

N:\jobs\1733.00\Drawings\CD\173300 SIP.dwg, 8/15/2019 10:11:52 AM



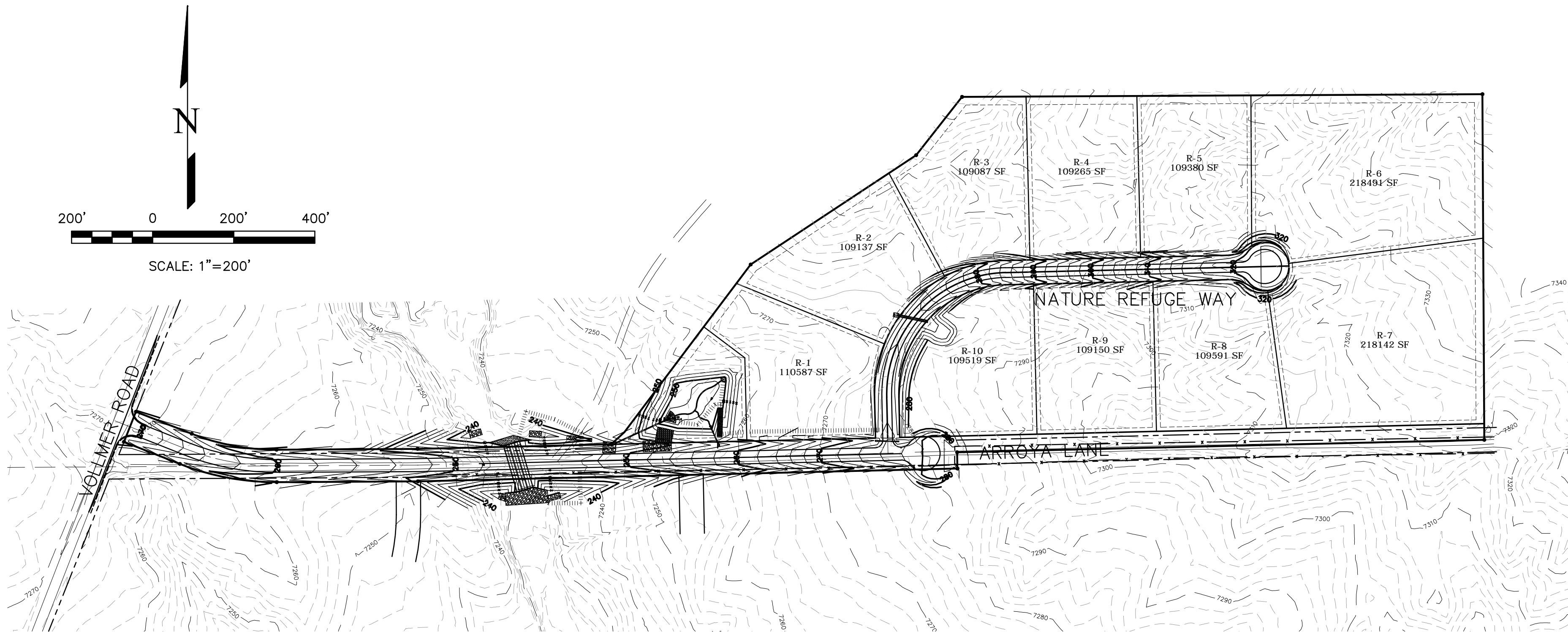
# TIMBERRIDGE ESTATES - 9210 ARROYA LANE

## EL PASO COUNTY

# STREET IMPROVEMENT PLAN & GEC PLAN

### AUGUST 2019

### SF-18-027



#### EL PASO COUNTY STANDARD CONSTRUCTION NOTES:

- 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 & 2 AND THE EL PASO COUNTY ENGINEERING CRITERIA MANUAL.
- 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).
- 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:
  - EL PASO COUNTY ENGINEERING CRITERIA MANUAL (ECM)
  - CITY OF COLORADO SPRINGS/EL PASO COUNTY DRAINAGE CRITERIA MANUAL, VOLUMES 1 & 2
  - COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION
  - CDOT M & S STANDARDS.
- 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-FACE WILL BE ENTIRELY THE DEVELOPER'S RESPONSIBILITY TO RECTIFY.
- 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.
- CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT (PCD) INSPECTIONS, PRIOR TO STARTING CONSTRUCTION.
- IT IS THE CONTRACTORS 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.
- 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.
- ALL STORM DRAIN PIPE SHALL BE CLASS III RCP UNLESS OTHERWISE NOTED AND APPROVED BY PCD.
- 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.
- ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.

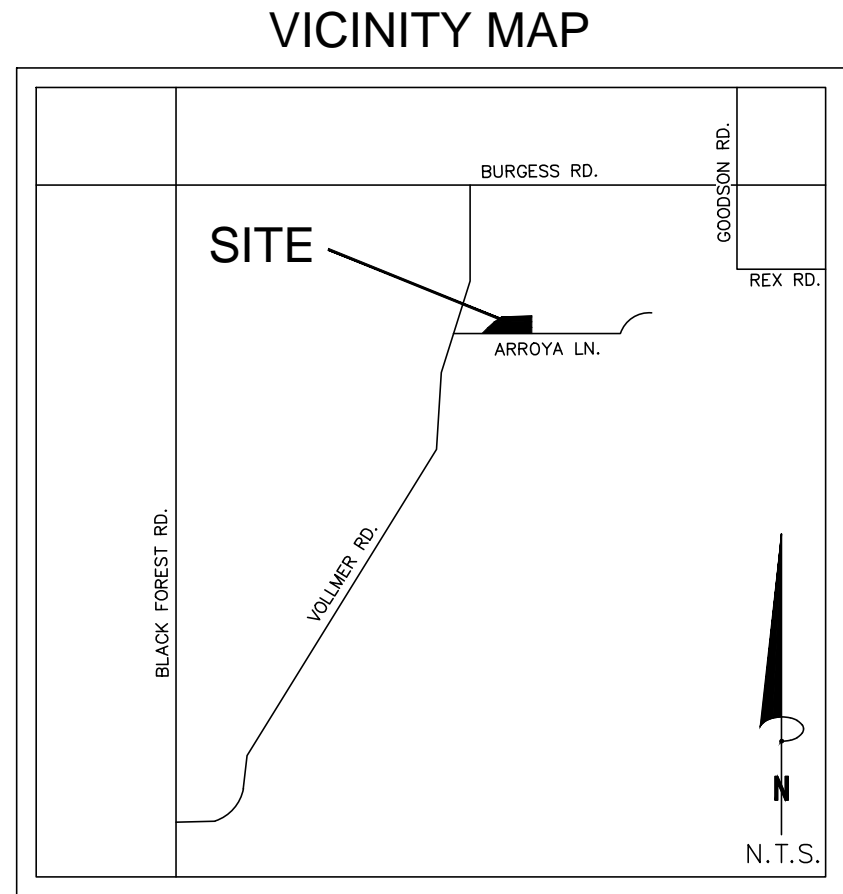
- SIGHT VISIBILITY TRIANGLES AS IDENTIFIED IN THE PLANS SHALL BE PROVIDED AT ALL INTERSECTIONS. OBSTRUCTIONS GREATER THAN 18 INCHES ABOVE FLOWLINE ARE NOT ALLOWED WITHIN SIGHT TRIANGLES.
- SIGNING AND STRIPING SHALL COMPLY WITH EL PASO COUNTY PUBLIC WORK DEPARTMENT AND MUTCD CRITERIA.
- CONTRACTOR SHALL OBTAIN ANY PERMITS REQUIRED BY EL PASO COUNTY PWD, INCLUDING WORK WITHIN THE RIGHT-OF-WAY AND SPECIAL TRANSPORT PERMITS.
- 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.

#### GENERAL NOTES

- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES ALONG THE SITE. THE OMISSION FROM OR THE INCLUSION OF UTILITY LOCATIONS ON THE PLANS IS NOT TO BE CONSIDERED AS THE NON-EXISTENCE OF OR A DEFINITE LOCATION OF EXISTING UNDERGROUND UTILITIES.
- THE CONTRACTOR WILL TAKE THE NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES, BUILDINGS, FENCES, AND ROADWAYS FROM DAMAGE DUE TO THIS OPERATION. ANY DAMAGE TO THE ABOVE WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND ANY SERVICE DISRUPTION WILL BE SETTLED BY THE CONTRACTOR.
- BULK GRADING SHALL BE COMPLETED TO A SUBGRADE TOLERANCE OF PLUS OR MINUS 0.2'.
- CONTRACTOR TO OBTAIN COPIES OF THE SOILS REPORT FROM THE GEOTECHNICAL ENGINEER AND TO BE KEPT ONSITE DURING ALL EARTHWORK OPERATIONS.
- MAXIMUM CUT/FILL SLOPES SHALL NOT EXCEED 3:1, UNLESS OTHERWISE NOTED.
- EROSION CONTROL MEASURES SHALL BE IMPLEMENTED IN A MANNER THAT WILL PROTECT PROPERTIES AND PUBLIC FACILITIES FROM THE ADVERSE EFFECTS OF EROSION AND SEDIMENTATION AS A RESULT OF CONSTRUCTION AND EARTHWORK ACTIVITIES WITHIN THE PROJECT SITE.
- EROSION CONTROL DEVICES SHOULD BE CHECKED AFTER EVERY STORM. REPAIRS OR REPLACEMENT SHOULD BE MADE AS NECESSARY TO MAINTAIN PROPER PROTECTION.
- CONTRACTOR SHALL REVIEW GEOTECHNICAL REPORT BY GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION.

#### TRAFFIC CONTROL NOTE

THE CONTRACTOR SHALL PROVIDE ALL TRAFFIC CONTROL DEVICES AND MONITORING NECESSARY TO SAFELY COMPLETE THE WORK SHOWN IN THESE CONSTRUCTION DOCUMENTS IN CONFORMANCE WITH M.U.T.C.D. GUIDELINES. THE CONTRACTOR SHALL COMPLETE ALL NECESSARY WORK FOR PLAN REVIEW, PERMITS AND PROCESSING. TRAFFIC CONTROL WILL NOT BE PAID SEPARATELY BUT IS INCLUDED IN THE COST OF THE PROJECT.



#### SHEET INDEX:

- COVER SHEET
- STREET IMPROVEMENT PLANS
- OVERVIEW
- INTERSECTION OF VOLLMER RD AND ARROYA LN
- ARROYA LANE - PLAN & PROFILE
- NATURE REFUGE WAY - PLAN & PROFILE
- STREET DETAILS SHEET
- BOX CULVERT DETAILS SHEET
- BOX CULVERT DETAILS SHEET
- BOX CULVERT DETAILS SHEET
- OVERVIEW - 11x17 ZOOM #1
- OVERVIEW - 11x17 ZOOM #2

#### GRADING & EROSION CONTROL PLANS

- NOTES SHEET
- GRADING PLAN - EAST
- GRADING PLAN - WEST
- GRADING PLAN DETAILS
- GRADING PLAN DETAILS
- EROSION CONTROL PLAN
- EROSION CONTROL DETAILS
- EROSION CONTROL DETAILS
- EROSION CONTROL DETAILS
- GRADING PLAN - 11x17 ZOOM - EAST
- GRADING PLAN - 11x17 ZOOM - WEST
- EROSION CONTROL PLAN - 11x17 ZOOM - EAST
- EROSION CONTROL PLAN - 11x17 ZOOM - WEST

NOTE: THE 11x17 ZOOM PLANS WERE ADDED AT THE REQUEST OF THE COUNTY. USING THESE PLANS AT 11x17 IS NOT RECOMMENDED.

#### SOIL TYPES

ONSITE SOILS ARE HYDROLOGIC GROUP "B", KETTLE GRAVELLY LOAMY SAND (40), 3 TO 8 PERCENT SLOPES, KETTLE GRAVELLY LOAMY SAND (41), 8 TO 40 PERCENT SLOPES AND PRING COARSE SANDY LOAM (71)

#### BENCHMARKS

A #4 REBAR 28.3 FEET SOUTH AND 77.2 FEET WEST OF THE SOUTHEAST PROPERTY CORNER.  
ELEV = 7,319.85' (NGVD-1929)

#### BASIS OF BEARING

THE EAST LINE OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 12 SOUTH, RANGE 65 WEST AND IS ASSUMED TO BEAR NORTH 0 DEGREES 18 MINUTES 04 SECONDS EAST 2640.26 FEET.

#### 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 CAUSED BY ANY NEGLIGENT ACTS, ERRORS OR OMISSIONS ON MY PART IN PREPARATION OF THESE DETAILED PLANS AND SPECIFICATIONS.

L' DUCETT, P.E. #32339 DATE  
FOR AND ON BEHALF OF TERRA NOVA ENGINEERING, INC.

#### OWNER/DEVELOPER'S STATEMENT

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

OWNER NAME, TITLE DATE

BUSINESS NAME

#### EL PASO COUNTY APPROVAL

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.

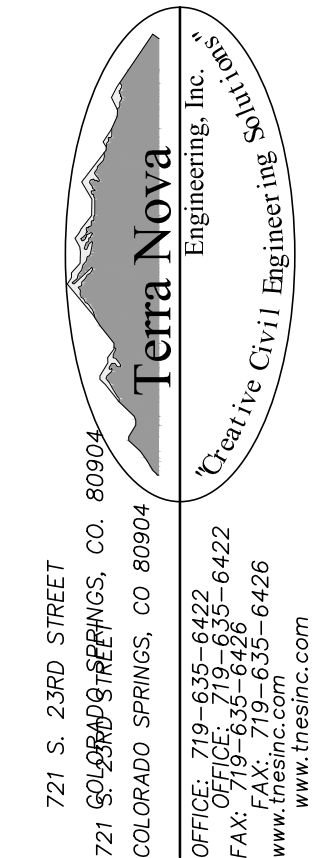
IN ACCORDANCE WITH ECM SECTION 1.12, THESE CONSTRUCTION DOCUMENTS WILL BE VALID FOR CONSTRUCTION FOR A PERIOD OF 2 YEARS FROM THE DATE SIGNED BY THE EL PASO COUNTY ENGINEER. IF CONSTRUCTION HAS NOT STARTED WITHIN THOSE 2 YEARS, THE PLANS WILL NEED TO BE RESUBMITTED FOR APPROVAL, INCLUDING PAYMENT OF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

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

DATE

REVISIONS	NO.	DESCRIPTION	DATE
UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE ENGINEERING, TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT DESIGNATED BY WRITTEN AUTHORIZATION.			

PREPARED FOR:  
TIMBERRIDGE ESTATES, LLC  
ATTN: SCOTT HENTIE  
2760 BROGANS BLUFF  
COLORADO SPRINGS, CO 80919  
719.499.6752



TIMBERRIDGE ESTATES 9210 ARROYA LANE	STREET IMPROVEMENT PLAN COVER SHEET
---	--

DESIGNED BY LD
DRAWN BY DLF
CHECKED BY LD
H-SCALE AS SHOWN
V-SCALE NA
JOB NO. 1733.00
DATE ISSUED 08/13/19
SHEET NO. 1 OF 24



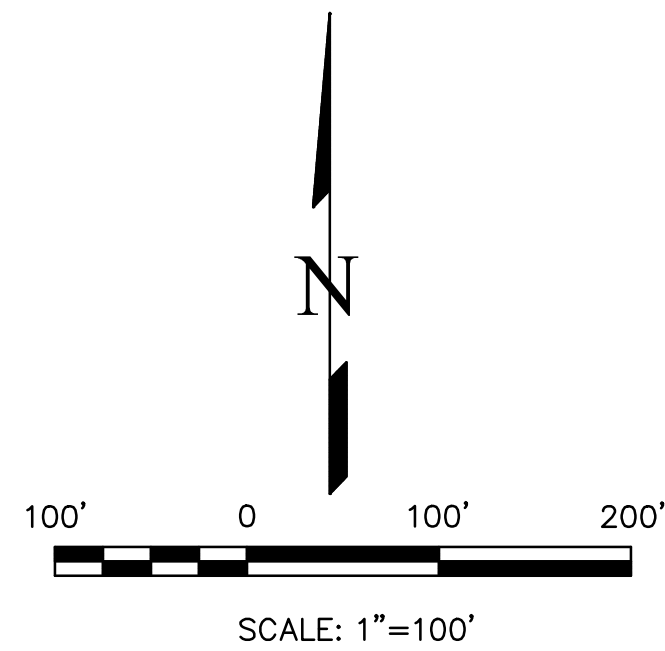
TIMBERRIDGE ESTATES - 9210 ARROYA LANE  
EL PASO COUNTY  
STREET IMPROVEMENT PLAN  
AUGUST 2019

BENCHMARKS

A #4 REBAR 28.3 FEET SOUTH AND 77.2 FEET WEST OF THE SOUTHEAST  
PROPERTY CORNER.  
ELEV = 7,319.85' (NGVD-1929)

LEGEND

- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROPOSED 10' CONTOUR
- SURFACE FLOW CHANNEL
- PROPOSED DRAINAGE EASEMENT
- EXISTING WATER LINE
- DRAINAGE FLOW DIRECTION
- PROPOSED POND OR CULVERT ACCESS PATH



NOTES

1. REINFORCE PROPOSED SWALES PR3, PR4, PR7, PR8, PR9, PR10, & PR11 WITH PERMANENT ROCK CHECK DAMS PER COUNTY CONSTRUCTION DETAIL CD-1 (IN DCM VOL 2). CHECK DAMS ARE NOT REQUIRED FOR SWALE AREAS WITH RIPRAP.

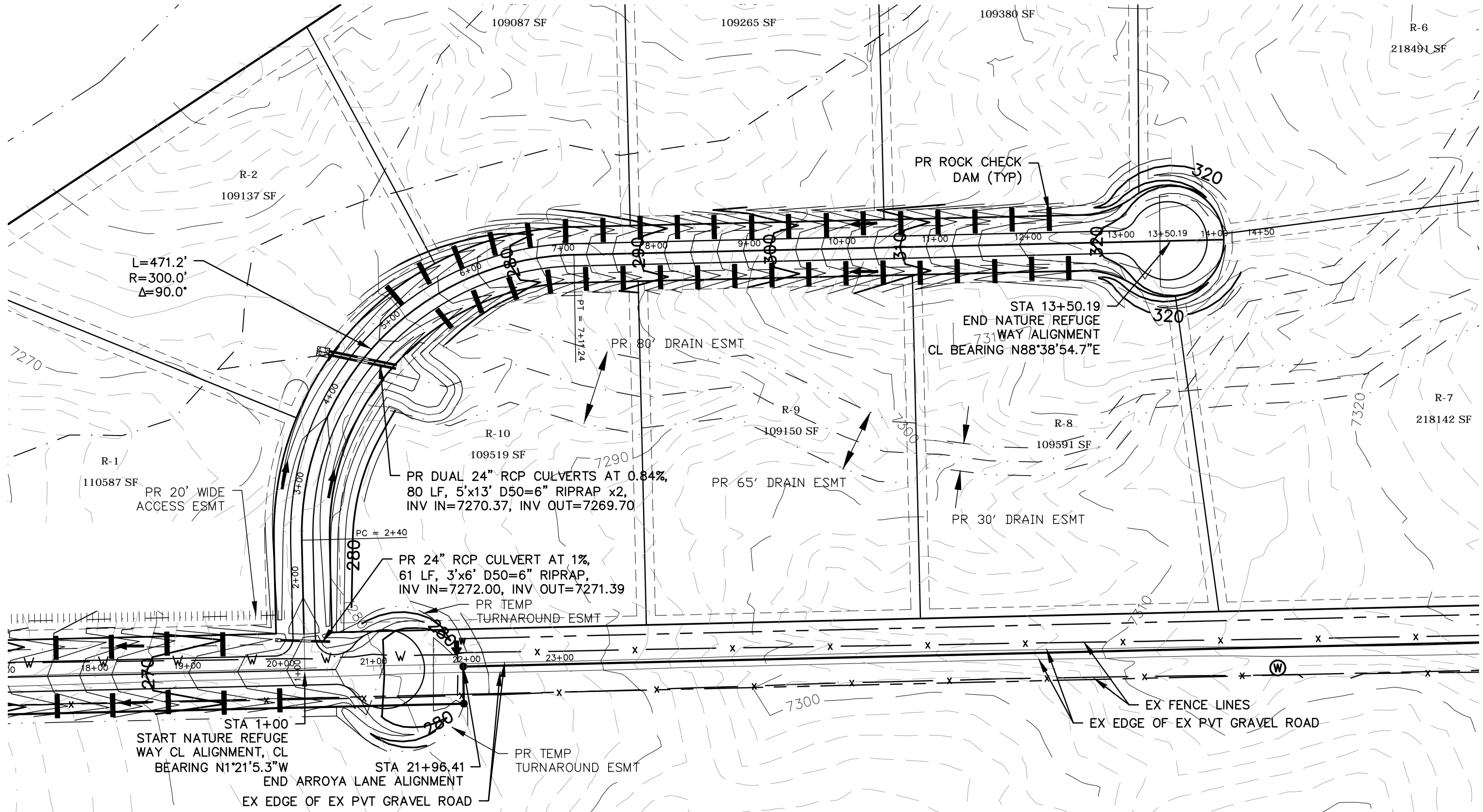
2. FUTURE SAND FILTERS TO BE INSTALLED PRIOR TO THE PAVING OF ARROYA LANE. SAND FILTERS WILL NOT BE PUT INTO OPERATION WHILE ARROYA LANE IS STILL A GRAVEL ROAD. FUTURE SAND FILTERS WILL BE ACCESSED FROM THE ADJACENT FUTURE ROADS. FINAL SAND FILTER DESIGN TO BE PREPARED WITH FINAL DESIGN OF PAVED ARROYA LANE.

CHECK DAM SPACING

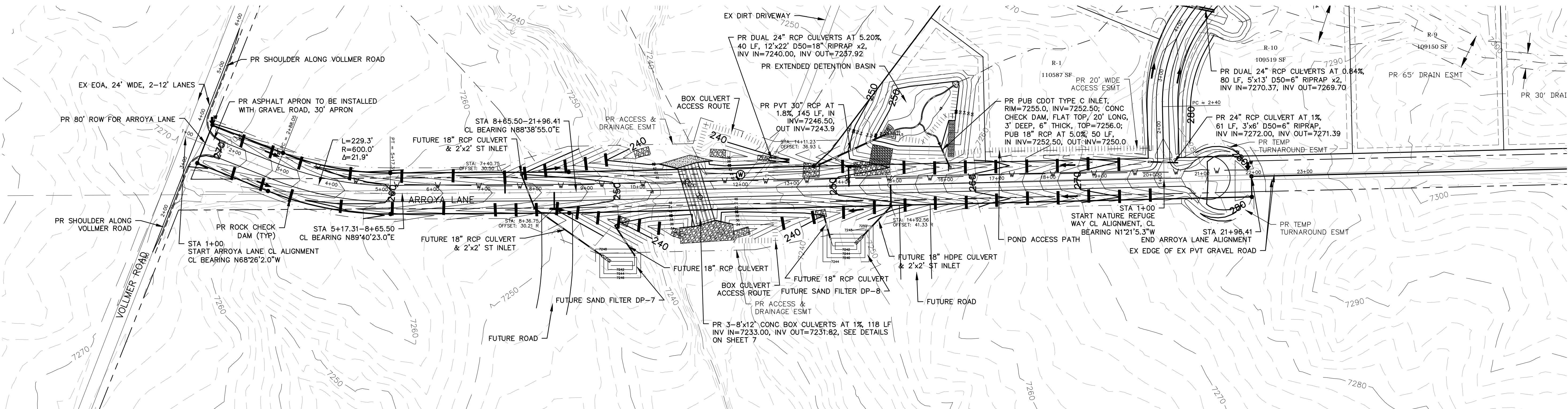
CHECK DAM SPACING IS BASED ON SLOPE AND CHECK DAM HEIGHT. THE TOP OF THE DOWNHILL CHECK DAM SHOULD BE AT THE SAME ELEVATION AS THE BOTTOM OF THE NEXT CHECK DAM UPSTREAM. SPECIFIC CHECK DAM LOCATIONS TO BE SET BY CONTRACTOR BASED ON FIELD CONDITIONS. A MINIMUM OF 9" TO BE MAINTAINED BETWEEN THE TOP OF CHECK DAMS AND THE TOP OF THE SWALE. MAX CHECK DAM HEIGHTS AND CHECK DAM SPACING RANGES ARE SHOWN BELOW. PRELIMINARY CHECK DAM LOCATIONS ARE SHOWN ON THE PLAN (CONTRACTOR TO FINALIZE).

SWALE	CHECK DAM MAX HEIGHT	CHECK DAM SPACING AT MAX HEIGHT
PR3	2.0'	31'-42'
PR4	2.0'	20'-60'
PR7	2.5'	58'-65'
PR8	3.0'	60'
PR9	2.5'	58'-65'
PR10	2.5'	40'-120'
PR11	2.5'	40'-120'

SEE GRADING AND EROSION CONTROL PLAN SHEET 19 FOR STANDARD DETAIL.



NATURE REFUGE WAY ALIGNMENT



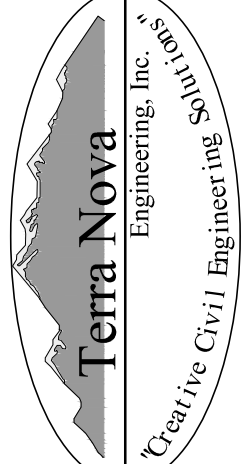
ARROYA LANE ALIGNMENT

REVISIONS

NO.	DESCRIPTION	DATE

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE REVIEWING AGENCIES, THE REVIEWING AGENCIES HAVE NO LIABILITY FOR THE DESIGN OR CONSTRUCTION OF THE PROJECT. THE USER OF THESE DRAWINGS SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND AUTHORIZATIONS FROM THE APPROPRIATE AGENCIES.

PREPARED FOR:  
TIMBERRIDGE ESTATES, LLC  
ATTN: SCOTT HENTIE  
2760 BROOKS BLUFF  
COLORADO SPRINGS, CO 80919  
719.499.6752



Terra Nova  
Engineering, Inc.  
Creative Civil Engineering

721 S. 2900 STREET  
COLORADO SPRINGS, CO 80904  
OFFICE: 719-635-6422  
FAX: 719-635-6426  
www.tnashinc.com

TIMBERRIDGE ESTATES  
9210 ARROYA LANE  
STREET IMPROVEMENT PLAN  
OVERVIEW

DESIGNED BY LD  
DRAWN BY DLF  
CHECKED BY LD  
H-SCALE 1"=100'  
V-SCALE NA  
JOB NO. 1733.00  
DATE ISSUED 08/13/19  
SHEET NO. 2 OF 24

N:\jobs\1733.00\Drawings\CD\173300 SIP.dwg, 8/15/2019 10:11:53 AM

N:\jobs\1733.00\Drawings\CD\173300 SIP.dwg, 8/15/2019 10:11:54 AM

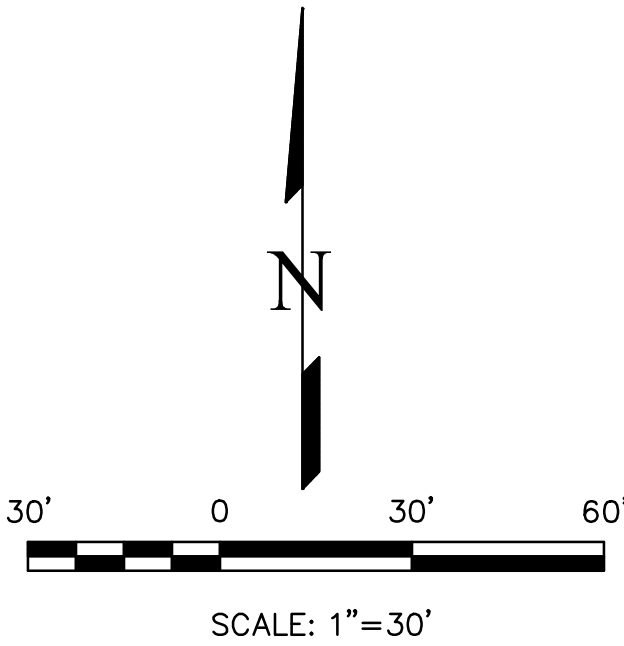
TIMBERRIDGE ESTATES - 9210 ARROYA LANE  
EL PASO COUNTY  
STREET IMPROVEMENT PLAN  
AUGUST 2019

BENCHMARKS

A #4 REBAR 28.3 FEET SOUTH AND 77.2 FEET WEST OF THE SOUTHEAST  
PROPERTY CORNER.  
ELEV = 7,319.85' (NGVD-1929)

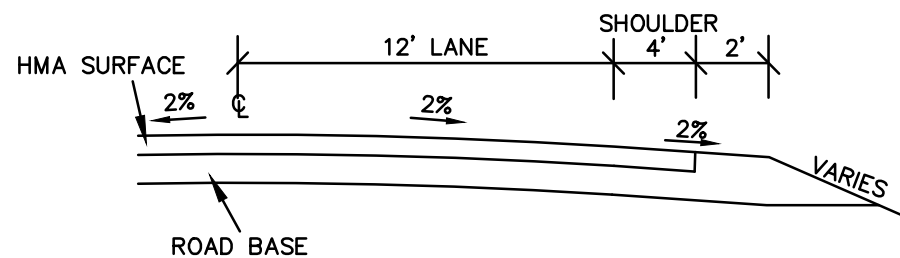
LEGEND

- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROPOSED 10' CONTOUR
- SURFACE FLOW CHANNEL
- PROPOSED DRAINAGE EASEMENT
- EXISTING WATER LINE
- DRAINAGE FLOW DIRECTION
- PROPOSED POND OR CULVERT ACCESS PATH



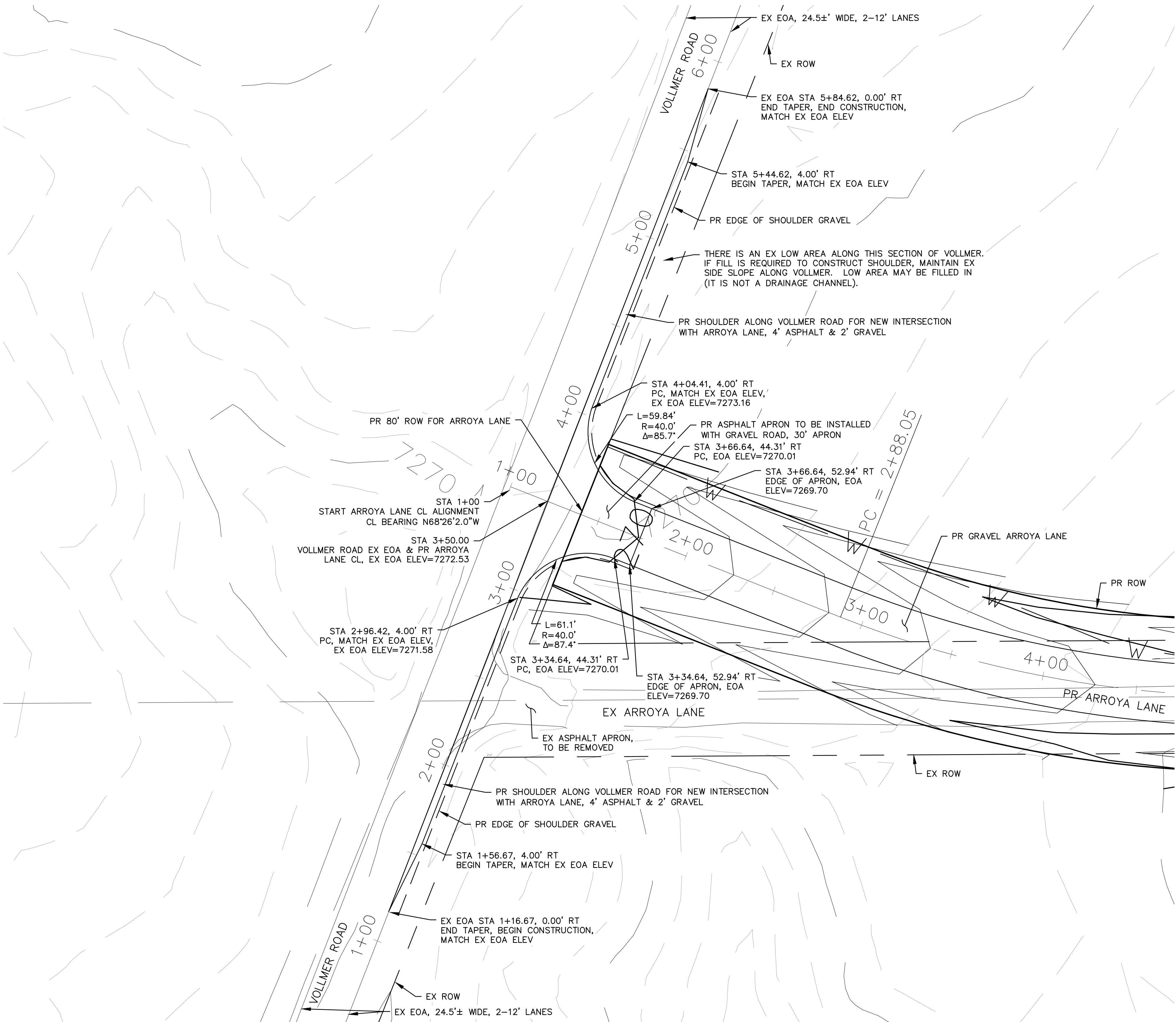
NOTES

1. FILL MATERIAL WILL BE NECESSARY TO CONSTRUCT SHOULDERS IN SOME  
AREAS. MATCH EXISTING SIDE SLOPES COMING OFF VOLLMER ROAD  
STARTING FROM EDGE OF NEW SHOULDERS.



