| FED.RD. DIV.NO. | FEDERAL AID PROJECT NO. | | SHEET NO. |
|---|---|---|---|
| 6 | | | 1 |
| STATE | DIST. | COUNTY | |
| TX. | SAT | BEXAR | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| 0915 | 12 | 514 | |

# STATE OF TEXAS
## DEPARTMENT OF TRANSPORTATION

LEONVALLEY

## HUEBNER CREEK HIKE AND BIKE TRAIL

PROJECT NO.:
CONTROL NO.: 0915-12-514
C.S.:
LIMITS: BANDERA ROAD TO EVERS ROAD
PROJECT LENGTH: 0.85 MILES

CLASSIFICATION:
DESIGN SPEED: 18 MPH
AVERAGE DAILY TRAFFIC: N/A
AREA OF DISTURBED SOIL: 1.83 ACRES

## FINAL PLANS

LETTING DATE: _____
DATE CONTRACTOR BEGAN WORK: _____
DATE WORK ACCEPTED: _____
FINAL CONTRACT COST: _____
CONTRACTOR: _____

"TDLR INSPECTION REQUIRED"
"TDLR NO.: EABPRJB5806180"

INDEX OF SHEETS



* THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

JESS W. SWAIM 99204 LICENSED PROFESSIONAL ENGINEER

Jess W. Swaim, P.E
10-20-2014

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY JESS W. SWAIM
P.E. # 99204
DATE: 11/12/2014

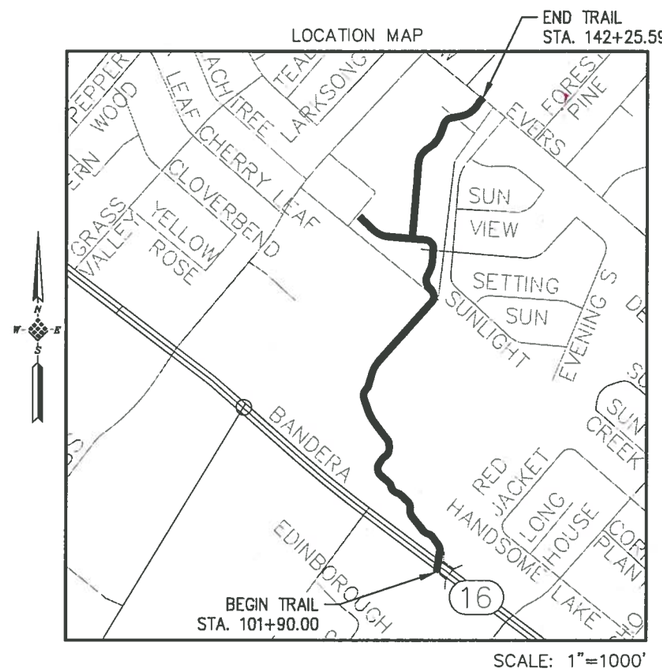
PLANS PREPARED BY:


IDS Engineering Group
TBPE F-002726 TBPLS 10110704

613 NW Loop 410,
Suite 550
San Antonio, TX 78216
210.340.8481


CONSTRUCTION OF HIKE AND BIKE TRAIL

LOCATION MAP




SCALE: 1"=1000'

EXCEPTIONS: NONE
EQUATIONS: NONE
RAILROAD CROSSING: NONE

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, JUNE 1, 2004 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT: REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FROM FHWA 1273, MAY, 2012).

### CITY OF LEON VALLEY

RECOMMENDED FOR LETTING: Melinda Stout
PUBLIC WORKS DIRECTOR

APPROVED FOR LETTING: Manuel Longoria
CITY MANAGER

### TEXAS DEPARTMENT OF TRANSPORTATION

RECOMMENDED FOR LETTING: Lizette J. Colbert, P.E

DISTRICT DESIGN SUPPORT DIRECTOR

APPROVED FOR LETTING: 11/25/15

DISTRICT ENGINEER

10/20/14

Z:\211700100\410 Design\060 DWGS\G-CS.dwg [COVER] Plotted Dec 08, 2014 at 4:41pm by GRomero (Last Saved by: mmina)

SENECA DR.

EL VERDE RD.

LIMITS OF WORK
LC-17 SEGMENT 3
(UNDER DESIGN)

BANDERA ROAD
(SH 16)

BEGIN TRAIL A
STA. 101+90.00

BORE B-2

NATURAL AREA PARK BOUNDARY

HUEBNER ONION HOMESTEAD

BORE B-1

TRAIL A

10' CONCRETE TRAIL

TRAIL CL

MATCHLINE A-A STA. 113+00
SEE THIS SHEET

NATURAL AREA PARK BOUNDARY

HANDSOME LAKE DR.

LEGEND

EASEMENT LINE

CREEK FLOW LINE

BORE LOCATION

10' CONCRETE TRAIL

CONTRACTOR CAN OBTAIN A COPY OF THE BORE LOGS FROM THE CITY, UPON WRITTEN REQUEST.

MATCHLINE A-A STA. 113+00
SEE THIS SHEET

NATURAL AREA PARK BOUNDARY

TRAIL A

10' CONCRETE TRAIL

NATURAL AREA PARK BOUNDARY

SUNLIGHT DR.

TRAIL CL

10' CONCRETE TRAIL

TRAIL B

BEGIN TRAIL B
STA. 10+00

POSS RD.

END TRAIL B
STA. 14+11.59

TRAIL A

10' CONCRETE TRAIL

TRAIL CL

END TRAIL A
STA. 142+25.59

EVERS RD.

200' 0' 200'

SCALE
1"=200'

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
THONG HUY LE
95764
LICENSED
PROFESSIONAL ENGINEER
11-3-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410,
Suite 550
San Antonio, TX 78216
210.340.8481

LEON VALLEY

Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

PROJECT LAYOUT AND
BORE LOCATIONS

| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 2 | 57 |

## GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION JUNE 2004, OR LATEST.

2. NO EXTRA PAYMENT SHALL BE ALLOWED FOR WORK CALLED FOR ON THE PLANS, BUT NOT INCLUDED IN THE BID PROPOSAL. THIS INCIDENTAL WORK WILL BE REQUIRED AND SHALL BE INCLUDED IN THE PAY ITEM TO WHICH IT RELATES.

3. THE CONTRACTOR SHALL PROVIDE ACCESS FOR THE DELIVERY OF MAIL BY THE U.S. POSTAL SERVICE.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION ANY DAMAGE DONE TO EXISTING FENCES, CONCRETE ISLANDS, STREET PAVING, CURBS, SHRUBS, BUSHES OR DRIVEWAYS. (NO SEPARATE PAY ITEM).

5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT ALL SIGNS AND BARRICADES ARE PROPERLY INSTALLED AND MAINTAINED. ALL LOCATIONS AND DISTANCES WILL BE DECIDED UPON IN THE FIELD BY THE CONTRACTOR, USING THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES". THE CITY'S CONSTRUCTION INSPECTOR AND TRAFFIC ENGINEERING REPRESENTATIVE WILL ONLY BE RESPONSIBLE TO INSPECT BARRICADES AND SIGNS. IF, IN THE OPINION OF THE TRAFFIC ENGINEERING REPRESENTATIVE AND THE CONSTRUCTION INSPECTOR, THE BARRICADES AND SIGNS DO NOT CONFORM TO ESTABLISHED STANDARDS OR ARE INCORRECTLY PLACED OR ARE INSUFFICIENT IN QUANTITY TO PROTECT THE GENERAL PUBLIC, THE CONSTRUCTION INSPECTOR SHALL HAVE THE OPTION TO STOP OPERATIONS UNTIL SUCH TIME AS THE CONDITIONS ARE CORRECTED.

6. IF THE NEED ARISES, ADDITIONAL BARRICADES AND DIRECTIONAL DEVICES MAY BE ORDERED BY THE TRAFFIC ENGINEERING REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.

7. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.171 C.P.S. MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.

8. CONTRACTOR SHALL NOTIFY THE CITY INSPECTOR TWENTY FOUR (24) HOURS PRIOR TO BACKFILL OF ANY UTILITY TRENCHES TO SCHEDULE FOR DENSITY TEST AS REQUIRED.

9. CONTRACTOR SHALL PRESERVE ALL CONSTRUCTION STAKES, MARKS, ETC. IF ANY ARE DESTROYED OR REMOVED BY THE CONTRACTOR OR HIS EMPLOYEES, THEY SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

10. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO CONSTRUCTION TO DETERMINE THE LOCATION OF EXISTING UTILITIES. CONTRACTOR SHALL NOTIFY THE FOLLOWING AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO EXCAVATION OPERATION:

| | |
|---|---|
| SAN ANTONIO WATER SYSTEM (SAWS) | 233-2010 |
| GRANDE COLD WATER | 210-684-1391 X224 |
| COLV SEWER | 210-681-1232 |
| COLV PUBLIC WORKS | 210-681-1232 |
| TEXAS STATE WIDE ONE CALL LOCATOR | 811 |
| - CITY PUBLIC SERVICE ENERGY | |
| - TIME WARNER | |
| - AT&T | |

11. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES INDICATED ON THE PLANS ARE TAKEN FROM AVAILABLE RECORDS AND ARE NOT GUARANTEED, BUT SHALL BE INVESTIGATED AND VERIFIED BY THE CONTRACTOR BEFORE STARTING WORK. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY DAMAGE TO AND FOR THE MAINTENANCE AND PROTECTION OF THE EXISTING UTILITIES EVEN IF THEY ARE NOT SHOWN ON THE PLANS. LOCATION AND DEPTH OF EXISTING UTILITIES SHOWN HERE ARE APPROXIMATE ONLY. ACTUAL LOCATIONS AND DEPTHS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION AND HE SHALL BE RESPONSIBLE FOR PROTECTION OF SAME DURING CONSTRUCTION.

12. ALL WASTE MATERIAL SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE HIS SOLE RESPONSIBILITY TO DISPOSE OF THIS MATERIAL OFF THE LIMITS OF THE PROJECT. NO WASTE MATERIAL SHALL BE PLACED IN EXISTING LOWS THAT WILL BLOCK OR ALTER FLOW LIMITS OF EXISTING ARTIFICIAL OR NATURAL DRAINAGE.

13. THE CONTRACTOR SHALL NOT PLACE ANY WASTE MATERIAL IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN DEVELOPMENT PERMIT.

14. THE CONTRACTOR SHALL MAINTAIN ALL ADJOINING STREETS AND TRAVELED ROUTES FREE FROM SPILLED AND /OR TRACKED CONSTRUCTION MATERIALS AND /OR DEBRIS.

15. IF THE CONTRACTOR ENCOUNTERS ANY ARCHAEOLOGICAL DEPOSITS DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR MUST STOP EXCAVATION IMMEDIATELY, CONTACT THE CITY INSPECTOR, AND CALL THE CITY PUBLIC WORKS AT 681-1232 FOR AN ARCHAEOLOGICAL INVESTIGATION.

THE CONTRACTOR CANNOT BEGIN EXCAVATION AGAIN WITHOUT WRITTEN PERMISSION FROM THE CITY.

IF MORE THAN THREE (3) DAYS ARE REQUIRED FOR INVESTIGATION (NOT INCLUDING HOLIDAY AND WEEKENDS) AND IF THE CONTRACTOR IS UNABLE TO WORK IN OTHER AREAS, THEN THE CONTRACTOR WILL BE ALLOWED TO NEGOTIATE FOR ADDITIONAL CONSTRUCTION TIME UPON WRITTEN REQUEST WITHIN TEN (10) DAYS AFTER THE FIRST NOTICE TO THE CITY OF ARCHAEOLOGICAL INVESTIGATION FOR EACH EVENT.

IF THE TIME REQUIRED FOR INVESTIGATION IS LESS THAN OR EQUAL TO THREE (3) DAYS FOR EACH EVENT, CONTRACT DURATION WILL NOT BE EXTENDED.

16. IF SUSPECTED CONTAMINATION IS ENCOUNTERED DURING CONSTRUCTION OPERATIONS, CITY OF LEON VALLEY SHALL BE NOTIFIED IMMEDIATELY WHEN CONTAMINATED SOILS AND /OR GROUNDWATER ARE ENCOUNTERED AT LOCATIONS NOT IDENTIFIED IN THE PLANS. THE NOTIFICATION SHOULD INCLUDE THE STATION NUMBER, TYPE OF CONTAMINATED MEDIA, EVIDENCE OF CONTAMINATION AND MEASURES TAKEN TO CONTAIN THE CONTAMINATED MEDIA AND PREVENT PUBLIC ACCESS. THE CONTAMINATED SOIL AND /OR GROUNDWATER SHALL NOT BE REMOVED FROM THE LOCATION WITHOUT PRIOR CITY OF LEON VALLEY APPROVAL.

THE CONTRACTOR MUST STOP THE EXCAVATION IMMEDIATELY AND CONTACT THE CITY OF LEON VALLEY INSPECTOR. THE CONTRACTOR CANNOT BEGIN EXCAVATION ACTIVITIES WITHOUT WRITTEN PERMISSION FROM THE CITY.

17. CONTRACTOR SHALL NOT REMOVE OR ADJUST ANY VIA FACILITIES. THE CONTRACTOR MUST CONTACT VIA FOURTEEN DAYS PRIOR, FOR THE REMOVAL OF BENCHES, STOP POLES OR ANY OTHER VIA FACILITIES THAT MAY BE PRESENT. PLEASE PROVIDE THIRTY DAYS PRIOR NOTICE FOR SHELTER REMOVAL (TELEPHONE NOS: (210) 362-2155 OR (210) 362-2096). THE CONTRACTOR WILL BE LIABLE FOR ANY DAMAGES TO VIA FACILITIES NOT REMOVED BY VIA. THE CONTRACTOR IS REQUIRED TO REPLACE ALL FLATWORK REMOVED OR DAMAGED IN THE COURSE OF EXECUTING THE CONTRACT UNLESS OTHERWISE NOTED BY VIA. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROTECTING VIA FACILITIES IF ADJACENT TO WORK AREA.

## TREE PROTECTION AND PRESERVATION GENERAL NOTES

1. NO UTILITY OR STREET EXCAVATION WORK SHALL BEGIN IN AREAS WHERE TREE PRESERVATION AND TREATMENT MEASURES HAVE NOT BEEN COMPLETED AND APPROVED.
2. TREE PROTECTION FENCING SHALL BE REQUIRED. TREE PROTECTION FENCING SHALL BE INSTALLED, MAINTAINED AND REPAIRED BY THE CONTRACTOR DURING SITE CONSTRUCTION. DURING CONSTRUCTION ACTIVITY, AT LEAST A SIX-INCH LAYER OF COARSE MULCH SHALL BE PLACED AND MAINTAINED OVER THE ROOT PROTECTION ZONE (NO SEPARATE PAY ITEM).
3. THE CONTRACTOR SHALL AVOID CUTTING ROOTS LARGER THAN ONE INCH IN DIAMETER WHEN EXCAVATING NEAR EXISTING TREES. EXCAVATION IN THE VICINITY OF TREES SHALL PROCEED WITH CAUTION. THE CONTRACTOR SHALL CONTACT THE CITY INSPECTOR FOR GUIDANCE.
4. ROOTS WILL BE CUT WITH A ROCK SAW OR BY HAND, NOT BY AN EXCAVATOR OR OTHER ROAD CONSTRUCTION EQUIPMENT.
5. ALL CURB AND SIDEWALK WORK SHALL USE ALTERNATIVE CONSTRUCTION METHODS TO MINIMIZE EXTENSIVE ROOT DAMAGE TO TREES (REFER TO DETAILS).
6. EXPOSED ROOTS SHALL BE COVERED AT THE END OF THE DAY USING TECHNIQUES SUCH AS COVERING WITH SOIL, MULCH, OR WET BURLAP.
7. NO EQUIPMENT, VEHICLES OR MATERIALS SHALL OPERATE OR BE STORED WITHIN THE ROOT PROTECTION ZONE OF ANY TREE NEAR THE PROJECT. ROOT PROTECTION ZONE IS 1 FOOT OF RADIUS PER INCH OF TREE'S DIAMETER. A 10-INCH DIAMETER TREE WOULD HAVE A 10 FOOT RADIUS ROOT PROTECTION ZONE AROUND THE TREE. ROOTS OR BRANCHES IN CONFLICT WITH THE CONSTRUCTION SHALL BE CUT CLEANLY ACCORDING TO PROPER PRUNING METHODS. OAK WOUNDS SHALL BE PAINTED OVER WITHIN 30 MINUTES TO PREVENT OAK WILT.
8. SAPLINGS, SHRUBS OR BUSHES TO BE CLEARED FROM THE PROTECTED ROOT ZONE AREA OF A LARGE TREE SHALL BE REMOVED BY HAND AS DESIGNATED BY THE INSPECTOR.
9. NO WIRES, NAILS OR OTHER MATERIAL MAY BE ATTACHED TO PROTECTED TREES.
10. TREES, TREE LIMBS, BUSHES AND SHRUBS LOCATED IN THE CITY STREET OR ALLEY RIGHT-OF-WAY OR PERMANENT EASEMENTS WHICH INTERFERE WITH PROPOSED CONSTRUCTION ACTIVITIES SHALL BE PROPERLY PRUNED FOLLOWING THE ANSI A-300 STANDARDS FOR PRUNING. ALL TREE PRUNING SHALL BE COMPLETED BY A CITY OF SAN ANTONIO TREE MAINTENANCE LICENSED CONTRACTOR (ARTICLE 21-171, CITY CODE) ONLY AFTER APPROVAL FROM THE CAPITAL PROJECTS MANAGEMENT THROUGH THE INSPECTOR.
11. NO EXCESSIVE TREE TRIMMING WILL BE PERMITTED.
12. ALL DEBRIS GENERATED BY THE PRUNING AND TRIMMING OF THE TREES AND /OR BUSHES SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF PROPERLY (NO SEPARATE PAY ITEM).
13. TREES MUST BE MAINTAINED IN GOOD HEALTH THROUGHOUT THE CONSTRUCTION PROCESS. MAINTENANCE MAY INCLUDE, BUT NOT LIMITED TO: WATERING THE ROOT PROTECTION ZONE, WASHING FOLIAGE, FERTILIZATION, PRUNING, ADDITIONAL MULCH APPLICATIONS AND OTHER MAINTENANCE AS NEEDED ON THE PROJECT.
14. ANY TREE REMOVAL SHALL BE APPROVED BY THE CITY ARBORIST. (494-4771)
15. TREES WHICH ARE DAMAGED OR LOST DUE TO THE CONTRACTOR'S NEGLIGENCE DURING CONSTRUCTION SHALL BE MITIGATED TO THE CITY'S SATISFACTION.
16. TREE PLANTING FOR MITIGATION OR ENHANCEMENT: ALL PLANTED TREES SHALL BE MAINTAINED IN A HEALTHY CONDITION AT ALL TIMES. THIS INCLUDES IRRIGATION, FERTILIZING, PRUNING AND OTHER MAINTENANCE AS NEEDED ON THE PROJECT. TREES THAT DIE WITHIN TWELVE (12) MONTHS SHALL BE REPLACED WITH A TREE OF EQUAL SIZE AND SPECIES.

## ACCESSIBILITY REQUIREMENTS

1. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS AT ALL TIMES TO LOCAL RESIDENCES AND BUSINESSES.

2. WHEN THE WORK REQUIRES THE EXCAVATION OF THE STREET AND THE REMOVAL OF THE EXISTING DRIVEWAY APPROACHES AND SIDEWALKS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY ALL-WEATHER ACCESS TO THE BUSINESSES AND RESIDENCES. THE TEMPORARY DRIVEWAY APPROACHES SHALL BE CONSTRUCTED WITH FLEXIBLE BASE OR GRAVEL MATERIAL AT NO SEPARATE COST TO THE CITY.

3. PRIOR TO INITIATING THE CONSTRUCTION OF NEW DRIVEWAY APPROACHES, THE CONTRACTOR SHALL GIVE ADVANCE WARNING IN PERSON, OR IN WRITING, OF AT LEAST 48 HOURS TO EACH RESIDENCE THAT WILL BE IMMEDIATELY AFFECTED, SO THAT ALTERNATE PLANS MAY BE MADE BY THE RESIDENTS.

4. FOR BUSINESSES WITH MORE THAN ONE DRIVEWAY, AT LEAST ONE DRIVEWAY SHALL REMAIN OPEN WHILE THE OTHER NEW DRIVEWAY APPROACHES ARE CONSTRUCTED. FOR BUSINESSES WITH ONLY ONE DRIVEWAY, THE NEW DRIVEWAY APPROACH SHALL BE CONSTRUCTED IN HALF WIDTHS, UNLESS A TEMPORARY ASPHALT DRIVEWAY IS FIRST INSTALLED AT NO SEPARATE COST TO THE CITY.

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

STATE OF TEXAS
THONG HUY LE
95764
LICENSED
PROFESSIONAL ENGINEER
11-3-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481

LEONVALLEY

Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

GENERAL NOTES

| | | |
|---|---|---|
| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 3 | 57 |

Z:\211700100\410 Design\060 DWGS\C-NOTES.dwg [NOTES] Plotted Dec 09, 2014 at 10:18am by GRomero (Last Saved by: mmina)

## SUPPLEMENTAL GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE 2004 TXDOT – STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES.

2. ALL PHASES OF WORK UNDER THIS CONTRACT SHALL BE WITH STRICT ADHERENCE TO THE PLANS AND ACCOMPANYING SPECIFICATIONS. WHERE DIFFERENCES OCCUR BETWEEN THESE TWO DOCUMENTS, THE MORE STRINGENT REQUIREMENT SHALL APPLY. FINAL DECISIONS OR JUDGMENTS ON INTERPRETATION OF THE SPECIFICATIONS AND/OR ON MATTERS NOT SPECIFICALLY COVERED BY THE ABOVE DOCUMENTS SHALL BE MADE BY THE CITY OF LEON VALLEY ENGINEER.

3. CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE CONSTRUCTION OF THE PROJECT INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNERS AND THE ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTIONS WITH THE PERFORMANCE OF THE WORK ON THIS PROJECT, EXCEPTING FROM LIABILITY ARISING FROM SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.

4. CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR STRUCTURAL DESIGN/GEOTECHNICAL/SAFETY/EQUIPMENT CONSULTANT, IF ANY, SHALL REVIEW THESE PLANS AND ANY AVAILABLE GEOTECHNICAL INFORMATION AND THE ANTICIPATED INSTALLATION SITE (S) WITHIN THE PROJECT WORK AREA IN ORDER TO DEVELOP THE CONTRACTOR'S PLANS TO IMPLEMENT THE PROJECT DESCRIBED IN THE CONTRACT DOCUMENTS. THE CONTRACTOR'S PLANS SHALL PROVIDE FOR ADEQUATE TRENCH SAFETY SYSTEMS THAT COMPLY WITH, AT A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS, SPECIFICALLY CONTRACTOR AND/OR CONTRACTOR'S INDEPENDENTLY RETAINED EMPLOYEE OR SAFETY CONSULTANT SHALL DEVELOP AND IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS. GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.

5. NO ADDITIONAL PAYMENT SHALL BE MADE FOR ROCK, SAND, GRAVEL, OR OTHER UNSTABLE CONDITIONS ENCOUNTERED IN ANY WORK IMPLIED BY THESE DRAWINGS. IN THE OFFICE OF IDS ENGINEERING GROUP. THE CONTRACTOR MAY REVIEW A COPY OF THE GEOTECHNICAL REPORT FOR THE PROJECT IN ORDER TO OBTAIN KNOWLEDGE OF THE SUBSURFACE CONDITIONS.

6. THE CONTRACTOR SHALL PROVIDE CONTINUOUS ACCESS FOR RESIDENTS AND BUSINESSES.

7. WHENEVER POWER POLES ARE ADJACENT TO THE PROPOSE EXCAVATION, THE CONTRACTOR SHALL PROVIDE PROPER SHORING OR OTHER SUITABLE SUPPORT DURING CONSTRUCTION, IN WHICH METHODS MUST BE APPROVED BY THE OWNER OF THE UTILITY.

8. ALL TRENCHES MUST BE BACKFILLED AT THE END OF EACH WORK DAY. THE CONTRACTOR SHALL NOT LEAVE OPEN TRENCHES DURING NON–WORKING HOURS.

9. CONTRACTOR SHALL COMPLY WITH CITY OF LEON VALLEY BUILDING CODE AND REGULATIONS, AS WELL AS OTHER SAFETY CODES AND INSPECTION PROVISIONS APPLICABLE TO THIS PROJECT.

10. CONTRACTOR SHALL SECURE ALL PERMITS REQUIRED FOR CONSTRUCTION AND SHALL NOTIFY RESPECTIVE GOVERNMENTAL OR UTILITY AGENCIES AFFECTED BY CONSTRUCTION.

11. CONTRACTOR IS REQUIRED TO VERIFY PROJECT ELEVATIONS.

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE GRADING ELEVATIONS ACCORDING TO THE FOLLOWING TOLERANCES:

| | |
|---|---|
| PAD ELEVATION | #0.1 FOOT |
| PAVEMENT | #0.005 FOOT |
| CURBS. GUTTERS, AND DRAINAGE FACILITIES | #0.002 FOOT |
| LANDSCAPING | #0.2 FOOT |

SHOULD ANY ABOVE MENTIONED ELEVATIONS FOUND TO BE OUT OF LEVEL BEYOND THE STATED TOLERANCE AFTER CONTRACTOR'S OPERATIONS, THE CONTRACTOR SHALL RETURN AND CORRECT THE GRADING AT NO COST TO THE OWNER. ALL EXCESS MATERIALS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT THE CONTRACTOR'S EXPENSE.

13. "MATCH EXISTING" SHALL BE UNDERSTOOD TO SIGNIFY VERTICAL AND HORIZONTAL ALIGNMENT.

14. THE SITE DISTURBED DURING CONSTRUCTION SHALL BE RESEEDED. 70% VEGITATIVE COVER SHALL BE ESTABLISHED BEFORE ACCEPTANCE OF PHASE.

15. ANY EXISTING SITE IMPROVEMENT OR UTILITY REMOVED, DAMAGED OR UNDERCUT BY CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE ENGINEER AND APPROVED BY THE RESPECTIVE UTILITY AT THE CONTRACTOR'S EXPENSE.

16. DRIVEWAYS, WALKS, AND RETAINING WALLS SHALL BE DEMOLISHED AND REMOVED WHERE NECESSARY FOR NEW CONSTRUCTION.

17. REMOVAL OF EXISTING STORM DRAINS INDICATED ON PLANS SHALL BE INCLUDED IN ITEM 100, PREPARING RIGHT–OF–WAY.

18. "TXDOT" SHALL SIGNIFY TEXAS DEPARTMENT OF TRANSPORTATION.

19. CONTRACTOR SHALL CONTACT THE CONSTRUCTION INSPECTION AND MATERIALS TESTING DIVISION, CITY OF LEON VALLEY, AT LEAST 24 HOURS PRIOR TO BEGINNING WORK FOR WHICH THE INSPECTION IS DESIRED.

20. MULTI – USE PATH – THE STANDARD MULTI – USE PATH PROPOSED FOR THE PROJECT IS TEN FEET (10') WIDE, ADJUSTMENTS IN THE ALIGNMENT WILL BE ALLOWED TO MANEUVER PAST EXISTING UTILITIES, TREES AND OTHER EXISTING FEATURES. ALIGNMENT ADJUSTMENTS SHALL BE APPROVED BY THE INSPECTOR OR ENGINEER.

21. CONTACT CITY OF LEON VALLEY RIGHT OF WAY DEPARTMENT TO GET INFORMATION ON EASEMENTS OBTAINED FOR THIS PROJECT.

22. ALL CLEARING, TREE REMOVAL, AND GRADING FOR THE PROJECT WILL BE SUBSIDIARY TO RIGHT–OF–WAY PREPARATION.

23. CONCRETE BUMP–OUTS FOR TRAIL MARKERS ARE INCIDENTAL TO ITEM 0531 2004.

24. MULTI – USE PATH TO BE CONSTRUCTED TO MEET REQUIREMENTS OF ARCHITECTURAL BARRIER ACT ACCESSIBILITY GUIDELINES FOR OUTDOOR DEVELOPED AREAS.

25. SLOPE CRITERIA: AS PER AASHTO
CROSS SLOPE – 1:50 (2%) MAXIMUM
RUNNING SLOPE –1:20 ANY DISTANCE
1: 10 FOR 30' MAX.

26. ALL CONSTRUCTION AREAS MUST BE SAFE FOR PEDESTRIAN TRAFFIC BEFORE, DURING, AND AFTER CONSTRUCTION. WORK SITES SHALL BE CLEANED DAILY OF ALL CONSTRUCTION TRASH, DEBRIS, AND MATERIALS, ETC.

27. CONTRACTOR SHALL WARN ALL EMPLOYEES TO BEWARE OF WILDLIFE WHILE ON THE PROJECT SITE. NEITHER THE CITY OF LEON VALLEY NOR THE DESIGN CONSULTANT SHALL BE RESPONSIBLE FOR ANY INJURY OR MEDICAL BILLS INCURRED WHILE ON PROJECT.

28. COST OF COMPACTING EXISTING SUBGRADE AND PLACEMENT OF TOPSOIL IN AREAS DISTURBED BY CONSTRUCTION IS SUBSIDIARY TO THE EXCAVATION COST.

29. CONTRACTOR TO PROVIDE POSITIVE DRAINAGE IN ALL DISTURBED AREAS. MINIMUM SLOPES IN DISTURBED AREAS SHALL BE 2%, MAXIMUM SLOPES SHALL BE 3:1.

30. CONTRACTOR TO KEEP DISRUPTION OF SOIL AND EXISTING VEGETATION TO A MINIMUM.

31. INTENT IS FOR PROPOSEO GRADE LINE TO GENERALLY FOLLOW EXISTING GRADE. FIELD ADJUSTMENTS MAY BE REQUIRED TO MEET PROJECT INTENT.

32. POSITIVE DRAINAGE MUST BE MAINTAINED ACROSS TRAIL TO THE CREEK. ADJUST GRADING OF TRAIL AND SIDE SLOPES AS NECESSARY TO ENSURE NO PONDING OF WATER BY TRAIL. WORK IS TO BE CONSIDERED SUBSIDIARY TO THE PERTINENT BID ITEMS.

## TXDOT GENERAL NOTES

STEEL WRAPPED OR ASBESTOS UTILITY LINES:

EXISTING STEEL WRAPPED NATURAL GAS AND/OR ASBESTOS CEMENT (AC) WATER LINES THAT WILL NO LONGER BE IN SERVICE ARE USUALLY ABANDONED IN PLACE (AIP). HOWEVER, IF ANY OF THESE LINES HAVE TO BE REMOVED FOR WHATEVER REASON (IN THE WAY OF OTHER CONSTRUCTION, TO MAKE TIE–INS, ETC.) COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS, ORDINANCES AND REGULATIONS REGARDING THE MANAGEMENT OF THESE MATERIALS. AT A MINIMUM:

1. CONTACT THE ENGINEER.

2. REMOVE THE MINIMUM AMOUNT OF PIPE NEEDED TO PERFORM THE PROPOSED WORK.

3. COVER AND SECURE THE ENDS OF THE PIPE WITH A DOUBLE LAYER OF 6 MIL PLASTIC. IF THE PIPE IS DAMAGED, COVER THE ENTIRE PIPE.

4. MOVE THE PIPE TO AN APPROVED TEMPORARY SITE WITHIN THE PROJECT.

5. THE ENGINEER WILL DETERMINE THE OWNER (UTILITY COMPANY) OF THE PIPE AND WILL COORDINATE REMOVAL FROM THE PROJECT. THE CONTRACTOR WILL LOAD THE PIPE ONTO THE REMOVAL VEHICLES BUT WILL NOT BE RESPONSIBLE FOR REMOVING THE PIPE FROM THE PROJECT.

6. REMOVAL OF THE PIPE FROM THE TRENCH IS SUBSIDIARY TO THE WORK THAT CREATED THE NEED FOR THE REMOVAL (EXCAVATION FOR STRUCTURES, ROADWAY, A NEW LINE, TIE–INS, ETC.). THE WORK PERFORMED IN HANDLING THE PIPE AFTER IT HAS BEEN REMOVED FROM THE TRENCH (COVERING WITH PLASTIC, HAULING TO THE TEMPORARY SITE AND LATER LOADING ON TO THE DISPOSAL VEHICLES WILL BE PAID FOR THROUGH THE FORCE ACCOUNT PROCEDURE.

G–3 CONTACT THE ENGINEER OR THE CITY WHEN CONSTRUCTION OPERATIONS ARE WITHIN 400 FEET OF A SIGNALIZED INTERSECTION TO DETERMINE/VERIFY THE LOCATION OF LOOP DETECTORS, CONDUIT, GROUND–BOXES, ETC. REPAIR OR REPLACE ANY SIGNAL EQUIPMENT DAMAGED BY CONSTRUCTION OPERATIONS. THE METHOD OF REPAIR OR REPLACEMENT SHALL BE PRE–APPROVED AND INSPECTED. DEPENDING ON THE TYPE AND EXTENT OF THE DAMAGE, THE ENGINEER RESERVES THE RIGHT TO PERFORM THE REPAIR OR REPLACEMENT WORK AND THE CONTRACTOR WILL BE BILLED FOR THIS WORK.

G–4 REMOVE EXISTING RAISED PAVEMENT MARKINGS AS THE WORK PROGRESSES OR AS APPROVED. THIS WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS. PROPERLY DISPOSE MATERIALS REMOVED.

G–5 TO BETTER FIT FIELD CONDITIONS, THE CROSS SECTIONS MAY BE VARIED WHEN APPROVED.

G–6 IF THERE ARE WASTE AREAS OR MATERIAL SOURCE AREAS, FOLLOW THE TEXAS AGGREGATE QUARRY AND PIT SAFETY ACT REQUIREMENTS.

G–7 ANY MATERIALS REMOVED AND NOT REUSED AND DETERMINED TO BE SALVAGEABLE SHALL BE STORED WITHIN THE PROJECT LIMITS AT AN APPROVED LOCATION OR DELIVERED UNDAMAGED TO THE STORAGE YARD AS DIRECTED. PROPERLY DISPOSE UNSALVAGEABLE MATERIALS IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS. DEFACE TRAFFIC SIGNS SO THAT THEY WILL NOT REAPPEAR IN PUBLIC AS SIGNS.

G–8 ANY SIGN PANELS THAT ARE ADJUSTED OR REMOVED AND REPLACED, SHALL BE DONE THE SAME WORKDAY UNLESS OTHERWISE APPROVED.

G–9 NOTIFY THE ENGINEER AT LEAST TWO WEEKS PRIOR TO A PROPOSED TRAFFIC PATTERN CHANGE(S) THAT WILL REQUIRE A REVISION TO TRAFFIC SIGNALS.

G–10 HURRICANE EVACUATION

HURRICANE SEASON IS FROM JUNE 1 THRU NOVEMBER 30. AS THE CLOSEST METROPOLITAN CITY INLAND FROM THE TEXAS COAST, THE CITY OF SAN ANTONIO IS A MAJOR SHELTER DESTINATION DURING MANDATORY HURRICANE EVACUATIONS. AS SUCH, PLANNED WORK ZONE LANE OR ROAD CLOSURES MAY BE RESTRICTED AND/OR SUSPENDED DURING MANDATORY HURRICANE EVACUATION OPERATIONS. THE DISTRICT WILL COORDINATE THESE RESTRICTIONS AT A MINIMUM H–120 FROM ANY PROJECTED IMPACT TO THE TEXAS COAST.

NO TIME CHARGES WILL BE MADE IF THE ENGINEER DETERMINES THAT WORK ON THE PROJECT WAS IMPACTED BY THE HURRICANE.

THE ENGINEER MAY ORDER CHANGES IN THE TRAFFIC CONTROL PLAN TO ACCOMMODATE EVACUATION TRAFFIC, AND MAY SUSPEND THE WORK, ALL OR IN PART, TO ENSURE TIMELY COMPLETION OF THIS WORK. ALL WORK TO IMPLEMENT CHANGES IN THE TRAFFIC CONTROL PLAN WILL BE PAID THROUGH EXISTING BID PRICES OR THROUGH ITEM 9.5, FORCE ___

## TXDOT GENERAL NOTES CONT'D

ACCOUNT. HOWEVER, THE DEPARTMENT WILL NOT ENTERTAIN ANY REQUEST FOR DELAY DAMAGES, LOSS OF EFFICIENCY THAT MAY BE ATTRIBUTED TO THE RESTRICTION OR SUSPENSION OF ROAD OR LANE CLOSURES, OR TO CHANGES IN THE TRAFFIC CONTROL PLAN.

G–11 THE CONTRACTOR SHOULD BE AWARE THAT THE "CITY PUBLIC SERVICE" (CPS) WILL BE CONSULTED BY THE ENGINEER IN MATTERS CONCERNING THE EXECUTION OF THE WORK, MATERIALS AND TESTING RELATED TO THE CPS WORK. AS SUCH; A CPS EMPLOYEE MAY BE OBSERVING THE CONSTRUCTION AND RELATED OPERATIONS AS THEY PROGRESS.

––ITEM 5––

5–5 WHEN WORKING NEAR AERIAL ELECTRICAL LINES OR UTILITY POLES, COMPLY WITH FEDERAL, STATE AND LOCAL REGULATIONS. FOR ELECTRICAL LINES AND POLES SHOWN IN THE PLANS, IF THE LINES NEED TO BE DE–ENERGIZED OR IF POLES NEED TO BE BRACED, CONTACT THE ELECTRICAL COMPANY. WORK PERTAINING TO DE–ENERGIZING LINES, BRACING POLES AND OTHER PROTECTIVE MEASURES WILL NOT BE PAID BY TXDOT.

5–6 PREVENTION OF MIGRATORY BIRD NESTING

IT IS ANTICIPATED THAT MIGRATORY BIRDS, A PROTECTED GROUP OF SPECIES, MAY TRY TO NEST ON BRIDGES, CULVERTS, VEGETATION, OR GRAVEL SUBSTRATE, AT ANY TIME OF THE YEAR. THE PREFERRED NESTING SEASON FOR MIGRATORY BIRDS IS FROM FEBRUARY 15 THROUGH OCTOBER 1. WHEN PRACTICABLE, SCHEDULE CONSTRUCTION OPERATIONS OUTSIDE OF THE PREFERRED NESTING SEASON. OTHERWISE, NESTS CONTAINING MIGRATORY BIRDS MUST BE AVOIDED AND NO WORK WILL BE PERFORMED IN THE NESTING AREAS UNTIL THE YOUNG BIRDS HAVE FLEDGED.

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LEONVALLEY

Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

SUPPLEMENTAL GENERAL NOTES-1

| | | | |
|---|---|---|---|
| CHK. BY: | T.L. | IDS JOB NO: | 211700100 |
| DWG. BY: | M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: | 10/15/2014 | 4 | 57 |

Z:\211700100\410 Design\060 DWGS\C–NOTES.dwg [SUPP NOTES–1] Plotted Dec 09, 2014 at 10:18am by GRomero (Last Saved by: mmina)

## TXDOT GENERAL NOTES CONT'D

STRUCTURES

BRIDGE AND CULVERT CONSTRUCTION OPERATIONS CAN NOT BEGIN UNTIL SWALLOW NESTING PREVENTION IS IMPLEMENTED, UNTIL AFTER OCTOBER 1 IF IT'S DETERMINED THAT SWALLOW NESTING IS ACTIVELY OCCURRING, OR UNTIL IT'S DETERMINED SWALLOW NESTS HAVE BEEN ABANDONED. IF THE STATE INSTALLED NESTING DETERRENT ON THE BRIDGES AND CULVERTS, MAINTAIN THE EXISTING NESTING DETERRENT TO PREVENT SWALLOW NESTING UNTIL OCTOBER 1 OR COMPLETION OF THE BRIDGE AND CULVERT WORK, WHICHEVER OCCURS EARLIER. IF NEW NESTS ARE BUILT AND OCCUPIED AFTER THE BEGINNING OF THE WORK, DO NOT PERFORM WORK THAT CAN INTERFERE WITH OR DISCOURAGE SWALLOWS FROM RETURNING TO THEIR NESTS. PREVENTION OF SWALLOW NESTING CAN BE PERFORMED BY ONE OF THE FOLLOWING METHODS:

1. BY FEBRUARY 15 BEGIN THE REMOVAL OF ANY EXISTING MUD NESTS AND ALL OTHER MUD PLACED BY SWALLOWS FOR THE CONSTRUCTION OF NESTS ON ANY PORTION OF THE BRIDGE AND CULVERTS. THE ENGINEER WILL INSPECT THE BRIDGES AND CULVERTS FOR NEST BUILDING ACTIVITY. IF SWALLOWS BEGIN NEST BUILDING, SCRAPE OR WASH DOWN ALL NEST SITES. PERFORM THESE ACTIVITIES DAILY UNLESS THE ENGINEER DETERMINES THE NEED TO DO THIS WORK MORE FREQUENTLY. REMOVE NESTS AND MUD THROUGH OCTOBER 1 OR UNTIL BRIDGE AND CULVERT CONSTRUCTION OPERATIONS ARE COMPLETED.

2. BY FEBRUARY 15 PLACE A NESTING DETERRENT (WHICH PREVENTS ACCESS TO THE BRIDGE AND CULVERT BY SWALLOWS) ON THE ENTIRE BRIDGE (EXCEPT DECK AND RAILING) AND CULVERTS.

NO EXTENSION OF TIME OR COMPENSATION PAYMENT WILL BE GRANTED FOR A DELAY OR SUSPENSION OF WORK CAUSED BY NESTING SWALLOWS. THIS WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS.

5-7 PROVIDE A NON-INTRUSIVE BACK-UP ALARM SYSTEM ON ALL HEAVY EQUIPMENT USED IN CLOSE PROXIMITY TO RESIDENTIAL AREAS. THIS ITEM IS SUBSIDIARY TO VARIOUS BID ITEMS.

--ITEM 6--

6-1 SHOW THE STOCKPILE LOT AND/OR SUB LOT NUMBERS ON ALL TICKETS FOR ALL MATERIALS.

--ITEM 7--

7-1 THE PROJECT'S TOTAL DISTURBED AREA IS 1.83 ACRES. THE DISTURBED AREA IN ALL PROJECT LOCATIONS AND CONTRACTOR PROJECT SPECIFIC LOCATIONS (PSL'S), WITHIN 1/4 MILE OF THE PROJECT LIMITS, WILL FURTHER ESTABLISH THE AUTHORIZATION REQUIREMENTS FOR STORM WATER DISCHARGES. THE DEPARTMENT WILL OBTAIN AN AUTHORIZATION TO DISCHARGE STORM WATER FROM THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) FOR THE CONSTRUCTION ACTIVITIES SHOWN ON THE PLANS. OBTAIN ANY REQUIRED AUTHORIZATION FROM THE TCEQ FOR ANY PSL'S ON OR OFF THE ROW. WHEN THE TOTAL AREA DISTURBED ON THE PROJECT AND PSL'S WITHIN 1/4 MILE OF THE PROJECT EXCEEDS 5 ACRES, PROVIDE A COPY OF THE CONTRACTOR NOI FOR PSL'S TO THE ENGINEER (TO THE APPROPRIATE MS4 OPERATOR WHEN THE PROJECT IS ON AN OFF-STATE SYSTEM ROUTE).

7-3 NOTIFY THE ENGINEER OF THE DISTURBED ACREAGE WITHIN ONE (1) MILE OF THE PROJECT LIMITS. OBTAIN AUTHORIZATION FROM THE TCEQ FOR CONTRACTOR PSL'S FOR CONSTRUCTION SUPPORT ACTIVITIES ON OR OFF ROW.

--ITEM 8--

8-1 WORKING DAYS WILL BE COMPUTED AND CHARGED IN ACCORDANCE WITH ARTICLE 8.3.A.1: FIVE-DAY WORK WEEK.

8-3 LOCATE AND REFERENCE WITH STATION AND OFFSET ALL MANHOLES AND VALVES WITHIN THE CONSTRUCTION AREA. EACH MANHOLE AND VALVE SHALL BE IDENTIFIED BY ITS OWNER (SAWS, CPS, ETC.). NO ROADWORK WILL BEGIN UNTIL THIS LIST HAS BEEN SUBMITTED. GAS VALVES HAVE TO BE ACCESSIBLE AT ALL TIMES, THEREFORE; TEMP. CTB, MATERIAL STOCK PILES, ETC. CAN NOT BE PLACED OVER THESE VALVES.

8-4 CONSTRUCT ALL MANHOLES AND VALVES TO FINAL PAVEMENT ELEVATIONS PRIOR TO THE FINAL MAT OF ACP. IF, BETWEEN THE FINAL ELEVATION ADJUSTMENT AND THE FINAL MAT OF ACP, THE MANHOLES AND VALVES ARE GOING TO BE EXPOSED TO TRAFFIC, PLACE TEMPORARY ASPHALT AROUND THE MANHOLE AND VALVE TO PROVIDE A +/- 50:1 TAPER. THE COST OF ELEVATION ADJUSTMENT WILL BE PART OF THE MANHOLE AND VALVE WORK, AND ASPHALT TAPERS ARE PART OF THE ACP WORK.

--ITEM 100--

100-1BEGIN CLEARING OPERATIONS AFTER TREES AND OTHER AREAS OF VEGETATION TO BE PROTECTED HAVE BEEN IDENTIFIED AND APPROVED. INSTALL FENCING AROUND FEATURES TO BE PROTECTED AS SHOWN IN THE PLANS OR DIRECTED. COORDINATE ALL RIGHT OF WAY CLEARING OPERATIONS WITH THE SW3P.

100-2 TRIM AND REMOVE BRUSH AND TREES AS NEEDED FOR CONSTRUCTION OPERATIONS. OBTAIN APPROVAL FOR PROPOSED METHOD OF TREE AND BRUSH TRIMMING AND REMOVAL. VERTICAL FLAILING EQUIPMENT IS NOT ALLOWED. TREAT DAMAGED OR CUT BRANCHES, ROOTS AND/OR STUMPS OF ALL OAK TREES WITH A COMMERCIAL TREE WOUND DRESSING. DISINFECT ALL PRUNING TOOLS WITH A SOLUTION OF 70% ALCOHOL BEFORE MOVING FROM ONE TREE TO ANOTHER. UNLESS OTHERWISE APPROVED REMOVE ALL RESULTING VEGETATIVE DEBRIS FROM THE ROW WITHIN 24 HOURS. THE ENGINEER CAN STOP ALL CONSTRUCTION OPERATIONS IF THE DRESSING, CUT AND REMOVAL REQUIREMENTS ARE NOT FOLLOWED.

--ITEM 164--

164-1DRILL SEEDING OF PERMANENT GRASSES REQUIRES THE USE OF APPROVED GRASS SEEDING EQUIPMENT CAPABLE OF PROPERLY STORING AND METERING THE RELEASE OF SMALL SEEDS (SUCH AS BERMUDA GRASS) SEPARATELY FROM FLUFFY TYPE SEEDS (SUCH AS BLUESTEMS). EQUIPMENT MANUFACTURED FOR PLANTING GRAIN CROPS IS ACCEPTABLE FOR PLANTING TEMPORARY COOL SEASON SEEDS, BUT NOT FOR PLANTING THE PERMANENT SEED MIX.

WHEN DRILL SEEDING IS REQUIRED, CULTIVATE THE AREA TO A DEPTH OF 4 IN. AFTER THE FERTILIZER HAS BEEN APPLIED AND BEFORE PLACING THE SEED.

IF PERFORMING A PERMANENT SEEDING IN AN AREA WITH ESTABLISHED TEMPORARY GRASS COVER AND MOWING IS PERFORMED INSTEAD OF TILLING, SEED AND FERTILIZER MAY BE DISTRIBUTED SIMULTANEOUSLY DURING "BROADCAST SEEDING" OPERATIONS, PROVIDED EACH COMPONENT IS APPLIED AT THE SPECIFIED RATE.

--ITEM 166--

166-1USE A FERTILIZER WITH AN ANALYSIS OF 13-13-13 (50% OF THE TOTAL N MUST BE SULFUR COATED UREA) TO APPLY 60 LBS OF ACTUAL N PER ACRE. THIS REQUIRES 460 LBS OF 13-13-13 PER ACRE OR .095 LBS PER SY OF AREA.

--ITEM 168--

APPLY VEGETATIVE WATERING AS NEEDED TO SUPPLEMENT NATURAL RAINFALL DURING THE VEGETATION ESTABLISHMENT PERIOD. PLAN QUANTITY OF IRRIGATION WATER IS BASED ON THE APPLICATION OF A TOTAL OF 1.3 GAL OF WATER EACH WEEK FOR EACH SQ. YD. OF AREA THAT IS SODDED OR SEEDED. ESTABLISHMENT TIME IS ESTIMATED TO BE 12 WEEKS FOR BOTH SOD AND PERMANENT SEED MIXES. TEMPORARY SEEDING WILL REQUIRE LESS TIME FOR ESTABLISHMENT. PROVIDE A SCHEDULE AND COORDINATE WATERING CYCLES AND RATES PER CYCLE WITH THE ENGINEER. OBTAIN APPROVAL IF THE QUANTITY OF WATER TO BE APPLIED IS EXPECTED TO EXCEED THE PLAN QUANTITY. ADJUST THE AMOUNT OF WATER APPLIED WITH EACH CYCLE AND THE NUMBER OF CYCLES EACH WK. ACCORDING TO ACTUAL SITE CONDITIONS. DROUGHT OR OTHER CONDITIONS, AS DETERMINED BY THE ENGINEER, MAY REQUIRE THE APPLICATION OF SUPPLEMENTAL IRRIGATION DURING HOURS OTHER THAN NORMAL WORKING HOURS.

--ITEM 247--

247-1 THERE IS NO MINIMUM PI REQUIREMENT FOR THIS PROJECT.

--ITEM 420--

420-1 MASS CONCRETE WILL BE MEASURED IN PLACE.

420-2 RESTRICT LARGE AGGREGATE SIZE TO ¾" MAXIMUM FOR CLASS "C" CONCRETE USED IN AESTHETIC DETAILS REQUIRING FORM LINERS.

--ITEM 421--

421-1USE AN AUTOMATED TICKET THAT CONTAINS THE SAME INFORMATION AS TXDOT'S TICKET. SUBMIT THE TICKET FOR APPROVAL PRIOR TO USE. THE CONCRETE PRODUCER WILL CONTACT THE DISTRICT LABORATORY OR THE ENGINEER'S OFFICE (OUTSIDE THE SAN ANTONIO AREA) TO INFORM TXDOT OF SCHEDULED STRUCTURAL CONCRETE BATCHING. STRUCTURAL CONCRETE INCLUDES BRIDGE DRILL SHAFTS, COLUMNS, CAPS, ABUTMENTS, DECK OR TOP SLABS OF DIRECT TRAFFIC CULVERTS.

421-2 ENTRAINED AIR IS ALLOWED FOR CLASS P AND CLASS HES CONCRETE ONLY. AIR CONTENT TESTING IS WAIVED FOR ALL CLASSES OF CONCRETE.

421-3 THE CURING FACILITIES AND STRENGTH TESTING EQUIPMENT IS NOT REQUIRED FOR THIS PROJECT.

421-4 POLY-FIBER REINFORCED CONCRETE MAY BE USED AS AN OPTION, WITH THE APPROVAL BY THE ENGINEER, FOR RIPRAP, SIDEWALK, CURB/GUTTER, AND MOW STRIP. USE A TXDOT APPROVED MANUFACTURER OR PRODUCER FOR THE POLY-FIBER. THE POLY-FIBERS SHALL BE COMBINED WITH THE CONCRETE IN PROPORTIONS AS RECOMMENDED BY THE MANUFACTURER. A CONCRETE MIX DESIGN MUST BE APPROVED BY THE ENGINEER.

--ITEM 432--

432-1 IN ALL RIPRAP SLOPES, PROVIDE 3 INCH DIAMETER WEEP HOLES AT 10 FOOT MAXIMUM SPACING AND BACKED WITH LOOSE GRADED GRAVEL OR CRUSHED STONE AND GALVANIZED HARDWARE CLOTH.

## TXDOT GENERAL NOTES CONT'D

432-2 IN AREAS WHERE GUARD FENCE POSTS ARE TO BE PLACED IN RIPRAP, THE RIPRAP SHALL HAVE AN 18 INCH +/-BLOCKED OUT AREA (ROUND OR SQUARE).

432-3 MATCH THE SLOPE OF THE RIPRAP (MOW STRIP) TO THE SLOPE OF THE ADJACENT ROADWAY.

--ITEM 462--

462-1 USE CONCRETE AGGREGATE WITH TWO SACKS OF PORTLAND CEMENT PER CUBIC YARD FOR FILL BETWEEN PRE-CAST BOXES.

462-2 THE FOLLOWING STRUCTURES SHALL BE CAST-IN-PLACE: ALL STRUCTURES SPECIFIED IN PLAN.

--ITEM 500--

500-1 "MATERIALS ON HAND" PAYMENTS WILL NOT BE CONSIDERED IN DETERMINING PERCENTAGES FOR MOBILIZATION PAYMENTS.

--ITEM 502--

502-4 AFTER WRITTEN NOTIFICATION, THE TIME FRAME TO PROVIDE PROPERLY MAINTAINED SIGNS AND BARRICADES BEFORE CONSIDERED IN NON-COMPLIANCE IS 48 HOURS FROM RECEIPT OF THE NOTIFICATION.

502-6 MOVING AN EXISTING SIGN TO A TEMPORARY LOCATION IS SUBSIDIARY TO THIS ITEM. INSTALLATIONS WITH PERMANENT SUPPORTS AT PERMANENT LOCATIONS WILL BE PAID FOR UNDER THE APPLICABLE BID ITEM (S).

502-8 NOTIFY THE ENGINEER 5 BUSINESS DAYS IN ADVANCE OF ANY TEMPORARY OR PERMANENT LANE, RAMP, CONNECTOR, ETC. CLOSURES/DETOURS, RESTRICTIONS TO LANE WIDTHS, ALTERATIONS TO VERTICAL CLEARANCES, OR MODIFICATIONS TO RADII. ANY OTHER MODIFICATIONS TO THE ROADWAY THAT MAY ADVERSELY AFFECT THE MOBILITY OF OVERSIZED/OVERWEIGHT TRUCKS ALSO REQUIRE 5 BUSINESS DAYS ADVANCE NOTICE TO THE ENGINEER. UNLESS SHOWN IN THE TCP, NO LANE, RAMP, CONNECTOR, ETC. CLOSURES ARE ALLOWED DURING SPECIAL EVENTS. AT LEAST ONE LANE HAS TO REMAIN OPEN AT ALL TIMES. FOR ALL LANE CLOSURES, PROVIDE WRITTEN CLOSURE INFORMATION BY 1:00PM ON THE BUSINESS DAY PRIOR TO THE CLOSURE. FOR CLOSURES ON A MONDAY OR FOLLOWING A HOLIDAY, FURNISH THE INFORMATION THE WORKDAY PRIOR TO THE CLOSURE. LANE CLOSURES WILL NOT BE ALLOWED IF THIS REPORTING REQUIREMENT IS NOT MET.

502-8A FOR CLOSURES NOT LISTED IN THE TCP; THE LANE CLOSURES ARE LIMITED TO BETWEEN THE HOURS OF 5:00 AM TO 8:00 PM, AND AT LEAST ONE LANE HAS TO REMAIN OPEN AT ALL TIMES.

502-9 AVOID PLACING STOCKPILES WITHIN THE ROADWAY'S HORIZONTAL CLEAR ZONE. IF A STOCKPILE IS PLACED WITHIN THE CLEAR ZONE, ADDRESS IN ACCORDANCE WITH THE TMUTCD.

502-10 DO NOT PLACE BARRICADES, SIGNS, OR ANY OTHER TRAFFIC CONTROL DEVICES WHERE THEY INTERFERE WITH SIGHT DISTANCE AT DRIVEWAYS OR SIDE STREETS.

502-11 IN ADDITION TO PROVIDING A CONTRACTOR'S RESPONSIBLE PERSON AND A PHONE NUMBER FOR EMERGENCY CONTACT, HAVE AN EMPLOYEE AVAILABLE TO RESPOND ON THE PROJECT FOR EMERGENCIES AND FOR TAKING CORRECTIVE MEASURES WITHIN 2 HOURS OR WITHIN A REASONABLE TIME FRAME AS SPECIFIED BY THE ENGINEER.

--ITEM 531--

531-1THE CURB RAMP TRUNCATED DOMES WILL BE TERRA COTTA.

531-2 THE CURB RAMP LOCATIONS SHOWN IN THE PLANS HAVE TAKEN INTO ACCOUNT THE GEOMETRIC FEATURES OF THE INTERSECTION, TRAFFIC SIGNALS, AND THE PAVEMENT MARKINGS. IF ANYTHING CHANGES DURING CONSTRUCTION, THE LOCATION OF CURB RAMPS MUST BE ADJUSTED TO ENSURE THEY MEET TAS REQUIREMENTS.

--ITEM 1122--

1122-1 AN INSPECTOR WILL PERFORM A REGULARLY SCHEDULED SWP3 INSPECTION EVERY 7 CALENDAR DAYS.

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STATE OF TEXAS
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11-3-14

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LEON VALLEY

Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

SUPPLEMENTAL GENERAL NOTES-2

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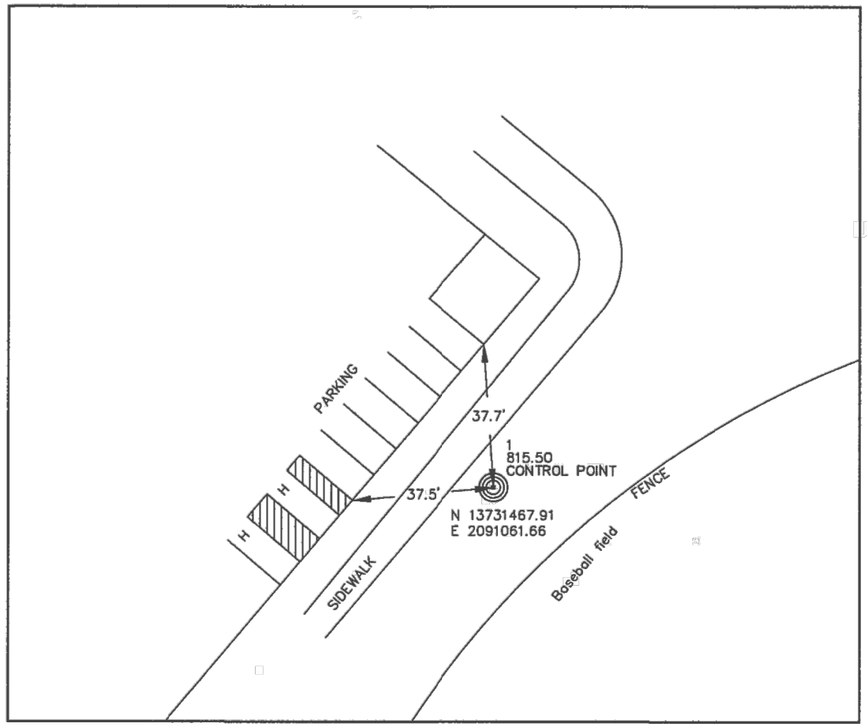
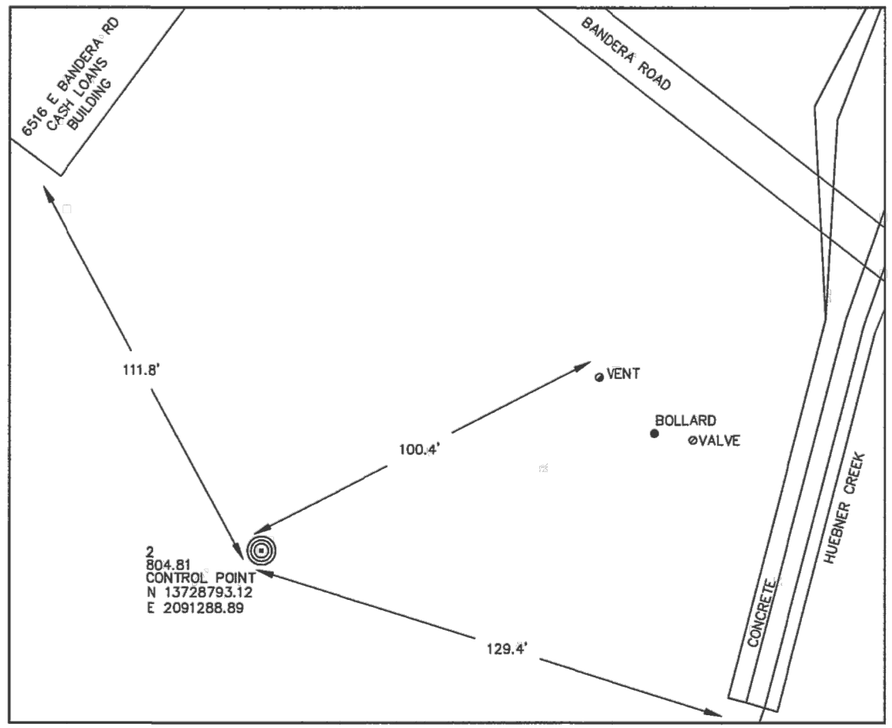
| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 5 | 57 |




IRON ROD WITH AN ALUMINUM CAP SET IN DIRT SOUTHEAST OF THE MAIN PARKING LOT OF RAYMOND RIMKUS PARK.




IRON ROD WITH AN ALUMINUM CAP SET IN DIRT SOUTHWEST OF BANDERA ROAD AND NORTHWEST OF HUEBERN CREEK.


LEGEND

Iron rod with Cap Set

HORIZONTAL DATUM

1. THE COORDINATE ARE BASED ON NAD83, TEXAS STATE PLANE COORDINATE SYSTEM, SOUTH CENTRAL ZONE (4204). COORDINATES AND DISTANCES ARE IN U.S. SURVEY FEET, DISPLAYED COORDINATE VALUES ARE SURFACE. GRID TO SURFACE SCALE FACTOR IS 1.00017.

2. THE HORIZONTAL AND VERTICAL CONTROL VALUES WERE OBTAINED BY GPS OVSERVATIONS UTILIZING THE FOLLOWING CONTROL POINTS: TXDOT TXSA AND VERIFIED WITH LOCAL VERTICAL DATUM.

3. THE VERTICAL DATUM IS BASED ON NAVD88 WHITH THE GEOID 03

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4/22/14

LEONVALLEY

Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

PROJECT SURVEY CONTROL

SurGIS of Texas

SurGIS of Texas Corporation
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| CHK. BY: T.L. | IDS JOB NO: 211700100 | | |
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS | |
| DATE: 10/15/2014 | 6 | 57 | |

TRAIL QUANTITIES

| | ROADWAY | | |
|---|---|---|---|
| Spec Item | Description | Unit | Quantity |
| 0100 2002 | PREP ROW | STA | 45 |
| 0104 2009 | REM CONC (RIP RAP) | SY | 392 |
| 0104 2036 | REM CONC (SIDEWALK OR RAMP) | SY | 15 |
| 0105 2011 | REM STAB BASE AND ASPH PAV (2"-6") | SY | 2190 |
| 0110 2001 | EXCAVATION (ROADWAY) | CY | 1700 |
| 0110 2002 | EXCAVATION (CHANNEL) | CY | 90 |
| 0132 2001 | EMBANKMENT (FINAL) (ORD COMP) (TY A) | CY | 270 |
| 0161 2008 | EROSION CONTROL COMPOST (2") | SY | 3072 |
| 0247 2334 | FL BS (CMP INPLC) (TY A OR B GR4) (3") | SY | 4513 |
| 0420 2001 | CL A CONCRETE (MISC) | CY | 30 |
| 0500 2001 | MOBILIZATION | LS | 1 |
| 0502 2001 | BARRICADES, SIGNS, AND TRAFFIC HANDLING | MO | 6 |
| 1122 2001 | ROCK FILTER DAMS (INSTALL) (TY1) | LF | 140 |
| 1122 2009 | ROCK FILTER DAMS (REMOVE) (TY1) | LF | 140 |
| 1122 2037 | TEMP SEDIMENT CONTROL FENCE INSTALL | LF | 4250 |
| 1122 2057 | TEMP SEDIMENT CONTROL FENCE REMOVE | LF | 4250 |
| 0531 2004 | CONC SIDEWALKS (6") | SY | 6183 |
| SS 2001 | FLAGSTONE VENEER | SF | 1810 |
| SS 5530 | REMOVABLE BOLLARDS | EA | 2 |

STRUCTURAL QUANTITIES

| | STRUCTURE | | |
|---|---|---|---|
| 1. | **Bandera Rd Under-bridge Trail From 101+90 to 104+7.75** | | |
| 0420 2013 | CL C CONC (MISC) | CY | 120 |
| 0420 2005 | CL C CONC (FOOTINGS) | CY | 5 |
| 0420 2256 | CL S CONC (APPR SLAB) (HPC) | CY | 9 |
| 0420 2029 | CL S CONC (SLAB) | CY | 15 |
| 0529 2011 | CONC CURB & GUTTER (SAWTOOTH) | LF | 283 |
| 0420 2001 | CL A CONC (MISC) | CY | 25 |
| | | | |
| 2. | **Retaining Wall From 104+07.75 to 104+73.19** | | |
| 0420 2011 | CL C CONC (RETAINING WALL) | CY | 8 |
| 0420 2005 | CL C CONC (FOOTINGS) | CY | 8 |
| 0420 2013 | CL C CONC (MISC) | CY | 14 |
| | | | |
| 3. | **Retaining Walls From 109+69.86 to 111+41.60** | | |
| 0420 2011 | CL C CONC (RETAINING WALL) | CY | 26 |
| 0420 2005 | CL C CONC (FOOTINGS) | CY | 31 |
| | | | |
| 4. | **Elev. Low Water Crossing From 111+41.60 to 111+68.59** | | |
| 0416 2002 | DRILL SHAFT (24IN) | LF | 180 |
| 0420 2256 | CL S CONC (APPR SLAB) (HPC) | CY | 9 |
| 0420 2029 | CL S CONC (SLAB) | CY | 11 |
| 0420 2011 | CL C CONC (RETAINING WALL) | CY | 14 |
| 0420 2005 | CL C CONC (FOOTINGS) | CY | 12 |
| 0529 2011 | CONC CURB & GUTTER (SAWTOOTH) | LF | 62 |
| | | | |
| 5. | **Retaining Walls From 111+68.59 to 112+65** | | |
| 0420 2011 | CL C CONC (RETAINING WALL) | CY | 15 |
| 0420 2005 | CL C CONC (FOOTINGS) | CY | 18 |
| | | | |
| 6. | **Monument Foundation** | | |
| 0420 2013 | CL C CONC (MISC) | CY | 1.5 |

TREE PRESERVATION, LANDSCAPE AND SIGNAGE QUANTITIES

| | TREE PRESERVATION, LANDSCAPE, SIGNAGE | | |
|---|---|---|---|
| | **A. TREE PRESERVATION** | | |
| 1020 2001 | TREE PROTECTION | EA | 50 |
| 1020 2002 | TREE PROTECTION (PROTECT FENCE)(PLASTIC) | LF | 2,500 |
| 1020 2005 | TREE PROTECTION (MULCH) | SY | 3,000 |
| | | | |
| | **B. LANDSCAPE** | | |
| SS2002 | Bike Rack | EA | 1 |
| SS2003 | Drinking Fountain | EA | 3 |
| SS2004 | Trash Receptacles | EA | 2 |
| SS2005 | Shade Structure | EA | 1 |
| SS2006 | Seating Boulders | EA | 6 |
| 0160 2005 | Furnishing and Placing Topsoil (4") | CY | 385 |
| SS2007 | Steel Handrail | LF | 90 |
| SS2008 | Cedar Split-Rail Fence | LF | 650 |
| SS2009 | Park Bench | EA | 2 |
| 0168 2001 | Vegetative Watering | MG | 420 |
| SS2010 | Cellulose Fiber Mulch Seeding (Perm) | AC | 1 |
| | | | |
| | **C. SIGNAGE** | | |
| SS1000 | Trail Signage | EA | 10 |
| SS1001 | Roadway Sign | EA | 2 |
| SS1002 | Trailhead Sign | EA | 1 |
| SS1003 | Trail Medalion | EA | 1 |
| SS1004 | 1/4 Mile Marker | EA | 3 |
| SS1005 | Creek Crossing Marker | EA | 2 |
| SS1006 | Kiosk | EA | 4 |

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
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STATE OF TEXAS
THONG HUY LE
95764
LICENSED
PROFESSIONAL ENGINEER
11-3-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481

LEONVALLEY

Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

QUANTITY SUMMARY-1

| | | | |
|---|---|---|---|
| CHK. BY: | T.L. | IDS JOB NO: | 211700100 |
| DWG. BY: | M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: | 10/15/2014 | 7 | 57 |

Z:\211700100\410 Design\060 DWGS\C-QUANTITY SUMMARY.dwg [QUANT.] Plotted Dec 09, 2014 at 10:18am by GRomero (Last Saved by: mmina)

## Cut And Fill Calculations Trail A

| Station | Cut Area (sq/ft) | Fill Area (sq/ft) | Cut Volume (CY) | Fill Volume (CY) | Cumulative Cut (CY) | Cumulative Fill (CY) |
|---|---|---|---|---|---|---|
| 102+00 | 0.01 | 7.03 | 0.00 | 0.00 | 0.00 | 0.00 |
| 102+30 | 0.00 | 8.20 | 0.00 | 8.46 | 0.00 | 8.46 |
| 102+60 | 0.54 | 9.44 | 0.30 | 9.80 | 0.31 | 18.26 |
| 102+90 | 0.24 | 12.43 | 0.44 | 12.15 | 0.74 | 30.41 |
| 103+20 | 0.00 | 11.47 | 0.13 | 13.28 | 0.87 | 43.68 |
| 103+50 | 0.00 | 11.93 | 0.00 | 13.00 | 0.87 | 56.68 |
| 103+80 | 0.00 | 22.17 | 0.00 | 18.90 | 0.87 | 75.58 |
| 104+10 | 8.75 | 0.00 | 4.89 | 12.19 | 5.77 | 87.77 |
| 104+40 | 37.52 | 0.01 | 25.78 | 0.01 | 31.54 | 87.77 |
| 104+70 | 31.53 | 0.00 | 38.36 | 0.00 | 69.91 | 87.78 |
| 105+00 | 2.16 | 3.64 | 18.55 | 2.08 | 88.46 | 89.86 |
| 105+30 | 0.55 | 7.39 | 1.50 | 6.22 | 89.96 | 96.08 |
| 105+60 | 2.23 | 4.91 | 1.61 | 6.48 | 91.57 | 102.56 |
| 105+90 | 0.62 | 7.24 | 1.59 | 6.73 | 93.15 | 109.29 |
| 106+20 | 3.67 | 2.53 | 2.38 | 5.43 | 95.54 | 114.71 |
| 106+50 | 7.44 | 0.10 | 6.17 | 1.46 | 101.71 | 116.17 |
| 106+80 | 11.56 | 0.00 | 10.55 | 0.06 | 112.26 | 116.23 |
| 107+10 | 8.65 | 0.16 | 11.27 | 0.08 | 123.53 | 116.31 |
| 107+40 | 4.60 | 1.88 | 7.37 | 1.16 | 130.90 | 117.47 |
| 107+70 | 3.38 | 4.85 | 4.41 | 3.83 | 135.31 | 121.30 |
| 108+00 | 5.13 | 1.99 | 4.70 | 3.96 | 140.00 | 125.26 |
| 108+30 | 10.32 | 0.30 | 8.58 | 1.27 | 148.58 | 126.53 |
| 108+60 | 12.86 | 0.00 | 12.87 | 0.17 | 161.46 | 126.70 |
| 108+90 | 9.00 | 0.14 | 12.19 | 0.07 | 173.65 | 126.77 |
| 109+20 | 7.27 | 0.47 | 8.98 | 0.36 | 182.63 | 127.13 |
| 109+50 | 18.66 | 0.00 | 14.28 | 0.28 | 196.91 | 127.42 |
| 109+80 | 29.50 | 0.00 | 26.84 | 0.00 | 223.75 | 127.42 |
| 110+10 | 36.79 | 0.00 | 36.85 | 0.00 | 260.59 | 127.42 |
| 110+40 | 44.21 | 0.00 | 45.00 | 0.00 | 305.59 | 127.42 |
| 110+70 | 46.83 | 0.00 | 50.52 | 0.00 | 356.11 | 127.42 |
| 111+00 | 50.46 | 0.00 | 54.03 | 0.00 | 410.14 | 127.42 |
| 111+30 | 35.10 | 0.00 | 47.55 | 0.00 | 457.69 | 127.42 |
| 111+90 | 49.62 | 0.00 | 93.95 | 0.00 | 551.64 | 127.42 |
| 112+20 | 46.40 | 0.00 | 53.35 | 0.00 | 604.99 | 127.42 |
| 112+50 | 32.58 | 0.00 | 43.73 | 0.00 | 648.72 | 127.42 |
| 112+80 | 35.59 | 0.00 | 38.34 | 0.00 | 687.06 | 127.42 |
| 113+10 | 23.69 | 0.00 | 33.09 | 0.00 | 720.15 | 127.42 |
| 113+40 | 9.27 | 0.48 | 18.48 | 0.24 | 738.62 | 127.66 |
| 113+70 | 9.91 | 0.00 | 10.66 | 0.27 | 749.28 | 127.93 |
| 114+00 | 6.46 | 0.69 | 9.09 | 0.38 | 758.37 | 128.31 |
| 114+30 | 6.42 | 0.83 | 7.15 | 0.84 | 765.52 | 129.15 |
| 114+60 | 6.90 | 0.68 | 7.40 | 0.84 | 772.93 | 129.99 |
| 114+90 | 8.28 | 0.07 | 8.43 | 0.41 | 781.36 | 130.40 |
| 115+20 | 7.96 | 0.15 | 9.01 | 0.12 | 790.37 | 130.52 |
| 115+50 | 10.86 | 0.00 | 10.45 | 0.08 | 800.82 | 130.61 |
| 115+80 | 13.91 | 0.00 | 13.75 | 0.00 | 814.57 | 130.61 |
| 116+10 | 19.02 | 0.00 | 18.29 | 0.00 | 832.87 | 130.61 |
| 116+40 | 21.75 | 0.00 | 22.65 | 0.00 | 855.52 | 130.61 |
| 116+70 | 20.43 | 0.00 | 23.41 | 0.00 | 878.93 | 130.61 |
| 117+00 | 13.56 | 0.00 | 18.94 | 0.00 | 897.87 | 130.61 |
| 117+30 | 9.55 | 0.13 | 12.92 | 0.07 | 910.79 | 130.68 |
| 117+60 | 8.09 | 0.33 | 9.74 | 0.28 | 920.54 | 130.95 |
| 117+90 | 7.78 | 0.63 | 8.82 | 0.53 | 929.35 | 131.48 |
| 118+20 | 5.76 | 1.58 | 7.52 | 1.23 | 936.87 | 132.71 |
| 118+50 | 4.79 | 2.00 | 5.86 | 1.99 | 942.74 | 134.70 |
| 118+50 | 4.79 | 2.00 | 5.86 | 1.99 | 942.74 | 134.70 |
| 118+80 | 6.47 | 1.13 | 6.25 | 1.75 | 948.99 | 136.45 |
| 119+10 | 4.69 | 1.82 | 6.19 | 1.64 | 955.18 | 138.09 |
| 119+40 | 4.08 | 2.39 | 4.87 | 2.33 | 960.05 | 140.42 |
| 119+70 | 4.39 | 2.17 | 4.70 | 2.53 | 964.75 | 142.95 |
| 120+00 | 3.96 | 2.47 | 4.64 | 2.58 | 969.39 | 145.53 |
| 120+30 | 2.98 | 3.08 | 3.86 | 3.08 | 973.25 | 148.61 |
| 120+60 | 4.35 | 2.62 | 4.07 | 3.17 | 977.32 | 151.78 |
| 120+90 | 4.90 | 2.02 | 5.14 | 2.58 | 982.46 | 154.36 |
| 121+20 | 3.22 | 3.31 | 4.51 | 2.96 | 986.97 | 157.32 |
| 121+50 | 2.11 | 4.14 | 2.96 | 4.14 | 989.93 | 161.46 |
| 121+80 | 3.03 | 3.37 | 2.86 | 4.17 | 992.78 | 165.63 |
| 122+10 | 4.95 | 2.20 | 4.43 | 3.09 | 997.22 | 168.72 |
| 122+40 | 7.22 | 1.09 | 6.76 | 1.83 | 1003.97 | 170.55 |
| 122+70 | 5.12 | 1.97 | 6.85 | 1.70 | 1010.83 | 172.25 |
| 123+00 | 4.72 | 2.34 | 5.46 | 2.40 | 1016.29 | 174.65 |
| 123+30 | 3.56 | 3.12 | 4.60 | 3.04 | 1020.89 | 177.68 |
| 123+60 | 3.93 | 2.82 | 4.16 | 3.30 | 1025.05 | 180.99 |
| 123+90 | 3.95 | 2.69 | 4.38 | 3.06 | 1029.43 | 184.05 |
| 124+20 | 4.43 | 2.42 | 4.65 | 2.84 | 1034.08 | 186.89 |
| 124+50 | 6.05 | 1.33 | 5.82 | 2.08 | 1039.90 | 188.98 |
| 124+80 | 6.13 | 1.09 | 6.76 | 1.35 | 1046.66 | 190.33 |
| 125+10 | 6.68 | 0.63 | 7.03 | 1.03 | 1053.70 | 191.35 |
| 125+40 | 7.51 | 0.57 | 7.77 | 0.73 | 1061.47 | 192.08 |
| 125+70 | 12.60 | 0.00 | 11.12 | 0.33 | 1072.59 | 192.41 |
| 126+00 | 10.30 | 0.00 | 12.70 | 0.00 | 1085.30 | 192.41 |
| 126+30 | 6.35 | 0.99 | 9.24 | 0.56 | 1094.54 | 192.97 |
| 126+60 | 6.05 | 0.92 | 6.80 | 1.08 | 1101.34 | 194.04 |
| 126+90 | 7.35 | 0.11 | 7.42 | 0.58 | 1108.76 | 194.62 |
| 127+20 | 11.34 | 0.00 | 10.38 | 0.06 | 1119.15 | 194.69 |
| 127+50 | 8.83 | 0.20 | 11.18 | 0.12 | 1130.32 | 194.80 |
| 127+80 | 6.70 | 0.66 | 8.61 | 0.49 | 1138.93 | 195.29 |
| 128+10 | 5.27 | 1.40 | 6.64 | 1.15 | 1145.58 | 196.44 |
| 128+40 | 5.05 | 1.46 | 5.73 | 1.59 | 1151.31 | 198.03 |
| 128+70 | 5.77 | 1.06 | 6.01 | 1.40 | 1157.32 | 199.43 |
| 129+00 | 4.14 | 2.41 | 5.47 | 1.99 | 1162.79 | 201.42 |
| 129+30 | 3.70 | 2.55 | 4.30 | 2.79 | 1167.10 | 204.21 |
| 129+60 | 6.76 | 1.09 | 5.76 | 2.06 | 1172.86 | 206.27 |
| 129+90 | 7.81 | 1.02 | 8.09 | 1.18 | 1180.95 | 207.44 |
| 130+20 | 9.70 | 0.20 | 9.73 | 0.68 | 1190.68 | 208.12 |
| 130+80 | 12.58 | 0.00 | 24.83 | 0.18 | 1215.51 | 208.30 |
| 131+10 | 10.22 | 0.58 | 12.66 | 0.32 | 1228.17 | 208.62 |
| 131+40 | 7.26 | 2.43 | 9.71 | 1.67 | 1237.88 | 210.29 |
| 131+70 | 1.27 | 8.89 | 4.74 | 6.29 | 1242.62 | 216.58 |
| 132+00 | 12.89 | 14.53 | 7.87 | 13.01 | 1250.49 | 229.59 |
| 132+30 | 7.84 | 1.70 | 11.52 | 9.02 | 1262.00 | 238.61 |
| 132+60 | 6.14 | 2.59 | 7.77 | 2.38 | 1269.77 | 241.00 |
| 132+90 | 7.45 | 1.45 | 7.55 | 2.24 | 1277.32 | 243.24 |
| 133+20 | 9.01 | 0.29 | 9.14 | 0.97 | 1286.46 | 244.21 |
| 133+50 | 7.88 | 0.20 | 9.38 | 0.27 | 1295.85 | 244.48 |
| 133+80 | 10.03 | 0.00 | 9.95 | 0.11 | 1305.79 | 244.59 |
| 134+10 | 7.92 | 0.23 | 9.97 | 0.13 | 1315.77 | 244.71 |
| 134+40 | 7.57 | 0.54 | 8.61 | 0.42 | 1324.37 | 245.14 |
| 134+70 | 8.48 | 0.52 | 8.92 | 0.59 | 1333.29 | 245.72 |
| 135+00 | 7.91 | 1.32 | 9.10 | 1.02 | 1342.40 | 246.74 |
| 135+30 | 7.78 | 0.76 | 8.72 | 1.16 | 1351.11 | 247.90 |
| 135+60 | 9.27 | 0.06 | 9.47 | 0.46 | 1360.59 | 248.36 |
| 135+90 | 10.21 | 0.00 | 10.82 | 0.04 | 1371.41 | 248.39 |
| 136+20 | 8.60 | 0.33 | 10.45 | 0.18 | 1381.86 | 248.57 |
| 136+20 | 8.60 | 0.33 | 10.45 | 0.18 | 1381.86 | 248.57 |
| 136+50 | 7.44 | 0.46 | 8.92 | 0.42 | 1390.78 | 248.99 |
| 136+80 | 7.45 | 0.61 | 8.28 | 0.58 | 1399.06 | 249.57 |
| 137+10 | 9.45 | 0.11 | 9.39 | 0.40 | 1408.45 | 249.97 |
| 137+40 | 10.33 | 0.00 | 10.98 | 0.06 | 1419.43 | 250.03 |
| 137+70 | 6.63 | 0.84 | 9.40 | 0.48 | 1428.83 | 250.51 |
| 138+00 | 4.77 | 2.04 | 6.33 | 1.58 | 1435.16 | 252.09 |
| 138+30 | 9.51 | 0.36 | 7.94 | 1.32 | 1443.10 | 253.41 |
| 138+60 | 9.81 | 0.24 | 10.74 | 0.33 | 1453.84 | 253.75 |
| 138+90 | 6.26 | 2.35 | 8.93 | 1.44 | 1462.77 | 255.18 |
| 139+20 | 8.10 | 0.37 | 7.92 | 1.50 | 1470.68 | 256.69 |
| 139+50 | 11.58 | 0.00 | 10.86 | 0.23 | 1481.54 | 256.91 |
| 139+80 | 9.23 | 0.04 | 11.57 | 0.02 | 1493.11 | 256.94 |
| 140+10 | 8.91 | 0.17 | 10.08 | 0.12 | 1503.19 | 257.06 |
| 140+40 | 9.69 | 0.07 | 10.32 | 0.14 | 1513.50 | 257.19 |
| 140+70 | 10.06 | 0.24 | 10.93 | 0.17 | 1524.43 | 257.36 |
| 141+00 | 8.53 | 0.35 | 10.30 | 0.34 | 1534.73 | 257.70 |
| 141+30 | 8.16 | 1.05 | 9.25 | 0.81 | 1543.98 | 258.51 |
| 141+60 | 6.03 | 1.61 | 7.86 | 1.51 | 1551.84 | 260.02 |
| 141+90 | 4.25 | 4.29 | 5.72 | 3.30 | 1557.56 | 263.32 |
| TOTAL | | | | TRAIL A | 1557.56 | 263.32 |

## Cut And Fill Calculations Trail B

| Station | Cut Area (sq/ft) | Fill Area (sq/ft) | Cut Volume (CY) | Fill Volume (CY) | Cumulative Cut (CY) | Cumulative Fill (CY) |
|---|---|---|---|---|---|---|
| 10+20 | 7.91 | 0.70 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10+50 | 8.44 | 0.58 | 9.09 | 0.71 | 9.09 | 0.71 |
| 10+80 | 10.29 | 0.26 | 10.41 | 0.47 | 19.49 | 1.18 |
| 11+10 | 12.93 | 0.00 | 12.90 | 0.15 | 32.40 | 1.33 |
| 11+40 | 11.94 | 0.01 | 13.79 | 0.00 | 46.19 | 1.34 |
| 11+70 | 10.01 | 0.47 | 12.13 | 0.27 | 58.32 | 1.61 |
| 12+00 | 9.37 | 0.57 | 10.71 | 0.60 | 69.03 | 2.21 |
| 12+30 | 11.44 | 0.16 | 11.49 | 0.42 | 80.52 | 2.64 |
| 12+60 | 14.71 | 0.24 | 14.48 | 0.23 | 95.00 | 2.86 |
| 12+90 | 10.75 | 0.00 | 14.14 | 0.14 | 109.15 | 3.00 |
| 13+20 | 6.83 | 0.00 | 9.76 | 0.00 | 118.91 | 3.00 |
| 13+50 | 9.18 | 0.30 | 8.89 | 0.16 | 127.80 | 3.17 |
| 13+80 | 9.53 | 0.41 | 10.39 | 0.39 | 138.19 | 3.56 |
| TOTAL | | | | TRAIL B | 138.19 | 3.56 |

| REV | DATE | BY | REVISIONS |
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STATE OF TEXAS
THONG HUY LE
95764
LICENSED
PROFESSIONAL ENGINEER
11-3-14


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LEONVALLEY

Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

QUANTITY SUMMARY-2

| | | | |
|---|---|---|---|
| CHK. BY: T.L. | IDS JOB NO: 211700100 | | |
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS | |
| DATE: 10/15/2014 | 8 | 57 | |

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## BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).

2. The development and design of the Traffic Control Plan (TCP)is the responsibility of the Engineer.

3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.

4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.

5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets", the TxDOT "Roadway Design Manual" or engineering judgment.

6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.

7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.

8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.

9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.

10. As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. However, the TRAFFIC FINES DOUBLE sign will not be required on projects consisting solely of mobile operation work, such as striping or milling edgeline rumble strips. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.

11. Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.

12. The Engineer has the final decision on the location of all traffic control devices.

13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

## WORKER SAFETY APPAREL NOTES:

1. Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel" labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Class 3 garments should be considered for high traffic volume work areas or night time work.

Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found on-line at the web address given below or by contacting:

Texas Department of Transportation
Traffic Operations Division - TE
Phone (512) 416-3118

| THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov |
|---|
| COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD) |
| DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS) |
| MATERIAL PRODUCER LIST (MPL) |
| ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)" |
| STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD) |
| TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) |
| TRAFFIC ENGINEERING STANDARD SHEETS |



Texas Department of Transportation | Traffic Operations Division Standard

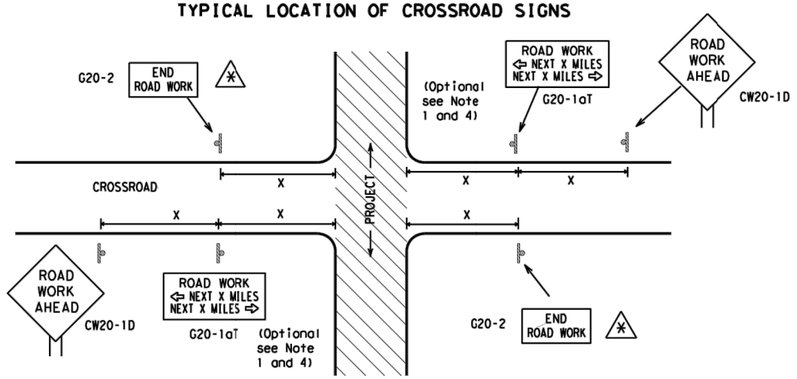
# BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

# BC(1)-13

| FILE: bc-13.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT November 2002 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| 4-03 5-10 | DIST | COUNTY | | SHEET NO. |
| 9-07 7-13 | | | | 9 |

DATE:
FILE:

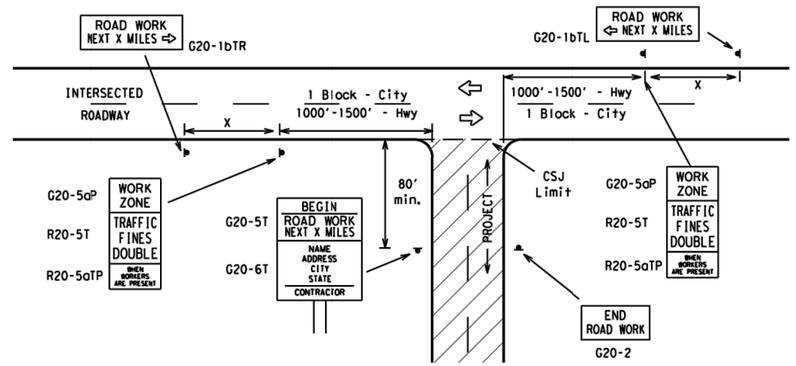
## TYPICAL LOCATION OF CROSSROAD SIGNS




* May be mounted on back of "ROAD WORK AHEAD"(CW20-1D) sign with approval of engineer. (See note 2 below)

1. The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D)sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
2. The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK"(G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume. This information shall be shown in the plans.
3. Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
4. The "ROAD WORK NEXT X MILES"(G20-1aT)sign shall be required at high volume crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
5. Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
6. When work occurs in the intersection area, appropriate traffic control devices, as shown elsewhere in the plans or as determined by the Engineer/Inspector, shall be in place.

## T-INTERSECTION




## CSJ LIMITS AT T-INTERSECTION

1. The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
2. If construction closes the road at a T-intersection the Contractor shall place the "CONTRACTOR NAME"(G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow(G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR)" signs shall be replaced by the detour signing called for in the plans.

## TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING [1,5,6]

### SIZE

| Sign Number or Series | Conventional Road | Expressway/ Freeway |
|---|---|---|
| CW20[4] CW21 CW22 CW23 CW25 | 48" x 48" | 48" x 48" |
| CW1, CW2, CW7, CW8, CW9, CW11, CW14 | 36" x 36" | 48" x 48" |
| CW3, CW4, CW5, CW6, CW8-3, CW10, CW12 | 48" x 48" | 48" x 48" |

### SPACING

| Posted Speed | Sign Spacing "X" Δ |
|---|---|
| MPH | Feet (Apprx.) |
| 30 | 120 |
| 35 | 160 |
| 40 | 240 |
| 45 | 320 |
| 50 | 400 |
| 55 | 500[2] |
| 60 | 600[2] |
| 65 | 700[2] |
| 70 | 800[2] |
| 75 | 900[2] |
| 80 | 1000[2] |
| * | *[3] |

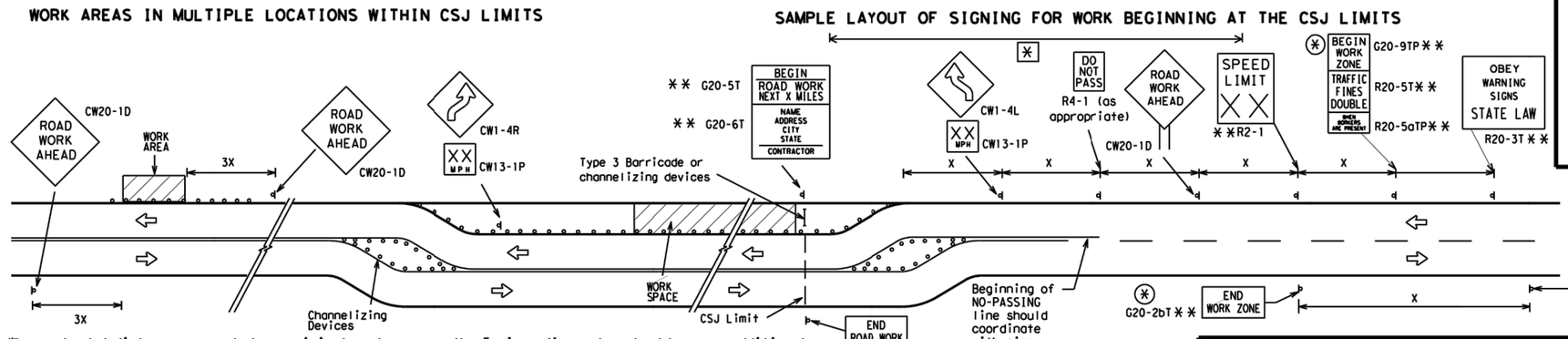
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

Δ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

### GENERAL NOTES

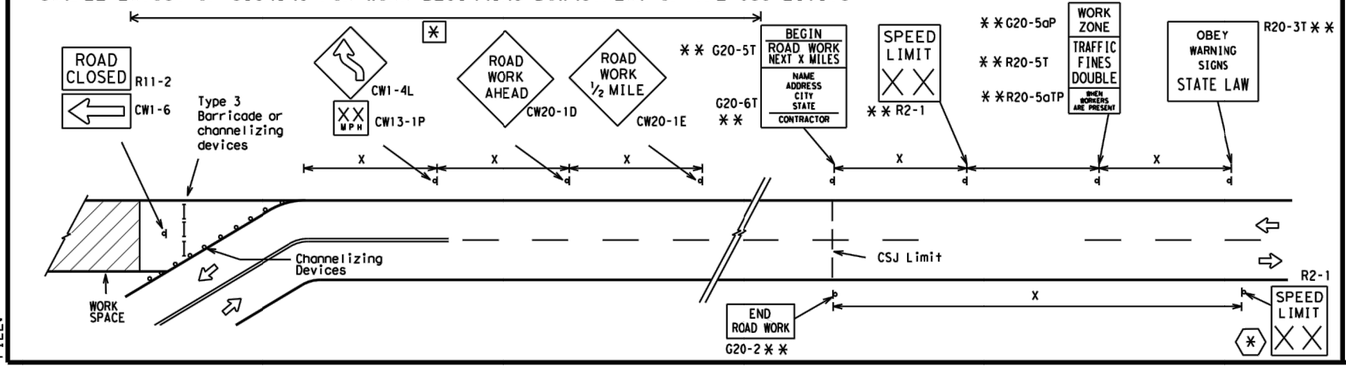
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may be used on low volume crossroads at the discretion of the Engineer. See Note 2 under "Typical Location of Crossroad Signs".
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in "TMUTCD", Sign Appendix or the "Standard Highway Sign Designs for Texas" manual for complete list of available sign design sizes.

## WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS




When extended distances occur between minimal work spaces, the Engineer/Inspector should ensure additional "ROAD WORK AHEAD"(CW20-1D)signs are placed in advance of these work areas to remind drivers they are still within the project limits. See the applicable TCP sheets for exact location and spacing of signs and channelizing devices.

## SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING DOWNSTREAM OF THE CSJ LIMITS




## SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

### NOTES

The Contractor shall determine the appropriate distance to be placed on the G20-1 series signs and "BEGIN ROAD WORK NEXT X MILES"(G20-5T)sign for each specific project. This distance shall replace the "X" and shall be rounded to the nearest whole mile with the approval of the Engineer. No decimals shall be used.

(*) The "BEGIN WORK ZONE"(G20-9TP) and "END WORK ZONE" (G20-2bT) shall be used as shown on the sample layout when advance signs are required outside the CSJ Limits. They inform the motorist of entering or leaving a part of the work zone lying outside the CSJ Limits where traffic fines may double if workers are present.

** Required CSJ Limit signing. See Note 10 on BC(1). TRAFFIC FINES DOUBLE signs will not be required on projects consisting solely of mobile operations work.

[*] Area for placement of "ROAD WORK AHEAD" (CW20-1D)sign and other signs or devices as called for on the Traffic Control Plan.

(*) Contractor will install a regulatory speed limit sign at the end of the work zone.

### LEGEND

| | |
|---|---|
| ⊢ | Type 3 Barricade |
| ○ ○ ○ | Channelizing Devices |
| ▬ | Sign |
| X | See Typical Construction Warning Sign Size and Spacing chart or the TMUTCD for sign spacing requirements. |



Texas Department of Transportation

Traffic Operations Division Standard

# BARRICADE AND CONSTRUCTION PROJECT LIMIT

## BC(2)-13

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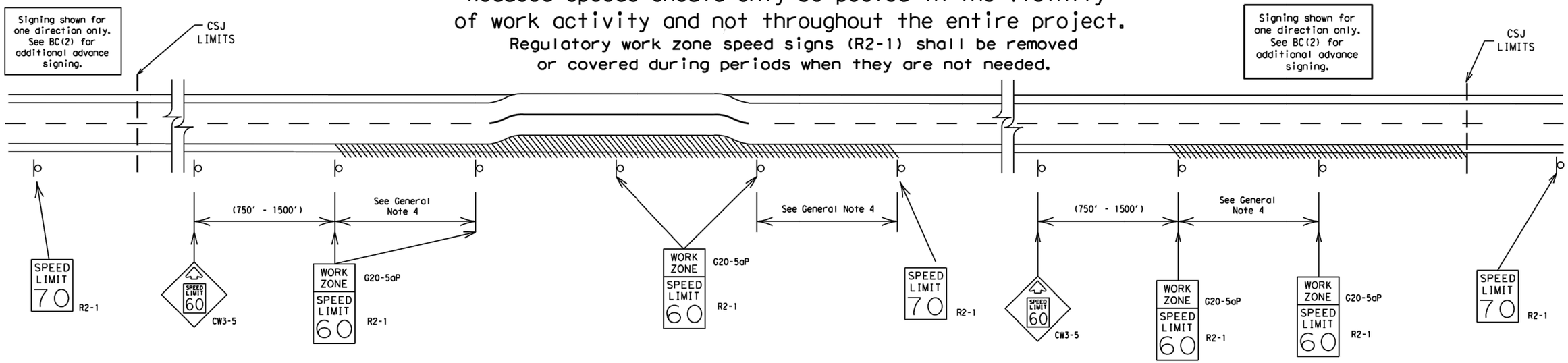
# TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

**Work zone speed limits shall be regulatory, established in accordance with the "Procedures for Establishing Speed Zones," and approved by the Texas Transportation Commission, or by City Ordinance when within Incorporated City Limits.**

Reduced speeds should only be posted in the vicinity of work activity and not throughout the entire project.

Regulatory work zone speed signs (R2-1) shall be removed or covered during periods when they are not needed.




## GUIDANCE FOR USE:

### LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit should be included on the design of the traffic control plans when restricted geometrics with a lower design speed are present in the work zone and modification of the geometrics to a higher design speed is not feasible.

Long/Intermediate Term Work Zone Speed Limit signs, when approved as described above, should be posted and visible to the motorist when work activity is present. Work activity may also be defined as a change in the roadway that requires a reduced speed for motorists to safely negotiate the work area, including:

a) rough road or damaged pavement surface
b) substantial alteration of roadway geometrics (diversions)
c) construction detours
d) grade
e) width
f) other conditions readily apparent to the driver

As long as any of these conditions exist, the work zone speed limit signs should remain in place.

### SHORT TERM WORK ZONE SPEED LIMITS

This type of work zone speed limit may be included on the design of the traffic control plans when workers or equipment are not behind concrete barrier, when work activity is within 10 feet of the traveled way or actually in the travelled way.

Short Term Work Zone Speed Limit signs should be posted and visible to the motorists only when work activity is present. When work activity is not present, signs shall be removed or covered.
(See Removing or Covering on BC(4)).

### GENERAL NOTES

1. Regulatory work zone speed limits should be used only for sections of construction projects where speed control is of major importance.
2. Regulatory work zone speed limit signs shall be placed on supports at a 7 foot minimum mounting height.
3. Speed zone signs are illustrated for one direction of travel and are normally posted for each direction of travel.
4. Frequency of work zone speed limit signs should be:
   40 mph and greater 0.2 to 2 miles
   35 mph and less 0.2 to 1 mile
5. Regulatory speed limit signs shall have black legend and border on a white reflective background (See "Reflective Sheeting" on BC(4)).
6. Fabrication, erection and maintenance of the"ADVANCE SPEED LIMIT"(CW3-5)sign, "WORK ZONE"(G20-5aP) plaque and the "SPEED LIMIT"(R2-1)signs shall not be paid for directly, but shall be considered subsidiary to Item 502.
7. Turning signs from view, laying signs over or down will not be allowed, unless as otherwise noted under "REMOVING OR COVERING" on BC(4).
8. Techniques that may help reduce traffic speeds include but are not limited to:
   A. Law enforcement.
   B. Flagger stationed next to sign.
   C. Portable changeable message sign (PCMS).
   D. Low-power (drone) radar transmitter.
   E. Speed monitor trailers or signs.
9. Speeds shown on details above are for illustration only. Work Zone Speed Limits should only be posted as approved for each project.
10. For more specific guidance concerning the type of work, work zone conditions and factors impacting allowable regulatory construction speed zone reduction see TxDOT form #1204 in the TxDOT e-form system.



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# BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

## BC(3)-13

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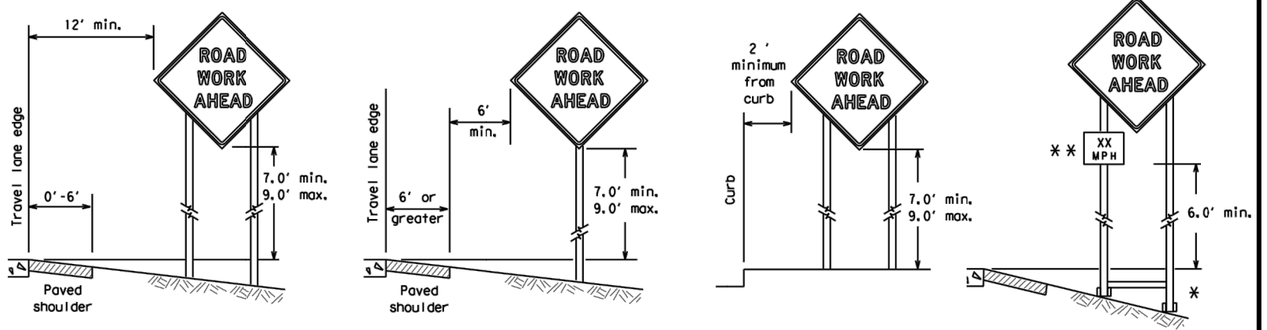
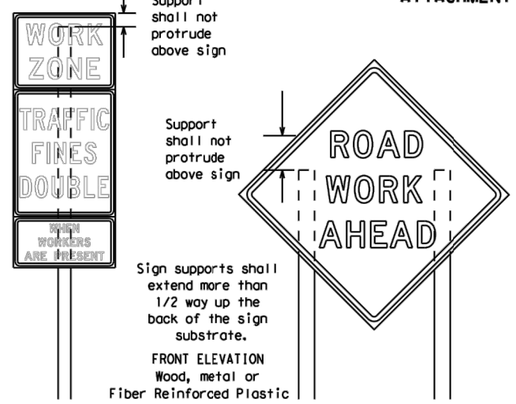
## TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



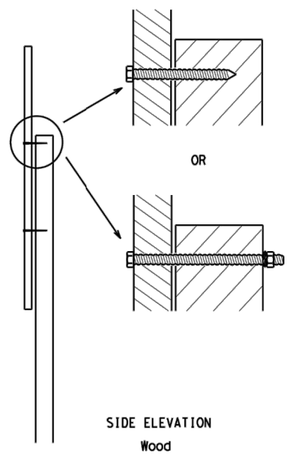

* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

** When plaques are placed on dual-leg supports, they should be attached to the upright nearest the travel lane. Supplemental plaques (advisory or distance) should not cover the surface of the parent sign.

## ATTACHMENT FOR SIGN SUPPORTS




Splicing embedded perforated square metal tubing in order to extend post height will only be allowed when the splice is made using four bolts, two above and two below the spice point. Splice must be located entirely behind the sign substrate, not near the base of the support. Splice insert lengths should be at least 5 times nominal post size, centered on the splice and of at least the same gauge material.

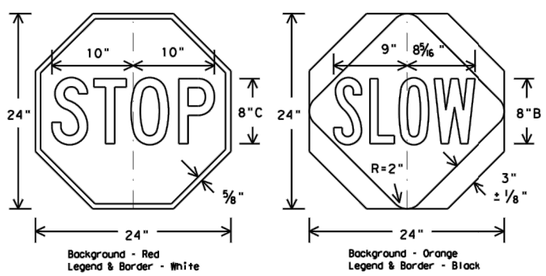



Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

**Nails shall NOT be allowed. Each sign shall be attached directly to the sign support. Multiple signs shall not be joined or spliced by any means. Wood supports shall not be extended or repaired by splicing or other means.**

## STOP/SLOW PADDLES

1. STOP/SLOW paddles are the primary method to control traffic by flaggers. The STOP/SLOW paddle size should be 24" x 24" as detailed below.
2. When used at night, the STOP/SLOW paddle shall be retroreflectorized.
3. STOP/SLOW paddles may be attached to a staff with a minimum length of 6' to the bottom of the sign.
4. Any lights incorporated into the STOP or SLOW paddle faces shall only be as specifically described in Section 6E.03 Hand Signaling Devices in the TMUTCD.




## CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

1. Permanent signs are used to give notice of traffic laws or regulations, call attention to conditions that are potentially hazardous to traffic operations, show route designations, destinations, directions, distances, services, points of interest, and other geographical, recreational, or cultural information. Drivers proceeding through a work zone need the same, if not better route guidance as normally installed on a roadway without construction.
2. When permanent regulatory or warning signs conflict with work zone conditions, remove or cover the permanent signs until the permanent sign message matches the roadway condition.
3. When existing permanent signs are moved and relocated due to construction purposes, they shall be visible to motorists at all times.
4. If existing signs are to be relocated on their original supports, they shall be installed on crashworthy bases as shown on the SMD Standard sheets. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards. This work should be paid for under the appropriate pay item for relocating existing signs.
5. If permanent signs are to be removed and relocated using temporary supports, the Contractor shall use crashworthy supports as shown on the BC sheets or the CWZTCD. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards during construction. This work should be paid for under the appropriate pay item for relocating existing signs.
6. Any sign or traffic control device that is struck or damaged by the Contractor or his/her construction equipment shall be replaced as soon as possible by the Contractor to ensure proper guidance for the motorists. This will be subsidiary to Item 502.

## GENERAL NOTES FOR WORK ZONE SIGNS

1. Contractor shall install and maintain signs in a straight and plumb condition and/or as directed by the Engineer.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. All signs shall be installed in accordance with the plans or as directed by the Engineer. Signs shall be used to regulate, warn, and guide the traveling public safely through the work zone.
5. The Contractor may furnish either the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD). The Engineer/Inspector may require the Contractor to furnish other work zone signs that are shown in the TMUTCD but may have been omitted from the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the Contractor's Responsible Person. All changes must be documented in writing before being implemented. This can include documenting the changes in the Inspector's TxDOT diary and having both the Inspector and Contractor initial and date the agreed upon changes.
6. The Contractor shall furnish sign supports listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD). The Contractor shall install the sign support in accordance with the manufacturer's recommendations. If there is a question regarding installation procedures, the Contractor shall furnish the Engineer a copy of the manufacturer's installation recommendations so the Engineer can verify the correct procedures are being followed.
7. The Contractor is responsible for installing signs on approved supports and replacing signs with damaged or cracked substrates and/or damaged or marred reflective sheeting as directed by the Engineer/Inspector.
8. Identification markings may be shown only on the back of the sign substrate. The maximum height of letters and/or company logos used for identification shall be 1 inch.
9. The Contractor shall replace damaged wood posts. New or damaged wood sign posts shall not be spliced.

## DURATION OF WORK (as defined by the "Texas Manual on Uniform Traffic Control Devices" Part 6)

1. The types of sign supports, sign mounting height, the size of signs, and the type of sign substrates can vary based on the type of work being performed. The Engineer is responsible for selecting the appropriate size sign for the type of work being performed. The Contractor is responsible for ensuring the sign support, sign mounting height and substrate meets manufacturer's recommendations in regard to crashworthiness and duration of work requirements.
   a. Long-term stationary - work that occupies a location more than 3 days.
   b. Intermediate-term stationary - work that occupies a location more than one daylight period up to 3 days, or nighttime work lasting more than one hour.
   c. Short-term stationary - daytime work that occupies a location for more than 1 hour in a single daylight period.
   d. Short, duration - work that occupies a location up to 1 hour.
   e. Mobile - work that moves continuously or intermittently (stopping for up to approximately 15 minutes.)

## SIGN MOUNTING HEIGHT

1. The bottom of Long-term/Intermediate-term signs shall be at least 7 feet, but not more than 9 feet, above the paved surface, except as shown for supplemental plaques mounted below other signs.
2. The bottom of Short-term/Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground.
3. Long-term/Intermediate-term Signs may be used in lieu of Short-term/Short Duration signing.
4. Short-term/Short Duration signs shall be used only during daylight and shall be removed at the end of the workday or raised to appropriate Long-term/Intermediate sign height.
5. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

## SIZE OF SIGNS

1. The Contractor shall furnish the sign sizes shown on BC (2) unless otherwise shown in the plans or as directed by the Engineer.

## SIGN SUBSTRATES

1. The Contractor shall ensure the sign substrate is installed in accordance with the manufacturer's recommendations for the type of sign support that is being used. The CWZTCD lists each substrate that can be used on the different types and models of sign supports.
2. "Mesh" type materials are NOT an approved sign substrate, regardless of the tightness of the weave.
3. All wooden individual sign panels fabricated from 2 or more pieces shall have one or more plywood cleat, 1/2" thick by 6" wide, fastened to the back of the sign and extending fully across the sign. The cleat shall be attached to the back of the sign using wood screws that do not penetrate the face of the sign panel. The screws shall be placed on both sides of the splice and spaced at 6" centers. The Engineer may approve other methods of splicing the sign face.

## REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the color and retro-reflectivity requirements of DMS-8300 for rigid signs or DMS-8310 for roll-up signs. The web address for DMS specifications is shown on BC(1).
2. White sheeting, meeting the requirements of DMS-8300 Type A, shall be used for signs with a white background.
3. Orange sheeting, meeting the requirements of DMS-8300 Type $B_{FL}$ or Type $C_{FL}$, shall be used for rigid signs with orange backgrounds.

## SIGN LETTERS

1. All sign letters and numbers shall be clear, and open rounded type uppercase alphabet letters as approved by the Federal Highway Administration (FHWA) and as published in the "Standard Highway Sign Design for Texas" manual. Signs, letters and numbers shall be of first class workmanship in accordance with Department Standards and Specifications.

## REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered.
2. Long-term stationary or intermediate stationary signs installed on square metal tubing may be turned away from traffic 90 degrees when the sign message is not applicable. This technique may not be used for signs installed in the median of divided highways or near any intersections where the sign may be seen from approaching traffic.
3. Signs installed on wooden skids shall not be turned at 90 degree angles to the roadway. These signs should be removed or completely covered when not required.
4. When signs are covered, the material used shall be opaque, such as heavy mil black plastic, or other materials which will cover the entire sign face and maintain their opaque properties under automobile headlights at night, without damaging the sign sheeting.
5. Burlap shall NOT be used to cover signs.
6. Duct tape or other adhesive material shall NOT be affixed to a sign face.
7. Signs and anchor stubs shall be removed and holes backfilled upon completion of work.

## SIGN SUPPORT WEIGHTS

1. Where sign supports require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand should be used.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects shall not be permitted for use as sign support weights.
4. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs.
5. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall NOT be used.
6. Rubber ballasts designed for channelizing devices should not be used for ballast on portable sign supports. Sign supports designed and manufactured with rubber bases may be used when shown on the CWZTCD list.
7. Sandbags shall only be placed along or laid over the base supports of the traffic control device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners. Sandbags shall be placed along the length of the skids to weigh down the sign support.
8. Sandbags shall NOT be placed under the skid and shall not be used to level sign supports placed on slopes.

## FLAGS ON SIGNS

1. Flags may be used to draw attention to warning signs. When used the flag shall be 16 inches square or larger and shall be orange or fluorescent red-orange in color. Flags shall not be allowed to cover any portion of the sign face.



Texas Department of Transportation | Traffic Operations Division Standard

# BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

# BC(4)-13

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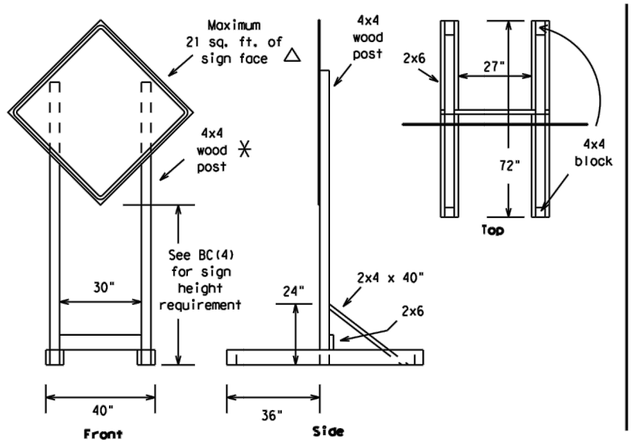
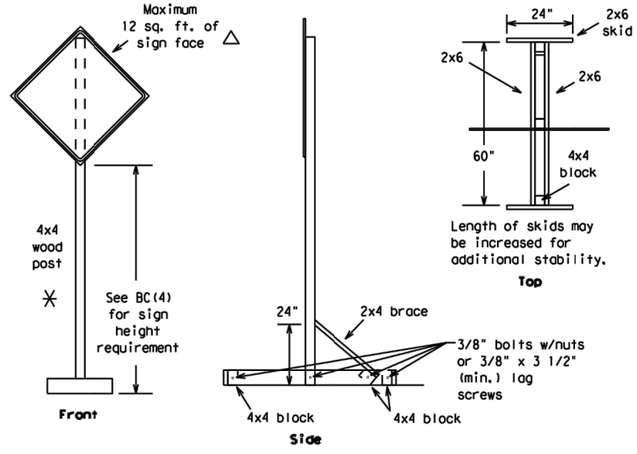
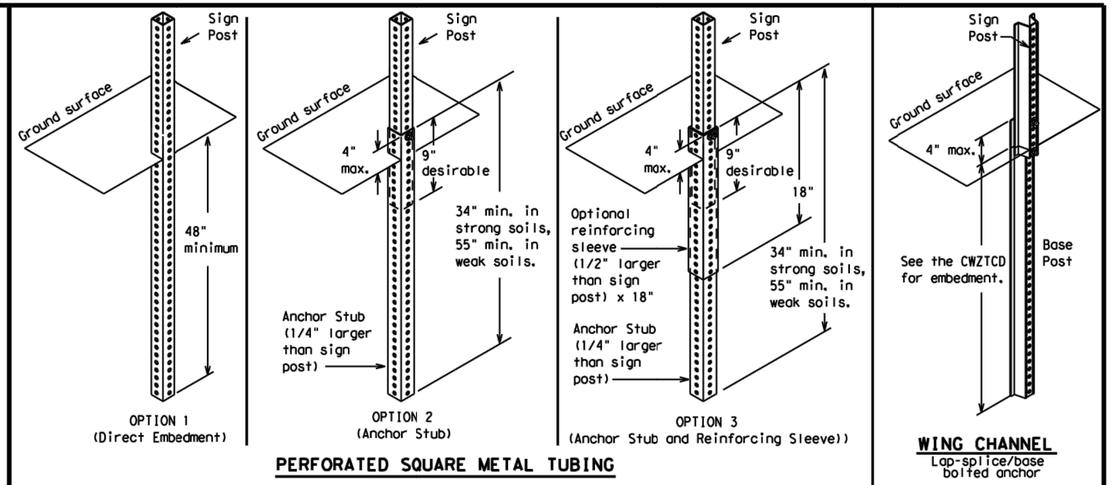


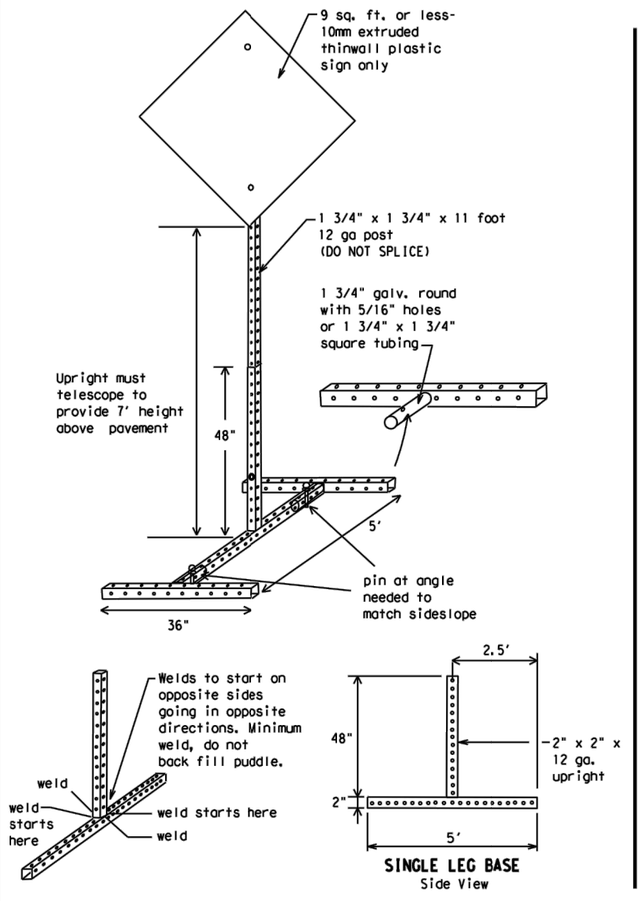

## SKID MOUNTED WOOD SIGN SUPPORTS

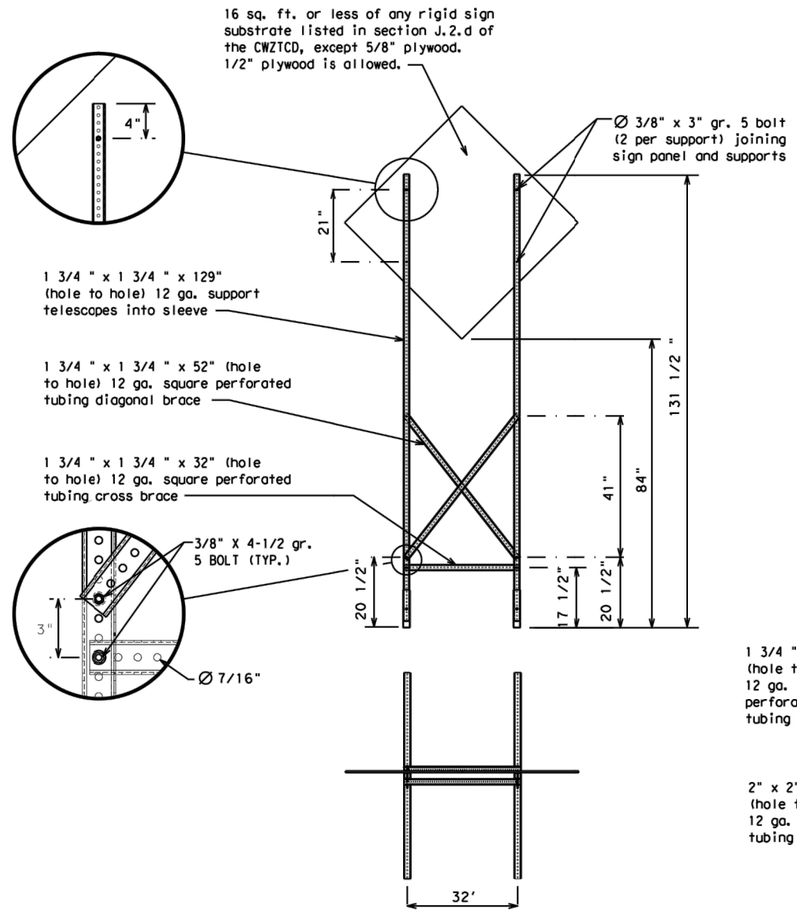
LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS □

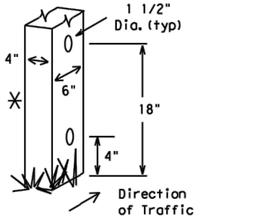



## GROUND MOUNTED SIGN SUPPORTS

Refer to the CWZTCD and the manufacturer's installation procedure for each type sign support.
The maximum sign square footage shall adhere to the manufacturer's recommendation.
Two post installations can be used for larger signs.

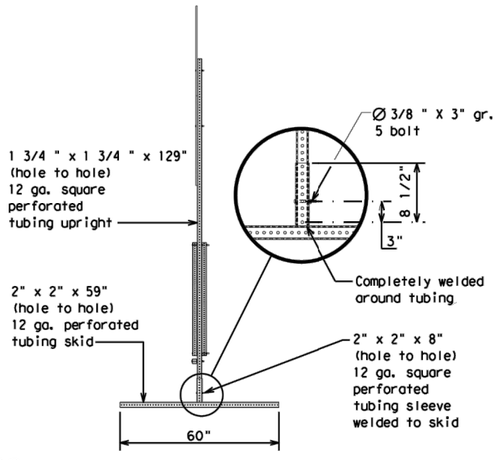



| Nominal Post Size | Number of Posts | Maximum Sq. feet of Sign Face | Minimum Soil Embedment | Drilled Hole(s) Required |
|---|---|---|---|---|
| 4 x 4 | 1 | 12 | 36" | NO |
| 4 x 4 | 2 | 21 | 36" | NO |
| 4 x 6 | 1 | 21 | 36" | YES |
| 4 x 6 | 2 | 36 | 36" | YES |

WOOD POST SYSTEM FOR GROUND MOUNTED SIGN SUPPORTS




## WEDGE ANCHORS

Both steel and plastic Wedge Anchor Systems as shown on the SMD Standard Sheets may be used as temporary sign supports for signs up to 10 square feet of sign face. They may be set in concrete or in sturdy soils if approved by the Engineer. (See web address for "Traffic Engineering Standard Sheets" on BC(1)).

## OTHER DESIGNS

MORE DETAILS OF APPROVED LONG/INTERMEDIATE AND SHORT TERM SUPPORTS CAN BE FOUND ON THE CWZTCD LIST. SEE BC(1) FOR WEBSITE LOCATION.

### GENERAL NOTES

1. Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

□ See BC(4) for definition of "Work Duration."

✳ Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.

△ See the CWZTCD for the type of sign substrate that can be used for each approved sign support.



Texas Department of Transportation — Traffic Operations Division Standard

## SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

## BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

## BC(5)-13

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WHEN NOT IN USE, REMOVE THE PCMS FROM THE RIGHT-OF-WAY OR PLACE THE PCMS BEHIND BARRIER OR GUARDRAIL WITH SIGN PANEL TURNED PARALLEL TO TRAFFIC

## PORTABLE CHANGEABLE MESSAGE SIGNS

1. The Engineer/Inspector shall approve all messages used on portable changeable message signs (PCMS).
2. Messages on PCMS should contain no more than 8 words (about four to eight characters per word), not including simple words such as "TO," "FOR," "AT," etc.
3. Messages should consist of a single phase, or two phases that alternate. Three-phase messages are not allowed. Each phase of the message should convey a single thought, and must be understood by itself.
4. Use the word "EXIT" to refer to an exit ramp on a freeway; i.e., "EXIT CLOSED." Do not use the term "RAMP."
5. Always use the route or interstate designation (IH, US, SH, FM) along with the number when referring to a roadway.
6. When in use the bottom of a stationary PCMS message panel should be a minimum 7 feet above the roadway, where possible.
7. The message term "WEEKEND" should be used only if the work is to start on Saturday morning and end by Sunday evening at midnight. Actual days and hours of work should be displayed on the PCMS if work is to begin on Friday evening and/or continue into Monday morning.
8. The Engineer/Inspector may select one of two options which are available for displaying a two-phase message on a PCMS. Each phase may be displayed for either four seconds each or for three seconds each.
9. Do not "flash" messages or words included in a message. The message should be steady burn or continuous while displayed.
10. Do not present redundant information on a two-phase message; i.e., keeping two lines of the message the same and changing the third line.
11. Do not use the word "Danger" in message.
12. Do not display the message "LANES SHIFT LEFT" or "LANES SHIFT RIGHT" on a PCMS. Drivers do not understand the message.
13. Do not display messages that scroll horizontally or vertically across the face of the sign.
14. The following table lists abbreviated words and two-word phrases that are acceptable for use on a PCMS. Both words in a phrase must be displayed together. Words or phrases not on this list should not be abbreviated, unless shown in the TMUTCD.
15. PCMS character height should be at least 18 inches for trailer mounted units. They should be visible from at least 1/2 (.5) mile and the text should be legible from at least 600 feet at night and 800 feet in daylight. Truck mounted units must have a character height of 10 inches and must be legible from at least 400 feet.
16. Each line of text should be centered on the message board rather than left or right justified.
17. If disabled, the PCMS should default to an illegible display that will not alarm motorists and will only be used to alert workers that the PCMS has malfunctioned. A pattern such as a series of horizontal solid bars is appropriate.

| WORD OR PHRASE | ABBREVIATION |
|---|---|
| Access Road | ACCS RD |
| Alternate | ALT |
| Avenue | AVE |
| Best Route | BEST RTE |
| Boulevard | BLVD |
| Bridge | BRDG |
| Cannot | CANT |
| Center | CTR |
| Construction Ahead | CONST AHD |
| CROSSING | XING |
| Detour Route | DETOUR RTE |
| Do Not | DONT |
| East | E |
| Eastbound | (route) E |
| Emergency | EMER |
| Emergency Vehicle | EMER VEH |
| Entrance, Enter | ENT |
| Express Lane | EXP LN |
| Expressway | EXPWY |
| XXXX Feet | XXXX FT |
| Fog Ahead | FOG AHD |
| Freeway | FRWY, FWY |
| Freeway Blocked | FWY BLKD |
| Friday | FRI |
| Hazardous Driving | HAZ DRIVING |
| Hazardous Material | HAZMAT |
| High-Occupancy | HOV |
| Vehicle Highway | HWY |
| Hour(s) | HR, HRS |
| Information | INFO |
| It Is | ITS |
| Junction | JCT |
| Left | LFT |
| Left Lane | LFT LN |
| Lane Closed | LN CLOSED |
| Lower Level | LWR LEVEL |
| Maintenance | MAINT |

| WORD OR PHRASE | ABBREVIATION |
|---|---|
| Major | MAJ |
| Miles | MI |
| Miles Per Hour | MPH |
| Minor | MNR |
| Monday | MON |
| Normal | NORM |
| North | N |
| Northbound | (route) N |
| Parking | PKING |
| Road | RD |
| Right Lane | RT LN |
| Saturday | SAT |
| Service Road | SERV RD |
| Shoulder | SHLDR |
| Slippery | SLIP |
| South | S |
| Southbound | (route) S |
| Speed | SPD |
| Street | ST |
| Sunday | SUN |
| Telephone | PHONE |
| Temporary | TEMP |
| Thursday | THURS |
| To Downtown | TO DWNTN |
| Traffic | TRAF |
| Travelers | TRVLRS |
| Tuesday | TUES |
| Time Minutes | TIME MIN |
| Upper Level | UPR LEVEL |
| Vehicles (s) | VEH, VEHS |
| Warning | WARN |
| Wednesday | WED |
| Weight Limit | WT LIMIT |
| West | W |
| Westbound | (route) W |
| Wet Pavement | WET PVMT |
| Will Not | WONT |

Roadway designation # IH-number, US-number, SH-number, FM-number

# RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

(The Engineer may approve other messages not specifically covered here.)

## Phase 1: Condition Lists

### Road/Lane/Ramp Closure List

| | |
|---|---|
| FREEWAY CLOSED X MILE | FRONTAGE ROAD CLOSED |
| ROAD CLOSED AT SH XXX | SHOULDER CLOSED XXX FT |
| ROAD CLSD AT FM XXXX | RIGHT LN CLOSED XXX FT |
| RIGHT X LANES CLOSED | RIGHT X LANES OPEN |
| CENTER LANE CLOSED | DAYTIME LANE CLOSURES |
| NIGHT LANE CLOSURES | I-XX SOUTH EXIT CLOSED |
| VARIOUS LANES CLOSED | EXIT XXX CLOSED X MILE |
| EXIT CLOSED | RIGHT LN TO BE CLOSED |
| MALL DRIVEWAY CLOSED | X LANES CLOSED TUE - FRI |
| XXXXXXXX BLVD CLOSED | |

### Other Condition List

| | |
|---|---|
| ROADWORK XXX FT | ROAD REPAIRS XXXX FT |
| FLAGGER XXXX FT | LANE NARROWS XXXX FT |
| RIGHT LN NARROWS XXXX FT | TWO-WAY TRAFFIC XX MILE |
| MERGING TRAFFIC XXXX FT | CONST TRAFFIC XXX FT |
| LOOSE GRAVEL XXXX FT | UNEVEN LANES XXXX FT |
| DETOUR X MILE | ROUGH ROAD XXXX FT |
| ROADWORK PAST SH XXXX | ROADWORK NEXT FRI-SUN |
| BUMP XXXX FT | US XXX EXIT X MILES |
| TRAFFIC SIGNAL XXXX FT | LANES SHIFT * |

* LANES SHIFT in Phase 1 must be used with STAY IN LANE in Phase 2.

## Phase 2: Possible Component Lists

| Action to Take/Effect on Travel List | | Location List | Warning List | ** Advance Notice List |
|---|---|---|---|---|
| MERGE RIGHT | FORM X LINES RIGHT | AT FM XXXX | SPEED LIMIT XX MPH | TUE-FRI XX AM- X PM |
| DETOUR NEXT X EXITS | USE XXXXX RD EXIT | BEFORE RAILROAD CROSSING | MAXIMUM SPEED XX MPH | APR XX-XX X PM-X AM |
| USE EXIT XXX | USE EXIT I-XX NORTH | NEXT X MILES | MINIMUM SPEED XX MPH | BEGINS MONDAY |
| STAY ON US XXX SOUTH | USE I-XX E TO I-XX N | PAST US XXX EXIT | ADVISORY SPEED XX MPH | BEGINS MAY XX |
| TRUCKS USE US XXX N | WATCH FOR TRUCKS | XXXXXXX TO XXXXXXX | RIGHT LANE EXIT | MAY X-X XX PM - XX AM |
| WATCH FOR TRUCKS | EXPECT DELAYS | US XXX TO FM XXXX | USE CAUTION | NEXT FRI-SUN |
| EXPECT DELAYS | PREPARE TO STOP | | DRIVE SAFELY | XX AM TO XX PM |
| REDUCE SPEED XXX FT | END SHOULDER USE | | DRIVE WITH CARE | NEXT TUE AUG XX |
| USE OTHER ROUTES | WATCH FOR WORKERS | | | TONIGHT XX PM- XX AM |
| STAY IN LANE * | | | | |

** See Application Guidelines Note 6.

### APPLICATION GUIDELINES

1. Only 1 or 2 phases are to be used on a PCMS.
2. The 1st phase (or both) should be selected from the "Road/Lane/Ramp Closure List" and the "Other Condition List".
3. A 2nd phase can be selected from the "Action to Take/Effect on Travel, Location, General Warning, or Advance Notice Phase Lists".
4. A Location Phase is necessary only if a distance or location is not included in the first phase selected.
5. If two PCMS are used in sequence, they must be separated by a minimum of 1000 ft. Each PCMS shall be limited to two phases, and should be understandable by themselves.
6. For advance notice, when the current date is within seven days of the actual work date, calendar days should be replaced with days of the week. Advance notification should typically be for no more than one week prior to the work.

### WORDING ALTERNATIVES

1. The words RIGHT, LEFT and ALL can be interchanged as appropriate.
2. Roadway designations IH, US, SH, FM and LP can be interchanged as appropriate.
3. EAST, WEST, NORTH and SOUTH (or abbreviations E, W, N and S) can be interchanged as appropriate.
4. Highway names and numbers replaced as appropriate.
5. ROAD, HIGHWAY and FREEWAY can be interchanged as needed.
6. AHEAD may be used instead of distances if necessary.
7. FT and MI, MILE and MILES interchanged as appropriate.
8. AT, BEFORE and PAST interchanged as needed.
9. Distances or AHEAD can be eliminated from the message if a location phase is used.

PCMS SIGNS WITHIN THE R.O.W. SHALL BE BEHIND GUARDRAIL OR CONCRETE BARRIER OR SHALL HAVE A MINIMUM OF FOUR (4) PLASTIC DRUMS PLACED PERPENDICULAR TO TRAFFIC ON THE UPSTREAM SIDE OF THE PCMS, WHEN EXPOSED TO ONE DIRECTION OF TRAFFIC. WHEN EXPOSED TO TWO WAY TRAFFIC, THE FOUR DRUMS SHOULD BE PLACED WITH ONE DRUM AT EACH OF THE FOUR CORNERS OF THE UNIT.

### FULL MATRIX PCMS SIGNS

1. When Full Matrix PCMS signs are used, the character height and legibility/visibility requirements shall be maintained as listed in Note 15 under "PORTABLE CHANGEABLE MESSAGE SIGNS" above.
2. When symbol signs, such as the "Flagger Symbol"(CW20-7) are represented graphically on the Full Matrix PCMS sign and, with the approval of the Engineer, it shall maintain the legibility/visibility requirement listed above.
3. When symbol signs are represented graphically on the Full Matrix PCMS, they shall only supplement the use of the static sign represented, and shall not substitute for, or replace that sign.
4. A full matrix PCMS may be used to simulate a flashing arrow board provided it meets the visibility, flash rate and dimming requirements on BC(7), for the same size arrow.



Texas Department of Transportation

Traffic Operations Division Standard

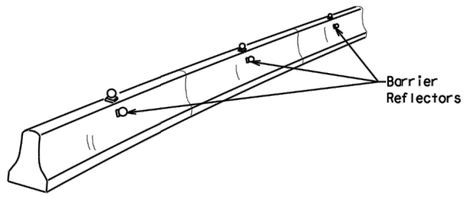
# BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

# BC(6)-13

| FILE: bc-13.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT November 2002 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS 9-07 7-13 | DIST | COUNTY | | SHEET NO. 14 |

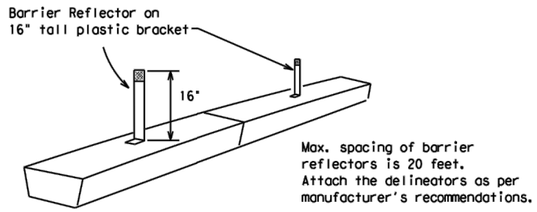
DATE:
FILE:

1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.

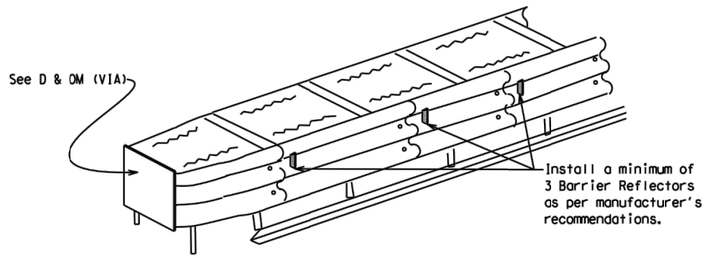



## CONCRETE TRAFFIC BARRIER (CTB)

3. Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector. The Barrier Reflector mounted on the side of the CTB shall be located directly below the reflector mounted on top of the barrier, as shown in the detail above.
4. Where CTB separates two-way traffic, three barrier reflectors shall be mounted on each section of CTB. The reflector unit on top shall have two yellow reflective faces (Bi-Directional)while the reflectors on each side of the barrier shall have one yellow reflective face, as shown in the detail above.
5. When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
6. Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
7. Maximum spacing of Barrier Reflectors is forty (40) feet.
8. Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
9. Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
10. Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
11. Single slope barriers shall be delineated as shown on the above detail.




## LOW PROFILE CONCRETE BARRIER (LPCB)

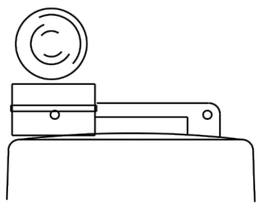



## DELINEATION OF END TREATMENTS

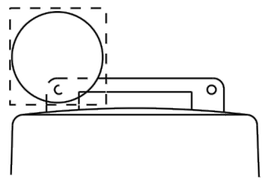
**END TREATMENTS FOR CTB'S USED IN WORK ZONES**

End treatments used on CTB's in work zones shall meet crashworthy standards as defined in the National Cooperative Highway Research Report 350. Refer to the CWZTCD List for approved end treatments and manufacturers.

# BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.



Warning reflector may be round or square. Must have a yellow reflective surface area of at least 30 square inches

## WARNING LIGHTS

1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type $B_{FL}$ or $C_{FL}$ Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
4. Type-C and Type D 360 degree Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
5. The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
6. When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.
7. When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.
8. The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

## WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

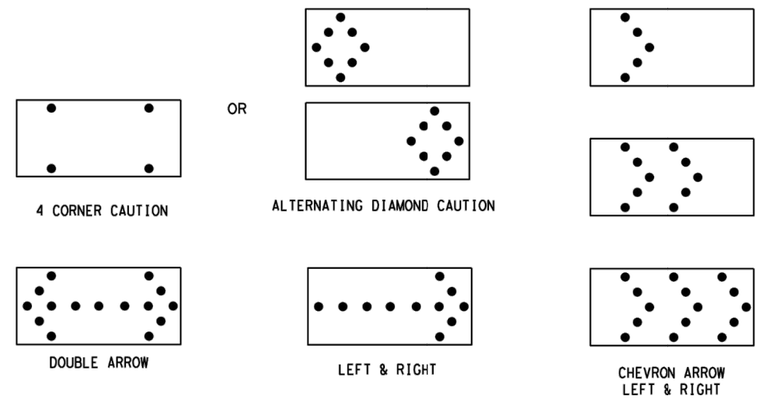
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the successive flashing of the sequential warning lights should occur from the beginning of the taper to the end of the merging taper in order to identify the desired vehicle path. The rate of flashing for each light shall be 65 flashes per minute, plus or minus 10 flashes.
4. Type C and D steady-burn warning lights are intended to be used in a series to delineate the edge of the travel lane on detours, on lane changes, on lane closures, and on other similar conditions.
5. Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
6. Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
7. The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.

## WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C (STEADY BURN) WARNING LIGHTS

1. A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
2. The warning reflector shall be yellow in color and shall be manufactured using a sign substrate approved for use with plastic drums listed on the CWZTCD.
3. The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
4. Round reflectors shall be fully reflectorized, including the area where attached to the drum.
5. Square substrates must have a minimum of 30 square inches of reflectorized sheeting. They do not have to be reflectorized where it attaches to the drum.
6. The side of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS 8300-Type B or Type C.
7. When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
8. The warning reflector should be mounted on the side of the handle nearest approaching traffic.
9. The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.

Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

1. The Flashing Arrow Board should be used for all lane closures on multi-lane roadways, or slow moving maintenance or construction activities on the travel lanes.
2. Flashing Arrow Boards should not be used on two-lane, two-way roadways, detours, diversions or work on shoulders unless the "CAUTION" display (see detail below) is used.
3. The Engineer/Inspector shall choose all appropriate signs, barricades and/or other traffic control devices that should be used in conjunction with the Flashing Arrow Board.
4. The Flashing Arrow Board should be able to display the following symbols:




5. The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
6. The straight line caution display is NOT ALLOWED.
7. The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
8. Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
9. The sequential arrow display is NOT ALLOWED.
10. The flashing arrow display is the TxDOT standard; however, the sequential Chevron display may be used during daylight operations.
11. The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
12. A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
13. A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.
14. Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

| REQUIREMENTS | | | |
|---|---|---|---|
| TYPE | MINIMUM SIZE | MINIMUM NUMBER OF PANEL LAMPS | MINIMUM VISIBILITY DISTANCE |
| B | 30 x 60 | 13 | 3/4 mile |
| C | 48 x 96 | 15 | 1 mile |

**ATTENTION**
Flashing Arrow Boards shall be equipped with automatic dimming devices.

WHEN NOT IN USE, REMOVE THE ARROW BOARD FROM THE RIGHT-OF-WAY OR PLACE THE ARROW BOARD BEHIND CONCRETE TRAFFIC BARRIER OR GUARDRAIL.

# FLASHING ARROW BOARDS



## TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the National Cooperative Highway Research Report No. 350 (NCHRP 350) or the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CWZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
6. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.

Texas Department of Transportation

*Traffic Operations Division Standard*

# BARRICADE AND CONSTRUCTION ARROW PANEL, REFLECTORS, WARNING LIGHTS & ATTENUATOR

# BC(7)-13

| FILE: bc-13.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT November 2002 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| 9-07 | DIST | COUNTY | | SHEET NO. |
| 7-13 | | | | 15 |

DATE:
FILE:

## GENERAL NOTES

1. For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
2. For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
3. For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
4. Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
5. Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
6. The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

## GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

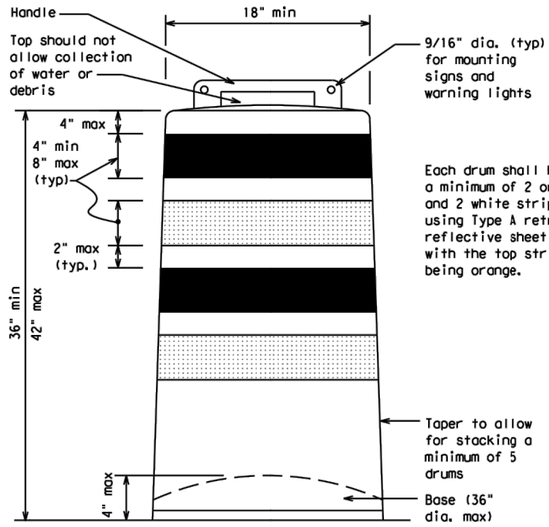
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
3. Plastic drums shall be constructed of lightweight flexible, and deformable materials. The Contractor shall NOT use metal drums or single piece plastic drums as channelization devices or sign supports.
4. Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
5. The top of the drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 9/16 inch diameter holes to allow attachment of a warning light, warning reflector unit or approved compliant sign.
6. The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches nor greater than 8 inches in width. Any non-reflectorized space between any two adjacent stripes shall not exceed 2 inches in width.
7. Bases shall have a maximum width of 36 inches, a maximum height of 4 inches, and a minimum of two footholds of sufficient size to allow base to be held down while separating the drum body from the base.
8. Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
9. Drum body shall have a maximum unballasted weight of 11 lbs.
10. Drum and base shall be marked with manufacturer's name and model number.

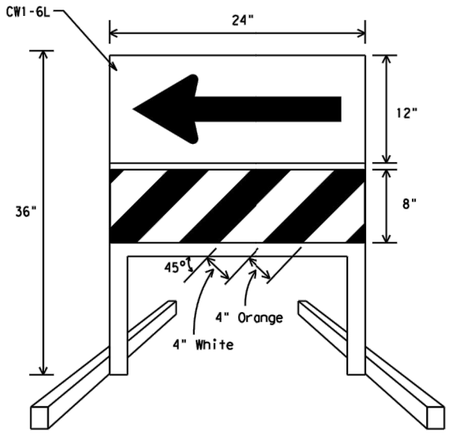
## RETROREFLECTIVE SHEETING

1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon vehicular impact, the sheeting shall remain adhered in-place and exhibit no delaminating, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

## BALLAST

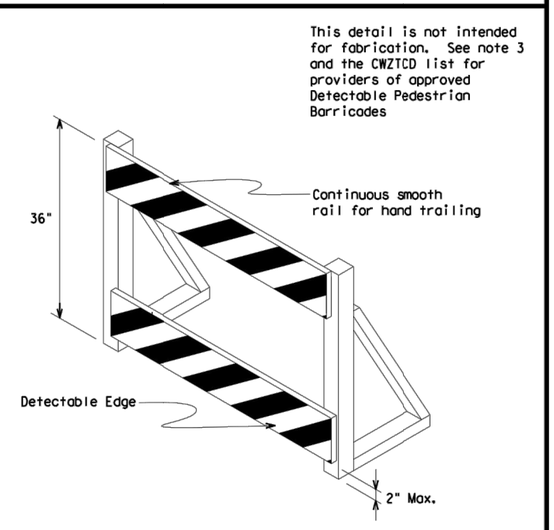
1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
2. Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-in ballast can be constructed of an integral crumb rubber base or a solid rubber base.
3. Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
4. The ballast shall not be heavy objects, water, or any material that would become hazardous to motorists, pedestrians, or workers when the drum is struck by a vehicle.
5. When used in regions susceptible to freezing, drums shall have drainage holes in the bottoms so that water will not collect and freeze becoming a hazard when struck by a vehicle.
6. Ballast shall not be placed on top of drums.
7. Adhesives may be used to secure base of drums to pavement.



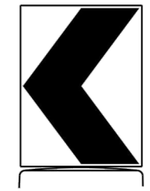

## DIRECTION INDICATOR BARRICADE

1. The Direction Indicator Barricade may be used in tapers, transitions, and other areas where specific directional guidance to drivers is necessary.
2. If used, the Direction Indicator Barricade should be used in series to direct the driver through the transition and into the intended travel lane.
3. The Direction Indicator Barricade shall consist of One-Direction Large Arrow (CW1-6) sign in the size shown with a black arrow on a background of Type $B_{FL}$ or Type $C_{FL}$ Orange retroreflective sheeting above a rail with Type A retroreflective sheeting in alternating 4" white and orange stripes sloping downward at an angle of 45 degrees in the direction road users are to pass. Sheeting types shall be as per DMS 8300.
4. Double arrows on the Direction Indicator Barricade will not be allowed.
5. Approved manufacturers are shown on the CWZTCD List. Ballast shall be as approved by the manufacturers instructions.

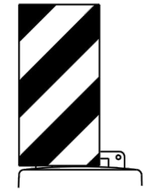



## DETECTABLE PEDESTRIAN BARRICADES

1. When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility.
2. Where pedestrians with visual disabilities normally use the closed sidewalk, a device that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk.
3. Detectable pedestrian barricades similar to the one pictured above, longitudinal channelizing devices, some concrete barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.
4. Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)" and should not be used as a control for pedestrian movements.
5. Warning lights shall not be attached to detectable pedestrian barricades.
6. Detectable pedestrian barricades may use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.



18" x 24" Sign
(Maximum Sign Dimension)
Chevron CW1-8, Opposing Traffic Lane Divider, Driveway sign D70a, Keep Right R4 series or other signs as approved by Engineer



12" x 24"
Vertical Panel
mount with diagonals sloping down towards travel way

**Plywood, Aluminum or Metal sign substrates shall NOT be used on plastic drums**

## SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
2. Chevrons and other work zone signs with an orange background shall be manufactured with Type $B_{FL}$ or Type $C_{FL}$ Orange sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
3. Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
4. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R9 series signs discussed in note 8 below.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
7. Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
8. R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.



Texas Department of Transportation

Traffic Operations Division Standard

# BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

# BC(8)-13

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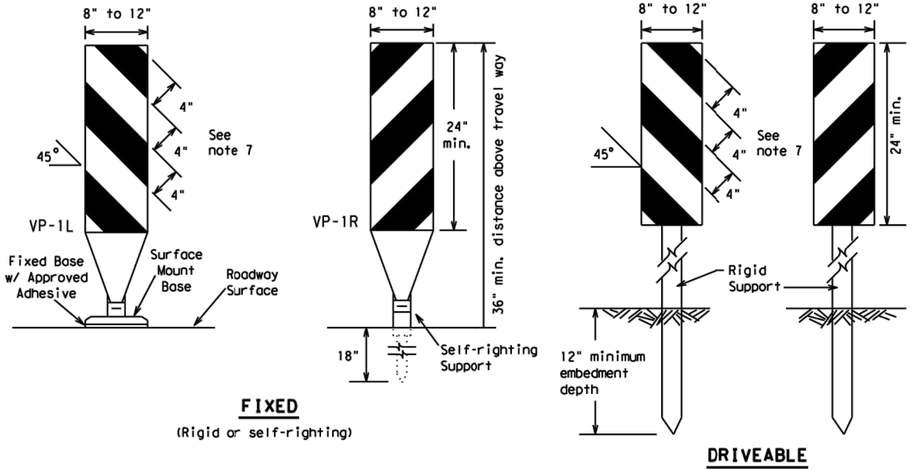
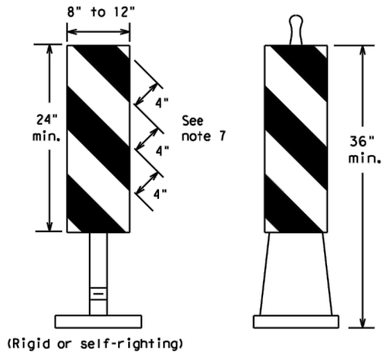



**FIXED**
(Rigid or self-righting)

**DRIVEABLE**

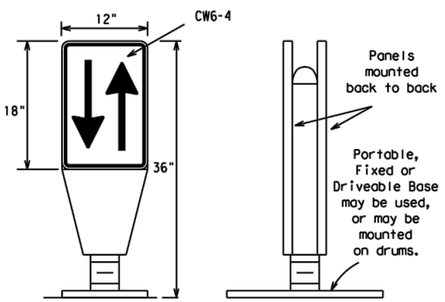



(Rigid or self-righting)

**PORTABLE**

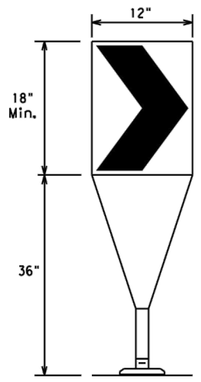
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual Appendix B "Treatment of Pavement Drop-offs in Work Zones" for additional guidelines on the use of VP's for drop-offs.
3. VP's should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the travel lane.
4. VP's used on expressways and freeways or other high speed roadways, may have more than 270 square inches of retroreflective area facing traffic.
5. Self-righting supports are available with portable base. See "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
6. Sheeting for the VP's shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
7. Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.

## VERTICAL PANELS (VPs)




1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
2. The OTLD may be used in combination with 42" cones or VPs.
3. Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
4. The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type $B_{FL}$ or Type $C_{FL}$ conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

## OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



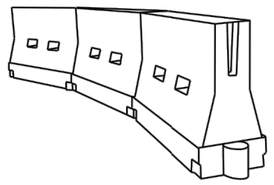

Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
3. Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
4. To be effective, the chevron should be visible for at least 500 feet.
5. Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type $B_{FL}$ or Type $C_{FL}$ conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
6. For Long Term Stationary use on tapers or transitions on freeways and divided highways self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

## CHEVRONS

## GENERAL NOTES

1. Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
3. Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices shall be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
4. The Contractor shall maintain devices in a clean condition and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
5. Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
6. Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
7. The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.



## LONGITUDINAL CHANNELIZING DEVICES (LCD)

1. LCDs are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to contain or redirect a vehicle on impact.
2. LCDs may be used instead of a line of cones or drums.
3. LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
5. LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
6. LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10) placed near the top of the LCD along the full length of the device.

## WATER BALLASTED SYSTEMS USED AS BARRIERS

1. Water ballasted systems used as barriers shall not be used solely to channelize road users, but also to protect the work space per the appropriate NCHRP 350 crashworthiness requirements based on roadway speed and barrier application.
2. Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
3. Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
5. When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

If used to channelize pedestrians, longitudinal channelizing devices or water ballasted systems must have a continuous detectable bottom for users of long canes and the top of the unit shall not be less than 32 inches in height.

## HOLLOW OR WATER BALLASTED SYSTEMS USED AS LONGITUDINAL CHANNELIZING DEVICES OR BARRIERS

| Posted Speed * | Formula | Minimum Desirable Taper Lengths ** 10' Offset | 11' Offset | 12' Offset | Suggested Maximum Spacing of Channelizing Devices: On a Taper | On a Tangent |
|---|---|---|---|---|---|---|
| 30 | $L = \frac{WS^2}{60}$ | 150' | 165' | 180' | 30' | 60' |
| 35 | | 205' | 225' | 245' | 35' | 70' |
| 40 | | 265' | 295' | 320' | 40' | 80' |
| 45 | L = WS | 450' | 495' | 540' | 45' | 90' |
| 50 | | 500' | 550' | 600' | 50' | 100' |
| 55 | | 550' | 605' | 660' | 55' | 110' |
| 60 | | 600' | 660' | 720' | 60' | 120' |
| 65 | | 650' | 715' | 780' | 65' | 130' |
| 70 | | 700' | 770' | 840' | 70' | 140' |
| 75 | | 750' | 825' | 900' | 75' | 150' |
| 80 | | 800' | 880' | 960' | 80' | 160' |

** Taper lengths have been rounded off.
L=Length of Taper (FT.) W=Width of Offset (FT.)
S=Posted Speed (MPH)

## SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation | Traffic Operations Division Standard

# BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

# BC(9)-13

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| 7-13 | | | | 17 |

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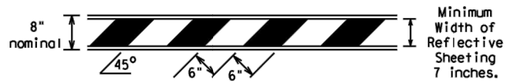
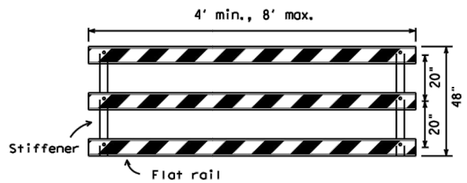
## TYPE 3 BARRICADES

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road striping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



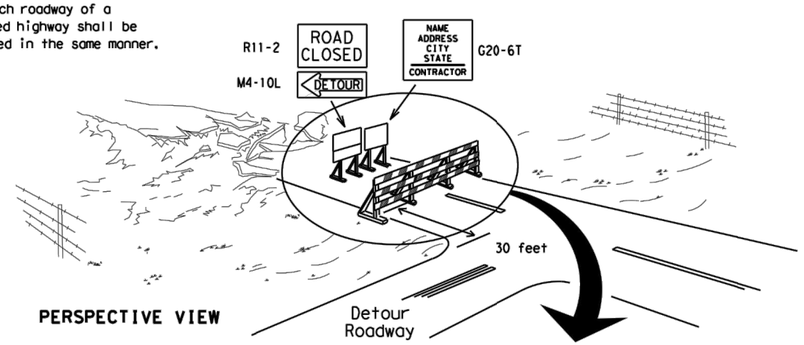

### TYPICAL STRIPING DETAIL FOR BARRICADE RAIL




Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

### TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

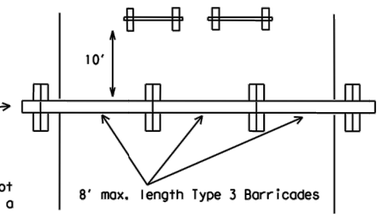
Each roadway of a divided highway shall be barricaded in the same manner.




PERSPECTIVE VIEW

The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.

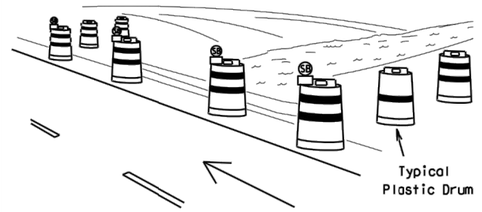
Barricade striping should slant downward in the direction of detour.




PLAN VIEW

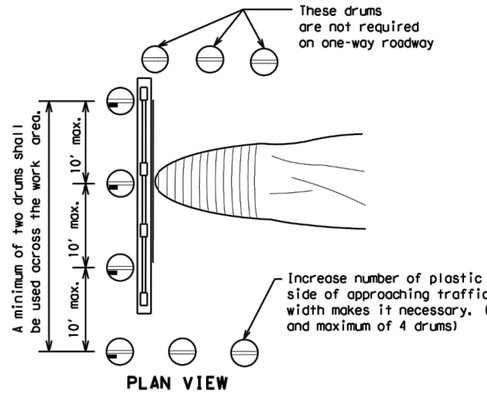
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

### TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION




PERSPECTIVE VIEW

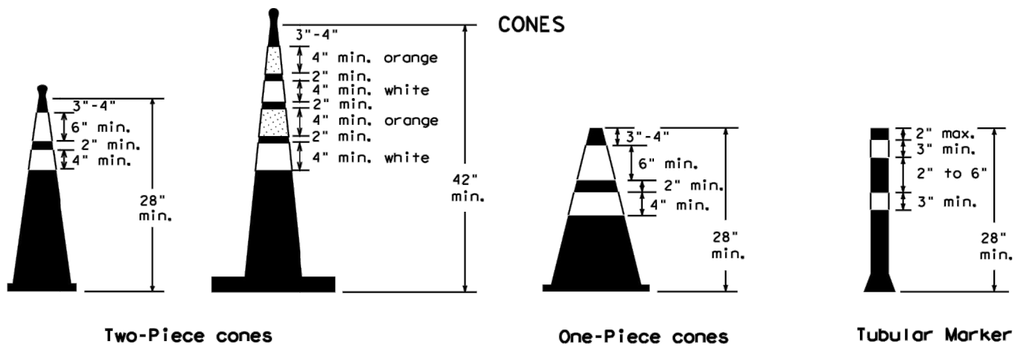
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder width is greater than 12 feet, steady-burn lights may be omitted if drums are used.
5. Drums must extend the length of the culvert widening.




PLAN VIEW

| LEGEND | |
|---|---|
| | Plastic drum |
| | Plastic drum with steady burn light or yellow warning reflector |
| SB | Steady burn warning light or yellow warning reflector |

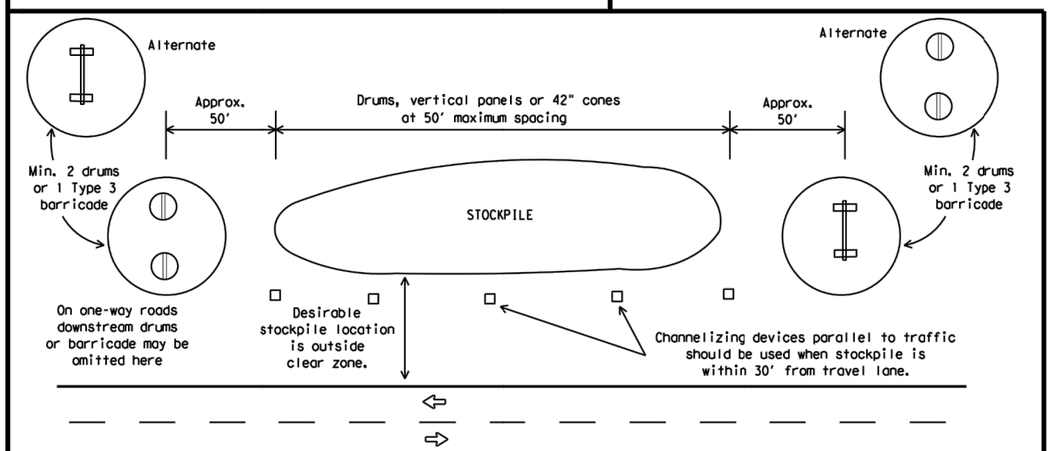
### CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS




28" Cones shall have a minimum weight of 9 1/2 lbs.

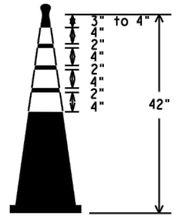
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers used at night shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.




### TRAFFIC CONTROL FOR MATERIAL STOCKPILES

THIS DEVICE SHALL NOT BE USED ON PROJECTS LET AFTER MARCH 2014.




EDGELINE CHANNELIZER

1. This device is intended only for use in place of a vertical panel to channelize traffic by indicating the edge of the travel lane. It is not intended to be used in transitions or tapers.
2. This device shall not be used to separate lanes of traffic (opposing or otherwise) or warn of objects.
3. This device is based on a 42 inch, two-piece cone with an alternate striping pattern: four 4 inch retroreflective bands, with an approximate 2 inch gap between bands. The color of the band should correspond to the color of the edgeline (yellow for left edgeline, white for right edgeline) for which the device is substituted or for which it supplements. The reflectorized bands shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
4. The base must weigh a minimum of 30 lbs.



Texas Department of Transportation

Traffic Operations Division Standard

# BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

## BC(10)-13

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| 7-13 | | | | 18 |

DATE:
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# WORK ZONE PAVEMENT MARKINGS

## GENERAL

1. The Contractor shall be responsible for maintaining work zone and existing pavement markings, in accordance with the standard specifications and special provisions, on all roadways open to traffic within the CSJ limits unless otherwise stated in the plans.
2. Color, patterns and dimensions shall be in conformance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
3. Additional supplemental pavement marking details may be found in the plans or specifications.
4. Pavement markings shall be installed in accordance with the TMUTCD and as shown on the plans.
5. When short term markings are required on the plans, short term markings shall conform with the TMUTCD, the plans and details as shown on the Standard Plan Sheet WZ(STPM).
6. When standard pavement markings are not in place and the roadway is opened to traffic, DO NOT PASS signs shall be erected to mark the beginning of the sections where passing is prohibited and PASS WITH CARE signs at the beginning of sections where passing is permitted.
7. All work zone pavement markings shall be installed in accordance with Item 662, "Work Zone Pavement Markings."

## RAISED PAVEMENT MARKERS

1. Raised pavement markers are to be placed according to the patterns on BC(12).
2. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and Departmental Material Specification DMS-4200 or DMS-4300.

## PREFABRICATED PAVEMENT MARKINGS

1. Removable prefabricated pavement markings shall meet the requirements of DMS-8241.
2. Non-removable prefabricated pavement markings (foil back) shall meet the requirements of DMS-8240.

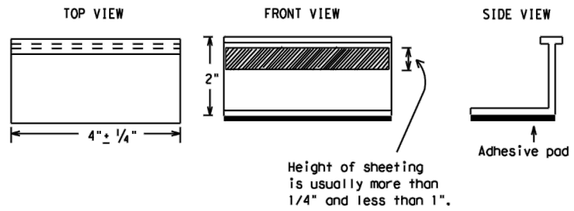
## MAINTAINING WORK ZONE PAVEMENT MARKINGS

1. The Contractor will be responsible for maintaining work zone pavement markings within the work limits.
2. Work zone pavement markings shall be inspected in accordance with the frequency and reporting requirements of work zone traffic control device inspections as required by Form 599.
3. The markings should provide a visible reference for a minimum distance of 300 feet during normal daylight hours and 160 feet when illuminated by automobile low-beam headlights at night, unless sight distance is restricted by roadway geometrics.
4. Markings failing to meet this criteria within the first 30 days after placement shall be replaced at the expense of the Contractor as per Specification Item 662.

## REMOVAL OF PAVEMENT MARKINGS

1. Pavement markings that are no longer applicable, could create confusion or direct a motorist toward or into the closed portion of the roadway shall be removed or obliterated before the roadway is opened to traffic.
2. The above shall not apply to detours in place for less than three days, where flaggers and/or sufficient channelizing devices are used in lieu of markings to outline the detour route.
3. Pavement markings shall be removed to the fullest extent possible, so as not to leave a discernable marking. This shall be by any method approved by TxDOT Specification Item 677 for "Eliminating Existing Pavement Markings and Markers".
4. The removal of pavement markings may require resurfacing or seal coating portions of the roadway as described in Item 677.
5. Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used.
6. Blast cleaning may be used but will not be required unless specifically shown in the plans.
7. Over-painting of the markings SHALL NOT BE permitted.
8. Removal of raised pavement markers shall be as directed by the Engineer.
9. Removal of existing pavement markings and markers will be paid for directly in accordance with Item 677, "ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS," unless otherwise stated in the plans.
10. Black-out marking tape may be used to cover conflicting existing markings for periods less than two weeks when approved by the Engineer.

# Temporary Flexible-Reflective Roadway Marker Tabs




**STAPLES OR NAILS SHALL NOT BE USED TO SECURE TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS TO THE PAVEMENT SURFACE**

1. Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of DMS-8242.
2. Tabs detailed on this sheet are to be inspected and accepted by the Engineer or designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.
   A. Select five (5) or more tabs at random from each lot or shipment and submit to the Construction Division, Materials and Pavement Section to determine specification compliance.
   B. Select five (5) tabs and perform the following test. Affix five (5) tabs at 24 inch intervals on an asphaltic pavement in a straight line. Using a medium size passenger vehicle or pickup, run over the markers with the front and rear tires at a speed of 35 to 40 miles per hour, four (4) times in each direction. No more than one (1) out of the five (5) reflective surfaces shall be lost or displaced as a result of this test.
3. Small design variances may be noted between tab manufacturers.
4. See Standard Sheet WZ(STPM) for tab placement on new pavements. See Standard Sheet TCP(7-1) for tab placement on seal coat work.

## RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

1. Raised pavement markers used as guidemarks shall be from the approved product list, and meet the requirements of DMS-4200.
2. All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.
3. Adhesive for guidemarks shall be bituminous material hot applied or butyl rubber pad for all surfaces, or thermoplastic for concrete surfaces.

Guidemarks shall be designated as:
YELLOW - (two amber reflective surfaces with yellow body).
WHITE - (one silver reflective surface with white body).

| DEPARTMENTAL MATERIAL SPECIFICATIONS | |
|---|---|
| PAVEMENT MARKERS (REFLECTORIZED) | DMS-4200 |
| TRAFFIC BUTTONS | DMS-4300 |
| EPOXY AND ADHESIVES | DMS-6100 |
| BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS | DMS-6130 |
| PERMANENT PREFABRICATED PAVEMENT MARKINGS | DMS-8240 |
| TEMPORARY REMOVABLE, PREFABRICATED PAVEMENT MARKINGS | DMS-8241 |
| TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS | DMS-8242 |

A list of prequalified reflective raised pavement markers, non-reflective traffic buttons, roadway marker tabs and other pavement markings can be found at the Material Producer List web address shown on BC(1).



Texas Department of Transportation

Traffic Operations Division Standard

# BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

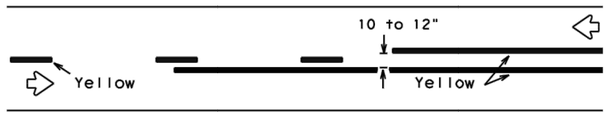
# BC(11)-13

| FILE: bc-13.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT February 1998 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| 2-98 11-02 7-13 | DIST | COUNTY | | SHEET NO. |
| 1-02 9-07 | | | | 19 |

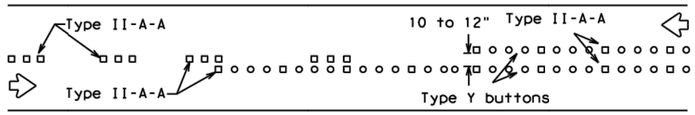
DATE:
FILE:

DATE:
FILE:

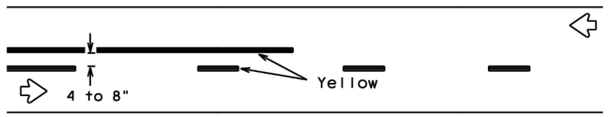
# PAVEMENT MARKING PATTERNS



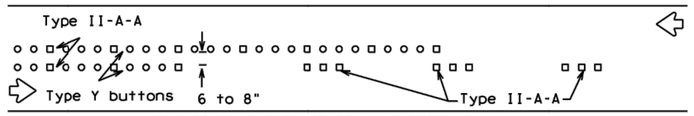

REFLECTORIZED PAVEMENT MARKINGS - PATTERN A




RAISED PAVEMENT MARKERS - PATTERN A



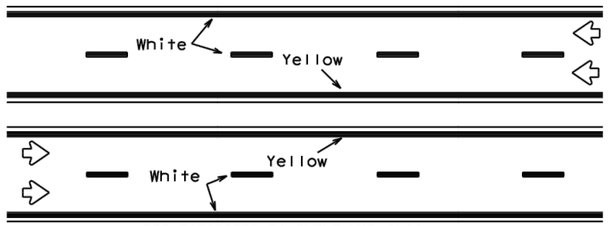

REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



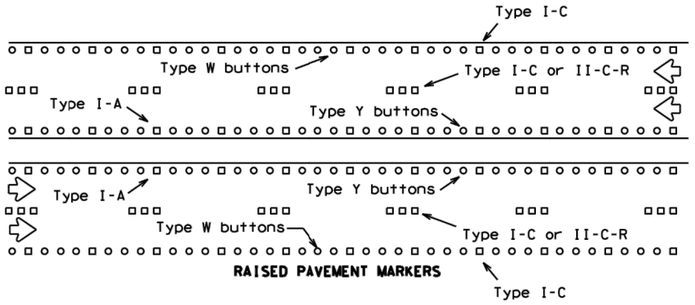

RAISED PAVEMENT MARKERS - PATTERN B

Pattern A is the TXDOT Standard, however Pattern B may be used if approved by the Engineer.
Prefabricated markings may be substituted for reflectorized pavement markings.

## CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO-LANE, TWO-WAY HIGHWAYS



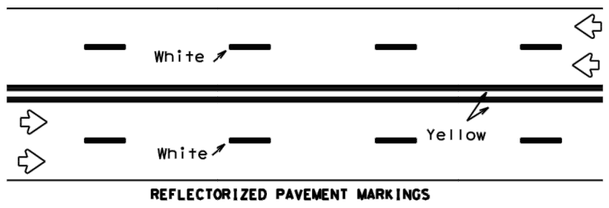

REFLECTORIZED PAVEMENT MARKINGS



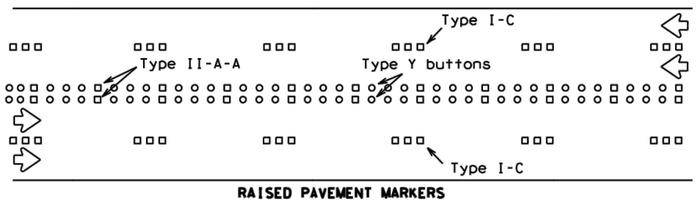

RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

## EDGE & LANE LINES FOR DIVIDED HIGHWAY



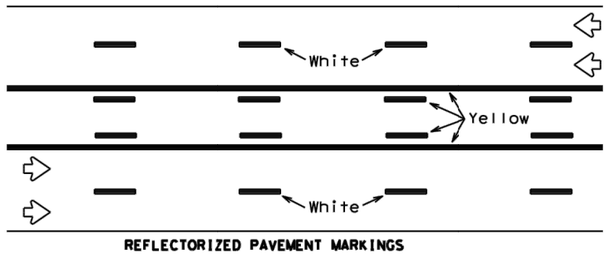

REFLECTORIZED PAVEMENT MARKINGS



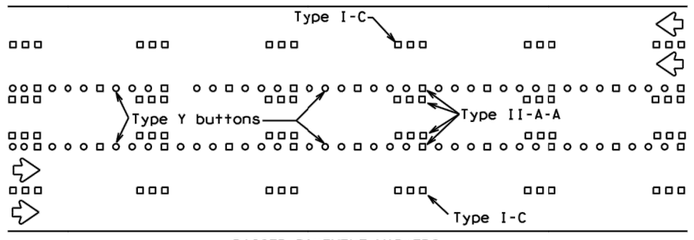

RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

## LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS




REFLECTORIZED PAVEMENT MARKINGS

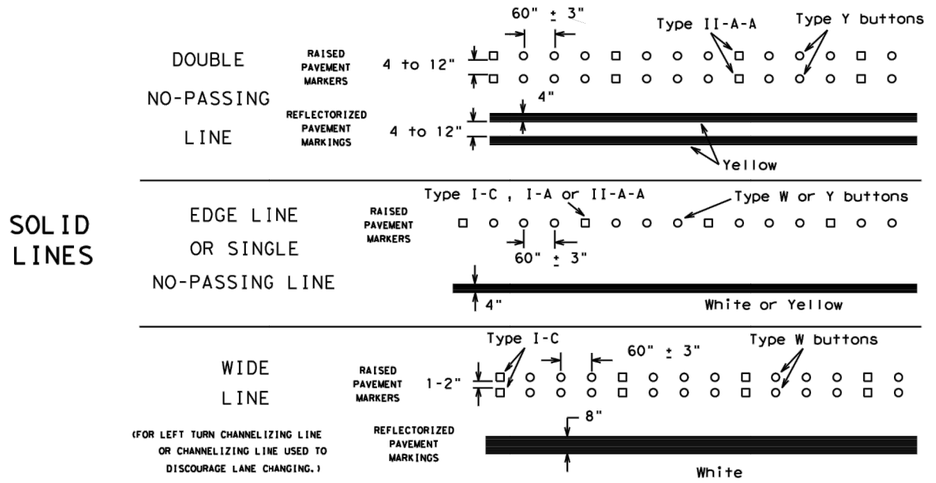



RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

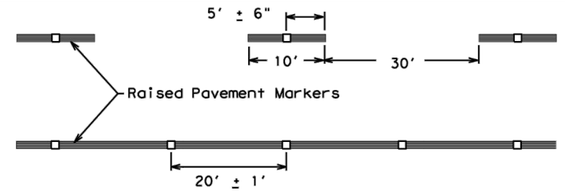
## TWO-WAY LEFT TURN LANE

# STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS




### REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

If raised pavement markers are used to supplement REMOVABLE markings, the markers shall be applied to the top of the tape at the approximate mid length of tape used for broken lines or at 20 foot spacing for solid lines. This allows an easier removal of raised pavement markers and tape.




Centerline only - not to be used on edge lines

Raised pavement markers used as standard pavement markings shall be from the approved products list and meet the requirements of Item 672 "RAISED PAVEMENT MARKERS."



Texas Department of Transportation

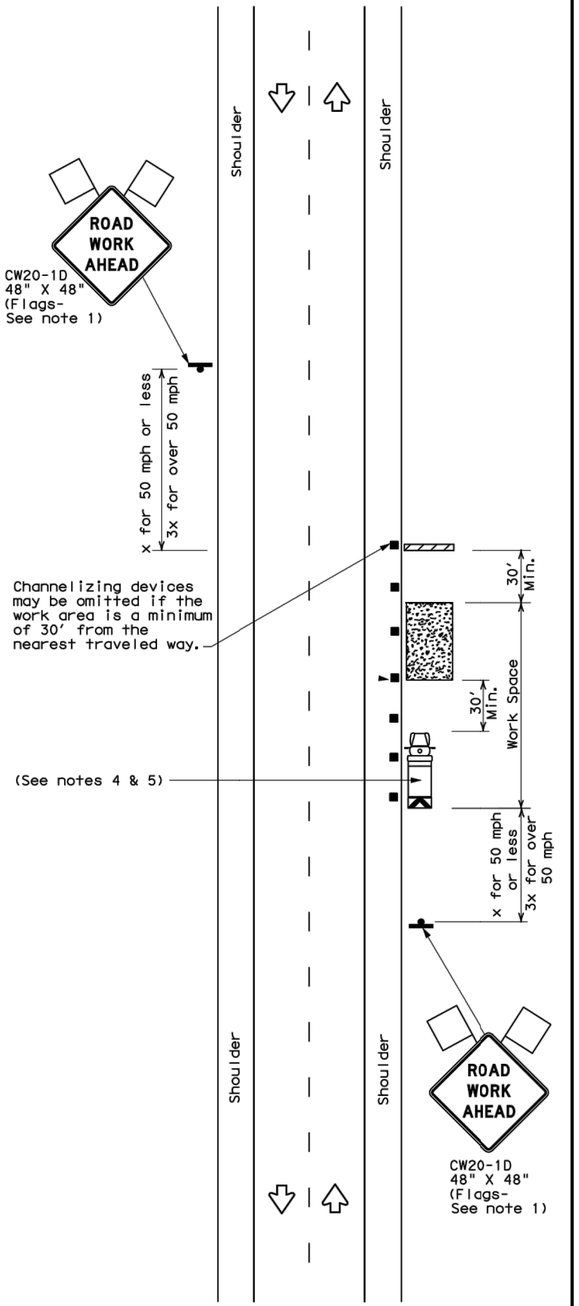
Traffic Operations Division Standard

# BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

## BC(12)-13

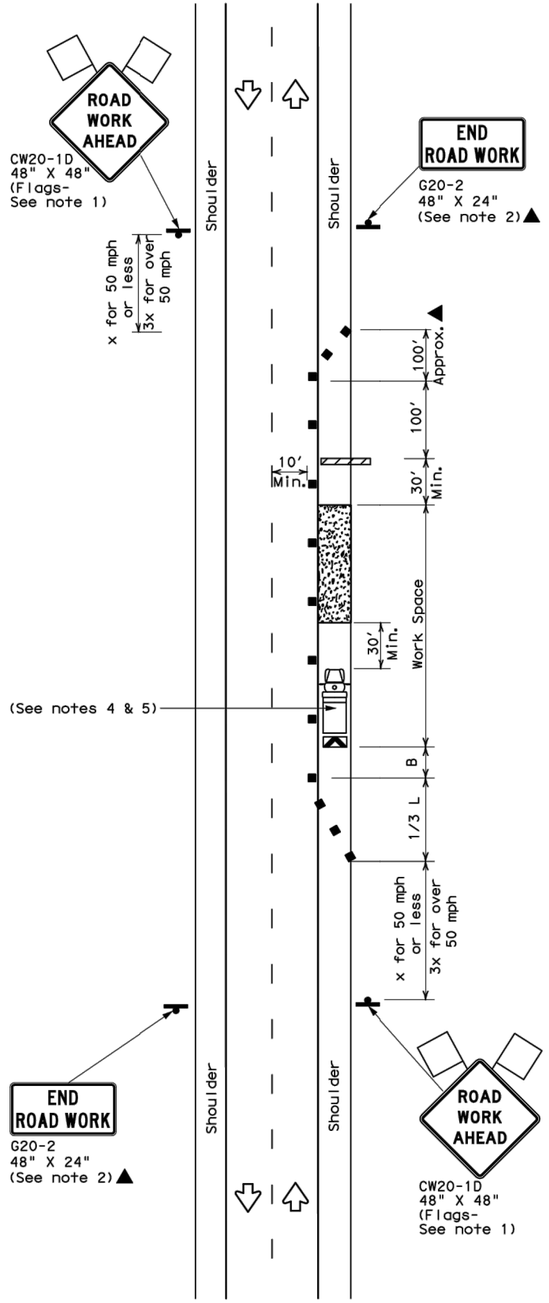
| FILE: bc-13.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT February 1998 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| 1-97 11-02 7-13 | DIST | COUNTY | | SHEET NO. |
| 2-98 9-07 | | | | 20 |

DATE:
FILE:



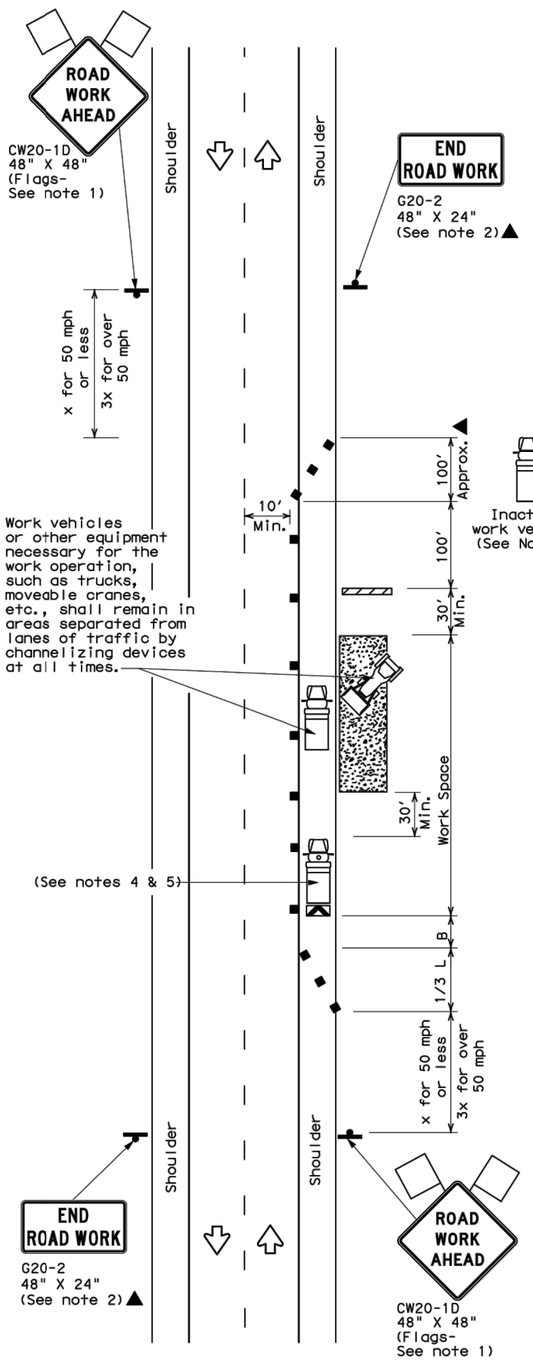

TCP (2-1a)

## WORK SPACE NEAR SHOULDER
Conventional Roads




TCP (2-1b)

## WORK SPACE ON SHOULDER
Conventional Roads




TCP (2-1c)

## WORK VEHICLES ON SHOULDER
Conventional Roads

| LEGEND | | | |
|---|---|---|---|
| | Type 3 Barricade | ■ ■ | Channelizing Devices |
| | Heavy Work Vehicle | | Truck Mounted Attenuator (TMA) |
| | Trailer Mounted Flashing Arrow Board | (M) | Portable Changeable Message Sign (PCMS) |
| | Sign | | Traffic Flow |
| | Flag | | Flagger |

| Posted Speed * | Formula | Minimum Desirable Taper Lengths ** 10' Offset | 11' Offset | 12' Offset | Suggested Maximum Spacing of Channelizing Devices On a Taper | On a Tangent | Minimum Sign Spacing "X" Distance | Suggested Longitudinal Buffer Space "B" |
|---|---|---|---|---|---|---|---|---|
| 30 | $L=\frac{WS^2}{60}$ | 150' | 165' | 180' | 30' | 60' | 120' | 90' |
| 35 | | 205' | 225' | 245' | 35' | 70' | 160' | 120' |
| 40 | | 265' | 295' | 320' | 40' | 80' | 240' | 155' |
| 45 | L=WS | 450' | 495' | 540' | 45' | 90' | 320' | 195' |
| 50 | | 500' | 550' | 600' | 50' | 100' | 400' | 240' |
| 55 | | 550' | 605' | 660' | 55' | 110' | 500' | 295' |
| 60 | | 600' | 660' | 720' | 60' | 120' | 600' | 350' |
| 65 | | 650' | 715' | 780' | 65' | 130' | 700' | 410' |
| 70 | | 700' | 770' | 840' | 70' | 140' | 800' | 475' |
| 75 | | 750' | 825' | 900' | 75' | 150' | 900' | 540' |

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

| TYPICAL USAGE | | | | |
|---|---|---|---|---|
| MOBILE | SHORT DURATION | SHORT TERM STATIONARY | INTERMEDIATE TERM STATIONARY | LONG TERM STATIONARY |
| | ✓ | ✓ | ✓ | ✓ |

## GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated in the plans, or for routine maintenance work, when approved by the Engineer.
3. Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
4. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
6. See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
7. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
8. CW21-5 "SHOULDER WORK" signs may be used in place of CW21-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

For construction or maintenance contract work, specific project requirements for shadow vehicles can be found in the project GENERAL NOTES for Item 502, Barricades, Signs and Traffic Handling.

