

Final Drainage Report

***Compark Village South Filing No. 2
Parker, Colorado***

Code: CLCPKC3

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ENGINEERS CERTIFICATION

This Final Drainage Report for Compark Village South Filing No. 2 was prepared by me or under my direct supervision in accordance with the provisions of the *Town of Parker Storm Drainage and Environmental Criteria Manual*. I understand that the Town of Parker and its designated town authority do not and will not assume liability for drainage facilities designed by others.

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I. **Introduction**

A. Location

Compark Village South Filing 2 is located within the south half of section 6, township 6 south, range 66 west of the 6th principal meridian, Town of Parker, Douglas County, Colorado. The site is bound by existing residential neighborhoods to the South, future Belford Ave to the North, and future developed parcels to the East and West.

The Compark Village South Filing 2 developed area is approximately 32.9 acres. Upon final build out, the site will contain 120 residential duplex lots and 72 residential single family home lots.

B. Description of Property

The topography for the site generally slopes from South to North. The highest elevation on the site is located at the southwest quadrant of the site and the lowest elevation is located directly north of Belford Avenue.

Existing vegetation on the site is comprised of native grasses, shrubs and weedy species indigenous to the area.

C. Existing Soils

Existing soils for the site were researched on the NRCS web soil survey, see Appendix A. Three principal soil groups exist onsite:

- Newlin Gravelly Sandy Loam (NeE 8 to 30% slopes) This rolling to steep sloping soil is located on uplands and terrace side slopes. Runoff is medium and erosion hazard is slight to moderate. This soil is classified as a Type B Hydrologic Soil Group.
- Fondis Clay Loam (FoD 3 to 9% slopes) This sloping soil is located on uplands. Runoff is high and the erosion hazard is moderate. The soil is classified as a Type C Hydrologic Soil Group.
- Fondis Clay Loam (FoB 1 to 3% slopes) This gently sloping soil is located on tablelands and uplands. Runoff is medium and erosion hazard is slight to moderate. The soil is classified as a Type C Hydrologic Soil Group.

II. Drainage Basins and Sub-Basins

A. Existing Basin Description

The proposed site is tributary to Green Acres Tributary which runs through the property adjacent to the North of the site. The Green Acres Tributary confluences w/ Happy Canyon Creek upstream of Jordan Road and ultimately joins Cherry Creek, further downstream of Jordan Road. There is an existing 10' x 12' box culvert located to the north of the site that conveys flows from an existing depressed area to the north of the site through and under E-470.

The site is located within Zone X as shown on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) numbers 08035C0062F and 08035C0066F, dated September 30, 2005 for Happy Canyon Creek. The FIRM maps can be found in Appendix A. A portion of the Green Acres Tributary is located in the Zone A 100-year Floodplain, also shown on the FIRM maps in Appendix A.

B. Proposed Basin Development

The proposed site will be divided into several drainage sub-basins. These sub-basins have been determined based on land use, area, roadway slopes, storm sewer locations and inlet capacities. The developed site will generally follow the existing drainage patterns and runoff will be conveyed via storm sewer, overland flow, and channel flow through a proposed channel to a proposed regional detention and water quality pond located directly north of the site. This regional detention pond will release restricted flows into an existing box culvert under E-470 and into the Green Acres Tributary in compliance with the Master Drainage Report for Compark Village South and Town of Parker requirements. The Preliminary Drainage Exhibit located in Appendix D shows the location and size of each proposed drainage sub-basin.

C. Sub Basin Descriptions

BEL-1

Drainage basin BEL-1 is composed of landscaped area, sidewalk, and the north half of a portion of Belford Avenue. Storm water will flow east toward Design Point B1 where it will be collected by Inlet 2-1. This is an on grade 10' Type R inlet with the capacity to handle the runoff from a 5 year storm event. From there, storm water will be conveyed to the West Water Quality Pond just southeast of Belford Avenue via storm sewer. This pond discharges directly to Green Acres Tributary. In the 100 year storm event, excess runoff will bypass Inlet 2-1 and flow into sub basin BEL-3 where it will be intercepted by Inlet 2-2 at Design Point B3.

BEL-2

Drainage basin BEL-2 is composed of landscaped area, sidewalk, and the south half of a portion of Belford Avenue. Storm water will flow east toward Design Point B2 where it will be collected by Inlet 1-1. This is an on grade 10' Type R inlet with the capacity to handle the runoff from a 5 year storm event. From there, storm water will be conveyed to the West Water Quality Pond just southeast of Belford Avenue via storm sewer. This pond discharges directly to Green Acres Tributary. In the 100 year storm event, excess runoff will bypass Inlet 1-1 and flow into sub basin BEL-4 where it will be intercepted by Inlet 1-2 at Design Point B4.

BEL-3

Drainage basin BEL-3 is composed of landscaped area, sidewalk, and the north half of a portion of Belford Avenue. Storm water will flow toward a low point in the middle of the basin at Design Point B3 where it will be collected by Inlet 2-2. This is a 15' Type R inlet in sump with the capacity to handle the runoff from a 100 year storm event for basin BEL-3 as well as the bypass runoff from basin BEL-1. From there, storm water will be conveyed to the East Water Quality Pond just east of Belford Avenue via storm sewer. This pond discharges directly to Green Acres Tributary.

BEL-4

Drainage basin BEL-4 is composed of landscaped area, sidewalk, and the south half of a portion of Belford Avenue. Storm water will flow toward a low point in the middle of the basin at Design Point B4 where it will be collected by Inlet 1-2. This is a 10' Type R inlet in sump with the capacity to handle the runoff from a 100 year storm event for basin BEL-4 as well as the bypass runoff from basin BEL-2. From there, storm water will be conveyed to the East Water Quality Pond just east of Belford Avenue via storm sewer. This pond discharges directly to Green Acres Tributary.

BEL-5

Drainage basin BEL-5 is composed of landscaped area, sidewalk, and the north half of a portion of Belford Avenue. It also includes half of the bridge over Happy Canyon Creek. Storm water will generally flow southeast toward Design Point B5 at South Chambers Road. A storm sewer network has not yet been designed to accommodate this basin. This will be completed in another phase.

BEL-6

Drainage basin BEL-6 is composed of landscaped area, sidewalk, and the south half of a portion of Belford Avenue. It also includes half of the bridge over Happy Canyon Creek. Storm water will generally flow southeast toward Design Point B6 at South

Chambers Road. A storm sewer network has not yet been designed to accommodate this basin. This will be completed in another phase.

CVS-1

Drainage basin CVS-1 is composed of landscaped area, sidewalk, and the north half of a portion of Belford Avenue. Storm water will flow northeast toward Design Point 1 where it will be intercepted by Inlet 1-3. This is an on grade 15' Type R inlet with the capacity to handle the runoff from a 5 year storm event. From there, storm water will be conveyed directly to Green Acres Tributary via storm sewer. A water quality structure will be installed just before the outfall into Green Acres Tributary as part of the Compark Village South Filing No. 1 project. In the 100 year storm event, excess runoff will bypass Inlet 1-3 and flow into sub basin CVS-3 where it will be intercepted by Inlet 1-4 at Design Point 3.

CVS-2

Drainage basin CVS-2 is composed of landscaped area, sidewalk, and the south half of a portion of Belford Avenue. Storm water will flow northeast toward Design Point 2 where it will be intercepted by Inlet 2-3. This is an on grade 15' Type R inlet with the capacity to handle the runoff from a 5 year storm event. From there, storm water will be conveyed directly to Green Acres Tributary via storm sewer. In the 100 year storm event, excess runoff will bypass Inlet 2-3 and flow into sub basin CVS-4 where it will be intercepted by Inlet 2-4 at Design Point 4.

CVS-3

Drainage basin CVS-3 is composed of landscaped area, sidewalk, and the north half of a portion of Belford Avenue. Storm water will flow northeast toward Design Point 3 where it will be collected by Inlet 1-4. This is an on grade 10' Type R inlet with the capacity to handle the runoff from a 5 year storm event. From there, storm water will be conveyed directly to Green Acres Tributary via storm sewer. A water quality structure will be installed just before the outfall into Green Acres Tributary as part of the Compark Village South Filing No. 1 project. In the 100 year storm event, excess runoff will bypass Inlet 2-3 and flow into sub basin CVS-7 where it will be intercepted by Inlet 1-6 at Design Point 7.

CVS-4

Drainage basin CVS-4 is composed of landscaped area, sidewalk, and the south half of a portion of Belford Avenue. Storm water will flow northeast toward Design Point 4 where it will be collected by Inlet 2-4. This is an on grade 15' Type R inlet with the capacity to handle the runoff from a 5 year storm event. From there, storm water will be conveyed directly to Green Acres Tributary via storm sewer. In the 100 year storm event, excess runoff will bypass Inlet 2-4 and flow into sub basin CVS-8 where it will be intercepted by Inlet 2-6 at Design Point 8.

CVS-4A

Drainage basin CVS-4 is composed of landscaped area, sidewalk, residential homes, and residential local streets. Storm water will flow northeast toward Design Point 4A where it will be collected by Inlet 3-4. This is a 10' Type R inlet in sump with the capacity to handle the runoff from a 100 year storm event for basin CVS-4A as well as the bypass runoff from basin CVS-5. From there, it will be conveyed directly to Green Acres Tributary via storm sewer.

CVS-5

Drainage basin CVS-5 is composed of landscaped area, sidewalk, residential homes and residential local streets. Storm water will flow northeast toward Design Point 5 where it will be collected by Inlet 5-4. This is an on grade 15' Type R inlet with the capacity to handle the runoff from a 2 year storm event. From there, it will be conveyed directly to Green Acres Tributary via storm sewer. In the 100 year storm event, excess runoff will bypass Inlet 5-4 and flow into sub basin CVS-4A where it will be intercepted by Inlet 3-4 at Design Point 4A.

CVS-6

Drainage basin CVS-6 is composed of landscaped area, a berm, sidewalk, and residential local streets. Storm water will flow north toward Design Point 6 where it will be collected by Inlet 6-4. This is an on grade 10' Type R inlet with the capacity to handle the runoff from a 100 year storm event. From there, it will be conveyed directly to Green Acres Tributary via storm sewer.

CVS-7

Drainage basin CVS-7 is composed of landscaped area, sidewalk, and the north half of a portion of Belford Avenue. Storm water will flow east toward Design Point 7 where it will be collected by Inlet 1-6. This is an on grade 10' Type R inlet with the capacity to handle the runoff from a 5 year storm event. From there, storm water will be conveyed directly to Green Acres Tributary via storm sewer. A water quality structure will be installed just before the outfall into Green Acres Tributary as part of the Compark Village South Filing No. 1 project. In the 100 year storm event, excess runoff will bypass Inlet 5-4 and flow into sub basin CVS-11 where it will be intercepted by Inlet 1-5 at Design Point 11.

CVS-8

Drainage basin CVS-8 is composed of landscaped area, sidewalk, and the south half of a portion of Belford Avenue. Storm water will flow east toward Design Point 8 where it will be intercepted by Inlet 2-6. This is an on grade 15' Type R inlet with the capacity to handle the runoff from a 5 year storm event. From there, storm water will be conveyed directly to Green Acres Tributary via storm sewer. In the 100 year storm

event, excess runoff will bypass Inlet 2-6 and flow into sub basin CVS-12 where it will be intercepted by Inlet 2-5 at Design Point 12.

CVS-9

Drainage basin CVS-9 is composed of landscaped area, sidewalk, residential homes and residential local streets. Storm water will flow northeast toward Design Point 9 where it will be collected by Inlet 4-5A. This is an on grade 15' Type R inlet with the capacity to handle the runoff from a 2 year storm event. From there, it will be conveyed directly to Green Acres Tributary via storm sewer. In the 100 year storm event, excess runoff will bypass Inlet 4-5A and flow into sub basin CVS-12 where it will be intercepted by Inlet 2-5 at Design Point 12.

CVS-9A

Drainage basin CVS-9A is composed of landscaped area, sidewalk, residential homes and residential local streets. Storm water will generally flow northwest toward Design Point 9A where it will be collected by Inlet 4-4. This is a 5' Type R inlet in sump with the capacity to handle the runoff from a 100 year storm event. From there, it will be conveyed directly to Green Acres Tributary via storm sewer.

CVS-10

Drainage basin CVS-10 is composed of landscaped area, sidewalk, residential homes and residential local streets. Storm water will flow northeast toward Design Point 10 where it will be collected by Inlet 5-5A. This is an on grade 15' Type R inlet with the capacity to handle the runoff from a 2 year storm event. From there, storm water will be conveyed directly to Green Acres Tributary via storm sewer. In the 100 year storm event, excess runoff will bypass Inlet 5-5A and flow into sub basin CVS-13B where it will be intercepted by Inlet 4-5B at Design Point 13B.

CVS-10A

Drainage basin CVS-10A is composed of landscaped area, sidewalk, residential homes and residential local streets. Storm water will generally flow northwest toward Design Point 10A where it will be collected by Inlet 5-4A. This is a 5' Type R inlet on grade with the capacity to handle the runoff from a 2 year storm event. From there, it will be conveyed directly to Green Acres Tributary via storm sewer. In the 100 year storm event, excess runoff will bypass Inlet 5-4A and flow into sub basin CVS-10 where it will be intercepted by Inlet 5-5A at Design Point 10.

CVS-11

Drainage basin CVS-11 is composed of landscaped area, sidewalk, and the north half of a portion of Belford Avenue. Storm water will flow toward a low point in the middle of the basin at Design Point 11 where it will be collected by Inlet 1-5. This is a 10'

Type R inlet in sump with the capacity to handle the runoff from a 100 year storm event for basin CVS-11 as well as the bypass runoff from basin CVS-7. From there, storm water will be conveyed to the regional detention pond at E-470 via storm sewer. This pond discharges directly to Green Acres Tributary.

CVS-12

Drainage basin CVS-12 is composed of landscaped area, sidewalk, residential homes, residential local streets, and the south half of a portion of Belford Avenue. Storm water will flow toward a low point in the middle of the north side of the basin at Design Point 12 where it will be collected by Inlet 2-5. This is a 15' Type R inlet in sump with the capacity to handle the runoff from a 100 year storm event for basin CVS-12 as well as the bypass runoff from basins CVS-8 and CVS-9. From there, storm water will be conveyed to the regional detention pond at E-470 via storm sewer. This pond discharges directly to Green Acres Tributary.

CVS-12A

Drainage basin CVS-12A is composed of landscaped area, sidewalk, residential homes and residential local streets. Storm water will flow south and east toward Design Point 12A where it will be collected by Inlet 3-5. This is a 15' Type R inlet in sump with the capacity to handle the runoff from a 100 year storm event. From there, storm water will be conveyed to the regional detention pond at E-470 via storm sewer. This pond discharges directly to Green Acres Tributary.

CVS-12B

Drainage basin CVS-12B is composed of landscaped area, sidewalk, residential homes and residential local streets. Storm water will generally flow south and west toward Design Point 12A where it will be collected by Inlet 3-5. This is a 15' Type R inlet in sump with the capacity to handle the runoff from a 100 year storm event. From there, storm water will be conveyed to the regional detention pond at E-470 via storm sewer. This pond discharges directly to Green Acres Tributary.

CVS-13

Drainage basin CVS-13 is composed of landscaped area, sidewalk, residential homes and residential local streets. Storm water will flow northeast toward Design Point 13 where it will be collected by Inlet 4-5. This is a 10' Type R inlet in sump with the capacity to handle the runoff from a 100 year storm event as well as the bypass runoff from basin CVS-13C. From there, storm water will be conveyed to the regional detention pond at E-470 via storm sewer. This pond discharges directly to Green Acres Tributary.

CVS-13A

Drainage basin CVS-13A is composed of landscaped area, sidewalk, residential homes and residential local streets. Storm water will flow east and north toward Design Point 13A where it will be collected by Inlet 6-5A. This is a 10' Type R inlet on grade with the capacity to handle the runoff from a 2 year storm event. From there, storm water will be conveyed to the regional detention pond at E-470 via storm sewer. This pond discharges directly to Green Acres Tributary. In the 100 year storm event, excess runoff will bypass Inlet 6-5A and flow into sub basin CVS-13 where it will be intercepted by Inlet 4-5 at Design Point 13.

CVS-13B

Drainage basin CVS-13B is composed of landscaped area, sidewalk, residential homes and residential local streets. Storm water will flow east and north toward Design Point 13B where it will be collected by Inlet 4-5B. This is a 10' Type R inlet on grade with the capacity to handle the runoff from a 2 year storm event. From there, storm water will be conveyed to the regional detention pond at E-470 via storm sewer. This pond discharges directly to Green Acres Tributary. In the 100 year storm event, excess runoff will bypass Inlet 4-5B and flow into sub basin CVS-13C where it will be intercepted by Inlet 4-5C at Design Point 13C.

CVS-13C

Drainage basin CVS-13C is composed of landscaped area, sidewalk, residential homes and residential local streets. Storm water will flow north and east toward Design Point 13C where it will be collected by Inlet 4-5C. This is a 5' Type R inlet on grade with the capacity to handle the runoff from a 2 year storm event. From there, storm water will be conveyed to the regional detention pond at E-470 via storm sewer. This pond discharges directly to Green Acres Tributary. In the 100 year storm event, excess runoff will bypass Inlet 4-5C and flow into sub basin CVS-13 where it will be intercepted by Inlet 4-5 Design Point 13.

CVS-14

Drainage basin CVS-14 is composed of landscaped area, sidewalk, residential homes and residential local streets. Storm water will flow north and east toward Design Point 14 where it will be collected by Inlet 6-5. This is a 15' Type R inlet in sump with the capacity to handle the runoff from a 100 year storm event including runoff from basin CVS-14B and bypass runoff from basin CVS-14C. From there, storm water will be conveyed to the regional detention pond at E-470 via storm sewer. This pond discharges directly to Green Acres Tributary.

CVS-14A

Drainage basin CVS-14A is composed of landscaped area and berms. Runoff will flow toward a swale along the north side of the basin. The swale will send the storm water east toward Design Point 14A where it will be collected by Inlet 7-5. This is a

CDOT Type C inlet with the capacity to handle the runoff from a 100 year storm event. From there, storm water will be conveyed to the regional detention pond at E-470 via storm sewer. This pond discharges directly to Green Acres Tributary.

CVS-14B

Drainage basin CVS-14 is composed of landscaped area, future sidewalk, some future residential homes and future residential local streets. Storm water will north and east flow toward Design Point 14 where it will be collected by Inlet 6-5. This is a 15' Type R inlet in sump with the capacity to handle the runoff from a 100 year storm event including runoff from basin CVS-14. From there, storm water will be conveyed to the regional detention pond at E-470 via storm sewer. This pond discharges directly to Green Acres Tributary.

CVS-14C

Drainage basin CVS-14C is composed of landscaped area, sidewalk, residential homes and residential local streets. Storm water will flow north and east toward Design Point 14C where it will be collected by Inlet 5-5B. This is a 10' Type R inlet on grade with the capacity to handle the runoff from a 2 year storm event. From there, storm water will be conveyed to the regional detention pond at E-470 via storm sewer. This pond discharges directly to Green Acres Tributary. In the 100 year storm event, excess runoff will bypass Inlet 5-5B and flow into sub basin CVS-14 where it will be intercepted by Inlet 6-5 at Design Point 14.

CVS-15

Drainage basin CVS-15 is to be developed in a later phase and will be composed of landscaped area, sidewalk, residential homes and residential local streets. Storm water will flow north and west toward Design Point 15 where it will be collected by Inlet 5-5. This is a 10' Type R inlet in sump with the capacity to handle the runoff from a 100 year storm event as well as bypass runoff from Basin CVS-15A. From there, storm water will be conveyed to the regional detention pond at E-470 via storm sewer. This pond discharges directly to Green Acres Tributary.

CVS-15A

Drainage basin CVS-15A is to be developed in a later phase and will be composed of landscaped area, sidewalk, residential homes and residential local streets. Storm water will flow west and north toward Design Point 15A where it will be collected by Inlet 6-5B. This is a 10' Type R inlet on grade with the capacity to handle the runoff from a 2 year storm event. From there, storm water will be conveyed to the regional detention pond at E-470 via storm sewer. This pond discharges directly to Green Acres Tributary. In the 100 year storm event, excess runoff will bypass Inlet 6-5B and

flow into sub basin CVS-15 where it will be intercepted by Inlet 5-5 at Design Point 15.

CVS-16

Drainage basin CVS-16 is composed of landscaped area, sidewalk, residential homes and residential local streets. Storm water will flow northeast toward Design Point 16. A storm sewer network has not yet been designed to accommodate this basin. This will be completed in a later phase of the project. In the interim condition, runoff will be collected by a temporary swale directly east of the basin. This swale is sized with the capacity to handle the runoff from the 100 year storm event. It is designed to convey water directly to the regional detention pond at E-470.

CVS-17

Drainage basin CVS-17 is to be developed in a later phase and will be composed of landscaped area, sidewalk, residential homes and residential local streets. Storm water will flow northeast toward Design Point 17. A storm sewer network has not yet been designed to accommodate this basin. This will be completed as part of a later phase.

CVS-18

Drainage basin CVS-18 is to be developed in a later phase and will be composed of landscaped area, sidewalk, and residential local streets. Storm water will flow northeast toward Design Point 18. A storm sewer network has not yet been designed to accommodate this basin. This will be completed as part of a later phase.

CVS-19

Drainage basin CVS-19 is to be developed in a later phase and will be composed of landscaped area, sidewalk, residential homes, residential local streets, and the south half of a portion of Belford Avenue. Storm water will flow northeast toward Design Point 19. A storm sewer network has not yet been designed to accommodate this basin. This will be completed as part of a later phase.

CVS-20

Drainage basin CVS-20 is to be developed in a later phase and will be composed of landscaped area, sidewalk, residential homes, and residential local streets. Storm water will flow southwest and then northwest toward Design Point 20. A storm sewer network has not yet been designed to accommodate this basin. This will be completed as part of a later phase.

CVS-21

Drainage basin CVS-21 is to be developed in a later phase and will be composed of landscaped area, sidewalk, residential homes, and residential local streets. Storm water will flow north east toward Design Point 21. A storm sewer network has not yet been designed to accommodate this basin. This will be completed as part of a later phase.

III. Drainage Design Criteria

A. Hydrology Criteria

The Town of Parker *Storm Drainage and Environmental Criteria Manual* and the Urban Drainage and Flood Control District (UDFCD) *Urban Storm Drainage Criteria Manual* were used for the storm drainage system design.

The following criteria was utilized in developing the proposed drainage system:

- The proposed drainage system is designed to match, as best as possible, the historic drainage patterns occurring at the site.
- The proposed drainage system attempts to limit the diversion of storm runoff from one basin to another (basin transfer).
- Runoff generated from drainage sub-basins is conveyed via the proposed storm sewer system, overland flow or via the Green Acres Tributary into the proposed regional detention and water quality pond.

Design Rainfall: UDFCD rainfall data is used to determine peak runoff values. The 2-year and 100-year frequency storms are used as the minor and major design storms respectively.

Runoff Calculation: Peak storm runoff is determined using the rational formula,

$$Q = CIA \text{ (CFS)}$$

C = Runoff coefficient based on surface impermeability

I = Rainfall intensity in inches per hour

A = Drainage basin area in acres

UDFCD Imperviousness Values (Table 6-3) and Runoff Coefficients (Table 6-5) were used to develop basin runoff coefficients. These tables can be found in Appendix B. The runoff coefficients are weighted for each applicable sub-basin to more accurately reflect the runoff characteristics of the site.

Time of Concentration is determined using the criteria in Sections 3.4.1 and 3.4.2 of the UDFCD Criteria Manual. These calculations are included in Appendix B.

Rainfall intensities are determined using the Town of Parker's *Storm Drainage and Environmental Criteria Manual* Point Rainfall data and Intensity-Duration curves.

The recurrence intervals used for this study were based on a residential land use. The minor drainage system is designed for a 2-year recurrence interval and the major drainage system is designed for a 100-year recurrence interval.

B. Hydraulic Criteria

The following criteria were utilized in determining allowable street flow.

Minor Storm (2-yr)

- Local Street – No curb overtopping and flow may spread to crown of street.

Minor Storm (5-yr)

- Collector Street – No curb overtopping. Flow Spread must leave at least a 10 foot width free of water. (5-feet on each side of crown for roads without median. 10-feet on each side of median for roads with a median.)

Major Storm (100-yr)

- Local and Collector Streets – The depth of water at the gutter flowline shall not exceed 12 inches. A minimum of 18-inches must be provided from the water surface elevation to the lowest floor elevation or window well opening elevation for structures that are adjacent to the roadway (this includes residential dwellings, public, commercial and industrial buildings).

For the major and minor storm events, allowable capacity was determined using Street and Inlet Hydraulics version 3.14 by UDFCD.

IV. **Drainage Facility Design**

A. General Concept

Stormwater runoff from the proposed subdivision will generally follow existing drainage patterns from southwest to northeast on the site. Overland flow and a proposed storm sewer system will route the runoff to the Green Acres Tributary or directly to the

proposed regional detention and water quality pond located on the Green Acres Tributary at E-470. This pond will release restricted flows directly into the Green Acres Tributary through the existing 10' x 12' box culvert under E-470.

B. Specific Details

As mentioned previously in this report, the site will be divided into several drainage sub-basins. The onsite runoff will be routed through the site via the proposed roadways and gutters where it will be intercepted by a number of on-grade inlets and inlets located in roadway sumps. This runoff will be routed, via storm sewer, to either the Green Acres Tributary which leads to the proposed regional detention pond or directly to the proposed regional detention pond. Existing water quality structures from the Compark Village South, Filing 1 project will ensure that any water directly entering the Green Acres Tributary is treated.

In addition to the onsite sub-basins, the runoff from some offsite areas will be routed through the proposed site. These offsite areas are two basins (H170 & H180) directly south of the site that include part of the Grand View Estates development. In each basin, flows are intercepted via proposed flared end sections and carried through the site via proposed storm sewer into either the Green Acres Tributary or directly into the proposed regional detention pond at E-470.

The proposed regional detention pond for this development was designed based on a study of major basins that all discharge to the Green Acres Tributary. As has been stated, smaller sub basins were created for this report to more accurately design the storm sewer network that serves the KB Homes residential development. To verify coordination between these two sets of data, a table has been provided below.

Basin ID	Impervious % used in GAT Hydrology Study	Composite Impervious % of Corresponding Sub Basins
H161	50%	41%
H171	50%	44%
H181	50%	38%

The corresponding composite impervious percentages from the sub basin analysis are all below the percentages used to design the regional detention pond. Therefore, the pond has been sufficiently designed to exceed the storage requirements for the KB Homes residential site.

More details for the proposed detention and water quality pond are included in the Conceptual Drainage Report for Compark South prepared by Manhard Consulting, Ltd.^[5] and approved by the Town of Parker.

V. Environmental Protection Criteria

A. Erosion and Sediment Control Measures

During construction, silt fence, inlet protection, and vehicle tracking pads will be used to prevent sediment from entering the storm sewer system or sediment leaving the site. Temporary sediment basins will also be used during construction to trap sediment from stormwater before it leaves the site. All erosion and sediment control measures will be maintained, inspected, and repaired by the Contractor throughout the construction project in compliance with Town of Parker requirements. The proposed Construction Best Management Practices (CBMPs) for this development will follow the requirements for the Town of Parker and UDFCD.

B. Water Quality

Water quality control for this development will be constructed as part of the Compark Village South Filing 1 project. This will consist of CDS manhole structures from Contech Engineered Solutions LLC at the end of each storm line that discharges to Green Acres Tributary.

VI. Conclusion

A. Compliance with Standards

The drainage system for Compark Village South Filing No. 2 was designed to meet the Town of Parker's *Storm Drainage and Environmental Criteria Manual* and the Urban Drainage and Flood Control District's *Urban Storm Drainage Criteria Manual*. The existing Flood Insurance Rate Map (FIRM) in Appendix A shows no portion of the developed site area to be within a flood hazard area. Therefore, no map revisions through FEMA are required as part of this development.

B. Drainage Concept

The drainage system was designed to allow storm water to be safely conveyed through and away from the site without negatively impacting downstream properties. The drainage concepts proposed for this site are in accordance with the Conceptual Drainage Report for Compark South prepared by Manhard Consulting, Ltd. and approved by the Town of Parker.

All storm sewer facilities are intended to be included within the Town of Parker's public improvements maintenance program. The Compark South Drainage Channel Tract will be owned and maintained by the Belford South Metropolitan District. The Town of Parker will retain oversight maintenance rights as needed during emergency conditions.

C. Erosion and Sediment Control Concept

The Construction Best Management Practices (CBMPs) proposed for this site follow the requirements of the Town of Parker and the recommendations by UDFCD. Attention to proper installation and maintenance are essential for the sediment and erosion control practices to function properly.

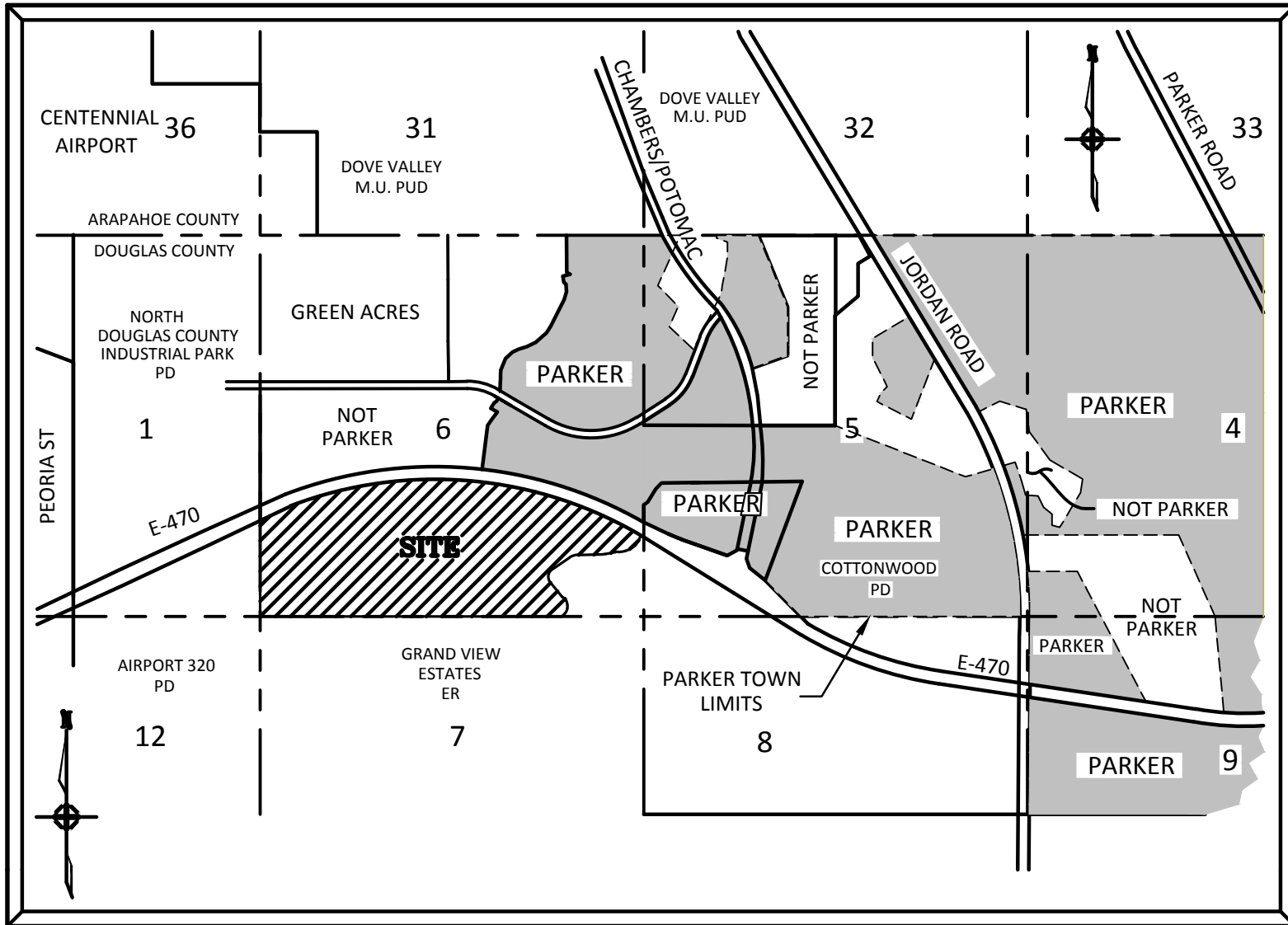
VII. References

1. Town of Parker's *Storm Drainage and Environmental Criteria Manual*, February 2014.
2. Urban Drainage and Flood Control District's *Urban Storm Drainage Criteria Manual* Vol. 1–2, dated April, 2008.
3. Urban Drainage and Flood Control District's *Urban Storm Drainage Criteria Manual* Vol. 3, dated November, 2010.
4. StormCAD, V8i (SELECT series 2), Bentley Systems, Inc., c. 2011 Bentley Systems, Inc.
5. Conceptual Drainage Report for Compark South, prepared by Manhard Consulting, Ltd., dated November 20, 2015.
6. Happy Canyon Creek Major Drainageway Plan, prepared by Muller Engineering Company, Inc., dated March 2014
7. Final Drainage Report for Compark Village South, Filing No. 1, prepared by Manhard Consulting Ltd., dated December 20, 2016

APPENDIX A

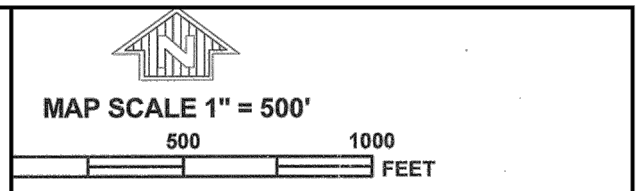
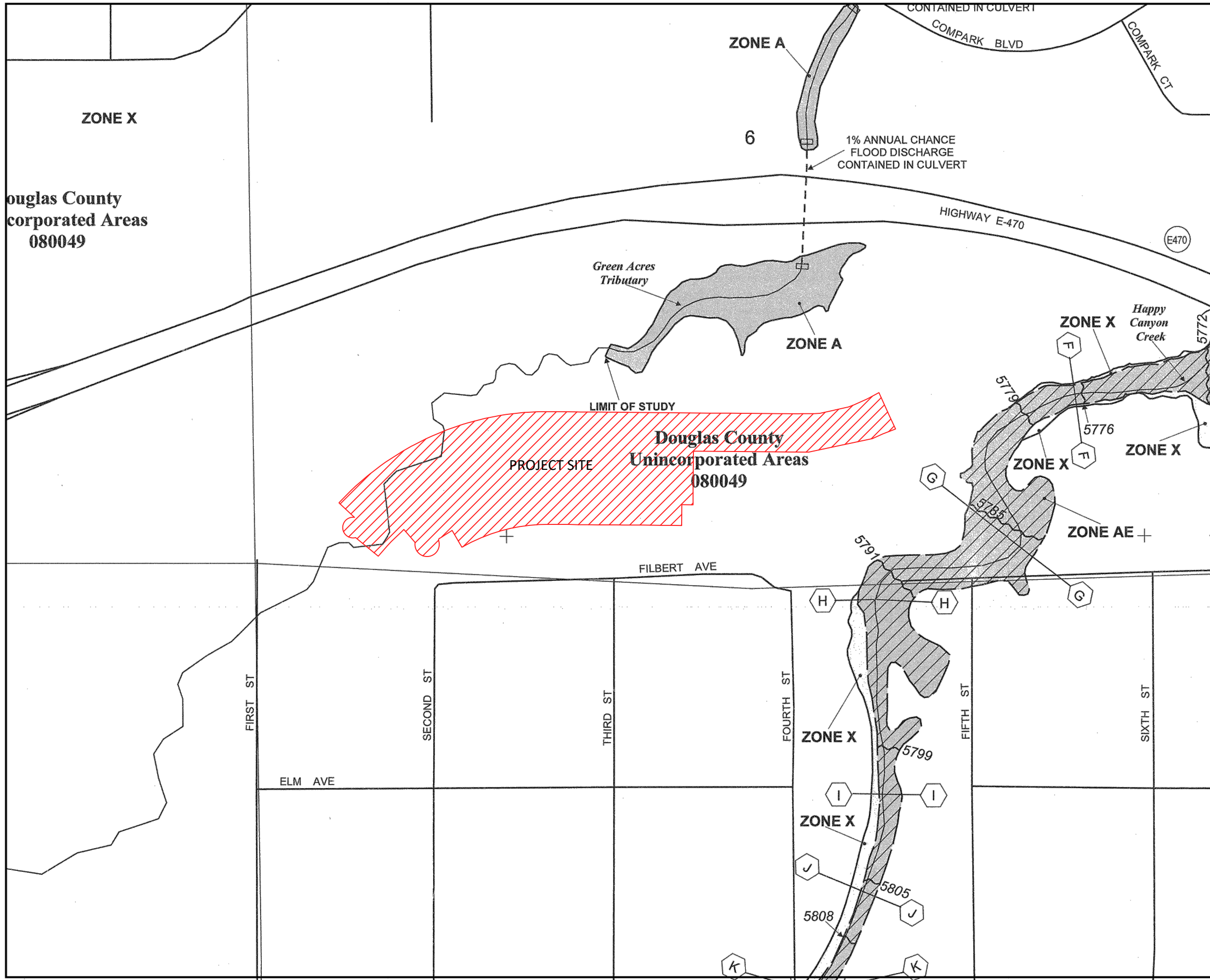
Maps

- Vicinity Map
- FEMA Flood Information Rate Map
- Soils Map



VICINITY MAP

N.T.S.



PANEL 0062F

FIRM
FLOOD INSURANCE RATE MAP
DOUGLAS COUNTY,
COLORADO
AND INCORPORATED AREAS

PANEL 62 OF 495
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS

COMMUNITY	NUMBER	PANEL	SUFFIX
DOUGLAS COUNTY	080049	0062	F
LONE TREE, CITY OF	080319	0062	F

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

MAP NUMBER
08035C0062F

EFFECTIVE DATE:
SEPTEMBER 30, 2005



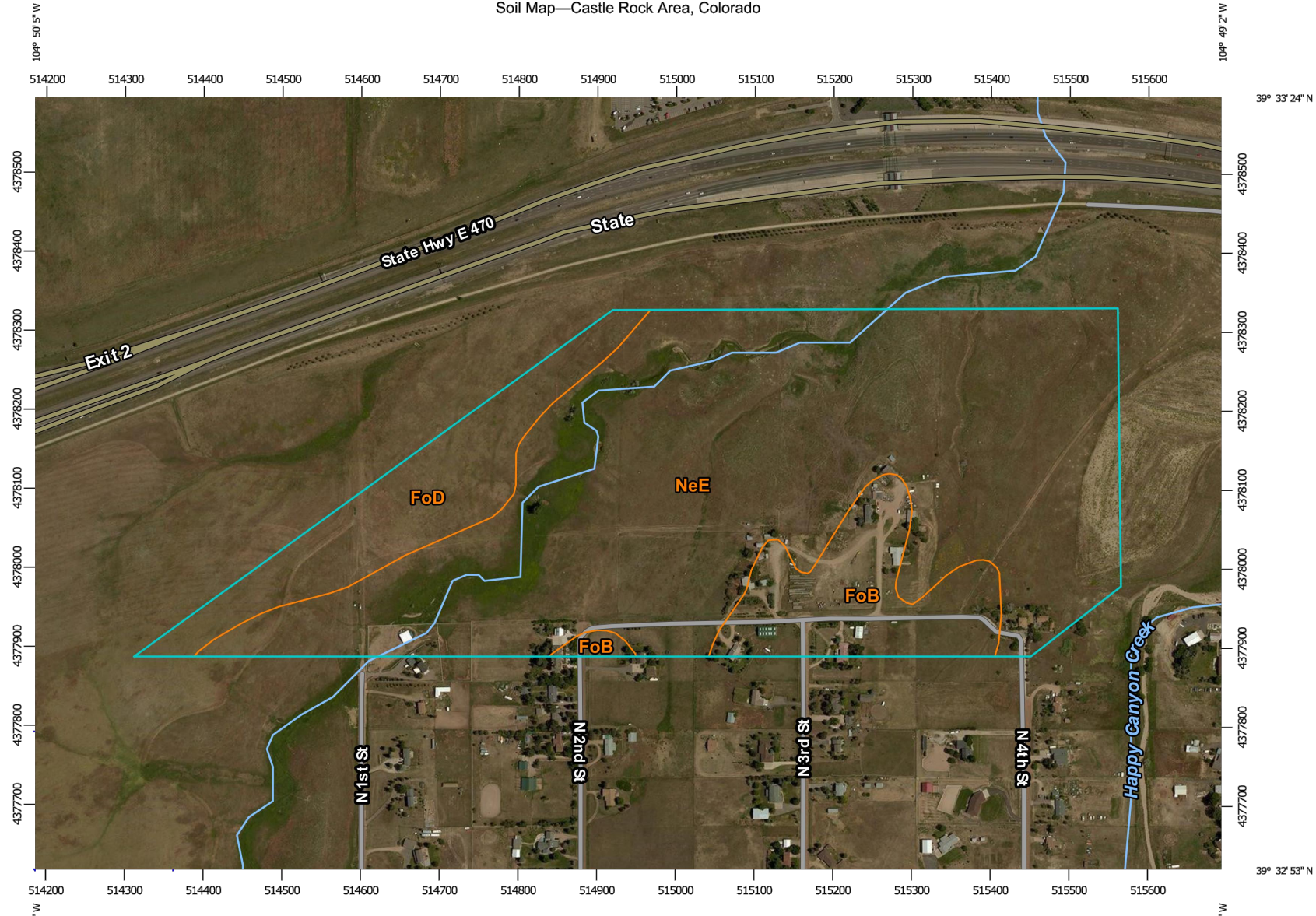
Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

JOINS PANEL 0068

11:25 D:\a\Name: P:\Clc\pkc3\ComSouth05-Residential_Preliminary_Plot\Documents\Engineering\StormWater_Reports\Preliminary_Report\Soil_Map_Exhibit.dwg Updated By: rkatz

Soil Map—Castle Rock Area, Colorado



Map Scale: 1:6,890 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84



Web Soil Survey
National Cooperative Soil Survey





































1/14/2016
Page 1 of 3



COMPARK VILLAGE SOUTH FILING NO. 1
TOWN OF PARKER, CO
SOIL MAP EXHIBIT

RJM
RAK
1/14/16
1:6,890
SHEET
1
CLCPKC3

MAP LEGEND

- | | | | |
|--|--|---|--|
| Area of Interest (AOI) | |  Spoil Area | |
|  Area of Interest (AOI) | |  Stony Spot | |
| Soils | |  Very Stony Spot | |
|  Soil Map Unit Polygons | |  Wet Spot | |
|  Soil Map Unit Lines | |  Other | |
|  Soil Map Unit Points | |  Special Line Features | |
| Special Point Features | | Water Features | |
|  Blowout | |  Streams and Canals | |
|  Borrow Pit | | Transportation | |
|  Clay Spot | |  Rails | |
|  Closed Depression | |  Interstate Highways | |
|  Gravel Pit | |  US Routes | |
|  Gravelly Spot | |  Major Roads | |
|  Landfill | |  Local Roads | |
|  Lava Flow | | Background | |
|  Marsh or swamp | |  Aerial Photography | |
|  Mine or Quarry | | | |
|  Miscellaneous Water | | | |
|  Perennial Water | | | |
|  Rock Outcrop | | | |
|  Saline Spot | | | |
|  Sandy Spot | | | |
|  Severely Eroded Spot | | | |
|  Sinkhole | | | |
|  Slide or Slip | | | |
|  Sodic Spot | | | |

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Castle Rock Area, Colorado
 Survey Area Data: Version 8, Sep 23, 2014

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 10, 2014—Aug 21, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



COMPARK VILLAGE SOUTH FILING NO. 1
 TOWN OF PARKER, CO
 SOIL MAP EXHIBIT

RJM
 RAK
 1/14/16
 1:6, 890
 SHEET
2
 CLCPKC3

11:25 D:\a\Name: P:\C\clcpkc3\ComSouth05-Residential_Preliminary_Plot\Documents\Engineering\StormWater_Reports\Preliminary_Report\Soil_Map_Exhibit.dwg Updated By: rjatz

Soil Map—Castle Rock Area, Colorado

Map Unit Legend

Castle Rock Area, Colorado (CO622)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
FoB	Fondis clay loam, 1 to 3 percent slopes	12.3	12.1%
FoD	Fondis clay loam, 3 to 9 percent slopes	13.2	12.9%
NeE	Newlin gravelly sandy loam, 8 to 30 percent slopes	76.6	75.0%
Totals for Area of Interest		102.1	100.0%



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

1/14/2016
Page 3 of 3

C1CPK03

3

SHEET

1:6,890

1/14/16

RAK

RAM

COMPARK VILLAGE SOUTH FILING NO. 1

TOWN OF PARKER, CO

SOIL MAP EXHIBIT

Manhard
CONSULTING LTD

2025 Arapahoe County, Box 116 (Denver, CO 80116) public@manhard.com 303.708.0400 manhard.com
Civil Engineers • Surveyors • Water Resources Engineers • Water & Wastewater Engineers
Construction Management • Environmental Sciences • Landmarks Architecture • Planning

APPENDIX B

Hydrologic Analysis

- UDFCD Table 6-3
- UDFCD Table 6-4
- UDFCD Table 6-5
- UDFCD Figures 6-1, 6-2 & 6-3
- Impervious Percentage Calculations
- Time of Concentration Calculations
- 2-Year Storm Runoff Calculations
- 5-Year Storm Runoff Calculations
- 100-Year Storm Runoff Calculations

Table 6-3. Recommended percentage imperviousness values

Land Use or Surface Characteristics	Percentage Imperviousness (%)
Business:	
Downtown Areas	95
Suburban Areas	75
Residential:	
Single-family	
2.5 acres or larger	12
0.75 – 2.5 acres	20
0.25 – 0.75 acres	30
0.25 acres or less	45
Apartments	75
Industrial:	
Light areas	80
Heavy areas	90
Parks, cemeteries	10
Playgrounds	25
Schools	55
Railroad yard areas	50
Undeveloped Areas:	
Historic flow analysis	2
Greenbelts, agricultural	2
Off-site flow analysis (when land use not defined)	45
Streets:	
Paved	100
Gravel (packed)	40
Drive and walks	90
Roofs	90
Lawns, sandy soil	2
Lawns, clayey soil	2

Table 6-4. Runoff coefficient equations based on NRCS soil group and storm return period

NRCS Soil Group	Storm Return Period					
	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
A	$C_A = 0.89i$	$C_A = 0.93i$	$C_A = 0.94i$	$C_A = 0.944i$	$C_A = 0.95i$	$C_A = 0.81i + 0.154$
B	$C_B = 0.89i$	$C_B = 0.93i$	$C_B = 0.81i + 0.125$	$C_B = 0.70i + 0.23$	$C_B = 0.59i + 0.364$	$C_B = 0.49i + 0.454$
C/D	$C_{C/D} = 0.89i$	$C_{C/D} = 0.87i + 0.052$	$C_{C/D} = 0.74i + 0.2$	$C_{C/D} = 0.64i + 0.31$	$C_{C/D} = 0.54i + 0.418$	$C_{C/D} = 0.45i + 0.508$

Where:

i = % imperviousness (expressed as a decimal)

C_A = Runoff coefficient for Natural Resources Conservation Service (NRCS) HSG A soils

C_B = Runoff coefficient for NRCS HSG B soils

$C_{C/D}$ = Runoff coefficient for NRCS HSG C and D soils.

The values for various catchment imperviousness and storm return periods are presented graphically in Figures 6-1 through 6-3, and are tabulated in Table 6-5. These coefficients were developed for the Denver region to work in conjunction with the time of concentration recommendations in Section 2.4. Use of these coefficients and this procedure outside of the semi-arid climate found in the Denver region may not be valid. The UD-Rational Excel workbook performs all the needed calculations to find the runoff coefficient given the soil type and imperviousness and the reader may want to take advantage of this macro-enabled Excel workbook that is available for download from the UDFCD's website www.udfcd.org.

See Examples 7.1 and 7.2 that illustrate the Rational Method.

Table 6-5. Runoff coefficients, *c*

Total or Effective % Imperviousness	NRCS Hydrologic Soil Group A					
	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
2%	0.02	0.02	0.02	0.02	0.02	0.17
5%	0.04	0.05	0.05	0.05	0.05	0.19
10%	0.09	0.09	0.09	0.09	0.1	0.23
15%	0.13	0.14	0.14	0.14	0.14	0.28
20%	0.18	0.19	0.19	0.19	0.19	0.32
25%	0.22	0.23	0.24	0.24	0.24	0.36
30%	0.27	0.28	0.28	0.28	0.29	0.4
35%	0.31	0.33	0.33	0.33	0.33	0.44
40%	0.36	0.37	0.38	0.38	0.38	0.48
45%	0.4	0.42	0.42	0.42	0.43	0.52
50%	0.45	0.47	0.47	0.47	0.48	0.56
55%	0.49	0.51	0.52	0.52	0.52	0.6
60%	0.53	0.56	0.56	0.57	0.57	0.64
65%	0.58	0.6	0.61	0.61	0.62	0.68
70%	0.62	0.65	0.66	0.66	0.67	0.72
75%	0.67	0.7	0.71	0.71	0.71	0.76
80%	0.71	0.74	0.75	0.76	0.76	0.8
85%	0.76	0.79	0.8	0.8	0.81	0.84
90%	0.8	0.84	0.85	0.85	0.86	0.88
95%	0.85	0.88	0.89	0.9	0.9	0.92
100%	0.89	0.93	0.94	0.94	0.95	0.96
Total or Effective % Imperviousness	NRCS Hydrologic Soil Group B					
2%	0.02	0.02	0.14	0.24	0.38	0.46
5%	0.04	0.05	0.17	0.27	0.39	0.48
10%	0.09	0.09	0.21	0.3	0.42	0.5
15%	0.13	0.14	0.25	0.34	0.45	0.53
20%	0.18	0.19	0.29	0.37	0.48	0.55
25%	0.22	0.23	0.33	0.41	0.51	0.58
30%	0.27	0.28	0.37	0.44	0.54	0.6
35%	0.31	0.33	0.41	0.48	0.57	0.63
40%	0.36	0.37	0.45	0.51	0.6	0.65
45%	0.4	0.42	0.49	0.55	0.63	0.67
50%	0.45	0.47	0.53	0.58	0.66	0.7
55%	0.49	0.51	0.57	0.62	0.69	0.72
60%	0.53	0.56	0.61	0.65	0.72	0.75
65%	0.58	0.6	0.65	0.69	0.75	0.77
70%	0.62	0.65	0.69	0.72	0.78	0.8
75%	0.67	0.7	0.73	0.76	0.81	0.82
80%	0.71	0.74	0.77	0.79	0.84	0.85
85%	0.76	0.79	0.81	0.83	0.87	0.87
90%	0.8	0.84	0.85	0.86	0.89	0.9
95%	0.85	0.88	0.89	0.9	0.92	0.92
100%	0.89	0.93	0.94	0.94	0.95	0.94

Table 6-5. Runoff coefficients, *c* (continued)

Total or Effective % Imperviousness	NRCS Hydrologic Soil Groups C and D					
	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
2%	0.02	0.07	0.22	0.32	0.43	0.52
5%	0.04	0.1	0.24	0.34	0.45	0.53
10%	0.09	0.14	0.27	0.37	0.47	0.55
15%	0.13	0.18	0.31	0.41	0.5	0.58
20%	0.18	0.23	0.35	0.44	0.53	0.6
25%	0.22	0.27	0.39	0.47	0.55	0.62
30%	0.27	0.31	0.42	0.5	0.58	0.64
35%	0.31	0.36	0.46	0.53	0.61	0.67
40%	0.36	0.4	0.5	0.57	0.63	0.69
45%	0.4	0.44	0.53	0.6	0.66	0.71
50%	0.45	0.49	0.57	0.63	0.69	0.73
55%	0.49	0.53	0.61	0.66	0.72	0.76
60%	0.53	0.57	0.64	0.69	0.74	0.78
65%	0.58	0.62	0.68	0.73	0.77	0.8
70%	0.62	0.66	0.72	0.76	0.8	0.82
75%	0.67	0.7	0.76	0.79	0.82	0.85
80%	0.71	0.75	0.79	0.82	0.85	0.87
85%	0.76	0.79	0.83	0.85	0.88	0.89
90%	0.8	0.83	0.87	0.89	0.9	0.91
95%	0.85	0.88	0.9	0.92	0.93	0.94
100%	0.89	0.92	0.94	0.95	0.96	0.96

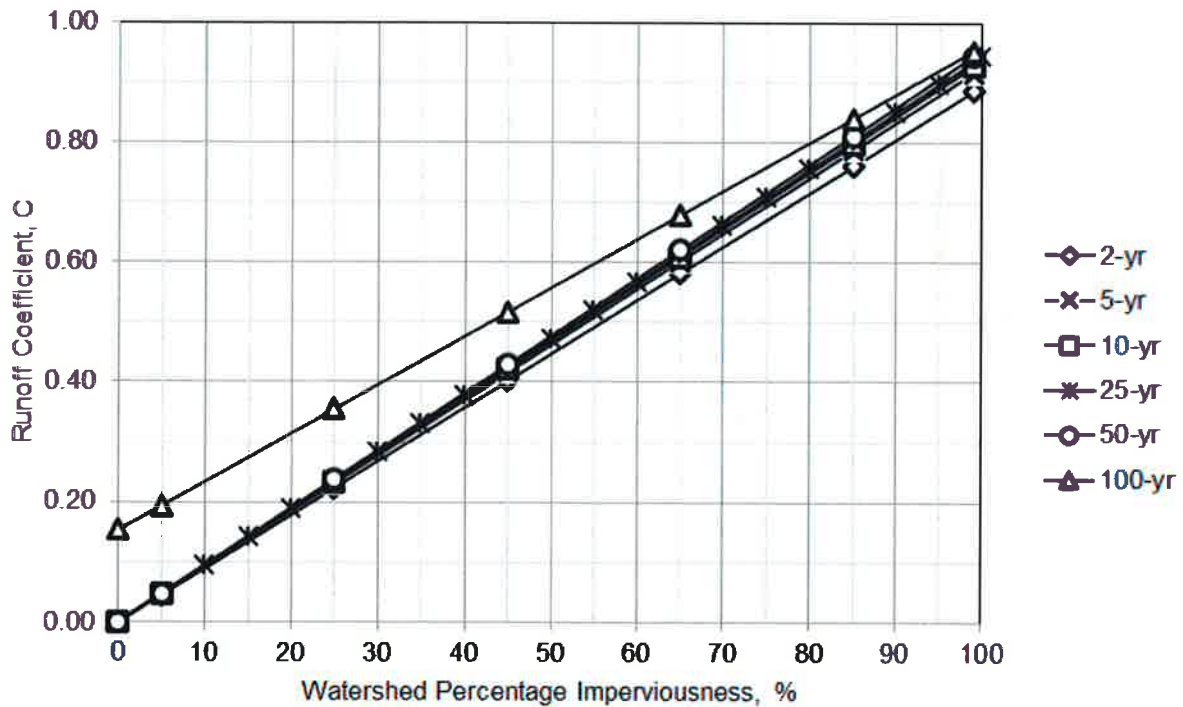


Figure 6-1. Runoff coefficient vs. watershed imperviousness NRCS HSG A

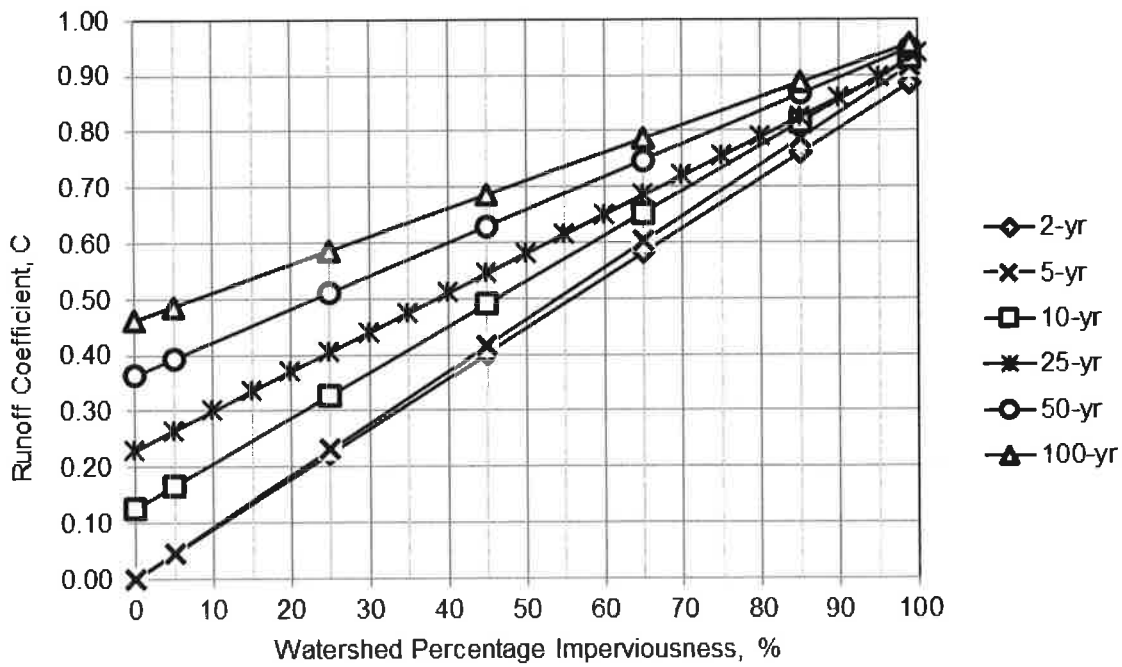


Figure 6-2. Runoff coefficient vs. watershed imperviousness NRCS HSG B

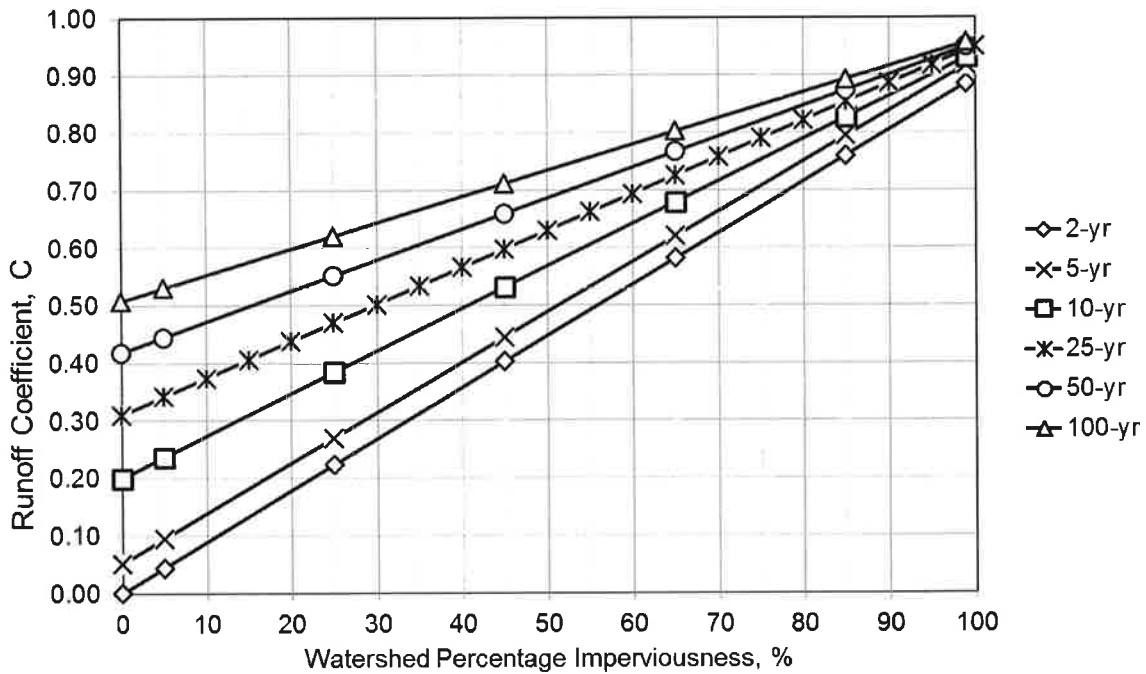


Figure 6-3. Runoff coefficient vs. watershed imperviousness NRCS HSG C and D

Compark South

TOWN OF PARKER, COLORADO PROPOSED IMPERVIOUSNESS CALCULATIONS 6/9/2016

CVS-1

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	1.18	1.18
Landscape	2%	2.67	0.05

Total Area: 3.85

Percentage Imperviousness: 32.0%
C₂ (Table 6-4, Type C Soil): 0.28
C₅ (Table 6-4, Type C Soil): 0.33
C₁₀₀ (Table 6-4, Type C Soil): 0.65

CVS-2

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	1.09	1.09
Landscape	2%	0.33	0.01

Total Area: 1.42

Percentage Imperviousness: 77.0%
C₂ (Table 6-4, Type C Soil): 0.69
C₅ (Table 6-4, Type C Soil): 0.72
C₁₀₀ (Table 6-4, Type C Soil): 0.85

CVS-3

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	0.57	0.57
Landscape	2%	0.37	0.01

Total Area: 0.94

Percentage Imperviousness: 62.0%
C₂ (Table 6-4, Type B Soil): 0.55
C₅ (Table 6-4, Type B Soil): 0.58
C₁₀₀ (Table 6-4, Type B Soil): 0.76

CVS-4

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	0.56	0.56
Landscape	2%	0.61	0.01

Total Area: 1.17

Percentage Imperviousness: 49.0%
C₂ (Table 6-4, Type B Soil): 0.44
C₅ (Table 6-4, Type B Soil): 0.46
C₁₀₀ (Table 6-4, Type B Soil): 0.69

*Note: Impervious percentages were determined using Figures 3-3, 3-4, 3-5 from Volume 3 of the Urban Storm Drainage Criteria Manual.

CVS-4A

Percentage Imperviousness*:	55.0%
C₂ (Table 6-4, Type B Soil):	0.49
C₅ (Table 6-4, Type B Soil):	0.51
C₁₀₀ (Table 6-4, Type B Soil):	0.72

CVS-5

Percentage Imperviousness*:	45.0%
C₂ (Table 6-4, Type B Soil):	0.40
C₅ (Table 6-4, Type B Soil):	0.42
C₁₀₀ (Table 6-4, Type B Soil):	0.67

CVS-6

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	0.28	0.28
Landscape	2%	0.37	0.01

Total Area: 0.65

Percentage Imperviousness:	45.0%
C₂ (Table 6-4, Type B Soil):	0.40
C₅ (Table 6-4, Type B Soil):	0.42
C₁₀₀ (Table 6-4, Type B Soil):	0.67

CVS-6A

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	0.00	0.00
Landscape	2%	0.78	0.02

Total Area: 0.78

Percentage Imperviousness:	2.0%
C₂ (Table 6-4, Type B Soil):	0.02
C₅ (Table 6-4, Type B Soil):	0.02
C₁₀₀ (Table 6-4, Type B Soil):	0.46

CVS-7

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	0.86	0.86
Landscape	2%	0.25	0.01

Total Area: 1.11

Percentage Imperviousness:	78.0%
C₂ (Table 6-4, Type B Soil):	0.69
C₅ (Table 6-4, Type B Soil):	0.73
C₁₀₀ (Table 6-4, Type B Soil):	0.84

*Note: Impervious percentages were determined using Figures 3-3, 3-4, 3-5 from Volume 3 of the Urban Storm Drainage Criteria Manual.

CVS-8

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	0.86	0.86
Landscape	2%	0.73	0.01

Total Area: 1.59

Percentage Imperviousness: 55.0%
C₂ (Table 6-4, Type B Soil): 0.49
C₅ (Table 6-4, Type B Soil): 0.51
C₁₀₀ (Table 6-4, Type B Soil): 0.72

CVS-9

Percentage Imperviousness*: 55.0%
C₂ (Table 6-4, Type B Soil): 0.49
C₅ (Table 6-4, Type B Soil): 0.51
C₁₀₀ (Table 6-4, Type B Soil): 0.72

CVS-9A

Percentage Imperviousness*: 55.0%
C₂ (Table 6-4, Type B Soil): 0.49
C₅ (Table 6-4, Type B Soil): 0.51
C₁₀₀ (Table 6-4, Type B Soil): 0.72

CVS-10

Percentage Imperviousness*: 51.0%
C₂ (Table 6-4, Type B Soil): 0.45
C₅ (Table 6-4, Type B Soil): 0.47
C₁₀₀ (Table 6-4, Type B Soil): 0.70

CVS-10A

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	0.25	0.25
Landscape	2%	0.15	0.00

Total Area: 0.40

Percentage Imperviousness: 63.0%
C₂ (Table 6-4, Type B Soil): 0.56
C₅ (Table 6-4, Type B Soil): 0.59
C₁₀₀ (Table 6-4, Type B Soil): 0.76

CVS-11

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	2.08	2.08
Landscape	2%	1.39	0.03

Total Area: 3.47

Percentage Imperviousness: 78.0%
C₂ (Table 6-4, Type B Soil): 0.69
C₅ (Table 6-4, Type B Soil): 0.73
C₁₀₀ (Table 6-4, Type B Soil): 0.84

*Note: Impervious percentages were determined using Figures 3-3, 3-4, 3-5 from Volume 3 of the Urban Storm Drainage Criteria Manual.

CVS-12

Percentage Imperviousness*:	55.0%
C ₂ (Table 6-4, Type B Soil):	0.49
C ₅ (Table 6-4, Type B Soil):	0.51
C ₁₀₀ (Table 6-4, Type B Soil):	0.72

CVS-12A

Percentage Imperviousness*:	55.0%
C ₂ (Table 6-4, Type B Soil):	0.49
C ₅ (Table 6-4, Type B Soil):	0.51
C ₁₀₀ (Table 6-4, Type B Soil):	0.72

CVS-12B

Percentage Imperviousness*:	55.0%
C ₂ (Table 6-4, Type B Soil):	0.49
C ₅ (Table 6-4, Type B Soil):	0.51
C ₁₀₀ (Table 6-4, Type B Soil):	0.72

CVS-13

Percentage Imperviousness*:	55.0%
C ₂ (Table 6-4, Type B Soil):	0.49
C ₅ (Table 6-4, Type B Soil):	0.51
C ₁₀₀ (Table 6-4, Type B Soil):	0.72

CVS-13A

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	0.76	0.76
Landscape	2%	0.48	0.01

Total Area: 1.24

Percentage Imperviousness:	62.0%
C ₂ (Table 6-4, Type B Soil):	0.55
C ₅ (Table 6-4, Type B Soil):	0.58
C ₁₀₀ (Table 6-4, Type B Soil):	0.76

CVS-13B

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	0.79	0.79
Landscape	2%	0.48	0.01

Total Area: 1.27

Percentage Imperviousness:	63.0%
C ₂ (Table 6-4, Type B Soil):	0.56
C ₅ (Table 6-4, Type B Soil):	0.59
C ₁₀₀ (Table 6-4, Type B Soil):	0.76

*Note: Impervious percentages were determined using Figures 3-3, 3-4, 3-5 from Volume 3 of the Urban Storm Drainage Criteria Manual.

CVS-13C

Percentage Imperviousness*: **55.0%**
C₂ (Table 6-4, Type B Soil): **0.49**
C₅ (Table 6-4, Type B Soil): **0.51**
C₁₀₀ (Table 6-4, Type B Soil): **0.72**

CVS-14

Percentage Imperviousness: **55.0%**
C₂ (Table 6-4, Type B Soil): **0.49**
C₅ (Table 6-4, Type B Soil): **0.51**
C₁₀₀ (Table 6-4, Type B Soil): **0.72**

CVS-14A

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	0.00	0.00
Landscape	2%	4.12	0.08
Total Area:		4.12	

Percentage Imperviousness: **2.0%**
C₂ (Table 6-4, Type B Soil): **0.02**
C₅ (Table 6-4, Type B Soil): **0.02**
C₁₀₀ (Table 6-4, Type B Soil): **0.46**

CVS-14B

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	0.18	0.18
Landscape	2%	2.55	0.05
Total Area:		2.73	

Percentage Imperviousness: **8.0%**
C₂ (Table 6-4, Type B Soil): **0.07**
C₅ (Table 6-4, Type B Soil): **0.07**
C₁₀₀ (Table 6-4, Type B Soil): **0.49**

CVS-14C

Percentage Imperviousness: **55.0%**
C₂ (Table 6-4, Type B Soil): **0.49**
C₅ (Table 6-4, Type B Soil): **0.51**
C₁₀₀ (Table 6-4, Type B Soil): **0.72**

CVS-15

Percentage Imperviousness*: **55.0%**
C₂ (Table 6-4, Type B Soil): **0.49**
C₅ (Table 6-4, Type B Soil): **0.51**
C₁₀₀ (Table 6-4, Type B Soil): **0.72**

*Note: Impervious percentages were determined using Figures 3-3, 3-4, 3-5 from Volume 3 of the Urban Storm Drainage Criteria Manual.

