MEMORANDUM

DATE: February 12, 2020

TO: Kari Parsons, PCD-Project Manager CCES Responses in RED

FROM: Jeff Rice, PCD-Engineering
719-520-7877

SUBJECT: SF-19-009– Retreat at Timber Ridge Filing 1
Second Submittal

Engineering Division
Planning and Community Development (PCD)-Engineering reviews plans and reports to ensure general conformance with El Paso County standards and criteria. The project engineer is responsible for compliance with all applicable criteria, including other governmental regulations. Notwithstanding anything depicted in the plans in words or graphic representation, all design and construction related to roads, storm drainage and erosion control shall conform to the standards and requirements of the most recent version of the relevant adopted El Paso County standards, including the Land Development Code (LDC), the Engineering Criteria Manual (ECM), the Drainage Criteria Manual (DCM), and the Drainage Criteria Manual Volume 2 (DCM2). Any deviations from regulations and standards must be requested, and approved by the ECM Administrator, in writing. Any modifications necessary to meet overlooked criteria after-the-fact will be entirely the developer's responsibility to rectify.

The comments include unresolved previous comments and new comments resulting from the re-submittal in **bold**. All previous comments that have been resolved have been noted or deleted. A written response to all comments and redlines is required for review of the re-submittal. **Note: no response to redline CD comments was found for the first review.** CD Responses were uploaded to EDARP under the optional documents. Also now provided Please arrange a meeting between the developer's team and County staff to review and discuss these comments and prepared revisions/responses prior to the next submittal. Additional comments may be generated on items added or revised after the original comments.

Note: The ECM was updated July 2, 2019 requiring updated plan requirements, checklists and forms in order for the County to maintain compliance with its MS4 permit. These comments reflect the updates. Noted

General / Letter of Intent / Deviations

1. Note: regarding the "Notice of Fair Share Reimbursement", reference LDC 8.7.2(D) - Process for Request and Approval of Fair Share Reimbursement. The request will be processed when all required items have been submitted, which is to be no earlier than the date of final plat approval and no later than one year after the date of completion of the improvement.
2. Show the proposed trail on all applicable plans. **Unresolved (not found).** The trail adjacent to this first Filing was shown and labeled on the drainage maps (sheets 2 & 4), GEC (sheet 4), Channel Plans (sheet 23). Now shown on Pond 1 Plan (sheet 25). For future trail not adjacent to Filing 1 please reference the approved Prelim. Plan.
3. Deviation requests were not found. Provide requests for the following and any other deviations:

a. **Resolved.**
b. **Resolved.**
c. Bridge/culvert design; if a deviation is proposed regarding DCM 6.4.2 (bridge freeboard) it should be requested as soon as possible. **Partially resolved; is the deviation for freeboard applicable? The culvert calculation sheets appear to possibly show adequate freeboard. See redlines if the deviation applies.** Deviation is no longer being requested. Design size of structure was adjusted to meet the DCM 6.4.2 (bridge freeboard) using FEMA flows of 2600 cfs.
d. **Per ECM Section 3.3.2.I.1: "All culverts within the County's right-of-way are required to be RCP (minimum Class 3). Other materials for storm pipe *may* be allowed, assuming a comparable service life can be achieved and the design criteria presented in this section are met." Additional information is required including materials certification of the proposed steel material's design life to discuss with the County Engineer. To be clear, the information needs to show that the proposed steel arch will provide a comparable service life to a reinforced concrete structure, or a concrete structure needs to be provided. Provide complete specifications including footing design details.** Additional proposed materials specifications now provided from manufacturer. Footing details also now provided with final structure design.

4. Provide a complete wetland mitigation plan. Documentation regarding adherence to the mitigation plan shall be provided to the Planning and Community Development Department by December 31 of each year beginning at the time of initial ground disturbing activities continuing for three years or until the USACE permit is closed. **Resolved.**
5. See Letter of Intent redlines. **Partially resolved; see updated redlines.** Revised
6. Address any proposed street lighting in the Letter of Intent. A license agreement will be required if streetlights are proposed within County rights-of-way. **Resolved; a license agreement template can be provided upon request. Plan reviews and coordination between MVEA and County staff is required.** Noted. Lighting plans and license agreement now provided.

Final Plat

1. **through 6 – Resolved.**
7. **Add the entity responsible for maintenance of the landscaping to note # 34.** Added

Transportation / Traffic Impact Study

1. **Resolved.**
2. **The Estates at TimberRidge project has been withdrawn by that applicant; specify on page 2 of the memorandum what improvements will be made to Arroya Lane with this project if the Estates project does not construct Arroya Lane to a gravel standard.** TIS revised

Final Drainage Report / Drainage Plans

1. Note: this review is cursory due to the need for additional information and analysis as described in the comments below. **Partially resolved; additional information is still required and may generate additional comments.** Noted

2. See FDR redlines. **Partially resolved; see updated redlines.** See FDR redline responses
3. Remaining SP-18-002 comments on the Sand Creek channel: **Partially resolved;**
    a. Address specifically how re-routing of flows to specific outfalls on the Sand Creek channel will affect the overall channel flows, velocities, volumes and depths. **Discussion not found.** Narrative now included on pages 7, 8, 14 and 15
    b. Address channel velocities, in the range of 8 to 11 fps per the FEMA study, above the 7 fps recommended in the DBPS, and any stabilization necessary above that called for in the DBPS… to be further addressed with detailed modeling in the FDR. **Partially resolved; add narrative to explain how the proposed improvements will reduce the channel velocities and shear stresses…** Additional narrative added on page 21 **The proposed design utilizes the natural vegetation as the main design feature. If the design as accepted, there will need to be details within the channel maintenance agreement stating that the HOA or district will be responsible for maintaining the vegetation, not the County.** As discussed in our meeting, upon final construction of the channel improvements including vegetation and wetland replacement, a warranty period will cover the initial "grow-in" timing for all new vegetation prior to the County accepting ownership and maintenance responsibilities of the channel.
    c. **Resolved.**
4. Regarding the Sand Creek channel:
    a. Provide a complete channel plan and profile. **Unresolved. The plans need to include all proposed improvements and conceptual future improvements up to the east side of Lot 9.** This area now included in Tract A, Filing 1 and additional improvement design included
    b. Provide maintenance access to the channel and box culvert. **Unresolved (complete access design not found).** Access ramps now clearly shown and labeled. Additional access ramp provided on south side of Poco Rd. crossing.
    c. If the channel is proposed to be County-maintained rather than metro district-maintained, improvements according to the DBPS need to be provided; address completely in the FDR. Additional improvements to those proposed in the DBPS may be needed to qualify for reimbursement and maintenance eligibility. If the developer desires reimbursement for the construction costs and for the County to maintain the improvements, the process in the DCM needs to be followed (reference DCM Sections 1.7 and 3.3). Noted. We understand the developer is responsible for maintenance of improved facilities during the warranty period and County will take over responsibility upon final acceptance. We also recognize and understand the drainage reimbursement criteria as we plan to request reimbursement/credits for any improvements shown in the DBPS.
    d. Verify culvert outlet protection design. It appears that a low tailwater basin/plunge pool may be necessary (DCM10.8.3/UDFCD 9.3.2.2). **Unresolved; reference DCM Section 6.4.3.** Plunge pool design now provided at outlet of culvert crossing at Poco Rd.
    e. **Resolved.**
    f. Specifically address geotechnical hazards including unstable slopes and how the channel improvements will fit in with the wetlands mitigation areas. A wetlands mitigation map will be required showing the proposed/required locations of mitigation (replacement areas) as overlapped with the necessary channel improvements. **Partially resolved; show all details on the complete channel plans. Also address the potentially unstable slopes to the east of lots 9-11.** Channel improvements now include grading of 3:1 slopes where existing

unstable slopes existed and providing selective rip-rap lining as needed adjacent to lots 9-11.

g. An O&M manual for permanent stormwater measures in Sand Creek will need to be provided prior to County acceptance of the channel; the template for this document will be provided to you when available. Noted

5. Regarding ditch protection calculations, long-term stability of native vegetation needs to be shown in areas where temporary ECB is proposed initially. Long runs of channel (over 200 feet) needing permanent long-term protection need a long-term design, such as ditch checks, drop structures or riprap. Address as appropriate. **Partially resolved; there are still long stretches of roadside ditch proposed to only receive TRM or ECB. If the long-term design does not include additional protection and the channel can not be shown to be vegetated and stable after construction additional improvements may be required prior to County acceptance of these roads.** Noted, see revised plans
6. Provide discussion of maintenance access and aspects of the preliminary design. Show access roads for ponds/permanent BMPs and channels on the drainage plans. Reference ECM 3.3.3.K. **Partially resolved; see redlines and other comments.** Additional access roads now provided
7. Provide a PDB/BMP Maintenance Agreement and Easement for district maintenance of PBMPs. The latest template for the Agreement can be e-mailed upon request.
8. **Resolved.**
9. The MS4 Post-Construction Documentation Forms and SDI Worksheets for FSD ponds and any permanent sediment basins will be reviewed with the next submittal. Provide the forms for all detention BMPs. Note: this project is in the Fountain Creek watershed, which requires strict adherence to state statute meaning any detention facilities must be required by the County's MS4 permit. **Partially resolved; ensure that all updated MS4 forms and SDI worksheets are submitted and permits for all embankments have been issued by the State Engineer.** Noted
10. Regarding the BMP O&M/I&M Plan, ensure that all stormwater control measures/BMPs are addressed and maintenance procedures provided corresponding to the final design. **Unresolved (not found).** IM Plan revised
11. Note: Any urban lot areas draining directly offsite may require an easement or other documentation from the adjoining owner(s) that the proposed developed condition is acceptable. Noted

<u>Construction Plans / Geotechnical Issues / Grading and Erosion Control Plan / SWMP</u>

1. Clearly show and label all required offsite easements. Provide permission/easement documentation or reception numbers. **Partially resolved; the NEPE template to attach to the temporary turnaround easement legal descriptions will be provided. Easements for utilities to the south need to be provided when available.** Noted
2. Revise pipe size/slope or provide a deviation request with adequate justification and specifications for watertight pressure pipe (ECM 3.3.1.D - exceeding short runs with a pressure head) where applicable. **Partially resolved; the deviation request is still required with adequate justification.** Plans updated and HGL's adjusted accordingly
3. **Resolved.**
4. Show and label all maintenance access roads and the trail on the plans. **Unresolved (not found); a separate plan clearly showing all maintenance access roads and the trail would be acceptable and would aid in review.** All access roads and trail are now clearly shown and labeled on plans.
5. **Resolved.**

6. Geotechnical issues: **Unresolved; separate Entech report referenced in response was not found.** Separate report now provided
    a. Provide the necessary additional geotechnical study for final design. Noted
    b. Address sheet pile and channel improvements and pond embankments. Contained within additional report and design
    c. Generally address stability of existing stock pond embankment(s) proposed to remain. Contained within additional report and design
7. If there will be USPS mail kiosk/cluster(s) in this subdivision provide location(s) and details. **Unresolved.** Now shown and approved by USPS
8. Ensure that all GEC Plan and SWMP checklist items (attached) are provided. GEC and SWMP checklists will be reviewed further with the next submittal. **As noted at the beginning of these comments, updated GEC and SWMP checklists are required to be provided by the design engineer. Provide with the next submittal. Instructions are provided below the list of attachments. Checklists can be found at:** Noted
9. **https://planningdevelopment.elpasoco.com/wp-content/uploads/Engineering/EngineeringDocuments/Copy-of-GEC-SWMP_Checklists.xlsx.**
10. See CD/GEC Plan redlines for additional comments and clarification of these comments. **Partially resolved; see updated redlines.** Noted
11. **Include GEC plans for all offsite construction (Arroya, water lines, sanitary sewer…).** Plans now included
12. **Provide detailed intersection grading where accessible pedestrian routes meeting ADA requirements (cross slopes specifically) are required (at stop conditions). Ensure that all pedestrian access routes comply with the requirements compiled in CDOT Design Guide Chapter 12:** Plans now included **https://www.codot.gov/business/designsupport/bulletins_manuals/design-bulletins/db-2018-4/view**
13. **Provide the new PBMP Applicability Form, which can be found at:** Now provided
14. **https://planningdevelopment.elpasoco.com/wp-content/uploads/Engineering/EngineeringDocuments/PBMP-Applicability-Form.docx.**
15. **An updated ESQCP form is required as part of ECM updates; provide with the next submittal. The form can be found at** Now provided
16. **https://planningdevelopment.elpasoco.com/wp-content/uploads/Engineering/EngineeringDocuments/Erosion-and-Stormwater-Quality-Control-Permitrev.2019.docx.**
17. **Utility Plans:**
    a. **Provide a copy of the necessary offsite easement(s) when available.** Noted
    b. **Ensure that the proposed Poco Road culverts are labeled properly.** Revised
    c. **Proposed improvements to Arroya Lane are shown; verify that the CDs include those improvements if Estates at Timberridge will not be constructing those improvements.** Arroya Lane will not be improved at this time to include public improvements. Only improvements per updated Fire commitment letter will be provided until platting adjacent to Arroya Lane occurs.

Forms / SIA / Surety Estimate Form

1. Provide the draft Subdivision Improvements Agreement (SIA). **Please provide in Word document format. Staff will coordinate with the County Attorney on revisions including the following:**
    a. **Minor revisions and updates.** See update

   b. **Possible addition of language regarding connection to offsite utility systems.** See revised
   c. **In regard to future County maintenance of the Sand Creek channel, addressing wetland mitigation requirements/responsibilities, timing, and maintenance.** Will add after County attorney reviews again
   d. **Transfer of responsibilities from HOA to metro district (if that is the case).** Noted
2. See FAE redlines. Note: FAE minimum costs may be revised in the near future requiring update of this FAE. **Partially resolved; see updated redlines.** See revised
3. See attached Engineering Final Submittal Checklist for reference. Noted

Attachments/Electronic Files Responses to all the following found in Engineering Responses under additional doccuments

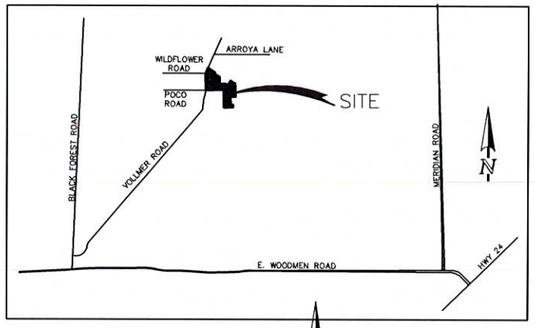
1. LOI redlines
2. Deviation request redlines
3. Final Drainage Report redlines
4. CD redlines
5. FAE redlines
6. Engineering Final Submittal Checklist

RETREAT AT TIMBERRIDGE FILING NO. 1

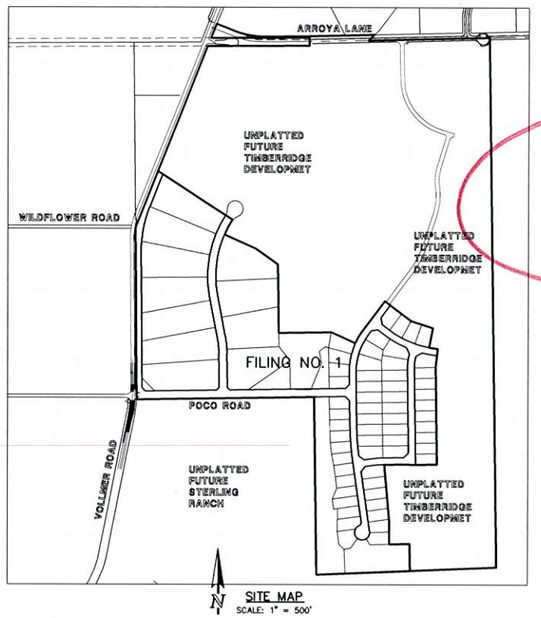
COUNTY OF EL PASO, STATE OF COLORADO

CONSTRUCTION DRAWINGS

AUGUST 2019



VICINITY MAP
N.T.S.



SITE MAP
SCALE: 1" = 500'

GENERAL CONSTRUCTION NOTES:

1. THE LOCATION OF EXISTING UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND MAY NOT INCLUDE ALL UTILITIES. THE EXCAVATION CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATED AND PRESERVE ANY AND ALL UTILITIES.
2. BEFORE COMMENCING ANY EXCAVATION, CALL **1-800-922-1987** FOR EXISTING UTILITY LOCATIONS.
3. THE CONTRACTOR WILL TAKE THE NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES FROM DAMAGE DUE TO THIS OPERATION. ANY DAMAGE TO THE UTILITIES WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND ANY SERVICE DISRUPTION WILL BE SETTLED BY THE CONTRACTOR.
4. ALL BACKFILL, SUB-BASE AND/OR BASE COURSE (CLASS 6) MATERIAL SHALL BE COMPACTED TO THE SOILS ENGINEER'S RECOMMENDATIONS, AND APPROVED BY EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT (PCD).
5. ALL STATIONING IS CENTERLINE UNLESS OTHERWISE INDICATED. ALL ELEVATIONS ARE CENTERLINE UNLESS OTHERWISE INDICATED.
6. THE CONTRACTOR SHALL REVEGETATE ALL DISTURBED AREAS AS SOON AS POSSIBLE AND EROSION CONTROL SHALL BE INSTALLED AND MAINTAINED IN A FUNCTIONAL MANNER AT ALL TIMES. DEVELOPER RESPONSIBLE FOR MAINTAINING DISTURBED AREAS UNTIL REVEGETATION IS COMPLETE.
7. ALL DISTURBED PAVEMENT EDGES SHALL BE CUT TO NEAT LINES. REPAIR SHALL CONFORM TO THE EPC ECM APPENDIX K – 1.2C.
8. ADDITIONAL EROSION CONTROL STRUCTURES MAY BE REQUIRED AT THE TIME OF CONSTRUCTION.
9. BUILDING CONTRACTORS WILL BE RESPONSIBLE FOR CONSTRUCTING POSITIVE DRAINAGE AWAY FROM ALL STRUCTURES.
10. ASPHALT THICKNESS AND BASE COURSE THICKNESS (COMPACTED) FOR ROADS SHALL BE PER DESIGN REPORT BY OWNER'S GEOTECHNICAL ENGINEER. OWNER'S GEOTECHNICAL ENGINEER TO BE ON SITE AT TIME OF ROAD CONSTRUCTION TO EVALUATE SOIL CONDITIONS AND DETERMINE IF ADDITIONAL MEASURES ARE NECESSARY TO ASSURE STABILITY OF THE NEW ROADS. PAVEMENT DESIGN SHALL BE APPROVED BY PLANNING AND COMMUNITY DEVELOPMENT PRIOR TO CONSTRUCTION.
11. THE CONTRACTOR SHALL REVEGETATE ALL DISTURBED AREAS WITHIN 21 DAYS OF SUBSTANTIAL GRADING COMPLETION. EROSION CONTROL SHALL BE INSTALLED AND MAINTAINED IN A FUNCTIONAL MANNER AT ALL TIMES. DEVELOPER IS RESPONSIBLE FOR MAINTAINING DISTURBED AREAS UNTIL REVEGETATION IS COMPLETE.
12. TYPE M RIP-RAP WITH 4" OF TYPE II GRANULAR BEDDING AND MIRAFI 180N OR EQUAL MAY BE SUBSTITUTED WHERE TYPE L RIP-RAP WITH MIRAFI FW 700 OR EQUAL IS SPECIFIED
13. ALL MATERIALS AND INSTALLATION PROCEDURES SHALL BE IN COMPLIANCE WITH ANY AND ALL APPLICABLE EL PASO COUNTY STANDARDS.

STANDARD NOTES FOR EL PASO COUNTY CONSTRUCTION PLANS:

1. ALL DRAINAGE AND ROADWAY CONSTRUCTION SHALL MEET THE STANDARDS AND SPECIFICATIONS OF THE CITY OF COLORADO SPRINGS/EL PASO COUNTY DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2, AND THE EL PASO COUNTY ENGINEERING CRITERIA MANUAL.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR THE NOTIFICATION AND FIELD NOTIFICATION OF ALL EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, BEFORE BEGINNING CONSTRUCTION. LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CALL 811 TO CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC).
3. CONTRACTOR SHALL KEEP A COPY OF THESE APPROVED PLANS, THE GRADING AND EROSION CONTROL PLAN, THE STORMWATER MANAGEMENT PLAN (SWMP), THE SOILS AND GEOTECHNICAL REPORT, AND THE APPROPRIATE DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS AT THE JOB SITE AT ALL TIMES, INCLUDING THE FOLLOWING:
   a. EL PASO COUNTY ENGINEERING CRITERIA MANUAL (ECM)
   b. CITY OF COLORADO SPRINGS/EL PASO COUNTY DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2
   c. COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION
   d. CDOT M & S STANDARDS
4. NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPTED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS FROM REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING. ANY MODIFICATIONS NECESSARY TO MEET CRITERIA AFTER-THE-FACT WILL BE ENTIRELY THE DEVELOPER'S RESPONSIBILITY TO RECTIFY.
5. IT IS THE DESIGN ENGINEER'S RESPONSIBILITY TO ACCURATELY SHOW EXISTING CONDITIONS, BOTH ONSITE AND OFFSITE, ON THE CONSTRUCTION PLANS. ANY MODIFICATIONS NECESSARY DUE TO CONFLICTS, OMISSIONS, OR CHANGED CONDITIONS WILL BE ENTIRELY THE DEVELOPER'S RESPONSIBILITY TO RECTIFY.
6. CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT – INSPECTIONS, PRIOR TO STARTING CONSTRUCTION.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO UNDERSTAND THE REQUIREMENTS OF ALL JURISDICTIONAL AGENCIES AND TO OBTAIN ALL REQUIRED PERMITS, INCLUDING BUT NOT LIMITED TO EL PASO COUNTY EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP), REGIONAL BUILDING FLOODPLAIN DEVELOPMENT PERMIT, U.S. ARMY CORPS OF ENGINEERS-ISSUED 401 AND/OR 404 PERMITS, AND COUNTY AND STATE FUGITIVE DUST PERMITS.
8. CONTRACTOR SHALL NOT DEVIATE FROM THE PLANS WITHOUT FIRST OBTAINING WRITTEN APPROVAL FROM THE DESIGN ENGINEER AND PCD. CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY UPON DISCOVERY OF ANY ERRORS OR INCONSISTENCIES.
9. ALL STORM DRAIN PIPE SHALL BE CLASS III RCP UNLESS OTHERWISE NOTED AND APPROVED BY PCD.
10. CONTRACTOR SHALL COORDINATE GEOTECHNICAL TESTING PER ECM STANDARDS. PAVEMENT DESIGN SHALL BE APPROVED BY EL PASO COUNTY PCD PRIOR TO PLACEMENT OF CURB AND GUTTER AND PAVEMENT.
11. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.
12. SIGHT VISIBILITY TRIANGLES AS IDENTIFIED IN THE PLANS SHALL BE PROVIDED AT ALL INTERSECTIONS. OBSTRUCTIONS GREATER THAN 18 INCHES ABOVE FLOWLINE ARE NOT ALLOWED WITHIN SIGHT TRIANGLES.
13. SIGNING AND STRIPING SHALL COMPLY WITH EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS AND MUTCD CRITERIA.
14. CONTRACTOR SHALL OBTAIN ANY PERMITS REQUIRED BY EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS, INCLUDING WORK WITHIN THE RIGHT-OF-WAY AND SPECIAL TRANSPORT PERMITS.
15. THE LIMITS OF CONSTRUCTION SHALL REMAIN WITHIN THE PROPERTY LINE UNLESS OTHERWISE NOTED. THE OWNER/DEVELOPER SHALL OBTAIN WRITTEN PERMISSION AND EASEMENTS, WHERE REQUIRED, FROM ADJOINING PROPERTY OWNER(S) PRIOR TO ANY OFF-SITE DISTURBANCE, GRADING, OR CONSTRUCTION.

SIGNING AND STRIPING NOTES:

1. ALL SIGNS AND PAVEMENT MARKINGS SHALL BE IN COMPLIANCE WITH THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. REMOVAL OF EXISTING PAVEMENT MARKINGS SHALL BE ACCOMPLISHED BY A METHOD THAT DOES NOT MATERIALLY DAMAGE THE PAVEMENT. THE PAVEMENT MARKINGS SHALL BE REMOVED TO THE EXTENT THAT THEY WILL NOT BE VISIBLE UNDER DAY OR NIGHT CONDITIONS. AT NO TIME WILL IT BE ACCEPTABLE TO PAINT OVER EXISTING PAVEMENT MARKINGS.
3. ANY DEVIATION FROM THE STRIPING AND SIGNING PLAN SHALL BE APPROVED BY EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT.
4. ALL SIGNS SHOWN ON THE SIGNING AND STRIPING PLAN SHALL BE NEW SIGNS. EXISTING SIGNS MAY REMAIN OR BE REUSED IF THEY MEET CURRENT EL PASO COUNTY AND MUTCD STANDARDS.
5. STREET NAME AND REGULATORY STOP SIGNS SHALL BE ON THE SAME POST AT INTERSECTIONS.
6. ALL REMOVED SIGNS SHALL BE DISPOSED OF IN A PROPER MANNER BY THE CONTRACTOR.
7. ALL STREET NAME SIGNS SHALL HAVE "D" SERIES LETTERS, WITH LOCAL ROADWAY SIGNS BEING 4" UPPER-LOWER CASE LETTERING ON 8" BLANK AND NON-LOCAL ROADWAY SIGNS BEING 6" LETTERING, UPPER-LOWER CASE ON 12" BLANK, WITH A WHITE BORDER THAT IS NOT RECESSED. MULTI-LANE ROADWAYS WITH SPEED LIMITS OF 40 MPH OR HIGHER SHALL HAVE 8" UPPER-LOWER CASE LETTERING ON 18" BLANK WITH A WHITE BORDER THAT IS NOT RECESSED. THE WIDTH OF THE NON-RECESSED WHITE BORDERS SHALL MATCH PAGE 255 OF THE 2012 MUTCD "STANDARD HIGHWAY SIGNS."
8. ALL TRAFFIC SIGNS SHALL HAVE A MINIMUM HIGH INTENSITY PRISMATIC GRADE SHEETING.
9. ALL LOCAL RESIDENTIAL STREET SIGNS SHALL BE MOUNTED ON A 1.75" X 1.75" SQUARE TUBE SIGN POST AND STUB POST BASE. FOR OTHER APPLICATIONS, REFER TO THE CDOT STANDARD S-614-8 REGARDING USE OF THE P2 TUBULAR STEEL POST SLIPBASE DESIGN.
10. ALL SIGNS SHALL BE SINGLE SHEET ALUMINUM WITH 0.100" MINIMUM THICKNESS.
11. ALL LIMIT LINES/STOP LINES, CROSSWALK LINES, PAVEMENT LEGENDS, AND ARROWS SHALL BE A MINIMUM 125 MIL THICKNESS PREFORMED THERMOPLASTIC PAVEMENT MARKINGS WITH TAPERED LEADING EDGES PER CDOT STANDARD S-627-1. WORD AND SYMBOL MARKINGS SHALL BE THE NARROW TYPE. STOP BARS SHALL BE 24" IN WIDTH. CROSSWALKS LINES SHALL BE 12" WIDE AND 8' LONG PER CDOT S-627-1.
12. ALL LONGITUDINAL LINES SHALL BE A MINIMUM 15MIL THICKNESS EPOXY PAINT. ALL NON-LOCAL RESIDENTIAL ROADWAYS SHALL INCLUDE BOTH RIGHT AND LEFT EDGE LINE STRIPING AND ANY ADDITIONAL STRIPING AS REQUIRED BY CDOT S-627-1.
13. THE CONTRACTOR SHALL NOTIFY EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT **(719) 520-6819** PRIOR TO AND UPON COMPLETION OF SIGNING AND STRIPING.
14. THE CONTRACTOR SHALL OBTAIN A WORK IN THE RIGHT OF WAY PERMIT FROM THE EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS (DPW) PRIOR TO ANY SIGNAGE OR STRIPING WORK WITHIN AN EXISTING EL PASO COUNTY ROADWAY.

BENCHMARKS:

BENCHMARK #1: A 3.25 ALUMINUM SURVEYORS CAP STAMPED "WC 30' 2006 PLS 10376" LOCATED 30 EAST OF THE EAST QUARTER CORNER OF SECTION 28, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE 6TH PRINCIPAL MERIDIAN. ELEVATION: = 7168.20

BENCH MARK #2: A 3.25 ALUMINUM SURVEYORS CAP STAMPED "2006 PLS 10376" LOCATED AT THE SOUTHEAST CORNER OF SECTION 28, TOWNSHIP 12 SOUTH, RANGE 65 WEST OF THE 6TH PRINCIPAL MERIDIAN. ELEVATION: = 7141.36

AGENCIES:

OWNER/DEVELOPER:	TIMBERRIDGE DEVELOPMENT GROUP, LLC 6385 CORPORATE DRIVE, SUITE 200 COLORADO SPRINGS, CO 80919 MR. LOREN J. MORELAND, (719) 592-9333
CIVIL ENGINEER:	CLASSIC CONSULTING ENGINEERS & SURVEYORS 619 N. CASCADE AVENUE, SUITE 200 COLORADO SPRINGS, COLORADO 80903 MR. MARC A. WHORTON, P.E. (719) 785-2802
COUNTY ENGINEERING:	EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT 2880 INTERNATIONAL CIRCLE, SUITE 110 COLORADO SPRINGS, COLORADO 80910 MR. JEFF RICE (719) 520-7877
GAS COMPANY:	BLACKHILLS ENERGY 37 WIDEFIELD BOULEVARD WIDEFIELD, COLORADO 80911 MR. GEORGE M. PETERSON, (719) 392-3491
ELECTRIC COMPANY:	MOUNTAIN VIEW ELECTRIC P.O. BOX 1600 LIMON, COLORADO 80828 MR. LES ULFERS, (719) 495-2283
FIRE DISTRICT:	BLACK FOREST FIRE PROTECTION DISTRICT 11445 TEACHOUT ROAD COLORADO SPRINGS, CO 80908 CHIEF BRYAN JACK, (719) 495-4300
TELEPHONE COMPANY:	CENTURY LINK (LOCATORS) 811 AT & T (LOCATORS) 811

SHEET INDEX

CCES
CD Responses

APPROVALS:

DESIGN ENGINEER'S STATEMENT:

THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECTION AND SUPERVISION. SAID PLANS AND SPECIFICATIONS HAVE BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE COUNTY FOR DETAILED ROADWAY, DRAINAGE, GRADING AND EROSION CONTROL PLANS AND SPECIFICATIONS, AND SAID PLANS AND SPECIFICATIONS ARE IN CONFORMITY WITH APPLICABLE MASTER DRAINAGE PLANS AND MASTER TRANSPORTATION PLANS. SAID PLANS AND SPECIFICATIONS MEET THE PURPOSES FOR WHICH THE PARTICULAR ROADWAY AND DRAINAGE FACILITIES ARE DESIGNED AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I ACCEPT RESPONSIBILITY FOR ANY LIABILITY DIRECTLY CAUSED BY THE NEGLIGENT ACTS, ERRORS, OR OMISSIONS ON MY PART IN PREPARATION OF THESE DETAILED PLANS AND SPECIFICATIONS.

MARC A WHORTON, COLORADO P.E. #37155 — DATE
FOR AND ON THE BEHALF OF CLASSIC CONSULTING ENGINEERS & SURVEYORS

OWNER/DEVELOPER'S STATEMENT:

I, THE OWNER/DEVELOPER HAVE READ AND WILL COMPLY WITH THE REQUIREMENTS OF THE EROSION CONTROL PLAN AND AS SPECIFIED IN THESE DETAILED PLANS AND SPECIFICATIONS.

LOREN J. MORELAND — DATE

EL PASO COUNTY:

COUNTY PLAN REVIEW IS PROVIDED ONLY FOR GENERAL CONFORMANCE WITH COUNTY DESIGN CRITERIA. THE COUNTY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, AND/OR ELEVATIONS WHICH SHALL BE CONFIRMED AT THE JOB SITE. THE COUNTY THROUGH THE APPROVAL OF THIS DOCUMENT ASSUMES NO RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT.

FILED IN ACCORDANCE WITH THE REQUIREMENTS OF THE EL PASO COUNTY LAND DEVELOPMENT CODE, DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2 AND ENGINEERING CRITERIA MANUAL AS AMENDED.

IN ACCORDANCE WITH WITH ECM SECTION 1.12, THESE CONSTRUCTION DOCUMENTS WILL BE VALID FOR CONSTRUCTION FOR A PERIOD OF 2 YEARS FROM THE DATE SIGNED BY THE EL PASO COUNTY ENGINEER. IF CONSTRUCTION HAS NOT STARTED WITHIN THOSE 2 YEARS, THE PLANS WILL NEED TO BE RESUBMITTED FOR APPROVAL, INCLUDING PAYMENT OF REVIEW FEES AT THE PLANNING AND COMMUNITY DEVELOPMENT DIRECTOR'S DISCRETION.

JENNIFER IRVINE, P.E. — DATE
COUNTY ENGINEER / ECM ADMINISTRATOR

PCD No. SF-19-009

48 HOURS BEFORE YOU DIG, CALL UTILITY LOCATORS
811
UTILITY NOTIFICATION CENTER OF COLORADO
IT'S THE LAW

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NO.	REVISION	DATE
1	REVISED PER COUNTY COMMENTS	08-13-19

REVIEW:
PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC A. WHORTON, COLORADO P.E. #37155 — DATE

CLASSIC CONSULTING
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION DRAWINGS
TITLE SHEET

DESIGNED BY	MAW	SCALE		DATE	04-05-19
DRAWN BY	MAW	(H) 1"=	N/A	SHEET	1 OF 29
CHECKED BY		(V) 1"=	N/A	JOB NO.	1185.00

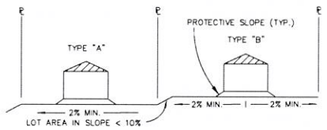
N:\1185\00\DRAWINGS\CONSTRUCTION\01 1185\00 CDS TITLE.dwg, 8/22/2019 3:41:36 PM, 1:1

EL PASO COUNTY GRADING AND EROSION CONTROL NOTES:

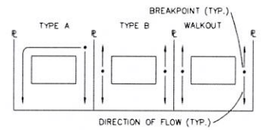
1. CONSTRUCTION MAY NOT COMMENCE UNTIL A CONSTRUCTION PERMIT IS OBTAINED FROM PLANNING AND COMMUNITY DEVELOPMENT (PCD) AND A PRE-CONSTRUCTION CONFERENCE IS HELD WITH PLANNING AND COMMUNITY DEVELOPMENT INSPECTIONS.
2. STORMWATER DISCHARGES FROM CONSTRUCTION SITES SHALL NOT CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS. ALL WORK AND EARTH DISTURBANCE SHALL BE DONE IN A MANNER THAT MINIMIZES POLLUTION OF ANY ON-SITE OR OFF SITE WATERS, INCLUDING WETLANDS.
3. NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPTED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS TO REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING.
4. A SEPARATE STORMWATER MANAGEMENT PLAN (SWMP) FOR THIS PROJECT SHALL BE COMPLETED AND AN EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP) ISSUED PRIOR TO COMMENCING CONSTRUCTION. DURING CONSTRUCTION THE SWMP IS THE RESPONSIBILITY OF THE DESIGNATED STORMWATER MANAGER, SHALL BE LOCATED ON SITE AT ALL TIMES AND SHALL BE KEPT UP TO DATE WITH WORK PROGRESS AND CHANGES IN THE FIELD.
5. ONCE THE ESQCP HAS BEEN ISSUED, THE CONTRACTOR MAY INSTALL THE INITIAL STAGE EROSION AND SEDIMENT CONTROL BMPS AS INDICATED ON THE GEC. A PRE-CONSTRUCTION MEETING BETWEEN THE CONTRACTOR, ENGINEER, AND EL PASO COUNTY WILL BE HELD PRIOR TO ANY CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE APPLICANT TO COORDINATE THE MEETING TIME AND PLACE WITH COUNTY PCD INSPECTIONS STAFF.
6. SOIL EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 21 CALENDAR DAYS AFTER FINAL GRADING, OR FINAL EARTH DISTURBANCE, HAS BEEN COMPLETED. DISTURBED AREAS AND STOCKPILES WHICH ARE NOT AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS SHALL ALSO BE MULCHED WITHIN 21 DAYS AFTER INTERIM GRADING. AN AREA THAT IS GOING TO REMAIN IN AN INTERIM STATE FOR MORE THAN 60 DAYS SHALL ALSO BE SEEDED. ALL TEMPORARY SOIL EROSION CONTROL MEASURES AND BMPS SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND ESTABLISHED.
7. TEMPORARY SOIL EROSION CONTROL FACILITIES SHALL BE REMOVED AND EARTH DISTURBANCE AREAS GRADED AND STABILIZED WITH PERMANENT SOIL EROSION CONTROL MEASURES PURSUANT TO STANDARDS AND SPECIFICATION PRESCRIBED IN THE DCM VOLUME II AND THE ENGINEERING CRITERIA MANUAL (ECM) APPENDIX I.
8. ALL PERSONS ENGAGED IN EARTH DISTURBANCE SHALL IMPLEMENT AND MAINTAIN ACCEPTABLE SOIL EROSION AND SEDIMENT CONTROL MEASURES INCLUDING BMPS IN CONFORMANCE WITH THE EROSION CONTROL TECHNICAL STANDARDS OF THE DRAINAGE CRITERIA MANUAL (DCM) VOLUME II AND IN ACCORDANCE WITH THE STORMWATER MANAGEMENT PLAN (SWMP).
9. ALL TEMPORARY EROSION CONTROL FACILITIES INCLUDING BMPS AND ALL PERMANENT FACILITIES INTENDED TO CONTROL EROSION OF ANY EARTH DISTURBANCE OPERATIONS, SHALL BE INSTALLED AS DEFINED IN THE APPROVED PLANS, THE SWMP AND THE DCM VOLUME II AND MAINTAINED THROUGHOUT THE DURATION OF THE EARTH DISTURBANCE OPERATION.
10. ANY EARTH DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY REDUCE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION. ALL DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST PRACTICAL PERIOD OF TIME.
11. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER AROUND, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE DESIGNED TO LIMIT THE DISCHARGE TO A NON-EROSIVE VELOCITY.
12. CONCRETE WASH WATER SHALL BE CONTAINED AND DISPOSED OF IN ACCORDANCE WITH THE SWMP. NO WASH WATER SHALL BE DISCHARGED TO OR ALLOWED TO RUNOFF TO STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.
13. EROSION CONTROL BLANKETING IS TO BE USED ON SLOPES STEEPER THAN 3:1.
14. BUILDING, CONSTRUCTION, EXCAVATION, OR OTHER WASTE MATERIALS SHALL NOT BE TEMPORARILY PLACED OR STORED IN THE STREET, ALLEY, OR OTHER PUBLIC WAY, UNLESS IN ACCORDANCE WITH AN APPROVED TRAFFIC CONTROL PLAN. BMP'S MAY BE REQUIRED BY EL PASO COUNTY ENGINEERING IF DEEMED NECESSARY, BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES.
15. VEHICLE TRACKING OF SOILS AND CONSTRUCTION DEBRIS OFF-SITE SHALL BE MINIMIZED. MATERIALS TRACKED OFFSITE SHALL BE CLEANED UP AND PROPERLY DISPOSED OF IMMEDIATELY.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL WASTES FROM THE CONSTRUCTION SITE FOR DISPOSAL IN ACCORDANCE WITH LOCAL AND STATE REGULATORY REQUIREMENTS. NO CONSTRUCTION DEBRIS, TREE SLASH, BUILDING MATERIAL WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, OR DISCHARGED AT THE SITE.
17. THE OWNER, SITE DEVELOPER, CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, AND SAND THAT MAY ACCUMULATE IN THE STORM SEWER OR OTHER DRAINAGE CONVEYANCE SYSTEM AND STORMWATER APPURTENANCES AS A RESULT OF SITE DEVELOPMENT.
18. THE QUANTITY OF MATERIALS STORED ON THE PROJECT SITE SHALL BE LIMITED, AS MUCH AS PRACTICAL, TO THAT QUANTITY REQUIRED TO PERFORM THE WORK IN AN ORDERLY SEQUENCE. ALL MATERIALS STORED ON-SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER, IN THEIR ORIGINAL CONTAINERS, WITH ORIGINAL MANUFACTURER'S LABELS.
19. NO CHEMICALS ARE TO BE USED BY THE CONTRACTOR, WHICH HAVE THE POTENTIAL TO BE RELEASED IN STORMWATER UNLESS PERMISSION FOR THE USE OF A SPECIFIC CHEMICAL IS GRANTED IN WRITING BY THE ECM ADMINISTRATOR. IN GRANTING THE USE OF SUCH CHEMICALS, SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.
20. BULK STORAGE STRUCTURES FOR PETROLEUM PRODUCTS AND OTHER CHEMICALS SHALL HAVE ADEQUATE PROTECTION SO AS TO CONTAIN ALL SPILLS AND PREVENT ANY SPILLED MATERIAL FROM ENTERING STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.
21. NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE FLOW LINE OF THE CURB AND GUTTER OR IN THE DITCHLINE.
22. INDIVIDUALS SHALL COMPLY WITH THE 'COLORADO WATER QUALITY CONTROL ACT' (TITLE 25, ARTICLE 8, CRS), AND THE 'CLEAN WATER ACT' (33 USC 1344), IN ADDITION TO THE REQUIREMENTS INCLUDED IN THE DCM VOLUME II AND THE ECM APPENDIX I. ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (NPDES, FLOODPLAIN, 404, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, OR COUNTY AGENCIES, THE MORE RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.
23. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.
24. PRIOR TO ACTUAL CONSTRUCTION THE PERMITEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.
25. A WATER SOURCE SHALL BE AVAILABLE ON SITE DURING EARTHWORK OPERATIONS AND UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.
26. THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY RMG – ROCKY MOUNTAIN GROUP TITLED "GEOLOGY AND SOILS REPORT AND WASTEWATER STUDY WITH DETENTION STORAGE CRITERIA – [redacted] AND SHALL BE CONSIDERED A PART OF THESE PLANS.
27. AT LEAST TEN DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB 1 ACRE OR MORE, THE OWNER OR OPERATOR OF CONSTRUCTION ACTIVITY SHALL SUBMIT A PERMIT APPLICATION FOR STORMWATER DISCHARGE TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY DIVISION. THE APPLICATION CONTAINS CERTIFICATION OF COMPLETION OF A STORMWATER MANAGEMENT PLAN (SWMP), OF WHICH THIS GRADING AND EROSION CONTROL PLAN MAY BE A PART. FOR INFORMATION OR APPLICATION MATERIALS CONTACT:

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
WATER QUALITY CONTROL DIVISION
WQCD – PERMITS
4300 CHERRY CREEK DRIVE SOUTH
DENVER, CO 80246-1530
ATTN: PERMITS UNIT

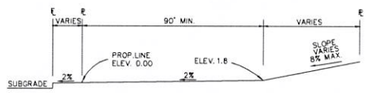
Update the notes to the new standard notes.



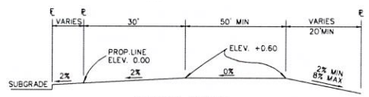
TYPICAL LOT SECTION DETAIL
N.T.S.



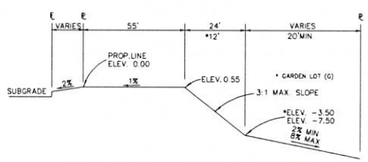
LOT DRAINAGE TYPES
N.T.S.



TYPICAL (A) LOT
N.T.S



TYPICAL (B) LOT
N.T.S



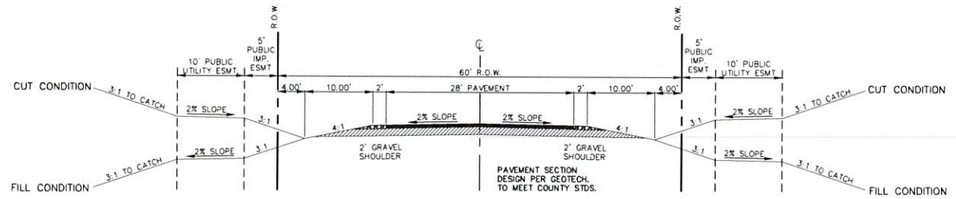
TYPICAL WALKOUT LOT (W/O) OR GARDEN (G)
N.T.S

NOTES:

BASED ON GREATER TYPICAL DEPTH OF PROPOSED LOTS, ALL LOT TEMPLATES ADJUSTED AND ADDITIONAL 5'.

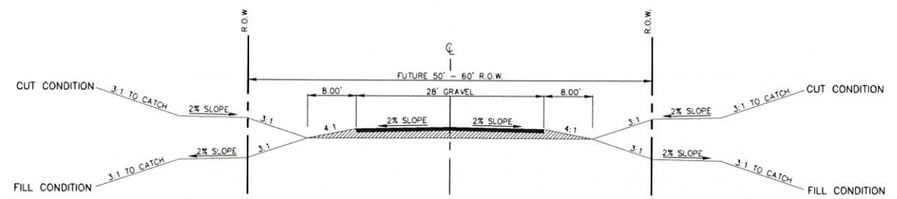
"T" LOTS OR "TRANSITION" LOTS OCCUR IN PLACES WHERE BOTH PROPERTY LINES CANNOT BE GRADED AS THE TYPICAL STANDARD LOT TEMPLATES SHOWN. THESE LOTS WILL STILL BE GRADED TO CREATE POSITIVE DRAINAGE AWAY FROM THE STRUCTURE.

SIDE LOT SWALES ARE REQUIRED ON THE DOWNHILL LOTS, EITHER BY BUILDER OR GRADING CONTRACTOR.



60' R.O.W. TYPICAL RURAL LOCAL CROSS SECTION
SCALE: 1" = 10'

ASPEN VALLEY ROAD

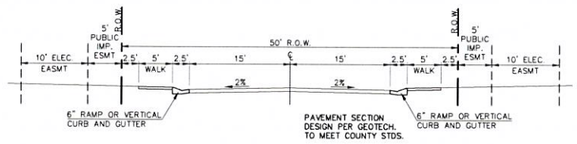


FUTURE R.O.W. TYPICAL SECONDARY ACCESS ROAD
SCALE: 1" = 10'

SECONDARY EMERGENCY ACCESS UP TO ARROYA LANE

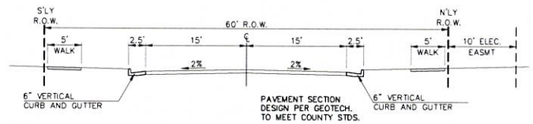
Does the cross section indicate construction on Arroya Lane also?

Just up to Arroya Lane per our discussion and B.F. Fire approval.



50' R.O.W. TYPICAL URBAN LOCAL CROSS SECTION
SCALE: 1" = 10'

ANTELOPE RAVINE DRIVE
RABBIT TAIL PLACE
ELK ANTLER LANE
BISON VALLEY TRAIL



60' R.O.W. TYPICAL URBAN LOCAL CROSS SECTION
SCALE: 1" = 10'

POCO ROAD

48 HOURS BEFORE YOU DIG, CALL UTILITY LOCATORS
811
UTILITY NOTIFICATION CENTER OF COLORADO
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NO.	REVISION	DATE
1	REVISED PER COUNTY COMMENTS	06-10-19

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC A. WHORTON, COLORADO P.E. #37155 DATE

CLASSIC CONSULTING SM
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

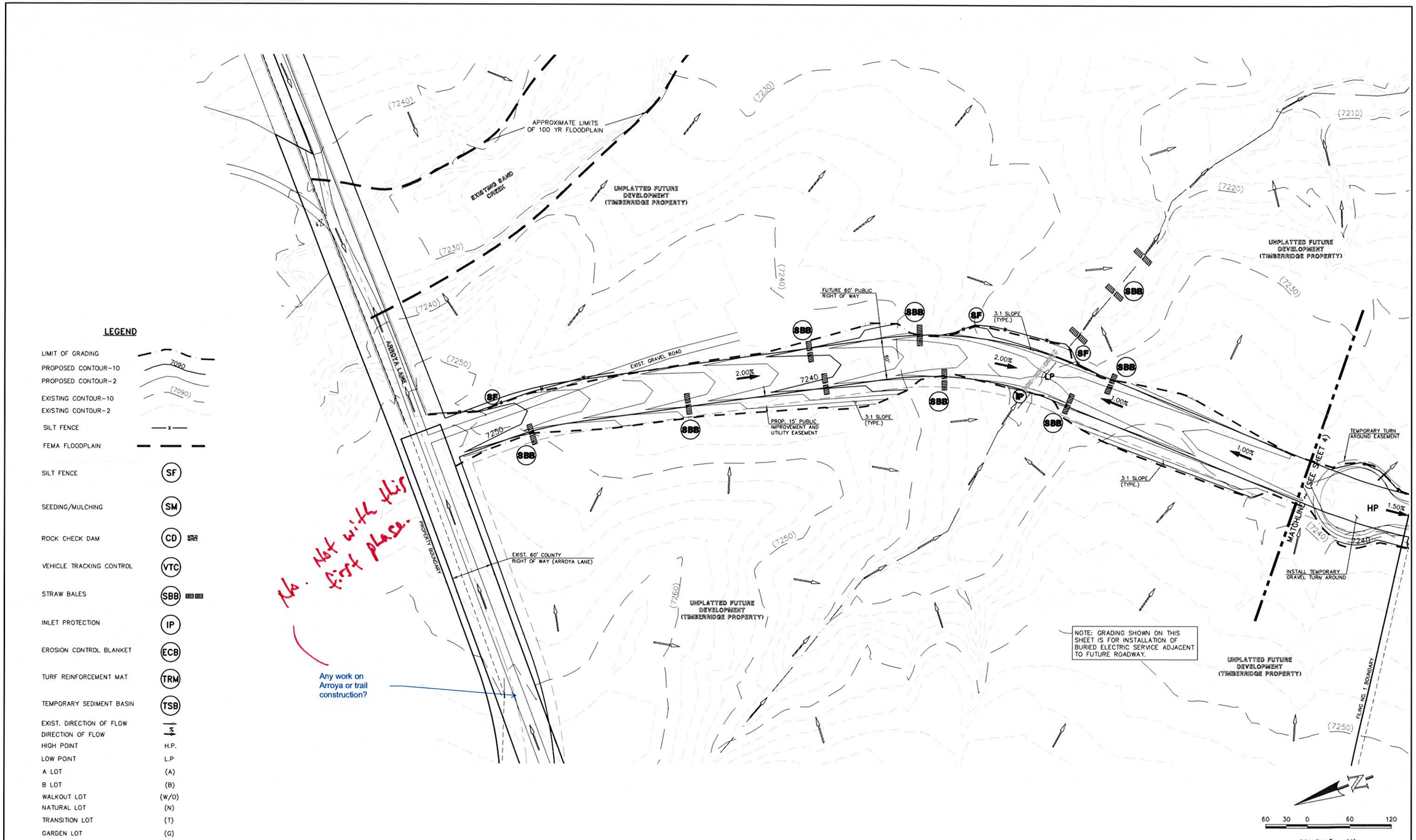
RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION DRAWINGS
STREET SECTIONS / EROSION CONTROL NOTES

CLASSIC CONSULTING

DESIGNED BY	PRA	SCALE		DATE	04-05-19
DRAWN BY	PRA	(H) 1"= N/A		SHEET	2 OF 29
CHECKED BY		(V) 1"= N/A		JOB NO.	1185.00

N:\1185.00\DRAWINGS\CONSTRUCTION\02 1185.00 GR 01.dwg, 8/22/2019 1:00:47 PM, 1:1

See comment letter and provide checklist.



No. Not with this first phase.

Any work on Arroya or trail construction?

LEGEND

LIMIT OF GRADING	
PROPOSED CONTOUR-10	7090
PROPOSED CONTOUR-2	
EXISTING CONTOUR-10	(7090)
EXISTING CONTOUR-2	
SILT FENCE	—x—
FEMA FLOODPLAIN	
SILT FENCE	SF
SEEDING/MULCHING	SM
ROCK CHECK DAM	CD
VEHICLE TRACKING CONTROL	VTC
STRAW BALES	SBB
INLET PROTECTION	IP
EROSION CONTROL BLANKET	ECB
TURF REINFORCEMENT MAT	TRM
TEMPORARY SEDIMENT BASIN	TSB
EXIST. DIRECTION OF FLOW	
DIRECTION OF FLOW	
HIGH POINT	H.P.
LOW POINT	L.P
A LOT	(A)
B LOT	(B)
WALKOUT LOT	(W/O)
NATURAL LOT	(N)
TRANSITION LOT	(T)
GARDEN LOT	(G)

EROSION CONTROL BLANKET (NORTH AMERICAN GREEN – SC150 OR EQUIVALENT) TO BE INSTALLED ON ALL 3:1 SLOPES OR GREATER

SEEDING/MULCHING NOTE:
SEEDING AND MULCHING SHALL BE INSTALLED INSIDE LIMITS OF GRADING EXCLUDING ROADWAY SURFACES, SIDEWALK AREAS AND RIP-RAP AREAS.

60 30 0 60 120

SCALE: 1" = 60'

48 HOURS BEFORE YOU DIG, CALL UTILITY LOCATORS
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NO.	REVISION	DATE
1	REVISED PER COUNTY COMMENTS	08-13-19

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC A. WHORTON, COLORADO P.E. #37155 DATE

CLASSIC CONSULTING
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION PLANS
GRADING & EROSION CONTROL PLAN

CLASSIC CONSULTING

DESIGNED BY	PRA	SCALE		DATE	04-05-19
DRAWN BY	ESO	(H) 1"= 60'		SHEET	3 OF 29
CHECKED BY		(V) 1"= N/A		JOB NO.	1185.00

N:\1185\00\DRAWINGS\CONSTRUCTION\03 1185\00 GR 02.dwg, 8/23/2019 2:23:51 PM, 1:1

LEGEND

LIMIT OF GRADING		INLET PROTECTION	IP
PROPOSED CONTOUR-10	7090	EROSION CONTROL BLANKET	ECB
PROPOSED CONTOUR-2		TURF REINFORCEMENT MAT	TRM
EXISTING CONTOUR-10	(7090)	TEMPORARY SEDIMENT BASIN	TSB
EXISTING CONTOUR-2		EXIST. DIRECTION OF FLOW	
SILT FENCE	—x—	DIRECTION OF FLOW	
FEMA FLOODPLAIN		HIGH POINT	H.P.
SILT FENCE	SF	LOW POINT	L.P
SEEDING/MULCHING	SM	A LOT	(A)
		B LOT	(B)
ROCK CHECK DAM	CD	WALKOUT LOT	(W/O)
		NATURAL LOT	(N)
VEHICLE TRACKING CONTROL	VTC	TRANSITION LOT	(T)
		GARDEN LOT	(G)
STRAW BALES	SBB		

EROSION CONTROL BLANKET (NORTH AMERICAN GREEN – SC150 OR EQUIVALENT) TO BE INSTALLED ON ALL 3:1 SLOPES OR GREATER

SEEDING/MULCHING NOTE:
SEEDING AND MULCHING SHALL BE INSTALLED INSIDE LIMITS OF GRADING EXCLUDING ROADWAY SURFACES, SIDEWALK AREAS AND RIP-RAP AREAS.

the entire (?)

