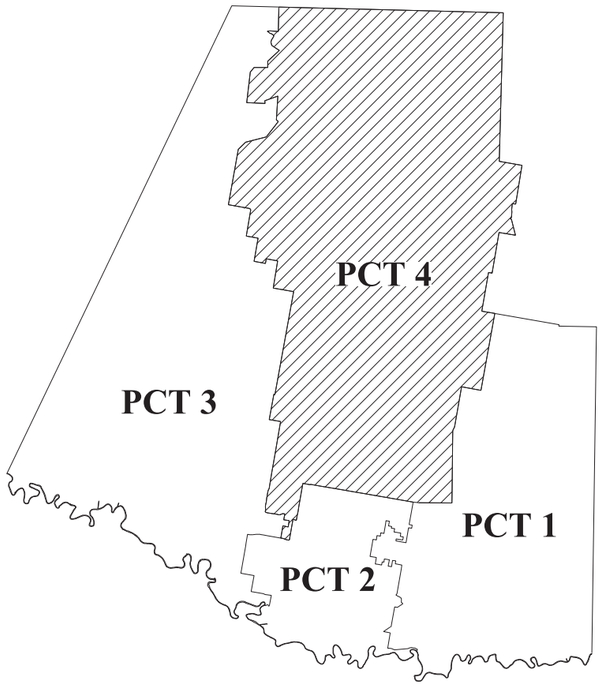


JUDGE RICHARD F. CORTEZ
CHAIRMAN OF THE BOARD

COMMISSIONER DAVID L. FUENTES
BOARD MEMBER

COMMISSIONER EDUARDO "EDDIE" CANTU
BOARD MEMBER

COMMISSIONER EVERARDO "EVER" VILLARREAL
BOARD MEMBER

COMMISSIONER ELLIE TORRES
BOARD MEMBER

N.T.S.

HIDALGO COUNTY
PRECINCT 4

NORTH MAIN DRAIN III - PHASE I

RAUL E. SESIN, P.E., C.F.M.
HIDALGO COUNTY DRAINAGE DISTRICT No. 1
GENERAL MANAGER
HIDALGO COUNTY FLOODPLAIN
ADMINISTRATOR

STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER

6-1-2023

PONCIANO N. LONGORIA — DATE

B2Z ENGINEERING
TBPE FIRM NO. F-11187

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
HOUSTON ♦ MISSION ♦ SAN ANTONIO

DATE: 6/1/2023 9:00:21 AM
FILE: pw:\\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\2022\2022-2135-01 - North Main Drain III Phase II\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\General\NORTH MAIN DRAIN III -TITLE.dgn

SHEET INDEX

STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED
PROFESSIONAL ENGINEER

Ponciano N. Longoria, P.E.

PONCIANO N. LONGORIA — 6/1/2023 DATE

HIDALGO COUNTY DRAINAGE DISTRICT No. 1

HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
Houston • Mission • San Antonio

NORTH MAIN DRAIN III - PHASE I
INDEX OF SHEETS

SHEET 1 OF 1

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		2

STATE	DIST.	COUNTY
TEXAS	PHR	HIDALGO

CONT.	SECT.	JOB	HIGHWAY NO.

DATE: 6/1/2023 6:03:28 PM
FILE: pw:\\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\2022\2022-2135-01 - North Main Drain III Phase II\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\General\NORTH MAIN DRAIN -INDEX.dgn