Texas Department of Transportation
Traffic Operations Division

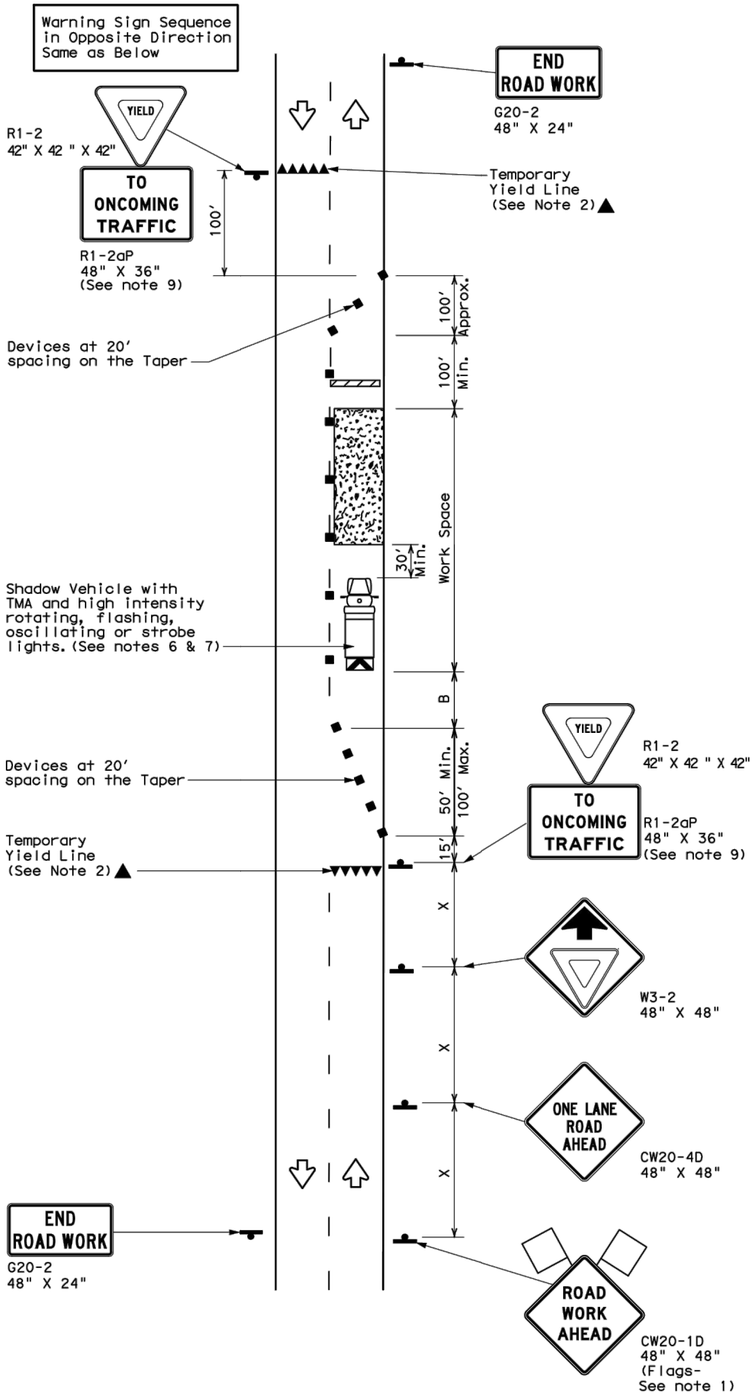
# TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-12

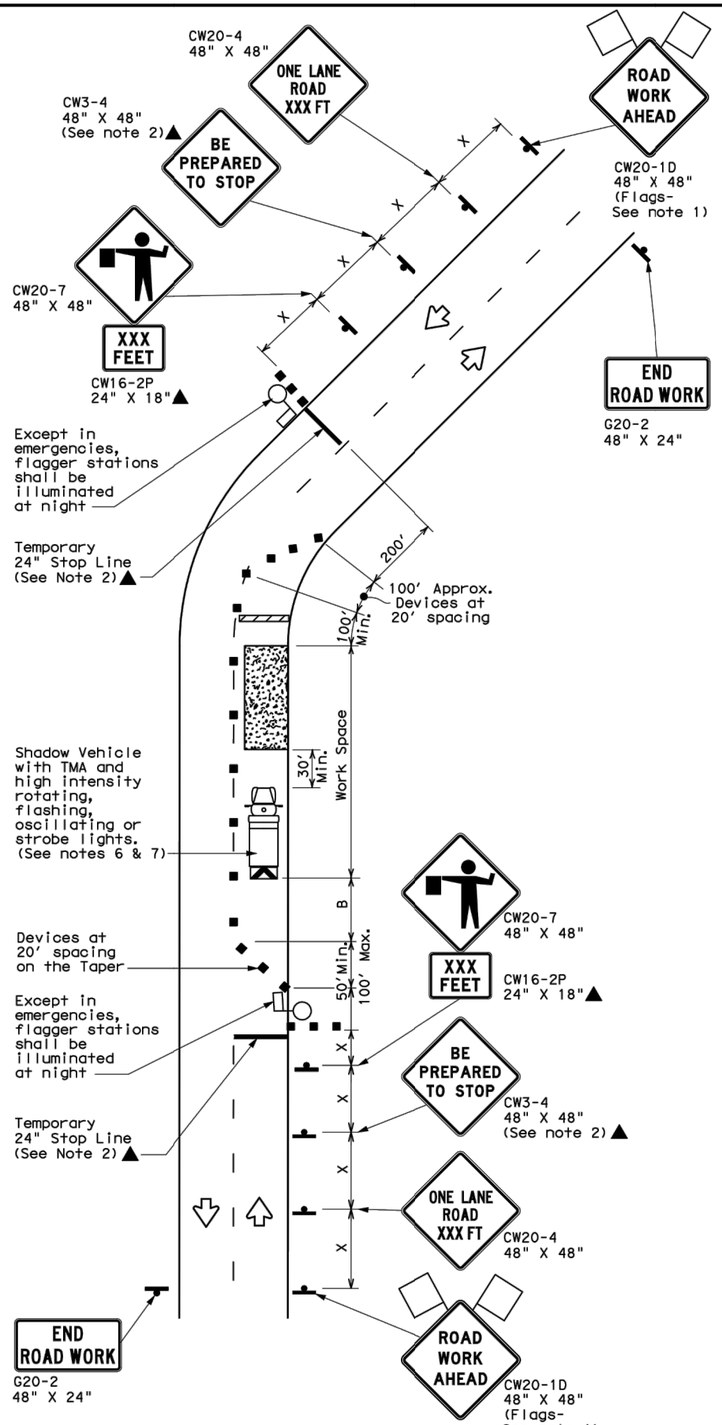


| DN: TXDOT | CK: TXDOT | DW: TXDOT | CK: TXDOT |
|---|---|---|---|
| CONT | SECT | JOB | HIGHWAY |
| | | | |
| DIST | COUNTY | | SHEET NO. |
| | | | 21 |

REVISIONS
2-94 2-12
8-95
1-97
4-98




TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)




TCP (2-2b)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH FLAGGERS

| LEGEND | | | |
|---|---|---|---|
| | Type 3 Barricade | ■ ■ | Channelizing Devices |
| | Heavy Work Vehicle | | Truck Mounted Attenuator (TMA) |
| | Trailer Mounted Flashing Arrow Board | M | Portable Changeable Message Sign (PCMS) |
| | Sign | | Traffic Flow |
| | Flag | | Flagger |

| Posted Speed ✳ | Formula | Minimum Desirable Taper Lengths ✳✳ 10' Offset | 11' Offset | 12' Offset | Suggested Maximum Spacing of Channelizing Devices On a Taper | On a Tangent | Minimum Sign Spacing "X" Distance | Suggested Longitudinal Buffer Space "B" | Stopping Sight Distance |
|---|---|---|---|---|---|---|---|---|---|
| 30 | $L=\frac{WS^2}{60}$ | 150' | 165' | 180' | 30' | 60' | 120' | 90' | 200' |
| 35 | | 205' | 225' | 245' | 35' | 70' | 160' | 120' | 250' |
| 40 | | 265' | 295' | 320' | 40' | 80' | 240' | 155' | 305' |
| 45 | L=WS | 450' | 495' | 540' | 45' | 90' | 320' | 195' | 360' |
| 50 | | 500' | 550' | 600' | 50' | 100' | 400' | 240' | 425' |
| 55 | | 550' | 605' | 660' | 55' | 110' | 500' | 295' | 495' |
| 60 | | 600' | 660' | 720' | 60' | 120' | 600' | 350' | 570' |
| 65 | | 650' | 715' | 780' | 65' | 130' | 700' | 410' | 645' |
| 70 | | 700' | 770' | 840' | 70' | 140' | 800' | 475' | 730' |
| 75 | | 750' | 825' | 900' | 75' | 150' | 900' | 540' | 820' |

✳ Conventional Roads Only
✳✳ Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

| TYPICAL USAGE | | | | |
|---|---|---|---|---|
| MOBILE | SHORT DURATION | SHORT TERM STATIONARY | INTERMEDIATE TERM STATIONARY | LONG TERM STATIONARY |
| | ✓ | ✓ | ✓ | |

## GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4 "ONE LANE ROAD XXX FT" sign, but proper sign spacing shall be maintained.
4. Flaggers should use two-way radios or other methods of communication to control traffic.
5. Length of work space should be based on the ability of flaggers to communicate.
6. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

### TCP (2-2a)

8. The R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work space should be no longer than one half city block. In rural areas, roadways with less than 2000 ADT, work space should be no longer than 400 feet.
9. The R1-2aP "YIELD TO ONCOMING TRAFFIC" sign shall be placed on a support at a 7 foot minimum mounting height.

### TCP (2-2b)

10. Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain stopping sight distance to the flagger and a queue of stopped vehicles. (See table above).
12. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situtations.

For construction or maintenance contract work, specific project requirements for shadow vehicles can be found in the project GENERAL NOTES for Item 502, Barricades, Signs and Traffic Handling.

Texas Department of Transportation
Traffic Operations Division

# TRAFFIC CONTROL PLAN
# ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(2-2)-12



| DN: TXDOT | CK: TXDOT | DW: TXDOT | CK: TXDOT |
|---|---|---|---|

| REVISIONS | CONT | SECT | JOB | HIGHWAY |
|---|---|---|---|---|
| 8-95 2-12 | | | | |
| 1-97 | DIST | COUNTY | | SHEET NO. |
| 4-98 | | | | |
| 3-03 | | | | 22 |

DATE:
FILE:

100' 0' 100'

SCALE
1"=100'

③ SIDEWALK CLOSED R9-9
BARRICADE TYPE III

③ SIDEWALK CLOSED R9-9
BARRICADE TYPE III

REMOVE ASPHALT PAVEMENT (ITEM 105) (2190 S.Y. TOTAL)

EXISTING CONCRETE SIDEWALK TO BE REMOVED (0.39 S.Y.)

③&④ SIDEWALK CLOSED R9-9
BARRICADE TYPE III

EXISTING CONCRETE SIDEWALK TO BE REMOVED (1.49 S.Y.)

④ SIDEWALK CLOSED R9-9
BARRICADE TYPE III

RELOCATE 4 EXISTING SIGNS

START SAWCUT EXISTING PAVEMENT STA. 132+68.49 OFF. 5.0 RT.

SEE INSET 1

EXISTING BENCHES AND CONCRETE SLAB TO BE REMOVED

②&④ SIDEWALK CLOSED R9-9
BARRICADE TYPE III

EXISTING CONCRETE BRIDGE AND CULVERT HEADWALLS TO REMAIN

END SAWCUT EXISTING PAVEMENT STA. 133+47.96 OFF. 5.0 RT.

EXISTING FENCE TO REMAIN IN PLACE

EXISTING CONCRETE SLAB TO BE REMOVED ~ 2 SY

EXISTING BENCHES AND CONCRETE SLAB TO BE REMOVED

SAWCUT LINE

INSET 1
SCALE:1"=20'

①&② SIDEWALK CLOSED R9-9
BARRICADE TYPE III

REMOVE EXISTING ASPHALT RAMPS

① SIDEWALK CLOSED R9-9
BARRICADE TYPE III

REMOVE EXISTING TRASH CAN

EXISTING BRICK SIDEWALK TO BE REMOVED (4.85 S.Y.)

REMOVE 132 LF OF EXISTING FENCE

EXISTING CONCRETE SIDEWALK TO BE REMOVED (7.47 S.Y.)

① SIDEWALK CLOSED R9-9
BARRICADE TYPE III

EXISTING CONCRETE SIDEWALK AND RAMP TO BE REMOVED (1.95 S.Y.)

POSS RD.

SUNLIGHT DR.

EVERS RD

BANDERA RD. (SH 16)

EXISTING CONCRETE RIP RAP TO BE REMOVED (392 S.Y.)

CONSTRUCTION PHASING NOTES:

RECOMMENDED PHASING SEQUENCES:

① CONSTRUCT TRAIL "A" FROM STATION 136+00 TO 142+38.

② CONSTRUCT TRAIL "A" FROM STATION 130+57 TO 136+00.

③ CONSTRUCT TRAIL "B" (STATION 10+00 TO 14+00).

④ CONSTRUCT TRAIL "A" FROM STATION 125+00 TO 130+57 AND TRAIL "B" FROM STATION 14+00 TO 14+11.

⑤ CONSTRUCT REMAINING OF TRAIL "A".

CONSTRUCTION PHASING ACCOMMODATIONS NOTES:

a. THE PHASING SEQUENCE IS INTENDED TO EASE PEDESTRIAN TRAFFIC IN THE RAYMOND RIMKUS PARK AREA, AND IN PARTICULAR, ACCESS TO THE PARK AMENITIES INCLUDING BASEBALL FIELD, PLAYGROUND, BASKETBALL/TENNIS COURTS.

b. ALL TRAIL GRADING, FLATWORK FOR EACH PHASE MUST BE COMPLETED AND OPEN TO FOOT TRAFFIC PRIOR TO STARTING THE NEXT PHASE.

c. SIGNS AND BARRICADES HAVE A NUMBER NEXT TO THEM. THE NUMBER IS INTENDED TO MATCH WITH THE PHASING SEQUENCE.

## LEGEND

- EXISTING GROUND (CENTER)
- PROPOSED GROUND @ CL
- 800 EXISTING CONTOUR MAJOR
- 802 EXISTING CONTOUR MINOR
- APPROX. ROW
- EASEMENT LINE
- CREEK FLOW LINE
- PROPOSED FENCE
- PROPOSED RECYCLE WATER LINE
- PROPOSED SANITARY SEWER LINE
- WL EXISTING WATER LINE
- WL EXISTING CSC RECYCLE WATER
- EXISTING CPS TRANSMISSION LINE
- EXISTING OVERHEAD PRIMARY
- EXISTING PVC SANITARY SEWER
- EXISTING 4" GAS
- EXISTING OH GRANDE LINE
- EXISTING FENCE
- 10' CONCRETE TRAIL
- 2" EROSION CONTROL COMPOST (ITEM161)(SS2010)
- FLOW ARROW
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING POWER POLE
- EXISTING GUY WIRE
- EXISTING SIGN
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- W EXISTING WATER METER
- EXISTING TREE
- EXISTING ASPHALT TO BE REMOVED
- EXISTING CONCRETE RIP RAP TO BE REMOVED

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
THONG HUY LE
95764
LICENSED PROFESSIONAL ENGINEER
11-3-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481

LEONVALLEY

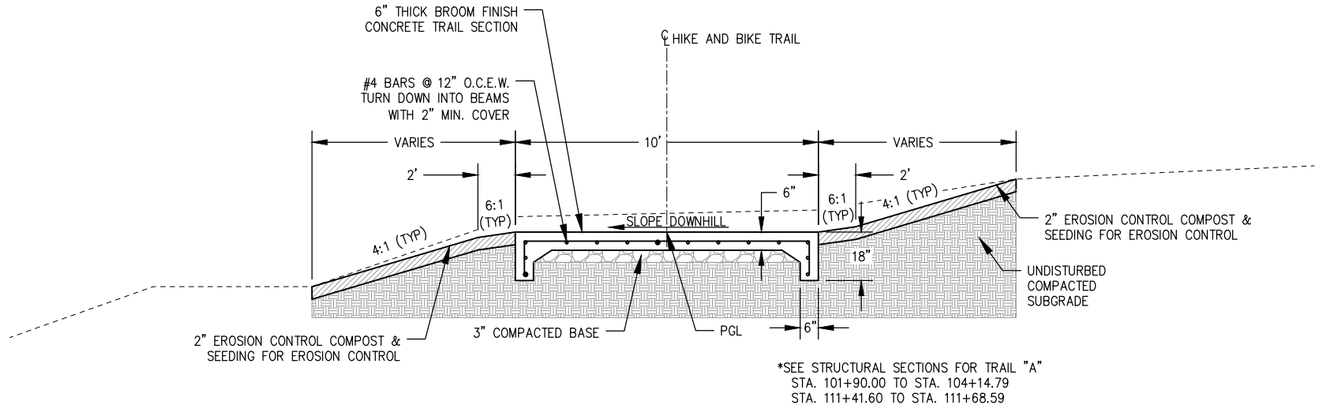
Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

DEMOLITION PLAN AND CONSTRUCTION PHASING NOTES

| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 23 | 57 |

Z:\211700100\410 Design\060 DWGS\C-DEMO.dwg [DEMO] Plotted Dec 09, 2014 at 10:20am by GRomero (Last Saved by: GRomero)




*SEE STRUCTURAL SECTIONS FOR TRAIL "A"
STA. 101+90.00 TO STA. 104+14.79
STA. 111+41.60 TO STA. 111+68.59

## TYPICAL SECTION: 6" CONCRETE HIKE AND BIKE TRAIL

TRAIL "A"
STA. 104+73.19 TO STA. 109+69.86
STA. 112+64.84 TO STA. 142+25.59
TRAIL "B"
STA. 10+00 TO STA. 14+11.59

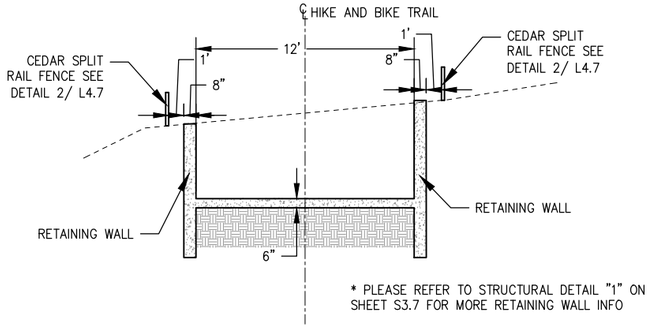
SLOPES:
PREFERRED CROSS SLOPE – 1% (1/100)
MAX CROSS SLOPE – 2% (1/50)

NOTES:
1. HYDROMULCH/SEED ALL GROUND SURFACES DISTURBED BY CONSTRUCTION.

2. COST OF COMPACTING EXISTING SUBGRADE AND PLACEMENT OF TOPSOIL IN AREAS DISTURBED BY CONSTRUCTION IS SUBSIDIARY TO THE EXCAVATION COST.

3. CONTRACTOR TO PROVIDE POSITIVE DRAINAGE IN ALL DISTURBED AREAS. MINIMUM SLOPES IN DISTURBED AREAS SHALL BE 2% MAXIMUM SLOPES SHALL BE 3:1.

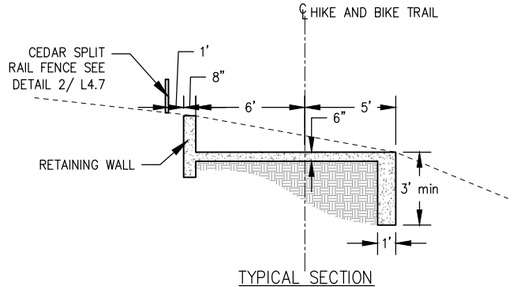
4. CONTRACTOR TO KEEP DISRUPTION OF SOIL AND EXISTING VEGETATION TO A MINIMUM.




* PLEASE REFER TO STRUCTURAL DETAIL "1" ON SHEET S3.7 FOR MORE RETAINING WALL INFO

## TYPICAL SECTION

TRAIL "A"
STA. 109+69.86 – 111+41.60
STA. 111+68.59 – 112+64.84




## TYPICAL SECTION

TRAIL "A"
STA. 104+14.79 – 104+73.19

* PLEASE REFER TO STRUCTURAL DETAIL "1" ON SHEET S3.7 FOR MORE RETAINING WALL INFO

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

STATE OF TEXAS
THONG HUY LE
95764
LICENSED
PROFESSIONAL ENGINEER
11-3-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481

LEON VALLEY

Texas Department of Transportation

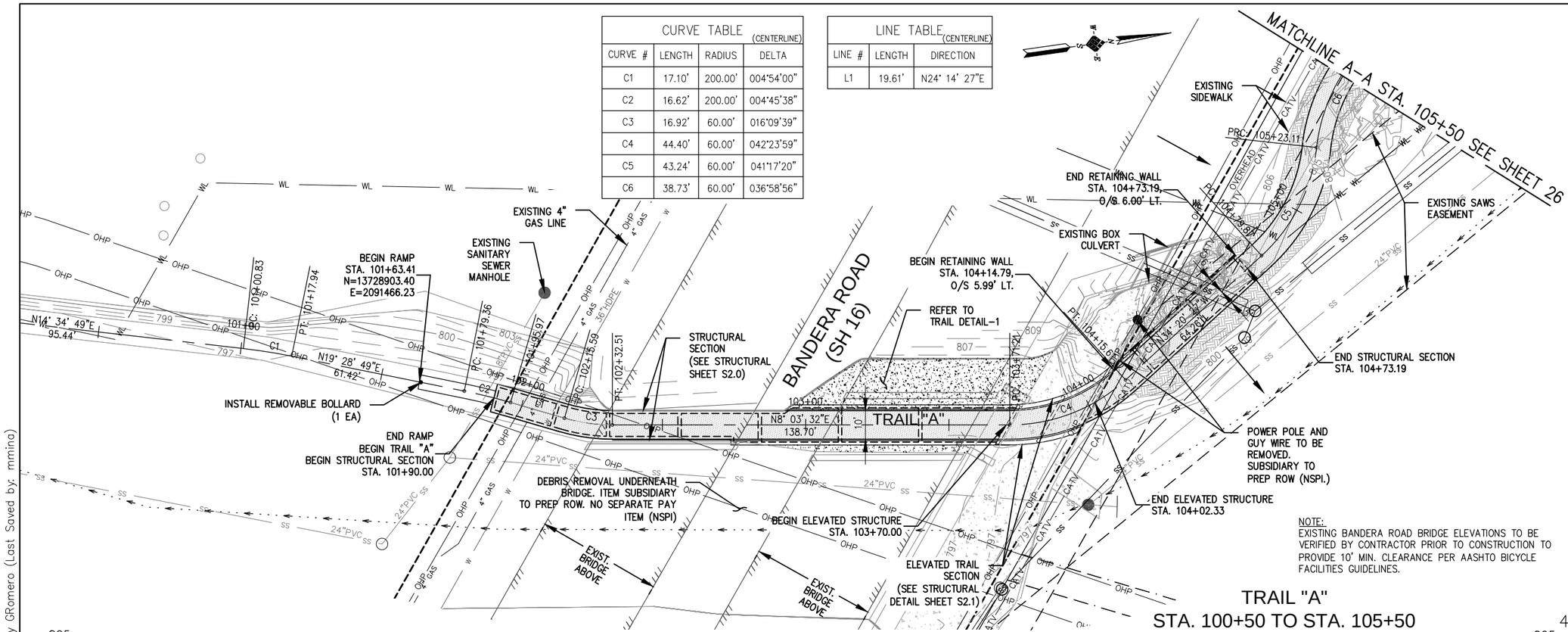
LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

TRAIL TYPICAL SECTION

| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 24 | 57 |

| CURVE TABLE (CENTERLINE) | | | |
|---|---|---|---|
| CURVE # | LENGTH | RADIUS | DELTA |
| C1 | 17.10' | 200.00' | 004°54'00" |
| C2 | 16.62' | 200.00' | 004°45'38" |
| C3 | 16.92' | 60.00' | 016°09'39" |
| C4 | 44.40' | 60.00' | 042°23'59" |
| C5 | 43.24' | 60.00' | 041°17'20" |
| C6 | 38.73' | 60.00' | 036°58'56" |

| LINE TABLE (CENTERLINE) | | |
|---|---|---|
| LINE # | LENGTH | DIRECTION |
| L1 | 19.61' | N24° 14' 27"E |

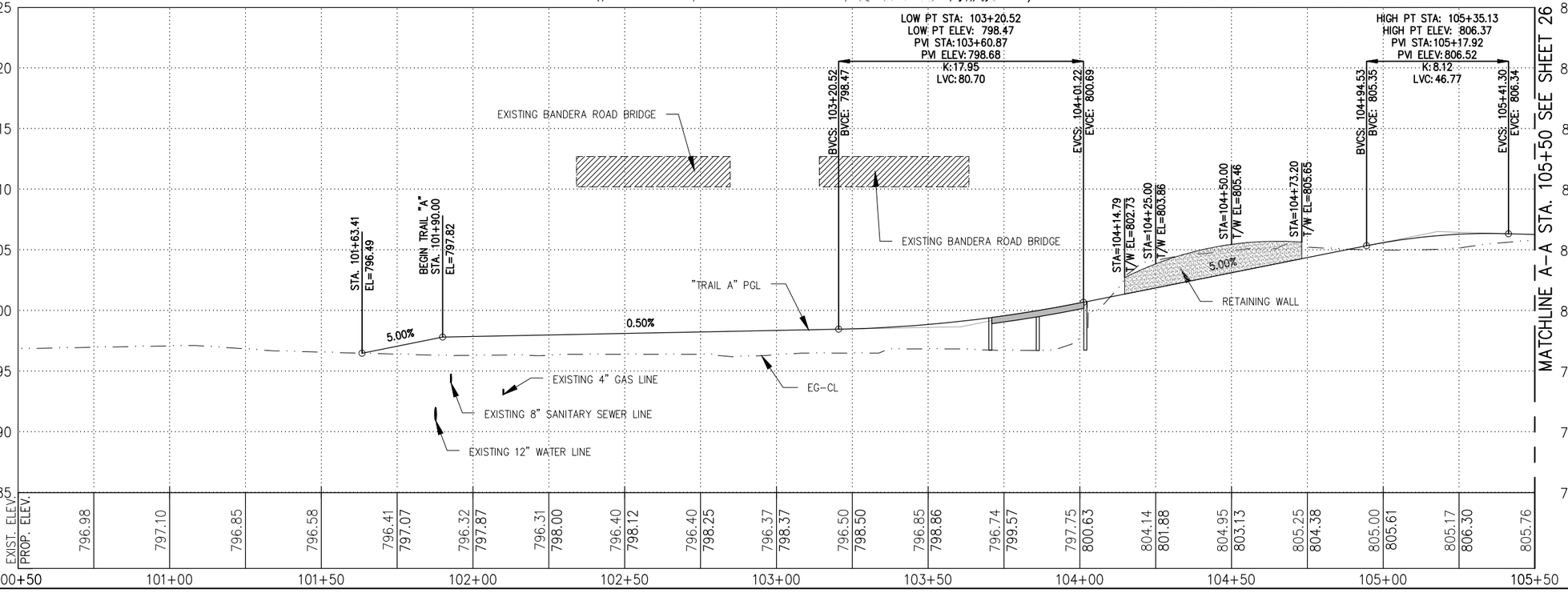



TRAIL "A"
STA. 100+50 TO STA. 105+50

40' 0' 40'

SCALE 1"=40'

SCALE: 1"=40'(H) 1"=10'(V)




LEGEND

- EXISTING GROUND (CENTER)
- PROPOSED GROUND @ CL
- 800 EXISTING CONTOUR MAJOR
- 802 EXISTING CONTOUR MINOR
- APPROX. ROW
- EASEMENT LINE
- CREEK FLOW LINE
- PROPOSED FENCE
- WL PROPOSED RECYCLE WATER LINE
- SS PROPOSED SANITARY SEWER LINE
- W EXISTING WATER LINE
- WL EXISTING CSC RECYCLE WATER
- OHP EXISTING CPS TRANSMISSION LINE
- OHP EXISTING OVERHEAD PRIMARY
- SS EXISTING PVC SANITARY SEWER
- 4" GAS EXISTING 4" GAS
- CATV EXISTING OH GRANDE LINE
- EXISTING FENCE
- 10' CONCRETE TRAIL
- 2" EROSION CONTROL COMPOST (ITEM161)(SS2010)
- FLOW ARROW
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING POWER POLE
- EXISTING GUY WIRE
- EXISTING SIGN
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING WATER METER
- EXISTING TREE

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS THONG HUY LE 95764 LICENSED PROFESSIONAL ENGINEER 11-3-14

IDS Engineering Group
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613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481

LEONVALLEY

Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

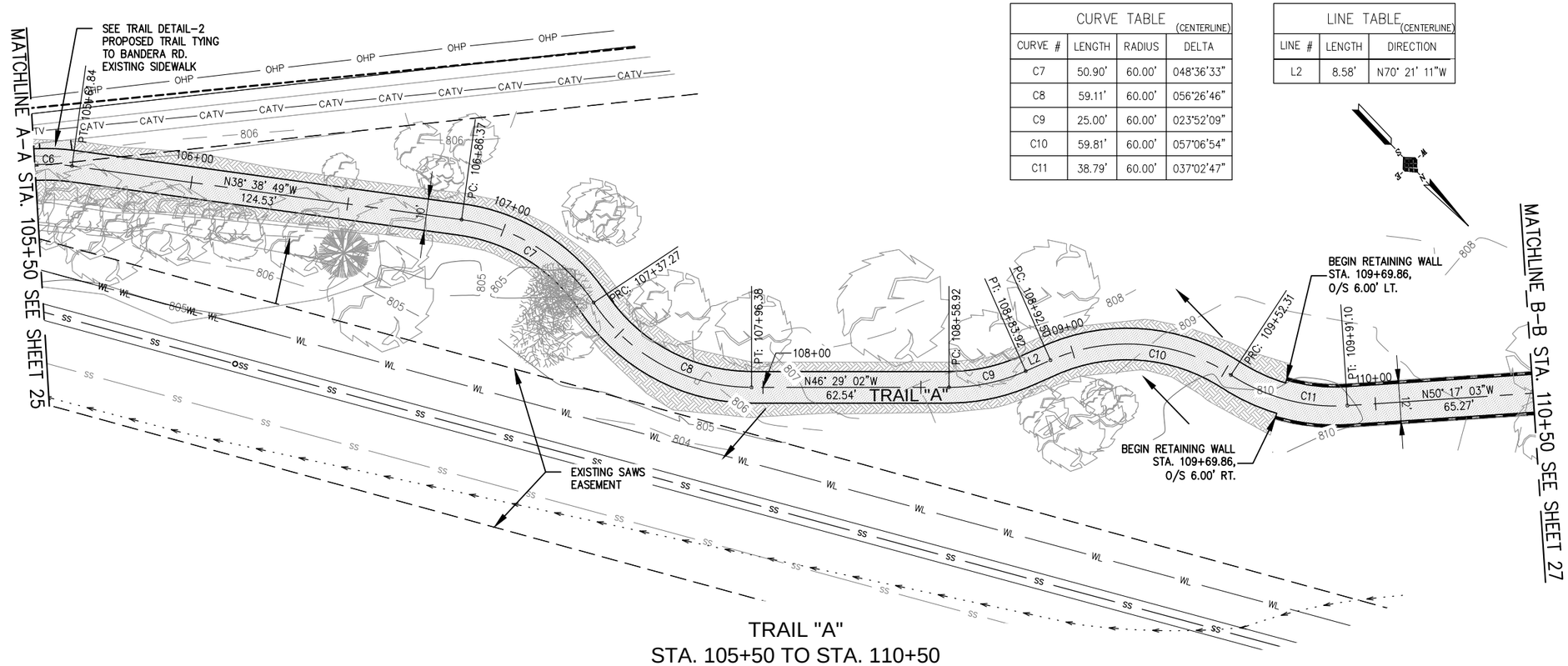
BIKE TRAIL A PLAN AND PROFILE
STA. 100+50 TO STA. 105+50

| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: M.G.M./D.E. | SHEET NO. 25 | TOTAL SHEETS 57 |
| DATE: 10/15/2014 | | |

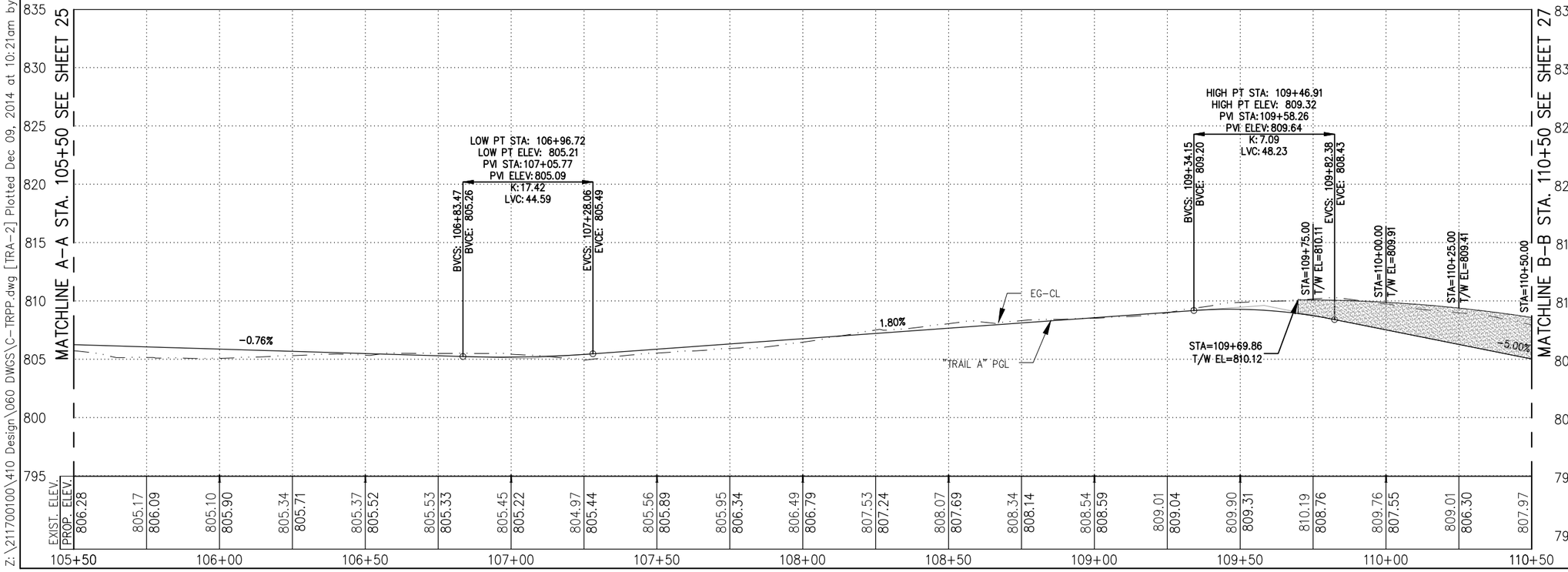
Z:\211700100\410 Design\060 DWGS\C-TRPP.dwg [TRA-1] Plotted Dec 09, 2014 at 10:21am by GRomero (Last Saved by: mmina)

| CURVE TABLE (CENTERLINE) | | | |
|---|---|---|---|
| CURVE # | LENGTH | RADIUS | DELTA |
| C7 | 50.90' | 60.00' | 048°36'33" |
| C8 | 59.11' | 60.00' | 056°26'46" |
| C9 | 25.00' | 60.00' | 023°52'09" |
| C10 | 59.81' | 60.00' | 057°06'54" |
| C11 | 38.79' | 60.00' | 037°02'47" |

| LINE TABLE (CENTERLINE) | | |
|---|---|---|
| LINE # | LENGTH | DIRECTION |
| L2 | 8.58' | N70° 21' 11"W |




TRAIL "A"
STA. 105+50 TO STA. 110+50




## LEGEND

- EXISTING GROUND (CENTER)
- PROPOSED GROUND @ CL
- 800 EXISTING CONTOUR MAJOR
- 802 EXISTING CONTOUR MINOR
- APPROX. ROW
- EASEMENT LINE
- CREEK FLOW LINE
- PROPOSED FENCE
- WL PROPOSED RECYCLE WATER LINE
- SS PROPOSED SANITARY SEWER LINE
- W EXISTING WATER LINE
- WL EXISTING CSC RECYCLE WATER
- OHP EXISTING CPS TRANSMISSION LINE
- OHP EXISTING OVERHEAD PRIMARY
- SS EXISTING PVC SANITARY SEWER
- 4" GAS EXISTING 4" GAS
- CATV EXISTING OH GRANDE LINE
- EXISTING FENCE
- 10' CONCRETE TRAIL
- 2" EROSION CONTROL COMPOST (ITEM161)(SS2010)
- FLOW ARROW
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING POWER POLE
- EXISTING GUY WIRE
- EXISTING SIGN
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING WATER METER
- EXISTING TREE

40' 0' 40'

SCALE 1"=40'

SCALE: 1"=40'(H) 1"=10'(V)

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
THONG HUY LE
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11-3-14


IDS Engineering Group
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San Antonio, TX 78216
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LEONVALLEY

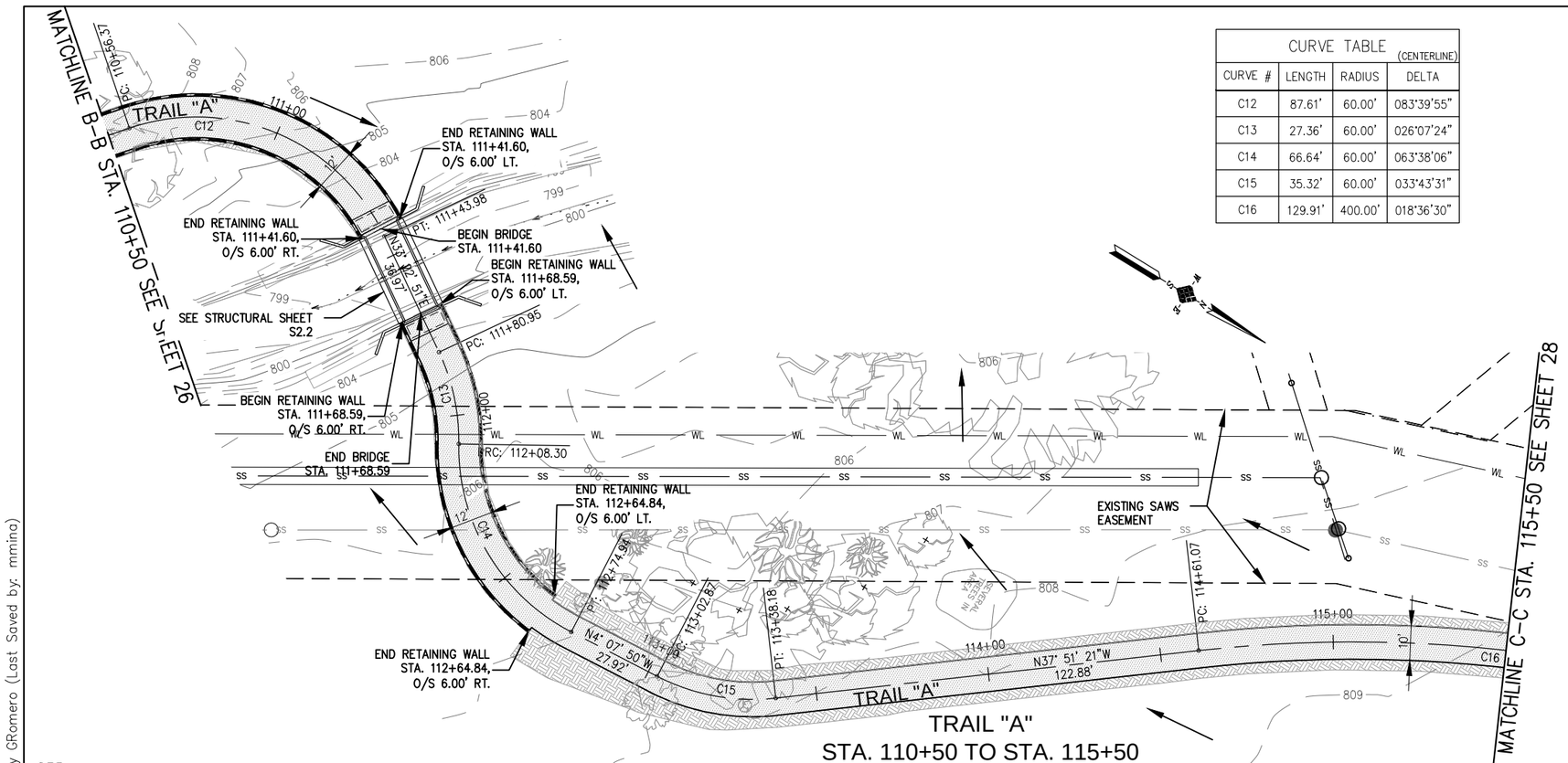
Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

BIKE TRAIL A PLAN AND PROFILE
STA. 105+50 TO STA. 110+50

| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: M.G.M./D.E. | SHEET NO. 26 | TOTAL SHEETS 57 |
| DATE: 10/15/2014 | | |

Z:\211700100\410 Design\060 DWGS\C-TRPP.dwg [TRA-2] Plotted Dec 09, 2014 at 10:21am by GRomero (Last Saved by: mmina)

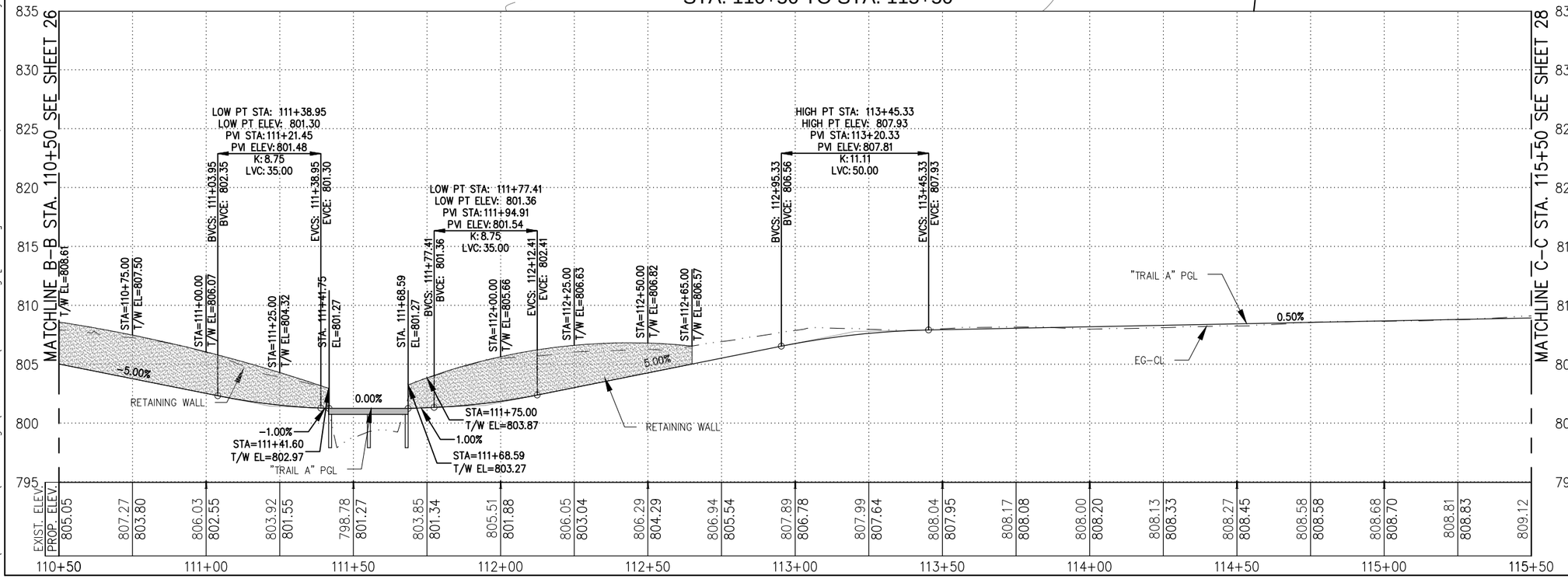



| CURVE TABLE (CENTERLINE) | | | |
|---|---|---|---|
| CURVE # | LENGTH | RADIUS | DELTA |
| C12 | 87.61' | 60.00' | 083°39'55" |
| C13 | 27.36' | 60.00' | 026°07'24" |
| C14 | 66.64' | 60.00' | 063°38'06" |
| C15 | 35.32' | 60.00' | 033°43'31" |
| C16 | 129.91' | 400.00' | 018°36'30" |

## LEGEND

- EXISTING GROUND (CENTER)
- PROPOSED GROUND @ CL
- 800 EXISTING CONTOUR MAJOR
- 802 EXISTING CONTOUR MINOR
- APPROX. ROW
- EASEMENT LINE
- CREEK FLOW LINE
- PROPOSED FENCE
- WL PROPOSED RECYCLE WATER LINE
- SS PROPOSED SANITARY SEWER LINE
- W EXISTING WATER LINE
- WL EXISTING CSC RECYCLE WATER
- OHP EXISTING CPS TRANSMISSION LINE
- OHP EXISTING OVERHEAD PRIMARY
- SS EXISTING PVC SANITARY SEWER
- 4" GAS EXISTING 4" GAS
- CATV EXISTING OH GRANDE LINE
- EXISTING FENCE
- 10' CONCRETE TRAIL
- 2" EROSION CONTROL COMPOST (ITEM161)(SS2010)
- FLOW ARROW
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING POWER POLE
- EXISTING GUY WIRE
- EXISTING SIGN
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- W EXISTING WATER METER
- EXISTING TREE

TRAIL "A"
STA. 110+50 TO STA. 115+50




40' 0' 40'

SCALE

SCALE: 1"=40'(H) 1"=10'(V)

1"=40'

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
THONG HUY LE
95764
LICENSED
PROFESSIONAL ENGINEER
11-3-14

IDS Engineering Group
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San Antonio, TX 78216
210.340.8481

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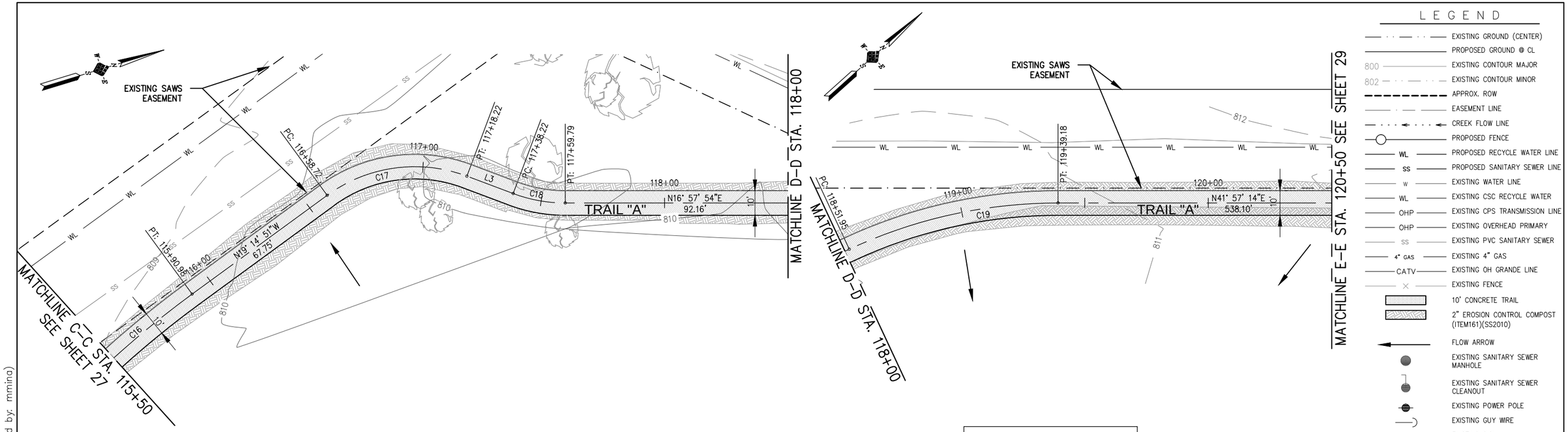
Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

BIKE TRAIL A PLAN AND PROFILE
STA. 110+50 TO STA. 115+50

| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 27 | 57 |

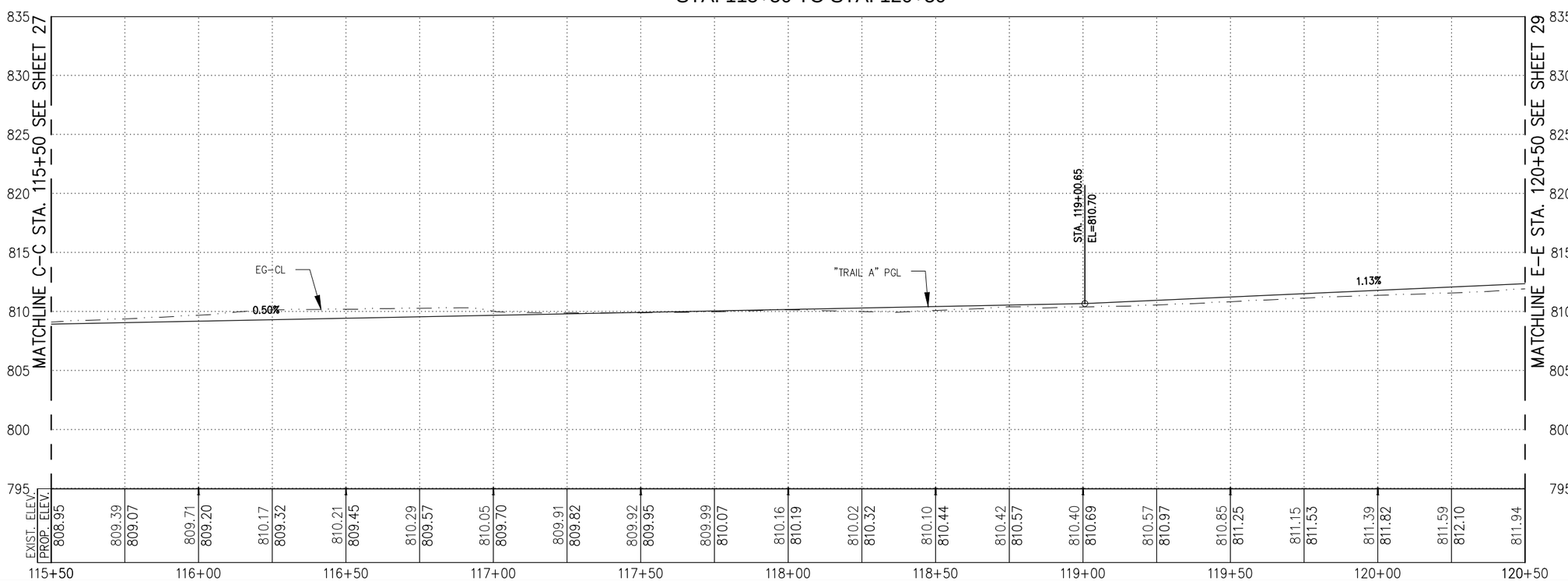
Z:\211700100\410 Design\060 DWGS\C-TRPP.dwg [TRA-3] Plotted Dec 09, 2014 at 10:21am by GRomero (Last Saved by: mmina)




| CURVE TABLE (CENTERLINE) | | | |
|---|---|---|---|
| CURVE # | LENGTH | RADIUS | DELTA |
| C17 | 59.49' | 60.00' | 056°48'40" |
| C18 | 21.57' | 60.00' | 020°35'55" |
| C19 | 87.23' | 200.00' | 024°59'20" |

| LINE TABLE (CENTERLINE) | | |
|---|---|---|
| LINE # | LENGTH | DIRECTION |
| L3 | 20.00' | N37° 33' 50"E |

## TRAIL "A"
## STA. 115+50 TO STA. 120+50




40' 0' 40'

SCALE

1"=40'

SCALE: 1"=40'(H) 1"=10'(V)

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

THONG HUY LE 95764 LICENSED PROFESSIONAL ENGINEER 11-3-14

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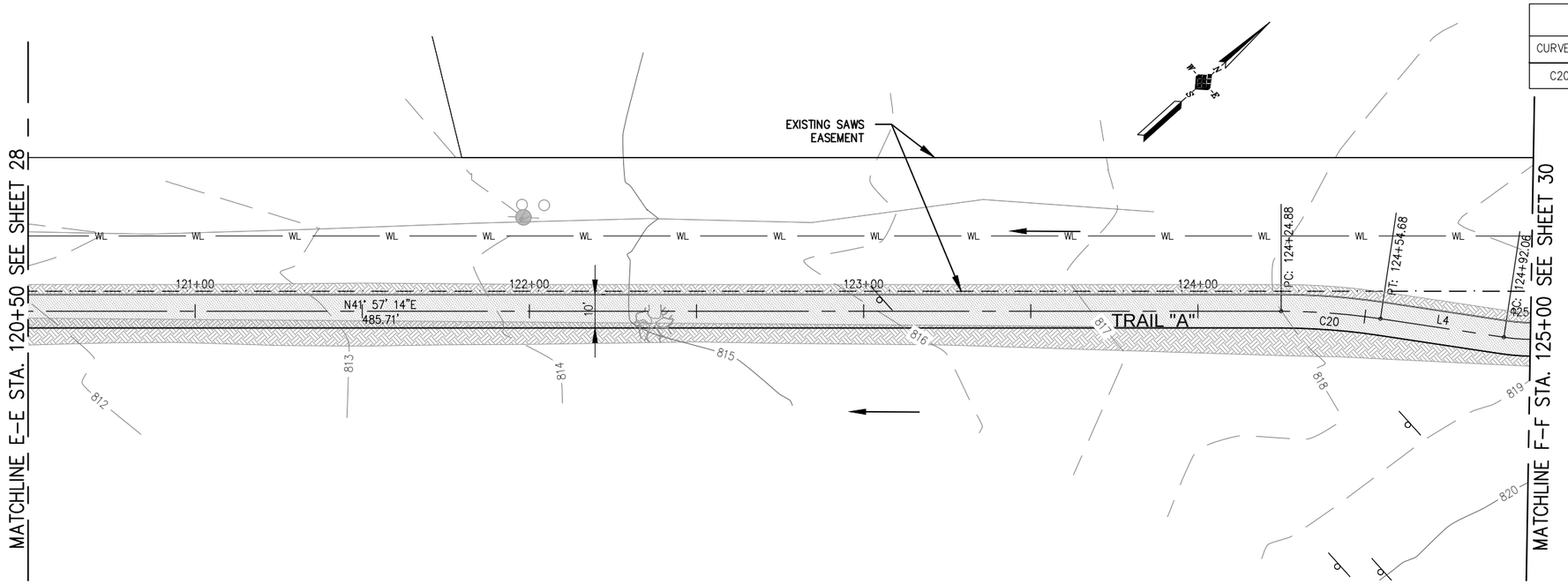
LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

BIKE TRAIL A PLAN AND PROFILE
STA. 115+50 TO STA. 120+50

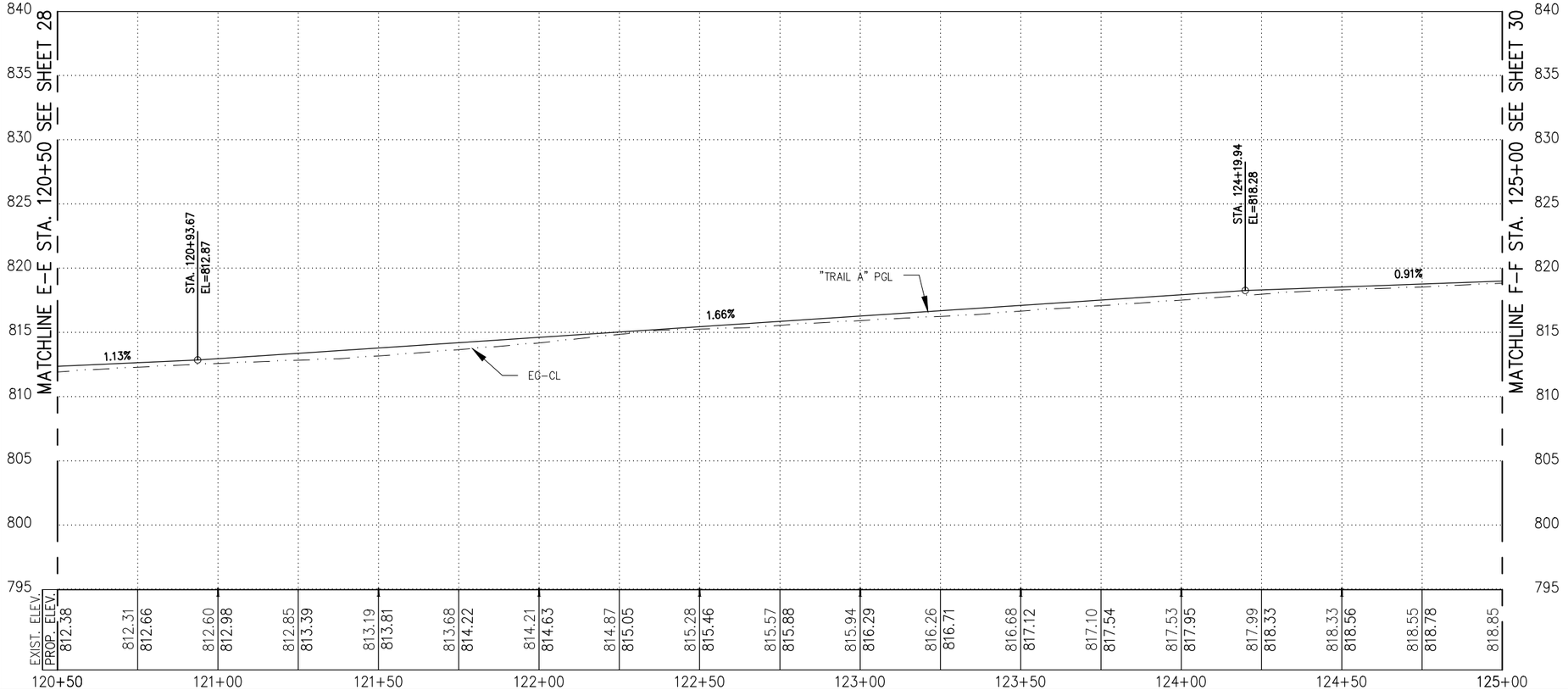
| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 28 | 57 |




| CURVE TABLE (CENTERLINE) | | | |
|---|---|---|---|
| CURVE # | LENGTH | RADIUS | DELTA |
| C20 | 29.80' | 200.00' | 008°32'12" |

| LINE TABLE (CENTERLINE) | | |
|---|---|---|
| LINE # | LENGTH | DIRECTION |
| L4 | 37.38' | N50° 29' 27"E |

## TRAIL "A"
## STA. 120+50 TO STA. 125+00




## LEGEND

- EXISTING GROUND (CENTER)
- PROPOSED GROUND @ CL
- 800 EXISTING CONTOUR MAJOR
- 802 EXISTING CONTOUR MINOR
- APPROX. ROW
- EASEMENT LINE
- CREEK FLOW LINE
- PROPOSED FENCE
- WL PROPOSED RECYCLE WATER LINE
- SS PROPOSED SANITARY SEWER LINE
- W EXISTING WATER LINE
- WL EXISTING CSC RECYCLE WATER
- OHP EXISTING CPS TRANSMISSION LINE
- OHP EXISTING OVERHEAD PRIMARY
- SS EXISTING PVC SANITARY SEWER
- 4" GAS EXISTING 4" GAS
- CATV EXISTING OH GRANDE LINE
- EXISTING FENCE
- 10' CONCRETE TRAIL
- 2" EROSION CONTROL COMPOST (ITEM161)(SS2010)
- FLOW ARROW
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING POWER POLE
- EXISTING GUY WIRE
- EXISTING SIGN
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING WATER METER
- EXISTING TREE

40' 0' 40'

SCALE 1"=40'

SCALE: 1"=40'(H) 1"=10'(V)

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS — THONG HUY LE — 95764 — LICENSED PROFESSIONAL ENGINEER — 11-3-14

IDS Engineering Group
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LEONVALLEY

Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

BIKE TRAIL A PLAN AND PROFILE
STA. 120+50 TO STA. 125+00

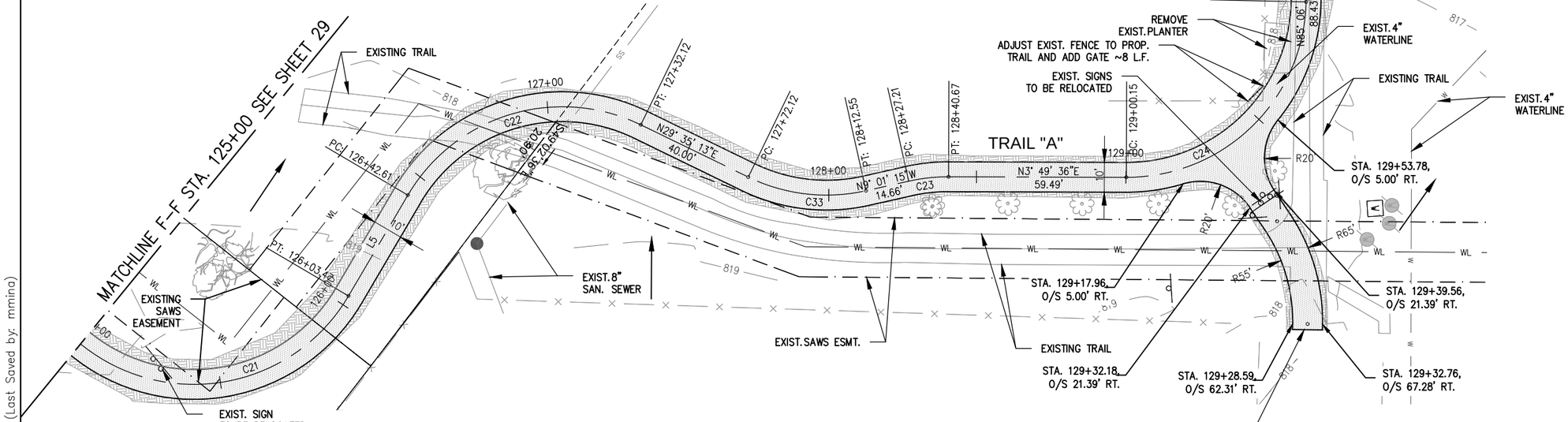
| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 29 | 57 |

Z:\211700100\410 Design\060 DWGS\C-TRPP.dwg [TRA-5] Plotted Dec 09, 2014 at 10:23am by GRomero (Last Saved by: mmina)

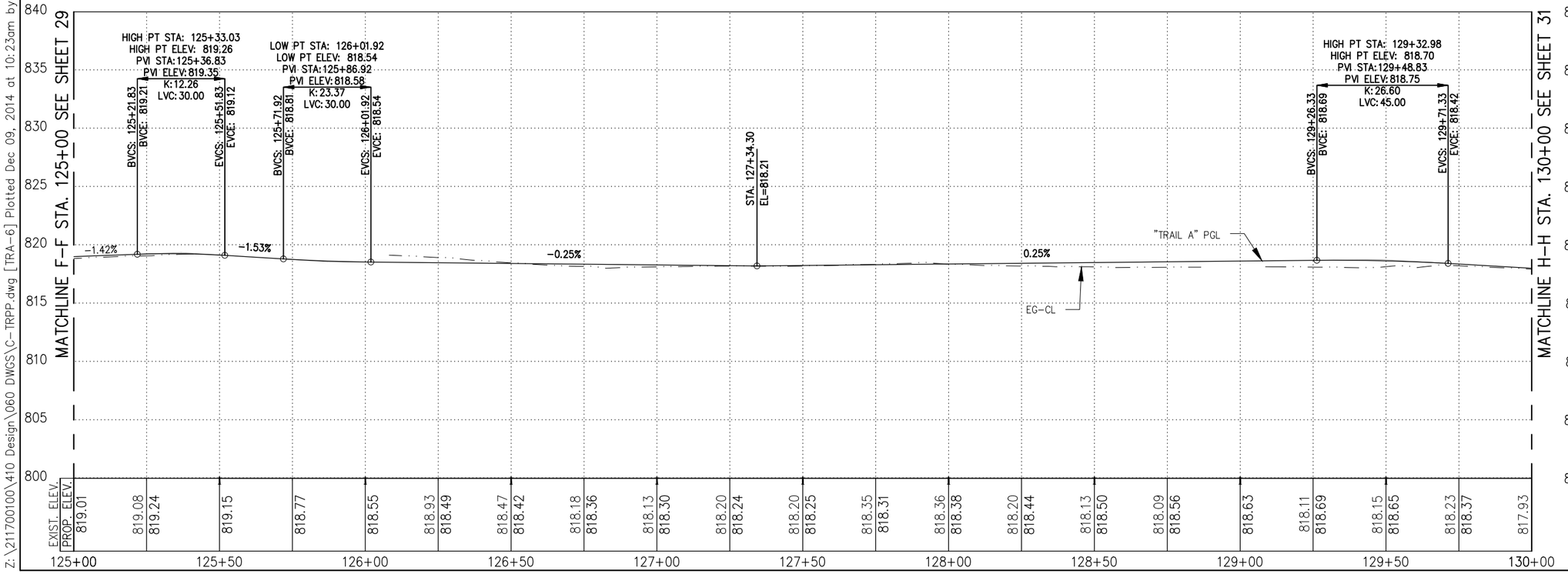
| CURVE TABLE | | | |
|---|---|---|---|
| CURVE # | LENGTH | RADIUS | DELTA |
| C33 | 40.43' | 60.00' | 038°36'28" |

| LINE TABLE (CENTERLINE) | | |
|---|---|---|
| LINE # | LENGTH | DIRECTION |
| L5 | 39.14' | N55° 53' 28"W |

| CURVE TABLE (CENTERLINE) | | | |
|---|---|---|---|
| CURVE # | LENGTH | RADIUS | DELTA |
| C21 | 111.40' | 60.00' | 106°22'55" |
| C22 | 89.51' | 60.00' | 085°28'41" |
| C23 | 13.45' | 60.00' | 012°50'51" |
| C24 | 93.13' | 60.00' | 088°56'04" |




TRAIL "A"
STA. 125+00 TO STA. 130+00




## LEGEND

- EXISTING GROUND (CENTER)
- PROPOSED GROUND @ CL
- 800 EXISTING CONTOUR MAJOR
- 802 EXISTING CONTOUR MINOR
- APPROX. ROW
- EASEMENT LINE
- CREEK FLOW LINE
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- WL PROPOSED RECYCLE WATER LINE
- SS PROPOSED SANITARY SEWER LINE
- W EXISTING WATER LINE
- WL EXISTING CSC RECYCLE WATER
- OHP EXISTING CPS TRANSMISSION LINE
- OHP EXISTING OVERHEAD PRIMARY
- SS EXISTING PVC SANITARY SEWER
- 4" GAS EXISTING 4" GAS
- CATV EXISTING OH GRANDE LINE
- EXISTING FENCE
- 10' CONCRETE TRAIL
- 2" EROSION CONTROL COMPOST (ITEM161)(SS2010)
- FLOW ARROW
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING POWER POLE
- EXISTING GUY WIRE
- EXISTING SIGN
- EXISTING FIRE HYDRANT
- W EXISTING WATER VALVE
- W EXISTING WATER METER
- EXISTING TREE

40' 0' 40'

SCALE 1"=40'

SCALE: 1"=40'(H) 1"=10'(V)

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
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LICENSED PROFESSIONAL ENGINEER
11-3-14


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LEONVALLEY

Texas Department of Transportation

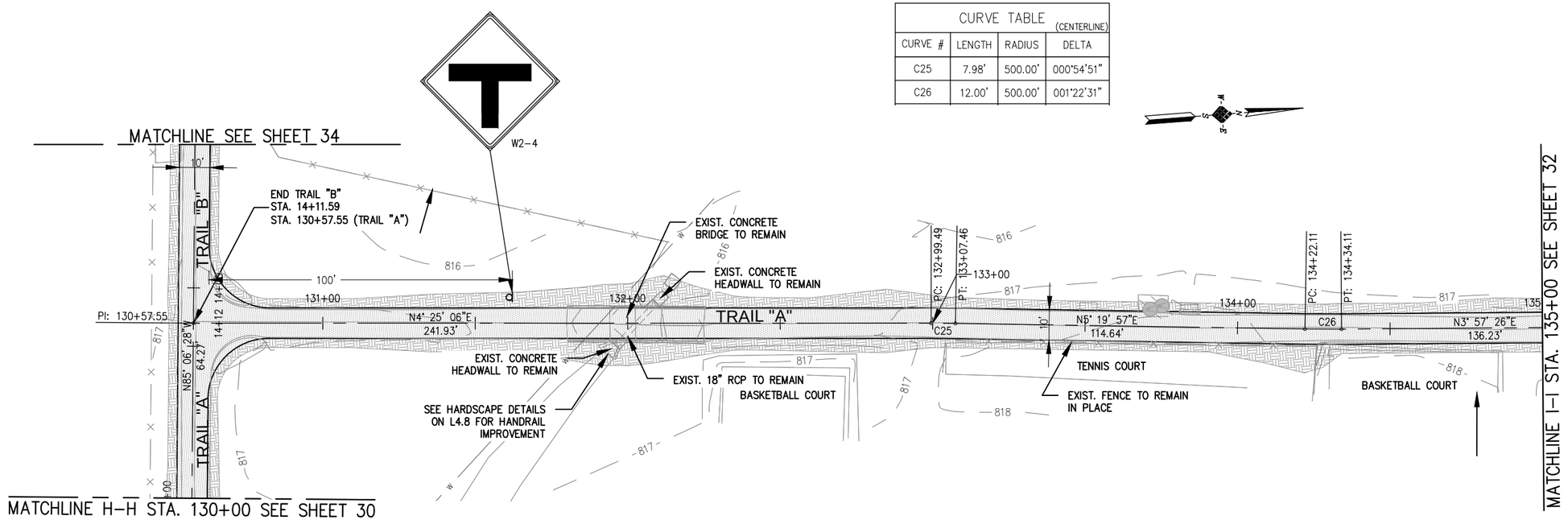
LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

BIKE TRAIL A PLAN AND PROFILE
STA. 125+00 TO STA. 130+00

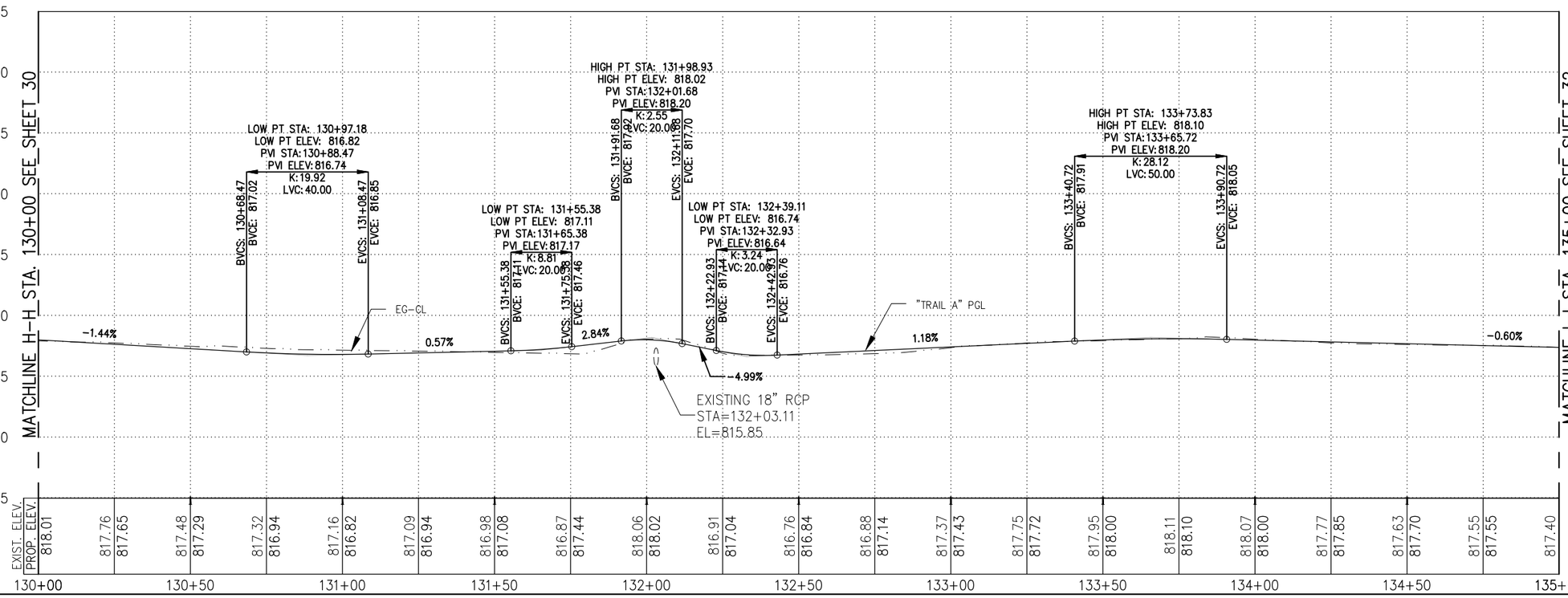
| CHK. BY: | T.L. | IDS JOB NO: 211700100 | |
|---|---|---|---|
| DWG. BY: M.G.M./D.E. | | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | | 30 | 57 |

Z:\211700100\410 Design\060 DWGS\C-TRPP.dwg [TRA-6] Plotted Dec 09, 2014 at 10:23am by GRomero (Last Saved by: mmina)

| CURVE TABLE (CENTERLINE) | | | |
|---|---|---|---|
| CURVE # | LENGTH | RADIUS | DELTA |
| C25 | 7.98' | 500.00' | 000°54'51" |
| C26 | 12.00' | 500.00' | 001°22'31" |




## TRAIL "A"
## STA. 130+00 TO STA. 135+00




## LEGEND

- EXISTING GROUND (CENTER)
- PROPOSED GROUND @ CL
- 800 EXISTING CONTOUR MAJOR
- 802 EXISTING CONTOUR MINOR
- APPROX. ROW
- EASEMENT LINE
- CREEK FLOW LINE
- PROPOSED FENCE
- WL PROPOSED RECYCLE WATER LINE
- SS PROPOSED SANITARY SEWER LINE
- W EXISTING WATER LINE
- WL EXISTING CSC RECYCLE WATER
- OHP EXISTING CPS TRANSMISSION LINE
- OHP EXISTING OVERHEAD PRIMARY
- SS EXISTING PVC SANITARY SEWER
- 4" GAS EXISTING 4" GAS
- CATV EXISTING OH GRANDE LINE
- EXISTING FENCE
- 10' CONCRETE TRAIL
- 2" EROSION CONTROL COMPOST (ITEM161)(SS2010)
- FLOW ARROW
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING POWER POLE
- EXISTING GUY WIRE
- EXISTING SIGN
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING WATER METER
- EXISTING TREE

40' 0' 40'

SCALE 1"=40'

SCALE: 1"=40'(H) 1"=10'(V)

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS — THONG HUY LE — 95764 — LICENSED PROFESSIONAL ENGINEER — 11-3-14


IDS Engineering Group
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LEON VALLEY

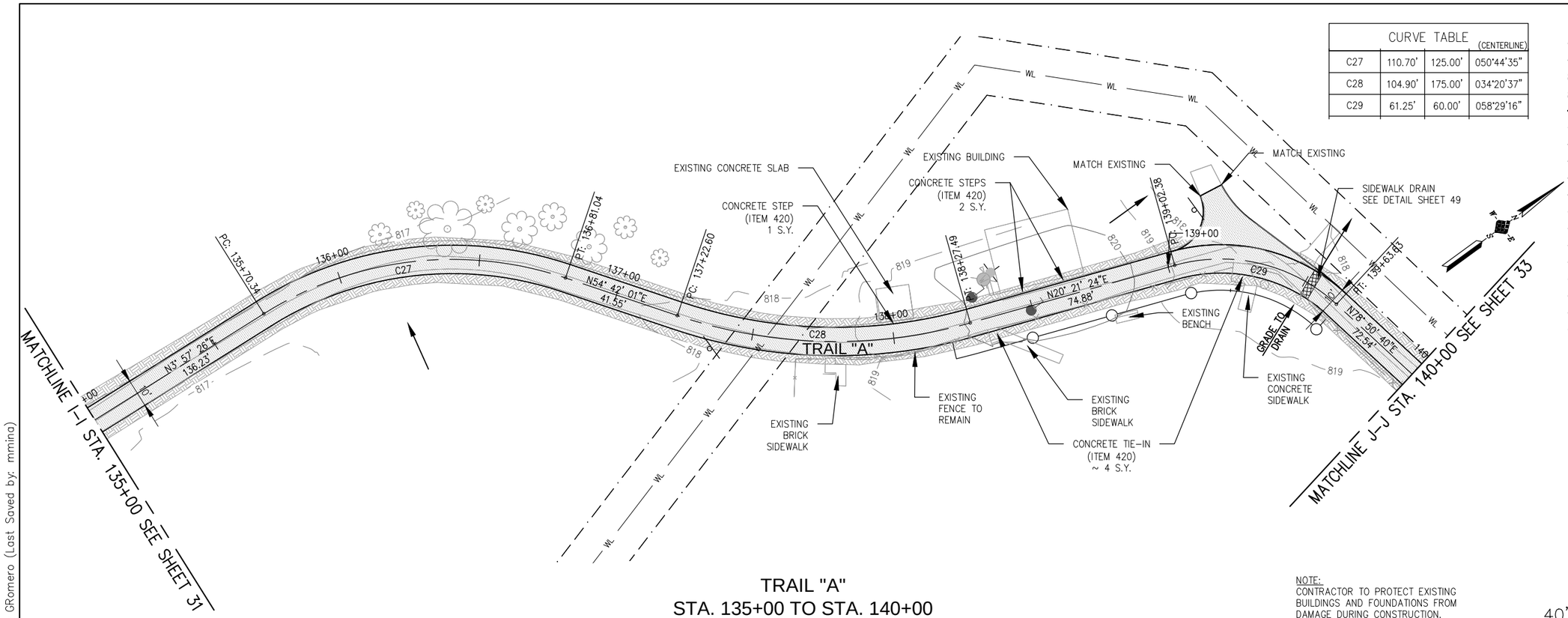
Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

BIKE TRAIL A PLAN AND PROFILE
STA. 130+00 TO STA. 135+00

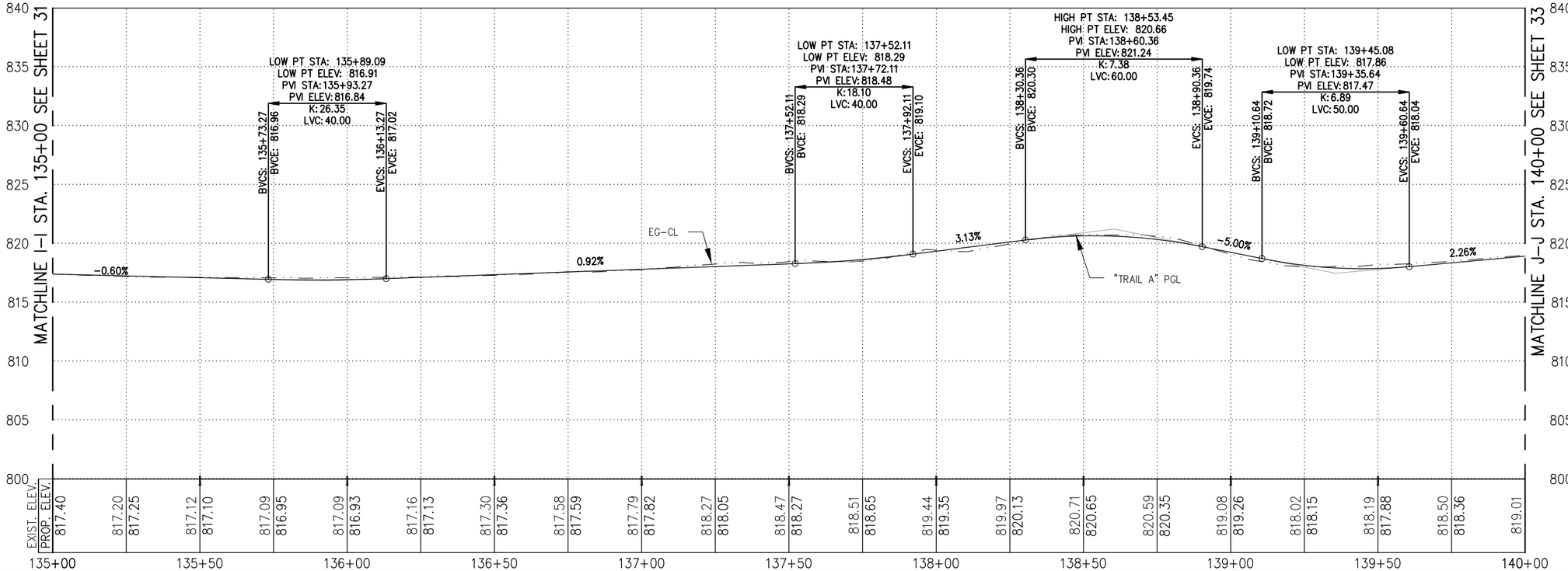
| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 31 | 57 |

| CURVE TABLE | | | (CENTERLINE) |
|---|---|---|---|
| C27 | 110.70' | 125.00' | 050°44'35" |
| C28 | 104.90' | 175.00' | 034°20'37" |
| C29 | 61.25' | 60.00' | 058°29'16" |




TRAIL "A"
STA. 135+00 TO STA. 140+00

NOTE:
CONTRACTOR TO PROTECT EXISTING BUILDINGS AND FOUNDATIONS FROM DAMAGE DURING CONSTRUCTION.




