

DEVIATION REQUEST (Attach diagrams, figures, and other documentation to clarify request)

A deviation from the standards of or in Section 3.3.1.J.2 of the Engineering Criteria Manual (ECM) is requested.

Identify the specific ECM standard which a deviation is requested:

Section 3.3.1.J.2 "Where the conduit size increases, the inside top slope of the conduits shall be continuous in elevation. Change in conduit shall be accomplished in a reinforced concrete manhole or cleanout structure only."

State the reason for the requested deviation:

Storm MH-35 and Storm MH-17: A manhole drop greater than one foot (without matching inside top of conduit elevations) is requested in order to provide acceptable velocities within the proposed storm sewer and optimize the elevation at which the storm sewer enters the proposed East Pond full spectrum detention pond for the proposed development. The existing sanitary sewer presents a challenge for the installation of the storm sewer. Without the drop manhole storm sewer will be placed in deep installations (greater than 18 feet) due to the size of the pipe and to avoid sanitary sewer service conflicts of the existing sanitary sewer. By using the drop at Storm MH-35, the storm sewer is above the services within Sunday Gulch (MH-17) and at the intersection of Falling Rock and Big Johnson Drive (upstream of MH-35) with a more conventional installation and the deep sewer installation is limited to short segments just upstream of the East Pond Detention Facility.

Slopes and associated water velocities within the storm sewer system are optimized to be just below the allowable maximum velocity allowed for the Q100 event. The two drop manholes are vital components of this design and enable more easily maintainable depths of cover and avoidance of the many potential utility conflicts within the site.

Explain the proposed alternative and compare to the ECM standards (May provide applicable regional or national standards used as basis):

Drop manholes in excess of 1-ft have been approved under the City of Colorado Springs DCM Volume 1, Chapter 9, Section 6.4 (regional standard) for similar situations within adjacent municipalities. Drops greater than 1-ft require additional concrete strength and scour protection which is proposed with this design in the form of Class D concrete for the manhole and provision of a 1' sump for energy dissipation.

LIMITS OF CONSIDERATION

(At least one of the conditions listed below must be met for this deviation request to be considered.)

- The ECM standard is inapplicable to the particular situation.
- Topography, right-of-way, or other geographical conditions or impediments impose an undue hardship and an equivalent alternative that can accomplish the same design objective is available and does not compromise public safety or accessibility.
- A change to a standard is required to address a specific design or construction problem, and if not modified, the standard will impose an undue hardship on the applicant with little or no material benefit to the public.

Provide justification:

With the sanitary sewer currently installed within Filing One, the storm sewer installation needs to coordinate to avoid conflict with the existing Sanitary sewer main and associated sanitary sewer services. The design as presented, eliminates deep storm sewer installation that would require excessive shoring and sanitary sewer protection (because it would have been installed below the sanitary) and potentially dangerous installation and long-term deep manhole access points for maintenance. Downstream of the drop manhole, the storm sewer is adjusted to a flatter grade to daylight to the existing pond and does not require a steeper pipe slope which would increase velocities (above 18 fps).

CRITERIA FOR APPROVAL

Per ECM section 5.8.7 the request for a deviation may be considered if the request is **not based exclusively on financial considerations**. The deviation must not be detrimental to public safety or surrounding property. The applicant must include supporting information demonstrating compliance with **all of the following criteria**:

The deviation will achieve the intended result with a comparable or superior design and quality of improvement.

Per Section 5.8 of the ECM, ***“Section 5.8 of the ECM establishes a mechanism whereby an engineering design standard can be modified when if strictly adhered to, would cause unnecessary hardship or unsafe design because of topographical or other conditions particular to the site, and that a departure may be made without destroying the intent of such provision”***

The design revision provides a superior design to the storm drain with relation to the existing utility constraints, conventional construction practices and enables the pipe velocities to meet EPC criteria.

The deviation will not adversely affect safety or operations.

The proposed deviation will not adversely impact safety or operations by allowing the shallow installation of the storm drain and creating shallower manholes instead of deep (greater than 18-ft) access manholes for maintenance. Construction safety will be enhanced because the installation will not require additional protective shoring and working around existing installed utilities.