INTERSECTION SHOULDERS ALONG VOLLMER ROAD - SHOULDER SECTION

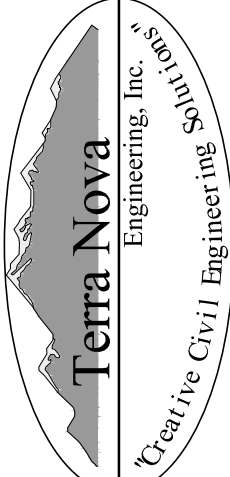
NOT TO SCALE



INTERSECTION OF VOLLMER ROAD AND ARROYA LANE

VOLLMER ROAD - NEW SHOULDERS ON EAST SIDE

EX 60' ROW - RURAL MINOR ARTERIAL  
DESIGN SPEED = 50 MPH, POSTED SPEED = 45 MPH

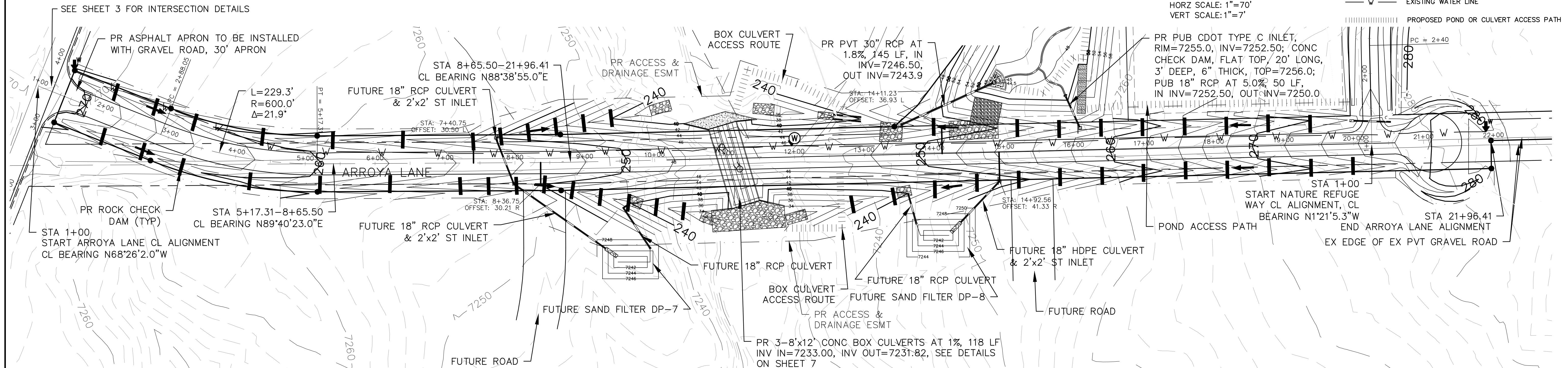
REVISIONS	NO.	DESCRIPTION	DATE
UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE REVIEWING AGENCIES, THE REVIEWING AGENCIES, TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT DESIGNATED BY THE PROJECT DESIGNATED BY WRITTEN AUTHORIZATION.			
PREPARED FOR: TIMBERRIDGE ESTATES, LLC ATTN: SCOTT HENTIE 2760 BROGANS BLUFF COLORADO SPRINGS, CO 80919 719.499.6752			
 721 S. 2960 STREET COLORADO SPRINGS, CO 80904 OFFICE: 719-635-6422 FAX: 719-635-6426 www.tnaseinc.com			
TIMBERRIDGE ESTATES 9210 ARROYA LANE STREET IMPROVEMENT PLAN INTERSECTION OF VOLLMER ROAD AND ARROYA LANE			
DESIGNED BY LD			
DRAWN BY DLF			
CHECKED BY LD			
H-SCALE 1"=30'			
V-SCALE NA			
JOB NO. 1733.00			
DATE ISSUED 08/13/19			
SHEET NO. 3 OF 24			



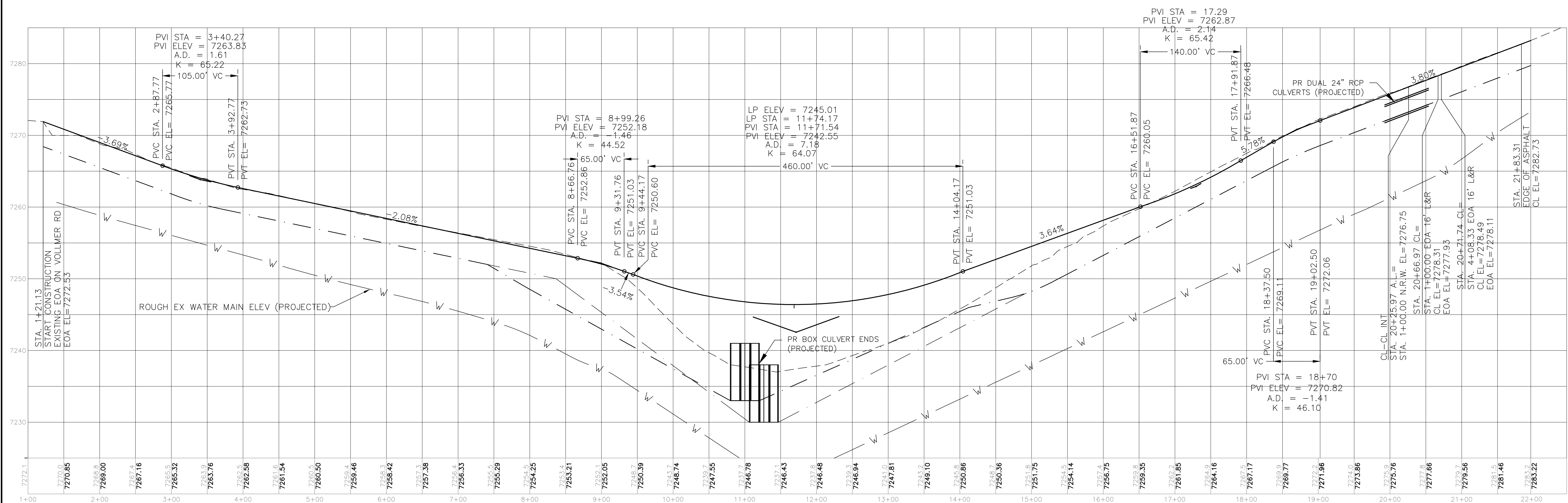
# STREET IMPROVEMENT PLAN

## AUGUST 2019

A #4 REBAR 28.3 FEET SOUTH AND 77.2 FEET WEST OF THE SOUTHEAST  
PROPERTY CORNER.  
ELEV = 7,319.85' (NGVD-1929)



RURAL MINOR COLLECTOR, DESIGN SPEED = 40 MPH, POSTED SPEED = 35 MPH



ARROYA LANE ALIGNMENT – PROFILE

EXISTING 2' CONTOUR

7260 EXISTING 10' CONTOUR

PROPOSED 2' CONTOUR

7260 PROPOSED 10' CONTOUR


SURFACE FLOW CHANNEL

PROPOSED DRAINAGE EASEMENT

W EXISTING WATER LINE

PROPOSED POND OR CULVERT ACCESS PATH

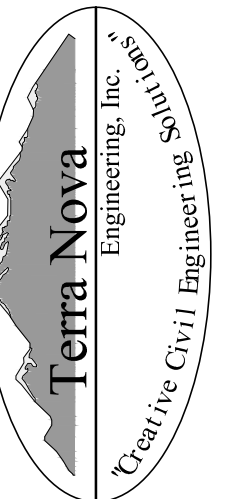
70' 0 70' 140'



HORZ SCALE: 1"=70'  
VERT SCALE: 1"=7'

[illegible]

PREPARED FOR:  
TIMBERRIDGE ESTATES, LLC  
ATTN: SCOTT HENTE  
2760 BROGANS BLUFF  
COLORADO SPRINGS, CO 80911  
719.499.6752




COLORADO SPRINGS, CO 80904  
OFFICE: 719-635-6422  
FAX: 719-635-6426  
[www.tnesinc.com](http://www.tnesinc.com)

9210 ARROYA LANE  
STREET IMPROVEMENT PLAN  
ARROYA LANE - PLAN & PROFILE

DESIGNED BY LD	
DRAWN BY	DLF
CHECKED BY LD	
SCALE	1"=70'
SCALE	1"=7'
JOB NO. 1733.00	
DATE ISSUED 08/13/19	
SHEET NO. 4 OF 24	



TIMBERRIDGE ESTATES				<p>PREPARED FOR:</p> <p><b>TIMBERRIDGE ESTATES, LLC</b>  <b>ATTN: SCOTT HENIE</b>          2760 BROGANS BLUFF          COLORADO SPRINGS, CO 80919          719.499.6752</p>	
DESIGNED BY LD		721 S. 23RD STREET		UNLESS SUCH TIME AS THESE	
DRAWN BY DLF		COLORADO SPRINGS, CO 80904		DRAWINGS ARE APPROVED	
CHECKED BY LD		OFFICE: 719-635-6422		BY: _____ DATE: _____	
H-SCALE 1"=70'		FAX: 719-635-6426		BY: _____ DATE: _____	
V-SCALE 1"=7'		www.tneinc.com		BY: _____ DATE: _____	
JOB NO. 1733.00				BY: _____ DATE: _____	
DATE ISSUED 08/13/19				BY: _____ DATE: _____	
SHEET NO. 5 OF 24				BY: _____ DATE: _____	



N:\jobs\1733.00\Drawings\CD\173300 SIP.dwg, 8/15/2019 10:11:57 AM

**BENCHMARKS**  
A #4 REBAR 28.3 FEET SOUTH AND 77.2 FEET WEST OF THE SOUTHEAST  
PROPERTY CORNER.  
ELEV = 7,319.85' (NGVD-1929)

# TIMBERRIDGE ESTATES - 9210 ARROYA LANE

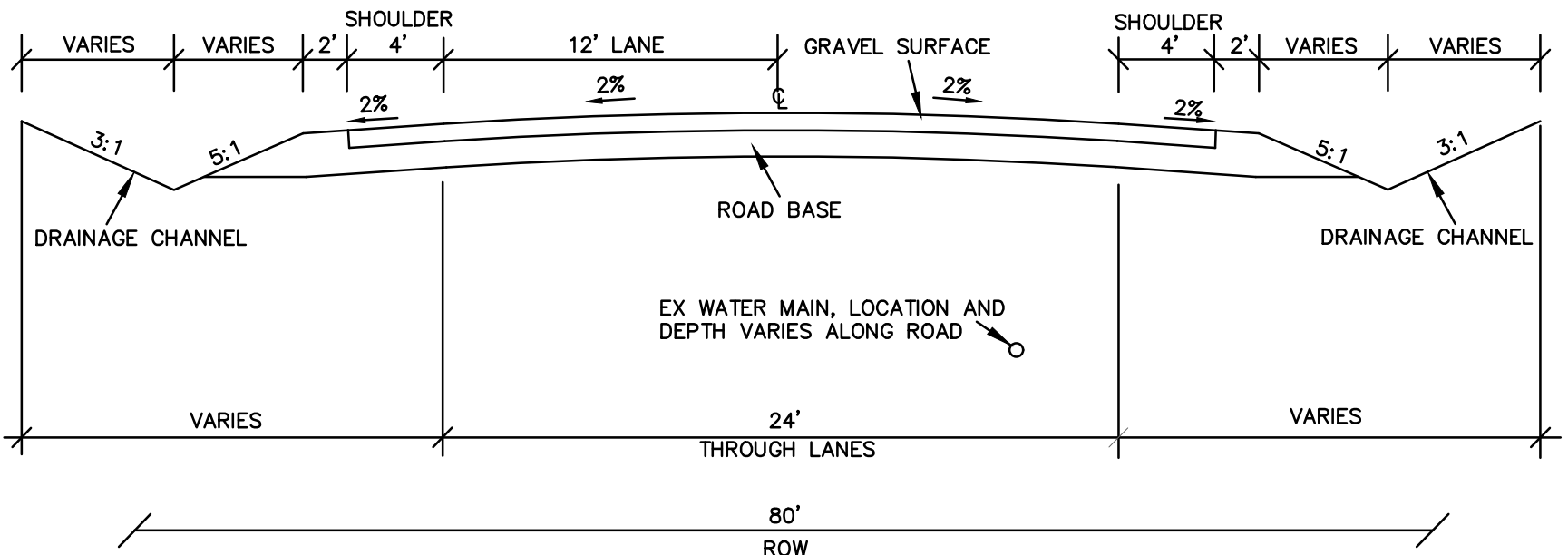
## EL PASO COUNTY

### STREET IMPROVEMENT PLAN

#### AUGUST 2019

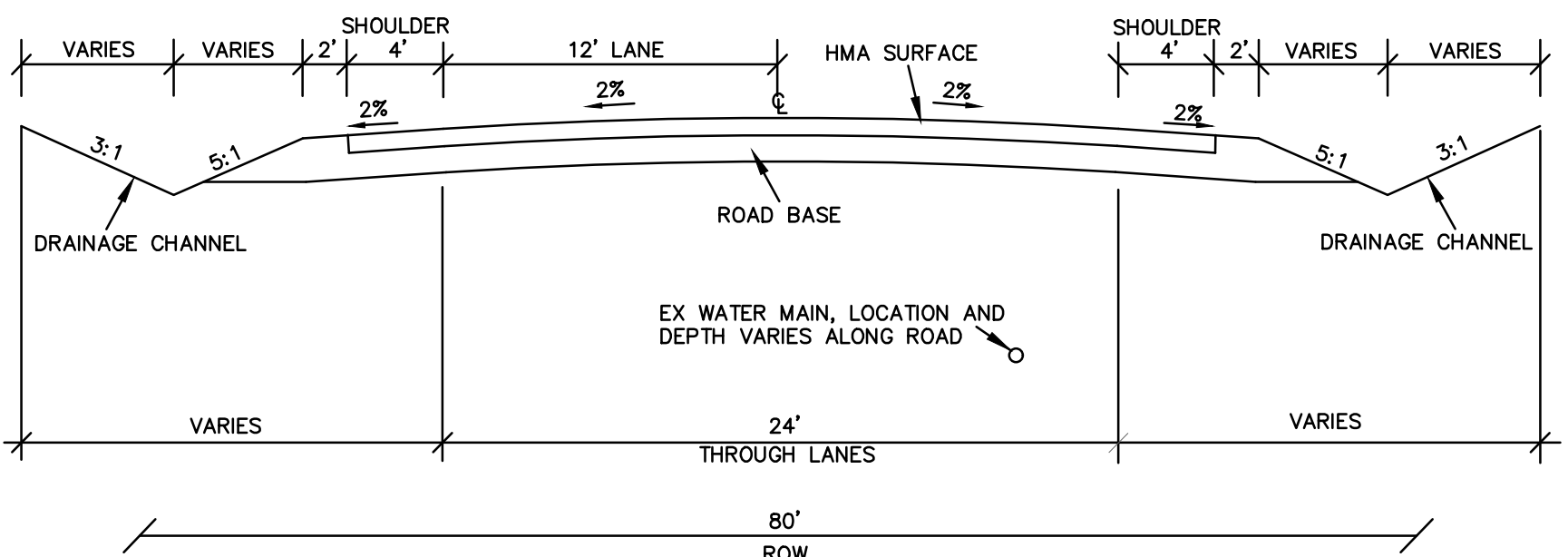
#### LEGEND

- EXISTING 2' CONTOUR
- 7260 EXISTING 10' CONTOUR
- PROPOSED 2' CONTOUR
- 7260 PROPOSED 10' CONTOUR
- SURFACE FLOW CHANNEL
- PROPOSED DRAINAGE EASEMENT
- W EXISTING WATER LINE



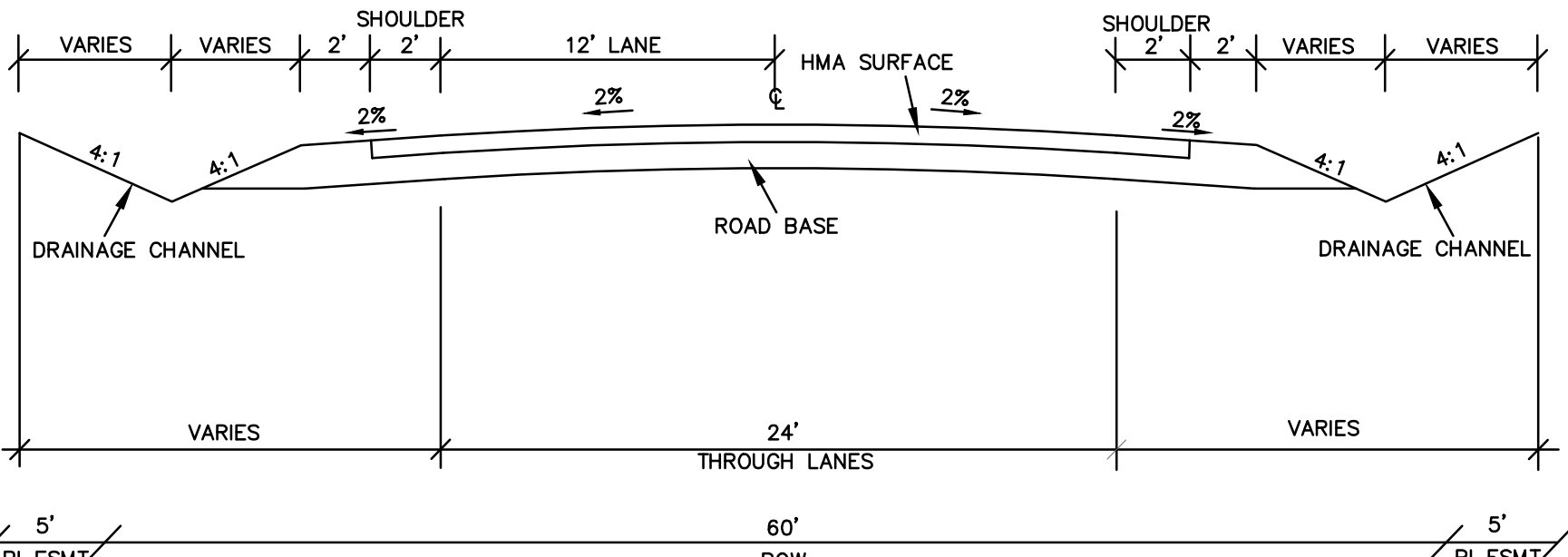
**TYPICAL STREET SECTION (RURAL MINOR COLLECTOR) - ARROYA LANE (PUBLIC)**  
**INTERIM GRAVEL SURFACE**

NOT TO SCALE



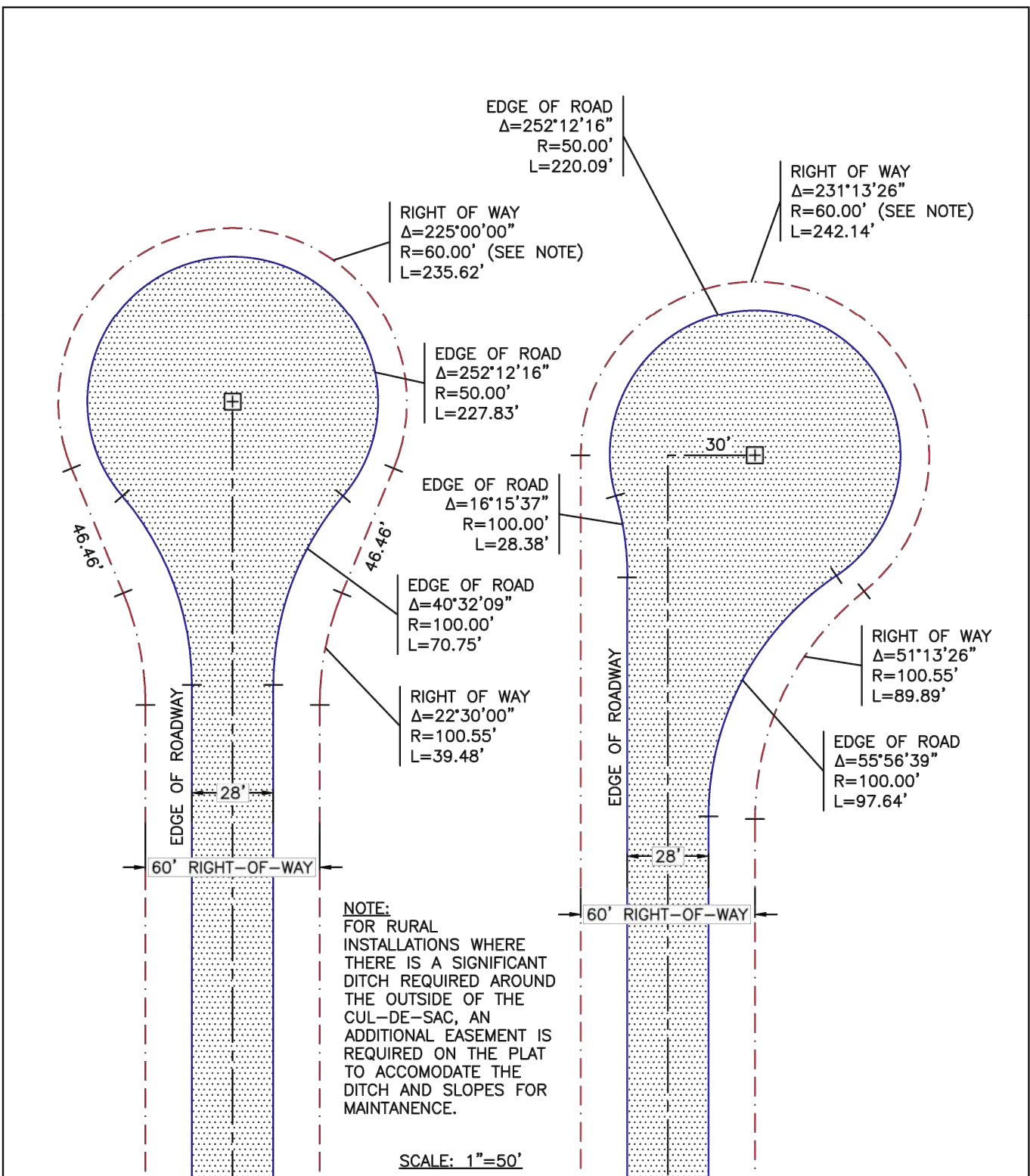
**TYPICAL STREET SECTION (RURAL MINOR COLLECTOR) - ARROYA LANE (PUBLIC)**  
**FINAL ASPHALT SURFACE**

NOT TO SCALE



**TYPICAL STREET SECTION (RURAL LOCAL) - NATURE REFUGE WAY (PUBLIC)**

NOT TO SCALE



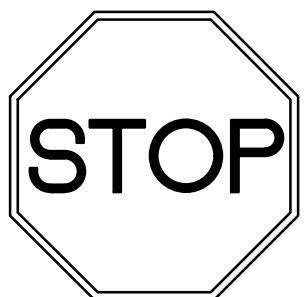
1/1/08	Rural Cul-De-Sac Details	EL PASO COUNTY DEPARTMENT OF TRANSPORTATION
DATE APPROVED:	John A. McCarty	REVISION DATE: 12/8/15
DEPARTMENT OF TRANSPORTATION	Standard Drawing	FILE NAME: SD_2-76

**PRIVATE ROAD**

PRIVATE ROAD

**END COUNTY MAINTENANCE**

END COUNTY MAINTENANCE



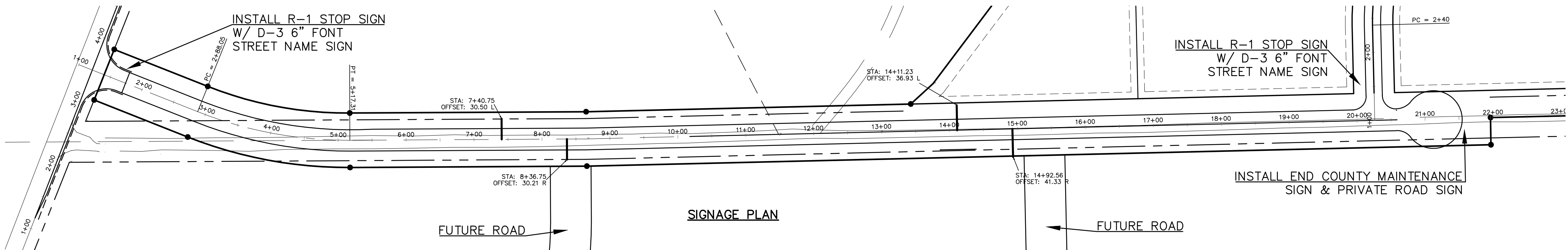
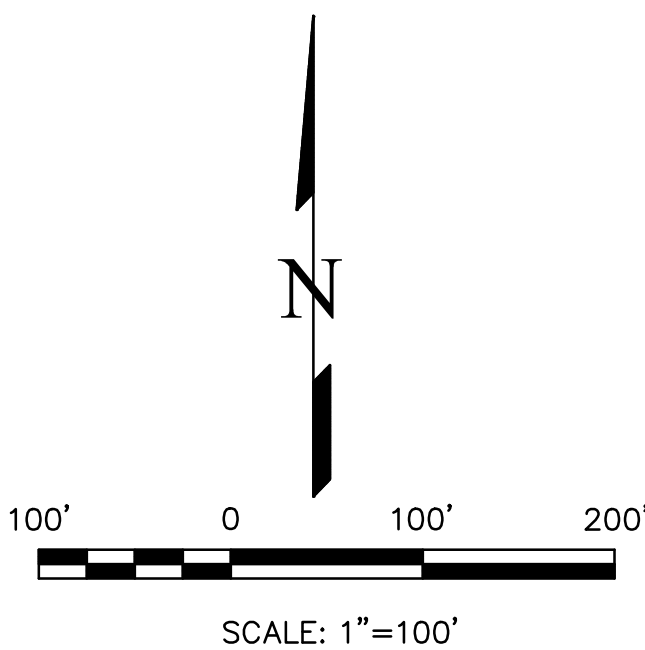
R1-1

**N MAIN ST**

D-3

#### STREET NAME SIGNS

- 1 - VOLLMER ROAD, 6" / 4.5" TALL FONT, 12" TALL SIGN
- 2 - ARROYA LANE, 6" / 4.5" TALL FONT, 12" TALL SIGN
- 1 - NATURE REFUGE WAY, 6" / 4.5" TALL FONT, 12" TALL SIGN



REVISIONS	NO.	DESCRIPTION	DATE
UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED FOR THE PROJECT BY THE REVIEWING AGENCIES, THE REVIEWING AGENCIES, TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT AND NOT FOR ANY OTHER PROJECT WITHOUT WRITTEN AUTHORIZATION.			