LEGEND

- EXISTING GROUND (CENTER)
- PROPOSED GROUND @ CL
- 800 EXISTING CONTOUR MAJOR
- 802 EXISTING CONTOUR MINOR
- APPROX. ROW
- EASEMENT LINE
- CREEK FLOW LINE
- PROPOSED FENCE
- WL PROPOSED RECYCLE WATER LINE
- SS PROPOSED SANITARY SEWER LINE
- W EXISTING WATER LINE
- WL EXISTING CSC RECYCLE WATER
- OHP EXISTING CPS TRANSMISSION LINE
- OHP EXISTING OVERHEAD PRIMARY
- SS EXISTING PVC SANITARY SEWER
- 4" GAS EXISTING 4" GAS
- CATV EXISTING OH GRANDE LINE
- EXISTING FENCE
- 10' CONCRETE TRAIL
- 2" EROSION CONTROL COMPOST (ITEM161)(SS2010)
- FLOW ARROW
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING POWER POLE
- EXISTING GUY WIRE
- EXISTING SIGN
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING WATER METER
- EXISTING TREE

40' 0' 40'

SCALE 1"=40'

SCALE:
1"=40'(H)
1"=10'(V)

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
THONG HUY LE
95764
LICENSED PROFESSIONAL ENGINEER
11-3-14


IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481


LEONVALLEY

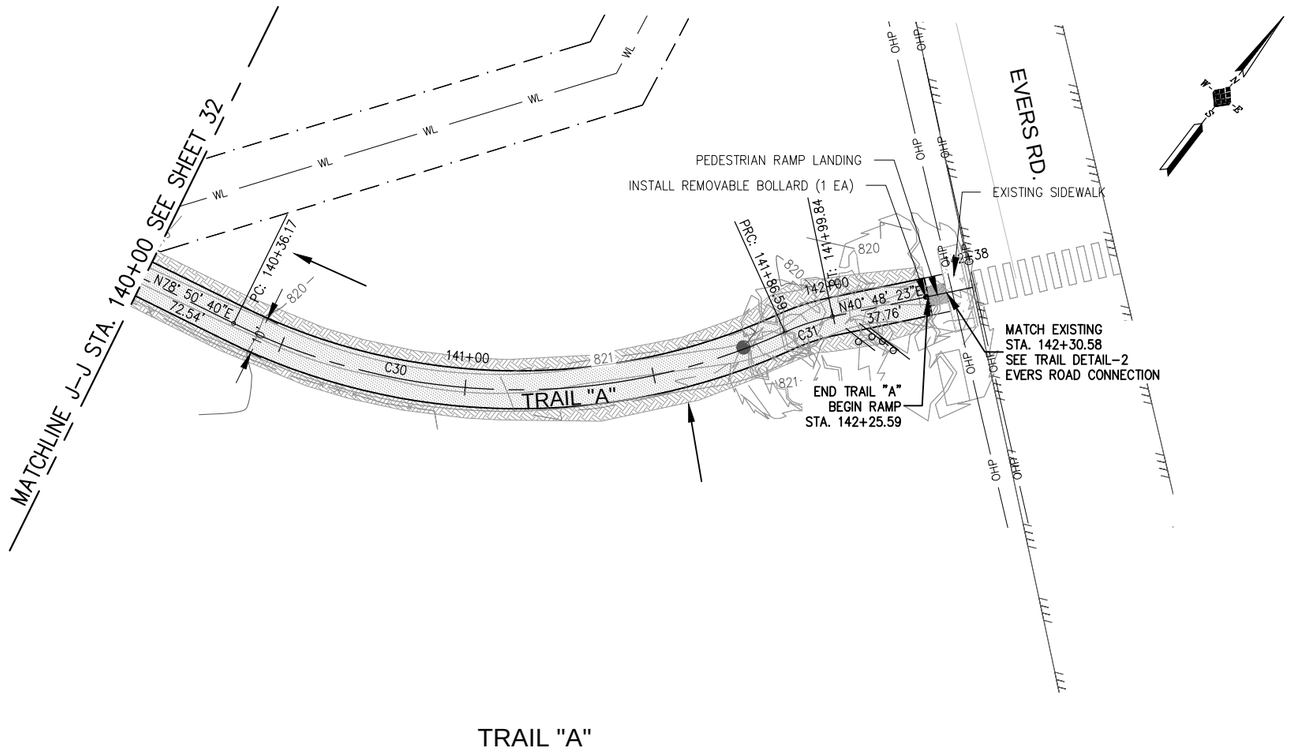
Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

BIKE TRAIL A PLAN AND PROFILE
STA. 135+00 TO STA. 140+00

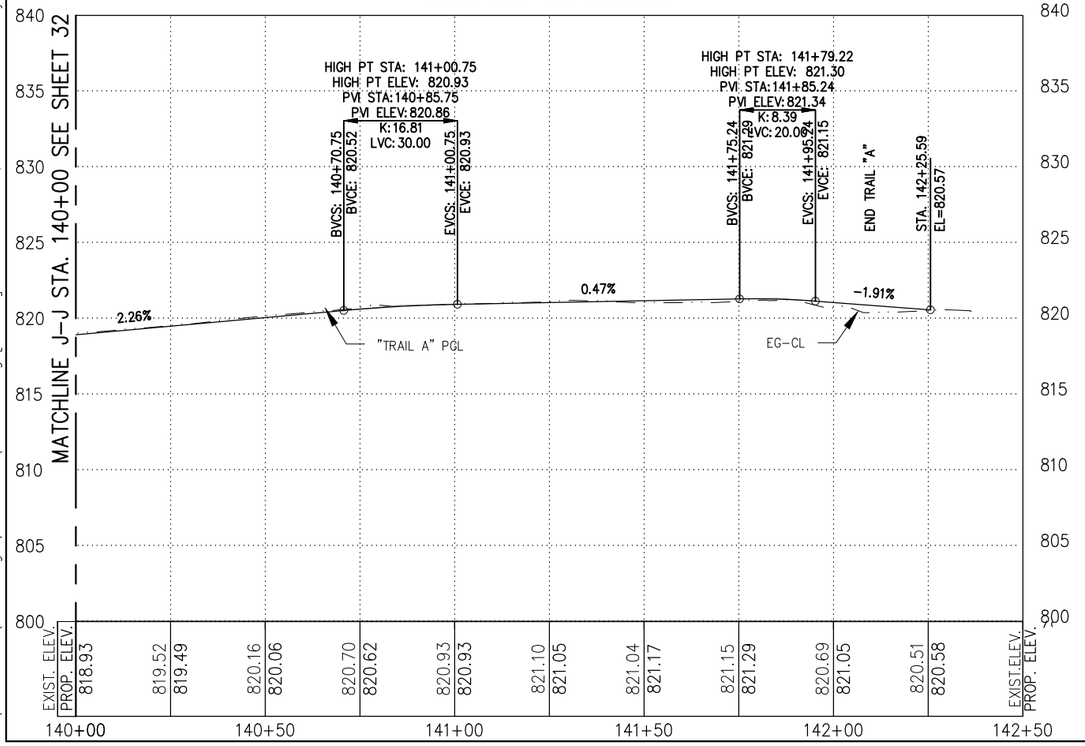
| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 32 | 57 |

Z:\211700100\410 Design\060 DWGS\C-TRPP.dwg [TRA-8] Plotted Dec 09, 2014 at 10:24am by GRomero (Last Saved by: mmina)




| CURVE TABLE (CENTERLINE) | | | |
|---|---|---|---|
| C30 | 150.42' | 170.00' | 050°41'43" |
| C31 | 13.25' | 60.00' | 012°39'26" |

## TRAIL "A"
## STA. 140+00 TO END




## LEGEND

- EXISTING GROUND (CENTER)
- PROPOSED GROUND @ CL
- 800 EXISTING CONTOUR MAJOR
- 802 EXISTING CONTOUR MINOR
- APPROX. ROW
- EASEMENT LINE
- CREEK FLOW LINE
- PROPOSED FENCE
- WL PROPOSED RECYCLE WATER LINE
- SS PROPOSED SANITARY SEWER LINE
- W EXISTING WATER LINE
- WL EXISTING CSC RECYCLE WATER
- OHP EXISTING CPS TRANSMISSION LINE
- OHP EXISTING OVERHEAD PRIMARY
- SS EXISTING PVC SANITARY SEWER
- 4" GAS EXISTING 4" GAS
- CATV EXISTING OH GRANDE LINE
- EXISTING FENCE
- 10' CONCRETE TRAIL
- 2" EROSION CONTROL COMPOST (ITEM161)(SS2010)
- FLOW ARROW
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING POWER POLE
- EXISTING GUY WIRE
- EXISTING SIGN
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- W EXISTING WATER METER
- EXISTING TREE

40' 0' 40'

SCALE 1"=40'

SCALE: 1"=40'(H) 1"=10'(V)

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
THONG HUY LE
95764
LICENSED PROFESSIONAL ENGINEER
11-3-14

IDS Engineering Group
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613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481

LEONVALLEY

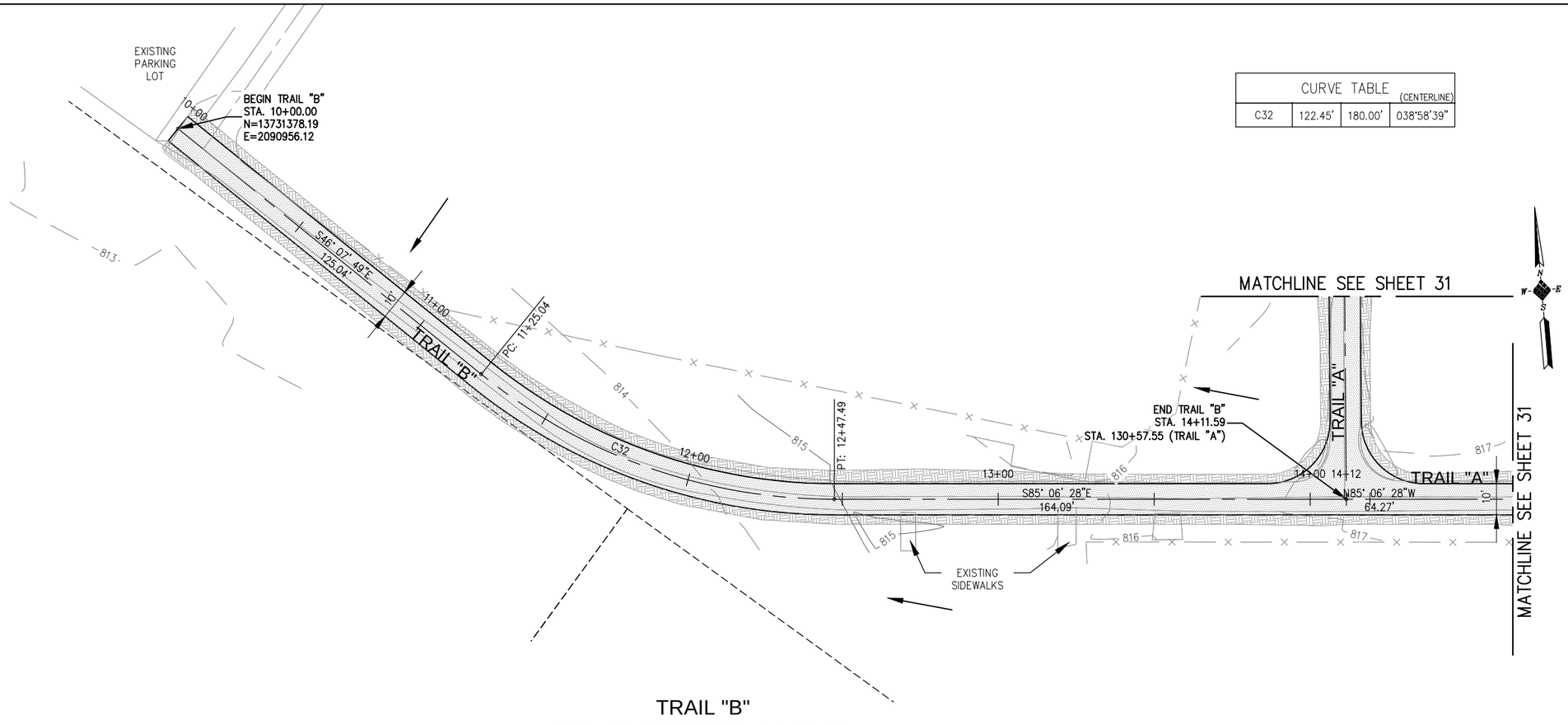
Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

BIKE TRAIL A PLAN AND PROFILE
STA. 140+00 TO END

| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 33 | 57 |

Z:\211700100\410 Design\060 DWGS\C-TRPP.dwg [TRA-9] Plotted Dec 09, 2014 at 10:25am by GRomero (Last Saved by: mmina)




| CURVE TABLE (CENTERLINE) | | | |
|---|---|---|---|
| C32 | 122.45' | 180.00' | 038°58'39" |

## LEGEND

- EXISTING GROUND (CENTER)
- PROPOSED GROUND @ CL
- 800 EXISTING CONTOUR MAJOR
- 802 EXISTING CONTOUR MINOR
- APPROX. ROW
- EASEMENT LINE
- CREEK FLOW LINE
- PROPOSED FENCE
- WL PROPOSED RECYCLE WATER LINE
- SS PROPOSED SANITARY SEWER LINE
- W EXISTING WATER LINE
- WL EXISTING CSC RECYCLE WATER
- OHP EXISTING CPS TRANSMISSION LINE
- OHP EXISTING OVERHEAD PRIMARY
- SS EXISTING PVC SANITARY SEWER
- 4" GAS EXISTING 4" GAS
- CATV EXISTING OH GRANDE LINE
- EXISTING FENCE
- 10' CONCRETE TRAIL
- 2" EROSION CONTROL COMPOST (ITEM161)(SS2010)
- FLOW ARROW
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING POWER POLE
- EXISTING GUY WIRE
- EXISTING SIGN
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- W EXISTING WATER METER
- EXISTING TREE

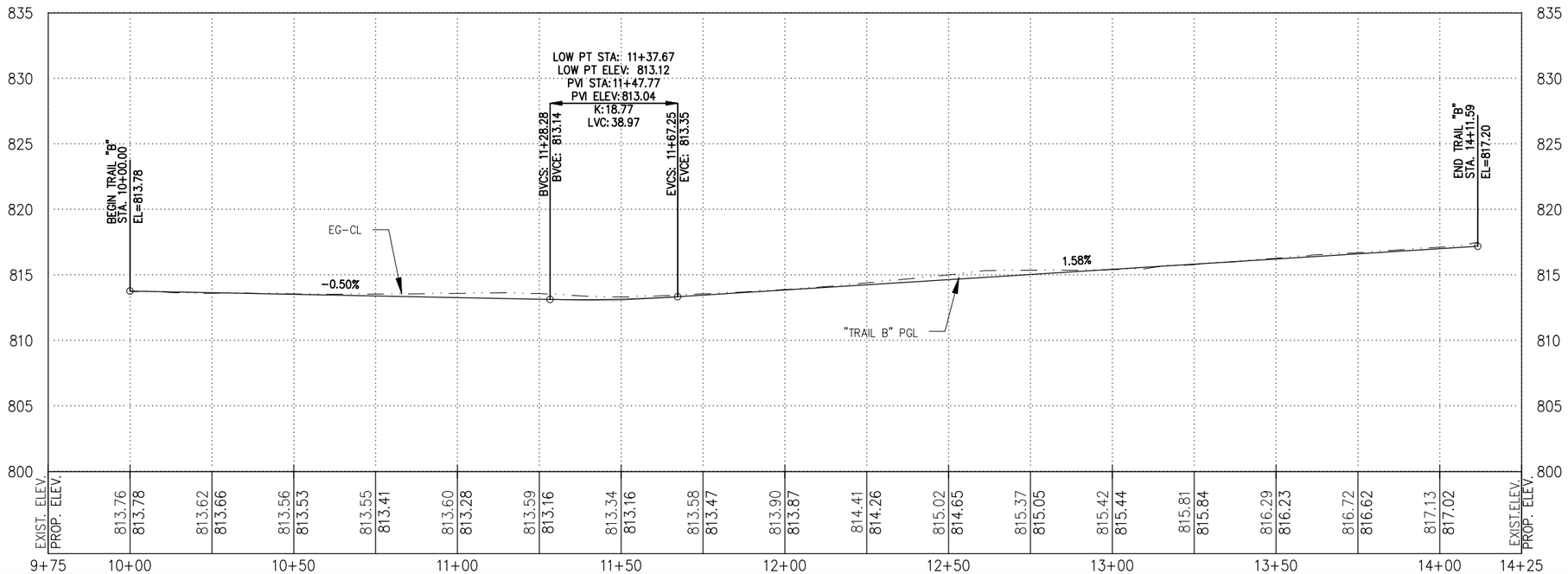
40' 0' 40'

SCALE

SCALE: 1"=40'(H) 1"=10'(V)

1"=40'

## TRAIL "B"
## STA. 10+00 TO STA. 14+11.59




| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS — THONG HUY LE — 95764 — LICENSED PROFESSIONAL ENGINEER — 11-3-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481

LEON VALLEY

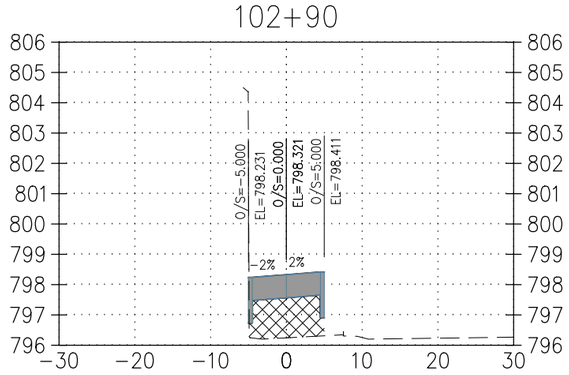
Texas Department of Transportation

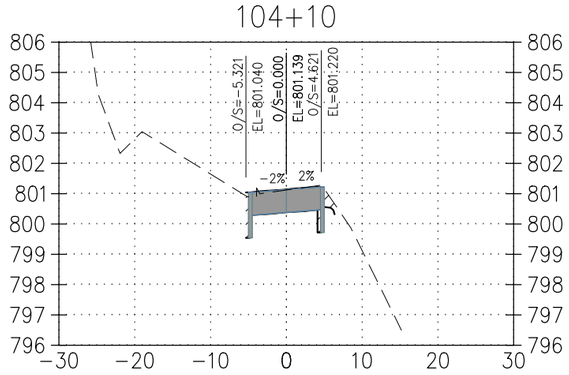
LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

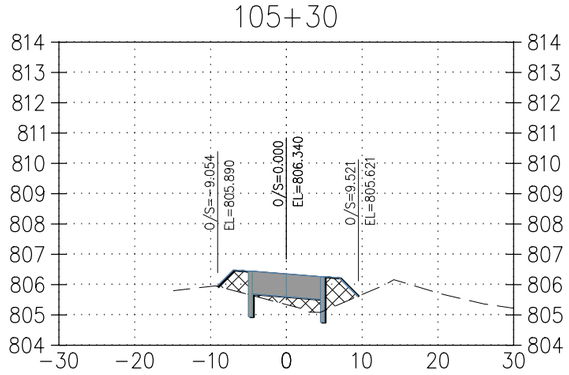
BIKE TRAIL B PLAN AND PROFILE
STA. 10+00 TO STA. 14+11.59

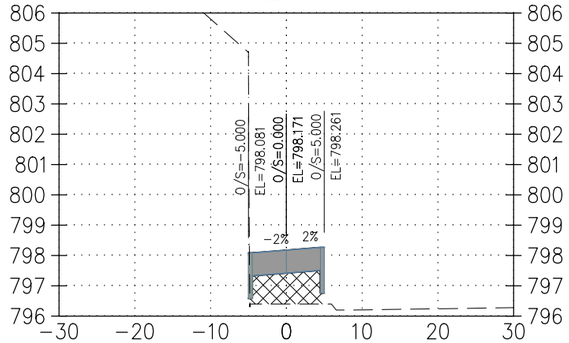
| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 34 | 57 |

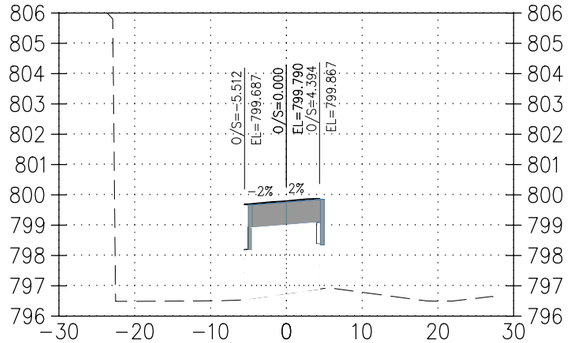
Z:\211700100\410 Design\060 DWGS\C-TRPP.dwg [TRB-1] Plotted Dec 09, 2014 at 10:25am by GRomero (Last Saved by: mmina)

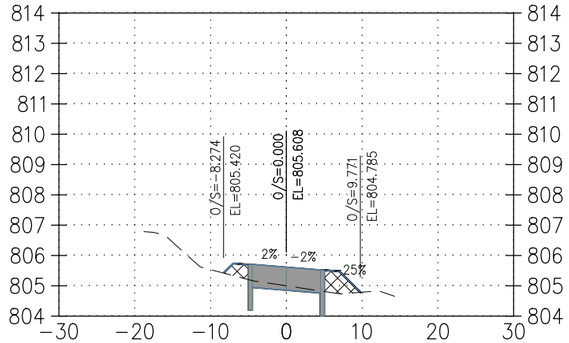


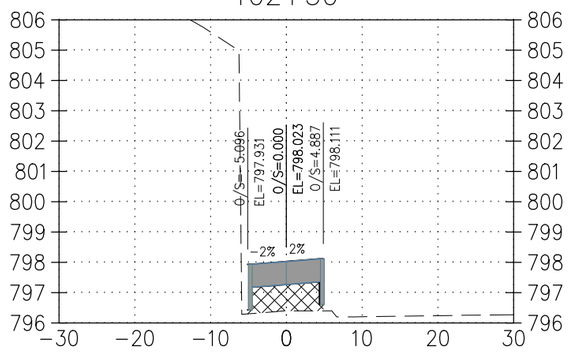



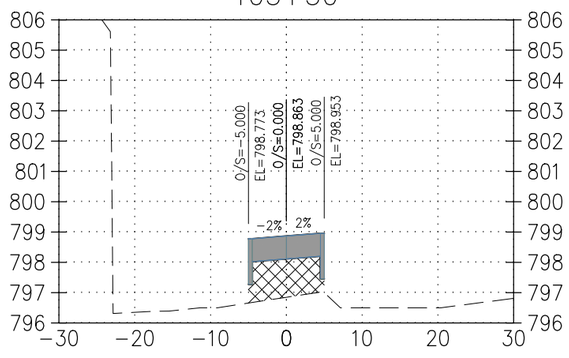



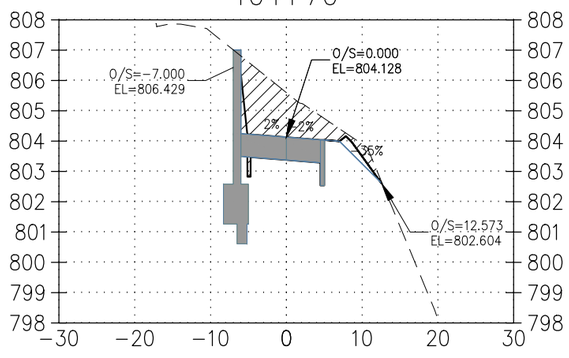



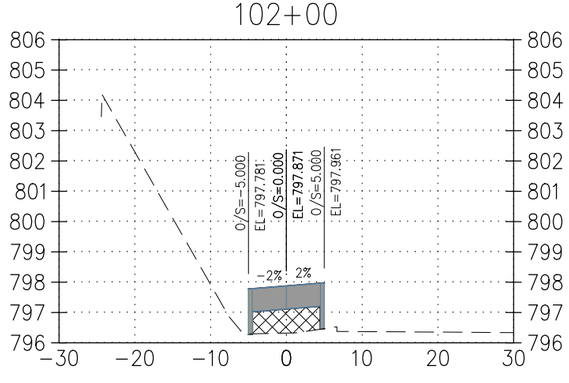



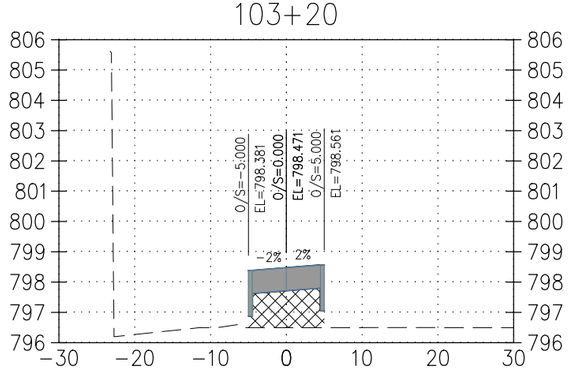



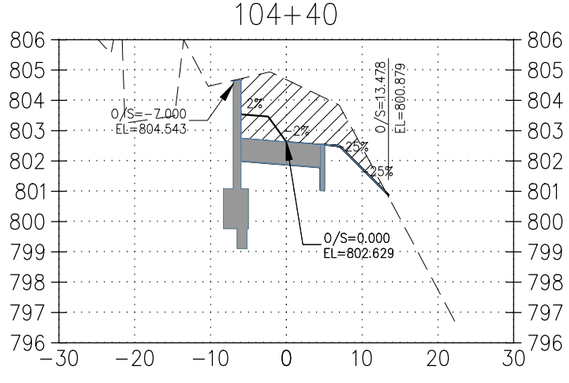




20' 0' 20'

SCALE 1"=20'

SCALE:
1"=20'(H)
1"=5'(V)

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
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11-3-14

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LEONVALLEY

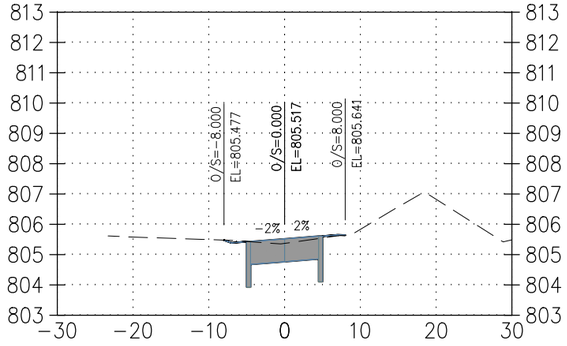
Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

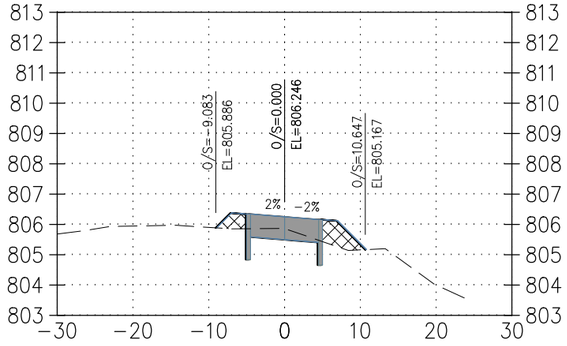
BIKE TRAIL A CROSS SECTIONS-1
STA. 102+50 TO STA. 105+30

| | | |
|---|---|---|
| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 35 | 57 |

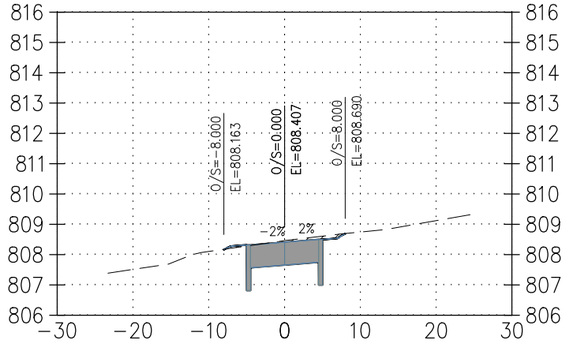
106+50



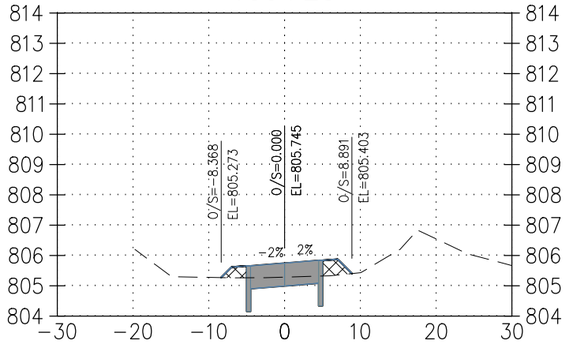

107+70



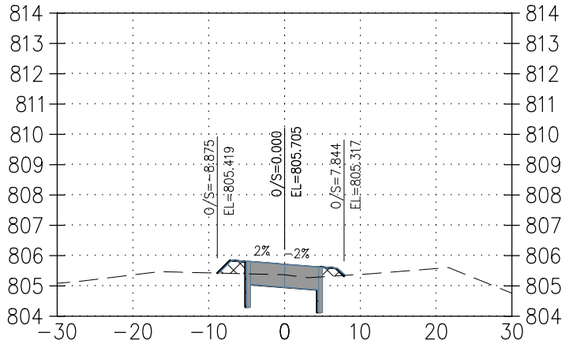

108+90




106+20




107+40

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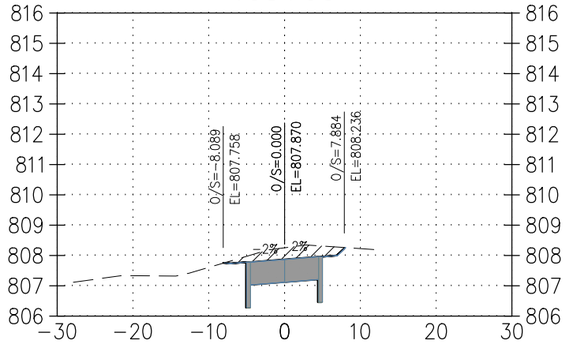
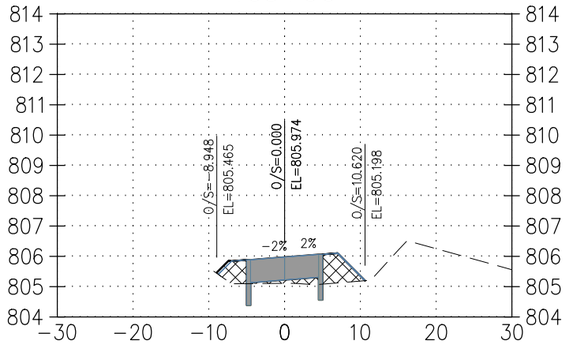
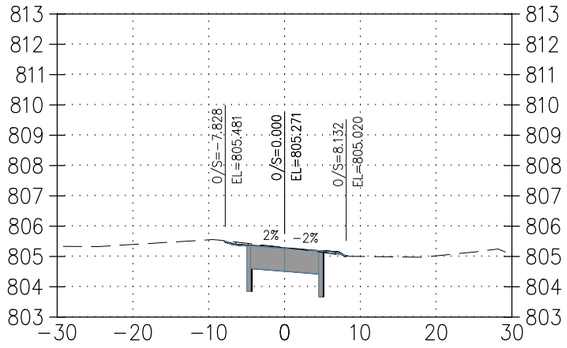


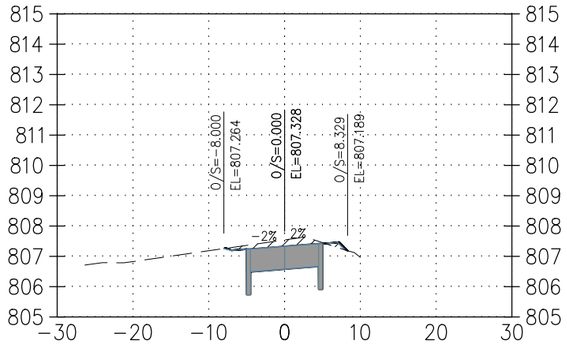

105+90



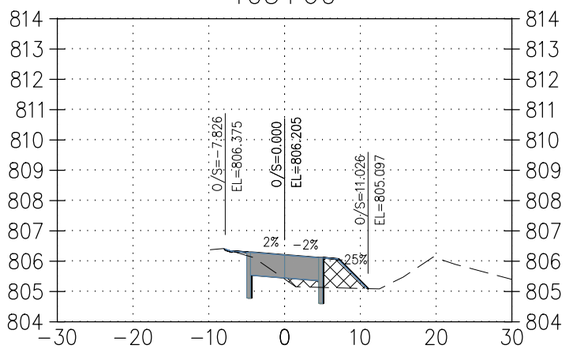

107+10



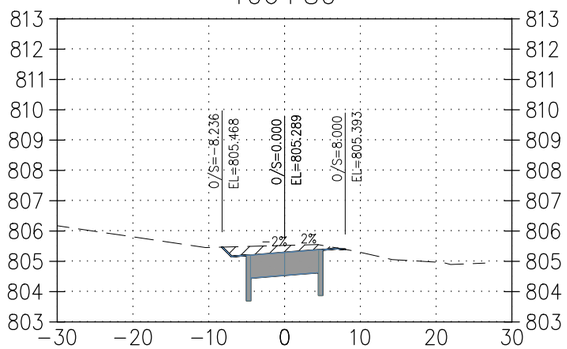

108+30



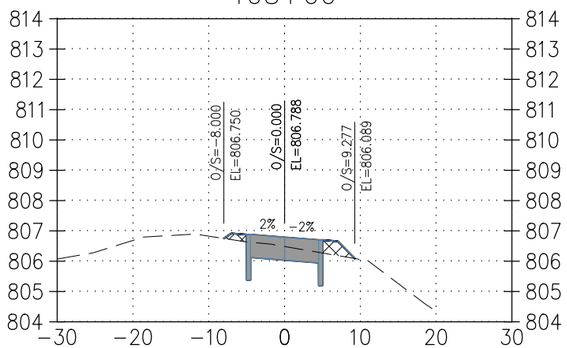

105+60




106+80




108+00




20' 0' 20'

SCALE

1"=20'

SCALE:
1"=20'(H)
1"=5'(V)

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

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11-3-14

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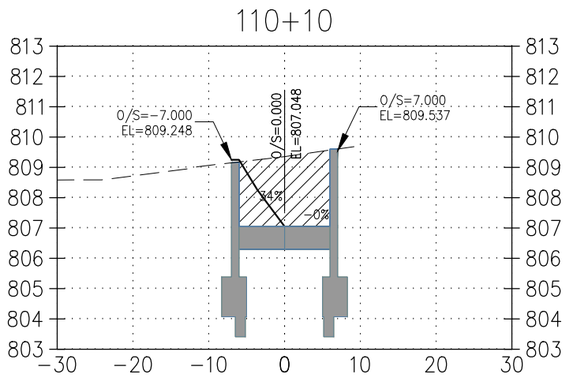
LEONVALLEY

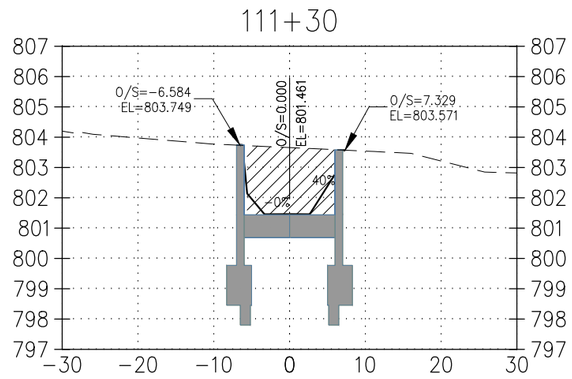
Texas Department of Transportation

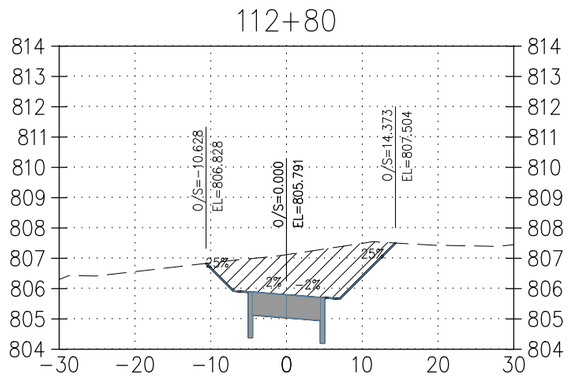
LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

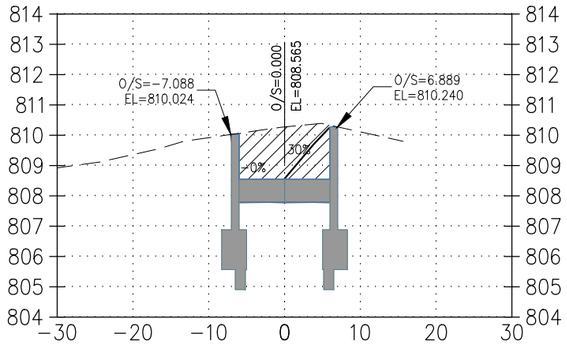
BIKE TRAIL A CROSS SECTIONS-2
STA. 105+60 TO STA. 108+90

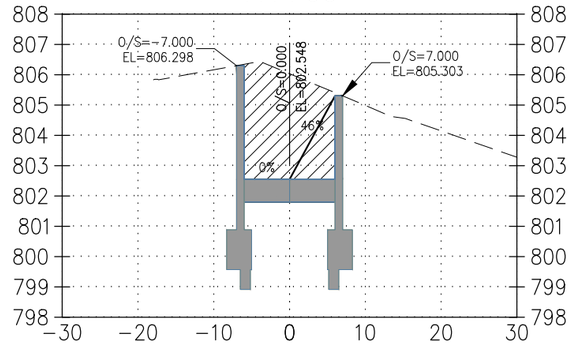
| | | | |
|---|---|---|---|
| CHK. BY: T.L. | IDS JOB NO: 211700100 | | |
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS | |
| DATE: 10/15/2014 | 36 | 57 | |

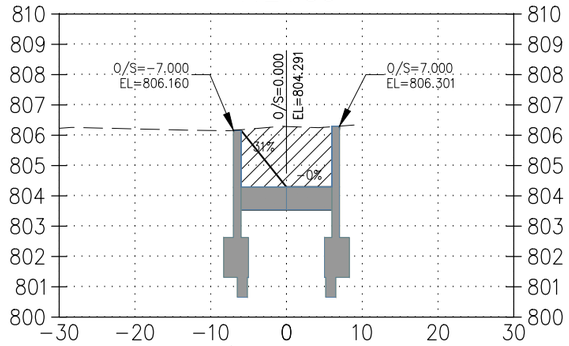


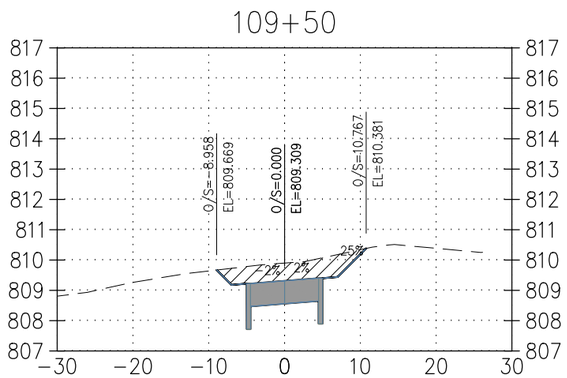



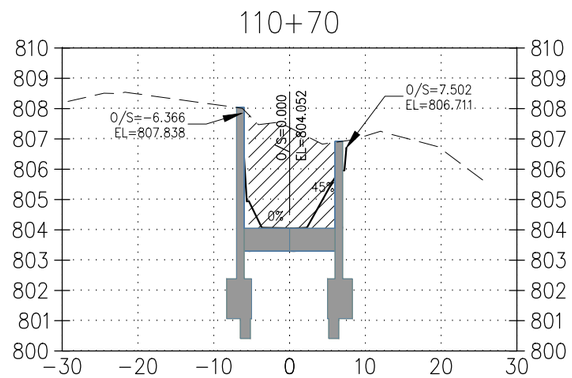



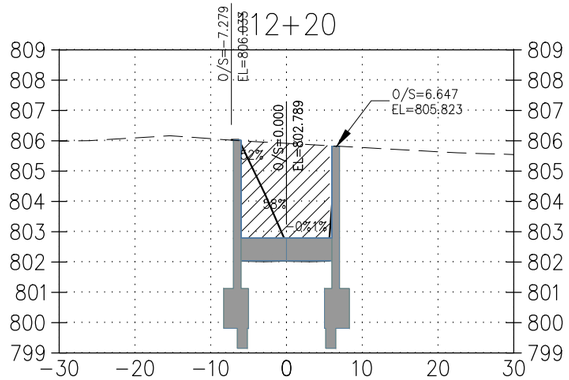



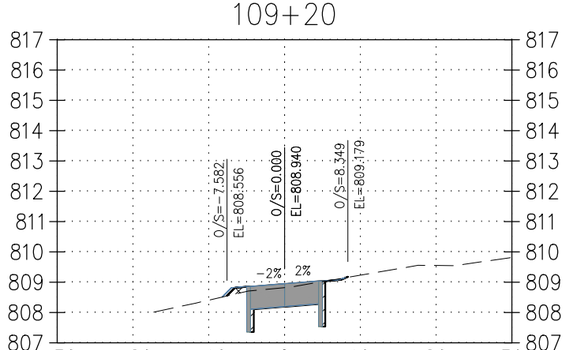



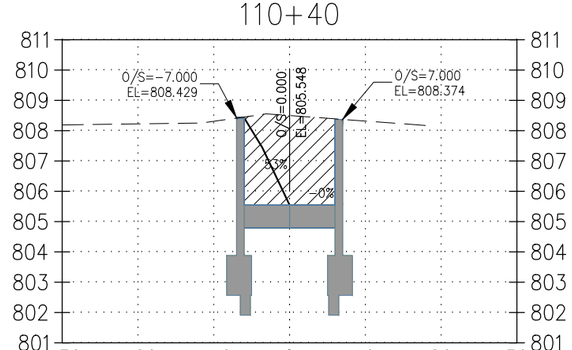



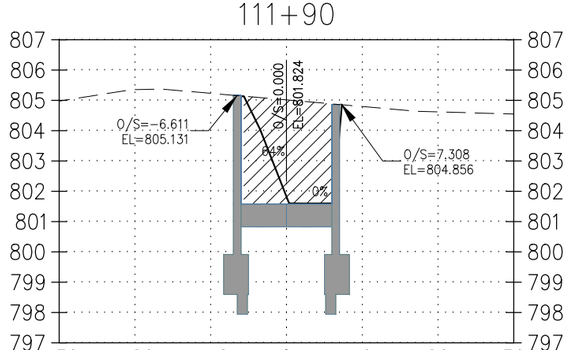




20' 0' 20'

SCALE

1"=20'

SCALE:
1"=20'(H)
1"=5'(V)

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
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| | | | |

STATE OF TEXAS
THONG HUY LE
95764
LICENSED
PROFESSIONAL ENGINEER
11-3-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410,
Suite 550
San Antonio, TX 78216
210.340.8481

LEONVALLEY

Texas Department of Transportation

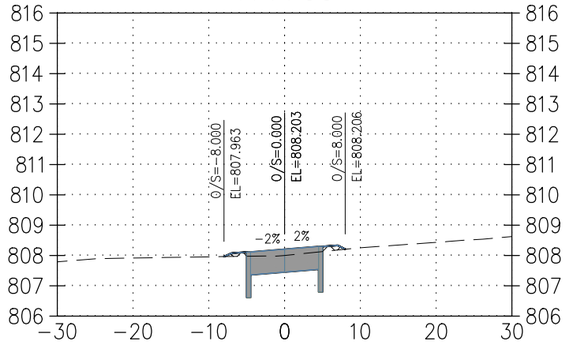
LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

BIKE TRAIL A CROSS SECTIONS-3
STA. 109+20 TO STA. 112+80

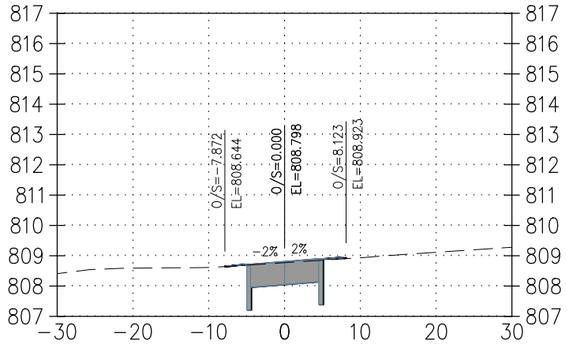
| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 37 | 57 |

Z:\211700100\410 Design\060 DWGS\C-CROSS-SEC.dwg [SEC-3] Plotted Dec 09, 2014 at 10:26am by GRomero (Last Saved by: mmina)

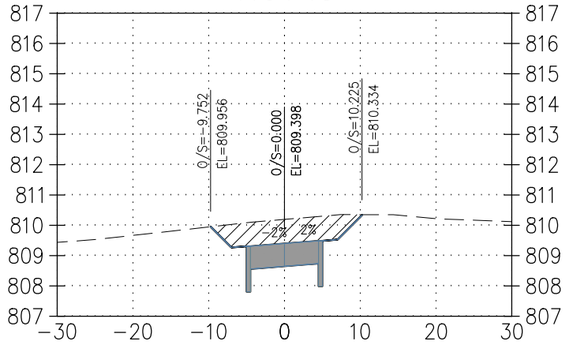
114+00



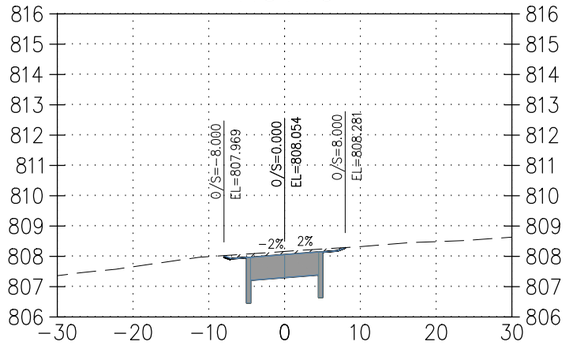

115+20



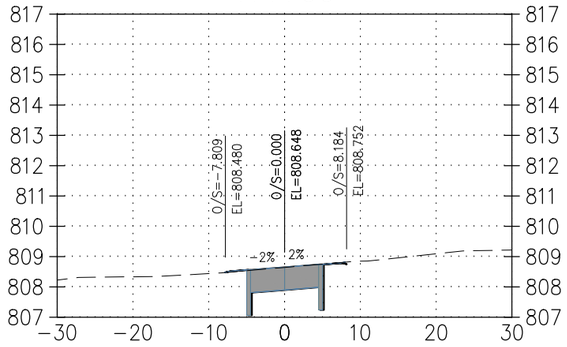

116+40



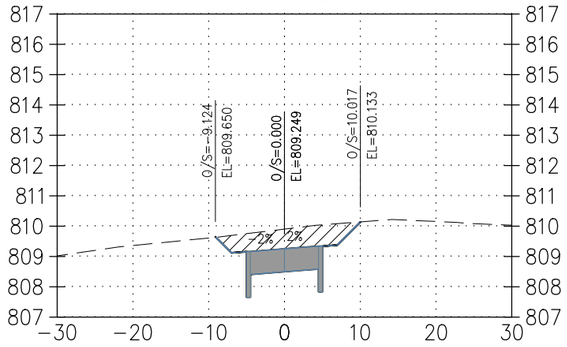

113+70



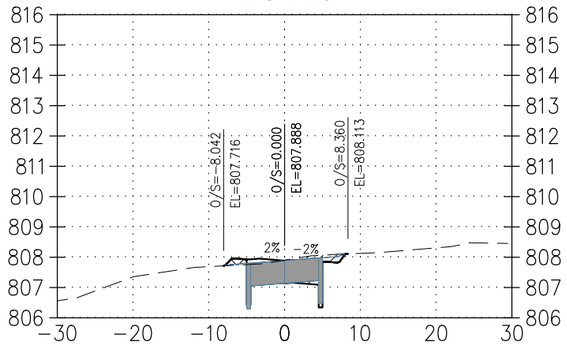

114+90



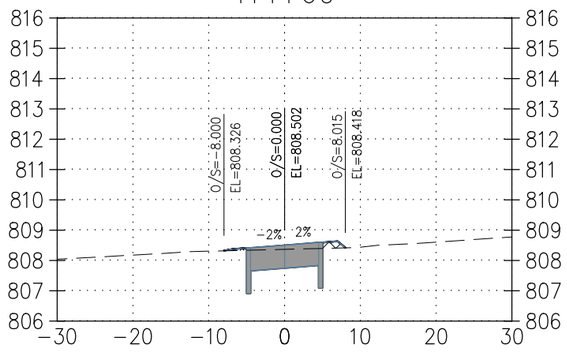

116+10



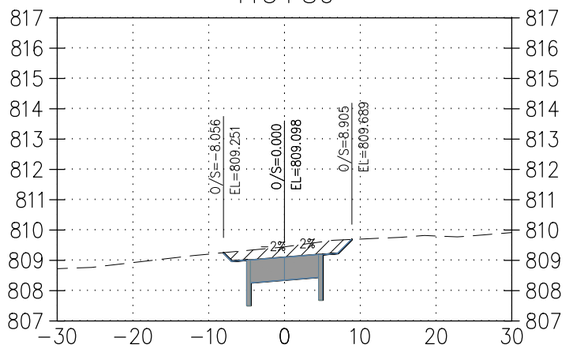

113+40



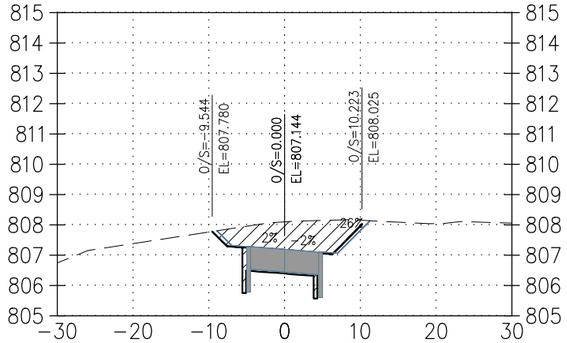

114+60



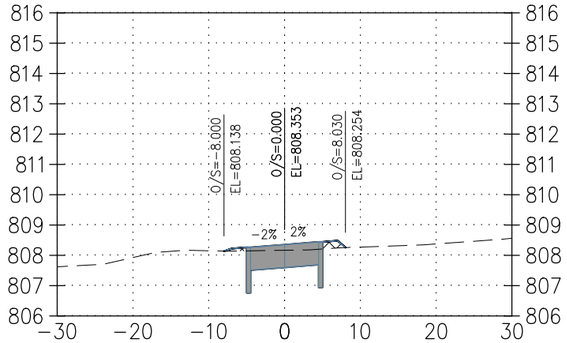

115+80



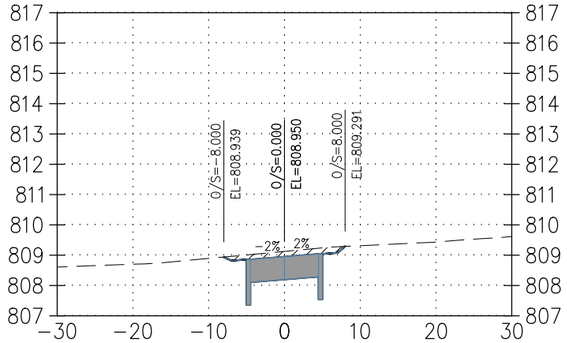

113+10




114+30




115+50




20' 0' 20'

SCALE

1"=20'

SCALE:
1"=20'(H)
1"=5'(V)

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
THONG HUY LE
95764
LICENSED
PROFESSIONAL ENGINEER
11-3-14

IDS Engineering Group
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613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481

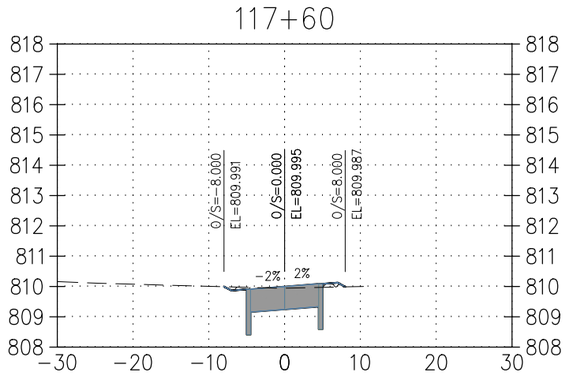
LEON VALLEY

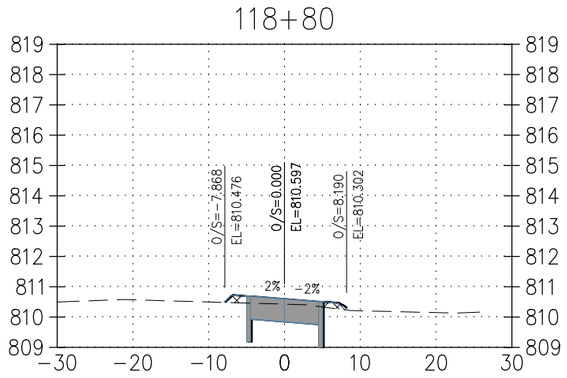
Texas Department of Transportation

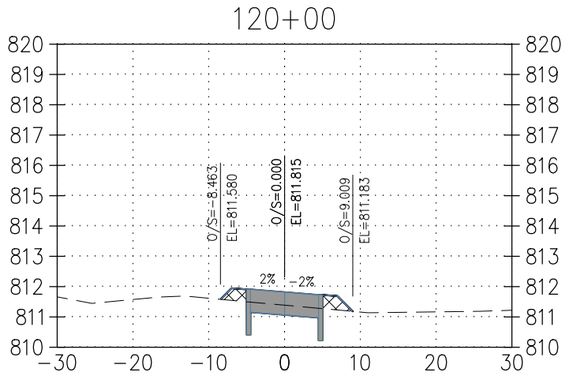
LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

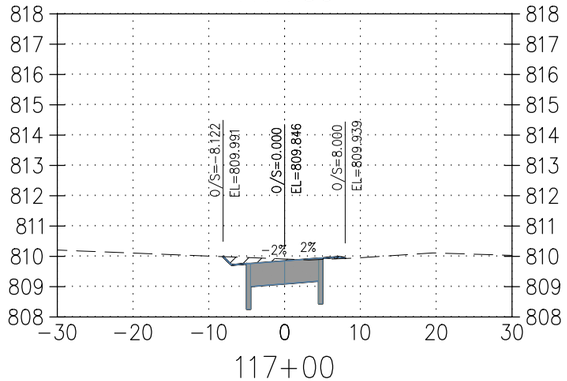
BIKE TRAIL A CROSS SECTIONS-4
STA. 113+10 TO STA. 116+40

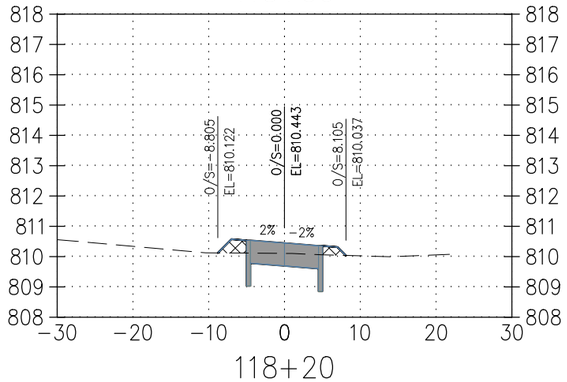
| | | | |
|---|---|---|---|
| CHK. BY: T.L. | IDS JOB NO: 211700100 | | |
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS | |
| DATE: 10/15/2014 | 38 | 57 | |

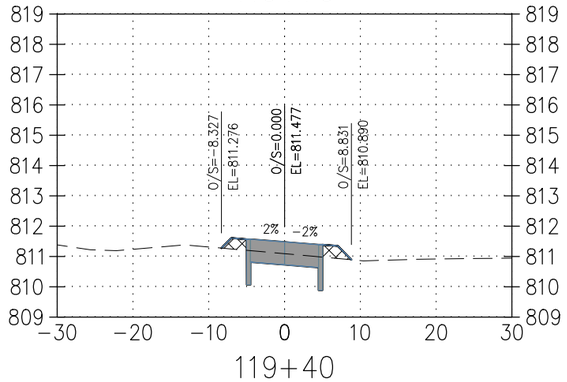


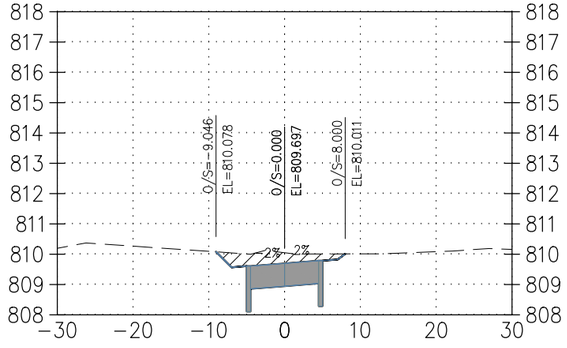



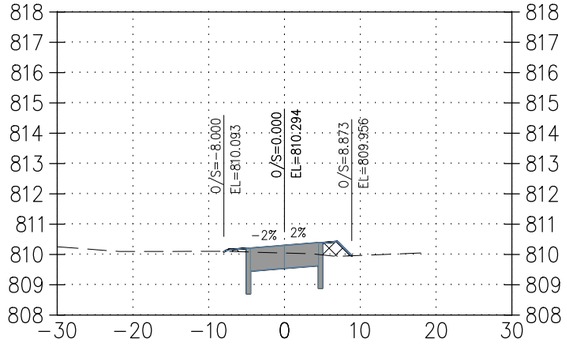



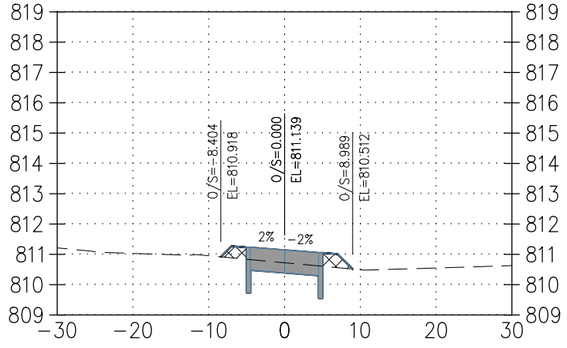



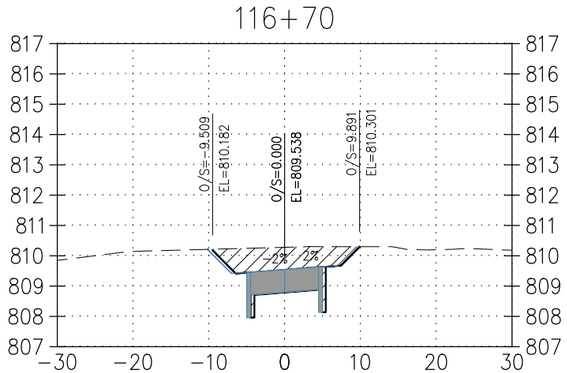



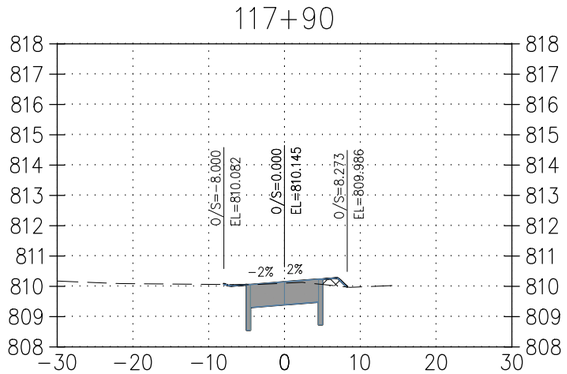



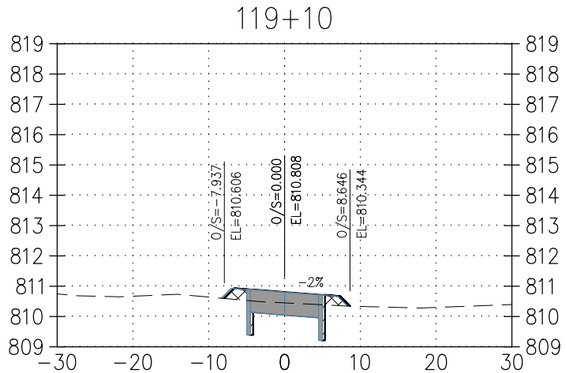




20' 0' 20'

SCALE

1"=20'

SCALE:
1"=20'(H)
1"=5'(V)

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
THONG HUY LE
95764
LICENSED
PROFESSIONAL ENGINEER
11-3-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481

LEONVALLEY

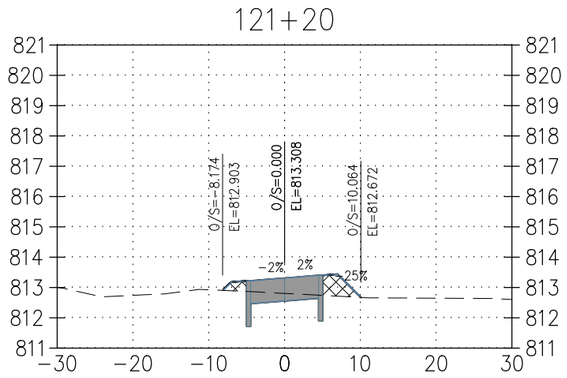
Texas Department of Transportation

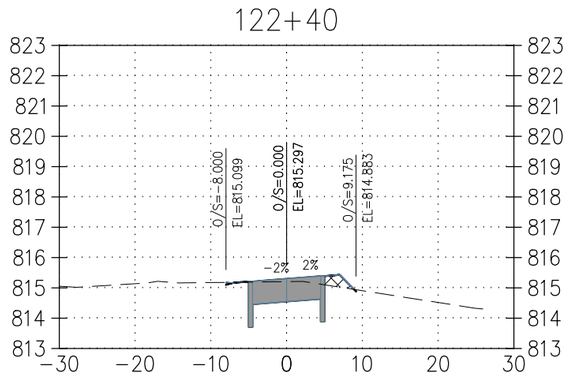
LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

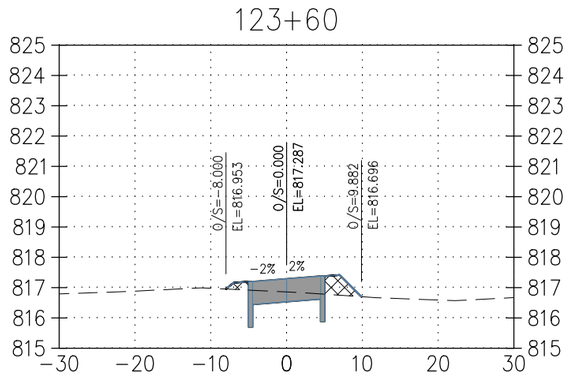
BIKE TRAIL A CROSS SECTIONS-5
STA. 116+70 TO STA. 120+00

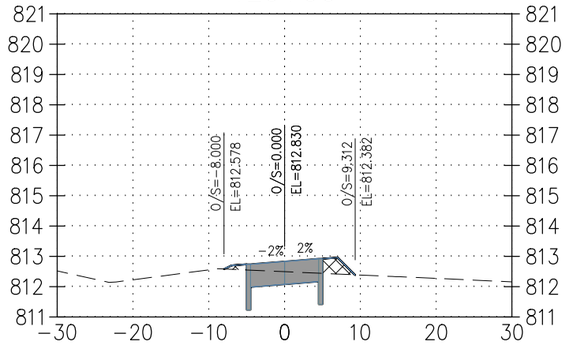
| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 39 | 57 |

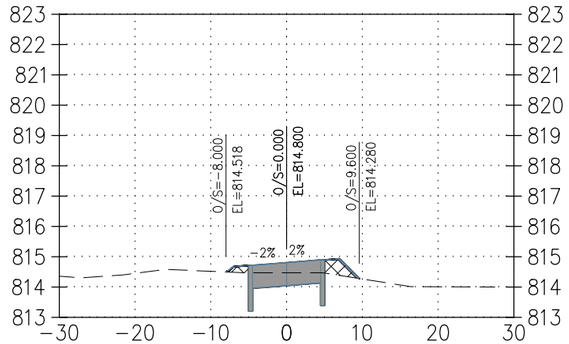
Z:\211700100\410 Design\060 DWGS\C-CROSS-SEC.dwg [SEC-5] Plotted Dec 09, 2014 at 10:26am by GRomero (Last Saved by: mmina)

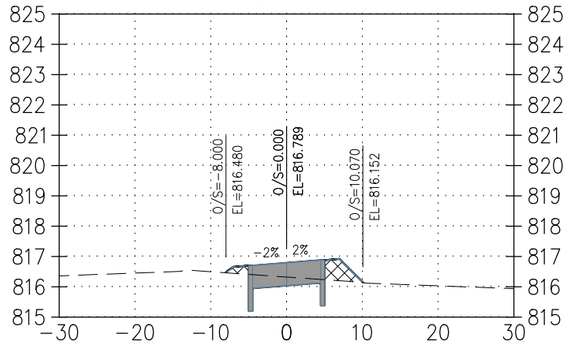


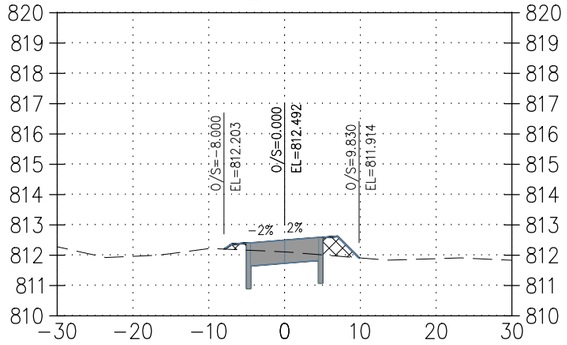



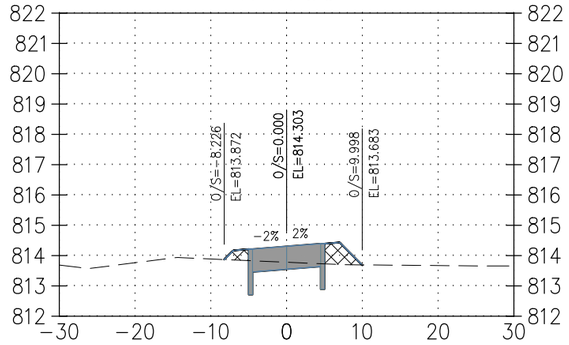



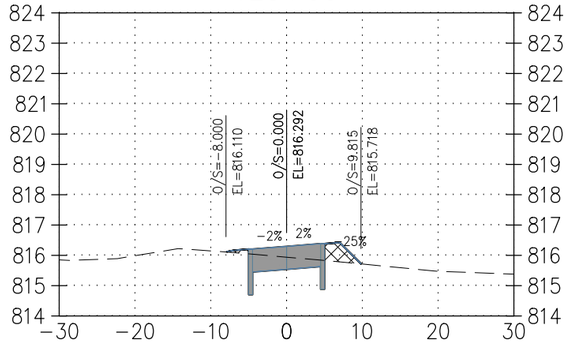



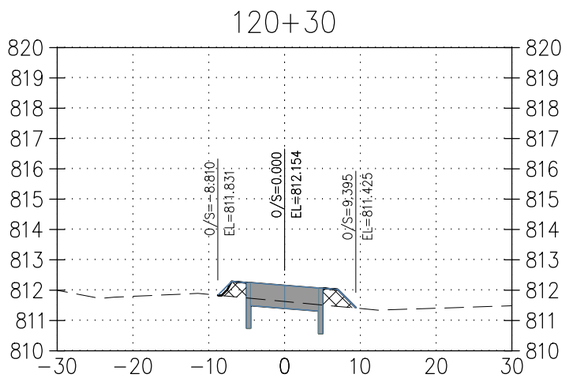



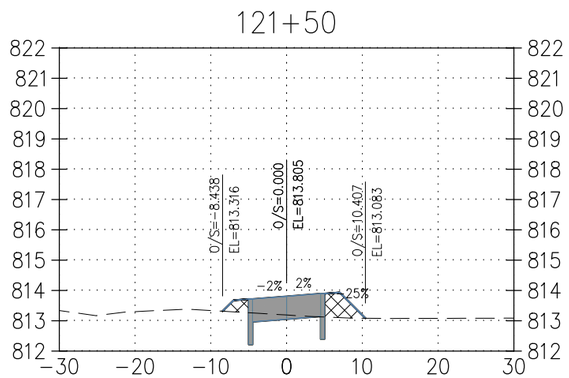



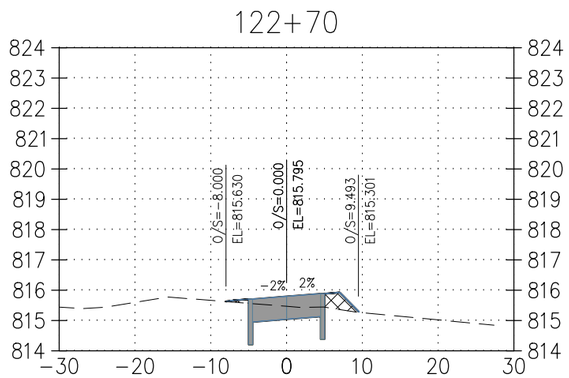




20' 0' 20'

SCALE

1"=20'

SCALE:
1"=20'(H)
1"=5'(V)

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
THONG HUY LE
95764
LICENSED
PROFESSIONAL ENGINEER
11-3-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481

LEONVALLEY

Texas Department of Transportation

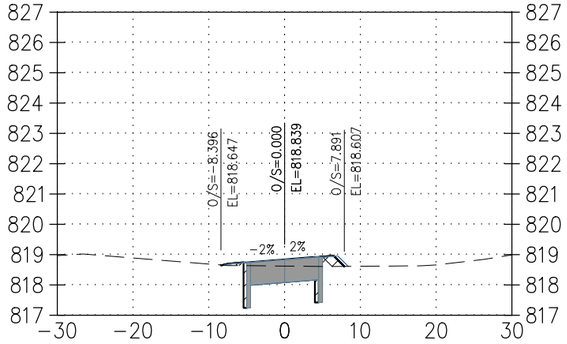
LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

BIKE TRAIL A CROSS SECTIONS-6
STA. 120+30 TO STA. 123+60

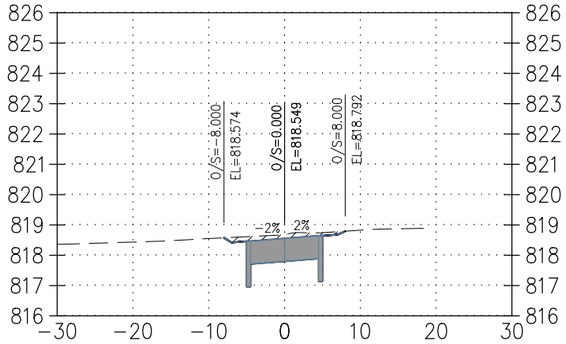
| | | | |
|---|---|---|---|
| CHK. BY: T.L. | IDS JOB NO: 211700100 | | |
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS | |
| DATE: 10/15/2014 | 40 | 57 | |

Z:\211700100\410 Design\060 DWGS\C-CROSS-SEC.dwg [SEC-6] Plotted Dec 09, 2014 at 10:26am by GRomero (Last Saved by: mmina)

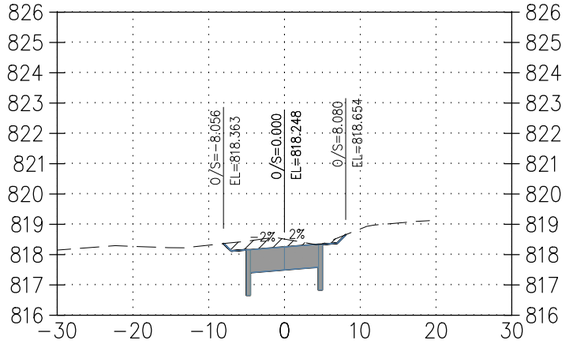
124+80



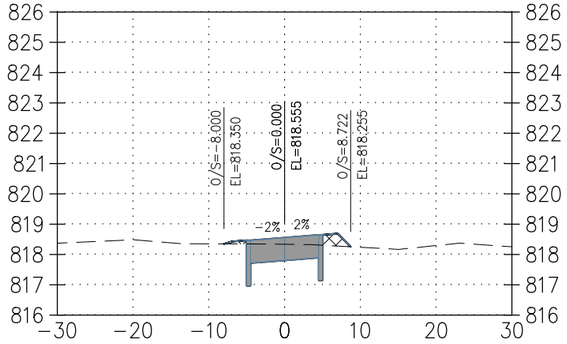

126+00



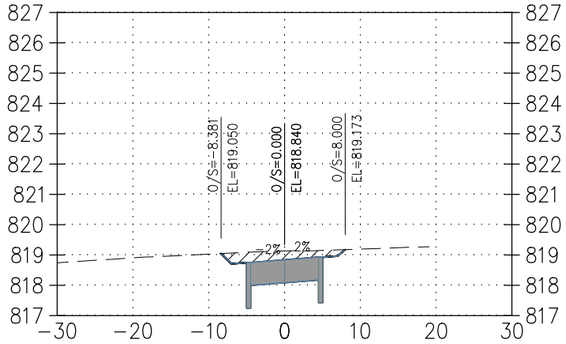

127+20



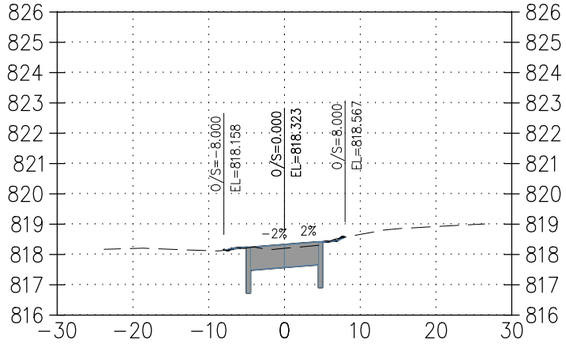

124+50



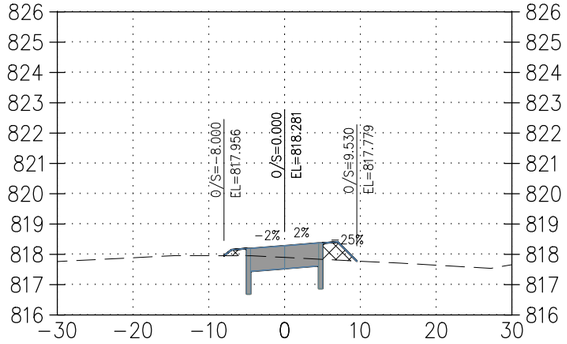

125+70



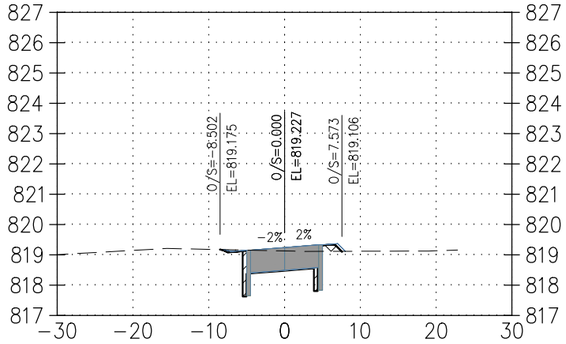

126+90



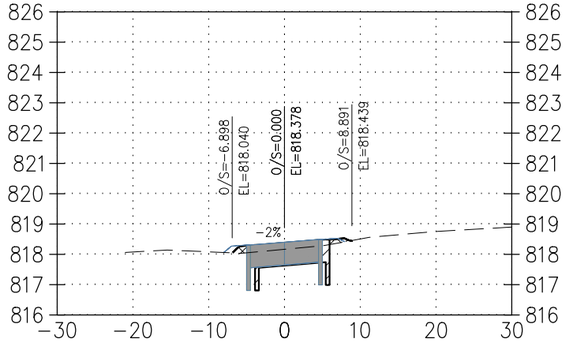

124+20



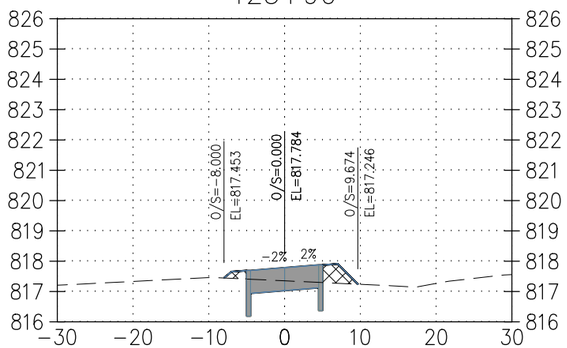

125+40



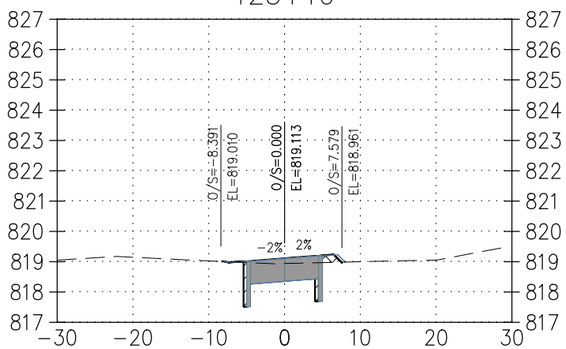

126+60



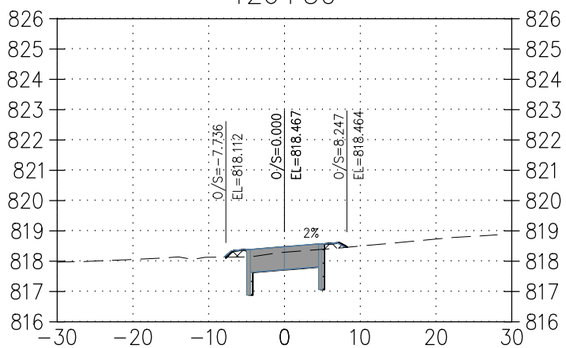

123+90




125+10




126+30




20' 0' 20'

SCALE

1"=20'

SCALE:
1"=20'(H)
1"=5'(V)

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
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11-3-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
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LEON VALLEY

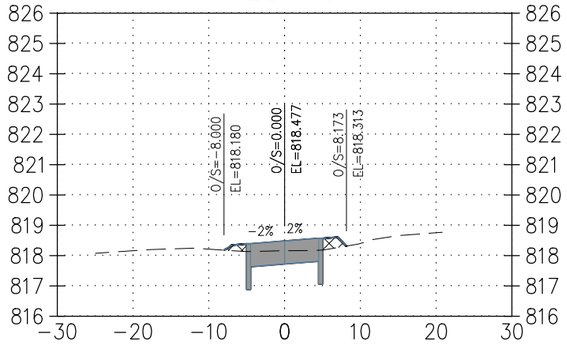
Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

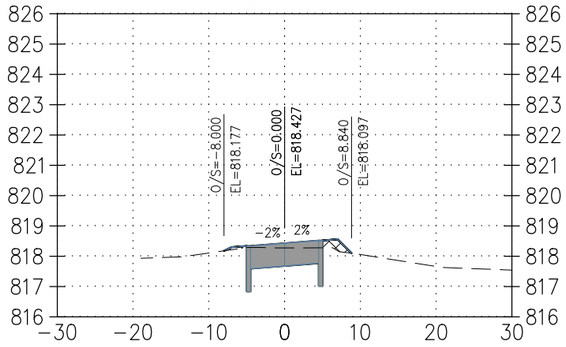
BIKE TRAIL A CROSS SECTIONS-7
STA. 123+90 TO STA. 127+20

| | | | |
|---|---|---|---|
| CHK. BY: T.L. | IDS JOB NO: 211700100 | | |
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS | |
| DATE: 10/15/2014 | 41 | 57 | |

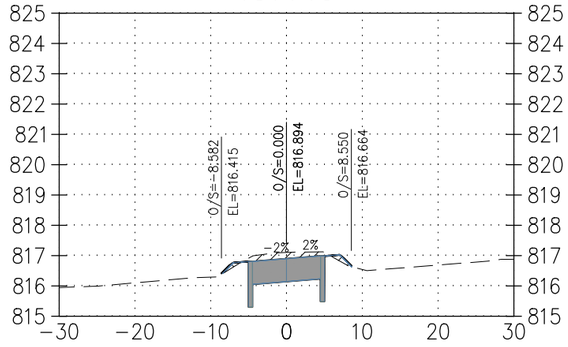
128+40



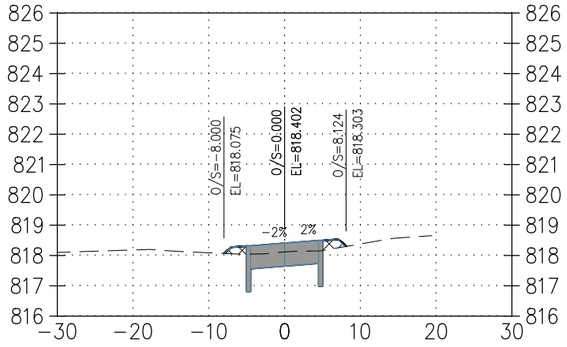

129+60



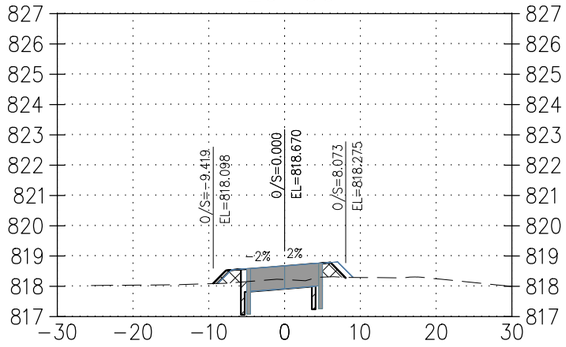

131+10



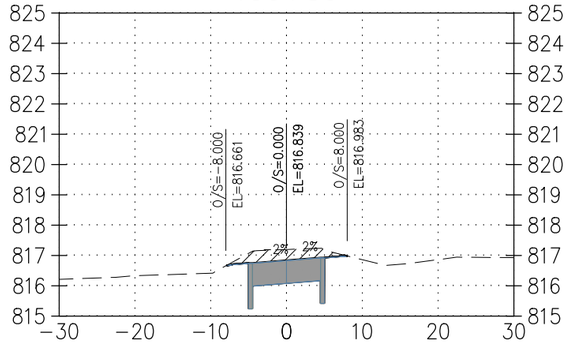

128+10



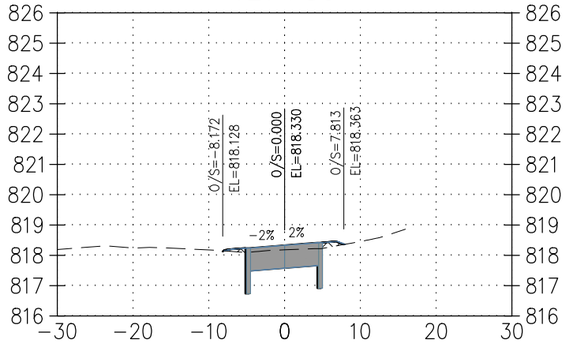

129+30



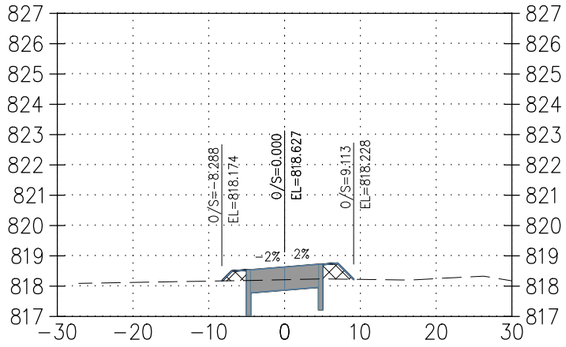

130+80



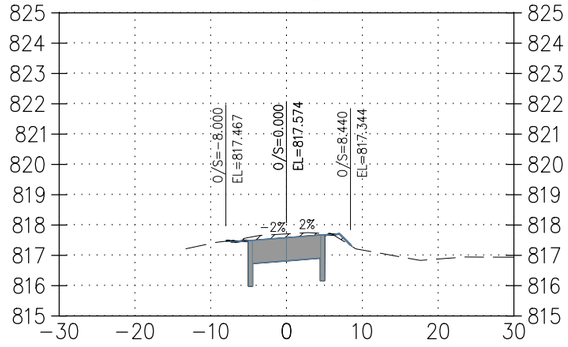

127+80



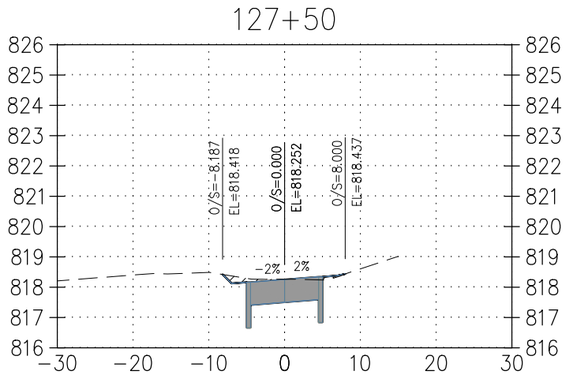

129+00



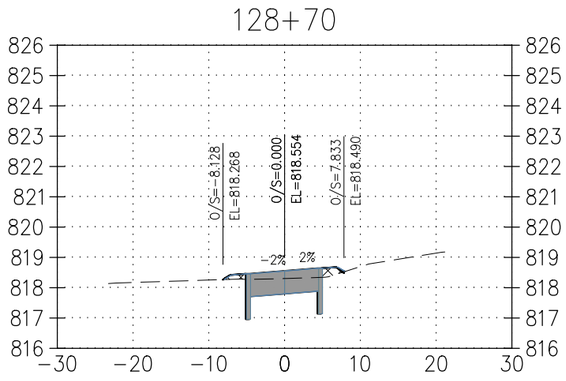

130+20



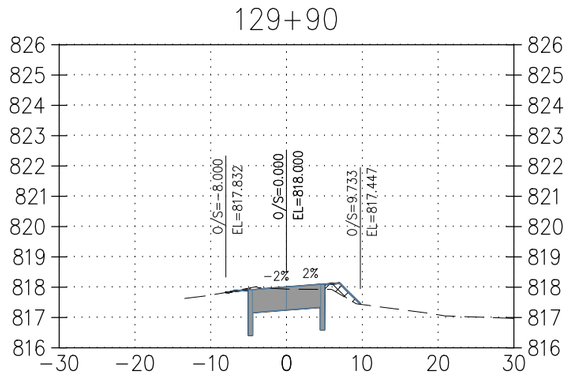

127+50




128+70




129+90




20' 0' 20'

SCALE

1"=20'

SCALE:
1"=20'(H)
1"=5'(V)

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
THONG HUY LE
95764
LICENSED
PROFESSIONAL ENGINEER
11-3-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481

LEON VALLEY

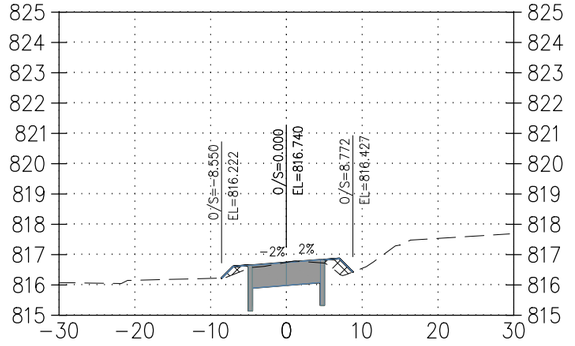
Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

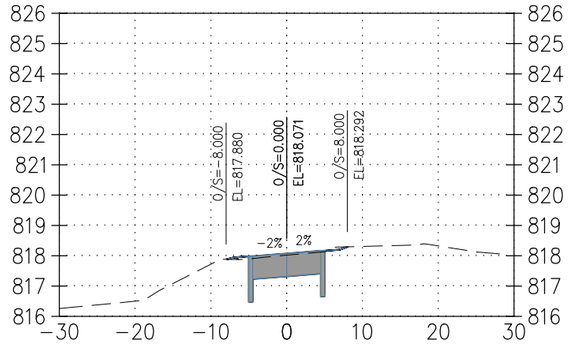
BIKE TRAIL A CROSS SECTIONS-8
STA. 127+50 TO STA. 131+40

| | | | |
|---|---|---|---|
| CHK. BY: T.L. | IDS JOB NO: 211700100 | | |
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS | |
| DATE: 10/15/2014 | 42 | 57 | |

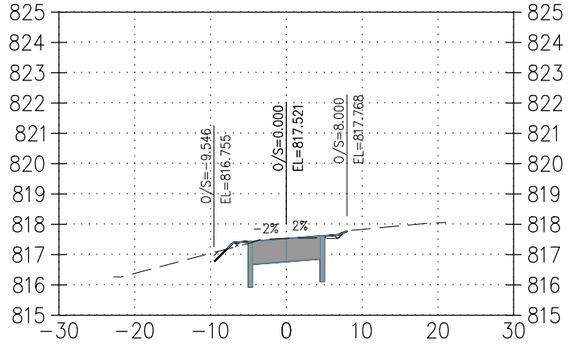
132+30



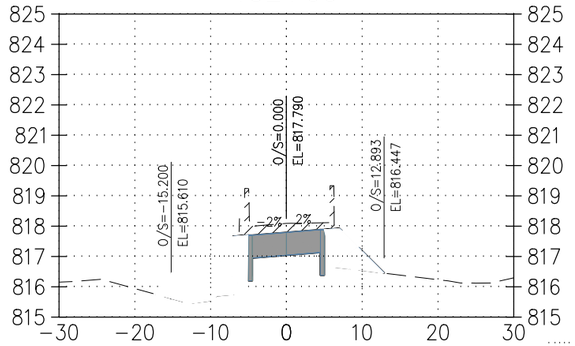

133+50



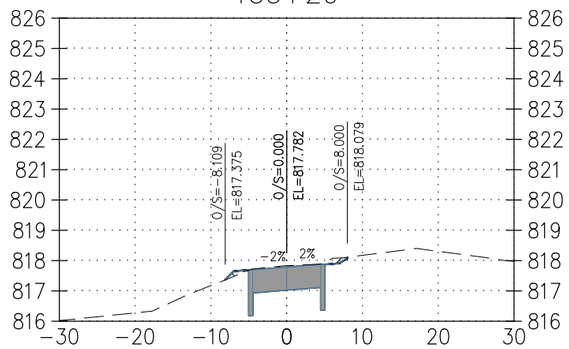

134+70



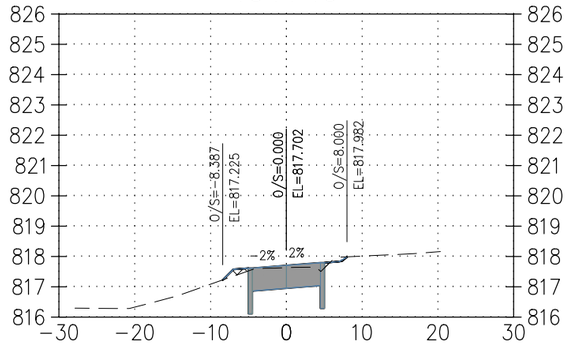

132+00



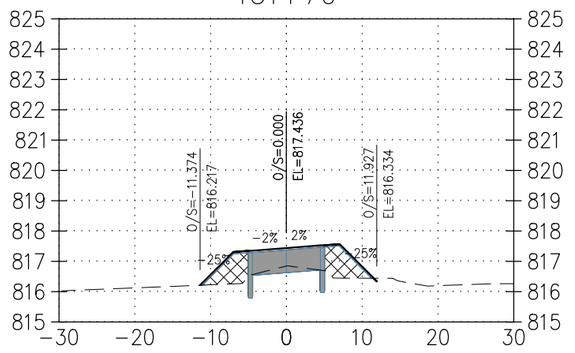

133+20



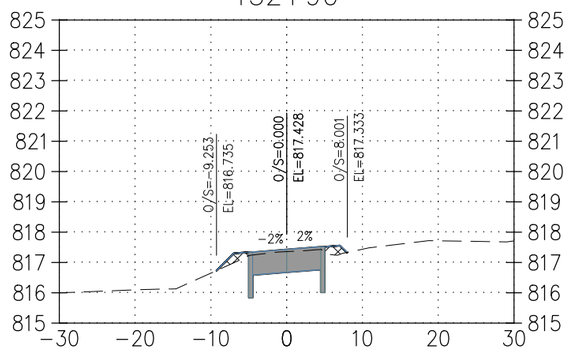

134+40



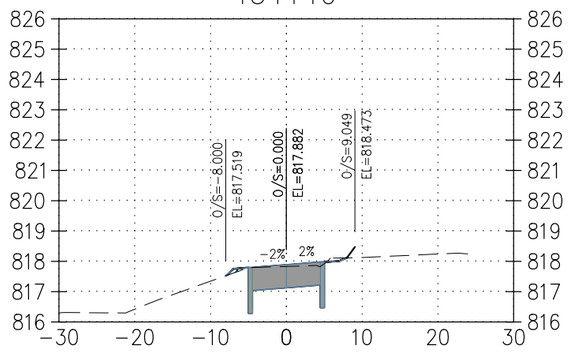

131+70



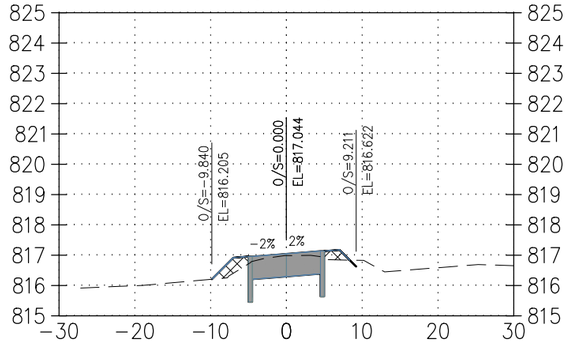

132+90



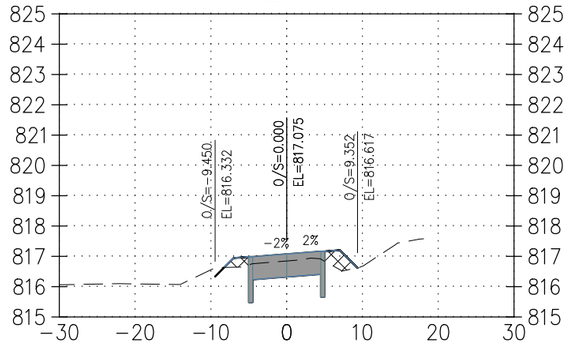

134+10



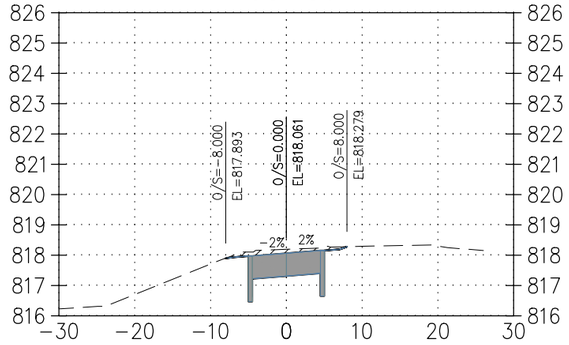

131+40

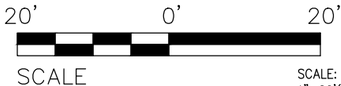



132+60




133+80




SCALE

1"=20'

SCALE:
1"=20'(H)
1"=5'(V)

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
THONG HUY LE
95764
LICENSED
PROFESSIONAL ENGINEER
11-3-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481

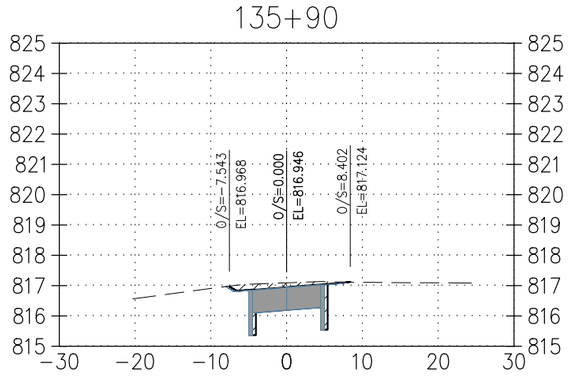
LEONVALLEY

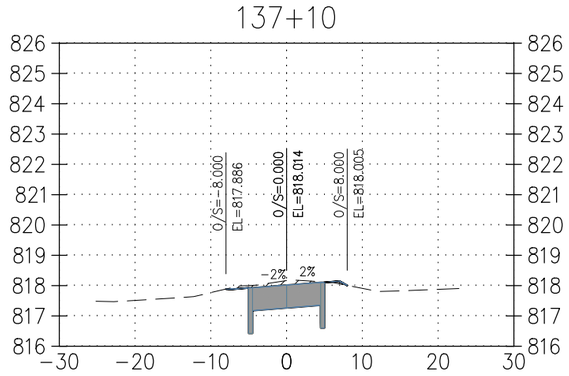
Texas Department of Transportation

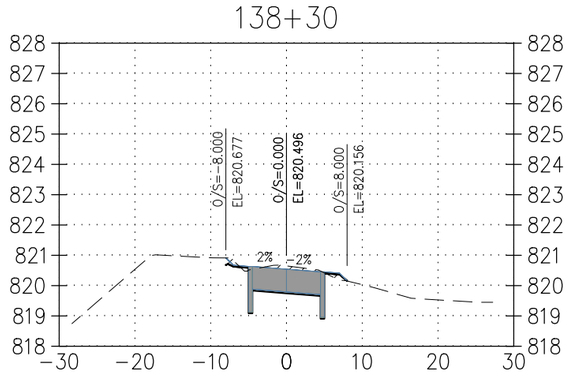
LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

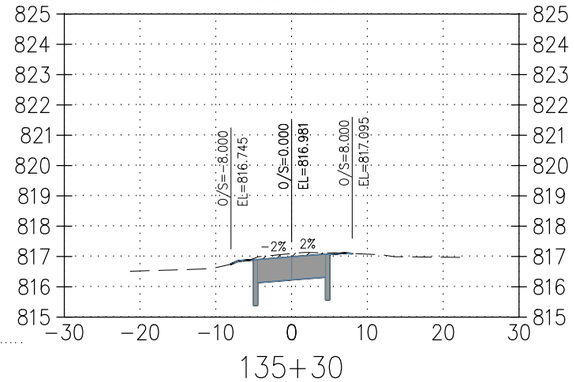
BIKE TRAIL A CROSS SECTIONS-9
STA. 131+70 TO STA. 134+70

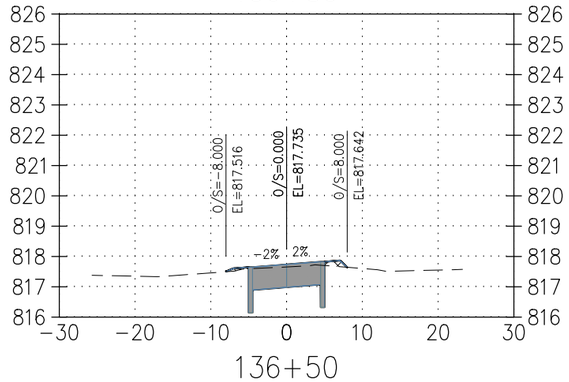
| | | | |
|---|---|---|---|
| CHK. BY: T.L. | IDS JOB NO: 211700100 | | |
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS | |
| DATE: 10/15/2014 | 43 | 57 | |

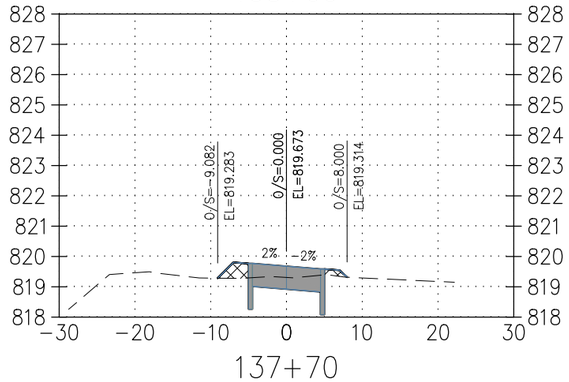


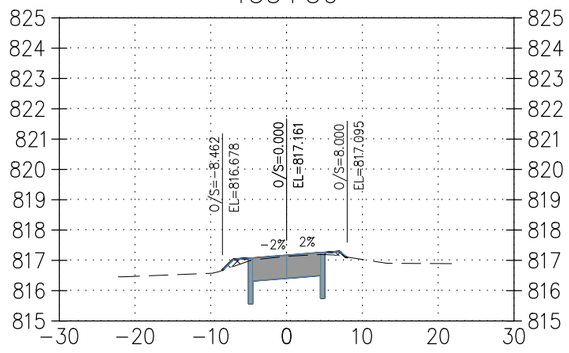



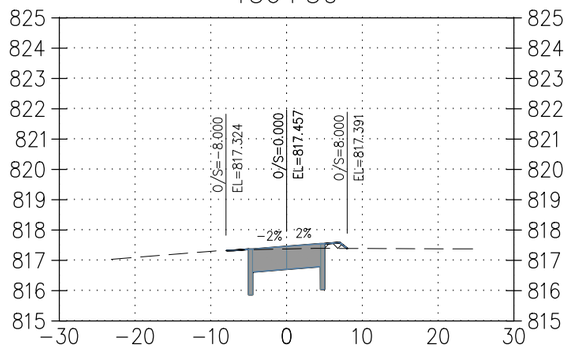



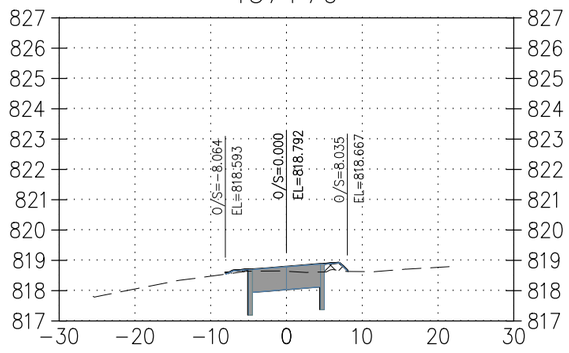



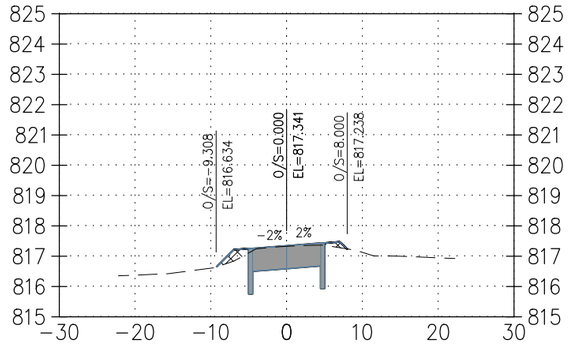



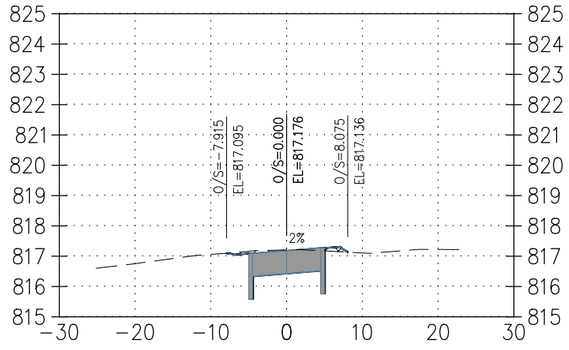



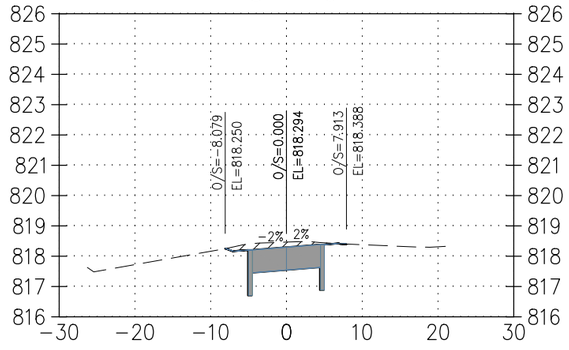




20' 0' 20'

SCALE 1"=20'

SCALE:
1"=20'(H)
1"=5'(V)

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
THONG HUY LE
95764
LICENSED
PROFESSIONAL ENGINEER
11-3-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481