GENERAL NOTES

1. THE FOLLOWING NOTES ARE GENERAL AND APPLY TO ALL SHEETS OF THESE CONTRACT DOCUMENTS AS IF THEY WERE WRITTEN IN THEIR ENTIRETY ON EACH SHEET.
2. ALL WORK DESCRIBED IN THESE GENERAL NOTES SHALL BE CONSIDERED INCIDENTAL TO OTHER WORK AND SHALL NOT BE PAID SEPARATELY, UNLESS IDENTIFIED IN THE BID FORM
3. CONTRACTOR SHALL CONTACT THE OWNER 48 HOURS PRIOR TO START OF ANY CONSTRUCTION WITHIN PROJECT SITE.
4. ALL WORK SHALL BE COMPLETED TO THE SATISFACTION OF THE HIDALGO COUNTY DRAINAGE DISTRICT NO. 1, SANTA CRUZ IRRIGATION DISTRICT NO. 15, AND HIDALGO COUNTY IRRIGATION DISTRICT NO.1
5. IN THE EVENT THE OWNER AND/OR ENGINEER FINDS THE MATERIALS OR THE FINISHED PRODUCT IN WHICH THE MATERIALS ARE USED OR THE WORK PERFORMED ARE NOT IN REASONABLY CLOSE CONFORMANCE WITH THE PLANS AND SPECIFICATIONS, AND HAVE RESULTED IN AN INFERIOR OR UNSATISFACTORY PRODUCT, THE WORK OR MATERIALS SHALL BE REMOVED AND REPLACED OR OTHERWISE CORRECTED AT THE CONTRACTOR'S EXPENSE. FIELD WORK AND CORRECTIONS SHALL ONLY BE APPROVED OR REJECTED BY THE OWNER AND/OR ENGINEER.
6. THE CONTRACTOR SHALL HAVE AVAILABLE AT ALL TIMES AND ON THE WORK SITE WHEN WORK IS IN PROGRESS, AS HIS AGENT, A COMPETENT SUPERINTENDENT CAPABLE OF READING AND UNDERSTANDING THE PLANS AND SPECIFICATIONS AND EXPERIENCED IN THE TYPE OF WORK BEING PERFORMED. THE SUPERINTENDENT SHALL BE FURNISHED IRRESPECTIVE OF THE AMOUNT OF WORK SUBLET.
7. PROVIDE OWNER AND/OR ENGINEER THE NAME AND EMERGENCY TELEPHONE NUMBER(S) OF AN AUTHORIZED REPRESENTATIVE(S) OF THE CONTRACTOR. SAID REPRESENTATIVE(S) SHALL BE AVAILABLE 24 HOURS, SEVEN DAYS A WEEK IN THE EVENT AN AFTER HOUR EMERGENCY ARISES ON THE PROJECT SITE. ONLY THE OWNER HAS THE AUTHORITY TO DIRECT THE CONTRACTOR IN AN EMERGENCY SITUATION. UPON RECEIVING DIRECTION FROM THE OWNER, THE CONTRACTOR'S REPRESENTATIVE(S) SHALL COORDINATE AND MOBILIZE CORRECTIVE PROCEDURES.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ALL EXISTING CONDITIONS INCLUDING LOCATION AND DIMENSIONS OF ALL EXISTING CONSTRUCTION AND UTILITIES. CONTRACTOR SHALL NOTIFY ENGINEER IF THERE IS A CONFLICT BETWEEN THE CONTRACT DOCUMENTS AND EXISTING CONDITIONS BEFORE PROCEEDING WITH WORK.
9. SHOULD ANY ERRORS BECOME APPARENT ON THE PLANS, THEY SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND/OR ENGINEER PRIOR TO CONSTRUCTION SO THAT CLARIFICATION OR REDESIGN MAY OCCUR.
10. THE LAYOUT OF THE PROJECT FEATURES AS SHOWN SHALL BE FIELD STAKED BY THE CONTRACTOR AND APPROVED BY THE OWNER PRIOR TO CONSTRUCTION
11. CONTRACTOR TO NOTIFY ALL UTILITY COMPANIES WITHIN THE CONSTRUCTION AREA 48 HOURS PRIOR TO EXCAVATION NEAR THEIR UTILITIES.
12. UNLESS DETAILED, SPECIFIED OR OTHERWISE INDICATED ON THE DRAWINGS CONSTRUCTION SHALL BE AS INDICATED IN THE APPLICABLE TYPICAL DETAILS AND GENERAL NOTES. TYPICAL DETAILS SHALL APPLY EVEN THOUGH NOT REFERENCED AT SPECIFIC LOCATIONS ON DRAWINGS.
13. WHERE NO CONSTRUCTION DETAILS ARE SHOWN OR NOTED FOR ANY PART OF WORK, DETAILS SHALL BE THE SAME AS FOR OTHER SIMILAR WORK.
14. PRIOR TO EXCAVATION FOR NEW STRUCTURES, ELECTRICAL CONDUIT, FABRICATION OF NEW PIPING AND/OR OTHER PROPOSED UTILITIES, CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL EXISTING PIPING AND UTILITIES IN THE CONSTRUCTION AREA. THE CONTRACTOR SHALL TEMPORARILY RELOCATE CONFLICTING EXISTING UTILITIES AT TIE-IN/CONNECTION LOCATIONS AND REINSTALL THEM AS REQUIRED TO ELIMINATE THE CONFLICT AT NO ADDITIONAL COST TO THE OWNER.
15. EXISTING FACILITY AND UTILITY INFORMATION SHOWN ON THE DRAWING WAS OBTAINED FROM AVAILABLE RECORDS OR ELECTRONIC FILES. THE CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS, SIZES, MATERIAL TYPES, AND ELEVATIONS SHOWN AROUND OR NEAR AREAS OF CONSTRUCTION PRIOR TO START OF CONSTRUCTION.
16. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT FROM DAMAGE, ALL EXISTING FACILITIES AND UTILITIES SHOWN OR NOT SHOWN WHICH ARE TO REMAIN IN PLACE. ALL FACILITIES DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE EXPEDITIOUSLY REPAIRED OR RECONSTRUCTED TO THE ORIGINAL OR BETTER CONDITION AT THE CONTRACTOR'S EXPENSE WITHOUT ADDITIONAL COMPENSATION.
17. CONTRACTOR SHALL VERIFY LOCATION OF ALL, MECHANICAL AND ELECTRICAL ITEMS BEFORE PLACING ANY STRUCTURAL STEEL OR CONCRETE. ALSO, STRUCTURAL DIMENSIONS AND OPENINGS CONTROLLED BY MECHANICAL OR ELECTRICAL EQUIPMENT SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
18. MECHANICAL AND ELECTRICAL EQUIPMENT SUPPORTS, ANCHORAGES, OPENINGS, RECESSES AND REVEALS NOT SHOWN ON THE STRUCTURAL DRAWINGS, BUT REQUIRED BY OTHER CONTRACT DRAWINGS, SHALL BE PROVIDED PRIOR TO CASTING CONCRETE.
19. CONTRACTOR TO OBTAIN ALL CONSTRUCTION PERMITS NOT SUPPLIED BY OWNER AT HIS EXPENSE PRIOR TO COMMENCEMENT OF WORK.
20. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ADEQUATE DRAINAGE OF PROPOSED FACILITIES AT ALL TIMES DURING CONSTRUCTION.
23. THE CONTRACTOR SHALL PROVIDE/MAINTAIN ADEQUATE POSITIVE DRAINAGE AT ALL TIMES DURING THE INSTALLATION OF THE STRUCTURES, DRAINAGE, UTILITY, IRRIGATION AND ROAD IMPROVEMENTS. DEWATERING OF THE TRENCH MAY BE REQUIRED DURING THE INSTALLATION OF THE DRAINAGE, UTILITY AND IRRIGATION FACILITIES/STRUCTURES. SAID DEWATERING SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST AND REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED IN THE PROPOSAL UNLESS OTHERWISE NOTED.
24. THE CONTRACTOR SHALL PROVIDE ACCESS TO EXISTING RESIDENCES AT ALL TIMES.
25. CONTRACTOR IS RESPONSIBLE FOR CLEANING MUD AND/OR DIRT TRACKED ONTO EXISTING STREETS BY HIS WORKMEN'S, SUPPLIER'S, OR SUBCONTRACTOR'S VEHICLES. STREETS MUST BE CLEANED WITHIN 2 HOURS OF WHEN THE TRACKING OCCURS. NO SEPARATE PAY.
26. PROVIDE ALL SHEETING/SHORING REQUIRED TO PROTECT EXISTING STRUCTURES, PIPE, AND FACILITIES. CONTRACTOR IS HEREBY INFORMED THAT ALL TRENCHING AND SHORING WILL BE DONE IN STRICT ACCORDANCE WITH THE LATEST OSHA STANDARDS.
27. ANY ADDITIONAL SOIL BORINGS THE CONTRACTOR REQUIRES ARE TO BE DONE BY THE CONTRACTOR AT HIS EXPENSE.
28. ALL WORK SHALL BE DONE IN ACCORDANCE WITH APPLICABLE LOCAL REQUIREMENTS.
29. PAVED SURFACES SHALL BE PROTECTED FROM DAMAGE FROM ANY EQUIPMENT.
30. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY IRON RODS DISTURBED DURING CONSTRUCTION AND SHALL BE REPLACED BY REGISTERED PUBLIC LAND SURVEYOR TO ORIGINAL PROPERTY CORNER AT NO SEPARATE PAY.
31. WORK PERFORMED UNDER THIS CONTRACT IS GOVERNED BY REQUIREMENTS OF SEVERAL PUBLIC, GOVERNMENTAL, AND PRIVATE ENTITIES. CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF SAID ENTITIES.
32. CONTRACTOR SHALL SECURE THE CONSTRUCTION SITE AT ALL TIMES INCLUDING EVENTS OF INCLEMENT WEATHER.
33. THE CONTRACTOR TO MAINTAIN ALL EQUIPMENT AND TRANSPORTATION OF SAID EQUIPMENT WITHIN THE EXISTING RIGHTS-OF-WAY OF THE CITY, COUNTY, OR STATE.
34. THE CONTRACTOR SHALL CLEANUP AND RESTORE THE AREA OF OPERATIONS TO A CONDITION AS GOOD AS OR BETTER THAN THAT WHICH EXISTED PRIOR TO INSTALLATION OF ALL ITEMS TO BE CONSTRUCTED.
35. ANY DAMAGES TO FENCES, WALKS, OR PRIVATE PROPERTY SHALL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE.
15. CONTRACTOR SHALL MAKE CONNECTIONS TO EXISTING PIPE, EQUIPMENT, ETC. AS REQUIRED AND SHALL PROVIDE ALL FITTINGS, ADAPTERS AND APPURTENANCES REQUIRED TO MAKE THE CONNECTIONS. PROVIDE ALL SUPPORTS REQUIRED FOR A RIGIDLY SUPPORTED, COMPLETE AND WORKING SYSTEM.
16. CONTRACTOR SHALL NOTIFY OWNER A MINIMUM OF 48 HRS. PRIOR TO ANY TIE-INS WHICH REQUIRE INTERRUPTION OF SERVICE TO EXISTING CUSTOMERS.
17. OVERHEAD LINES MAY EXIST ON THE PROPERTY AND CONTRACTOR SHALL TAKE SPECIAL PRECAUTIONS IN THE VICINITY OF ANY OVERHEAD ELECTRIC LINES. LINES HAVE NOT BEEN MARKED SINCE THEY ARE CLEARLY VISIBLE, BUT CONTRACTOR SHOULD LOCATE THEM PRIOR TO CONSTRUCTION. CONTRACTOR SHALL ABIDE BY NATIONAL ELECTRIC