CVS-15A

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	0.55	0.55
Landscape	2%	0.40	0.01
Total Area:		0.95	

Percentage Imperviousness:	59.0%
C ₂ (Table 6-4, Type B Soil):	0.53
C ₅ (Table 6-4, Type B Soil):	0.55
C ₁₀₀ (Table 6-4, Type B Soil):	0.74

CVS-16

Percentage Imperviousness*:	55.0%
C ₂ (Table 6-4, Type B Soil):	0.49
C ₅ (Table 6-4, Type B Soil):	0.51
C ₁₀₀ (Table 6-4, Type B Soil):	0.72

CVS-17

Percentage Imperviousness*:	55.0%
C ₂ (Table 6-4, Type B Soil):	0.49
C ₅ (Table 6-4, Type B Soil):	0.51
C ₁₀₀ (Table 6-4, Type B Soil):	0.72

CVS-18

Percentage Imperviousness*:	50.0%
C ₂ (Table 6-4, Type B Soil):	0.45
C ₅ (Table 6-4, Type B Soil):	0.47
C ₁₀₀ (Table 6-4, Type B Soil):	0.70

CVS-19

Percentage Imperviousness*:	73.0%
C ₂ (Table 6-4, Type B Soil):	0.65
C ₅ (Table 6-4, Type B Soil):	0.68
C ₁₀₀ (Table 6-4, Type B Soil):	0.81

CVS-20

Percentage Imperviousness*:	55.0%
C ₂ (Table 6-4, Type B Soil):	0.49
C ₅ (Table 6-4, Type B Soil):	0.51
C ₁₀₀ (Table 6-4, Type B Soil):	0.72

CVS-21

Percentage Imperviousness*:	55.0%
C ₂ (Table 6-4, Type B Soil):	0.49
C ₅ (Table 6-4, Type B Soil):	0.51
C ₁₀₀ (Table 6-4, Type B Soil):	0.72

*Note: Impervious percentages were determined using Figures 3-3, 3-4, 3-5 from Volume 3 of the Urban Storm Drainage Criteria Manual.

BEL-1

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	1.23	1.23
Landscape	2%	2.50	0.05

Total Area: 3.73

Percentage Imperviousness: 34.0%
C₂ (Table 6-4, Type B Soil): 0.30
C₅ (Table 6-4, Type B Soil): 0.32
C₁₀₀ (Table 6-4, Type B Soil): 0.62

BEL-2

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	0.68	0.68
Landscape	2%	0.70	0.01

Total Area: 1.38

Percentage Imperviousness: 77.0%
C₂ (Table 6-4, Type B Soil): 0.69
C₅ (Table 6-4, Type B Soil): 0.72
C₁₀₀ (Table 6-4, Type B Soil): 0.83

BEL-3

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	1.34	1.34
Landscape	2%	5.42	0.11

Total Area: 6.76

Percentage Imperviousness: 21.0%
C₂ (Table 6-4, Type B Soil): 0.19
C₅ (Table 6-4, Type B Soil): 0.20
C₁₀₀ (Table 6-4, Type B Soil): 0.56

BEL-4

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	1.36	1.36
Landscape	2%	0.39	0.01

Total Area: 1.75

Percentage Imperviousness: 78.0%
C₂ (Table 6-4, Type B Soil): 0.69
C₅ (Table 6-4, Type B Soil): 0.73
C₁₀₀ (Table 6-4, Type B Soil): 0.84

*Note: Impervious percentages were determined using Figures 3-3, 3-4, 3-5 from Volume 3 of the Urban Storm Drainage Criteria Manual.

BEL-5

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	3.43	3.43
Landscape	2%	1.12	0.02

Total Area: 4.55

Percentage Imperviousness: 76.0%
C₂ (Table 6-4, Type B Soil): 0.68
C₅ (Table 6-4, Type B Soil): 0.71
C₁₀₀ (Table 6-4, Type B Soil): 0.83

BEL-6

Land Use	Imperviousness (UDFCD Table 6-3)	Total Area (Acres)	Impervious Area (Acres)
Pavement/Hardscape	100%	2.77	2.77
Landscape	2%	1.18	0.02

Total Area: 3.95

Percentage Imperviousness: 71.0%
C₂ (Table 6-4, Type B Soil): 0.63
C₅ (Table 6-4, Type B Soil): 0.66
C₁₀₀ (Table 6-4, Type B Soil): 0.80

*Note: Impervious percentages were determined using Figures 3-3, 3-4, 3-5 from Volume 3 of the Urban Storm Drainage Criteria Manual.

**PROPOSED DRAINAGE BASINS
STANDARD FORM SF-2
TIME OF CONCENTRATION**

PROJECT: Compark Village South, Filing 1

NOTES:
 $T_1 = [0.395 \times (1.1 - C_c) \times L^{0.5}] / (S^{0.33})$
 $T_1 = L / (60 \times V)$ (Velocity from UDFCD Fig. RO-1)
 $T_c \text{ Check} = 10 + L/180$ (Urbanized Basins Only)

JOB NO: CLCPKC3

CALCULATED BY: RAK DATE: November 16, 2016
 REVISED BY: DATE:

SUB-BASIN DATA			INITIAL/OVERLAND TIME (T ₁)			TRAVEL TIME (T ₂) - (GRASS SWALE)				TRAVEL TIME (T ₃) - (PAVEMENT/CURB & GUTTER)				T _c CHECK (urbanized basins)		FINAL T _c (min)	REMARKS
AREA DESIGNATION	RUNOFF COEFFICIENT, C ₁₀₀	AREA, A (acres)	FLOW LENGTH, (ft)	SLOPE (%)	INITIAL TIME T ₁ (min)	FLOW LENGTH, (ft)	SLOPE (%)	VELOCITY (ft/s)	TRAVEL TIME T ₂ (min)	FLOW LENGTH, (ft)	SLOPE (%)	VELOCITY (ft/s)	TRAVEL TIME T ₃ (min)	TOTAL LENGTH (ft)	MAXIMUM T _c = (T ₁ + T ₃)		
CVS-1 (Inlet 1-3)	0.65	3.85	0	0.0%	0.0	0	0.0%	0.0	0.0	1172	2.0%	2.8	6.9	1172	16.5	6.9	
CVS-2 (Inlet 2-3)	0.85	1.42	0	0.0%	0.0	0	0.0%	0.0	0.0	1125	2.0%	2.8	6.6	1125	16.3	6.6	
CVS-3 (Inlet 1-4)	0.76	0.94	0	0.0%	0.0	0	0.0%	0.0	0.0	1055	2.0%	2.8	6.2	1055	15.9	6.2	
CVS-4 (Inlet 2-4)	0.69	1.17	0	0.0%	0.0	0	0.0%	0.0	0.0	600	1.5%	2.4	4.1	600	13.3	4.1	
CVS-4A (Inlet 3-4)	0.72	1.76	100	2.0%	5.4	180	2.0%	1.0	3.0	416	1.5%	2.4	2.8	696	13.9	11.3	
CVS-5 (Inlet 5-4)	0.67	2.63	100	4.0%	4.9	130	5.5%	1.6	1.3	380	1.3%	2.3	2.8	610	13.4	9.0	
CVS-6 (Inlet 6-4)	0.67	0.58	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0	Minimum
CVS-6A (FES 2-4)	0.46	0.78	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0	Minimum
CVS-7 (Inlet 1-6)	0.84	1.11	0	0.0%	0.0	0	0.0%	0.0	0.0	904	0.6%	1.5	10.2	904	15.0	10.2	
CVS-8 (Inlet 2-6)	0.72	1.59	0	0.0%	0.0	0	0.0%	0.0	0.0	897	0.6%	1.5	10.1	897	15.0	10.1	
CVS-9 (Inlet 4-5A)	0.72	2.41	100	2.0%	5.4	180	2.0%	1.0	3.0	440	1.1%	2.1	3.5	720	14.0	11.9	
CVS-9A (Inlet 3-4)	0.72	0.37	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0	Minimum
CVS-10 (Inlet 5-5A)	0.70	2.78	100	2.0%	5.7	180	2.0%	1.0	3.0	594	1.0%	2.0	5.0	874	14.9	13.7	
CVS-10A (Inlet 5-4A)	0.76	0.40	100	2.0%	4.8	55	2.0%	1.0	0.9	5	1.0%	2.0	0.0	160	10.9	5.8	
CVS-11 (Inlet 1-5)	0.84	2.03	0	0.0%	0.0	0	0.0%	0.0	0.0	1046	0.5%	1.4	12.3	1046	15.8	12.3	
CVS-12 (Inlet 2-5)	0.72	4.58	100	1.5%	5.9	48	1.5%	0.9	0.9	599	1.0%	2.0	5.0	747	14.2	11.9	
CVS-12A (Inlet 3-5)	0.72	0.81	100	2.0%	5.4	120	2.0%	1.0	2.0	30	1.0%	2.0	0.3	250	11.4	7.7	
CVS-12B (Inlet 3-5)	0.72	1.31	100	2.0%	5.4	190	2.0%	1.0	3.2	350	1.8%	2.7	2.2	640	13.6	10.8	
CVS-13 (Inlet 4-5)	0.72	1.16	100	4.7%	4.1	81	2.0%	1.0	1.4	230	1.0%	2.0	1.9	411	12.3	7.4	
CVS 13A (Inlet 6-5A)	0.76	1.20	55	2.0%	3.6	0	0.0%	0.0	0.0	817	1.8%	2.7	5.1	872	14.8	8.7	
CVS 13B (Inlet 4-5B)	0.76	1.53	55	2.0%	3.6	0	0.0%	0.0	0.0	877	1.8%	2.7	5.4	932	15.2	9.0	
CVS 13C (Inlet 4-5C)	0.72	1.26	100	2.0%	5.4	81	2.0%	1.0	1.4	250	1.0%	2.0	2.1	431	12.4	8.8	
CVS-14 (Inlet 6-5)	0.72	1.89	100	2.0%	5.4	40	2.0%	1.0	0.7	608	1.0%	2.0	5.1	748	14.2	11.1	
CVS-14A (Inlet 7-5)	0.46	4.01	100	5.0%	6.8	1258	2.0%	1.0	21.2	0	0.0%	0.0	0.0	1358	17.5	17.5	
CVS-14B (Inlet 6-5)	0.49	2.73	100	5.0%	6.4	512	3.0%	1.2	7.0	5	1.0%	2.0	0.0	617	13.4	13.4	
CVS-14C (Inlet 5-5B)	0.72	1.93	100	2.0%	5.4	40	2.0%	1.0	0.7	634	1.0%	2.0	5.3	774	14.3	11.4	
CVS-15 (Inlet 5-5)	0.72	2.01	100	2.0%	5.4	170	2.0%	1.0	2.9	619	1.0%	2.0	5.2	889	14.9	13.4	
CVS-15A (Inlet 6-5B)	0.74	0.95	55	2.0%	3.8	0	0.0%	0.0	0.0	698	2.0%	2.8	4.1	753	14.2	7.9	
CVS-16	0.72	2.58	100	1.6%	5.8	44	1.6%	0.9	0.8	772	1.0%	2.0	6.4	916	15.1	13.1	
CVS-17	0.72	4.10	100	5.3%	3.9	129	5.3%	1.6	1.3	564	1.0%	2.0	4.7	793	14.4	10.0	
CVS-18	0.70	3.06	100	15.5%	2.9	115	3.0%	1.2	1.6	990	1.0%	2.0	8.3	1205	16.7	12.8	
CVS-19	0.81	1.61	100	3.5%	3.4	200	3.5%	1.3	2.5	0	0.0%	0.0	0.0	300	11.7	6.0	
CVS-20	0.72	1.80	100	2.0%	5.4	17	2.0%	1.0	0.3	570	1.0%	2.0	4.8	687	13.8	10.4	
CVS-21	0.72	3.88	100	0.0%	21.0	164	3.3%	1.3	2.1	833	1.1%	2.1	6.6	1097	16.1	16.1	
BEL-1 (Inlet 2-1)	0.62	3.73	100	1.5%	7.6	466	1.5%	0.9	9.1	462	0.8%	1.8	4.4	508	12.8	12.8	
BEL-2 (Inlet 1-1)	0.83	1.38	0	0.0%	0.0	0	0.0%	0.0	0.0	1123	1.5%	2.4	7.6	1123	16.2	7.6	
BEL-3 (Inlet 2-2)	0.56	6.76	100	1.5%	8.6	232	1.5%	0.9	4.5	462	0.8%	1.8	4.3	794	14.4	14.4	
BEL-4 (Inlet 1-2)	0.84	1.75	0	0.0%	0.0	0	0.0%	0.0	0.0	825	0.8%	1.7	7.9	825	14.6	7.9	
BEL-5	0.83	4.55	100	3.1%	3.4	0	0.0%	0.0	0.0	1602	3.1%	3.5	7.6	1702	19.5	11.0	
BEL-6	0.80	3.95	100	9.8%	2.5	0	0.0%	0.0	0.0	1009	3.0%	3.5	4.9	1109	16.2	7.4	

**PROPOSED DRAINAGE BASINS
STANDARD FORM SF-3
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)**

PROJECT: COMPARK VILLAGE SOUTH, FILINGS 1 & 2

CLCPKC3

CALCULATED BY:
REVISED BY:

RAK

DATE: November 18, 2016
DATE:

Manning's n-value =0.013

2-YEAR

Basin ID	Design Point	DIRECT RUNOFF						Direct Runoff, Q (cfs)	Total Runoff, Q (cfs)	STORM SEWER					REMARKS
		Area (ac)	Tc (min.)	Runoff Coefficient, C	Intensity, I (in/hr)	C*A (Acres)	Intercepted (cfs)			Bypass (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)		
CVS-1 (Inlet 1-3)	1	3.85	6.9	0.28	4.3	1.10	4.7	4.7	4.7	0.0	8.9	3.1%	24		
CVS-2 (Inlet 2-3)	2	1.42	6.6	0.69	4.3	0.97	4.2	4.2	4.2	0.0	4.2	10.0%	24		
CVS-3 (Inlet 1-4)	3	0.94	6.2	0.55	4.4	0.52	2.3	2.3	2.3	0.0	2.3	1.7%	18		
CVS-4 (Inlet 2-4)	4	1.17	4.1	0.44	5.0	0.51	2.5	2.5	2.5	0.0	2.5	0.9%	18		
CVS-4A (Inlet 3-4)	4A	1.76	11.3	0.49	3.6	0.86	3.1	3.1	3.1	0.0	2.9	1.0%	18		
CVS-5 (Inlet 5-4)	5	2.63	9.0	0.40	3.9	1.05	4.1	4.1	4.1	0.0	4.1	1.0%	18		
CVS-6 (Inlet 6-4)	6	0.58	5.0	0.40	4.7	0.23	1.1	1.1	1.1	0.0	9.6	1.7%	36		
CVS-6A (FES 2-4)	6A	0.78	5.0	0.02	4.7	0.01	0.1	0.1	0.1	0.0	8.5	3.1%	36		
CVS-7 (Inlet 1-6)	7	1.11	10.2	0.69	3.7	0.77	2.9	2.9	2.9	0.0	5.8	3.0%	24		
CVS-8 (Inlet 2-6)	8	1.59	10.1	0.49	3.7	0.78	2.9	2.9	2.9	0.0	2.9	1.4%	24		
CVS-9 (Inlet 4-5A)	9	2.41	11.9	0.49	3.5	1.18	4.1	4.1	4.1	0.0	4.1	1.2%	18		
CVS-9A (Inlet 4-4)	9A	0.37	5.0	0.49	4.7	0.18	0.9	0.9	0.9	0.0	0.9	1.0%	18		
CVS-10 (Inlet 5-5A)	10	2.78	13.7	0.45	3.3	1.26	4.2	4.2	4.2	0.0	4.2	1.2%	18		
CVS-10A (Inlet 5-4A)	10A	0.40	5.8	0.56	4.5	0.22	1.0	1.0	1.0	0.0	1.0	1.0%	18		
CVS-11 (Inlet 1-5)	11	2.03	12.3	0.69	3.4	1.41	4.9	4.9	4.9	0.0	12.8	0.8%	36		
CVS-12 (Inlet 2-5)	12	4.58	11.9	0.49	3.5	2.24	7.9	7.9	7.9	0.0	7.9	0.7%	36		
CVS-12A (Inlet 3-5)	12	0.81	7.7	0.49	4.1	0.40	1.6	1.6	1.6	0.0	40.0	1.9%	42		
CVS-12B (Inlet 3-5)	12A	1.31	10.8	0.49	3.6	0.64	2.3	2.3	2.3	0.0	40.0	1.9%	42		
CVS-13 (Inlet 4-5)	13	1.16	7.4	0.49	4.2	0.57	2.4	2.4	2.4	0.0	2.4	3.6%	18		
CVS 13A (Inlet 6-5A)	13A	1.20	8.7	0.55	4.0	0.66	2.6	2.6	2.6	0.0	2.6	1.0%	18		
CVS 13B (Inlet 4-5B)	13B	1.53	9.0	0.56	3.9	0.86	3.4	3.4	3.4	0.0	3.4	1.0%	18		
CVS 13C (Inlet 4-5C)	13C	1.26	8.8	0.49	3.9	0.62	2.4	2.4	2.4	0.0	2.4	1.0%	18		
CVS-14 (Inlet 6-5)	14	1.89	11.1	0.49	3.6	0.93	3.3	3.3	3.3	0.0	8.2	3.2%	30		
CVS-14A (Inlet 7-5)	14A	4.01	17.5	0.02	2.9	0.07	0.2	0.2	0.2	0.0	4.3	4.7%	24		
CVS-14B (Inlet 6-5)	14	2.73	13.4	0.07	3.3	0.19	0.6	0.6	0.6	0.0	8.6	3.4%	30		
CVS-14C (Inlet 5-5B)	14C	1.93	11.4	0.49	3.6	0.94	3.4	3.4	3.4	0.0	3.4	2.8%	18		
CVS-15 (Inlet 5-5)	15	2.05	13.4	0.49	3.3	1.00	3.3	3.3	3.3	0.0	3.3	5.0%	18		
CVS-15A (Inlet 6-5B)	15A	0.95	7.9	0.53	4.1	0.50	2.0	2.0	2.0	0.0	2.0	1.0%	18		
CVS-16	16	2.58	13.1	0.49	3.4	1.26	4.2	4.2	-	-	-	-	-		
CVS-17	17	4.10	10.0	0.49	3.8	2.01	7.6	7.6	-	-	-	-	-		
CVS-18	18	3.06	12.8	0.45	3.4	1.36	4.6	4.6	-	-	-	-	-		
CVS-19	19	1.61	6.0	0.65	4.5	1.05	4.7	4.7	-	-	-	-	-		
CVS-20	20	1.80	10.4	0.49	3.7	0.88	3.3	3.3	-	-	-	-	-		
CVS-21	21	3.88	16.1	0.49	3.1	1.90	5.8	5.8	-	-	-	-	-		
BEL-1 (Inlet 2-1)	B1	3.73	12.8	0.30	3.4	1.13	3.8	3.8	3.8	0.0	5.9	3.3%	36		
BEL-2 (Inlet 1-1)	B2	1.38	7.6	0.69	4.2	0.95	3.9	3.9	3.9	0.0	8.4	0.9%	36		
BEL-3 (Inlet 2-2)	B3	6.76	14.4	0.19	3.2	1.26	4.1	4.1	4.1	0.0	6.6	3.2%	36		
BEL-4 (Inlet 1-2)	B4	1.75	7.9	0.69	4.1	1.21	5.0	5.0	5.0	0.0	11.6	2.9%	36		
BEL-5	B5	4.55	11.0	0.68	3.6	3.08	11.1	11.1	-	-	-	-	-		
BEL-6	B6	3.95	7.4	0.63	4.2	2.50	10.5	10.5	-	-	-	-	-		

**PROPOSED DRAINAGE BASINS
STANDARD FORM SF-3
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)**

PROJECT: COMPARK VILLAGE SOUTH, FILINGS 1 & 2 CLCPKC3

CALCULATED BY: RAK DATE: November 18, 2016 Manning's n-value = 0.013

REVISED BY: DATE: 5-YEAR

Basin ID	Design Point	DIRECT RUNOFF							INLET		STORM SEWER			REMARKS
		Area (ac)	Tc (min.)	Runoff Coefficient, C	Intensity, I (in/hr)	C*A (Acres)	Direct Runoff, Q (cfs)	Total Runoff, Q (cfs)	Intercepted (cfs)	Bypass (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	
CVS-1 (Inlet 1-3)	1	3.85	6.9	0.33	4.3	1.27	5.5	5.5	5.5	0.0	10.0	3.1%	24	
CVS-2 (Inlet 2-3)	2	1.42	6.6	0.72	4.3	1.03	4.5	4.5	4.5	0.0	4.5	10.0%	24	
CVS-3 (Inlet 1-4)	3	0.94	6.2	0.58	4.4	0.54	2.4	2.4	2.4	0.0	2.4	1.7%	18	
CVS-4 (Inlet 2-4)	4	1.17	4.1	0.46	5.0	0.53	2.6	2.6	2.6	0.0	2.6	0.9%	18	
CVS-4A (Inlet 3-4)	4A	1.76	11.3	0.51	3.6	0.90	3.2	3.2	3.2	0.0	3.1	1.0%	18	
CVS-5 (Inlet 5-4)	5	2.63	9.0	0.42	3.9	1.10	4.3	4.3	4.3	0.0	4.3	1.0%	18	
CVS-6 (Inlet 6-4)	6	0.58	5.0	0.42	4.7	0.24	1.1	1.1	1.1	0.0	9.6	1.7%	36	
CVS-6A (FES 2-4)	6A	0.78	5.0	0.02	4.7	0.01	0.1	0.1	0.1	0.0	8.5	3.1%	36	
CVS-7 (Inlet 1-6)	7	1.11	10.2	0.73	3.7	0.81	3.0	3.0	3.0	0.0	6.0	3.0%	24	
CVS-8 (Inlet 2-6)	8	1.59	10.1	0.51	3.7	0.81	3.0	3.0	3.0	0.0	3.0	1.4%	24	
CVS-9 (Inlet 4-5A)	9	2.41	11.9	0.51	3.5	1.23	4.3	4.3	4.3	0.0	4.3	1.2%	18	
CVS-9A (Inlet 4-4)	9A	0.37	5.0	0.51	4.7	0.19	0.9	0.9	0.9	0.0	0.9	1.0%	18	
CVS-10 (Inlet 5-5A)	10	2.78	13.7	0.47	3.3	1.32	4.3	4.3	4.3	0.0	4.3	1.2%	18	
CVS-10A (Inlet 5-4A)	10A	0.40	5.8	0.59	4.5	0.23	1.1	1.1	1.1	0.0	1.1	1.0%	18	
CVS-11 (Inlet 1-5)	11	2.03	12.3	0.73	3.4	1.47	5.1	5.1	5.1	0.0	13.3	0.8%	36	
CVS-12 (Inlet 2-5)	12	4.58	11.9	0.51	3.5	2.34	8.2	8.2	8.2	0.0	8.2	0.7%	36	
CVS-12A (Inlet 3-5)	12	0.81	7.7	0.51	4.1	0.41	1.7	1.7	1.7	0.0	41.4	1.9%	42	
CVS-12B (Inlet 3-5)	12A	1.31	10.8	0.51	3.6	0.67	2.4	2.4	2.4	0.0	41.4	1.9%	42	
CVS-13 (Inlet 4-5)	13	1.16	7.4	0.51	4.2	0.59	2.5	2.5	2.5	0.0	2.5	3.6%	18	
CVS 13A (Inlet 6-5A)	13A	1.20	8.7	0.58	4.0	0.69	2.7	2.7	2.7	0.0	2.7	1.0%	18	
CVS 13B (Inlet 4-5B)	13B	1.53	9.0	0.59	3.9	0.90	3.5	3.5	3.5	0.0	3.5	1.0%	18	
CVS 13C (Inlet 4-5C)	13C	1.26	8.8	0.51	3.9	0.64	2.5	2.5	2.5	0.0	2.5	1.0%	18	
CVS-14 (Inlet 6-5)	14	1.89	11.1	0.51	3.6	0.97	3.5	3.5	3.5	0.0	8.5	3.2%	30	
CVS-14A (Inlet 7-5)	14A	4.01	17.5	0.02	2.9	0.07	0.2	0.2	0.2	0.0	4.3	4.7%	24	
CVS-14B (Inlet 6-5)	14	2.73	13.4	0.07	3.3	0.20	0.7	0.7	0.7	0.0	8.8	3.4%	30	
CVS-14C (Inlet 5-5B)	14C	1.93	11.4	0.51	3.6	0.99	3.5	3.5	3.5	0.0	3.5	2.8%	18	
CVS-15 (Inlet 5-5)	15	2.01	13.4	0.51	3.3	1.03	3.4	3.4	3.4	0.0	3.4	5.0%	18	
CVS-15A (Inlet 6-5B)	15A	0.95	7.9	0.55	4.1	0.52	2.1	2.1	2.1	0.0	2.1	1.0%	18	
CVS-16	16	2.58	13.1	0.51	3.4	1.32	4.4	4.4	-	-	-	-	-	
CVS-17	17	4.10	10.0	0.51	3.8	2.10	7.9	7.9	-	-	-	-	-	
CVS-18	18	3.06	12.8	0.47	3.4	1.42	4.8	4.8	-	-	-	-	-	
CVS-19	19	1.61	6.0	0.68	4.5	1.09	4.9	4.9	-	-	-	-	-	
CVS-20	20	1.80	10.4	0.51	3.7	0.92	3.4	3.4	-	-	-	-	-	
CVS-21	21	3.88	16.1	0.51	3.1	1.98	6.1	6.1	-	-	-	-	-	
BEL-1 (Inlet 2-1)	B1	3.73	12.8	0.32	3.4	1.18	4.0	4.0	4.0	0.0	6.1	3.3%	36	
BEL-2 (Inlet 1-1)	B2	1.38	7.6	0.72	4.2	0.99	4.1	4.1	4.1	0.0	8.8	0.9%	36	
BEL-3 (Inlet 2-2)	B3	6.76	14.4	0.20	3.2	1.32	4.2	4.2	4.2	0.0	6.9	3.2%	36	
BEL-4 (Inlet 1-2)	B4	1.75	7.9	0.73	4.1	1.27	5.2	5.2	5.2	0.0	12.1	2.9%	36	
BEL-5	B5	4.55	11.0	0.71	3.6	3.22	11.6	11.6	-	-	-	-	-	
BEL-6	B6	3.95	7.4	0.66	4.2	2.61	10.9	10.9	-	-	-	-	-	

**PROPOSED DRAINAGE BASINS
STANDARD FORM SF-3
STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)**

PROJECT: COMPARK VILLAGE SOUTH, FILINGS 1 & 2 CLCPKC3
 CALCULATED BY: RAK DATE: November 18, 2016 Manning's n-value = 0.013
 REVISED BY: DATE: _____ 100-YEAR _____

Basin ID	Design Point	DIRECT RUNOFF							INLET		STORM SEWER			REMARKS
		Area (ac)	Tc (min.)	Runoff Coefficient, C	Intensity, I (in/hr)	C*A (Acres)	Direct Runoff, Q (cfs)	Total Runoff with Bypass, Q (cfs)	Intercepted (cfs)	Bypass (cfs)	Design Flow (cfs)	Slope (%)	Pipe Size (inches)	
CVS-1 (Inlet 1-3)	1	3.85	6.9	0.65	8.0	2.51	20.2	20.2	13.5	6.7	22.5	3.1%	24	Bypass flow goes to CVS-3.
CVS-2 (Inlet 2-3)	2	1.42	6.6	0.85	8.1	1.21	9.9	9.9	9.0	1.0	9.0	10.0%	24	Bypass flow goes to CVS-4.
CVS-3 (Inlet 1-4)	3	0.94	6.2	0.76	8.3	0.71	5.9	12.6	7.7	4.9	7.7	1.7%	18	Takes bypass flow from CVS-1. Bypass goes to CVS-7.
CVS-4 (Inlet 2-4)	4	1.17	4.1	0.69	9.3	0.81	7.5	8.5	8.0	0.5	8.0	0.9%	18	Takes bypass flow from CVS-2. Bypass goes to CVS-8.
CVS-4A (Inlet 3-4)	4A	1.76	11.3	0.72	6.7	1.27	8.5	9.5	9.5	0.0	9.6	1.0%	18	Takes bypass flow from CVS-5.
CVS-5 (Inlet 5-4)	5	2.63	9.0	0.67	7.3	1.77	13.0	13.0	11.0	2.0	11.0	1.0%	18	Bypass flow goes to CVS-4A.
CVS-6 (Inlet 6-4)	6	0.58	5.0	0.67	8.8	0.39	3.5	3.5	3.5	0.0	51.3	1.7%	36	
CVS-6A (FES 2-4)	6A	0.78	5.0	0.46	8.8	0.36	3.2	3.2	3.2	0.0	51.0	3.1%	36	
CVS-7 (Inlet 1-6)	7	1.11	10.2	0.84	7.0	0.93	6.5	11.4	7.3	4.1	15.4	3.0%	24	Takes bypass flow from CVS-3. Bypass goes to CVS-11.
CVS-8 (Inlet 2-6)	8	1.59	10.1	0.72	7.0	1.15	8.1	8.6	8.1	0.5	8.1	1.4%	24	Takes bypass flow from CVS-4. Bypass goes to CVS-12.
CVS-9 (Inlet 4-5A)	9	2.41	11.9	0.72	6.5	1.74	11.4	11.6	10.2	1.4	10.2	1.2%	18	Bypass flow goes to CVS-12.
CVS-9A (Inlet 4-4)	9A	0.37	5.0	0.72	8.8	0.27	2.4	2.4	2.4	0.0	2.4	1.0%	18	
CVS-10 (Inlet 5-5A)	10	2.78	13.7	0.70	6.2	1.96	12.1	12.3	10.6	1.7	10.6	1.2%	18	Takes bypass flow from CVS-10A. Bypass flow goes to CVS-13B.
CVS-10A (Inlet 5-4A)	10A	0.40	5.8	0.76	8.5	0.31	2.6	2.6	2.2	0.4	2.2	1.0%	18	Bypass flow goes to CVS-10
CVS-11 (Inlet 1-5)	11	2.03	12.3	0.84	6.5	1.70	11.0	15.1	15.1	0.0	38.7	0.8%	36	Takes bypass flow from CVS-7.
CVS-12 (Inlet 2-5)	12	4.58	11.9	0.72	6.6	3.31	21.7	23.6	23.6	0.0	23.6	0.7%	36	Takes bypass flow from CVS-8 and CVS-9.
CVS-12A (Inlet 3-5)	12	0.81	7.7	0.72	7.8	0.59	4.5	4.5	4.5	0.0	137.0	1.9%	42	
CVS-12B (Inlet 3-5)	12A	1.31	10.8	0.72	6.8	0.95	6.5	9.4	9.4	0.0	137.0	1.9%	42	
CVS-13 (Inlet 4-5)	13	1.16	7.4	0.72	7.9	0.84	6.6	8.9	8.9	0.0	8.9	3.6%	18	Takes bypass flow from CVS-13A and CVS-13C.
CVS 13A (Inlet 6-5A)	13A	1.20	8.7	0.76	7.4	0.91	6.7	6.7	6.2	0.5	6.2	1.0%	18	Bypass flow goes to CVS-13
CVS 13B (Inlet 4-5B)	13B	1.53	9.0	0.76	7.3	1.17	8.5	9.4	6.9	2.5	6.9	1.0%	18	Takes bypass flow from CVS-10. Bypass flow goes to CVS-13C.
CVS 13C (Inlet 4-5C)	13C	1.26	8.8	0.72	7.4	0.91	6.7	7.9	3.9	4.0	3.9	1.0%	18	Takes bypass flow from CVS 13B. Bypass flow goes to CVS-13
CVS-14 (Inlet 6-5)	14	1.89	11.1	0.72	6.7	1.37	9.2	10.1	10.1	0.0	54.4	3.2%	30	Takes bypass from CVS-14C
CVS-14A (Inlet 7-5)	14A	4.01	17.5	0.46	5.5	1.86	10.2	10.2	10.2	0.0	34.8	4.7%	24	
CVS-14B (Inlet 6-5)	14	2.73	13.4	0.49	6.2	1.35	8.4	9.5	9.5	0.0	54.4	3.4%	30	
CVS-14C (Inlet 5-5B)	14C	1.93	11.4	0.72	6.7	1.40	9.3	9.3	7.5	1.8	7.5	2.8%	18	Bypass flow goes to CVS-14
CVS-15 (Inlet 5-5)	15	2.01	13.4	0.72	6.2	1.45	9.0	9.1	9.1	0.0	9.1	5.0%	18	Takes bypass flow from CVS-15A
CVS-15A (Inlet 6-5B)	15A	0.95	7.9	0.74	7.7	0.71	5.4	5.4	5.3	0.1	5.3	1.0%	18	
CVS-16	16	2.58	13.1	0.72	6.3	1.87	11.7	-	-	-	-	-	-	
CVS-17	17	4.10	10.0	0.72	7.0	2.97	20.9	-	-	-	-	-	-	
CVS-18	18	3.06	12.8	0.70	6.4	2.14	13.6	-	-	-	-	-	-	
CVS-19	19	1.61	6.0	0.81	8.4	1.31	11.0	-	-	-	-	-	-	
CVS-20	20	1.80	10.4	0.72	6.9	1.30	9.0	-	-	-	-	-	-	
CVS-21	21	3.88	16.1	0.72	5.7	2.81	16.0	-	-	-	-	-	-	
BEL-1 (Inlet 2-1)	B1	3.73	12.8	0.62	6.3	2.31	14.7	14.7	8.3	6.4	63.6	3.3%	36	Bypass flow goes to BEL-3.
BEL-2 (Inlet 1-1)	B2	1.38	7.6	0.83	7.8	1.15	8.9	8.9	6.5	2.4	69.5	0.9%	36	Bypass flow goes to BEL-4.
BEL-3 (Inlet 2-2)	B3	6.76	14.4	0.56	6.0	3.76	22.6	29.0	29.0	0.0	95.6	3.2%	36	Takes bypass from BEL-1.
BEL-4 (Inlet 1-2)	B4	1.75	7.9	0.84	7.7	1.46	11.2	13.6	13.6	0.0	110.8	2.9%	36	Takes bypass from BEL-2.
BEL-5	B5	4.55	11.0	0.83	6.8	3.76	25.5	-	-	-	-	-	-	
BEL-6	B6	3.95	7.4	0.80	7.9	3.17	24.9	-	-	-	-	-	-	

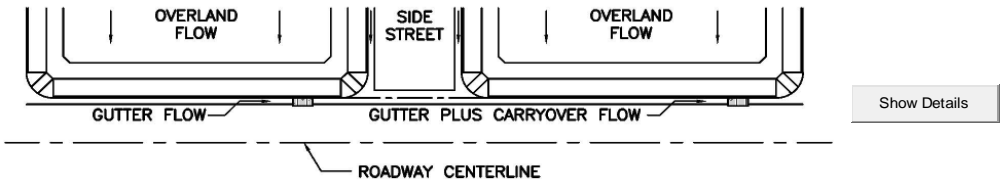
APPENDIX C

Hydraulic Analysis

- Inlet Capacity Calculations
- StormCAD Storm Sewer Design
 - 2-Year Storm Table and Profiles
 - 5-Year Storm Table and Profiles
 - 100-Year Storm Table and Profiles
- Swale Calculations
- Water Quality Structure Cut Sheets & Calculations

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
Inlet ID: INLET 1-1

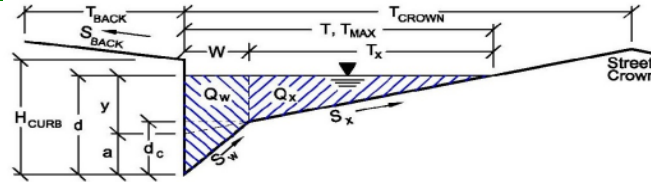


<p>Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):</p> <p>*Q_{known} = <input type="text" value="4.1"/> <input type="text" value="8.9"/> cfs</p> <p>* If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.</p>		<p><--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---</p>
<p>Geographic Information: (Enter data in the blue cells):</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>Site Type:</p> <p><input type="radio"/> Site is Urban</p> <p><input type="radio"/> Site is Non-Urban</p> </div> <div style="width: 30%;"> <p>Flows Developed For:</p> <p><input type="radio"/> Street Inlets</p> <p><input type="radio"/> Area Inlets in a Median</p> </div> <div style="width: 30%;"> <p>Subcatchment Area = <input type="text"/> Acres</p> <p>Percent Imperviousness = <input type="text"/> %</p> <p>NRCS Soil Type = <input type="text"/> A, B, C, or D</p> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%;"> <p>Slope (ft/ft) Length (ft)</p> <p>Overland Flow = <input type="text"/> <input type="text"/></p> <p>Channel Flow = <input type="text"/> <input type="text"/></p> </div> </div>		
<p>Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + I_c)^{C_3}$</p> <p>Design Storm Return Period, T_r = <input type="text"/> years</p> <p>Return Period One-Hour Precipitation, P₁ = <input type="text"/> inches</p> <p>C₁ = <input type="text"/></p> <p>C₂ = <input type="text"/></p> <p>C₃ = <input type="text"/></p> <p>User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C = <input type="text"/></p> <p>User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C₅ = <input type="text"/></p> <p>Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b = <input type="text" value="0.0"/> <input type="text" value="0.0"/> cfs</p> <p style="text-align: right;">Total Design Peak Flow, Q = <input type="text" value="4.1"/> <input type="text" value="8.9"/> cfs</p>		

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

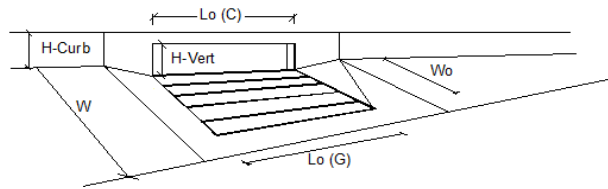
Project: **COMPARK SOUTH**
 Inlet ID: **INLET 1-1**



Gutter Geometry (Enter data in the blue cells)	
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = 17.5$ ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = 0.020$ ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = 0.020$
Height of Curb at Gutter Flow Line	$H_{CURB} = 6.00$ inches
Distance from Curb Face to Street Crown	$T_{CROWN} = 37.0$ ft
Gutter Width	$W = 2.00$ ft
Street Transverse Slope	$S_x = 0.020$ ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = 0.083$ ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = 0.019$ ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = 0.013$
Max. Allowable Spread for Minor & Major Storm	$T_{MAX} = \begin{matrix} \text{Minor Storm} & \text{Major Storm} \\ 20.0 & 37.0 \end{matrix}$ ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	$d_{MAX} = \begin{matrix} \text{Minor Storm} & \text{Major Storm} \\ 6.0 & 12.0 \end{matrix}$ inches
Allow Flow Depth at Street Crown (leave blank for no)	<input type="checkbox"/> <input checked="" type="checkbox"/> check = yes
MINOR STORM Allowable Capacity is based on Depth Criterion	
MAJOR STORM Allowable Capacity is based on Depth Criterion	
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'	
Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'	
$Q_{allow} =$	$\begin{matrix} \text{Minor Storm} & \text{Major Storm} \\ 23.4 & 207.0 \end{matrix}$ cfs

INLET ON A CONTINUOUS GRADE

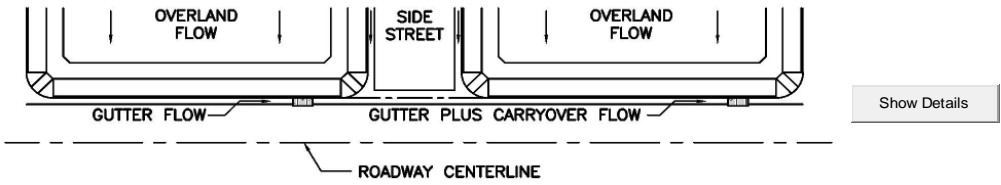
Project: COMPARK SOUTH
 Inlet ID: INLET 1-1



Design Information (Input)	MINOR		MAJOR		
	MINOR	MAJOR	MINOR	MAJOR	
Type of Inlet	Type = CDOT Type R Curb Opening				
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	$a_{LOCAL} = 3.0$	3.0			inches
Total Number of Units in the Inlet (Grate or Curb Opening)	$N_o = 2$	2			
Length of a Single Unit Inlet (Grate or Curb Opening)	$L_o = 5.00$	5.00			ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	$W_o = N/A$	N/A			ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	$C_r-G = N/A$	N/A			
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	$C_r-C = 0.10$	0.10			
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'					
Total Inlet Interception Capacity	$Q = 3.98$	6.47			cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	$Q_b = 0.1$	2.4			cfs
Capture Percentage = $Q_g/Q_o =$	$C\% = 97$	73			%

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
Inlet ID: INLET 1-2



Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		Minor Storm	Major Storm	
		*Q _{known} =	5.2	11.2
				cfs
* If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.				
Geographic Information: (Enter data in the blue cells):				
Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Subcatchment Area =		Acres
		Percent Imperviousness =		%
		NRCS Soil Type =		A, B, C, or D
		Slope (ft/ft)	Length (ft)	
		Overland Flow =		
		Channel Flow =		
Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$		Minor Storm	Major Storm	
Design Storm Return Period, T _r =				years
Return Period One-Hour Precipitation, P ₁ =				inches
C ₁ =				
C ₂ =				
C ₃ =				
User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =				
User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C ₅ =				
Bypass (Carry-Over) Flow from upstream Subcatchments, Q _b =		0.0	2.4	cfs
Total Design Peak Flow, Q =		5.2	13.6	cfs

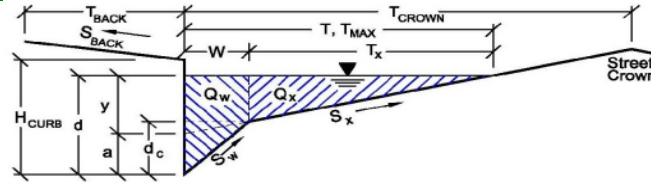
<---
FILL IN THIS SECTION
OR...
FILL IN THE
SECTIONS BELOW.
<---

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:
Inlet ID:

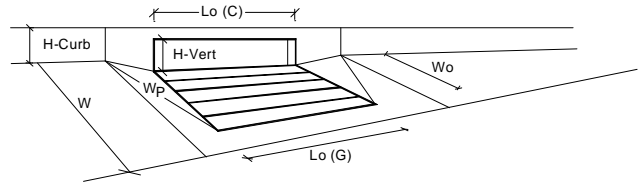
COMPARK SOUTH
INLET 1-2



Gutter Geometry (Enter data in the blue cells)					
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = 17.5$ ft				
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = 0.020$ ft/ft				
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = 0.020$				
Height of Curb at Gutter Flow Line	$H_{CURB} = 6.00$ inches				
Distance from Curb Face to Street Crown	$T_{CROWN} = 37.0$ ft				
Gutter Width	$W = 2.00$ ft				
Street Transverse Slope	$S_x = 0.020$ ft/ft				
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = 0.083$ ft/ft				
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = 0.000$ ft/ft				
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = 0.013$				
Max. Allowable Spread for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center;">Minor Storm</td> <td style="text-align: center;">Major Storm</td> </tr> <tr> <td style="text-align: center;">$T_{MAX} = 20.0$</td> <td style="text-align: center;">$T_{MAX} = 37.0$</td> </tr> </table>	Minor Storm	Major Storm	$T_{MAX} = 20.0$	$T_{MAX} = 37.0$
Minor Storm	Major Storm				
$T_{MAX} = 20.0$	$T_{MAX} = 37.0$				
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center;">Minor Storm</td> <td style="text-align: center;">Major Storm</td> </tr> <tr> <td style="text-align: center;">$d_{MAX} = 6.0$</td> <td style="text-align: center;">$d_{MAX} = 12.0$</td> </tr> </table>	Minor Storm	Major Storm	$d_{MAX} = 6.0$	$d_{MAX} = 12.0$
Minor Storm	Major Storm				
$d_{MAX} = 6.0$	$d_{MAX} = 12.0$				
Allow Flow Depth at Street Crown (leave blank for no)	<input type="checkbox"/> <input checked="" type="checkbox"/> check = yes				
MINOR STORM Allowable Capacity is based on Depth Criterion					
MAJOR STORM Allowable Capacity is based on Depth Criterion					
<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center;">Minor Storm</td> <td style="text-align: center;">Major Storm</td> </tr> <tr> <td style="text-align: center;">$Q_{allow} = \text{SUMP}$</td> <td style="text-align: center;">$Q_{allow} = \text{SUMP}$</td> </tr> </table>		Minor Storm	Major Storm	$Q_{allow} = \text{SUMP}$	$Q_{allow} = \text{SUMP}$
Minor Storm	Major Storm				
$Q_{allow} = \text{SUMP}$	$Q_{allow} = \text{SUMP}$				
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak' Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'					

INLET IN A SUMP OR SAG LOCATION

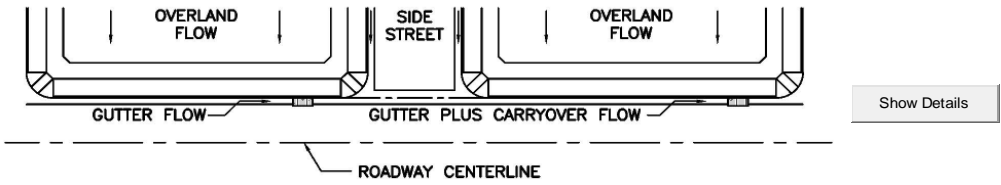
Project = **COMPARK SOUTH**
 Inlet ID = **INLET 1-2**



Design Information (Input)	MINOR		MAJOR	
	Type of Inlet	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	N_o =	2	2	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	6.0	10.4	inches
Grate Information	<input type="checkbox"/> Override Depths			
Length of a Unit Grate	$L_o (G)$ =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	$C_r (G)$ =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	$C_w (G)$ =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	$C_o (G)$ =	N/A	N/A	
Curb Opening Information				
Length of a Unit Curb Opening	$L_o (C)$ =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	$C_r (C)$ =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	$C_w (C)$ =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	$C_o (C)$ =	0.67	0.67	
Total Inlet Interception Capacity (assumes clogged condition)				
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	Q_a =	10.5	23.8	cfs
	$Q_{PEAK REQUIRED}$ =	5.2	13.6	cfs

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
Inlet ID: INLET 1-3



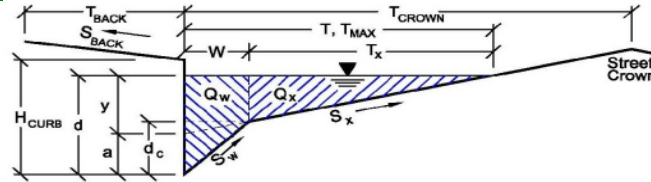
<p>Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):</p> <p>*Q_{known} = <input type="text" value="5.5"/> <input type="text" value="20.2"/> cfs</p> <p>* If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.</p>		<p><--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---</p>
<p>Geographic Information: (Enter data in the blue cells):</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>Site Type:</p> <p><input type="radio"/> Site is Urban</p> <p><input type="radio"/> Site is Non-Urban</p> </div> <div style="width: 30%;"> <p>Flows Developed For:</p> <p><input type="radio"/> Street Inlets</p> <p><input type="radio"/> Area Inlets in a Median</p> </div> <div style="width: 30%;"> <p>Subcatchment Area = <input type="text"/> Acres</p> <p>Percent Imperviousness = <input type="text"/> %</p> <p>NRCS Soil Type = <input type="text"/> A, B, C, or D</p> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%;"> <p>Slope (ft/ft) Length (ft)</p> <p>Overland Flow = <input type="text"/> <input type="text"/></p> <p>Channel Flow = <input type="text"/> <input type="text"/></p> </div> </div>		
<p>Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$</p> <p>Design Storm Return Period, T_r = <input type="text"/> years</p> <p>Return Period One-Hour Precipitation, P₁ = <input type="text"/> inches</p> <p>C₁ = <input type="text"/></p> <p>C₂ = <input type="text"/></p> <p>C₃ = <input type="text"/></p> <p>User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C = <input type="text"/></p> <p>User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C₅ = <input type="text"/></p> <p>Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b = <input type="text" value="0.0"/> <input type="text" value="0.0"/> cfs</p> <p style="text-align: right;">Total Design Peak Flow, Q = <input type="text" value="5.5"/> <input type="text" value="20.2"/> cfs</p>		

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:
Inlet ID:

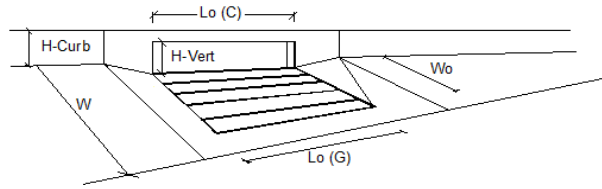
COMPARK SOUTH
INLET 1-3



Gutter Geometry (Enter data in the blue cells)									
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = $ <input style="width: 50px;" type="text" value="17.5"/> ft								
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = $ <input style="width: 50px;" type="text" value="0.020"/> ft/ft								
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = $ <input style="width: 50px;" type="text" value="0.020"/>								
Height of Curb at Gutter Flow Line	$H_{CURB} = $ <input style="width: 50px;" type="text" value="6.00"/> inches								
Distance from Curb Face to Street Crown	$T_{CROWN} = $ <input style="width: 50px;" type="text" value="37.0"/> ft								
Gutter Width	$W = $ <input style="width: 50px;" type="text" value="2.00"/> ft								
Street Transverse Slope	$S_x = $ <input style="width: 50px;" type="text" value="0.020"/> ft/ft								
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = $ <input style="width: 50px;" type="text" value="0.083"/> ft/ft								
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = $ <input style="width: 50px;" type="text" value="0.019"/> ft/ft								
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = $ <input style="width: 50px;" type="text" value="0.013"/>								
Max. Allowable Spread for Minor & Major Storm	<table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td style="text-align: center;">Minor Storm</td> <td style="text-align: center;">Major Storm</td> <td></td> </tr> <tr> <td style="text-align: right;">$T_{MAX} =$</td> <td style="text-align: center;"><input style="width: 50px;" type="text" value="20.0"/></td> <td style="text-align: center;"><input style="width: 50px;" type="text" value="37.0"/></td> <td style="text-align: right;">ft</td> </tr> </table>		Minor Storm	Major Storm		$T_{MAX} = $	<input style="width: 50px;" type="text" value="20.0"/>	<input style="width: 50px;" type="text" value="37.0"/>	ft
	Minor Storm	Major Storm							
$T_{MAX} = $	<input style="width: 50px;" type="text" value="20.0"/>	<input style="width: 50px;" type="text" value="37.0"/>	ft						
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	<table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td style="text-align: center;">Minor Storm</td> <td style="text-align: center;">Major Storm</td> <td></td> </tr> <tr> <td style="text-align: right;">$d_{MAX} =$</td> <td style="text-align: center;"><input style="width: 50px;" type="text" value="6.0"/></td> <td style="text-align: center;"><input style="width: 50px;" type="text" value="12.0"/></td> <td style="text-align: right;">inches</td> </tr> </table>		Minor Storm	Major Storm		$d_{MAX} = $	<input style="width: 50px;" type="text" value="6.0"/>	<input style="width: 50px;" type="text" value="12.0"/>	inches
	Minor Storm	Major Storm							
$d_{MAX} = $	<input style="width: 50px;" type="text" value="6.0"/>	<input style="width: 50px;" type="text" value="12.0"/>	inches						
Allow Flow Depth at Street Crown (leave blank for no)	<table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: right;">check = yes</td> </tr> </table>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes					
<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes							
MINOR STORM Allowable Capacity is based on Depth Criterion									
MAJOR STORM Allowable Capacity is based on Depth Criterion									
<table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td style="text-align: center;">Minor Storm</td> <td style="text-align: center;">Major Storm</td> <td></td> </tr> <tr> <td style="text-align: right;">$Q_{allow} =$</td> <td style="text-align: center;"><input style="width: 50px;" type="text" value="23.4"/></td> <td style="text-align: center;"><input style="width: 50px;" type="text" value="207.0"/></td> <td style="text-align: right;">cfs</td> </tr> </table>			Minor Storm	Major Storm		$Q_{allow} = $	<input style="width: 50px;" type="text" value="23.4"/>	<input style="width: 50px;" type="text" value="207.0"/>	cfs
	Minor Storm	Major Storm							
$Q_{allow} = $	<input style="width: 50px;" type="text" value="23.4"/>	<input style="width: 50px;" type="text" value="207.0"/>	cfs						
<p>Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'</p> <p>Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'</p>									

INLET ON A CONTINUOUS GRADE

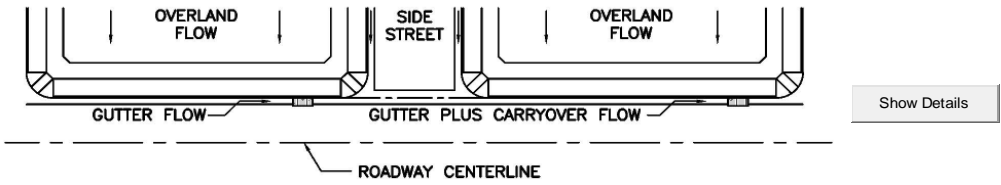
Project: COMPARK SOUTH
 Inlet ID: INLET 1-3



Design Information (Input)	MINOR		MAJOR	
	Type of Inlet	Type = CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	$a_{LOCAL} = 3.0$	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	$N_o = 3$	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	$L_o = 5.00$	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	$W_o = N/A$	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	$C_r-G = N/A$	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	$C_r-C = 0.10$	0.10	0.10	
Street Hydraulics: OK - $Q <$ maximum allowable from sheet 'Q-Allow'				
Total Inlet Interception Capacity	$Q = 5.50$	13.47	13.47	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	$Q_b = 0.0$	6.7	6.7	cfs
Capture Percentage = $Q_i/Q_o =$	$C\% = 100$	67	67	%

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
 Inlet ID: INLET 1-4



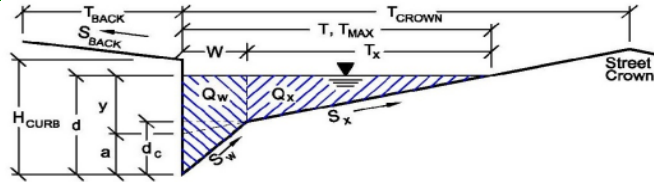
Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		Minor Storm Major Storm *Q _{known} = <input type="text" value="2.4"/> <input type="text" value="5.9"/> cfs	<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---
Geographic Information: (Enter data in the blue cells):		Subcatchment Area = <input type="text"/> Acres Percent Imperviousness = <input type="text"/> % NRCS Soil Type = <input type="text"/> A, B, C, or D	
Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Slope (ft/ft) Length (ft) Overland Flow = <input type="text"/> <input type="text"/> Channel Flow = <input type="text"/> <input type="text"/>	
Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + I_c)^{C_3}$		Minor Storm Major Storm	
		Design Storm Return Period, T _r = <input type="text"/> years	
		Return Period One-Hour Precipitation, P ₁ = <input type="text"/> inches	
		C ₁ = <input type="text"/>	
		C ₂ = <input type="text"/>	
		C ₃ = <input type="text"/>	
User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C = <input type="text"/>		User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C ₅ = <input type="text"/>	
		Bypass (Carry-Over) Flow from upstream Subcatchments, Q _b = <input type="text" value="0.0"/> <input type="text" value="6.7"/> cfs	
		Total Design Peak Flow, Q = <input type="text" value="2.4"/> <input type="text" value="12.6"/> cfs	

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:
Inlet ID:

COMPARK SOUTH
INLET 1-4



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

$T_{BACK} = 17.5$ ft
 $S_{BACK} = 0.020$ ft/ft
 $n_{BACK} = 0.020$

Height of Curb at Gutter Flow Line
Distance from Curb Face to Street Crown
Gutter Width
Street Transverse Slope
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)
Street Longitudinal Slope - Enter 0 for sump condition
Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$H_{CURB} = 6.00$ inches
 $T_{CROWN} = 37.0$ ft
 $W = 2.00$ ft
 $S_x = 0.020$ ft/ft
 $S_w = 0.083$ ft/ft
 $S_o = 0.019$ ft/ft
 $n_{STREET} = 0.013$

Max. Allowable Spread for Minor & Major Storm
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm
Allow Flow Depth at Street Crown (leave blank for no)

	Minor Storm	Major Storm	
$T_{MAX} =$	20.0	37.0	ft
$d_{MAX} =$	6.0	12.0	inches
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion
MAJOR STORM Allowable Capacity is based on Depth Criterion

$Q_{allow} =$

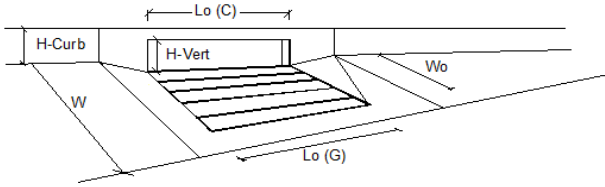
23.4	207.0
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 cfs

Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'
Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

INLET ON A CONTINUOUS GRADE

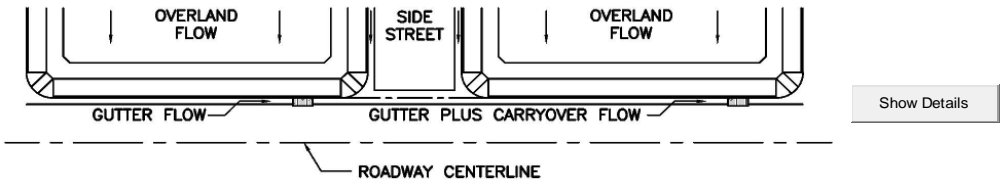
Project: COMPARK SOUTH
 Inlet ID: INLET 1-4



Design Information (Input)	MINOR		MAJOR		
	Type = CDOT Type R Curb Opening				
Type of Inlet	CDOT Type R Curb Opening				
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	$a_{LOCAL} =$	3.0	3.0		inches
Total Number of Units in the Inlet (Grate or Curb Opening)	$N_o =$	2	2		
Length of a Single Unit Inlet (Grate or Curb Opening)	$L_o =$	5.00	5.00		ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	$W_o =$	N/A	N/A		ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	$C_r-G =$	N/A	N/A		
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	$C_r-C =$	0.10	0.10		
Street Hydraulics: OK - $Q <$ maximum allowable from sheet 'Q-Allow'					
Total Inlet Interception Capacity	$Q =$	2.40	7.70		cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	$Q_b =$	0.0	4.9		cfs
Capture Percentage = $Q_i/Q_o =$	$C\% =$	100	61		%

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
 Inlet ID: INLET 1-5



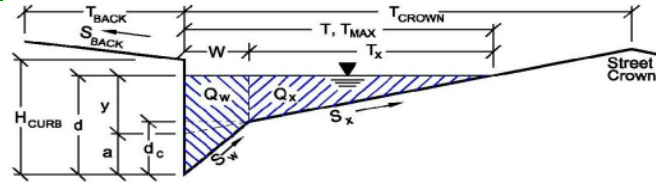
Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Minor Storm</td> <td style="padding: 2px;">Major Storm</td> </tr> <tr> <td align="center" style="padding: 2px;">5.1</td> <td align="center" style="padding: 2px;">11.0</td> </tr> </table> cfs	Minor Storm	Major Storm	5.1	11.0	<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---																	
Minor Storm	Major Storm																							
5.1	11.0																							
* If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.																								
Geographic Information: (Enter data in the blue cells):																								
Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Subcatchment Area = <input type="text"/> Acres Percent Imperviousness = <input type="text"/> % NRCS Soil Type = <input type="text"/> A, B, C, or D																						
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Total Design Peak Flow, Q = <input type="text"/>	Major Storm	cfs																						

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:
Inlet ID:

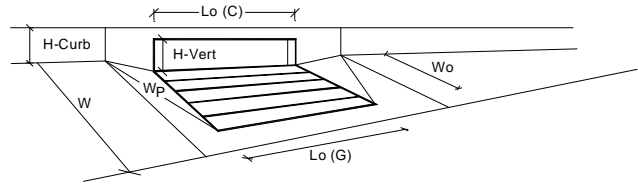
COMPARK SOUTH
INLET 1-5



Gutter Geometry (Enter data in the blue cells)							
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} =$ <input style="width: 60px;" type="text" value="17.5"/> ft						
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} =$ <input style="width: 60px;" type="text" value="0.020"/> ft/ft						
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} =$ <input style="width: 60px;" type="text" value="0.020"/>						
Height of Curb at Gutter Flow Line	$H_{CURB} =$ <input style="width: 60px;" type="text" value="6.00"/> inches						
Distance from Curb Face to Street Crown	$T_{CROWN} =$ <input style="width: 60px;" type="text" value="37.0"/> ft						
Gutter Width	$W =$ <input style="width: 60px;" type="text" value="2.00"/> ft						
Street Transverse Slope	$S_x =$ <input style="width: 60px;" type="text" value="0.020"/> ft/ft						
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w =$ <input style="width: 60px;" type="text" value="0.083"/> ft/ft						
Street Longitudinal Slope - Enter 0 for sump condition	$S_o =$ <input style="width: 60px;" type="text" value="0.000"/> ft/ft						
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} =$ <input style="width: 60px;" type="text" value="0.013"/>						
Max. Allowable Spread for Minor & Major Storm	<table style="display: inline-table; border: none;"> <tr> <td style="padding: 0 10px;">Minor Storm</td> <td style="padding: 0 10px;">Major Storm</td> <td></td> </tr> <tr> <td style="text-align: center;">$T_{MAX} =$ <input style="width: 60px;" type="text" value="20.0"/></td> <td style="text-align: center;"><input style="width: 60px;" type="text" value="37.0"/></td> <td style="text-align: right;">ft</td> </tr> </table>	Minor Storm	Major Storm		$T_{MAX} =$ <input style="width: 60px;" type="text" value="20.0"/>	<input style="width: 60px;" type="text" value="37.0"/>	ft
Minor Storm	Major Storm						
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Minor Storm	Major Storm						
$d_{MAX} =$ <input style="width: 60px;" type="text" value="6.0"/>	<input style="width: 60px;" type="text" value="12.0"/>	inches					
Allow Flow Depth at Street Crown (leave blank for no)	<table style="display: inline-table; border: none;"> <tr> <td style="padding: 0 10px;"><input type="checkbox"/></td> <td style="padding: 0 10px;"><input checked="" type="checkbox"/></td> <td style="text-align: right;">check = yes</td> </tr> </table>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes			
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MINOR STORM Allowable Capacity is based on Depth Criterion							
MAJOR STORM Allowable Capacity is based on Depth Criterion							
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Minor Storm	Major Storm						
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Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'							
Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'							

INLET IN A SUMP OR SAG LOCATION

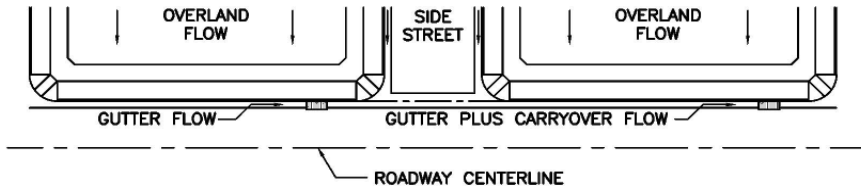
Project = **COMPARK SOUTH**
 Inlet ID = **INLET 1-5**



Design Information (Input)	MINOR		MAJOR	
	Type of Inlet	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	$a_{local} = 3.00$		3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	$N_o = 2$		2	
Water Depth at Flowline (outside of local depression)	Ponding Depth = 6.0		10.4 inches	
Grate Information	MINOR		MAJOR	
Length of a Unit Grate	$L_o (G) = N/A$		N/A	feet
Width of a Unit Grate	$W_o = N/A$		N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	$A_{ratio} = N/A$		N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	$C_r (G) = N/A$		N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	$C_w (G) = N/A$		N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	$C_o (G) = N/A$		N/A	
Curb Opening Information	MINOR		MAJOR	
Length of a Unit Curb Opening	$L_o (C) = 5.00$		5.00	feet
Height of Vertical Curb Opening in Inches	$H_{vert} = 6.00$		6.00	inches
Height of Curb Orifice Throat in Inches	$H_{throat} = 6.00$		6.00	inches
Angle of Throat (see USDCM Figure ST-5)	$\theta = 63.40$		63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	$W_p = 2.00$		2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	$C_r (C) = 0.10$		0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	$C_w (C) = 3.60$		3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	$C_o (C) = 0.67$		0.67	
Total Inlet Interception Capacity (assumes clogged condition)	MINOR		MAJOR	
	$Q_a = 10.5$		23.8	cfs
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK REQUIRED} = 5.1$		15.1 cfs	

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
 Inlet ID: INLET 1-6



Show Details

Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Minor Storm</td> <td style="padding: 2px;">Major Storm</td> </tr> <tr> <td align="center" style="padding: 2px;">3.0</td> <td align="center" style="padding: 2px;">6.5</td> </tr> </table> cfs	Minor Storm	Major Storm	3.0	6.5	<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---																	
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* If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.																								
Geographic Information: (Enter data in the blue cells):																								
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ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

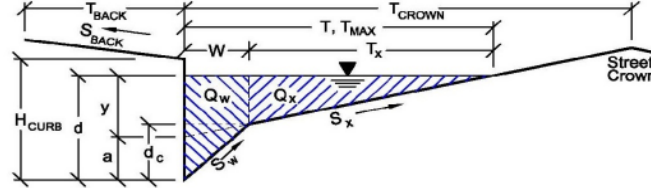
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

COMPARK SOUTH

Inlet ID:

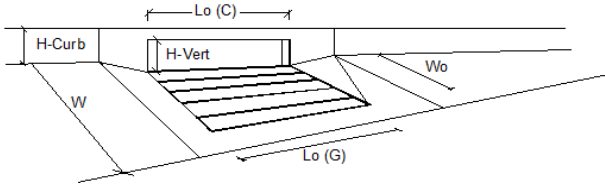
INLET 1-6



Gutter Geometry (Enter data in the blue cells)							
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = 17.5$ ft						
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = 0.020$ ft/ft						
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = 0.020$						
Height of Curb at Gutter Flow Line	$H_{CURB} = 6.00$ inches						
Distance from Curb Face to Street Crown	$T_{CROWN} = 37.0$ ft						
Gutter Width	$W = 2.00$ ft						
Street Transverse Slope	$S_x = 0.020$ ft/ft						
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = 0.083$ ft/ft						
Street Longitudinal Slope - Enter 0 for sump condition	$S_D = 0.010$ ft/ft						
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = 0.013$						
Max. Allowable Spread for Minor & Major Storm	<table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="padding: 2px 10px;">Minor Storm</th> <th style="padding: 2px 10px;">Major Storm</th> <th style="padding: 2px 10px;">ft</th> </tr> </thead> <tbody> <tr> <td style="border: 1px solid blue; text-align: center;">20.0</td> <td style="border: 1px solid blue; text-align: center;">37.0</td> <td></td> </tr> </tbody> </table>	Minor Storm	Major Storm	ft	20.0	37.0	
Minor Storm	Major Storm	ft					
20.0	37.0						
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	<table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="padding: 2px 10px;">Minor Storm</th> <th style="padding: 2px 10px;">Major Storm</th> <th style="padding: 2px 10px;">inches</th> </tr> </thead> <tbody> <tr> <td style="border: 1px solid blue; text-align: center;">6.0</td> <td style="border: 1px solid blue; text-align: center;">12.0</td> <td></td> </tr> </tbody> </table>	Minor Storm	Major Storm	inches	6.0	12.0	
Minor Storm	Major Storm	inches					
6.0	12.0						
Allow Flow Depth at Street Crown (leave blank for no)	<table style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="padding-left: 10px;">check = yes</td> </tr> </tbody> </table>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes					
MINOR STORM Allowable Capacity is based on Depth Criterion							
MAJOR STORM Allowable Capacity is based on Depth Criterion							
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'							
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$Q_{allow} =$	<table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="padding: 2px 10px;">Minor Storm</th> <th style="padding: 2px 10px;">Major Storm</th> <th style="padding: 2px 10px;">cfs</th> </tr> </thead> <tbody> <tr> <td style="border: 1px solid green; text-align: center;">16.8</td> <td style="border: 1px solid green; text-align: center;">171.1</td> <td></td> </tr> </tbody> </table>	Minor Storm	Major Storm	cfs	16.8	171.1	
Minor Storm	Major Storm	cfs					
16.8	171.1						

INLET ON A CONTINUOUS GRADE

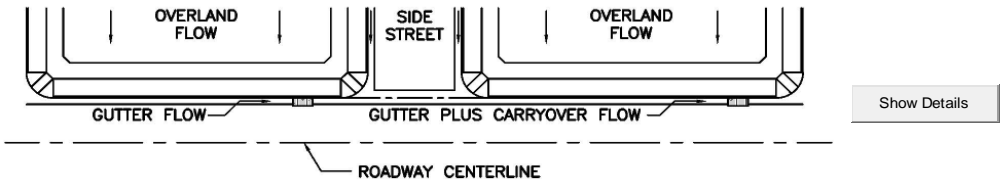
Project: COMPARK SOUTH
 Inlet ID: INLET 1-6



Design Information (Input)	MINOR		MAJOR		
Type of Inlet	Type = CDOT Type R Curb Opening				
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	$a_{LOCAL} =$	3.0	3.0		inches
Total Number of Units in the Inlet (Grate or Curb Opening)	$N_o =$	2	2		
Length of a Single Unit Inlet (Grate or Curb Opening)	$L_o =$	5.00	5.00		ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	$W_o =$	N/A	N/A		ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	$C_r-G =$	N/A	N/A		
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	$C_r-C =$	0.10	0.10		
Street Hydraulics: OK - $Q <$ maximum allowable from sheet 'Q-Allow'					
Total Inlet Interception Capacity	$Q =$	3.00	7.28		cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	$Q_b =$	0.0	4.1		cfs
Capture Percentage = $Q_i/Q_o =$	$C\% =$	100	64		%

