# FINAL DRAINAGE REPORT
# FOR
# INDIGO RANCH AT STETSON RIDGE FILING NO. 3 & 4
# AND
# MASTER DEVELOPMENT DRAINAGE PLAN AMENDMENT
# FOR
# STETSON RIDGE

**JULY 2004**
***REVISED April 2005***

**PREPARED FOR:**
**CLASSIC COMMUNITIES**
**6385 CORPORATE DRIVE, SUITE 200**
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**PREPARED BY:**
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**1016.60**

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# FINAL DRAINAGE REPORT FOR INDIGO RANCH AT STETSON RIDGE FILING NO. 3 & 4, AND MASTER DEVELOPMENT DRAINAGE PLAN AMENDMENT FOR STETSON RIDGE

## DRAINAGE REPORT STATEMENT

**ENGINEER'S STATEMENT:**
The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the City for drainage reports and said report is in conformity with the master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors, or omissions on my part in preparing this report.

KYLE R. CAMPBELL
PROFESSIONAL ENGINEER

Kyle R. Campbell, P.E., Colorado P.E. #29794 — Date: 4/18/05

**DEVELOPER'S STATEMENT:**
I, the developer, have read and will comply with all of the requirements specified in this drainage report and plan.

Business Name: Classic Communities

By:

Title: Vice President

Address: 6385 Corporate Drive , Suite 200

Colorado Springs, CO 80919

**CITY OF COLORADO SPRINGS ONLY:**
Filed in accordance with Section 7.7.906 of the Code of the City of Colorado Springs, 2001, as amended.

City Engineer — Date: MAY 9, 2005

Conditions:

# FINAL DRAINAGE REPORT FOR INDIGO RANCH AT STETSON RIDGE FILING NO. 3 & 4, AND MASTER DEVELOPMENT DRAINAGE PLAN AMENDMENT FOR STETSON RIDGE

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## APPENDICES

# FINAL DRAINAGE REPORT FOR INDIGO RANCH AT STETSON RIDGE FILING NO. 3 & 4, AND MASTER DEVELOPMENT DRAINAGE PLAN AMENDMENT FOR STETSON RIDGE

## PURPOSE

This document is the Final Drainage Plan for Stetson Ridge Subdivision Filing No. 3 and Filing No. 4 and the Master Development Drainage Plan Amendment For Stetson Ridge. The purpose of this report is to identify on-site drainage patterns, storm sewer, inlet locations, and areas tributary to the site, and to safely route developed storm water runoff to adequate outfall facilities.

## GENERAL DESCRIPTION

Indigo Ranch at Stetson Ridge Filings 3 & 4, is an 89.90-acre site located in the easterly half of Section 17 and the east half of Section 8, Township 13 South, Range 65 West of the Sixth Principal Meridian in the City of Colorado Springs, County of El Paso, State of Colorado. The site is bounded on the north unplatted land, to the south by Issaquah Drive and Indigo Ranch at Stetson Hills Filings No. 1 & 2, to the east by unplatted land, and to the west by proposed Peterson Road. A single family residential development with associated streets is proposed for this site. This report also represents an Amendment to the Master Development Drainage Plan for Stetson Ridge. The limits of this study, is the balance of the unplatted land within Stetson Ridge Master Plan not including proposed Fillings 3 & 4.

The average soil condition reflects Hydrologic Group "A" (Blakeland) as determined by the "Soil Survey of El Paso County Area," prepared by the Soil Conservation Service (see map in Appendix).

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## EXISTING DRAINAGE CONDITIONS

The site is located within the Sand Creek Drainage Basin. This site has existing slopes ranging from 1% to 10%. Portions of Issaquah Drive and Peterson Road have been completed along the south and southwest portions of the site.

Stetson Ridge Filing No. 3 & 4 was studied as part of the "Master Development Drainage Plan for Stetson Ridge," prepared by Leigh Whitehead & Associates, approved January 2001 and has been revised with the "Master Development Drainage Plan Amendment for Stetson Ridge," prepared by Classic Consulting Engineers and Surveyors which is being reviewed concurrently with this report. As described by the MDDP for Stetson Ridge by Leigh Whitehead & Associates, developed runoff from Stetson Ridge is conveyed to four major outfall points (MDDP Basins A, B, C, & G). Flows from MDDP Basin A and Basin B were to be conveyed to the south across Stetson Hills Boulevard. Flows from MDDP Basins C and G were to be conveyed westerly across the Ridgeview Subdivision and ultimately into the Sand Creek drainage channel.

The Final Drainage Report for Indigo Ranch at Stetson Ridge Filing Nos. 1, 2, & 3 further detailed the outfall locations and discharge quantities for flows routed southerly toward Stetson Ridge South as well as flows routed westerly toward Indigo Ranch at Ridgeview Filing Nos. 1 & 2. Indigo Ranch at Ridgeview was previously studied by JR Engineering, in the "Master Development Drainage Plan Amendment for the Easterly Portion of Ridgeview Subdivision and Preliminary Drainage Report for Ridgeview Assisted Living Development," dated May 1999, revised November 1999, and approved December 1999. and subsequently, in the "Final Drainage Report for Indigo Ranch at Ridgeview Filing Nos. 1 & 2," prepared by Classic Consulting Engineers & Surveyors, approved March 2002.

The southwest portion of Indigo Ranch at Stetson Ridge Filing No. 2 was previously shown on the MDDP by Leigh Whitehead & Associates as a multi-family parcel, was proposed to drain southerly via a 48" RCP storm pipe. The 48" storm pipe was sized to accept 12.12 acres, $Q_{100}$=70.3 cfs, from this site. This portion of land is currently platted as part of Indigo Ranch at Stetson Ridge Filing No. 2. The 48" storm pipe was not constructed to outfall the developed discharge to the south per the revised Stetson Ridge South layout. Therefore the proposed flows in Indigo Ranch at Stetson Ridge were routed to the west. These flows were not originally anticipated in the Ridgeview Subdivision MDDP by JR Engineering, however they were accounted for in the Indigo Ranch at Ridgeview Final Drainage Report calculations, and ultimately the construction of Indigo Ranch at Ridgeview Filing No. 1 storm sewer outfall system.

**PROPOSED DRAINAGE CONDITIONS**

Flows from the proposed Stetson Ridge Master Plan closely reflect the drainage concepts as given in the Master Development Drainage Plan by Leigh Whitehead & Associates and subsequently the previously submitted Master Development Drainage Plan Amendment for Stetson Ridge by Classic Consulting Engineers and Surveyors., dated April 2003. Revisions to the MDDP for Stetson Ridge are necessary due to changes to the Master Plan for Stetson Ridge which bought about coinciding changes in parcel sizes, locations, and zoning designations. Banning-Lewis Ranch will accept developed flows from a portion of the land located along the eastern side of the Stetson Ridge Master Plan. Runoff from these developments will be contained within site specific temporary detention facilities with releases rates matching historic flows until such time the adjacent Banning-Lewis Detention Facility has been constructed to accept developed flows. Major outfall points are designated on the Drainage Map with the runoff reaching the areas described as follows:

## ***SOUTHERN COLLECTION SYSTEM***

The Southern Collection System refers to proposed drainage facilities that direct runoff to an existing 66" RCP located near the intersection of Peterson Road and Issaquah Drive. Runoff to this point has been referenced as Basin C per the "Master Development Drainage Plan for Stetson Ridge East", by Leigh Whitehead and Associates, date January 2001 and Pipe 61 per the "Final Drainage Report for Indigo Ranch at Stetson Ridge Filing Nos. 1, 2, and 3", by Classic Consulting Engineers and Surveyors, dated November 2001. Per this Amendment to the MDDP for Stetson Ridge the southern most and coinciding collection point will be referenced as Pipe 24.

***Design Point 4*** ($Q_5$ = 3 cfs, $Q_{100}$ = 9 cfs) consists of developed flows from single family residential lots and landscaping and portions of proposed Issaquah Drive from 1.43-acre Basin TT. This runoff will combine with flow-by from Design Point 2 ($Q_5$ = 0.4 cfs, $Q_{100}$ = 4.2 cfs). A portion of the combined flows at Design Point 4 will be collected by a proposed 8' at-grade inlet. The intercepted flows will be conveyed southwesterly in Pipe Run 10, ($Q_5$ = 1 cfs, $Q_{100}$ = 5 cfs). The remaining flow-by ($Q_5$ = 0.5 cfs, $Q_{100}$ = 3.6 cfs) will continue southwesterly within the southerly flowline of Proposed Issaquah Drive to Design Point 18.

***Design Point 5*** ($Q_5$ = 3 cfs, $Q_{100}$ = 7 cfs) consists of developed flows from single family residential lots and landscaping and portions of proposed Issaquah Drive from 1.63-acre Basin SS. This runoff will combine with flow-by from Design Point 3 ($Q_5$ = 0.2 cfs, $Q_{100}$ = 1.1 cfs). A portion of the combined flows at Design Point 5 will be collected by a proposed 6' at-grade inlet. The intercepted flows will be conveyed southeasterly in Pipe Run 12, ($Q_5$ = 2 cfs, $Q_{100}$ = 4 cfs), where they will combine with the intercepted runoff from Design Point 5. The remaining flow-by ($Q_5$ = 0.8 cfs, $Q_{100}$ = 3.1 cfs) will continue southwesterly within the northerly flowline of Proposed Issaquah Drive to Design Point 19.

***Design Point 6*** ($Q_5$ = 19 cfs, $Q_{100}$ = 38 cfs) consists of developed flows from Basin OS-13, 9.18 Ac., a future single family development proposed at 3.7 – 7.99 du/ac. Runoff from Design Point 6 will be collected within a proposed 30" RCP stub. This anticipated runoff will combine with flows from Design Points 4 and 5 and it to be conveyed southwesterly within Pipe Run 13, ($Q_5$ = 21 cfs, $Q_{100}$ = 45 cfs) a proposed 36" RCP, which ties into an existing 36" stub near Sonesta Drive.

***Design Point 7*** ($Q_5$ = 18 cfs, $Q_{100}$ = 37 cfs) consists of developed flows from Basin OS-13A, 8.81 Ac., a future single family development proposed at 3.7 – 7.99 du/ac. Anticipated runoff from Design Point 7 will be collected within a proposed 24" RCP and conveyed under future Antelope Ridge Drive. Runoff will then be conveyed westerly across the future Elementary School/Park Site to Design Point 11. A Final Drainage Report for Basin OS-13-A and the future Elementary school site will determine the final alignment of this outfall system.

***Design Point 8*** ($Q_5$ = 35 cfs, $Q_{100}$ = 68 cfs) consists of developed flows from Basin OS-14, 19.75 Ac., which is currently planned as for a single family residential site. Runoff from the area will be conveyed underneath future Antelope Ridge Drive within Pipe Run 82, a proposed 36" RCP.

***Design Point 9*** ($Q_5$ = 40 cfs, $Q_{100}$ = 79 cfs) consists of developed flows from Basin OS-16, 2.32 Ac., ($Q_5$ = 8 cfs, $Q_{100}$ = 16 cfs) which is currently planned for future Antelope Ridge Drive and adjacent landscaping. Flows from this basin will combine with runoff from Design Point 8 and will continue in a northwest direction within Pipe Run 83, a proposed 36" RCP. After conveyance under future Antelope Ridge Drive flows will be conveyed westerly within a graded swale across the future elementary School/Park Site to Design Point 11, until such time the school is to be constructed.

***Design Point 10*** ($Q_5$ = 3 cfs, $Q_{100}$ = 6 cfs) consists of developed flows from existing single family residential streets in 0.86-acre Basin PT-6. The runoff from this basin is currently intercepted within an existing 4' sump inlet and is discharged onto the future Elementary school site via a 18" RCP and swale where it conveys flows northerly to Design Point 11 until such time the school is to be constructed.

***Design Point 11*** ($Q_5$ = 66 cfs, $Q_{100}$ = 132 cfs) consists of developed flows from Basin OS-15, 12.53 Ac., ($Q_5$ = 14 cfs, $Q_{100}$ = 30 cfs) which is currently planned for a future Elementary School/Park Site, as well as runoff from Design Points 7, 8, 9, and 10. The majority of these combined runoff will be collected and conveyed within an existing 42" RCP stub (Pipe Run 14). Flow within the existing pipe will be restricted to $Q_5$ = 66 cfs and $Q_{100}$ = 106 cfs. The remaining runoff ($Q_{100}$ = 26 cfs) will discharge onto Issaquah and Sonesta Drives where it will be conveyed to downstream sump inlets at Design Points 26 and 27.

***Design Point 12*** ($Q_5$ = 8 cfs, $Q_{100}$ = 18 cfs) consists of developed flows from single family residential lots and adjacent streets from 2.80-acre Basin EE and 1.64-acre Basin FF. Runoff from these two basins will be collected within a proposed 8' D-10-R sump inlet within Tenderfoot Drive where runoff will combine with runoff from Design Point 13.

***Design Point 13*** ($Q_5$ = 2 cfs, $Q_{100}$ = 4 cfs) consists of developed flows from single family residential lots and adjacent streets within 0.86-acre Basin GG. Runoff from this basin will be collected within the adjacent proposed streets and conveyed to a proposed 4' D-10-R sump inlet within proposed Tenderfoot Drive. A proposed 24" RCP (Pipe Run 3: $Q_5$ = 10 cfs, $Q_{100}$ = 21 cfs) will convey the flows south. Should an inlet become clogged or obstructed accumulated runoff will discharge out into Legend Hill Drive and will be intercepted downstream with no adverse affects to the surrounding area.

**_Design Point 14_** ($Q_5$ = 4 cfs, $Q_{100}$ = 9 cfs) consists of developed flows from single family residential lots and adjacent streets from 0.85-acre Basin JJ and 1.46-acre Basin KK. Runoff from these two basins will be collected within the proposed adjacent streets and conveyed to a low point on the east side of proposed Tin Star Drive where a proposed 4' D-10-R sump inlet will intercept the flows.

**_Design Point 15_** ($Q_5$ = 1 cfs, $Q_{100}$ = 2 cfs) consists of developed flows from single family residential lots and adjacent streets from 0.36-acre Basin LL. Runoff collected in Tin Star Drive, where a proposed 4' D-10-R sump inlet will intercept the flows. Two proposed 18" RCP (Pipe Run 7 and 8) will convey the DP 14 and DP 15 flows. Should the inlets become clogged or obstructed accumulated runoff will discharge out into Legend Hill Drive and will be intercepted downstream with no adverse affects to the surrounding area.

**_Design Point 16_** ($Q_5$ = 3 cfs, $Q_{100}$ = 6 cfs) consists of developed flows from single family residential lots and adjacent streets from 1.63-acre Basin MM. Collected runoff will be directed to a low point within proposed Tin Star Drive where a proposed 4' D-10-R sump inlet will intercept the flows.

**_Design Point 17_** ($Q_5$ = 3 cfs, $Q_{100}$ = 7 cfs) consists of developed flows from single family residential lots and adjacent streets from 1.43-acre Basin NN. Runoff collected at the low point of Design Point 17 will be intercepted by a proposed 4' sump inlet. This collected flow will combine with runoff contained within the aforementioned Pipes 7 and 8. These flows will then combine with runoff carried within Pipe 8A totaling $Q_5$ = 10 cfs, $Q_{100}$ = 21 cfs. The flows will be conveyed west through Proposed Legend Hill Drive and then south within the Right of Way of proposed Sonesta Drive through a proposed 30" RCP (Pipe Run 9) to an existing junction box located within Existing Issaquah Drive. Runoff conveyed in Pipe Runs 9, 13, and 14 will continue to flow southwesterly underneath existing Issaquah Drive within an existing 42" RCP ($Q_5$ = 97 cfs, $Q_{100}$ = 173 cfs) Pipe Run 15.

***Design Point 18*** ($Q_5$ = 7 cfs, $Q_{100}$ = 13 cfs) consists of developed flows from existing single family residential lots and adjacent streets from 1.22-acre Basin OS-D, a 10% allowance for adjacent landscape flow from property adjacent to the Issaquah Drive, a 0.92-acre portion of Proposed Issaquah Drive, and flow-by from Design Point 4 ($Q_5$ = 0.5 cfs, $Q_{100}$ = 4.9 cfs). A portion of the combined flows at Design Point 18 will be collected by an existing 6' at-grade inlet. The intercepted flows ($Q_5$ = 4 cfs, $Q_{100}$ = 7 cfs) will be conveyed northwesterly within an existing 18" RCP and combine with flows collected within the aforementioned 42" RCP. The remaining flow-by ($Q_5$ = 3 cfs, $Q_{100}$ = 6.5 cfs) will continue west within the southern flowline of Proposed Issaquah Drive (Design Point 26). Since the at-grade inlet is already at capacity, it is assumed that the additional overflow from the elementary school site (Basin OS-15) in the 100-yr storm event will flow past these at-grade inlets to the sump inlets at DP-26 and DP-27.

***Design Point 19*** ($Q_5$ = 4 cfs, $Q_{100}$ = 11 cfs) consists of developed flows from existing single family residential lots and adjacent streets from 2.14-acre Basin UU and flow-by from Design Point 5 ($Q_5$ = 0.8 cfs, $Q_{100}$ = 3.1 cfs). A portion of the combined flows at Design Point 19 will be collected by an existing 6' at-grade inlet. The intercepted flows ($Q_5$ = 3 cfs, $Q_{100}$ = 6 cfs) will be conveyed southwesterly within an existing 18" RCP and combine with flows collected within the aforementioned 42" RCP totaling $Q_5$ = 102 cfs, $Q_{100}$ = 180 cfs) (Pipe Run 18). The remaining flow-by ($Q_5$ = 1.1 cfs, $Q_{100}$ = 5.3 cfs) will continue west within the northern flowline to Design Point 27, an existing low point in Issaquah Drive.

***Design Point 20*** ($Q_5$ = 6 cfs, $Q_{100}$ = 12 cfs) consists of developed flows from single family residential lots and adjacent streets from 3.10-acre Basin DD. Collected runoff will be directed south via curb and gutter to a low point within Proposed Canyon Crest Drive.

***Design Point 21*** ($Q_5$ = 3 cfs, $Q_{100}$ = 6 cfs) consists of developed flows from single family residential lots and adjacent streets from 1.29-acre Basin CC. Collected runoff will be directed south via curb and gutter to a low point within Proposed Canyon Crest Drive.

***Design Point 22*** ($Q_5$ = 4 cfs, $Q_{100}$ = 9 cfs) consists of developed flows from single family residential lots and adjacent streets from 2.50-acre Basin OO. Collected runoff will be directed west via curb and gutter to a low point within Proposed Canyon Crest Drive.

***Design Point 23*** ($Q_5$ = 7 cfs, $Q_{100}$ = 15 cfs) consists of developed flows from single family residential lots and adjacent streets from 1.86-acre Basin HH, 0.98-acre Basin HH, and 1.04-acre Basin PP. Collected runoff will be directed west via curb and gutter to a low point within Proposed Canyon Crest Drive.

***Design Point 24*** ($Q_5$ = 9 cfs, $Q_{100}$ = 20 cfs) consists of developed flows from Design Points 20 and 22. Collected runoff will be intercepted by a proposed 10' sump inlet and convey southwesterly to Design Point 25 within a proposed 24" RCP (Pipe Run 19).

***Design Point 25*** ($Q_5$ = 9 cfs, $Q_{100}$ = 20 cfs) consists of developed flows from Design Points 21 and 23. Collected runoff will be intercepted by a proposed 10' sump inlet and conveyed southwesterly within a proposed 24" RCP (Pipe Run 20). Runoff from Design Points 24 and 25 will combine ($Q_5$ = 19 cfs, $Q_{100}$ = 39 cfs) and continue within a proposed 30" RCP (Pipe Run 21) to an existing 36" stub located in the southwest corner of Proposed Indigo Ranch at Stetson Ridge Filing No. 3. A 6' wide bottom trapezoidal graded swale 1.5' deep with 3:1 side slopes at 2% or equal conveyance channel shall be provided to accommodate the 100-year runoff should the inlet become clogged or obstructed.

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***Design Point 26*** ($Q_5$ = 8 cfs, $Q_{100}$ = 34 cfs) consists of developed flows from existing single family residential lots and adjacent streets from 1.87-acre Basin OS-C and flow-by from Design Point 18 ($Q_5$ = 3.0 cfs, $Q_{100}$ = 6.5 cfs) including a portion of the 100-yr storm event overflow from Basin OS-15 ($Q_{100}$ = 26 cfs). Runoff to the low point within existing Issaquah Dr. will be collected by an existing 14' sump inlet and conveyed to an existing junction box via an existing 24" RCP.

***Design Point 27*** ($Q_5$ = 12 cfs, $Q_{100}$ = 31 cfs) consists of developed flows from existing single family residential lots and adjacent streets from 1.56-acre Basin WW, 3.56-acre Basin XX, and flow-by from Design Point 19 ($Q_5$ = 1.1 cfs, $Q_{100}$ = 5.3 cfs). Runoff conveyed to the existing low point within Issaquah Drive will be collected by an existing 12' sump inlet. The intercepted runoff will combine with flows contained within Pipe Run 21 totaling $Q_5$ = 31 cfs, $Q_{100}$ = 71 cfs and will continue to an existing junction box via an existing 36" RCP. Combined runoff from Pipes 18, 22, and 23 and flows from the existing D 19A-inlet (Pipe 60, prev FDR) combine in Pipe Run 24 for a total of $Q_5$ = 135 cfs and $Q_{100}$ = 269 cfs and will be conveyed within the existing 66" RCP. Runoff to this point is approximately 12 cfs more than the anticipated runoff described within the Indigo Stetson Ridge Final Drainage Report of 257 cfs. A hydraulic analysis of the existing system has been conducted to ensure adequate capacity to handle the additional 12 cfs. Therefore discharge to this point will have no negative impact on existing downstream facilities and the Sand Creek Channel.

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***NORTHERN COLLECTION SYSTEM***

The Northern Collection System refers to proposed drainage facilities that direct runoff to a future 78" RCP located near the proposed low point within future Peterson Road adjacent to Proposed Indigo Ranch at Stetson Ridge Filing No. 4 and Proposed Indigo Ranch at Ridgeview Filing No. 2. Runoff to this point has been referenced as Basin G per the "Master Development Drainage Plan for Stetson Ridge East", by Leigh Whitehead and Associates, date January 2001 and Pipe 33 per the "Final Drainage Report for Indigo Ranch at Stetson Ridgeview Filing Nos. 1, & 2 by Classic Consulting Engineers and Surveyors, revised February 2002. Per this Amendment to the MDDP for Stetson Ridge the coinciding collection point will be referenced as Pipe 78.

***Design Point 1*** ($Q_5$ = 24 cfs, $Q_{100}$ = 50 cfs) consists of developed flows from Basin OS-10, 10.34 acres of land zoned for single family residential, and Basin QQ. Basin QQ is 1.41-acres of commercial landscaping, single family lots, and Issaquah Drive. The combined runoff from these basins will be collected on-site, and within a sump inlet located in the roundabout, and routed to the 30" RCP located within Issaquah Drive. These collected flows will be conveyed southwesterly within Pipe Run 25, ($Q_5$ = 24 cfs, $Q_{100}$ = 50 cfs).

***Design Point 2*** ($Q_5$ = 4 cfs, $Q_{100}$ = 9 cfs) consists of developed flows from single family residential lots, community commercial landscaping, and portions of proposed Issaquah Drive, all located within the 1.40-acre Basin RR. A portion of the runoff at Design Point 2 will be collected by a proposed 6' at-grade inlet. These collected flows will be conveyed southwesterly within Pipe Run 26, ($Q_5$ = 4 cfs, $Q_{100}$ = 5 cfs). The storm water that is not collected by this inlet will be collected downstream at Design Point 4 and has been accounted for in the Southern Collection System portion of this report.

**_Design Point 3_** ($Q_5$ = 2 cfs, $Q_{100}$ = 4 cfs) consists of developed flows from single family residential lots and portions of proposed Issaquah Drive from 1.00-acre Basin U. A portion of the combined flows at Design Point 3 will be intercepted by a proposed 6' at-grade inlet. The collected flows will be conveyed southwesterly in Pipe Run 27, ($Q_5$ = 1.9 cfs, $Q_{100}$ = 3.6 cfs). This flow will combine with runoff from Design Points 1 and 2, and continue westerly within Pipe Run 28 ($Q_5$ = 29 cfs, $Q_{100}$ = 56 cfs) a proposed 30" RCP.

**_Design Point 28_** ($Q_5$ = 8 cfs, $Q_{100}$ = 16 cfs) consists of developed flows from single family residential lots and adjacent streets from 2.16-acre Basin V and 2.36-acre Basin W. Runoff from the two basins will be collected within the adjacent proposed streets and conveyed to a low point within Proposed Butch Cassidy Blvd.

**_Design Point 29_** ($Q_5$ = 2 cfs, $Q_{100}$ = 4 cfs) consists of developed flows from single family residential lots and adjacent streets within 0.79-acre Basin X. Runoff from this basin will be collected within the adjacent proposed streets and conveyed to a low point within Proposed Butch Cassidy Blvd. At this point, runoff from Design Points 28 and 29 will be collected within a pair of proposed 4' sump inlets. Two proposed 18" RCPs will each act to convey approximately $Q_5$ = 6 cfs, $Q_{100}$ = 12.5 cfs, before continuing northerly within a proposed 24" RCP (Pipe Run 31 : $Q_5$ = 12 cfs, $Q_{100}$ = 25 cfs). Flows carried within Pipes 28 and 31 will combine within a proposed 36" RCP (Pipe 32) which will continue west containing flows of $Q_5$ = 37 cfs and $Q_{100}$ = 74 cfs.

**_Design Point 30_** ($Q_5$ = 3 cfs, $Q_{100}$ = 7 cfs) consists of developed flows from single family residential lots and adjacent streets from 1.89-acre Basins L. Collected runoff will be directed south via curb and gutter to a low point within Proposed Tenderfoot Lane where it will be collected by a proposed 4' sump inlet. The intercepted flow from Design Points 30 will be conveyed within a proposed 18" RCP and combine with flows contained within Pipe 32. Combined flows totaling $Q_5$ = 40 cfs, $Q_{100}$ = 80 cfs will continue west within a proposed 36" RCP (Pipe Run 34).