PERMANENT SEDIMENT BASIN DESIGN INFO
PERMANENT SEDIMENT BASIN
(3.2 DISTURBED ACRES AT 800 C.F./AC.)
TOTAL REQUIRED STORAGE 2,560 CF
APPROX. DIMENSIONS WIDTH = 40', LENGTH = 65', DEPTH = 4.0'
OUTLET = 6" PVC STANDPIPE W/ (1) COLUMN, (5) HOLES OF PERFORATIONS W/4" SPACING BETWEEN HOLES.
9/16" DIAMETER PERFORATIONS. 6' MIN. SPILLWAY WIDTH.
(SEE DETAIL SHEET SC-7)

MATCHLINE ~ (SEE SHEET 6)

MATCHLINE ~ (SEE SHEET 5)

FUTURE TRAIL

FILING NO. 1 BOUNDARY

TRACT A

TRACT B

TRACT F

POND-1

PERMANENT SEDIMENT BASIN

PROPOSED TRAIL

TEMPORARY SEDIMENT POND TO BE CONVERTED TO A PERMANENT, WATER QUALITY EDB. SEE POND CONSTRUCTION PLANS BY CCES

4:1 SLOPE (TYPE.)

PROPOSED RIPRAP SPILLWAY SEE PERMANENT POND CONSTRUCTION PLANS

PROPOSED MAINTENANCE ACCESS ROAD

PROPOSED 20' PUBLIC DRAINAGE EASEMENT (ACCESS ROAD EASMT)

PROPOSED 70' PUBLIC DRAINAGE EASEMENT

TEMPORARY TURN AROUND EASEMENT

UNPLATTED FUTURE DEVELOPMENT (TIMBERRIDGE PROPERTY)

INSTALL TEMPORARY GRAVEL TURN AROUND

INSTALL ECB IN SIDE ROAD DITCH ADJACENT TO LOTS 2-7

INSTALL ECB IN SIDE ROAD DITCH ADJACENT TO LOT 11

INSTALL TRM IN SIDE ROAD DITCH AND SWALE AJACENT TO POCO ROAD.

ECB required as there is very little flow here

ECB or TRM?

ASPEN VALLEY ROAD (60' PUBLIC ROW)

POCO ROAD (60' PUBLIC ROW)

Additional permanent erosion protection appears to be required. Consider rock ditch checks.

INSTALL TRM IN SIDE ROAD DITCH ADJACENT TO LOTS 1-5

TRM is permanent E.C.

PROPOSED 2% MINIMUM SWALE TO THE EAST

PROPOSED 50' PUBLIC DRAINAGE EASEMENT

INSTALL TRM IN SIDE ROAD DITCH ADJACENT TO POCO ROAD

PROPOSED 6' BERM

PROPOSED GRADING EASEMENT

5:1 SLOPE (TYP.)

PROPERTY BOUNDARY

EXISTING VOLLMER ROAD

UNPLATTED FUTURE DEVELOPMENT

HP

8 "N" 9 "N" 10 "N" 11 "N" 7 "N" 6 "N" 5 "N" 4 "N" 3 "N" 2 "N" 1 "N"

SCALE: 1" = 60'

48 HOURS BEFORE YOU DIG, CALL UTILITY LOCATORS
811
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NO.	REVISION	DATE
1	REVISED PER COUNTY COMMENTS	08-13-19

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

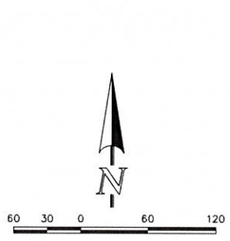
MARC A. WHORTON, COLORADO P.E. #37155 DATE

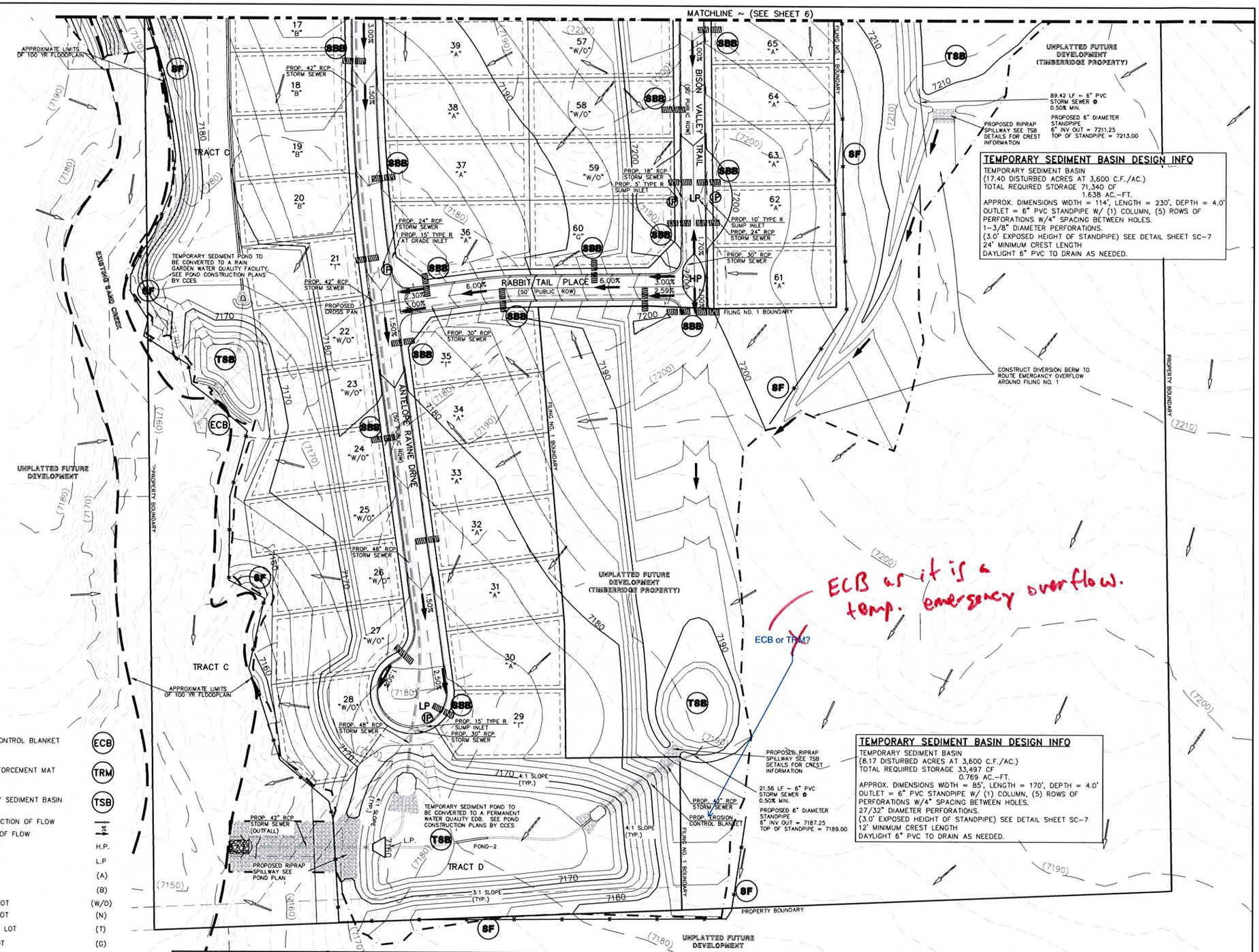
CLASSIC CONSULTING SM
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION PLANS
GRADING & EROSION CONTROL PLAN

DESIGNED BY	PRA	SCALE		DATE	04-05-19
DRAWN BY	ESO	(H) 1"= 60'		SHEET	4 OF 29
CHECKED BY		(V) 1"= N/A		JOB NO.	1185.00

N:\1185\00\DRAWINGS\CONSTRUCTION\04 1185GR GR 03.dwg, 8/22/2019 2:11:13 PM, 1:1





TEMPORARY SEDIMENT BASIN DESIGN INFO

TEMPORARY SEDIMENT BASIN
(17.40 DISTURBED ACRES AT 3,600 C.F./AC.)
TOTAL REQUIRED STORAGE 71,340 CF
1.638 AC.-FT.
APPROX. DIMENSIONS WIDTH = 114', LENGTH = 230', DEPTH = 4.0'
OUTLET = 6" PVC STANDPIPE W/ (1) COLUMN, (5) ROWS OF PERFORATIONS W/4" SPACING BETWEEN HOLES.
1-3/8" DIAMETER PERFORATIONS.
(3.0' EXPOSED HEIGHT OF STANDPIPE) SEE DETAIL SHEET SC-7
24' MINIMUM CREST LENGTH
DAYLIGHT 6" PVC TO DRAIN AS NEEDED.

TEMPORARY SEDIMENT BASIN DESIGN INFO

TEMPORARY SEDIMENT BASIN
(8.17 DISTURBED ACRES AT 3,600 C.F./AC.)
TOTAL REQUIRED STORAGE 33,497 CF
0.769 AC.-FT.
APPROX. DIMENSIONS WIDTH = 85', LENGTH = 170', DEPTH = 4.0'
OUTLET = 6" PVC STANDPIPE W/ (1) COLUMN, (5) ROWS OF PERFORATIONS W/4" SPACING BETWEEN HOLES.
27/32" DIAMETER PERFORATIONS.
(3.0' EXPOSED HEIGHT OF STANDPIPE) SEE DETAIL SHEET SC-7
12' MINIMUM CREST LENGTH
DAYLIGHT 6" PVC TO DRAIN AS NEEDED.

LEGEND

LIMIT OF GRADING		EROSION CONTROL BLANKET	ECB
PROPOSED CONTOUR-10	7090	TURF REINFORCEMENT MAT	TRM
PROPOSED CONTOUR-2		TEMPORARY SEDIMENT BASIN	TSB
EXISTING CONTOUR-10	(7090)	EXIST. DIRECTION OF FLOW	
EXISTING CONTOUR-2		DIRECTION OF FLOW	
SILT FENCE	—x—	HIGH POINT	H.P.
FEMA FLOODPLAIN		LOW POINT	L.P
SILT FENCE	SF	A LOT	(A)
SEEDING/MULCHING	SM	B LOT	(B)
ROCK CHECK DAM	CD	WALKOUT LOT	(W/O)
VEHICLE TRACKING CONTROL	VTC	NATURAL LOT	(N)
STRAW BALES	SBB	TRANSITION LOT	(T)
INLET PROTECTION	IP	GARDEN LOT	(G)

EROSION CONTROL BLANKET (NORTH AMERICAN GREEN - SC150 OR EQUIVALENT) TO BE INSTALLED ON ALL 3:1 SLOPES OR GREATER

SEEDING/MULCHING NOTE:
SEEDING AND MULCHING SHALL BE INSTALLED INSIDE LIMITS OF GRADING EXCLUDING ROADWAY SURFACES, SIDEWALK AREAS AND RIP-RAP AREAS.

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NO.	REVISION	DATE
1	REVISED PER COUNTY COMMENTS	08-13-19

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

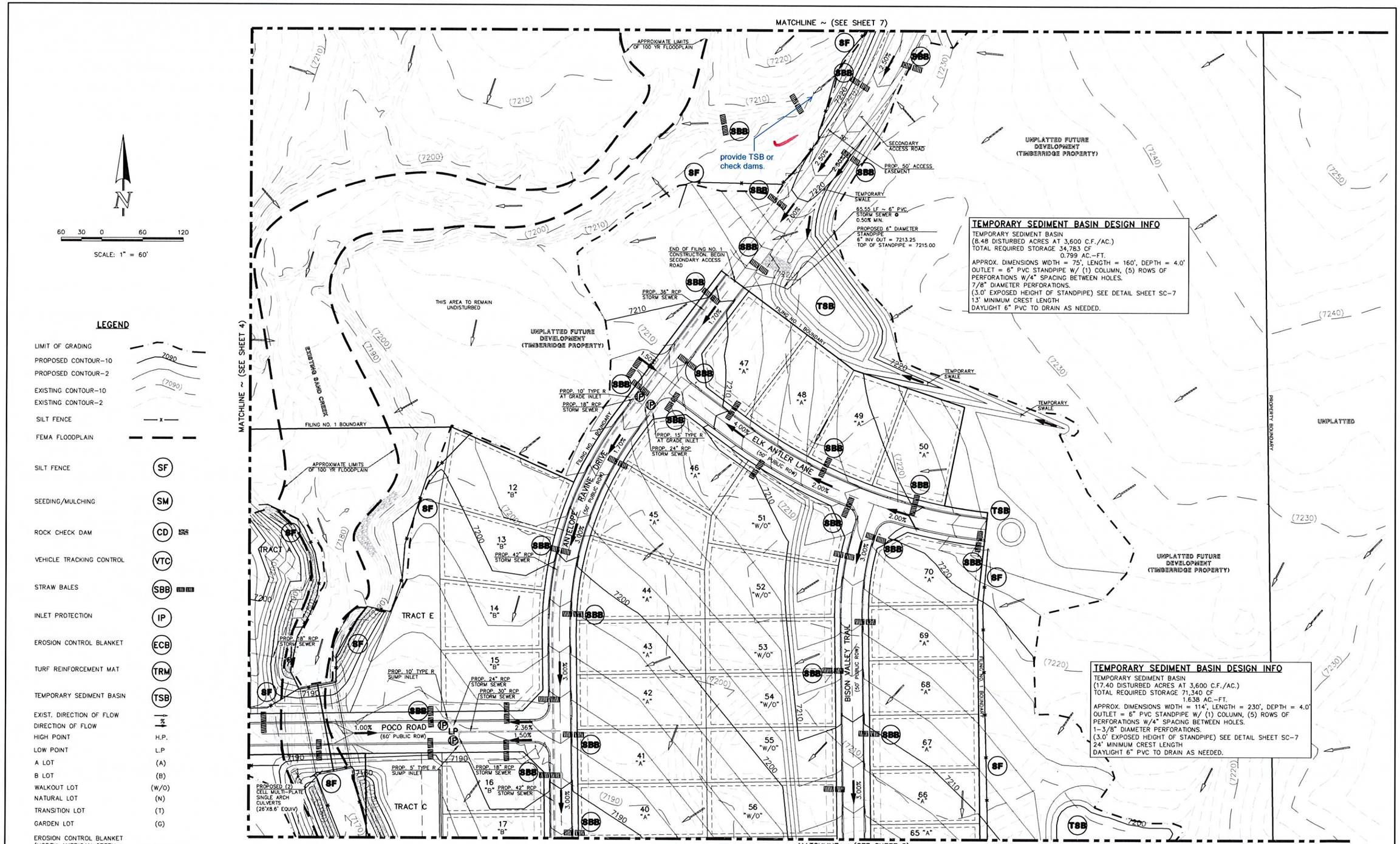
MARC A. WHORTON, COLORADO P.E. #37155 DATE

CLASSIC CONSULTING
519 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION PLANS
GRADING & EROSION CONTROL PLAN

DESIGNED BY	PRA	SCALE		DATE	04-05-19
DRAWN BY	ESO	(H) 1"= 60'		SHEET	5 OF 29
CHECKED BY		(V) 1"= N/A		JOB NO.	1185.00

N:\1185\00\DRAWINGS\CONSTRUCTION\05-1185GR GR 04.dwg, 8/22/2019 2:20:18 PM, 1:1



LEGEND

LIMIT OF GRADING	
PROPOSED CONTOUR-10	7090
PROPOSED CONTOUR-2	
EXISTING CONTOUR-10	(7090)
EXISTING CONTOUR-2	
SILT FENCE	—x—
FEMA FLOODPLAIN	
SILT FENCE	SF
SEEDING/MULCHING	SM
ROCK CHECK DAM	CD
VEHICLE TRACKING CONTROL	VTC
STRAW BALES	SBB
INLET PROTECTION	IP
EROSION CONTROL BLANKET	ECB
TURF REINFORCEMENT MAT	TRM
TEMPORARY SEDIMENT BASIN	TSB
EXIST. DIRECTION OF FLOW	
DIRECTION OF FLOW	
HIGH POINT	H.P.
LOW POINT	L.P
A LOT	(A)
B LOT	(B)
WALKOUT LOT	(W/O)
NATURAL LOT	(N)
TRANSITION LOT	(T)
GARDEN LOT	(G)

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NO.	REVISION	DATE
1	REVISED PER COUNTY COMMENTS	08-12-19

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MARC A. WHORTON, COLORADO P.E. #37155 DATE

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RETREAT AT TIMBERRIDGE FILING NO. 1 CONSTRUCTION PLANS

GRADING & EROSION CONTROL PLAN

CLASSIC CONSULTING

DESIGNED BY	PRA	SCALE		DATE	04-05-19
DRAWN BY	ESO	(H) 1"= 60'	SHEET	6	OF 29
CHECKED BY		(V) 1"= N/A	JOB NO.	1185.00	

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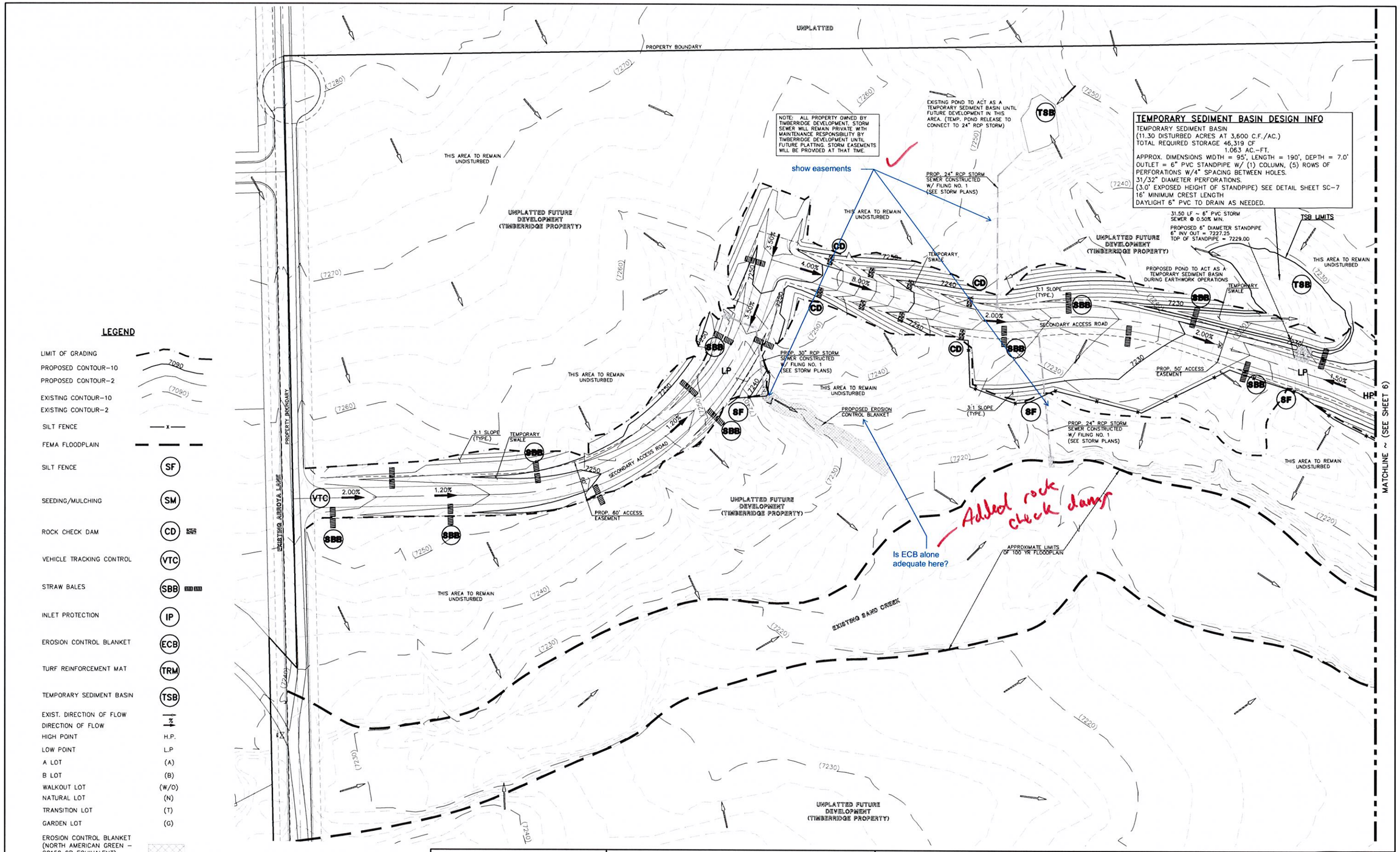

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CONSTRUCTION PLANS
GRADING & EROSION CONTROL PLAN

DESIGNED BY	PRA	SCALE		DATE	04-05-19
DRAWN BY	ESO	(H) 1"= 60'		SHEET	7 OF 29
CHECKED BY		(V) 1"= N/A		JOB NO.	1185.00

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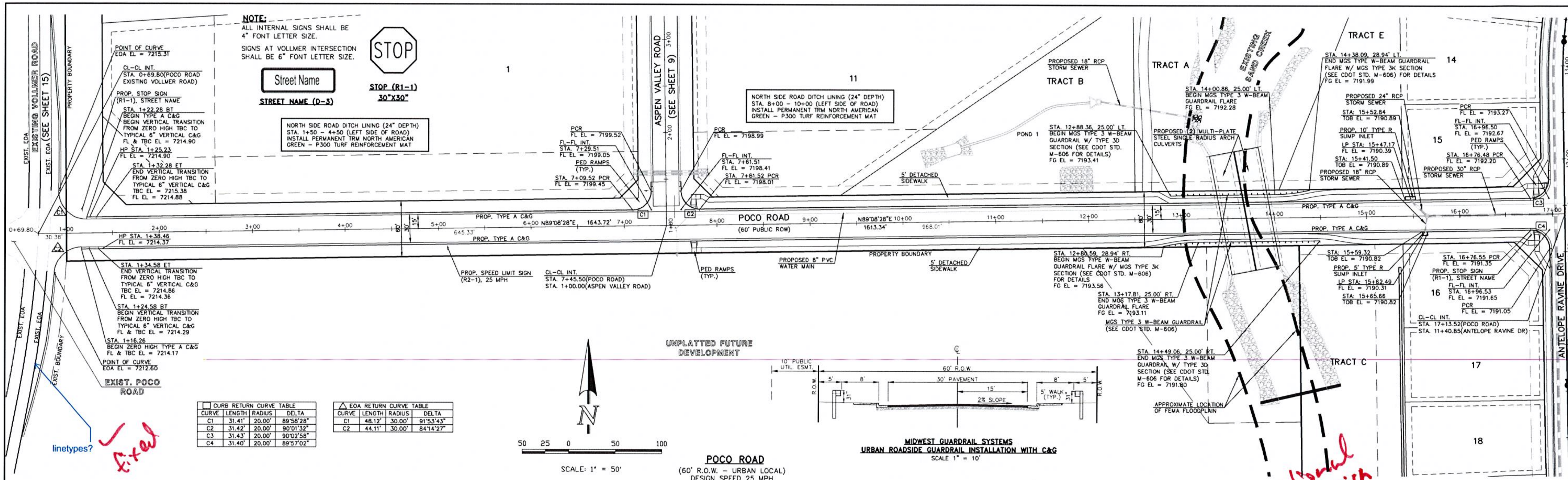
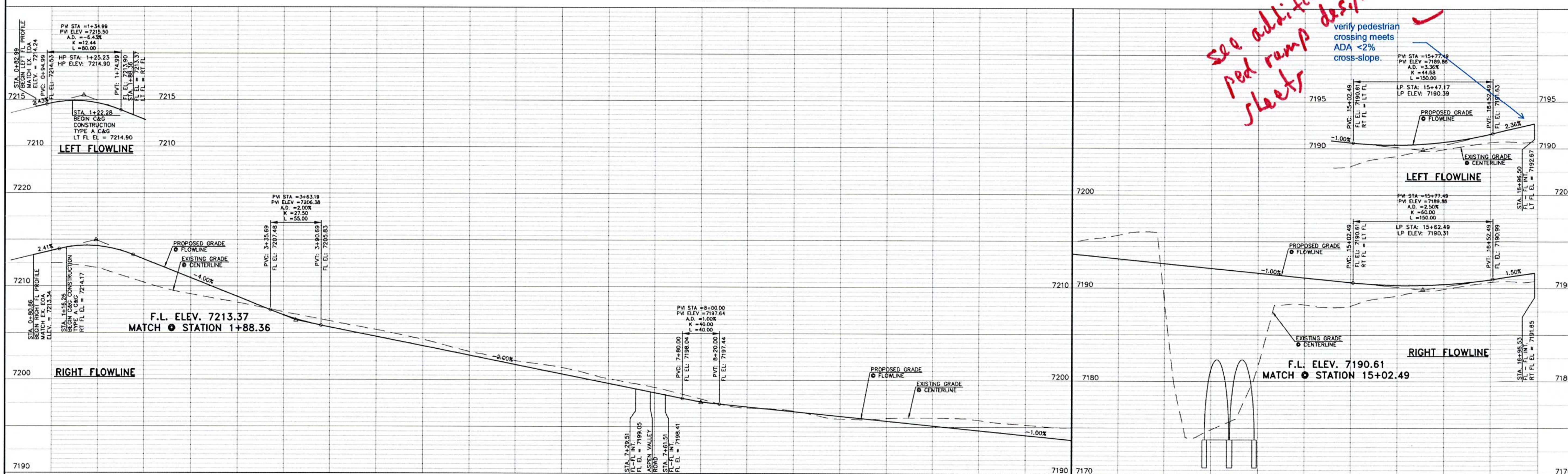


☐ CURB RETURN CURVE TABLE			
CURVE	LENGTH	RADIUS	DELTA
C1	31.41'	20.00'	89°58'28"
C2	31.42'	20.00'	90°01'32"
C3	31.43'	20.00'	90°02'58"
C4	31.40'	20.00'	89°57'02"

△ EOA RETURN CURVE TABLE			
CURVE	LENGTH	RADIUS	DELTA
C1	48.12'	30.00'	91°53'43"
C2	44.11'	30.00'	84°14'27"



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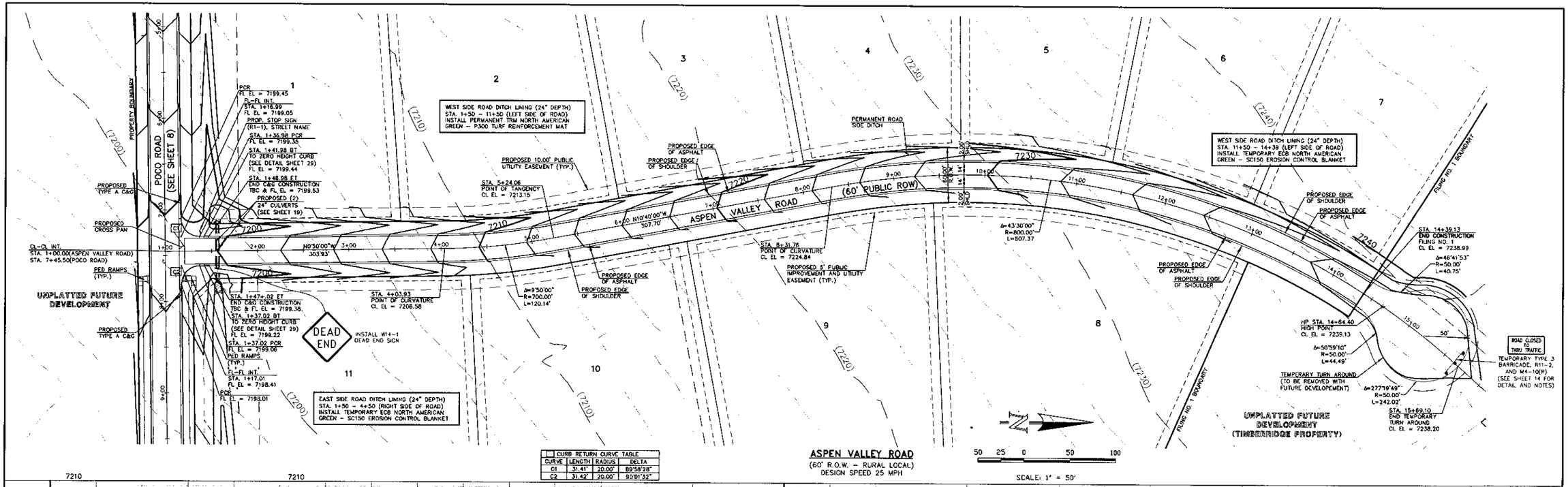
(719)785-0790
(719)785-0799(Fax)

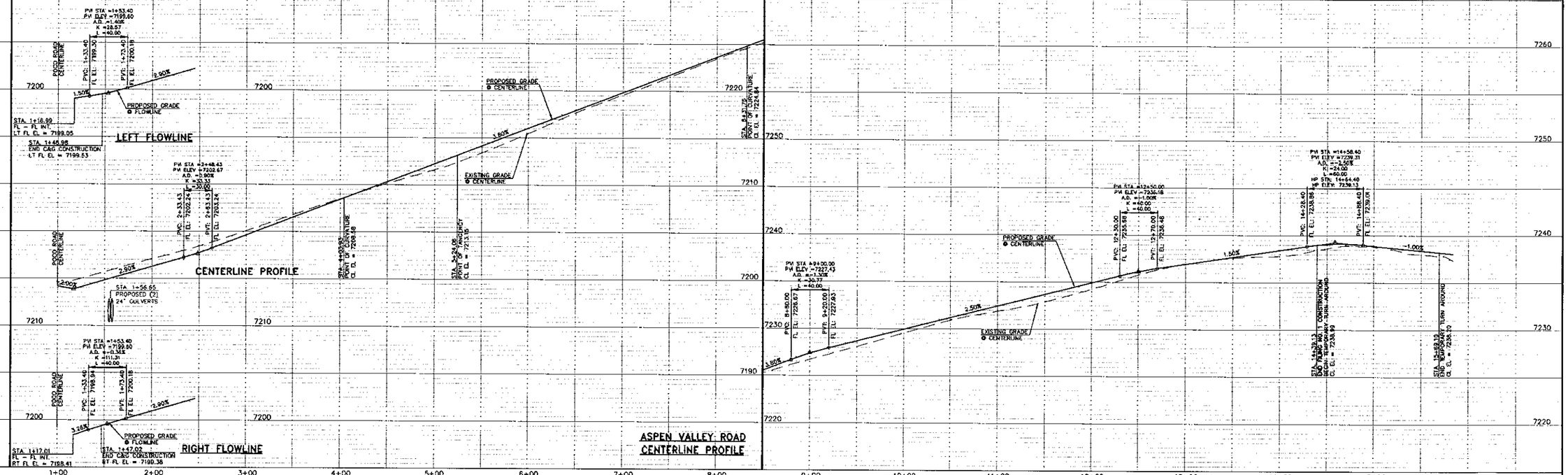
RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION PLANS
STREET IMPROVEMENT PLANS
POCO ROAD

DESIGNED BY	MAW	SCALE		DATE	04-05-19
DRAWN BY	ESO	(H) 1"= 50'		SHEET	8 OF 29
CHECKED BY		(V) 1"= 5'		JOB NO.	1185.00



CURB RETURN CURVE TABLE			
CURVE	LENGTH	RADIUS	DELTA
C1	31.41'	20.00'	89°58'28"
C2	31.42'	20.00'	90°01'32"

ASPEN VALLEY ROAD
(60' R.O.W. - RURAL LOCAL)
DESIGN SPEED 25 MPH



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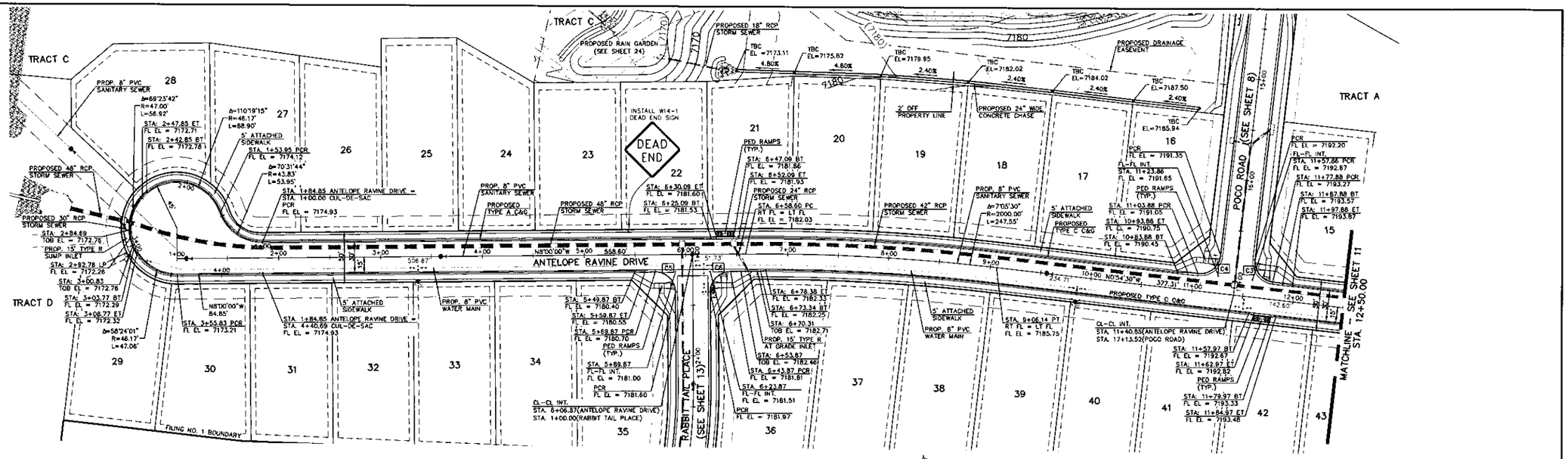
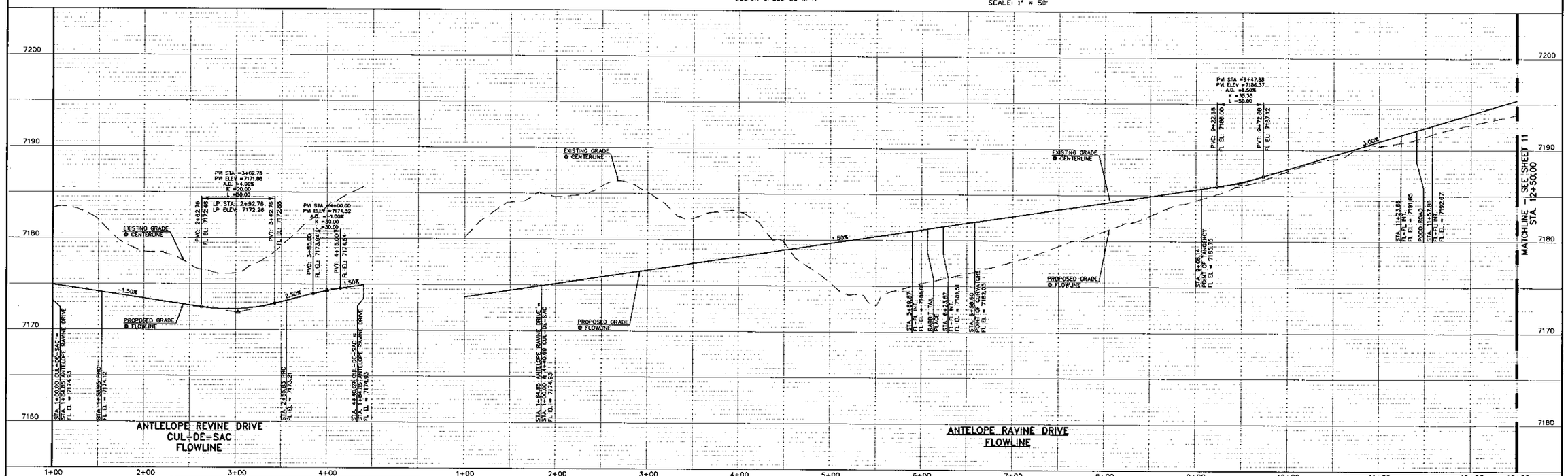
RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION PLANS
STREET IMPROVEMENT PLANS
ASPEN VALLEY ROAD

DESIGNED BY	MAW	SCALE		DATE	04-05-19
DRAWN BY	ESO	(H) 1"= 50'		SHEET	9 OF 29
CHECKED BY		(V) 1"= 5'		JOB NO.	1185.00





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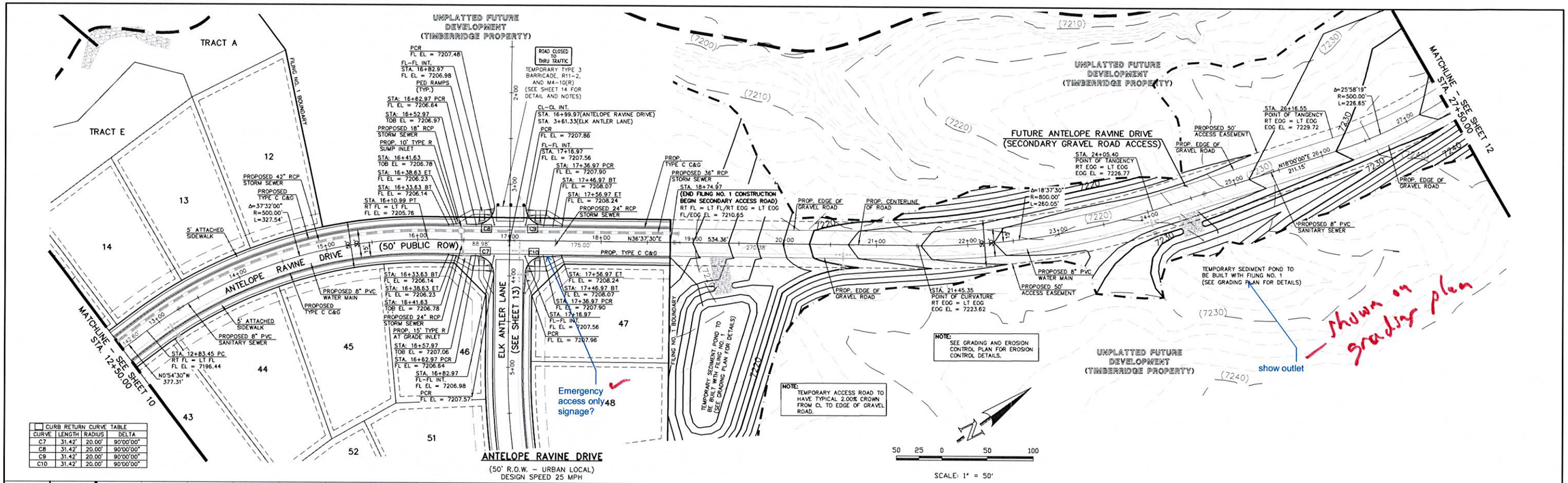
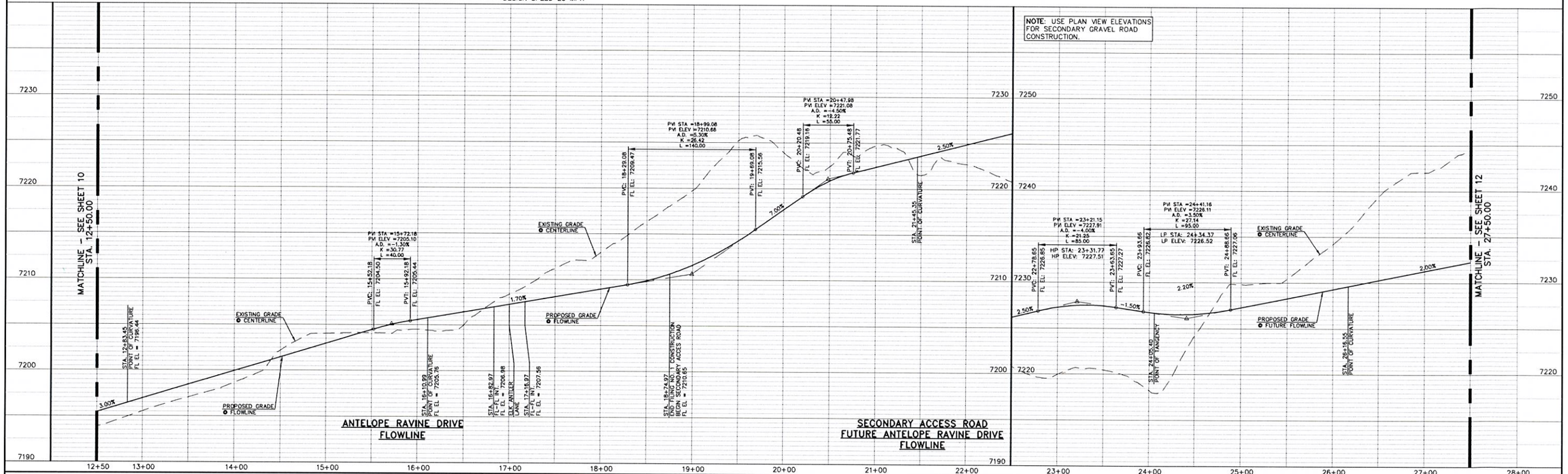
RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION PLANS
STREET IMPROVEMENT PLANS
ANTELOPE RAVINE DRIVE & CUL-DE-SAC

DESIGNED BY	MAW	SCALE		DATE	04-05-19
DRAWN BY	ESO	(H) 1"=	50'	SHEET	10 OF 29
CHECKED BY		(V) 1"=	5'	JOB NO.	1185.00





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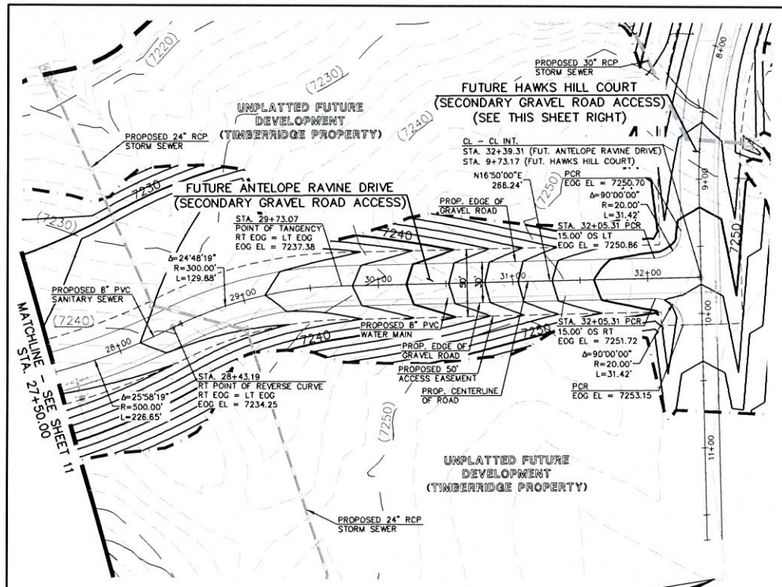
RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION PLANS
STREET IMPROVEMENT PLANS
ANTELOPE RAVINE DRIVE

DESIGNED BY	MAW	SCALE		DATE	04-05-19
DRAWN BY	ESO	(H) 1"= 50'		SHEET	11 OF 29
CHECKED BY		(V) 1"= 5'		JOB NO.	1185.00

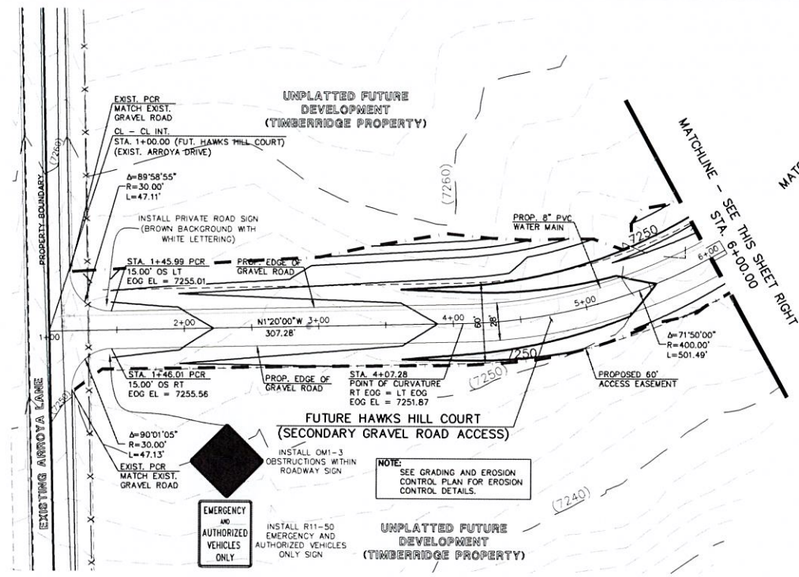
N:\1185\00\DRAWINGS\CONSTRUCTION\11 1185.00 S 04.dwg, 8/13/2019 1:40:05 PM, 1:1



NOTE: TEMPORARY ACCESS ROAD TO HAVE TYPICAL 2.00% CROWN FROM CL TO EDGE OF GRAVEL ROAD.

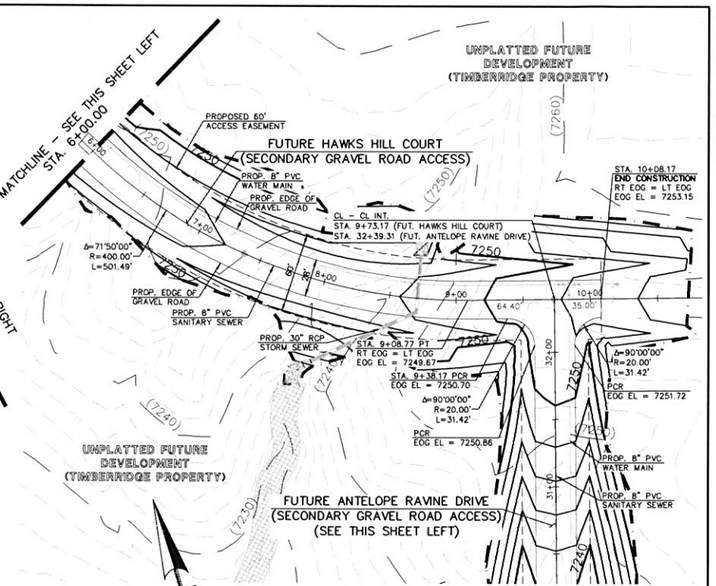
FUTURE ANTELOPE RAVINE DRIVE
(30' MAT WIDTH)
(SECONDARY ACCESS)

50 25 0 50 100
SCALE: 1" = 50'



50 25 0 50 100
SCALE: 1" = 50'

HAWK HILLS COURT
(28' MAT WIDTH)
(SECONDARY ACCESS)



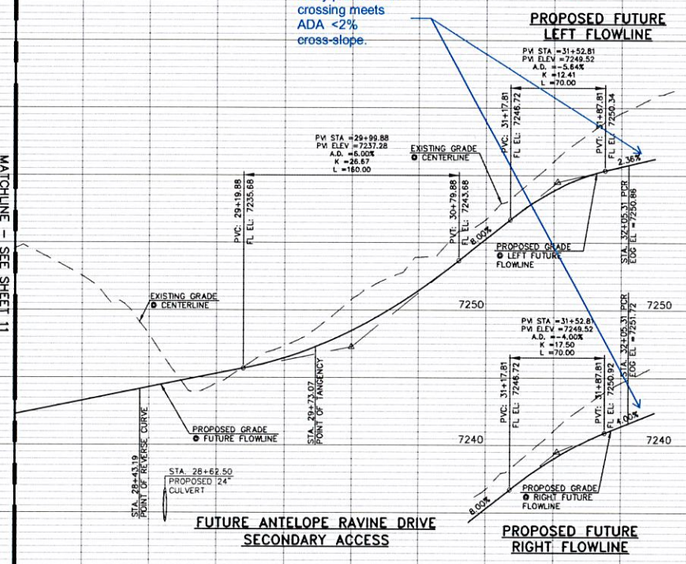
50 25 0 50 100
SCALE: 1" = 50'

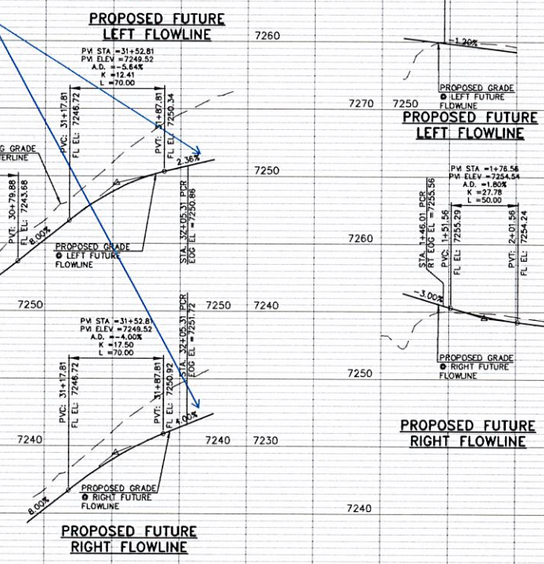
FUTURE HAWK HILLS COURT
(30' MAT WIDTH)
(SECONDARY ACCESS)

NOTE: USE PLAN VIEW ELEVATIONS FOR GRAVEL ROAD CONSTRUCTION

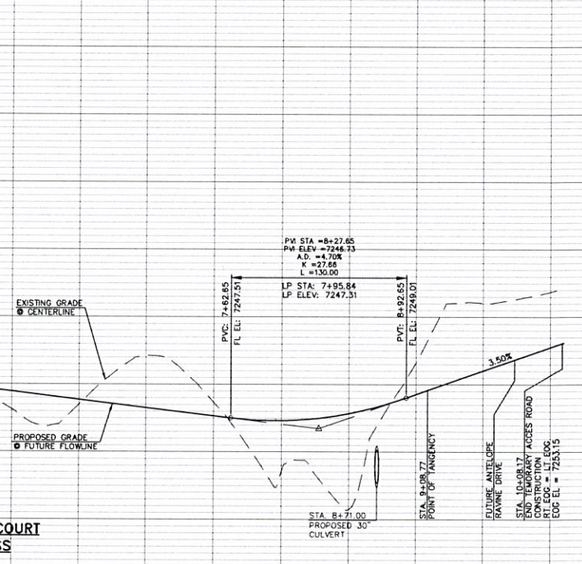
See added pool ramp sheet

verify pedestrian crossing meets ADA <2% cross-slope.





NOTE: USE PLAN VIEW ELEVATIONS FOR GRAVEL ROAD CONSTRUCTION



27+50 28+00 29+00 30+00 31+00 32+00 1+00 2+00 3+00 4+00 5+00 6+00 7+00 8+00 9+00 10+00

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STREET IMPROVEMENT PLANS
ANTELOPE RAVINE DR. & HAWK HILL CT.

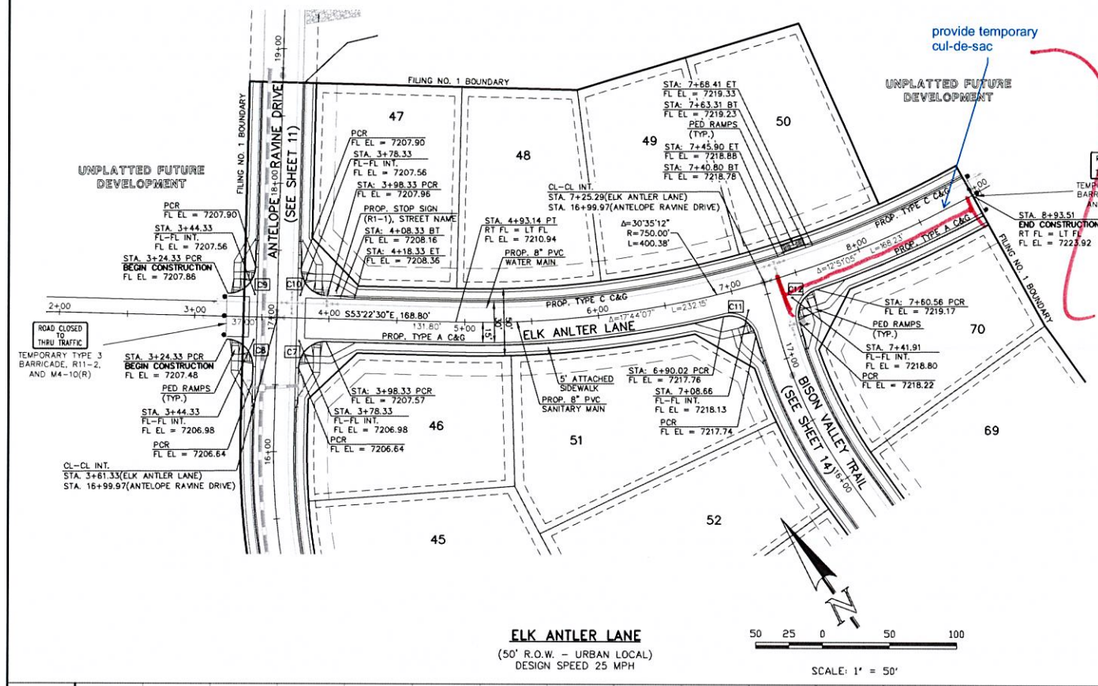
DESIGNED BY	MAW	SCALE		DATE	04-05-19
DRAWN BY	ESO	(H) 1"= 50'		SHEET	12 OF 29
CHECKED BY		(V) 1"= 5'		JOB NO.	1185.00

N:\1185\00\DRAWINGS\CONSTRUCTION\12 1185001 S 05.dwg, 8/13/2019 2:17:29 PM, 1:1

provide temporary cul-de-sac

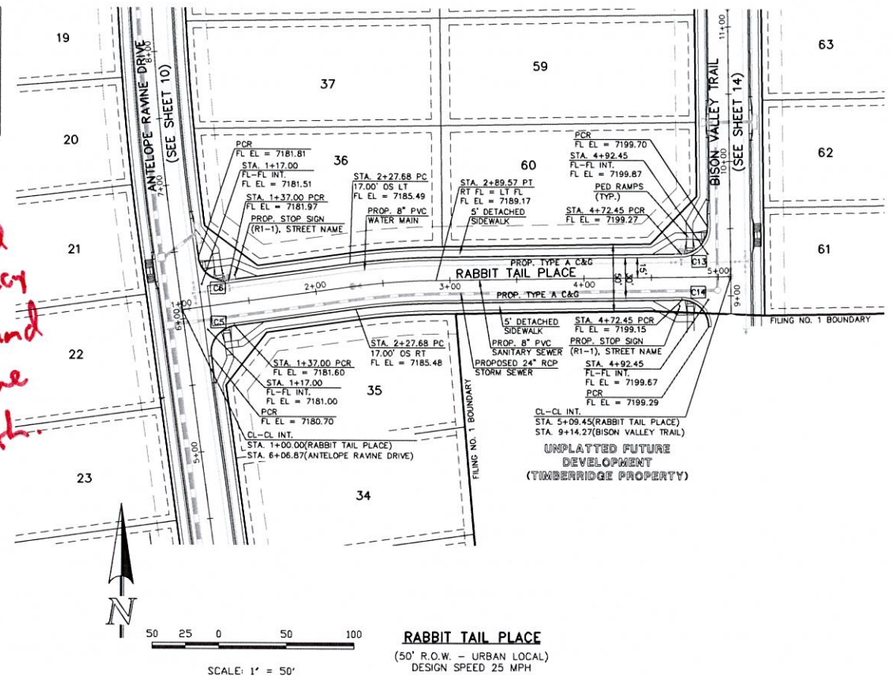
CURB RETURN CURVE TABLE			
CURVE	LENGTH	RADIUS	DELTA
C5	31.42'	20.00'	90°00'00"
C6	31.42'	20.00'	90°00'00"
C7	31.42'	20.00'	90°00'00"
C8	31.42'	20.00'	90°00'00"
C9	31.42'	20.00'	90°00'00"
C10	31.42'	20.00'	90°00'00"
C11	30.48'	20.00'	87°18'19"
C12	30.48'	20.00'	87°18'19"
C13	31.42'	20.00'	90°00'00"
C14	31.42'	20.00'	90°00'00"

Not required for emergency turn-around at only one lot depth.