    FORBIDS ALL ACTIVITIES IN WHICH PERSONS OR THINGS MAY COME WITHIN SIX (6) FEET OF LIVE OVERHEAD HIGH VOLTAGE LINES. CONTRACTORS AND OWNERS ARE LEGALLY RESPONSIBLE FOR SAFETY OF CONSTRUCTION WORKERS UNDER THIS LAW. THIS LAW CARRIES BOTH CRIMINAL AND CIVIL LIABILITY. THE CONTRACTOR SHALL TAKE SPECIAL PRECAUTIONS IN THE VICINITY OF ANY OVERHEAD ELECTRIC LINES.
18. CONTRACTOR SHALL VERIFY LOCATION OF ALL, MECHANICAL AND ELECTRICAL ITEMS BEFORE PLACING ANY STRUCTURAL STEEL OR CONCRETE. ALSO, STRUCTURAL DIMENSIONS AND OPENINGS CONTROLLED BY MECHANICAL OR ELECTRICAL EQUIPMENT SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
19. MECHANICAL AND ELECTRICAL EQUIPMENT SUPPORTS, ANCHORAGES, OPENINGS, RECESSES AND REVEALS NOT SHOWN ON THE STRUCTURAL DRAWINGS, BUT REQUIRED BY OTHER CONTRACT DRAWINGS, SHALL BE PROVIDED PRIOR TO CASTING CONCRETE.
20. CONTRACTOR SHALL PERFORM ALL WORK IN ACCORDANCE WITH OSHA STANDARDS FOR CONFINED SPACE. CONTRACTOR SHALL PROVIDE ALL REQUIRED EQUIPMENT INCLUDING A MONITOR FOR AIR AND EQUIPMENT FOR BREATHING AIR AND RETRIEVING SYSTEMS.
21. THE PREPARATION OF THESE PLANS REFLECTS INFORMATION, PROVIDED BY OTHERS, ON THE APPROXIMATE LOCATION AND EXISTENCE OF EXISTING UTILITY AND ADJACENT PHYSICAL FEATURES. HOWEVER, THEY DO NOT IMPLY OR AFFIRM THAT ALL UTILITIES OR PHYSICAL FEATURES ARE SHOWN. GENERALLY, UTILITY SERVICE CONNECTIONS ARE NOT INDICATED ON THESE PLANS. CONTRACTOR IS RESPONSIBLE FOR NOTIFICATIONS OF THE OWNER IMMEDIATELY UPON ENCOUNTERING UNFORESEEN CONFLICTS.
22. THE APPROXIMATE LOCATIONS OF KNOWN EXISTING UTILITIES ARE SHOWN, CONTRACTOR SHALL DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATIONS IN THE FIELD PRIOR TO COMMENCING WORK. CONTRACTOR TO BE FULLY RESPONSIBLE FOR DAMAGES WHICH MIGHT OCCUR BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE EXISTING UTILITIES.

