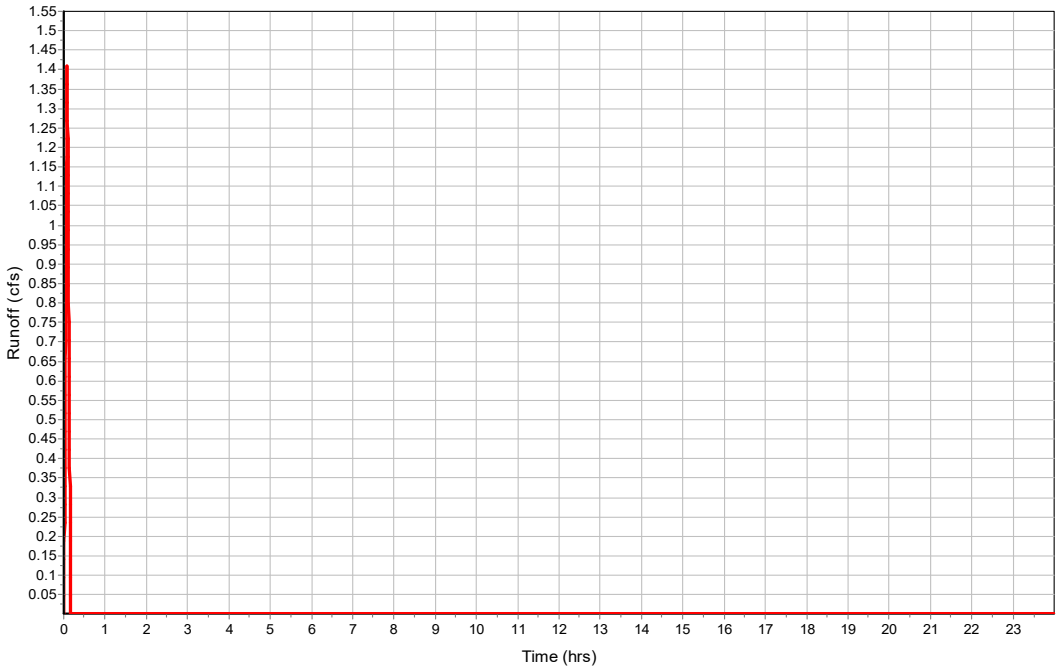
User-Defined TOC override (minutes): 5.00

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.47
Peak Runoff (cfs)	1.41
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.55
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : A5.1

Runoff Hydrograph



Subbasin : A6.1

Input Data

Area (ac) 0.08
Weighted Runoff Coefficient 0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.08	-	0.95
Composite Area & Weighted Runoff Coeff.	0.08		0.95

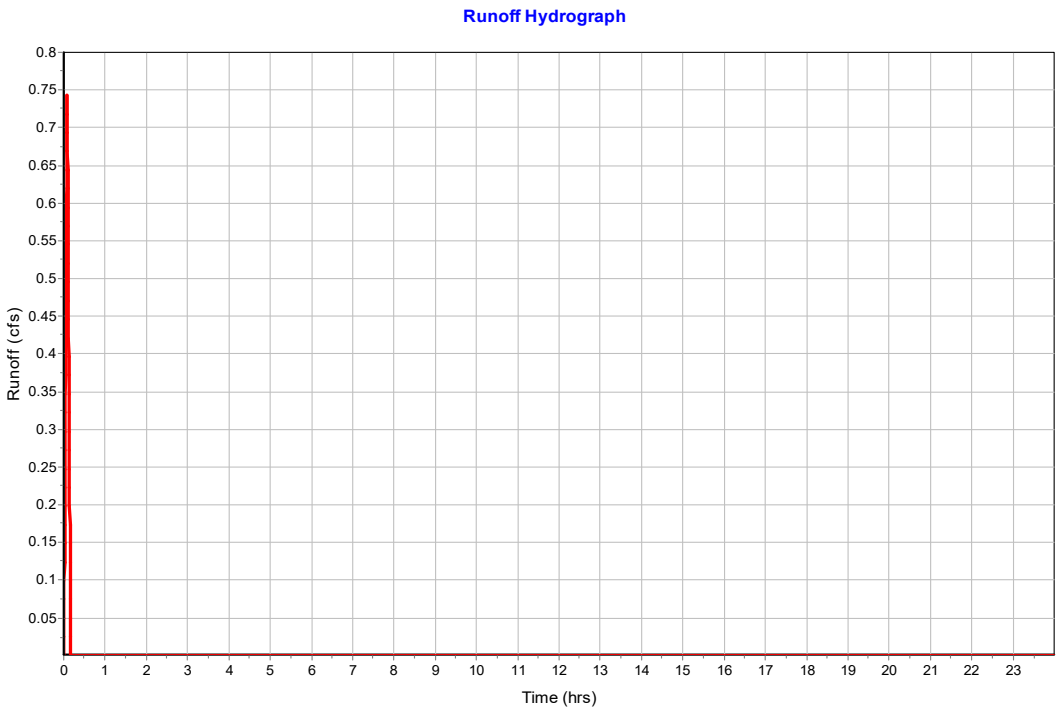
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in) 0.86
Total Runoff (in) 0.82
Peak Runoff (cfs) 0.74
Rainfall Intensity 10.29
Weighted Runoff Coefficient 0.95
Time of Concentration (days hh:mm:ss) 0 00:05:00

Subbasin : A6.1



Subbasin : A6.2

Input Data

Area (ac)	0.08
Weighted Runoff Coefficient	0.84

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.01	-	0.25
-	0.07	-	0.95
Composite Area & Weighted Runoff Coeff.	0.08		0.84

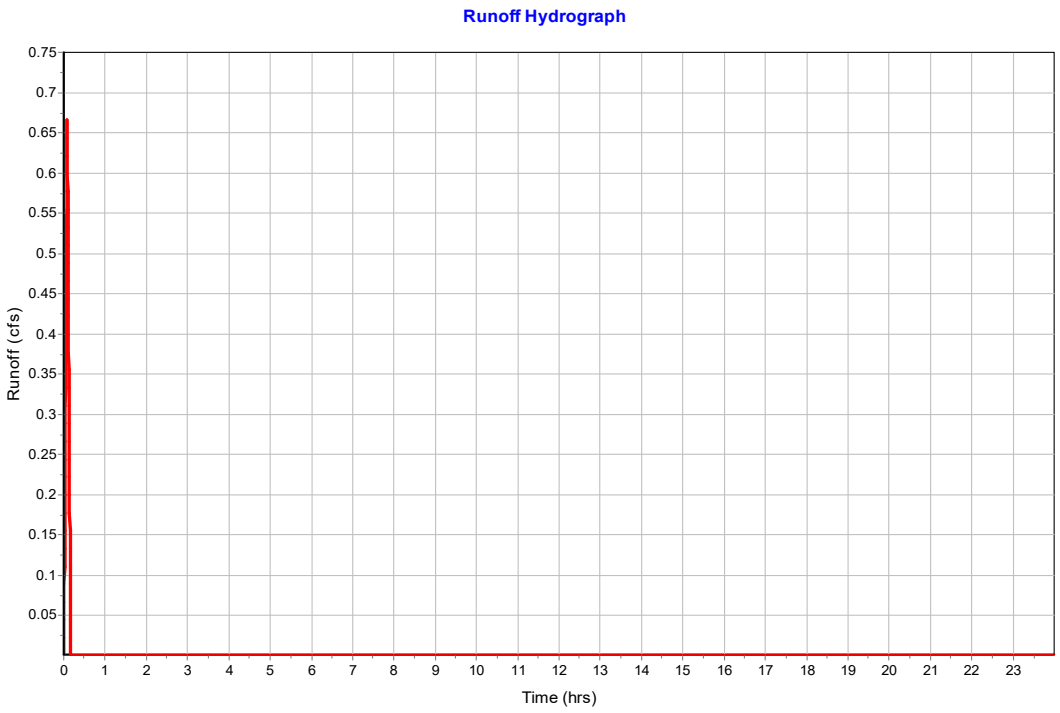
Time of Concentration

User-Defined TOC override (minutes): 5.00

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.72
Peak Runoff (cfs)	0.67
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.84
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : A6.2



Subbasin : B10.1

Input Data

Area (ac)	0.14
Weighted Runoff Coefficient	0.54

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.08	-	0.25
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.14		0.54

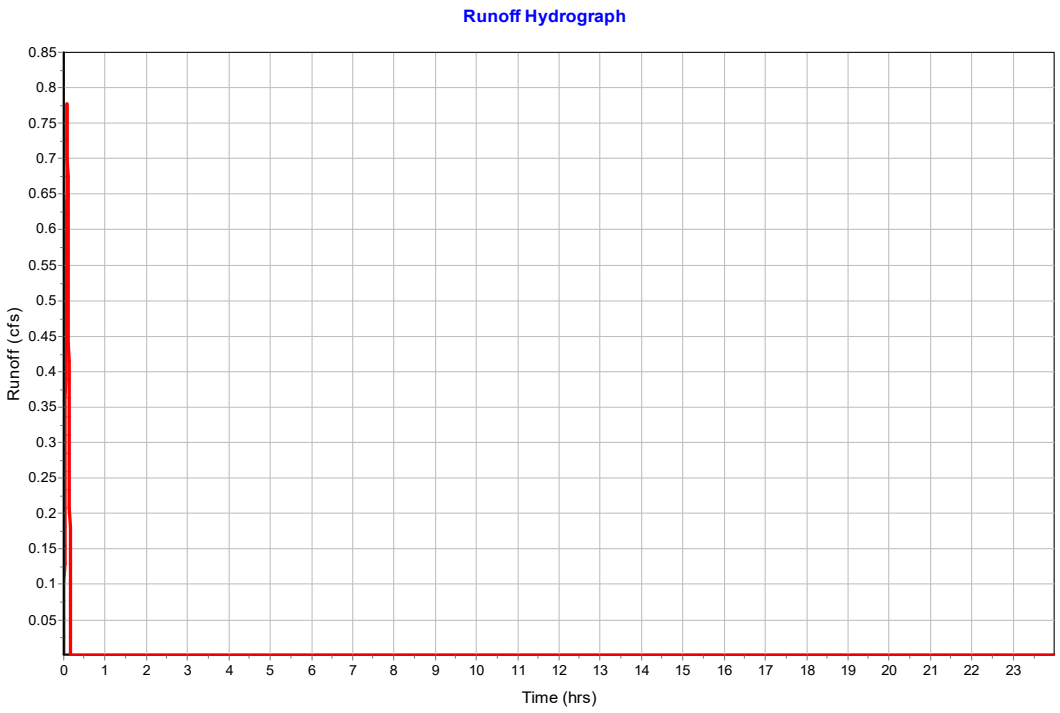
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.46
Peak Runoff (cfs)	0.78
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.54
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : B10.1



COFFMAN ENGINEERS

Subbasin : B11.1

Input Data

Area (ac)	0.58
Weighted Runoff Coefficient	0.32

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.52	-	0.25
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.58		0.32

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	290	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.5	0	0
Computed Flow Time (min) :	9.74	0	0

Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.017	0	0
Flow Length (ft) :	157	0	0
Channel Slope (%) :	5.5	0	0
Cross Section Area (ft^2) :	0.2	0	0
Wetted Perimeter (ft) :	1.9	0	0
Velocity (ft/sec) :	4.58	0	0
Computed Flow Time (min) :	0.57	0	0

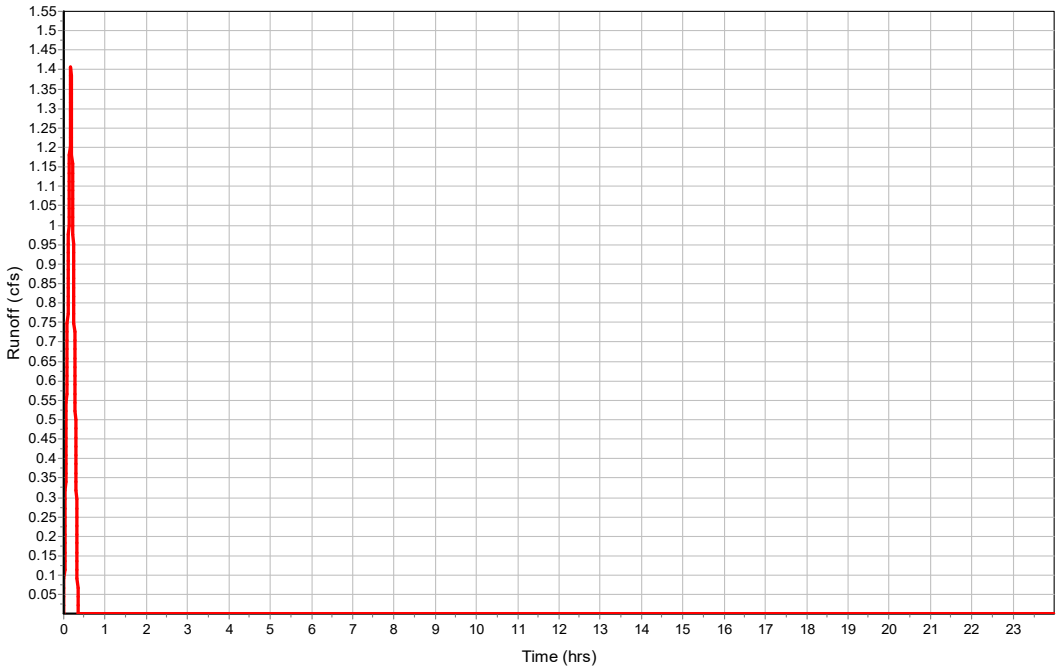
Total TOC (min) 10.31

Subbasin Runoff Results

Total Rainfall (in)	1.32
Total Runoff (in)	0.42
Peak Runoff (cfs)	1.41
Rainfall Intensity	7.634
Weighted Runoff Coefficient	0.32
Time of Concentration (days hh:mm:ss)	0 00:10:19

Subbasin : B11.1

Runoff Hydrograph



Subbasin : B11.2

Input Data

Area (ac)	0.02
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.02	-	0.95
Composite Area & Weighted Runoff Coeff.	0.02		0.95

Time of Concentration

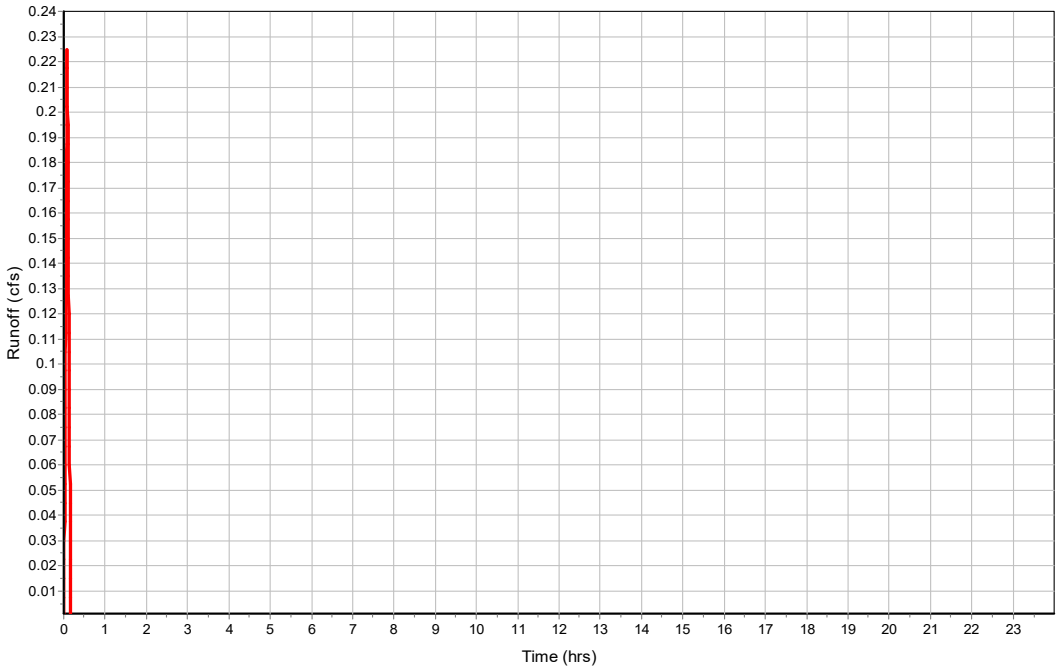
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.23
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : B11.2

Runoff Hydrograph



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Subbasin : B12.1

Input Data

Area (ac)	0.57
Weighted Runoff Coefficient	0.29

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.53	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	0.57		0.29

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	190	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.46	0	0
Computed Flow Time (min) :	6.94	0	0

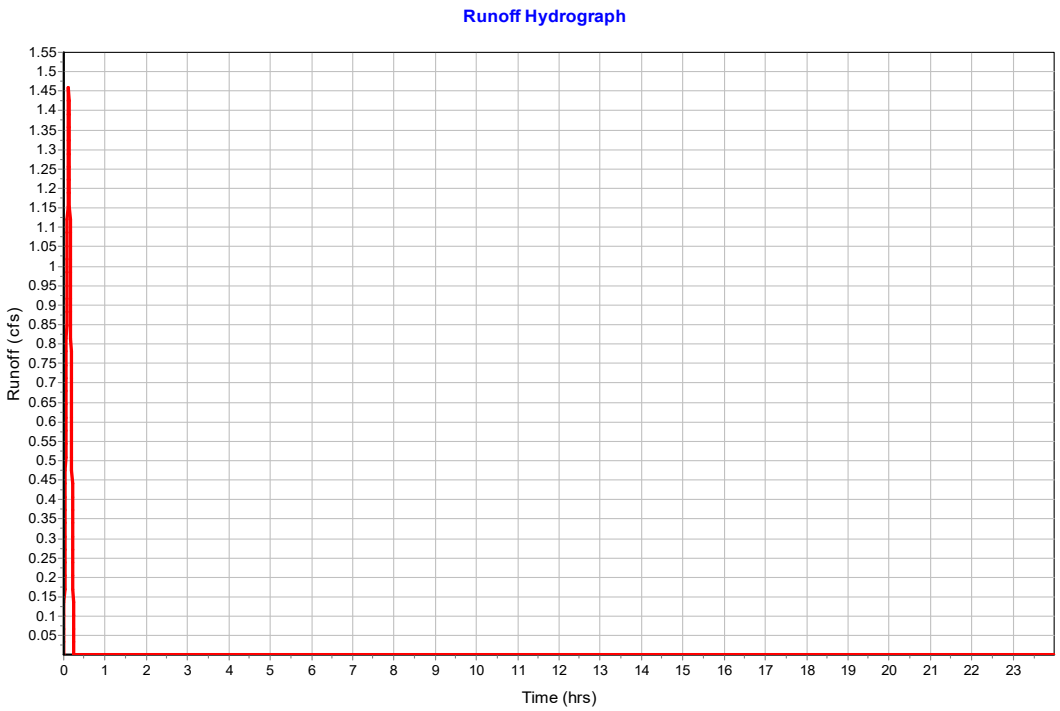
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.017	0	0
Flow Length (ft) :	90	0	0
Channel Slope (%) :	7.8	0	0
Cross Section Area (ft^2) :	0.2	0	0
Wetted Perimeter (ft) :	1.9	0	0
Velocity (ft/sec) :	5.46	0	0
Computed Flow Time (min) :	0.27	0	0

Total TOC (min) 7.22

Subbasin Runoff Results

Total Rainfall (in)	1.06
Total Runoff (in)	0.31
Peak Runoff (cfs)	1.46
Rainfall Intensity	8.843
Weighted Runoff Coefficient	0.29
Time of Concentration (days hh:mm:ss)	0 00:07:13

Subbasin : B12.1



Subbasin : B12.2

Input Data

Area (ac)	0.07
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.07	-	0.95
Composite Area & Weighted Runoff Coeff.	0.07		0.95

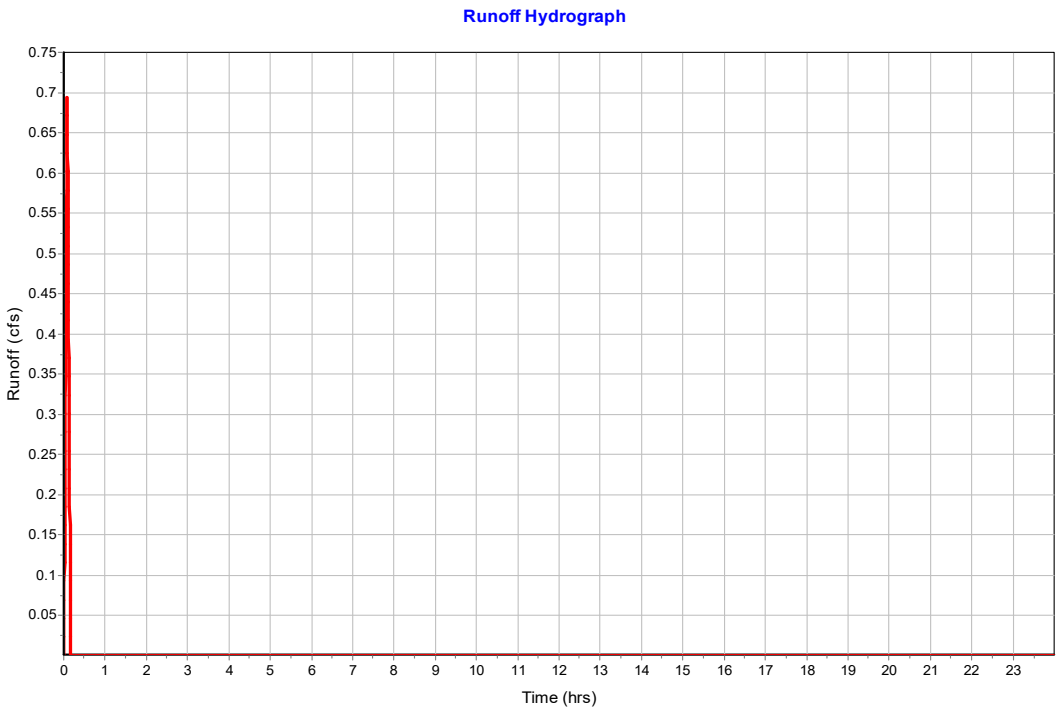
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.69
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : B12.2



COFFMAN ENGINEERS

Subbasin : B13.1

Input Data

Area (ac)	0.58
Weighted Runoff Coefficient	0.29

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.53	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	0.57		0.29

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	220	0	0
Slope (%) :	17	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.44	0	0
Computed Flow Time (min) :	8.33	0	0

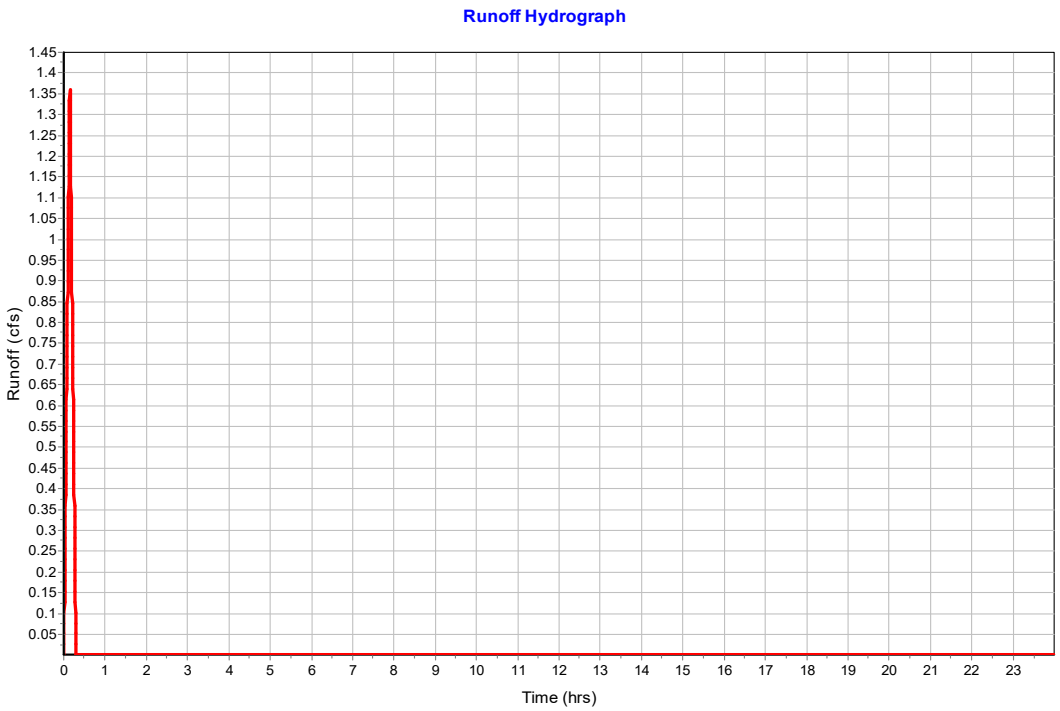
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.017	0	0
Flow Length (ft) :	160	0	0
Channel Slope (%) :	6.5	0	0
Cross Section Area (ft^2) :	0.2	0	0
Wetted Perimeter (ft) :	1.9	0	0
Velocity (ft/sec) :	4.98	0	0
Computed Flow Time (min) :	0.54	0	0

Total TOC (min) 8.87

Subbasin Runoff Results

Total Rainfall (in)	1.2
Total Runoff (in)	0.35
Peak Runoff (cfs)	1.36
Rainfall Intensity	8.123
Weighted Runoff Coefficient	0.29
Time of Concentration (days hh:mm:ss)	0 00:08:52

Subbasin : B13.1



Subbasin : B8.1

Input Data

Area (ac)	0.61
Weighted Runoff Coefficient	0.3

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.57	-	0.25
-	0.05	-	0.95
Composite Area & Weighted Runoff Coeff.	0.62		0.3

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	310	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.5	0	0
Computed Flow Time (min) :	10.27	0	0

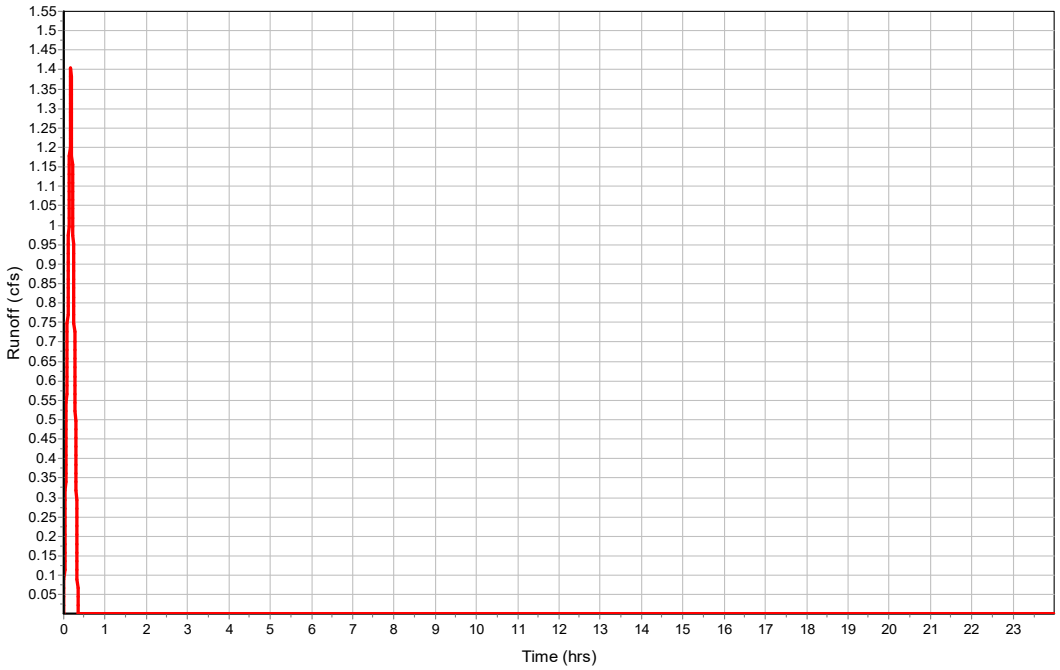
Total TOC (min) 10.27

Subbasin Runoff Results

Total Rainfall (in)	1.32
Total Runoff (in)	0.4
Peak Runoff (cfs)	1.4
Rainfall Intensity	7.646
Weighted Runoff Coefficient	0.3
Time of Concentration (days hh:mm:ss)	0 00:10:16

Subbasin : B8.1

Runoff Hydrograph



Subbasin : B9.1

Input Data

Area (ac)	0.46
Weighted Runoff Coefficient	0.3

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.43	-	0.25
-	0.03	-	0.95
Composite Area & Weighted Runoff Coeff.	0.46		0.3

Time of Concentration

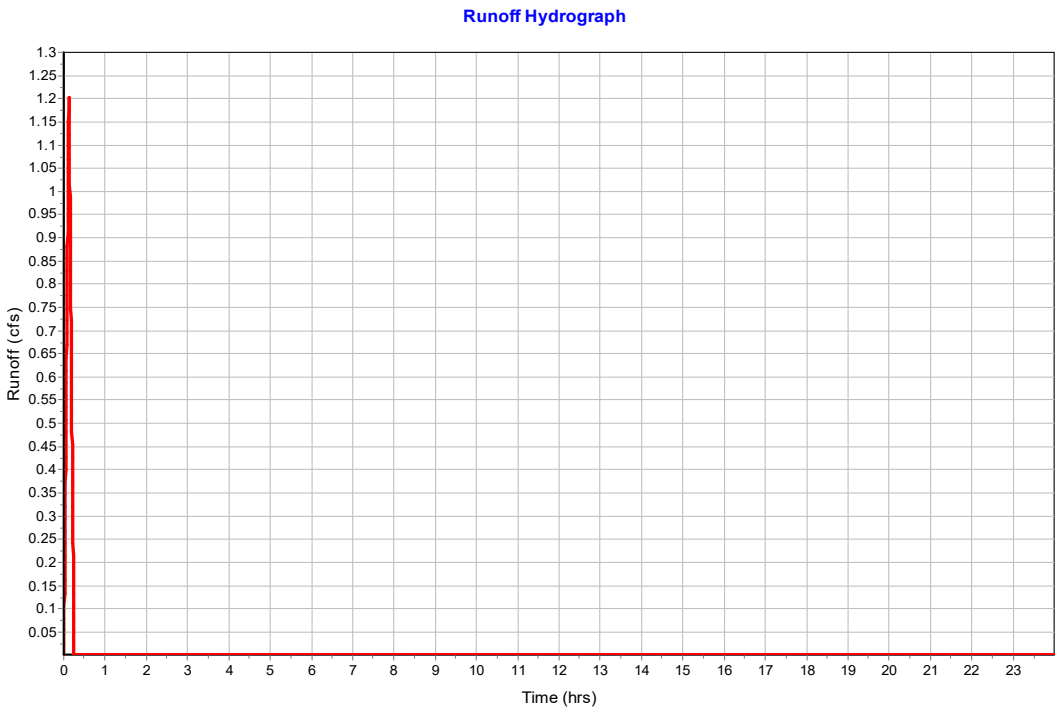
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	210	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.47	0	0
Computed Flow Time (min) :	7.52	0	0

Total TOC (min) 7.52

Subbasin Runoff Results

Total Rainfall (in)	1.09
Total Runoff (in)	0.33
Peak Runoff (cfs)	1.2
Rainfall Intensity	8.695
Weighted Runoff Coefficient	0.3
Time of Concentration (days hh:mm:ss)	0 00:07:31

Subbasin : B9.1



COFFMAN ENGINEERS

Subbasin : B9.2

Input Data

Area (ac)	0.06
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0	-	0.25
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.06		0.95

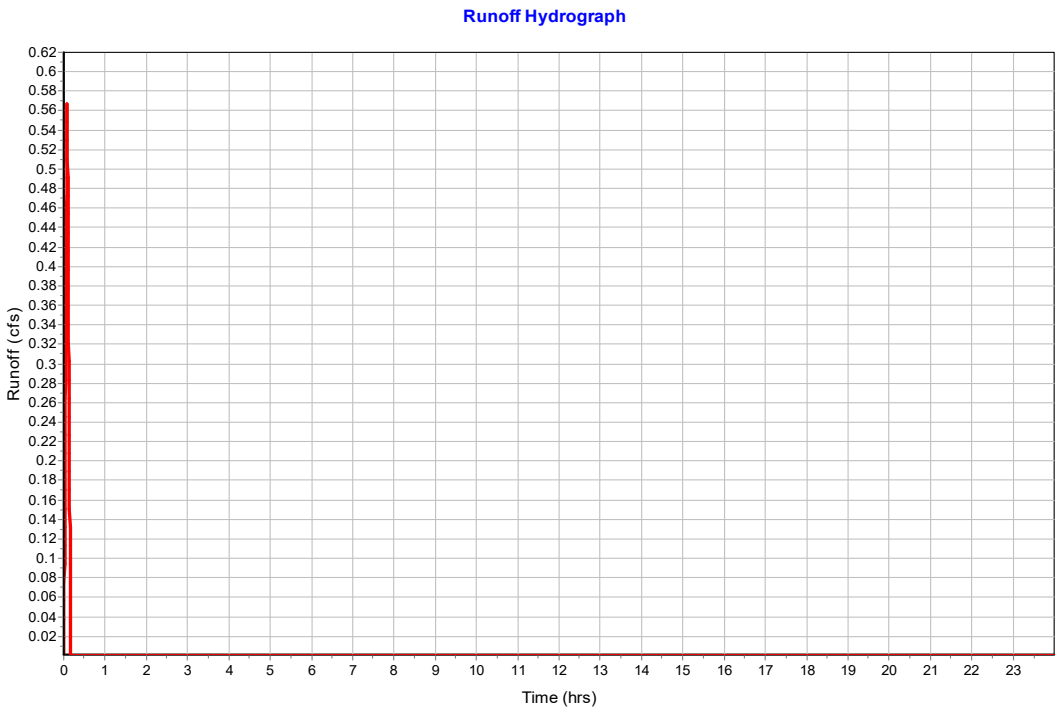
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.57
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : B9.2



COFFMAN ENGINEERS

Subbasin : B-C1

Input Data

Area (ac)	0.56
Weighted Runoff Coefficient	0.48

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.38	-	0.25
-	0.19	-	0.95
Composite Area & Weighted Runoff Coeff.	0.57		0.48

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	140	0	0
Slope (%) :	5.7	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.26	0	0
Computed Flow Time (min) :	8.99	0	0

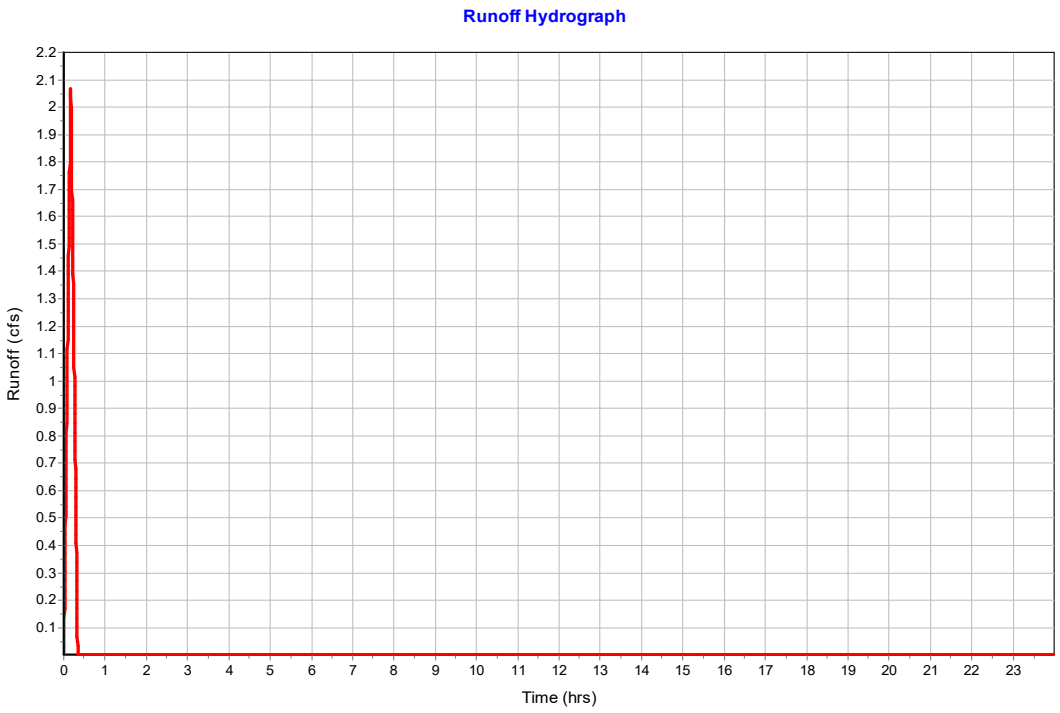
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.017	0	0
Flow Length (ft) :	240	0	0
Channel Slope (%) :	2.7	0	0
Cross Section Area (ft^2) :	0.2	0	0
Wetted Perimeter (ft) :	1.9	0	0
Velocity (ft/sec) :	3.21	0	0
Computed Flow Time (min) :	1.25	0	0

Total TOC (min) 10.23

Subbasin Runoff Results

Total Rainfall (in)	1.3
Total Runoff (in)	0.62
Peak Runoff (cfs)	2.07
Rainfall Intensity	7.659
Weighted Runoff Coefficient	0.48
Time of Concentration (days hh:mm:ss)	0 00:10:14

Subbasin : B-C1



COFFMAN ENGINEERS

Subbasin : B-C2

Input Data

Area (ac)	0.64
Weighted Runoff Coefficient	0.29

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.6	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	0.64		0.29

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	350	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.52	0	0
Computed Flow Time (min) :	11.32	0	0

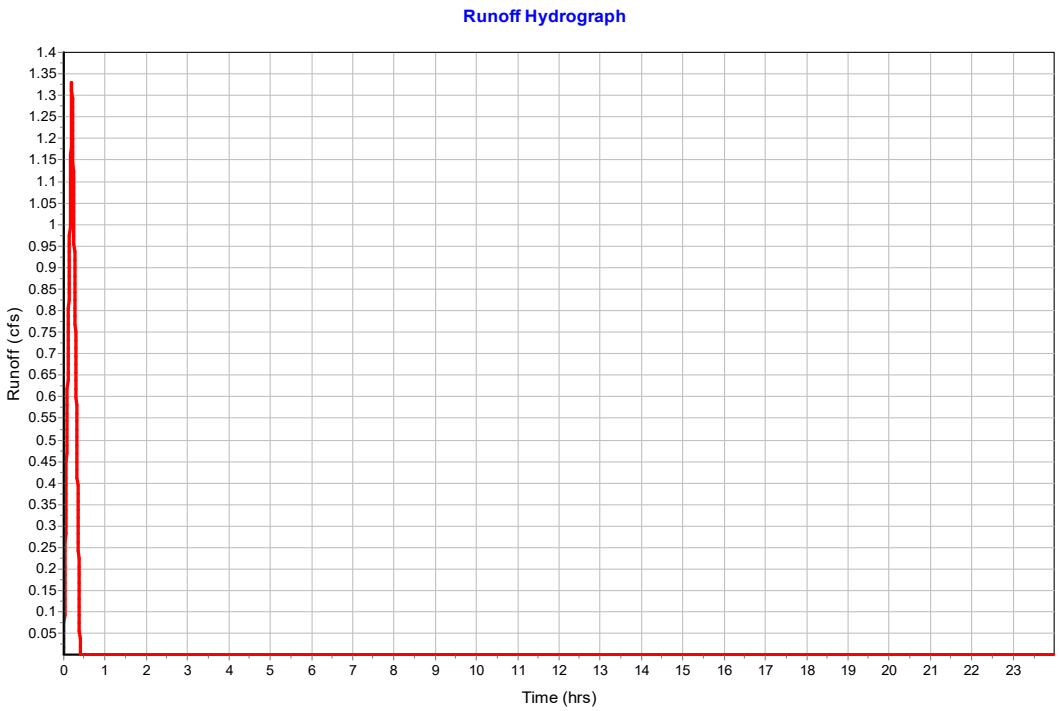
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.017	0	0
Flow Length (ft) :	65	0	0
Channel Slope (%) :	1.2	0	0
Cross Section Area (ft^2) :	0.2	0	0
Wetted Perimeter (ft) :	1.9	0	0
Velocity (ft/sec) :	2.14	0	0
Computed Flow Time (min) :	0.51	0	0

Total TOC (min) 11.83

Subbasin Runoff Results

Total Rainfall (in)	1.42
Total Runoff (in)	0.41
Peak Runoff (cfs)	1.33
Rainfall Intensity	7.213
Weighted Runoff Coefficient	0.29
Time of Concentration (days hh:mm:ss)	0 00:11:50

Subbasin : B-C2



COFFMAN ENGINEERS

Subbasin : C1.1

Input Data

Area (ac)	0.58
Weighted Runoff Coefficient	0.32

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.53	-	0.25
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.59		0.32

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	350	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.52	0	0
Computed Flow Time (min) :	11.32	0	0

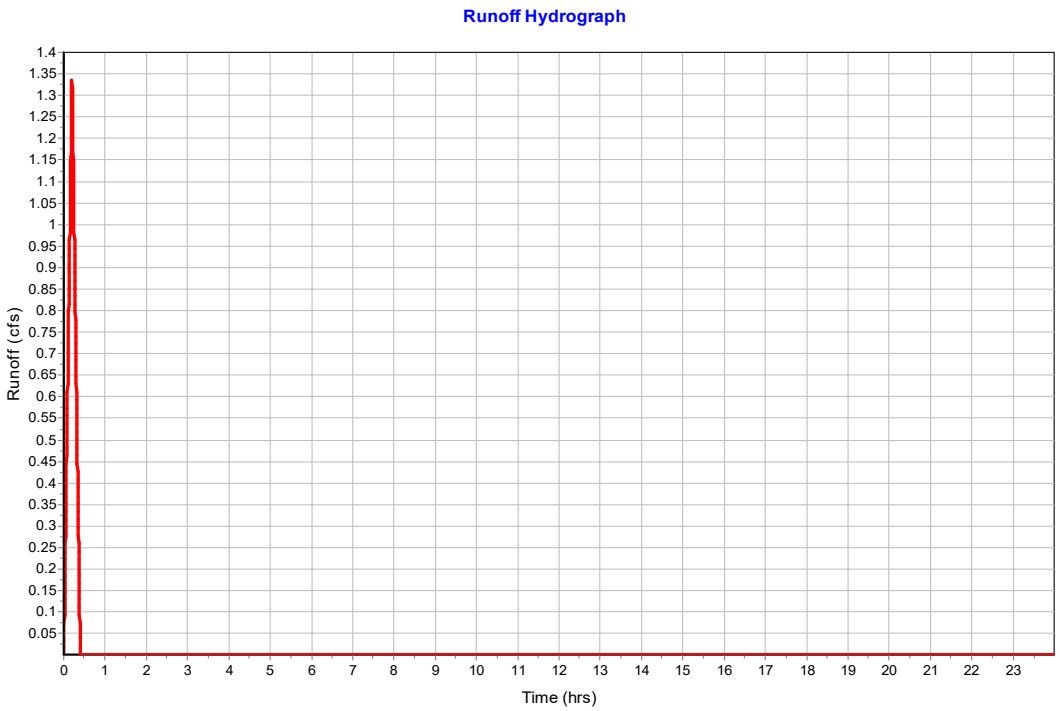
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.017	0	0
Flow Length (ft) :	143	0	0
Channel Slope (%) :	2.95	0	0
Cross Section Area (ft^2) :	0.2	0	0
Wetted Perimeter (ft) :	1.9	0	0
Velocity (ft/sec) :	3.36	0	0
Computed Flow Time (min) :	0.71	0	0

Total TOC (min) 12.03

Subbasin Runoff Results

Total Rainfall (in)	1.43
Total Runoff (in)	0.46
Peak Runoff (cfs)	1.33
Rainfall Intensity	7.163
Weighted Runoff Coefficient	0.32
Time of Concentration (days hh:mm:ss)	0 00:12:02

Subbasin : C1.1



COFFMAN ENGINEERS

Subbasin : C2.1

Input Data

Area (ac)	0.55
Weighted Runoff Coefficient	0.31

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.51	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	0.55		0.31

Time of Concentration

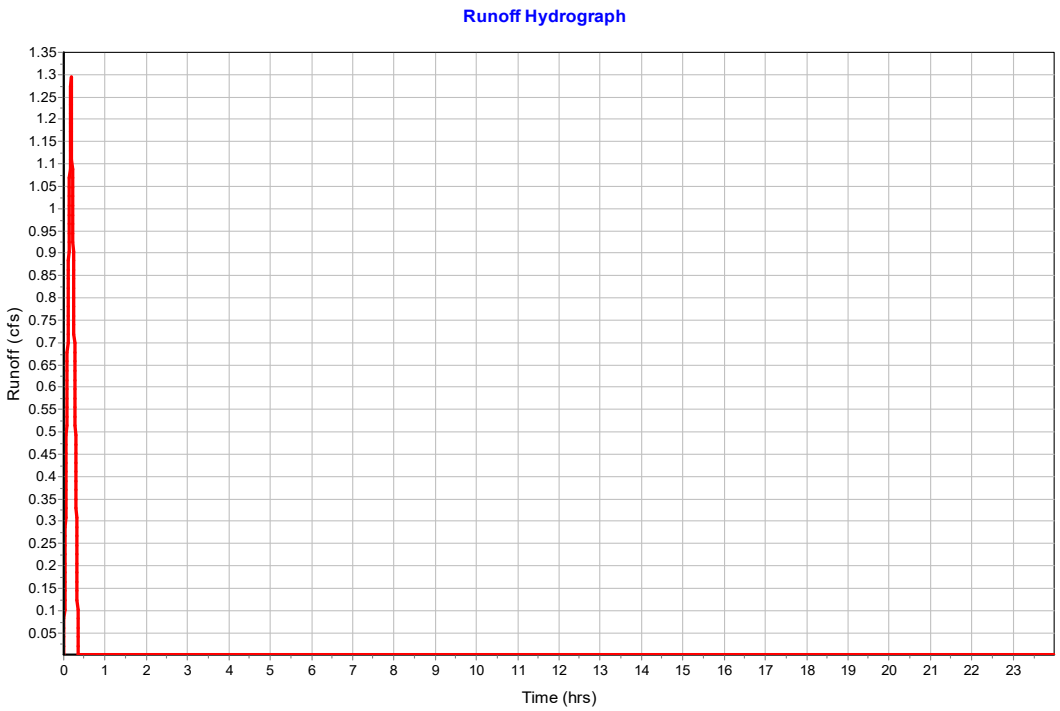
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	320	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.51	0	0
Computed Flow Time (min) :	10.54	0	0

Total TOC (min) 10.54

Subbasin Runoff Results

Total Rainfall (in)	1.32
Total Runoff (in)	0.41
Peak Runoff (cfs)	1.3
Rainfall Intensity	7.565
Weighted Runoff Coefficient	0.31
Time of Concentration (days hh:mm:ss)	0 00:10:32

Subbasin : C2.1



COFFMAN ENGINEERS

Subbasin : C2.2

Input Data

Area (ac)	0.1
Weighted Runoff Coefficient	0.57

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.05	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	0.09		0.57

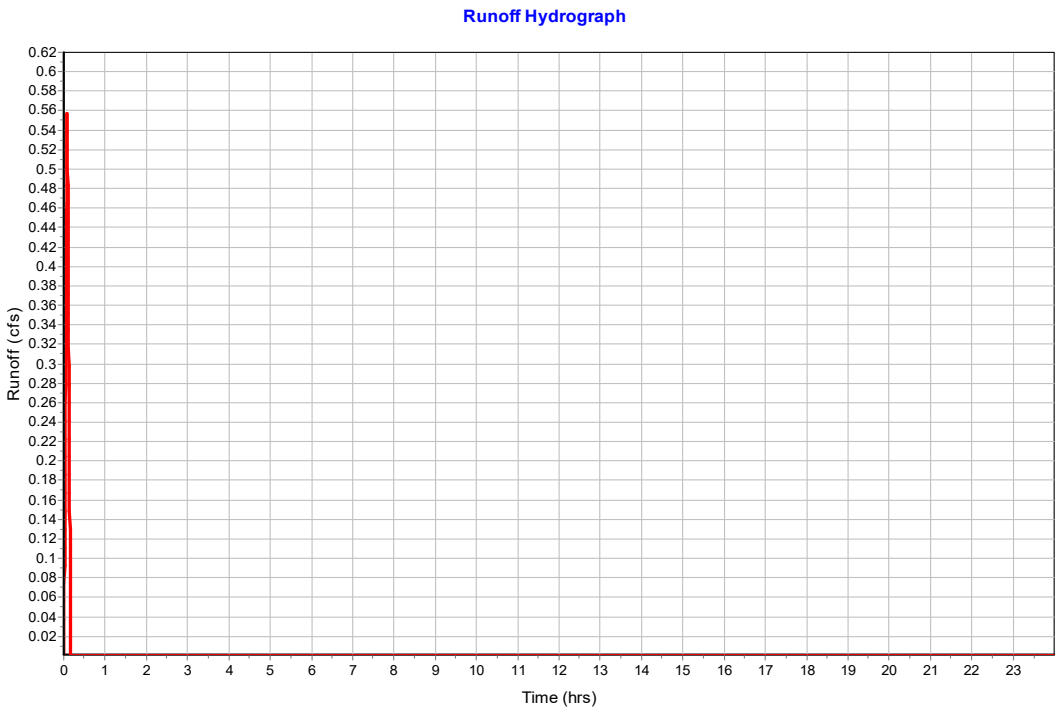
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.49
Peak Runoff (cfs)	0.56
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.57
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : C2.2



COFFMAN ENGINEERS

Subbasin : C3.1

Input Data

Area (ac)	0.56
Weighted Runoff Coefficient	0.38

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.45	-	0.25
-	0.1	-	0.95
Composite Area & Weighted Runoff Coeff.	0.55		0.38

Time of Concentration

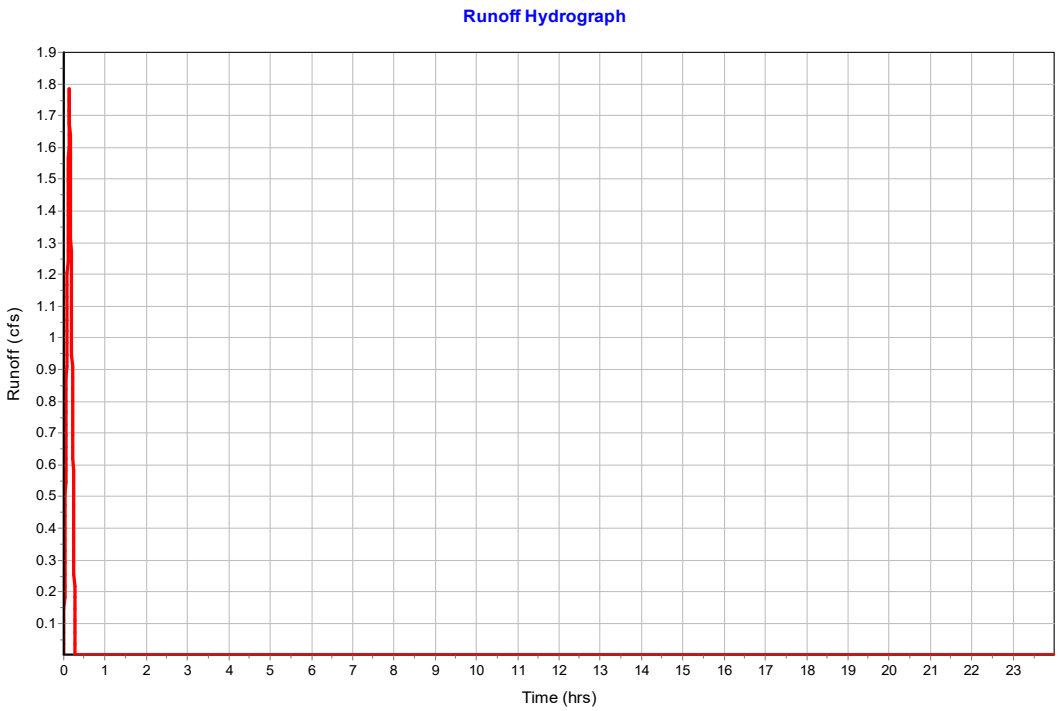
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	230	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.47	0	0
Computed Flow Time (min) :	8.09	0	0

Total TOC (min) 8.09

Subbasin Runoff Results

Total Rainfall (in)	1.15
Total Runoff (in)	0.44
Peak Runoff (cfs)	1.79
Rainfall Intensity	8.437
Weighted Runoff Coefficient	0.38
Time of Concentration (days hh:mm:ss)	0 00:08:05

Subbasin : C3.1



Subbasin : C3.2

Input Data

Area (ac)	0.05
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0	-	0.25
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.06		0.95

Time of Concentration

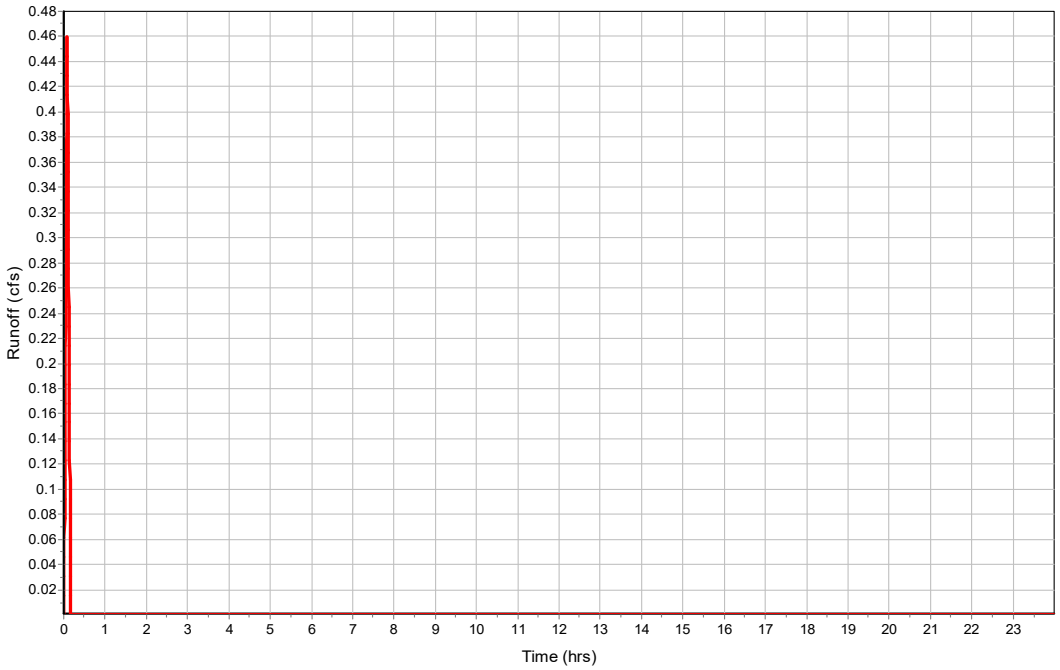
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.46
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : C3.2

Runoff Hydrograph



Subbasin : D1.1

Input Data

Area (ac)	0.37
Weighted Runoff Coefficient	0.28

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.35	-	0.25
-	0.01	-	0.95
Composite Area & Weighted Runoff Coeff.	0.36		0.28

Time of Concentration

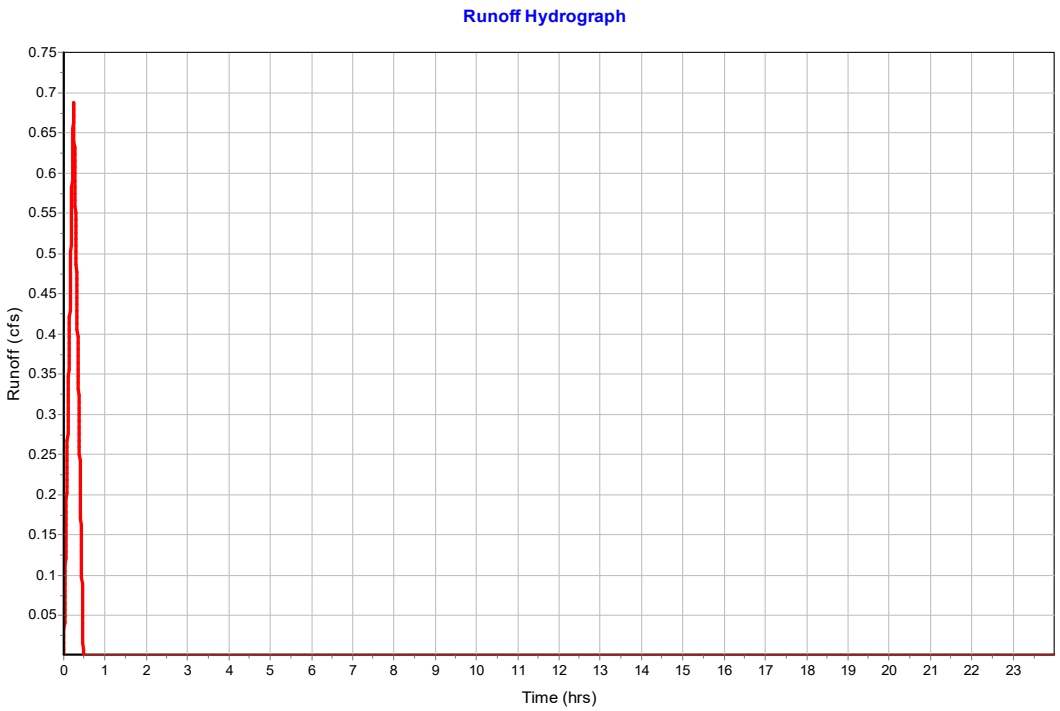
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	460	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.54	0	0
Computed Flow Time (min) :	14.09	0	0

Total TOC (min) 14.09

Subbasin Runoff Results

Total Rainfall (in)	1.59
Total Runoff (in)	0.44
Peak Runoff (cfs)	0.69
Rainfall Intensity	6.711
Weighted Runoff Coefficient	0.28
Time of Concentration (days hh:mm:ss)	0 00:14:05

Subbasin : D1.1



COFFMAN ENGINEERS

Subbasin : D2.1

Input Data

Area (ac)	0.59
Weighted Runoff Coefficient	0.32

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.52	-	0.25
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.58		0.32

Time of Concentration

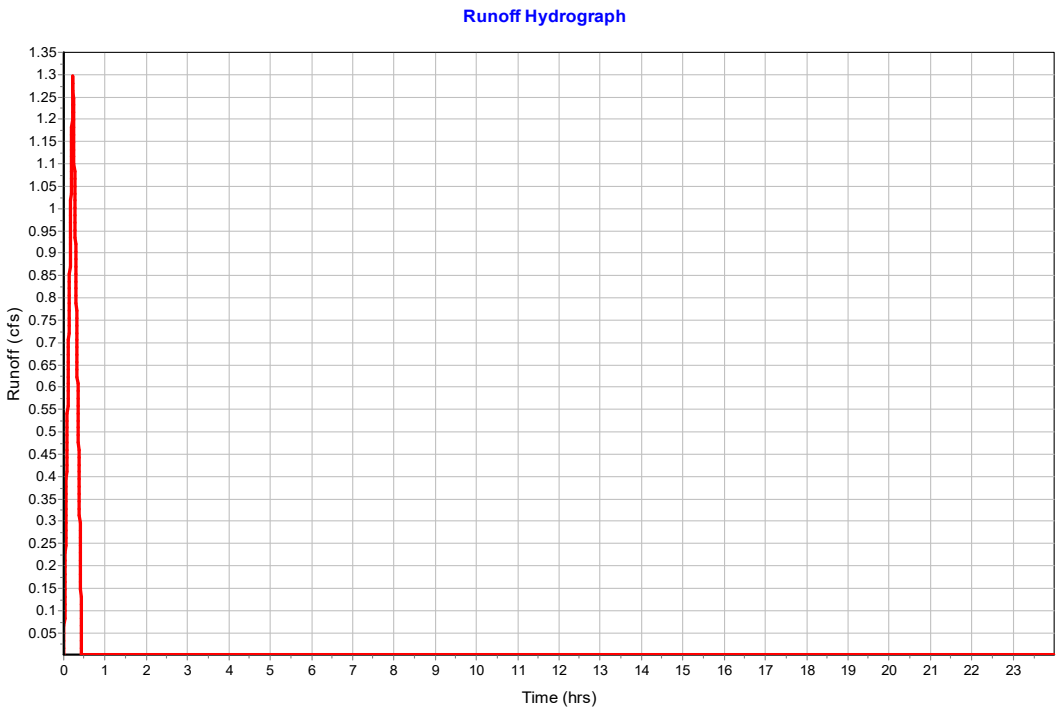
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	420	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.53	0	0
Computed Flow Time (min) :	13.1	0	0

Total TOC (min) 13.10

Subbasin Runoff Results

Total Rainfall (in)	1.52
Total Runoff (in)	0.49
Peak Runoff (cfs)	1.3
Rainfall Intensity	6.916
Weighted Runoff Coefficient	0.32
Time of Concentration (days hh:mm:ss)	0 00:13:06

Subbasin : D2.1



COFFMAN ENGINEERS

Subbasin : D2.2

Input Data

Area (ac)	0.06
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0	-	0.25
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.06		0.95

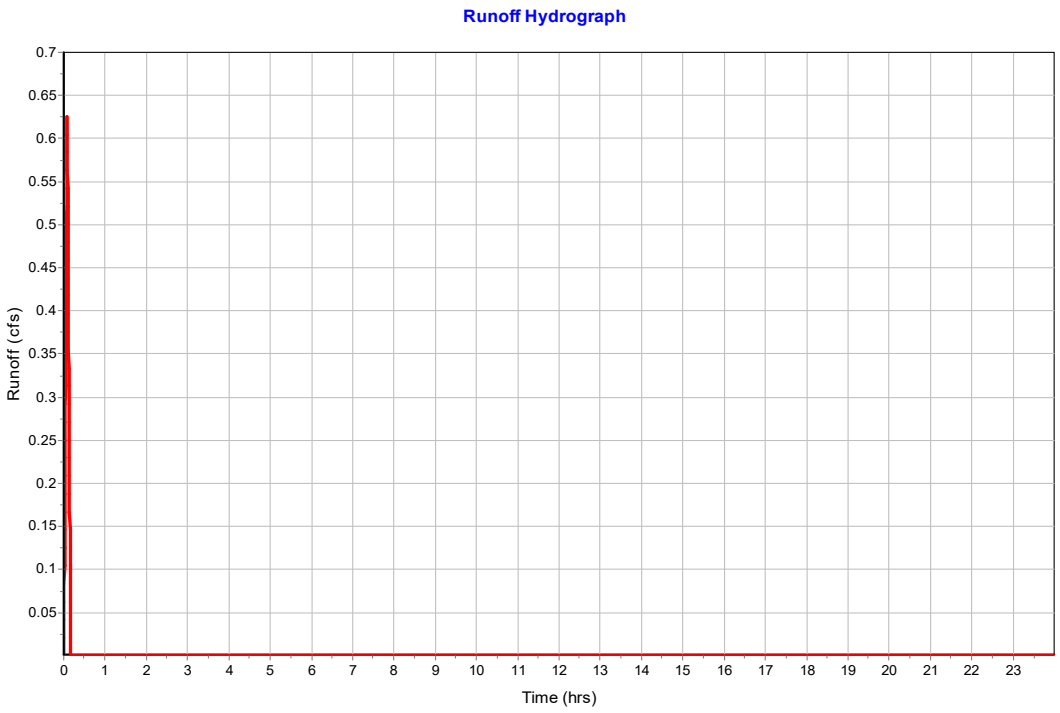
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.63
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : D2.2



Subbasin : D3.1

Input Data

Area (ac)	0.52
Weighted Runoff Coefficient	0.33

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.46	-	0.25
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.52		0.33

Time of Concentration

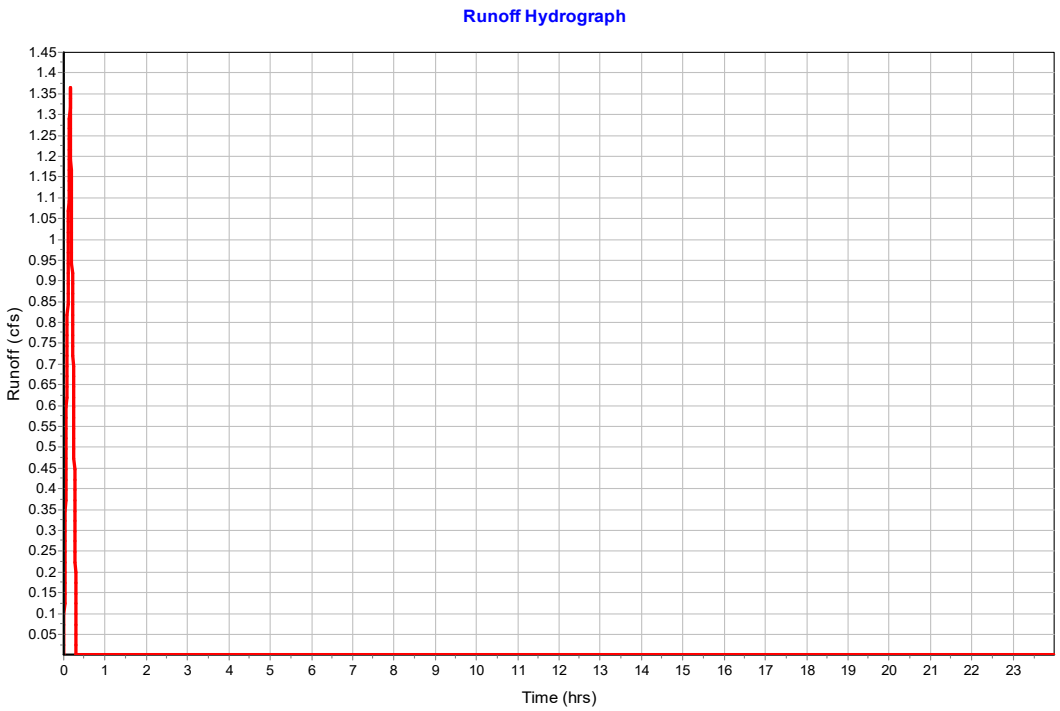
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	270	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.49	0	0
Computed Flow Time (min) :	9.2	0	0

Total TOC (min) 9.20

Subbasin Runoff Results

Total Rainfall (in)	1.22
Total Runoff (in)	0.4
Peak Runoff (cfs)	1.37
Rainfall Intensity	8.001
Weighted Runoff Coefficient	0.33
Time of Concentration (days hh:mm:ss)	0 00:09:12

Subbasin : D3.1



Subbasin : D3.2

Input Data

Area (ac)	0.05
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0	-	0.25
-	0.05	-	0.95
Composite Area & Weighted Runoff Coeff.	0.05		0.95

Time of Concentration

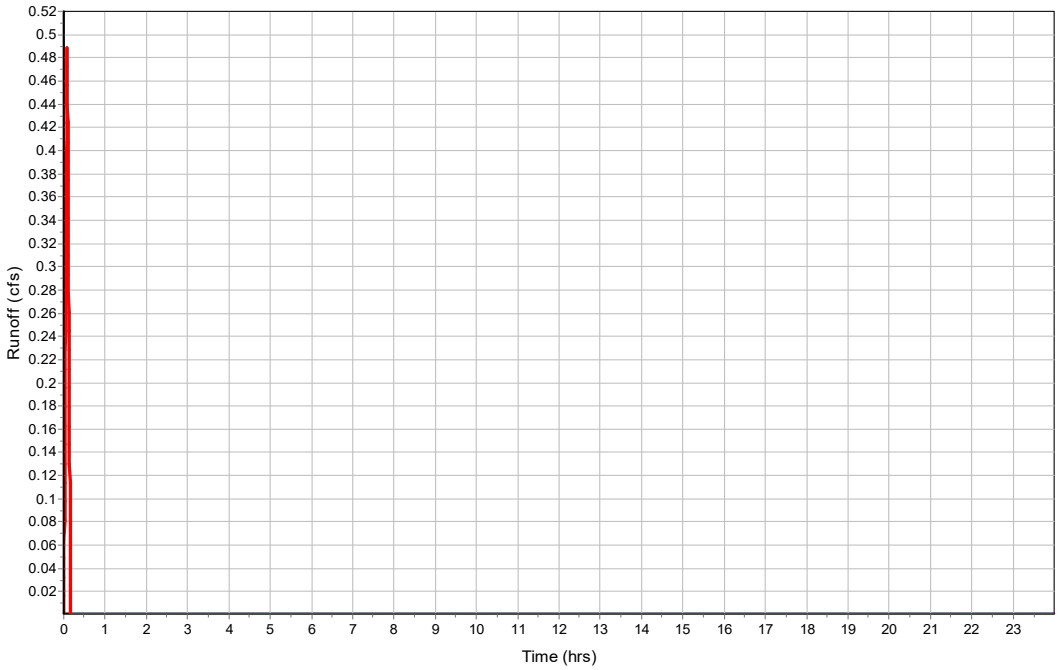
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.49
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : D3.2

Runoff Hydrograph



COFFMAN ENGINEERS

Subbasin : D4.1

Input Data

Area (ac)	0.61
Weighted Runoff Coefficient	0.29

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.58	-	0.25
-	0.03	-	0.95
Composite Area & Weighted Runoff Coeff.	0.61		0.29

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	260	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.49	0	0
Computed Flow Time (min) :	8.93	0	0

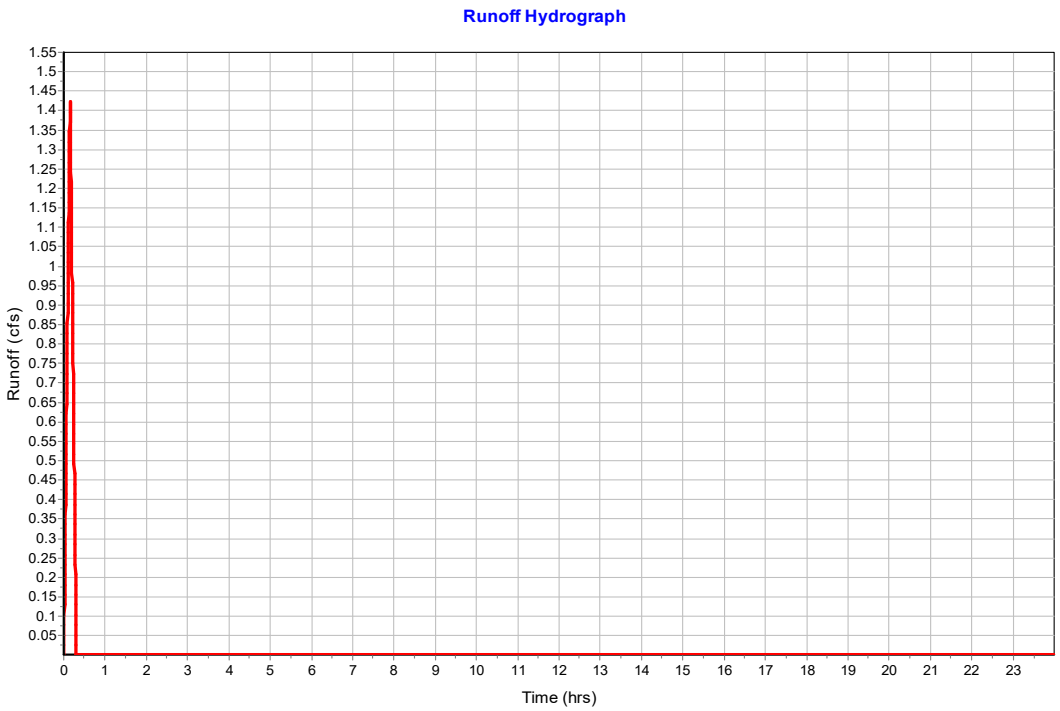
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.017	0	0
Flow Length (ft) :	90	0	0
Channel Slope (%) :	8.1	0	0
Cross Section Area (ft^2) :	0.2	0	0
Wetted Perimeter (ft) :	1.9	0	0
Velocity (ft/sec) :	5.56	0	0
Computed Flow Time (min) :	0.27	0	0

Total TOC (min) 9.20

Subbasin Runoff Results

Total Rainfall (in)	1.22
Total Runoff (in)	0.36
Peak Runoff (cfs)	1.42
Rainfall Intensity	8.001
Weighted Runoff Coefficient	0.29
Time of Concentration (days hh:mm:ss)	0 00:09:12

Subbasin : D4.1



COFFMAN ENGINEERS

Subbasin : D4.2

Input Data

Area (ac)	0.07
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0	-	0.25
-	0.07	-	0.95
Composite Area & Weighted Runoff Coeff.	0.07		0.95

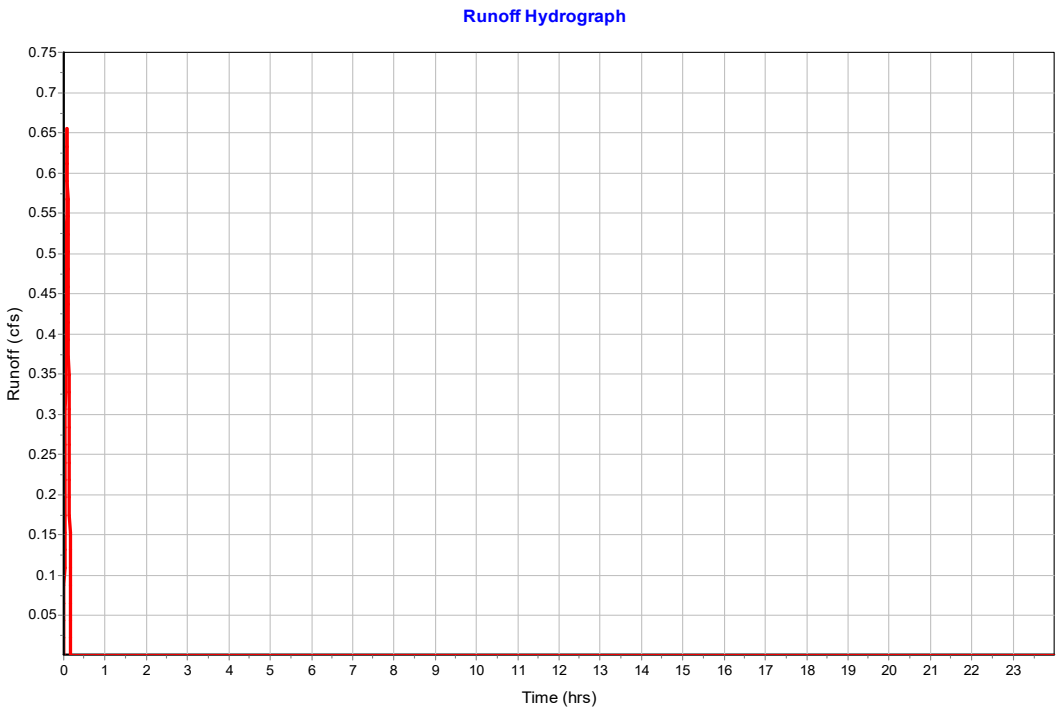
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.66
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : D4.2



Subbasin : D5.1

Input Data

Area (ac)	0.58
Weighted Runoff Coefficient	0.31

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.53	-	0.25
-	0.05	-	0.95
Composite Area & Weighted Runoff Coeff.	0.58		0.31

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	260	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.49	0	0
Computed Flow Time (min) :	8.93	0	0

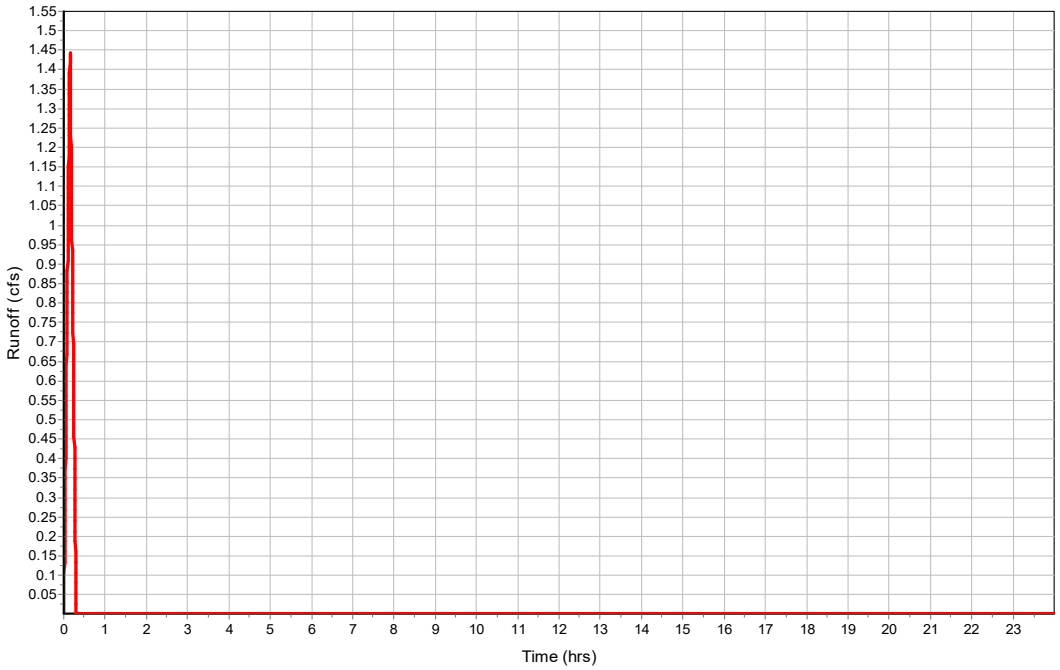
Total TOC (min) 8.93

Subbasin Runoff Results

Total Rainfall (in)	1.22
Total Runoff (in)	0.38
Peak Runoff (cfs)	1.44
Rainfall Intensity	8.1
Weighted Runoff Coefficient	0.31
Time of Concentration (days hh:mm:ss)	0 00:08:56

Subbasin : D5.1

Runoff Hydrograph



Subbasin : D-E1

Input Data

Area (ac)	1.28
Weighted Runoff Coefficient	0.27

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.25	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	1.29		0.27

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	350	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.52	0	0
Computed Flow Time (min) :	11.32	0	0

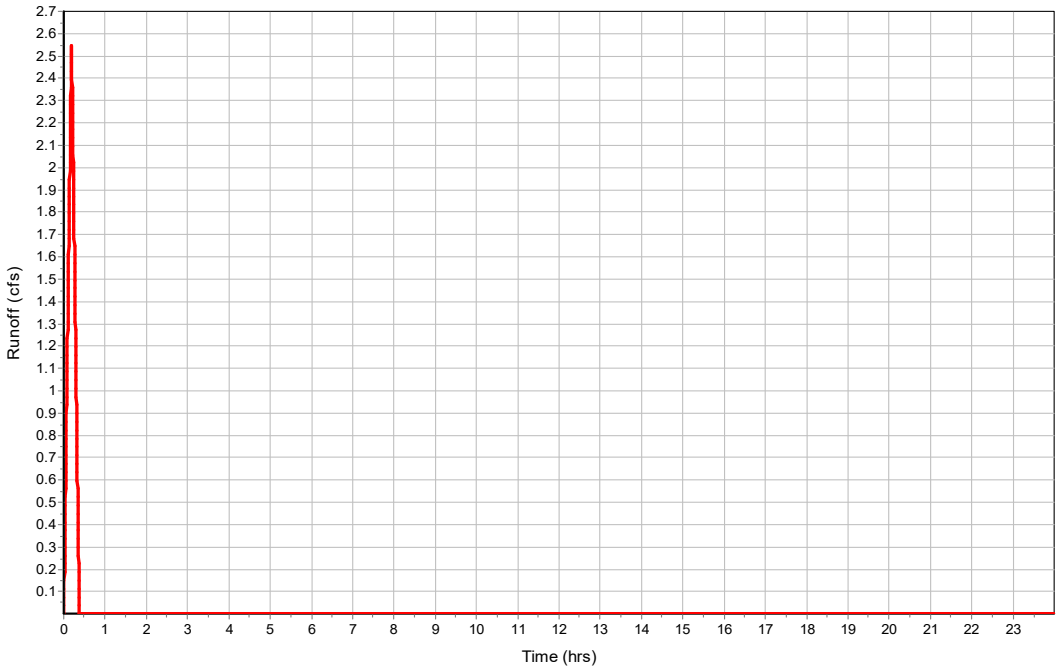
Total TOC (min) 11.32

Subbasin Runoff Results

Total Rainfall (in)	1.39
Total Runoff (in)	0.38
Peak Runoff (cfs)	2.54
Rainfall Intensity	7.345
Weighted Runoff Coefficient	0.27
Time of Concentration (days hh:mm:ss)	0 00:11:19

Subbasin : D-E1

Runoff Hydrograph



Subbasin : D-E2

Input Data

Area (ac)	0.8
Weighted Runoff Coefficient	0.41

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.62	-	0.25
-	0.18	-	0.95
Composite Area & Weighted Runoff Coeff.	0.8		0.41

Time of Concentration

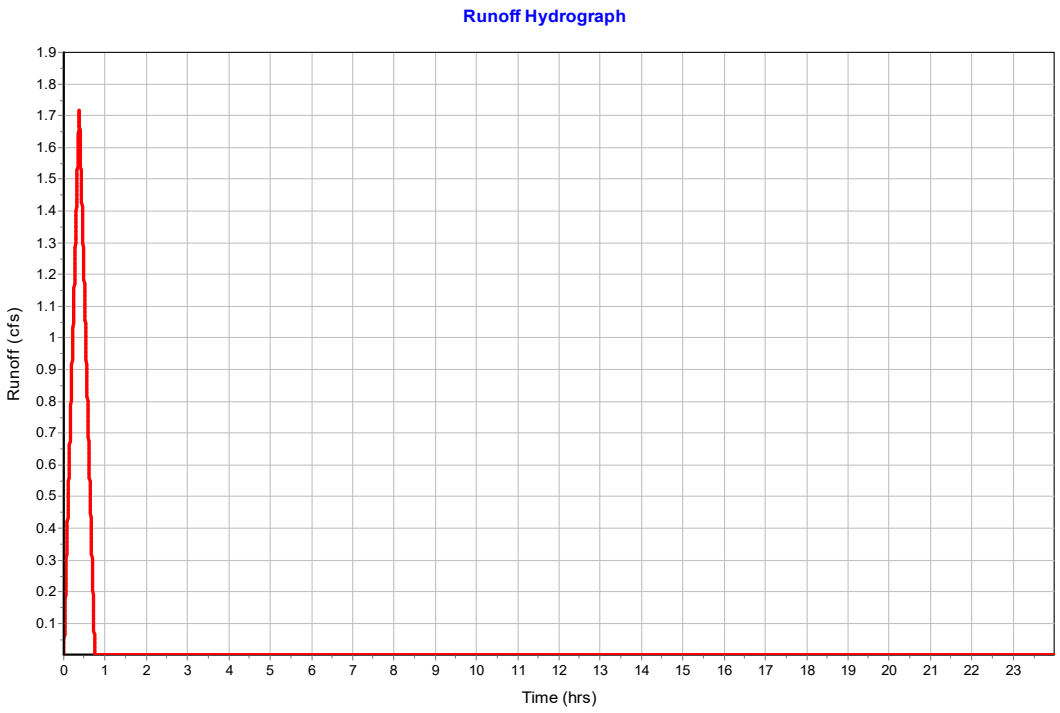
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	350	0	0
Slope (%) :	3.6	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.26	0	0
Computed Flow Time (min) :	22.48	0	0

Total TOC (min) 22.48

Subbasin Runoff Results

Total Rainfall (in)	1.97
Total Runoff (in)	0.81
Peak Runoff (cfs)	1.72
Rainfall Intensity	5.258
Weighted Runoff Coefficient	0.41
Time of Concentration (days hh:mm:ss)	0 00:22:29

Subbasin : D-E2



Subbasin : E1.1

Input Data

Area (ac)	0.31
Weighted Runoff Coefficient	0.32

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.28	-	0.25
-	0.03	-	0.95
Composite Area & Weighted Runoff Coeff.	0.31		0.32

Time of Concentration

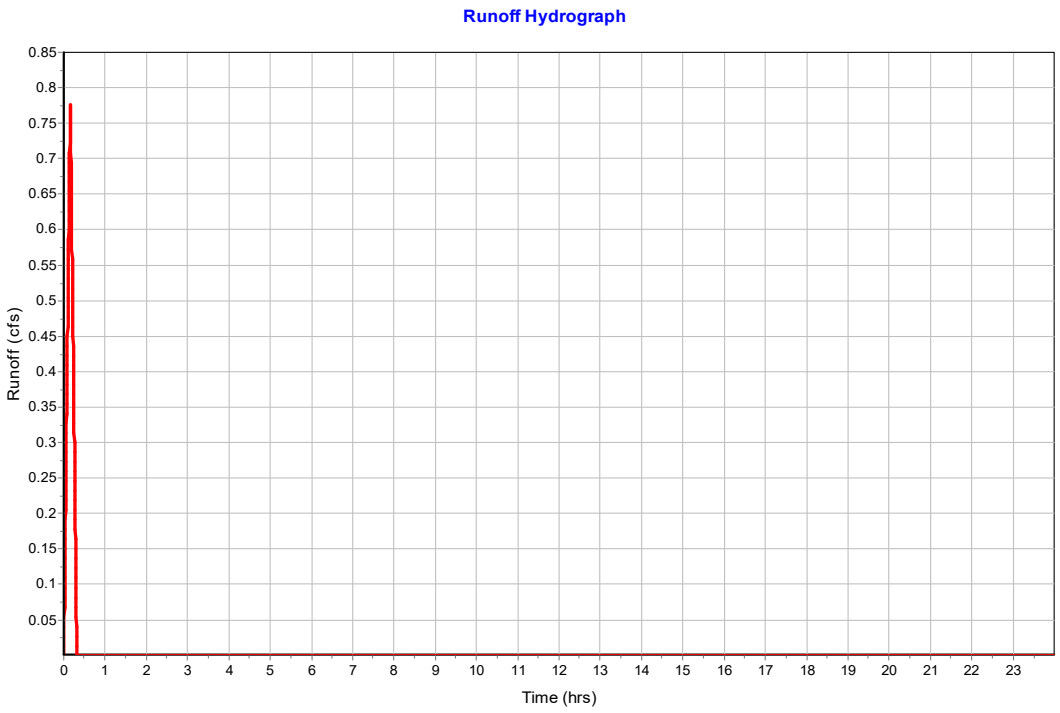
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	280	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.49	0	0
Computed Flow Time (min) :	9.47	0	0

Total TOC (min) 9.47

Subbasin Runoff Results

Total Rainfall (in)	1.25
Total Runoff (in)	0.4
Peak Runoff (cfs)	0.78
Rainfall Intensity	7.906
Weighted Runoff Coefficient	0.32
Time of Concentration (days hh:mm:ss)	0 00:09:28

Subbasin : E1.1



Subbasin : E2.1

Input Data

Area (ac)	0.4
Weighted Runoff Coefficient	0.37

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.33	-	0.25
-	0.07	-	0.95
Composite Area & Weighted Runoff Coeff.	0.4		0.37

Time of Concentration

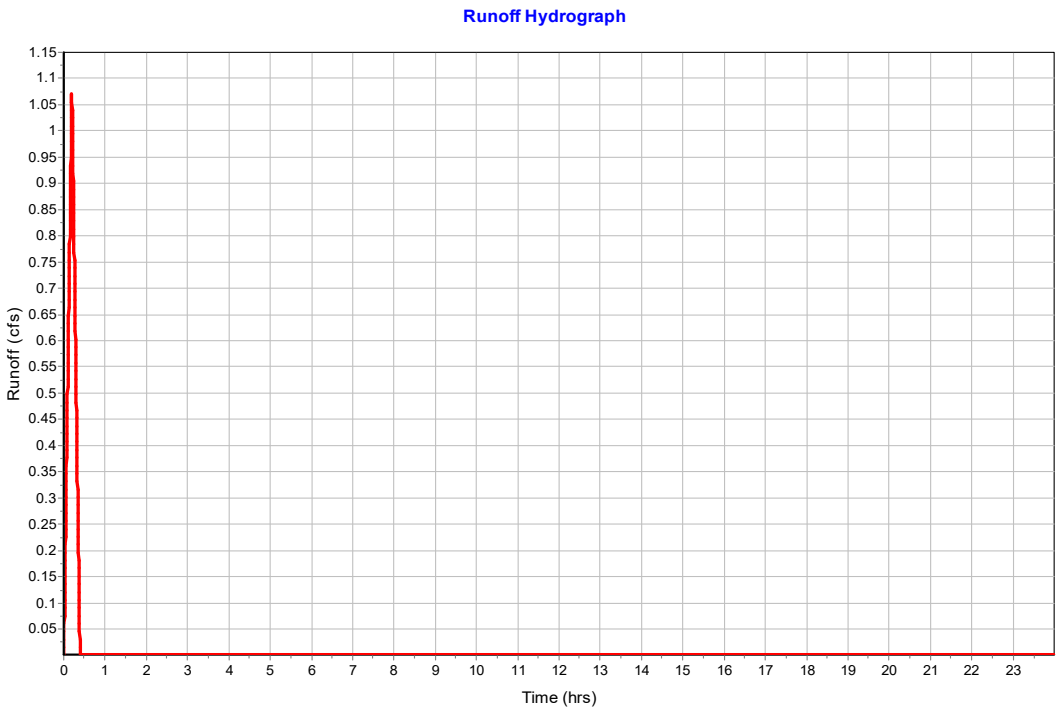
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	370	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.52	0	0
Computed Flow Time (min) :	11.84	0	0

Total TOC (min) 11.84

Subbasin Runoff Results

Total Rainfall (in)	1.42
Total Runoff (in)	0.53
Peak Runoff (cfs)	1.07
Rainfall Intensity	7.21
Weighted Runoff Coefficient	0.37
Time of Concentration (days hh:mm:ss)	0 00:11:50

Subbasin : E2.1



Subbasin : E2.2

Input Data

Area (ac)	0.08
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.08	-	0.95
Composite Area & Weighted Runoff Coeff.	0.08		0.95

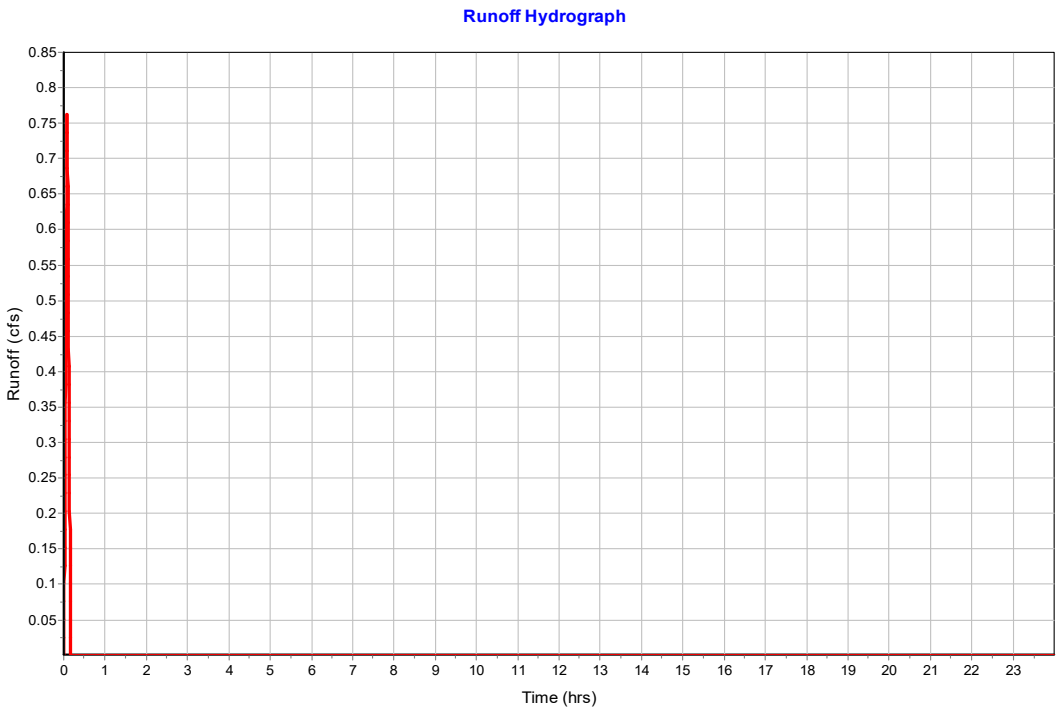
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.76
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : E2.2



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Subbasin : E4.1

Input Data

Area (ac)	0.63
Weighted Runoff Coefficient	0.38

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.52	-	0.25
-	0.11	-	0.95
Composite Area & Weighted Runoff Coeff.	0.63		0.38

Time of Concentration

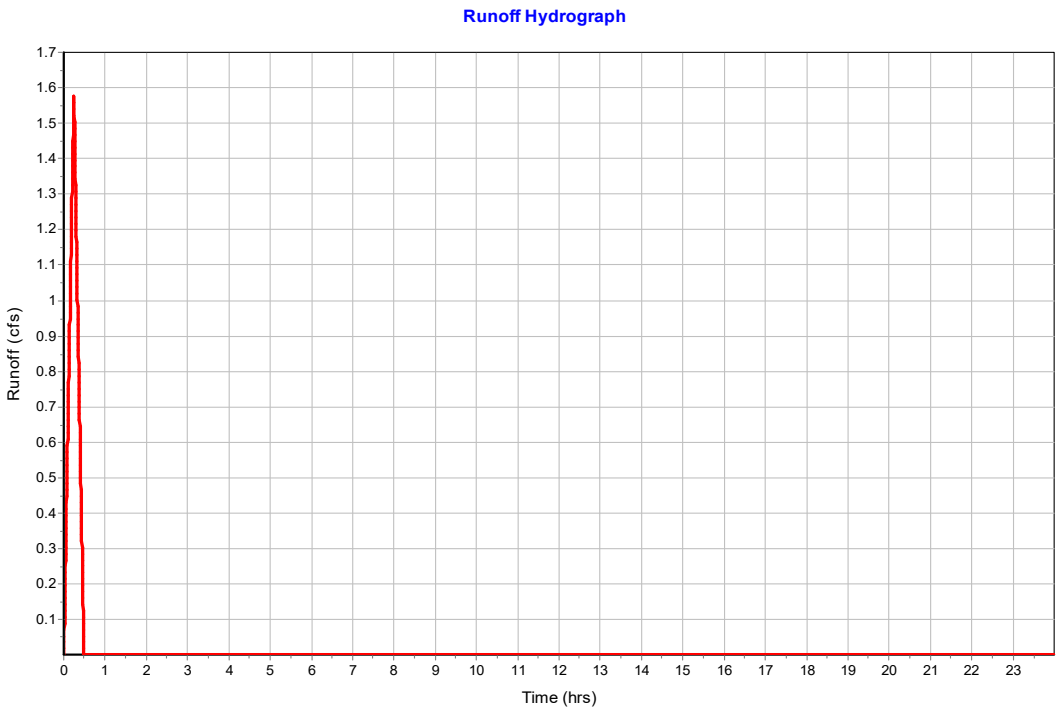
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	370	0	0
Slope (%) :	11.7	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.42	0	0
Computed Flow Time (min) :	14.67	0	0

Total TOC (min) 14.67

Subbasin Runoff Results

Total Rainfall (in)	1.61
Total Runoff (in)	0.61
Peak Runoff (cfs)	1.58
Rainfall Intensity	6.6
Weighted Runoff Coefficient	0.38
Time of Concentration (days hh:mm:ss)	0 00:14:40

Subbasin : E4.1



Subbasin : E4.2

Input Data

Area (ac)	0.05
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0	-	0.25
-	0.05	-	0.95
Composite Area & Weighted Runoff Coeff.	0.05		0.95

Time of Concentration

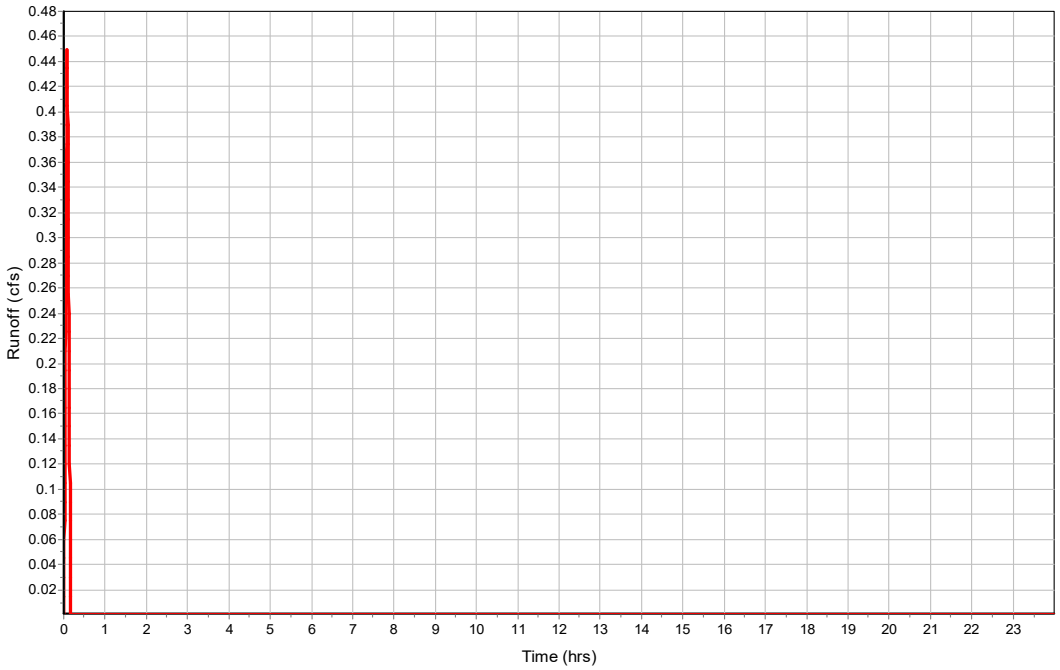
User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.45
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : E4.2

Runoff Hydrograph



Subbasin : E5.1

Input Data

Area (ac)	0.71
Weighted Runoff Coefficient	0.29

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.68	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	0.72		0.29

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	325	0	0
Slope (%) :	14.8	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.45	0	0
Computed Flow Time (min) :	12.04	0	0

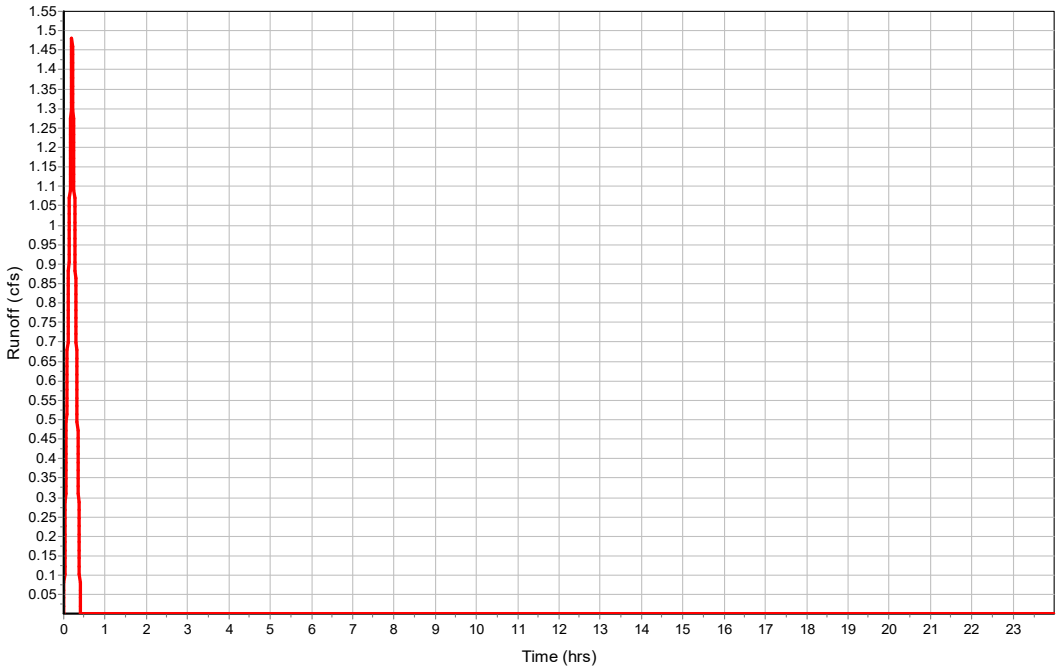
Total TOC (min) 12.04

Subbasin Runoff Results

Total Rainfall (in)	1.43
Total Runoff (in)	0.42
Peak Runoff (cfs)	1.48
Rainfall Intensity	7.161
Weighted Runoff Coefficient	0.29
Time of Concentration (days hh:mm:ss)	0 00:12:02

Subbasin : E5.1

Runoff Hydrograph



Subbasin : E5.2

Input Data

Area (ac)	0.04
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	0.04		0.95

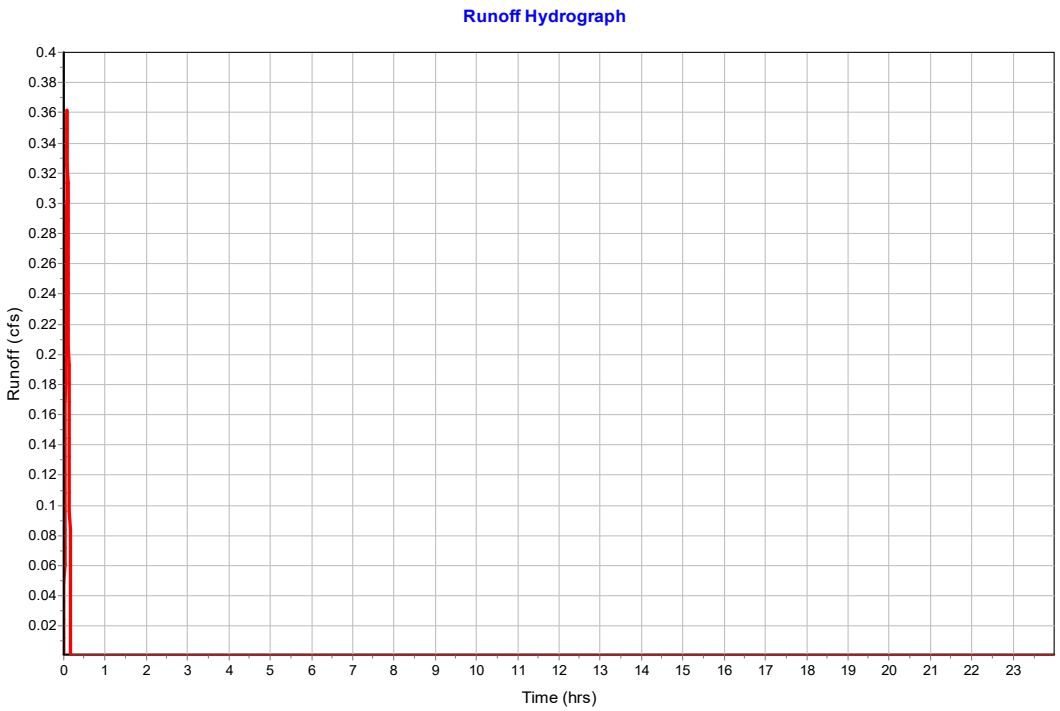
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.36
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : E5.2



COFFMAN ENGINEERS

Subbasin : E6.1

Input Data

Area (ac)	0.45
Weighted Runoff Coefficient	0.39

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.37	-	0.25
-	0.09	-	0.95
Composite Area & Weighted Runoff Coeff.	0.46		0.39

Time of Concentration

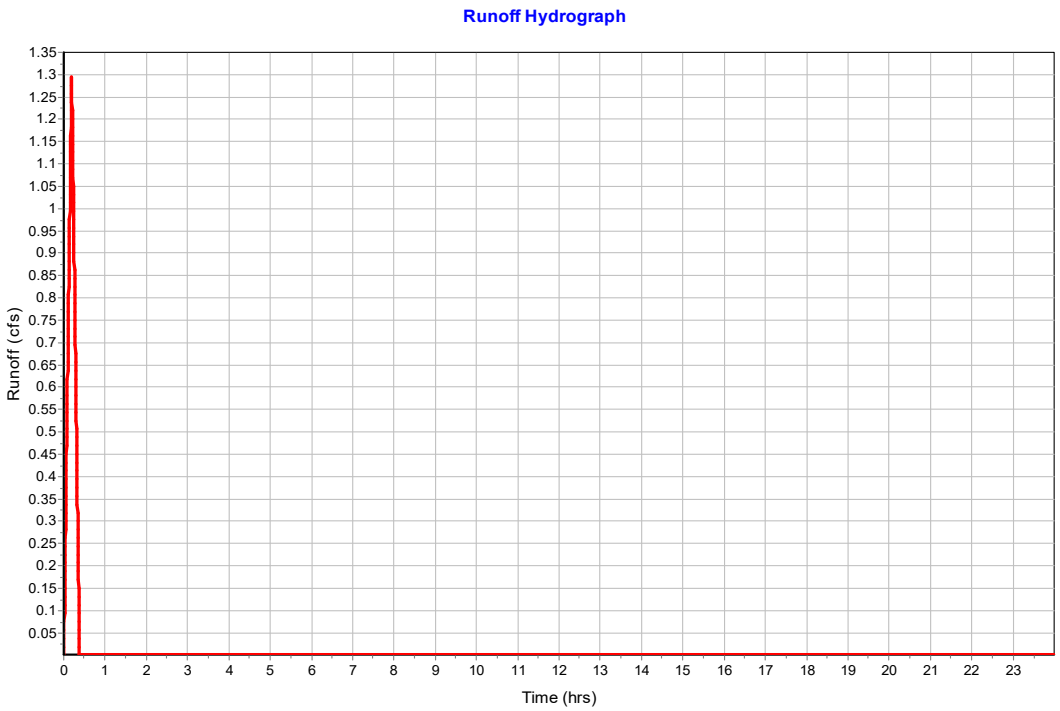
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	300	0	0
Slope (%) :	14.3	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.44	0	0
Computed Flow Time (min) :	11.45	0	0

Total TOC (min) 11.45

Subbasin Runoff Results

Total Rainfall (in)	1.4
Total Runoff (in)	0.55
Peak Runoff (cfs)	1.29
Rainfall Intensity	7.311
Weighted Runoff Coefficient	0.39
Time of Concentration (days hh:mm:ss)	0 00:11:27

Subbasin : E6.1



Subbasin : E8.1

Input Data

Area (ac)	0.68
Weighted Runoff Coefficient	0.32

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.62	-	0.25
-	0.06	-	0.95
Composite Area & Weighted Runoff Coeff.	0.68		0.32

Time of Concentration

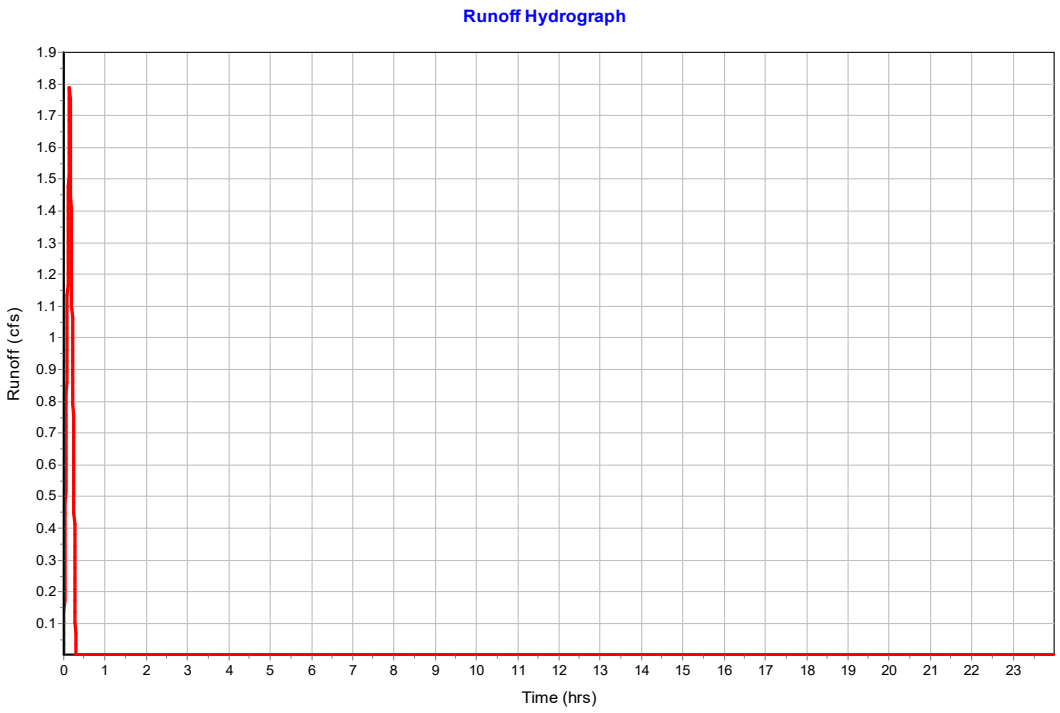
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	200	0	0
Slope (%) :	12.5	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.38	0	0
Computed Flow Time (min) :	8.73	0	0