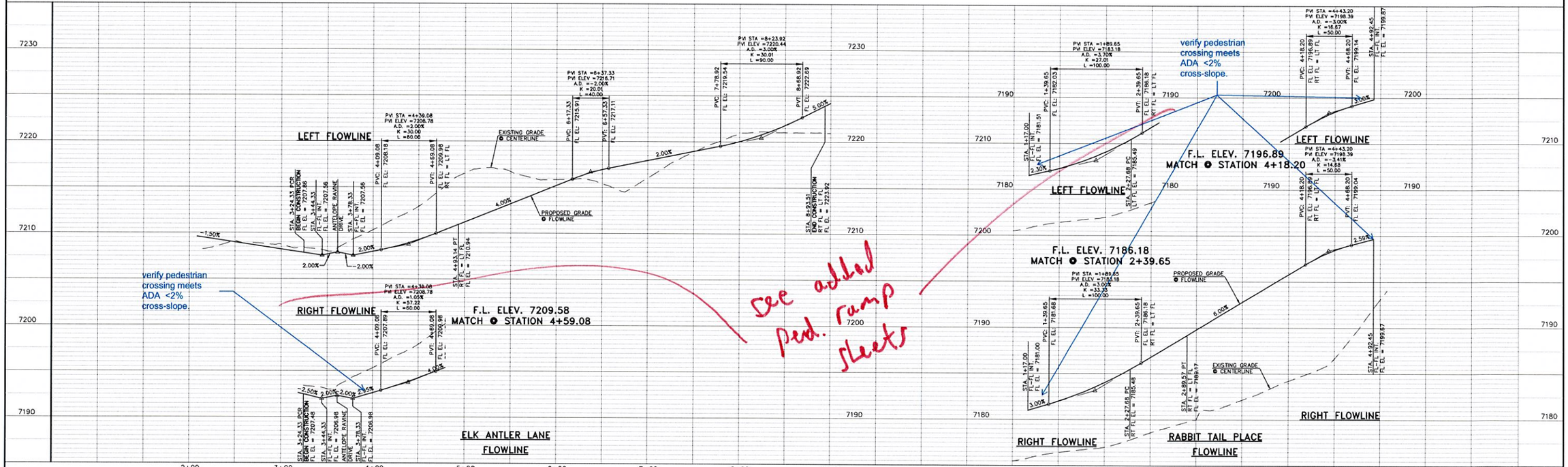
ELK ANTLER LANE
(50' R.O.W. – URBAN LOCAL)
DESIGN SPEED 25 MPH

SCALE: 1" = 50'



RABBIT TAIL PLACE
(50' R.O.W. – URBAN LOCAL)
DESIGN SPEED 25 MPH

SCALE: 1" = 50'



48 HOURS BEFORE YOU DIG,
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NO.	REVISION	DATE
1	REVISED PER COUNTY COMMENTS	08-13-19

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC A. WHORTON, COLORADO P.E. #37155 DATE

CLASSIC CONSULTING
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION PLANS
STREET IMPROVEMENT PLANS
ELK ANTLER LANE & RABBIT TAIL PLACE

DESIGNED BY	MAW	SCALE		DATE	04-05-19
DRAWN BY	ESO	(H) 1"= 50'		SHEET	13 OF 29
CHECKED BY		(V) 1"= 5'		JOB NO.	1185.00

N:\1185\00\DRAWINGS\CONSTRUCTION\13_1185SS_S_Ofl.dwg, 8/13/2019 2:29:03 PM, 1:1

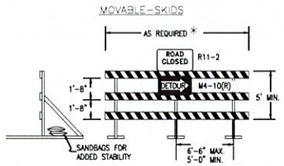
RAIL LENGTH TABLE *

TYPE 3 BARRICADE		LENGTH
FIXED	MOVABLE	
F - A	M - A	8'- 14'
F - B	M - B	15'- 24'
F - C	M - C	25'- 35'
F - D	M - D	> 35'

NOTES

1. TYPE 3 BARRICADES HAVE 3 RETLECTORIZED RAIL FACES IF FACING TRAFFIC IN ONE DIRECTION AND 6 IF FACING TRAFFIC IN TWO DIRECTIONS.
2. THE PORTION OF THE POST ABOVE THE GROUND LINE SHALL BE PAINTED IN ACCORDANCE WITH THE APPROPRIATE GENERAL NOTE.
3. DETACHABLE EXTENSION WING RAILS FOR BYPASSING OF CONSTRUCTION EQUIPMENT ARE PERMITTED, WHEN NECESSARY, ON FIXED OR MOVABLE TYPE 3 BARRICADES. THE LENGTH SHALL BE ADEQUATE TO CLOSE THE ROADWAY AND/OR SHOULDER AS REQUIRED.

MOVABLE-SKIDS



MOVABLE-HINGED

std. note

TYPICAL TYPE 3 BARRICADES

STOP (R1-1)
30"X30"

STREET NAME (D-3)

SPEED LIMIT (R2-1)
24"X30"

W14-2aR & W14-2aL

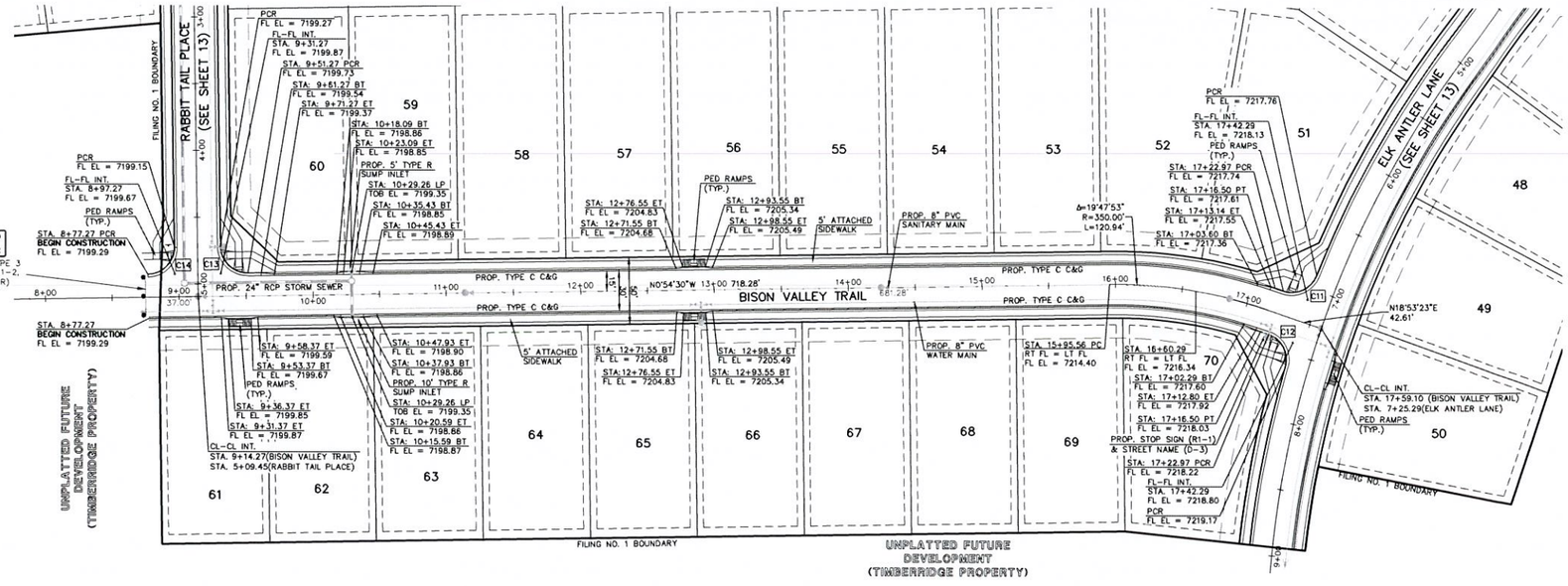
NOTE:
ALL INTERNAL SIGNS SHALL BE 4" FONT LETTER SIZE.
SIGNS AT VOLLMER INTERSECTION SHALL BE 6" FONT LETTER SIZE.

INSTALL R11-50 EMERGENCY AND AUTHORIZED VEHICLES ONLY SIGN

INSTALL OM1-3 OBSTRUCTIONS WITHIN ROADWAY SIGN

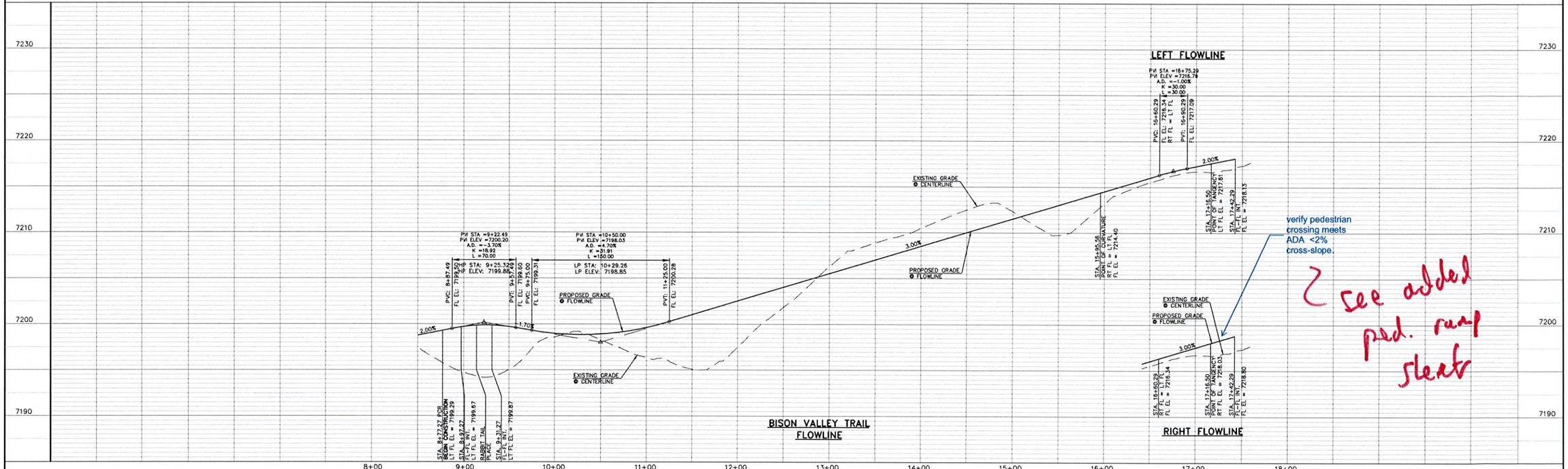
CURB RETURN CURVE TABLE

CURVE	LENGTH	RADIUS	DELTA
C11	30.48'	20.00'	87°18'19"
C12	30.48'	20.00'	87°18'19"
C13	31.42'	20.00'	90°00'00"
C14	31.42'	20.00'	90°00'00"



BISON VALLEY TRAIL

(50' R.O.W. – URBAN LOCAL)
DESIGN SPEED 25 MPH



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MARC A. WHORTON, COLORADO P.E. #37155 DATE

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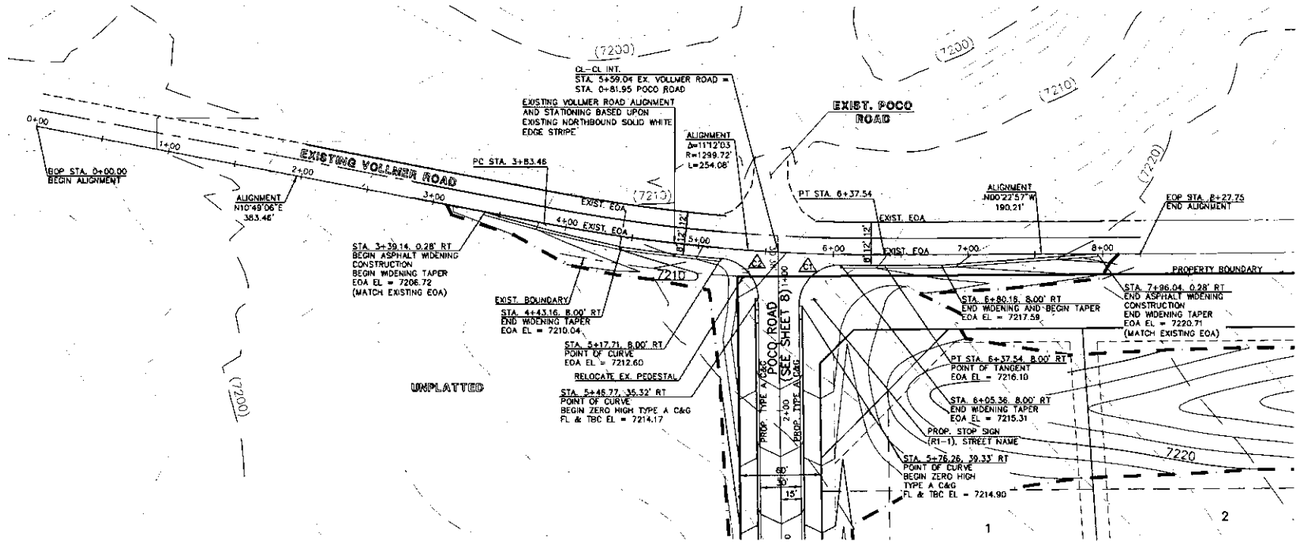
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION PLANS
STREET IMPROVEMENT PLANS
BISON VALLEY TRAIL

CLASSIC CONSULTING

DESIGNED BY	MAW	SCALE	DATE 04-05-19
DRAWN BY	ESO	(H) 1"= 50'	SHEET 14 OF 29
CHECKED BY		(V) 1"= 5'	JOB NO. 1185.00

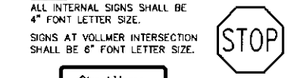
N:\1185\00\DRAWINGS\CONSTRUCTION\14 1185SD S 07.dwg, 8/13/2019 2:35:35 PM, 1:1



△ EOA RETURN CURVE TABLE			
CURVE	LENGTH	RADIUS	DELTA
C1	48.12'	30.00'	91°53'43"
C2	44.11'	30.00'	84°14'27"

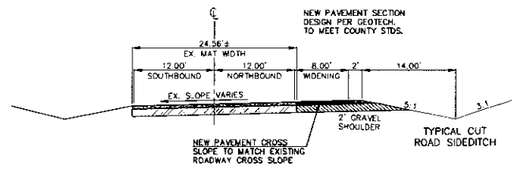
EXISTING VOLLMER ROAD
(R.O.W. VARIES– RURAL MINOR ARTERIAL)
POSTED SPEED 45 MPH

NOTE:
ALL INTERNAL SIGNS SHALL BE 4" FONT LETTER SIZE.
SIGNS AT VOLLMER INTERSECTION SHALL BE 6" FONT LETTER SIZE.

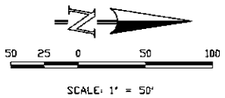


STREET NAME (D-3)

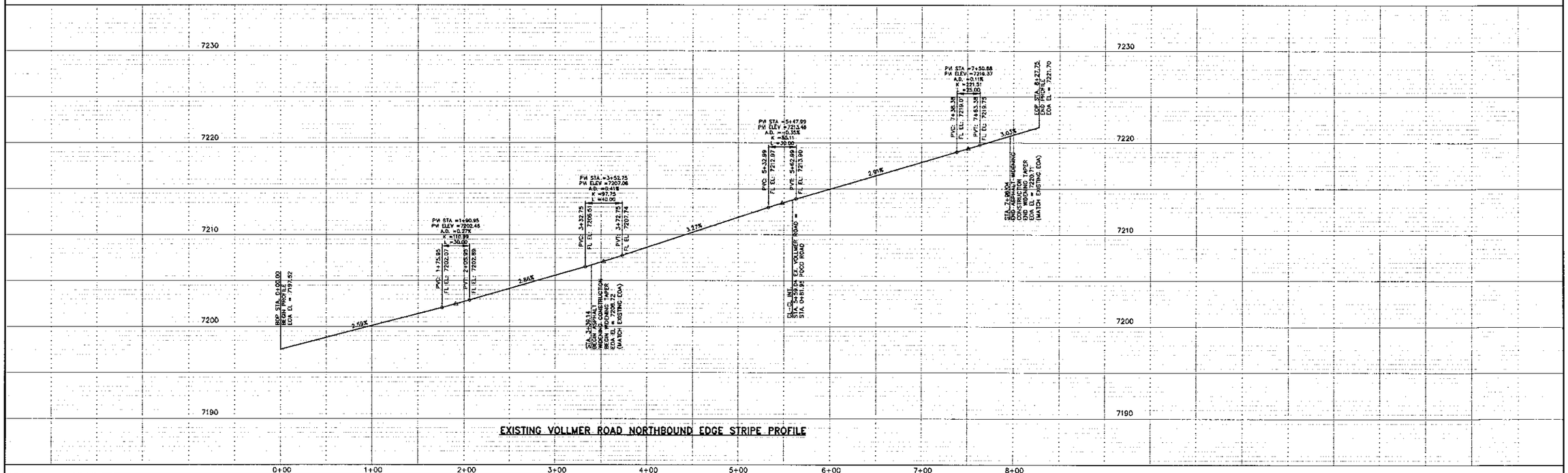
STOP (R1-1)
30"X30"



EXISTING VOLLMER ROAD SHOULDER WIDENING
SCALE: 1" = 10'



SCALE: 1" = 50'



EXISTING VOLLMER ROAD NORTHBOUND EDGE STRIPE PROFILE

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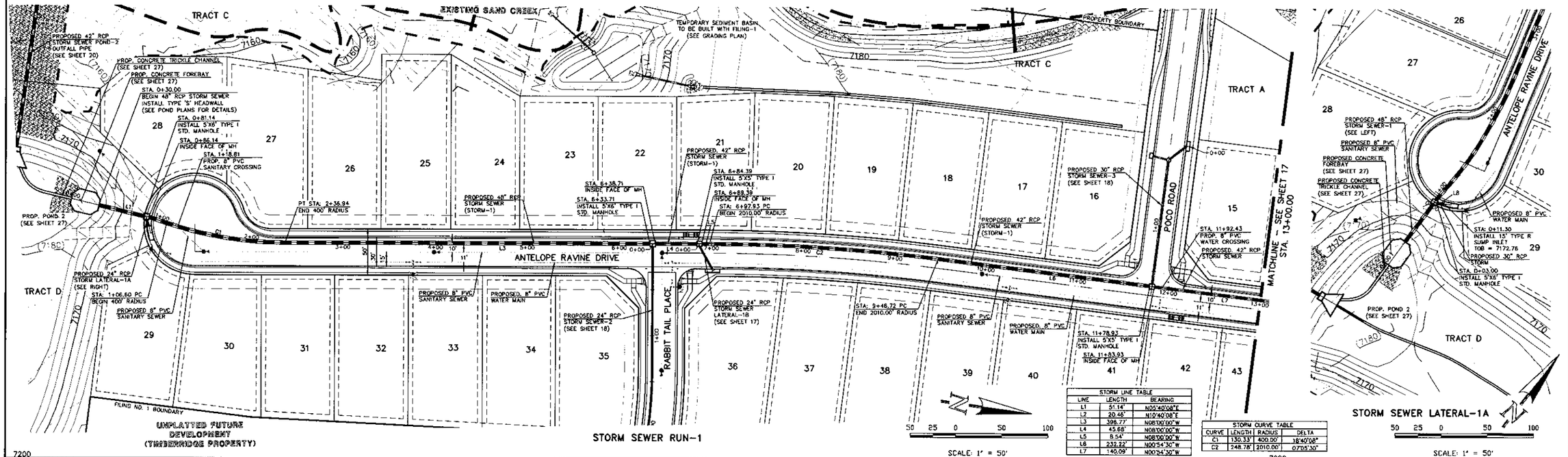
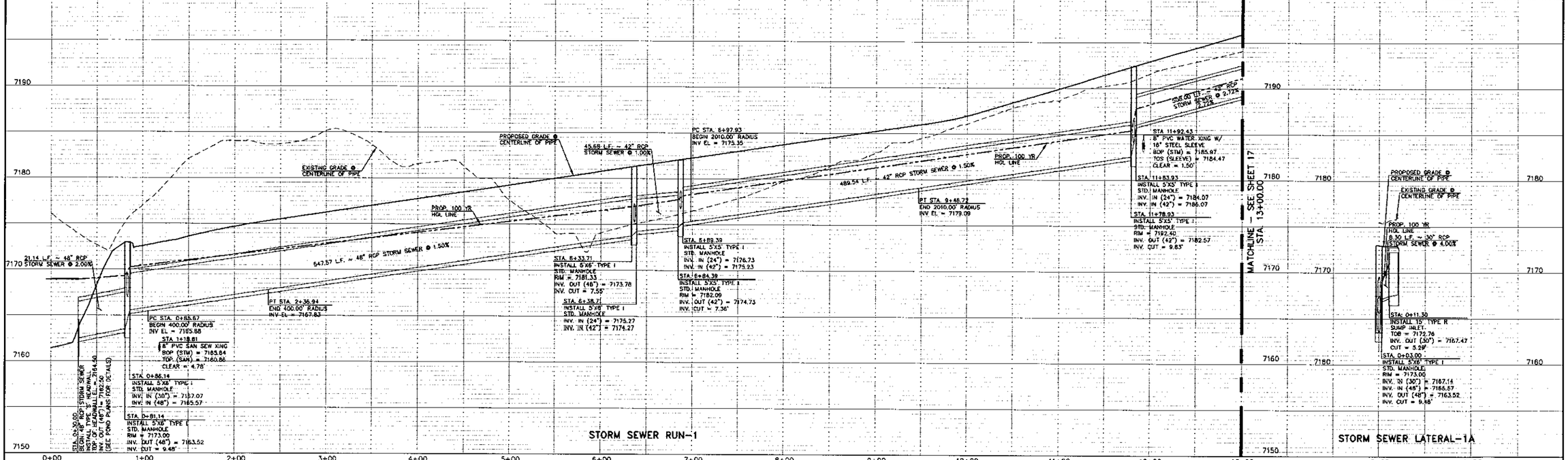
RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION PLANS
STREET IMPROVEMENT PLANS
VOLLMER ROAD EAST SHOULDER WIDENING

CLASSIC CONSULTING

DESIGNED BY	MAW	SCALE	DATE 04-05-19
DRAWN BY	ESO	(H) 1"= 50'	SHEET 15 OF 29
CHECKED BY		(V) 1"= 5'	JOB NO. 1185.00





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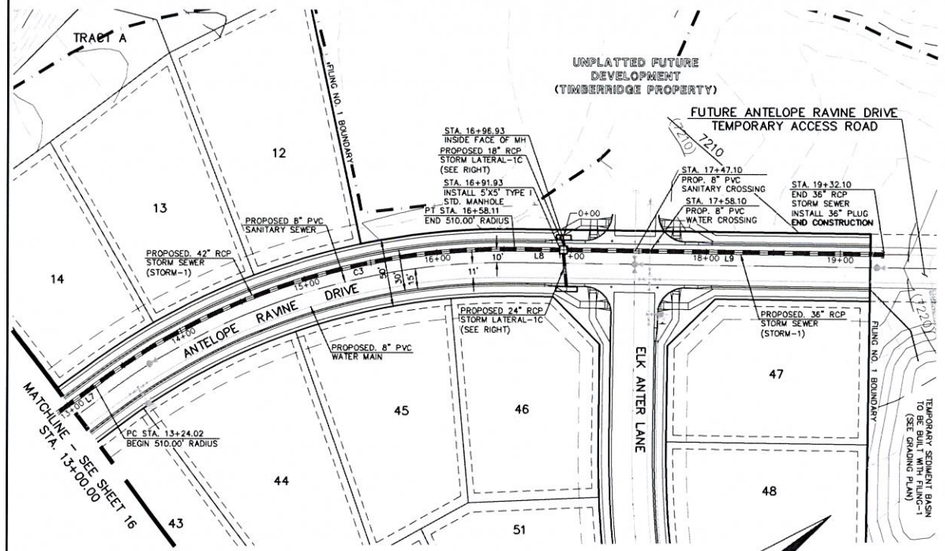
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

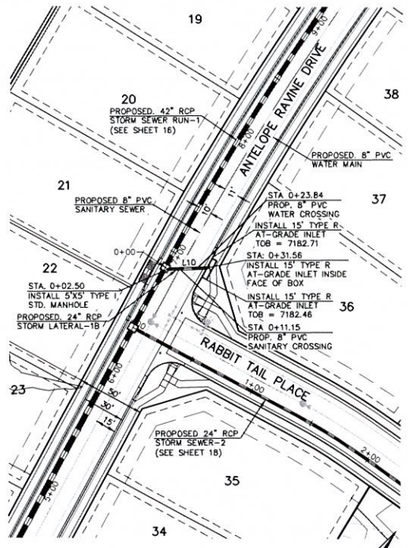
RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION PLANS
STORM SEWER PLAN

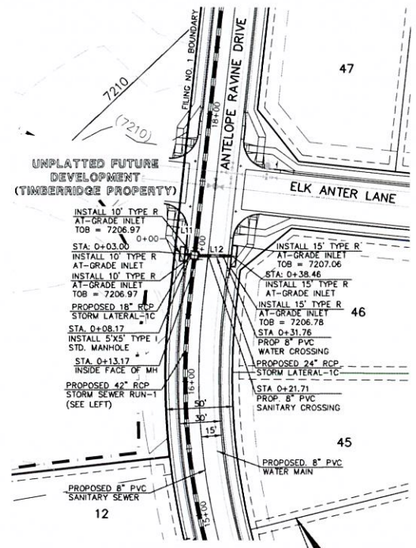
DESIGNED BY	MAW	SCALE		DATE	04-05-19
DRAWN BY	ESD	(H) 1"= 50'		SHEET	16 OF 29
CHECKED BY		(V) 1"= 5'		JOB NO.	1185.00

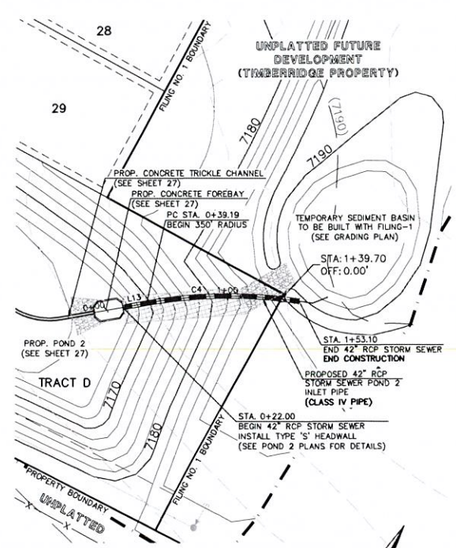


STORM LINE TABLE		
LINE	LENGTH	BEARING
L7	140.09'	N00°54'30"W
L8	33.81'	N36°37'30"E
L9	235.17'	N36°37'30"E
L10	29.06'	N52°05'58"E
L11	5.17'	S53°22'30"E
L12	25.29'	S59°02'50"E
L13	18.19'	N50°26'39"E

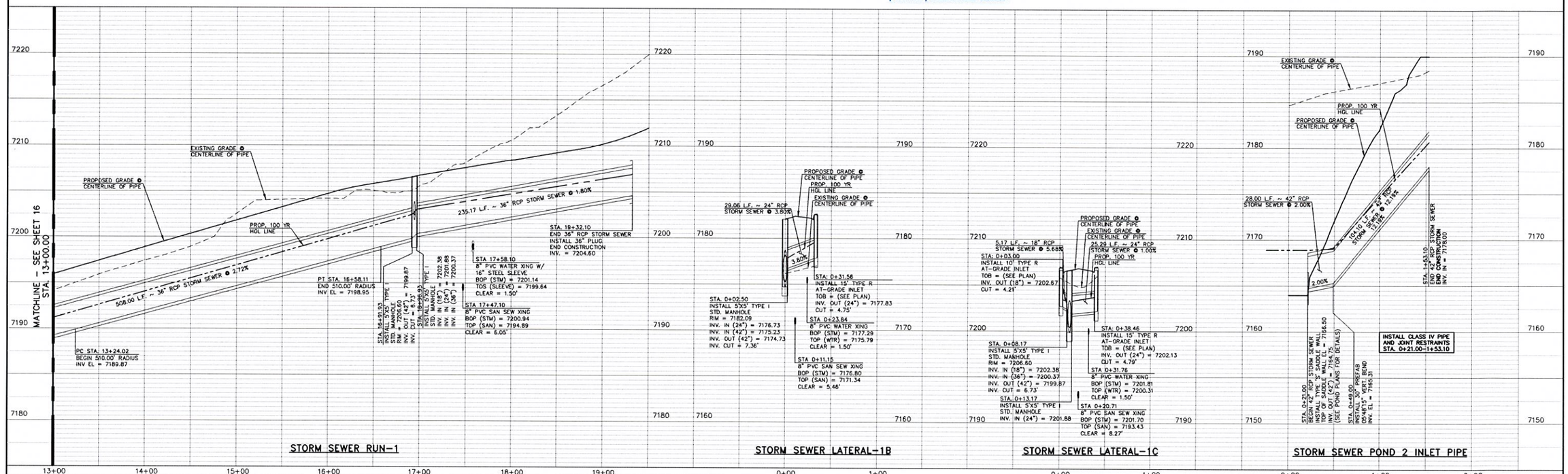
STORM CURVE TABLE			
CURVE	LENGTH	RADIUS	DELTA
C3	335.07'	511.50'	37°32'00"
C4	113.91'	350.00'	18°38'51"







Label all storm sewers as public or private/metro district



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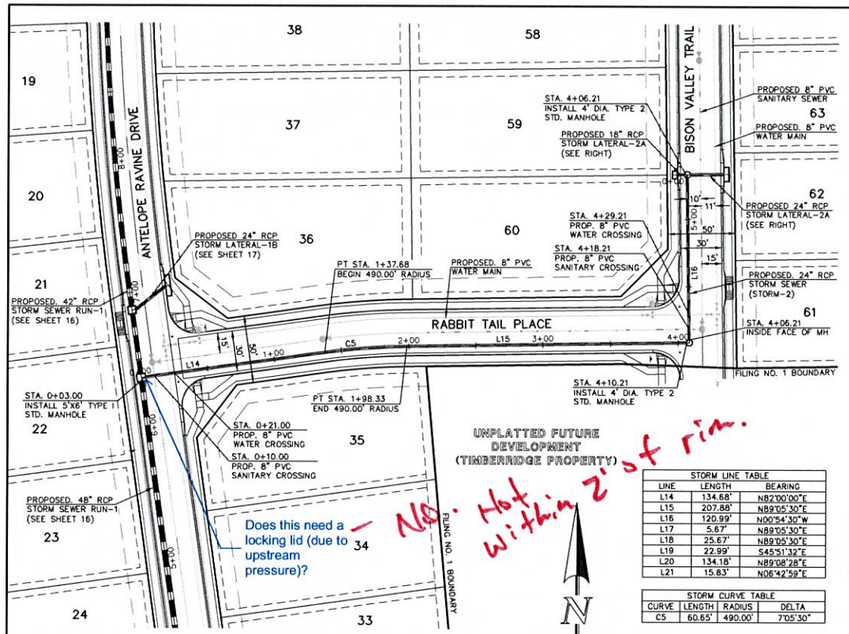
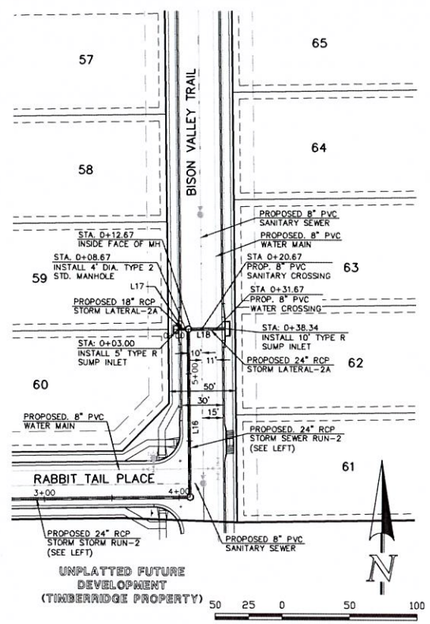
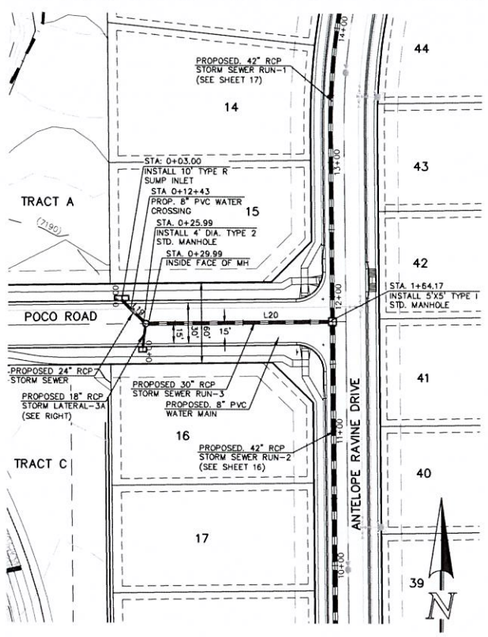
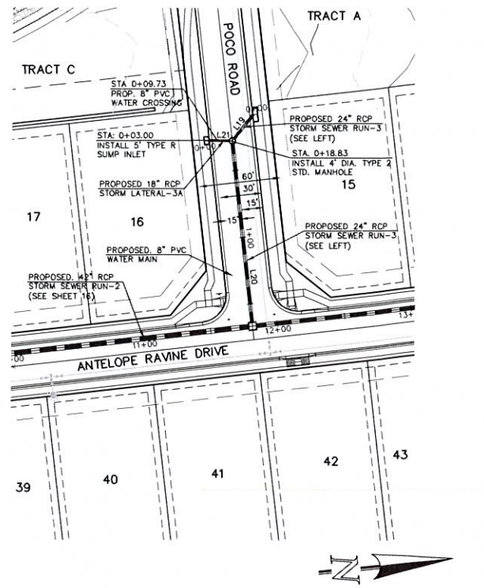
STORM SEWER PLAN

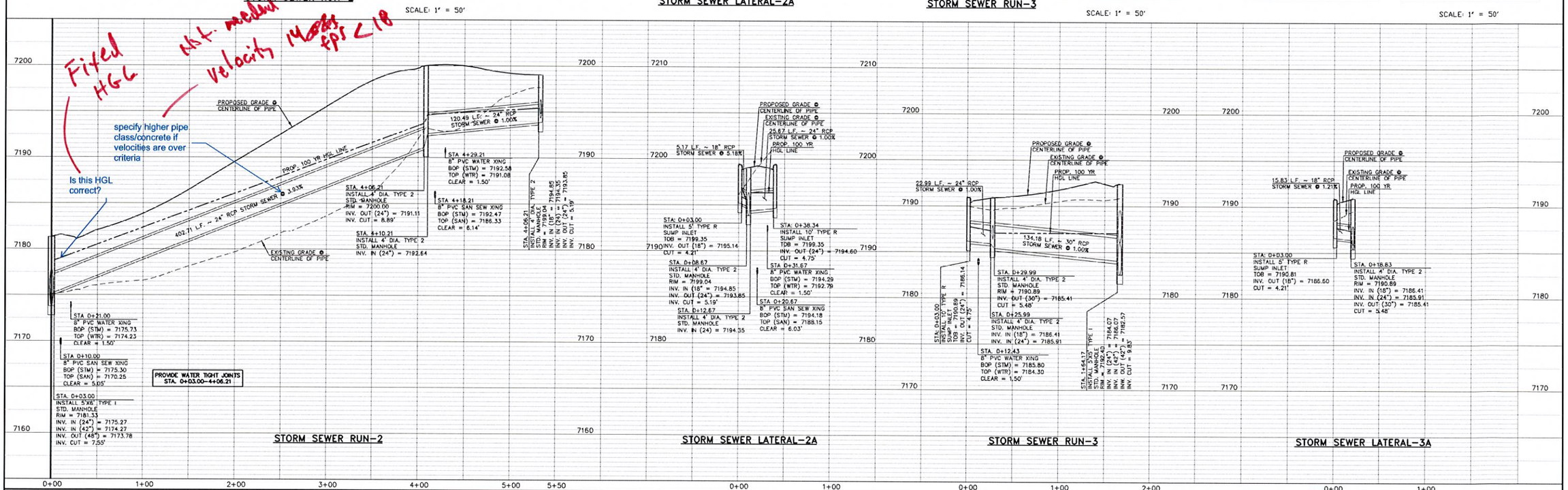
DESIGNED BY	MAW	SCALE		DATE	04-05-19
DRAWN BY	ESO	(H) 1"=	50'	SHEET	17 OF 29
CHECKED BY		(V) 1"=	5'	JOB NO.	1185.00











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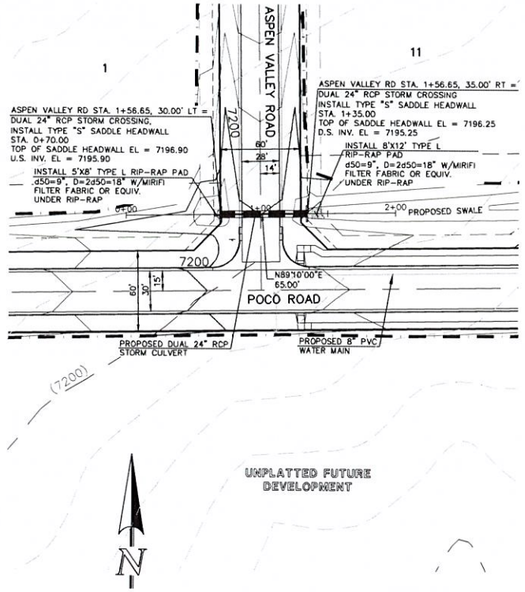
STORM SEWER PLAN

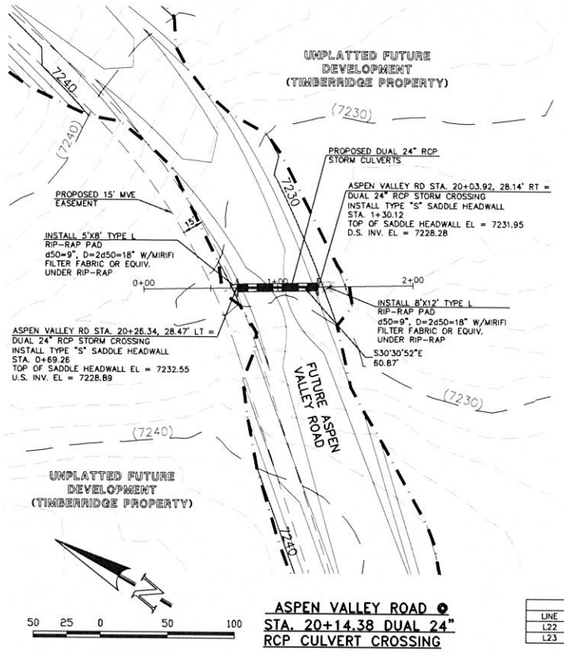
DESIGNED BY	MAW	SCALE		DATE	04-05-19
DRAWN BY	ESO	(H) 1"= 50'		SHEET	18 OF 29
CHECKED BY		(V) 1"= 5'		JOB NO.	1185.00

N:\1185\00\DRAWINGS\CONSTRUCTION\18 1185001 STM 03.dwg, 8/13/2019 4:27:57 PM, 1:1



DUAL STORM CULVERT ASPEN VALLEY ROAD CROSSING 24" RCP CULVERTS

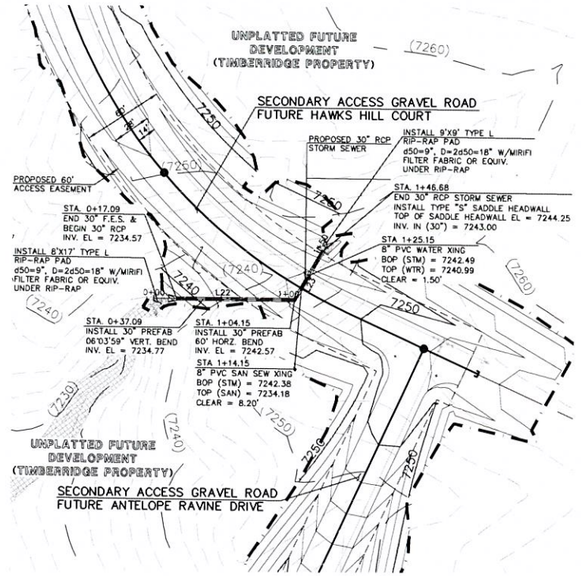
SCALE: 1" = 50'



ASPEN VALLEY ROAD @ STA. 20+14.38 DUAL 24" RCP CULVERT CROSSING

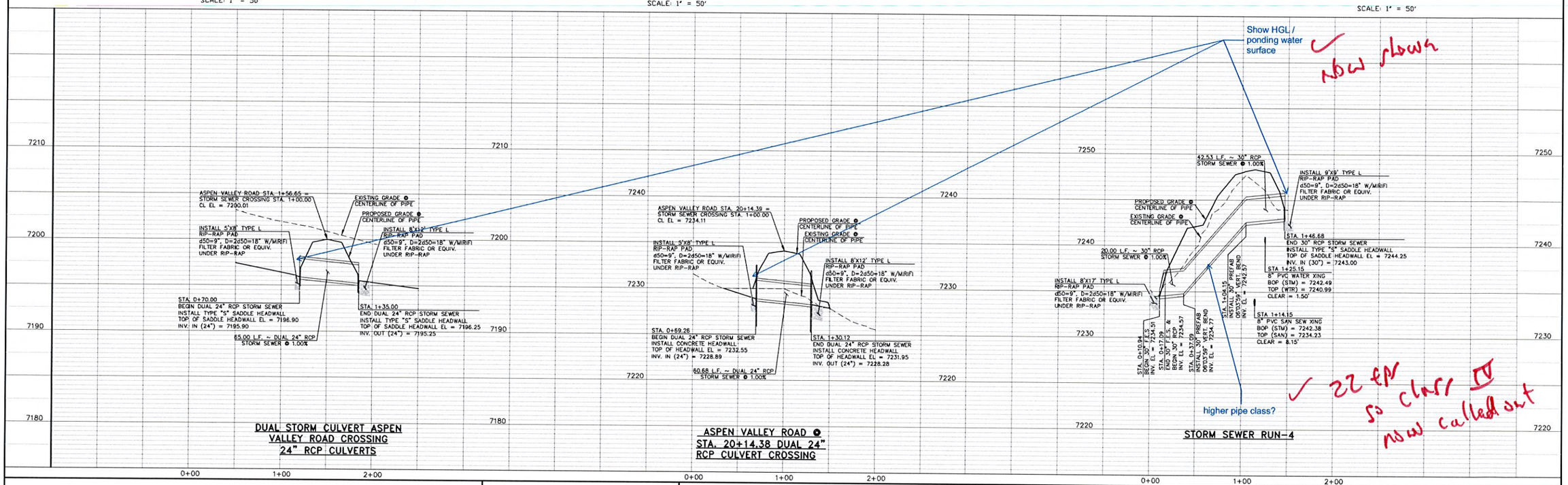
SCALE: 1" = 50'

STORM LINE TABLE		
LINE	LENGTH	BEARING
L22	87.06'	N82°23'14"E
L23	42.53'	N22°23'14"E



STORM SEWER RUN-4

SCALE: 1" = 50'



DUAL STORM CULVERT ASPEN VALLEY ROAD CROSSING 24" RCP CULVERTS

ASPEN VALLEY ROAD @ STA. 20+14.38 DUAL 24" RCP CULVERT CROSSING

STORM SEWER RUN-4

22 fps so class IV now called out

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STORM SEWER PLAN

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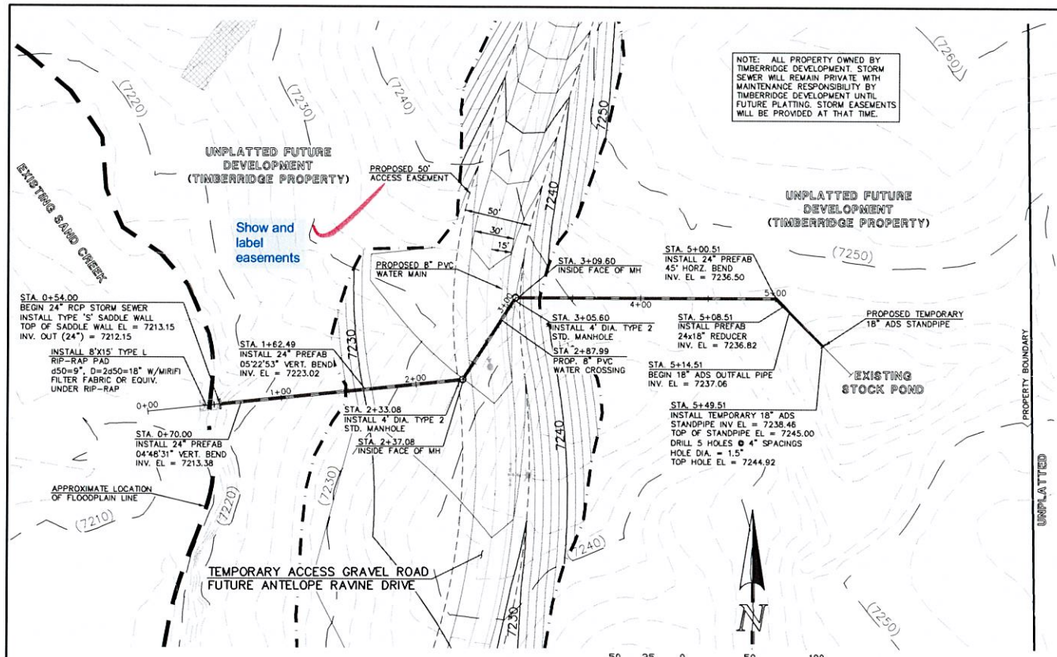
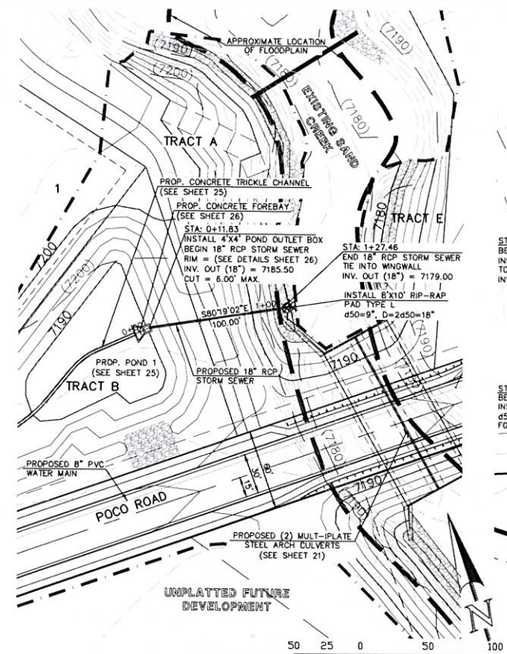
CHECKED BY		(V) 1"=	5'	JOB NO.	1185.00

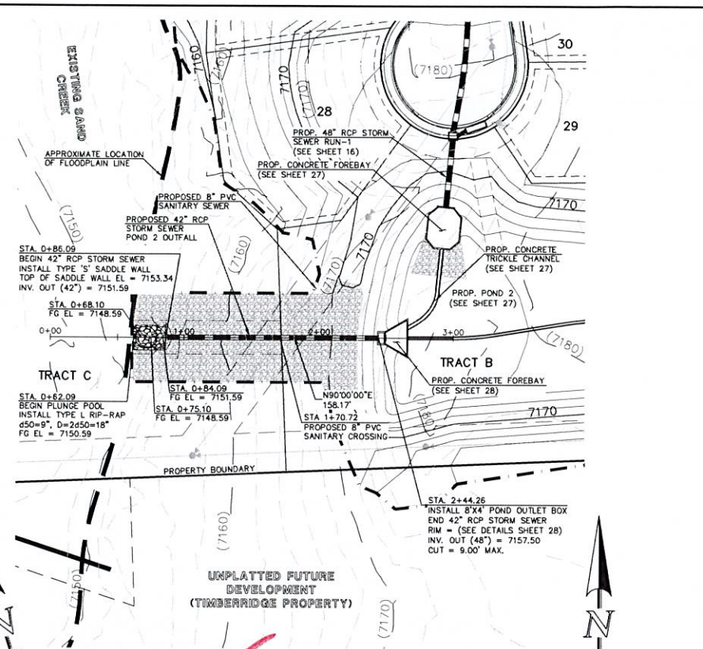
N:\1185\00\DRAWINGS\CONSTRUCTION\19 1185.00 STM 04.dwg, 8/23/2019 10:51:07 AM, 1:1



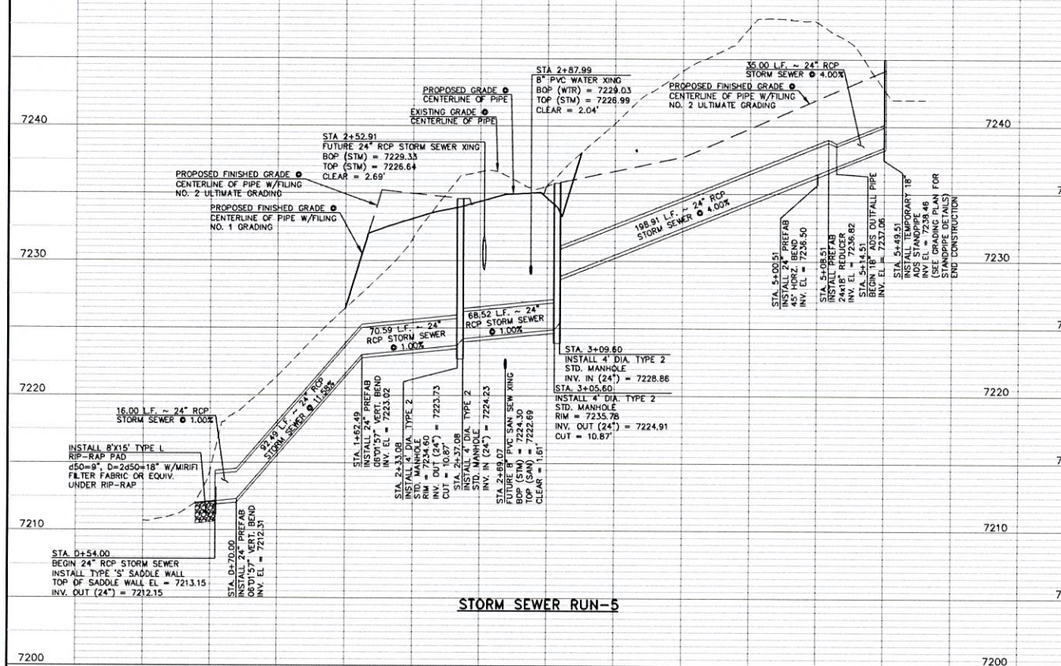
STORM SEWER RUN-5



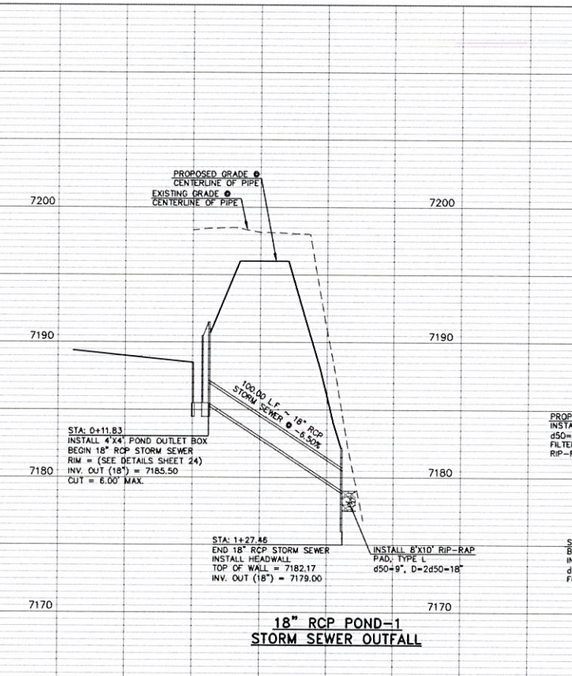
18" RCP POND-1 STORM SEWER OUTFALL



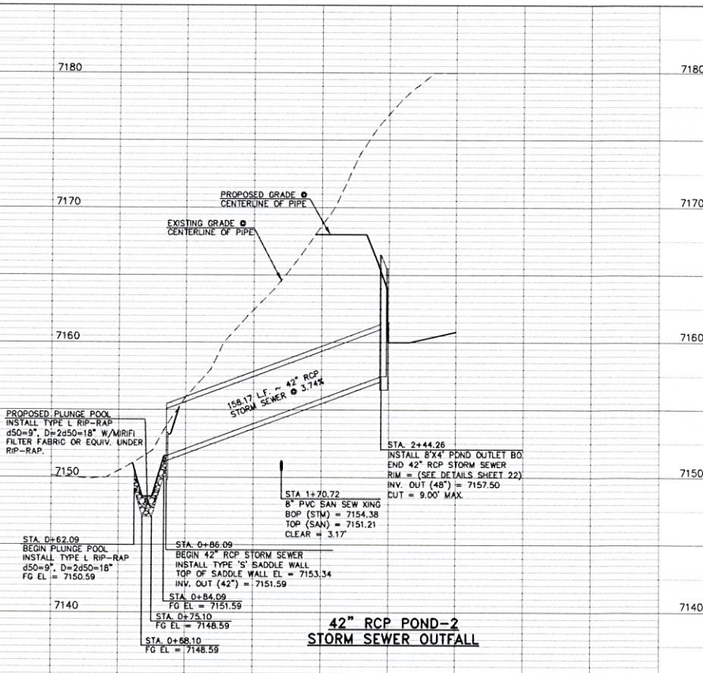
42" RCP POND-2 STORM SEWER OUTFALL



STORM SEWER RUN-5



18" RCP POND-1 STORM SEWER OUTFALL



42" RCP POND-2 STORM SEWER OUTFALL

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NO.	REVISION	DATE
1	REVISED PER COUNTY COMMENTS	08-13-19

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC A. WHORTON, COLORADO P.E. #37155 DATE

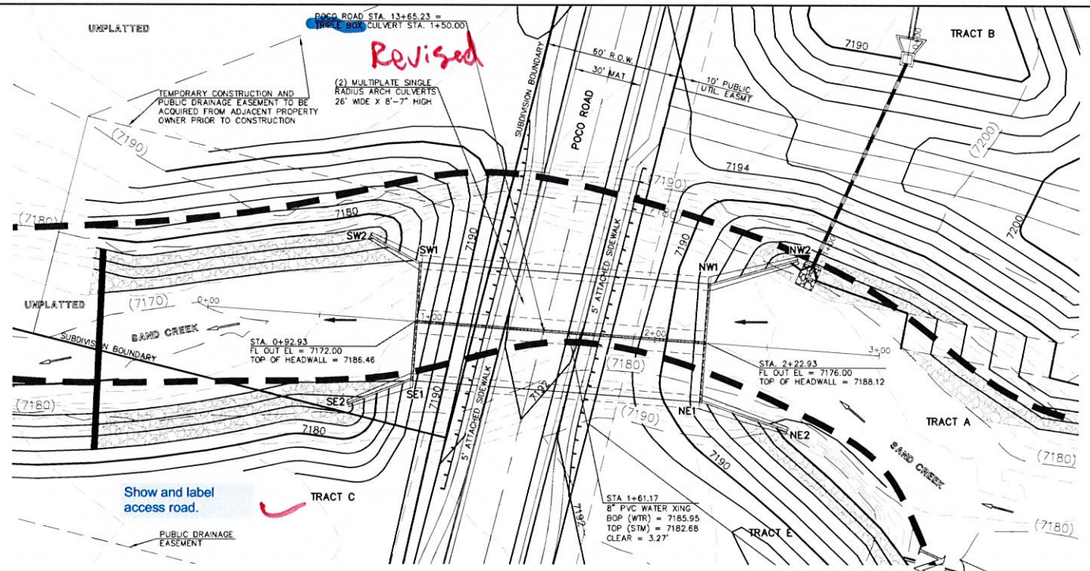
CLASSIC CONSULTING SM
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION PLANS
STORM SEWER PLAN

CLASSIC CONSULTING

DESIGNED BY	MAW	SCALE		DATE	04-05-19
DRAWN BY	ESO	(H) 1"=	50'	SHEET	20 OF 29
CHECKED BY		(V) 1"=	5'	JOB NO.	1185.00

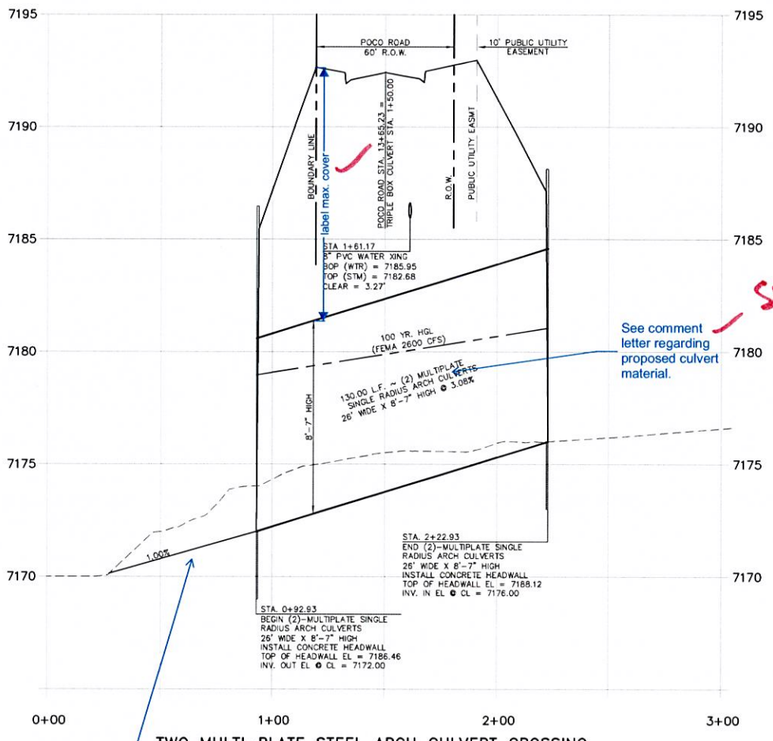
N:\1185\01\DRAWINGS\CONSTRUCTION\20 1185S00 STM 00.dwg, 8/23/2019 1:44:45 PM, 1:1



TWO MULTI-PLATE STEEL ARCH CULVERT CROSSING

30 15 0 30 60

SCALE: 1" = 30'



See comment letter regarding proposed culvert material.