The deviation will not adversely affect maintenance and its associated cost.

Proposed access to the drop manhole will be in conformance with all pertinent safety and maintenance guidelines and will not increase maintenance costs.

The deviation will not adversely affect aesthetic appearance.

Aesthetic appearance will not be changed as the proposed deviation is a storm manhole and will appear as such in the field.

The deviation meets the design intent and purpose of the ECM standards.

By raising the upstream storm pipe to avoid utility conflict with proposed sanitary sewer, and by lowering the downstream pipe to reduce pipe velocities/HGL's to within acceptable range, the 3.56-foot drop meets the design intent and purpose of the ECM standards.

The deviation meets the control measure requirements of Part I.E.3 and Part I.E.4 of the County's MS4 permit, as applicable.

The proposed deviation is in conformance with Part I.E.3 and Part I.E.4 of the County's MS4 permit.

REVIEW AND RECOMMENDATION:

Approved by the ECM Administrator

This request has been determined to have met the criteria for approval. A deviation from Section _____ of the ECM is hereby granted based on the justification provided.

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Denied by the ECM Administrator

This request has been determined not to have met criteria for approval. A deviation from Section _____ of the ECM is hereby denied.

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ECM ADMINISTRATOR COMMENTS/CONDITIONS:

1.1. PURPOSE

The purpose of this resource is to provide a form for documenting the findings and decision by the ECM Administrator concerning a deviation request. The form is used to document the review and decision concerning a requested deviation. The request and decision concerning each deviation from a specific section of the ECM shall be recorded on a separate form.

1.2. BACKGROUND

A deviation is a critical aspect of the review process and needs to be documented to ensure that the deviations granted are applied to a specific development application in conformance with the criteria for approval and that the action is documented as such requests can point to potential needed revisions to the ECM.

1.3. APPLICABLE STATUTES AND REGULATIONS

Section 5.8 of the ECM establishes a mechanism whereby an engineering design standard can be modified when if strictly adhered to, would cause unnecessary hardship or unsafe design because of topographical or other conditions particular to the site, and that a departure may be made without destroying the intent of such provision.

1.4. APPLICABILITY

All provisions of the ECM are subject to deviation by the ECM Administrator provided that one of the following conditions is met:

- The ECM standard is inapplicable to a particular situation.
- Topography, right-of-way, or other geographical conditions or impediments impose an undue hardship on the applicant, and an equivalent alternative that can accomplish the same design objective is available and does not compromise public safety or accessibility.
- A change to a standard is required to address a specific design or construction problem, and if not modified, the standard will impose an undue hardship on the applicant with little or no material benefit to the public.

1.5. TECHNICAL GUIDANCE

The review shall ensure all criteria for approval are adequately considered and that justification for the deviation is properly documented.