UTILITY NOTES

1. ALL CONSTRUCTION SHALL CONFORM WITH OWNER STANDARDS
2. THE CONTRACTOR SHALL BE RESPONSIBLE TO CALL DIG TESS 48 HOURS PRIOR TO COMMENCEMENT OF WORK FOR UTILITY SPOTTING @ (1-800-DIG-TESS).
3. THE CONTRACTOR TO NOTIFY ALL UTILITY COMPANIES FOR VERIFICATION OF LOCATION OF EXISTING FACILITIES PRIOR TO BEGINNING ANY EXCAVATION.
4. UTILITIES SHOWN ON PLANS ARE APPROXIMATE IN LOCATION, ARE FOR INFORMATIONAL PURPOSES ONLY, AND MAY NOT BE ALL INCLUSIVE. THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES SHOWN ON THESE PLANS ARE BASED UPON ABOVE GROUND EVIDENCE (INCLUDING, BUT NOT LIMITED TO MANHOLES, INLETS, VALVES, AND MARKS MADE UPON THE GROUND BY OTHERS) AND ARE SPECULATIVE IN NATURE. THERE MAY ALSO BE OTHER EXISTING UNDERGROUND UTILITIES FOR WHICH THERE IS NO ABOVE GROUND EVIDENCE OR FOR WHICH NO ABOVE GROUND EVIDENCE WAS OBSERVED. NEITHER THE OWNER NOR ENGINEER ASSUMES ANY RESPONSIBILITY FOR UTILITIES NOT SHOWN OR NOT IN THE LOCATION SHOWN. THE CONTRACTOR SHALL VERIFY ALL LOCATIONS AND ELEVATIONS AND SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT UTILITY LINES WHETHER SHOWN OR NOT SHOWN. ANY DEVIATIONS SHALL BE CALLED TO THE ENGINEER'S ATTENTION IMMEDIATELY
5. THE CONTRACTOR SHALL HAVE THE RESPONSIBILITY BEFORE ANY CONSTRUCTION WORK HAS BEGUN, OF DETERMINING THE EXACT HORIZONTAL AND VERTICAL LOCATIONS OF ANY UNDERGROUND FACILITIES IN THE AREA OF CONSTRUCTION PRIOR TO COMMENCING WORK, WHETHER INDICATED ON THE PLANS OR NOT. ANY FACILITIES DISTURBED BY THE CONTRACTOR SHALL BE RESTORED BY CONTRACTOR AT OWN EXPENSE. THE CONTRACTOR SHALL COORDINATE WITH THE PROPER UTILITY THE RELOCATION OF ANY FACILITY DESIGNATED ON THE PLANS OR DEEMED NECESSARY TO BE RELOCATED BY THE ENGINEER IN ORDER TO COMPLETE CONSTRUCTION OF THE PROJECT.
6. IN THE EVENT OF DAMAGE TO UNDERGROUND FACILITIES WHETHER OR NOT SHOWN IN THE DRAWINGS, THE CONTRACTOR SHALL MAKE THE NECESSARY REPAIRS TO PLACE THE FACILITIES BACK IN SERVICE AT NO INCREASE IN THE CONTRACT PRICE. SUCH REPAIRS SHALL CONFORM TO THE REQUIREMENTS OF THE COMPANY OR AGENCY SERVICING THE FACILITY.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING ALL RESIDENTS/BUSINESSES OF INTERRUPTION TO THEIR UTILITIES THAT WILL BE CAUSED BY THE CONSTRUCTION 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.
8. SHOULD A POTENTIAL CONFLICT EXIST BETWEEN THE EXISTING UTILITY, LATERAL, AND/OR SERVICE, AND THE PROPOSED IMPROVEMENTS, IMMEDIATELY NOTIFY OWNER AND/OR ENGINEER FOR FURTHER DIRECTION.
9. MAINTAIN SERVICE TO ALL EXISTING UTILITIES THROUGHOUT THE DURATION OF THE PROJECT.
10. SUPPORT, BRACE, AND/OR SHORE EXISTING UTILITIES WHEN EXCAVATING ADJACENT TO, ABOVE, OR BELOW EXISTING UTILITIES.
11. CONTRACTOR TO MAKE ARRANGEMENTS WITH THE APPROPRIATE UTILITY COMPANY FOR SECURING POLES, IF NECESSARY, WHILE CONSTRUCTION PASSES BY POLES. COSTS OF SECURING POLES WILL BE PAID FOR BY THE CONTRACTOR, NO SEPARATE PAY.
12. TRENCHING FOR UTILITY INSTALLATION SHALL BE NO MORE THAN 200' AHEAD OF PIPE INSTALLATION AND BACKFILL. NO TRENCH SHALL BE LEFT OPEN AFTER NORMAL WORKING HOURS. TRENCH PLATES SHALL BE USED TO COVER OPEN TRENCHES AT ROAD CROSSINGS.
13. UNLESS SHOWN OTHERWISE ON PLANS OR SPECIFICATIONS, DEWATERING FOR UTILITY INSTALLATION, INCLUDING ALL MANHOLES & CULVERTS, WILL NOT BE PAID FOR DIRECTLY BUT CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.
14. ALL PIPELINES 12" AND LARGER SHALL HAVE A MINIMUM COVER OF 48" UNLESS THE COVER AND DEPTH IS SPECIFICALLY INDICATED N THE DRAWINGS. PIPE SMALLER THAN 12" SHALL HAVE A MINIMUM COVER OF 36" UNLESS NOTED OTHERWISE. PIPES SHALL BE ROUTED AS SHOWN UNLESS MINOR REVISIONS ARE NECESSARY TO MISS EXISTING PIPES, STRUCTURES, ETC. CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL FITTINGS AND ADAPTERS REQUIRED TO MAKE THE ROUTING CHANGES AT NO ADDITIONAL COST TO THE OWNER.
CODE AND ANY REQUIREMENT BY OWNER OF ELECTRIC LINES. TEXAS LAW, SECTION 752, HEALTH & SAFETY CODE,

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED PROFESSIONAL ENGINEER

HIDALGO COUNTY DRAINAGE DISTRICT NO. 1

HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
TEDSI
TBPE F-1640
1201 Interstate Highway 2
Mission, Texas 78572
(956) 424-7898