Total TOC (min) 8.73

Subbasin Runoff Results

Total Rainfall (in)	1.18
Total Runoff (in)	0.38
Peak Runoff (cfs)	1.79
Rainfall Intensity	8.176
Weighted Runoff Coefficient	0.32
Time of Concentration (days hh:mm:ss)	0 00:08:44

Subbasin : E8.1



Subbasin : E8.2

Input Data

Area (ac)	0.05
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0	-	0.25
-	0.05	-	0.95
Composite Area & Weighted Runoff Coeff.	0.05		0.95

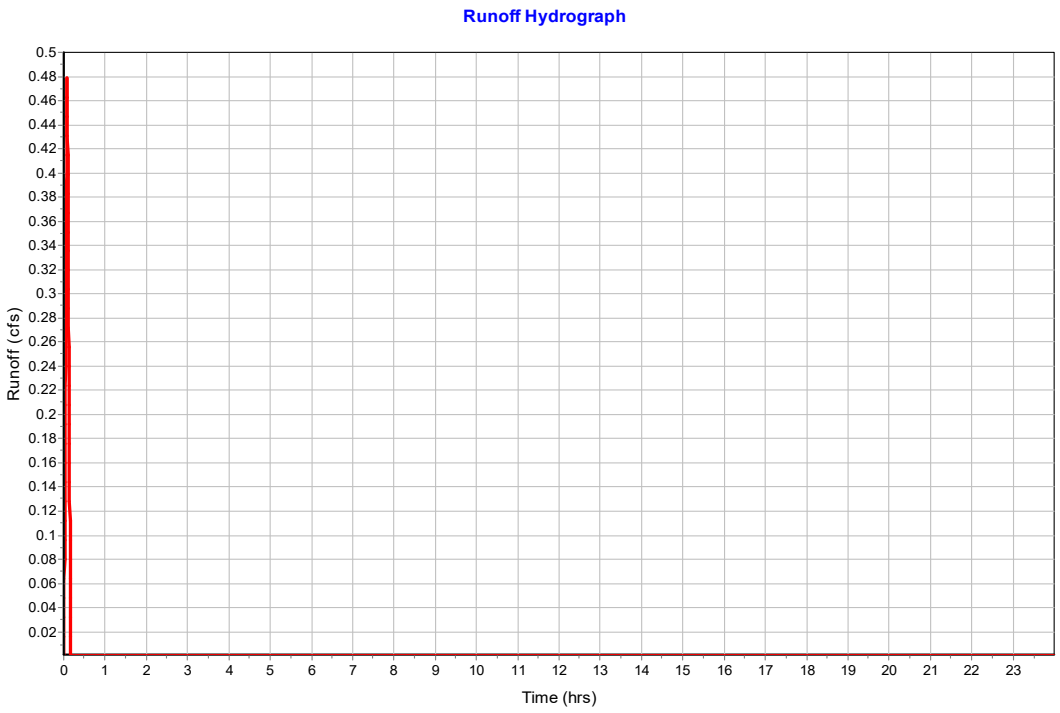
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.48
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : E8.2



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Subbasin : F1.1

Input Data

Area (ac)	0.22
Weighted Runoff Coefficient	0.55

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.13	-	0.25
-	0.1	-	0.95
Composite Area & Weighted Runoff Coeff.	0.23		0.55

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	230	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.47	0	0
Computed Flow Time (min) :	8.09	0	0

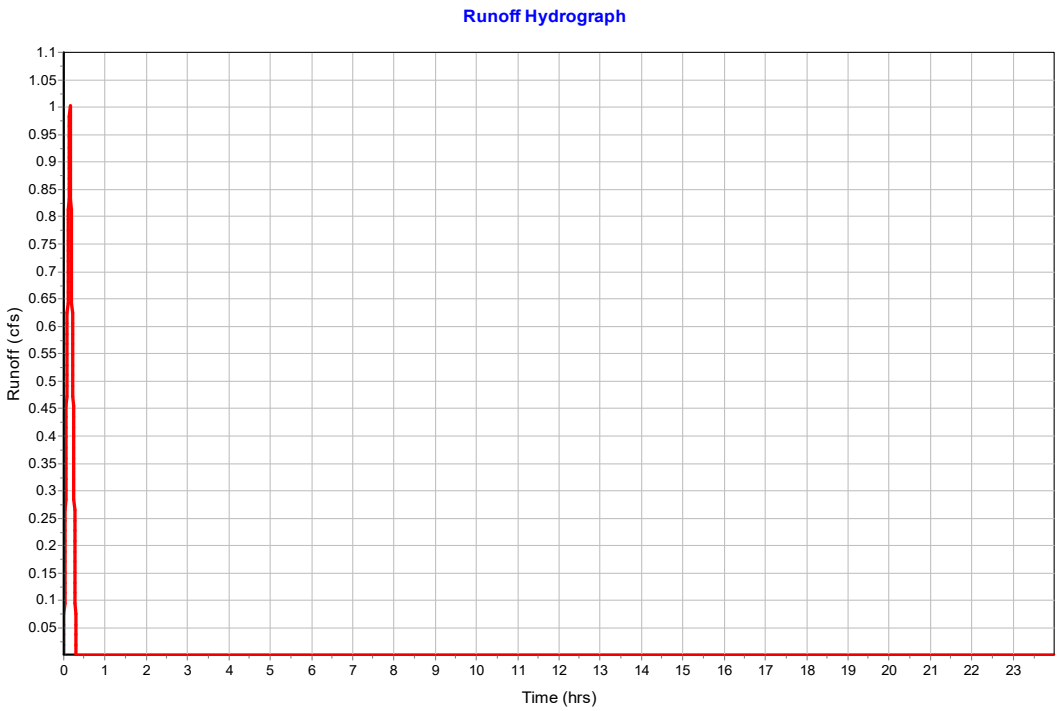
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.017	0	0
Flow Length (ft) :	210	0	0
Channel Slope (%) :	5.7	0	0
Cross Section Area (ft^2) :	0.2	0	0
Wetted Perimeter (ft) :	1.9	0	0
Velocity (ft/sec) :	4.67	0	0
Computed Flow Time (min) :	0.75	0	0

Total TOC (min) 8.84

Subbasin Runoff Results

Total Rainfall (in)	1.2
Total Runoff (in)	0.66
Peak Runoff (cfs)	1
Rainfall Intensity	8.134
Weighted Runoff Coefficient	0.55
Time of Concentration (days hh:mm:ss)	0 00:08:50

Subbasin : F1.1



Subbasin : F1.2

Input Data

Area (ac)	0.01
Weighted Runoff Coefficient	0.35

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.66	-	0.25
-	0.11	-	0.95
Composite Area & Weighted Runoff Coeff.	0.77		0.35

Time of Concentration

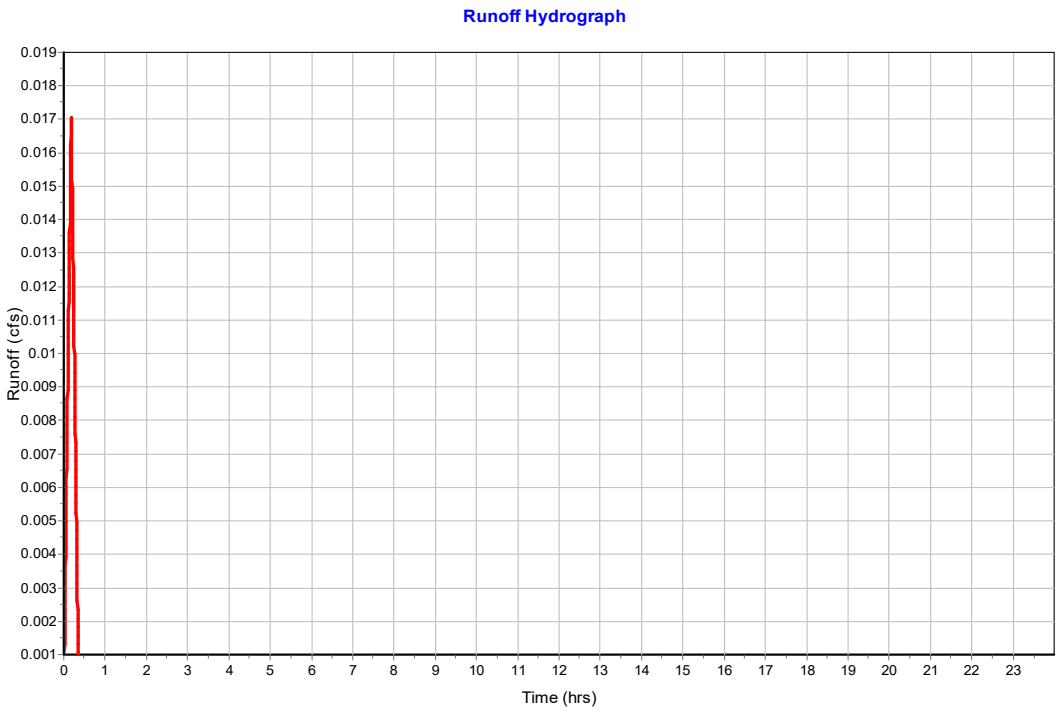
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	290	0	0
Slope (%) :	15.4	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.45	0	0
Computed Flow Time (min) :	10.81	0	0

Total TOC (min) 10.81

Subbasin Runoff Results

Total Rainfall (in)	1.35
Total Runoff (in)	0.47
Peak Runoff (cfs)	0.02
Rainfall Intensity	7.486
Weighted Runoff Coefficient	0.35
Time of Concentration (days hh:mm:ss)	0 00:10:49

Subbasin : F1.2



Subbasin : F3.1

Input Data

Area (ac)	0.56
Weighted Runoff Coefficient	0.3

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.52	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	0.56		0.3

Time of Concentration

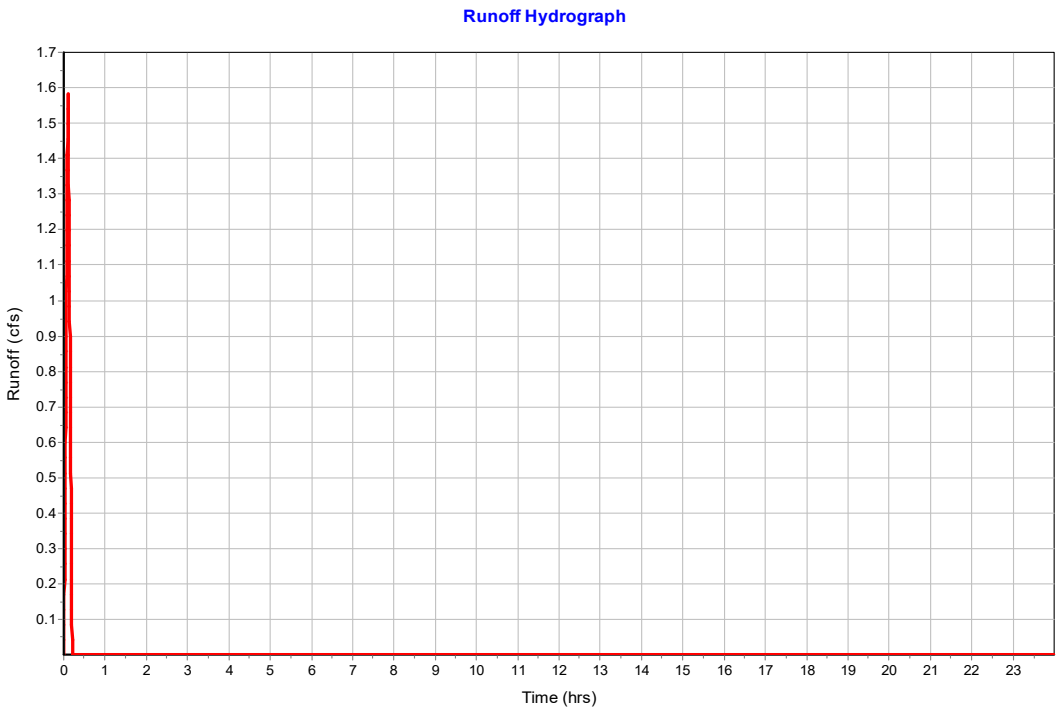
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	165	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.44	0	0
Computed Flow Time (min) :	6.2	0	0

Total TOC (min) 6.20

Subbasin Runoff Results

Total Rainfall (in)	0.97
Total Runoff (in)	0.29
Peak Runoff (cfs)	1.58
Rainfall Intensity	9.416
Weighted Runoff Coefficient	0.3
Time of Concentration (days hh:mm:ss)	0 00:06:12

Subbasin : F3.1



Subbasin : F3.2

Input Data

Area (ac)	0.04
Weighted Runoff Coefficient	0.95

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0	-	0.25
-	0.04	-	0.95
Composite Area & Weighted Runoff Coeff.	0.04		0.95

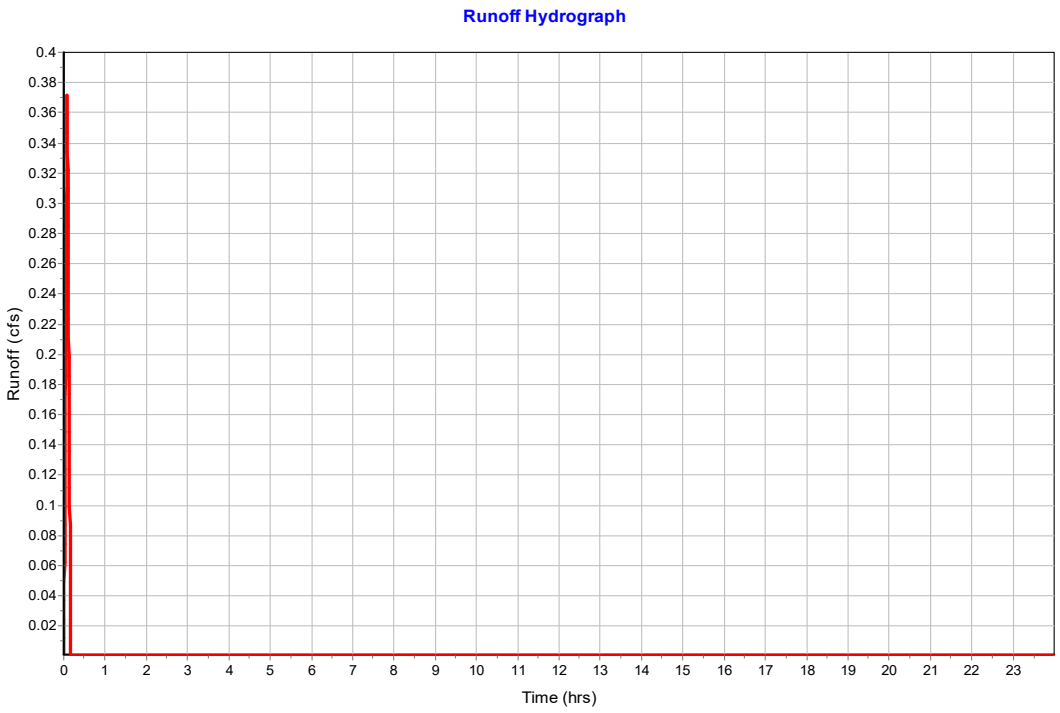
Time of Concentration

User-Defined TOC override (minutes): 5

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.82
Peak Runoff (cfs)	0.37
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.95
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : F3.2



Subbasin : H_POND

Input Data

Area (ac)	1.57
Weighted Runoff Coefficient	0.4

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.57	-	0.4
Composite Area & Weighted Runoff Coeff.	1.57		0.4

Time of Concentration

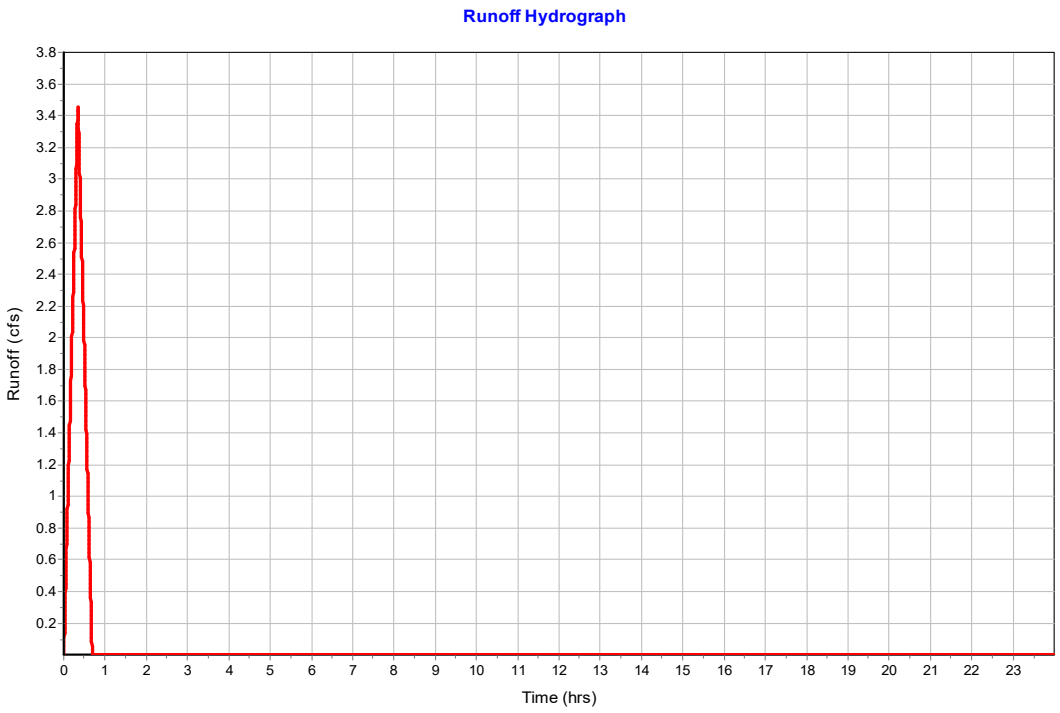
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	266	0	0
Slope (%) :	7.14	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.21	0	0
Computed Flow Time (min) :	20.65	0	0

Total TOC (min) 20.65

Subbasin Runoff Results

Total Rainfall (in)	1.9
Total Runoff (in)	0.76
Peak Runoff (cfs)	3.46
Rainfall Intensity	5.504
Weighted Runoff Coefficient	0.4
Time of Concentration (days hh:mm:ss)	0 00:20:39

Subbasin : H_POND



Subbasin : H2

Input Data

Area (ac)	0.26
Weighted Runoff Coefficient	0.4

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.26	-	0.4
Composite Area & Weighted Runoff Coeff.	0.26		0.4

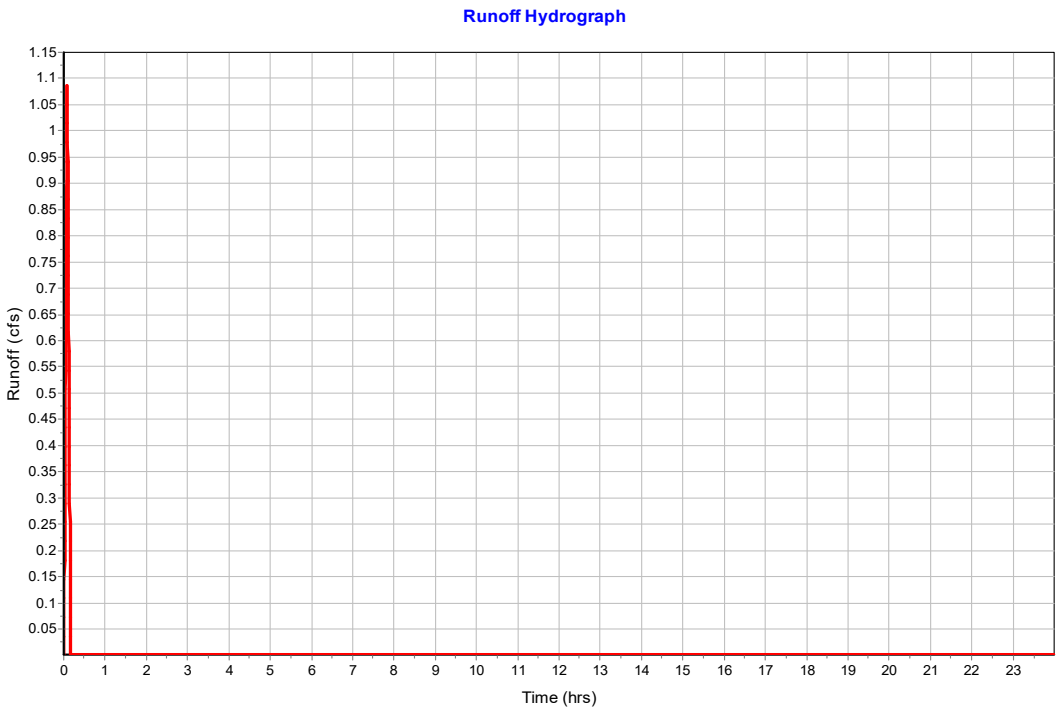
Time of Concentration

User-Defined TOC override (minutes): 5.00

Subbasin Runoff Results

Total Rainfall (in)	0.86
Total Runoff (in)	0.34
Peak Runoff (cfs)	1.09
Rainfall Intensity	10.29
Weighted Runoff Coefficient	0.4
Time of Concentration (days hh:mm:ss)	0 00:05:00

Subbasin : H2


Runoff Hydrograph
Runoff (cfs)
Time (hrs)
1.15
1.1
1.05
1
0.95
0.9
0.85
0.8
0.75
0.7
0.65
0.6
0.55
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

COFFMAN ENGINEERS

Subbasin : H-3

Input Data

Area (ac)	1.3
Weighted Runoff Coefficient	0.24

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.3	-	0.24
Composite Area & Weighted Runoff Coeff.	1.3		0.24

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	260	0	0
Slope (%) :	12	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.4	0	0
Computed Flow Time (min) :	10.95	0	0

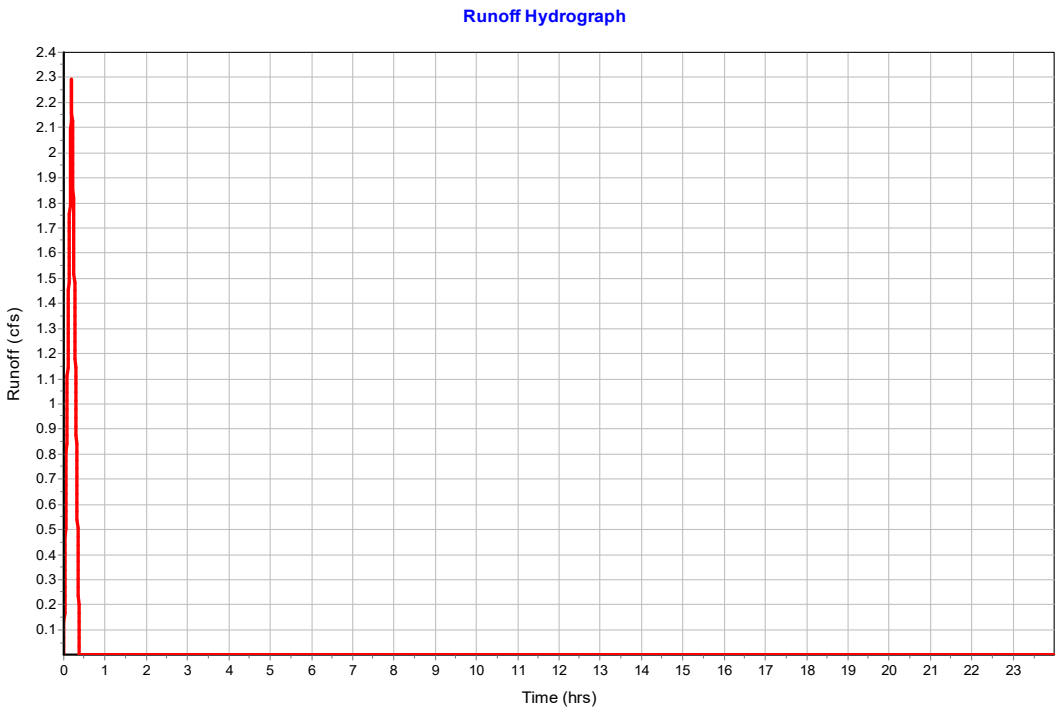
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.017	0	0
Flow Length (ft) :	90	0	0
Channel Slope (%) :	1	0	0
Cross Section Area (ft^2) :	1.2	0	0
Wetted Perimeter (ft) :	3.5	0	0
Velocity (ft/sec) :	4.29	0	0
Computed Flow Time (min) :	0.35	0	0

Total TOC (min) 11.30

Subbasin Runoff Results

Total Rainfall (in)	1.39
Total Runoff (in)	0.33
Peak Runoff (cfs)	2.29
Rainfall Intensity	7.351
Weighted Runoff Coefficient	0.24
Time of Concentration (days hh:mm:ss)	0 00:11:18

Subbasin : H-3


Runoff Hydrograph
Runoff (cfs)
Time (hrs)
2.4
2.3
2.2
2.1
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

COFFMAN ENGINEERS

Subbasin : MAUKA_NORTH

Input Data

Area (ac)	20.06
Weighted Runoff Coefficient	0.42

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	19.22	-	0.4
-	0.67	-	0.95
-	0.17	-	0.24
Composite Area & Weighted Runoff Coeff.	20.06		0.42

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	200	0	0
Slope (%) :	22.6	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.32	0	0
Computed Flow Time (min) :	10.37	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	668	0	0
Slope (%) :	20	0	0
Surface Type :	Woodland	Unpaved	Unpaved
Velocity (ft/sec) :	2.24	0	0
Computed Flow Time (min) :	4.97	0	0

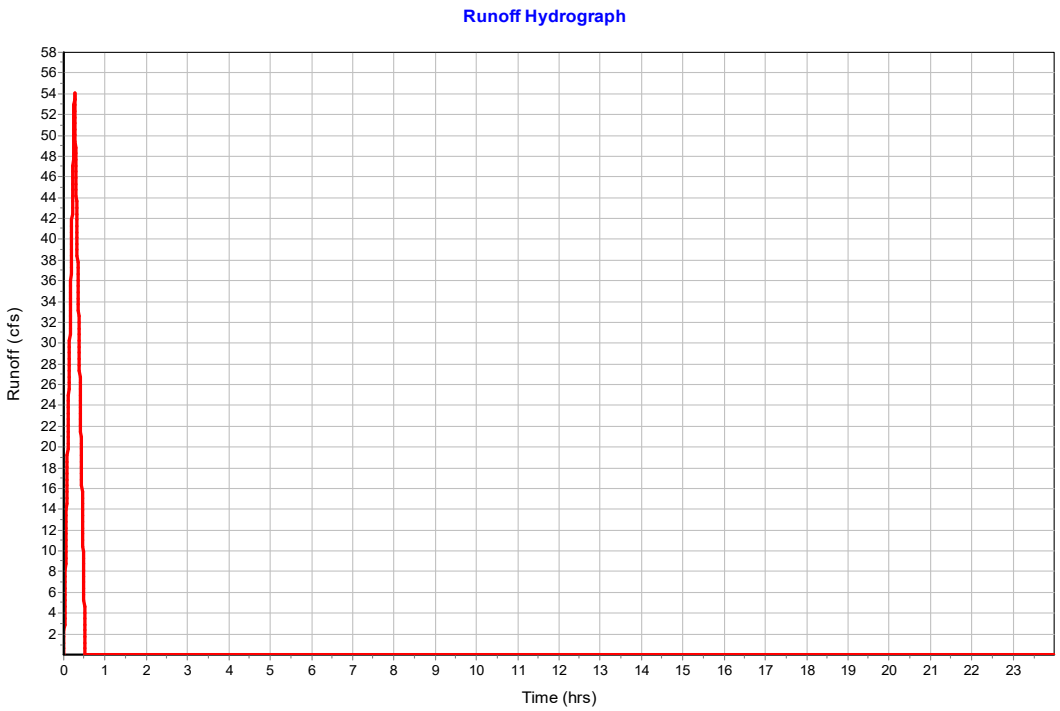
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.02	0	0
Flow Length (ft) :	680	0	0
Channel Slope (%) :	16.64	0	0
Cross Section Area (ft^2) :	52.5	0	0
Wetted Perimeter (ft) :	19.18	0	0
Velocity (ft/sec) :	59.47	0	0
Computed Flow Time (min) :	0.19	0	0

Total TOC (min) 15.53

Subbasin Runoff Results

Total Rainfall (in)	1.66
Total Runoff (in)	0.7
Peak Runoff (cfs)	54.08
Rainfall Intensity	6.419
Weighted Runoff Coefficient	0.42
Time of Concentration (days hh:mm:ss)	0 00:15:32

Subbasin : MAUKA_NORTH



COFFMAN ENGINEERS

Subbasin : MAUKA_SOUTH

Input Data

Area (ac)	5.66
Weighted Runoff Coefficient	0.41

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	26.05	-	0.4
-	0.64	-	0.95
-	0.6	-	0.25
Composite Area & Weighted Runoff Coeff.	27.29		0.41

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	200	0	0
Slope (%) :	23	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.49	0	0
Computed Flow Time (min) :	6.84	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	630	0	0
Slope (%) :	20	0	0
Surface Type :	Woodland	Unpaved	Unpaved
Velocity (ft/sec) :	2.24	0	0
Computed Flow Time (min) :	4.69	0	0

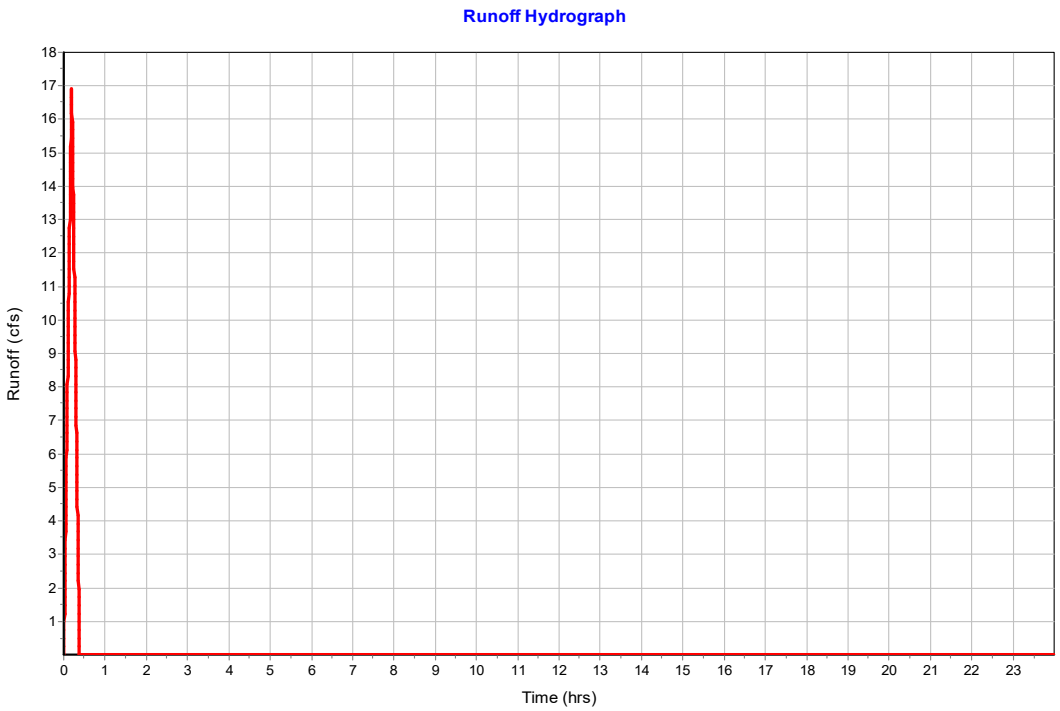
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.02	0	0
Flow Length (ft) :	34	0	0
Channel Slope (%) :	10	0	0
Cross Section Area (ft^2) :	52.5	0	0
Wetted Perimeter (ft) :	19.18	0	0
Velocity (ft/sec) :	46.1	0	0
Computed Flow Time (min) :	0.01	0	0

Total TOC (min) 11.54

Subbasin Runoff Results

Total Rainfall (in)	1.4
Total Runoff (in)	0.57
Peak Runoff (cfs)	16.91
Rainfall Intensity	7.287
Weighted Runoff Coefficient	0.41
Time of Concentration (days hh:mm:ss)	0 00:11:32

Subbasin : MAUKA_SOUTH



COFFMAN ENGINEERS

Subbasin : PRESERV_1

Input Data

Area (ac)	2.89
Weighted Runoff Coefficient	0.34

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	1.8	-	0.4
-	1.09	-	0.24
Composite Area & Weighted Runoff Coeff.	2.89		0.34

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	20	0	0
Slope (%) :	5	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.11	0	0
Computed Flow Time (min) :	3	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	339	0	0
Slope (%) :	5	0	0
Surface Type :	Woodland	Unpaved	Unpaved
Velocity (ft/sec) :	1.12	0	0
Computed Flow Time (min) :	5.04	0	0

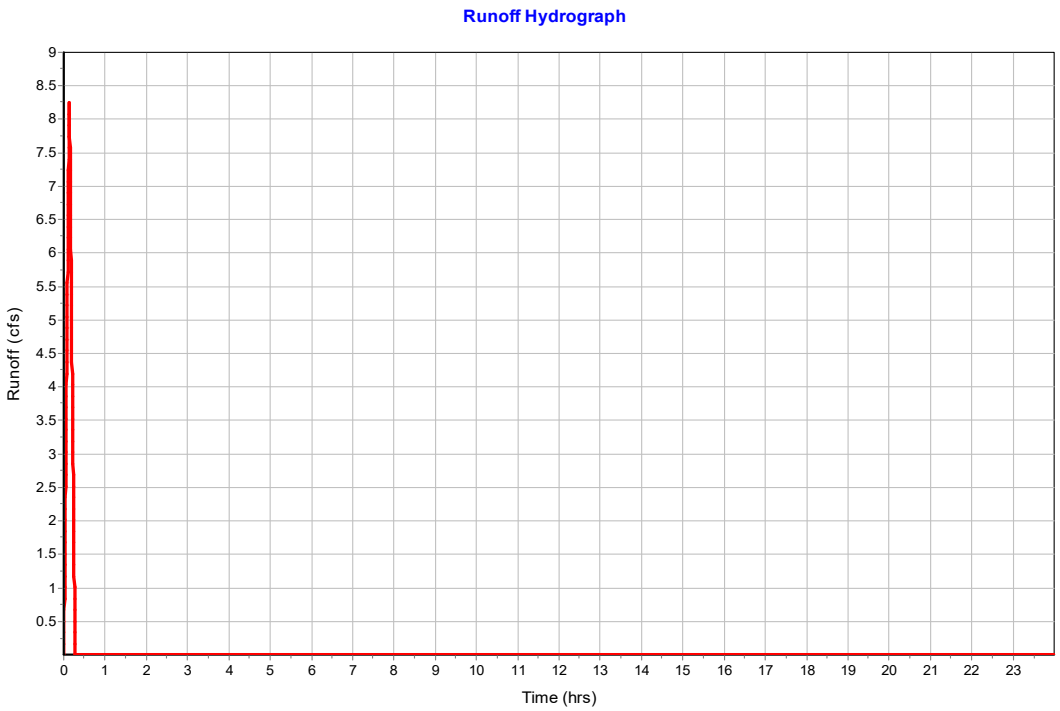
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.02	0	0
Flow Length (ft) :	84	0	0
Channel Slope (%) :	5	0	0
Cross Section Area (ft^2) :	3.5	0	0
Wetted Perimeter (ft) :	9	0	0
Velocity (ft/sec) :	8.88	0	0
Computed Flow Time (min) :	0.16	0	0

Total TOC (min) 8.21

Subbasin Runoff Results

Total Rainfall (in)	1.14
Total Runoff (in)	0.39
Peak Runoff (cfs)	8.24
Rainfall Intensity	8.386
Weighted Runoff Coefficient	0.34
Time of Concentration (days hh:mm:ss)	0 00:08:13

Subbasin : PRESERV_1



COFFMAN ENGINEERS

Subbasin : PRESERV_2

Input Data

Area (ac)	1.1
Weighted Runoff Coefficient	0.33

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.64	-	0.4
-	0.46	-	0.24
Composite Area & Weighted Runoff Coeff.	1.1		0.33

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	200	0	0
Slope (%) :	7.6	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.21	0	0
Computed Flow Time (min) :	16.03	0	0

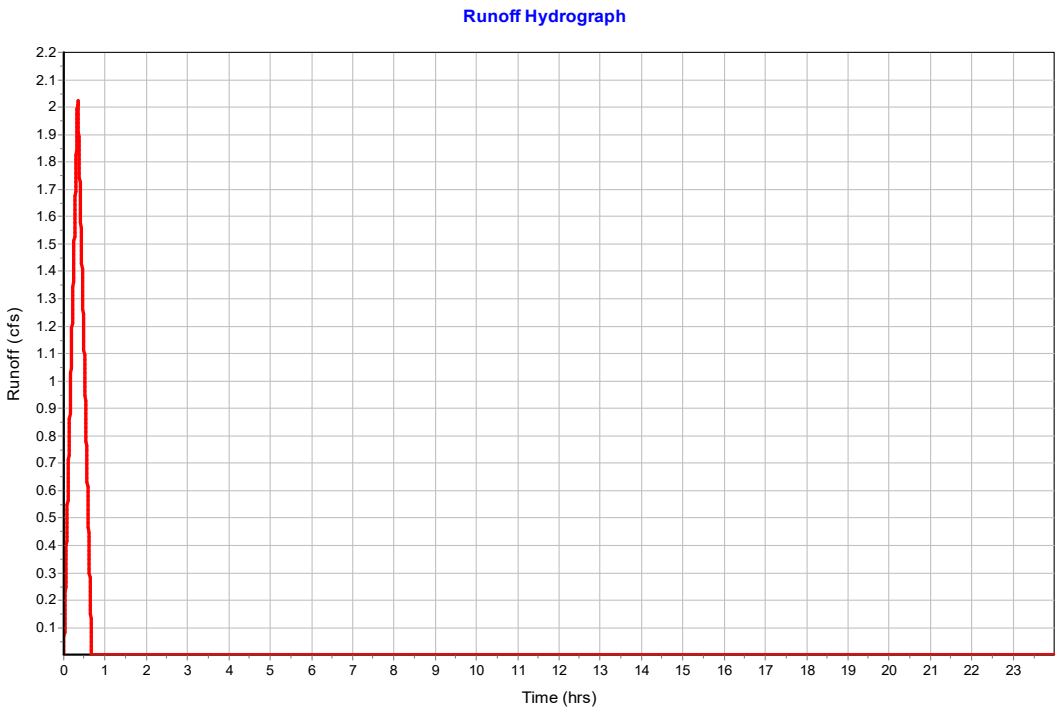
Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	93	148	0
Slope (%) :	4.26	3.3	0
Surface Type :	Woodland	Woodland	Unpaved
Velocity (ft/sec) :	1.03	0.91	0
Computed Flow Time (min) :	1.5	2.71	0

Total TOC (min) 20.25

Subbasin Runoff Results

Total Rainfall (in)	1.89
Total Runoff (in)	0.62
Peak Runoff (cfs)	2.03
Rainfall Intensity	5.563
Weighted Runoff Coefficient	0.33
Time of Concentration (days hh:mm:ss)	0 00:20:15

Subbasin : PRESERV_2



COFFMAN ENGINEERS

Subbasin : PRESERV_3

Input Data

Area (ac)	3.81
Weighted Runoff Coefficient	0.36

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	2.91	-	0.4
-	0.9	-	0.24
Composite Area & Weighted Runoff Coeff.	3.81		0.36

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.4	0.4
Flow Length (ft) :	100	100	100
Slope (%) :	12.5	12.8	14.7
2 yr, 24 hr Rainfall (in) :	5.98	5.98	5.98
Velocity (ft/sec) :	0.22	0.22	0.24
Computed Flow Time (min) :	7.55	7.48	7.07

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	160	600	0
Slope (%) :	13.2	3.94	0
Surface Type :	Woodland	Unpaved	Unpaved
Velocity (ft/sec) :	1.82	3.2	0
Computed Flow Time (min) :	1.47	3.13	0

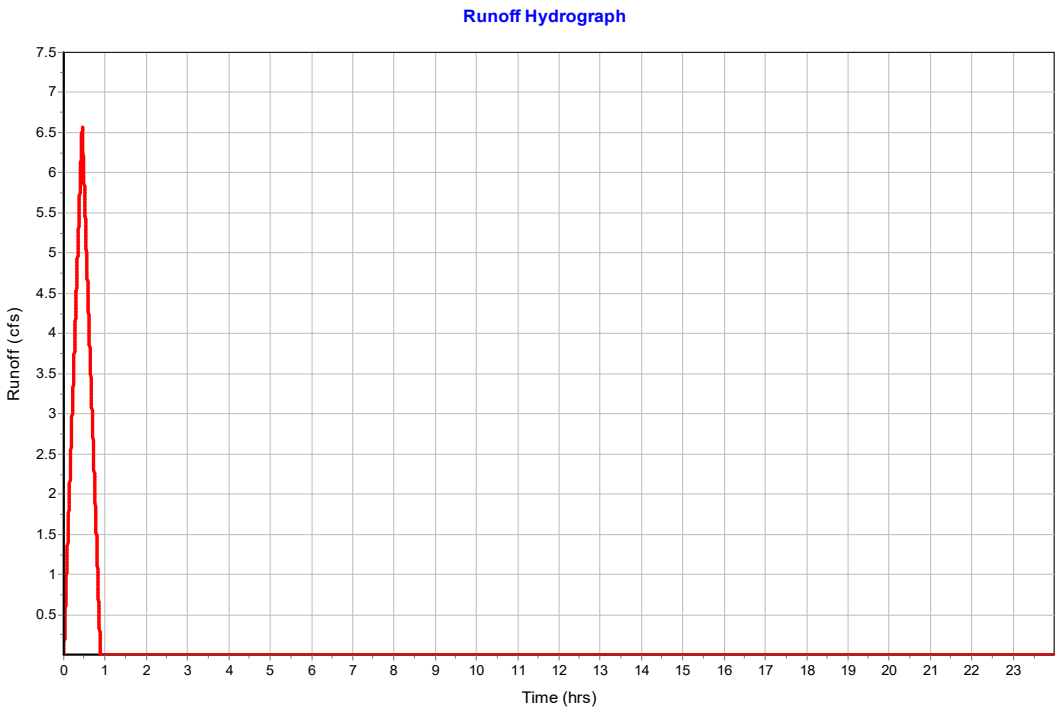
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.02	0	0
Flow Length (ft) :	20	0	0
Channel Slope (%) :	20	0	0
Cross Section Area (ft^2) :	3.5	0	0
Wetted Perimeter (ft) :	9	0	0
Velocity (ft/sec) :	17.75	0	0
Computed Flow Time (min) :	0.02	0	0

Total TOC (min) 26.71

Subbasin Runoff Results

Total Rainfall (in)	2.13
Total Runoff (in)	0.77
Peak Runoff (cfs)	6.57
Rainfall Intensity	4.791
Weighted Runoff Coefficient	0.36
Time of Concentration (days hh:mm:ss)	0 00:26:43

Subbasin : PRESERV_3



COFFMAN ENGINEERS

Subbasin : PRESERV_4

Input Data

Area (ac)	0.44
Weighted Runoff Coefficient	0.4

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.44	-	0.4
Composite Area & Weighted Runoff Coeff.	0.44		0.4

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	200	0	0
Slope (%) :	6.67	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.2	0	0
Computed Flow Time (min) :	16.89	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	68	0	0
Slope (%) :	6.67	0	0
Surface Type :	Grass pasture	Unpaved	Unpaved
Velocity (ft/sec) :	1.81	0	0
Computed Flow Time (min) :	0.63	0	0

Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.02	0	0
Flow Length (ft) :	38	0	0
Channel Slope (%) :	20	0	0
Cross Section Area (ft^2) :	3.5	0	0
Wetted Perimeter (ft) :	9	0	0
Velocity (ft/sec) :	17.75	0	0
Computed Flow Time (min) :	0.04	0	0

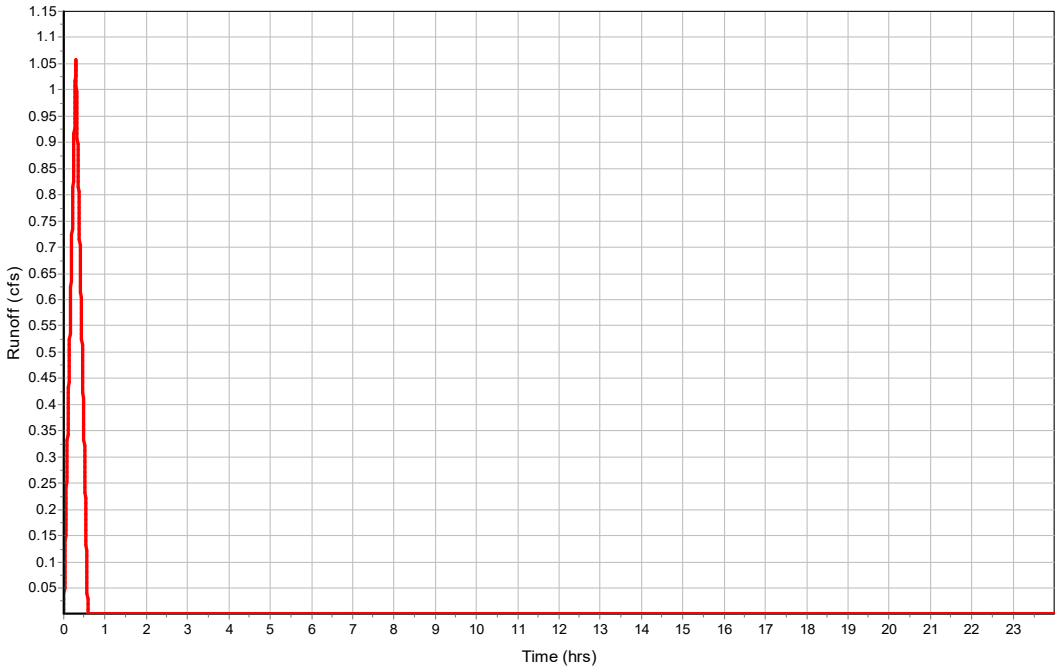
Total TOC (min) 17.56

Subbasin Runoff Results

Total Rainfall (in)	1.75
Total Runoff (in)	0.7
Peak Runoff (cfs)	1.06
Rainfall Intensity	6.007
Weighted Runoff Coefficient	0.4
Time of Concentration (days hh:mm:ss)	0 00:17:34

Subbasin : PRESERV_4

Runoff Hydrograph



Subbasin : PRESERV_5

Input Data

Area (ac)	0.17
Weighted Runoff Coefficient	0.24

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.17	-	0.24
Composite Area & Weighted Runoff Coeff.	0.17		0.24

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	200	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.46	0	0
Computed Flow Time (min) :	7.24	0	0

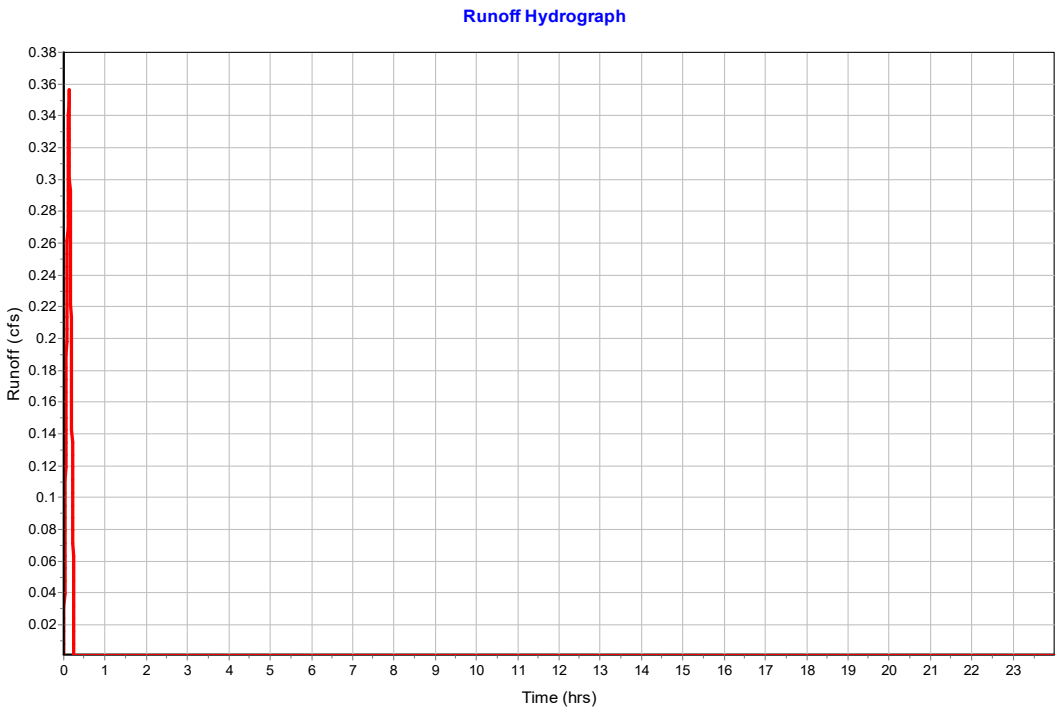
Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	40	0	0
Slope (%) :	20	0	0
Surface Type :	Grass pasture	Unpaved	Unpaved
Velocity (ft/sec) :	3.13	0	0
Computed Flow Time (min) :	0.21	0	0

Total TOC (min) 7.45

Subbasin Runoff Results

Total Rainfall (in)	1.09
Total Runoff (in)	0.26
Peak Runoff (cfs)	0.36
Rainfall Intensity	8.729
Weighted Runoff Coefficient	0.24
Time of Concentration (days hh:mm:ss)	0 00:07:27

Subbasin : PRESERV_5



COFFMAN ENGINEERS

Subbasin : PRESERV_6

Input Data

Area (ac)	0.42
Weighted Runoff Coefficient	0.24

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.42	-	0.24
Composite Area & Weighted Runoff Coeff.	0.42		0.24

Time of Concentration

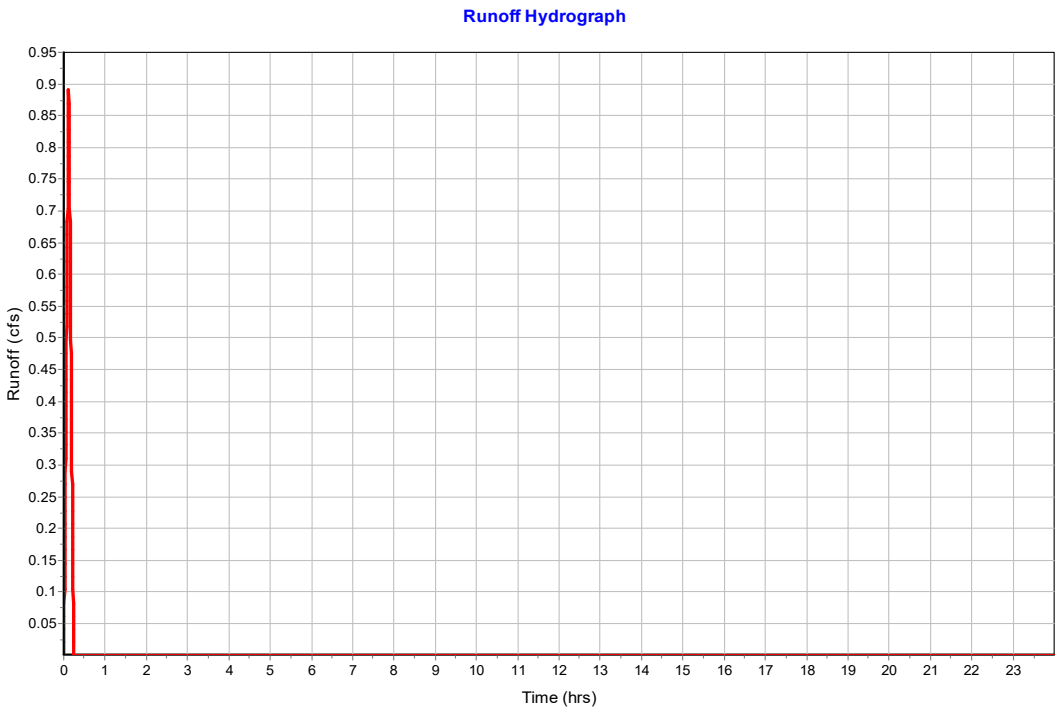
Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.24	0	0
Flow Length (ft) :	200	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.46	0	0
Computed Flow Time (min) :	7.24	0	0

Total TOC (min) 7.24

Subbasin Runoff Results

Total Rainfall (in)	1.06
Total Runoff (in)	0.25
Peak Runoff (cfs)	0.89
Rainfall Intensity	8.833
Weighted Runoff Coefficient	0.24
Time of Concentration (days hh:mm:ss)	0 00:07:14

Subbasin : PRESERV_6



COFFMAN ENGINEERS

Subbasin : PRESERV_7

Input Data

Area (ac)	9.79
Weighted Runoff Coefficient	0.4

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	9.79	-	0.4
Composite Area & Weighted Runoff Coeff.	9.79		0.4

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.4	0.4
Flow Length (ft) :	100	100	100
Slope (%) :	90	80	70
2 yr, 24 hr Rainfall (in) :	5.98	5.98	5.98
Velocity (ft/sec) :	0.49	0.46	0.44
Computed Flow Time (min) :	3.43	3.59	3.79

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	991	0	0
Slope (%) :	40	0	0
Surface Type :	Woodland	Unpaved	Unpaved
Velocity (ft/sec) :	3.16	0	0
Computed Flow Time (min) :	5.23	0	0

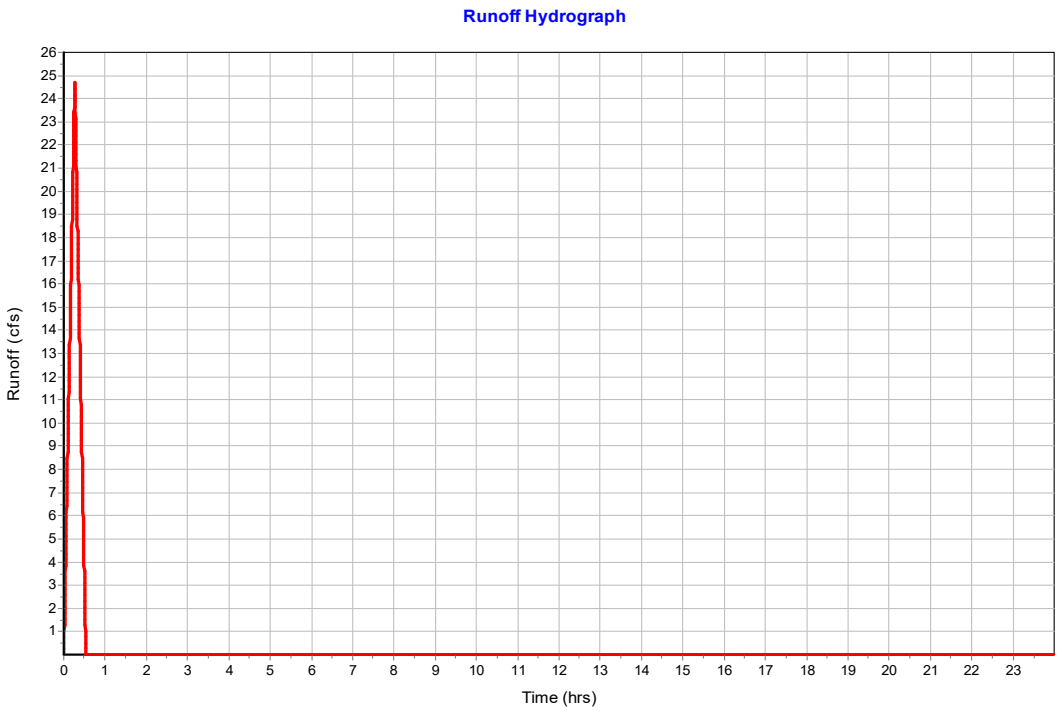
Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.02	0	0
Flow Length (ft) :	20	0	0
Channel Slope (%) :	15	0	0
Cross Section Area (ft^2) :	3.5	0	0
Wetted Perimeter (ft) :	9	0	0
Velocity (ft/sec) :	15.37	0	0
Computed Flow Time (min) :	0.02	0	0

Total TOC (min) 16.06

Subbasin Runoff Results

Total Rainfall (in)	1.68
Total Runoff (in)	0.67
Peak Runoff (cfs)	24.69
Rainfall Intensity	6.304
Weighted Runoff Coefficient	0.4
Time of Concentration (days hh:mm:ss)	0 00:16:04

Subbasin : PRESERV_7



COFFMAN ENGINEERS

Subbasin : PRESERV_8

Input Data

Area (ac)	6.24
Weighted Runoff Coefficient	0.4

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	6.24	-	0.4
Composite Area & Weighted Runoff Coeff.	6.24		0.4

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0	0
Flow Length (ft) :	200	0	0
Slope (%) :	20	0	0
2 yr, 24 hr Rainfall (in) :	5.98	0	0
Velocity (ft/sec) :	0.31	0	0
Computed Flow Time (min) :	10.89	0	0

Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	450	50	0
Slope (%) :	20	1.67	0
Surface Type :	Woodland	Woodland	Unpaved
Velocity (ft/sec) :	2.24	0.65	0
Computed Flow Time (min) :	3.35	1.28	0

Channel Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.02	0	0
Flow Length (ft) :	20	0	0
Channel Slope (%) :	15	0	0
Cross Section Area (ft^2) :	3.5	0	0
Wetted Perimeter (ft) :	9	0	0
Velocity (ft/sec) :	15.37	0	0
Computed Flow Time (min) :	0.02	0	0

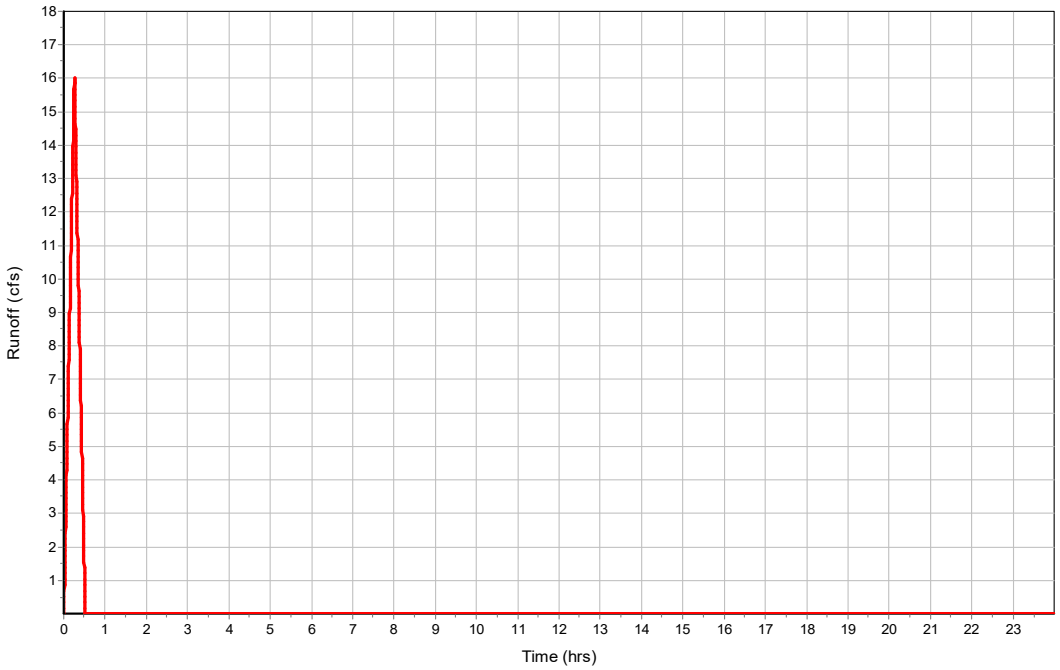
Total TOC (min) 15.54

Subbasin Runoff Results

Total Rainfall (in)	1.66
Total Runoff (in)	0.66
Peak Runoff (cfs)	16.02
Rainfall Intensity	6.416
Weighted Runoff Coefficient	0.4
Time of Concentration (days hh:mm:ss)	0 00:15:32

Subbasin : PRESERV_8

Runoff Hydrograph



Subbasin : PRESERV_9

Input Data

Area (ac)	1.09
Weighted Runoff Coefficient	0.31

Runoff Coefficient

Soil/Surface Description	Area (acres)	Soil Group	Runoff Coeff.
-	0.6	-	0.24
-	0.49	-	0.4
Composite Area & Weighted Runoff Coeff.	1.09		0.31

Time of Concentration

Sheet Flow Computations	Subarea A	Subarea B	Subarea C
Manning's Roughness :	0.4	0.4	0.4
Flow Length (ft) :	100	100	100
Slope (%) :	5.3	12	10.2
2 yr, 24 hr Rainfall (in) :	5.98	5.98	5.98
Velocity (ft/sec) :	0.16	0.22	0.2
Computed Flow Time (min) :	10.64	7.67	8.19

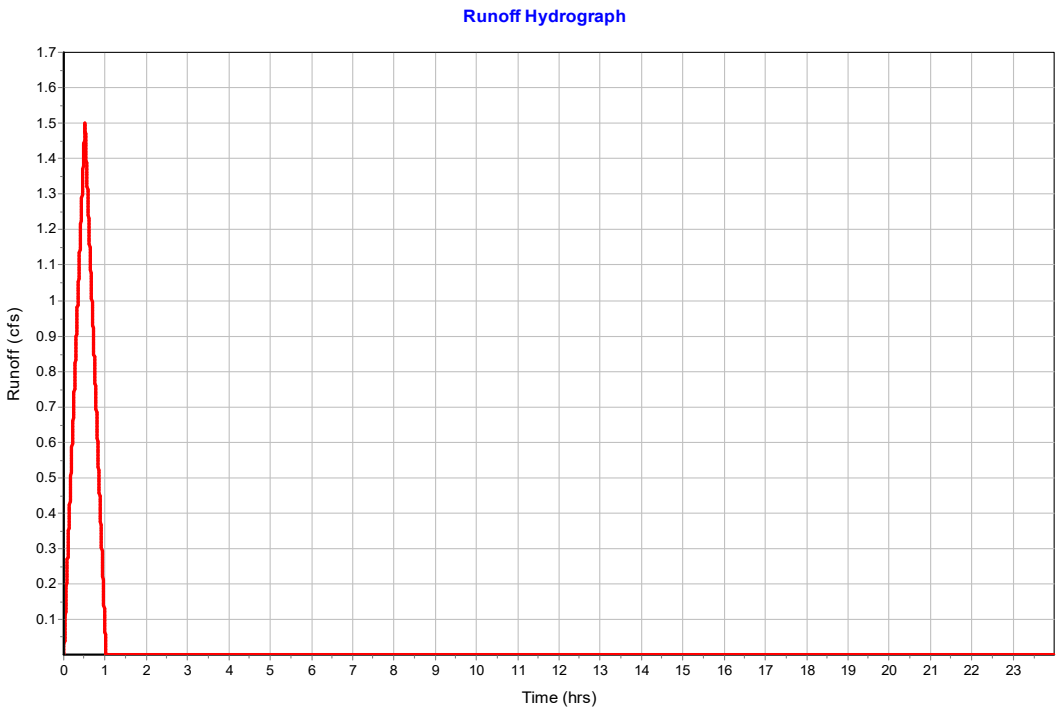
Shallow Concentrated Flow Computations	Subarea A	Subarea B	Subarea C
Flow Length (ft) :	175	186	0
Slope (%) :	4.26	2.17	0
Surface Type :	Woodland	Unpaved	Unpaved
Velocity (ft/sec) :	1.03	2.38	0
Computed Flow Time (min) :	2.83	1.3	0

Total TOC (min) 30.63

Subbasin Runoff Results

Total Rainfall (in)	2.27
Total Runoff (in)	0.7
Peak Runoff (cfs)	1.5
Rainfall Intensity	4.444
Weighted Runoff Coefficient	0.31
Time of Concentration (days hh:mm:ss)	0 00:30:38

Subbasin : PRESERV_9



Junction Input

Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft^2)
4-Jun	253.00	254.25	-254.25	0.00
5-Jun	270.00	271.25	-271.25	0.00
6-Jun	290.00	291.25	-291.25	0.00
7-Jun	305.00	306.25	-306.25	0.00
8-Jun	310.00	311.25	-311.25	0.00
9-Jun	313.00	314.25	-314.25	0.00
10-Jun	340.00	341.25	-341.25	0.00
SDFC D (STORM)	229.40	237.42	0.00	0.00
SDFC-A (STORM)	252.88	258.84	0.00	0.00
SDFC-BC (STORM)	255.76	263.76	0.00	0.00
SDFC-E(STORM)	231.93	237.65	0.00	0.00
SDHW-G1 (STORM)	233.00	237.00	0.00	0.00
SDHW-H2	246.54	251.54	0.00	0.00
SDMH-A1 (STORM)	217.50	239.13	0.00	0.00
SDMH-A2 (STORM)	233.07	246.59	0.00	0.00
SDMH-A3 (STORM)	243.28	258.09	0.00	0.00
SDMH-A5 (STORM)	265.11	274.77	0.05	0.00
SDMH-B1 (STORM)	212.90	222.77	0.00	0.00
SDMH-B10 (STORM)	288.00	299.48	0.00	0.00
SDMH-B11 (STORM)	298.46	306.18	0.00	0.00
SDMH-B12 (STORM)	306.23	314.37	0.01	0.00
SDMH-B2 (STORM)	218.98	227.86	0.01	0.00
SDMH-B3 (STORM)	238.89	248.68	0.00	0.00
SDMH-B4 (STORM)	252.24	269.51	0.00	0.00
SDMH-B5 (STORM)	252.76	266.49	0.00	0.00
SDMH-B6 (STORM)	252.54	263.83	0.00	0.00
SDMH-B7 (STORM)	257.38	265.79	0.00	0.00
SDMH-B8 (STORM)	266.72	276.34	0.00	0.00
SDMH-B9 (STORM)	283.30	291.00	0.00	0.00
SDMH-C1 (STORM)	256.00	265.00	0.00	0.00
SDMH-C2 (STORM)	259.28	266.56	0.00	0.00
SDMH-C3 (STORM)	262.48	270.00	0.00	0.00
SDMH-C4 (STORM)	271.00	281.00	0.00	0.00
SDMH-D1 (STORM)	235.43	244.00	0.00	0.00
SDMH-D2 (STORM)	249.50	257.09	0.00	0.00
SDMH-D3 (STORM)	282.53	290.10	0.00	0.00
SDMH-D4 (STORM)	299.50	306.95	0.00	0.00
SDMH-D5 (STORM)	305.50	314.00	0.00	0.00
SDMH-E1 (STORM)	232.75	242.43	0.00	0.00
SDMH-E2 (STORM)	246.13	255.60	0.00	0.00
SDMH-E3 (STORM)	269.66	278.00	0.00	0.00
SDMH-E4 (STORM)	286.50	295.57	0.00	0.00
SDMH-E5 (STORM)	288.69	297.87	0.00	0.00
SDMH-E6 (STORM)	291.15	299.42	0.00	0.00
SDMH-E7 (STORM)	303.26	314.53	0.00	0.00
SDMH-E8 (STORM)	318.27	326.00	0.00	0.00
SDMH-F1 (STORM)	290.93	300.47	0.00	0.00
SDMH-F2 (STORM)	293.34	303.31	0.00	0.00
SDMH-F3 (STORM)	312.09	323.59	0.01	0.00
SDMH-G1 (STORM)	228.94	249.00	0.00	0.00
SDMH-H1 (STORM)	179.49	193.34	-0.21	0.00
SDMH-H2 (STORM)	184.28	219.21	0.00	0.00
SDMH-H3 (STORM)	210.82	240.96	0.00	0.00
SDMH-H4 (STORM)	217.45	239.00	0.00	0.00
SDMH-H5 (STORM)	224.14	253.00	0.00	0.00

Junction Results

Element ID	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
4-Jun	47.66	253.83	0.00	0 00:16	0 00:00	0.00	0.00
5-Jun	45.21	270.86	0.00	0 00:16	0 00:00	0.00	0.00
6-Jun	41.20	290.67	0.00	0 00:16	0 00:00	0.00	0.00
7-Jun	40.22	305.82	0.00	0 00:16	0 00:00	0.00	0.00
8-Jun	40.23	310.93	0.00	0 00:16	0 00:00	0.00	0.00
9-Jun	40.26	314.13	0.00	0 00:16	0 00:00	0.00	0.00
10-Jun	16.01	340.58	0.00	0 00:15	0 00:00	0.00	0.00
SDFC D (STORM)	17.30	231.17	0.00	0 00:09	0 00:00	0.00	0.00
SDFC-A (STORM)	2.27	253.31	0.00	0 00:06	0 00:00	0.00	0.00
SDFC-BC (STORM)	13.02	258.53	0.00	0 00:09	0 00:00	0.00	0.00
SDFC-E(STORM)	8.83	233.16	0.00	0 00:09	0 00:00	0.00	0.00
SDHW-G1 (STORM)	47.63	236.08	0.00	0 00:16	0 00:00	0.00	0.00
SDHW-H2	65.09	248.81	0.00	0 00:15	0 00:00	0.00	0.00
SDMH-A1 (STORM)	2.25	220.96	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-A2 (STORM)	2.25	236.29	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-A3 (STORM)	2.27	246.59	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-A5 (STORM)	1.30	268.35	0.00	0 00:05	0 00:00	0.00	0.00
SDMH-B1 (STORM)	12.95	216.91	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B10 (STORM)	3.84	291.47	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-B11 (STORM)	2.59	301.78	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-B12 (STORM)	1.08	309.42	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-B2 (STORM)	12.95	222.65	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B3 (STORM)	12.95	242.46	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B4 (STORM)	12.96	255.99	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B5 (STORM)	12.98	257.30	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-B6 (STORM)	13.00	258.07	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B7 (STORM)	6.64	261.26	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-B8 (STORM)	5.25	270.15	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-B9 (STORM)	4.16	286.66	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-C1 (STORM)	4.06	259.45	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-C2 (STORM)	2.92	262.81	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-C3 (STORM)	2.93	266.00	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-C4 (STORM)	1.21	274.24	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-D1 (STORM)	5.88	238.89	0.00	0 00:05	0 00:00	0.00	0.00
SDMH-D2 (STORM)	5.37	252.96	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-D3 (STORM)	3.77	285.87	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-D4 (STORM)	2.33	302.83	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-D5 (STORM)	0.91	308.71	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E1 (STORM)	8.83	236.40	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E2 (STORM)	8.10	249.53	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-E3 (STORM)	6.93	273.04	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E4 (STORM)	6.93	289.92	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E5 (STORM)	5.42	292.27	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-E6 (STORM)	2.14	294.52	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E7 (STORM)	1.18	306.49	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-E8 (STORM)	1.18	321.47	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-F1 (STORM)	2.55	294.41	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-F2 (STORM)	1.21	296.68	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-F3 (STORM)	1.21	315.30	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-G1 (STORM)	47.27	233.62	0.00	0 00:17	0 00:00	0.00	0.00
SDMH-H1 (STORM)	131.24	187.17	0.00	0 00:18	0 00:00	0.00	0.00
SDMH-H2 (STORM)	131.19	189.36	0.00	0 00:14	0 00:00	0.00	0.00
SDMH-H3 (STORM)	121.81	215.69	0.00	0 00:16	0 00:00	0.00	0.00
SDMH-H4 (STORM)	64.93	222.93	0.00	0 00:15	0 00:00	0.00	0.00
SDMH-H5 (STORM)	65.05	228.82	0.00	0 00:15	0 00:00	0.00	0.00

Pipe Input

Element ID	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses
{STORM}.A-0 (STORM)	10.71	220.29	220.50	-1.9600	30.000	0.0130	0.5000	0.5000	0.0000
{STORM}.A-1 (STORM)	100.70	220.50	236.07	-15.4600	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.A-2 (STORM)	218.68	236.07	246.28	-4.6700	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.A-3 (STORM)	14.06	251.62	252.88	-8.9600	12.000	0.0130	0.5000	0.5000	0.0000
{STORM}.A-4 (STORM)	29.04	252.88	253.84	-3.3100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.A-5 (STORM)	143.05	254.34	268.11	-9.6300	12.000	0.0130	0.5000	0.7000	0.0000
{STORM}.A-5.1 (STORM)	31.77	256.72	256.04	2.1200	12.000	0.0130	0.5000	0.7000	0.0000
{STORM}.A-6.1 (STORM)	11.49	270.47	270.33	1.2200	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.A-6.2 (STORM)	14.21	271.40	270.61	5.5700	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.B-0 (STORM)	69.39	215.90	213.00	4.1700	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-1 (STORM)	78.08	221.98	215.90	7.7900	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-10 (STORM)	106.44	271.47	286.30	-13.9300	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-10.1 (STORM)	12.09	287.00	286.80	1.6500	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-11 (STORM)	92.10	286.80	291.00	-4.5600	18.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-11.1 (STORM)	47.87	293.48	293.00	1.0000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-11.2 (STORM)	40.03	293.48	291.50	4.9500	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-12 (STORM)	100.47	292.50	301.46	-8.9200	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-12.1 (STORM)	10.82	302.55	302.30	2.3000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-12.2 (STORM)	17.38	302.55	302.30	1.4400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-13 (STORM)	80.79	301.46	309.23	-9.6200	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-13.1 (STORM)	13.80	310.67	310.47	1.4600	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-2 (STORM)	163.81	221.98	241.89	-12.1600	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-3 (STORM)	249.48	242.86	255.24	-4.9700	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-4 (STORM)	98.43	255.14	255.76	-0.6300	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-5 (STORM)	99.98	255.76	256.49	-0.7400	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-6 (STORM)	24.21	256.49	256.84	-1.4400	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-7 (STORM)	10.44	257.00	256.84	1.5500	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-8 (STORM)	79.04	258.86	260.38	-1.9200	18.000	0.0130	0.5000	0.8000	0.0000
{STORM}.B-8.1 (STORM)	12.46	261.75	261.55	1.6000	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.B-9 (STORM)	115.90	260.38	269.72	-8.0600	18.000	0.0130	0.5000	0.8000	0.0000
{STORM}.B-9.1 (STORM)	12.98	272.34	272.14	1.5400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-9.2 (STORM)	11.49	272.34	272.14	1.7400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-0 (STORM)	17.61	257.37	256.84	2.9800	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-1 (STORM)	63.57	259.00	257.37	2.5700	24.000	0.0130	0.5000	0.9000	0.0000
{STORM}.C-1.1 (STORM)	11.15	261.00	260.80	1.8000	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-2 (STORM)	54.84	260.00	262.28	-4.1600	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-2.1 (STORM)	12.79	266.00	265.80	1.6000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-2.2 (STORM)	12.89	266.00	265.80	1.5500	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-3 (STORM)	99.30	262.28	265.48	-3.2200	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.C-3.1 (STORM)	12.20	277.00	276.80	1.6400	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-3.2 (STORM)	12.12	277.00	276.80	1.6500	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-4 (STORM)	125.09	265.48	274.00	-6.8100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-0 (STORM)	37.25	229.40	228.67	1.9500	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-1 (STORM)	98.20	238.43	230.40	8.1800	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-1.1 (STORM)	12.67	240.00	239.80	1.5900	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.D-2 (STORM)	80.60	252.50	238.43	17.4600	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.D-2.1 (STORM)	12.16	253.12	252.92	1.6400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-2.2 (STORM)	12.13	253.12	252.92	1.6500	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-3 (STORM)	203.16	285.53	252.50	16.2600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-3.1 (STORM)	12.04	286.10	285.90	1.6700	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-3.2 (STORM)	12.19	286.10	285.90	1.6600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-4 (STORM)	192.04	302.50	285.53	8.8400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-4.1 (STORM)	12.74	302.90	302.63	2.1100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-4.2 (STORM)	12.42	302.90	302.63	2.1700	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-5 (STORM)	85.24	308.50	302.50	7.0400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-5.1 (STORM)	13.99	310.60	310.40	1.4300	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.D-E.2 (STORM)	15.15	233.49	233.25	1.5800	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-1 (STORM)	10.39	231.93	231.63	2.8900	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-1.1 (STORM)	12.39	238.48	238.28	1.6200	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-2 (STORM)	64.97	232.03	235.75	-5.7300	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-2.1 (STORM)	12.20	251.60	251.40	1.6300	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-2.2 (STORM)	11.94	251.60	251.40	1.6700	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-3 (STORM)	77.50	235.75	249.13	-17.2600	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-4 (STORM)	125.26	249.13	272.66	-18.7800	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-4.1 (STORM)	14.65	291.70	291.50	1.3600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-4.2 (STORM)	13.05	291.93	291.50	3.3000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-5 (STORM)	121.85	272.66	289.50	-13.8200	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-5.1 (STORM)	19.76	293.97	293.50	2.3600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-5.2 (STORM)	13.36	294.02	293.50	3.8900	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-6 (STORM)	45.09	289.50	291.69	-4.8600	24.000	0.0130	0.5000	1.0000	0.0000

Pipe Input

Element ID	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses
{STORM}.E-6.1 (STORM)	13.50	295.56	295.36	1.4800	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-7 (STORM)	41.79	292.16	294.15	-4.7500	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-8 (STORM)	155.55	294.15	306.26	-7.7900	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-8.1 (STORM)	13.32	322.43	322.23	1.5100	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.E-8.2 (STORM)	13.61	322.56	322.23	2.4200	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.E-9 (STORM)	94.31	306.26	321.27	-15.9200	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.F-0 (STORM)	120.28	291.88	293.93	-1.7000	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-1 (STORM)	127.59	293.93	296.34	-1.8900	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-1.1 (STORM)	14.25	296.37	296.07	2.1100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-1.2 (STORM)	10.90	296.27	296.07	1.8300	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-2 (STORM)	143.28	296.34	315.09	-13.0900	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.F-3.1 (STORM)	10.94	320.00	319.55	4.1100	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.F-3.2 (STORM)	20.93	320.00	319.55	2.1500	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.G-1 (STORM)	44.33	231.94	233.00	-2.3900	42.000	0.0130	0.5000	0.6000	0.0000
{STORM}.G-2 (STORM)	200.57	227.17	231.94	-2.3800	42.000	0.0130	0.5000	1.0000	0.0000
{STORM}.H-4 (STORM)	201.47	213.82	203.76	4.9900	72.000	0.0130	0.5000	0.7000	0.0000
{STORM}.H-5 (STORM)	49.07	220.45	219.96	1.0000	72.000	0.0130	0.5000	1.0000	0.0000
{STORM}.H-6	131.86	227.14	223.19	3.0000	60.000	0.0130	0.5000	0.6000	0.0000
D-E.1	19.30	232.82	233.09	-1.4000	18.000	0.0150	0.5000	1.0000	0.0000
DET_BASIN_OUT_24	44.00	182.00	180.00	4.5500	24.000	0.0130	0.5000	0.5000	0.0000
DET_BASIN_OUT_30	44.00	182.00	180.00	4.5500	30.000	0.0130	0.5000	0.5000	0.0000
H-0	16.29	182.49	182.00	3.0000	72.000	0.0130	0.5000	0.5000	0.0000
H-3	43.53	187.28	182.49	11.0000	72.000	0.0130	0.5000	0.5000	0.0000
H-7	28.58	246.54	246.00	1.8900	60.000	0.0130	0.5000	0.5000	0.0000

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Pipe Results

Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow Velocity	Travel Time	Peak Flow Depth	Total Time Surcharged	Froude Number	Reported Condition
(cfs)	(days hh:mm)	(cfs)	(ft/sec)	(min)	(ft)	(min)		
2.25	0 00:06	57.43	4.45	0.04	0.40	0.00		Calculated
2.25	0 00:06	88.96	10.74	0.16	0.34	0.00		Calculated
2.25	0 00:06	48.89	7.75	0.47	0.30	0.00		Calculated
2.27	0 00:06	10.67	8.42	0.03	0.38	0.00		Calculated
2.27	0 00:05	6.48	6.09	0.08	0.49	0.00		Calculated
1.29	0 00:05	11.06	9.16	0.26	0.23	0.00		Calculated
0.66	0 00:08	5.19	4.09	0.13	0.26	0.00		Calculated
0.66	0 00:05	3.93	2.99	0.06	0.32	0.00		Calculated
0.65	0 00:05	8.41	5.17	0.05	0.22	0.00		Calculated
12.95	0 00:10	46.22	9.92	0.12	0.87	0.00		Calculated
12.95	0 00:10	63.13	11.52	0.11	0.84	0.00		Calculated
4.16	0 00:07	39.20	13.50	0.13	0.35	0.00		Calculated
0.61	0 00:05	4.58	3.40	0.06	0.28	0.00		Calculated
3.83	0 00:07	22.43	8.80	0.17	0.44	0.00		Calculated
1.23	0 00:10	3.57	3.62	0.22	0.45	0.00		Calculated
0.20	0 00:05	7.92	4.12	0.16	0.12	0.00		Calculated
2.59	0 00:07	31.37	10.10	0.17	0.30	0.00		Calculated
1.31	0 00:07	5.40	4.11	0.04	0.42	0.00		Calculated
0.61	0 00:05	4.27	3.18	0.09	0.29	0.00		Calculated
1.08	0 00:09	32.57	5.90	0.23	0.25	0.00		Calculated
1.08	0 00:09	4.30	3.77	0.06	0.39	0.00		Calculated
12.95	0 00:10	78.88	15.53	0.18	0.62	0.00		Calculated
12.95	0 00:10	50.41	12.75	0.33	0.72	0.00		Calculated
12.96	0 00:10	17.90	5.50	0.30	1.40	0.00		Calculated
12.98	0 00:09	19.41	4.96	0.34	1.56	0.00		Calculated
13.00	0 00:09	27.16	5.18	0.08	1.63	0.00		Calculated
8.23	0 00:08	28.18	3.21	0.05	1.71	0.00		Calculated
6.63	0 00:08	14.56	6.96	0.19	0.80	0.00		Calculated
1.43	0 00:10	4.50	3.97	0.05	0.47	0.00		Calculated
5.25	0 00:07	29.81	7.89	0.24	0.65	0.00		Calculated
0.86	0 00:07	4.42	3.41	0.06	0.36	0.00		Calculated
0.43	0 00:05	4.70	3.00	0.06	0.24	0.00		Calculated
5.34	0 00:11	39.02	2.71	0.11	1.48	0.00		Calculated
4.05	0 00:09	36.28	4.94	0.21	0.86	0.00		Calculated
1.38	0 00:12	4.78	4.04	0.05	0.45	0.00		Calculated
2.91	0 00:08	7.27	7.68	0.12	0.49	0.00		Calculated
1.50	0 00:08	4.51	3.90	0.05	0.49	0.00		Calculated
0.59	0 00:05	4.44	3.14	0.07	0.29	0.00		Calculated
2.92	0 00:08	6.39	6.99	0.24	0.52	0.00		Calculated
1.07	0 00:08	4.56	3.73	0.05	0.39	0.00		Calculated
0.36	0 00:05	4.58	2.92	0.07	0.21	0.00		Calculated
1.21	0 00:08	9.30	5.49	0.38	0.38	0.00		Calculated
17.29	0 00:09	31.67	7.29	0.09	1.41	0.00		Calculated
5.88	0 00:09	30.04	11.25	0.15	0.61	0.00		Calculated
0.79	0 00:14	4.49	3.57	0.06	0.33	0.00		Calculated
5.37	0 00:09	14.89	15.40	0.09	0.46	0.00		Calculated
1.49	0 00:09	4.57	3.90	0.05	0.49	0.00		Calculated
0.73	0 00:05	4.58	3.33	0.06	0.32	0.00		Calculated
3.75	0 00:09	14.36	12.68	0.27	0.40	0.00		Calculated
1.34	0 00:09	4.60	3.83	0.05	0.46	0.00		Calculated
0.51	0 00:05	4.59	3.08	0.07	0.26	0.00		Calculated
2.32	0 00:09	10.59	9.95	0.32	0.34	0.00		Calculated
1.31	0 00:09	5.18	4.09	0.05	0.43	0.00		Calculated
0.48	0 00:05	5.24	3.34	0.06	0.24	0.00		Calculated
0.91	0 00:09	9.45	5.37	0.26	0.27	0.00		Calculated
0.91	0 00:09	4.26	3.60	0.06	0.36	0.00		Calculated
2.49	0 00:11	13.22	4.25	0.06	0.55	0.00		Calculated
8.83	0 00:09	38.45	6.11	0.03	0.94	0.00		Calculated
0.78	0 00:09	4.54	3.58	0.06	0.32	0.00		Calculated
8.83	0 00:09	54.13	7.12	0.15	0.88	0.00		Calculated
1.25	0 00:12	4.55	3.75	0.05	0.44	0.00		Calculated
0.76	0 00:05	4.60	3.36	0.06	0.33	0.00		Calculated
8.10	0 00:09	93.98	12.46	0.10	0.52	0.00		Calculated
6.92	0 00:09	98.05	15.89	0.13	0.39	0.00		Calculated
1.44	0 00:09	4.16	3.74	0.07	0.49	0.00		Calculated
0.41	0 00:05	6.47	3.77	0.06	0.20	0.00		Calculated
6.93	0 00:09	84.11	15.32	0.13	0.40	0.00		Calculated
1.60	0 00:12	5.48	4.66	0.07	0.45	0.00		Calculated
0.36	0 00:05	7.02	3.91	0.06	0.17	0.00		Calculated

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Pipe Results

Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow Velocity	Travel Time	Peak Flow Depth	Total Time Surcharged	Froude Number	Reported Condition
(cfs)	(days hh:mm)	(cfs)	(ft/sec)	(min)	(ft)	(min)		
5.42	0 00:07	49.87	8.55	0.09	0.51	0.00		Calculated
1.14	0 00:11	4.34	3.83	0.06	0.40	0.00		Calculated
2.14	0 00:09	22.91	7.06	0.10	0.34	0.00		Calculated
1.17	0 00:09	9.94	6.35	0.41	0.30	0.00		Calculated
1.07	0 00:08	4.38	3.61	0.06	0.40	0.00		Calculated
0.38	0 00:05	5.55	3.36	0.07	0.20	0.00		Calculated
1.18	0 00:08	14.22	9.61	0.16	0.21	0.00		Calculated
2.52	0 00:07	13.71	5.48	0.37	0.46	0.00		Calculated
1.20	0 00:06	4.90	3.97	0.54	0.41	0.00		Calculated
1.28	0 00:06	5.17	4.11	0.06	0.42	0.00		Calculated
0.08	0 00:05	4.83	2.04	0.09	0.10	0.00		Calculated
1.21	0 00:06	12.89	9.04	0.26	0.28	0.00		Calculated
0.98	0 00:06	7.23	4.76	0.04	0.31	0.00		Calculated
0.29	0 00:05	5.22	3.19	0.11	0.17	0.00		Calculated
47.27	0 00:16	155.58	6.84	0.11	2.38	0.00		Calculated
47.21	0 00:17	155.16	11.95	0.28	1.50	0.00		Calculated
121.79	0 00:16	946.36	19.08	0.18	1.66	0.00		Calculated
64.91	0 00:15	423.22	7.70	0.11	2.03	0.00		Calculated
64.93	0 00:15	450.77	13.38	0.16	1.48	0.00		Calculated
1.71	0 00:22	4.07	2.60	0.12	0.60	0.00		Calculated
44.48	0 00:18	48.23	15.21	0.05	1.76	0.00		Calculated
69.41	0 00:18	87.45	15.83	0.05	2.09	0.00		Calculated
130.35	0 00:16	733.76	9.99	0.03	4.74	0.00		Calculated
131.24	0 00:16	1404.59	10.54	0.07	3.31	0.00		Calculated
65.05	0 00:15	358.00	9.78	0.05	1.86	0.00		Calculated

Inlet Input

Element ID	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Inlet Depth (ft)	Grate Clogging Factor (%)
DI-A4.1 (STORM)	2	255.71	260.68	4.97	30.00
DI-A5.1 (STORM)	1	269.47	274.85	5.38	30.00
DI-A5.2 (STORM)	1	270.40	275.30	4.90	30.00
DI-B10.1 (STORM)	1	292.48	297.48	5.00	30.00
DI-B10.2 (STORM)	1	292.48	297.39	4.91	30.00
DI-B11.1 (STORM)	1	301.55	306.54	4.99	30.00
DI-B11.2 (STORM)	1	301.55	306.55	5.00	30.00
DI-B12.1 (STORM)	1	309.67	314.69	5.02	30.00
DI-B7.1 (STORM)	1	260.75	265.75	5.00	30.00
DI-B8.1 (STORM)	1	271.34	276.34	5.00	30.00
DI-B8.2 (STORM)	1	271.34	276.34	5.00	30.00
DI-B9.1 (STORM)	1	286.00	291.00	5.00	30.00
DI-C1.1 (STORM)	1	260.00	265.00	5.00	30.00
DI-C3.1 (STORM)	1	265.00	270.00	5.00	30.00
DI-C3.2 (STORM)	1	265.00	270.00	5.00	30.00
DI-C4.1 (STORM)	1	276.00	281.00	5.00	30.00
DI-C4.2 (STORM)	1	276.00	281.00	5.00	30.00
DI-D1.1 (STORM)	1	239.00	244.00	5.00	30.00
DI-D2.1 (STORM)	1	252.12	257.15	5.03	30.00
DI-D2.2 (STORM)	1	252.12	257.13	5.01	30.00
DI-D3.1 (STORM)	1	285.10	290.11	5.01	30.00
DI-D3.2 (STORM)	1	285.10	290.15	5.05	30.00
DI-D4.1 (STORM)	1	301.90	306.90	5.00	30.00
DI-D4.2 (STORM)	1	301.90	306.91	5.01	30.00
DI-D5.1 (STORM)	1	309.60	314.60	5.00	30.00
DI-E1.1 (STORM)	1	237.48	242.48	5.00	30.00
DI-E2.1 (STORM)	1	250.60	255.60	5.00	30.00
DI-E2.2 (STORM)	1	250.60	255.60	5.00	30.00
DI-E4.1 (STORM)	1	290.70	295.70	5.00	30.00
DI-E4.2 (STORM)	1	290.93	295.94	5.01	30.00
DI-E5.1 (STORM)	1	292.96	298.02	5.06	30.00
DI-E5.2 (STORM)	1	293.02	297.96	4.94	30.00
DI-E6.1 (STORM)	1	294.56	299.56	5.00	30.00
DI-E8.1 (STORM)	1	321.43	326.43	5.00	30.00
DI-E8.2 (STORM)	1	321.56	326.56	5.00	30.00
DI-F1.1 (STORM)	1	295.37	300.37	5.00	30.00
DI-F1.2 (STORM)	1	295.27	300.27	5.00	30.00
DI-F3.1 (STORM)	1	319.00	325.00	6.00	30.00
DI-F3.2 (STORM)	1	319.00	325.00	6.00	30.00
SDCB-B1 (STORM)	2	257.00	263.87	6.87	30.00
SDCB-C1 (STORM)	2	257.36	264.52	7.16	30.00
SDCB-D1 (STORM)	2	233.49	235.30	1.81	30.00
SDCB-D2 (STORM)	2	233.09	234.90	1.81	30.00
SDMH-A4 (STORM)	2	250.84	260.33	9.49	30.00

Inlet Results

Element ID	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Max Depth Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
DI-A4.1 (STORM)	1.47	N/A	N/A	N/A	3.47	261.25	0.57	0 00:08	0.00	0.00
DI-A5.1 (STORM)	0.75	0.00	0.75	0.43	2.08	274.89	0.04	0 00:05	0.00	0.00
DI-A5.2 (STORM)	0.73	0.00	0.72	0.43	2.05	275.34	0.04	0 00:05	0.00	0.00
DI-B10.1 (STORM)	1.53	1.19	0.34	78.01	4.05	297.65	0.17	0 00:10	0.00	0.00
DI-B10.2 (STORM)	0.22	0.22	0.00	100.00	1.32	297.47	0.08	0 00:05	0.00	0.00
DI-B11.1 (STORM)	1.63	1.25	0.38	76.83	4.24	306.71	0.17	0 00:07	0.00	0.00
DI-B11.2 (STORM)	0.69	0.00	0.69	0.44	2.01	306.59	0.04	0 00:05	0.00	0.00
DI-B12.1 (STORM)	1.36	1.09	0.26	80.61	3.75	314.85	0.16	0 00:09	0.00	0.00
DI-B7.1 (STORM)	1.62	1.35	0.26	83.64	5.19	265.94	0.19	0 00:10	0.00	0.00
DI-B8.1 (STORM)	1.29	0.00	1.29	0.21	2.24	276.38	0.04	0 00:07	0.00	0.00
DI-B8.2 (STORM)	0.57	0.45	0.12	78.72	1.65	276.44	0.10	0 00:05	0.00	0.00
DI-B9.1 (STORM)	0.84	0.61	0.24	71.78	1.91	291.12	0.12	0 00:05	0.00	0.00
DI-C1.1 (STORM)	1.54	1.31	0.23	84.83	5.06	265.19	0.19	0 00:12	0.00	0.00
DI-C3.1 (STORM)	1.74	1.31	0.43	75.21	4.42	270.17	0.17	0 00:08	0.00	0.00
DI-C3.2 (STORM)	0.65	0.59	0.06	90.79	1.97	270.12	0.12	0 00:05	0.00	0.00
DI-C4.1 (STORM)	1.78	1.08	0.70	60.69	3.57	281.16	0.16	0 00:08	0.00	0.00
DI-C4.2 (STORM)	0.46	0.37	0.08	81.61	1.52	281.09	0.09	0 00:05	0.00	0.00
DI-D1.1 (STORM)	0.81	0.01	0.81	0.66	2.45	244.05	0.05	0 00:14	0.00	0.00
DI-D2.1 (STORM)	1.57	1.32	0.25	84.24	5.09	257.34	0.19	0 00:09	0.00	0.00
DI-D2.2 (STORM)	0.76	0.01	0.75	0.68	2.37	257.17	0.05	0 00:05	0.00	0.00
DI-D3.1 (STORM)	1.98	1.16	0.82	58.69	3.84	290.27	0.16	0 00:09	0.00	0.00
DI-D3.2 (STORM)	0.65	0.49	0.16	75.95	1.72	290.26	0.11	0 00:05	0.00	0.00
DI-D4.1 (STORM)	1.94	1.14	0.80	58.71	3.76	307.06	0.16	0 00:09	0.00	0.00
DI-D4.2 (STORM)	0.65	0.50	0.15	76.36	1.74	307.01	0.11	0 00:05	0.00	0.00
DI-D5.1 (STORM)	1.44	0.00	1.44	0.20	2.33	314.64	0.05	0 00:09	0.00	0.00
DI-E1.1 (STORM)	0.81	0.01	0.81	0.67	2.45	242.53	0.05	0 00:09	0.00	0.00
DI-E2.1 (STORM)	1.33	1.18	0.16	88.31	4.61	255.78	0.18	0 00:12	0.00	0.00
DI-E2.2 (STORM)	0.79	0.01	0.79	0.67	2.42	255.65	0.05	0 00:05	0.00	0.00
DI-E4.1 (STORM)	1.71	1.29	0.41	75.72	4.36	295.87	0.17	0 00:09	0.00	0.00
DI-E4.2 (STORM)	0.45	0.43	0.02	94.93	1.71	296.05	0.11	0 00:05	0.00	0.00
DI-E5.1 (STORM)	1.62	N/A	N/A	N/A	8.82	298.38	0.36	0 00:12	0.00	0.00
DI-E5.2 (STORM)	0.36	0.36	0.00	100.00	1.80	298.07	0.11	0 00:05	0.00	0.00
DI-E6.1 (STORM)	1.30	1.16	0.14	89.24	4.57	299.73	0.18	0 00:11	0.00	0.00
DI-E8.1 (STORM)	1.79	1.08	0.70	60.65	3.57	326.58	0.16	0 00:08	0.00	0.00
DI-E8.2 (STORM)	0.48	0.39	0.09	81.05	1.54	326.66	0.10	0 00:05	0.00	0.00
DI-F1.1 (STORM)	1.31	1.17	0.15	88.78	4.59	300.54	0.18	0 00:06	0.00	0.00
DI-F1.2 (STORM)	0.08	0.08	0.00	100.00	1.02	300.34	0.06	0 00:05	0.00	0.00
DI-F3.1 (STORM)	1.58	0.00	1.58	0.19	2.41	325.05	0.05	0 00:06	0.00	0.00
DI-F3.2 (STORM)	0.37	0.31	0.06	84.48	1.40	325.09	0.09	0 00:05	0.00	0.00
SDCB-B1 (STORM)	2.08	N/A	N/A	N/A	3.71	264.13	0.26	0 00:09	0.00	0.00
SDCB-C1 (STORM)	1.61	N/A	N/A	N/A	3.44	264.78	0.26	0 00:10	0.00	0.00
SDCB-D1 (STORM)	2.56	N/A	N/A	N/A	3.97	235.57	0.27	0 00:11	0.00	0.00
SDCB-D2 (STORM)	1.72	N/A	N/A	N/A	3.51	235.16	0.26	0 00:22	0.00	0.00
SDMH-A4 (STORM)	0.63	N/A	N/A	N/A	2.40	260.57	0.24	0 00:05	0.00	0.00

Storage Nodes

Storage Node : DETENTION_POND

Input Data

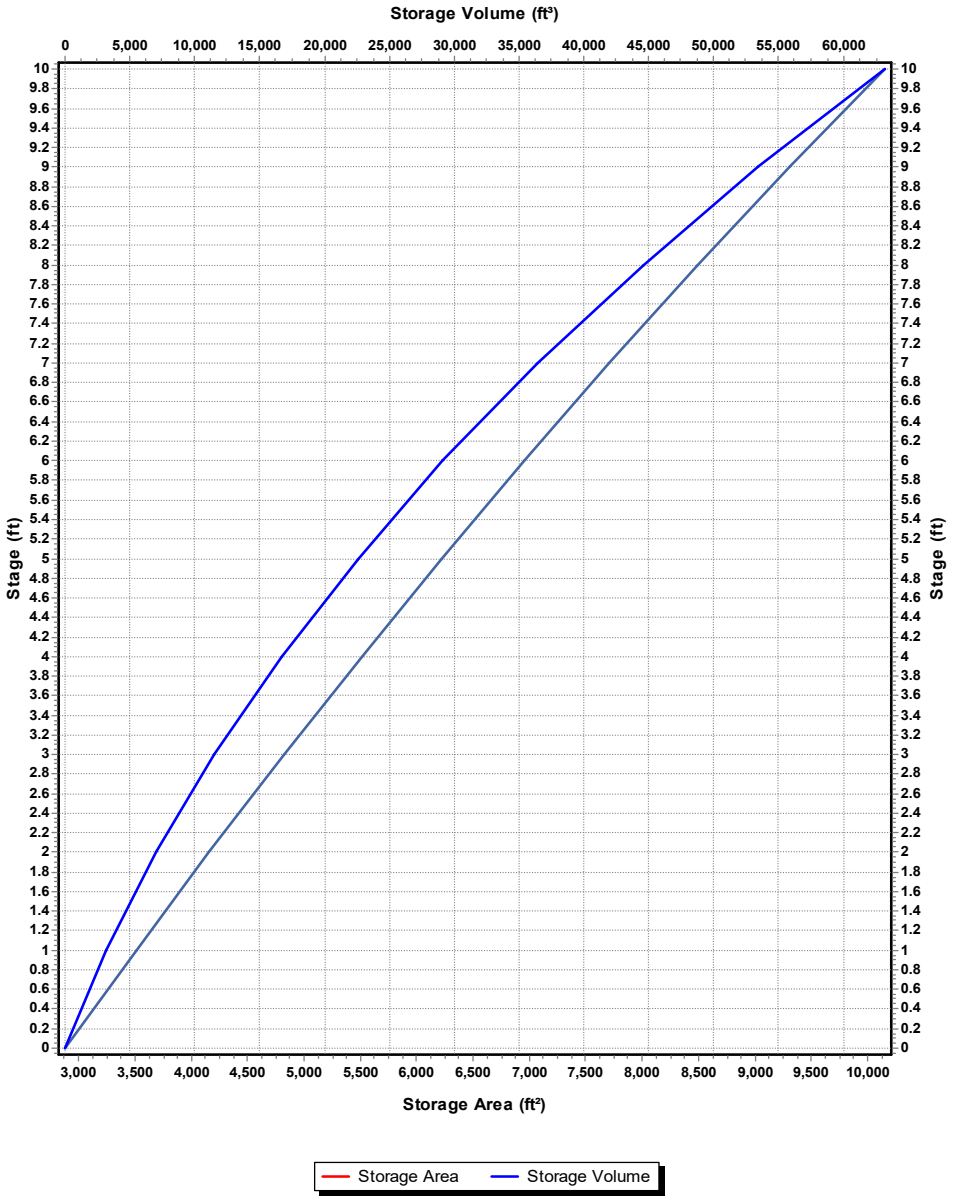
Invert Elevation (ft)	182.00
Max (Rim) Elevation (ft)	192.00
Max (Rim) Offset (ft)	10.00
Initial Water Elevation (ft)	0.00
Initial Water Depth (ft)	-182.00
Ponded Area (ft^2)	100.00
Evaporation Loss	0.00

Storage Area Volume Curves

Storage Curve : New_Lipalu_Basin

Stage (ft)	Storage Area (ft^2)	Storage Volume (ft^3)
0	2879.03	0
1	3508.41	3193.72
2	4155.91	7025.88
3	4824.19	11515.93
4	5511.1	16683.58
5	6219.64	22548.95
6	6950.31	29133.93
7	7708.08	36463.13
8	8494.11	44564.23
9	9308.36	53465.47
10	10153.61	63196.46

Storage Area Volume Curves



Storage Node : DETENTION_POND (continued)

Outflow Weirs

SN	Element ID	Weir Type	Flap Gate	Crest Elevation (ft)	Crest Offset (ft)	Length (ft)	Weir Total Height (ft)	Discharge Coefficient
1	WEIR_LIPALU	Trapezoidal	No	190.50	8.50	20.00	1.25	3.37

Output Summary Results

Peak Inflow (cfs)	133.01
Peak Lateral Inflow (cfs)	3.46
Peak Outflow (cfs)	113.89
Peak Exfiltration Flow Rate (cfm)	0
Max HGL Elevation Attained (ft)	186.81
Max HGL Depth Attained (ft)	4.81
Average HGL Elevation Attained (ft)	183.59
Average HGL Depth Attained (ft)	1.59
Time of Max HGL Occurrence (days hh:mm)	0 00:18
Total Exfiltration Volume (1000-ft³)	0
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0

APPENDIX II

Hydraulic Grade Line Analysis

Prepared By:
Rebecca Matlack

Reviewed By:
Kimo Unten

10-Year, 1-Hour Storm

Hydraulic Calculations

COFFMAN ENGINEERS

Project Description

File Name	2023.01.10 CURRENT Ratl & Mod Ratl.SPF
Description	Drainage Report (Rational 10-yr 1-hr Storm)

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	Rational
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	00:00:00	0:00:00
End Analysis On	00:00:00	1:00:00
Start Reporting On	00:00:00	0:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	1
Subbasins	58
Nodes	104
Junctions	55
Outfalls	4
Flow Diversions	0
Inlets	44
Storage Nodes	1
Links	139
Channels	44
Pipes	94
Pumps	0
Orifices	0
Weirs	1
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period	10 year(s)

COFFMAN ENGINEERS

Subbasin Summary

Subbasin ID	Area (ac)	Weighted Runoff Coefficient	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ft^3)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
A5	0.06	0.9500	0.86	0.82	165.67	0.55	0 00:05:00
A5.1	0.25	0.5500	0.86	0.47	426.63	1.41	0 00:05:00
A6.1	0.08	0.9500	0.86	0.82	224.84	0.74	0 00:05:00
A6.2	0.08	0.8400	0.86	0.72	201.25	0.67	0 00:05:00
B10.1	0.14	0.5400	0.86	0.46	235.30	0.78	0 00:05:00
B11.1	0.58	0.3200	1.32	0.42	880.26	1.41	0 00:10:18
B11.2	0.02	0.9500	0.86	0.82	68.04	0.23	0 00:05:00
B12.1	0.57	0.2900	1.06	0.31	632.03	1.46	0 00:07:13
B12.2	0.07	0.9500	0.86	0.82	210.05	0.69	0 00:05:00
B13.1	0.58	0.2900	1.20	0.35	726.80	1.36	0 00:08:52
B8.1	0.61	0.3000	1.32	0.40	877.52	1.40	0 00:10:16
B9.1	0.46	0.3000	1.09	0.33	545.54	1.20	0 00:07:31
B9.2	0.06	0.9500	0.86	0.82	171.59	0.57	0 00:05:00
B-C1	0.56	0.4800	1.30	0.62	1270.96	2.07	0 00:10:13
B-C2	0.64	0.2900	1.42	0.41	953.48	1.33	0 00:11:49
C1.1	0.58	0.3200	1.43	0.46	967.60	1.33	0 00:12:01
C2.1	0.55	0.3100	1.32	0.41	821.54	1.30	0 00:10:32
C2.2	0.10	0.5700	0.86	0.49	168.63	0.56	0 00:05:00
C3.1	0.56	0.3800	1.15	0.44	881.55	1.79	0 00:08:05
C3.2	0.05	0.9500	0.86	0.82	139.05	0.46	0 00:05:00
D1.1	0.37	0.2800	1.59	0.44	589.89	0.69	0 00:14:05
D2.1	0.59	0.3200	1.52	0.49	1033.81	1.30	0 00:13:06
D2.2	0.06	0.9500	0.86	0.82	189.34	0.63	0 00:05:00
D3.1	0.52	0.3300	1.22	0.40	756.31	1.37	0 00:09:12
D3.2	0.05	0.9500	0.86	0.82	147.92	0.49	0 00:05:00
D4.1	0.61	0.2900	1.22	0.36	789.94	1.42	0 00:09:12
D4.2	0.07	0.9500	0.86	0.82	198.22	0.66	0 00:05:00
D5.1	0.58	0.3100	1.22	0.38	786.89	1.44	0 00:08:55
D-E1	1.28	0.2700	1.39	0.38	1746.48	2.54	0 00:11:19
D-E2	0.80	0.4100	1.97	0.81	2337.63	1.72	0 00:22:28
E1.1	0.31	0.3200	1.25	0.40	446.88	0.78	0 00:09:28
E2.1	0.40	0.3700	1.42	0.53	765.66	1.07	0 00:11:50
E2.2	0.08	0.9500	0.86	0.82	230.76	0.76	0 00:05:00
E4.1	0.63	0.3800	1.61	0.61	1397.42	1.58	0 00:14:40
E4.2	0.05	0.9500	0.86	0.82	136.09	0.45	0 00:05:00
E5.1	0.71	0.2900	1.43	0.42	1074.10	1.48	0 00:12:02
E5.2	0.04	0.9500	0.86	0.82	109.46	0.36	0 00:05:00
E6.1	0.45	0.3900	1.40	0.55	899.82	1.29	0 00:11:27
E8.1	0.68	0.3200	1.18	0.38	937.17	1.79	0 00:08:43
E8.2	0.05	0.9500	0.86	0.82	144.96	0.48	0 00:05:00
F1.1	0.22	0.5500	1.20	0.66	535.85	1.00	0 00:08:50
F1.2	0.01	0.3500	1.35	0.47	11.16	0.02	0 00:10:48
F3.1	0.56	0.3000	0.97	0.29	589.51	1.58	0 00:06:12
F3.2	0.04	0.9500	0.86	0.82	112.42	0.37	0 00:05:00
H_POND	1.57	0.4000	1.90	0.76	4319.92	3.46	0 00:20:39
H2	0.26	0.4000	0.86	0.34	328.70	1.09	0 00:05:00
H-3	1.30	0.2400	1.39	0.33	1571.43	2.29	0 00:11:18
MAUKA_NORTH	20.06	0.4200	1.66	0.70	50681.19	54.08	0 00:15:31
MAUKA_SOUTH	5.66	0.4100	1.40	0.57	11772.74	16.91	0 00:11:32
PRESERV_1	2.89	0.3400	1.14	0.39	4070.39	8.24	0 00:08:12
PRESERV_2	1.10	0.3300	1.89	0.62	2490.42	2.03	0 00:20:15
PRESERV_3	3.81	0.3600	2.13	0.77	10607.84	6.57	0 00:26:42
PRESERV_4	0.44	0.4000	1.75	0.70	1119.64	1.06	0 00:17:33
PRESERV_5	0.17	0.2400	1.09	0.26	161.68	0.36	0 00:07:27
PRESERV_6	0.42	0.2400	1.06	0.25	385.72	0.89	0 00:07:14
PRESERV_7	9.79	0.4000	1.68	0.67	23881.34	24.69	0 00:16:03
PRESERV_8	6.24	0.4000	1.66	0.66	15017.75	16.02	0 00:15:32
PRESERV_9	1.09	0.3100	2.27	0.70	2785.52	1.50	0 00:30:37