***Design Point 31*** ($Q_5 = 9$ cfs, $Q_{100} = 18$ cfs) consists of developed flows from single family residential lots and adjacent streets from 1.84-acre Basin Z and 2.91-acre Basin BB. Runoff from these two basins will be collected within the proposed adjacent streets and conveyed to a low point within Proposed Canyon Crest Drive. A proposed 4' sump inlet will intercept said runoff and convey it north to Design Point 32 via a proposed 18" RCP.

***Design Point 32*** ($Q_5 = 9$ cfs, $Q_{100} = 18$ cfs) consists of developed flows from single family residential lots and adjacent streets from 2.60-acre Basin Y and 2.75-acre Basin AA. Runoff from these two basins will be collected within the proposed adjacent streets and conveyed to a low point within Proposed Canyon Crest Drive. Flows intercepted by a proposed 4' sump inlet will combine with flow from Design Point 31 totaling $Q_5 = 17$ cfs, $Q_{100} = 35$ cfs and continue north within a proposed 24" RCP (Pipe Run 36). Flow contained within Pipes 34 and 36 will combine within a Pipe 37, a proposed 42" RCP, ($Q_5 = 55$ cfs, $Q_{100} = 111$ cfs) which continues to a low point located within Proposed Indian River Drive. Should the inlets become clogged or obstructed accumulated runoff will overtop the small localized roadway high point and continue south to the proposed 10' sump inlets located within the cul-de-sac of Canyon Crest Drive.

***Design Point 33*** ($Q_5 = 7$ cfs, $Q_{100} = 14$ cfs) consists of developed flows from single family residential lots and adjacent streets from 1.79-acre Basin M and 1.87-acre Basin N. Collected runoff will be via curb and gutter to a low point within Proposed Indian River Drive.

***Design Point 34*** ($Q_5 = 5$ cfs, $Q_{100} = 10$ cfs) consists of developed flows from single family residential lots and adjacent streets from 2.89-acre Basin O. Collected runoff will be directed via curb and gutter to a low point within Proposed Indian River Drive.

***Design Point 35*** ($Q_5$ = 2 cfs, $Q_{100}$ = 5 cfs) consists of developed flows from single family residential lots and adjacent streets from 1.41-acre Basin J. Collected runoff will be directed via curb and gutter to a low point within Proposed Indian River Drive.

***Design Point 36*** ($Q_5$ = 3 cfs, $Q_{100}$ = 6 cfs) consists of developed flows from single family residential lots and adjacent streets from 1.28-acre Basin K. Collected runoff will be directed west via curb and gutter to a low point within Proposed Indian River Drive.

***Design Point 37*** ($Q_5$ = 9 cfs, $Q_{100}$ = 19 cfs) consists of developed flows from Design Points 33 and 35. Collected runoff will be intercepted by a proposed 8' sump inlet and convey west to Design Point 38 within a proposed 18" RCP (Pipe Run 38). Flows are contained within Pipe 38 (18" RCP) and will continue towards Design Point 38.

***Design Point 38*** ($Q_5$ = 7 cfs, $Q_{100}$ = 15 cfs) consists of developed flows from Design Points 34 and 36. Collected runoff will be intercepted by a proposed 8' sump inlet and conveyed southwesterly within a proposed 18" RCP (Pipe Run 40). Runoff from Design Points 38 will combine with flows contained within Pipe 39 and continue west within a proposed 48" RCP ($Q_5$ = 69 cfs, $Q_{100}$ = 141 cfs) (Pipe Run 41) to the low point located within Proposed Peterson Road. A 6' wide bottom trapezoidal graded swale 1.5' deep with 3:1 side slopes at 2% or equivalent overflow channel shall be provided to accommodate the 100-year runoff should the inlet become clogged or obstructed.

***Design Point 41*** ($Q_5$ = 25 cfs, $Q_{100}$ = 44 cfs) consists of developed flows from Basin OS-3, 7.44 Ac., which is a future commercial development. The anticipated flows will be collected at Design Point 41 and conveyed westerly in a future 30" RCP (Pipe Run 45) within future Dublin Road. These flows will combine with the flows from DP-60 within Pipe Run 85 ($Q_5$ = 36 cfs, $Q_{100}$ = 66 cfs).

***Design Point 42*** ($Q_5 = 31$ cfs, $Q_{100} = 55$ cfs) consists of developed flows from Basin OS-4, 8.45 Ac., which is a future commercial development. The anticipated flows will be collected at Design Point 42 and conveyed southwesterly in a future 30" RCP (Pipe Run 46). These flows will combine with upstream flows within Pipe Run 47, ($Q = 63$ cfs, $Q_{100} = 113$ cfs) and continue westward.

***Design Point 43*** ($Q_5 = 27$ cfs, $Q_{100} = 55$ cfs) consists of developed flows from Basin OS-5, 11.26 Ac., a future multi-family development proposed at 12.0 – 24.0 du/ac. The anticipated flows will be collected within a proposed 30" RCP at Design Point 43 and conveyed southwesterly within a proposed 30" RCP (Pipe Run 50).

***Design Point 44*** ($Q_5 = 12$ cfs, $Q_{100} = 23$ cfs) consists of developed flows from half of Basin OS-7, 7.12 Ac., future Dublin Boulevard Runoff from this portion of the basin will be collected by a 12' sump inlet. Runoff contained within the roadway prior to reaching the proposed sump inlet is far below the allowable capacity of the future major arterial roadway per the Colorado Springs Drainage Criteria Manual. The anticipated flows will be collected at Design Point 44 will combine with flows with contained in Pipe 50. These combined flows will continue south within a proposed 42" RCP (Pipe Run 52 ($Q_5 = 38$ cfs, $Q_{100} = 76$ cfs)).

***Design Point 45*** ($Q_5 = 12$ cfs, $Q_{100} = 23$ cfs) consists of developed flows from half of Basin OS-7, 7.12 Ac., future Dublin Boulevard Runoff from this portion of the basin will be collected by a 12' sump inlet and directed northward via a proposed 24" RCP to the proposed main line located with future Dublin Road. Anticipated flows will be collected at Design Point 45 will combine with flows with contained in Pipe 52. These combined flows will continue south within a proposed 54" RCP (Pipe Run 53 ($Q_5 = 109$ cfs, $Q_{100} = 204$ cfs)). Should the inlets become clogged or obstructed accumulated runoff will overtop the small localized roadway high point and continue south to the proposed 10' sump inlets located within Hawk Wind Boulevard.

*Design Point 46* ($Q_5$ = 18 cfs, $Q_{100}$ = 33 cfs) consists of developed flows from Basin OS-8, 4.32 Ac., of future commercial development and proposed Issaquah Drive. The anticipated flows will be collected at Design Point 46, and two sump inlets located within Issaquah, and conveyed south and west within a future 30" RCP (Pipe Run 54).

*Design Point 47* ($Q_5$ = 25 cfs, $Q_{100}$ = 47 cfs) consists of developed flows from Basin OS-9, 8.81 Ac., of future commercial development. The anticipated flows will be collected at Design Point 47 and conveyed south within a future 30" RCP (Pipe Run 55). The collected runoff will combine with flows contained within future Pipe 54. These combined flows will continue south within a proposed 36" RCP ((Pipe Run 56 ($Q_5$ = 41 cfs, $Q_{100}$ = 76 cfs)).

*Design Point 48* ($Q_5$ = 20 cfs, $Q_{100}$ = 37 cfs) consists of developed flows from Basin OS-11, 5.83 Ac., a future single family development proposed at 8.0 – 11.99 du/ac. The anticipated flows will be collected at Design Point 48 and conveyed westerly within in a future 30" RCP (Pipe Run 57). These flows will combine with upstream flows conveyed by Pipe Run 56 within a proposed 42" RCP for a total flow of $Q_5$ = 58 cfs, $Q_{100}$ = 108 cfs (Pipe Run 58).

*Design Point 49* ($Q_5$ = 35 cfs, $Q_{100}$ = 70 cfs) consists of developed flows from Basin OS-12, 18.80 Ac., a future Middle School Site with associated buildings, parking, play fields and landscaping. The flows generated by Basin OS-12 shall be directed to Design Point 49, and conveyed within a proposed 36" RCP (Pipe Run 65).

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***Design Point 50*** ($Q_5$ = 6 cfs, $Q_{100}$ = 12 cfs) consists of developed flows from single family residential lots and adjacent streets located within 2.35-acre Basin E. Runoff will be collected within the proposed street and conveyed south via curb and gutter to a proposed low point located within the southern cul-de-sac of Proposed Coyote Ridge Court. Runoff reaching this location will be collected by a proposed 6' sump inlet and will continue southwesterly within a proposed 18" RCP (Pipe Run 70). A 4' wide bottom trapezoidal graded swale 1' deep with 3:1 side slopes at 2% or equivalent overflow channel shall be provided to accommodate the 100-year runoff should the inlet become clogged or obstructed.

***Design Point 51*** ($Q_5$ = 13 cfs, $Q_{100}$ = 27 cfs) consists of developed flows from single family residential lots and adjacent streets located within 1.18-acre C, 3.34-acre Basin F, and 2.29-acre Basin G. A portion of the combined flows at Design Point 51 will be intercepted a proposed 18' at-grade inlet. The collected flows will be conveyed northwesterly in Pipe Run 59, ($Q_5$ = 10 cfs, $Q_{100}$ = 17 cfs). This flow will combine with flows carried in Pipe 58 and continue westerly within Pipe Run 60 ($Q_5$ = 60 cfs, $Q_{100}$ = 111 cfs) a proposed 30" RCP. The remaining flow-by ($Q_5$ = 3 cfs, $Q_{100}$ = 10 cfs) will continue west within the southern flowline to Design Point 54.

***Design Point 52*** ($Q_5$ = 3 cfs, $Q_{100}$ = 7 cfs) consists of developed flows from single family residential lots and adjacent streets from a portion of 2.37-acre Basin I. Runoff from this basins will be collected within the proposed adjacent streets and conveyed to a low point within Sundance Kid Drive where runoff will combine with runoff from Design Point 53.

***Design Point 53*** ($Q_5$ = 1 cfs, $Q_{100}$ = 3 cfs) consists of developed flows from single family residential lots and adjacent streets from a portion of the 2.37-acre Basin I. Runoff collected at the low point from Design Points 52 and 53 will be split between two proposed 4' sump inlets and directed down pipe within two proposed 18" RCP (Pipe Run 61 and 62). Each pipe will convey a maximum of $Q_5$ = 3 cfs, $Q_{100}$ = 6 cfs and will be conveyed north within Pipe Run 63 a proposed 18" which conveys a total of $Q_5$ = 4 cfs, $Q_{100}$ = 9 cfs. Should the inlets become clogged or obstructed accumulated runoff will discharge out into Hawk Wind Boulevard and will be intercepted by downstream facilities with no adverse affects to the surrounding area.

***Design Point 54*** ($Q_5$ = 10 cfs, $Q_{100}$ = 24 cfs) consists of developed flows from single family residential lots and adjacent streets from a portion of 1.46-acre Basin D, 2.20-acre Basin H, and flow-by from Design Point 51. Runoff from these basins will be conveyed within the southern flowline of Proposed Hawk Wind Boulevard to a proposed 12' sump inlet. Runoff collected by the inlet will be conveyed northwesterly within a proposed 24" RCP where it will combine with flows contained within a proposed 66" RCP (Pipe 69) for a total flow of $Q_5$ = 178 cfs, $Q_{100}$ = 343 cfs. Should the inlets located at Design Points 54 or 55 become clogged or obstructed accumulated runoff will overtop the small localized roadway high point and continue west to Proposed Peterson Road.

***Design Point 55*** ($Q_5$ = 19 cfs, $Q_{100}$ = 38 cfs) consists of developed flows from single family residential lots and adjacent streets from a portion of 2.39-acre Basin A, 4.17-acre Basin B, and 3.40-acre Basin P. Runoff from these basins will be collected by a 20' sump inlet and directed westward via a proposed 30" RCP where it will combine with flows within Pipe Run 70. Pipe 72 will continue southwesterly within a proposed 30" RCP with flow of $Q_5$ = 24 cfs, $Q_{100}$ = 48 cfs. These flows will combine with those contained the aforementioned within Pipe 69 and continue south within Proposed Peterson Road within a proposed 66" Pipe (Pipe Run 73) with flows totaling $Q_5$ = 195 cfs, $Q_{100}$ = 377 cfs, until combining with Pipe 41 at the proposed manhole junction box. Flows will also combine with flows from Proposed Peterson Road within a proposed 78" RCP, (Pipe 78; $Q_5$ = 269 cfs, $Q_{100}$ = 526 cfs) or equivalently sized box culvert.

**_Design Point 56_** ($Q_5$ = 6 cfs, $Q_{100}$ = 12 cfs) consists of developed flows from single family residential lots and adjacent streets from the 2.48-acre Basin S. Runoff from this basin will be collected within the curb and gutter of Proposed Peterson Road and conveyed to 12' sump inlet located within the low point of the proposed roadway. Runoff collected by the inlet will be conveyed within a proposed 18" RCP (Pipe Run 75). The conveyed flows carried within Pipe 75 will combine with flows from DP-57 and eventually reach the proposed manhole junction box.

**_Design Point 57_** ($Q_5$ = 4 cfs, $Q_{100}$ = 7 cfs) consists of developed flows from the south-western half of Proposed Peterson Road. Runoff from the 0.87-acre Basin T are collected within the curb and gutter of Proposed Peterson Road and conveyed to 12' at-grade inlet located within the low point of the proposed roadway. Runoff collected within the inlet will be conveyed within a proposed 24" RCP (Pipe Run 77). The conveyed flow carried within Pipe 77 will combine with flows from Pipe 74 and Pipe 41 at the proposed manhole junction box.

**_Design Point 60_** ($Q_5$ = 15 cfs, $Q_{100}$ = 28 cfs) consists of flows from Basin OS-8B, 3.62-acres of future commercial land and proposed Issaquah Drive. These flows are collected at this design point and within two sump inlets located within Issaquah. Flows are routed within a 24" RCP, Pipe 84, and will combine with flows from DP-41 within Pipe Run 85 ($Q_5$ = 36 cfs, $Q_{100}$ = 66 cfs).

**_Design Point 61_** ($Q_5$ = 5 cfs, $Q_{100}$ = 10 cfs) consists of developed flows from the south-eastern half of Proposed Peterson Road and adjacent home lots. Runoff from the 1.95-acre Basin R are collected within the curb and gutter of Proposed Peterson Road and conveyed to 12' at-grade inlet located within the low point of the proposed roadway. Runoff collected within the inlet will be conveyed within a proposed 18" RCP (Pipe Run 76) where it combines within the 66" RCP (Pipe Run 73).

***Design Point 62*** ($Q_5$ = 8 cfs, $Q_{100}$ = 15 cfs) consists of developed flows from the north-western half of Proposed Peterson Road. Runoff from the 1.84-acre Basin Q are collected within the curb and gutter of Proposed Peterson Road and conveyed to 20' at-grade inlet located within the low point of the proposed roadway. Runoff collect within the inlet will be conveyed within a proposed 18" RCP to the 66" main within Peterson Road. The 66" RCP (Pipe Run 74) contains flows of $Q_5$ = 203 cfs and $Q_{100}$ = 392 cfs and connects to the proposed manhole junction box. The 78" outlet pipe (Pipe 78) combines the flows from Pipe Runs 74, 41, and 77. The amount of flow within Pipe 78 is $Q_5$ = 269 cfs and $Q_{100}$ = 526 cfs.

Flows to this point are higher than anticipated within the Final Drainage Report for Indigo Ranch at Ridgeview Filing Nos. 1 & 2. The moderate increase in flows to this point shall have little to no adverse affects to the Sand Creek Drainage Channel. Although the storm facilities sized within the future Indigo Ranch at Ridgeview Filing No. 2 remain adequate, a Final Drainage Report for Indigo Ranch at Ridgeview Filings. No. 2 shall be completed prior to final plat recordation of the filing.

Until the development of Indigo Ranch at Stetson Ridge Filing No. 4, flows reaching the proposed 78" northern outfall point will be limited to the developed runoff reaching Design Points 28, 29, 31 , and 32, as well as undeveloped flows from and north of Indigo Ranch at Stetson Ridge Filing No. 4. A temporary sedimentation pond will be constructed to capture runoff and sediment until such time the continuation of the large 78"/84" conveyance system to Sand Creek (as further discussed within the Final Drainage Report for Indigo Ranch at Ridgeview Filings Nos. 1 & 2), and the proposed permanent outlet structure designed as part of the Sand Creek Channel Improvement Plans by JR Engineering are in place with the construction of Indigo Ranch at Ridgeview Filing No. 2.

***SAND CREEK OUTFALL – NORTH***

The Sand Creek Outfall – North refers to proposed drainage facilities that will direct runoff within a future 48" RCP to discharge to Sand Creek near the northern portion of the proposed community park site

***Design Point 39*** ($Q_5$ = 41 cfs, $Q_{100}$ = 83 cfs) consists of developed flows from Basin OS-1, 16.84 Ac., a future single family development proposed at 8.0 – 11.99 du/ac. The anticipated flows will be collected at Design Point 39 and conveyed westerly in a future 42" RCP (Pipe Run 42) ($Q_5$ = 41 cfs, $Q_{100}$ = 83 cfs).

***Design Point 40*** ($Q_5$ = 42 cfs, $Q_{100}$ = 87 cfs) consists of developed flows from Basin OS-2, 18.92 Ac., a future single family development proposed at 3.5 – 7.99 du/ac. The anticipated flows will be collected at Design Point 40 and conveyed westerly in a future 42" RCP ($Q_5$ = 42 cfs, $Q_{100}$ = 87 cfs). These flows will combine with upstream flows conveyed by Pipe 42, within a proposed 48" RCP with flows totaling $Q_5$ = 78 cfs, $Q_{100}$ = 162 cfs (Pipe 44). The anticipated flows will be conveyed westerly to outfall in Sand Creek.

The Sand Creek drainage channel adjacent to Stetson Ridge and Ridgeview was studied by Leigh Whitehead and Associates as part of the MDDP for Stetson Ridge, and the MDDP for Ridgeview by JR Engineering. Additional studies linking the this conveyance system to the planned outfall systems into Sand Creek will be completed prior to development of the northern parcels.

***COMMUNITY PARK/DUBLIN OUTFALL – NORTH***

***Basin OS-6*** ($Q_5$ = 26 cfs, $Q_{100}$ = 69 cfs) consists of developed flows from a future community park site and portions of Proposed Dublin Boulevard. The anticipated runoff from the area will be directed towards Sand Creek via a roadside ditch until such time improvements are made to the Dublin Boulevard.

## *OUTFALLS TO BANNING LEWIS RANCH*

Banning-Lewis Ranch will accept developed flows from a portion of the land located along the eastern side of the Stetson Ridge Development. Runoff from these developments will be contained within site specific temporary detention facilities with releases rates matching historic flows until such time the adjacent Banning-Lewis Detention Facility has been constructed to accept developed flows. The following description details developed flow conditions and assume that the flow can be retained to Banning Lewis. Historic flow calculations and detention pond sizing and outfall structures will be detailed in future Final Drainage Report for each specific development.

***Design Point 58*** ($Q_5$ = 48 cfs, $Q_{100}$ = 92 cfs) consists of developed flows from single family residential lots, a future commercial development, and adjacent streets from a 3.97-acre Basin OS-1A, 4.66-acre Basin OS-3A, 1.19-acre Basin OS-7A, 6.37-acre Basin OS-8A, and 3.75-acre Basin OS-10A. Runoff from these basins will be conveyed in existing road side ditches along Marksheffel to a single 42" RCP culvert or a pair of proposed 36" RCP culverts (Pipe Run 79). Dual culverts may be necessary due to grading constraints which will limit available head over pipe.

***Design Point 59*** ($Q_5$ = 24 cfs, $Q_{100}$ = 46 cfs) consists of developed flows from single family residential lots, a future commercial development, and adjacent streets from a 7.49-acre Basin OS-13B and 2.03-acre Basin OS-14A. Runoff from these basins will be conveyed in existing road side ditches along Marksheffel to a proposed 30" RCP culvert (Pipe Run 80) located within a low point.

Developed flows from to Design Points 58 and 59 will not exceed the Historic flow crossing Marksheffel Road to the east. Unless, flows from these areas have been anticipated in the Master Development Drainage Plan for Banning Lewis Ranch to discharge into the Toy Ranches Subdivision. If no assumption has been made then existing culverts under Marksheffel Road will not be removed and replaced due to no additional storm water conveyance.

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## HYDROLOGIC CALCULATIONS

Hydrologic calculations were performed using the City of Colorado Springs/El Paso County Drainage Criteria Manual, as revised in November 1991 and October 1994. The Rational Method was used to estimate storm water runoff anticipated from design storms with 5-year and 100-year recurrence interval.

## FLOODPLAIN STATEMENT

A portion of this site is located within a floodplain as determined by the Flood Insurance Rate Maps (F.I.R.M.) Map Number 08041C 0537F, 008041C 0545F, and 08041C 0543, effective date, March 17, 1997 (See Appendix).

## CONSTRUCTION COST OPINION

Major 100-year storm system has been approved by Drainage Board for reimbursement. No adjustment to the Sand Creek Basin fee has been presented for completion of improvements, final costs will be presented to Drainage Board.

**FILING NO. 3 Public Drainage Facilities (Reimbursable System Only)***

| ITEM | DESCRIPTION | QUANTITY | UNIT COST | COST |
|---|---|---|---|---|
| 1. | TYPE I Storm Manhole | 5 EA | $8,000/EA | $ 40,000.00 |
| **SUB-TOTAL** | | | | **$ 40,000.00** |
| **15% ENGINEERING & CONTINGENCIES** | | | | **$ 6,000.00** |
| **TOTAL** | | | | **$ 50,000.00** |

**FILING NO. 4 Public Drainage Facilities (Reimbursable System Only)***

| ITEM | DESCRIPTION | QUANTITY | UNIT COST | COST |
|---|---|---|---|---|
| 1. | 48" RCP Storm Drain | 700 LF | $52/LF | $ 36,400.00 |
| 2. | 54" RCP Storm Drain | 850 LF | $65/LF | $ 55,250.00 |
| 3. | 66" RCP Storm Drain | 1000 LF | $85/LF | $ 85,000.00 |
| 4. | 78" RCP Storm Drain | 200 LF | $120/LF | $ 25,000.00 |
| 5. | 54" Prefab Bends | 2 EA | $1,600/EA | $ 3,200.00 |
| 6. | 66" Prefab Bends | 2 EA | $1,900/EA | $ 3,800.00 |
| 7. | 48" x 18" Wye | 1 EA | $1,850/EA | $ 1,850.00 |
| 8. | 54" x 42" Wye | 1 EA | $2,250/EA | $ 2,250.00 |
| 9. | 66" x 24" Wye | 1 EA | $2,600/EA | $ 2,600.00 |
| 10. | 66" x 36" Wye | 1 EA | $3,000/LF | $ 3,000.00 |
| 11. | 66" x 54" Wye | 1 EA | $3,500/LF | $ 3,500.00 |
| 12. | 78" x 24" Wye | 1 EA | $3,150/EA | $ 3,150.00 |
| 13. | 48" x 42" Reducer | 1 EA | $1,500/EA | $ 1,500.00 |
| 14. | 66" x 48" Collar | 1 EA | $1,700/EA | $ 1,700.00 |
| 15. | 78" x 66" Junct. Box | 1 EA | $7,000/EA | $ 7,000.00 |
| 16. | 78" x 48" Junct. Box | 1 EA | $6,500/EA | $ 6,500.00 |
| 17. | TYPE I Storm Manhole | 12 EA | $8,000/EA | $ 96,000.00 |
| **SUB-TOTAL** | | | | **$ 337,700.00** |
| **15% ENGINEERING & CONTINGENCIES** | | | | **$ 84,425.00** |
| **TOTAL** | | | | **$ 422,125.00** |

**OFFSITE OUTFALL Public Drainage Facilities (Reimbursable System Only)**

*(Refer to Final Drainage Report for Indigo Ranch at Ridgeview for complete information regarding cost assurances for Public Drainage Facilities.)***

| ITEM | DESCRIPTION | QUANTITY | UNIT COST | COST |
|---|---|---|---|---|
| 1. | 78" RCP Storm Drain | 1250 LF | $120/LF | $ 150,000.00 |
| 2. | 66" RCP Storm Drain | 1265 LF | $90/LF | $ 113,850.00 |
| **SUB-TOTAL** | | | | **$ 263,850.00** |
| **15% ENGINEERING & CONTINGENCIES** | | | | **$ 39,577.50** |
| **TOTAL** | | | | **$ 303,427.50** |

**Assurances for these outfall facilities associated with Indigo Ranch at Ridgeview Development will be required to be posted prior to issuance of building permit for Indigo Ranch at Stetson Ridge Filing No. 3 or 4.