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
Inlet ID: INLET 2-1



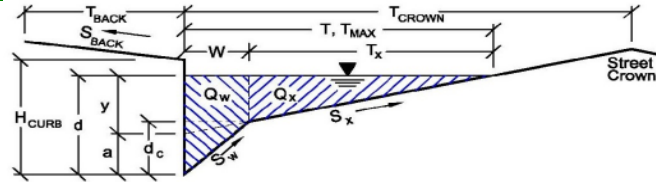
<p>Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):</p> <p>*Q_{known} = <input type="text" value="4.0"/> <input type="text" value="14.7"/> cfs</p> <p>* If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.</p>		<p><--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---</p>
<p>Geographic Information: (Enter data in the blue cells):</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>Site Type:</p> <p><input type="radio"/> Site is Urban</p> <p><input type="radio"/> Site is Non-Urban</p> </div> <div style="width: 30%;"> <p>Flows Developed For:</p> <p><input type="radio"/> Street Inlets</p> <p><input type="radio"/> Area Inlets in a Median</p> </div> <div style="width: 30%;"> <p>Subcatchment Area = <input type="text"/> Acres</p> <p>Percent Imperviousness = <input type="text"/> %</p> <p>NRCS Soil Type = <input type="text"/> A, B, C, or D</p> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%;"> <p>Slope (ft/ft) Length (ft)</p> <p>Overland Flow = <input type="text"/> <input type="text"/></p> <p>Channel Flow = <input type="text"/> <input type="text"/></p> </div> </div>		
<p>Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c) * C_3$</p> <p>Design Storm Return Period, T_r = <input type="text"/> years</p> <p>Return Period One-Hour Precipitation, P₁ = <input type="text"/> inches</p> <p>C₁ = <input type="text"/></p> <p>C₂ = <input type="text"/></p> <p>C₃ = <input type="text"/></p> <p>User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C = <input type="text"/></p> <p>User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C₅ = <input type="text"/></p> <p>Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b = <input type="text" value="0.0"/> <input type="text" value="0.0"/> cfs</p> <p>Total Design Peak Flow, Q = <input type="text" value="4.0"/> <input type="text" value="14.7"/> cfs</p>		

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: COMPARK SOUTH

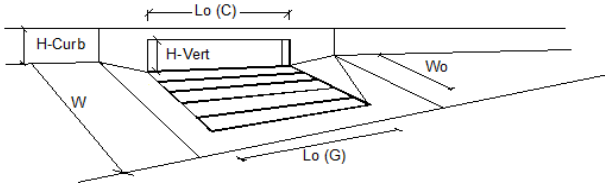
Inlet ID: INLET 2-1



Gutter Geometry (Enter data in the blue cells)							
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = 17.5$ ft						
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = 0.020$ ft/ft						
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = 0.020$						
Height of Curb at Gutter Flow Line	$H_{CURB} = 6.00$ inches						
Distance from Curb Face to Street Crown	$T_{CROWN} = 37.0$ ft						
Gutter Width	$W = 2.00$ ft						
Street Transverse Slope	$S_x = 0.020$ ft/ft						
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = 0.083$ ft/ft						
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = 0.019$ ft/ft						
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = 0.013$						
Max. Allowable Spread for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Minor Storm</th> <th style="text-align: center;">Major Storm</th> <th></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">$T_{MAX} = 20.0$</td> <td style="text-align: center;">37.0</td> <td style="text-align: right;">ft</td> </tr> </tbody> </table>	Minor Storm	Major Storm		$T_{MAX} = 20.0$	37.0	ft
Minor Storm	Major Storm						
$T_{MAX} = 20.0$	37.0	ft					
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Minor Storm</th> <th style="text-align: center;">Major Storm</th> <th></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">$d_{MAX} = 6.0$</td> <td style="text-align: center;">12.0</td> <td style="text-align: right;">inches</td> </tr> </tbody> </table>	Minor Storm	Major Storm		$d_{MAX} = 6.0$	12.0	inches
Minor Storm	Major Storm						
$d_{MAX} = 6.0$	12.0	inches					
Allow Flow Depth at Street Crown (leave blank for no)	<table style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: right;">check = yes</td> </tr> </table>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes					
MINOR STORM Allowable Capacity is based on Depth Criterion							
MAJOR STORM Allowable Capacity is based on Depth Criterion							
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'	$Q_{allow} = 23.4$ cfs						
Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'	207.0 cfs						

INLET ON A CONTINUOUS GRADE

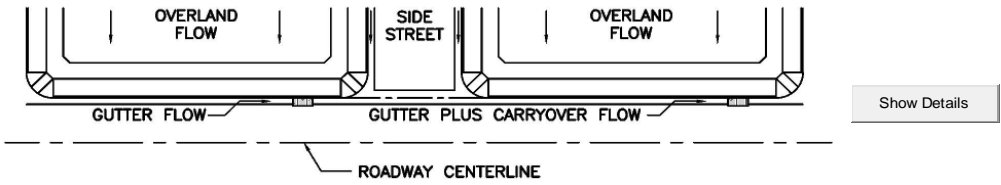
Project: COMPARK SOUTH
 Inlet ID: INLET 2-1



Design Information (Input)	MINOR		MAJOR		
Type of Inlet	Type = CDOT Type R Curb Opening				
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	$a_{LOCAL} =$	3.0	3.0		inches
Total Number of Units in the Inlet (Grate or Curb Opening)	$N_o =$	2	2		
Length of a Single Unit Inlet (Grate or Curb Opening)	$L_o =$	5.00	5.00		ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	$W_o =$	N/A	N/A		ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	$C_r-G =$	N/A	N/A		
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	$C_r-C =$	0.10	0.10		
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'					
Total Inlet Interception Capacity	$Q =$	3.90	8.29		cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	$Q_b =$	0.1	6.4		cfs
Capture Percentage = $Q_i/Q_o =$	$C\% =$	98	56		%

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
 Inlet ID: INLET 2-2



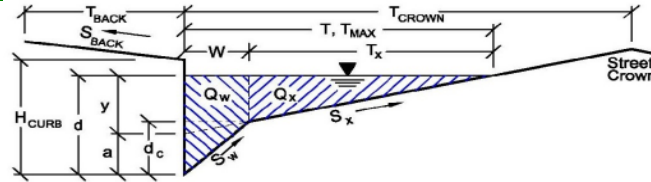
<p>Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):</p>		<table border="1" style="display: inline-table;"> <tr> <td style="width: 50px;">Minor Storm</td> <td style="width: 50px;">Major Storm</td> </tr> <tr> <td style="text-align: center;">4.2</td> <td style="text-align: center;">22.6</td> </tr> <tr> <td colspan="2" style="text-align: right;">cfs</td> </tr> </table>	Minor Storm	Major Storm	4.2	22.6	cfs		<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---														
Minor Storm	Major Storm																						
4.2	22.6																						
cfs																							
<p>* If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.</p>																							
<p>Geographic Information: (Enter data in the blue cells):</p>																							
<p>Site Type:</p> <p><input type="radio"/> Site is Urban</p> <p><input type="radio"/> Site is Non-Urban</p>	<p>Flows Developed For:</p> <p><input type="radio"/> Street Inlets</p> <p><input type="radio"/> Area Inlets in a Median</p>	<p>Subcatchment Area = <input type="text"/> Acres</p> <p>Percent Imperviousness = <input type="text"/> %</p> <p>NRCS Soil Type = <input type="text"/> A, B, C, or D</p>																					
		<table border="1" style="display: inline-table;"> <tr> <td style="width: 50px;">Slope (ft/ft)</td> <td style="width: 50px;">Length (ft)</td> </tr> <tr> <td style="text-align: center;">Overland Flow = <input type="text"/></td> <td style="text-align: center;">Channel Flow = <input type="text"/></td> </tr> </table>	Slope (ft/ft)	Length (ft)	Overland Flow = <input type="text"/>	Channel Flow = <input type="text"/>																	
Slope (ft/ft)	Length (ft)																						
Overland Flow = <input type="text"/>	Channel Flow = <input type="text"/>																						
<p>Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$</p>																							
		<table border="1" style="display: inline-table;"> <tr> <td style="width: 50px;">Minor Storm</td> <td style="width: 50px;">Major Storm</td> </tr> <tr> <td style="text-align: center;">Design Storm Return Period, T_r = <input type="text"/></td> <td style="text-align: center;">years</td> </tr> <tr> <td style="text-align: center;">Return Period One-Hour Precipitation, P_1 = <input type="text"/></td> <td style="text-align: center;">inches</td> </tr> <tr> <td style="text-align: center;">C_1 = <input type="text"/></td> <td style="text-align: center;"><input type="text"/></td> </tr> <tr> <td style="text-align: center;">C_2 = <input type="text"/></td> <td style="text-align: center;"><input type="text"/></td> </tr> <tr> <td style="text-align: center;">C_3 = <input type="text"/></td> <td style="text-align: center;"><input type="text"/></td> </tr> <tr> <td style="text-align: center;">User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C = <input type="text"/></td> <td style="text-align: center;"><input type="text"/></td> </tr> <tr> <td style="text-align: center;">User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 = <input type="text"/></td> <td style="text-align: center;"><input type="text"/></td> </tr> <tr> <td style="text-align: center;">Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b = <input type="text"/></td> <td style="text-align: center;">cfs</td> </tr> <tr> <td style="text-align: center;">Total Design Peak Flow, Q = <input type="text"/></td> <td style="text-align: center;">cfs</td> </tr> </table>	Minor Storm	Major Storm	Design Storm Return Period, T_r = <input type="text"/>	years	Return Period One-Hour Precipitation, P_1 = <input type="text"/>	inches	C_1 = <input type="text"/>	<input type="text"/>	C_2 = <input type="text"/>	<input type="text"/>	C_3 = <input type="text"/>	<input type="text"/>	User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C = <input type="text"/>	<input type="text"/>	User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 = <input type="text"/>	<input type="text"/>	Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b = <input type="text"/>	cfs	Total Design Peak Flow, Q = <input type="text"/>	cfs	
Minor Storm	Major Storm																						
Design Storm Return Period, T_r = <input type="text"/>	years																						
Return Period One-Hour Precipitation, P_1 = <input type="text"/>	inches																						
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Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b = <input type="text"/>	cfs																						
Total Design Peak Flow, Q = <input type="text"/>	cfs																						

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:
Inlet ID:

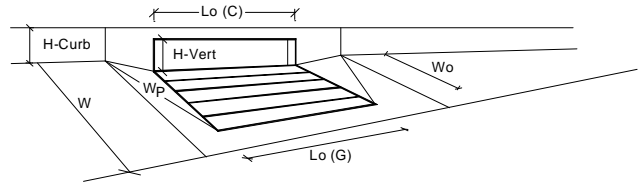
**COMPARK SOUTH
INLET 2-2**



Gutter Geometry (Enter data in the blue cells)	
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = 17.5$ ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = 0.020$ ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = 0.020$
Height of Curb at Gutter Flow Line	$H_{CURB} = 6.00$ inches
Distance from Curb Face to Street Crown	$T_{CROWN} = 37.0$ ft
Gutter Width	$W = 2.00$ ft
Street Transverse Slope	$S_x = 0.020$ ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = 0.083$ ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = 0.000$ ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = 0.013$
Max. Allowable Spread for Minor & Major Storm	$T_{MAX} = \begin{matrix} \text{Minor Storm} & \text{Major Storm} \\ 20.0 & 37.0 \end{matrix}$ ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	$d_{MAX} = \begin{matrix} \text{Minor Storm} & \text{Major Storm} \\ 6.0 & 12.0 \end{matrix}$ inches
Allow Flow Depth at Street Crown (leave blank for no)	<input type="checkbox"/> <input checked="" type="checkbox"/> check = yes
MINOR STORM Allowable Capacity is based on Depth Criterion	
MAJOR STORM Allowable Capacity is based on Depth Criterion	
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'	$Q_{allow} = \begin{matrix} \text{Minor Storm} & \text{Major Storm} \\ \text{SUMP} & \text{SUMP} \end{matrix}$ cfs
Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'	

INLET IN A SUMP OR SAG LOCATION

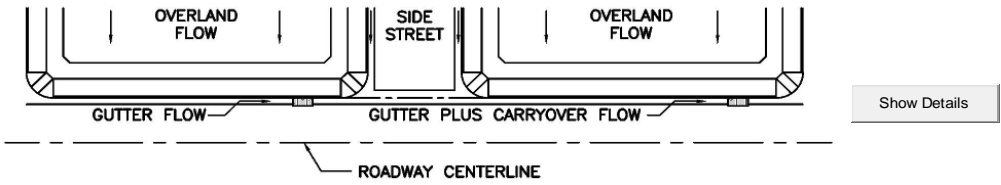
Project = **COMPARK SOUTH**
 Inlet ID = **INLET 2-2**



Design Information (Input)	MINOR		MAJOR	
	Type of Inlet	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	N_o =	3	3	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	6.0	10.4	inches
Grate Information	<input type="checkbox"/> Override Depths			
Length of a Unit Grate	$L_o (G)$ =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	$C_r (G)$ =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	$C_w (G)$ =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	$C_o (G)$ =	N/A	N/A	
Curb Opening Information				
Length of a Unit Curb Opening	$L_o (C)$ =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	$C_r (C)$ =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	$C_w (C)$ =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	$C_o (C)$ =	0.67	0.67	
Total Inlet Interception Capacity (assumes clogged condition)				
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	Q_a =	13.5	36.4	cfs
	$Q_{PEAK REQUIRED}$ =	4.3	29.0	cfs

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
Inlet ID: INLET 2-3



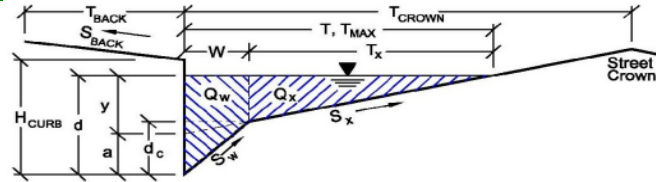
<p>Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):</p> <p>*Q_{known} = <input type="text" value="4.5"/> <input type="text" value="9.9"/> cfs</p> <p>* If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.</p>		<p><--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---</p>
<p>Geographic Information: (Enter data in the blue cells):</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>Site Type:</p> <p><input type="radio"/> Site is Urban</p> <p><input type="radio"/> Site is Non-Urban</p> </div> <div style="width: 30%;"> <p>Flows Developed For:</p> <p><input type="radio"/> Street Inlets</p> <p><input type="radio"/> Area Inlets in a Median</p> </div> <div style="width: 30%;"> <p>Subcatchment Area = <input type="text"/> Acres</p> <p>Percent Imperviousness = <input type="text"/> %</p> <p>NRCS Soil Type = <input type="text"/> A, B, C, or D</p> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%;"> <p>Slope (ft/ft) Length (ft)</p> <p>Overland Flow = <input type="text"/> <input type="text"/></p> <p>Channel Flow = <input type="text"/> <input type="text"/></p> </div> </div>		
<p>Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$</p> <p>Design Storm Return Period, T_r = <input type="text"/> years</p> <p>Return Period One-Hour Precipitation, P_1 = <input type="text"/> inches</p> <p>C_1 = <input type="text"/></p> <p>C_2 = <input type="text"/></p> <p>C_3 = <input type="text"/></p> <p>User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C = <input type="text"/></p> <p>User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 = <input type="text"/></p> <p>Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b = <input type="text" value="0.0"/> <input type="text" value="0.0"/> cfs</p> <p style="text-align: right;">Total Design Peak Flow, Q = <input type="text" value="4.5"/> <input type="text" value="9.9"/> cfs</p>		

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: COMPARK SOUTH

Inlet ID: INLET 2-3



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb

$T_{BACK} = 17.5$ ft

Side Slope Behind Curb (leave blank for no conveyance credit behind curb)

$S_{BACK} = 0.020$ ft/ft

Manning's Roughness Behind Curb (typically between 0.012 and 0.020)

$n_{BACK} = 0.013$

Height of Curb at Gutter Flow Line

$H_{CURB} = 6.00$ inches

Distance from Curb Face to Street Crown

$T_{CROWN} = 37.0$ ft

Gutter Width

$W = 2.00$ ft

Street Transverse Slope

$S_x = 0.020$ ft/ft

Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)

$S_w = 0.083$ ft/ft

Street Longitudinal Slope - Enter 0 for sump condition

$S_o = 0.015$ ft/ft

Manning's Roughness for Street Section (typically between 0.012 and 0.020)

$n_{STREET} = 0.013$

Max. Allowable Spread for Minor & Major Storm

	Minor Storm	Major Storm	
$T_{MAX} =$	20.0	37.0	ft

Max. Allowable Depth at Gutter Flowline for Minor & Major Storm

	Minor Storm	Major Storm	
$d_{MAX} =$	6.0	12.0	inches

Allow Flow Depth at Street Crown (leave blank for no)

check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Depth Criterion

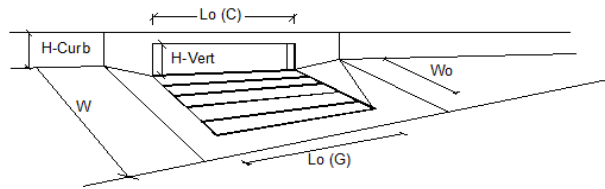
	Minor Storm	Major Storm	
$Q_{allow} =$	20.8	225.6	cfs

Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

INLET ON A CONTINUOUS GRADE

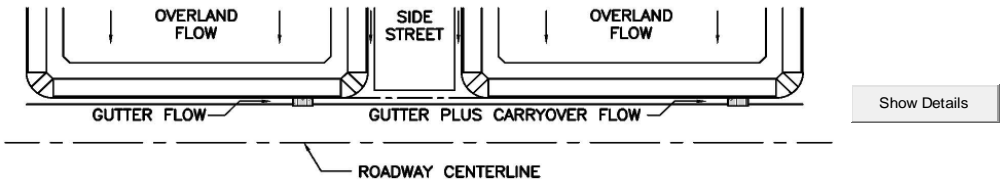
Project: COMPARK SOUTH
 Inlet ID: INLET 2-3



Design Information (Input)	MINOR		MAJOR	
	Type of Inlet	Type = CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	$a_{LOCAL} = 3.0$	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	$N_o = 3$	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	$L_o = 5.00$	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	$W_o = N/A$	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	$C_r-G = N/A$	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	$C_r-C = 0.10$	0.10	0.10	
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'				
Total Inlet Interception Capacity	$Q = 4.50$	4.50	8.95	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	$Q_b = 0.0$	0.0	1.0	cfs
Capture Percentage = $Q_i/Q_o =$	$C\% = 100$	100	90	%

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
Inlet ID: INLET 2-4



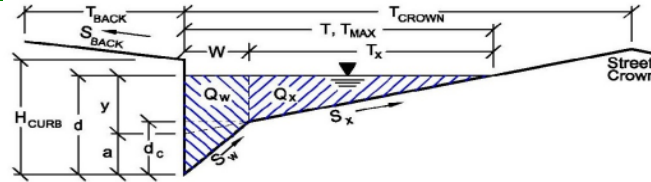
Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Minor Storm</td> <td style="padding: 2px;">Major Storm</td> </tr> <tr> <td align="center" style="padding: 2px;">2.6</td> <td align="center" style="padding: 2px;">7.5</td> </tr> <tr> <td align="center" colspan="2" style="padding: 2px;">cfs</td> </tr> </table>	Minor Storm	Major Storm	2.6	7.5	cfs		<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---															
Minor Storm	Major Storm																							
2.6	7.5																							
cfs																								
* If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.																								
Geographic Information: (Enter data in the blue cells):																								
Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Subcatchment Area = <input type="text"/> Acres Percent Imperviousness = <input type="text"/> % NRCS Soil Type = <input type="text"/> A, B, C, or D																						
		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Slope (ft/ft)</td> <td style="padding: 2px;">Length (ft)</td> </tr> <tr> <td style="padding: 2px;">Overland Flow =</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">Channel Flow =</td> <td style="padding: 2px;"></td> </tr> </table>	Slope (ft/ft)	Length (ft)	Overland Flow =		Channel Flow =																	
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Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$																								
		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Design Storm Return Period, T_r =</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">years</td> </tr> <tr> <td style="padding: 2px;">Return Period One-Hour Precipitation, P_1 =</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">inches</td> </tr> <tr> <td style="padding: 2px;">C_1 =</td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">C_2 =</td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">C_3 =</td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =</td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 =</td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> </tr> </table>	Design Storm Return Period, T_r =		years	Return Period One-Hour Precipitation, P_1 =		inches	C_1 =			C_2 =			C_3 =			User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =			User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 =			
Design Storm Return Period, T_r =		years																						
Return Period One-Hour Precipitation, P_1 =		inches																						
C_1 =																								
C_2 =																								
C_3 =																								
User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =																								
User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 =																								
		Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b = <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">0.0</td> <td style="padding: 2px;">1.0</td> </tr> <tr> <td align="center" colspan="2" style="padding: 2px;">cfs</td> </tr> </table>	0.0	1.0	cfs																			
0.0	1.0																							
cfs																								
		Total Design Peak Flow, Q = <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">2.6</td> <td style="padding: 2px;">8.5</td> </tr> <tr> <td align="center" colspan="2" style="padding: 2px;">cfs</td> </tr> </table>	2.6	8.5	cfs																			
2.6	8.5																							
cfs																								

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:
Inlet ID:

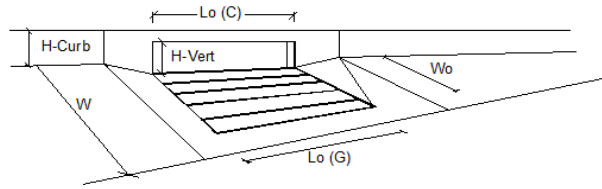
COMPARK SOUTH
INLET 2-4



Gutter Geometry (Enter data in the blue cells)					
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = 5.0$ ft				
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = 0.020$ ft/ft				
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = 0.013$				
Height of Curb at Gutter Flow Line	$H_{CURB} = 6.00$ inches				
Distance from Curb Face to Street Crown	$T_{CROWN} = 37.0$ ft				
Gutter Width	$W = 2.00$ ft				
Street Transverse Slope	$S_x = 0.020$ ft/ft				
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = 0.083$ ft/ft				
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = 0.015$ ft/ft				
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = 0.013$				
Max. Allowable Spread for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px 5px;">Minor Storm</th> <th style="padding: 2px 5px;">Major Storm</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px 5px;">$T_{MAX} = 20.0$</td> <td style="padding: 2px 5px;">37.0</td> </tr> </tbody> </table> ft	Minor Storm	Major Storm	$T_{MAX} = 20.0$	37.0
Minor Storm	Major Storm				
$T_{MAX} = 20.0$	37.0				
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px 5px;">Minor Storm</th> <th style="padding: 2px 5px;">Major Storm</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px 5px;">$d_{MAX} = 6.0$</td> <td style="padding: 2px 5px;">12.0</td> </tr> </tbody> </table> inches	Minor Storm	Major Storm	$d_{MAX} = 6.0$	12.0
Minor Storm	Major Storm				
$d_{MAX} = 6.0$	12.0				
Allow Flow Depth at Street Crown (leave blank for no)	<table style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 0 10px;"><input type="checkbox"/></td> <td style="text-align: center; padding: 0 10px;"><input checked="" type="checkbox"/></td> <td>check = yes</td> </tr> </table>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes			
MINOR STORM Allowable Capacity is based on Depth Criterion					
MAJOR STORM Allowable Capacity is based on Depth Criterion					
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'	$Q_{allow} = 20.8$ cfs				
Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'	204.4 cfs				

INLET ON A CONTINUOUS GRADE

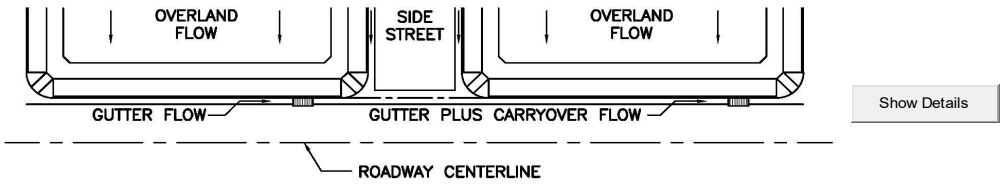
Project: COMPARK SOUTH
 Inlet ID: INLET 2-4



Design Information (Input)	MINOR		MAJOR		
Type of Inlet	Type = CDOT Type R Curb Opening				
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	$a_{LOCAL} =$	3.0	3.0		inches
Total Number of Units in the Inlet (Grate or Curb Opening)	$N_o =$	3	3		
Length of a Single Unit Inlet (Grate or Curb Opening)	$L_o =$	5.00	5.00		ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	$W_o =$	N/A	N/A		ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	$C_r-G =$	N/A	N/A		
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	$C_r-C =$	0.10	0.10		
Street Hydraulics: OK - $Q <$ maximum allowable from sheet 'Q-Allow'					
Total Inlet Interception Capacity	$Q =$	2.60	8.05		cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	$Q_b =$	0.0	0.5		cfs
Capture Percentage = $Q_i/Q_o =$	$C\% =$	100	95		%

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
Inlet ID: INLET 2-5



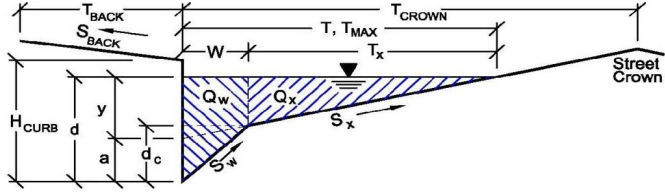
Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		Minor Storm	Major Storm	
		*Q _{known} =	7.9	21.7
				cfs
* If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.				
Geographic Information: (Enter data in the blue cells):				
Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban		Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median		
Subcatchment Area =		Acres		
Percent Imperviousness =		%		
NRCS Soil Type =		A, B, C, or D		
		Slope (ft/ft)	Length (ft)	
Overland Flow =				
Channel Flow =				
Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$				
Design Storm Return Period, T _r =		Minor Storm	Major Storm	years
Return Period One-Hour Precipitation, P ₁ =				inches
C ₁ =				
C ₂ =				
C ₃ =				
User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =				
User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C ₅ =				
Bypass (Carry-Over) Flow from upstream Subcatchments, Q _b =		0.0	1.9	cfs
Total Design Peak Flow, Q =		7.9	23.6	cfs

<---
FILL IN THIS SECTION
OR...
FILL IN THE
SECTIONS BELOW.
<---

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

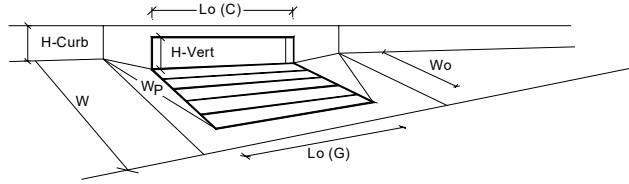
Project: **COMPARK SOUTH**
 Inlet ID: **INLET 2-5**



Gutter Geometry (Enter data in the blue cells)	
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = 0.0$ ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = 0.020$ ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = 0.013$
Height of Curb at Gutter Flow Line	$H_{CURB} = 6.00$ inches
Distance from Curb Face to Street Crown	$T_{CROWN} = 37.0$ ft
Gutter Width	$W = 2.00$ ft
Street Transverse Slope	$S_x = 0.020$ ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = 0.083$ ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = 0.000$ ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = 0.016$
Max. Allowable Spread for Minor & Major Storm	$T_{MAX} = \begin{matrix} \text{Minor Storm} & \text{Major Storm} \\ 20.0 & 37.0 \end{matrix}$ ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	$d_{MAX} = \begin{matrix} \text{Minor Storm} & \text{Major Storm} \\ 6.0 & 10.2 \end{matrix}$ inches
Allow Flow Depth at Street Crown (leave blank for no)	<input type="checkbox"/> <input checked="" type="checkbox"/> check = yes
MINOR STORM Allowable Capacity is based on Depth Criterion	
MAJOR STORM Allowable Capacity is based on Depth Criterion	
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'	
Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'	
$Q_{allow} =$	$\begin{matrix} \text{Minor Storm} & \text{Major Storm} \\ \text{SUMP} & \text{SUMP} \end{matrix}$ cfs

INLET IN A SUMP OR SAG LOCATION

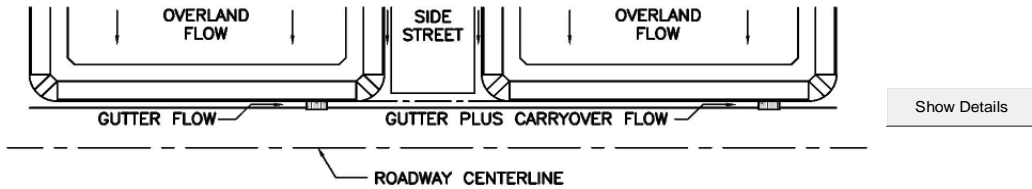
Project = **COMPARK SOUTH**
 Inlet ID = **INLET 2-5**



Design Information (Input)	MINOR		MAJOR	
	Type of Inlet	Inlet Type = CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} = 3.00	3.00	inches	
Number of Unit Inlets (Grate or Curb Opening)	No = 2	2		
Water Depth at Flowline (outside of local depression)	Ponding Depth = 5.6	12.0	inches	
Grate Information	<input checked="" type="checkbox"/> Override Depths			
Length of a Unit Grate	$L_o (G)$ = N/A	N/A	feet	
Width of a Unit Grate	W_o = N/A	N/A	feet	
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} = N/A	N/A		
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	$C_r (G)$ = N/A	N/A		
Grate Weir Coefficient (typical value 2.15 - 3.60)	$C_w (G)$ = N/A	N/A		
Grate Orifice Coefficient (typical value 0.60 - 0.80)	$C_o (G)$ = N/A	N/A		
Curb Opening Information	MINOR		MAJOR	
Length of a Unit Curb Opening	$L_o (C)$ = 5.00	5.00	feet	
Height of Vertical Curb Opening in Inches	H_{vert} = 6.00	6.00	inches	
Height of Curb Orifice Throat in Inches	H_{throat} = 6.00	6.00	inches	
Angle of Throat (see USDCM Figure ST-5)	Theta = 63.40	63.40	degrees	
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p = 2.00	2.00	feet	
Clogging Factor for a Single Curb Opening (typical value 0.10)	$C_r (C)$ = 0.10	0.10		
Curb Opening Weir Coefficient (typical value 2.3-3.7)	$C_w (C)$ = 3.60	3.60		
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	$C_o (C)$ = 0.67	0.67		
Total Inlet Interception Capacity (assumes clogged condition)	MINOR		MAJOR	
	Q_a = 8.7	25.5	cfs	
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK REQUIRED}$ = 7.9	23.6	cfs	

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
 Inlet ID: INLET 2-6



Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Minor Storm</td> <td style="padding: 2px;">Major Storm</td> </tr> <tr> <td style="text-align: center; padding: 2px;">3.0</td> <td style="text-align: center; padding: 2px;">8.1</td> </tr> <tr> <td colspan="2" style="text-align: right; padding: 2px;">cfs</td> </tr> </table>	Minor Storm	Major Storm	3.0	8.1	cfs		<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---
Minor Storm	Major Storm								
3.0	8.1								
cfs									
* If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.									
Geographic Information: (Enter data in the blue cells):									
Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Subcatchment Area = <input type="text"/> Acres Percent Imperviousness = <input type="text"/> % NRCS Soil Type = <input type="text"/> A, B, C, or D							
		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Slope (ft/ft)</td> <td style="padding: 2px;">Length (ft)</td> </tr> <tr> <td style="text-align: center; padding: 2px;">Overland Flow =</td> <td style="text-align: center; padding: 2px;">Channel Flow =</td> </tr> </table>	Slope (ft/ft)	Length (ft)	Overland Flow =	Channel Flow =			
Slope (ft/ft)	Length (ft)								
Overland Flow =	Channel Flow =								
Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c) ^{C_3}$									
		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Minor Storm</td> <td style="padding: 2px;">Major Storm</td> </tr> <tr> <td style="text-align: center; padding: 2px;">0.0</td> <td style="text-align: center; padding: 2px;">0.5</td> </tr> <tr> <td colspan="2" style="text-align: right; padding: 2px;">cfs</td> </tr> </table>	Minor Storm	Major Storm	0.0	0.5	cfs		
Minor Storm	Major Storm								
0.0	0.5								
cfs									
		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Minor Storm</td> <td style="padding: 2px;">Major Storm</td> </tr> <tr> <td style="text-align: center; padding: 2px;">3.0</td> <td style="text-align: center; padding: 2px;">8.6</td> </tr> <tr> <td colspan="2" style="text-align: right; padding: 2px;">cfs</td> </tr> </table>	Minor Storm	Major Storm	3.0	8.6	cfs		
Minor Storm	Major Storm								
3.0	8.6								
cfs									

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

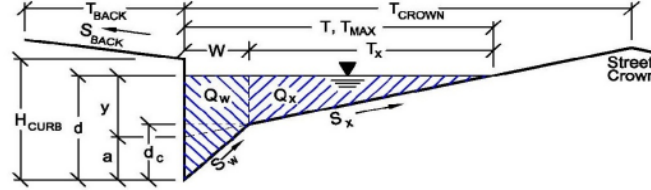
(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

COMPARK SOUTH

Inlet ID:

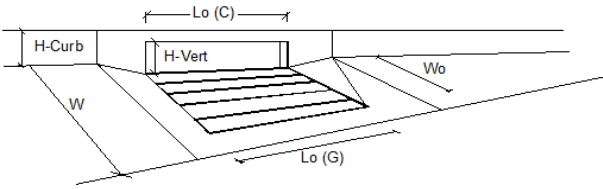
INLET 2-6



Gutter Geometry (Enter data in the blue cells)													
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = 5.0$ ft												
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = 0.020$ ft/ft												
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = 0.013$												
Height of Curb at Gutter Flow Line	$H_{CURB} = 6.00$ inches												
Distance from Curb Face to Street Crown	$T_{CROWN} = 37.0$ ft												
Gutter Width	$W = 2.00$ ft												
Street Transverse Slope	$S_x = 0.020$ ft/ft												
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_W = 0.083$ ft/ft												
Street Longitudinal Slope - Enter 0 for sump condition	$S_D = 0.005$ ft/ft												
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = 0.013$												
Max. Allowable Spread for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 50%; text-align: center;">Minor Storm</th> <th style="width: 50%; text-align: center;">Major Storm</th> <th style="width: 50%;"></th> </tr> </thead> <tbody> <tr> <td>$T_{MAX} =$</td> <td style="text-align: center;">20.0</td> <td style="text-align: center;">37.0</td> <td style="text-align: right;">ft</td> </tr> <tr> <td>$d_{MAX} =$</td> <td style="text-align: center;">6.0</td> <td style="text-align: center;">12.0</td> <td style="text-align: right;">inches</td> </tr> </tbody> </table>		Minor Storm	Major Storm		$T_{MAX} =$	20.0	37.0	ft	$d_{MAX} =$	6.0	12.0	inches
	Minor Storm	Major Storm											
$T_{MAX} =$	20.0	37.0	ft										
$d_{MAX} =$	6.0	12.0	inches										
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	$d_{MAX} = 6.0$ inches												
Allow Flow Depth at Street Crown (leave blank for no)	<input type="checkbox"/> <input checked="" type="checkbox"/> check = yes												
MINOR STORM Allowable Capacity is based on Depth Criterion													
MAJOR STORM Allowable Capacity is based on Depth Criterion													
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'	$Q_{allow} = 12.0$ cfs												
Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'	$Q_{allow} = 118.0$ cfs												

INLET ON A CONTINUOUS GRADE

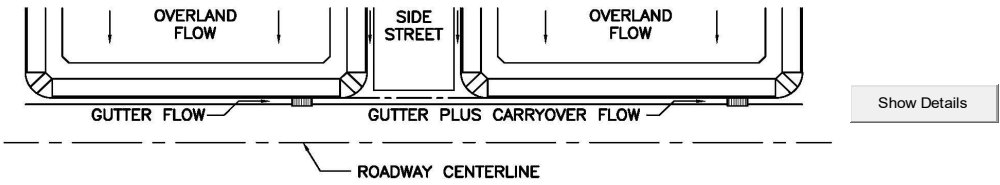
Project: COMPARK SOUTH
 Inlet ID: INLET 2-6



Design Information (Input)	MINOR		MAJOR		
	MINOR	MAJOR	MINOR	MAJOR	
Type of Inlet	Type = CDOT Type R Curb Opening				
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	$a_{LOCAL} = 3.0$	3.0			inches
Total Number of Units in the Inlet (Grate or Curb Opening)	$N_o = 3$	3			
Length of a Single Unit Inlet (Grate or Curb Opening)	$L_o = 5.00$	5.00			ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	$W_o = N/A$	N/A			ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	$C_r-G = N/A$	N/A			
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	$C_r-C = 0.10$	0.10			
Street Hydraulics: OK - $Q < Q_{allow}$ maximum allowable from sheet 'Q-Allow'					
Total Inlet Interception Capacity	$Q = 3.00$	8.06			cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	$Q_b = 0.0$	0.5			cfs
Capture Percentage = $Q_c/Q_o =$	$C\% = 100$	94			%

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
Inlet ID: INLET 3-4



Design Flow: ONLY if already determined through other methods:
(local peak flow for 1/2 of street OR grass-lined channel):

	Minor Storm	Major Storm
* Q_{known} =	3.9	10.7

<--- FILL IN THIS SECTION OR...>

*** If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.**

Geographic Information: (Enter data in the blue cells):

Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Subcatchment Area = <input type="text"/> Acres Percent Imperviousness = <input type="text"/> % NRCS Soil Type = <input type="text"/> A, B, C, or D	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%; text-align: center;">Slope (ft/ft)</th> <th style="width: 25%; text-align: center;">Length (ft)</th> </tr> </thead> <tbody> <tr> <td>Overland Flow =</td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> <tr> <td>Channel Flow =</td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> </tbody> </table>		Slope (ft/ft)	Length (ft)	Overland Flow =	<input type="text"/>	<input type="text"/>	Channel Flow =	<input type="text"/>	<input type="text"/>
	Slope (ft/ft)	Length (ft)										
Overland Flow =	<input type="text"/>	<input type="text"/>										
Channel Flow =	<input type="text"/>	<input type="text"/>										

<--- FILL IN THE SECTIONS BELOW. >---

Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$

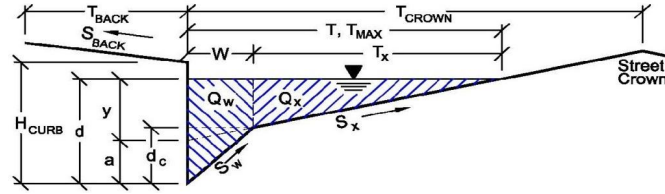
	Minor Storm	Major Storm
Design Storm Return Period, T_r =	<input type="text"/>	<input type="text"/>
Return Period One-Hour Precipitation, P_1 =	<input type="text"/>	<input type="text"/>
C_1 =	<input type="text"/>	<input type="text"/>
C_2 =	<input type="text"/>	<input type="text"/>
C_3 =	<input type="text"/>	<input type="text"/>
User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =	<input type="text"/>	<input type="text"/>
User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 =	<input type="text"/>	<input type="text"/>
Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b =	0.0	0.5
Total Design Peak Flow, Q =	3.9	11.2

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: **COMPARK SOUTH**

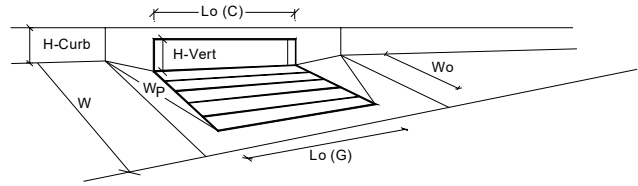
Inlet ID: **INLET 3-4**



Gutter Geometry (Enter data in the blue cells)																	
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} =$ <input style="width: 60px;" type="text" value="0.0"/> ft																
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} =$ <input style="width: 60px;" type="text" value="0.020"/> ft/ft																
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} =$ <input style="width: 60px;" type="text" value="0.020"/>																
Height of Curb at Gutter Flow Line	$H_{CURB} =$ <input style="width: 60px;" type="text" value="4.00"/> inches																
Distance from Curb Face to Street Crown	$T_{CROWN} =$ <input style="width: 60px;" type="text" value="17.0"/> ft																
Gutter Width	$W =$ <input style="width: 60px;" type="text" value="2.00"/> ft																
Street Transverse Slope	$S_x =$ <input style="width: 60px;" type="text" value="0.020"/> ft/ft																
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w =$ <input style="width: 60px;" type="text" value="0.083"/> ft/ft																
Street Longitudinal Slope - Enter 0 for sump condition	$S_o =$ <input style="width: 60px;" type="text" value="0.000"/> ft/ft																
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} =$ <input style="width: 60px;" type="text" value="0.016"/>																
Max. Allowable Spread for Minor & Major Storm	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%; text-align: center;">Minor Storm</th> <th style="width: 25%; text-align: center;">Major Storm</th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr> <td>$T_{MAX} =$</td> <td style="text-align: center;"><input style="width: 40px;" type="text" value="17.0"/></td> <td style="text-align: center;"><input style="width: 40px;" type="text" value="17.0"/></td> <td style="text-align: right;">ft</td> </tr> <tr> <td>$d_{MAX} =$</td> <td style="text-align: center;"><input style="width: 40px;" type="text" value="4.0"/></td> <td style="text-align: center;"><input style="width: 40px;" type="text" value="12.0"/></td> <td style="text-align: right;">inches</td> </tr> <tr> <td></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td style="text-align: right;">check = yes</td> </tr> </tbody> </table>		Minor Storm	Major Storm		$T_{MAX} =$	<input style="width: 40px;" type="text" value="17.0"/>	<input style="width: 40px;" type="text" value="17.0"/>	ft	$d_{MAX} =$	<input style="width: 40px;" type="text" value="4.0"/>	<input style="width: 40px;" type="text" value="12.0"/>	inches		<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes
	Minor Storm	Major Storm															
$T_{MAX} =$	<input style="width: 40px;" type="text" value="17.0"/>	<input style="width: 40px;" type="text" value="17.0"/>	ft														
$d_{MAX} =$	<input style="width: 40px;" type="text" value="4.0"/>	<input style="width: 40px;" type="text" value="12.0"/>	inches														
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes														
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm																	
Allow Flow Depth at Street Crown (leave blank for no)																	
MINOR STORM Allowable Capacity is based on Depth Criterion																	
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Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'																	
$Q_{allow} =$	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%; text-align: center;">Minor Storm</th> <th style="width: 25%; text-align: center;">Major Storm</th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr> <td></td> <td style="text-align: center;"><input style="width: 40px;" type="text" value="SUMP"/></td> <td style="text-align: center;"><input style="width: 40px;" type="text" value="SUMP"/></td> <td style="text-align: right;">cfs</td> </tr> </tbody> </table>		Minor Storm	Major Storm			<input style="width: 40px;" type="text" value="SUMP"/>	<input style="width: 40px;" type="text" value="SUMP"/>	cfs								
	Minor Storm	Major Storm															
	<input style="width: 40px;" type="text" value="SUMP"/>	<input style="width: 40px;" type="text" value="SUMP"/>	cfs														

INLET IN A SUMP OR SAG LOCATION

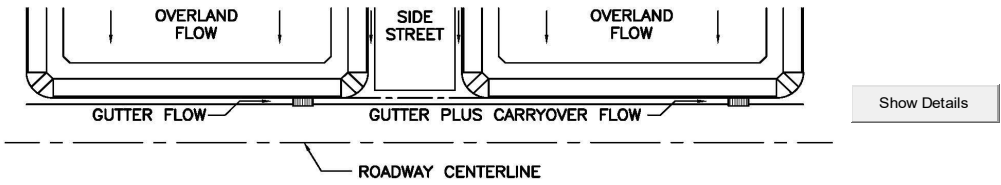
Project = **COMPARK SOUTH**
 Inlet ID = **INLET 3-4**



Design Information (Input)	MINOR		MAJOR	
	Type of Inlet	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	5.00	5.00	inches
Number of Unit Inlets (Grate or Curb Opening)	N_o =	3	3	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	12.0	inches
Grate Information	<input checked="" type="checkbox"/> Override Depths			
Length of a Unit Grate	$L_o (G)$ =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	$C_r (G)$ =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	$C_w (G)$ =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	$C_o (G)$ =	N/A	N/A	
Curb Opening Information				
Length of a Unit Curb Opening	$L_o (C)$ =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	$C_r (C)$ =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	$C_w (C)$ =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	$C_o (C)$ =	0.67	0.67	
Total Inlet Interception Capacity (assumes clogged condition)				
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	Q_a =	3.9	42.1	cfs
	$Q_{PEAK REQUIRED}$ =	3.9	11.2	cfs

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
 Inlet ID: INLET 3-5

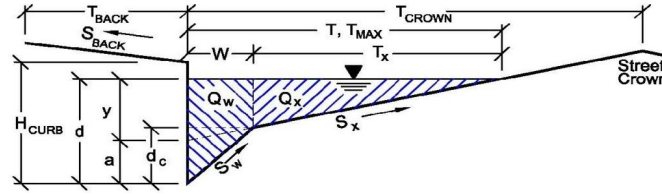


Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		Minor Storm Major Storm * Q_{known} = <input type="text" value="3.9"/> <input type="text" value="11.0"/> cfs	<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---
Geographic Information: (Enter data in the blue cells):		Subcatchment Area = <input type="text"/> Acres Percent Imperviousness = <input type="text"/> % NRCS Soil Type = <input type="text"/> A, B, C, or D	
Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Slope (ft/ft) Length (ft) Overland Flow = <input type="text"/> <input type="text"/> Channel Flow = <input type="text"/> <input type="text"/>	
Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$		Minor Storm Major Storm	
Design Storm Return Period, T_r = <input type="text"/> years Return Period One-Hour Precipitation, P_1 = <input type="text"/> inches C_1 = <input type="text"/> C_2 = <input type="text"/> C_3 = <input type="text"/> User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C = <input type="text"/> User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 = <input type="text"/>		Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b = <input type="text" value="0.0"/> <input type="text" value="0.0"/> cfs	
Total Design Peak Flow, Q = <input type="text" value="3.9"/> <input type="text" value="11.0"/> cfs			

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

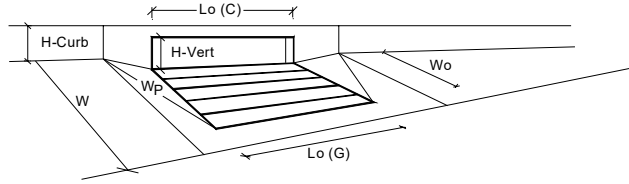
Project: **COMPARK SOUTH**
 Inlet ID: **INLET 3-5**



Gutter Geometry (Enter data in the blue cells)													
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = 0.0$ ft												
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = 0.020$ ft/ft												
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = 0.020$												
Height of Curb at Gutter Flow Line	$H_{CURB} = 4.00$ inches												
Distance from Curb Face to Street Crown	$T_{CROWN} = 17.0$ ft												
Gutter Width	$W = 2.00$ ft												
Street Transverse Slope	$S_x = 0.020$ ft/ft												
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = 0.083$ ft/ft												
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = 0.000$ ft/ft												
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = 0.016$												
Max. Allowable Spread for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">Minor Storm</th> <th style="text-align: center;">Major Storm</th> <th></th> </tr> </thead> <tbody> <tr> <td>$T_{MAX} =$</td> <td style="text-align: center;">17.0</td> <td style="text-align: center;">17.0</td> <td>ft</td> </tr> <tr> <td>$d_{MAX} =$</td> <td style="text-align: center;">4.0</td> <td style="text-align: center;">12.0</td> <td>inches</td> </tr> </tbody> </table>		Minor Storm	Major Storm		$T_{MAX} =$	17.0	17.0	ft	$d_{MAX} =$	4.0	12.0	inches
	Minor Storm	Major Storm											
$T_{MAX} =$	17.0	17.0	ft										
$d_{MAX} =$	4.0	12.0	inches										
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm													
Allow Flow Depth at Street Crown (leave blank for no)	<input type="checkbox"/> <input type="checkbox"/> check = yes												
MINOR STORM Allowable Capacity is based on Depth Criterion													
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Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'													
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$Q_{allow} =$	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">Minor Storm</th> <th style="text-align: center;">Major Storm</th> <th></th> </tr> </thead> <tbody> <tr> <td></td> <td style="text-align: center;">SUMP</td> <td style="text-align: center;">SUMP</td> <td>cfs</td> </tr> </tbody> </table>		Minor Storm	Major Storm			SUMP	SUMP	cfs				
	Minor Storm	Major Storm											
	SUMP	SUMP	cfs										

INLET IN A SUMP OR SAG LOCATION

Project = **COMPARK SOUTH**
 Inlet ID = **INLET 3-5**



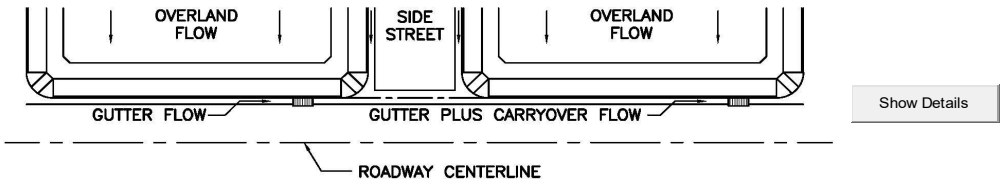
Design Information (Input)		MINOR		MAJOR	
		CDOT Type R Curb Opening			
Type of Inlet	Inlet Type =	5.00	5.00	5.00	inches
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	5.00	5.00	5.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	3	3	3	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	12.0	12.0	inches
Grate Information		MINOR		MAJOR	
Length of a Unit Grate	$L_o (G)$ =	N/A	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	$C_r (G)$ =	N/A	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	$C_w (G)$ =	N/A	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	$C_o (G)$ =	N/A	N/A	N/A	
Curb Opening Information		MINOR		MAJOR	
Length of a Unit Curb Opening	$L_o (C)$ =	5.00	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	$C_r (C)$ =	0.10	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	$C_w (C)$ =	3.60	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	$C_o (C)$ =	0.67	0.67	0.67	
Total Inlet Interception Capacity (assumes clogged condition)		MINOR		MAJOR	
Q_a		3.9	42.1	42.1	cfs
$Q_{PEAK REQUIRED}$		3.9	11.0	11.0	cfs

Override Depths

Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
 Inlet ID: INLET 4-4



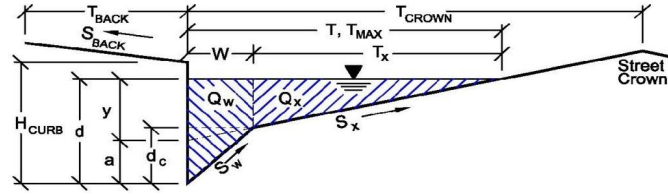
Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		Minor Storm Major Storm *Q _{known} = <input type="text" value="0.9"/> <input type="text" value="2.4"/> cfs	<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---
Geographic Information: (Enter data in the blue cells):		Subcatchment Area = <input type="text"/> Acres Percent Imperviousness = <input type="text"/> % NRCS Soil Type = <input type="text"/> A, B, C, or D	
Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Slope (ft/ft) Length (ft) Overland Flow = <input type="text"/> <input type="text"/> Channel Flow = <input type="text"/> <input type="text"/>	
Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$		Minor Storm Major Storm	
Design Storm Return Period, T _r = <input type="text"/> years Return Period One-Hour Precipitation, P ₁ = <input type="text"/> inches C ₁ = <input type="text"/> C ₂ = <input type="text"/> C ₃ = <input type="text"/> User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C = <input type="text"/> User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C ₅ = <input type="text"/>		Bypass (Carry-Over) Flow from upstream Subcatchments, Q _b = <input type="text" value="0.0"/> <input type="text" value="0.0"/> cfs	
Total Design Peak Flow, Q = <input type="text" value="0.9"/> <input type="text" value="2.4"/> cfs			

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: **COMPARK SOUTH**

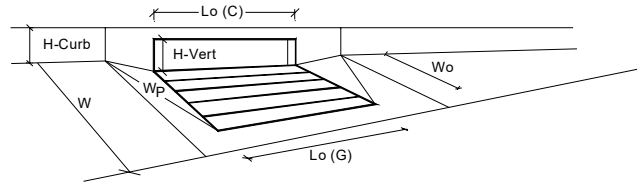
Inlet ID: **INLET 4-4**



Gutter Geometry (Enter data in the blue cells)													
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = 0.0$ ft												
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = 0.020$ ft/ft												
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = 0.020$												
Height of Curb at Gutter Flow Line	$H_{CURB} = 4.00$ inches												
Distance from Curb Face to Street Crown	$T_{CROWN} = 17.0$ ft												
Gutter Width	$W = 2.00$ ft												
Street Transverse Slope	$S_x = 0.020$ ft/ft												
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = 0.083$ ft/ft												
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = 0.000$ ft/ft												
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = 0.016$												
Max. Allowable Spread for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Minor Storm</th> <th>Major Storm</th> <th></th> </tr> </thead> <tbody> <tr> <td>$T_{MAX} =$</td> <td>17.0</td> <td>17.0</td> <td>ft</td> </tr> <tr> <td>$d_{MAX} =$</td> <td>4.0</td> <td>12.0</td> <td>inches</td> </tr> </tbody> </table>		Minor Storm	Major Storm		$T_{MAX} =$	17.0	17.0	ft	$d_{MAX} =$	4.0	12.0	inches
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	Minor Storm	Major Storm											
	SUMP	SUMP	cfs										

INLET IN A SUMP OR SAG LOCATION

Project = **COMPARK SOUTH**
 Inlet ID = **INLET 4-4**

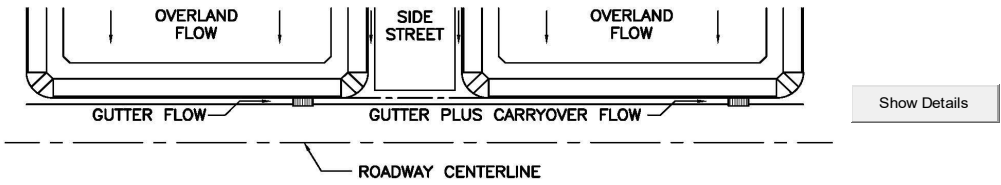


Design Information (Input)		MINOR		MAJOR	
Type of Inlet	Inlet Type =	CDOT Type R Curb Opening			
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	5.00	5.00	inches	
Number of Unit Inlets (Grate or Curb Opening)	N_o =	1	1		
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	12.0	inches	<input checked="" type="checkbox"/> Override Depths
Grate Information		MINOR		MAJOR	
Length of a Unit Grate	$L_o (G)$ =	N/A	N/A	feet	
Width of a Unit Grate	W_o =	N/A	N/A	feet	
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A		
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	$C_r (G)$ =	N/A	N/A		
Grate Weir Coefficient (typical value 2.15 - 3.60)	$C_w (G)$ =	N/A	N/A		
Grate Orifice Coefficient (typical value 0.60 - 0.80)	$C_o (G)$ =	N/A	N/A		
Curb Opening Information		MINOR		MAJOR	
Length of a Unit Curb Opening	$L_o (C)$ =	5.00	5.00	feet	
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches	
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches	
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees	
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet	
Clogging Factor for a Single Curb Opening (typical value 0.10)	$C_r (C)$ =	0.10	0.10		
Curb Opening Weir Coefficient (typical value 2.3-3.7)	$C_w (C)$ =	3.60	3.60		
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	$C_o (C)$ =	0.67	0.67		
Total Inlet Interception Capacity (assumes clogged condition)		MINOR		MAJOR	
	Q_a =	1.9	13.2	cfs	
	$Q_{PEAK REQUIRED}$ =	0.9	2.4	cfs	

Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
 Inlet ID: INLET 4-5

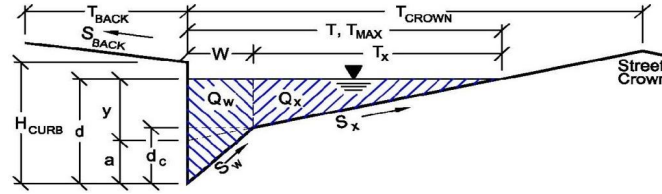


Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		Minor Storm Major Storm * Q_{known} = <input type="text" value="2.4"/> <input type="text" value="6.6"/> cfs	<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---
Geographic Information: (Enter data in the blue cells):		Subcatchment Area = <input type="text"/> Acres Percent Imperviousness = <input type="text"/> % NRCS Soil Type = <input type="text"/> A, B, C, or D	
Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Slope (ft/ft) Length (ft) Overland Flow = <input type="text"/> <input type="text"/> Channel Flow = <input type="text"/> <input type="text"/>	
Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$		Minor Storm Major Storm	
		Design Storm Return Period, T_r = <input type="text"/> years	
		Return Period One-Hour Precipitation, P_1 = <input type="text"/> inches	
		C_1 = <input type="text"/>	
		C_2 = <input type="text"/>	
		C_3 = <input type="text"/>	
User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C = <input type="text"/>		C = <input type="text"/>	
User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 = <input type="text"/>		C_5 = <input type="text"/>	
		Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b = <input type="text" value="0.0"/> <input type="text" value="2.3"/> cfs	
		Total Design Peak Flow, Q = <input type="text" value="2.4"/> <input type="text" value="8.9"/> cfs	

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

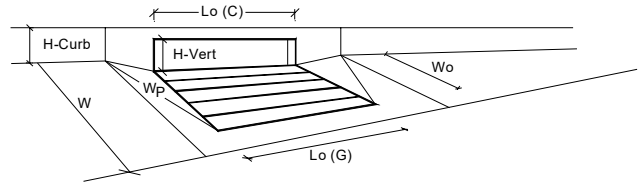
Project: **COMPARK SOUTH**
 Inlet ID: **INLET 4-5**



Gutter Geometry (Enter data in the blue cells)							
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = 0.0$ ft						
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = 0.020$ ft/ft						
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = 0.020$						
Height of Curb at Gutter Flow Line	$H_{CURB} = 4.00$ inches						
Distance from Curb Face to Street Crown	$T_{CROWN} = 17.0$ ft						
Gutter Width	$W = 2.00$ ft						
Street Transverse Slope	$S_x = 0.020$ ft/ft						
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = 0.083$ ft/ft						
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = 0.000$ ft/ft						
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = 0.016$						
Max. Allowable Spread for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px;">Minor Storm</th> <th style="padding: 2px;">Major Storm</th> <th style="padding: 2px;">ft</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">$T_{MAX} = 17.0$</td> <td style="padding: 2px;">$T_{MAX} = 17.0$</td> <td style="padding: 2px;"></td> </tr> </tbody> </table>	Minor Storm	Major Storm	ft	$T_{MAX} = 17.0$	$T_{MAX} = 17.0$	
Minor Storm	Major Storm	ft					
$T_{MAX} = 17.0$	$T_{MAX} = 17.0$						
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px;">Minor Storm</th> <th style="padding: 2px;">Major Storm</th> <th style="padding: 2px;">inches</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">$d_{MAX} = 4.0$</td> <td style="padding: 2px;">$d_{MAX} = 12.0$</td> <td style="padding: 2px;"></td> </tr> </tbody> </table>	Minor Storm	Major Storm	inches	$d_{MAX} = 4.0$	$d_{MAX} = 12.0$	
Minor Storm	Major Storm	inches					
$d_{MAX} = 4.0$	$d_{MAX} = 12.0$						
Allow Flow Depth at Street Crown (leave blank for no)	<table style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 2px;"><input checked="" type="checkbox"/></td> <td style="text-align: center; padding: 2px;"><input checked="" type="checkbox"/></td> <td style="padding: 2px;">check = yes</td> </tr> </table>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes			
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes					
MINOR STORM Allowable Capacity is based on Depth Criterion							
MAJOR STORM Allowable Capacity is based on Depth Criterion							
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'							
Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'							
$Q_{allow} =$	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px;">Minor Storm</th> <th style="padding: 2px;">Major Storm</th> <th style="padding: 2px;">cfs</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px; text-align: center;">SUMP</td> <td style="padding: 2px; text-align: center;">SUMP</td> <td style="padding: 2px;"></td> </tr> </tbody> </table>	Minor Storm	Major Storm	cfs	SUMP	SUMP	
Minor Storm	Major Storm	cfs					
SUMP	SUMP						

INLET IN A SUMP OR SAG LOCATION

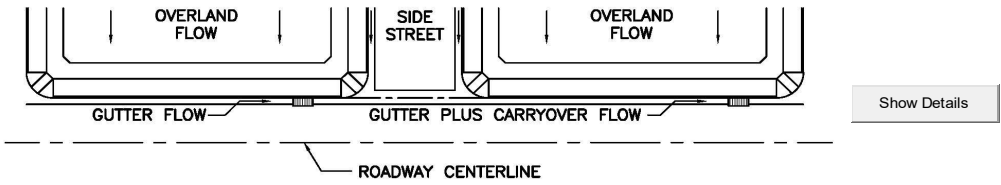
Project = **COMPARK SOUTH**
 Inlet ID = **INLET 4-5**



Design Information (Input)	MINOR		MAJOR		
	CDOT Type R Curb Opening				
Type of Inlet	CDOT Type R Curb Opening				
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	5.00	5.00		inches
Number of Unit Inlets (Grate or Curb Opening)	N_o =	2	2		
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	12.0		inches
Grate Information					<input checked="" type="checkbox"/> Override Depths
Length of a Unit Grate	$L_o (G)$ =	N/A	N/A		feet
Width of a Unit Grate	W_o =	N/A	N/A		feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A		
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	$C_r (G)$ =	N/A	N/A		
Grate Weir Coefficient (typical value 2.15 - 3.60)	$C_w (G)$ =	N/A	N/A		
Grate Orifice Coefficient (typical value 0.60 - 0.80)	$C_o (G)$ =	N/A	N/A		
Curb Opening Information					
Length of a Unit Curb Opening	$L_o (C)$ =	5.00	5.00		feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00		inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00		inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40		degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00		feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	$C_r (C)$ =	0.10	0.10		
Curb Opening Weir Coefficient (typical value 2.3-3.7)	$C_w (C)$ =	3.60	3.60		
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	$C_o (C)$ =	0.67	0.67		
Total Inlet Interception Capacity (assumes clogged condition)					
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	Q_a =	3.1	27.5		cfs
	$Q_{PEAK REQUIRED}$ =	2.4	8.9		cfs

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
 Inlet ID: INLET 4-5A

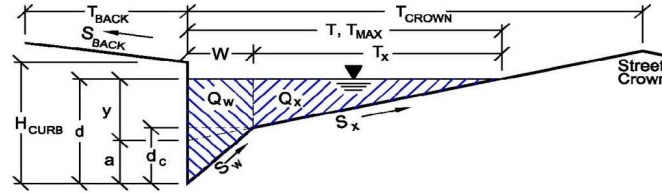


<p>Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):</p>		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Minor Storm</td> <td style="padding: 2px;">Major Storm</td> </tr> <tr> <td style="text-align: center; padding: 2px;">4.1</td> <td style="text-align: center; padding: 2px;">11.4</td> </tr> <tr> <td colspan="2" style="text-align: right; padding: 2px;">cfs</td> </tr> </table>	Minor Storm	Major Storm	4.1	11.4	cfs		<p style="color: red; font-size: small;"><--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---</p>																								
Minor Storm	Major Storm																																
4.1	11.4																																
cfs																																	
<p>* If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.</p>																																	
<p>Geographic Information: (Enter data in the blue cells):</p>		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Subcatchment Area =</td> <td style="width: 20%;"></td> <td style="width: 10%;">Acres</td> <td style="width: 15%;"></td> </tr> <tr> <td>Percent Imperviousness =</td> <td></td> <td>%</td> <td></td> </tr> <tr> <td>NRCS Soil Type =</td> <td></td> <td>A, B, C, or D</td> <td></td> </tr> </table>		Subcatchment Area =		Acres		Percent Imperviousness =		%		NRCS Soil Type =		A, B, C, or D																			
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Percent Imperviousness =		%																															
NRCS Soil Type =		A, B, C, or D																															
<p>You cannot enter values for Q and use the Q calculator at the same time</p>		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;"></td> <td style="width: 25%; text-align: center;">Slope (ft/ft)</td> <td style="width: 25%; text-align: center;">Length (ft)</td> <td style="width: 25%;"></td> </tr> <tr> <td>Overland Flow =</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Gutter Flow =</td> <td></td> <td></td> <td></td> </tr> </table>			Slope (ft/ft)	Length (ft)		Overland Flow =				Gutter Flow =																					
	Slope (ft/ft)	Length (ft)																															
Overland Flow =																																	
Gutter Flow =																																	
<p>Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$</p>		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 25%; text-align: center;">Minor Storm</td> <td style="width: 25%; text-align: center;">Major Storm</td> </tr> <tr> <td>Design Storm Return Period, T_r =</td> <td></td> <td>years</td> </tr> <tr> <td>Return Period One-Hour Precipitation, P_1 =</td> <td></td> <td>inches</td> </tr> <tr> <td>C_1 =</td> <td></td> <td></td> </tr> <tr> <td>C_2 =</td> <td></td> <td></td> </tr> <tr> <td>C_3 =</td> <td></td> <td></td> </tr> <tr> <td>User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =</td> <td></td> <td></td> </tr> <tr> <td>User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 =</td> <td></td> <td></td> </tr> <tr> <td>Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b =</td> <td style="text-align: center;">0.0</td> <td style="text-align: center;">0.2</td> </tr> <tr> <td></td> <td colspan="2" style="text-align: right;">cfs</td> </tr> </table>			Minor Storm	Major Storm	Design Storm Return Period, T_r =		years	Return Period One-Hour Precipitation, P_1 =		inches	C_1 =			C_2 =			C_3 =			User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =			User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 =			Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b =	0.0	0.2		cfs	
	Minor Storm	Major Storm																															
Design Storm Return Period, T_r =		years																															
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C_1 =																																	
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User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =																																	
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Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b =	0.0	0.2																															
	cfs																																
<p style="text-align: right;">Total Design Peak Flow, Q =</p>		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">4.1</td> <td style="padding: 2px;">11.6</td> </tr> <tr> <td colspan="2" style="text-align: right; padding: 2px;">cfs</td> </tr> </table>		4.1	11.6	cfs																											
4.1	11.6																																
cfs																																	

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

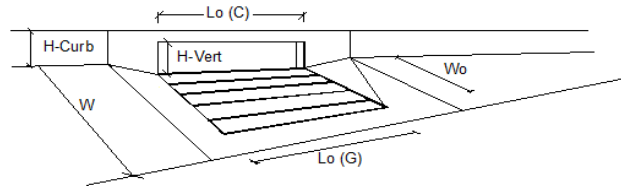
Project: **COMPARK SOUTH**
 Inlet ID: **INLET 4-5A**



Gutter Geometry (Enter data in the blue cells)							
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = 0.0$ ft						
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = 0.020$ ft/ft						
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = 0.020$						
Height of Curb at Gutter Flow Line	$H_{CURB} = 4.00$ inches						
Distance from Curb Face to Street Crown	$T_{CROWN} = 17.0$ ft						
Gutter Width	$W = 2.00$ ft						
Street Transverse Slope	$S_x = 0.020$ ft/ft						
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = 0.083$ ft/ft						
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = 0.010$ ft/ft						
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = 0.016$						
Max. Allowable Spread for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Minor Storm</th> <th style="text-align: center;">Major Storm</th> <th></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">$T_{MAX} = 17.0$</td> <td style="text-align: center;">17.0</td> <td style="text-align: right;">ft</td> </tr> </tbody> </table>	Minor Storm	Major Storm		$T_{MAX} = 17.0$	17.0	ft
Minor Storm	Major Storm						
$T_{MAX} = 17.0$	17.0	ft					
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Minor Storm</th> <th style="text-align: center;">Major Storm</th> <th></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">$d_{MAX} = 4.3$</td> <td style="text-align: center;">12.0</td> <td style="text-align: right;">inches</td> </tr> </tbody> </table>	Minor Storm	Major Storm		$d_{MAX} = 4.3$	12.0	inches
Minor Storm	Major Storm						
$d_{MAX} = 4.3$	12.0	inches					
Allow Flow Depth at Street Crown (leave blank for no)	<input type="checkbox"/> <input checked="" type="checkbox"/> check = yes						
MINOR STORM Allowable Capacity is based on Depth Criterion							
MAJOR STORM Allowable Capacity is based on Depth Criterion							
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'							
Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'							
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Minor Storm</th> <th style="text-align: center;">Major Storm</th> <th></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">$Q_{allow} = 4.4$</td> <td style="text-align: center;">91.2</td> <td style="text-align: right;">cfs</td> </tr> </tbody> </table>	Minor Storm	Major Storm		$Q_{allow} = 4.4$	91.2	cfs
Minor Storm	Major Storm						
$Q_{allow} = 4.4$	91.2	cfs					

INLET ON A CONTINUOUS GRADE

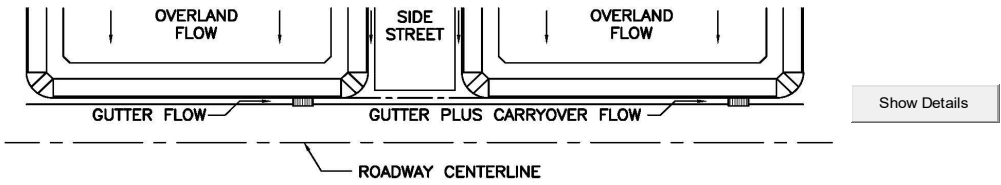
Project: COMPARK SOUTH
 Inlet ID: INLET 4-5A