PREPARED FOR:  
**TIMBERRIDGE ESTATES, LLC**  
ATTN: SCOTT HENTIE  
2760 BROGANS BLUFF  
COLORADO SPRINGS, CO 80919  
719.499.6752

**Terra Nova**  
Engineering, Inc.  
721 S. 2900 STREET  
COLORADO SPRINGS, CO 80904  
OFFICE: 719-635-6422  
FAX: 719-635-6426  
www.tnainc.com

**TIMBERRIDGE ESTATES**  
9210 ARROYA LANE  
STREET IMPROVEMENT PLAN  
STREET DETAILS SHEET

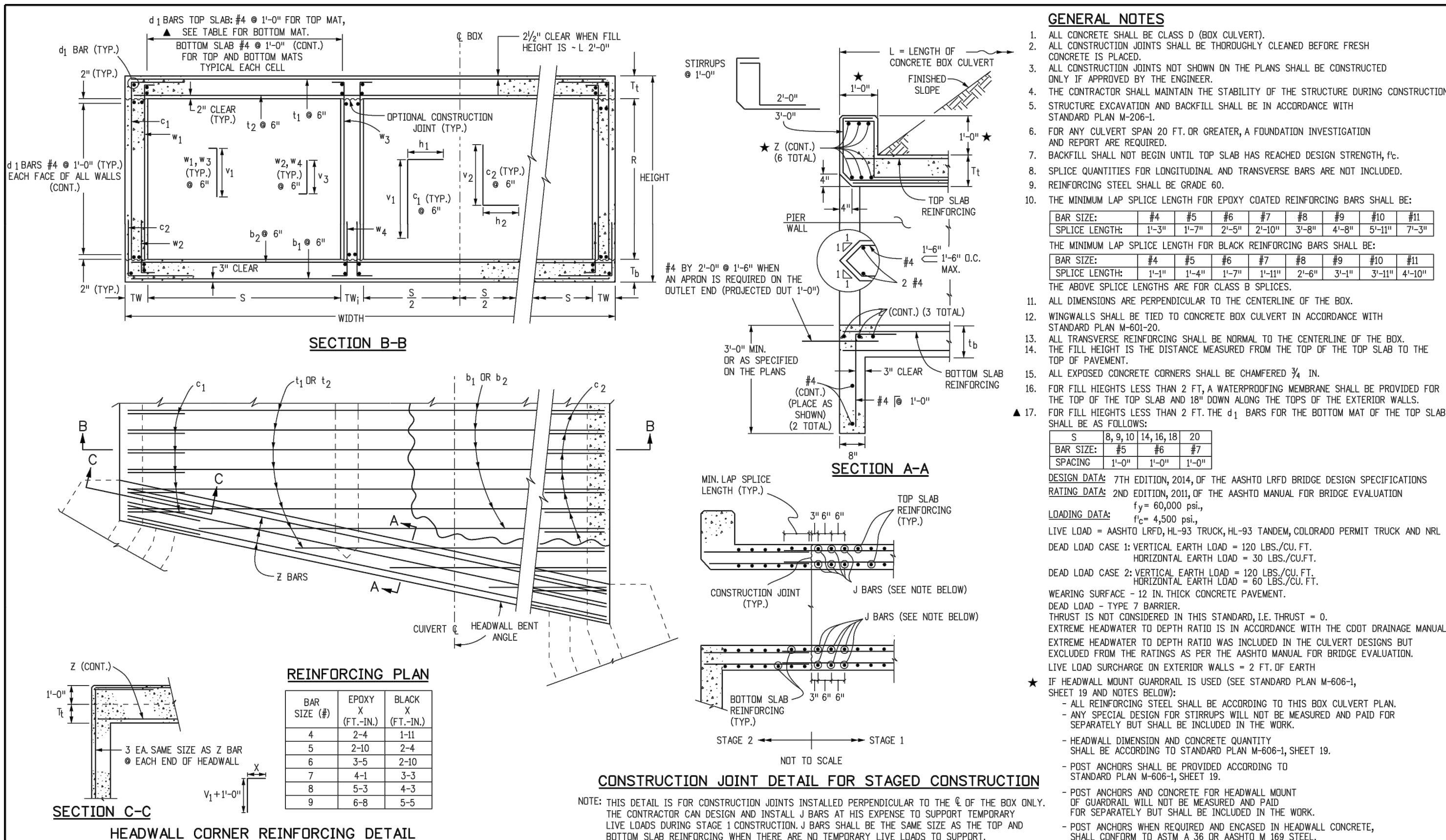
DESIGNED BY LD
DRAWN BY DLF
CHECKED BY LD
H-SCALE 1"=100'
V-SCALE NA
JOB NO. 1733.00
DATE ISSUED 08/13/19
SHEET NO. 6 OF 24



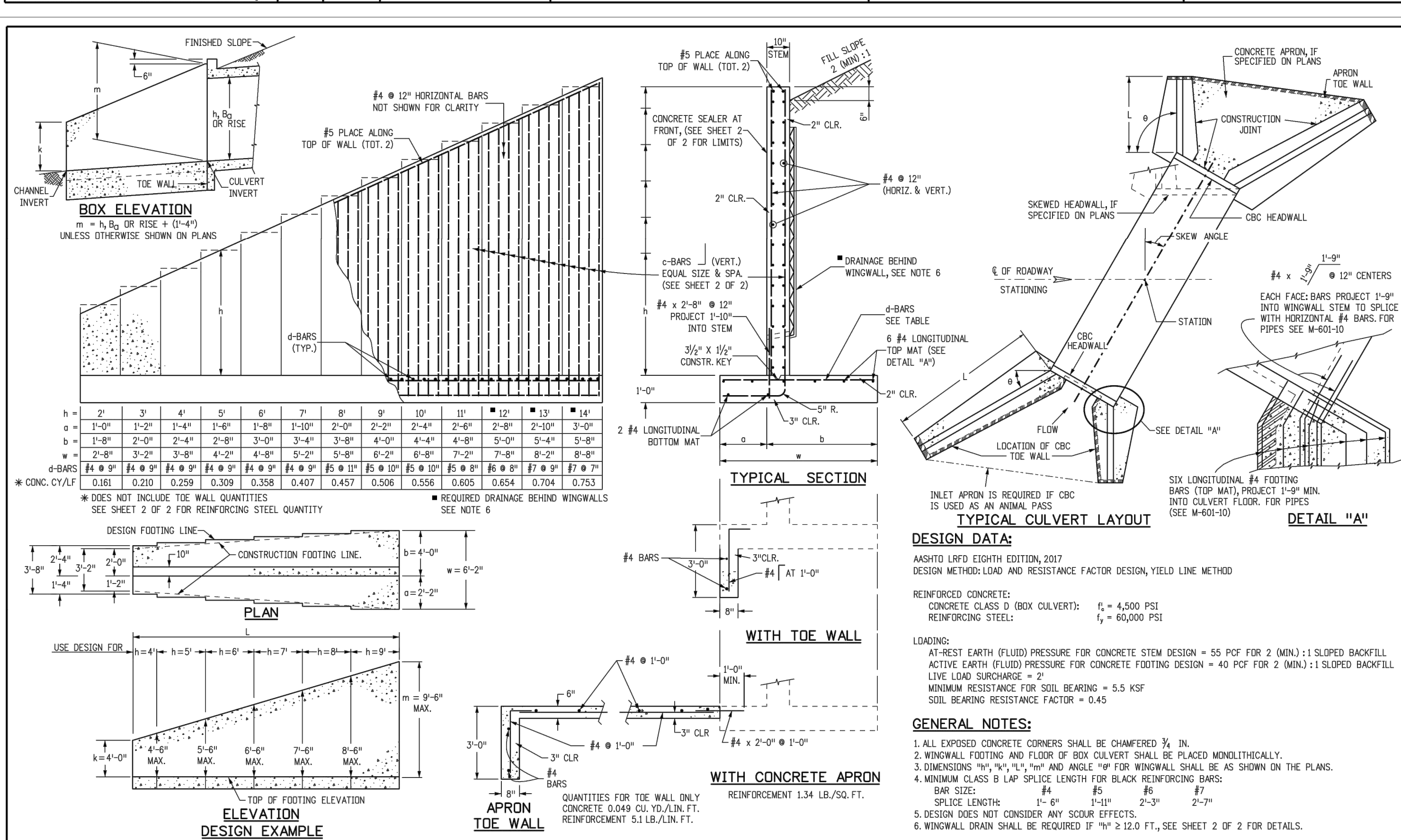
# STREET IMPROVEMENT PLAN

## AUGUST 2019





Computer File Information		Sheet Revisions		Colorado Department of Transportation		TRIPLE CONCRETE BOX CULVERT		STANDARD PLAN NO.	
Creation Date: 07/04/12	Initials: JBE	Date: 08/27/13	Comments: LRFD Design	2201 East Arkansas Avenue	CDOT HQ, 4th Floor	2201 East Arkansas Avenue	CDOT HQ, 4th Floor	M-601-3	
Last Modification Date: 11/25/15	Initials: JBE	Date: 08/01/15	Comments: Analysis Program Updates	Denver, CO 80222	Phone: 303-757-9868	Denver, CO 80222	Phone: 303-757-9868		
Full Path: www.codot.gov/business/designsupport									
Drawing File Name: 601020102.dgn									
CAD Ver.: MicroStation V8	Scale: Not to Scale	Units: English							



Computer File Information		Sheet Revisions		Colorado Department of Transportation		WINGWALLS FOR PIPE OR BOX CULVERTS		STANDARD PLAN NO.	
Creation Date: 07/04/12	Initials: HHB	Date: 09/04/18	Comments: LRFD Design	2201 East Arkansas Avenue	CDOT HQ, 3rd Floor	2201 East Arkansas Avenue	CDOT HQ, 3rd Floor	M-601-20	
Last Modification Date: 09/04/18	Initials: HHB			Denver, CO 80204	Phone: 303-757-9821	Denver, CO 80204	Phone: 303-757-9821		
Full Path: www.codot.gov/business/designsupport									
Drawing File Name: 601020102.dgn									
CAD Ver.: MicroStation V8	Scale: Not to Scale	Units: English							

Computer File Information		Sheet Revisions		Colorado Department of Transportation		TRIPLE CONCRETE BOX CULVERT		STANDARD PLAN NO.	
Creation Date: 07/04/12	Initials: JBE	Date: 08/27/13	Comments: LRFD Design	2201 East Arkansas Avenue	CDOT HQ, 4th Floor	2201 East Arkansas Avenue	CDOT HQ, 4th Floor	M-601-3	
Last Modification Date: 11/25/15	Initials: JBE	Date: 08/01/15	Comments: Analysis Program Updates	Denver, CO 80222	Phone: 303-757-9868	Denver, CO 80222	Phone: 303-757-9868		
Full Path: www.codot.gov/business/designsupport									
Drawing File Name: 601020202.dgn									
CAD Ver.: MicroStation V8	Scale: Not to Scale	Units: English							

Computer File Information		Sheet Revisions		Colorado Department of Transportation		TRIPLE CONCRETE BOX CULVERT		STANDARD PLAN NO.	
Creation Date: 07/04/12	Initials: JBE	Date: 08/27/13	Comments: LRFD Design	2201 East Arkansas Avenue	CDOT HQ, 4th Floor	2201 East Arkansas Avenue	CDOT HQ, 4th Floor	M-601-3	
Last Modification Date: 11/25/15	Initials: JBE	Date: 08/01/15	Comments: Analysis Program Updates	Denver, CO 80222	Phone: 303-757-9868	Denver, CO 80222	Phone: 303-757-9868		
Full Path: www.codot.gov/business/designsupport									
Drawing File Name: 601020202.dgn									
CAD Ver.: MicroStation V8	Scale: Not to Scale	Units: English							

Computer File Information		Sheet Revisions		Colorado Department of Transportation		WINGWALLS FOR PIPE OR BOX CULVERTS		STANDARD PLAN NO.	
Creation Date: 07/04/12	Initials: HHB	Date: 09/04/18	Comments: LRFD Design	2201 East Arkansas Avenue	CDOT HQ, 3rd Floor	2201 East Arkansas Avenue	CDOT HQ, 3rd Floor	M-601-20	
Last Modification Date: 09/04/18	Initials: HHB			Denver, CO 80204	Phone: 303-757-9821	Denver, CO 80204	Phone: 303-757-9821		
Full Path: www.codot.gov/business/designsupport									
Drawing File Name: 601020202.dgn									
CAD Ver.: MicroStation V8	Scale: Not to Scale	Units: English							

Computer File Information		Sheet Revisions		Colorado Department of Transportation		WINGWALLS FOR PIPE OR BOX CULVERTS		STANDARD PLAN NO.	
Creation Date: 07/04/12	Initials: HHB	Date: 09/04/18	Comments: LRFD Design	2201 East Arkansas Avenue	CDOT HQ, 3rd Floor	2201 East Arkansas Avenue	CDOT HQ, 3rd Floor	M-601-20	
Last Modification Date: 09/04/18	Initials: HHB			Denver, CO 80204	Phone: 303-757-9821	Denver, CO 80204	Phone: 303-757-9821		
Full Path: www.codot.gov/business/designsupport									
Drawing File Name: 601020202.dgn									
CAD Ver.: MicroStation V8	Scale: Not to Scale	Units: English							

DATE

DESCRIPTION

REVISIONS

NO.

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE DESIGN ENGINEER, TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT AND FOR THE COST OF THE PROJECT. NO WRITTEN AUTHORIZATION.

PREPARED BY:

TIMBERIDGE ESTATES, LLC

ATTN: SCOTT HENTIE

2760 BROADBENT BLUFF

COLORADO SPRINGS, CO 80919

719.499.6752

DESIGNED BY LD

DRAWN BY DLF

CHECKED BY LD

H-SCALE NA

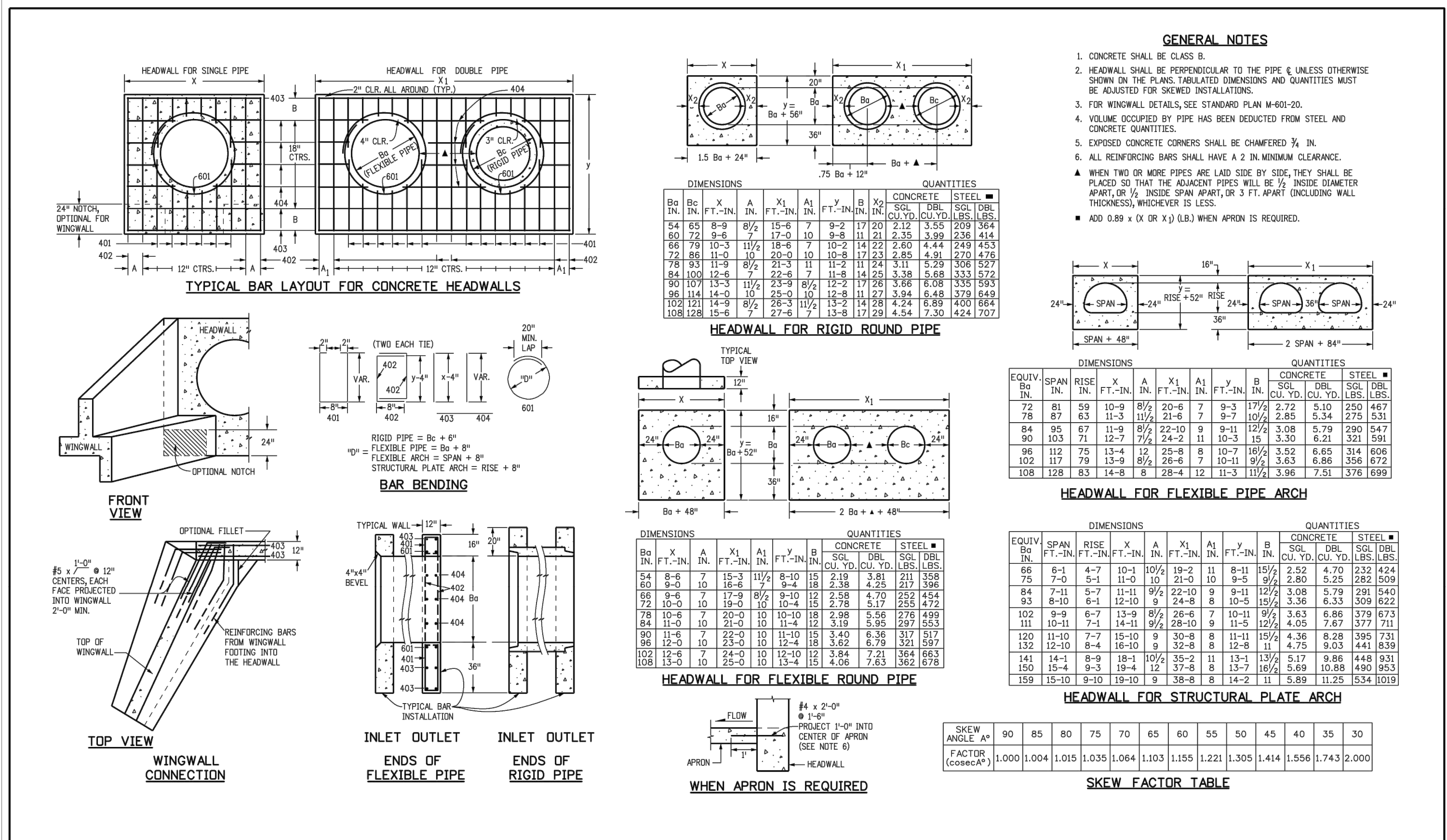
V-SCALE NA

JOB NO. 1733.00

DATE ISSUED 08/13/19

SHEET NO. 8 OF 24





REVISIONS

NO.	DESCRIPTION	DATE

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED FOR CONSTRUCTION BY THE REVIEWING AGENCIES, THE REVIEWING AGENCIES, TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT DESIGNATED BY THE PROJECT DESIGN. NO WRITTEN AUTHORIZATION.

PREPARED FOR:

TIMBERRIDGE ESTATES, LLC  
ATTN: SCOTT HENTIE  
2760 BROGANS BLUFF  
COLORADO SPRINGS, CO 80919  
719.499.6752

Terra Nova

Engineering, Inc.

Creative Civil Engineer Inc

721 S. 2940 STREET  
COLORADO SPRINGS, CO 80904  
OFFICE: 719-635-6422  
FAX: 719-635-6426  
www.tnashc.com

TIMBERRIDGE ESTATES

9210 ARROYA LANE

STREET IMPROVEMENT PLAN

BOX CULVERT DETAILS SHEET

DESIGNED BY LD

DRAWN BY DLF

CHECKED BY LD

H-SCALE NA

V-SCALE NA

JOB NO. 1733.00

DATE ISSUED 08/13/19

SHEET NO. 9 OF 24












# STREET IMPROVEMENT PLAN

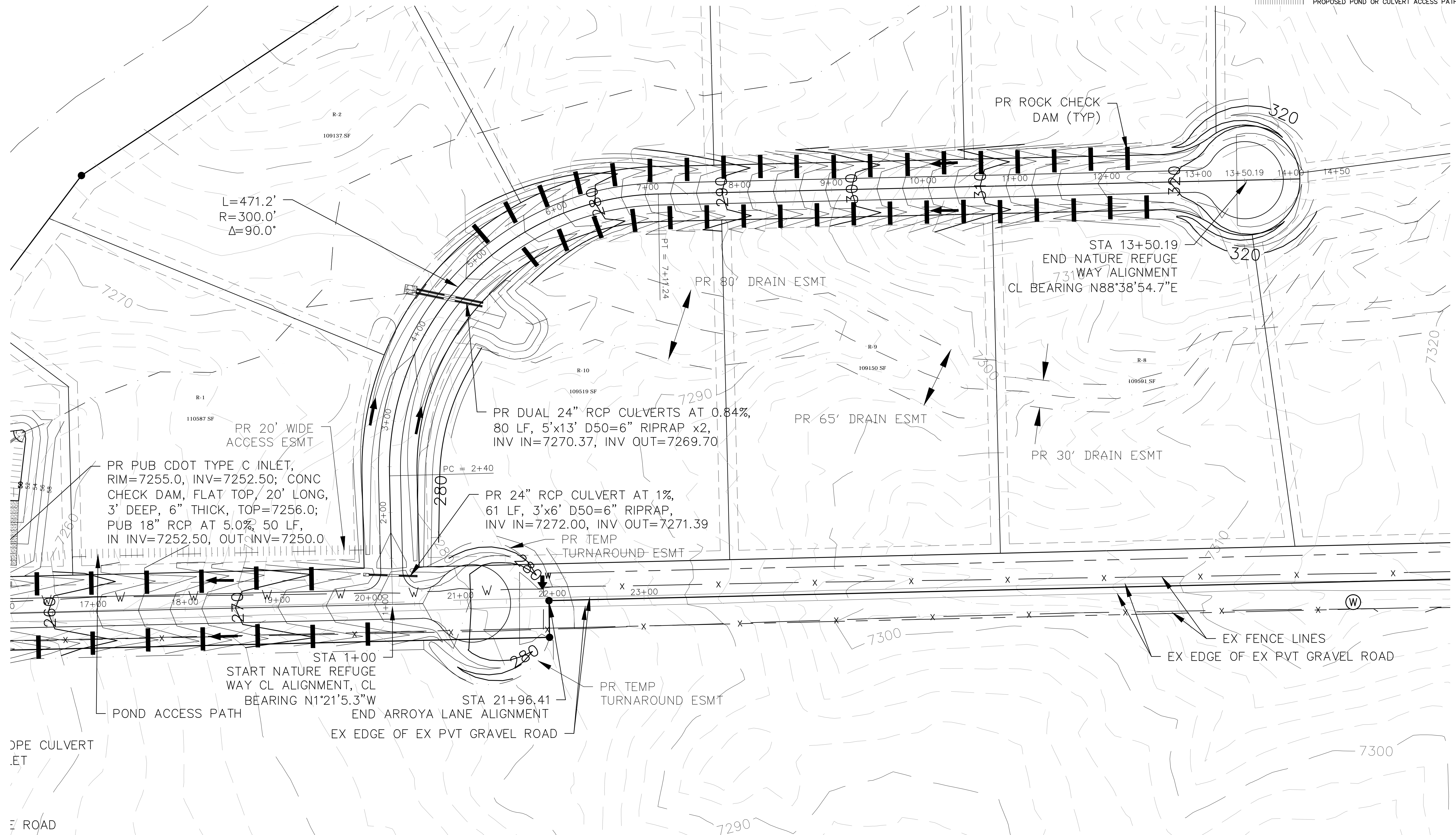
AUGUST 2019



I

**LEGEND**

- |   |                                      |
|---|--------------------------------------|
|  | EXISTING 2' CONTOUR                  |
|  | EXISTING 10' CONTOUR                 |
|  | PROPOSED 2' CONTOUR                  |
|  | PROPOSED 10' CONTOUR                 |
|  | SURFACE FLOW CHANNEL                 |
|  | PROPOSED DRAINAGE EASEMENT           |
|  | EXISTING WATER LINE                  |
|  | DRAINAGE FLOW DIRECTION              |
|  | PROPOSED POND OR CULVERT ACCESS PATH |



NO.	DESCRIPTION	DATE
	UNTIL SUCH TIME AS THESE	
	STAGES ARE COMPLETED	
	BY THE APPROPRIATE	
	REVIEWING AGENCIES,	
	TERRA NOVA ENGINEERING,	
	AND FOR THEIR USE	
	ONLY FOR THE	
	PURPOSES DESIGNATED BY	
	WRITTEN AUTHORIZATION.	

PREPARED FOR:  
TIMBERRIDGE ESTATES, LLC  
ATTN: SCOTT HENTE  
2760 BROGANS BLUFF  
COLORADO SPRINGS, CO 809  
719.499.6752



721 S. 23RD STREET  
COLORADO SPRINGS, CO 80904  
OFFICE: 719-635-6422  
FAX: 719-635-6426  
[www.tnesinc.com](http://www.tnesinc.com)

IMBERRIDGE ES/ATES  
9210 ARROYA LANE  
STREET IMPROVEMENT PLAN  
OVERVIEW – 11x17 ZOOM #1

DESIGNED BY LD	
DRAWN BY	DLF
CHECKED BY LD	
SCALE 1"=50'	
SCALE NA	
JOB NO. 1733.00	
DATE ISSUED 08/13/19	
SHEET NO. 10 OF 24	



<div><div>TIMBERRIDGE ESTATES</div><div>9210 ARROYA LANE</div></div>		<div><div>721 S. 23RD STREET</div><div>COLORADO SPRINGS, CO 80904</div><div>OFFICE: 719-635-6422</div><div>FAX: 719-635-6426</div><div>www.tnresinc.com</div></div> <div><div><div><div><div></div><div>Terra Nova</div><div>Engineering, Inc.</div></div><div><div>EST. 1975</div><div>Respective Civil Engineering</div></div></div></div></div>		<div>PREPARED FOR:</div> <div><div>TIMBERRIDGE ESTATES, LLC</div><div>ATTN: SCOTT HENITE</div><div>2760 BROGANS BLUFF</div><div>COLORADO SPRINGS, CO 80919</div><div>719.499.6752</div></div>		<div>UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPLICANT REMAINING AGENCIES TERRA NOVA ENGINEERING, INC., APPROVES THEIR USE ON THE PROJECT DESIGNATED BY WRITTEN AUTHORIZATION.</div>		<table><thead><tr><th>REVISIONS</th><th>DESCRIPTION</th><th>DATE</th></tr></thead><tbody><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr></tbody></table>		REVISIONS	DESCRIPTION	DATE																														
REVISIONS	DESCRIPTION	DATE																																								
<div>DESIGNED BY LD</div> <div>DRAWN BY DLF</div> <div>CHECKED BY LD</div>		<div>H-SCALE 1"=50'</div> <div>V-SCALE NA</div> <div>JOB NO. 1733.00</div> <div>DATE ISSUED 08/13/19</div> <div>SHEET NO. 11 OF 24</div>																																								