B2Z ENGINEERING
TBPE FIRM NO. F-11187

NORTH MAIN DRAIN III
PHASE I
GENERAL NOTES

SHEET 1 OF 2

DN:		CONT	SECT	JOB	HIGHWAY
CK DN:					
DW:					
CK DW:		DIST	COUNTY		SHEET NO.
TR:			Hidalgo		3
CK TR:					

$FILES$

k:\Precinct 4\North Main Drain III\NMD+PH1\REF\01 GENERAL\NMD+GENERAL+NOTES+PH1.dgn
5/5/2023
5:35:37 PM

23. PUBLIC AND PRIVATE UTILITY LINES AND CUSTOMER SERVICE LINES MAY EXIST THAT ARE NOT SHOWN ON THE CONSTRUCTION DRAWINGS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE, MAINTAIN AND PROTECT THE INTEGRITY OF THESE LINES. HAND EXCAVATION MAY BE REQUIRED. THE CONTRACTOR SHALL RESTORE RELOCATED OR DIVERTED UTILITY TO ITS ORIGINAL CONDITION AND LOCATION WHEN APPLICABLE UPON COMPLETION OF CONSTRUCTION. SAID RESTORATION SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST AND REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED IN THE PROPOSAL.

24. THE CONTRACTOR SHALL ADJUST EXISTING **N.A.W.S.C** WATER LINES AS REQUIRED TO INSTALL DRAINAGE IMPROVEMENTS SAID ADJUSTMENTS SHALL BE COORDINATED WITH **N.A.W.S.C.** PRIOR TO COMMENCEMENT OF WORK. SAID WATER LINE ADJUSTMENT SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST AND REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED IN THE PROPOSAL.

25. THE CONTRACTOR SHALL ADJUST AND CONNECT TO NEW SYSTEM EXISTING FIELD DRAIN LINES AT PROPOSED LOCATIONS. SAID WORK SHALL BE COORDINATED WITH **H.C.I.D. NO. 1** PRIOR TO COMMENCEMENT OF WORK. SAID LINE ADJUSTMENTS AND CONNECTIONS SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST AND REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED IN THE PROPOSAL.

26. WHERE NEW WATER LINES AND SEWER LINES ARE INSTALLED WITH A SEPARATION DISTANCE CLOSER THAN NINE FEET (I.E., WATER LINES CROSSING WASTEWATER LINES, WATER LINES PARALLELING WASTEWATER LINES, OR WATER LINES NEXT TO MANHOLES) THE INSTALLATION MUST MEET THE REQUIREMENTS OF 30 TAC 317 (DESIGN OF SEWAGE SYSTEMS) OR 30 TAC 290 (WATER HYGIENE).

20. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING WATER AND SEWER CONNECTIONS TO ALL HOMES AND BUSINESSES IN WORKING ORDER AT ALL TIMES, EXCEPT FOR BRIEF INTERRUPTIONS IN SERVICE FOR CONNECTIONS TO BE REINSTALLED. IN NO CASE SHALL SERVICES BE ALLOWED TO REMAIN OUT OF SERVICE OVERNIGHT. CONTRACTOR IS RESPONSIBLE FOR DAMAGES TO SAID SERVICES.

21. PUBLIC AND PRIVATE UTILITY LINES AND CUSTOMER SERVICE LINES MAY EXIST THAT ARE NOT SHOWN ON THE CONSTRUCTION DRAWINGS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE, MAINTAIN AND PROTECT THE INTEGRITY OF THESE LINES. HAND EXCAVATION MAY BE REQUIRED. THE CONTRACTOR SHALL RESTORE RELOCATED OR DIVERTED UTILITY TO ITS ORIGINAL CONDITION AND LOCATION WHEN APPLICABLE UPON COMPLETION OF CONSTRUCTION. SAID RESTORATION SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST AND REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED IN THE PROPOSAL.

STREET & EXCAVATION

1. ASPHALT LAYING MACHINE SHALL BE CAPABLE OF LAYING A 14' WIDTH.

2. DURING SUBGRADE PREPARATION, THE DEVELOPMENT OF ANY SOFT AREAS SHALL BE REMOVED AND REPLACED WITH ACCEPTABLE MATERIAL AND COMPACTED AS PER PROJECT SPECIFICATIONS. A SOFT AREA SHALL BE DEFINED AS AN AREA THAT EXHIBITS A DEPRESSION GREATER THAN 1" MEASURED VERTICALLY WHEN ROLLED AT 2' INTERVALS OR LESS BY A 14 YARD DUMP TRUCK FULLY LOADED. THIS WORK SHALL NOT BE PAID FOR DIRECTLY BUT CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.

3. WHERE EXISTING ASPHALT IS TO BE CUT, THESE CUTS SHALL BE VERTICAL CUTS MADE WITH A SAW.

4. CARE SHALL BE TAKEN TO PROTECT CURB AND GUTTER AND OTHER CONCRETE SURFACES FROM ASPHALT SPLATTER DURING PRIMING, SEALING, AND TACKING OPERATIONS.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR GRADING AREA BETWEEN THE BACK OF CURB/EDGE OF PAVEMENT, ROAD SIDE DITCH AND RIGHT-OF-WAY TO HAVE POSITIVE FLOW TO THE PROPOSED DRAINAGE SYSTEM.