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Node Summary

Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Diameter or Width (in)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ft^3)	Total Time Flooded (min)
SDFC D (STORM)	Junction	229.40	237.42	96.00	17.30	231.17	0 00:00	0.00	0.00
SDFC-A (STORM)	Junction	252.88	258.84	48.00	2.27	253.31	0 00:00	0.00	0.00
SDFC-BC (STORM)	Junction	255.76	263.76	72.00	13.02	258.53	0 00:00	0.00	0.00
SDFC-E(STORM)	Junction	231.93	237.65	72.00	8.83	233.16	0 00:00	0.00	0.00
SDHW-G1 (STORM)	Junction	233.00	237.00		47.63	236.08	0 00:00	0.00	0.00
SDHW-H2	Junction	246.54	251.54		65.09	248.81	0 00:00	0.00	0.00
SDMH-A1 (STORM)	Junction	217.50	239.13	48.00	2.25	220.96	0 00:00	0.00	0.00
SDMH-A2 (STORM)	Junction	233.07	246.59	48.00	2.25	236.29	0 00:00	0.00	0.00
SDMH-A3 (STORM)	Junction	243.28	258.09	48.00	2.27	246.59	0 00:00	0.00	0.00
SDMH-A5 (STORM)	Junction	265.11	274.77	48.00	1.30	268.35	0 00:00	0.00	0.00
SDMH-B1 (STORM)	Junction	212.90	222.77	48.00	12.95	216.91	0 00:00	0.00	0.00
SDMH-B10 (STORM)	Junction	288.00	299.48	48.00	3.84	291.47	0 00:00	0.00	0.00
SDMH-B11 (STORM)	Junction	298.46	306.18	48.00	2.59	301.78	0 00:00	0.00	0.00
SDMH-B12 (STORM)	Junction	306.23	314.37	48.00	1.08	309.42	0 00:00	0.00	0.00
SDMH-B2 (STORM)	Junction	218.98	227.86	48.00	12.95	222.65	0 00:00	0.00	0.00
SDMH-B3 (STORM)	Junction	238.89	248.68	48.00	12.95	242.46	0 00:00	0.00	0.00
SDMH-B4 (STORM)	Junction	252.24	269.51	48.00	12.96	255.99	0 00:00	0.00	0.00
SDMH-B5 (STORM)	Junction	252.76	266.49	48.00	12.98	257.30	0 00:00	0.00	0.00
SDMH-B6 (STORM)	Junction	252.54	263.83	48.00	13.00	258.07	0 00:00	0.00	0.00
SDMH-B7 (STORM)	Junction	257.38	265.79	48.00	6.64	261.26	0 00:00	0.00	0.00
SDMH-B8 (STORM)	Junction	266.72	276.34	48.00	5.25	270.15	0 00:00	0.00	0.00
SDMH-B9 (STORM)	Junction	283.30	291.00	48.00	4.16	286.66	0 00:00	0.00	0.00
SDMH-C1 (STORM)	Junction	256.00	265.00	48.00	4.06	259.45	0 00:00	0.00	0.00
SDMH-C2 (STORM)	Junction	259.28	266.56	48.00	2.92	262.81	0 00:00	0.00	0.00
SDMH-C3 (STORM)	Junction	262.48	270.00	48.00	2.93	266.00	0 00:00	0.00	0.00
SDMH-C4 (STORM)	Junction	271.00	281.00	48.00	1.21	274.24	0 00:00	0.00	0.00
SDMH-D1 (STORM)	Junction	235.43	244.00	48.00	5.88	238.89	0 00:00	0.00	0.00
SDMH-D2 (STORM)	Junction	249.50	257.09	48.00	5.37	252.96	0 00:00	0.00	0.00
SDMH-D3 (STORM)	Junction	282.53	290.10	48.00	3.77	285.87	0 00:00	0.00	0.00
SDMH-D4 (STORM)	Junction	299.50	306.95	48.00	2.33	302.83	0 00:00	0.00	0.00
SDMH-D5 (STORM)	Junction	305.50	314.00	48.00	0.91	308.71	0 00:00	0.00	0.00
SDMH-E1 (STORM)	Junction	232.75	242.43	48.00	8.83	236.40	0 00:00	0.00	0.00
SDMH-E2 (STORM)	Junction	246.13	255.60	48.00	8.10	249.53	0 00:00	0.00	0.00
SDMH-E3 (STORM)	Junction	269.66	278.00	48.00	6.93	273.04	0 00:00	0.00	0.00
SDMH-E4 (STORM)	Junction	286.50	295.57	48.00	6.93	289.92	0 00:00	0.00	0.00
SDMH-E5 (STORM)	Junction	288.69	297.87	60.00	5.42	292.27	0 00:00	0.00	0.00
SDMH-E6 (STORM)	Junction	291.15	299.42	48.00	2.14	294.52	0 00:00	0.00	0.00
SDMH-E7 (STORM)	Junction	303.26	314.53	48.00	1.18	306.49	0 00:00	0.00	0.00
SDMH-E8 (STORM)	Junction	318.27	326.00	48.00	1.18	321.47	0 00:00	0.00	0.00
SDMH-F1 (STORM)	Junction	290.93	300.47	48.00	2.55	294.41	0 00:00	0.00	0.00
SDMH-F2 (STORM)	Junction	293.34	303.31	48.00	1.21	296.68	0 00:00	0.00	0.00
SDMH-F3 (STORM)	Junction	312.09	323.59	48.00	1.21	315.30	0 00:00	0.00	0.00
SDMH-G1 (STORM)	Junction	228.94	249.00	60.00	47.27	233.62	0 00:00	0.00	0.00
SDMH-H1 (STORM)	Junction	179.49	193.34	96.00	131.24	187.17	0 00:00	0.00	0.00
SDMH-H2 (STORM)	Junction	184.28	219.21	96.00	131.19	189.36	0 00:00	0.00	0.00
SDMH-H3 (STORM)	Junction	210.82	240.96	96.00	121.81	215.69	0 00:00	0.00	0.00
SDMH-H4 (STORM)	Junction	217.45	239.00	72.00	64.93	222.93	0 00:00	0.00	0.00
SDMH-H5 (STORM)	Junction	224.14	253.00	72.00	65.05	228.82	0 00:00	0.00	0.00
OUTFALL__DET_WEIR	Outfall	175.00			0.00	175.00			
OUTFALL_DET_PIPE_24	Outfall	180.00			44.48	181.52			
OUTFALL_DET_PIPE_30	Outfall	180.00			69.41	181.68			
SDHW-A1 (STORM)	Outfall	220.29			2.25	220.63			
DETENTION_POND	Storage Node	182.00	192.00		133.01	186.81		0.00	0.00

Link Summary

Element ID	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow Velocity	Peak Flow Depth	Total Time Surcharged	Reported Condition
			(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)	(ft/sec)	(ft)	(min)	
{STORM}.A-0 (STORM)	SDHW-A1 (STORM)	SDMH-A1 (STORM)	10.71	220.29	220.50	-1.9600	30.000	0.0130	2.25	57.43	4.45	0.40	0.00	Calculated
{STORM}.A-1 (STORM)	SDMH-A1 (STORM)	SDMH-A2 (STORM)	100.70	220.50	236.07	-15.4600	24.000	0.0130	2.25	88.96	10.74	0.34	0.00	Calculated
{STORM}.A-2 (STORM)	SDMH-A2 (STORM)	SDMH-A3 (STORM)	218.68	236.07	246.28	-4.6700	24.000	0.0130	2.25	48.89	7.75	0.30	0.00	Calculated
{STORM}.A-3 (STORM)	SDMH-A3 (STORM)	SDFC-A (STORM)	14.06	251.62	252.88	-8.9600	12.000	0.0130	2.27	10.67	8.42	0.38	0.00	Calculated
{STORM}.A-4 (STORM)	SDFC-A (STORM)	SDMH-A4 (STORM)	29.04	252.88	253.84	-3.3100	12.000	0.0130	2.27	6.48	6.09	0.49	0.00	Calculated
{STORM}.A-5 (STORM)	SDMH-A4 (STORM)	SDMH-A5 (STORM)	143.05	254.34	268.11	-9.6300	12.000	0.0130	1.29	11.06	9.16	0.23	0.00	Calculated
{STORM}.B-0 (STORM)	SDMH-B1 (STORM)	SDMH-H2 (STORM)	69.39	215.90	213.00	4.1700	24.000	0.0130	12.95	46.22	9.92	0.87	0.00	Calculated
{STORM}.B-1 (STORM)	SDMH-B2 (STORM)	SDMH-B1 (STORM)	78.08	221.98	215.90	7.7900	24.000	0.0130	12.95	63.13	11.52	0.84	0.00	Calculated
{STORM}.B-10 (STORM)	SDMH-B8 (STORM)	SDMH-B9 (STORM)	106.44	271.47	286.30	-13.9300	18.000	0.0130	4.16	39.20	13.50	0.35	0.00	Calculated
{STORM}.B-11 (STORM)	SDMH-B9 (STORM)	SDMH-B10 (STORM)	92.10	286.80	291.00	-4.5600	18.000	0.0130	3.83	22.43	8.80	0.44	0.00	Calculated
{STORM}.B-12 (STORM)	SDMH-B10 (STORM)	SDMH-B11 (STORM)	100.47	292.50	301.46	-8.9200	18.000	0.0130	2.59	31.37	10.10	0.30	0.00	Calculated
{STORM}.B-13 (STORM)	SDMH-B11 (STORM)	SDMH-B12 (STORM)	80.79	301.46	309.23	-9.6200	18.000	0.0130	1.08	32.57	5.90	0.25	0.00	Calculated
{STORM}.B-2 (STORM)	SDMH-B2 (STORM)	SDMH-B3 (STORM)	163.81	221.98	241.89	-12.1600	24.000	0.0130	12.95	78.88	15.53	0.62	0.00	Calculated
{STORM}.B-3 (STORM)	SDMH-B3 (STORM)	SDMH-B4 (STORM)	249.48	242.86	255.24	-4.9700	24.000	0.0130	12.95	50.41	12.75	0.72	0.00	Calculated
{STORM}.B-4 (STORM)	SDMH-B4 (STORM)	SDMH-B5 (STORM)	98.43	255.14	255.76	-0.6300	24.000	0.0130	12.96	17.90	5.50	1.40	0.00	Calculated
{STORM}.B-5 (STORM)	SDMH-B5 (STORM)	SDMH-B6 (STORM)	99.98	255.76	256.49	-0.7400	24.000	0.0130	12.98	19.41	4.96	1.56	0.00	Calculated
{STORM}.B-6 (STORM)	SDMH-B6 (STORM)	SDFC-BC (STORM)	24.21	256.49	256.84	-1.4400	24.000	0.0130	13.00	27.16	5.18	1.63	0.00	Calculated
{STORM}.B-7 (STORM)	SDCB-B1 (STORM)	SDFC-BC (STORM)	10.44	257.00	256.84	1.5500	24.000	0.0130	8.23	28.18	3.21	1.71	0.00	Calculated
{STORM}.B-8 (STORM)	SDCB-B1 (STORM)	SDMH-B7 (STORM)	79.04	258.86	260.38	-1.9200	18.000	0.0130	6.63	14.56	6.96	0.80	0.00	Calculated
{STORM}.B-9 (STORM)	SDMH-B7 (STORM)	SDMH-B8 (STORM)	115.90	260.38	269.72	-8.0600	18.000	0.0130	5.25	29.81	7.89	0.65	0.00	Calculated
{STORM}.C-0 (STORM)	SDCB-C1 (STORM)	SDFC-BC (STORM)	17.61	257.37	256.84	2.9800	24.000	0.0130	5.34	39.02	2.71	1.48	0.00	Calculated
{STORM}.C-1 (STORM)	SDMH-C1 (STORM)	SDCB-C1 (STORM)	63.57	259.00	257.37	2.5700	24.000	0.0130	4.05	36.28	4.94	0.86	0.00	Calculated
{STORM}.C-2 (STORM)	SDMH-C1 (STORM)	SDMH-C2 (STORM)	54.84	260.00	262.28	-4.1600	12.000	0.0130	2.91	7.27	7.68	0.49	0.00	Calculated
{STORM}.C-3 (STORM)	SDMH-C2 (STORM)	SDMH-C3 (STORM)	99.30	262.28	265.48	-3.2200	12.000	0.0130	2.92	6.39	6.99	0.52	0.00	Calculated
{STORM}.C-4 (STORM)	SDMH-C3 (STORM)	SDMH-C4 (STORM)	125.09	265.48	274.00	-6.8100	12.000	0.0130	1.21	9.30	5.49	0.38	0.00	Calculated
{STORM}.D-0 (STORM)	SDFC D (STORM)	SDMH-H3 (STORM)	37.25	229.40	228.67	1.9500	24.000	0.0130	17.29	31.67	7.29	1.41	0.00	Calculated
{STORM}.D-1 (STORM)	SDMH-D1 (STORM)	SDFC D (STORM)	98.20	238.43	230.40	8.1800	18.000	0.0130	5.88	30.04	11.25	0.61	0.00	Calculated
{STORM}.D-2 (STORM)	SDMH-D2 (STORM)	SDMH-D1 (STORM)	80.60	252.50	238.43	17.4600	12.000	0.0130	5.37	14.89	15.40	0.46	0.00	Calculated
{STORM}.D-3 (STORM)	SDMH-D3 (STORM)	SDMH-D2 (STORM)	203.16	285.53	252.50	16.2600	12.000	0.0130	3.75	14.36	12.68	0.40	0.00	Calculated
{STORM}.D-4 (STORM)	SDMH-D4 (STORM)	SDMH-D3 (STORM)	192.04	302.50	285.53	8.8400	12.000	0.0130	2.32	10.59	9.95	0.34	0.00	Calculated
{STORM}.D-5 (STORM)	SDMH-D5 (STORM)	SDMH-D4 (STORM)	85.24	308.50	302.50	7.0400	12.000	0.0130	0.91	9.45	5.37	0.27	0.00	Calculated
{STORM}.D-E.1 (STORM)	SDCB-D2 (STORM)	SDFC D (STORM)	19.30	232.82	233.09	-1.4000	18.000	0.0150	1.71	4.07	2.60	0.60	0.00	Calculated
{STORM}.D-E.2 (STORM)	SDCB-D1 (STORM)	SDFC D (STORM)	15.15	233.49	233.25	1.5800	18.000	0.0130	2.49	13.22	4.25	0.55	0.00	Calculated
{STORM}.E-1 (STORM)	SDFC-E(STORM)	SDFC D (STORM)	10.39	231.93	231.63	2.8900	24.000	0.0130	8.83	38.45	6.11	0.94	0.00	Calculated
{STORM}.E-2 (STORM)	SDFC-E(STORM)	SDMH-E1 (STORM)	64.97	232.03	235.75	-5.7300	24.000	0.0130	8.83	54.13	7.12	0.88	0.00	Calculated
{STORM}.E-3 (STORM)	SDMH-E1 (STORM)	SDMH-E2 (STORM)	77.50	235.75	249.13	-17.2600	24.000	0.0130	8.10	93.98	12.46	0.52	0.00	Calculated
{STORM}.E-4 (STORM)	SDMH-E2 (STORM)	SDMH-E3 (STORM)	125.26	249.13	272.66	-18.7800	24.000	0.0130	6.92	98.05	15.89	0.39	0.00	Calculated
{STORM}.E-5 (STORM)	SDMH-E3 (STORM)	SDMH-E4 (STORM)	121.85	272.66	289.50	-13.8200	24.000	0.0130	6.93	84.11	15.32	0.40	0.00	Calculated
{STORM}.E-6 (STORM)	SDMH-E4 (STORM)	SDMH-E5 (STORM)	45.09	289.50	291.69	-4.8600	24.000	0.0130	5.42	49.87	8.55	0.51	0.00	Calculated
{STORM}.E-7 (STORM)	SDMH-E5 (STORM)	SDMH-E6 (STORM)	41.79	292.16	294.15	-4.7500	18.000	0.0130	2.14	22.91	7.06	0.34	0.00	Calculated
{STORM}.E-8 (STORM)	SDMH-E6 (STORM)	SDMH-E7 (STORM)	155.55	294.15	306.26	-7.7900	12.000	0.0130	1.17	9.94	6.35	0.30	0.00	Calculated
{STORM}.E-9 (STORM)	SDMH-E7 (STORM)	SDMH-E8 (STORM)	94.31	306.26	321.27	-15.9200	12.000	0.0130	1.18	14.22	9.61	0.21	0.00	Calculated
{STORM}.F-0 (STORM)	SDMH-E5 (STORM)	SDMH-F1 (STORM)	120.28	291.88	293.93	-1.7000	18.000	0.0130	2.52	13.71	5.48	0.46	0.00	Calculated
{STORM}.F-1 (STORM)	SDMH-F1 (STORM)	SDMH-F2 (STORM)	127.59	293.93	296.34	-1.8900	12.000	0.0130	1.20	4.90	3.97	0.41	0.00	Calculated

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Link Summary

Element ID	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow Velocity	Peak Flow Depth	Total Time Surcharged	Reported Condition
			(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)	(ft/sec)	(ft)	(min)	
{STORM}.F-2 (STORM)	SDMH-F2 (STORM)	SDMH-F3 (STORM)	143.28	296.34	315.09	-13.0900	12.000	0.0130	1.21	12.89	9.04	0.28	0.00	Calculated
{STORM}.G-1 (STORM)	SDMH-G1 (STORM)	SDHW-G1 (STORM)	44.33	231.94	233.00	-2.3900	42.000	0.0130	47.27	155.58	6.84	2.38	0.00	Calculated
{STORM}.G-2 (STORM)	SDMH-H3 (STORM)	SDMH-G1 (STORM)	200.57	227.17	231.94	-2.3800	42.000	0.0130	47.21	155.16	11.95	1.50	0.00	Calculated
{STORM}.H-0 (STORM)	SDMH-H1 (STORM)	DETENTION_POND	16.29	182.49	182.00	3.0000	72.000	0.0130	130.35	733.76	9.99	4.74	0.00	Calculated
{STORM}.H-3 (STORM)	SDMH-H2 (STORM)	SDMH-H1 (STORM)	43.53	187.28	182.49	11.0000	72.000	0.0130	131.24	1404.59	10.54	3.31	0.00	Calculated
{STORM}.H-4 (STORM)	SDMH-H3 (STORM)	SDMH-H2 (STORM)	201.47	213.82	203.76	4.9900	72.000	0.0130	121.79	946.36	19.08	1.66	0.00	Calculated
{STORM}.H-5 (STORM)	SDMH-H4 (STORM)	SDMH-H3 (STORM)	49.07	220.45	219.96	1.0000	72.000	0.0130	64.91	423.22	7.70	2.03	0.00	Calculated
{STORM}.H-6 (STORM)	SDMH-H5 (STORM)	SDMH-H4 (STORM)	131.86	227.14	223.19	3.0000	60.000	0.0130	64.93	450.77	13.38	1.48	0.00	Calculated
{STORM}.H-7 (STORM)	SDHW-H2	SDMH-H5 (STORM)	28.58	246.54	246.00	1.8900	60.000	0.0130	65.05	358.00	9.78	1.86	0.00	Calculated
DET_BASIN_OUT_24	DETENTION_POND	OUTFALL_DET_PIPE_24	44.00	182.00	180.00	4.5500	24.000	0.0130	44.48	48.23	15.21	1.76	0.00	Calculated
DET_BASIN_OUT_30	DETENTION_POND	OUTFALL_DET_PIPE_30	44.00	182.00	180.00	4.5500	30.000	0.0130	69.41	87.45	15.83	2.09	0.00	Calculated
WEIR_LIPALU	DETENTION_POND	OUTFALL__DET_WEIR		182.00	175.00				0.00					

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Inlet Summary

Element ID	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Allowable Spread (ft)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)
DI-A4.1 (STORM)	2	255.71	260.68	1.47	N/A	N/A	N/A	7.00	3.47	261.25
DI-A5.1 (STORM)	1	269.47	274.85	0.75	0.00	0.75	0.43	7.00	2.08	274.89
DI-A5.2 (STORM)	1	270.40	275.30	0.73	0.00	0.72	0.43	7.00	2.05	275.34
DI-B10.1 (STORM)	1	292.48	297.48	1.53	1.19	0.34	78.01	7.00	4.05	297.65
DI-B10.2 (STORM)	1	292.48	297.39	0.22	0.22	0.00	100.00	7.00	1.32	297.47
DI-B11.1 (STORM)	1	301.55	306.54	1.63	1.25	0.38	76.83	7.00	4.24	306.71
DI-B11.2 (STORM)	1	301.55	306.55	0.69	0.00	0.69	0.44	7.00	2.01	306.59
DI-B12.1 (STORM)	1	309.67	314.69	1.36	1.09	0.26	80.61	7.00	3.75	314.85
DI-B7.1 (STORM)	1	260.75	265.75	1.62	1.35	0.26	83.64	7.00	5.19	265.94
DI-B8.1 (STORM)	1	271.34	276.34	1.29	0.00	1.29	0.21	7.00	2.24	276.38
DI-B8.2 (STORM)	1	271.34	276.34	0.57	0.45	0.12	78.72	7.00	1.65	276.44
DI-B9.1 (STORM)	1	286.00	291.00	0.84	0.61	0.24	71.78	7.00	1.91	291.12
DI-C1.1 (STORM)	1	260.00	265.00	1.54	1.31	0.23	84.83	7.00	5.06	265.19
DI-C3.1 (STORM)	1	265.00	270.00	1.74	1.31	0.43	75.21	7.00	4.42	270.17
DI-C3.2 (STORM)	1	265.00	270.00	0.65	0.59	0.06	90.79	7.00	1.97	270.12
DI-C4.1 (STORM)	1	276.00	281.00	1.78	1.08	0.70	60.69	7.00	3.57	281.16
DI-C4.2 (STORM)	1	276.00	281.00	0.46	0.37	0.08	81.61	7.00	1.52	281.09
DI-D1.1 (STORM)	1	239.00	244.00	0.81	0.01	0.81	0.66	7.00	2.45	244.05
DI-D2.1 (STORM)	1	252.12	257.15	1.57	1.32	0.25	84.24	7.00	5.09	257.34
DI-D2.2 (STORM)	1	252.12	257.13	0.76	0.01	0.75	0.68	7.00	2.37	257.17
DI-D3.1 (STORM)	1	285.10	290.11	1.98	1.16	0.82	58.69	7.00	3.84	290.27
DI-D3.2 (STORM)	1	285.10	290.15	0.65	0.49	0.16	75.95	7.00	1.72	290.26
DI-D4.1 (STORM)	1	301.90	306.90	1.94	1.14	0.80	58.71	7.00	3.76	307.06
DI-D4.2 (STORM)	1	301.90	306.91	0.65	0.50	0.15	76.36	7.00	1.74	307.01
DI-D5.1 (STORM)	1	309.60	314.60	1.44	0.00	1.44	0.20	7.00	2.33	314.64
DI-E1.1 (STORM)	1	237.48	242.48	0.81	0.01	0.81	0.67	7.00	2.45	242.53
DI-E2.1 (STORM)	1	250.60	255.60	1.33	1.18	0.16	88.31	7.00	4.61	255.78
DI-E2.2 (STORM)	1	250.60	255.60	0.79	0.01	0.79	0.67	7.00	2.42	255.65
DI-E4.1 (STORM)	1	290.70	295.70	1.71	1.29	0.41	75.72	7.00	4.36	295.87
DI-E4.2 (STORM)	1	290.93	295.94	0.45	0.43	0.02	94.93	7.00	1.71	296.05
DI-E5.1 (STORM)	1	292.96	298.02	1.62	N/A	N/A	N/A	7.00	8.82	298.38
DI-E5.2 (STORM)	1	293.02	297.96	0.36	0.36	0.00	100.00	7.00	1.80	298.07
DI-E6.1 (STORM)	1	294.56	299.56	1.30	1.16	0.14	89.24	7.00	4.57	299.73
DI-E8.1 (STORM)	1	321.43	326.43	1.79	1.08	0.70	60.65	7.00	3.57	326.58
DI-E8.2 (STORM)	1	321.56	326.56	0.48	0.39	0.09	81.05	7.00	1.54	326.66
DI-F1.1 (STORM)	1	295.37	300.37	1.31	1.17	0.15	88.78	7.00	4.59	300.54
DI-F1.2 (STORM)	1	295.27	300.27	0.08	0.08	0.00	100.00	7.00	1.02	300.34
DI-F3.1 (STORM)	1	319.00	325.00	1.58	0.00	1.58	0.19	7.00	2.41	325.05
DI-F3.2 (STORM)	1	319.00	325.00	0.37	0.31	0.06	84.48	7.00	1.40	325.09
SDCB-B1 (STORM)	2	257.00	263.87	2.08	N/A	N/A	N/A	7.00	3.71	264.13
SDCB-C1 (STORM)	2	257.36	264.52	1.61	N/A	N/A	N/A	7.00	3.44	264.78
SDCB-D1 (STORM)	2	233.49	235.30	2.56	N/A	N/A	N/A	7.00	3.97	235.57
SDCB-D2 (STORM)	2	233.09	234.90	1.72	N/A	N/A	N/A	7.00	3.51	235.16
SDMH-A4 (STORM)	2	250.84	260.33	0.63	N/A	N/A	N/A	7.00	2.40	260.57

Junction Input

Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft^2)
4-Jun	253.00	254.25	-254.25	0.00
5-Jun	270.00	271.25	-271.25	0.00
6-Jun	290.00	291.25	-291.25	0.00
7-Jun	305.00	306.25	-306.25	0.00
8-Jun	310.00	311.25	-311.25	0.00
9-Jun	313.00	314.25	-314.25	0.00
10-Jun	340.00	341.25	-341.25	0.00
SDFC D (STORM)	229.40	237.42	0.00	0.00
SDFC-A (STORM)	252.88	258.84	0.00	0.00
SDFC-BC (STORM)	255.76	263.76	0.00	0.00
SDFC-E(STORM)	231.93	237.65	0.00	0.00
SDHW-G1 (STORM)	233.00	237.00	0.00	0.00
SDHW-H2	246.54	251.54	0.00	0.00
SDMH-A1 (STORM)	217.50	239.13	0.00	0.00
SDMH-A2 (STORM)	233.07	246.59	0.00	0.00
SDMH-A3 (STORM)	243.28	258.09	0.00	0.00
SDMH-A5 (STORM)	265.11	274.77	0.05	0.00
SDMH-B1 (STORM)	212.90	222.77	0.00	0.00
SDMH-B10 (STORM)	288.00	299.48	0.00	0.00
SDMH-B11 (STORM)	298.46	306.18	0.00	0.00
SDMH-B12 (STORM)	306.23	314.37	0.01	0.00
SDMH-B2 (STORM)	218.98	227.86	0.01	0.00
SDMH-B3 (STORM)	238.89	248.68	0.00	0.00
SDMH-B4 (STORM)	252.24	269.51	0.00	0.00
SDMH-B5 (STORM)	252.76	266.49	0.00	0.00
SDMH-B6 (STORM)	252.54	263.83	0.00	0.00
SDMH-B7 (STORM)	257.38	265.79	0.00	0.00
SDMH-B8 (STORM)	266.72	276.34	0.00	0.00
SDMH-B9 (STORM)	283.30	291.00	0.00	0.00
SDMH-C1 (STORM)	256.00	265.00	0.00	0.00
SDMH-C2 (STORM)	259.28	266.56	0.00	0.00
SDMH-C3 (STORM)	262.48	270.00	0.00	0.00
SDMH-C4 (STORM)	271.00	281.00	0.00	0.00
SDMH-D1 (STORM)	235.43	244.00	0.00	0.00
SDMH-D2 (STORM)	249.50	257.09	0.00	0.00
SDMH-D3 (STORM)	282.53	290.10	0.00	0.00
SDMH-D4 (STORM)	299.50	306.95	0.00	0.00
SDMH-D5 (STORM)	305.50	314.00	0.00	0.00
SDMH-E1 (STORM)	232.75	242.43	0.00	0.00
SDMH-E2 (STORM)	246.13	255.60	0.00	0.00
SDMH-E3 (STORM)	269.66	278.00	0.00	0.00
SDMH-E4 (STORM)	286.50	295.57	0.00	0.00
SDMH-E5 (STORM)	288.69	297.87	0.00	0.00
SDMH-E6 (STORM)	291.15	299.42	0.00	0.00
SDMH-E7 (STORM)	303.26	314.53	0.00	0.00
SDMH-E8 (STORM)	318.27	326.00	0.00	0.00
SDMH-F1 (STORM)	290.93	300.47	0.00	0.00
SDMH-F2 (STORM)	293.34	303.31	0.00	0.00
SDMH-F3 (STORM)	312.09	323.59	0.01	0.00
SDMH-G1 (STORM)	228.94	249.00	0.00	0.00
SDMH-H1 (STORM)	179.49	193.34	-0.21	0.00
SDMH-H2 (STORM)	184.28	219.21	0.00	0.00
SDMH-H3 (STORM)	210.82	240.96	0.00	0.00
SDMH-H4 (STORM)	217.45	239.00	0.00	0.00
SDMH-H5 (STORM)	224.14	253.00	0.00	0.00

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Junction Results

Element ID	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
4-Jun	47.66	253.83	0.00	0 00:16	0 00:00	0.00	0.00
5-Jun	45.21	270.86	0.00	0 00:16	0 00:00	0.00	0.00
6-Jun	41.20	290.67	0.00	0 00:16	0 00:00	0.00	0.00
7-Jun	40.22	305.82	0.00	0 00:16	0 00:00	0.00	0.00
8-Jun	40.23	310.93	0.00	0 00:16	0 00:00	0.00	0.00
9-Jun	40.26	314.13	0.00	0 00:16	0 00:00	0.00	0.00
10-Jun	16.01	340.58	0.00	0 00:15	0 00:00	0.00	0.00
SDFC D (STORM)	17.30	231.17	0.00	0 00:09	0 00:00	0.00	0.00
SDFC-A (STORM)	2.27	253.31	0.00	0 00:06	0 00:00	0.00	0.00
SDFC-BC (STORM)	13.02	258.53	0.00	0 00:09	0 00:00	0.00	0.00
SDFC-E(STORM)	8.83	233.16	0.00	0 00:09	0 00:00	0.00	0.00
SDHW-G1 (STORM)	47.63	236.08	0.00	0 00:16	0 00:00	0.00	0.00
SDHW-H2	65.09	248.81	0.00	0 00:15	0 00:00	0.00	0.00
SDMH-A1 (STORM)	2.25	220.96	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-A2 (STORM)	2.25	236.29	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-A3 (STORM)	2.27	246.59	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-A5 (STORM)	1.30	268.35	0.00	0 00:05	0 00:00	0.00	0.00
SDMH-B1 (STORM)	12.95	216.91	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B10 (STORM)	3.84	291.47	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-B11 (STORM)	2.59	301.78	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-B12 (STORM)	1.08	309.42	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-B2 (STORM)	12.95	222.65	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B3 (STORM)	12.95	242.46	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B4 (STORM)	12.96	255.99	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B5 (STORM)	12.98	257.30	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-B6 (STORM)	13.00	258.07	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B7 (STORM)	6.64	261.26	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-B8 (STORM)	5.25	270.15	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-B9 (STORM)	4.16	286.66	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-C1 (STORM)	4.06	259.45	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-C2 (STORM)	2.92	262.81	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-C3 (STORM)	2.93	266.00	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-C4 (STORM)	1.21	274.24	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-D1 (STORM)	5.88	238.89	0.00	0 00:05	0 00:00	0.00	0.00
SDMH-D2 (STORM)	5.37	252.96	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-D3 (STORM)	3.77	285.87	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-D4 (STORM)	2.33	302.83	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-D5 (STORM)	0.91	308.71	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E1 (STORM)	8.83	236.40	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E2 (STORM)	8.10	249.53	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-E3 (STORM)	6.93	273.04	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E4 (STORM)	6.93	289.92	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E5 (STORM)	5.42	292.27	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-E6 (STORM)	2.14	294.52	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E7 (STORM)	1.18	306.49	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-E8 (STORM)	1.18	321.47	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-F1 (STORM)	2.55	294.41	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-F2 (STORM)	1.21	296.68	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-F3 (STORM)	1.21	315.30	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-G1 (STORM)	47.27	233.62	0.00	0 00:17	0 00:00	0.00	0.00
SDMH-H1 (STORM)	131.24	187.17	0.00	0 00:18	0 00:00	0.00	0.00
SDMH-H2 (STORM)	131.19	189.36	0.00	0 00:14	0 00:00	0.00	0.00
SDMH-H3 (STORM)	121.81	215.69	0.00	0 00:16	0 00:00	0.00	0.00
SDMH-H4 (STORM)	64.93	222.93	0.00	0 00:15	0 00:00	0.00	0.00
SDMH-H5 (STORM)	65.05	228.82	0.00	0 00:15	0 00:00	0.00	0.00

THESE "JUNCTIONS" ARE JUST NULL CONNECTIONS BETWEEN PRESERVATION SWALE SECTIONS OR "TRENCHES" NO DATA EVALUATED HERE.

Pipe Input

Element ID	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses
{STORM}.A-0 (STORM)	10.71	220.29	220.50	-1.9600	30.000	0.0130	0.5000	0.5000	0.0000
{STORM}.A-1 (STORM)	100.70	220.50	236.07	-15.4600	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.A-2 (STORM)	218.68	236.07	246.28	-4.6700	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.A-3 (STORM)	14.06	251.62	252.88	-8.9600	12.000	0.0130	0.5000	0.5000	0.0000
{STORM}.A-4 (STORM)	29.04	252.88	253.84	-3.3100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.A-5 (STORM)	143.05	254.34	268.11	-9.6300	12.000	0.0130	0.5000	0.7000	0.0000
{STORM}.A-5.1 (STORM)	31.77	256.72	256.04	2.1200	12.000	0.0130	0.5000	0.7000	0.0000
{STORM}.A-6.1 (STORM)	11.49	270.47	270.33	1.2200	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.A-6.2 (STORM)	14.21	271.40	270.61	5.5700	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.B-0 (STORM)	69.39	215.90	213.00	4.1700	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-1 (STORM)	78.08	221.98	215.90	7.7900	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-10 (STORM)	106.44	271.47	286.30	-13.9300	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-10.1 (STORM)	12.09	287.00	286.80	1.6500	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-11 (STORM)	92.10	286.80	291.00	-4.5600	18.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-11.1 (STORM)	47.87	293.48	293.00	1.0000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-11.2 (STORM)	40.03	293.48	291.50	4.9500	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-12 (STORM)	100.47	292.50	301.46	-8.9200	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-12.1 (STORM)	10.82	302.55	302.30	2.3000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-12.2 (STORM)	17.38	302.55	302.30	1.4400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-13 (STORM)	80.79	301.46	309.23	-9.6200	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-13.1 (STORM)	13.80	310.67	310.47	1.4600	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-2 (STORM)	163.81	221.98	241.89	-12.1600	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-3 (STORM)	249.48	242.86	255.24	-4.9700	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-4 (STORM)	98.43	255.14	255.76	-0.6300	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-5 (STORM)	99.98	255.76	256.49	-0.7400	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-6 (STORM)	24.21	256.49	256.84	-1.4400	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-7 (STORM)	10.44	257.00	256.84	1.5500	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-8 (STORM)	79.04	258.86	260.38	-1.9200	18.000	0.0130	0.5000	0.8000	0.0000
{STORM}.B-8.1 (STORM)	12.46	261.75	261.55	1.6000	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.B-9 (STORM)	115.90	260.38	269.72	-8.0600	18.000	0.0130	0.5000	0.8000	0.0000
{STORM}.B-9.1 (STORM)	12.98	272.34	272.14	1.5400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-9.2 (STORM)	11.49	272.34	272.14	1.7400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-0 (STORM)	17.61	257.37	256.84	2.9800	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-1 (STORM)	63.57	259.00	257.37	2.5700	24.000	0.0130	0.5000	0.9000	0.0000
{STORM}.C-1.1 (STORM)	11.15	261.00	260.80	1.8000	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-2 (STORM)	54.84	260.00	262.28	-4.1600	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-2.1 (STORM)	12.79	266.00	265.80	1.6000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-2.2 (STORM)	12.89	266.00	265.80	1.5500	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-3 (STORM)	99.30	262.28	265.48	-3.2200	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.C-3.1 (STORM)	12.20	277.00	276.80	1.6400	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-3.2 (STORM)	12.12	277.00	276.80	1.6500	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-4 (STORM)	125.09	265.48	274.00	-6.8100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-0 (STORM)	37.25	229.40	228.67	1.9500	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-1 (STORM)	98.20	238.43	230.40	8.1800	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-1.1 (STORM)	12.67	240.00	239.80	1.5900	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.D-2 (STORM)	80.60	252.50	238.43	17.4600	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.D-2.1 (STORM)	12.16	253.12	252.92	1.6400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-2.2 (STORM)	12.13	253.12	252.92	1.6500	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-3 (STORM)	203.16	285.53	252.50	16.2600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-3.1 (STORM)	12.04	286.10	285.90	1.6700	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-3.2 (STORM)	12.19	286.10	285.90	1.6600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-4 (STORM)	192.04	302.50	285.53	8.8400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-4.1 (STORM)	12.74	302.90	302.63	2.1100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-4.2 (STORM)	12.42	302.90	302.63	2.1700	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-5 (STORM)	85.24	308.50	302.50	7.0400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-5.1 (STORM)	13.99	310.60	310.40	1.4300	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.D-E.2 (STORM)	15.15	233.49	233.25	1.5800	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-1 (STORM)	10.39	231.93	231.63	2.8900	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-1.1 (STORM)	12.39	238.48	238.28	1.6200	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-2 (STORM)	64.97	232.03	235.75	-5.7300	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-2.1 (STORM)	12.20	251.60	251.40	1.6300	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-2.2 (STORM)	11.94	251.60	251.40	1.6700	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-3 (STORM)	77.50	235.75	249.13	-17.2600	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-4 (STORM)	125.26	249.13	272.66	-18.7800	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-4.1 (STORM)	14.65	291.70	291.50	1.3600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-4.2 (STORM)	13.05	291.93	291.50	3.3000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-5 (STORM)	121.85	272.66	289.50	-13.8200	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-5.1 (STORM)	19.76	293.97	293.50	2.3600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-5.2 (STORM)	13.36	294.02	293.50	3.8900	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-6 (STORM)	45.09	289.50	291.69	-4.8600	24.000	0.0130	0.5000	1.0000	0.0000

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Pipe Input

Element ID	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses
{STORM}.E-6.1 (STORM)	13.50	295.56	295.36	1.4800	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-7 (STORM)	41.79	292.16	294.15	-4.7500	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-8 (STORM)	155.55	294.15	306.26	-7.7900	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-8.1 (STORM)	13.32	322.43	322.23	1.5100	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.E-8.2 (STORM)	13.61	322.56	322.23	2.4200	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.E-9 (STORM)	94.31	306.26	321.27	-15.9200	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.F-0 (STORM)	120.28	291.88	293.93	-1.7000	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-1 (STORM)	127.59	293.93	296.34	-1.8900	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-1.1 (STORM)	14.25	296.37	296.07	2.1100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-1.2 (STORM)	10.90	296.27	296.07	1.8300	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-2 (STORM)	143.28	296.34	315.09	-13.0900	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.F-3.1 (STORM)	10.94	320.00	319.55	4.1100	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.F-3.2 (STORM)	20.93	320.00	319.55	2.1500	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.G-1 (STORM)	44.33	231.94	233.00	-2.3900	42.000	0.0130	0.5000	0.6000	0.0000
{STORM}.G-2 (STORM)	200.57	227.17	231.94	-2.3800	42.000	0.0130	0.5000	1.0000	0.0000
{STORM}.H-4 (STORM)	201.47	213.82	203.76	4.9900	72.000	0.0130	0.5000	0.7000	0.0000
{STORM}.H-5 (STORM)	49.07	220.45	219.96	1.0000	72.000	0.0130	0.5000	1.0000	0.0000
{STORM}.H-6	131.86	227.14	223.19	3.0000	60.000	0.0130	0.5000	0.6000	0.0000
D-E.1	19.30	232.82	233.09	-1.4000	18.000	0.0150	0.5000	1.0000	0.0000
DET_BASIN_OUT_24	44.00	182.00	180.00	4.5500	24.000	0.0130	0.5000	0.5000	0.0000
DET_BASIN_OUT_30	44.00	182.00	180.00	4.5500	30.000	0.0130	0.5000	0.5000	0.0000
H-0	16.29	182.49	182.00	3.0000	72.000	0.0130	0.5000	0.5000	0.0000
H-3	43.53	187.28	182.49	11.0000	72.000	0.0130	0.5000	0.5000	0.0000
H-7	28.58	246.54	246.00	1.8900	60.000	0.0130	0.5000	0.5000	0.0000

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Pipe Results

Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow Velocity	Travel Time	Peak Flow Depth	Total Time Surcharged	Froude Number	Reported Condition
(cfs)	(days hh:mm)	(cfs)	(ft/sec)	(min)	(ft)	(min)		
2.25	0 00:06	57.43	4.45	0.04	0.40	0.00		Calculated
2.25	0 00:06	88.96	10.74	0.16	0.34	0.00		Calculated
2.25	0 00:06	48.89	7.75	0.47	0.30	0.00		Calculated
2.27	0 00:06	10.67	8.42	0.03	0.38	0.00		Calculated
2.27	0 00:05	6.48	6.09	0.08	0.49	0.00		Calculated
1.29	0 00:05	11.06	9.16	0.26	0.23	0.00		Calculated
0.66	0 00:08	5.19	4.09	0.13	0.26	0.00		Calculated
0.66	0 00:05	3.93	2.99	0.06	0.32	0.00		Calculated
0.65	0 00:05	8.41	5.17	0.05	0.22	0.00		Calculated
12.95	0 00:10	46.22	9.92	0.12	0.87	0.00		Calculated
12.95	0 00:10	63.13	11.52	0.11	0.84	0.00		Calculated
4.16	0 00:07	39.20	13.50	0.13	0.35	0.00		Calculated
0.61	0 00:05	4.58	3.40	0.06	0.28	0.00		Calculated
3.83	0 00:07	22.43	8.80	0.17	0.44	0.00		Calculated
1.23	0 00:10	3.57	3.62	0.22	0.45	0.00		Calculated
0.20	0 00:05	7.92	4.12	0.16	0.12	0.00		Calculated
2.59	0 00:07	31.37	10.10	0.17	0.30	0.00		Calculated
1.31	0 00:07	5.40	4.11	0.04	0.42	0.00		Calculated
0.61	0 00:05	4.27	3.18	0.09	0.29	0.00		Calculated
1.08	0 00:09	32.57	5.90	0.23	0.25	0.00		Calculated
1.08	0 00:09	4.30	3.77	0.06	0.39	0.00		Calculated
12.95	0 00:10	78.88	15.53	0.18	0.62	0.00		Calculated
12.95	0 00:10	50.41	12.75	0.33	0.72	0.00		Calculated
12.96	0 00:10	17.90	5.50	0.30	1.40	0.00		Calculated
12.98	0 00:09	19.41	4.96	0.34	1.56	0.00		Calculated
13.00	0 00:09	27.16	5.18	0.08	1.63	0.00		Calculated
8.23	0 00:08	28.18	3.21	0.05	1.71	0.00		Calculated
6.63	0 00:08	14.56	6.96	0.19	0.80	0.00		Calculated
1.43	0 00:10	4.50	3.97	0.05	0.47	0.00		Calculated
5.25	0 00:07	29.81	7.89	0.24	0.65	0.00		Calculated
0.86	0 00:07	4.42	3.41	0.06	0.36	0.00		Calculated
0.43	0 00:05	4.70	3.00	0.06	0.24	0.00		Calculated
5.34	0 00:11	39.02	2.71	0.11	1.48	0.00		Calculated
4.05	0 00:09	36.28	4.94	0.21	0.86	0.00		Calculated
1.38	0 00:12	4.78	4.04	0.05	0.45	0.00		Calculated
2.91	0 00:08	7.27	7.68	0.12	0.49	0.00		Calculated
1.50	0 00:08	4.51	3.90	0.05	0.49	0.00		Calculated
0.59	0 00:05	4.44	3.14	0.07	0.29	0.00		Calculated
2.92	0 00:08	6.39	6.99	0.24	0.52	0.00		Calculated
1.07	0 00:08	4.56	3.73	0.05	0.39	0.00		Calculated
0.36	0 00:05	4.58	2.92	0.07	0.21	0.00		Calculated
1.21	0 00:08	9.30	5.49	0.38	0.38	0.00		Calculated
17.29	0 00:09	31.67	7.29	0.09	1.41	0.00		Calculated
5.88	0 00:09	30.04	11.25	0.15	0.61	0.00		Calculated
0.79	0 00:14	4.49	3.57	0.06	0.33	0.00		Calculated
5.37	0 00:09	14.89	15.40	0.09	0.46	0.00		Calculated
1.49	0 00:09	4.57	3.90	0.05	0.49	0.00		Calculated
0.73	0 00:05	4.58	3.33	0.06	0.32	0.00		Calculated
3.75	0 00:09	14.36	12.68	0.27	0.40	0.00		Calculated
1.34	0 00:09	4.60	3.83	0.05	0.46	0.00		Calculated
0.51	0 00:05	4.59	3.08	0.07	0.26	0.00		Calculated
2.32	0 00:09	10.59	9.95	0.32	0.34	0.00		Calculated
1.31	0 00:09	5.18	4.09	0.05	0.43	0.00		Calculated
0.48	0 00:05	5.24	3.34	0.06	0.24	0.00		Calculated
0.91	0 00:09	9.45	5.37	0.26	0.27	0.00		Calculated
0.91	0 00:09	4.26	3.60	0.06	0.36	0.00		Calculated
2.49	0 00:11	13.22	4.25	0.06	0.55	0.00		Calculated
8.83	0 00:09	38.45	6.11	0.03	0.94	0.00		Calculated
0.78	0 00:09	4.54	3.58	0.06	0.32	0.00		Calculated
8.83	0 00:09	54.13	7.12	0.15	0.88	0.00		Calculated
1.25	0 00:12	4.55	3.75	0.05	0.44	0.00		Calculated
0.76	0 00:05	4.60	3.36	0.06	0.33	0.00		Calculated
8.10	0 00:09	93.98	12.46	0.10	0.52	0.00		Calculated
6.92	0 00:09	98.05	15.89	0.13	0.39	0.00		Calculated
1.44	0 00:09	4.16	3.74	0.07	0.49	0.00		Calculated
0.41	0 00:05	6.47	3.77	0.06	0.20	0.00		Calculated
6.93	0 00:09	84.11	15.32	0.13	0.40	0.00		Calculated
1.60	0 00:12	5.48	4.66	0.07	0.45	0.00		Calculated
0.36	0 00:05	7.02	3.91	0.06	0.17	0.00		Calculated

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Pipe Results

Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow Velocity	Travel Time	Peak Flow Depth	Total Time Surcharged	Froude Number	Reported Condition
(cfs)	(days hh:mm)	(cfs)	(ft/sec)	(min)	(ft)	(min)		
5.42	0 00:07	49.87	8.55	0.09	0.51	0.00		Calculated
1.14	0 00:11	4.34	3.83	0.06	0.40	0.00		Calculated
2.14	0 00:09	22.91	7.06	0.10	0.34	0.00		Calculated
1.17	0 00:09	9.94	6.35	0.41	0.30	0.00		Calculated
1.07	0 00:08	4.38	3.61	0.06	0.40	0.00		Calculated
0.38	0 00:05	5.55	3.36	0.07	0.20	0.00		Calculated
1.18	0 00:08	14.22	9.61	0.16	0.21	0.00		Calculated
2.52	0 00:07	13.71	5.48	0.37	0.46	0.00		Calculated
1.20	0 00:06	4.90	3.97	0.54	0.41	0.00		Calculated
1.28	0 00:06	5.17	4.11	0.06	0.42	0.00		Calculated
0.08	0 00:05	4.83	2.04	0.09	0.10	0.00		Calculated
1.21	0 00:06	12.89	9.04	0.26	0.28	0.00		Calculated
0.98	0 00:06	7.23	4.76	0.04	0.31	0.00		Calculated
0.29	0 00:05	5.22	3.19	0.11	0.17	0.00		Calculated
47.27	0 00:16	155.58	6.84	0.11	2.38	0.00		Calculated
47.21	0 00:17	155.16	11.95	0.28	1.50	0.00		Calculated
121.79	0 00:16	946.36	19.08	0.18	1.66	0.00		Calculated
64.91	0 00:15	423.22	7.70	0.11	2.03	0.00		Calculated
64.93	0 00:15	450.77	13.38	0.16	1.48	0.00		Calculated
1.71	0 00:22	4.07	2.60	0.12	0.60	0.00		Calculated
44.48	0 00:18	48.23	15.21	0.05	1.76	0.00		Calculated
69.41	0 00:18	87.45	15.83	0.05	2.09	0.00		Calculated
130.35	0 00:16	733.76	9.99	0.03	4.74	0.00		Calculated
131.24	0 00:16	1404.59	10.54	0.07	3.31	0.00		Calculated
65.05	0 00:15	358.00	9.78	0.05	1.86	0.00		Calculated

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Inlet Input

Element ID	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Inlet Depth (ft)	Grate Clogging Factor (%)
DI-A4.1 (STORM)	2	255.71	260.68	4.97	30.00
DI-A5.1 (STORM)	1	269.47	274.85	5.38	30.00
DI-A5.2 (STORM)	1	270.40	275.30	4.90	30.00
DI-B10.1 (STORM)	1	292.48	297.48	5.00	30.00
DI-B10.2 (STORM)	1	292.48	297.39	4.91	30.00
DI-B11.1 (STORM)	1	301.55	306.54	4.99	30.00
DI-B11.2 (STORM)	1	301.55	306.55	5.00	30.00
DI-B12.1 (STORM)	1	309.67	314.69	5.02	30.00
DI-B7.1 (STORM)	1	260.75	265.75	5.00	30.00
DI-B8.1 (STORM)	1	271.34	276.34	5.00	30.00
DI-B8.2 (STORM)	1	271.34	276.34	5.00	30.00
DI-B9.1 (STORM)	1	286.00	291.00	5.00	30.00
DI-C1.1 (STORM)	1	260.00	265.00	5.00	30.00
DI-C3.1 (STORM)	1	265.00	270.00	5.00	30.00
DI-C3.2 (STORM)	1	265.00	270.00	5.00	30.00
DI-C4.1 (STORM)	1	276.00	281.00	5.00	30.00
DI-C4.2 (STORM)	1	276.00	281.00	5.00	30.00
DI-D1.1 (STORM)	1	239.00	244.00	5.00	30.00
DI-D2.1 (STORM)	1	252.12	257.15	5.03	30.00
DI-D2.2 (STORM)	1	252.12	257.13	5.01	30.00
DI-D3.1 (STORM)	1	285.10	290.11	5.01	30.00
DI-D3.2 (STORM)	1	285.10	290.15	5.05	30.00
DI-D4.1 (STORM)	1	301.90	306.90	5.00	30.00
DI-D4.2 (STORM)	1	301.90	306.91	5.01	30.00
DI-D5.1 (STORM)	1	309.60	314.60	5.00	30.00
DI-E1.1 (STORM)	1	237.48	242.48	5.00	30.00
DI-E2.1 (STORM)	1	250.60	255.60	5.00	30.00
DI-E2.2 (STORM)	1	250.60	255.60	5.00	30.00
DI-E4.1 (STORM)	1	290.70	295.70	5.00	30.00
DI-E4.2 (STORM)	1	290.93	295.94	5.01	30.00
DI-E5.1 (STORM)	1	292.96	298.02	5.06	30.00
DI-E5.2 (STORM)	1	293.02	297.96	4.94	30.00
DI-E6.1 (STORM)	1	294.56	299.56	5.00	30.00
DI-E8.1 (STORM)	1	321.43	326.43	5.00	30.00
DI-E8.2 (STORM)	1	321.56	326.56	5.00	30.00
DI-F1.1 (STORM)	1	295.37	300.37	5.00	30.00
DI-F1.2 (STORM)	1	295.27	300.27	5.00	30.00
DI-F3.1 (STORM)	1	319.00	325.00	6.00	30.00
DI-F3.2 (STORM)	1	319.00	325.00	6.00	30.00
SDCB-B1 (STORM)	2	257.00	263.87	6.87	30.00
SDCB-C1 (STORM)	2	257.36	264.52	7.16	30.00
SDCB-D1 (STORM)	2	233.49	235.30	1.81	30.00
SDCB-D2 (STORM)	2	233.09	234.90	1.81	30.00
SDMH-A4 (STORM)	2	250.84	260.33	9.49	30.00

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Inlet Results

Element ID	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Max Depth Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
DI-A4.1 (STORM)	1.47	N/A	N/A	N/A	3.47	261.25	0.57	0 00:08	0.00	0.00
DI-A5.1 (STORM)	0.75	0.00	0.75	0.43	2.08	274.89	0.04	0 00:05	0.00	0.00
DI-A5.2 (STORM)	0.73	0.00	0.72	0.43	2.05	275.34	0.04	0 00:05	0.00	0.00
DI-B10.1 (STORM)	1.53	1.19	0.34	78.01	4.05	297.65	0.17	0 00:10	0.00	0.00
DI-B10.2 (STORM)	0.22	0.22	0.00	100.00	1.32	297.47	0.08	0 00:05	0.00	0.00
DI-B11.1 (STORM)	1.63	1.25	0.38	76.83	4.24	306.71	0.17	0 00:07	0.00	0.00
DI-B11.2 (STORM)	0.69	0.00	0.69	0.44	2.01	306.59	0.04	0 00:05	0.00	0.00
DI-B12.1 (STORM)	1.36	1.09	0.26	80.61	3.75	314.85	0.16	0 00:09	0.00	0.00
DI-B7.1 (STORM)	1.62	1.35	0.26	83.64	5.19	265.94	0.19	0 00:10	0.00	0.00
DI-B8.1 (STORM)	1.29	0.00	1.29	0.21	2.24	276.38	0.04	0 00:07	0.00	0.00
DI-B8.2 (STORM)	0.57	0.45	0.12	78.72	1.65	276.44	0.10	0 00:05	0.00	0.00
DI-B9.1 (STORM)	0.84	0.61	0.24	71.78	1.91	291.12	0.12	0 00:05	0.00	0.00
DI-C1.1 (STORM)	1.54	1.31	0.23	84.83	5.06	265.19	0.19	0 00:12	0.00	0.00
DI-C3.1 (STORM)	1.74	1.31	0.43	75.21	4.42	270.17	0.17	0 00:08	0.00	0.00
DI-C3.2 (STORM)	0.65	0.59	0.06	90.79	1.97	270.12	0.12	0 00:05	0.00	0.00
DI-C4.1 (STORM)	1.78	1.08	0.70	60.69	3.57	281.16	0.16	0 00:08	0.00	0.00
DI-C4.2 (STORM)	0.46	0.37	0.08	81.61	1.52	281.09	0.09	0 00:05	0.00	0.00
DI-D1.1 (STORM)	0.81	0.01	0.81	0.66	2.45	244.05	0.05	0 00:14	0.00	0.00
DI-D2.1 (STORM)	1.57	1.32	0.25	84.24	5.09	257.34	0.19	0 00:09	0.00	0.00
DI-D2.2 (STORM)	0.76	0.01	0.75	0.68	2.37	257.17	0.05	0 00:05	0.00	0.00
DI-D3.1 (STORM)	1.98	1.16	0.82	58.69	3.84	290.27	0.16	0 00:09	0.00	0.00
DI-D3.2 (STORM)	0.65	0.49	0.16	75.95	1.72	290.26	0.11	0 00:05	0.00	0.00
DI-D4.1 (STORM)	1.94	1.14	0.80	58.71	3.76	307.06	0.16	0 00:09	0.00	0.00
DI-D4.2 (STORM)	0.65	0.50	0.15	76.36	1.74	307.01	0.11	0 00:05	0.00	0.00
DI-D5.1 (STORM)	1.44	0.00	1.44	0.20	2.33	314.64	0.05	0 00:09	0.00	0.00
DI-E1.1 (STORM)	0.81	0.01	0.81	0.67	2.45	242.53	0.05	0 00:09	0.00	0.00
DI-E2.1 (STORM)	1.33	1.18	0.16	88.31	4.61	255.78	0.18	0 00:12	0.00	0.00
DI-E2.2 (STORM)	0.79	0.01	0.79	0.67	2.42	255.65	0.05	0 00:05	0.00	0.00
DI-E4.1 (STORM)	1.71	1.29	0.41	75.72	4.36	295.87	0.17	0 00:09	0.00	0.00
DI-E4.2 (STORM)	0.45	0.43	0.02	94.93	1.71	296.05	0.11	0 00:05	0.00	0.00
DI-E5.1 (STORM)	1.62	N/A	N/A	N/A	8.82	298.38	0.36	0 00:12	0.00	0.00
DI-E5.2 (STORM)	0.36	0.36	0.00	100.00	1.80	298.07	0.11	0 00:05	0.00	0.00
DI-E6.1 (STORM)	1.30	1.16	0.14	89.24	4.57	299.73	0.18	0 00:11	0.00	0.00
DI-E8.1 (STORM)	1.79	1.08	0.70	60.65	3.57	326.58	0.16	0 00:08	0.00	0.00
DI-E8.2 (STORM)	0.48	0.39	0.09	81.05	1.54	326.66	0.10	0 00:05	0.00	0.00
DI-F1.1 (STORM)	1.31	1.17	0.15	88.78	4.59	300.54	0.18	0 00:06	0.00	0.00
DI-F1.2 (STORM)	0.08	0.08	0.00	100.00	1.02	300.34	0.06	0 00:05	0.00	0.00
DI-F3.1 (STORM)	1.58	0.00	1.58	0.19	2.41	325.05	0.05	0 00:06	0.00	0.00
DI-F3.2 (STORM)	0.37	0.31	0.06	84.48	1.40	325.09	0.09	0 00:05	0.00	0.00
SDCB-B1 (STORM)	2.08	N/A	N/A	N/A	3.71	264.13	0.26	0 00:09	0.00	0.00
SDCB-C1 (STORM)	1.61	N/A	N/A	N/A	3.44	264.78	0.26	0 00:10	0.00	0.00
SDCB-D1 (STORM)	2.56	N/A	N/A	N/A	3.97	235.57	0.27	0 00:11	0.00	0.00
SDCB-D2 (STORM)	1.72	N/A	N/A	N/A	3.51	235.16	0.26	0 00:22	0.00	0.00
SDMH-A4 (STORM)	0.63	N/A	N/A	N/A	2.40	260.57	0.24	0 00:05	0.00	0.00

Storage Nodes

Storage Node : DETENTION_POND

Input Data

Invert Elevation (ft)	182.00
Max (Rim) Elevation (ft)	192.00
Max (Rim) Offset (ft)	10.00
Initial Water Elevation (ft)	0.00
Initial Water Depth (ft)	-182.00
Ponded Area (ft^2)	100.00
Evaporation Loss	0.00

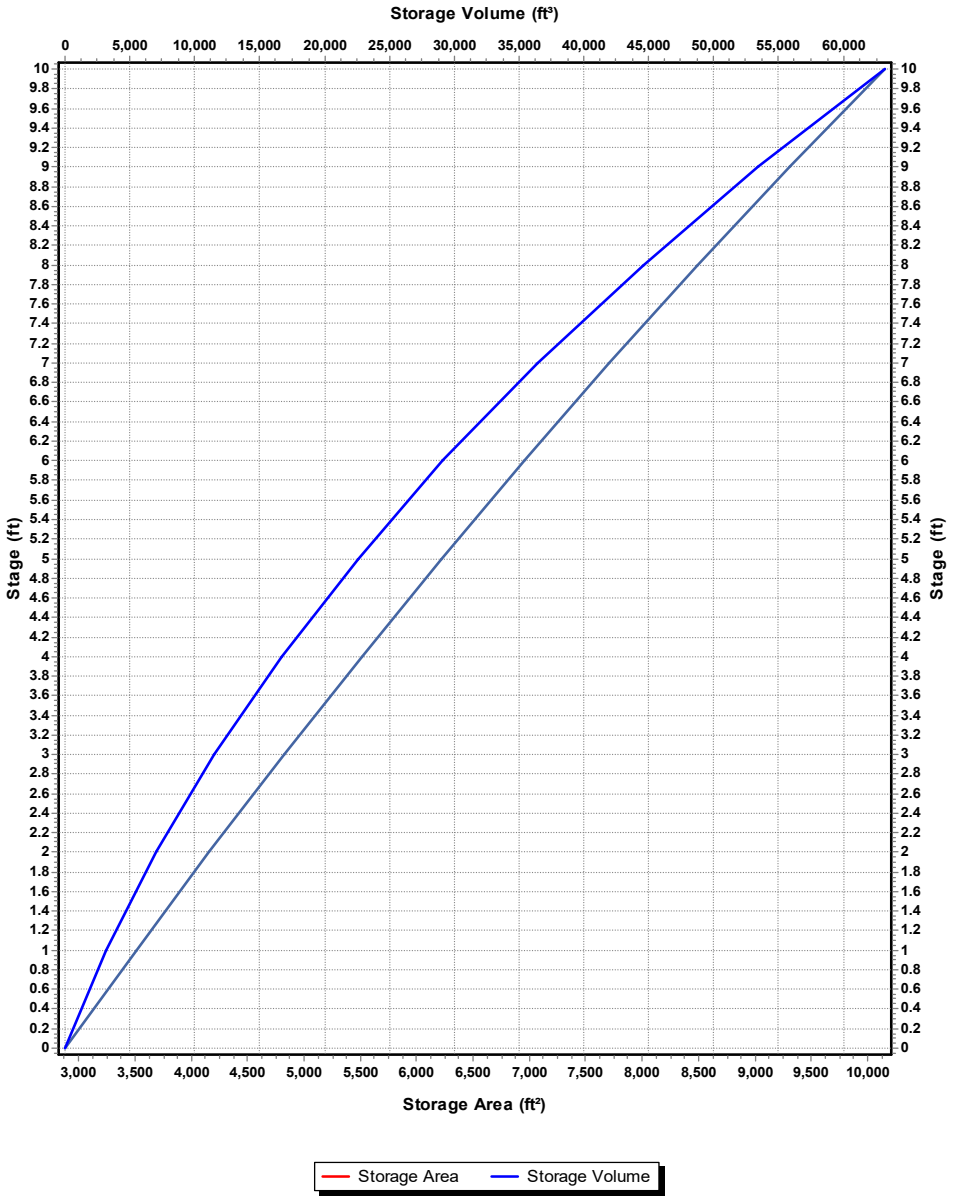
Storage Area Volume Curves

Storage Curve : New_Lipalu_Basin

Stage (ft)	Storage Area (ft^2)	Storage Volume (ft^3)
0	2879.03	0
1	3508.41	3193.72
2	4155.91	7025.88
3	4824.19	11515.93
4	5511.1	16683.58
5	6219.64	22548.95
6	6950.31	29133.93
7	7708.08	36463.13
8	8494.11	44564.23
9	9308.36	53465.47
10	10153.61	63196.46

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Storage Area Volume Curves



Storage Node : DETENTION_POND (continued)

Outflow Weirs

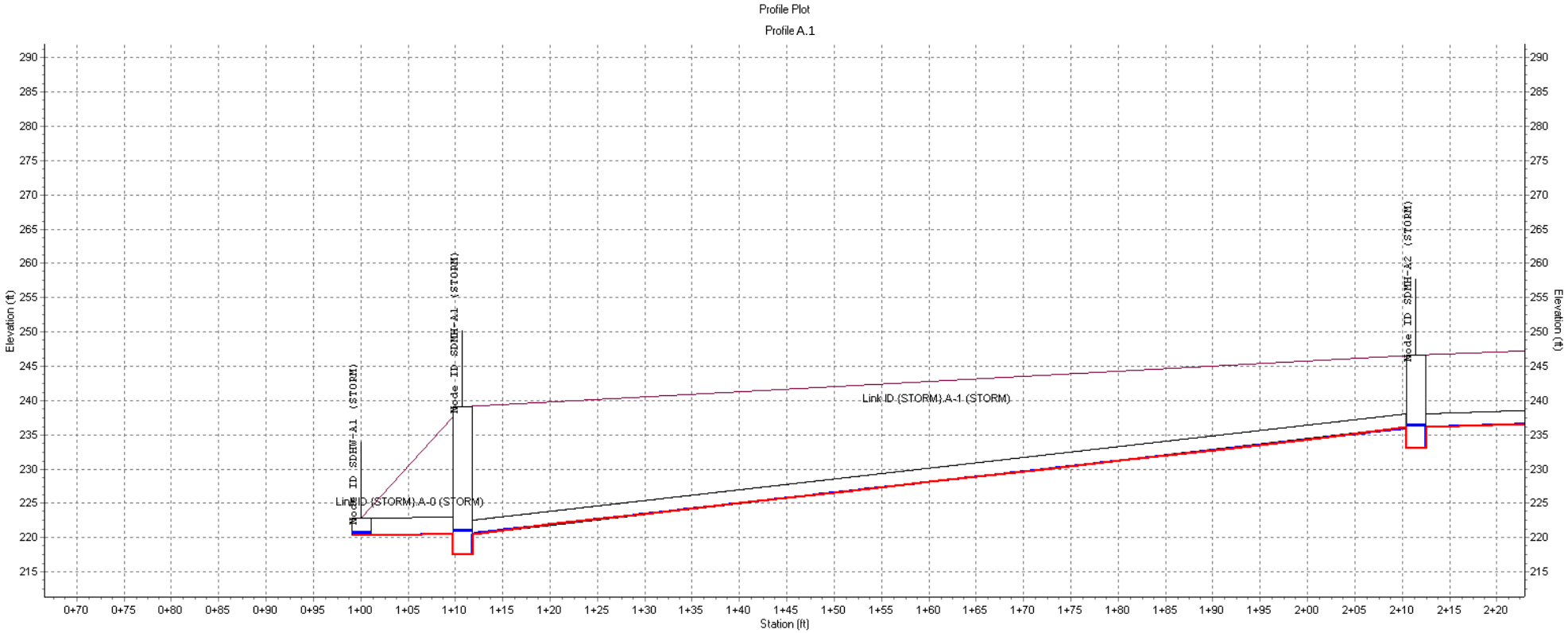
SN	Element ID	Weir Type	Flap Gate	Crest Elevation (ft)	Crest Offset (ft)	Length (ft)	Weir Total Height (ft)	Discharge Coefficient
1	WEIR_LIPALU	Trapezoidal	No	190.50	8.50	20.00	1.25	3.37

Output Summary Results

Peak Inflow (cfs)	133.01
Peak Lateral Inflow (cfs)	3.46
Peak Outflow (cfs)	113.89
Peak Exfiltration Flow Rate (cfm)	0
Max HGL Elevation Attained (ft)	186.81
Max HGL Depth Attained (ft)	4.81
Average HGL Elevation Attained (ft)	183.59
Average HGL Depth Attained (ft)	1.59
Time of Max HGL Occurrence (days hh:mm)	0 00:18
Total Exfiltration Volume (1000-ft³)	0
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0

WSEL SHOWN IN DETAIL 2, SHEET C-504

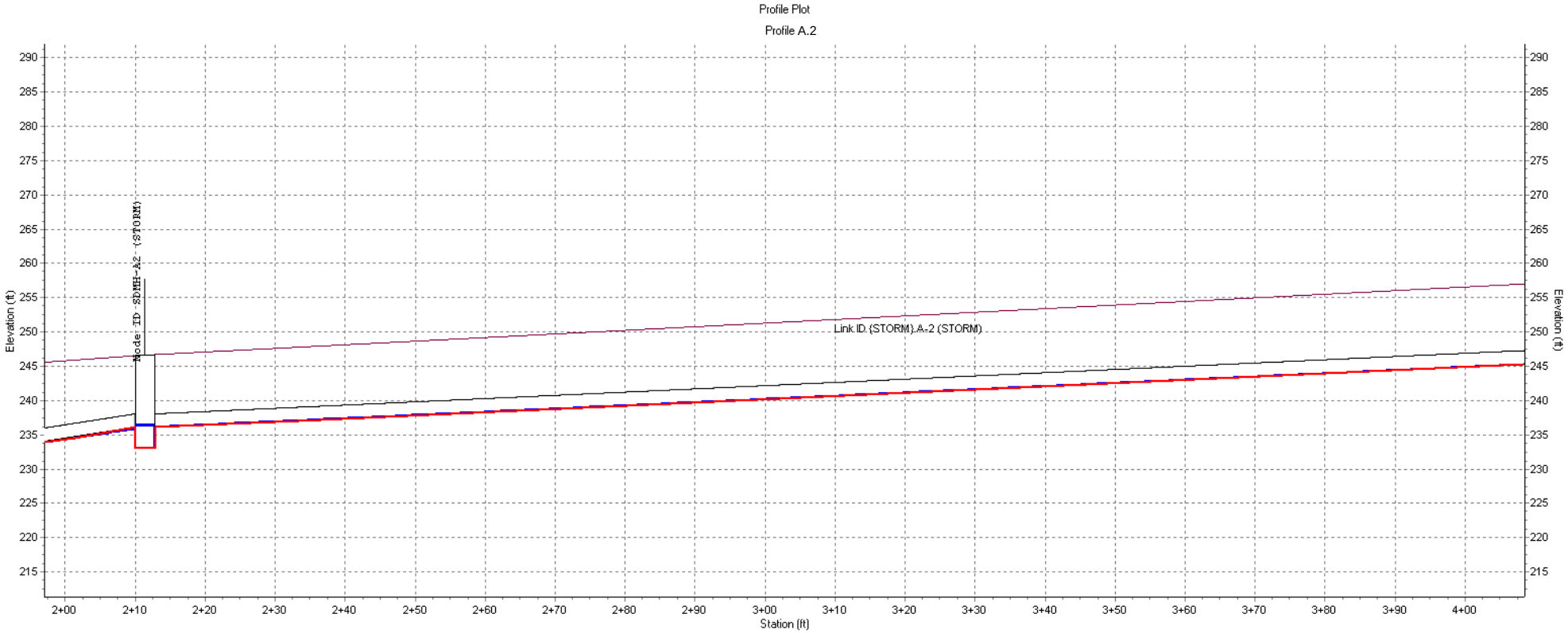
10 YEAR, 1HR STORM



Node ID:	SDHW-A1 (STORM)	SDMH-A1 (STORM)	SDMH-A2 (STORM)
Rim (ft):		239.13	246.59
Invert (ft):	220.29	217.50	233.07
Min Pipe Cover (ft):		16.13	8.52
Max HGL (ft):	220.63	220.96	236.29

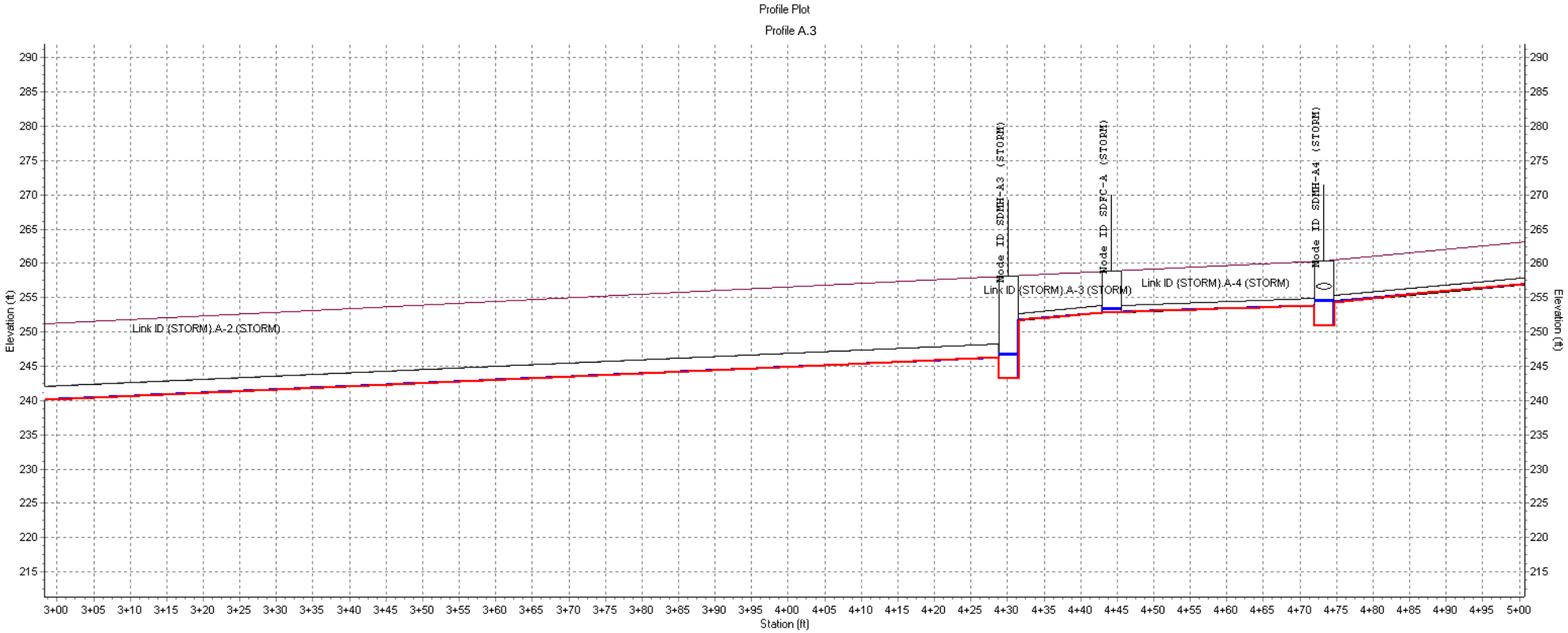
Link ID:	(STORM).A-0 (STORM)	(STORM).A-1 (STORM)	
Length (ft):	10.71	100.70	
Dia (in):	30.00	24.00	
Slope (ft/ft):	-0.0196	-0.1546	
Up Invert (ft):	220.29	220.50	
Dn Invert (ft):	220.50	236.07	
Max Q (cfs):	2.25	2.25	
Max Vel (ft/s):	4.45	10.74	
Max Depth (ft):	0.40	0.34	

10 YEAR, 1HR STORM



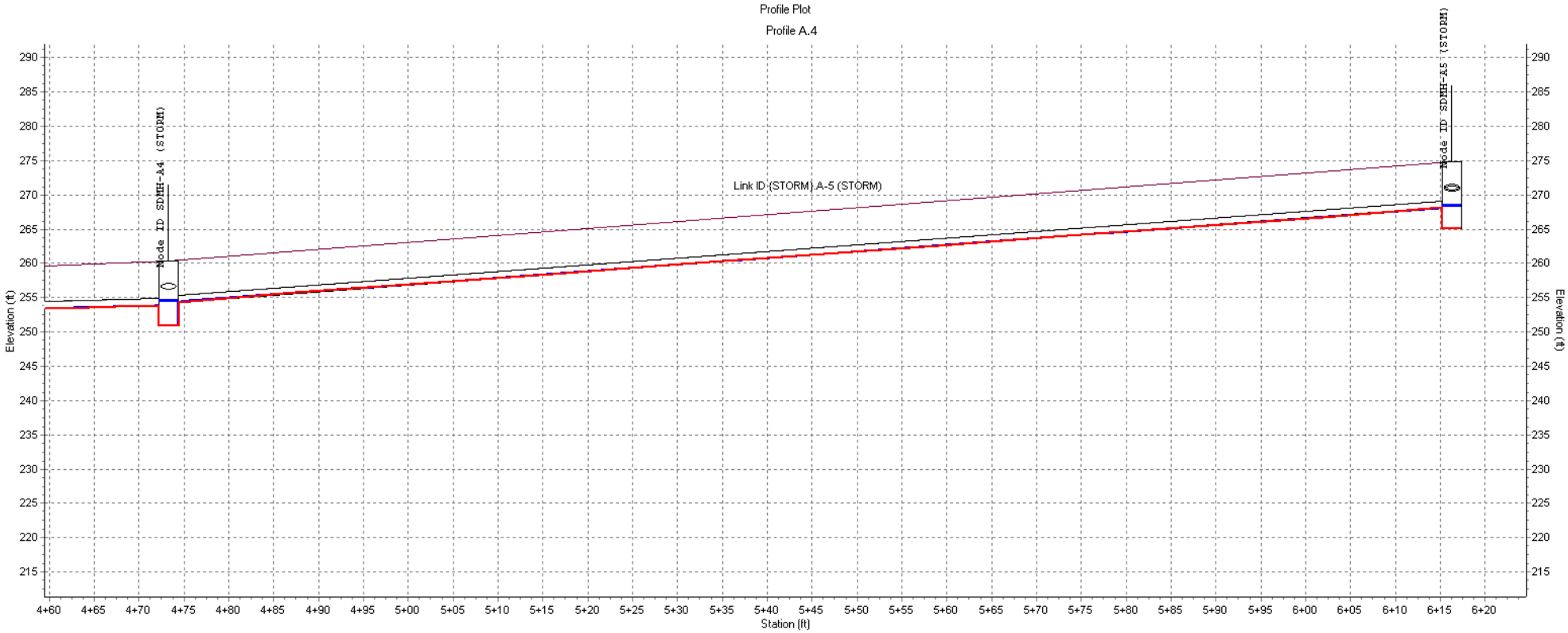
Node ID:	SDMH-A2 (STORM)	
Rim (ft):	246.59	
Invert (ft):	233.07	
Min Pipe Cover (ft):	8.52	
Max HGL (ft):	236.29	
Link ID:		(STORM).A-2 (STORM)
Length (ft):		218.68
Dia (in):		24.00
Slope (ft/ft):		-0.0467
Up Invert (ft):		236.07
Dn Invert (ft):		246.28
Max Q (cfs):		2.25
Max Vel (ft/s):		7.75
Max Depth (ft):		0.30

10 YEAR, 1HR STORM



Node ID:			SDMH-A3 (STORM)	SDFC-A (STORM)	SDMH-A4 (STORM)	
Rim (ft):			258.09	258.84	260.33	
Invert (ft):			243.28	252.88	250.84	
Min Pipe Cover (ft):			5.47	4.97		
Max HGL (ft):			246.59	253.31	254.39	
Link ID:	{STORM}.A-2 (STORM)		{STORM}.A-3 (STORM)		{STORM}.A-4 (STORM)	
Length (ft):	218.68		14.06		29.04	
Dia (in):	24.00		12.00		12.00	
Slope (ft/ft):	-0.0467		-0.0896		-0.0331	
Up Invert (ft):	236.07		251.61		252.88	
Dn Invert (ft):	246.28		252.88		253.84	
Max Q (cfs):	2.25		2.27		2.27	
Max Vel (ft/s):	7.75		8.42		6.09	
Max Depth (ft):	0.30		0.38		0.49	

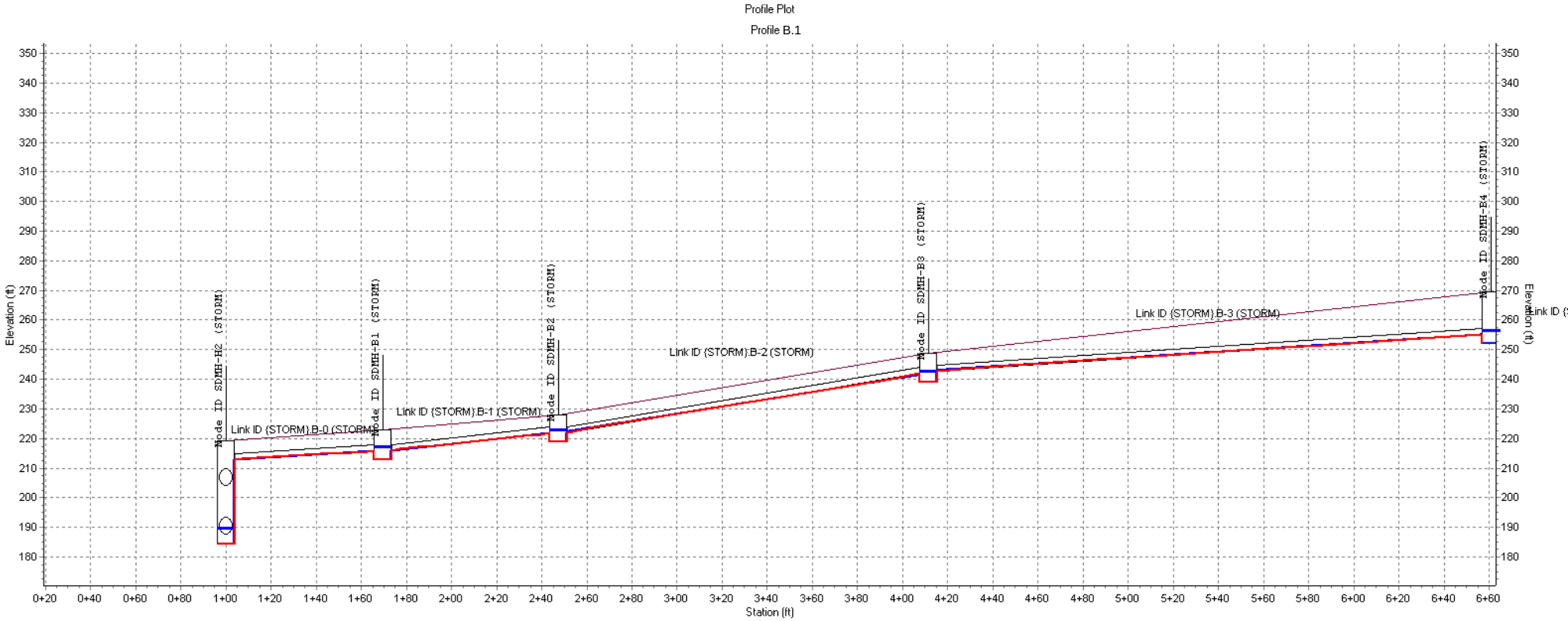
10 YEAR, 1HR STORM



Node ID:	SDMH-A4 (STORM)		SDMH-A5 (STORM)
Rim (ft):	260.33		274.77
Invert (ft):	250.84		265.11
Min Pipe Cover (ft):			3.16
Max HGL (ft):	254.39		268.35

Link ID:	{STORM}.A-5 (STORM)
Length (ft):	143.05
Dia (in):	12.00
Slope (ft/ft):	-0.0963
Up Invert (ft):	254.34
Dn Invert (ft):	268.11
Max Q (cfs):	1.29
Max Vel (ft/s):	9.16
Max Depth (ft):	0.23

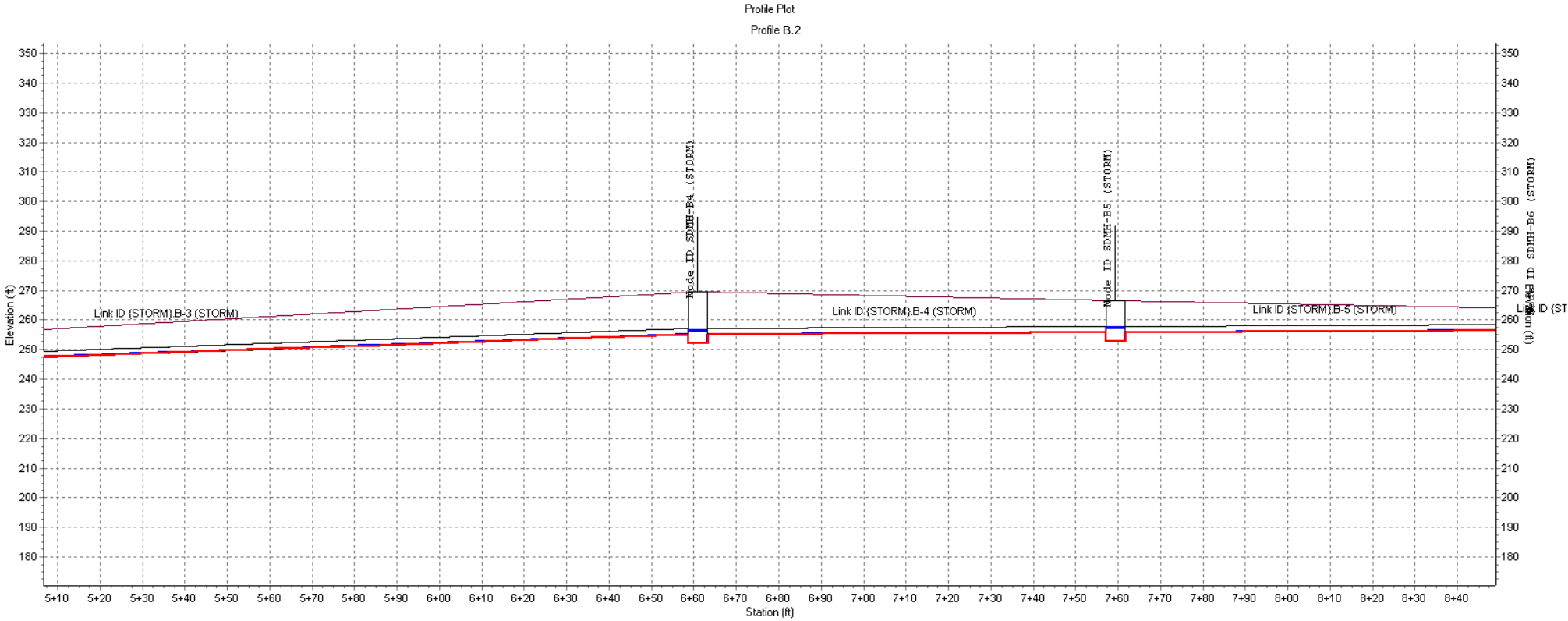
10 YEAR, 1HR STORM



Node ID:	SDMH-H2 (STORM)	SDMH-B1 (STORM)	SDMH-B2 (STORM)	SDMH-B3 (STORM)	
Rim (ft):	219.21	222.77	227.86	248.68	
Invert (ft):	184.28	212.90	218.98	238.89	
Min Pipe Cover (ft):	4.21	4.87	3.88	3.83	
Max HGL (ft):	189.36	216.91	222.65	242.46	

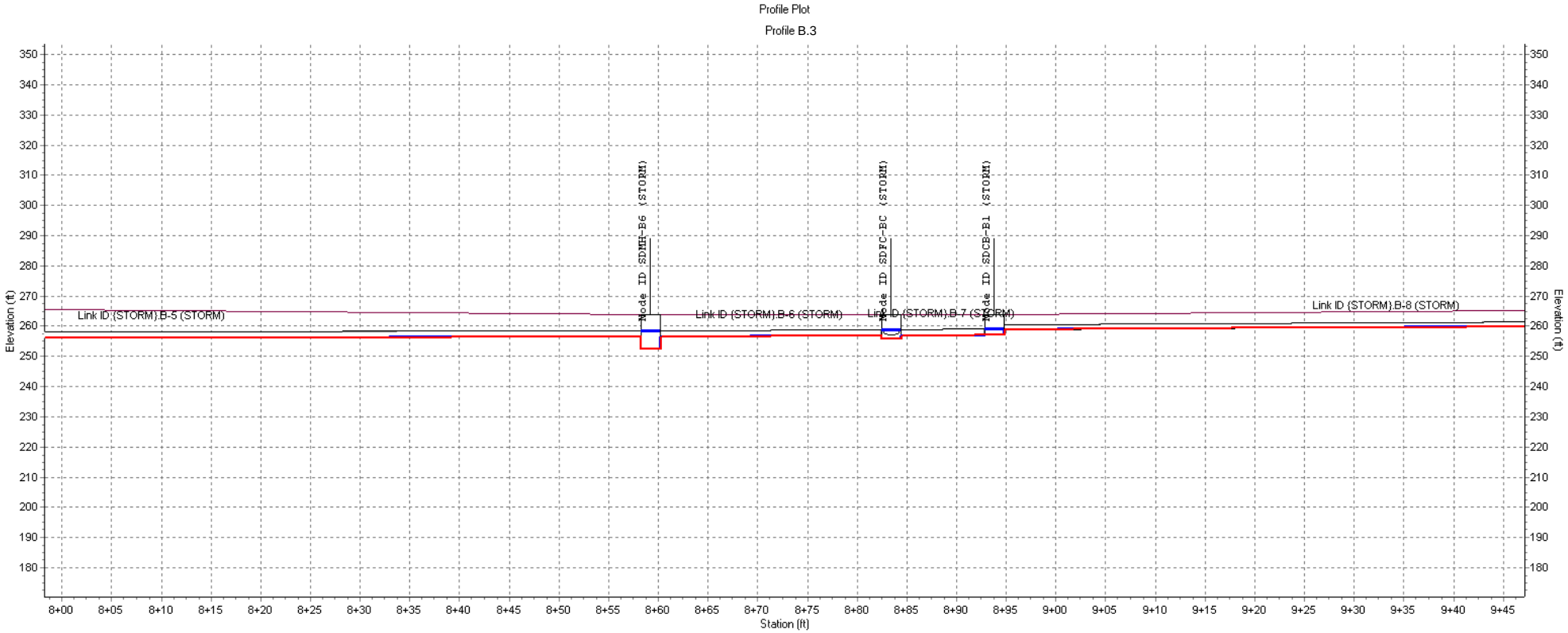
Link ID:	{STORM}.B-0 (STORM)	{STORM}.B-1 (STORM)	{STORM}.B-2 (STORM)	{STORM}.B-3 (STORM)
Length (ft):	69.39	78.08	163.81	249.48
Dia (in):	24.00	24.00	24.00	24.00
Slope (ft/ft):	0.0417	0.0779	-0.1216	-0.0497
Up Invert (ft):	215.90	221.98	221.98	242.86
Dn Invert (ft):	213.00	215.90	241.89	255.24
Max Q (cfs):	12.95	12.95	12.95	12.95
Max Vel (ft/s):	9.92	11.52	15.53	12.75
Max Depth (ft):	0.87	0.84	0.62	0.72

10 YEAR, 1HR STORM



Node ID:		SDMH-B4 (STORM)	SDMH-B5 (STORM)	
Rim (ft):		269.51	266.49	
Invert (ft):		252.24	252.76	
Min Pipe Cover (ft):		12.27	8.74	
Max HGL (ft):		255.99	257.30	
Link ID:	(STORM).B-3 (STORM)	(STORM).B-4 (STORM)	(STORM).B-5 (STORM)	
Length (ft):	249.48	98.43	99.98	
Dia (in):	24.00	24.00	24.00	
Slope (ft/ft):	-0.0497	-0.0063	-0.0074	
Up Invert (ft):	242.86	255.14	255.76	
Dn Invert (ft):	255.24	255.76	256.49	
Max Q (cfs):	12.95	12.96	12.98	
Max Vel (ft/s):	12.75	5.50	4.96	
Max Depth (ft):	0.72	1.40	1.56	

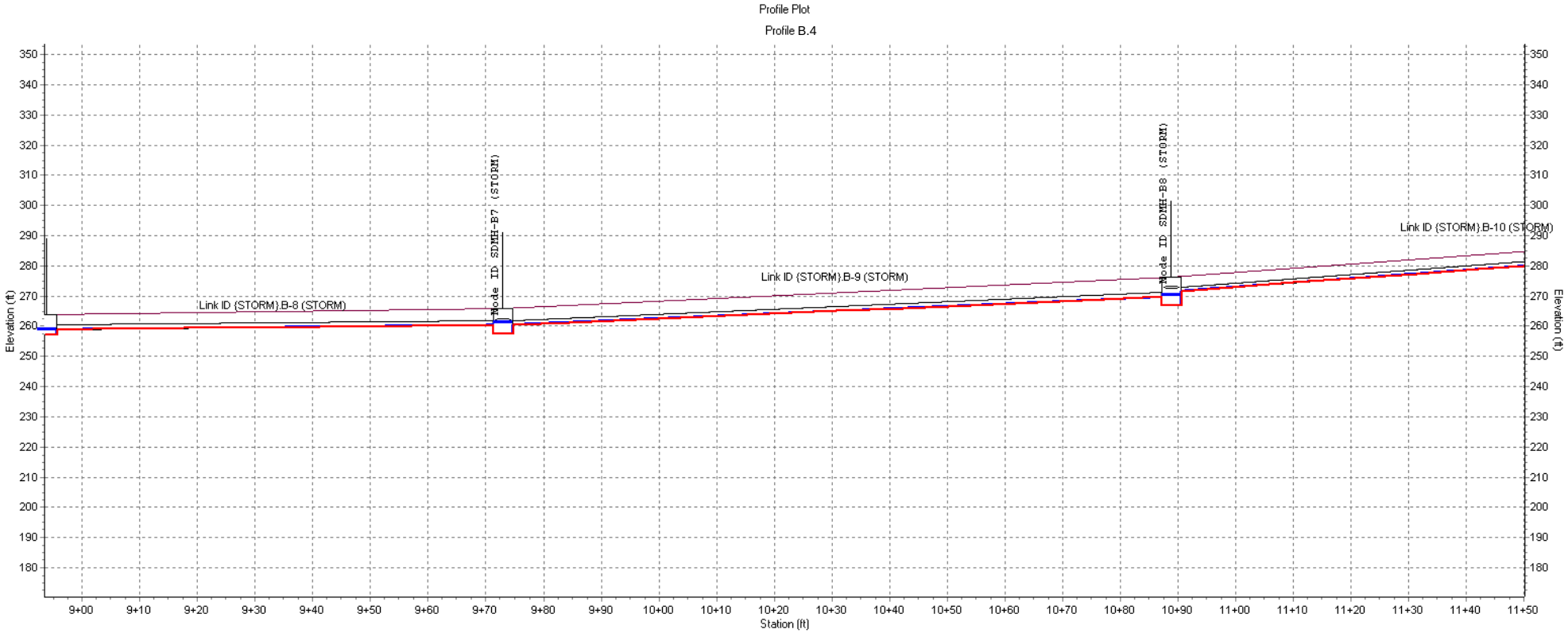
10 YEAR, 1HR STORM



Node ID:		SDMH-B6 (STORM)	SDFC-BC (STORM)	SDCB-B1 (STORM)	
Rim (ft):		263.83	263.76	263.87	
Invert (ft):		252.54	255.76	257.00	
Min Pipe Cover (ft):		5.34	4.92		
Max HGL (ft):		258.07	258.53	258.73	

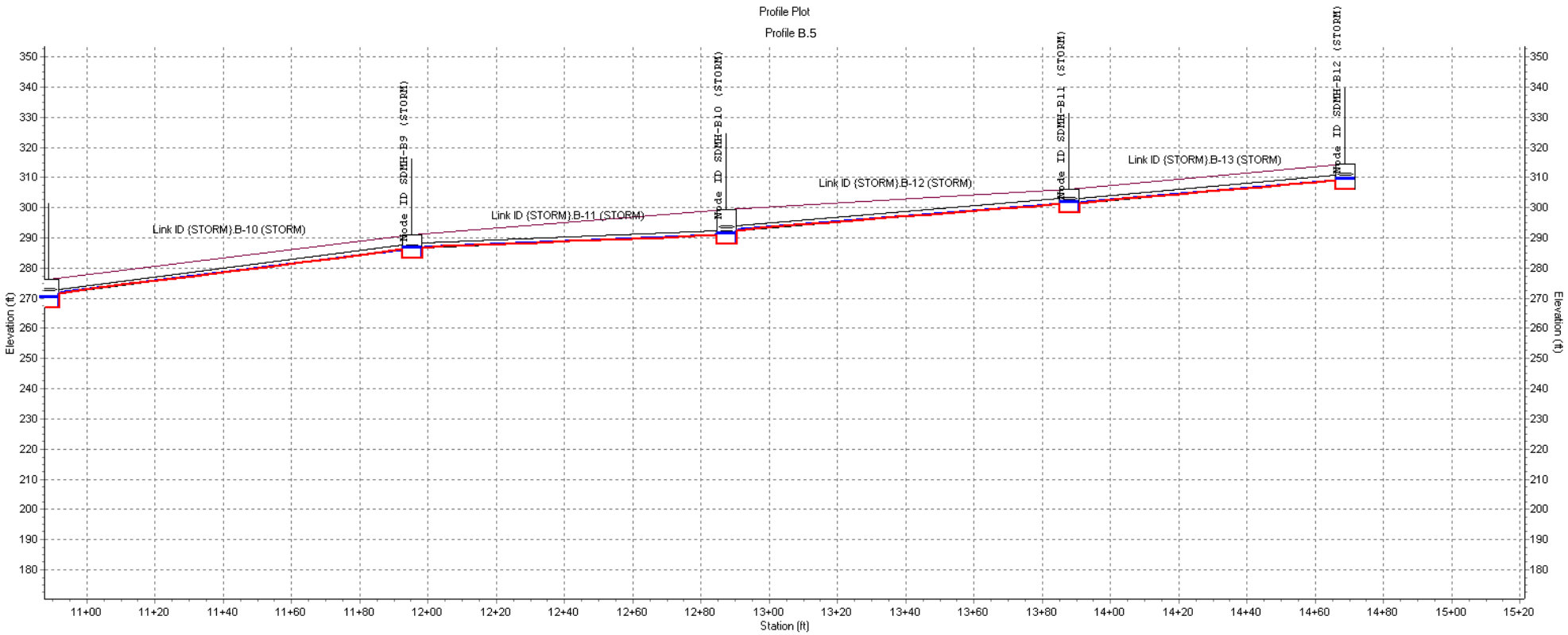
Link ID:	{STORM}.B-5 (STORM)	{STORM}.B-6 (STORM)	{STORM}.B-7 (STORM)	{STORM}.B-8 (STORM)
Length (ft):	99.98	24.21	10.44	79.04
Dia (in):	24.00	24.00	24.00	18.00
Slope (ft/ft):	-0.0074	-0.0144	0.0155	-0.0192
Up Invert (ft):	255.76	256.49	257.00	258.86
Dn Invert (ft):	256.49	256.84	256.84	260.38
Max Q (cfs):	12.98	13.00	8.23	6.63
Max Vel (ft/s):	4.96	5.18	3.21	6.96
Max Depth (ft):	1.56	1.63	1.71	0.80

10 YEAR, 1HR STORM



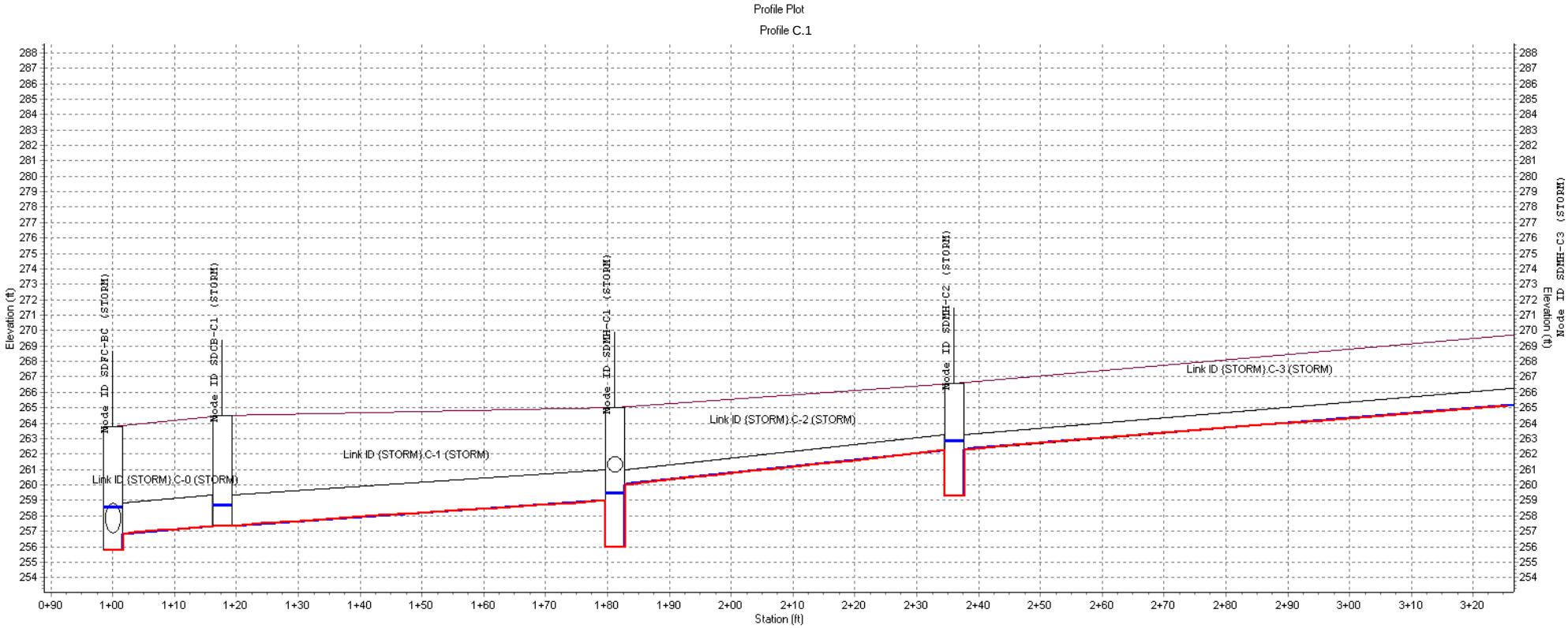
Node ID:		SDMH-B7 (STORM)		SDMH-B8 (STORM)	
Rim (ft):		265.79		276.34	
Invert (ft):		257.38		266.72	
Min Pipe Cover (ft):		3.24		3.20	
Max HGL (ft):		261.26		270.15	
Link ID:	{STORM}.B-8 (STORM)		{STORM}.B-9 (STORM)		
Length (ft):	79.04		115.90		106.44
Dia (in):	18.00		18.00		18.00
Slope (ft/ft):	-0.0192		-0.0806		-0.1393
Up Invert (ft):	258.86		260.38		271.47
Dn Invert (ft):	260.38		269.72		286.30
Max Q (cfs):	6.63		5.25		4.16
Max Vel (ft/s):	6.96		7.89		13.50
Max Depth (ft):	0.80		0.65		0.35

10 YEAR, 1HR STORM



Node ID:		SDMH-B9 (STORM)	SDMH-B10 (STORM)	SDMH-B11 (STORM)	SDMH-B12 (STORM)
Rim (ft):		291.00	299.48	306.18	314.37
Invert (ft):		283.30	288.00	298.46	306.23
Min Pipe Cover (ft):		2.70	5.48	2.88	2.90
Max HGL (ft):		286.66	291.47	301.78	309.42
Link ID:	{STORM}.B-10 (STORM)	{STORM}.B-11 (STORM)	{STORM}.B-12 (STORM)	{STORM}.B-13 (STORM)	
Length (ft):	106.44	92.10	100.47	80.79	
Dia (in):	18.00	18.00	18.00	18.00	
Slope (ft/ft):	-0.1393	-0.0456	-0.0892	-0.0962	
Up Invert (ft):	271.47	286.80	292.50	301.46	
Dn Invert (ft):	286.30	291.00	301.46	309.23	
Max Q (cfs):	4.16	3.83	2.59	1.08	
Max Vel (ft/s):	13.50	8.80	10.10	5.90	
Max Depth (ft):	0.35	0.44	0.30	0.25	

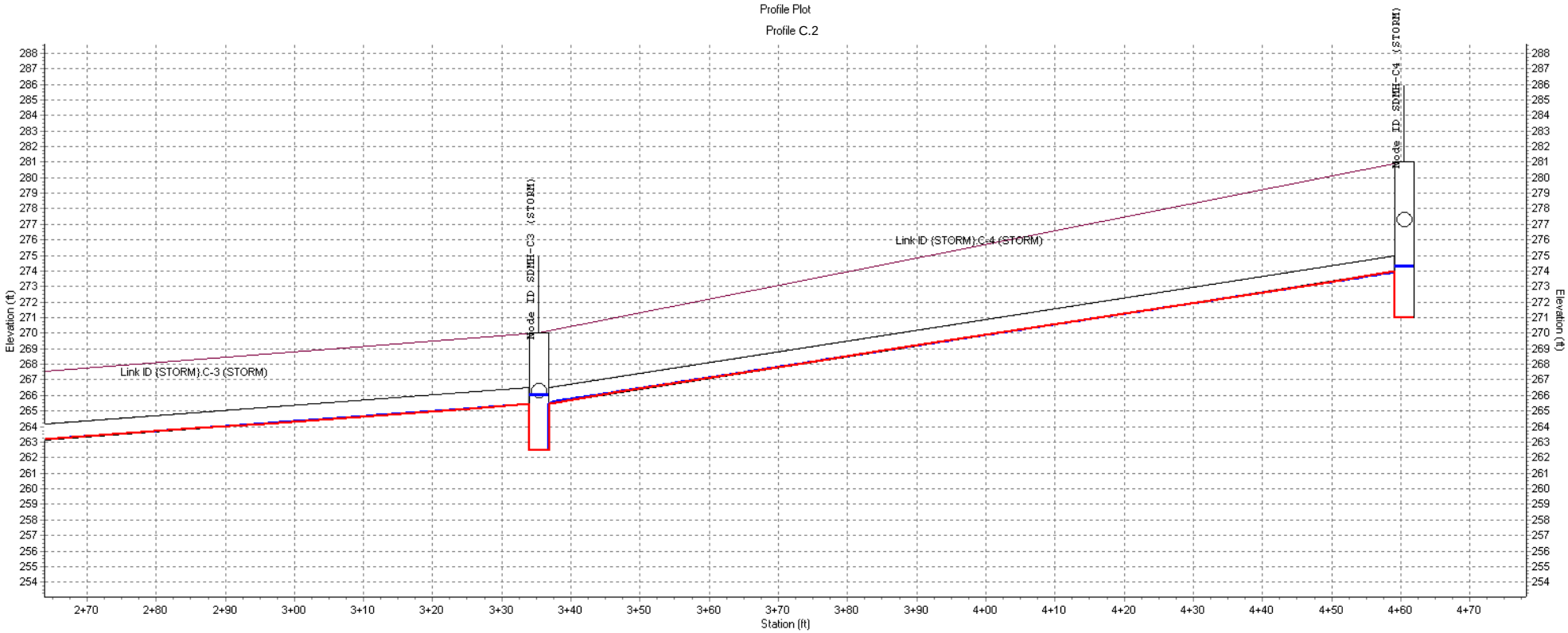
10 YEAR, 1HR STORM



Node ID:	SDFC-BC (STORM)	SDCB-C1 (STORM)	SDMH-C1 (STORM)	SDMH-C2 (STORM)	
Rim (ft):	263.76	264.52	265.00	266.56	
Invert (ft):	255.76	257.36	256.00	259.28	
Min Pipe Cover (ft):	4.92		3.20	3.28	
Max HGL (ft):	258.53	258.64	259.45	262.81	