1.6. LIMITS OF APPROVAL

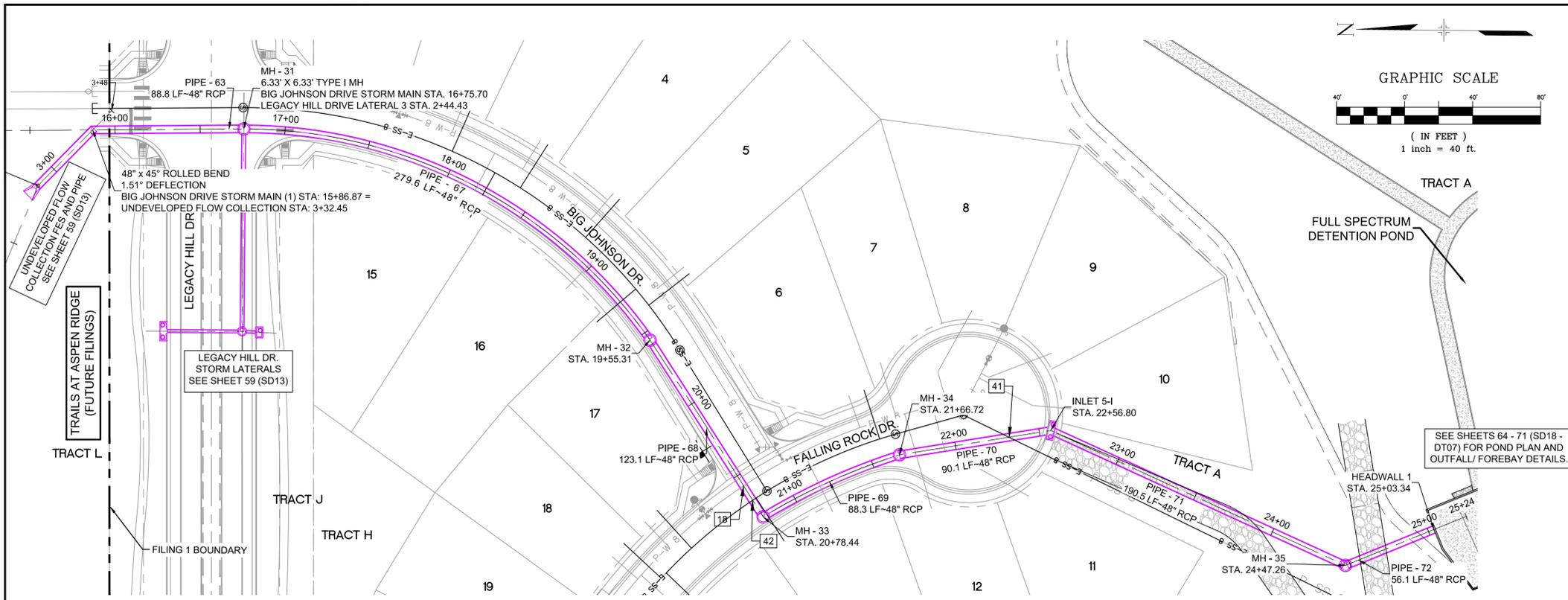
Whether a request for deviation is approved as proposed or with conditions, the approval is for project-specific use and shall not constitute a precedent or general deviation from these Standards.

1.7. REVIEW FEES

A Deviation Review Fee shall be paid in full at the time of submission of a request for deviation. The fee for Deviation Review shall be as determined by resolution of the BoCC.