See design life letter/calcs.

What are channel velocities and Froude Nos? Is no bottom stailization required? Provide complete channel profile through the site to match HEC-RAS modeling.

See revised plans and calcs. for culverts

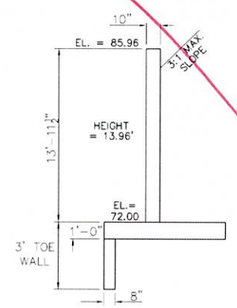
TWO MULTI-PLATE STEEL ARCH CULVERT CROSSING

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

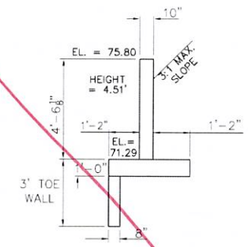
SOUTHWEST HEADWALL/WINGWALLS

PER CDOT M-601-20
SEE CDOT M-601-20 FOR DESIGN REQUIREMENTS

EL AT TOP OF HEADWALL = 7186.46
EL AT TOP OF WINGWALL SW1 = 7185.96
EL AT TOP OF WINGWALL SW2 = 7175.80
EL AT TOP OF SW1 FOOTING = 7172.00
EL AT TOP OF SW2 FOOTING = 7171.29



SOUTHWEST WINGWALL TOP
N.T.S.
(WALL SW1)

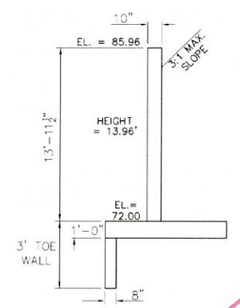


SOUTHWEST WINGWALL BOTTOM
N.T.S.
(WALL SW2)

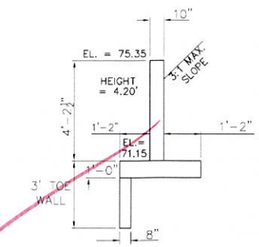
SOUTHEAST HEADWALL/WINGWALLS

PER CDOT M-601-20
SEE CDOT M-601-20 FOR DESIGN REQUIREMENTS

EL AT TOP OF HEADWALL = 7186.46
EL AT TOP OF WINGWALL SE1 = 7185.96
EL AT TOP OF WINGWALL SE2 = 7175.35
EL AT TOP OF SE1 FOOTING = 7172.00
EL AT TOP OF SE2 FOOTING = 7171.15



SOUTHEAST WINGWALL TOP
N.T.S.
(WALL SE1)

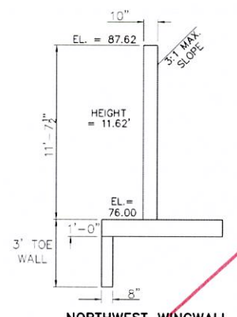


SOUTHEAST WINGWALL BOTTOM
N.T.S.
(WALL SE2)

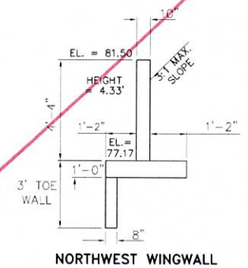
NORTHWEST HEADWALL/WINGWALLS

PER CDOT M-601-20
SEE CDOT M-601-20 FOR DESIGN REQUIREMENTS

EL AT TOP OF HEADWALL = 7188.12
EL AT TOP OF WINGWALL NW1 = 7187.62
EL AT TOP OF WINGWALL NW2 = 7181.50
EL AT TOP OF NW1 FOOTING = 7176.00
EL AT TOP OF NW2 FOOTING = 7177.17



NORTHWEST WINGWALL TOP
N.T.S.
(WALL NW1)

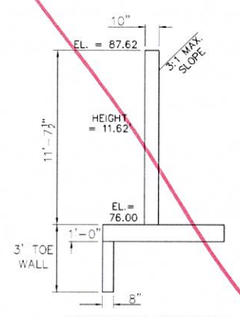


NORTHWEST WINGWALL BOTTOM
N.T.S.
(WALL NW2)

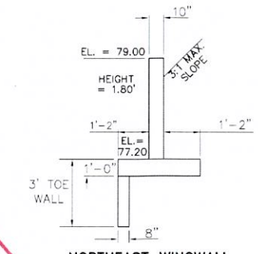
NORTHEAST HEADWALL/WINGWALLS

PER CDOT M-601-20
SEE CDOT M-601-20 FOR DESIGN REQUIREMENTS

EL AT TOP OF HEADWALL = 7188.12
EL AT TOP OF WINGWALL NE1 = 7187.62
EL AT TOP OF WINGWALL NE2 = 7179.00
EL AT TOP OF NE1 FOOTING = 7176.00
EL AT TOP OF NE2 FOOTING = 7177.20



NORTHEAST WINGWALL TOP
N.T.S.
(WALL NE1)



NORTHEAST WINGWALL BOTTOM
N.T.S.
(WALL NE2)

See Final design plans from contech

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MARC A. WHORTON, COLORADO P.E. #37155 DATE

CLASSIC CONSULTING
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION PLANS
POCO ROAD CULVERT CROSSING

CLASSIC CONSULTING

DESIGNED BY	PRA	SCALE		DATE	04-05-19
DRAWN BY	PRA	(H) 1"=	30'	SHEET	21 OF 29
CHECKED BY		(V) 1"=	3'	JOB NO.	1185.00

N:\1185001\DRAWINGS\CONSTRUCTION\21 1185001 STM 06 BOX CULVERT.dwg, 8/27/2019 2:51:52 PM, 1:1

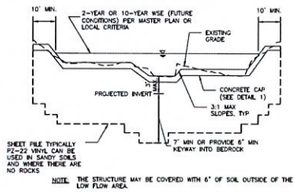
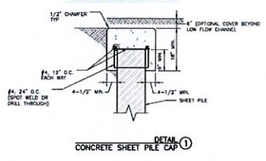


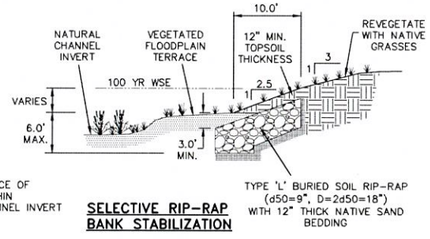
Figure 9-27. Check structure details (Part 2 of 3)

Adjust so this prints legibly (verify).



DETAIL
CONCRETE SHEET PILE CAP 1

Figure 9-28. Check structure details (Part 3 of 3)



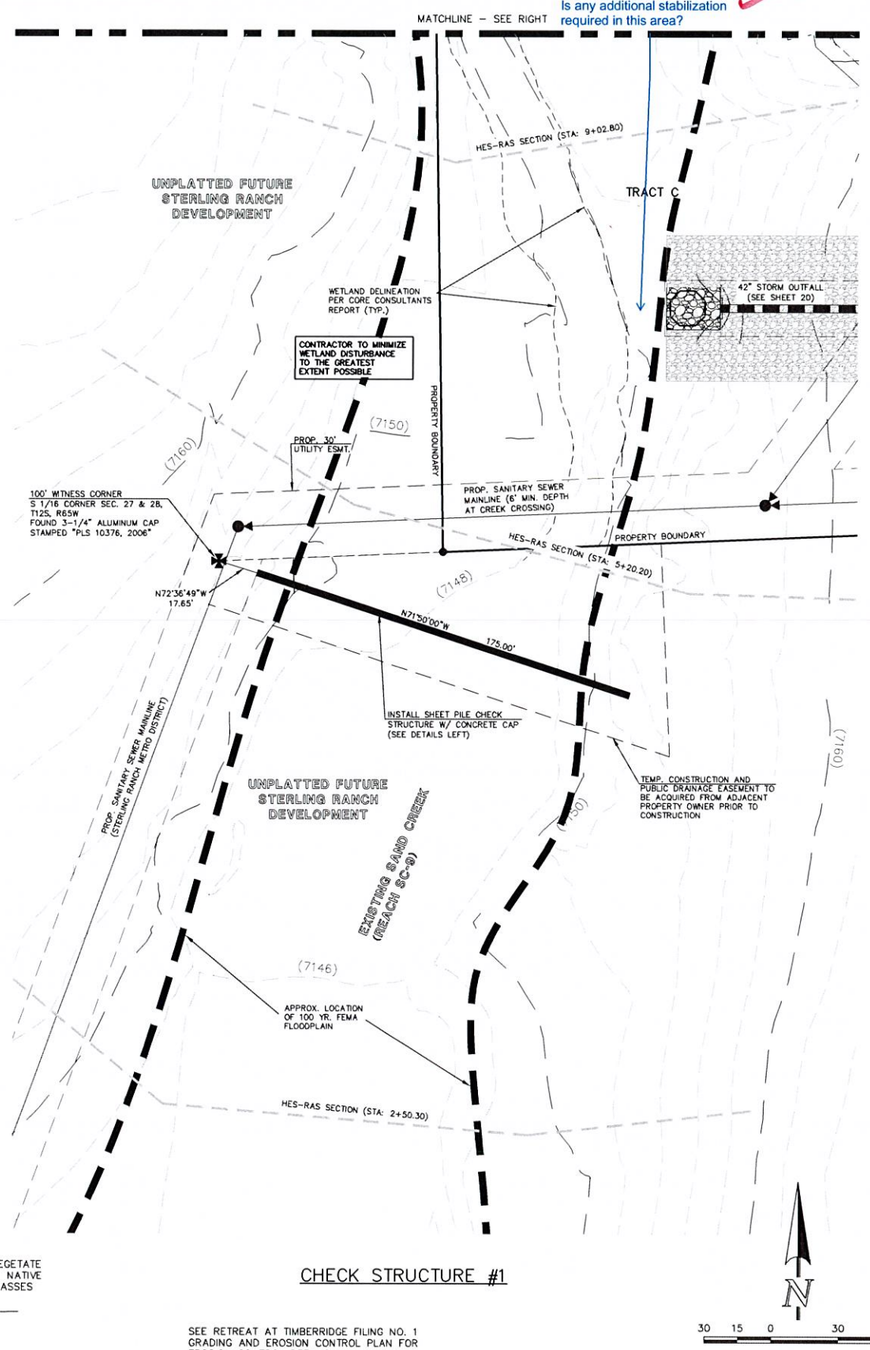
NO DISTURBANCE OF WETLANDS WITHIN NATURAL CHANNEL INVERT

SELECTIVE RIP-RAP BANK STABILIZATION

SECTION A-A
N.T.S.

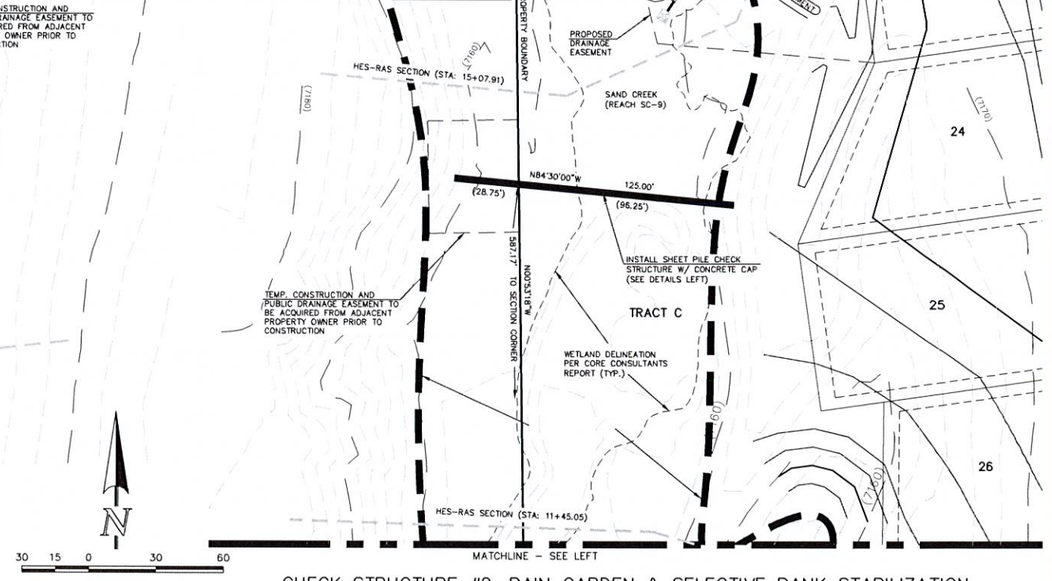
TYPE 'L' BURIED SOIL RIP-RAP (d50=9", D=2d50=18") WITH 12" THICK NATIVE SAND BEDDING

Is any additional stabilization required in this area?



CHECK STRUCTURE #1

SEE RETREAT AT TIMBERRIDGE FILING NO. 1 GRADING AND EROSION CONTROL PLAN FOR EROSION CONTROL DETAILS.



CHECK STRUCTURE #2, RAIN GARDEN & SELECTIVE BANK STABILIZATION

N

30 15 0 30 60

SCALE: 1" = 30'

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MARC A. WHORTON, COLORADO P.E. #37155 DATE

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Colorado Springs, Colorado 80903 (719)785-0799(Fax)

RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION PLANS
CHECK STRUCTURES AND SELECTIVE BANK STABILIZATION

CLASSIC CONSULTING

DESIGNED BY	MAW	SCALE		DATE	04-05-19
DRAWN BY	MAW	(H) 1"= 30'		SHEET	22 OF 29
CHECKED BY		(V) 1"= N/A		JOB NO.	1185.00

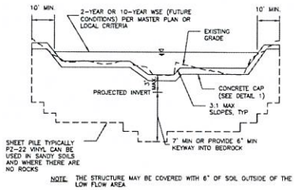


Figure 9-27. Check structure details (Part 2 of 3)

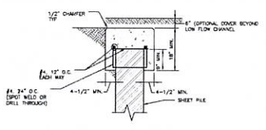
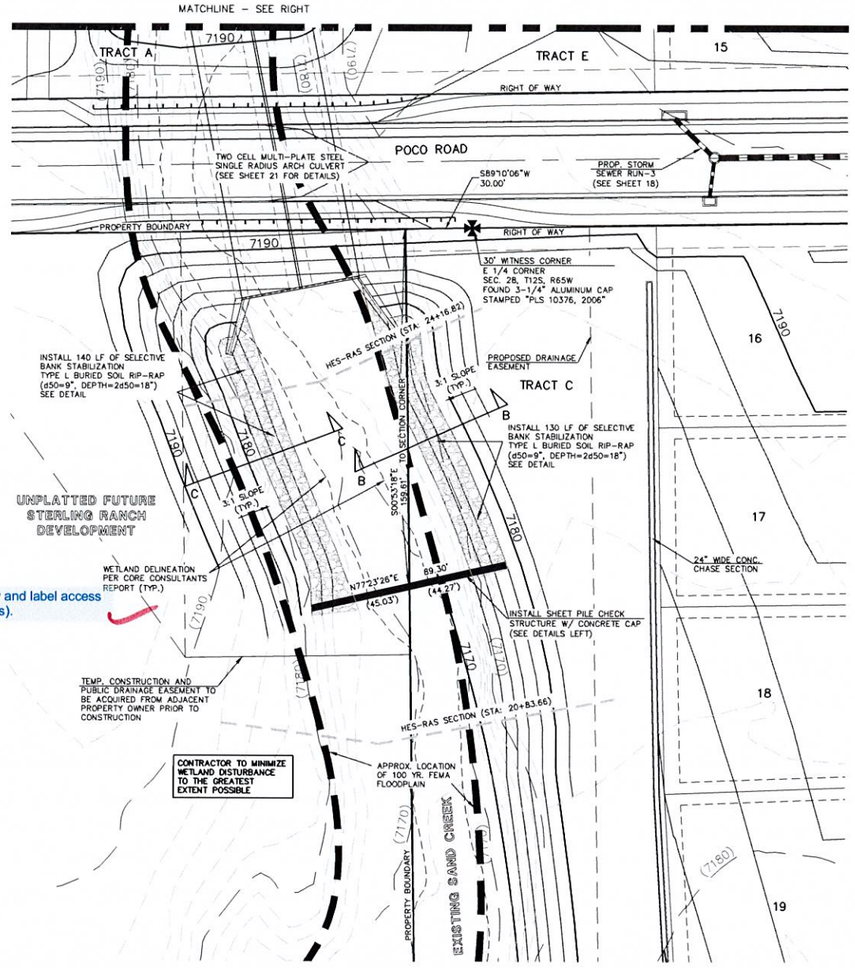
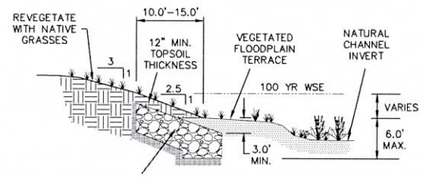


Figure 9-28. Check structure details (Part 3 of 3)



Show and label access road(s).

CHECK STRUCTURE #3 & SELECTIVE BANK STABILIZATION

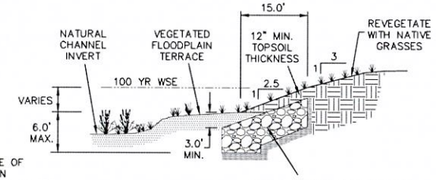


SELECTIVE RIP-RAP BANK STABILIZATION

SECTION C–C

N.T.S.

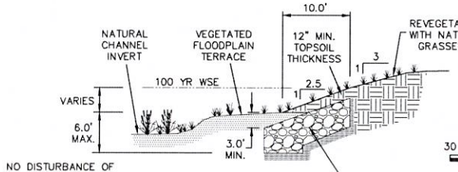
NO DISTURBANCE OF WETLANDS WITHIN NATURAL CHANNEL INVERT



SELECTIVE RIP-RAP BANK STABILIZATION

SECTION B–B

N.T.S.

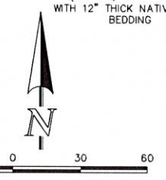


NO DISTURBANCE OF WETLANDS WITHIN NATURAL CHANNEL INVERT

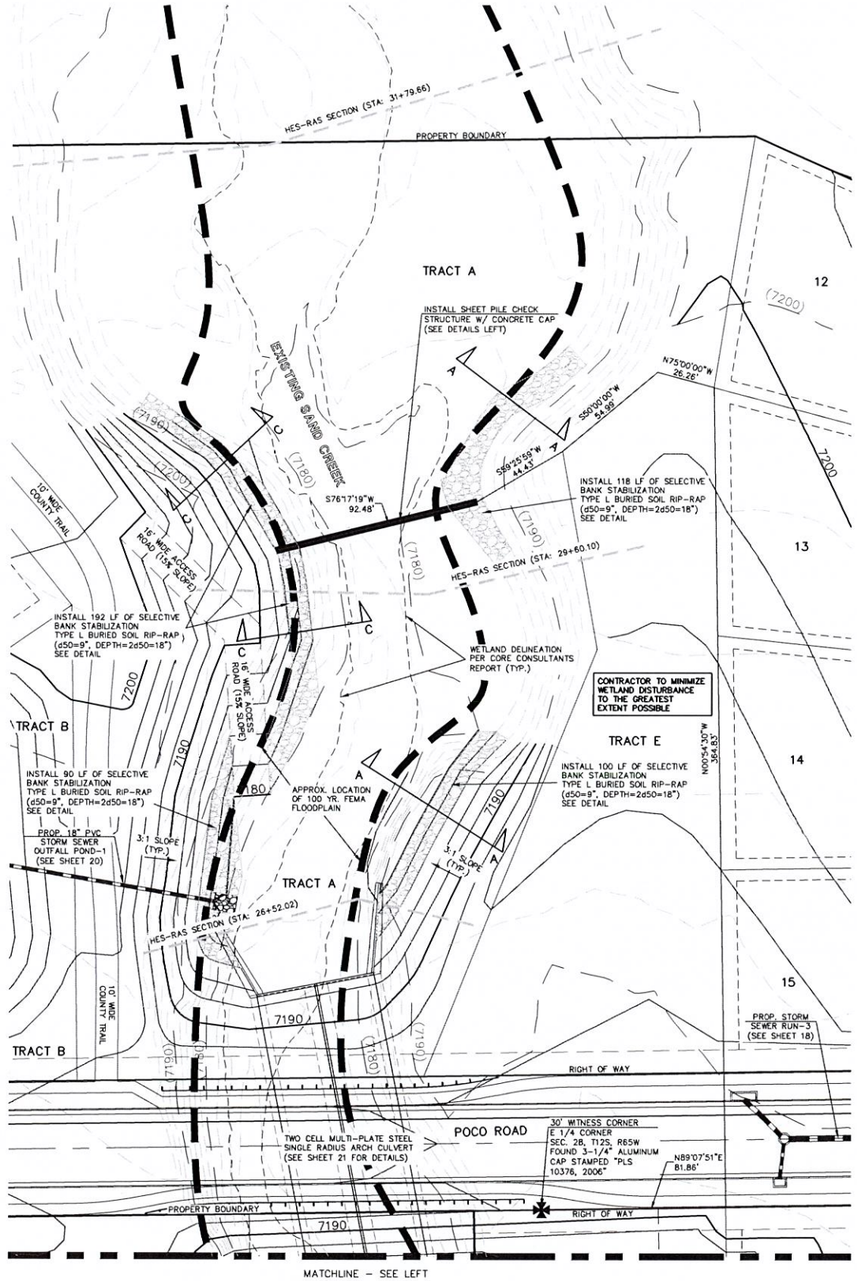
SELECTIVE RIP-RAP BANK STABILIZATION

SECTION A–A

N.T.S.



SEE RETREAT AT TIMBERRIDGE FILING NO. 1 GRADING AND EROSION CONTROL PLAN FOR EROSION CONTROL DETAILS.



CHECK STRUCTURE #4 & SELECTIVE BANK STABILIZATION

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Colorado Springs, Colorado 80903 (719)785-0799(Fax)

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CONSTRUCTION PLANS
CHECK STRUCTURES AND SELECTIVE BANK STABILIZATION

CLASSIC CONSULTING

DESIGNED BY	MAW	SCALE		DATE	04-05-19
DRAWN BY	MAW	(H) 1"= 30'		SHEET	23 OF 29
CHECKED BY		(V) 1"= N/A		JOB NO.	1185.00

N:\1185\00\DRAWINGS\CONSTRUCTION\22 23 118500 CHANNEL.dwg, 8/13/2019 5:45:19 PM, 1:1

Table B-1. Material specification for bioretention/rain garden facilities

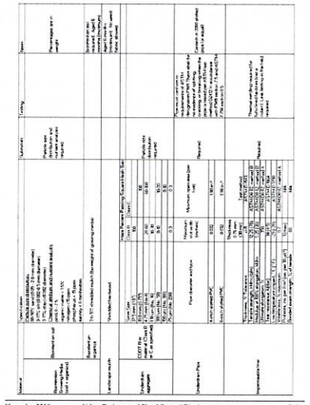


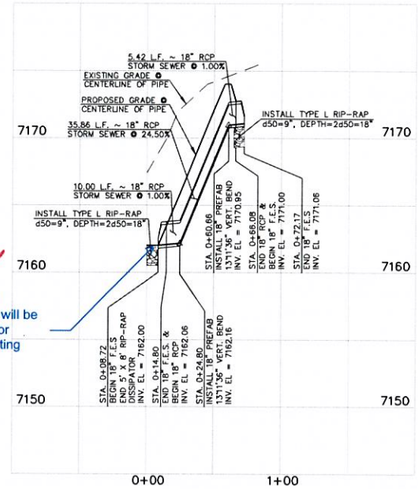
Table B-3. Native seed mix for rain gardens

Common Name	Scientific Name	Variety	PLS[1] lbs per Acre	Ounces per Acre
Sand bluestem	Andropogon hallii	Garden	3.5	
Sideoats grama	Bouteloua curtipendula	Butte	3	
Prairie sandreed	Calamovilfa longifolia	Goshen	3	
Indian ricegrass	Oryzopsis hymenoides	Paloma	3	
Switchgrass	Panicum virgatum	Blackwell	4	
Western wheatgrass	Pascopyrum smithii	Arriba	3	
Little bluestem	Schizachyrium scoparium	Pawnee	3	
Alkali sacaton	Sporobolus airoides		3	
Sand dropseed	Sporobolus cryptandrus		3	
Prairie sage[2]	Artemisia frigida			2
Blue aster[2]	Aster laevis			4
Blanket flower[2]	Gaillardia aristata			8
Prairie coneflower[2]	Ratibida columnifera			4
Purple prairieclover[2]	Dalea (Petalostemum) purpurea			4
Sub-Totals:			27.5	22
Total lbs per acre:			28.9	

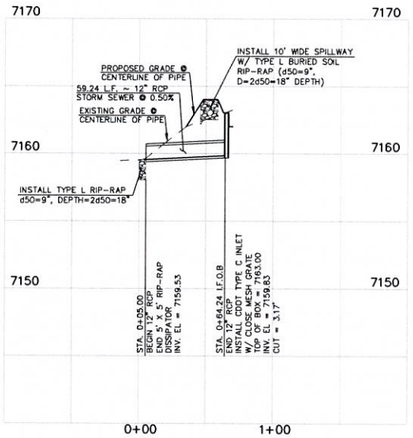
[1] Wildflower seed (optional) for a more diverse and natural look
[2] PLS = Pure Live Seed

Added calcs.

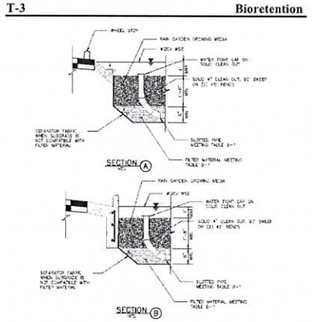
Verify that dissipation will be adequate for velocity exiting pipe.

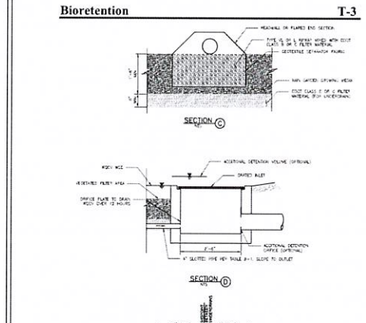


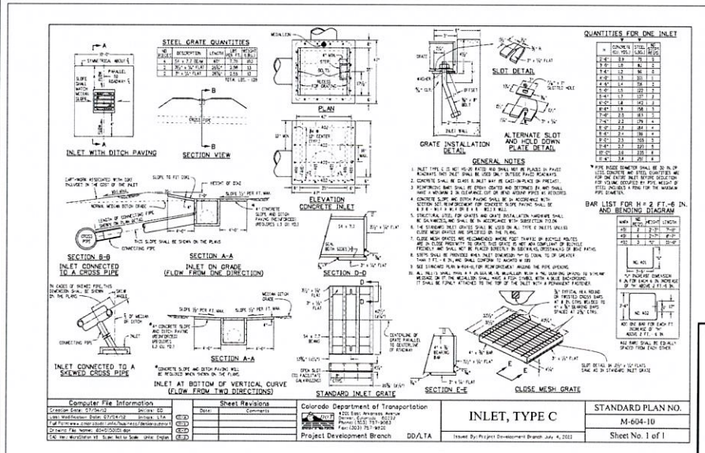
18" RCP INLET TO RAIN GARDEN
SCALE 1" = 50' HORZ.
1" = 5' VERT.

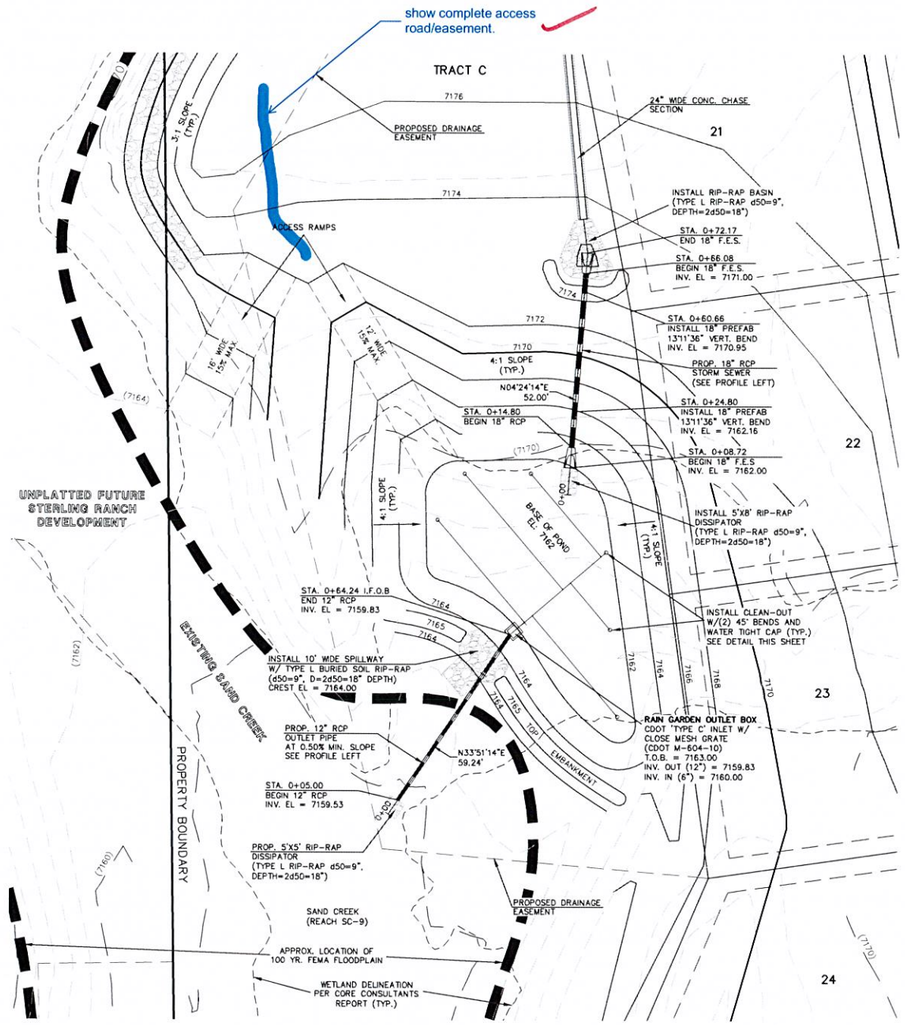


12" RCP STORM SEWER OUTFALL FROM RAIN GARDEN
SCALE 1" = 50' HORZ.
1" = 5' VERT.









RAIN GARDEN

WQCV REQUIRED = 1,045 CF
WQCV PROVIDED = 3,572 CF
UNDERDRAIN ORIFICE DIA. = 13/16 IN.
6" SLOTTED UNDERDRAIN SPACED 15' O.C.

N

20 10 0 20 40

SCALE: 1" = 20'

SEE RETREAT AT TIMBERRIDGE FILING NO. 1 GRADING AND EROSION CONTROL PLAN FOR EROSION CONTROL DETAILS.

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NO.	REVISION	DATE
1	REVISED PER COUNTY COMMENTS	08-13-19

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

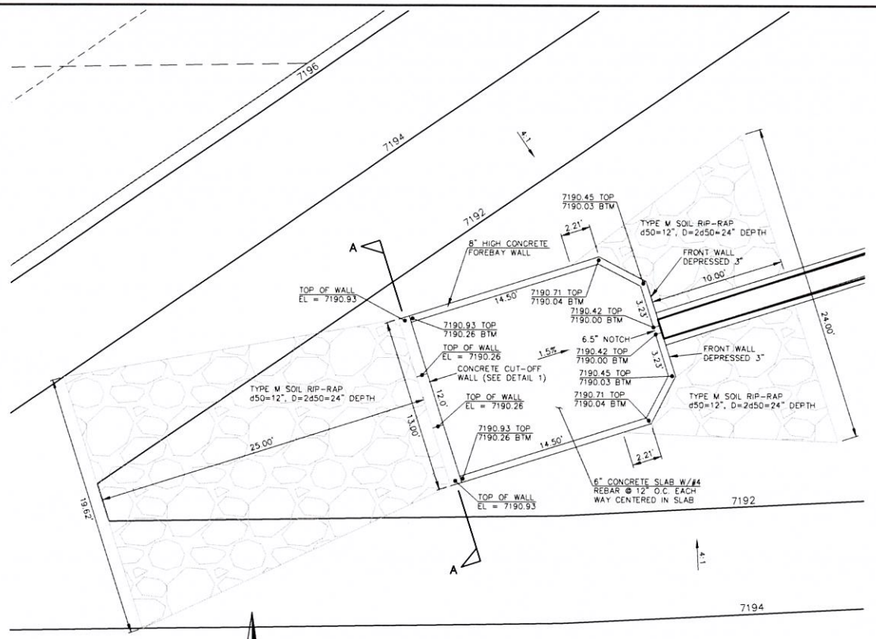
MARC A. WHORTON, COLORADO P.E. #37155 DATE

CLASSIC CONSULTING
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

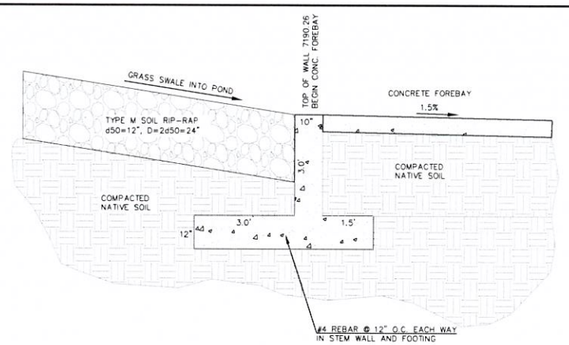
RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION PLANS
RAIN GARDEN AND DETAILS

DESIGNED BY	MAW	SCALE		DATE	04-05-19
DRAWN BY	MAW	(H) 1"= 30'		SHEET	24 OF 29
CHECKED BY		(V) 1"= N/A		JOB NO.	1185.00

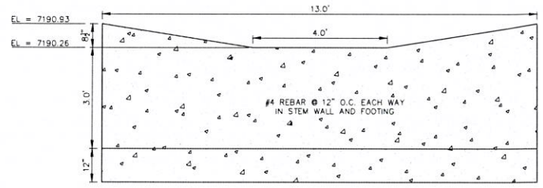
N:\1185\01_DRAWINGS\CONSTRUCTION\24 1185001 RAIN GARDEN.dwg, 8/13/2019 5:50:05 PM, 1:1



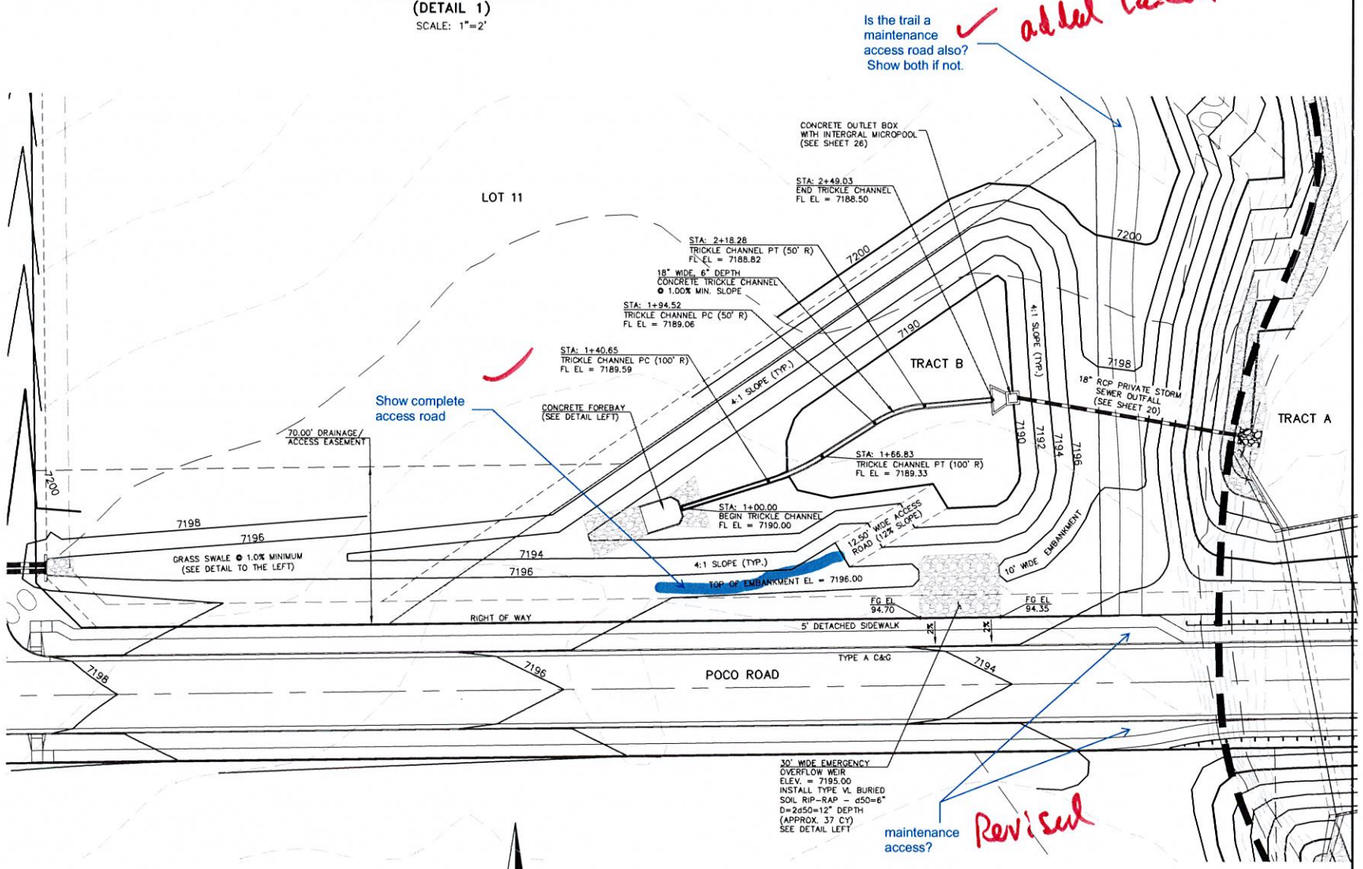
CONCRETE FOREBAY
SCALE: 1 "= 5'



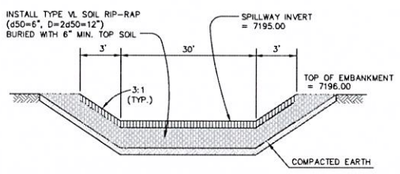
CONCRETE CUT-OFF WALL
(DETAIL 1)
SCALE: 1"=2'



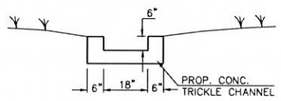
CONCRETE CUT-OFF WALL
(DETAIL 1) – SECTION A-A
SCALE: 1"=2'



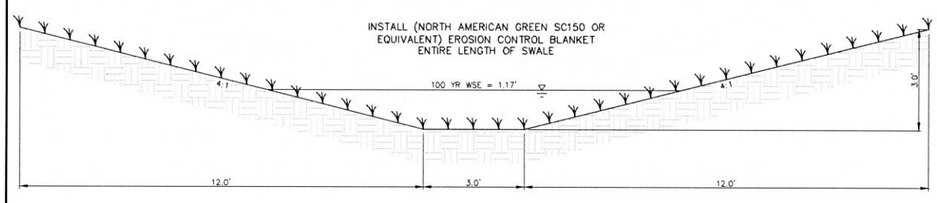
DETENTION FACILITY POND 1



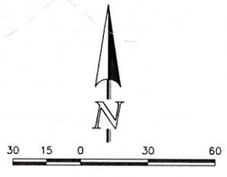
EMERGENCY SPILLWAY
CROSS SECTION
SCALE: N.T.S.



TRICKLE CHANNEL
TYPICAL SECTION
N.T.S.



GRASS SWALE INTO POND 1
SCALE: 1"=2'



30 15 0 30 60

SCALE: 1" = 30'

SEE RETREAT AT TIMBERRIDGE FILING NO. 1 GRADING AND EROSION CONTROL PLAN FOR EROSION CONTROL DETAILS.

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NO.	REVISION	DATE
1	REVISED PER COUNTY COMMENTS	08-14-19

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC A. WHORTON, COLORADO P.E. #37155 DATE

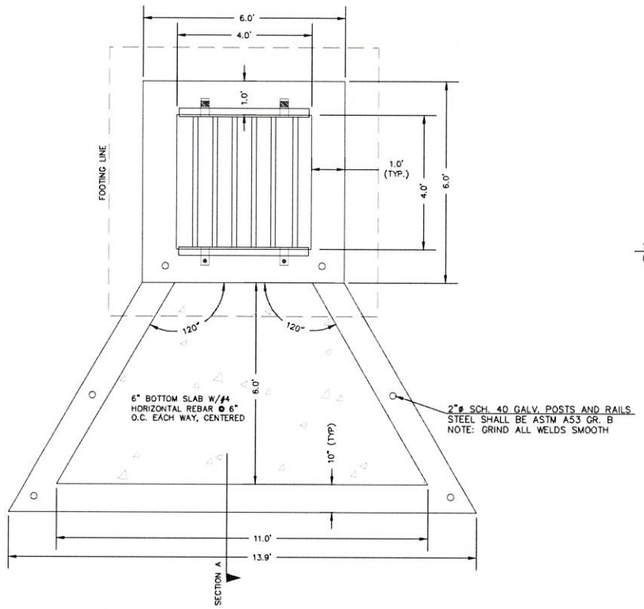
CLASSIC CONSULTING SM
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION PLANS
DETENTION FACILITY POND 1
POND PLAN

CLASSIC CONSULTING

DESIGNED BY	MAW	SCALE		DATE	04-05-19
DRAWN BY	MAW	(H) 1"= 30'		SHEET	25 OF 29
CHECKED BY		(V) 1"= N/A		JOB NO.	1185.00

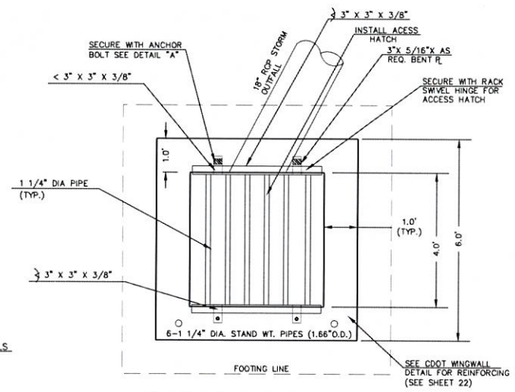
N:\1185\00\DRAWINGS\CONSTRUCTION\25 1185DD POND SHEET 02.dwg, 8/14/2019 9:52:02 AM, 1:1



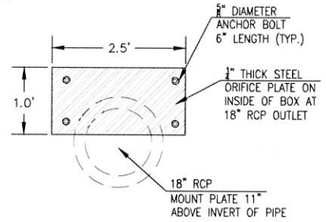
CONCRETE MICROPOOL
SCALE 1" = 2'

NOTES:

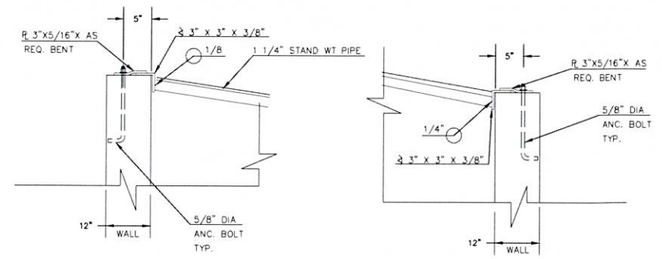
1. WELD PLATES MAY BE SUBSTITUTED FOR PIPE EMBEDDMENT.
2. DESIGN CRITERIA SHALL BE IN ACCORDANCE WITH AASHTO STANDARDS.
3. HANDRAIL DESIGN SHALL BE COMPATIBLE WITH THE DESIGN OF THE WINGWALLS AND HEADWALLS.
4. RAILING POSTS SHALL BE SET TO NORMAL TO GRADE. RAILS SHALL RUN PARALLEL TO THE SLOPES OF TOPS OF THE WALLS.
5. ALL RAILS SHALL HAVE EXPANSION JOINTS SPACED AT 40'-0 MAX. JOINT ENDS SHALL BE FREE OF ANY SHARP EDGES OR CORNERS.

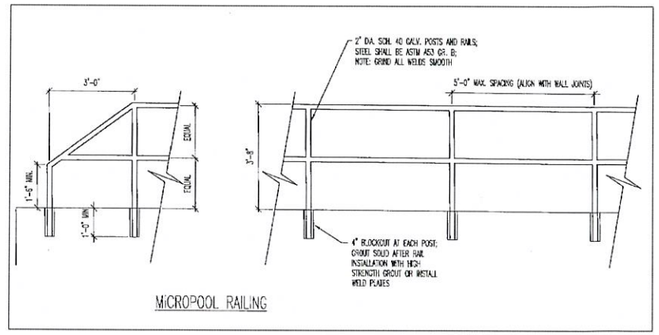


4'X4' OUTLET BOX OVERFLOW TRASH RACK
SCALE 1" = 2'

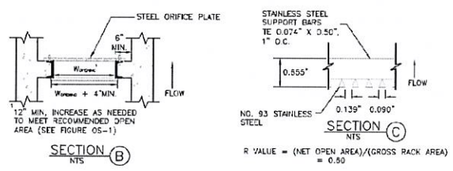


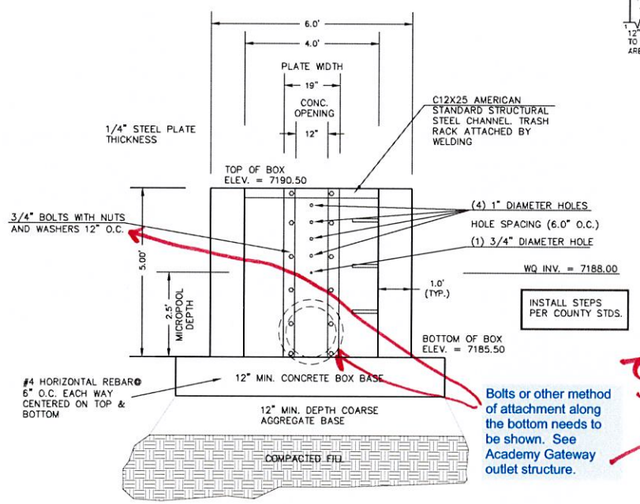
OUTLET BOX ORIFICE PLATE – $\frac{1}{4}$" STEEL





OUTLET BOX RAILING
N.T.S.





4X4' OUTLET BOX ORIFICE PLATE
SCALE 1" = 2'

(ALL MATERIALS PER EL PASO COUNTY SPECIFICATIONS)

ORIFICE PLATE NOTES:

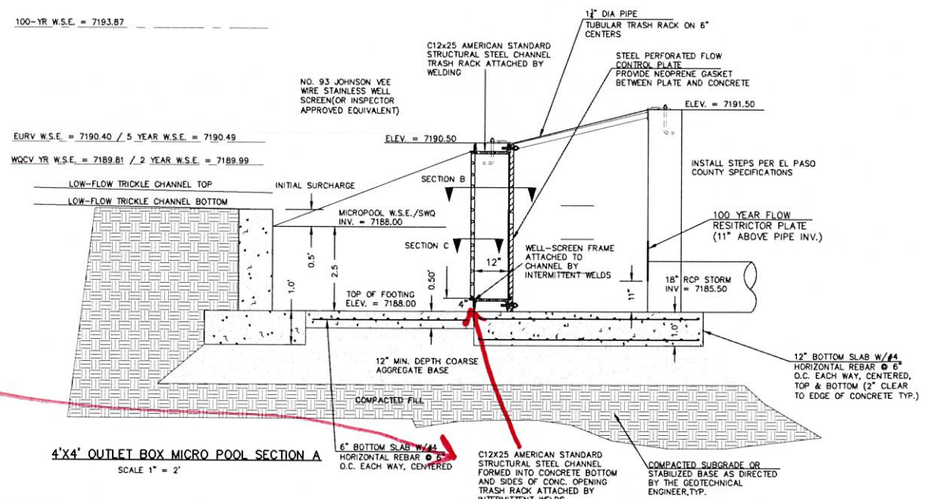
1. INSTALL HOLES AS SHOWN ON DETAIL TO RIGHT
2. PROVIDE GASKET MATERIAL BETWEEN THE ORIFICE PLATE AND CONCRETE

EURV AND WQCV TRASH RACKS:

3. WELL-SCREEN TRASH RACKS SHALL BE STAINLESS STEEL AND SHALL BE ATTACHED BY INTERMITTENT WELDS ALONG THE EDGE OF THE MOUNTING FRAME.
4. BAR GRATE TRASH RACKS SHALL BE ALUMINUM AND SHALL BE BOLTED USING STAINLESS STEEL HARDWARE.
5. STRUCTURAL DESIGN OF TRASH RACKS SHALL BE BASED ON FULL HYDROSTATIC HEAD WITH ZERO HEAD DOWNSTREAM OF RACK

OVERFLOW TRASH RACKS:

1. ALL TRASH RACKS SHALL BE MOUNTED USING STAINLESS STEEL HARDWARE AND PROVIDED WITH HINGED AND LOCKABLE OR BOLTABLE ACCESS PANELS
2. TRASH RACKS SHALL BE STAINLESS STEEL, ALUMINUM, OR STEEL. STEEL TRASH RACKS SHALL BE HOT DIP GALVANIZED AND MAY BE HOT POWDER COATED AFTER GALVANIZING.
3. TRASH RACKS SHALL BE DESIGNED SUCH THAT THE DIAGONAL DIMENSION OF EACH OPENING IS SMALLER THAN THE DIAMETER OF THE OUTLET PIPE.
4. STRUCTURAL DESIGN OF THE TRASH RACKS SHALL BE BASED ON FULL HYDROSTATIC HEAD WITH ZERO HEAD DOWNSTREAM OF THE RACK.



4'X4' OUTLET BOX MICRO POOL SECTION A
SCALE 1" = 2'

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NO.	REVISION	DATE
1	REVISED PER COUNTY COMMENTS	08-13-19

REVIEW:

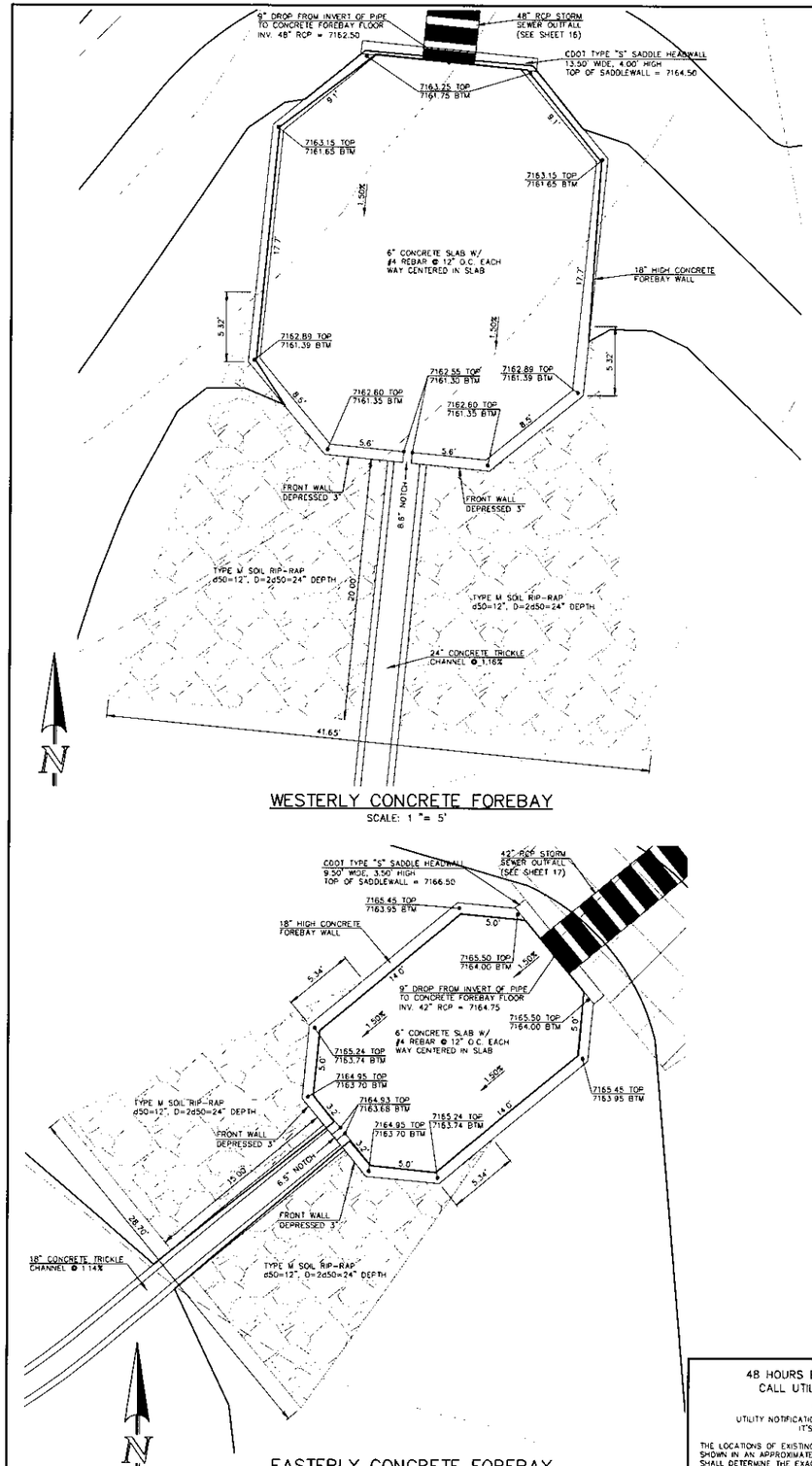
PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC A. WHORTON, COLORADO P.E. #37155 DATE

CLASSIC CONSULTING
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION DRAWINGS
DETENTION FACILITY 1
OUTLET BOX DETAILS

DESIGNED BY	MAW	SCALE		DATE	04-05-19
DRAWN BY	MAW	(H) 1"=	N/A	SHEET	26 OF 29
CHECKED BY		(V) 1"=	N/A	JOB NO.	1185.00



DETENTION FACILITY POND 2

SEE RETREAT AT TIMBERRIDGE FILING NO. 1 GRADING AND EROSION CONTROL PLAN FOR EROSION CONTROL DETAILS.