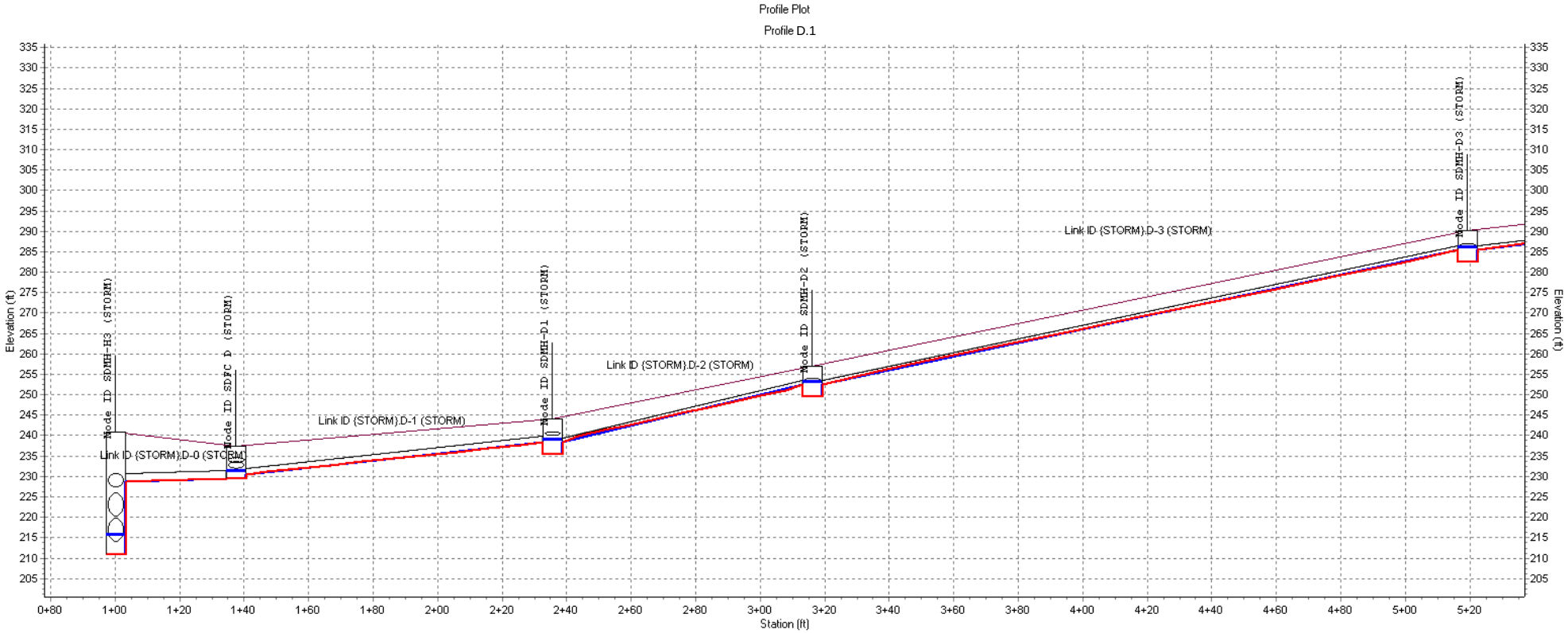
Link ID:	(STORM).C-0 (STORM)	(STORM).C-1 (STORM)	(STORM).C-2 (STORM)	(STORM).C-3 (STORM)
Length (ft):	17.61	63.57	54.84	99.30
Dia (in):	24.00	24.00	12.00	12.00
Slope (ft/ft):	0.0298	0.0257	-0.0416	-0.0322
Up Invert (ft):	257.36	259.00	260.00	262.28
Dn Invert (ft):	256.84	257.36	262.28	265.48
Max Q (cfs):	5.34	4.05	2.91	2.92
Max Vel (ft/s):	2.71	4.94	7.68	6.99
Max Depth (ft):	1.48	0.86	0.49	0.52

10 YEAR, 1HR STORM



Node ID:		SDMH-C3 (STORM)		SDMH-C4 (STORM)
Rim (ft):		270.00		281.00
Invert (ft):		262.48		271.00
Min Pipe Cover (ft):		3.20		3.20
Max HGL (ft):		266.00		274.24
Link ID:	{STORM}:C-3 (STORM)		{STORM}:C-4 (STORM)	
Length (ft):	99.30		125.09	
Dia (in):	12.00		12.00	
Slope (ft/ft):	-0.0322		-0.0681	
Up Invert (ft):	262.28		265.48	
Dn Invert (ft):	265.48		274.00	
Max Q (cfs):	2.92		1.21	
Max Vel (ft/s):	6.99		5.49	
Max Depth (ft):	0.52		0.38	

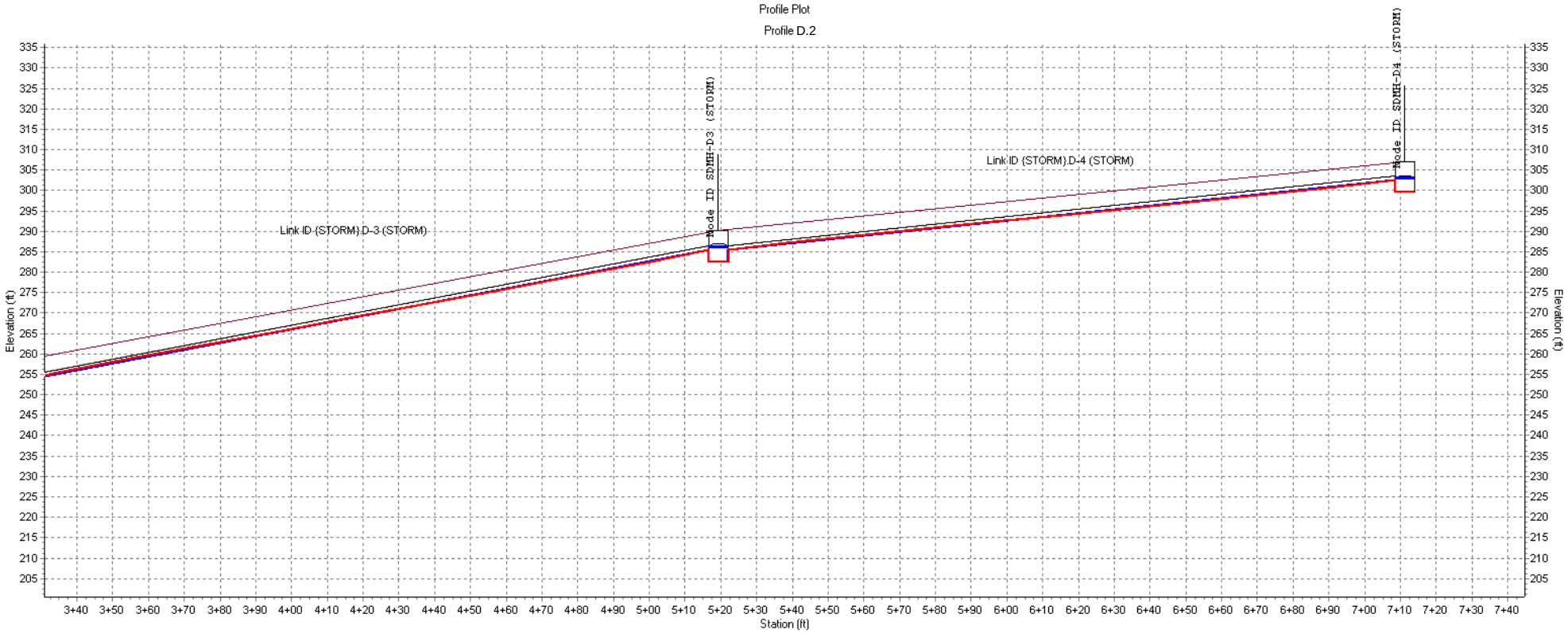
10 YEAR, 1HR STORM



Node ID:	SDMH-H3 (STORM)	SDFC D (STORM)	SDMH-D1 (STORM)	SDMH-D2 (STORM)	SDMH-D3 (STORM)
Rim (ft):	240.96	237.42	244.00	257.09	290.10
Invert (ft):	210.82	229.40	235.43	249.50	282.53
Min Pipe Cover (ft):	10.29	2.67	3.20	3.17	3.20
Max HGL (ft):	215.69	231.17	238.89	252.96	285.87

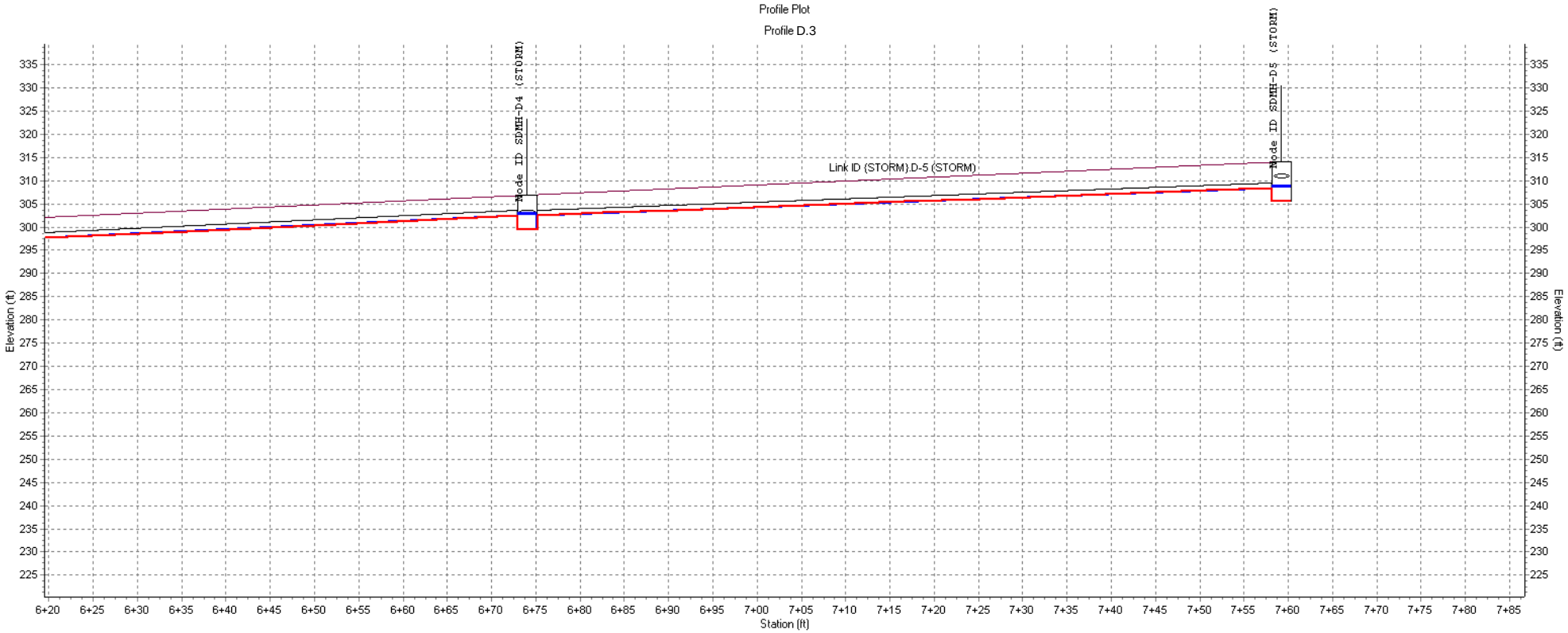
Link ID:	{STORM}.D-0 (STORM)	{STORM}.D-1 (STORM)	{STORM}.D-2 (STORM)	{STORM}.D-3 (STORM)
Length (ft):	37.25	98.20	80.60	203.16
Dia (in):	24.00	18.00	12.00	12.00
Slope (ft/ft):	0.0195	0.0818	0.1746	0.1626
Up Invert (ft):	229.40	238.43	252.50	285.53
Dn Invert (ft):	228.67	230.40	238.43	252.50
Max Q (cfs):	17.29	5.88	5.37	3.75
Max Vel (ft/s):	7.29	11.25	15.40	12.68
Max Depth (ft):	1.41	0.61	0.46	0.40

10 YEAR, 1HR STORM



Node ID:		SDMH-D3 (STORM)	SDMH-D4 (STORM)
Rim (ft):		290.10	306.95
Invert (ft):		282.53	299.50
Min Pipe Cover (ft):		3.20	3.32
Max HGL (ft):		285.87	302.83
Link ID:	{STORM}.D-3 (STORM)	{STORM}.D-4 (STORM)	
Length (ft):	203.16	192.04	
Dia (in):	12.00	12.00	
Slope (ft/ft):	0.1626	0.0884	
Up Invert (ft):	285.53	302.50	
Dn Invert (ft):	252.50	285.53	
Max Q (cfs):	3.75	2.32	
Max Vel (ft/s):	12.68	9.95	
Max Depth (ft):	0.40	0.34	

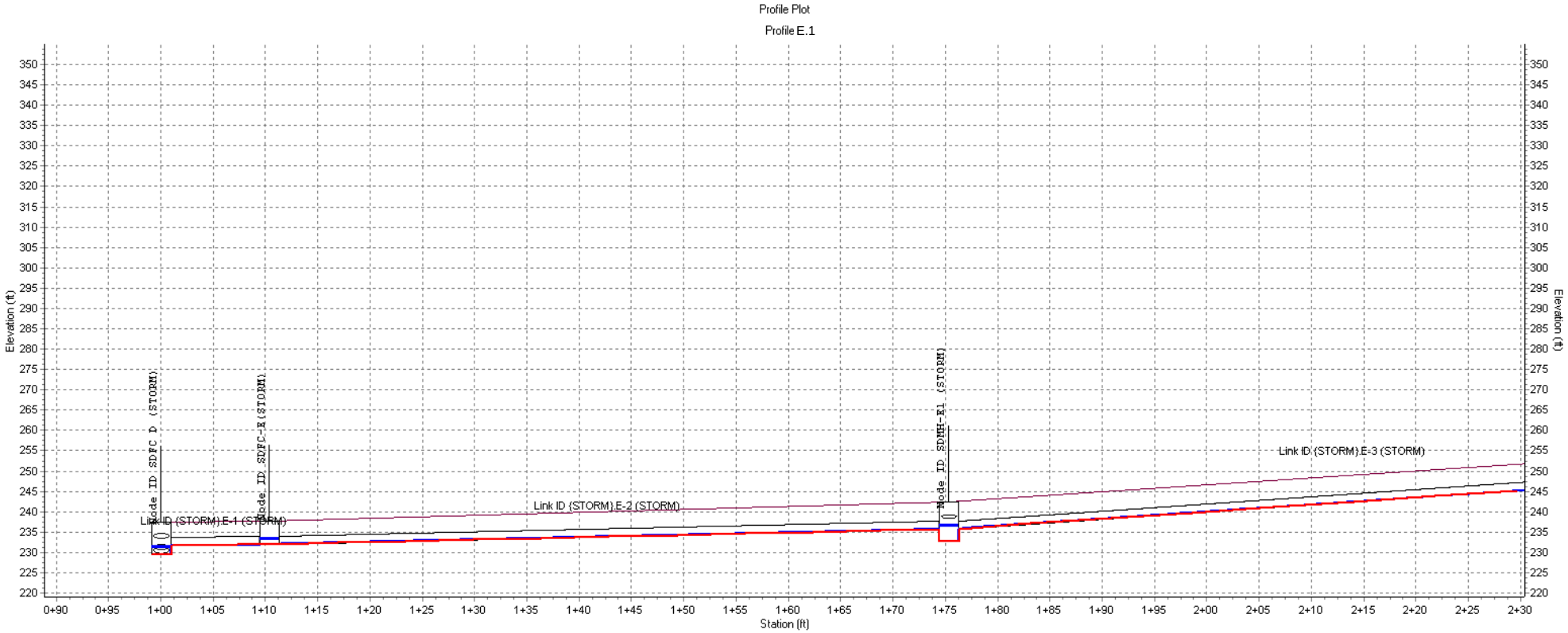
10 YEAR, 1HR STORM



Node ID:	SDMH-D4 (STORM)	SDMH-D5 (STORM)
Rim (ft):	306.95	314.00
Invert (ft):	299.50	305.50
Min Pipe Cover (ft):	3.32	2.60
Max HGL (ft):	302.83	308.71

Link ID:	(STORM):D-5 (STORM)	
Length (ft):	85.24	
Dia (in):	12.00	
Slope (ft/ft):	0.0704	
Up Invert (ft):	308.50	
Dn Invert (ft):	302.50	
Max Q (cfs):	0.91	
Max Vel (ft/s):	5.37	
Max Depth (ft):	0.27	

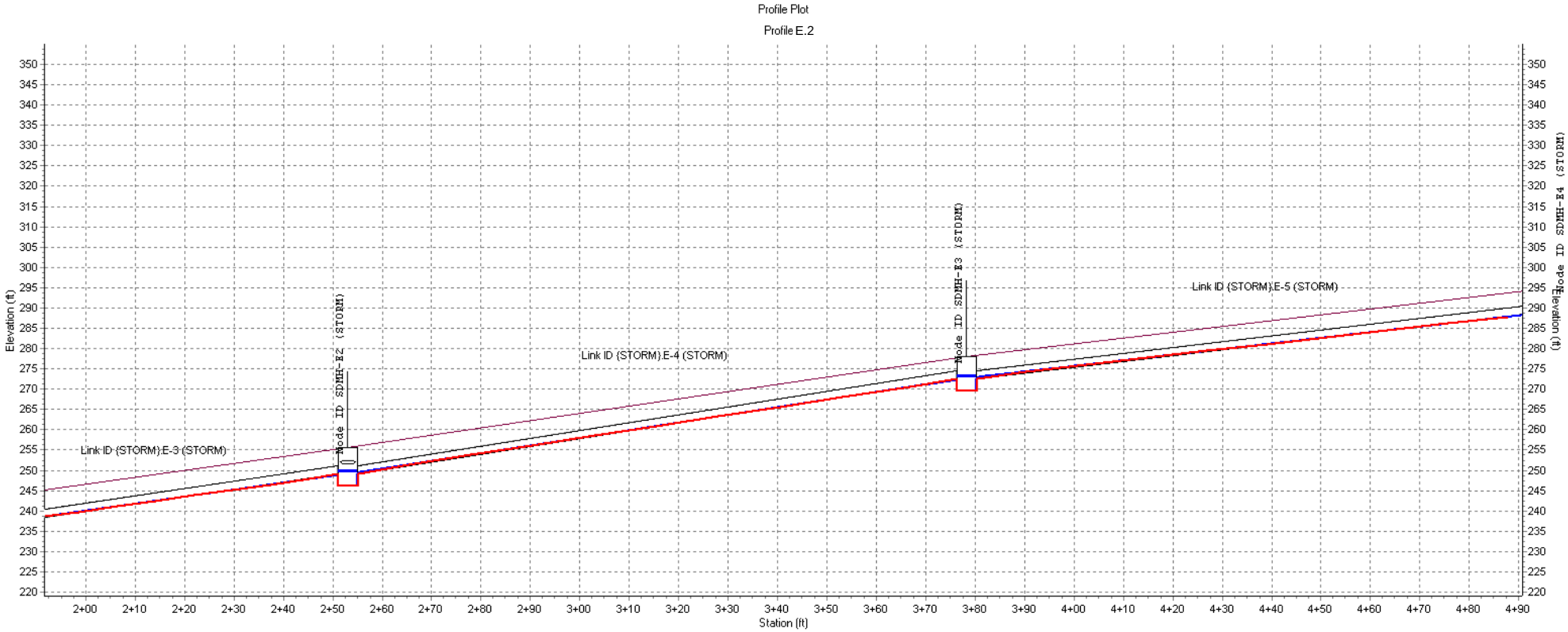
10 YEAR, 1HR STORM



Node ID:	SDFC D (STORM)	SDFC-E(STORM)	SDMH-E1 (STORM)	
Rim (ft):	237.42	237.65	242.43	
Invert (ft):	229.40	231.93	232.75	
Min Pipe Cover (ft):	2.67	3.62	3.15	
Max HGL (ft):	231.17	233.16	236.40	

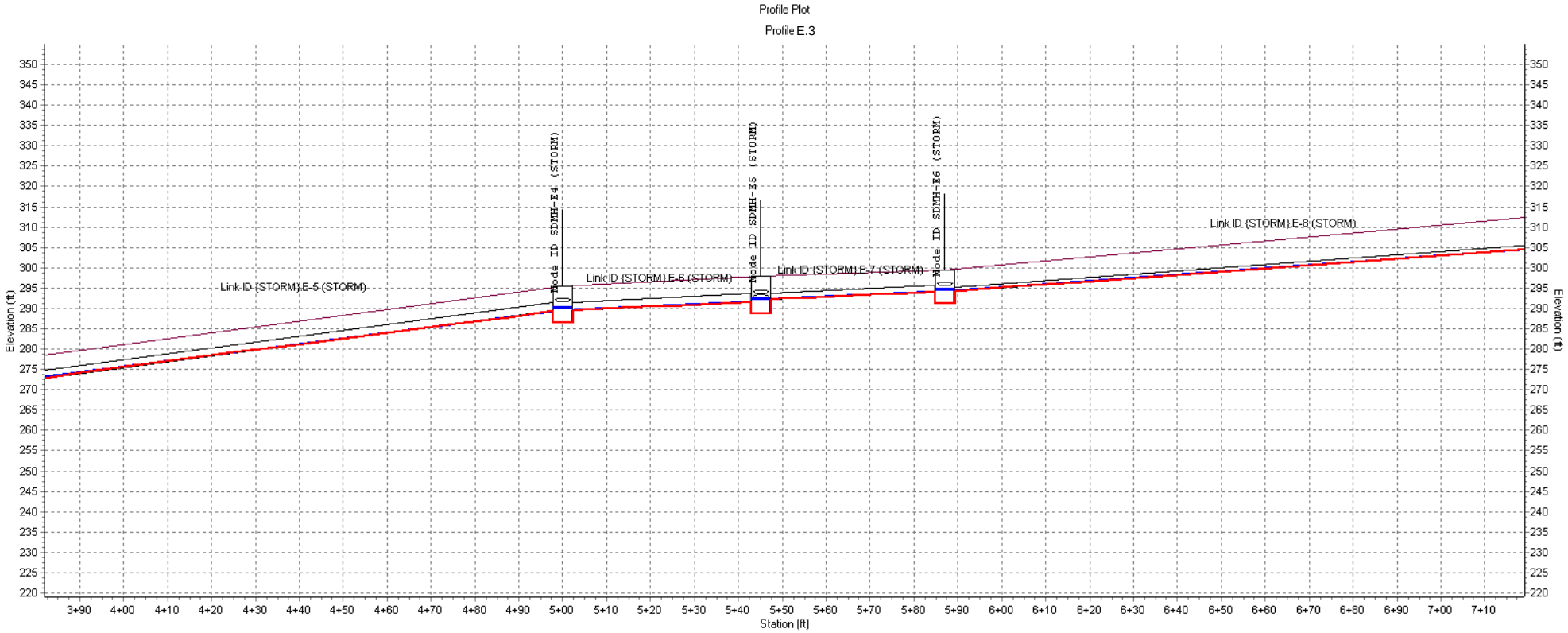
Link ID:	(STORM).E-1 (STORM)	(STORM).E-2 (STORM)	(STORM).E-3 (STORM)
Length (ft):	10.39	64.97	77.50
Dia (in):	24.00	24.00	24.00
Slope (ft/ft):	0.0289	-0.0573	-0.1726
Up Invert (ft):	231.93	232.03	235.75
Dn Invert (ft):	231.63	235.75	249.13
Max Q (cfs):	8.83	8.83	8.10
Max Vel (ft/s):	6.11	7.12	12.46
Max Depth (ft):	0.94	0.88	0.52

10 YEAR, 1HR STORM



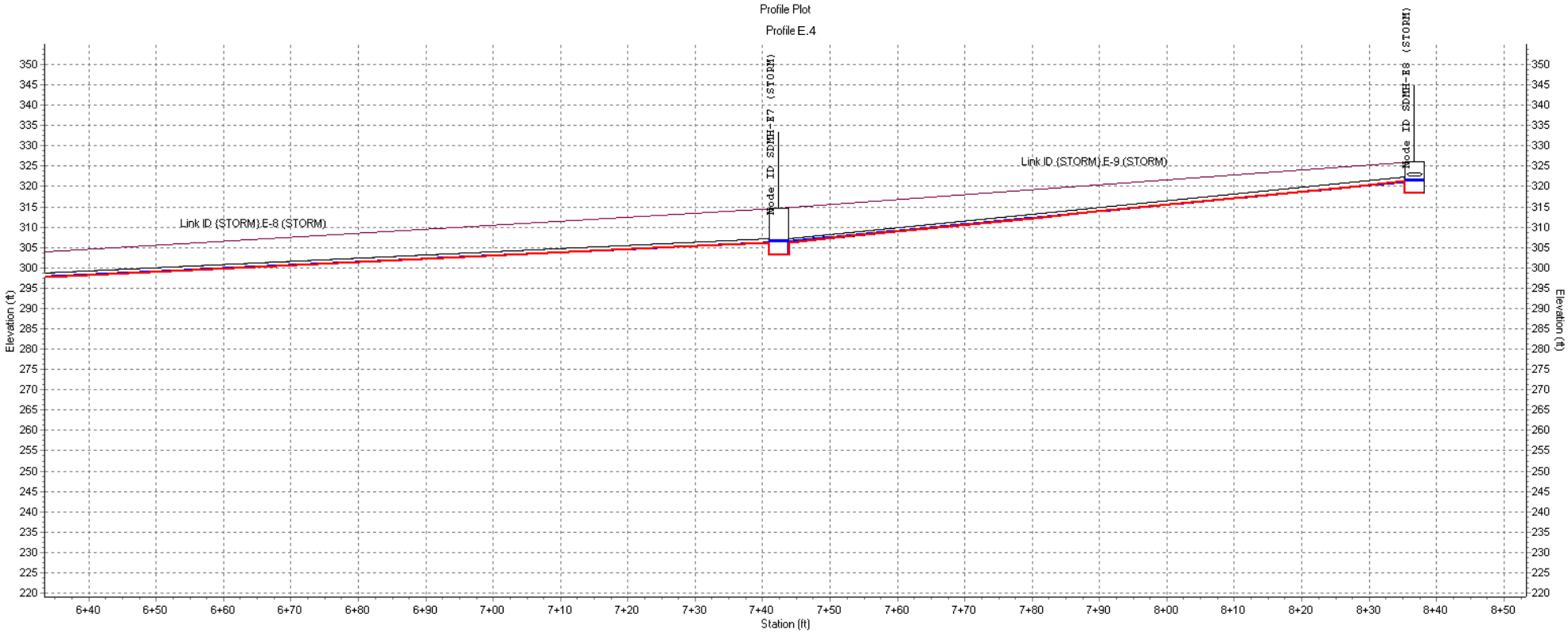
Node ID:		SDMH-E2 (STORM)	SDMH-E3 (STORM)	
Rim (ft):		255.60	278.00	
Invert (ft):		246.13	269.66	
Min Pipe Cover (ft):		3.20	3.34	
Max HGL (ft):		249.53	273.04	
Link ID:	(STORM).E-3 (STORM)	(STORM).E-4 (STORM)	(STORM).E-5 (STORM)	
Length (ft):	77.50	125.26	121.85	
Dia (in):	24.00	24.00	24.00	
Slope (ft/ft):	-0.1726	-0.1878	-0.1382	
Up Invert (ft):	235.75	249.13	272.66	
Dn Invert (ft):	249.13	272.66	289.50	
Max Q (cfs):	8.10	6.92	6.93	
Max Vel (ft/s):	12.46	15.89	15.32	
Max Depth (ft):	0.52	0.39	0.40	

10 YEAR, 1HR STORM



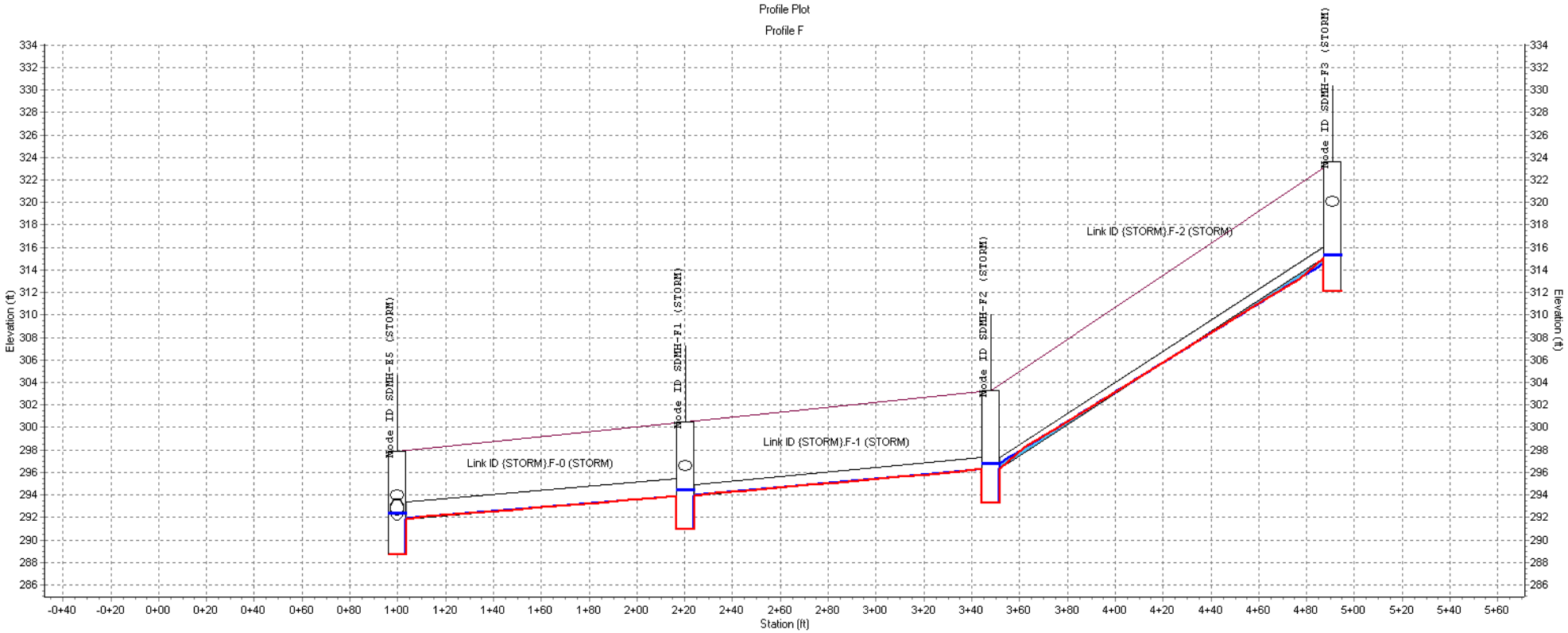
Node ID:		SDMH-E4 (STORM)	SDMH-E5 (STORM)	SDMH-E6 (STORM)	
Rim (ft):		295.57	297.87	299.42	
Invert (ft):		286.50	288.69	291.15	
Min Pipe Cover (ft):		3.08	3.37	3.06	
Max HGL (ft):		289.92	292.27	294.52	
Link ID:	(STORM).E-5 (STORM)	(STORM).E-6 (STORM)	(STORM).E-7 (STORM)	(STORM).E-8 (STORM)	
Length (ft):	121.85	45.09	41.79	155.55	
Dia (in):	24.00	24.00	18.00	12.00	
Slope (ft/ft):	-0.1382	-0.0486	-0.0475	-0.0779	
Up Invert (ft):	272.66	289.50	292.16	294.15	
Dn Invert (ft):	289.50	291.69	294.15	306.26	
Max Q (cfs):	6.93	5.42	2.14	1.17	
Max Vel (ft/s):	15.32	8.55	7.06	6.35	
Max Depth (ft):	0.40	0.51	0.34	0.30	

10 YEAR, 1HR STORM



Node ID:		SDMH-E7 (STORM)		SDMH-E8 (STORM)
Rim (ft):		314.53		326.00
Invert (ft):		303.26		318.27
Min Pipe Cover (ft):		7.27		2.77
Max HGL (ft):		306.49		321.47
Link ID:	(STORM).E-8 (STORM)		(STORM).E-9 (STORM)	
Length (ft):	155.55		94.31	
Dia (in):	12.00		12.00	
Slope (ft/ft):	-0.0779		-0.1592	
Up Invert (ft):	294.15		306.26	
Dn Invert (ft):	306.26		321.27	
Max Q (cfs):	1.17		1.18	
Max Vel (ft/s):	6.35		9.61	
Max Depth (ft):	0.30		0.21	

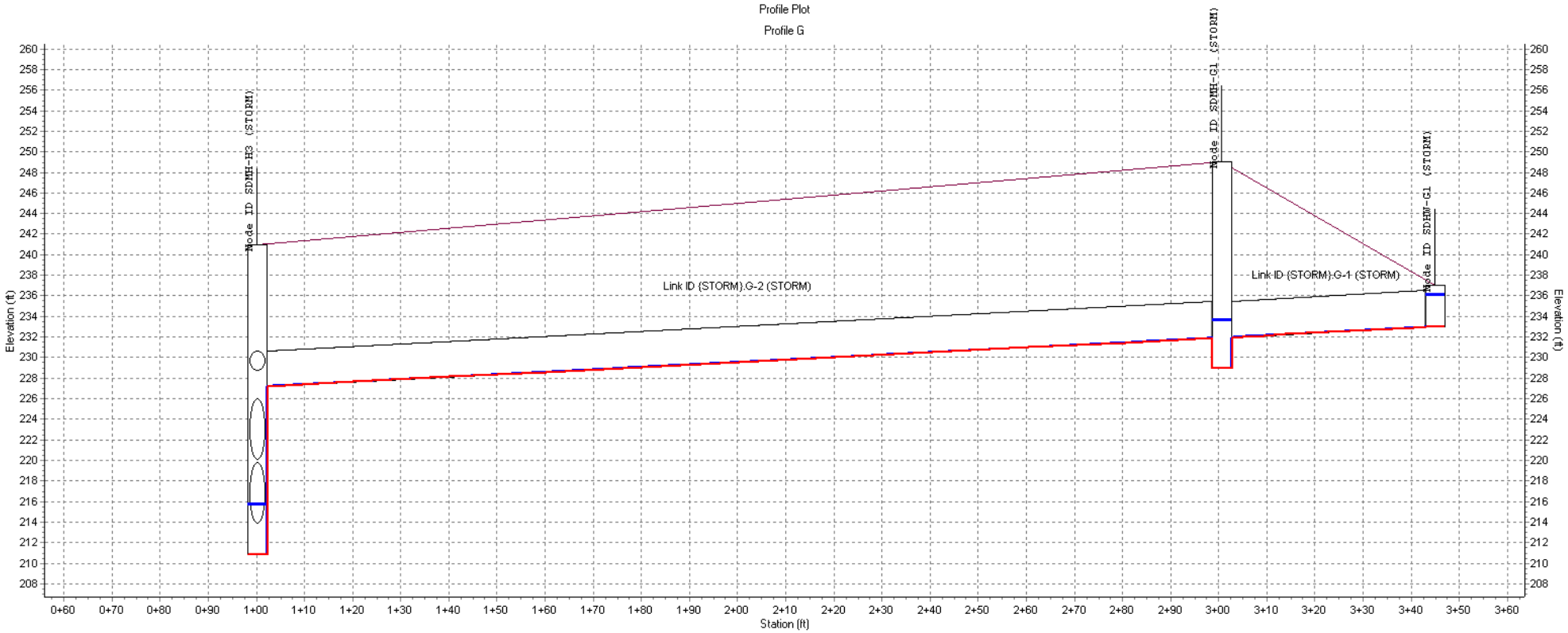
10 YEAR, 1HR STORM



Node ID:	SDMH-E5 (STORM)	SDMH-F1 (STORM)	SDMH-F2 (STORM)	SDMH-F3 (STORM)
Rim (ft):	297.87	300.47	303.31	323.59
Invert (ft):	288.69	290.93	293.34	312.09
Min Pipe Cover (ft):	3.37	3.41	5.98	3.04
Max HGL (ft):	292.27	294.41	296.68	315.30

Link ID:	{STORM}.F-0 (STORM)	{STORM}.F-1 (STORM)	{STORM}.F-2 (STORM)	
Length (ft):	120.28	127.59	143.28	
Dia (in):	18.00	12.00	12.00	
Slope (ft/ft):	-0.0170	-0.0189	-0.1309	
Up Invert (ft):	291.88	293.93	296.34	
Dn Invert (ft):	293.93	296.34	315.09	
Max Q (cfs):	2.52	1.20	1.21	
Max Vel (ft/s):	5.48	3.97	9.04	
Max Depth (ft):	0.46	0.41	0.28	

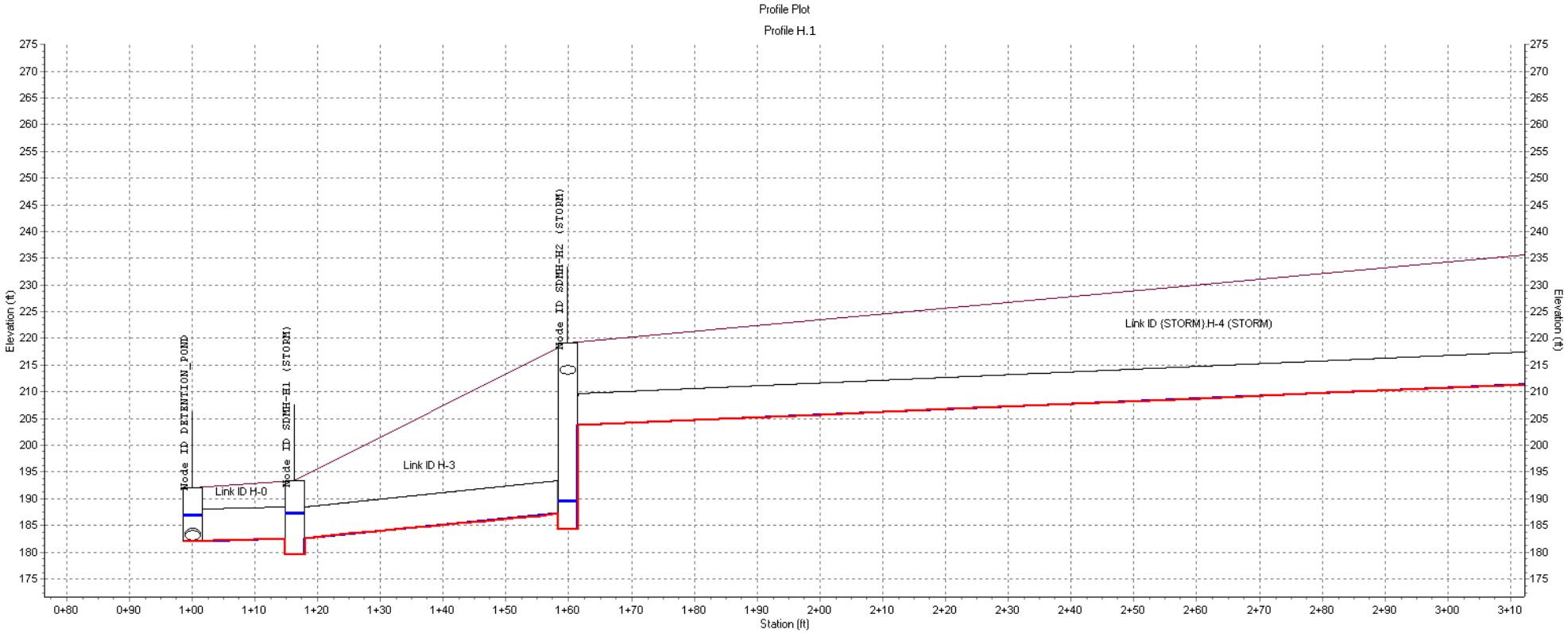
10 YEAR, 1HR STORM



Node ID:	SDMH-H3 (STORM)		SDMH-G1 (STORM)	SDHW-G1 (STORM)
Rim (ft):	240.96		249.00	237.00
Invert (ft):	210.82		228.94	233.00
Min Pipe Cover (ft):	10.29		13.56	0.50
Max HGL (ft):	215.69		233.62	236.08

Link ID:	(STORM).G-2 (STORM)	(STORM).G-1 (STORM)	
Length (ft):	200.57	44.33	
Dia (in):	42.00	42.00	
Slope (ft/ft):	-0.0238	-0.0239	
Up Invert (ft):	227.17	231.94	
Dn Invert (ft):	231.94	233.00	
Max Q (cfs):	47.21	47.27	
Max Vel (ft/s):	11.95	6.84	
Max Depth (ft):	1.50	2.38	

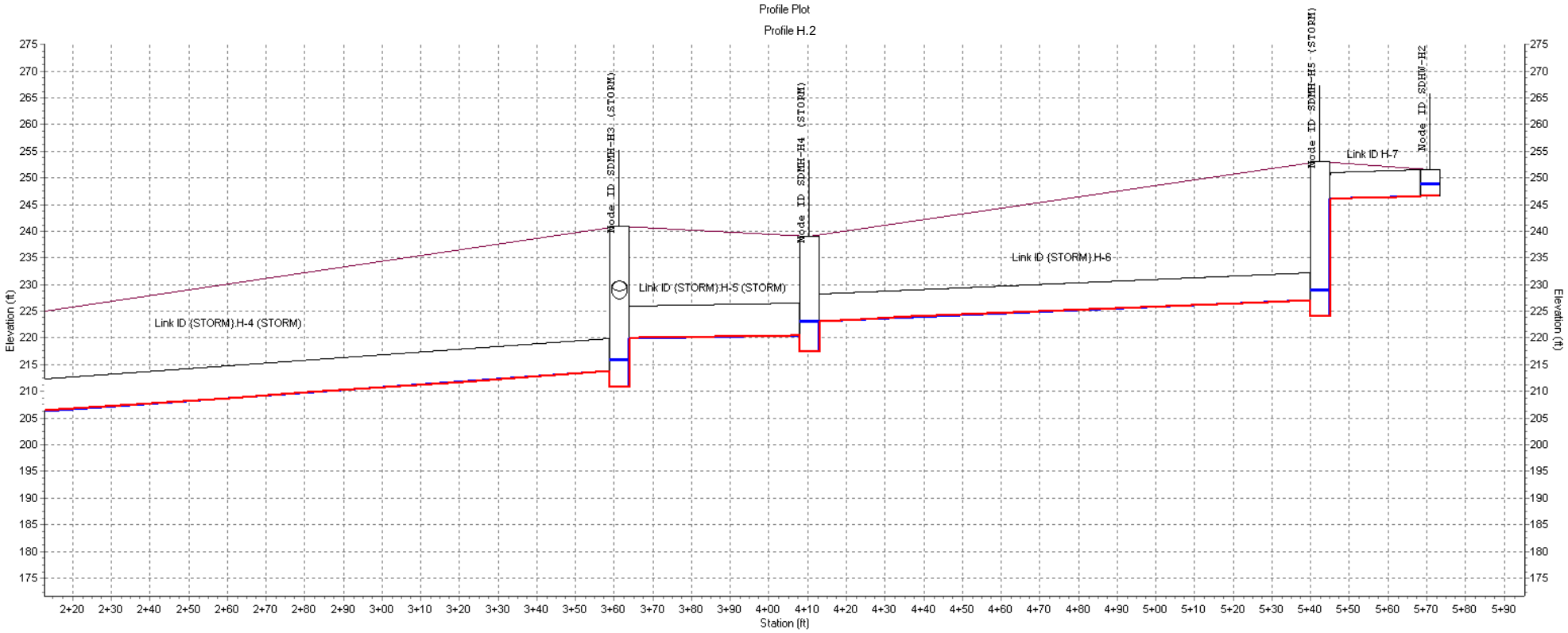
10 YEAR, 1HR STORM



Node ID:	DETENTION_POND	SDMH-H1 (STORM)	SDMH-H2 (STORM)	
Rim (ft):	192.00	193.34	219.21	
Invert (ft):	182.00	179.49	184.28	
Min Pipe Cover (ft):		4.85	4.21	
Max HGL (ft):	186.81	187.17	189.36	

Link ID:	H-0	H-3	(STORM):H-4 (STORM)
Length (ft):	16.29	43.53	201.47
Dia (in):	72.00	72.00	72.00
Slope (ft/ft):	0.0300	0.1100	0.0499
Up Invert (ft):	182.49	187.28	213.82
Dn Invert (ft):	182.00	182.49	203.76
Max Q (cfs):	130.35	131.24	121.79
Max Vel (ft/s):	9.99	10.54	19.08
Max Depth (ft):	4.74	3.31	1.66

10 YEAR, 1HR STORM



Node ID:		SDMH-H3 (STORM)	SDMH-H4 (STORM)	SDMH-H5 (STORM)	SDHW-H2
Rim (ft):		240.96	239.00	253.00	251.54
Invert (ft):		210.82	217.45	224.14	246.54
Min Pipe Cover (ft):		10.29	10.81	2.00	0.00
Max HGL (ft):		215.69	222.93	228.82	248.81

Link ID:	(STORM).H-4 (STORM)	(STORM).H-5 (STORM)	(STORM).H-6	H-7	
Length (ft):	201.47	49.07	131.86	28.58	
Dia (in):	72.00	72.00	60.00	60.00	
Slope (ft/ft):	0.0499	0.0100	0.0300	0.0189	
Up Invert (ft):	213.82	220.45	227.14	246.54	
Dn Invert (ft):	203.76	219.96	223.19	246.00	
Max Q (cfs):	121.79	64.91	64.93	65.05	
Max Vel (ft/s):	19.08	7.70	13.38	9.78	
Max Depth (ft):	1.66	2.03	1.48	1.86	

10-Year, 24-Hour Storm

Hydraulic Calculations

Project Description

File Name	2023.01.10 CURRENT Ratl & Mod Ratl.SPF
Description	Drainage Report (Rational 10-yr 24-hr Storm)

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	Rational
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	00:00:00	0:00:00
End Analysis On	00:00:00	0:00:00
Start Reporting On	00:00:00	0:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	1
Subbasins	58
Nodes	104
Junctions	55
Outfalls	4
Flow Diversions	0
Inlets	44
Storage Nodes	1
Links	139
Channels	44
Pipes	94
Pumps	0
Orifices	0
Weirs	1
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period	10 year(s)

COFFMAN ENGINEERS

Subbasin Summary

Subbasin ID	Area (ac)	Weighted Runoff Coefficient	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ft^3)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
A5	0.06	0.9500	0.86	0.82	165.67	0.55	0 00:05:00
A5.1	0.25	0.5500	0.86	0.47	426.63	1.41	0 00:05:00
A6.1	0.08	0.9500	0.86	0.82	224.84	0.74	0 00:05:00
A6.2	0.08	0.8400	0.86	0.72	201.25	0.67	0 00:05:00
B10.1	0.14	0.5400	0.86	0.46	235.30	0.78	0 00:05:00
B11.1	0.58	0.3200	1.32	0.42	880.26	1.41	0 00:10:18
B11.2	0.02	0.9500	0.86	0.82	68.04	0.23	0 00:05:00
B12.1	0.57	0.2900	1.06	0.31	632.03	1.46	0 00:07:13
B12.2	0.07	0.9500	0.86	0.82	210.05	0.69	0 00:05:00
B13.1	0.58	0.2900	1.20	0.35	726.80	1.36	0 00:08:52
B8.1	0.61	0.3000	1.32	0.40	877.52	1.40	0 00:10:16
B9.1	0.46	0.3000	1.09	0.33	545.54	1.20	0 00:07:31
B9.2	0.06	0.9500	0.86	0.82	171.59	0.57	0 00:05:00
B-C1	0.56	0.4800	1.30	0.62	1270.96	2.07	0 00:10:13
B-C2	0.64	0.2900	1.42	0.41	953.48	1.33	0 00:11:49
C1.1	0.58	0.3200	1.43	0.46	967.60	1.33	0 00:12:01
C2.1	0.55	0.3100	1.32	0.41	821.54	1.30	0 00:10:32
C2.2	0.10	0.5700	0.86	0.49	168.63	0.56	0 00:05:00
C3.1	0.56	0.3800	1.15	0.44	881.55	1.79	0 00:08:05
C3.2	0.05	0.9500	0.86	0.82	139.05	0.46	0 00:05:00
D1.1	0.37	0.2800	1.59	0.44	589.89	0.69	0 00:14:05
D2.1	0.59	0.3200	1.52	0.49	1033.81	1.30	0 00:13:06
D2.2	0.06	0.9500	0.86	0.82	189.34	0.63	0 00:05:00
D3.1	0.52	0.3300	1.22	0.40	756.31	1.37	0 00:09:12
D3.2	0.05	0.9500	0.86	0.82	147.92	0.49	0 00:05:00
D4.1	0.61	0.2900	1.22	0.36	789.94	1.42	0 00:09:12
D4.2	0.07	0.9500	0.86	0.82	198.22	0.66	0 00:05:00
D5.1	0.58	0.3100	1.22	0.38	786.89	1.44	0 00:08:55
D-E1	1.28	0.2700	1.39	0.38	1746.48	2.54	0 00:11:19
D-E2	0.80	0.4100	1.97	0.81	2337.63	1.72	0 00:22:28
E1.1	0.31	0.3200	1.25	0.40	446.88	0.78	0 00:09:28
E2.1	0.40	0.3700	1.42	0.53	765.66	1.07	0 00:11:50
E2.2	0.08	0.9500	0.86	0.82	230.76	0.76	0 00:05:00
E4.1	0.63	0.3800	1.61	0.61	1397.42	1.58	0 00:14:40
E4.2	0.05	0.9500	0.86	0.82	136.09	0.45	0 00:05:00
E5.1	0.71	0.2900	1.43	0.42	1074.10	1.48	0 00:12:02
E5.2	0.04	0.9500	0.86	0.82	109.46	0.36	0 00:05:00
E6.1	0.45	0.3900	1.40	0.55	899.82	1.29	0 00:11:27
E8.1	0.68	0.3200	1.18	0.38	937.17	1.79	0 00:08:43
E8.2	0.05	0.9500	0.86	0.82	144.96	0.48	0 00:05:00
F1.1	0.22	0.5500	1.20	0.66	535.85	1.00	0 00:08:50
F1.2	0.01	0.3500	1.35	0.47	11.16	0.02	0 00:10:48
F3.1	0.56	0.3000	0.97	0.29	589.51	1.58	0 00:06:12
F3.2	0.04	0.9500	0.86	0.82	112.42	0.37	0 00:05:00
H_POND	1.57	0.4000	1.90	0.76	4319.92	3.46	0 00:20:39
H2	0.26	0.4000	0.86	0.34	328.70	1.09	0 00:05:00
H-3	1.30	0.2400	1.39	0.33	1571.43	2.29	0 00:11:18
MAUKA_NORTH	20.06	0.4200	1.66	0.70	50681.19	54.08	0 00:15:31
MAUKA_SOUTH	5.66	0.4100	1.40	0.57	11772.74	16.91	0 00:11:32
PRESERV_1	2.89	0.3400	1.14	0.39	4070.39	8.24	0 00:08:12
PRESERV_2	1.10	0.3300	1.89	0.62	2490.42	2.03	0 00:20:15
PRESERV_3	3.81	0.3600	2.13	0.77	10607.84	6.57	0 00:26:42
PRESERV_4	0.44	0.4000	1.75	0.70	1119.64	1.06	0 00:17:33
PRESERV_5	0.17	0.2400	1.09	0.26	161.68	0.36	0 00:07:27
PRESERV_6	0.42	0.2400	1.06	0.25	385.72	0.89	0 00:07:14
PRESERV_7	9.79	0.4000	1.68	0.67	23881.34	24.69	0 00:16:03
PRESERV_8	6.24	0.4000	1.66	0.66	15017.75	16.02	0 00:15:32
PRESERV_9	1.09	0.3100	2.27	0.70	2785.52	1.50	0 00:30:37

Node Summary

Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Diameter or Width (in)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ft^3)	Total Time Flooded (min)
SDFC D (STORM)	Junction	229.40	237.42	96.00	17.30	231.17	0 00:00	0.00	0.00
SDFC-A (STORM)	Junction	252.88	258.84	48.00	2.27	253.31	0 00:00	0.00	0.00
SDFC-BC (STORM)	Junction	255.76	263.76	72.00	13.02	258.53	0 00:00	0.00	0.00
SDFC-E(STORM)	Junction	231.93	237.65	72.00	8.83	233.16	0 00:00	0.00	0.00
SDHW-G1 (STORM)	Junction	233.00	237.00		47.63	236.08	0 00:00	0.00	0.00
SDHW-H2	Junction	246.54	251.54		65.09	248.81	0 00:00	0.00	0.00
SDMH-A1 (STORM)	Junction	217.50	239.13	48.00	2.25	220.96	0 00:00	0.00	0.00
SDMH-A2 (STORM)	Junction	233.07	246.59	48.00	2.25	236.29	0 00:00	0.00	0.00
SDMH-A3 (STORM)	Junction	243.28	258.09	48.00	2.27	246.59	0 00:00	0.00	0.00
SDMH-A5 (STORM)	Junction	265.11	274.77	48.00	1.30	268.35	0 00:00	0.00	0.00
SDMH-B1 (STORM)	Junction	212.90	222.77	48.00	12.95	216.91	0 00:00	0.00	0.00
SDMH-B10 (STORM)	Junction	288.00	299.48	48.00	3.84	291.47	0 00:00	0.00	0.00
SDMH-B11 (STORM)	Junction	298.46	306.18	48.00	2.59	301.78	0 00:00	0.00	0.00
SDMH-B12 (STORM)	Junction	306.23	314.37	48.00	1.08	309.42	0 00:00	0.00	0.00
SDMH-B2 (STORM)	Junction	218.98	227.86	48.00	12.95	222.65	0 00:00	0.00	0.00
SDMH-B3 (STORM)	Junction	238.89	248.68	48.00	12.95	242.46	0 00:00	0.00	0.00
SDMH-B4 (STORM)	Junction	252.24	269.51	48.00	12.96	255.99	0 00:00	0.00	0.00
SDMH-B5 (STORM)	Junction	252.76	266.49	48.00	12.98	257.30	0 00:00	0.00	0.00
SDMH-B6 (STORM)	Junction	252.54	263.83	48.00	13.00	258.07	0 00:00	0.00	0.00
SDMH-B7 (STORM)	Junction	257.38	265.79	48.00	6.64	261.26	0 00:00	0.00	0.00
SDMH-B8 (STORM)	Junction	266.72	276.34	48.00	5.25	270.15	0 00:00	0.00	0.00
SDMH-B9 (STORM)	Junction	283.30	291.00	48.00	4.16	286.66	0 00:00	0.00	0.00
SDMH-C1 (STORM)	Junction	256.00	265.00	48.00	4.06	259.45	0 00:00	0.00	0.00
SDMH-C2 (STORM)	Junction	259.28	266.56	48.00	2.92	262.81	0 00:00	0.00	0.00
SDMH-C3 (STORM)	Junction	262.48	270.00	48.00	2.93	266.00	0 00:00	0.00	0.00
SDMH-C4 (STORM)	Junction	271.00	281.00	48.00	1.21	274.24	0 00:00	0.00	0.00
SDMH-D1 (STORM)	Junction	235.43	244.00	48.00	5.88	238.89	0 00:00	0.00	0.00
SDMH-D2 (STORM)	Junction	249.50	257.09	48.00	5.37	252.96	0 00:00	0.00	0.00
SDMH-D3 (STORM)	Junction	282.53	290.10	48.00	3.77	285.87	0 00:00	0.00	0.00
SDMH-D4 (STORM)	Junction	299.50	306.95	48.00	2.33	302.83	0 00:00	0.00	0.00
SDMH-D5 (STORM)	Junction	305.50	314.00	48.00	0.91	308.71	0 00:00	0.00	0.00
SDMH-E1 (STORM)	Junction	232.75	242.43	48.00	8.83	236.40	0 00:00	0.00	0.00
SDMH-E2 (STORM)	Junction	246.13	255.60	48.00	8.10	249.53	0 00:00	0.00	0.00
SDMH-E3 (STORM)	Junction	269.66	278.00	48.00	6.93	273.04	0 00:00	0.00	0.00
SDMH-E4 (STORM)	Junction	286.50	295.57	48.00	6.93	289.92	0 00:00	0.00	0.00
SDMH-E5 (STORM)	Junction	288.69	297.87	60.00	5.42	292.27	0 00:00	0.00	0.00
SDMH-E6 (STORM)	Junction	291.15	299.42	48.00	2.14	294.52	0 00:00	0.00	0.00
SDMH-E7 (STORM)	Junction	303.26	314.53	48.00	1.18	306.49	0 00:00	0.00	0.00
SDMH-E8 (STORM)	Junction	318.27	326.00	48.00	1.18	321.47	0 00:00	0.00	0.00
SDMH-F1 (STORM)	Junction	290.93	300.47	48.00	2.55	294.41	0 00:00	0.00	0.00
SDMH-F2 (STORM)	Junction	293.34	303.31	48.00	1.21	296.68	0 00:00	0.00	0.00
SDMH-F3 (STORM)	Junction	312.09	323.59	48.00	1.21	315.30	0 00:00	0.00	0.00
SDMH-G1 (STORM)	Junction	228.94	249.00	60.00	47.27	233.62	0 00:00	0.00	0.00
SDMH-H1 (STORM)	Junction	179.49	193.34	96.00	131.24	187.17	0 00:00	0.00	0.00
SDMH-H2 (STORM)	Junction	184.28	219.21	96.00	131.19	189.36	0 00:00	0.00	0.00
SDMH-H3 (STORM)	Junction	210.82	240.96	96.00	121.81	215.69	0 00:00	0.00	0.00
SDMH-H4 (STORM)	Junction	217.45	239.00	72.00	64.93	222.93	0 00:00	0.00	0.00
SDMH-H5 (STORM)	Junction	224.14	253.00	72.00	65.05	228.82	0 00:00	0.00	0.00
OUTFALL__DET_WEIR	Outfall	175.00			0.00	175.00			
OUTFALL_DET_PIPE_24	Outfall	180.00			44.48	181.52			
OUTFALL_DET_PIPE_30	Outfall	180.00			69.41	181.68			
SDHW-A1 (STORM)	Outfall	220.29			2.25	220.63			
DETENTION_POND	Storage Node	182.00	192.00		133.01	186.81		0.00	0.00

Link Summary

Element ID	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow Velocity	Peak Flow Depth	Total Time Surcharged	Reported Condition
			(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)	(ft/sec)	(ft)	(min)	
{STORM}.A-0 (STORM)	SDHW-A1 (STORM)	SDMH-A1 (STORM)	10.71	220.29	220.50	-1.9600	30.000	0.0130	2.25	57.43	4.45	0.40	0.00	Calculated
{STORM}.A-1 (STORM)	SDMH-A1 (STORM)	SDMH-A2 (STORM)	100.70	220.50	236.07	-15.4600	24.000	0.0130	2.25	88.96	10.74	0.34	0.00	Calculated
{STORM}.A-2 (STORM)	SDMH-A2 (STORM)	SDMH-A3 (STORM)	218.68	236.07	246.28	-4.6700	24.000	0.0130	2.25	48.89	7.75	0.30	0.00	Calculated
{STORM}.A-3 (STORM)	SDMH-A3 (STORM)	SDFC-A (STORM)	14.06	251.62	252.88	-8.9600	12.000	0.0130	2.27	10.67	8.42	0.38	0.00	Calculated
{STORM}.A-4 (STORM)	SDFC-A (STORM)	SDMH-A4 (STORM)	29.04	252.88	253.84	-3.3100	12.000	0.0130	2.27	6.48	6.09	0.49	0.00	Calculated
{STORM}.A-5 (STORM)	SDMH-A4 (STORM)	SDMH-A5 (STORM)	143.05	254.34	268.11	-9.6300	12.000	0.0130	1.29	11.06	9.16	0.23	0.00	Calculated
{STORM}.B-0 (STORM)	SDMH-B1 (STORM)	SDMH-H2 (STORM)	69.39	215.90	213.00	4.1700	24.000	0.0130	12.95	46.22	9.92	0.87	0.00	Calculated
{STORM}.B-1 (STORM)	SDMH-B2 (STORM)	SDMH-B1 (STORM)	78.08	221.98	215.90	7.7900	24.000	0.0130	12.95	63.13	11.52	0.84	0.00	Calculated
{STORM}.B-10 (STORM)	SDMH-B8 (STORM)	SDMH-B9 (STORM)	106.44	271.47	286.30	-13.9300	18.000	0.0130	4.16	39.20	13.50	0.35	0.00	Calculated
{STORM}.B-11 (STORM)	SDMH-B9 (STORM)	SDMH-B10 (STORM)	92.10	286.80	291.00	-4.5600	18.000	0.0130	3.83	22.43	8.80	0.44	0.00	Calculated
{STORM}.B-12 (STORM)	SDMH-B10 (STORM)	SDMH-B11 (STORM)	100.47	292.50	301.46	-8.9200	18.000	0.0130	2.59	31.37	10.10	0.30	0.00	Calculated
{STORM}.B-13 (STORM)	SDMH-B11 (STORM)	SDMH-B12 (STORM)	80.79	301.46	309.23	-9.6200	18.000	0.0130	1.08	32.57	5.90	0.25	0.00	Calculated
{STORM}.B-2 (STORM)	SDMH-B2 (STORM)	SDMH-B3 (STORM)	163.81	221.98	241.89	-12.1600	24.000	0.0130	12.95	78.88	15.53	0.62	0.00	Calculated
{STORM}.B-3 (STORM)	SDMH-B3 (STORM)	SDMH-B4 (STORM)	249.48	242.86	255.24	-4.9700	24.000	0.0130	12.95	50.41	12.75	0.72	0.00	Calculated
{STORM}.B-4 (STORM)	SDMH-B4 (STORM)	SDMH-B5 (STORM)	98.43	255.14	255.76	-0.6300	24.000	0.0130	12.96	17.90	5.50	1.40	0.00	Calculated
{STORM}.B-5 (STORM)	SDMH-B5 (STORM)	SDMH-B6 (STORM)	99.98	255.76	256.49	-0.7400	24.000	0.0130	12.98	19.41	4.96	1.56	0.00	Calculated
{STORM}.B-6 (STORM)	SDMH-B6 (STORM)	SDFC-BC (STORM)	24.21	256.49	256.84	-1.4400	24.000	0.0130	13.00	27.16	5.18	1.63	0.00	Calculated
{STORM}.B-7 (STORM)	SDCB-B1 (STORM)	SDFC-BC (STORM)	10.44	257.00	256.84	1.5500	24.000	0.0130	8.23	28.18	3.21	1.71	0.00	Calculated
{STORM}.B-8 (STORM)	SDCB-B1 (STORM)	SDMH-B7 (STORM)	79.04	258.86	260.38	-1.9200	18.000	0.0130	6.63	14.56	6.96	0.80	0.00	Calculated
{STORM}.B-9 (STORM)	SDMH-B7 (STORM)	SDMH-B8 (STORM)	115.90	260.38	269.72	-8.0600	18.000	0.0130	5.25	29.81	7.89	0.65	0.00	Calculated
{STORM}.C-0 (STORM)	SDCB-C1 (STORM)	SDFC-BC (STORM)	17.61	257.37	256.84	2.9800	24.000	0.0130	5.34	39.02	2.71	1.48	0.00	Calculated
{STORM}.C-1 (STORM)	SDMH-C1 (STORM)	SDCB-C1 (STORM)	63.57	259.00	257.37	2.5700	24.000	0.0130	4.05	36.28	4.94	0.86	0.00	Calculated
{STORM}.C-2 (STORM)	SDMH-C1 (STORM)	SDMH-C2 (STORM)	54.84	260.00	262.28	-4.1600	12.000	0.0130	2.91	7.27	7.68	0.49	0.00	Calculated
{STORM}.C-3 (STORM)	SDMH-C2 (STORM)	SDMH-C3 (STORM)	99.30	262.28	265.48	-3.2200	12.000	0.0130	2.92	6.39	6.99	0.52	0.00	Calculated
{STORM}.C-4 (STORM)	SDMH-C3 (STORM)	SDMH-C4 (STORM)	125.09	265.48	274.00	-6.8100	12.000	0.0130	1.21	9.30	5.49	0.38	0.00	Calculated
{STORM}.D-0 (STORM)	SDFC D (STORM)	SDMH-H3 (STORM)	37.25	229.40	228.67	1.9500	24.000	0.0130	17.29	31.67	7.29	1.41	0.00	Calculated
{STORM}.D-1 (STORM)	SDMH-D1 (STORM)	SDFC D (STORM)	98.20	238.43	230.40	8.1800	18.000	0.0130	5.88	30.04	11.25	0.61	0.00	Calculated
{STORM}.D-2 (STORM)	SDMH-D2 (STORM)	SDMH-D1 (STORM)	80.60	252.50	238.43	17.4600	12.000	0.0130	5.37	14.89	15.40	0.46	0.00	Calculated
{STORM}.D-3 (STORM)	SDMH-D3 (STORM)	SDMH-D2 (STORM)	203.16	285.53	252.50	16.2600	12.000	0.0130	3.75	14.36	12.68	0.40	0.00	Calculated
{STORM}.D-4 (STORM)	SDMH-D4 (STORM)	SDMH-D3 (STORM)	192.04	302.50	285.53	8.8400	12.000	0.0130	2.32	10.59	9.95	0.34	0.00	Calculated
{STORM}.D-5 (STORM)	SDMH-D5 (STORM)	SDMH-D4 (STORM)	85.24	308.50	302.50	7.0400	12.000	0.0130	0.91	9.45	5.37	0.27	0.00	Calculated
{STORM}.D-E.1 (STORM)	SDCB-D2 (STORM)	SDFC D (STORM)	19.30	232.82	233.09	-1.4000	18.000	0.0150	1.71	4.07	2.60	0.60	0.00	Calculated
{STORM}.D-E.2 (STORM)	SDCB-D1 (STORM)	SDFC D (STORM)	15.15	233.49	233.25	1.5800	18.000	0.0130	2.49	13.22	4.25	0.55	0.00	Calculated
{STORM}.E-1 (STORM)	SDFC-E(STORM)	SDFC D (STORM)	10.39	231.93	231.63	2.8900	24.000	0.0130	8.83	38.45	6.11	0.94	0.00	Calculated
{STORM}.E-2 (STORM)	SDFC-E(STORM)	SDMH-E1 (STORM)	64.97	232.03	235.75	-5.7300	24.000	0.0130	8.83	54.13	7.12	0.88	0.00	Calculated
{STORM}.E-3 (STORM)	SDMH-E1 (STORM)	SDMH-E2 (STORM)	77.50	235.75	249.13	-17.2600	24.000	0.0130	8.10	93.98	12.46	0.52	0.00	Calculated
{STORM}.E-4 (STORM)	SDMH-E2 (STORM)	SDMH-E3 (STORM)	125.26	249.13	272.66	-18.7800	24.000	0.0130	6.92	98.05	15.89	0.39	0.00	Calculated
{STORM}.E-5 (STORM)	SDMH-E3 (STORM)	SDMH-E4 (STORM)	121.85	272.66	289.50	-13.8200	24.000	0.0130	6.93	84.11	15.32	0.40	0.00	Calculated
{STORM}.E-6 (STORM)	SDMH-E4 (STORM)	SDMH-E5 (STORM)	45.09	289.50	291.69	-4.8600	24.000	0.0130	5.42	49.87	8.55	0.51	0.00	Calculated
{STORM}.E-7 (STORM)	SDMH-E5 (STORM)	SDMH-E6 (STORM)	41.79	292.16	294.15	-4.7500	18.000	0.0130	2.14	22.91	7.06	0.34	0.00	Calculated
{STORM}.E-8 (STORM)	SDMH-E6 (STORM)	SDMH-E7 (STORM)	155.55	294.15	306.26	-7.7900	12.000	0.0130	1.17	9.94	6.35	0.30	0.00	Calculated
{STORM}.E-9 (STORM)	SDMH-E7 (STORM)	SDMH-E8 (STORM)	94.31	306.26	321.27	-15.9200	12.000	0.0130	1.18	14.22	9.61	0.21	0.00	Calculated
{STORM}.F-0 (STORM)	SDMH-E5 (STORM)	SDMH-F1 (STORM)	120.28	291.88	293.93	-1.7000	18.000	0.0130	2.52	13.71	5.48	0.46	0.00	Calculated
{STORM}.F-1 (STORM)	SDMH-F1 (STORM)	SDMH-F2 (STORM)	127.59	293.93	296.34	-1.8900	12.000	0.0130	1.20	4.90	3.97	0.41	0.00	Calculated

Link Summary

Element ID	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow Velocity	Peak Flow Depth	Total Time Surcharged	Reported Condition
			(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)	(ft/sec)	(ft)	(min)	
{STORM}.F-2 (STORM)	SDMH-F2 (STORM)	SDMH-F3 (STORM)	143.28	296.34	315.09	-13.0900	12.000	0.0130	1.21	12.89	9.04	0.28	0.00	Calculated
{STORM}.G-1 (STORM)	SDMH-G1 (STORM)	SDHW-G1 (STORM)	44.33	231.94	233.00	-2.3900	42.000	0.0130	47.27	155.58	6.84	2.38	0.00	Calculated
{STORM}.G-2 (STORM)	SDMH-H3 (STORM)	SDMH-G1 (STORM)	200.57	227.17	231.94	-2.3800	42.000	0.0130	47.21	155.16	11.95	1.50	0.00	Calculated
{STORM}.H-0 (STORM)	SDMH-H1 (STORM)	DETENTION_POND	16.29	182.49	182.00	3.0000	72.000	0.0130	130.35	733.76	9.99	4.74	0.00	Calculated
{STORM}.H-3 (STORM)	SDMH-H2 (STORM)	SDMH-H1 (STORM)	43.53	187.28	182.49	11.0000	72.000	0.0130	131.24	1404.59	10.54	3.31	0.00	Calculated
{STORM}.H-4 (STORM)	SDMH-H3 (STORM)	SDMH-H2 (STORM)	201.47	213.82	203.76	4.9900	72.000	0.0130	121.79	946.36	19.08	1.66	0.00	Calculated
{STORM}.H-5 (STORM)	SDMH-H4 (STORM)	SDMH-H3 (STORM)	49.07	220.45	219.96	1.0000	72.000	0.0130	64.91	423.22	7.70	2.03	0.00	Calculated
{STORM}.H-6 (STORM)	SDMH-H5 (STORM)	SDMH-H4 (STORM)	131.86	227.14	223.19	3.0000	60.000	0.0130	64.93	450.77	13.38	1.48	0.00	Calculated
{STORM.}H-7 (STORM)	SDHW-H2	SDMH-H5 (STORM)	28.58	246.54	246.00	1.8900	60.000	0.0130	65.05	358.00	9.78	1.86	0.00	Calculated
DET_BASIN_OUT_24	DETENTION_POND	OUTFALL_DET_PIPE_24	44.00	182.00	180.00	4.5500	24.000	0.0130	44.48	48.23	15.21	1.76	0.00	Calculated
DET_BASIN_OUT_30	DETENTION_POND	OUTFALL_DET_PIPE_30	44.00	182.00	180.00	4.5500	30.000	0.0130	69.41	87.45	15.83	2.09	0.00	Calculated
WEIR_LIPALU	DETENTION_POND	OUTFALL__DET_WEIR		182.00	175.00				0.00					

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Inlet Summary

Element ID	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Allowable Spread (ft)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)
DI-A4.1 (STORM)	2	255.71	260.68	1.47	N/A	N/A	N/A	7.00	3.47	261.25
DI-A5.1 (STORM)	1	269.47	274.85	0.75	0.00	0.75	0.43	7.00	2.08	274.89
DI-A5.2 (STORM)	1	270.40	275.30	0.73	0.00	0.72	0.43	7.00	2.05	275.34
DI-B10.1 (STORM)	1	292.48	297.48	1.53	1.19	0.34	78.01	7.00	4.05	297.65
DI-B10.2 (STORM)	1	292.48	297.39	0.22	0.22	0.00	100.00	7.00	1.32	297.47
DI-B11.1 (STORM)	1	301.55	306.54	1.63	1.25	0.38	76.83	7.00	4.24	306.71
DI-B11.2 (STORM)	1	301.55	306.55	0.69	0.00	0.69	0.44	7.00	2.01	306.59
DI-B12.1 (STORM)	1	309.67	314.69	1.36	1.09	0.26	80.61	7.00	3.75	314.85
DI-B7.1 (STORM)	1	260.75	265.75	1.62	1.35	0.26	83.64	7.00	5.19	265.94
DI-B8.1 (STORM)	1	271.34	276.34	1.29	0.00	1.29	0.21	7.00	2.24	276.38
DI-B8.2 (STORM)	1	271.34	276.34	0.57	0.45	0.12	78.72	7.00	1.65	276.44
DI-B9.1 (STORM)	1	286.00	291.00	0.84	0.61	0.24	71.78	7.00	1.91	291.12
DI-C1.1 (STORM)	1	260.00	265.00	1.54	1.31	0.23	84.83	7.00	5.06	265.19
DI-C3.1 (STORM)	1	265.00	270.00	1.74	1.31	0.43	75.21	7.00	4.42	270.17
DI-C3.2 (STORM)	1	265.00	270.00	0.65	0.59	0.06	90.79	7.00	1.97	270.12
DI-C4.1 (STORM)	1	276.00	281.00	1.78	1.08	0.70	60.69	7.00	3.57	281.16
DI-C4.2 (STORM)	1	276.00	281.00	0.46	0.37	0.08	81.61	7.00	1.52	281.09
DI-D1.1 (STORM)	1	239.00	244.00	0.81	0.01	0.81	0.66	7.00	2.45	244.05
DI-D2.1 (STORM)	1	252.12	257.15	1.57	1.32	0.25	84.24	7.00	5.09	257.34
DI-D2.2 (STORM)	1	252.12	257.13	0.76	0.01	0.75	0.68	7.00	2.37	257.17
DI-D3.1 (STORM)	1	285.10	290.11	1.98	1.16	0.82	58.69	7.00	3.84	290.27
DI-D3.2 (STORM)	1	285.10	290.15	0.65	0.49	0.16	75.95	7.00	1.72	290.26
DI-D4.1 (STORM)	1	301.90	306.90	1.94	1.14	0.80	58.71	7.00	3.76	307.06
DI-D4.2 (STORM)	1	301.90	306.91	0.65	0.50	0.15	76.36	7.00	1.74	307.01
DI-D5.1 (STORM)	1	309.60	314.60	1.44	0.00	1.44	0.20	7.00	2.33	314.64
DI-E1.1 (STORM)	1	237.48	242.48	0.81	0.01	0.81	0.67	7.00	2.45	242.53
DI-E2.1 (STORM)	1	250.60	255.60	1.33	1.18	0.16	88.31	7.00	4.61	255.78
DI-E2.2 (STORM)	1	250.60	255.60	0.79	0.01	0.79	0.67	7.00	2.42	255.65
DI-E4.1 (STORM)	1	290.70	295.70	1.71	1.29	0.41	75.72	7.00	4.36	295.87
DI-E4.2 (STORM)	1	290.93	295.94	0.45	0.43	0.02	94.93	7.00	1.71	296.05
DI-E5.1 (STORM)	1	292.96	298.02	1.62	N/A	N/A	N/A	7.00	8.82	298.38
DI-E5.2 (STORM)	1	293.02	297.96	0.36	0.36	0.00	100.00	7.00	1.80	298.07
DI-E6.1 (STORM)	1	294.56	299.56	1.30	1.16	0.14	89.24	7.00	4.57	299.73
DI-E8.1 (STORM)	1	321.43	326.43	1.79	1.08	0.70	60.65	7.00	3.57	326.58
DI-E8.2 (STORM)	1	321.56	326.56	0.48	0.39	0.09	81.05	7.00	1.54	326.66
DI-F1.1 (STORM)	1	295.37	300.37	1.31	1.17	0.15	88.78	7.00	4.59	300.54
DI-F1.2 (STORM)	1	295.27	300.27	0.08	0.08	0.00	100.00	7.00	1.02	300.34
DI-F3.1 (STORM)	1	319.00	325.00	1.58	0.00	1.58	0.19	7.00	2.41	325.05
DI-F3.2 (STORM)	1	319.00	325.00	0.37	0.31	0.06	84.48	7.00	1.40	325.09
SDCB-B1 (STORM)	2	257.00	263.87	2.08	N/A	N/A	N/A	7.00	3.71	264.13
SDCB-C1 (STORM)	2	257.36	264.52	1.61	N/A	N/A	N/A	7.00	3.44	264.78
SDCB-D1 (STORM)	2	233.49	235.30	2.56	N/A	N/A	N/A	7.00	3.97	235.57
SDCB-D2 (STORM)	2	233.09	234.90	1.72	N/A	N/A	N/A	7.00	3.51	235.16
SDMH-A4 (STORM)	2	250.84	260.33	0.63	N/A	N/A	N/A	7.00	2.40	260.57

Junction Input

Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft^2)
4-Jun	253.00	254.25	-254.25	0.00
5-Jun	270.00	271.25	-271.25	0.00
6-Jun	290.00	291.25	-291.25	0.00
7-Jun	305.00	306.25	-306.25	0.00
8-Jun	310.00	311.25	-311.25	0.00
9-Jun	313.00	314.25	-314.25	0.00
10-Jun	340.00	341.25	-341.25	0.00
SDFC D (STORM)	229.40	237.42	0.00	0.00
SDFC-A (STORM)	252.88	258.84	0.00	0.00
SDFC-BC (STORM)	255.76	263.76	0.00	0.00
SDFC-E(STORM)	231.93	237.65	0.00	0.00
SDHW-G1 (STORM)	233.00	237.00	0.00	0.00
SDHW-H2	246.54	251.54	0.00	0.00
SDMH-A1 (STORM)	217.50	239.13	0.00	0.00
SDMH-A2 (STORM)	233.07	246.59	0.00	0.00
SDMH-A3 (STORM)	243.28	258.09	0.00	0.00
SDMH-A5 (STORM)	265.11	274.77	0.05	0.00
SDMH-B1 (STORM)	212.90	222.77	0.00	0.00
SDMH-B10 (STORM)	288.00	299.48	0.00	0.00
SDMH-B11 (STORM)	298.46	306.18	0.00	0.00
SDMH-B12 (STORM)	306.23	314.37	0.01	0.00
SDMH-B2 (STORM)	218.98	227.86	0.01	0.00
SDMH-B3 (STORM)	238.89	248.68	0.00	0.00
SDMH-B4 (STORM)	252.24	269.51	0.00	0.00
SDMH-B5 (STORM)	252.76	266.49	0.00	0.00
SDMH-B6 (STORM)	252.54	263.83	0.00	0.00
SDMH-B7 (STORM)	257.38	265.79	0.00	0.00
SDMH-B8 (STORM)	266.72	276.34	0.00	0.00
SDMH-B9 (STORM)	283.30	291.00	0.00	0.00
SDMH-C1 (STORM)	256.00	265.00	0.00	0.00
SDMH-C2 (STORM)	259.28	266.56	0.00	0.00
SDMH-C3 (STORM)	262.48	270.00	0.00	0.00
SDMH-C4 (STORM)	271.00	281.00	0.00	0.00
SDMH-D1 (STORM)	235.43	244.00	0.00	0.00
SDMH-D2 (STORM)	249.50	257.09	0.00	0.00
SDMH-D3 (STORM)	282.53	290.10	0.00	0.00
SDMH-D4 (STORM)	299.50	306.95	0.00	0.00
SDMH-D5 (STORM)	305.50	314.00	0.00	0.00
SDMH-E1 (STORM)	232.75	242.43	0.00	0.00
SDMH-E2 (STORM)	246.13	255.60	0.00	0.00
SDMH-E3 (STORM)	269.66	278.00	0.00	0.00
SDMH-E4 (STORM)	286.50	295.57	0.00	0.00
SDMH-E5 (STORM)	288.69	297.87	0.00	0.00
SDMH-E6 (STORM)	291.15	299.42	0.00	0.00
SDMH-E7 (STORM)	303.26	314.53	0.00	0.00
SDMH-E8 (STORM)	318.27	326.00	0.00	0.00
SDMH-F1 (STORM)	290.93	300.47	0.00	0.00
SDMH-F2 (STORM)	293.34	303.31	0.00	0.00
SDMH-F3 (STORM)	312.09	323.59	0.01	0.00
SDMH-G1 (STORM)	228.94	249.00	0.00	0.00
SDMH-H1 (STORM)	179.49	193.34	-0.21	0.00
SDMH-H2 (STORM)	184.28	219.21	0.00	0.00
SDMH-H3 (STORM)	210.82	240.96	0.00	0.00
SDMH-H4 (STORM)	217.45	239.00	0.00	0.00
SDMH-H5 (STORM)	224.14	253.00	0.00	0.00

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Junction Results

Element ID	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
4-Jun	47.66	253.83	0.00	0 00:16	0 00:00	0.00	0.00
5-Jun	45.21	270.86	0.00	0 00:16	0 00:00	0.00	0.00
6-Jun	41.20	290.67	0.00	0 00:16	0 00:00	0.00	0.00
7-Jun	40.22	305.82	0.00	0 00:16	0 00:00	0.00	0.00
8-Jun	40.23	310.93	0.00	0 00:16	0 00:00	0.00	0.00
9-Jun	40.26	314.13	0.00	0 00:16	0 00:00	0.00	0.00
10-Jun	16.01	340.58	0.00	0 00:15	0 00:00	0.00	0.00
SDFC D (STORM)	17.30	231.17	0.00	0 00:09	0 00:00	0.00	0.00
SDFC-A (STORM)	2.27	253.31	0.00	0 00:06	0 00:00	0.00	0.00
SDFC-BC (STORM)	13.02	258.53	0.00	0 00:09	0 00:00	0.00	0.00
SDFC-E(STORM)	8.83	233.16	0.00	0 00:09	0 00:00	0.00	0.00
SDHW-G1 (STORM)	47.63	236.08	0.00	0 00:16	0 00:00	0.00	0.00
SDHW-H2	65.09	248.81	0.00	0 00:15	0 00:00	0.00	0.00
SDMH-A1 (STORM)	2.25	220.96	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-A2 (STORM)	2.25	236.29	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-A3 (STORM)	2.27	246.59	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-A5 (STORM)	1.30	268.35	0.00	0 00:05	0 00:00	0.00	0.00
SDMH-B1 (STORM)	12.95	216.91	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B10 (STORM)	3.84	291.47	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-B11 (STORM)	2.59	301.78	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-B12 (STORM)	1.08	309.42	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-B2 (STORM)	12.95	222.65	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B3 (STORM)	12.95	242.46	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B4 (STORM)	12.96	255.99	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B5 (STORM)	12.98	257.30	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-B6 (STORM)	13.00	258.07	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B7 (STORM)	6.64	261.26	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-B8 (STORM)	5.25	270.15	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-B9 (STORM)	4.16	286.66	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-C1 (STORM)	4.06	259.45	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-C2 (STORM)	2.92	262.81	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-C3 (STORM)	2.93	266.00	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-C4 (STORM)	1.21	274.24	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-D1 (STORM)	5.88	238.89	0.00	0 00:05	0 00:00	0.00	0.00
SDMH-D2 (STORM)	5.37	252.96	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-D3 (STORM)	3.77	285.87	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-D4 (STORM)	2.33	302.83	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-D5 (STORM)	0.91	308.71	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E1 (STORM)	8.83	236.40	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E2 (STORM)	8.10	249.53	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-E3 (STORM)	6.93	273.04	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E4 (STORM)	6.93	289.92	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E5 (STORM)	5.42	292.27	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-E6 (STORM)	2.14	294.52	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E7 (STORM)	1.18	306.49	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-E8 (STORM)	1.18	321.47	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-F1 (STORM)	2.55	294.41	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-F2 (STORM)	1.21	296.68	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-F3 (STORM)	1.21	315.30	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-G1 (STORM)	47.27	233.62	0.00	0 00:17	0 00:00	0.00	0.00
SDMH-H1 (STORM)	131.24	187.17	0.00	0 00:18	0 00:00	0.00	0.00
SDMH-H2 (STORM)	131.19	189.36	0.00	0 00:14	0 00:00	0.00	0.00
SDMH-H3 (STORM)	121.81	215.69	0.00	0 00:16	0 00:00	0.00	0.00
SDMH-H4 (STORM)	64.93	222.93	0.00	0 00:15	0 00:00	0.00	0.00
SDMH-H5 (STORM)	65.05	228.82	0.00	0 00:15	0 00:00	0.00	0.00

THESE "JUNCTIONS" ARE JUST NULL CONNECTIONS BETWEEN PRESERVATION SWALE SECTIONS OR "TRENCHES" NO DATA EVALUATED HERE.

Pipe Input

Element ID	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses
{STORM}.A-0 (STORM)	10.71	220.29	220.50	-1.9600	30.000	0.0130	0.5000	0.5000	0.0000
{STORM}.A-1 (STORM)	100.70	220.50	236.07	-15.4600	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.A-2 (STORM)	218.68	236.07	246.28	-4.6700	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.A-3 (STORM)	14.06	251.62	252.88	-8.9600	12.000	0.0130	0.5000	0.5000	0.0000
{STORM}.A-4 (STORM)	29.04	252.88	253.84	-3.3100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.A-5 (STORM)	143.05	254.34	268.11	-9.6300	12.000	0.0130	0.5000	0.7000	0.0000
{STORM}.A-5.1 (STORM)	31.77	256.72	256.04	2.1200	12.000	0.0130	0.5000	0.7000	0.0000
{STORM}.A-6.1 (STORM)	11.49	270.47	270.33	1.2200	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.A-6.2 (STORM)	14.21	271.40	270.61	5.5700	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.B-0 (STORM)	69.39	215.90	213.00	4.1700	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-1 (STORM)	78.08	221.98	215.90	7.7900	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-10 (STORM)	106.44	271.47	286.30	-13.9300	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-10.1 (STORM)	12.09	287.00	286.80	1.6500	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-11 (STORM)	92.10	286.80	291.00	-4.5600	18.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-11.1 (STORM)	47.87	293.48	293.00	1.0000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-11.2 (STORM)	40.03	293.48	291.50	4.9500	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-12 (STORM)	100.47	292.50	301.46	-8.9200	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-12.1 (STORM)	10.82	302.55	302.30	2.3000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-12.2 (STORM)	17.38	302.55	302.30	1.4400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-13 (STORM)	80.79	301.46	309.23	-9.6200	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-13.1 (STORM)	13.80	310.67	310.47	1.4600	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-2 (STORM)	163.81	221.98	241.89	-12.1600	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-3 (STORM)	249.48	242.86	255.24	-4.9700	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-4 (STORM)	98.43	255.14	255.76	-0.6300	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-5 (STORM)	99.98	255.76	256.49	-0.7400	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-6 (STORM)	24.21	256.49	256.84	-1.4400	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-7 (STORM)	10.44	257.00	256.84	1.5500	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-8 (STORM)	79.04	258.86	260.38	-1.9200	18.000	0.0130	0.5000	0.8000	0.0000
{STORM}.B-8.1 (STORM)	12.46	261.75	261.55	1.6000	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.B-9 (STORM)	115.90	260.38	269.72	-8.0600	18.000	0.0130	0.5000	0.8000	0.0000
{STORM}.B-9.1 (STORM)	12.98	272.34	272.14	1.5400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-9.2 (STORM)	11.49	272.34	272.14	1.7400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-0 (STORM)	17.61	257.37	256.84	2.9800	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-1 (STORM)	63.57	259.00	257.37	2.5700	24.000	0.0130	0.5000	0.9000	0.0000
{STORM}.C-1.1 (STORM)	11.15	261.00	260.80	1.8000	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-2 (STORM)	54.84	260.00	262.28	-4.1600	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-2.1 (STORM)	12.79	266.00	265.80	1.6000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-2.2 (STORM)	12.89	266.00	265.80	1.5500	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-3 (STORM)	99.30	262.28	265.48	-3.2200	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.C-3.1 (STORM)	12.20	277.00	276.80	1.6400	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-3.2 (STORM)	12.12	277.00	276.80	1.6500	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-4 (STORM)	125.09	265.48	274.00	-6.8100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-0 (STORM)	37.25	229.40	228.67	1.9500	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-1 (STORM)	98.20	238.43	230.40	8.1800	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-1.1 (STORM)	12.67	240.00	239.80	1.5900	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.D-2 (STORM)	80.60	252.50	238.43	17.4600	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.D-2.1 (STORM)	12.16	253.12	252.92	1.6400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-2.2 (STORM)	12.13	253.12	252.92	1.6500	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-3 (STORM)	203.16	285.53	252.50	16.2600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-3.1 (STORM)	12.04	286.10	285.90	1.6700	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-3.2 (STORM)	12.19	286.10	285.90	1.6600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-4 (STORM)	192.04	302.50	285.53	8.8400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-4.1 (STORM)	12.74	302.90	302.63	2.1100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-4.2 (STORM)	12.42	302.90	302.63	2.1700	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-5 (STORM)	85.24	308.50	302.50	7.0400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-5.1 (STORM)	13.99	310.60	310.40	1.4300	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.D-E.2 (STORM)	15.15	233.49	233.25	1.5800	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-1 (STORM)	10.39	231.93	231.63	2.8900	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-1.1 (STORM)	12.39	238.48	238.28	1.6200	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-2 (STORM)	64.97	232.03	235.75	-5.7300	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-2.1 (STORM)	12.20	251.60	251.40	1.6300	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-2.2 (STORM)	11.94	251.60	251.40	1.6700	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-3 (STORM)	77.50	235.75	249.13	-17.2600	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-4 (STORM)	125.26	249.13	272.66	-18.7800	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-4.1 (STORM)	14.65	291.70	291.50	1.3600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-4.2 (STORM)	13.05	291.93	291.50	3.3000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-5 (STORM)	121.85	272.66	289.50	-13.8200	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-5.1 (STORM)	19.76	293.97	293.50	2.3600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-5.2 (STORM)	13.36	294.02	293.50	3.8900	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-6 (STORM)	45.09	289.50	291.69	-4.8600	24.000	0.0130	0.5000	1.0000	0.0000

Pipe Input

Element ID	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses
{STORM}.E-6.1 (STORM)	13.50	295.56	295.36	1.4800	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-7 (STORM)	41.79	292.16	294.15	-4.7500	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-8 (STORM)	155.55	294.15	306.26	-7.7900	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-8.1 (STORM)	13.32	322.43	322.23	1.5100	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.E-8.2 (STORM)	13.61	322.56	322.23	2.4200	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.E-9 (STORM)	94.31	306.26	321.27	-15.9200	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.F-0 (STORM)	120.28	291.88	293.93	-1.7000	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-1 (STORM)	127.59	293.93	296.34	-1.8900	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-1.1 (STORM)	14.25	296.37	296.07	2.1100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-1.2 (STORM)	10.90	296.27	296.07	1.8300	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-2 (STORM)	143.28	296.34	315.09	-13.0900	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.F-3.1 (STORM)	10.94	320.00	319.55	4.1100	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.F-3.2 (STORM)	20.93	320.00	319.55	2.1500	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.G-1 (STORM)	44.33	231.94	233.00	-2.3900	42.000	0.0130	0.5000	0.6000	0.0000
{STORM}.G-2 (STORM)	200.57	227.17	231.94	-2.3800	42.000	0.0130	0.5000	1.0000	0.0000
{STORM}.H-4 (STORM)	201.47	213.82	203.76	4.9900	72.000	0.0130	0.5000	0.7000	0.0000
{STORM}.H-5 (STORM)	49.07	220.45	219.96	1.0000	72.000	0.0130	0.5000	1.0000	0.0000
{STORM}.H-6	131.86	227.14	223.19	3.0000	60.000	0.0130	0.5000	0.6000	0.0000
D-E.1	19.30	232.82	233.09	-1.4000	18.000	0.0150	0.5000	1.0000	0.0000
DET_BASIN_OUT_24	44.00	182.00	180.00	4.5500	24.000	0.0130	0.5000	0.5000	0.0000
DET_BASIN_OUT_30	44.00	182.00	180.00	4.5500	30.000	0.0130	0.5000	0.5000	0.0000
H-0	16.29	182.49	182.00	3.0000	72.000	0.0130	0.5000	0.5000	0.0000
H-3	43.53	187.28	182.49	11.0000	72.000	0.0130	0.5000	0.5000	0.0000
H-7	28.58	246.54	246.00	1.8900	60.000	0.0130	0.5000	0.5000	0.0000

COFFMAN ENGINEERS

Pipe Results

Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow Velocity	Travel Time	Peak Flow Depth	Total Time Surcharged	Froude Number	Reported Condition
(cfs)	(days hh:mm)	(cfs)	(ft/sec)	(min)	(ft)	(min)		
2.25	0 00:06	57.43	4.45	0.04	0.40	0.00		Calculated
2.25	0 00:06	88.96	10.74	0.16	0.34	0.00		Calculated
2.25	0 00:06	48.89	7.75	0.47	0.30	0.00		Calculated
2.27	0 00:06	10.67	8.42	0.03	0.38	0.00		Calculated
2.27	0 00:05	6.48	6.09	0.08	0.49	0.00		Calculated
1.29	0 00:05	11.06	9.16	0.26	0.23	0.00		Calculated
0.66	0 00:08	5.19	4.09	0.13	0.26	0.00		Calculated
0.66	0 00:05	3.93	2.99	0.06	0.32	0.00		Calculated
0.65	0 00:05	8.41	5.17	0.05	0.22	0.00		Calculated
12.95	0 00:10	46.22	9.92	0.12	0.87	0.00		Calculated
12.95	0 00:10	63.13	11.52	0.11	0.84	0.00		Calculated
4.16	0 00:07	39.20	13.50	0.13	0.35	0.00		Calculated
0.61	0 00:05	4.58	3.40	0.06	0.28	0.00		Calculated
3.83	0 00:07	22.43	8.80	0.17	0.44	0.00		Calculated
1.23	0 00:10	3.57	3.62	0.22	0.45	0.00		Calculated
0.20	0 00:05	7.92	4.12	0.16	0.12	0.00		Calculated
2.59	0 00:07	31.37	10.10	0.17	0.30	0.00		Calculated
1.31	0 00:07	5.40	4.11	0.04	0.42	0.00		Calculated
0.61	0 00:05	4.27	3.18	0.09	0.29	0.00		Calculated
1.08	0 00:09	32.57	5.90	0.23	0.25	0.00		Calculated
1.08	0 00:09	4.30	3.77	0.06	0.39	0.00		Calculated
12.95	0 00:10	78.88	15.53	0.18	0.62	0.00		Calculated
12.95	0 00:10	50.41	12.75	0.33	0.72	0.00		Calculated
12.96	0 00:10	17.90	5.50	0.30	1.40	0.00		Calculated
12.98	0 00:09	19.41	4.96	0.34	1.56	0.00		Calculated
13.00	0 00:09	27.16	5.18	0.08	1.63	0.00		Calculated
8.23	0 00:08	28.18	3.21	0.05	1.71	0.00		Calculated
6.63	0 00:08	14.56	6.96	0.19	0.80	0.00		Calculated
1.43	0 00:10	4.50	3.97	0.05	0.47	0.00		Calculated
5.25	0 00:07	29.81	7.89	0.24	0.65	0.00		Calculated
0.86	0 00:07	4.42	3.41	0.06	0.36	0.00		Calculated
0.43	0 00:05	4.70	3.00	0.06	0.24	0.00		Calculated
5.34	0 00:11	39.02	2.71	0.11	1.48	0.00		Calculated
4.05	0 00:09	36.28	4.94	0.21	0.86	0.00		Calculated
1.38	0 00:12	4.78	4.04	0.05	0.45	0.00		Calculated
2.91	0 00:08	7.27	7.68	0.12	0.49	0.00		Calculated
1.50	0 00:08	4.51	3.90	0.05	0.49	0.00		Calculated
0.59	0 00:05	4.44	3.14	0.07	0.29	0.00		Calculated
2.92	0 00:08	6.39	6.99	0.24	0.52	0.00		Calculated
1.07	0 00:08	4.56	3.73	0.05	0.39	0.00		Calculated
0.36	0 00:05	4.58	2.92	0.07	0.21	0.00		Calculated
1.21	0 00:08	9.30	5.49	0.38	0.38	0.00		Calculated
17.29	0 00:09	31.67	7.29	0.09	1.41	0.00		Calculated
5.88	0 00:09	30.04	11.25	0.15	0.61	0.00		Calculated
0.79	0 00:14	4.49	3.57	0.06	0.33	0.00		Calculated
5.37	0 00:09	14.89	15.40	0.09	0.46	0.00		Calculated
1.49	0 00:09	4.57	3.90	0.05	0.49	0.00		Calculated
0.73	0 00:05	4.58	3.33	0.06	0.32	0.00		Calculated
3.75	0 00:09	14.36	12.68	0.27	0.40	0.00		Calculated
1.34	0 00:09	4.60	3.83	0.05	0.46	0.00		Calculated
0.51	0 00:05	4.59	3.08	0.07	0.26	0.00		Calculated
2.32	0 00:09	10.59	9.95	0.32	0.34	0.00		Calculated
1.31	0 00:09	5.18	4.09	0.05	0.43	0.00		Calculated
0.48	0 00:05	5.24	3.34	0.06	0.24	0.00		Calculated
0.91	0 00:09	9.45	5.37	0.26	0.27	0.00		Calculated
0.91	0 00:09	4.26	3.60	0.06	0.36	0.00		Calculated
2.49	0 00:11	13.22	4.25	0.06	0.55	0.00		Calculated
8.83	0 00:09	38.45	6.11	0.03	0.94	0.00		Calculated
0.78	0 00:09	4.54	3.58	0.06	0.32	0.00		Calculated
8.83	0 00:09	54.13	7.12	0.15	0.88	0.00		Calculated
1.25	0 00:12	4.55	3.75	0.05	0.44	0.00		Calculated
0.76	0 00:05	4.60	3.36	0.06	0.33	0.00		Calculated
8.10	0 00:09	93.98	12.46	0.10	0.52	0.00		Calculated
6.92	0 00:09	98.05	15.89	0.13	0.39	0.00		Calculated
1.44	0 00:09	4.16	3.74	0.07	0.49	0.00		Calculated
0.41	0 00:05	6.47	3.77	0.06	0.20	0.00		Calculated
6.93	0 00:09	84.11	15.32	0.13	0.40	0.00		Calculated
1.60	0 00:12	5.48	4.66	0.07	0.45	0.00		Calculated
0.36	0 00:05	7.02	3.91	0.06	0.17	0.00		Calculated

COFFMAN ENGINEERS

Pipe Results

Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow Velocity	Travel Time	Peak Flow Depth	Total Time Surcharged	Froude Number	Reported Condition
(cfs)	(days hh:mm)	(cfs)	(ft/sec)	(min)	(ft)	(min)		
5.42	0 00:07	49.87	8.55	0.09	0.51	0.00		Calculated
1.14	0 00:11	4.34	3.83	0.06	0.40	0.00		Calculated
2.14	0 00:09	22.91	7.06	0.10	0.34	0.00		Calculated
1.17	0 00:09	9.94	6.35	0.41	0.30	0.00		Calculated
1.07	0 00:08	4.38	3.61	0.06	0.40	0.00		Calculated
0.38	0 00:05	5.55	3.36	0.07	0.20	0.00		Calculated
1.18	0 00:08	14.22	9.61	0.16	0.21	0.00		Calculated
2.52	0 00:07	13.71	5.48	0.37	0.46	0.00		Calculated
1.20	0 00:06	4.90	3.97	0.54	0.41	0.00		Calculated
1.28	0 00:06	5.17	4.11	0.06	0.42	0.00		Calculated
0.08	0 00:05	4.83	2.04	0.09	0.10	0.00		Calculated
1.21	0 00:06	12.89	9.04	0.26	0.28	0.00		Calculated
0.98	0 00:06	7.23	4.76	0.04	0.31	0.00		Calculated
0.29	0 00:05	5.22	3.19	0.11	0.17	0.00		Calculated
47.27	0 00:16	155.58	6.84	0.11	2.38	0.00		Calculated
47.21	0 00:17	155.16	11.95	0.28	1.50	0.00		Calculated
121.79	0 00:16	946.36	19.08	0.18	1.66	0.00		Calculated
64.91	0 00:15	423.22	7.70	0.11	2.03	0.00		Calculated
64.93	0 00:15	450.77	13.38	0.16	1.48	0.00		Calculated
1.71	0 00:22	4.07	2.60	0.12	0.60	0.00		Calculated
44.48	0 00:18	48.23	15.21	0.05	1.76	0.00		Calculated
69.41	0 00:18	87.45	15.83	0.05	2.09	0.00		Calculated
130.35	0 00:16	733.76	9.99	0.03	4.74	0.00		Calculated
131.24	0 00:16	1404.59	10.54	0.07	3.31	0.00		Calculated
65.05	0 00:15	358.00	9.78	0.05	1.86	0.00		Calculated

Inlet Input

Element ID	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Inlet Depth (ft)	Grate Clogging Factor (%)
DI-A4.1 (STORM)	2	255.71	260.68	4.97	30.00
DI-A5.1 (STORM)	1	269.47	274.85	5.38	30.00
DI-A5.2 (STORM)	1	270.40	275.30	4.90	30.00
DI-B10.1 (STORM)	1	292.48	297.48	5.00	30.00
DI-B10.2 (STORM)	1	292.48	297.39	4.91	30.00
DI-B11.1 (STORM)	1	301.55	306.54	4.99	30.00
DI-B11.2 (STORM)	1	301.55	306.55	5.00	30.00
DI-B12.1 (STORM)	1	309.67	314.69	5.02	30.00
DI-B7.1 (STORM)	1	260.75	265.75	5.00	30.00
DI-B8.1 (STORM)	1	271.34	276.34	5.00	30.00
DI-B8.2 (STORM)	1	271.34	276.34	5.00	30.00
DI-B9.1 (STORM)	1	286.00	291.00	5.00	30.00
DI-C1.1 (STORM)	1	260.00	265.00	5.00	30.00
DI-C3.1 (STORM)	1	265.00	270.00	5.00	30.00
DI-C3.2 (STORM)	1	265.00	270.00	5.00	30.00
DI-C4.1 (STORM)	1	276.00	281.00	5.00	30.00
DI-C4.2 (STORM)	1	276.00	281.00	5.00	30.00
DI-D1.1 (STORM)	1	239.00	244.00	5.00	30.00
DI-D2.1 (STORM)	1	252.12	257.15	5.03	30.00
DI-D2.2 (STORM)	1	252.12	257.13	5.01	30.00
DI-D3.1 (STORM)	1	285.10	290.11	5.01	30.00
DI-D3.2 (STORM)	1	285.10	290.15	5.05	30.00
DI-D4.1 (STORM)	1	301.90	306.90	5.00	30.00
DI-D4.2 (STORM)	1	301.90	306.91	5.01	30.00
DI-D5.1 (STORM)	1	309.60	314.60	5.00	30.00
DI-E1.1 (STORM)	1	237.48	242.48	5.00	30.00
DI-E2.1 (STORM)	1	250.60	255.60	5.00	30.00
DI-E2.2 (STORM)	1	250.60	255.60	5.00	30.00
DI-E4.1 (STORM)	1	290.70	295.70	5.00	30.00
DI-E4.2 (STORM)	1	290.93	295.94	5.01	30.00
DI-E5.1 (STORM)	1	292.96	298.02	5.06	30.00
DI-E5.2 (STORM)	1	293.02	297.96	4.94	30.00
DI-E6.1 (STORM)	1	294.56	299.56	5.00	30.00
DI-E8.1 (STORM)	1	321.43	326.43	5.00	30.00
DI-E8.2 (STORM)	1	321.56	326.56	5.00	30.00
DI-F1.1 (STORM)	1	295.37	300.37	5.00	30.00
DI-F1.2 (STORM)	1	295.27	300.27	5.00	30.00
DI-F3.1 (STORM)	1	319.00	325.00	6.00	30.00
DI-F3.2 (STORM)	1	319.00	325.00	6.00	30.00
SDCB-B1 (STORM)	2	257.00	263.87	6.87	30.00
SDCB-C1 (STORM)	2	257.36	264.52	7.16	30.00
SDCB-D1 (STORM)	2	233.49	235.30	1.81	30.00
SDCB-D2 (STORM)	2	233.09	234.90	1.81	30.00
SDMH-A4 (STORM)	2	250.84	260.33	9.49	30.00

Inlet Results

Element ID	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Max Depth Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
DI-A4.1 (STORM)	1.47	N/A	N/A	N/A	3.47	261.25	0.57	0 00:08	0.00	0.00
DI-A5.1 (STORM)	0.75	0.00	0.75	0.43	2.08	274.89	0.04	0 00:05	0.00	0.00
DI-A5.2 (STORM)	0.73	0.00	0.72	0.43	2.05	275.34	0.04	0 00:05	0.00	0.00
DI-B10.1 (STORM)	1.53	1.19	0.34	78.01	4.05	297.65	0.17	0 00:10	0.00	0.00
DI-B10.2 (STORM)	0.22	0.22	0.00	100.00	1.32	297.47	0.08	0 00:05	0.00	0.00
DI-B11.1 (STORM)	1.63	1.25	0.38	76.83	4.24	306.71	0.17	0 00:07	0.00	0.00
DI-B11.2 (STORM)	0.69	0.00	0.69	0.44	2.01	306.59	0.04	0 00:05	0.00	0.00
DI-B12.1 (STORM)	1.36	1.09	0.26	80.61	3.75	314.85	0.16	0 00:09	0.00	0.00
DI-B7.1 (STORM)	1.62	1.35	0.26	83.64	5.19	265.94	0.19	0 00:10	0.00	0.00
DI-B8.1 (STORM)	1.29	0.00	1.29	0.21	2.24	276.38	0.04	0 00:07	0.00	0.00
DI-B8.2 (STORM)	0.57	0.45	0.12	78.72	1.65	276.44	0.10	0 00:05	0.00	0.00
DI-B9.1 (STORM)	0.84	0.61	0.24	71.78	1.91	291.12	0.12	0 00:05	0.00	0.00
DI-C1.1 (STORM)	1.54	1.31	0.23	84.83	5.06	265.19	0.19	0 00:12	0.00	0.00
DI-C3.1 (STORM)	1.74	1.31	0.43	75.21	4.42	270.17	0.17	0 00:08	0.00	0.00
DI-C3.2 (STORM)	0.65	0.59	0.06	90.79	1.97	270.12	0.12	0 00:05	0.00	0.00
DI-C4.1 (STORM)	1.78	1.08	0.70	60.69	3.57	281.16	0.16	0 00:08	0.00	0.00
DI-C4.2 (STORM)	0.46	0.37	0.08	81.61	1.52	281.09	0.09	0 00:05	0.00	0.00
DI-D1.1 (STORM)	0.81	0.01	0.81	0.66	2.45	244.05	0.05	0 00:14	0.00	0.00
DI-D2.1 (STORM)	1.57	1.32	0.25	84.24	5.09	257.34	0.19	0 00:09	0.00	0.00
DI-D2.2 (STORM)	0.76	0.01	0.75	0.68	2.37	257.17	0.05	0 00:05	0.00	0.00
DI-D3.1 (STORM)	1.98	1.16	0.82	58.69	3.84	290.27	0.16	0 00:09	0.00	0.00
DI-D3.2 (STORM)	0.65	0.49	0.16	75.95	1.72	290.26	0.11	0 00:05	0.00	0.00
DI-D4.1 (STORM)	1.94	1.14	0.80	58.71	3.76	307.06	0.16	0 00:09	0.00	0.00
DI-D4.2 (STORM)	0.65	0.50	0.15	76.36	1.74	307.01	0.11	0 00:05	0.00	0.00
DI-D5.1 (STORM)	1.44	0.00	1.44	0.20	2.33	314.64	0.05	0 00:09	0.00	0.00
DI-E1.1 (STORM)	0.81	0.01	0.81	0.67	2.45	242.53	0.05	0 00:09	0.00	0.00
DI-E2.1 (STORM)	1.33	1.18	0.16	88.31	4.61	255.78	0.18	0 00:12	0.00	0.00
DI-E2.2 (STORM)	0.79	0.01	0.79	0.67	2.42	255.65	0.05	0 00:05	0.00	0.00
DI-E4.1 (STORM)	1.71	1.29	0.41	75.72	4.36	295.87	0.17	0 00:09	0.00	0.00
DI-E4.2 (STORM)	0.45	0.43	0.02	94.93	1.71	296.05	0.11	0 00:05	0.00	0.00
DI-E5.1 (STORM)	1.62	N/A	N/A	N/A	8.82	298.38	0.36	0 00:12	0.00	0.00
DI-E5.2 (STORM)	0.36	0.36	0.00	100.00	1.80	298.07	0.11	0 00:05	0.00	0.00
DI-E6.1 (STORM)	1.30	1.16	0.14	89.24	4.57	299.73	0.18	0 00:11	0.00	0.00
DI-E8.1 (STORM)	1.79	1.08	0.70	60.65	3.57	326.58	0.16	0 00:08	0.00	0.00
DI-E8.2 (STORM)	0.48	0.39	0.09	81.05	1.54	326.66	0.10	0 00:05	0.00	0.00
DI-F1.1 (STORM)	1.31	1.17	0.15	88.78	4.59	300.54	0.18	0 00:06	0.00	0.00
DI-F1.2 (STORM)	0.08	0.08	0.00	100.00	1.02	300.34	0.06	0 00:05	0.00	0.00
DI-F3.1 (STORM)	1.58	0.00	1.58	0.19	2.41	325.05	0.05	0 00:06	0.00	0.00
DI-F3.2 (STORM)	0.37	0.31	0.06	84.48	1.40	325.09	0.09	0 00:05	0.00	0.00
SDCB-B1 (STORM)	2.08	N/A	N/A	N/A	3.71	264.13	0.26	0 00:09	0.00	0.00
SDCB-C1 (STORM)	1.61	N/A	N/A	N/A	3.44	264.78	0.26	0 00:10	0.00	0.00
SDCB-D1 (STORM)	2.56	N/A	N/A	N/A	3.97	235.57	0.27	0 00:11	0.00	0.00
SDCB-D2 (STORM)	1.72	N/A	N/A	N/A	3.51	235.16	0.26	0 00:22	0.00	0.00
SDMH-A4 (STORM)	0.63	N/A	N/A	N/A	2.40	260.57	0.24	0 00:05	0.00	0.00