6. PRIMING AND HOT MIX OPERATIONS SHALL NOT BE CONDUCTED ON DAYS WHEN OZONE ADVISORY HAS BEEN ISSUED; EXCLUDING DIRECTED REPAIRS.

7. ALL ROAD CROSSINGS SHALL BE REPLACED WITH A MINIMUM OF 8" COMPACTED CALICHE AND 2" HMAC OR LIKE SECTION, WHICHEVER IS GREATER.

8. THE DRAINAGE DISTRICT WILL PROVIDE CONTROL POINTS (BENCHMARK AND PROPERTY CORNERS) FOR THE WORK TO BE PERFORMED BY THE CONTRACTOR. CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION STAKING, INCLUDING BUT NOT LIMITED TO HORIZONTAL & VERTICAL GRADE CUTS FOR CURB & GUTTER, IRRIGATION LINE, ROADWAY, STORM DRAIN PIPE, ROADSIDE DITCHES, DRIVEWAY CULVERTS AND DITCH WORK AT NO SEPARATE PAY UNLESS NOTED OTHERWISE.

9. THE CONTRACTOR SHALL CONNECT PROPOSED. IRRIGATION LINE WITH EXISTING IRRIGATION PIPE IN ACCORDANCE WITH **H.C.I.D. NO 1** SPECIFICATIONS. SUPPORT COLLARS MAY BE USED. THE CONTRACTOR SHALL BE RESPONSIBLE TO REPAIR ANY DAMAGE TO THE EXIST. LINE CAUSED BY THIS WORK. ELBOWS AND MISC. FITTINGS SHALL ALSO BE USE TO ACHIEVE A 1.0 FT SEPARATION BETWEEN TOP OF PROP. DRAIN LINE AND BOTTOM OF THE IRRIGATION LINE.

10. ELBOW FOR RCP OR HPP BEING PROPOSED AT THE END OF LINES SHALL BE PRE-FABRICATED AND SECURED TO THE PIPE WITH A CONCRETE COLLAR (TYPICAL ON ALL PIPE ELBOW INSTALLATIONS.) ELBOW SHALL BE REQUIRED AT ALL LOCATIONS SHOWN ON THE PLANS. THIS SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST AND REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED IN THE PROPOSAL. PRE-FABRICATED ELBOWS SHALL BE FIELD CONFIRMED BY THE CONTRACTOR.

11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPROVING ALL EXISTING DRIVEWAYS. CALICHE, DIRT OR ASPHALT DRIVEWAYS SHALL BE REPLACED WITH 3" COMPACTED CALICHE AND 1" ACP. CONCRETE DRIVEWAYS SHALL BE REPLACED WITH 4" CONCRETE WITH REINFORCEMENT AS PER DETAILS. THIS SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED ON THE PROPOSAL UNLESS A SPECIFIC BID ITEM IS INCLUDED IN THE BID FOR DRIVEWAYS.

12. FOR ALL PITS OR QUARRIES, COMPLY WITH THE "TEXAS AGGREGATE QUARRY AND PIT SAFETY ACT."

13. THE CONTRACTOR SHALL RELOCATE OR RECONSTRUCT ALL MAIL BOXES TO BE 1' BEHIND BACK OF CURB OR 3' BEHIND EDGE OF PAVEMENT. MAIL BOXES SHALL BE REPLACED TO THE SAME EXISTING CONDITIONS OR BETTER. SAID RELOCATION AND/OR RECONSTRUCTION OF MAIL BOXES SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST AND REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED IN THE PROPOSAL.

14. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING ALL EXISTING WATER VALVES AND MANHOLES TO MATCH PROPOSED FINISH GRADE OF ROADWAY. CONCRETE COLLARS SHALL BE INSTALLED TO MATCH TOPS WITH PAVEMENT GRADE. THIS WORK SHALL BE INCIDENTAL AND NOT A SEPARATE PAY ITEM UNLESS STATED OTHERWISE.

15. THE CONTRACTOR SHALL INSURE A 6" MINIMUM COVER FOR DRIVEWAY CULVERTS. THE RELAYING OR REMOVAL OF DRIVEWAY PIPE CULVERTS SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED ON THE PROPOSAL.