N:\jobs\1733.00\Drawings\CD\173300 GEC.dwg, 8/15/2019 10:12:48 AM

# TIMBERRIDGE ESTATES - 9210 ARROYA LANE

## EL PASO COUNTY

# GRADING & EROSION CONTROL PLAN

## AUGUST 2019

STANDARD NOTES FOR EL PASO COUNTY GRADING AND EROSION CONTROL PLANS

1. 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.
2. 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.
3. A SEPARATE STORMWATER MANAGEMENT PLAN (SMWP) 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.
4. ONCE THE ESQCP IS APPROVED AND A "NOTICE TO PROCEED" HAS BEEN ISSUED, THE CONTRACTOR MAY INSTALL THE INITIAL STAGE EROSION AND SEDIMENT CONTROL MEASURES AS INDICATED ON THE APPROVED GEC. A PRECONSTRUCTION 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 STAFF.
5. CONTROL MEASURES MUST BE INSTALLED PRIOR TO COMMENCEMENT OF ACTIVITIES THAT COULD CONTRIBUTE POLLUTANTS TO STORMWATER. CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, AND DISTURBED LAND AREAS SHALL BE INSTALLED IMMEDIATELY UPON COMPLETION OF THE DISTURBANCE.
6. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE MAINTAINED AND REMAIN IN EFFECTIVE OPERATING CONDITION UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND FINAL STABILIZATION IS ESTABLISHED. ALL PERSONS ENGAGED IN LAND DISTURBANCE ACTIVITIES SHALL ASSESS THE ADEQUACY OF CONTROL MEASURES AT THE SITE AND IDENTIFY IF CHANGES TO THOSE CONTROL MEASURES ARE NEEDED TO ENSURE THE CONTINUED EFFECTIVE PERFORMANCE OF THE CONTROL MEASURES. ALL CHANGES TO TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES MUST BE INCORPORATED INTO THE STORMWATER MANAGEMENT PLAN.
7. TEMPORARY STABILIZATION SHALL BE IMPLEMENTED ON DISTURBED AREAS AND STOCKPILES WHERE GROUND DISTURBING CONSTRUCTION ACTIVITY HAS PERMANENTLY CEASED OR TEMPORARILY CEASED FOR LONGER THAN 14 DAYS.
8. FINAL STABILIZATION MUST BE IMPLEMENTED AT ALL APPLICABLE CONSTRUCTION SITES. FINAL STABILIZATION IS ACHIEVED WHEN ALL GROUND DISTURBING ACTIVITIES ARE COMPLETE AND ALL DISTURBED AREAS EITHER HAVE A UNIFORM VEGETATIVE COVER WITH INDIVIDUAL PLANT DENSITY OF 70 PERCENT OF PRE-DISTURBANCE LEVELS ESTABLISHED OR EQUIVALENT PERMANENT ALTERNATIVE STABILIZATION METHOD IS IMPLEMENTED. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED UPON FINAL STABILIZATION AND BEFORE PERMIT CLOSURE.
9. ALL PERMANENT STORMWATER MANAGEMENT FACILITIES SHALL BE INSTALLED AS DESIGNED IN THE APPROVED PLANS. ANY PROPOSED CHANGES THAT EFFECT THE DESIGN OR FUNCTION OF PERMANENT STORMWATER MANAGEMENT STRUCTURES MUST BE APPROVED BY THE ECM ADMINISTRATOR PRIOR TO IMPLEMENTATION.
10. EARTH DISTURBANCES SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY MINIMIZE 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. PRE-EXISTING VEGETATION SHALL BE PROTECTED AND MAINTAINED WITHIN 50 HORIZONTAL FEET OF A WATERS OF THE STATE UNLESS SHOWN TO BE INFEASIBLE AND SPECIFICALLY REQUESTED AND APPROVED.
11. COMPACTION OF SOIL MUST BE PREVENTED IN AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES OR WHERE FINAL STABILIZATION WILL BE ACHIEVED BY VEGETATIVE COVER. AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES SHALL ALSO BE PROTECTED FROM SEDIMENTATION DURING CONSTRUCTION UNTIL FINAL STABILIZATION IS ACHIEVED. IF COMPACTION PREVENTION IS NOT FEASIBLE DUE TO SITE CONSTRAINTS, ALL AREAS DESIGNATED FOR INFILTRATION AND VEGETATION CONTROL MEASURES MUST BE LOOSENEED PRIOR TO INSTALLATION OF THE CONTROL MEASURE(S).
12. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER AROUND, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE A STABILIZED CONVEYANCE DESIGNED TO MINIMIZE EROSION AND THE DISCHARGE OF SEDIMENT OFF SITE.
13. CONCRETE WASH WATER SHALL BE CONTAINED AND DISPOSED OF IN ACCORDANCE WITH THE SWMP. NO WASH WATER SHALL BE DISCHARGED TO OR ALLOWED TO ENTER STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES. CONCRETE WASHOUTS SHALL NOT BE LOCATED IN AN AREA WHERE SHALLOW GROUNDWATER MAY BE PRESENT, OR WITHIN 50 FEET OF A SURFACE WATER BODY, CREEK OR STREAM.
14. DURING DEWATERING OPERATIONS OF UNCONTAMINATED GROUND WATER MAY BE DISCHARGED ON SITE, BUT SHALL NOT LEAVE THE SITE IN THE FORM OF SURFACE RUNOFF UNLESS AN APPROVED STATE DEWATERING PERMIT IS IN PLACE.
15. EROSION CONTROL BLANKETING OR OTHER PROTECTIVE COVERING SHALL BE USED ON SLOPES STEEPER THAN 3:1.
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. 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. CONTROL MEASURES MAY BE REQUIRED BY EL PASO COUNTY ENGINEERING IF DEEMED NECESSARY, BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES.
18. TRACKING OF SOILS AND CONSTRUCTION DEBRIS OFF-SITE SHALL BE MINIMIZED. MATERIALS TRACKED OFF-SITE SHALL BE CLEANED UP AND PROPERLY DISPOSED OF IMMEDIATELY.
19. THE OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, SOIL, AND SAND THAT MAY ACCUMULATE IN ROADS, STORM DRAINS AND OTHER DRAINAGE CONVEYANCE SYSTEMS AND STORMWATER APPURTENANCES AS A RESULT OF SITE DEVELOPMENT.
20. 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.
21. NO CHEMICAL(S) HAVING THE POTENTIAL TO BE RELEASED IN STORMWATER ARE TO BE STORED OR USED ONSITE UNLESS PERMISSION FOR THE USE OF SUCH CHEMICAL(S) IS GRANTED IN WRITING BY THE ECM ADMINISTRATOR. IN GRANTING APPROVAL FOR THE USE OF SUCH CHEMICAL(S), SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.
22. BULK STORAGE OF ALLOWED PETROLEUM PRODUCTS OR OTHER ALLOWED LIQUID CHEMICALS IN EXCESS OF 55 GALLONS SHALL REQUIRE ADEQUATE SECONDARY CONTAINMENT PROTECTION TO CONTAIN ALL SPILLS ONSITE AND TO PREVENT ANY SPILLED MATERIALS FROM ENTERING STATE WATERS, ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR OTHER FACILITIES.
23. NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE CURB AND GUTTER OR DITCH EXCEPT WITH APPROVED SEDIMENT CONTROL MEASURES.
24. OWNER/DEVELOPER AND THEIR AGENTS 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 OF THE LAND DEVELOPMENT CODE, DCM VOLUME II AND THE ECM APPENDIX I. ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (1041, NPDES, FLOODPLAIN, 404, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND OTHER LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, LOCAL, OR COUNTY AGENCIES, THE MOST RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.
25. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE ONLY AT APPROVED CONSTRUCTION ACCESS POINTS.
26. PRIOR TO CONSTRUCTION THE PERMITTEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.
27. A WATER SOURCE SHALL BE AVAILABLE ON SITE DURING EARTHWORK OPERATIONS AND SHALL BE UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.
28. THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY ENTECH ENGINEERING, INC. AND SHALL BE CONSIDERED A PART OF THESE PLANS.
29. AT LEAST TEN (10) DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB ONE (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  
WOOD - PERMITS  
4300 CHERRY CREEK DRIVE SOUTH  
DENVER, CO 80246-1530  
ATTN: PERMITS UNIT

EL PASO COUNTY STANDARD CONSTRUCTION NOTES:

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 & 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 & 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-FACE 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 (PCD) INSPECTIONS, PRIOR TO STARTING CONSTRUCTION.
7. IT IS THE CONTRACTORS 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 PUBLIC WORK DEPARTMENT AND MUTCD CRITERIA.
14. CONTRACTOR SHALL OBTAIN ANY PERMITS REQUIRED BY EL PASO COUNTY PWD, 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.

CONSTRUCTION SCHEDULE

BEGIN GRADING: SUMMER 2019, END GRADING: FALL 2020

TRAFFIC CONTROL NOTE

THE CONTRACTOR SHALL PROVIDE ALL TRAFFIC CONTROL DEVICES AND MONITORING NECESSARY TO SAFELY COMPLETE THE WORK SHOWN IN THESE CONSTRUCTION DOCUMENTS IN CONFORMANCE WITH M.U.T.C.D. GUIDELINES. THE CONTRACTOR SHALL COMPLETE ALL NECESSARY WORK FOR PLAN REVIEW, PERMITS AND PROCESSING. TRAFFIC CONTROL WILL NOT BE PAID SEPARATELY BUT IS INCLUDED IN THE COST OF THE PROJECT.

UTILITY NOTES

1. UTILITY LINE LOCATIONS AND ELEVATIONS ARE APPROXIMATE AND ARE TO BE FIELD VERIFIED.
2. BURY DEPTH OF THE WATER MAIN ALONG ARROYA LANE TO BE CONFIRMED PRIOR TO STARTING ANY GRADING ABOVE THE WATER MAIN.

EARTHWORK VOLUMES

ESTIMATED CUT = 25,652 CY, ESTIMATED FILL = 15,581 CY, NET = 10,071 CY <CUT>

CONSTRUCTION NOTES:

1. ALL WORK SHALL COMPLY WITH THE CODES AND POLICIES FOR EL PASO COUNTY.
2. EXISTING TOPOGRAPHIC INFORMATION SHOWN ON THIS GRADING PLAN WAS OBTAINED FROM AERIAL CONTOURS. THE CONTRACTOR SHALL BE RESPONSIBLE TO EXAMINE THE SITE AND BE FAMILIAR WITH THE EXISTING CONDITIONS.
3. DEPTH OF MOISTURE-DENSITY CONTROL FOR THIS PROJECT SHALL BE AS FOLLOWS:  
BASE OF ALL CUTS AND FILLS - 12 INCHES, FULL DEPTH OF ALL EMBANKMENTS.
4. THE CONTRACTOR IS RESPONSIBLE FOR THE RE-ESTABLISHMENT OF ALL SURVEY MONUMENTS DISTURBED WITHIN THE PROJECT LIMITS.
5. THE CONTRACTOR SHALL PROTECT ALL WORK AREAS AND FACILITIES FROM FLOODING AT ALL TIMES. AREAS AND FACILITIES SUBJECTED TO FLOODING, REGARDLESS OF THE SOURCE OF WATER, SHALL BE PROMPTLY DEWATERED AND RESTORED.
6. PRIOR TO PAVING OPERATIONS, THE ENTIRE SUBGRADE SHALL BE PROOF-ROLLED WITH A LOADED 988 FRONT-END LOADER OR SIMILAR HEAVY RUBBER TIRED VEHICLE (GVW OF 50,000 POUNDS WITH 18 KIP PER AXLE AT TIRE PRESSURES OF 90 PSI) TO DETECT ANY SOFT OR LOOSE AREAS. IN AREAS WHERE SOFT OR LOOSE SOILS, PUMPING OR EXCESSIVE MOVEMENT IS OBSERVED, THE EXPOSED MATERIALS SHALL BE OVER-EXCAVATED TO A MINIMUM DEPTH OF TWO FEET BELOW PROPOSED FINAL GRADE OR TO A DEPTH AT WHICH SOILS ARE STABLE. AFTER THIS HAS BEEN COMPLETED, THE EXPOSED MATERIALS SHALL BE SCARIFIED TO A DEPTH OF 12 INCHES AND MOISTURE CONDITIONED. THE SUBGRADE SHALL THEN BE UNIFORMLY COMPACTED TO A MINIMUM OF 95% OF STANDARD PROCTOR DENSITY (ASTM D-698) AT 0 TO +4.0% OF OPTIMUM MOISTURE CONTENT FOR A-6 AND A-7-6 SOILS ENCOUNTERED. OTHER SUBGRADE TYPES SHALL BE UNIFORMLY COMPACTED TO A MINIMUM OF 95% OF MODIFIED PROCTOR DENSITY (ASTM D-1557) AT PLUS OR MINUS 2.0% OF OPTIMUM MOISTURE CONTENT. AREAS WHERE STABLE NATURAL SOILS ARE ENCOUNTERED AT PROPOSED SUBGRADE ELEVATION SHALL ALSO BE SCARIFIED (18 INCHES FOR A-7-6 SOILS BELOW FULL-DEPTH ASPHALT CONCRETE) AND COMPACTED AS OUTLINED ABOVE PRIOR TO PAVING OPERATIONS. SUBGRADE FILL SHALL BE PLACED IN SIX-INCH LIFTS AND UNIFORMLY COMPACTED, MEETING THE REQUIREMENTS AS PREVIOUSLY DESCRIBED.
7. SUBGRADE MATERIALS DEEMED UNSUITABLE BY THE ENGINEER SHALL BE EXCAVATED, DISPOSED OF AND REPLACED WITH APPROVED MATERIALS.
8. FILL SHALL BE PLACED IN 8-INCH MAXIMUM LOOSE LIFTS AND SHALL BE COMPACTED PRIOR TO SUCCESSIVE LIFTS.
9. THE CONTRACTOR IS RESPONSIBLE FOR PREVENTING AND CONTROLLING EROSION DURING CONSTRUCTION ACTIVITIES AT ALL TIMES DURING GRADING AND CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE THE FOLLOWING EROSION AND SEDIMENT CONTROL MEASURES:  
-SEDIMENT CONTROL LOGS WHERE NEEDED AND/OR AS DIRECTED BY THE ENGINEER.  
-SILT FENCE WHERE NEEDED AND/OR AS DIRECTED BY THE ENGINEER.  
-PERMANENT SEEDING AND MULCHING WHERE NEEDED AND/OR AS DIRECTED BY THE ENGINEER.  
-CONCRETE WASH AREAS.  
-VEHICLE TRACKING CONTROL.  
-SOIL STOCKPILING AREA.  
-MATERIALS STAGING AREA.  
THESE AND ALL EROSION CONTROL BEST MANAGEMENT PRACTICES AS SHOWN IN THE GRADING AND EROSION CONTROL PLANS SHALL BE STRICTLY ADHERED TO.
10. FINISHED CONTOURS/ SPOT ELEVATIONS SHOWN HEREON REPRESENT FINISHED GRADES.

REVISIONS

NO.	DESCRIPTION	DATE

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE REVIEWING AGENCIES, TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT DESCRIBED. NO OTHER USE WITHOUT WRITTEN AUTHORIZATION.

PREPARED FOR:  
**TIMBERRIDGE ESTATES, LLC**  
ATTN: SCOTT HENTIE  
2760 BROGANS BLUFF  
COLORADO SPRINGS, CO 80919  
719.499.6752

TIMBERRIDGE ESTATES

9210 ARROYA LANE

GRADING & EROSION CONTROL PLAN

NOTES SHEET

721 S. 23RD STREET  
271 SOLARADO SPRINGS, CO. 80904  
COLORADO SPRINGS, CO 80904  
OFFICE: 719-635-6442  
FAX: 719-635-6426  
www.tresinc.com

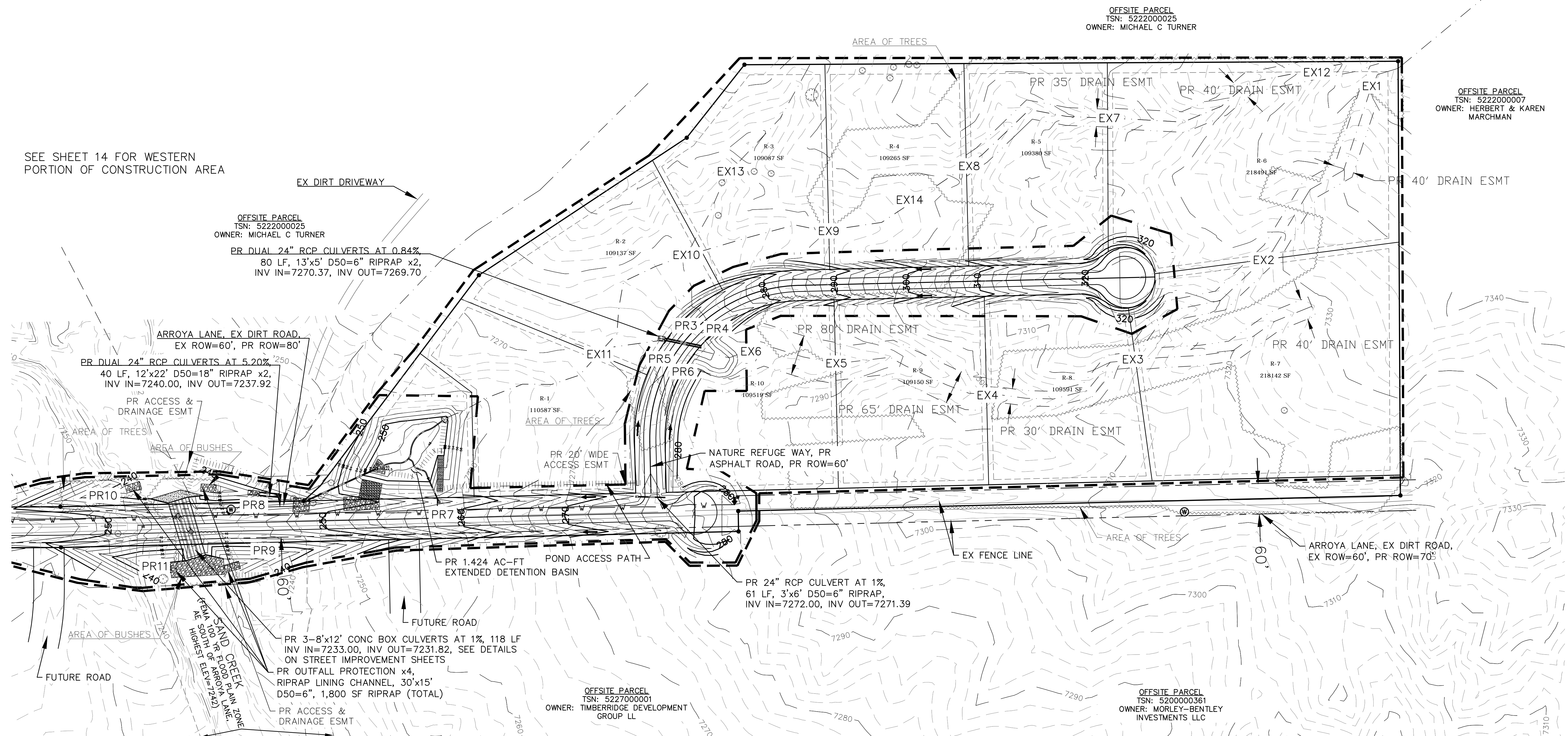
DESIGNED BY LD  
DRAWN BY DLF  
CHECKED BY LD  
H-SCALE NA  
V-SCALE NA  
JOB NO. 1733.00  
DATE ISSUED 08/13/19  
SHEET NO. 12 OF 24



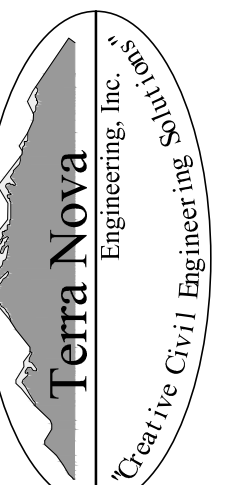
**BENCHMARKS**  
A #4 REBAR 28.3 FEET SOUTH AND 77.2 FEET WEST OF THE SOUTHEAST  
PROPERTY CORNER.  
ELEV = 7,319.85' (NGVD-1929)

1. REINFORCE PROPOSED SWALES PR3, PR4, PR7, PR8, PR9, PR10, & PR11 WITH PERMANENT ROCK CHECK DAMS PER COUNTY CONSTRUCTION DETAIL CD-1 (IN DCM VOL 2). CHECK DAMS ARE NOT REQUIRED FOR SWALE PR12.
2. PROPOSED ONSITE DRAINAGE EASEMENTS ARE BASED ON EXISTING CONDITIONS, 100-YEAR STORM EVENTS, AND 1" FREEBOARD.
3. DRAINAGE CHANNEL GRADING AND EASEMENT FOR LOTS R-1, R-2, R-3, & R-4 HAVE NOT BEEN INCLUDED. THESE ITEMS WILL BE ADDRESSED ON A LOT BY LOT BASIS AS PART OF THE CONSTRUCTION PLANS FOR THE INDIVIDUAL LOTS.

	EXISTING 2' CONTOUR
	EXISTING 10' CONTOUR
	PROPOSED 2' CONTOUR
	PROPOSED 10' CONTOUR
	SURFACE FLOW CHANNEL
	PROPOSED DRAINAGE EASEMENT
	EXISTING WATER LINE
	CONSTRUCTION SITE BOUNDARY
	AREA OF SOIL DISTURBANCE
	EXISTING TREE
	OPEN CHANNEL FLOW CALC POINT
	AREA OF TREES/BRUSH LIMIT
	FLOW DIRECTION
	PROPOSED POND OR CULVERT ACCESS PATH

[illegible]

PREPARED FOR:  
TIMBERRIDGE ESTATES, LLC  
ATTN: SCOTT HENTE  
2760 BROGANS BLUFF  
COLORADO SPRINGS, CO 80912  
719.499.6752



721 S. 23RD STREET  
COLORADO SPRINGS, CO 80904  
OFFICE: 719-635-6422  
FAX: 719-635-6426  
[www.tnesinc.com](http://www.tnesinc.com)

9210 ARROYA LANE

GRADING & EROSION CONTROL PLAN  
GRADING PLAN - EAST

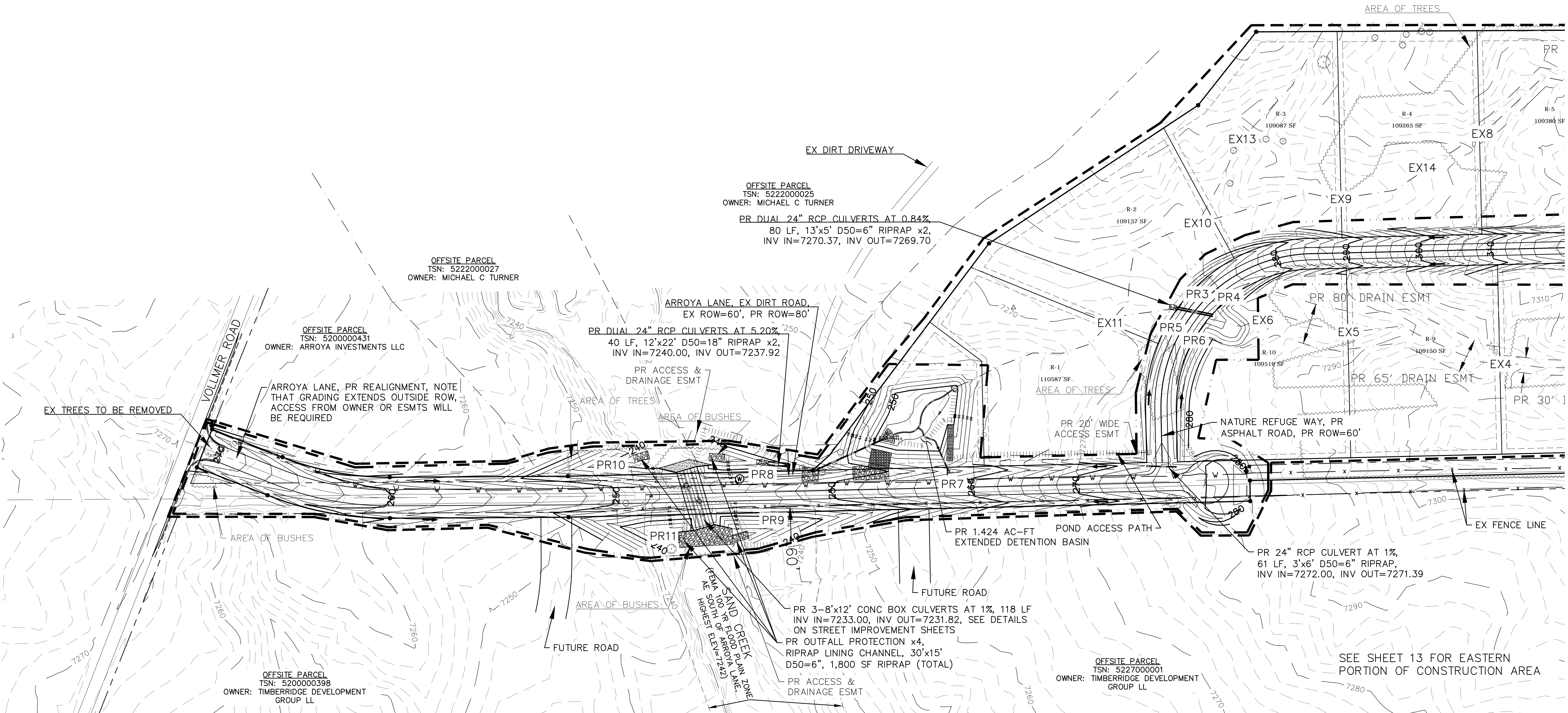
DESIGNED BY LD	
DRAWN BY	DLF
CHECKED BY LD	
SCALE	1"=100'
SCALE	NA
JOB NO. 1733.00	
DATE ISSUED 08/13/19	
SHEET NO.	13 OF 24



TIMBERRIDGE ESTATES - 9210 ARROYA LANE  
EL PASO COUNTY  
GRADING & EROSION CONTROL PLAN  
AUGUST 2019

**BENCHMARKS**  
A #4 REBAR 28.3 FEET SOUTH AND 77.2 FEET WEST OF THE SOUTHEAST  
PROPERTY CORNER.  
ELEV = 7,319.85' (NGVD-1929)

**NOTES**  
1. REINFORCE PROPOSED SWALES PR3, PR4, PR7, PR8, PR9, PR10, & PR11  
WITH PERMANENT ROCK CHECK DAMS PER COUNTY CONSTRUCTION DETAIL  
CD-1 (IN DCM VOL 2). CHECK DAMS ARE NOT REQUIRED FOR SWALE  
AREAS WITH RIPRAP.  
2. PROPOSED ONSITE DRAINAGE EASEMENTS ARE BASED ON EXISTING  
CONDITIONS, 100-YEAR STORM EVENTS, 1' FREEBOARD, AND ARE  
PRELIMINARY.  
3. DRAINAGE CHANNEL GRADING AND EASEMENT FOR LOTS R-1, R-2, R-3,  
AND R-4 HAVE NOT BEEN INCLUDED. THESE ITEMS WILL BE ADDRESSED  
ON A LOT BY LOT BASIS AS PART OF THE CONSTRUCTION PLANS FOR THE  
INDIVIDUAL LOTS.



- LEGEND**
- EXISTING 2' CONTOUR
  - EXISTING 10' CONTOUR
  - PROPOSED 2' CONTOUR
  - PROPOSED 10' CONTOUR
  - SURFACE FLOW CHANNEL
  - PROPOSED DRAINAGE EASEMENT
  - EXISTING WATER LINE
  - CONSTRUCTION SITE BOUNDARY
  - AREA OF SOIL DISTURBANCE
  - EXISTING TREE
  - EX# / PR#
  - OPEN CHANNEL FLOW CALC POINT
  - AREA OF TREES/BRUSH LIMIT
  - FLOW DIRECTION
  - PROPOSED POND OR CULVERT ACCESS PATH

REVISIONS	
NO.	DESCRIPTION

UNTIL SUCH TIME AS THESE  
DRAWINGS ARE APPROVED  
FOR CONSTRUCTION BY  
THE EL PASO COUNTY  
ENGINEERING DEPARTMENT  
TERRA NOVA ENGINEERING,  
INC. APPROVES THEIR USE  
ONLY FOR THE PROJECT  
AND SITE SPECIFICALLY  
IDENTIFIED BY  
WRITTEN AUTHORIZATION.

PREPARED FOR:  
TIMBERRIDGE ESTATES, LLC  
ATTN: SCOTT HENTZ  
2760 BROGANS BLUFF  
COLORADO SPRINGS, CO 80919  
719.499.6752

**Terra Nova**  
Engineering, Inc.  
Creative Civil Engineering  
721 S. 2960 STREET  
COLORADO SPRINGS, CO 80904  
OFFICE: 719-635-6422  
FAX: 719-635-6426  
www.tnainc.com

**TIMBERRIDGE ESTATES**  
9210 ARROYA LANE  
GRADING & EROSION CONTROL PLAN  
GRADING PLAN - WEST

DESIGNED BY LD
DRAWN BY DLF
CHECKED BY LD
H-SCALE 1"=100'
V-SCALE NA
JOB NO. 1733.00
DATE ISSUED 08/13/19
SHEET NO. 14 OF 24



N:\jobs\1733.00\Drawings\CD\173300 GEC.dwg, 8/15/2019 10:12:52 AM

**BENCHMARKS**  
A #4 REBAR 28.3 FEET SOUTH AND 77.2 FEET WEST OF THE SOUTHEAST  
PROPERTY CORNER.  
ELEV = 7,319.85' (NGVD-1929)

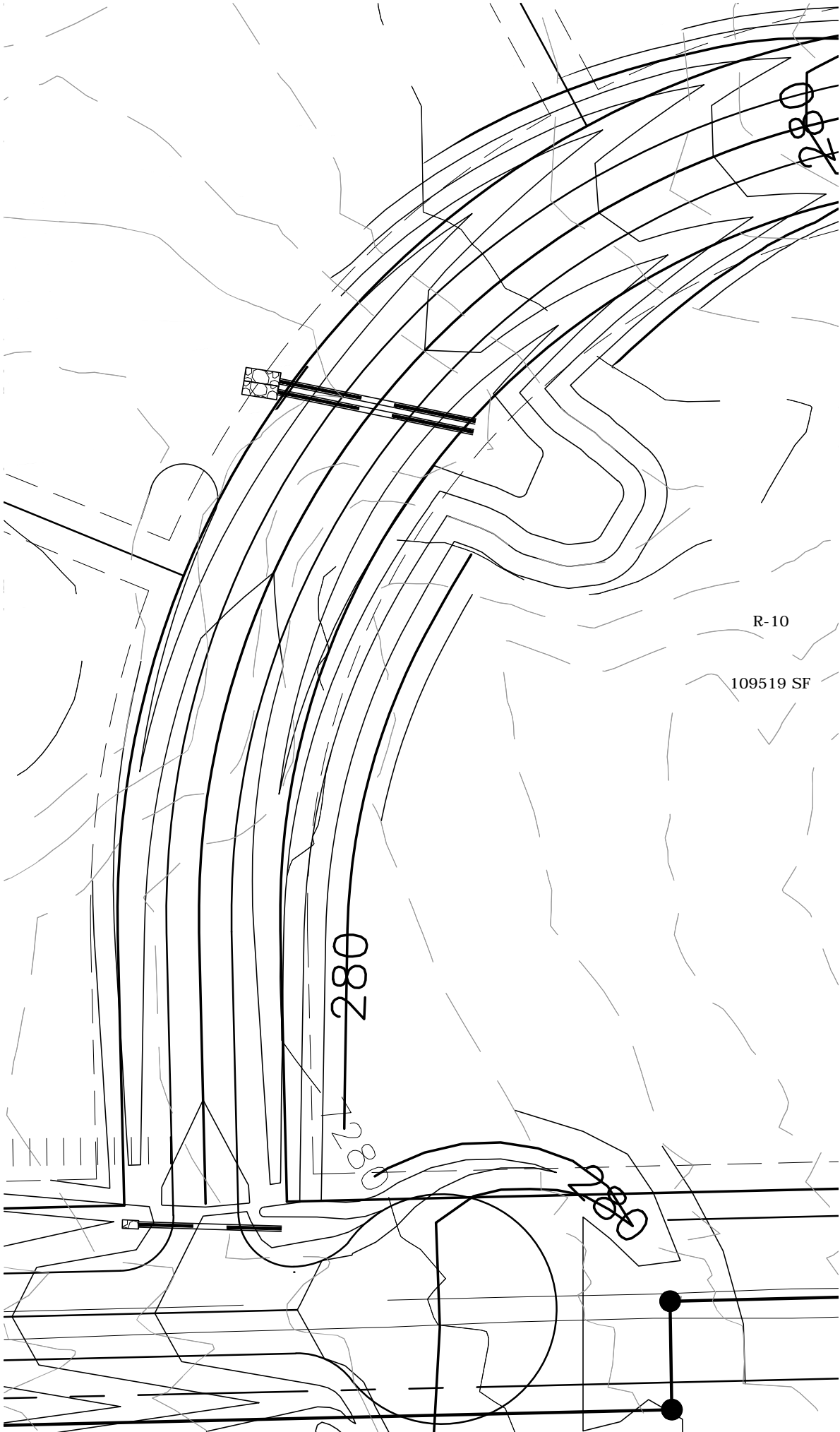
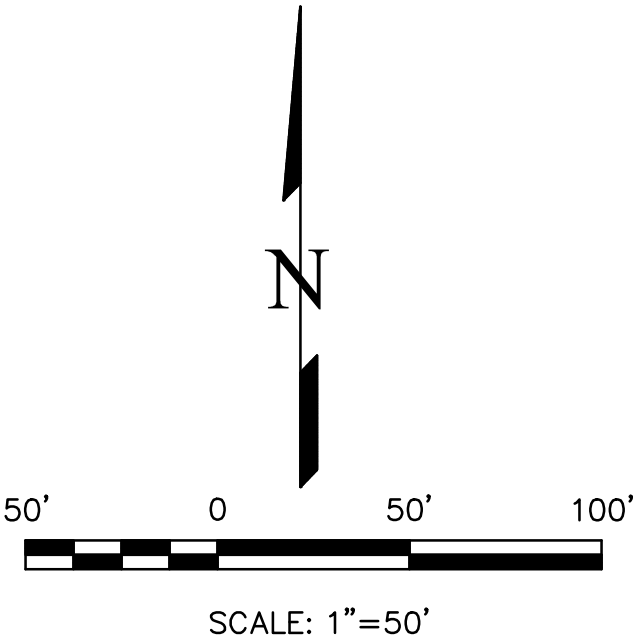
# TIMBERRIDGE ESTATES - 9210 ARROYA LANE