Storage Nodes

Storage Node : DETENTION_POND

Input Data

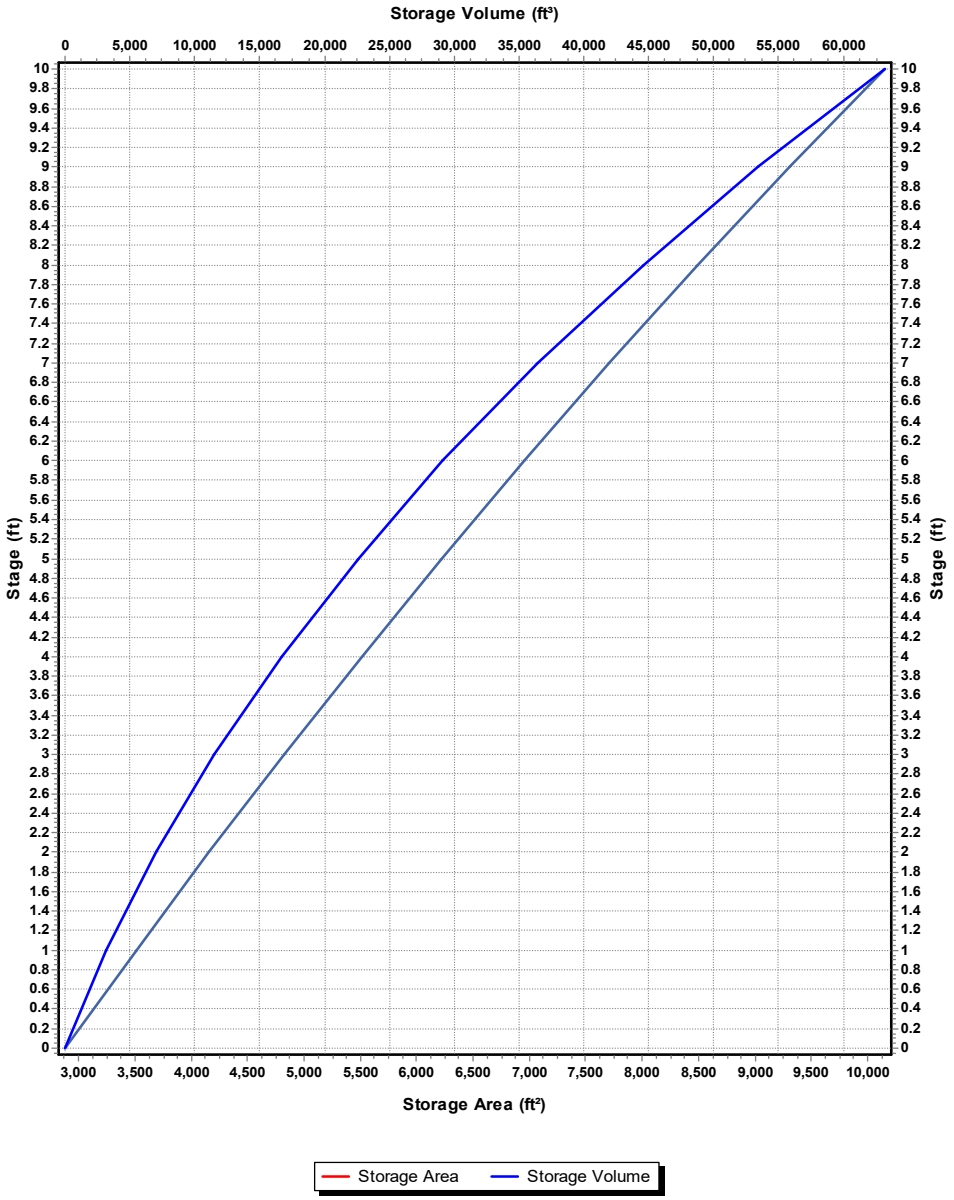
Invert Elevation (ft)	182.00
Max (Rim) Elevation (ft)	192.00
Max (Rim) Offset (ft)	10.00
Initial Water Elevation (ft)	0.00
Initial Water Depth (ft)	-182.00
Ponded Area (ft^2)	100.00
Evaporation Loss	0.00

Storage Area Volume Curves

Storage Curve : New_Lipalu_Basin

Stage (ft)	Storage Area (ft^2)	Storage Volume (ft^3)
0	2879.03	0
1	3508.41	3193.72
2	4155.91	7025.88
3	4824.19	11515.93
4	5511.1	16683.58
5	6219.64	22548.95
6	6950.31	29133.93
7	7708.08	36463.13
8	8494.11	44564.23
9	9308.36	53465.47
10	10153.61	63196.46

Storage Area Volume Curves



Storage Node : DETENTION_POND (continued)

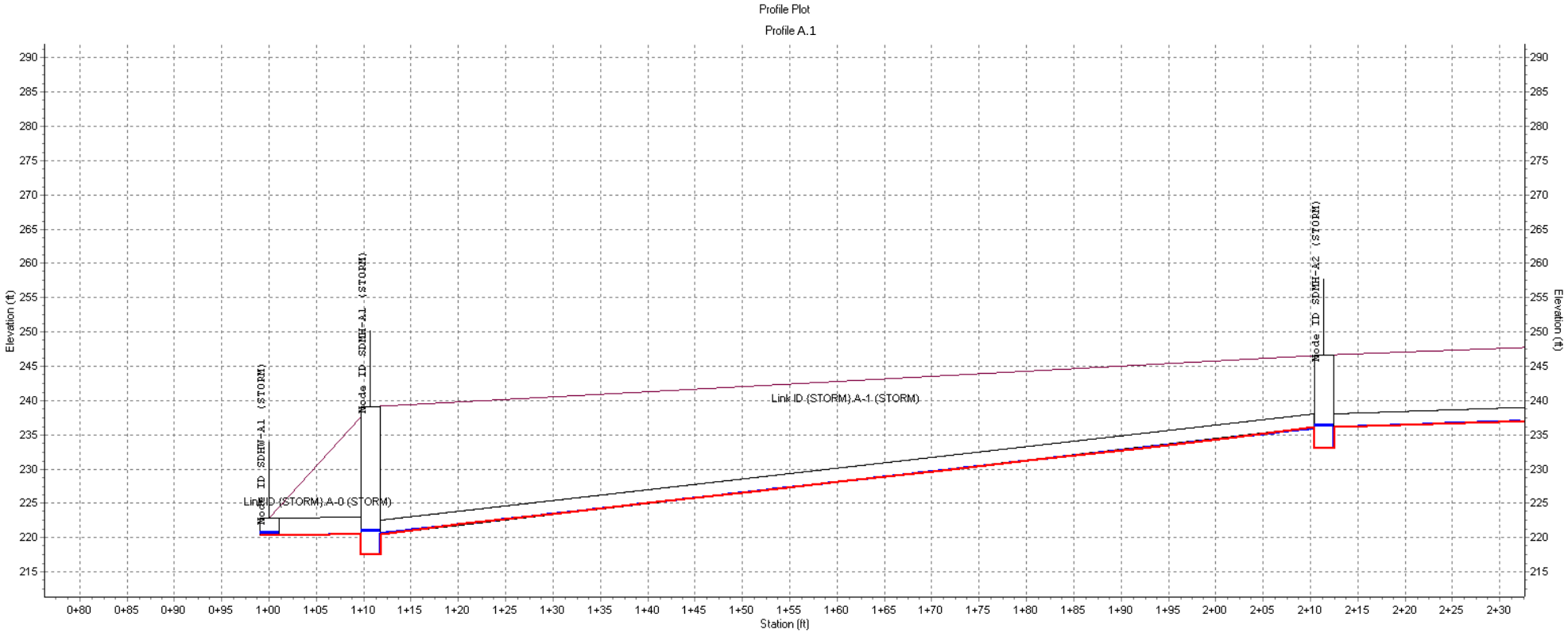
Outflow Weirs

SN	Element ID	Weir Type	Flap Gate	Crest Elevation (ft)	Crest Offset (ft)	Length (ft)	Weir Total Height (ft)	Discharge Coefficient
1	WEIR_LIPALU	Trapezoidal	No	190.50	8.50	20.00	1.25	3.37

Output Summary Results

Peak Inflow (cfs)	133.01
Peak Lateral Inflow (cfs)	3.46
Peak Outflow (cfs)	113.89
Peak Exfiltration Flow Rate (cfm)	0
Max HGL Elevation Attained (ft)	186.81
Max HGL Depth Attained (ft)	4.81
Average HGL Elevation Attained (ft)	182.07
Average HGL Depth Attained (ft)	0.07
Time of Max HGL Occurrence (days hh:mm)	0 00:18
Total Exfiltration Volume (1000-ft³)	0
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0

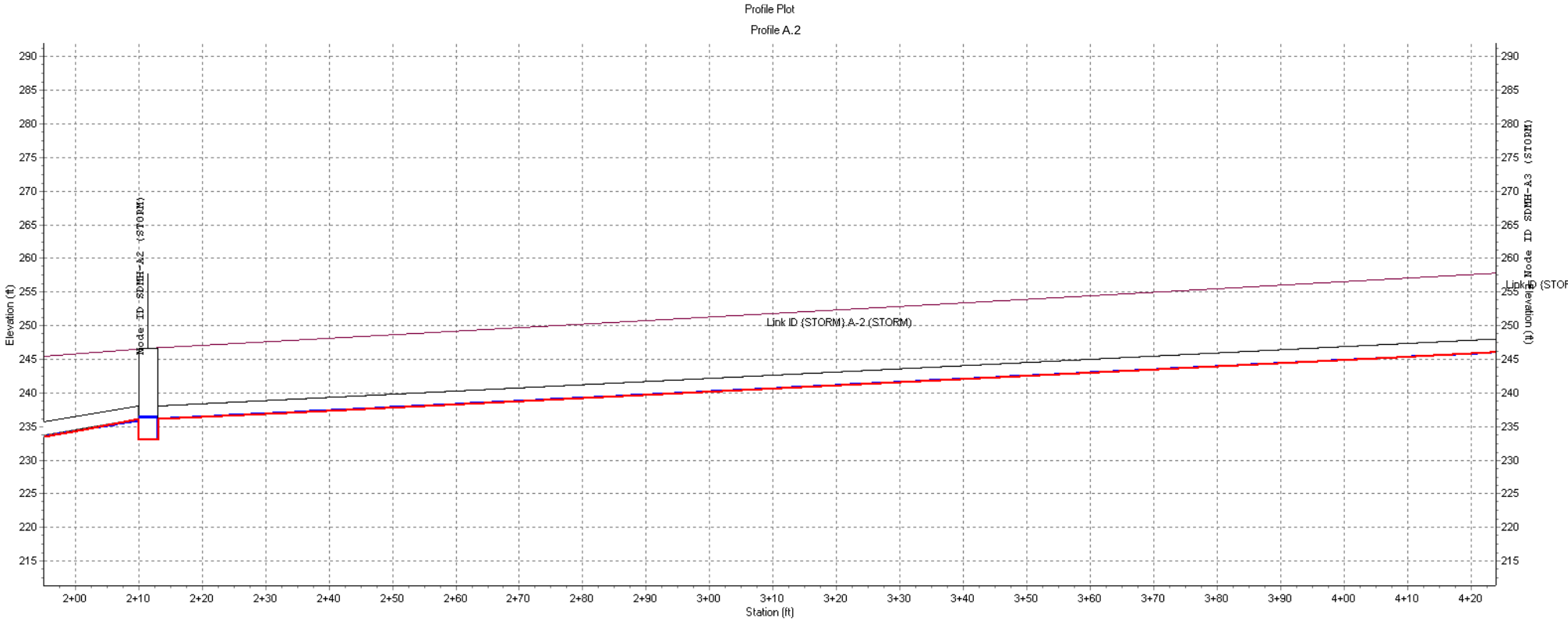
10 YEAR, 24HR STORM



Node ID:	SDHW-A1 (STORM)	SDMH-A1 (STORM)	SDMH-A2 (STORM)
Rim (ft):		239.13	246.59
Invert (ft):	220.29	217.50	233.07
Min Pipe Cover (ft):		16.13	8.52
Max HGL (ft):	220.63	220.96	236.29

Link ID:	(STORM).A-0 (STORM)	(STORM).A-1 (STORM)	
Length (ft):	10.71	100.70	
Dia (in):	30.00	24.00	
Slope (ft/ft):	-0.0196	-0.1546	
Up Invert (ft):	220.29	220.50	
Dn Invert (ft):	220.50	236.07	
Max Q (cfs):	2.25	2.25	
Max Vel (ft/s):	4.45	10.74	
Max Depth (ft):	0.40	0.34	

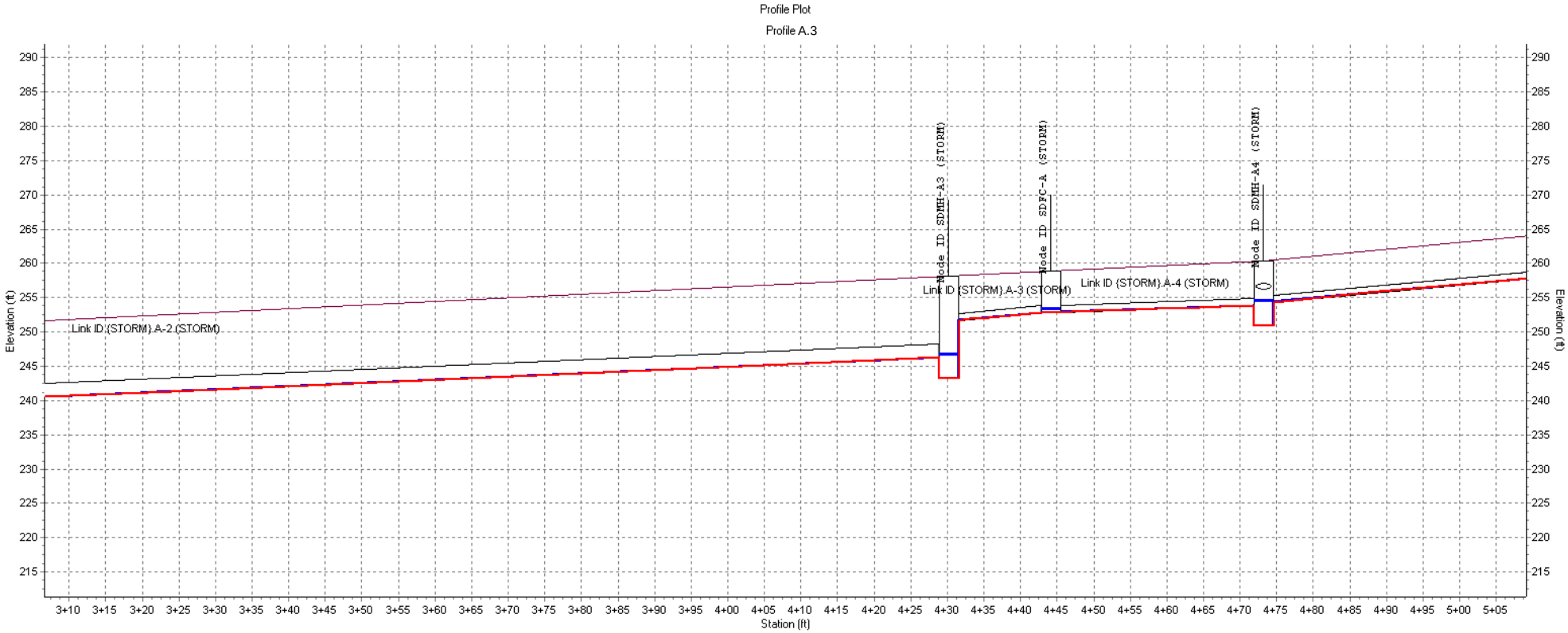
10 YEAR, 24HR STORM



Node ID:	SDMH-A2 (STORM)	
Rim (ft):	246.59	
Invert (ft):	233.07	
Min Pipe Cover (ft):	8.52	
Max HGL (ft):	236.29	

Link ID:	(STORM).A-2 (STORM)
Length (ft):	218.68
Dia (in):	24.00
Slope (ft/ft):	-0.0467
Up Invert (ft):	236.07
Dn Invert (ft):	246.28
Max Q (cfs):	2.25
Max Vel (ft/s):	7.75
Max Depth (ft):	0.30

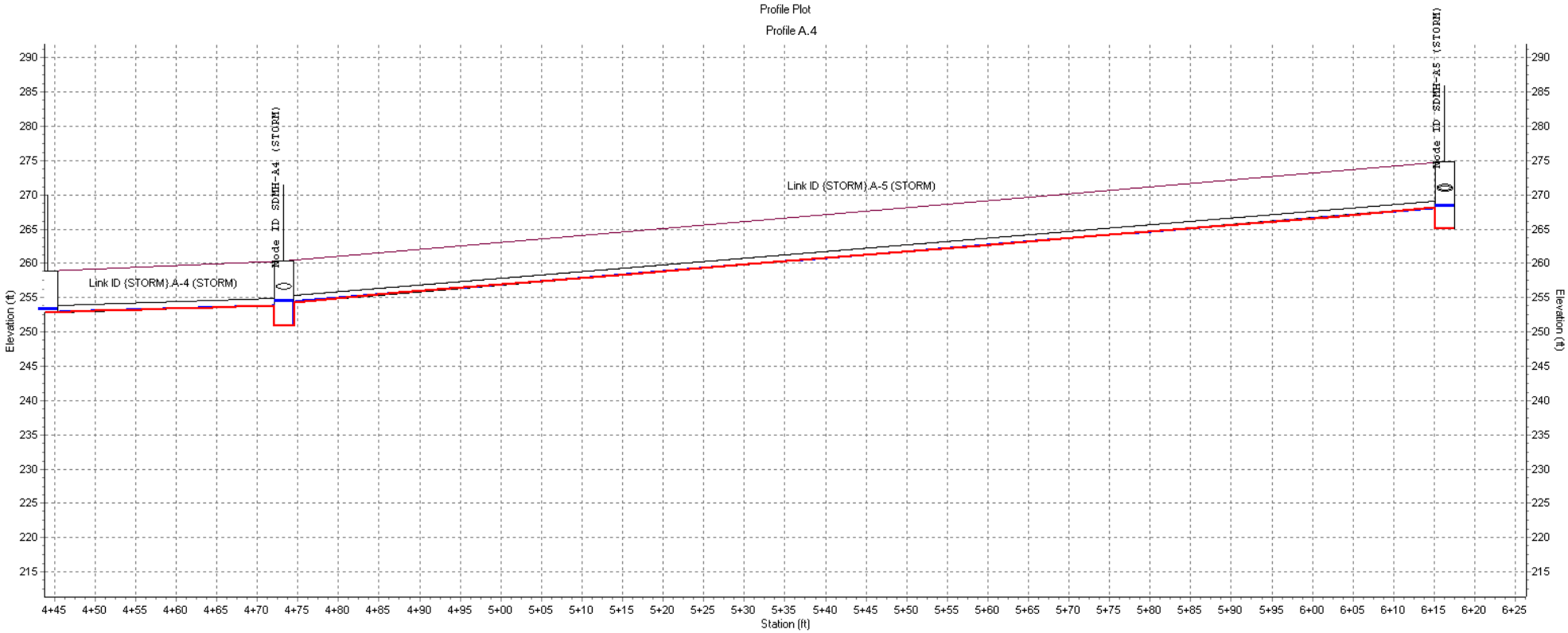
10 YEAR, 24HR STORM



Node ID:		SDMH-A3 (STORM)	SDFC-A (STORM)	SDMH-A4 (STORM)
Rim (ft):		258.09	258.84	260.33
Invert (ft):		243.28	252.88	250.84
Min Pipe Cover (ft):		5.47	4.97	
Max HGL (ft):		246.59	253.31	254.39

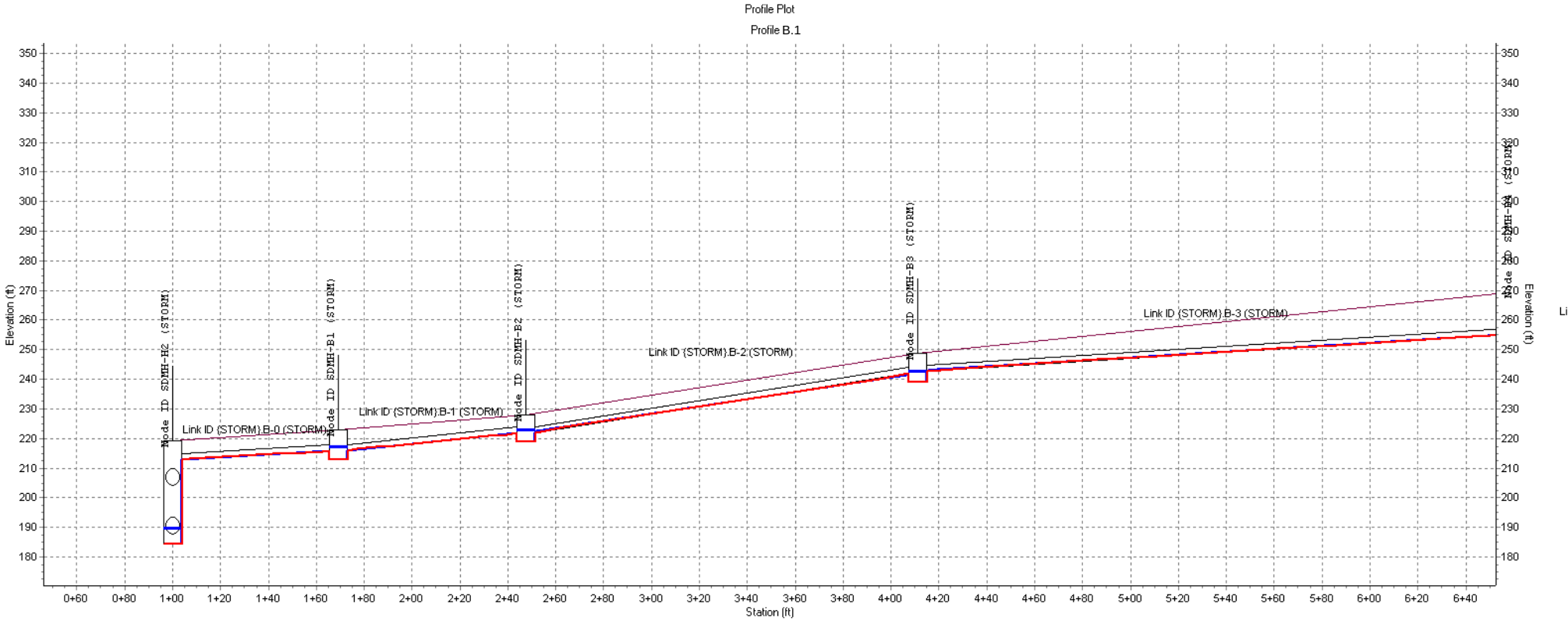
Link ID:	(STORM).A-2 (STORM)	(STORM).A-3 (STORM)	(STORM).A-4 (STORM)
Length (ft):	218.68	14.06	29.04
Dia (in):	24.00	12.00	12.00
Slope (ft/ft):	-0.0467	-0.0896	-0.0331
Up Invert (ft):	236.07	251.61	252.88
Dn Invert (ft):	246.28	252.88	253.84
Max Q (cfs):	2.25	2.27	2.27
Max Vel (ft/s):	7.75	8.42	6.09
Max Depth (ft):	0.30	0.38	0.49

10 YEAR, 24HR STORM



Node ID:		SDMH-A4 (STORM)	SDMH-A5 (STORM)
Rim (ft):		260.33	274.77
Invert (ft):		250.84	265.11
Min Pipe Cover (ft):			3.16
Max HGL (ft):		254.39	268.35
Link ID:	{STORM}.A-4 (STORM)	{STORM}.A-5 (STORM)	
Length (ft):	29.04	143.05	
Dia (in):	12.00	12.00	
Slope (ft/ft):	-0.0331	-0.0963	
Up Invert (ft):	252.88	254.34	
Dn Invert (ft):	253.84	268.11	
Max Q (cfs):	2.27	1.29	
Max Vel (ft/s):	6.09	9.16	
Max Depth (ft):	0.49	0.23	

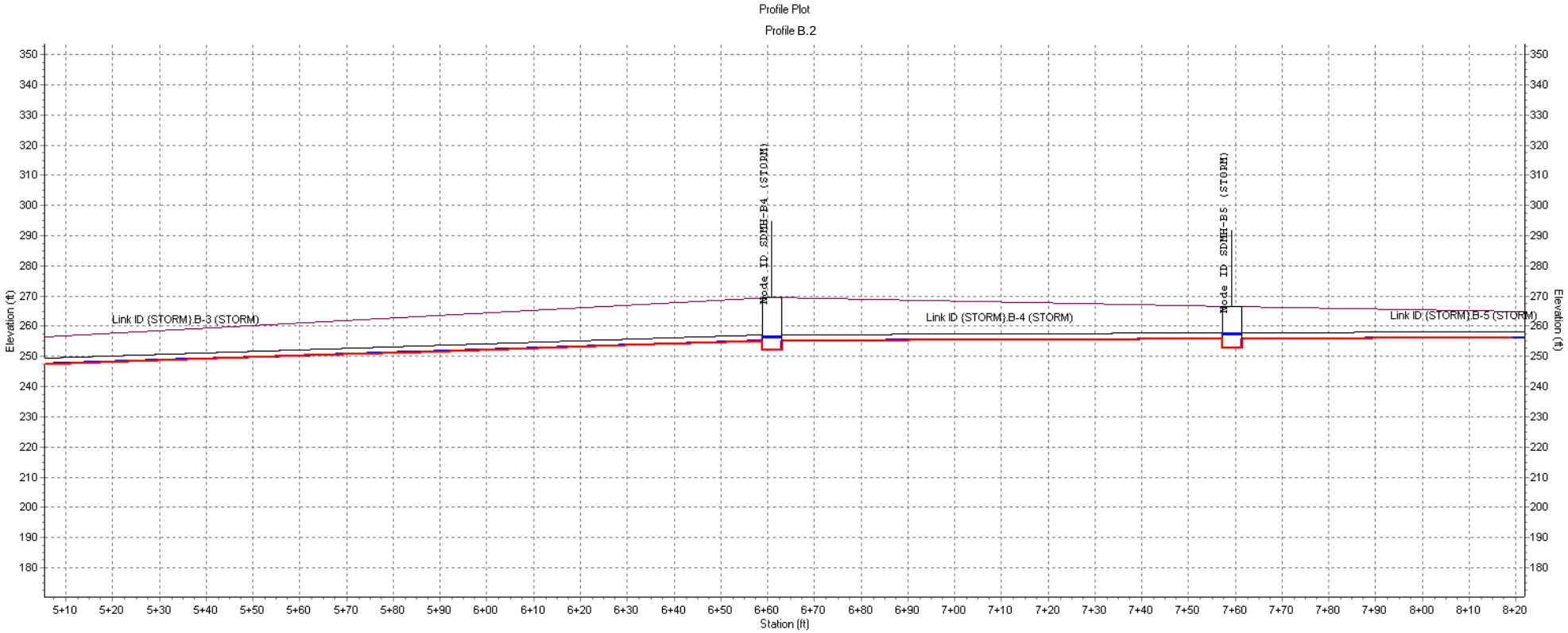
10 YEAR, 24HR STORM



Node ID:	SDMH-H2 (STORM)	SDMH-B1 (STORM)	SDMH-B2 (STORM)	SDMH-B3 (STORM)	
Rim (ft):	219.21	222.77	227.86	248.68	
Invert (ft):	184.28	212.90	218.98	238.89	
Min Pipe Cover (ft):	4.21	4.87	3.88	3.83	
Max HGL (ft):	189.36	216.91	222.65	242.46	

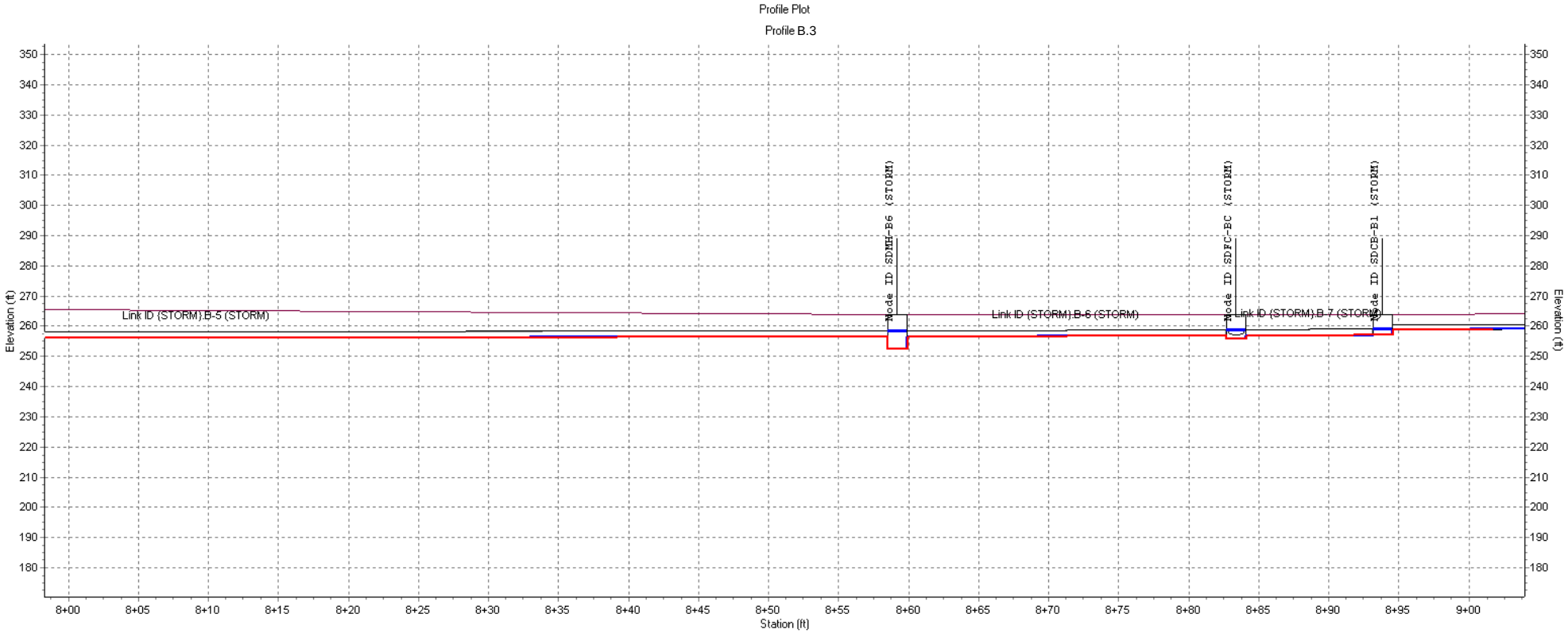
Link ID:	(STORM).B-0 (STORM)	(STORM).B-1 (STORM)	(STORM).B-2 (STORM)	(STORM).B-3 (STORM)
Length (ft):	69.39	78.08	163.81	249.48
Dia (in):	24.00	24.00	24.00	24.00
Slope (ft/ft):	0.0417	0.0779	-0.1216	-0.0497
Up Invert (ft):	215.90	221.98	221.98	242.86
Dn Invert (ft):	213.00	215.90	241.89	255.24
Max Q (cfs):	12.95	12.95	12.95	12.95
Max Vel (ft/s):	9.92	11.52	15.53	12.75
Max Depth (ft):	0.87	0.84	0.62	0.72

10 YEAR, 24HR STORM



Node ID:		SDMH-B4 (STORM)	SDMH-B5 (STORM)	
Rim (ft):		269.51	266.49	
Invert (ft):		252.24	252.76	
Min Pipe Cover (ft):		12.27	8.74	
Max HGL (ft):		255.99	257.30	
Link ID:	{STORM}.B-3 (STORM)	{STORM}.B-4 (STORM)	{STORM}.B-5 (STORM)	
Length (ft):	249.48	98.43	99.98	
Dia (in):	24.00	24.00	24.00	
Slope (ft/ft):	-0.0497	-0.0063	-0.0074	
Up Invert (ft):	242.86	255.14	255.76	
Dn Invert (ft):	255.24	255.76	256.49	
Max Q (cfs):	12.95	12.96	12.98	
Max Vel (ft/s):	12.75	5.50	4.96	
Max Depth (ft):	0.72	1.40	1.56	

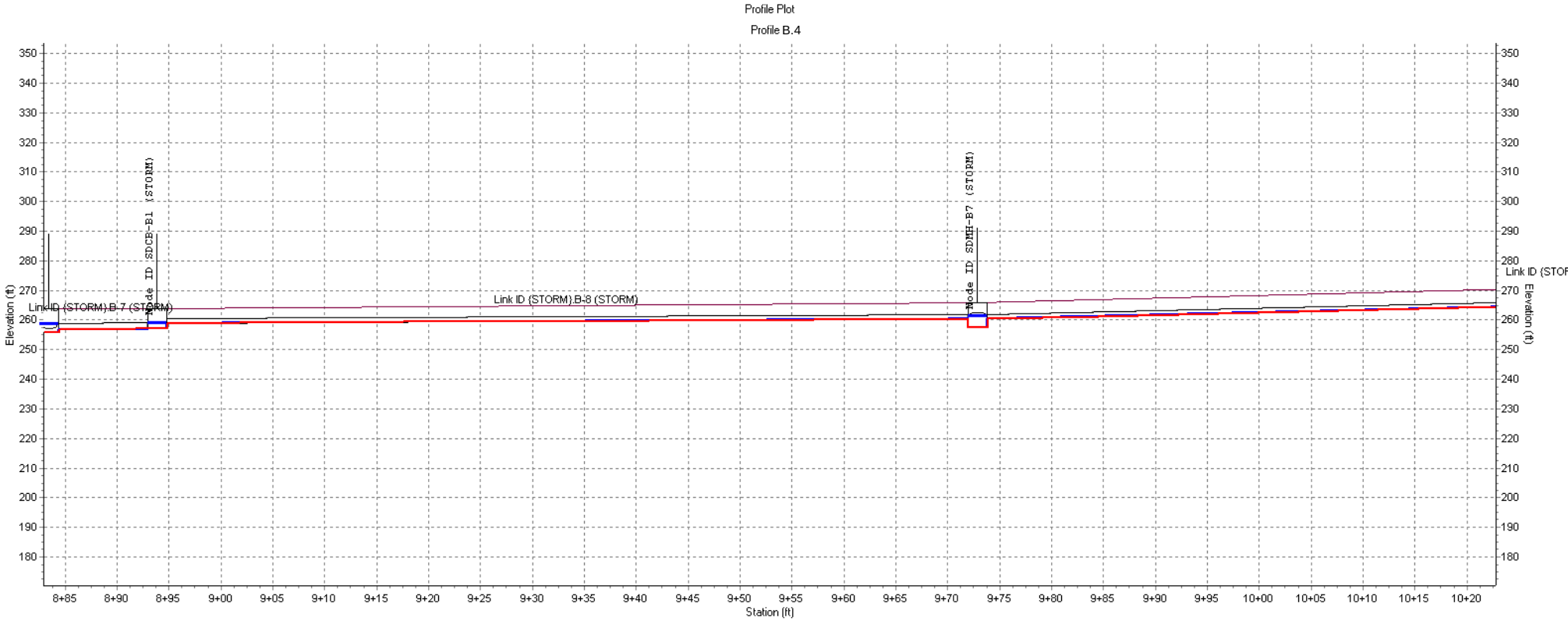
10 YEAR, 24HR STORM



Node ID:		SDMH-B6 (STORM)	SDFC-BC (STORM)	SDCB-B1 (STORM)
Rim (ft):		263.83	263.76	263.87
Invert (ft):		252.54	255.76	257.00
Min Pipe Cover (ft):		5.34	4.92	
Max HGL (ft):		258.07	258.53	258.73

Link ID:	{STORM}.B-5 (STORM)	{STORM}.B-6 (STORM)	{STORM}.B-7 (STORM)	
Length (ft):	99.98	24.21	10.44	
Dia (in):	24.00	24.00	24.00	
Slope (ft/ft):	-0.0074	-0.0144	0.0155	
Up Invert (ft):	255.76	256.49	257.00	
Dn Invert (ft):	256.49	256.84	256.84	
Max Q (cfs):	12.98	13.00	8.23	
Max Vel (ft/s):	4.96	5.18	3.21	
Max Depth (ft):	1.56	1.63	1.71	

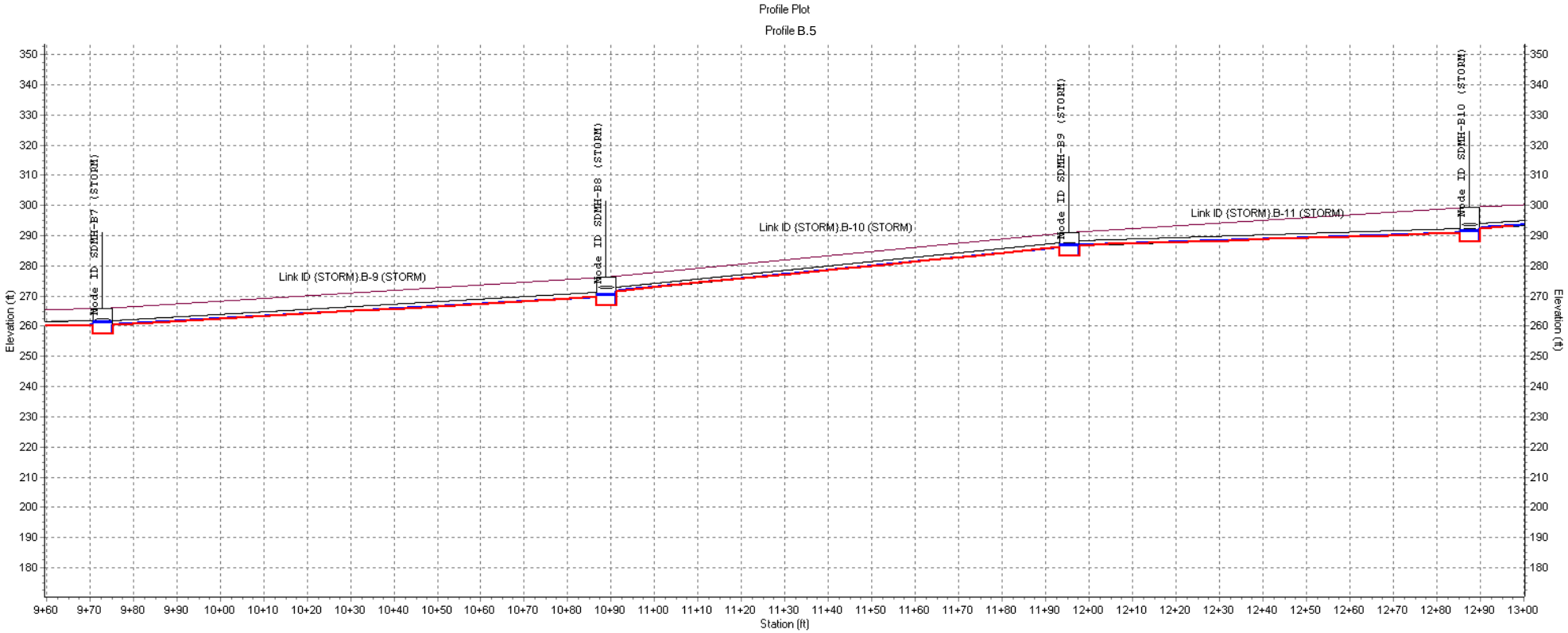
10 YEAR, 24HR STORM



Node ID:		SDCB-B1 (STORM)	SDMH-B7 (STORM)
Rim (ft):		263.87	265.79
Invert (ft):		257.00	257.38
Min Pipe Cover (ft):			3.24
Max HGL (ft):		258.73	261.26

Link ID:	{STORM}.B-7 (STORM)	{STORM}.B-8 (STORM)	
Length (ft):	10.44	79.04	
Dia (in):	24.00	18.00	
Slope (ft/ft):	0.0155	-0.0192	
Up Invert (ft):	257.00	258.86	
Dn Invert (ft):	256.84	260.38	
Max Q (cfs):	8.23	6.63	
Max Vel (ft/s):	3.21	6.96	
Max Depth (ft):	1.71	0.80	

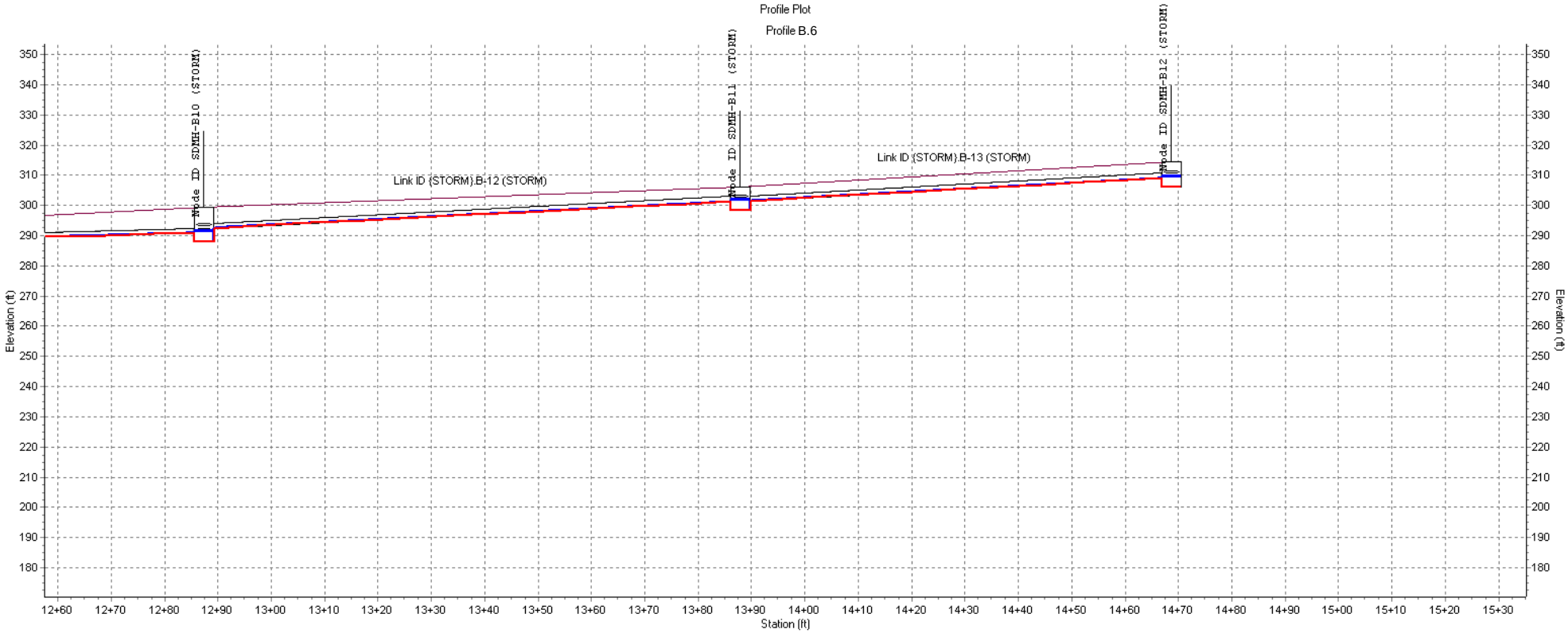
10 YEAR, 24HR STORM



Node ID:	SDMH-B7 (STORM)	SDMH-B8 (STORM)	SDMH-B9 (STORM)	SDMH-B10 (STORM)
Rim (ft):	265.79	276.34	291.00	299.48
Invert (ft):	257.38	266.72	283.30	288.00
Min Pipe Cover (ft):	3.24	3.20	2.70	5.48
Max HGL (ft):	261.26	270.15	286.66	291.47

Link ID:	{STORM}.B-9 (STORM)	{STORM}.B-10 (STORM)	{STORM}.B-11 (STORM)
Length (ft):	115.90	106.44	92.10
Dia (in):	18.00	18.00	18.00
Slope (ft/ft):	-0.0806	-0.1393	-0.0456
Up Invert (ft):	260.38	271.47	286.80
Dn Invert (ft):	269.72	286.30	291.00
Max Q (cfs):	5.25	4.16	3.83
Max Vel (ft/s):	7.89	13.50	8.80
Max Depth (ft):	0.65	0.35	0.44

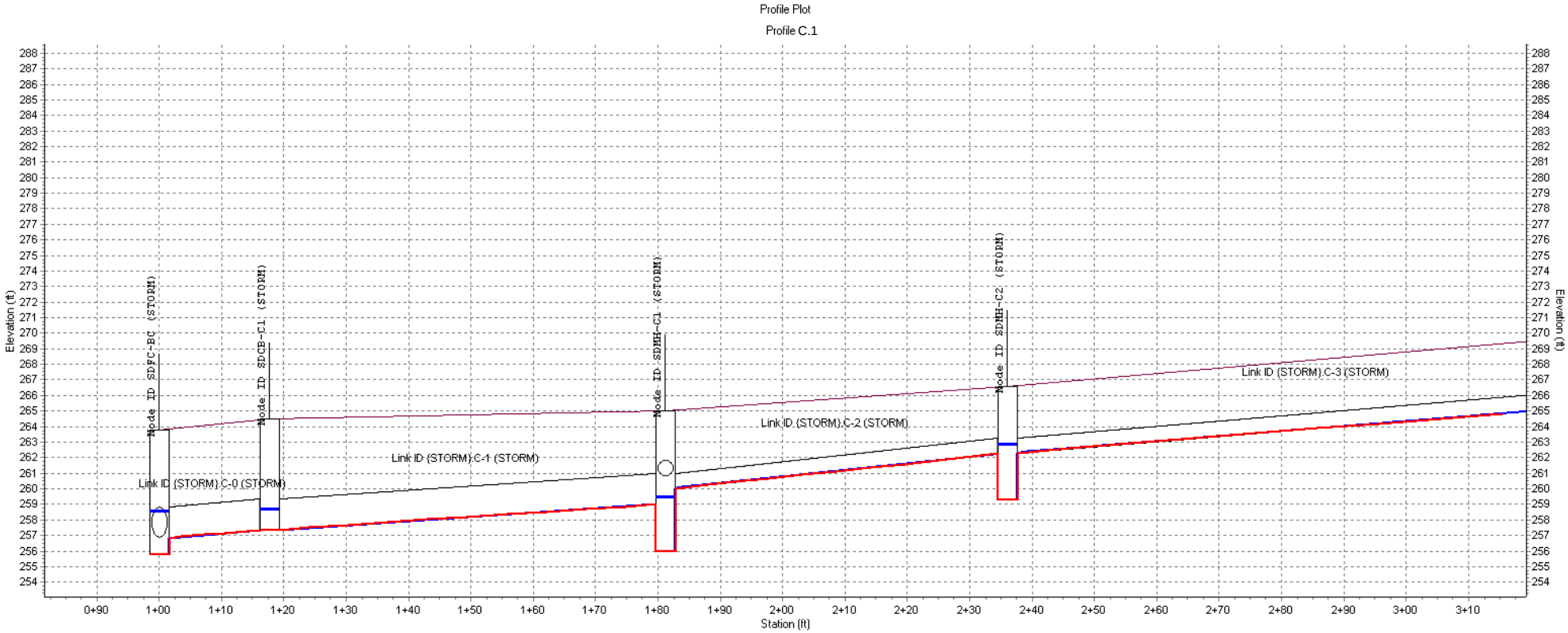
10 YEAR, 24HR STORM



Node ID:	SDMH-B10 (STORM)	SDMH-B11 (STORM)	SDMH-B12 (STORM)
Rim (ft):	299.48	306.18	314.37
Invert (ft):	288.00	298.46	306.23
Min Pipe Cover (ft):	5.48	2.88	2.90
Max HGL (ft):	291.47	301.78	309.42

Link ID:	(STORM).B-12 (STORM)	(STORM).B-13 (STORM)	
Length (ft):	100.47	80.79	
Dia (in):	18.00	18.00	
Slope (ft/ft):	-0.0892	-0.0962	
Up Invert (ft):	292.50	301.46	
Dn Invert (ft):	301.46	309.23	
Max Q (cfs):	2.59	1.08	
Max Vel (ft/s):	10.10	5.90	
Max Depth (ft):	0.30	0.25	

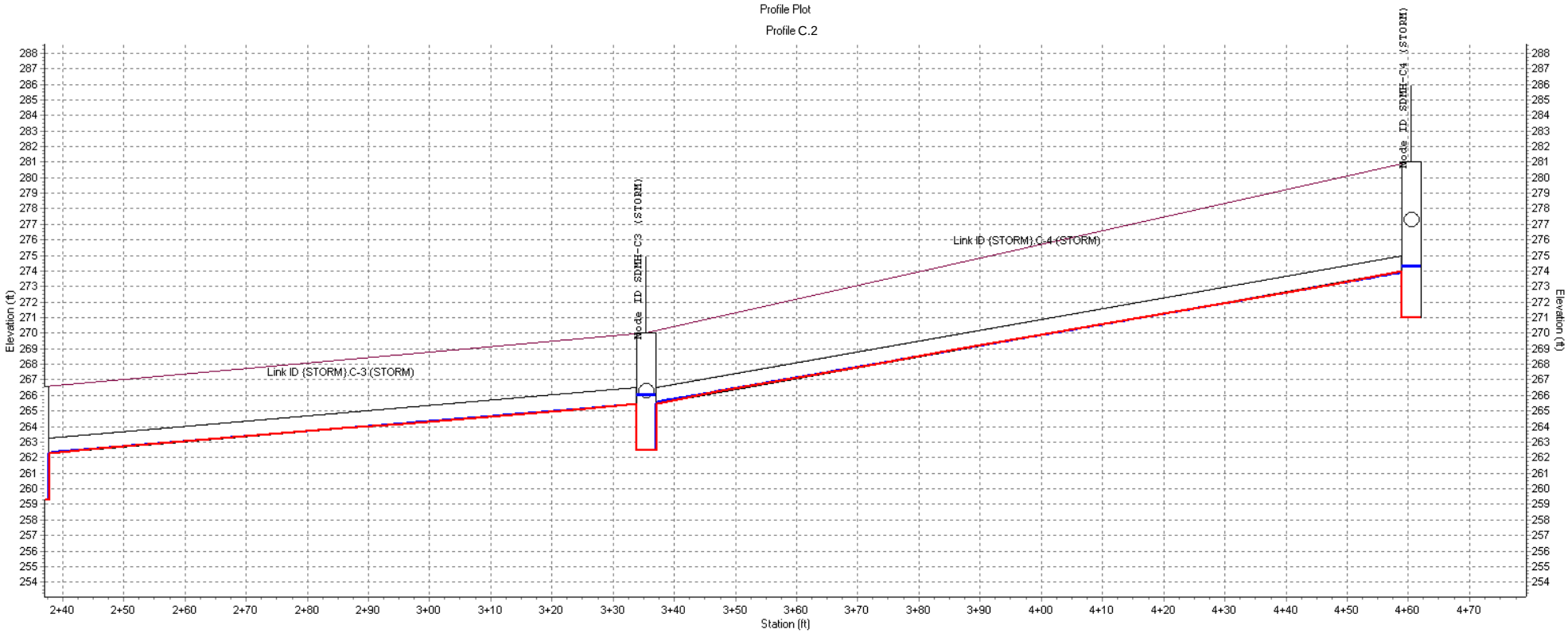
10 YEAR, 24HR STORM



Node ID:	SDFC-BC (STORM)	SDCB-C1 (STORM)	SDMH-C1 (STORM)	SDMH-C2 (STORM)	
Rim (ft):	263.76	264.52	265.00	266.56	
Invert (ft):	255.76	257.36	256.00	259.28	
Min Pipe Cover (ft):	4.92		3.20	3.28	
Max HGL (ft):	258.53	258.64	259.45	262.81	

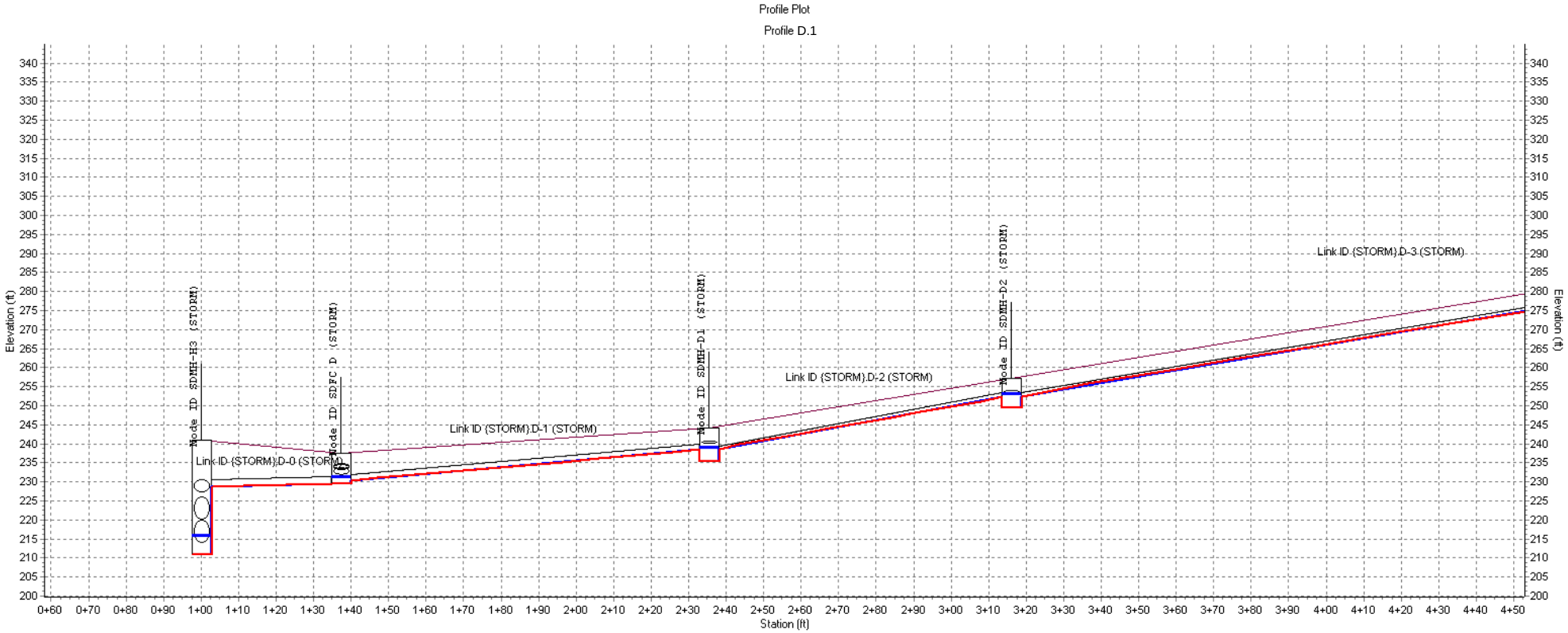
Link ID:	(STORM).C-0 (STORM)	(STORM).C-1 (STORM)	(STORM).C-2 (STORM)	(STORM).C-3 (STORM)
Length (ft):	17.61	63.57	54.84	99.30
Dia (in):	24.00	24.00	12.00	12.00
Slope (ft/ft):	0.0298	0.0257	-0.0416	-0.0322
Up Invert (ft):	257.36	259.00	260.00	262.28
Dn Invert (ft):	256.84	257.36	262.28	265.48
Max Q (cfs):	5.34	4.05	2.91	2.92
Max Vel (ft/s):	2.71	4.94	7.68	6.99
Max Depth (ft):	1.48	0.86	0.49	0.52

10 YEAR, 24HR STORM



Node ID:		SDMH-C3 (STORM)	SDMH-C4 (STORM)
Rim (ft):		270.00	281.00
Invert (ft):		262.48	271.00
Min Pipe Cover (ft):		3.20	3.20
Max HGL (ft):		266.00	274.24
Link ID:	{STORM}.C-3 (STORM)	{STORM}.C-4 (STORM)	
Length (ft):	99.30	125.09	
Dia (in):	12.00	12.00	
Slope (ft/ft):	-0.0322	-0.0681	
Up Invert (ft):	262.28	265.48	
Dn Invert (ft):	265.48	274.00	
Max Q (cfs):	2.92	1.21	
Max Vel (ft/s):	6.99	5.49	
Max Depth (ft):	0.52	0.38	

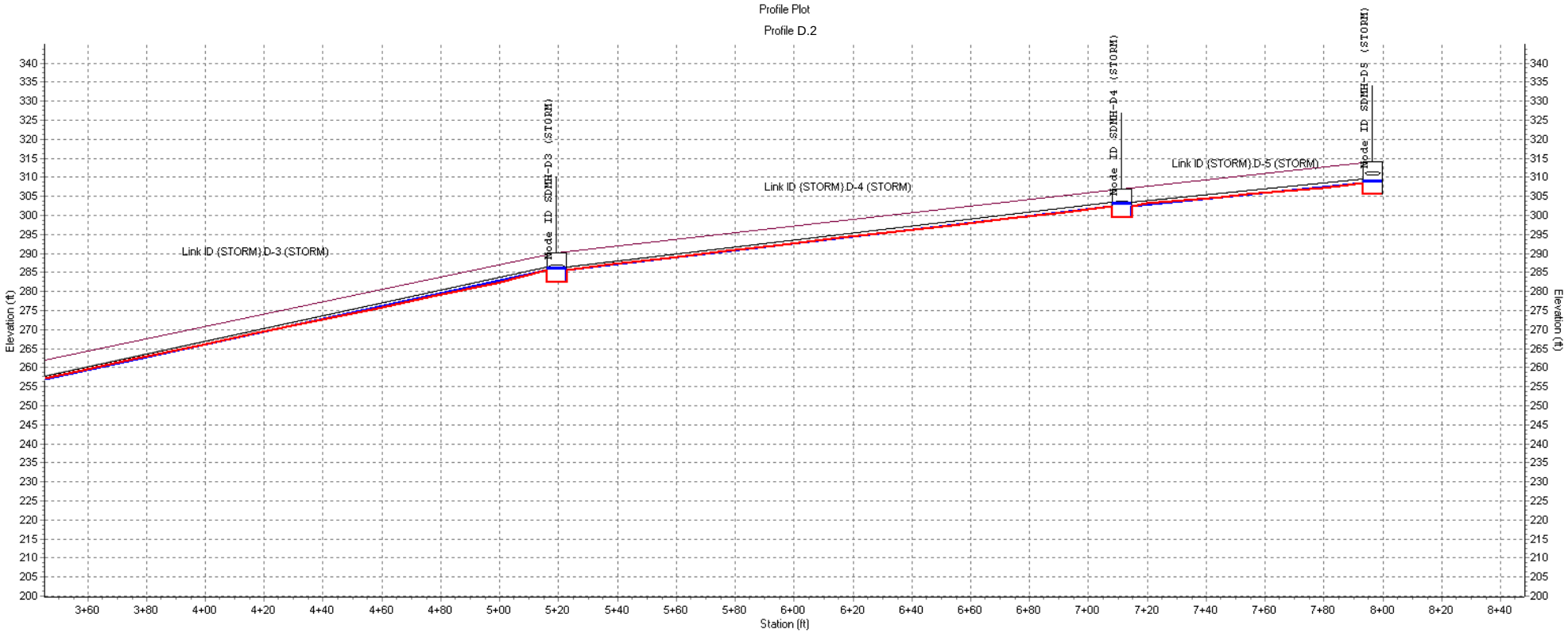
10 YEAR, 24HR STORM



Node ID:	SDMH-H3 (STORM)	SDFC D (STORM)	SDMH-D1 (STORM)	SDMH-D2 (STORM)	
Rim (ft):	240.96	237.42	244.00	257.09	
Invert (ft):	210.82	229.40	235.43	249.50	
Min Pipe Cover (ft):	10.29	2.67	3.20	3.17	
Max HGL (ft):	215.69	231.17	238.89	252.96	

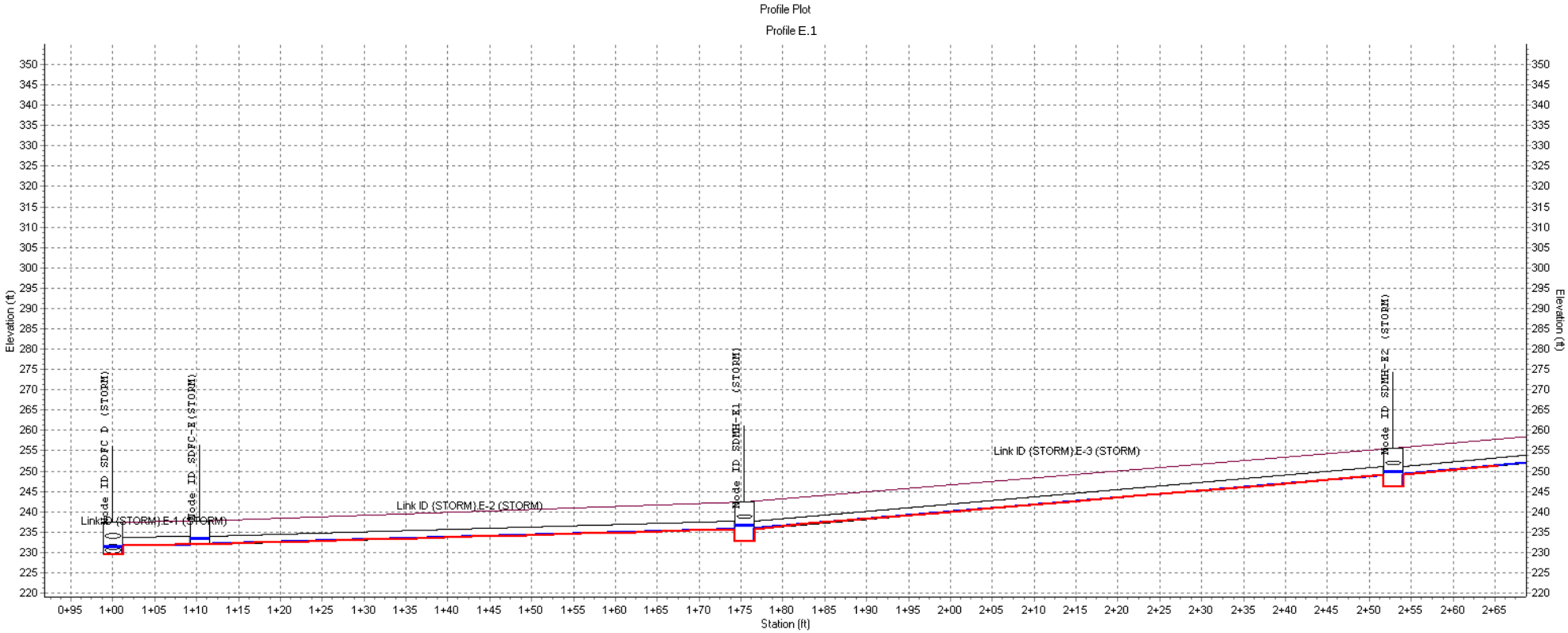
Link ID:	(STORM).D-0 (STORM)	(STORM).D-1 (STORM)	(STORM).D-2 (STORM)	(STORM).D-3 (STORM)
Length (ft):	37.25	98.20	80.60	203.16
Dia (in):	24.00	18.00	12.00	12.00
Slope (ft/ft):	0.0195	0.0818	0.1746	0.1626
Up Invert (ft):	229.40	238.43	252.50	285.53
Dn Invert (ft):	228.67	230.40	238.43	252.50
Max Q (cfs):	17.29	5.88	5.37	3.75
Max Vel (ft/s):	7.29	11.25	15.40	12.68
Max Depth (ft):	1.41	0.61	0.46	0.40

10 YEAR, 24HR STORM



Node ID:		SDMH-D3 (STORM)		SDMH-D4 (STORM)		SDMH-D5 (STORM)	
Rim (ft):		290.10		306.95		314.00	
Invert (ft):		282.53		299.50		305.50	
Min Pipe Cover (ft):		3.20		3.32		2.60	
Max HGL (ft):		285.87		302.83		308.71	
Link ID:	(STORM).D-3 (STORM)		(STORM).D-4 (STORM)		(STORM).D-5 (STORM)		
Length (ft):	203.16		192.04		85.24		
Dia (in):	12.00		12.00		12.00		
Slope (ft/ft):	0.1626		0.0884		0.0704		
Up Invert (ft):	285.53		302.50		308.50		
Dn Invert (ft):	252.50		285.53		302.50		
Max Q (cfs):	3.75		2.32		0.91		
Max Vel (ft/s):	12.68		9.95		5.37		
Max Depth (ft):	0.40		0.34		0.27		

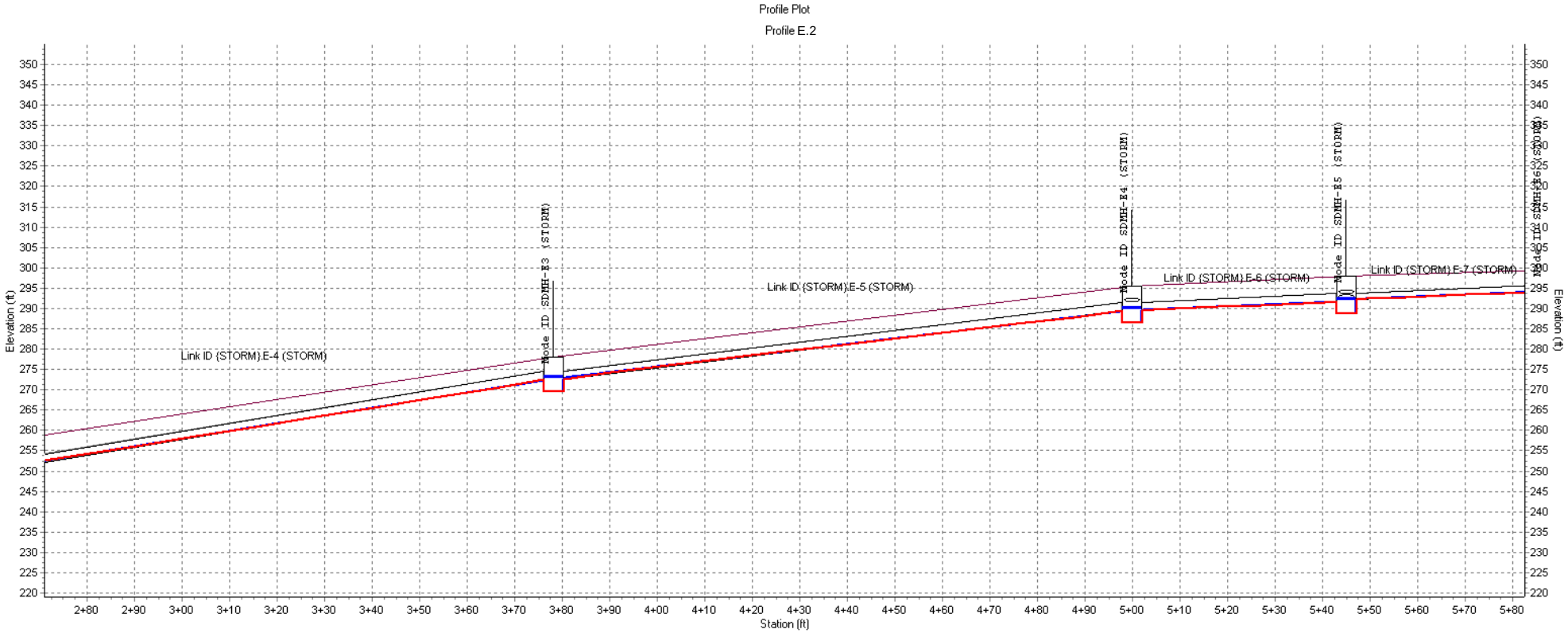
10 YEAR, 24HR STORM



Node ID:	SDFC D (STORM)	SDFC-E (STORM)	SDMH-E1 (STORM)	SDMH-E2 (STORM)
Rim (ft):	237.42	237.65	242.43	255.60
Invert (ft):	229.40	231.93	232.75	246.13
Min Pipe Cover (ft):	2.67	3.62	3.15	3.20
Max HGL (ft):	231.17	233.16	236.40	249.53

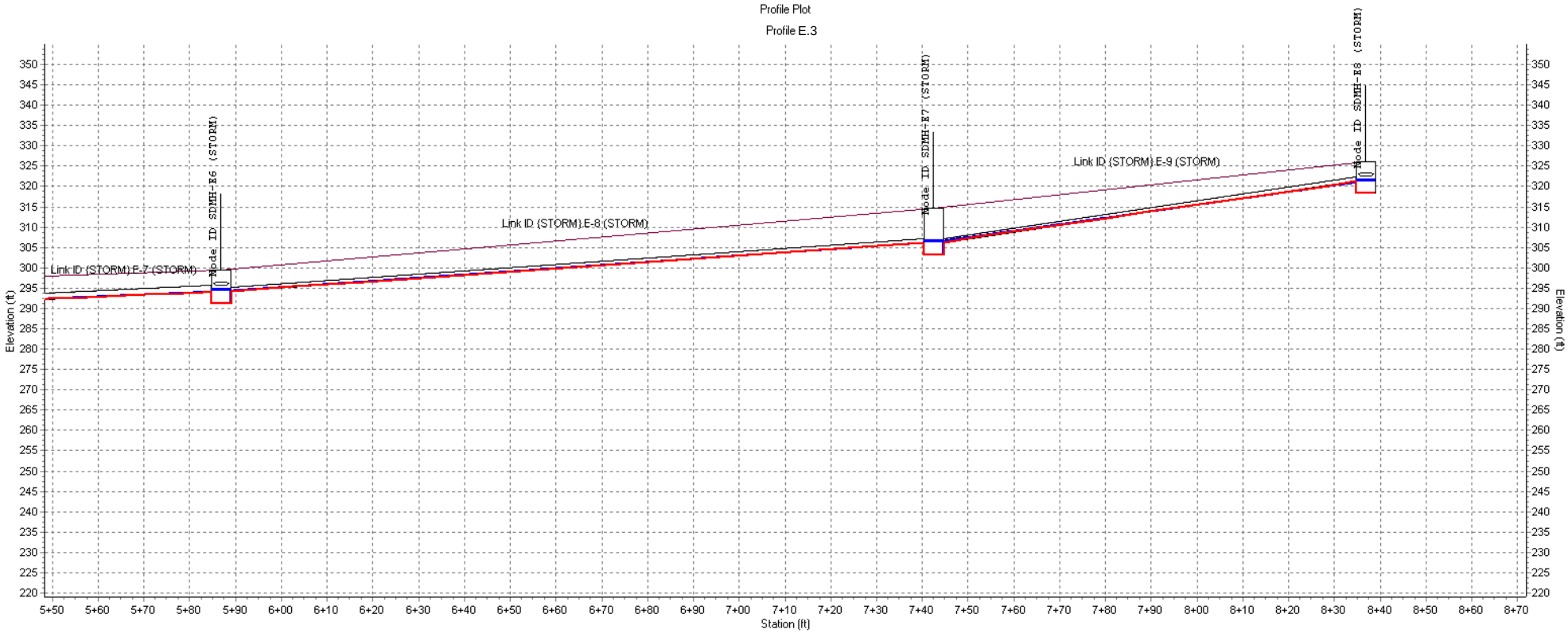
Link ID:	(STORM).E-1 (STORM)	(STORM).E-2 (STORM)	(STORM).E-3 (STORM)
Length (ft):	10.39	64.97	77.50
Dia (in):	24.00	24.00	24.00
Slope (ft/ft):	0.0289	-0.0573	-0.1726
Up Invert (ft):	231.93	232.03	235.75
Dn Invert (ft):	231.63	235.75	249.13
Max Q (cfs):	8.83	8.83	8.10
Max Vel (ft/s):	6.11	7.12	12.46
Max Depth (ft):	0.94	0.88	0.52

10 YEAR, 24HR STORM



Node ID:		SDMH-E3 (STORM)	SDMH-E4 (STORM)	SDMH-E5 (STORM)	
Rim (ft):		278.00	295.57	297.87	
Invert (ft):		269.66	286.50	288.69	
Min Pipe Cover (ft):		3.34	3.08	3.37	
Max HGL (ft):		273.04	289.92	292.27	
Link ID:	{STORM}.E-4 (STORM)	{STORM}.E-5 (STORM)	{STORM}.E-6 (STORM)	{STORM}.E-7 (STORM)	
Length (ft):	125.26	121.85	45.09	41.79	
Dia (in):	24.00	24.00	24.00	18.00	
Slope (ft/ft):	-0.1878	-0.1382	-0.0486	-0.0475	
Up Invert (ft):	249.13	272.66	289.50	292.16	
Dn Invert (ft):	272.66	289.50	291.69	294.15	
Max Q (cfs):	6.92	6.93	5.42	2.14	
Max Vel (ft/s):	15.89	15.32	8.55	7.06	
Max Depth (ft):	0.39	0.40	0.51	0.34	

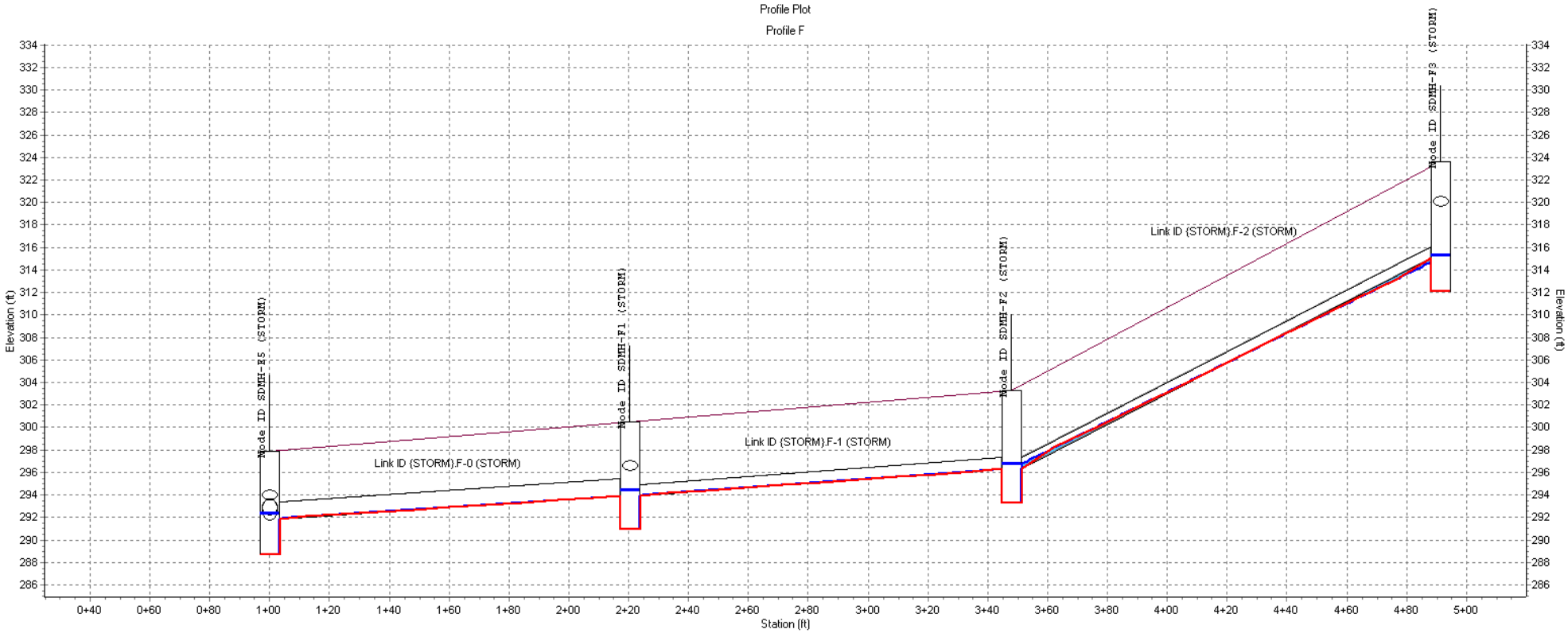
10 YEAR, 24HR STORM



Node ID:		SDMH-E6 (STORM)	SDMH-E7 (STORM)	SDMH-E8 (STORM)
Rim (ft):		299.42	314.53	326.00
Invert (ft):		291.15	303.26	318.27
Min Pipe Cover (ft):		3.06	7.27	2.77
Max HGL (ft):		294.52	306.49	321.47

Link ID:	(STORM).E-7 (STORM)	(STORM).E-8 (STORM)	(STORM).E-9 (STORM)	
Length (ft):	41.79	155.55	94.31	
Dia (in):	18.00	12.00	12.00	
Slope (ft/ft):	-0.0475	-0.0779	-0.1592	
Up Invert (ft):	292.16	294.15	306.26	
Dn Invert (ft):	294.15	306.26	321.27	
Max Q (cfs):	2.14	1.17	1.18	
Max Vel (ft/s):	7.06	6.35	9.61	
Max Depth (ft):	0.34	0.30	0.21	

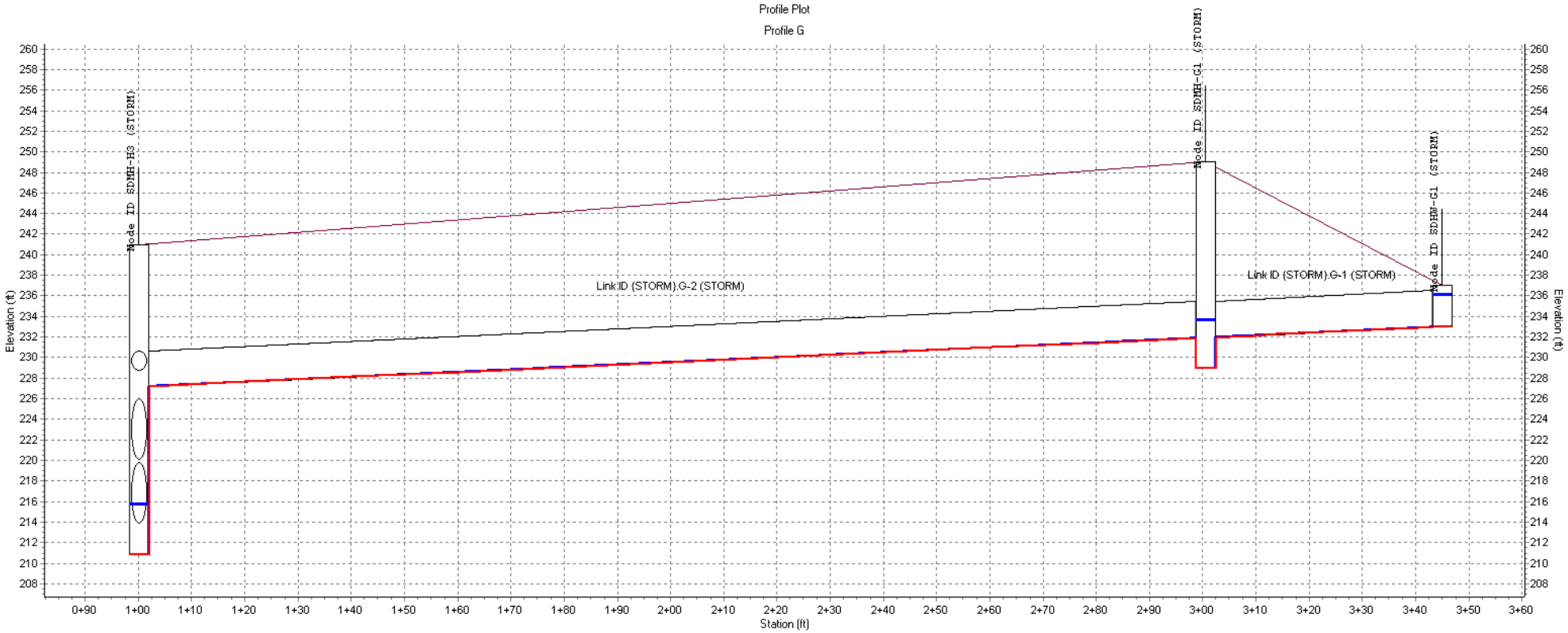
10 YEAR, 24HR STORM



Node ID:	SDMH-E5 (STORM)	SDMH-F1 (STORM)	SDMH-F2 (STORM)	SDMH-F3 (STORM)
Rim (ft):	297.87	300.47	303.31	323.59
Invert (ft):	288.69	290.93	293.34	312.09
Min Pipe Cover (ft):	3.37	3.41	5.98	3.04
Max HGL (ft):	292.27	294.41	296.68	315.30

Link ID:	(STORM).F-0 (STORM)	(STORM).F-1 (STORM)	(STORM).F-2 (STORM)	
Length (ft):	120.28	127.59	143.28	
Dia (in):	18.00	12.00	12.00	
Slope (ft/ft):	-0.0170	-0.0189	-0.1309	
Up Invert (ft):	291.88	293.93	296.34	
Dn Invert (ft):	293.93	296.34	315.09	
Max Q (cfs):	2.52	1.20	1.21	
Max Vel (ft/s):	5.48	3.97	9.04	
Max Depth (ft):	0.46	0.41	0.28	

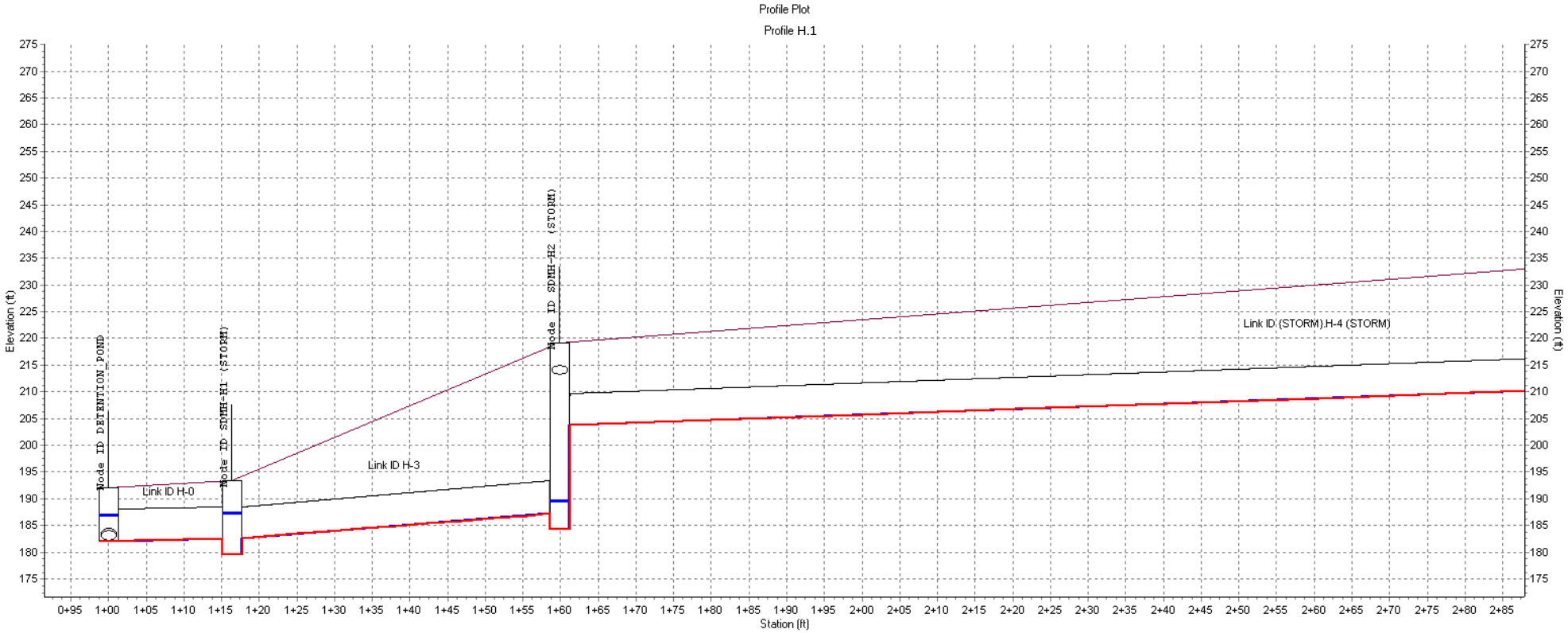
10 YEAR, 24HR STORM



Node ID:	SDMH-H3 (STORM)		SDMH-G1 (STORM)	SDHW-G1 (STORM)
Rim (ft):	240.96		249.00	237.00
Invert (ft):	210.82		228.94	233.00
Min Pipe Cover (ft):	10.29		13.56	0.50
Max HGL (ft):	215.69		233.62	236.08

Link ID:	(STORM).G-2 (STORM)	(STORM).G-1 (STORM)
Length (ft):	200.57	44.33
Dia (in):	42.00	42.00
Slope (ft/ft):	-0.0238	-0.0239
Up Invert (ft):	227.17	231.94
Dn Invert (ft):	231.94	233.00
Max Q (cfs):	47.21	47.27
Max Vel (ft/s):	11.95	6.84
Max Depth (ft):	1.50	2.38

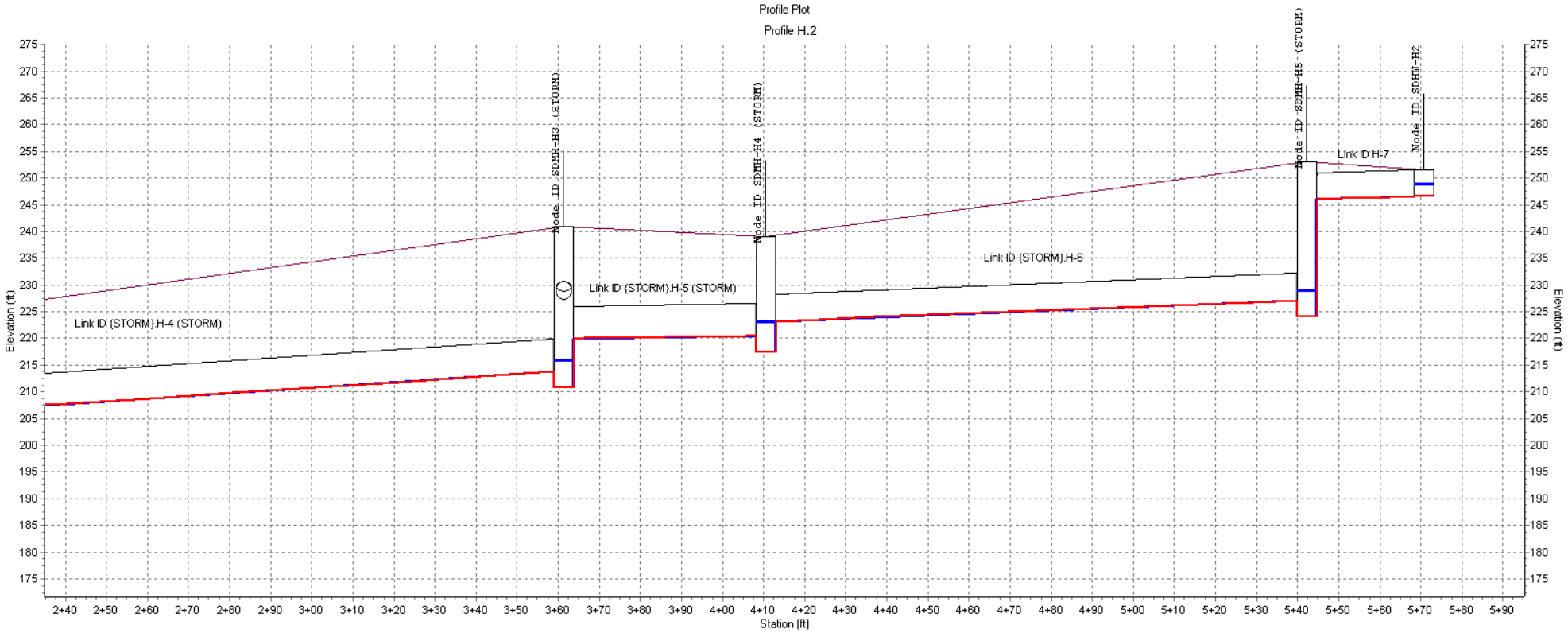
10 YEAR, 24HR STORM



Node ID:	DETENTION_POND	SDMH-H1 (STORM)	SDMH-H2 (STORM)	
Rim (ft):	192.00	193.34	219.21	
Invert (ft):	182.00	179.49	184.28	
Min Pipe Cover (ft):		4.85	4.21	
Max HGL (ft):	186.81	187.17	189.36	

Link ID:	H-0	H-3	(STORM).H-4 (STORM)
Length (ft):	16.29	43.53	201.47
Dia (in):	72.00	72.00	72.00
Slope (ft/ft):	0.0300	0.1100	0.0499
Up Invert (ft):	182.49	187.28	213.82
Dn Invert (ft):	182.00	182.49	203.76
Max Q (cfs):	130.35	131.24	121.79
Max Vel (ft/s):	9.99	10.54	19.08
Max Depth (ft):	4.74	3.31	1.66

10 YEAR, 24HR STORM



Node ID:		SDMH-H3 (STORM)	SDMH-H4 (STORM)	SDMH-H5 (STORM)	SDHW-H2
Rim (ft):		240.96	239.00	253.00	251.54
Invert (ft):		210.82	217.45	224.14	246.54
Min Pipe Cover (ft):		10.29	10.81	2.00	0.00
Max HGL (ft):		215.69	222.93	228.82	248.81

Link ID:	(STORM).H-4 (STORM)	(STORM).H-5 (STORM)	(STORM).H-6	H-7	
Length (ft):	201.47	49.07	131.86	28.58	
Dia (in):	72.00	72.00	60.00	60.00	
Slope (ft/ft):	0.0499	0.0100	0.0300	0.0189	
Up Invert (ft):	213.82	220.45	227.14	246.54	
Dn Invert (ft):	203.76	219.96	223.19	246.00	
Max Q (cfs):	121.79	64.91	64.93	65.05	
Max Vel (ft/s):	19.08	7.70	13.38	9.78	
Max Depth (ft):	1.66	2.03	1.48	1.86	

50-Year, 1-Hour Storm

Hydraulic Calculations

Project Description

File Name	2023.01.10 CURRENT Ratl & Mod Ratl.SPF
Description	Drainage Report (Rational 50-yr 1-hr Storm)

Project Options

Flow Units	CFS
Elevation Type	Elevation
Hydrology Method	Rational
Time of Concentration (TOC) Method	SCS TR-55
Link Routing Method	Hydrodynamic
Enable Overflow Ponding at Nodes	YES
Skip Steady State Analysis Time Periods	NO

Analysis Options

Start Analysis On	00:00:00	0:00:00
End Analysis On	00:00:00	1:00:00
Start Reporting On	00:00:00	0:00:00
Antecedent Dry Days	0	days
Runoff (Dry Weather) Time Step	0 01:00:00	days hh:mm:ss
Runoff (Wet Weather) Time Step	0 00:05:00	days hh:mm:ss
Reporting Time Step	0 00:05:00	days hh:mm:ss
Routing Time Step	30	seconds

Number of Elements

	Qty
Rain Gages	1
Subbasins	58
Nodes	104
Junctions	55
Outfalls	4
Flow Diversions	0
Inlets	44
Storage Nodes	1
Links	139
Channels	44
Pipes	94
Pumps	0
Orifices	0
Weirs	1
Outlets	0
Pollutants	0
Land Uses	0

Rainfall Details

Return Period	50 year(s)

Subbasin Summary

Subbasin ID	Area (ac)	Weighted Runoff Coefficient	Total Rainfall (in)	Total Runoff (in)	Total Runoff Volume (ft^3)	Peak Runoff (cfs)	Time of Concentration (days hh:mm:ss)
A5	0.06	0.9500	1.19	1.13	229.71	0.76	0 00:05:00
A5.1	0.25	0.5500	1.19	0.65	591.13	1.96	0 00:05:00
A6.1	0.08	0.9500	1.19	1.13	311.74	1.03	0 00:05:00
A6.2	0.08	0.8400	1.19	1.00	279.51	0.92	0 00:05:00
B10.1	0.14	0.5400	1.19	0.64	326.77	1.08	0 00:05:00
B11.1	0.58	0.3200	1.82	0.58	1221.07	1.95	0 00:10:18
B11.2	0.02	0.9500	1.19	1.13	94.34	0.31	0 00:05:00
B12.1	0.57	0.2900	1.47	0.43	877.82	2.02	0 00:07:13
B12.2	0.07	0.9500	1.19	1.13	291.23	0.96	0 00:05:00
B13.1	0.58	0.2900	1.66	0.48	1007.46	1.89	0 00:08:52
B8.1	0.61	0.3000	1.83	0.55	1217.41	1.95	0 00:10:16
B9.1	0.46	0.3000	1.51	0.45	756.39	1.67	0 00:07:31
B9.2	0.06	0.9500	1.19	1.13	237.91	0.79	0 00:05:00
B-C1	0.56	0.4800	1.80	0.86	1762.61	2.87	0 00:10:13
B-C2	0.64	0.2900	1.97	0.57	1320.57	1.85	0 00:11:49
C1.1	0.58	0.3200	1.99	0.64	1343.65	1.85	0 00:12:01
C2.1	0.55	0.3100	1.84	0.57	1140.14	1.80	0 00:10:32
C2.2	0.10	0.5700	1.19	0.68	233.81	0.77	0 00:05:00
C3.1	0.56	0.3800	1.59	0.61	1223.26	2.48	0 00:08:05
C3.2	0.05	0.9500	1.19	1.13	192.79	0.64	0 00:05:00
D1.1	0.37	0.2800	2.20	0.62	817.08	0.95	0 00:14:05
D2.1	0.59	0.3200	2.11	0.67	1433.72	1.80	0 00:13:06
D2.2	0.06	0.9500	1.19	1.13	262.52	0.87	0 00:05:00
D3.1	0.52	0.3300	1.70	0.56	1050.96	1.89	0 00:09:12
D3.2	0.05	0.9500	1.19	1.13	205.10	0.68	0 00:05:00
D4.1	0.61	0.2900	1.70	0.49	1094.79	1.97	0 00:09:12
D4.2	0.07	0.9500	1.19	1.13	274.83	0.91	0 00:05:00
D5.1	0.58	0.3100	1.69	0.52	1091.63	2.00	0 00:08:55
D-E1	1.28	0.2700	1.93	0.52	2421.79	3.53	0 00:11:19
D-E2	0.80	0.4100	2.73	1.12	3243.18	2.38	0 00:22:28
E1.1	0.31	0.3200	1.74	0.56	619.61	1.08	0 00:09:28
E2.1	0.40	0.3700	1.97	0.73	1062.61	1.48	0 00:11:50
E2.2	0.08	0.9500	1.19	1.13	319.95	1.06	0 00:05:00
E4.1	0.63	0.3800	2.24	0.85	1937.69	2.18	0 00:14:40
E4.2	0.05	0.9500	1.19	1.13	188.69	0.62	0 00:05:00
E5.1	0.71	0.2900	1.99	0.58	1490.80	2.05	0 00:12:02
E5.2	0.04	0.9500	1.19	1.13	151.77	0.50	0 00:05:00
E6.1	0.45	0.3900	1.94	0.76	1249.20	1.80	0 00:11:27
E8.1	0.68	0.3200	1.64	0.52	1299.15	2.48	0 00:08:43
E8.2	0.05	0.9500	1.19	1.13	200.99	0.67	0 00:05:00
F1.1	0.22	0.5500	1.66	0.91	743.19	1.39	0 00:08:50
F1.2	0.01	0.3500	1.88	0.66	15.48	0.02	0 00:10:48
F3.1	0.56	0.3000	1.34	0.40	819.22	2.20	0 00:06:12
F3.2	0.04	0.9500	1.19	1.13	155.87	0.52	0 00:05:00
H_POND	1.57	0.4000	2.63	1.05	5995.45	4.79	0 00:20:39
H2	0.26	0.4000	1.19	0.48	456.16	1.51	0 00:05:00
H-3	1.30	0.2400	1.93	0.46	2180.18	3.18	0 00:11:18
MAUKA_NORTH	20.06	0.4200	2.30	0.97	70342.00	75.00	0 00:15:31
MAUKA_SOUTH	5.66	0.4100	1.94	0.79	16313.37	23.46	0 00:11:32
PRESERV_1	2.89	0.3400	1.58	0.54	5644.00	11.43	0 00:08:12
PRESERV_2	1.10	0.3300	2.61	0.86	3455.36	2.81	0 00:20:15
PRESERV_3	3.81	0.3600	2.95	1.06	14701.61	9.11	0 00:26:42
PRESERV_4	0.44	0.4000	2.43	0.97	1552.48	1.47	0 00:17:33
PRESERV_5	0.17	0.2400	1.51	0.36	224.01	0.49	0 00:07:27
PRESERV_6	0.42	0.2400	1.46	0.35	535.13	1.24	0 00:07:14
PRESERV_7	9.79	0.4000	2.33	0.93	33121.14	34.23	0 00:16:03
PRESERV_8	6.24	0.4000	2.30	0.92	20839.10	22.21	0 00:15:32
PRESERV_9	1.09	0.3100	3.15	0.98	3861.74	2.08	0 00:30:37

Node Summary

Element ID	Element Type	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Diameter or Width (in)	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ft^3)	Total Time Flooded (min)
SDFC D (STORM)	Junction	229.40	237.42	96.00	24.05	232.21	0 00:00	0.00	0.00
SDFC-A (STORM)	Junction	252.88	258.84	48.00	3.12	253.42	0 00:00	0.00	0.00
SDFC-BC (STORM)	Junction	255.76	263.76	72.00	17.85	259.76	0 00:00	0.00	0.00
SDFC-E(STORM)	Junction	231.93	237.65	72.00	12.40	233.46	0 00:00	0.00	0.00
SDHW-G1 (STORM)	Junction	233.00	237.00		60.36	236.59	0 00:00	0.00	0.00
SDHW-H2	Junction	246.54	251.54		90.28	249.31	0 00:00	0.00	0.00
SDMH-A1 (STORM)	Junction	217.50	239.13	48.00	3.10	221.05	0 00:00	0.00	0.00
SDMH-A2 (STORM)	Junction	233.07	246.59	48.00	3.10	236.33	0 00:00	0.00	0.00
SDMH-A3 (STORM)	Junction	243.28	258.09	48.00	3.12	246.64	0 00:00	0.00	0.00
SDMH-A5 (STORM)	Junction	265.11	274.77	48.00	1.79	268.39	0 00:00	0.00	0.00
SDMH-B1 (STORM)	Junction	212.90	222.77	48.00	17.85	217.18	0 00:00	0.00	0.00
SDMH-B10 (STORM)	Junction	288.00	299.48	48.00	5.22	291.56	0 00:00	0.00	0.00
SDMH-B11 (STORM)	Junction	298.46	306.18	48.00	3.45	301.83	0 00:00	0.00	0.00
SDMH-B12 (STORM)	Junction	306.23	314.37	48.00	1.37	309.44	0 00:00	0.00	0.00
SDMH-B2 (STORM)	Junction	218.98	227.86	48.00	17.85	222.80	0 00:00	0.00	0.00
SDMH-B3 (STORM)	Junction	238.89	248.68	48.00	17.85	242.57	0 00:00	0.00	0.00
SDMH-B4 (STORM)	Junction	252.24	269.51	48.00	17.85	256.15	0 00:00	0.00	0.00
SDMH-B5 (STORM)	Junction	252.76	266.49	48.00	17.85	257.89	0 00:00	0.00	0.00
SDMH-B6 (STORM)	Junction	252.54	263.83	48.00	17.85	259.06	0 00:00	0.00	0.00
SDMH-B7 (STORM)	Junction	257.38	265.79	48.00	8.99	261.49	0 00:00	0.00	0.00
SDMH-B8 (STORM)	Junction	266.72	276.34	48.00	7.12	270.22	0 00:00	0.00	0.00
SDMH-B9 (STORM)	Junction	283.30	291.00	48.00	5.67	286.73	0 00:00	0.00	0.00
SDMH-C1 (STORM)	Junction	256.00	265.00	48.00	5.53	260.05	0 00:00	0.00	0.00
SDMH-C2 (STORM)	Junction	259.28	266.56	48.00	3.89	262.94	0 00:00	0.00	0.00
SDMH-C3 (STORM)	Junction	262.48	270.00	48.00	3.90	266.11	0 00:00	0.00	0.00
SDMH-C4 (STORM)	Junction	271.00	281.00	48.00	1.53	274.27	0 00:00	0.00	0.00
SDMH-D1 (STORM)	Junction	235.43	244.00	48.00	8.15	238.96	0 00:00	0.00	0.00
SDMH-D2 (STORM)	Junction	249.50	257.09	48.00	7.32	253.06	0 00:00	0.00	0.00
SDMH-D3 (STORM)	Junction	282.53	290.10	48.00	5.00	285.93	0 00:00	0.00	0.00
SDMH-D4 (STORM)	Junction	299.50	306.95	48.00	3.04	302.88	0 00:00	0.00	0.00
SDMH-D5 (STORM)	Junction	305.50	314.00	48.00	1.16	308.74	0 00:00	0.00	0.00
SDMH-E1 (STORM)	Junction	232.75	242.43	48.00	12.40	236.57	0 00:00	0.00	0.00
SDMH-E2 (STORM)	Junction	246.13	255.60	48.00	11.37	249.61	0 00:00	0.00	0.00
SDMH-E3 (STORM)	Junction	269.66	278.00	48.00	9.63	273.12	0 00:00	0.00	0.00
SDMH-E4 (STORM)	Junction	286.50	295.57	48.00	9.63	290.00	0 00:00	0.00	0.00
SDMH-E5 (STORM)	Junction	288.69	297.87	60.00	7.56	292.40	0 00:00	0.00	0.00
SDMH-E6 (STORM)	Junction	291.15	299.42	48.00	2.72	294.58	0 00:00	0.00	0.00
SDMH-E7 (STORM)	Junction	303.26	314.53	48.00	1.49	306.52	0 00:00	0.00	0.00
SDMH-E8 (STORM)	Junction	318.27	326.00	48.00	1.49	321.49	0 00:00	0.00	0.00
SDMH-F1 (STORM)	Junction	290.93	300.47	48.00	3.48	294.51	0 00:00	0.00	0.00
SDMH-F2 (STORM)	Junction	293.34	303.31	48.00	1.55	296.73	0 00:00	0.00	0.00
SDMH-F3 (STORM)	Junction	312.09	323.59	48.00	1.55	315.33	0 00:00	0.00	0.00
SDMH-G1 (STORM)	Junction	228.94	249.00	60.00	60.19	233.93	0 00:00	0.00	0.00
SDMH-H1 (STORM)	Junction	179.49	193.34	96.00	180.94	189.85	0 00:00	0.00	0.00
SDMH-H2 (STORM)	Junction	184.28	219.21	96.00	181.68	190.66	0 00:00	0.00	0.00
SDMH-H3 (STORM)	Junction	210.82	240.96	96.00	166.30	216.11	0 00:00	0.00	0.00
SDMH-H4 (STORM)	Junction	217.45	239.00	72.00	90.07	223.45	0 00:00	0.00	0.00
SDMH-H5 (STORM)	Junction	224.14	253.00	72.00	90.22	229.21	0 00:00	0.00	0.00
OUTFALL__DET_WEIR	Outfall	175.00			0.00	175.00			
OUTFALL_DET_PIPE_24	Outfall	180.00			55.30	182.00			
OUTFALL_DET_PIPE_30	Outfall	180.00			87.52	182.50			
SDHW-A1 (STORM)	Outfall	220.29			3.10	220.68			
DETENTION_POND	Storage Node	182.00	192.00		184.07	189.44		0.00	0.00