Design Information (Input)	MINOR		MAJOR		
Type of Inlet	Type = CDOT Type R Curb Opening				
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a _{LOCAL} = 3.0	3.0			inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No = 3	3			
Length of a Single Unit Inlet (Grate or Curb Opening)	L _o = 5.00	5.00			ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	W _o = N/A	N/A			ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C _{r-G} = N/A	N/A			
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C _{r-C} = 0.10	0.10			
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'					
Total Inlet Interception Capacity	Q = 4.10	10.24			cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	Q _b = 0.0	1.4			cfs
Capture Percentage = Q _a /Q _o =	C% = 100	88			%

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
 Inlet ID: INLET 4-5B

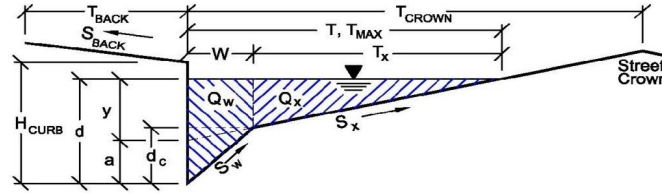


Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		Minor Storm Major Storm *Q _{known} = <input type="text" value="3.4"/> <input type="text" value="8.5"/> cfs	<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---
Geographic Information: (Enter data in the blue cells):		Subcatchment Area = <input type="text"/> Acres Percent Imperviousness = <input type="text"/> % NRCS Soil Type = <input type="text"/> A, B, C, or D	
Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Slope (ft/ft) Length (ft) Overland Flow = <input type="text"/> <input type="text"/> Channel Flow = <input type="text"/> <input type="text"/>	
Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$		Minor Storm Major Storm	
		Design Storm Return Period, T _r = <input type="text"/> years	
		Return Period One-Hour Precipitation, P ₁ = <input type="text"/> inches	
		C ₁ = <input type="text"/>	
		C ₂ = <input type="text"/>	
		C ₃ = <input type="text"/>	
User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C = <input type="text"/>		User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C ₅ = <input type="text"/>	
		Bypass (Carry-Over) Flow from upstream Subcatchments, Q _b = <input type="text" value="0.0"/> <input type="text" value="0.9"/> cfs	
		Total Design Peak Flow, Q = <input type="text" value="3.4"/> <input type="text" value="9.4"/> cfs	

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

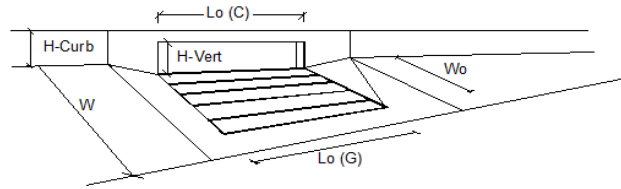
Project: **COMPARK SOUTH**
 Inlet ID: **INLET 4-5B**



Gutter Geometry (Enter data in the blue cells)							
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = 0.0$ ft						
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = 0.020$ ft/ft						
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = 0.020$						
Height of Curb at Gutter Flow Line	$H_{CURB} = 4.00$ inches						
Distance from Curb Face to Street Crown	$T_{CROWN} = 17.0$ ft						
Gutter Width	$W = 2.00$ ft						
Street Transverse Slope	$S_x = 0.020$ ft/ft						
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = 0.083$ ft/ft						
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = 0.010$ ft/ft						
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = 0.016$						
Max. Allowable Spread for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Minor Storm</th> <th style="text-align: center;">Major Storm</th> <th></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">$T_{MAX} = 17.0$</td> <td style="text-align: center;">$T_{MAX} = 17.0$</td> <td style="text-align: right;">ft</td> </tr> </tbody> </table>	Minor Storm	Major Storm		$T_{MAX} = 17.0$	$T_{MAX} = 17.0$	ft
Minor Storm	Major Storm						
$T_{MAX} = 17.0$	$T_{MAX} = 17.0$	ft					
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Minor Storm</th> <th style="text-align: center;">Major Storm</th> <th></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">$d_{MAX} = 4.0$</td> <td style="text-align: center;">$d_{MAX} = 12.0$</td> <td style="text-align: right;">inches</td> </tr> </tbody> </table>	Minor Storm	Major Storm		$d_{MAX} = 4.0$	$d_{MAX} = 12.0$	inches
Minor Storm	Major Storm						
$d_{MAX} = 4.0$	$d_{MAX} = 12.0$	inches					
Allow Flow Depth at Street Crown (leave blank for no)	<input type="checkbox"/> <input checked="" type="checkbox"/> check = yes						
MINOR STORM Allowable Capacity is based on Depth Criterion							
MAJOR STORM Allowable Capacity is based on Depth Criterion							
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'							
Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'							
$Q_{allow} =$	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Minor Storm</th> <th style="text-align: center;">Major Storm</th> <th></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">3.4</td> <td style="text-align: center;">91.2</td> <td style="text-align: right;">cfs</td> </tr> </tbody> </table>	Minor Storm	Major Storm		3.4	91.2	cfs
Minor Storm	Major Storm						
3.4	91.2	cfs					

INLET ON A CONTINUOUS GRADE

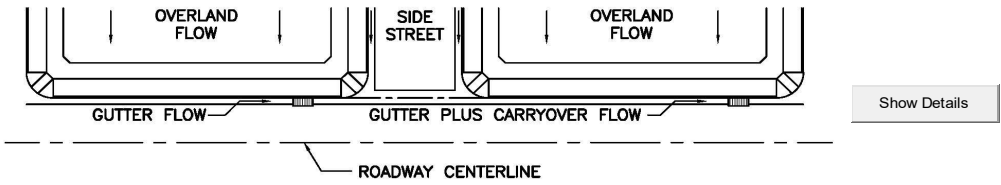
Project: COMPARK SOUTH
 Inlet ID: INLET 4-5B



Design Information (Input)	MINOR		MAJOR	
	Type of Inlet	Type = CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a _{LOCAL} = 3.0	3.0	inches	
Total Number of Units in the Inlet (Grate or Curb Opening)	No = 2	2		
Length of a Single Unit Inlet (Grate or Curb Opening)	L _o = 5.00	5.00	ft	
Width of a Unit Grate (cannot be greater than W from Q-Allow)	W _o = N/A	N/A	ft	
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C _{r-G} = N/A	N/A		
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C _{r-C} = 0.10	0.10		
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'				
Total Inlet Interception Capacity	Q = 3.40	6.90	cfs	
Total Inlet Carry-Over Flow (flow bypassing inlet)	Q _b = 0.0	2.4	cfs	
Capture Percentage = Q _a /Q _o =	C% = 100	74	%	

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
 Inlet ID: INLET 4-5C

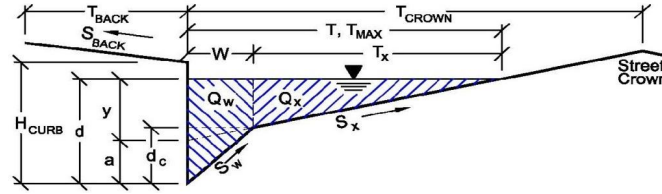


Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Minor Storm</td> <td style="padding: 2px;">Major Storm</td> </tr> <tr> <td align="center" style="padding: 2px;">2.4</td> <td align="center" style="padding: 2px;">6.7</td> </tr> </table> cfs	Minor Storm	Major Storm	2.4	6.7	<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---																	
Minor Storm	Major Storm																							
2.4	6.7																							
* If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.																								
Geographic Information: (Enter data in the blue cells):																								
Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Subcatchment Area = <input type="text"/> Acres Percent Imperviousness = <input type="text"/> % NRCS Soil Type = <input type="text"/> A, B, C, or D																						
		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Slope (ft/ft)</td> <td style="padding: 2px;">Length (ft)</td> </tr> <tr> <td style="padding: 2px;">Overland Flow =</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">Channel Flow =</td> <td style="padding: 2px;"></td> </tr> </table>	Slope (ft/ft)	Length (ft)	Overland Flow =		Channel Flow =																	
Slope (ft/ft)	Length (ft)																							
Overland Flow =																								
Channel Flow =																								
Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$																								
		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Design Storm Return Period, T_r =</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">years</td> </tr> <tr> <td style="padding: 2px;">Return Period One-Hour Precipitation, P_1 =</td> <td style="padding: 2px;"></td> <td style="padding: 2px;">inches</td> </tr> <tr> <td style="padding: 2px;">C_1 =</td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">C_2 =</td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">C_3 =</td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =</td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;">User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 =</td> <td style="padding: 2px;"></td> <td style="padding: 2px;"></td> </tr> </table>	Design Storm Return Period, T_r =		years	Return Period One-Hour Precipitation, P_1 =		inches	C_1 =			C_2 =			C_3 =			User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =			User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 =			
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User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =																								
User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 =																								
		Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b = <input type="text"/> 0.0 <input type="text"/> 1.2 cfs																						
		Total Design Peak Flow, Q = <input type="text"/> 2.4 <input type="text"/> 7.9 cfs																						

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

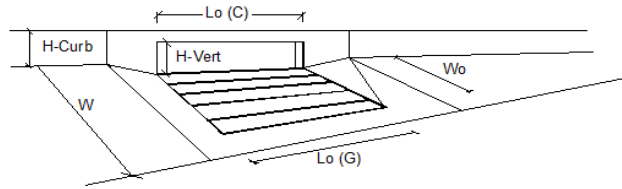
Project: **COMPARK SOUTH**
 Inlet ID: **INLET 4-5C**



Gutter Geometry (Enter data in the blue cells)									
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = $ <input style="width: 50px;" type="text" value="0.0"/> ft								
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = $ <input style="width: 50px;" type="text" value="0.020"/> ft/ft								
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = $ <input style="width: 50px;" type="text" value="0.020"/>								
Height of Curb at Gutter Flow Line	$H_{CURB} = $ <input style="width: 50px;" type="text" value="4.00"/> inches								
Distance from Curb Face to Street Crown	$T_{CROWN} = $ <input style="width: 50px;" type="text" value="17.0"/> ft								
Gutter Width	$W = $ <input style="width: 50px;" type="text" value="2.00"/> ft								
Street Transverse Slope	$S_x = $ <input style="width: 50px;" type="text" value="0.020"/> ft/ft								
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = $ <input style="width: 50px;" type="text" value="0.083"/> ft/ft								
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = $ <input style="width: 50px;" type="text" value="0.010"/> ft/ft								
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = $ <input style="width: 50px;" type="text" value="0.016"/>								
Max. Allowable Spread for Minor & Major Storm	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%; text-align: center;">Minor Storm</th> <th style="width: 25%; text-align: center;">Major Storm</th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr> <td>$T_{MAX} =$</td> <td style="text-align: center;"><input style="width: 50px;" type="text" value="17.0"/></td> <td style="text-align: center;"><input style="width: 50px;" type="text" value="17.0"/></td> <td style="text-align: right;">ft</td> </tr> </tbody> </table>		Minor Storm	Major Storm		$T_{MAX} = $	<input style="width: 50px;" type="text" value="17.0"/>	<input style="width: 50px;" type="text" value="17.0"/>	ft
	Minor Storm	Major Storm							
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	Minor Storm	Major Storm							
$d_{MAX} = $	<input style="width: 50px;" type="text" value="4.0"/>	<input style="width: 50px;" type="text" value="12.0"/>	inches						
Allow Flow Depth at Street Crown (leave blank for no)	<table style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 50%;"></td> <td style="width: 25%; text-align: center;"><input type="checkbox"/></td> <td style="width: 25%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 10%;"></td> </tr> </tbody> </table> check = yes		<input type="checkbox"/>	<input checked="" type="checkbox"/>					
	<input type="checkbox"/>	<input checked="" type="checkbox"/>							
MINOR STORM Allowable Capacity is based on Depth Criterion									
MAJOR STORM Allowable Capacity is based on Depth Criterion	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%; text-align: center;">Minor Storm</th> <th style="width: 25%; text-align: center;">Major Storm</th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr> <td>$Q_{allow} =$</td> <td style="text-align: center;"><input style="width: 50px;" type="text" value="3.4"/></td> <td style="text-align: center;"><input style="width: 50px;" type="text" value="91.2"/></td> <td style="text-align: right;">cfs</td> </tr> </tbody> </table>		Minor Storm	Major Storm		$Q_{allow} = $	<input style="width: 50px;" type="text" value="3.4"/>	<input style="width: 50px;" type="text" value="91.2"/>	cfs
	Minor Storm	Major Storm							
$Q_{allow} = $	<input style="width: 50px;" type="text" value="3.4"/>	<input style="width: 50px;" type="text" value="91.2"/>	cfs						
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'									
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INLET ON A CONTINUOUS GRADE

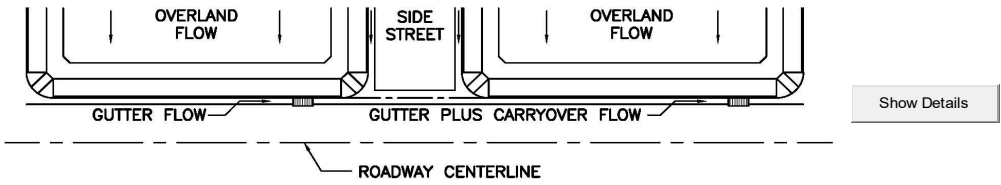
Project: COMPARK SOUTH
 Inlet ID: INLET 4-5C



Design Information (Input)	MINOR		MAJOR		
	MINOR	MAJOR	MINOR	MAJOR	
Type of Inlet	CDOT Type R Curb Opening				
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	5.0	5.0	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	2	2	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)	5.00	5.00	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	N/A	N/A	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10	0.10	0.10	
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'					
Total Inlet Interception Capacity	2.40	6.85	2.40	6.85	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	0.0	1.1	0.0	1.1	cfs
Capture Percentage = Q_a/Q_o =	100	87	100	87	%

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
 Inlet ID: INLET 5-4



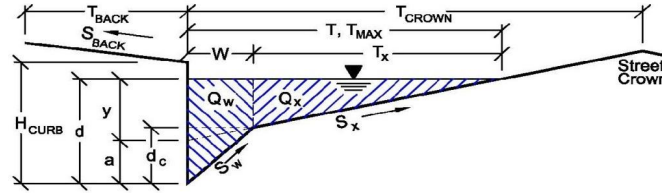
Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		Minor Storm Major Storm * Q_{known} = <input type="text" value="3.4"/> <input type="text" value="10.8"/> cfs	<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---
Geographic Information: (Enter data in the blue cells):		Subcatchment Area = <input type="text"/> Acres Percent Imperviousness = <input type="text"/> % NRCS Soil Type = <input type="text"/> A, B, C, or D	
Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Slope (ft/ft) Length (ft) Overland Flow = <input type="text"/> <input type="text"/> Channel Flow = <input type="text"/> <input type="text"/>	
Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$		Minor Storm Major Storm	
Design Storm Return Period, T_r = <input type="text"/> years Return Period One-Hour Precipitation, P_1 = <input type="text"/> inches C_1 = <input type="text"/> C_2 = <input type="text"/> C_3 = <input type="text"/> User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C = <input type="text"/> User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 = <input type="text"/>		Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b = <input type="text" value="0.0"/> <input type="text" value="0.0"/> cfs	
		Total Design Peak Flow, Q = <input type="text" value="3.4"/> <input type="text" value="10.8"/> cfs	

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: **COMPARK SOUTH**

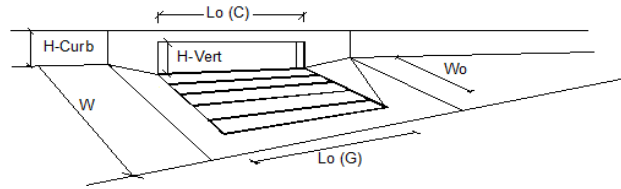
Inlet ID: **INLET 5-4**



Gutter Geometry (Enter data in the blue cells)									
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = $ <input style="width: 50px;" type="text" value="0.0"/> ft								
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = $ <input style="width: 50px;" type="text" value="0.020"/> ft/ft								
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = $ <input style="width: 50px;" type="text" value="0.020"/>								
Height of Curb at Gutter Flow Line	$H_{CURB} = $ <input style="width: 50px;" type="text" value="4.00"/> inches								
Distance from Curb Face to Street Crown	$T_{CROWN} = $ <input style="width: 50px;" type="text" value="17.0"/> ft								
Gutter Width	$W = $ <input style="width: 50px;" type="text" value="2.00"/> ft								
Street Transverse Slope	$S_x = $ <input style="width: 50px;" type="text" value="0.020"/> ft/ft								
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = $ <input style="width: 50px;" type="text" value="0.083"/> ft/ft								
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = $ <input style="width: 50px;" type="text" value="0.010"/> ft/ft								
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = $ <input style="width: 50px;" type="text" value="0.016"/>								
Max. Allowable Spread for Minor & Major Storm	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%; text-align: center;">Minor Storm</th> <th style="width: 25%; text-align: center;">Major Storm</th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr> <td>$T_{MAX} =$</td> <td style="text-align: center;"><input style="width: 50px;" type="text" value="17.0"/></td> <td style="text-align: center;"><input style="width: 50px;" type="text" value="17.0"/></td> <td style="text-align: right;">ft</td> </tr> </tbody> </table>		Minor Storm	Major Storm		$T_{MAX} = $	<input style="width: 50px;" type="text" value="17.0"/>	<input style="width: 50px;" type="text" value="17.0"/>	ft
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$T_{MAX} = $	<input style="width: 50px;" type="text" value="17.0"/>	<input style="width: 50px;" type="text" value="17.0"/>	ft						
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%; text-align: center;">Minor Storm</th> <th style="width: 25%; text-align: center;">Major Storm</th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr> <td>$d_{MAX} =$</td> <td style="text-align: center;"><input style="width: 50px;" type="text" value="4.0"/></td> <td style="text-align: center;"><input style="width: 50px;" type="text" value="12.0"/></td> <td style="text-align: right;">inches</td> </tr> </tbody> </table>		Minor Storm	Major Storm		$d_{MAX} = $	<input style="width: 50px;" type="text" value="4.0"/>	<input style="width: 50px;" type="text" value="12.0"/>	inches
	Minor Storm	Major Storm							
$d_{MAX} = $	<input style="width: 50px;" type="text" value="4.0"/>	<input style="width: 50px;" type="text" value="12.0"/>	inches						
Allow Flow Depth at Street Crown (leave blank for no)	<table style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 50%;"></td> <td style="width: 25%; text-align: center;"><input type="checkbox"/></td> <td style="width: 25%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 10%;"></td> </tr> </tbody> </table>		<input type="checkbox"/>	<input checked="" type="checkbox"/>					
	<input type="checkbox"/>	<input checked="" type="checkbox"/>							
MINOR STORM Allowable Capacity is based on Depth Criterion									
MAJOR STORM Allowable Capacity is based on Depth Criterion									
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'									
Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'									
$Q_{allow} = $	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 25%; text-align: center;">Minor Storm</th> <th style="width: 25%; text-align: center;">Major Storm</th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr> <td></td> <td style="text-align: center;"><input style="width: 50px;" type="text" value="3.4"/></td> <td style="text-align: center;"><input style="width: 50px;" type="text" value="91.4"/></td> <td style="text-align: right;">cfs</td> </tr> </tbody> </table>		Minor Storm	Major Storm			<input style="width: 50px;" type="text" value="3.4"/>	<input style="width: 50px;" type="text" value="91.4"/>	cfs
	Minor Storm	Major Storm							
	<input style="width: 50px;" type="text" value="3.4"/>	<input style="width: 50px;" type="text" value="91.4"/>	cfs						

INLET ON A CONTINUOUS GRADE

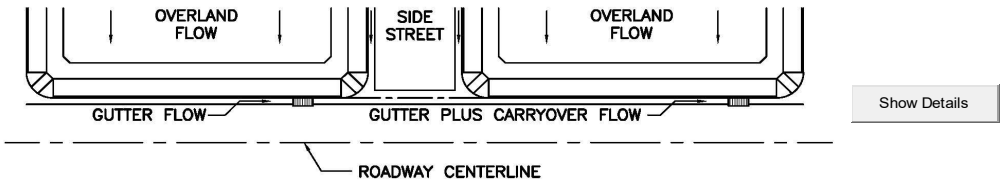
Project: COMPARK SOUTH
 Inlet ID: INLET 5-4



Design Information (Input)	MINOR		MAJOR	
	Type of Inlet	Type = CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	$a_{LOCAL} = 3.0$	3.0	inches	
Total Number of Units in the Inlet (Grate or Curb Opening)	$N_o = 3$	3		
Length of a Single Unit Inlet (Grate or Curb Opening)	$L_o = 5.00$	5.00	ft	
Width of a Unit Grate (cannot be greater than W from Q-Allow)	$W_o = N/A$	N/A	ft	
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	$C_r-G = N/A$	N/A		
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	$C_r-C = 0.10$	0.10		
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'				
Total Inlet Interception Capacity	$Q = 3.40$	9.77	cfs	
Total Inlet Carry-Over Flow (flow bypassing inlet)	$Q_b = 0.0$	1.0	cfs	
Capture Percentage = $Q_a/Q_o =$	$C\% = 100$	90	%	

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
 Inlet ID: INLET 5-4A

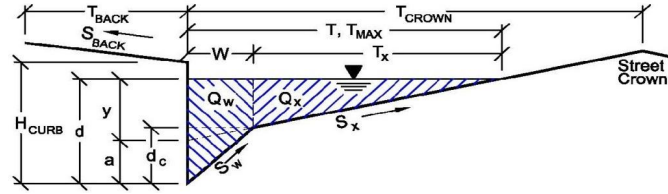


Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Minor Storm</td> <td style="padding: 2px;">Major Storm</td> </tr> <tr> <td style="text-align: center; padding: 2px;">1.0</td> <td style="text-align: center; padding: 2px;">2.6</td> </tr> </table> cfs	Minor Storm	Major Storm	1.0	2.6	<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---												
Minor Storm	Major Storm																		
1.0	2.6																		
* If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.																			
Geographic Information: (Enter data in the blue cells):																			
Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Subcatchment Area = <input style="width: 50px;" type="text"/> Acres Percent Imperviousness = <input style="width: 50px;" type="text"/> % NRCS Soil Type = <input style="width: 50px;" type="text"/> A, B, C, or D																	
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		Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b = <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px;">0.0</td><td style="padding: 2px;">0.0</td></tr></table> cfs	0.0	0.0															
0.0	0.0																		
		Total Design Peak Flow, Q = <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px;">1.0</td><td style="padding: 2px;">2.6</td></tr></table> cfs	1.0	2.6															
1.0	2.6																		

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

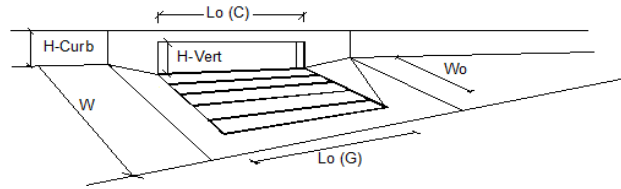
Project: **COMPARK SOUTH**
 Inlet ID: **INLET 5-4A**



Gutter Geometry (Enter data in the blue cells)						
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} =$	0.0 ft				
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} =$	0.020 ft/ft				
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} =$	0.020				
Height of Curb at Gutter Flow Line	$H_{CURB} =$	4.00 inches				
Distance from Curb Face to Street Crown	$T_{CROWN} =$	17.0 ft				
Gutter Width	$W =$	2.00 ft				
Street Transverse Slope	$S_x =$	0.020 ft/ft				
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w =$	0.083 ft/ft				
Street Longitudinal Slope - Enter 0 for sump condition	$S_o =$	0.010 ft/ft				
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} =$	0.016				
Max. Allowable Spread for Minor & Major Storm	$T_{MAX} =$	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <th style="padding: 2px;">Minor Storm</th> <th style="padding: 2px;">Major Storm</th> </tr> <tr> <td style="padding: 2px; text-align: center;">17.0</td> <td style="padding: 2px; text-align: center;">17.0</td> </tr> </table> ft	Minor Storm	Major Storm	17.0	17.0
Minor Storm	Major Storm					
17.0	17.0					
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	$d_{MAX} =$	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <th style="padding: 2px;">Minor Storm</th> <th style="padding: 2px;">Major Storm</th> </tr> <tr> <td style="padding: 2px; text-align: center;">4.0</td> <td style="padding: 2px; text-align: center;">12.0</td> </tr> </table> inches	Minor Storm	Major Storm	4.0	12.0
Minor Storm	Major Storm					
4.0	12.0					
Allow Flow Depth at Street Crown (leave blank for no)		<input type="checkbox"/> <input checked="" type="checkbox"/> check = yes				
MINOR STORM Allowable Capacity is based on Depth Criterion						
MAJOR STORM Allowable Capacity is based on Depth Criterion						
	$Q_{allow} =$	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <th style="padding: 2px;">Minor Storm</th> <th style="padding: 2px;">Major Storm</th> </tr> <tr> <td style="padding: 2px; text-align: center;">3.4</td> <td style="padding: 2px; text-align: center;">91.2</td> </tr> </table> cfs	Minor Storm	Major Storm	3.4	91.2
Minor Storm	Major Storm					
3.4	91.2					
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak' Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'						

INLET ON A CONTINUOUS GRADE

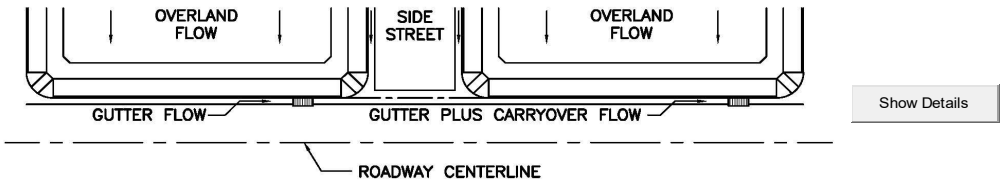
Project: COMPARK SOUTH
 Inlet ID: INLET 5-4A



Design Information (Input)	MINOR		MAJOR	
	Type of Inlet	Type = CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a _{LOCAL} = 5.0	5.0	inches	
Total Number of Units in the Inlet (Grate or Curb Opening)	No = 1	1		
Length of a Single Unit Inlet (Grate or Curb Opening)	L _o = 5.00	5.00	ft	
Width of a Unit Grate (cannot be greater than W from Q-Allow)	W _o = N/A	N/A	ft	
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C _{r-G} = N/A	N/A		
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C _{r-C} = 0.10	0.10		
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'				
Total Inlet Interception Capacity	Q = 1.00	2.22	cfs	
Total Inlet Carry-Over Flow (flow bypassing inlet)	Q _b = 0.0	0.4	cfs	
Capture Percentage = Q _a /Q _o =	C% = 100	85	%	

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
 Inlet ID: INLET 5-5



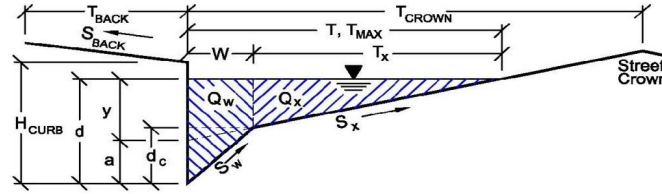
Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Minor Storm</td> <td style="padding: 2px;">Major Storm</td> </tr> <tr> <td style="text-align: center; padding: 2px;">3.3</td> <td style="text-align: center; padding: 2px;">9.0</td> </tr> </table> cfs	Minor Storm	Major Storm	3.3	9.0	<--- FILL IN THIS SECTION OR...		
Minor Storm	Major Storm								
3.3	9.0								
* If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.									
Geographic Information: (Enter data in the blue cells):									
Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Subcatchment Area = <input style="width: 50px;" type="text"/> Acres Percent Imperviousness = <input style="width: 50px;" type="text"/> % NRCS Soil Type = <input style="width: 50px;" type="text"/> A, B, C, or D	Slope (ft/ft) Length (ft) Overland Flow = <input style="width: 50px;" type="text"/> / <input style="width: 50px;" type="text"/> Channel Flow = <input style="width: 50px;" type="text"/> / <input style="width: 50px;" type="text"/>						
Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$									
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Minor Storm	Major Storm								
		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;"> </td> <td style="padding: 2px;"> </td> </tr> </table> inches							
		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">C₁ =</td> <td style="padding: 2px;"> </td> </tr> <tr> <td style="padding: 2px;">C₂ =</td> <td style="padding: 2px;"> </td> </tr> <tr> <td style="padding: 2px;">C₃ =</td> <td style="padding: 2px;"> </td> </tr> </table>	C ₁ =		C ₂ =		C ₃ =		
C ₁ =									
C ₂ =									
C ₃ =									
User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C = <input style="width: 50px;" type="text"/>									
User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C ₅ = <input style="width: 50px;" type="text"/>									
Bypass (Carry-Over) Flow from upstream Subcatchments, Q _b =		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">0.0</td> <td style="padding: 2px;">6.4</td> </tr> </table> cfs	0.0	6.4					
0.0	6.4								
Total Design Peak Flow, Q =		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px; background-color: #e0ffe0;">3.3</td> <td style="padding: 2px; background-color: #e0ffe0;">15.4</td> </tr> </table> cfs	3.3	15.4					
3.3	15.4								

<---
 FILL IN THIS SECTION
 OR...
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 SECTIONS BELOW.
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ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

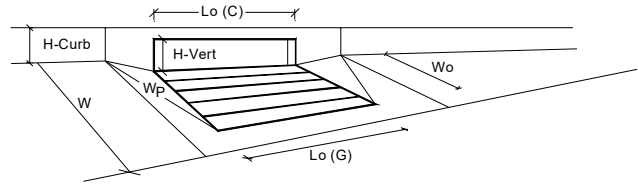
Project: **COMPARK SOUTH**
 Inlet ID: **INLET 5-5**



Gutter Geometry (Enter data in the blue cells)									
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = $ <input style="width: 50px;" type="text" value="0.0"/> ft								
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = $ <input style="width: 50px;" type="text" value="0.020"/> ft/ft								
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = $ <input style="width: 50px;" type="text" value="0.020"/>								
Height of Curb at Gutter Flow Line	$H_{CURB} = $ <input style="width: 50px;" type="text" value="4.00"/> inches								
Distance from Curb Face to Street Crown	$T_{CROWN} = $ <input style="width: 50px;" type="text" value="17.0"/> ft								
Gutter Width	$W = $ <input style="width: 50px;" type="text" value="2.00"/> ft								
Street Transverse Slope	$S_x = $ <input style="width: 50px;" type="text" value="0.020"/> ft/ft								
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = $ <input style="width: 50px;" type="text" value="0.083"/> ft/ft								
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = $ <input style="width: 50px;" type="text" value="0.000"/> ft/ft								
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = $ <input style="width: 50px;" type="text" value="0.016"/>								
Max. Allowable Spread for Minor & Major Storm	<table style="width: 100%; border: none;"> <tr> <td style="border: none;"></td> <td style="border: none; text-align: center;">Minor Storm</td> <td style="border: none; text-align: center;">Major Storm</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;">$T_{MAX} =$</td> <td style="border: 1px solid black; width: 50px; text-align: center;">17.0</td> <td style="border: 1px solid black; width: 50px; text-align: center;">17.0</td> <td style="border: none;">ft</td> </tr> </table>		Minor Storm	Major Storm		$T_{MAX} = $	17.0	17.0	ft
	Minor Storm	Major Storm							
$T_{MAX} = $	17.0	17.0	ft						
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	<table style="width: 100%; border: none;"> <tr> <td style="border: none;">$d_{MAX} =$</td> <td style="border: 1px solid black; width: 50px; text-align: center;">4.0</td> <td style="border: 1px solid black; width: 50px; text-align: center;">12.0</td> <td style="border: none;">inches</td> </tr> </table>	$d_{MAX} = $	4.0	12.0	inches				
$d_{MAX} = $	4.0	12.0	inches						
Allow Flow Depth at Street Crown (leave blank for no)	<table style="width: 100%; border: none;"> <tr> <td style="border: none;"></td> <td style="border: none; text-align: center;"><input type="checkbox"/></td> <td style="border: none; text-align: center;"><input checked="" type="checkbox"/></td> <td style="border: none;">check = yes</td> </tr> </table>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	check = yes				
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MINOR STORM Allowable Capacity is based on Depth Criterion									
MAJOR STORM Allowable Capacity is based on Depth Criterion									
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'									
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	Minor Storm	Major Storm							
	SUMP	SUMP	cfs						

INLET IN A SUMP OR SAG LOCATION

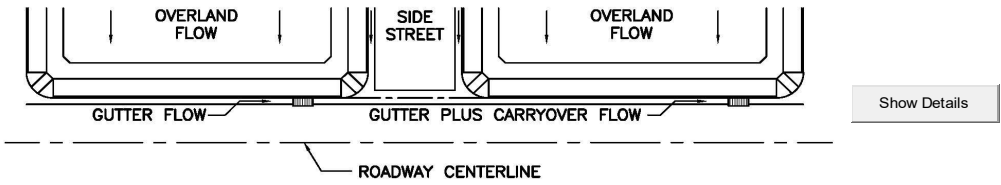
Project = **COMPARK SOUTH**
 Inlet ID = **INLET 5-5**



Design Information (Input)	MINOR		MAJOR		
	Type of Inlet	CDOT Type R Curb Opening			
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	5.00	5.00	inches	
Number of Unit Inlets (Grate or Curb Opening)	N_o =	2	2		
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.1	12.0	inches	
Grate Information		MINOR		MAJOR	
Length of a Unit Grate	$L_o (G)$ =	N/A	N/A	feet	
Width of a Unit Grate	W_o =	N/A	N/A	feet	
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A		
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	$C_r (G)$ =	N/A	N/A		
Grate Weir Coefficient (typical value 2.15 - 3.60)	$C_w (G)$ =	N/A	N/A		
Grate Orifice Coefficient (typical value 0.60 - 0.80)	$C_o (G)$ =	N/A	N/A		
Curb Opening Information		MINOR		MAJOR	
Length of a Unit Curb Opening	$L_o (C)$ =	5.00	5.00	feet	
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches	
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches	
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees	
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet	
Clogging Factor for a Single Curb Opening (typical value 0.10)	$C_r (C)$ =	0.10	0.10		
Curb Opening Weir Coefficient (typical value 2.3-3.7)	$C_w (C)$ =	3.60	3.60		
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	$C_o (C)$ =	0.67	0.67		
Total Inlet Interception Capacity (assumes clogged condition)		MINOR		MAJOR	
	Q_a =	3.4	27.5	cfs	
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK REQUIRED}$ =	3.3	15.4	cfs	

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
 Inlet ID: INLET 5-5A

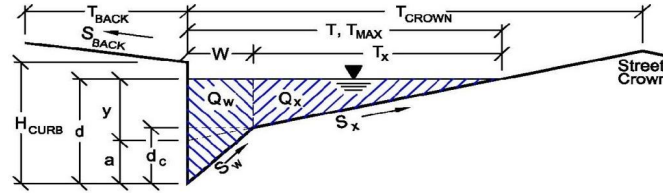


Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Minor Storm</td> <td style="padding: 2px;">Major Storm</td> </tr> <tr> <td style="text-align: center; padding: 2px;">4.2</td> <td style="text-align: center; padding: 2px;">12.1</td> </tr> <tr> <td colspan="2" style="text-align: right; padding: 2px;">cfs</td> </tr> </table>	Minor Storm	Major Storm	4.2	12.1	cfs		<--- FILL IN THIS SECTION OR...																	
Minor Storm	Major Storm																									
4.2	12.1																									
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Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Subcatchment Area = <input style="width: 50px;" type="text"/> Acres Percent Imperviousness = <input style="width: 50px;" type="text"/> % NRCS Soil Type = <input style="width: 50px;" type="text"/> A, B, C, or D	<--- FILL IN THE SECTIONS BELOW. <---																							
		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Slope (ft/ft)</td> <td style="padding: 2px;">Length (ft)</td> </tr> <tr> <td style="padding: 2px;">Overland Flow = <input style="width: 50px;" type="text"/></td> <td style="padding: 2px;">Channel Flow = <input style="width: 50px;" type="text"/></td> </tr> </table>	Slope (ft/ft)	Length (ft)	Overland Flow = <input style="width: 50px;" type="text"/>	Channel Flow = <input style="width: 50px;" type="text"/>																				
Slope (ft/ft)	Length (ft)																									
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Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Minor Storm</td> <td style="padding: 2px;">Major Storm</td> </tr> <tr> <td style="padding: 2px;">Design Storm Return Period, T_r = <input style="width: 50px;" type="text"/></td> <td style="padding: 2px;">Design Storm Return Period, T_r = <input style="width: 50px;" type="text"/></td> </tr> <tr> <td style="padding: 2px;">Return Period One-Hour Precipitation, P_1 = <input style="width: 50px;" type="text"/></td> <td style="padding: 2px;">Return Period One-Hour Precipitation, P_1 = <input style="width: 50px;" type="text"/></td> </tr> <tr> <td style="padding: 2px;">C_1 = <input style="width: 50px;" type="text"/></td> <td style="padding: 2px;">C_1 = <input style="width: 50px;" type="text"/></td> </tr> <tr> <td style="padding: 2px;">C_2 = <input style="width: 50px;" type="text"/></td> <td style="padding: 2px;">C_2 = <input style="width: 50px;" type="text"/></td> </tr> <tr> <td style="padding: 2px;">C_3 = <input style="width: 50px;" type="text"/></td> <td style="padding: 2px;">C_3 = <input style="width: 50px;" type="text"/></td> </tr> <tr> <td style="padding: 2px;">User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C = <input style="width: 50px;" type="text"/></td> <td style="padding: 2px;">User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C = <input style="width: 50px;" type="text"/></td> </tr> <tr> <td style="padding: 2px;">User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 = <input style="width: 50px;" type="text"/></td> <td style="padding: 2px;">User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 = <input style="width: 50px;" type="text"/></td> </tr> <tr> <td colspan="2" style="padding: 2px;">Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b = <input style="width: 50px;" type="text"/></td> <td style="padding: 2px;">Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b = <input style="width: 50px;" type="text"/></td> <td style="padding: 2px;">cfs</td> </tr> <tr> <td colspan="2" style="padding: 2px;">Total Design Peak Flow, Q = <input style="width: 50px;" type="text"/></td> <td style="padding: 2px;">Total Design Peak Flow, Q = <input style="width: 50px;" type="text"/></td> <td style="padding: 2px;">cfs</td> </tr> </table>	Minor Storm	Major Storm	Design Storm Return Period, T_r = <input style="width: 50px;" type="text"/>	Design Storm Return Period, T_r = <input style="width: 50px;" type="text"/>	Return Period One-Hour Precipitation, P_1 = <input style="width: 50px;" type="text"/>	Return Period One-Hour Precipitation, P_1 = <input style="width: 50px;" type="text"/>	C_1 = <input style="width: 50px;" type="text"/>	C_1 = <input style="width: 50px;" type="text"/>	C_2 = <input style="width: 50px;" type="text"/>	C_2 = <input style="width: 50px;" type="text"/>	C_3 = <input style="width: 50px;" type="text"/>	C_3 = <input style="width: 50px;" type="text"/>	User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C = <input style="width: 50px;" type="text"/>	User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C = <input style="width: 50px;" type="text"/>	User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 = <input style="width: 50px;" type="text"/>	User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 = <input style="width: 50px;" type="text"/>	Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b = <input style="width: 50px;" type="text"/>		Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b = <input style="width: 50px;" type="text"/>	cfs	Total Design Peak Flow, Q = <input style="width: 50px;" type="text"/>		Total Design Peak Flow, Q = <input style="width: 50px;" type="text"/>	cfs
Minor Storm	Major Storm																									
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ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

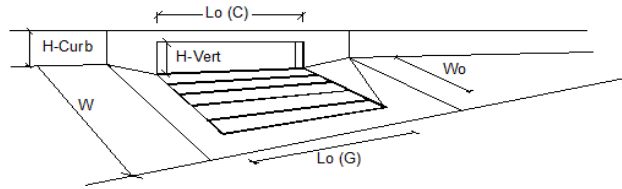
Project: **COMPARK SOUTH**
 Inlet ID: **INLET 5-5A**



Gutter Geometry (Enter data in the blue cells)							
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = 0.0$ ft						
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = 0.020$ ft/ft						
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = 0.020$						
Height of Curb at Gutter Flow Line	$H_{CURB} = 4.00$ inches						
Distance from Curb Face to Street Crown	$T_{CROWN} = 17.0$ ft						
Gutter Width	$W = 2.00$ ft						
Street Transverse Slope	$S_x = 0.020$ ft/ft						
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = 0.083$ ft/ft						
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = 0.010$ ft/ft						
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = 0.016$						
Max. Allowable Spread for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px;">Minor Storm</th> <th style="padding: 2px;">Major Storm</th> <th style="padding: 2px;"></th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 2px;">$T_{MAX} = 17.0$</td> <td style="text-align: center; padding: 2px;">17.0</td> <td style="text-align: center; padding: 2px;">ft</td> </tr> </tbody> </table>	Minor Storm	Major Storm		$T_{MAX} = 17.0$	17.0	ft
Minor Storm	Major Storm						
$T_{MAX} = 17.0$	17.0	ft					
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px;">Minor Storm</th> <th style="padding: 2px;">Major Storm</th> <th style="padding: 2px;"></th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 2px;">$d_{MAX} = 4.3$</td> <td style="text-align: center; padding: 2px;">12.0</td> <td style="text-align: center; padding: 2px;">inches</td> </tr> </tbody> </table>	Minor Storm	Major Storm		$d_{MAX} = 4.3$	12.0	inches
Minor Storm	Major Storm						
$d_{MAX} = 4.3$	12.0	inches					
Allow Flow Depth at Street Crown (leave blank for no)	<input type="checkbox"/> <input checked="" type="checkbox"/> check = yes						
MINOR STORM Allowable Capacity is based on Depth Criterion							
MAJOR STORM Allowable Capacity is based on Depth Criterion							
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="padding: 2px;">Minor Storm</th> <th style="padding: 2px;">Major Storm</th> <th style="padding: 2px;"></th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 2px;">$Q_{allow} = 4.4$</td> <td style="text-align: center; padding: 2px;">91.2</td> <td style="text-align: center; padding: 2px;">cfs</td> </tr> </tbody> </table>	Minor Storm	Major Storm		$Q_{allow} = 4.4$	91.2	cfs
Minor Storm	Major Storm						
$Q_{allow} = 4.4$	91.2	cfs					
Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'							

INLET ON A CONTINUOUS GRADE

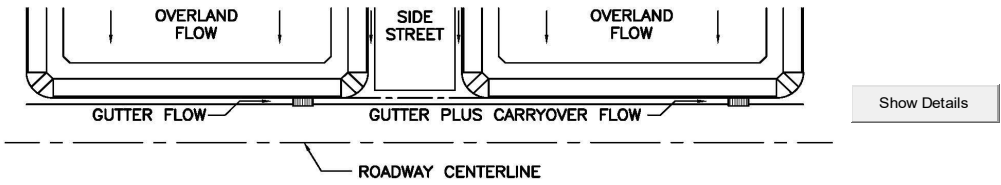
Project: COMPARK SOUTH
 Inlet ID: INLET 5-5A



Design Information (Input)	MINOR		MAJOR		
	MINOR	MAJOR	MINOR	MAJOR	
Type of Inlet	CDOT Type R Curb Opening				
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	3.0	3.0			inches
Total Number of Units in the Inlet (Grate or Curb Opening)	3	3			
Length of a Single Unit Inlet (Grate or Curb Opening)	5.00	5.00			ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	N/A	N/A			ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A			
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10			
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'					
Total Inlet Interception Capacity	4.20	10.62			cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	0.0	1.7			cfs
Capture Percentage = Q_a/Q_o =	100	86			%

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
Inlet ID: INLET 5-5B

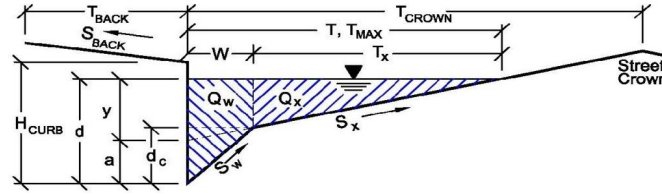


<p>Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):</p> <p>*Q_{known} = <table border="1" style="display: inline-table;"><tr><td>Minor Storm</td><td>Major Storm</td></tr><tr><td style="text-align: center;">3.4</td><td style="text-align: center;">9.3</td></tr></table> cfs</p> <p>* If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.</p>		Minor Storm	Major Storm	3.4	9.3	<p><--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---</p>				
Minor Storm	Major Storm									
3.4	9.3									
<p>Geographic Information: (Enter data in the blue cells):</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>Site Type:</p> <p><input type="radio"/> Site is Urban</p> <p><input type="radio"/> Site is Non-Urban</p> </div> <div style="width: 30%;"> <p>Flows Developed For:</p> <p><input type="radio"/> Street Inlets</p> <p><input type="radio"/> Area Inlets in a Median</p> </div> <div style="width: 30%;"> <p>Subcatchment Area = <input type="text"/> Acres</p> <p>Percent Imperviousness = <input type="text"/> %</p> <p>NRCS Soil Type = <input type="text"/> A, B, C, or D</p> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%;"> <p>Slope (ft/ft) Length (ft)</p> <p>Overland Flow = <input type="text"/> <input type="text"/></p> <p>Channel Flow = <input type="text"/> <input type="text"/></p> </div> </div>										
<p>Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$</p> <p>Design Storm Return Period, T_r = <input type="text"/> years</p> <p>Return Period One-Hour Precipitation, P₁ = <input type="text"/> inches</p> <p>C₁ = <input type="text"/></p> <p>C₂ = <input type="text"/></p> <p>C₃ = <input type="text"/></p> <p>User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C = <input type="text"/></p> <p>User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C₅ = <input type="text"/></p> <p>Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b = <table border="1" style="display: inline-table;"><tr><td>Minor Storm</td><td>Major Storm</td></tr><tr><td style="text-align: center;">0.0</td><td style="text-align: center;">0.0</td></tr></table> cfs</p> <p style="text-align: right;">Total Design Peak Flow, Q = <table border="1" style="display: inline-table;"><tr><td>Minor Storm</td><td>Major Storm</td></tr><tr><td style="text-align: center;">3.4</td><td style="text-align: center;">9.3</td></tr></table> cfs</p>		Minor Storm	Major Storm	0.0	0.0	Minor Storm	Major Storm	3.4	9.3	
Minor Storm	Major Storm									
0.0	0.0									
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3.4	9.3									

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

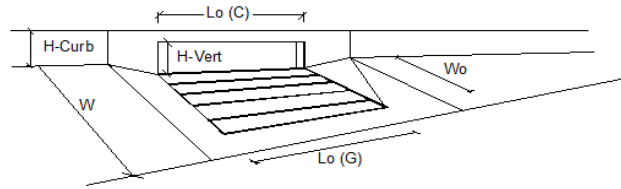
Project: **COMPARK SOUTH**
 Inlet ID: **INLET 5-5B**



Gutter Geometry (Enter data in the blue cells)													
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = 0.0$ ft												
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = 0.020$ ft/ft												
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = 0.020$												
Height of Curb at Gutter Flow Line	$H_{CURB} = 4.01$ inches												
Distance from Curb Face to Street Crown	$T_{CROWN} = 17.0$ ft												
Gutter Width	$W = 2.00$ ft												
Street Transverse Slope	$S_x = 0.020$ ft/ft												
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = 0.083$ ft/ft												
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = 0.010$ ft/ft												
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = 0.016$												
Max. Allowable Spread for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Minor Storm</th> <th>Major Storm</th> <th></th> </tr> </thead> <tbody> <tr> <td>$T_{MAX} =$</td> <td>17.0</td> <td>17.0</td> <td>ft</td> </tr> <tr> <td>$d_{MAX} =$</td> <td>4.0</td> <td>12.0</td> <td>inches</td> </tr> </tbody> </table>		Minor Storm	Major Storm		$T_{MAX} =$	17.0	17.0	ft	$d_{MAX} =$	4.0	12.0	inches
	Minor Storm	Major Storm											
$T_{MAX} =$	17.0	17.0	ft										
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Max. Allowable Depth at Gutter Flowline for Minor & Major Storm													
Allow Flow Depth at Street Crown (leave blank for no)	<input type="checkbox"/> <input checked="" type="checkbox"/> check = yes												
MINOR STORM Allowable Capacity is based on Depth Criterion													
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	Minor Storm	Major Storm											
	3.4	91.2	cfs										

INLET ON A CONTINUOUS GRADE

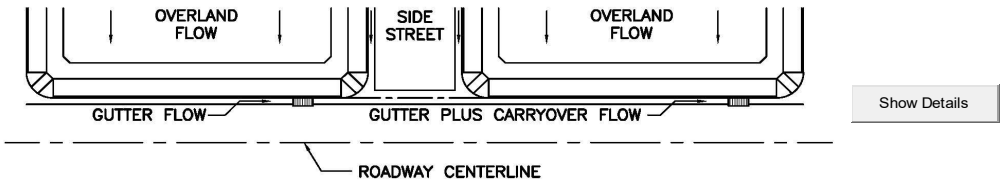
Project: COMPARK SOUTH
 Inlet ID: INLET 5-5B



Design Information (Input)	MINOR		MAJOR	
	Type of Inlet	Type = CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	$a_{LOCAL} = 5.0$	5.0	inches	
Total Number of Units in the Inlet (Grate or Curb Opening)	$N_o = 2$	2		
Length of a Single Unit Inlet (Grate or Curb Opening)	$L_o = 5.00$	5.00	ft	
Width of a Unit Grate (cannot be greater than W from Q-Allow)	$W_o = N/A$	N/A	ft	
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	$C_r-G = N/A$	N/A		
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	$C_r-C = 0.10$	0.10		
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'				
Total Inlet Interception Capacity	$Q = 3.40$	7.54	cfs	
Total Inlet Carry-Over Flow (flow bypassing inlet)	$Q_b = 0.0$	1.8	cfs	
Capture Percentage = $Q_a/Q_o =$	$C\% = 100$	81	%	

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
 Inlet ID: INLET 6-4



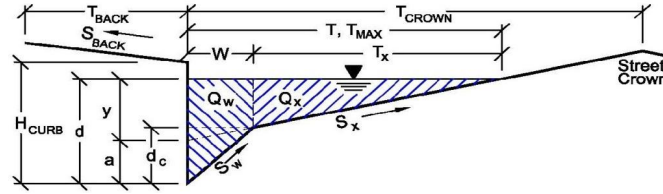
<p>Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):</p>		<table border="1" style="display: inline-table;"> <tr> <td style="width: 50px;">Minor Storm</td> <td style="width: 50px;">Major Storm</td> </tr> <tr> <td style="text-align: center;">1.1</td> <td style="text-align: center;">3.5</td> </tr> </table> cfs	Minor Storm	Major Storm	1.1	3.5	<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---											
Minor Storm	Major Storm																	
1.1	3.5																	
<p>* If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.</p>																		
<p>Geographic Information: (Enter data in the blue cells):</p>																		
Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Subcatchment Area = <input type="text"/> Acres Percent Imperviousness = <input type="text"/> % NRCS Soil Type = <input type="text"/> A, B, C, or D																
		<table border="1" style="display: inline-table;"> <tr> <td style="width: 50px;">Slope (ft/ft)</td> <td style="width: 50px;">Length (ft)</td> </tr> <tr> <td style="text-align: center;">Overland Flow =</td> <td style="text-align: center;">Channel Flow =</td> </tr> </table>	Slope (ft/ft)	Length (ft)	Overland Flow =	Channel Flow =												
Slope (ft/ft)	Length (ft)																	
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	<table border="1" style="display: inline-table;"> <tr> <td style="width: 50px;">Design Storm Return Period, T_r =</td> <td style="width: 50px;">Minor Storm</td> <td style="width: 50px;">Major Storm</td> <td style="width: 50px;">years</td> </tr> <tr> <td style="text-align: center;">Return Period One-Hour Precipitation, P₁ =</td> <td style="text-align: center;">C₁ =</td> <td style="text-align: center;">C₂ =</td> <td style="text-align: center;">C₃ =</td> </tr> <tr> <td style="text-align: center;">User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =</td> <td style="text-align: center;">User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C₅ =</td> <td style="text-align: center;">Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b =</td> <td style="text-align: center;">Total Design Peak Flow, Q =</td> </tr> <tr> <td></td> <td style="text-align: center;">0.0</td> <td style="text-align: center;">0.0</td> <td style="text-align: center;">1.1 3.5</td> </tr> </table>	Design Storm Return Period, T _r =	Minor Storm	Major Storm	years	Return Period One-Hour Precipitation, P ₁ =	C ₁ =	C ₂ =	C ₃ =	User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =	User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C ₅ =	Bypass (Carry-Over) Flow from upstream Subcatchments, Q _b =	Total Design Peak Flow, Q =		0.0	0.0	1.1 3.5	
Design Storm Return Period, T _r =	Minor Storm	Major Storm	years															
Return Period One-Hour Precipitation, P ₁ =	C ₁ =	C ₂ =	C ₃ =															
User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =	User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C ₅ =	Bypass (Carry-Over) Flow from upstream Subcatchments, Q _b =	Total Design Peak Flow, Q =															
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Minor Storm	Major Storm																	
0.0	0.0																	

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: **COMPARK SOUTH**

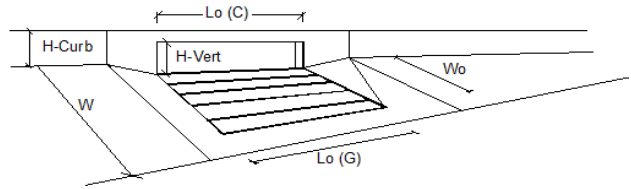
Inlet ID: **INLET 6-4**



Gutter Geometry (Enter data in the blue cells)							
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = 0.0$ ft						
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = 0.020$ ft/ft						
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = 0.020$						
Height of Curb at Gutter Flow Line	$H_{CURB} = 4.00$ inches						
Distance from Curb Face to Street Crown	$T_{CROWN} = 17.0$ ft						
Gutter Width	$W = 2.00$ ft						
Street Transverse Slope	$S_x = 0.020$ ft/ft						
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = 0.083$ ft/ft						
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = 0.006$ ft/ft						
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = 0.016$						
Max. Allowable Spread for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Minor Storm</th> <th style="text-align: center;">Major Storm</th> <th></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">$T_{MAX} = 17.0$</td> <td style="text-align: center;">$T_{MAX} = 17.0$</td> <td style="text-align: right;">ft</td> </tr> </tbody> </table>	Minor Storm	Major Storm		$T_{MAX} = 17.0$	$T_{MAX} = 17.0$	ft
Minor Storm	Major Storm						
$T_{MAX} = 17.0$	$T_{MAX} = 17.0$	ft					
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Minor Storm</th> <th style="text-align: center;">Major Storm</th> <th></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">$d_{MAX} = 4.0$</td> <td style="text-align: center;">$d_{MAX} = 12.0$</td> <td style="text-align: right;">inches</td> </tr> </tbody> </table>	Minor Storm	Major Storm		$d_{MAX} = 4.0$	$d_{MAX} = 12.0$	inches
Minor Storm	Major Storm						
$d_{MAX} = 4.0$	$d_{MAX} = 12.0$	inches					
Allow Flow Depth at Street Crown (leave blank for no)	<input type="checkbox"/> <input checked="" type="checkbox"/> check = yes						
MINOR STORM Allowable Capacity is based on Depth Criterion							
MAJOR STORM Allowable Capacity is based on Depth Criterion							
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'							
Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'							
	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Minor Storm</th> <th style="text-align: center;">Major Storm</th> <th></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">$Q_{allow} = 2.6$</td> <td style="text-align: center;">$Q_{allow} = 70.6$</td> <td style="text-align: right;">cfs</td> </tr> </tbody> </table>	Minor Storm	Major Storm		$Q_{allow} = 2.6$	$Q_{allow} = 70.6$	cfs
Minor Storm	Major Storm						
$Q_{allow} = 2.6$	$Q_{allow} = 70.6$	cfs					

INLET ON A CONTINUOUS GRADE

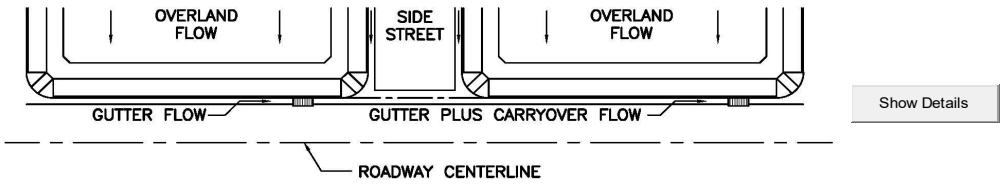
Project: COMPARK SOUTH
 Inlet ID: INLET 6-4



Design Information (Input)	MINOR	MAJOR	
Type of Inlet	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	3.0	3.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	2	2	
Length of a Single Unit Inlet (Grate or Curb Opening)	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W from Q-Allow)	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	0.10	0.10	
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'			
Total Inlet Interception Capacity	1.10	3.50	cfs
Total Inlet Carry-Over Flow (flow bypassing inlet)	0.0	0.0	cfs
Capture Percentage = Q_a/Q_o =	100	100	%

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
 Inlet ID: INLET 6-5

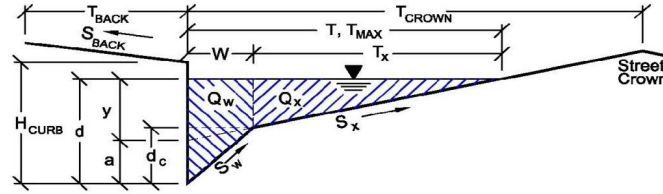


Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		Minor Storm Major Storm * Q_{known} = <input type="text" value="3.9"/> <input type="text" value="17.6"/> cfs	<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---
Geographic Information: (Enter data in the blue cells):		Subcatchment Area = <input type="text"/> Acres Percent Imperviousness = <input type="text"/> % NRCS Soil Type = <input type="text"/> A, B, C, or D	
Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Slope (ft/ft) Length (ft) Overland Flow = <input type="text"/> <input type="text"/> Channel Flow = <input type="text"/> <input type="text"/>	
Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$		Minor Storm Major Storm	
		Design Storm Return Period, T_r = <input type="text"/> years	
		Return Period One-Hour Precipitation, P_1 = <input type="text"/> inches	
		C_1 = <input type="text"/>	
		C_2 = <input type="text"/>	
		C_3 = <input type="text"/>	
User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C = <input type="text"/>		C = <input type="text"/>	
User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 = <input type="text"/>		C_5 = <input type="text"/>	
		Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b = <input type="text" value="0.0"/> <input type="text" value="0.9"/> cfs	
		Total Design Peak Flow, Q = <input type="text" value="3.9"/> <input type="text" value="18.5"/> cfs	

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

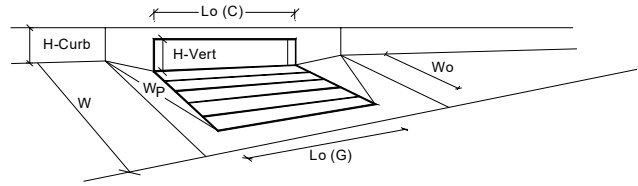
Project: **COMPARK SOUTH**
 Inlet ID: **INLET 6-5**



Gutter Geometry (Enter data in the blue cells)							
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = 0.0$ ft						
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = 0.020$ ft/ft						
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = 0.020$						
Height of Curb at Gutter Flow Line	$H_{CURB} = 4.00$ inches						
Distance from Curb Face to Street Crown	$T_{CROWN} = 17.0$ ft						
Gutter Width	$W = 2.00$ ft						
Street Transverse Slope	$S_x = 0.020$ ft/ft						
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = 0.083$ ft/ft						
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = 0.000$ ft/ft						
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = 0.013$						
Max. Allowable Spread for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center;">Minor Storm</td> <td style="text-align: center;">Major Storm</td> <td></td> </tr> <tr> <td>$T_{MAX} = 17.0$</td> <td>$T_{MAX} = 17.0$</td> <td>ft</td> </tr> </table>	Minor Storm	Major Storm		$T_{MAX} = 17.0$	$T_{MAX} = 17.0$	ft
Minor Storm	Major Storm						
$T_{MAX} = 17.0$	$T_{MAX} = 17.0$	ft					
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center;">Minor Storm</td> <td style="text-align: center;">Major Storm</td> <td></td> </tr> <tr> <td>$d_{MAX} = 4.0$</td> <td>$d_{MAX} = 12.0$</td> <td>inches</td> </tr> </table>	Minor Storm	Major Storm		$d_{MAX} = 4.0$	$d_{MAX} = 12.0$	inches
Minor Storm	Major Storm						
$d_{MAX} = 4.0$	$d_{MAX} = 12.0$	inches					
Allow Flow Depth at Street Crown (leave blank for no)	<input type="checkbox"/> <input checked="" type="checkbox"/> check = yes						
MINOR STORM Allowable Capacity is based on Depth Criterion							
MAJOR STORM Allowable Capacity is based on Depth Criterion							
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'							
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$Q_{allow} =$	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="text-align: center;">Minor Storm</td> <td style="text-align: center;">Major Storm</td> <td></td> </tr> <tr> <td style="text-align: center;">SUMP</td> <td style="text-align: center;">SUMP</td> <td>cfs</td> </tr> </table>	Minor Storm	Major Storm		SUMP	SUMP	cfs
Minor Storm	Major Storm						
SUMP	SUMP	cfs					

INLET IN A SUMP OR SAG LOCATION

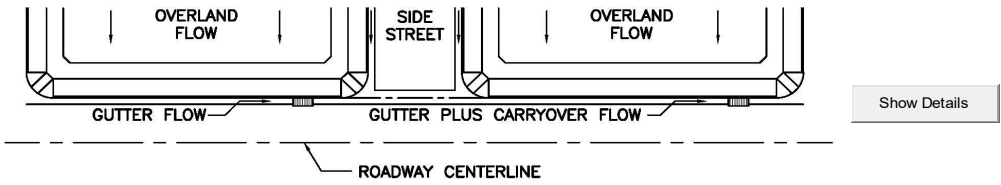
Project = **COMPARK SOUTH**
 Inlet ID = **INLET 6-5**



Design Information (Input)	MINOR		MAJOR		
	Type of Inlet	CDOT Type R Curb Opening			
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	a_{local} =	5.00	5.00	inches	
Number of Unit Inlets (Grate or Curb Opening)	N_o =	3	3		
Water Depth at Flowline (outside of local depression)	Ponding Depth =	4.0	12.0	inches	
Grate Information		MINOR		MAJOR	
Length of a Unit Grate	$L_o (G)$ =	N/A	N/A	feet	
Width of a Unit Grate	W_o =	N/A	N/A	feet	
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A		
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	$C_r (G)$ =	N/A	N/A		
Grate Weir Coefficient (typical value 2.15 - 3.60)	$C_w (G)$ =	N/A	N/A		
Grate Orifice Coefficient (typical value 0.60 - 0.80)	$C_o (G)$ =	N/A	N/A		
Curb Opening Information		MINOR		MAJOR	
Length of a Unit Curb Opening	$L_o (C)$ =	5.00	5.00	feet	
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches	
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches	
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees	
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet	
Clogging Factor for a Single Curb Opening (typical value 0.10)	$C_r (C)$ =	0.10	0.10		
Curb Opening Weir Coefficient (typical value 2.3-3.7)	$C_w (C)$ =	3.60	3.60		
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	$C_o (C)$ =	0.67	0.67		
Total Inlet Interception Capacity (assumes clogged condition)		MINOR		MAJOR	
	Q_a =	3.9	42.1	cfs	
Inlet Capacity IS GOOD for Minor and Major Storms (>Q PEAK)	$Q_{PEAK REQUIRED}$ =	3.9	18.5	cfs	

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
 Inlet ID: INLET 6-5A

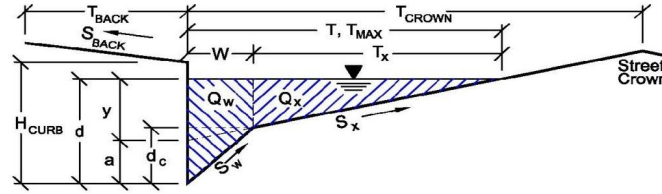


Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Minor Storm</td> <td style="padding: 2px;">Major Storm</td> </tr> <tr> <td style="text-align: center; padding: 2px;">2.6</td> <td style="text-align: center; padding: 2px;">6.7</td> </tr> </table> cfs	Minor Storm	Major Storm	2.6	6.7	<--- FILL IN THIS SECTION OR...								
Minor Storm	Major Storm														
2.6	6.7														
* If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.															
Geographic Information: (Enter data in the blue cells):															
Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Subcatchment Area = <input style="width: 50px;" type="text"/> Acres Percent Imperviousness = <input style="width: 50px;" type="text"/> % NRCS Soil Type = <input style="width: 50px;" type="text"/> A, B, C, or D	Slope (ft/ft) Length (ft) Overland Flow = <input style="width: 50px;" type="text"/> / <input style="width: 50px;" type="text"/> Channel Flow = <input style="width: 50px;" type="text"/> / <input style="width: 50px;" type="text"/>												
Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$															
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Minor Storm	Major Storm														
		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Return Period One-Hour Precipitation, P_1 =</td> <td style="padding: 2px;"> </td> </tr> <tr> <td style="padding: 2px;">C_1 =</td> <td style="padding: 2px;"> </td> </tr> <tr> <td style="padding: 2px;">C_2 =</td> <td style="padding: 2px;"> </td> </tr> <tr> <td style="padding: 2px;">C_3 =</td> <td style="padding: 2px;"> </td> </tr> <tr> <td style="padding: 2px;">User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =</td> <td style="padding: 2px;"> </td> </tr> <tr> <td style="padding: 2px;">User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 =</td> <td style="padding: 2px;"> </td> </tr> </table> inches	Return Period One-Hour Precipitation, P_1 =		C_1 =		C_2 =		C_3 =		User-Defined Storm Runoff Coefficient (leave this blank to accept a calculated value), C =		User-Defined 5-yr. Runoff Coefficient (leave this blank to accept a calculated value), C_5 =		
Return Period One-Hour Precipitation, P_1 =															
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		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b =</td> <td style="padding: 2px;">0.0</td> <td style="padding: 2px;">0.0</td> </tr> </table> cfs	Bypass (Carry-Over) Flow from upstream Subcatchments, Q_b =	0.0	0.0										
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		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Total Design Peak Flow, Q =</td> <td style="padding: 2px;">2.6</td> <td style="padding: 2px;">6.7</td> </tr> </table> cfs	Total Design Peak Flow, Q =	2.6	6.7	FILL IN THE SECTIONS BELOW. <---									
Total Design Peak Flow, Q =	2.6	6.7													

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

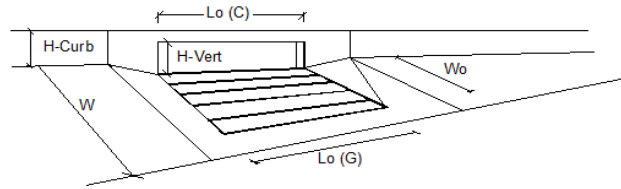
Project: **COMPARK SOUTH**
 Inlet ID: **INLET 6-5A**



Gutter Geometry (Enter data in the blue cells)													
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = 0.0$ ft												
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = 0.020$ ft/ft												
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = 0.020$												
Height of Curb at Gutter Flow Line	$H_{CURB} = 4.00$ inches												
Distance from Curb Face to Street Crown	$T_{CROWN} = 17.0$ ft												
Gutter Width	$W = 2.00$ ft												
Street Transverse Slope	$S_x = 0.020$ ft/ft												
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = 0.083$ ft/ft												
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = 0.038$ ft/ft												
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = 0.016$												
Max. Allowable Spread for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Minor Storm</th> <th>Major Storm</th> <th></th> </tr> </thead> <tbody> <tr> <td>$T_{MAX} =$</td> <td>17.0</td> <td>17.0</td> <td>ft</td> </tr> <tr> <td>$d_{MAX} =$</td> <td>4.0</td> <td>12.0</td> <td>inches</td> </tr> </tbody> </table>		Minor Storm	Major Storm		$T_{MAX} =$	17.0	17.0	ft	$d_{MAX} =$	4.0	12.0	inches
	Minor Storm	Major Storm											
$T_{MAX} =$	17.0	17.0	ft										
$d_{MAX} =$	4.0	12.0	inches										
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm													
Allow Flow Depth at Street Crown (leave blank for no)	<input type="checkbox"/> <input checked="" type="checkbox"/> check = yes												
MINOR STORM Allowable Capacity is based on Depth Criterion													
MAJOR STORM Allowable Capacity is based on Depth Criterion													
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak' Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Minor Storm</th> <th>Major Storm</th> <th></th> </tr> </thead> <tbody> <tr> <td>$Q_{allow} =$</td> <td>6.6</td> <td>88.7</td> <td>cfs</td> </tr> </tbody> </table>		Minor Storm	Major Storm		$Q_{allow} =$	6.6	88.7	cfs				
	Minor Storm	Major Storm											
$Q_{allow} =$	6.6	88.7	cfs										

INLET ON A CONTINUOUS GRADE

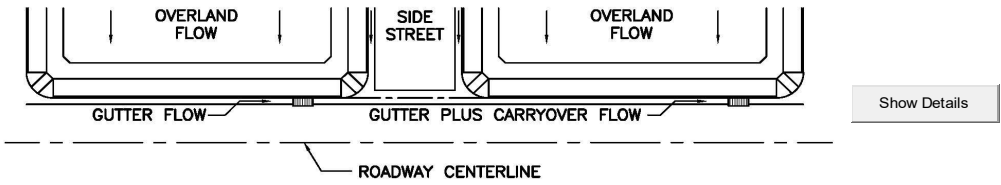
Project: COMPARK SOUTH
 Inlet ID: INLET 6-5A