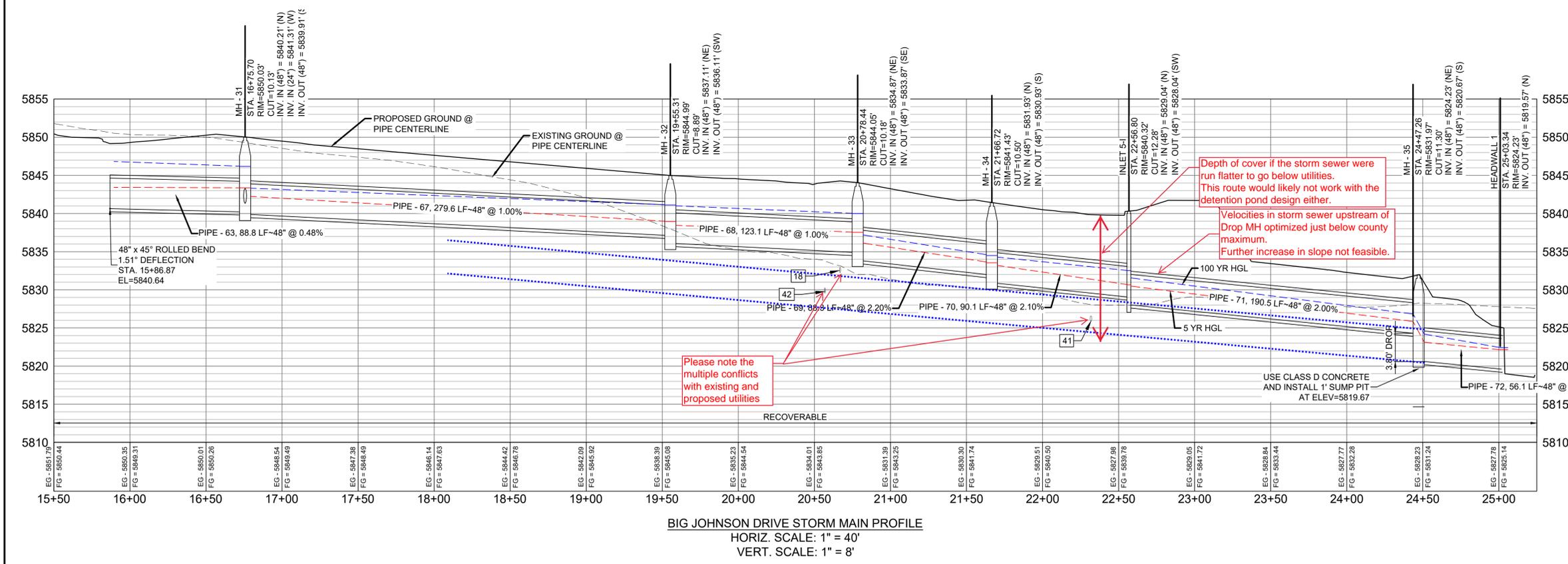


Know what's below.
Call before you dig.



| UTILITY CROSSING DETAILS | | | | |
|--------------------------|---------------------------|-------------------------|--------------------------|------------|
| CROSSING # | N & E | TOP OF PIPE | BTM OF PIPE | SEPARATION |
| 18 | N 6,527.71 E 13,794.11 | 8" PVC WATER 5830.27 | 48" RCP STORM 5834.68 | 4.52' |
| 41 | N 6,373.53 E 13,823.63 | 8" PVC SAN 5826.60 | 48" RCP STORM 5829.29 | 2.69' |
| 42 | N 6,522.39 E 13,785.59 | 8" PVC SAN 5832.96 | 48" RCP STORM 5834.52 | 1.56' |

| STRUCTURE TABLE | | | |
|-----------------|---------------------------------|--|---------------------------|
| NAME | TYPE | DETAILS | N & E |
| HEADWALL 1 | 25'-1/2" HEADWALL | RIM = 5824.23 PIPE - 72 INV IN (48") = 5819.57 | N: 6121.72 E: 13768.57 |
| INLET 5-I | 10' SUMP TYPE R INLET (1' DROP) | RIM = 5840.32 PIPE - 70 INV IN (48") = 5829.04 PIPE - 71 INV OUT (48") = 5828.04 | N: 6346.94 E: 13826.64 |
| MH - 31 | 6.33' X 6.33' TYPE I MH | RIM = 5850.03 PIPE - 63 INV IN (48") = 5840.21 PIPE - 64 INV IN (24") = 5841.31 PIPE - 67 INV OUT (48") = 5839.91 | N: 6821.46 E: 14003.48 |
| MH - 32 | 6.33' X 6.33' TYPE I 1' DROP MH | RIM = 5844.99 PIPE - 67 INV IN (48") = 5837.11 PIPE - 68 INV OUT (48") = 5836.11 | N: 6582.59 E: 13789.65 |
| MH - 33 | 6.33' X 6.33' TYPE I 1' DROP MH | RIM = 5844.05 PIPE - 68 INV IN (48") = 5834.87 PIPE - 69 INV OUT (48") = 5833.87 | N: 6516.10 E: 13776.02 |
| MH - 34 | 6.33' X 6.33' TYPE I 1' DROP MH | RIM = 5841.43 PIPE - 69 INV IN (48") = 5831.93 PIPE - 70 INV OUT (48") = 5830.93 | N: 6435.89 E: 13812.37 |
| MH - 35 | 6.33' X 6.33' TYPE I 1' DROP MH | RIM = 5831.97 PIPE - 71 INV IN (48") = 5824.23 PIPE - 72 INV OUT (48") = 5820.67 | N: 6173.69 E: 13747.51 |
| MH - 204 | 6.33' X 6.33' TYPE I MH | RIM = 5849.18 PIPE - 203 INV IN (48") = 5840.84 PIPE - 223 INV IN (18") = 5843.34 PIPE - 222 INV IN (18") = 5843.34 PIPE - 232 INV OUT (48") = 5840.74 | N: 6927.98 E: 14002.74 |