**FILING NO. 3 Public Drainage Facilities (Non-Reimbursable)**

| ITEM | DESCRIPTION | QUANTITY | UNIT COST | COST |
|---|---|---|---|---|
| 1. | 4' D-10-R Inlet | 12 EACH | $3,150/EA | $ 37,800.00 |
| 2. | 6' D-10-R Inlet | 1 EACH | $4,035/EA | $ 4,035.00 |
| 3. | 8' D-10-R Inlet | 5 EACH | $5,350/EA | $ 26,750.00 |
| 4. | 18" RCP Storm Drain | 675 LF | $22/LF | $ 14,850.00 |
| 5. | 24" RCP Storm Drain | 625 LF | $35/LF | $ 21,875.00 |
| 6. | 30" RCP Storm Drain | 500 LF | $38/LF | $ 19,000.00 |
| 7. | 36" RCP Storm Drain | 800 LF | $48/LF | $ 38,400.00 |
| 8. | 18" RCP Bends | 3 EACH | $500/EA | $ 1,500.00 |
| 9. | 24" RCP Bends | 5 EACH | $675/EA | $ 3,375.00 |
| 10. | 30" RCP Bends | 3 EACH | $850/EA | $ 2,550.00 |
| 11. | 36" RCP Bends | 1 EACH | $1,150/EA | $ 1,150.00 |
| 12. | 18" x 18" WYE | 1 EACH | $1,025/EA | $ 1,025.00 |
| 13. | 24" x 18" WYE | 2 EACH | $1,025/EA | $ 2,050.00 |
| 14. | 30" x 24" WYE | 2 EACH | $1,250/EA | $ 2,500.00 |
| 15. | 36" x 18" WYE | 1 EACH | $1,500/EA | $ 1,500.00 |
| 16. | 36" x 36" WYE | 1 EACH | $1,750/EA | $ 1,750.00 |
| 17. | 24" x 18" Reducer | 2 EACH | $900/EA | $ 1,800.00 |
| 18. | 30" x 24" Reducer | 2 EACH | $1,200/EA | $ 2,400.00 |
| 19. | 36" x 30" Reducer | 2 EACH | $1,450/EA | $ 2,900.00 |

| | |
|---|---|
| **SUB-TOTAL** | **$ 184,710.00** |
| **15% ENGINEERING & CONTINGENCIES** | **$ 27,706.55** |
| **TOTAL** | **$ 212,416.50** |

## FILING NO. 4 Public Drainage Facilities (Non-Reimbursable)

| ITEM | DESCRIPTION | QUANTITY | UNIT COST | COST |
|---|---|---|---|---|
| 1. | 4' D-10-R Inlet | 3 EACH | $3,150/EA | $ 9,450.00 |
| 2. | 6' D-10-R Inlet | 2 EACH | $3,800/EA | $ 7,600.00 |
| 3. | 8' D-10-R Inlet | 2 EACH | $4,100/EA | $ 8,200.00 |
| 4. | 12' D-10-R Inlet | 6 EACH | $4,750/EA | $ 28,500.00 |
| 5. | 18' D-10-R Inlet | 1 EACH | $11,000/EA | $ 11,000.00 |
| 6. | 18" RCP Storm Drain | 500 LF | $28/LF | $ 14,000.00 |
| 7. | 24" RCP Storm Drain | 600 LF | $32/LF | $ 19,200.00 |
| 8. | 30" RCP Storm Drain | 800 LF | $38/LF | $ 30,400.00 |
| 9. | 36" RCP Storm Drain | 1200 LF | $48/LF | $ 57,600.00 |
| 10. | 42" RCP Storm Drain | 1150 LF | $52/LF | $ 59,800.00 |
| 11. | 18" RCP Bends | 5 EACH | $500/EA | $ 2,500.00 |
| 12. | 24" RCP Bends | 3 EACH | $675/EA | $ 2,025.00 |
| 13. | 30" RCP Bends | 4 EACH | $850/EA | $ 3,400.00 |
| 14. | 36" RCP Bends | 3 EACH | $1,150/EA | $ 3,450.00 |
| 15. | 42" RCP Bends | 5 EACH | $1,300/EA | $ 6,500.00 |
| 16. | 18" x 18" WYE | 1 EACH | $1,025/EA | $ 1,025.00 |
| 17. | 24" x 18" WYE | 3 EACH | $1,025/EA | $ 3,075.00 |
| 18. | 30" x 18" WYE | 1 EACH | $1,250/EA | $ 1,250.00 |
| 19. | 30" x 24" WYE | 2 EACH | $1,250/EA | $ 2,500.00 |
| 20. | 36" x 18" WYE | 1 EACH | $1,550/EA | $ 1,550.00 |
| 21. | 24" x 18" Reducer | 2 EACH | $900/EA | $ 1,800.00 |
| 22. | 36" x 24" Reducer | 1 EACH | $1,350/EA | $ 1,350.00 |
| 23. | 42" x 36" Reducer | 1 EACH | $1,800/EA | $ 1,800.00 |
| 20. | 54" x 42" Collar | 1 EACH | $1,700/EA | $ 1,700.00 |

| | |
|---|---|
| **SUB-TOTAL** | **$ 279,675.00** |
| **15% ENGINEERING & CONTINGENCIES** | **$ 41,951.25** |
| **TOTAL** | **$ 321,626.25** |

Classic Consulting Engineers & Surveyors cannot and does not guarantee that the construction cost will not vary from these opinions of probable construction costs. These opinions represent our best judgment as design professionals familiar with the construction industry and this development in particular.

## DRAINAGE AND BRIDGE FEES

This area lies within Sand Creek drainage basin boundaries. The year 2004 drainage and bridge fees are as follows:

<u>**Filing No. 3**</u>

| | |
|---|---|
| **Drainage Fees:** | |
| $7,382.00/acre x 42.21 acres | $311,594.22 |
| **Bridge Fees:** | |
| $454/acre x 42.21 acres | $ 19,163.34 |
| **Pond Fees:** | |
| **Land** | |
| $494.00/acre x 42.21 acres | $ 20,851.74 |
| **Facilities:** | |
| $1,637.00/acre x 42.21 acres | $ 69,097.77 |
| **Pond #2 Fees:** | |
| $820.00/acre x 42.21 acres | $ 34,612.20 |
| **TOTAL** | **$455,319.27** |

Based upon the differences of reimbursable system costs and drainage fees, prior to recording the final plat for Filing No. 3, the following fees are due:

| | |
|---|---|
| Drainage | $261,594.22 |
| Bridge | *$ 0.00 |
| Pond | $ 20,851.74 |
| Land Facilities | $ 69,097.77 |
| Pond #2 | $ 34,612.20 |
| **Total** | **$386,155.93** |

*Per the approved "Amendment to the Final Drainage Report(s) for Indigo Ranch at Stetson Ridge Filing Nos. 1, 2, and 3, Indigo Ranch at Ridgeview Filing Nos. 1 and 2" (Drainage and Bridge Fees), no bridge fees will be required due to the bridge over Sand Creek at Stetson Hills Boulevard.

**Filing No. 4**

**Drainage Fees:**

| | |
|---|---|
| $7,382.00/acre x 47.69 acres | $352,047.58 |
| **Bridge Fees:** | |
| $454/acre x 47.69 acres | $ 21,651.26 |
| **Pond Fees:** | |
| **Land** | |
| $494.00/acre x 47.69 acres | $ 23,558.86 |
| **Facilities:** | |
| $637.00/acre x 47.69 acres | $ 30,378.53 |
| **Pond #2 Fees:** | |
| $820.00/acre x 47.69 acres* | $ 39,105.80 |
| **TOTAL** | **$466,742.03** |

Based upon the difference of reimbursable system costs and drainage fees, prior to recording the final plat for Filing No. 4 the following fees are due:

| | |
|---|---|
| Drainage | $ 44,617.03 |
| Bridge | *$ 0.00 |
| Pond | $ 23,558.86 |
| Land Facilities | $ 30,378.53 |
| Pond #2 | $ 39,105.80 |
| **Total** | **$ 137,660.22** |

*Per the approved "Amendment to the Final Drainage Report(s) for Indigo Ranch at Stetson Ridge Filing Nos. 1, 2, and 3, Indigo Ranch at Ridgeview Filing Nos. 1 and 2" (Drainage and Bridge Fees), no bridge fees will be required due to the bridge over Sand Creek at Stetson Hills Boulevard.

## SUMMARY

All drainage facilities were sized using the current City of Colorado Springs Drainage Criteria and will safely discharge storm water runoff to adequate outfalls. Overall drainage patterns conform to the Master Development Drainage Plan for Stetson Ridge by Leigh Whitehead & Associates. Developed flows from individual parcels are conveyed to drainage structures via asphalt surfaces and concrete curb and gutter and will be safely routed to downstream facilities. A portion of the developed flows from Stetson Ridge will be routed along Peterson Road and through Indigo Ranch at Ridgeview. Outfall locations into the Sand Creek drainage channel were designated in the Master Development Drainage Plan for Ridgeview by JR Engineering. as stated in the MDDP by Leigh Whitehead & Associates. A portion of the Stetson Ridge development will be directed to drain toward Marksheffel Road, but not exceed the historical rate. It is also noted that this report is preliminary in nature for the area outside of the proposed plat for Indigo Ranch at Stetson Ridge Filing No. 3 & 4, and future developments of any portion of this project shall be analyzed thoroughly based upon final grading and/or street improvements for that particular development.

PREPARED BY:

**Classic Consulting Engineers & Surveyors, LLC**

Darin L. Moffett, P.E.
Project Engineer

Kyle R. Campbell, P.E.
Division Manager

ag/101660/rev-MDDP 03-05.doc

## REFERENCES


1. City of Colorado Springs/County of El Paso Drainage Criteria Manual dated October 1991.

2. "Master Development Drainage Plan for Indigo Ranch at Stetson Ridge," Leigh Whitehead & Associates, dated January 2001.

3. "Master Development Drainage Plan for Ridgeview Subdivision," URS Greiner, dated November 1998.

4. "Master Development Drainage Plan for Stetson Ridge East," Leigh Whitehead & Associates & Associates, dated March 2000.

5. "Master Development Drainage Plan Amendment for the Easterly Portion of Ridgeview Subdivision and Preliminary Drainage Report for Ridgeview Assisted Living Development," JR Engineering, dated December 1999.

6. "Final Drainage Report for Indigo Ranch at Stetson Ridge Filing Nos. 1, 2, & 3," Classic Consulting Engineers & Surveyors, LLC, dated November 2001.

7. "Final Drainage Report for Indigo Ranch at Ridgeview Filing Nos. 1 & 2," Classic Consulting Engineers & Surveyors, LLC, dated February 2002.

# APPENDIX

CLASSIC
CONSULTING
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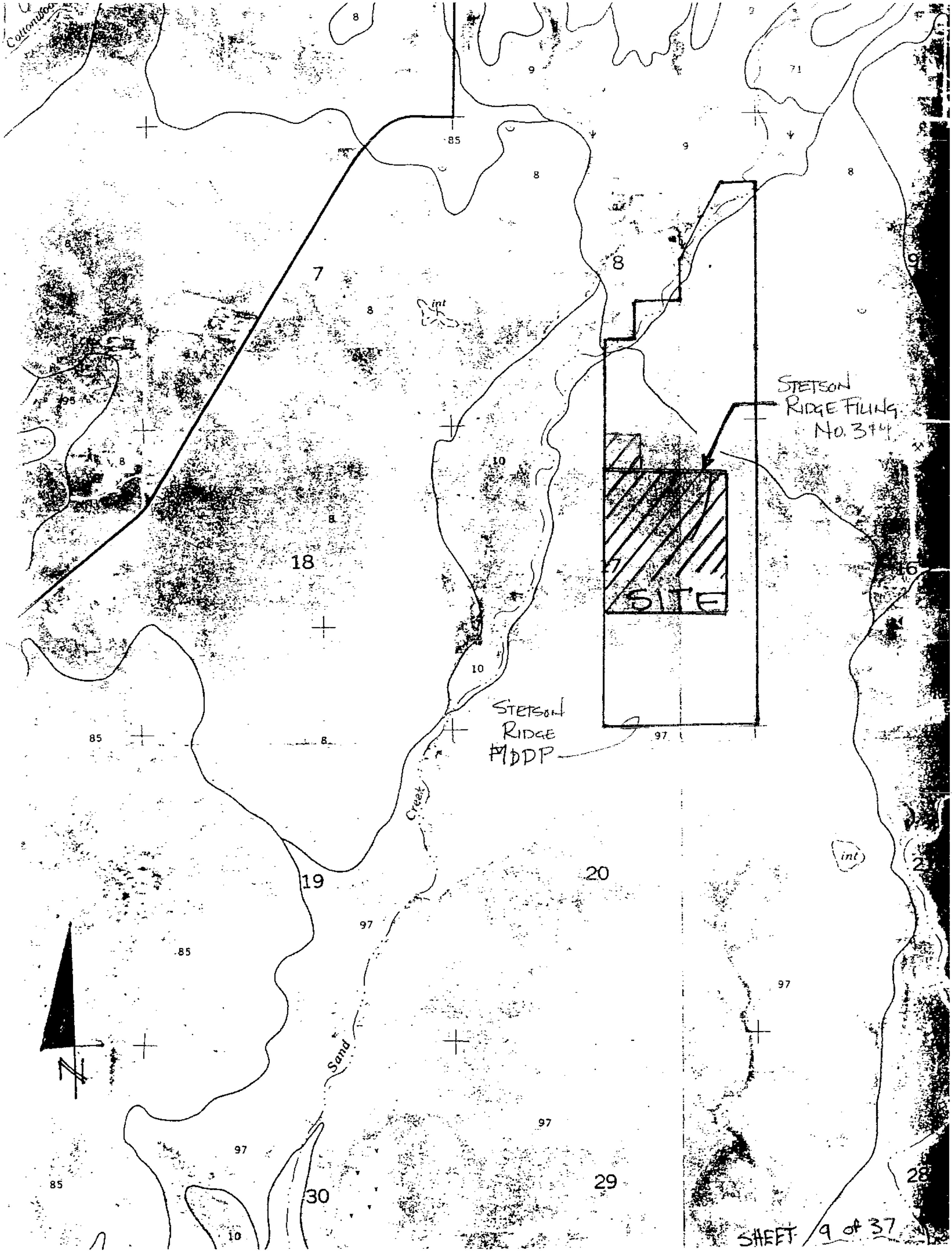
# VICINITY MAP


VICINITY MAP

NTS

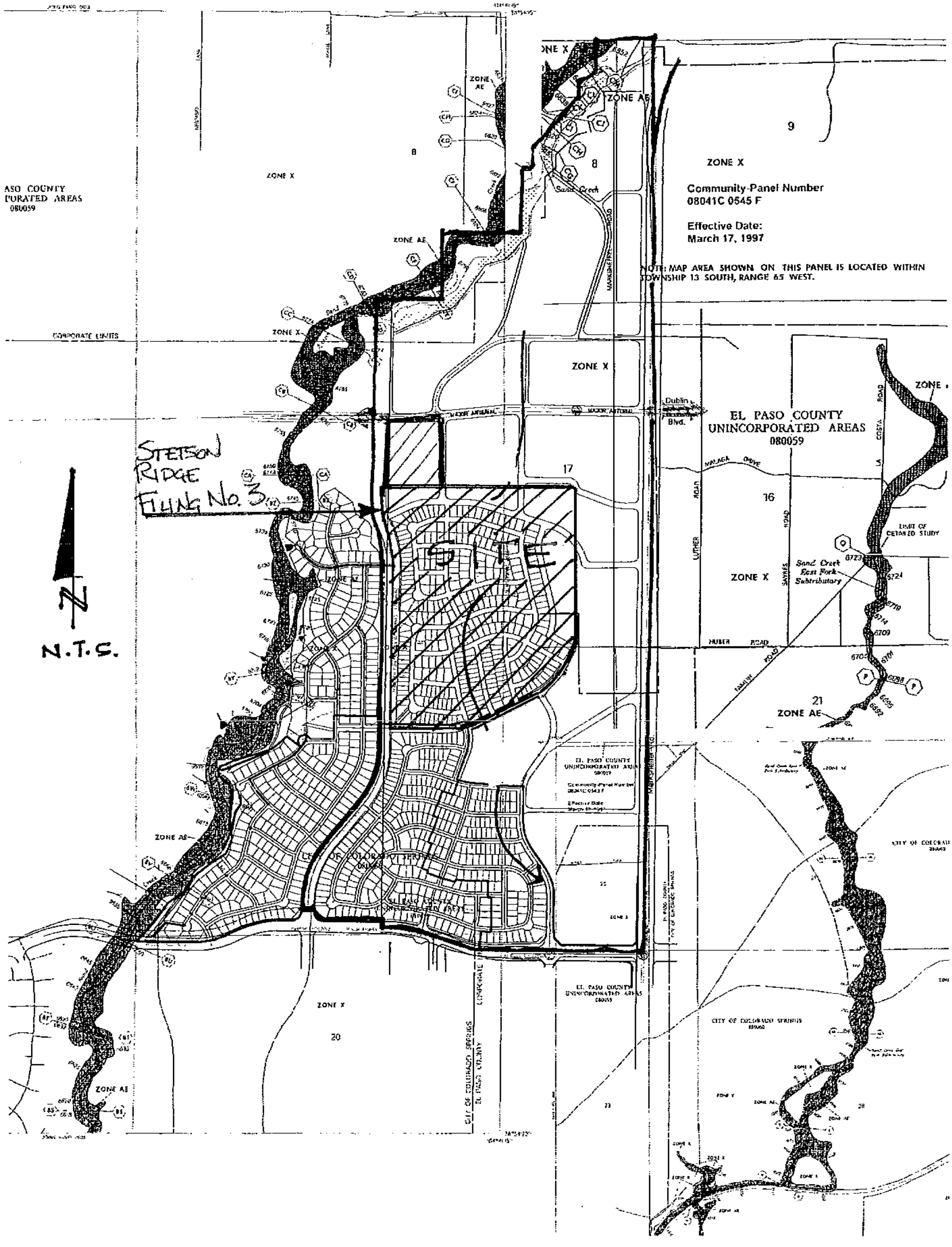
CLASSIC
CONSULTING
ENGINEERS & SURVEYORS

# SOILS MAP (S.C.S SURVEY)



Cottonwood
7
8
18
19
20
29
30
Sand
Creek
STETSON RIDGE FILING NO. 3 (?)
SITE
STETSON RIDGE MDDP
int
SHEET 9 of 37

# F.E.M.A. MAP

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CLASSIC
CONSULTING
ENGINEERS & SURVEYORS

# HYDROLOGIC CALCULATIONS

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
JOB NUMBER: *1016.60*
DATE: *07/07/04*
CALCULATED BY: *DLM*

# FINAL DRAINAGE REPORT ~ BASIN RUNOFF COEFFICIENT SUMMARY

| BASIN | TOTAL AREA (AC) | IMPERVIOUS AREA / STREETS | | | LANDSCAPE/UNDEVELOPED AREAS | | | WEIGHTED | | **WEIGHTED CA** | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AREA (AC) | C(5) | C(100) | AREA (AC) | C(5) | C(100) | C(5) | C(100) | **CA(5)** | **CA(100)** |
| A | 2.06 | 2.06 | 0.90 | 0.95 | 0.50 | 0.25 | 0.35 | 0.77 | 0.83 | **1.59** | **1.72** |
| B | 3.45 | 0.00 | 0.90 | 0.95 | 3.45 | 0.57 | 0.67 | 0.57 | 0.67 | **1.97** | **2.31** |
| C | 1.18 | 0.69 | 0.90 | 0.95 | 0.49 | 0.55 | 0.65 | 0.75 | 0.83 | **0.89** | **0.97** |
| D | 1.46 | 0.00 | 0.90 | 0.95 | 0.93 | 0.60 | 0.70 | 0.60 | 0.70 | **0.88** | **1.02** |
| E | 2.35 | 0.00 | 0.90 | 0.95 | 2.35 | 0.60 | 0.70 | 0.60 | 0.70 | **1.41** | **1.65** |
| F | 3.34 | 0.00 | 0.90 | 0.95 | 3.34 | 0.55 | 0.65 | 0.55 | 0.65 | **1.84** | **2.17** |
| G | 2.29 | 0.00 | 0.90 | 0.95 | 2.29 | 0.55 | 0.65 | 0.55 | 0.65 | **1.26** | **1.49** |
| H | 2.20 | 0.00 | 0.90 | 0.95 | 2.20 | 0.55 | 0.65 | 0.55 | 0.65 | **1.21** | **1.43** |
| I | 2.37 | 0.00 | 0.90 | 0.95 | 0.59 | 0.55 | 0.65 | 0.55 | 0.65 | **1.30** | **1.54** |
| J | 1.41 | 0.00 | 0.90 | 0.95 | 1.41 | 0.53 | 0.63 | 0.53 | 0.63 | **0.75** | **0.89** |
| K | 1.28 | 0.00 | 0.90 | 0.95 | 1.28 | 0.60 | 0.70 | 0.60 | 0.70 | **0.77** | **0.90** |
| L | 1.89 | 0.00 | 0.90 | 0.95 | 1.89 | 0.52 | 0.62 | 0.52 | 0.62 | **0.98** | **1.17** |
| M | 1.79 | 0.00 | 0.90 | 0.95 | 1.79 | 0.55 | 0.65 | 0.55 | 0.65 | **0.98** | **1.16** |
| N | 1.87 | 0.00 | 0.90 | 0.95 | 1.87 | 0.55 | 0.65 | 0.55 | 0.65 | **1.03** | **1.22** |
| O | 2.89 | 0.00 | 0.90 | 0.95 | 2.89 | 0.50 | 0.60 | 0.50 | 0.60 | **1.45** | **1.73** |
| P | 3.40 | 1.43 | 0.90 | 0.95 | 1.97 | 0.50 | 0.60 | 0.67 | 0.75 | **2.27** | **2.54** |
| Q | 1.84 | 1.84 | 0.90 | 0.95 | 0.00 | 0.55 | 0.65 | 0.90 | 0.95 | **1.66** | **1.75** |
| R | 1.95 | 0.73 | 0.90 | 0.95 | 1.22 | 0.50 | 0.60 | 0.65 | 0.73 | **1.27** | **1.43** |
| S | 2.48 | 0.86 | 0.90 | 0.95 | 1.62 | 0.50 | 0.60 | 0.64 | 0.72 | **1.58** | **1.79** |
| T | 0.86 | 0.86 | 0.90 | 0.95 | 0.00 | 0.55 | 0.65 | 0.90 | 0.95 | **0.77** | **0.82** |
| U | 1.00 | 0.00 | 0.90 | 0.95 | 1.00 | 0.55 | 0.65 | 0.55 | 0.65 | **0.55** | **0.65** |
| V | 2.16 | 0.00 | 0.90 | 0.95 | 2.16 | 0.55 | 0.65 | 0.55 | 0.65 | **1.19** | **1.40** |
| W | 2.36 | 0.00 | 0.90 | 0.95 | 2.36 | 0.55 | 0.65 | 0.55 | 0.65 | **1.30** | **1.53** |
| X | 0.79 | 0.00 | 0.90 | 0.95 | 0.79 | 0.60 | 0.70 | 0.60 | 0.70 | **0.47** | **0.55** |
| Y | 2.60 | 0.00 | 0.90 | 0.95 | 2.60 | 0.52 | 0.62 | 0.52 | 0.62 | **1.35** | **1.61** |
| Z | 1.84 | 0.00 | 0.90 | 0.95 | 1.84 | 0.55 | 0.65 | 0.55 | 0.65 | **1.01** | **1.20** |
| AA | 2.75 | 0.00 | 0.90 | 0.95 | 2.75 | 0.55 | 0.65 | 0.55 | 0.65 | **1.51** | **1.79** |
| BB | 2.91 | 0.00 | 0.90 | 0.95 | 2.91 | 0.55 | 0.65 | 0.55 | 0.65 | **1.60** | **1.89** |

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
JOB NUMBER: *1016.60*
DATE: *07/07/04*
CALCULATED BY: *DLM*

# FINAL DRAINAGE REPORT ~ BASIN RUNOFF COEFFICIENT SUMMARY

| BASIN | TOTAL AREA (AC) | IMPERVIOUS AREA / STREETS | | | LANDSCAPE/UNDEVELOPED AREAS | | | WEIGHTED | | WEIGHTED CA | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AREA (AC) | C(5) | C(100) | AREA (AC) | C(5) | C(100) | C(5) | C(100) | **CA(5)** | **CA(100)** |
| CC | 1.29 | 0.00 | 0.90 | 0.95 | 1.29 | 0.57 | 0.67 | 0.57 | 0.67 | **0.74** | **0.86** |
| DD | 3.10 | 0.00 | 0.90 | 0.95 | 3.10 | 0.55 | 0.65 | 0.55 | 0.65 | **1.71** | **2.02** |
| EE | 2.80 | 0.00 | 0.90 | 0.95 | 2.80 | 0.55 | 0.65 | 0.55 | 0.65 | **1.54** | **1.82** |
| FF | 1.64 | 0.00 | 0.90 | 0.95 | 1.64 | 0.55 | 0.65 | 0.55 | 0.65 | **0.90** | **1.07** |
| GG | 0.86 | 0.00 | 0.90 | 0.95 | 0.86 | 0.57 | 0.67 | 0.57 | 0.67 | **0.49** | **0.58** |
| HH | 1.86 | 0.00 | 0.90 | 0.95 | 1.86 | 0.55 | 0.65 | 0.55 | 0.65 | **1.02** | **1.21** |
| II | 0.98 | 0.00 | 0.90 | 0.95 | 0.98 | 0.57 | 0.67 | 0.57 | 0.67 | **0.56** | **0.66** |
| JJ | 0.85 | 0.00 | 0.90 | 0.95 | 0.85 | 0.55 | 0.65 | 0.55 | 0.65 | **0.47** | **0.55** |
| KK | 1.46 | 0.00 | 0.90 | 0.95 | 1.46 | 0.52 | 0.62 | 0.52 | 0.62 | **0.76** | **0.91** |
| LL | 0.36 | 0.00 | 0.90 | 0.95 | 0.36 | 0.57 | 0.67 | 0.57 | 0.67 | **0.21** | **0.24** |
| MM | 1.63 | 0.00 | 0.90 | 0.95 | 1.63 | 0.52 | 0.62 | 0.52 | 0.62 | **0.85** | **1.01** |
| NN | 1.43 | 0.00 | 0.90 | 0.95 | 1.43 | 0.57 | 0.67 | 0.57 | 0.67 | **0.82** | **0.96** |
| OO | 2.50 | 0.00 | 0.90 | 0.95 | 2.50 | 0.51 | 0.61 | 0.51 | 0.61 | **1.28** | **1.53** |
| PP | 1.04 | 0.00 | 0.90 | 0.95 | 1.04 | 0.57 | 0.67 | 0.57 | 0.67 | **0.59** | **0.70** |
| QQ | 1.41 | 0.62 | 0.90 | 0.95 | 0.79 | 0.50 | 0.60 | 0.68 | 0.75 | **0.95** | **1.06** |
| RR | 1.40 | 0.80 | 0.90 | 0.95 | 0.60 | 0.35 | 0.45 | 0.66 | 0.74 | **0.93** | **1.03** |
| SS | 1.63 | 0.40 | 0.90 | 0.95 | 1.23 | 0.35 | 0.45 | 0.48 | 0.57 | **0.79** | **0.93** |
| TT | 1.43 | 0.66 | 0.90 | 0.95 | 0.77 | 0.25 | 0.35 | 0.55 | 0.63 | **0.79** | **0.90** |
| UU | 2.14 | 0.00 | 0.90 | 0.95 | 2.14 | 0.52 | 0.62 | 0.52 | 0.62 | **1.11** | **1.33** |
| VV | 0.92 | 0.61 | 0.90 | 0.95 | 0.31 | 0.25 | 0.35 | 0.68 | 0.75 | **0.63** | **0.69** |
| WW | 1.56 | 0.55 | 0.90 | 0.95 | 1.01 | 0.52 | 0.62 | 0.65 | 0.74 | **1.02** | **1.15** |
| XX | 3.56 | 1.85 | 0.90 | 0.95 | 1.71 | 0.52 | 0.62 | 0.72 | 0.79 | **2.55** | **2.82** |
| YY | 1.42 | 1.42 | 0.90 | 0.95 | 0.00 | 0.55 | 0.65 | 0.90 | 0.95 | **1.28** | **1.35** |
| OS-0 | 7.42 | 7.42 | 0.65 | 0.75 | 0.00 | 0.65 | 0.75 | 0.65 | 0.75 | **4.82** | **5.57** |
| OS-1 | 16.84 | 16.84 | 0.65 | 0.75 | 0.00 | 0.65 | 0.75 | 0.65 | 0.75 | **10.95** | **12.63** |
| OS-1A | 3.97 | 3.97 | 0.90 | 0.95 | 0.00 | 0.65 | 0.75 | 0.90 | 0.95 | **3.57** | **3.77** |