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Colorado Springs, Colorado 80903 (719)785-0799(Fax)

RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION PLANS
DETENTION FACILITY POND 2
POND PLAN

CLASSIC CONSULTING

DESIGNED BY	MAW	SCALE		DATE	04-05-19
DRAWN BY	MAW	(H) 1"= 30'		SHEET	27 OF 29
CHECKED BY		(V) 1"= N/A		JOB NO.	1165.00

NOTES:

1. WELD PLATES MAY BE SUBSTITUTED FOR PIPE EMBEDDMENT.
2. DESIGN CRITERIA SHALL BE IN ACCORDANCE WITH AASHTO STANDARDS.
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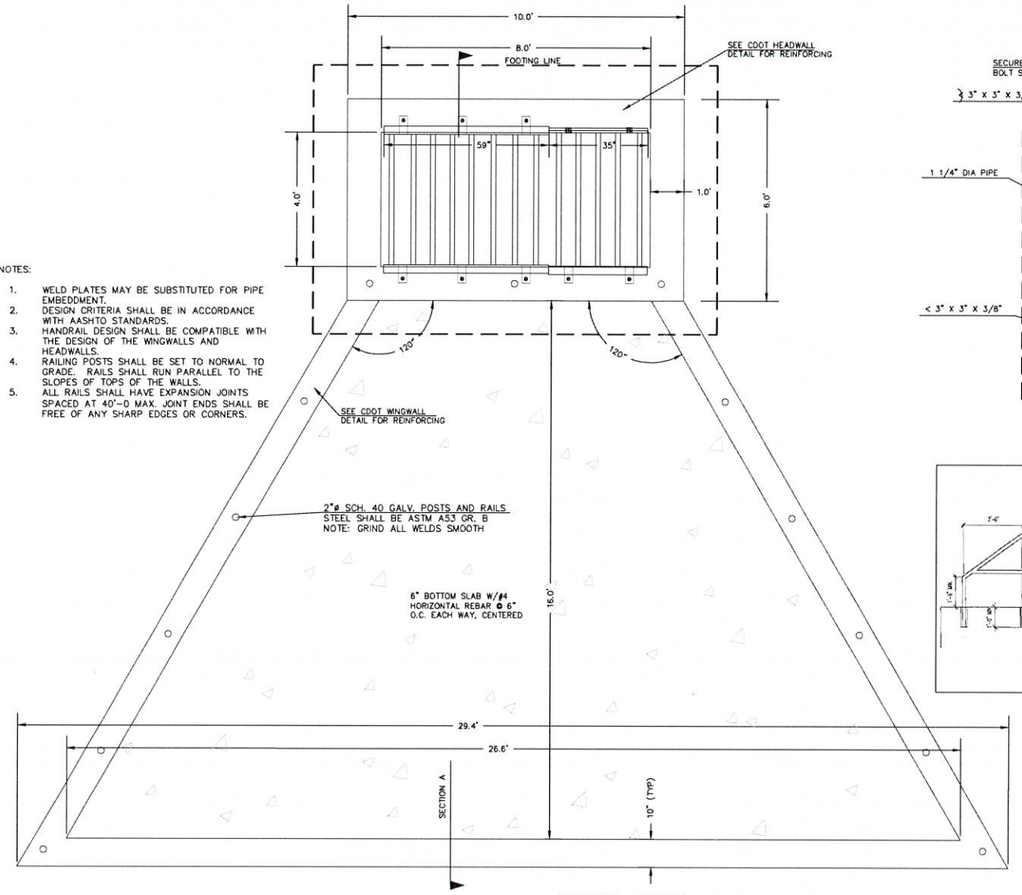
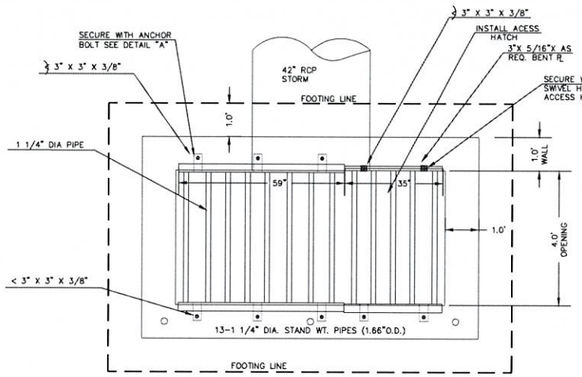
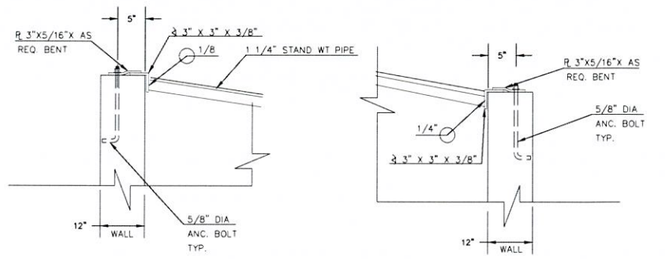
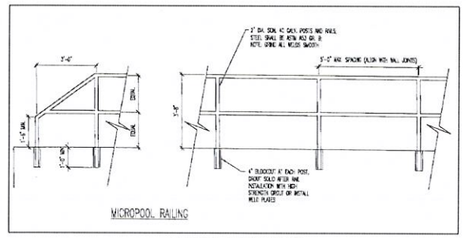


CONCRETE MICROPOOL
SCALE 1" = 2'

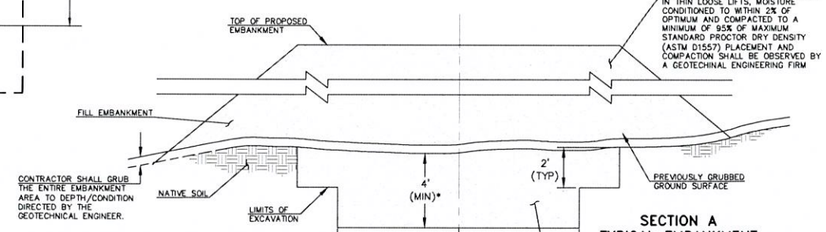


8'X4' OUTLET BOX OVERFLOW TRASH RACK
SCALE 1" = 2'



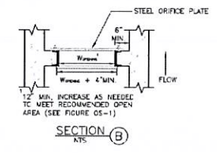


OUTLET BOX RAILING
N.T.S.

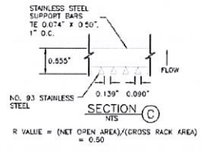


SECTION A
TYPICAL EMBANKMENT
WITH SOIL KEYWAY
SCALE: N.T.S.

* UPON GRUBBING EXISTING SOILS IN EMBANKMENT AREA, ENGINEER SHALL BE CONTACTED TO DETERMINE SOIL QUALITY. IF POOR PERMEABILITY IS FOUND (I.E. SANDY-SILT) ONLY TOP 2' X 14' PORTION OF EMBANKMENT KEY IS REQUIRED FOR CONSTRUCTION.

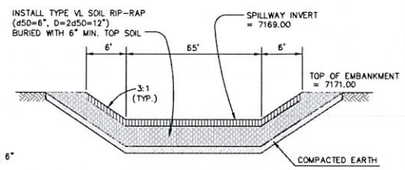


SECTION (B)
NTS

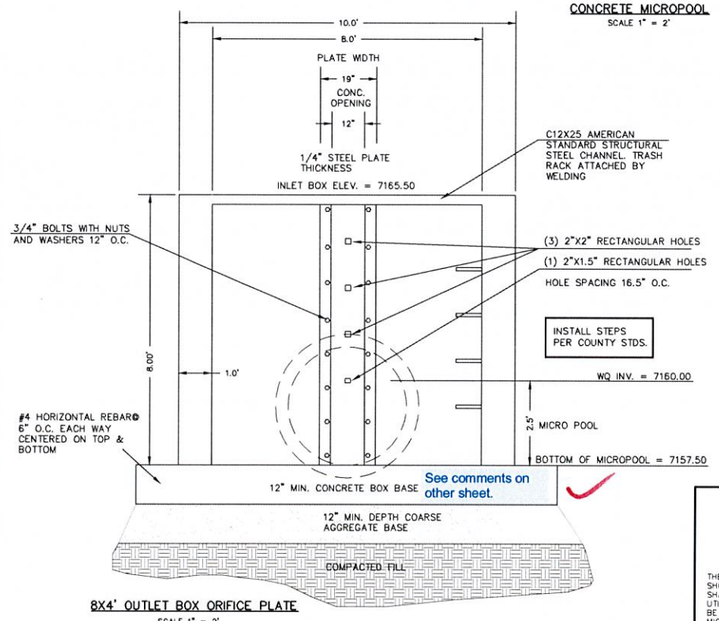


SECTION (C)
NTS

R VALUE = (NET OPEN AREA)/(GROSS RACK AREA)
= 0.50



EMERGENCY SPILLWAY
CROSS SECTION
SCALE: N.T.S.



8X4' OUTLET BOX ORIFICE PLATE
SCALE 1" = 2'

(ALL MATERIALS PER EL PASO COUNTY SPECIFICATIONS)

ORIFICE PLATE NOTES:

1. INSTALL HOLES AS SHOWN ON DETAIL TO RIGHT.
2. PROVIDE GASKET MATERIAL BETWEEN THE ORIFICE PLATE AND CONCRETE

EURV AND WQCV TRASH RACKS:

3. WELL-SCREEN TRASH RACKS SHALL BE STAINLESS STEEL AND SHALL BE ATTACHED BY INTERMITTENT WELDS ALONG THE EDGE OF THE MOUNTING FRAME.
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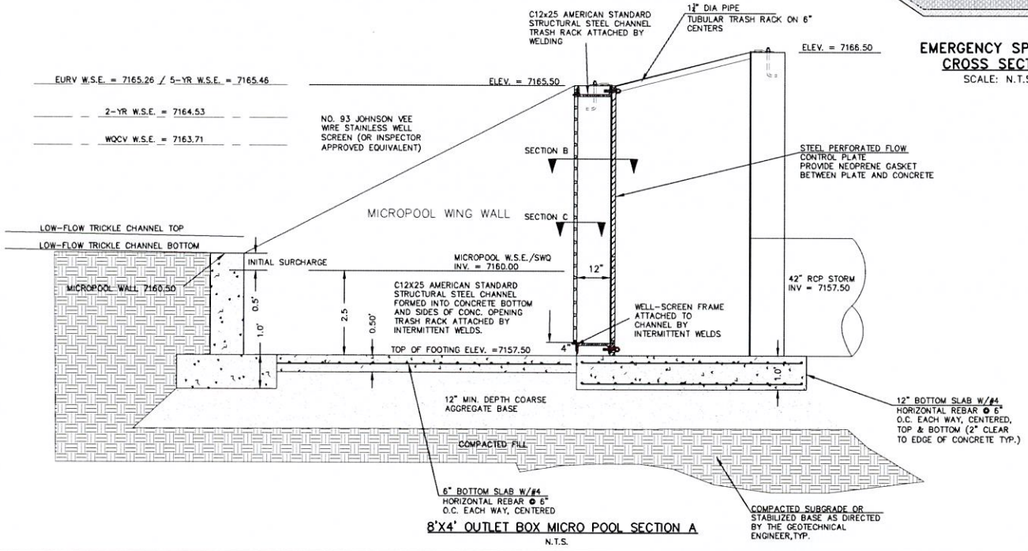

8'X4' OUTLET BOX MICRO POOL SECTION A
N.T.S.

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NO.	REVISION	DATE
1	REVISED PER COUNTY COMMENTS	08-13-19

REVIEW:

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MARC A. WHORTON, COLORADO P.E. #37155 DATE

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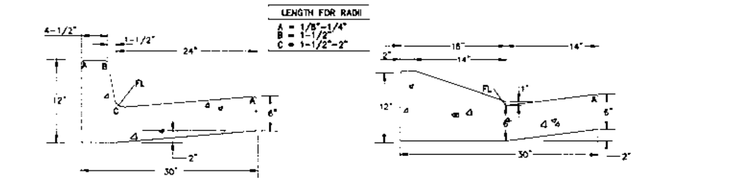
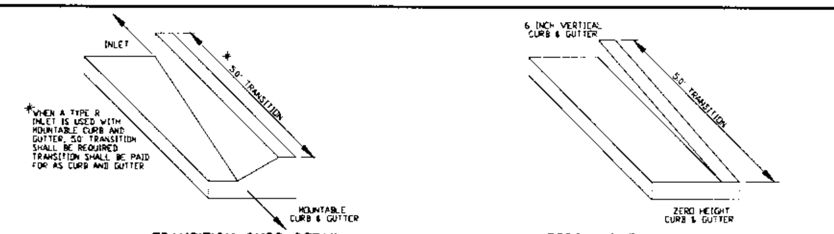
Colorado Springs, Colorado 80903 (719)785-0799(Fax)

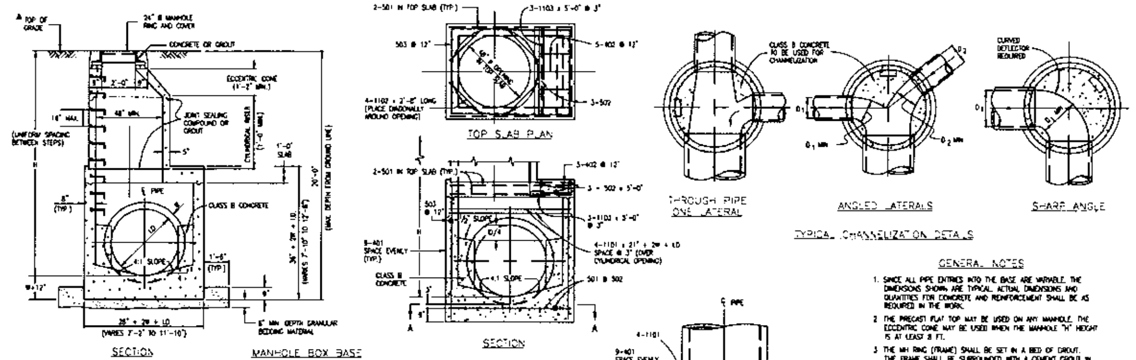
RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION PLANS
DETENTION FACILITY 2
OUTLET BOX DETAILS

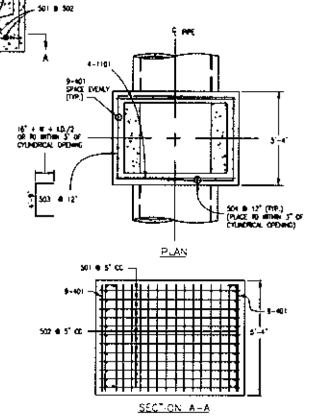
CLASSIC CONSULTING

DESIGNED BY	MAW	SCALE		DATE	04-05-19
DRAWN BY	MAW	(H) 1"=	N/A	SHEET	28 OF 29
CHECKED BY		(V) 1"=	N/A	JOB NO.	1185.00









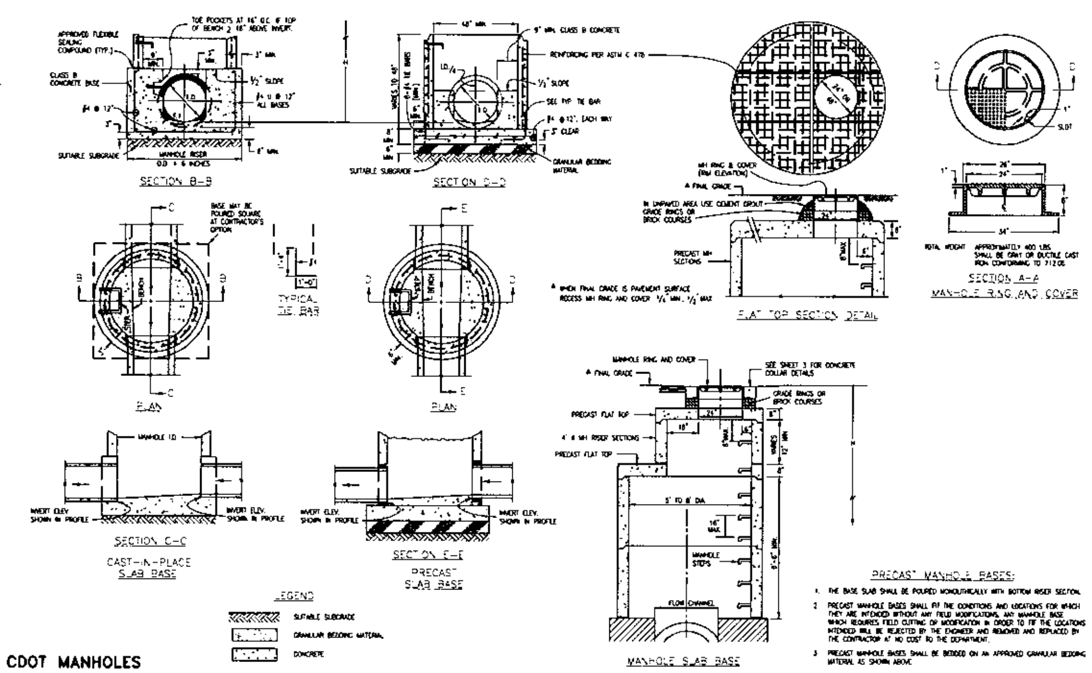
QUANTITIES FOR CONCRETE MANHOLE BOX BASE

MARK	SIZE	TYPE	WT. #/FT	BARS	I.D. 54"	60"	66"	72"	84"	96"	FORMULAS
401	4	I	0.668	NO. REQ'D / LENGTH / WEIGHT *	18 / 8'-1" / 97.2	18 / 8'-8" / 104.2	18 / 9'-3" / 111.2	18 / 9'-10" / 118.2	18 / 11'-0" / 132.3	18 / 12'-2" / 146.3	401 BAR LENGTH = 32"+2W+I.D
402	4	III	0.668	NO. REQ'D / LENGTH / WEIGHT *	5 / 5'-5" / 18.1	5 / 6'-0" / 20.0	5 / 6'-7" / 22.0	5 / 7'-2" / 23.9	5 / 8'-4" / 27.8	5 / 9'-8" / 31.7	402 BAR LENGTH = I.D + 2W
501	5	I	1.043	NO. REQ'D / LENGTH / WEIGHT *	17 / 7'-5" / 131.5	17 / 8'-0" / 141.8	17 / 8'-7" / 152.2	17 / 9'-2" / 162.5	17 / 10'-4" / 183.2	17 / 11'-6" / 203.9	501 BAR LENGTH = 24" + I.D + 2W
502	5	I	1.043	NO. REQ'D / LENGTH / WEIGHT *	22 / 5'-0" / 114.7	23 / 5'-0" / 119.9	25 / 5'-0" / 130.4	26 / 5'-0" / 135.6	29 / 5'-0" / 151.2	32 / 5'-0" / 166.9	502 NUMBER BARS REQ'D. = 3 + ((24+I.D+2W)/@ 5 + 1)
503	5	II	1.043	NO. REQ'D / LENGTH / WEIGHT *	16 / 12'-10" / 214.2	16 / 13'-5" / 223.9	18 / 14'-0" / 262.8	18 / 14'-7" / 273.8	20 / 15'-9" / 328.5	24 / 16'-11" / 423.5	503 NUMBER BARS REQ'D = 2((13+I.D.+2W)/@ 12 + 1); BAR LENGTH = 4'-9"+2(16+W+I.D./2)
504	5	I	1.043	NO. REQ'D / LENGTH / WEIGHT *	12 / 8'-1" / 101.2	14 / 8'-8" / 126.6	14 / 9'-3" / 135.1	16 / 9'-10" / 164.1	18 / 11'-0" / 206.5	20 / 12'-2" / 253.8	504 NUMBER BARS REQ'D = 2((2W+I.D.-4)/@ 12 + 1); BAR LENGTH = 32"+2W+I.D.
1101	11	I	5.313	NO. REQ'D / LENGTH / WEIGHT *	4 / 7'-2" / 152.5	4 / 7'-9" / 164.7	4 / 8'-4" / 177.1	4 / 8'-11" / 189.5	4 / 10'-1" / 214.3	4 / 11'-3" / 239.1	1101 BAR LENGTH = 21" + I.D. + 2W
1102	11	I	5.313	NO. REQ'D / LENGTH / WEIGHT *	4 / 2'-8" / 56.7	4 / 2'-8" / 56.7	4 / 2'-8" / 56.7	4 / 2'-8" / 56.7	4 / 2'-8" / 56.7	4 / 56.7 / 2'-8"	BENDING — TYPE I: STRAIGHT
1105	11	I	5.313	NO. REQ'D / LENGTH / WEIGHT *	3 / 5'-0" / 79.7	3 / 5'-0" / 79.7	3 / 5'-0" / 79.7	3 / 5'-0" / 79.7	3 / 5'-0" / 79.7	3 / 5'-0" / 79.7	TYPE II: 4'-9"; 16"+W+I.D./2
REINFORCING STEEL TOTAL *					965.6	1,037.5	1,127.2	1,204.0	1,380.2	1,601.4	TYPE III: 12", 12", 7"; I.D.+2W-38"
CONCRETE - CUBIC YARDS - TOTAL					6.0	6.6	7.3	8.0	9.5	11.1	

NOTE: QUANTITIES ARE BASED ON SAME SIZE PIPE ENTRANCE TO AND EXIT FROM BASE AND A 4 FT. MANHOLE ENTRANCE INTO TOP SLAB OF BASE.

GENERAL NOTES

1. SINCE ALL PIPE ENTRIES INTO THE BASE ARE VARIABLE, THE DIMENSIONS SHOWN ARE TYPICAL. ACTUAL DIMENSIONS AND QUANTITIES FOR CONCRETE AND REINFORCEMENT SHALL BE AS REQUIRED IN THE WORK.
2. THE PRECAST FLAT TOP MAY BE USED ON ANY MANHOLE. THE ECCENTRIC CONE MAY BE USED WHEN THE MANHOLE "H" HEIGHT IS AT LEAST 8 FT.
3. THE MH RING (FRAME) SHALL BE SET IN A BED OF GROUT. THE FRAME SHALL BE SURROUNDED WITH A CEMENT GROUT IN UNPAVED AREA, OR A CONCRETE COLLAR IN PAVED AREA. SEE DETAILS ON SHEETS 2 AND 3.
4. DESIGN OF BOX BASE IS BASED ON STRAIGHT RUNS OF CONDUIT OR CHANGE IN DIRECTION OF LESS THAN 45°. SPECIAL DESIGN IS REQUIRED FOR 45° OR GREATER.
5. PRECAST MANHOLES AND REINFORCEMENT SHALL CONFORM TO ASTM C 478 (AASHTO M 199)
6. CAST-IN-PLACE MANHOLES SHALL BE CLASS B CONCRETE.
7. STEPS SHALL BE REQUIRED WHEN THE MANHOLE DEPTH EXCEEDS 3 FT.-6 IN. AND SHALL BE IN ACCORDANCE WITH AASHTO M 199
8. ALL REINFORCING STEEL SHALL HAVE A MINIMUM YIELD STRENGTH OF 60,000 PSI. VERTICAL STEEL SHALL BE PLACED AT ℄ OF WALL. ALL BARS SHALL HAVE A 2 IN MINIMUM CLEARANCE.
9. ALL PIPE ENTRIES INTO THE BASE OF MANHOLE SHALL BE CONNECTED BY OPEN CHANNELIZATION ADJUSTED FOR PIPE SIZE, SHAPE, SLOPE, AND DIRECTION OF FLOW. DETAILS SHOWN ARE TYPICAL FOR INSTALLATIONS WITH ALL INVERTS OF SAME RELATIVE ELEVATION. FOR EXCESSIVE ELEVATION DIFFERENCE BETWEEN INVERTS, SPECIAL BASE/CHANNEL DETAILS WILL BE SHOWN ON THE PLANS.
10. FLOW CHANNELS AND INVERTS SHALL BE FORMED BY SHAPING WITH CLASS B CONCRETE OR APPROVED GROUT.
11. STUB-OUTS SHALL EXTEND 2 FT. MINIMUM BEYOND OUTSIDE WALL SURFACE OF MANHOLE AND BE SATISFACTORILY PLUGGED.
12. CHECK WITH THE LOCAL GOVERNMENT AUTHORITY FOR ANY ADDITIONAL SANITARY SEWER SPECIFICATIONS, DETAILS, OR REGULATIONS.
13. THE SLOPE OF THE MANHOLE COVER SHALL MATCH THE ROADWAY PROFILE AND CROSS SLOPE.



PRECAST MANHOLE BASES:

1. THE BASE SLAB SHALL BE POURED MONOLITHICALLY WITH BOTTOM RISER SECTION.
2. PRECAST MANHOLE BASES SHALL FIT THE CONDITIONS AND LOCATIONS FOR WHICH THEY ARE INTENDED WITHOUT ANY FIELD MODIFICATIONS. ANY MANHOLE BASE WHICH REQUIRES FIELD CUTTING OR MODIFICATION IN ORDER TO FIT THE LOCATIONS INTENDED WILL BE REJECTED BY THE ENGINEER AND REMOVED AND REPLACED BY THE CONTRACTOR AT NO COST TO THE DEPARTMENT.
3. PRECAST MANHOLE BASES SHALL BE BEDDED ON AN APPROVED GRANULAR BEDDING MATERIAL AS SHOWN ABOVE.

CDOT MANHOLES
STD. PLAN NO: M-604-20

TABLE ONE ~ BAR LIST FOR CURB INLETS, TYPE "R"

MARK	DIA IN.	O.C SPACING	TYPE	ALL INLETS L= 5' NO. REQ'D.	ALL INLETS L= 5' LENGTH	INLETS, H ≤ 5' 10' NO. REQ'D.	10' LENGTH	15' NO. REQ'D.	15' LENGTH	INLETS, H > 5' 10' NO. REQ'D	10' LENGTH	15' NO. REQ'D.	15' LENGTH
401	1/2"	11"	II	15	*	21	*	26	*	11	*	11	*
402		11"	II	7	*	13	*	18	*	7	*	7	*
403		9"	II	*	4'-10"	*	4'-0"	*	4'-0"	*	4'-0"	*	4'-10"
405		6"	VI	11	6'-10"	21	6'-10"	31	6'-10"	11	6'-10"	11	6'-10
406		6"	VIII	7	8'-10"	7	13'-10"	7	18'-10"	7	8'-10"	7	8'-10"
407		9"	II	*	5'-10"	*	10'-10	*	15'-10"	*	5'-10"	*	5'-10"
408		12"	II	3	6'-10"	3	11'-0"	3	16'-0"	3	11'-0"	3	16'-0"
409		8"	II	6	5'-10"	6	10'-10"	6	15'-10"	6	10'-10"	6	15'-10"
410		11"	VII							3	*	3	*
411		11"	II							3	5'-2"	3	10'-2"
412		11"	II							3	2'-9"	3	2'-9"
413		9"	II							7	10'-10"	7	15'-10"
501	5/8"	5 1/2"	IV	11	3'-4"	22	3'-4"	33	3'-4"	22	3'-4"	33	3'-4"
502		5 1/2"	III							11	11'-5"	17	11'-5"
503		5 1/2"	II	5	3'-6"	16	3'-6"	27	3'-6"	6	3'-6"	6	3'-6"
504		5 1/2"	IX									5	8'-4"
	3/4"												
601		2 1/2"	V	2	8'-10"	2	8'-10"	2	8'-10"	2	8'-10"	4	8'-10"
#8[8.5				1	5'-10"	1	10'-10"	1	15'-10"	1	10'-10"	1	15'-10"
				2BARS,1ROD	—	4BARS,3RODS	—	8BARS,5RODS	—	4BARS,3RODS	—	8BARS,5RODS	—

(INLETS, H ≤ 5' = REGULAR INLETS; INLETS, H > 5' = DROP BOX INLETS)

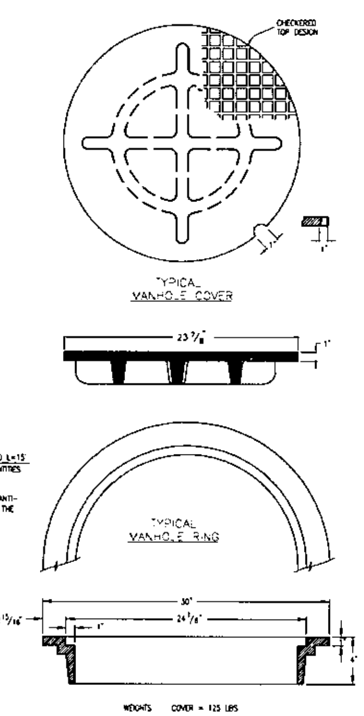
* VARIABLE, REFER TO TABLE TWO.
\# INCLUDE 18" NO. 4 BARS (SEE CHANNEL LAYOUT DETAIL).
† SEE CURB FACE ASSEMBLY ON SHEET 1 AND CHANNEL LAYOUT DETAILS ON THIS SHEET.

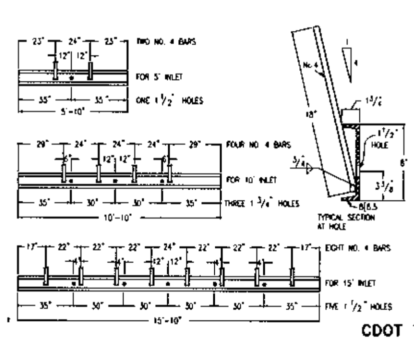
TABLE TWO ~ BARS AND QUANTITIES VARIABLE WITH "H"

"H"	LENGTH 401	LENGTH 402	LENGTH 410	NO. REQ'D. REGULAR 403	NO. REQ'D. REGULAR 407	NO. REQ'D. DROP BOX 403	NO. REQ'D. DROP BOX 407	L=5' CU.YD.CONC.	L=5' LB.STEEL	L=10' CU.YD.CONC.	L=10' LB.STEEL	L=15' CU.YD.CONC.	L=15' LB.STEEL
3'-0"	2'-8"	1'-8"		10	7			3.2	285	5.3	497	7.4	706
3'-6"	3'-2"	2'-2"		10	7			3.4	305	5.7	528	7.9	747
4'-0"	3'-8"	2'-8"		12	9			3.7	326	6.0	559	8.4	786
4'-6"	4'-2"	3'-2"		12	9			3.9	534	6.4	571	8.8	803
5'-0"	4'-8"	3'-8"		14	11			4.1	354	6.7	602	9.3	844
5'-6"	5'-2"	4'-2"	3'-5"	16	13	15	6	4.4	375	6.0	607	7.4	850
6'-0"	5'-8"	4'-8"	3'-11"	16	13	16	6	4.6	382	6.2	616	7.6	860
6'-6"	6'-2"	5'-2"	4'-5"	18	15	18	8	4.8	402	6.4	637	7.8	880
7'-0"	6'-8"	5'-8"	4'-11"	20	17	19	10	5.0	423	6.6	654	8.0	897
7'-6"	7'-2"	6'-2"	5'-5"	20	17	20	10	5.3	430	6.9	664	8.3	907
8'-0"	7'-8"	6'-8"	5'-11"	22	19	22	12	5.5	451	7.1	684	8.5	927
8'-6"	8'-2"	7'-2"	6'-5"	24	21	23	14	5.7	471	7.3	702	8.7	944
9'-0"	8'-8"	7'-8"	6'-11"	24	21	24	14	6.0	479	7.6	711	9.0	954
9'-6"	9'-2"	8'-2"	7'-5"	26	23	26	16	6.2	499	7.8	732	9.2	974
10'-0"	9'-8"	8'-8"	7'-11"	28	25	27	18	6.4	520	8.0	749	9.4	992
10'-6"	10'-2"	9'-2"	8'-5"	28	25	28	18	6.7	527	8.3	759	9.7	1001
11'-0"	10'-8"	9'-8"	8'-11"	30	27	30	20	6.9	547	8.5	779	9.9	1022

NOTE: FOR L=5', L=10' AND L=15' REGULAR INLETS TOTAL QUANTITIES NEEDED ARE OUTSIDE OF THE HEAVY BLACK LINE. DROP BOX INLETS TOTAL QUANTITIES NEEDED ARE INSIDE OF THE HEAVY BLACK LINE.

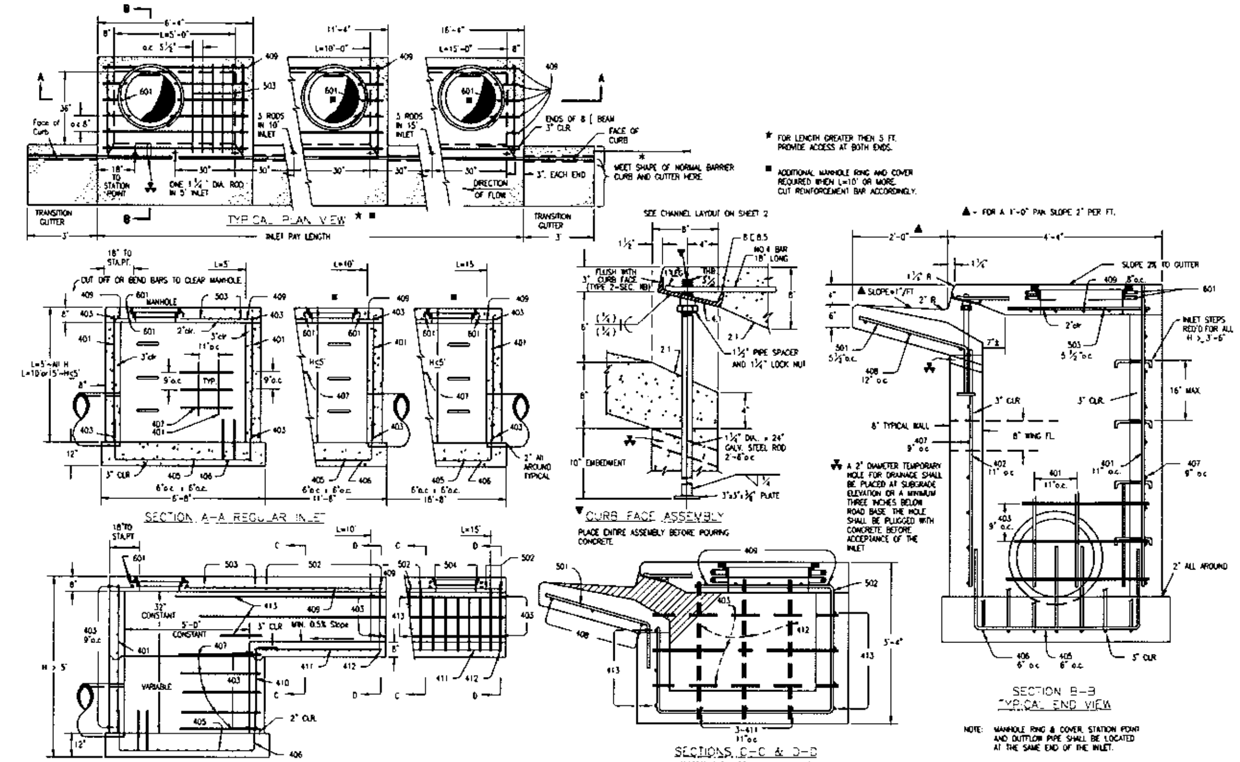
STEEL WEIGHTS DO NOT INCLUDE STRUCTURAL STEEL.



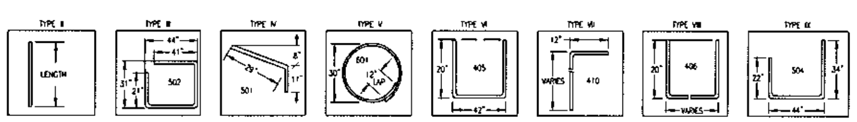


GENERAL NOTES

1. ALL CONCRETE SHALL BE CLASS B
2. CONCRETE WALLS SHALL BE FORMED ON BOTH SIDES AND SHALL BE 8 IN. THICK
3. INLET STEPS SHALL BE IN ACCORDANCE WITH AASHTO M 199
4. CURB FACE ASSEMBLY SHALL BE GALVANIZED AFTER WELDING
5. EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 3/4 IN. CURB AND GUTTER CORNERS SHALL BE FINISHED TO MATCH THE EXISTING CURB AND GUTTER BEYOND THE TRANSITION GUTTER.
6. REINFORCING BARS SHALL BE DEFORMED AND SHALL HAVE A 2 IN. MINIMUM CLEARANCE. ALL REINFORCING BARS SHALL BE EPOXY COATED.
7. DIMENSIONS AND WEIGHTS OF TYPICAL MANHOLE RING AND COVER ARE NOMINAL
8. MATERIAL FOR MANHOLE RINGS AND COVERS SHALL BE GRAY OR DUCTILE CAST IRON CONFORMING TO 712.06.
9. SINCE PIPE ENTRIES INTO THE INLET ARE VARIABLE, THE DIMENSIONS SHOWN ARE TYPICAL. ACTUAL DIMENSIONS AND QUANTITIES FOR CONCRETE AND REINFORCEMENT SHALL BE AS REQUIRED IN THE WORK. QUANTITIES INCLUDE VOLUMES OCCUPIED BY PIPES.
10. STRUCTURAL STEEL SHALL BE GALVANIZED AND SHALL CONFORM TO THE REQUIREMENTS OF 712.06



CDOT TYPE R INLET
STD. PLAN NO: M-604-12



BAR BENDING DIAGRAMS ~ (Dimensions are Out-to-Out of bar)

48 HOURS BEFORE YOU DIG, CALL UTILITY LOCATORS
811
UTILITY NOTIFICATION CENTER OF COLORADO
IT'S THE LAW

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE CAUSED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NO.	REVISION	DATE
1	REVISED PER COUNTY COMMENTS	9-26-18

REVIEW:

PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF CLASSIC CONSULTING ENGINEERS AND SURVEYORS, LLC

MARC A. WHORTON, COLORADO P.E. #37155 DATE

CLASSIC CONSULTING
619 N. Cascade Avenue, Suite 200, Colorado Springs, Colorado 80903
(719)785-0790
(719)785-0799(Fax)

PAINT BRUSH HILLS FILING NO. 13E
CONSTRUCTION PLANS
DETAIL SHEET

DESIGNED BY	MAW	SCALE	DATE 04-05-19
DRAWN BY	MAW	(H) 1"= NA	SHEET 29 OF 29
CHECKED BY		(V) 1"= NA	JOB NO. 1185.00

INNOVATIVE DESIGN. CLASSIC RESULTS.

FINAL DRAINAGE REPORT FOR RETREAT AT TIMBERRIDGE FILING NO. 1

CCES Responses

Also see comment letter.

Prepared for:
TIMBERRIDGE DEVELOPMENT GROUP, LLC
6385 CORPORATE DR., SUITE 200
COLORADO SPRINGS CO 80919
(719) 592-9333

Engineering Review
11/12/2019 2:42:46 PM
dsdrice
JeffRice@elpasoco.com
(719) 520-7877
EPC Planning & Community Development Department

Prepared by:
CLASSIC CONSULTING
619 N. CASCADE AVE SUITE 200
COLORADO SPRINGS CO 80903
(719) 785-0790

Job No. 1185.00

PCD Project No. SF-19-009

According to the DBPS, this reach of Sand Creek all contained within the channel has the following flow characteristics: Q_{10} = 630 cfs Q_{100} = 2170 cfs. However, the 100 yr. flow recognized by FEMA in the LOMR 08-08-0541P with effective date of July 23, 2009, equals nearly Q_{100} = 2600 cfs. Also, Sterling Ranch has recently finalized their MDDP which includes modeling of this property as well as the large acreage north up to the top of the Sand Creek Basin. The MDDP proposes developed flows within Sand Creek that are significantly lower than both the DBPS and FEMA currently show. These flows are as follows: At Arroya Lane crossing Q_{10} = 430 cfs Q_{100} = 1487 cfs and TimberRidge south property line Q_{10} = 452 cfs Q_{100} = 1523 cfs. Even with the County approval of the MDDP and these adjusted flows, a CLOMR/LOMR will be required to be prepared, submitted and approved by FEMA prior to utilizing these flows in any Final Drainage Reports within this development. Based on the anticipated 12-18 month timing of the CLOMR/LOMR process, this development has decided to continue to utilize the much larger FEMA recognized flows for all proposed channel improvements through this property. However, given the County's approval of the Sterling Ranch MDDP, and as such the acknowledgment of these reasonable lower flow quantities through this Reach, a deviation has been submitted for relief from the allowable clearance of the proposed major drainageway crossing as found in the DCM Vol. 1 6.4.2. The 2600 cfs FEMA recognized flows will be utilized in the structure calculations but relief from the 2 feet freeboard within the structure is being requested in the aforementioned deviation request.

Is this necessary? — Not now. See Revised

The majority of these off-site flows enter the property at the north end of the site conveying flows from the northwest (Black Forest area) and the off-site stock ponds to the north (both tributary to hundreds of acres of property in Black Forest). There are multiple existing culvert crossings of Vollmer Rd. just north of Arroya Lane to facilitate these historic flow patterns. The following are the few key culverts that directly feed the Sand Creek channel north of Arroya Lane: Approximately 1,000 feet north of Arroya Lane, an existing 36" CMP crosses Vollmer Road (Basin SC-1 on Off-site Drainage Map). A small basin and natural ravine just west of Vollmer feeds this facility. From a recent field visit, this small facility seems to be in good working condition,

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RAS hydraulic analysis for this portion of Reach SC-9 has been provided in order to determine the necessary channel improvements for the proposed Filing No. 1 development and future Filings. A separate wetland impact report along with the Section 404 permitting, prepared by CORE Consultants, has been developed based on these proposed channel improvements and submitted directly to the U.S. Army Corps of Engineers with necessary consult with U.S. Fish and Wildlife for their review and approval. This report and documentation can be found in the Appendix for El Paso County staff cursory review.

HEC-RAS MODELING

HEC-RAS ver. 5.0.6 was used to perform a one-dimensional, steady flow hydraulic model of a portion of Reach SC-9 from Arroya Lane to approximately 650 feet downstream of the TimberRidge south property line. HEC-RAS was used to define the stream centerline, overbanks, cross-sections and manning's n values. The stream centerline follows the channel thalweg to define the reach network. Cross-section topography data was obtained by using the generated surface from the 2-ft. flown contours utilized for all site design. This data was then exported from AutoCAD containing three-dimensional coordinates for the stream centerline, cross-sections, reach stations, overbank stations, reach lengths and imported into HEC-RAS. Two separate models defining the existing condition and proposed condition were prepared using the same centerline stationing. The proposed model included the introduction of the ineffective flow area for the culvert added for the Poco Road crossing. Different Manning's n values were applied across the various channel cross-sections to reflect the changes in vegetative cover within the channel and overbanks. The selected Manning's n values for the channel and overbanks were determined using Tables 10-1 and 10-2 from the DCM and Table 3 from the USGS Guide for selecting Manning's Roughness Coefficients based on numerous site visits in an effort to photograph and document each cross-section. (See Appendix) The following table summarizes the selected Manning's n values:

Per the approved DBPS, the anticipated developed flows just upstream of this project are Q_{10} = 630 cfs and Q_{100} = 2170 cfs as depicted within DBPS segment no. 171. The anticipated developed flows exiting this property are Q_{10} = 670 cfs and Q_{100} = 2260 cfs as depicted within DBPS segment no. 170. As discussed earlier, the FEMA FIS flows appear to be significantly higher than both those presented in the DBPS and the Sterling Ranch MDDP. Based on the approved Sterling Ranch MDDP and the anticipated future CLOMR/LOMR processing by Sterling Ranch, we have continued to utilize the significantly larger flows as determined by the FEMA FIS (2600 cfs) in the channel improvement designs but request relief from the allowable clearance of the proposed major drainageway crossing as found in the DCM Vol. 1 6.4.2. The 2600 cfs will be utilized in the structure calculations but relief from the 2 feet freeboard within the structure is being requested via formal deviation.

see Revised

The proposed public roadway crossing of Sand Creek is planned for this site. (Extension of Poco Road) Upon development of Filing No. 1, the proposed crossing will consist of a two cell multi-plate steel ~~single radius~~ arch (26' x 8.7') with concrete headwalls to facilitate the conveyance of the 100 yr. flow. (See Appendix) This facility has an Hw/D = 0.80 utilizing the 2600 cfs FEMA flows and using flows of 2170 cfs as presented in the Sand Creek DBPS, it has an Hw/D = 0.69 and allows for 1.7' freeboard within the structure. The proposed structure is made from heavy gage corrugated steel plates with 3 oz. per square foot galvanized coating (both sides) capable of providing a service life of 75 years or longer. Soils testing will provide further design information related to wall thickness to account for corrosion and abrasion requirements per County standards.

verify — See Revised

Now provided with Entech / Contech plans

Based on recent site visits during May and July of this year, the entire Sand Creek drainage corridor through the Retreat at TimberRidge development was walked and photographed for documentation purposes and aide in the HEC-RAS modeling. (See Appendix) As discovered in the field and documented in the photos taken both up-stream and down-stream at each HES-RAS station, this reach of the Sand Creek channel appears very stable with no signs of erosion within

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the main channel or channel overbanks. This is mainly due to the significant vegetal cover throughout the reach. The classification of the vegetal cover seems to have a range from Retardance Class A-C as defined by HEC-15 chart (See Appendix) This type of vegetation retardance significantly increases the allowable shear stress within the channel while reducing the velocity. The following table defines the retardance level based on the vegetation class:

Table 3

Vegetal Retardance Curve Index by SCS Retardance Class

SCS Retardance Class	Retardance Curve Index
A	10.0
B	7.64
C	5.60
D	4.44
E	2.88

Based on this information, the maximum allowable sheer stress is found by the flowing equation:

$$T = 0.75 \text{Curve Index}$$

Thus, the range of shear stress for this reach of Sand Creek equals 4.2 – 7.5 (lb/ft^2).

Referencing the HES-RAS model calculations in the Appendix shows that only a few stations showed shear stress exceeding this limit. (Sta: 33+34.27, 20+83.66 and 18+79.67) The latter two stations are within the Filing 1 development area and with the proposed channel improvements and selective embankment lining, the shear stress at those two locations will be reduced to the allowable range. Station 33+34.27 will be addressed with proposed channel improvements in the future Filing.

This is next to the proposed Filing 1 lots. Bank stabilization at a minimum (along with potentially unstable slopes) should be addressed.

See revised

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Provide existing and proposed channel slopes. Discuss other flow attributes including Froude #, calculated velocities at reaches that have issues. Provide a table showing criteria and proposed values at specified stations. Deviations may be required.

See Revised text

The proposed channel improvements within this Filing consist of four check structures located approximately 600 feet apart. One will be constructed north of the Poco Road crossing and three south of the road crossing. The DBPS only depicts one structure along this stretch of channel but three additional ones are being planned to further limit degradation and help control the elevation of the channel invert. These check structures are designed to be sheet piling with a concrete cap per Urban Drainage Vol. 2 Figures 9-27 thru 9-28.

The DBPS also recommended to provide selective rip-rap channel stabilization located at culvert crossings, pipe outlets and outside bends of the channel. Based on the mean channel slope and maximum allowable velocity of 7.0 fps, Type L Rip-Rap stabilization will be provided at select locations within Filing No. 1. (See Appendix) In conjunction with the installation of the rip-rap stabilization, the selected stretches of channel have also been widened 15'-20' to create and extend the floodplain terraces, better stabilize the steeper natural slopes outside the floodplain area and help reduce the shear stress. The proposed widening of the floodplain terraces takes place outside of the wetland delineations. (Reference the wetland mitigation plan prepared by CORE Consultants found in the Appendix)

DRAINAGE CRITERIA

Hydrologic calculations were performed using the City of Colorado Springs/El Paso County Drainage Criteria Manual, as revised in November 1991 and October 1994 with County adopted Chapter 6 and Section 3.2.1 of Chapter 13 of the City of Colorado Springs/El Paso County Drainage Criteria Manual as revised in May 2014. The overall pre-development design model was calculated using PondPack V8i with time of concentrations estimated using NRCS Unit Hydrograph procedures described in the DCM based upon the hydrologic soil type and runoff ARC II curve numbers (CN) chart (Table 6-10) with a 24 hour NRCS Type II distribution. Individual on-site developed basin design used for detention/SWQ basin sizing, inlet sizing and storm system routing was calculated using the Rational Method. Runoff Coefficients are based on the

imperviousness of the particular land use and the hydrologic soil type in accordance with Table 6-6. The average rainfall intensity, by recurrence interval found in the Intensity-Duration-Frequency (IDF) curves in Figure 6-5. (See Appendix)

The City of Colorado Springs/El Paso County DCM requires the Four Step Process for receiving water protection that focuses on reducing runoff volumes, treating the water quality capture volume (WQCV), stabilizing drainage ways, and implementing long-term source controls. The Four Step Process pertains to management of smaller, frequently occurring storm events, as opposed to larger storms for which drainage and flood control infrastructure are sized. Implementation of these four steps helps to achieve storm water permit requirements.

This site adheres to this **Four Step Process** as follows:

1. **Employ Runoff Reduction Practices:** Proposed rural lot impervious area (roof tops, patios, etc.) will sheet flow across lengthy landscape/natural areas within the large lots and proposed urban lot impervious areas (roof tops, patios, etc.) will sheet flow across landscaped yards and through open space areas to slow runoff and increase time of concentration prior to being conveyed to the proposed public streets or detention facilities. This will minimize directly connected impervious areas within the project site.

2. **Stabilize Drainageways:** After developed flows utilize the runoff reduction practices through the front and rear yards, developed flows will travel via roadside ditches in the large lot, rural portions of the development, curb and gutter within the public streets in the urban portions of the development and eventually public storm systems. These collected flows are then routed directly to multiple extended detention basins (full-spectrum facilities) and a Rain Garden. Where developed flows are not able to be routed to public streets (rear yards of lots 25-28 adjacent to Sand Creek – 0.90 ac.), sheet flows will travel across landscaped rear yards towards the Sand Creek channel within the open

space corridor. This channel corridor will then be protected with various channel improvements as recommended in the Sand Creek DBPS and proposed with this Filing in order to reduce velocities to erosive levels.

3. **Provide Water Quality Capture Volume (WQCV):** Runoff from this development will be treated through capture and slow release of the WQCV and excess urban runoff volume (EURV) in the proposed Full-Spectrum permanent Extended Detention Basins and a Rain Garden designed per current El Paso County drainage criteria.

4. **Consider need for Industrial and Commercial BMPs**: No industrial or commercial uses are proposed within this development. However, a site specific storm water quality and erosion control plan and narrative has been submitted along with the grading and erosion control plan. Details such as site specific sediment and erosion control construction BMP's as well as temporary and permanent BMP's were detailed in this plan and narrative to protect receiving waters. Multiple temporary BMP's are proposed based on specific phasing of the overall development. BMP's will be constructed and maintained as the development has been graded and erosion control methods employed.

FLOODPLAIN STATEMENT

Portions of this site are located within a floodplain as determined by the Flood Insurance Rate Maps (F.I.R.M.) Map Number 08041C 0535G with effective date of December 7, 2018 and the previously mentioned LOMR 08-08-0541P with an effective date of July 23, 2009. (See Appendix).

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the **North American Vertical Datum of 1988 (NAVD88)**. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at http://www.ngs.noaa.gov/.

Base Map information shown on this FIRM was provided in digital format by El Paso County, Colorado Springs Utilities, and Anderson Consulting Engineers, Inc. These data are current as of 2008.

This map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. The profile baselines depicted on this map represent the hydraulic modeling baselines that match the flood profiles and Floodway Data Tables if applicable, in the FIS report. As a result, the profile baselines may deviate significantly from the new base map channel representation and may appear outside of the floodplain.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact **FEMA Map Service Center** (MSC) via the FEMA Map Information eXchange (FMIX) 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The MSC may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

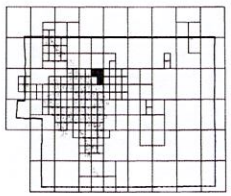
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

El Paso County Vertical Datum Offset Table

Flooding Source	Vertical Datum Offset (ft)

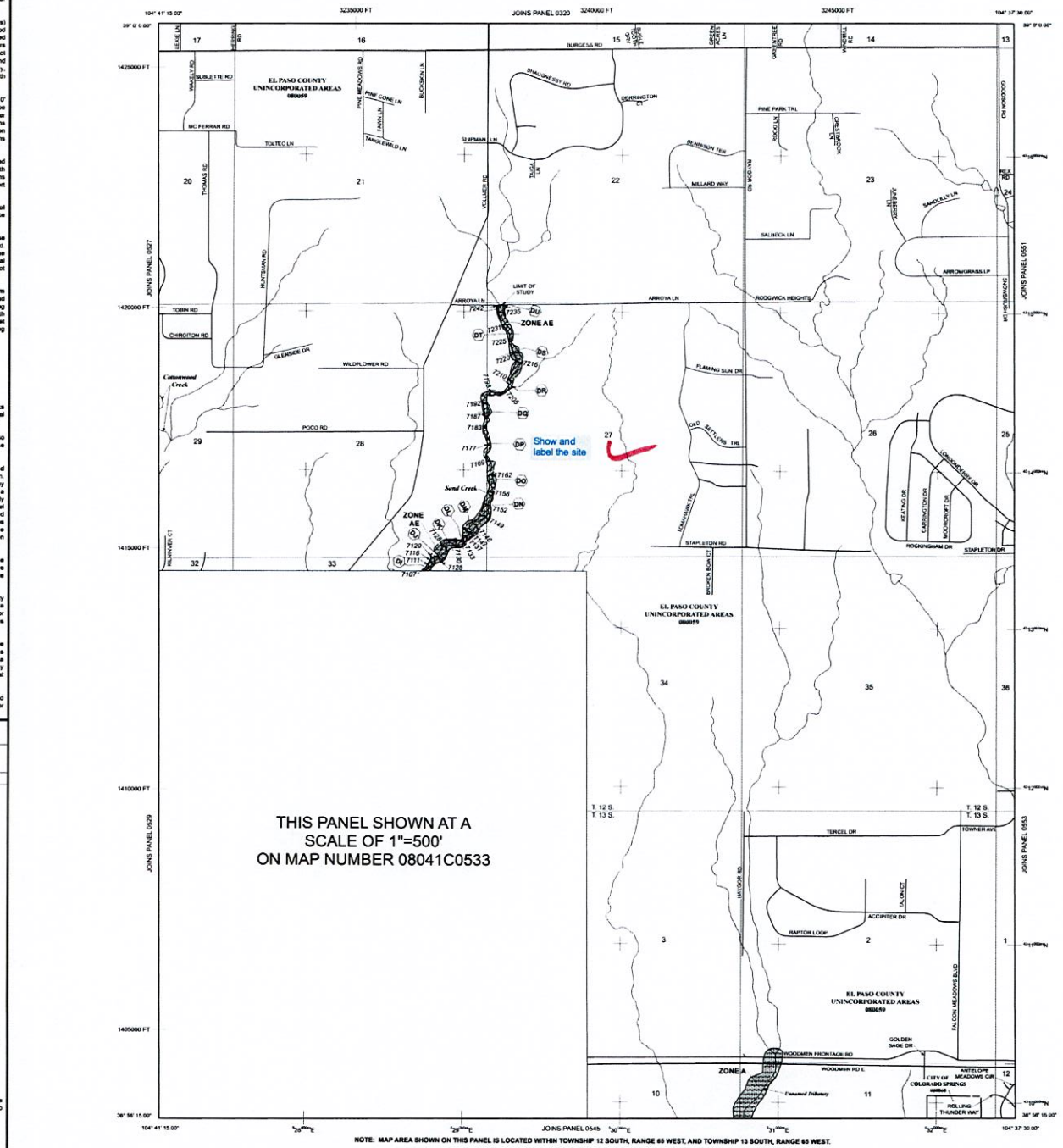
REFER TO SECTION 3.3 OF THE EL PASO COUNTY FLOOD INSURANCE STUDY FOR STREAM BY STREAM VERTICAL DATUM CONVERSION INFORMATION

Panel Location Map



This Digital Flood Insurance Rate Map (DFIRM) was produced through a Cooperating Technical Partner (CTP) agreement between the State of Colorado Water Conservation Board (CWCB) and the Federal Emergency Management Agency (FEMA).