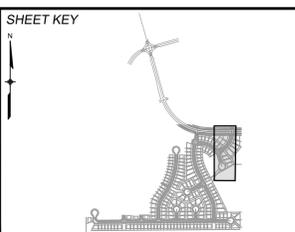


| PIPE TABLE | | | | |
|------------|-------------|--------|-------|---------|
| PIPE NAME | BEARING | LENGTH | SLOPE | SIZE |
| PIPE - 68 | S57°19'01"W | 123.1' | 1.00% | 48" RCP |
| PIPE - 72 | S22°03'30"E | 56.1' | 1.96% | 48" RCP |
| PIPE - 71 | S24°32'55"W | 190.5' | 2.00% | 48" RCP |
| PIPE - 63 | S00°23'44"E | 88.8' | 0.48% | 48" RCP |
| PIPE - 70 | S09°06'55"E | 90.1' | 2.10% | 48" RCP |

| PIPE TABLE | | | | | |
|------------|---------|--------------|---------|--------|---------|
| PIPE NAME | RADIUS | CHORD LENGTH | LENGTH | SLOPE | SIZE |
| PIPE - 67 | 292.32' | 269.07' | 279.60' | 1.000% | 48" RCP |
| PIPE - 69 | 368.81' | 88.06' | 88.27' | 2.200% | 48" RCP |

- NOTES:
- ALL STATION, OFFSET, AND NORTHING/EASTING VALUES ARE TO THE CENTER OF ALL STRUCTURES UNLESS OTHERWISE NOTED.
 - PIPE LENGTHS ARE MEASURED FROM CENTER TO CENTER OF ALL STRUCTURES.
 - ALL PIPE BENDS ANGLES ARE MEASURED FROM THE CENTER OF PIPE.
 - CONTRACTOR TO FIELD VERIFY HORIZONTAL AND VERTICAL LOCATION OF EXISTING STRUCTURES.
 - TOP OF BOX ELEVATIONS GIVEN FOR CDOT TYPE R INLETS REFER TO THE COUNTY STANDARD DETAIL FOR CORRESPONDING DESIGN ELEVATIONS.
 - ALL RCP PIPE SHALL BE CLASS III UNLESS OTHERWISE NOTED.
 - PIPES OF DIFFERENT SIZES ARE TO BE MATCHED TO THE CROWN OF THE INSIDE WALL OF PIPE.
 - ALL TYPE C INLETS ARE TO COLORADO DEPARTMENT OF TRANSPORTATION STANDARD TYPE M-604-10.
 - PER THE EL PASO COUNTY ENGINEERING CRITERIA MANUAL, MANHOLES SHALL BE INSTALLED 1/8" BELOW THE SURFACE OF THE PAVEMENT ON THE LOWEST SIDE OF THE MANHOLE.
 - SECTIONS OF STORM PIPE WITH PRESSURE HEAD DURING THE 100 YR STORM SHALL USE WATERTIGHT JOINTS WITH A 100 YR SERVICE LIFE PER ECM 3.3.1.B.2.

| | |
|---|-------------|
| REFERENCE DRAWINGS | |
| No. | DATE |
| | DESCRIPTION |
| | REVISIONS |
| | BY |
| COMPUTER FILE MANAGEMENT | |
| FILE NAME: s:\19.886.011 (trails at aspen ridge - f1)\100 Dwg\104 plan sets\construction plans\road & storm plans\SD13-14.dwg | |
| CTB FILE: --- | |
| PLOT DATE: January 6, 2020 9:50:01 AM | |
| THIS DRAWING IS CURRENT AS OF PLOT DATE AND MAY BE SUBJECT TO CHANGE. | |