## EL PASO COUNTY

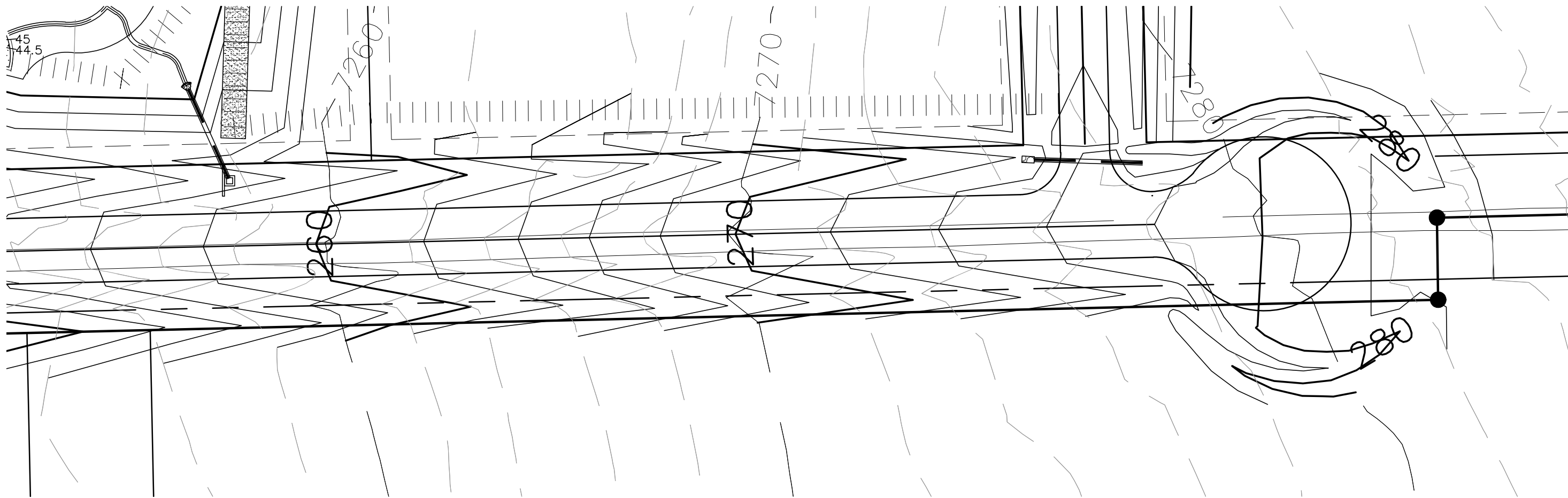
### GRADING & EROSION CONTROL PLAN

#### AUGUST 2019

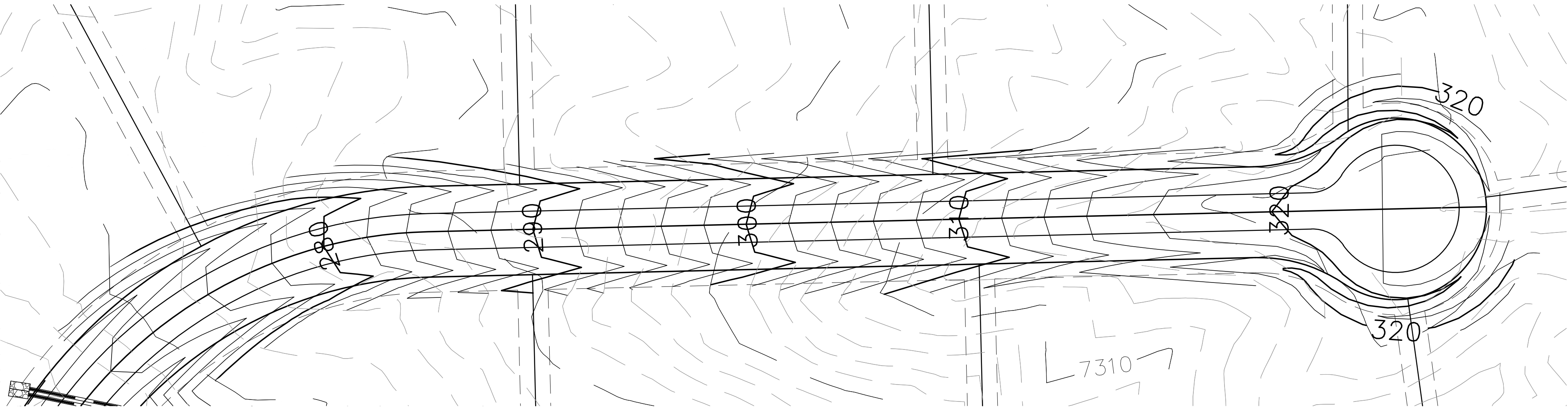
- LEGEND**
- EXISTING 2' CONTOUR
  - EXISTING 10' CONTOUR
  - PROPOSED 2' CONTOUR
  - PROPOSED 10' CONTOUR
  - SURFACE FLOW CHANNEL
  - PROPOSED DRAINAGE EASEMENT
  - EXISTING WATER LINE
  - CONSTRUCTION SITE BOUNDARY
  - AREA OF SOIL DISTURBANCE
  - EXISTING TREE
  - PROPOSED POND OR CULVERT ACCESS PATH



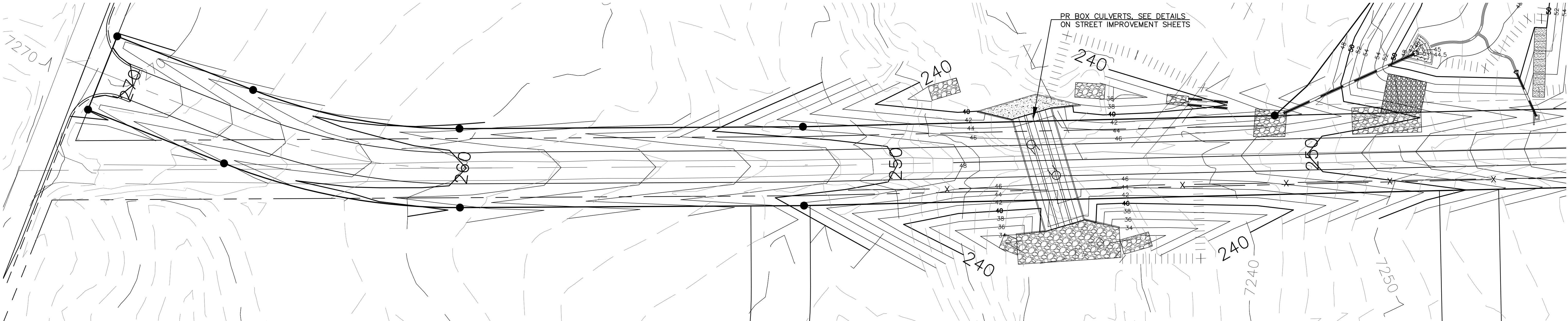
**SOUTH PORTION NATURE REFUGE WAY DETAIL**



**EAST PORTION ARROYA LANE DETAIL**



**NORTH PORTION NATURE REFUGE WAY DETAIL**



**WEST PORTION ARROYA LANE DETAIL**

REVISIONS	
NO.	DESCRIPTION

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE EL PASO COUNTY ENGINEERING DEPARTMENT, TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT DESIGNATED BY THE PROJECT NUMBER AND DATE OF WRITTEN AUTHORIZATION.

PREPARED FOR:  
**TIMBERRIDGE ESTATES, LLC**  
ATTN: SCOTT HENTIE  
2760 BROGANS BLUFF  
COLORADO SPRINGS, CO 80919  
719.499.6752

721 S. 2900 STREET  
COLORADO SPRINGS, CO 80904  
OFFICE: 719-635-6422  
FAX: 719-635-6426  
www.tnainc.com

**Terra Nova**  
Engineering, Inc.  
Creative Civil Engineering

**TIMBERRIDGE ESTATES**  
9210 ARROYA LANE  
GRADING & EROSION CONTROL PLAN  
GRADING PLAN - DETAILS

DESIGNED BY LD
DRAWN BY DLF
CHECKED BY LD
H-SCALE 1"=50'
V-SCALE NA
JOB NO. 1733.00
DATE ISSUED 08/13/19
SHEET NO. 15 OF 24



BENCHMARKS

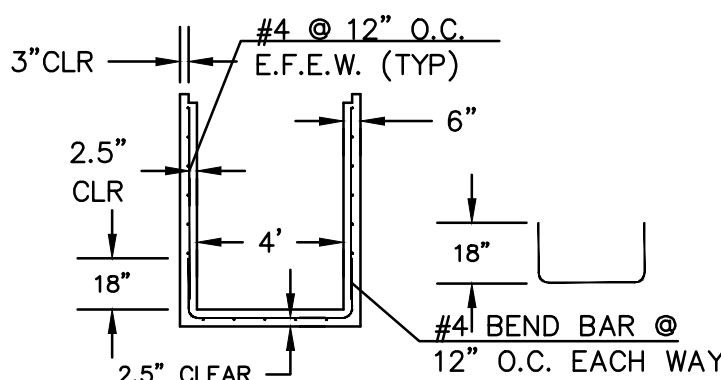
A #4 REBAR 28.3 FEET SOUTH AND 77.2 FEET WEST OF THE SOUTHEAST PROPERTY CORNER.  
ELEV = 7,319.85' (NGVD-1929)

LEGEND

- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROPOSED 10' CONTOUR
- SURFACE FLOW CHANNEL
- PROPOSED DRAINAGE EASEMENT
- EXISTING WATER LINE
- CONSTRUCTION SITE BOUNDARY
- AREA OF SOIL DISTURBANCE
- EXISTING TREE
- PROPOSED POND OR CULVERT ACCESS PATH

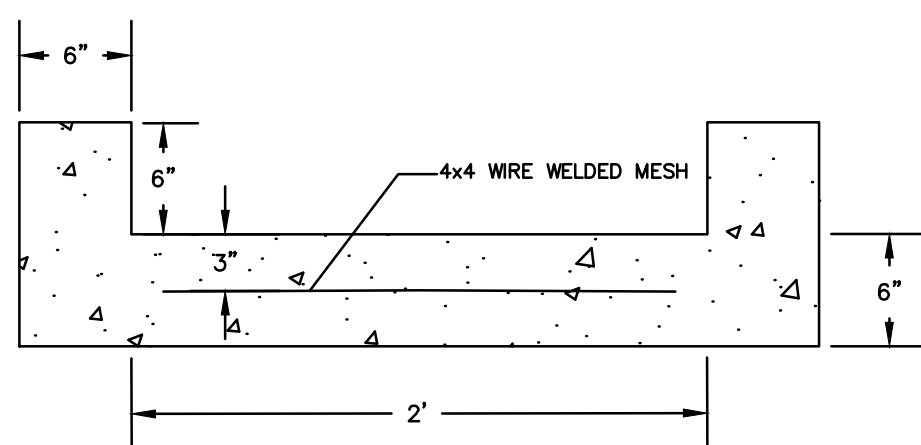
NOTES

- REINFORCE PROPOSED SWALES PR3, PR4, PR7, PR8, PR9, PR10, & PR11 WITH PERMANENT ROCK CHECK DAMS PER COUNTY CONSTRUCTION DETAIL CD-1 (IN DCM VOL 2). CHECK DAMS ARE NOT REQUIRED FOR SWALE AREAS WITH RIPRAP.
- SWALE PR3 IS ON THE NORTH SIDE OF NATURE REFUGE WAY AND EXTENDS FROM THE DUAL CULVERTS TO THE CUL-DE-SAC.
- SWALE PR4 IS ON THE SOUTH SIDE OF NATURE REFUGE WAY AND EXTENDS FROM THE DUAL CULVERTS TO THE CUL-DE-SAC.
- SWALE PR7 IS ON THE NORTH SIDE OF ARROYA LANE AND EXTENDS FROM THE INTERSECTION WITH NATURE REFUGE WAY TO THE EDB SPILLWAY.
- SWALE PR8 IS ON THE NORTH SIDE OF ARROYA LANE AND EXTENDS FROM THE EDB SPILLWAY TO SAND CREEK.
- SWALE PR9 IS ON THE SOUTH SIDE OF ARROYA LANE AND EXTENDS FROM THE CUL-DE-SAC TO SAND CREEK.
- SWALE PR10 IS ON THE NORTH SIDE OF ARROYA LANE AND EXTENDS FROM THE INTERSECTION WITH VOLLMER ROAD TO SAND CREEK.
- SWALE PR11 IS ON THE SOUTH SIDE OF ARROYA LANE AND EXTENDS FROM THE INTERSECTION WITH VOLLMER ROAD TO SAND CREEK.



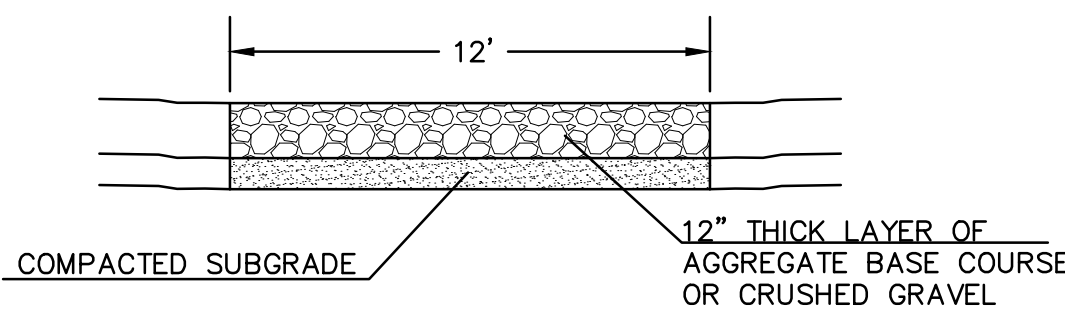
4'x4' OUTLET BOX  
STRUCTURAL DETAIL

NOT TO SCALE



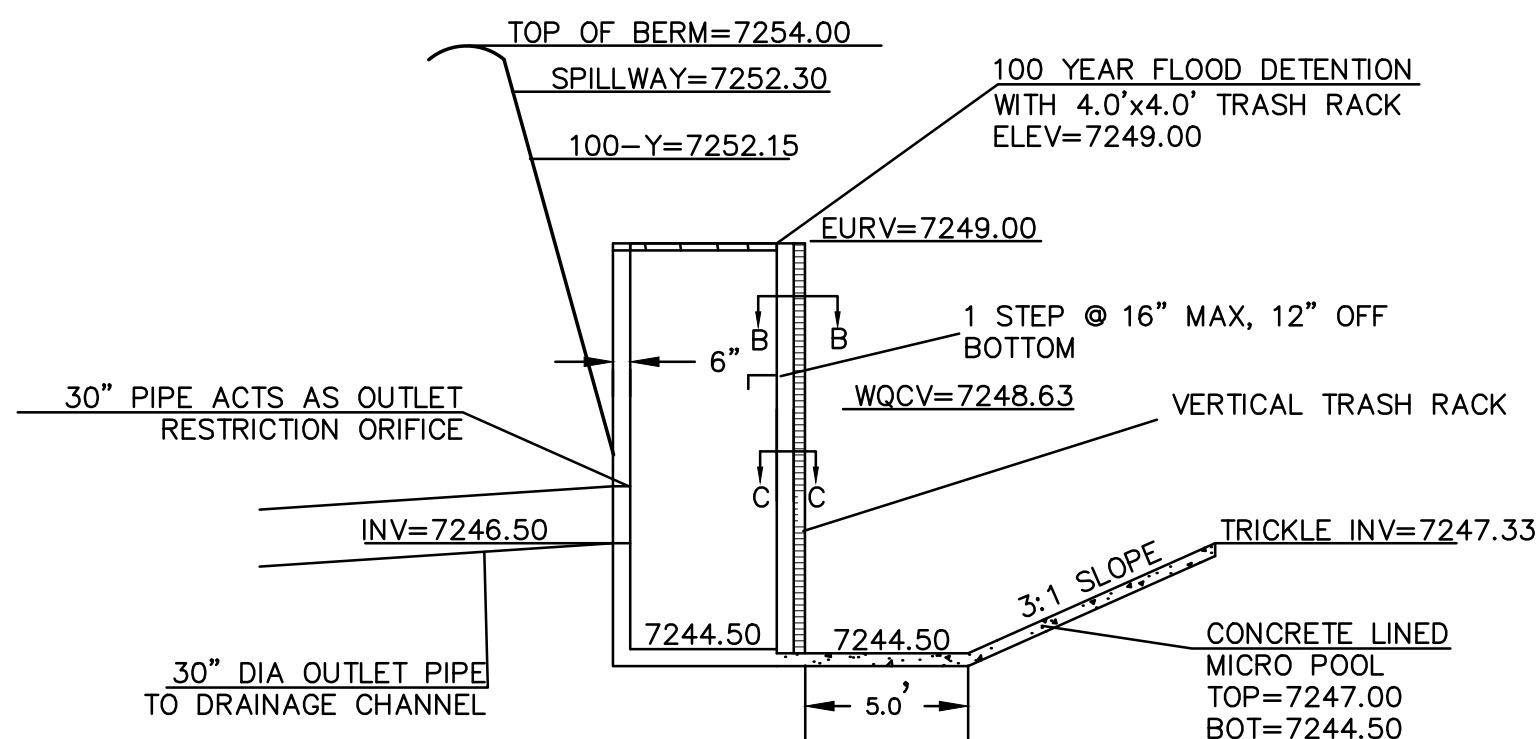
2' CONCRETE TRICKLE CHANNEL

NOT TO SCALE



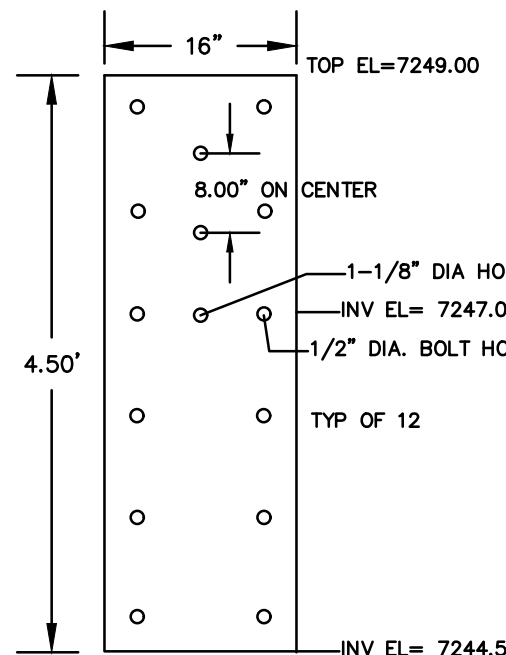
12' MAINTENANCE ACCESS ROAD SECTION

NOT TO SCALE



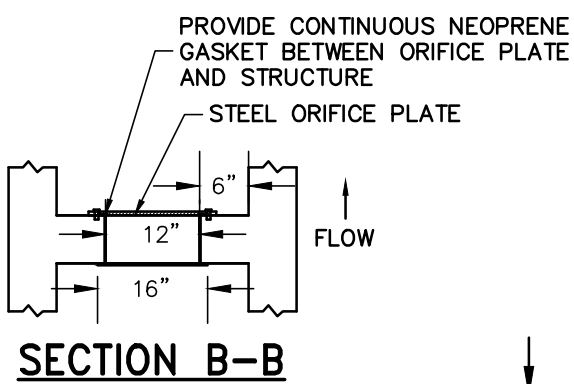
OUTLET STRUCTURE

NOT TO SCALE



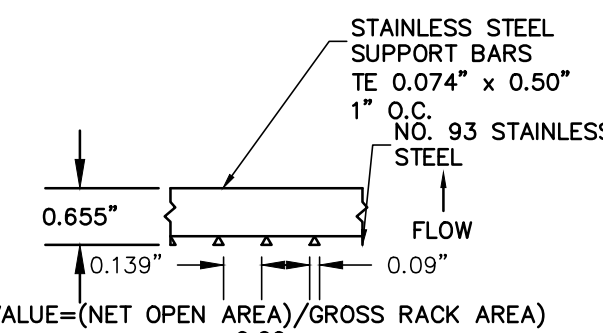
ORIFICE PLATE  
PERFORATED HOLE PATTERN

NOT TO SCALE



SECTION B-B

NOT TO SCALE



SECTION C-C

NOT TO SCALE

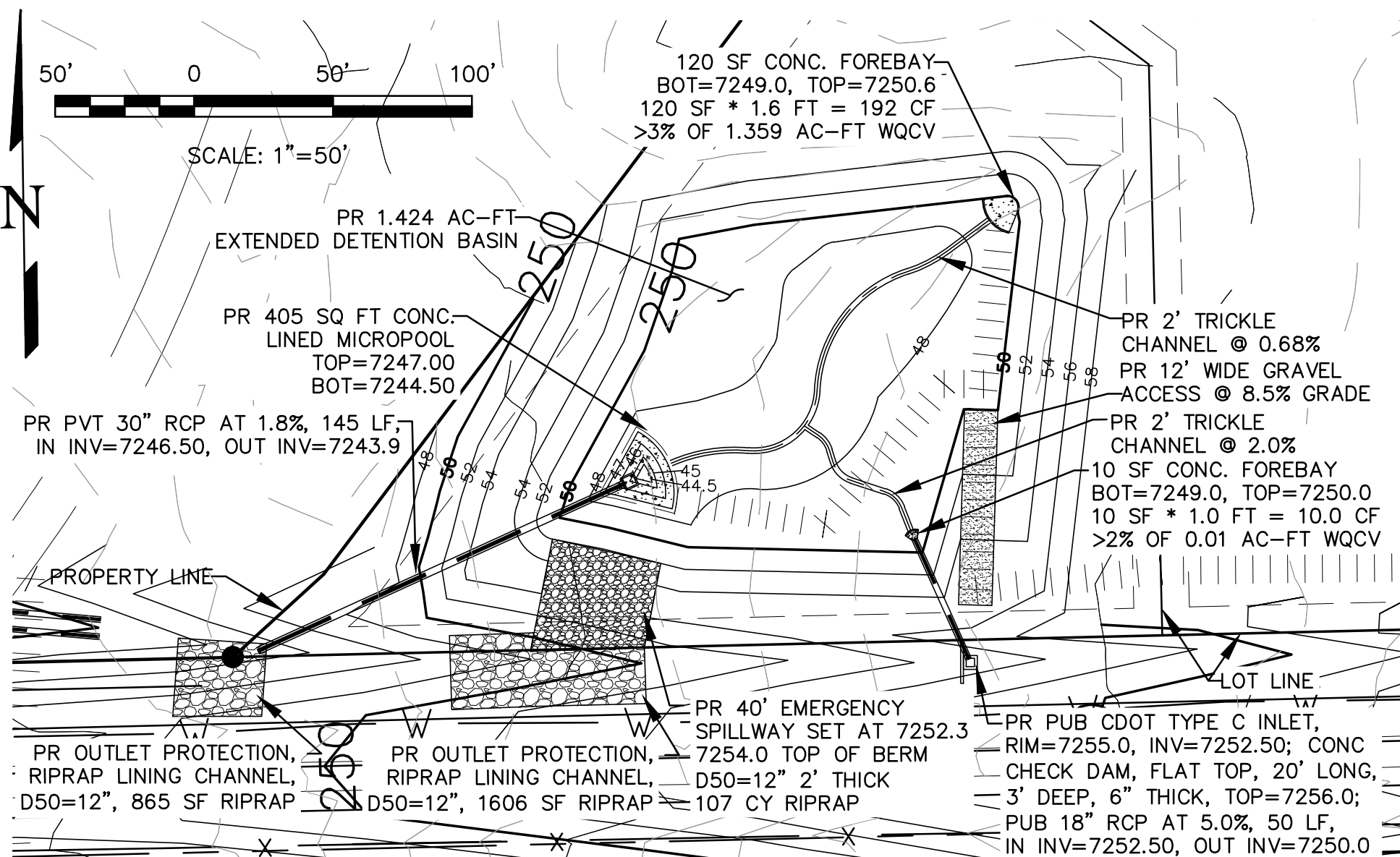
POND OUTLET OVERALL DETAIL

# TIMBERRIDGE ESTATES - 9210 ARROYA LANE

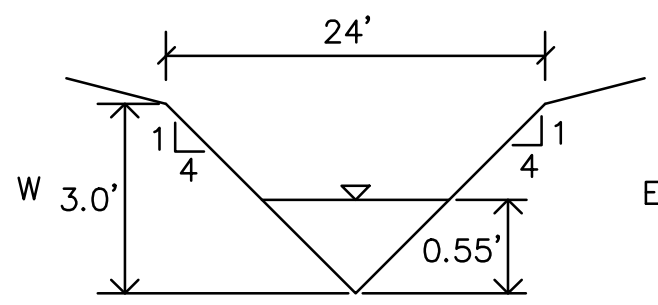
## EL PASO COUNTY

### GRADING & EROSION CONTROL PLAN

#### AUGUST 2019



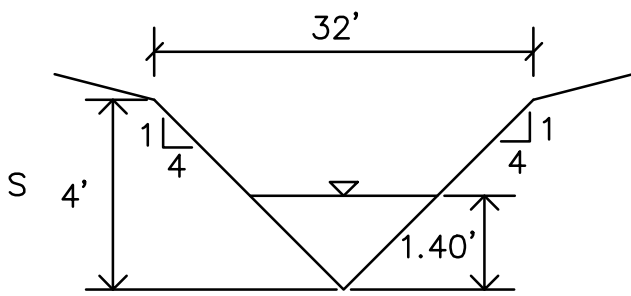
EXTENDED DETENTION BASIN DETAIL



Q = 4.8 CFS  
SLOPE = 3.8%  
n VALUE = 0.03  
DEPTH = 0.55'  
VELOCITY = 4.00 FT/S  
FROUDE # = 1.34

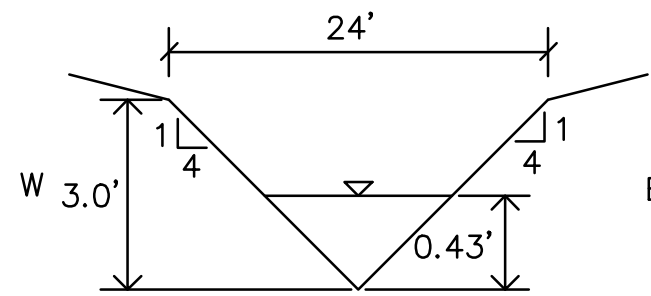
\*ADD CHECK DAMS, SEE NOTE 1

SWALE CROSS SECTION - PR3



Q = 67.1 CFS  
SLOPE = 5.0%  
n VALUE = 0.03  
DEPTH = 1.40'  
VELOCITY = 8.56 FT/S  
FROUDE # = 1.80  
\*EXPANDED TO ALLOW FOR POSSIBLE FUTURE FLOW INCREASES  
\*ADD CHECK DAMS, SEE NOTE 1