LEONVALLEY

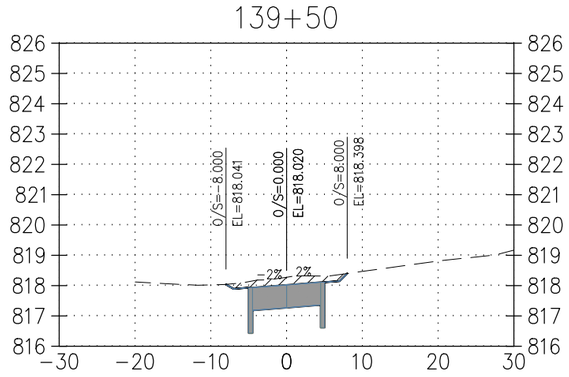
Texas Department of Transportation

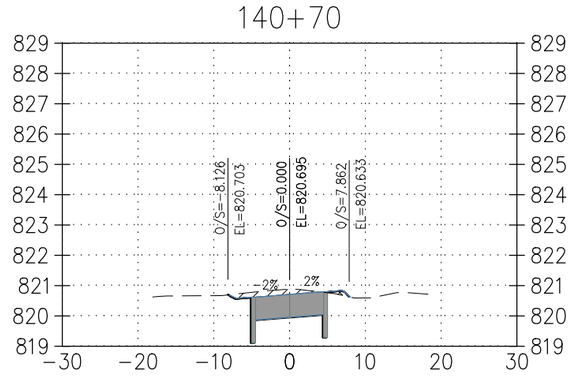
LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

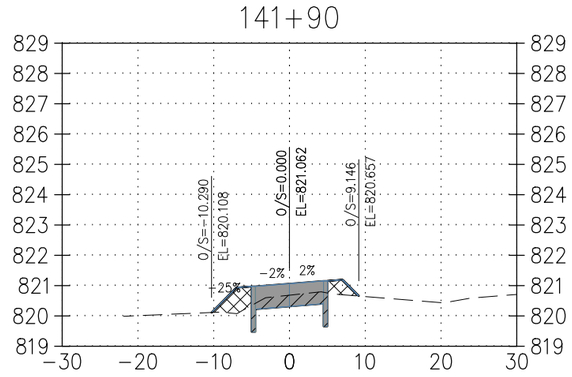
BIKE TRAIL A CROSS SECTIONS-10
STA. 135+00 TO STA. 138+30

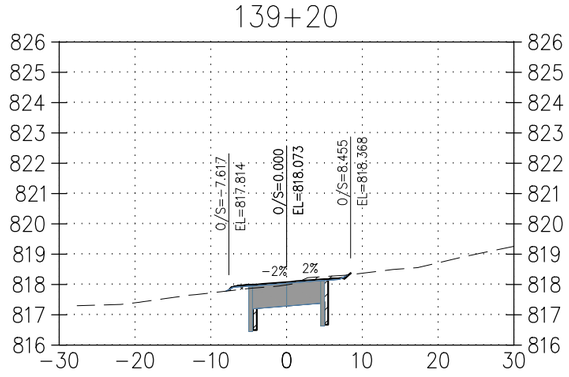
| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 44 | 57 |

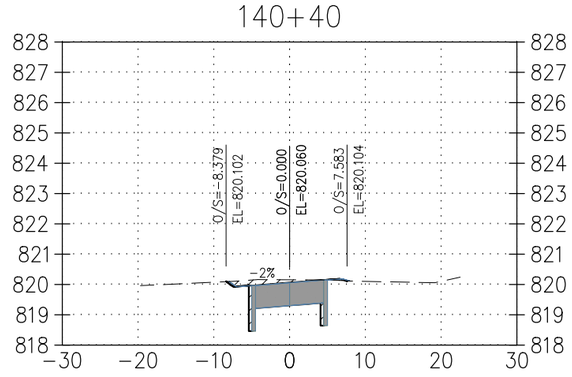
Z:\211700100\410 Design\060 DWGS\C-CROSS-SEC.dwg [SEC-10] Plotted Dec 09, 2014 at 10:27am by GRomero (Last Saved by: mmina)

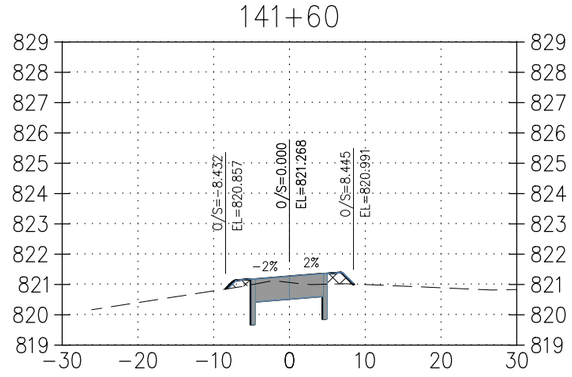


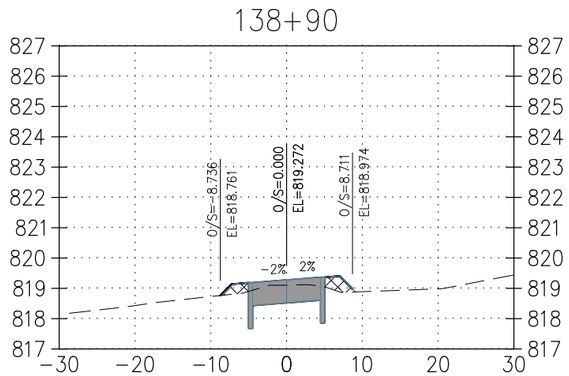



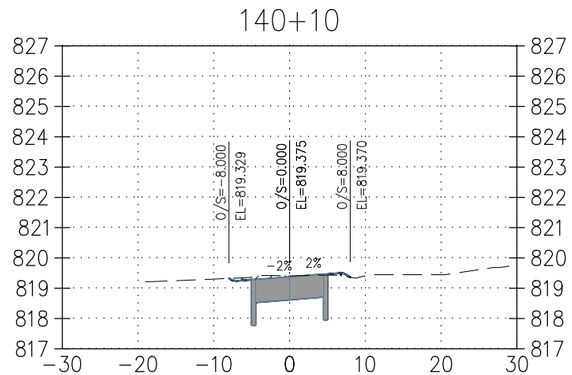



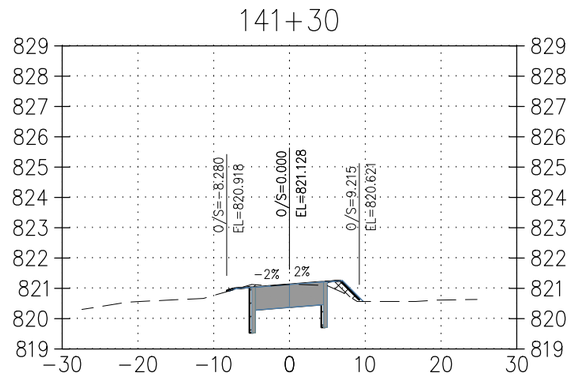



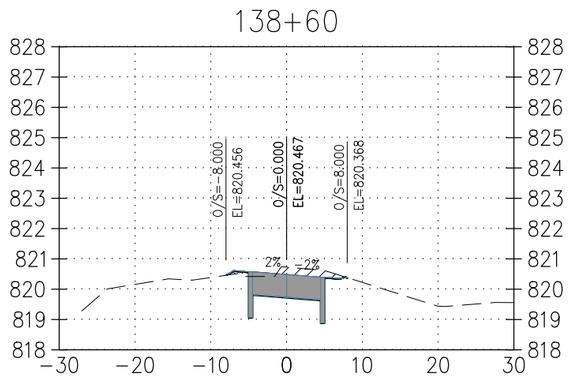



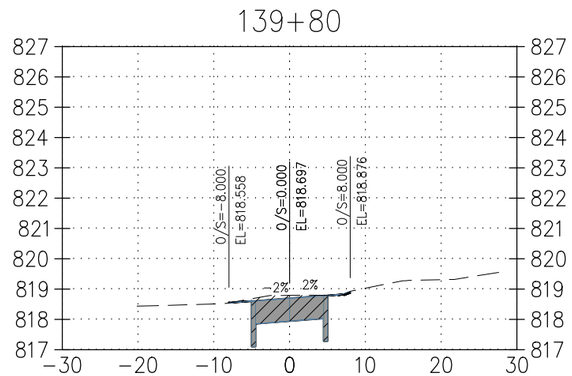



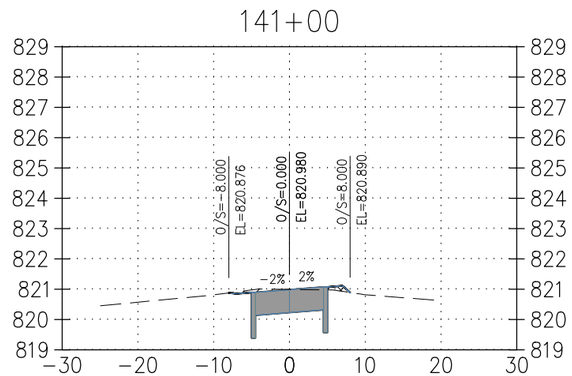




20' 0' 20'

SCALE 1"=20'

SCALE:
1"=20'(H)
1"=5'(V)

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
THONG HUY LE
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LICENSED
PROFESSIONAL ENGINEER
11-3-14


IDS Engineering Group
TBPE F-002726 TBPLS 10110704
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210.340.8481


LEON VALLEY

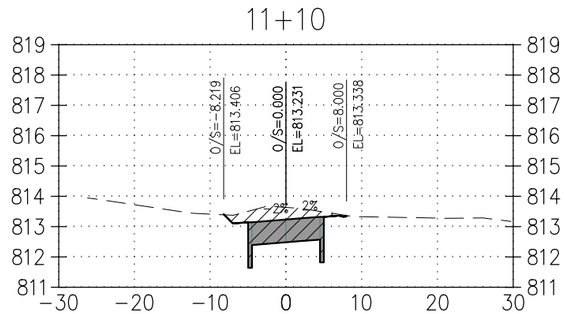
Texas Department of Transportation

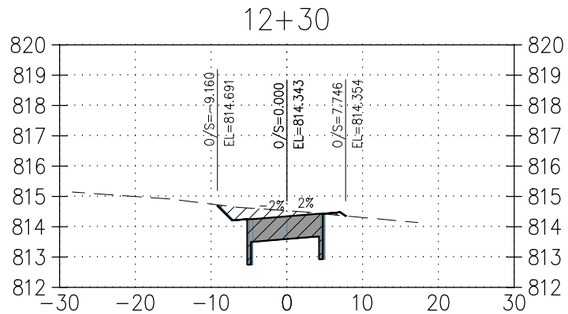
LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

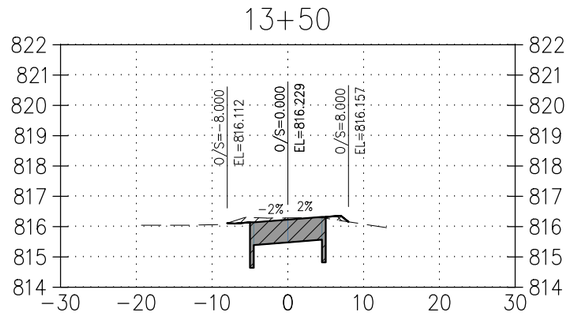
BIKE TRAIL A CROSS SECTIONS-11
STA. 138+60 TO STA. 141+90

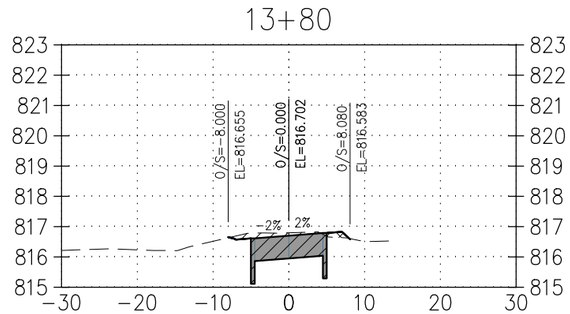
| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 45 | 57 |

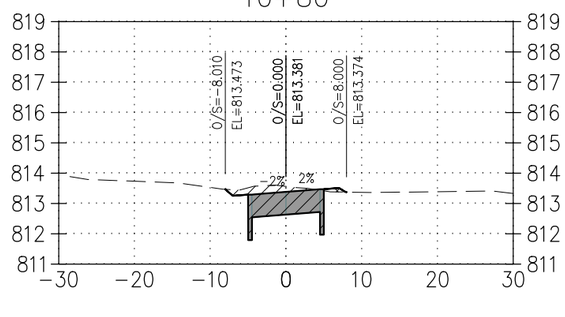
Z:\211700100\410 Design\060 DWGS\C-CROSS-SEC.dwg [SEC-11] Plotted Dec 09, 2014 at 10:27am by GRomero (Last Saved by: mmina)

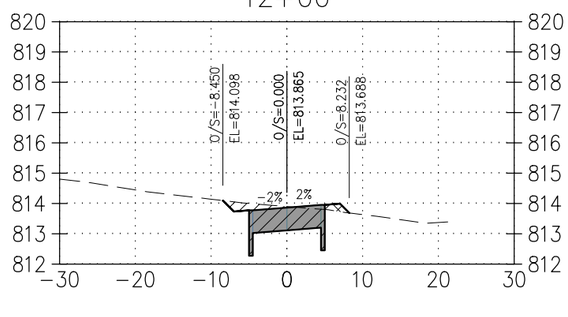


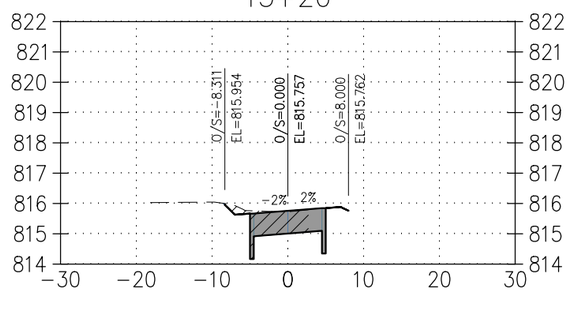



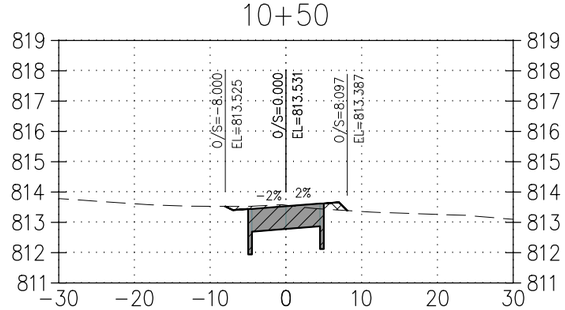



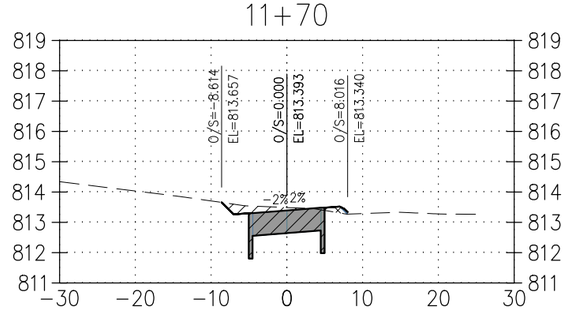



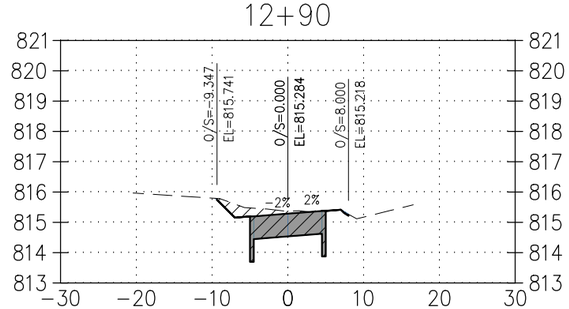



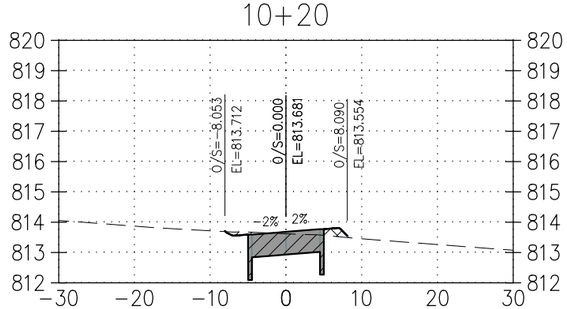



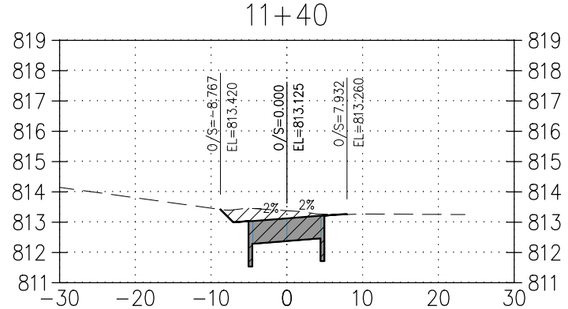



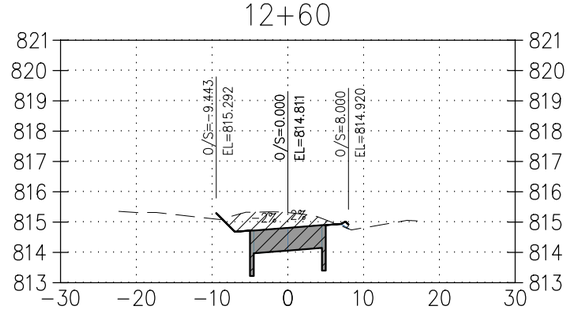




20’ 0’ 20’

SCALE

1”=20’

SCALE:
1”=20’(H)
1”=5’(V)

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
THONG HUY LE
95764
LICENSED
PROFESSIONAL ENGINEER
11-3-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481

LEONVALLEY

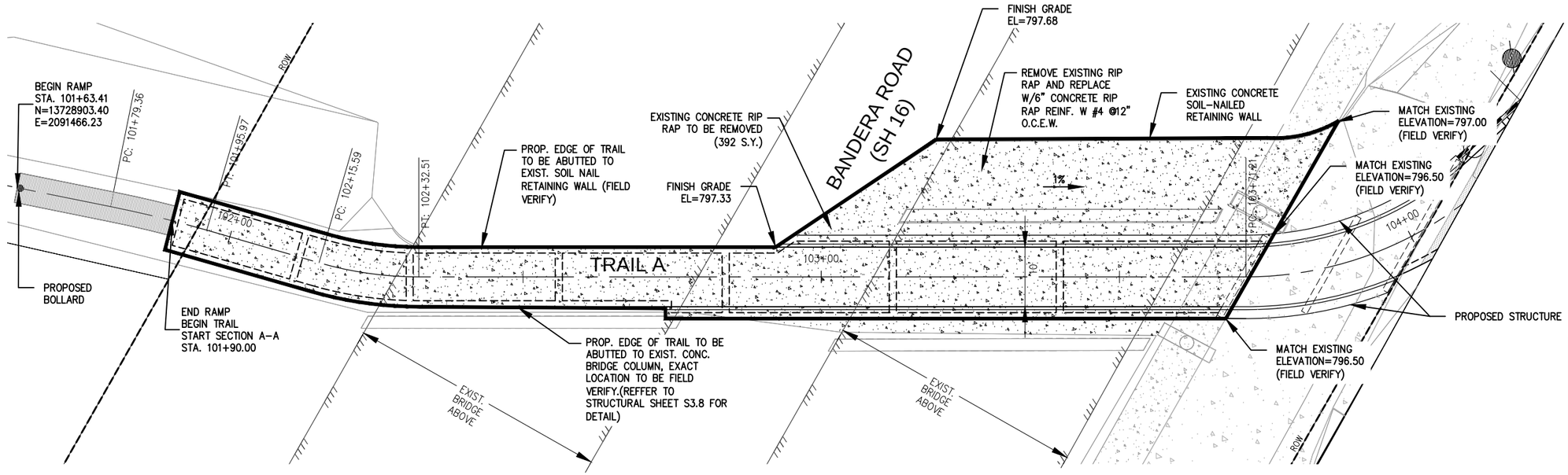
Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

BIKE TRAIL B CROSS SECTIONS
STA. 100+30 TO END

| CHK. BY: T.L. | IDS JOB NO: | 211700100 |
|---|---|---|
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 46 | 57 |

Z:\211700100\410 Design\060 DWGS\C-CROSS-SEC.dwg [SEC-TRAIL B] Plotted Dec 09, 2014 at 10:28am by GRomero (Last Saved by: mming)




RIP RAP REMOVAL/ REGRADING UNDER BANDERA BRIDGE

20' 0' 20'

SCALE
1"=20'

## LEGEND

- EXISTING GROUND (CENTER)
- PROPOSED GROUND @ CL
- 800 EXISTING CONTOUR MAJOR
- 802 EXISTING CONTOUR MINOR
- APPROX. ROW
- EASEMENT LINE
- CREEK FLOW LINE
- PROPOSED FENCE
- PROPOSED RECYCLE WATER LINE
- PROPOSED SANITARY SEWER LINE
- WL EXISTING WATER LINE
- WL EXISTING CSC RECYCLE WATER
- EXISTING CPS TRANSMISSION LINE
- EXISTING OVERHEAD PRIMARY
- EXISTING PVC SANITARY SEWER
- EXISTING 4" GAS
- EXISTING OH GRANDE LINE
- EXISTING FENCE
- 10' CONCRETE TRAIL
- 2" EROSION CONTROL COMPOST (ITEM161)(SS2010)
- FLOW ARROW
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING POWER POLE
- EXISTING GUY WIRE
- EXISTING SIGN
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- W EXISTING WATER METER
- EXISTING TREE
- RIP RAP REMOVAL LIMITS

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

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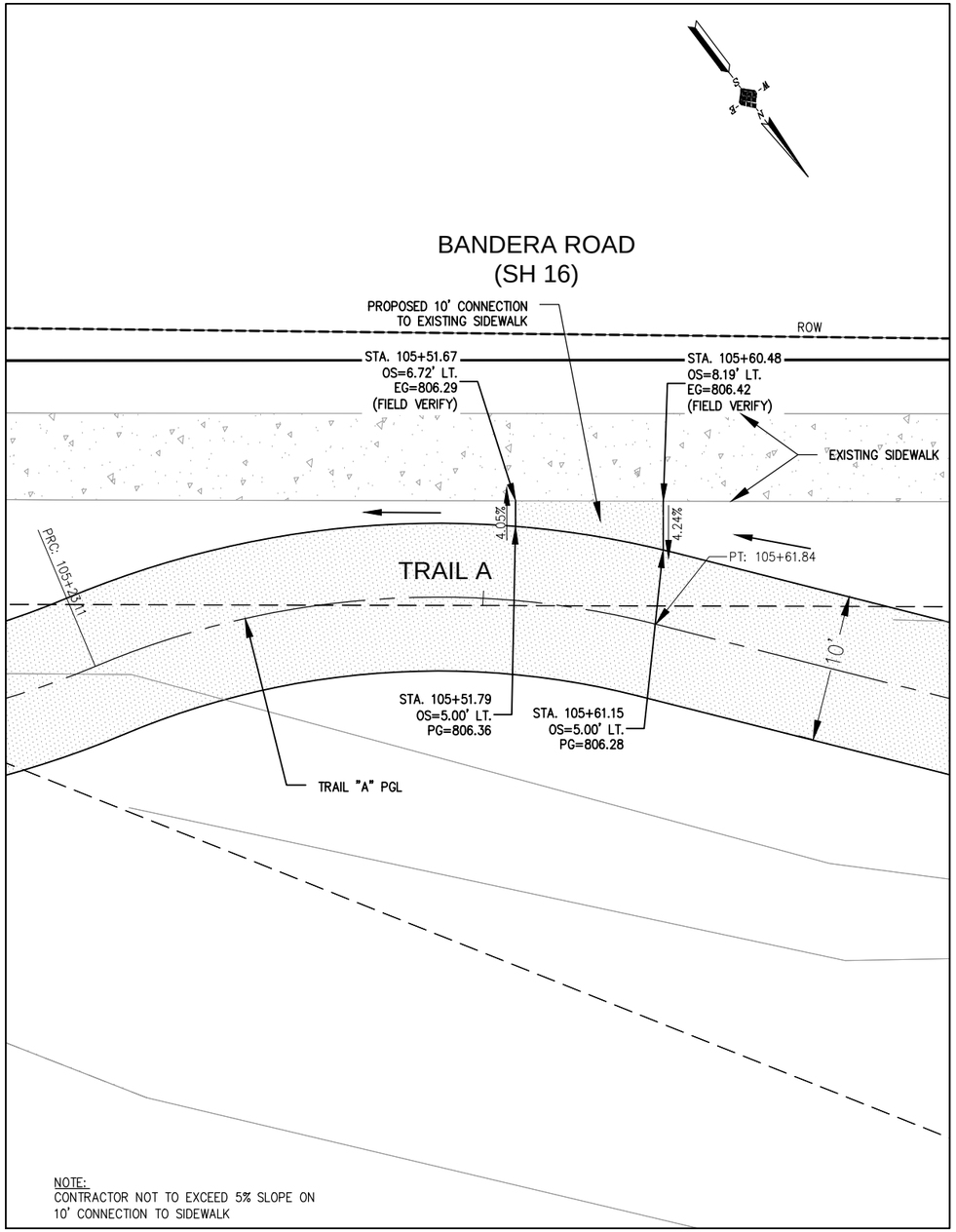
LEONVALLEY

Texas Department of Transportation

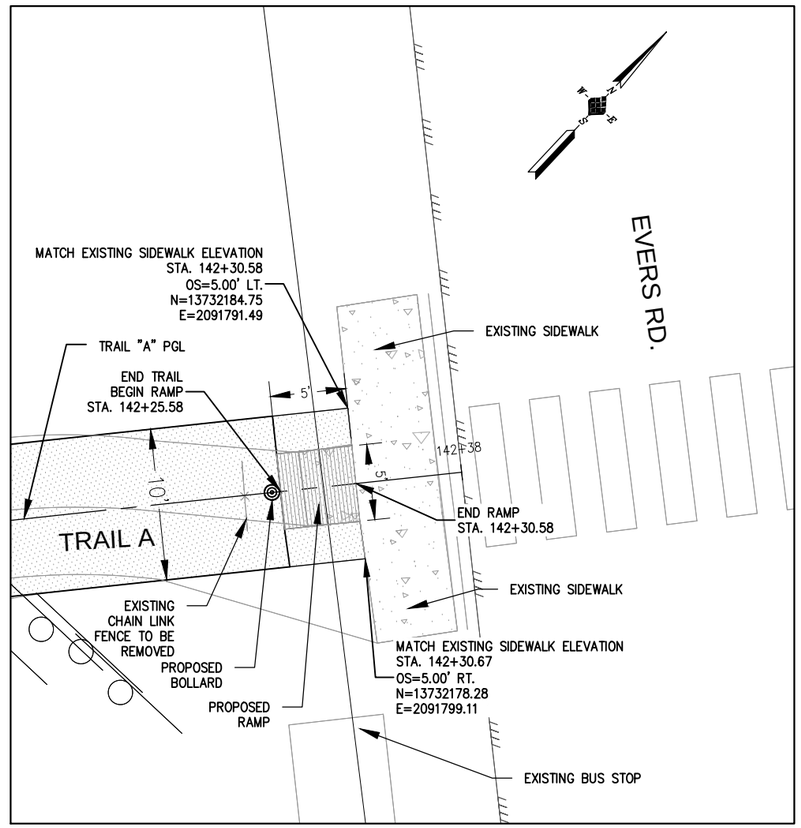
LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

TRAIL DETAIL-1

| | | | |
|---|---|---|---|
| CHK. BY: T.L. | IDS JOB NO: 211700100 | | |
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS | |
| DATE: 10/15/2014 | 47 | 57 | |




PROPOSED TRAIL TYING TO
BANDERA RD EXISTING SIDEWALK




EVERS ROAD CONNECTION

## LEGEND

- EXISTING GROUND (CENTER)
- PROPOSED GROUND @ CL
- 800 EXISTING CONTOUR MAJOR
- 802 EXISTING CONTOUR MINOR
- APPROX. ROW
- EASEMENT LINE
- CREEK FLOW LINE
- PROPOSED FENCE
- PROPOSED RECYCLE WATER LINE
- PROPOSED SANITARY SEWER LINE
- WL EXISTING WATER LINE
- WL EXISTING CSC RECYCLE WATER
- EXISTING CPS TRANSMISSION LINE
- EXISTING OVERHEAD PRIMARY
- EXISTING PVC SANITARY SEWER
- EXISTING 4" GAS
- EXISTING OH GRANDE LINE
- EXISTING FENCE
- 10' CONCRETE TRAIL
- 2" EROSION CONTROL COMPOST (ITEM161)(SS2010)
- FLOW ARROW
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING POWER POLE
- EXISTING GUY WIRE
- EXISTING SIGN
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- W EXISTING WATER METER
- EXISTING TREE

10' 0' 10'

SCALE
1"=10'

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

STATE OF TEXAS
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210.340.8481

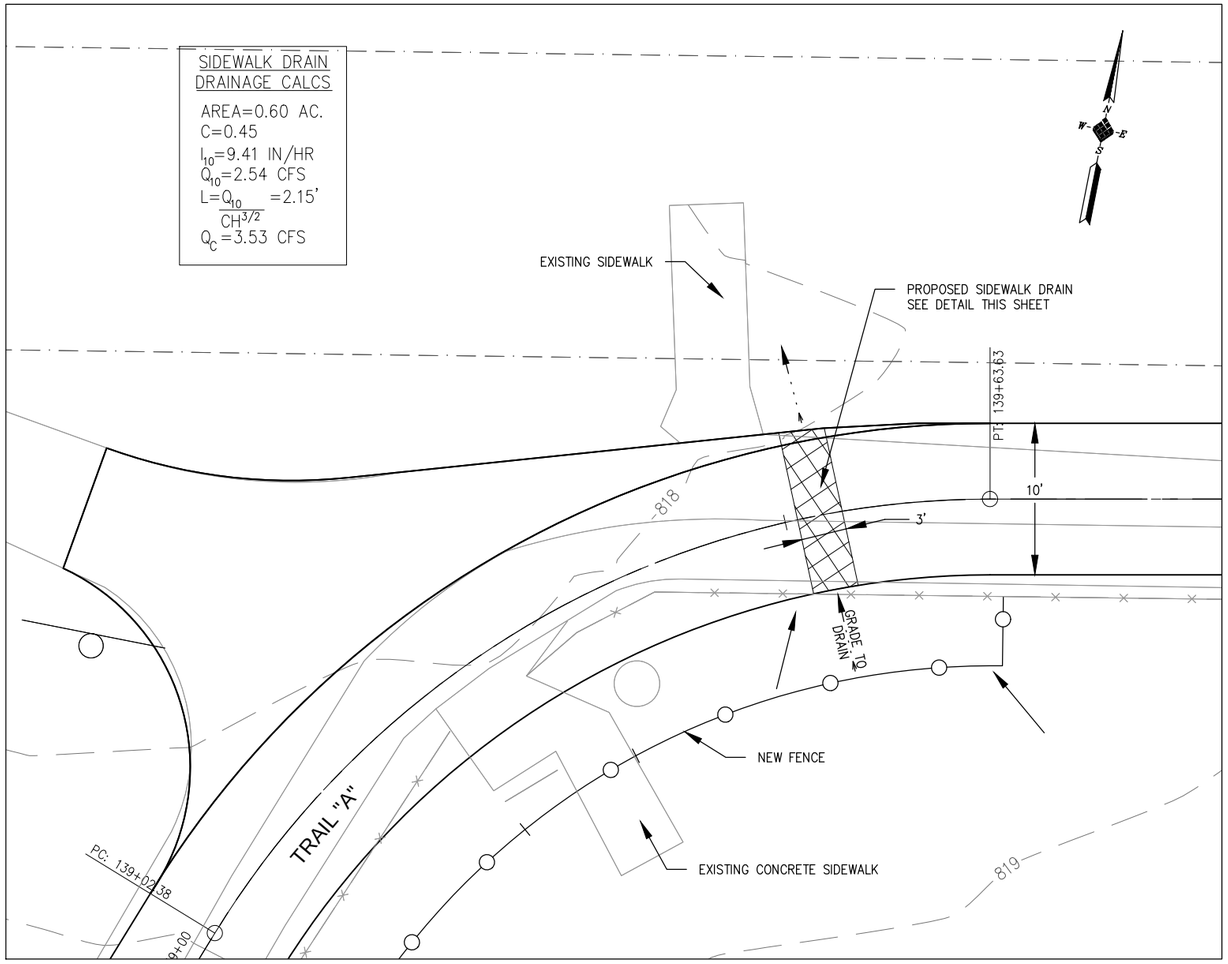
LEON VALLEY

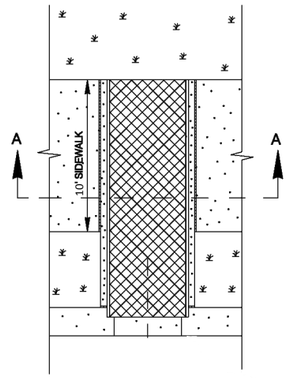
Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

TRAIL DETAIL-2

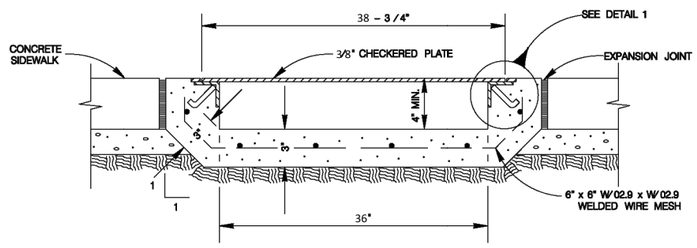
| | | |
|---|---|---|
| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 48 | 57 |




## CONCRETE SIDEWALK DRAIN DETAIL

SCALE : 1"=4'




## SECTION A–A

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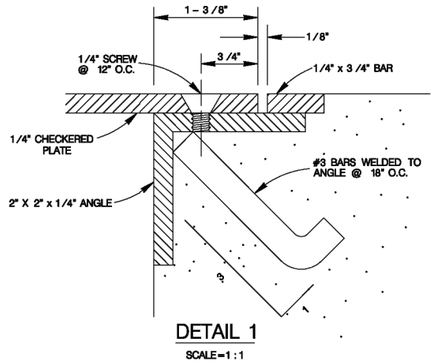


## DETAIL 1

SCALE=1 : 1

## LEGEND

- EXISTING GROUND (CENTER)
- PROPOSED GROUND @ CL
- 800 EXISTING CONTOUR MAJOR
- 802 EXISTING CONTOUR MINOR
- APPROX. ROW
- EASEMENT LINE
- CREEK FLOW LINE
- PROPOSED FENCE
- WL PROPOSED RECYCLE WATER LINE
- SS PROPOSED SANITARY SEWER LINE
- WL EXISTING WATER LINE
- WL EXISTING CSC RECYCLE WATER
- OHP EXISTING CPS TRANSMISSION LINE
- OHP EXISTING OVERHEAD PRIMARY
- SS EXISTING PVC SANITARY SEWER
- 4" GAS EXISTING 4" GAS
- CATV EXISTING OH GRANDE LINE
- EXISTING FENCE
- 10' CONCRETE TRAIL
- 2" EROSION CONTROL COMPOST (ITEM161)(SS2010)
- FLOW ARROW
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING POWER POLE
- EXISTING GUY WIRE
- EXISTING SIGN
- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- W EXISTING WATER METER
- EXISTING TREE

10' 0' 10'

SCALE

1"=10'

| REV | DATE | BY | REVISIONS |
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| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

STATE OF TEXAS
THONG HUY LE
95764
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11-3-14

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San Antonio, TX 78216
210.340.8481

LEONVALLEY

Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

SIDEWALK DETAIL

| | | | |
|---|---|---|---|
| CHK. BY: T.L. | IDS JOB NO: 211700100 | | |
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS | |
| DATE: 10/15/2014 | 49 | 57 | |

## I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

Texas Pollutant Discharge Elimination System (TPDES) TXR 150000: Stormwater Discharge Permit or Construction General Permit (CGP) required for projects with 1 or more acres distrubed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 1122.

☐ No Action Required ☒ Required Action

Action No.

1. Prevent stormwater pollution by controlling erosion and sedimentation in accordance with TPDES Permit TXR 150000.
2. Comply with the Storm Water Pollution Prevention Plan (SW3P) and revise when necessary to control pollution or required by the Engineer.
3. Post Construction Site Notice (CSN) with SW3P information on or near the site, accessible to the public and Texas Commission on Environmental Quality (TCEQ), Environmental Protection Agency (EPA) or other inspectors.
4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, Contractor shall submit Notice of Intent (NOI) to TCEQ and the Engineer.
5. NOI required: ☐Yes ☒No

Note: If amount of soil disturbance changes, permit requirements may change.

## II. WORK IN OR NEAR STREAMS, WATERBODIES AND WETLANDS CLEAN WATER ACT SECTIONS 401 AND 404

US Army Corps of Engineers (USACE) Permit required for filling, dredging, excavating or other work in any potential USACE jurisdictional water, such as, rivers, creeks, streams, or wetlands.

The Contractor shall adhere to all of the terms and conditions associated with the following permit(s):

☐ No Permit Required
☒ Nationwide Permit (NWP) 14 - Pre-construction Notice (PCN) not Required
☐ Nationwide Permit 14 - PCN Required
☐ Individual 404 Permit Required
☐ Other Nationwide Permit Required: NWP# _____

Required Actions: List waters of the US permit applies to, location in project and check Best Management Practices (BMPs) planned to control erosion, sedimentation and post-project total suspended solids (TSS).

1. PLAN WILL COMPLY WITH USACOE REGULATIONS
2. WORK WILL BE PERFORMED IN HUEBNER CREEK AT FIVE LOCATIONS TO PLACE A 10' WIDE CONCRETE TRAIL BETWEEN STATIONS 101+90 TO 112+00.
3.
4.

401 Best Management Practices: (Not applicable if no USACE permit)

| Erosion | Sedimentation | Post-Construction TSS |
|---|---|---|
| ☐ Temporary Vegetation | ☒ Silt Fence | ☐ Vegetative Filter Strips |
| ☒ Blankets/Matting | ☒ Rock Berm | ☐ Retention/Irrigation Systems |
| ☒ Mulch | ☐ Triangular Filter Dike | ☐ Extended Detention Basin |
| ☐ Sodding | ☐ Sand Bag Berm | ☐ Constructed Wetlands |
| ☐ Interceptor Swale | ☐ Straw Bale Dike | ☐ Wet Basin |
| ☐ Diversion Dike | ☐ Brush Berms | ☒ Erosion Control Compost (PERMANENT BMP) |
| ☒ Erosion Control Compost | ☒ Erosion Control Compost | ☐ Mulch Filter Berm and Socks |
| ☐ Mulch Filter Berm and Socks | ☐ Mulch Filter Berm and Socks | ☐ Compost Filter Berm and Socks |
| ☐ Compost Filter Berm and Socks | ☐ Compost Filter Berm and Socks | ☐ Vegetation Lined Ditches |
| | ☐ Stone Outlet Sediment Traps | ☐ Sand Filter Systems |
| | ☐ Sediment Basins | ☐ Sedimentation Chambers |

## III. CULTURAL RESOURCES

Refer to TxDOT Standard Specifications in the event historical issues or archeological artifacts are found during construction. Upon discovery of archeological artifacts (bones, burnt rock, flint, pottery, etc.) cease work in the immediate area and contact the Engineer immediately.

☐ No Action Required ☒ Required Action

Action No.

1. ARCHEOLOGIST WILL BE ON-CALL DURING CONSTRUCTION SHOULD ARCHEOLOGICAL ARTIFACTS BE DISCOVERED. SEE GENERAL NOTES.
2. NO WORK IS TO BE PERFORMED IN THE VICINITY OF THE HISTORIC ONION HOMESTEAD PROPERTY.
3.
4.

## IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical.

☐ No Action Required ☒ Required Action

Action No.

1. TREE REMOVAL WILL COMPLY WITH LEON VALLEY TREE ORDINANCE
2. MINIMIZE REMOVAL OF RIPARIAN VEGETATION AND USE STONE RIPRAP TO DISSIPATE AND CONTROL THE VELOCITY OF STORMWATER ENTERING THE DRAINAGE.
3. REVIEW TPWD TEXAS WILDSCAPE WEBSITE, TPWD TEXAS PLANT INFORMATION DATABASE, AND THE LADY BIRD JOHNSON WILDFLOWER CENTER'S RECOMMENDED NATIVE PLANTS DATABASE AND NATIVE PLANT ALTERNATIVES TO INVASIVES AS A PART OF LANDSCAPE SELECTION.
4.

## V. FEDERAL LISTED, PROPOSED THREATENED, ENDANGERED SPECIES, CRITICAL HABITAT, STATE LISTED SPECIES, CANDIDATE SPECIES AND MIGRATORY BIRDS.

☐ No Action Required ☒ Required Action

Action No.

1. MIGRATORY BIRD NESTS: Schedule construction activities as needed to meet the following requirements:

   A. Do not remove or destroy any active migratory bird nests (nests containing eggs and/or flightless birds) at any time of year. If there are any active nests, they shall not be removed until the nests become inactive.

   B. On/in structures, if there are any active nests, they shall not be removed until all nests become inactive. After inactive nests are removed and/or before nest activity begins, deterrent materials may be applied to the structures to prevent future nest building.

2. See Item 5 in General Notes.
3. SHOULD ANY WILDLIFE BE ENCOUNTERED, THEY SHALL BE HANDLED BY PERSONNEL PERMITTED TO HANDLE STATE OR FEDERALLY LISTED SPECIES.
4.

If any of the listed species are observed, cease work in the immediate area, do not disturb species or habitat and contact the Engineer immediately. The work may not remove active nests from bridges and other structures during nesting season of the birds associated with the nests. If caves or sinkholes are discovered, cease work in the immediated area, and contact the Engineer immediately.

POTENTIAL HABITAT EXISTS FOR FOUR STATE LISTED SPECIES, THE PEREGRINE FALCON, AMERICAN PEREGRINE FALCON, TEXAS INDIGO SNAKE, AND TIMBER/CANEBRAKE RATTLESNAKE, AND FOUR SPECIES OF THE GREATEST CONSERVATION NEED (SGCN), THE ARCTIC PEREGRINE FALCON, THE PLAINS SPOTTED SKUNK, SPOT-TAILED EARLESS LIZARD, AND THE TEXAS GARTER SNAKE. IF ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL TAKE MEASURES TO AVOID AND PROTECT THESE SPECIES.

ADDITIONALLY, POTENTIAL HABITAT FOR THREE SGCN PLANTS EXIST WITHIN THE PROJECT AREA: BIG RED SAGE, CORRELL'S FALSE DRAGON-HEAD, AND HILL COUNTRY WILD-MERCURY. MEASURES SHOULD BE TAKEN TO MINIMIZE CLEARING. IMPACTED VEGETATION SHOULD BE REPLACED WITH SEED MIX LISTED IN SPECIAL SPECIFICATION 2010 SEEDING FOR EROSION CONTROL.

## VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

Comply with the Hazard Communication Act (the Act) for personnel who will be working with hazardous materials by conducting safety meetings prior to beginning construction and making workers aware of potential hazards in the workplace. Ensure that all workers are provided with personal protective equipment appropiate for any hazardous materials used.

Obtain and keep on-site Material Safety Data Sheets (MSDS) for all hazardous products used on the project, which may include, but are not limited to the following categories: Paints, acids, solvents, asphalt products, chemical additives, fuels and concrete curing compounds or additives. Provide protected storage, off bare ground and covered, for products which may be hazardous. Maintain product labelling as required by the Act.

Maintain an adequate supply of on-site spill response materials, as indicated in the MSDS. In the event of a spill, take actions to mitigate the spill as indicated in the MSDS, in accordance with safe work practices, and contact the District Spill Coordinator immediately. The Contractor shall be responsible for the proper containment and cleanup of all product spills.

Contact the Engineer if any of the follwing are detected:
* Dead or distressed vegetation (not identified as normal)
* Trash piles, drums, canister, barrels, etc.
* Undesirable smells or odors
* Evidence of leaching or seepage of substances

Hazardous Materials or Contamination Issues Specific to this Project:

☒ No Action Required ☐ Required Action

Action No.

1. NO ENVIRONMENTAL CONCERNS ARE ANTICIPATED EAST OF BANDERA ROAD.
2.
3.

Does the project involve the demolition of a span bridge?
☐ Yes ☒ No (No further action required)

If "Yes", a pre-demolition notification must be submitted to the Texas Department of State Health Services, 20 calendar days prior to the demolition of the bridges(s) on the project. Contact TxDOT's hazardous material Coordinator at 210-615-6486 for assisstance with the notification.

## VII. OTHER ENVIRONMENTAL ISSUES

(includes regional issues such as Edwards Aquifer District, etc.)

☐ No Action Required ☒ Required Action

Action No.

1. DO NOT LEAVE EXCAVATIONS OPEN OVERNIGHT IF POSSIBLE OR PROVIDE ESCAPE RAMPS TO PREVENT WILDLIFE FROM BECOMING TRAPPED. INSPECT EXCAVATIONS IN THE MORNING FOR TRAPPED WILDLIFE.
2.
3.

Texas Department of Transportation
San Antonio District Standard

# ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

# EPIC

| FILE: epic August 2012.dgn | DN: TxDOT | CK: TxDOT | DW: BW | CK: JAB |
|---|---|---|---|---|
| ©TxDOT August 2012 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| | DIST | COUNTY | | SHEET NO. |
| | | | | 50 |

# SITE DESCRIPTION

**PROJECT NAME AND LOCATION:** HUEBNER CREEK HIKE AND BIKE TRAIL – CITY OF LEON VALLEY. FROM THE INTERSECTION OF HUEBNER CREEK AND BANDERA ROAD NORTH TO EVERS ROAD APPROXIMATELY 0.85 MILE,

**CONTACT AND PHONE NO.:** MELINDA MORITZ – LEON VALLEY PUBLIC WORKS DIRECTOR
(210) 681–1232

**PROJECT DESCRIPTION:** CONSTRUCTION OF 4,475 LINEAR FEET OF 10' WIDE CONCRETE TRAIL ALONG HUEBNER CREEK TO THE NORTH OF BANDERA ROAD THROUGH RAYMOND RIMKUS PARK TO CONNECT TO EVERS ROAD.

**MAJOR SOIL DISTURBING ACTIVITIES:** CLEARING AND GRADING FOR TRAIL ALIGNMENT

**TOTAL PROJECT AREA (ACRES):** APPROXIMATELY 58.8 ACRES

**TOTAL AREA TO BE DISTURBED:** APPROXIMATELY 1.83 ACRES

**WEIGHTED RUNOFF COEFFICIENT: (AFTER CONSTRUCTION)** .40 (COSA UDC–JAN. 2006 TABLE 504–1B)

**EXISTING CONDITION OF SOIL, VEGETATIVE COVER AND % OF VEGETATIVE COVER:** MAJORITY OF AREA IS NATIVE UNTOUCHED. PARK AREA INCLUDES ATHLETIC FIELDS, SIDEWALKS, SOME SMALL STRUCTURES, AND A PAVED PARKING AREA OF ABOUT 1.5 ACRES. SLOPES 1–5%, MEDIUM VEGETATIVE COVER, SEE GEOTECH FOR SOIL CLASSIFICATION

**DESCRIPTION OF WATER DISCHARGED NOT ASSOCIATED WITH CONSTRUCTION:** SITE NATURALLY DRAINS TO HUEBENER CREEK

**NAME OF RECEIVING WATERS:** HUEBNER CREEK

**IDENTIFY STORMWATER DISCHARGE POINTS:** N/A

**A DESCRIPTION AND TIME FRAME FOR INSTALLATION OF STABILIZATION PRACTICES IN CONJUNCTION WITH CONSTRUCTION:** SILT FENCE AND ROCK BERMS TO BE INSTALLED PRIOR TO CONSTRUCTION, EROSION CONTROL COMPOST DURING CONSTRUCTION, AND HYDROMULCHING OF REMAINING DISTURBED AREAS AT CONCLUSION.

# EROSION AND SEDIMENTATION CONTROLS

## SOIL STABILIZATION PRACTICES:

- X HYDROMULCHING
- ____ TEMPORARY SEEDING
- ____ PERMANENT PLANTING, SODDING OR SEEDING
- X MULCHING
- ____ SOIL RETENTION BLANKET
- ____ BUFFER ZONES
- X PRESERVATION OF NATURAL RESOURSES

## OTHER:

DISTURBED AREAS ON WHICH CONSTRUCTION ACTIVITY HAS CEASED TEMPORARILY OR PERMANENTLY, SHALL BE STABILIZED WITHIN 14 DAYS UNLESS ACTIVITIES ARE SCHEDULED TO RESUME AND DONE WITHIN 21 DAYS.

## STRUCTURAL PRACTICES:

- X SILT FENCES
- ____ HAY BALES
- ____ GRAVEL FILTRATION BAGS
- X ROCK BERMS
- ____ DIVERSION, INTERCEPTOR OR PERIMETER DIKES
- ____ DIVERSION, INTERCEPTOR OR PERIMETER SWALES
- ____ DIVERSION, DIKE AND SWALE COMBINATIONS
- ____ PAVED FLUMES
- X ROCK BEDDING AT CONSTRUCTION EXIT (STABILIZED ENTRANCE)
- ____ TIMBER MATTING AT CONSTRUCTION EXIT (STABILIZED ENTRANCE)
- ____ CHANNEL LINERS
- ____ SEDIMENT TRAPS
- ____ SEDIMENT BASINS
- ____ STORM INLET SEDIMENT TRAP
- ____ STONE OUTLET SEDIMENT STRUCTURES
- ____ CURBS AND GUTTERS
- ____ STORM SEWERS
- ____ VELOCITY CONTROL STRUCTURES
- ____ GEOTEXTILES

**OTHER:** ____

**NARRATIVE – SEQUENCE OF CONSTRUCTION (STORMWATER MANAGEMENT) ACTIVITIES:**

**THE ORDER OF ACTIVITIES WILL BE AS FOLLOWS:** INSTALL SW3P MEASURES, INSTALL TRAFFIC DEVICES AS NEEDED IN ACCORDANCE WITH TXDOT BC SHEETS SIDEWALK(TRAIL), AND MISCELLANEOUS STRUCTURES

**A DESCRIPTION OF MAINTENANCE PROCEDURES FOR CONTROL MEASURES USED:** MAINTAIN SW3P MEASURES PER THE TPDES GENERAL PERMIT AND WATER VEGETATED AREA AS NEEDED TO MAINTAIN STABLIZED CONDITIONS

**STORMWATER MANAGEMENT:** STORM WATER MANAGEMENT DURING CONSTRUCTION WILL BE HANDLED WITHIN THE CREEK BEDS THEMSELVES.

**A DESCRIPTION OF PERMANENT STORM WATER MANAGEMENT CONTROLS:** N/A

## OTHER EROSION AND SEDIMENTATION CONTROLS

**MAINTENANCE:**

ALL EROSION AND SEDIMENT CONTROLS WILL BE MAINTAINED IN GOOD WORKING ORDER. IF A REPAIR IS NECESSARY, IT WILL BE DONE AT THE EARLIEST DATE POSSIBLE, BUT NO LATER THAN 7 CALENDAR DAYS AFTER THE SURROUNDING EXPOSED GROUND HAS DRIED SUFFICIENTLY TO PREVENT FURTHER DAMAGE FROM HEAVY EQUIPMENT. THE AREAS ADJACENT TO CREEKS AND DRAINAGEWAYS SHALL HAVE PRIORITY, FOLLOWED BY DEVICES PROTECTING STORM SEWER INLETS.

**INSPECTION:**

AN INSPECTION WILL BE PERFORMED BY THE CONTRACTOR EVERY 14 DAYS AS WELL AS AFTER EVERY 1/2" OR MORE OF RAIN (RECORDED ON A NON-FREEZING RAIN GAUGE TO BE LOCATED AT THE PROJECT SITE). AN INSPECTION AND MAINTENANCE REPORT WILL BE MADE PER INSPECTION. BASED ON THE INSPECTION RESULTS, THE CONTROLS SHALL BE CORRECTED BEFORE THE NEXT SCHEDULED INSPECTION.

**WASTE MATERIALS:**

ALL WASTE MATERIALS WILL BE COLLECTED AND STORED IN A SECURELY LIDDED METAL DUMPSTER. THE DUMPSTER WILL MEET ALL STATE AND LOCAL CITY SOLID WASTE MANAGEMENT REGULATIONS. ALL TRASH AND CONSTRUCTION DEBRIS FROM THE SITE WILL BE DEPOSITED IN THE DUMPSTER. THE DUMPSTER WILL BE EMPTIED AS NECESSARY OR AS REQUIRED BY LOCAL REGULATION AND THE TRASH WILL BE HAULED TO A LOCAL DUMP. NO CONSTRUCTION MATERIALS WILL BE BURIED ON SITE.

**HAZARDOUS WASTE (INCLUDING SPILL REPORTING):**

AT A MINIMUM, ANY PRODUCTS IN THE FOLLOWING CATEGORIES ARE CONSIDERED TO BE HAZARDOUS: PAINTS, ACIDS FOR CLEANING MASONRY SURFACES, GASOLINE, MOTOR OIL, CLEANING SOLVENTS, ASPHALT PRODUCTS, CHEMICAL ADDITIVES FOR SOIL STABILIZATION OR CONCRETE CURING COMPOUNDS AND ADDITIVES. IN THE EVENT OF A SPILL WHICH MAY BE HAZARDOUS AND MEETS REPORTING REQUIREMENTS, THE NATIONAL RESPONSE CENTER SHOULD BE CONTACTED AT 800-424-8802, AND ANY REQUIRED CHANGES MADE TO THE SWPPP. IN THE EVENT OF A LIFE THREATENING SPILL THE SAN ANTONIO FIRE DEPARTMENT SHOULD BE NOTIFIED AS WELL AS THE APPROPRIATE CITY INSPECTORS.

**SANITARY WASTE** SANITARY WASTE WILL BE COLLECTED FROM PORTABLE UNITS AS NECESSARY OR AS REQUIRED BY LOCAL REGULATIONS BY A LICENSED SANITARY WASTE MANAGEMENT CONTRACTOR

**OFFSITE EXCAVATION SOURCE LOCATION** N/A

**OFFSITE FILL SOURCE LOCATION** N/A

**OFFSITE VEHICLE TRACKING** N/A

- ____ HAUL ROADS DAMPENED FOR DUST CONTROL.
- X LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
- X EXCESS DIRT ON ROAD TO BE REMOVED DAILY
- X STABILIZED CONSTRUCTION ENTRANCE.

**OTHER:**

CERTIFICATION THAT SITE DISTURBANCE AND / OR DISCHARGES WILL NOT EFFECT LISTED ENDANGERED SPECIES AND THEIR HABITAT.
**WHAT METHOD IS USED TO SATISFY THE ENDANGERED SPECIES REQUIREMENTS?** IF ANY OF THE LISTED SPECIES ARE OBSERVED, CEASE WORK IN THE IMMEDIATE AREA, DO NOT DISTURB SPECIES OR HABITAT AND CONTACT THE ENGINEER IMMEDIATELY. MEASURES SHOULD BE TAKEN TO MINIMIZE CLEARING. IMPACTED VEGETATION SHOULD BE REPLACED WITH SEED MIX LISTED IN SPECIAL SPECIFICATION 2010 SEEDING FOR EROSION CONTROL.

**REMARKS:**

DISPOSAL AREAS, STOCKPILES AND HAUL ROADS SHALL BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE AND CONTROL THE AMOUNT OF SEDIMENT THAT ENTERS RECEIVING WATERS. DISPOSAL AREAS SHALL NOT BE LOCATED IN ANY WETLAND, BODY OF WATER, STREAMBED OR FLOODPLAIN CONSTRUCTION STAGING AREAS AND VEHICLE MAINTENANCE AREAS SHALL BE CONSTRUCTED BY THE CONTRACTOR IN A MANNER TO MINIMIZE THE RUNOFF OF POLLUTANTS. ALL WATERWAYS SHALL BE CLEARED AS SOON AS POSSIBLE OF TEMPORARY EMBANKMENT, TEMPORARY BRIDGES, MATTING, FALSEWORK, PILING DEBRIS OR OTHER OBSTRUCTION PLACED DURING CONSTRUCTION OPERATIONS THAT ARE NOT PART OF THE FINISHED WORK.

STATE OF TEXAS
THONG HUY LE
95764
LICENSED
PROFESSIONAL ENGINEER
10-15-14

# STORM WATER POLLUTION PREVENTION PLAN (SW3P) NARRATIVE

| | | | |
|---|---|---|---|
| ____% SUBMITTAL | PROJECT NO.: 211700100 | | DATE: 06/09/2014 |
| DRWN. BY: ____ | DSGN. BY: ____ | CHKD. BY: T.L. | SHEET NO.: 51 OF 57 |

SENECA DR.

EL VERDE RD.

BANDERA ROAD
(SH 16)

ROCK FILTER DAM
~ 100 LF

BEGIN TRAIL
STA. 101+90.00
O/S 0.00

NATURAL AREA PARK BOUNDARY

TREE
FENCING
752 LF

BEGIN BRIDGE LIMITS
STA. 111+41.59

TRAIL A

SILT FENCE

100 YR FLOOD
PLAIN LIMITS

ROCK FILTER DAM
~ 18 LF

END BRIDGE LIMITS
STA. 111+68.59

TREE
FENCING
1401 LF

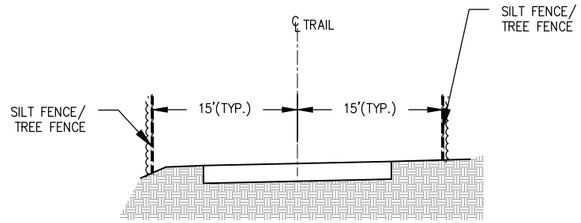
NATURAL AREA PARK BOUNDARY

HANDSOME LAKE DR.

MATCHLINE A-A STA. 113+00
SEE THIS SHEET

LEGEND

- SILT FENCE
- CHANNEL FLOW LINE
- TREE FENCING
- ROCK FILTER DAM




NATURAL AREA PARK BOUNDARY

SILT FENCE

100 YR FLOOD
PLAIN LIMITS

TRAIL B

SILT FENCE

POSS RD.

MATCHLINE A-A STA. 113+00
SEE THIS SHEET

TRAIL A

TREE
FENCING
1401 LF

ROCK FILTER DAM
~ 22 LF

TRAIL A

SILT FENCE

NATURAL AREA PARK BOUNDARY

SUNLIGHT DR.

END TRAIL
STA. 142+25.59

EVERS RD.

200' 0' 200'

SCALE
1"=200'

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

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THONG HUY LE
95764
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11-3-14


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LEONVALLEY

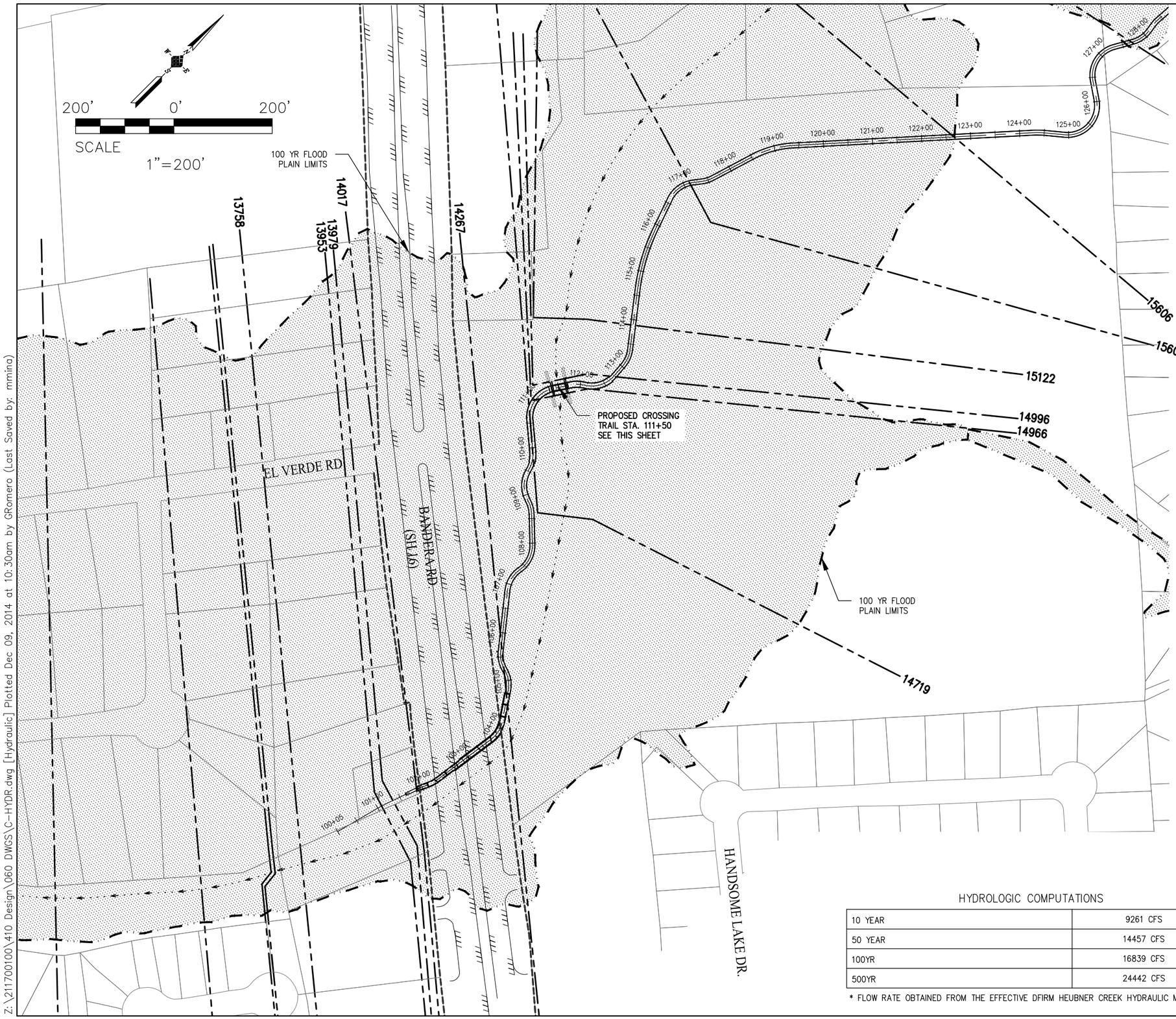
Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

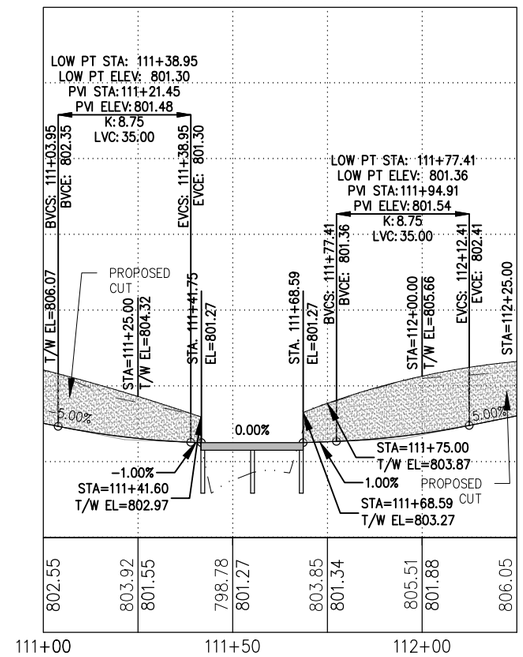
STORM WATER POLLUTION
PREVENTION PLAN

| CHK. BY: T.L. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | 52 | 57 |

Z:\211700100\410 Design\060 DWGS\C-SW3P.dwg [SW3P] Plotted Dec 09, 2014 at 10:30am by GRomero (Last Saved by: mmina)




## STREAM CROSS SECTIONS AND TRAIL PROFILE




SCALE:
1"=40'(H)
1"=10'(V)

LEGEND

- 100 YEAR FLOODPLAIN
- CHANNEL FLOW LINE
- 14996 HEC-RAS CROSS SECTION

NOTES:
1. HEC-RAS 4.1.0 WAS USED FOR HYDRAULIC ANALYSIS AND DESIGN.

### HYDROLOGIC COMPUTATIONS

| | |
|---|---|
| 10 YEAR | 9261 CFS |
| 50 YEAR | 14457 CFS |
| 100YR | 16839 CFS |
| 500YR | 24442 CFS |

* FLOW RATE OBTAINED FROM THE EFFECTIVE DFIRM HEUBNER CREEK HYDRAULIC MODEL

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

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Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

HYDRAULIC DATA SHEET-1

| | | | |
|---|---|---|---|
| CHK. BY: T.L. | IDS JOB NO: 211700100 | | |
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS | |
| DATE: 10/15/2014 | 53 | 57 | |

# HEC-RAS SUMMARY TABLE

| Reach | River Sta | Profile | Plan | Q Total | Min Ch El | W.S. Elev | Crit W.S. | E.G. Elev | E.G. Slope | Vel Chnl | Flow Area | Top Width | Froude # Chl |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | (cfs) | (ft) | (ft) | (ft) | (ft) | (ft/ft) | (ft/s) | (sq ft) | (ft) | |
| 1 | 14996 | 10yr | POST-LVT | 9261 | 797.90 | 811.80 | 806.14 | 812.01 | 0.00 | 4.87 | 4607.52 | 807.22 | 0.25 |
| 1 | 14996 | 10yr | Exist-LVT | 9261 | 798.00 | 811.84 | | 812.15 | 0.00 | 7.16 | 3373.48 | 807.92 | 0.38 |
| 1 | 14996 | 50yr | POST-LVT | 14457 | 797.90 | 813.06 | 807.62 | 813.38 | 0.00 | 6.31 | 5655.48 | 869.41 | 0.31 |
| 1 | 14996 | 50yr | Exist-LVT | 14457 | 798.00 | 813.09 | | 813.47 | 0.00 | 8.36 | 4422.31 | 871.55 | 0.42 |
| 1 | 14996 | 100yr | POST-LVT | 16839 | 797.90 | 813.68 | 808.26 | 814.04 | 0.00 | 6.77 | 6211.88 | 907.61 | 0.32 |
| 1 | 14996 | 100yr | Exist-LVT | 16839 | 798.00 | 813.70 | | 814.09 | 0.00 | 8.61 | 4964.79 | 908.72 | 0.42 |
| 1 | 14996 | 500yr | POST-LVT | 24442 | 797.90 | 815.19 | 809.71 | 815.68 | 0.00 | 8.14 | 7647.12 | 995.79 | 0.37 |
| 1 | 14996 | 500yr | Exist-LVT | 24442 | 798.00 | 815.21 | | 815.65 | 0.00 | 9.54 | 6401.38 | 996.90 | 0.44 |
| | | | | | | | | | | | | | |
| 1 | 14981 | | | Bridge | | | | | | | | | |
| | | | | | | | | | | | | | |
| 1 | 14966 | 10yr | POST-LVT | 9261 | 797.90 | 811.60 | | 811.95 | 0.00 | 5.89 | 3777.74 | 857.41 | 0.31 |
| 1 | 14966 | 10yr | Exist-LVT | 9261 | 798.00 | 811.80 | | 812.10 | 0.00 | 6.21 | 3340.86 | 864.04 | 0.36 |
| 1 | 14966 | 50yr | POST-LVT | 14457 | 797.90 | 812.79 | | 813.29 | 0.00 | 7.44 | 4826.34 | 912.79 | 0.37 |
| 1 | 14966 | 50yr | Exist-LVT | 14457 | 798.00 | 813.04 | | 813.42 | 0.00 | 7.26 | 4453.20 | 925.53 | 0.39 |
| 1 | 14966 | 100yr | POST-LVT | 16839 | 797.90 | 813.42 | | 813.95 | 0.00 | 7.82 | 5409.86 | 939.87 | 0.38 |
| 1 | 14966 | 100yr | Exist-LVT | 16839 | 798.00 | 813.65 | | 814.03 | 0.00 | 7.44 | 5027.78 | 948.83 | 0.39 |
| 1 | 14966 | 500yr | POST-LVT | 24442 | 797.90 | 814.87 | | 815.55 | 0.00 | 9.28 | 6832.43 | 1045.11 | 0.43 |
| 1 | 14966 | 500yr | Exist-LVT | 24442 | 798.00 | 815.14 | | 815.59 | 0.00 | 8.42 | 6529.17 | 1119.40 | 0.41 |
| | | | | | | | | | | | | | |
| 1 | 14719 | 10yr | POST-LVT | 9261 | 796.87 | 811.37 | 809.17 | 811.71 | 0.001527 | 5.88 | 3271.3 | 999.81 | 0.36 |
| 1 | 14719 | 10yr | Exist-LVT | 9261 | 796.87 | 811.37 | 809.17 | 811.71 | 0.001527 | 5.88 | 3271.3 | 999.81 | 0.36 |
| 1 | 14719 | 50yr | POST-LVT | 14457 | 796.87 | 812.55 | 810 | 812.96 | 0.001776 | 6.91 | 4500.58 | 1093.91 | 0.39 |
| 1 | 14719 | 50yr | Exist-LVT | 14457 | 796.87 | 812.55 | 810 | 812.96 | 0.001776 | 6.91 | 4500.58 | 1093.91 | 0.39 |
| 1 | 14719 | 100yr | POST-LVT | 16839 | 796.87 | 813.22 | 810.93 | 813.61 | 0.001609 | 6.88 | 5241.62 | 1101.73 | 0.38 |
| 1 | 14719 | 100yr | Exist-LVT | 16839 | 796.87 | 813.22 | 810.93 | 813.61 | 0.001609 | 6.88 | 5241.62 | 1101.73 | 0.38 |
| 1 | 14719 | 500yr | POST-LVT | 24442 | 796.87 | 814.71 | 811.93 | 815.14 | 0.001648 | 7.62 | 6927.03 | 1176.07 | 0.39 |
| 1 | 14719 | 500yr | Exist-LVT | 24442 | 796.87 | 814.71 | 811.93 | 815.14 | 0.001648 | 7.62 | 6927.03 | 1176.07 | 0.39 |
| | | | | | | | | | | | | | |
| 1 | 14267 Bandera - XS03 | 10yr | POST-LVT | 9261 | 796.65 | 811.21 | 803.87 | 811.31 | 0.000409 | 3.27 | 5356.98 | 1051.43 | 0.16 |
| 1 | 14267 Bandera - XS03 | 10yr | Exist-LVT | 9261 | 796.65 | 811.21 | 803.87 | 811.31 | 0.000409 | 3.27 | 5356.98 | 1051.43 | 0.16 |
| 1 | 14267 Bandera - XS03 | 50yr | POST-LVT | 14457 | 796.65 | 812.24 | 806.18 | 812.41 | 0.000658 | 4.36 | 6369.01 | 1134.51 | 0.21 |
| 1 | 14267 Bandera - XS03 | 50yr | Exist-LVT | 14457 | 796.65 | 812.24 | 806.18 | 812.41 | 0.000658 | 4.36 | 6369.01 | 1134.51 | 0.21 |
| 1 | 14267 Bandera - XS03 | 100yr | POST-LVT | 16839 | 796.65 | 812.89 | 806.96 | 813.07 | 0.000698 | 4.63 | 7024.5 | 1258.05 | 0.21 |
| 1 | 14267 Bandera - XS03 | 100yr | Exist-LVT | 16839 | 796.65 | 812.89 | 806.96 | 813.07 | 0.000698 | 4.63 | 7024.5 | 1258.05 | 0.21 |
| 1 | 14267 Bandera - XS03 | 500yr | POST-LVT | 24442 | 796.65 | 814.42 | 808.95 | 814.57 | 0.000723 | 4.02 | 9858.45 | 1354.3 | 0.2 |
| 1 | 14267 Bandera - XS03 | 500yr | Exist-LVT | 24442 | 796.65 | 814.42 | 808.95 | 814.57 | 0.000723 | 4.02 | 9858.45 | 1354.3 | 0.2 |
| | | | | | | | | | | | | | |
| 1 | 14168 Bandera Road | | | Bridge | | | | | | | | | |
| | | | | | | | | | | | | | |
| 1 | 14017 Bandera - XS02 | 10yr | POST-LVT | 9261 | 796.57 | 804.70 | 803.40 | 806.34 | 0.00 | 10.27 | 901.74 | 153.95 | 0.73 |
| 1 | 14017 Bandera - XS02 | 10yr | Exist-LVT | 9261 | 796.57 | 804.70 | 803.40 | 806.34 | 0.00 | 10.27 | 901.74 | 153.95 | 0.73 |
| 1 | 14017 Bandera - XS02 | 50yr | POST-LVT | 14457 | 796.57 | 806.50 | 805.31 | 808.73 | 0.00 | 12.02 | 1324.64 | 416.70 | 0.80 |
| 1 | 14017 Bandera - XS02 | 50yr | Exist-LVT | 14457 | 796.57 | 806.50 | 805.31 | 808.73 | 0.00 | 12.02 | 1324.64 | 416.70 | 0.80 |
| 1 | 14017 Bandera - XS02 | 100yr | POST-LVT | 16839 | 796.57 | 807.52 | 806.05 | 809.69 | 0.00 | 11.95 | 1940.29 | 698.87 | 0.76 |
| 1 | 14017 Bandera - XS02 | 100yr | Exist-LVT | 16839 | 796.57 | 807.52 | 806.05 | 809.69 | 0.00 | 11.95 | 1940.29 | 698.87 | 0.76 |
| 1 | 14017 Bandera - XS02 | 500yr | POST-LVT | 24442 | 796.57 | 810.08 | 808.60 | 811.99 | 0.00 | 11.78 | 4472.08 | 1186.76 | 0.65 |
| 1 | 14017 Bandera - XS02 | 500yr | Exist-LVT | 24442 | 796.57 | 810.08 | 808.60 | 811.99 | 0.00 | 11.78 | 4472.08 | 1186.76 | 0.65 |
| | | | | | | | | | | | | | |
| 1 | 13979 Bandera - XS01 | 10yr | POST-LVT | 9261 | 796.65 | 804.59 | 803.28 | 806.29 | 0.00 | 10.45 | 887.49 | 182.82 | 0.76 |
| 1 | 13979 Bandera - XS01 | 10yr | Exist-LVT | 9261 | 796.65 | 804.59 | 803.28 | 806.29 | 0.00 | 10.45 | 887.49 | 182.82 | 0.76 |
| 1 | 13979 Bandera - XS01 | 50yr | POST-LVT | 14457 | 796.65 | 806.51 | 805.63 | 808.65 | 0.00 | 11.86 | 1544.27 | 440.71 | 0.77 |
| 1 | 13979 Bandera - XS01 | 50yr | Exist-LVT | 14457 | 796.65 | 806.51 | 805.63 | 808.65 | 0.00 | 11.86 | 1544.27 | 440.71 | 0.77 |
| 1 | 13979 Bandera - XS01 | 100yr | POST-LVT | 16839 | 796.65 | 807.54 | 806.39 | 809.59 | 0.00 | 11.78 | 2279.08 | 836.09 | 0.71 |
| 1 | 13979 Bandera - XS01 | 100yr | Exist-LVT | 16839 | 796.65 | 807.54 | 806.39 | 809.59 | 0.00 | 11.78 | 2279.08 | 836.09 | 0.71 |
| 1 | 13979 Bandera - XS01 | 500yr | POST-LVT | 24442 | 796.65 | 810.09 | 808.71 | 811.92 | 0.00 | 11.75 | 4798.30 | 1212.06 | 0.62 |
| 1 | 13979 Bandera - XS01 | 500yr | Exist-LVT | 24442 | 796.65 | 810.09 | 808.71 | 811.92 | 0.00 | 11.75 | 4798.30 | 1212.06 | 0.62 |

**SCOUR ANALYSIS**

**Depth of Scour = Ds = Dm x(Vm/Vc -1)**

**Ds = Depth of Scour**
**Dm= Mean Depth**
**Vm = Mean Velocity**
**Vc = Competent Velocity (Value Obtained from Table 8-PB-22 488)***

**Location:** **Upstream of Trail Crossing**

**Scour Calcs:**

| | | |
|---|---|---|
| **Q10 =** | 9261.00 | cfs |
| **Dm=** | 11.59 | ft |
| **Vm=** | 4.87 | ft/s |
| **Vc=** | 3.50 | ft/s |
| **Ds=** | 4.54 | ft **SCOUR** |

| | | |
|---|---|---|
| **Q100 =** | 16839.00 | cfs |
| **Dm=** | 13.47 | ft |
| **Vm=** | 6.77 | ft/s |
| **Vc=** | 3.50 | ft/s |
| **Ds=** | 12.58 | ft **SCOUR** |

**Reference: US Bureau of Reclamation "Computing Degradation and Local Scour", 1984*

**SCOUR ANALYSIS**

**Depth of Scour = Ds = Dm x(Vm/Vc -1)**

**Ds = Depth of Scour**
**Dm= Mean Depth**
**Vm = Mean Velocity**
**Vc = Competent Velocity (Value Obtained from Table 8-PB-22 488)***

**Location:** **Upstream of Bandera Road Bridge Crossing**

**Scour Calcs:**

| | | |
|---|---|---|
| **Q10 =** | 9261.00 | cfs |
| **Dm=** | 12.80 | ft |
| **Vm=** | 3.27 | ft/s |
| **Vc=** | 3.50 | ft/s |
| **Ds=** | -0.84 | ft **NO SCOUR** |

| | | |
|---|---|---|
| **Q100 =** | 16839.00 | cfs |
| **Dm=** | 14.49 | ft |
| **Vm=** | 4.63 | ft/s |
| **Vc=** | 3.50 | ft/s |
| **Ds=** | 4.68 | ft **SCOUR** |

**Reference: US Bureau of Reclamation "Computing Degradation and Local Scour", 1984*

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

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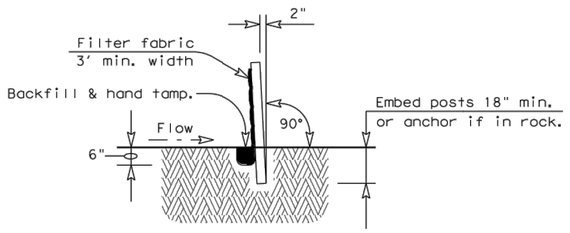
LEONVALLEY

Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

HYDRAULIC DATA SHEET-2

| | | | |
|---|---|---|---|
| CHK. BY: T.L. | IDS JOB NO: 211700100 | | |
| DWG. BY: M.G.M./D.E. | SHEET NO. | TOTAL SHEETS | |
| DATE: 10/15/2014 | 54 | 57 | |




## SECTION A-A

GENERAL NOTES

1. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

### PLAN SHEET LEGEND

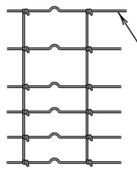
Sediment Control Fence —— SCF ——

### SEDIMENT CONTROL FENCE USAGE GUIDELINES

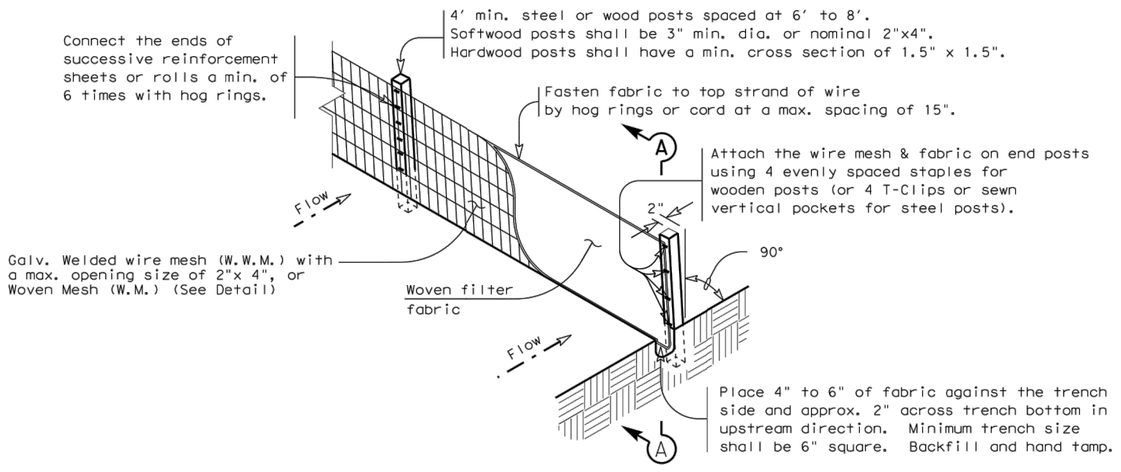
A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

Sediment control fence should be sized to filter a max. flow through rate of 100 GPM/FT$^2$. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

Galv. Hinge joint knot woven mesh (12.5 Ga. Min.) requires a minimum of five horizontal wires spaced at a max. 12 inches apart and all vertical wires spaced at a max. 12 inches apart.

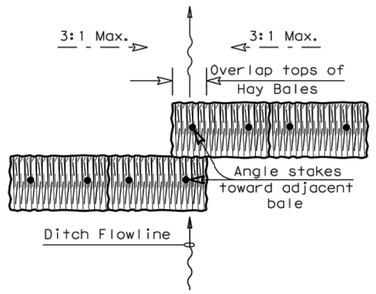



## Hinge Joint Knot Woven Mesh (Option)

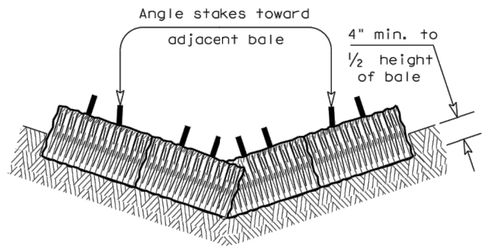



## TEMPORARY SEDIMENT CONTROL FENCE

SCF




## PLAN VIEW




## PROFILE VIEW

### PLANS SHEET LEGEND

Baled Hay —— BH ——

### BALED HAY USAGE GUIDELINES

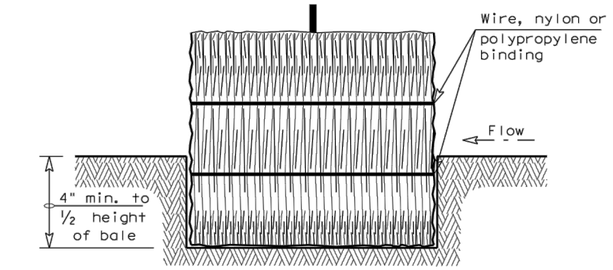
A Baled Hay installation may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A two year storm frequency may be used to calculate the flow rate to be filtered. The installation should be sized to filter a maximum flow thru rate of 5 GPM/FT$^2$ of cross sectional area. Baled hay may be used at the following locations:

1. Where the runoff approaching the baled hay flows over disturbed soil for less than 100'. If the slope of the disturbed soil exceeds 10%, the length of slope upstream the baled hay should be less than 50'.
2. Where the installation will be required for less than 3 months.
3. Where the contributing drainage area is less than ½ acre.

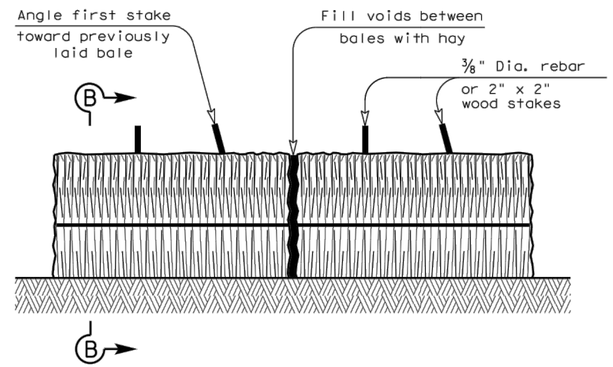
For Baled Hay installations in small ditches, the additional following considerations apply:

1. The ditch sideslopes should be graded as flat as possible to maximize the drainage flowrate thru the hay.
2. The ditch should be graded large enough to contain the overtopping drainage when sediment has filled to the top of the baled hay.

Bales should be replaced usually every 2 months or more often during wet weather when loss of structural integrity is accelerated.




## SECTION B-B




## BALED HAY FOR EROSION CONTROL

BH

GENERAL NOTES

1. Hay bales shall be a minimum of 30" in length and weigh a minimum of 50 Lbs.
2. Hay bales shall be bound by either wire or nylon or polypropylene string. The bales shall be composed entirely of vegetative matter.
3. Hay bales shall be embedded in the soil a minimum of 4" and where possible ½ the height of the bale.
4. Hay bales shall be placed in a row with ends tightly abutting the adjacent bales. The bales shall be placed with bindings parallel to the ground.
5. Hay bales shall be securely anchored in place with ⅜" Dia. rebar or 2" x 2" wood stakes, driven through the bales. The first stake shall be angled towards the previously laid bale to force the bales together.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation — Design Division Standard

# TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

## FENCE & BALED HAY

## EC(1)-09

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| ©TxDOT June 1993 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| | DIST | COUNTY | | SHEET NO. |
| | | | | 55 |

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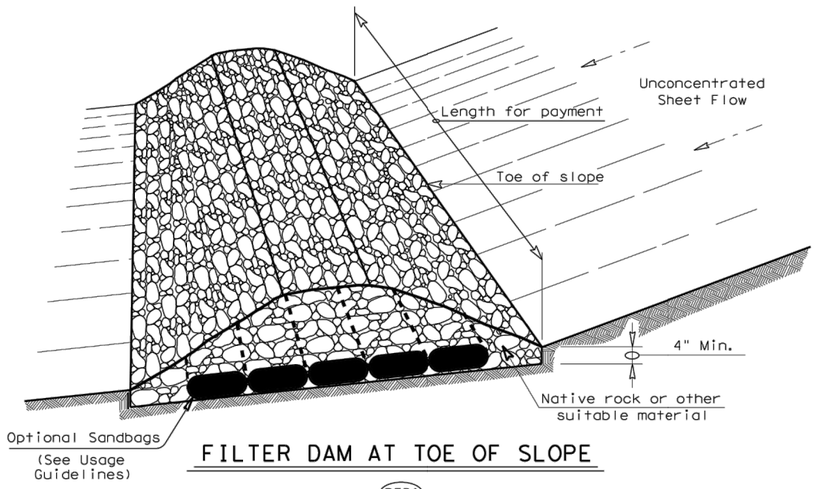
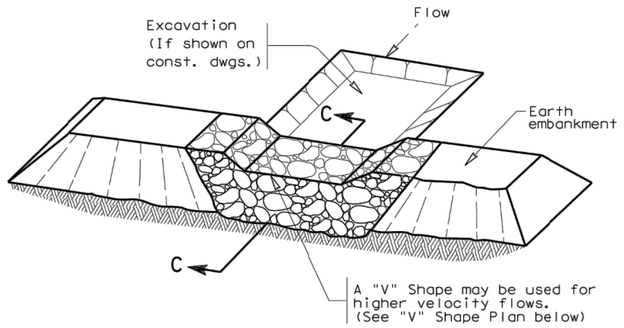
FILE:



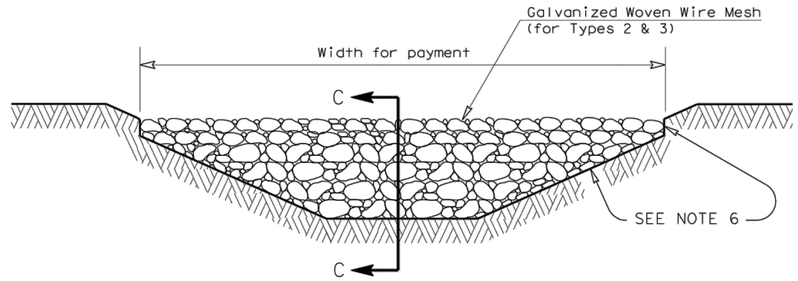

## FILTER DAM AT TOE OF SLOPE

RFD1
TYPE 1



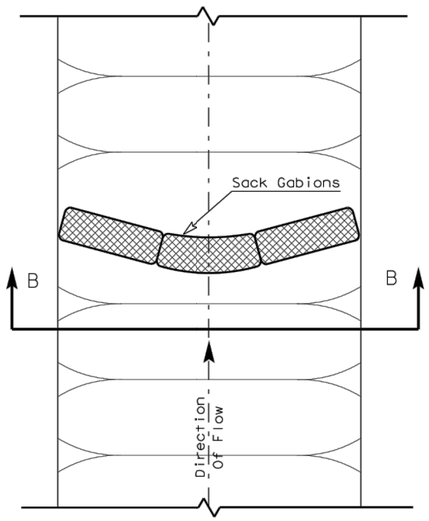

## FILTER DAM AT SEDIMENT TRAP

RFD1 OR RFD2
TYPE 1 OR TYPE 2

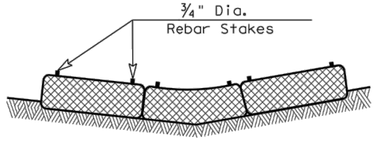



## FILTER DAM AT CHANNEL SECTIONS

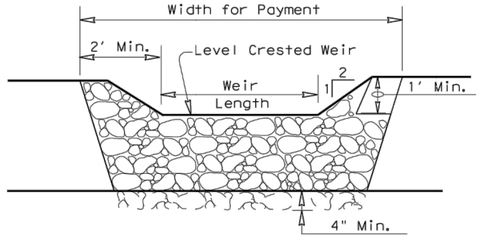
RFD1 OR RFD2 OR RFD3
TYPE 1 OR TYPE 2



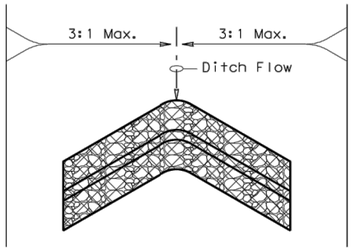

## PLAN VIEW




## SECTION B-B

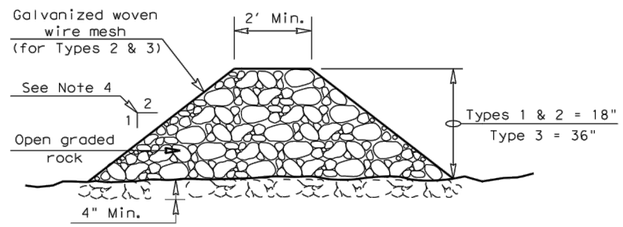



## PROFILE




## "V" SHAPE

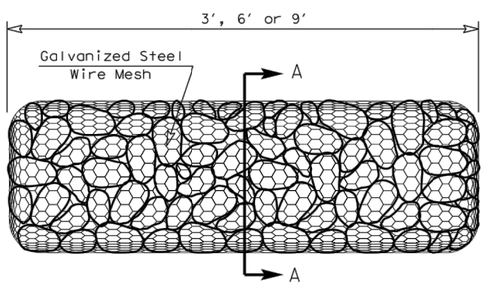
(Plan View)



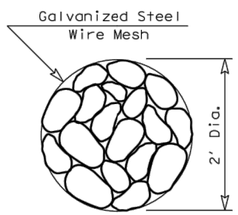

## SECTION C-C

### PLANS SHEET LEGEND

Type 1 Rock Filter Dam — RFD1
Type 2 Rock Filter Dam — RFD2
Type 3 Rock Filter Dam — RFD3




## TYPE 4 (SACK GABIONS)




## SECTION A-A

## ROCK FILTER DAM USAGE GUIDELINES

Rock Filter Dams should be constructed downstream from disturbed areas to intercept sediment from overland runoff and/or concentrated flow. The dams should be sized to filter a maximum flow through rate of 60 GPM/FT$^2$ of cross sectional area. A 2 year storm frequency may be used to calculate the flow rate.