Link Summary

Element ID	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow Velocity	Peak Flow Depth	Total Time Surcharged	Reported Condition
			(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)	(ft/sec)	(ft)	(min)	
{STORM}.A-0 (STORM)	SDHW-A1 (STORM)	SDMH-A1 (STORM)	10.71	220.29	220.50	-1.9600	30.000	0.0130	3.10	57.43	4.80	0.47	0.00	Calculated
{STORM}.A-1 (STORM)	SDMH-A1 (STORM)	SDMH-A2 (STORM)	100.70	220.50	236.07	-15.4600	24.000	0.0130	3.10	88.96	11.06	0.40	0.00	Calculated
{STORM}.A-2 (STORM)	SDMH-A2 (STORM)	SDMH-A3 (STORM)	218.68	236.07	246.28	-4.6700	24.000	0.0130	3.10	48.89	8.45	0.35	0.00	Calculated
{STORM}.A-3 (STORM)	SDMH-A3 (STORM)	SDFC-A (STORM)	14.06	251.62	252.88	-8.9600	12.000	0.0130	3.12	10.67	8.87	0.46	0.00	Calculated
{STORM}.A-4 (STORM)	SDFC-A (STORM)	SDMH-A4 (STORM)	29.04	252.88	253.84	-3.3100	12.000	0.0130	3.12	6.48	6.21	0.62	0.00	Calculated
{STORM}.A-5 (STORM)	SDMH-A4 (STORM)	SDMH-A5 (STORM)	143.05	254.34	268.11	-9.6300	12.000	0.0130	1.77	11.06	10.00	0.28	0.00	Calculated
{STORM}.B-0 (STORM)	SDMH-B1 (STORM)	SDMH-H2 (STORM)	69.39	215.90	213.00	4.1700	24.000	0.0130	17.85	46.22	10.40	1.07	0.00	Calculated
{STORM}.B-1 (STORM)	SDMH-B2 (STORM)	SDMH-B1 (STORM)	78.08	221.98	215.90	7.7900	24.000	0.0130	17.85	63.13	11.85	1.05	0.00	Calculated
{STORM}.B-10 (STORM)	SDMH-B8 (STORM)	SDMH-B9 (STORM)	106.44	271.47	286.30	-13.9300	18.000	0.0130	5.67	39.20	14.58	0.41	0.00	Calculated
{STORM}.B-11 (STORM)	SDMH-B9 (STORM)	SDMH-B10 (STORM)	92.10	286.80	291.00	-4.5600	18.000	0.0130	5.22	22.43	9.47	0.52	0.00	Calculated
{STORM}.B-12 (STORM)	SDMH-B10 (STORM)	SDMH-B11 (STORM)	100.47	292.50	301.46	-8.9200	18.000	0.0130	3.44	31.37	10.86	0.35	0.00	Calculated
{STORM}.B-13 (STORM)	SDMH-B11 (STORM)	SDMH-B12 (STORM)	80.79	301.46	309.23	-9.6200	18.000	0.0130	1.37	32.57	6.28	0.29	0.00	Calculated
{STORM}.B-2 (STORM)	SDMH-B2 (STORM)	SDMH-B3 (STORM)	163.81	221.98	241.89	-12.1600	24.000	0.0130	17.85	78.88	16.52	0.75	0.00	Calculated
{STORM}.B-3 (STORM)	SDMH-B3 (STORM)	SDMH-B4 (STORM)	249.48	242.86	255.24	-4.9700	24.000	0.0130	17.85	50.41	13.77	0.86	0.00	Calculated
{STORM}.B-4 (STORM)	SDMH-B4 (STORM)	SDMH-B5 (STORM)	98.43	255.14	255.76	-0.6300	24.000	0.0130	17.85	17.90	6.09	1.76	0.00	Calculated
{STORM}.B-5 (STORM)	SDMH-B5 (STORM)	SDMH-B6 (STORM)	99.98	255.76	256.49	-0.7400	24.000	0.0130	17.85	19.41	5.68	2.00	3.00	SURCHARGED
{STORM}.B-6 (STORM)	SDMH-B6 (STORM)	SDFC-BC (STORM)	24.21	256.49	256.84	-1.4400	24.000	0.0130	17.85	27.16	5.68	2.00	5.00	SURCHARGED
{STORM}.B-7 (STORM)	SDCB-B1 (STORM)	SDFC-BC (STORM)	10.44	257.00	256.84	1.5500	24.000	0.0130	11.01	28.18	3.50	2.00	6.00	SURCHARGED
{STORM}.B-8 (STORM)	SDCB-B1 (STORM)	SDMH-B7 (STORM)	79.04	258.86	260.38	-1.9200	18.000	0.0130	8.95	14.56	7.35	1.11	0.00	Calculated
{STORM}.B-9 (STORM)	SDMH-B7 (STORM)	SDMH-B8 (STORM)	115.90	260.38	269.72	-8.0600	18.000	0.0130	7.11	29.81	8.13	0.80	0.00	Calculated
{STORM}.C-0 (STORM)	SDCB-C1 (STORM)	SDFC-BC (STORM)	17.61	257.37	256.84	2.9800	24.000	0.0130	7.80	39.02	2.84	2.00	4.00	SURCHARGED
{STORM}.C-1 (STORM)	SDMH-C1 (STORM)	SDCB-C1 (STORM)	63.57	259.00	257.37	2.5700	24.000	0.0130	5.38	36.28	4.97	1.52	0.00	Calculated
{STORM}.C-2 (STORM)	SDMH-C1 (STORM)	SDMH-C2 (STORM)	54.84	260.00	262.28	-4.1600	12.000	0.0130	3.88	7.27	8.10	0.59	0.00	Calculated
{STORM}.C-3 (STORM)	SDMH-C2 (STORM)	SDMH-C3 (STORM)	99.30	262.28	265.48	-3.2200	12.000	0.0130	3.89	6.39	7.31	0.64	0.00	Calculated
{STORM}.C-4 (STORM)	SDMH-C3 (STORM)	SDMH-C4 (STORM)	125.09	265.48	274.00	-6.8100	12.000	0.0130	1.53	9.30	5.65	0.45	0.00	Calculated
{STORM}.D-0 (STORM)	SDFC D (STORM)	SDMH-H3 (STORM)	37.25	229.40	228.67	1.9500	24.000	0.0130	23.96	31.67	8.64	1.65	0.00	Calculated
{STORM}.D-1 (STORM)	SDMH-D1 (STORM)	SDFC D (STORM)	98.20	238.43	230.40	8.1800	18.000	0.0130	8.15	30.04	11.45	1.02	0.00	Calculated
{STORM}.D-2 (STORM)	SDMH-D2 (STORM)	SDMH-D1 (STORM)	80.60	252.50	238.43	17.4600	12.000	0.0130	7.31	14.89	16.61	0.55	0.00	Calculated
{STORM}.D-3 (STORM)	SDMH-D3 (STORM)	SDMH-D2 (STORM)	203.16	285.53	252.50	16.2600	12.000	0.0130	4.99	14.36	13.23	0.48	0.00	Calculated
{STORM}.D-4 (STORM)	SDMH-D4 (STORM)	SDMH-D3 (STORM)	192.04	302.50	285.53	8.8400	12.000	0.0130	3.04	10.59	10.60	0.39	0.00	Calculated
{STORM}.D-5 (STORM)	SDMH-D5 (STORM)	SDMH-D4 (STORM)	85.24	308.50	302.50	7.0400	12.000	0.0130	1.16	9.45	5.63	0.31	0.00	Calculated
{STORM}.D-E.1 (STORM)	SDCB-D2 (STORM)	SDFC D (STORM)	19.30	232.82	233.09	-1.4000	18.000	0.0150	2.32	4.07	2.86	0.70	0.00	Calculated
{STORM}.D-E.2 (STORM)	SDCB-D1 (STORM)	SDFC D (STORM)	15.15	233.49	233.25	1.5800	18.000	0.0130	3.57	13.22	4.63	0.68	0.00	Calculated
{STORM}.E-1 (STORM)	SDFC-E(STORM)	SDFC D (STORM)	10.39	231.93	231.63	2.8900	24.000	0.0130	12.39	38.45	6.60	1.15	0.00	Calculated
{STORM}.E-2 (STORM)	SDFC-E(STORM)	SDMH-E1 (STORM)	64.97	232.03	235.75	-5.7300	24.000	0.0130	12.40	54.13	7.19	1.12	0.00	Calculated
{STORM}.E-3 (STORM)	SDMH-E1 (STORM)	SDMH-E2 (STORM)	77.50	235.75	249.13	-17.2600	24.000	0.0130	11.38	93.98	12.96	0.65	0.00	Calculated
{STORM}.E-4 (STORM)	SDMH-E2 (STORM)	SDMH-E3 (STORM)	125.26	249.13	272.66	-18.7800	24.000	0.0130	9.63	98.05	17.11	0.47	0.00	Calculated
{STORM}.E-5 (STORM)	SDMH-E3 (STORM)	SDMH-E4 (STORM)	121.85	272.66	289.50	-13.8200	24.000	0.0130	9.63	84.11	16.62	0.48	0.00	Calculated
{STORM}.E-6 (STORM)	SDMH-E4 (STORM)	SDMH-E5 (STORM)	45.09	289.50	291.69	-4.8600	24.000	0.0130	7.56	49.87	9.13	0.62	0.00	Calculated
{STORM}.E-7 (STORM)	SDMH-E5 (STORM)	SDMH-E6 (STORM)	41.79	292.16	294.15	-4.7500	18.000	0.0130	2.72	22.91	7.42	0.39	0.00	Calculated
{STORM}.E-8 (STORM)	SDMH-E6 (STORM)	SDMH-E7 (STORM)	155.55	294.15	306.26	-7.7900	12.000	0.0130	1.48	9.94	6.61	0.35	0.00	Calculated
{STORM}.E-9 (STORM)	SDMH-E7 (STORM)	SDMH-E8 (STORM)	94.31	306.26	321.27	-15.9200	12.000	0.0130	1.49	14.22	10.23	0.24	0.00	Calculated
{STORM}.F-0 (STORM)	SDMH-E5 (STORM)	SDMH-F1 (STORM)	120.28	291.88	293.93	-1.7000	18.000	0.0130	3.43	13.71	5.90	0.55	0.00	Calculated
{STORM}.F-1 (STORM)	SDMH-F1 (STORM)	SDMH-F2 (STORM)	127.59	293.93	296.34	-1.8900	12.000	0.0130	1.55	4.90	4.13	0.49	0.00	Calculated

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Link Summary

Element ID	From (Inlet) Node	To (Outlet) Node	Length	Inlet Invert Elevation	Outlet Invert Elevation	Average Slope	Diameter or Height	Manning's Roughness	Peak Flow	Design Flow Capacity	Peak Flow Velocity	Peak Flow Depth	Total Time Surcharged	Reported Condition
			(ft)	(ft)	(ft)	(%)	(in)		(cfs)	(cfs)	(ft/sec)	(ft)	(min)	
{STORM}.F-2 (STORM)	SDMH-F2 (STORM)	SDMH-F3 (STORM)	143.28	296.34	315.09	-13.0900	12.000	0.0130	1.55	12.89	9.47	0.32	0.00	Calculated
{STORM}.G-1 (STORM)	SDMH-G1 (STORM)	SDHW-G1 (STORM)	44.33	231.94	233.00	-2.3900	42.000	0.0130	60.19	155.58	7.45	2.74	0.00	Calculated
{STORM}.G-2 (STORM)	SDMH-H3 (STORM)	SDMH-G1 (STORM)	200.57	227.17	231.94	-2.3800	42.000	0.0130	60.11	155.16	12.51	1.75	0.00	Calculated
{STORM}.H-0 (STORM)	SDMH-H1 (STORM)	DETENTION_POND	16.29	182.49	182.00	3.0000	72.000	0.0130	180.61	733.76	10.39	6.00	11.00	SURCHARGED
{STORM}.H-3 (STORM)	SDMH-H2 (STORM)	SDMH-H1 (STORM)	43.53	187.28	182.49	11.0000	72.000	0.0130	180.94	1404.59	10.72	4.69	0.00	Calculated
{STORM}.H-4 (STORM)	SDMH-H3 (STORM)	SDMH-H2 (STORM)	201.47	213.82	203.76	4.9900	72.000	0.0130	166.36	946.36	20.18	2.00	0.00	Calculated
{STORM}.H-5 (STORM)	SDMH-H4 (STORM)	SDMH-H3 (STORM)	49.07	220.45	219.96	1.0000	72.000	0.0130	90.04	423.22	8.35	2.44	0.00	Calculated
{STORM}.H-6	SDMH-H5 (STORM)	SDMH-H4 (STORM)	131.86	227.14	223.19	3.0000	60.000	0.0130	90.07	450.77	14.25	1.79	0.00	Calculated
{STORM.}H-7 (STORM)	SDHW-H2	SDMH-H5 (STORM)	28.58	246.54	246.00	1.8900	60.000	0.0130	90.22	358.00	10.61	2.24	0.00	Calculated
DET_BASIN_OUT_24	DETENTION_POND	OUTFALL_DET_PIPE_24	44.00	182.00	180.00	4.5500	24.000	0.0130	55.30	48.23	17.60	2.00	13.00	SURCHARGED
DET_BASIN_OUT_30	DETENTION_POND	OUTFALL_DET_PIPE_30	44.00	182.00	180.00	4.5500	30.000	0.0130	87.52	87.45	18.66	2.50	1.00	SURCHARGED
WEIR_LIPALU	DETENTION_POND	OUTFALL__DET_WEIR		182.00	175.00				0.00					

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Inlet Summary

Element ID	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Allowable Spread (ft)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)
DI-A4.1 (STORM)	2	255.71	260.68	2.08	N/A	N/A	N/A	7.00	4.11	261.26
DI-A5.1 (STORM)	1	269.47	274.85	1.04	0.00	1.04	0.37	7.00	2.36	274.90
DI-A5.2 (STORM)	1	270.40	275.30	1.05	0.00	1.05	0.37	7.00	2.36	275.35
DI-B10.1 (STORM)	1	292.48	297.48	2.18	1.53	0.65	70.14	7.00	5.06	297.67
DI-B10.2 (STORM)	1	292.48	297.39	0.31	0.31	0.00	98.88	7.00	1.50	297.48
DI-B11.1 (STORM)	1	301.55	306.54	2.35	1.60	0.76	67.84	7.00	5.24	306.73
DI-B11.2 (STORM)	1	301.55	306.55	0.96	0.00	0.96	0.38	7.00	2.28	306.59
DI-B12.1 (STORM)	1	309.67	314.69	1.89	1.38	0.51	73.19	7.00	4.61	314.86
DI-B7.1 (STORM)	1	260.75	265.75	2.28	1.70	0.59	74.36	7.00	6.25	265.96
DI-B8.1 (STORM)	1	271.34	276.34	1.80	1.08	0.72	60.09	7.00	3.58	276.49
DI-B8.2 (STORM)	1	271.34	276.34	0.79	0.58	0.21	73.43	7.00	1.86	276.45
DI-B9.1 (STORM)	1	286.00	291.00	1.21	0.00	1.20	0.22	7.00	2.19	291.04
DI-C1.1 (STORM)	1	260.00	265.00	2.23	1.67	0.56	74.88	7.00	6.13	265.21
DI-C3.1 (STORM)	1	265.00	270.00	2.55	1.68	0.86	66.04	7.00	5.49	270.19
DI-C3.2 (STORM)	1	265.00	270.00	0.92	0.00	0.92	0.39	7.00	2.24	270.04
DI-C4.1 (STORM)	1	276.00	281.00	2.48	1.33	1.14	53.89	7.00	4.42	281.17
DI-C4.2 (STORM)	1	276.00	281.00	0.64	0.49	0.15	76.46	7.00	1.71	281.11
DI-D1.1 (STORM)	1	239.00	244.00	1.25	1.13	0.12	90.04	7.00	4.46	244.17
DI-D2.1 (STORM)	1	252.12	257.15	2.37	1.74	0.63	73.23	7.00	6.32	257.36
DI-D2.2 (STORM)	1	252.12	257.13	1.09	1.01	0.08	93.04	7.00	4.06	257.29
DI-D3.1 (STORM)	1	285.10	290.11	2.95	1.49	1.46	50.51	7.00	4.93	290.29
DI-D3.2 (STORM)	1	285.10	290.15	0.94	0.66	0.28	69.75	7.00	1.98	290.27
DI-D4.1 (STORM)	1	301.90	306.90	2.80	1.44	1.36	51.35	7.00	4.76	307.08
DI-D4.2 (STORM)	1	301.90	306.91	0.91	0.64	0.26	70.95	7.00	1.96	307.03
DI-D5.1 (STORM)	1	309.60	314.60	2.00	1.17	0.84	58.21	7.00	3.85	314.76
DI-E1.1 (STORM)	1	237.48	242.48	1.19	1.08	0.11	91.15	7.00	4.31	242.65
DI-E2.1 (STORM)	1	250.60	255.60	1.99	1.55	0.44	78.07	7.00	5.79	255.80
DI-E2.2 (STORM)	1	250.60	255.60	1.11	1.03	0.08	92.61	7.00	4.14	255.77
DI-E4.1 (STORM)	1	290.70	295.70	2.44	1.64	0.80	67.05	7.00	5.36	295.89
DI-E4.2 (STORM)	1	290.93	295.94	0.62	0.57	0.06	91.11	7.00	1.94	296.06
DI-E5.1 (STORM)	1	292.96	298.02	2.38	N/A	N/A	N/A	7.00	11.71	298.44
DI-E5.2 (STORM)	1	293.02	297.96	0.51	0.00	0.51	0.80	7.00	2.05	298.00
DI-E6.1 (STORM)	1	294.56	299.56	1.80	1.45	0.35	80.78	7.00	5.49	299.75
DI-E8.1 (STORM)	1	321.43	326.43	2.48	1.35	1.13	54.39	7.00	4.45	326.60
DI-E8.2 (STORM)	1	321.56	326.56	0.66	0.50	0.16	75.87	7.00	1.74	326.67
DI-F1.1 (STORM)	1	295.37	300.37	1.94	1.53	0.41	78.78	7.00	5.75	300.57
DI-F1.2 (STORM)	1	295.27	300.27	0.11	0.11	0.00	100.00	7.00	1.16	300.35
DI-F3.1 (STORM)	1	319.00	325.00	2.19	1.23	0.97	55.93	7.00	4.07	325.16
DI-F3.2 (STORM)	1	319.00	325.00	0.51	0.41	0.11	79.48	7.00	1.58	325.10
SDCB-B1 (STORM)	2	257.00	263.87	2.88	N/A	N/A	N/A	7.00	8.60	264.23
SDCB-C1 (STORM)	2	257.36	264.52	2.67	N/A	N/A	N/A	7.00	8.27	264.87
SDCB-D1 (STORM)	2	233.49	235.30	3.60	N/A	N/A	N/A	7.00	9.65	235.68
SDCB-D2 (STORM)	2	233.09	234.90	2.38	N/A	N/A	N/A	7.00	3.88	235.17
SDMH-A4 (STORM)	2	250.84	260.33	0.91	N/A	N/A	N/A	7.00	2.78	260.57

Junction Input

Element ID	Invert Elevation (ft)	Ground/Rim (Max) Elevation (ft)	Surcharge Depth (ft)	Ponded Area (ft^2)
4-Jun	253.00	254.25	-254.25	0.00
5-Jun	270.00	271.25	-271.25	0.00
6-Jun	290.00	291.25	-291.25	0.00
7-Jun	305.00	306.25	-306.25	0.00
8-Jun	310.00	311.25	-311.25	0.00
9-Jun	313.00	314.25	-314.25	0.00
10-Jun	340.00	341.25	-341.25	0.00
SDFC D (STORM)	229.40	237.42	0.00	0.00
SDFC-A (STORM)	252.88	258.84	0.00	0.00
SDFC-BC (STORM)	255.76	263.76	0.00	0.00
SDFC-E(STORM)	231.93	237.65	0.00	0.00
SDHW-G1 (STORM)	233.00	237.00	0.00	0.00
SDHW-H2	246.54	251.54	0.00	0.00
SDMH-A1 (STORM)	217.50	239.13	0.00	0.00
SDMH-A2 (STORM)	233.07	246.59	0.00	0.00
SDMH-A3 (STORM)	243.28	258.09	0.00	0.00
SDMH-A5 (STORM)	265.11	274.77	0.05	0.00
SDMH-B1 (STORM)	212.90	222.77	0.00	0.00
SDMH-B10 (STORM)	288.00	299.48	0.00	0.00
SDMH-B11 (STORM)	298.46	306.18	0.00	0.00
SDMH-B12 (STORM)	306.23	314.37	0.01	0.00
SDMH-B2 (STORM)	218.98	227.86	0.01	0.00
SDMH-B3 (STORM)	238.89	248.68	0.00	0.00
SDMH-B4 (STORM)	252.24	269.51	0.00	0.00
SDMH-B5 (STORM)	252.76	266.49	0.00	0.00
SDMH-B6 (STORM)	252.54	263.83	0.00	0.00
SDMH-B7 (STORM)	257.38	265.79	0.00	0.00
SDMH-B8 (STORM)	266.72	276.34	0.00	0.00
SDMH-B9 (STORM)	283.30	291.00	0.00	0.00
SDMH-C1 (STORM)	256.00	265.00	0.00	0.00
SDMH-C2 (STORM)	259.28	266.56	0.00	0.00
SDMH-C3 (STORM)	262.48	270.00	0.00	0.00
SDMH-C4 (STORM)	271.00	281.00	0.00	0.00
SDMH-D1 (STORM)	235.43	244.00	0.00	0.00
SDMH-D2 (STORM)	249.50	257.09	0.00	0.00
SDMH-D3 (STORM)	282.53	290.10	0.00	0.00
SDMH-D4 (STORM)	299.50	306.95	0.00	0.00
SDMH-D5 (STORM)	305.50	314.00	0.00	0.00
SDMH-E1 (STORM)	232.75	242.43	0.00	0.00
SDMH-E2 (STORM)	246.13	255.60	0.00	0.00
SDMH-E3 (STORM)	269.66	278.00	0.00	0.00
SDMH-E4 (STORM)	286.50	295.57	0.00	0.00
SDMH-E5 (STORM)	288.69	297.87	0.00	0.00
SDMH-E6 (STORM)	291.15	299.42	0.00	0.00
SDMH-E7 (STORM)	303.26	314.53	0.00	0.00
SDMH-E8 (STORM)	318.27	326.00	0.00	0.00
SDMH-F1 (STORM)	290.93	300.47	0.00	0.00
SDMH-F2 (STORM)	293.34	303.31	0.00	0.00
SDMH-F3 (STORM)	312.09	323.59	0.01	0.00
SDMH-G1 (STORM)	228.94	249.00	0.00	0.00
SDMH-H1 (STORM)	179.49	193.34	-0.21	0.00
SDMH-H2 (STORM)	184.28	219.21	0.00	0.00
SDMH-H3 (STORM)	210.82	240.96	0.00	0.00
SDMH-H4 (STORM)	217.45	239.00	0.00	0.00
SDMH-H5 (STORM)	224.14	253.00	0.00	0.00

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Junction Results

Element ID	Peak Inflow (cfs)	Max HGL Elevation Attained (ft)	Max Surcharge Depth Attained (ft)	Time of Max HGL Occurrence (days hh:mm)	Time of Peak Flooding Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
4-Jun	59.84	253.96	0.00	0 00:18	0 00:00	0.00	0.00
5-Jun	56.04	270.95	0.00	0 00:18	0 00:00	0.00	0.00
6-Jun	49.85	290.75	0.00	0 00:14	0 00:00	0.00	0.00
7-Jun	48.57	305.91	0.00	0 00:14	0 00:00	0.00	0.00
8-Jun	48.48	311.04	0.00	0 00:13	0 00:00	0.00	0.00
9-Jun	55.82	314.25	0.00	0 00:13	0 00:16	0.30	4.00
10-Jun	22.21	340.68	0.00	0 00:15	0 00:00	0.00	0.00
SDFC D (STORM)	24.05	232.21	0.00	0 00:09	0 00:00	0.00	0.00
SDFC-A (STORM)	3.12	253.42	0.00	0 00:06	0 00:00	0.00	0.00
SDFC-BC (STORM)	17.85	259.76	0.00	0 00:09	0 00:00	0.00	0.00
SDFC-E(STORM)	12.40	233.46	0.00	0 00:09	0 00:00	0.00	0.00
SDHW-G1 (STORM)	60.36	236.59	0.00	0 00:14	0 00:00	0.00	0.00
SDHW-H2	90.28	249.31	0.00	0 00:15	0 00:00	0.00	0.00
SDMH-A1 (STORM)	3.10	221.05	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-A2 (STORM)	3.10	236.33	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-A3 (STORM)	3.12	246.64	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-A5 (STORM)	1.79	268.39	0.00	0 00:05	0 00:00	0.00	0.00
SDMH-B1 (STORM)	17.85	217.18	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B10 (STORM)	5.22	291.56	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-B11 (STORM)	3.45	301.83	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-B12 (STORM)	1.37	309.44	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-B2 (STORM)	17.85	222.80	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B3 (STORM)	17.85	242.57	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B4 (STORM)	17.85	256.15	0.00	0 00:10	0 00:00	0.00	0.00
SDMH-B5 (STORM)	17.85	257.89	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-B6 (STORM)	17.85	259.06	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-B7 (STORM)	8.99	261.49	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-B8 (STORM)	7.12	270.22	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-B9 (STORM)	5.67	286.73	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-C1 (STORM)	5.53	260.05	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-C2 (STORM)	3.89	262.94	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-C3 (STORM)	3.90	266.11	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-C4 (STORM)	1.53	274.27	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-D1 (STORM)	8.15	238.96	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-D2 (STORM)	7.32	253.06	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-D3 (STORM)	5.00	285.93	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-D4 (STORM)	3.04	302.88	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-D5 (STORM)	1.16	308.74	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E1 (STORM)	12.40	236.57	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E2 (STORM)	11.37	249.61	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-E3 (STORM)	9.63	273.12	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E4 (STORM)	9.63	290.00	0.00	0 00:08	0 00:00	0.00	0.00
SDMH-E5 (STORM)	7.56	292.40	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-E6 (STORM)	2.72	294.58	0.00	0 00:09	0 00:00	0.00	0.00
SDMH-E7 (STORM)	1.49	306.52	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-E8 (STORM)	1.49	321.49	0.00	0 00:07	0 00:00	0.00	0.00
SDMH-F1 (STORM)	3.48	294.51	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-F2 (STORM)	1.55	296.73	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-F3 (STORM)	1.55	315.33	0.00	0 00:06	0 00:00	0.00	0.00
SDMH-G1 (STORM)	60.19	233.93	0.00	0 00:14	0 00:00	0.00	0.00
SDMH-H1 (STORM)	180.94	189.85	0.00	0 00:19	0 00:00	0.00	0.00
SDMH-H2 (STORM)	181.68	190.66	0.00	0 00:17	0 00:00	0.00	0.00
SDMH-H3 (STORM)	166.30	216.11	0.00	0 00:15	0 00:00	0.00	0.00
SDMH-H4 (STORM)	90.07	223.45	0.00	0 00:15	0 00:00	0.00	0.00
SDMH-H5 (STORM)	90.22	229.21	0.00	0 00:15	0 00:00	0.00	0.00

THESE "JUNCTIONS" ARE JUST NULL CONNECTIONS BETWEEN PRESERVATION SWALE SECTIONS OR "TRENCHES" NO DATA EVALUATED HERE.

Pipe Input

Element ID	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses
{STORM}.A-0 (STORM)	10.71	220.29	220.50	-1.9600	30.000	0.0130	0.5000	0.5000	0.0000
{STORM}.A-1 (STORM)	100.70	220.50	236.07	-15.4600	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.A-2 (STORM)	218.68	236.07	246.28	-4.6700	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.A-3 (STORM)	14.06	251.62	252.88	-8.9600	12.000	0.0130	0.5000	0.5000	0.0000
{STORM}.A-4 (STORM)	29.04	252.88	253.84	-3.3100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.A-5 (STORM)	143.05	254.34	268.11	-9.6300	12.000	0.0130	0.5000	0.7000	0.0000
{STORM}.A-5.1 (STORM)	31.77	256.72	256.04	2.1200	12.000	0.0130	0.5000	0.7000	0.0000
{STORM}.A-6.1 (STORM)	11.49	270.47	270.33	1.2200	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.A-6.2 (STORM)	14.21	271.40	270.61	5.5700	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.B-0 (STORM)	69.39	215.90	213.00	4.1700	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-1 (STORM)	78.08	221.98	215.90	7.7900	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-10 (STORM)	106.44	271.47	286.30	-13.9300	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-10.1 (STORM)	12.09	287.00	286.80	1.6500	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-11 (STORM)	92.10	286.80	291.00	-4.5600	18.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-11.1 (STORM)	47.87	293.48	293.00	1.0000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-11.2 (STORM)	40.03	293.48	291.50	4.9500	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-12 (STORM)	100.47	292.50	301.46	-8.9200	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-12.1 (STORM)	10.82	302.55	302.30	2.3000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-12.2 (STORM)	17.38	302.55	302.30	1.4400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-13 (STORM)	80.79	301.46	309.23	-9.6200	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-13.1 (STORM)	13.80	310.67	310.47	1.4600	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-2 (STORM)	163.81	221.98	241.89	-12.1600	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-3 (STORM)	249.48	242.86	255.24	-4.9700	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-4 (STORM)	98.43	255.14	255.76	-0.6300	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-5 (STORM)	99.98	255.76	256.49	-0.7400	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-6 (STORM)	24.21	256.49	256.84	-1.4400	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.B-7 (STORM)	10.44	257.00	256.84	1.5500	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-8 (STORM)	79.04	258.86	260.38	-1.9200	18.000	0.0130	0.5000	0.8000	0.0000
{STORM}.B-8.1 (STORM)	12.46	261.75	261.55	1.6000	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.B-9 (STORM)	115.90	260.38	269.72	-8.0600	18.000	0.0130	0.5000	0.8000	0.0000
{STORM}.B-9.1 (STORM)	12.98	272.34	272.14	1.5400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.B-9.2 (STORM)	11.49	272.34	272.14	1.7400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-0 (STORM)	17.61	257.37	256.84	2.9800	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-1 (STORM)	63.57	259.00	257.37	2.5700	24.000	0.0130	0.5000	0.9000	0.0000
{STORM}.C-1.1 (STORM)	11.15	261.00	260.80	1.8000	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-2 (STORM)	54.84	260.00	262.28	-4.1600	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-2.1 (STORM)	12.79	266.00	265.80	1.6000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-2.2 (STORM)	12.89	266.00	265.80	1.5500	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.C-3 (STORM)	99.30	262.28	265.48	-3.2200	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.C-3.1 (STORM)	12.20	277.00	276.80	1.6400	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-3.2 (STORM)	12.12	277.00	276.80	1.6500	12.000	0.0130	0.5000	0.8000	0.0000
{STORM}.C-4 (STORM)	125.09	265.48	274.00	-6.8100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-0 (STORM)	37.25	229.40	228.67	1.9500	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-1 (STORM)	98.20	238.43	230.40	8.1800	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-1.1 (STORM)	12.67	240.00	239.80	1.5900	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.D-2 (STORM)	80.60	252.50	238.43	17.4600	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.D-2.1 (STORM)	12.16	253.12	252.92	1.6400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-2.2 (STORM)	12.13	253.12	252.92	1.6500	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-3 (STORM)	203.16	285.53	252.50	16.2600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-3.1 (STORM)	12.04	286.10	285.90	1.6700	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-3.2 (STORM)	12.19	286.10	285.90	1.6600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-4 (STORM)	192.04	302.50	285.53	8.8400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-4.1 (STORM)	12.74	302.90	302.63	2.1100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-4.2 (STORM)	12.42	302.90	302.63	2.1700	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-5 (STORM)	85.24	308.50	302.50	7.0400	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.D-5.1 (STORM)	13.99	310.60	310.40	1.4300	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.D-E.2 (STORM)	15.15	233.49	233.25	1.5800	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-1 (STORM)	10.39	231.93	231.63	2.8900	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-1.1 (STORM)	12.39	238.48	238.28	1.6200	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-2 (STORM)	64.97	232.03	235.75	-5.7300	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-2.1 (STORM)	12.20	251.60	251.40	1.6300	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-2.2 (STORM)	11.94	251.60	251.40	1.6700	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-3 (STORM)	77.50	235.75	249.13	-17.2600	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-4 (STORM)	125.26	249.13	272.66	-18.7800	24.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-4.1 (STORM)	14.65	291.70	291.50	1.3600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-4.2 (STORM)	13.05	291.93	291.50	3.3000	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-5 (STORM)	121.85	272.66	289.50	-13.8200	24.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-5.1 (STORM)	19.76	293.97	293.50	2.3600	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-5.2 (STORM)	13.36	294.02	293.50	3.8900	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-6 (STORM)	45.09	289.50	291.69	-4.8600	24.000	0.0130	0.5000	1.0000	0.0000

Pipe Input

Element ID	Length (ft)	Inlet Invert Elevation (ft)	Outlet Invert Elevation (ft)	Average Slope (%)	Pipe Diameter or Height (in)	Manning's Roughness	Entrance Losses	Exit/Bend Losses	Additional Losses
{STORM}.E-6.1 (STORM)	13.50	295.56	295.36	1.4800	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-7 (STORM)	41.79	292.16	294.15	-4.7500	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.E-8 (STORM)	155.55	294.15	306.26	-7.7900	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.E-8.1 (STORM)	13.32	322.43	322.23	1.5100	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.E-8.2 (STORM)	13.61	322.56	322.23	2.4200	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.E-9 (STORM)	94.31	306.26	321.27	-15.9200	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.F-0 (STORM)	120.28	291.88	293.93	-1.7000	18.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-1 (STORM)	127.59	293.93	296.34	-1.8900	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-1.1 (STORM)	14.25	296.37	296.07	2.1100	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-1.2 (STORM)	10.90	296.27	296.07	1.8300	12.000	0.0130	0.5000	1.0000	0.0000
{STORM}.F-2 (STORM)	143.28	296.34	315.09	-13.0900	12.000	0.0130	0.5000	0.6000	0.0000
{STORM}.F-3.1 (STORM)	10.94	320.00	319.55	4.1100	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.F-3.2 (STORM)	20.93	320.00	319.55	2.1500	12.000	0.0130	0.5000	0.9000	0.0000
{STORM}.G-1 (STORM)	44.33	231.94	233.00	-2.3900	42.000	0.0130	0.5000	0.6000	0.0000
{STORM}.G-2 (STORM)	200.57	227.17	231.94	-2.3800	42.000	0.0130	0.5000	1.0000	0.0000
{STORM}.H-4 (STORM)	201.47	213.82	203.76	4.9900	72.000	0.0130	0.5000	0.7000	0.0000
{STORM}.H-5 (STORM)	49.07	220.45	219.96	1.0000	72.000	0.0130	0.5000	1.0000	0.0000
{STORM}.H-6	131.86	227.14	223.19	3.0000	60.000	0.0130	0.5000	0.6000	0.0000
D-E.1	19.30	232.82	233.09	-1.4000	18.000	0.0150	0.5000	1.0000	0.0000
DET_BASIN_OUT_24	44.00	182.00	180.00	4.5500	24.000	0.0130	0.5000	0.5000	0.0000
DET_BASIN_OUT_30	44.00	182.00	180.00	4.5500	30.000	0.0130	0.5000	0.5000	0.0000
H-0	16.29	182.49	182.00	3.0000	72.000	0.0130	0.5000	0.5000	0.0000
H-3	43.53	187.28	182.49	11.0000	72.000	0.0130	0.5000	0.5000	0.0000
H-7	28.58	246.54	246.00	1.8900	60.000	0.0130	0.5000	0.5000	0.0000

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Pipe Results

Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow Velocity	Travel Time	Peak Flow Depth	Total Time Surcharged	Froude Number	Reported Condition
(cfs)	(days hh:mm)	(cfs)	(ft/sec)	(min)	(ft)	(min)		
3.10	0 00:06	57.43	4.80	0.04	0.47	0.00		Calculated
3.10	0 00:06	88.96	11.06	0.15	0.40	0.00		Calculated
3.10	0 00:06	48.89	8.45	0.43	0.35	0.00		Calculated
3.12	0 00:06	10.67	8.87	0.03	0.46	0.00		Calculated
3.12	0 00:05	6.48	6.21	0.08	0.62	0.00		Calculated
1.77	0 00:05	11.06	10.00	0.24	0.28	0.00		Calculated
0.92	0 00:08	5.19	4.40	0.12	0.31	0.00		Calculated
0.88	0 00:05	3.93	3.21	0.06	0.38	0.00		Calculated
0.91	0 00:05	8.41	5.51	0.04	0.26	0.00		Calculated
17.85	0 00:10	46.22	10.40	0.11	1.07	0.00		Calculated
17.85	0 00:10	63.13	11.85	0.11	1.05	0.00		Calculated
5.67	0 00:07	39.20	14.58	0.12	0.41	0.00		Calculated
0.83	0 00:05	4.58	3.64	0.06	0.33	0.00		Calculated
5.22	0 00:07	22.43	9.47	0.16	0.52	0.00		Calculated
1.65	0 00:08	3.57	3.86	0.21	0.53	0.00		Calculated
0.29	0 00:05	7.92	4.51	0.15	0.13	0.00		Calculated
3.44	0 00:07	31.37	10.86	0.15	0.35	0.00		Calculated
1.75	0 00:07	5.40	4.38	0.04	0.51	0.00		Calculated
0.82	0 00:05	4.27	3.40	0.09	0.34	0.00		Calculated
1.37	0 00:09	32.57	6.28	0.21	0.29	0.00		Calculated
1.37	0 00:09	4.30	3.98	0.06	0.45	0.00		Calculated
17.85	0 00:10	78.88	16.52	0.17	0.75	0.00		Calculated
17.85	0 00:10	50.41	13.77	0.30	0.86	0.00		Calculated
17.85	0 00:09	17.90	6.09	0.27	1.76	0.00		Calculated
17.85	0 00:09	19.41	5.68	0.29	2.00	3.00		SURCHARGED
17.85	0 00:09	27.16	5.68	0.07	2.00	5.00		SURCHARGED
11.01	0 00:08	28.18	3.50	0.05	2.00	6.00		SURCHARGED
8.95	0 00:08	14.56	7.35	0.18	1.11	0.00		Calculated
1.89	0 00:08	4.50	4.24	0.05	0.55	0.00		Calculated
7.11	0 00:07	29.81	8.13	0.24	0.80	0.00		Calculated
1.13	0 00:07	4.42	3.62	0.06	0.42	0.00		Calculated
0.56	0 00:05	4.70	3.17	0.06	0.28	0.00		Calculated
7.80	0 00:12	39.02	2.84	0.10	2.00	4.00		SURCHARGED
5.38	0 00:09	36.28	4.97	0.21	1.52	0.00		Calculated
1.89	0 00:10	4.78	4.34	0.04	0.54	0.00		Calculated
3.88	0 00:08	7.27	8.10	0.11	0.59	0.00		Calculated
2.06	0 00:08	4.51	4.20	0.05	0.60	0.00		Calculated
0.81	0 00:05	4.44	3.37	0.06	0.35	0.00		Calculated
3.89	0 00:08	6.39	7.31	0.23	0.64	0.00		Calculated
1.33	0 00:08	4.56	3.93	0.05	0.45	0.00		Calculated
0.47	0 00:05	4.58	3.11	0.06	0.25	0.00		Calculated
1.53	0 00:08	9.30	5.65	0.37	0.45	0.00		Calculated
23.96	0 00:09	31.67	8.64	0.07	1.65	0.00		Calculated
8.15	0 00:09	30.04	11.45	0.14	1.02	0.00		Calculated
1.20	0 00:13	4.49	3.94	0.05	0.41	0.00		Calculated
7.31	0 00:09	14.89	16.61	0.08	0.55	0.00		Calculated
2.14	0 00:09	4.57	4.25	0.05	0.61	0.00		Calculated
1.04	0 00:05	4.58	3.60	0.06	0.39	0.00		Calculated
4.99	0 00:09	14.36	13.23	0.26	0.48	0.00		Calculated
1.83	0 00:09	4.60	4.11	0.05	0.55	0.00		Calculated
0.71	0 00:05	4.59	3.31	0.06	0.32	0.00		Calculated
3.04	0 00:09	10.59	10.60	0.30	0.39	0.00		Calculated
1.74	0 00:09	5.18	4.34	0.05	0.51	0.00		Calculated
0.63	0 00:05	5.24	3.52	0.06	0.28	0.00		Calculated
1.16	0 00:09	9.45	5.63	0.25	0.31	0.00		Calculated
1.16	0 00:09	4.26	3.81	0.06	0.41	0.00		Calculated
3.57	0 00:11	13.22	4.63	0.05	0.68	0.00		Calculated
12.39	0 00:09	38.45	6.60	0.03	1.15	0.00		Calculated
1.11	0 00:09	4.54	3.88	0.05	0.39	0.00		Calculated
12.40	0 00:09	54.13	7.19	0.15	1.12	0.00		Calculated
1.77	0 00:12	4.55	4.05	0.05	0.54	0.00		Calculated
1.03	0 00:05	4.60	3.60	0.06	0.39	0.00		Calculated
11.38	0 00:08	93.98	12.96	0.10	0.65	0.00		Calculated
9.63	0 00:09	98.05	17.11	0.12	0.47	0.00		Calculated
1.99	0 00:09	4.16	4.03	0.06	0.60	0.00		Calculated
0.56	0 00:05	6.47	4.01	0.05	0.23	0.00		Calculated
9.63	0 00:08	84.11	16.62	0.12	0.48	0.00		Calculated
2.36	0 00:12	5.48	5.02	0.07	0.58	0.00		Calculated
0.51	0 00:05	7.02	4.20	0.05	0.21	0.00		Calculated

Pipe Results

Peak Flow	Time of Peak Flow Occurrence	Design Flow Capacity	Peak Flow Velocity	Travel Time	Peak Flow Depth	Total Time Surcharged	Froude Number	Reported Condition
(cfs)	(days hh:mm)	(cfs)	(ft/sec)	(min)	(ft)	(min)		
7.56	0 00:08	49.87	9.13	0.08	0.62	0.00		Calculated
1.44	0 00:11	4.34	4.05	0.06	0.46	0.00		Calculated
2.72	0 00:09	22.91	7.42	0.09	0.39	0.00		Calculated
1.48	0 00:07	9.94	6.61	0.39	0.35	0.00		Calculated
1.33	0 00:08	4.38	3.80	0.06	0.46	0.00		Calculated
0.49	0 00:05	5.55	3.57	0.06	0.23	0.00		Calculated
1.49	0 00:07	14.22	10.23	0.15	0.24	0.00		Calculated
3.43	0 00:07	13.71	5.90	0.34	0.55	0.00		Calculated
1.55	0 00:06	4.90	4.13	0.51	0.49	0.00		Calculated
1.83	0 00:06	5.17	4.44	0.05	0.52	0.00		Calculated
0.11	0 00:05	4.83	2.17	0.08	0.12	0.00		Calculated
1.55	0 00:06	12.89	9.47	0.25	0.32	0.00		Calculated
1.23	0 00:06	7.23	4.95	0.04	0.35	0.00		Calculated
0.40	0 00:05	5.22	3.45	0.10	0.21	0.00		Calculated
60.19	0 00:14	155.58	7.45	0.10	2.74	0.00		Calculated
60.11	0 00:14	155.16	12.51	0.27	1.75	0.00		Calculated
166.36	0 00:15	946.36	20.18	0.17	2.00	0.00		Calculated
90.04	0 00:15	423.22	8.35	0.10	2.44	0.00		Calculated
90.07	0 00:15	450.77	14.25	0.15	1.79	0.00		Calculated
2.32	0 00:23	4.07	2.86	0.11	0.70	0.00		Calculated
55.30	0 00:19	48.23	17.60	0.04	2.00	13.00		SURCHARGED
87.52	0 00:19	87.45	18.66	0.04	2.50	1.00		SURCHARGED
180.61	0 00:15	733.76	10.39	0.03	6.00	11.00		SURCHARGED
180.94	0 00:15	1404.59	10.72	0.07	4.69	0.00		Calculated
90.22	0 00:15	358.00	10.61	0.04	2.24	0.00		Calculated

Inlet Input

Element ID	Number of Inlets	Catchbasin Invert Elevation (ft)	Max (Rim) Elevation (ft)	Inlet Depth (ft)	Grate Clogging Factor (%)
DI-A4.1 (STORM)	2	255.71	260.68	4.97	30.00
DI-A5.1 (STORM)	1	269.47	274.85	5.38	30.00
DI-A5.2 (STORM)	1	270.40	275.30	4.90	30.00
DI-B10.1 (STORM)	1	292.48	297.48	5.00	30.00
DI-B10.2 (STORM)	1	292.48	297.39	4.91	30.00
DI-B11.1 (STORM)	1	301.55	306.54	4.99	30.00
DI-B11.2 (STORM)	1	301.55	306.55	5.00	30.00
DI-B12.1 (STORM)	1	309.67	314.69	5.02	30.00
DI-B7.1 (STORM)	1	260.75	265.75	5.00	30.00
DI-B8.1 (STORM)	1	271.34	276.34	5.00	30.00
DI-B8.2 (STORM)	1	271.34	276.34	5.00	30.00
DI-B9.1 (STORM)	1	286.00	291.00	5.00	30.00
DI-C1.1 (STORM)	1	260.00	265.00	5.00	30.00
DI-C3.1 (STORM)	1	265.00	270.00	5.00	30.00
DI-C3.2 (STORM)	1	265.00	270.00	5.00	30.00
DI-C4.1 (STORM)	1	276.00	281.00	5.00	30.00
DI-C4.2 (STORM)	1	276.00	281.00	5.00	30.00
DI-D1.1 (STORM)	1	239.00	244.00	5.00	30.00
DI-D2.1 (STORM)	1	252.12	257.15	5.03	30.00
DI-D2.2 (STORM)	1	252.12	257.13	5.01	30.00
DI-D3.1 (STORM)	1	285.10	290.11	5.01	30.00
DI-D3.2 (STORM)	1	285.10	290.15	5.05	30.00
DI-D4.1 (STORM)	1	301.90	306.90	5.00	30.00
DI-D4.2 (STORM)	1	301.90	306.91	5.01	30.00
DI-D5.1 (STORM)	1	309.60	314.60	5.00	30.00
DI-E1.1 (STORM)	1	237.48	242.48	5.00	30.00
DI-E2.1 (STORM)	1	250.60	255.60	5.00	30.00
DI-E2.2 (STORM)	1	250.60	255.60	5.00	30.00
DI-E4.1 (STORM)	1	290.70	295.70	5.00	30.00
DI-E4.2 (STORM)	1	290.93	295.94	5.01	30.00
DI-E5.1 (STORM)	1	292.96	298.02	5.06	30.00
DI-E5.2 (STORM)	1	293.02	297.96	4.94	30.00
DI-E6.1 (STORM)	1	294.56	299.56	5.00	30.00
DI-E8.1 (STORM)	1	321.43	326.43	5.00	30.00
DI-E8.2 (STORM)	1	321.56	326.56	5.00	30.00
DI-F1.1 (STORM)	1	295.37	300.37	5.00	30.00
DI-F1.2 (STORM)	1	295.27	300.27	5.00	30.00
DI-F3.1 (STORM)	1	319.00	325.00	6.00	30.00
DI-F3.2 (STORM)	1	319.00	325.00	6.00	30.00
SDCB-B1 (STORM)	2	257.00	263.87	6.87	30.00
SDCB-C1 (STORM)	2	257.36	264.52	7.16	30.00
SDCB-D1 (STORM)	2	233.49	235.30	1.81	30.00
SDCB-D2 (STORM)	2	233.09	234.90	1.81	30.00
SDMH-A4 (STORM)	2	250.84	260.33	9.49	30.00

Inlet Results

Element ID	Peak Flow (cfs)	Peak Flow Intercepted by Inlet (cfs)	Peak Flow Bypassing Inlet (cfs)	Inlet Efficiency during Peak Flow (%)	Max Gutter Spread during Peak Flow (ft)	Max Gutter Water Elev. during Peak Flow (ft)	Max Gutter Water Depth during Peak Flow (ft)	Time of Max Depth Occurrence (days hh:mm)	Total Flooded Volume (ac-in)	Total Time Flooded (min)
DI-A4.1 (STORM)	2.08	N/A	N/A	N/A	4.11	261.26	0.58	0 00:08	0.00	0.00
DI-A5.1 (STORM)	1.04	0.00	1.04	0.37	2.36	274.90	0.05	0 00:05	0.00	0.00
DI-A5.2 (STORM)	1.05	0.00	1.05	0.37	2.36	275.35	0.05	0 00:05	0.00	0.00
DI-B10.1 (STORM)	2.18	1.53	0.65	70.14	5.06	297.67	0.19	0 00:08	0.00	0.00
DI-B10.2 (STORM)	0.31	0.31	0.00	98.88	1.50	297.48	0.09	0 00:05	0.00	0.00
DI-B11.1 (STORM)	2.35	1.60	0.76	67.84	5.24	306.73	0.19	0 00:07	0.00	0.00
DI-B11.2 (STORM)	0.96	0.00	0.96	0.38	2.28	306.59	0.05	0 00:05	0.00	0.00
DI-B12.1 (STORM)	1.89	1.38	0.51	73.19	4.61	314.86	0.18	0 00:09	0.00	0.00
DI-B7.1 (STORM)	2.28	1.70	0.59	74.36	6.25	265.96	0.21	0 00:08	0.00	0.00
DI-B8.1 (STORM)	1.80	1.08	0.72	60.09	3.58	276.49	0.16	0 00:07	0.00	0.00
DI-B8.2 (STORM)	0.79	0.58	0.21	73.43	1.86	276.45	0.12	0 00:05	0.00	0.00
DI-B9.1 (STORM)	1.21	0.00	1.20	0.22	2.19	291.04	0.04	0 00:05	0.00	0.00
DI-C1.1 (STORM)	2.23	1.67	0.56	74.88	6.13	265.21	0.21	0 00:10	0.00	0.00
DI-C3.1 (STORM)	2.55	1.68	0.86	66.04	5.49	270.19	0.19	0 00:08	0.00	0.00
DI-C3.2 (STORM)	0.92	0.00	0.92	0.39	2.24	270.04	0.04	0 00:05	0.00	0.00
DI-C4.1 (STORM)	2.48	1.33	1.14	53.89	4.42	281.17	0.17	0 00:08	0.00	0.00
DI-C4.2 (STORM)	0.64	0.49	0.15	76.46	1.71	281.11	0.11	0 00:05	0.00	0.00
DI-D1.1 (STORM)	1.25	1.13	0.12	90.04	4.46	244.17	0.17	0 00:13	0.00	0.00
DI-D2.1 (STORM)	2.37	1.74	0.63	73.23	6.32	257.36	0.21	0 00:09	0.00	0.00
DI-D2.2 (STORM)	1.09	1.01	0.08	93.04	4.06	257.29	0.17	0 00:05	0.00	0.00
DI-D3.1 (STORM)	2.95	1.49	1.46	50.51	4.93	290.29	0.18	0 00:09	0.00	0.00
DI-D3.2 (STORM)	0.94	0.66	0.28	69.75	1.98	290.27	0.12	0 00:05	0.00	0.00
DI-D4.1 (STORM)	2.80	1.44	1.36	51.35	4.76	307.08	0.18	0 00:09	0.00	0.00
DI-D4.2 (STORM)	0.91	0.64	0.26	70.95	1.96	307.03	0.12	0 00:05	0.00	0.00
DI-D5.1 (STORM)	2.00	1.17	0.84	58.21	3.85	314.76	0.16	0 00:09	0.00	0.00
DI-E1.1 (STORM)	1.19	1.08	0.11	91.15	4.31	242.65	0.17	0 00:09	0.00	0.00
DI-E2.1 (STORM)	1.99	1.55	0.44	78.07	5.79	255.80	0.20	0 00:12	0.00	0.00
DI-E2.2 (STORM)	1.11	1.03	0.08	92.61	4.14	255.77	0.17	0 00:05	0.00	0.00
DI-E4.1 (STORM)	2.44	1.64	0.80	67.05	5.36	295.89	0.19	0 00:09	0.00	0.00
DI-E4.2 (STORM)	0.62	0.57	0.06	91.11	1.94	296.06	0.12	0 00:05	0.00	0.00
DI-E5.1 (STORM)	2.38	N/A	N/A	N/A	11.71	298.44	0.42	0 00:12	0.00	0.00
DI-E5.2 (STORM)	0.51	0.00	0.51	0.80	2.05	298.00	0.04	0 00:05	0.00	0.00
DI-E6.1 (STORM)	1.80	1.45	0.35	80.78	5.49	299.75	0.19	0 00:11	0.00	0.00
DI-E8.1 (STORM)	2.48	1.35	1.13	54.39	4.45	326.60	0.17	0 00:08	0.00	0.00
DI-E8.2 (STORM)	0.66	0.50	0.16	75.87	1.74	326.67	0.11	0 00:05	0.00	0.00
DI-F1.1 (STORM)	1.94	1.53	0.41	78.78	5.75	300.57	0.20	0 00:06	0.00	0.00
DI-F1.2 (STORM)	0.11	0.11	0.00	100.00	1.16	300.35	0.07	0 00:05	0.00	0.00
DI-F3.1 (STORM)	2.19	1.23	0.97	55.93	4.07	325.16	0.17	0 00:06	0.00	0.00
DI-F3.2 (STORM)	0.51	0.41	0.11	79.48	1.58	325.10	0.10	0 00:05	0.00	0.00
SDCB-B1 (STORM)	2.88	N/A	N/A	N/A	8.60	264.23	0.36	0 00:09	0.00	0.00
SDCB-C1 (STORM)	2.67	N/A	N/A	N/A	8.27	264.87	0.35	0 00:09	0.00	0.00
SDCB-D1 (STORM)	3.60	N/A	N/A	N/A	9.65	235.68	0.38	0 00:11	0.00	0.00
SDCB-D2 (STORM)	2.38	N/A	N/A	N/A	3.88	235.17	0.27	0 00:23	0.00	0.00
SDMH-A4 (STORM)	0.91	N/A	N/A	N/A	2.78	260.57	0.24	0 00:05	0.00	0.00

Storage Nodes

Storage Node : DETENTION_POND

Input Data

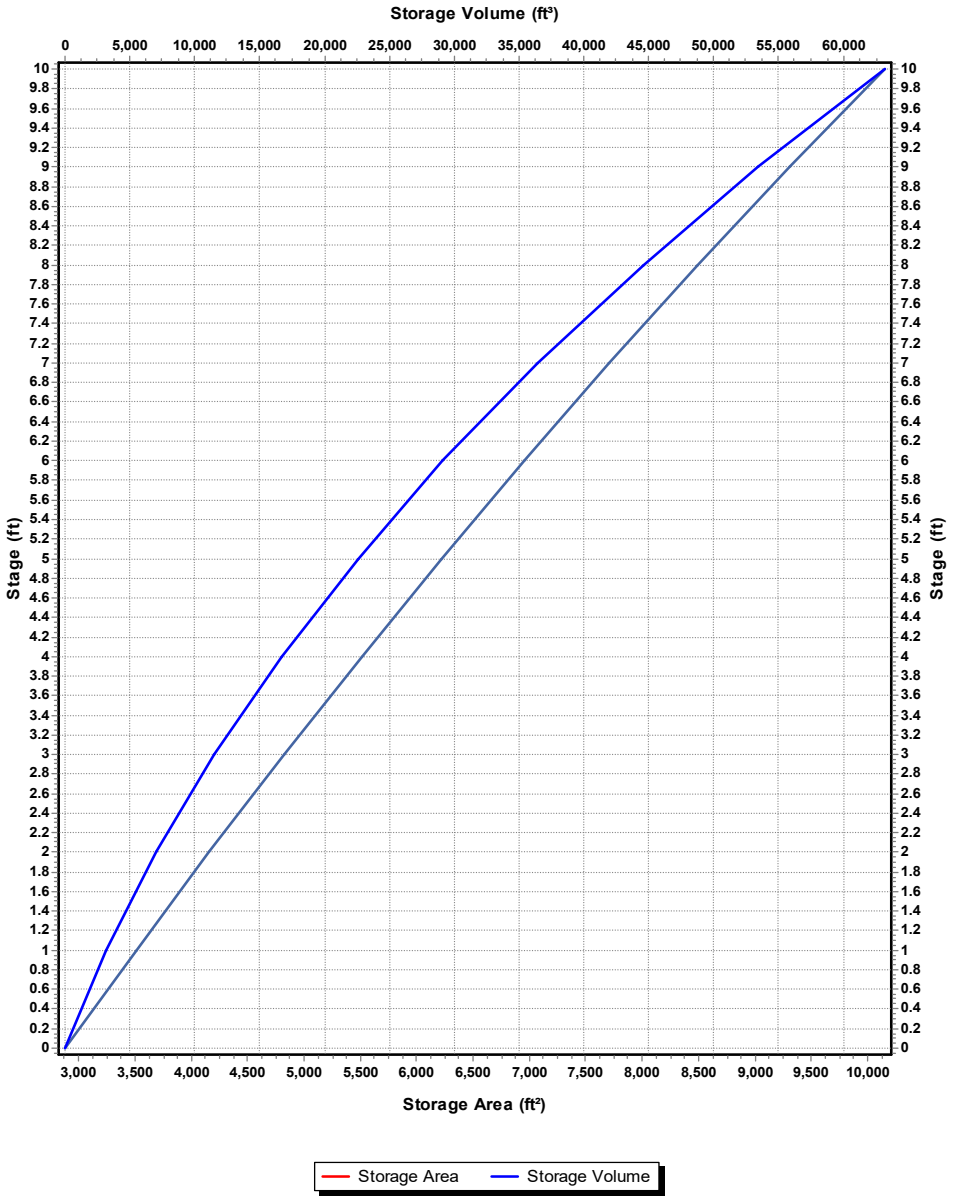
Invert Elevation (ft)	182.00
Max (Rim) Elevation (ft)	192.00
Max (Rim) Offset (ft)	10.00
Initial Water Elevation (ft)	0.00
Initial Water Depth (ft)	-182.00
Ponded Area (ft^2)	100.00
Evaporation Loss	0.00

Storage Area Volume Curves

Storage Curve : New_Lipalu_Basin

Stage (ft)	Storage Area (ft^2)	Storage Volume (ft^3)
0	2879.03	0
1	3508.41	3193.72
2	4155.91	7025.88
3	4824.19	11515.93
4	5511.1	16683.58
5	6219.64	22548.95
6	6950.31	29133.93
7	7708.08	36463.13
8	8494.11	44564.23
9	9308.36	53465.47
10	10153.61	63196.46

Storage Area Volume Curves



Storage Node : DETENTION_POND (continued)

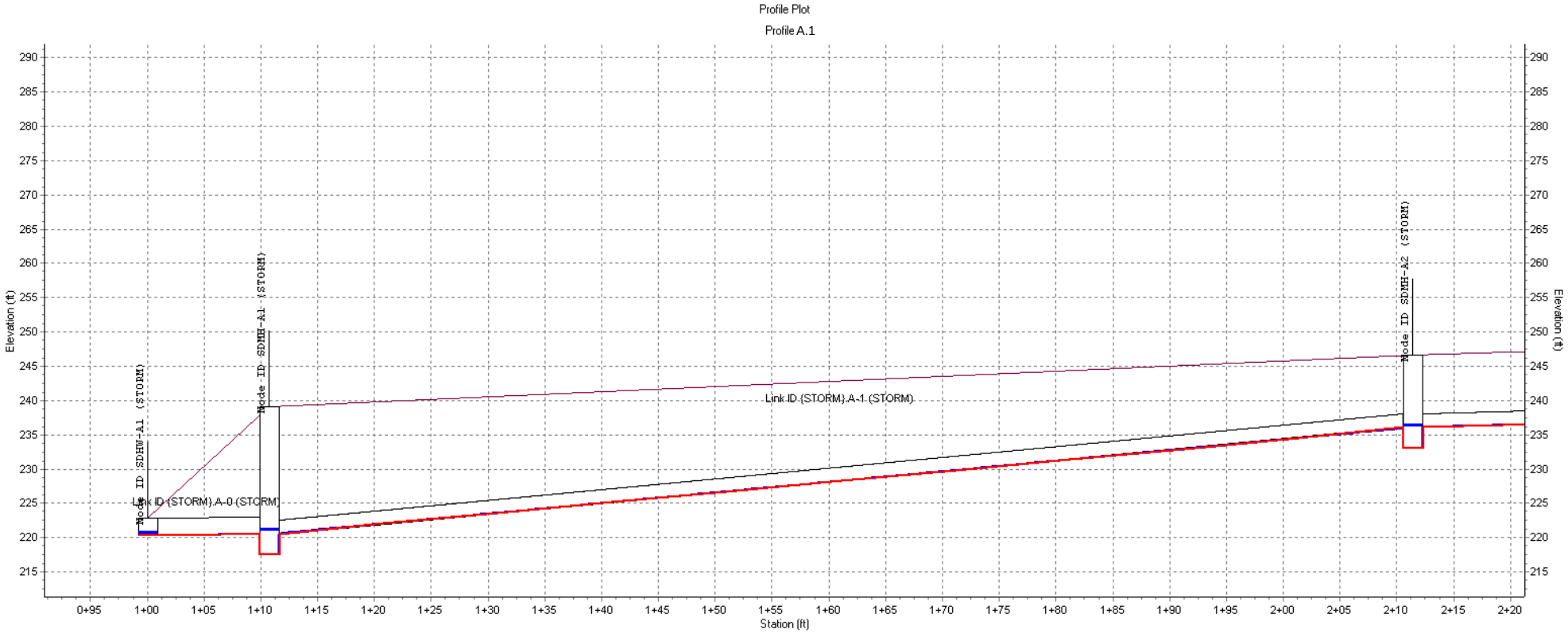
Outflow Weirs

SN	Element ID	Weir Type	Flap Gate	Crest Elevation (ft)	Crest Offset (ft)	Length (ft)	Weir Total Height (ft)	Discharge Coefficient
1	WEIR_LIPALU	Trapezoidal	No	190.50	8.50	20.00	1.25	3.37

Output Summary Results

Peak Inflow (cfs)	184.07
Peak Lateral Inflow (cfs)	4.79
Peak Outflow (cfs)	142.82
Peak Exfiltration Flow Rate (cfm)	0
Max HGL Elevation Attained (ft)	189.44
Max HGL Depth Attained (ft)	7.44
Average HGL Elevation Attained (ft)	184.64
Average HGL Depth Attained (ft)	2.64
Time of Max HGL Occurrence (days hh:mm)	0 00:19
Total Exfiltration Volume (1000-ft³)	0
Total Flooded Volume (ac-in)	0
Total Time Flooded (min)	0
Total Retention Time (sec)	0

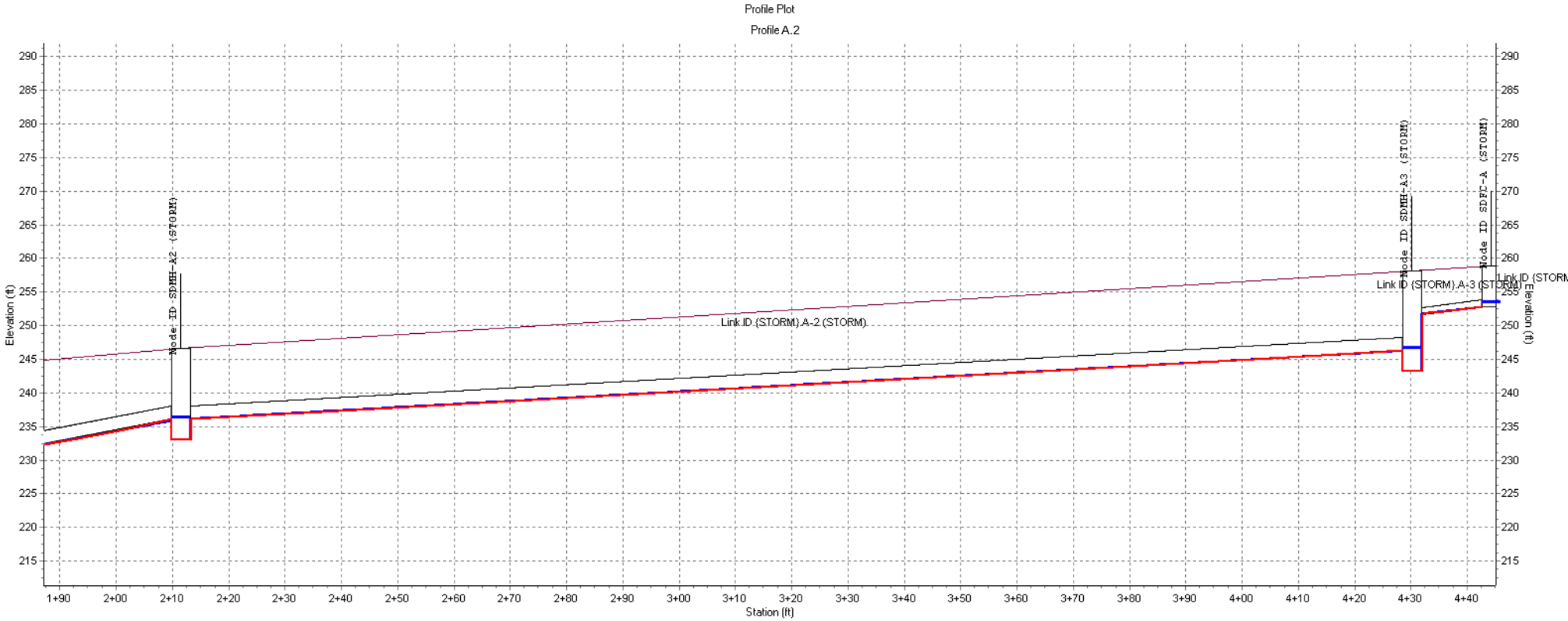
50 YEAR, 1 HR STORM



Node ID:	SDHW-A1 (STORM)	SDMH-A1 (STORM)		SDMH-A2 (STORM)
Rim (ft):		239.13		246.59
Invert (ft):	220.29	217.50		233.07
Min Pipe Cover (ft):		16.13		8.52
Max HGL (ft):	220.68	221.05		236.33

Link ID:	(STORM).A-0 (STORM)	(STORM).A-1 (STORM)	
Length (ft):	10.71	100.70	
Dia (in):	30.00	24.00	
Slope (ft/ft):	-0.0196	-0.1546	
Up Invert (ft):	220.29	220.50	
Dn Invert (ft):	220.50	236.07	
Max Q (cfs):	3.10	3.10	
Max Vel (ft/s):	4.80	11.06	
Max Depth (ft):	0.47	0.40	

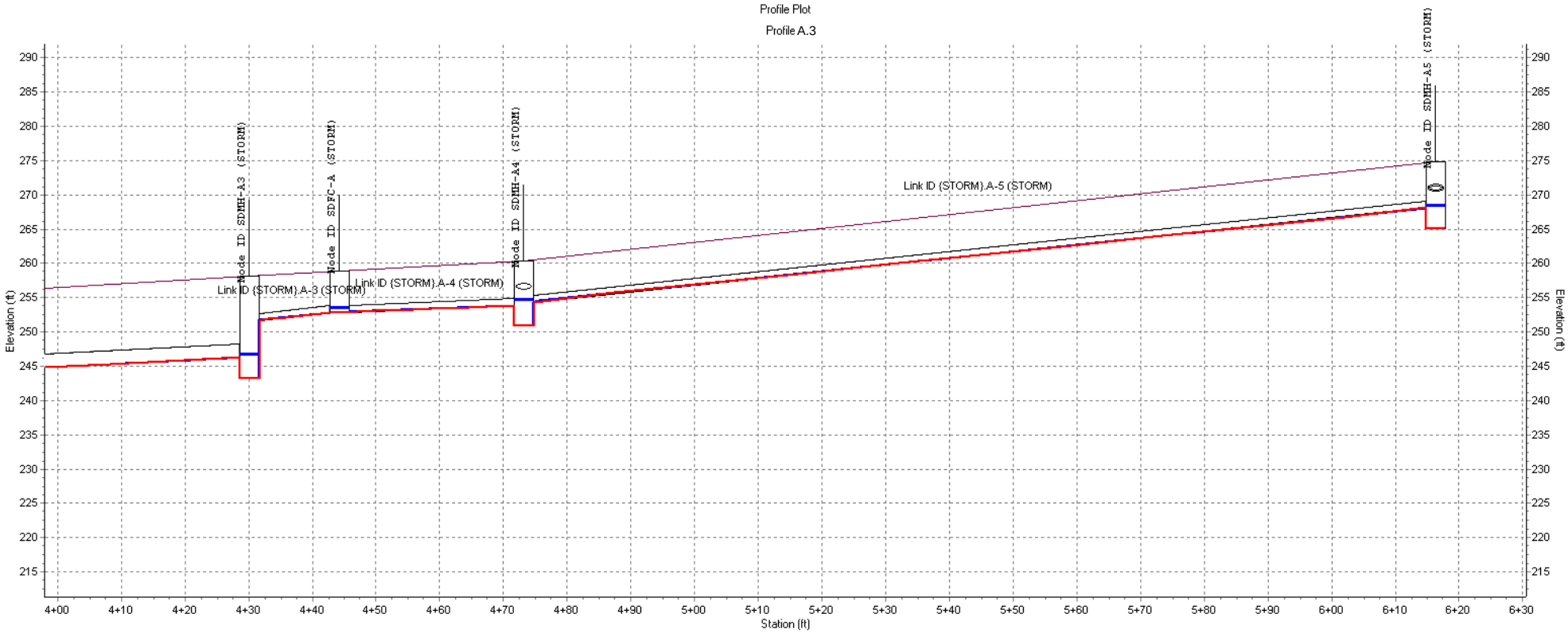
50 YEAR, 1 HR STORM



Node ID:	SDMH-A2 (STORM)		SDMH-A3 (STORM)
Rim (ft):	246.59		258.09
Invert (ft):	233.07		243.28
Min Pipe Cover (ft):	8.52		5.47
Max HGL (ft):	236.33		246.64

Link ID:	(STORM).A-2 (STORM)	
Length (ft):	218.68	14.06
Dia (in):	24.00	12.00
Slope (ft/ft):	-0.0467	-0.0896
Up Invert (ft):	236.07	251.61
Dn Invert (ft):	246.28	252.88
Max Q (cfs):	3.10	3.12
Max Vel (ft/s):	8.45	8.87
Max Depth (ft):	0.35	0.46

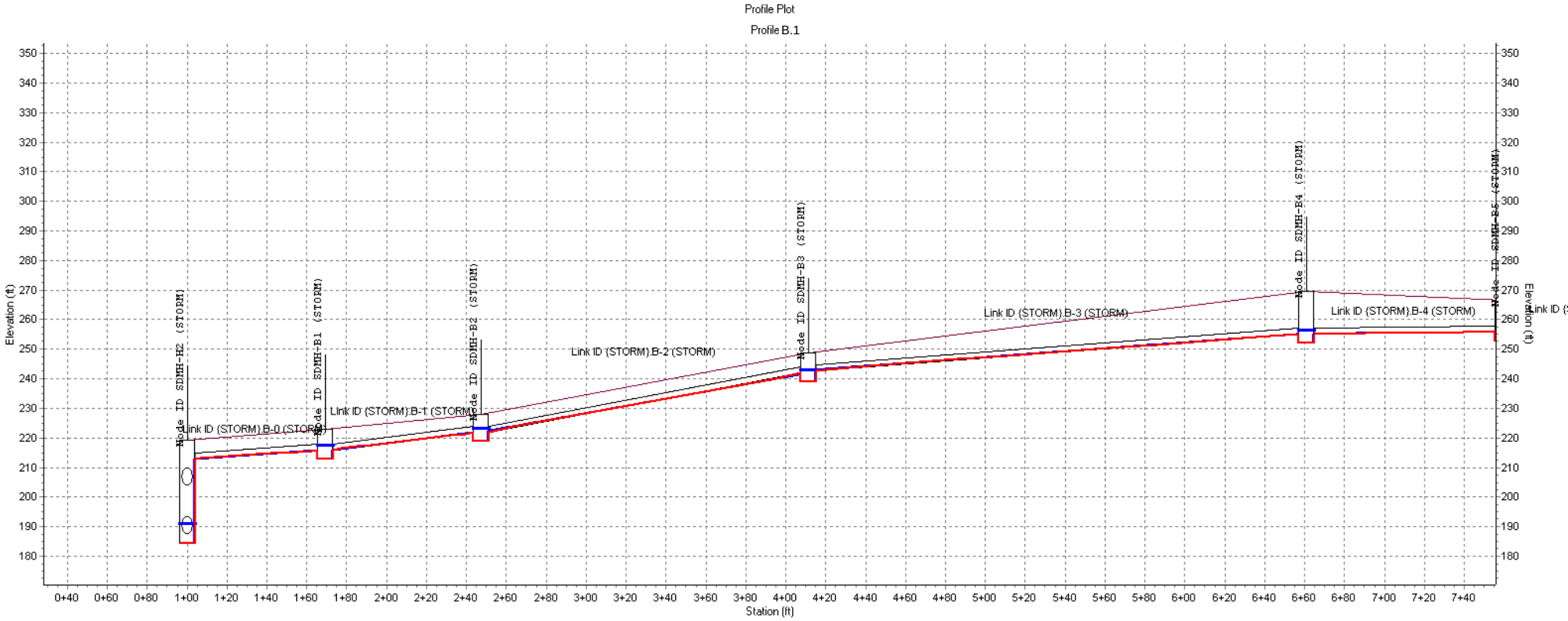
50 YEAR, 1 HR STORM



Node ID:	SDMH-A3 (STORM)	SDFC-A (STORM)	SDMH-A4 (STORM)	SDMH-A5 (STORM)
Rim (ft):	258.09	258.84	260.33	274.77
Invert (ft):	243.28	252.88	250.84	265.11
Min Pipe Cover (ft):	5.47	4.97		3.16
Max HGL (ft):	246.64	253.42	254.53	268.39

Link ID:	(STORM).A-3 (STORM)	(STORM).A-4 (STORM)	(STORM).A-5 (STORM)	
Length (ft):	14.06	29.04	143.05	
Dia (in):	12.00	12.00	12.00	
Slope (ft/ft):	-0.0896	-0.0331	-0.0963	
Up Invert (ft):	251.61	252.88	254.34	
Dn Invert (ft):	252.88	253.84	268.11	
Max Q (cfs):	3.12	3.12	1.77	
Max Vel (ft/s):	8.87	6.21	10.00	
Max Depth (ft):	0.46	0.62	0.28	

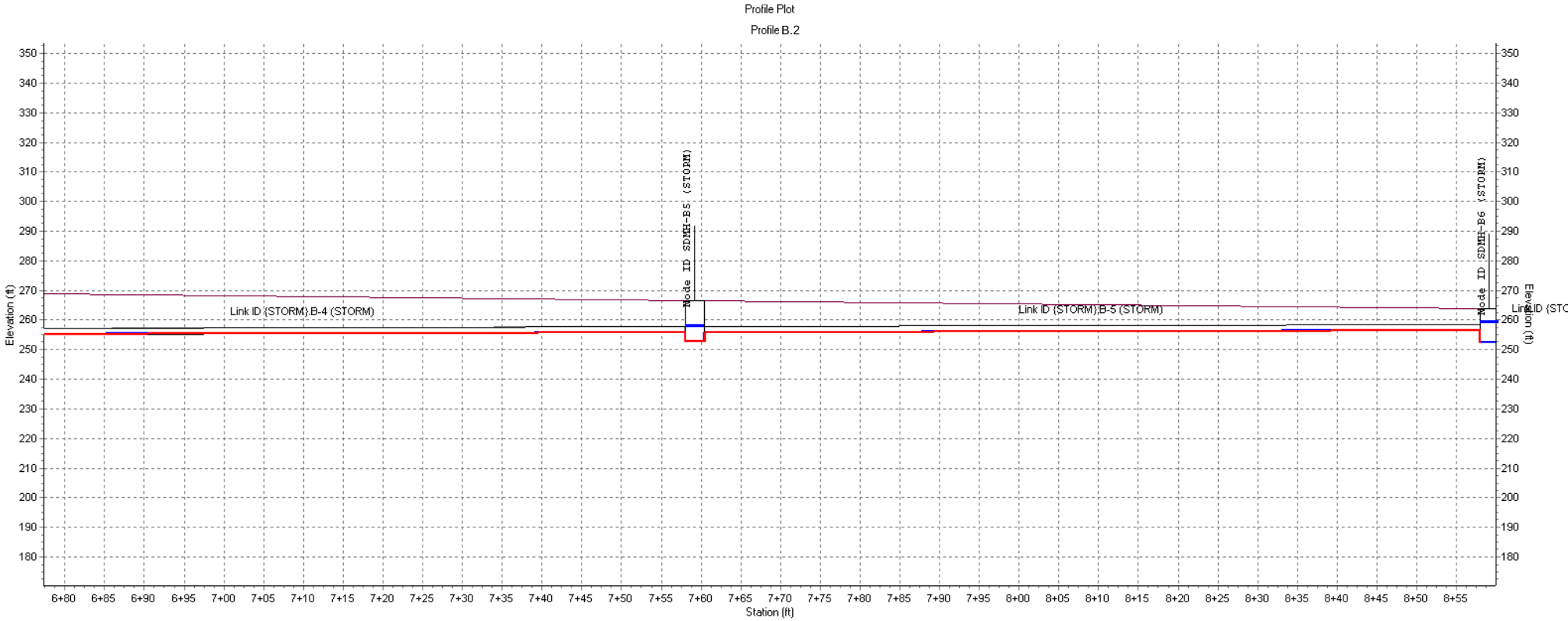
50 YEAR, 1 HR STORM



Node ID:	SDMH-H2 (STORM)	SDMH-B1 (STORM)	SDMH-B2 (STORM)	SDMH-B3 (STORM)	SDMH-B4 (STORM)	
Rim (ft):	219.21	222.77	227.86	248.68	269.51	
Invert (ft):	184.28	212.90	218.98	238.89	252.24	
Min Pipe Cover (ft):	4.21	4.87	3.88	3.83	12.27	
Max HGL (ft):	190.66	217.18	222.80	242.57	256.15	

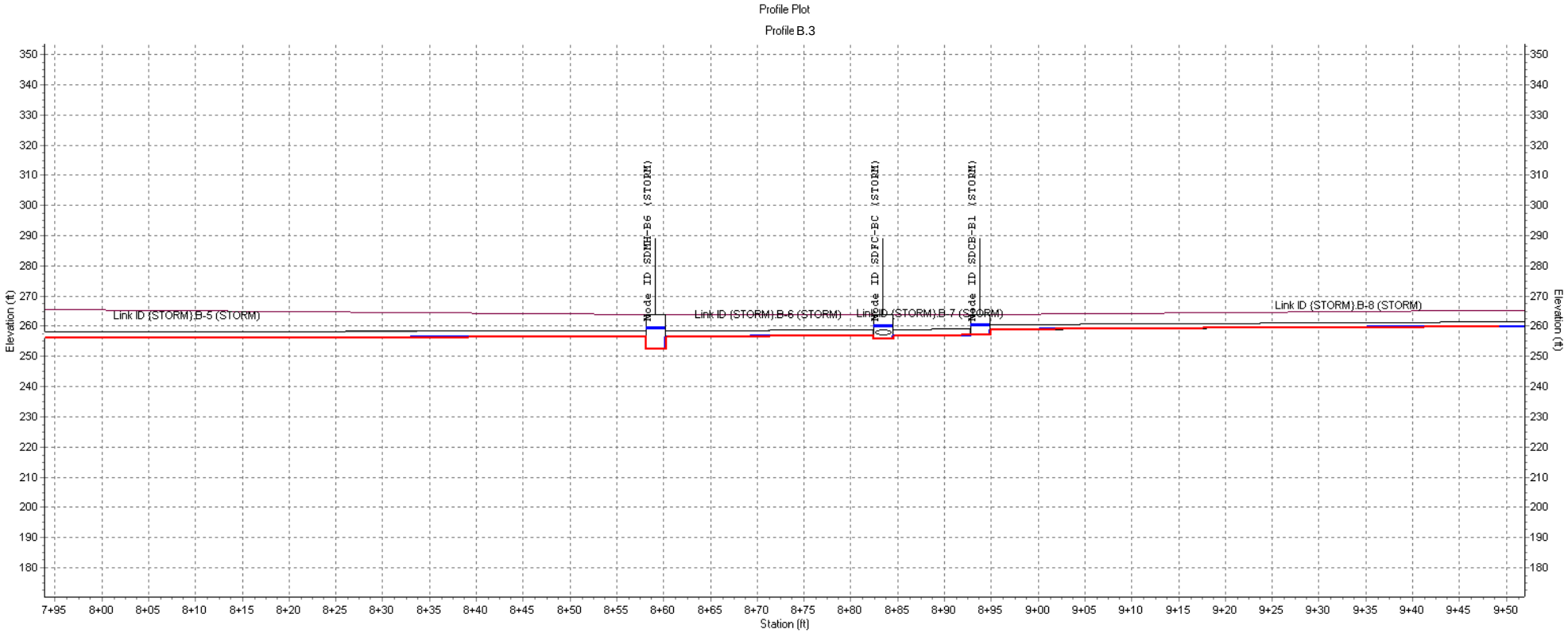
Link ID:	(STORM).B-0 (STORM)	(STORM).B-1 (STORM)	(STORM).B-2 (STORM)	(STORM).B-3 (STORM)	(STORM).B-4 (STORM)
Length (ft):	69.39	78.08	163.81	249.48	98.43
Dia (in):	24.00	24.00	24.00	24.00	24.00
Slope (ft/ft):	0.0417	0.0779	-0.1216	-0.0497	-0.0063
Up Invert (ft):	215.90	221.98	221.98	242.86	255.14
Dn Invert (ft):	213.00	215.90	241.89	255.24	255.76
Max Q (cfs):	17.85	17.85	17.85	17.85	17.85
Max Vel (ft/s):	10.40	11.85	16.52	13.77	6.09
Max Depth (ft):	1.07	1.05	0.75	0.86	1.76

50 YEAR, 1 HR STORM



Node ID:		SDMH-B5 (STORM)	
Rim (ft):		266.49	
Invert (ft):		252.76	
Min Pipe Cover (ft):		8.74	
Max HGL (ft):		257.89	
Link ID:	(STORM).B-4 (STORM)		(STORM).B-5 (STORM)
Length (ft):	98.43		99.98
Dia (in):	24.00		24.00
Slope (ft/ft):	-0.0063		-0.0074
Up Invert (ft):	255.14		255.76
Dn Invert (ft):	255.76		256.49
Max Q (cfs):	17.85		17.85
Max Vel (ft/s):	6.09		5.68
Max Depth (ft):	1.76		2.00

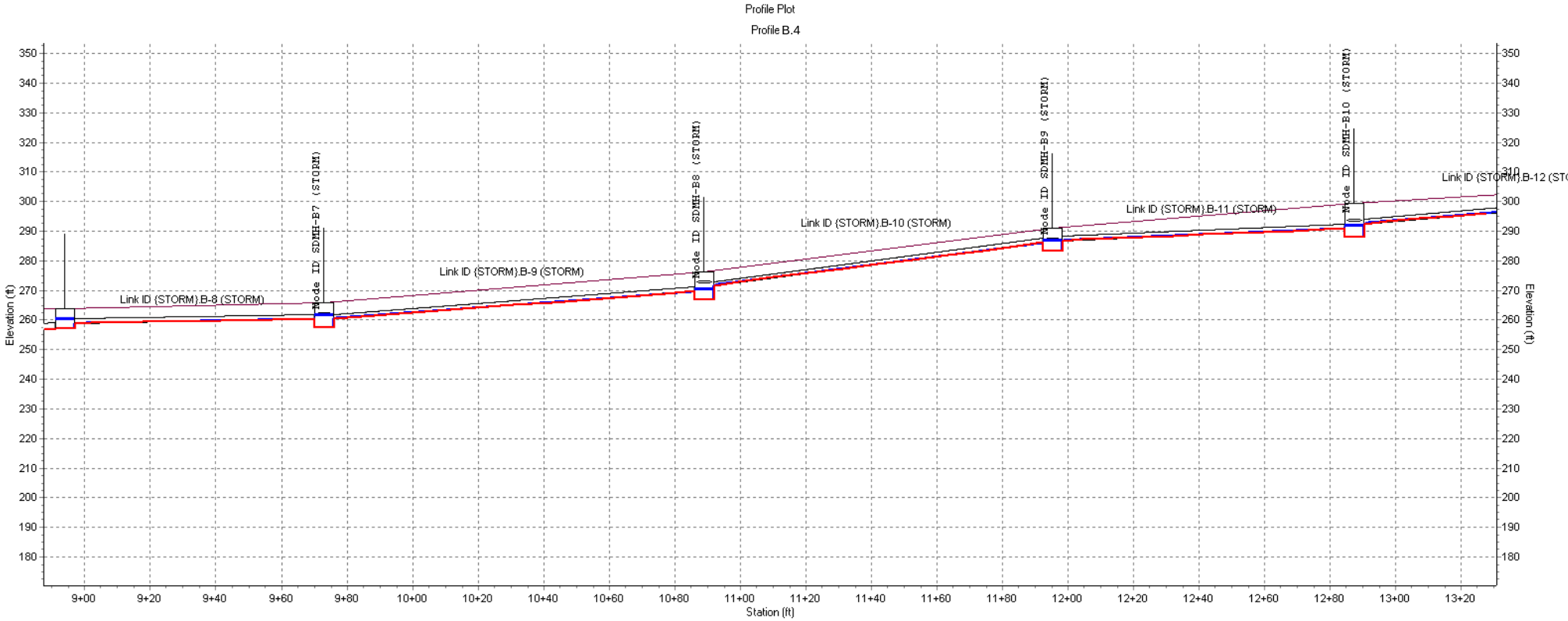
50 YEAR, 1 HR STORM



Node ID:		SDMH-B6 (STORM)	SDFC-BC (STORM)	SDCB-B1 (STORM)	
Rim (ft):		263.83	263.76	263.87	
Invert (ft):		252.54	255.76	257.00	
Min Pipe Cover (ft):		5.34	4.92		
Max HGL (ft):		259.06	259.76	260.04	

Link ID:	{STORM}.B-5 (STORM)	{STORM}.B-6 (STORM)	{STORM}.B-7 (STORM)	{STORM}.B-8 (STORM)
Length (ft):	99.98	24.21	10.44	79.04
Dia (in):	24.00	24.00	24.00	18.00
Slope (ft/ft):	-0.0074	-0.0144	0.0155	-0.0192
Up Invert (ft):	255.76	256.49	257.00	258.86
Dn Invert (ft):	256.49	256.84	256.84	260.38
Max Q (cfs):	17.85	17.85	11.01	8.95
Max Vel (ft/s):	5.68	5.68	3.50	7.35
Max Depth (ft):	2.00	2.00	2.00	1.11

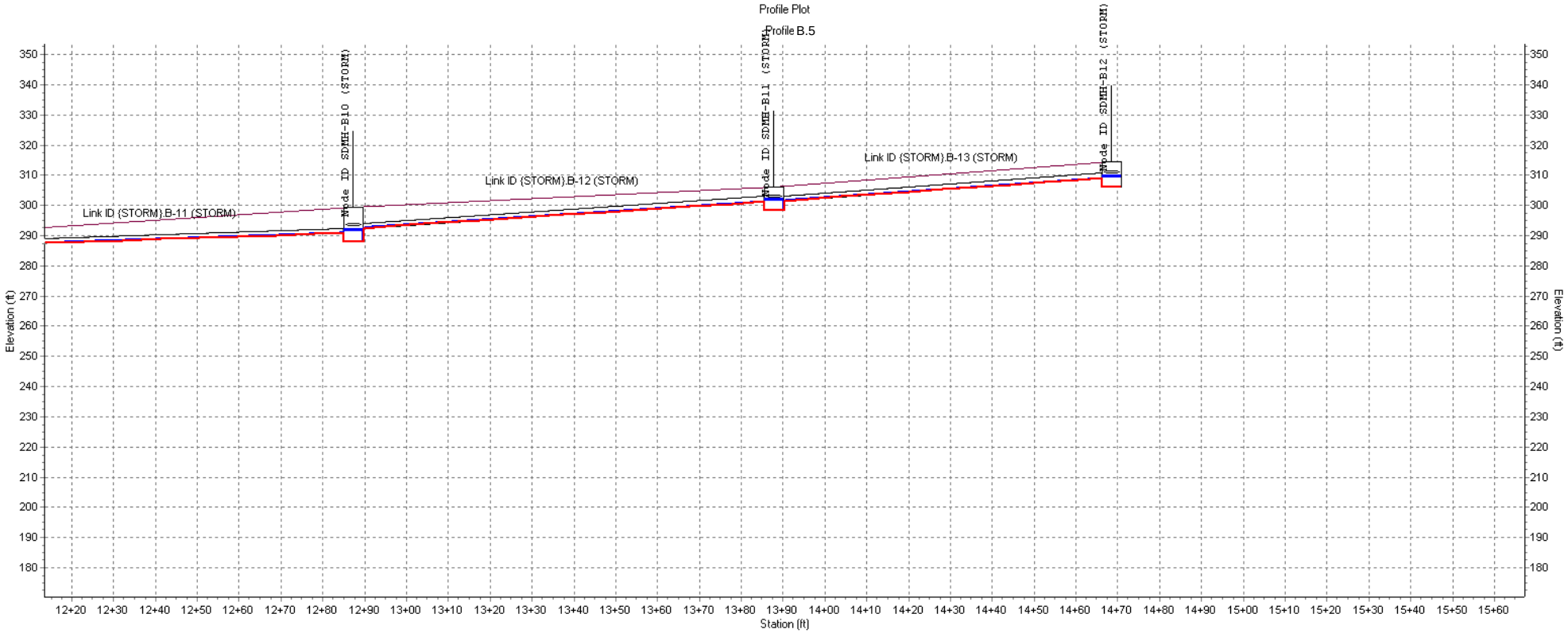
50 YEAR, 1 HR STORM



Node ID:		SDMH-B7 (STORM)	SDMH-B8 (STORM)	SDMH-B9 (STORM)	SDMH-B10 (STORM)
Rim (ft):	263.87	265.79	276.34	291.00	299.48
Invert (ft):	257.00	257.38	266.72	283.30	288.00
Min Pipe Cover (ft):		3.24	3.20	2.70	5.48
Max HGL (ft):	260.04	261.49	270.22	286.73	291.56

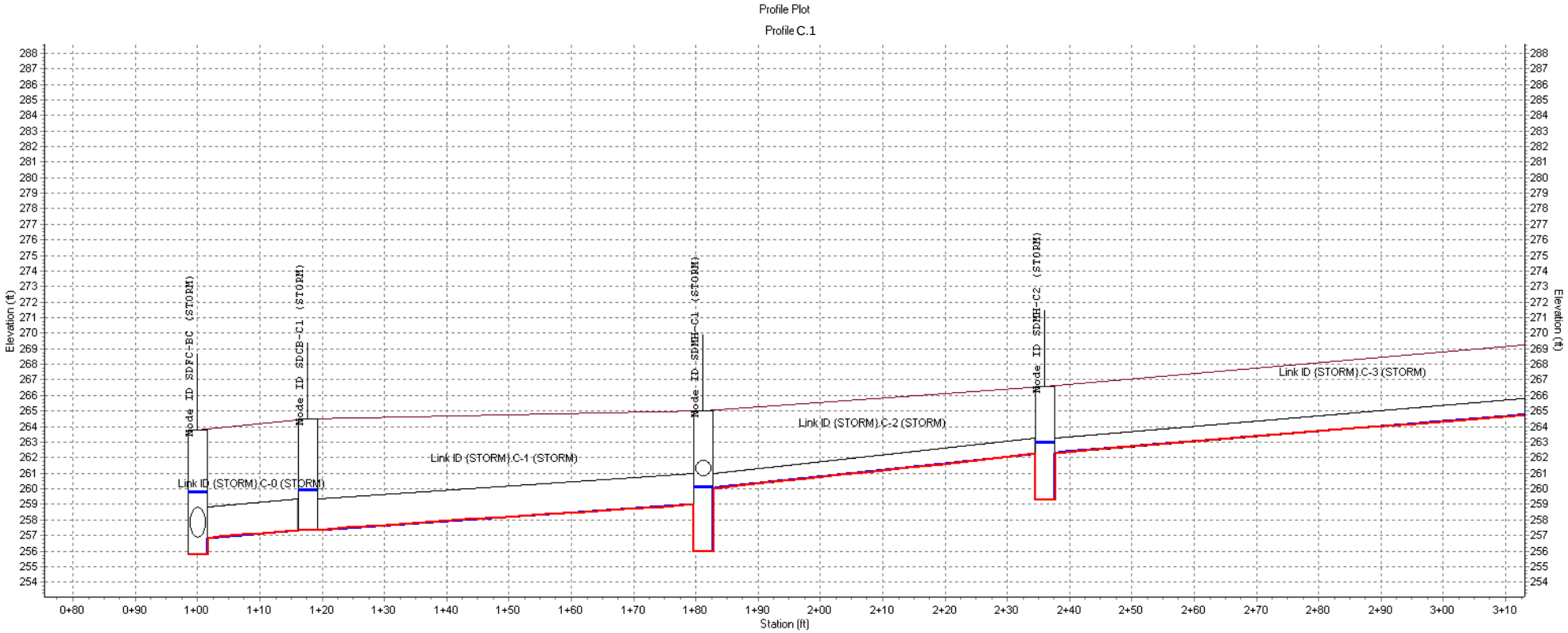
Link ID:		{STORM}.B-8 (STORM)	{STORM}.B-9 (STORM)	{STORM}.B-10 (STORM)	{STORM}.B-11 (STORM)	
Length (ft):		79.04	115.90	106.44	92.10	
Dia (in):		18.00	18.00	18.00	18.00	
Slope (ft/ft):		-0.0192	-0.0806	-0.1393	-0.0456	
Up Invert (ft):		258.86	260.38	271.47	286.80	
Dn Invert (ft):		260.38	269.72	286.30	291.00	
Max Q (cfs):		8.95	7.11	5.67	5.22	
Max Vel (ft/s):		7.35	8.13	14.58	9.47	
Max Depth (ft):		1.11	0.80	0.41	0.52	

50 YEAR, 1 HR STORM



Node ID:		SDMH-B10 (STORM)	SDMH-B11 (STORM)	SDMH-B12 (STORM)
Rim (ft):		299.48	306.18	314.37
Invert (ft):		288.00	298.46	306.23
Min Pipe Cover (ft):		5.48	2.88	2.90
Max HGL (ft):		291.56	301.83	309.44
Link ID:	{STORM}.B-11 (STORM)	{STORM}.B-12 (STORM)	{STORM}.B-13 (STORM)	
Length (ft):	92.10	100.47	80.79	
Dia (in):	18.00	18.00	18.00	
Slope (ft/ft):	-0.0456	-0.0892	-0.0962	
Up Invert (ft):	286.80	292.50	301.46	
Dn Invert (ft):	291.00	301.46	309.23	
Max Q (cfs):	5.22	3.44	1.37	
Max Vel (ft/s):	9.47	10.86	6.28	
Max Depth (ft):	0.52	0.35	0.29	

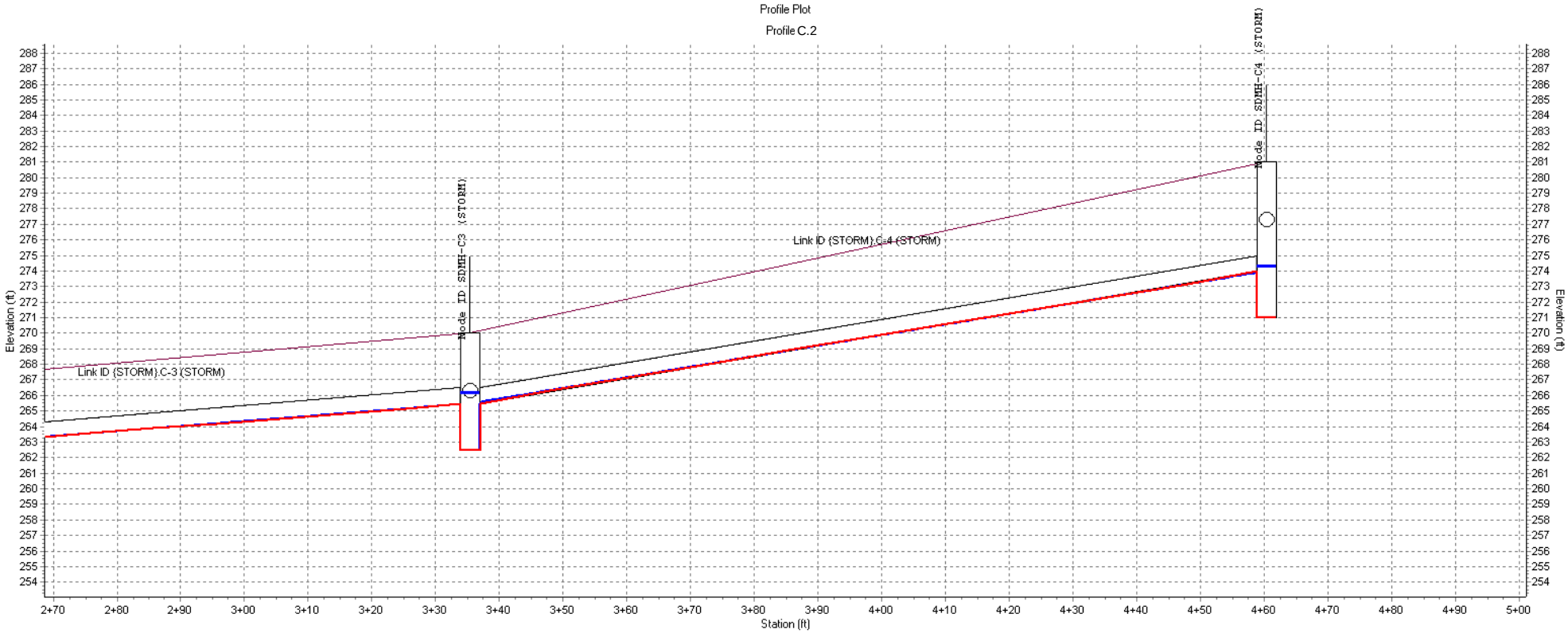
50 YEAR, 1 HR STORM



Node ID:	SDFC-BC (STORM)	SDCB-C1 (STORM)	SDMH-C1 (STORM)	SDMH-C2 (STORM)	
Rim (ft):	263.76	264.52	265.00	266.56	
Invert (ft):	255.76	257.36	256.00	259.28	
Min Pipe Cover (ft):	4.92		3.20	3.28	
Max HGL (ft):	259.76	259.91	260.05	262.94	

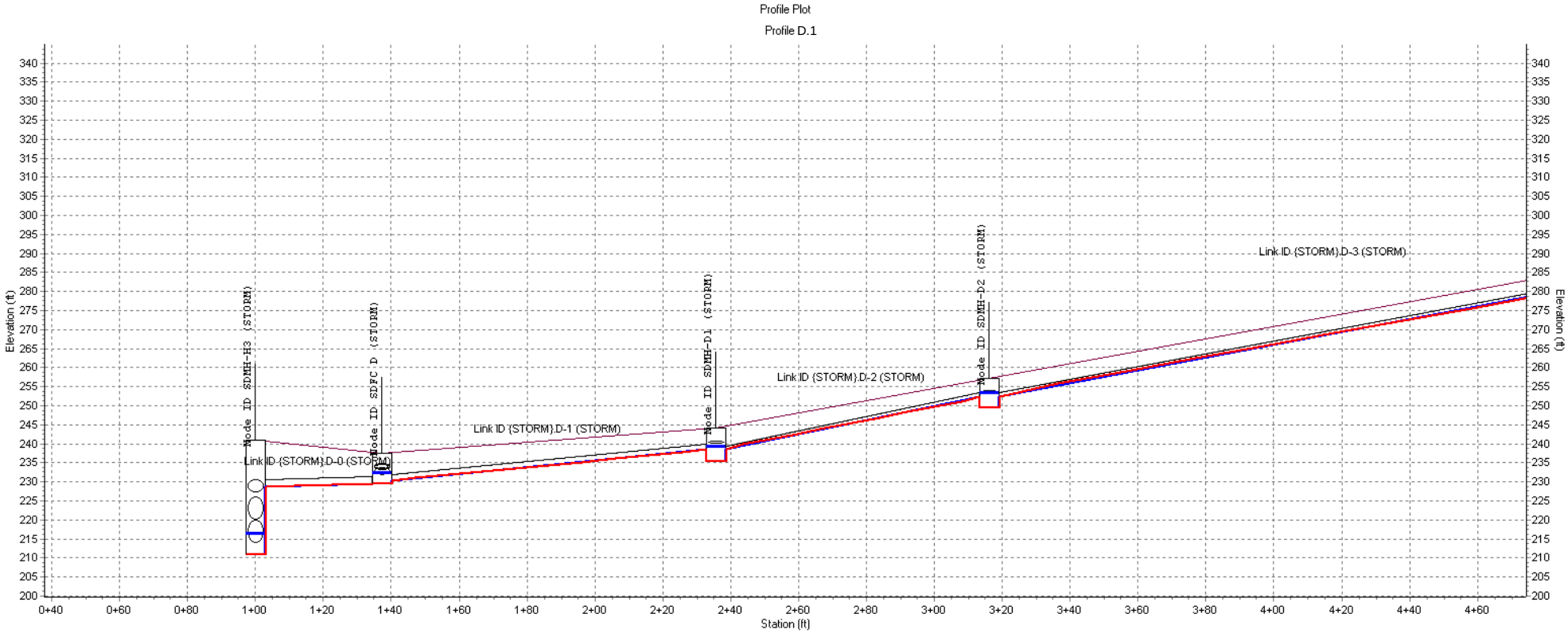
Link ID:	{STORM}.C-0 (STORM)	{STORM}.C-1 (STORM)	{STORM}.C-2 (STORM)	{STORM}.C-3 (STORM)
Length (ft):	17.61	63.57	54.84	99.30
Dia (in):	24.00	24.00	12.00	12.00
Slope (ft/ft):	0.0298	0.0257	-0.0416	-0.0322
Up Invert (ft):	257.36	259.00	260.00	262.28
Dn Invert (ft):	256.84	257.36	262.28	265.48
Max Q (cfs):	7.80	5.38	3.88	3.89
Max Vel (ft/s):	2.84	4.97	8.10	7.31
Max Depth (ft):	2.00	1.52	0.59	0.64

50 YEAR, 1 HR STORM



Node ID:		SDMH-C3 (STORM)	SDMH-C4 (STORM)
Rim (ft):		270.00	281.00
Invert (ft):		262.48	271.00
Min Pipe Cover (ft):		3.20	3.20
Max HGL (ft):		266.11	274.27
Link ID:	{STORM}.C-3 (STORM)	{STORM}.C-4 (STORM)	
Length (ft):	99.30	125.09	
Dia (in):	12.00	12.00	
Slope (ft/ft):	-0.0322	-0.0681	
Up Invert (ft):	262.28	265.48	
Dn Invert (ft):	265.48	274.00	
Max Q (cfs):	3.89	1.53	
Max Vel (ft/s):	7.31	5.65	
Max Depth (ft):	0.64	0.45	

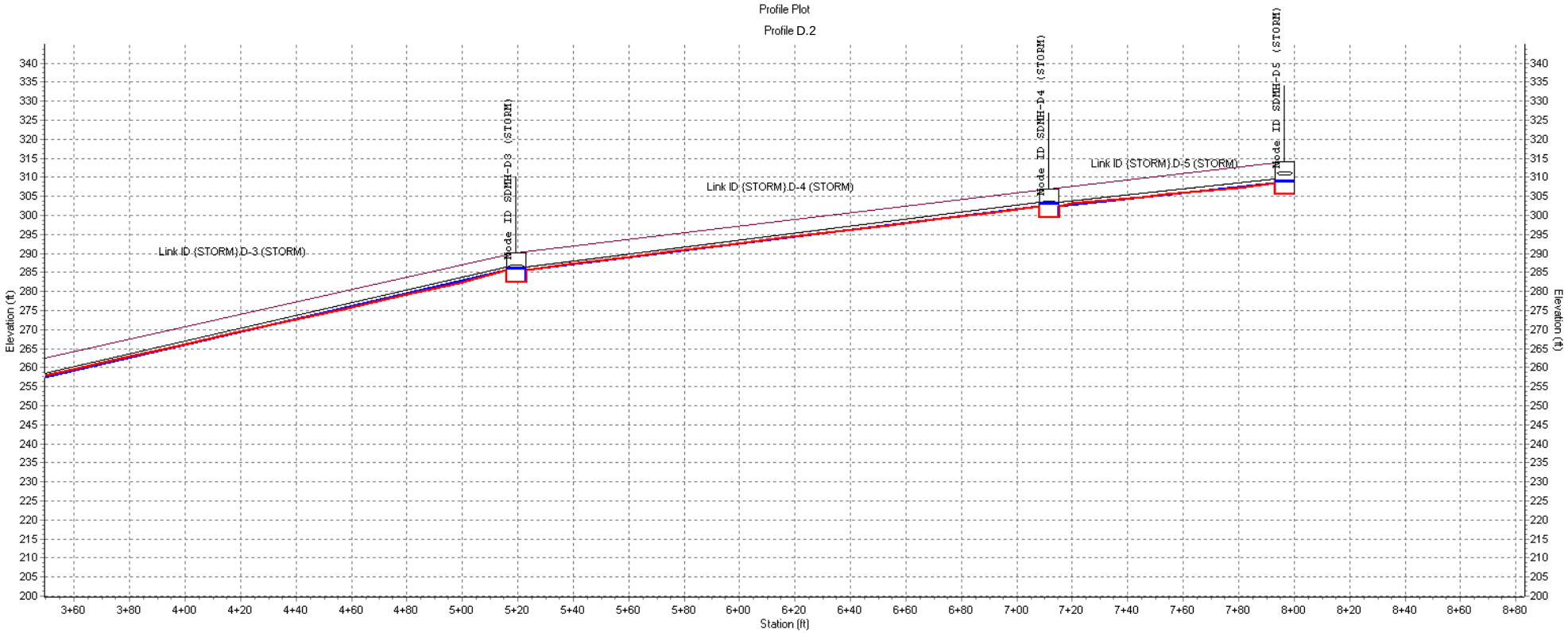
50 YEAR, 1 HR STORM



Node ID:	SDMH-H3 (STORM)	SDFC D (STORM)	SDMH-D1 (STORM)	SDMH-D2 (STORM)	
Rim (ft):	240.96	237.42	244.00	257.09	
Invert (ft):	210.82	229.40	235.43	249.50	
Min Pipe Cover (ft):	10.29	2.67	3.20	3.17	
Max HGL (ft):	216.11	232.21	238.96	253.06	

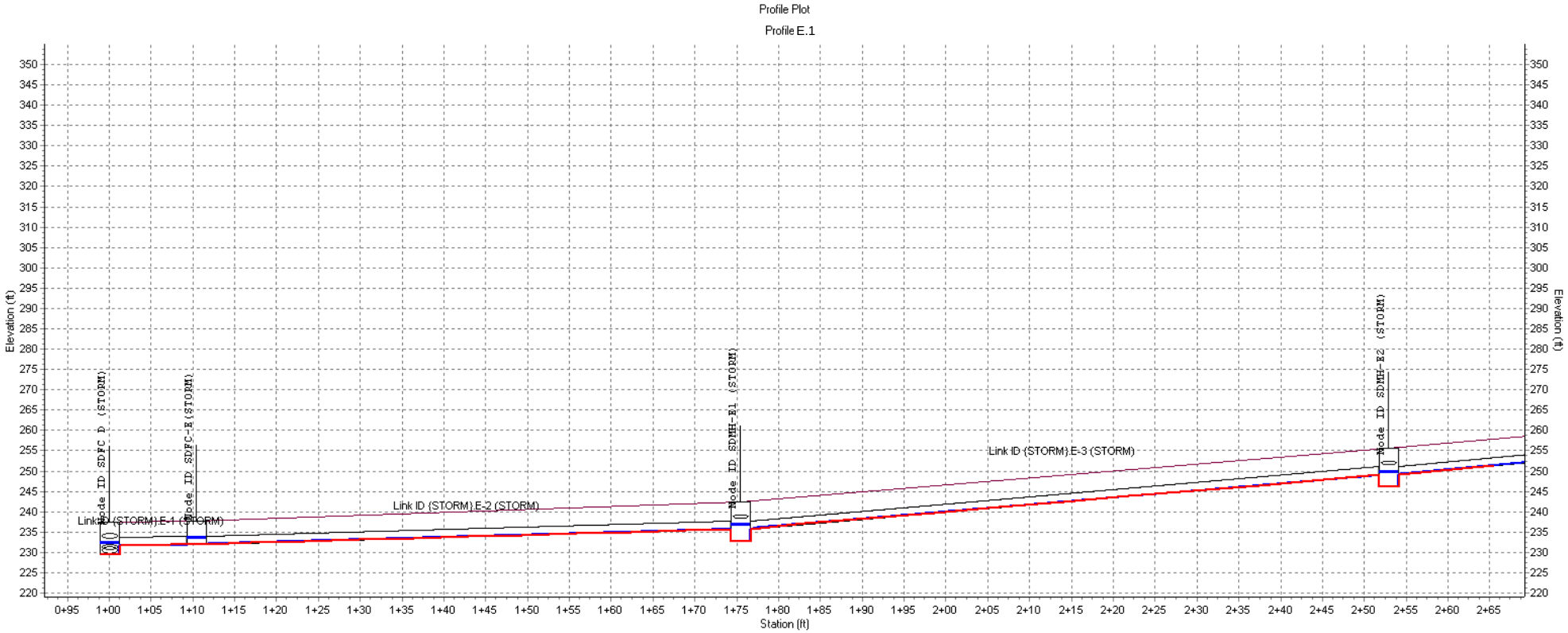
Link ID:	{STORM}.D-0 (STORM)	{STORM}.D-1 (STORM)	{STORM}.D-2 (STORM)	{STORM}.D-3 (STORM)
Length (ft):	37.25	98.20	80.60	203.16
Dia (in):	24.00	18.00	12.00	12.00
Slope (ft/ft):	0.0195	0.0818	0.1746	0.1626
Up Invert (ft):	229.40	238.43	252.50	285.53
Dn Invert (ft):	228.67	230.40	238.43	252.50
Max Q (cfs):	23.96	8.15	7.31	4.99
Max Vel (ft/s):	8.64	11.45	16.61	13.23
Max Depth (ft):	1.65	1.02	0.55	0.48

50 YEAR, 1 HR STORM



Node ID:		SDMH-D3 (STORM)	SDMH-D4 (STORM)	SDMH-D5 (STORM)
Rim (ft):		290.10	306.95	314.00
Invert (ft):		282.53	299.50	305.50
Min Pipe Cover (ft):		3.20	3.32	2.60
Max HGL (ft):		285.93	302.88	308.74
Link ID:	(STORM).D-3 (STORM)	(STORM).D-4 (STORM)	(STORM).D-5 (STORM)	
Length (ft):	203.16	192.04	85.24	
Dia (in):	12.00	12.00	12.00	
Slope (ft/ft):	0.1626	0.0884	0.0704	
Up Invert (ft):	285.53	302.50	308.50	
Dn Invert (ft):	252.50	285.53	302.50	
Max Q (cfs):	4.99	3.04	1.16	
Max Vel (ft/s):	13.23	10.60	5.63	
Max Depth (ft):	0.48	0.39	0.31	