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
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## FINAL DRAINAGE REPORT ~ BASIN RUNOFF COEFFICIENT SUMMARY

| BASIN | TOTAL AREA (AC) | IMPERVIOUS AREA / STREETS | | | LANDSCAPE/UNDEVELOPED AREAS | | | WEIGHTED | | WEIGHTED CA | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AREA (AC) | C(5) | C(100) | AREA (AC) | C(5) | C(100) | C(5) | C(100) | **CA(5)** | **CA(100)** |
| OS-2 | 18.92 | 18.92 | 0.60 | 0.70 | 0.00 | 0.25 | 0.35 | 0.60 | 0.70 | **11.35** | **13.24** |
| OS-3 | 7.44 | 7.44 | 0.90 | 0.90 | 0.00 | 0.25 | 0.35 | 0.90 | 0.90 | **6.70** | **6.70** |
| OS-3A | 4.66 | 1.50 | 0.90 | 0.95 | 3.16 | 0.90 | 0.90 | 0.90 | 0.92 | **4.19** | **4.27** |
| OS-4 | 8.45 | 8.45 | 0.90 | 0.90 | 0.00 | 0.25 | 0.35 | 0.90 | 0.90 | **7.61** | **7.61** |
| OS-5 | 11.26 | 11.26 | 0.70 | 0.80 | 0.00 | 0.25 | 0.35 | 0.70 | 0.80 | **7.88** | **9.01** |
| OS-6 | 15.06 | 3.50 | 0.90 | 0.95 | 11.56 | 0.30 | 0.55 | 0.44 | 0.64 | **6.62** | **9.68** |
| OS-7 | 7.12 | 7.12 | 0.90 | 0.95 | 0.00 | 0.25 | 0.35 | 0.90 | 0.95 | **6.41** | **6.76** |
| OS-7A | 1.19 | 1.19 | 0.90 | 0.95 | 0.00 | 0.25 | 0.35 | 0.90 | 0.95 | **1.07** | **1.13** |
| OS-8 | 4.32 | 4.32 | 0.90 | 0.95 | 0.00 | 0.25 | 0.35 | 0.90 | 0.95 | **3.89** | **4.10** |
| OS-8A | 6.37 | 5.13 | 0.60 | 0.70 | 1.24 | 0.25 | 0.35 | 0.53 | 0.63 | **3.39** | **4.03** |
| OS-8B | 3.62 | 3.62 | 0.90 | 0.95 | 0.00 | 0.25 | 0.35 | 0.90 | 0.95 | **3.26** | **3.44** |
| OS-9 | 8.81 | 6.37 | 0.90 | 0.90 | 2.44 | 0.25 | 0.35 | 0.72 | 0.75 | **6.34** | **6.59** |
| OS-10 | 10.34 | 10.34 | 0.60 | 0.70 | 0.00 | 0.25 | 0.35 | 0.60 | 0.70 | **6.20** | **7.24** |
| OS-10A | 3.75 | 2.52 | 0.90 | 0.95 | 1.23 | 0.60 | 0.70 | 0.80 | 0.87 | **3.01** | **3.26** |
| OS-11 | 5.83 | 5.83 | 0.90 | 0.95 | 0.00 | 0.25 | 0.35 | 0.90 | 0.95 | **5.25** | **5.54** |
| OS-12 | 18.80 | 18.80 | 0.70 | 0.80 | 0.00 | 0.25 | 0.35 | 0.70 | 0.80 | **13.16** | **15.04** |
| OS-13 | 9.18 | 9.18 | 0.60 | 0.70 | 0.00 | 0.25 | 0.35 | 0.60 | 0.70 | **5.51** | **6.43** |
| OS-13A | 8.81 | 8.81 | 0.60 | 0.70 | 0.00 | 0.25 | 0.35 | 0.60 | 0.70 | **5.29** | **6.17** |
| OS-13B | 7.49 | 2.34 | 0.90 | 0.95 | 5.15 | 0.60 | 0.70 | 0.69 | 0.78 | **5.20** | **5.83** |
| OS-14 | 19.75 | 19.75 | 0.66 | 0.73 | 0.00 | 0.25 | 0.35 | 0.66 | 0.73 | **13.04** | **14.42** |
| OS-14A | 2.03 | 2.03 | 0.90 | 0.95 | 0.00 | 0.25 | 0.35 | 0.90 | 0.95 | **1.83** | **1.93** |
| OS-15 | 12.53 | 12.53 | 0.43 | 0.52 | 0.00 | 0.25 | 0.35 | 0.43 | 0.52 | **5.39** | **6.52** |
| OS-16 | 2.32 | 2.32 | 0.90 | 0.95 | 0.00 | 0.25 | 0.35 | 0.90 | 0.95 | **2.09** | **2.20** |
| OS-A | 10.83 | 10.83 | 0.90 | 0.95 | 0.00 | 0.25 | 0.35 | 0.90 | 0.95 | **9.75** | **10.29** |
| OS-B | 6.20 | 6.20 | 0.90 | 0.95 | 0.00 | 0.25 | 0.35 | 0.90 | 0.95 | **5.58** | **5.89** |
| OS-C | 1.87 | 1.87 | 0.90 | 0.95 | 0.00 | 0.25 | 0.35 | 0.90 | 0.95 | **1.68** | **1.78** |
| OS-D | 1.22 | 0.81 | 0.90 | 0.95 | 0.41 | 0.59 | 0.69 | 0.80 | 0.86 | **0.97** | **1.05** |

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
JOB NUMBER: *1016.60*
DATE: *07/07/04*
CALCULATED BY: *DLM*

## FINAL DRAINAGE REPORT ~ BASIN RUNOFF COEFFICIENT SUMMARY

| BASIN | TOTAL AREA (AC) | IMPERVIOUS AREA / STREETS | | | LANDSCAPE/UNDEVELOPED AREAS | | | WEIGHTED | | **WEIGHTED CA** | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AREA (AC) | C(5) | C(100) | AREA (AC) | C(5) | C(100) | C(5) | C(100) | **CA(5)** | **CA(100)** |
| OS-E | 1.29 | 1.29 | 0.90 | 0.95 | 0.00 | 0.25 | 0.35 | 0.90 | 0.95 | **1.16** | **1.23** |
| PT-6 | 0.86 | 0.86 | 0.90 | 0.95 | 0.00 | 0.25 | 0.35 | 0.90 | 0.95 | **0.77** | **0.82** |

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
JOB NUMBER: *1016.60*
DATE: *07/07/04*
CALC'D BY: *DLM*

# FINAL DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY

| | WEIGHTED | | OVERLAND | | | | STREET / CHANNEL FLOW | | | | Tc | TOTAL FLOWS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BASIN | CA(5) | CA(100) | C(5) | Length (ft) | Height (ft) | Tc (min) | Length (ft) | Slope (%) | Velocity (fps) | Tc (min) | TOTAL (min) | I(2) (in/hr) | I(5) (in/hr) | I(100) (in/hr) | Q(5) (cfs) | Q(100) (cfs) |
| A | 1.59 | 1.72 | 0.25 | 20 | 0.5 | 5.3 | 1800 | 2.6% | 5.6 | 5.4 | 10.6 | 2.91 | 4.01 | 7.13 | 6 | 12 |
| B | 1.97 | 2.31 | 0.25 | 120 | 2.4 | 13.9 | 1000 | 2.6% | 5.6 | 3.0 | 16.8 | 2.38 | 3.28 | 5.83 | 6 | 13 |
| C | 0.89 | 0.97 | 0.25 | 50 | 1 | 8.9 | 800 | 4.0% | 7.0 | 1.9 | 10.8 | 2.89 | 3.97 | 7.07 | 4 | 7 |
| D | 0.88 | 1.02 | 0.25 | 80 | 1.6 | 11.3 | 300 | 2.0% | 4.9 | 1.0 | 12.3 | 2.74 | 3.77 | 6.71 | 3 | 7 |
| E | 1.41 | 1.65 | 0.25 | 50 | 1 | 8.9 | 400 | 4.0% | 7.0 | 1.0 | 9.9 | 2.99 | 4.12 | 7.32 | 6 | 12 |
| F | 1.84 | 2.17 | 0.25 | 125 | 2.5 | 14.1 | 450 | 2.7% | 5.7 | 1.3 | 15.5 | 2.48 | 3.42 | 6.07 | 6 | 13 |
| G | 1.26 | 1.49 | 0.25 | 150 | 5 | 13.1 | 350 | 2.0% | 4.9 | 1.2 | 14.3 | 2.57 | 3.54 | 6.30 | 4 | 9 |
| H | 1.21 | 1.43 | 0.25 | 150 | 5 | 13.1 | 300 | 2.0% | 4.9 | 1.0 | 14.1 | 2.59 | 3.56 | 6.33 | 4 | 9 |
| I | 1.30 | 1.54 | 0.25 | 140 | 2.8 | 15.0 | 300 | 2.0% | 4.9 | 1.0 | 16.0 | 2.44 | 3.36 | 5.98 | 4 | 9 |
| J | 0.75 | 0.89 | 0.25 | 180 | 3.6 | 17.0 | 180 | 1.7% | 4.5 | 0.7 | 17.6 | 2.33 | 3.21 | 5.70 | 2 | 5 |
| K | 0.77 | 0.90 | 0.25 | 50 | 1 | 8.9 | 575 | 1.7% | 4.5 | 2.1 | 11.1 | 2.87 | 3.94 | 7.01 | 3 | 6 |
| L | 0.98 | 1.17 | 0.25 | 140 | 2.8 | 15.0 | 225 | 2.0% | 4.9 | 0.8 | 15.7 | 2.46 | 3.39 | 6.02 | 3 | 7 |
| M | 0.98 | 1.16 | 0.25 | 130 | 2.6 | 14.4 | 175 | 1.0% | 3.5 | 0.8 | 15.3 | 2.50 | 3.44 | 6.11 | 3 | 7 |
| N | 1.03 | 1.22 | 0.25 | 135 | 2.7 | 14.7 | 200 | 1.7% | 4.5 | 0.7 | 15.4 | 2.48 | 3.42 | 6.08 | 4 | 7 |
| O | 1.45 | 1.73 | 0.25 | 150 | 3.7 | 14.5 | 750 | 1.7% | 4.5 | 2.8 | 17.2 | 2.36 | 3.25 | 5.77 | 5 | 10 |
| P | 2.27 | 2.54 | 0.25 | 160 | 7 | 12.4 | 675 | 3.0% | 6.1 | 1.9 | 14.2 | 2.58 | 3.55 | 6.31 | 8 | 16 |
| Q | 1.66 | 1.75 | 0.9 | 50 | 1 | 2.1 | 1300 | 3.0% | 6.1 | 3.6 | 5.7 | 3.59 | 4.94 | 8.78 | 8 | 15 |
| R | 1.27 | 1.43 | 0.25 | 100 | 3 | 11.1 | 400 | 2.0% | 4.9 | 1.3 | 12.4 | 2.73 | 3.76 | 6.69 | 5 | 10 |
| S | 1.58 | 1.79 | 0.25 | 150 | 8 | 11.2 | 425 | 2.0% | 4.9 | 1.4 | 12.6 | 2.71 | 3.73 | 6.64 | 6 | 12 |
| T | 0.77 | 0.82 | 0.9 | 50 | 1 | 2.1 | 530 | 1.0% | 3.5 | 2.5 | 5.0 | 3.71 | 5.10 | 9.07 | 4 | 7 |
| U | 0.55 | 0.65 | 0.25 | 80 | 1.6 | 11.3 | 260 | 1.3% | 3.9 | 1.1 | 12.4 | 2.73 | 3.76 | 6.69 | 2 | 4 |
| V | 1.19 | 1.40 | 0.25 | 200 | 4 | 17.9 | 200 | 3.0% | 6.1 | 0.5 | 18.4 | 2.28 | 3.14 | 5.58 | 4 | 8 |
| W | 1.30 | 1.53 | 0.25 | 120 | 2.4 | 13.9 | 400 | 2.4% | 5.4 | 1.2 | 15.1 | 2.51 | 3.45 | 6.14 | 4 | 9 |
| X | 0.47 | 0.55 | 0.25 | 50 | 1 | 8.9 | 400 | 3.0% | 6.1 | 1.1 | 10.0 | 2.98 | 4.10 | 7.28 | 2 | 4 |
| Y | 1.35 | 1.61 | 0.25 | 160 | 3.2 | 16.0 | 400 | 1.5% | 4.3 | 1.6 | 17.6 | 2.34 | 3.22 | 5.72 | 4 | 9 |
| Z | 1.01 | 1.20 | 0.25 | 100 | 2 | 12.6 | 385 | 2.0% | 4.9 | 1.3 | 13.9 | 2.60 | 3.58 | 6.36 | 4 | 8 |

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
JOB NUMBER: *1016.60*
DATE: *07/07/04*
CALC'D BY: *DLM*

# FINAL DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY

| | WEIGHTED | | OVERLAND | | | | STREET / CHANNEL FLOW | | | | Tc | | | | TOTAL FLOWS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BASIN | CA(5) | CA(100) | C(5) | Length (ft) | Height (ft) | Tc (min) | Length (ft) | Slope (%) | Velocity (fps) | Tc (min) | TOTAL (min) | I(2) (in/hr) | I(5) (in/hr) | I(100) (in/hr) | Q(5) (cfs) | Q(100) (cfs) |
| AA | 1.51 | 1.79 | 0.25 | 50 | 1 | 8.9 | 1200 | 2.0% | 4.9 | 4.0 | 13.0 | 2.68 | 3.69 | 6.56 | 6 | 12 |
| BB | 1.60 | 1.89 | 0.25 | 180 | 5 | 15.2 | 450 | 1.5% | 4.3 | 1.7 | 17.0 | 2.37 | 3.27 | 5.81 | 5 | 11 |
| CC | 0.74 | 0.86 | 0.25 | 50 | 1 | 8.9 | 600 | 1.5% | 4.3 | 2.3 | 11.3 | 2.84 | 3.91 | 6.96 | 3 | 6 |
| DD | 1.71 | 2.02 | 0.25 | 140 | 3.2 | 14.3 | 600 | 1.5% | 4.3 | 2.3 | 16.6 | 2.40 | 3.30 | 5.86 | 6 | 12 |
| EE | 1.54 | 1.82 | 0.25 | 110 | 4.4 | 10.6 | 300 | 3.0% | 6.1 | 0.8 | 11.4 | 2.83 | 3.90 | 6.93 | 6 | 13 |
| FF | 0.90 | 1.07 | 0.25 | 125 | 2.5 | 14.1 | 350 | 1.6% | 4.4 | 1.3 | 15.5 | 2.48 | 3.42 | 6.07 | 3 | 6 |
| GG | 0.49 | 0.58 | 0.25 | 50 | 1 | 8.9 | 350 | 1.6% | 4.4 | 1.3 | 10.3 | 2.95 | 4.06 | 7.22 | 2 | 4 |
| HH | 1.02 | 1.21 | 0.25 | 100 | 2 | 12.6 | 500 | 2.6% | 5.6 | 1.5 | 14.1 | 2.59 | 3.56 | 6.32 | 4 | 8 |
| II | 0.56 | 0.66 | 0.25 | 50 | 1 | 8.9 | 500 | 2.0% | 4.9 | 1.7 | 10.6 | 2.91 | 4.01 | 7.12 | 2 | 5 |
| JJ | 0.47 | 0.55 | 0.25 | 120 | 2.4 | 13.9 | 300 | 2.0% | 4.9 | 1.0 | 14.9 | 2.53 | 3.48 | 6.18 | 2 | 3 |
| KK | 0.76 | 0.91 | 0.25 | 200 | 7 | 14.9 | 50 | 1.0% | 3.5 | 0.2 | 15.1 | 2.51 | 3.45 | 6.14 | 3 | 6 |
| LL | 0.21 | 0.24 | 0.25 | 50 | 1 | 8.9 | 100 | 1.0% | 3.5 | 0.5 | 9.4 | 3.05 | 4.20 | 7.46 | 1 | 2 |
| MM | 0.85 | 1.01 | 0.25 | 130 | 2.6 | 14.4 | 225 | 2.0% | 4.9 | 0.8 | 15.2 | 2.50 | 3.44 | 6.12 | 3 | 6 |
| NN | 0.82 | 0.96 | 0.25 | 50 | 1 | 8.9 | 290 | 2.0% | 4.9 | 1.0 | 9.9 | 2.99 | 4.11 | 7.32 | 3 | 7 |
| OO | 1.28 | 1.53 | 0.25 | 160 | 4 | 14.9 | 500 | 2.2% | 5.2 | 1.6 | 16.5 | 2.41 | 3.32 | 5.89 | 4 | 9 |
| PP | 0.59 | 0.70 | 0.25 | 50 | 1 | 8.9 | 430 | 2.2% | 5.2 | 1.4 | 10.3 | 2.94 | 4.05 | 7.20 | 2 | 5 |
| QQ | 0.95 | 1.06 | 0.25 | 80 | 1.6 | 11.3 | 390 | 1.3% | 4.0 | 1.6 | 12.9 | 2.69 | 3.70 | 6.58 | 4 | 7 |
| RR | 0.93 | 1.03 | 0.25 | 50 | 8 | 4.5 | 400 | 1.3% | 3.9 | 1.7 | 6.2 | 3.50 | 4.81 | 8.56 | 4 | 9 |
| SS | 0.79 | 0.93 | 0.25 | 70 | 1.4 | 10.6 | 800 | 1.7% | 4.5 | 3.0 | 13.5 | 2.63 | 3.62 | 6.44 | 3 | 6 |
| TT | 0.79 | 0.90 | 0.25 | 30 | 0.6 | 6.9 | 800 | 1.7% | 4.5 | 3.0 | 9.9 | 2.99 | 4.12 | 7.33 | 3 | 7 |
| UU | 1.11 | 1.33 | 0.25 | 75 | 1.5 | 11.0 | 960 | 3.0% | 6.1 | 2.6 | 13.6 | 2.63 | 3.62 | 6.43 | 4 | 9 |
| VV | 0.63 | 0.69 | 0.25 | 25 | 0.5 | 6.3 | 850 | 3.0% | 6.1 | 2.3 | 8.7 | 3.14 | 4.32 | 7.69 | 3 | 5 |
| WW | 1.02 | 1.15 | 0.25 | 80 | 1.6 | 11.3 | 560 | 2.5% | 5.5 | 1.7 | 13.0 | 2.68 | 3.69 | 6.56 | 4 | 8 |
| XX | 2.55 | 2.82 | 0.25 | 60 | 2.5 | 7.7 | 900 | 2.0% | 4.9 | 3.0 | 10.7 | 2.90 | 3.99 | 7.10 | 10 | 20 |
| YY | 1.28 | 1.35 | 0.9 | 20 | 0.5 | 1.2 | 1050 | 2.0% | 4.9 | 3.5 | 5.0 | 3.71 | 5.10 | 9.07 | 7 | 12 |

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
JOB NUMBER: *1016.60*
DATE: *07/07/04*
CALC'D BY: *DLM*

# FINAL DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY

| BASIN | WEIGHTED CA(5) | CA(100) | OVERLAND C(5) | Length (ft) | Height (ft) | Tc (min) | STREET / CHANNEL FLOW Length (ft) | Slope (%) | Velocity (fps) | Tc (min) | Tc TOTAL (min) | I(2) (in/hr) | I(5) (in/hr) | I(100) (in/hr) | TOTAL FLOWS Q(5) (cfs) | Q(100) (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OS-0 | 4.82 | 5.57 | 0.25 | 100 | 2 | 12.6 | 1400 | 4.0% | 7.0 | 3.3 | 16.0 | 2.44 | 3.36 | 5.98 | 16 | 33 |
| OS-1 | 10.95 | 12.63 | 0.25 | 200 | 20 | 10.5 | 1000 | 4.0% | 7.0 | 2.4 | 12.9 | 2.69 | 3.70 | 6.58 | 41 | 83 |
| OS-1A | 3.57 | 3.77 | 0.25 | 30 | 0.6 | 6.9 | 2000 | 4.4% | 7.3 | 4.6 | 11.5 | 2.82 | 3.88 | 6.90 | 14 | 26 |
| OS-2 | 11.35 | 13.24 | 0.25 | 200 | 20 | 10.5 | 1000 | 4.0% | 7.0 | 2.4 | 12.9 | 2.69 | 3.70 | 6.58 | 42 | 87 |
| OS-3 | 6.70 | 6.70 | 0.25 | 75 | 1.5 | 11.0 | 600 | 2.0% | 4.9 | 2.0 | 13.0 | 2.68 | 3.69 | 6.56 | 25 | 44 |
| OS-3A | 4.19 | 4.27 | 0.25 | 75 | 1.5 | 11.0 | 700 | 2.0% | 4.9 | 2.4 | 13.3 | 2.65 | 3.65 | 6.49 | 15 | 28 |
| OS-4 | 7.61 | 7.61 | 0.25 | 75 | 3 | 8.7 | 600 | 4.0% | 7.0 | 1.4 | 10.1 | 2.97 | 4.08 | 7.25 | 31 | 55 |
| OS-5 | 7.88 | 9.01 | 0.25 | 100 | 2 | 12.6 | 1000 | 4.0% | 7.0 | 2.4 | 15.0 | 2.51 | 3.46 | 6.15 | 27 | 55 |
| OS-6 | 6.62 | 9.68 | 0.25 | 200 | 20 | 10.5 | 200 | 33.0% | 20.1 | 0.2 | 10.7 | 2.91 | 4.00 | 7.11 | 26 | 69 |
| OS-7 | 6.41 | 6.76 | 0.25 | 20 | 0.5 | 5.3 | 2000 | 2.0% | 4.9 | 6.7 | 12.0 | 2.77 | 3.82 | 6.79 | 24 | 46 |
| OS-7A | 1.07 | 1.13 | 0.25 | 20 | 2 | 3.3 | 200 | 3.0% | 6.1 | 0.5 | 5.0 | 3.71 | 5.10 | 9.07 | 5 | 10 |
| OS-8 | 3.89 | 4.10 | 0.25 | 50 | 3 | 6.2 | 360 | 2.0% | 4.9 | 1.2 | 7.4 | 3.31 | 4.55 | 8.09 | 18 | 33 |
| OS-8A | 3.39 | 4.03 | 0.25 | 75 | 3 | 8.7 | 800 | 2.7% | 5.7 | 2.3 | 11.1 | 2.87 | 3.95 | 7.01 | 13 | 28 |
| OS-8B | 3.26 | 3.44 | 0.25 | 50 | 3 | 6.2 | 350 | 2.0% | 4.9 | 1.2 | 7.4 | 3.31 | 4.56 | 8.11 | 15 | 28 |
| OS-9 | 6.34 | 6.59 | 0.25 | 75 | 3 | 8.7 | 700 | 3.0% | 6.1 | 1.9 | 10.6 | 2.91 | 4.01 | 7.12 | 25 | 47 |
| 0S-10 | 6.20 | 7.24 | 0.25 | 100 | 2 | 12.6 | 900 | 2.0% | 4.9 | 3.0 | 15.7 | 2.47 | 3.39 | 6.03 | 21 | 44 |
| OS-10A | 3.01 | 3.26 | 0.25 | 100 | 2 | 12.6 | 570 | 2.0% | 4.9 | 1.9 | 14.6 | 2.55 | 3.51 | 6.24 | 11 | 20 |
| OS-11 | 5.25 | 5.54 | 0.25 | 100 | 3 | 11.1 | 550 | 3.0% | 6.1 | 1.5 | 12.6 | 2.72 | 3.74 | 6.65 | 20 | 37 |
| OS-12 | 13.16 | 15.04 | 0.25 | 300 | 6 | 21.9 | 1200 | 2.0% | 4.9 | 4.0 | 25.9 | 1.91 | 2.63 | 4.67 | 35 | 70 |
| OS-13 | 5.51 | 6.43 | 0.25 | 100 | 2 | 12.6 | 1000 | 2.0% | 4.9 | 3.4 | 16.0 | 2.44 | 3.36 | 5.97 | 19 | 38 |
| OS-13A | 5.29 | 6.17 | 0.25 | 100 | 2 | 12.6 | 1000 | 2.0% | 4.9 | 3.4 | 16.0 | 2.44 | 3.36 | 5.97 | 18 | 37 |
| OS-13B | 5.20 | 5.83 | 0.25 | 100 | 2 | 12.6 | 870 | 1.5% | 4.3 | 3.4 | 16.0 | 2.44 | 3.36 | 5.97 | 17 | 35 |
| OS-14 | 13.04 | 14.42 | 0.25 | 300 | 6 | 21.9 | 1000 | 2.0% | 4.9 | 3.4 | 25.3 | 1.94 | 2.67 | 4.74 | 35 | 68 |
| OS-14A | 1.83 | 1.93 | 0.25 | 20 | 2 | 3.3 | 780 | 2.0% | 4.9 | 2.6 | 6.0 | 3.54 | 4.87 | 8.66 | 9 | 17 |
| OS-15 | 5.39 | 6.52 | 0.25 | 400 | 8 | 25.3 | 300 | 2.0% | 4.9 | 1.0 | 26.3 | 1.89 | 2.61 | 4.64 | 14 | 30 |
| OS-16 | 2.09 | 2.20 | 0.25 | 40 | 0.8 | 8.0 | 600 | 1.3% | 4.0 | 2.5 | 10.5 | 2.93 | 4.03 | 7.16 | 8 | 16 |