BENCHMARK
COLORADO SPRINGS UTILITIES (FIMS) MONUMENT F206
A BERTSEN TOP SECURITY MONUMENT SYSTEM WITH A 3.5-INCH DIAMETER ALUMINUM CAP IN A ROAD BOX, LOCATED ON THE NORTHWEST CORNER OF FONTAINE BOULEVARD AND POWERS BOULEVARD.
ELEVATION - 5897.89' U.S. SURVEY FT

BASIS OF BEARING
BEARINGS ARE BASED ON THE NORTH LINE OF THE NORTHWEST QUARTER OF SECTION 9, TOWNSHIP 15 SOUTH, RANGE 65 WEST OF THE 6TH P.M. SAID LINE BEARS S89°51'23"E FROM THE NORTHWEST CORNER OF SAID SECTION 9 (2 1/2' AULM. CAP PLS 17664) TO THE N 1/4 CORNER OF SAID SECTION 9 (3 1/2' AULM. CAP PLS 10377)



TRAILS AT ASPEN RIDGE

FILING NO. 1
ROADWAY & STORM IMPROVEMENT PLANS

STORM DRAIN PLAN & PROFILE

DESIGNED BY: KMZ
DRAWN BY: LCB
CHECKED BY: NMS

SCALE: HORIZ 1" = 40'
VERT 1" = 8'