Type 1 (18" high with no wire mesh): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approx. 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

## GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. In stream use the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with ¾" dia. rebar stakes.
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation — Design Division Standard

# TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

## ROCK FILTER DAMS

## EC(2)-93

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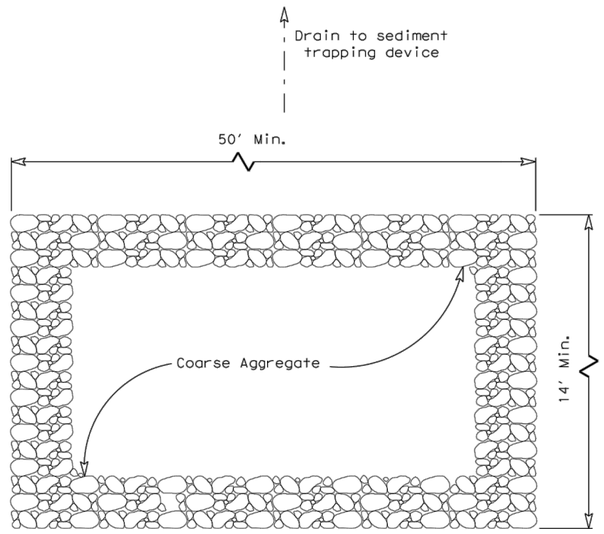
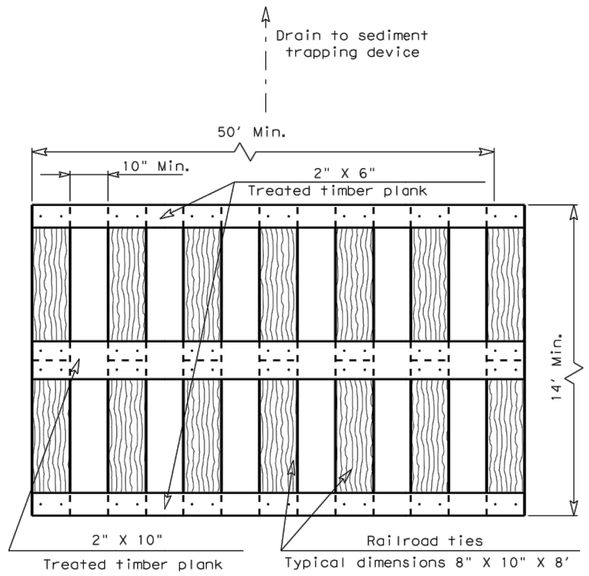



PLAN

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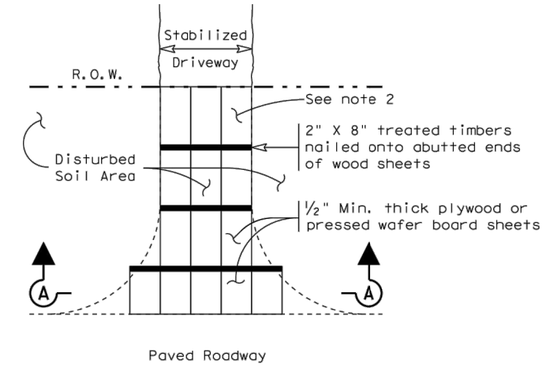


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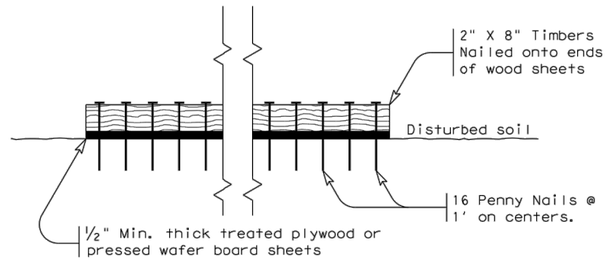
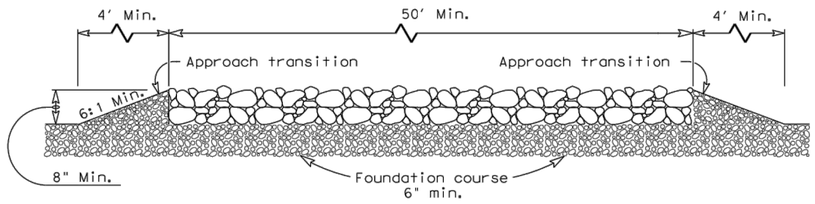



SECTION A-A

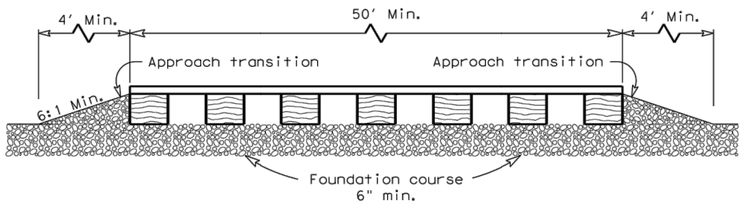



PROFILE

## CONSTRUCTION EXIT (TYPE 1)

### GENERAL NOTES

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50′.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.




PROFILE

## CONSTRUCTION EXIT (TYPE 2)

### GENERAL NOTES

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50′.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

## CONSTRUCTION EXIT (TYPE 3)

### GENERAL NOTES

1. The length of the type 3 construction exit shall be as shown on the plans, or as directed by the Engineer.
2. The type 3 construction exit may be constructed from open graded crushed stone with a size of two to four inches spread a min. of 4" thick to the limits shown on the plans.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

Texas Department of Transportation

Design Division Standard

# TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

## CONSTRUCTION EXITS

## EC(3)-93

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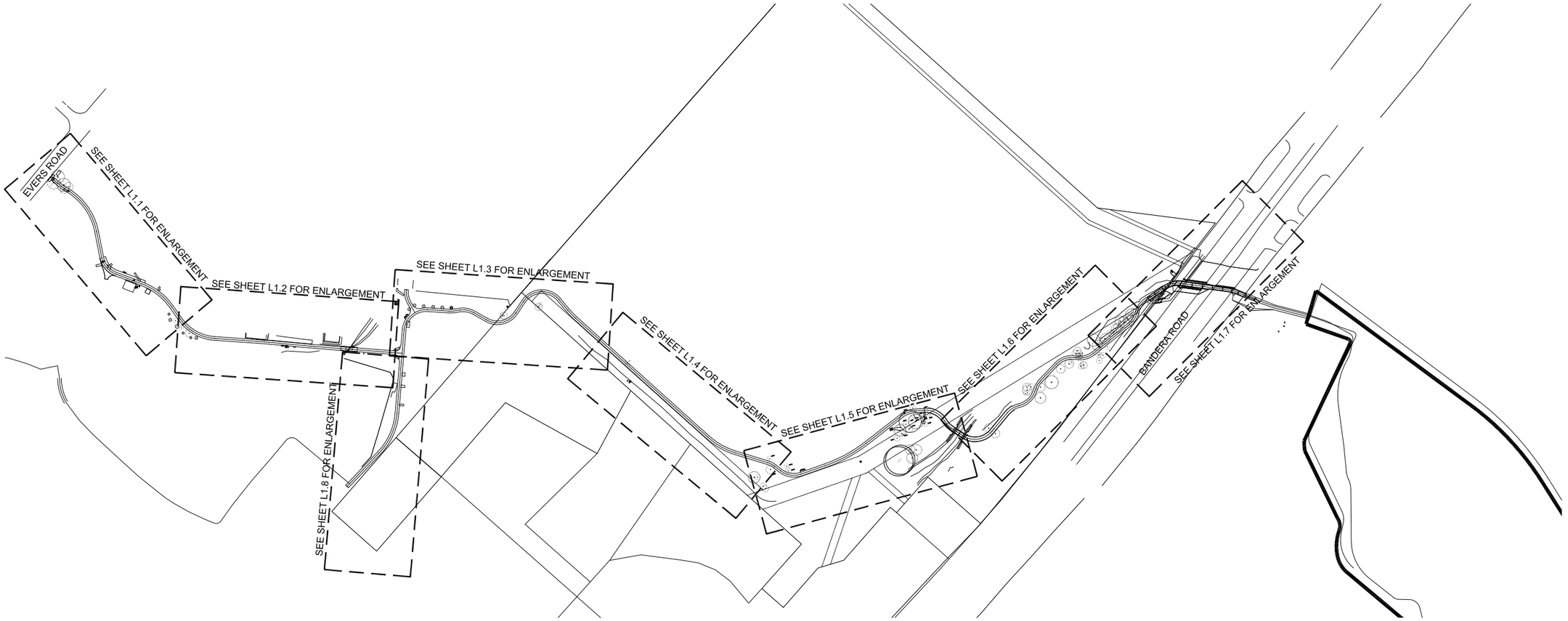
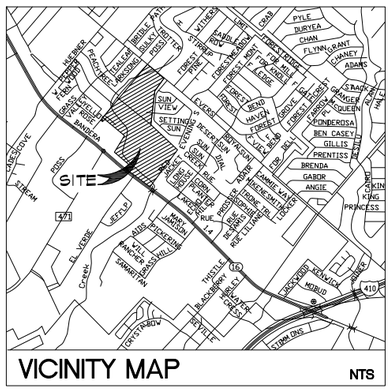



## 1 OVERALL TREE PRESERVATION PLAN
SCALE: 1"=300'-0"

### LEGEND

EXISTING TREES TO BE REMOVED

EXISTING TREES TO REMAIN




### TREE PRESERVATION NOTE(S) ( # Keyed Notes)

1. Existing trees and understory are to be selectively retained as directed by Landscape Architect. Trees to remain shall include protected trees 6" caliper and larger, and small species trees 2" and larger.
2. All conditions necessitating the removal or pruning of a tree shall be reviewed by Landscape Architect. The locations of any improvements with the potential of impacting trees shall be staked/delineated prior to the field review.
3. Barricade fencing shall be placed to protect RPZ of all trees to remain that are adjacent to construction or disturbed areas unless otherwise approved by Landscape Architect to provide access to work. In these instances the minimum distance for barricade fencing from trunk shall be equal to 50% minimum of RPZ. Five foot (5'-0") from trunk of tree or clump of trees is allowed on one side of the tree with approved alternative construction methods only. Full RPZ is required on other side. Approval from City Aborist/Tree Inspector is required. Refer to Detail 2/L3.0 for tree barricade fencing.
4. Maximum clearing limit within selective clearing areas around buildings to provide access for construction is 15'-0".
5. Root Protection Zone (RPZ): RPZ requirements are defined as 12" diameter per 1" caliper of trunk at 42" height (Diameter Breast Height, DBH). Minimum RPZ requirements are 6" to each 1" caliper at DBH or 5' to trunk whichever is greater.
6. Protected & heritage trees shall be removed only under the following situations:
   A. Approval from Mark Kroeze (210-494-4771) is required for removal of any significant/heritage tree.
   B. Cut/fill greater than three (3") inches to take place beneath the dripline of a tree exceeds 50% of the Root Protection Zone (RPZ).
   C. Construction of a building or other improvements require the removal of more than 30% of the viable portion of a tree crown.
   D. Poor condition of tree.
7. No equipment, vehicles or materials shall be operated or stored within the root protection zone. No clean-out areas will be constructed so that the material will be in or migrate to the root protection zone.
8. Roots or branches in conflict with construction shall be cut cleanly according to proper pruning methods. All Oak wounds shall be painted within 30 minutes to prevent Oak Wilt infection.
9. Exposed roots shall be covered at the end of the work day using techniques such as covering with soil, mulch or wet burlap.
10. All woody material to be removed may be chipped into mulch & distributed on site within RPZ's at trees adjacent to construction & natural areas.
11. Trees which are damaged or lost due to contractor's negligence during construction shall be mitigated.
12. In addition, existing protected trees on a project are to be maintained in a healthy condition at all times. This includes irrgating, fertilizing, pruning and other maintenance as needed on the project. Trees that die within twelve (12) months shall be replaced at the ratio determined by the City of Leon Valley's Unified Development Code.
13. Contractor is responsible for providing a licensed tree maintenance professional throughout the project.
14. Not all trees were surveyed in the Leon Valley Huebner Onion Nautral Area. Contractor shall provide a continuous line of tree fencing along both sides of trail in Natural Area as indicated in Storm Water Pollution Prevention Plan sheets. Any trees damaged or removed without approval from the Owner will be mitigated by the contractor at no cost to the owner.

### TREE PRESERVATION SCHEDULE

See Sheet L1.9 for Tree Preservation Schedule.

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
ALBERT B. FERNANDEZ JR.
1218
REGISTERED LANDSCAPE ARCHITECT
11-07-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481

C•F•Z Group LLC
Cotterau • Fernandez • Zavala
Landscape Architecture & Planning
4242 Medical Drive, Suite 5200
San Antonio, Texas 78229
210-366-1911/210-366-0044 fax

LEON VALLEY

Texas Department of Transportation
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LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

OVERALL TREE PRESERVATION PLAN

| CHK. BY: | ABF | IDS JOB NO: | 211700100 |
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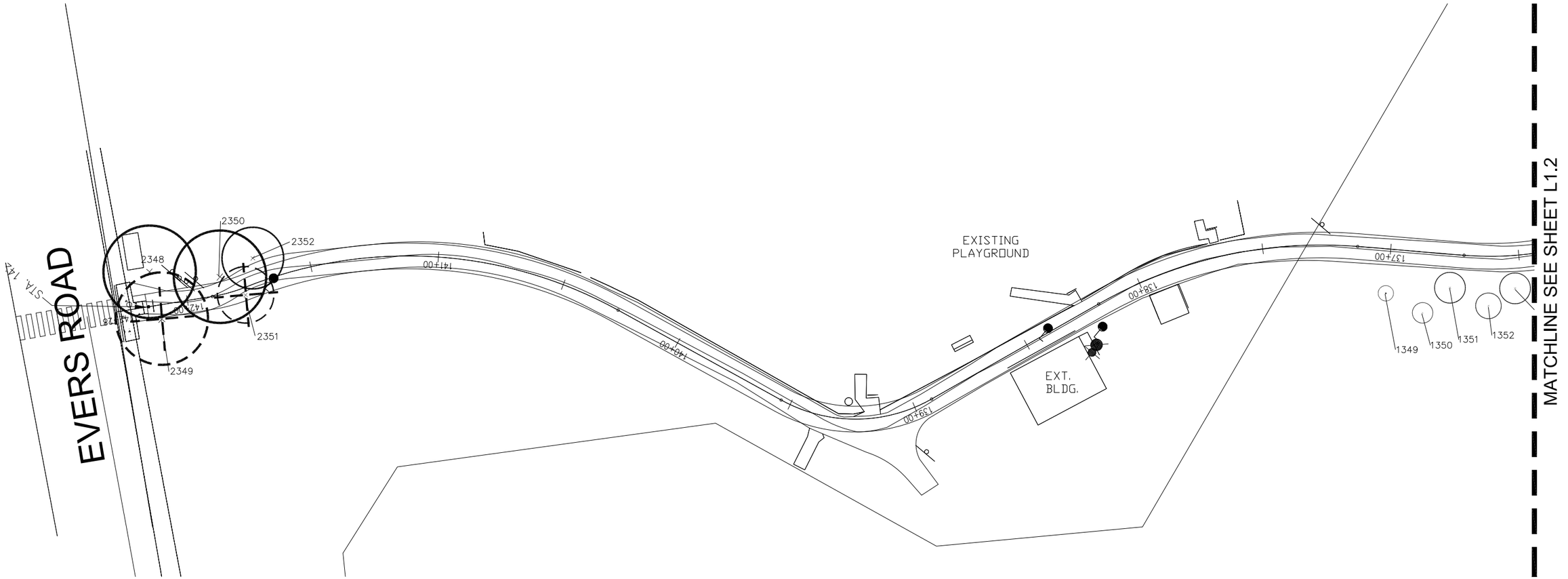
| DWG. BY: | HG | SHEET NO. | TOTAL SHEETS |
| DATE: 11/07/2014 | | L1.0 | 32 |




## 1 ENLARGED TREE PRESERVATION PLAN

SCALE: 1"=40'-0"

### LEGEND

EXISTING TREES TO BE REMOVED

EXISTING TREES TO REMAIN

### TREE PRESERVATION NOTE(S) ( # Keyed Notes)

1. Existing trees and understory are to be selectively retained as directed by Landscape Architect. Trees to remain shall include protected trees 6" caliper and larger, and small species trees 2" and larger.
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| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
ALBERT B. FERNANDEZ JR.
1218
REGISTERED LANDSCAPE ARCHITECT
10-15-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481

LEONVALLEY

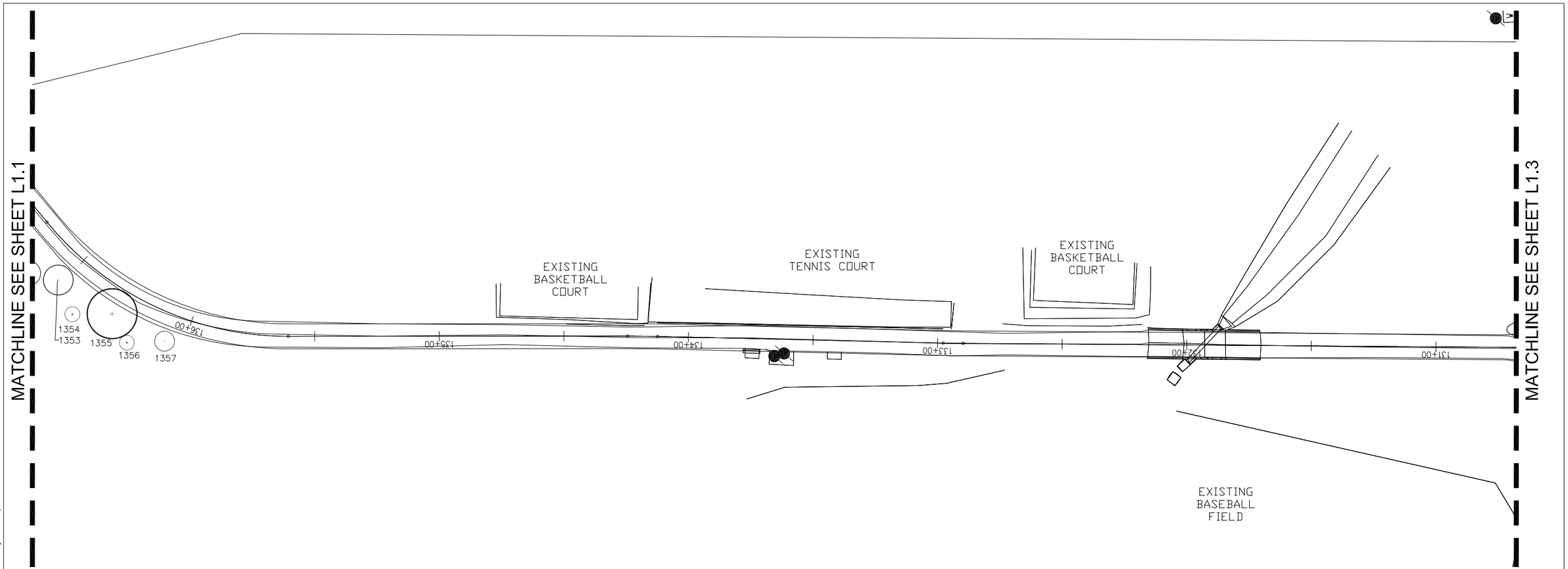


LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

ENLARGED TREE PRESERVATION PLAN

C•F•Z Group LLC
Coltrane • Fernandez • Zavala
Landscape Architecture & Planning
4242 Medical Drive, Suite 5200
San Antonio, Texas 78229
210-366-1911/210-366-0044 fax

| CHK. BY: | ABF | IDS JOB NO: | 211700100 |
|---|---|---|---|
| DWG. BY: | HG | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | | L1.1 | 32 |




# 1 ENLARGED TREE PRESERVATION PLAN

SCALE: 1"=40'-0"

## LEGEND

EXISTING TREES TO BE REMOVED

EXISTING TREES TO REMAIN

## TREE PRESERVATION NOTE(S) ( # Keyed Notes)

1. Existing trees and understory are to be selectively retained as directed by Landscape Architect. Trees to remain shall include protected trees 6" caliper and larger, and small species trees 2" and larger.
2. All conditions necessitating the removal or pruning of a tree shall be reviewed by Landscape Architect. The locations of any improvements with the potential of impacting trees shall be staked/delineated prior to the field review.
3. Barricade fencing shall be placed to protect RPZ of all trees to remain that are adjacent to construction or disturbed areas unless otherwise approved by Landscape Architect to provide access to work. In these instances the minimum distance for barricade fencing from trunk shall be equal to 50% minimum of RPZ. Five foot (5'-0") from trunk of tree or clump of trees is allowed on one side of the tree with approved alternative construction methods only. Full RPZ is required on other side. Approval from City Aborist/Tree Inspector is required. Refer to Detail 2/L3.0 for tree barricade fencing.
4. Maximum clearing limit within selective clearing areas around buildings to provide access for construction is 15'-0".
5. Root Protection Zone (RPZ): RPZ requirements are defined as 12" diameter per 1" caliper of trunk at 42" height (Diameter Breast Height, DBH). Minimum RPZ requirements are 6" to each 1" caliper at DBH or 5' to trunk whichever is greater.
6. Protected & heritage trees shall be removed only under the following situations:
   A. Approval from Mark Kroeze (210-494-4771) is required for removal of any significant/heritage tree.
   B. Cut/fill greater than three (3") inches to take place beneath the dripline of a tree exceeds 50% of the Root Protection Zone (RPZ).
   C. Construction of a building or other improvements require the removal of more than 30% of the viable portion of a tree crown.
   D. Poor condition of tree.
7. No equipment, vehicles or materials shall be operated or stored within the root protection zone. No clean-out areas will be constructed so that the material will be in or migrate to the root protection zone.
8. Roots or branches in conflict with construction shall be cut cleanly according to proper pruning methods. All Oak wounds shall be painted within 30 minutes to prevent Oak Wilt infection.
9. Exposed roots shall be covered at the end of the work day using techniques such as covering with soil, mulch or wet burlap.
10. All woody material to be removed may be chipped into mulch & distributed on site within RPZ's at trees adjacent to construction & natural areas.
11. Trees which are damaged or lost due to contractor's negligence during construction shall be mitigated.
12. In addition, existing protected trees on a project are to be maintained in a healthy condition at all times. This includes irrgating, fertilizing, pruning and other maintenance as needed on the project. Trees that die within twelve (12) months shall be replaced at the ratio determined by the City of Leon Valley's Unified Development Code.
13. Contractor is responsible for providing a licensed tree maintenance professional throughout the project.
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STATE OF TEXAS
ALBERT B. FERNANDEZ JR.
1218
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10-15-14

IDS Engineering Group
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210.340.8481

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LEON VALLEY, TEXAS

ENLARGED TREE PRESERVATION PLAN

C•F•Z Group LLC
Coltrane • Fernandez • Zavala
Landscape Architecture & Planning
4242 Medical Drive, Suite 5200
San Antonio, Texas 78229
210-366-1911/210-366-0044 fax

| CHK. BY: | ABF | IDS JOB NO: | 211700100 |
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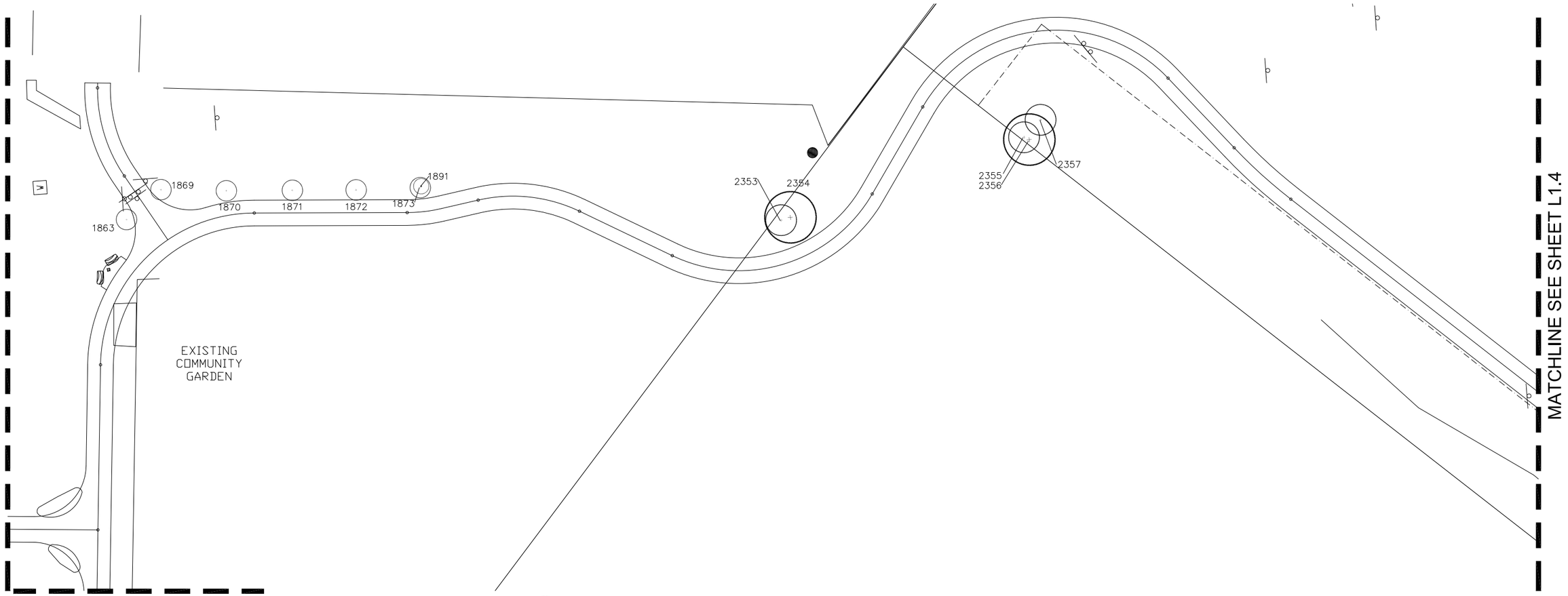
| DATE: 10/15/2014 | | L1.2 | 32 |




## 1 ENLARGED TREE PRESERVATION PLAN
SCALE: 1"=40'-0"

### LEGEND

EXISTING TREES TO BE REMOVED

EXISTING TREES TO REMAIN

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ENLARGED TREE PRESERVATION PLAN

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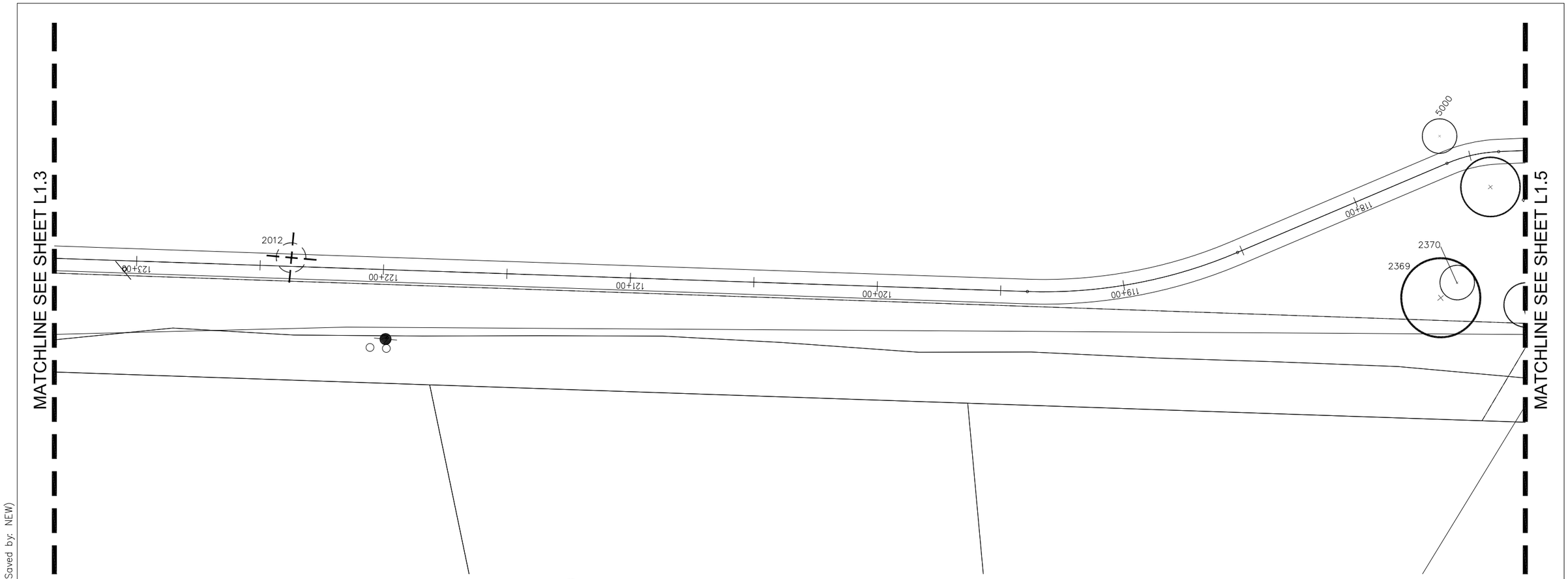
| DWG. BY: | HG | SHEET NO. | TOTAL SHEETS |
| DATE: 11/07/2014 | | L1.3 | 32 |




## 1 ENLARGED TREE PRESERVATION PLAN
SCALE: 1"=40'-0"

### LEGEND

EXISTING TREES TO BE REMOVED

EXISTING TREES TO REMAIN

### TREE PRESERVATION NOTE(S) ( # Keyed Notes)

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ENLARGED TREE PRESERVATION PLAN

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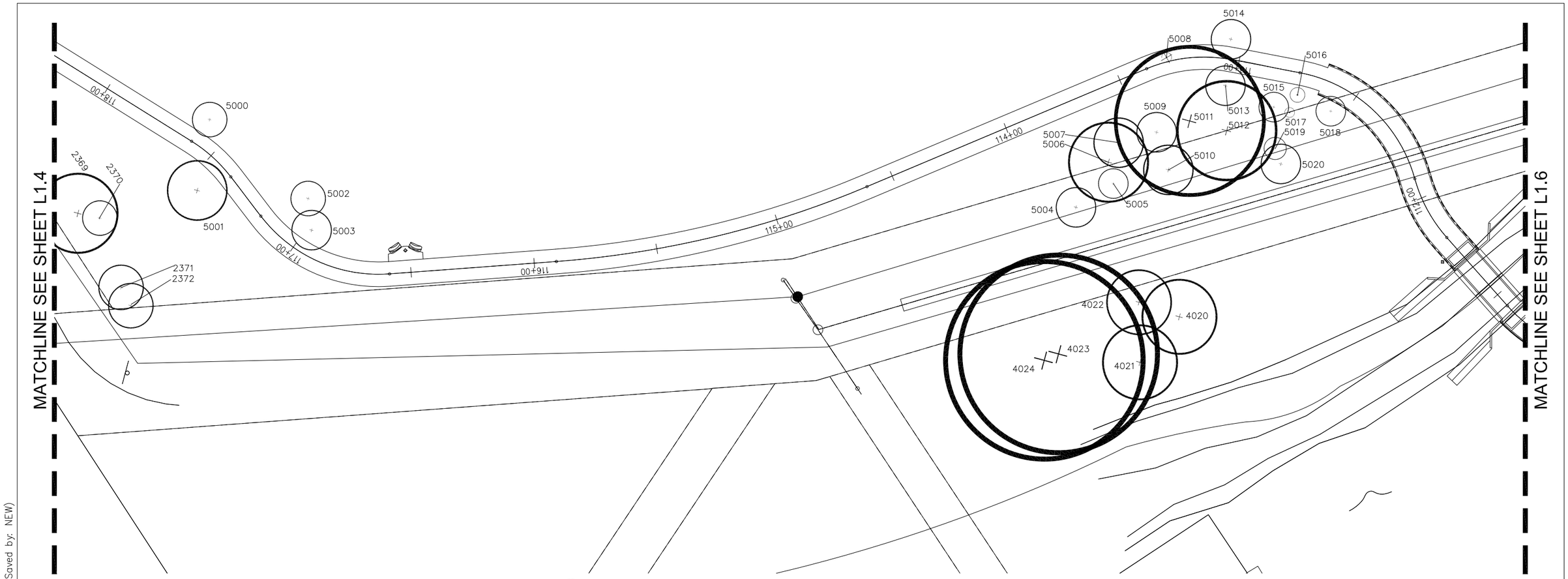


# 1 ENLARGED TREE PRESERVATION PLAN

SCALE: 1"=40'-0"

## LEGEND

EXISTING TREES TO BE REMOVED

EXISTING TREES TO REMAIN

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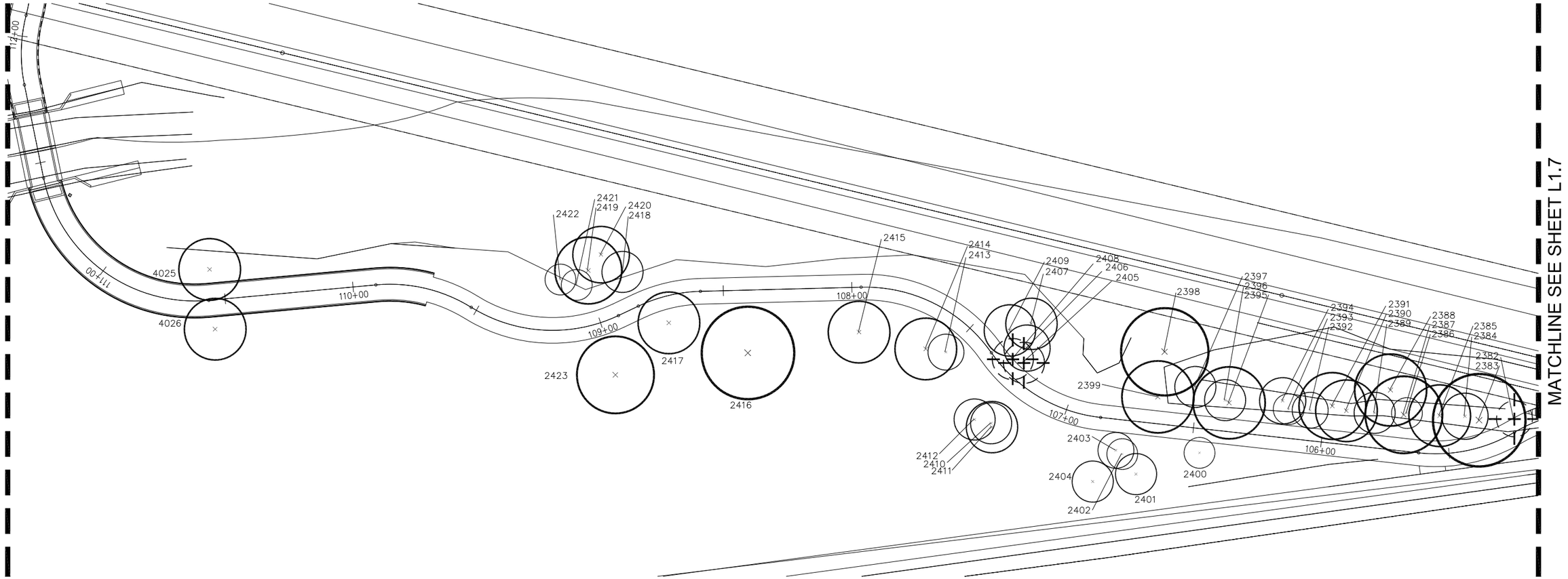


# 1 ENLARGED TREE PRESERVATION PLAN

SCALE: 1"=40'-0"

## LEGEND

EXISTING TREES TO BE REMOVED

EXISTING TREES TO REMAIN

## TREE PRESERVATION NOTE(S) ( # Keyed Notes)

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ENLARGED TREE PRESERVATION PLAN

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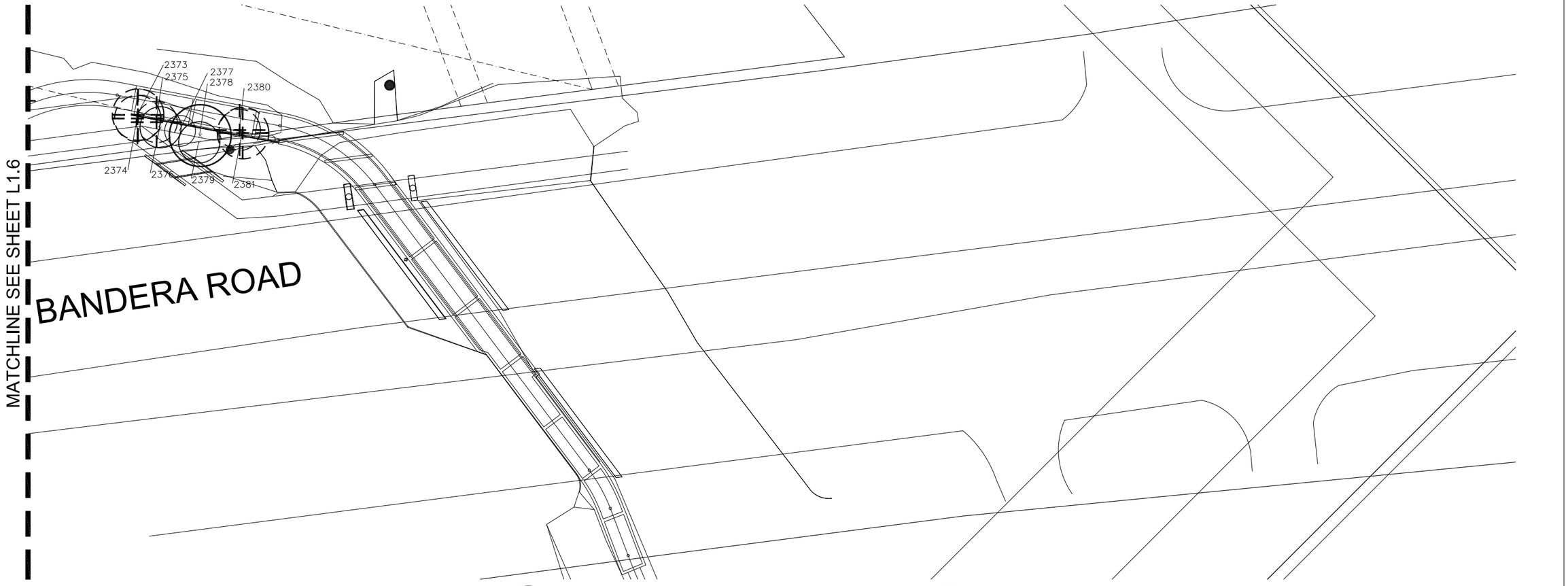


## 1 ENLARGED TREE PRESERVATION PLAN
SCALE: 1"=40'-0"

### LEGEND

EXISTING TREES TO BE REMOVED

EXISTING TREES TO REMAIN

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| DWG. BY: | HG | SHEET NO. | TOTAL SHEETS |
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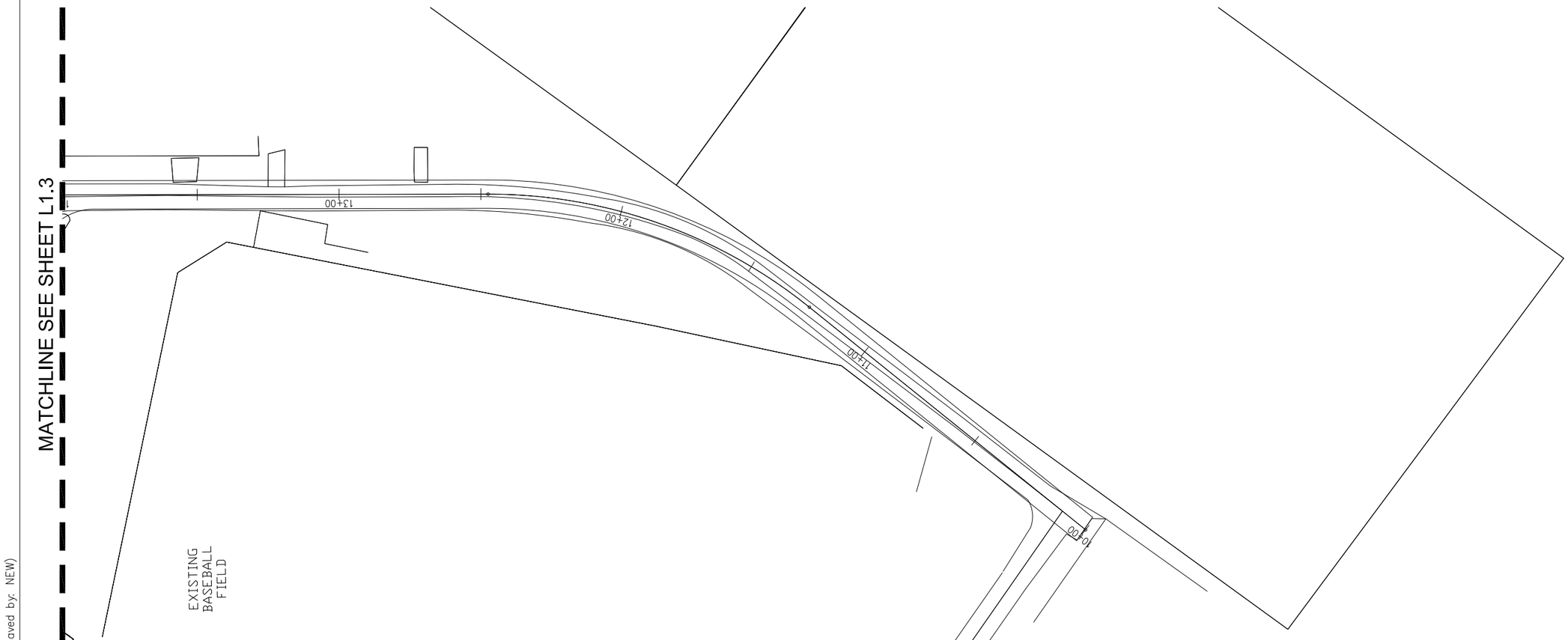


## 1 ENLARGED TREE PRESERVATION PLAN
SCALE: 1"=40'-0"

**LEGEND**

EXISTING TREES TO BE REMOVED

EXISTING TREES TO REMAIN

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1. Existing trees and understory are to be selectively retained as directed by Landscape Architect. Trees to remain shall include protected trees 6" caliper and larger, and small species trees 2" and larger.
2. All conditions necessitating the removal or pruning of a tree shall be reviewed by Landscape Architect. The locations of any improvements with the potential of impacting trees shall be staked/delineated prior to the field review.
3. Barricade fencing shall be placed to protect RPZ of all trees to remain that are adjacent to construction or disturbed areas unless otherwise approved by Landscape Architect to provide access to work. In these instances the minimum distance for barricade fencing from trunk shall be equal to 50% minimum of RPZ. Five foot (5'-0") from trunk of tree or clump of trees is allowed on one side of the tree with approved alternative construction methods only. Full RPZ is required on other side. Approval from City Aborist/Tree Inspector is required. Refer to Detail 2/L3.0 for tree barricade fencing.
4. Maximum clearing limit within selective clearing areas around buildings to provide access for construction is 15'-0".
5. Root Protection Zone (RPZ): RPZ requirements are defined as 12" diameter per 1" caliper of trunk at 42" height (Diameter Breast Height, DBH). Minimum RPZ requirements are 6" to each 1" caliper at DBH or 5' to trunk whichever is greater.
6. Protected & heritage trees shall be removed only under the following situations:
   A. Approval from Mark Kroeze (210-494-4771) is required for removal of any significant/heritage tree.
   B. Cut/fill greater than three (3") inches to take place beneath the dripline of a tree exceeds 50% of the Root Protection Zone (RPZ).
   C. Construction of a building or other improvements require the removal of more than 30% of the viable portion of a tree crown.
   D. Poor condition of tree.
7. No equipment, vehicles or materials shall be operated or stored within the root protection zone. No clean-out areas will be constructed so that the material will be in or migrate to the root protection zone.
8. Roots or branches in conflict with construction shall be cut cleanly according to proper pruning methods. All Oak wounds shall be painted within 30 minutes to prevent Oak Wilt infection.
9. Exposed roots shall be covered at the end of the work day using techniques such as covering with soil, mulch or wet burlap.
10. All woody material to be removed may be chipped into mulch & distributed on site within RPZ's at trees adjacent to construction & natural areas.
11. Trees which are damaged or lost due to contractor's negligence during construction shall be mitigated.
12. In addition, existing protected trees on a project are to be maintained in a healthy condition at all times. This includes irrgating, fertilizing, pruning and other maintenance as needed on the project. Trees that die within twelve (12) months shall be replaced at the ratio determined by the City of Leon Valley's Unified Development Code.
13. Contractor is responsible for providing a licensed tree maintenance professional throughout the project.
14. Not all trees were surveyed in the Leon Valley Huebner Onion Nautral Area. Contractor shall provide a continuous line of tree fencing along both sides of trail in Natural Area. Any trees damaged or removed without approval from the Owner will be mitigated by the contractor at no cost to the owner.

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
ALBERT B. FERNANDEZ JR.
1218
REGISTERED LANDSCAPE ARCHITECT
10-15-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410, Suite 550
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LEONVALLEY

Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

ENLARGED TREE PRESERVATION PLAN

| | | | |
|---|---|---|---|
| CHK. BY: | ABF | IDS JOB NO: | 211700100 |
| DWG. BY: | HG | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | | L1.8 | 32 |

| TREE PRESERVATION REQUIREMENTS | | | | | | |
|---|---|---|---|---|---|---|
| | **Total # of Trees** | **Preservation Requirements** | **Min. Required for Preservation** | **# of Trees to Remain** | **# of Trees to be Removed** | **# of Trees to be Planted** |
| Small Trees | 34 | 50% (floodplain) | 17 | 32 | 2 | 4 (previous column x 2-3" trees) |
| Medium Trees | 38 | 50% (floodplain) | 19 | 30 | 8 | 16 (previous column x 2-6" trees) |
| Large Trees | 29 | 50% (floodplain) | 14.5 | 28 | 1 | 3 (previous column x 3-8" trees) |
| **TOTAL** | **101** | | **50.5** | **90** | **11** | **23** |
| | | | | | | |
| Heritage Trees | 3 | 100% (floodplain) | 3 | 3 | 0 | 0 |
| **TOTAL** | **3** | | | | | |

| TREE PRESERVATION SCHEDULE | | | | TREES | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **TREE NUMBER** | **DIAMETER BREAST HEIGHT** | **SPECIES** | **FIELD NOTE** | **SMALL (4"-7")** | | **MEDIUM (8"-11")** | | **LARGE (12"-23")** | | **HERITAGE (24"+)** | |
| | | | | TO REMAIN | TO BE REMOVED | TO REMAIN | TO BE REMOVED | TO REMAIN | TO BE REMOVED | TO REMAIN | TO BE REMOVED |
| 1349 | 3" | TREE | | X | | | | | | | |
| 1350 | 4" | TREE | | X | | | | | | | |
| 1351 | 6" | TREE | | X | | | | | | | |
| 1352 | 5" | TREE | | X | | | | | | | |
| 1353 | 6" | TREE | | X | | | | | | | |
| 1354 | 3" | TREE | | --- | | | | | | | |
| 1355 | 10" | TREE | | | | X | | | | | |
| 1356 | 3" | TREE | | --- | | | | | | | |
| 1357 | 4" | TREE | | X | | | | | | | |
| 1863 | 4" | TREE | | X | | | | | | | |
| 1869 | 4" | TREE | | X | | | | | | | |
| 1870 | 4" | TREE | | X | | | | | | | |
| 1871 | 4" | TREE | | X | | | | | | | |
| 1872 | 4" | TREE | | X | | | | | | | |
| 1873 | 4" | TREE | | X | | | | | | | |
| 1891 | 3" | TREE | | --- | | | | | | | |
| 2012 | 6" | MESQUITE | | | X | | | | | | |
| 2348 | 18" | HACKBERRY | | | | | | X | | | |
| 2349 | 18" | HACKBERRY | | | | | | | X | | |
| 2350 | 18" | CEDAR ELM | | | | | | X | | | |
| 2351 | 11" | CEDAR ELM | | | | | X | | | | |
| 2352 | 12" | CEDAR ELM | | | | | | X | | | |
| 2353 | 6" | HACKBERRY | | X | | | | | | | |
| 2354 | 10" | HACKBERRY | | | | X | | | | | |
| 2355 | 6" | HACKBERRY | | X | | | | | | | |
| 2356 | 10" | HACKBERRY | | | | X | | | | | |
| 2357 | 6" | HACKBERRY | | X | | | | | | | |
| 2369 | 16" | CEDAR ELM | | | | | | X | | | |
| 2370 | 7" | HACKBERRY | | X | | | | | | | |
| 2371 | 9" | CEDAR ELM | | | | X | | | | | |
| 2372 | 9" | CEDAR ELM | | | | X | | | | | |
| 2373 | 10" | CEDAR ELM | | | | | X | | | | |
| 2374 | 9" | CEDAR ELM | | | | | X | | | | |
| 2375 | 8" | CEDAR ELM | | | | | X | | | | |
| 2376 | 8" | CEDAR ELM | | | | X | | | | | |
| 2377 | 6" | CEDAR ELM | | X | | | | | | | |
| 2378 | 12" | CEDAR ELM | | | | | | X | | | |
| 2379 | 8" | CEDAR ELM | | | | X | | | | | |
| 2380 | 8" | CEDAR ELM | | | | | X | | | | |
| 2381 | 10" | CEDAR ELM | | | | | X | | | | |
| 2382 | 7" | HACKBERRY | | | X | | | | | | |
| 2383 | 18" | CEDAR ELM | | | | | | X | | | |
| 2384 | 9" | CEDAR ELM | | | | X | | | | | |
| 2385 | 12" | CEDAR ELM | | | | | | X | | | |
| 2386 | 6" | CEDAR ELM | | X | | | | | | | |
| 2387 | 15" | CEDAR ELM | | | | | | X | | | |
| 2388 | 14" | CEDAR ELM | | | | | | X | | | |
| 2389 | 8" | CEDAR ELM | | | | X | | | | | |
| 2390 | 12" | CEDAR ELM | | | | | | X | | | |
| 2391 | 13" | CEDAR ELM | | | | | | X | | | |
| 2392 | 7" | CEDAR ELM | | X | | | | | | | |
| 2393 | 6" | CEDAR ELM | | X | | | | | | | |
| 2394 | 9" | HACKBERRY | | | | X | | | | | |
| 2395 | 14" | CEDAR ELM | | | | | | X | | | |
| 2396 | 8" | CEDAR ELM | | | | X | | | | | |
| 2397 | 8" | CHINBERRY | | | | X | | | | | |
| 2398 | 17" | CEDAR ELM | | | | | | X | | | |
| 2399 | 14" | CEDAR ELM | | | | | | X | | | |
| 2400 | 6" | CEDAR ELM | | X | | | | | | | |
| 2401 | 8" | CEDAR ELM | | | | X | | | | | |
| 2402 | 6" | HACKBERRY | | X | | | | | | | |
| 2403 | 7" | HACKBERRY | | X | | | | | | | |

| TREE PRESERVATION SCHEDULE | | | | TREES | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **TREE NUMBER** | **DIAMETER BREAST HEIGHT** | **SPECIES** | **FIELD NOTE** | **SMALL (4"-7")** | | **MEDIUM (8"-11")** | | **LARGE (12"-23")** | | **HERITAGE (24"+)** | |
| | | | | TO REMAIN | TO BE REMOVED | TO REMAIN | TO BE REMOVED | TO REMAIN | TO BE REMOVED | TO REMAIN | TO BE REMOVED |
| 2404 | 8" | CEDAR ELM | | | | X | | | | | |
| 2405 | 8" | ASH | | | | | X | | | | |
| 2406 | 9" | ASH | | | | X | | | | | |
| 2407 | 10" | ASH | | | | X | | | | | |
| 2408 | 8" | ASH | | | | | X | | | | |
| 2409 | 10" | HACKBERRY | | | | X | | | | | |
| 2410 | 8" | CEDAR ELM | | | | X | | | | | |
| 2411 | 10" | HACKBERRY | | | | X | | | | | |
| 2412 | 8" | CEDAR ELM | | | | X | | | | | |
| 2413 | 7" | CEDAR ELM | | X | | | | | | | |
| 2414 | 12" | HACKBERRY | | | | | | X | | | |
| 2415 | 12" | HACKBERRY | | | | | | X | | | |
| 2416 | 18" | CEDAR ELM | | | | | | X | | | |
| 2417 | 12" | HACKBERRY | | | | | | X | | | |
| 2418 | 8" | CEDAR ELM | | | | X | | | | | |
| 2419 | 13" | HACKBERRY | | | | | | X | | | |
| 2420 | 11" | CEDAR ELM | | | | X | | | | | |
| 2421 | 6" | CEDAR ELM | | X | | | | | | | |
| 2422 | 6" | CEDAR ELM | | X | | | | | | | |
| 2423 | 15" | HACKBERRY | | | | | | X | | | |
| 4020 | 15" | HACKBERRY | | | | | | X | | | |
| 4021 | 15" | CEDAR ELM | | | | | | X | | | |
| 4022 | 13" | CEDAR ELM | | | | | | X | | | |
| 4023 | 40" | LIVE OAK | | | | | | | | X | |
| 4024 | 40" | LIVE OAK | | | | | | | | X | |
| 4025 | 12" | CEDAR ELM | | | | | | X | | | |
| 4026 | 12" | HACKBERRY | | | | | | X | | | |
| 5000 | 7" | CEDAR ELM | | X | | | | | | | |
| 5001* | 12" | CEDAR ELM | | | | | | X | | | |
| 5002* | 7" | CEDAR ELM | | X | | | | | | | |
| 5003* | 8" | CEDAR ELM | | | | X | | | | | |
| 5004* | 8" | HACKBERRY | | | | X | | | | | |
| 5005* | 6" | PECAN | | X | | | | | | | |
| 5006* | 16" | HACKBERRY | | | | | | X | | | |
| 5007* | 10" | HACKBERRY | | | | X | | | | | |
| 5008* | 2" | CEDAR ELM | | | — | | | | | | |
| 5009* | 8" | HACKBERRY | | | | X | | | | | |
| 5010* | 10" | PECAN | | | | X | | | | | |
| 5011* | 30" | OAK | | | | | | | | X | |
| 5012* | 20" | HACKBERRY | | | | | | X | | | |
| 5013* | 8" | OAK | | | | X | | | | | |
| 5014* | 8" | OAK | | | | X | | | | | |
| 5015* | 6" | HACKBERRY | | X | | | | | | | |
| 5016* | 3" | HACKBERRY | | — | | | | | | | |
| 5017* | 2" | PECAN | | — | | | | | | | |
| 5018* | 6" | PECAN | | X | | | | | | | |
| 5019* | 4.5" | PECAN | | X | | | | | | | |
| 5020* | 8" | CEDAR ELM | | | | X | | | | | |
| | | | | | | | | | | | |
| SUB-TOTAL: | | | | 32 | 2 | 30 | 8 | 28 | 1 | 3 | 0 |
| TOTAL TREES ON SITE: | | | | 34 | | 38 | | 29 | | 3 | |

LEGEND:
*EXISTING TREE DOES NOT HAVE TREE TAG. TREE TAG NUMBER PROVIDED FOR REFERENCE ONLY.
— EXISTING TREE DOES NOT MEET CITY'S MINIMUM PRESERVATION SIZE REQUIREMENT.

C•F•Z Group LLC
Coltrane • Fernandez • Zavala
Landscape Architecture & Planning
4242 Medical Drive, Suite 5200
San Antonio, Texas 78229
210-366-1911/210-366-0044 fax

| REV | DATE | BY | REVISIONS |
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| | | | |

STATE OF TEXAS
ALBERT B. FERNANDEZ JR.
1218
REGISTERED LANDSCAPE ARCHITECT
11-07-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481

LEONVALLEY

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LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

TREE PRESERVATION SCHEDULE

| | | | |
|---|---|---|---|
| CHK. BY: | ABF | IDS JOB NO: | 211700100 |
| DWG. BY: | HG | SHEET NO. | TOTAL SHEETS |
| DATE: | 11/07/2014 | L1.9 | 32 |

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## 1 OVERALL LANDSCAPE PLAN
SCALE: 1"=300'-0"

### LEGEND

EXISTING TREES TO REMAIN

NATIVE SUN/SHADE GRASS SEED MIX, HYDRO-SEED

### PLANTING NOTES: ( # Keyed Notes)

1. Landscape contractor shall be responsible for making himself familiar with the specifications and all submittal requirements. It is the responsibility of the Landscape contractor to notify the Landscape Architect for site inspections as specified in the specifications. Failure to notify the Landscape Architect does not relieve the contractor from inspection approval and will require the contractor to install/repair work as required for approval at the cost of the contractor. Landscape contractor is to inform Landscape Architect of the start date of work.
2. The landscape contractor is to notify Texas One Call (800-245-4545) and 800 DIG TESS (800-344-8377) 72 hours prior to any excavation. Landscape contractor shall be responsible for making himself familiar with all underground utilities, pipes and structures. Landscape contractor shall take sole responsibility for any cost incurred due to damage of said utilities whether or not Texas One Call is notified.
3. Do not willingly proceed with construction as designed when it is obvious that unknown obstruction and/or grade differences exist that may not have been known during design. Such conditions shall be immediately brought to the attention of the Landscape Architect. The Contractor shall assume full responsibility for all necessary revisions due to failure to give such notification.
4. The Contractor shall be responsible for any coordination with subcontractors as required to accomplish planting operations.
5. If conflicts arise between size of areas and plans, Contractor is to contact Landscape Architect for resolution. Failure to make such conflicts known will result in Contractor's liability to relocate the materials.
6. See specifications for planting requirements, materials and execution.

7. Trail medallion, See Dtl. 1/L4.0.
8. Concrete pad, See Civil Dwgs.
9. 1/4 mile marker, See Dtl. 3/L4.0.
10. Rest area, See Dtl. 1/L4.3.
11. Boulder seating, See Dtl. 1/L4.1.
12. Trash receptacle, See Dtl. 2/L4.1.
13. Recycle receptacle, See Dtl. 2/L4.1.
14. Seed to limits of grading and to repair construction damage. See Civil Dwgs.
15. Trailhead sign, See Dtl. 1/L4.2.
16. Creek crossing marker, See Dtl. 2/L4.0.
17. Roadway sign, See Dtl. 4/L4.3.
18. Bike rack, See Dtl. 4/L4.0.
19. Water fountain, See Dtl. 3/L4.1.
20. Kiosk, See Dtl. 1/L4.4.
21. Shade structure, See Dtl. 1-5/L4.5.
22. Trail signage, See Dtl. 3/L4.3.
23. Replace existing water fountain with new water fountain, See Dtl. 3/L4.1.
24. Creek crossing. See Civil Dwgs. Creek crossing to receive flagstone veneer. See Dtl. 1/L4.7.
25. Cedar split-rail fence. See Dtl. 2/L4.7.
26. Remove existing PVC hand rail and replace with new galvanized steel railing. See Dtl. 1-5/L4.6 and 1/L4.8.
27. Remove existing bench. Replace with new park bench. See Dtl. 3/L4.7.
28. Concrete retaining wall. See Civil Dwgs. Retaining wall to receive flagstone veneer. See Dtl. 1/L4.7.
29. Existing bridge to receive flagstone veneer. See Dtl. 1/L4.7.
30. Mutt Mitt Sign, See Dtl. 2/L4.3.
31. Coordinate relocation of existing signs with Civil Engineer.

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
ALBERT B. FERNANDEZ JR.
1218
REGISTERED LANDSCAPE ARCHITECT
11-07-14


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LEON VALLEY, TEXAS

OVERALL LANDSCAPE PLAN


C•F•Z Group LLC
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Landscape Architecture & Planning
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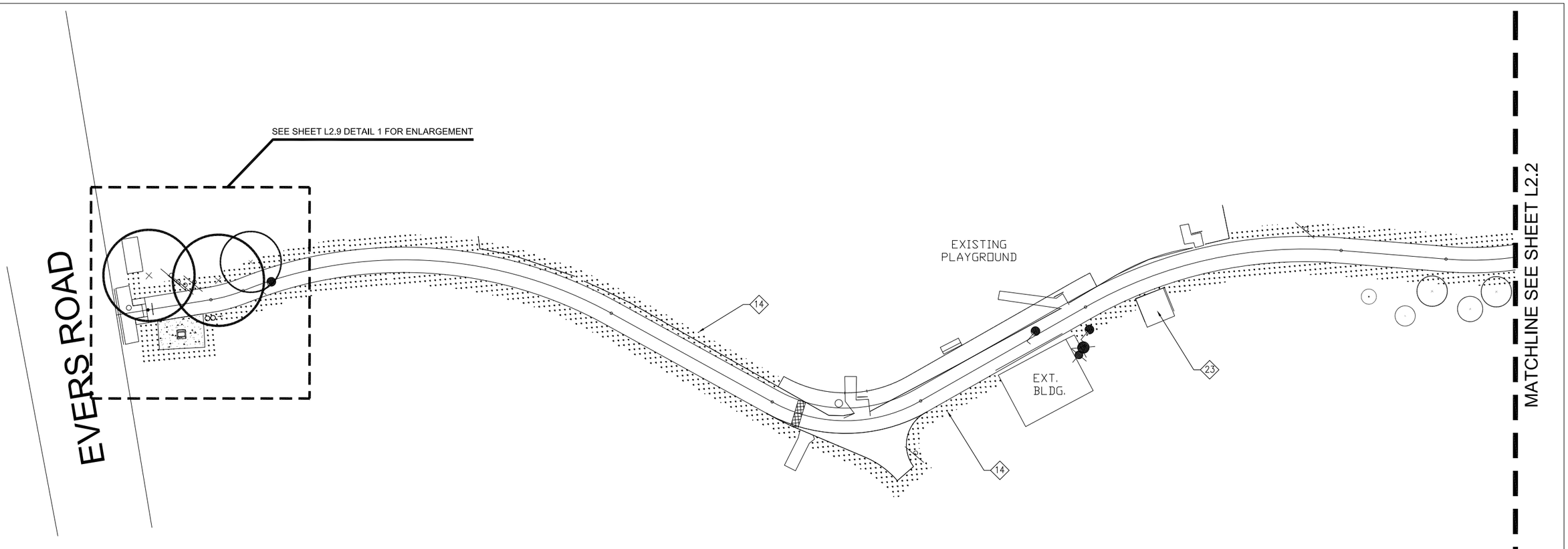
210-366-1911/210-366-0044 fax


| | | | |
|---|---|---|---|
| CHK. BY: | ABF | IDS JOB NO: | 211700100 |
| DWG. BY: | HG | SHEET NO. | TOTAL SHEETS |
| DATE: 11/07/2014 | | L2.0. | 32 |

S:\14-873\Dwgs\4873_L4.0.dwg [L2.0] Plotted Nov 07, 2014 at 9:28am by NEW (Last Saved by: NEW)




## 1 ENLARGED LANDSCAPE PLAN
SCALE: 1"=40'-0"

### LEGEND

EXISTING TREES TO REMAIN

NATIVE SUN/SHADE GRASS SEED MIX, HYDRO-SEED

### PLANTING NOTES: ( ◇# Keyed Notes)

1. Landscape contractor shall be responsible for making himself familiar with the specifications and all submittal requirements. It is the responsibility of the Landscape contractor to notify the Landscape Architect for site inspections as specified in the specifications. Failure to notify the Landscape Architect does not relieve the contractor from inspection approval and will require the contractor to install/repair work as required for approval at the cost of the contractor. Landscape contractor is to inform Landscape Architect of the start date of work.
2. The landscape contractor is to notify Texas One Call (800-245-4545) and 800 DIG TESS (800-344-8377) 72 hours prior to any excavation. Landscape contractor shall be responsible for making himself familiar with all underground utilities, pipes and structures. Landscape contractor shall take sole responsibility for any cost incurred due to damage of said utilities whether or not Texas One Call is notified.
3. Do not willingly proceed with construction as designed when it is obvious that unknown obstruction and/or grade differences exist that may not have been known during design. Such conditions shall be immediately brought to the attention of the Landscape Architect. The Contractor shall assume full responsibility for all necessary revisions due to failure to give such notification.
4. The Contractor shall be responsible for any coordination with subcontractors as required to accomplish planting operations.
5. If conflicts arise between size of areas and plans, Contractor is to contact Landscape Architect for resolution. Failure to make such conflicts known will result in Contractor's liability to relocate the materials.
6. See specifications for planting requirements, materials and execution.

◇7 Trail medallion, See Dtl. 1/L4.0.

◇8 Concrete pad, See Civil Dwgs.

◇9 1/4 mile marker, See Dtl. 3/L4.0.

◇10 Rest area, See Dtl. 1/L4.3.

◇11 Boulder seating, See Dtl. 1/L4.1.

◇12 Trash receptacle, See Dtl. 2/L4.1.

◇13 Recycle receptacle, See Dtl. 2/L4.1.

◇14 Seed to limits of grading and to repair construction damage. See Civil Dwgs.

◇15 Trailhead sign, See Dtl. 1/L4.2.

◇16 Creek crossing marker, See Dtl. 2/L4.0.

◇17 Roadway sign, See Dtl. 4/L4.3.

◇18 Bike rack, See Dtl. 4/L4.0.

◇19 Water fountain, See Dtl. 3/L4.1.

◇20 Kiosk, See Dtl. 1/L4.4.

◇21 Shade structure, See Dtl. 1-5/L4.5.

◇22 Trail signage, See Dtl. 3/L4.3.

◇23 Replace existing water fountain with new water fountain, See Dtl. 3/L4.1.

◇24 Creek crossing. See Civil Dwgs. Creek crossing to receive flagstone veneer. See Dtl. 1/L4.7.

◇25 Cedar split-rail fence. See Dtl. 2/L4.7.

◇26 Remove existing PVC hand rail and replace with new galvanized steel railing. See Dtl. 1-5/L4.6 and 1/L4.8.

◇27 Remove existing bench. Replace with new park bench. See Dtl. 3/L4.7.

◇28 Concrete retaining wall. See Civil Dwgs. Retaining wall to receive flagstone veneer. See Dtl. 1/L4.7.

◇29 Existing bridge to receive flagstone veneer. See Dtl. 1/L4.7.

◇30 Mutt Mitt Sign, See Dtl. 2/L4.3.

◇31 Coordinate relocation of existing signs with Civil Engineer.

C•F•Z Group LLC
Coltrane • Fernandez • Zavala
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4242 Medical Drive, Suite 5200
San Antonio, Texas 78229
210-366-1911/210-366-0044 fax

| REV | DATE | BY | REVISIONS |
|---|---|---|---|
| | | | |

STATE OF TEXAS
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1216
REGISTERED LANDSCAPE ARCHITECT
11-07-14

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210.340.8481

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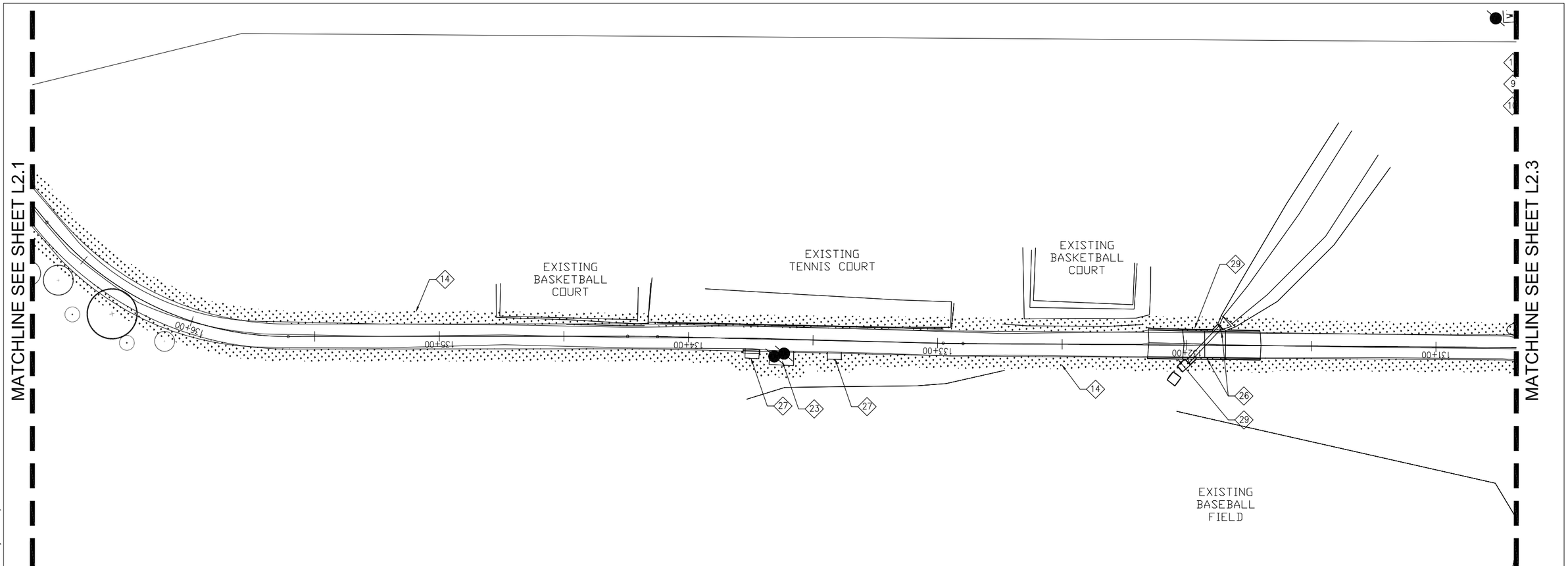
LEON VALLEY, TEXAS

ENLARGED LANDSCAPE PLAN

| | | | |
|---|---|---|---|
| CHK. BY: | ABF | IDS JOB NO: | 211700100 |
| DWG. BY: | HG | SHEET NO. | TOTAL SHEETS |
| DATE: 11/07/2014 | | L2.1 | 32 |




# 1 ENLARGED LANDSCAPE PLAN
SCALE: 1"=40'-0"

## LEGEND

EXISTING TREES TO REMAIN

NATIVE SUN/SHADE GRASS SEED MIX, HYDRO-SEED

## PLANTING NOTES: ( ◇# Keyed Notes)

1. Landscape contractor shall be responsible for making himself familiar with the specifications and all submittal requirements. It is the responsibility of the Landscape contractor to notify the Landscape Architect for site inspections as specified in the specifications. Failure to notify the Landscape Architect does not relieve the contractor from inspection approval and will require the contractor to install/repair work as required for approval at the cost of the contractor. Landscape contractor is to inform Landscape Architect of the start date of work.
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3. Do not willingly proceed with construction as designed when it is obvious that unknown obstruction and/or grade differences exist that may not have been known during design. Such conditions shall be immediately brought to the attention of the Landscape Architect. The Contractor shall assume full responsibility for all necessary revisions due to failure to give such notification.
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◇7 Trail medallion, See Dtl. 1/L4.0.

◇8 Concrete pad, See Civil Dwgs.

◇9 1/4 mile marker, See Dtl. 3/L4.0.

◇10 Rest area, See Dtl. 1/L4.3.

◇11 Boulder seating, See Dtl. 1/L4.1.

◇12 Trash receptacle, See Dtl. 2/L4.1.

◇13 Recycle receptacle, See Dtl. 2/L4.1.

◇14 Seed to limits of grading and to repair construction damage. See Civil Dwgs.

◇15 Trailhead sign, See Dtl. 1/L4.2.

◇16 Creek crossing marker, See Dtl. 2/L4.0.

◇17 Roadway sign, See Dtl. 4/L4.3.

◇18 Bike rack, See Dtl. 4/L4.0.

◇19 Water fountain, See Dtl. 3/L4.1.

◇20 Kiosk, See Dtl. 1/L4.4.

◇21 Shade structure, See Dtl. 1-5/L4.5.

◇22 Trail signage, See Dtl. 3/L4.3.

◇23 Replace existing water fountain with new water fountain, See Dtl. 3/L4.1.

◇24 Creek crossing. See Civil Dwgs. Creek crossing to receive flagstone veneer. See Dtl. 1/L4.7.

◇25 Cedar split-rail fence. See Dtl. 2/L4.7.

◇26 Remove existing PVC hand rail and replace with new galvanized steel railing. See Dtl. 1-5/L4.6 and 1/L4.8.

◇27 Remove existing bench. Replace with new park bench. See Dtl. 3/L4.7.

◇28 Concrete retaining wall. See Civil Dwgs. Retaining wall to receive flagstone veneer. See Dtl. 1/L4.7.

◇29 Existing bridge to receive flagstone veneer. See Dtl. 1/L4.7.

◇30 Mutt Mitt Sign, See Dtl. 2/L4.3.

◇31 Coordinate relocation of existing signs with Civil Engineer.

| REV | DATE | BY | REVISIONS |
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STATE OF TEXAS
ALBERT B. FERNANDEZ JR.
1218
REGISTERED LANDSCAPE ARCHITECT
10-15-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481

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LEON VALLEY, TEXAS

ENLARGED LANDSCAPE PLAN

| CHK. BY: | ABF | IDS JOB NO: | 211700100 |
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| DWG. BY: | HG | SHEET NO. | TOTAL SHEETS |
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C•F•Z Group LLC
Coltrane • Fernandez • Zavala
Landscape Architecture & Planning
4242 Medical Drive, Suite 5200
San Antonio, Texas 78229
210-366-1911/210-366-0044 fax

MATCHLINE SEE SHEET L2.2

MATCHLINE SEE SHEET L2.4

MATCHLINE SEE SHEET L2.8

EXISTING COMMUNITY GARDEN

# 1 ENLARGED LANDSDCAPE PLAN
SCALE: 1"=40'-0"

## LEGEND

EXISTING TREES TO REMAIN

NATIVE SUN/SHADE GRASS SEED MIX, HYDRO-SEED

## PLANTING NOTES: ( ◇# Keyed Notes)

1. Landscape contractor shall be responsible for making himself familiar with the specifications and all submittal requirements. It is the responsibility of the Landscape contractor to notify the Landscape Architect for site inspections as specified in the specifications. Failure to notify the Landscape Architect does not relieve the contractor from inspection approval and will require the contractor to install/repair work as required for approval at the cost of the contractor. Landscape contractor is to inform Landscape Architect of the start date of work.
2. The landscape contractor is to notify Texas One Call (800-245-4545) and 800 DIG TESS (800-344-8377) 72 hours prior to any excavation. Landscape contractor shall be responsible for making himself familiar with all underground utilities, pipes and structures. Landscape contractor shall take sole responsibility for any cost incurred due to damage of said utilities whether or not Texas One Call is notified.
3. Do not willingly proceed with construction as designed when it is obvious that unknown obstruction and/or grade differences exist that may not have been known during design. Such conditions shall be immediately brought to the attention of the Landscape Architect. The Contractor shall assume full responsibility for all necessary revisions due to failure to give such notification.
4. The Contractor shall be responsible for any coordination with subcontractors as required to accomplish planting operations.
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◇7 Trail medallion, See Dtl. 1/L4.0.

◇8 Concrete pad, See Civil Dwgs.

◇9 1/4 mile marker, See Dtl. 3/L4.0.

◇10 Rest area, See Dtl. 1/L4.3.

◇11 Boulder seating, See Dtl. 1/L4.1.

◇12 Trash receptacle, See Dtl. 2/L4.1.

◇13 Recycle receptacle, See Dtl. 2/L4.1.

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◇15 Trailhead sign, See Dtl. 1/L4.2.

◇16 Creek crossing marker, See Dtl. 2/L4.0.

◇17 Roadway sign, See Dtl. 4/L4.3.

◇18 Bike rack, See Dtl. 4/L4.0.

◇19 Water fountain, See Dtl. 3/L4.1.

◇20 Kiosk, See Dtl. 1/L4.4.

◇21 Shade structure, See Dtl. 1-5/L4.5.

◇22 Trail signage, See Dtl. 3/L4.3.

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◇25 Cedar split-rail fence. See Dtl. 2/L4.7.

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◇28 Concrete retaining wall. See Civil Dwgs. Retaining wall to receive flagstone veneer. See Dtl. 1/L4.7.

◇29 Existing bridge to receive flagstone veneer. See Dtl. 1/L4.7.

◇30 Mutt Mitt Sign, See Dtl. 2/L4.3.

◇31 Coordinate relocation of existing signs with Civil Engineer.

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ALBERT B. FERNANDEZ JR.
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11-07-14


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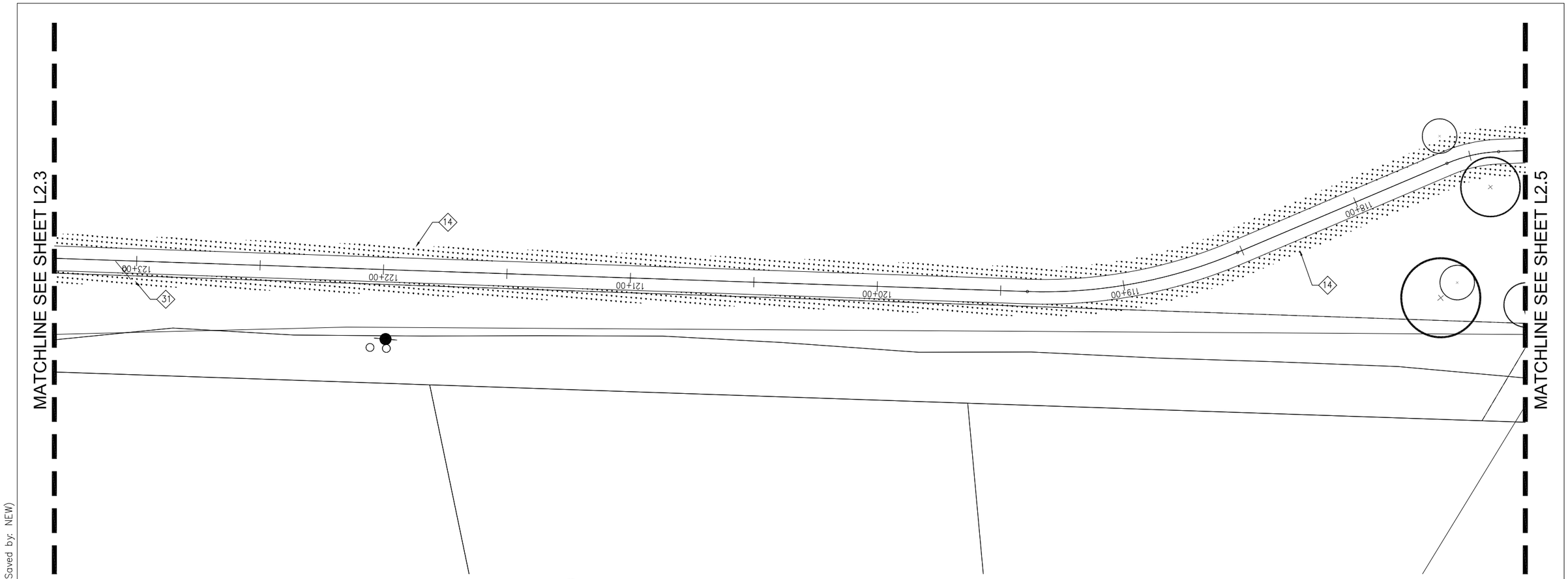
| DWG. BY: | HG | SHEET NO. | TOTAL SHEETS |
| DATE: 11/07/2014 | | L2.3 | 32 |




## 1 ENLARGED LANDSCAPE PLAN
SCALE: 1"=40'-0"

### LEGEND

EXISTING TREES TO REMAIN

NATIVE SUN/SHADE GRASS SEED MIX, HYDRO-SEED

### PLANTING NOTES: ( # Keyed Notes)

1. Landscape contractor shall be responsible for making himself familiar with the specifications and all submittal requirements. It is the responsibility of the Landscape contractor to notify the Landscape Architect for site inspections as specified in the specifications. Failure to notify the Landscape Architect does not relieve the contractor from inspection approval and will require the contractor to install/repair work as required for approval at the cost of the contractor. Landscape contractor is to inform Landscape Architect of the start date of work.
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5. If conflicts arise between size of areas and plans, Contractor is to contact Landscape Architect for resolution. Failure to make such conflicts known will result in Contractor's liability to relocate the materials.
6. See specifications for planting requirements, materials and execution.

7. Trail medallion, See Dtl. 1/L4.0.
8. Concrete pad, See Civil Dwgs.
9. 1/4 mile marker, See Dtl. 3/L4.0.
10. Rest area, See Dtl. 1/L4.3.
11. Boulder seating, See Dtl. 1/L4.1.
12. Trash receptacle, See Dtl. 2/L4.1.
13. Recycle receptacle, See Dtl. 2/L4.1.
14. Seed to limits of grading and to repair construction damage. See Civil Dwgs.
15. Trailhead sign, See Dtl. 1/L4.2.
16. Creek crossing marker, See Dtl. 2/L4.0.
17. Roadway sign, See Dtl. 4/L4.3.
18. Bike rack, See Dtl. 4/L4.0.
19. Water fountain, See Dtl. 3/L4.1.
20. Kiosk, See Dtl. 1/L4.4.
21. Shade structure, See Dtl. 1-5/L4.5.
22. Trail signage, See Dtl. 3/L4.3.
23. Replace existing water fountain with new water fountain, See Dtl. 3/L4.1.
24. Creek crossing. See Civil Dwgs. Creek crossing to receive flagstone veneer. See Dtl. 1/L4.7.
25. Cedar split-rail fence. See Dtl. 2/L4.7.
26. Remove existing PVC hand rail and replace with new galvanized steel railing. See Dtl. 1-5/L4.6 and 1/L4.8.
27. Remove existing bench. Replace with new park bench. See Dtl. 3/L4.7.
28. Concrete retaining wall. See Civil Dwgs. Retaining wall to receive flagstone veneer. See Dtl. 1/L4.7.
29. Existing bridge to receive flagstone veneer. See Dtl. 1/L4.7.
30. Mutt Mitt Sign, See Dtl. 2/L4.3.
31. Coordinate relocation of existing signs with Civil Engineer.

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San Antonio, Texas 78229
210-366-1911/210-366-0044 fax

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STATE OF TEXAS
ALBERT B. FERNANDEZ JR.
1218
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10-15-14

IDS Engineering Group
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LEON VALLEY, TEXAS

ENLARGED LANDSCAPE PLAN

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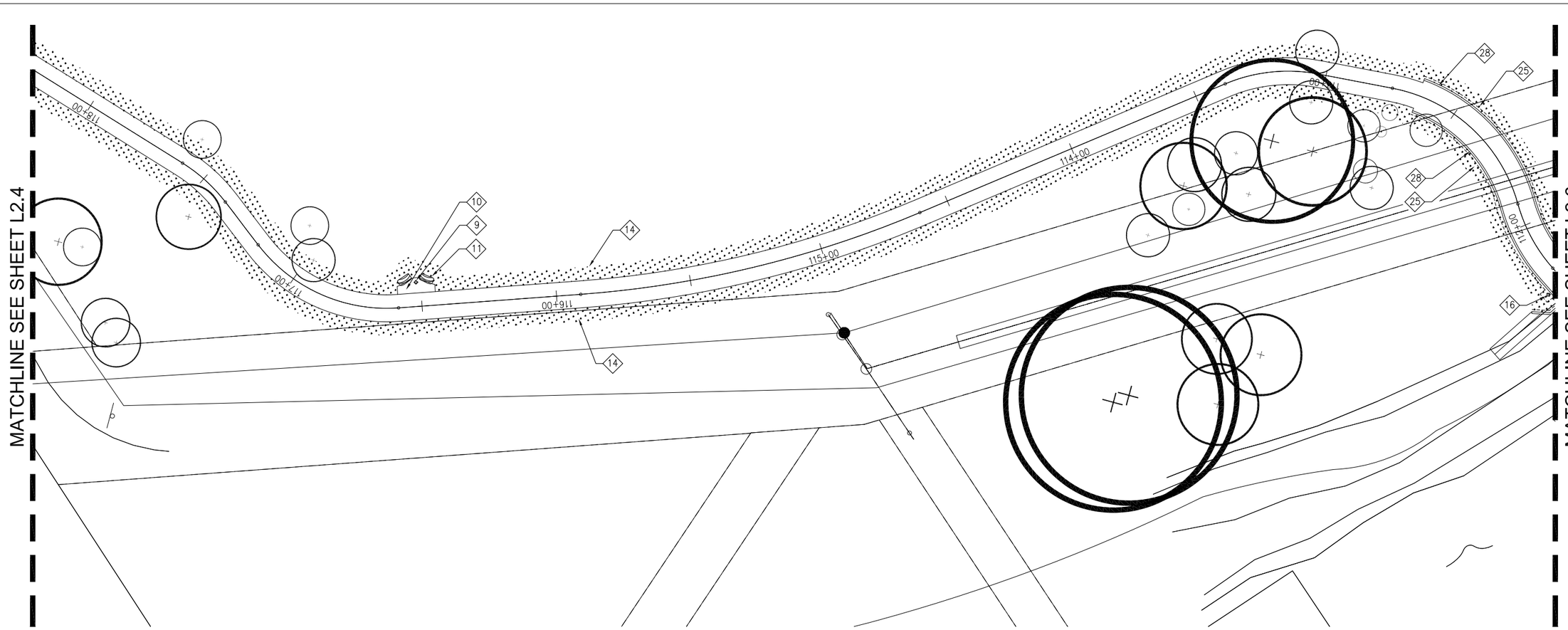


## 1 ENLARGED LANDSCAPE PLAN

SCALE: 1"=40'-0"

### LEGEND

EXISTING TREES TO REMAIN

NATIVE SUN/SHADE GRASS SEED MIX, HYDRO-SEED

### PLANTING NOTES: ( # Keyed Notes)

1. Landscape contractor shall be responsible for making himself familiar with the specifications and all submittal requirements. It is the responsibility of the Landscape contractor to notify the Landscape Architect for site inspections as specified in the specifications. Failure to notify the Landscape Architect does not relieve the contractor from inspection approval and will require the contractor to install/repair work as required for approval at the cost of the contractor. Landscape contractor is to inform Landscape Architect of the start date of work.
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5. If conflicts arise between size of areas and plans, Contractor is to contact Landscape Architect for resolution. Failure to make such conflicts known will result in Contractor's liability to relocate the materials.
6. See specifications for planting requirements, materials and execution.

7. Trail medallion, See Dtl. 1/L4.0.
8. Concrete pad, See Civil Dwgs.
9. 1/4 mile marker, See Dtl. 3/L4.0.
10. Rest area, See Dtl. 1/L4.3.
11. Boulder seating, See Dtl. 1/L4.1.
12. Trash receptacle, See Dtl. 2/L4.1.
13. Recycle receptacle, See Dtl. 2/L4.1.
14. Seed to limits of grading and to repair construction damage. See Civil Dwgs.
15. Trailhead sign, See Dtl. 1/L4.2.
16. Creek crossing marker, See Dtl. 2/L4.0.
17. Roadway sign, See Dtl. 4/L4.3.
18. Bike rack, See Dtl. 4/L4.0.
19. Water fountain, See Dtl. 3/L4.1.
20. Kiosk, See Dtl. 1/L4.4.
21. Shade structure, See Dtl. 1-5/L4.5.
22. Trail signage, See Dtl. 3/L4.3.
23. Replace existing water fountain with new water fountain, See Dtl. 3/L4.1.
24. Creek crossing. See Civil Dwgs. Creek crossing to receive flagstone veneer. See Dtl. 1/L4.7.
25. Cedar split-rail fence. See Dtl. 2/L4.7.
26. Remove existing PVC hand rail and replace with new galvanized steel railing. See Dtl. 1-5/L4.6 and 1/L4.8.
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28. Concrete retaining wall. See Civil Dwgs. Retaining wall to receive flagstone veneer. See Dtl. 1/L4.7.
29. Existing bridge to receive flagstone veneer. See Dtl. 1/L4.7.
30. Mutt Mitt Sign, See Dtl. 2/L4.3.
31. Coordinate relocation of existing signs with Civil Engineer.

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STATE OF TEXAS
ALBERT B. FERNANDEZ JR.
1218
REGISTERED LANDSCAPE ARCHITECT
10-15-14


IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410, Suite 550
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LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

ENLARGED LANDSCAPE PLAN

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| DWG. BY: | HG | SHEET NO. | TOTAL SHEETS |
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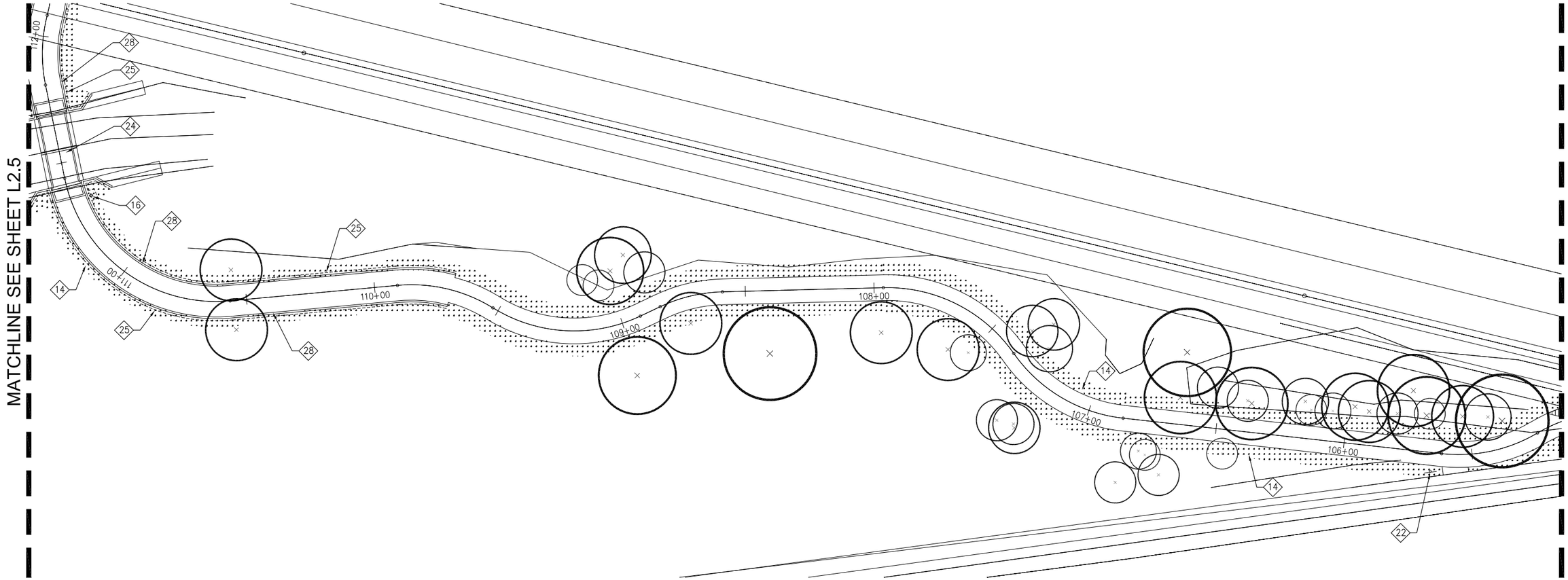


# 1 ENLARGED LANDSCAPE PLAN
SCALE: 1"=40'-0"

## LEGEND

EXISTING TREES TO REMAIN

NATIVE SUN/SHADE GRASS SEED MIX, HYDRO-SEED

## PLANTING NOTES: ( ◇# Keyed Notes)

1. Landscape contractor shall be responsible for making himself familiar with the specifications and all submittal requirements. It is the responsibility of the Landscape contractor to notify the Landscape Architect for site inspections as specified in the specifications. Failure to notify the Landscape Architect does not relieve the contractor from inspection approval and will require the contractor to install/repair work as required for approval at the cost of the contractor. Landscape contractor is to inform Landscape Architect of the start date of work.
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6. See specifications for planting requirements, materials and execution.

◇7 Trail medallion, See Dtl. 1/L4.0.

◇8 Concrete pad, See Civil Dwgs.

◇9 1/4 mile marker, See Dtl. 3/L4.0.

◇10 Rest area, See Dtl. 1/L4.3.

◇11 Boulder seating, See Dtl. 1/L4.1.

◇12 Trash receptacle, See Dtl. 2/L4.1.

◇13 Recycle receptacle, See Dtl. 2/L4.1.

◇14 Seed to limits of grading and to repair construction damage. See Civil Dwgs.

◇15 Trailhead sign, See Dtl. 1/L4.2.

◇16 Creek crossing marker, See Dtl. 2/L4.0.

◇17 Roadway sign, See Dtl. 4/L4.3.

◇18 Bike rack, See Dtl. 4/L4.0.

◇19 Water fountain, See Dtl. 3/L4.1.

◇20 Kiosk, See Dtl. 1/L4.4.

◇21 Shade structure, See Dtl. 1-5/L4.5.

◇22 Trail signage, See Dtl. 3/L4.3.

◇23 Replace existing water fountain with new water fountain, See Dtl. 3/L4.1.

◇24 Creek crossing. See Civil Dwgs. Creek crossing to receive flagstone veneer. See Dtl. 1/L4.7.

◇25 Cedar split-rail fence. See Dtl. 2/L4.7.

◇26 Remove existing PVC hand rail and replace with new galvanized steel railing. See Dtl. 1-5/L4.6 and 1/L4.8.

◇27 Remove existing bench. Replace with new park bench. See Dtl. 3/L4.7.

◇28 Concrete retaining wall. See Civil Dwgs. Retaining wall to receive flagstone veneer. See Dtl. 1/L4.7.

◇29 Existing bridge to receive flagstone veneer. See Dtl. 1/L4.7.

◇30 Mutt Mitt Sign, See Dtl. 2/L4.3.