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
| JOB NUMBER: | *1016.60* |
| DATE: | *07/07/04* |
| CALC'D BY: | *DLM* |

## FINAL DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY

| | WEIGHTED | | OVERLAND | | | | STREET / CHANNEL FLOW | | | | Tc | | | | TOTAL FLOWS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BASIN | CA(5) | CA(100) | C(5) | Length (ft) | Height (ft) | Tc (min) | Length (ft) | Slope (%) | Velocity (fps) | Tc (min) | TOTAL (min) | I(2) (in/hr) | I(5) (in/hr) | I(100) (in/hr) | Q(5) (cfs) | Q(100) (cfs) |
| OS-A | 9.75 | 10.29 | 0.25 | 50 | 3 | 6.2 | 600 | 3.0% | 6.1 | 1.6 | 7.9 | 3.25 | 4.47 | 7.94 | 44 | 82 |
| OS-B | 5.58 | 5.89 | 0.25 | 50 | 3 | 6.2 | 600 | 3.0% | 6.1 | 1.6 | 7.9 | 3.25 | 4.47 | 7.94 | 25 | 47 |
| OS-C | 1.68 | 1.78 | 0.25 | 60 | 1.2 | 9.8 | 600 | 2.0% | 4.9 | 2.0 | 11.8 | 2.79 | 3.84 | 6.83 | 6 | 12 |
| OS-D | 0.97 | 1.05 | 0.25 | 110 | 2.5 | 12.7 | 500 | 1.0% | 3.5 | 2.4 | 15.1 | 2.51 | 3.45 | 6.14 | 3 | 6 |
| OS-E | 1.16 | 1.23 | 0.25 | 80 | 8 | 6.6 | 100 | 1.0% | 3.5 | 0.5 | 7.1 | 3.35 | 4.62 | 8.21 | 5 | 10 |
| PT-6 | 0.77 | 0.82 | 0.25 | 30 | 0.6 | 6.9 | 400 | 2.0% | 4.9 | 1.3 | 8.3 | 3.19 | 4.39 | 7.81 | 3 | 6 |

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
JOB NUMBER: *1016.60*
DATE: *07/07/04*
CALCULATED BY: *DLM*

# FINAL DRAINAGE REPORT ~ SURFACE ROUTING SUMMARY

| Design Point(s) | Contributing Basins | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity I(5) | Intensity I(100) | Flow Q(5) | Flow Q(100) | Inlet Size |
|---|---|---|---|---|---|---|---|---|---|
| 1 | OS-10 (QQ) | 7.16 | 8.30 | 15.7 | 3.39 | 6.03 | 24 | 50 | |
| 2 | RR | 0.93 | 1.030 | 6.2 | 4.81 | 8.56 | 4 | 9 | 6' AT GRADE INLET |
| 3 | U | 0.55 | 0.65 | 12.4 | 3.76 | 6.69 | 2 | 4 | 6' AT GRADE INLET |
| 4 | FB-2, TT | 0.87 | 1.39 | 15.2 | 3.44 | 6.12 | 3 | 9 | 8' AT GRADE INLET |
| 5 | FB-3, SS | 0.84 | 1.10 | 13.5 | 3.63 | 6.45 | 3 | 7 | 6' AT GRADE INLET |
| 6 | OS-13 | 5.51 | 6.43 | 16.0 | 3.36 | 5.97 | 19 | 38 | |
| 7 | OS-13A | 5.29 | 6.17 | 16.0 | 3.36 | 5.97 | 18 | 37 | |
| 8 | OS-14 | 13.04 | 14.42 | 25.3 | 2.67 | 4.74 | 35 | 68 | |
| 9 | DP-8, OS-16 | 15.12 | 16.62 | 25.3 | 2.67 | 4.74 | 40 | 79 | |
| 10 | PT-6 | 0.77 | 0.82 | 8.3 | 4.39 | 7.81 | 3 | 6 | *EX. 4' AT GRADE INLET* |
| 11 | DP-7, DP-9, DP-10, 90% OS-15 | 26.03 | 29.47 | 28.0 | 2.52 | 4.48 | 66 | 132 | |
| 12 | EE, FF | 2.44 | 2.89 | 15.5 | 3.42 | 6.07 | 8 | 18 | 8' SUMP INLET |
| 13 | GG | 0.49 | 0.58 | 11.4 | 3.90 | 6.93 | 2 | 4 | 4' SUMP INLET |
| 14 | JJ, KK | 1.23 | 1.46 | 15.1 | 3.45 | 6.14 | 4 | 9 | 4' SUMP INLET |
| 15 | LL | 0.21 | 0.24 | 9.4 | 4.20 | 7.46 | 1 | 2 | 4' SUMP INLET |
| 16 | MM | 0.85 | 1.01 | 15.2 | 3.44 | 6.12 | 3 | 6 | 4' SUMP INLET |
| 17 | NN | 0.82 | 0.96 | 9.9 | 4.11 | 7.32 | 3 | 7 | 4' SUMP INLET |
| 18 | FB-6, VV, 10% OS-15, OS-D | 2.28 | 2.39 | 20.4 | 2.98 | 5.31 | 7 | 13 | *EX. 6' AT GRADE INLET* |
| 19 | FB-5, UU | 1.33 | 1.84 | 16.1 | 3.35 | 5.96 | 4 | 11 | *EX. 6' AT GRADE INLET* |
| 20 | DD | 1.71 | 2.02 | 16.6 | 3.30 | 5.86 | 6 | 12 | |
| 21 | CC | 0.74 | 0.86 | 11.3 | 3.91 | 6.96 | 3 | 6 | |
| 22 | OO | 1.28 | 1.53 | 16.5 | 3.32 | 5.89 | 4 | 9 | |
| 23 | HH, II, PP | 2.17 | 2.56 | 17.6 | 3.21 | 5.71 | 7 | 15 | |

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
JOB NUMBER: *1016.60*
DATE: *07/07/04*
CALCULATED BY: *DLM*

## FINAL DRAINAGE REPORT ~ SURFACE ROUTING SUMMARY

| Design Point(s) | Contributing Basins | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity | | Flow | | Inlet Size |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | I(5) | I(100) | Q(5) | Q(100) | |
| 24 | DP-20, DP-22 | 2.98 | 3.54 | 18.3 | 3.15 | 5.60 | 9 | 20 | 10' SUMP INLET |
| 25 | DP-21, DP-23 | 2.91 | 3.43 | 17.6 | 3.21 | 5.71 | 9 | 20 | 10' SUMP INLET |
| 26 | FB-18, OS-C, .90% FB-11 | 2.69 | 6.70 | 22.4 | 2.84 | 5.05 | 8 | 34 | *EX. 14' SUMP INLET* |
| 27 | FB-19, WW, XX, .10% FB-11 | 3.90 | 5.56 | 18.1 | 3.17 | 5.63 | 12 | 31 | *EX. 12' SUMP INLET* |
| 28 | V, W | 2.49 | 2.94 | 18.4 | 3.14 | 5.58 | 8 | 16 | 4' SUMP INLET |
| 29 | X | 0.47 | 0.55 | 10.0 | 4.10 | 7.28 | 2 | 4 | 4' SUMP INLET |
| 30 | L | 0.98 | 1.17 | 15.7 | 3.39 | 6.02 | 3 | 7 | 4' SUMP INLET |
| 31 | Z, BB | 2.61 | 3.09 | 17.0 | 3.27 | 5.81 | 9 | 18 | 8' SUMP INLET |
| 32 | Y, AA | 2.86 | 3.40 | 19.6 | 3.05 | 5.41 | 9 | 18 | 8' SUMP INLET |
| 33 | M, N | 2.01 | 2.38 | 16.0 | 3.36 | 5.97 | 7 | 14 | |
| 34 | O | 1.45 | 1.73 | 17.2 | 3.25 | 5.77 | 5 | 10 | |
| 35 | J | 0.75 | 0.89 | 17.6 | 3.21 | 5.70 | 2 | 5 | |
| 36 | K | 0.77 | 0.90 | 11.1 | 3.94 | 7.01 | 3 | 6 | |
| 37 | DP-33, DP-35 | 2.76 | 3.27 | 17.6 | 3.21 | 5.70 | 9 | 19 | 8' SUMP INLET |
| 38 | DP-34, DP-36 | 2.21 | 2.63 | 17.2 | 3.25 | 5.77 | 7 | 15 | 8' SUMP INLET |
| 39 | OS-1 | 10.95 | 12.63 | 12.9 | 3.70 | 6.58 | 41 | 83 | |
| 40 | OS-2 | 11.35 | 13.24 | 12.9 | 3.70 | 6.58 | 42 | 87 | |
| 41 | OS-3 | 6.70 | 6.70 | 13.0 | 3.69 | 6.56 | 25 | 44 | |
| 42 | OS-4 | 7.61 | 7.61 | 10.1 | 4.08 | 7.25 | 31 | 55 | |
| 43 | OS-5 | 7.88 | 9.01 | 15.0 | 3.46 | 6.15 | 27 | 55 | |
| 44 | 50% OS-7 | 3.20 | 3.38 | 12.0 | 3.82 | 6.79 | 12 | 23 | 12' SUMP INLET |
| 45 | 50% OS-7 | 3.20 | 3.38 | 12.0 | 3.82 | 6.79 | 12 | 23 | 12' SUMP INLET |
| 46 | OS-8 | 3.89 | 4.10 | 7.4 | 4.55 | 8.09 | 18 | 33 | |

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
JOB NUMBER: *1016.60*
DATE: *07/07/04*
CALCULATED BY: *DLM*

## FINAL DRAINAGE REPORT ~ SURFACE ROUTING SUMMARY

| Design Point(s) | Contributing Basins | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity | | Flow | | Inlet Size |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | I(5) | I(100) | Q(5) | Q(100) | |
| 47 | OS-9 | 6.34 | 6.59 | 10.6 | 4.01 | 7.12 | 25 | 47 | |
| 48 | OS-11 | 5.25 | 5.54 | 12.6 | 3.74 | 6.65 | 20 | 37 | |
| 49 | OS-12 | 13.16 | 15.04 | 25.9 | 2.63 | 4.67 | 35 | 70 | |
| 50 | E | 1.41 | 1.65 | 9.9 | 4.12 | 7.32 | 6 | 12 | 4' SUMP INLET |
| 51 | C, F, G | 3.99 | 4.63 | 17.0 | 3.27 | 5.81 | 13 | 27 | 18' AT-GRADE INLET |
| 52 | 75% I | 0.98 | 1.16 | 16.0 | 3.36 | 5.98 | 3 | 7 | 4' SUMP INLET |
| 53 | 25% I | 0.33 | 0.39 | 8.0 | 4.44 | 7.90 | 1 | 3 | 4' SUMP INLET |
| 54 | FB-51, D, H | 3.15 | 4.19 | 17.5 | 3.22 | 5.73 | 10 | 24 | 12' SUMP INLET |
| 55 | A, B, P | 5.83 | 6.57 | 16.8 | 3.28 | 5.83 | 19 | 38 | 12' SUMP INLET |
| 56 | S | 1.58 | 1.79 | 12.6 | 3.73 | 6.64 | 6 | 12 | 12' SUMP INLET |
| 57 | T | 0.77 | 0.82 | 5.0 | 5.10 | 9.07 | 4 | 7 | 12' AT-GRADE INLET |
| 58 | OS-1A, OS-3A, OS-8A, 10A | 14.16 | 15.32 | 16.0 | 3.36 | 5.97 | 48 | 92 | |
| 59 | OS-13B, OS-14A | 7.02 | 7.76 | 16.0 | 3.36 | 5.97 | 24 | 46 | |
| 60 | OS-8B | 3.26 | 3.44 | 7.4 | 4.56 | 8.11 | 15 | 28 | |
| 61 | R | 1.27 | 1.43 | 12.4 | 3.76 | 6.69 | 5 | 10 | 12' AT-GRADE INLET |
| 62 | Q | 1.66 | 1.75 | 5.7 | 4.94 | 8.78 | 8 | 15 | 12' AT-GRADE INLET |

CLASSIC
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# HYDRAULIC CALCULATIONS

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
JOB NUMBER: *1016.60*
DATE: *07/07/04*
CALCULATED BY: *DLM*

* PIPES ARE LISTED AT MAXIMUM SIZE REQUIRED TO ACCOMMODATE Q100 FLOWS AT MINIMUM GRADE.
REFER TO INDIVIDUAL PIPE SHEETS FOR HYDRAULIC INFORMATION.

## FINAL DRAINAGE REPORT ~ PIPE ROUTING SUMMARY

| Pipe Run | Design Points/Pipe Run | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity | | Flow | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | I(5) | I(100) | Q(5) | Q(100) | Pipe Size* |
| 1 | DP-13 | 1.47 | 1.73 | 15.5 | 3.42 | 6.07 | 5 | 11 | 18" RCP |
| 2 | DP-12 | 1.47 | 1.73 | 15.5 | 3.42 | 6.07 | 5 | 11 | 18" RCP |
| 3 | 1, 2 | 2.93 | 3.46 | 15.5 | 3.42 | 6.07 | 10 | 21 | 24" RCP |
| 4 | DP-17 | 0.82 | 0.96 | 9.9 | 4.11 | 7.32 | 3 | 7 | 18" RCP |
| 5 | DP-16 | 0.85 | 1.01 | 15.2 | 3.44 | 6.12 | 3 | 6 | 18" RCP |
| 6 | 4, 5 | 1.66 | 1.97 | 15.2 | 3.44 | 6.12 | 6 | 12 | 18" RCP |
| 7 | DP-15 | 0.21 | 0.24 | 9.4 | 4.20 | 7.46 | 1 | 2 | 18" RCP |
| 8 | DP-14 | 1.23 | 1.46 | 15.1 | 3.45 | 6.14 | 4 | 9 | 18" RCP |
| 8A | 6, 7, 8 | 3.09 | 3.67 | 17.0 | 3.27 | 5.81 | 10 | 21 | 24" RCP |
| 9 | 3, 8A | 6.03 | 7.13 | 17.0 | 3.27 | 5.81 | 20 | 41 | 30" RCP |
| 10 | AT-GRADE INLET DP-4 | 0.38 | 0.80 | 15.2 | 3.44 | 6.12 | 1 | 5 | 18" RCP |
| 11 | DP-6 | 5.51 | 6.43 | 16.0 | 3.36 | 5.97 | 19 | 38 | 30" RCP |
| 12 | AT-GRADE INLET DP-5 | 0.63 | 0.59 | 13.5 | 3.63 | 6.45 | 2 | 4 | 18" RCP |
| 13 | 10, 11, 12 | 6.51 | 7.82 | 17.0 | 3.26 | 5.80 | 21 | 45 | 36" RCP |
| 14 | DP-11 (less overflow from OS-15) | 26.03 | 23.61 | 28.0 | 2.52 | 4.48 | 66 | 106 | *EX. 42" RCP* |
| 15 | 9, 13, 14 | 38.57 | 38.55 | 28.0 | 2.52 | 4.48 | 97 | 173 | *EX. 42" RCP* |
| 16 | AT-GRADE INLET DP-18 | 1.27 | 1.17 | 20.4 | 2.98 | 5.31 | 4 | 6 | *EX. 18" RCP* |
| 17 | AT-GRADE INLET DP-19 | 1.01 | 0.94 | 16.1 | 3.35 | 5.96 | 3 | 6 | *EX. 18" RCP* |
| 18 | 15, 16, 17 | 40.85 | 40.66 | 28.5 | 2.49 | 4.43 | 102 | 180 | *EX. 42"/54"* |
| 19 | DP-24 | 2.98 | 3.54 | 18.3 | 3.15 | 5.60 | 9 | 20 | 24" RCP |
| 20 | DP-25 | 2.91 | 3.43 | 17.6 | 3.21 | 5.71 | 9 | 20 | 24" RCP |
| 21 | 19, 20 | 5.89 | 6.97 | 18.3 | 3.15 | 5.60 | 19 | 39 | 30" RCP |
| 22 | DP-27, 21 | 9.79 | 12.53 | 18.1 | 3.17 | 5.63 | 31 | 71 | *EX. 36" RCP* |

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
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REFER TO INDIVIDUAL PIPE SHEETS FOR HYDRAULIC INFORMATION.

## FINAL DRAINAGE REPORT ~ PIPE ROUTING SUMMARY

| Pipe Run | Design Points/Pipe Run | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity | | Flow | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | I(5) | I(100) | Q(5) | Q(100) | Pipe Size* |
| 23 | DP-26 | 2.69 | 6.70 | 22.4 | 2.84 | 5.05 | 8 | 34 | *EX. 24" RCP* |
| 24 | 18, 22, 23 exising inlet 60 | 53.94 | 60.67 | 28.5 | 2.49 | 4.43 | 135 | 269 | *EX. 60" RCP* |
| 25 | DP-1 | 7.16 | 8.30 | 15.7 | 3.39 | 6.03 | 24 | 50 | 30" RCP |
| 26 | AT-GRADE INLET DP-2 | 0.85 | 0.54 | 6.2 | 4.81 | 8.56 | 4.1 | 4.6 | 18" RCP |
| 27 | AT-GRADE INLET DP-3 | 0.50 | 0.54 | 12.4 | 3.76 | 6.69 | 1.9 | 3.6 | 18" RCP |
| 28 | 25, 26, 27 | 8.51 | 9.37 | 15.9 | 3.37 | 6.00 | 29 | 56 | 30" RCP |
| 29 | DP-29 | 1.48 | 1.75 | 10.0 | 4.10 | 7.28 | 6 | 13 | 18" RCP |
| 30 | DP-28 | 1.48 | 1.75 | 10.0 | 4.10 | 7.29 | 6 | 13 | 18" RCP |
| 31 | 29, 30 | 2.96 | 3.49 | 10.0 | 4.10 | 7.29 | 12 | 25 | 24" RCP |
| 32 | 28, 31 | 11.47 | 12.86 | 17.4 | 3.23 | 5.74 | 37 | 74 | 36" RCP |
| 33 | DP-30 | 0.98 | 1.17 | 15.7 | 3.39 | 6.02 | 3 | 7 | 18" RCP |
| 34 | 32, 33 | 12.45 | 14.04 | 17.7 | 3.20 | 5.70 | 40 | 80 | 36" RCP |
| 35 | DP-31 | 2.61 | 3.09 | 17.0 | 3.27 | 5.81 | 9 | 18 | 18" RCP |
| 36 | 35, DP-32 | 5.48 | 6.49 | 19.6 | 3.05 | 5.41 | 17 | 35 | 24" RCP |
| 37 | 34, 36 | 17.93 | 20.52 | 19.6 | 3.05 | 5.41 | 55 | 111 | 42" RCP |
| 38 | DP-37 | 2.76 | 3.27 | 17.6 | 3.21 | 5.70 | 9 | 19 | 18" RCP |
| 39 | 37, 38 | 20.69 | 23.79 | 20.3 | 2.99 | 5.32 | 62 | 127 | 42" RCP |
| 40 | DP-38 | 2.21 | 2.63 | 17.2 | 3.25 | 5.77 | 7 | 15 | 18" RCP |
| 41 | 39, 40 | 22.90 | 26.42 | 20.3 | 2.99 | 5.32 | 69 | 141 | 48" RCP |
| 42 | DP-39 | 10.95 | 12.63 | 12.9 | 3.70 | 6.58 | 41 | 83 | 42" RCP |
| 43 | DP-40 | 11.35 | 13.24 | 12.9 | 3.70 | 6.58 | 42 | 87 | 42" RCP |
| 44 | 39, 40 | 22.30 | 25.87 | 14.5 | 3.52 | 6.25 | 78 | 162 | 48" RCP |
| 45 | DP-41 | 6.70 | 6.70 | 13.0 | 3.69 | 6.56 | 25 | 44 | 30" RCP |
| 46 | DP-42 | 7.61 | 7.61 | 10.1 | 4.08 | 7.25 | 31 | 55 | 30" RCP |

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
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REFER TO INDIVIDUAL PIPE SHEETS FOR HYDRAULIC INFORMATION.

## FINAL DRAINAGE REPORT ~ PIPE ROUTING SUMMARY

| Pipe Run | Design Points/Pipe Run | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity | | Flow | | Pipe Size* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | I(5) | I(100) | Q(5) | Q(100) | |
| 47 | 85, 46 | 17.56 | 17.74 | 13.8 | 3.60 | 6.40 | 63 | 113 | 42" RCP |
| 48 | DP-45 | 3.20 | 3.38 | 12.0 | 3.82 | 6.79 | 12 | 23 | 24" RCP |
| 49 | 47, 48 | 20.76 | 21.12 | 13.8 | 3.60 | 6.40 | 75 | 135 | 42" RCP |
| 50 | DP-43 | 7.88 | 9.01 | 15.0 | 3.46 | 6.15 | 27 | 55 | 30" RCP |
| 51 | DP-44 | 3.20 | 3.38 | 12.0 | 3.82 | 6.79 | 12 | 23 | 24" RCP |
| 52 | 50, 51 | 11.09 | 12.39 | 15.0 | 3.46 | 6.15 | 38 | 76 | 42" RCP |
| 53 | 49, 52 | 31.85 | 33.51 | 15.4 | 3.42 | 6.08 | 109 | 204 | 54" RCP |
| 54 | DP-46 | 3.89 | 4.10 | 7.4 | 4.55 | 8.09 | 18 | 33 | 30" RCP |
| 55 | DP-47 | 6.34 | 6.59 | 10.6 | 4.01 | 7.12 | 25 | 47 | 30" RCP |
| 56 | 54, 55 | 10.23 | 10.69 | 10.6 | 4.01 | 7.12 | 41 | 76 | 36" RCP |
| 57 | DP-48 | 5.25 | 5.54 | 12.6 | 3.74 | 6.65 | 20 | 37 | 30" RCP |
| 58 | 56, 57 | 15.48 | 16.23 | 12.6 | 3.74 | 6.65 | 58 | 108 | 42" RCP |
| 59 | AT-GRADE INLET DP-51 | 2.93 | 2.89 | 17.0 | 3.27 | 5.81 | 10 | 17 | 18" RCP |
| 60 | 58, 59 | 18.40 | 19.12 | 17.0 | 3.27 | 5.81 | 60 | 111 | 48" RCP |
| 61 | DP-53 | 0.65 | 0.77 | 8.0 | 4.44 | 7.90 | 3 | 6 | 18" RCP |
| 62 | DP-52 | 0.65 | 0.77 | 16.0 | 3.36 | 5.98 | 2 | 5 | 18" RCP |
| 63 | 61, 62 | 1.30 | 1.54 | 16.0 | 3.36 | 5.98 | 4 | 9 | 18" RCP |
| 64 | 60, 63 | 19.71 | 20.66 | 17.2 | 3.25 | 5.77 | 64 | 119 | 48" RCP |
| 65 | DP-49 | 13.16 | 15.04 | 25.9 | 2.63 | 4.67 | 35 | 70 | 36" RCP |
| 66 | 64, 65 | 32.87 | 35.70 | 25.9 | 2.63 | 4.67 | 86 | 167 | 54" RCP |
| 67 | 53, 66 | 64.72 | 69.21 | 25.9 | 2.63 | 4.67 | 170 | 323 | 66" RCP |
| 68 | DP-54 | 3.15 | 4.19 | 17.5 | 3.22 | 5.73 | 10 | 24 | 24" RCP |
| 69 | 67, 68 | 67.86 | 73.41 | 25.9 | 2.63 | 4.67 | 178 | 343 | 66" RCP |
| 70 | DP-50 | 1.41 | 1.65 | 9.9 | 4.12 | 7.32 | 6 | 12 | 18" RCP |

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REFER TO INDIVIDUAL PIPE SHEETS FOR HYDRAULIC INFORMATION.