Design Information (Input)	MINOR		MAJOR	
	Type of Inlet	Type = CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	$a_{LOCAL} = 5.0$	5.0	inches	
Total Number of Units in the Inlet (Grate or Curb Opening)	$N_o = 2$	2		
Length of a Single Unit Inlet (Grate or Curb Opening)	$L_o = 5.00$	5.00	ft	
Width of a Unit Grate (cannot be greater than W from Q-Allow)	$W_o = N/A$	N/A	ft	
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	$C_r-G = N/A$	N/A		
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	$C_r-C = 0.10$	0.10		
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'				
Total Inlet Interception Capacity	$Q = 2.60$	6.24	cfs	
Total Inlet Carry-Over Flow (flow bypassing inlet)	$Q_b = 0.0$	0.5	cfs	
Capture Percentage = $Q_d/Q_o =$	$C\% = 100$	93	%	

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

Project: COMPARK SOUTH
 Inlet ID: INLET 6-5B

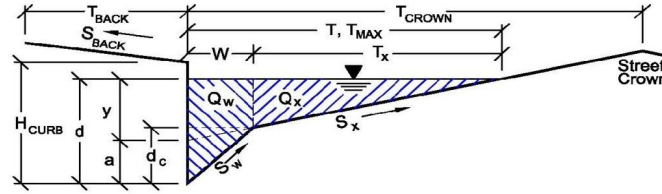


Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Minor Storm</td> <td style="padding: 2px;">Major Storm</td> </tr> <tr> <td style="text-align: center; padding: 2px;">2.0</td> <td style="text-align: center; padding: 2px;">5.4</td> </tr> </table> cfs	Minor Storm	Major Storm	2.0	5.4	<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---																								
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Geographic Information: (Enter data in the blue cells):																															
Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Subcatchment Area = <input type="text"/> Acres Percent Imperviousness = <input type="text"/> % NRCS Soil Type = <input type="text"/> A, B, C, or D																													
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Slope (ft/ft)	Length (ft)																														
Overland Flow = <input type="text"/>	Channel Flow = <input type="text"/>																														
Rainfall Information: Intensity I (inch/hr) = $C_1 * P_1 / (C_2 + T_c)^{C_3}$																															
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		Total Design Peak Flow, Q = <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">2.0</td> <td style="padding: 2px;">5.4</td> </tr> </table> cfs	2.0	5.4																											
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ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

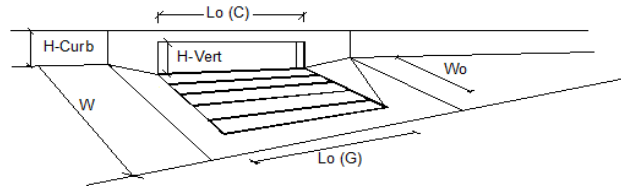
Project: **COMPARK SOUTH**
 Inlet ID: **INLET 6-5B**



Gutter Geometry (Enter data in the blue cells)													
Maximum Allowable Width for Spread Behind Curb	$T_{BACK} = 0.0$ ft												
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	$S_{BACK} = 0.020$ ft/ft												
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	$n_{BACK} = 0.020$												
Height of Curb at Gutter Flow Line	$H_{CURB} = 4.00$ inches												
Distance from Curb Face to Street Crown	$T_{CROWN} = 17.0$ ft												
Gutter Width	$W = 2.00$ ft												
Street Transverse Slope	$S_x = 0.020$ ft/ft												
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	$S_w = 0.083$ ft/ft												
Street Longitudinal Slope - Enter 0 for sump condition	$S_o = 0.038$ ft/ft												
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	$n_{STREET} = 0.016$												
Max. Allowable Spread for Minor & Major Storm	<table border="1" style="display: inline-table; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Minor Storm</th> <th>Major Storm</th> <th></th> </tr> </thead> <tbody> <tr> <td>$T_{MAX} =$</td> <td>17.0</td> <td>17.0</td> <td>ft</td> </tr> <tr> <td>$d_{MAX} =$</td> <td>4.0</td> <td>12.0</td> <td>inches</td> </tr> </tbody> </table>		Minor Storm	Major Storm		$T_{MAX} =$	17.0	17.0	ft	$d_{MAX} =$	4.0	12.0	inches
	Minor Storm	Major Storm											
$T_{MAX} =$	17.0	17.0	ft										
$d_{MAX} =$	4.0	12.0	inches										
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm													
Allow Flow Depth at Street Crown (leave blank for no)	<input type="checkbox"/> <input checked="" type="checkbox"/> check = yes												
MINOR STORM Allowable Capacity is based on Depth Criterion													
MAJOR STORM Allowable Capacity is based on Depth Criterion													
Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'													
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	Minor Storm	Major Storm											
$Q_{allow} =$	6.6	88.7	cfs										

INLET ON A CONTINUOUS GRADE

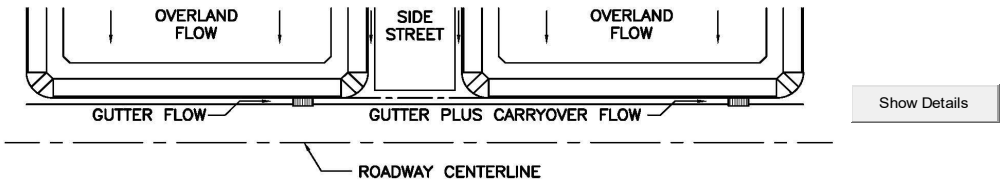
Project: COMPARK SOUTH
 Inlet ID: INLET 6-5B



Design Information (Input)	MINOR		MAJOR	
	Type of Inlet	Type = CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from 'Q-Allow')	$a_{LOCAL} = 5.0$	5.0	inches	
Total Number of Units in the Inlet (Grate or Curb Opening)	$N_o = 2$	2		
Length of a Single Unit Inlet (Grate or Curb Opening)	$L_o = 5.00$	5.00	ft	
Width of a Unit Grate (cannot be greater than W from Q-Allow)	$W_o = N/A$	N/A	ft	
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	$C_r-G = N/A$	N/A		
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	$C_r-C = 0.10$	0.10		
Street Hydraulics: OK - Q < maximum allowable from sheet 'Q-Allow'				
Total Inlet Interception Capacity	$Q = 2.00$	5.30	cfs	
Total Inlet Carry-Over Flow (flow bypassing inlet)	$Q_b = 0.0$	0.1	cfs	
Capture Percentage = $Q_a/Q_o =$	$C\% = 100$	98	%	

**DESIGN PEAK FLOW FOR ONE-HALF OF STREET
OR GRASS-LINED CHANNEL BY THE RATIONAL METHOD**

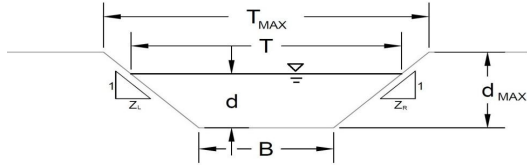
Project: COMPARK SOUTH
Inlet ID: INLET 7-5



Design Flow: ONLY if already determined through other methods: (local peak flow for 1/2 of street OR grass-lined channel):		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Minor Storm</td> <td style="padding: 2px;">Major Storm</td> </tr> <tr> <td style="text-align: center; padding: 2px;">0.2</td> <td style="text-align: center; padding: 2px;">10.2</td> </tr> </table> cfs	Minor Storm	Major Storm	0.2	10.2	<--- FILL IN THIS SECTION OR... FILL IN THE SECTIONS BELOW. <---												
Minor Storm	Major Storm																		
0.2	10.2																		
* If you enter values in Row 14, skip the rest of this sheet and proceed to sheet Q-Allow or Area Inlet.																			
Geographic Information: (Enter data in the blue cells):																			
Site Type: <input type="radio"/> Site is Urban <input type="radio"/> Site is Non-Urban	Flows Developed For: <input type="radio"/> Street Inlets <input type="radio"/> Area Inlets in a Median	Subcatchment Area = <input style="width: 50px;" type="text"/> Acres Percent Imperviousness = <input style="width: 50px;" type="text"/> % NRCS Soil Type = <input style="width: 50px;" type="text"/> A, B, C, or D																	
		<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Slope (ft/ft)</td> <td style="padding: 2px;">Length (ft)</td> </tr> <tr> <td style="padding: 2px;">Overland Flow = <input style="width: 50px;" type="text"/></td> <td style="padding: 2px;">Channel Flow = <input style="width: 50px;" type="text"/></td> </tr> </table>	Slope (ft/ft)	Length (ft)	Overland Flow = <input style="width: 50px;" type="text"/>	Channel Flow = <input style="width: 50px;" type="text"/>													
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0.0	0.0																		
		Total Design Peak Flow, Q = <table border="1" style="display: inline-table; border-collapse: collapse;"><tr><td style="padding: 2px;">0.2</td><td style="padding: 2px;">10.2</td></tr></table> cfs	0.2	10.2															
0.2	10.2																		

AREA INLET IN A TRAPEZOIDAL GRASS-LINED CHANNEL

COMPARK SOUTH
INLET 7-5



Grass Type	Limiting Manning's n
A	0.06
B	0.04
C	0.033
D	0.03
E	0.024

Analysis of Trapezoidal Grass-Lined Channel Using SCS Method

NRCS Vegetal Retardance (A, B, C, D, or E)
Manning's n (Leave cell D16 blank to manually enter an n value)
Channel Invert Slope
Bottom Width
Left Side Slope
Right Side Slope

A, B, C, D or E
n = 0.030
S₀ = 0.0100 ft/ft
B = 2.00 ft
Z1 = 5.00 ft/ft
Z2 = 5.00 ft/ft

Check one of the following soil types:

Soil Type:	Max. Velocity (V _{MAX})	Max Froude No. (F _{MAX})
Sandy	5.0 fps	0.50
Non-Sandy	7.0 fps	0.80

Choose One:
 Sandy
 Non-Sandy

Max. Allowable Top Width of Channel for Minor & Major Storm
Max. Allowable Water Depth in Channel for Minor & Major Storm

	Minor Storm	Major Storm	
T _{MAX} =	12.00	12.00	feet
d _{MAX} =	1.00	1.00	feet

Allowable Channel Capacity Based On Channel Geometry

MINOR STORM Allowable Capacity is based on Depth Criterion
MAJOR STORM Allowable Capacity is based on Depth Criterion

	Minor Storm	Major Storm	
Q _{allow} =	24.01	24.01	cfs
d _{allow} =	1.00	1.00	ft

Water Depth in Channel Based On Design Peak Flow

Design Peak Flow
Water Depth

Q _p =	0.20	10.20	cfs
d =	0.09	0.68	feet

Minor storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'
Major storm max. allowable capacity GOOD - greater than flow given on sheet 'Q-Peak'

AREA INLET IN A TRAPEZOIDAL GRASS-LINED CHANNEL

COMPARK SOUTH
INLET 7-5

Inlet Design Information (Input)

Type of Inlet

Inlet Type = CDOT Type C

Angle of Inclined Gate (must be ≤ 30 degrees)

$\theta =$ 0.00 degrees

Width of Gate

$W =$ 3.00 feet

Length of Gate

$L =$ 3.00 feet

Open Area Ratio

$A_{RATIO} =$ 0.70

Height of Inclined Gate

$H_B =$ 0.00 feet

Clogging Factor

$C_f =$ 0.50

Grate Discharge Coefficient

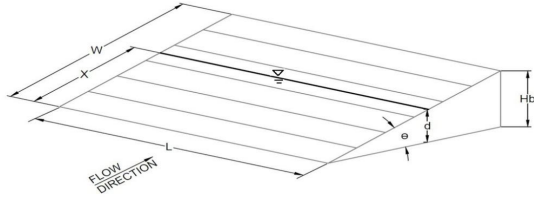
$C_d =$ 0.96

Orifice Coefficient

$C_o =$ 0.64

Weir Coefficient

$C_w =$ 2.05



Water Depth at Inlet (for depressed inlets, 1 foot is added for depression)

	MINOR	MAJOR
$d =$	0.09	0.68

Total Inlet Interception Capacity (assumes clogged condition)

	MINOR	MAJOR	
$Q_a =$	0.51	10.44	cfs

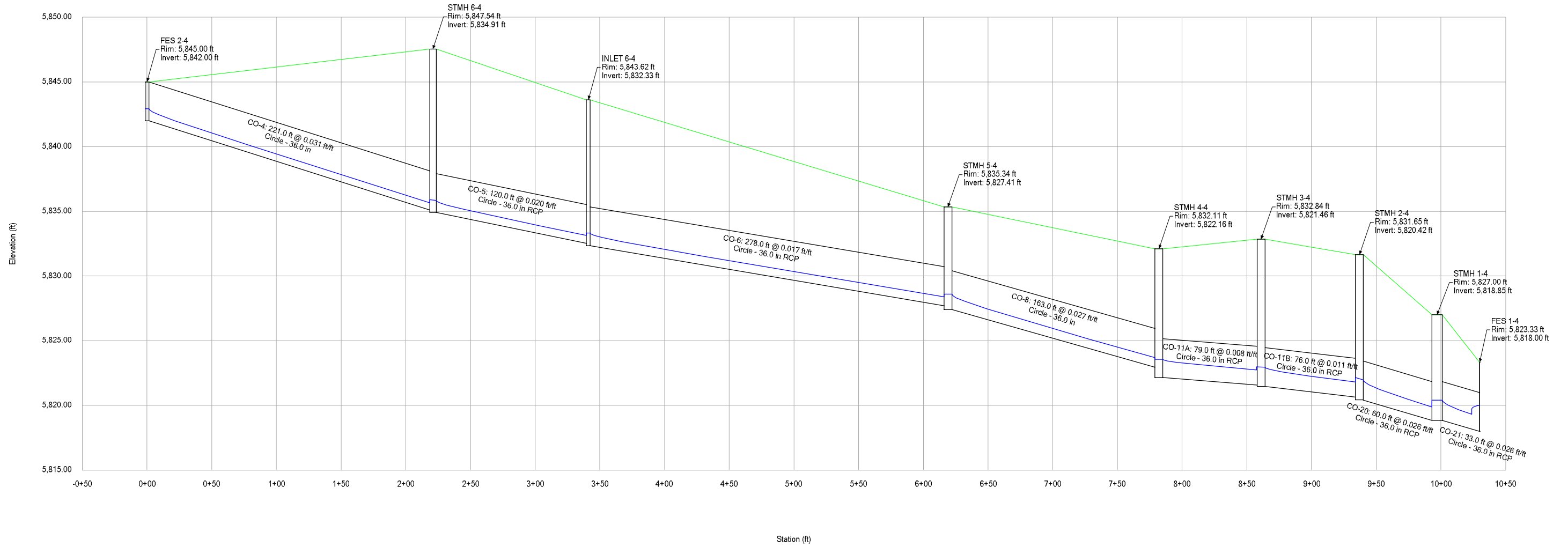
Inlet Capacity IS GOOD for Minor and Major Storms ($> Q_{PEAK}$)

Bypassed Flow, $Q_b =$ 0.00 0.00 cfs

Capture Percentage = $Q_a/Q_o = C\%$ 100 100 %

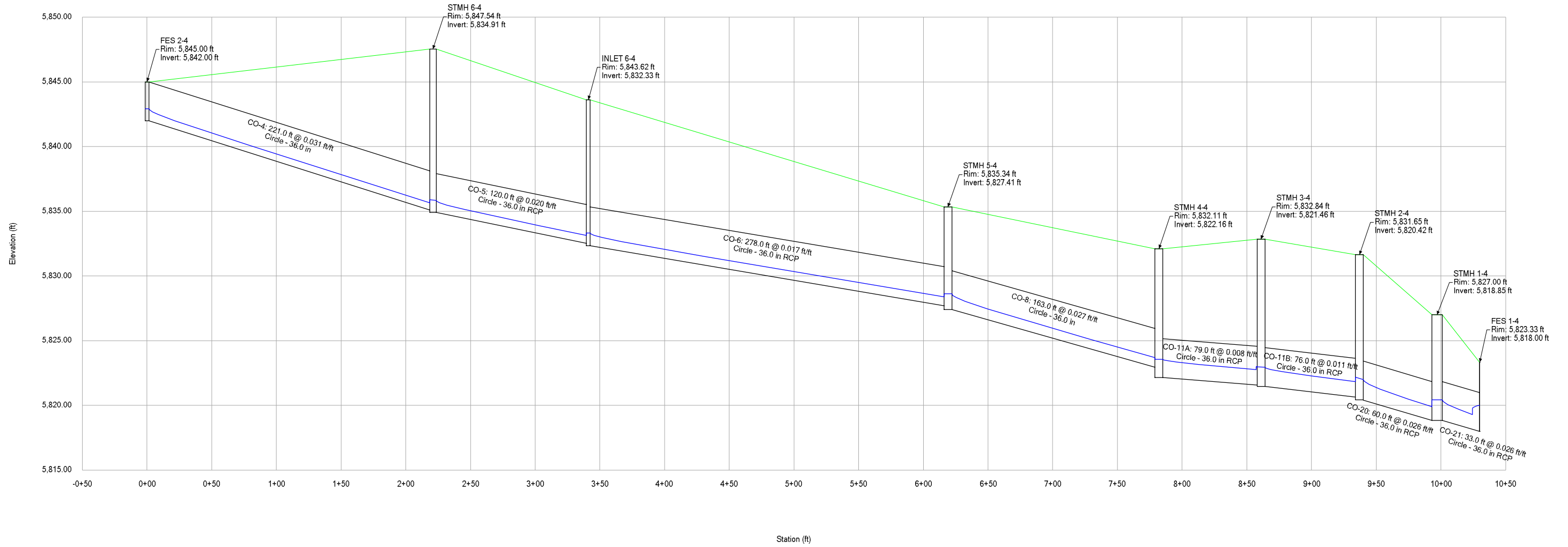
Profile Report

Engineering Profile - Profile - Storm Line 4 (Compark Village South StormCAD [2 year].stsw)



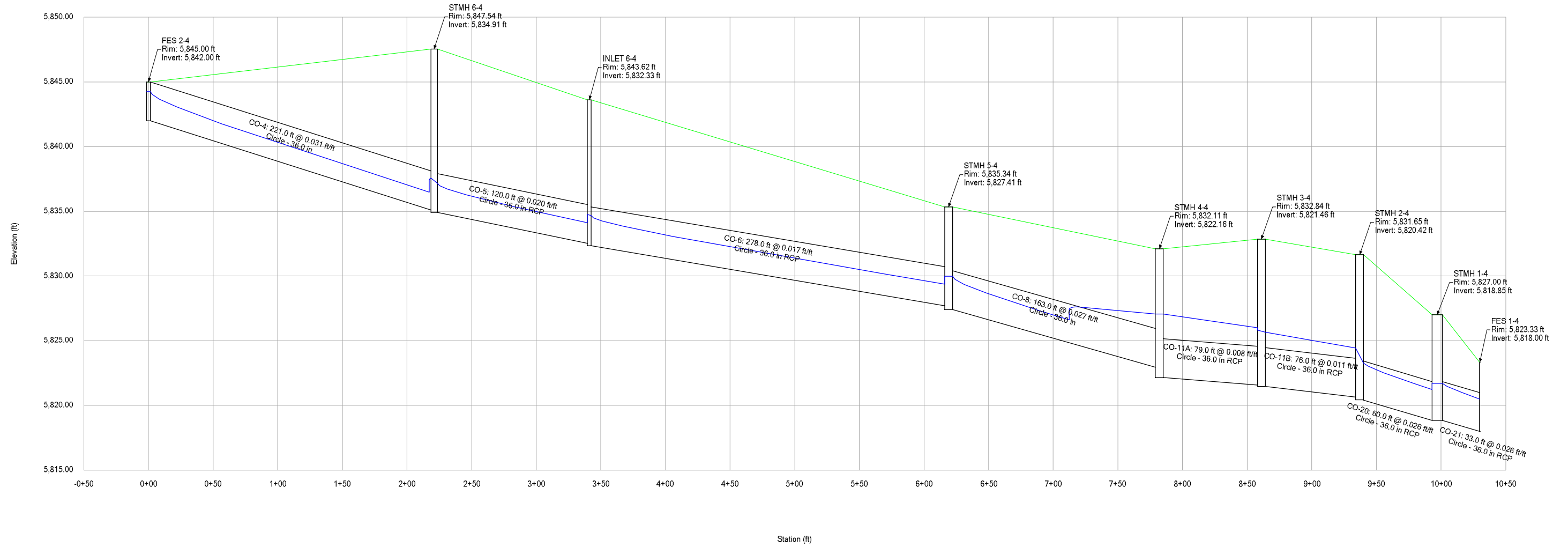
Profile Report

Engineering Profile - Profile - Storm Line 4 (Compark Village South StormCAD [5 year].stsw)

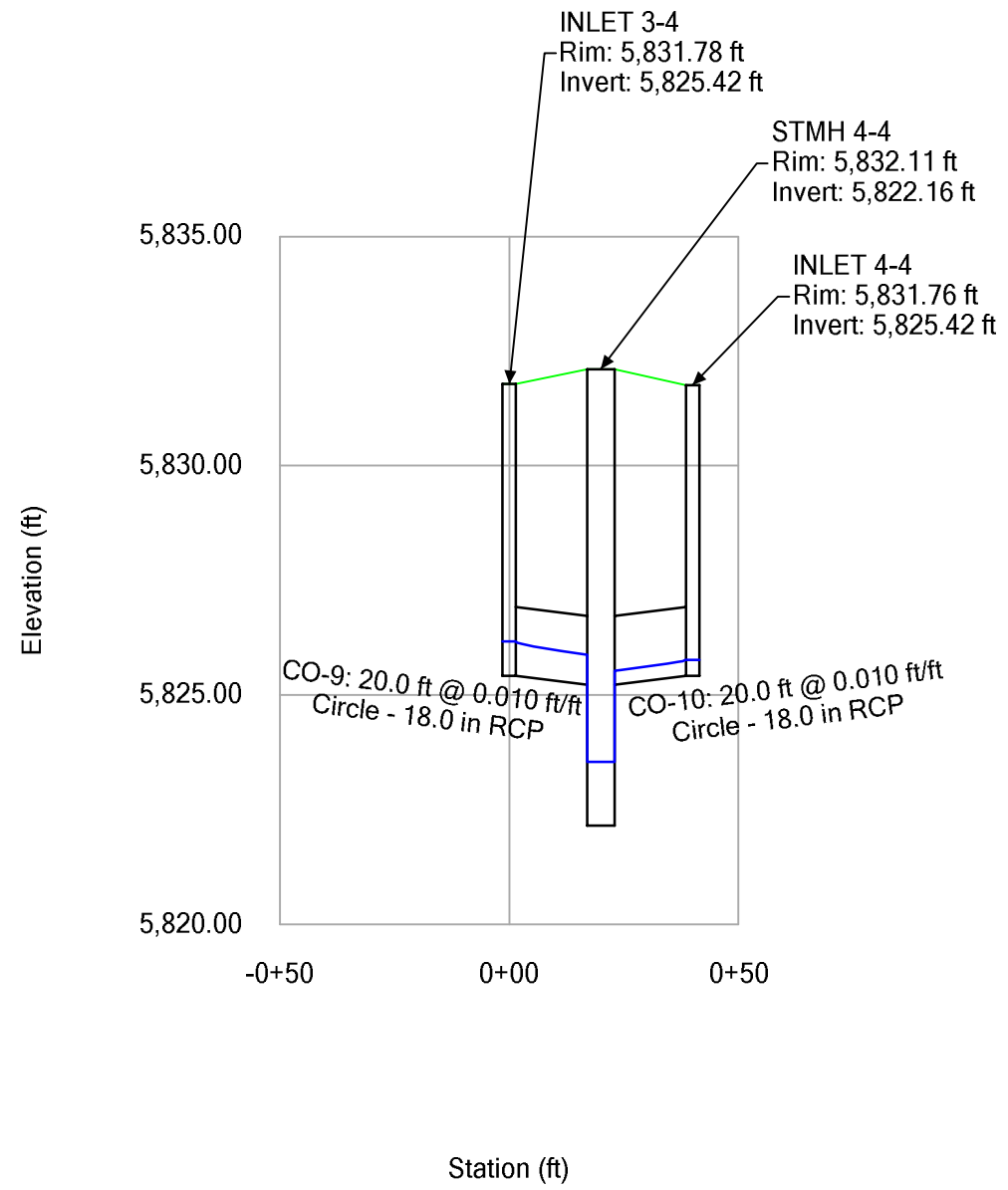


Profile Report

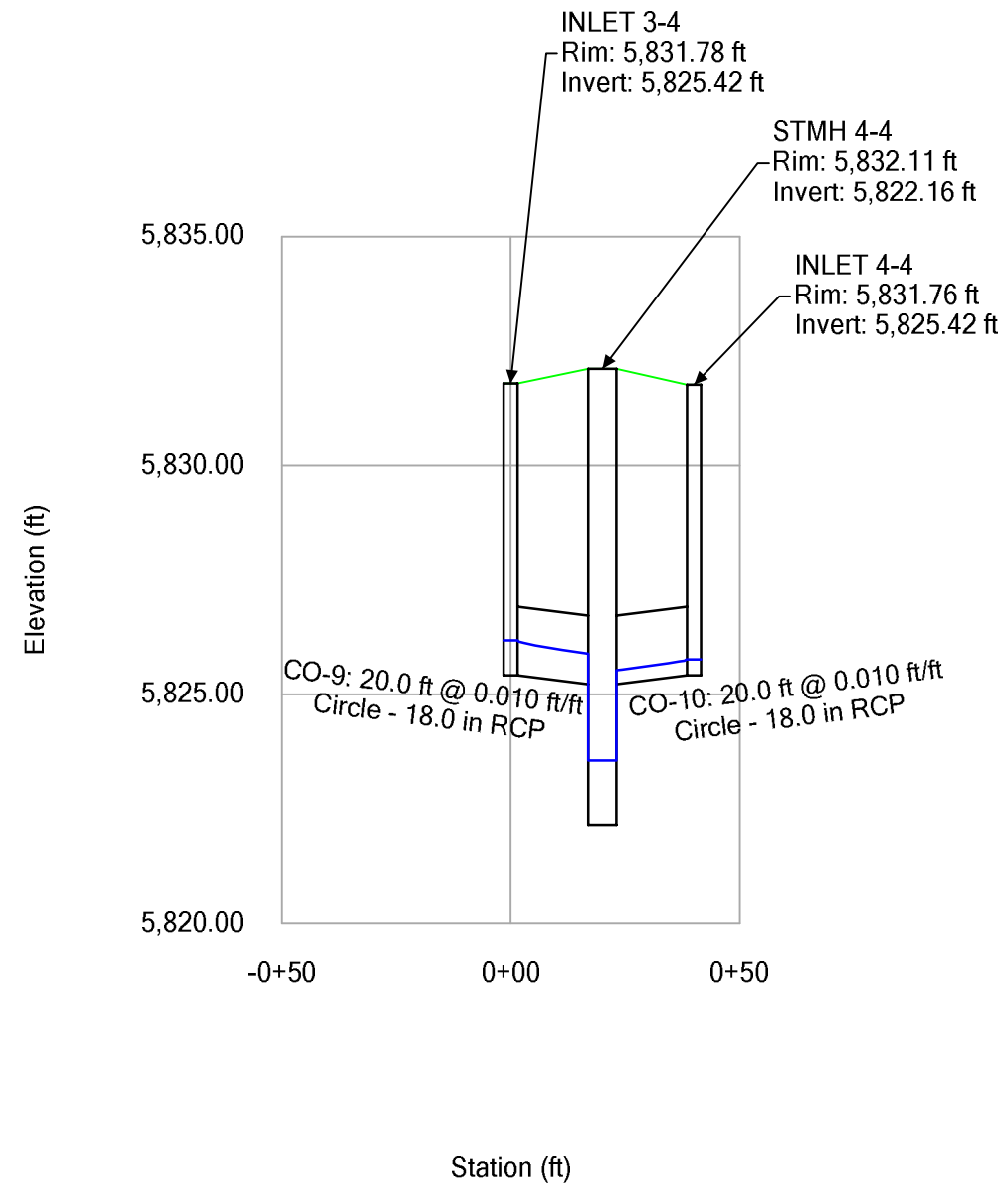
Engineering Profile - Profile - Storm Line 4 (Compark Village South StormCAD [100 year].stsw)



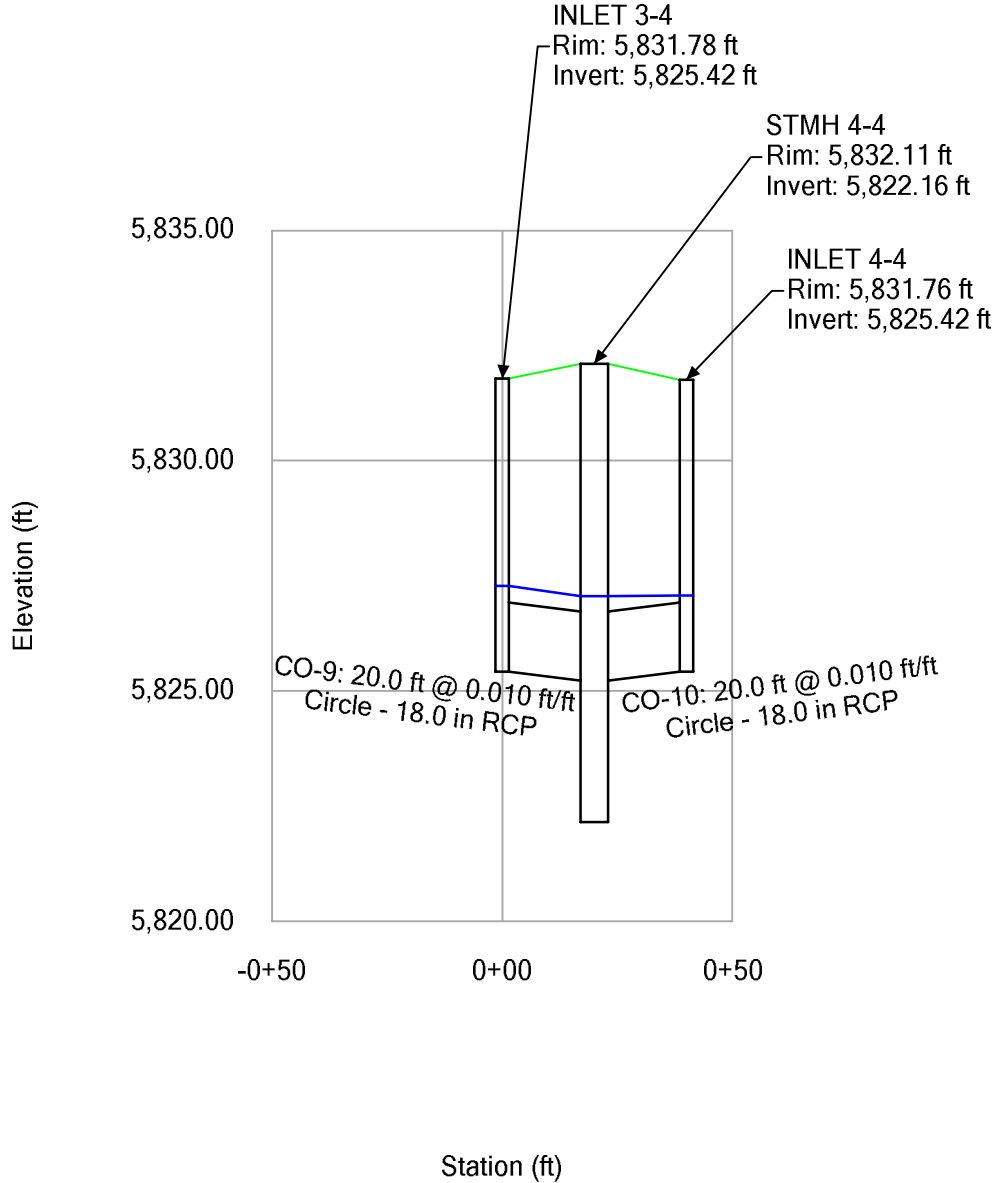
Profile Report
Engineering Profile - Profile - Storm Line 4A (Compark Village South StormCAD [2 year].stsw)



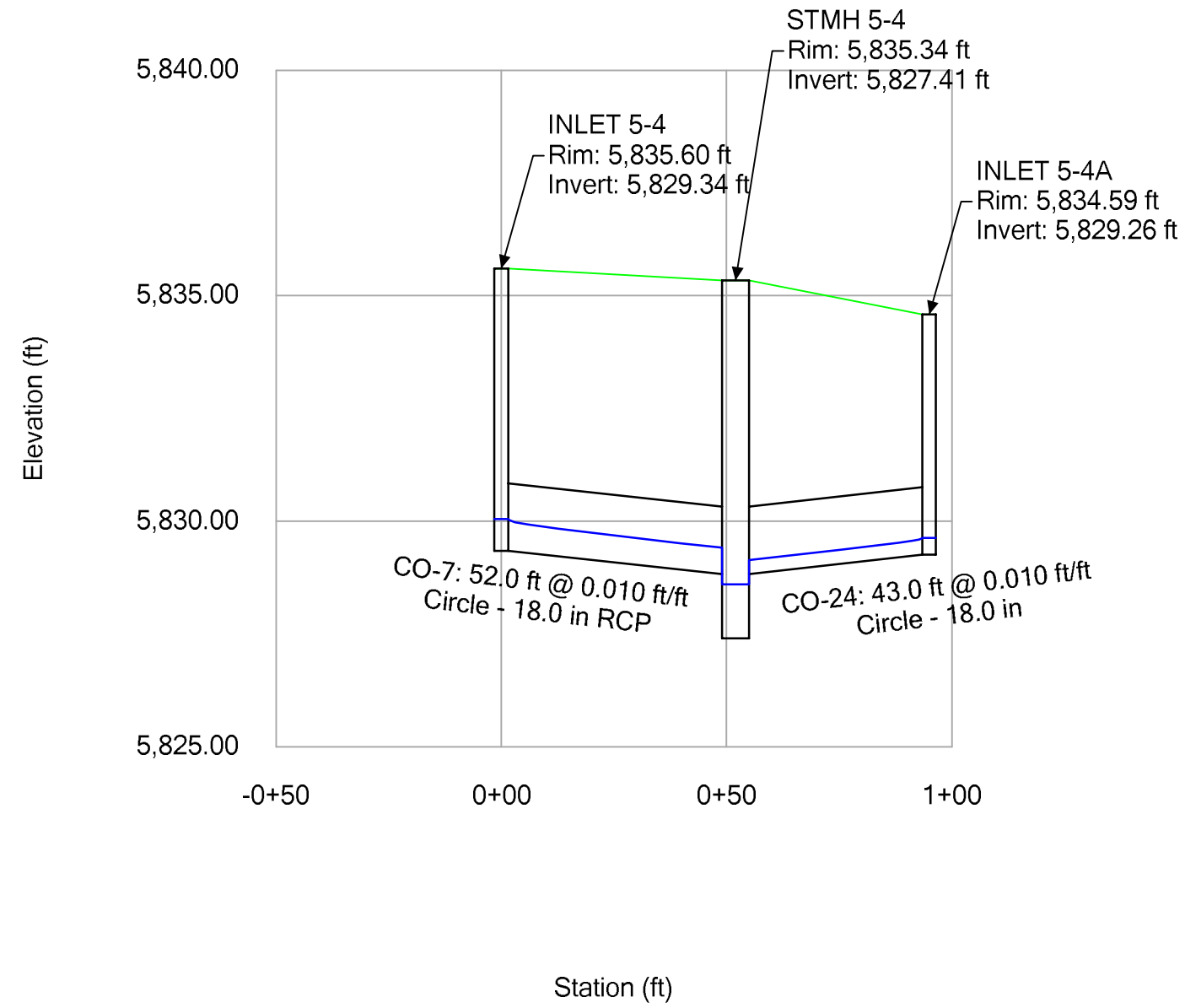
Profile Report
Engineering Profile - Profile - Storm Line 4A (Compark Village South StormCAD [5 year].stsw)



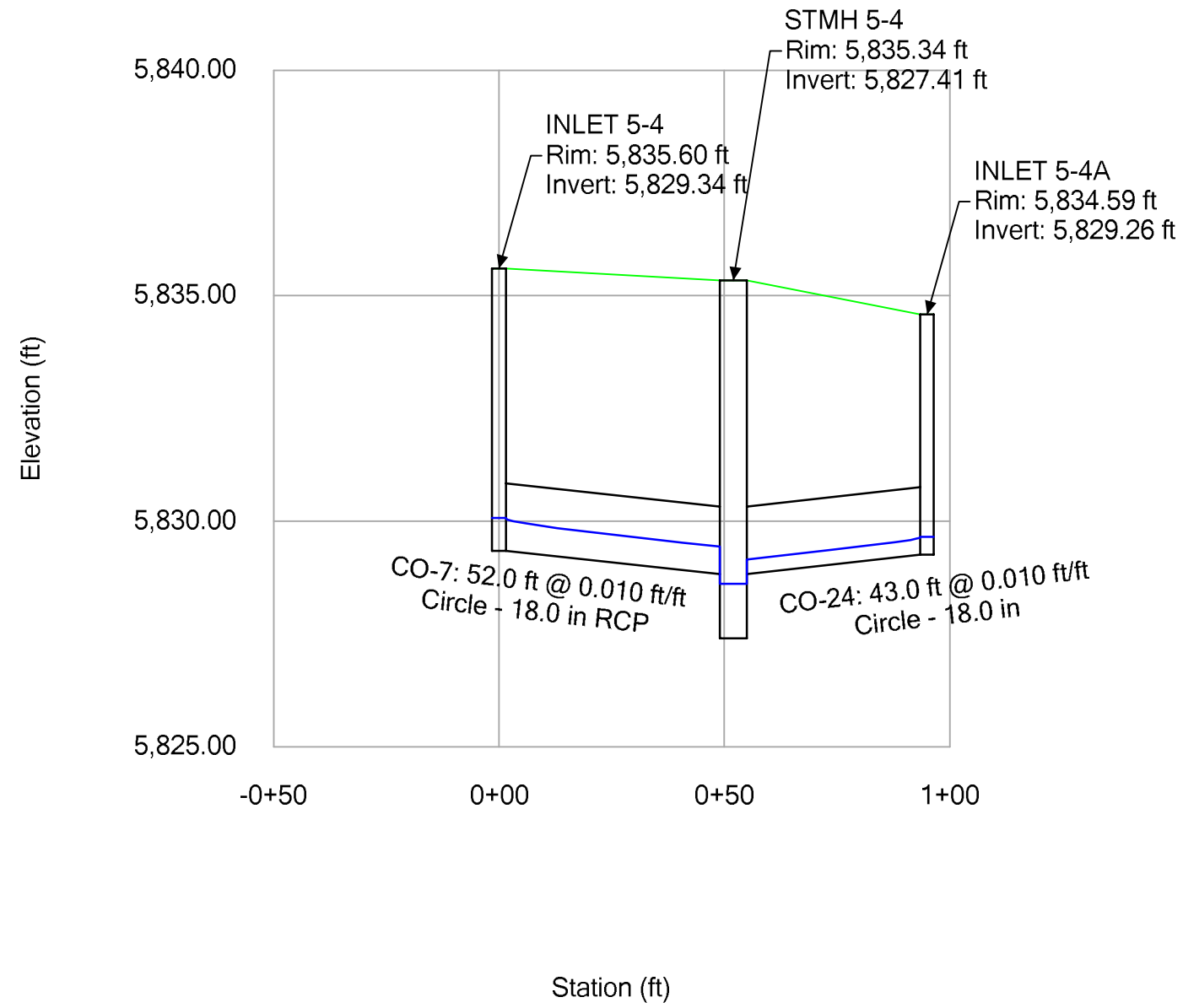
Profile Report
Engineering Profile - Profile - Storm Line 4A (Compark Village South StormCAD [100 year].stsw)



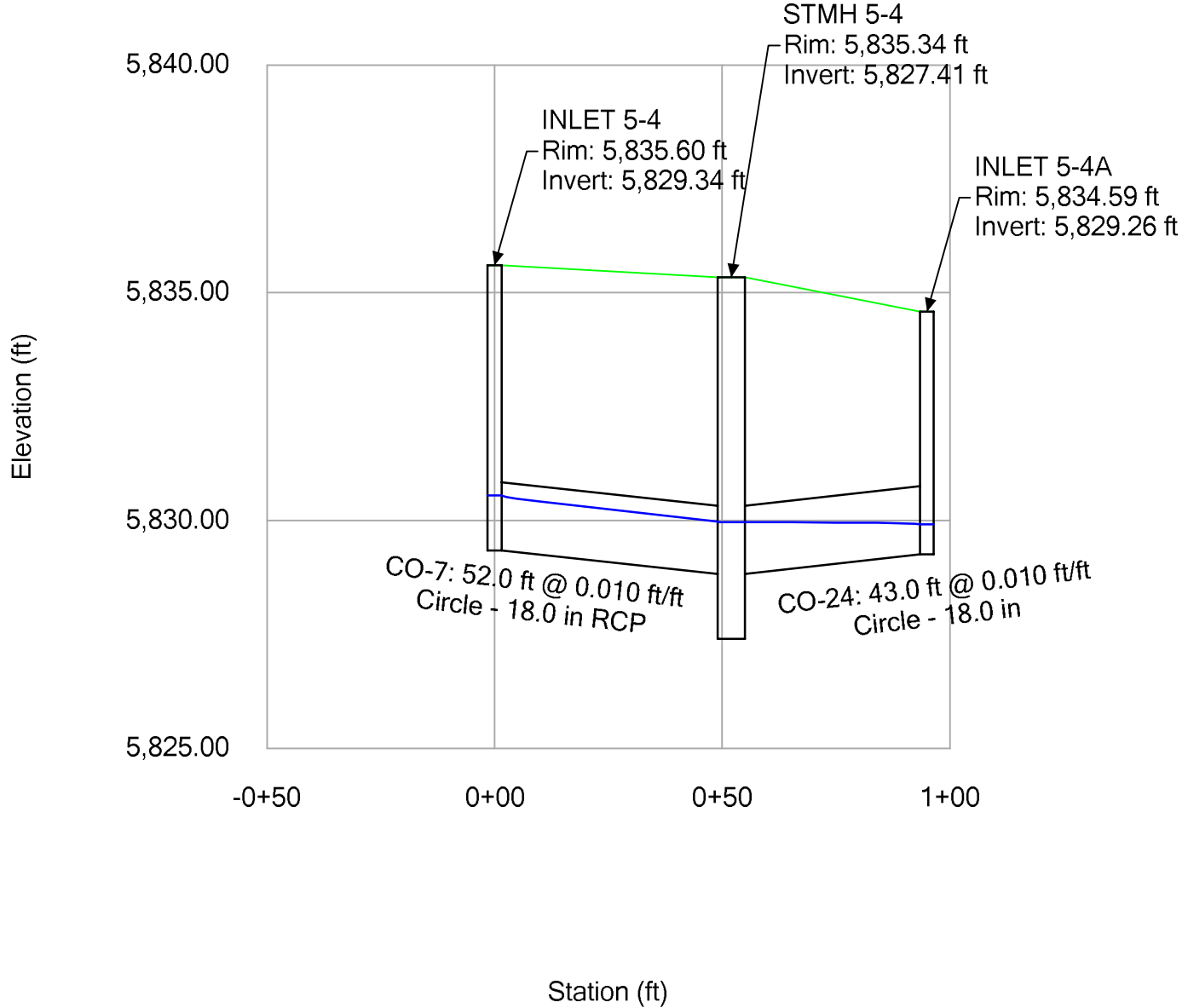
Profile Report
Engineering Profile - Profile - Storm Line 4B (Compark Village South StormCAD [2 year].stsw)



Profile Report
Engineering Profile - Profile - Storm Line 4B (Compark Village South StormCAD [5 year].stsw)

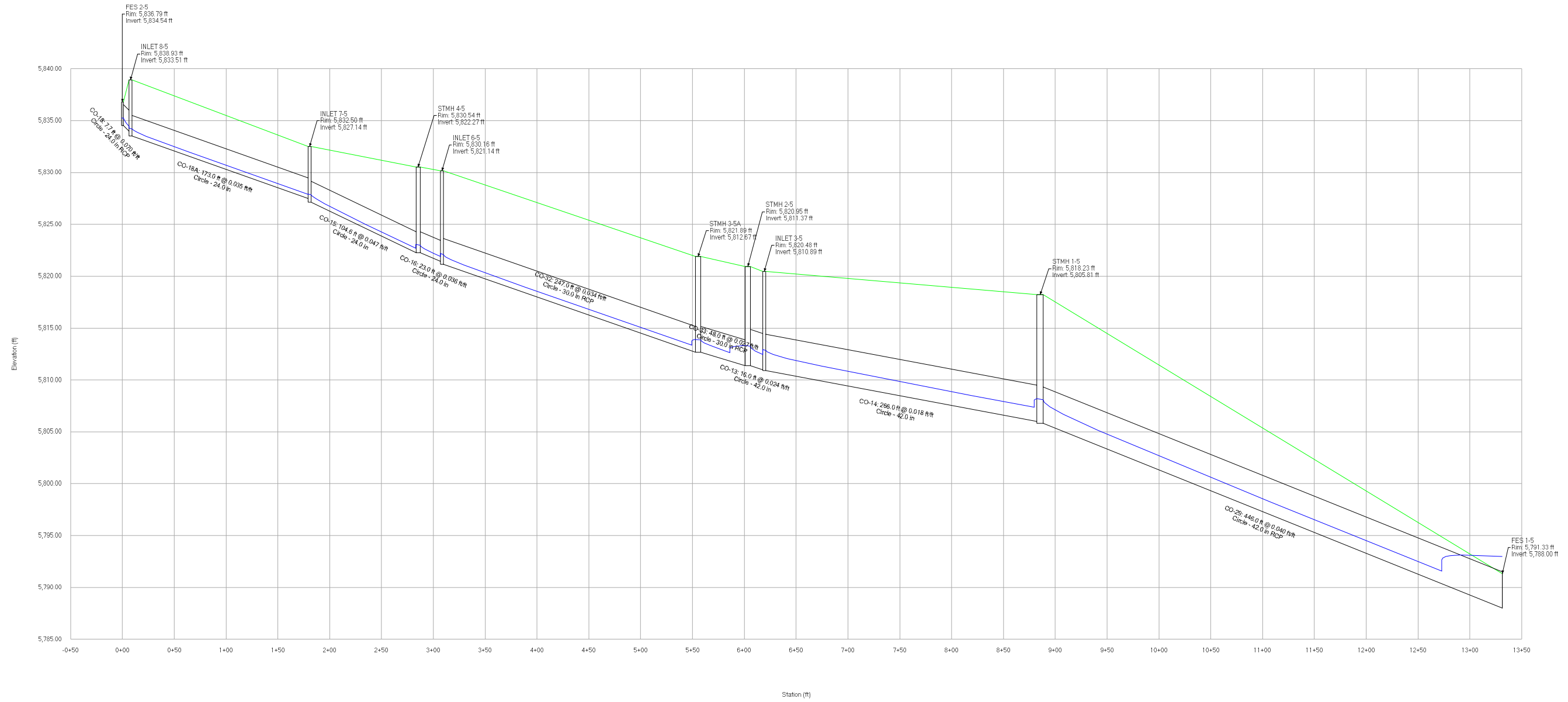


Profile Report
Engineering Profile - Profile - Storm Line 4B (Compark Village South StormCAD [100 year].stsw)



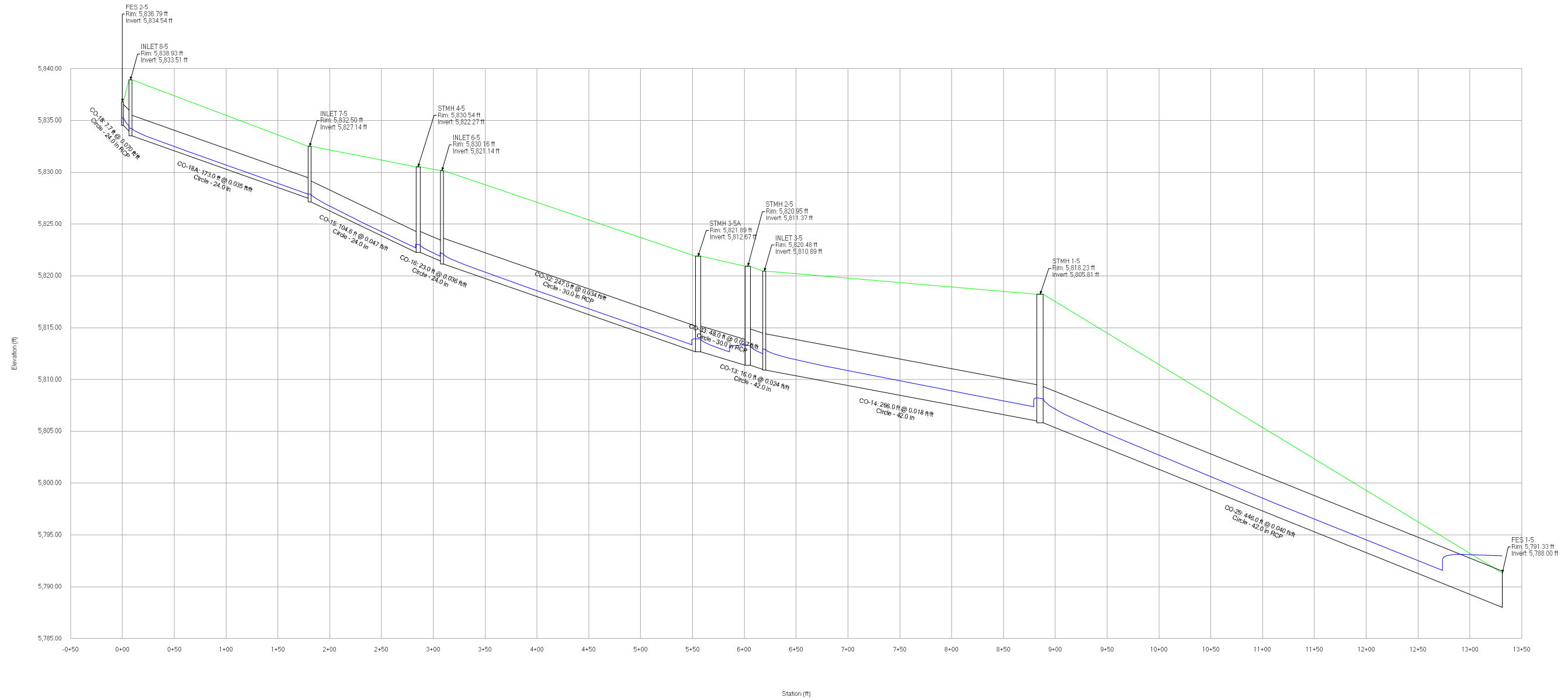
Profile Report

Engineering Profile - Profile - Storm Line 5 (Compark Village South StormCAD [2 year].stsw)



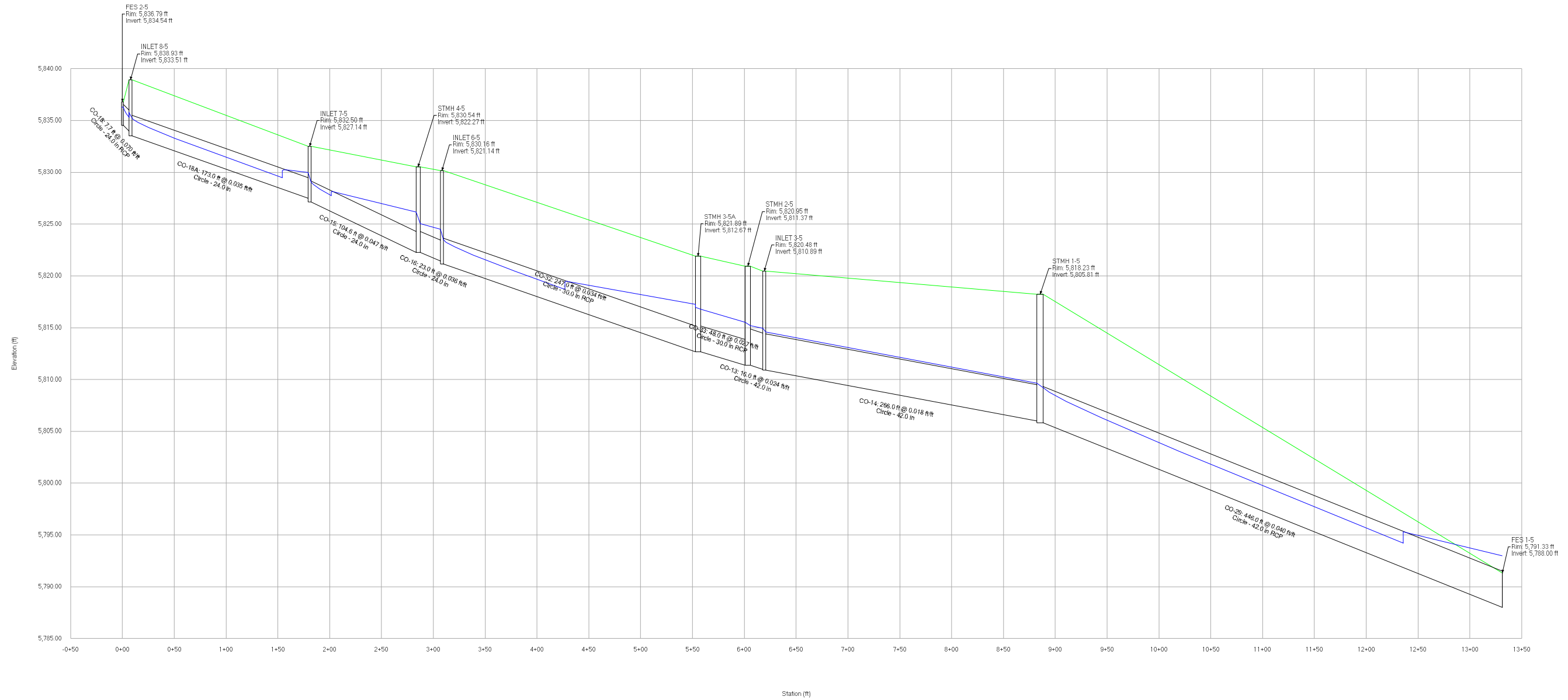
Profile Report

Engineering Profile - Profile - Storm Line 5 (Compark Village South StormCAD [5 year].stsw)

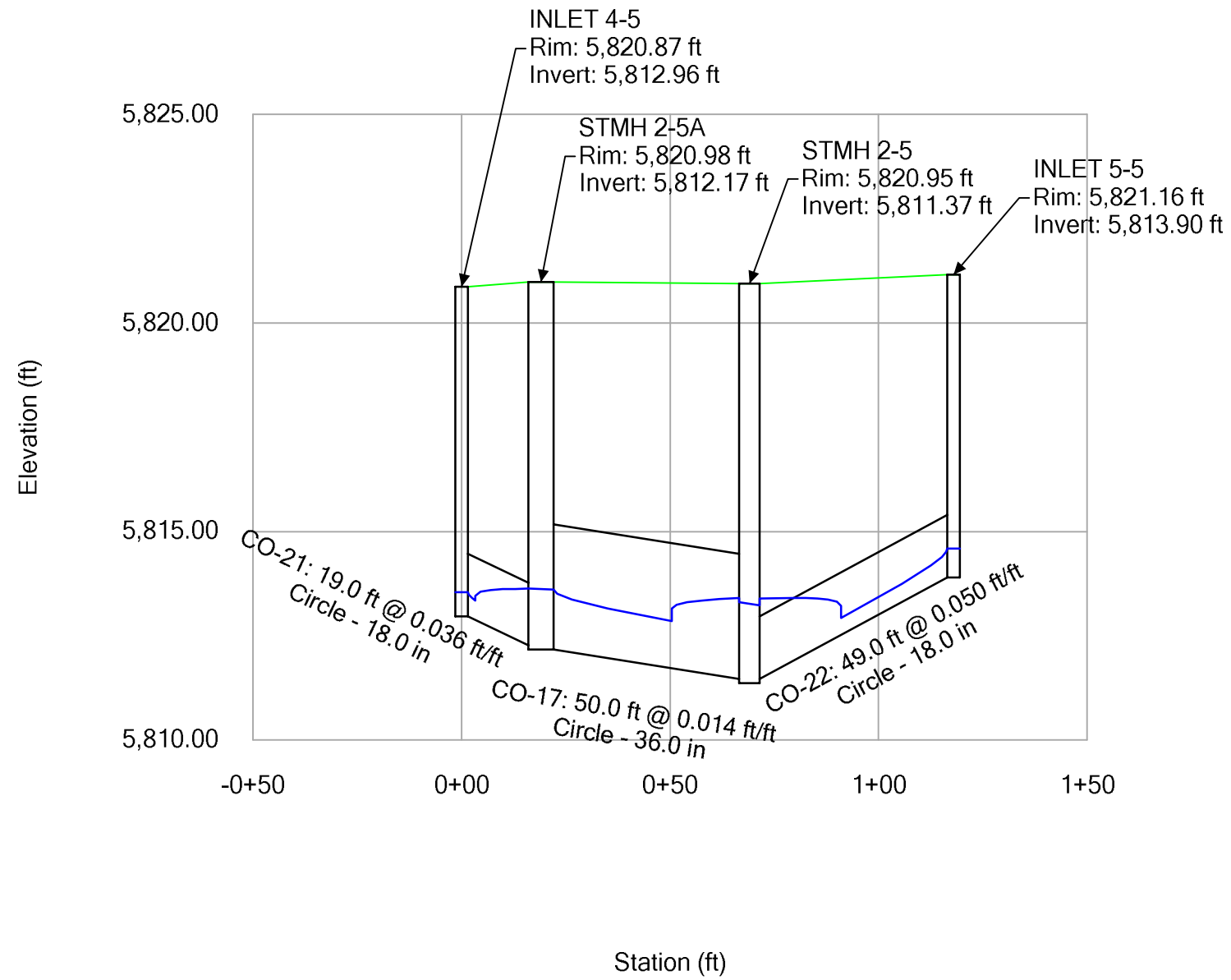


Profile Report

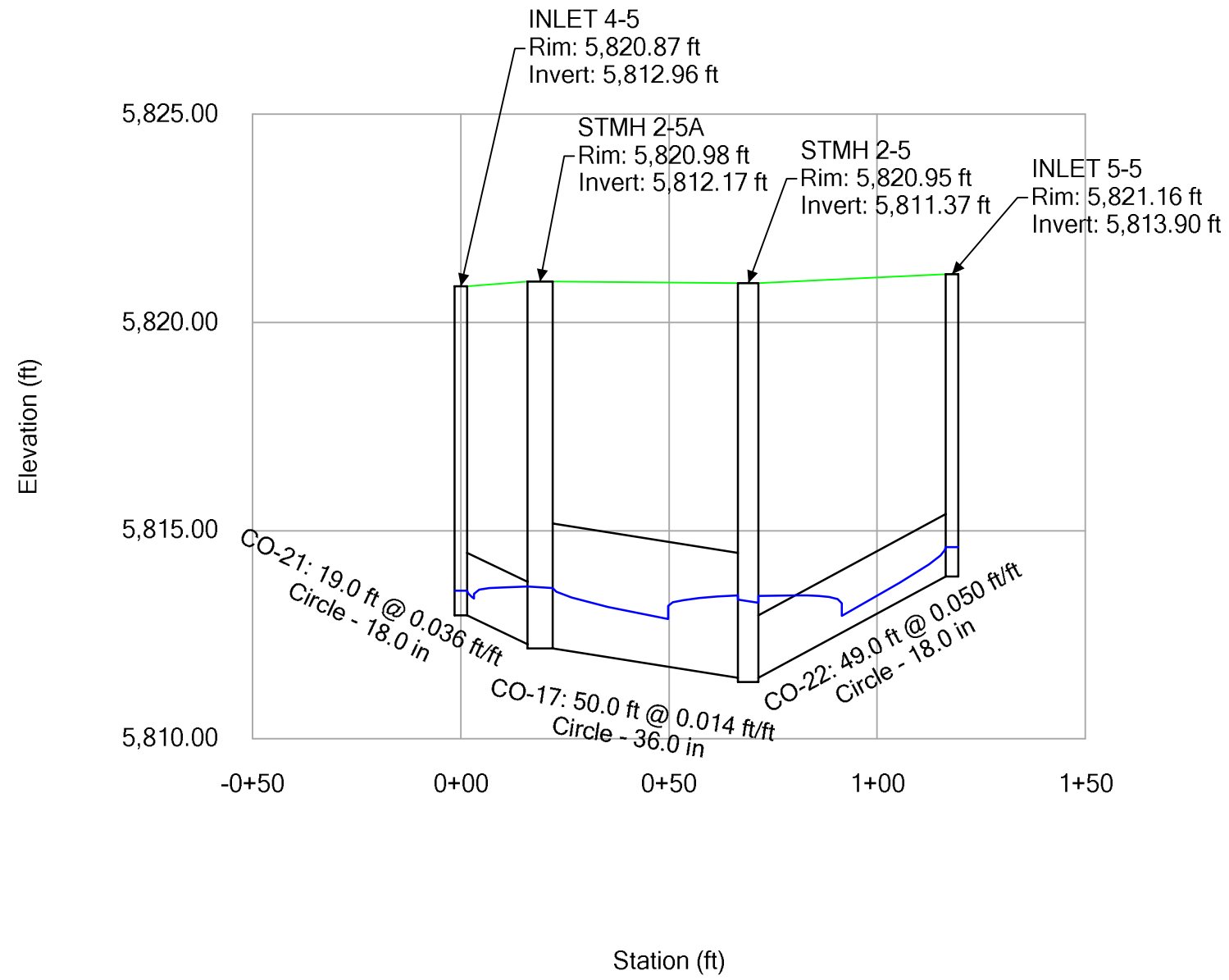
Engineering Profile - Profile - Storm Line 5 (Compark Village South StormCAD [100 year].stsw)



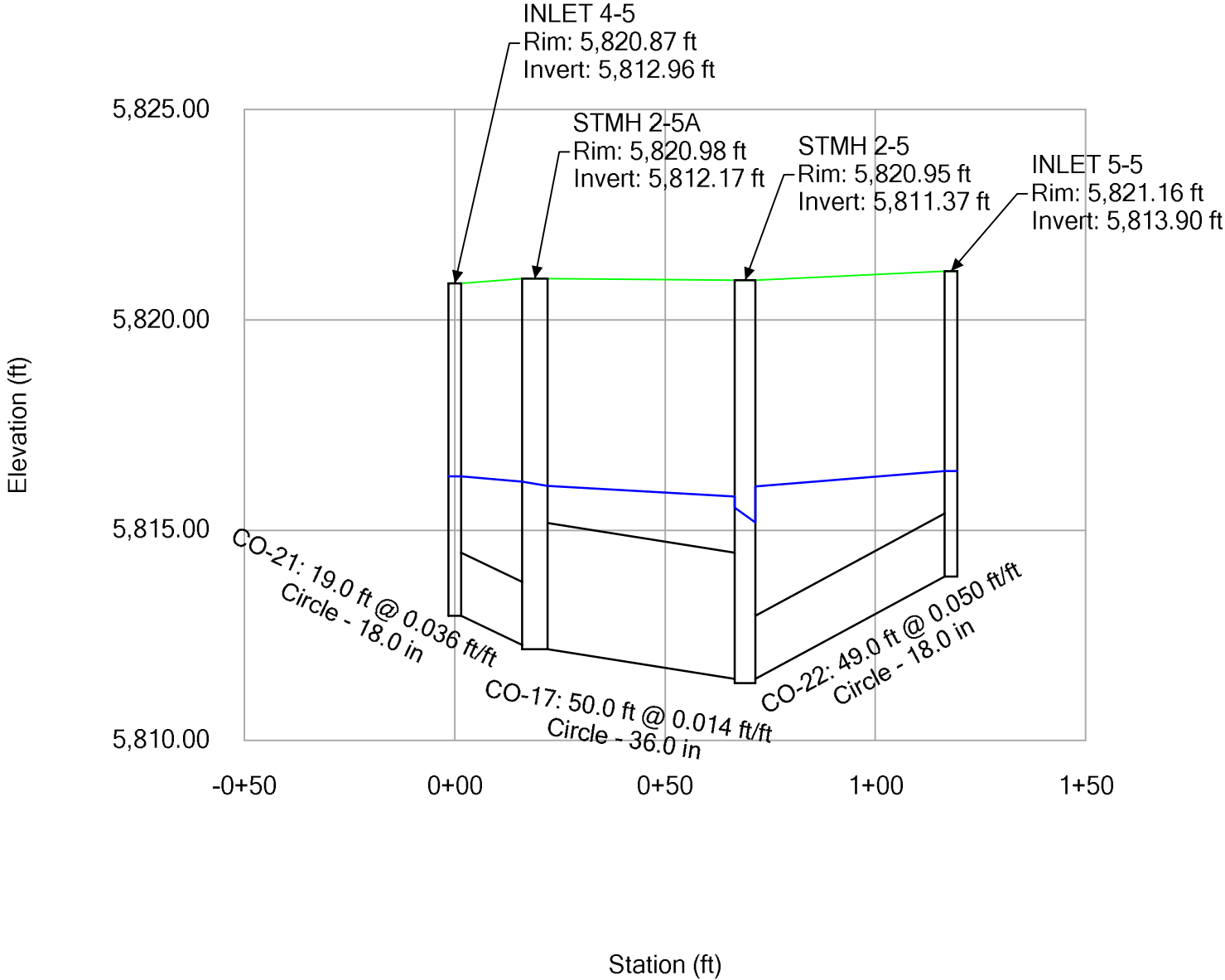
Profile Report
Engineering Profile - Profile - Storm Line 5B (Compark Village South StormCAD [2 year].stsw)



Profile Report
Engineering Profile - Profile - Storm Line 5B (Compark Village South StormCAD [5 year].stsw)

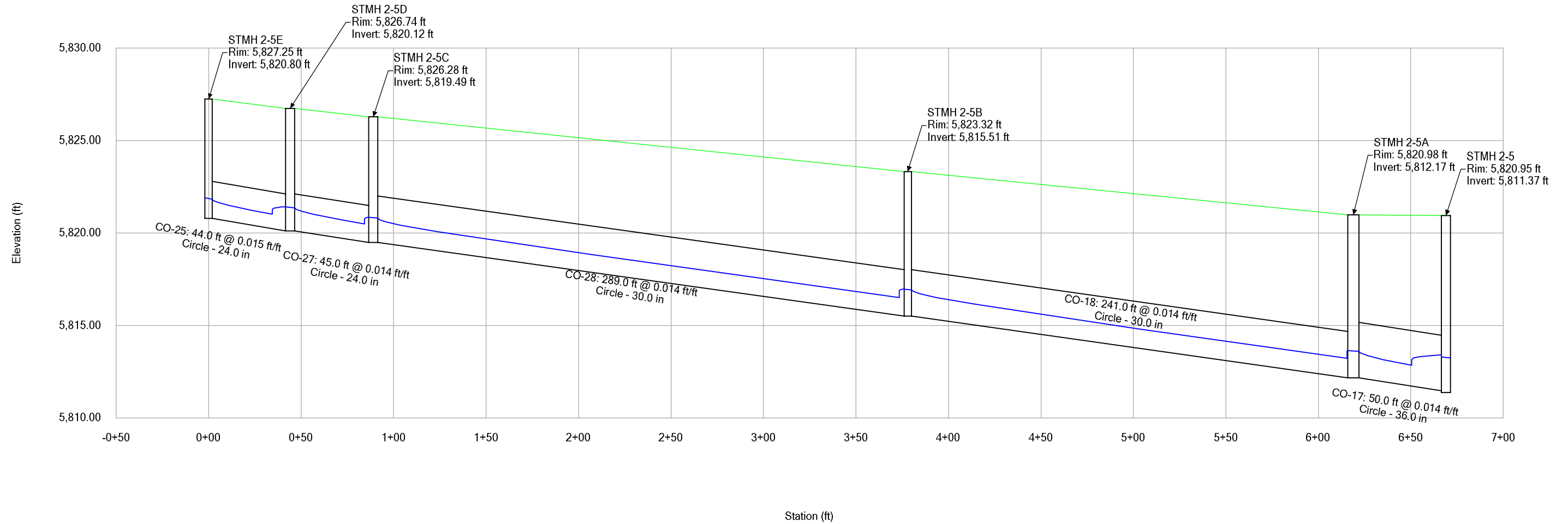


Profile Report
Engineering Profile - Profile - Storm Line 5B (Compark Village South StormCAD [100 year].stsw)