◇31 Coordinate relocation of existing signs with Civil Engineer.

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STATE OF TEXAS
ALBERT B. FERNANDEZ JR.
1218
REGISTERED LANDSCAPE ARCHITECT
10-15-14


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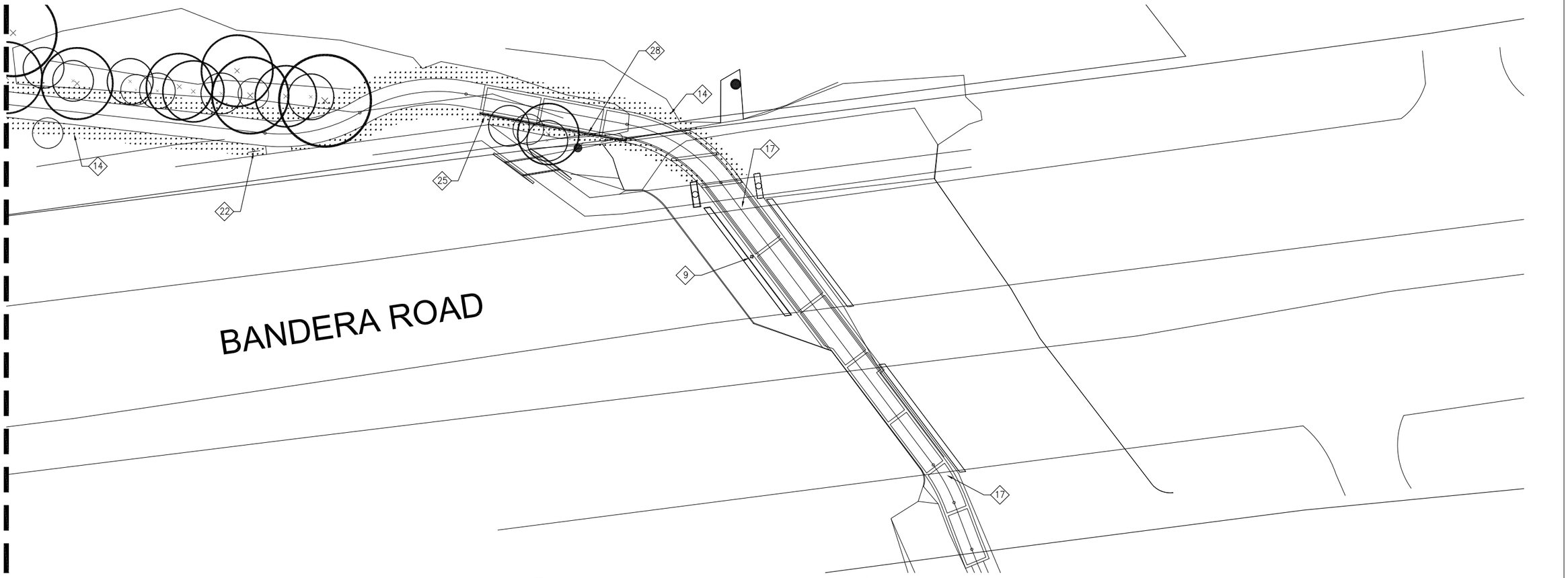


# 1 ENLARGED LANDSCAPE PLAN
SCALE: 1"=40'-0"

## LEGEND

EXISTING TREES TO REMAIN

NATIVE SUN/SHADE GRASS SEED MIX, HYDRO-SEED

## PLANTING NOTES: ( # Keyed Notes)

1. Landscape contractor shall be responsible for making himself familiar with the specifications and all submittal requirements. It is the responsibility of the Landscape contractor to notify the Landscape Architect for site inspections as specified in the specifications. Failure to notify the Landscape Architect does not relieve the contractor from inspection approval and will require the contractor to install/repair work as required for approval at the cost of the contractor. Landscape contractor is to inform Landscape Architect of the start date of work.
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30. Mutt Mitt Sign, See Dtl. 2/L4.3.
31. Coordinate relocation of existing signs with Civil Engineer.

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STATE OF TEXAS
ALBERT B. FERNANDEZ JR.
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LEON VALLEY, TEXAS

ENLARGED LANDSCAPE PLAN

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| DWG. BY: | HG | SHEET NO. | TOTAL SHEETS |
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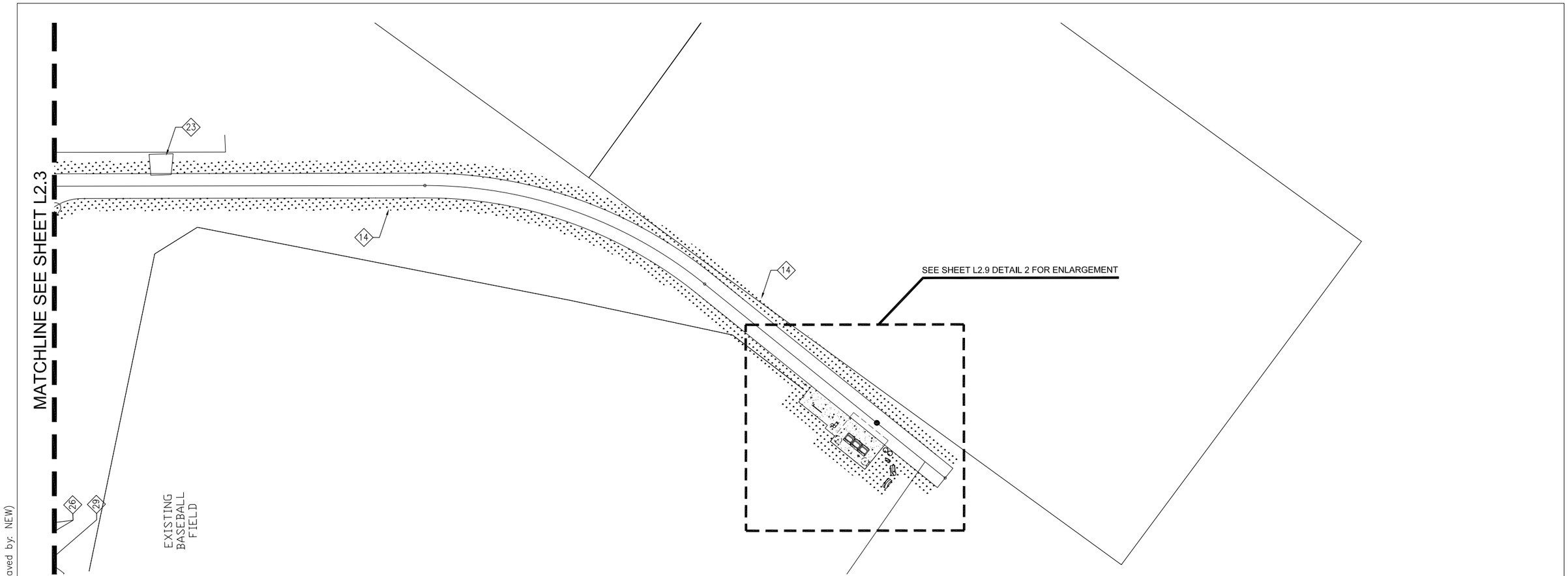


# 1 ENLARGED LANDSCAPE PLAN

SCALE: 1"=40'-0"

## LEGEND

EXISTING TREES TO REMAIN

NATIVE SUN/SHADE GRASS SEED MIX, HYDRO-SEED

## PLANTING NOTES: ( ◇# Keyed Notes)

1. Landscape contractor shall be responsible for making himself familiar with the specifications and all submittal requirements. It is the responsibility of the Landscape contractor to notify the Landscape Architect for site inspections as specified in the specifications. Failure to notify the Landscape Architect does not relieve the contractor from inspection approval and will require the contractor to install/repair work as required for approval at the cost of the contractor. Landscape contractor is to inform Landscape Architect of the start date of work.
2. The landscape contractor is to notify Texas One Call (800-245-4545) and 800 DIG TESS (800-344-8377) 72 hours prior to any excavation. Landscape contractor shall be responsible for making himself familiar with all underground utilities, pipes and structures. Landscape contractor shall take sole responsibility for any cost incurred due to damage of said utilities whether or not Texas One Call is notified.
3. Do not willingly proceed with construction as designed when it is obvious that unknown obstruction and/or grade differences exist that may not have been known during design. Such conditions shall be immediately brought to the attention of the Landscape Architect. The Contractor shall assume full responsibility for all necessary revisions due to failure to give such notification.
4. The Contractor shall be responsible for any coordination with subcontractors as required to accomplish planting operations.
5. If conflicts arise between size of areas and plans, Contractor is to contact Landscape Architect for resolution. Failure to make such conflicts known will result in Contractor's liability to relocate the materials.
6. See specifications for planting requirements, materials and execution.

◇7 Trail medallion, See Dtl. 1/L4.0.

◇8 Concrete pad, See Civil Dwgs.

◇9 1/4 mile marker, See Dtl. 3/L4.0.

◇10 Rest area, See Dtl. 1/L4.3.

◇11 Boulder seating, See Dtl. 1/L4.1.

◇12 Trash receptacle, See Dtl. 2/L4.1.

◇13 Recycle receptacle, See Dtl. 2/L4.1.

◇14 Seed to limits of grading and to repair construction damage. See Civil Dwgs.

◇15 Trailhead sign, See Dtl. 1/L4.2.

◇16 Creek crossing marker, See Dtl. 2/L4.0.

◇17 Roadway sign, See Dtl. 4/L4.3.

◇18 Bike rack, See Dtl. 4/L4.0.

◇19 Water fountain, See Dtl. 3/L4.1.

◇20 Kiosk, See Dtl. 1/L4.4.

◇21 Shade structure, See Dtl. 1-5/L4.5.

◇22 Trail signage, See Dtl. 3/L4.3.

◇23 Replace existing water fountain with new water fountain, See Dtl. 3/L4.1.

◇24 Creek crossing. See Civil Dwgs. Creek crossing to receive flagstone veneer. See Dtl. 1/L4.7.

◇25 Cedar split-rail fence. See Dtl. 2/L4.7.

◇26 Remove existing PVC hand rail and replace with new galvanized steel railing. See Dtl. 1-5/L4.6 and 1/L4.8.

◇27 Remove existing bench. Replace with new park bench. See Dtl. 3/L4.7.

◇28 Concrete retaining wall. See Civil Dwgs. Retaining wall to receive flagstone veneer. See Dtl. 1/L4.7.

◇29 Existing bridge to receive flagstone veneer. See Dtl. 1/L4.7.

◇30 Mutt Mitt Sign, See Dtl. 2/L4.3.

◇31 Coordinate relocation of existing signs with Civil Engineer.

| REV | DATE | BY | REVISIONS |
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ALBERT B. FERNANDEZ JR. 1218 REGISTERED LANDSCAPE ARCHITECT STATE OF TEXAS 11-07-14

IDS Engineering Group
TBPE F-002726 TBPLS 10110704
613 NW Loop 410, Suite 550
San Antonio, TX 78216
210.340.8481

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LEON VALLEY, TEXAS

ENLARGED LANDSCAPE PLAN

C•F•Z Group LLC
Coltrane • Fernandez • Zavala
Landscape Architecture & Planning
4242 Medical Drive, Suite 5200
San Antonio, Texas 78229
210-366-1911/210-366-0044 fax

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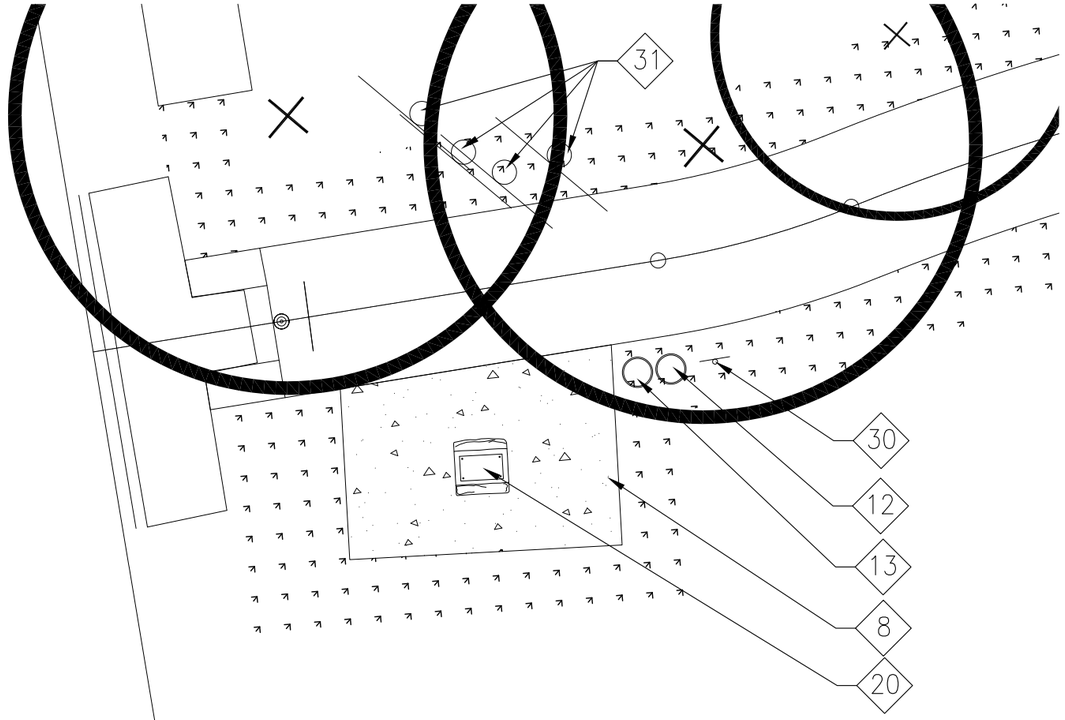
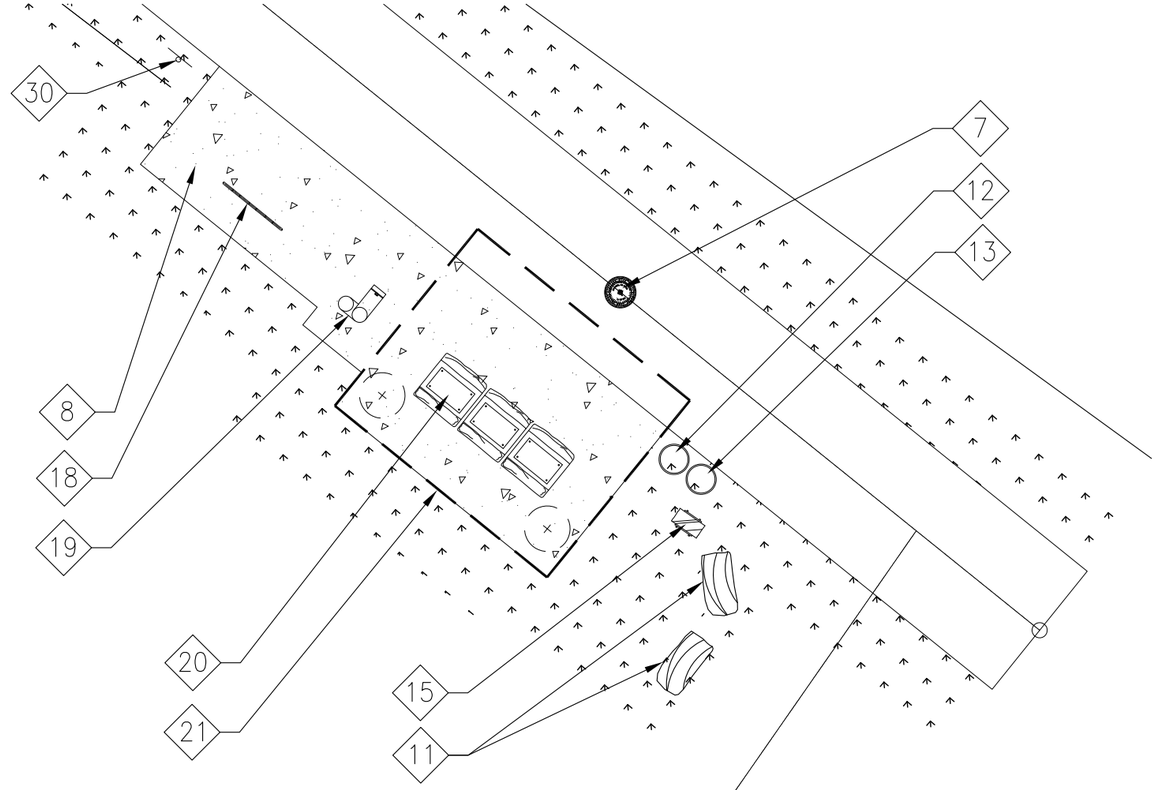



## 1 ENLARGED LANDSCAPE PLAN-ENTRY AT EVERS RD.
SCALE: 1"=10'-0"




## 2 ENLARGED LANDSCAPE PLAN-TRAILHEAD
SCALE: 1"=10'-0"

### LEGEND

EXISTING TREES TO REMAIN

NATIVE SUN/SHADE GRASS SEED MIX, HYDRO-SEED

### PLANTING NOTES: ( ◇# Keyed Notes)

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◇11 Boulder seating, See Dtl. 1/L4.1.

◇12 Trash receptacle, See Dtl. 2/L4.1.

◇13 Recycle receptacle, See Dtl. 2/L4.1.

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◇16 Creek crossing marker, See Dtl. 2/L4.0.

◇17 Roadway sign, See Dtl. 4/L4.3.

◇18 Bike rack, See Dtl. 4/L4.0.

◇19 Water fountain, See Dtl. 3/L4.1.

◇20 Kiosk, See Dtl. 1/L4.4.

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◇23 Replace existing water fountain with new water fountain, See Dtl. 3/L4.1.

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◇25 Cedar split-rail fence. See Dtl. 2/L4.7.

◇26 Remove existing PVC hand rail and replace with new galvanized steel railing. See Dtl. 1-5/L4.6 and 1/L4.8.

◇27 Remove existing bench. Replace with new park bench. See Dtl. 3/L4.7.

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◇30 Mutt Mitt Sign, See Dtl. 2/L4.3.

◇31 Coordinate relocation of existing signs with Civil Engineer.

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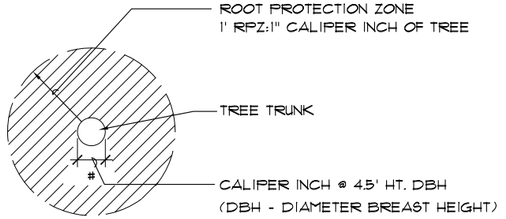
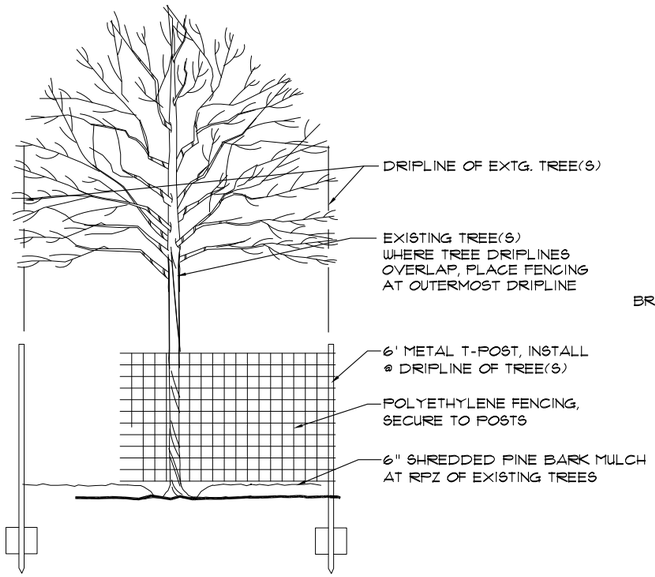



PLAN VIEW

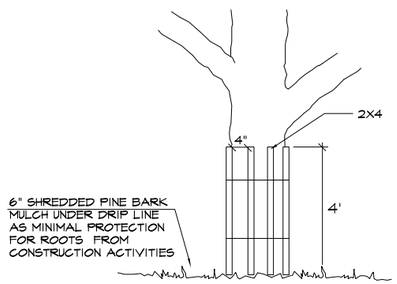
TREE PROTECTION NOTES:

1. All trees to be preserved shall be protected against injury or damage, including soil compaction, breaking or skinning of roots, trunks, or branches during construction operations. A minimum of 50% of the RPZ shall be preserved at natural grade. No cutting, filling, trenching, root disturbance, soil disturbance, or construction impacts shall occur closer to the trunk than 1/2 the RPZ radius.
2. Protect designated tree with a temporary min. 4' ht fencing. See Detail 2/L3.0.
3. Erect temporary fencing before commencing site preparation work. Maintain fencing during full construction period. Remove fencing only when all hardscape construction work is completed.
4. Protect all existing trees from disposal or storage of construction materials or vehicle parking. Protect trees from spreading of spoiled soil over RPZ.
5. Install and maintain minimum of 6" of shredded pine bark mulch at RPZ. See Detail 2/L3.0.
6. Repair preserved trees damaged by construction operations per aborist industry standards. All broken branches and exposed roots of existing trees shall be cut cleanly. All oak species must be painted with tree wound dressing within 30 minutes.
7. The proposed finished grade and elevation within the RPZ of any existing tree shall not be raised or lowered more than three (3) inches. Finished grade and elevation above or below 3" shall included tree wells/retaining walls outside the RPZ.
8. Replace trees scheduled to remain that are removed or damaged beyond repair by construction operations, as determined by Landscape Architect or City Representative, with tree(s) of similar size and species. Cost for tree replacement shall be determined in accordance with the Tree Evaluation Formula as described in "A Guide to the Professional Evaluation of Landscape Trees, Specimen Shrubs, and Evergreens" as published by the International Society of Arboriculture.
9. All costs for repair and replacement of preserved trees damaged by construction operations or lack of adequate protection during construction shall be borne by Contractor.
10. City of San Antonio Tree Maintenance license required for Contractor/Subcontractor employed to prune, treat or remove trees.
11. A Certified Arborist is required for Contractor/Subcontractor employed to prune, treat or remove trees.

## 1 ROOT PROTECTION ZONE (RPZ)
NTS

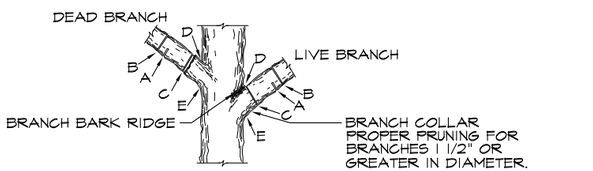



## 2 TREE BARRICADE FENCING
NTS




NOTE:
WRAP TREE TRUNK WITH 2"X4" STUDS AND ROPE OR BAND IN PLACE AS NEEDED TO PROTECT TREES IN WORK AREAS.

## 4 TREE ARMOR
NTS




NOTE: DO NOT CUT FROM D to E.

A. FIRST CUT - TO PREVENT THE BARK FROM BEING PEELED WHEN THE BRANCH FALLS.
B. SECOND CUT - TO REDUCE THE WEIGHT OF BRANCH.
C. FINAL CUT - ALLOW FOR HEALING COLLAR BUT NO STUBS
D. BRANCH RIDGES - INDENT PROPERLY BRANCH RIDGES WHICH ARE SITE FOR DECAY.

FOR OAKS ONLY: PAINT ALL WOUNDS OR CUTS WITH PRUNING PAINT WITHIN 30 MIN TO PREVENT THE SPREAD OF OAK WILT.

## 3 BRANCH PRUNING
NTS

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TREE PRESERVATION DETAILS

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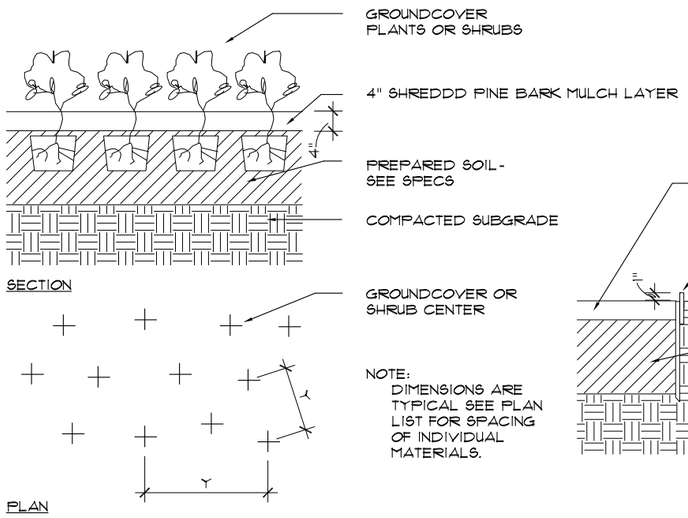
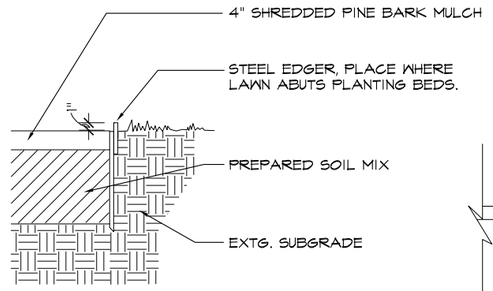
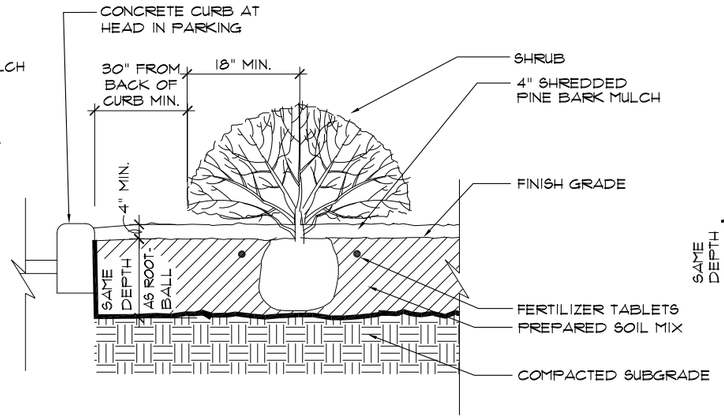


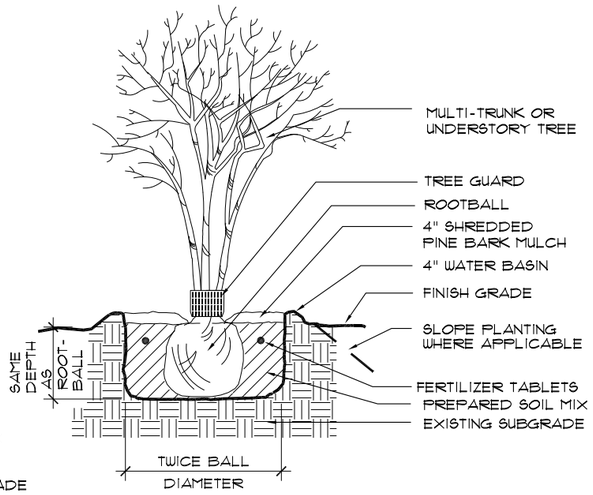

## 1 TRIANGLE SPACING PLANTING DETAIL
NTS




## 2 STEEL EDGER
NTS




## 3 SHRUB BED DETAIL
NTS




## 4 MULTI-TRUNK TREE PLANTING
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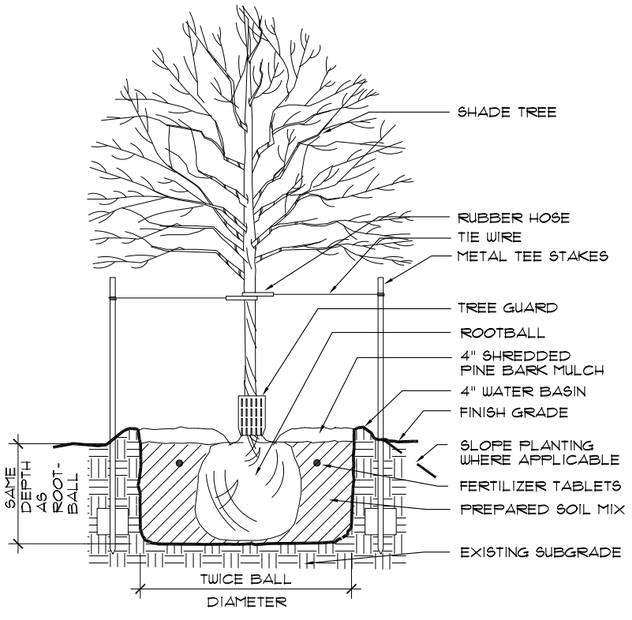
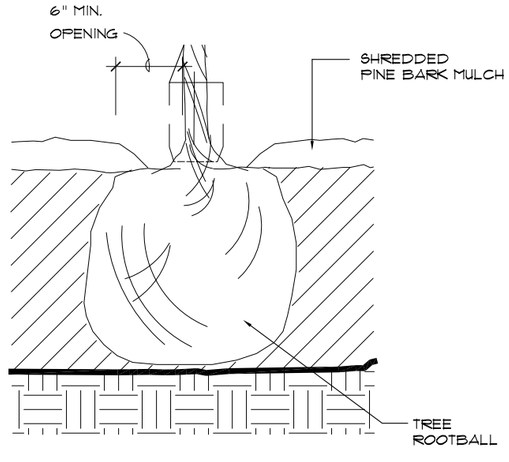



## 6 SHADE TREE PLANTING
NTS




## 7 TREE MULCH DETAIL
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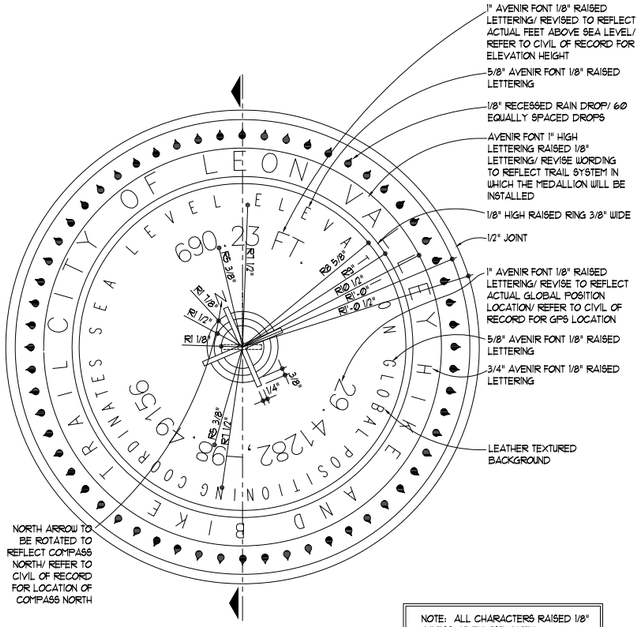
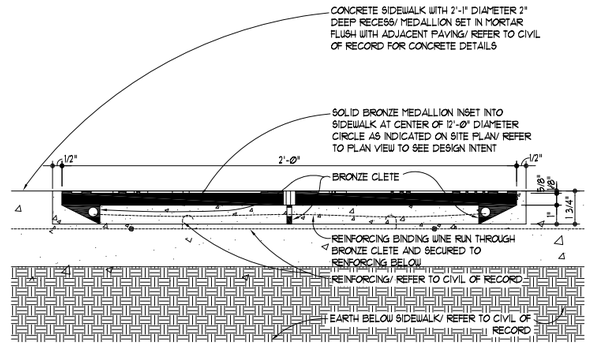
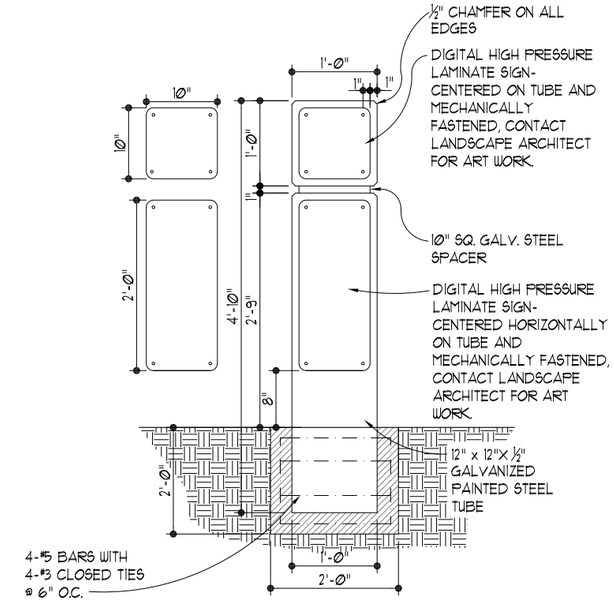


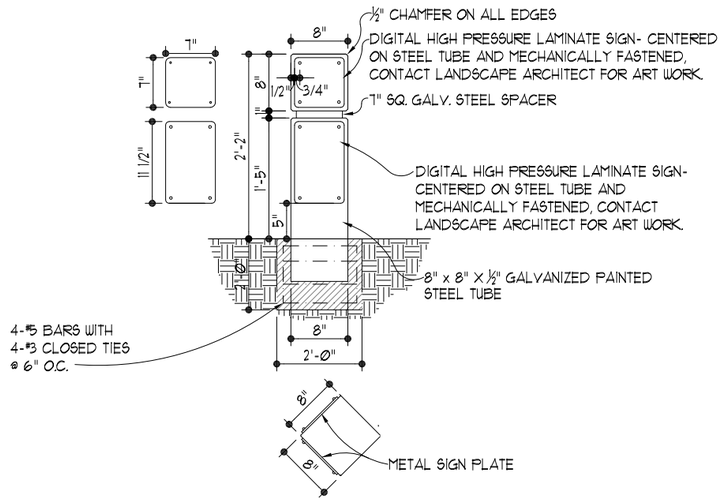

NOTE: ALL CHARACTERS RAISED 1/8" UNLESS OTHERWISE NOTED

## 1 TRAIL MEDALLION
SCALE: 1-1/2"=1'-0"

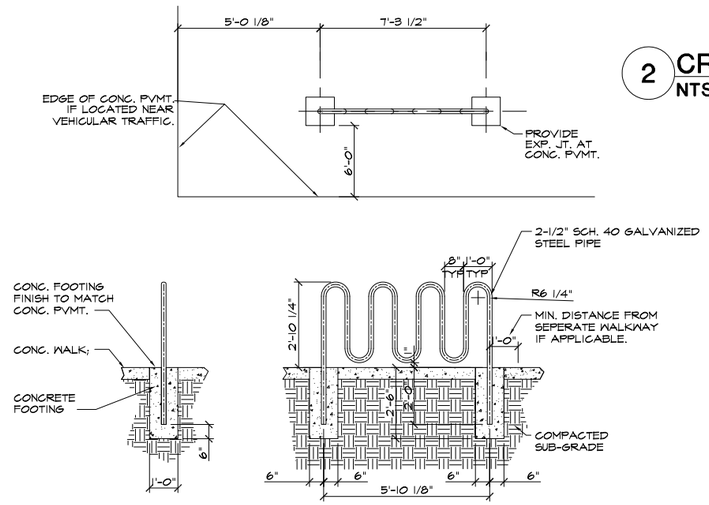



## 2 CREEK CROSSING MARKER
NTS




## 3 1/4 MILE MARKER
NTS




## 4 BIKE RACK
NTS

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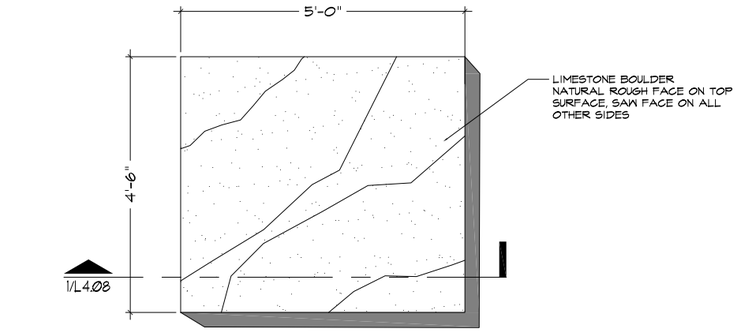
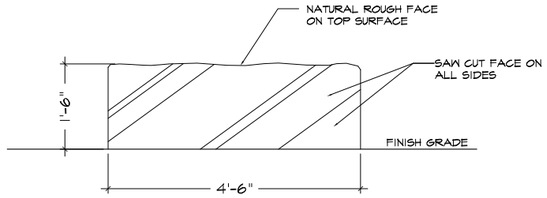
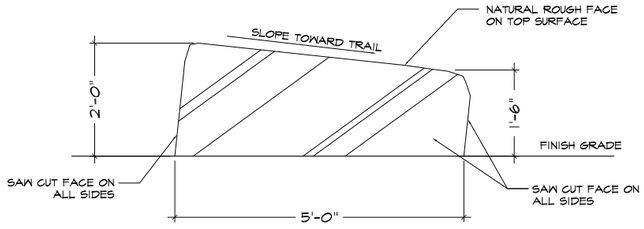
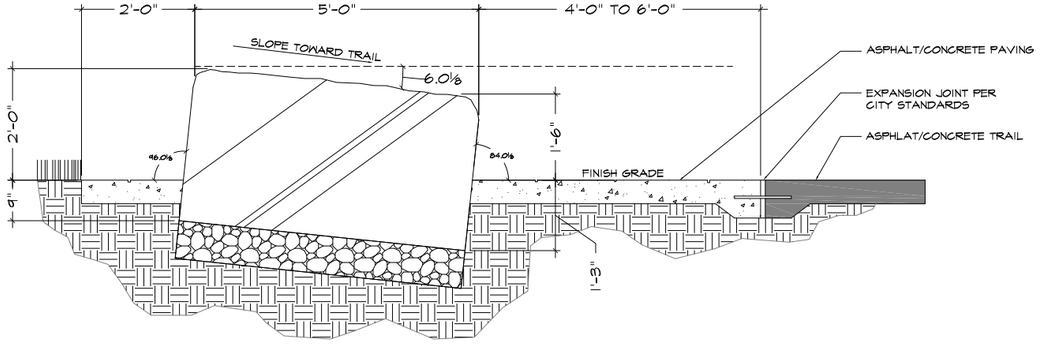


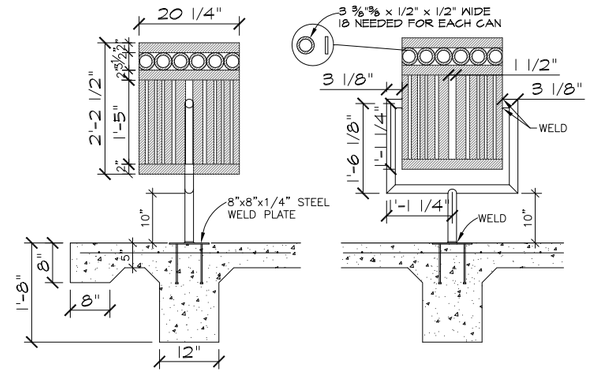



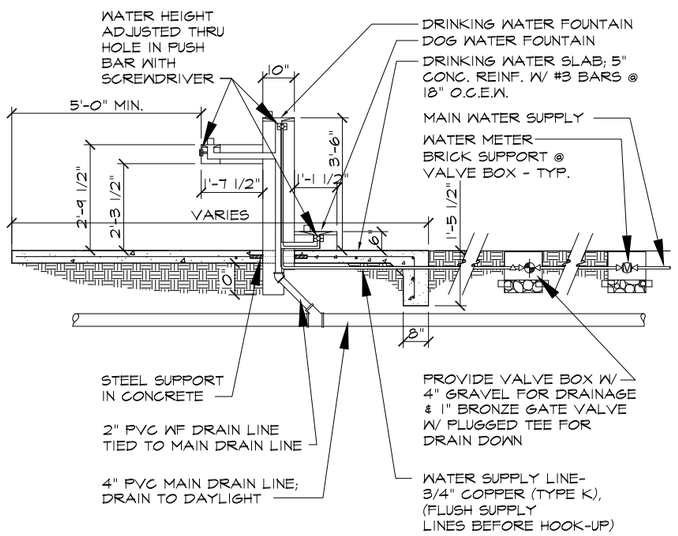




## 1 BOULDER SEATING
NTS

NOTE:
POWDER COAT COLOR TO BE SELECTED BY OWNER.




## 2 TRASH/RECYCLE RECEPTACLES
NTS




NOTE:
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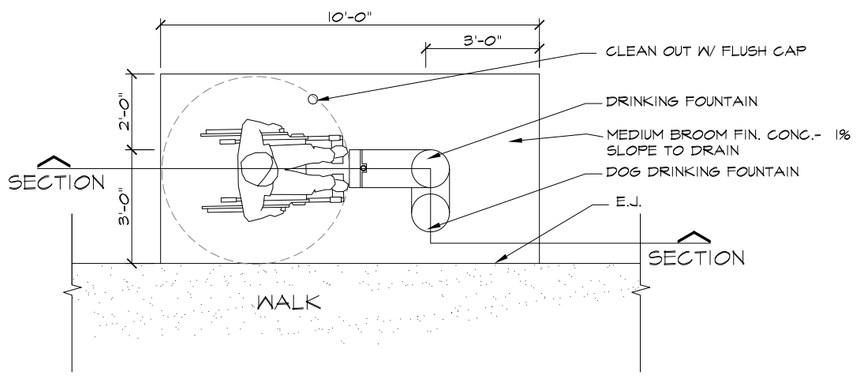


## 3 DRINKING FOUNTAIN
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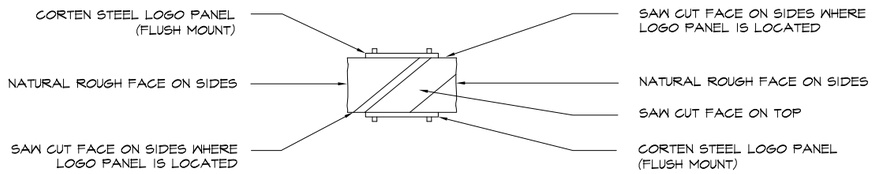
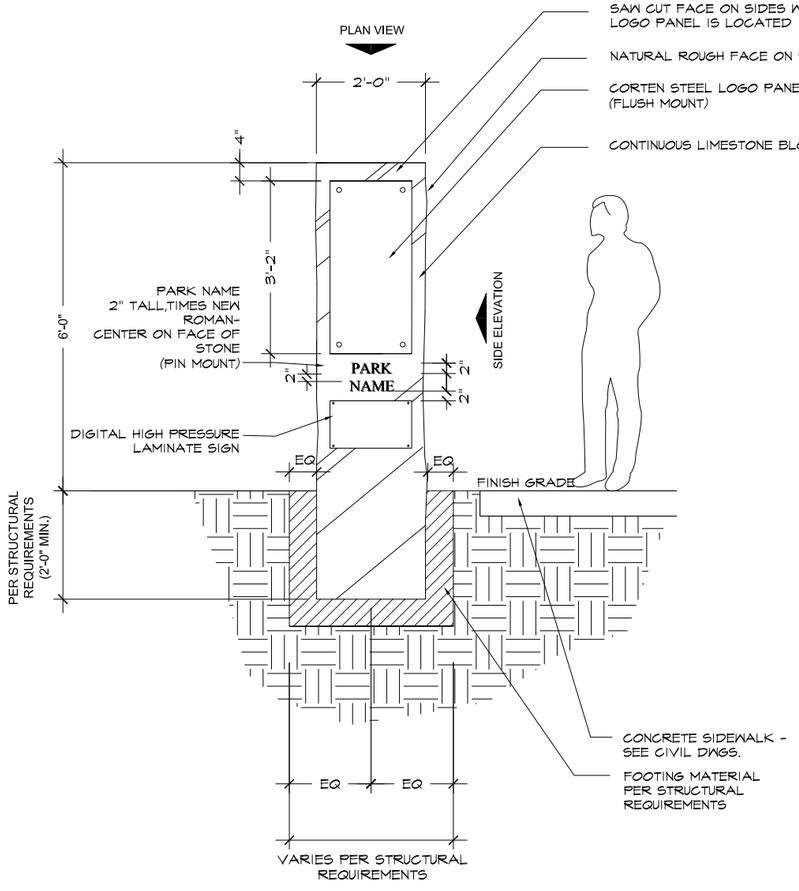
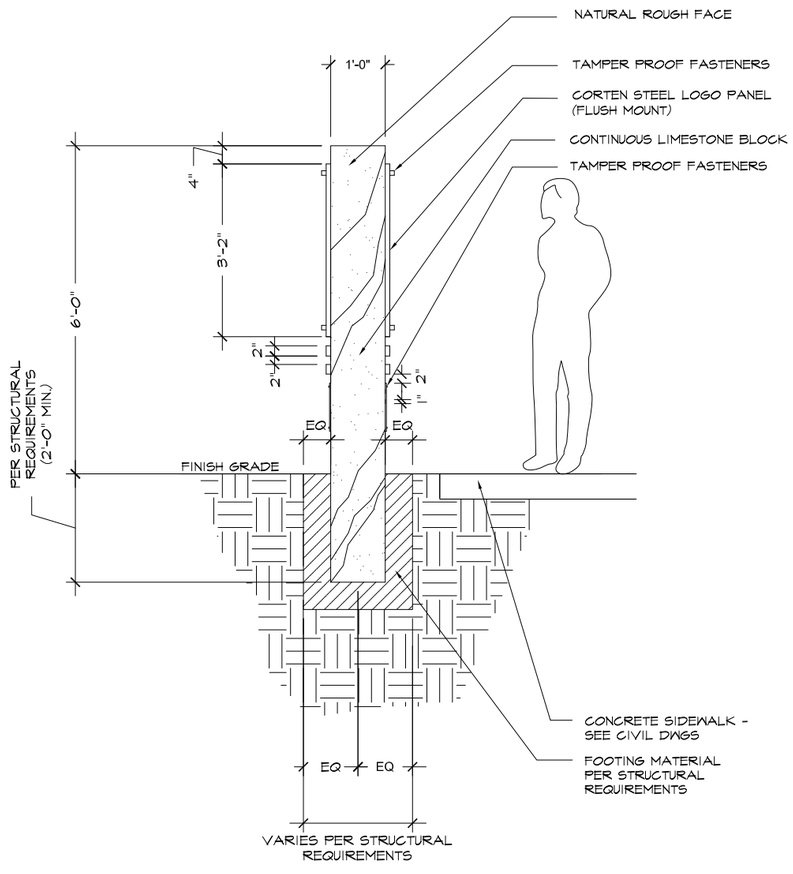



NOTE:

1. LIMESTONE COLORS-
   A. NATURAL ROUGH FACE- 'RUST' WITH MINOR AMOUNTS OF 'CREAM'
   B. SAW CUT FACE- 'CREAM'
2. LIMESTONE SAMPLE TO BE APPROVED BY OWNER PRIOR TO CONSTRUCTION.




MONUMENT - FRONT ELEVATION




MONUMENT - SIDE ELEVATION

## 1 TRAILHEAD SIGN
NTS

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| | | | |

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Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

HARDSCAPE
DETAILS

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Coltrane • Fernandez • Zavala
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& Planning
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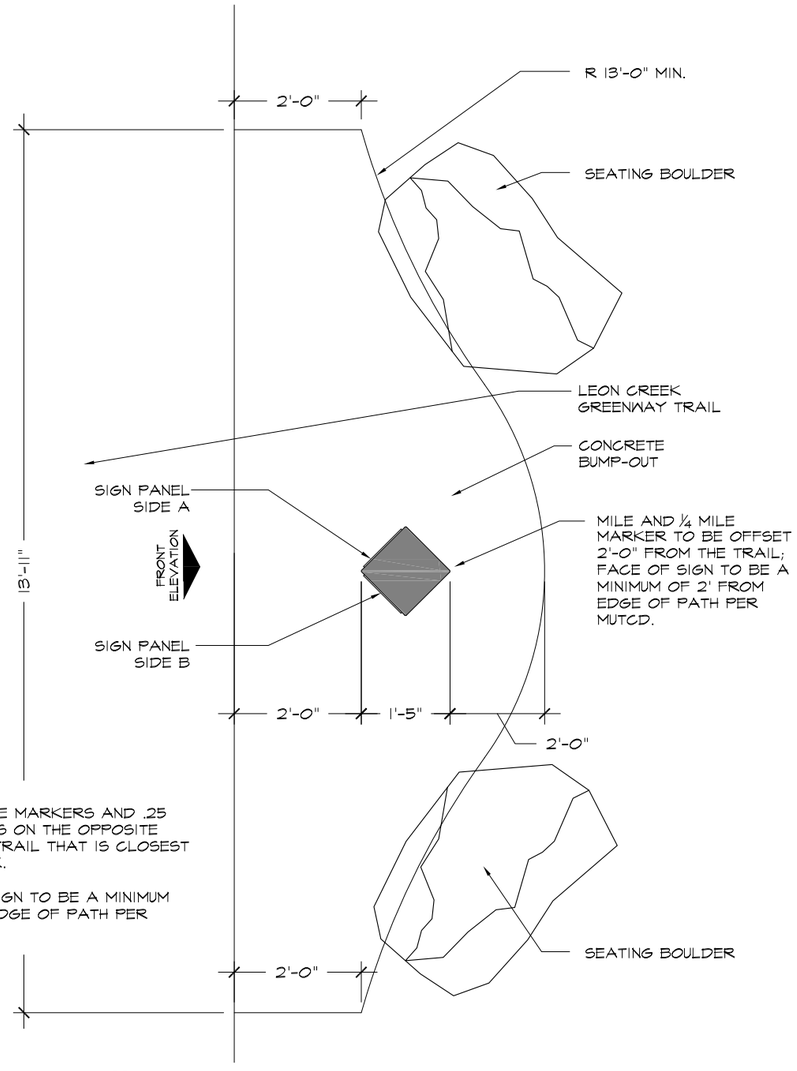
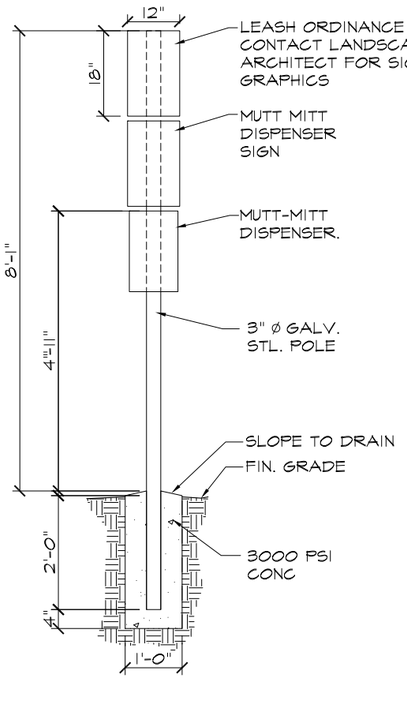


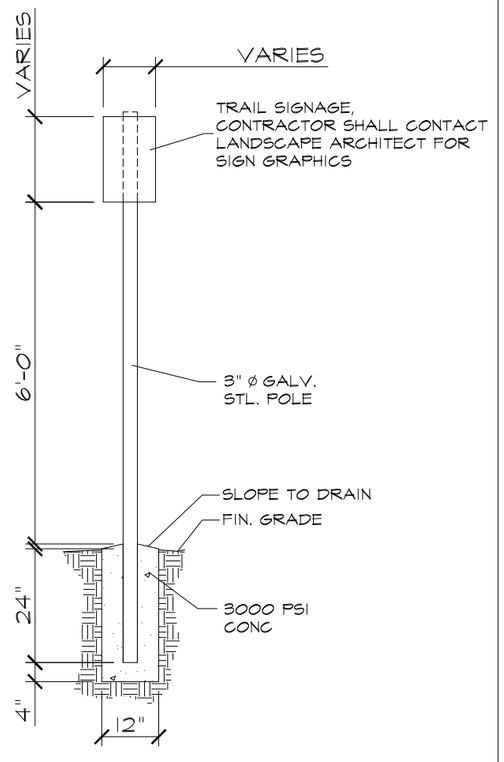

NOTE:
1) LOCATE MILE MARKERS AND .25 MILE MARKERS ON THE OPPOSITE SIDE OF THE TRAIL THAT IS CLOSEST TO THE CREEK.

2) FACE OF SIGN TO BE A MINIMUM OF 2' FROM EDGE OF PATH PER MUTCD.

## 1 REST AREA
NTS




## 2 MUTT MITT SIGN
NTS




## 3 TRAIL SIGNAGE (TYP.)
NTS


## 4 ROADWAY SIGN
NTS

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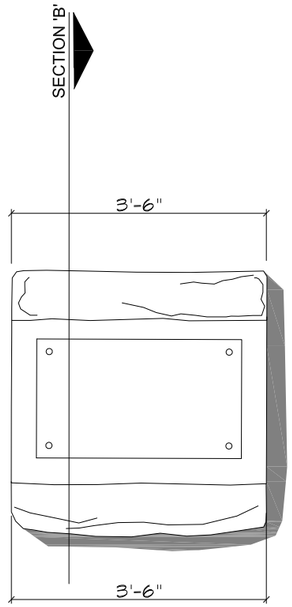
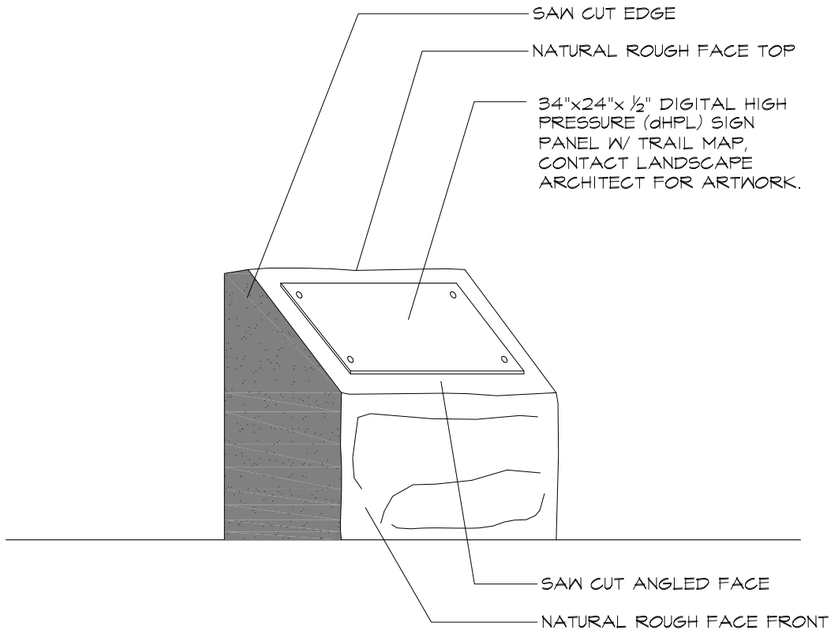
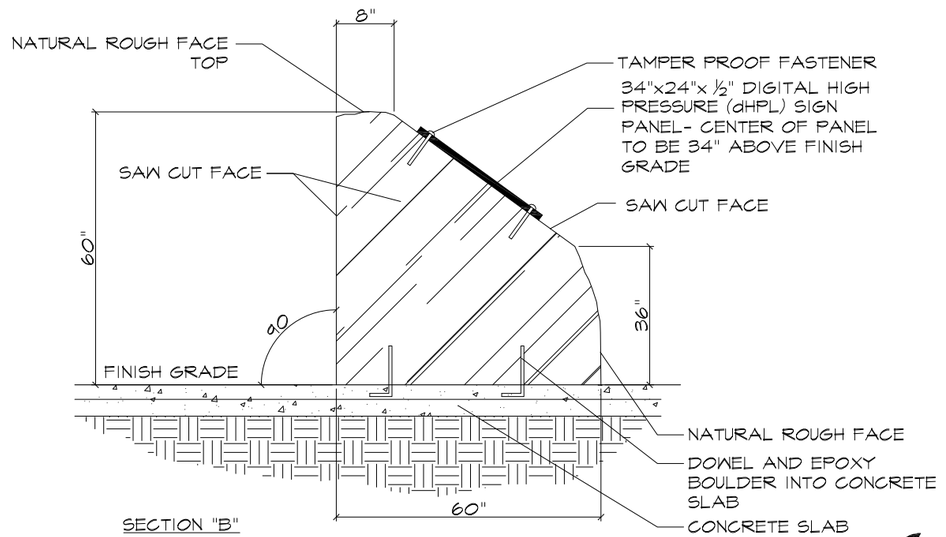



FRONT
ELEVATION




NOTES:
KIOSK @ EVERS ROAD.
1 - LEON VALLEY HIKE AND BIKE TRAIL MAP PANEL.

KIOSKS @ TRAILHEAD
1 - LEON VALLEY HIKE AND BIKE TRAIL MAP PANEL.
2 - EDUCATIONAL PANELS




SECTION "B"

1 KIOSK
NTS

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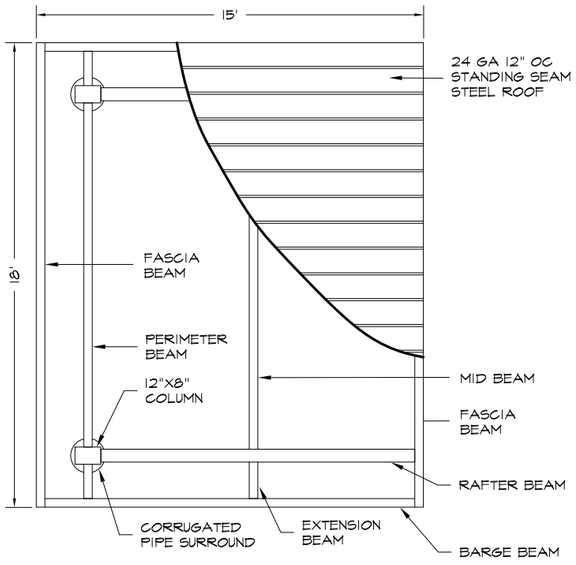
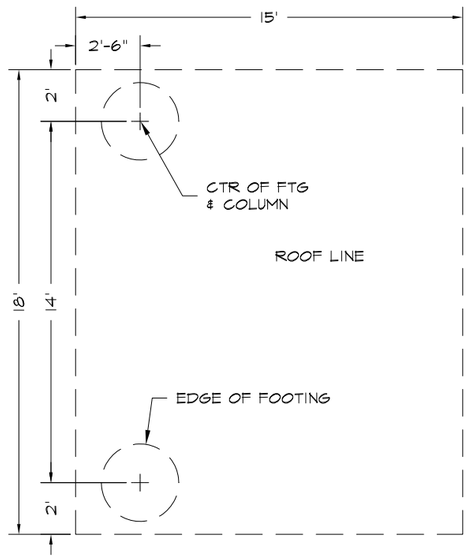
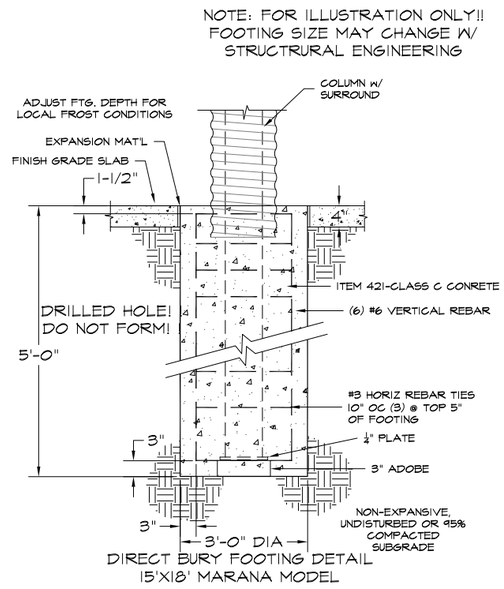


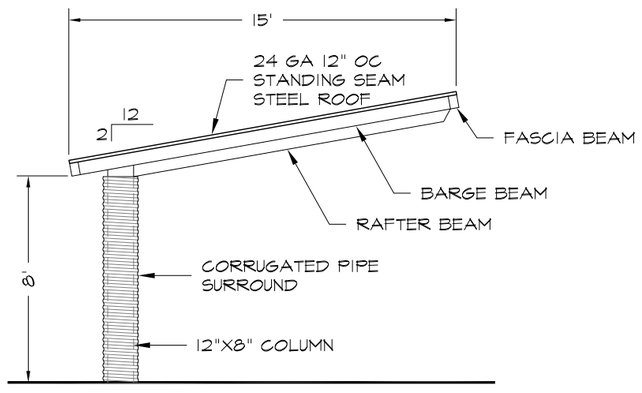

## 1 SHADE STRUCTURE-ROOF
NTS



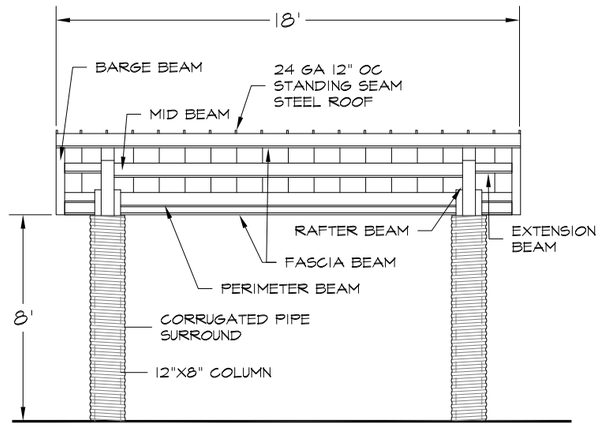

## 2 SHADE STRUCTURE-FOOTING LAYOUT
NTS




## 3 SHADE STRUCTURE-FOOTING DETAIL
NTS




## 4 SHADE STRUCTURE- SIDE ELEVATION
NTS




MARANA MODEL 15' X 18' SHADE STRUCTURE
BY CLASSIC RECREATION SYSTEMS, INC. MANUFACTURER
AND MODEL NUMBER ARE SHOWN FOR EXAMPLE ONLY.
CONTRACTOR TO SUBMIT A STRUCTURE THAT IS OF EQUIVALENT
SPECIFICATIONS.

## 5 SHADE STRUCTURE- SIDE ELEVATION
NTS

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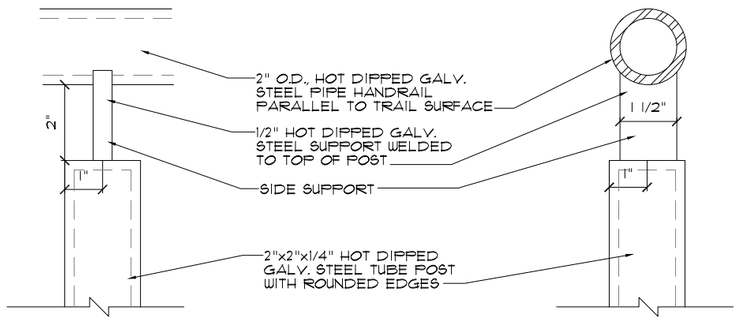
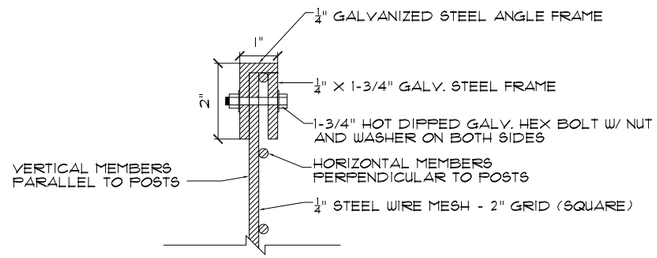


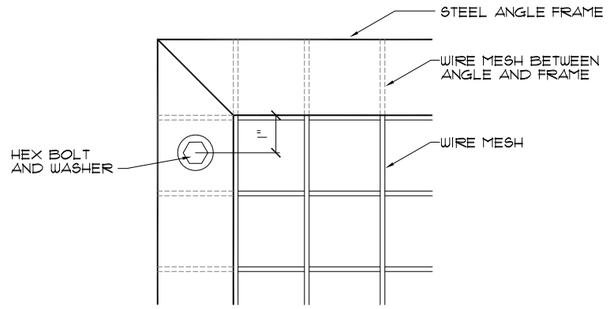

ELEVATION

## 1 GALVANIZED STEEL RAILING-POST CONNECTION
SCALE: 3"=1'-0"



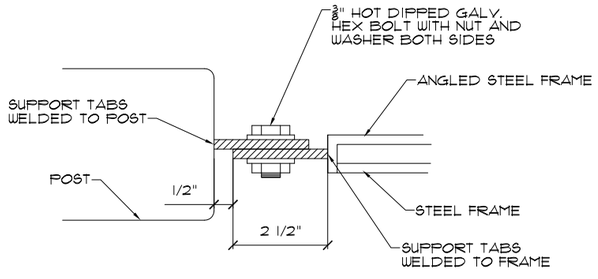

SECTION

## 2 GALVANIZED STEEL RAILING - PANEL CONSTRUCTION
SCALE: 3"=1'-0"

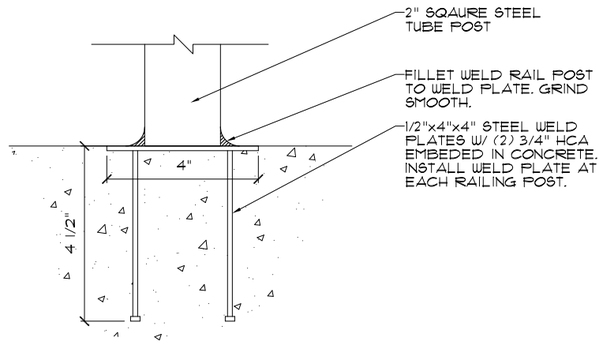



ELEVATION

## 3 GALVANIZED STEEL RAILING - PANEL CONSTRUCTION
SCALE: 3"=1'-0"




## 4 GALVANIZED STEEL RAILING - POST AND FRAME CONNECTION
SCALE: 3"=1'-0"




## 5 GALVANIZED STEEL RAILING - WELD PLATE CONNECTION
SCALE: 3"=1'-0"

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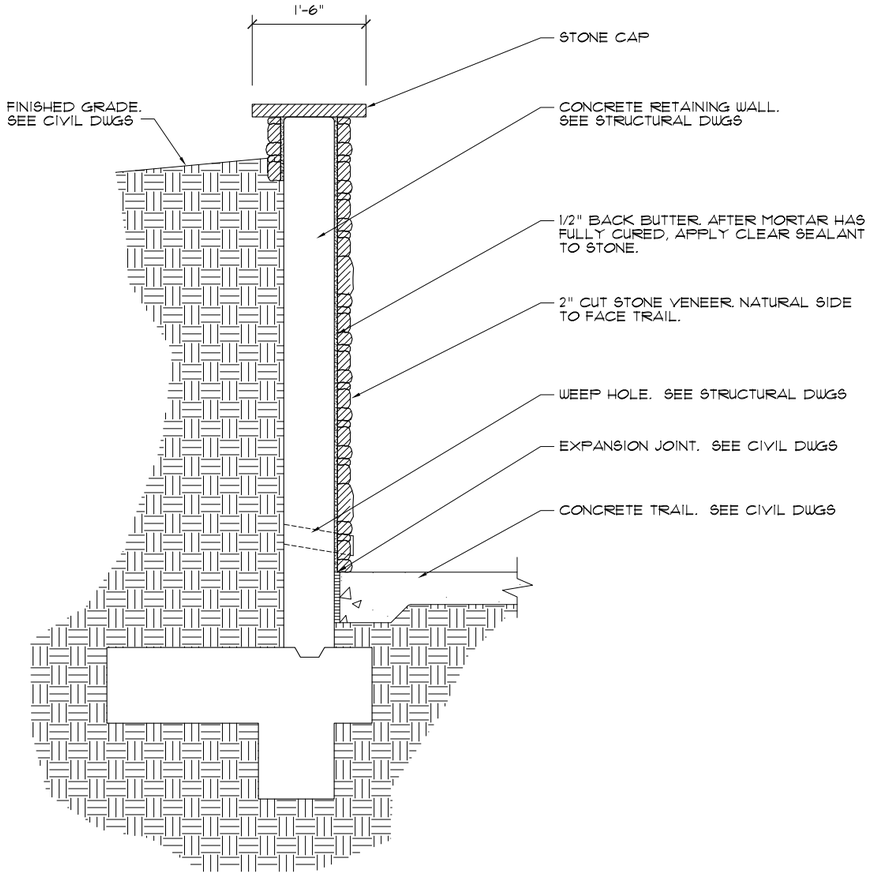
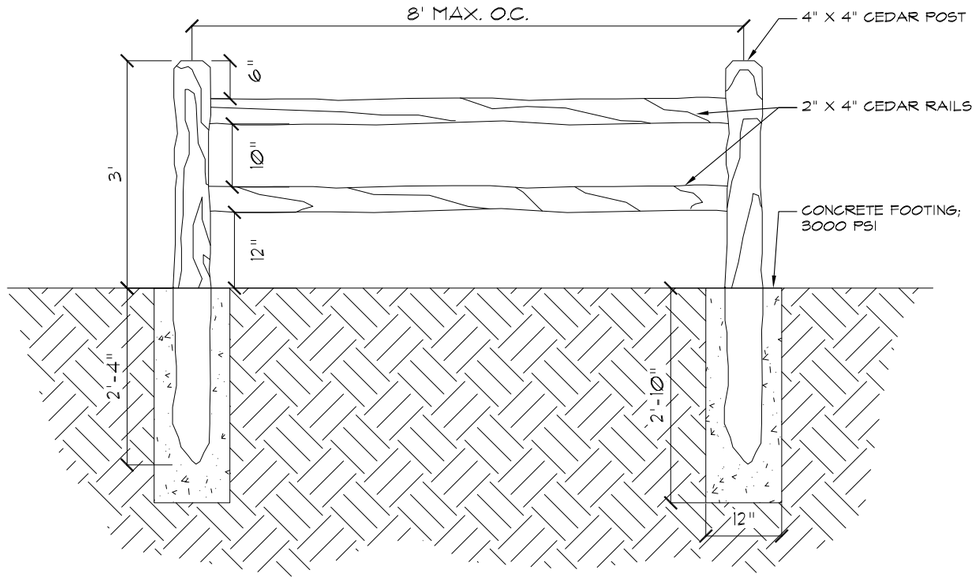
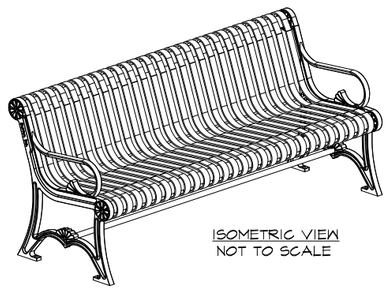



## 1 RETAINING WALL - FLAGSTONE VENEER (TYP.)
SCALE: 1/2" = 1'-0"

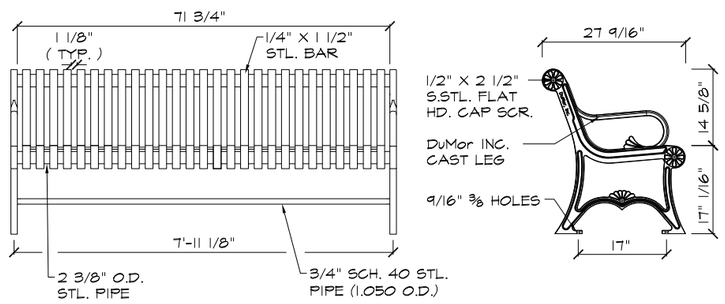



## 2 CEDAR SPLIT-RAIL FENCE
SCALE: 1/2" = 1'-0"

NOTE:
POWDER COAT COLOR TO BE SELECTED BY OWNER



ISOMETRIC VIEW
NOT TO SCALE




FRONT VIEW
NOT TO SCALE

SIDE VIEW
NOT TO SCALE

## 3 PARK BENCH
NOT TO SCALE

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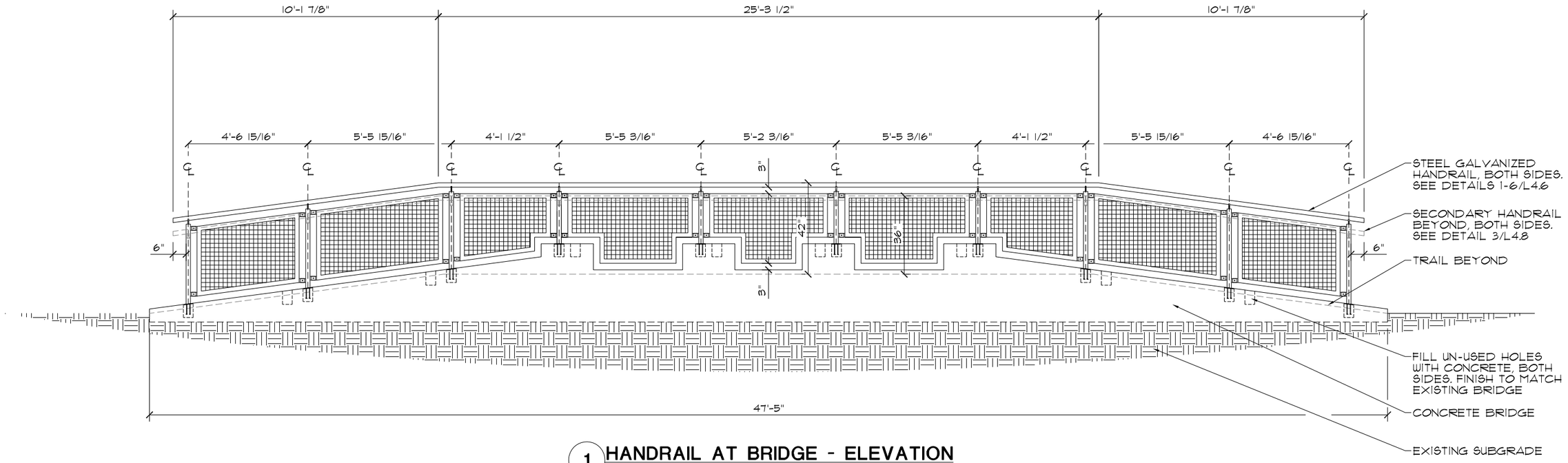
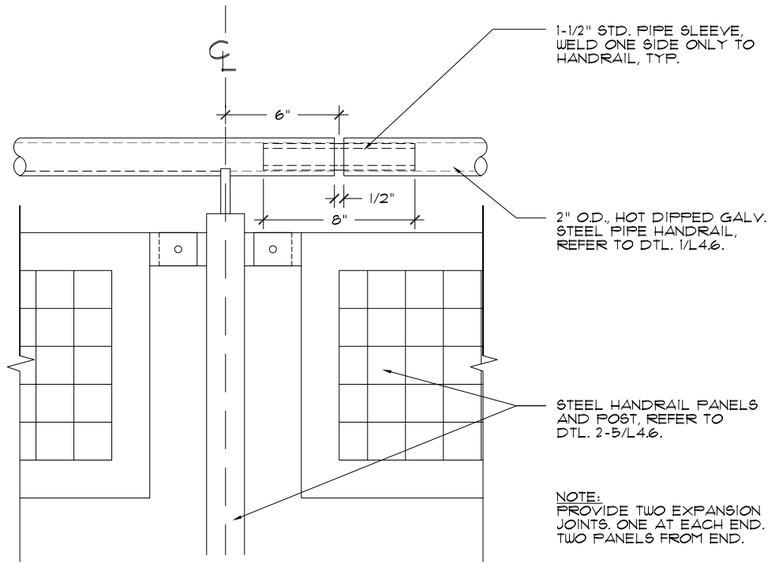
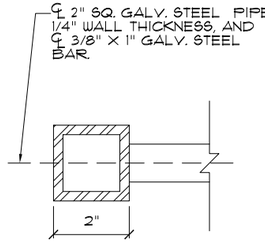


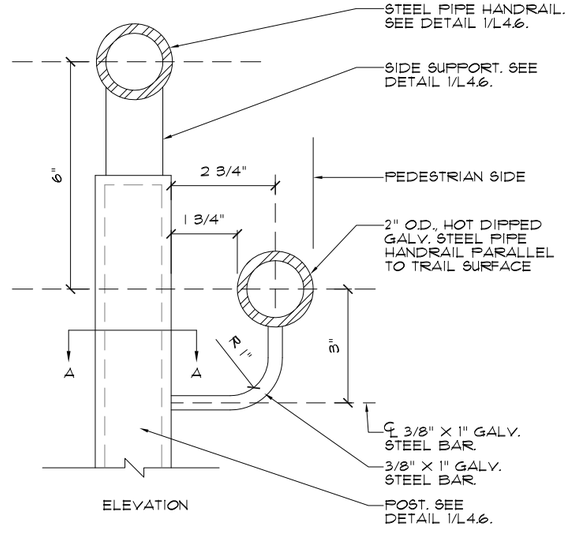

## 1 HANDRAIL AT BRIDGE - ELEVATION
SCALE: 1/4" = 1'-0"




## 2 HANDRAIL EXPANSION JOINT
SCALE: 1-1/2" = 1'-0"




SECTION A




ELEVATION

## 3 SECONDARY HANDRAIL DETAILS
SCALE: 1-1/2" = 1'-0"

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# S T R U C T U R A L  N O T E S

## COORDINATION

A. The Contractor shall compare the Structural, Civil, Landscape, and other series drawings and report any discrepancies between each set of drawings and within each set of drawings prior to fabrication and installation of any structural members.

B. Only larger sleeve openings and framed openings in structural framing component members are indicated on the Structural Drawings. However, all sleeves, inserts and openings, including frames and/or sleeves shall be provided for passage, provision and/or incorporation of the work of the contract, including but not limited to Mechanical, Electrical and Plumbing work. This work shall include the coordination of sizes, alignment, dimensions, position, locations, elevations and grades as required to serve the intended purpose. Openings not indicated on the Structural Drawings, but required as noted above, shall be submitted to the Structural Engineer for review.

C. Refer to Civil and Landscape drawings for elevations, slopes, drains and location of depressed and elevated areas.

D. Compatibility of the structure and provisions for equipment supported on or from structural components shall be verified as to size, dimensions, clearances, accessibility, weights and reaction with the equipment for which the structure has been designed prior to submission of shop drawings and data for each piece of equipment and for structural components. Differences shall be noted on the submittals.

E. The details designated as "Typical Details" apply generally to the Structural Drawings in all areas where conditions are similar to those described in the details.

F. All structural elements of the project have been designed by the Engineer to resist the required code vertical and lateral forces that could occur in the final completed structure only. It is the responsibility of the Contractor to provide all required bracing during construction to maintain the stability and safety of all structural elements during the construction process until the lateral-load resisting or stability-providing system is completely installed and the structure is completely tied together. Temporary supports shall not result in the overstress or damage of the elements to be braced nor any elements used as brace supports.

G. The Contract Structural Drawings and Specifications represent the finished structure, and except where specifically shown, do not indicate the means or methods of construction. The Contractor and their Sub-Contractors shall supervise and direct the Work and shall be solely responsible for all construction means, methods, procedures, techniques, sequences and safety measures including, but not limited to, adherences to all OSHA guidelines. The Engineer shall not have control of, and shall not be responsible for, construction means, methods, techniques, sequences or procedures, for safety precautions and programs in connection with the Work, for the acts or omissions of the Contractor, Subcontractors, or any other person performing any of the Work, or for the failure of any of these persons to carry out the Work in accordance with the Structural Contract Documents.

H. Where conflict exists among the various parts of the Structural Contract Documents, Structural Drawings, General Notes, and Specifications, the strictest requirements, as indicated by the Engineer, shall govern.

I. Periodic site observation by field representatives of JQ - San Antonio, LLP is solely for the purpose of determining if the Work is proceeding in accordance with the Structural Contract Documents. This limited site observation is not intended to be a check of the quality or quantity of the Work, but rather a periodic check in an effort to inform the Owner against defects and deficiencies in the work of the Contractor.

## SUBSTITUTIONS

A. All requests for substitutions of materials or details shown in the Structural Contract Documents shall be submitted for approval during the bidding period.

B. Once bids are accepted, proposed substitutions will be considered only when they are officially submitted with an identified savings or duration to be deducted from the contract and/or schedule impact. Submittals not satisfying the above criteria will not be considered.

## MAINTENANCE STATEMENT

A. All structures require periodic maintenance to extend lifespan and to ensure structural integrity from exposure to the environment. A planned program of maintenance shall be established by the building owner. This program shall include such items as but not limited to painting of structural steel, protective coating for concrete, sealants, caulked joints, expansion joints, control joints, spalls and cracks in concrete, and pressure washing of exposed structural elements exposed to a salt environment or other harsh chemicals.

## CODES

A. The General Building Code used as the basis for the structural design is as follows:
1. City of Leon Valley Building Code (2006 International Building Code with City of Leon Valley Amendments)

B. Structural Concrete: Building Code Requirements for Reinforced Concrete, American Concrete Institute, ACI 318, as referenced by the General Building Code.

C. Pedestrian Bridges: LRFD Guide Specifications for the Design of Pedestrian Bridges, December 2009, American Association of State Highway and Transportation Officials.

D. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, Sixth Edition, June 2012. American Association of State Highway and Transportation Officials.

## DESIGN LOADS

A. Dead Loads include the self-weight of the structural elements.

B. Live Loads

| | OCCUPANCY OR USE | UNIFORM (psf) | CONCENTRATED (lbs.) |
|---|---|---|---|
| 1. | Sidewalks, Vehicular driveways and yards subject to trucking at grade. | 250 | 8000 |
| 2. | Pedestrian Loading | 100 | -- |
| 3. | Vehicle Load | -- | H5 |

C. Snow loads

| | |
|---|---|
| Ground snow load, Pg | 5 psf |

D. Wind loads - Wind lateral load on structural frame is based on ASCE 7 using the following:

| | | |
|---|---|---|
| a. | Basic Wind Speed | 115 mph |
| b. | Exposure Category | C |
| c. | Importance Factor, Iw | 1.0 |
| d. | Internal Pressure Coefficient, Gcpi | 0.00 |
| e. | Risk Category | II |

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STRUCTURAL NOTES

10/15/2014

STATE OF TEXAS
DAVID N. GAUTHIER
69624
LICENSED PROFESSIONAL ENGINEER

shaping the built environment


JASTER-QUINTANILLA SAN ANTONIO, LLP
125 WEST SUNSET SAN ANTONIO, TEXAS 78209
210.349.9098
JQ JOB NO: 1132026 TBPE FIRM F-432


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| DATE: | 10/15/2014 | S1.0 | 20 |

# S T R U C T U R A L  N O T E S

## DESIGN LOADS

E. Seismic Loads

1. The structure and structural components of the building have been designed in accordance with General Building Code with the following criteria:

| | | |
|---|---|---|
| a. | Seismic Importance Factor, Ie | I |
| b. | Risk Category | II |
| c. | Mapped Spectral Response Accelerations | |
| i. | Ss | 0.075 g |
| ii. | S1 | 0.028 g |
| d. | Site Class | C |
| e. | Spectral Response Coefficients | |
| i. | SDS | 0.06 g |
| ii. | SD1 | 0.032 g |
| f. | Seismic Design Category | A |
| g. | Basic Seismic-force-resisting system | Bearing Wall: Ordinary Reinforced concrete shear walls |
| h. | Analysis Procedure Used | Simplified |

F. Load Combinations

1. Strength Design
   a. 1.4(D+F)
   b. 1.2(D+F) + 1.6(L+H)
   c. 1.2(D+F) + 1.0W + 1.0 L + 1.6H
   d. 1.2(D+F) + 1.0E + 1.0 L + 1.6H
   e. 0.9D + 1.0W + 1.6H
   f. 0.9(D+F) + 1.0E + 1.6H

2. Allowable Stress Design
   a. D + F
   b. D + H + F + L
   c. D + H + F + (0.6W or 0.7E)
   d. D + H + F + 0.75(0.6W) + 0.75L
   e. D + H + F + 0.75(0.7E) + 0.75L
   f. 0.6D + 0.6W + H
   g. 0.6(D+F) + 0.7E + H

## SUBMITTALS

A. Shop drawings shall be prepared for all structural items and submitted for review by the Structural Engineer. Structural Drawings shall not be reproduced and used as shop drawings. All items deviating from the Structural Drawings or from previously submitted shop drawings shall be clouded.

B. Contractor shall review shop drawings for compliance with the Structural Drawings and shall certify that they have done so by a stamp noting that the drawings have been "Approved" and which bears the signature (or initials) of an authorized representative of the Contractor and the date. Submittals which do not reflect the Contractor's approval, signature and date will be returned without review.

C. Contractor shall be responsible for delays caused by rejection of inadequate shop drawings.

D. Where review and return of shop drawings is required or requested, the Engineer will review each submittal and, where possible, return within 2 weeks of receipt.

E. Corrections or comments on shop drawings or manufacturer's data sheets do not relieve the Contractor from compliance with requirements of the plans and specifications. Engineer's review is for general conformance with the requirements of the Structural Drawings. Contractor is responsible for confirming and correcting all quantities and dimensions, selecting fabrication processes and techniques of construction, and coordinating the work with that of all other contractors.

F. Refer to individual sections for specific submittal requirements.

G. Contractor will be responsible for providing and distributing Engineer's comments to their subcontractors.

## EXCAVATION PROTECTION

A. The sides of all excavations greater than 5'-0" in depth shall be laid back to a slope of 3 horizontal to 1 vertical, unless the following applies:
   1. A steeper slope is allowed by the Geotechnical Engineer for the particular location and site conditions in question
   2. A temporary retention system is indicated on the Structural Drawings.
   3. An alternative protective system is submitted by the Contractor and allowed by the Owner.

B. Contractor shall submit drawings and calculations sealed by a Registered Engineer licensed in the State of Texas for the design of any temporary retention or alternative protective systems. Temporary retention or alternative protective systems shall be designed to resist the soil pressures stipulated in the project geotechnical report prepared by Arias & Associates, dated 30 April 2014. In addition, the design shall consider surcharges created by construction equipment, excavation spoil, and other surface encumbrances.

C. Contractor shall comply with all Occupational Safety and Health Administration standards and all other regulatory agency standards regarding excavation safety.

## STRUCTURAL TRAIL EARTHWORK

A. Structural fill material shall meet all requirements of TxDOT Standard Specification Item 247, Type A, Grade 1 or 2 crushed Limestone

B. Prior to placing fill material, remove all organic and other deleterious material from the existing grade for a distance of 3'-0" beyond structure, to a depth of no less than 6 inches. Remove additional material as required to place a minimum of 4 inches of structural fill beneath the trail slab. All exposed subgrade surfaces shall then be scarified to a depth of 1'-0", watered as required and recompacted to a minimum of 95 percent of the maximum dry density as defined by ASTM D 698 (Standard Proctor Test) at a moisture content within 4 percent of the optimum moisture content.

C. Retaining Wall subgrade should be proofrolled with rubber tired equipment weighing at least 15 tons. Areas that yield or rut should be removed to firmer soils and replaced with compacted select fill. Scarify the exposed retaining wall subgrade to a depth of at least 1'-0" and moisture condition all exposed subgrade surfaces to between optimum moisture content and +4% of the optimum moisture content. The subgrade should then be compacted to at least 95% of maximum dry density from ASTM D698. A lean concrete mudmat can be considered to protect the bearing surface.

D. Subgrade preparation & compaction is required at trail slabs, beams, support wall footings, and retaining wall footings unless Geotechnical Engineer determines that exposed subgrade is intact rock capable of supporting bearing pressures provided in Geotechnical Report without further preparation.

E. Structural fill shall be placed in 8 inch loose lifts (where depth of fill requires) to final subgrade elevation, watered as required and compacted to a minimum of 95 percent of the maximum dry density as defined in ASTM D 698 at a moisture content within 2 percent of the optimum moisture content.

F. Compaction and moisture content of subgrade and each lift of structural fill shall be inspected and approved by a qualified engineering technician, supervised by a Geotechnical Engineer.

G. Building pad preparation information is based on a geotechnical report provided by Arias and Associates dated 30 April 2014.

## EPOXY ADHESIVE

A. Adhesive Rebar Doweling

Adhesive doweling systems in concrete shall have been testied and qualified in accordance with ACI 355.4 and ICC-ES AC 308. Qualifying adhesive shall be installed in accordance with the manufacturer's recommendation and shall be one of the following products:
   a. Epoxy: HIT-RE 500 SD (ICC-ES ESR 2322), Hilti Inc.
   b. Epoxy: SET-XP (ICC-ES ESR-2508), SIMPSON STRONG-TIE.
   c. Acrylic: HIT-HY 150 MAX-SD (ICC-ES ESR-3013), Hilti Inc.

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# S T R U C T U R A L  N O T E S

## CONTROLLED BACKFILL BEHIND RETAINING WALLS

A. Backfill material shall be clean gravel with less than 5% passing the #200 sieve. This material is incidental to pay item 0420 2011 CL C CONC (RETAINING WALL).

B. Fill shall be separated from adjacent soils using a geo-textile fabric (Mirafi 140N or approved equivalent) to prevent adjacent finer-grained soils from infiltrating into the pore space of the backfill. This material is incidental to pay item 0420 2011 CL C CONC (RETAINING WALL).

C. Fill shall be compacted to 70% relative density as determined by the Geotechnical Engineer.

D. Compaction and moisture content of controlled backfill shall be verified by an independent testing laboratory.

E. The top 1'-6" of material below the ground surface shall consist of LEAN CLAY, with a liquid limit less than 50 percent and a plasticity index between 15 and 25. This material shall be placed in 6" lifts and compacted at optimum moisture content, to 95 percent of the maximum density per ASTM D698. This material is incidental to pay item 0420 2011 CL C CONC (RETAINING WALL).

F. Backfill material shall not be placed against retaining walls until all supporting slabs, beams, struts, etc., have attained their 28 day design strength unless proper bracing is installed.

G. Where backfill is required on both sides of a structure or building element, backfill shall be placed simultaneously along both sides so that the backfill height on one side does not exceed the height on the opposite side by more than 4'-0".

H. Compaction and moisture content of subgrade and each lift of structural fill shall be inspected and approved by a qualified engineering technician, supervised by a Geotechnical Engineer.

I. Design of retaining walls is based on equivalent passive hydrostatic pressures of 55 pcf, assuming free draining backfill and use of perforated drain pipe.

J. The above recommendations have been prepared in accordance with the geotechnical report prepared by Arias and Associates dated 30 April 2014.

## DRILLED PIERS

A.. Pier design is based on the following design criteria:

| | | |
|---|---|---|
| 1. | Allowable end bearing: | 15,000 psf below 13ft |
| 2. | Side friction: | 500 psf from 5 ft to 13 ft |
| | | 1000 psf below 13ft |

B. Pier design is in accordance with the recommendations in the following geotechnical report:

| | | |
|---|---|---|
| 1. | Geotechnical engineer: | Arias and Associates |
| 2. | Date of report: | 30-Apr-14 |
| 3. | Report number: | 2013-667 |

C. Bearing stratum shown on the pier details is LEAN CLAY.

D. Piers not specifically located on the plan shall be located on centerline of wall above. Where no wall occurs, locate on centerline of beam.

E. Provide dowels from piers into concrete above using same bar size and number as shown for pilaster above. Where no pilaster occurs, use dowels of same size and number as pier reinforcing steel. Extend dowels 30 bar diameters into pier and beam, wall, pilaster or column, unless noted otherwise on the Structural Drawings.

F. Elevation of top of piers, unless noted otherwise on the Structural Drawings, is at the bottom of the deepest intersecting beam or wall supported by the pier.

G. Reinforcing cage shall be held securely away from earth at sides and bottom by sets of 3 spacers at a maximum spacing of 8 ft. along the length of the cage and 1'-0" from the bottom.

H. Pier reinforcing and concrete shall be placed immediately after drilling operations are complete; in no case shall a pier be drilled that cannot be placed by the end of the workday.

I. See plans for pier sizes, reinforcing and depth.

## DRILLED PIERS

J. The contractor shall verify depths of piers before pier steel is cut. Pier steel may be delivered to the jobsite in standard lengths and cut as required. Provide 64 bar diameter laps in all vertical pier reinforcing.

K. Reinforcing steel shop drawings shall include placing drawings for templates to set dowels in piers.

L. Top of pier shall be of the specified diameter. Form top of pier if required to maintain the specified diameter. Any concrete extending beyond the specified diameter shall be removed.

M. Temporary steel casing may be required during pier drilling operations. Prior to the placement of concrete, any seepage water shall be removed from the pier holes. Special construction procedures in accordance with ACI 336.1 and ACI 336.3R and specifications shall be followed during extraction of the casing and during concrete placement.

N. Contractor shall include in bid documents, unit-costs for casing if required and unit-cost for greater and lesser depth of drilling for each pier size.

O. All piers shall be inspected by a representative of a Qualified Geotechnical Laboratory in order to ensure that the proposed bearing material has been reached in accordance with the recommendations given in the geotechnical report.