Additional Flood Hazard information and resources are available from local communities and the Colorado Water Conservation Board.



THIS PANEL SHOWN AT A SCALE OF 1"=500' ON MAP NUMBER 08041C0533

NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 12 SOUTH, RANGE 65 WEST, AND TOWNSHIP 13 SOUTH, RANGE 65 WEST.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAS) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** No Base Flood Elevations determined.
- **ZONE AE** Base Flood Elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 (EL 987) Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- A-A Cross section line
- 23-23 Transect line
- 97° 07' 30.00" / 32° 22' 30.00" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4775000mN 1000-meter Universal Transverse Mercator grid ticks, zone 13
- 6000000 FT 5000-foot grid ticks: Colorado State Plane coordinate system, central zone (FIPSZONE 0502), Lambert Conformal Conic Projection
- DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MARCH 17, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
DECEMBER 7, 2018 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History Table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-9620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0535G

FIRM
FLOOD INSURANCE RATE MAP
EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 535 OF 1300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0535	G
EL PASO COUNTY	080059	0535	G

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

MAP NUMBER 08041C0535G

MAP REVISED DECEMBER 7, 2018

Federal Emergency Management Agency

Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Tuesday, Jul 30 2019

Two Cell Multi-plate Steel Single Arch Culverts (26'x8.6' equiv.) Flows FEMA Flows

Invert Elev Dn (ft)	= 7172.00
Pipe Length (ft)	= 130.00
Slope (%)	= 3.08
Invert Elev Up (ft)	= 7176.00
Rise (in)	= 122.0
Shape	= Arch
Span (in)	= 244.0
No. Barrels	= 2
n-Value	= 0.024
Culvert Type	= Arch Corrugated Metal
Culvert Entrance	= 90D headwall (A)
Coeff. K,M,c,Y,k	= 0.0083, 2, 0.0379, 0.69, 0.5

See Revised calc. sheets

Embankment

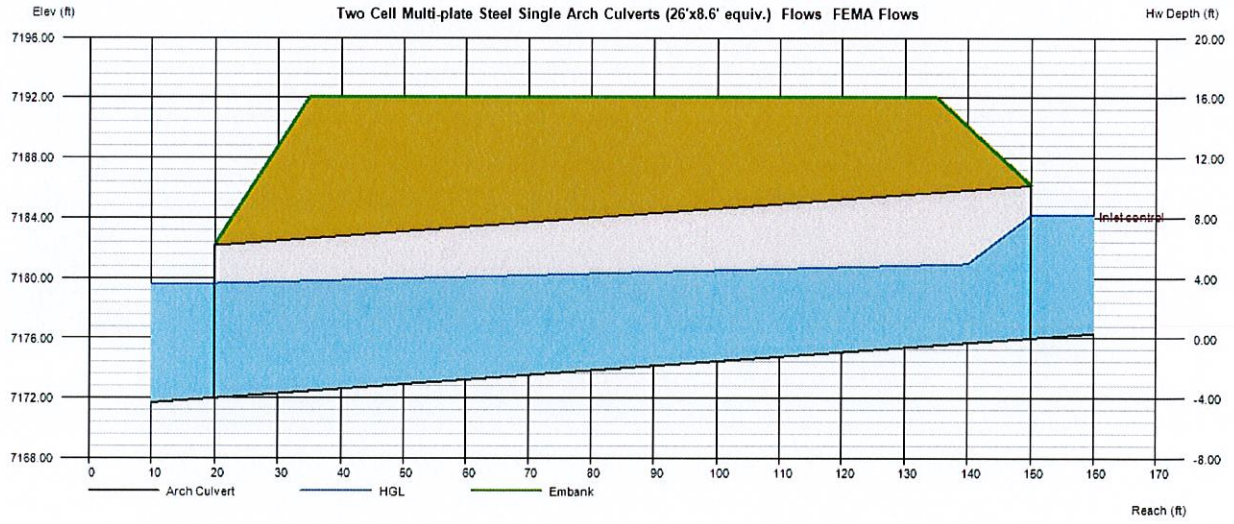
Top Elevation (ft)	= 7192.00
Top Width (ft)	= 100.00
Crest Width (ft)	= 140.00

Calculations

Qmin (cfs)	= 2600.00
Qmax (cfs)	= 2600.00
Tailwater Elev (ft)	= (dc+D)/2

Highlighted

Qtotal (cfs)	= 2600.00
Qpipe (cfs)	= 2600.00
Qovertop (cfs)	= 0.00
Veloc Dn (ft/s)	= 9.37
Veloc Up (ft/s)	= 13.22
HGL Dn (ft)	= 7179.61
HGL Up (ft)	= 7181.05
Hw Elev (ft)	= 7184.15
Hw/D (ft)	= 0.80
Flow Regime	= Inlet Control



ROADSIDE DITCH CALCUALTIONS

Aspen Valley Road - West side of roadway (Sta. 1+50 to Sta. 11+50)

	Erosion Control Blanket (ECB) (North American Green - SC150) (Temporary - 24 months)		Turf Reinforcement Mat (TRM) (North American Green - P300) (Permanent)		Revegetation - Grass lined (Native Seed Mix)
Given:					
Design Flow (cfs)	22.0		22.0		5.5
Permissible Shear (lbs/ft.^{2})	2.0		8.0		0.1
Permissible Velocity (ft./sec.)	8.0		16.0		3.0
Safety Factor	1		1		1
Ditch Slope (Max.)	3.8%		3.8%		1.5%
Ditch Section (24 in. depth)	V-Ditch		V-Ditch		V-Ditch
Flow Area (ft.^{2})	2.89		9.00		4.00
Wetted Perimeter (ft.)	7.02		12.39		8.26
Hydraulic Radius	0.41		0.73		0.48
Mannings n	0.035		0.030		0.030
Depth of Flow (max.)	0.9		1.5		1.0
Calculations:					
Shear Stress (lbs/ft.^{2})	2.0		3.6		0.9
Velocity (ft./sec.)	7.6		2.4		1.4
Allowed Flow (cfs)	13.3		70.4		15.0

Maintenance and Removal

Maintenance activities include the following:

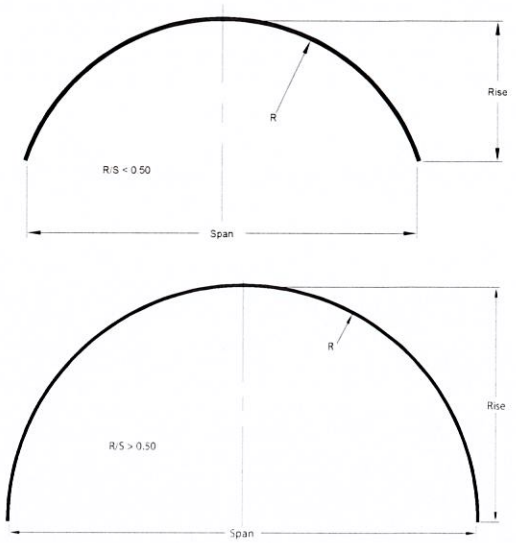
- Dredge sediment from the basin, as needed to maintain BMP effectiveness, typically when the design storage volume is no more than one-third filled with sediment.
- Inspect the sediment basin embankments for stability and seepage.
- Inspect the inlet and outlet of the basin, repair damage, and remove debris. Remove, clean and replace the gravel around the outlet on a regular basis to remove the accumulated sediment within it and keep the outlet functioning.
- Be aware that removal of a sediment basin may require dewatering and associated permit requirements.
- Do not remove a sediment basin until the upstream area has been stabilized with vegetation.

Final disposition of the sediment basin depends on whether the basin will be converted to a permanent post-construction stormwater basin or whether the basin area will be returned to grade. For basins being converted to permanent detention basins, remove accumulated sediment and reconfigure the basin and outlet to meet the requirements of the final design for the detention facility. If the sediment basin is not to be used as a permanent detention facility, fill the excavated area with soil and stabilize with vegetation.

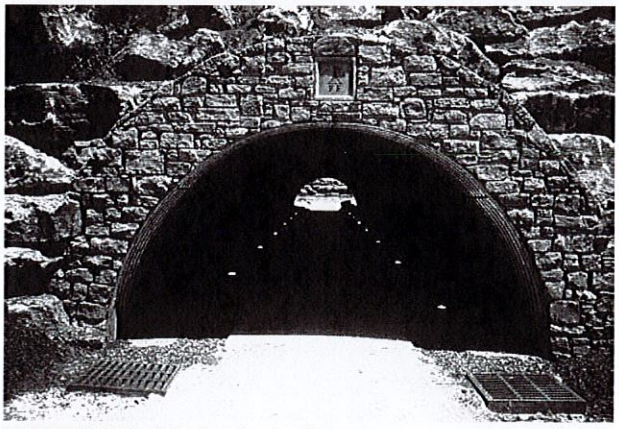
Include in I&M Plan

TABLE 22. MULTI-PLATE® ARCHES

Dimensions					Nominal Arc Length
Span Ft.-In.	Rise Ft.-In.	Waterway Area Ft.²	Rise/Span Ratio	Radius Inches	Pi
6-0	1-10	7.9	0.30	41	27
	2-4	10.0	0.38	37	30
	3-2	15.0	0.53	36	36
7-0	2-5	12.1	0.34	45	33
	2-10	14.9	0.41	43	36
	3-8	20.4	0.52	42	42
8-0	2-11	17.0	0.36	51	39
	3-4	20.3	0.42	49	42
	4-2	26.6	0.52	48	48
9-0	2-11	19.2	0.33	59	42
	3-11	26.5	0.43	55	48
	4-8	33.6	0.52	54	54
10-0	3-6	25.4	0.35	64	48
	4-5	33.5	0.44	61	54
	5-3	41.4	0.52	60	60
11-0	3-6	27.8	0.32	73	51
	4-6	36.9	0.41	68	57
	5-9	50.0	0.52	66	66
12-0	4-1	35.3	0.34	78	57
	5-0	45.2	0.42	73	63
	6-3	59.4	0.52	72	72
13-0	4-1	38.1	0.33	87	60
	5-1	48.9	0.40	81	66
	6-9	69.7	0.52	78	78
14-0	4-8	47.0	0.31	91	66
	5-7	58.5	0.38	86	72
	7-3	80.7	0.44	84	84
15-0	4-8	48.9	0.52	101	69
	5-8	62.8	0.33	93	75
	6-7	74.8	0.44	91	81
	7-9	92.6	0.52	90	90
16-0	5-3	60.1	0.31	105	75
	7-1	86.2	0.42	97	87
	8-4	105.3	0.52	96	96
17-0	5-3	63.4	0.31	115	78
	7-2	91.9	0.42	103	90
	8-10	118.8	0.52	102	102
18-0	5-9	74.8	0.32	119	84
	7-8	104.6	0.43	109	96
	8-11	126.0	0.50	108	105
19-0	6-4	87.1	0.33	123	90
	8-3	118.1	0.43	115	102
	9-5	140.7	0.50	114	111
20-0	6-4	91.0	0.32	133	93
	8-3	124.4	0.42	122	105
	10-0	156.3	0.50	120	117
21-0	6-11	104.6	0.33	137	99
	8-10	139.2	0.42	128	111
	10-6	172.6	0.50	126	123
22-0	6-11	109.3	0.32	146	102
	8-11	145.9	0.40	135	114
	11-0	189.8	0.50	132	129
23-0	8-0	133.6	0.35	147	111
	9-10	171.1	0.43	140	123
	11-6	207.8	0.50	138	135
24-0	8-6	149.4	0.36	152	117
	10-4	188.3	0.43	146	129
	12-0	226.6	0.50	144	141
25-0	8-7	155.6	0.34	160	120
	10-10	206.3	0.43	152	135
	12-6	246.2	0.50	150	147
26-0	8-7	161.4	0.33	169	123
	11-0	214.9	0.42	158	138
	13-1	266.7	0.50	156	153

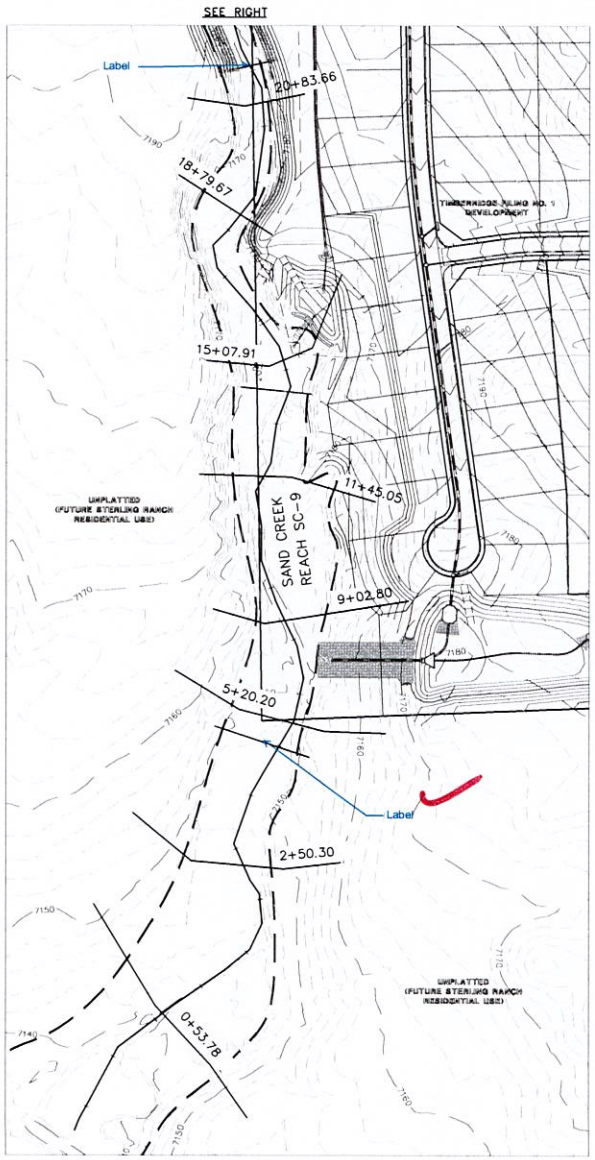


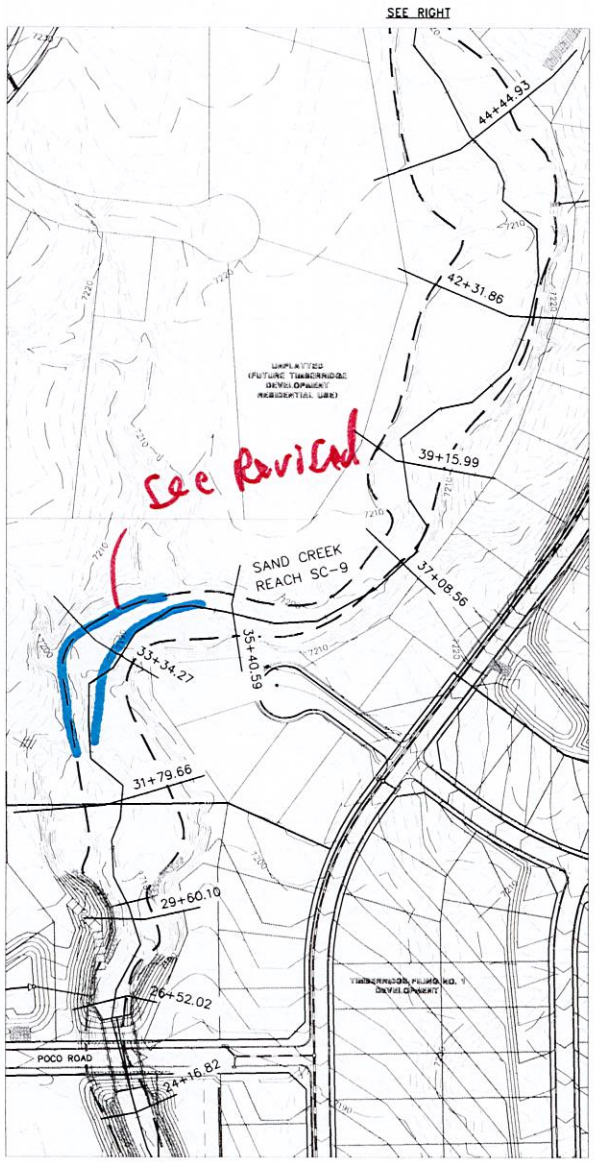
Single Radius Arch



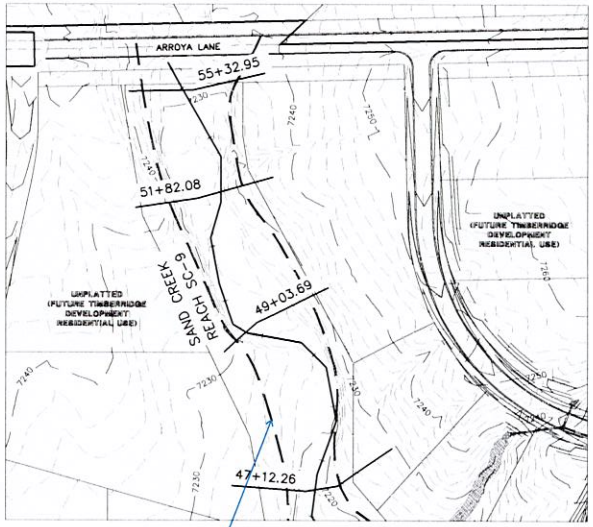
MULTI-PLATE Arch Pedestrian Underpass

Notes:
1. Dimensions are to inside crests of corrugations are are subject to manufacturing tolerances.
2. To determine proper gage, use Table 24 and/or design information found on Pages 13-18.
3. For additional arch sizes, contact your Contech representative.





See Revised

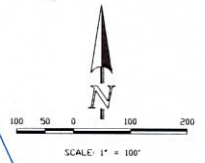


Label which floodplain line these are (FEMA 100-year flow?).

This is just a stationing exhibit for report to relate to HEC-RAS

Provide complete channel plan and profile.

See channel plans for full details.



CLASSIC CONSULTING
619 N. Cascade Avenue, Suite 200, Colorado Springs, Colorado 80903 (719)785-0790 (719)785-0799 [Fax]

RETREAT AT TIMBERRIDGE FILING NO. 1
CONSTRUCTION PLANS
HEC-RAS ANALYSIS
CHANNEL STATIONING EXHIBIT

DESIGNED BY	MAW	SCALE		DATE	7/22/19
DRAWN BY	MAW	(H) 1"= 100'		SHEET	1 OF 1
CHECKED BY		(V) 1"= N/A		JOB NO.	1185.00

HEC-RAS Plan: SC EX River: Sand Creek Ex Reach: TimberRidge

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	Max Chl Dpth	Hydr Radius	E.G. Elev	E.G. Slope	Vel Total	Shear Total	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(lb/sq ft)	(sq ft)	(ft)	
TimberRidge	5532.95	FEMA 100 Yr.	2600	7231.07	7235.50	7234.14	4.66	3.61	7236.07	0.022123	4.66	4.98	558.42	153.96	1.25
TimberRidge	5532.95	DBPS 100 Yr.	2170	7231.07	7235.06	7233.83	4.22	3.29	7235.57	0.022489	4.42	4.62	491.29	148.54	1.24
TimberRidge	5532.95	DBPS 10 Yr.	630	7231.07	7233.05	7232.37	2.21	1.73	7233.27	0.022690	2.90	2.45	216.94	125.08	1.10
TimberRidge	5532.95	Sterling MDDP 10	1487	7231.07	7234.28	7233.25	3.44	2.71	7234.68	0.022906	3.92	3.88	379.03	139.02	1.20
TimberRidge	5532.95	Sterling MDDP 10	430	7231.07	7232.67	7232.10	1.83	1.41	7232.83	0.022520	2.53	1.98	170.10	120.85	1.06
TimberRidge	5182.08	FEMA 100 Yr.	2600	7225.96	7231.65		5.70	4.27	7232.07	0.018672	4.79	4.97	542.26	125.30	0.68
TimberRidge	5182.08	DBPS 100 Yr.	2170	7225.96	7231.06		5.11	3.92	7231.45	0.019529	4.61	4.77	470.40	118.57	0.69
TimberRidge	5182.08	DBPS 10 Yr.	630	7225.96	7228.29		2.34	2.07	7228.49	0.026393	3.41	3.42	184.86	88.41	0.70
TimberRidge	5182.08	Sterling MDDP 10	1487	7225.96	7229.99		4.04	3.26	7230.32	0.021556	4.24	4.39	350.64	106.44	0.69
TimberRidge	5182.08	Sterling MDDP 10	430	7225.96	7227.79		1.84	1.68	7227.95	0.027954	3.03	2.93	142.00	84.12	0.69
TimberRidge	4903.69	FEMA 100 Yr.	2600	7222.00	7229.08		7.08	5.44	7229.23	0.006505	3.12	2.21	833.97	150.82	0.29
TimberRidge	4903.69	DBPS 100 Yr.	2170	7222.00	7228.48		6.48	5.01	7228.62	0.006320	2.91	1.98	745.57	146.46	0.28
TimberRidge	4903.69	DBPS 10 Yr.	630	7222.00	7225.44		3.43	2.70	7225.49	0.006018	1.88	1.02	334.41	122.62	0.25
TimberRidge	4903.69	Sterling MDDP 10	1487	7222.00	7227.37		5.37	4.19	7227.47	0.006081	2.53	1.59	586.70	138.16	0.27
TimberRidge	4903.69	Sterling MDDP 10	430	7222.00	7224.80		2.80	2.20	7224.84	0.006198	1.66	0.85	258.34	116.86	0.24
TimberRidge	4712.26	FEMA 100 Yr.	2600	7218.00	7224.68	7222.51	6.70	3.44	7225.00	0.022780	4.35	4.89	597.42	173.07	0.54
TimberRidge	4712.26	DBPS 100 Yr.	2170	7218.00	7224.22	7222.12	6.24	3.29	7224.51	0.022035	4.16	4.52	521.13	157.68	0.53
TimberRidge	4712.26	DBPS 10 Yr.	630	7218.00	7221.73	7220.17	3.75	2.31	7221.88	0.016908	2.92	2.44	215.45	92.67	0.42
TimberRidge	4712.26	Sterling MDDP 10	1487	7218.00	7223.36	7221.42	5.38	2.98	7223.60	0.020204	3.74	3.76	397.13	132.38	0.49
TimberRidge	4712.26	Sterling MDDP 10	430	7218.00	7221.20	7219.77	3.22	2.02	7221.31	0.015247	2.55	1.92	168.65	82.95	0.39
TimberRidge	4444.93	FEMA 100 Yr.	2600	7213.94	7217.42		3.49	2.61	7217.80	0.040856	4.86	6.67	535.42	204.29	0.65
TimberRidge	4444.93	DBPS 100 Yr.	2170	7213.94	7217.12		3.19	2.39	7217.46	0.040744	4.56	6.08	475.55	198.45	0.64
TimberRidge	4444.93	DBPS 10 Yr.	630	7213.94	7215.69		1.76	1.27	7215.84	0.041075	3.00	3.26	209.85	165.13	0.58
TimberRidge	4444.93	Sterling MDDP 10	1487	7213.94	7216.58		2.65	1.95	7216.84	0.041527	4.02	5.05	369.98	189.56	0.63
TimberRidge	4444.93	Sterling MDDP 10	430	7213.94	7215.36		1.43	1.05	7215.48	0.044062	2.73	2.89	157.29	149.73	0.58
TimberRidge	4231.86	FEMA 100 Yr.	2600	7206.00	7213.04		7.04	4.68	7213.17	0.006041	2.76	1.76	943.54	200.13	0.40
TimberRidge	4231.86	DBPS 100 Yr.	2170	7206.00	7212.40		6.40	4.11	7212.52	0.006650	2.66	1.71	816.05	196.98	0.41
TimberRidge	4231.86	DBPS 10 Yr.	630	7206.00	7209.92		3.92	1.87	7209.99	0.008563	1.84	1.00	343.25	182.92	0.43
TimberRidge	4231.86	Sterling MDDP 10	1487	7206.00	7211.39		5.39	3.22	7211.50	0.007420	2.40	1.49	620.71	191.95	0.42
TimberRidge	4231.86	Sterling MDDP 10	430	7206.00	7209.48		3.48	1.53	7209.55	0.008485	1.62	0.81	265.27	173.55	0.42
TimberRidge	3915.99	FEMA 100 Yr.	2600	7204.00	7210.59		6.60	5.34	7210.78	0.007054	3.26	2.35	797.06	146.22	0.43
TimberRidge	3915.99	DBPS 100 Yr.	2170	7204.00	7209.87		5.88	5.10	7210.03	0.006914	3.12	2.20	696.16	133.70	0.42
TimberRidge	3915.99	DBPS 10 Yr.	630	7204.00	7206.77		2.77	2.41	7206.84	0.008582	2.11	1.29	297.89	122.42	0.41
TimberRidge	3915.99	Sterling MDDP 10	1487	7204.00	7208.63		4.64	4.05	7208.76	0.007503	2.79	1.90	533.41	129.50	0.42
TimberRidge	3915.99	Sterling MDDP 10	430	7204.00	7206.18		2.19	1.88	7206.24	0.009565	1.89	1.12	226.98	120.03	0.42
TimberRidge	3708.56	FEMA 100 Yr.	2600	7200.10	7207.58		7.58	4.46	7208.29	0.025141	5.87	7.01	442.63	97.03	0.81
TimberRidge	3708.56	DBPS 100 Yr.	2170	7200.10	7206.95		6.95	4.29	7207.59	0.024814	5.65	6.64	384.34	87.56	0.80
TimberRidge	3708.56	DBPS 10 Yr.	630	7200.10	7203.92		3.92	2.65	7204.19	0.021965	3.74	3.63	168.25	62.60	0.68
TimberRidge	3708.56	Sterling MDDP 10	1487	7200.10	7205.77		5.77	4.03	7206.26	0.023482	5.11	5.91	291.25	70.41	0.75
TimberRidge	3708.56	Sterling MDDP 10	430	7200.10	7203.44		3.44	2.29	7203.62	0.018225	3.10	2.60	138.66	59.80	0.60
TimberRidge	3540.59	FEMA 100 Yr.	2600	7193.66	7201.16		7.50	5.28	7201.54	0.016276	4.88	5.37	533.27	98.38	0.47
TimberRidge	3540.59	DBPS 100 Yr.	2170	7193.66	7200.50		6.84	4.82	7200.85	0.016469	4.62	4.95	469.77	95.16	0.46
TimberRidge	3540.59	DBPS 10 Yr.	630	7193.66	7197.37		3.71	2.51	7197.54	0.018076	3.19	2.84	197.61	77.42	0.44
TimberRidge	3540.59	Sterling MDDP 10	1487	7193.66	7199.31		5.65	3.95	7199.59	0.017044	4.13	4.20	359.82	89.21	0.45
TimberRidge	3540.59	Sterling MDDP 10	430	7193.66	7196.60		2.94	1.93	7196.76	0.023454	3.07	2.82	139.94	71.61	0.48

SR9 Revised

HEC-RAS Plan: SC EX River: Sand Creek Ex Reach: TimberRidge (Continued)

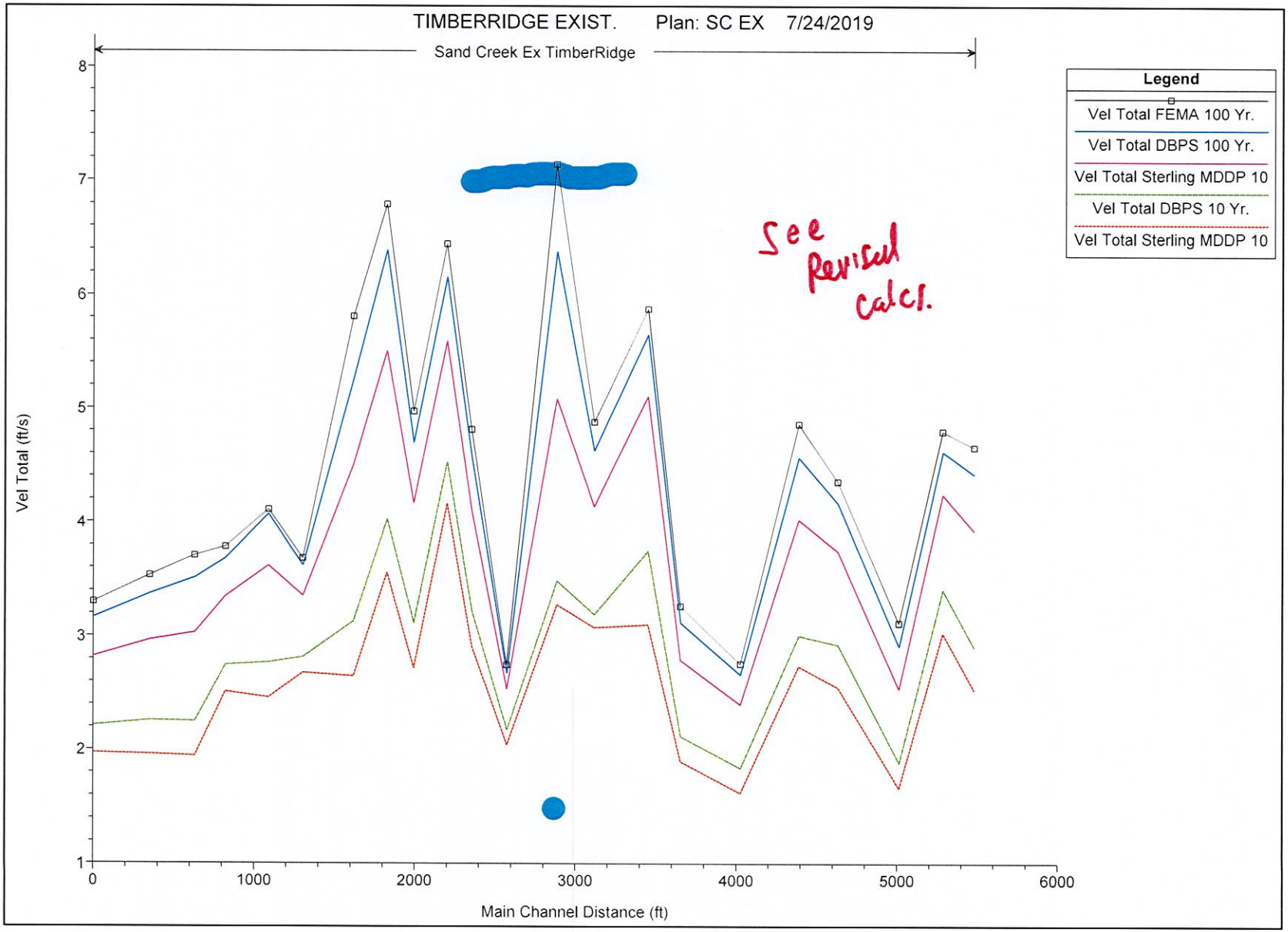
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	Max Chl Dpth	Hydr Radius	E.G. Elev	E.G. Slope	Vel Total	Shear Total	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(lb/sq ft)	(sq ft)	(ft)	
TimberRidge	3334.27	FEMA 100 Yr.	2600	7188.53	7193.50		5.54	2.87	7194.42	0.072171	7.14	12.95	364.29	124.33	0.92
TimberRidge	3334.27	DBPS 100 Yr.	2170	7188.53	7193.30	7192.93	5.34	2.70	7194.05	0.061480	6.38	10.37	340.20	123.58	0.84
TimberRidge	3334.27	DBPS 10 Yr.	630	7188.53	7191.99	7190.32	4.03	1.55	7192.25	0.028505	3.48	2.76	180.93	114.98	0.54
TimberRidge	3334.27	Sterling MDDP 10	1487	7188.53	7192.91	7192.43	4.95	2.35	7193.41	0.044673	5.08	6.57	292.52	122.08	0.71
TimberRidge	3334.27	Sterling MDDP 10	430	7188.53	7191.33		3.37	2.36	7191.50	0.021223	3.27	3.13	131.30	54.16	0.45
TimberRidge	3179.66	FEMA 100 Yr.	2600	7183.98	7189.18		5.38	4.11	7189.37	0.006788	2.75	1.74	947.01	229.24	0.71
TimberRidge	3179.66	DBPS 100 Yr.	2170	7183.98	7188.59		4.79	3.57	7188.77	0.007722	2.67	1.72	811.57	226.59	0.74
TimberRidge	3179.66	DBPS 10 Yr.	630	7183.98	7186.09		2.29	1.61	7186.22	0.014486	2.17	1.46	289.82	179.56	0.89
TimberRidge	3179.66	Sterling MDDP 10	1487	7183.98	7187.58		3.78	2.70	7187.75	0.009902	2.53	1.67	587.35	216.95	0.81
TimberRidge	3179.66	Sterling MDDP 10	430	7183.98	7185.63		1.83	1.30	7185.74	0.016961	2.04	1.37	210.63	162.16	0.93
TimberRidge	2960.1	FEMA 100 Yr.	2600	7178.00	7186.36	7184.83	8.36	5.46	7187.33	0.012243	4.81	4.17	540.94	95.93	1.03
TimberRidge	2960.1	DBPS 100 Yr.	2170	7178.00	7185.67	7184.39	7.67	4.94	7186.58	0.012402	4.56	3.83	475.88	93.43	1.02
TimberRidge	2960.1	DBPS 10 Yr.	630	7178.00	7182.47	7182.15	4.47	2.37	7183.10	0.013556	3.22	2.01	195.76	81.33	0.98
TimberRidge	2960.1	Sterling MDDP 10	1487	7178.00	7184.43	7183.52	6.43	3.99	7185.23	0.012823	4.09	3.19	363.22	88.84	1.01
TimberRidge	2960.1	Sterling MDDP 10	430	7178.00	7181.87	7181.32	3.87	1.92	7182.43	0.013212	2.91	1.58	147.93	76.11	0.94
TimberRidge	2652.02	FEMA 100 Yr.	2600	7176.17	7183.17	7182.29	7.08	5.21	7184.75	0.023099	6.44	7.52	403.64	74.87	1.38
TimberRidge	2652.02	DBPS 100 Yr.	2170	7176.17	7182.48	7181.67	6.39	4.70	7183.94	0.023997	6.15	7.05	352.70	72.89	1.38
TimberRidge	2652.02	DBPS 10 Yr.	630	7176.17	7179.25	7178.95	3.16	2.37	7180.06	0.030715	4.53	4.55	139.16	57.95	1.38
TimberRidge	2652.02	Sterling MDDP 10	1487	7176.17	7181.25	7180.64	5.16	3.82	7182.47	0.025731	5.59	6.14	265.99	68.14	1.38
TimberRidge	2652.02	Sterling MDDP 10	430	7176.17	7178.61	7178.44	2.52	1.88	7179.31	0.034607	4.16	4.07	103.34	54.38	1.41
TimberRidge	2416.82	FEMA 100 Yr.	2600	7171.98	7180.37	7178.04	8.45	6.07	7181.30	0.011437	4.97	4.33	523.22	82.99	1.00
TimberRidge	2416.82	DBPS 100 Yr.	2170	7171.98	7179.63	7177.43	7.71	5.57	7180.46	0.011363	4.69	3.95	462.43	80.16	0.98
TimberRidge	2416.82	DBPS 10 Yr.	630	7171.98	7176.06		4.14	3.04	7176.45	0.010686	3.11	2.03	202.28	65.37	0.86
TimberRidge	2416.82	Sterling MDDP 10	1487	7171.98	7178.27	7176.44	6.35	4.63	7178.93	0.011295	4.16	3.27	357.08	74.95	0.94
TimberRidge	2416.82	Sterling MDDP 10	430	7171.98	7175.37		3.45	2.53	7175.67	0.010159	2.71	1.60	158.43	61.76	0.81
TimberRidge	2083.66	FEMA 100 Yr.	2600	7169.85	7176.70	7175.92	6.86	5.13	7178.44	0.026213	6.79	8.39	382.97	71.41	1.46
TimberRidge	2083.66	DBPS 100 Yr.	2170	7169.85	7176.08	7175.34	6.24	4.70	7177.62	0.025996	6.39	7.63	339.53	69.34	1.43
TimberRidge	2083.66	DBPS 10 Yr.	630	7169.85	7173.26	7172.77	3.42	2.55	7173.92	0.022312	4.02	3.55	156.58	60.29	1.20
TimberRidge	2083.66	Sterling MDDP 10	1487	7169.85	7175.05	7174.36	5.21	3.95	7176.21	0.024078	5.50	5.94	270.14	66.11	1.34
TimberRidge	2083.66	Sterling MDDP 10	430	7169.85	7172.66	7172.31	2.82	2.05	7173.20	0.022657	3.55	2.90	120.98	58.07	1.17
TimberRidge	1879.67	FEMA 100 Yr.	2600	7165.99	7171.60		5.62	4.12	7172.21	0.031058	5.81	8.00	447.76	106.82	0.88
TimberRidge	1879.67	DBPS 100 Yr.	2170	7165.99	7171.28		5.30	3.87	7171.78	0.027596	5.25	6.67	413.29	105.18	0.82
TimberRidge	1879.67	DBPS 10 Yr.	630	7165.99	7169.14	7168.18	3.16	2.17	7169.33	0.020768	3.13	2.81	201.48	92.17	0.65
TimberRidge	1879.67	Sterling MDDP 10	1487	7165.99	7170.47		4.49	3.23	7170.85	0.025649	4.50	5.17	330.59	101.12	0.77
TimberRidge	1879.67	Sterling MDDP 10	430	7165.99	7168.71	7167.80	2.73	1.82	7168.85	0.018543	2.64	2.11	162.65	88.71	0.60
TimberRidge	1507.91	FEMA 100 Yr.	2600	7159.96	7164.64		4.70	3.16	7164.88	0.017631	3.68	3.47	706.87	222.98	0.64
TimberRidge	1507.91	DBPS 100 Yr.	2260	7159.96	7164.27		4.33	2.84	7164.51	0.019313	3.61	3.43	625.38	219.14	0.66
TimberRidge	1507.91	DBPS 10 Yr.	670	7159.96	7162.06		2.12	1.66	7162.20	0.024564	2.81	2.54	238.33	143.22	0.66
TimberRidge	1507.91	Sterling MDDP 10	1520	7159.96	7163.41		3.47	2.44	7163.61	0.020460	3.35	3.12	453.97	184.96	0.66
TimberRidge	1507.91	Sterling MDDP 10	450	7159.96	7161.50		1.56	1.39	7161.62	0.028802	2.68	2.50	168.19	120.55	0.68
TimberRidge	1145.05	FEMA 100 Yr.	2600	7153.97	7160.24	7159.41	6.27	3.32	7161.04	0.017900	4.11	3.71	633.15	188.76	1.19
TimberRidge	1145.05	DBPS 100 Yr.	2260	7153.97	7159.81	7159.12	5.84	3.24	7160.55	0.017502	4.07	3.54	555.70	169.49	1.16
TimberRidge	1145.05	DBPS 10 Yr.	670	7153.97	7157.71	7157.19	3.74	1.89	7158.17	0.014853	2.77	1.75	242.31	127.24	0.99
TimberRidge	1145.05	Sterling MDDP 10	1520	7153.97	7158.97	7158.47	5.00	2.72	7159.60	0.017048	3.61	2.90	420.67	152.99	1.12
TimberRidge	1145.05	Sterling MDDP 10	450	7153.97	7157.21		3.24	1.65	7157.58	0.013286	2.46	1.37	183.08	110.30	0.92

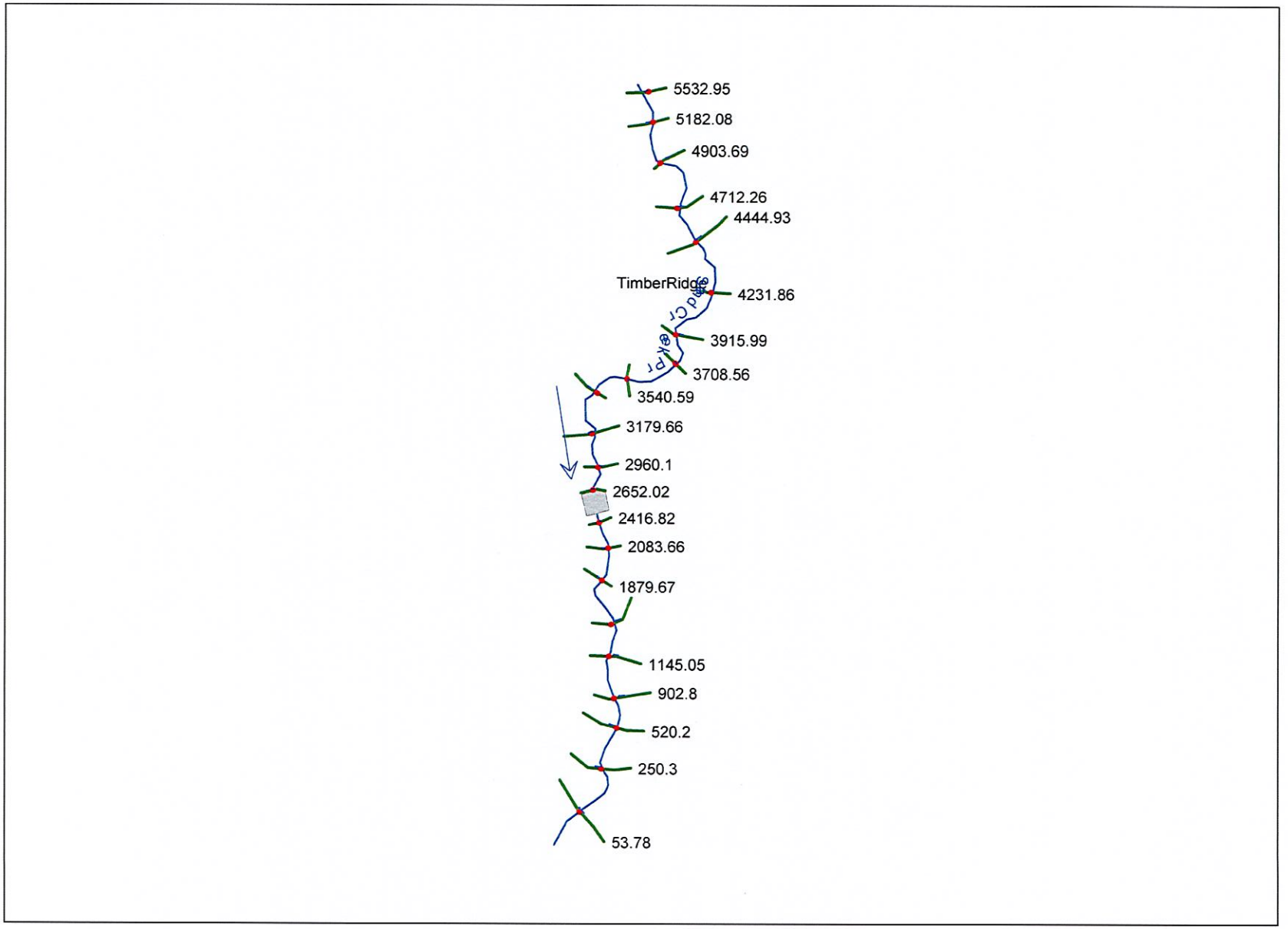
See Revised

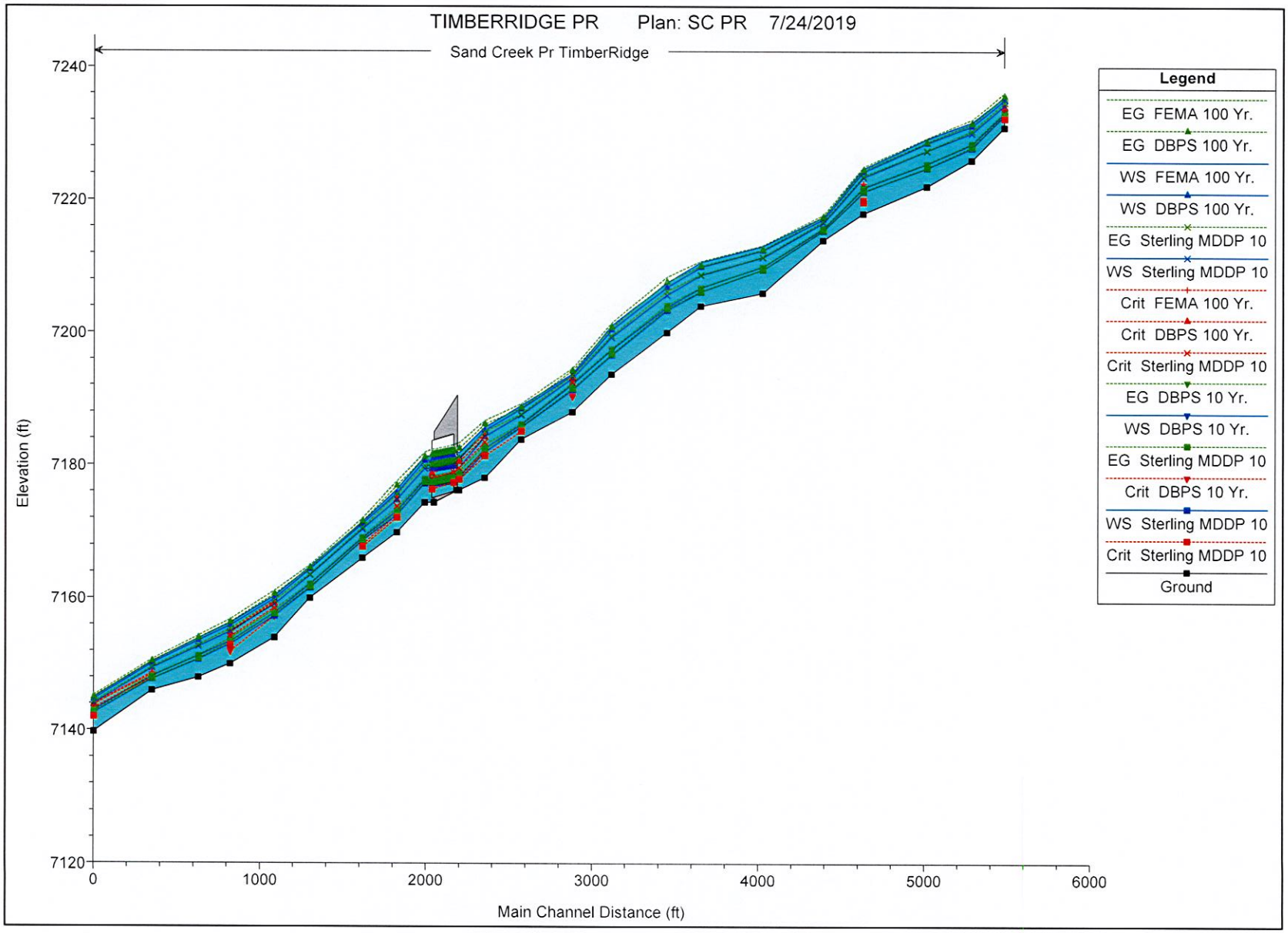
HEC-RAS Plan: SC EX River: Sand Creek Ex Reach: TimberRidge (Continued)

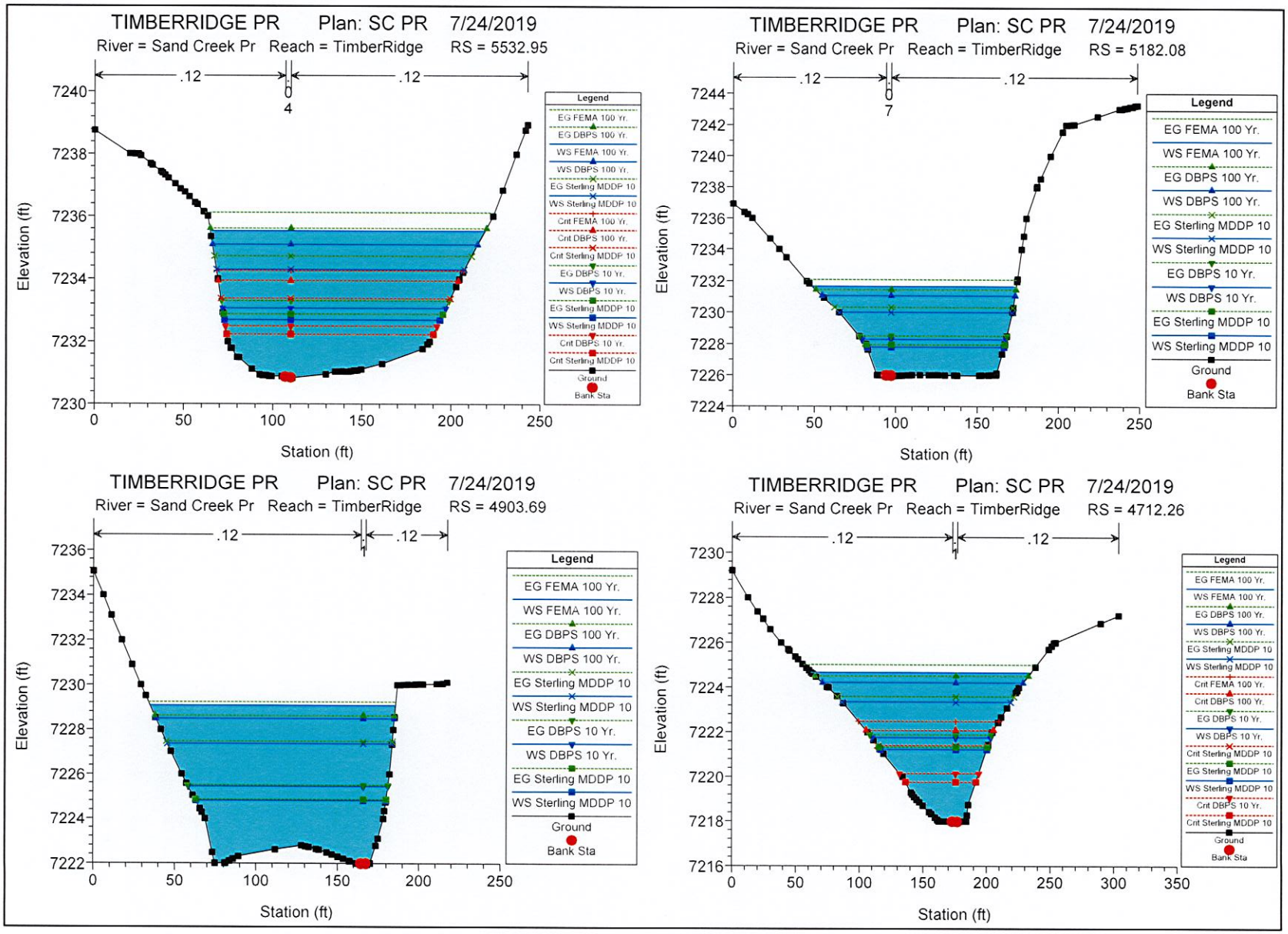
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	Max Chl Dpth	Hydr Radius	E.G. Elev	E.G. Slope	Vel Total	Shear Total	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(lb/sq ft)	(sq ft)	(ft)	
TimberRidge	902.8	FEMA 100 Yr.	2600	7150.00	7156.17	7154.91	6.18	3.62	7156.72	0.014230	3.78	3.22	687.79	188.79	1.05
TimberRidge	902.8	DBPS 100 Yr.	2260	7150.00	7155.77	7154.68	5.78	3.47	7156.29	0.014183	3.68	3.07	614.75	175.97	1.04
TimberRidge	902.8	DBPS 10 Yr.	670	7150.00	7153.41	7151.92	3.42	1.75	7153.83	0.017658	2.74	1.93	244.24	139.03	1.07
TimberRidge	902.8	Sterling MDDP 10	1520	7150.00	7154.82	7154.10	4.83	2.83	7155.28	0.015037	3.34	2.66	454.59	159.67	1.04
TimberRidge	902.8	Sterling MDDP 10	450	7150.00	7152.93	7152.84	2.94	1.36	7153.36	0.019115	2.51	1.62	179.31	131.07	1.08
TimberRidge	520.2	FEMA 100 Yr.	2600	7147.95	7153.89		5.95	4.29	7154.30	0.011030	3.70	2.95	702.00	162.64	0.93
TimberRidge	520.2	DBPS 100 Yr.	2260	7147.95	7153.53		5.59	4.04	7153.90	0.010716	3.51	2.70	644.34	158.70	0.90
TimberRidge	520.2	DBPS 10 Yr.	670	7147.95	7151.16		3.22	2.22	7151.33	0.009585	2.25	1.33	297.98	134.04	0.78
TimberRidge	520.2	Sterling MDDP 10	1520	7147.95	7152.61		4.67	3.36	7152.89	0.010128	3.03	2.13	502.43	148.68	0.85
TimberRidge	520.2	Sterling MDDP 10	450	7147.95	7150.66		2.72	1.79	7150.80	0.009340	1.94	1.04	231.84	129.25	0.75
TimberRidge	250.3	FEMA 100 Yr.	2600	7145.94	7150.36	7148.66	4.44	3.22	7150.70	0.015253	3.53	3.06	736.72	228.67	1.04
TimberRidge	250.3	DBPS 100 Yr.	2260	7145.94	7150.07	7148.41	4.15	3.02	7150.38	0.015037	3.37	2.84	671.11	221.52	1.02
TimberRidge	250.3	DBPS 10 Yr.	670	7145.94	7148.11		2.19	1.85	7148.24	0.013044	2.26	1.51	296.94	160.35	0.85
TimberRidge	250.3	Sterling MDDP 10	1520	7145.94	7149.32	7147.88	3.40	2.59	7149.56	0.014286	2.96	2.31	513.32	197.91	0.96
TimberRidge	250.3	Sterling MDDP 10	450	7145.94	7147.68		1.76	1.52	7147.77	0.012686	1.96	1.21	230.01	150.74	0.81
TimberRidge	53.78	FEMA 100 Yr.	2600	7139.72	7144.87	7143.94	5.17	2.75	7145.23	0.016007	3.30	2.75	787.94	285.68	1.08
TimberRidge	53.78	DBPS 100 Yr.	2260	7139.72	7144.61	7143.74	4.91	2.58	7144.96	0.016004	3.16	2.57	714.84	277.12	1.07
TimberRidge	53.78	DBPS 10 Yr.	670	7139.72	7142.91	7142.61	3.21	1.44	7143.17	0.016016	2.21	1.44	303.06	209.76	1.00
TimberRidge	53.78	Sterling MDDP 10	1520	7139.72	7143.94	7141.96	4.24	2.15	7144.25	0.016012	2.82	2.15	539.52	250.13	1.05
TimberRidge	53.78	Sterling MDDP 10	450	7139.72	7142.55	7141.96	2.85	1.17	7142.79	0.015995	1.97	1.17	228.51	194.63	0.98