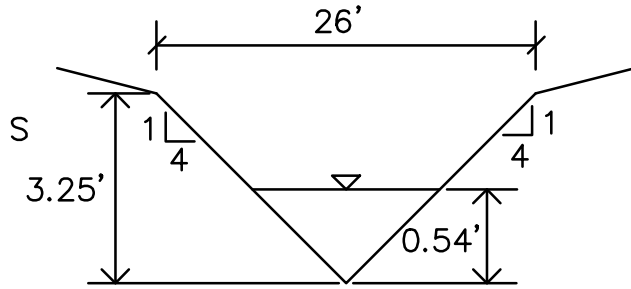
SWALE CROSS SECTION - PR8



Q = 3.3 CFS  
SLOPE = 6.3%  
n VALUE = 0.03  
DEPTH = 0.43'  
VELOCITY = 4.37 FT/S  
FROUDE # = 1.66

\*ADD CHECK DAMS, SEE NOTE 1

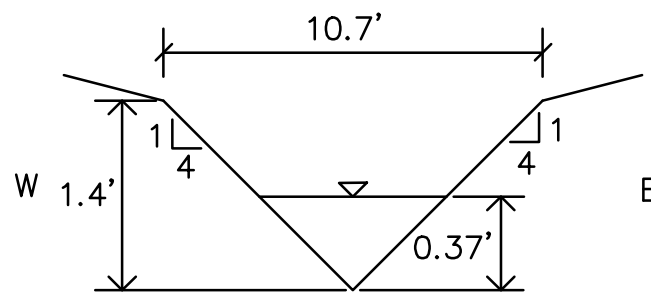
SWALE CROSS SECTION - PR4



Q = 5.8 CFS  
SLOPE = 6.0%  
n VALUE = 0.03  
DEPTH = 0.54'  
VELOCITY = 4.97 FT/S  
FROUDE # = 1.68

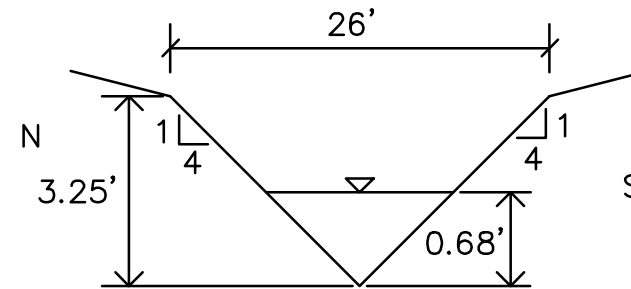
\*ADD CHECK DAMS, SEE NOTE 1

SWALE CROSS SECTION - PR9



Q = 0.9 CFS  
SLOPE = 1.3%  
n VALUE = 0.03  
DEPTH = 0.37'  
VELOCITY = 1.79 FT/S  
FROUDE # = 0.73

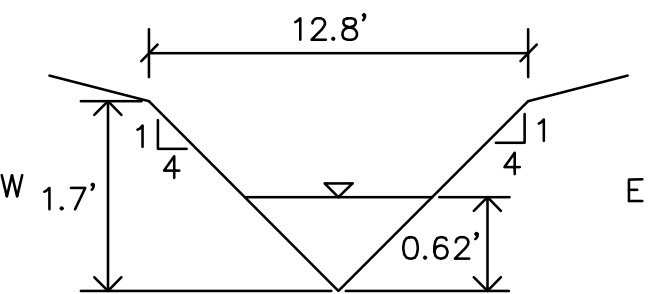
SWALE CROSS SECTION - PR5



Q = 10.6 CFS  
SLOPE = 5.9%  
n VALUE = 0.03  
DEPTH = 0.70'  
VELOCITY = 5.74 FT/S  
FROUDE # = 1.74

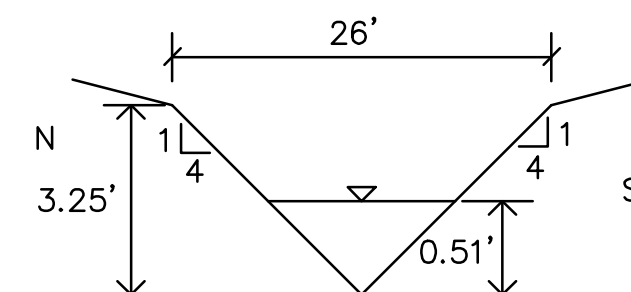
\*EXPANDED TO ALLOW FOR POSSIBLE FUTURE FLOW INCREASES  
\*ADD CHECK DAMS, SEE NOTE 1

SWALE CROSS SECTION - PR10



Q = 3.6 CFS  
SLOPE = 1.3%  
n VALUE = 0.03  
DEPTH = 0.62'  
VELOCITY = 2.53 FT/S  
FROUDE # = 0.80

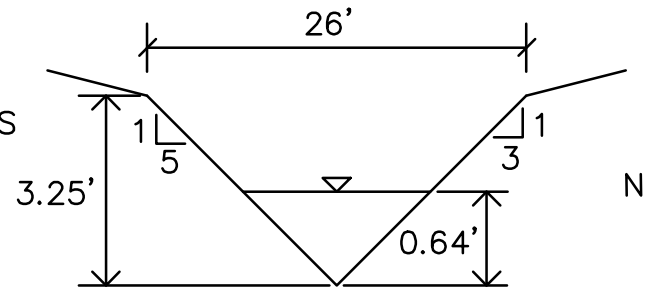
SWALE CROSS SECTION - PR6



Q = 5.7 CFS  
SLOPE = 7.8%  
n VALUE = 0.03  
DEPTH = 0.51'  
VELOCITY = 5.44 FT/S  
FROUDE # = 1.90

\*ADD CHECK DAMS, SEE NOTE 1

SWALE CROSS SECTION - PR11



Q = 8.5 CFS  
SLOPE = 5.2%  
n VALUE = 0.03  
DEPTH = 0.64'  
VELOCITY = 5.17 FT/S  
FROUDE # = 1.61

\*EXPANDED TO ALLOW FOR POSSIBLE FUTURE FLOW INCREASES  
\*ADD CHECK DAMS, SEE NOTE 1

SWALE CROSS SECTION - PR7

REVISIONS	NO.	DESCRIPTION	DATE

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE ENGINEER, NO OTHER REVISIONS WILL BE MADE. TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT AND SITE SPECIFIC DESIGN. WRITTEN AUTHORIZATION.

PREPARED FOR:  
TIMBERRIDGE ESTATES, LLC  
ATTN: SCOTT HENTZ  
2760 BROOKS BLUFF  
COLORADO SPRINGS, CO 80919  
719.499.6752

Terra Nova  
Engineering, Inc.  
721 S. 2900 STREET  
COLORADO SPRINGS, CO 80904  
OFFICE: 719-635-6422  
FAX: 719-635-6426  
www.tnainc.com

TIMBERRIDGE ESTATES  
9210 ARROYA LANE  
GRADING & EROSION CONTROL PLAN  
GRADING PLAN - DETAILS

DESIGNED BY LD  
DRAWN BY DLF  
CHECKED BY LD  
H-SCALE 1"=200'  
V-SCALE NA  
JOB NO. 1733.00  
DATE ISSUED 08/13/19  
SHEET NO. 16 OF 24



N:\jobs\1733.00\Drawings\CD\173300 GEC.dwg, 8/15/2019 10:12:54 AM

TIMBERRIDGE ESTATES - 9210 ARROYA LANE  
EL PASO COUNTY  
GRADING & EROSION CONTROL PLAN  
AUGUST 2019

**BENCHMARKS**  
A #4 REBAR 28.3 FEET SOUTH AND 77.2 FEET WEST OF THE SOUTHEAST  
PROPERTY CORNER.  
ELEV = 7,319.85' (NGVD-1929)

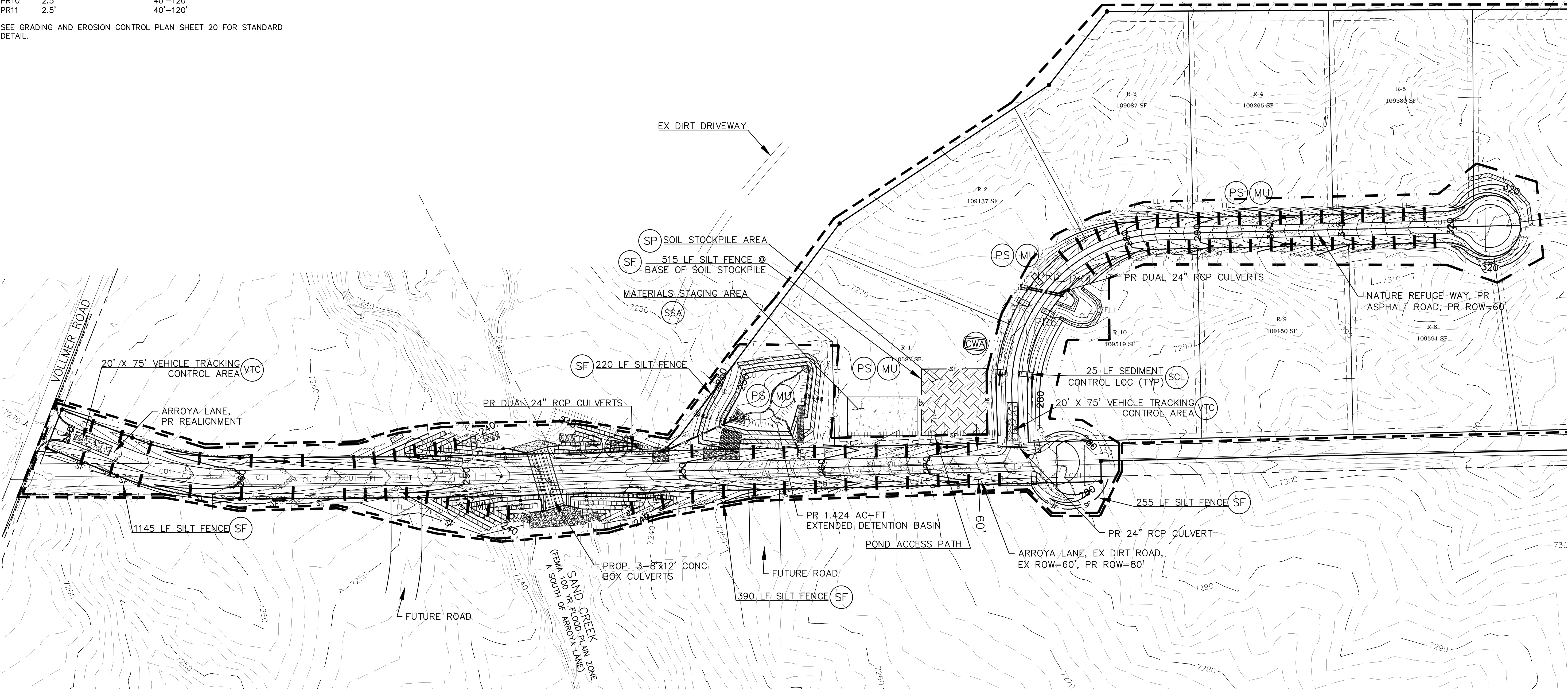
**EROSION CONTROL NOTES**  
1. PERMANENT SEEDING AND MULCH IS TO BE APPLIED TO ALL DISTURBED  
AREAS OTHER THAN ROADWAYS. EROSION CONTROL BLANKETS MUST BE  
USED ALONG FLOW LINE PROPOSED DRAINAGE CHANNELS (3 FEET WIDE)  
AND ON DETENTION BASIN SIDES.  
2. REINFORCE PROPOSED SWALES PR3, PR4, PR7, PR8, PR9, PR10, & PR11  
WITH PERMANENT ROCK CHECK DAMS PER COUNTY CONSTRUCTION DETAIL  
CD-1 (IN DCM VOL 2). CHECK DAMS ARE NOT REQUIRED FOR SWALE  
AREAS WITH RIPRAP.

**EROSION CONTROL QUANTITIES**  
SILT FENCE: 2,525 LF  
SEDIMENT CONTROL LOG: 2,500 LF  
SEED & MULCH: 8.8 AC  
EROSION CONTROL BLANKET: 3,700 SY  
ROCK CHECK DAMS: 86

**CHECK DAM SPACING**  
CHECK DAM SPACING IS BASED ON SLOPE AND CHECK DAM HEIGHT. THE  
TOP OF THE DOWNHILL CHECK DAM SHOULD BE AT THE SAME ELEVATION  
AS THE BOTTOM OF THE NEXT CHECK DAM UPSTREAM. SPECIFIC CHECK  
DAM LOCATIONS TO BE SET BY CONTRACTOR BASED ON FIELD CONDITIONS.  
A MINIMUM OF 9" TO BE MAINTAINED BETWEEN THE TOP OF CHECK DAMS  
AND THE TOP OF THE SWALE. MAX CHECK DAM HEIGHTS AND CHECK DAM  
SPACING RANGES ARE SHOWN BELOW. PRELIMINARY CHECK DAM  
LOCATIONS ARE SHOWN ON THE PLAN (CONTRACTOR TO FINALIZE).

SWALE	CHECK DAM MAX HEIGHT	CHECK DAM SPACING AT MAX HEIGHT
PR3	2.0'	31'-42'
PR4	2.0'	20'-60'
PR7	2.5'	58'-65'
PR8	3.0'	60'
PR9	2.5'	58'-65'
PR10	2.5'	40'-120'
PR11	2.5'	40'-120'

SEE GRADING AND EROSION CONTROL PLAN SHEET 20 FOR STANDARD  
DETAIL.



KEY	TITLE	SYMBOL	IMPLEMENTATION PHASE
SF	SILT FENCE	SF	INITIAL
SSA	STABILIZED STAGING AREA	SSA	INITIAL
VTC	VEHICLE TRACKING CONTROL	VTC	INITIAL
SP	STOCKPILE MANAGEMENT WITH PROTECTION	SP	INITIAL
CWA	CONCRETE WASHOUT AREA	CWA	INITIAL
SCL	SEDIMENT CONTROL LOG	SCL	INITIAL
MU	MULCHING - HYDROSEED OR EROSION CONTROL BLANKET, ECB MUST BE USED WITHIN DRAINAGE CHANNELS & ON POND SIDES	MU	FINAL
PS	PERMANENT SEEDING - HYDROSEED, SEED MIX PER COLORADO SPRINGS DRAINAGE CRITERIA MANUAL (MAY 2014) VOL 1, TABLE 14-12	PS	FINAL
CD	ROCK CHECK DAM, PRELIM LOCATION, CONTRACTOR TO FINALIZE	CD	FINAL

LEGEND	
---	EXISTING 2' CONTOUR
-7260-	EXISTING 10' CONTOUR
---	PROPOSED 2' CONTOUR
-7260-	PROPOSED 10' CONTOUR
---	SURFACE FLOW CHANNEL
---	PROPOSED DRAINAGE EASEMENT
---	EXISTING WATER LINE
---	CONSTRUCTION SITE BOUNDARY
---	AREA OF SOIL DISTURBANCE
---	EXISTING TREE
---	CUT FILL AREA BOUNDARY
EX# / PR#	OPEN CHANNEL FLOW CALC POINT
---	FLOW DIRECTION
---	PROPOSED POND OR CULVERT ACCESS PATH

DATE: \_\_\_\_\_

DESCRIPTION: \_\_\_\_\_

REVISIONS: \_\_\_\_\_

NO. \_\_\_\_\_

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE REVIEWING AGENCIES, THE REVIEWING AGENCIES HAVE NO LIABILITY FOR ANY ERRORS OR OMISSIONS. THE REVIEWING AGENCIES HAVE NO LIABILITY FOR ANY ERRORS OR OMISSIONS. THE REVIEWING AGENCIES HAVE NO LIABILITY FOR ANY ERRORS OR OMISSIONS.

PREPARED FOR:

TIMBERRIDGE ESTATES, LLC

ATTN: SCOTT HENTIE

2760 BROGANS BLUFF

COLORADO SPRINGS, CO 80919

719.499.6752

ENGINEER:

Terra Nova

Engineering, Inc.

721 S. 2900 STREET

COLORADO SPRINGS, CO 80904

OFFICE: 719-635-6422

FAK: 719-635-6426

www.tnainc.com

TIMBERRIDGE ESTATES

9210 ARROYA LANE

GRADING & EROSION CONTROL PLAN

EROSION CONTROL PLAN

DESIGNED BY LD

DRAWN BY DLF

CHECKED BY LD

H-SCALE 1"=100'

V-SCALE NA

JOB NO. 1733.00

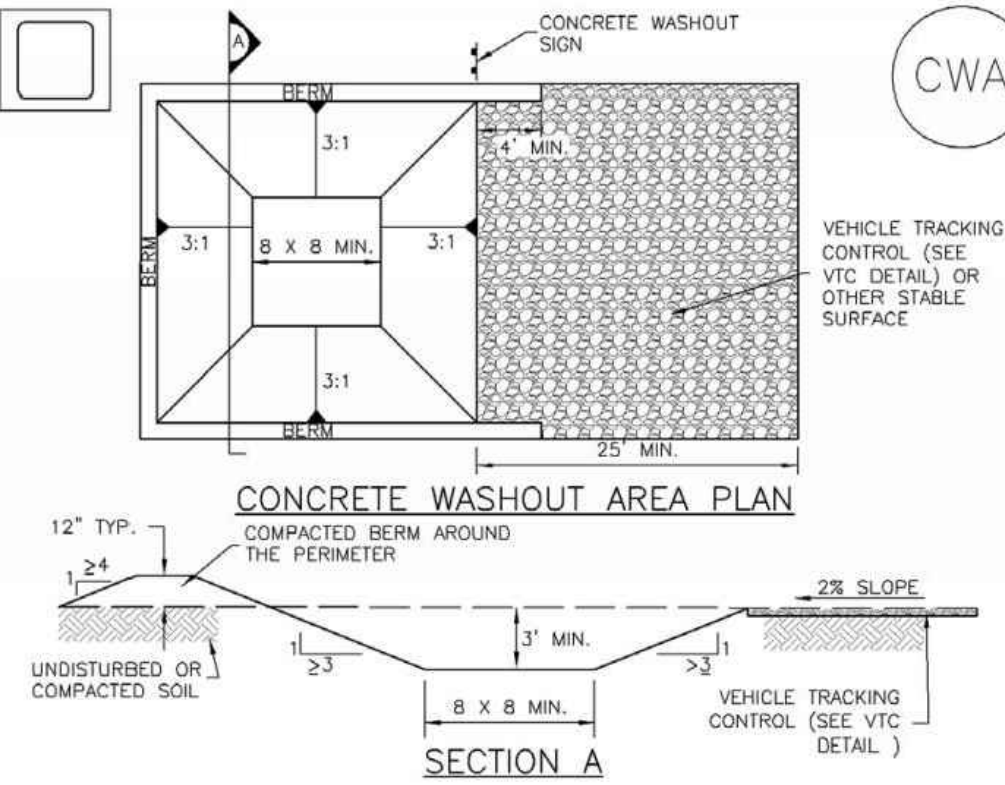
DATE ISSUED 08/13/19

SHEET NO. 17 OF 24



N:\jobs\1733.00\Drawings\CD\173300 GEC.dwg, 8/15/2019 10:12:55 AM

Concrete Washout Area (CWA)MM-1



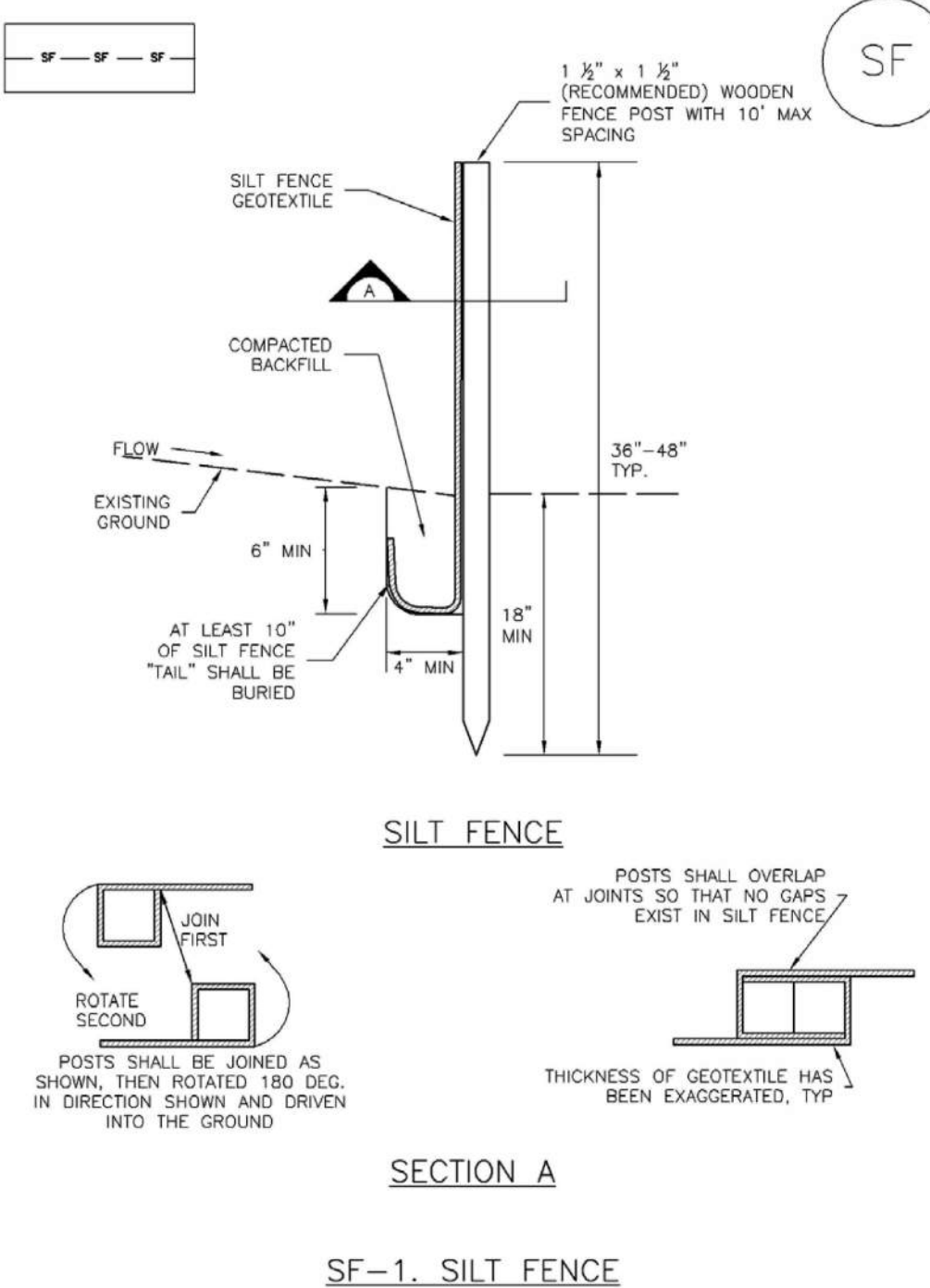
CWA-1. CONCRETE WASHOUT AREA

CWA INSTALLATION NOTES

1. SEE PLAN VIEW FOR:  
-CWA INSTALLATION LOCATION.
2. DO NOT LOCATE AN UNLINED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1,000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS INFEASIBLE, OR IF HIGHLY PERMEABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (16 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE SHOULD BE USED.
3. THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.
4. CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8' BY 8' SLOPES, LEADING OUT OF THE SUBSURFACE PIT SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3' DEEP.
5. BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.
6. VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.
7. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
8. USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

November 2010 Urban Drainage and Flood Control District CWA-3  
Urban Storm Drainage Criteria Manual Volume 3

Silt Fence (SF)SC-1



SF-1. SILT FENCE

November 2010 Urban Drainage and Flood Control District SF-3  
Urban Storm Drainage Criteria Manual Volume 3

Concrete Washout Area (CWA)MM-2

CWA MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. THE CWA SHALL BE REPAIRED, CLEANED, OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE. CONCRETE MATERIALS, ACCUMULATED IN PIT, SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF 2'.
5. CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER-TIGHT CONTAINER AND DISPOSED OF PROPERLY.
6. THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.
7. WHEN THE CWA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD).  
NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

CWA-4 Urban Drainage and Flood Control District November 2010  
Urban Storm Drainage Criteria Manual Volume 3

Silt Fence (SF)SC-1

SILT FENCE INSTALLATION NOTES

1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2-5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.
2. A UNIFORM 6" X 4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.
3. COMPACT ANCHOR TRENCH BY HAND WITH A "JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.
4. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.
5. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.
6. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J-HOOK." THE "J-HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' - 20').
7. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

SILT FENCE MAINTENANCE NOTES

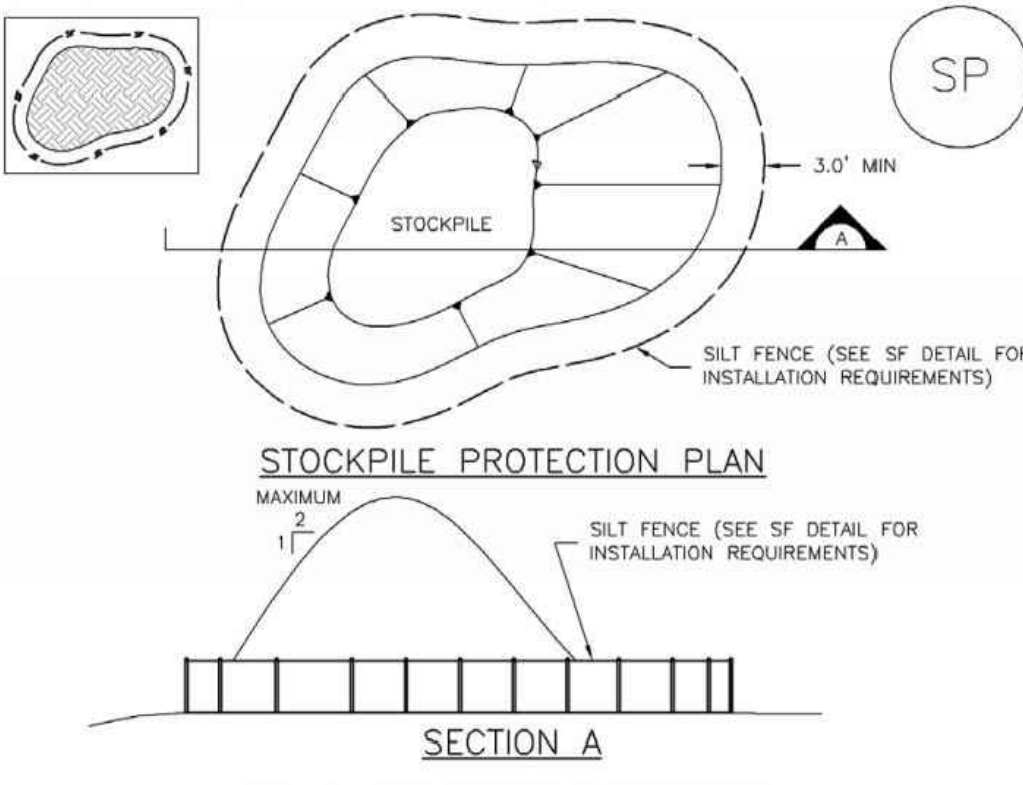
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP. TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 6".
5. REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.
6. SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.
7. WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

SF-4 Urban Drainage and Flood Control District November 2010  
Urban Storm Drainage Criteria Manual Volume 3

Stockpile Management (SP)MM-2



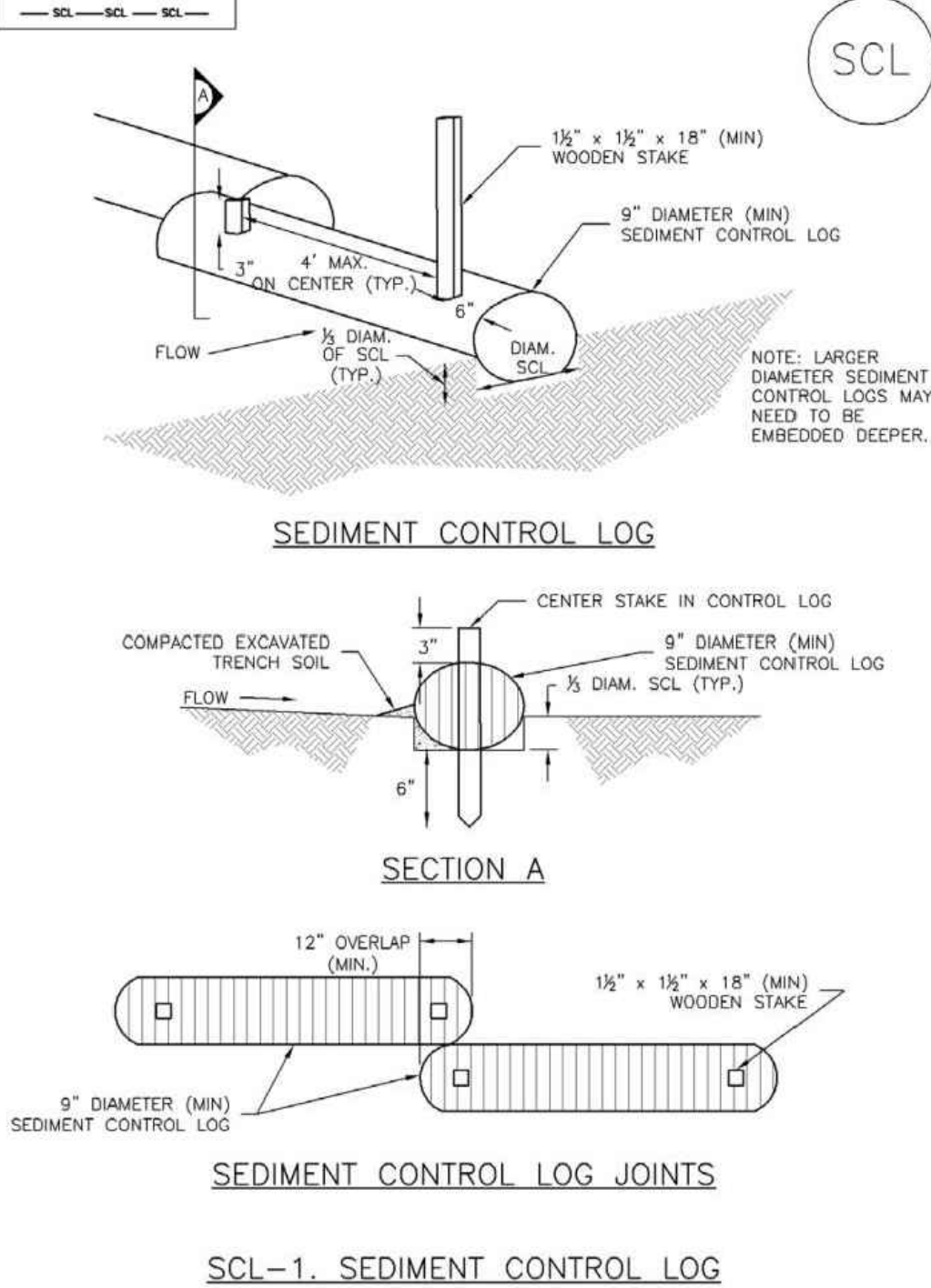
SP-1. STOCKPILE PROTECTION

STOCKPILE PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:  
-LOCATION OF STOCKPILES.  
-TYPE OF STOCKPILE PROTECTION.
2. INSTALL PERIMETER CONTROLS IN ACCORDANCE WITH THEIR RESPECTIVE DESIGN DETAILS. SILT FENCE IS SHOWN IN THE STOCKPILE PROTECTION DETAILS; HOWEVER, OTHER TYPES OF PERIMETER CONTROLS INCLUDING SEDIMENT CONTROL LOGS OR ROCK SOCKS MAY BE SUITABLE IN SOME CIRCUMSTANCES. CONSIDERATIONS FOR DETERMINING THE APPROPRIATE TYPE OF PERIMETER CONTROL FOR A STOCKPILE INCLUDE WHETHER THE STOCKPILE IS LOCATED ON A PERVIOUS OR IMPERVIOUS SURFACE, THE RELATIVE HEIGHTS OF THE PERIMETER CONTROL AND STOCKPILE, THE ABILITY OF THE PERIMETER CONTROL TO CONTAIN THE STOCKPILE WITHOUT FAILING IN THE EVENT THAT MATERIAL FROM THE STOCKPILE SHIFTS OR SLUMPS AGAINST THE PERIMETER, AND OTHER FACTORS.
3. STABILIZE THE STOCKPILE SURFACE WITH SURFACE ROUGHENING, TEMPORARY SEEDING AND MULCHING, EROSION CONTROL BLANKETS, OR SOIL BINDERS. SOILS STOCKPILED FOR AN EXTENDED PERIOD (TYPICALLY FOR MORE THAN 60 DAYS) SHOULD BE SEEDED AND MULCHED WITH A TEMPORARY GRASS COVER ONCE THE STOCKPILE IS PLACED (TYPICALLY WITHIN 14 DAYS). USE OF MULCH ONLY OR A SOIL BINDER IS ACCEPTABLE IF THE STOCKPILE WILL BE IN PLACE FOR A MORE LIMITED TIME PERIOD (TYPICALLY 30-60 DAYS).
4. FOR TEMPORARY STOCKPILES ON THE INTERIOR PORTION OF A CONSTRUCTION SITE, WHERE OTHER DOWNGRADIENT CONTROLS, INCLUDING PERIMETER CONTROL, ARE IN PLACE, STOCKPILE PERIMETER CONTROLS MAY NOT BE REQUIRED.