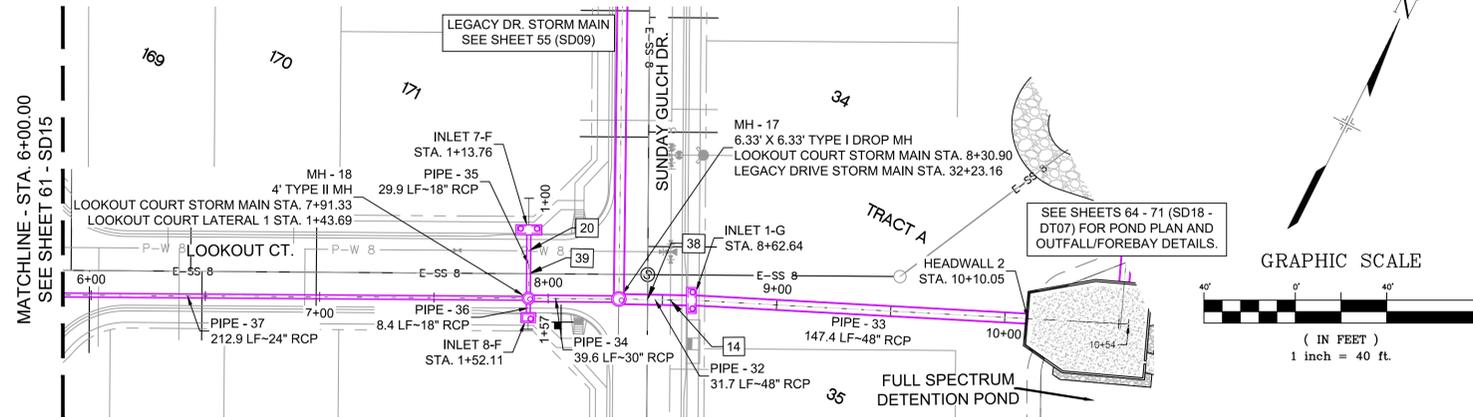
DATE ISSUED: SEPTEMBER, 2019

DRAWING No. 60 OF 73
SD14



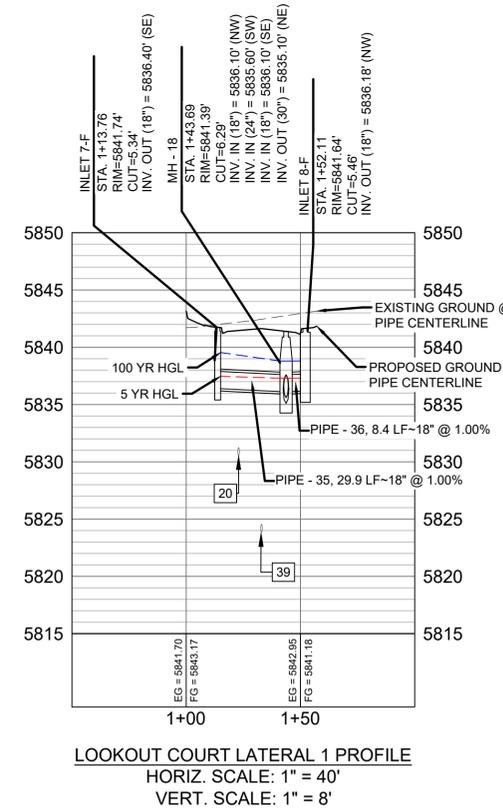
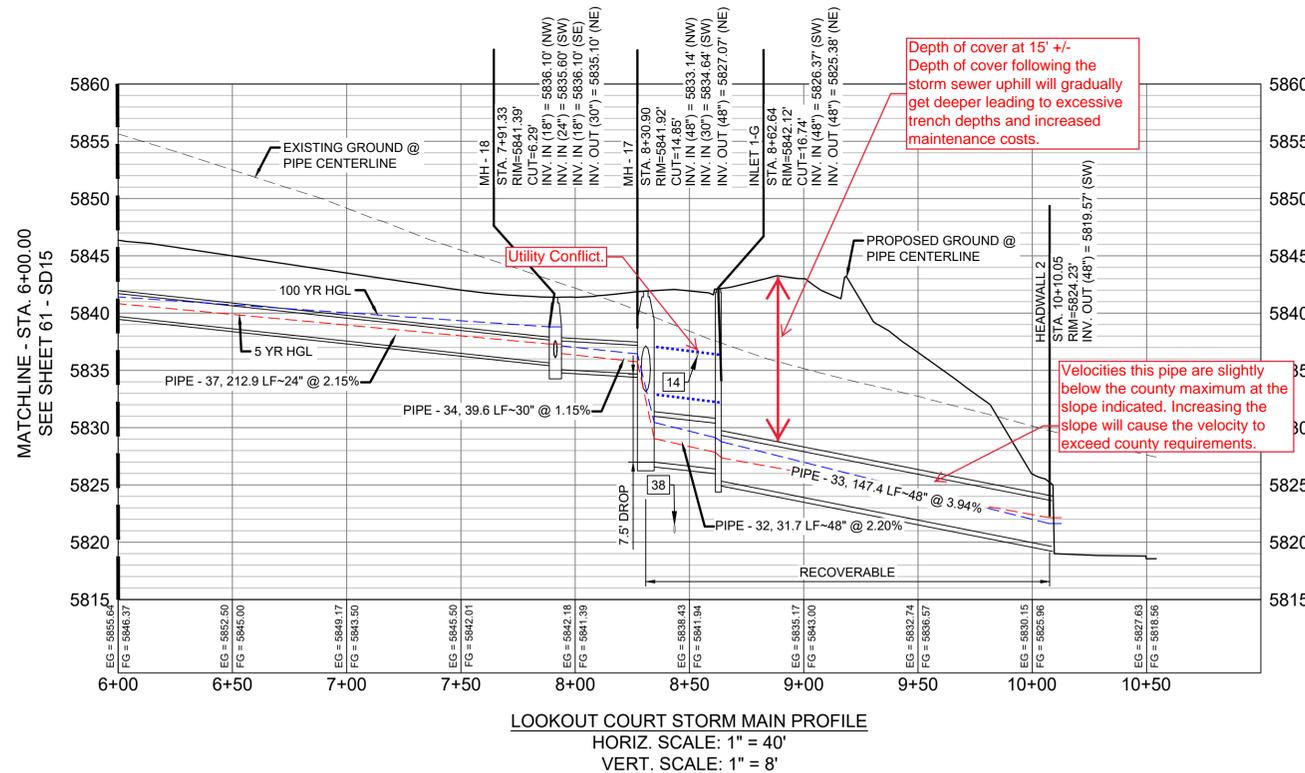
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| 14 | N 6,024.68 E 13,595.07 | 48" RCP STORM 5830.98 | 8" PVC WATER 5836.23 | 5.25' |
| 20 | N 6,015.43 E 13,530.21 | 8" PVC WATER 5831.26 | 18" RCP STORM 5836.10 | 4.84' |
| 38 | N 6,020.11 E 13,585.98 | 8" PVC SAN 5821.49 | 48" RCP STORM 5823.46 | 1.97' |
| 39 | N 6,006.40 E 13,534.70 | 8" PVC SAN 5824.56 | 18" RCP STORM 5836.00 | 11.44' |