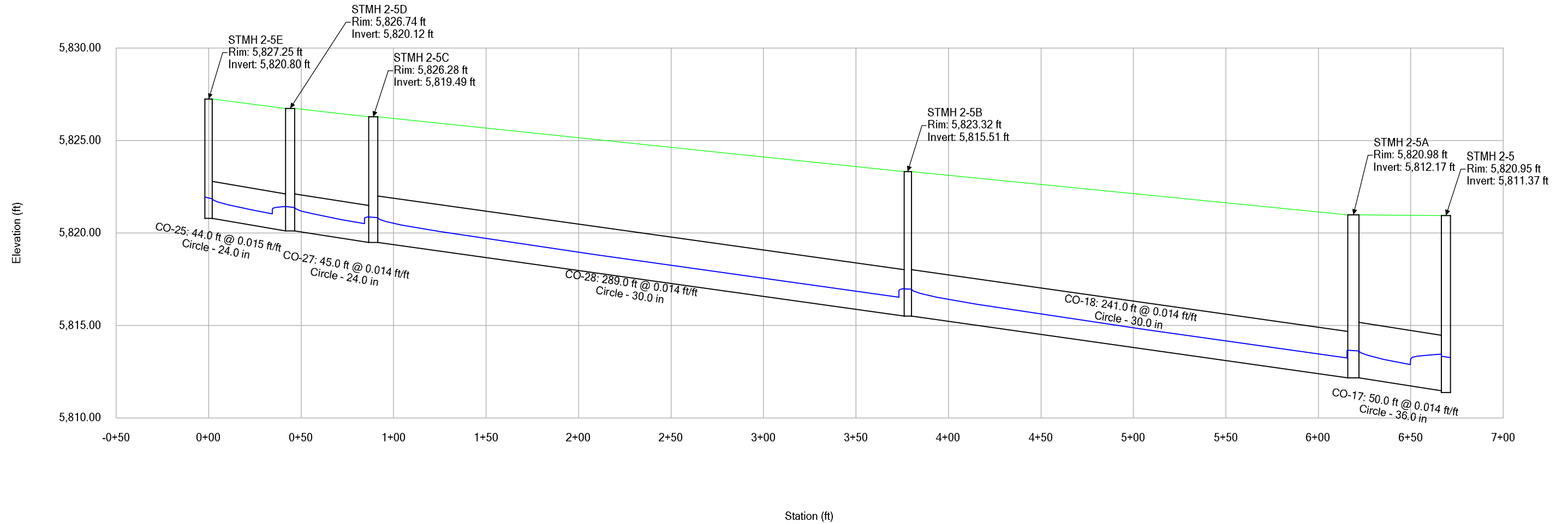
Profile Report

Engineering Profile - Profile - Storm Line 5C (Compark Village South StormCAD [2 year].stsw)



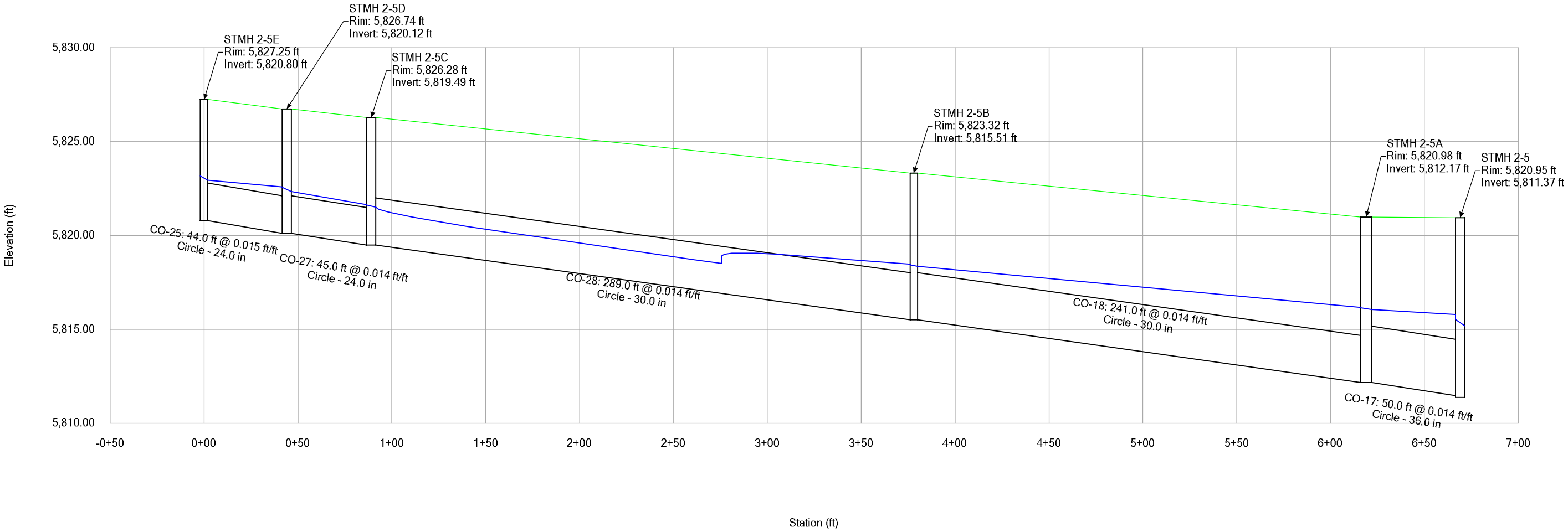
Profile Report

Engineering Profile - Profile - Storm Line 5C (Compark Village South StormCAD [5 year].stsw)

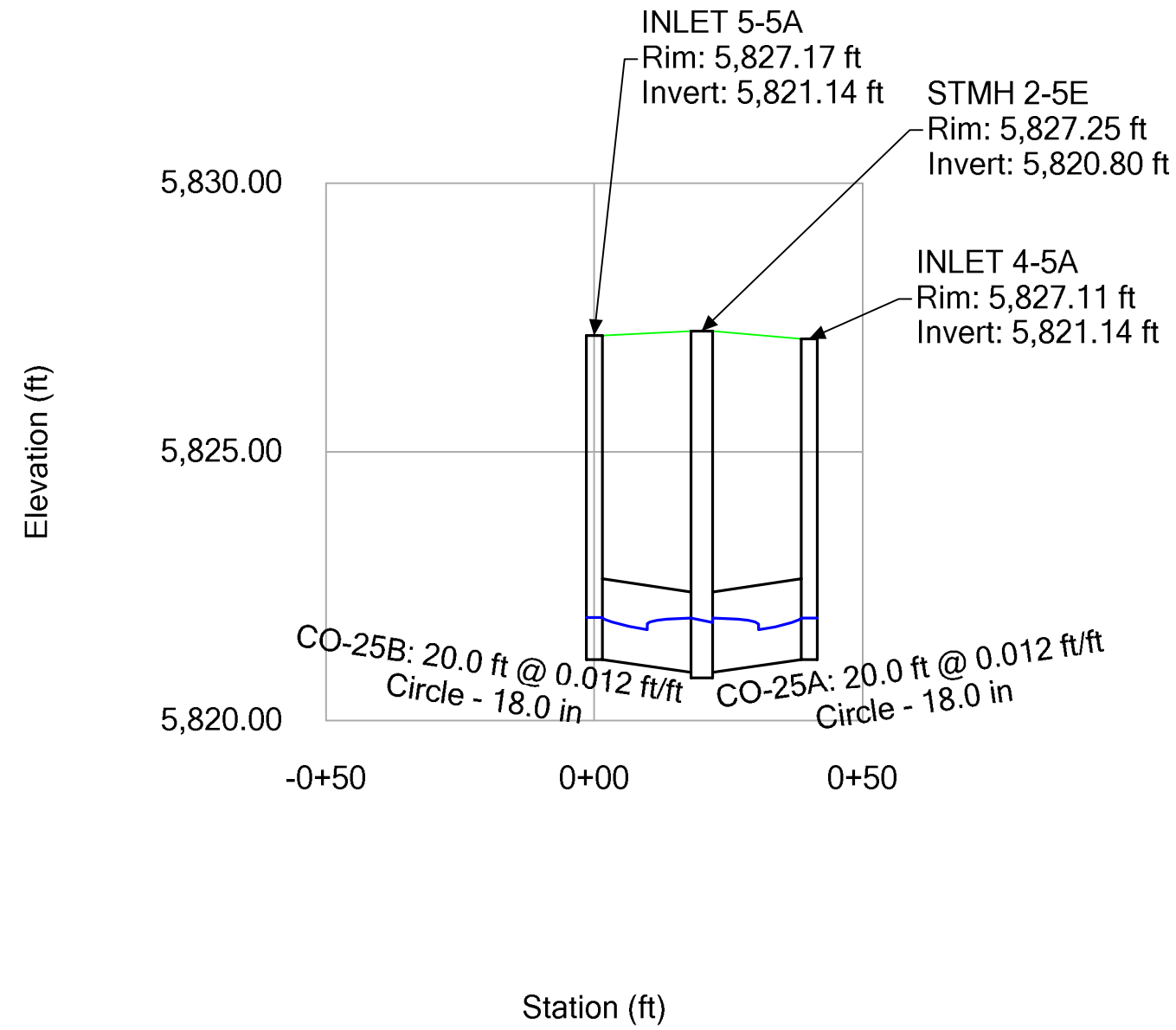


Profile Report

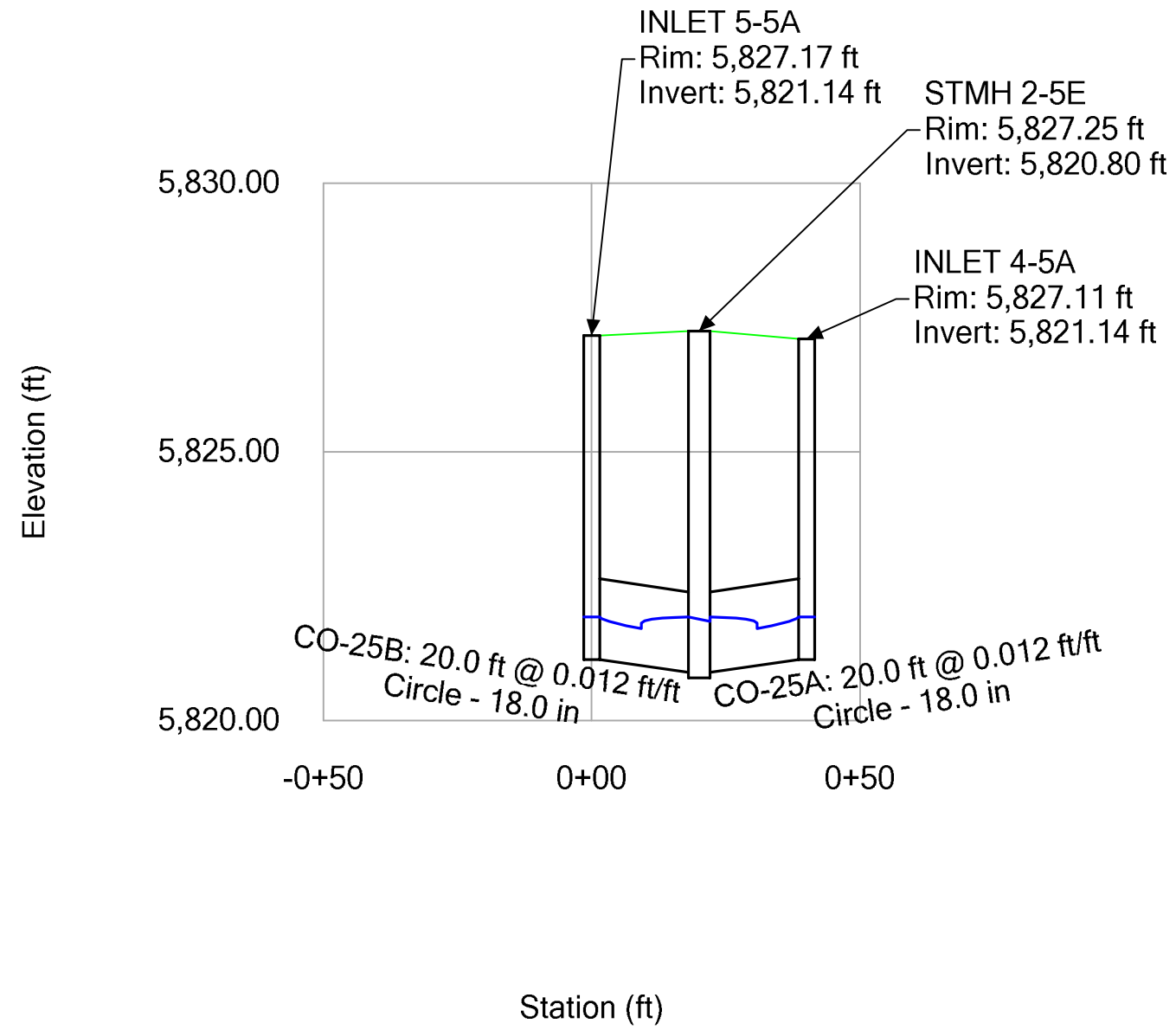
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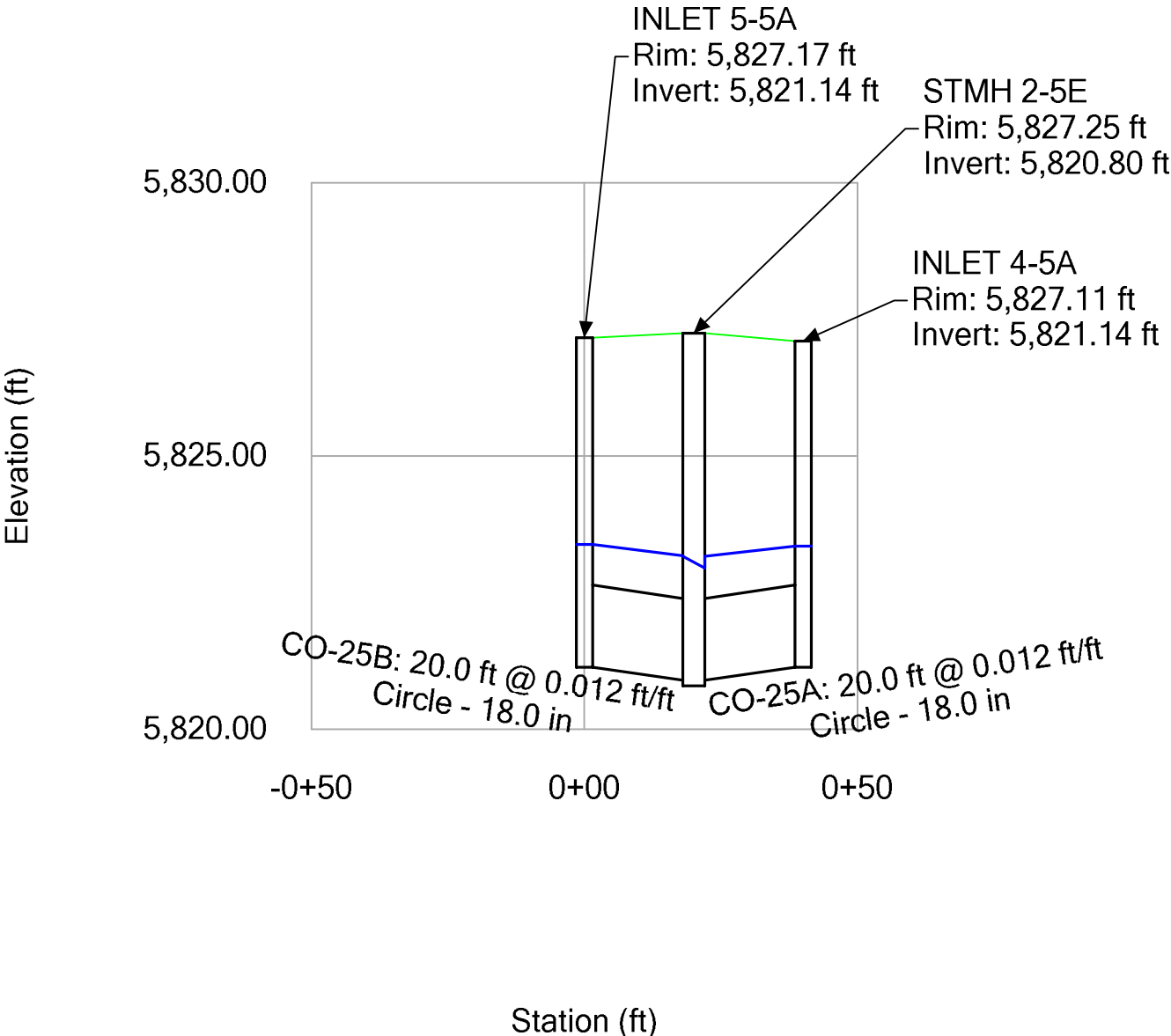
Profile Report
Engineering Profile - Profile - Storm Line 5D (Compark Village South StormCAD [2 year].stsw)



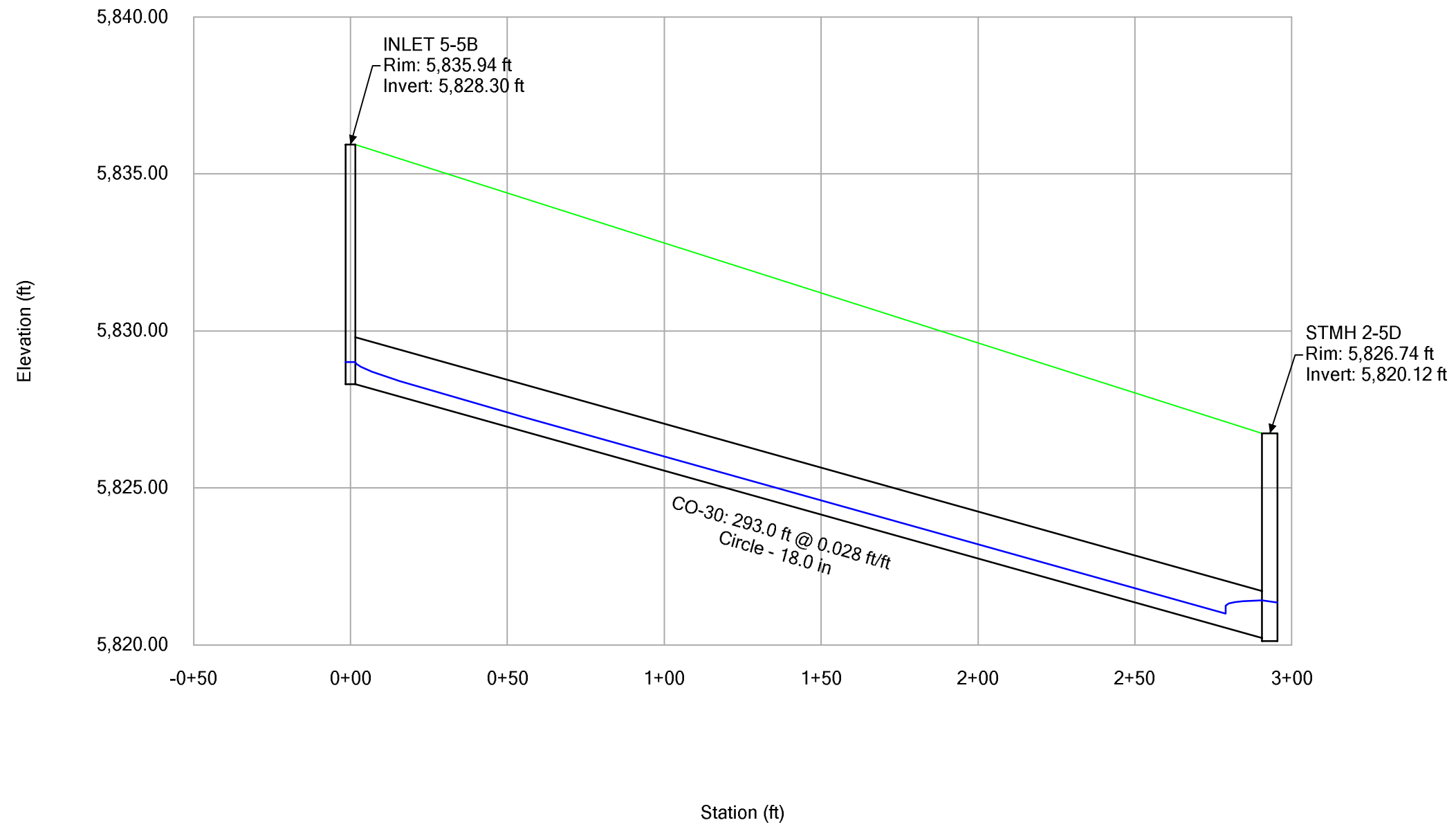
Profile Report
Engineering Profile - Profile - Storm Line 5D (Compark Village South StormCAD [5 year].stsw)



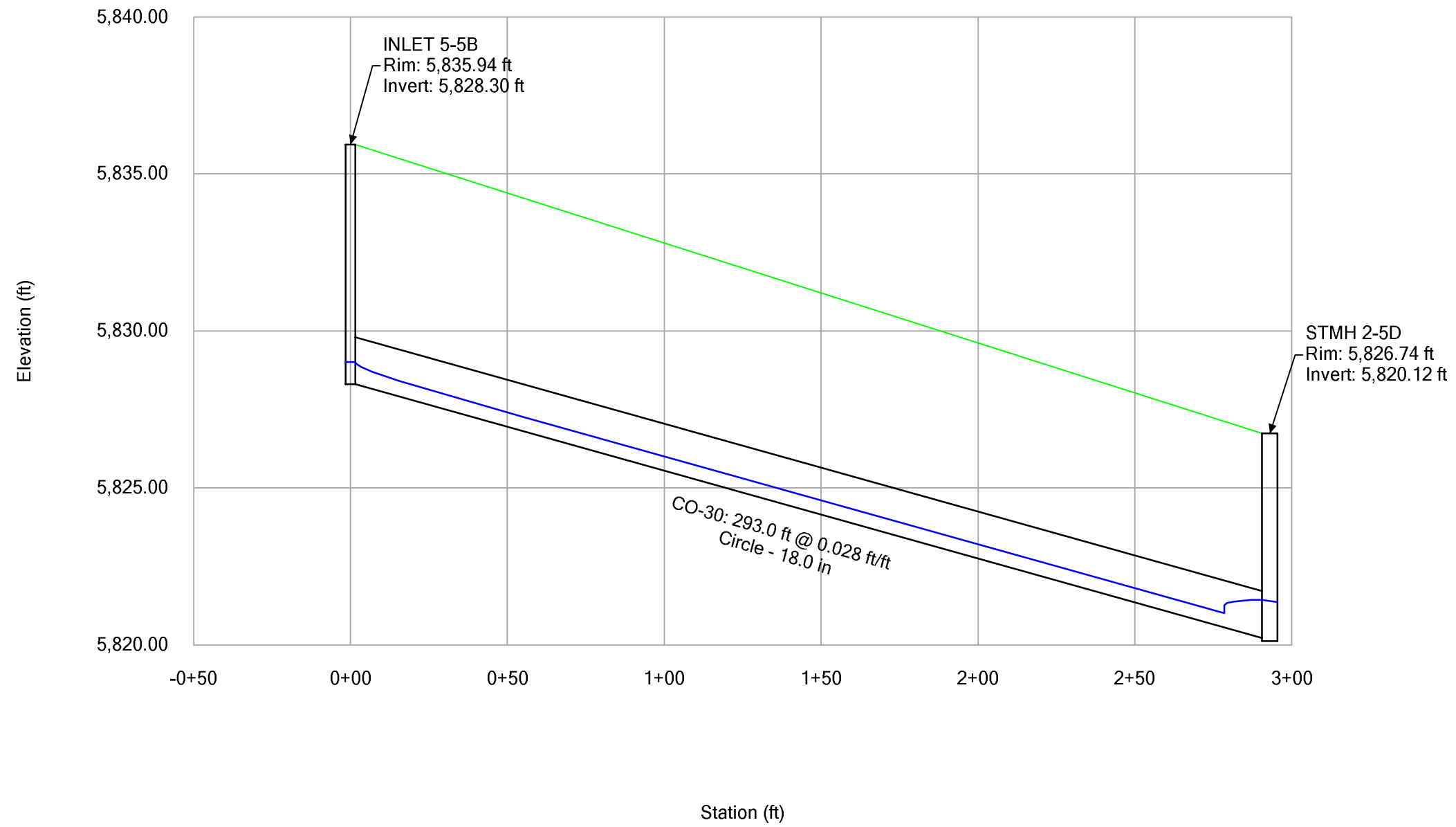
Profile Report
Engineering Profile - Profile - Storm Line 5D (Compark Village South StormCAD [100 year].stsw)



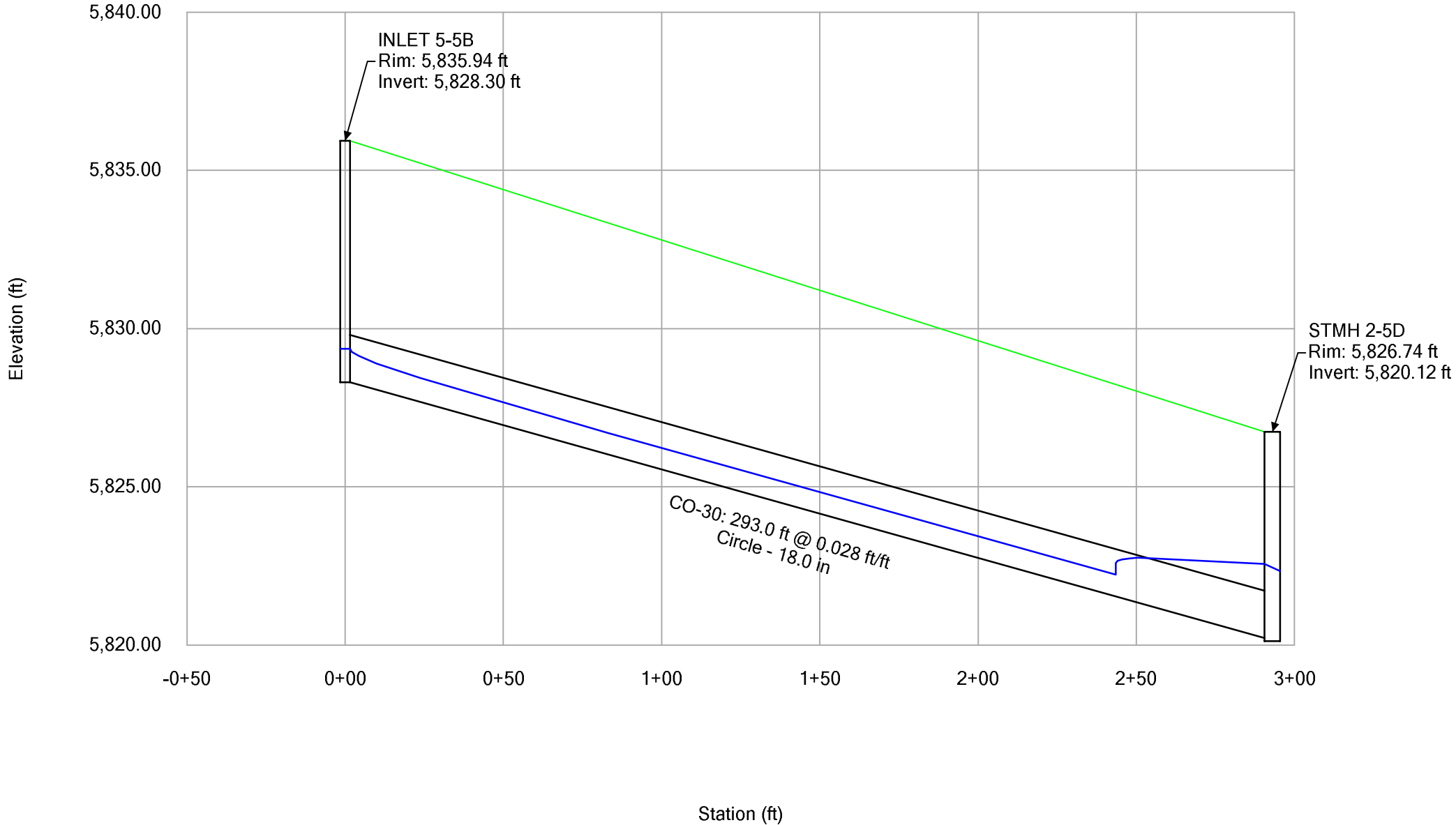
Profile Report
Engineering Profile - Profile - Storm Line 5E (Compark Village South StormCAD [2 year].stsw)



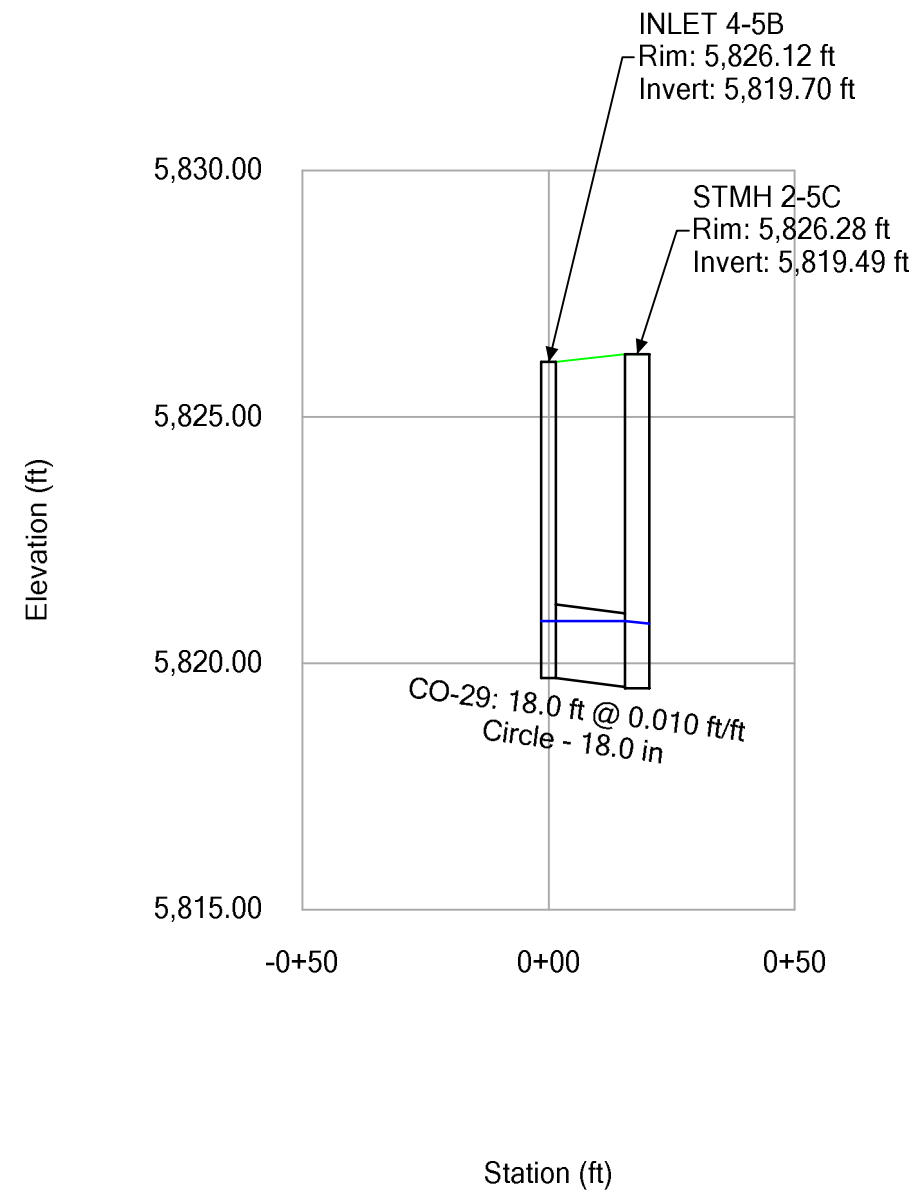
Profile Report
Engineering Profile - Profile - Storm Line 5E (Compark Village South StormCAD [5 year].stsw)



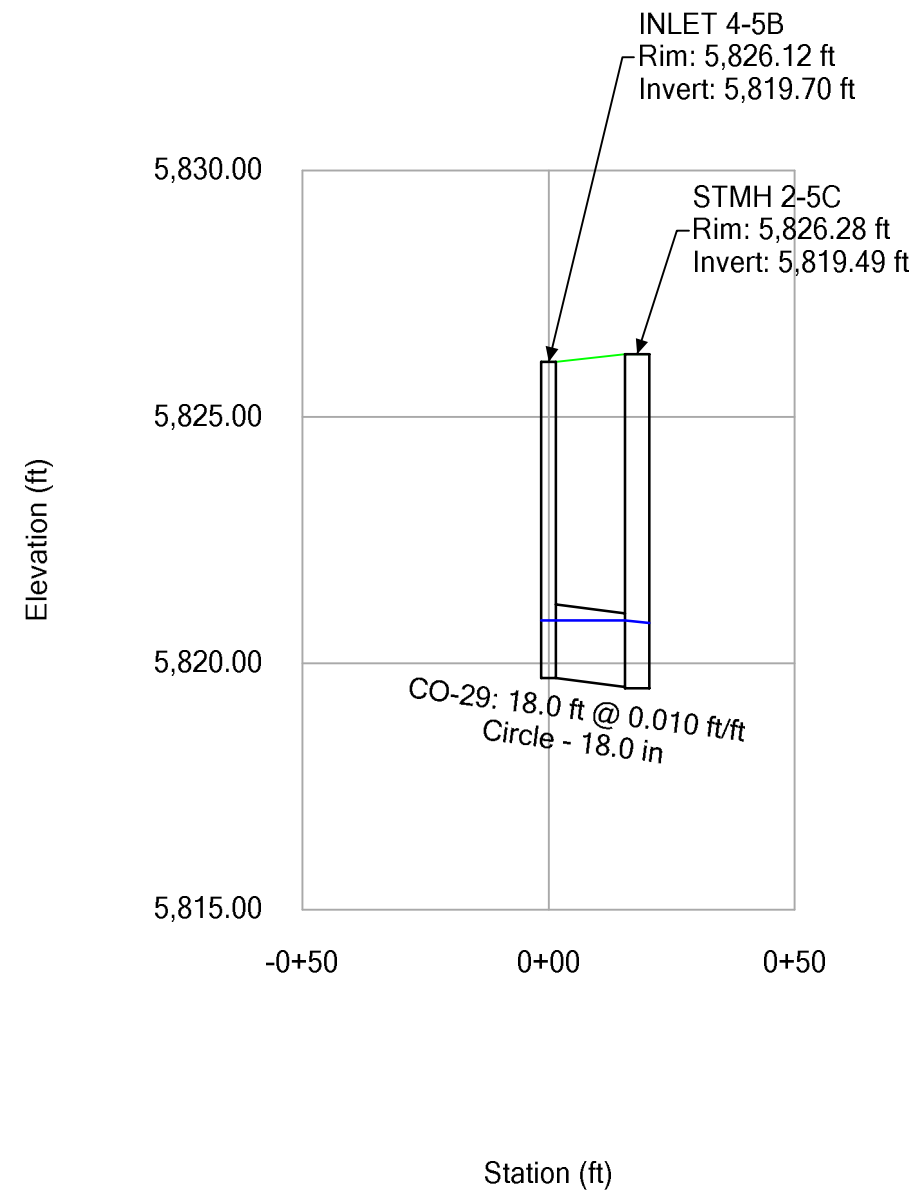
Profile Report
Engineering Profile - Profile - Storm Line 5E (Compark Village South StormCAD [100 year].stsw)



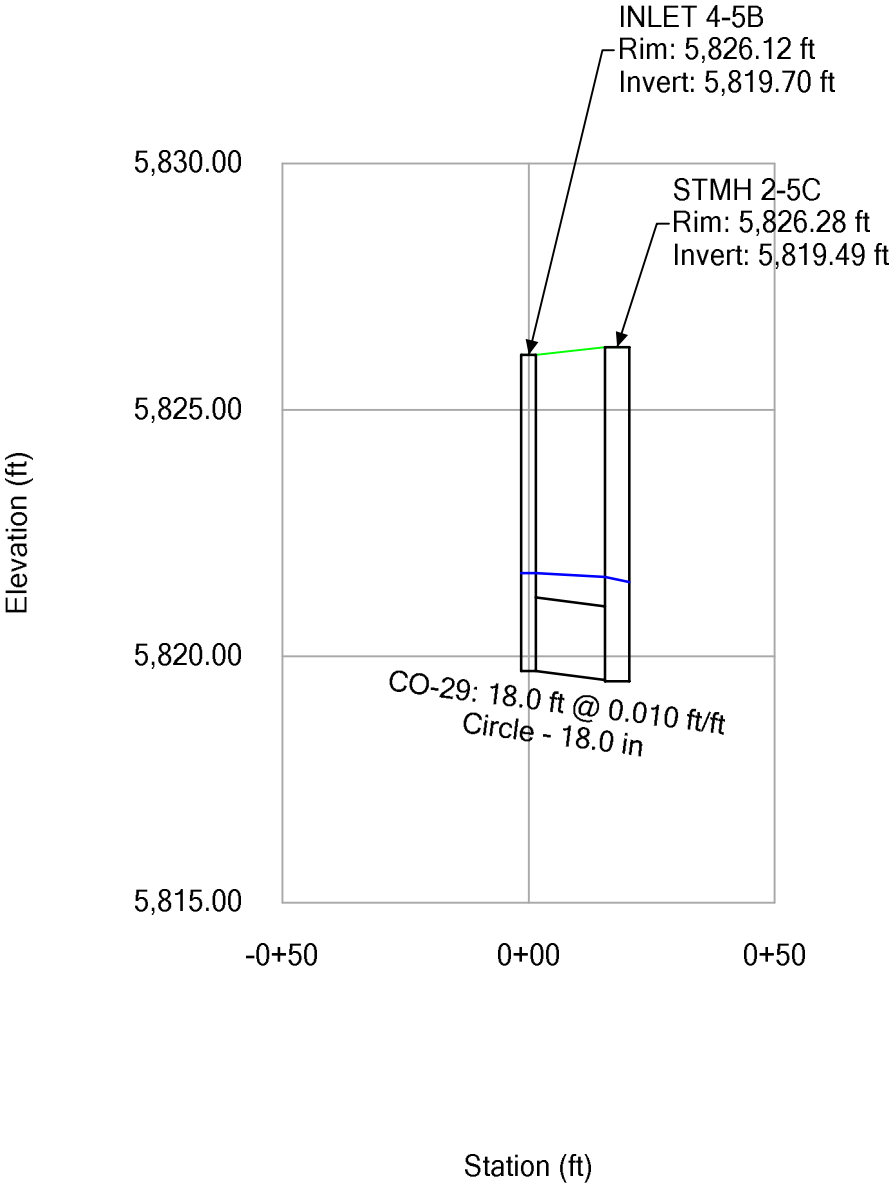
Profile Report
Engineering Profile - Profile - Storm Line 5F (Compark Village South StormCAD [2 year].stsw)



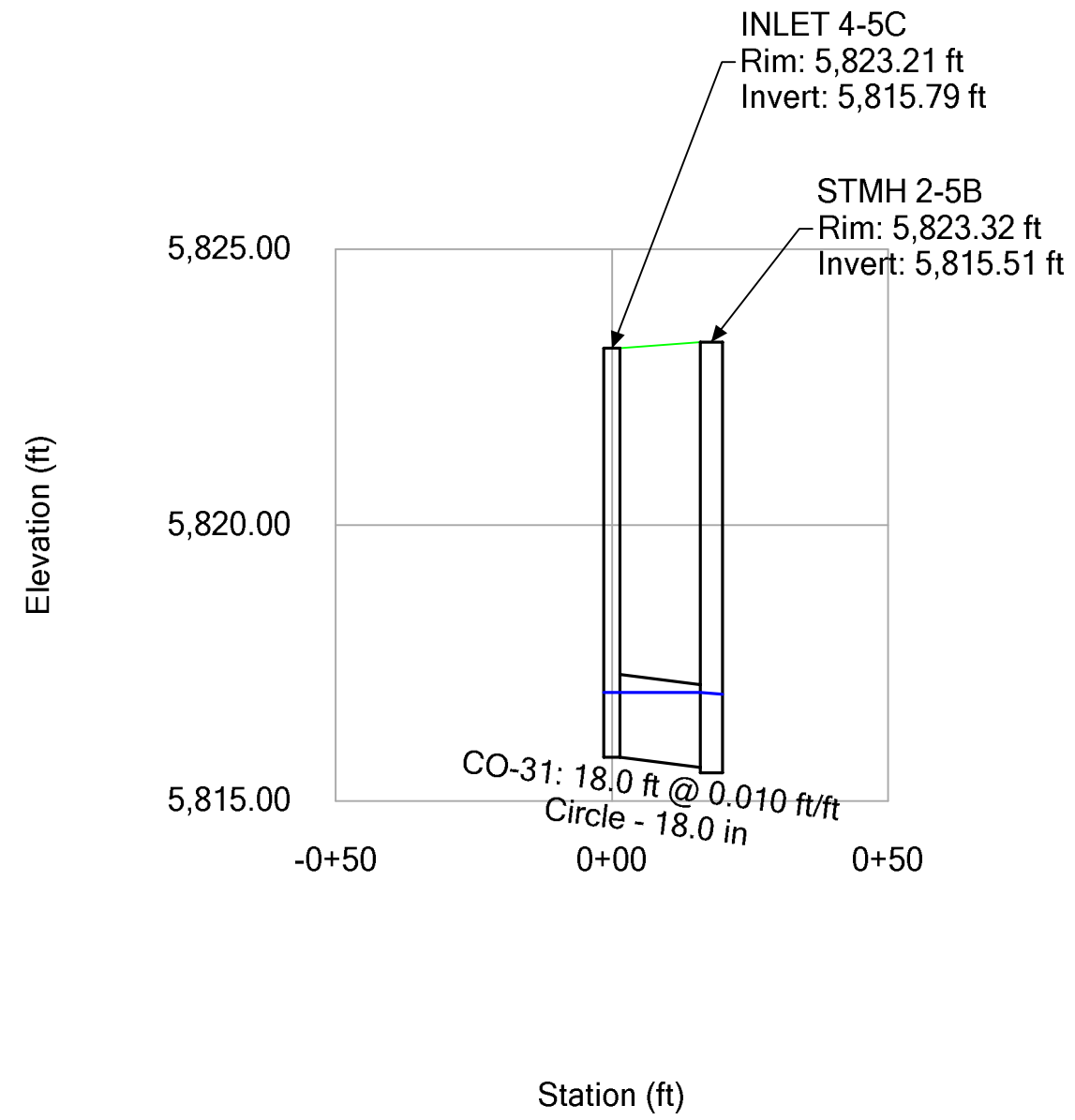
Profile Report
Engineering Profile - Profile - Storm Line 5F (Compark Village South StormCAD [5 year].stsw)



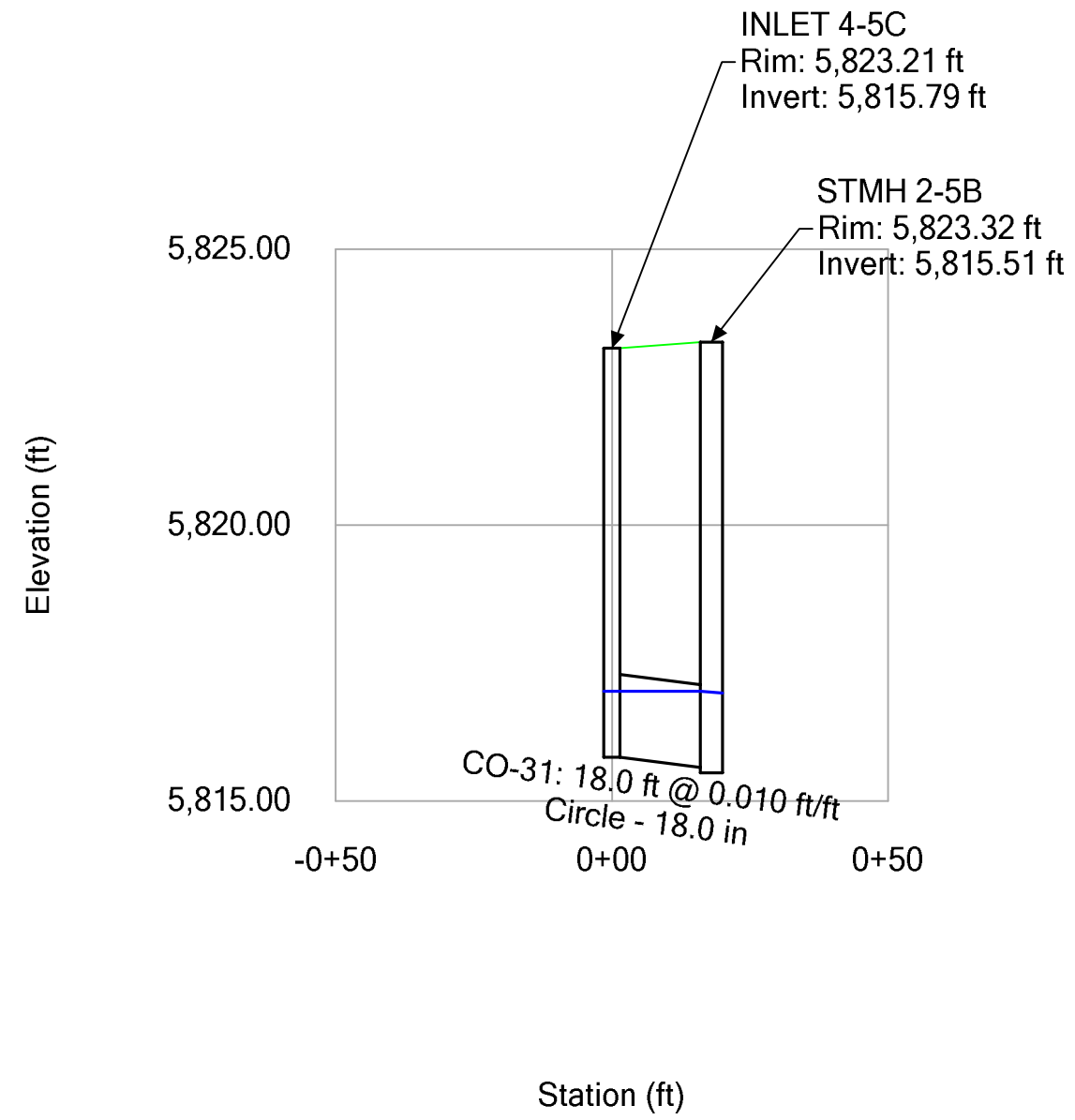
Profile Report
Engineering Profile - Profile - Storm Line 5F (Compark Village South StormCAD [100 year].stsw)



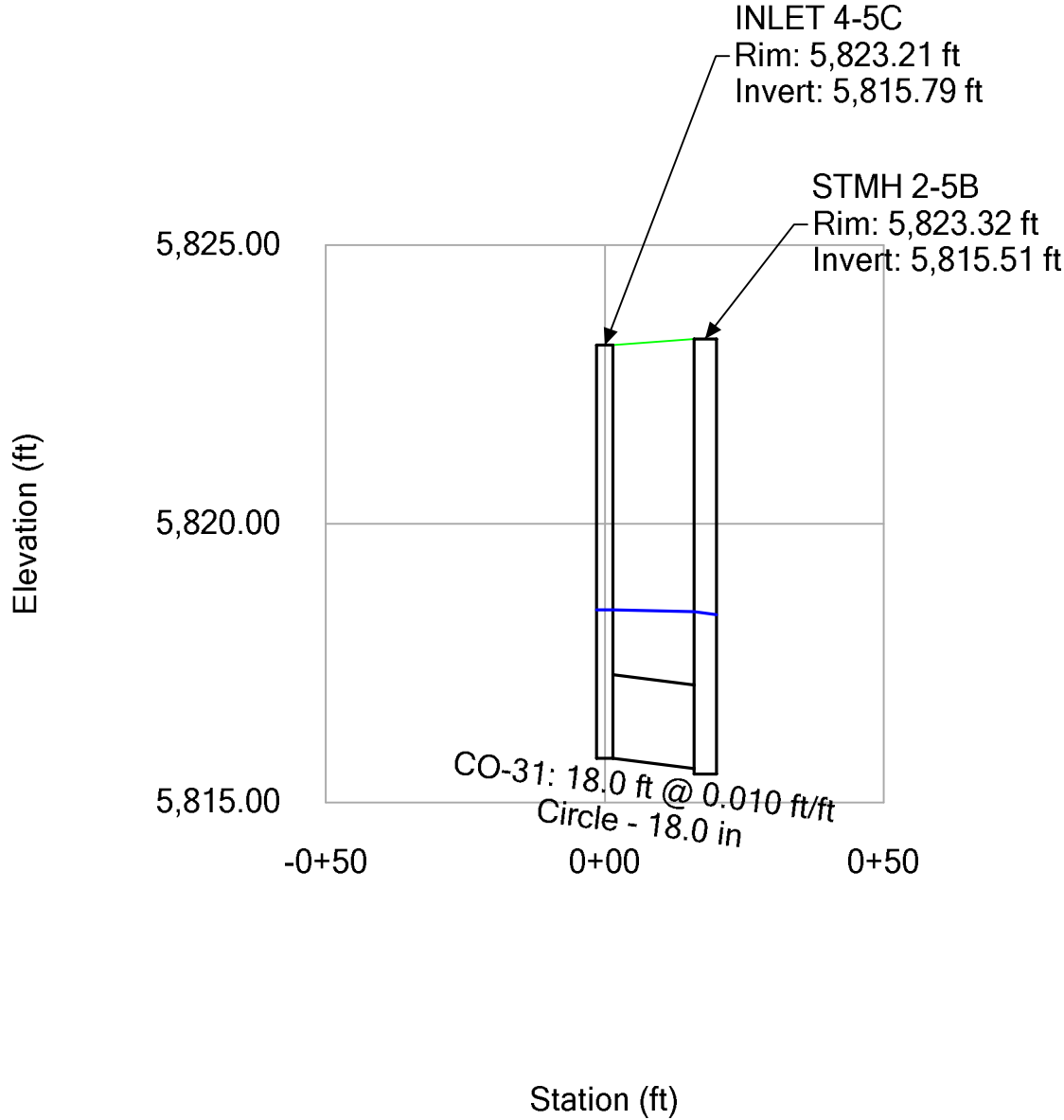
Profile Report
Engineering Profile - Profile - Storm Line 5G (Compark Village South StormCAD [2 year].stsw)



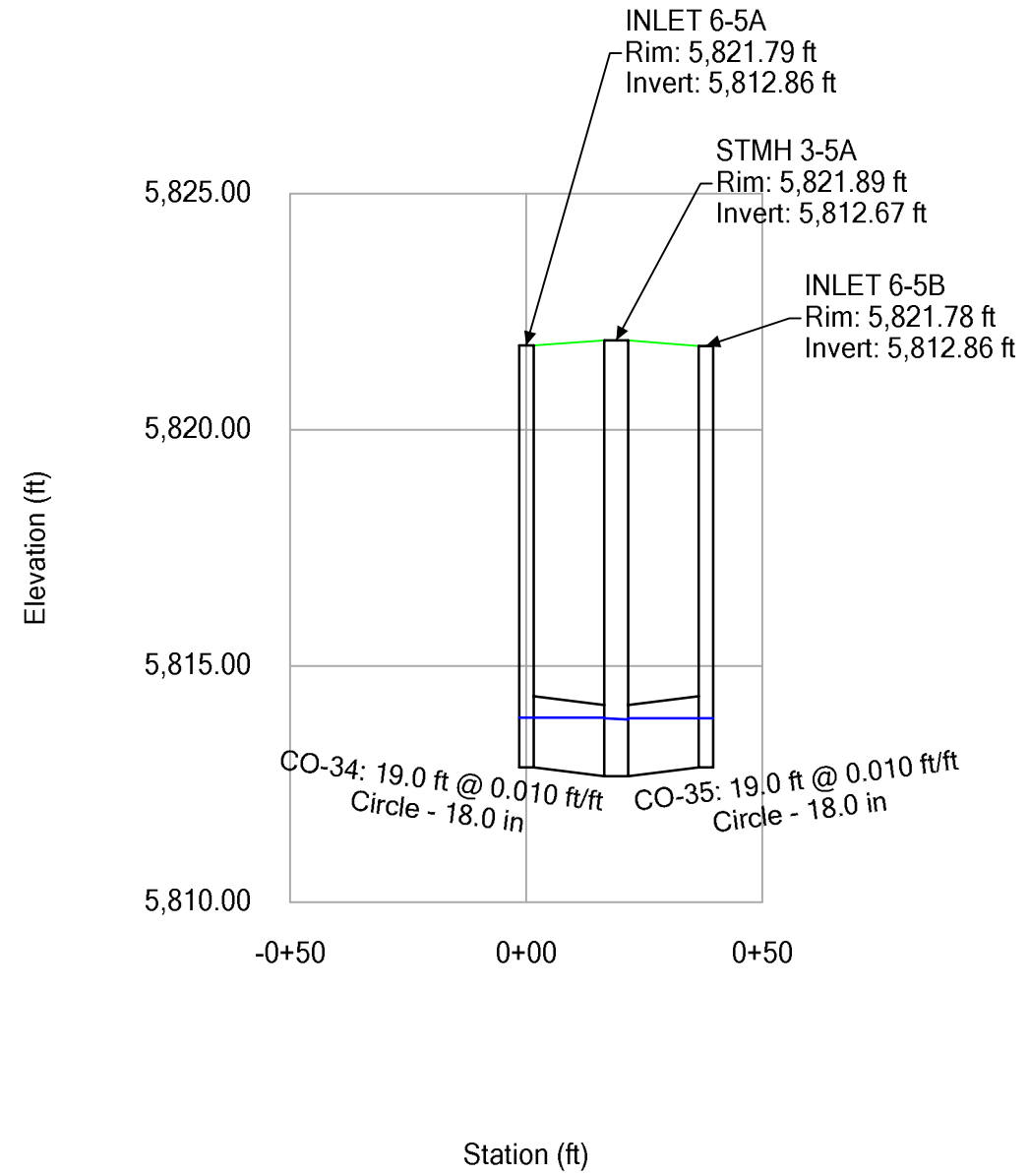
Profile Report
Engineering Profile - Profile - Storm Line 5G (Compark Village South StormCAD [5 year].stsw)



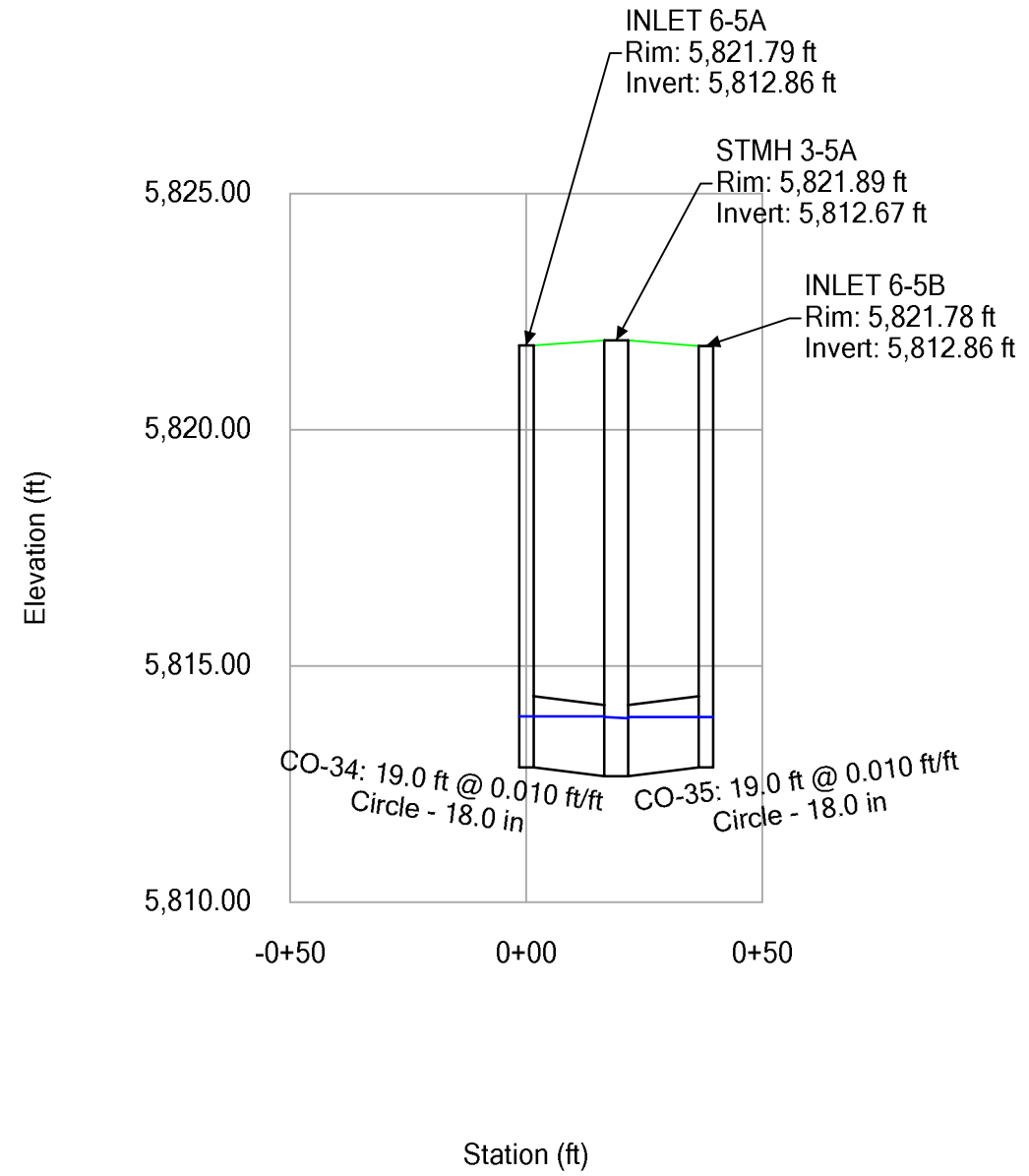
Profile Report
Engineering Profile - Profile - Storm Line 5G (Compark Village South StormCAD [100 year].stsw)



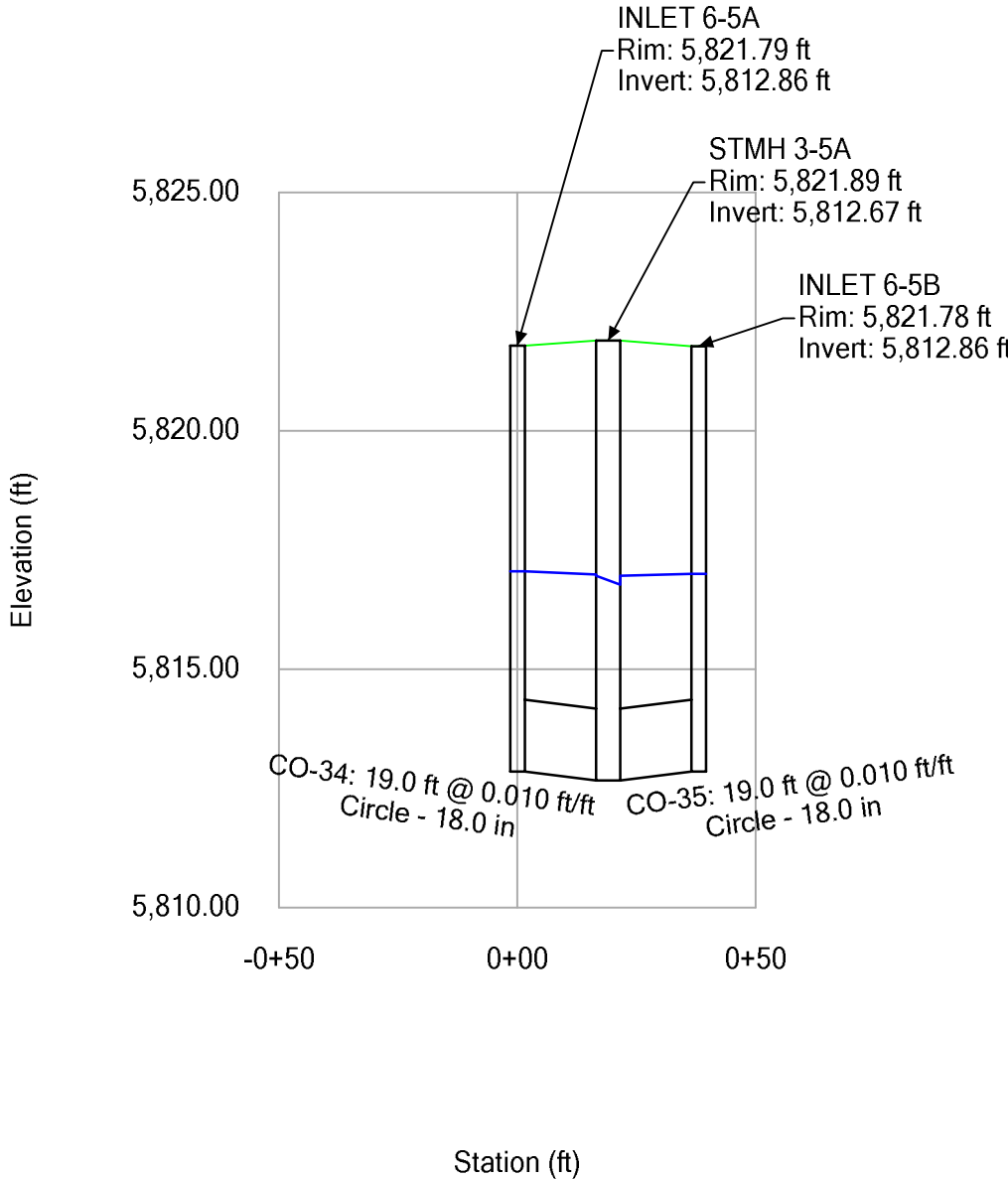
Profile Report
Engineering Profile - Profile - Storm Line 5H (Compark Village South StormCAD [2 year].stsw)



Profile Report
Engineering Profile - Profile - Storm Line 5H (Compark Village South StormCAD [5 year].stsw)



Profile Report
Engineering Profile - Profile - Storm Line 5H (Compark Village South StormCAD [100 year].stsw)



FlexTable: Conduit Table

Label	Start Node	Invert (Start) (ft)	Stop Node	Invert (Stop) (ft)	Length (User Defined) (ft)	Slope (Calculated) (ft/ft)	Diameter (in)	Manning's n	Flow (cfs)
CO-5	STMH 6-4	5,834.91	INLET 6-4	5,832.53	120.0	0.020	36.0	0.013	8.50
CO-6	INLET 6-4	5,832.33	STMH 5-4	5,827.71	278.0	0.017	36.0	0.013	9.60
CO-18	FES 2-5	5,834.54	INLET 8-5	5,834.00	7.7	0.070	24.0	0.013	4.10
CO-7	INLET 5-4	5,829.34	STMH 5-4	5,828.83	52.0	0.010	18.0	0.013	3.40
CO-9	INLET 3-4	5,825.42	STMH 4-4	5,825.23	20.0	0.010	18.0	0.013	3.90
CO-12	INLET 1-4	5,823.04	STMH 2-4	5,821.92	65.0	0.017	18.0	0.013	2.30
CO-10	INLET 4-4	5,825.42	STMH 4-4	5,825.23	20.0	0.010	18.0	0.013	0.90
CO-16	INLET 2-6	5,813.03	INLET 1-6	5,811.92	80.0	0.014	24.0	0.013	2.90
CO-27	INLET 2-5	5,808.09	INLET 1-5	5,807.49	90.0	0.007	36.0	0.013	7.90
CO-28	INLET 1-5	5,807.29	STMH 1-5	5,806.51	103.0	0.008	36.0	0.013	12.80
CO-29	STMH 1-5	5,805.81	FES 1-5	5,788.00	446.0	0.040	42.0	0.013	53.81
CO-1	INLET 2-3	5,840.56	INLET 1-3	5,831.04	94.0	0.101	24.0	0.013	4.20
CO-4	FES 2-4	5,842.00	STMH 6-4	5,835.11	221.0	0.031	36.0	0.013	8.50
CO-8	STMH 5-4	5,827.41	STMH 4-4	5,822.96	163.0	0.027	36.0	0.013	14.00
CO-21	INLET 4-5	5,812.96	STMH 2-5A	5,812.27	19.0	0.036	18.0	0.013	2.40
CO-22	INLET 5-5	5,813.90	STMH 2-5	5,811.47	49.0	0.050	18.0	0.013	3.30
CO-11A	STMH 4-4	5,822.16	STMH 3-4	5,821.56	79.0	0.008	36.0	0.013	18.80
CO-11B	STMH 3-4	5,821.46	STMH 2-4	5,820.65	76.0	0.011	36.0	0.013	21.30
CO-11C	INLET 2-4	5,822.07	STMH 3-4	5,821.56	56.0	0.009	18.0	0.013	2.50
CO-17	INLET 1-6	5,811.72	STMH 1-6	5,807.77	133.0	0.030	24.0	0.013	5.80
CO-17A	STMH 1-6	5,807.67	FES1-6	5,806.00	70.0	0.024	24.0	0.013	5.80
CO-18A	INLET 8-5	5,833.51	INLET 7-5	5,827.49	173.0	0.035	24.0	0.013	4.10
CO-25A	INLET 4-5A	5,821.14	STMH 2-5E	5,820.90	20.0	0.012	18.0	0.013	4.10
CO-25B	INLET 5-5A	5,821.14	STMH 2-5E	5,820.90	20.0	0.012	18.0	0.013	4.20
CO-13	STMH 2-5	5,811.37	INLET 3-5	5,810.99	16.0	0.024	42.0	0.013	36.10
CO-14	INLET 3-5	5,810.89	STMH 1-5	5,806.01	266.0	0.018	42.0	0.013	40.00
CO-15	INLET 7-5	5,827.14	STMH 4-5	5,822.27	104.6	0.047	24.0	0.013	4.30
CO-16	STMH 4-5	5,822.27	INLET 6-5	5,821.44	23.0	0.036	24.0	0.013	4.30
CO-17	STMH 2-5A	5,812.17	STMH 2-5	5,811.47	50.0	0.014	36.0	0.013	20.00
CO-18	STMH 2-5B	5,815.51	STMH 2-5A	5,812.17	241.0	0.014	30.0	0.013	17.60
CO-20	STMH 2-4	5,820.42	STMH 1-4	5,818.85	60.0	0.026	36.0	0.013	23.60
CO-21	STMH 1-4	5,818.85	FES 1-4	5,818.00	33.0	0.026	36.0	0.013	23.60
CO-22	INLET 1-3	5,829.94	STMH 1-3	5,829.37	18.4	0.031	24.0	0.013	8.90
CO-23	STMH 1-3	5,829.37	O-1	5,829.00	12.0	0.031	24.0	0.013	8.90
CO-24	INLET 5-4A	5,829.26	STMH 5-4	5,828.83	43.0	0.010	18.0	0.013	1.00
CO-25	STMH 2-5E	5,820.80	STMH 2-5D	5,820.12	44.0	0.015	24.0	0.013	8.30
CO-27	STMH 2-5D	5,820.12	STMH 2-5C	5,819.49	45.0	0.014	24.0	0.013	11.80
CO-28	STMH 2-5C	5,819.49	STMH 2-5B	5,815.51	289.0	0.014	30.0	0.013	15.20
CO-29	INLET 4-5B	5,819.70	STMH 2-5C	5,819.52	18.0	0.010	18.0	0.013	3.40
CO-30	INLET 5-5B	5,828.30	STMH 2-5D	5,820.22	293.0	0.028	18.0	0.013	3.50
CO-31	INLET 4-5C	5,815.79	STMH 2-5B	5,815.61	18.0	0.010	18.0	0.013	2.40
CO-32	INLET 6-5	5,821.14	STMH 3-5A	5,812.67	247.0	0.034	30.0	0.013	8.20
CO-33	STMH 3-5A	5,812.67	STMH 2-5	5,811.37	48.0	0.027	30.0	0.013	12.80
CO-34	INLET 6-5A	5,812.86	STMH 3-5A	5,812.67	19.0	0.010	18.0	0.013	2.60
CO-35	INLET 6-5B	5,812.86	STMH 3-5A	5,812.67	19.0	0.010	18.0	0.013	2.00