November 2010 Urban Drainage and Flood Control District SP-3  
Urban Storm Drainage Criteria Manual Volume 3

Sediment Control Log (SCL)SC-2



SCL-1. SEDIMENT CONTROL LOG

November 2010 Urban Drainage and Flood Control District SCL-3  
Urban Storm Drainage Criteria Manual Volume 3

Stockpile Management (SM)MM-2

STOCKPILE PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. IF PERIMETER PROTECTION MUST BE MOVED TO ACCESS SOIL STOCKPILE, REPLACE PERIMETER CONTROLS BY THE END OF THE WORKDAY.
5. STOCKPILE PERIMETER CONTROLS CAN BE REMOVED ONCE ALL THE MATERIAL FROM THE STOCKPILE HAS BEEN USED.

(DETAILS ADAPTED FROM PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

SP-4 Urban Drainage and Flood Control District November 2010  
Urban Storm Drainage Criteria Manual Volume 3

Sediment Control Log (SCL)SC-2

SEDIMENT CONTROL LOG INSTALLATION NOTES

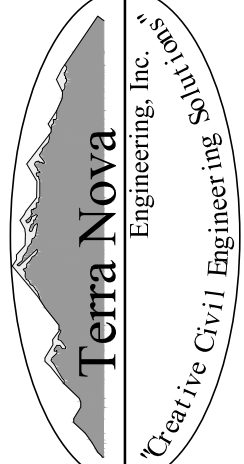
1. SEE PLAN VIEW FOR LOCATION AND LENGTH OF SEDIMENT CONTROL LOGS.
2. SEDIMENT CONTROL LOGS THAT ACT AS A PERIMETER CONTROL SHALL BE INSTALLED PRIOR TO ANY UPGRADE/ LAND-DISTURBING ACTIVITIES.
3. SEDIMENT CONTROL LOGS SHALL CONSIST OF STRAW, COMPOST, EXCELSIOR OR COCONUT FIBER, AND SHALL BE FREE OF ANY NOXIOUS WEED SEEDS OR DEFECTS INCLUDING RIPS, HOLES AND OBVIOUS WEAR.
4. SEDIMENT CONTROL LOGS MAY BE USED AS SMALL CHECK DAMS IN DITCHES AND SWALES. HOWEVER, THEY SHOULD NOT BE USED IN PERENNIAL STREAMS OR HIGH VELOCITY DRAINAGE WAYS.
5. IT IS RECOMMENDED THAT SEDIMENT CONTROL LOGS BE TRENCHED INTO THE GROUND TO A DEPTH OF APPROXIMATELY 1/2 OF THE DIAMETER OF THE LOG. IF TRENCHING TO THIS DEPTH IS NOT FEASIBLE AND/OR DESIRABLE (SHORT TERM INSTALLATION WITH DESIRE NOT TO DAMAGE LANDSCAPE) A LESSER TRENCHING DEPTH MAY BE ACCEPTABLE WITH MORE ROBUST STAKING.
6. THE UPHILL SIDE OF THE SEDIMENT CONTROL LOG SHALL BE BACKFILLED WITH SOIL THAT IS FREE OF ROCKS AND DEBRIS. THE SOIL SHALL BE TIGHTLY COMPACTED INTO THE SHAPE OF A RIGHT TRIANGLE USING A SHOVEL OR WEIGHTED LAWN ROLLER.
7. FOLLOW MANUFACTURERS' GUIDANCE FOR STAKING. IF MANUFACTURERS' INSTRUCTIONS DO NOT SPECIFY SPACING, STAKES SHALL BE PLACED ON 4' CENTERS AND EMBEDDED A MINIMUM OF 6" INTO THE GROUND. 3" OF THE STAKE SHALL PROTRUDE FROM THE TOP OF THE LOG. STAKES THAT ARE BROKEN PRIOR TO INSTALLATION SHALL BE REPLACED.

SEDIMENT CONTROL LOG MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. SEDIMENT ACCUMULATED UPSTREAM OF SEDIMENT CONTROL LOG SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 1/2 OF THE HEIGHT OF THE SEDIMENT CONTROL LOG.
5. SEDIMENT CONTROL LOG SHALL BE REMOVED AT THE END OF CONSTRUCTION; IF DISTURBED AREAS EXIST AFTER REMOVAL, THEY SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO, JEFFERSON COUNTY, COLORADO, DOUGLAS COUNTY, COLORADO, AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)  
NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

November 2010 Urban Drainage and Flood Control District SCL-5  
Urban Storm Drainage Criteria Manual Volume 3

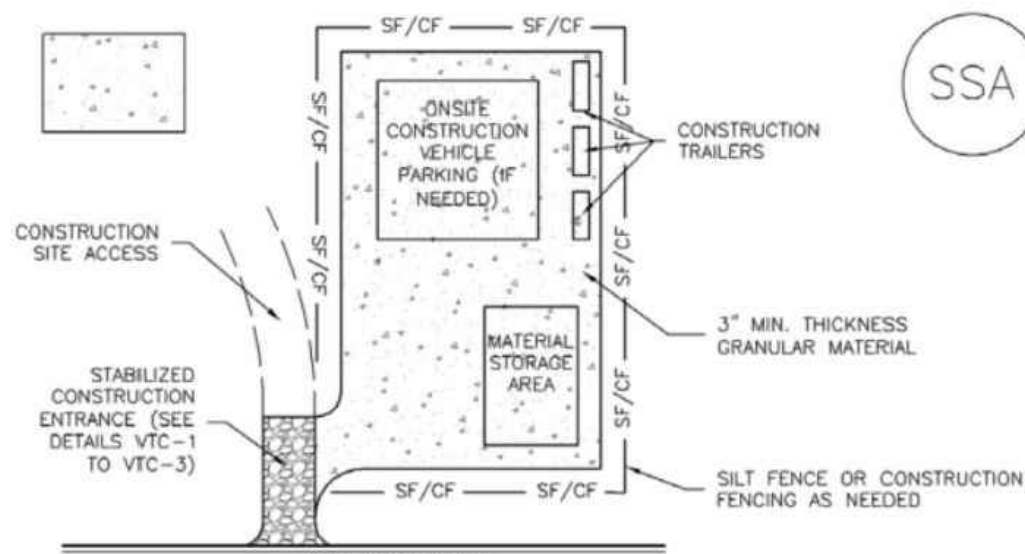
REVISIONS		NO.	DESCRIPTION	DATE
NO.	DESCRIPTION			
UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE REVIEWING AGENCIES, THE REVIEWING AGENCIES HAVE REVIEWED THE DRAWINGS FOR TECHNICAL ACCURACY ONLY. TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT DESCRIBED BY THE TITLE BLOCK. ANY OTHER USE WITHOUT WRITTEN AUTHORIZATION IS PROHIBITED.				
PREPARED FOR: TIMBRIDGE ESTATES, LLC ATTN: SCOTT HENTIE 2760 BROGANS BLUFF COLORADO SPRINGS, CO 80919 719.499.6752				
 Terra Nova Engineering, Inc. 2760 Brogans Bluff Colorado Springs, CO 80919 719.499.6752 www.tneshinc.com				
TIMBRIDGE ESTATES 9210 ARROYA LANE GRADING & EROSION CONTROL PLAN EROSION CONTROL PLAN - DETAILS				
DESIGNED BY LD DRAWN BY DLF CHECKED BY LD H-SCALE NA V-SCALE NA JOB NO. 1733.00 DATE ISSUED 08/13/19 SHEET NO. 18 OF 24				



N:\jobs\1733.00\Drawings\CD\173300 GEC.dwg, 8/15/2019 10:12:57 AM

Stabilized Staging Area (SSA)

SM-6



SSA-1. STABILIZED STAGING AREA

STABILIZED STAGING AREA INSTALLATION NOTES

- SEE PLAN VIEW FOR:
  - LOCATION OF STAGING AREA(S).
  - CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.
- STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.
- STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.
- THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.
- UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.
- ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

STABILIZED STAGING AREA MAINTENANCE NOTES

- INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.

November 2010 Urban Drainage and Flood Control District SSA-3  
Urban Storm Drainage Criteria Manual Volume 3

SM-6

Stabilized Staging Area (SSA)

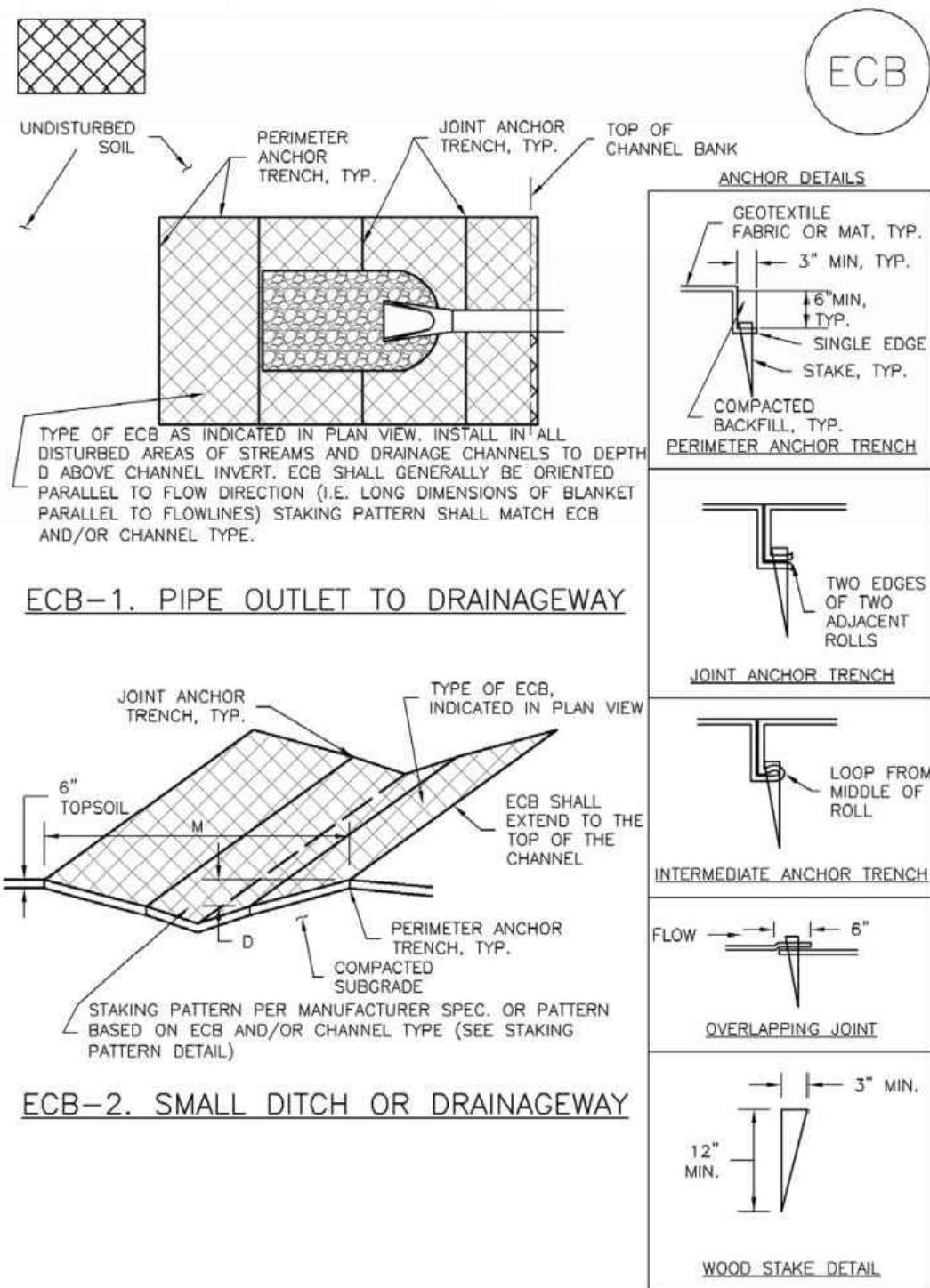
STABILIZED STAGING AREA MAINTENANCE NOTES

- STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.
  - THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE, AND THE AREA COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.
- NOTE: MANY MUNICIPALITIES PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS DUE TO DIFFICULTIES WITH RE-ESTABLISHMENT OF VEGETATION IN AREAS WHERE RECYCLED CONCRETE WAS PLACED.
- NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.
- (DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)

SSA-4 Urban Drainage and Flood Control District November 2010  
Urban Storm Drainage Criteria Manual Volume 3

EC-6

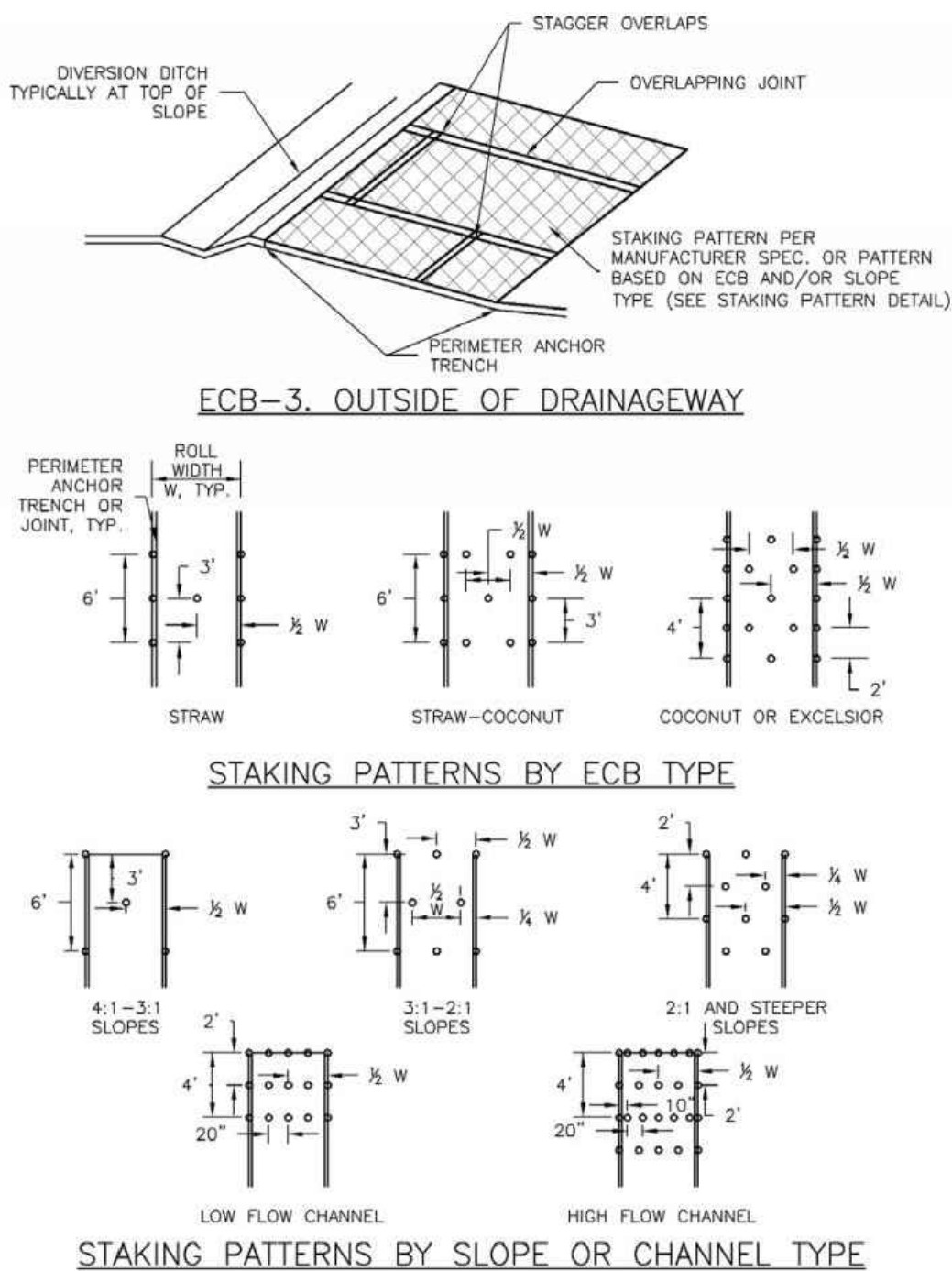
Rolled Erosion Control Products (RECP)



RECP-6 Urban Drainage and Flood Control District November 2010  
Urban Storm Drainage Criteria Manual Volume 3

Rolled Erosion Control Products (RECP)

EC-6



November 2010 Urban Drainage and Flood Control District RECP-7  
Urban Storm Drainage Criteria Manual Volume 3

EC-6

Rolled Erosion Control Products (RECP)

EROSION CONTROL BLANKET INSTALLATION NOTES

- SEE PLAN VIEW FOR:
  - LOCATION OF ECB.
  - TYPE OF ECB (STRAW, STRAW-COCOONUT, COCONUT, OR EXCELSIOR).
  - AREA, A, IN SQUARE YARDS OF EACH TYPE OF ECB.
- 100% NATURAL AND BIODEGRADABLE MATERIALS ARE PREFERRED FOR RECPs, ALTHOUGH SOME JURISDICTIONS MAY ALLOW OTHER MATERIALS IN SOME APPLICATIONS.
- IN AREAS WHERE ECBs ARE SHOWN ON THE PLANS, THE PERMITTEE SHALL PLACE TOPSOIL AND PERFORM FINAL GRADING, SURFACE PREPARATION, AND SEEDING AND MULCHING. SUBGRADE SHALL BE SMOOTH AND MOIST PRIOR TO ECB INSTALLATION AND THE ECB SHALL BE IN FULL CONTACT WITH SUBGRADE. NO GAPS OR VOIDS SHALL EXIST UNDER THE BLANKET.
- PERIMETER ANCHOR TRENCH SHALL BE USED ALONG THE OUTSIDE PERIMETER OF ALL BLANKET AREAS.
- JOINT ANCHOR TRENCH SHALL BE USED TO JOIN ROLLS OF ECBs TOGETHER (LONGITUDINALLY AND TRANSVERSELY) FOR ALL ECBs EXCEPT STRAW WHICH MAY USE AN OVERLAPPING JOINT.
- INTERMEDIATE ANCHOR TRENCH SHALL BE USED AT SPACING OF ONE-HALF ROLL LENGTH FOR COCONUT AND EXCELSIOR ECBs.
- OVERLAPPING JOINT DETAIL SHALL BE USED TO JOIN ROLLS OF ECBs TOGETHER FOR ECBs ON SLOPES.
- MATERIAL SPECIFICATIONS OF ECBs SHALL CONFORM TO TABLE ECB-1.
- ANY AREAS OF SEEDING AND MULCHING DISTURBED IN THE PROCESS OF INSTALLING ECBs SHALL BE RESEEDED AND MULCHED.
- DETAILS ON DESIGN PLANS FOR MAJOR DRAINAGEWAY STABILIZATION WILL GOVERN IF DIFFERENT FROM THOSE SHOWN HERE.

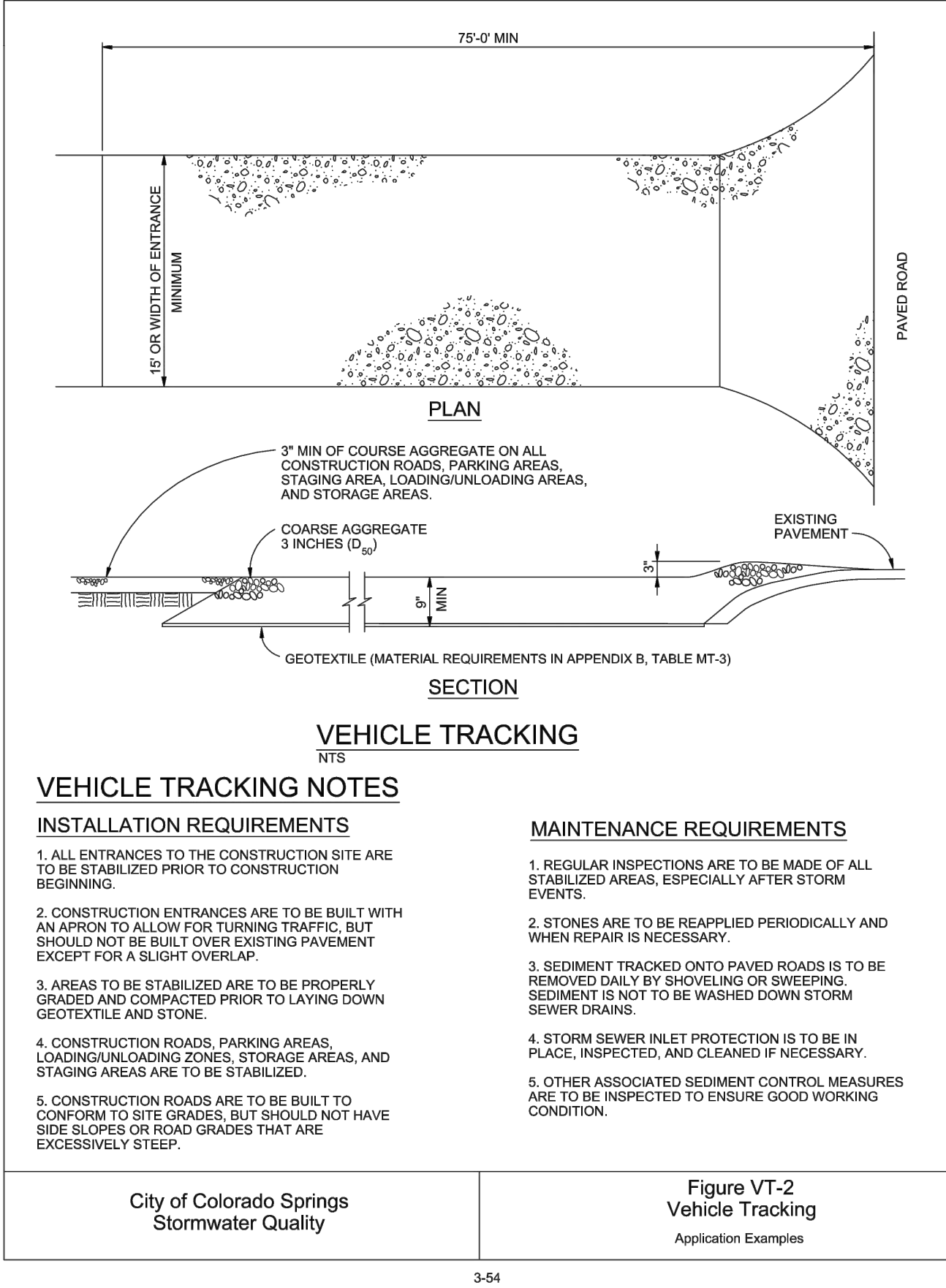
TABLE ECB-1. ECB MATERIAL SPECIFICATIONS			
TYPE	COCONUT CONTENT	STRAW CONTENT	EXCELSIOR CONTENT
STRAW**	—	100%	—
STRAW-COCOONUT	30% MIN	70% MAX	—
COCONUT	100%	—	—
EXCELSIOR	—	—	100%

\*\*STRAW ECBs MAY ONLY BE USED OUTSIDE OF STREAMS AND DRAINAGE CHANNELS.  
\*\*ALTERNATE NETTING MAY BE ACCEPTABLE IN SOME JURISDICTIONS

RECP-8 Urban Drainage and Flood Control District November 2010  
Urban Storm Drainage Criteria Manual Volume 3

Rolled Erosion Control Products (RECP)

EC-6



City of Colorado Springs Stormwater Quality Figure VT-2 Vehicle Tracking Application Examples  
3-54

November 2010 Urban Drainage and Flood Control District RECP-9  
Urban Storm Drainage Criteria Manual Volume 3

REVISIONS

NO.	DESCRIPTION	DATE

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE REVIEWING AGENCIES, TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR:  
**TIMBERRIDGE ESTATES, LLC**  
ATTN: SCOTT HENTIE  
2760 BROGANS BLUFF  
COLORADO SPRINGS, CO 80919  
719.499.6752

**Terra Nova**  
Engineering, Inc.  
Creative Civil Engineer Inc.

721 S. 2960 STREET  
COLORADO SPRINGS, CO 80904  
OFFICE: 719-635-6422  
FAX: 719-635-6426  
www.tnashinc.com

**TIMBERRIDGE ESTATES**  
9210 ARROYA LANE

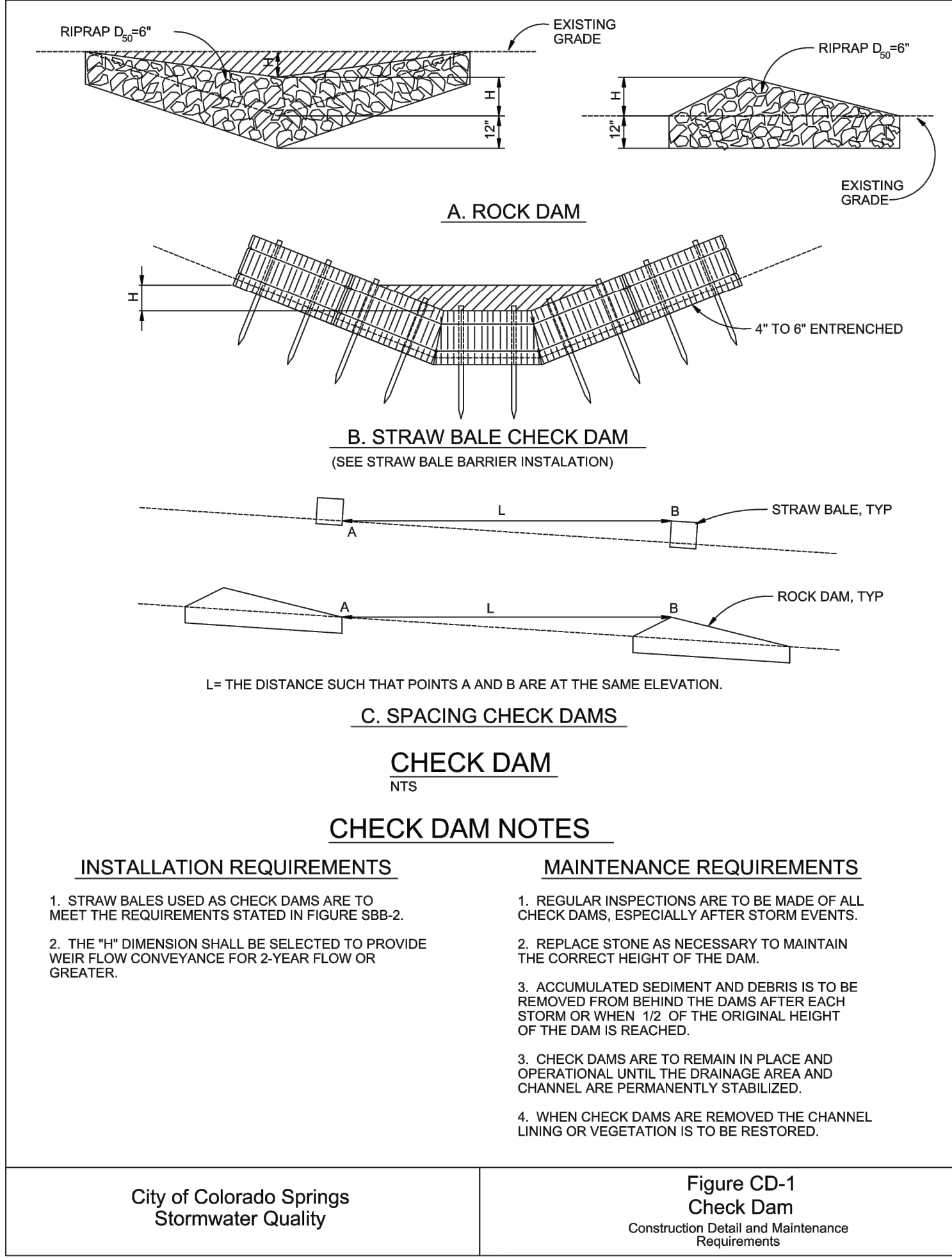
GRADING & EROSION CONTROL PLAN  
EROSION CONTROL PLAN - DETAILS

DESIGNED BY LD  
DRAWN BY DLF  
CHECKED BY LD

H-SCALE NA  
V-SCALE NA

JOB NO. 1733.00  
DATE ISSUED 08/13/19  
SHEET NO. 19 OF 24





## Temporary and Permanent Seeding (TS/PS) EC-2

### Description

Temporary seeding can be used to stabilize disturbed areas that will be inactive for an extended period. Permanent seeding should be used to stabilize areas at final grade that will not be otherwise stabilized. Effective seeding includes preparation of a seedbed, selection of an appropriate seed mixture, proper planting techniques, and protection of the seeded area with mulch, geotextiles, or other appropriate measures.