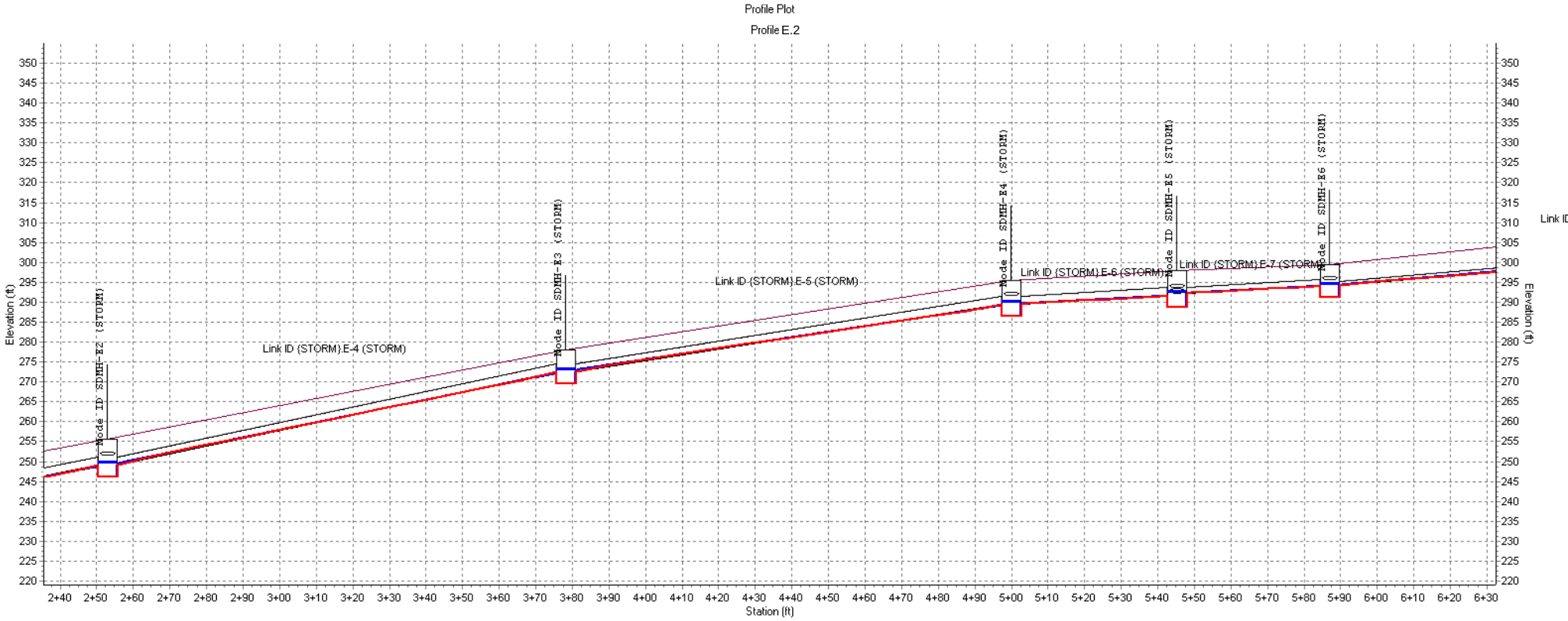
50 YEAR, 1 HR STORM



Node ID:	SDFC D (STORM)	SDFC-E (STORM)	SDMH-E1 (STORM)	SDMH-E2 (STORM)
Rim (ft):	237.42	237.65	242.43	255.60
Invert (ft):	229.40	231.93	232.75	246.13
Min Pipe Cover (ft):	2.67	3.62	3.15	3.20
Max HGL (ft):	232.21	233.46	236.57	249.61

Link ID:	(STORM).E-1 (STORM)	(STORM).E-2 (STORM)	(STORM).E-3 (STORM)	
Length (ft):	10.39	64.97	77.50	
Dia (in):	24.00	24.00	24.00	
Slope (ft/ft):	0.0289	-0.0573	-0.1726	
Up Invert (ft):	231.93	232.03	235.75	
Dn Invert (ft):	231.63	235.75	249.13	
Max Q (cfs):	12.39	12.40	11.38	
Max Vel (ft/s):	6.60	7.19	12.96	
Max Depth (ft):	1.15	1.12	0.65	

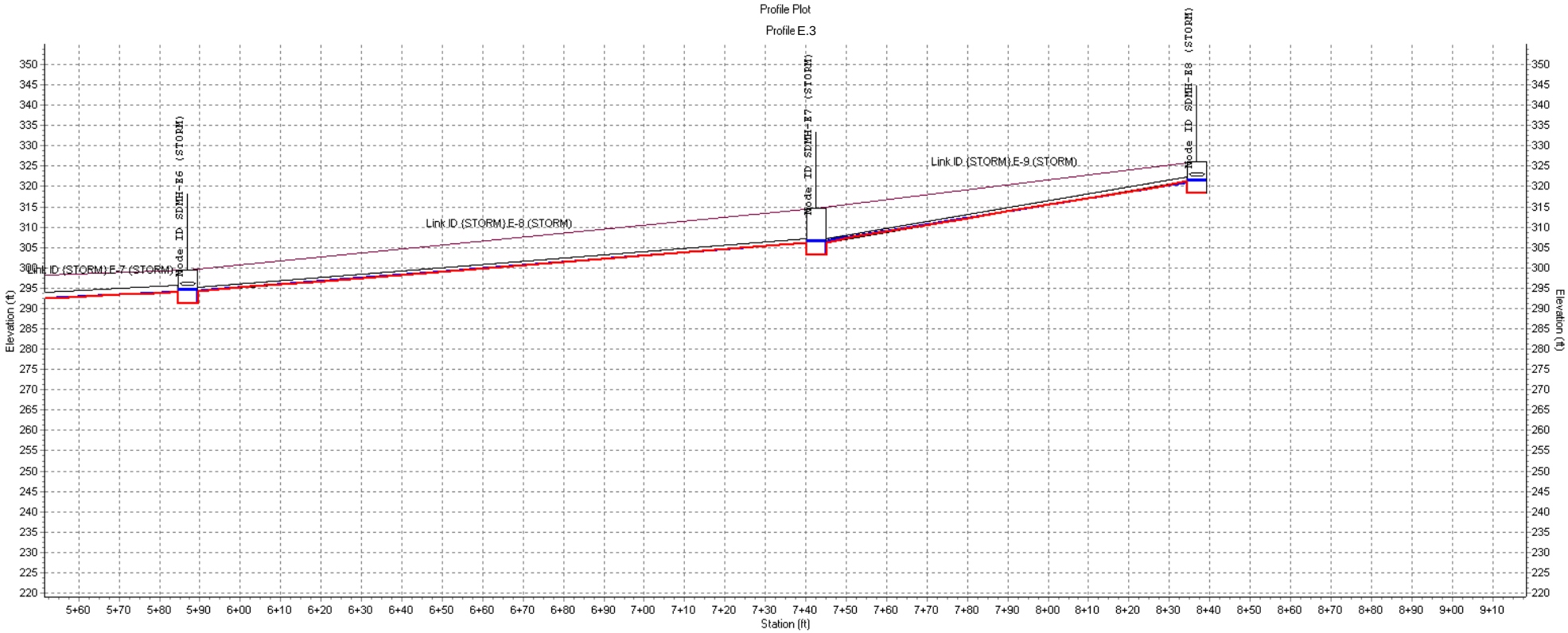
50 YEAR, 1 HR STORM



Node ID:	SDMH-E2 (STORM)	SDMH-E3 (STORM)	SDMH-E4 (STORM)	SDMH-E5 (STORM)	SDMH-E6 (STORM)
Rim (ft):	255.60	278.00	295.57	297.87	299.42
Invert (ft):	246.13	269.66	286.50	288.69	291.15
Min Pipe Cover (ft):	3.20	3.34	3.08	3.37	3.06
Max HGL (ft):	249.61	273.12	290.00	292.40	294.58

Link ID:	(STORM).E-4 (STORM)	(STORM).E-5 (STORM)	(STORM).E-6 (STORM)	(STORM).E-7 (STORM)
Length (ft):	125.26	121.85	45.09	41.79
Dia (in):	24.00	24.00	24.00	18.00
Slope (ft/ft):	-0.1878	-0.1382	-0.0486	-0.0475
Up Invert (ft):	249.13	272.66	289.50	292.16
Dn Invert (ft):	272.66	289.50	291.69	294.15
Max Q (cfs):	9.63	9.63	7.56	2.72
Max Vel (ft/s):	17.11	16.62	9.13	7.42
Max Depth (ft):	0.47	0.48	0.62	0.39

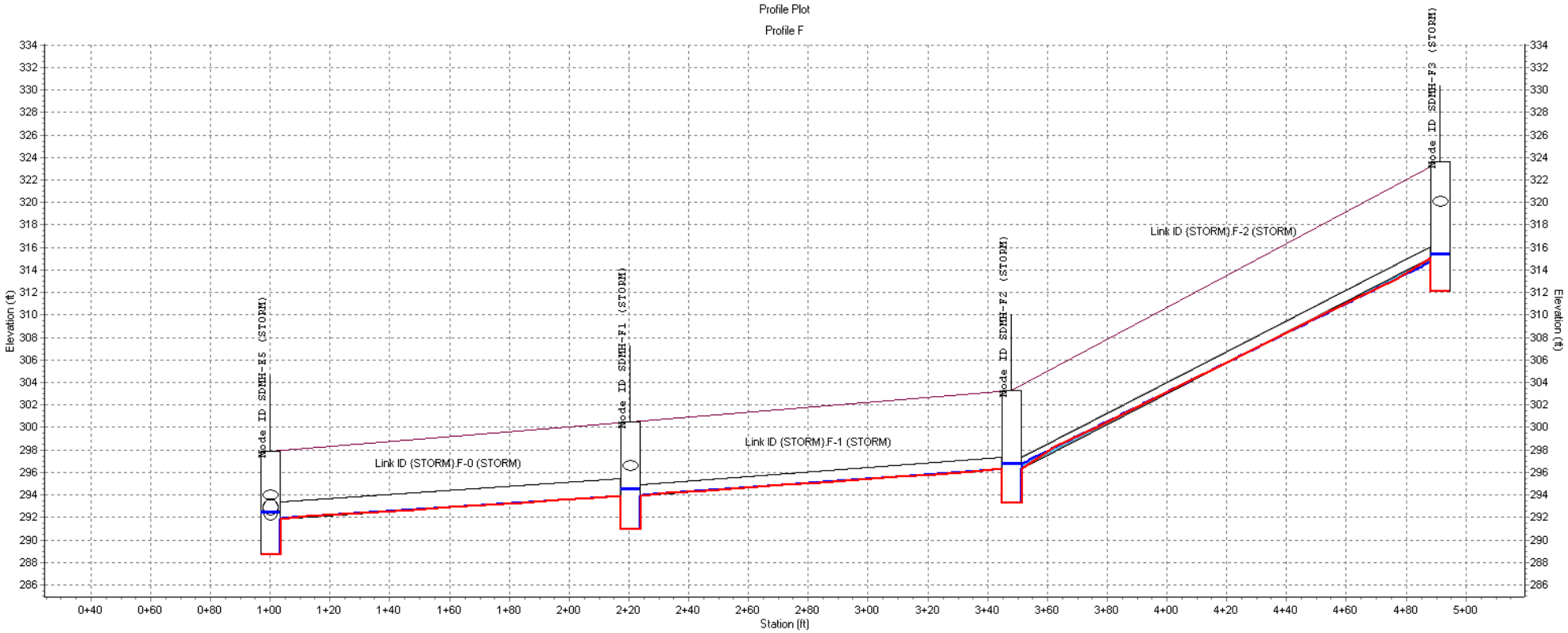
50 YEAR, 1 HR STORM



Node ID:		SDMH-E6 (STORM)	SDMH-E7 (STORM)	SDMH-E8 (STORM)
Rim (ft):		299.42	314.53	326.00
Invert (ft):		291.15	303.26	318.27
Min Pipe Cover (ft):		3.06	7.27	2.77
Max HGL (ft):		294.58	306.52	321.49

Link ID:	(STORM).E-7 (STORM)	(STORM).E-8 (STORM)	(STORM).E-9 (STORM)	
Length (ft):	41.79	155.55	94.31	
Dia (in):	18.00	12.00	12.00	
Slope (ft/ft):	-0.0475	-0.0779	-0.1592	
Up Invert (ft):	292.16	294.15	306.26	
Dn Invert (ft):	294.15	306.26	321.27	
Max Q (cfs):	2.72	1.48	1.49	
Max Vel (ft/s):	7.42	6.61	10.23	
Max Depth (ft):	0.39	0.35	0.24	

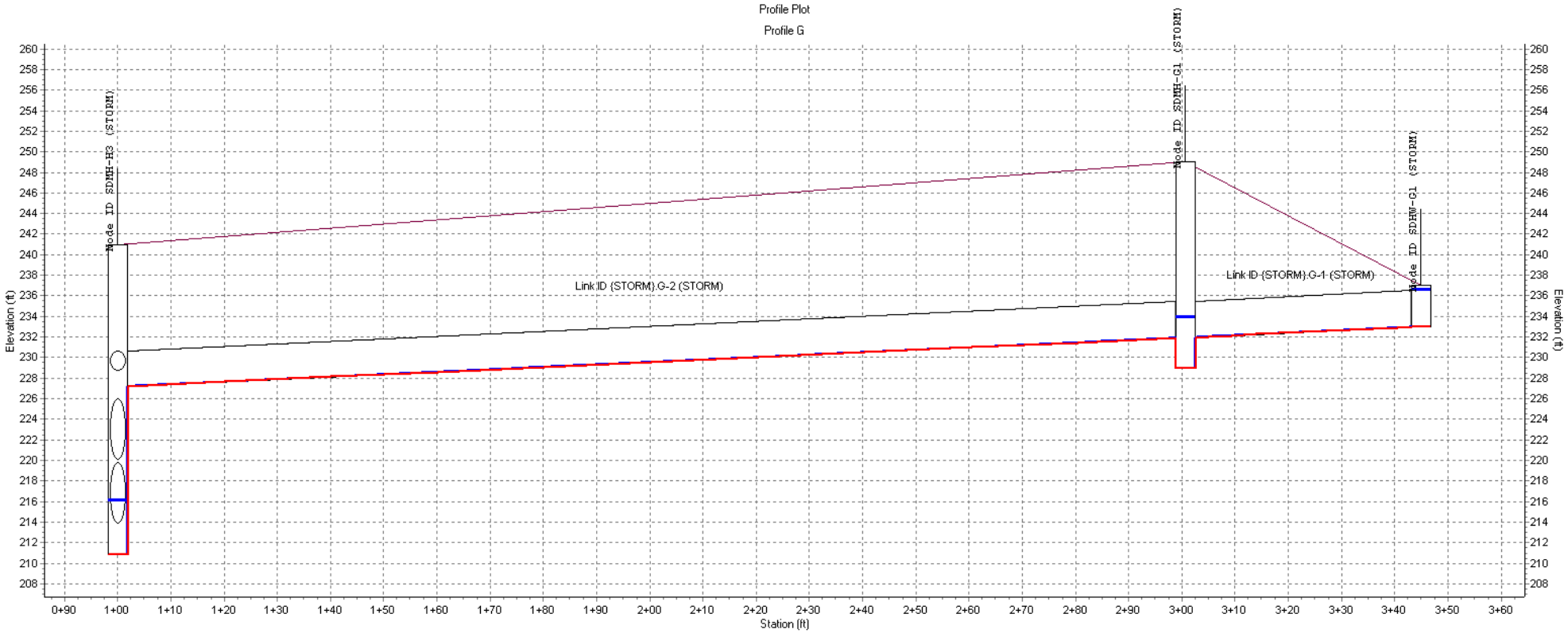
50 YEAR, 1 HR STORM



Node ID:	SDMH-E5 (STORM)	SDMH-F1 (STORM)	SDMH-F2 (STORM)	SDMH-F3 (STORM)
Rim (ft):	297.87	300.47	303.31	323.59
Invert (ft):	288.69	290.93	293.34	312.09
Min Pipe Cover (ft):	3.37	3.41	5.98	3.04
Max HGL (ft):	292.40	294.51	296.73	315.33

Link ID:	(STORM).F-0 (STORM)	(STORM).F-1 (STORM)	(STORM).F-2 (STORM)	
Length (ft):	120.28	127.59	143.28	
Dia (in):	18.00	12.00	12.00	
Slope (ft/ft):	-0.0170	-0.0189	-0.1309	
Up Invert (ft):	291.88	293.93	296.34	
Dn Invert (ft):	293.93	296.34	315.09	
Max Q (cfs):	3.43	1.55	1.55	
Max Vel (ft/s):	5.90	4.13	9.47	
Max Depth (ft):	0.55	0.49	0.32	

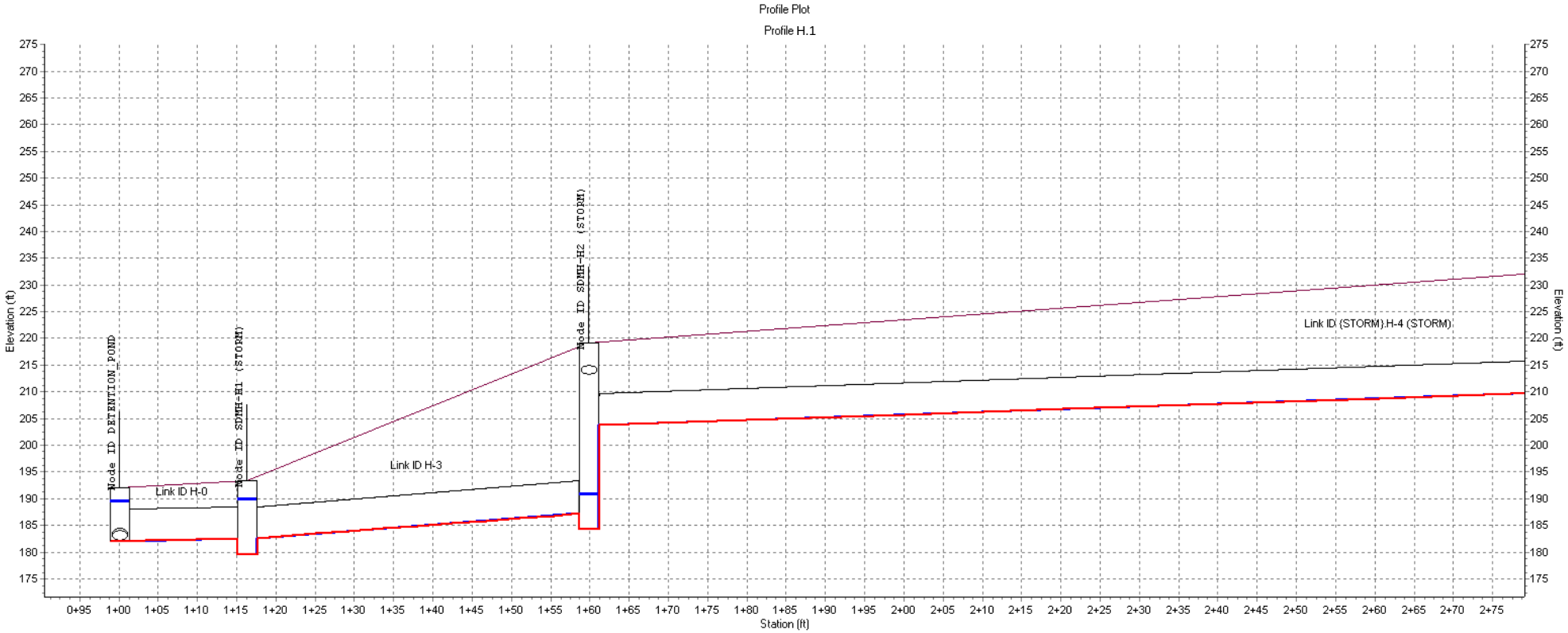
50 YEAR, 1 HR STORM



Node ID:	SDMH-H3 (STORM)		SDMH-G1 (STORM)	SDHW-G1 (STORM)
Rim (ft):	240.96		249.00	237.00
Invert (ft):	210.82		228.94	233.00
Min Pipe Cover (ft):	10.29		13.56	0.50
Max HGL (ft):	216.11		233.93	236.59

Link ID:	(STORM).G-2 (STORM)	(STORM).G-1 (STORM)	
Length (ft):	200.57	44.33	
Dia (in):	42.00	42.00	
Slope (ft/ft):	-0.0238	-0.0239	
Up Invert (ft):	227.17	231.94	
Dn Invert (ft):	231.94	233.00	
Max Q (cfs):	60.11	60.19	
Max Vel (ft/s):	12.51	7.45	
Max Depth (ft):	1.75	2.74	

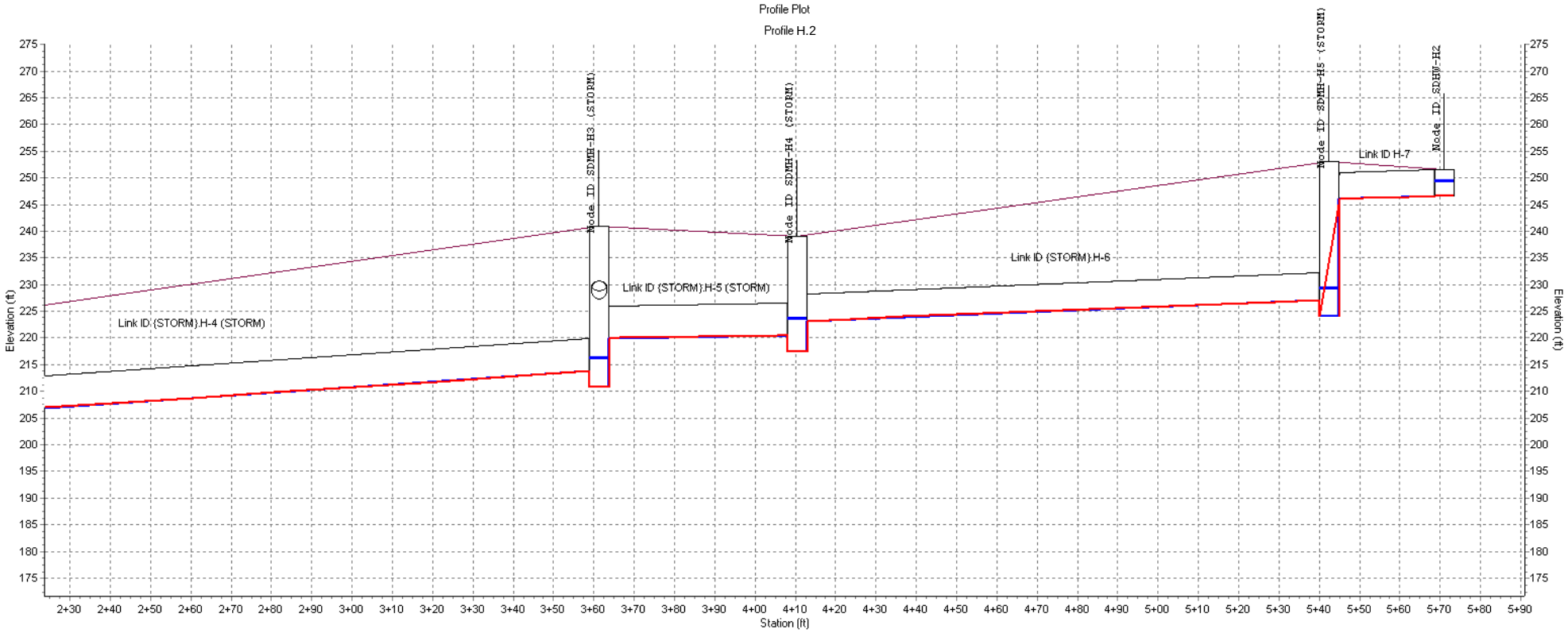
50 YEAR, 1 HR STORM



Node ID:	DETENTION_POND	SDMH-H1 (STORM)	SDMH-H2 (STORM)	
Rim (ft):	192.00	193.34	219.21	
Invert (ft):	182.00	179.49	184.28	
Min Pipe Cover (ft):		4.85	4.21	
Max HGL (ft):	189.44	189.85	190.66	

Link ID:	H-0	H-3	(STORM).H-4 (STORM)
Length (ft):	16.29	43.53	201.47
Dia (in):	72.00	72.00	72.00
Slope (ft/ft):	0.0300	0.1100	0.0499
Up Invert (ft):	182.49	187.28	213.82
Dn Invert (ft):	182.00	182.49	203.76
Max Q (cfs):	180.61	180.94	166.36
Max Vel (ft/s):	10.39	10.72	20.18
Max Depth (ft):	6.00	4.69	2.00

50 YEAR, 1 HR STORM



Node ID:		SDMH-H3 (STORM)	SDMH-H4 (STORM)	SDMH-H5 (STORM)	SDHW-H2
Rim (ft):		240.96	239.00	253.00	251.54
Invert (ft):		210.82	217.45	224.14	246.54
Min Pipe Cover (ft):		10.29	10.81	2.00	0.00
Max HGL (ft):		216.11	223.45	229.21	249.31

Link ID:	{STORM}.H-4 (STORM)	{STORM}.H-5 (STORM)	{STORM}.H-6	H-7	
Length (ft):	201.47	49.07	131.86	28.58	
Dia (in):	72.00	72.00	60.00	60.00	
Slope (ft/ft):	0.0499	0.0100	0.0300	0.0189	
Up Invert (ft):	213.82	220.45	227.14	246.54	
Dn Invert (ft):	203.76	219.96	223.19	246.00	
Max Q (cfs):	166.36	90.04	90.07	90.22	
Max Vel (ft/s):	20.18	8.35	14.25	10.61	
Max Depth (ft):	2.00	2.44	1.79	2.24	

APPENDIX III

Inlet and Swale Calculations

- Existing Inlet Evaluation Calculations
- On-Site Swale Calculations
- Rock Catchment Ditch Calculations
- Preservation Swale Calculations

Prepared By:
Jonathan Hartford and Rebecca Matlack

Reviewed By:
Kimo Unten

Existing Inlet Evaluation Calculations

Worksheet for Inlet Grate_C-12

Project Description		
Solve For	Discharge	
Input Data		
Headwater Elevation	2.00 ft	
Centroid Elevation	0.00 ft	
Tailwater Elevation	0.00 ft	
Discharge Coefficient	0.650	
Opening Width	3.00 ft	
Opening Height	1.3 ft	(Assumed 50% Clogged)
Results		
Discharge	28.76 cfs	> 25.2 cfs
Headwater Height Above Centroid	2.00 ft	
Tailwater Height Above Centroid	0.00 ft	
Flow Area	3.9 ft²	
Velocity	7.37 ft/s	

Worksheet for Inlet Grate_C-13

Project Description		
Solve For	Discharge	
Input Data		
Headwater Elevation	1.33 ft	
Centroid Elevation	0.00 ft	
Tailwater Elevation	0.00 ft	
Discharge Coefficient	0.650	
Opening Width	3.00 ft	
Opening Height	1.3 ft	(Assumed 50% Clogged)
Results		
Discharge	23.70 cfs	> 10.9 cfs
Headwater Height Above Centroid	1.33 ft	
Tailwater Height Above Centroid	0.00 ft	
Flow Area	3.9 ft²	
Velocity	6.01 ft/s	

Worksheet for Inlet Grate_A-7

Project Description		
Solve For	Discharge	
Input Data		
Headwater Elevation	2.00 ft	
Centroid Elevation	0.00 ft	
Tailwater Elevation	0.00 ft	
Discharge Coefficient	0.650	
Opening Width	3.00 ft	
Opening Height	1.3 ft	(Assumed 50% Clogged)
Results		
Discharge	29.07 cfs	> 18.7 cfs
Headwater Height Above Centroid	2.00 ft	
Tailwater Height Above Centroid	0.00 ft	
Flow Area	3.9 ft²	
Velocity	7.37 ft/s	

Worksheet for Inlet Pipe A-6

Project Description	
Solve For	Discharge

Input Data		
Headwater Elevation	15.00 ft	
Centroid Elevation	2.00 ft	
Tailwater Elevation	2.60 ft	
Discharge Coefficient	0.640	
Opening Area	8.8 ft²	(Assumed 30% Clogged)

Results		
Discharge	159.09 cfs	< 204.3 cfs
Headwater Height Above Centroid	13.00 ft	
Tailwater Height Above Centroid	0.60 ft	
Velocity	18.08 ft/s	

On-Site Swale Calculations

Worksheet for Grass Swale

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.200
Channel Slope	0.020 ft/ft
Left Side Slope	5.000 H:V
Right Side Slope	5.000 H:V
Bottom Width	3.00 ft
Discharge	5.00 cfs

Results	
Normal Depth	11.0 in
Flow Area	7.0 ft²
Wetted Perimeter	12.4 ft
Hydraulic Radius	6.8 in
Top Width	12.18 ft
Critical Depth	4.3 in
Critical Slope	0.925 ft/ft
Velocity	0.72 ft/s
Velocity Head	0.01 ft
Specific Energy	0.93 ft
Froude Number	0.167
Flow Type	Subcritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	11.0 in
Critical Depth	4.3 in
Channel Slope	0.020 ft/ft
Critical Slope	0.925 ft/ft

Worksheet for Retaining Wall Swale

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.016
Channel Slope	0.020 ft/ft
Left Side Slope	0.000 H:V
Right Side Slope	1.000 H:V
Bottom Width	2.00 ft
Discharge	6.45 cfs

Results	
Normal Depth	5.5 in
Flow Area	1.0 ft²
Wetted Perimeter	3.1 ft
Hydraulic Radius	4.0 in
Top Width	2.46 ft
Critical Depth	7.8 in
Critical Slope	0.007 ft/ft
Velocity	6.27 ft/s
Velocity Head	0.61 ft
Specific Energy	1.07 ft
Froude Number	1.710
Flow Type	Supercritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.5 in
Critical Depth	7.8 in
Channel Slope	0.020 ft/ft
Critical Slope	0.007 ft/ft

Worksheet for Edge of Fill Swale

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.016
Channel Slope	0.020 ft/ft
Left Side Slope	0.000 H:V
Right Side Slope	1.000 H:V
Bottom Width	2.00 ft
Discharge	2.24 cfs

Results	
Normal Depth	2.9 in
Flow Area	0.5 ft²
Wetted Perimeter	2.6 ft
Hydraulic Radius	2.4 in
Top Width	2.24 ft
Critical Depth	4.0 in
Critical Slope	0.007 ft/ft
Velocity	4.43 ft/s
Velocity Head	0.31 ft
Specific Energy	0.54 ft
Froude Number	1.645
Flow Type	Supercritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	2.9 in
Critical Depth	4.0 in
Channel Slope	0.020 ft/ft
Critical Slope	0.007 ft/ft

Worksheet for Lower Preservation Swale

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.023
Channel Slope	0.070 ft/ft
Constructed Depth	15.0 in
Constructed Top Width	5.50 ft
Discharge	3.60 cfs

Results	
Normal Depth	3.9 in
Flow Area	0.6 ft²
Wetted Perimeter	2.9 ft
Hydraulic Radius	2.5 in
Top Width	2.79 ft
Critical Depth	5.8 in
Critical Slope	0.012 ft/ft
Velocity	6.00 ft/s
Velocity Head	0.56 ft
Specific Energy	0.88 ft
Froude Number	2.280
Flow Type	Supercritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	3.9 in
Critical Depth	5.8 in
Channel Slope	0.070 ft/ft
Critical Slope	0.012 ft/ft

Rock Catchment Ditch Calculations

MAUKA ROCK CATCHMENT SWALE: 10 YEAR, 1 HOUR STORM @ MIN SWALE SLOPE

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.017
Channel Slope	1.000 %
Left Side Slope	0.500 H:V
Right Side Slope	0.500 H:V
Bottom Width	8.00 ft
Discharge	65.09 cfs

Results	
Normal Depth	11.9 in
Flow Area	8.5 ft²
Wetted Perimeter	10.2 ft
Hydraulic Radius	9.9 in
Top Width	8.99 ft
Critical Depth	14.9 in
Critical Slope	0.492 %
Velocity	7.70 ft/s
Velocity Head	0.92 ft
Specific Energy	1.92 ft
Froude Number	1.400
Flow Type	Supercritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	11.9 in
Critical Depth	14.9 in
Channel Slope	1.000 %
Critical Slope	0.492 %

MAUKA ROCK CATCHMENT SWALE: 10 YEAR, 1 HOUR STORM @ AVG SWALE SLOPE

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.017
Channel Slope	10.000 %
Left Side Slope	0.500 H:V
Right Side Slope	0.500 H:V
Bottom Width	8.00 ft
Discharge	65.09 cfs

Results	
Normal Depth	5.9 in
Flow Area	4.0 ft²
Wetted Perimeter	9.1 ft
Hydraulic Radius	5.3 in
Top Width	8.49 ft
Critical Depth	14.9 in
Critical Slope	0.492 %
Velocity	16.09 ft/s
Velocity Head	4.02 ft
Specific Energy	4.51 ft
Froude Number	4.110
Flow Type	Supercritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.9 in
Critical Depth	14.9 in
Channel Slope	10.000 %
Critical Slope	0.492 %

MAUKA ROCK CATCHMENT SWALE: 10 YEAR, 1 HOUR STORM @ MAX SWALE SLOPE

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.017
Channel Slope	20.000 %
Left Side Slope	0.500 H:V
Right Side Slope	0.500 H:V
Bottom Width	8.00 ft
Discharge	65.09 cfs

Results	
Normal Depth	4.8 in
Flow Area	3.3 ft²
Wetted Perimeter	8.9 ft
Hydraulic Radius	4.4 in
Top Width	8.40 ft
Critical Depth	14.9 in
Critical Slope	0.492 %
Velocity	20.01 ft/s
Velocity Head	6.22 ft
Specific Energy	6.62 ft
Froude Number	5.668
Flow Type	Supercritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	4.8 in
Critical Depth	14.9 in
Channel Slope	20.000 %
Critical Slope	0.492 %

Preservation Swale Calculations

PRESERVATION SWALE: 10 YEAR, 1 HOUR STORM @ MIN SWALE SLOPE

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.017
Channel Slope	2.000 %
Left Side Slope	1.000 H:V
Right Side Slope	1.000 H:V
Bottom Width	2.00 ft
Discharge	47.63 cfs

Results	
Normal Depth	16.3 in
Flow Area	4.5 ft²
Wetted Perimeter	5.8 ft
Hydraulic Radius	9.4 in
Top Width	4.71 ft
Critical Depth	22.8 in
Critical Slope	0.534 %
Velocity	10.47 ft/s
Velocity Head	1.70 ft
Specific Energy	3.06 ft
Froude Number	1.879
Flow Type	Supercritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	16.3 in
Critical Depth	22.8 in
Channel Slope	2.000 %
Critical Slope	0.534 %

PRESERVATION SWALE: 10 YEAR, 1 HOUR STORM @ AVG SWALE SLOPE

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.017
Channel Slope	10.000 %
Left Side Slope	1.000 H:V
Right Side Slope	1.000 H:V
Bottom Width	2.00 ft
Discharge	47.63 cfs

Results	
Normal Depth	10.5 in
Flow Area	2.5 ft²
Wetted Perimeter	4.5 ft
Hydraulic Radius	6.8 in
Top Width	3.76 ft
Critical Depth	22.8 in
Critical Slope	0.534 %
Velocity	18.85 ft/s
Velocity Head	5.52 ft
Specific Energy	6.40 ft
Froude Number	4.052
Flow Type	Supercritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	10.5 in
Critical Depth	22.8 in
Channel Slope	10.000 %
Critical Slope	0.534 %

PRESERVATION SWALE: 10 YEAR, 1 HOUR STORM @ MAX SWALE SLOPE

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.017
Channel Slope	28.330 %
Left Side Slope	1.000 H:V
Right Side Slope	1.000 H:V
Bottom Width	2.00 ft
Discharge	47.63 cfs

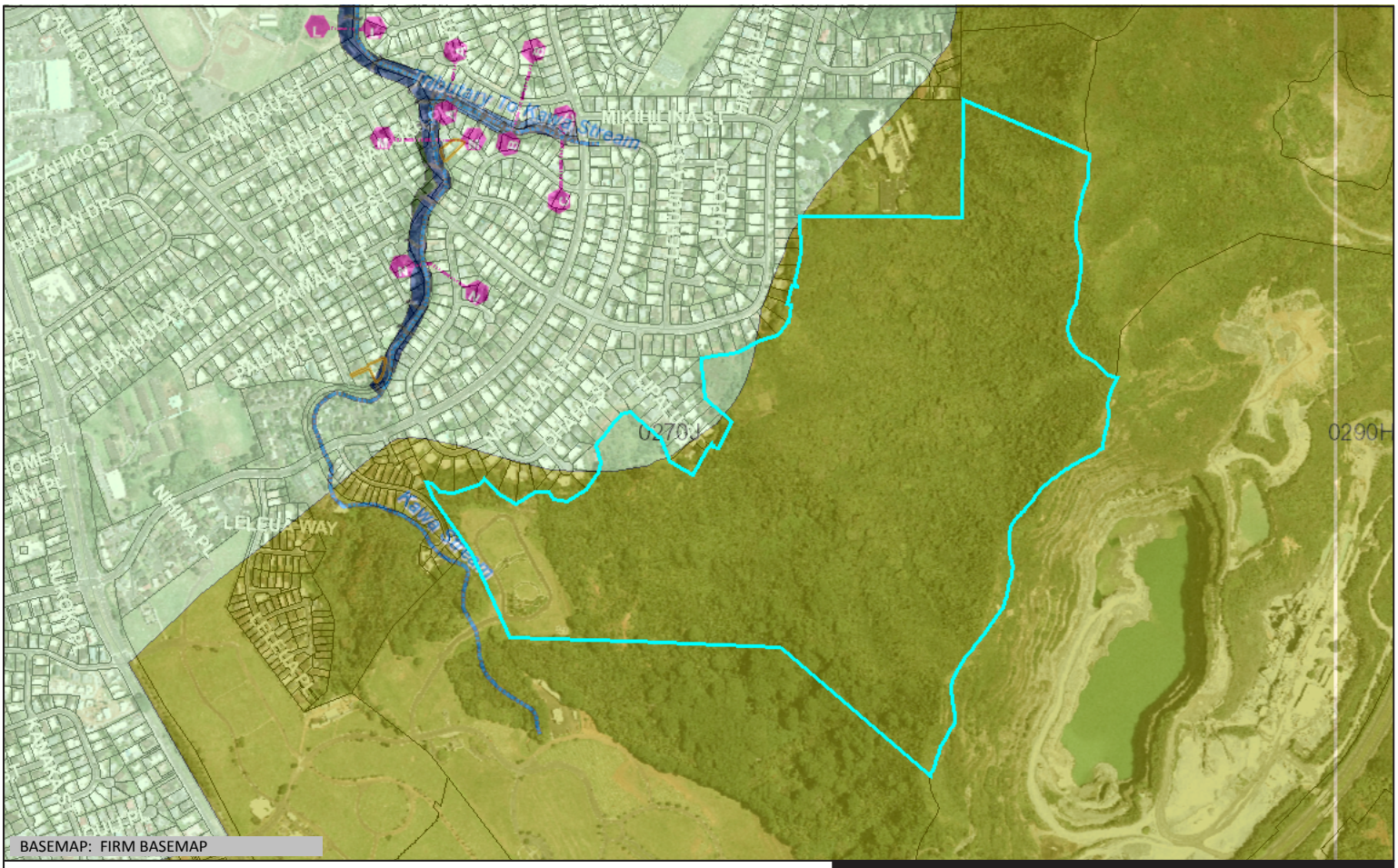
Results	
Normal Depth	7.9 in
Flow Area	1.7 ft²
Wetted Perimeter	3.9 ft
Hydraulic Radius	5.4 in
Top Width	3.31 ft
Critical Depth	22.8 in
Critical Slope	0.534 %
Velocity	27.39 ft/s
Velocity Head	11.66 ft
Specific Energy	12.31 ft
Froude Number	6.661
Flow Type	Supercritical

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

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	7.9 in
Critical Depth	22.8 in
Channel Slope	28.330 %
Critical Slope	0.534 %

APPENDIX IV

FEMA Flood Map



Flood Hazard Assessment Report

www.hawaiinfip.org

Property Information

COUNTY:	HONOLULU
TMK NO:	(1) 4-5-033:001
WATERSHED:	KAWA; KAWAINUI
PARCEL ADDRESS:	ADDRESS NOT FOUND KANEOHE, HI 96744

Notes:

Flood Hazard Information

FIRM INDEX DATE:	NOVEMBER 05, 2014
LETTER OF MAP CHANGE(S):	NONE
FEMA FIRM PANEL:	15003C0270J
PANEL EFFECTIVE DATE:	NOVEMBER 05, 2014

THIS PROPERTY IS WITHIN A TSUNAMI EVACUTION ZONE: NO
FOR MORE INFO, VISIT: http://www.scd.hawaii.gov/

THIS PROPERTY IS WITHIN A DAM EVACUATION ZONE: NO
FOR MORE INFO, VISIT: http://dlnreng.hawaii.gov/dam/

0 600 1,200 ft

Disclaimer: The Hawaii Department of Land and Natural Resources (DLNR) assumes no responsibility arising from the use, accuracy, completeness, and timeliness of any information contained in this report. Viewers/Users are responsible for verifying the accuracy of the information and agree to indemnify the DLNR, its officers, and employees from any liability which may arise from its use of its data or information.

If this map has been identified as 'PRELIMINARY', please note that it is being provided for informational purposes and is not to be used for flood insurance rating. Contact your county floodplain manager for flood zone determinations to be used for compliance with local floodplain management regulations.

FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND
(*Note: legend does not correspond with NFHL)*

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD - The 1% annual chance flood (100-year), also know as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. SFHAs include Zone A, AE, AH, AO, V, and VE. The Base Flood Elevation (BFE) is the water surface elevation of the 1% annual chance flood. Mandatory flood insurance purchase applies in these zones:

	Zone A: No BFE determined.
	Zone AE: BFE determined.
	Zone AH: Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
	Zone AO: Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
	Zone V: Coastal flood zone with velocity hazard (wave action); no BFE determined.
	Zone VE: Coastal flood zone with velocity hazard (wave action); BFE determined.
	Zone AEF: Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.

NON-SPECIAL FLOOD HAZARD AREA - An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.

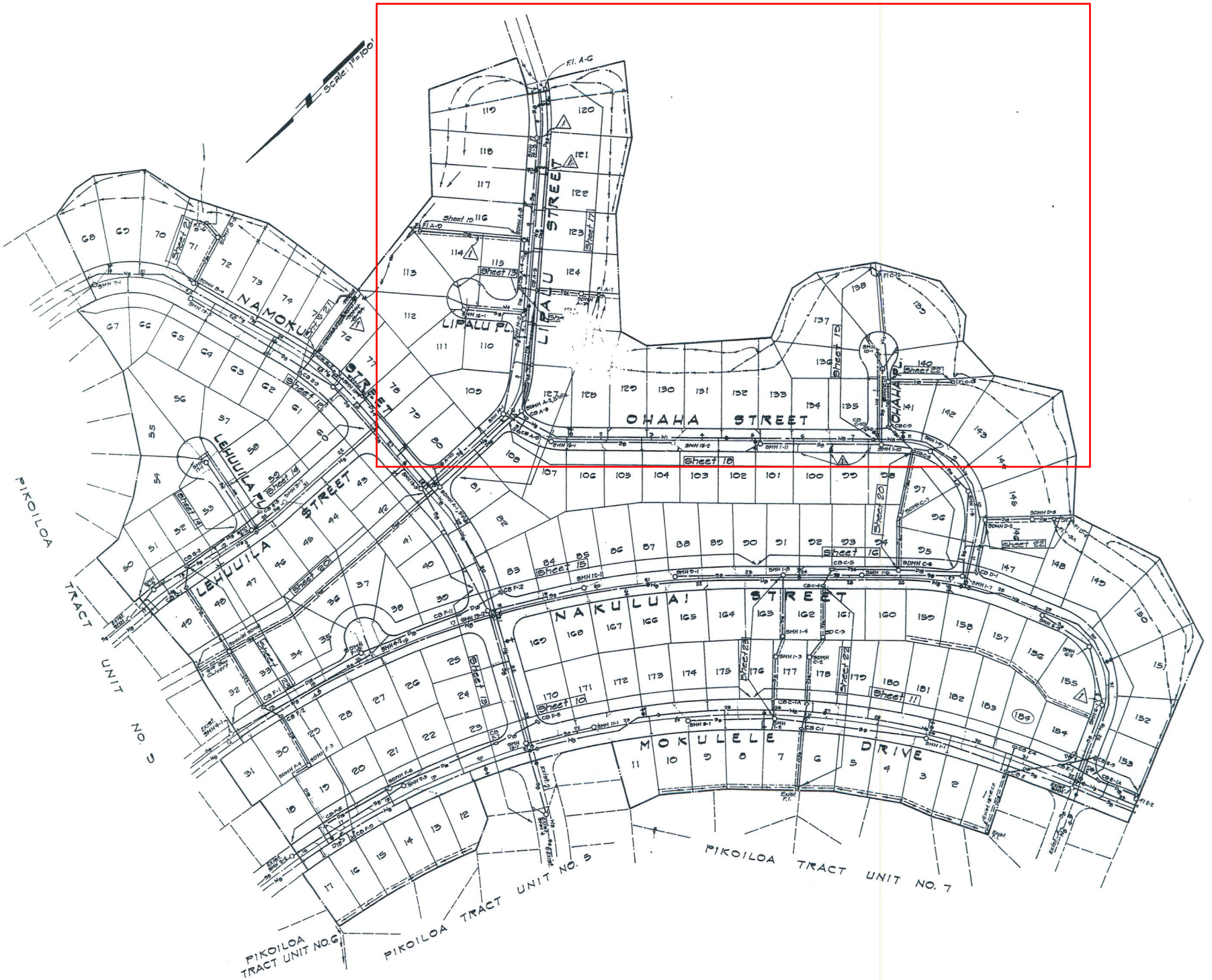
	Zone XS (X shaded): Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
	Zone X: Areas determined to be outside the 0.2% annual chance floodplain.

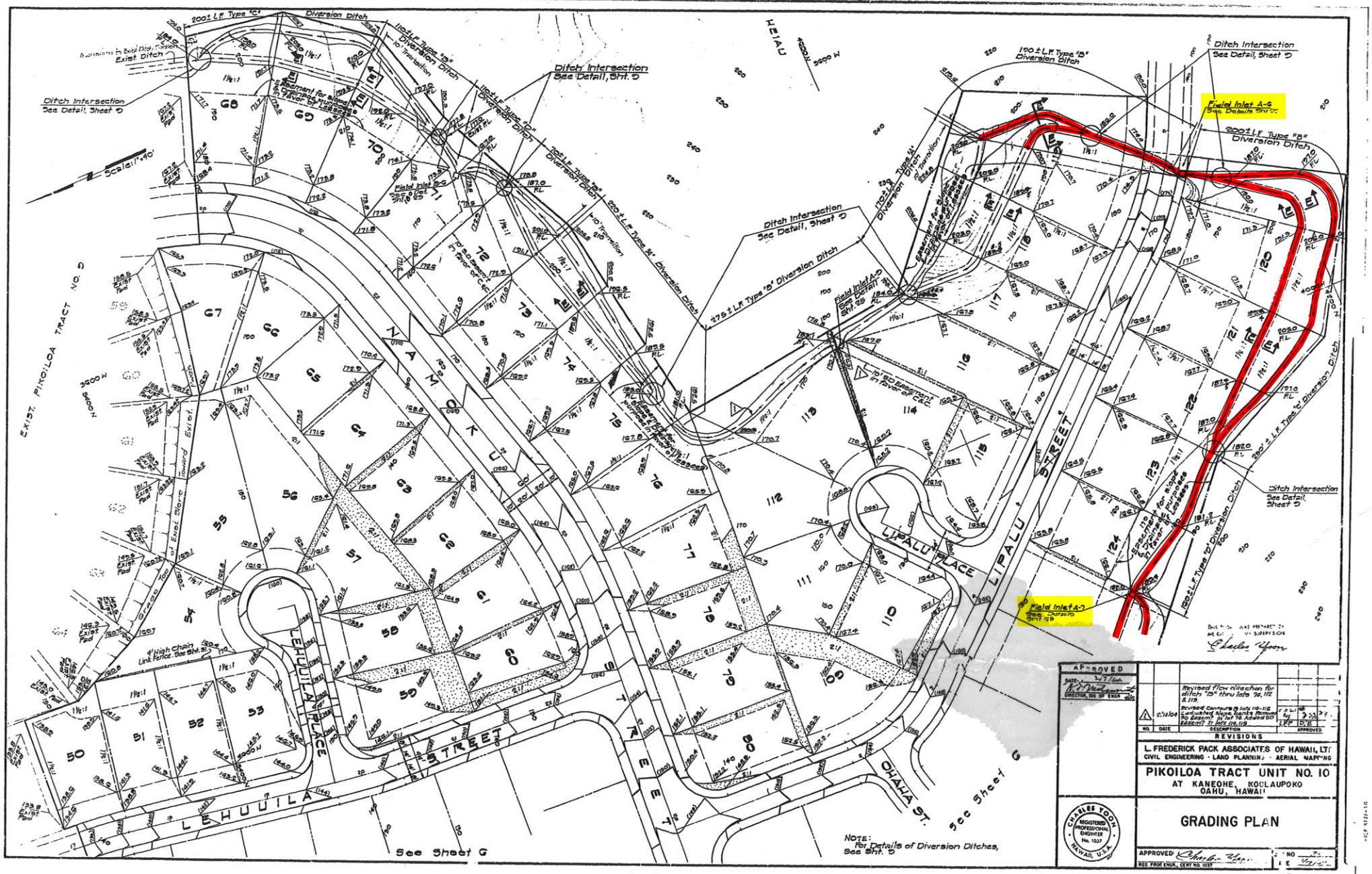
OTHER FLOOD AREAS

	Zone D: Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase apply, but coverage is available in participating communities.

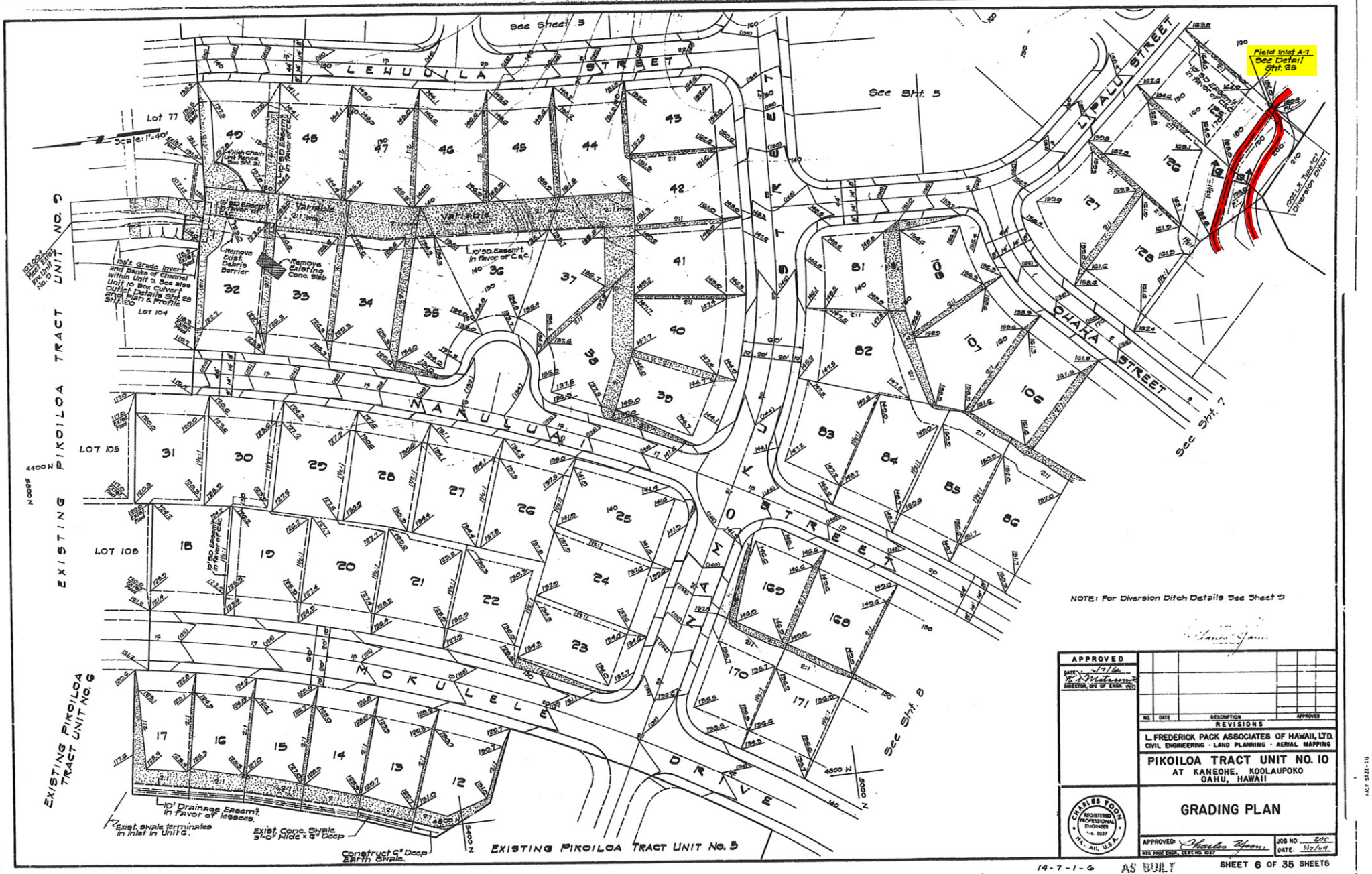
APPENDIX V

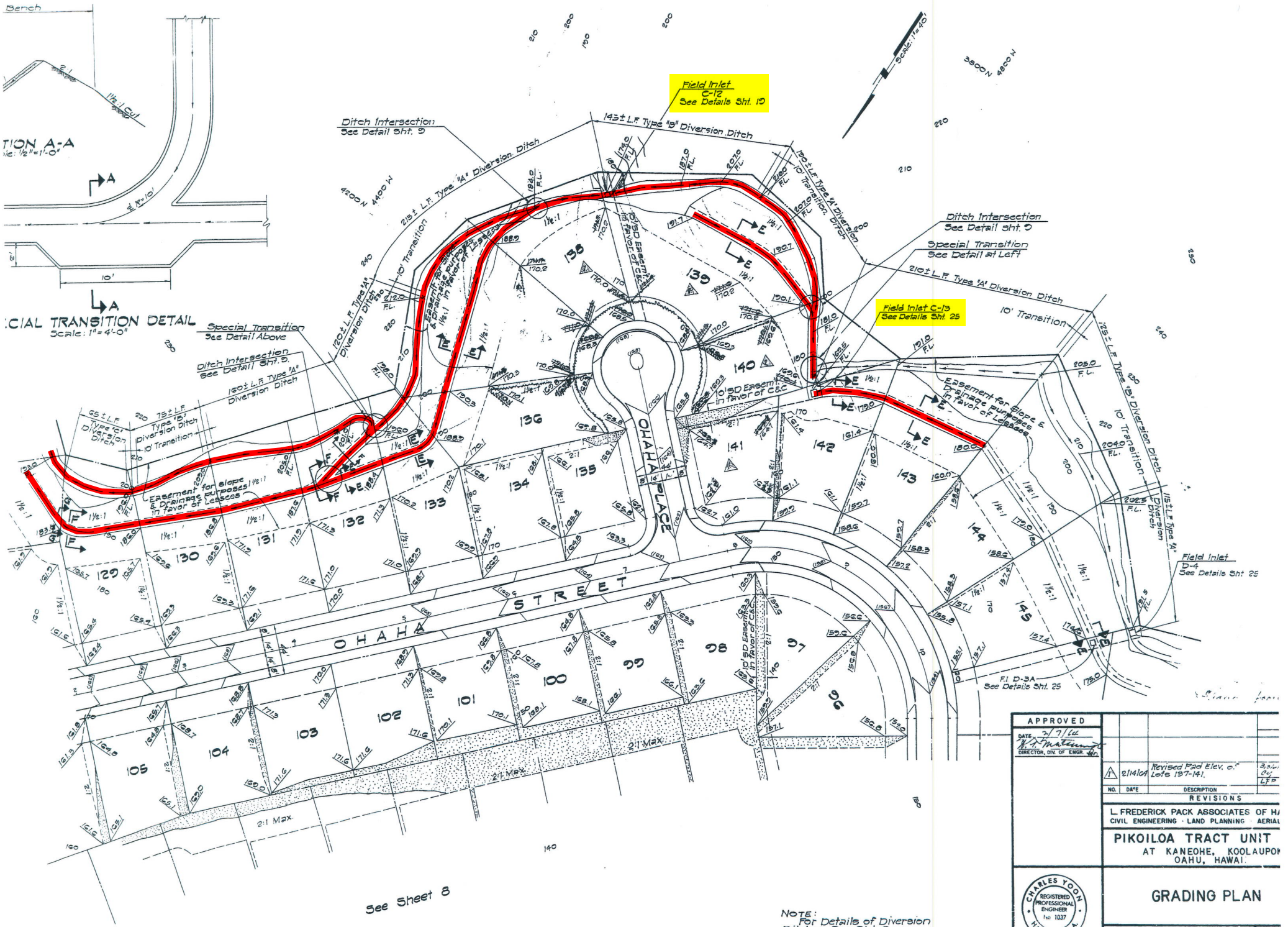
Pikoiloa As-Builts
(Receiving Drainage System)


Scale: 1"=100'
LIPALU STREET
LIPALU PL.
OHAHA STREET
OHAHA PL.
NAMOKU STREET
LEHUULA PL.
LEHUULA STREET
NAKULUA STREET
MOKULELE DRIVE
PIKOILOA TRACT UNIT NO. 3
PIKOILOA TRACT UNIT NO. 5
PIKOILOA TRACT UNIT NO. 7
PIKOILOA TRACT UNIT NO. 6
Sheet 10
Sheet 11
Sheet 12
Sheet 13
Sheet 14
Sheet 15
Sheet 16
Sheet 17
Sheet 18
Sheet 19
Sheet 20
Sheet 21
Sheet 22
Sheet 23



14-7-1-5 AS BUILT SHEET 5 OF 35 SHEETS


See Sheet 5
LEHUULA STREET
See Sht. 5
LIPALU STREET
Field Inlet A-1
See Detail
Sht. 28
Lot 77
Scale: 1"=40'
EXISTING PIKOILOA TRACT UNIT NO. 9
LOT 104
LOT 105
LOT 106
MAKUAU
KUAMOO STREET
OHAHA STREET
See Sht. 7
MOKULELE
DRIVE
See Sht. 8
EXISTING PIKOILOA TRACT UNIT NO. 6
EXISTING PIKOILOA TRACT UNIT NO. 5
Remove Existing Conc. Slab
Remove Earth Debris Barrier
Variable
Variable
10' Drainage Easem't in Favor of Lessees.
Exist. Swale terminates in inlet in Unit 6.
Exist. Conc. Swale 3'-0" Wide x 6" Deep
Construct 6" Deep Earth Swale.
NOTE: For Diversion Ditch Details See Sheet 9
APPROVED
DIRECTOR, DEPT OF ENGR (DCC)
REVISIONS
NO. DATE DESCRIPTION APPROVED
L. FREDERICK PACK ASSOCIATES OF HAWAII, LTD.
CIVIL ENGINEERING · LAND PLANNING · AERIAL MAPPING
PIKOILOA TRACT UNIT NO. 10
AT KANEOHE, KOOLAUPOKO
OAHU, HAWAII
GRADING PLAN
CHARLES TOOM
REGISTERED PROFESSIONAL ENGINEER
No. 1037
HAWAII, U.S.A.
APPROVED:
REG. PROF. ENGR., CERT. NO. 1037
JOB NO. 226
DATE 5/7/69
14-7-1-6 AS BUILT
SHEET 6 OF 35 SHEETS



APPROVED
DATE 2/7/14
DIRECTOR, DIV. OF ENGR.

NO.	DATE	DESCRIPTION
1	2/14/14	Revised Pad Elev. of Lots 137-141.

REVISIONS

L. FREDERICK PACK ASSOCIATES OF HA
CIVIL ENGINEERING · LAND PLANNING · AERIAL

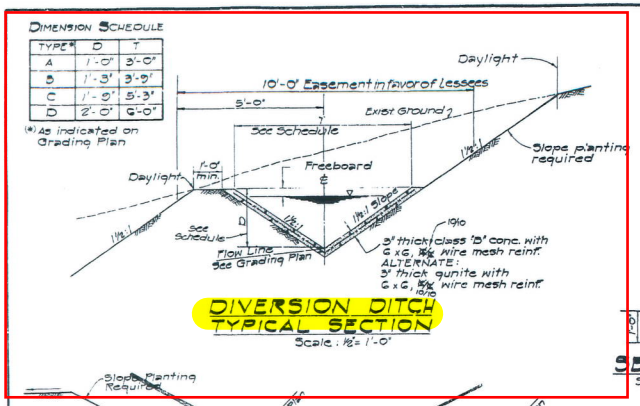
PIKOILOA TRACT UNIT
AT KANEOHE, KOOLAUPOK
OAHU, HAWAI.

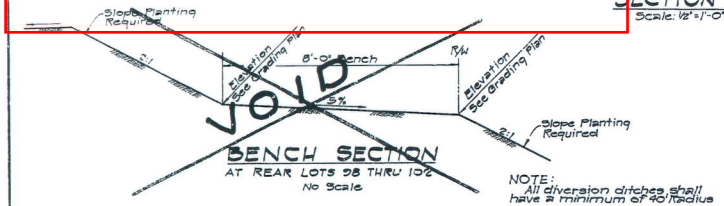
CHARLES YOON REGISTERED PROFESSIONAL ENGINEER No. 1037 HAWAII, U.S.A.

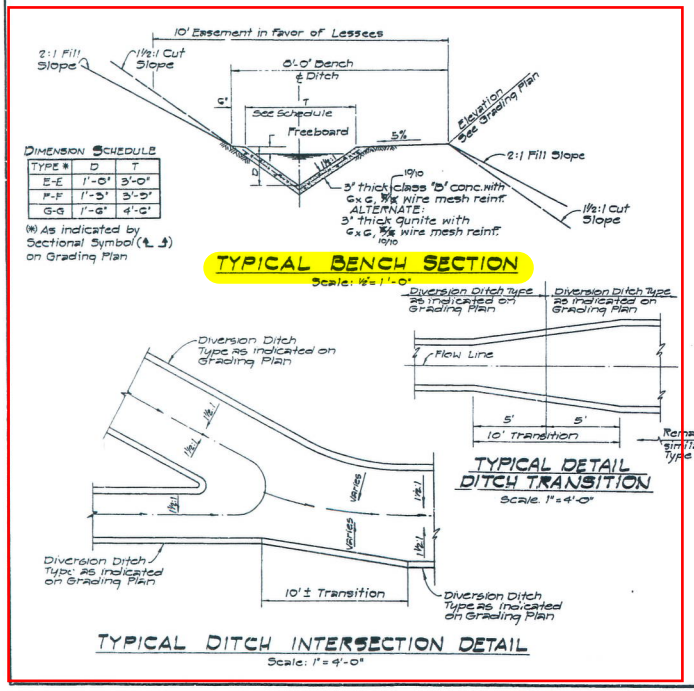
GRADING PLAN

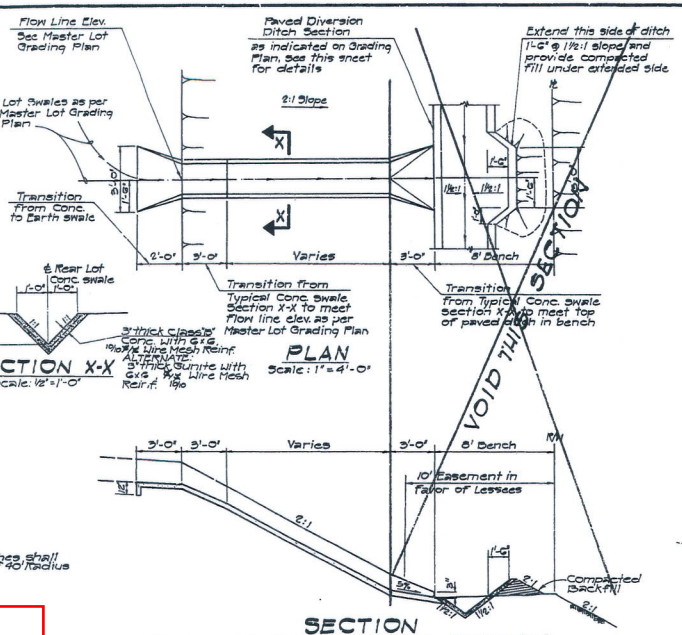
APPROVED: Charles Yoon
REG. PROF. ENGR., CERT. NO. 1037

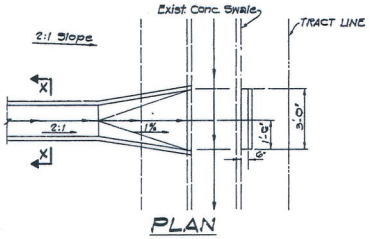
JOB NO
DATE

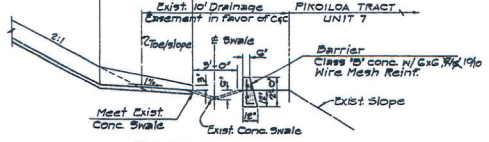


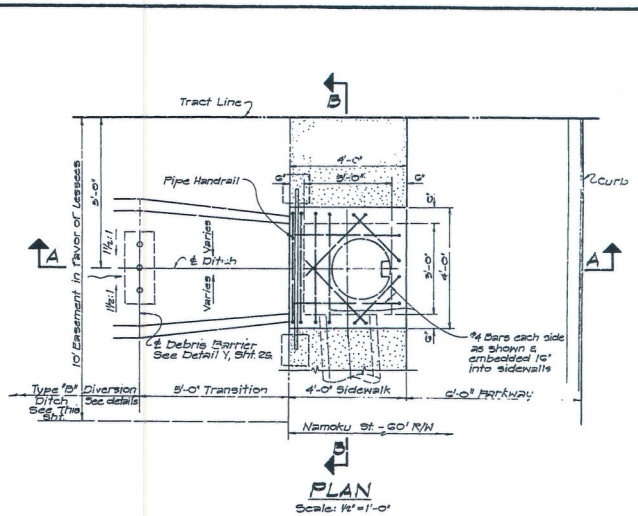


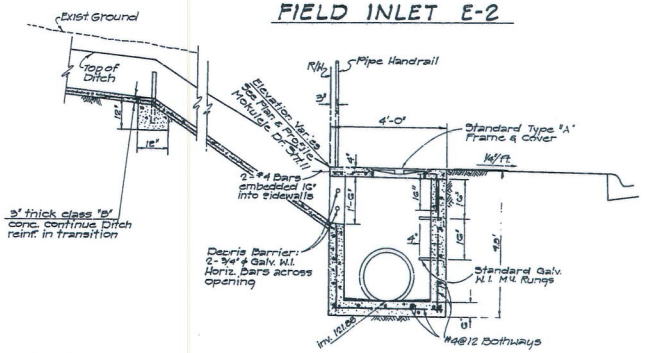


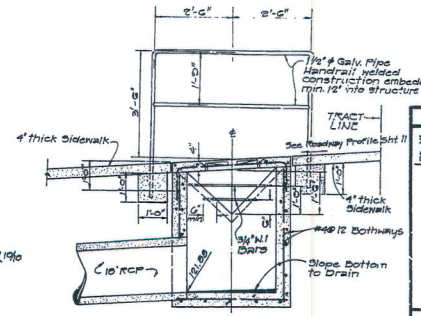












APPROVED
DATE 2/7/64
DIRECTOR, DEPT OF ENGR

NO.	DATE	DESCRIPTION	APPROVED
1	2/14/64	Change W.M. Reinf. From G x G x 6/6 to G x G x 6/10 for all diversion ditches & benches	LFF

REVISIONS

L. FREDERICK PACK ASSOCIATES OF HAWAII, LTD.
CIVIL ENGINEERING · LAND PLANNING · AERIAL MAPPING

PIKOILOA TRACT UNIT NO. 10
AT KANEOHE, KOOLAUPOKO
OAHU, HAWAII

DRAINAGE DETAILS

REGISTERED PROFESSIONAL ENGINEER No. 1037 CHARLES YOON HAWAII, U.S.A.

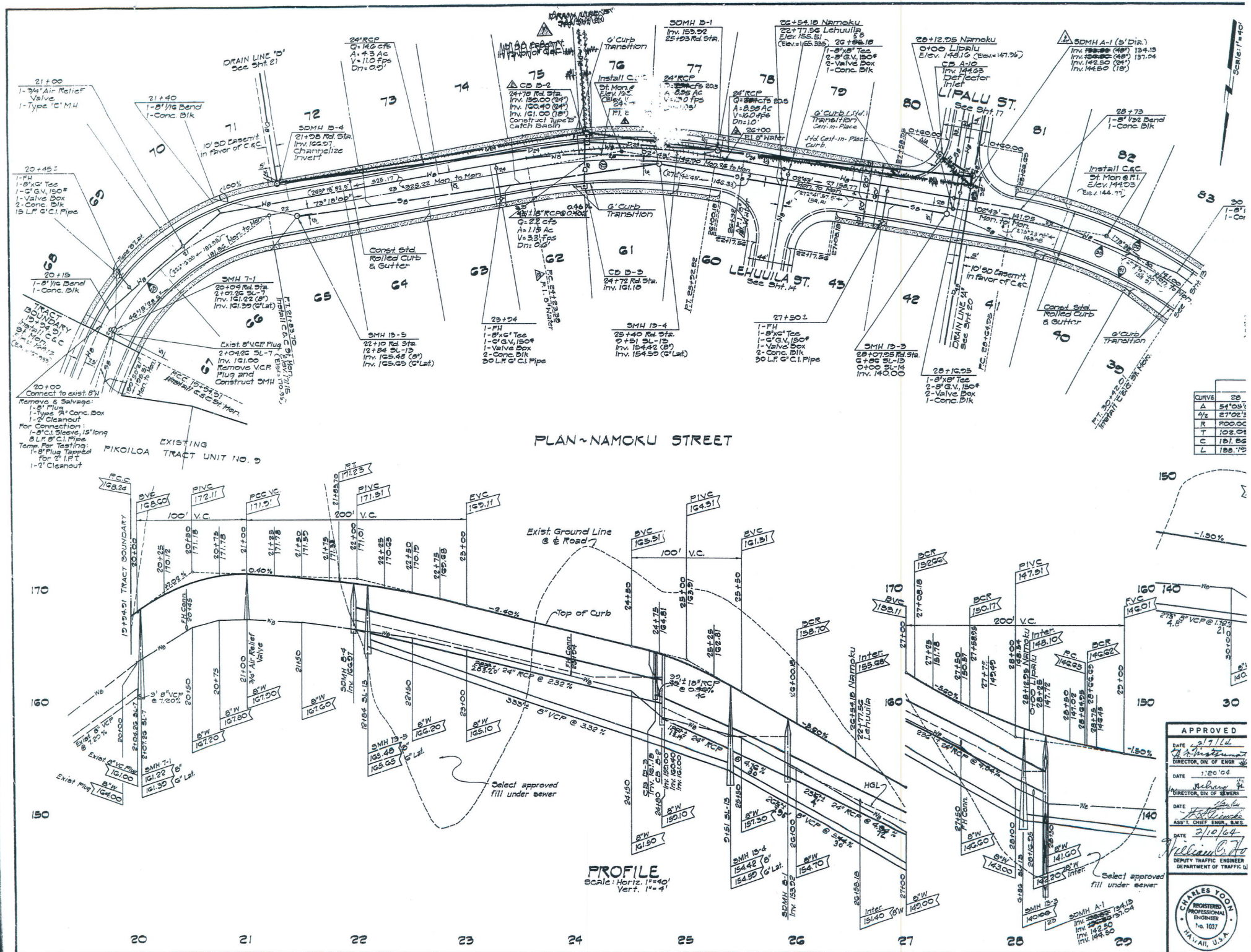
APPROVED: Charles Yoon
REG. PROF. ENGR., CERT. NO. 1037

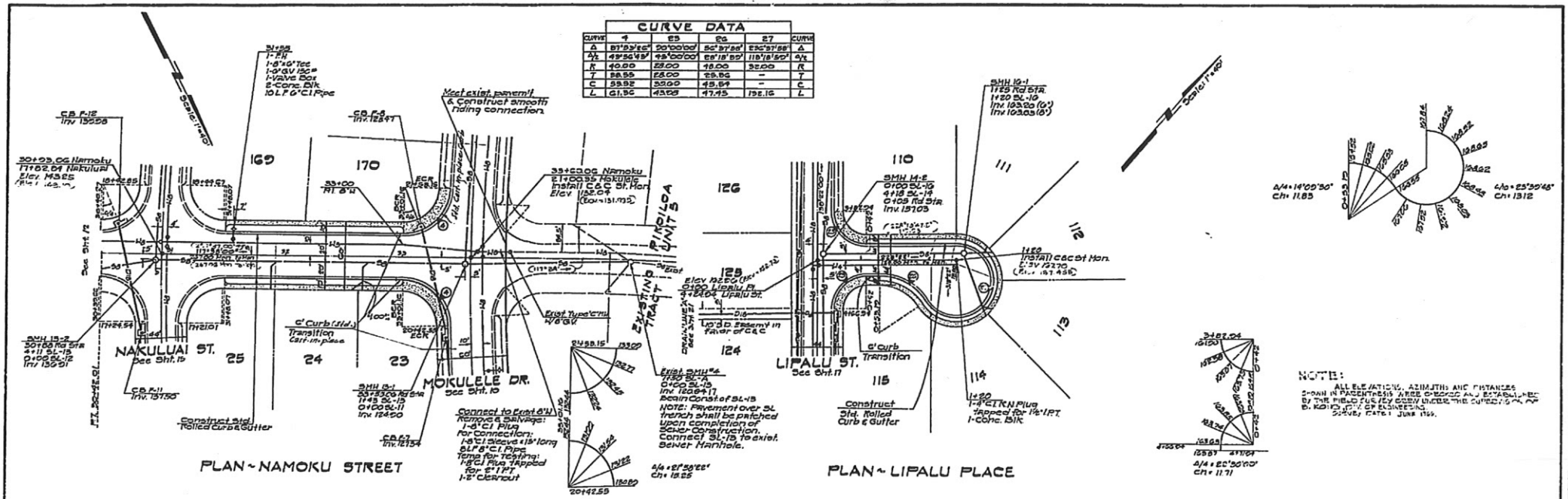
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DATE: 1/17/64

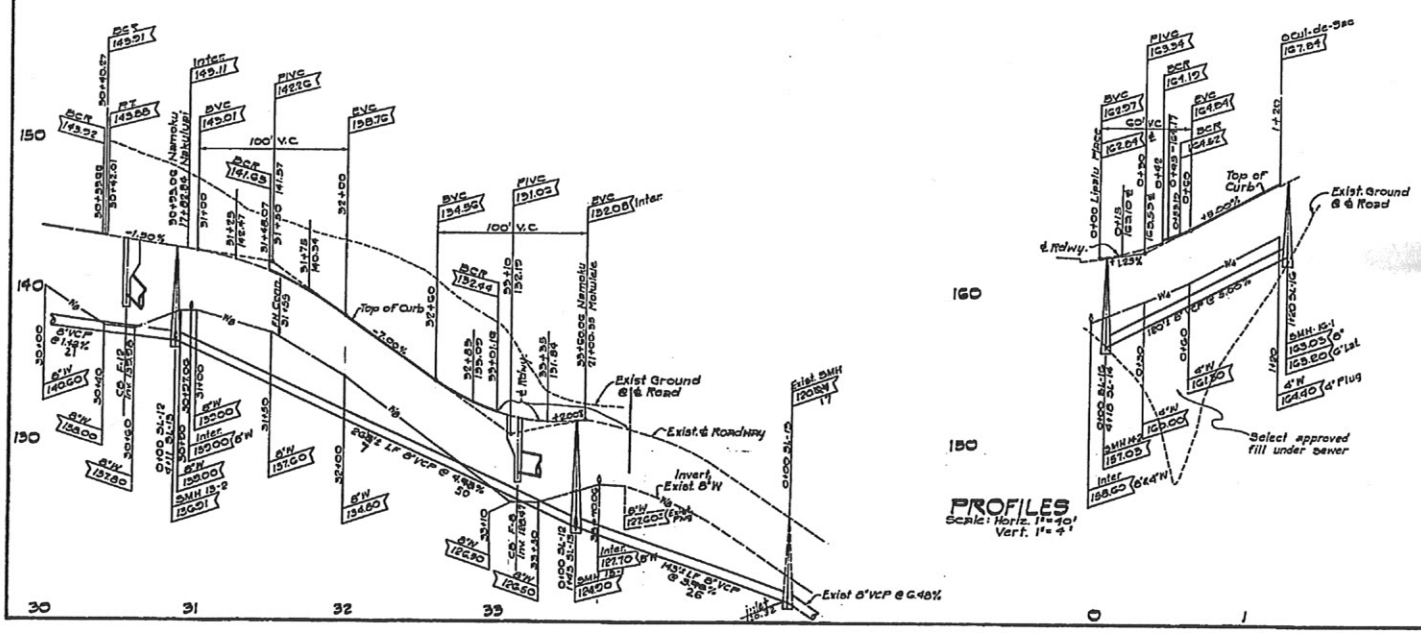
14-7-1-9 AS BUILT

SHEET 9 OF 35 SHEETS

010-368


PLAN ~ NAMOKU STREET
PROFILE
Scale: Horiz. 1"=40'
Vert. 1"=4'
EXISTING
PIKOILOA TRACT UNIT NO. 9
TRACT BOUNDARY
DRAIN LINE "D"
See Sht. 21
LIPALU ST.
See Sht. 17
LEHUULA ST.
See Sht. 14
DRAIN LINE "A"
See Sht. 20
Select approved fill under sewer
Top of Curb
Exist. Ground Line @ ℄ Road
HGL
APPROVED
DIRECTOR, DIV. OF ENGR
DIRECTOR, DIV. OF SEWERS
ASS'T. CHIEF ENGR., B.W.S.
DEPUTY TRAFFIC ENGINEER
DEPARTMENT OF TRAFFIC
CHARLES YOON
REGISTERED PROFESSIONAL ENGINEER
No. 1037
HAWAII, U.S.A.





APPROVED

DIRECTOR, DIV OF ENGR — DATE 2/7/64

DIRECTOR, DIV OF SEWERS — DATE 1 DEC 64

ASST CHIEF ENGR, BWS — DATE

DEPUTY TRAFFIC ENGINEER, DEPARTMENT OF TRAFFIC — DATE 2/10/64

NO.	DATE	DESCRIPTION	APPROVED

REVISIONS

L. FREDERICK PACK ASSOCIATES OF HAWAII, LTD.
CIVIL ENGINEERING · LAND PLANNING · AERIAL MAPPING

PIKOILOA TRACT UNIT NO. 10
AT KANEOHE, KOOLAUPOKO
OAHU, HAWAII

PLAN & PROFILE

NAMOKU STREET
STA. 30+42.01 TO STA. 33+60.06

LIPALU PLACE
STA. 0+00 TO STA. 1+20.00

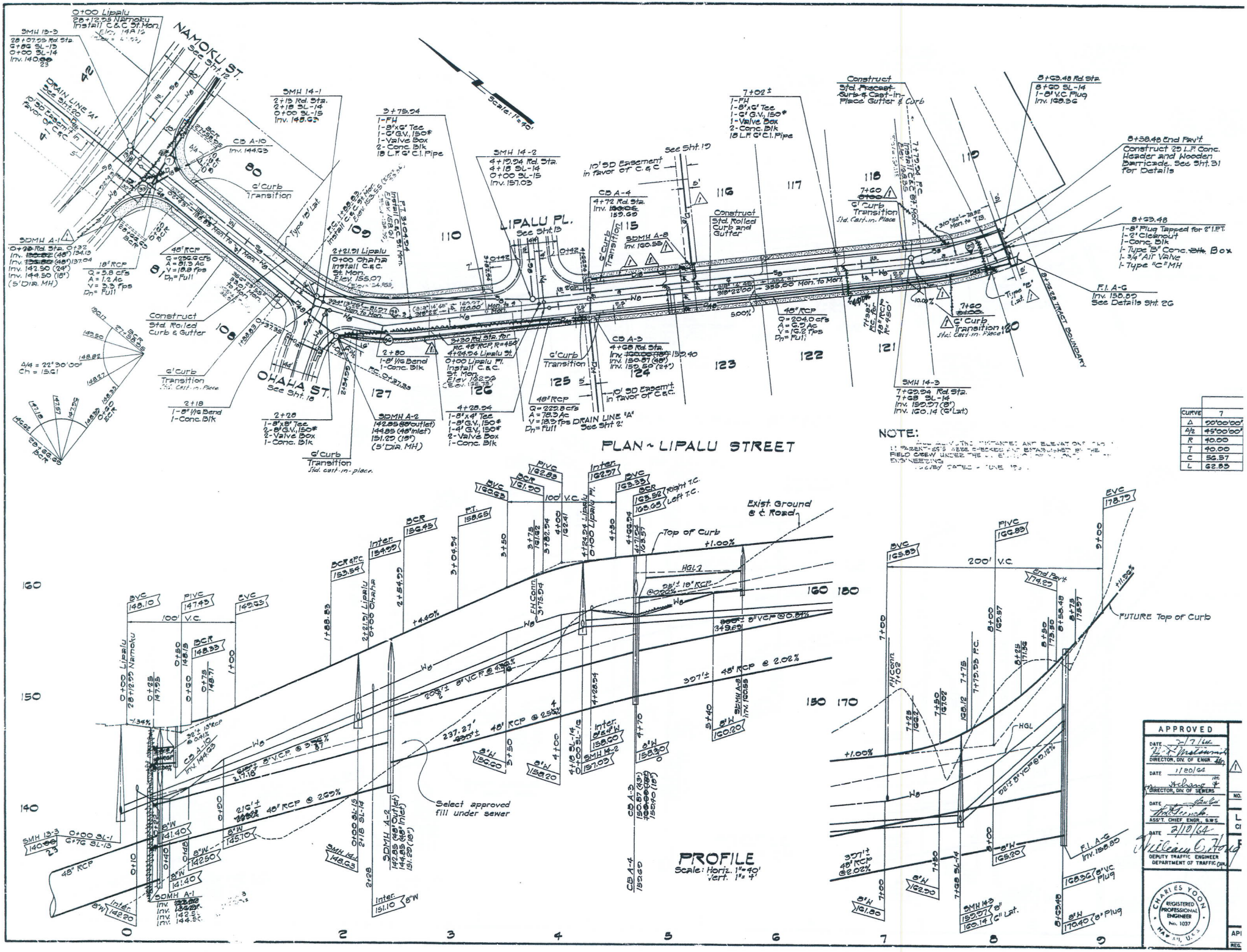
CHARLES TOM
REGISTERED PROFESSIONAL ENGINEER No. 1337
HAWAII, U.S.A.

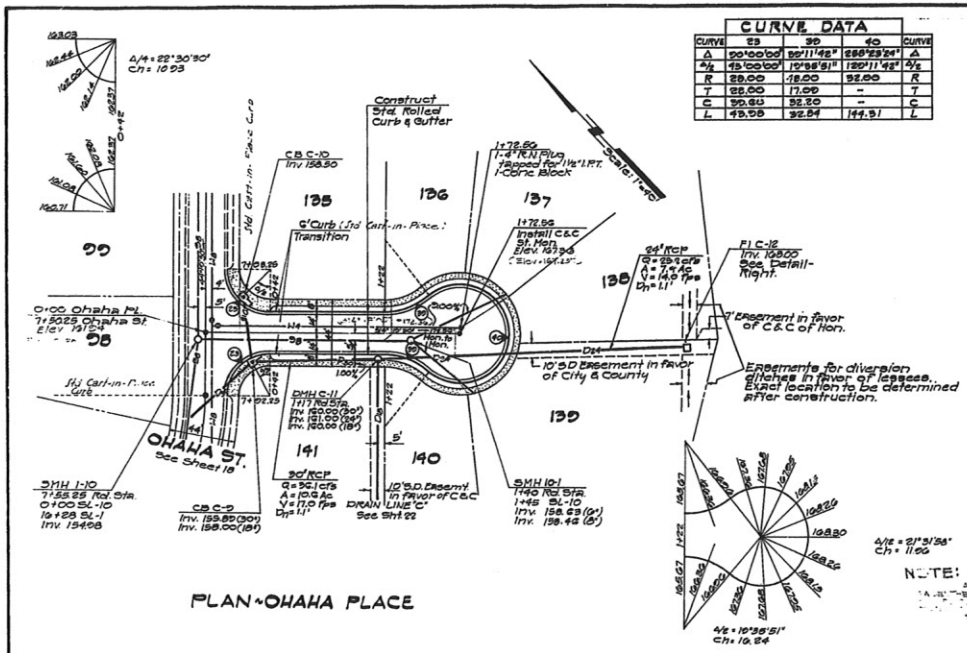
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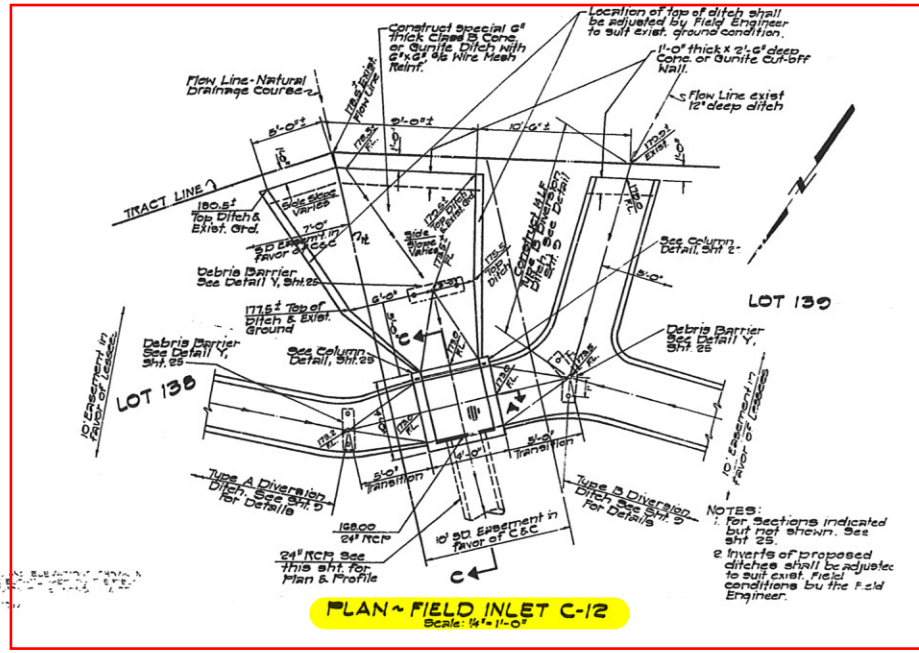
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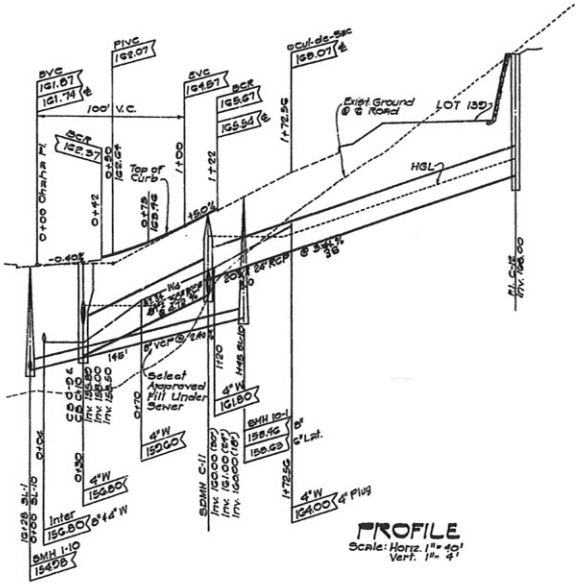
14-7-1-13 AS BUILT

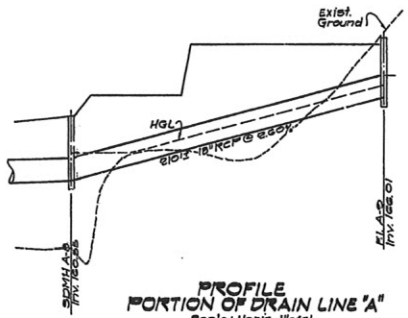
SHEET 13 OF 35 SHEETS

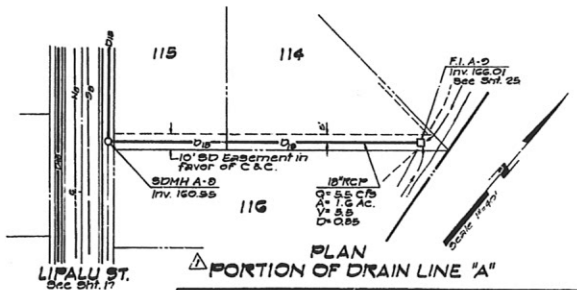

NAMOKU ST.
See Sht. 12
LIPALU PL.
See Sht. 13
OHAHA ST.
See Sht. 18
DRAIN LINE "A"
See Sht. 2
Scale: 1" = 40'
0+00 Lipalu
28+12.95 Namoku
Install C.& C. St. Mon.
Elev. 149.12
SMH 13-3
28+07.95 Rel Sta.
0+82 SL-13
0+00 SL-14
Inv. 140.66
SMH 14-1
2+13 Rel. Sta.
2+18 SL-14
0+00 SL-15
Inv. 148.63
SMH 14-2
4+19.94 Rel. Sta.
4+18 SL-14
0+00 SL-15
Inv. 157.03
SMH 14-3
7+69.94 Rel. Sta.
7+68 SL-14
Inv. 150.27 (8")
Inv. 160.14 (6" Lat)
SDMH A-1
0+78 Rel. Sta. 0.32
Inv. 130.02 (48") 134.13
Inv. 135.82 (48") 137.04
Inv. 142.50 (24")
Inv. 144.50 (18")
(5' Dia. MH)
SDMH A-2
142.85 (48" Outlet)
144.85 (48" Inlet)
151.20 (18")
(5' Dia. MH)
SDMH A-3
Inv. 150.55
SDMH A-4
Inv. 150.87 (48")
Inv. 150.50 (24")
CB A-10
Inv. 144.63
CB A-4
4+72 Rel. Sta.
Inv. 153.60
159.60
CB A-3
4+68 Rel. Sta.
Inv. 150.40
150.40
2+21.91 Lipalu
0+00 Ohaha
Install C.& C.
St. Mon.
Elev. 155.07
7+02 ±
1-FH
1-8"x6" Tee
1-6" G.V., 150#
1-Valve Box
2-Conc. Blk
18 L.F. 6" C.I. Pipe
3+75.94
1-FH
1-8"x6" Tee
1-6" G.V., 150#
1-Valve Box
2-Conc. Blk
18 L.F. 6" C.I. Pipe
2+18
1-8" 1/16 Bend
1-Conc. Blk
2+28
1-8"x8" Tee
2-8" G.V., 150#
2-Valve Box
1-Conc. Blk
4+28.94
1-8"x4" Tee
1-8" G.V., 150#
1-4" G.V., 150#
2-Valve Box
1-Conc. Blk
2+80
1-8" 1/16 Bend
1-Conc. Blk
3+30 Rel. Sta. for
P.C. 48" RCP, R=450'
4+24.94 Lipalu St.
0+00 Lipalu Pl.
Install C.& C.
St. Mon.
Elev. 162.03
Ce Ev. 155.73
7+02 ±
1-FH
1-8"x6" Tee
1-6" G.V., 150#
1-Valve Box
2-Conc. Blk
18 L.F. 6" C.I. Pipe
8+03.48 Rel Sta.
8+00 SL-14
1-8" V.C. Plug
Inv. 168.36
8+38.48 End Pav't
Construct 25 L.F. Conc.
Header and Wooden
Barricade. See Sht. 31
for Details
8+03.48
1-8" Plug Tapped for 2" I.P.T.
1-2" Cleanout
1-Conc. Blk
1-Type "B" Conc. Box
1-3/4" Air Valve
1-Type "C" MH
F.I. A-G
Inv. 158.80
See Details Sht. 26
Construct
Std. Precast
Curb & Cast-in-
Place Gutter & Curb
Construct
Std. Rolled
Curb and
Gutter
Construct
Std. Rolled
Curb & Gutter
C' Curb
Transition
Std. Cast-in-Place
Type "B"
Cast
Type "C"
Cast
10' SD Easement
in favor of C. & C.
Mon. to Mon.
Mon. to T.B.
T.B. to Mon.
Type "B" Lat.
48" RCP
Q = 204.0 cfs
A = 6.0 Ac
V = 16.2 fps
Dh = Full
48" RCP
Q = 222.8 cfs
A = 7.3 Ac
V = 18.3 fps
Dh = Full
42" RCP
Q = 250 cfs
A = 8.13 Ac
V = 18.8 fps
Dh = Full
18" RCP
Q = 3.8 cfs
A = 1.2 Ac
V = 3.3 fps
Dh = Full
Type "B" Lat.
Type "C" Lat.
Type "B" Cast
Type "C" Cast
Type "B" Box
Type "C" MH











APPROVED
DIRECTOR, DIV. OF ENGR. — DATE 1-6-64
DIRECTOR, DIV. OF SEWERS — DATE 1-6-64
ASS'T CHIEF ENGR., B.W.S. — DATE 2/10/64
DEPUTY TRAFFIC ENGINEER, DEPARTMENT OF TRAFFIC ENG. — DATE 2/10/64

NO.	DATE	DESCRIPTION	APPROVED
1	2/11/64	Added Portion of Drain Line A Plan & Profile.	2/11/64 Eng. 2/11/64 L.F.P. 2/11/64 C.I.E.

REVISIONS

L. FREDERICK PACK ASSOCIATES OF HAWAII, LTD
CIVIL ENGINEERING · LAND PLANNING · AERIAL MAPPING

PIKOILOA TRACT UNIT NO. 10
AT KANEOHE, KOOLAUPOKO
OAHU, HAWAII

PLAN & PROFILE

OHAHA PLACE
STA. 0+00 TO STA. 1+72.56

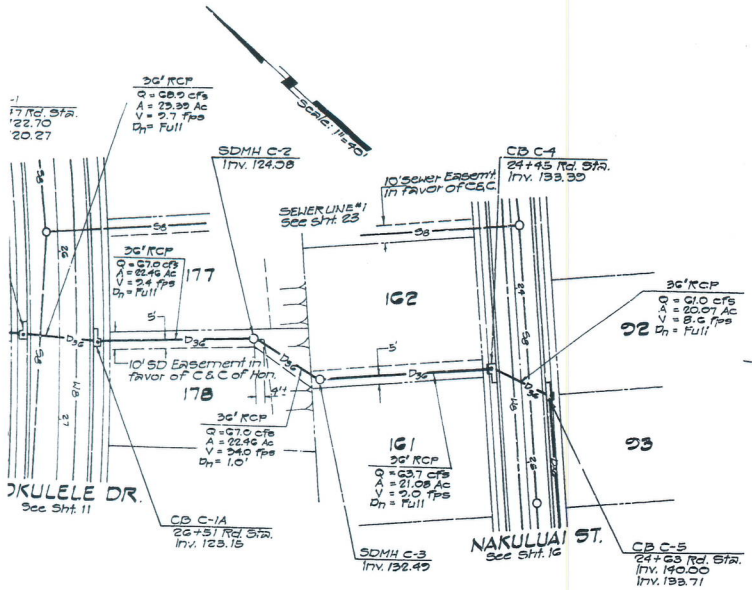
CHARLES TOON REGISTERED PROFESSIONAL ENGINEER No. 1037 HAWAII, U.S.A.

APPROVED: Charles Toon, REG. PROF. ENGR., CERT. NO. 1037
JOB NO. 2-40
DATE 1/2/64

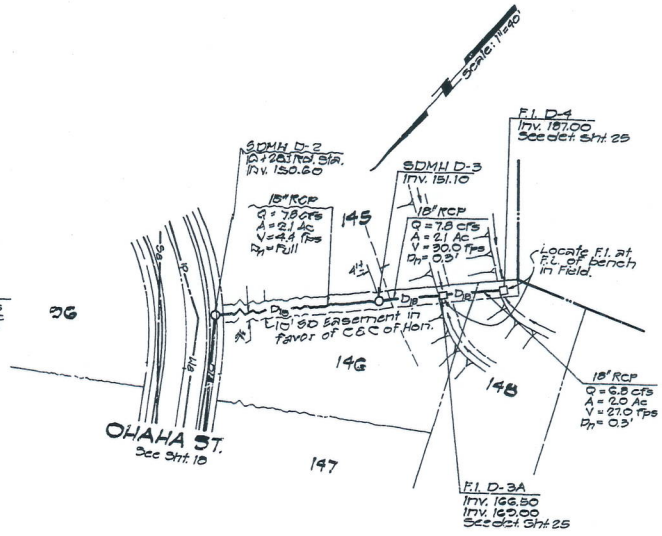
14-7-1-19

AS BUILT

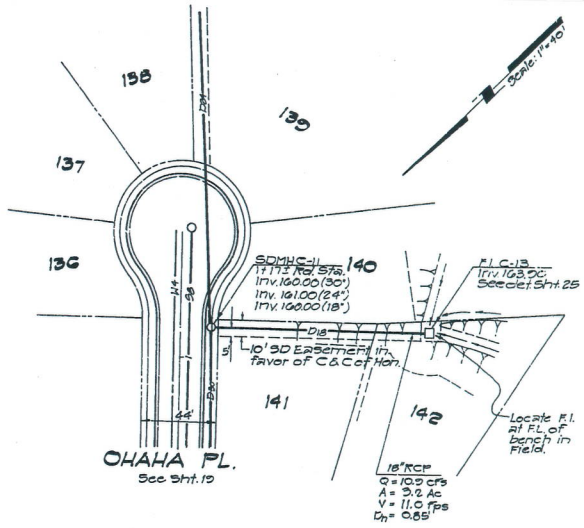
SHEET 19 OF 35 SHEETS



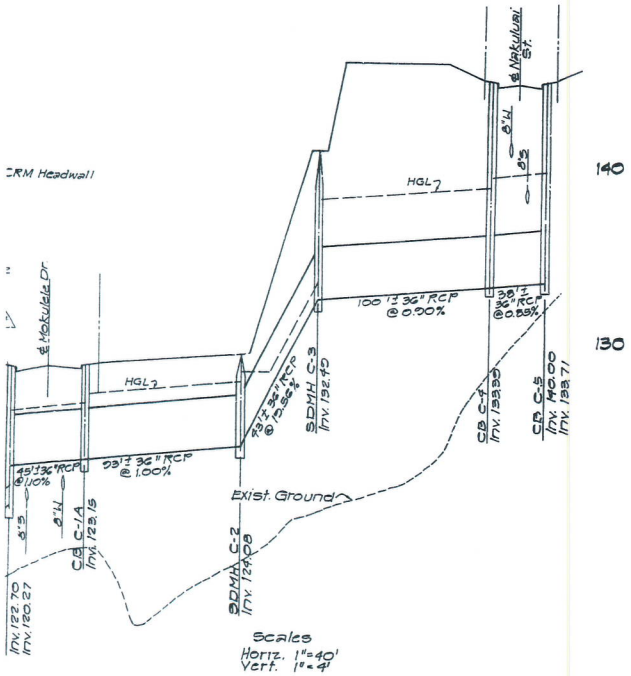
PLAN ~ PORT. OF DRAIN LINE "C"

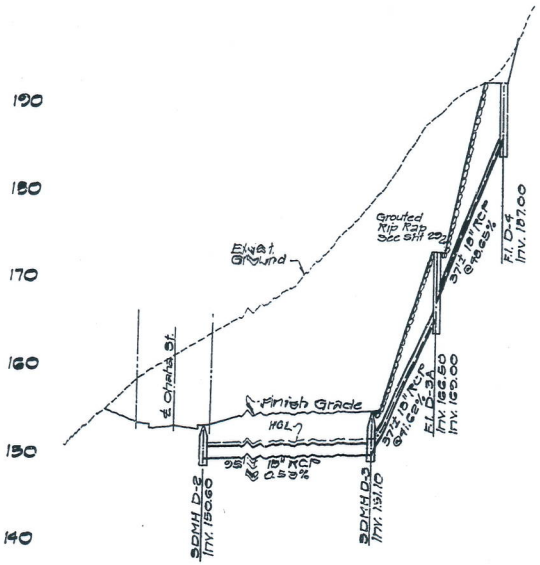


PLAN ~ DRAIN LINE "D"

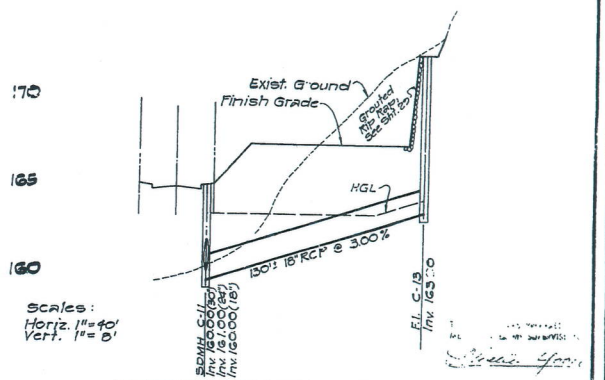


PLAN ~ PORT. OF DRAIN LINE "C"





PROFILES
Scales As Noted



APPROVED
DATE 2-17-04
DIRECTOR, DIV. OF ENGR.

NO.	DATE	DESCRIPTION	APPROVED
1	2/14/04	Revised Finish Grade for Lot 1 on profile	LFP DIE

REVISIONS

L. FREDERICK PACK ASSOCIATES OF HAWAII, LTD.
CIVIL ENGINEERING · LAND PLANNING · AERIAL MAPPING

PIKOILOA TRACT UNIT NO. 10
AT KANEOHE, KOOLAUPOKO
OAHU, HAWAII

PLAN & PROFILE

PORTION OF DRAIN LINES "C" & "D"

CHARLES YOON
REGISTERED PROFESSIONAL ENGINEER
No. 1037
HAWAII, U.S.A.

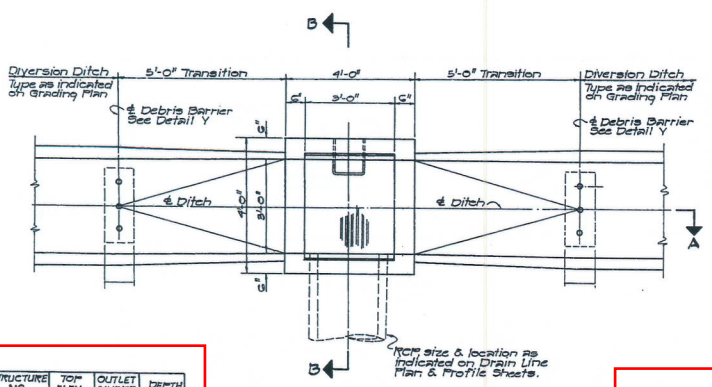
APPROVED: Charles Yoon
REG. PROF. ENGR., CERT. NO. 1037

JOB NO: 2490
DATE: 1/27/04

14-7-1-22 AS BUILT

SHEET 22 OF 35 SHEETS

HALF SIZE-16



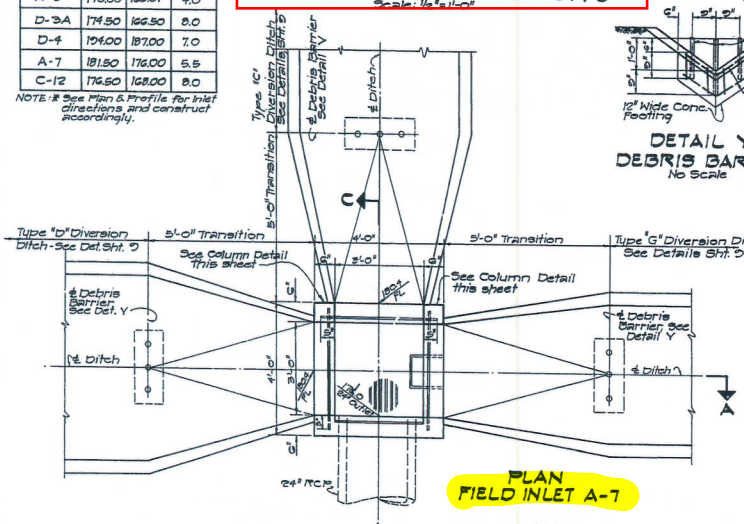
PLAN

FIELD INLETS TYPE D-3A & D-4 & A-7*

Scale: 1/2"=1'-0"

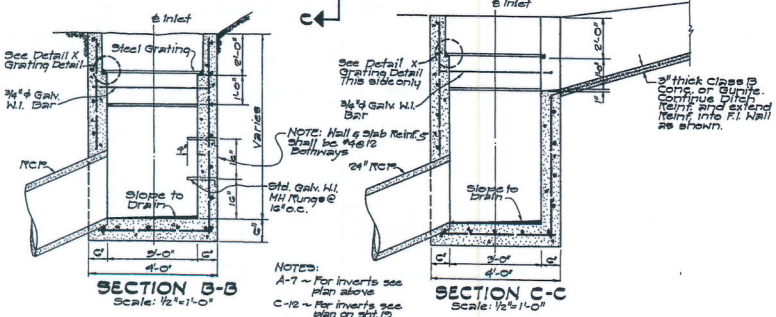
STRUCTURE NO.	TOP ELEV.	OUTLET INVERT	DEPTH
~~B-7~~	~~184.40~~	~~173.40~~	~~11.0~~
A-7*	170.00	165.01	4.0
D-3A	174.50	166.50	8.0
D-4	194.00	187.00	7.0
A-7	181.50	176.00	5.5
C-12	176.50	168.00	8.0

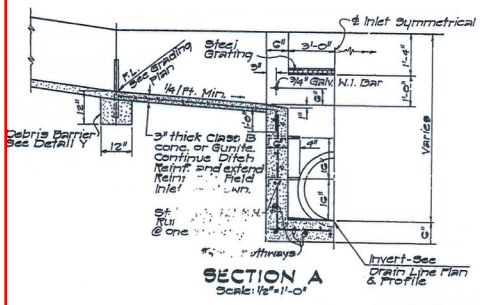
NOTE: * See Plan & Profile for inlet directions and construct accordingly.



PLAN

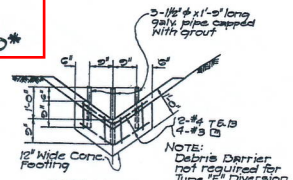
FIELD INLET A-7





SECTION A

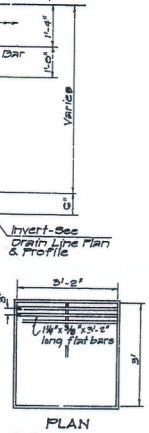
Scale: 1/2"=1'-0"



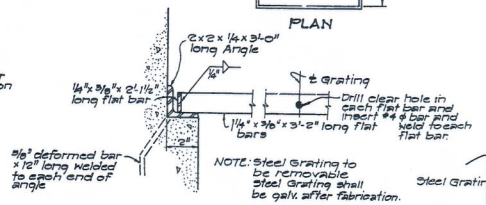
DETAIL Y

DEBRIS BARRIER

No Scale



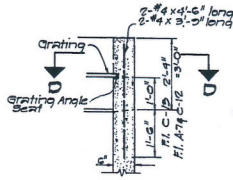
PLAN



DETAIL X

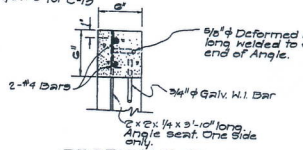
STEEL GRATING DETAIL

Scale: 3"=1'-0"



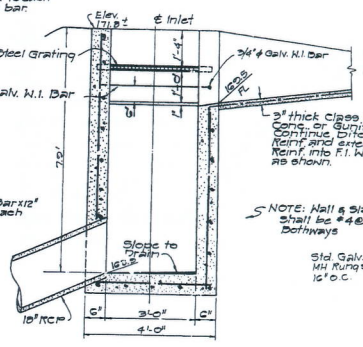
COLUMN DETAIL

Scale: 1 1/2"=1'-0"



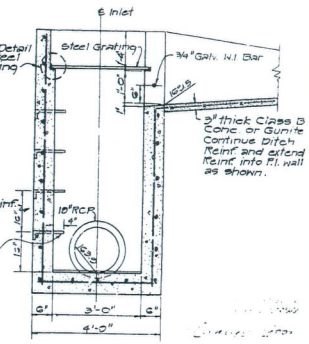
SECTION D-D

Scale: 1 1/2"=1'-0"



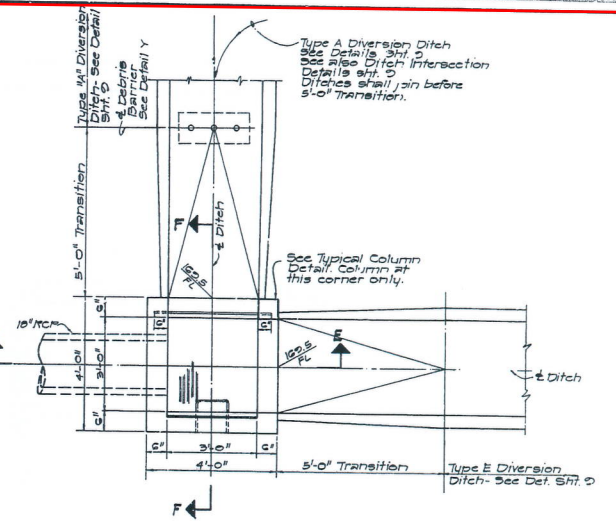
SECTION E-E

Scale: 1/2"=1'-0"



SECTION F-F

Scale: 1/2"=1'-0"



PLAN

FIELD INLET C-13

Scale: 1/2"=1'-0"

APPROVED

DATE 2/7/14

DIRECTOR, DIV. OF ENGR.