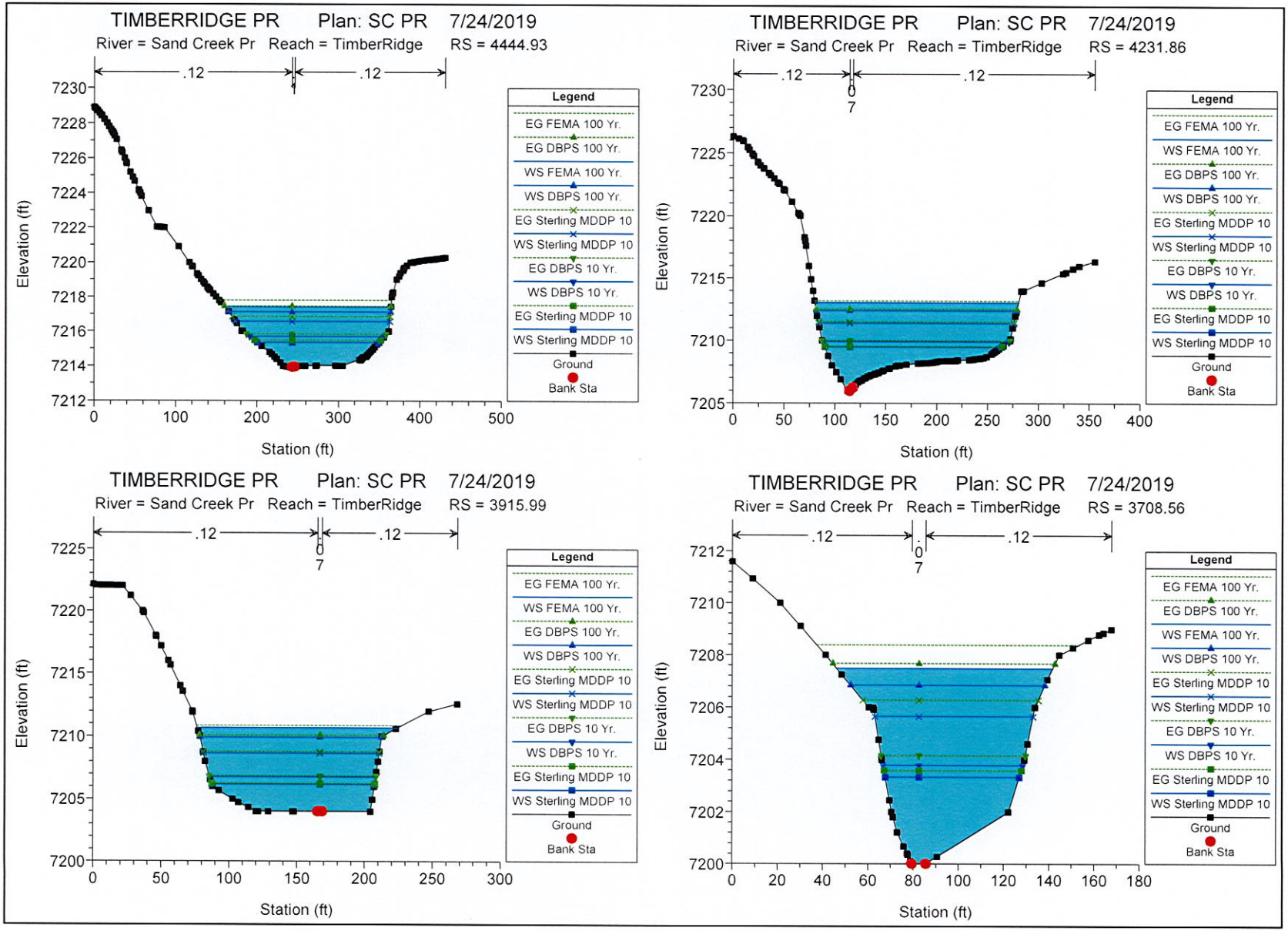
See Revised

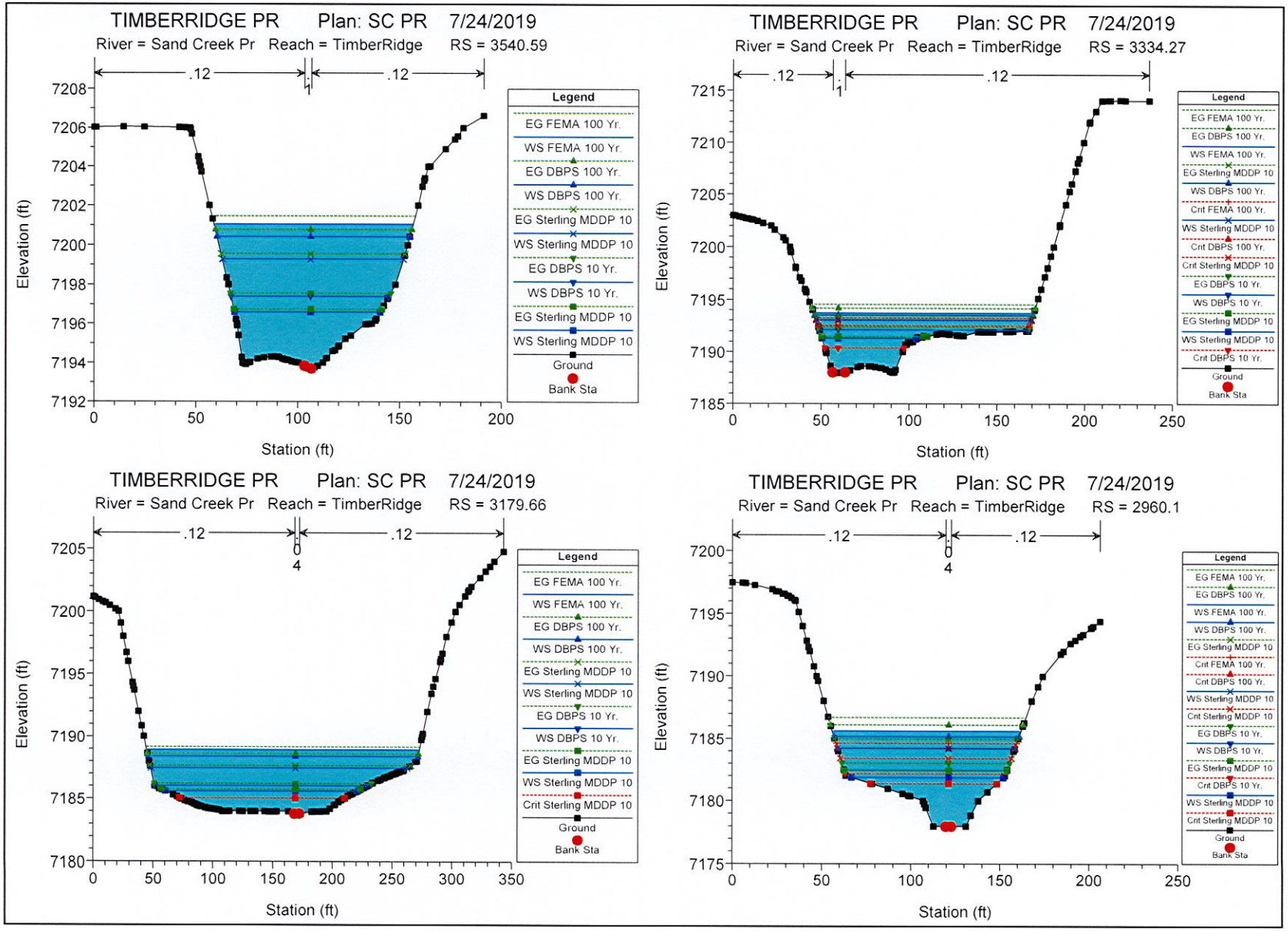

TIMBERRIDGE EXIST. Plan: SC EX 7/24/2019
Sand Creek Ex TimberRidge
Legend
Vel Total FEMA 100 Yr.
Vel Total DBPS 100 Yr.
Vel Total Sterling MDDP 10
Vel Total DBPS 10 Yr.
Vel Total Sterling MDDP 10
See Revised calc.
Vel Total (ft/s)
Main Channel Distance (ft)
1
2
3
4
5
6
7
8
0
1000
2000
3000
4000
5000
6000


5532.95
5182.08
4903.69
4712.26
4444.93
TimberRidge
4231.86
3915.99
3708.56
3540.59
3179.66
2960.1
2652.02
2416.82
2083.66
1879.67
1145.05
902.8
520.2
250.3
53.78


TIMBERRIDGE PR Plan: SC PR 7/24/2019
Sand Creek Pr TimberRidge
Elevation (ft)
7240
7220
7200
7180
7160
7140
7120
0
1000
2000
3000
4000
5000
6000
Main Channel Distance (ft)
Legend
EG FEMA 100 Yr.
EG DBPS 100 Yr.
WS FEMA 100 Yr.
WS DBPS 100 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
Crit FEMA 100 Yr.
Crit DBPS 100 Yr.
Crit Sterling MDDP 10
EG DBPS 10 Yr.
WS DBPS 10 Yr.
EG Sterling MDDP 10
Crit DBPS 10 Yr.
WS Sterling MDDP 10
Crit Sterling MDDP 10
Ground


TIMBERRIDGE PR Plan: SC PR 7/24/2019
River = Sand Creek Pr Reach = TimberRidge RS = 5532.95
.12
.12
4
Elevation (ft)
Station (ft)
Legend
EG FEMA 100 Yr.
WS FEMA 100 Yr.
EG DBPS 100 Yr.
WS DBPS 100 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
Crit FEMA 100 Yr.
Crit DBPS 100 Yr.
Crit Sterling MDDP 10
EG DBPS 10 Yr.
WS DBPS 10 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
Crit DBPS 10 Yr.
Crit Sterling MDDP 10
Ground
Bank Sta
TIMBERRIDGE PR Plan: SC PR 7/24/2019
River = Sand Creek Pr Reach = TimberRidge RS = 5182.08
.12
.12
7
Elevation (ft)
Station (ft)
Legend
EG FEMA 100 Yr.
WS FEMA 100 Yr.
EG DBPS 100 Yr.
WS DBPS 100 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
EG DBPS 10 Yr.
WS DBPS 10 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
Ground
Bank Sta
TIMBERRIDGE PR Plan: SC PR 7/24/2019
River = Sand Creek Pr Reach = TimberRidge RS = 4903.69
.12
.12
Elevation (ft)
Station (ft)
Legend
EG FEMA 100 Yr.
WS FEMA 100 Yr.
EG DBPS 100 Yr.
WS DBPS 100 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
EG DBPS 10 Yr.
WS DBPS 10 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
Ground
Bank Sta
TIMBERRIDGE PR Plan: SC PR 7/24/2019
River = Sand Creek Pr Reach = TimberRidge RS = 4712.26
.12
.12
Elevation (ft)
Station (ft)
Legend
EG FEMA 100 Yr.
WS FEMA 100 Yr.
EG DBPS 100 Yr.
WS DBPS 100 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
Crit FEMA 100 Yr.
Crit DBPS 100 Yr.
EG DBPS 10 Yr.
WS DBPS 10 Yr.
Crit Sterling MDDP 10
EG Sterling MDDP 10
WS Sterling MDDP 10
Crit DBPS 10 Yr.
Crit Sterling MDDP 10
Ground
Bank Sta


TIMBERRIDGE PR Plan: SC PR 7/24/2019
River = Sand Creek Pr Reach = TimberRidge RS = 4444.93
.12
.12
Elevation (ft)
Station (ft)
Legend
EG FEMA 100 Yr.
EG DBPS 100 Yr.
WS FEMA 100 Yr.
WS DBPS 100 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
EG DBPS 10 Yr.
WS DBPS 10 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
Ground
Bank Sta
TIMBERRIDGE PR Plan: SC PR 7/24/2019
River = Sand Creek Pr Reach = TimberRidge RS = 4231.86
.12
.12
Elevation (ft)
Station (ft)
Legend
EG FEMA 100 Yr.
WS FEMA 100 Yr.
EG DBPS 100 Yr.
WS DBPS 100 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
EG DBPS 10 Yr.
WS DBPS 10 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
Ground
Bank Sta
TIMBERRIDGE PR Plan: SC PR 7/24/2019
River = Sand Creek Pr Reach = TimberRidge RS = 3915.99
.12
.12
Elevation (ft)
Station (ft)
Legend
EG FEMA 100 Yr.
WS FEMA 100 Yr.
EG DBPS 100 Yr.
WS DBPS 100 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
EG DBPS 10 Yr.
WS DBPS 10 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
Ground
Bank Sta
TIMBERRIDGE PR Plan: SC PR 7/24/2019
River = Sand Creek Pr Reach = TimberRidge RS = 3708.56
.12
.12
Elevation (ft)
Station (ft)
Legend
EG FEMA 100 Yr.
EG DBPS 100 Yr.
WS FEMA 100 Yr.
WS DBPS 100 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
EG DBPS 10 Yr.
WS DBPS 10 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
Ground
Bank Sta


TIMBERRIDGE PR Plan: SC PR 7/24/2019
River = Sand Creek Pr Reach = TimberRidge RS = 3540.59
.12
.12
Elevation (ft)
Station (ft)
Legend
EG FEMA 100 Yr.
WS FEMA 100 Yr.
EG DBPS 100 Yr.
WS DBPS 100 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
EG DBPS 10 Yr.
WS DBPS 10 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
Ground
Bank Sta
TIMBERRIDGE PR Plan: SC PR 7/24/2019
River = Sand Creek Pr Reach = TimberRidge RS = 3334.27
.12
.12
Elevation (ft)
Station (ft)
Legend
EG FEMA 100 Yr.
EG DBPS 100 Yr.
WS FEMA 100 Yr.
EG Sterling MDDP 10
WS DBPS 100 Yr.
Crit FEMA 100 Yr.
WS Sterling MDDP 10
Crit DBPS 100 Yr.
Crit Sterling MDDP 10
EG DBPS 10 Yr.
WS DBPS 10 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
Crit DBPS 10 Yr.
Ground
Bank Sta
TIMBERRIDGE PR Plan: SC PR 7/24/2019
River = Sand Creek Pr Reach = TimberRidge RS = 3179.66
.12
.12
Elevation (ft)
Station (ft)
Legend
EG FEMA 100 Yr.
WS FEMA 100 Yr.
EG DBPS 100 Yr.
WS DBPS 100 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
EG DBPS 10 Yr.
WS DBPS 10 Yr.
EG Sterling MDDP 10
WS Sterling MDDP 10
Crit Sterling MDDP 10
Ground
Bank Sta
TIMBERRIDGE PR Plan: SC PR 7/24/2019
River = Sand Creek Pr Reach = TimberRidge RS = 2960.1
.12
.12
Elevation (ft)
Station (ft)
Legend
EG FEMA 100 Yr.
EG DBPS 100 Yr.
WS FEMA 100 Yr.
WS DBPS 100 Yr.
EG Sterling MDDP 10
Crit FEMA 100 Yr.
Crit DBPS 100 Yr.
WS Sterling MDDP 10
Crit Sterling MDDP 10
EG DBPS 10 Yr.
WS DBPS 10 Yr.
EG Sterling MDDP 10
Crit DBPS 10 Yr.
WS Sterling MDDP 10
Crit Sterling MDDP 10
Ground
Bank Sta

protect bend, side slopes

HEC-RAS Plan: SC PR River: Sand Creek Pr Reach: TimberRidge (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	Max Chl Dpth	Hydr Radius	E.G. Elev	E.G. Slope	Vel Total	Shear Total	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(lb/sq ft)	(sq ft)	(ft)	
TimberRidge	3334.27	FEMA 100 Yr.	2600	7187.96	7193.70	7193.27	5.74	3.05	7194.55	0.058800	6.67	11.21	389.99	125.12	0.85
TimberRidge	3334.27	DBPS 100 Yr.	2170	7187.96	7193.47	7193.00	5.51	2.85	7194.17	0.051790	6.00	9.23	361.50	124.24	0.79
TimberRidge	3334.27	DBPS 10 Yr.	630	7187.96	7192.11	7190.39	4.15	1.62	7192.37	0.028019	3.23	2.83	195.35	119.05	0.56
TimberRidge	3334.27	Sterling MDDP 10	1487	7187.96	7193.03	7192.52	5.07	2.46	7193.51	0.040268	4.85	6.18	306.86	122.53	0.69
TimberRidge	3334.27	Sterling MDDP 10	430	7187.96	7191.28		3.32	2.33	7191.48	0.020678	3.34	3.01	128.80	53.80	0.46
TimberRidge	3179.66	FEMA 100 Yr.	2600	7183.81	7188.93		5.13	3.88	7189.16	0.008005	2.92	1.94	889.95	228.13	0.77
TimberRidge	3179.66	DBPS 100 Yr.	2170	7183.81	7188.39		4.59	3.39	7188.61	0.008901	2.83	1.88	766.96	225.71	0.80
TimberRidge	3179.66	DBPS 10 Yr.	630	7183.81	7186.04		2.24	1.57	7186.20	0.015243	2.24	1.50	280.82	178.46	0.92
TimberRidge	3179.66	Sterling MDDP 10	1487	7183.81	7187.45		3.65	2.60	7187.66	0.010976	2.66	1.78	559.01	214.63	0.85
TimberRidge	3179.66	Sterling MDDP 10	430	7183.81	7185.60	7185.05	1.80	1.28	7185.75	0.017110	2.08	1.37	206.44	161.13	0.94
TimberRidge	2960.1	FEMA 100 Yr.	2600	7178.00	7185.62	7184.65	7.62	4.81	7186.69	0.015671	4.99	4.71	521.50	106.03	1.15
TimberRidge	2960.1	DBPS 100 Yr.	2170	7178.00	7185.17	7184.23	7.17	4.47	7186.10	0.014460	4.58	4.03	473.67	103.92	1.09
TimberRidge	2960.1	DBPS 10 Yr.	630	7178.00	7182.44	7182.19	4.44	2.25	7183.04	0.013310	3.03	1.87	207.80	91.21	0.97
TimberRidge	2960.1	Sterling MDDP 10	1487	7178.00	7184.22	7183.45	6.22	3.73	7184.97	0.013220	3.94	3.08	377.18	99.49	1.02
TimberRidge	2960.1	Sterling MDDP 10	430	7178.00	7181.87	7181.40	3.87	1.82	7182.42	0.013199	2.75	1.50	156.55	85.16	0.94
TimberRidge	2652.02	FEMA 100 Yr.	2600	7176.11	7181.80	7181.03	5.71	4.68	7183.32	0.031766	6.86	9.27	379.13	77.95	1.56
TimberRidge	2652.02	DBPS 100 Yr.	2170	7176.11	7180.82	7180.50	4.73	3.92	7182.46	0.043312	7.14	10.60	304.13	75.07	1.76
TimberRidge	2652.02	DBPS 10 Yr.	630	7176.11	7178.19	7178.19	2.10	1.79	7179.10	0.066403	5.29	7.44	119.03	65.29	1.91
TimberRidge	2652.02	Sterling MDDP 10	1487	7176.11	7179.59	7179.59	3.50	2.96	7181.13	0.059183	6.93	10.92	214.58	70.79	1.96
TimberRidge	2652.02	Sterling MDDP 10	430	7176.11	7177.78	7177.78	1.69	1.43	7178.49	0.068075	4.63	6.09	92.83	63.99	1.86
TimberRidge	2500		Culvert												
TimberRidge	2416.82	FEMA 100 Yr.	2600	7174.30	7181.27		6.97	5.12	7181.90	0.027831	6.23	8.89	417.47	79.01	0.60
TimberRidge	2416.82	DBPS 100 Yr.	2170	7174.30	7180.64		6.34	4.65	7181.20	0.028273	5.89	8.20	368.30	77.00	0.60
TimberRidge	2416.82	DBPS 10 Yr.	630	7174.30	7177.67		3.37	2.31	7177.95	0.034137	4.09	4.92	153.99	66.03	0.59
TimberRidge	2416.82	Sterling MDDP 10	1487	7174.30	7179.47		5.17	3.75	7179.93	0.030410	5.30	7.11	280.54	73.31	0.60
TimberRidge	2416.82	Sterling MDDP 10	430	7174.30	7177.14		2.84	1.93	7177.36	0.033132	3.58	3.99	120.01	61.77	0.57
TimberRidge	2083.66	FEMA 100 Yr.	2600	7169.85	7176.23	7175.22	6.38	4.81	7177.52	0.023739	6.06	7.13	429.08	87.11	1.37
TimberRidge	2083.66	DBPS 100 Yr.	2170	7169.85	7175.66	7174.73	5.81	4.40	7176.81	0.023663	5.71	6.50	379.73	84.42	1.35
TimberRidge	2083.66	DBPS 10 Yr.	630	7169.85	7173.05	7172.51	3.19	2.38	7173.55	0.020599	3.61	3.06	174.34	72.62	1.14
TimberRidge	2083.66	Sterling MDDP 10	1487	7169.85	7174.71	7173.86	4.86	3.70	7175.58	0.021945	4.92	5.07	301.99	80.23	1.26
TimberRidge	2083.66	Sterling MDDP 10	430	7169.85	7172.47	7172.09	2.62	1.89	7172.89	0.021633	3.22	2.56	133.43	69.98	1.13
TimberRidge	1879.67	FEMA 100 Yr.	2600	7165.99	7171.45		5.46	4.01	7171.97	0.028093	5.40	7.03	481.66	119.04	0.83
TimberRidge	1879.67	DBPS 100 Yr.	2170	7165.99	7171.12		5.14	3.76	7171.55	0.025138	4.89	5.89	443.35	116.95	0.78
TimberRidge	1879.67	DBPS 10 Yr.	630	7165.99	7168.99	7168.08	3.01	2.05	7169.16	0.020865	3.00	2.66	209.66	102.03	0.65
TimberRidge	1879.67	Sterling MDDP 10	1487	7165.99	7170.29		4.31	3.10	7170.62	0.024512	4.26	4.75	348.67	111.56	0.75
TimberRidge	1879.67	Sterling MDDP 10	430	7165.99	7168.61	7167.72	2.63	1.73	7168.74	0.017958	2.50	1.94	171.72	98.94	0.59
TimberRidge	1507.91	FEMA 100 Yr.	2600	7159.96	7164.66		4.72	3.19	7164.91	0.017930	3.74	3.57	696.01	217.05	0.65
TimberRidge	1507.91	DBPS 100 Yr.	2260	7159.96	7164.29		4.35	2.86	7164.54	0.019670	3.66	3.51	616.82	214.88	0.67
TimberRidge	1507.91	DBPS 10 Yr.	670	7159.96	7162.01		2.06	1.82	7162.15	0.023724	2.91	2.70	230.61	126.17	0.65
TimberRidge	1507.91	Sterling MDDP 10	1520	7159.96	7163.38		3.44	2.31	7163.59	0.020300	3.51	2.93	432.96	186.33	0.65
TimberRidge	1507.91	Sterling MDDP 10	450	7159.96	7161.50		1.56	1.39	7161.62	0.028975	2.68	2.51	167.86	120.51	0.68
TimberRidge	1145.05	FEMA 100 Yr.	2600	7153.97	7160.24	7159.41	6.27	3.32	7161.04	0.017900	4.11	3.71	633.15	188.76	1.19
TimberRidge	1145.05	DBPS 100 Yr.	2260	7153.97	7159.81	7159.12	5.84	3.24	7160.55	0.017502	4.07	3.54	555.70	169.49	1.16
TimberRidge	1145.05	DBPS 10 Yr.	670	7153.97	7157.71	7157.19	3.74	1.89	7158.17	0.014853	2.77	1.75	242.31	127.24	0.99
TimberRidge	1145.05	Sterling MDDP 10	1520	7153.97	7158.97	7158.47	5.00	2.72	7159.60	0.017048	3.61	2.90	420.67	152.99	1.12

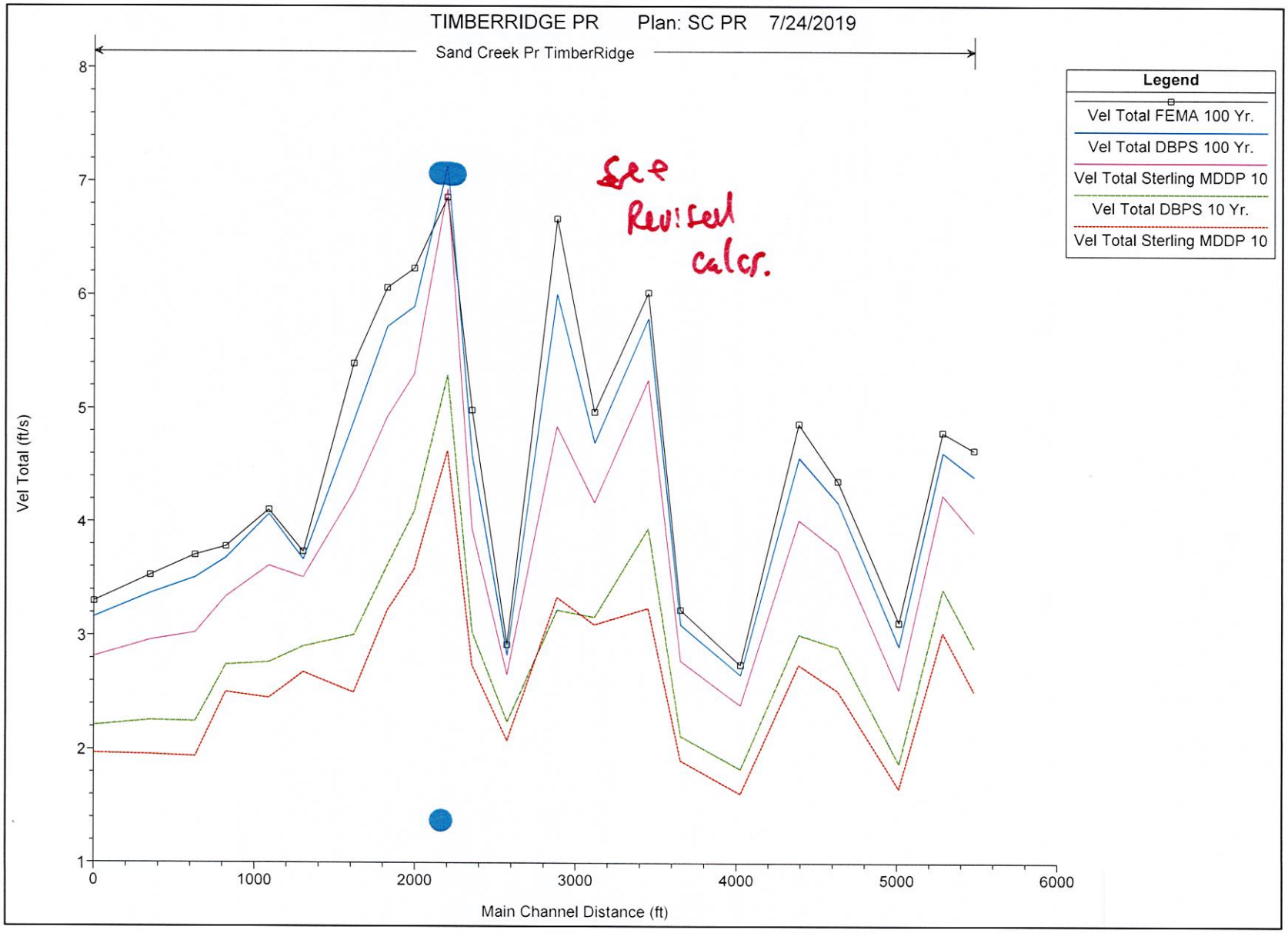
See Revised

What are velocities and shear through the culvert?

HEC-RAS Plan: SC PR River: Sand Creek Pr Reach: TimberRidge (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	Max Chl Dpth	Hydr Radius	E.G. Elev	E.G. Slope	Vel Total	Shear Total	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(lb/sq ft)	(sq ft)	(ft)	
TimberRidge	1145.05	Sterling MDDP 10	450	7153.97	7157.21		3.24	1.65	7157.58	0.013286	2.46	1.37	183.08	110.30	0.92
TimberRidge	902.8	FEMA 100 Yr.	2600	7150.00	7156.17	7154.91	6.18	3.62	7156.72	0.014230	3.78	3.22	687.79	188.79	1.06
TimberRidge	902.8	DBPS 100 Yr.	2260	7150.00	7155.77	7154.68	5.78	3.47	7156.29	0.014183	3.68	3.07	614.75	175.97	1.04
TimberRidge	902.8	DBPS 10 Yr.	670	7150.00	7153.41	7151.92	3.42	1.75	7153.83	0.017672	2.74	1.93	244.17	139.02	1.07
TimberRidge	902.8	Sterling MDDP 10	1520	7150.00	7154.82	7154.11	4.83	2.83	7155.28	0.015037	3.34	2.66	454.59	159.67	1.04
TimberRidge	902.8	Sterling MDDP 10	450	7150.00	7152.93	7152.84	2.94	1.36	7153.36	0.019115	2.51	1.62	179.31	131.07	1.08
TimberRidge	520.2	FEMA 100 Yr.	2600	7147.95	7153.89		5.95	4.29	7154.30	0.011034	3.70	2.95	701.92	162.63	0.93
TimberRidge	520.2	DBPS 100 Yr.	2260	7147.95	7153.53		5.59	4.04	7153.90	0.010712	3.51	2.70	644.41	158.71	0.90
TimberRidge	520.2	DBPS 10 Yr.	670	7147.95	7151.16		3.22	2.22	7151.33	0.009579	2.25	1.32	298.04	134.05	0.78
TimberRidge	520.2	Sterling MDDP 10	1520	7147.95	7152.61		4.67	3.36	7152.89	0.010132	3.03	2.13	502.36	148.67	0.85
TimberRidge	520.2	Sterling MDDP 10	450	7147.95	7150.66		2.72	1.79	7150.80	0.009340	1.94	1.04	231.83	129.25	0.75
TimberRidge	250.3	FEMA 100 Yr.	2600	7145.94	7150.37	7148.65	4.44	3.22	7150.70	0.015242	3.53	3.06	736.88	228.68	1.04
TimberRidge	250.3	DBPS 100 Yr.	2260	7145.94	7150.07	7148.42	4.15	3.03	7150.38	0.015033	3.37	2.84	671.16	221.52	1.02
TimberRidge	250.3	DBPS 10 Yr.	670	7145.94	7148.11		2.19	1.85	7148.24	0.013036	2.26	1.51	297.00	160.35	0.85
TimberRidge	250.3	Sterling MDDP 10	1520	7145.94	7149.32	7147.88	3.40	2.59	7149.56	0.014296	2.96	2.31	513.19	197.88	0.96
TimberRidge	250.3	Sterling MDDP 10	450	7145.94	7147.68		1.76	1.52	7147.77	0.012714	1.96	1.21	229.84	150.71	0.81
TimberRidge	53.78	FEMA 100 Yr.	2600	7139.72	7144.87	7143.94	5.17	2.75	7145.23	0.016007	3.30	2.75	787.94	285.68	1.08
TimberRidge	53.78	DBPS 100 Yr.	2260	7139.72	7144.61	7143.74	4.91	2.58	7144.96	0.016004	3.16	2.57	714.84	277.12	1.07
TimberRidge	53.78	DBPS 10 Yr.	670	7139.72	7142.91	7142.61	3.21	1.44	7143.17	0.016016	2.21	1.44	303.06	209.76	1.00
TimberRidge	53.78	Sterling MDDP 10	1520	7139.72	7143.94	7143.29	4.24	2.15	7144.25	0.016002	2.82	2.15	539.65	250.15	1.05
TimberRidge	53.78	Sterling MDDP 10	450	7139.72	7142.55	7141.96	2.85	1.17	7142.79	0.015995	1.97	1.17	228.51	194.63	0.98

See Revised


TIMBERRIDGE PR Plan: SC PR 7/24/2019
Sand Creek Pr TimberRidge
Legend
Vel Total FEMA 100 Yr.
Vel Total DBPS 100 Yr.
Vel Total Sterling MDDP 10
Vel Total DBPS 10 Yr.
Vel Total Sterling MDDP 10
See Revised calcs.
Vel Total (ft/s)
Main Channel Distance (ft)
1
2
3
4
5
6
7
8
0
1000
2000
3000
4000
5000
6000

CN VALUES - EXISTING CONDITIONS

BASIN (label)	BASIN AREA (Ac)	SOIL TYPE B		WEIGHTED C=
		CN	AREA (Ac.)	
EX-1	32.4	61	32.4	61
EX-2	1.7	61	1.7	61
EX-3	25.7	61	25.7	61
EX-4	9.6	61	9.6	61
EX-5	123.3	61	123.3	61
EX-6	41.8	61	41.8	61
EX-7	27.6	63	27.6	63
EX-8	9.5	61	9.5	61

TIME OF CONCENTRATION - EXISTING CONDITIONS

BASIN	CN	I(25)	OVERLAND			STREET / CHANNEL FLOW				Tc TOTAL	Tc LAG	Tc LAG
			Length (ft)	Height (ft)	Tc (min)	Length (ft)	Slope (%)	Velocity (fps)	Tc (min)	(min)	(min)	(hr)
EX-1	61.0	0.08	300	10	21.4	1500	1.8%	1.3	19.2	40.7	24.4	0.41
EX-2	61.0	0.08	300	10	21.4					21.4	12.8	0.21
EX-3	61.0	0.08	300	17	20.2	1500	4.0%	1.8	13.9	34.1	20.4	0.34
EX-4	61.0	0.08	300	10	21.4	1000	4.0%	1.8	9.3	30.7	18.4	0.31
EX-5	61.0	0.08	300	8	21.1	1800	2.0%	1.3	23.1	44.2	27.7	0.46
EX-6	61.0	0.08	300	10	21.4	800	3.0%	1.3	10.3	31.7	19.0	0.32
EX-7	63.0	0.08	300	10	21.4	1200	3.0%	1.4	14.3	35.7	21.4	0.36
EX-8	61.0	0.08	300	10	21.4	700	4.0%	1.3	9.0	30.4	18.2	0.30

BASIN SUMMARY - EXISTING CONDITIONS

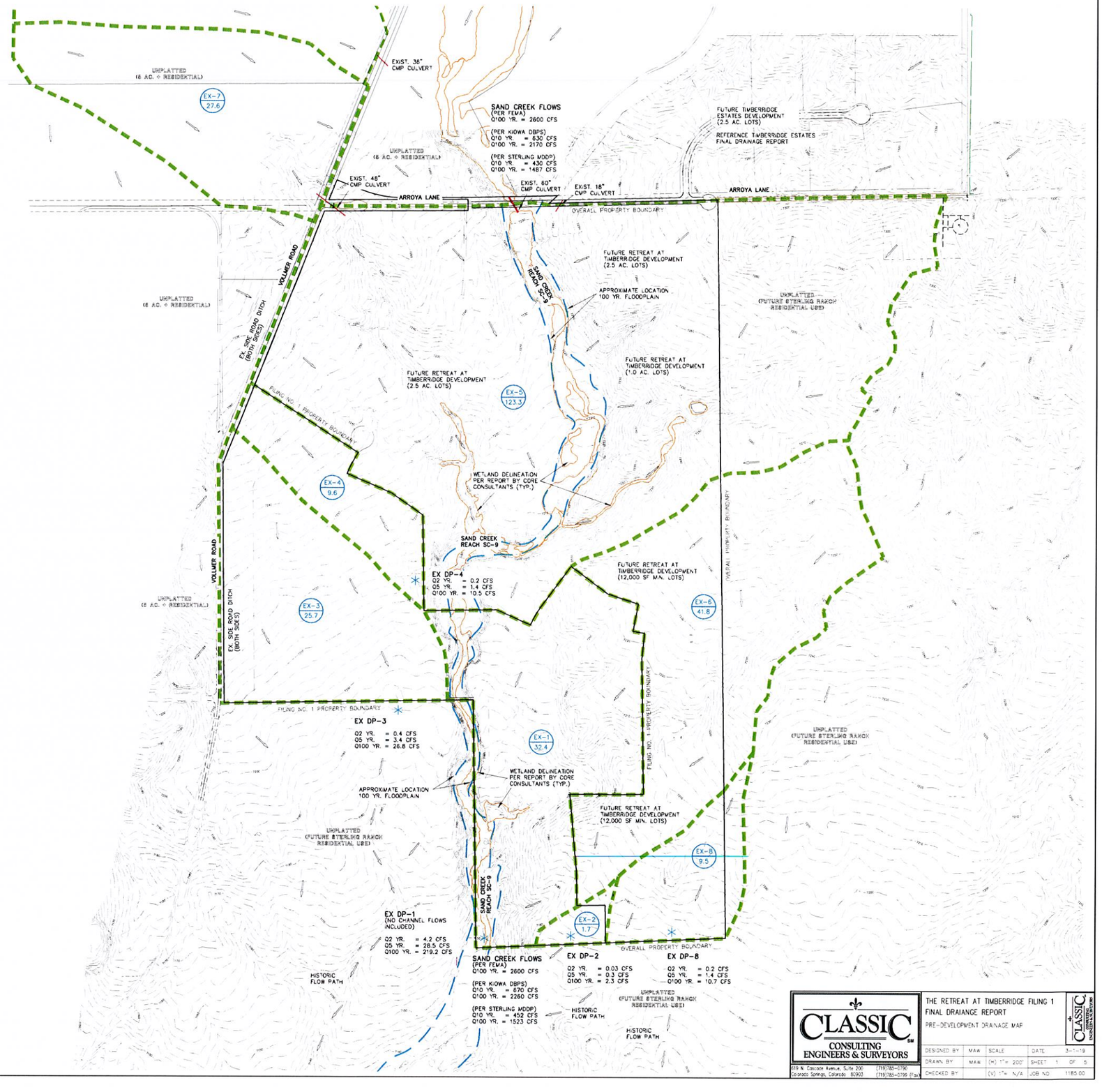
BASIN (label)	TOTAL BASIN AREA (acres)	WEIGHTED CN	TOTAL LAG TIME (hours)	Q 2 Yr. (cfs)	Q 5 Yr. (cfs)	Q 100 Yr. (cfs)
EX-1	32.4	61	0.41	0.5	3.9	30.0
EX-2	1.7	61	0.21	0.03	0.3	2.3
EX-3	25.7	61	0.34	0.4	3.4	26.8
EX-4	9.6	61	0.31	0.2	1.4	10.5
EX-5	123.3	61	0.46	2.0	13.5	107.2
EX-6	41.8	61	0.32	0.7	5.8	44.8
EX-7	27.6	63	0.36	1.0	5.2	32.1
EX-8	9.5	61	0.30	0.2	1.4	10.7

DESIGN POINTS SURFACE ROUTING SUMMARY - EXISTING CONDITIONS

Design Point (label)	Contributing Basins	Q 2 Yr. Q (cfs)	Q 5 Yr. Q (cfs)	Q 100 Yr. Q (cfs)
EX DP-1	BASINS EX-1, EX-4, EX-5, EX-6, EX-7 (234.7 AC.)	4.2	28.5	219.2
EX DP-2	BASIN EX-2 (1.7 AC.)	0.03	0.3	2.3
EX DP-3	BASIN EX-3 (25.7 AC.)	0.4	3.4	26.8
EX-DP-4	BASIN EX-4 (9.6 AC.)	0.2	1.4	10.5
EX-DP-8	BASIN EX-8 (9.5 AC.)	0.2	1.4	10.7

LEGEND

DESCRIPTION	SYMBOL
EXISTING GROUND CONTOUR	6910
PROPOSED FINISHED CONTOUR	6910
BASIN BOUNDARY	
DESIGN POINT	
BASIN IDENTIFIER / AREA IN ACRES	BB / 10.0
EXISTING DIRECTION OF FLOW	
EXISTING STORM SEWER	
WETLAND DELINEATION	



CLASSIC CONSULTING ENGINEERS & SURVEYORS
619 N. Cascade Avenue, Suite 200, Colorado Springs, Colorado 80903 (719)785-0790 (719)785-0799 (Fax)

THE RETREAT AT TIMBERRIDGE FILING 1
FINAL DRAINAGE REPORT
PRE-DEVELOPMENT DRAINAGE MAP

DESIGNED BY	MAW	SCALE		DATE	3-11-19
DRAWN BY	MAW	(H) 1"= 200'	SHEET	1	OF 5
CHECKED BY		(V) 1"= N/A	JOB NO.	1185.00	

label

LEGEND

DESCRIPTION	SYMBOL
EXISTING GROUND CONTOUR	6910
PROPOSED FINISHED CONTOUR	6910
BASIN BOUNDARY	
BASIN IDENTIFIER / AREA IN ACRES	
DESIGN POINT	
EXISTING DIRECTION OF FLOW	
PROPOSED DIRECTION OF FLOW	
PROPOSED DRAINAGE IMPROVEMENTS	
PIPE RUN	
WETLAND DELINEATION	

FUTURE TIMBERRIDGE RURAL LOTS (2.5 AC. MIN.)

FUTURE TIMBERRIDGE RURAL LOTS (1.0 AC. MIN.)

FUTURE TIMBERRIDGE URBAN LOTS (12,000 SF MIN.)

PROPERTY BOUNDARY

UNPLATTED (FUTURE STERLING RANCH RESIDENTIAL USE)

APPROXIMATE LOCATION 100 YR. FLOODPLAIN (PER LOMR 08-080541P)

TEMP. 30" RCP STORM UNTIL FUTURE DEVELOPMENT

FUTURE 30" RCP STORM SYSTEM CONSTRUCTED WITH FUTURE DEVELOPMENT

24" RCP OUTFALL CONSTRUCTED WITH FILING NO. 1 FOR STOCK POND RELEASE

LOCATION OF FUTURE SEDIMENT POND

EXIST. STOCK POND

EXIST. STOCK POND TO BE DRAINED AND REMOVED WITH FUTURE TIMBERRIDGE DEVELOPMENT

FUTURE SEDIMENT POND NOTES

PROP. OFF-SITE SEDIMENT POND TO BE CONSTRUCTED PRIOR TO EXIST STOCK POND IS REMOVED

DRAINAGE ESMT. TO BE ACQUIRED PRIOR TO CONSTRUCTION OF OFF-SITE SEDIMENT POND.

FORMAL OUTLET INSTALLED AND CONNECTED DIRECTLY TO 24" RCP OUTFALL TO ROUTE FLOWS DIRECTLY TO SAND CREEK

FUTURE OFF-SITE DEVELOPMENT WILL BE REQUIRED TO PROVIDE SWQ TREATMENT FOR CONTINUED RELEASE TO SAND CREEK

SIDE ROAD DITCH NOT WELL DEFINED IN THIS AREA SO FLOWS FROM VOLLMER RD. ENTER PROPERTY

FILING NO. 1 BOUNDARY

PROP. NATURAL BERM 6'-8' HEIGHT @ 5:1 (LOTS 1-7)

18" CULVERT REQUIRED

RURAL LOTS (2.5 AC. MIN.)

EXIST. VOLLMER ROAD SIDE DITCH (TYP.)

VOLLMER ROAD

40' WIDE ROW DEDICATION

ASPEN VALLEY ROAD (RURAL LOCAL)

FUTURE TRAIL

shown on grading plan

Label ditch stabilization.

SHEET PILE CHECK STRUCTURE W/ CONC. CAP (SEE UDFCD FIG. 9-26 THRU 9-28)

PROPOSED POND 1

PRE-DEVELOPMENT
Q2 YR. = 0.30 CFS
Q5 YR. = 0.48 CFS
Q100 YR. = 29.2 CFS

DEVELOPED RELEASE
Q2 YR. = 0.10 CFS
Q5 YR. = 0.17 CFS
Q100 YR. = 24.0 CFS

PROP. DUAL 24" RCP CULVERTS

DRAINAGE ESMT.

PROP. CHANNEL ACCESS RAMP

TRACT A

TRACT B

TRACT E

PERMANENT SEDIMENT BASIN

SAND CREEK REACH SC-9

WETLAND DELINEATION PER REPORT BY CORE CONSULTANTS (TYP.)

SELECTIVE RIP-RAP BANK STABILIZATION (TYPE L 1.5' THICK)

10' TYPE R AT-GRADE INLET

15' TYPE R AT-GRADE INLET

10' TYPE R SUMP INLET

5' TYPE R SUMP INLET

36" RCP STORM

ELK ANTLER LANE (URBAN LOCAL)

ANTELOPE RANGE DRIVE (URBAN LOCAL)

POCO ROAD (URBAN LOCAL)

PROPERTY BOUNDARY

PROPOSED POND 1

WQCV = 0.214 AC.-FT
EURV = 0.177 AC.-FT
100 YR = 0.877 AC.-FT
TOTAL = 1.268 AC.-FT

TWO CELL MULTI-PLATE CULVERTS (26'X8.7')

UNPLATTED (FUTURE STERLING RANCH RESIDENTIAL USE)

Show maintenance access roads — now labeled

SEE SHEET 3

NOTE:
FUTURE DEVELOPED FLOW QUANTITIES WITHIN BASINS OS-5, OS-6 & OS-9 EQUAL TO THE PRE-DEVELOPMENT FLOW QUANTITIES WILL BE TREATED AND DETAINED WITHIN POND 2.

LOCATION OF FUTURE SEDIMENT POND

DRAINAGE ESMT. TO BE ACQUIRED PRIOR TO CONSTRUCTION OF OFF-SITE SEDIMENT POND.

SEE SHEET 3

NOTE:
SEE SHEET 3 FOR BASIN AND DEVELOPED FLOW CALCULATIONS

N

100 50 0 100 200

SCALE: 1" = 100'

CLASSIC CONSULTING

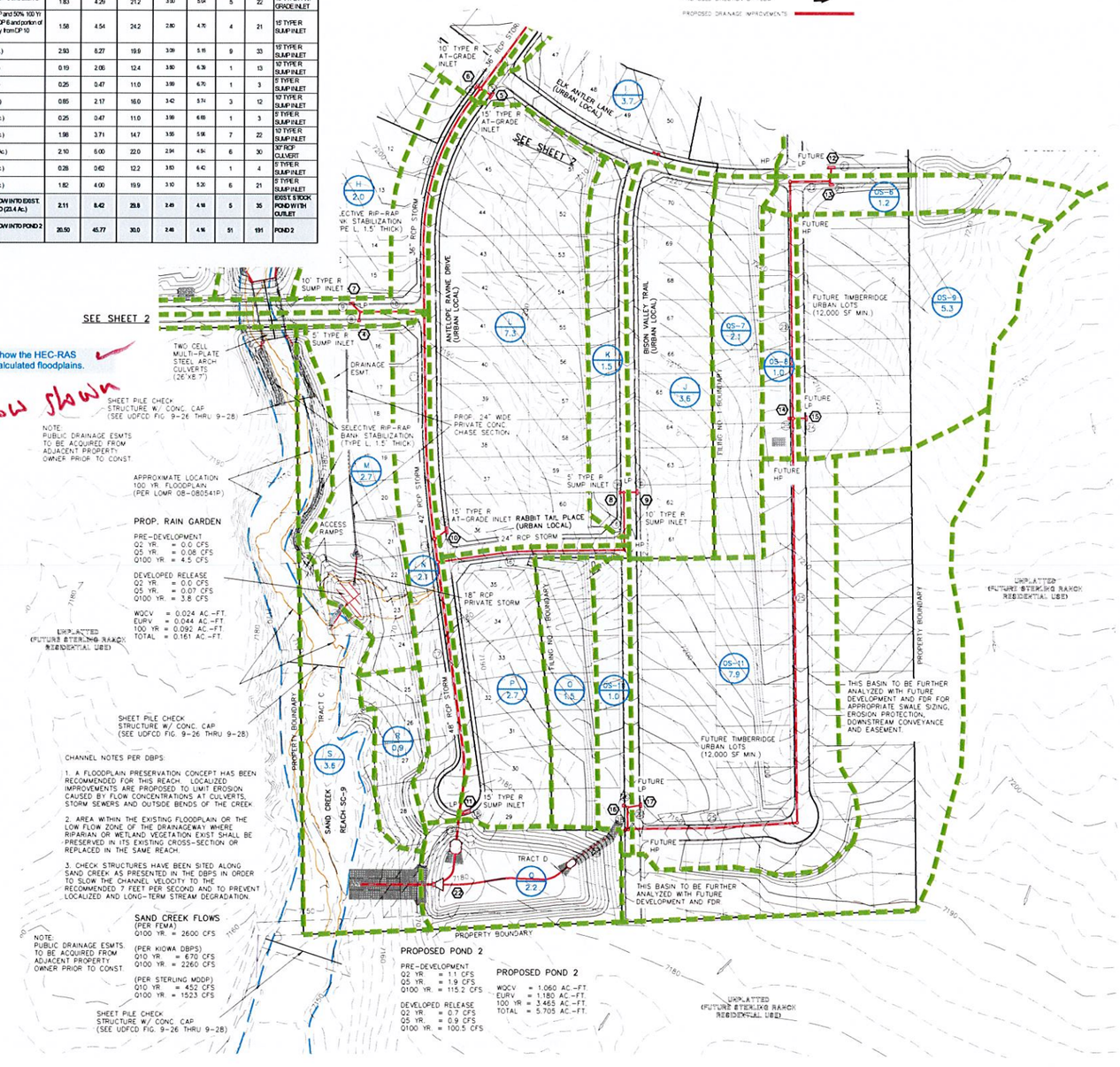
619 N. Cascade Avenue, Suite 200
Colorado Springs, Colorado 80903
(719)785-0790
(719)785-0799 (Fax)

THE RETREAT AT TIMBERRIDGE FILING 1
FINAL DRAINAGE REPORT
DEVELOPED DRAINAGE MAP
(INCL. FUTURE TIMBERRIDGE DEVELOPED BASINS)

DESIGNED BY	MAW	SCALE		DATE	1-31-19
DRAWN BY	MAW	(H) 1"= 100'	SHEET	2	OF 3
CHECKED BY		(V) 1"= N/A	JOB NO.	2520.00	

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	A (13.6 Ac), OS-1 (12 Ac.) and C (6.7 Ac.)	3.58	9.08	31.8	2.39	4.02	9	36	DUAL 24" RCP CULVERTS
2	TOTAL INFLOW INTO POND 1 A, B, C and OS-1 (29.4 Ac.)	4.66	12.16	33.8	2.30	3.86	11	47	POND 1
3	No longer used								
4	DI (1.1 Ac)	0.74	0.87	15.2	3.50	5.86	3	5	5' TYPER SUMP INLET
5	OS-4 (3.1 Ac.), I (3.7 Ac.)	1.61	3.17	17.7	3.28	5.50	5	17	15' TYPER AT-GRADE INLET
6	OS-3 (2.5 Ac.)	0.63	1.18	11.9	3.86	6.46	2	8	10' TYPER AT-GRADE INLET
7	Basin D2, Basin H and 50% of 100 yr Flowby from DP-6 (5.5 Ac)	1.51	2.47	27.3	2.62	4.40	4	11	10' TYPER SUMP INLET
8	K (1.5 Ac.)	0.36	0.71	12.6	3.78	6.35	1	4	5' TYPER SUMP INLET
9	J and OS-7 (5.7 Ac.)	1.43	2.68	16.0	3.43	5.75	5	15	10' TYPER SUMP INLET
10	Flowby from DP-5 and Basin L (7.3 Ac)	1.83	4.29	21.2	3.00	5.04	5	22	15' TYPER AT-GRADE INLET
11	Basins N, O, P and 50% 100 Yr Flowby from DP-6 and portion of 100 Yr Flowby from DP-10 (13.6 Ac)	1.58	4.54	24.2	2.80	4.70	4	21	15' TYPER SUMP INLET
12	OS-5 (20.9 Ac.)	2.93	8.27	19.9	3.09	5.18	9	33	10' TYPER SUMP INLET
13	OS-6 (1.2 Ac.)	0.19	2.06	12.4	3.80	6.39	1	13	10' TYPER SUMP INLET
14	OS-8 (1.0 Ac.)	0.25	0.47	11.0	3.99	6.70	1	3	5' TYPER SUMP INLET
15	OS-9 (5.3 Ac.)	0.85	2.17	16.0	3.43	5.74	3	12	10' TYPER SUMP INLET
16	OS-10 (1.0 Ac.)	0.25	0.47	11.0	3.99	6.69	1	3	5' TYPER SUMP INLET
17	OS-11 (7.9 Ac.)	1.98	3.71	14.7	3.55	5.96	7	22	10' TYPER SUMP INLET
18	OS-12 (15.0 Ac.)	2.10	6.00	22.0	2.94	4.94	6	30	30" RCP CULVERT
19	OS-13 (1.4 Ac.)	0.28	0.62	12.2	3.80	6.40	1	4	5' TYPER SUMP INLET
20	OS-14 (5.1 Ac.)	1.82	4.00	19.9	3.10	5.20	6	21	5' TYPER SUMP INLET
21	TOTAL INFLOW INTO EDOT STOCK POND (23.4 Ac.)	2.11	8.42	29.8	2.49	4.18	5	35	EDOT STOCK POND WITH OUTLET
22	TOTAL INFLOW INTO POND 2 (160.8 Ac.)	20.50	45.77	30.0	2.48	4.16	51	191	POND 2