P. The contractor shall make and maintain accurate records of the drilled pier depths, bearing stratum, depth of penetration into bearing stratum, diameter and location (including off center eccentricities), and shall submit this information to the Engineer.

## CAST-IN-PLACE CONCRETE

A. CLASSES OF CONCRETE

All concrete shall conform to the requirements as specified in the table below, unless noted otherwise on the Structural Drawings:

Concrete Mix Schedule:

| Conc. Class | Strength psi | Agg. Type | Coarse Agg. Grades | Max w/c | Notes |
|---|---|---|---|---|---|
| A | 3000 | NWT | 1-4, 8 | 0.60 | |
| C | 3600 | NWT | 1-6 | 0.45 | |
| S | 4000 | NWT | 2-5 | 0.45 | |

a. "NWT" refers to normal concrete having air dry unit weight of approximately 145 PCF (ASTM C33 aggregate).
b. Where w/c ratio is not indicated in the Concrete Mix Schedule, it shall be as necessary to meet strength requirements.
c. Where the w/c ratio is shown, it shall be adhered to regardless of strength requirements.
d. "Strength" is required compressive cylinder strength at an age of 28 days.

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# S T R U C T U R A L  N O T E S

## CAST-IN-PLACE CONCRETE

Mix Usage Schedule:

| Description of use | Concrete Class | Air Content |
|---|---|---|
| Drilled Piers | C | ----- |
| Grade Beams | C | 3 - 6% |
| Retaining Walls | C | 3 - 6% |
| Structural Beams and Slab | C | ----- |
| Elevated Trail Section | S | ----- |
| Support Walls | S | ----- |
| Low Water Crossing | S | ----- |
| Rip Rap | A | ----- |
| Footings | C | ----- |
| Monument Foundation | C | ----- |

B. A maximum of 20% of the cementitious materials used in mix designs may be replaced with class C or F fly ash.

C. Provide 5 percent plus or minus 1 1/2 percent of entrained air in concrete permanently exposed to the weather and elsewhere at the contractor's option.

D. Horizontal construction joints in concrete placements shall be permitted only where indicated on the Structural Drawings. All vertical construction joints shall be made in the center of spans in accordance with the typical details. Contractor s shall submit proposed locations for construction joints not shown on the Structural Drawings for review by the Architect and Engineer. Additional construction joints may require additional reinforcing as specified by the Engineer which shall be provided by the contractor at no additional cost to the owner.

E. Embedded conduits, pipes, and sleeves shall meet the requirements of ACI 318, Section 6.3, including the following:

1. Conduits and pipes embedded within a slab, wall, or beam (other than those passing through) shall not be larger in outside dimension than 1/3 the overall thickness of the slab, wall or beam in which they are embedded.

2. Conduits, pipes and sleeves shall not be spaced closer than three diameters or widths on center.

G. Concrete placements shall not exceed 10,000 square feet or 100 linear feet on each side without prior approval by the Civil Engineer for each placement.

H. Void forms: Shall be the product of a reputable manufacturer regularly engaged in commercial production of void forms.
1. Void form composition shall be of corrugated paper material with a moisture resistant exterior and an interior fabrication of a uniform cellular configuration, composed of components constructed of double-faced wax-impregnated (partially or fully), corrugated fiberboard that is laminated with moisture resistant adhesive.

2. Design and maintain void forms to support all vertical and lateral loads that might be applied during construction until such loads can be supported by the concrete structure.

3. Form material shall be designed to lose its strength under prolonged contact with the moisture which normally accumulates beneath slabs and beams on grade.

J. Submittal: Submit proposed mix designs in accordance with ACI 301, chapter 3.9. Each proposed mix design shall be accompanied by a record of past performance based on at least 30 consecutive strength tests, or by three laboratory trial mixtures with confirmation tests.

K. Form all sides of below grade walls, earth forming is not permitted.

## CONCRETE REINFORCING

A. All reinforcing steel shall be new billet steel in accordance ASTM A615, Grade 60, unless noted otherwise in the Structural Drawings or these notes.

B. Detailing of reinforcing steel shall conform to the American Concrete Institute 315 Detailing Manual and all hooks and bends in reinforcing bars shall conform to ACI detailing standards, unless noted otherwise on the Structural Drawings.

C. Welding of reinforcing steel will not be permitted unless specifically shown on the Structural Drawings.

D. Heat shall not be used in the fabrication or installation of reinforcement.

## CONCRETE REINFORCING

E. Reinforcing steel clear cover shall be as follows:

| | | |
|---|---|---|
| 1. | Basement Walls | 1" Int., 2" ext. exposure |
| 2. | Drilled Piers | 3" |
| 3. | Earth-formed grade beams | 1 1/2" top, 3" sides, 3" bottom |
| 4. | Footings | 3" |
| 5. | Formed grade beams | 1 1/2" top, 2" sides, 3" bottom |
| 6. | Narrow pan joists | 1" |
| 7. | One way slabs | 3/4" |
| 8. | Slab-on-grade | 3/4" top |
| 9. | Tilt-wall panels | 1" Int., 2" ext. exposure |
| 10. | Walls | 1" Int., 2" ext. exposure |
| 11. | Wide pan joists (beams) | 1 1/2" Int., 2" ext. exposure |

a. "Exterior Exposure" refers to concrete exposed to earth or weather.

F. Submittal: Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 315 "Details and Detailing of Concrete Reinforcement". Do not reproduce the Structural Drawings for use as shop drawings.

## JOINT SEALANT

A. Joint sealant shall be a 2-component, premium-grade, polyurethane-based, elastomeric sealant with a chemical cure. Sealant shall have a self-leveling consistency in horizontal applications, and a non-sag consistency in vertical applications.

B. All joint surfaces shall be clean, sound and frost-free. Joint walls shall be free of oil, grease, curing compound residues, and any other foreign matter that may prevent bond. Cleaning and preparation of joint surfaces shall be accomplished by mechanical means.

C. Bond breaker tape, closed-cell backer rod or other approved method shall be used in bottom of joint to control depth and to prevent bond to bottom of joint.

D. Thoroughly mix A, B and color pack components in accordance with manufacturer's instructions to achieve a uniform color and consistency.

E. Pour or extrude sealant in one direction and allow to flow and level as necessary. Place nozzle of gun into bottom of joint and fill entire joint. Keep the nozzle deep in the sealant and continue with steady flow of sealant preceding nozzle to avoid air entrapment. Do not overlap sealant. Tool joint surface as required.

F. Self-leveling joint sealant shall be Sikaflex -2c SL by Sika Corp. or approved equal.

G. Non-sag joint sealant shall be Sikaflex -2c NS by Sika Corp. or approved equal.

H. Submittals: Submit manufacturer's data sheets and application instructions for review.

## JOINT FILLER

A. Joint Filler shall meet ASTM D1751, asphalt-saturated cellulostic fiber

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# STRUCTURAL NOTES

## STRUCTURAL ABBREVIATIONS

| | |
|---|---|
| Above Finish Floor | A.F.F. |
| Additional | ADDT'L |
| Adjacent | ADJ. |
| Aggregate | AGGR. |
| Alternate | ALT. |
| Anchor bolt | A.B. |
| And | & |
| Angle | ∠ |
| Approximate | APPROX. |
| Architect | ARCH. |
| Architectural | ARCH'L |
| At | @ |
| Air conditioner | A/C |
| Air handling unit | AHU |
| Back Face | B.F. |
| Back to Back | B. TO B. |
| Basement | BSMT. |
| Beam | BM. |
| Below Finish Floor | B.F.F. |
| Between | BTWN. |
| Blocking | BLKG. |
| Bottom | BOTT. |
| Bracket | BRKT. |
| Bridging | BRDG. |
| Building | BLDG. |
| Building Line | B.L. |
| Base Plate | B.P. |
| Cast-in-Place | C.I.P. |
| Ceiling | CLG. |
| Center Line | ℄ |
| Center of Gravity | C.G. |
| Clear or Clearance | CLR. |
| Column | COL. |
| Compression | COMP. |
| Concrete | CONC. |
| Concrete Masonry Unit | CMU |
| Connections. | CONN(S) |
| Continuous | CONT. |
| Contractor | CONTR. |
| Control Joint | CONTR. JT. |
| Construction | CONST. |
| Construction Joint | C.J. |
| Coordinate | COORD. |
| Cover plate | COV. PL. |
| Dead load | DL |
| Deformed Bar Anchor | D.B.A. |
| Detail | DET. |
| Development | DEV. |
| Diagonal | DIAG. |
| Diameter | DIA. OR Φ |
| Dimension(s) | DIM(S) |
| Drawing(s) | DWG(S). |
| Double | DBL. |
| Douglas Fir Larch | D.F.L. |
| Dowel(s) | DWL(S) |

| | |
|---|---|
| Each | EA. |
| Each Face | E.F. |
| Each Way | E.W. |
| Electrical | ELEC. |
| Elevation | ELEV. |
| Engineer | ENGR. |
| Equal | EQ. |
| Equipment | EQUIP. |
| Expansion | EXP. |
| Expansion Joint | E.J. |
| Existing | EXIST. |
| Exterior | EXT. |
| Fabricator | FABR. |
| Far Side | F.S. |
| Field verify | F.V. |
| Finished Floor | FIN. FLR. |
| Fireproof(ing) | FP. |
| Flange | FLG. |
| Floor | FL. |
| Floor Drain | F.D. |
| Foundation | FDN. |
| Foot(or)Feet | FT. |
| Finished Floor Elevation | F.F.E. |
| Gage or Gauge | GA. |
| Galvanized | GALV. |
| Grade | GR. |
| Grade beam | GR.BM. |
| Headed Concrete Anchors | H.C.A. |
| Headed Studs | H.S. |
| Height | HT. |
| High point | H.P. |
| Hollow Structural Section | H.S.S. |
| Horizontal | HORIZ. |
| Hot Dip Galvanized | HDG |
| Inch | IN. |
| Information | INFO. |
| Inside diameter | I.D. |
| Inside face | I.F. |
| Interior | INT. |
| Intermediate | INTERM. |
| Joint | JT. |
| Joist(s) | JST(S) |
| Kips(1000 lbs) | K |
| Kip per linear foot | KLF |
| Kip per square foot | KSF |
| Lightweight | LWT. |
| Live Load | LL |
| Longitudinal | LONG. |
| Long Leg Horizontal | LLH |
| Long Leg Vertical | LLV |
| Low Point | L.P. |

| | |
|---|---|
| Manufacture(r) | MFR. |
| Material | MAT'L. |
| Maximum | MAX. |
| Mechanical | MECH. |
| Mezzanine | MEZZ. |
| Middle | MID. |
| Minimum | MIN. |
| Miscellaneous | MISC. |
| Moment | M |
| Moment Connection(s) | MC |
| Near Face | N.F. |
| Nominal | NOM. |
| Non-Shrink | N.S. |
| Not in Contract | N.I.C. |
| Not to Scale | N.T.S. |
| Number | NO. OR # |
| On Center | O.C. |
| Opening(s) | OPNG(S) |
| Opposite | OPP. |
| Opposite Hand | O.H. |
| Outside Face | O.F. |
| Outside Diameter | O.D. |
| Perpendicular | PERP. |
| Plate | ℗ |
| Point | PT. |
| Pounds Per Square Foot | PSF |
| Pounds Per Square Inch | PSI |
| Precast Concrete | P/C |
| Prefabricated | PREFAB. |
| Preliminary | PRELIM. |
| Radius | R |
| Reinforced Concrete Pipe | RCP |
| Reinforce, Reinforcing, Reinforced, Reinforcment | REINF. |
| Remainder | REM. |
| Require, Required | REQ. |
| Retention | RET. |
| Required | REQ'D. |
| Roof Drain | R.D. |
| Room | RM. |
| Round | RND. |

| | |
|---|---|
| Schedule(d) | SCHED. |
| Section | SECT. |
| Shear | V |
| Sheet | SHT. |
| Shear Wall | SW. |
| Similar | SIM. |
| Slope down | SL. DN. |
| Southern Yellow Pine | S.Y.P. |
| Space | SP. |
| Specification(s) | SPEC(S) |
| Specified | SPEC'D |
| Square foot | S.F. |
| Stainless steel | S.S. |
| Standard | STD. |
| Steel | STL. |
| Stiffener | STIFF |
| Straight | STR. |
| Stirrups | STIR |
| Structure | STRUCT. |
| Structural | STRUCT'L |
| Subcontractor | SUBCONTR. |
| Support(s) | SUPP(S) |
| System | SYS. |
| Temperature | TEMP. |
| Tension | T |
| Thick | THK. |
| Tongue and Groove | T&G |
| Top and Bottom | T&B |
| Top of Beam | T.O.B. |
| Top of Footing | T.O.F. |
| Top of Joist | T.O.J. |
| Top of Pier | T.O.P. |
| Top of Piercap | T.O.P.C. |
| Top of Steel | T.O.S. |
| Top of Structural Concrete | T.O.S.C. |
| Top of Wall | T.O.W. |
| Typical | TYP. |
| Unless Noted Otherwise | U.N.O. |
| Vertical | VERT. |
| Waterstop | WS. |
| Welded Wire Fabric | W.W.F. |
| Wind Brace | WB |
| Wind Load | WL |
| Window | WDW. |
| With | W/ |
| Without | W/O |
| Work Point | W.P. |
| Wood | WD. |

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STRUCTURAL ABBREVIATIONS

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# STRUCTURAL NOTES

| REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION | | | | | |
|---|---|---|---|---|---|
| SPECIAL INSPECTION REQUIRED | VERIFICATION AND INSPECTION | INSPECTION FREQUENCY | | REFERENCED STANDARD | IBC REFERENCE |
| | | CONTINUOUS | PERIODIC | | |
| YES | 1. Inspection of reinforcing steel, including prestressing tendons, and placement. | -- | X | ACI 318: 3.5, 7.1-7.7 | 1913.4 |
| YES | 2. Inspection of reinforcing steel welding in accordance with Table 1704.3, Item 5b. | -- | -- | AWS D1.4<br>ACI 318: 3.5.2 | -- |
| YES | 3. Inspect bolts to be installed in concrete prior to and during placement of concrete where allowable loads have been increased. | X | -- | -- | 1911.5 |
| YES | 4. Verifying use of required design mix. | -- | X | ACI 318: Ch. 4, 5.2-5.4 | 1904.2.2,<br>1913.2,<br>1913.3 |
| YES | 5. At the time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete. | X | -- | ASTM C 172<br>ASTM C 31<br>ACI 318: 5.6, 5.8 | 1913.10 |
| YES | 6. Inspection of concrete and shotcrete placement for proper application techniques. | X | -- | ACI 318: 5.9, 5.10 | 1913.6,<br>1913.7,<br>1913.8 |
| YES | 7. Inspection for maintenance of specified curing temperature and techniques. | -- | X | ACI 318: 5.11-5.13 | 1913.9 |
| | 8. Inspection of prestressed concrete: | | | ACI 318: 18.20<br>ACI 318: 18.18.4 | -- |
| YES | a. Application of prestressing forces: | X | -- | | |
| YES | b. Grouting of bonded prestressing tendons in the seismic-force-resisting system: | X | -- | | |
| YES | 9. Erection of precast concrete members. | -- | X | ACI 318: Ch. 16 | -- |
| YES | 10. Verification of in-situ concrete strength, prior to stressing of tendons in posttensioned concrete and prior to removal of shores and forms from beams and structural slabs. | -- | X | ACI 318: 6.2 | -- |
| YES | 11. Inspect formwork for shape, location and dimensions of the concrete members being formed. | -- | X | ACI 318: 6.1.1 | -- |

SPECIAL INSPECTIONS

1. Special Inspections shall be performed in accordance with Chapter 17 of the 2006 International Building Code (IBC) by a Special Inspector hired by the Owner to perform the Special Inspections listed below. The Special Inspector shall be qualified by an approved agency according to the City's building official to perform the special inspections for which they will be undertaking. The Contractor shall coordinate with and notify the Special Inspector of all tests. The Special Inspector shall be responsible to verify that the items detailed in the Construction Documents were built accordingly and shall prepare, sign, and furnish inspection reports to the building official and the Architect for all time spent at the site. The Inspector shall bring discrepancies to the immediate attention of the General Contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the building official and to the Architect prior to the completion of that phase of the work. These special inspections are in addition to the other inspections listed in these Structural Notes or Project Specifications.

2. Where structural load-bearing members and assemblies are shop fabricated, the Special Inspector shall verify that the fabricator maintains detailed fabrication and quality control procedures that provide a basis for inspection control of the workmanship and the fabricator's ability to conform to the Construction Documents and Referenced Standards, unless the fabricator is registered and approved to perform such work without special inspection.

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TBPE FIRM F-432

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 Texas Department of Transportation

LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

SPECIAL INSPECTIONS

| CHK. BY: | D.G. | IDS JOB NO: | 211700100 |
|---|---|---|---|
| DWG. BY: | JQ-STAFF | SHEET NO. | TOTAL SHEETS |
| DATE: | 10/15/2014 | S1.5 | 20 |

# S T R U C T U R A L  N O T E S

| REQUIRED VERIFICATION AND INSPECTION OF SOILS | | | |
|---|---|---|---|
| SPECIAL INSPECTION REQUIRED | VERIFICATION AND INSPECTION | INSPECTION FREQUENCY | |
| | | CONTINUOUS | PERIODIC |
| YES | 1. Verify materials below footings are adequate to achieve the design bearing capacity. | -- | X |
| YES | 2. Verify excavations are extended to proper depth and have reached proper material. | -- | X |
| YES | 3. Perform classification and testing of controlled fill materials. | -- | X |
| YES | 4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of controlled fill. | X | -- |
| YES | 5. Prior to placement of controlled fill, observe subgrade and verify that site has been prepared properly. | -- | X |

| REQUIRED VERIFICATION AND INSPECTION OF PIER FOUNDATIONS | | | |
|---|---|---|---|
| SPECIAL INSPECTION REQUIRED | VERIFICATION AND INSPECTION | INSPECTION FREQUENCY | |
| | | CONTINUOUS | PERIODIC |
| YES | 1. Observe drilling operations and maintain complete and accurate records for each pier. | X | -- |
| YES | 2. Verify placement locations and plumbness, confirm pier diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end bearing strata capacity. | X | -- |
| YES | 3. For concrete piers, perform additional inspections in accordance with IBC Section 1704.4 and the concrete special inspection table. | -- | -- |
| YES | 4. For masonry piers, perform additional inspections in accordance with IBC Section 1704.5 and the masonry special inspection table. | -- | -- |

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Where structural load-bearing members and assemblies are shop fabricated, the Special Inspector shall verify that the fabricator maintains detailed fabrication and quality control procedures that provide a basis for inspection control of the workmanship and the fabricator's ability to conform to the Construction Documents and Referenced Standards, unless the fabricator is registered and approved to perform such work without special inspection.

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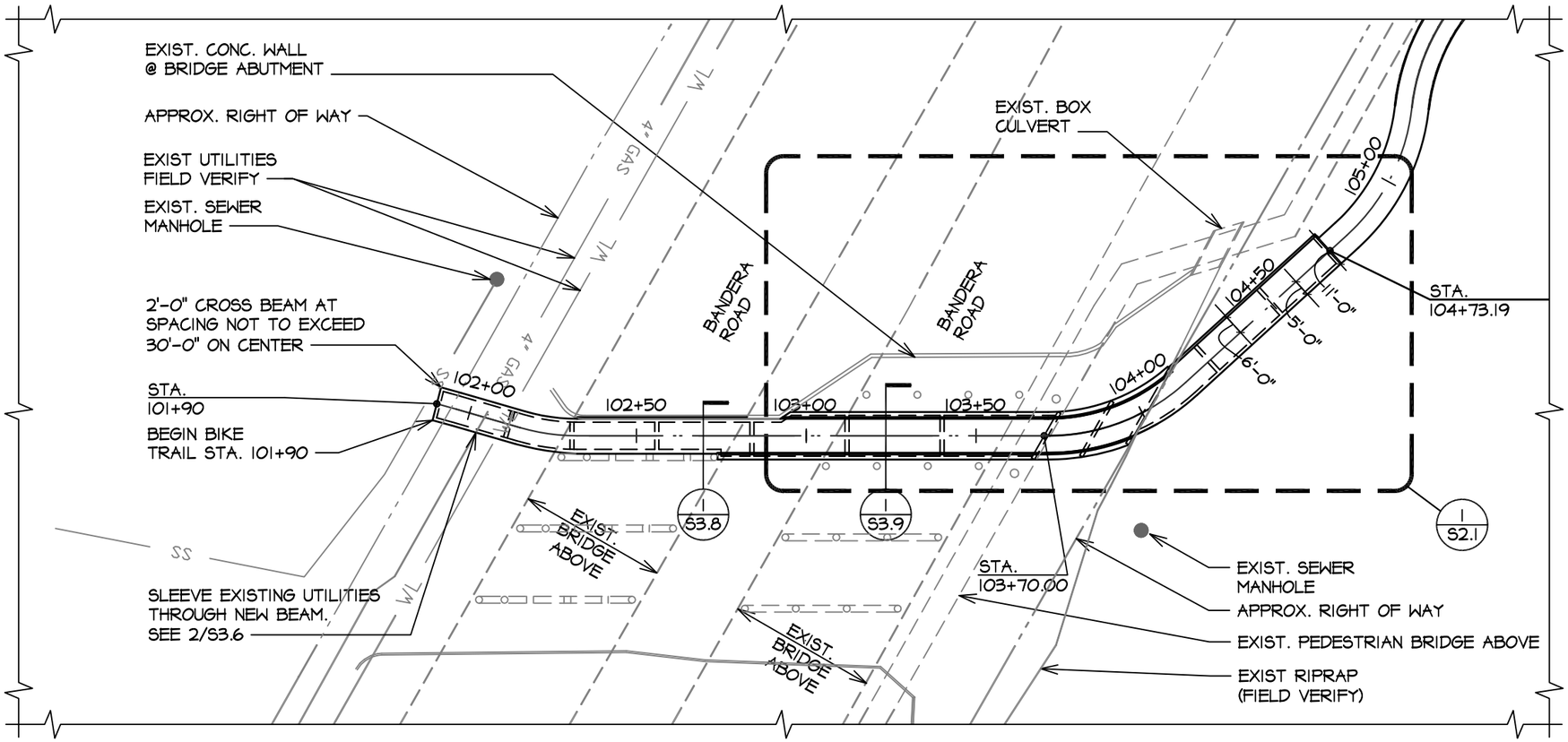
LEON VALLEY, TEXAS

SPECIAL INSPECTIONS

| CHK. BY: D.G. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: JQ-STAFF | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | S1.6 | 20 |




north

# TRAIL "A" AT BANDERA ROAD
# STATION 101+90 TO STA. 104+73.19

SCALE: 1"=40'

PLAN NOTES:

1. CIVIL SERIES DRAWINGS OF TRAIL TAKE PRECEDENCE WITH REGARD TO ALIGNMENT, MATERIALS, GRADES AND ELEVATIONS. REPORT ANY DISCREPANCIES BETWEEN THE CIVIL AND STRUCTURAL DRAWINGS TO THE ENGINEER/INSPECTOR FOR RESOLUTION PRIOR TO CONSTRUCTION.
2. REFER TO THE TYPICAL RETAINING WALL DETAILS ON SHEET S3.0 AND S3.1 FOR ALL AREAS WHERE THE NEW TRAIL IS GREATER THAN 1'-0" ABOVE FINISH GRADE, OR BELOW FINISH GRADE.
3. REFER TO TYPICAL RETAINING WALL DETAILS ON SHEET S3.0 AND S3.1 FOR TRAIL OUTSIDE INDICATED AREAS ON THE STRUCTURAL SERIES DRAWINGS THAT REQUIRE RETAINING WALL AS INDICATED ON THE CIVIL DRAWINGS.
4. REFER TO SHEET S3.2 FOR MISCELLANEOUS FOUNDATIONS FOR TRAIL MARKERS, MONUMENTS AND SHADE STRUCTURES.

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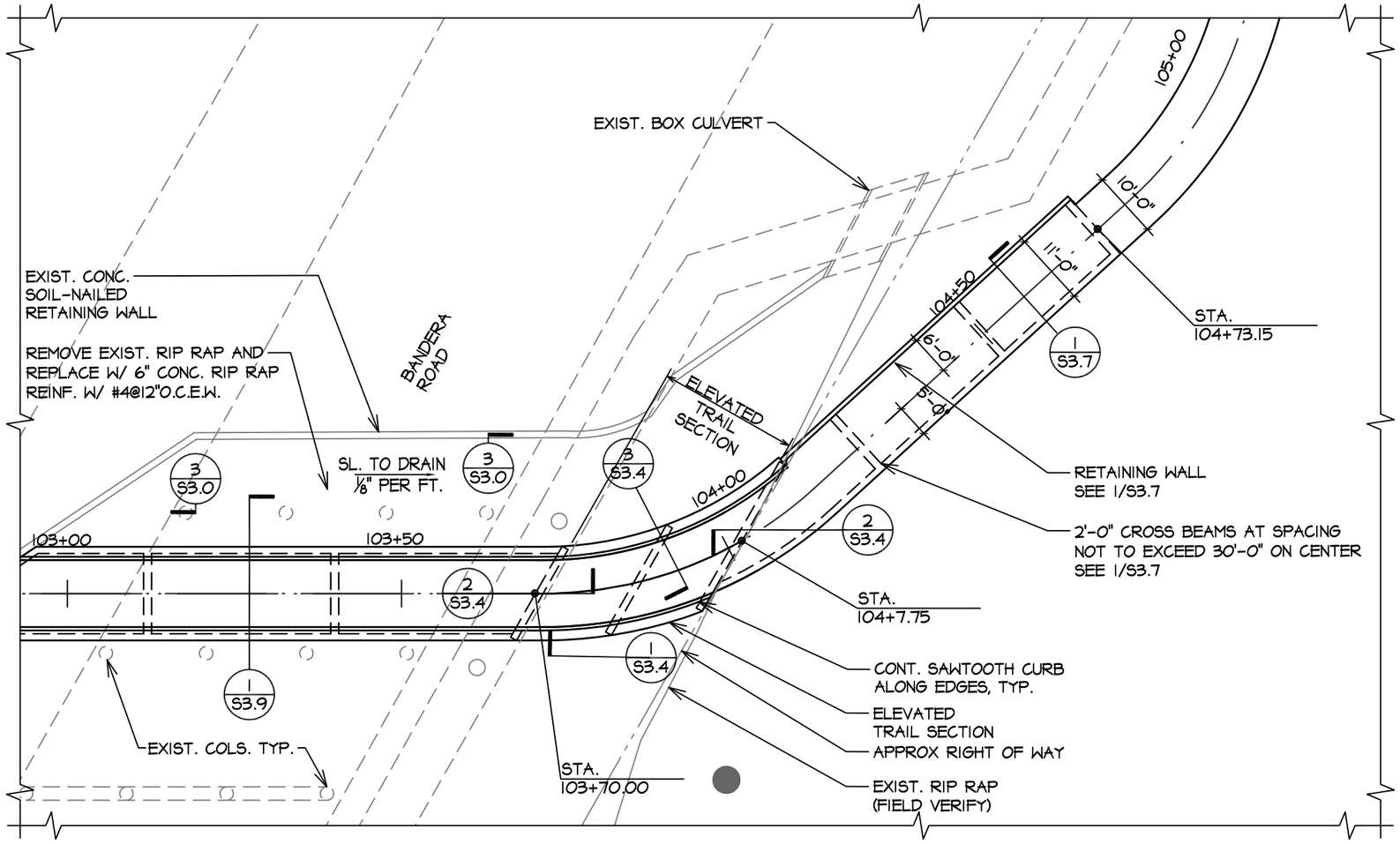
LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

TRAIL "A" STA. 101+90
TO STA. 104+73.19

| CHK. BY: D.G. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: JQ-STAFF | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | S2.0 | 20 |




north

# ENLARGED TRAIL "A"
# STATION 103+00 TO STA. 104+73.15

SCALE: 1"=20'

PLAN NOTES:

1. CIVIL SERIES DRAWINGS OF TRAIL TAKE PRECEDENCE WITH REGARD TO ALIGNMENT, MATERIALS, GRADES AND ELEVATIONS. REPORT ANY DISCREPANCIES BETWEEN THE CIVIL AND STRUCTURAL DRAWINGS TO THE ENGINEER/INSPECTOR FOR RESOLUTION PRIOR TO CONSTRUCTION.
2. REFER TO THE TYPICAL RETAINING WALL DETAILS ON SHEET S3.0 AND S3.1 FOR ALL AREAS WHERE THE NEW TRAIL IS GREATER THAN 1'-0" ABOVE FINISH GRADE, OR BELOW FINISH GRADE.
3. REFER TO TYPICAL RETAINING WALL DETAILS ON SHEET S3.0 AND S3.1 FOR TRAIL OUTSIDE INDICATED AREAS ON THE STRUCTURAL SERIES DRAWINGS THAT REQUIRE RETAINING WALL AS INDICATED ON THE CIVIL DRAWINGS.
4. REFER TO SHEET S3.2 FOR MISCELLANEOUS FOUNDATIONS FOR TRAIL MARKERS, MONUMENTS AND SHADE STRUCTURES.

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LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

TRAIL "A" STA. 103+00
TO STA. 104+73.15

10/15/2014

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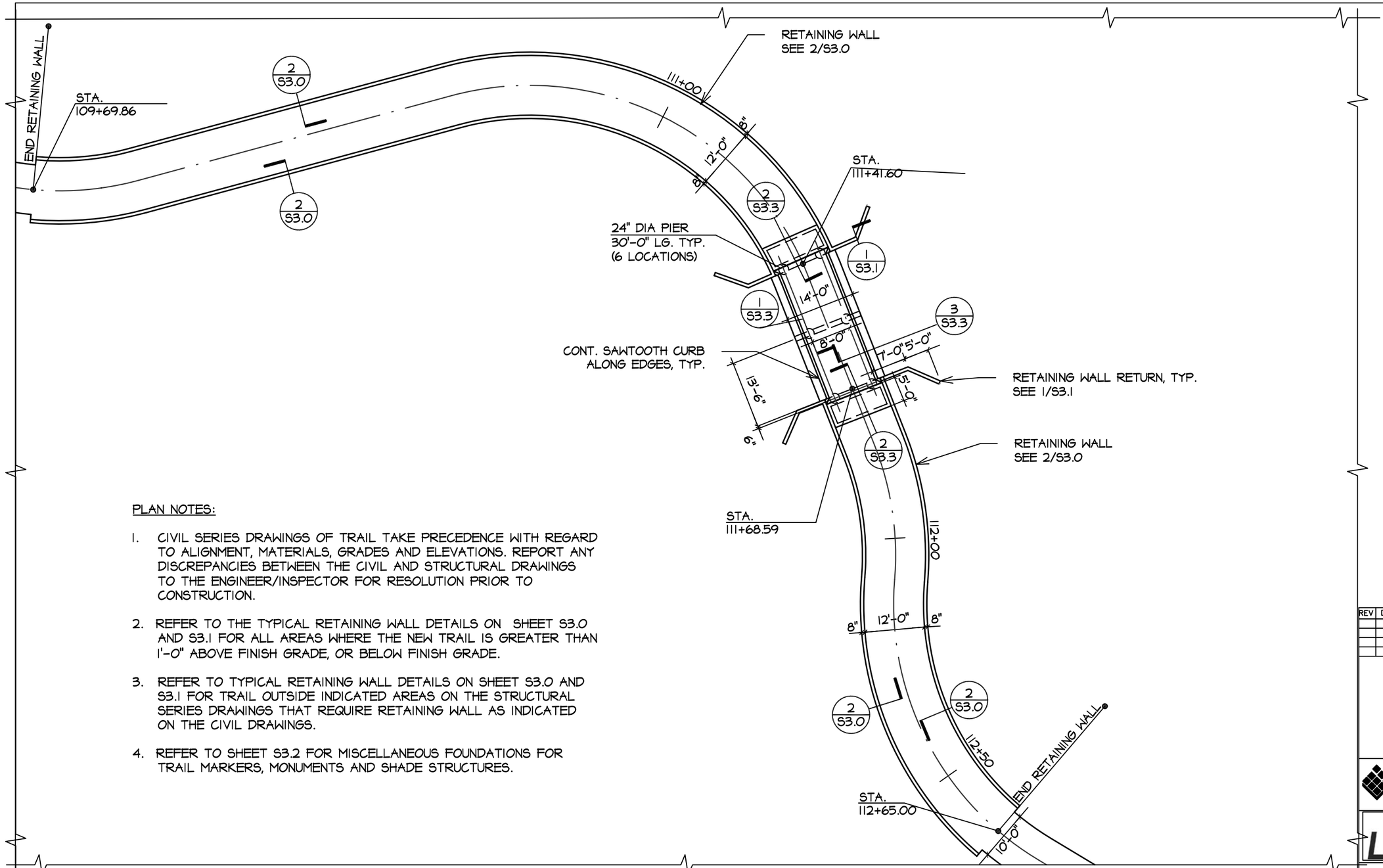
|---|---|---|
| DWG. BY: JQ-STAFF | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | S2.1 | 20 |




PLAN NOTES:

1. CIVIL SERIES DRAWINGS OF TRAIL TAKE PRECEDENCE WITH REGARD TO ALIGNMENT, MATERIALS, GRADES AND ELEVATIONS. REPORT ANY DISCREPANCIES BETWEEN THE CIVIL AND STRUCTURAL DRAWINGS TO THE ENGINEER/INSPECTOR FOR RESOLUTION PRIOR TO CONSTRUCTION.

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4. REFER TO SHEET S3.2 FOR MISCELLANEOUS FOUNDATIONS FOR TRAIL MARKERS, MONUMENTS AND SHADE STRUCTURES.

north

# TRAIL "A" WITH LOW WATER CROSSING
# STA. 109+69.86 TO STA. 112+65.00

SCALE: 1"=20'

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LEON VALLEY BIKE TRAIL
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TRAIL "A" STA. 109+69.86
TO STA. 112+65.00

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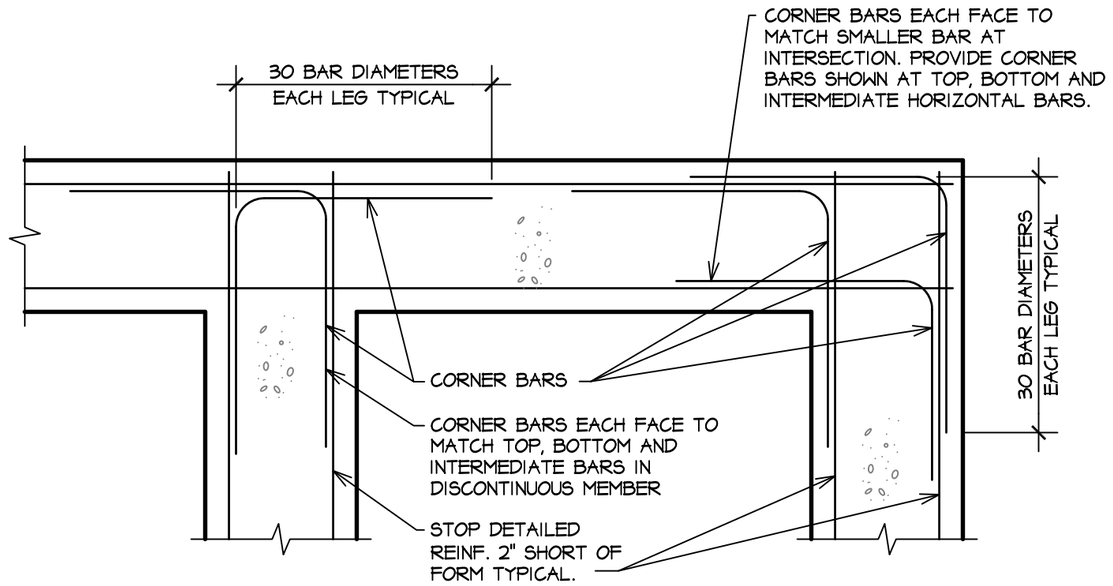


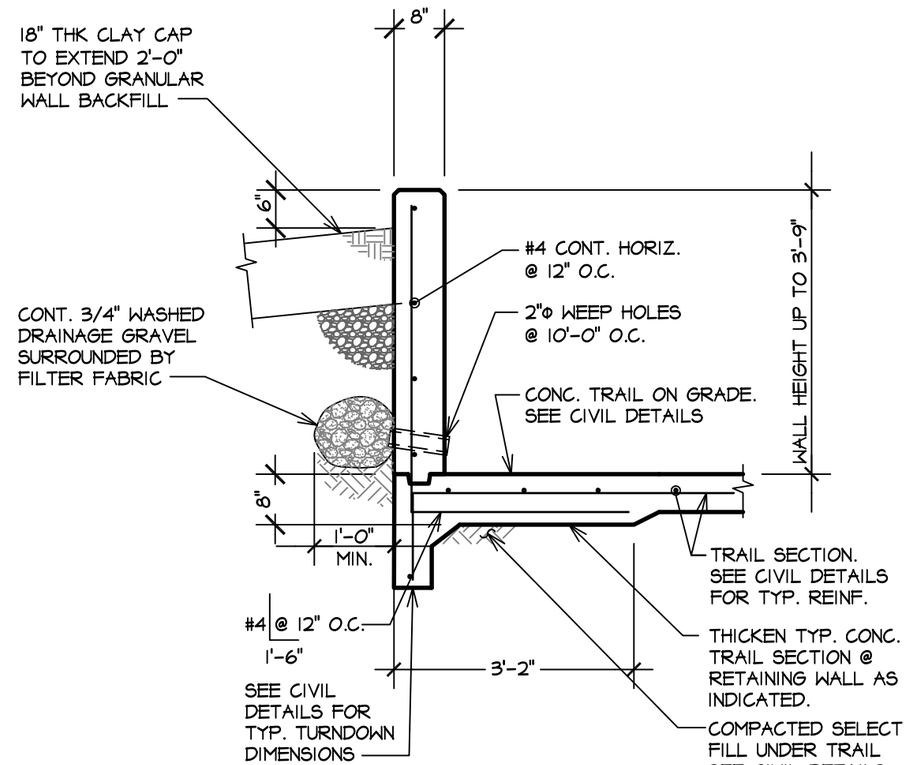

PLAN

NOTES:

1. WHERE 90 DEGREE HOOKS ARE SCHEDULED OR DETAILED FOR TOP BARS, CORNER BARS MAY BE OMITTED.
2. MATCH SIZE, LOCATION AND NUMBER OF HORIZONTAL BEAM AND WALL BARS, EXCEPT THAT WHERE THERE ARE MORE THAN 2 TOP OR BOTTOM BARS, ONLY THE INSIDE AND OUTSIDE BARS MUST BE MATCHED.

## 1 TYPICAL CORNER BARS BEAM INTERSECTION DETAIL

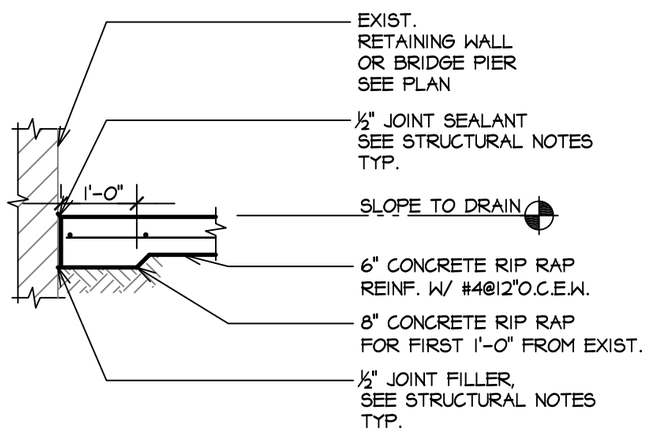
NO SCALE




## 2 RETAINING WALL AT TRAIL (UP TO 3'-9" ABOVE CONCRETE TRAIL)

NO SCALE

NOTE:
REFERENCE CIVIL DRAWINGS FOR LOCATIONS OF RETAINING WALLS & GUARDRAIL DETAILS.




## 3 NEW RIP RAP AT EXISTING RETAINING WALL OR BRIDGE PIER

NO SCALE

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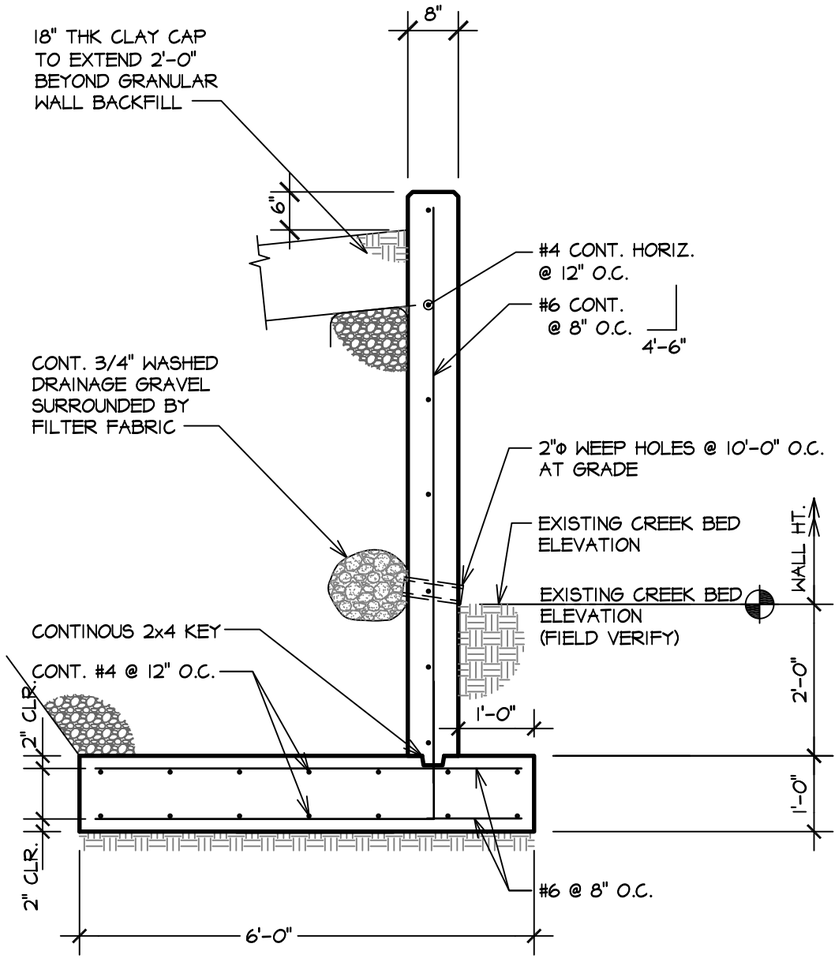
LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

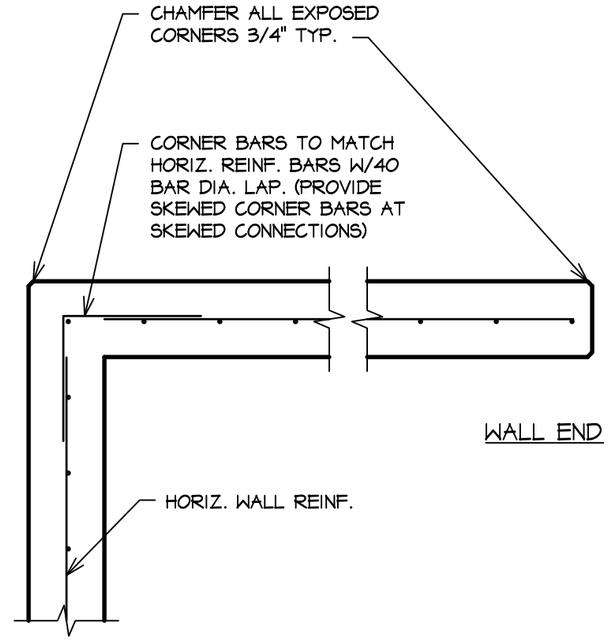
TRAIL SECTIONS

| CHK. BY: | D.G. | IDS JOB NO: | 211700100 |
|---|---|---|---|
| DWG. BY: | JQ-STAFF | SHEET NO. | TOTAL SHEETS |
| DATE: | 10/15/2014 | S3.0 | 20 |




## RETAINING WALL RETURNS

NO SCALE




WALL CORNER (PLAN VIEW)

## 2 TYPICAL WALL CORNER AND END CONDITIONS

SCALE: 1/2"=1'-0"

NOTE:
REFERENCE CIVIL DRAWINGS FOR LOCATIONS OF RETAINING WALLS & GUARDRAIL DETAILS.

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TRAIL SECTIONS

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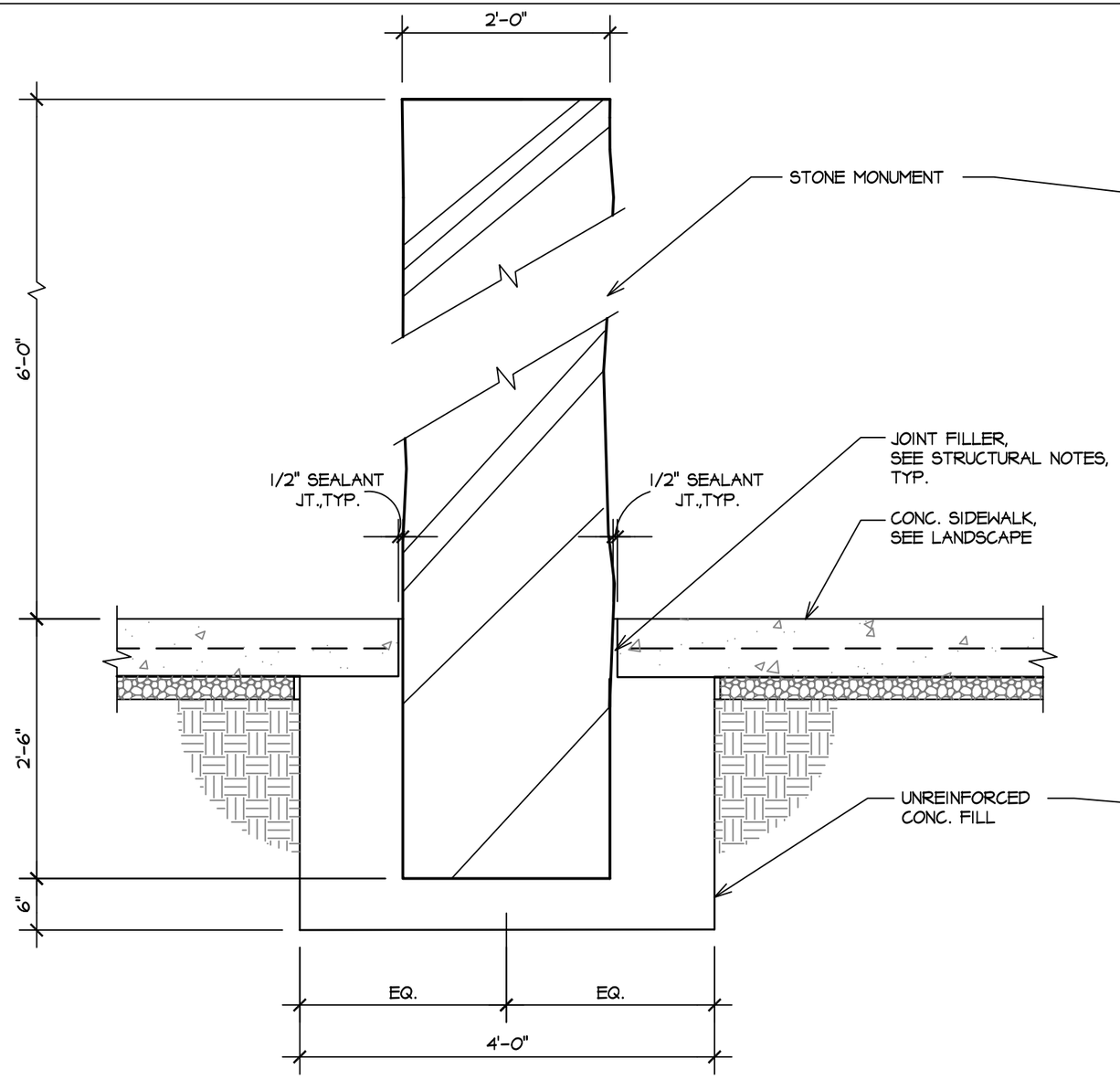
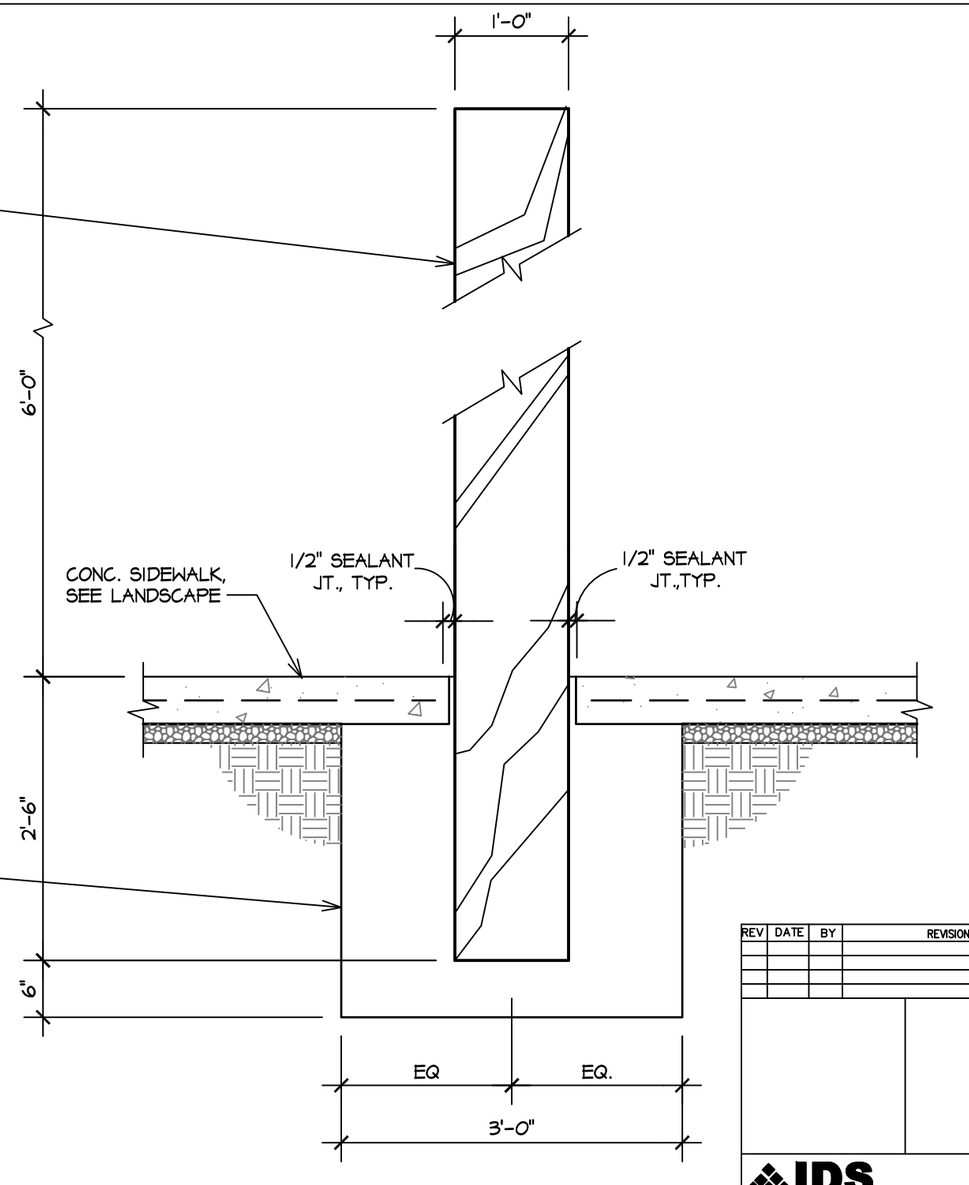
| DWG. BY: JQ-STAFF | SHEET NO. | TOTAL SHEETS | |
| DATE: 10/15/2014 | S3.1 | 20 | |




1 6' MONUMENT FOUNDATION-FRONT
SCALE: 3/4"=1'-0"




2 6' MONUMENT FOUNDATION-SIDE
SCALE: 3/4"=1'-0"

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MONUMENT FOUNDATION

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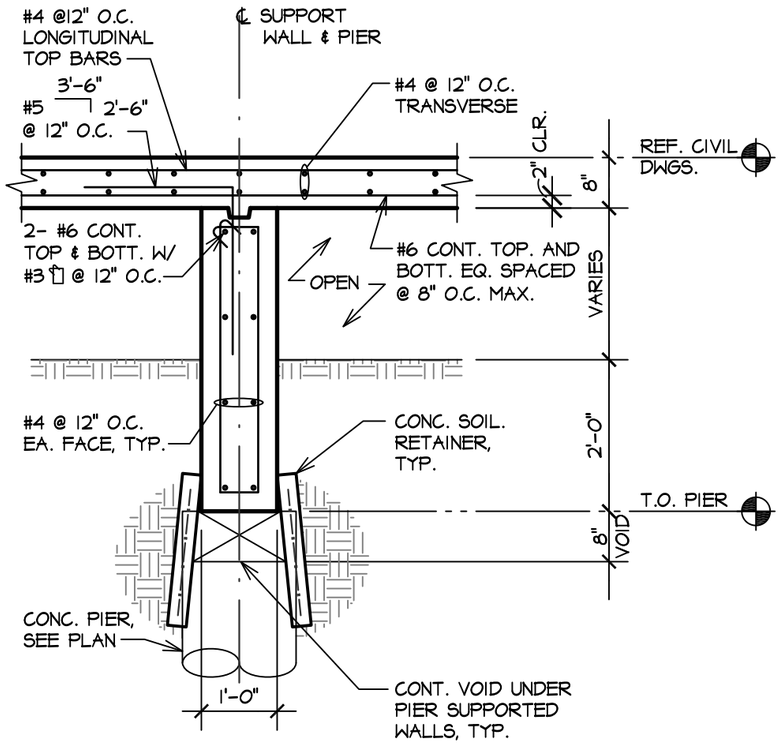
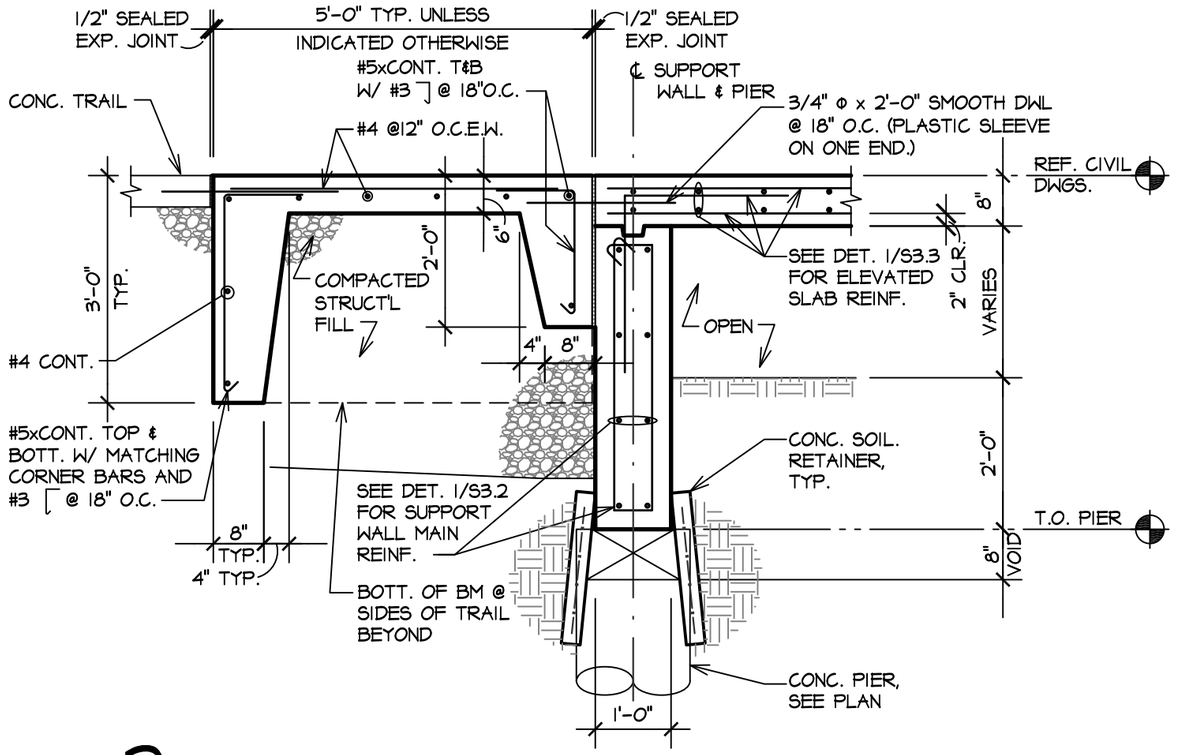
| CHK. BY: | D.G. | IDS JOB NO: | 211700100 |
|---|---|---|---|
| DWG. BY: | JQ-STAFF | SHEET NO. | TOTAL SHEETS |
| DATE: | 10/15/2014 | S3.2 | 20 |

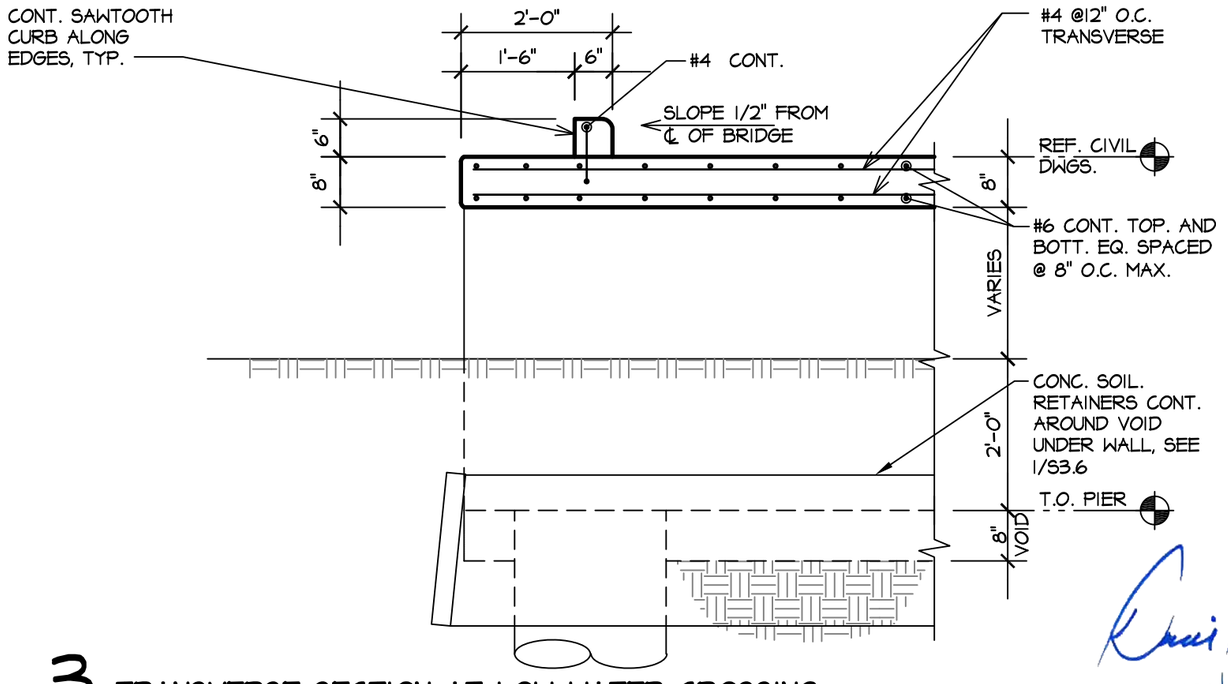



## 1 INTERMEDIATE SUPPORT SECTION AT ELEVATED LOW WATER CROSSING

SCALE: 1/2"=1'-0", TYP., U.N.O.




## 2 TRANSITION SLAB SECTION AT ELEVATED LOW WATER CROSSING




## 3 TRANSVERSE SECTION AT LOW WATER CROSSING

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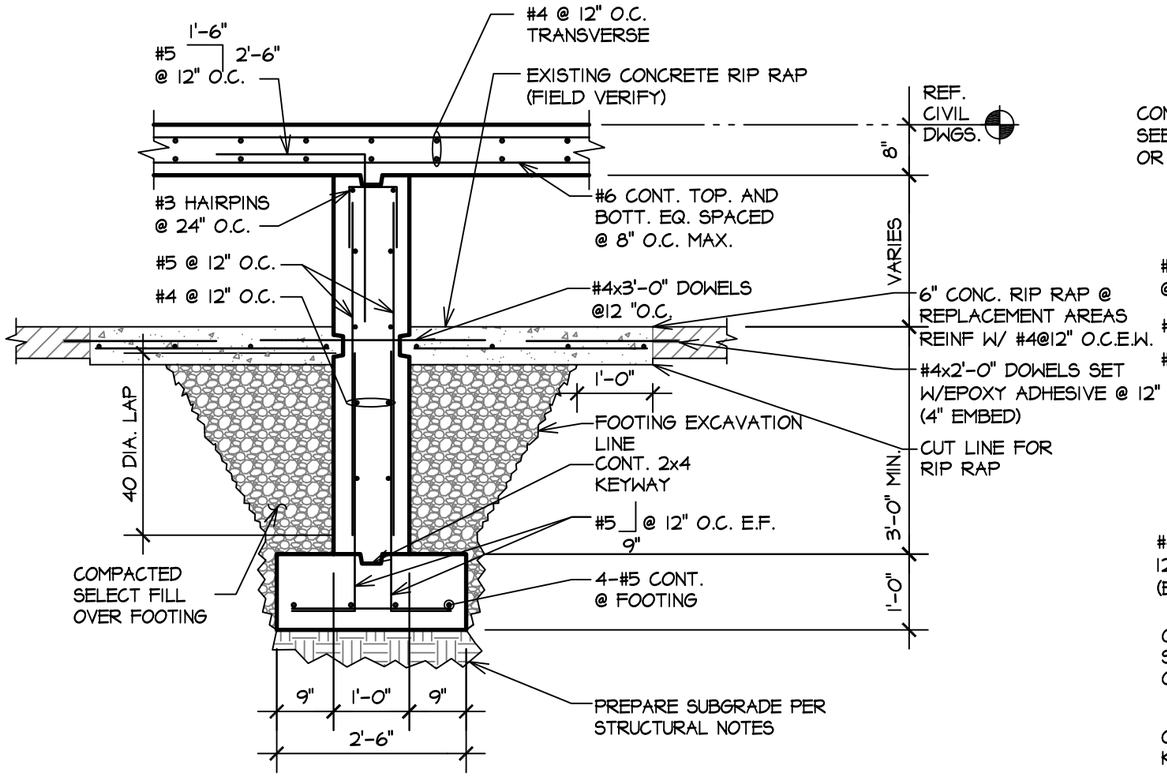
LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

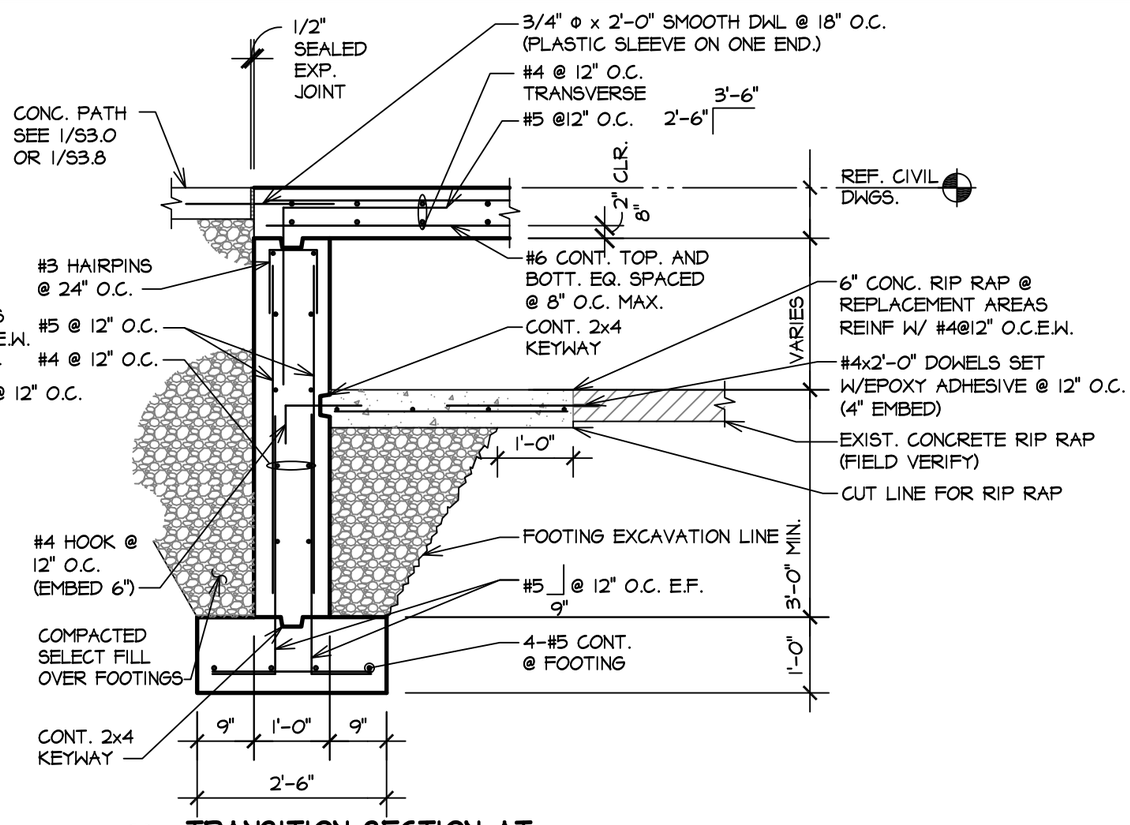
ELEVATED LOW WATER
CROSSING SECTIONS

| CHK. BY: D.G. | IDS JOB NO: 211700100 | |
|---|---|---|
| DWG. BY: JQ-STAFF | SHEET NO. | TOTAL SHEETS |
| DATE: 10/15/2014 | S3.3 | 20 |

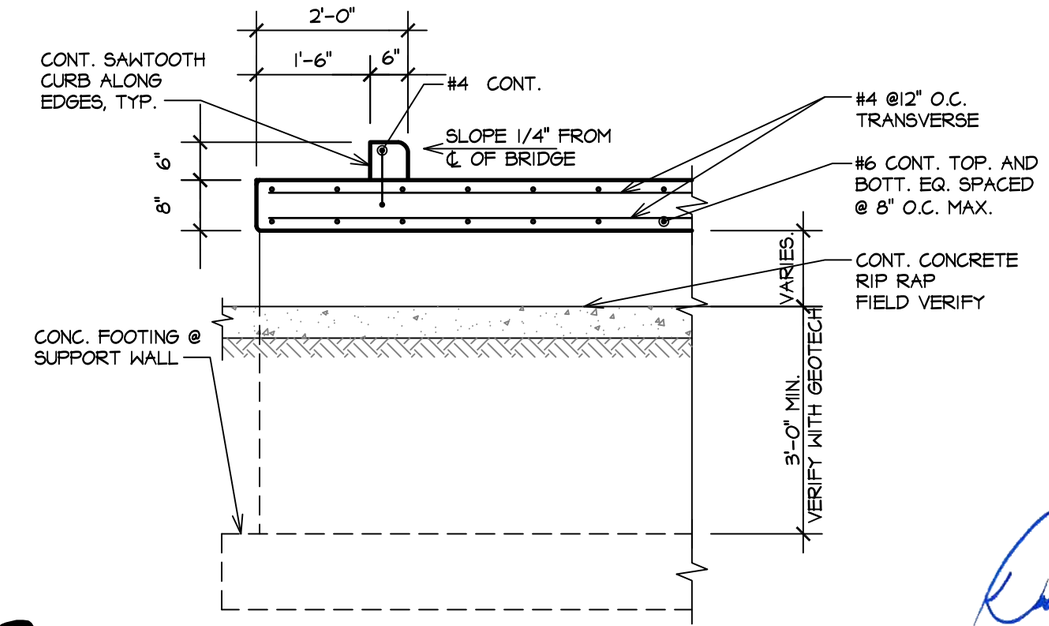



## 1 INTERMEDIATE SUPPORT SECTION AT ELEVATED TRAIL SEGMENT

SCALE: 1/2"=1'-0", TYP., U.N.O.




## 2 TRANSITION SECTION AT ELEVATED TRAIL SEGMENT




## 3 TRANSVERSE SECTION AT ELEVATED TRAIL SEGMENT

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LEON VALLEY BIKE TRAIL
LEON VALLEY, TEXAS

ELEVATED TRAIL SEGMENT SECTIONS

shaping the built environment
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210.349.9098
JQ JOB NO: 1132026 TBPE FIRM F-432

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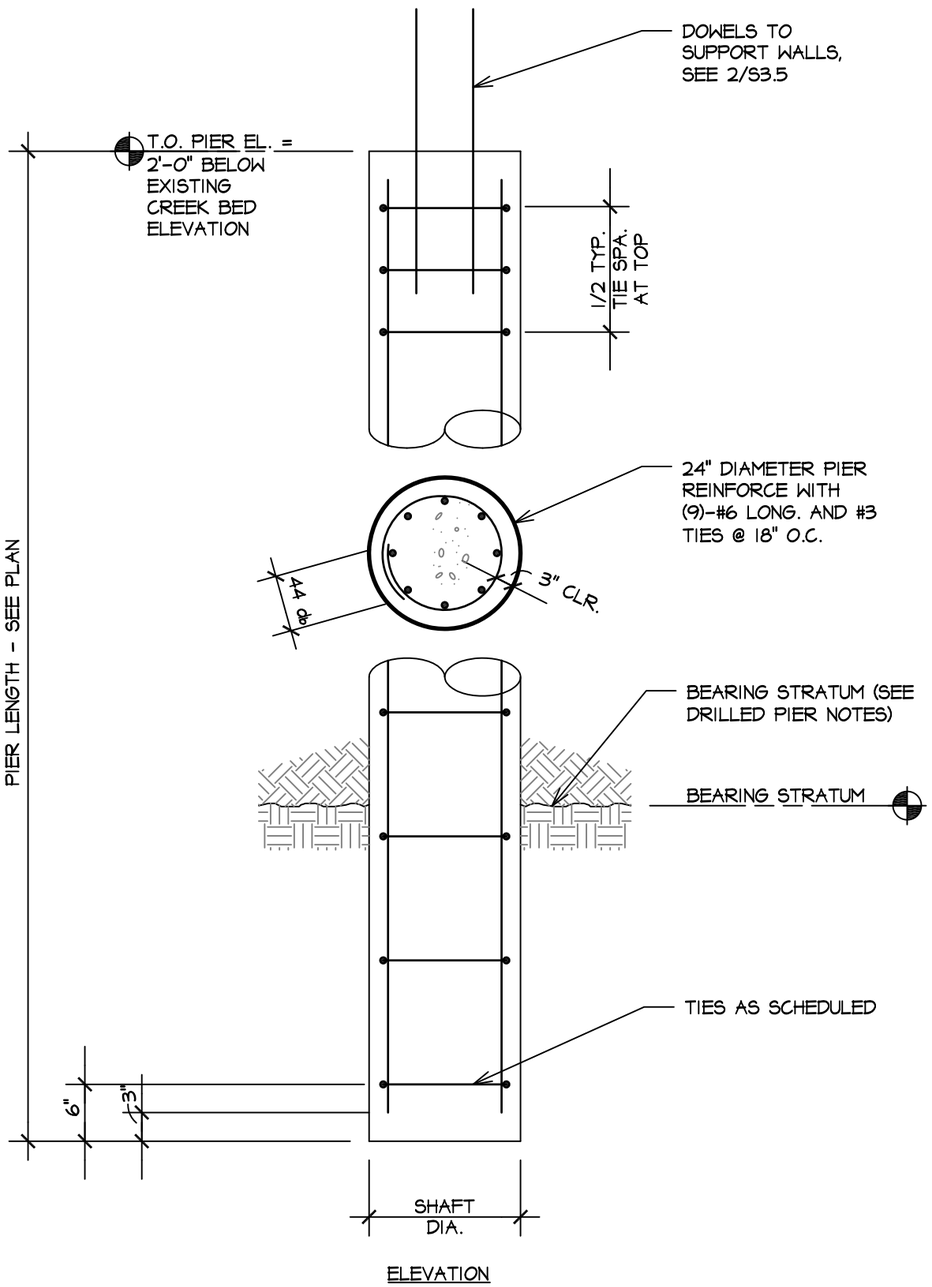
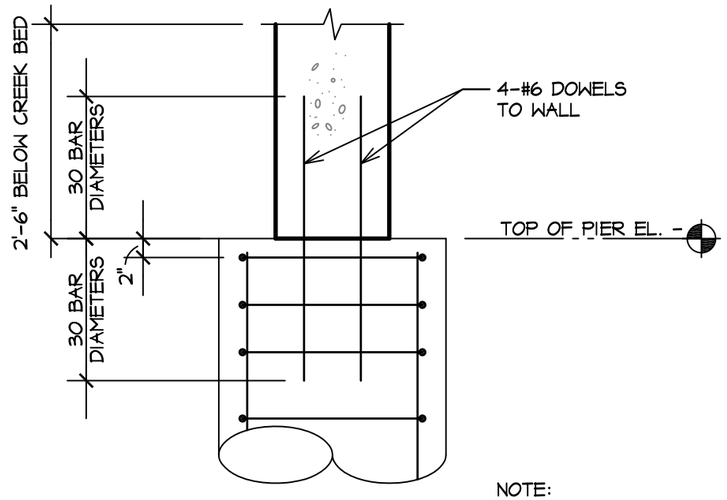
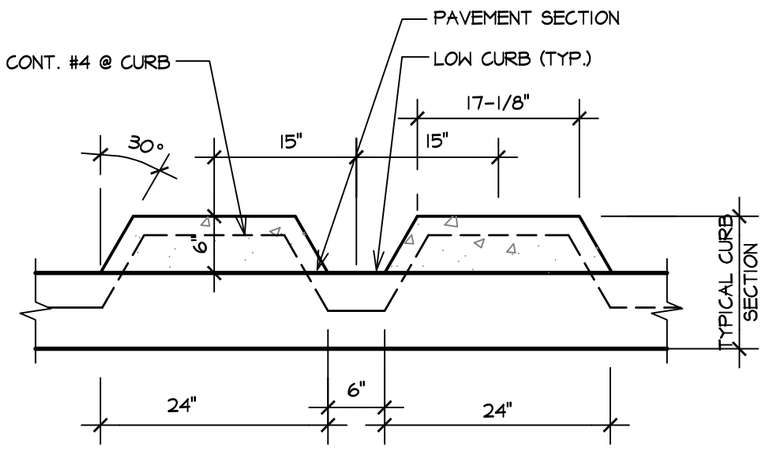



## 1 TYPICAL DRILLED PIER DETAIL
NO SCALE




NOTE:
CONC. VOID RETAINERS NOT SHOWN FOR CLARITY

## 2 TYPICAL WALL TOP OF PIER DETAIL
NO SCALE




## 3 TYPICAL SAWTOOTH CURB DETAIL
SCALE: 3/4"=1'-0"

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TYPICAL DETAILS

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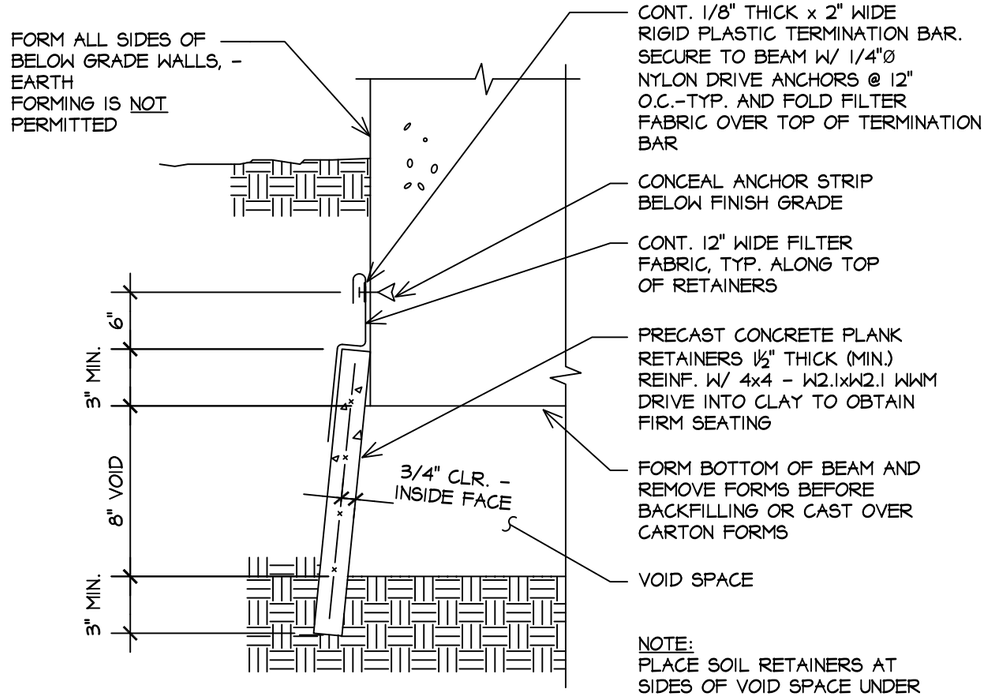
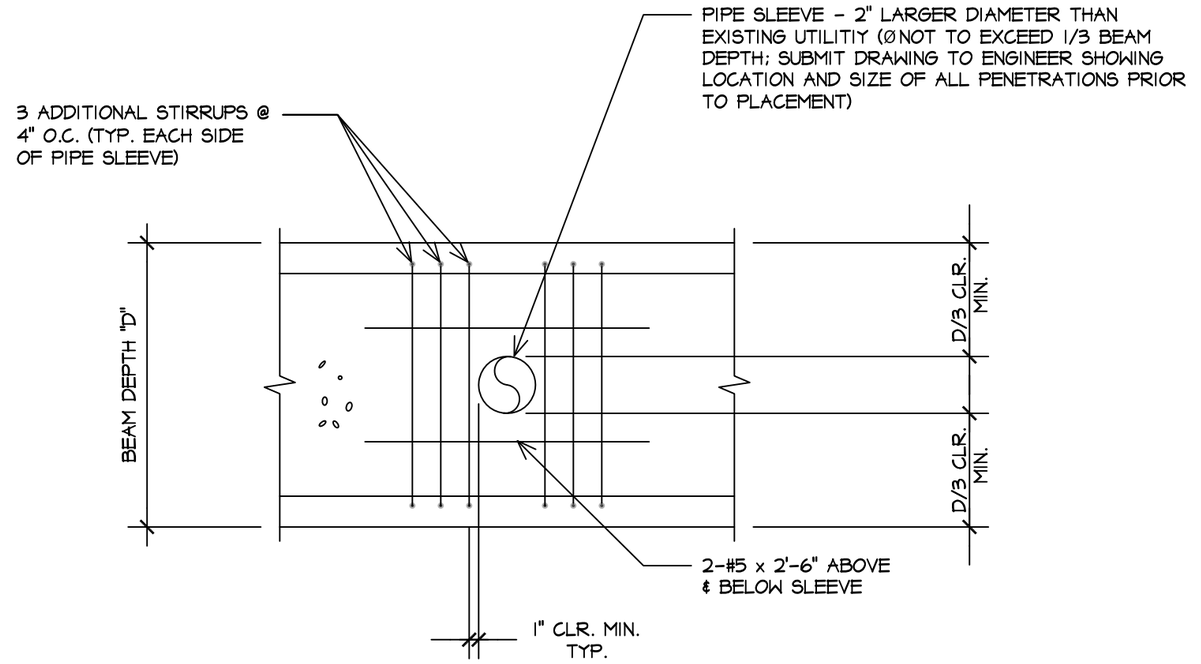



NOTE:
PLACE SOIL RETAINERS AT SIDES OF VOID SPACE UNDER ALL STRUCTURAL CONCRETE PIER CAPS, PILASTERS, GRADE BEAMS, AND WALLS BELOW GRADE.

## 1 TYPICAL SOIL RETAINER DETAIL
NO SCALE




ELEVATION

## 2 TYPICAL BEAM SLEEVE DETAIL
NO SCALE

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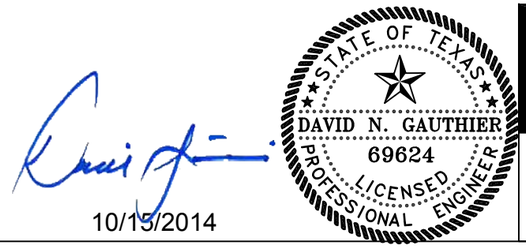
TYPICAL DETAILS

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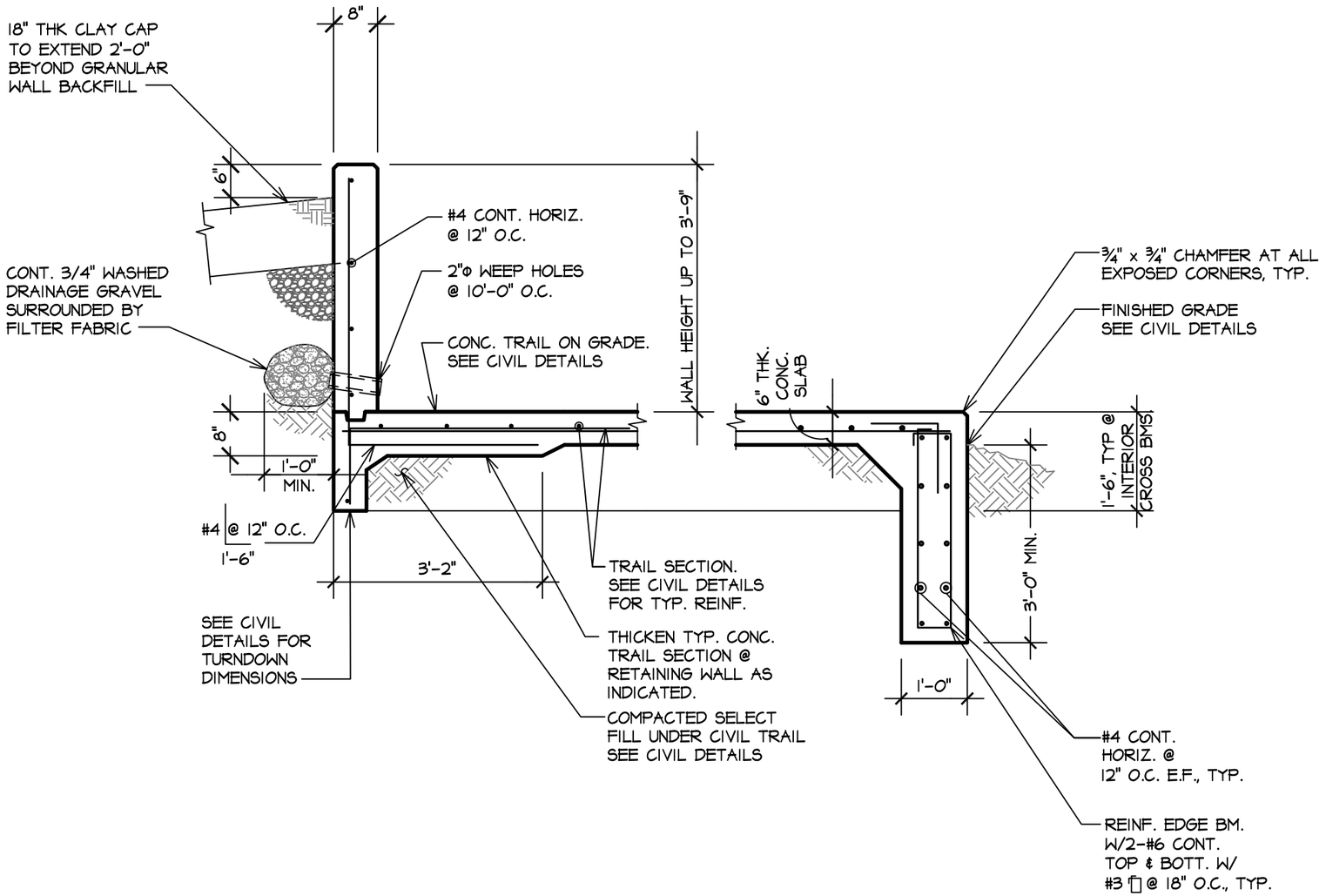


## RETAINING WALL AT TRAIL "A" @ BANDERA WITH BEAM TURNDOWN (UP TO 3'-9" ABOVE CONCRETE TRAIL)

NO SCALE

NOTE:
REFERENCE CIVIL DRAWINGS FOR LOCATIONS OF RETAINING WALLS & GUARDRAIL DETAILS.

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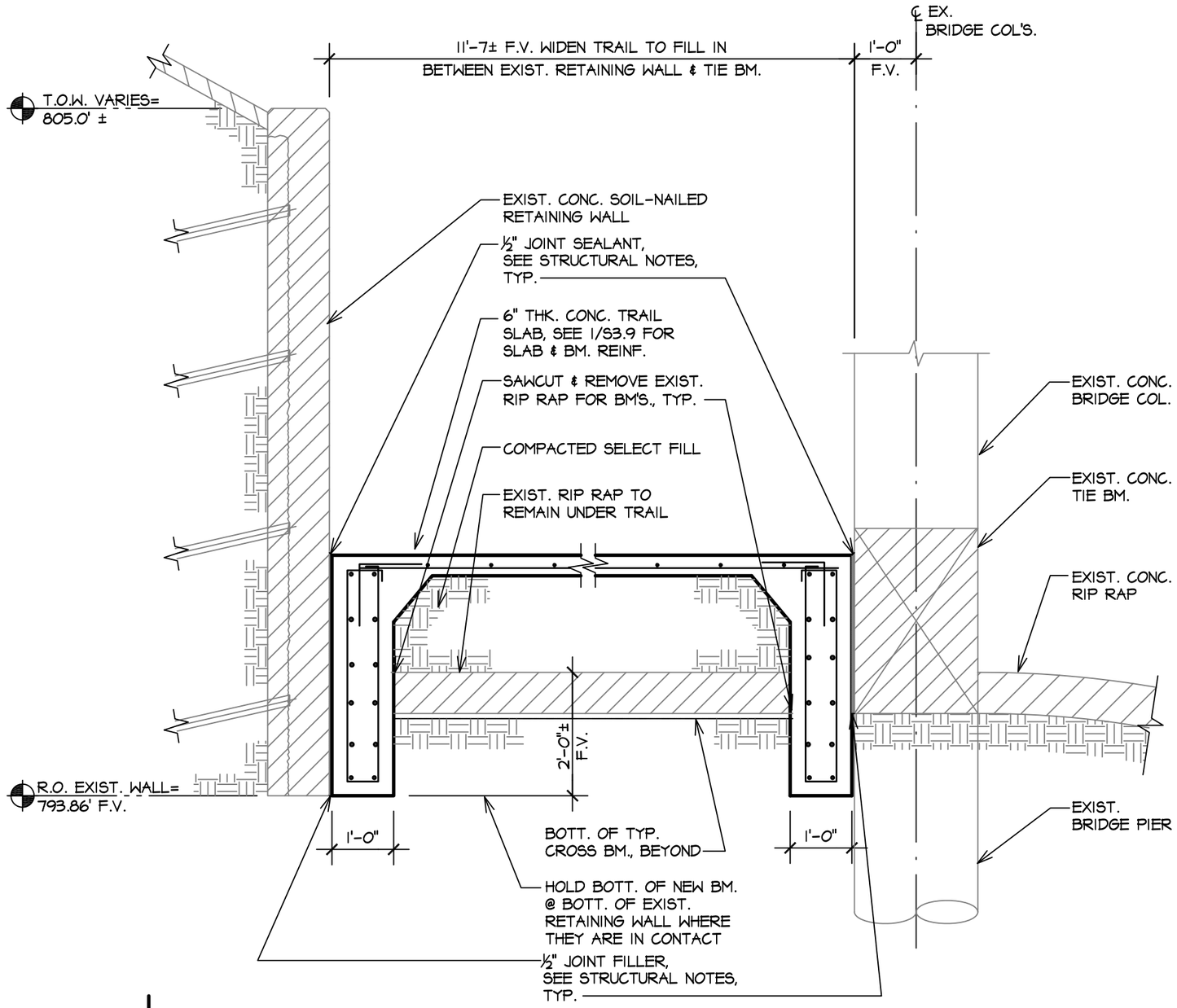


## RETAINING WALL AT TRAIL "A"

NO SCALE

NOTE:
REFERENCE CIVIL DRAWINGS FOR LOCATIONS OF RETAINING WALLS & GUARDRAIL DETAILS.

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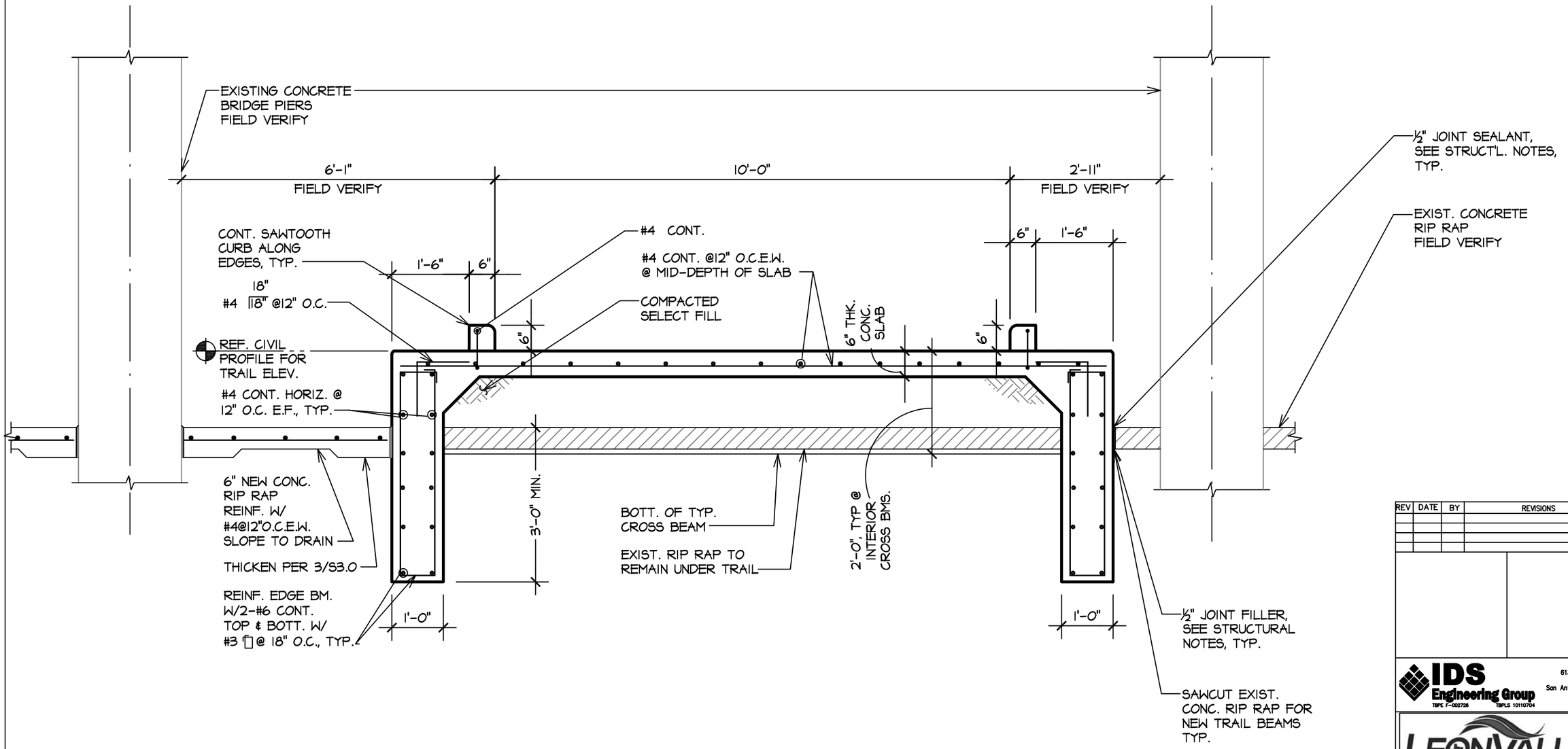


## CONCRETE TRAIL SECTION UNDER BANDERA ROAD

SCALE: 1/2"=1'-0"

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