NO.	DATE	DESCRIPTION	APPROVED
1	6/14/24	Added F.I. A-5 Delete F.I. B-7	3/26/24 LFP

REVISIONS

L. FREDERICK PACK ASSOCIATES OF HAWAII, LTD.

CIVIL ENGINEERING · LAND PLANNING · AERIAL MAPPING

PIKOILOA TRACT UNIT NO. 10

AT KANEOHE, KOOLAUPOKO

OAHU, HAWAII

CHARLES TOM REGISTERED PROFESSIONAL ENGINEER No. 11

DRAINAGE DETAILS

APPROVED: Charles Tom

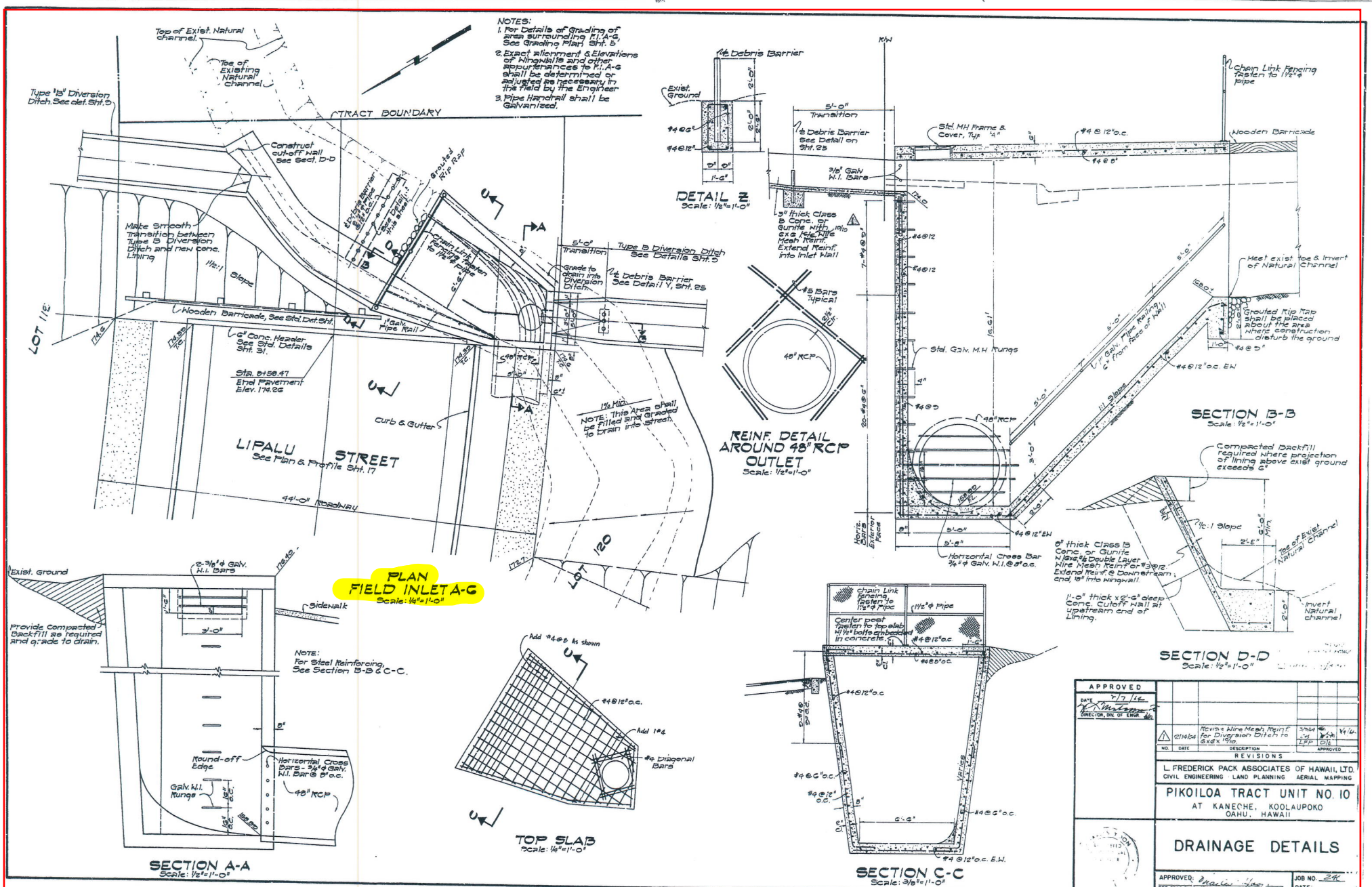
REG. PROF. ENGR. CERT. NO. 1037

JOB NO. 96

DATE 1/1/24

14-7-1-25 95 SHEET

SHEET 25 OF 35 SHEETS



14-7-1-26

SHEET 28 OF 35 SHEETS

FILE PLAN 850

PIKOILOA TRACT UNIT 9

SITUATED ON THE SOUTHEASTERLY SIDE OF PIKOILOA TRACT - UNIT 8, (FILE PLAN 608) AT KANEOHE, KOOLAUPOKO, OAHU, HAWAII

OWNER : Harold Kalmalu Long Castle
ADDRESS: Kailua, Koolaupoko, Oahu, Hawaii

Being a portion of Royal Patent 7684, Land Commission Award 4452, Apana 13 to K. Kalama, and a portion of Deed, Minister of the Interior to C.C. Harris, dated March 24, 1876, recorded in Liber 45, Page 286, in the Bureau of Conveyances, State of Hawaii.

SUBDIVIDED INTO LOTS 1 TO 14 INCLUSIVE, 14-A, 15, 15-A, 16 TO 111 INCLUSIVE, LOTS A TO H INCLUSIVE, J, K AND L (DRAINAGE DITCH RIGHT OF WAY)

AREA = 28.286 Acres

SUBJECT, HOWEVER, TO THE FOLLOWING EASEMENTS:

EASEMENT "A-1", 10 feet wide, for Storm Drain Purposes, over and across Lot 68
EASEMENT "A-2", 10 feet wide, for Storm Drain Purposes, over and across Lot 82
EASEMENT "A-3", for Storm Drain Purposes, over and across Lots 70 and 71.
EASEMENT "A-4", for Storm Drain Purposes, over and across Lots 34 and 51.
EASEMENT "A-5", 10 feet wide, for Storm Drain Purposes, over and across Lot 17.
EASEMENT "A-6", for Storm Drain Purposes, over and across Lots 66 and 76.
EASEMENT "A-7", 10 feet wide, for Storm Drain Purposes, over and across Lot 78.
EASEMENT "A-8", 10 feet wide, for Storm Drain Purposes, over and across Lot 87.
EASEMENT "B-1", 10 feet wide, for Sanitary Sewer Purposes, over Lot 111.
EASEMENT "B-2", 10 feet wide, for Sanitary Sewer Purposes, over and across Lots 69 and 67.
EASEMENT "B-3", 10 feet wide, for Sanitary Sewer Purposes, over and across Lot 100.
EASEMENT "B-4", 10 feet wide, for Sanitary Sewer Purposes, over and across Lot 81.
EASEMENT "B-5", 10 feet wide, for Sanitary Sewer Purposes, over and across Lot 16.
EASEMENT "C-1", for Storm Drain Purposes, over and across Lots 50, 48 to 46 inclusive, and affecting Lot 50.
EASEMENT "C-2", 10 feet wide, for Storm Drain Purposes, over and across Lots 21 to 25 inclusive.
EASEMENT "C-3", 10 feet wide, for Storm Drain Purposes, over and across Lots 26 to 28 inclusive.

This map is from an actual survey on the ground made under the direct supervision of the undersigned between 9/1/60 and 2/15/63, and may be checked by the State Surveyor with Field Book and Calculation Folder No. "TR-508."

L. FREDERICK PACK ASSOCIATES OF HAWAII, LTD.

631 University Avenue
Honolulu, Hawaii
March 21, 1963

Maitland C. Drake
MAITLAND C. DRAKE
Registered Professional Surveyor
Certificate No. 282-E

PIKOILOA TRACT UNIT 9
Received: 5/16/63
TMK 4-5-33

MAY 16 1963

I hereby certify that the description of Survey and map hereon have been examined and checked as to form and mathematical correctness but not on the ground and the same is approved in accordance with Section 9-3-3(1), 18 and 19 of the Revised Laws of 1955.

Honolulu, Hawaii
May 10, 1963

James D. Kynnersley
State Land Surveyor

State of Hawaii
Office of
Bureau of Conveyances
Received For Filing this 10th day of
May A.D. 1963 at 3:20 P.M.
and Filed in File No. 850

Oliver R. Lau
Registrar of Conveyances.

METES AND BOUNDS DESCRIPTION RECORDED IN LIBER 4511 ON PAGES 543-546

NOTE:
1. Figures shown thus ④, indicate number of courses in description
2. Owners of adjoining land as shown on plan are from records in the Taxation Maps Branch
3. All adjoining lands are Harold K.L. Castle owned, unless otherwise noted

Tax Map Key: 4-5-33
TK-508

30"x42" = 10.8 Sq. Ft.

HYDRAULIC DATA

1. Runoff Quantities computed by the Rational Method in accordance with the C & C. Stds. dated June 1959.
2. "n" values for Manning's Formula for concrete pipes = 0.013.
3. Tm = 10 years with I = 2.50 "/Hr.
   = 20 years with I = 2.90 "/Hr.
4. R = 0.79 when Tm = 10 years.
   = 0.85 when Tm = 20 years.
5. C = 0.60 for residential areas.
   = 0.90 for paved areas.
   = 0.10 for undeveloped areas.

True North

Scale 1" = 60'

SEWER NOTES

1. All sewer construction shall be done in accordance with the City & County Standard Specifications, approved by the Chief Engineer on Aug. 12, 1957 Order No. 1243, Bill 33 (1930) as amended.
2. In the event that any changes in alignment or grade for the proposed sewers are required due to unforseen conflict with other underground utilities, the Subdivision Engineer or Maker of plans shall be responsible for the required changes which are to be presented to the Division of Sewers for approval.
3. Minimum slope of all laterals shall be 1.00 %.
4. Sewer Easements to be granted to the City and County of Honolulu.
5. Contractor to bring top of S.M.H. to finished grade after curb construction.
6. Contractor to notify the Division of Sewers (2) days prior to commencement of work.
7. Sewer service shall not be available to this subdivision until early 1962 when the Kaneohe Treatment Plant is completed.

1. Materials and construction of Wa
with the Standards of the Board
2. The standard . . mensions of th
or A 21.8 Centrifugally Cast, Cement L

PIPE SIZE (Inches)	CLASS #	THICKNE (Inches
4	250	0.35
6	250	0.38
8	250	0.41
12	250	0.52

3. Cast iron fittings shall be ball
requirements as specified in th
4. Locations of existing Water Mai
only. In the event that any chan
and Appurtenances are required
improvements, the Subdivider s
cost thereof.
5. Wherever connections to exist
expose the existing Mains p
locations and depths.
6. Connections to existing Water
done by the Board of Water S
7. The Contractor shall be respo
appurtenances.
8. Where R.M., Tile or concrete wa
at his own expense, adequate s
of Water Supply Engineer to t
property.
9. The Contractor shall notify the
to commencing work on th
10. Where a corporation cock tap
ruction standards, a double
mueller threads, shall be use
11. The minimum clearance betwee
shall be 3.0 feet.
12. All service laterals are Type
Water Supply Standards. 1 1/2
13. All Water Meter Boxes shall b
Water Supply at the Board's
haul to the job site and install
expense.
14. Approval of these plans by the
only. Drainage and other featu
15. The Contractor shall arrange w
remove Meter Boxes and Appu
grading operations. Contrac
16. New Water System Shall Be Teste
17. The Contractor shall permit th
valves for chlorination purpos
have been Certified by the B.W
by the B.W.S. All necessary
work shall be performed by
18. Water Service is not available ab
19. Approval of these plans by the
adequacy of the water system
such as lines, grades, fitting
prepared these plans.
20. The occupants of lots 14A
shall be required to ante
elevation agreements, ag
the water system will p
occupants of these lots
21. Pressure regulators are recom

1. All constructio
Details and S
of Honolulu.
2. Bench Marks
and Data shall
3. Construct G
where Stand
4. Monolithic
Precast C

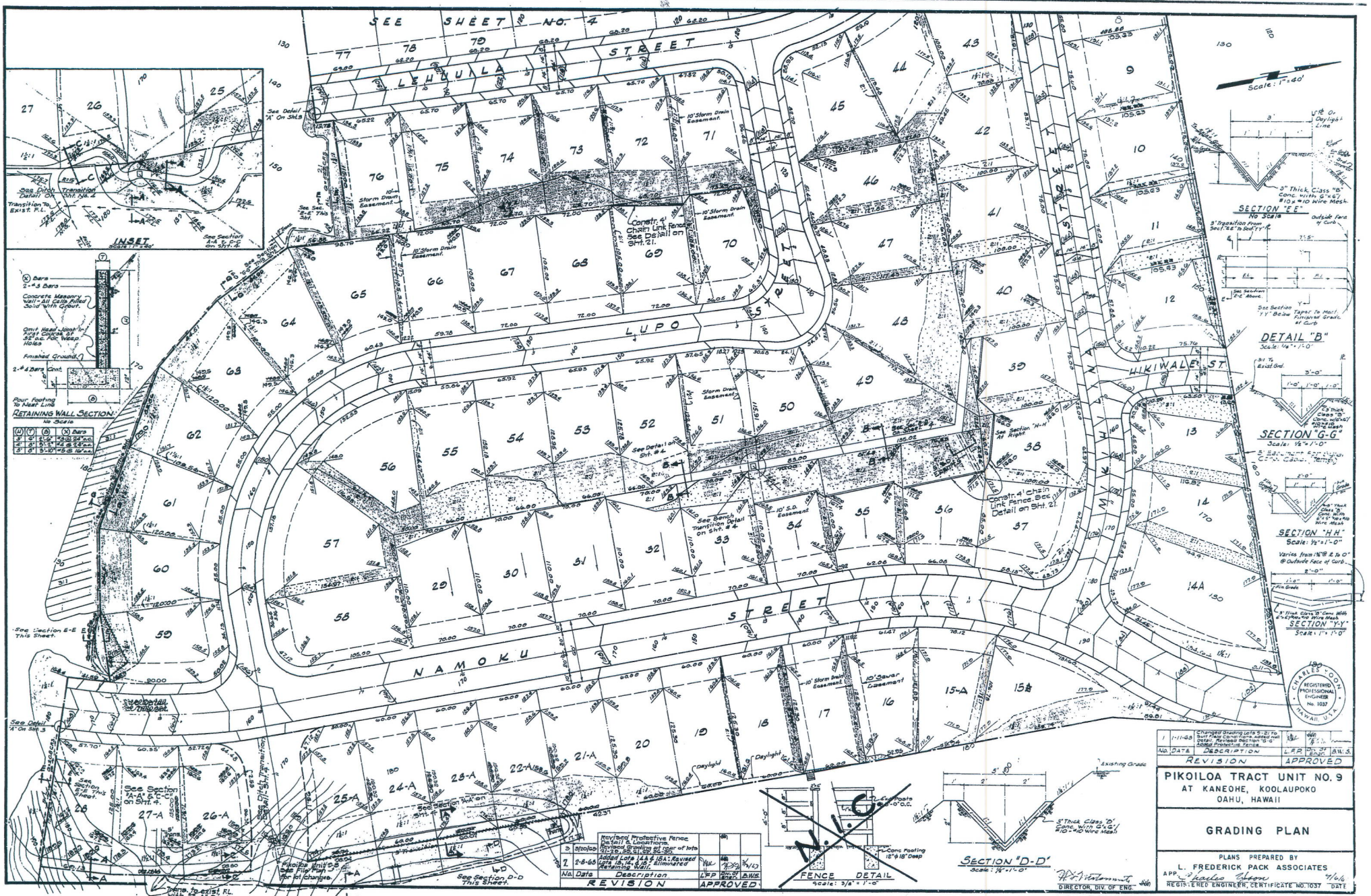
CHARLES YOON
REGISTERED PROFESSIONAL ENGINEER
No. 1037
HAWAII, U.S.A.

DIRECTOR, DIV. OF SEWERS

ASST. CHIEF ENG., B.W.S.

DIRECTOR, DIV. OF ENG.

AS BUILT

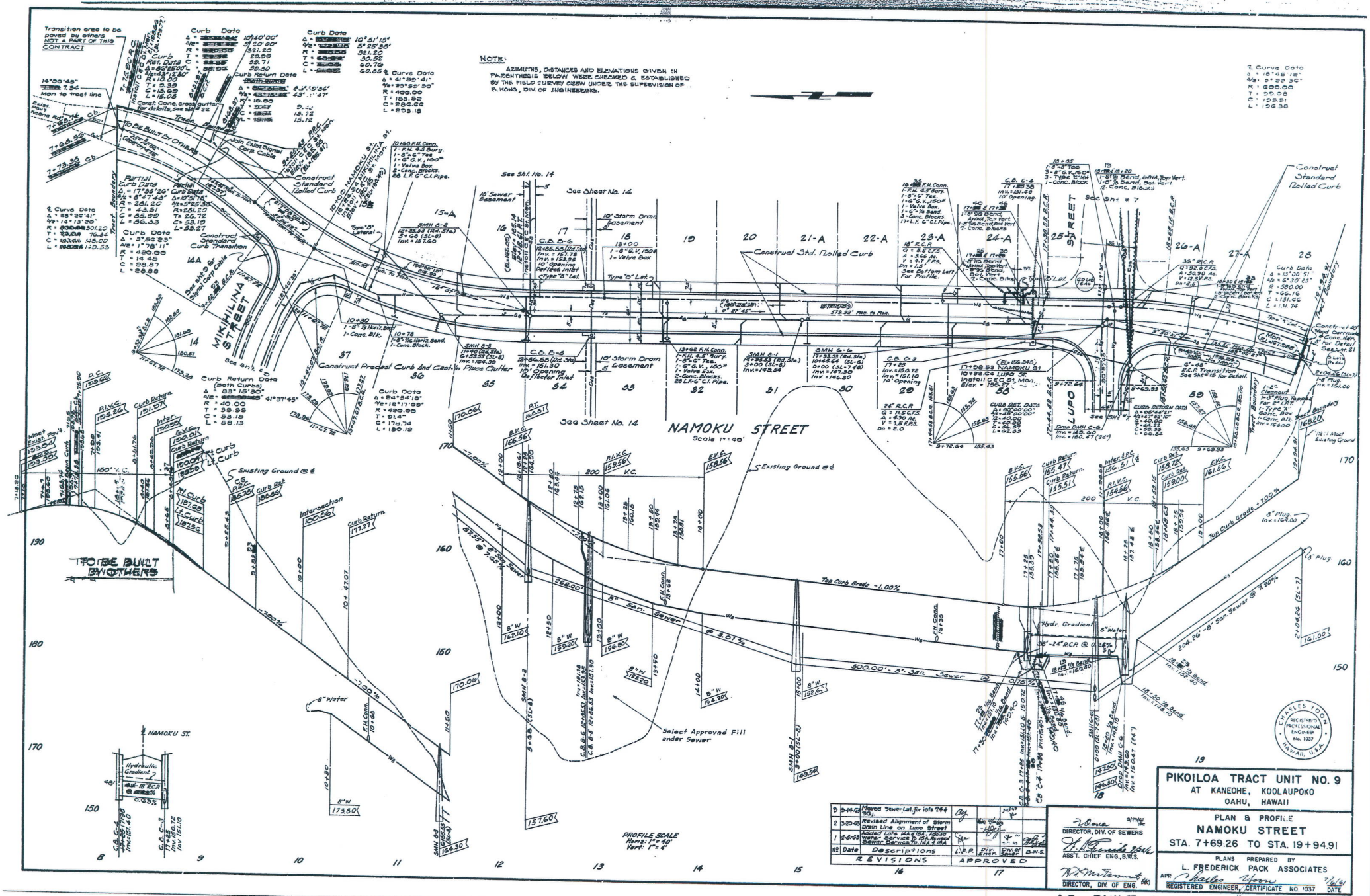


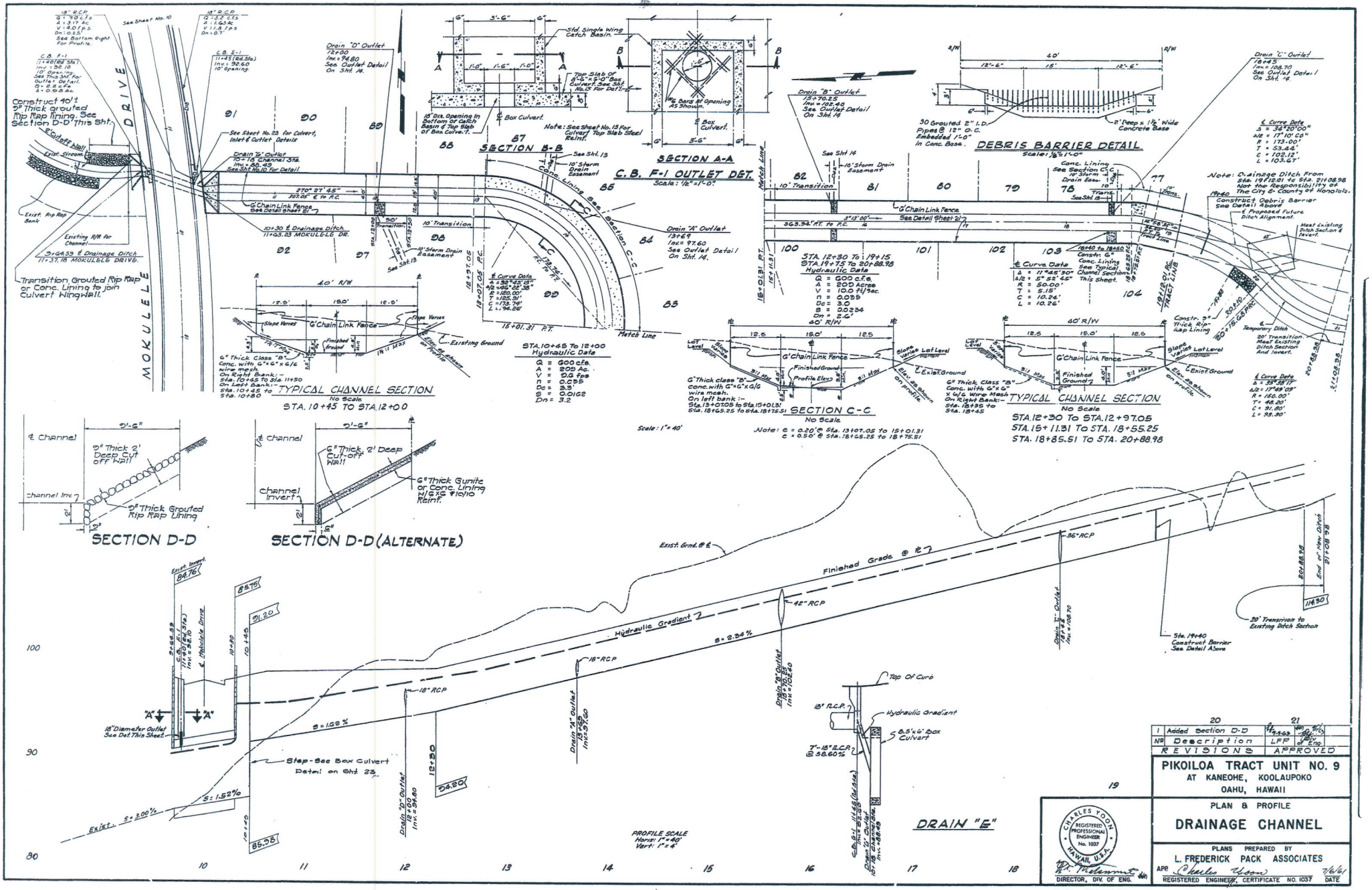
PIKOILOA TRACT UNIT NO. 9
AT KANEOHE, KOOLAUPOKO
OAHU, HAWAII

GRADING PLAN

PLANS PREPARED BY
L. FREDERICK PACK ASSOCIATES
APP. [signature] 9/66
REGISTERED ENGINEER, CERTIFICATE NO. 1037 DATE

AS BUILT 13-10-3-35 SHEET 5 OF 27 SHEETS


NAMOKU STREET
Scale 1"=40'
MIKIHILINA STREET
LUPO STREET
TO BE BUILT BY OTHERS
Existing Ground @ ℄
Top Curb Grade -1.00%
Top Curb Grade -1.00%
8" San. Sewer
300.00'-8" San. Sewer @ 3.01%
Hydr. Gradient
Select Approved Fill under Sewer
Construct Standard Rolled Curb
Construct Prepost Curb and Cast-in-Place Gutter
See Sht. No. 14
See Sheet No. 14
See Sheet No. 14
See Sht. # 7
℄ NAMOKU ST.
PROFILE SCALE
Horiz: 1"=40'
Vert: 1"=4'
NOTE:
AZIMUTHS, DISTANCES AND ELEVATIONS GIVEN IN PARENTHESIS BELOW WERE CHECKED & ESTABLISHED BY THE FIELD SURVEY CREW UNDER THE SUPERVISION OF P. KONG, DIV. OF ENGINEERING.
Transition area to be paved by others NOT A PART OF THIS CONTRACT
Join Existing Signal Corp Cable
To Be Built By Others
Construct Standard Rolled Curb
Construct Standard Curb Transition
Partial Curb Data
Curb Data
Curb Return Data
Curb Data
Curb Return Data (Both Curbs)
Curb Data
Curb Data
℄ Curve Data
Const. Conc. cross gutter for details, see sheet 22
10" Sewer Easement
10' Storm Drain Easement
Type "A" Lat.
Type "B" Lat.
Type "C" Lat.
Type "D" Lateral
10+98 F.H. Conn. 1-F.H. 4.5 Bury. 1-8"-45° Tee. 1-6" G.V., 150# 1-Valve Box 2-Conc. Blocks. 28 L.F. 6" C.I. Pipe.
C.B. B-6 12+65.55 (Rad.Sta.) Inv. = 151.78 Inv. = 153.95 10' Opening Deflector Inlet Type "B" Lat.
C.B. B-5 12+56.55 (Rad. Sta.) Inv. = 151.80 10' Opening Deflector Inlet
SMH B-3 (1+40 Rad. Sta.) G+23.33 (SL-8) Inv. = 164.30
SMH B-2 12+25.33 (Rad. Sta.) S + 66 (SL-8) Inv. = 157.60
18+62 F.H. Conn. 1-F.H. 4.5 Bury. 1-6"-C Tee. 1-6" G.V., 150# 1-Valve Box 2-Conc. Blocks. 28 L.F. 6" C.I. Pipe.
SMH B-1 18+33.33 (Rad. Sta.) 3+00 (SL-8) Inv. = 149.34
SMH B-4 17+38.33 (Rad. Sta.) 10+45.64 (SL-8) Inv. = 147.30 Inv. = 146.30
C.B. C-3 17+25 Inv. = 150.76 10' Opening
C.B. C-4 Inv. = 151.40 10' Opening
17+08.33 NAMOKU St. (EL = 166.240') Install C.E.C. St. Mon. Elev. = 166.21'
10+92.64 Lupo St.
Drop CMH C-6 Inv. = 142.50 Inv. = 160.27 (24")
17+44.48 B.C.R. 166.81
25-A 26-A 27-A 28 24-A 23-A 22-A 21-A 20 19 18 17 16 15-A 14A 14 37 36 35 34 33 32 31 30 29 58 59
Curb Data Δ = 13°30'51" 4/2 = 6°30'25" R = 500.00 T = 59.08 C = 131.46 L = 131.74
Curb Data Δ = 18°48'18" 4/2 = 9°24'09" R = 600.00 T = 99.08 C = 195.31 L = 196.38
Curb Data Δ = 41°55'41" 4/2 = 20°57'50" R = 400.00 T = 153.52 C = 286.00 L = 293.18
Curb Data Δ = 10°51'15" 5°25'38" 381.20 30.52 60.76 60.85
Curb Data 10°40'00" 5°20'00" 321.20 25.66 50.71 50.80
Curb Return Data Δ = 43°10'54" 43°11'47" R = 10.00 T = 3.93 L = 15.08 D = 573.24 C = 13.72 15.12
Curb Return Data Δ = 41°37'45" R = 40.00 T = 35.55 C = 53.15 L = 58.13
Curb Data Δ = 24°34'18" 4/2 = 12°17'09" R = 420.00 T = 91.47 C = 179.74 L = 180.18
Curb Data Δ = 17°55'20" 4/2 = 8°57'40" R = 420.00 T = 14.45 C = 28.87 L = 28.88
Curb Data Δ = 88°32'41" 4/2 = 44°16'20" R = 20.00 T = 19.84 C = 27.90 L = 30.92
Curb Data Δ = 37°50'15" 4/2 = 18°55'08" R = 260.00 T = 88.51 C = 168.55 L = 171.73
Curb Data Δ = 37°50'15" 4/2 = 18°55'08" R = 261.20 T = 89.51 C = 169.55 L = 172.53



1	Added Section D-D	9-9-63	
No	Description	LFP	of Eng.
REVISIONS		APPROVED	

PIKOILOA TRACT UNIT NO. 9
AT KANEOHE, KOOLAUPOKO
OAHU, HAWAII

PLAN & PROFILE

DRAINAGE CHANNEL

PLANS PREPARED BY
L. FREDERICK PACK ASSOCIATES

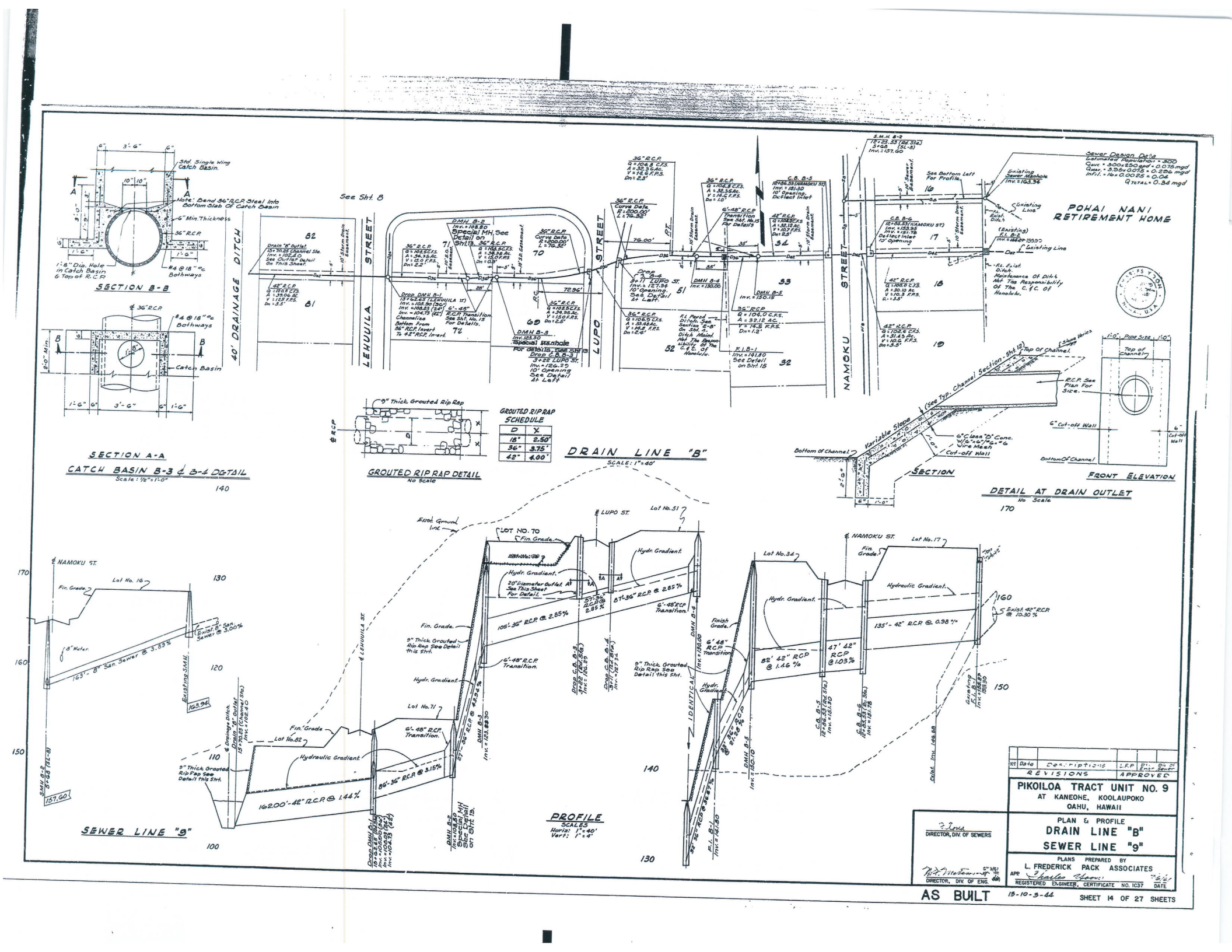
CHARLES YOON REGISTERED PROFESSIONAL ENGINEER No. 1037 HAWAII, U.S.A.

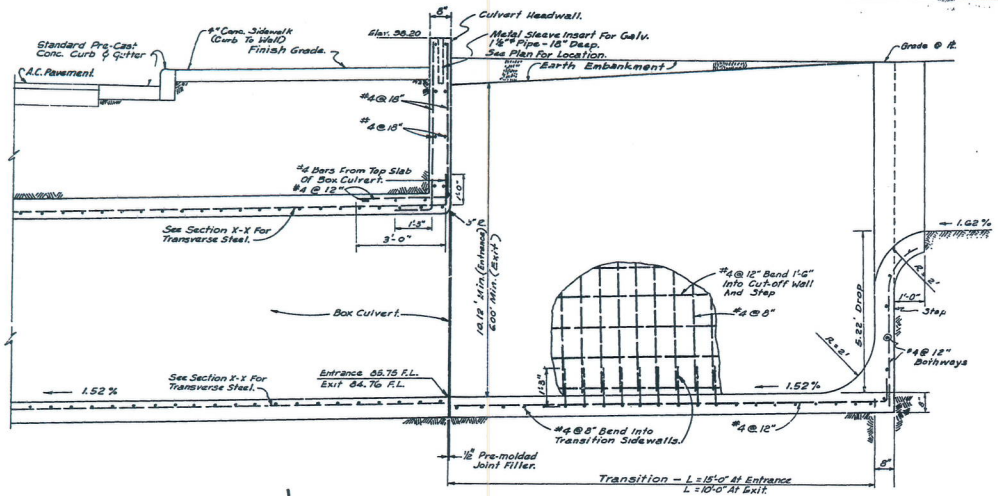
DIRECTOR, DIV. OF ENG.

APP. [signature] 7/6/61
REGISTERED ENGINEER, CERTIFICATE NO. 1037 DATE

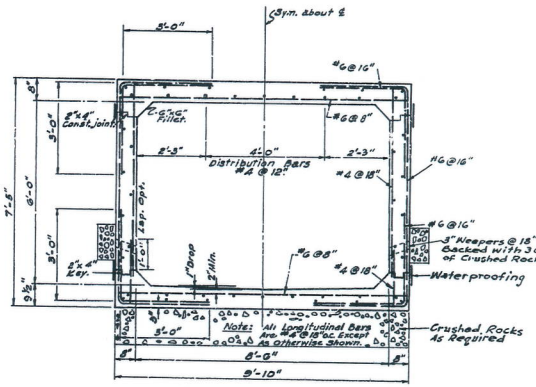
AS BUILT 13-10-3-42

SHEET 12 OF 27 SHEETS

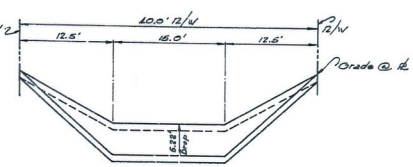

SECTION B-B
SECTION A-A
CATCH BASIN B-3 & B-4 DETAIL
Scale: 1/2"=1'-0"
GROUTED RIP RAP DETAIL
No Scale
GROUTED RIP RAP SCHEDULE
D X
18" 2.50'
36" 3.75'
42" 4.00'
DRAIN LINE "B"
SCALE: 1"=40'
SECTION
FRONT ELEVATION
DETAIL AT DRAIN OUTLET
No Scale
SEWER LINE "9"
PROFILE
SCALES
Horiz: 1"=40'
Vert: 1"=4'
LEHUUILA STREET
LUPO STREET
NAMOKU STREET
40' DRAINAGE DITCH
POHAI NANI RETIREMENT HOME
Sewer Design Data
Estimated Population = 300
Qave. = 300x250 gpd = 0.075 mgd
Qaver. = 3.5 Qave. = 0.26 mgd
Infil. = 16 x 0.0025 = 0.04
Q TOTAL = 0.34 mgd
PIKOILOA TRACT UNIT NO. 9
AT KANEOHE, KOOLAUPOKO
OAHU, HAWAII
PLAN & PROFILE
DRAIN LINE "B"
SEWER LINE "9"
PLANS PREPARED BY
L. FREDERICK PACK ASSOCIATES
REGISTERED ENGINEER, CERTIFICATE NO. 1037
DIRECTOR, DIV. OF SEWERS
DIRECTOR, DIV. OF ENG.
AS BUILT
13-10-3-44
SHEET 14 OF 27 SHEETS



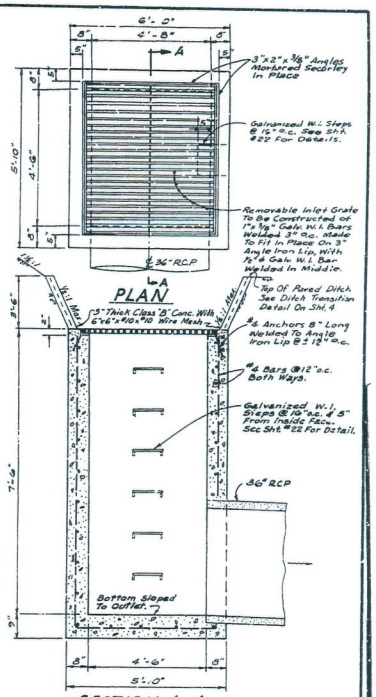
SECTION Y-Y
Scale: 1/2" = 1'-0"



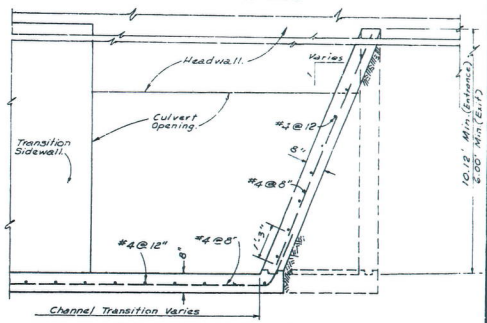
SECTION X-X
Scale: 1/2" = 1'-0"



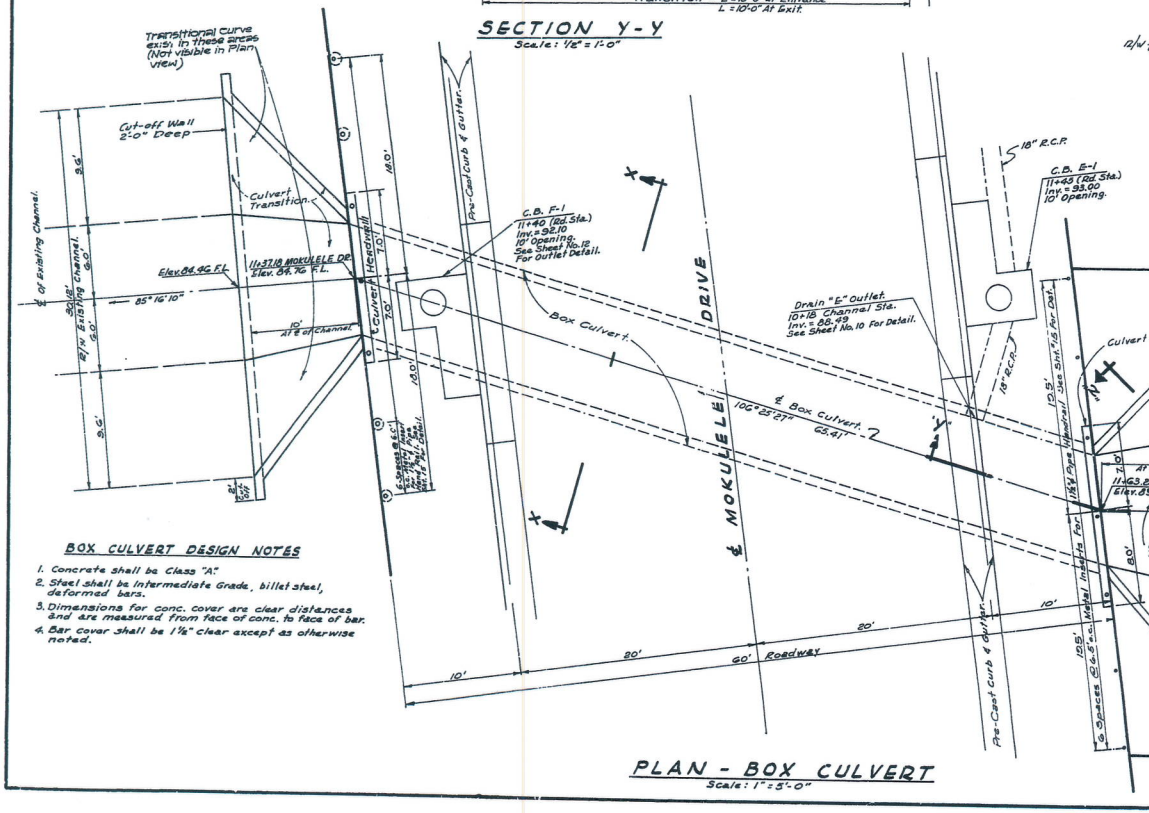
SECTION "B-B"
Scale: 1/2" = 1'-0"



SECTION A-A
FIELD INLET DETAIL
No Scale



SECTION Z-Z
Scale: 1/2" = 1'-0"



PLAN - BOX CULVERT
Scale: 1" = 5'-0"

BOX CULVERT DESIGN NOTES

1. Concrete shall be Class "A."
2. Steel shall be Intermediate Grade, billet steel, deformed bars.
3. Dimensions for conc. cover are clear distances and are measured from face of conc. to face of bar.
4. Bar cover shall be 1½" clear except as otherwise noted.

PIKOILOA TRACT UNIT NO. 9
AT KANEOHE, KOOLAUPOKO
OAHU, HAWAII

STORM DRAIN DETAILS

CHARLES YOUN REGISTERED PROFESSIONAL ENGINEER No. 1037 HAWAII, U.S.A.

PLANS PREPARED BY
L. FREDERICK PACK ASSOCIATES
APP. Charles Youn 7/6/61
REGISTERED ENGINEER, CERTIFICATE NO. 1037 DATE

DIRECTOR, DIV. OF ENG.

AS BUILT 19-10-3-47

SHEET 23 OF 27 SHEETS

APPENDIX VI

Pikoiloa 1963 Drainage Analysis
(Receiving Drainage System)

- Off-Site Drainage Analysis
- On-Site Drainage Analysis

Off-Site Drainage Analysis

RETURN TO D/E

OFFSITE DRAINAGE ANALYSIS

FOR

PIKOILOA SUBDIVISION

UNIT 10

November 14, 1963

L. Frederick Pack Associates of Hawaii, Ltd.
931 University Avenue
Honolulu 14, Hawaii

I. INTRODUCTION

The contributing areas to the various pick up points within the subdivision are relatively small, thereby allowing the runoff quantities to be estimated by the Rational Method. The Storm Drainage Standards of the City and County of Honolulu will be utilized to determine these Estimations.

For the design of the internal piping system, a recurrence interval of 10 years will be used in accordance with City and County standards. However, to assure a margin of safety for the various diversion ditches, benches and field inlets, a recurrence interval of 20 years will be used.

After the quantity of flows have been estimated for all the areas, a typical section will be designed and a graph prepared which will indicate the depth of flow at various "Q's" and slopes. It will then be possible to specify a limited number of sections for the construction plans.

All runoff areas and other pertinent data are depicted on the accompanying enclosure.

II. CALCULATIONS

A. AREAS:

Planimeter Readings:

A-1 = 32.35 square inches (A-4 included in A-1 = 3.15)
A-2 = 42.88 " " (A-3 included in A-2 = 3.85)

B = 5.12 " "

C-1 = 3.66 " "
C-2 = 0.95 " "

Planimeter Readings: (continued)

D-1 = (Negligible)
Use D = 1.75 square inches

E-1 = 6.02 " "
E-2 = 1.05 " "

F-1 = 2.52 " "
F-2 = 5.60 " "

G = 3.48 " "

H-1 = 1.08 " "
H-2 = 1.00 " "

J = 0.80 " "

Areas in Acres:

$$\text{Plan. Rdg.} \times \frac{40{,}000}{43{,}560} = \text{Acres} \qquad (0.91827)$$

A-1 = 30.2 Acres (A-4 = 2.9 acres)
A-2 = 39.4 " (A-3 = 5.3 acres)
Total 69.6 Acres

B = 4.7 Acres

C-1 = 3.4 Acres
C-2 = 0.9 "
Total 4.3 Acres

D = 1.6 Acres

E-1 = 4.5 Acres 5.5
E-2 = 1.0 "
Total 5.5 Acres 6.5

F-1 = 2.3 Acres
F-2 = 5.1 "
Total 7.4 Acres

G = 3.2 Acres

Areas in Acres: (continued)

H-1 = 1.0 Acres
H-2 = 1.0 "
Total 2.0 Acres

J = 0.70 Acres

B. DETERMINATION OF RUNOFF COEFFICIENT - (C)

From Table I -(City and County Standards)

A —	0.40	Relief
B —	0.10	Soil Infiltration
C —	0.05	Vegetal Cover
D —	0.15	Surface Storage
Total -	0.70	

C. REDUCTION COEFFICIENTS - (C)

From Table 3 - (City and County Standards)

	Tm in Years			
	10	20	30	50
R	0.79	0.85	0.89	0.93

D. TIME OF CONCENTRATION

Area	Maximum Length (Feet)	Diff. in Elevation	Type of Terrain	Aver. Slope H/L	"K" $L/\sqrt{S}$	Tc * (Minutes)
A-1	2,460	685	Well forested	0.28	4,640	9.0
A-2	2,020	575	Well forested	0.29	3,740	7.8
	130		Paved Swale			Negligible
B	900	200	Well Forested	0.22	1,915	5.0 ±

Assume Tc = 5.0 minutes for the remainder of the areas, inasmuch as concentration times less than 5 minutes are difficult to estimate due to the uncertainty of estimating saturation time.

* Tc - determined from Plate 3, City and County Standards using upper curve, inasmuch as natural terrain in the area is very well forested. -- an average velocity of 15 f.p.s. was assumed in paved swales.

E. DETERMINATION OF INTENSITY - (I)

(From Plate 8, City and County Standards)

Area	I - (10 years)	I - (20 years)
A-1	5.3	5.9
A-2	5.6	6.25
A	5.3	6.9
All other areas	6.15	6.8

Intensity of 1-hr. rainfall at Tm=10 years = 2.50± inches/hr.
(Plate 4, City and County Standards)

Intensity of 1-hr. rainfall at Tm=20 years = 2.8 inches/hr.
(Plate 5, City and County Standards)

F. DETERMINATION OF RUNOFF - (Q)

RC for Tm = 10 years = 0.553

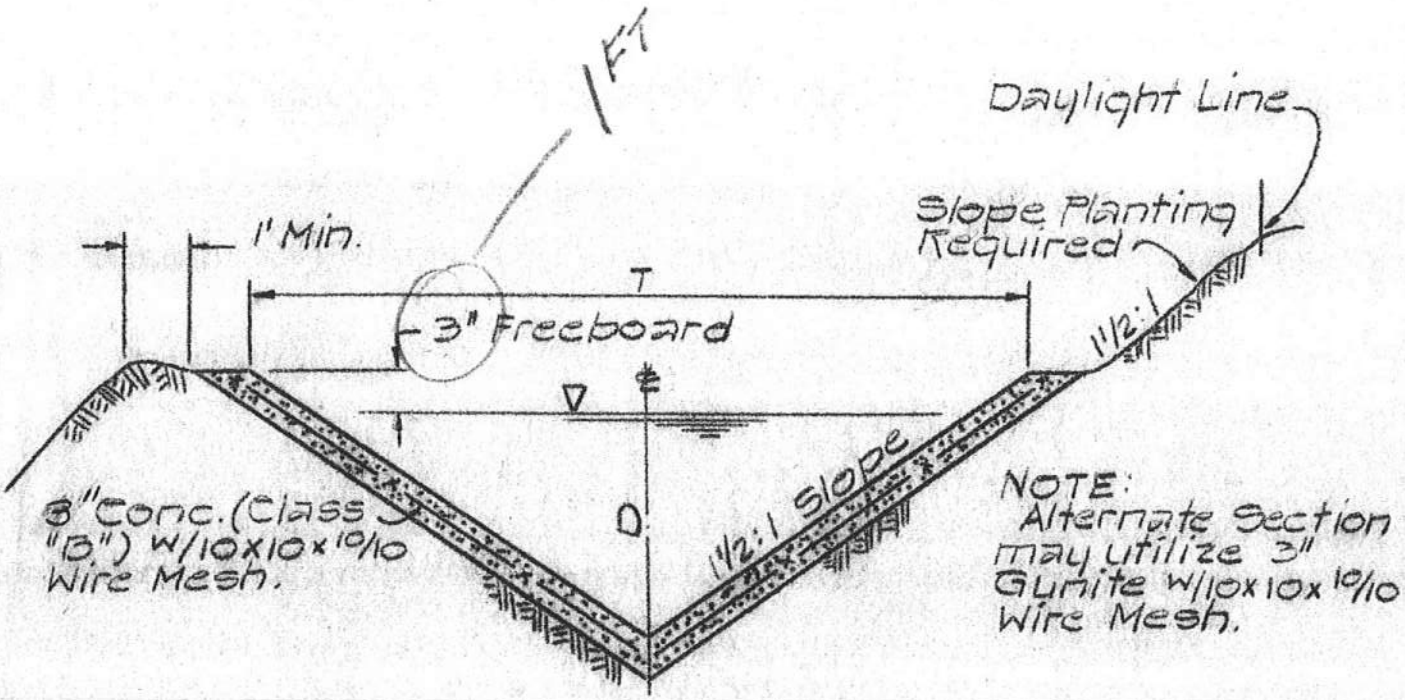
RC for Tm = 20 years = 0.595

	AREA (Acres)	INTENSITY 10 years	INTENSITY 20 years	Q - c.f.s. 10 years	Q - c.f.s. 20 years
A-1	30.2	5.3	5.9	88.5	106.0
A-2	39.4	5.6	6.25	122.0	146.5
A	69.6	5.3	5.9	204.0	244.3
B	4.7	6.15	6.80	16.0	19.0
C-1	3.4			11.6	13.8
C-2	0.9			3.1	3.6
C	4.3			14.6	17.4
D	1.6			5.4	6.5
E-1	4.5	5.5		15.3 18.7	18.2 22.3
E-2	1.0			3.4	4.0
E	5.5	6.5		18.7 22.1	22.3 26.3
F-1	2.3			7.8	9.3
F-2	5.1			17.3	20.6
F	7.4			25.2	29.9
G	3.2			10.9	12.9
H-1	1.0			3.4	4.0
H-2	1.0			3.4	4.0
H	2.0			6.8	8.1
J	0.7			2.4	2.8
(A-3)	5.3			18.0	21.4
(A-4)	2.9	6.15	6.80	9.9	11.7

III. DESIGN OF PAVED SWALES

A. Areas A-1 and A-2 are obviously too large to consider in their entirety as contributary areas. Areas A-3 and A-4 are more precisely the actual areas which supply runoff to the paved swales on each side of F.I. A-6.

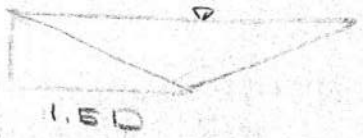
For the remainder of the areas, there doesn't appear to be any clear-cut differentiation of runoff areas. For this reason, the areas will be used in their entirety for the purpose of designing paved swales.



TYPICAL SECTION of DIVERSION DITCH

B. **CALCULATIONS FOR GRAPH**

Ref. Table 97
King's Hdbk.



D	R (0.416D)	$R^{2/3}$	A (ZD^2)
0.20	0.08	0.186	0.060
0.40	0.17	0.307	0.240
0.60	0.25	0.397	0.540
0.80	0.33	0.477	0.96
1.00	0.42	0.561	1.50
1.20	0.50	0.630	2.16
1.40	0.58	0.695	2.94
1.60	0.67	0.765	3.84
1.80	0.75	0.825	4.86
2.00	0.83	0.883	6.00

@ S = 0.01

S1/2 = 0.10

$1.486/0.015 = 99.067$

$Q = (A)\ (99.067)\ R^{2/3}\ (0.10)$

@ S = 0.02

S1/2 = 0.1414

(0.1414) (99.067) = 14.0081

@ S = 0.03

S1/2 = 0.1732

(0.1732) (99.067) = 17.1584

@ S = 0.04

S1/2 = 0.2000

(0.200) (99.067) = 19.8134

@ S = 0.05

S1/2 = 0.2236

(0.2236) (99.067) = 22.1514

@ S = 0.10

S1/2 = 0.3162

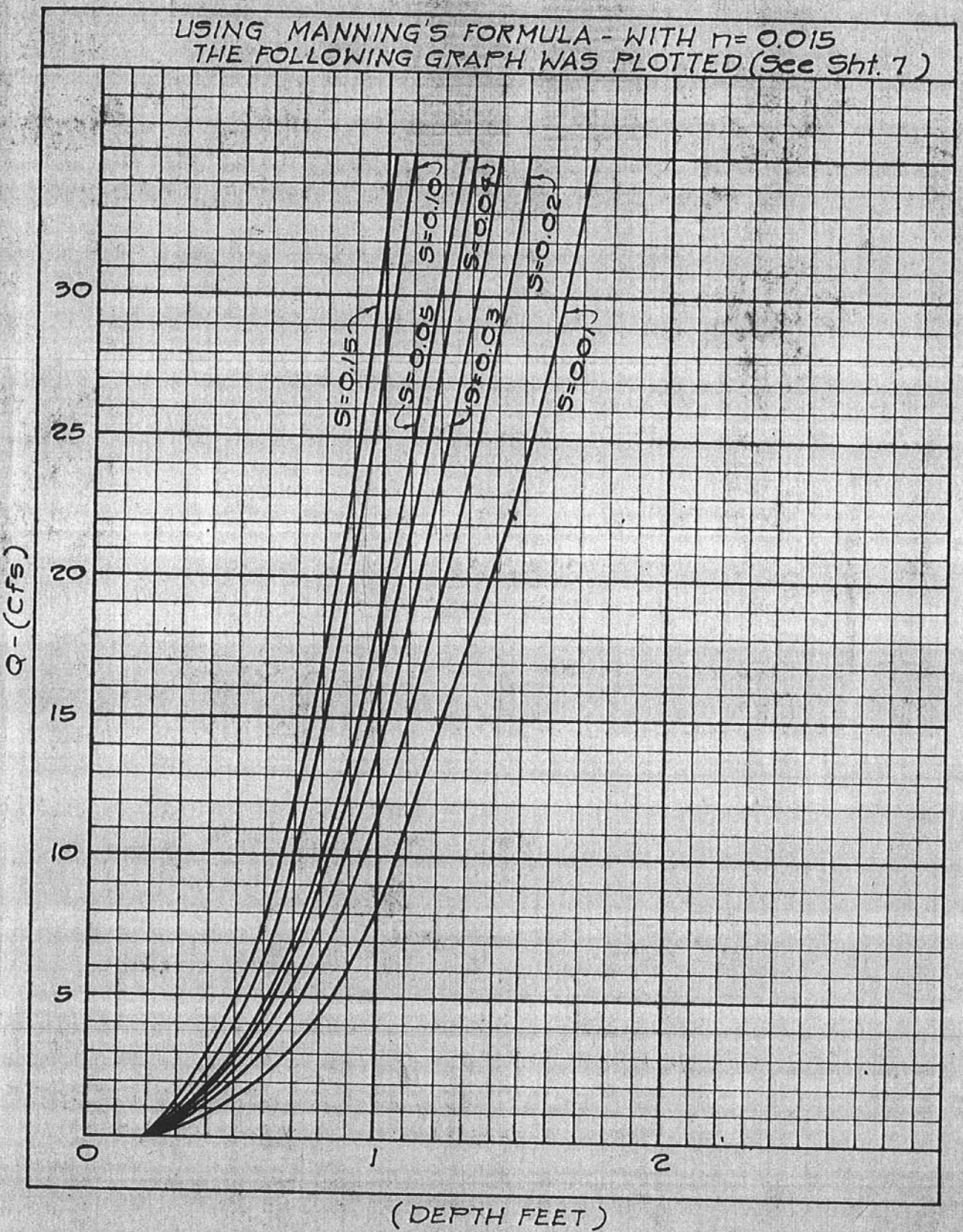
(0.3162) (99.067) = 31.3250

@ S = 0.15

S1/2 = 0.378

(0.378) (99.067) = 37.4473

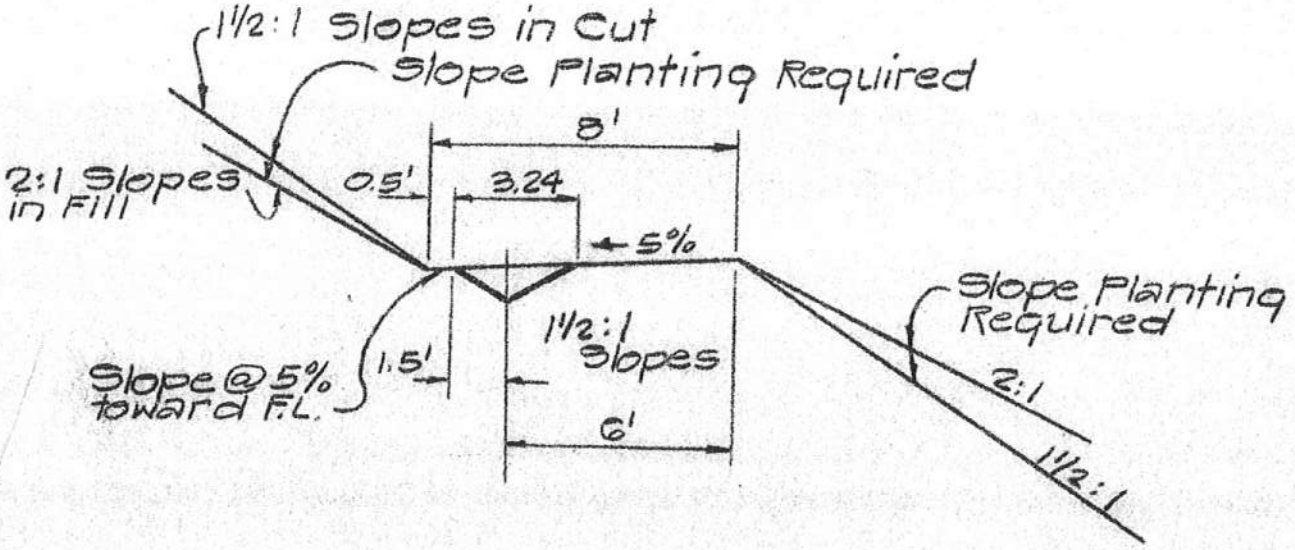
USING MANNING'S FORMULA - WITH n= 0.015
THE FOLLOWING GRAPH WAS PLOTTED (See Sht. 7)



IV. DESIGN PAVED BENCHES

A. The benches, in general, will receive a minimum amount of runoff. However, there are certain locations where flow from diversion ditches must be conveyed down a bench section to the intake point. The paved section for these areas must naturally be larger than those which carry only runoff from the various slopes. A nominal paved section, which in all cases is conservative, will be utilized for the typical bench. The specific areas, noted above, will be calculated with the use of the previously presented graph.

The bench flow lines will be held to a minimum slope of 1% in order to assure proper flow.



TYPICAL BENCH SECTION
Scale: 1"=5'-0"


MEALELE STREET
AKIMALA PL
PUALI KOA PLACE
KOA KAHIKO PLACE
AWELE PLACE
KANEOHE RANCH
KANEOHE KOOLAUP
TROUSDALE
PIKOIOA UNIT 10
Path of Runoff for Max Tc - Typical
RIDGE LINE
RIDGE LINE
RIDGE LINE
L. FREDERICK PACK ASSOCIATES
ENGINEERS
PLANNERS

On-Site Drainage Analysis

ON-SITE DRAINAGE ANALYSIS

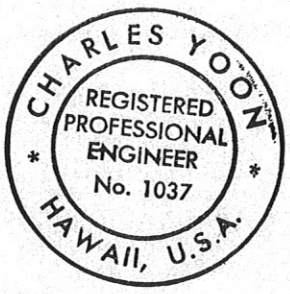
FOR

PIKOILOA SUBDIVISION, UNIT 10

Prepared By

L. Frederick Pack Associates of Hawaii, Ltd.
931 University Avenue
Honolulu, Hawaii

December 9, 1963



I. INTRODUCTION:

A. Contained herein are calculations, maps, etc. which explain the manner in which we have analyzed the various aspects of drainage design for Pikoiloa Subdivision, Unit 10. Much of the flow through the systems are contributed by areas which are outside of the Tract line. These flows are estimated and denoted in a report which was submitted to the Division of Engineering on November 14, 1963, and subsequently approved on November 26, 1963.

All the applicable portions of design are in accordance with the drainage standards of the City and County of Honolulu. The various items which are not covered by the above-noted standards have been referenced.

B. The items compiled herein include:

1. A Run-off Map
2. Hydraulic Gradient Calculation for all the lines depicted in 1.
3. Miscellaneous Calculations for:
   a. Required head at the various Field Inlets.
   b. Required head at the inlet to the natural channel (F.I. -A6)
   c. Velocity at outlet of the 8 x 6 Box Culvert.

II. CALCULATIONS:

A. Hydraulic Data

Recurrence Interval

Tm = 10 yr.
1-hr rainfall = 2.5"/hr.

Tm = 20 yr.
1-hr. rainfall = 2.9"/hr.

Calculations by Rational Method

Q = RCIA

R = Reduction Coeff

0.79 for Tm = 10 yr.
0.85 for Tm = 20 yr.

C = Runoff Coeff
Use 0.60 for Residential Areas

I = Rainfall Intensity, "/hr.

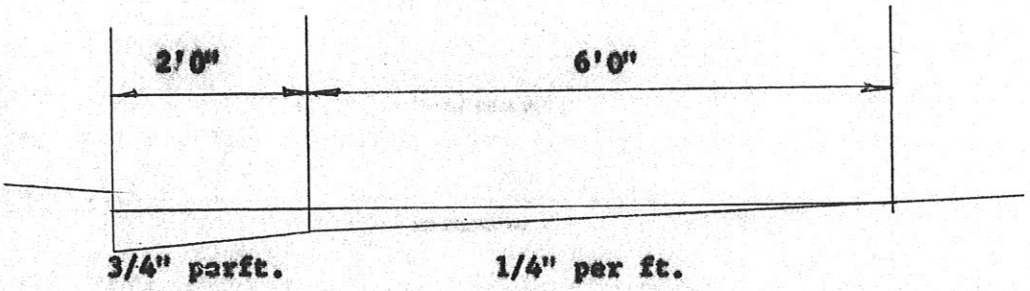
A = Areas in Acres

B. Determination of "Q" for Drain Line "A":

The quantity "Q" from F.I. A-6 to CB A-3 was estimated using a concentration time of 9.0 minutes. At C.B. A-3 other flows join the 204 c.f.s. noted for this reach of pipe, most notable of which is 18.7 c.f.s. from Area E (See Off-site Drainage Analysis). Inasmuch as Tc for this area is denoted as 5 mins. for the F.I., this quantity has been calculated for flow in the 48 inch pipe using Tc equals $9.0 + 400/16.2 = 9.4$ mins. The intensity then becomes 5.2 and Q equals $(0.474)\ (5.2)\ (5.5) = 13.56$ c.f.s.

The other areas contributing to this line are comparitively small and have high concentration times and have therefore simply been added regardless of concentration times in order to be on the conservative side.

GUTTER FLOW



ROAD GRADE %	Q cfs
0.4	1.4
0.6	1.7
0.8	1.9
1.0	2.1
1.5	2.6
2.0	3.0
2.5	3.4
3.0	3.7

ROAD GRADE %	Q cfs	
3.5	3.9	
4.0	4.1	Deflector Inlet
5.0	4.7	4.6
6.0	5.2	4.75
7.0	5.7	4.85
8.0	6.2	5.0
9.0	6.6	5.1
10.0	7.0	5.25

Sump Condition-Inlet= 10 cfs

Based on U.S. Public Roads
Chart No. 1072.06

HYDRAULIC GRADIENT CALCULATIONS

DRAIN LINE "A" 1/2

BY g

L. F. PACK ASSOC., LTD.
931 UNIVERSITY AVE.
DATE 11/18/63
CHECKED BY

STRUCTURE NO.	SIZE PIPE	Q TOTAL	SLOPE	LENGTH	V FULL	INV.	DN	SF	HF	DOWN-STREAM ELEV.	MANHOLE LOSSES A	B	C	D	ENT. CONT.	UP-STREAM ELEV.	ELEV. TOP PIPE	CONTROL'G ELEV.	AT	Q INC
SP MH		there is bend in between two structures.				133.48					61% top of pipe					119.48 ✓				
	48	267.5	.0346	530	21.3		F	.0346	18.34											
MH A-1						133.82 / 136.80							90° bend?						91.11	
	48	236.6	.0269	225	18.8		F	.0269	6.05	137.82	1.65	1.56	-	.55		141.58	140.80	147.9		30.9
MH A-2						142.85 / 144.85													81.32	
	48	229.8	.0256	235	18.3		F	.0256	6.02	147.63	1.32	.29	1.32	-		150.56	148.85	156.0		6.8
CB A-3						150.87													78.30	
	48	204.0	.0202	237	16.2		F	.0202	4.79	156.58	1.22	1.12	-	.38		159.30	154.87	163.5		25.8
MH A-5						153.68 / 159.46								?					69.6	
	48	204.0	.0202	160	16.2			.0202	3.23	164.09	.94	4.08	-			165.03	159.68 / 160.46	166.2		-
FI A-6						162.89				168.26	.94	4.08	-	-	1.48	173.23	162.89	175.0	69.6	204.3
											1	* Conservative								
CB A-3						159.50								?						
	24	18.7	.0065	90'	5.9		F	.0065	.59	Use top of pipe						161.50	161.5	163.5		
MH A-7A						160.07				162.09	.15	-	-	-		162.24	162.07	164.4	5.5	
	24	18.7	.4551	35	5.9		.4													
FI A-7						176.00				176.40	-	-	-	-	1.28	177.28	178.0	182.0	5.5	18.7

Consider this loss

Consider entrance control.

Inadequate

10.0

I-51-

HYDRAULIC GRADIENT CALCULATIONS

DRAIN LINE "A" 2/2

BY

L.F. PACK ASSOC., LTD.
931 UNIVERSITY AVE.
DATE 11/18/63
CHECKED BY

STRUCTURE NO.	SIZE PIPE	Q TOTAL	SLOPE	LENGTH	V FULL	INV.	DN	S_F	H_F	DOWN-STREAM ELEV.	MANHOLE LOSSES A.	B	C	D	ENT. CONT.	UP-STREAM ELEV.	ELEV. TOP PIPE	CONTROL'G ELEV.	A_T	Q INC
MH A-2						151.29				Use top of pipe						152.79	152.79	156.0		
	18	6.8	.0040	20	3.6		F	.0040	.08										3.02	
CB A-8						151.37				152.87	.08	.03	.06	-		153.04	152.87	155.3		4.1
	18	2.7	.0040	32	1.5		.47	.00062	.02										1.38	
CB A-9						151.50				153.06	.01	.03	-	-	.68	153.10	153.0	155.3		2.7
CB A-3						160.0					Use Top of pipe					161.50	161.5	163.5		
	18	4.6	.002	32	2.6		F	.002	.06										1.91	
CB A-4						160.06				151.56	.04	.10	-	-	1.29	161.70	161.56	163.6		4.6
MH A-1						144.50				Use top of pipe						146.00	146.0	147.9		
	18	5.8	.003	42	3.3		F	.003	.13										1.24	
CB A-10						144.63				146.13	.07	.19	-	-	1.46	146.39	146.1	148.0		5.8
★	Non Uniform Flow - Use of S_F is Conservative																			

HYDRAULIC GRADIENT CALCULATIONS

DRAIN LINE "B" 1/2

BY

L.F. PACK ASSOC., LTD.
931 UNIVERSITY AVE.
DATE 11/18/63
CHECKED BY

STRUCTURE NO.	SIZE PIPE	Q TOTAL	SLOPE	LENGTH	V FULL	INV.	DN	SF	HF	DOWN-STREAM ELEV.	MANHOLE LOSSES A	B	C	D	ENT. CONT.	UP-STREAM ELEV.	ELEV. TOP PIPE	CONTROL'G ELEV.	AT	Q INC
MH A-1						142.50					Use	top of pipe				144.50	144.5	147.9		
	24	25.1	0484	236	7.8		1.0	.012											8.55	
MH B-1						153.92				154.92	.30	-	-	-	3.6	157.52	155.92	159.1		-
	24	25.1	0416	122	7.8		1.05	.012											8.55	
						159.02				160.05	.30	.48	2.	.11	3.6	162.71	162.4	164.7		10.5
	24	14.6	.0232	283	5.1		0.9	.004											4.3	
MH B-4			?			166.97				167.87	.15	-	.14	-	2.2	169.31	168.97	171.1		-
	24	14.6	.0120	102	5.1		F	.004	.14										4.3	
MH B-5			?			167.38				169.72	.15	-	.14	-	2.2	170.01	169.38	173.5		-
	24	14.6	.0120	38	5.1		F	.004	.15										4.3	
FI B-6						167.53				170.16	.15	-	-	-	2.2	170.31	169.53	173.5		14.6
CB B-2						161.00							-			162.71	162.5	164.7		
	18	2.2	.004	45	1.3		0.6 *	.0004	.02										1.15	2.2
CB B-3						161.18				162.73	-	-	-	-	.83	162.73	162.68	164.7		

* Non Uniform Flow

HYDRAULIC GRADIENT CALCULATIONS

DRAIN LINE "B" 2/2

BY 4

L.F. PACK ASSOC., LTD.
931 UNIVERSITY AVE.
DATE 11/18/63
CHECKED BY

STRUCTURE NO.	SIZE PIPE	Q TOTAL	SLOPE	LENGTH	V FULL	INV.	DN	SF	HF	DOWN-STREAM ELEV.	MANHOLE LOSSES A	B	C	D	ENT. CONT.	UP-STREAM ELEV.	ELEV. TOP PIPE	CONTROL'G ELEV.	AT	Q INC
CB B-2						161.00										162.71	162.5	164.7		
	18	5.4		96	3.0		F	.0025	.24										1.6	
HH B-7A						161.24				162.95	.05	-	-	-	1.43	163.00	162.74	165.9		-
	18	5.4	.3224	33	3.0		.3	.0025											1.6	
F' B-7						193.49				173.79	.05	-	-	-	1.43	174.92	174.99	184.2		5.4

HYDRAULIC GRADIENT CALCULATIONS

DRAIN LINE "C" 1/2

BY 4

L.F. PACK ASSOC., LTD.
931 UNIVERSITY AVE.
DATE 11/18/63
CHECKED BY

STRUCTURE NO.	SIZE PIPE	Q TOTAL	SLOPE	LENGTH	V FULL	INV.	DN	SF	HF	DOWN-STREAM ELEV.	MANHOLE LOSSES A	B	C	D	ENT. CONT.	UP-STREAM ELEV.	ELEV. TOP PIPE	CONTROL'G ELEV.	AT	Q INC
Outlet		90.3				84.50	—									90.5				
	48	91.7	.0236	155	7.3		1.8	.004	.62											
DMH						88.16				91.12	.15	.32	-	.08	4.80	91.67		101.2		19.7
	48	70.0	.0560	211	5.7		1.2													
DMH						99.99 / 100.49				101.19	-	-	.11	-	4.00	104.10		111.5		
	42	70.6	.0400	79	7.5		1.4												24.68	
F1						103.63 / 109.00				105.03	-	-	-	-	4.13	108.36		114.8		2.3
	36	68.3 / 69.7	.0980	115	9.8		1.2												23.78	
CB C-1						120.27 / 122.70				121.47	-	-	-	-	5.70	125.97	125.70	128.3		.8
	36	67.5 / 68.9	.1011	45	9.8		F	.011	.50										23.39	
CB C-1A						123.15				126.47	.28	.10	-	-	-	126.85	126.15	128.3		1.9
	36	65.6 / 67.0	.04	93	9.7		F	.010	.93										22.46	
MH C-2						124.08				127.78	.26	-	.26	-	-	128.30	127.08	129.3		-
	36	65.6 / 67.0	.1956	43	9.7		1.0												22.46	
F1 C-3				Change this figure according to the revised plans.											5.40	138.15	135.49	141.00		3.9
	36	63.7 / 65.6	.100		9.8		F	.009	.90										21.08	
CB C-4						133.39				139.05	.23	.12	.23	-		139.63	136.39	145.0		4.9 / 2.9
	36	61.0		38	8.6		F	.0085	.32			1.1							20.07	
CB C-5						133.71				139.95	.20	.20	.40	.08		140.83 / 141.13	136.71	145.0		6.1

Non Limiting Flow - Use of F.F. Conservative

Change as reliable

$V_i = 0$ since drop

DRAIN LINE "C" 2/2

HYDRAULIC GRADIENT CALCULATIONS

BY 4

L. F. PACK ASSOC., LTD.
931 UNIVERSITY AVE.
DATE 11/20/63
CHECKED BY

STRUCTURE NO.	SIZE PIPE	Q TOTAL	SLOPE	LENGTH	V FULL	INV.	DN	SF	HF	DOWN-STREAM ELEV.	MANHOLE LOSSES A	B	C	D	ENT. CONT.	UP-STREAM ELEV.	ELEV. TOP PIPE	CONTROL'G ELEV.	AT	.Q INC
CB C-5						139.71 / 140.00										140.83 / 143.00				
	36	54.9		135	7.8		F	.0065	.88								143.00	145.0		6.1
MH C-6						140.88													17.52	
	30	43.5	.0990	102	8.9		1.0	.011		143.88	.23	(-) .30	.46	.20	✓	144.47	143.88	147.7		11.4
MH C-7						150.98 / 152.98													13.92	
	30	43.5		126	8.9		F	.011	1.39	151.98			-	-	4.50	155.48	155.48	159.9		-
CB C-8						154.37 / 155.21													13.92	
	30	41.4		68	8.4		F	.01	.68	156.87	.41	.20	.23	-	✓	157.71	157.71	160.0		2.1
CB C-9						155.89													12.86	
	30	36.1	.0472	87	7.4		1.1	.0075		158.39	.39	.22	.20	.08	✓	159.28	158.39	162.1		5.3
MH C-11						160.00 / 161.00													10.6	
	24	25.2	.0341	205	8.0		1.1	.013		161.10			-	.24	3.75	163.99	163.00	165.4		10.9
FI C-12						168.00													7.4	
										169.10			-	-	3.80	171.80	170.0	176.0		25.2

HYDRAULIC GRADIENT CALCULATIONS

DRAIN LINE "C"

BY

L.F. PACK ASSOC., LTD.
931 UNIVERSITY AVE.
DATE 11/20/63
CHECKED BY

STRUCTURE NO.	SIZE PIPE	Q TOTAL	SLOPE	LENGTH	V FULL	INV.	DN	SF	HF	DOWN-STREAM ELEV.	MANHOLE LOSSES A	B	C	D	ENT. CONT.	UP-STREAM ELEV.	ELEV. TOP PIPE	CONTROL'G ELEV.	AT	Q INC
CB C-9						~~158.00~~										159.28		162.10		
	18	4.2	.0119	42	2.4		.65	.0015	.06											
CB C-10						158.50				159.34	.03	.10	-	-	1.20	159.47	160.0	162.00	1.68	4.2
MH C-11						160.00										163.99	163.0	165.4		
	18	10.9	.030	130	6.2		.85												3.2	
FI C-13						163.90				164.75			-	-	2.40	166.30	165.4	173.0		10.9

+ Non Uniform Flow, Use of Sf is Conservative

HYDRAULIC GRADIENT CALCULATIONS

DRAIN LINE "D"

BY 4

L.F. PACK ASSOC., LTD.
931 UNIVERSITY AVE.
DATE 11/18/63
CHECKED BY

STRUCTURE NO.	SIZE PIPE	Q TOTAL	SLOPE	LENGTH	V FULL	INV.	DN	SF	HF	DOWN-STREAM ELEV.	MANHOLE LOSSES A	B	C	D	ENT. CONT.	UP-STREAM ELEV.	ELEV. TOP PIPE	CONTROL'G ELEV.	AT	ΔQ INC
30MH C-6						~~144.00~~										~~144.47~~ 145.7	145.7	147.7		
	18	11.4	0296	153	6.4		.9	~~.0?2~~											3.60	
CB D-1						~~148.70~~ 149.50				149.63			.22	.07	2.55	151.57	151.0	153.3		3.6
	18	7.8	.0107	103	4.4		.97	~~.0053~~											2.1	
MH D-2						150.60				151.57			.10	-	1.80	152.50	152.10	154.4		-
	18	7.8		95	4.4		F	.0053	.50										2.1	
MH D-3						151.10				153.00	.10	-	-	-	1.80	153.10	152.60	156.1		-
	18	7.8	.4162	37	4.4		.3												2.1	
FI D-3A						~~166.50~~ 169.0				166.80			-	.01	1.80	168.31	170.5	174.6		1.0
	18	6.8	.4865	37	3.8		.3												2.0	
FI D-4						187.00				187.30			-	-	1.65	188.95	188.5	194.0		6.8

HYDRAULIC GRADIENT CALCULATIONS

DRAIN LINE "E" 1/2

BY Y

L.F. PACK ASSOC., LTD.
931 UNIVERSITY AVE.
DATE 11/18/63

CHECKED BY

STRUCTURE NO.	SIZE PIPE	Q TOTAL	SLOPE	LENGTH	Y FULL	INV.	DN	SF	HF	DOWN-STREAM ELEV.	MANHOLE LOSSES A	B	C	D	ENT. CONT.	UP-STREAM ELEV.	ELEV. TOP PIPE	CONTROL'G ELEV.	AT	Q INC
Out-let						89.20										93.50				
	24	17.8	.0284	145	5.4		1.0'													
DMH 'A'						93.62 / 94.12				94.62'	✓	✓	3.38 / 2.88	–	2.60'	96.50'		103.3		
	18	17.8	.0252	35	5.4		F'	.0252	.88											
CB 'B'						95.00 / 97.02				97.38 / 97.90	.54	.62 / .65	.38 / .28	.15'	5.10	98.98		103.8		4.5
	18	13.3 / 12.6	.0760	113	7.5		.7'													
MH C						105.60				106.30			.30	–	3.08 / 2.85	108.75 / 108.98		109.5		–
	18	12.6 / 12.3	.1460	37	7.5		.6'												5.63	
FI D						111.06				111.66			.15	–	3.08 / 2.85	114.29 / 114.00		115.0		.4
	18	12.9	.0444	122	6.9		.8'												5.51	
CB E						116.48 / 117.58				117.28			.13	.06	3.00 / 2.78	119.45 / 119.61	119.08	122.4		4.7
	18	8.5 / 8.5	.005	124	4.6		F'	.005	.62										3.04	
CB E-1						118.20				120.07	.10	.11	.04	.02		120.34	119.70	121.7		2.5 / 1.8
	18	5.7	.003	65	3.2		F'	.003	.20										2.3	
CB E-1A						118.40				120.54	.06	.10	–	.01		120.71	119.90	122.3		3.3
	18	2.4	.0430	81	1.4		.35												0.7	
FI E-2						121.88				122.43			–	–	.87	122.75		126.2		2.4

HYDRAULIC GRADIENT CALCULATIONS

L. F. PACK ASSOC., LTD.
931 UNIVERSITY AVE.

DRAIN LINE E 2/2

BY 4

DATE 11/18/63

CHECKED BY

STRUCTURE NO.	SIZE PIPE	Q TOTAL	SLOPE	LENGTH	V FULL	INV.	DN	SF	HF	DOWN-STREAM ELEV.	MANHOLE LOSSES A	B	C	D	ENT. CONT.	UP-STREAM ELEV.	ELEV. TOP PIPE	CONTROL'G ELEV.	AT	Q INC
CB E						116.48										119.45		122.4		
	18	3.1	.0436	45	1.8		.39*	.0009	.04										1.65	
CB E-4						118.44				119.49	.02	.05	-	-	1.04	119.56	119.94	122.4	1	3.1
CB E-1						118.20										120.34	119.70	121.7		
	18	2.6	0418	55			.35												1.3	
CB E-3						120.50				120.85			-	-	.95	121.45	122.0	124.0		2.6

* Non Uniform Flow - Use of SF is Conservative

HYDRAULIC GRADIENT CALCULATIONS

DRAIN LINE "F" 1/2

BY [illegible]

L. F. PACK ASSOC., LTD.
931 UNIVERSITY AVE.
DATE 11/20/63

CHECKED BY

STRUCTURE NO.	SIZE PIPE	Q TOTAL	SLOPE	LENGTH	V FULL	INV.	DN	SF	HF	DOWN-STREAM ELEV.	MANHOLE LOSSES A	B	C	D	ENT. CONT.	UP-STREAM ELEV.	ELEV. TOP PIPE	CONTROL'G ELEV.	AT	Q INC
SP MH						112.2										114.2	114.2	127.8		
	24	21.4		128	6.8		F	.0085	1.09										9.93	
CB F-1						113.29				115.29	.25	.01	.12	.20	3.10	115.87	115.29 / 114.79	122.7		9.6
	18	11.8		40	6.7		F	.012	.48			.7 drop							5.44	
CB F-2						113.77 / 113.49				116.35	~~.24~~	(.22)	.12	.06	2.7	116.99	117.99 / 116.79	123.7		2.0
	18	9.8		110	5.5		F	.0085	.94	→ upstream velocity shall be considered									4.47	
MH F-3						116.43				117.43	.18	-	.16	-	2.21	118.77	117.93	123.9		-
	18	9.8		29	5.5		F	.0085	.25										4.47	
MH F-4						116.68				119.82	.18	-	.16	-	2.21	119.96	118.18	123.9		-
	18	9.8		118	5.5		F	.0085	1.00										4.47	
CB F-5						117.68 / 119.80				120.80	.18	.31	.16	.03	2.21	~~124.84~~ 121.18	121.3	123.3		4.1
	18	5.7	.0206	144	3.2		.62	.0029											2.46	
MH F-6						122.77				123.39	.07	-	-	-	1.44	124.21	124.3	126.2		-
	18	5.7	.0206	222	3.2		.62	.0029											2.46	
CB F-7						127.34				127.96	.07	.07	-	.01	1.44	128.79	128.84	130.8		1.5
	18	4.2	.0116	97	2.4		.42	.0017											1.68	
CB F-8						128.47				128.89	.03	.10	-	-	.86	129.33	129.97	132.24		4.2

8.0

8.0

5.9

HYDRAULIC GRADIENT CALCULATIONS

DRAIN LINE "F" 2/2

BY 4

L.F. PACK ASSOC., LTD.
931 UNIVERSITY AVE.
DATE 11/20/63
CHECKED BY

STRUCTURE NO.	SIZE PIPE	Q TOTAL	SLOPE	LENGTH	V FULL	INV.	DN	SF	HF	DOWN-STREAM ELEV.	MANHOLE LOSSES A	B	C	D	ENT. CONT.	UP-STREAM ELEV.	ELEV. TOP PIPE	CONTROL'G ELEV.	AT	Q INC
CB F-1						113.29 / 118.90										115.87	120.4	122.7		3.2
	18	~~6.4~~	0460	220	3.6		.55												2.84	
MH E-10						129.02				129.57			-	-	1.58	131.15	130.52	132.7		-
	18	6.4	0404	210	3.6		.56												2.84	
CB F-11						137.50				138.06			-	.01	1.58	139.65	139.00	141.0		2.4
	18	4.0	0256	97	2.3		.50												1.63	
CB F-12						139.98				140.48			-	-	1.19	141.67	141.48	143.81		4.0
CB F-5						119.80										~~121.18~~ 120.54				
	18	2.1	.0036	55	1.2		.60	.0004	.02										1.00	
CB F-9						120.00				121.20 / 120.60	.01	.02			.83	121.23 / ~~120~~.83	121.5	123.9		2.1

HYDRAULIC GRADIENT CALCULATIONS

DRAIN LINE "G"

BY 4

L.F. PACK ASSOC., LTD.
931 UNIVERSITY AVE.
DATE 11/22/63

CHECKED BY

STRUCTURE NO.	SIZE PIPE	Q TOTAL	SLOPE	LENGTH	V FULL	INV.	DN	SF	HF	DOWN-STREAM ELEV.	MANHOLE LOSSES A	B	C	D	ENT. CONT.	UP-STREAM ELEV.	ELEV. TOP PIPE	CONTROL'G ELEV.	AT	Q INC
SP MH.						~~119.00~~					USE Top of pipe									
	18	6.4	1100	150	3.6	"	.44												3.87	
CB G-1						135.50 136.60				135.94	.07	.04	.03	.01	1.58	137.60	138.10	140.8		.8
	18	5.6	0240	42	3.2		.60												2.68	
CB G-2						137.60				138.20	.06	.10	.02	.01	1.43	139.06	139.1	141.7		2.1
	18	3.5	0212	180	2.0		.50												1.64	
CB G-3						141.42				141.92	.02	.06	-	-	1.10	142.52	142.92	145.3		3.5

III. MISCELLANEOUS CALCULATIONS:

A. Estimation of Outlet Velocity into Existing Channel

1. The problem involved herein is to determine the outlet velocity at a proposed structure which flows into the existing channel of Pikoiloa Unit 9.

2. Assuming an 8 x 6 box culvert and a drop structure, as shown on the construction plans, the following properties and conclusions were reached:

Dc of Box Culvert:

$$Kc^1 = Q/_b 5/2 = 300/_8 5/2 = 300/_{182} = 1.65$$

$$Dc/_b = 0.44$$

$$Dc = (0.44)\ (8) = 3.52'$$

The following data is from the "Hydraulic Engineering Circular No. 5" (Hydraulic Charts for the Selection of Highway Culverts) by the U.S. Department of Commerce, Bureau of Public Works:

a. The existing channel section is much wider and at a greater slope than the proposed box culvert. Therefore, the tailwater will be at a lesser depth than the W.S. at the outlet of the culvert. We may, therefore, assume that the culvert is flowing with outlet control.

b. On page 5-7 it states that the approximate depth of flow at the outlet of the culvert is ~~$(d_c + D/2)$~~ $\frac{d_c + D}{2}$. This equals $\frac{3.52 + 6}{2}$ = 4.76 feet.

c. The velocity at the outlet is then $300/(4.76)(8)$ = 7.8 F.P.S. The channel section downstream will be lined for 20 feet in order to safeguard against any turbulence which might occur in the transition from the box culvert to the channel section.

d. Assuming an entrance loss of $0.7\ (V^2/2g)$:

$$L = 70' \pm$$

which is extremely high, and reading from Chart 12, H is determined to be 1.15. $Hw = H + 4.76 - 0.001 \times 70$ = 5.84 feet, which is not quite to the top of box.

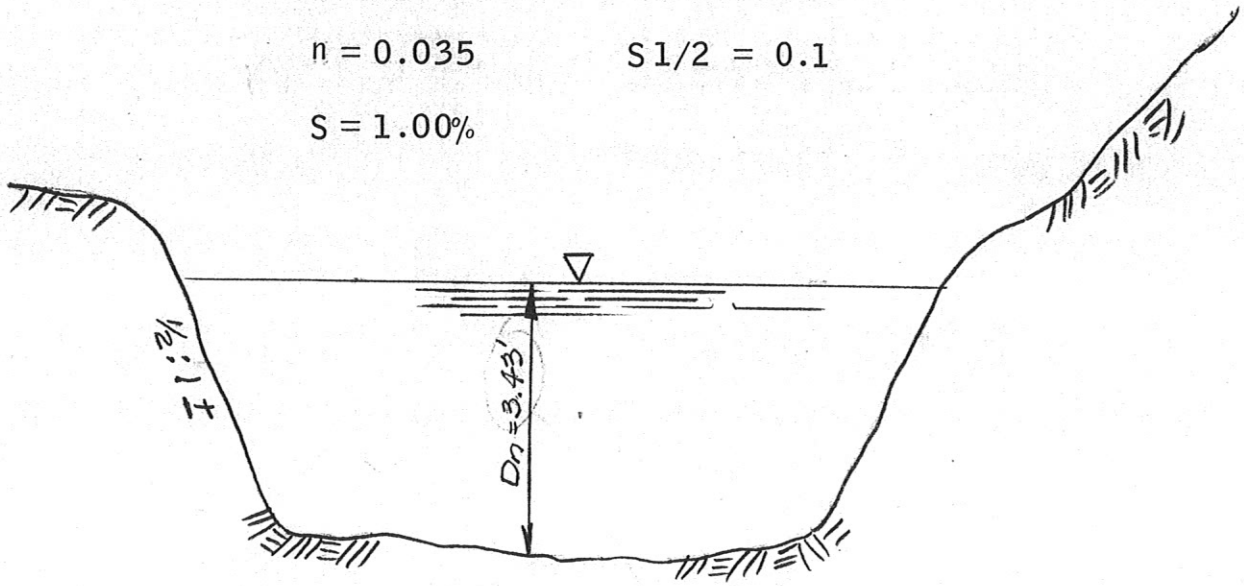
B. Determination of Water Depth at Existing Natural Channel — Mauka F1 A-6

1. Normal Depth:

$Q = 204.0$ c.f.s. ; $b\ 8/3 = 179$

$n = 0.035$ $\quad S\ 1/2 = 0.1$

$S = 1.00\%$



$$K' = \frac{Qn}{b\ 8/3\ S1/2} = \frac{204 \times .035}{179 \times .1}$$

$$= .399$$

$D/b = 0.49$

$Dn = 0.49 \times 7 = 3.43 + 1' = 4.43$ $\quad$ 5.0' (ht. of channel)

2. Critical Depth:

$$K'_c = \frac{Q}{b\ 5/2} = \frac{204.0}{130} = 1.569$$

$D\ c/b = .395$

$Dc = .395 \times 7 = 2.77$

Since there is free fall at the drop structure, it may be assumed that the depth of flow immediately upstream is somewhere between critical and normal depths, probably closer to critical. Therefore, we may conclude that there is sufficient freeboard as may be seen from the calculations for normal depth.

For e:

Assume $\mathcal{L}R = 40'$

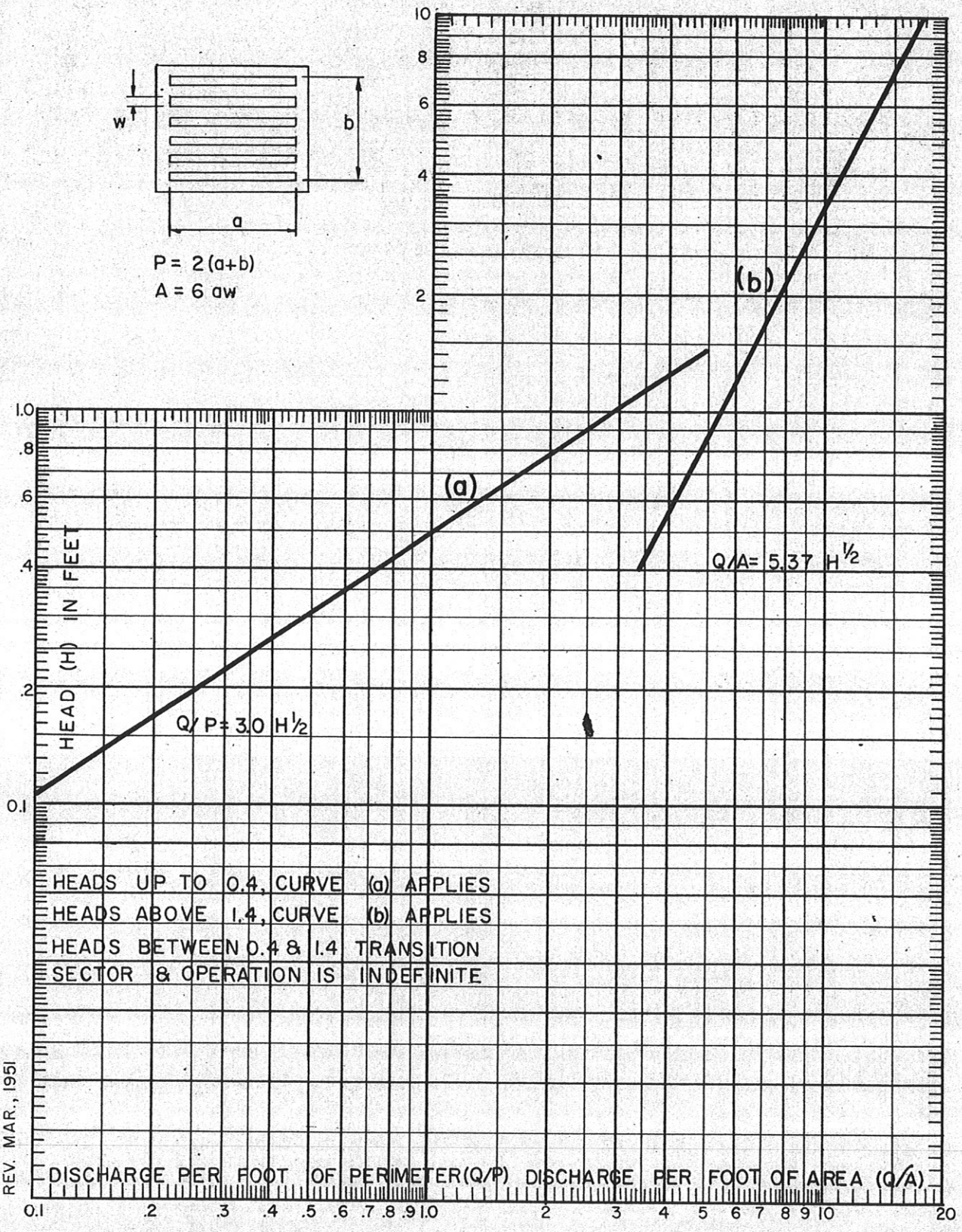
$B = 7.0'$

$V = Q/A = \frac{204}{29.8} = 6.8$ fps

$$e = \frac{V^2 B}{g R} = \frac{6.8^2 \times 7.0}{32.2 \times 40} = 0.25'$$

$P = 2(a+b)$

$A = 6\,aw$



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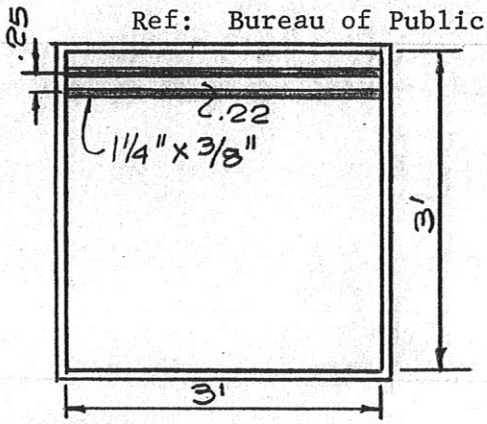
• BUREAU OF PUBLIC ROADS
DIVISION 2, WASHINGTON, D.C.

CAPACITY OF GRATE INLET IN SUMP
WATER PONDED ON GRATE

III - MISCELLANEOUS CALCULATIONS:

C - Capacity of Grate Inlets

Ref: Bureau of Public Roads - Chart # 1073.02



A = 12 (3.00) (.22) = 7.92 s.f.

P = 2 (3 + 3) = 12 ft.

A/2 = 3.96 s.f.

Note: Side opening is assumed as negligible (see details)

For F1 - A-7

Q = 22.1 cfs

$5.37\ H^{\frac{1}{2}} = Q/A$

$H^{\frac{1}{2}} = \frac{22.1}{5.37 \times 3.96} = 1.04$

Req'd. = $(1.04)^2$ = 1.08 (2.5' on F1, See Plans)

For F1 - B-6

Q = 14.6 cfs

$H^{\frac{1}{2}} = \frac{14.6}{5.37 \times 3.96} = 0.69$

Req'd. H = 0.48' (2.0 on F1, See Plans)

For F1 B-7

Q = 5.4 cfs

$H^{\frac{1}{2}} = \frac{5.4}{5.37 \times 3.96} = 0.25$

Req'd. H = 0.06 (1.3' on F1, See Plans)

For F1 C-12

Q = 25.2 cfs

$H^{\frac{1}{2}} = \frac{25.2}{5.37 \times 3.96} = 1.18$

Req'd. H = $(1.18)^2$ = 1.39' (2.5' on F1, See Plans)

For F1 C-13

Q = 10.9 cfs

$H^{\frac{1}{2}} = \frac{10.9}{5.37 \times 3.96} = 0.51$

Req'd. H = $(0.51)^2$ = 0.26' (1.3' on F1, See Plans)

For F1 C-3

Q = 3.3 cfs

$H^{\frac{1}{2}} = \frac{3.3}{5.37 \times 3.96} = 0.16$

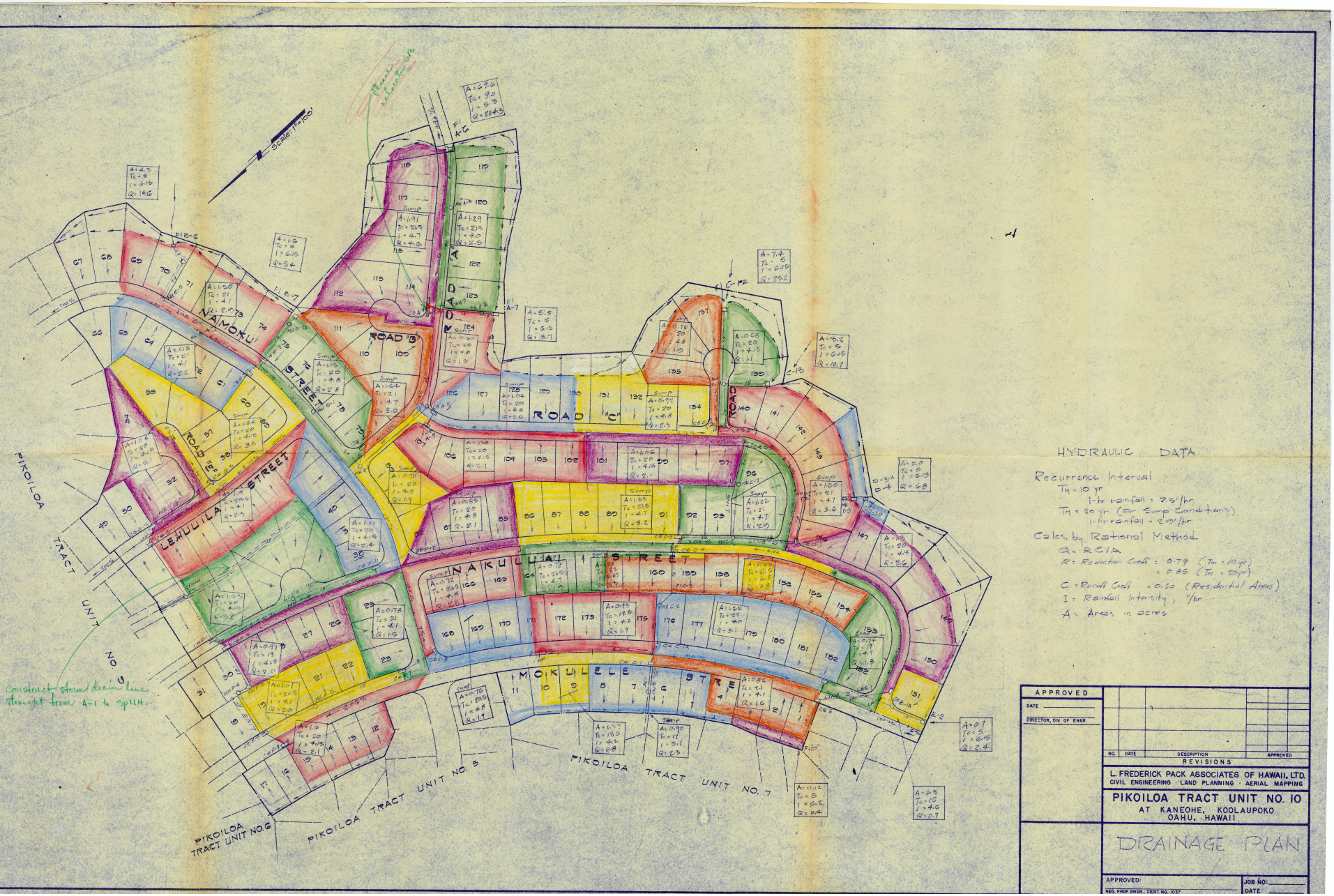
Req'd. H = $(.16)^2$ = 0.63 (1.3' on F1, See Plans)

For F1 D-4

Q = 6.8 cfs

$H^{\frac{1}{2}} = \frac{6.8}{5.37 \times 3.96} = .32$

Req'd. H = $(.32)^{\frac{1}{2}}$ = 0.10' (1.3' on F1, See Plans



HYDRAULIC DATA

Recurrence Interval
- T_R = 10 yr
  - 1-hr rainfall = 2.5"/hr
- T_R = 20 yr (for Sump Conditions)
  - 1-hr rainfall = 2.9"/hr

Calcs. by Rational Method
- $Q = RCIA$
- R = Reduction Coeff = 0.79 (T_R = 10 yr)
  - = 0.85 (T_R = 20 yr)
- C = Runoff Coeff = 0.60 (Residential Areas)
- I = Rainfall Intensity, "/hr
- A = Area in acres

APPROVED

DATE

DIRECTOR, DIV. OF ENGR.

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PIKOILOA TRACT UNIT NO. 10

AT KANEOHE, KOOLAUPOKO
OAHU, HAWAII

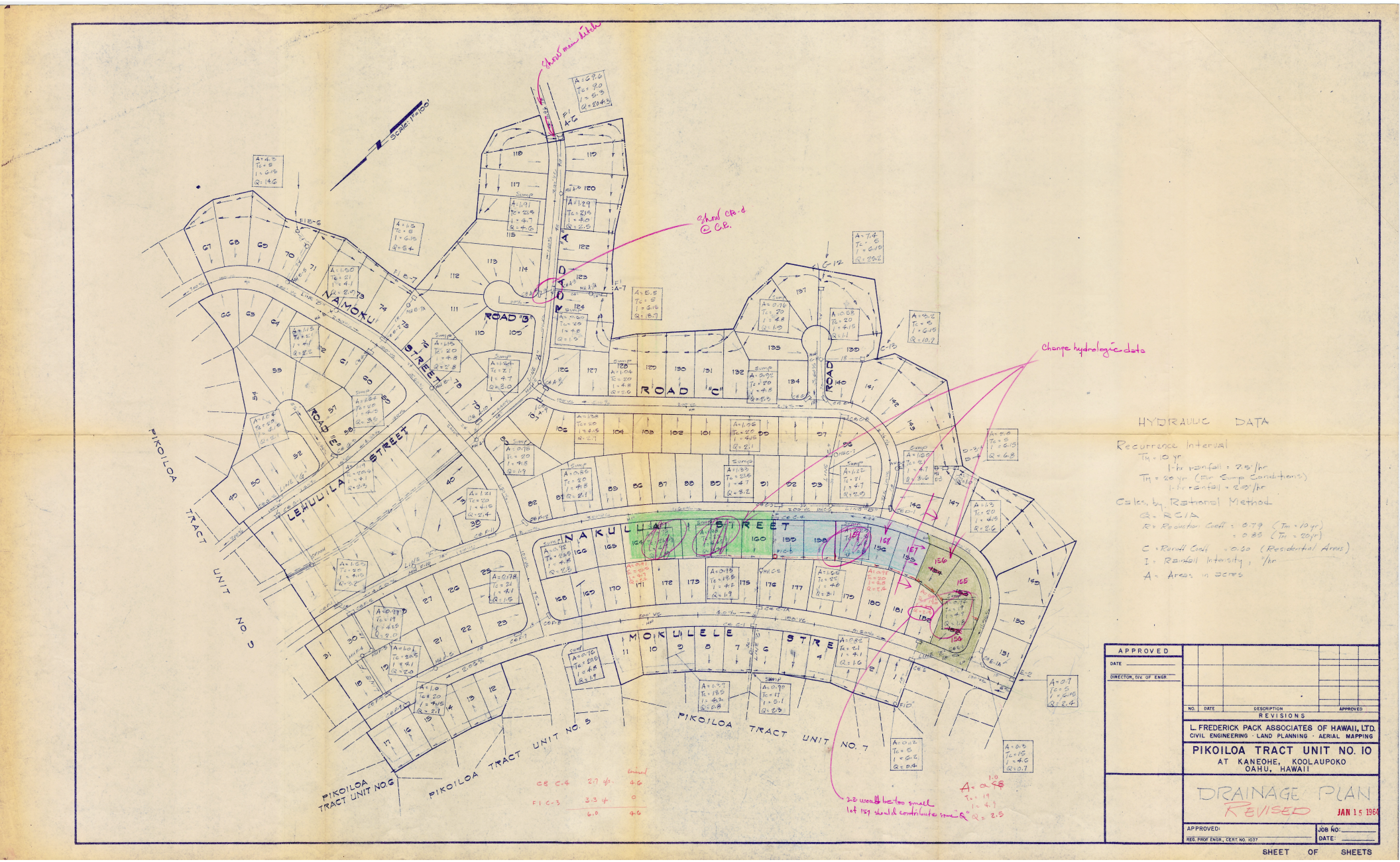
DRAINAGE PLAN

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DATE:


Scale 1"=100'
NAMOKU STREET
ROAD "B"
ROAD "C"
ROAD "A"
ROAD "D"
ROAD "E"
LEHULILA STREET
NAKULHAI STREET
MOKULELE STREET
PIKOILOA TRACT UNIT NO. 5
PIKOILOA TRACT UNIT NO. 7
PIKOILOA TRACT UNIT NO. 6
PIKOILOA TRACT UNIT NO. 9
show more detail
show C&C at C.B.
change hydrologic data
2-8 would be too small lot 157 should contribute some Q"
CB C-4 2.7 cfs. Existing 4.6
FIC-3 3.3 4 0
6.0 4.6
HYDRAULIC DATA
Recurrence Interval
Tr = 10 yr.
1-hr rainfall = 2.5"/hr
Tr = 20 yr. (For Sump Conditions)
1-hr rainfall = 2.85"/hr
Calcs. by Rational Method
Q = CIA
C = Runoff Coeff. = 0.50 (Residential Areas)
I = Rainfall Intensity, "/hr
A = Areas in acres
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OAHU, HAWAII
DRAINAGE PLAN
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