FlexTable: Conduit Table

Label	Start Node	Invert (Start) (ft)	Stop Node	Invert (Stop) (ft)	Length (User Defined) (ft)	Slope (Calculated) (ft/ft)	Diameter (in)	Manning's n	Flow (cfs)
CO-5	STMH 6-4	5,834.91	INLET 6-4	5,832.53	120.0	0.020	36.0	0.013	8.50
CO-6	INLET 6-4	5,832.33	STMH 5-4	5,827.71	278.0	0.017	36.0	0.013	9.60
CO-18	FES 2-5	5,834.54	INLET 8-5	5,834.00	7.7	0.070	24.0	0.013	4.10
CO-7	INLET 5-4	5,829.34	STMH 5-4	5,828.83	52.0	0.010	18.0	0.013	3.60
CO-9	INLET 3-4	5,825.42	STMH 4-4	5,825.23	20.0	0.010	18.0	0.013	4.00
CO-12	INLET 1-4	5,823.04	STMH 2-4	5,821.92	65.0	0.017	18.0	0.013	2.40
CO-10	INLET 4-4	5,825.42	STMH 4-4	5,825.23	20.0	0.010	18.0	0.013	0.90
CO-16	INLET 2-6	5,813.03	INLET 1-6	5,811.92	80.0	0.014	24.0	0.013	3.00
CO-27	INLET 2-5	5,808.09	INLET 1-5	5,807.49	90.0	0.007	36.0	0.013	8.20
CO-28	INLET 1-5	5,807.29	STMH 1-5	5,806.51	103.0	0.008	36.0	0.013	13.30
CO-29	STMH 1-5	5,805.81	FES 1-5	5,788.00	446.0	0.040	42.0	0.013	55.71
CO-1	INLET 2-3	5,840.56	INLET 1-3	5,831.04	94.0	0.101	24.0	0.013	4.50
CO-4	FES 2-4	5,842.00	STMH 6-4	5,835.11	221.0	0.031	36.0	0.013	8.50
CO-8	STMH 5-4	5,827.41	STMH 4-4	5,822.96	163.0	0.027	36.0	0.013	14.30
CO-21	INLET 4-5	5,812.96	STMH 2-5A	5,812.27	19.0	0.036	18.0	0.013	2.50
CO-22	INLET 5-5	5,813.90	STMH 2-5	5,811.47	49.0	0.050	18.0	0.013	3.40
CO-11A	STMH 4-4	5,822.16	STMH 3-4	5,821.56	79.0	0.008	36.0	0.013	19.20
CO-11B	STMH 3-4	5,821.46	STMH 2-4	5,820.65	76.0	0.011	36.0	0.013	21.80
CO-11C	INLET 2-4	5,822.07	STMH 3-4	5,821.56	56.0	0.009	18.0	0.013	2.60
CO-17	INLET 1-6	5,811.72	STMH 1-6	5,807.77	133.0	0.030	24.0	0.013	6.00
CO-17A	STMH 1-6	5,807.67	FES1-6	5,806.00	70.0	0.024	24.0	0.013	6.00
CO-18A	INLET 8-5	5,833.51	INLET 7-5	5,827.49	173.0	0.035	24.0	0.013	4.10
CO-25A	INLET 4-5A	5,821.14	STMH 2-5E	5,820.90	20.0	0.012	18.0	0.013	4.30
CO-25B	INLET 5-5A	5,821.14	STMH 2-5E	5,820.90	20.0	0.012	18.0	0.013	4.30
CO-13	STMH 2-5	5,811.37	INLET 3-5	5,810.99	16.0	0.024	42.0	0.013	37.30
CO-14	INLET 3-5	5,810.89	STMH 1-5	5,806.01	266.0	0.018	42.0	0.013	41.40
CO-15	INLET 7-5	5,827.14	STMH 4-5	5,822.27	104.6	0.047	24.0	0.013	4.30
CO-16	STMH 4-5	5,822.27	INLET 6-5	5,821.44	23.0	0.036	24.0	0.013	4.30
CO-17	STMH 2-5A	5,812.17	STMH 2-5	5,811.47	50.0	0.014	36.0	0.013	20.60
CO-18	STMH 2-5B	5,815.51	STMH 2-5A	5,812.17	241.0	0.014	30.0	0.013	18.10
CO-20	STMH 2-4	5,820.42	STMH 1-4	5,818.85	60.0	0.026	36.0	0.013	24.20
CO-21	STMH 1-4	5,818.85	FES 1-4	5,818.00	33.0	0.026	36.0	0.013	24.20
CO-22	INLET 1-3	5,829.94	STMH 1-3	5,829.37	18.4	0.031	24.0	0.013	10.00
CO-23	STMH 1-3	5,829.37	O-1	5,829.00	12.0	0.031	24.0	0.013	10.00
CO-24	INLET 5-4A	5,829.26	STMH 5-4	5,828.83	43.0	0.010	18.0	0.013	1.10
CO-25	STMH 2-5E	5,820.80	STMH 2-5D	5,820.12	44.0	0.015	24.0	0.013	8.60
CO-27	STMH 2-5D	5,820.12	STMH 2-5C	5,819.49	45.0	0.014	24.0	0.013	12.10
CO-28	STMH 2-5C	5,819.49	STMH 2-5B	5,815.51	289.0	0.014	30.0	0.013	15.60
CO-29	INLET 4-5B	5,819.70	STMH 2-5C	5,819.52	18.0	0.010	18.0	0.013	3.50
CO-30	INLET 5-5B	5,828.30	STMH 2-5D	5,820.22	293.0	0.028	18.0	0.013	3.50
CO-31	INLET 4-5C	5,815.79	STMH 2-5B	5,815.61	18.0	0.010	18.0	0.013	2.50
CO-32	INLET 6-5	5,821.14	STMH 3-5A	5,812.67	247.0	0.034	30.0	0.013	8.50
CO-33	STMH 3-5A	5,812.67	STMH 2-5	5,811.37	48.0	0.027	30.0	0.013	13.30
CO-34	INLET 6-5A	5,812.86	STMH 3-5A	5,812.67	19.0	0.010	18.0	0.013	2.70
CO-35	INLET 6-5B	5,812.86	STMH 3-5A	5,812.67	19.0	0.010	18.0	0.013	2.10

FlexTable: Conduit Table

Label	Start Node	Invert (Start) (ft)	Stop Node	Invert (Stop) (ft)	Length (User Defined) (ft)	Slope (Calculated) (ft/ft)	Diameter (in)	Manning's n	Flow (cfs)
CO-5	STMH 6-4	5,834.91	INLET 6-4	5,832.53	120.0	0.020	36.0	0.013	47.81
CO-6	INLET 6-4	5,832.33	STMH 5-4	5,827.71	278.0	0.017	36.0	0.013	51.31
CO-18	FES 2-5	5,834.54	INLET 8-5	5,834.00	7.7	0.070	24.0	0.013	24.64
CO-7	INLET 5-4	5,829.34	STMH 5-4	5,828.83	52.0	0.010	18.0	0.013	9.80
CO-9	INLET 3-4	5,825.42	STMH 4-4	5,825.23	20.0	0.010	18.0	0.013	11.20
CO-12	INLET 1-4	5,823.04	STMH 2-4	5,821.92	65.0	0.017	18.0	0.013	7.70
CO-10	INLET 4-4	5,825.42	STMH 4-4	5,825.23	20.0	0.010	18.0	0.013	2.40
CO-16	INLET 2-6	5,813.03	INLET 1-6	5,811.92	80.0	0.014	24.0	0.013	8.10
CO-27	INLET 2-5	5,808.09	INLET 1-5	5,807.49	90.0	0.007	36.0	0.013	23.50
CO-28	INLET 1-5	5,807.29	STMH 1-5	5,806.51	103.0	0.008	36.0	0.013	38.60
CO-29	STMH 1-5	5,805.81	FES 1-5	5,788.00	446.0	0.040	42.0	0.013	156.03
CO-1	INLET 2-3	5,840.56	INLET 1-3	5,831.04	94.0	0.101	24.0	0.013	9.00
CO-4	FES 2-4	5,842.00	STMH 6-4	5,835.11	221.0	0.031	36.0	0.013	47.81
CO-8	STMH 5-4	5,827.41	STMH 4-4	5,822.96	163.0	0.027	36.0	0.013	63.33
CO-21	INLET 4-5	5,812.96	STMH 2-5A	5,812.27	19.0	0.036	18.0	0.013	8.90
CO-22	INLET 5-5	5,813.90	STMH 2-5	5,811.47	49.0	0.050	18.0	0.013	9.10
CO-11A	STMH 4-4	5,822.16	STMH 3-4	5,821.56	79.0	0.008	36.0	0.013	76.93
CO-11B	STMH 3-4	5,821.46	STMH 2-4	5,820.65	76.0	0.011	36.0	0.013	84.93
CO-11C	INLET 2-4	5,822.07	STMH 3-4	5,821.56	56.0	0.009	18.0	0.013	8.00
CO-17	INLET 1-6	5,811.72	STMH 1-6	5,807.77	133.0	0.030	24.0	0.013	15.40
CO-17A	STMH 1-6	5,807.67	FES1-6	5,806.00	70.0	0.024	24.0	0.013	15.40
CO-18A	INLET 8-5	5,833.51	INLET 7-5	5,827.49	173.0	0.035	24.0	0.013	24.64
CO-25A	INLET 4-5A	5,821.14	STMH 2-5E	5,820.90	20.0	0.012	18.0	0.013	10.20
CO-25B	INLET 5-5A	5,821.14	STMH 2-5E	5,820.90	20.0	0.012	18.0	0.013	10.62
CO-13	STMH 2-5	5,811.37	INLET 3-5	5,810.99	16.0	0.024	42.0	0.013	123.06
CO-14	INLET 3-5	5,810.89	STMH 1-5	5,806.01	266.0	0.018	42.0	0.013	136.96
CO-15	INLET 7-5	5,827.14	STMH 4-5	5,822.27	104.6	0.047	24.0	0.013	34.84
CO-16	STMH 4-5	5,822.27	INLET 6-5	5,821.44	23.0	0.036	24.0	0.013	34.84
CO-17	STMH 2-5A	5,812.17	STMH 2-5	5,811.47	50.0	0.014	36.0	0.013	48.02
CO-18	STMH 2-5B	5,815.51	STMH 2-5A	5,812.17	241.0	0.014	30.0	0.013	39.12
CO-20	STMH 2-4	5,820.42	STMH 1-4	5,818.85	60.0	0.026	36.0	0.013	92.63
CO-21	STMH 1-4	5,818.85	FES 1-4	5,818.00	33.0	0.026	36.0	0.013	92.63
CO-22	INLET 1-3	5,829.94	STMH 1-3	5,829.37	18.4	0.031	24.0	0.013	22.50
CO-23	STMH 1-3	5,829.37	O-1	5,829.00	12.0	0.031	24.0	0.013	22.50
CO-24	INLET 5-4A	5,829.26	STMH 5-4	5,828.83	43.0	0.010	18.0	0.013	2.22
CO-25	STMH 2-5E	5,820.80	STMH 2-5D	5,820.12	44.0	0.015	24.0	0.013	20.82
CO-27	STMH 2-5D	5,820.12	STMH 2-5C	5,819.49	45.0	0.014	24.0	0.013	28.32
CO-28	STMH 2-5C	5,819.49	STMH 2-5B	5,815.51	289.0	0.014	30.0	0.013	35.22
CO-29	INLET 4-5B	5,819.70	STMH 2-5C	5,819.52	18.0	0.010	18.0	0.013	6.90
CO-30	INLET 5-5B	5,828.30	STMH 2-5D	5,820.22	293.0	0.028	18.0	0.013	7.50
CO-31	INLET 4-5C	5,815.79	STMH 2-5B	5,815.61	18.0	0.010	18.0	0.013	3.90
CO-32	INLET 6-5	5,821.14	STMH 3-5A	5,812.67	247.0	0.034	30.0	0.013	54.44
CO-33	STMH 3-5A	5,812.67	STMH 2-5	5,811.37	48.0	0.027	30.0	0.013	65.94
CO-34	INLET 6-5A	5,812.86	STMH 3-5A	5,812.67	19.0	0.010	18.0	0.013	6.20
CO-35	INLET 6-5B	5,812.86	STMH 3-5A	5,812.67	19.0	0.010	18.0	0.013	5.30

Temporary Swale East of Residential Site - Upper

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.01000	ft/ft
Left Side Slope	0.20	ft/ft (H:V)
Right Side Slope	0.20	ft/ft (H:V)
Bottom Width	4.00	ft
Discharge	9.80	ft ³ /s

Results

Normal Depth	0.79	ft
Flow Area	3.29	ft ²
Wetted Perimeter	5.62	ft
Hydraulic Radius	0.59	ft
Top Width	4.32	ft
Critical Depth	0.57	ft
Critical Slope	0.02837	ft/ft
Velocity	2.98	ft/s
Velocity Head	0.14	ft
Specific Energy	0.93	ft
Froude Number	0.60	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.79	ft
Critical Depth	0.57	ft
Channel Slope	0.01000	ft/ft

Temp Swale East of Street E - Top

GVF Output Data

Critical Slope 0.02837 ft/ft

Temporary Swale East of Residential Site - Lower

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.050	
Channel Slope	0.10000	ft/ft
Left Side Slope	0.20	ft/ft (H:V)
Right Side Slope	0.20	ft/ft (H:V)
Bottom Width	4.00	ft
Discharge	9.80	ft ³ /s

Results

Normal Depth	0.48	ft
Flow Area	1.95	ft ²
Wetted Perimeter	4.97	ft
Hydraulic Radius	0.39	ft
Top Width	4.19	ft
Critical Depth	0.57	ft
Critical Slope	0.05791	ft/ft
Velocity	5.03	ft/s
Velocity Head	0.39	ft
Specific Energy	0.87	ft
Froude Number	1.30	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.48	ft
Critical Depth	0.57	ft
Channel Slope	0.10000	ft/ft

Temp Swale East of Street E - Bottom

GVF Output Data

Critical Slope 0.05791 ft/ft

TEMPORARY SWALE (EAST OF RESIDENTIAL SITE)

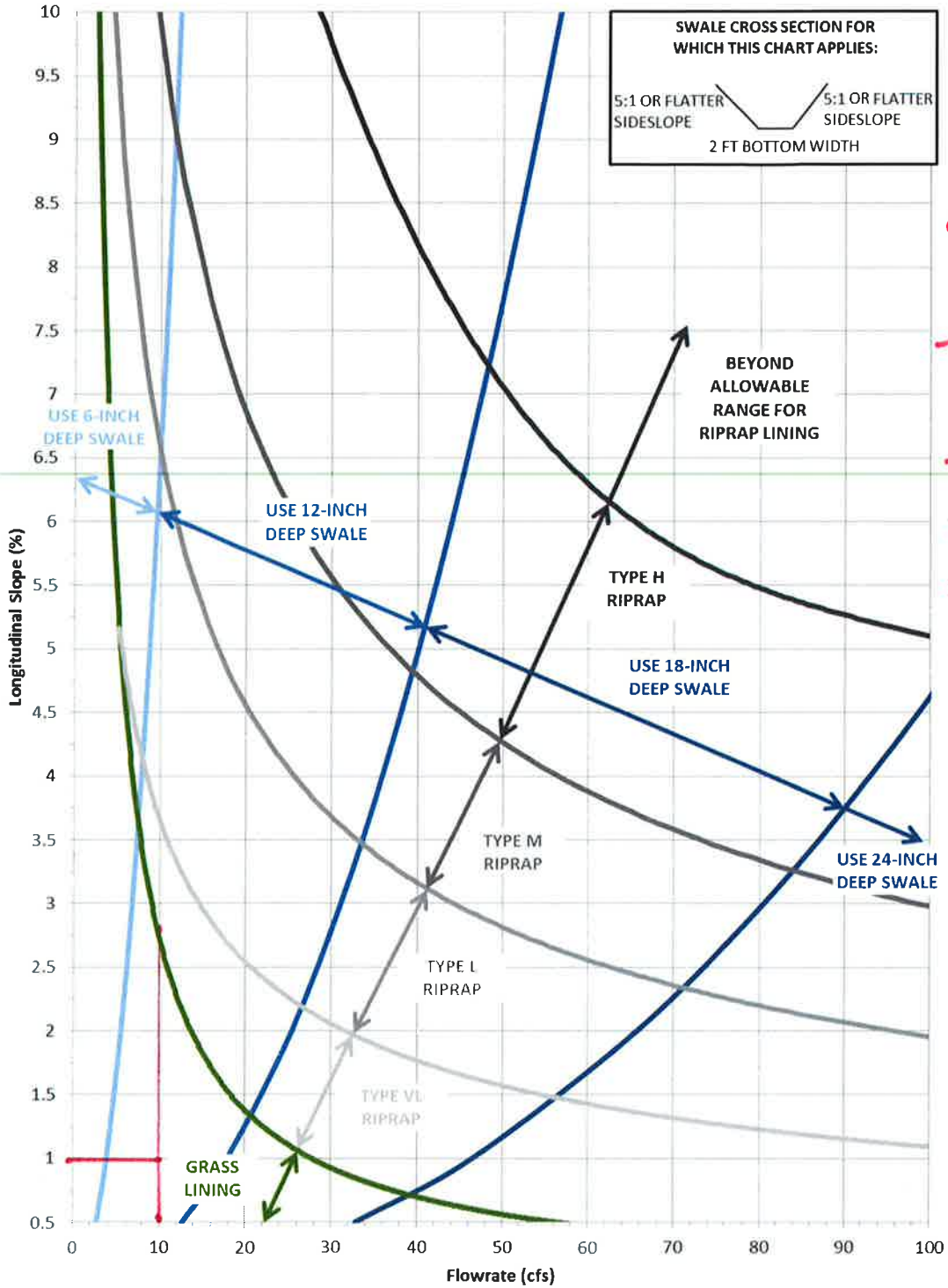


Figure 8-22. Swale stability chart; 2- to 4-foot bottom width and side slopes between 5:1 and 10:1
 (Note: Riprap classifications refer to gradation for riprap used in soil riprap or void-filled riprap. See Figure 8-34 for gradations.) (Source: Muller Engineering Company)

TEMPORARY SWALE (EAST OF RESIDENTIAL SITE)

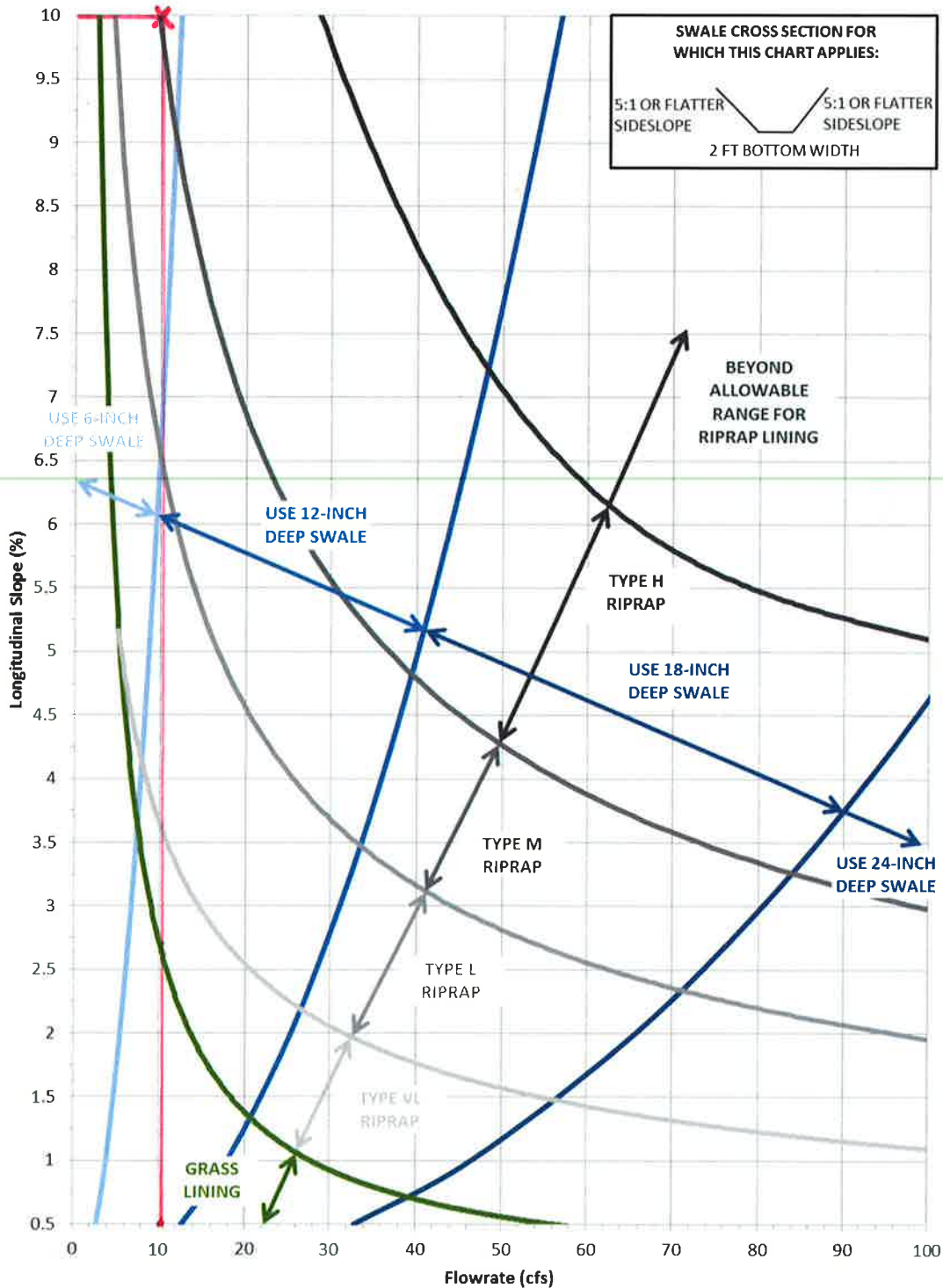
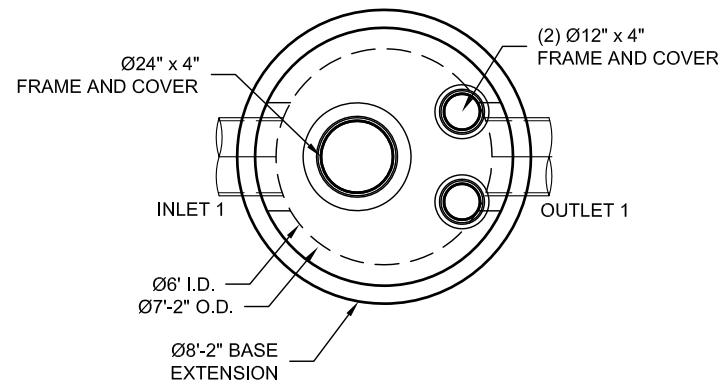
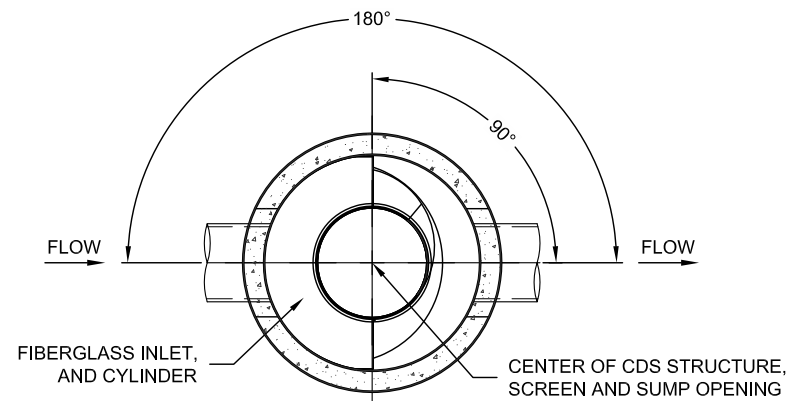


Figure 8-22. Swale stability chart; 2- to 4-foot bottom width and side slopes between 5:1 and 10:1
 (Note: Riprap classifications refer to gradation for riprap used in soil riprap or void-filled riprap. See Figure 8-34 for gradations.) (Source: Muller Engineering Company)

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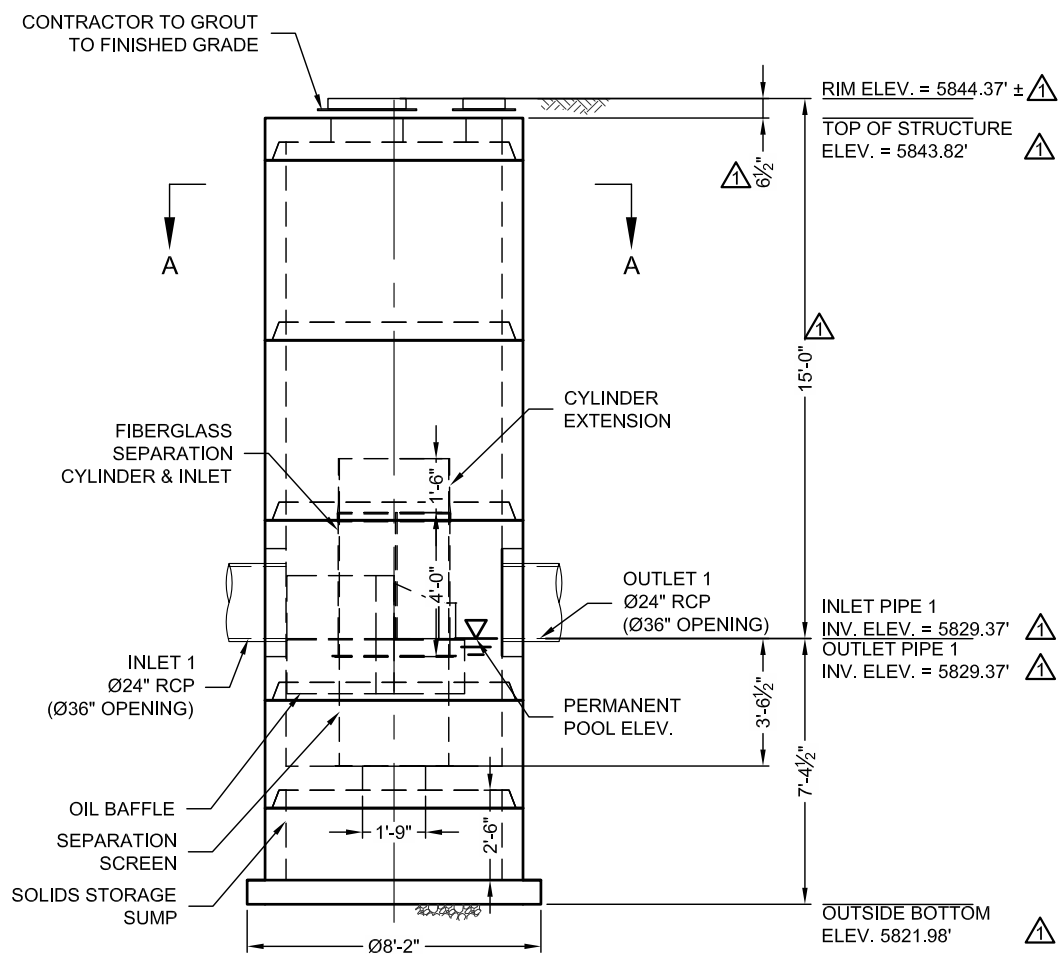


PLAN VIEW



SECTION A-A

● INTERNAL COMPONENTS TO BE INSTALLED BY CONTECH ON SITE



ELEVATION VIEW

MATERIAL LIST (PROVIDED BY CONTECH)

COUNT	DESCRIPTION	INSTALLED BY
1	FIBERGLASS INLET AND CYLINDER	CONTECH
1	2400 micron, 3' O.D. x 3.04' SEP. SCREEN	CONTECH
1	CYLINDER EXTENSION	CONTRACTOR
1	SEALANT FOR JOINTS (BY PRECASTER)	CONTRACTOR
1	Ø24" x 4" FRAME & COVER, E.J#41600389, OR EQUIV.	CONTRACTOR
2	Ø12" x 4" FRAME & COVER, E.J#41610201, OR EQUIV.	CONTRACTOR

SITE DESIGN DATA

WATER QUALITY FLOW RATE	0 CFS
PEAK FLOW RATE	29.2 CFS
RETURN PERIOD OF PEAK FLOW	100 YRS

GENERAL NOTES

- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
- CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
- STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
- IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
- CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
- CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

▲ **STRUCTURE WEIGHT**
APPROXIMATE HEAVIEST PICK = 10000 LBS.
STRUCTURE IS DELIVERED IN 6 PIECES

MAX FOOTPRINT = Ø8'-2"

CONTECH
CONTRACT
DRAWING

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MARK	DATE	REVISION DESCRIPTION	BY
1	7/28/16	IN/OUTLET & RIM ELEVATIONS	KJW

CDS3030-6-C - 542946-10
COMPARK SOUTH
PARKER, CO
for SYSTEM: STMH 1-3

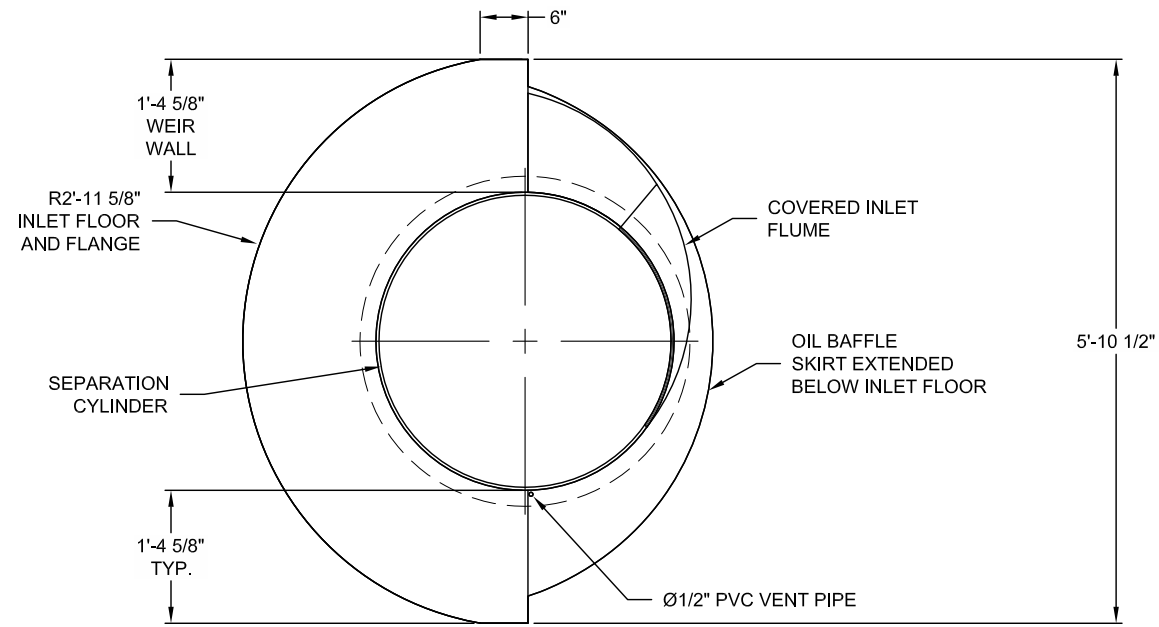
CONTECH
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www.ContechES.com
2201 W. Royal Lane, Suite 200, Irving, TX 75083
972-508-2000 972-508-2088 FAX

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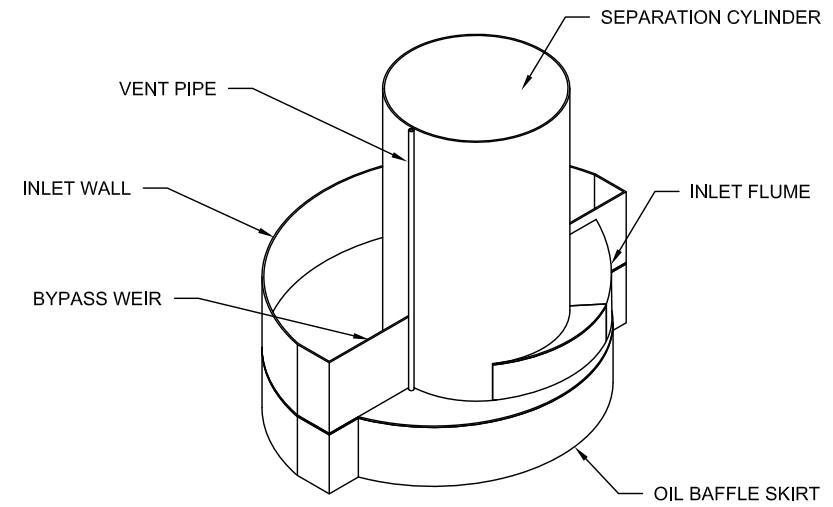
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DESIGNED:	JHR	DRAWN:	KJW
CHECKED:	XXX	APPROVED:	----
PROJECT No.:	542946	SEQUENCE No.:	10
SHEET:	1	OF	1

LPICO
LAYOUT 1A
3030-6-FGIS
1026 / FI72886

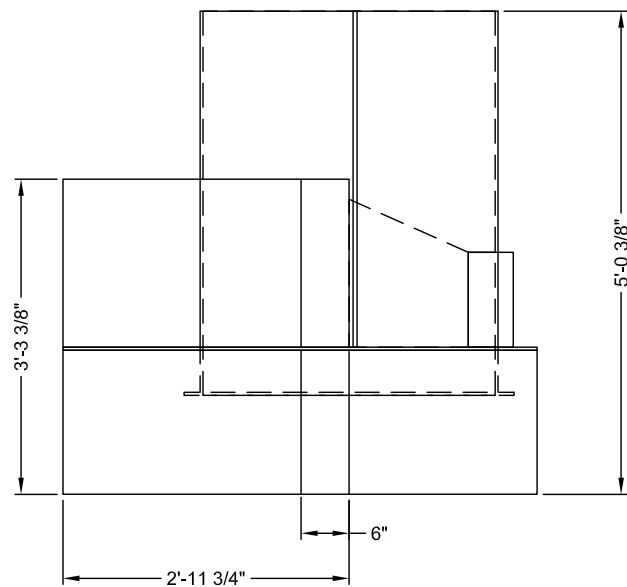
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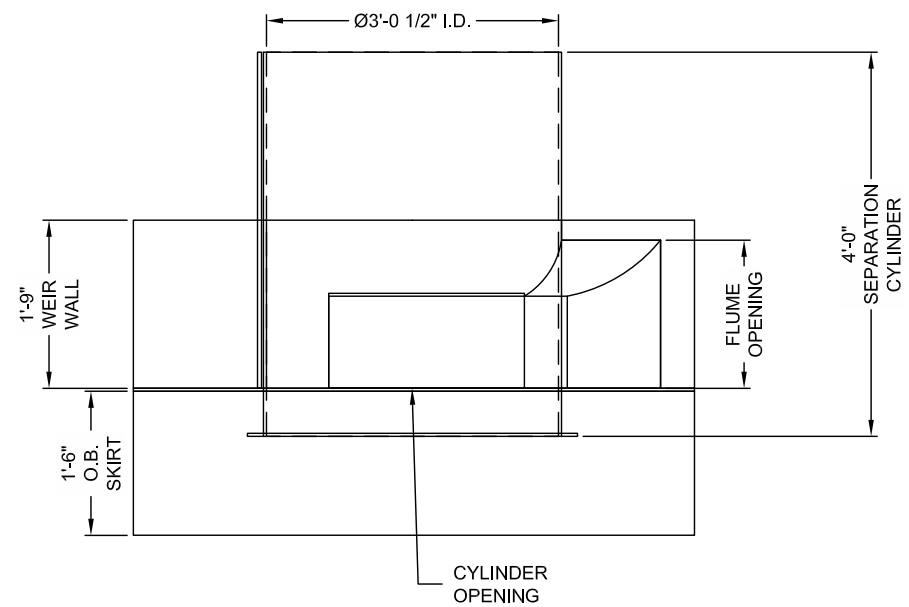
PLAN VIEW



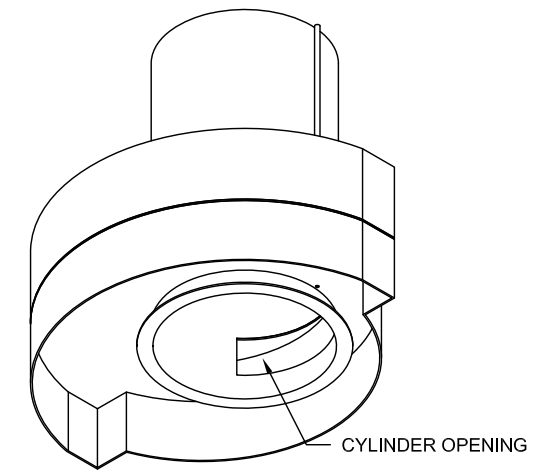
ASSEMBLY TOP VIEW
N.T.S.



ELEVATION VIEW



SIDE VIEW



ASSEMBLY BOTTOM VIEW
N.T.S.

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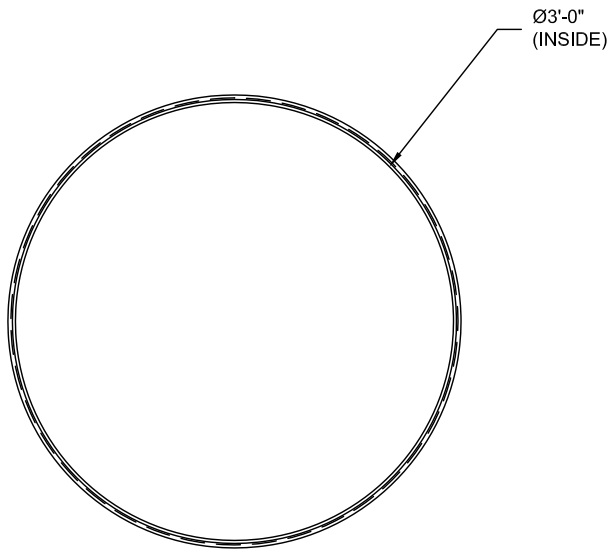
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PARKER, CO
 for SYSTEM: STMH 1-3

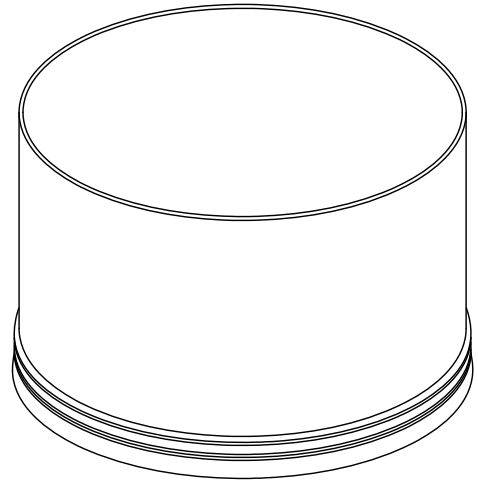
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ENGINEERED SOLUTIONS LLC
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 2201 W. Royal Lane, Suite 200, Irving, TX 75083
 972-580-2000 972-580-2089 FAX

DATE: 07/15/16	SCALE: 1/2" = 1'-0"
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CHECKED: XXX	APPROVED: ----
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SHEET: 1 OF 1	

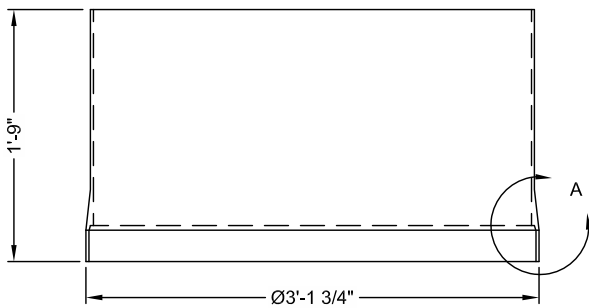
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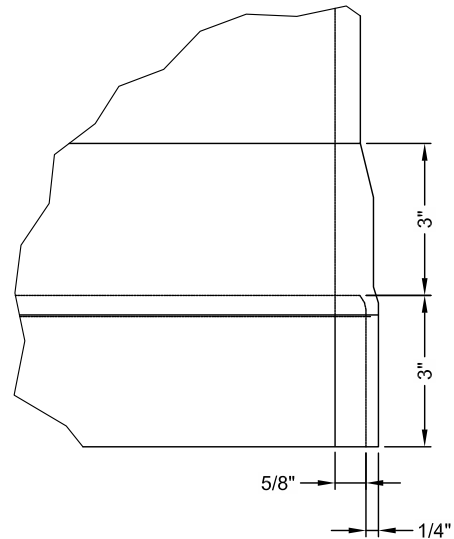
PLAN VIEW



ISOMETRIC VIEW



ELEVATION VIEW



DETAIL A
SCALE 3/16



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DRAWING

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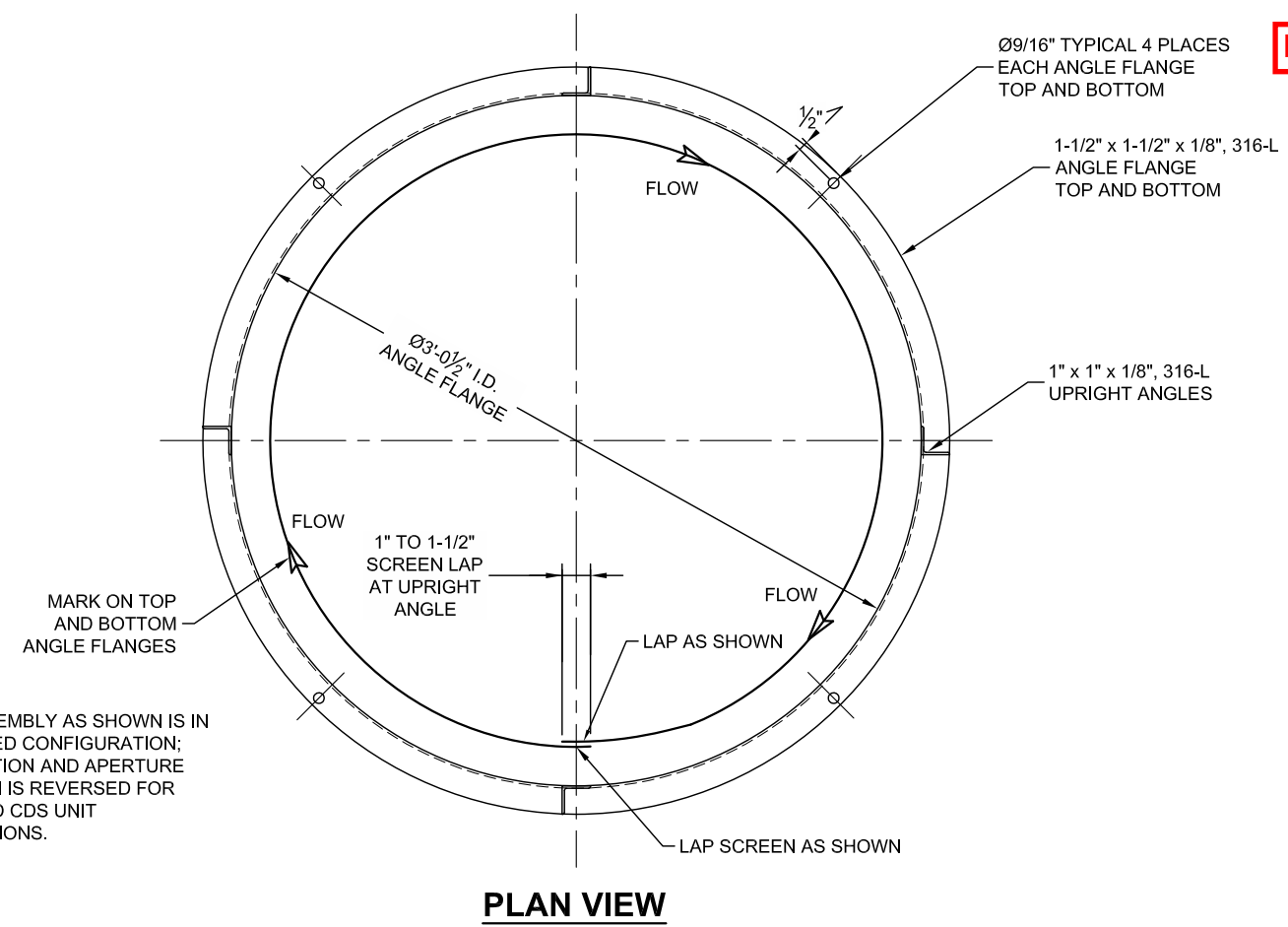
2201 W. Royal Lane, Suite 260, Irving, TX 75063
972-590-2000 972-590-2039 FAX

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COMPARK SOUTH
PARKER, CO
for SYSTEM: WQ UNIT #1

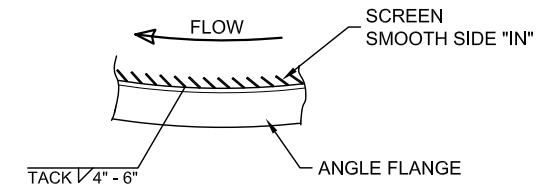
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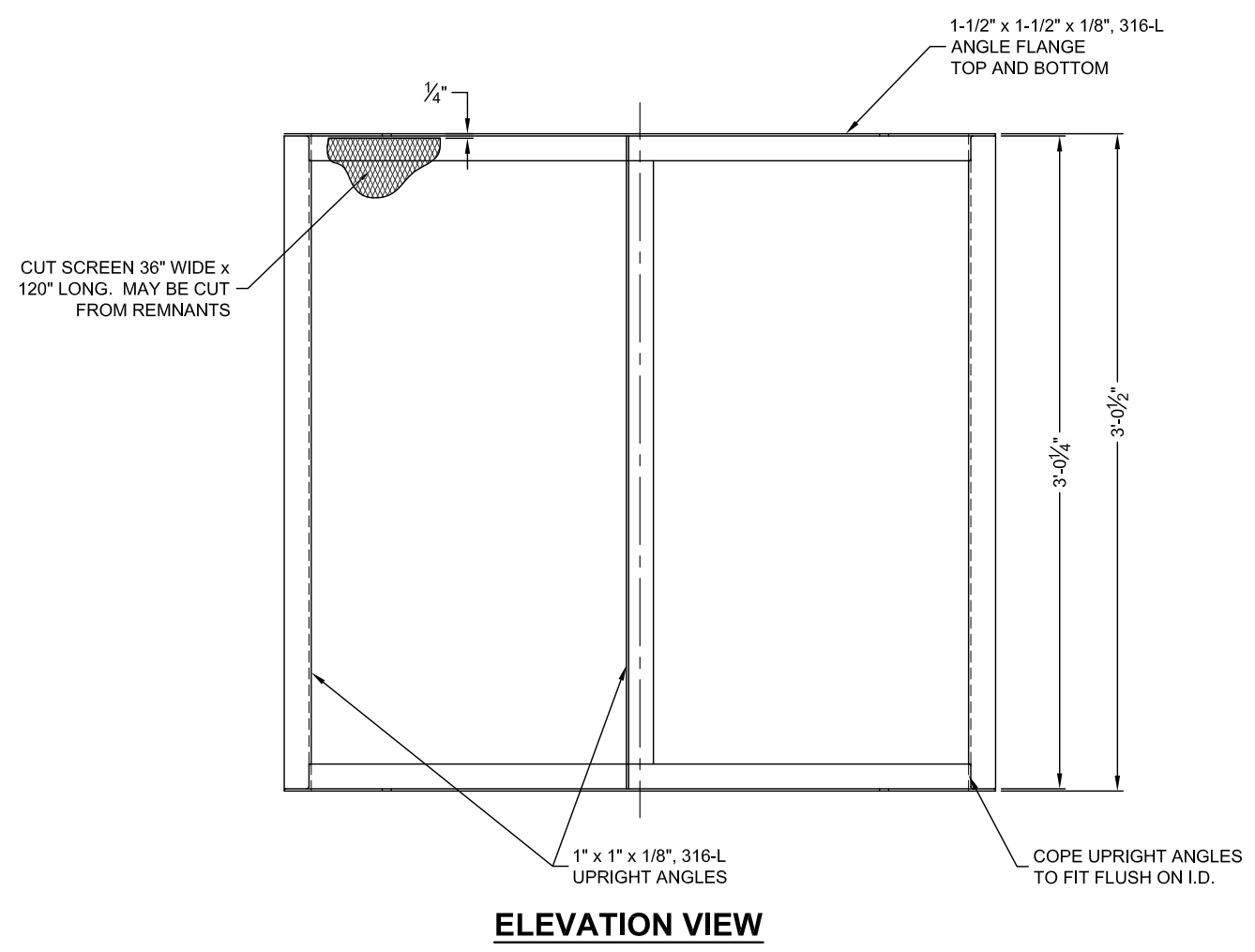
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NOTE:
SCREEN ASSEMBLY AS SHOWN IS IN
RIGHT-HANDED CONFIGURATION;
FLOW DIRECTION AND APERTURE
ORIENTATION IS REVERSED FOR
LEFT-HANDED CDS UNIT
CONFIGURATIONS.



**SCREEN DETAIL
TOP VIEW**



GENERAL NOTES:

1. ALL MATERIAL IS 316-L STAINLESS
2. SCREEN SHALL BE STAINLESS STEEL EXPANDED METAL CONFORMING TO ASTM 1267-01.
3. SCREEN APERTURE SIZE SHALL BE EITHER 4700 MICRON OR 2400 MICRON PER PROJECT ORDER.
4. TOP AND BOTTOM FLANGES MUST BE ROUND, FLAT, PARALLEL AND PLUM.
5. UPRIGHT ANGLES MUST BE PLUM AND SQUARE
6. STRAIGHTEN TOP AND BOTTOM FLANGES PRIOR TO ASSEMBLY OF FRAME.
7. FLATTEN ENDS OF SCREEN TO TOP AND BOTTOM ANGLE FLANGES PRIOR TO WELDING.
8. SCREEN IS TACK WELDED TO FRAME @ 4" CENTERS WITH SMOOTH SIDE ON INSIDE.
9. WIPE ANGLE FLANGES CLEAN AND PAINT:
 - CLOCKWISE END "GREEN" (RIGHT HAND FLOW).
 - COUNTER-CLOCKWISE END "RED" (LEFT HANDED FLOW).
10. FLANGE PAINTED GREEN ON TOP FOR RIGHT-HANDED CONFIGURATION.
11. FLANGE PAINTED RED ON TOP FOR LEFT-HANDED CONFIGURATION.
12. FABRICATOR TO SUPPLY THE FOLLOWING STAINLESS STEEL HARDWARE. SIZE AND QUANTITY OF ANCHORS AS INDICATED ON PROJECT ORDER.
 - FOR EACH 3/8" ANCHOR REQUIRED:
 - (1) 3/8" X 2-3/4" ANCHOR
 - (1) 3/8" NUT
 - (1) 3/8" LOCKWASHER
 - (1) 3/8" FLAT WASHER
 - FOR EACH 1/2" BOLT REQUIRED:
 - (1) 1/2" X 1-1/2" BOLT
 - (1) 1/2" NUT
 - (1) 1/2" LOCKWASHER
 - (2) 1/2" FLAT WASHERS

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MARK	DATE	REVISION DESCRIPTION	BY

CDS3030

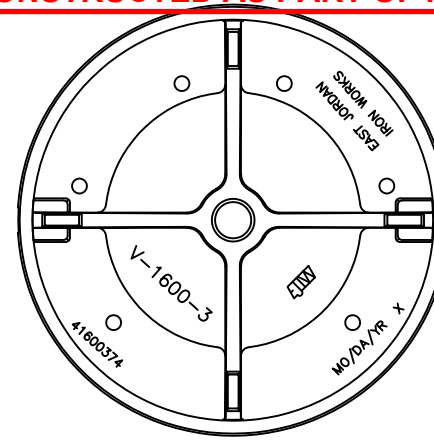
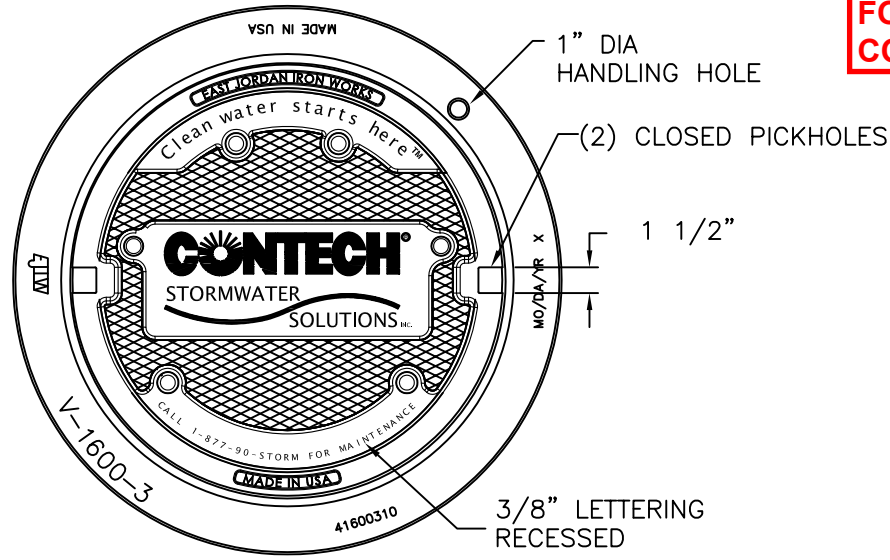
SCREEN ASSEMBLY DETAILS

CONTECH
ENGINEERED SOLUTIONS LLC
www.conteches.com
200 Enterprise Drive, Scarborough, ME 04074
877-507-8676 207-885-8830 207-885-8825 FAX

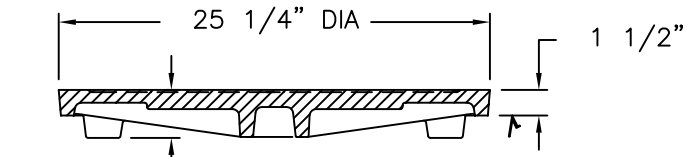
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DATE: 07/21/14	
DESIGNED: N/A	DRAWN: NDG
CHECKED: N/A	APPROVED: XXX
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SHEET: OF N/A	

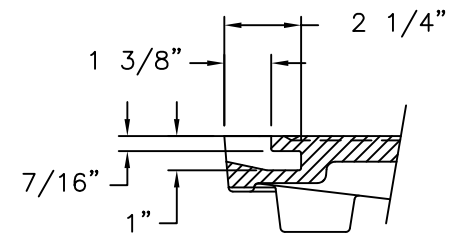
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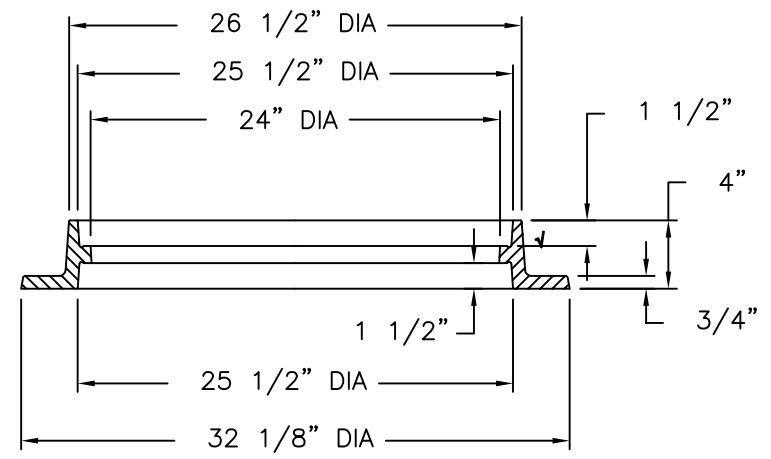
COVER BACK



COVER SECTION



PICKHOLE DETAIL



RING SECTION

EJIW EAST JORDAN
IRON WORKS EST. 1883

800-626-4653
www.ejiw.com
MADE IN USA

PRODUCT NUMBER

41600389

CATALOG NUMBER

V1600-3

**REVERSIBLE RING &
COVER ASSEMBLY**

LOAD RATING

HEAVY DUTY HS-20

COATING

UNDIPPED

ESTIMATED WEIGHT

COVER: 135 LBS
RING: 120 LBS
UNIT: 255 LBS

MATERIAL SPECIFICATION

RING - GRAY IRON
ASTM A48 CL35B
COVER - GRAY IRON
ASTM A48 CL35B

OPEN AREA

N/A

√DESIGNATES MACHINE SURFACE

DRAWN
DEW

DATE
05/02/08

LAST REVISED

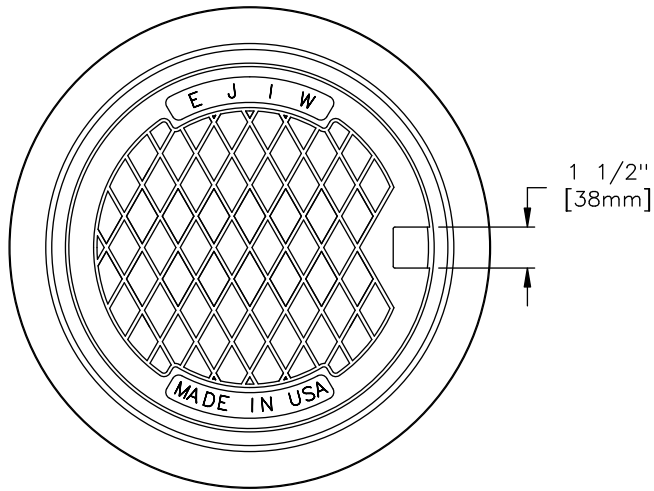
DATE

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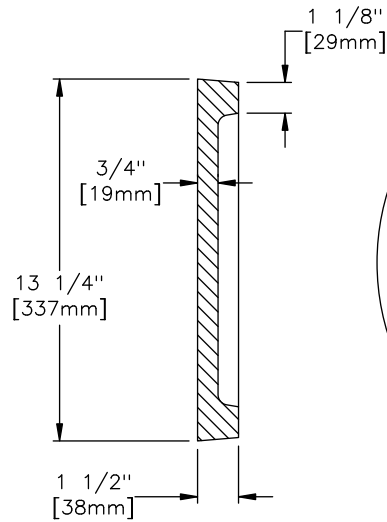
41600310
41600374

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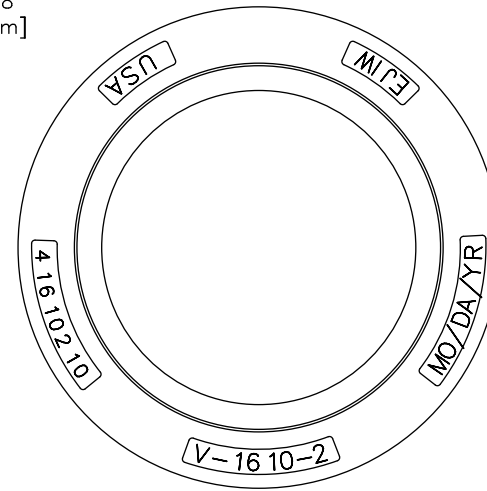
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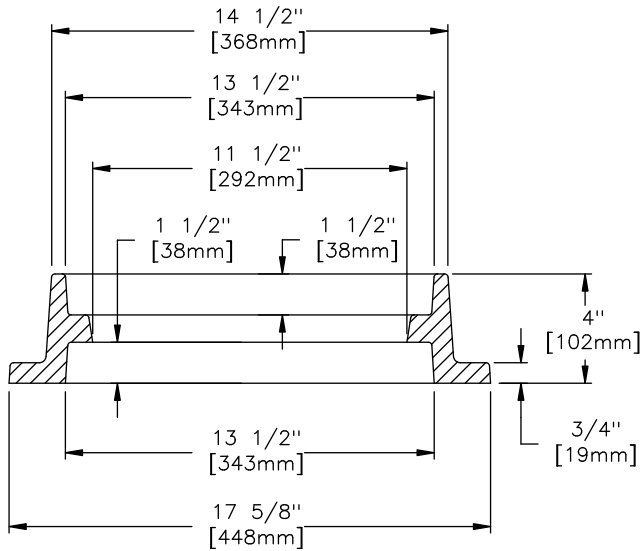
RING BOTTOM FLANGE



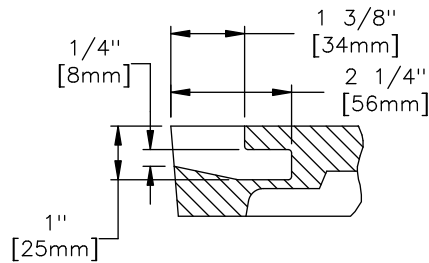
COVER SECTION



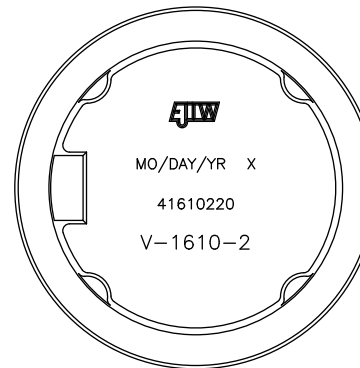
RING TOP FLANGE



RING SECTION



PICKHOLE DETAIL



COVER BACK

NOTE:
RING IS REVERSIBLE AND CAN BE
INSTALLED AS A TOP FLANGE UNIT

**EAST JORDAN
IRON WORKS, INC.**

P.O. BOX 439
EAST JORDAN, MI. 49727
1-800-874-4100
FAX 231-536-4458

DRAWN DAL	DATE 06/12/03
APPROVED	DATE

ASSEMBLY

PRODUCT NO.

41610201

CATALOG NO.

V-1610-2

REF. SALES DRAWING
41610210
41610220

EST. WT.

COVER: 36 LBS 16kg
RING: 45 LBS 20kg
TOTAL: 81 LBS 37kg

OPEN AREA

N/A

MAT'L SPEC.

COVER - GRAY IRON
ASTM A48 CL35B
RING - GRAY IRON
ASTM A48 CL35B

LOAD RATING

HEAVY DUTY



**INLINE
HYDRAULIC CALCULATIONS**
COMPARK SOUTH
PARKER, CO
542946-10



DESIGN PARAMETERS

CDS Model No. =	CDS3030
Design Treatment Flow =	3.0 cfs
Peak Design Flow =	29.20 cfs
Peak Design Return Interval =	100 year
Rim Elevation @ US Structure	5843.08 ft

DETAILED CALCULATIONS

TREATMENT FLOW

Tailwater Condition at Outfall, EL₀

$$EL_0 = \underline{5,830.16} \text{ ft (invert plus depth of flow at D/S outlet)}$$

Exit Loss from DownStream Pipe, h₁

$$h_1 = k * [V^2 / (2*g)]$$

where,

$$k = \underline{1.00}$$

$$V = Q / A_F$$

$$= \underline{7.48} \text{ fps}$$

$$h_1 = \underline{0.87} \text{ ft}$$

$$EGL_1 = EL_0 + n_1$$

$$= \underline{5831.03} \text{ ft}$$

Head Loss Through Downstream Pipe, h₂

Friction Losses, h₂

$$h_2 = S_{EGL} * L$$

where,

$$L = \underline{12} \text{ ft}$$

$$S_{EGL} = [(Q * n) / (1.49 * A_F * R^{2/3})]^2$$

where,

Pipe Characteristics

$$\text{Dia.} = \underline{24} \text{ in}$$

$$S_{PIPE} = \underline{0.0310} \text{ ft/ft}$$

$$n = \underline{0.013}$$

Flow Characteristics

$$d_F = \underline{0.37} \text{ ft}$$

$$A_F = \underline{0.40} \text{ sf}$$

$$P_W = \underline{1.78} \text{ ft}$$

$$R = \underline{0.23} \text{ ft}$$

Head Loss Through Downstream Pipe, h_2 (cont.'d)

7/26/2016

$$S_{EGL} = \underline{0.03112} \text{ ft / ft}$$

$$h_2 = \underline{0.3734} \text{ ft}$$

$$\begin{aligned} EGL_2' &= EGL_1 + h_2 \\ &= \underline{5831.40} \text{ ft} \end{aligned}$$

Check Entrance Condition for Critical Depth Control

$$EL_{CDS \text{ Inv.}} = \underline{5830.16} \text{ ft}$$

$$d_c = \underline{0.61} \text{ ft}$$

$$\begin{aligned} EGL_C &= EL_{CDS \text{ Inv.}} + d_c + V_{dc}^2 / (2 * g) \\ &= \underline{5830.98} \text{ ft} \end{aligned}$$

Identify Controlling EGL

Flow enters pipe at critical depth, EGL_C controls.

$$EGL_2 = \underline{5830.98} \text{ ft}$$

Re-entry Loss into DownStream Pipe, h_3

$$h_3 = k * [V^2 / (2 * g)]$$

where,

$$k = \underline{0.20}$$

$$V = Q / A$$

$$= \underline{3.69} \text{ fps (area based on critical depth)}$$

$$h_3 = \underline{0.04} \text{ ft}$$

$$\begin{aligned} EGL_3' &= EGL_2 + h_3 \\ &= \underline{5831.03} \text{ ft} \end{aligned}$$

Oil Baffle Loss, h_4

$$h_4 = k * [V^2 / (2 * g)]$$

where,

$$k = \underline{1.00}$$

$$A_{\text{Baffle}} = \underline{6.49} \text{ sf}$$

$$V = Q / A_{\text{baffle}}$$

$$= \underline{0.46} \text{ fps}$$

$$h_4 = \underline{0.0033} \text{ ft}$$

$$\begin{aligned} EGL_4 &= EGL_3 + h_4 \\ &= \underline{5831.03} \text{ ft} \end{aligned}$$

Check Standard Weir Elevation

$$HL_{CDS} = \underline{0.67} \text{ ft}$$

$$\begin{aligned} EL_W' &= EGL_4 + HL_{CDS} \\ &= \underline{5831.70} \text{ ft} \end{aligned}$$

$$H_W' = EL_W' - EL_{CDS \text{ INV.}}$$

$$= \underline{1.54} \text{ ft, or } \underline{18.46} \text{ in}$$

$$\text{Std. Weir Height} = \underline{21} \text{ in}$$

Status **OK**

$$\text{Use } H_W = \underline{21} \text{ in, or } \underline{1.75} \text{ ft}$$

$$\begin{aligned} EL_W &= EL_{CDS \text{ INV.}} + H_W \\ &= \underline{5831.91} \text{ ft} \end{aligned}$$

PEAK CONVEYANCE FLOW

7/26/2016

Tailwater Condition at Outfall, EL₀

EL₀ = 5,830.90 ft (tailwater condition per engineer, 100-yr)

Exit Loss from DownStream Pipe, h₁

$h_1 = k * [V^2 / (2*g)]$

where,

$k = \frac{1.00}{}$
 $V = \frac{Q}{A_F}$
 $= \frac{13.89}{}$ fps

$h_1 = \frac{2.99}{}$ ft

EGL₁ = EL₀ + h₁
 $= \frac{5833.89}{}$ ft

Head Loss Through Downstream Pipe, h₂

Friction Losses, h₂

$h_2 = S_{EGL} * L$

where,

$L = \frac{12}{}$ ft

$S_{EGL} = [(Q * n) / (1.49 * A_F * R^{2/3})]^2$

where,

Pipe Characteristics

Dia. = 24 in
 $S_{PIPE} = \frac{0.0310}{}$ ft/ft
 $n = \frac{0.013}{}$

Flow Characteristics

$d_n = \frac{1.27}{}$ ft
 $A_F = \frac{2.10}{}$ sf
 $P_W = \frac{3.69}{}$ ft
 $R = \frac{0.57}{}$ ft

$S_{EGL} = \frac{0.0310}{}$ ft / ft

$h_2 = \frac{0.37}{}$ ft

EGL₂' = EGL₁ + h₂
 $= \frac{5834.27}{}$ ft

Check Entrance Condition for Critical Depth Control

EL_{CDS Inv.} = 5830.16 ft

$d_c = \frac{1.91}{}$ ft

$EGL_C = EL_{CDS\ Inv.} + d_c + V_{dc}^2 / (2*g)$
 $= \frac{5833.46}{}$ ft

Identify Controlling EGL

Flow enters pipe at critical depth, EGL_c controls.

EGL₂ = 5833.46 ft

Re-entry Loss into DownStream Pipe, h_3

7/26/2016

$$h_3 = k * [V^2 / (2*g)]$$

where,

$$k = \frac{0.20}{}$$

$$V = Q / A_F$$

$$= \frac{9.46}{} \text{ fps (area based on critical depth)}$$

$$h_3 = \frac{0.28}{} \text{ ft}$$

$$EGL_3 = EGL_2 + h_3$$

$$= \frac{5833.73}{} \text{ ft}$$

Oil Baffle Loss, h_4

$$h_4 = k * [V^2 / (2*g)]$$

where,

$$k = \frac{0.00}{} \text{ (Skirted-baffle model)}$$

$$A_{\text{Baffle}} = \frac{6.49}{} \text{ sf}$$

$$V = Q / A_{\text{Baffle}}$$

$$= \frac{4.50}{} \text{ fps}$$

$$h_4 = \frac{0.00}{} \text{ ft}$$

$$EGL_4 = EGL_3 + h_4$$

$$= \frac{5833.73}{} \text{ ft}$$

$$HGL_4 = EGL_4 - [V_P^2 / (2*g)]$$

$$= \frac{5832.35}{} \text{ ft}$$

Head over Diversion Weir, h_5

Elevation of Weir

$$EL_{\text{Weir}} = \frac{5831.91}{} \text{ ft (established above)}$$

Headloss for Free Discharge Condition

$$h_{5a} = [Q / (C * L)]^{2/3}$$

where,

$$C = \frac{3.1}{}$$

$$L = \frac{3.00}{} \text{ ft}$$

$$h_{5a} = \frac{2.14}{} \text{ ft}$$

$$EGL_{5a} = EL_{\text{Weir}} + h_{5a}$$

$$= \frac{5834.05}{} \text{ ft}$$

Headloss for Submerged Condition

$$d_{\text{Sub}} = \frac{0.44}{} \text{ ft (depth of submergence)}$$

$$h_{5b} = \frac{1.76}{} \text{ ft (separate submerged weir calc.)}$$

$$EGL_{5b} = EGL_4 + h_{5b}$$

$$= \frac{5835.50}{} \text{ ft}$$

Identify EGL U/S of Weir

The discharge condition is Submerged, therefore

$$EGL_5 = \frac{5835.50}{} \text{ ft}$$

Expansion Loss from U/S Pipe, h_6

7/26/2016

$$h_6 = k * [V^2 / (2 * g)]$$

where,

$$k = \underline{0.30}$$

$$V = Q / A_F$$

$$= \underline{9.30} \text{ fps}$$

$$h_6 = \underline{0.40} \text{ ft}$$

$$EGL_6 = EGL_5 + h_6$$

$$= \underline{5835.90} \text{ ft}$$

Head Loss Through Upstream Pipe, h_7 Friction Losses, h_7

$$h_7 = S_{EGL} * L$$

where,

$$L = \underline{18} \text{ ft}$$

$$S_{EGL} = [(Q * n) / (1.49 * A_F * R^{2/3})]^2$$

where,

Pipe Characteristics

$$\text{Dia.} = \underline{24} \text{ in}$$

$$S_{PIPE} = \underline{0.0310} \text{ ft/ft}$$

$$n = \underline{0.013}$$

Flow Characteristics

$$d_n = \underline{2.00} \text{ ft}$$

$$A_F = \underline{3.14} \text{ sf}$$

$$P_W = \underline{6.28} \text{ ft}$$

$$R = \underline{0.50} \text{ ft}$$

$$S_{EGL} = \underline{0.0166} \text{ ft / ft}$$

$$h_7 = \underline{0.30} \text{ ft}$$

$$EGL_7' = EGL_6 + h_7$$

$$= \underline{5836.20} \text{ ft}$$

Check Entrance Condition for Critical Depth Control

$$EL_{U/S \text{ Inv.}} = \underline{5830.72} \text{ ft}$$

$$d_c = \underline{1.91} \text{ ft}$$

$$EGL_C = EL_{CDS \text{ Inv.}} + d_c + V_{dc}^2 / (2 * g)$$

$$= \underline{5834.01} \text{ ft}$$

Identify Controlling EGL

Friction based EGL controls.