FINAL DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY

BASIN	CA(2)	CA(5)	WEIGHTED CA(10)	WEIGHTED CA(25)	WEIGHTED CA(50)	WEIGHTED CA(100)	OVERLAND C(5)	OVERLAND Length (ft)	OVERLAND Height (ft)	OVERLAND Tc (min)	STREET / CHANNEL FLOW Length (ft)	STREET / CHANNEL FLOW Slope (%)	STREET / CHANNEL FLOW Velocity (fps)	STREET / CHANNEL FLOW Tc (min)	Tc TOTAL (min)	INTENSITY I(2) (in/hr)	INTENSITY I(5) (in/hr)	INTENSITY I(10) (in/hr)	INTENSITY I(25) (in/hr)	INTENSITY I(50) (in/hr)	INTENSITY I(100) (in/hr)	TOTAL FLOWS Q(2) (cfs)	TOTAL FLOWS Q(5) (cfs)	TOTAL FLOWS Q(100) (cfs)
OS-1	0.08	0.71	0.76	0.82	0.85	0.88	0.08	10	0.2	4.6	1700	3.5%	1.9	15.1	19.8	2.48	3.11	3.62	4.34	4.66	5.21	2	2	5
OS-2	0.02	0.07	0.14	0.23	0.27	0.32	0.09	300	10.5	21.1					21.1	2.41	3.01	3.51	4.21	4.51	5.05	0.0	0.2	1.6
OS-3	0.45	0.63	0.80	0.96	1.08	1.16	0.25	50	1.1	9.1	600	3.0%	3.5	2.9	11.9	3.09	3.86	4.51	5.45	5.80	6.46	1	2	8
OS-4	0.47	0.68	0.90	1.15	1.27	1.43	0.22	200	6	15.4	400	3.0%	3.5	1.9	17.6	2.62	3.28	3.83	4.58	4.90	5.51	1	2	8
OS-5	1.25	2.93	4.81	6.48	7.52	8.36	0.14	200	8	15.3	750	2.0%	2.8	4.4	19.9	2.47	3.09	3.61	4.33	4.64	5.19	3	9	43
OS-6	0.08	0.19	0.29	0.38	0.44	0.49	0.16	50	1.1	10.6	500	3.0%	3.5	2.4	12.4	3.04	3.80	4.44	5.37	5.71	6.36	0.3	1	3
OS-7	0.26	0.53	0.67	0.82	0.90	0.99	0.25	100	10	7.2					7.2	3.69	4.63	5.40	6.47	6.94	7.77	1	2	8
OS-8	0.14	0.25	0.32	0.39	0.43	0.47	0.25	55	1.1	9.1	400	3.0%	3.5	1.9	11.0	3.18	3.99	4.65	5.52	5.98	6.70	1	1	3
OS-9	0.37	0.65	1.27	1.76	1.96	2.17	0.16	200	10	14.1	400	3.0%	3.5	1.9	16.0	2.73	3.42	3.99	4.56	5.13	5.74	1	3	12
OS-10	0.16	0.25	0.32	0.39	0.43	0.47	0.25	55	1.1	9.1	400	3.0%	3.5	1.9	11.0	3.18	3.99	4.65	5.52	5.98	6.69	1	1	3
OS-11	1.42	1.98	2.53	3.08	3.40	3.71	0.25	200	10	12.8	450	3.0%	3.9	1.9	14.7	2.84	3.55	4.14	4.74	5.33	5.96	4	7	22
OS-12	0.90	2.10	3.45	4.65	5.40	6.00	0.14	300	13	18.5	600	2.0%	2.8	3.5	22.0	2.39	2.94	3.43	3.93	4.42	4.94	2	6	30
OS-13	0.17	0.28	0.38	0.49	0.56	0.62	0.25	55	1.1	9.1	450	2.0%	2.8	2.7	12.2	3.05	3.80	4.46	5.10	5.74	6.42	0.5	1	4
OS-14	1.08	1.82	2.46	3.19	3.64	4.00	0.20	300	12	17.8	350	2.0%	2.8	2.1	19.9	2.48	3.10	3.62	4.13	4.65	5.20	3	6	21
OS-15	0.70	2.11	3.56	5.28	7.25	8.42	0.09	300	16	18.2	1300	3.5%	1.9	11.6	29.8	2.00	2.49	2.91	3.32	3.74	4.18	1	5	35
OS-16	0.23	0.69	1.31	2.00	2.39	2.77	0.09	300	10	21.2	600	3.5%	1.9	5.3	26.6	2.13	2.66	3.11	3.55	4.00	4.47	0.5	2	12
OS-17	0.61	1.84	3.47	5.30	6.32	7.34	0.09	300	9.5	21.6	650	3.5%	1.9	5.8	27.4	2.10	2.62	3.08	3.49	3.93	4.39	1.3	5	32
OS-18	0.32	0.99	1.86	2.83	3.36	3.92	0.09	300	10	21.2	700	3.5%	1.9	6.2	27.5	2.09	2.61	3.08	3.49	3.92	4.38	0.7	3	17
OS-19	0.22	0.63	1.22	1.87	2.23	2.59	0.09	300	10	21.2	400	3.5%	1.9	3.6	24.8	2.21	2.77	3.23	3.69	4.15	4.64	0.5	2	12
OS-20	0.75	2.26	4.27	6.53	7.78	9.04	0.09	300	16	18.2	1300	3.5%	1.9	11.6	29.8	2.00	2.49	2.91	3.32	3.74	4.18	2	6	38
A	0.80	1.90	3.17	4.28	4.97	5.52	0.14	300	10.5	19.9	1080	3.2%	1.8	11.9	31.8	1.82	2.39	2.79	3.19	3.58	4.02	2	5	22
B	0.46	1.08	1.77	2.39	2.77	3.06	0.14	300	10.5	19.9	400	2.0%	1.4	4.7	24.6	2.22	2.78	3.24	3.71	4.17	4.67	1	3	14
C	0.40	0.94	1.54	2.08	2.41	2.66	0.14	300	10.5	19.9	1100	1.9%	2.4	7.5	27.3	2.10	2.62	3.08	3.49	3.93	4.40	1	2	12
DI	0.72	0.74	0.76	0.83	0.85	0.87	0.08	55	0.3	5.7	1400	1.9%	2.4	9.5	15.2	2.80	3.50	4.08	4.87	5.25	5.88	2	3	5
D2	0.08	1.07	1.16	1.30	1.36	1.43	0.25	55	1.1	9.1	500	2.9%	3.2	2.6	11.7	3.11	3.89	4.54	5.16	5.84	6.54	3	4	9
E	0.16	0.43	0.74	0.99	1.15	1.28	0.14	300	10.5	19.9	300	2.0%	1.4	3.5	23.4	2.26	2.85	3.33	3.81	4.28	4.79	0.4	1	6
F	0.02	0.13	0.21	0.28	0.32	0.36	0.14	300	10.5	19.9					19.9	2.48	3.10	3.62	4.13	4.65	5.20	0.1	0.4	1.9
G	0.02	0.13	0.36	0.60	0.72	0.84	0.08	70	1.4	3.7	400	2.0%	1.4	4.7	10.4	3.24	4.05	4.74	5.42	6.10	6.82	0.2	0.8	6
H	0.30	0.44	0.60	0.74	0.82	0.92	0.22	100	4	10.1	300	3.0%	3.5	1.4	11.5	3.13	3.92	4.57	5.23	5.88	6.58	1	2	6
I	0.67	0.90	1.16	1.44	1.59	1.74	0.25	120	3	12.4	550	3.0%	3.7	2.4	14.8	2.82	3.53	4.12	4.71	5.30	5.93	2	3	10
J	0.62	0.90	1.15	1.40	1.55	1.69	0.25	120	3	12.4	600	2.0%	2.8	3.5	16.0	2.74	3.43	4.00	4.57	5.14	5.75	2	3	10
K	0.27	0.38	0.48	0.59	0.65	0.71	0.25	55	1.1	9.1	600	2.0%	2.8	3.5	12.6	3.02	3.78	4.41	5.05	5.68	6.35	0.8	1	4
L	1.31	1.83	2.34	2.85	3.14	3.43	0.25	150	4.5	13.1	850	2.5%	3.2	4.5	17.6	2.62	3.28	3.83	4.38	4.93	5.51	3	6	19
M	0.41	0.59	0.81	1.00	1.11	1.24	0.22	100	4	10.1	400	2.0%	2.8	2.4	12.4	3.04	3.80	4.44	5.07	5.71	6.38	1	2	8
N	0.38	0.53	0.67	0.82	0.90	0.99	0.25	55	1.1	9.1	1050	2.0%	2.8	6.3	15.2	2.79	3.50	4.08	4.66	5.25	5.87	1	2	6
O	0.27	0.38	0.48	0.59	0.65	0.71	0.25	80	3	7.8					7.8	3.64	4.56	5.32	6.08	6.84	7.66	1	2	5
P	0.46	0.68	0.86	1.05	1.16	1.27	0.25	120	3	12.4	450	1.9%	2.4	3.1	15.5	2.77	3.47	4.05	4.63	5.21	5.83	1	2	7
Q	0.13	0.31	0.51	0.68	0.79	0.88	0.14	90	22	5.7	300	1.9%	1.2	4.1	9.8	3.32	4.16	4.85	5.54	6.24	6.98	0.4	1	6
R	0.16	0.23	0.25	0.35	0.39	0.42	0.25	80	6	7.8					7.8	3.39	4.50	5.26	6.01	6.76	7.56	1	1	3
S	0.07	0.29	0.54	0.90	1.09	1.26	0.08	140	14	10.2	750	1.9%	2.4	5.1	15.3	2.79	3.48	4.07	4.66	5.24	5.86	0.2	1.0	7

FINAL DRAINAGE REPORT ~ PIPE ROUTING SUMMARY

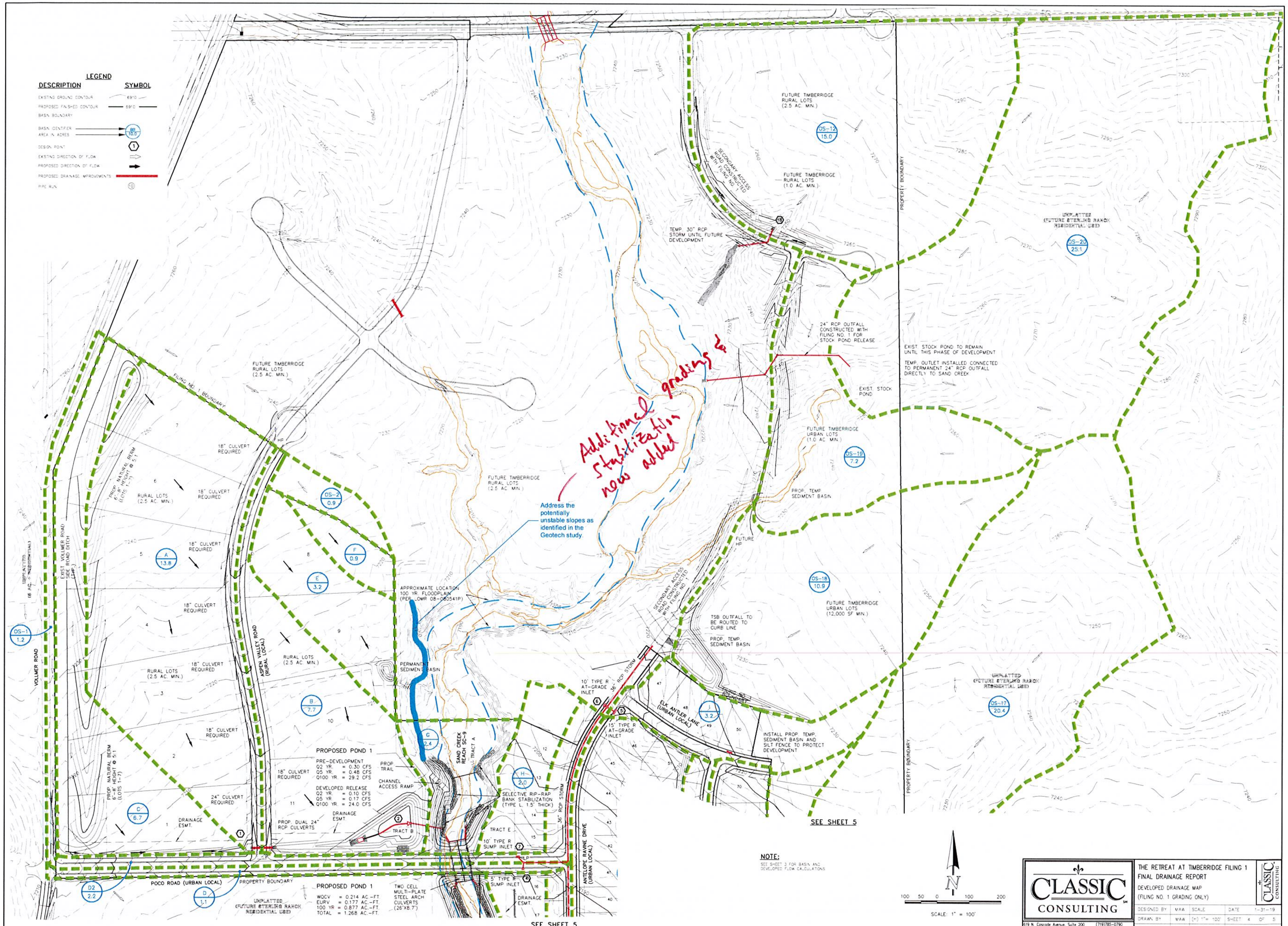
Pipe Run	Contributing Basins	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	Intensity I(5)	Intensity I(100)	Flow Q(5)	Flow Q(100)	Pipe Size*
1	DP-18	2.10	6.00	23.2	2.86	4.81	6	29	30" RCP
2	DP-19	0.28	0.62	12.2	3.80	6.40	1	4	18" RCP
3	DP-20	1.82	4.00	19.9	3.10	5.20	6	21	24" RCP
4	PR-1, PR-2, PR-3	4.20	10.62	23.9	2.82	4.73	12	50	30" RCP
5	Captured from DP-5	1.61	2.31	17.7	3.28	5.50	5	13	24" RCP
6	Captured from DP-6	0.63	0.93	11.9	3.86	6.46	2	6	18" RCP
7	PR-4, PR-5, PR-6	6.43	13.86	24.4	2.76	4.62	18	65	36" RCP
8	DP-4	0.74	0.87	15.2	3.50	5.86	3	5	18" RCP
9	DP-7	1.51	2.47	27.3	2.62	4.40	4	11	24" RCP
10	PR-8, PR-9	2.25	3.34	27.5	2.61	4.38	6	15	30" RCP
11	PR-7, PR-10	8.69	17.20	28.0	2.58	4.33	22	75	42" RCP
12	Captured from DP-10	1.83	2.83	21.2	3.00	5.04	5	14	24" RCP
13	PR-11, PR-12	10.51	20.00	28.1	2.58	4.33	27	87	42" RCP
14	DP-8	0.36	0.71	12.6	3.78	6.35	1	4	18" RCP
15	DP-9	1.43	2.68	16.0	3.43	5.75	5	15	24" RCP
16	PR-14, PR-15	1.80	3.38	16.4	3.39	5.69	6	19	24" RCP
17	PR-13, PR-16	12.31	23.41	28.6	2.55	4.28	31	100	48" RCP
18	DP-11	1.56	4.54	24.2	2.80	4.70	4	21	30" RCP
19	PR-17, PR-18 W'LY FOREBAY OUTFALL	13.89	27.96	28.8	2.54	4.26	35	119	48" RCP
20	DP-12	2.93	8.27	19.9	3.09	5.18	9	33	30" RCP
21	DP-13	0.19	2.06	12.4	3.80	6.39	1	13	24" RCP
22	PR-20, PR-21	3.12	8.33	20.7	3.04	5.10	9	42	30" RCP
23	DP-14	0.25	0.47	11.0	3.99	6.70	1	3	18" RCP
24	DP-15	0.85	2.17	16.0	3.43	5.74	3	12	24" RCP
25	PR-22, PR-23, PR-24	4.22	10.97	22.0	2.94	4.94	12	54	30" RCP
26	DP-16	0.25	0.47	11.0	3.99	6.69	1	3	18" RCP
27	DP-17	1.98	3.71	14.7	3.55	5.96	7	22	30" RCP
28	PR-26, PR-27	2.23	4.18	14.9	3.53	5.93	8	25	30" RCP
29	PR-25, PR-28 E'LY FOREBAY OUTFALL	6.44	15.16	22.3	2.82	4.91	19	74	42" RCP

CLASSIC CONSULTING
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799 (Fax)

THE RETREAT AT TIMBERRIDGE FILING 1
FINAL DRAINAGE REPORT
DEVELOPED DRAINAGE MAP
(INCL. FUTURE DEVELOPED TIMBERRIDGE BASINS)

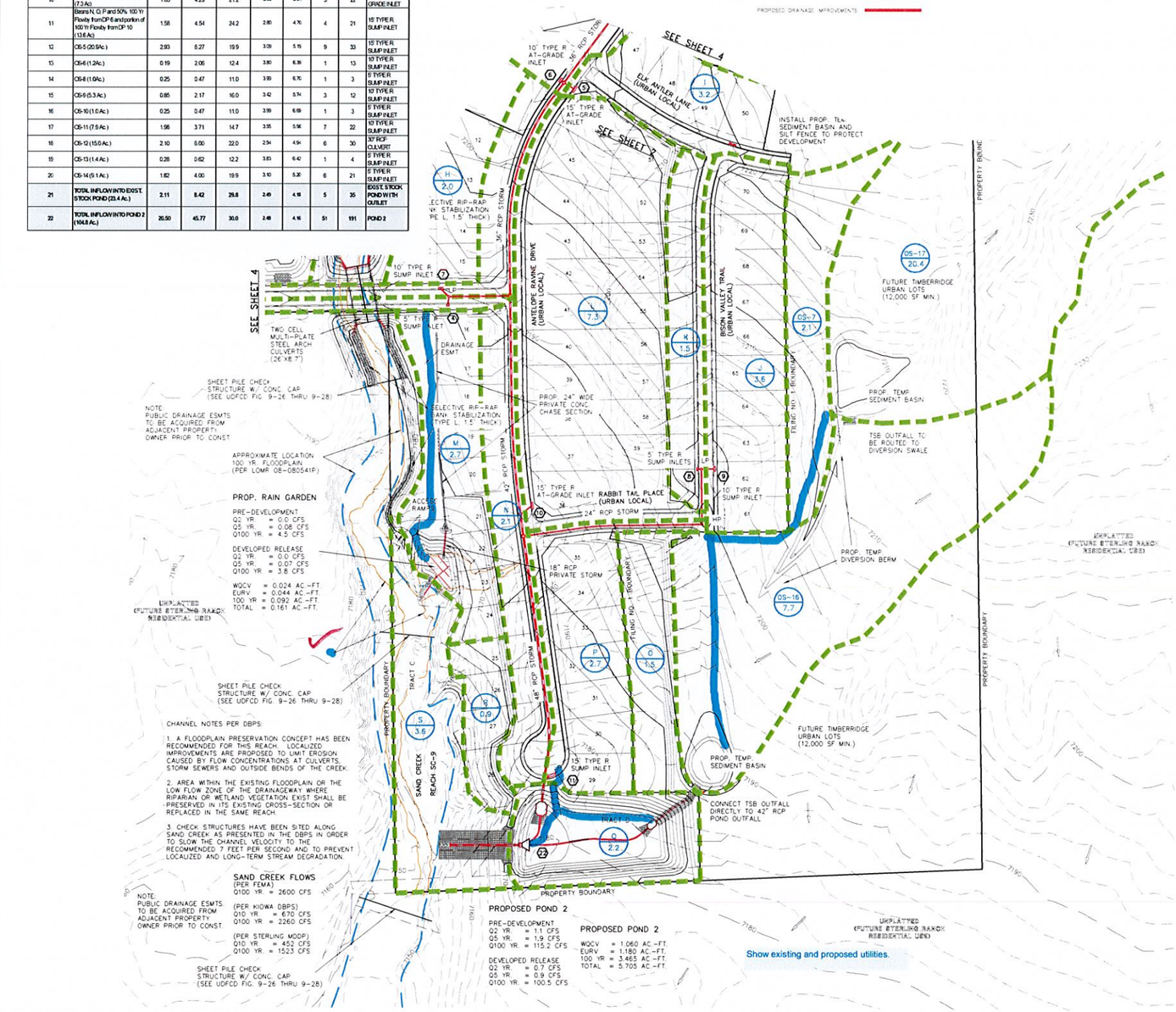
CLASSIC CONSULTING

DESIGNED BY	MAK	SCALE		DATE	1-31-19
DRAWN BY	MAK	(H) 1"= 100'	SHEET	3	OF 5
CHECKED BY		(V) 1"= N/A	JOB NO.	2520.00	


LEGEND
DESCRIPTION
SYMBOL
FUTURE TIMBERRIDGE RURAL LOTS (2.5 AC. MIN.)
FUTURE TIMBERRIDGE RURAL LOTS (1.0 AC. MIN.)
FUTURE TIMBERRIDGE URBAN LOTS (1.0 AC. MIN.)
FUTURE TIMBERRIDGE URBAN LOTS (12,000 SF MIN.)
TEMP. 30" RCP STORM UNTIL FUTURE DEVELOPMENT
24" RCP OUTFALL CONSTRUCTED WITH FILING NO. 1 FOR STOCK POND RELEASE
EXIST. STOCK POND TO REMAIN UNTIL THIS PHASE OF DEVELOPMENT
TEMP. OUTLET INSTALLED CONNECTED TO PERMANENT 24" RCP OUTFALL DIRECTLY TO SAND CREEK
EXIST. STOCK POND
PROP. TEMP. SEDIMENT BASIN
FUTURE HP
TSB OUTFALL TO BE ROUTED TO CURB LINE
PROP. TEMP. SEDIMENT BASIN
INSTALL PROP. TEMP. SEDIMENT BASIN AND SILT FENCE TO PROTECT DEVELOPMENT
Additional grading & stabilization now added
Address the potentially unstable slopes as identified in the Geotech study.
APPROXIMATE LOCATION 100 YR. FLOODPLAIN
PERMANENT SEDIMENT BASIN
SAND CREEK REACH SC-9
PROPOSED POND 1
PRE-DEVELOPMENT
Q2 YR. = 0.30 CFS
Q5 YR. = 0.48 CFS
Q100 YR. = 29.2 CFS
DEVELOPED RELEASE
Q2 YR. = 0.10 CFS
Q5 YR. = 0.17 CFS
Q100 YR. = 24.0 CFS
PROPOSED POND 1
WQCV = 0.214 AC-FT.
EURV = 0.177 AC-FT.
100 YR. = 0.877 AC-FT.
TOTAL = 1.268 AC-FT.
TWO CELL MULTI-PLATE STEEL ARCH CULVERTS (26'X8.7')
SELECTIVE RIP-RAP BANK STABILIZATION (TYPE L, 1.5' THICK)
VOLLMER ROAD
ASPEN VALLEY ROAD (RURAL LOCAL)
POCO ROAD (URBAN LOCAL)
ANTELOPE RAVINE DRIVE (URBAN LOCAL)
ELK ANTLER LANE (URBAN LOCAL)
FILING NO. 1 BOUNDARY
PROPERTY BOUNDARY
UNPLATTED (FUTURE STERLING RANCH RESIDENTIAL USE)
SEE SHEET 5
NOTE:
SCALE: 1" = 100'
CLASSIC CONSULTING
619 N. Cascade Avenue, Suite 200
Colorado Springs, Colorado 80903
(719)785-0790
(719)785-0799 (Fax)
THE RETREAT AT TIMBERRIDGE FILING 1
FINAL DRAINAGE REPORT
DEVELOPED DRAINAGE MAP
(FILING NO. 1 GRADING ONLY)
DESIGNED BY MAW
DRAWN BY MAW
CHECKED BY
SCALE (H) 1"= 100'
(V) 1"= N/A
DATE 1-31-19
SHEET 4 OF 5
JOB NO. 1185.00

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	A (13.8 Ac.), OS-1 (1.2 Ac.) and C (6.7 Ac.)	3.56	9.08	31.8	2.39	4.02	9	36	DUAL 24" RCP CULVERTS
2	**TOTAL INFLOW INTO POND 1 A, B, C and OS-1 (23.4 Ac.)**	**4.66**	**12.16**	**33.8**	**2.39**	**3.86**	**11**	**47**	**POND 1**
3	No longer used								
4	D1 (1.1 Ac.)	0.74	0.87	15.2	3.50	5.88	3	5	5' TYPER SUMP INLET
5	OS-4 (3.1 Ac.), I (3.7 Ac.)	1.61	3.17	17.7	3.28	5.50	5	17	10' TYPER AT-GRADE INLET
6	OS-3 (2.5 Ac.)	0.63	1.18	11.9	3.86	6.48	2	8	10' TYPER AT-GRADE INLET
7	Basin D2, Basin H and 50% of 100 yr Flowby from DP-6 (5.5 Ac)	1.51	2.47	27.3	2.62	4.40	4	11	10' TYPER SUMP INLET
8	K (1.5 Ac.)	0.39	0.71	12.6	3.78	6.35	1	4	5' TYPER SUMP INLET
9	J and OS-7 (5.7 Ac.)	1.43	2.68	16.0	3.43	5.75	5	15	10' TYPER SUMP INLET
10	Flowby from DP-5 and Basin L (7.3 Ac)	1.83	4.29	21.2	3.00	5.04	5	22	15' TYPER AT-GRADE INLET
11	Basins N, O, P and 50% 100 Yr Flowby from DP-6 and portion of 100 Yr Flowby from DP 10 (13.6 Ac)	1.58	4.54	24.2	2.80	4.70	4	21	15' TYPER SUMP INLET
12	OS-5 (20.5Ac)	2.93	6.27	19.9	3.09	5.19	9	33	15' TYPER SUMP INLET
13	OS-6 (1.2Ac)	0.19	2.06	12.4	3.80	6.39	1	13	10' TYPER SUMP INLET
14	OS-8 (1.0Ac.)	0.25	0.47	11.0	3.99	6.70	1	3	5' TYPER SUMP INLET
15	OS-9 (5.3 Ac.)	0.85	2.17	16.0	3.42	5.74	3	12	10' TYPER SUMP INLET
16	OS-10 (1.0 Ac.)	0.25	0.47	11.0	3.99	6.69	1	3	5' TYPER SUMP INLET
17	OS-11 (7.5 Ac.)	1.98	3.71	14.7	3.55	5.96	7	22	10' TYPER SUMP INLET
18	OS-12 (15.0 Ac.)	2.10	6.00	22.0	2.94	4.94	6	30	30" RCP CULVERT
19	OS-13 (1.4 Ac.)	0.28	0.62	12.2	3.83	6.42	1	4	5' TYPER SUMP INLET
20	OS-14 (6.1 Ac.)	1.82	4.00	19.9	3.10	5.20	6	21	5' TYPER SUMP INLET
21	**TOTAL INFLOW INTO EXIST. STOCK POND (23.4 Ac.)**	**2.11**	**8.42**	**28.8**	**2.49**	**4.18**	**5**	**35**	**EXIST. STOCK POND WITH OUTLET**
22	**TOTAL INFLOW INTO POND 2 (104.8 Ac.)**	**20.50**	**45.77**	**30.0**	**2.48**	**4.16**	**51**	**191**	**POND 2**



FINAL DRAINAGE REPORT – BASIN RUNOFF SUMMARY

BASIN	WEIGHTED CA(2)	CA(5)	CA(10)	CA(25)	CA(50)	CA(100)	OVERLAND C(5)	OVERLAND Length (ft)	OVERLAND Height (ft)	OVERLAND Tc (min)	STREET / CHANNEL FLOW Length (ft)	Slope (%)	Velocity (fps)	Tc (min)	Tc TOTAL (min)	INTENSITY I(2) (in/hr)	I(5) (in/hr)	I(10) (in/hr)	I(25) (in/hr)	I(50) (in/hr)	I(100) (in/hr)	TOTAL FLOWS Q(2) (cfs)	Q(5) (cfs)	Q(100) (cfs)
OS-1	0.56	0.71	0.76	0.82	0.85	0.88	0.08	10	0.2	4.6	1700	3.5%	1.9	15.1	19.8	2.46	3.11	3.62	4.14	4.66	5.21	2	2	5
OS-2	0.02	0.07	0.14	0.23	0.27	0.32	0.08	300	10.5	21.1					21.1	2.41	3.31	3.51	4.01	4.51	5.03	0.0	0.2	1.6
OS-3	0.45	0.63	0.80	0.96	1.08	1.18	0.25	55	1.1	5.1	600	3.0%	3.5	2.9	11.9	3.28	3.86	4.51	5.15	5.80	6.46	1	2	8
OS-4	0.47	0.66	0.93	1.15	1.27	1.43	0.22	200	6	15.6	400	3.0%	3.5	1.9	17.6	2.62	3.28	3.83	4.38	4.93	5.51	1	2	8
OS-5	1.25	2.93	4.61	6.48	7.52	8.56	0.14	200	8	13.5	750	2.0%	2.8	4.4	19.9	2.47	3.39	3.81	4.13	4.64	5.19	3	9	43
OS-6	0.02	0.13	0.29	0.38	0.44	0.49	0.16	55	1.1	10.0	500	3.0%	3.5	2.4	12.4	3.04	3.80	4.44	5.07	5.71	6.38	0.3	1	3
OS-7	0.38	0.53	0.67	0.82	0.90	0.99	0.25	100	10	7.2					7.2	3.69	4.83	5.46	6.17	6.94	7.77	1	2	8
OS-8	0.18	0.25	0.32	0.39	0.43	0.47	0.25	55	1.1	5.1	400	3.0%	3.5	1.9	11.0	3.18	3.99	4.65	5.32	5.98	6.70	1	1	3
OS-9	0.37	0.85	1.27	1.70	1.96	2.17	0.16	200	10	14.1	400	3.0%	3.5	1.9	16.0	2.73	3.42	3.98	4.56	5.13	5.74	1	3	12
OS-10	0.18	0.25	0.32	0.39	0.43	0.47	0.25	55	1.1	5.1	450	3.8%	3.9	1.9	11.0	3.18	3.99	4.65	5.32	5.98	6.69	1	1	3
OS-11	1.42	1.98	2.53	3.08	3.40	3.71	0.25	200	10	12.8	450	3.8%	3.9	1.9	14.7	2.84	3.55	4.14	4.74	5.33	5.96	4	7	22
OS-12	0.90	2.10	3.45	4.85	5.40	6.00	0.14	300	13	15.5	600	2.0%	2.8	3.5	22.0	2.35	2.94	3.42	3.93	4.42	4.94	2	6	30
OS-13	0.17	0.28	0.38	0.49	0.56	0.62	0.20	55	1.1	5.6	450	2.0%	2.8	2.7	12.2	3.05	3.83	4.46	5.10	5.74	6.42	0.5	1	4
OS-14	1.08	1.82	2.46	3.19	3.64	4.00	0.20	300	12	17.8	350	2.0%	2.8	2.1	19.9	2.46	3.10	3.62	4.13	4.65	5.20	3	6	21
OS-15	0.76	2.11	3.56	6.08	7.25	8.42	0.09	300	16	19.2	1300	3.5%	1.9	11.6	30.8	2.00	2.69	2.91	3.32	3.74	4.18	1	5	35
OS-16	0.22	0.63	1.31	2.00	2.39	2.77	0.09	300	10	21.2	600	3.5%	1.9	5.3	26.5	2.13	2.86	3.11	3.55	4.00	4.47	0.5	2	12
OS-17	0.61	1.84	3.47	5.30	6.32	7.34	0.09	300	9.5	21.6	650	3.5%	1.9	5.8	27.4	2.10	2.82	3.08	3.49	3.93	4.39	1.3	5	32
OS-18	0.30	0.94	1.85	2.83	3.36	3.92	0.09	300	10	21.2	700	3.5%	1.9	6.2	27.5	2.09	2.81	3.08	3.49	3.92	4.39	0.7	3	17
OS-19	0.22	0.65	1.22	1.87	2.23	2.59	0.09	300	10	21.2	400	3.5%	1.9	3.6	24.8	2.21	2.77	3.23	3.69	4.15	4.64	0.5	2	12
OS-20	0.75	2.20	4.27	6.53	7.76	9.04	0.09	300	16	19.2	1300	3.5%	1.9	11.6	30.8	2.00	2.69	2.91	3.32	3.74	4.18	2	8	38
A	0.62	1.53	3.17	4.28	4.87	5.52	0.14	300	10.5	19.9	1200	3.2%	1.8	11.9	31.8	1.92	2.59	2.79	3.19	3.59	4.02	2	5	22
B	0.46	1.06	1.77	2.39	2.77	3.06	0.14	300	10.5	19.9	450	2.0%	1.4	4.7	24.6	2.23	2.78	3.24	3.71	4.17	4.67	1	3	14
C	0.42	0.94	1.54	2.08	2.41	2.68	0.14	300	10.5	19.9	1100	1.9%	2.4	7.5	27.3	2.10	2.82	3.08	3.49	3.92	4.40	1	2	12
D1	0.75	0.74	0.78	0.83	0.85	0.87	0.08	15	0.3	3.7	1400	1.5%	2.4	9.5	15.2	2.80	3.50	4.08	4.67	5.25	5.88	2	3	5
D2	0.96	1.07	1.18	1.30	1.36	1.43	0.25	55	1.1	5.1	500	2.5%	3.2	2.6	11.7	3.11	3.89	4.54	5.19	5.84	6.54	3	4	9
E	0.19	0.43	0.74	0.99	1.15	1.28	0.14	300	10.5	19.9	300	2.0%	1.4	3.5	23.4	2.28	2.85	3.33	3.81	4.28	4.79	0.4	1	6
F	0.02	0.13	0.21	0.28	0.32	0.36	0.14	300	10.5	19.9					19.9	2.46	3.10	3.62	4.13	4.65	5.20	0.1	0.4	1.9
G	0.02	0.19	0.36	0.60	0.72	0.84	0.08	70	14	5.7	400	2.0%	1.4	4.7	10.4	3.24	4.36	4.74	5.42	6.10	6.80	0.2	0.8	6
H	0.31	0.44	0.60	0.74	0.82	0.92	0.22	100	4	10.1	300	3.0%	3.5	1.4	11.5	3.13	3.92	4.57	5.23	5.88	6.56	1	2	6
I	0.67	0.93	1.18	1.44	1.59	1.74	0.25	100	3	12.4	550	3.5%	3.7	2.4	14.9	2.82	3.53	4.12	4.71	5.30	5.93	2	3	10
J	0.62	0.92	1.15	1.40	1.55	1.69	0.25	100	3	12.4	600	2.0%	2.8	3.5	16.0	2.74	3.43	4.00	4.57	5.14	5.75	2	3	10
K	0.27	0.36	0.48	0.59	0.65	0.71	0.25	55	1.1	5.1	600	2.0%	2.8	3.5	12.6	3.12	3.76	4.41	5.05	5.68	6.35	0.8	1	4
L	1.31	1.83	2.34	2.85	3.14	3.43	0.25	150	4.5	13.1	650	2.5%	3.2	4.5	17.6	2.62	3.28	3.83	4.38	4.93	5.51	3	6	19
M	0.41	0.59	0.81	1.00	1.11	1.24	0.22	100	4	10.1	400	2.0%	2.8	2.4	12.4	3.04	3.80	4.44	5.07	5.71	6.39	1	2	8
N	0.32	0.53	0.67	0.82	0.90	0.99	0.25	55	1.1	5.1	1000	2.0%	2.8	6.2	16.2	2.79	3.50	4.08	4.66	5.25	5.87	1	2	6
O	0.27	0.36	0.48	0.59	0.65	0.71	0.25	80	5	7.5					7.5	3.64	4.80	5.32	5.86	6.84	7.66	1	2	5
P	0.46	0.63	0.86	1.05	1.16	1.27	0.25	100	3	12.4	450	1.9%	2.4	3.1	16.5	2.77	3.47	4.08	4.63	5.21	5.83	1	2	7
Q	0.13	0.31	0.51	0.68	0.79	0.88	0.14	60	22	5.7	300	1.9%	1.2	4.1	9.8	3.32	4.16	4.85	5.54	6.24	6.96	0.4	1	6
R	0.18	0.23	0.26	0.33	0.39	0.42	0.25	60	6	7.8					7.8	3.39	4.30	5.26	6.01	6.76	7.56	1	1	3
S	0.07	0.23	0.54	0.90	1.08	1.26	0.08	140	14	10.2	750	1.9%	2.4	5.1	15.3	2.70	3.45	4.07	4.66	5.24	5.85	0.2	1.0	7

FINAL DRAINAGE REPORT – PIPE ROUTING SUMMARY

Pipe Run	Contributing Basins	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	Intensity I(5)	Intensity I(100)	Flow Q(5)	Flow Q(100)	Pipe Size*
1	DP-18	2.10	6.00	23.2	2.66	4.81	6	29	30" RCP
2	DP-19	0.28	0.62	12.2	3.83	6.42	1	4	18" RCP
3	DP-20	1.82	4.00	19.9	3.10	5.20	6	21	24" RCP
4	PR-1, PR-2, PR-3	4.20	10.62	23.9	2.62	4.73	12	50	36" RCP
5	Captured from DP-5	1.61	2.31	17.7	3.28	5.50	5	13	24" RCP
6	Captured from DP-6	0.63	0.93	11.9	3.86	6.48	2	6	18" RCP
7	PR-4, PR-5, PR-6	6.43	13.86	24.4	2.79	4.68	18	65	36" RCP
8	DP-4	0.74	0.87	15.2	3.50	5.88	3	5	18" RCP
9	DP-7	1.51	2.47	27.3	2.62	4.40	4	11	24" RCP
10	PR-8, PR-9	2.25	3.34	27.5	2.61	4.38	6	15	30" RCP
11	PR-7, PR-10	8.69	17.20	28.0	2.58	4.33	22	75	42" RCP
12	Captured from DP-10	1.83	2.83	21.2	3.00	5.04	5	14	24" RCP
13	PR-11, PR-12	10.51	20.03	28.1	2.58	4.33	27	87	42" RCP
14	DP-8	0.38	0.71	12.6	3.78	6.35	1	4	18" RCP
15	DP-9	1.43	2.68	16.0	3.43	5.75	5	15	24" RCP
16	PR-14, PR-15	1.80	3.38	16.4	3.39	5.69	6	19	24" RCP
17	PR-13, PR-16	12.31	23.41	28.6	2.56	4.28	31	100	48" RCP
18	DP-11	1.58	4.54	24.2	2.80	4.70	4	21	30" RCP
19	**PR-17, PR-18 W'LY FOREBAY OUTFALL**	**13.89**	**27.96**	**28.8**	**2.54**	**4.26**	**35**	**119**	**48" RCP**
20	DP-12	2.93	6.27	19.9	3.09	5.19	9	33	30" RCP
21	DP-13	0.19	2.06	12.4	3.80	6.39	1	13	24" RCP
22	PR-20, PR-21	3.12	8.33	20.7	3.04	5.10	9	42	30" RCP
23	DP-14	0.25	0.47	11.0	3.99	6.70	1	3	18" RCP
24	DP-15	0.85	2.17	16.0	3.42	5.74	3	12	24" RCP
25	PR-22, PR-23, PR-24	4.22	10.97	22.0	2.94	4.94	12	54	30" RCP
26	DP-16	0.25	0.47	11.0	3.99	6.69	1	3	18" RCP
27	DP-17	1.98	3.71	14.7	3.55	5.96	7	22	30" RCP
28	PR-26, PR-27	2.23	4.18	14.9	3.53	5.93	8	25	30" RCP
29	**PR-25, PR-28 ELY FOREBAY OUTFALL**	**6.44**	**15.18**	**22.3**	**2.92**	**4.91**	**19**	**74**	**42" RCP**

CLASSIC CONSULTING
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799 (Fax)

THE RETREAT AT TIMBERRIDGE FILING 1
FINAL DRAINAGE REPORT
DEVELOPED DRAINAGE MAP
(FILING NO. 1 GRADING ONLY)

DESIGNED BY	MAK	SCALE		DATE	1-31-19
DRAWN BY	MAK	(H) 1"= 100'	SHEET	5	OF 5
CHECKED BY		(V) 1"= N/A	JOB NO.	1185.00	

CCES Responses

2019 Financial Assurance Estimate Form
(with pre-plat construction)

Updated: 7/16/2019

PROJECT INFORMATION		
RETREAT AT TIMBERRIDGE FILING NO. 1	8/13/2019	SF-19-009
Project Name	Date	PCD File No.

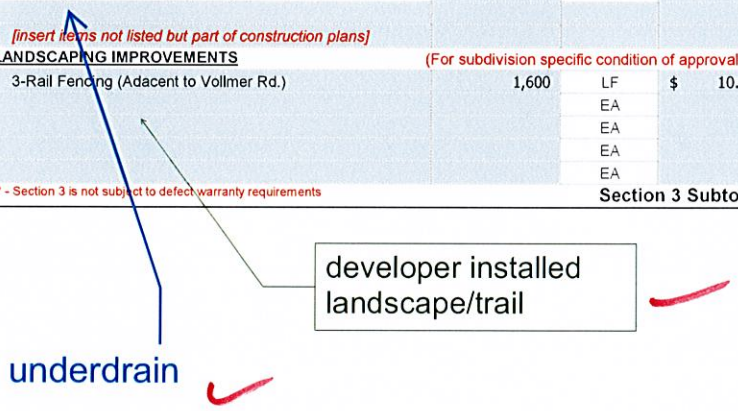
Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	Remaining	
SECTION 1 - GRADING AND EROSION CONTROL (Construction and Permanent BMPs)								
* Earthwork								*
less than 1,000; $5,300 min		CY	$ 8.00	=	$ -		$ -	*
1,000-5,000; $8,000 min		CY	$ 6.00	=	$ -		$ -	*
5,001-20,000; $30,000 min		CY	$ 5.00	=	$ -		$ -	*
20,001-50,000; $100,000 min		CY	$ 3.50	=	$ -		$ -	*
50,001-200,000; $175,000 min	150,000	CY	$ 2.50	=	$ 375,000.00		$ 375,000.00	*
greater than 200,000; $500,000 min		CY	$ 2.00	=	$ -		$ -	*
* Permanent Seeding (inc. noxious weed mgmnt.)	10	AC	$ 800.00	=	$ 8,000.00		$ 8,000.00	*
* Mulching	10	AC	$ 750.00	=	$ 7,500.00		$ 7,500.00	*
* Permanent Erosion Control Blanket	3,200	SY	$ 6.00	=	$ 19,200.00		$ 19,200.00	*
* Permanent Pond/BMP Construction	1,000	CY	$ 20.00	=	$ 20,000.00		$ 20,000.00	*
* Permanent Pond/BMP (Spillway)	3	EA	$ 5,000.00	=	$ 15,000.00		$ 15,000.00	*
* Permanent Pond/BMP (Outlet Structure)	3	EA	$ 8,000.00	=	$ 24,000.00		$ 24,000.00	
Safety Fence		LF	$ 3.00	=	$ -		$ -	
Temporary Erosion Control Blanket	1,500	SY	$ 3.00	=	$ 4,500.00		$ 4,500.00	
Vehicle Tracking Control	2	EA	$ 2,370.00	=	$ 4,740.00		$ 4,740.00	
Silt Fence	7,600	LF	$ 2.50	=	$ 19,000.00		$ 19,000.00	
Temporary Seeding	5	AC	$ 628.00	=	$ 3,140.00		$ 3,140.00	
Temporary Mulch	5	AC	$ 750.00	=	$ 3,750.00		$ 3,750.00	
Erosion Bales	75	EA	$ 25.00	=	$ 1,875.00		$ 1,875.00	
Erosion Logs/Straw Waddle		LF	$ 5.00	=	$ -		$ -	
Rock Check Dams	8	EA	$ 500.00	=	$ 4,000.00		$ 4,000.00	
Inlet Protection	10	EA	$ 167.00	=	$ 1,670.00		$ 1,670.00	
Sediment Basin	8	EA	$ 1,762.00	=	$ 14,096.00		$ 14,096.00	
Concrete Washout Basin	1	EA	$ 900.00	=	$ 900.00		$ 900.00	
				=	$ -		$ -	
[insert items not listed but part of construction plans]				=	$ -		$ -	
	MAINTENANCE (35% of Construction BMPs)			=	$ 20,184.85		$ 20,184.85	
* - Subject to defect warranty financial assurance. A minimum of 20% shall be retained until final acceptance (MAXIMUM OF 80% COMPLETE ALLOWED)		**Section 1 Subtotal**		=	**$ 546,555.85**		**$ 546,555.85**	
SECTION 2 - PUBLIC IMPROVEMENTS *								
ROADWAY IMPROVEMENTS								*
Construction Traffic Control	1	LS	$ 5,000.00	=	$ 5,000.00		$ 5,000.00	*
Aggregate Base Course (135 lbs/cf)	7,300	Tons	$ 28.00	=	$ 204,400.00		$ 204,400.00	*
Aggregate Base Course (135 lbs/cf)		CY	$ 50.00		$ -		$ -	*
Asphalt Pavement (3" thick)		SY	$ 14.00		$ -		$ -	*
Asphalt Pavement (4" thick)	21,800	SY	$ 19.00		$ 414,200.00		$ 414,200.00	*
Asphalt Pavement (6" thick)		SY	$ 29.00		$ -		$ -	*
Asphalt Pavement (147 lbs/cf) _" thick		Tons	$ 88.00	=	$ -		$ -	*
Raised Median, Paved		SF	$ 8.00	=	$ -		$ -	*
Regulatory Sign/Advisory Sign	14	EA	$ 300.00	=	$ 4,200.00		$ 4,200.00	*
Guide/Street Name Sign	14	EA	$ 250.00	=	$ 3,500.00		$ 3,500.00	*
Epoxy Pavement Marking		SF	$ 13.00	=	$ -		$ -	*
Thermoplastic Pavement Marking		SF	$ 23.00	=	$ -		$ -	*
Barricade - Type 3	3	EA	$ 200.00	=	$ 600.00		$ 600.00	*
Delineator - Type I		EA	$ 24.00	=	$ -		$ -	*
Curb and Gutter, Type A (6" Vertical)	4,050	LF	$ 30.00	=	$ 121,500.00		$ 121,500.00	*
Curb and Gutter, Type B (Median)		LF	$ 30.00	=	$ -		$ -	*
Curb and Gutter, Type C (Ramp)	6,600	LF	$ 30.00	=	$ 198,000.00		$ 198,000.00	*
4" Sidewalk (common areas only)		SY	$ 48.00	=	$ -		$ -	*
5" Sidewalk	4,550	SY	$ 60.00	=	$ 273,000.00		$ 273,000.00	*
6" Sidewalk	130	SY	$ 72.00	=	$ 9,360.00		$ 9,360.00	*
8" Sidewalk		SY	$ 96.00		$ -		$ -	*
Pedestrian Ramp		EA	$ 1,150.00	=	$ -		$ -	*
Cross Pan, local (8" thick, 6' wide to include return)		LF	$ 61.00	=	$ -		$ -	*
Cross Pan, collector (9" thick, 8' wide to include return)		LF	$ 92.00		$ -		$ -	*
Curb Chase		EA	$ 1,480.00	=	$ -		$ -	*
Guardrail Type 3 (W-Beam)	300	LF	$ 49.00	=	$ 14,700.00		$ 14,700.00	*
Guardrail Type 7 (Concrete)		LF	$ 72.00	=	$ -		$ -	*
Guardrail End Anchorage	2	EA	$ 2,098.00	=	$ 4,196.00		$ 4,196.00	*
Guardrail Impact Attenuator		EA	$ 3,767.00	=	$ -		$ -	*
Sound Barrier Fence (CMU block, 6' high)		LF	$ 78.00		$ -		$ -	*
Sound Barrier Fence (panels, 6' high)		LF	$ 80.00	=	$ -		$ -	*
Electrical Conduit, Size =		LF	$ 16.00	=	$ -		$ -	*
Traffic Signal, complete intersection		EA	$ 425,000	=	$ -		$ -	*

PROJECT INFORMATION		
RETREAT AT TIMBERRIDGE FILING NO. 1	8/13/2019	SF-19-009
Project Name	Date	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	Remaining	
				=	$ -		$ -	
[insert items not listed but part of construction plans]				=	$ -		$ -	*
STORM DRAIN IMPROVEMENTS								*
Dual Multi-plate Steel Arch Culverts, Size (26' x 8'- 7")	2	EA	$150,000.00	=	$ 300,000.00		$ 300,000.00	*
18" Reinforced Concrete Pipe	135	LF	$ 65.00	=	$ 8,775.00		$ 8,775.00	*
24" Reinforced Concrete Pipe	1,325	LF	$ 78.00	=	$ 103,350.00		$ 103,350.00	*
30" Reinforced Concrete Pipe	275	LF	$ 97.00	=	$ 26,675.00		$ 26,675.00	*
36" Reinforced Concrete Pipe	740	LF	$ 120.00	=	$ 88,800.00		$ 88,800.00	*
42" Reinforced Concrete Pipe	665	LF	$ 160.00	=	$ 106,400.00		$ 106,400.00	*
48" Reinforced Concrete Pipe	600	LF	$ 195.00	=	$ 117,000.00		$ 117,000.00	*
54" Reinforced Concrete Pipe		LF	$ 245.00	=	$ -		$ -	*
60" Reinforced Concrete Pipe		LF	$ 288.00	=	$ -		$ -	*
66" Reinforced Concrete Pipe		LF	$ 332.00	=	$ -		$ -	*
72" Reinforced Concrete Pipe		LF	$ 380.00	=	$ -		$ -	*
18" Corrugated Steel Pipe		LF	$ 84.00	=	$ -		$ -	*
24" Corrugated Steel Pipe		LF	$ 96.00	=	$ -		$ -	*
30" Corrugated Steel Pipe		LF	$ 122.00	=	$ -		$ -	*
36" Corrugated Steel Pipe		LF	$ 147.00	=	$ -		$ -	*
42" Corrugated Steel Pipe		LF	$ 168.00	=	$ -		$ -	*
48" Corrugated Steel Pipe		LF	$ 178.00	=	$ -		$ -	*
54" Corrugated Steel Pipe		LF	$ 260.00	=	$ -		$ -	*
60" Corrugated Steel Pipe		LF	$ 280.00	=	$ -		$ -	*
66" Corrugated Steel Pipe		LF	$ 340.00	=	$ -		$ -	*
72" Corrugated Steel Pipe		LF	$ 400.00	=	$ -		$ -	*
78" Corrugated Steel Pipe		LF	$ 460.00	=	$ -		$ -	*
84" Corrugated Steel Pipe		LF	$ 550.00	=	$ -		$ -	*
Flared End Section (FES) RCP Size = (unit cost = 6x pipe unit cost)	3	EA	$ 800.00	=	$ 2,400.00		$ 2,400.00	*
Flared End Section (FES) CSP Size = (unit cost = 6x pipe unit cost)		EA		=	$ -		$ -	*
End Treatment- Headwall (Arch Culverts)	2	EA	$ 8,000.00	=	$ 16,000.00		$ 16,000.00	*
End Treatment- Wingwall (Arch Culverts)	2	EA	$ 12,000.00	=	$ 24,000.00		$ 24,000.00	*
End Treatment - Headwall (Pipe Outlets)	5	EA	$ 1,200.00	=	$ 6,000.00		$ 6,000.00	*
Curb Inlet (Type R) L=5', Depth < 5'	2	EA	$ 5,542.00	=	$ 11,084.00		$ 11,084.00	*
Curb Inlet (Type R) L=5', 5' ≤ Depth < 10'		EA	$ 7,188.00	=	$ -		$ -	*
Curb Inlet (Type R) L =5', 10' ≤ Depth < 15'		EA	$ 8,345.00	=	$ -		$ -	*
Curb Inlet (Type R) L =10', Depth < 5'	3	EA	$ 7,627.00	=	$ 22,881.00		$ 22,881.00	*
Curb Inlet (Type R) L =10', 5' ≤ Depth < 10'		EA	$ 7,861.00	=	$ -		$ -	*
Curb Inlet (Type R) L =10', 10' ≤ Depth < 15'		EA	$ 9,841.00	=	$ -		$ -	*
Curb Inlet (Type R) L =15', Depth < 5'		EA	$ 9,918.00	=	$ -		$ -	*
Curb Inlet (Type R) L =15', 5' ≤ Depth < 10'	3	EA	$ 10,633.00	=	$ 31,899.00		$ 31,899.00	*
Curb Inlet (Type R) L =15', 10' ≤ Depth < 15'		EA	$ 11,627.00	=	$ -		$ -	*
Curb Inlet (Type R) L =20', Depth < 5'		EA	$ 10,570.00	=	$ -		$ -	*
Curb Inlet (Type R) L =20', 5' ≤ Depth < 10'		EA	$ 11,667.00	=	$ -		$ -	*
Grated Inlet (Type C) RG Outlet Depth < 5'	1	EA	$ 4,640.00	=	$ 4,640.00		$ 4,640.00	*
Grated Inlet (Type D), Depth < 5'		EA	$ 5,731.00	=	$ -		$ -	*
Storm Sewer Manhole, Box Base	5	EA	$ 11,627.00	=	$ 58,135.00		$ 58,135.00	*
Storm Sewer Manhole, Slab Base	5	EA	$ 6,395.00	=	$ 31,975.00		$ 31,975.00	*
Geotextile (Erosion Control)		SY	$ 6.00	=	$ -		$ -	*
Rip Rap, d50 size from 6" to 24"	870	Tons	$ 80.00	=	$ 69,600.00		$ 69,600.00	*
Rip Rap, Grouted		Tons	$ 95.00	=	$ -		$ -	*
Drainage Channel Construction, Size (W x H)		LF		=	$ -		$ -	*
Drainage Channel Lining, Concrete		CY	$ 570.00	=	$ -		$ -	*
Drainage Channel Lining, Rip Rap	660	CY	$ 112.00	=	$ 73,920.00		$ 73,920.00	*
Drainage Channel Lining, Grass		AC	$ 1,469.00	=	$ -		$ -	*
Drainage Channel Lining, Sheet Pile Check Structures	485	LF	$ 200.00	=	$ 97,000.00		$ 97,000.00	*
Permanent Pond/BMP (EDB)	2	EA	$ 50,000.00	=	$ 100,000.00		$ 100,000.00	
Permanent Pond/BMP (RG)	1	EA	$ 25,000.00	=	$ 25,000.00		$ 25,000.00	
			Section 2 Subtotal	**=**	**$ 2,578,190.00**		**$ 2,578,190.00**	

PROJECT INFORMATION		
RETREAT AT TIMBERRIDGE FILING NO. 1	8/13/2019	SF-19-009
Project Name	Date	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	Remaining
SECTION 3 - COMMON DEVELOPMENT IMPROVEMENTS (Private or District and NOT Maintained by EPC)**							
ROADWAY IMPROVEMENTS							
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
STORM DRAIN IMPROVEMENTS	(Exception: Permanent Pond/BMP shall be itemized under Section 1)						
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
WATER SYSTEM IMPROVEMENTS							
Water Main Pipe (PVC), Size 8"	4,550	LF	$ 64.00	=	$ 291,200.00		$ 291,200.00
Water Main Pipe (PVC), Size 12"	4,300	LF	$ 75.00	=	$ 322,500.00		$ 322,500.00
Gate Valves, 8"	30	EA	$ 1,858.00	=	$ 55,740.00		$ 55,740.00
Fire Hydrant Assembly, w/ all valves	12	EA	$ 6,597.00	=	$ 79,164.00		$ 79,164.00
Water Service Line Installation, inc. tap and valves	59	EA	$ 1,324.00	=	$ 78,116.00		$ 78,116.00
Fire Cistern Installation, complete		EA		=	$ -		$ -
				=	$ -		$ -
[insert items not listed but part of construction plans]				=	$ -		$ -
SANITARY SEWER IMPROVEMENTS							
Sewer Main Pipe (PVC), Size 8"	9,450	LF	$ 64.00	=	$ 604,800.00		$ 604,800.00
Sanitary Sewer Manhole, Depth < 15 feet	36	EA	$ 4,386.00	=	$ 157,896.00		$ 157,896.00
Sanitary Service Line Installation, complete	59	EA	$ 1,402.00	=	$ 82,718.00		$ 82,718.00
Sanitary Sewer Lift Station, complete		EA		=	$ -		$ -
				=	$ -		$ -
[insert items not listed but part of construction plans]				=	$ -		$ -
LANDSCAPING IMPROVEMENTS	(For subdivision specific condition of approval, or PUD)						
3-Rail Fencing (Adacent to Vollmer Rd.)	1,600	LF	$ 10.00	=	$ 16,000.00		$ 16,000.00
		EA		=	$ -		$ -
		EA		=	$ -		$ -
		EA		=	$ -		$ -
		EA		=	$ -		$ -
** - Section 3 is not subject to defect warranty requirements			Section 3 Subtotal	=	$ 1,688,134.00		$ 1,688,134.00



PROJECT INFORMATION		
RETREAT AT TIMBERRIDGE FILING NO. 1	8/13/2019	SF-19-009
Project Name	Date	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	(with Pre-Plat Construction) Remaining
AS-BUILT PLANS (Public Improvements inc. Permanent WQCV BMPs)		LS	$ 5,000.00	=	$ 5,000.00		$ 5,000.00
POND/BMP CERTIFICATION (inc. elevations and volume calculations)		LS	$ 2,000.00	=	$ 2,000.00		$ 2,000.00

Total Construction Financial Assurance **$ 4,819,879.85**

(Sum of all section subtotals plus as-builts and pond/BMP certification)

Total Remaining Construction Financial Assurance (with Pre-Plat Construction) **$ 4,819,879.85**

(Sum of all section totals less credit for items complete plus as-builts and pond/BMP certification)

Total Defect Warranty Financial Assurance **$ 609,378.00**

(20% of all items identified as (*). To be collateralized at time of preliminary acceptance)

Approvals

I hereby certify that this is an accurate and complete estimate of costs for the work as shown on the Grading and Erosion Control Plan and Construction Drawings associated with the Project.

Engineer (P.E. Seal Required)

Approved by Owner / Applicant — Date

Approved by El Paso County Engineer / ECM Administrator — Date