## FINAL DRAINAGE REPORT ~ PIPE ROUTING SUMMARY

| Pipe Run | Design Points/Pipe Run | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity | | Flow | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | I(5) | I(100) | Q(5) | Q(100) | Pipe Size* |
| 71 | DP-55 | 5.83 | 6.57 | 16.8 | 3.28 | 5.83 | 19 | 38 | 30" RCP |
| 72 | 70, 71 | 7.24 | 8.21 | 16.8 | 3.28 | 5.83 | 24 | 48 | 30" RCP |
| 73 | 69, 72 | 75.10 | 81.62 | 26.4 | 2.60 | 4.62 | 195 | 377 | 66" RCP |
| 74 | 76, 73, DP-62 | 78.03 | 84.79 | 26.4 | 2.60 | 4.62 | 203 | 392 | ~~78"~~ RCP 66" |
| 75 | DP-56 | 1.58 | 1.79 | 12.6 | 3.73 | 6.64 | 6 | 12 | 18" RCP |
| 76 | DP-61 | 1.27 | 1.43 | 12.4 | 3.76 | 6.69 | 5 | 10 | 18" RCP |
| 77 | DP-57, 75 | 2.36 | 2.61 | 12.64 | 3.73 | 6.64 | 9 | 17 | 24" RCP |
| 78 | 74, 41, 77 | 103.29 | 113.82 | 26.44 | 2.60 | 4.62 | 269 | 526 | 78" RCP |
| 79 | DP-58 | 14.16 | 15.32 | 16.00 | 3.36 | 5.97 | 48 | 92 | 42" RCP |
| 80 | DP-59 | 7.02 | 7.76 | 16.03 | 3.36 | 5.97 | 24 | 46 | 30" RCP |
| 81 | DP-7 | 5.29 | 6.17 | 16.01 | 3.36 | 5.97 | 18 | 37 | 24" RCP |
| 82 | DP-8 | 13.04 | 14.42 | 25.27 | 2.67 | 4.74 | 35 | 68 | 36" RCP |
| 83 | DP-9 | 15.12 | 16.62 | 25.27 | 2.67 | 4.74 | 40 | 79 | 36" RCP |
| 84 | DP-60 | 3.26 | 3.44 | 7.40 | 4.56 | 8.11 | 15 | 28 | 24" RCP |
| 85 | 84, 45 | 9.95 | 10.14 | 13.27 | 3.66 | 6.50 | 36 | 66 | 36" RCP |

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
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**DESIGN POINT 2** **100 YEAR FLOW**

| | | | | | |
|---|---|---|---|---|---|
| Q(100) | 8.8 | I(100) | 8.6 | | |
| DEPTH | 0.36 | Fr | 1.62 | Inlet size ? L(i) = | 6 |
| SPREAD | 11.5 | L(1) | 14.3 | If Li < L(2) then Qi = | 4 |
| CROSS SLOPE | 2.0% | L(2) | 8.6 | If Li > L(2) then Qi = | 5 |
| STREET SLOPE | 1.7% | L(3) | 30.7 | FB = | 4.2 |
| | | | | CA(eqv.)= | 0.49 |

**5 YEAR FLOW**

| | | | | | |
|---|---|---|---|---|---|
| Q(5) | 4.5 | I(5) | 4.8 | | |
| DEPTH | 0.20 | Fr | 1.22 | Inlet size ? L(i) = | 6 |
| SPREAD | 3.8 | L(1) | 3.5 | If Li < L(2) then Qi = | 8 |
| CROSS SLOPE | 2.0% | L(2) | 2.1 | If Li > L(2) then Qi = | 4 |
| STREET SLOPE | 1.7% | L(3) | 7.6 | FB = | 0.4 |
| | | | | CA(eqv.)= | 0.08 |

| | |
|---|---|
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**DESIGN POINT** 3 **100 YEAR FLOW**

| | | | | | |
|---|---|---|---|---|---|
| Q(100) | 4.3 | I(100) | 6.7 | | |
| DEPTH | 0.24 | Fr | 1.37 | Inlet size ? L(i) = | 6 |
| SPREAD | 5.5 | L(1) | 5.8 | If Li < L(2) then Qi = | 4 |
| CROSS SLOPE | 2.0% | L(2) | 3.5 | If Li > L(2) then Qi = | 3 |
| STREET SLOPE | 1.7% | L(3) | 12.4 | FB = | 1.1 |
| | | | | CA(eqv.)= | 0.16 |

**5 YEAR FLOW**

| | | | | | |
|---|---|---|---|---|---|
| Q(5) | 2.1 | I(5) | 3.8 | | |
| DEPTH | 0.20 | Fr | 1.22 | Inlet size ? L(i) = | 6 |
| SPREAD | 3.8 | L(1) | 3.5 | If Li < L(2) then Qi = | 4 |
| CROSS SLOPE | 2.0% | L(2) | 2.1 | If Li > L(2) then Qi = | 2 |
| STREET SLOPE | 1.7% | L(3) | 7.6 | FB = | 0.2 |
| | | | | CA(eqv.)= | 0.05 |

| | |
|---|---|
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| CALCULATED BY: | *DLM* |

**DESIGN POINT** 4 **100 YEAR FLOW**

| | | | | | |
|---|---|---|---|---|---|
| Q(100) | 9 | I(100) | 6.1 | | |
| DEPTH | 0.33 | Fr | 1.91 | Inlet size ? L(i) = | 8 |
| SPREAD | 10.0 | L(1) | 14.7 | If Li < L(2) then Qi = | 5 |
| CROSS SLOPE | 2.0% | L(2) | 8.8 | If Li > L(2) then Qi = | 5 |
| STREET SLOPE | 2.5% | L(3) | 31.5 | FB = | 3.6 |
| | | | | CA(eqv.)= | 0.59 |

**5 YEAR FLOW**

| | | | | | |
|---|---|---|---|---|---|
| Q(5) | 3 | I(5) | 3.4 | | |
| DEPTH | 0.22 | Fr | 1.60 | Inlet size ? L(i) = | 8 |
| SPREAD | 4.8 | L(1) | 5.8 | If Li < L(2) then Qi = | 4 |
| CROSS SLOPE | 2.0% | L(2) | 3.5 | If Li > L(2) then Qi = | 2 |
| STREET SLOPE | 2.5% | L(3) | 12.5 | FB = | 0.5 |
| | | | | CA(eqv.)= | 0.14 |

| | |
|---|---|
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**DESIGN POINT 5**

**100 YEAR FLOW**

| | | | | | |
|---|---|---|---|---|---|
| Q(100) | 7 | I(100) | 6.1 | | |
| DEPTH | 0.30 | Fr | 1.84 | Inlet size ? L(i) = | 6 |
| SPREAD | 8.5 | L(1) | 12.1 | If Li < L(2) then Qi = | 4 |
| CROSS SLOPE | 2.0% | L(2) | 7.2 | If Li > L(2) then Qi = | 4 |
| STREET SLOPE | 2.5% | L(3) | 25.8 | FB = | 3.1 |
| | | | | CA(eqv.)= | 0.51 |

**5 YEAR FLOW**

| | | | | | |
|---|---|---|---|---|---|
| Q(5) | 3 | I(5) | 3.6 | | |
| DEPTH | 0.22 | Fr | 1.60 | Inlet size ? L(i) = | 6 |
| SPREAD | 4.8 | L(1) | 5.8 | If Li < L(2) then Qi = | 3 |
| CROSS SLOPE | 2.0% | L(2) | 3.5 | If Li > L(2) then Qi = | 2 |
| STREET SLOPE | 2.5% | L(3) | 12.5 | FB = | 0.8 |
| | | | | CA(eqv.)= | 0.21 |

| | |
|---|---|
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**DESIGN POINT 12**

Total Flow: $Q_5$ = 8 cfs

$Q_{100}$ = 18 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 1.00 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 4 foot inlet required

INSTALL A PUBLIC 4 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
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**DESIGN POINT 13**

Total Flow: $Q_5$ = 2 cfs

$Q_{100}$ = 4 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 4 foot inlet required

INSTALL A PUBLIC 4 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
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| DATE: | *07/07/04* |
| CALCULATED BY: | *DLM* |

## DESIGN POINT 14

Total Flow: $Q_5$ = 4.0 cfs

$Q_{100}$ = 9.0 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 4 foot inlet required

INSTALL A PUBLIC 4 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
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| DATE: | *07/07/04* |
| CALCULATED BY: | *DLM* |

## DESIGN POINT 15

Total Flow: $Q_5$ = 1.0 cfs

$Q_{100}$ = 2.0 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 4 foot inlet required

INSTALL A PUBLIC 4 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
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## DESIGN POINT 16

Total Flow: $Q_5$ = 3 cfs

$Q_{100}$ = 6.2 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 4 foot inlet required

INSTALL A PUBLIC 4 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
| JOB NUMBER: | *1016.60* |
| DATE: | *07/07/04* |
| CALCULATED BY: | *DLM* |

## DESIGN POINT 17

Total Flow: $Q_5$ = 3 cfs

$Q_{100}$ = 7.0 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 0.70 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 4 foot inlet required

INSTALL A PUBLIC 4 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
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**DESIGN POINT** 18 **100 YEAR FLOW**

| | | | | | |
|---|---|---|---|---|---|
| Q(100) | 13 | I(100) | 5.3 | | |
| DEPTH | 0.36 | Fr | 1.88 | Inlet size ? L(i) = | 6 |
| SPREAD | 11.5 | L(1) | 16.7 | If Li < L(2) then Qi = | 5 |
| CROSS SLOPE | 2.0% | L(2) | 10.0 | If Li > L(2) then Qi = | 6 |
| STREET SLOPE | 2.3% | L(3) | 35.7 | FB = | 6.5 |
| | | | | CA(eqv.)= | 1.22 |

**5 YEAR FLOW**

| | | | | | |
|---|---|---|---|---|---|
| Q(5) | 7 | I(5) | 3.0 | | |
| DEPTH | 0.30 | Fr | 1.78 | Inlet size ? L(i) = | 6 |
| SPREAD | 8.8 | L(1) | 12.0 | If Li < L(2) then Qi = | 3 |
| CROSS SLOPE | 2.0% | L(2) | 7.2 | If Li > L(2) then Qi = | 4 |
| STREET SLOPE | 2.3% | L(3) | 25.7 | FB = | 3.0 |
| | | | | CA(eqv.)= | 1.00 |

| | |
|---|---|
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DESIGN POINT 19 — 100 YEAR FLOW

| | | | | | |
|---|---|---|---|---|---|
| Q(100) | 11 | I(100) | 6.0 | | |
| DEPTH | 0.34 | Fr | 1.85 | Inlet size ? L(i) = | 6 |
| SPREAD | 10.5 | L(1) | 14.9 | If Li < L(2) then Qi = | 4 |
| CROSS SLOPE | 2.0% | L(2) | 9.0 | If Li > L(2) then Qi = | 6 |
| STREET SLOPE | 2.3% | L(3) | 32.0 | FB = | 5.3 |
| | | | | CA(eqv.)= | 0.90 |

5 YEAR FLOW

| | | | | | |
|---|---|---|---|---|---|
| Q(5) | 4 | I(5) | 3.4 | | |
| DEPTH | 0.22 | Fr | 1.53 | Inlet size ? L(i) = | 6 |
| SPREAD | 4.8 | L(1) | 5.6 | If Li < L(2) then Qi = | 5 |
| CROSS SLOPE | 2.0% | L(2) | 3.4 | If Li > L(2) then Qi = | 3 |
| STREET SLOPE | 2.3% | L(3) | 12.0 | FB = | 1.1 |
| | | | | CA(eqv.)= | 0.32 |

| | |
|---|---|
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| CALCULATED BY: | *DLM* |

## DESIGN POINT 24

Total Flow: $Q_5$ = 9 cfs

$Q_{100}$ = 20 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 0.70 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 8 foot inlet required

INSTALL A PUBLIC 10 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT. ASSUME FLOWS SPLIT EVENLY BETWEEN DP-11 & DP-12

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
| JOB NUMBER: | *1016.60* |
| DATE: | *07/07/04* |
| CALCULATED BY: | *DLM* |

**DESIGN POINT 25**

Total Flow: $Q_5$ = 9 cfs

$Q_{100}$ = 20 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 8 foot inlet required

INSTALL A PUBLIC 10 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT. ASSUME FLOWS SPLIT EVENLY BETWEEN DP-11 & DP-12

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
| JOB NUMBER: | *1016.60* |
| DATE: | *07/07/04* |
| CALCULATED BY: | *DLM* |

**DESIGN POINT 26**

Total Flow: $Q_5$ = 8 cfs

$Q_{100}$ = 34 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 1.00 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

| | | |
|---|---|---|
| 5-Year Event: | 4 | foot inlet required |
| 100-Year Event: | 8 | foot inlet required |
| INSTALL A PUBLIC | 14 | EXIST. 14' SUMP INLET |

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
| JOB NUMBER: | *1016.60* |
| DATE: | *07/07/04* |
| CALCULATED BY: | *DLM* |

## DESIGN POINT 27

Total Flow: $Q_5$ = 12 cfs

$Q_{100}$ = 31 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 1.00 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

| | | |
|---|---|---|
| 5-Year Event: | 6 | foot inlet required |
| 100-Year Event: | 8 | foot inlet required |
| INSTALL A PUBLIC | 12 | EXISTING 12' SUMP INLET |

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
| JOB NUMBER: | *1016.60* |
| DATE: | *07/07/04* |
| CALCULATED BY: | *DLM* |

## DESIGN POINT 28

Total Flow: $Q_5$ = 8 cfs

$Q_{100}$ = 16.0 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 0.75 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 4 foot inlet required

INSTALL A PUBLIC 4 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
JOB NUMBER: *1016.60*
DATE: *07/07/04*
CALCULATED BY: *DLM*

## DESIGN POINT 29

Total Flow: $Q_5$ = 2 cfs
$Q_{100}$ = 4.0 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50
$D_{100}$ = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25
Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 4 foot inlet required

INSTALL A PUBLIC 4 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
| JOB NUMBER: | *1016.60* |
| DATE: | *07/07/04* |
| CALCULATED BY: | *DLM* |

**DESIGN POINT 30**

Total Flow: $Q_5$ = 3 cfs

$Q_{100}$ = 7.0 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 4 foot inlet required

INSTALL A PUBLIC 4 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
| JOB NUMBER: | *1016.60* |
| DATE: | *07/07/04* |
| CALCULATED BY: | *DLM* |

## DESIGN POINT 31

Total Flow: $Q_5$ = 9 cfs

$Q_{100}$ = 18.0 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 8 foot inlet required

INSTALL A PUBLIC 8 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
| JOB NUMBER: | *1016.60* |
| DATE: | *07/07/04* |
| CALCULATED BY: | *DLM* |

**DESIGN POINT 32**

Total Flow: $Q_5$ = 9 cfs

$Q_{100}$ = 18.0 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 8 foot inlet required

INSTALL A PUBLIC 8 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
| JOB NUMBER: | *1016.60* |
| DATE: | *07/07/04* |
| CALCULATED BY: | *DLM* |

**DESIGN POINT 37**

Total Flow: $Q_5$ = 9 cfs

$Q_{100}$ = 19.0 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 8 foot inlet required

INSTALL A PUBLIC 8 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
| JOB NUMBER: | *1016.60* |
| DATE: | *07/07/04* |
| CALCULATED BY: | *DLM* |

## DESIGN POINT 38

Total Flow: $Q_5$ = 7 cfs

$Q_{100}$ = 15.0 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 6 foot inlet required

INSTALL A PUBLIC 8 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
| JOB NUMBER: | *1016.60* |
| DATE: | *07/07/04* |
| CALCULATED BY: | *DLM* |

## DESIGN POINT 44

Total Flow: $Q_5$ = 12 cfs

$Q_{100}$ = 23.0 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 6 foot inlet required

100-Year Event: 12 foot inlet required

INSTALL A PUBLIC 12 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT. ASSUME FLOWS SPLIT EVENLY BETWEEN DP-44 & DP-45 FOR 100YR. EVENT

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
JOB NUMBER: *1016.60*
DATE: *07/07/04*
CALCULATED BY: *DLM*

**DESIGN POINT 45**

Total Flow: $Q_5$ = 12 cfs
$Q_{100}$ = 23.0 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50
$D_{100}$ = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25
Li (1.25) = Length of inlet opening

5-Year Event: 6 foot inlet required

100-Year Event: 12 foot inlet required

INSTALL A PUBLIC 12 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT. ASSUME FLOWS SPLIT EVENLY BETWEEN DP-44 & DP-45 FOR 100YR. EVENT

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
| JOB NUMBER: | *1016.60* |
| DATE: | *07/07/04* |
| CALCULATED BY: | *DLM* |

**DESIGN POINT 50**

Total Flow: $Q_5$ = 6 cfs

$Q_{100}$ = 12.0 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 4 foot inlet required

INSTALL A PUBLIC 4 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
| JOB NUMBER: | *1016.60* |
| DATE: | *07/07/04* |
| CALCULATED BY: | *DLM* |

**DESIGN POINT 51 — 100 YEAR FLOW**

| | | | | | |
|---|---|---|---|---|---|
| Q(100) | 27 | I(100) | 5.8 | | |
| DEPTH | 0.46 | Fr | 2.15 | Inlet size ? L(i) = | 18 |
| SPREAD | 16.5 | L(1) | 27.3 | If Li < L(2) then Qi = | 18 |
| CROSS SLOPE | 2.0% | L(2) | 16.4 | If Li > L(2) then Qi = | 17 |
| STREET SLOPE | 2.6% | L(3) | 58.5 | FB = | 10 |
| | | | | CA(eqv.)= | 1.74 |

**5 YEAR FLOW**

| | | | | | |
|---|---|---|---|---|---|
| Q(5) | 13 | I(5) | 3.3 | | |
| DEPTH | 0.36 | Fr | 2.01 | Inlet size ? L(i) = | 18 |
| SPREAD | 11.8 | L(1) | 18.2 | If Li < L(2) then Qi = | 13 |
| CROSS SLOPE | 2.0% | L(2) | 10.9 | If Li > L(2) then Qi = | 10 |
| STREET SLOPE | 2.6% | L(3) | 39.0 | FB = | 3 |
| | | | | CA(eqv.)= | 1.06 |

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
| JOB NUMBER: | *1016.60* |
| DATE: | *07/07/04* |
| CALCULATED BY: | *DLM* |

## DESIGN POINT 52

Total Flow: $Q_5$ = 3 cfs

$Q_{100}$ = 7.0 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 4 foot inlet required

INSTALL A PUBLIC 4 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
| JOB NUMBER: | *1016.60* |
| DATE: | *07/07/04* |
| CALCULATED BY: | *DLM* |

**DESIGN POINT 53**

Total Flow: $Q_5$ = 1 cfs

$Q_{100}$ = 3.0 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 4 foot inlet required

INSTALL A PUBLIC 4 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
| JOB NUMBER: | *1016.60* |
| DATE: | *07/07/04* |
| CALCULATED BY: | *DLM* |

**DESIGN POINT 54**

Total Flow: $Q_5$ = 10 cfs

$Q_{100}$ = 24.0 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50

$D_{100}$ = 0.67 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25

Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 12 foot inlet required

INSTALL A PUBLIC 12 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
JOB NUMBER: *1016.60*
DATE: *07/07/04*
CALCULATED BY: *DLM*

**DESIGN POINT 55**

Total Flow: $Q_5$ = 19 cfs
$Q_{100}$ = 38.3 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50
$D_{100}$ = 0.70 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25
Li (1.25) = Length of inlet opening

5-Year Event: 14 foot inlet required

100-Year Event: 20 foot inlet required

INSTALL A PUBLIC 20 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT.

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
JOB NUMBER: *1016.60*
DATE: *07/07/04*
CALCULATED BY: *DLM*

## DESIGN POINT 56

Total Flow: $Q_5$ = 6 cfs
$Q_{100}$ = 11.9 cfs

Maximum allowable ponding depth at sump:

$D_5$ = 0.50
$D_{100}$ = 0.50 (dmax)

Qi = 1.7(Li+1.8(W))(dmax + w/12)^1.85

Clogging Factor = 1.25
Li (1.25) = Length of inlet opening

5-Year Event: 4 foot inlet required

100-Year Event: 6 foot inlet required

INSTALL A PUBLIC 12 FT D-10-R INLET TO ACCEPT BOTH 5YR & 100 YR DEVELOPED FLOWS AT THIS DESIGN POINT

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
JOB NUMBER: *1016.60*
DATE: *07/07/04*
CALCULATED BY: *DLM*

DESIGN POINT 57 — 100 YEAR FLOW

| | | | | | |
|---|---|---|---|---|---|
| Q(100) | 7 | I(100) | 5.8 | | |
| DEPTH | 0.46 | Fr | 1.40 | Inlet size ? L(i) = | 12 |
| SPREAD | 16.5 | L(1) | 17.8 | If Li < L(2) then Qi = | 5 |
| CROSS SLOPE | 2.0% | L(2) | 10.7 | If Li > L(2) then Qi = | 5 |
| STREET SLOPE | 1.1% | L(3) | 38.0 | FB = | 3 |
| | | | | CA(eqv.)= | 0.47 |

5 YEAR FLOW

| | | | | | |
|---|---|---|---|---|---|
| Q(5) | 4 | I(5) | 3.3 | | |
| DEPTH | 0.36 | Fr | 1.31 | Inlet size ? L(i) = | 12 |
| SPREAD | 11.8 | L(1) | 11.8 | If Li < L(2) then Qi = | 4 |
| CROSS SLOPE | 2.0% | L(2) | 7.1 | If Li > L(2) then Qi = | 3 |
| STREET SLOPE | 1.1% | L(3) | 25.4 | FB = | 1 |
| | | | | CA(eqv.)= | 0.31 |

| | |
|---|---|
| JOB NAME: | *STETSON RIDGE SUBDIVISION, FILING NO. 3* |
| JOB NUMBER: | *1016.60* |
| DATE: | *07/07/04* |
| CALCULATED BY: | *DLM* |

**DESIGN POINT** 61 **100 YEAR FLOW**

| | | | | | |
|---|---|---|---|---|---|
| Q(100) | 10 | I(100) | 5.8 | | |
| DEPTH | 0.46 | Fr | 1.40 | Inlet size ? L(i) = | 12 |
| SPREAD | 16.5 | L(1) | 17.8 | If Li < L(2) then Qi = | 6 |
| CROSS SLOPE | 2.0% | L(2) | 10.7 | If Li > L(2) then Qi = | 6 |
| STREET SLOPE | 1.1% | L(3) | 38.0 | FB = | 4 |
| | | | | CA(eqv.)= | 0.61 |

**5 YEAR FLOW**

| | | | | | |
|---|---|---|---|---|---|
| Q(5) | 5 | I(5) | 3.3 | | |
| DEPTH | 0.36 | Fr | 1.31 | Inlet size ? L(i) = | 12 |
| SPREAD | 11.8 | L(1) | 11.8 | If Li < L(2) then Qi = | 5 |
| CROSS SLOPE | 2.0% | L(2) | 7.1 | If Li > L(2) then Qi = | 4 |
| STREET SLOPE | 1.1% | L(3) | 25.4 | FB = | 1 |
| | | | | CA(eqv.)= | 0.38 |

JOB NAME: *STETSON RIDGE SUBDIVISION, FILING NO. 3*
JOB NUMBER: *1016.60*
DATE: *07/07/04*
CALCULATED BY: *DLM*

**DESIGN POINT** 62 **100 YEAR FLOW**

| | | | | | |
|---|---|---|---|---|---|
| Q(100) | 15 | I(100) | 5.8 | | |
| DEPTH | 0.46 | Fr | 1.40 | Inlet size ? L(i) = | 20 |
| SPREAD | 16.5 | L(1) | 17.8 | If Li < L(2) then Qi = | 17 |
| CROSS SLOPE | 2.0% | L(2) | 10.7 | If Li > L(2) then Qi = | 12 |
| STREET SLOPE | 1.1% | L(3) | 38.0 | FB = | 3 |
| | | | | CA(eqv.)= | 0.60 |

**5 YEAR FLOW**

| | | | | | |
|---|---|---|---|---|---|
| Q(5) | 8 | I(5) | 3.3 | | |
| DEPTH | 0.36 | Fr | 1.31 | Inlet size ? L(i) = | 20 |
| SPREAD | 11.8 | L(1) | 11.8 | If Li < L(2) then Qi = | 14 |
| CROSS SLOPE | 2.0% | L(2) | 7.1 | If Li > L(2) then Qi = | 7 |
| STREET SLOPE | 1.1% | L(3) | 25.4 | FB = | 1 |
| | | | | CA(eqv.)= | 0.23 |

# PIPE 1
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 11.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 010967 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.27 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 010387 | ft/ft |
| Velocity | 6.22 | ft/s |
| Velocity Head | 0.60 | ft |
| Specific Energ | 2.10 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 11.83 | cfs |
| Discharge Full | 11.00 | cfs |
| Slope Full | 010967 | ft/ft |
| Flow Type | N/A | |

# PIPE 2
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 11.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 010967 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.27 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 010387 | ft/ft |
| Velocity | 6.22 | ft/s |
| Velocity Head | 0.60 | ft |
| Specific Energ: | 2.10 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 11.83 | cfs |
| Discharge Full | 11.00 | cfs |
| Slope Full | 010967 | ft/ft |
| Flow Type | N/A | |

# PIPE 3
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 24 | in |
| Discharge | ?1.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 008618 | ft/ft |
| Depth | 2.00 | ft |
| Flow Area | 3.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.64 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 008596 | ft/ft |
| Velocity | 6.68 | ft/s |
| Velocity Head | 0.69 | ft |
| Specific Energ | 2.69 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 22.59 | cfs |
| Discharge Full | 21.00 | cfs |
| Slope Full | 008618 | ft/ft |
| Flow Type | N/A | |

# PIPE 4
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 7.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 004441 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.02 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 006766 | ft/ft |
| Velocity | 3.96 | ft/s |
| Velocity Head | 0.24 | ft |
| Specific Energ | 1.74 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 7.53 | cfs |
| Discharge Full | 7.00 | cfs |
| Slope Full | 004441 | ft/ft |
| Flow Type | N/A | |

## PIPE 5
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 6.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 003263 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 0.95 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 006218 | ft/ft |
| Velocity | 3.40 | ft/s |
| Velocity Head | 0.18 | ft |
| Specific Energ: | 1.68 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 6.45 | cfs |
| Discharge Full | 6.00 | cfs |
| Slope Full | 003263 | ft/ft |
| Flow Type | N/A | |

# PIPE 6
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 12.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 013052 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.31 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 011803 | ft/ft |
| Velocity | 6.79 | ft/s |
| Velocity Head | 0.72 | ft |
| Specific Energ | 2.22 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 12.91 | cfs |
| Discharge Full | 12.00 | cfs |
| Slope Full | 013052 | ft/ft |
| Flow Type | N/A | |

# PIPE 7

## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 2.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 000363 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 0.53 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 004941 | ft/ft |
| Velocity | 1.13 | ft/s |
| Velocity Head | 0.02 | ft |
| Specific Energ | 1.52 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 2.15 | cfs |
| Discharge Full | 2.00 | cfs |
| Slope Full | 000363 | ft/ft |
| Flow Type | N/A | |

# PIPE 8
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 9.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 007342 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.16 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 008230 | ft/ft |
| Velocity | 5.09 | ft/s |
| Velocity Head | 0.40 | ft |
| Specific Energ | 1.90 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 9.68 | cfs |
| Discharge Full | 9.00 | cfs |
| Slope Full | 007342 | ft/ft |
| Flow Type | N/A | |

# PIPE 8A
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 24 | in |
| Discharge | ?1.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 008618 | ft/ft |
| Depth | 2.00 | ft |
| Flow Area | 3.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.64 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 008596 | ft/ft |
| Velocity | 6.68 | ft/s |
| Velocity Head | 0.69 | ft |
| Specific Energ | 2.69 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 22.59 | cfs |
| Discharge Full | 21.00 | cfs |
| Slope Full | 008618 | ft/ft |
| Flow Type | N/A | |