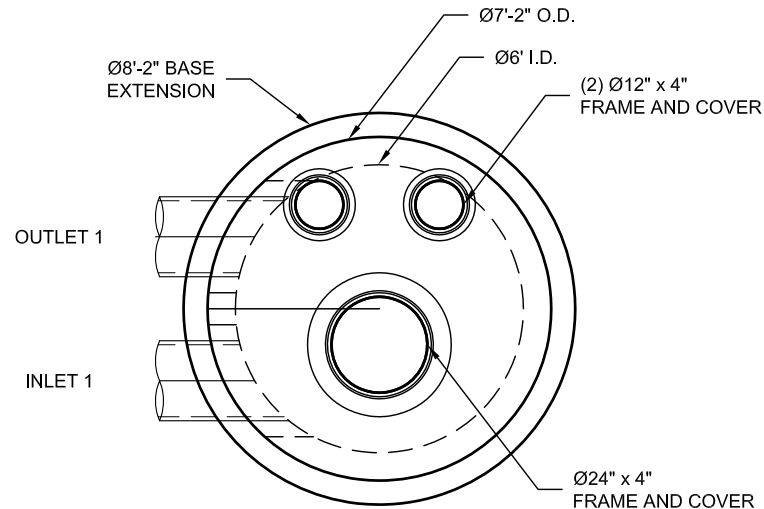
$$EGL_7 = \underline{5836.20} \text{ ft}$$

$$HGL_7 = EGL_7 - [V^2 / (2 * g)]$$

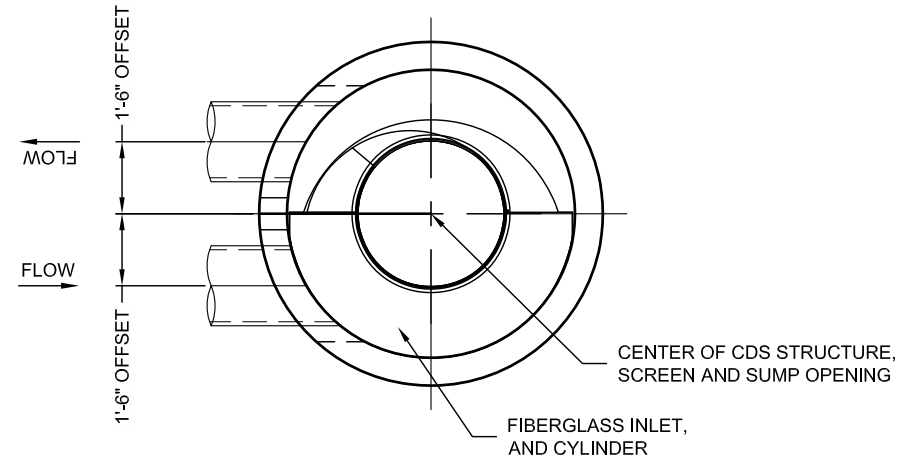
$$= \underline{5834.85} \text{ ft}$$

$$\text{Freeboard} = \underline{8.23} \text{ ft (at first upstream structure)}$$

FOR REFERENCE ONLY. TO BE CONSTRUCTED AS PART OF FILING 1.

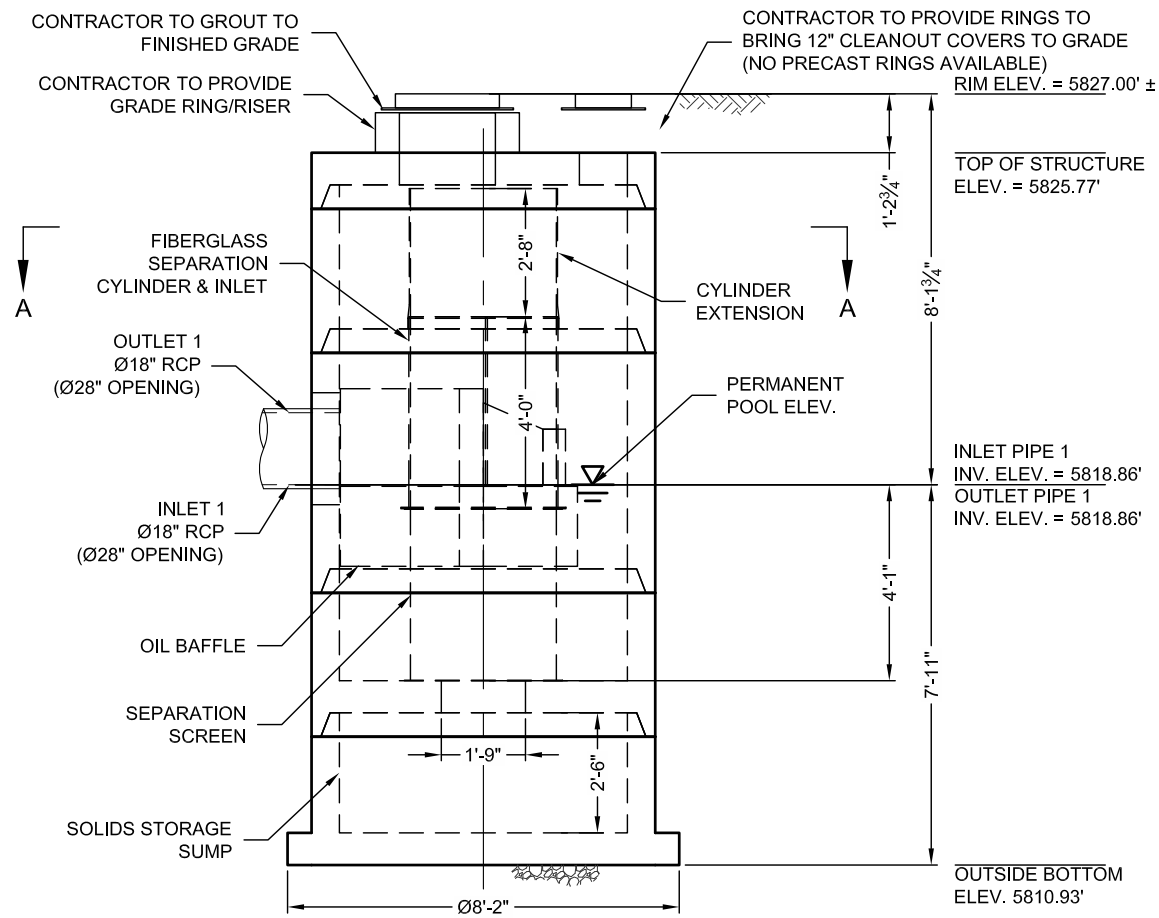


PLAN VIEW



SECTION A-A

● INTERNAL COMPONENTS TO BE INSTALLED BY CONTECH ON SITE



ELEVATION VIEW

MATERIAL LIST (PROVIDED BY CONTECH)

COUNT	DESCRIPTION	INSTALLED BY
1	FIBERGLASS INLET AND CYLINDER	CONTECH
1	2400 micron, 3' O.D. x 3.58' SEP. SCREEN	CONTECH
1	CYLINDER EXTENSION	CONTRACTOR
1	SEALANT FOR JOINTS (BY PRECASTER)	CONTRACTOR
1	Ø24" x 4" FRAME & COVER, E.J.#41600389, OR EQUIV.	CONTRACTOR
2	Ø12" x 4" FRAME & COVER, E.J.#41610201, OR EQUIV.	CONTRACTOR

SITE DESIGN DATA

WATER QUALITY FLOW RATE	0 CF
PEAK FLOW RATE	88 CF
RETURN PERIOD OF PEAK FLOW	100 YRS

GENERAL NOTES

- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
- CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
- STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
- IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
- CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
- CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

STRUCTURE WEIGHT

APPROXIMATE HEAVIEST PICK = 10000 LBS.
STRUCTURE IS DELIVERED IN 5 PIECES

MAX FOOTPRINT = Ø8'-2"

CONTECH
CONTRACT
DRAWING

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MARK	DATE	REVISION DESCRIPTION	BY

CDS3035-6-C - 542946-20
COMPARK SOUTH
PARKER, CO
for SYSTEM: STMH 1-4A

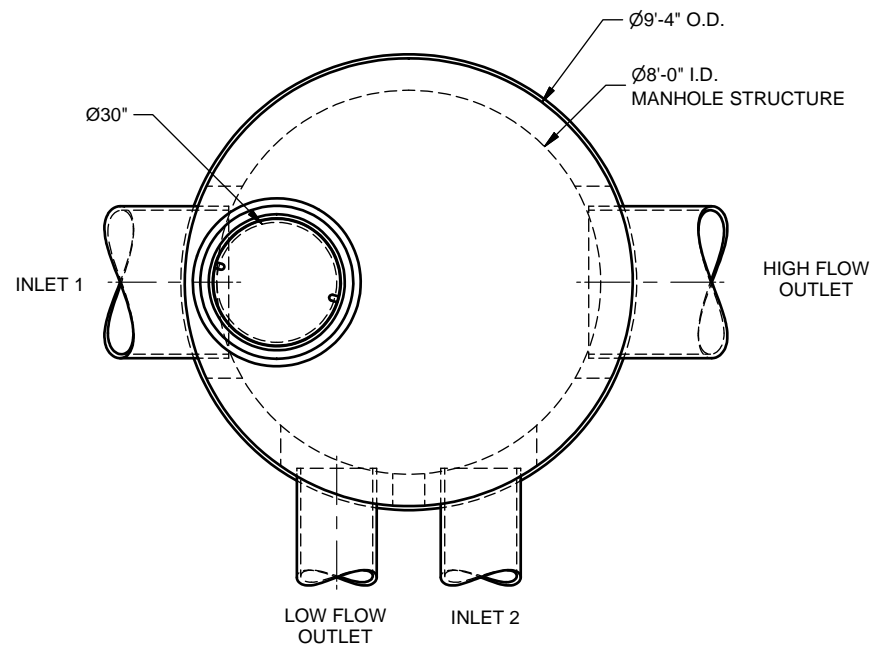
CONTECH
ENGINEERED SOLUTIONS LLC
www.ContechES.com
11815 NE Glenn Widing Drive, Portland, OR 97220
800-548-4687 503-240-3393 800-581-1271 FAX

CDS
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING PATENTS OR OTHER PATENTS PENDING.

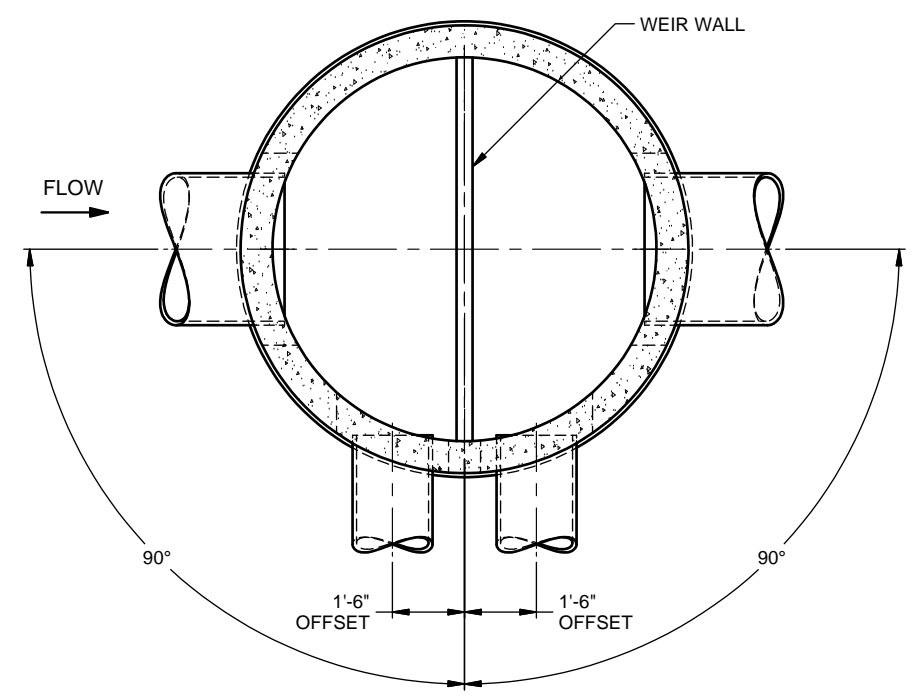
DATE:	07/18/16	SCALE:	1/4" = 1'-0"
DESIGNED:	JHR	DRAWN:	MLC
CHECKED:	XXX	APPROVED:	----
PROJECT No.:	542946	SEQUENCE No.:	20
SHEET:	1	OF	1

LPICO
LAYOUT 1A
3035-6-FGIS
1026 / FI72886

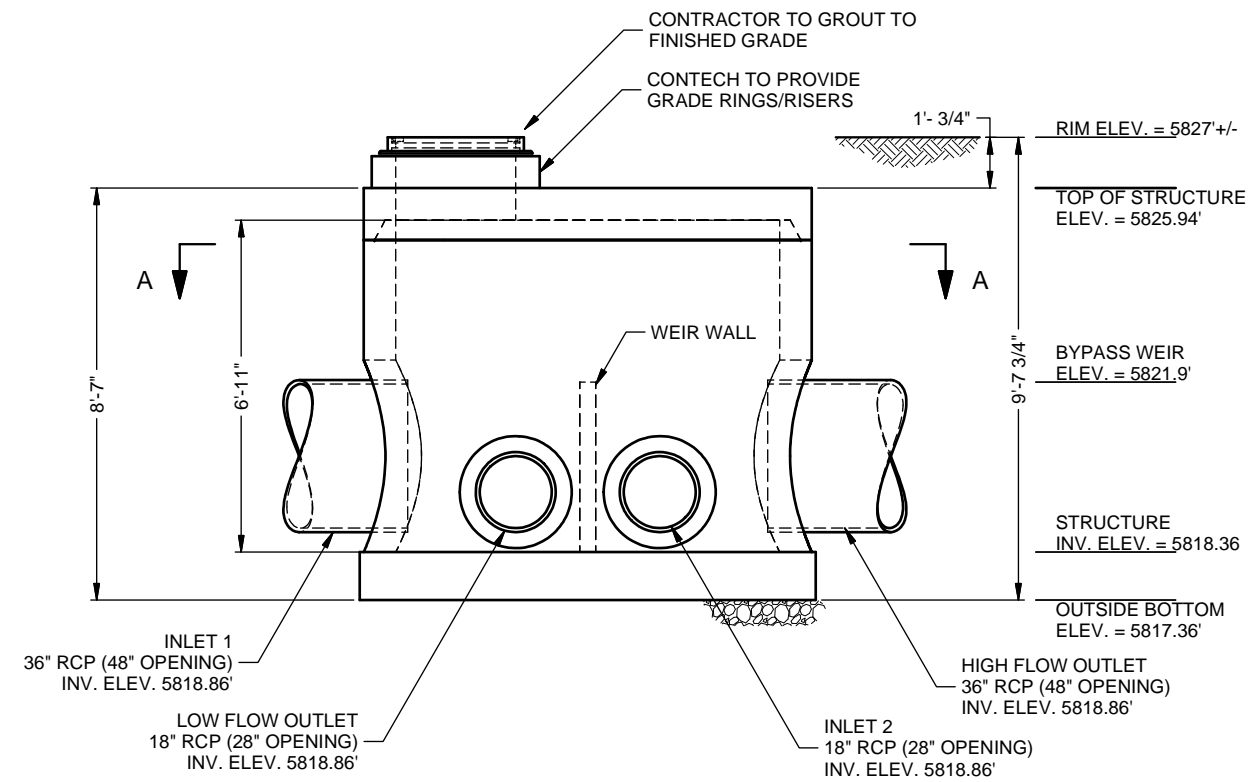
FOR REFERENCE ONLY. TO BE CONSTRUCTED AS PART OF FILING 1.



PLAN VIEW



SECTION A-A



ELEVATION VIEW

MATERIAL LIST - PROVIDED BY CONTECH

COUNT	DESCRIPTION	INSTALLED BY
1	JOINT SEALANT (BY PRECASTER)	CONTRACTOR
1 PLACE	GRADE RINGS/RISERS	CONTRACTOR
1	Ø30" x 4" EJ #41600484, OR EQUIVALENT	CONTRACTOR

GENERAL NOTES

- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH REPRESENTATIVE. www.ContechES.com.
- BYPASS STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
- STRUCTURE SHALL MEET AASHTO HS-20 ASSUMING EARTH COVER OF 0' - 5', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
- BYPASS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
- CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S).
- CONTRACTOR TO INSTALL GRADE RINGS/RISERS OR BLOCK REQUIRED BETWEEN THE TOP OF THE STRUCTURE AND THE BASE OF THE MANHOLE FRAMES.

STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 27000 LBS.
OF 2 PIECES

MAX FOOTPRINT = 9.5'

CONTECH
CONTRACT
DRAWING

LPICO
LAYOUT 1C

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NO.	DATE	REVISION DESCRIPTION	BY

DIVERSION BYPASS BPMH96 -
542946-40
COMPARK SOUTH
PARKER, CO

CONTECH
ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Drive, Suite 400, West Chester, OH 4100
800-338-1122 513-645-7000 513-645-7846 FAX

DATE: 7/15/16	SCALE: NONE
DESIGNED: JHR	DRAWN: MLC
CHECKED:	APPROVED:
PROJECT NUMBER: 542946	SHEET: 1 OF 1

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**OFFLINE CONCENTRIC CDS
HYDRAULIC CALCULATIONS**



7/26/2016

Compark South

Parker, CO

542946

STMH 1-4

DESIGN PARAMETERS

CDS Model No. = **CDS3035-6**

Design Treatment Flow = **3.8** cfs

Peak Design Flow = **88** cfs

Peak Design Return Interval = **100** year

Rim Elev. @ CDS (diversion) = **5827.00** ft

Required FB @ CDS Unit = **1.00** ft

Rim Elev. @ 1st U/S Structure = **5825.81** ft

Reqd. FB @ 1st U/S Structure = **1.00** ft

HYDRAULIC RESULTS SUMMARY

Estimated FB at CDS Unit = **1.31** ft (OK)

Est. FB at 1st U/S structure = **0.52** ft (Flood Potential)

DETAILED CALCULATIONS

7/26/2016

TREATMENT FLOW

Estimated HGL at Outfall

$$EL_{D/S \text{ Inv.}} = \underline{5817.99} \text{ ft} \quad (\text{based on CDS Invert unless provided})$$

$$HGL_{D/S} = \underline{5,818.37} \text{ ft} \quad (\text{unless provided, } D/S_{INV} + d_{n-WQ})$$

Exit Loss from DownStream Pipe, h_1

$$h_1 = k * [V^2 / (2*g)]$$

where,

$$k = \underline{0.40}$$

$$V = Q / A_F \\ = \underline{7.31} \text{ fps}$$

$$h_1 = \underline{0.33} \text{ ft}$$

$$EGL_1 = EL_0 + h_1 \\ = \underline{5818.70} \text{ ft}$$

Head Loss Through Downstream Pipe, h_2

Friction Losses, h_2

$$h_2 = S_{EGL} * L$$

where,

$$L_{D/S} = \underline{33} \text{ ft}$$

$$S_{EGL} = [(Q * n) / (1.49 * A_F * R^{2/3})]^2$$

where,

D/S Pipe Characteristics

$$\text{Dia.} = \underline{36} \text{ in}$$

$$S_{PIPE} = \underline{0.0261} \text{ ft/ft}$$

$$n = \underline{0.013}$$

Flow Characteristics

$$d_F = \underline{0.38} \text{ ft}$$

$$A_F = \underline{0.52} \text{ sf}$$

$$P_W = \underline{2.18} \text{ ft}$$

$$R = \underline{0.24} \text{ ft}$$

$$S_{EGL} = \underline{0.0275} \text{ ft / ft}$$

$$h_2 = \underline{0.91} \text{ ft}$$

$$EGL_2' = EGL_1 + h_2 \\ = \underline{5819.61} \text{ ft}$$

Check Entrance Condition for Critical Depth Control

$$EL_{CDS \text{ Inv.}} = \underline{5818.85} \text{ ft}$$

$$d_c = \underline{0.62} \text{ ft}$$

$$EGL_C = EL_{CDS \text{ Inv.}} + d_c + V_{dc}^2 / (2*g) \\ = \underline{5819.67} \text{ ft}$$

Identify Controlling EGL

Flow enters pipe at critical depth, EGLc controls.

$$EGL_2 = \underline{5819.67} \text{ ft}$$

Re-entry Loss into DownStream Pipe, h_3

$$h_3 = k * [V^2 / (2 * g)]$$

where,

$$k = \underline{0.40}$$

$$V = Q / A$$

$$= \underline{3.59} \text{ fps (flow area based on critical depth)}$$

$$h_3 = \underline{0.08} \text{ ft}$$

$$EGL_3' = EGL_2 + h_3$$

$$= \underline{5819.75} \text{ ft}$$

Check for CDS outlet control

$$EL_{\text{CDS Inv.}} = \underline{5818.85} \text{ ft}$$

$$\text{CDS I/O Diam.} = \underline{18.00} \text{ in}$$

$$L_{\text{CDS out}} = \underline{5.00} \text{ ft}$$

$$L_{\text{CDS in}} = \underline{5.00} \text{ ft}$$

$$d_{\text{c (CDS out)}} = \underline{0.74} \text{ ft}$$

$$EGL_{\text{C}} = EL_{\text{CDS Inv.}} + d_{\text{c (CDS Out)}} + V_{\text{dc}}^2 / (2 * g)$$

$$= \underline{5819.89} \text{ ft}$$

Identify Controlling EGL

The greater value controls

$$EGL_3 = \underline{5819.89} \text{ ft}$$

Determine CDS Weir Height

$$HL_{\text{CDS Op}} = \underline{2.00} \text{ ft}$$

$$V_{\text{CDS out}} = \underline{2.91} \text{ ft} \quad (\text{partial pipe})$$

$$HL_{\text{CDS out}} = \underline{0.012} \text{ ft}$$

$$V_{\text{CDS in}} = \underline{2.15} \text{ ft} \quad (\text{full pipe})$$

$$HL_{\text{CDS in}} = \underline{0.008} \text{ ft}$$

$$HL_{\text{CDS I/O}} = \underline{2.02} \text{ ft}$$

$$EL_{\text{W}}' = EGL_3 + HL_{\text{CDS Op}} + HL_{\text{CDS I/O}}$$

$$= \underline{5821.91} \text{ ft}$$

$$H_{\text{W}}' = EL_{\text{W}}' - EL_{\text{CDS Inv.}}$$

$$= \underline{3.06} \text{ ft, or } \underline{36.7} \text{ in}$$

Adjust for constructability

$$\text{Use } H_{\text{W}} = \underline{36.5} \text{ in, or } \underline{3.04} \text{ ft}$$

$$EL_{\text{W}} = EL_{\text{CDS Inv.}} + H_{\text{W}}$$

$$= \underline{5821.89} \text{ ft}$$

PEAK CONVEYANCE FLOW

7/26/2016

Estimated HGL at Outfall

HGL_{D/S} = 5,820.00 ft (water level at D/S outlet per engineer, 100-yr)

Exit Loss from D/S Pipe, h₁

$h_1 = k * [V^2 / (2*g)]$

where,

$k = \frac{0.40}{}$

$V = \frac{Q}{A_F}$
 $= \frac{17.10}{}$ fps

$h_1 = \frac{1.82}{}$ ft

EGL₁ = EL₀ + h₁
 $= \frac{5821.82}{}$ ft

Head Loss Through D/S Pipe, h₂

Friction Losses, h₂

$h_2 = S_{EGL} * L_{D/S}$

where,

$L_{D/S} = \frac{33}{}$ ft

$S_{EGL} = [(Q * n) / (1.49 * A_F * R^{2/3})]^2$

where,

D/S Pipe Characteristics

Dia. = 36 in

$S_{PIPE} = \frac{0.0261}{}$ ft/ft

$n = \frac{0.013}{}$

Flow Characteristics

$d_n = \frac{2.05}{}$ ft

$A_F = \frac{5.15}{}$ sf

$P_W = \frac{5.84}{}$ ft

$R = \frac{0.88}{}$ ft

$S_{EGL} = \frac{0.0263}{}$ ft / ft

$h_2 = \frac{0.87}{}$ ft

EGL₂' = EGL₁ + h₂
 $= \frac{5822.68}{}$ ft

Check Entrance Condition for Critical Depth Control

EL_{CDS Inv.} = 5818.85 ft

$d_c = \frac{2.99}{}$ ft

EGL_C = EL_{CDS Inv.} + d_c + V_{dc}² / (2*g)
 $= \frac{5824.25}{}$ ft

Identify Controlling EGL

Cannot enter at less than minimum energy, EGL_C controls.

EGL₂ = 5824.25 ft

Re-entry Loss into D/S Pipe, h_3

$$h_3 = k * [V^2 / (2 * g)]$$

where,

$$k = \frac{0.40}{}$$

$$V = Q / A_F$$

$$= \frac{12.45}{} \text{ fps (area based on critical depth)}$$

$$h_3 = \frac{0.96}{} \text{ ft}$$

$$EGL_3 = EGL_2 + h_3$$

$$= \frac{5825.21}{} \text{ ft}$$

$$HGL_3 = EGL_3 - [(V_p/4)^2 / (2 * g)]$$

$$= \frac{5825.06}{} \text{ ft (velocity assumed 25% of pipe velocity)}$$

Head over Diversion Weir, h_4

$$EL_{\text{weir}} = \frac{5821.89}{} \text{ ft (established above)}$$

$$L_{\text{weir}} = \frac{8.00}{} \text{ ft}$$

(weir is submerged)

Headloss for Free Discharge Condition

$$h_{4a} = [Q / (C * L)]^{2/3}$$

where,

$$C = \frac{3.43}{}$$

$$h_{4a} = \frac{2.18}{} \text{ ft}$$

$$EGL_{4a} = EL_{\text{weir}} + h_{4a}$$

$$= \frac{5824.07}{} \text{ ft}$$

Headloss for Submerged Condition

$$d_{\text{sub}} = \frac{3.17}{} \text{ ft (depth of submergence)}$$

$$h_{4b} = \frac{0.48}{} \text{ ft (separate submerged weir calc.)}$$

$$EGL_{4b} = EGL_3 + h_{4b}$$

$$= \frac{5825.69}{} \text{ ft}$$

Identify EGL U/S of Weir

The discharge condition is Submerged, therefore

$$EGL_4 = \frac{5825.69}{} \text{ ft}$$

Expansion Loss from U/S Pipe, h_5

$$h_5 = k * [V^2 / (2 * g)]$$

where,

$$k = \frac{0.40}{}$$

$$V = Q / A_F$$

$$= \frac{12.45}{} \text{ fps}$$

$$h_5 = \frac{0.96}{} \text{ ft}$$

$$EGL_5 = EGL_4 + h_5$$

$$= \frac{5826.65}{} \text{ ft}$$

Head Loss Through U/S Pipe, h_6 Friction Losses, h_6

$$h_6 = S_{EGL} * L$$

where,

$$L_{U/S} = \frac{60}{1} \text{ ft}$$

$$S_{EGL} = \left[\frac{(Q * n)}{(1.49 * A_F * R^{2/3})} \right]^2$$

where,

U/S Pipe Characteristics

$$\text{Dia.} = \frac{36}{1} \text{ in}$$

$$S_{PIPE} = \frac{0.0261}{1} \text{ ft/ft}$$

$$n = \frac{0.013}{1}$$

Flow Characteristics

$$d_n = \frac{3.00}{1} \text{ ft}$$

$$A_F = \frac{7.07}{1} \text{ sf}$$

$$P_W = \frac{9.42}{1} \text{ ft}$$

$$R = \frac{0.75}{1} \text{ ft}$$

$$S_{EGL} = \frac{0.0173}{1} \text{ ft / ft}$$

$$h_6 = \frac{1.04}{1} \text{ ft}$$

$$EGL_6' = EGL_5 + h_6$$

$$= \frac{5827.69}{1} \text{ ft}$$

Check Entrance Condition for Critical Depth Control

$$EL_{U/S \text{ Inv.}} = \frac{5820.42}{1} \text{ ft (based on inv \& slope unless provided)}$$

$$d_c = \frac{2.99}{1} \text{ ft}$$

$$EGL_C = EL_{CDS \text{ Inv.}} + d_c + V_{dc}^2 / (2 * g)$$

$$= \frac{5825.82}{1} \text{ ft}$$

Identify Controlling EGL

Friction based EGL controls.

$$EGL_6 = \frac{5827.69}{1} \text{ ft}$$

$$HGL_6 = EGL_6 - [V^2 / (2 * g)]$$

$$= \frac{5825.29}{1} \text{ ft}$$

Headloss Across Diversion Structure During Peak Flow

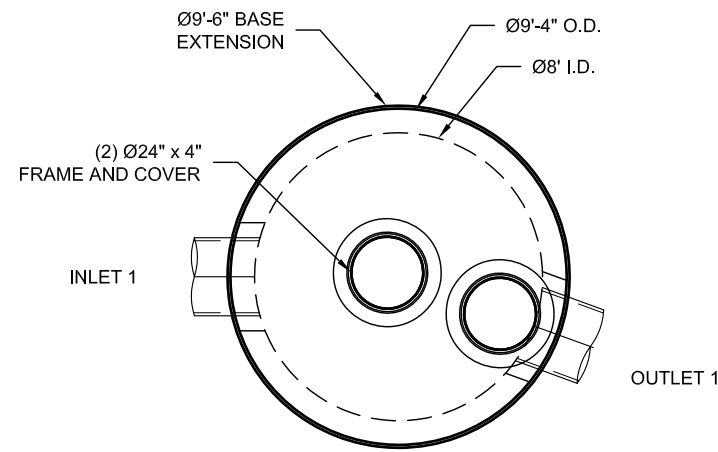
$$HL_{DW} = EGL_5 - EGL_2$$

$$HL_{DW} = \frac{2.40}{1} \text{ ft}$$

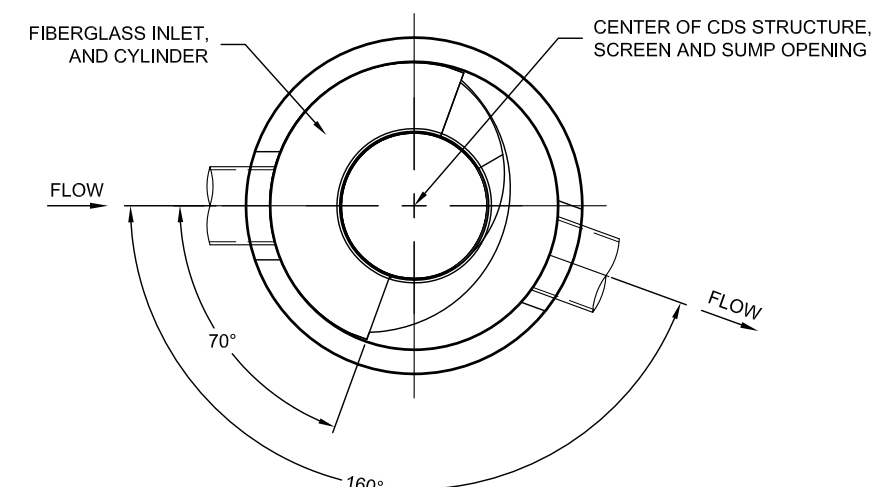
$$\text{Freeboard at CDS Unit} = \frac{1.31}{1} \text{ ft}$$

$$\text{FB at first U/S structure} = \frac{0.52}{1} \text{ ft}$$

FOR REFERENCE ONLY. TO BE CONSTRUCTED AS PART OF FILING 1.



PLAN VIEW



SECTION A-A

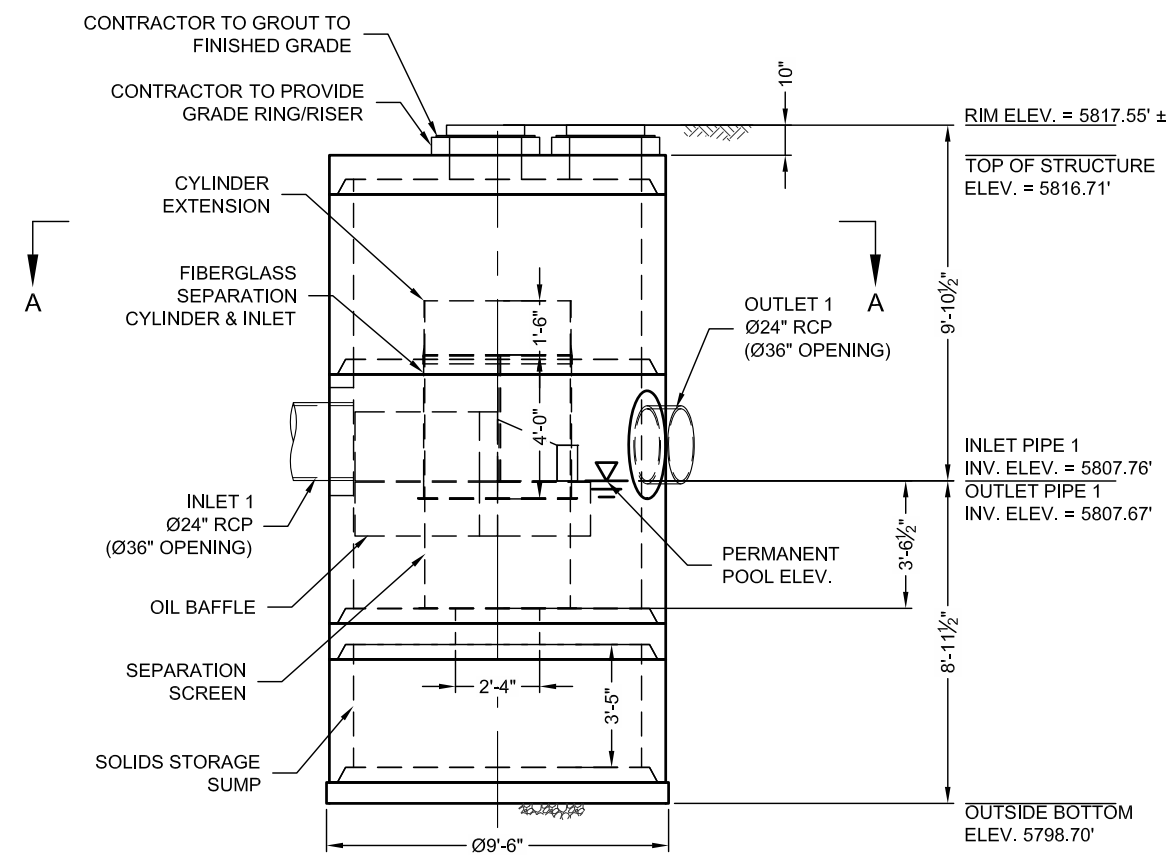
• INTERNAL COMPONENTS TO BE INSTALLED BY CONTECH ON SITE

MATERIAL LIST (PROVIDED BY CONTECH)

COUNT	DESCRIPTION	INSTALLED BY
1	FIBERGLASS INLET AND CYLINDER	CONTECH
1	2400 micron, 4' O.D. x 3.04' SEP. SCREEN	CONTECH
1	CYLINDER EXTENSION	CONTRACTOR
1	SEALANT FOR JOINTS (BY PRECASTER)	CONTRACTOR
2	Ø24" x 4" FRAME & COVER, E.J.#41600389, OR EQUIV.	CONTRACTOR

SITE DESIGN DATA

WATER QUALITY FLOW RATE	0 CF
PEAK FLOW RATE	43.2 CF
RETURN PERIOD OF PEAK FLOW	100 YRS



ELEVATION VIEW

GENERAL NOTES

- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
- CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
- STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
- IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
- CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
- CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

STRUCTURE WEIGHT

APPROXIMATE HEAVIEST PICK = 20500 LBS.
STRUCTURE IS DELIVERED IN 5 PIECES

MAX FOOTPRINT = Ø9'-6"



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MARK	DATE	REVISION DESCRIPTION	BY

CDS4030-8-C - 542946-30
COMPARK SOUTH
PARKER, CO
for SYSTEM: STMH 1-6

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
11815 NE Glenn Widing Drive, Portland, OR 97220
800-548-4687 503-240-3393 800-581-1274 FAX

CDS
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING PATENTS OR OTHER PATENT RIGHTS.

DATE:	07/15/16	SCALE:	3/16" = 1'-0"
DESIGNED:	JHR	DRAWN:	MLC
CHECKED:	XXX	APPROVED:	----
PROJECT No.:	542946	SEQUENCE No.:	30
SHEET:	1	OF	1

LPICO
LAYOUT 1C
4030-8-FGIS
1026 / FI72886

I:\AD\CONTECH\CPL\COM\ROOT\MERLIN\PROJECT\ACTIVE\542946-30\CDS\DRAWINGS\PRE-542946-30\CDS4030-8_CONFAB.DWG 8/16/2016 3:02 PM

DESIGN PARAMETERS

CDS Model No. =	CDS4030	
Design Treatment Flow =	4.5	cfs
Peak Design Flow =	43.20	cfs
Peak Design Return Interval =	100	year
Rim Elevation @ US Structure	5821.38	ft

DETAILED CALCULATIONS

TREATMENT FLOW

Tailwater Condition at Outfall, EL₀

$$EL_0 = \underline{5,791.61} \text{ ft (invert plus depth of flow at D/S outlet)}$$

Exit Loss from DownStream Pipe, h₁

$$h_1 = k * [V^2 / (2*g)]$$

where,

$$k = \underline{1.00}$$

$$V = Q / A_F$$

$$= \underline{17.26} \text{ fps}$$

$$h_1 = \underline{4.63} \text{ ft}$$

$$EGL_1 = EL_0 + h_1$$

$$= \underline{5796.23} \text{ ft}$$

Head Loss Through Downstream Pipe, h₂

Friction Losses, h₂

$$h_2 = S_{EGL} * L$$

where,

$$L = \underline{70} \text{ ft}$$

$$S_{EGL} = [(Q * n) / (1.49 * A_F * R^{2/3})]^2$$

where,

Pipe Characteristics

$$\text{Dia.} = \underline{24} \text{ in}$$

$$S_{PIPE} = \underline{0.2370} \text{ ft/ft}$$

$$n = \underline{0.013}$$

Flow Characteristics

$$d_F = \underline{0.28} \text{ ft}$$

$$A_F = \underline{0.26} \text{ sf}$$

$$P_W = \underline{1.52} \text{ ft}$$

$$R = \underline{0.17} \text{ ft}$$

Head Loss Through Downstream Pipe, h_2 (cont.'d)

7/26/2016

$$S_{EGL} = \underline{0.23814} \text{ ft / ft}$$

$$h_2 = \underline{16.6701} \text{ ft}$$

$$\begin{aligned} EGL_2' &= EGL_1 + h_2 \\ &= \underline{5812.90} \text{ ft} \end{aligned}$$

Check Entrance Condition for Critical Depth Control

$$EL_{CDS \text{ Inv.}} = \underline{5807.92} \text{ ft}$$

$$d_c = \underline{0.75} \text{ ft}$$

$$\begin{aligned} EGL_C &= EL_{CDS \text{ Inv.}} + d_c + V_{dc}^2 / (2 * g) \\ &= \underline{5808.94} \text{ ft} \end{aligned}$$

Identify Controlling EGL

Flow enters pipe at critical depth, EGL_C controls.

$$EGL_2 = \underline{5808.94} \text{ ft}$$

Re-entry Loss into DownStream Pipe, h_3

$$h_3 = k * [V^2 / (2 * g)]$$

where,

$$k = \underline{0.20}$$

$$V = Q / A$$

$$= \underline{4.19} \text{ fps (area based on critical depth)}$$

$$h_3 = \underline{0.05} \text{ ft}$$

$$\begin{aligned} EGL_3' &= EGL_2 + h_3 \\ &= \underline{5809.00} \text{ ft} \end{aligned}$$

Oil Baffle Loss, h_4

$$h_4 = k * [V^2 / (2 * g)]$$

where,

$$k = \underline{1.00}$$

$$A_{\text{Baffle}} = \underline{8.80} \text{ sf}$$

$$V = Q / A_{\text{baffle}}$$

$$= \underline{0.51} \text{ fps}$$

$$h_4 = \underline{0.0041} \text{ ft}$$

$$\begin{aligned} EGL_4 &= EGL_3 + h_4 \\ &= \underline{5809.00} \text{ ft} \end{aligned}$$

Check Standard Weir Elevation

$$HL_{CDS} = \underline{0.67} \text{ ft}$$

$$\begin{aligned} EL_W' &= EGL_4 + HL_{CDS} \\ &= \underline{5809.67} \text{ ft} \end{aligned}$$

$$H_W' = EL_W' - EL_{CDS \text{ INV.}}$$

$$= \underline{1.75} \text{ ft, or } \underline{21.01} \text{ in}$$

$$\text{Std. Weir Height} = \underline{23} \text{ in}$$

Status **OK**

$$\text{Use } H_W = \underline{23} \text{ in, or } \underline{1.92} \text{ ft}$$

$$\begin{aligned} EL_W &= EL_{CDS \text{ INV.}} + H_W \\ &= \underline{5809.84} \text{ ft} \end{aligned}$$

PEAK CONVEYANCE FLOW

7/26/2016

Tailwater Condition at Outfall, EL_0

$$EL_0 = \underline{5,810.00} \text{ ft (tailwater condition per engineer, 100-yr)}$$

Exit Loss from DownStream Pipe, h_1

$$h_1 = k * [V^2 / (2*g)]$$

where,

$$k = \underline{1.00}$$
$$V = Q / A_F$$
$$= \underline{13.76} \text{ fps}$$

$$h_1 = \underline{2.94} \text{ ft}$$

$$EGL_1 = EL_0 + h_1$$
$$= \underline{5812.94} \text{ ft}$$

Head Loss Through Downstream Pipe, h_2

Friction Losses, h_2

$$h_2 = S_{EGL} * L$$

where,

$$L = \underline{70} \text{ ft}$$

$$S_{EGL} = [(Q * n) / (1.49 * A_F * R^{2/3})]^2$$

where,

Pipe Characteristics

$$\text{Dia.} = \underline{24} \text{ in}$$
$$S_{PIPE} = \underline{0.2370} \text{ ft/ft}$$
$$n = \underline{0.013}$$

Flow Characteristics

$$d_n = \underline{2.00} \text{ ft}$$
$$A_F = \underline{3.14} \text{ sf}$$
$$P_W = \underline{6.28} \text{ ft}$$
$$R = \underline{0.50} \text{ ft}$$

$$S_{EGL} = \underline{0.0363} \text{ ft / ft}$$

$$h_2 = \underline{2.54} \text{ ft}$$

$$EGL_2' = EGL_1 + h_2$$
$$= \underline{5815.48} \text{ ft}$$

Check Entrance Condition for Critical Depth Control

$$EL_{CDS \text{ Inv.}} = \underline{5807.92} \text{ ft}$$

$$d_c = \underline{2.00} \text{ ft}$$

$$EGL_C = EL_{CDS \text{ Inv.}} + d_c + V_{dc}^2 / (2*g)$$
$$= \underline{5813.18} \text{ ft}$$

Identify Controlling EGL

Friction based EGL controls.

$$EGL_2 = \underline{5815.48} \text{ ft}$$

Re-entry Loss into DownStream Pipe, h_3

7/26/2016

$$h_3 = k * [V^2 / (2*g)]$$

where,

$$k = \frac{0.20}{}$$

$$V = Q / A_F$$

$$= \frac{13.76}{} \text{ fps (area based on flow depth)}$$

$$h_3 = \frac{0.59}{} \text{ ft}$$

$$EGL_3 = EGL_2 + h_3$$

$$= \frac{5816.07}{} \text{ ft}$$

Oil Baffle Loss, h_4

$$h_4 = k * [V^2 / (2*g)]$$

where,

$$k = \frac{0.00}{} \text{ (Skirted-baffle model)}$$

$$A_{\text{Baffle}} = \frac{8.80}{} \text{ sf}$$

$$V = Q / A_{\text{Baffle}}$$

$$= \frac{4.91}{} \text{ fps}$$

$$h_4 = \frac{0.00}{} \text{ ft}$$

$$EGL_4 = EGL_3 + h_4$$

$$= \frac{5816.07}{} \text{ ft}$$

$$HGL_4 = EGL_4 - [V_P^2 / (2*g)]$$

$$= \frac{5813.13}{} \text{ ft}$$

Head over Diversion Weir, h_5

Elevation of Weir

$$EL_{\text{Weir}} = \frac{5809.84}{} \text{ ft (established above)}$$

Headloss for Free Discharge Condition

$$h_{5a} = [Q / (C * L)]^{2/3}$$

where,

$$C = \frac{3.1}{}$$

$$L = \frac{4.00}{} \text{ ft}$$

$$h_{5a} = \frac{2.30}{} \text{ ft}$$

$$EGL_{5a} = EL_{\text{Weir}} + h_{5a}$$

$$= \frac{5812.14}{} \text{ ft}$$

Headloss for Submerged Condition

$$d_{\text{Sub}} = \frac{3.29}{} \text{ ft (depth of submergence)}$$

$$h_{5b} = \frac{0.40}{} \text{ ft (separate submerged weir calc.)}$$

$$EGL_{5b} = EGL_4 + h_{5b}$$

$$= \frac{5816.47}{} \text{ ft}$$

Identify EGL U/S of Weir

The discharge condition is Submerged, therefore

$$EGL_5 = \frac{5816.47}{} \text{ ft}$$

Expansion Loss from U/S Pipe, h_6

7/26/2016

$$h_6 = k * [V^2 / (2 * g)]$$

where,

$$k = \underline{0.30}$$

$$V = Q / A_F$$

$$= \underline{13.76} \text{ fps}$$

$$h_6 = \underline{0.88} \text{ ft}$$

$$EGL_6 = EGL_5 + h_6$$

$$= \underline{5817.35} \text{ ft}$$

Head Loss Through Upstream Pipe, h_7 Friction Losses, h_7

$$h_7 = S_{EGL} * L$$

where,

$$L = \underline{133} \text{ ft}$$

$$S_{EGL} = [(Q * n) / (1.49 * A_F * R^{2/3})]^2$$

where,

Pipe Characteristics

$$\text{Dia.} = \underline{24} \text{ in}$$

$$S_{PIPE} = \underline{0.0297} \text{ ft/ft}$$

$$n = \underline{0.013}$$

Flow Characteristics

$$d_n = \underline{2.00} \text{ ft}$$

$$A_F = \underline{3.14} \text{ sf}$$

$$P_W = \underline{6.28} \text{ ft}$$

$$R = \underline{0.50} \text{ ft}$$

$$S_{EGL} = \underline{0.0363} \text{ ft / ft}$$

$$h_7 = \underline{4.83} \text{ ft}$$

$$EGL_7' = EGL_6 + h_7$$

$$= \underline{5822.18} \text{ ft}$$

Check Entrance Condition for Critical Depth Control

$$EL_{U/S \text{ Inv.}} = \underline{5811.87} \text{ ft}$$

$$d_c = \underline{2.00} \text{ ft}$$

$$EGL_C = EL_{CDS \text{ Inv.}} + d_c + V_{dc}^2 / (2 * g)$$

$$= \underline{5817.13} \text{ ft}$$

Identify Controlling EGL

Friction based EGL controls.

$$EGL_7 = \underline{5822.18} \text{ ft}$$

$$HGL_7 = EGL_7 - [V^2 / (2 * g)]$$

$$= \underline{5819.24} \text{ ft}$$

$$\text{Freeboard} = \underline{2.14} \text{ ft (at first upstream structure)}$$

APPENDIX D

Drainage Basin Map

Project: 1/1/2017 8:13:44 Day Name: P:\C\43\3\ConsSouth05-Residential\StormWater\Reports\Drainage\Bain Map RAK.11.21.16.dwg Updated By: RAK



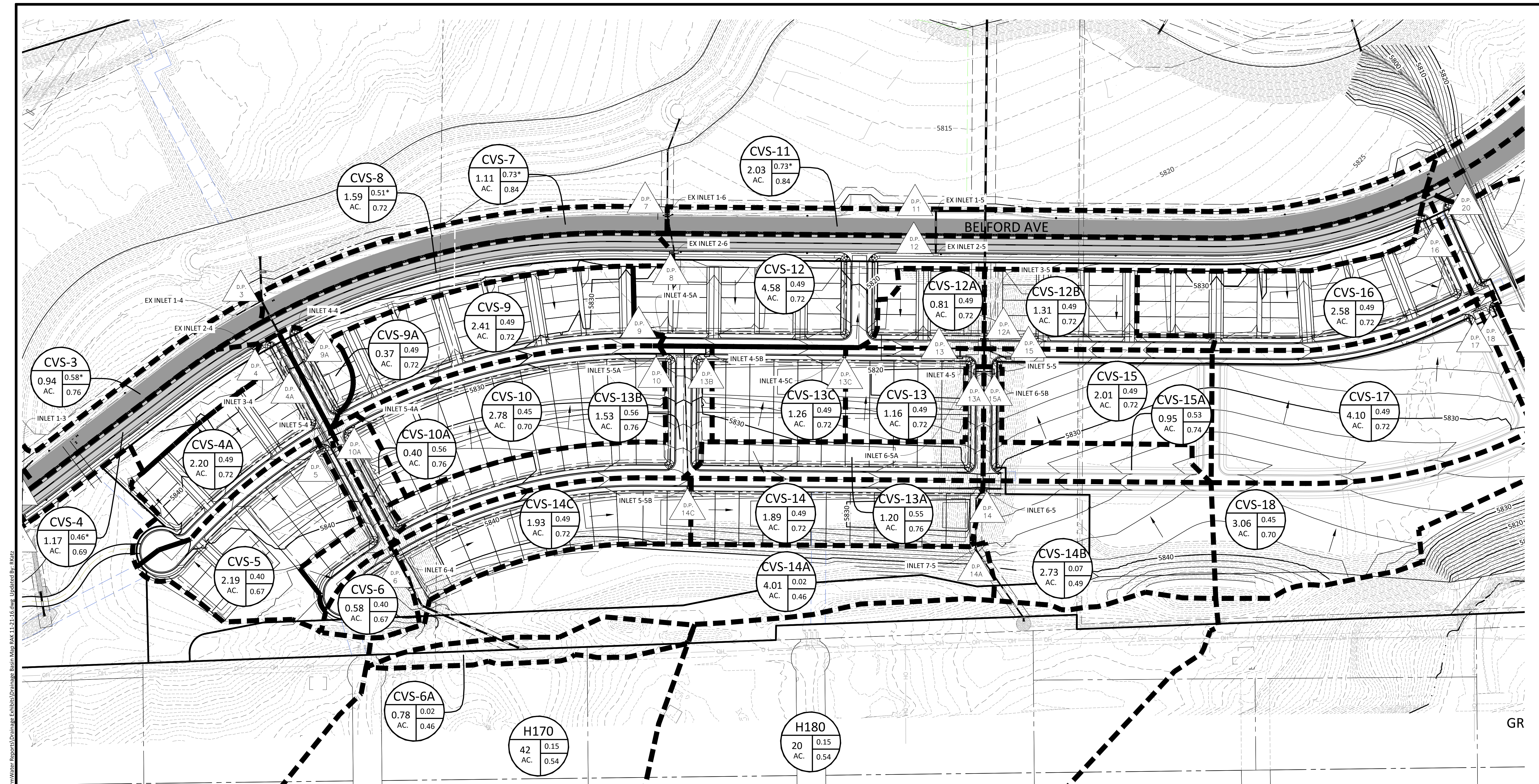
LEGEND

XX → SUB-BASIN #
 XXX/XXX/XXX → 2/5-YEAR RUNOFF COEFFICIENT (*DENOTES 5-YEAR RUNOFF)
 --- → 100-YEAR RUNOFF COEFFICIENT
 - - - - - → PROPOSED SUB-BASIN BOUNDARY

Basin ID	Design Point	DIRECT RUNOFF				INLET	STORM SEWER		REMARKS				
		Area (Ac)	To (ft)	Runoff Coefficient	Runoff (CFS)		Flow (CFS)	Depth (ft)					
CVS-1 (Inlet 1-3)	1	3.85	6.9	0.26	4.3	1.10	4.7	4.7	4.7	0.0	8.9	3.1%	24
CVS-2 (Inlet 2-3)	2	1.42	6.6	0.69	4.3	0.97	4.2	4.2	4.2	0.0	4.2	10.0%	24
CVS-3 (Inlet 1-4)	3	0.94	6.2	0.36	4.4	0.52	2.3	2.3	2.3	0.0	2.3	1.7%	18
CVS-4 (Inlet 2-4)	4	1.17	4.1	0.44	5.0	0.51	2.6	2.6	2.6	0.0	2.6	0.9%	18
CVS-4A (Inlet 3-4)	4A	2.20	11.3	0.46	3.6	1.08	3.9	3.9	3.9	0.0	3.9	1.0%	18
CVS-5 (Inlet 5-4)	5	2.19	9.0	0.40	3.9	0.88	3.4	3.4	3.4	0.0	3.4	1.0%	18
CVS-6 (Inlet 6-4)	6	0.98	8.0	0.40	4.7	0.23	1.1	1.1	1.1	0.0	1.1	1.7%	36
CVS-6A (FEES 2-4)	6A	0.78	5.0	0.02	4.7	0.01	0.1	0.1	0.1	0.0	0.1	8.5%	36
CVS-7 (Inlet 1-6)	7	1.11	10.2	0.69	3.7	0.77	2.9	2.9	2.9	0.0	2.9	3.0%	24
CVS-8 (Inlet 2-6)	8	1.59	10.1	0.69	3.7	0.78	2.9	2.9	2.9	0.0	2.9	1.1%	24
CVS-9 (Inlet 4-5A)	9	2.41	11.9	0.40	3.5	1.18	4.1	4.1	4.1	0.0	4.1	1.2%	18
CVS-9A (Inlet 4-4)	9A	0.97	5.0	0.49	4.7	1.18	4.9	4.9	4.9	0.0	4.9	1.0%	18
CVS-10 (Inlet 5-5A)	10	2.78	13.7	0.46	3.3	1.26	4.2	4.2	4.2	0.0	4.2	1.2%	18
CVS-10A (Inlet 5-4A)	10A	0.40	5.8	0.96	4.5	0.22	1.0	1.0	1.0	0.0	1.0	1.0%	18
CVS-11 (Inlet 1-5)	11	2.03	15.3	0.69	3.4	1.41	4.8	4.8	4.8	0.0	4.8	0.9%	36
CVS-12 (Inlet 2-5)	12	4.58	11.9	0.49	3.5	2.24	7.9	7.9	7.9	0.0	7.9	0.7%	36
CVS-13 (Inlet 3-5)	13	0.81	7.7	0.49	4.1	0.40	1.6	1.6	1.6	0.0	1.6	4.0%	42
CVS-13A (Inlet 3-4)	13A	1.31	10.9	0.49	3.6	0.64	2.3	2.3	2.3	0.0	2.3	1.9%	42
CVS-13 (Inlet 4-5)	13	1.16	7.4	0.40	4.2	0.07	2.4	2.4	2.4	0.0	2.4	3.0%	18
CVS-13A (Inlet 5-5A)	13A	1.20	8.7	0.39	4.0	0.69	2.6	2.6	2.6	0.0	2.6	1.0%	18
CVS-13B (Inlet 4-5B)	13B	1.53	9.0	0.59	3.9	0.86	3.4	3.4	3.4	0.0	3.4	1.0%	18
CVS-13C (Inlet 4-5C)	13C	1.28	8.8	0.49	3.9	0.02	2.4	2.4	2.4	0.0	2.4	1.0%	18
CVS-14 (Inlet 6-5)	14	1.89	11.1	0.49	3.6	0.93	3.3	3.3	3.3	0.0	3.3	3.2%	30
CVS-14A (Inlet 7-5)	14A	4.01	17.5	0.02	3.9	0.07	0.2	0.2	0.2	0.0	0.2	4.7%	24
CVS-14B (Inlet 6-5)	14B	2.73	13.4	0.67	3.3	1.19	4.6	4.6	4.6	0.0	4.6	3.4%	30
CVS-14C (Inlet 5-5)	14C	1.93	11.4	0.49	3.6	0.84	3.4	3.4	3.4	0.0	3.4	2.0%	18
CVS-15 (Inlet 5-5)	15	2.95	13.4	0.49	3.3	1.00	3.3	3.3	3.3	0.0	3.3	3.0%	18
CVS-15A (Inlet 6-5B)	15A	0.95	7.9	0.53	4.1	0.50	2.0	2.0	2.0	0.0	2.0	1.0%	18
CVS-16	16	2.98	13.1	0.49	3.4	1.26	4.2	4.2	4.2	0.0	4.2	-	-
CVS-17	17	4.10	19.0	0.69	3.8	1.10	7.6	7.6	7.6	0.0	7.6	-	-
CVS-18	18	3.08	12.8	0.65	3.4	1.36	4.6	4.6	4.6	0.0	4.6	-	-
CVS-19	19	1.81	8.0	0.69	4.5	1.00	4.7	4.7	4.7	0.0	4.7	-	-
CVS-20	20	1.80	10.4	0.46	3.7	0.80	3.3	3.3	3.3	0.0	3.3	-	-
CVS-21	21	3.88	19.1	0.49	3.1	1.80	6.8	6.8	6.8	0.0	6.8	-	-
BEL-1 (Inlet 1-1)	81	3.73	12.8	0.30	3.4	1.13	3.8	3.8	3.8	0.0	3.8	5.9%	36
BEL-2 (Inlet 1-1)	82	1.38	7.8	0.69	4.2	0.56	3.9	3.9	3.9	0.0	3.9	8.4%	36
BEL-3 (Inlet 2-2)	83	6.78	14.4	0.13	3.2	1.26	4.1	4.1	4.1	0.0	4.1	8.9%	36
BEL-4 (Inlet 1-2)	84	1.75	7.9	0.69	4.1	1.21	6.0	6.0	6.0	0.0	6.0	2.9%	36
BEL-5	85	4.95	11.0	0.68	3.8	1.00	11.1	11.1	11.1	0.0	11.1	-	-
BEL-6	86	3.99	7.4	0.82	4.2	0.92	10.6	10.6	10.6	0.0	10.6	-	-

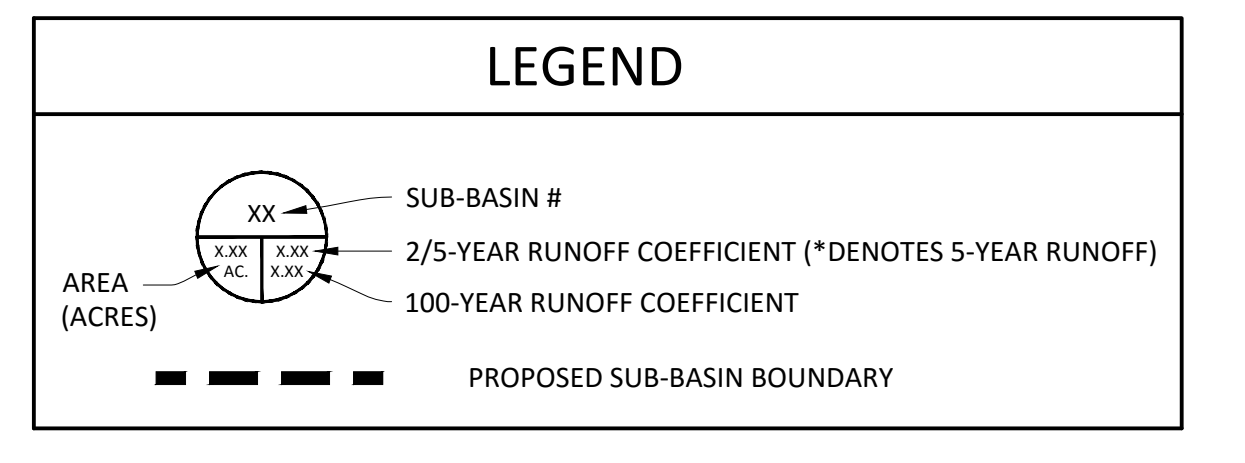
Basin ID	Design Point	DIRECT RUNOFF				INLET	STORM SEWER		REMARKS				
		Area (Ac)	To (ft)	Runoff Coefficient	Runoff (CFS)		Flow (CFS)	Depth (ft)					
CVS-1 (Inlet 1-3)	1	3.85	6.9	0.33	4.3	1.27	6.5	6.5	6.5	0.0	10.0	3.1%	24
CVS-2 (Inlet 2-3)	2	1.42	6.6	0.72	4.3	1.03	4.5	4.5	4.5	0.0	4.5	10.0%	24
CVS-3 (Inlet 1-4)	3	0.94	6.2	0.36	4.4	0.54	2.4	2.4	2.4	0.0	2.4	1.7%	18
CVS-4 (Inlet 2-4)	4	1.17	4.1	0.46	5.0	0.53	2.6	2.6	2.6	0.0	2.6	0.9%	18
CVS-4A (Inlet 3-4)	4A	2.20	11.3	0.59	3.6	1.15	4.0	4.0	4.0	0.0	4.0	1.0%	18
CVS-5 (Inlet 5-4)	5	2.19	9.0	0.42	3.9	0.92	3.6	3.6	3.6	0.0	3.6	1.0%	18
CVS-6 (Inlet 6-4)	6	0.98	8.0	0.40	4.7	0.01	0.1	0.1	0.1	0.0	0.1	1.7%	36
CVS-6A (FEES 2-4)	6A	0.78	5.0	0.02	4.7	0.01	0.1	0.1	0.1	0.0	0.1	8.5%	36
CVS-7 (Inlet 1-6)	7	1.11	10.2	0.73	3.7	0.81	3.0	3.0	3.0	0.0	3.0	3.0%	24
CVS-8 (Inlet 2-6)	8	1.59	10.1	0.51	3.7	0.81	3.0	3.0	3.0	0.0	3.0	1.4%	24
CVS-9 (Inlet 4-5A)	9	2.41	11.9	0.51	3.5	1.23	4.3	4.3	4.3	0.0	4.3	1.2%	18
CVS-9A (Inlet 4-4)	9A	0.97	5.0	0.51	4.7	0.19	0.9	0.9	0.9	0.0	0.9	1.0%	18
CVS-10 (Inlet 5-5A)	10	2.78	13.7	0.47	3.3	1.32	4.3	4.3	4.3	0.0	4.3	1.2%	18
CVS-10A (Inlet 5-4A)	10A	0.40	5.8	0.96	4.5	0.23	1.1	1.1	1.1	0.0	1.1	1.0%	18
CVS-11 (Inlet 1-5)	11	2.03	15.3	0.73	3.4	1.47	5.1	5.1	5.1	0.0	5.1	0.9%	36
CVS-12 (Inlet 2-5)	12	4.58	11.9	0.51	3.5	2.34	8.2	8.2	8.2	0.0	8.2	0.7%	36
CVS-13 (Inlet 3-5)	13	0.81	7.7	0.41	4.1	0.41	1.7	1.7	1.7	0.0	1.7	4.1%	42
CVS-13A (Inlet 3-4)	13A	1.31	10.8	0.51	3.6	0.67	2.4	2.4	2.4	0.0	2.4	1.9%	42
CVS-13 (Inlet 4-5)	13	1.16	7.4	0.41	4.2	0.50	2.6	2.6	2.6	0.0	2.6	3.0%	18
CVS-13A (Inlet 5-5A)	13A	1.20	8.7	0.58	4.0	0.69	2.7	2.7	2.7	0.0	2.7	1.0%	18
CVS-13B (Inlet 4-5B)	13B	1.53	9.0	0.59	3.9	0.80	3.5	3.5	3.5	0.0	3.5	1.0%	18
CVS-13C (Inlet 4-5C)	13C	1.28	8.8	0.51	3.9	0.04	2.5	2.5	2.5	0.0	2.5	1.0%	18
CVS-14 (Inlet 6-5)	14	1.89	11.1	0.51	3.6	0.97	3.5	3.5	3.5	0.0	3.5	3.2%	30
CVS-14A (Inlet 7-5)	14A	4.01	17.5	0.02	3.9	0.07	0.2	0.2	0.2	0.0	0.2	4.7%	24
CVS-14B (Inlet 6-5)	14B	2.73	13.4	0.67	3.3	1.19	4.6	4.6	4.6	0.0	4.6	3.4%	30
CVS-14C (Inlet 5-5)	14C	1.93	11.4	0.51	3.6	0.80	3.5	3.5	3.5	0.0	3.5	2.0%	18
CVS-15 (Inlet 5-5)	15	2.95	13.4	0.51	3.3	1.03	3.4	3.4	3.4	0.0	3.4	3.0%	18
CVS-15A (Inlet 6-5B)	15A	0.95	7.9	0.58	4.1	0.52	2.1	2.1	2.1	0.0	2.1	1.0%	18
CVS-16	16	2.98	13.1	0.51	3.4	1.32	4.4	4.4	4.4	0.0	4.4	-	-
CVS-17	17	4.10	19.0	0.51	3.8	1.10	7.9	7.9	7.9	0.0	7.9	-	-
CVS-18	18	3.08	12.8	0.47	3.4	1.42	4.8	4.8	4.8	0.0	4.8	-	-
CVS-19	19	1.81	8.0	0.68	4.5	1.09	4.9	4.9	4.9	0.0	4.9	-	-
CVS-20	20	1.80	10.4	0.51	3.7	0.80	3.4	3.4	3.4	0.0	3.4	-	-
CVS-21	21	3.88	19.1	0.51	3.1	1.86	6.1	6.1	6.1	0.0	6.1	-	-
BEL-1 (Inlet 1-1)	81	3.73	12.8	0.32	3.4	1.18	4.0	4.0	4.0	0.0	4.0	6.1%	36
BEL-2 (Inlet 1-1)	82	1.38	7.8	0.72	4.2	0.60	4.1	4.1	4.1	0.0	4.1	8.8%	36
BEL-3 (Inlet 2-2)	83	6.78	14.4	0.30	3.2	1.32	4.2	4.2	4.2	0.0	4.2	6.3%	36
BEL-4 (Inlet 1-2)	84	1.75	7.9	0.73	4.1	1.27	6.2	6.2	6.2	0.0	6.2	3.2%	36
BEL-5	85	4.95	11.0	0.71	3.6	1.32	11.6	11.6	11.6	0.0	11.6	-	-
BEL-6	86	3.99	7.4	0.86	4.2	0.91	10.9	10.9	10.9	0.0	10.9	-	-

Basin ID	Design Point	DIRECT RUNOFF				INLET	STORM SEWER		REMARKS		
		Area (Ac)	To (ft)	Runoff Coefficient	Runoff (CFS)		Flow (CFS)	Depth (ft)			
CVS-1 (Inlet 1-3)	1	3.85	6.9	0.65	8.0	2.51	20.2	20.2	13.5	6.7	22.5



2 YEAR STORM												5 YEAR STORM												100 YEAR STORM																	
Basin ID	Design Flow (MGD)	Area (Ac)	Runoff Coefficient	Peak Flow (MGD)	Peak Flow (MGD)	Peak Flow (MGD)	Peak Flow (MGD)	Peak Flow (MGD)	Peak Flow (MGD)	Peak Flow (MGD)	Peak Flow (MGD)	Basin ID	Design Flow (MGD)	Area (Ac)	Runoff Coefficient	Peak Flow (MGD)	Peak Flow (MGD)	Peak Flow (MGD)	Peak Flow (MGD)	Peak Flow (MGD)	Peak Flow (MGD)	Peak Flow (MGD)	Basin ID	Design Flow (MGD)	Area (Ac)	Runoff Coefficient	Peak Flow (MGD)	Peak Flow (MGD)	Peak Flow (MGD)	Peak Flow (MGD)	Peak Flow (MGD)	Peak Flow (MGD)									
CVS-1 (Inlet 1-3)	1	3.85	0.58	0.28	4.3	1.10	4.7	4.7	4.7	0.0	8.9	3.1%	24	CVS-1 (Inlet 1-3)	1	3.85	0.58	0.28	4.3	1.10	4.7	4.7	4.7	0.0	8.9	3.1%	24	CVS-1 (Inlet 1-3)	1	3.85	0.58	0.28	4.3	1.10	4.7	4.7	4.7	0.0	8.9	3.1%	24

NOTE: BYPASS FLOWS NOT INTERPRETED BY ON GRADE INLETS HAVE BEEN REDUCED BY 50% AND ADDED TO THE DIRECT FLOW AT THE NEXT DOWNHILL INLET PER SECTION 6.3.2 OF THE TOWN OF PARKER STORM DRAINAGE AND ENVIRONMENTAL CRITERIA MANUAL.



Printed: 1/22/2017 8:25 AM Day Name: P:\C\343\3\CompSouth05-Residential Preliminary Plat\Documents\StormWater Reports\Drainage Exhibit\Drainage Basin Map BAK 11.21.16.dwg Updated By: BKZ

DRAWN BY: _____
 CHECKED BY: _____
 DATE: _____

REVISIONS: _____
 DATE: _____

PROJ. MGR.: RLB
 PROJ. ASSOC.: ASD
 DRAWN BY: RAK
 DATE: 6-30-16

REVISED PER TOWN COMMENTS
 DATE: 11/27/2016

COMPARK SOUTH
 TOWN OF PARKER, CO

PROPOSED DRAINAGE AREA MAP - FILING NO. 2

COLORADO REGISTERED
 NEW J. MORRIS
 30877
 PROFESSIONAL ENGINEER

SHEET
3 OF **3**
 CLCPK3