Please note that the storm sewer system has been optimized to be below the county water velocity requirement of 18 ft/s and minimize depth of cover. The drop manhole is a vital component of this design.

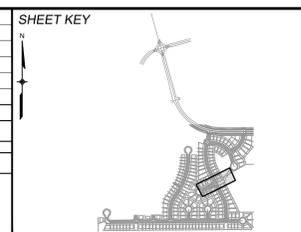
| STRUCTURE TABLE | | | |
|-----------------|-------------------------------------|--|---------------------------|
| NAME | TYPE | DETAILS | N & E |
| HEADWALL 2 | 24'-5 1/8" HEADWALL | RIM = 5824.23 PIPE - 33 INV IN (48") = 5819.57 | N: 6088.17 E: 13738.21 |
| INLET 1-G | 10' ON-GRADE TYPE R INLET (1' DROP) | RIM = 5842.12 PIPE - 32 INV IN (48") = 5826.37 PIPE - 33 INV OUT (48") = 5825.38 | N: 6028.42 E: 13603.45 |
| INLET 7-F | 10' SUMP TYPE R INLET | RIM = 5841.74 PIPE - 35 INV OUT (18") = 5836.40 | N: 6023.63 E: 13526.12 |
| INLET 8-F | 5' SUMP TYPE R INLET | RIM = 5841.64 PIPE - 36 INV OUT (18") = 5836.18 | N: 5989.35 E: 13543.28 |
| MH - 17 | 6.33' X 6.33' TYPE I DROP MH | PIPE - 31 INV IN (48") = 5833.14 PIPE - 34 INV IN (30") = 5834.64 PIPE - 32 INV OUT (48") = 5827.07 | N: 6014.58 E: 13574.89 |
| MH - 18 | 4' TYPE II MH | RIM = 5841.39 PIPE - 35 INV IN (18") = 5836.10 PIPE - 37 INV IN (24") = 5835.60 PIPE - 36 INV IN (18") = 5836.10 PIPE - 34 INV OUT (30") = 5835.10 | N: 5996.88 E: 13539.51 |



| PIPE TABLE | | | | |
|------------|-------------|--------|-------|---------|
| PIPE NAME | BEARING | LENGTH | SLOPE | SIZE |
| PIPE - 32 | S64°08'25"W | 31.7' | 2.20% | 48" RCP |
| PIPE - 34 | S63°25'00"W | 39.6' | 1.15% | 30" RCP |
| PIPE - 33 | N66°05'26"E | 147.4' | 3.94% | 48" RCP |
| PIPE - 37 | S63°24'17"W | 212.9' | 2.15% | 24" RCP |

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| COMPUTER FILE MANAGEMENT | | | |
| FILE NAME: s:\19.886.011 (trails at aspen ridge - f1)\100 Dwg\104 plan sets\construction plans\road & storm plans\SD15-16.dwg | | | |
| CTB FILE: --- | | | |
| PLOT DATE: January 6, 2020 9:53:13 AM | | | |
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PREPARED BY:

SEAL

TRAILS AT ASPEN RIDGE

FILING NO. 1
ROADWAY & STORM IMPROVEMENT PLANS

STORM DRAIN PLAN & PROFILE

| | | | |
|------------------|-----------------------|------------------------------|------------------|
| DESIGNED BY: KMZ | SCALE: HORIZ 1" = 40' | DATE ISSUED: SEPTEMBER, 2019 | DRAWING No. SD16 |
| DRAWN BY: LCB | VERT. 1" = 8' | SHEET 62 OF 73 | |
| CHECKED BY: NMS | | | |