### Appropriate Uses

When the soil surface is disturbed and will remain inactive for an extended period (typically 30 days or longer), proactive stabilization measures should be implemented. If the inactive period is short-lived (on the order of two weeks), techniques such as surface roughening may be appropriate. For longer periods of inactivity, temporary seeding and mulching can provide effective erosion control. Permanent seeding should be used on finished areas that have not been otherwise stabilized.

Typically, local governments have their own seed mixes and timelines for seeding. Check jurisdictional requirements for seeding and temporary stabilization.

### Design and Installation

Effective seeding requires proper seedbed preparation, selection of an appropriate seed mixture, use of appropriate seeding equipment to ensure proper coverage and density, and protection with mulch or fabric until plants are established.

The USDCM Volume 2 *Revegetation* Chapter contains detailed seed mix, soil preparations, and seeding and mulching recommendations that may be referenced to supplement this Fact Sheet.

Drill seeding is the preferred seeding method. Hydroseeding is not recommended except in areas where steep slopes prevent use of drill seeding equipment, and even in these instances it is preferable to hand seed and mulch. Some jurisdictions do not allow hydroseeding or hydromulching.

### Seedbed Preparation

Prior to seeding, ensure that areas to be revegetated have soil conditions capable of supporting vegetation. Overlot grading can result in loss of topsoil, resulting in poor quality subsoils at the ground surface that have low nutrient value, little organic matter content, few soil microorganisms, rooting restrictions, and conditions less conducive to infiltration of precipitation. As a result, it is typically necessary to provide stockpiled topsoil, compost, or other



Photograph TS/PS-1. Equipment used to drill seed. Photo courtesy of Douglas County.

Temporary and Permanent Seeding	
Functions	
Erosion Control	Yes
Sediment Control	No
Site/Material Management	No

June 2012 Urban Drainage and Flood Control District TS/PS-1  
Urban Storm Drainage Criteria Manual Volume 3

## Mulching (MU) EC-4

### Description

Mulching consists of evenly applying straw, hay, shredded wood mulch, rock bark or compost to disturbed soils and securing the mulch by crimping, tackifiers, netting or other measures. Mulching helps reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing runoff. Although often applied in conjunction with temporary or permanent seeding, it can also be used for temporary stabilization of areas that cannot be reseeded due to seasonal constraints.

Mulch can be applied either using standard mechanical dry application methods or using hydromulching equipment that hydraulically applies a slurry of water, wood fiber mulch, and often a tackifier.

### Appropriate Uses

Use mulch in conjunction with seeding to help protect the seedbed and stabilize the soil. Mulch can also be used as a temporary cover on low to mild slopes to help temporarily stabilize disturbed areas where growing season constraints prevent effective reseeding. Disturbed areas should be properly mulched and tacked, or seeded, mulched and tacked promptly after final grade is reached (typically within no longer than 14 days) on portions of the site not otherwise permanently stabilized.

Standard dry mulching is encouraged in most jurisdictions; however, hydromulching may not be allowed in certain jurisdictions or may not be allowed near waterways.

Do not apply mulch during windy conditions.

### Design and Installation

Prior to mulching, surface-roughen areas by rolling with a crimping or punching type roller or by track walking. Track walking should only be used where other methods are impractical because track walking with heavy equipment typically compacts the soil.

A variety of mulches can be used effectively at construction sites. Consider the following:

Mulch	
Functions	
Erosion Control	Yes
Sediment Control	Moderate
Site/Material Management	No



Photograph MU-1. An area that was recently seeded, mulched, and crimped.

June 2012 Urban Drainage and Flood Control District MU-1  
Urban Storm Drainage Criteria Manual Volume 3

## EC-2 Temporary and Permanent Seeding (TS/PS)

soil amendments and rototill them into the soil to a depth of 6 inches or more.

Topsoil should be salvaged during grading operations for use and spread on areas to be revegetated later. Topsoil should be viewed as an important resource to be utilized for vegetation establishment, due to its water-holding capacity, structure, texture, organic matter content, biological activity, and nutrient content. The rooting depth of most native grasses in the semi-arid Denver metropolitan area is 6 to 18 inches. At a minimum, the upper 6 inches of topsoil should be stripped, stockpiled, and ultimately respread across areas that will be revegetated.

Where topsoil is not available, subsoils should be amended to provide an appropriate plant-growth medium. Organic matter, such as well digested compost, can be added to improve soil characteristics conducive to plant growth. Other treatments can be used to adjust soil pH conditions when needed. Soil testing, which is typically inexpensive, should be completed to determine and optimize the types and amounts of amendments that are required.

If the disturbed ground surface is compacted, rip or rototill the surface prior to placing topsoil. If adding compost to the existing soil surface, rototilling is necessary. Surface roughening will assist in placement of a stable topsoil layer on steeper slopes, and allow infiltration and root penetration to greater depth.

Prior to seeding, the soil surface should be rough and the seedbed should be firm, but neither too loose nor compacted. The upper layer of soil should be in a condition suitable for seeding at the proper depth and conducive to plant growth. Seed-to-soil contact is the key to good germination.

### Seed Mix for Temporary Vegetation

To provide temporary vegetative cover on disturbed areas which will not be paved, built upon, or fully landscaped or worked for an extended period (typically 30 days or more), plant an annual grass appropriate for the time of planting and mulch the planted areas. Annual grasses suitable for the Denver metropolitan area are listed in Table TS/PS-1. These are to be considered only as general recommendations when specific design guidance for a particular site is not available. Local governments typically specify seed mixes appropriate for their jurisdiction.

### Seed Mix for Permanent Revegetation

To provide vegetative cover on disturbed areas that have reached final grade, a perennial grass mix should be established. Permanent seeding should be performed promptly (typically within 14 days) after reaching final grade. Each site will have different characteristics and a landscape professional or the local jurisdiction should be contacted to determine the most suitable seed mix for a specific site. In lieu of a specific recommendation, one of the perennial grass mixes appropriate for site conditions and growth season listed in Table TS/PS-2 can be used. The pure live seed (PLS) rates of application recommended in these tables are considered to be absolute minimum rates for seed applied using proper drill-seeding equipment.

If desired for wildlife habitat or landscape diversity, shrubs such as rubber rabbitbrush (*Chrysothamnus nauseosus*), fourwing saltbush (*Atriplex canescens*) and skunkbrush sumac (*Rhus trilobata*) could be added to the upland seedmixes at 0.25, 0.5 and 1 pound PLS/acre, respectively. In riparian zones, planting root stock of such species as American plum (*Prunus americana*), woods rose (*Rosa woodsii*), plains cottonwood (*Populus sargentii*), and willow (*Populus spp.*) may be considered. On non-topsoiled upland sites, a legume such as Ladak alfalfa at 1 pound PLS/acre can be included as a source of nitrogen for perennial grasses.

TS/PS-2 Urban Drainage and Flood Control District June 2012  
Urban Storm Drainage Criteria Manual Volume 3

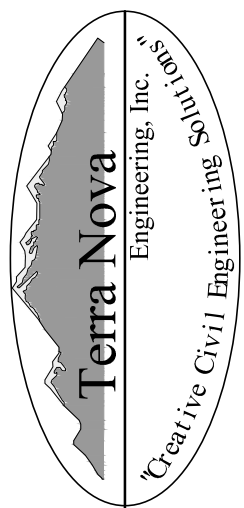
## EC-4 Mulching (MU)

- Clean, weed-free and seed-free cereal grain straw should be applied evenly at a rate of 2 tons per acre and must be tacked or fastened by a method suitable for the condition of the site. Straw mulch must be anchored (and not merely placed) on the surface. This can be accomplished mechanically by crimping or with the aid of tackifiers or nets. Anchoring with a crimping implement is preferred, and is the recommended method for areas flatter than 3:1. Mechanical crimpers must be capable of tucking the long mulch fibers into the soil to a depth of 3 inches without cutting them. An agricultural disk, while not an ideal substitute, may work if the disk blades are dull or blunted and set vertically; however, the frame may have to be weighted to afford proper soil penetration.
- Grass hay may be used in place of straw; however, because hay is comprised of the entire plant including seed, mulching with hay may seed the site with non-native grass species which might in turn out-compete the native seed. Alternatively, native species of grass hay may be purchased, but can be difficult to find and are more expensive than straw. Purchasing and utilizing a certified weed-free straw is an easier and less costly mulching method. When using grass hay, follow the same guidelines as for straw (provided above).
- On small areas sheltered from the wind and heavy runoff, spraying a tackifier on the mulch is satisfactory for holding it in place. For steep slopes and special situations where greater control is needed, erosion control blankets anchored with stakes should be used instead of mulch.
- Hydraulic mulching consists of wood cellulose fibers mixed with water and a tackifying agent and should be applied at a rate of no less than 1,500 pounds per acre (1,425 lbs of fibers mixed with at least 75 lbs of tackifier) with a hydraulic mulcher. For steeper slopes, up to 2000 pounds per acre may be required for effective hydroseeding. Hydromulch typically requires up to 24 hours to dry; therefore, it should not be applied immediately prior to inclement weather. Application to roads, waterways and existing vegetation should be avoided.
- Erosion control mats, blankets, or nets are recommended to help stabilize steep slopes (generally 3:1 and steeper) and waterways. Depending on the product, these may be used alone or in conjunction with grass or straw mulch. Normally, use of these products will be restricted to relatively small areas. Biodegradable mats made of straw and jute, straw-coconut, coconut fiber, or excelsior can be used instead of mulch. (See the ECM/TRM BMP for more information.)
- Some tackifiers or binders may be used to anchor mulch. Check with the local jurisdiction for allowed tackifiers. Manufacturer's recommendations should be followed at all times. (See the Soil Binder BMP for more information on general types of tackifiers.)
- Rock can also be used as mulch. It provides protection of exposed soils to wind and water erosion and allows infiltration of precipitation. An aggregate base course can be spread on disturbed areas for temporary or permanent stabilization. The rock mulch layer should be thick enough to provide full coverage of exposed soil on the area it is applied.

### Maintenance and Removal

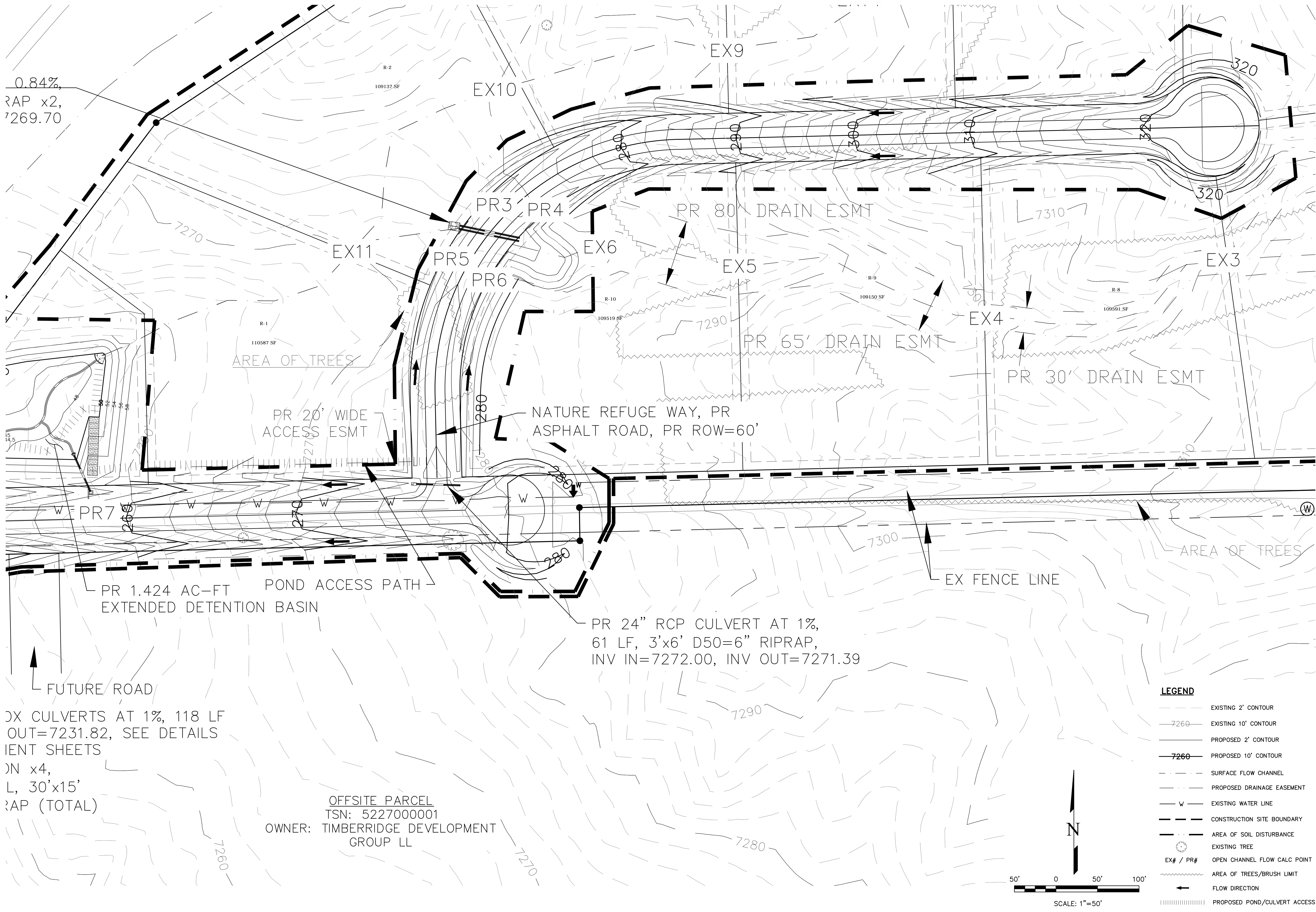
After mulching, the bare ground surface should not be more than 10 percent exposed. Reapply mulch, as needed, to cover bare areas.

MU-2 Urban Drainage and Flood Control District June 2012  
Urban Storm Drainage Criteria Manual Volume 3

TIMBERRIDGE ESTATES 9210 ARROYA LANE GRADING & EROSION CONTROL PLAN EROSION CONTROL PLAN - DETAILS	721 S. 2960 STREET COLORADO SPRINGS, CO 80904 OFFICE: 719-635-6422 FAX: 719-635-6426 www.tnasec.com		PREPARED FOR: TIMBERRIDGE ESTATES, LLC ATTN: SCOTT HENTIE 2760 BROGANS BLUFF COLORADO SPRINGS, CO 80919 719.499.6752	UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED AND REVIEWED BY THE ENGINEER, TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT AND SITE SPECIFICALLY DESIGNATED BY WRITTEN AUTHORIZATION.	REVISIONS	DESCRIPTION	DATE
					NO.		
DESIGNED BY LD							
DRAWN BY DLF							
CHECKED BY LD							
H-SCALE NA							
V-SCALE NA							
JOB NO. 1733.00							
DATE ISSUED 08/13/19							
SHEET NO. 20 OF 24							



N:\jobs\1733.00\Drawings\CD\173300 GEC.dwg, 8/15/2019 10:13:16 AM



REVISIONS	
NO.	DESCRIPTION

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, THE DESIGNER SHALL BE RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PROVIDED. TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT IDENTIFIED HEREIN. ANY OTHER USE IS WITHOUT WRITTEN AUTHORIZATION.
PREPARED FOR: TIMBERRIDGE ESTATES, LLC ATTN: SCOTT HENTIE 2760 BROGANS BLUFF COLORADO SPRINGS, CO 80919 719.499.6752

721 S. 2900 STREET COLORADO SPRINGS, CO 80904 OFFICE: 719-635-6422 FAX: 719-635-6426 www.tnaseinc.com	 Terra Nova Engineering, Inc. Creative Civil Engineering
---	---

TIMBERRIDGE ESTATES 9210 ARROYA LANE	GRADING & EROSION CONTROL PLAN GRADING PLAN - 11x17 ZOOM #1
---	--

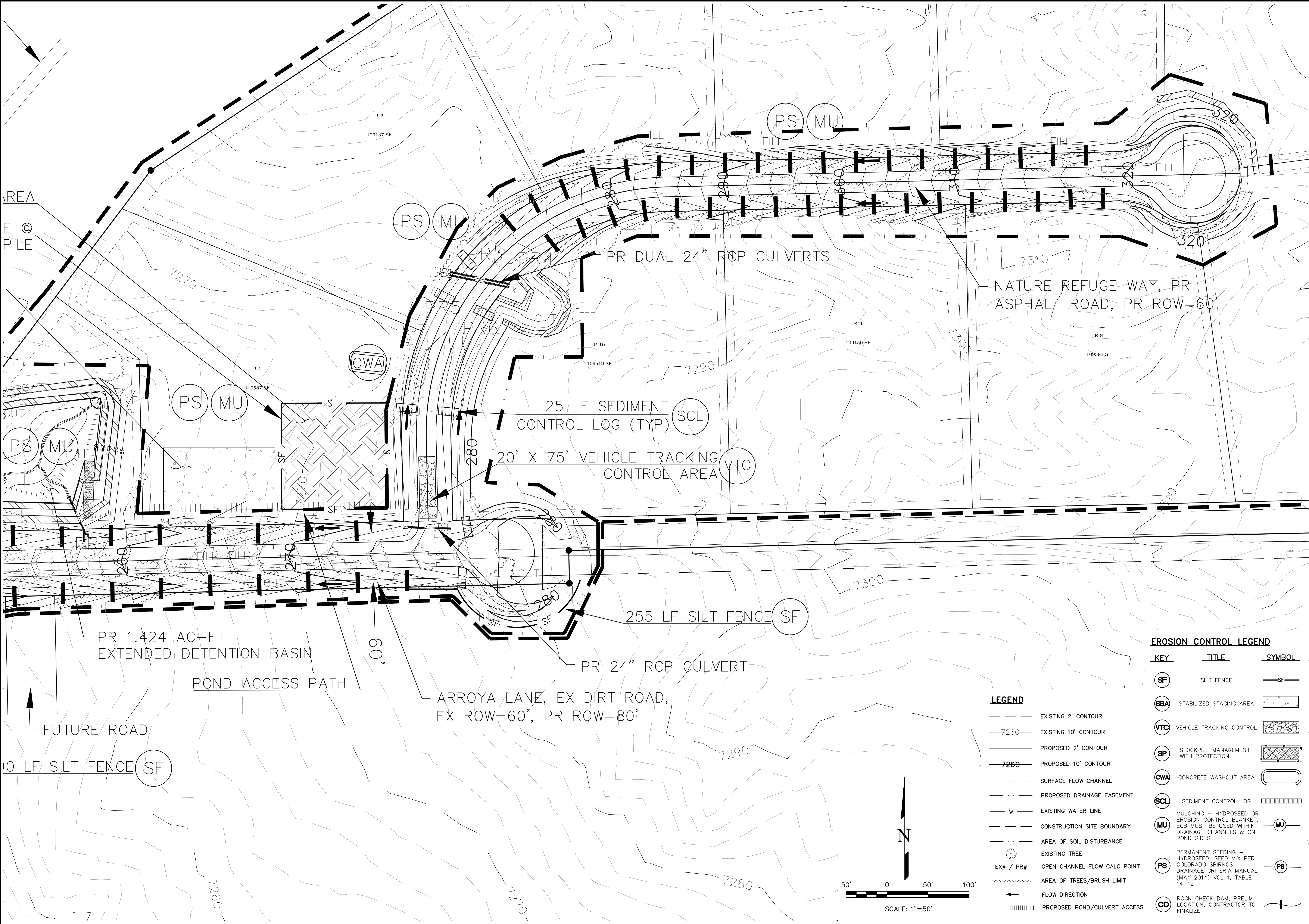
DESIGNED BY LD	CHECKED BY LD
DRAWN BY DLF	DATE ISSUED 08/13/19
H-SCALE 1"=50'	SHEET NO. 21 OF 24
V-SCALE NA	JOB NO. 1733.00







N:\jobs\1733.00\Drawings\CD\173300 GEC.dwg, 8/15/2019 10:13:18 AM



EROSION CONTROL LEGEND		
KEY	TITLE	SYMBOL
	SILT FENCE	
	STABILIZED STAGING AREA	
	VEHICLE TRACKING CONTROL	
	STOCKPILE MANAGEMENT WITH PROTECTION	
	CONCRETE WASHOUT AREA	
	SEDIMENT CONTROL LOG	
	MULCHING - HYDROSEED OR EROSION CONTROL BLANKET, ECB MUST BE USED WITHIN DRAINAGE CHANNELS & ON POND SIDES	
	PERMANENT SEEDING - HYDROSEED, SEED MIX PER COLORADO SPRINGS DRAINAGE CRITERIA MANUAL (MAY 2014) VOL 1, TABLE 14-12	
	ROCK CHECK DAM, PRELIM LOCATION, CONTRACTOR TO FINALIZE	

LEGEND	
	EXISTING 2' CONTOUR
	EXISTING 10' CONTOUR
	PROPOSED 2' CONTOUR
	PROPOSED 10' CONTOUR
	SURFACE FLOW CHANNEL
	PROPOSED DRAINAGE EASEMENT
	EXISTING WATER LINE
	CONSTRUCTION SITE BOUNDARY
	AREA OF SOIL DISTURBANCE
	EXISTING TREE
	OPEN CHANNEL FLOW CALC POINT
	AREA OF TREES/BRUSH LIMIT
	FLOW DIRECTION
	PROPOSED POND/CULVERT ACCESS

REVISIONS

NO.	DESCRIPTION	DATE

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE REVIEWING AGENCIES, THE REVIEWING AGENCIES, TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT AND FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.

PREPARED FOR:  
TIMBERRIDGE ESTATES, LLC  
ATTN: SCOTT HENTIE  
2760 BROGANS BLUFF  
COLORADO SPRINGS, CO 80919  
719.499.6752

Terra Nova Engineering, Inc.  
Creative Civil Engineering

721 S. 2960 STREET  
COLORADO SPRINGS, CO 80904  
OFFICE: 719-635-6422  
FAX: 719-635-6426  
www.tnaseinc.com

TIMBERRIDGE ESTATES  
9210 ARROYA LANE

GRADING & EROSION CONTROL PLAN  
EROSION CONTROL PLAN - 11x17 ZOOM EAST

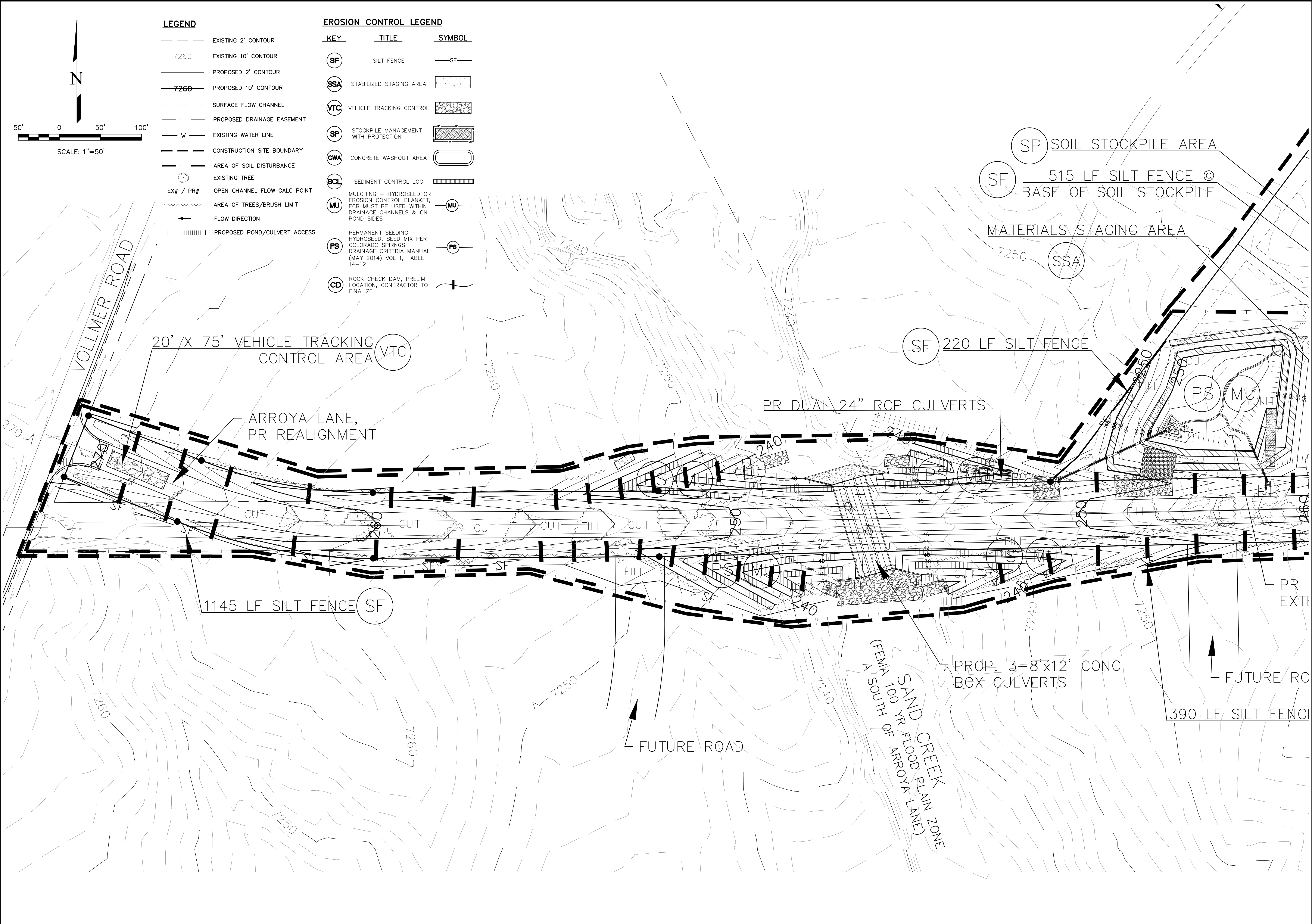
DESIGNED BY LD  
DRAWN BY DLF  
CHECKED BY LD

H-SCALE 1"=100'  
V-SCALE NA

JOB NO. 1733.00  
DATE ISSUED 08/13/19  
SHEET NO. 23 OF 24



N:\jobs\1733.00\Drawings\CD\173300 GEC.dwg, 8/15/2019 10:13:19 AM



LEGEND

- EXISTING 2' CONTOUR
- EXISTING 10' CONTOUR
- PROPOSED 2' CONTOUR
- PROPOSED 10' CONTOUR
- SURFACE FLOW CHANNEL
- PROPOSED DRAINAGE EASEMENT
- EXISTING WATER LINE
- CONSTRUCTION SITE BOUNDARY
- AREA OF SOIL DISTURBANCE
- EXISTING TREE
- EX# / PR#
- AREA OF TREES/BRUSH LIMIT
- FLOW DIRECTION
- PROPOSED POND/CULVERT ACCESS

EROSION CONTROL LEGEND

- | KEY | TITLE  | SYMBOL |
|-----|--|--------|
| SF  | SILT FENCE   | SF     |
| SSA | STABILIZED STAGING AREA  | SSA    |
| VTC | VEHICLE TRACKING CONTROL   | VTC    |
| SP  | STOCKPILE MANAGEMENT WITH PROTECTION   | SP     |
| CWA | CONCRETE WASHOUT AREA  | CWA    |
| SCL | SEDIMENT CONTROL LOG   | SCL    |
| MU  | MULCHING - HYDROSEED OR EROSION CONTROL BLANKET, ECB MUST BE USED WITHIN DRAINAGE CHANNELS & ON POND SIDES           | MU     |
| PS  | PERMANENT SEEDING - HYDROSEED, SEED MIX PER COLORADO SPIRINGS DRAINAGE CRITERIA MANUAL (MAY 2014) VOL 1, TABLE 14-12 | PS     |
| CD  | ROCK CHECK DAM, PRELIM LOCATION, CONTRACTOR TO FINALIZE  | CD     |

REVISIONS	NO.	DESCRIPTION	DATE
UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE REVIEWING AGENCIES, THE REVIEWING AGENCIES, TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT DESIGNATED BY WRITTEN AUTHORIZATION.			
PREPARED FOR: TIMBRIDGE ESTATES, LLC ATTN: SCOTT HENTIE 2760 BROGANS BLUFF COLORADO SPRINGS, CO 80919 719.499.6752			
Terra Nova Engineering, Inc. Creative Civil Engineering 721 S. 2900 STREET COLORADO SPRINGS, CO 80904 OFFICE: 719-635-6422 FAX: 719-635-6426 www.tnainc.com			
TIMBRIDGE ESTATES 9210 ARROYA LANE GRADING & EROSION CONTROL PLAN EROSION CONTROL PLAN - 11x17 ZOOM WEST			
DESIGNED BY LD DRAWN BY DLF CHECKED BY LD H-SCALE 1"=100' V-SCALE NA JOB NO. 1733.00 DATE ISSUED 08/13/19 SHEET NO. 24 OF 24			