# PIPE 9
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 30 | in |
| Discharge | 11.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 009993 | ft/ft |
| Depth | 2.50 | ft |
| Flow Area | 4.9 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.15 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 009252 | ft/ft |
| Velocity | 8.35 | ft/s |
| Velocity Head | 1.08 | ft |
| Specific Energ | 3.58 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 44.10 | cfs |
| Discharge Full | 41.00 | cfs |
| Slope Full | 009993 | ft/ft |
| Flow Type | N/A | |

# PIPE 10
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 5.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 002266 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 0.86 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 005779 | ft/ft |
| Velocity | 2.83 | ft/s |
| Velocity Head | 0.12 | ft |
| Specific Energ | 1.62 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 5.38 | cfs |
| Discharge Full | 5.00 | cfs |
| Slope Full | 002266 | ft/ft |
| Flow Type | N/A | |

# PIPE 11
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 30 | in |
| Discharge | 38.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 008584 | ft/ft |
| Depth | 2.50 | ft |
| Flow Area | 4.9 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.08 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 008336 | ft/ft |
| Velocity | 7.74 | ft/s |
| Velocity Head | 0.93 | ft |
| Specific Energ: | 3.43 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 40.88 | cfs |
| Discharge Full | 38.00 | cfs |
| Slope Full | 008584 | ft/ft |
| Flow Type | N/A | |

# PIPE 12
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 4.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 001450 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 0.77 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 005413 | ft/ft |
| Velocity | 2.26 | ft/s |
| Velocity Head | 0.08 | ft |
| Specific Energ | 1.58 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 4.30 | cfs |
| Discharge Full | 4.00 | cfs |
| Slope Full | 001450 | ft/ft |
| Flow Type | N/A | |

# PIPE 13
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 36 | in |
| Discharge | 15.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 004552 | ft/ft |
| Depth | 3.00 | ft |
| Flow Area | 7.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.19 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 005868 | ft/ft |
| Velocity | 6.37 | ft/s |
| Velocity Head | 0.63 | ft |
| Specific Energ: | 3.63 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 48.41 | cfs |
| Discharge Full | 45.00 | cfs |
| Slope Full | 004552 | ft/ft |
| Flow Type | N/A | |

# PIPE 14
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 42 | in |
| Discharge | 06.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 011101 | ft/ft |
| Depth | 3.50 | ft |
| Flow Area | 9.6 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 3.13 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 009820 | ft/ft |
| Velocity | 11.02 | ft/s |
| Velocity Head | 1.89 | ft |
| Specific Energ: | 5.39 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 114.02 | cfs |
| Discharge Full | 106.00 | cfs |
| Slope Full | 011101 | ft/ft |
| Flow Type | N/A | |

# PIPE 15
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 42 | in |
| Discharge | 73.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 029571 | ft/ft |
| Depth | 3.50 | ft |
| Flow Area | 9.6 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 3.44 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 026569 | ft/ft |
| Velocity | 17.98 | ft/s |
| Velocity Head | 5.02 | ft |
| Specific Energ | 8.52 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 186.10 | cfs |
| Discharge Full | 173.00 | cfs |
| Slope Full | 029571 | ft/ft |
| Flow Type | N/A | |

# PIPE 16
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 6.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 003263 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 0.95 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 006218 | ft/ft |
| Velocity | 3.40 | ft/s |
| Velocity Head | 0.18 | ft |
| Specific Energ | 1.68 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 6.45 | cfs |
| Discharge Full | 6.00 | cfs |
| Slope Full | 003263 | ft/ft |
| Flow Type | N/A | |

# PIPE 17
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 6.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 003263 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 0.95 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 006218 | ft/ft |
| Velocity | 3.40 | ft/s |
| Velocity Head | 0.18 | ft |
| Specific Energ | 1.68 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 6.45 | cfs |
| Discharge Full | 6.00 | cfs |
| Slope Full | 003263 | ft/ft |
| Flow Type | N/A | |

## PIPE 18
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 42 | in |
| Discharge | 80.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 032012 | ft/ft |
| Depth | 3.50 | ft |
| Flow Area | 9.6 | $ft^2$ |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 3.44 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 028952 | ft/ft |
| Velocity | 18.71 | ft/s |
| Velocity Head | 5.44 | ft |
| Specific Energ | 8.94 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 193.63 | cfs |
| Discharge Full | 180.00 | cfs |
| Slope Full | 032012 | ft/ft |
| Flow Type | N/A | |

# PIPE 19
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 24 | in |
| Discharge | 20.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 007817 | ft/ft |
| Depth | 2.00 | ft |
| Flow Area | 3.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.61 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 008120 | ft/ft |
| Velocity | 6.37 | ft/s |
| Velocity Head | 0.63 | ft |
| Specific Energ | 2.63 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 21.51 | cfs |
| Discharge Full | 20.00 | cfs |
| Slope Full | 007817 | ft/ft |
| Flow Type | N/A | |

# PIPE 20
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 24 | in |
| Discharge | ?0.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 007817 | ft/ft |
| Depth | 2.00 | ft |
| Flow Area | 3.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.61 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 008120 | ft/ft |
| Velocity | 6.37 | ft/s |
| Velocity Head | 0.63 | ft |
| Specific Energ | 2.63 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 21.51 | cfs |
| Discharge Full | 20.00 | cfs |
| Slope Full | 007817 | ft/ft |
| Flow Type | N/A | |

# PIPE 21
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 30 | in |
| Discharge | 39.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 009042 | ft/ft |
| Depth | 2.50 | ft |
| Flow Area | 4.9 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.11 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 008625 | ft/ft |
| Velocity | 7.95 | ft/s |
| Velocity Head | 0.98 | ft |
| Specific Energ | 3.48 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 41.95 | cfs |
| Discharge Full | 39.00 | cfs |
| Slope Full | 009042 | ft/ft |
| Flow Type | N/A | |

# PIPE 22
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 36 | in |
| Discharge | 71.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 011333 | ft/ft |
| Depth | 3.00 | ft |
| Flow Area | 7.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.67 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 010073 | ft/ft |
| Velocity | 10.04 | ft/s |
| Velocity Head | 1.57 | ft |
| Specific Energ | 4.57 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 76.38 | cfs |
| Discharge Full | 71.00 | cfs |
| Slope Full | 011333 | ft/ft |
| Flow Type | N/A | |

# PIPE 23
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 24 | in |
| Discharge | 34.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 022591 | ft/ft |
| Depth | 2.00 | ft |
| Flow Area | 3.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.91 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 019623 | ft/ft |
| Velocity | 10.82 | ft/s |
| Velocity Head | 1.82 | ft |
| Specific Energ | 3.82 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 36.57 | cfs |
| Discharge Full | 34.00 | cfs |
| Slope Full | 022591 | ft/ft |
| Flow Type | N/A | |

# PIPE 24
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 60 | in |
| Discharge | :69.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 010669 | ft/ft |
| Depth | 5.00 | ft |
| Flow Area | 19.6 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 4.53 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 009341 | ft/ft |
| Velocity | 13.70 | ft/s |
| Velocity Head | 2.92 | ft |
| Specific Energ | 7.92 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 289.36 | cfs |
| Discharge Full | 269.00 | cfs |
| Slope Full | 010669 | ft/ft |
| Flow Type | N/A | |

# PIPE 25
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 30 | in |
| Discharge | 50.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 014861 | ft/ft |
| Depth | 2.50 | ft |
| Flow Area | 4.9 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.30 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 012901 | ft/ft |
| Velocity | 10.19 | ft/s |
| Velocity Head | 1.61 | ft |
| Specific Energ | 4.11 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 53.79 | cfs |
| Discharge Full | 50.00 | cfs |
| Slope Full | 014861 | ft/ft |
| Flow Type | N/A | |

# PIPE 26
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forı |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 4.60 | cfs |

| Results | | |
|---|---|---|
| Slope | 001918 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 0.82 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 005619 | ft/ft |
| Velocity | 2.60 | ft/s |
| Velocity Head | 0.11 | ft |
| Specific Energ | 1.61 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 4.95 | cfs |
| Discharge Full | 4.60 | cfs |
| Slope Full | 001918 | ft/ft |
| Flow Type | N/A | |

# PIPE 27
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forı |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 3.60 | cfs |

| Results | | |
|---|---|---|
| Slope | 001175 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 0.72 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 005291 | ft/ft |
| Velocity | 2.04 | ft/s |
| Velocity Head | 0.06 | ft |
| Specific Energ: | 1.56 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 3.87 | cfs |
| Discharge Full | 3.60 | cfs |
| Slope Full | 001175 | ft/ft |
| Flow Type | N/A | |

# PIPE 28
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 30 | in |
| Discharge | 56.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 018642 | ft/ft |
| Depth | 2.50 | ft |
| Flow Area | 4.9 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.36 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 016123 | ft/ft |
| Velocity | 11.41 | ft/s |
| Velocity Head | 2.02 | ft |
| Specific Energ | 4.52 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 60.24 | cfs |
| Discharge Full | 56.00 | cfs |
| Slope Full | 018642 | ft/ft |
| Flow Type | N/A | |

# PIPE 29
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 13.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 015318 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | $ft^2$ |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.35 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 013475 | ft/ft |
| Velocity | 7.36 | ft/s |
| Velocity Head | 0.84 | ft |
| Specific Energ | 2.34 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 13.98 | cfs |
| Discharge Full | 13.00 | cfs |
| Slope Full | 015318 | ft/ft |
| Flow Type | N/A | |

# PIPE 30
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 13.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 015318 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.35 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 013475 | ft/ft |
| Velocity | 7.36 | ft/s |
| Velocity Head | 0.84 | ft |
| Specific Energ | 2.34 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 13.98 | cfs |
| Discharge Full | 13.00 | cfs |
| Slope Full | 015318 | ft/ft |
| Flow Type | N/A | |

# PIPE 31
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 24 | in |
| Discharge | ?5.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 012214 | ft/ft |
| Depth | 2.00 | ft |
| Flow Area | 3.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.76 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 010976 | ft/ft |
| Velocity | 7.96 | ft/s |
| Velocity Head | 0.98 | ft |
| Specific Energ | 2.98 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 26.89 | cfs |
| Discharge Full | 25.00 | cfs |
| Slope Full | 012214 | ft/ft |
| Flow Type | N/A | |

# PIPE 32
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 36 | in |
| Discharge | 74.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 012311 | ft/ft |
| Depth | 3.00 | ft |
| Flow Area | 7.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.71 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 010812 | ft/ft |
| Velocity | 10.47 | ft/s |
| Velocity Head | 1.70 | ft |
| Specific Energ | 4.70 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 79.60 | cfs |
| Discharge Full | 74.00 | cfs |
| Slope Full | 012311 | ft/ft |
| Flow Type | N/A | |

# PIPE 33
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 7.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 004441 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.02 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 006766 | ft/ft |
| Velocity | 3.96 | ft/s |
| Velocity Head | 0.24 | ft |
| Specific Energ | 1.74 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 7.53 | cfs |
| Discharge Full | 7.00 | cfs |
| Slope Full | 004441 | ft/ft |
| Flow Type | N/A | |

# PIPE 34
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 36 | in |
| Discharge | 30.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 014388 | ft/ft |
| Depth | 3.00 | ft |
| Flow Area | 7.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.77 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 012471 | ft/ft |
| Velocity | 11.32 | ft/s |
| Velocity Head | 1.99 | ft |
| Specific Energ | 4.99 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 86.06 | cfs |
| Discharge Full | 80.00 | cfs |
| Slope Full | 014388 | ft/ft |
| Flow Type | N/A | |

# PIPE 35
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forı |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 18.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 029367 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.45 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 025777 | ft/ft |
| Velocity | 10.19 | ft/s |
| Velocity Head | 1.61 | ft |
| Specific Energ | 3.11 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 19.36 | cfs |
| Discharge Full | 18.00 | cfs |
| Slope Full | 029367 | ft/ft |
| Flow Type | N/A | |

# PIPE 36
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 24 | in |
| Discharge | 35.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 023939 | ft/ft |
| Depth | 2.00 | ft |
| Flow Area | 3.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.92 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 020858 | ft/ft |
| Velocity | 11.14 | ft/s |
| Velocity Head | 1.93 | ft |
| Specific Energ: | 3.93 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 37.65 | cfs |
| Discharge Full | 35.00 | cfs |
| Slope Full | 023939 | ft/ft |
| Flow Type | N/A | |

# PIPE 37
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 42 | in |
| Discharge | 11.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 012173 | ft/ft |
| Depth | 3.50 | ft |
| Flow Area | 9.6 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 3.18 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 010644 | ft/ft |
| Velocity | 11.54 | ft/s |
| Velocity Head | 2.07 | ft |
| Specific Energ | 5.57 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 119.40 | cfs |
| Discharge Full | 111.00 | cfs |
| Slope Full | 012173 | ft/ft |
| Flow Type | N/A | |

# PIPE 38
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 24 | in |
| Discharge | 19.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 007055 | ft/ft |
| Depth | 2.00 | ft |
| Flow Area | 3.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.57 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 007690 | ft/ft |
| Velocity | 6.05 | ft/s |
| Velocity Head | 0.57 | ft |
| Specific Energ | 2.57 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 20.44 | cfs |
| Discharge Full | 19.00 | cfs |
| Slope Full | 007055 | ft/ft |
| Flow Type | N/A | |

# PIPE 39
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 42 | in |
| Discharge | 27.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 015936 | ft/ft |
| Depth | 3.50 | ft |
| Flow Area | 9.6 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 3.29 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 013773 | ft/ft |
| Velocity | 13.20 | ft/s |
| Velocity Head | 2.71 | ft |
| Specific Energ | 6.21 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 136.61 | cfs |
| Discharge Full | 127.00 | cfs |
| Slope Full | 015936 | ft/ft |
| Flow Type | N/A | |

# PIPE 40
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 15.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 020394 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.41 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 017624 | ft/ft |
| Velocity | 8.49 | ft/s |
| Velocity Head | 1.12 | ft |
| Specific Energ | 2.62 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 16.14 | cfs |
| Discharge Full | 15.00 | cfs |
| Slope Full | 020394 | ft/ft |
| Flow Type | N/A | |

# PIPE 41
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 48 | in |
| Discharge | 41.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 009636 | ft/ft |
| Depth | 4.00 | ft |
| Flow Area | 12.6 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 3.52 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 008671 | ft/ft |
| Velocity | 11.22 | ft/s |
| Velocity Head | 1.96 | ft |
| Specific Energ | 5.96 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 151.67 | cfs |
| Discharge Full | 141.00 | cfs |
| Slope Full | 009636 | ft/ft |
| Flow Type | N/A | |

# PIPE 42
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 42 | in |
| Discharge | 33.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 006806 | ft/ft |
| Depth | 3.50 | ft |
| Flow Area | 9.6 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.84 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 006925 | ft/ft |
| Velocity | 8.63 | ft/s |
| Velocity Head | 1.16 | ft |
| Specific Energ | 4.66 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 89.28 | cfs |
| Discharge Full | 83.00 | cfs |
| Slope Full | 006806 | ft/ft |
| Flow Type | N/A | |

# PIPE 43
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 42 | in |
| Discharge | 37.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 007478 | ft/ft |
| Depth | 3.50 | ft |
| Flow Area | 9.6 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.90 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 007331 | ft/ft |
| Velocity | 9.04 | ft/s |
| Velocity Head | 1.27 | ft |
| Specific Energ | 4.77 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 93.59 | cfs |
| Discharge Full | 87.00 | cfs |
| Slope Full | 007478 | ft/ft |
| Flow Type | N/A | |

# PIPE 44
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 48 | in |
| Discharge | 62.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 012721 | ft/ft |
| Depth | 4.00 | ft |
| Flow Area | 12.6 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 3.68 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 011042 | ft/ft |
| Velocity | 12.89 | ft/s |
| Velocity Head | 2.58 | ft |
| Specific Energ | 6.58 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 174.26 | cfs |
| Discharge Full | 162.00 | cfs |
| Slope Full | 012721 | ft/ft |
| Flow Type | N/A | |

# PIPE 45
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 30 | in |
| Discharge | 44.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 011509 | ft/ft |
| Depth | 2.50 | ft |
| Flow Area | 4.9 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.21 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 010313 | ft/ft |
| Velocity | 8.96 | ft/s |
| Velocity Head | 1.25 | ft |
| Specific Energ | 3.75 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 47.33 | cfs |
| Discharge Full | 44.00 | cfs |
| Slope Full | 011509 | ft/ft |
| Flow Type | N/A | |

# PIPE 46
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 30 | in |
| Discharge | 55.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 017982 | ft/ft |
| Depth | 2.50 | ft |
| Flow Area | 4.9 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.35 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 015543 | ft/ft |
| Velocity | 11.20 | ft/s |
| Velocity Head | 1.95 | ft |
| Specific Energ' | 4.45 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 59.16 | cfs |
| Discharge Full | 55.00 | cfs |
| Slope Full | 017982 | ft/ft |
| Flow Type | N/A | |

# PIPE 47
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 42 | in |
| Discharge | 13.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 012616 | ft/ft |
| Depth | 3.50 | ft |
| Flow Area | 9.6 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 3.20 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 010994 | ft/ft |
| Velocity | 11.74 | ft/s |
| Velocity Head | 2.14 | ft |
| Specific Energ: | 5.64 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 121.55 | cfs |
| Discharge Full | 113.00 | cfs |
| Slope Full | 012616 | ft/ft |
| Flow Type | N/A | |

# PIPE 48
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forı |
| Solve For | Full Flow Slopε |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 24 | in |
| Discharge | 23.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 010338 | ft/ft |
| Depth | 2.00 | ft |
| Flow Area | 3.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.71 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 009682 | ft/ft |
| Velocity | 7.32 | ft/s |
| Velocity Head | 0.83 | ft |
| Specific Energ | 2.83 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 24.74 | cfs |
| Discharge Full | 23.00 | cfs |
| Slope Full | 010338 | ft/ft |
| Flow Type | N/A | |

# PIPE 49
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forı |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 48 | in |
| Discharge | 35.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 008834 | ft/ft |
| Depth | 4.00 | ft |
| Flow Area | 12.6 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 3.46 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 008109 | ft/ft |
| Velocity | 10.74 | ft/s |
| Velocity Head | 1.79 | ft |
| Specific Energ | 5.79 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 145.22 | cfs |
| Discharge Full | 135.00 | cfs |
| Slope Full | 008834 | ft/ft |
| Flow Type | N/A | |

# PIPE 50
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 30 | in |
| Discharge | 55.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 017982 | ft/ft |
| Depth | 2.50 | ft |
| Flow Area | 4.9 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.35 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 015543 | ft/ft |
| Velocity | 11.20 | ft/s |
| Velocity Head | 1.95 | ft |
| Specific Energ | 4.45 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 59.16 | cfs |
| Discharge Full | 55.00 | cfs |
| Slope Full | 017982 | ft/ft |
| Flow Type | N/A | |

# PIPE 51
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forı |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 24 | in |
| Discharge | 23.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 010338 | ft/ft |
| Depth | 2.00 | ft |
| Flow Area | 3.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.71 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 009682 | ft/ft |
| Velocity | 7.32 | ft/s |
| Velocity Head | 0.83 | ft |
| Specific Energ | 2.83 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 24.74 | cfs |
| Discharge Full | 23.00 | cfs |
| Slope Full | 010338 | ft/ft |
| Flow Type | N/A | |

# PIPE 52
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 42 | in |
| Discharge | 76.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 005707 | ft/ft |
| Depth | 3.50 | ft |
| Flow Area | 9.6 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.73 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 006299 | ft/ft |
| Velocity | 7.90 | ft/s |
| Velocity Head | 0.97 | ft |
| Specific Energ | 4.47 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 81.75 | cfs |
| Discharge Full | 76.00 | cfs |
| Slope Full | 005707 | ft/ft |
| Flow Type | N/A | |

# PIPE 53
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 54 | in |
| Discharge | :04.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 010763 | ft/ft |
| Depth | 4.50 | ft |
| Flow Area | 15.9 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 4.06 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 009452 | ft/ft |
| Velocity | 12.83 | ft/s |
| Velocity Head | 2.56 | ft |
| Specific Energ | 7.06 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 219.44 | cfs |
| Discharge Full | 204.00 | cfs |
| Slope Full | 010763 | ft/ft |
| Flow Type | N/A | |

# PIPE 54
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 30 | in |
| Discharge | 33.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 006474 | ft/ft |
| Depth | 2.50 | ft |
| Flow Area | 4.9 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.96 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 007095 | ft/ft |
| Velocity | 6.72 | ft/s |
| Velocity Head | 0.70 | ft |
| Specific Energ | 3.20 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 35.50 | cfs |
| Discharge Full | 33.00 | cfs |
| Slope Full | 006474 | ft/ft |
| Flow Type | N/A | |

# PIPE 55
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Fori |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 30 | in |
| Discharge | 17.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 013131 | ft/ft |
| Depth | 2.50 | ft |
| Flow Area | 4.9 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.26 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 011528 | ft/ft |
| Velocity | 9.57 | ft/s |
| Velocity Head | 1.42 | ft |
| Specific Energ | 3.92 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 50.56 | cfs |
| Discharge Full | 47.00 | cfs |
| Slope Full | 013131 | ft/ft |
| Flow Type | N/A | |

# PIPE 56
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 36 | in |
| Discharge | 76.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 012985 | ft/ft |
| Depth | 3.00 | ft |
| Flow Area | 7.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.73 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 011339 | ft/ft |
| Velocity | 10.75 | ft/s |
| Velocity Head | 1.80 | ft |
| Specific Energ | 4.80 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 81.75 | cfs |
| Discharge Full | 76.00 | cfs |
| Slope Full | 012985 | ft/ft |
| Flow Type | N/A | |

# PIPE 57
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 30 | in |
| Discharge | 37.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 008138 | ft/ft |
| Depth | 2.50 | ft |
| Flow Area | 4.9 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.06 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 008061 | ft/ft |
| Velocity | 7.54 | ft/s |
| Velocity Head | 0.88 | ft |
| Specific Energ | 3.38 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 39.80 | cfs |
| Discharge Full | 37.00 | cfs |
| Slope Full | 008138 | ft/ft |
| Flow Type | N/A | |

# PIPE 58
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 42 | in |
| Discharge | 08.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 011524 | ft/ft |
| Depth | 3.50 | ft |
| Flow Area | 9.6 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 3.15 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 010141 | ft/ft |
| Velocity | 11.23 | ft/s |
| Velocity Head | 1.96 | ft |
| Specific Energ | 5.46 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 116.18 | cfs |
| Discharge Full | 108.00 | cfs |
| Slope Full | 011524 | ft/ft |
| Flow Type | N/A | |

# PIPE 59
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 17.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 026194 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | $ft^2$ |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.44 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 022816 | ft/ft |
| Velocity | 9.62 | ft/s |
| Velocity Head | 1.44 | ft |
| Specific Energ | 2.94 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 18.29 | cfs |
| Discharge Full | 17.00 | cfs |
| Slope Full | 026194 | ft/ft |
| Flow Type | N/A | |

# PIPE 60
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 48 | in |
| Discharge | 11.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 005972 | ft/ft |
| Depth | 4.00 | ft |
| Flow Area | 12.6 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 3.18 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 006311 | ft/ft |
| Velocity | 8.83 | ft/s |
| Velocity Head | 1.21 | ft |
| Specific Energ; | 5.21 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 119.40 | cfs |
| Discharge Full | 111.00 | cfs |
| Slope Full | 005972 | ft/ft |
| Flow Type | N/A | |

# PIPE 61
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 6.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 003263 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 0.95 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 006218 | ft/ft |
| Velocity | 3.40 | ft/s |
| Velocity Head | 0.18 | ft |
| Specific Energ | 1.68 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 6.45 | cfs |
| Discharge Full | 6.00 | cfs |
| Slope Full | 003263 | ft/ft |
| Flow Type | N/A | |

# PIPE 62
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 5.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 002266 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 0.86 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 005779 | ft/ft |
| Velocity | 2.83 | ft/s |
| Velocity Head | 0.12 | ft |
| Specific Energ | 1.62 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 5.38 | cfs |
| Discharge Full | 5.00 | cfs |
| Slope Full | 002266 | ft/ft |
| Flow Type | N/A | |

# PIPE 63
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forı |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 9.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 007342 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.16 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 008230 | ft/ft |
| Velocity | 5.09 | ft/s |
| Velocity Head | 0.40 | ft |
| Specific Energ | 1.90 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 9.68 | cfs |
| Discharge Full | 9.00 | cfs |
| Slope Full | 007342 | ft/ft |
| Flow Type | N/A | |

# PIPE 64
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forı |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 48 | in |
| Discharge | 19.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 006864 | ft/ft |
| Depth | 4.00 | ft |
| Flow Area | 12.6 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 3.29 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 006835 | ft/ft |
| Velocity | 9.47 | ft/s |
| Velocity Head | 1.39 | ft |
| Specific Energ: | 5.39 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 128.01 | cfs |
| Discharge Full | 119.00 | cfs |
| Slope Full | 006864 | ft/ft |
| Flow Type | N/A | |

# PIPE 65
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 36 | in |
| Discharge | 70.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 011016 | ft/ft |
| Depth | 3.00 | ft |
| Flow Area | 7.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.66 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 009840 | ft/ft |
| Velocity | 9.90 | ft/s |
| Velocity Head | 1.52 | ft |
| Specific Energ | 4.52 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 75.30 | cfs |
| Discharge Full | 70.00 | cfs |
| Slope Full | 011016 | ft/ft |
| Flow Type | N/A | |

# PIPE 66
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Fori |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 48 | in |
| Discharge | 67.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 013518 | ft/ft |
| Depth | 4.00 | ft |
| Flow Area | 12.6 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 3.71 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 011701 | ft/ft |
| Velocity | 13.29 | ft/s |
| Velocity Head | 2.74 | ft |
| Specific Energ | 6.74 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 179.64 | cfs |
| Discharge Full | 167.00 | cfs |
| Slope Full | 013518 | ft/ft |
| Flow Type | N/A | |

# PIPE 67
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 66 | in |
| Discharge | ;23.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 009253 | ft/ft |
| Depth | 5.50 | ft |
| Flow Area | 23.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 4.90 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 008226 | ft/ft |
| Velocity | 13.60 | ft/s |
| Velocity Head | 2.87 | ft |
| Specific Energ | 8.37 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 347.45 | cfs |
| Discharge Full | 323.00 | cfs |
| Slope Full | 009253 | ft/ft |
| Flow Type | N/A | |

# PIPE 68
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 24 | in |
| Discharge | 24.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 011256 | ft/ft |
| Depth | 2.00 | ft |
| Flow Area | 3.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.74 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 010303 | ft/ft |
| Velocity | 7.64 | ft/s |
| Velocity Head | 0.91 | ft |
| Specific Energ; | 2.91 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 25.82 | cfs |
| Discharge Full | 24.00 | cfs |
| Slope Full | 011256 | ft/ft |
| Flow Type | N/A | |

# PIPE 69
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 66 | in |
| Discharge | :43.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 010434 | ft/ft |
| Depth | 5.50 | ft |
| Flow Area | 23.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 4.99 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 009126 | ft/ft |
| Velocity | 14.44 | ft/s |
| Velocity Head | 3.24 | ft |
| Specific Energ | 8.74 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 368.97 | cfs |
| Discharge Full | 343.00 | cfs |
| Slope Full | 010434 | ft/ft |
| Flow Type | N/A | |

## PIPE 70
## Worksheet for Circular Channel

| Project Description | |
| --- | --- |
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
| --- | --- | --- |
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 12.00 | cfs |

| Results | | |
| --- | --- | --- |
| Slope | 013052 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.31 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 011803 | ft/ft |
| Velocity | 6.79 | ft/s |
| Velocity Head | 0.72 | ft |
| Specific Energ | 2.22 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 12.91 | cfs |
| Discharge Full | 12.00 | cfs |
| Slope Full | 013052 | ft/ft |
| Flow Type | N/A | |

# PIPE 71
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 30 | in |
| Discharge | 38.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 008584 | ft/ft |
| Depth | 2.50 | ft |
| Flow Area | 4.9 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.08 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 008336 | ft/ft |
| Velocity | 7.74 | ft/s |
| Velocity Head | 0.93 | ft |
| Specific Energ: | 3.43 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 40.88 | cfs |
| Discharge Full | 38.00 | cfs |
| Slope Full | 008584 | ft/ft |
| Flow Type | N/A | |

# PIPE 72
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forı |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 30 | in |
| Discharge | 18.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 013696 | ft/ft |
| Depth | 2.50 | ft |
| Flow Area | 4.9 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.27 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 011968 | ft/ft |
| Velocity | 9.78 | ft/s |
| Velocity Head | 1.49 | ft |
| Specific Energ | 3.99 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 51.63 | cfs |
| Discharge Full | 48.00 | cfs |
| Slope Full | 013696 | ft/ft |
| Flow Type | N/A | |

# PIPE 73
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 66 | in |
| Discharge | ;77.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 012605 | ft/ft |
| Depth | 5.50 | ft |
| Flow Area | 23.8 | $ft^2$ |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 5.12 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 010900 | ft/ft |
| Velocity | 15.87 | ft/s |
| Velocity Head | 3.91 | ft |
| Specific Energ | 9.41 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 405.54 | cfs |
| Discharge Full | 377.00 | cfs |
| Slope Full | 012605 | ft/ft |
| Flow Type | N/A | |

# PIPE 74
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 66 | in |
| Discharge | :92.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 013628 | ft/ft |
| Depth | 5.50 | ft |
| Flow Area | 23.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 5.17 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 011778 | ft/ft |
| Velocity | 16.50 | ft/s |
| Velocity Head | 4.23 | ft |
| Specific Energ: | 9.73 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 421.68 | cfs |
| Discharge Full | 392.00 | cfs |
| Slope Full | 013628 | ft/ft |
| Flow Type | N/A | |

# PIPE 75
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forı |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 12.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 013052 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.31 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 011803 | ft/ft |
| Velocity | 6.79 | ft/s |
| Velocity Head | 0.72 | ft |
| Specific Energ: | 2.22 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 12.91 | cfs |
| Discharge Full | 12.00 | cfs |
| Slope Full | 013052 | ft/ft |
| Flow Type | N/A | |

# PIPE 76
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 18 | in |
| Discharge | 10.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 009064 | ft/ft |
| Depth | 1.50 | ft |
| Flow Area | 1.8 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.22 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 009206 | ft/ft |
| Velocity | 5.66 | ft/s |
| Velocity Head | 0.50 | ft |
| Specific Energ: | 2.00 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 10.76 | cfs |
| Discharge Full | 10.00 | cfs |
| Slope Full | 009064 | ft/ft |
| Flow Type | N/A | |

# PIPE 77
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slop€ |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 24 | in |
| Discharge | 17.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 005648 | ft/ft |
| Depth | 2.00 | ft |
| Flow Area | 3.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.49 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 006937 | ft/ft |
| Velocity | 5.41 | ft/s |
| Velocity Head | 0.46 | ft |
| Specific Energ | 2.46 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 18.29 | cfs |
| Discharge Full | 17.00 | cfs |
| Slope Full | 005648 | ft/ft |
| Flow Type | N/A | |

# PIPE 78
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | 0.013 | |
| Diameter | 78 | in |
| Discharge | ;26.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 010067 | ft/ft |
| Depth | 6.50 | ft |
| Flow Area | 33.2 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 5.92 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 008788 | ft/ft |
| Velocity | 15.85 | ft/s |
| Velocity Head | 3.90 | ft |
| Specific Energ; | 10.40 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 565.82 | cfs |
| Discharge Full | 526.00 | cfs |
| Slope Full | 010067 | ft/ft |
| Flow Type | N/A | |

# PIPE 79
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 42 | in |
| Discharge | 92.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 008363 | ft/ft |
| Depth | 3.50 | ft |
| Flow Area | 9.6 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.97 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 007893 | ft/ft |
| Velocity | 9.56 | ft/s |
| Velocity Head | 1.42 | ft |
| Specific Energ | 4.92 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 98.96 | cfs |
| Discharge Full | 92.00 | cfs |
| Slope Full | 008363 | ft/ft |
| Flow Type | N/A | |

# PIPE 80
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 30 | in |
| Discharge | 16.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 012579 | ft/ft |
| Depth | 2.50 | ft |
| Flow Area | 4.9 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.24 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 011106 | ft/ft |
| Velocity | 9.37 | ft/s |
| Velocity Head | 1.36 | ft |
| Specific Energ: | 3.86 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 49.48 | cfs |
| Discharge Full | 46.00 | cfs |
| Slope Full | 012579 | ft/ft |
| Flow Type | N/A | |

# PIPE 81
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 24 | in |
| Discharge | 37.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 026753 | ft/ft |
| Depth | 2.00 | ft |
| Flow Area | 3.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.94 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 023483 | ft/ft |
| Velocity | 11.78 | ft/s |
| Velocity Head | 2.16 | ft |
| Specific Energ | 4.16 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 39.80 | cfs |
| Discharge Full | 37.00 | cfs |
| Slope Full | 026753 | ft/ft |
| Flow Type | N/A | |

# PIPE 82
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 36 | in |
| Discharge | 38.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 010395 | ft/ft |
| Depth | 3.00 | ft |
| Flow Area | 7.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.63 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 009393 | ft/ft |
| Velocity | 9.62 | ft/s |
| Velocity Head | 1.44 | ft |
| Specific Energ | 4.44 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 73.15 | cfs |
| Discharge Full | 68.00 | cfs |
| Slope Full | 010395 | ft/ft |
| Flow Type | N/A | |

# PIPE 83
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 36 | in |
| Discharge | 79.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 014030 | ft/ft |
| Depth | 3.00 | ft |
| Flow Area | 7.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.76 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 012178 | ft/ft |
| Velocity | 11.18 | ft/s |
| Velocity Head | 1.94 | ft |
| Specific Energ | 4.94 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 84.98 | cfs |
| Discharge Full | 79.00 | cfs |
| Slope Full | 014030 | ft/ft |
| Flow Type | N/A | |

# PIPE 84
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 24 | in |
| Discharge | 28.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 015321 | ft/ft |
| Depth | 2.00 | ft |
| Flow Area | 3.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 1.83 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 013343 | ft/ft |
| Velocity | 8.91 | ft/s |
| Velocity Head | 1.23 | ft |
| Specific Energ | 3.23 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 30.12 | cfs |
| Discharge Full | 28.00 | cfs |
| Slope Full | 015321 | ft/ft |
| Flow Type | N/A | |

# PIPE 85
## Worksheet for Circular Channel

| Project Description | |
|---|---|
| Worksheet | STORM SEWE |
| Flow Element | Circular Chann |
| Method | Manning's Forr |
| Solve For | Full Flow Slope |

| Input Data | | |
|---|---|---|
| Mannings Coeffic | ).013 | |
| Diameter | 36 | in |
| Discharge | 36.00 | cfs |

| Results | | |
|---|---|---|
| Slope | 009793 | ft/ft |
| Depth | 3.00 | ft |
| Flow Area | 7.1 | ft² |
| Wetted Perime | 0.00 | ft |
| Top Width | 0.00 | ft |
| Critical Depth | 2.60 | ft |
| Percent Full | 100.0 | % |
| Critical Slope | 008971 | ft/ft |
| Velocity | 9.34 | ft/s |
| Velocity Head | 1.35 | ft |
| Specific Energ | 4.35 | ft |
| Froude Numbe | 0.00 | |
| Maximum Disc | 71.00 | cfs |
| Discharge Full | 66.00 | cfs |
| Slope Full | 009793 | ft/ft |
| Flow Type | N/A | |

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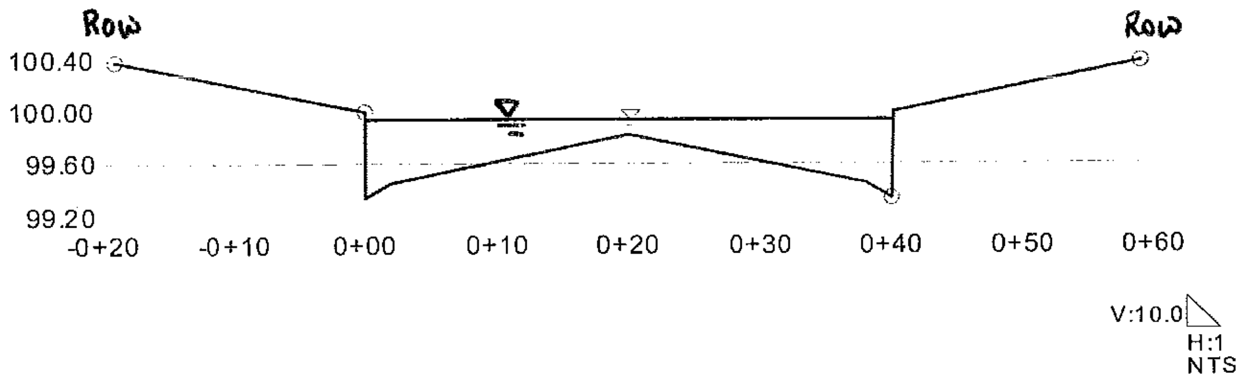
# STREET CAPACITY

# Cross Section
## Cross Section for Irregular Channel

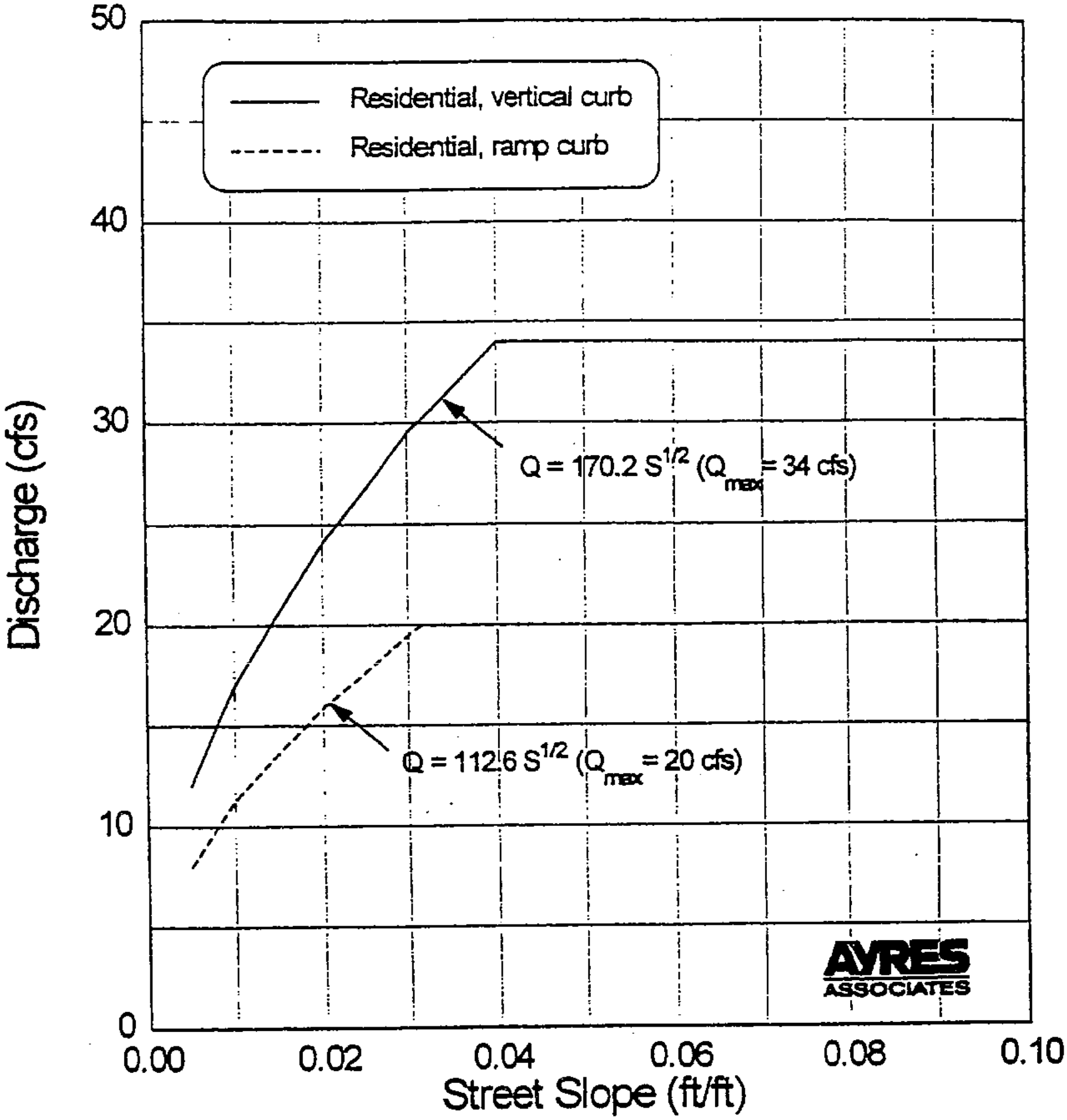
| Project Description | |
|---|---|
| Worksheet | Issaquah DP2( |
| Flow Element | Irregular Chan |
| Method | Manning's Forr |
| Solve For | Channel Depth |

| Section Data | | |
|---|---|---|
| Mannings Coefficie | 0.013 | |
| Slope | 0.010000 | ft/ft |
| Water Surface Elev. | 99.93 | ft |
| Elevation Range | .33 to 100.38 | |
| Discharge | 65.00 | cfs |

<34cfs/side



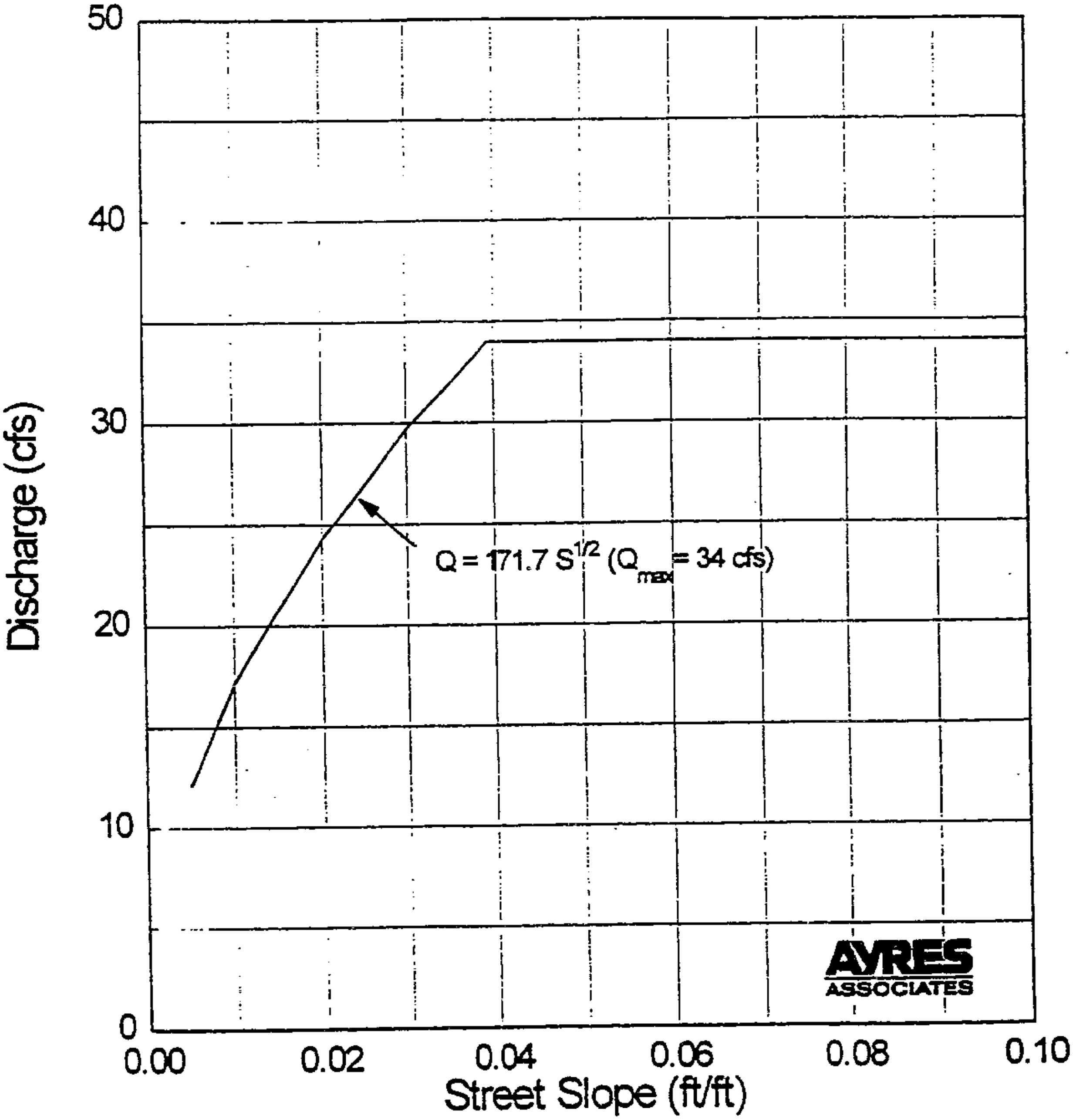
RESIDENTIAL STREET (34' Flowline to flowline)




Interim Release October 12, 1994
City of Colorado Springs

Use this graph to determine the allowable street capacity per side, initial storm, for the typical street section using a 2% crown.

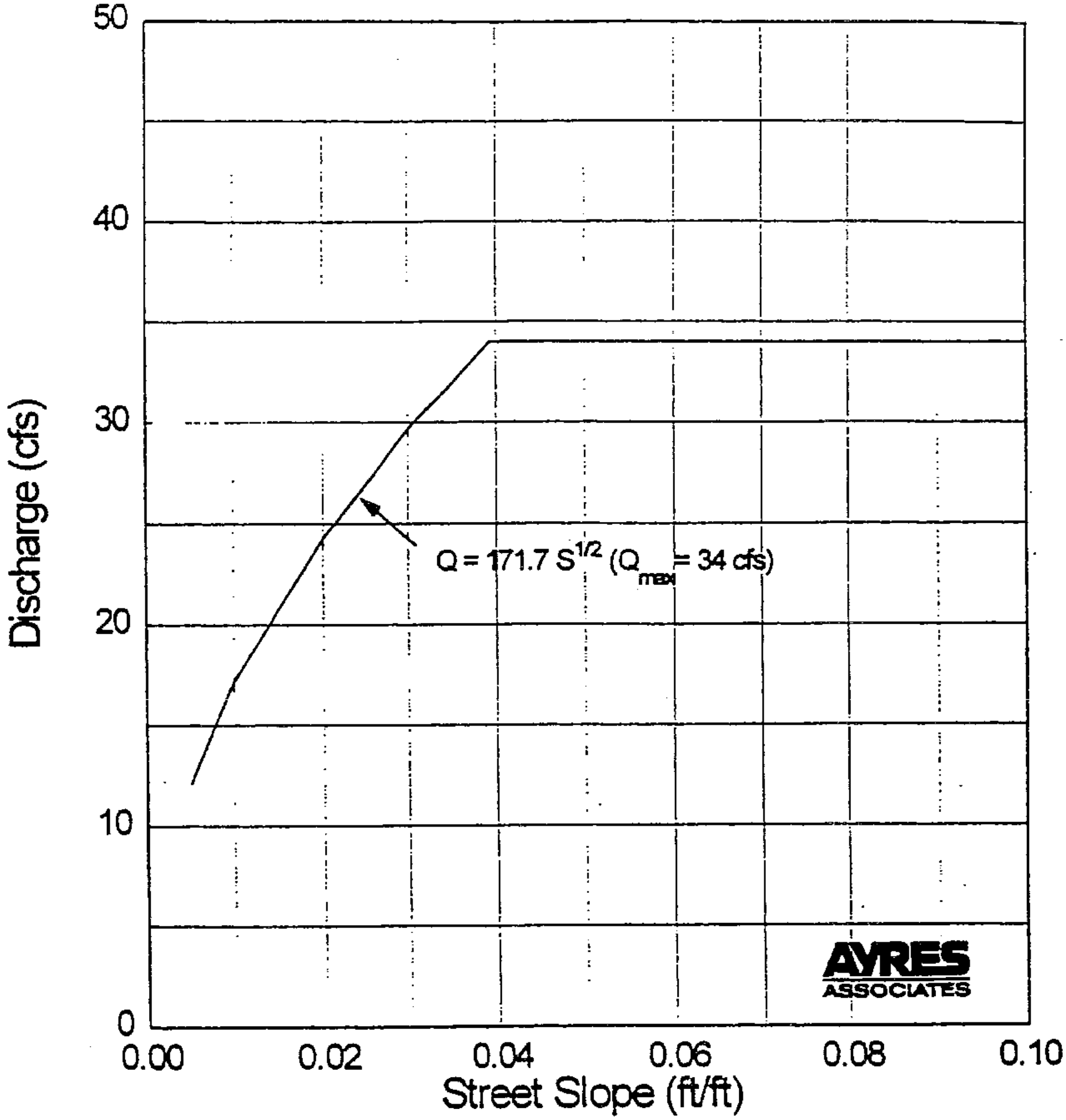
COLLECTOR STREETS (Major and Minor)




**Interim Release October 12, 1994**
**City of Colorado Springs**

Use this graph to determine the allowable street capacity per side, initial storm, for the typical street section using a 2% crown. No flow may cross the crown.

## ARTERIAL STREETS (Major and Minor)




**Interim Release October 12, 1994**
**City of Colorado Springs**

Use this graph to determine the allowable street capacity per side, initial storm, for the typical street section using a 2% crown. The curve corresponds to 6" depth @ flowline, 20 foot flow spread. No flow may cross the crown. Must keep one ten foot lane free of water in each direction.

JOB NUMBER:
1016.60

7/23/2004

# STETSON RIDGE SUBDIVISION FILING NO. 3/4

**Worksheet:** Street Capacity

**Residential Street:** (34' Flowline to Flowline)

**Curb Type:** Ramp

**Base Equation:** $Q = 112.6\ S^{1/2}$

| Design Point No. | Street Slope (ft/ft) | 5 Yr. Capacity (cfs) | 5 Yr. Event (cfs) | Design Result |
|---|---|---|---|---|
| 2 | 0.013 | 12.6 | 7 | Acceptable |
| 3 | 0.013 | 12.6 | 2 | Acceptable |
| 4 | 0.024 | 17.4 | 3 | Acceptable |
| 5 | 0.024 | 17.4 | 3 | Acceptable |
| 12 | 0.015 | 13.8 | 8 | Acceptable |
| 13 | 0.015 | 13.8 | 2 | Acceptable |
| 14 | 0.010 | 11.3 | 4 | Acceptable |
| 15 | 0.010 | 11.3 | 1 | Acceptable |
| 16 | 0.010 | 11.3 | 3 | Acceptable |
| 17 | 0.010 | 11.3 | 3 | Acceptable |
| 18 | 0.023 | 17.2 | 7 | Acceptable |
| 19 | 0.023 | 17.2 | 4 | Acceptable |
| 20 | 0.013 | 12.8 | 6 | Acceptable |
| 21 | 0.013 | 12.8 | 3 | Acceptable |
| 22 | 0.018 | 14.9 | 4 | Acceptable |
| 23 | 0.018 | 14.9 | 7 | Acceptable |
| 26 | 0.022 | 16.5 | 7 | Acceptable |
| 27 | 0.022 | 16.5 | 12 | Acceptable |
| 28 | 0.015 | 13.8 | 8 | Acceptable |
| 29 | 0.015 | 13.8 | 2 | Acceptable |
| 32 | 0.018 | 14.9 | 9 | Acceptable |
| 33 | 0.018 | 14.9 | 7 | Acceptable |
| 34 | 0.016 | 14.4 | 5 | Acceptable |
| 35 | 0.016 | 14.4 | 2 | Acceptable |
| 44 | 0.014 | 13.2 | 12 | Acceptable |
| 45 | 0.014 | 13.2 | 12 | Acceptable |
| 50 | 0.026 | 18.2 | 6 | Acceptable |
| 51 | 0.026 | 18.2 | 13 | Acceptable |
| 52 | 0.02 | 15.9 | 3 | Acceptable |
| 53 | 0.02 | 15.9 | 1 | Acceptable |
| 54 | 0.015 | 13.8 | 10 | Acceptable |
| 55 | 0.015 | 13.8 | 13 | Acceptable |

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# DRAINAGE MAP