16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT/RELOCATION OF ALL REGULATORY SIGNS REMOVED DUE TO CONSTRUCTION OPERATIONS WITH THE SAME SIGN ON FIXED SUPPORT(S) IMMEDIATELY UPON ITS REMOVAL. APPROVAL BY THE ENGINEER IS NECESSARY BEFORE REMOVING ANY REGULATORY ROADWAY SIGN(S). FLAGGERS ARE REQUIRED TO BE AVAILABLE TO DIRECT TRAFFIC DURING SIGN INTERMEDIATE DOWN TIME. RELOCATION OF ANY DIRECTIONAL SIGN ASSEMBLIES REMOVED DURING CONSTRUCTION OPERATIONS IMMEDIATELY UPON THEIR REMOVAL IS REQUIRED. THESE SIGNS SHALL BE RELOCATED TO A LOCATION IN ACCORDANCE WITH THE LATEST VERSION OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES". IN NO CASE WILL A SIGN BE REMOVED WITHOUT A REPLACEMENT SIGN AND SUPPORT(S) BEING READILY AVAILABLE AND A LOCATION ESTABLISHED. REMOVAL AND RELOCATION OF THESE SIGNS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED ON THE PROPOSAL.

17. ALL CONSTRUCTION OPERATIONS SHALL BE CONDUCTED TO PROVIDE THE LEAST POSSIBLE INTERFERENCE TO TRAFFIC AS PROVIDED FOR IN THE SPECIFICATIONS, TxDOT STANDARDS, TEXAS M.U.T.C.D. AND/OR AS DIRECTED. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE CURRENT EDITION OF THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

18. DIRT EXCAVATION AND HAULING MEASUREMENT SHALL BE BASED UPON CROSS-SECTIONS AS REQUIRED, IN ACCORDANCE WITH SECTION 02315, WHICH ARE BASED ON DIRT IN THE GROUND. NO ADDITIONAL PAYMENT WILL BE GIVEN FOR OVER EXCAVATION. FURTHER, PAYMENT SHALL NOT BE BASED ON THE NUMBER OF TRUCK-LOADS.

19. THE CONTRACTOR IS RESPONSIBLE FOR THE PREPARATION AND SUBMITTAL OF THE TRENCH EXCAVATION PROTECTION PLAN. CONTRACTOR SHALL SUBMIT CONSTRUCTION DETAILS AND DESIGN CALCULATIONS BEARING THE SEAL OF A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS BEFORE CONSTRUCTING THE SHORING AND/OR UTILIZING A TRENCH PROTECTION SYSTEM (BOX). THE ENGINEER RESERVES THE RIGHT TO REJECT DESIGNS NOT MEETING THE REQUIREMENTS OF SECTION ITEM **02490** AND **02331**.

20. ALL DEBRIS, VEGETATION AND SURPLUS MATERIAL, RESULTING FROM DEMOLITION AND/OR CLEARING OF THE RIGHT-OF-WAY IN PREPARATION OF PROPOSED IMPROVEMENTS SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE PROPERLY DISPOSED OF AT A SITE ACCEPTABLE TO HIDALGO COUNTY DRAINAGE DISTRICT NO 1. THE CONTRACTOR SHALL PROVIDE A LETTER STATING SO. THIS SHALL BE INCIDENTAL AND NOT A SEPARATE PAY ITEM UNLESS STATED SO. NO EXCESS EXCAVATED MATERIAL SHALL BE DEPOSITED IN LOW AREAS OR ALONG NATURAL DRAINAGE WAYS WITHOUT WRITTEN PERMISSION FROM THE AFFECTED PROPERTY OWNER AND THE HIDALGO COUNTY DRAINAGE DISTRICT NO 1. IF THE CONTRACTOR PLACES EXCESS MATERIAL IN THE AREAS WITHOUT WRITTEN PERMISSION, HE WILL BE RESPONSIBLE FOR ALL DAMAGE RESULTING FROM SUCH FILL AND CONTRACTOR SHALL REMOVE THE MATERIAL AT OWN COST.

21. NO OPEN EXCAVATION SHALL BE LEFT OPEN OVERNIGHT. ALL EXCAVATIONS WHICH CANNOT BE BACKFILLED OVERNIGHT SHALL BE COVERED. AS A MINIMUM, WITH STEEL PLATING WHEN IN PAVED AND UNPAVED AREAS SUBJECT TO VEHICULAR LOADING; ¾ PLYWOOD, WOOD PLANKING WITH O.S.H.A. ORANGE PLASTIC EXPANDED MESH BARRIER AROUND PERIMETER IN UNPAVED AREAS NOT SUBJECT TO VEHICULAR LOADING, OR AS APPROVED BY THE ENGINEER.

22. DURING EXCAVATION OPERATIONS FOR DRAINAGE AND/OR UTILITIES, THE CONTRACTOR SHALL NOT PILE EXCAVATED MATERIAL OR EXCAVATE WITHIN THE DRIP LINE OF TREES THAT ARE TO BE PRESERVED.

23. THE CONTRACTOR SHALL BE RESPONSIBLE TO FOLLOW ALL T.C.E.Q. STORM WATER POLLUTION PREVENTION PLAN (SWP3) REQUIREMENTS AS PER SWP3 SHEETS AND AS STATED IN TEXAS POLLUTANT DISCHARGE ELIMINATION SYSTEM CONSTRUCTION GENERAL PERMIT (TPDES TXR150000, EFFECTIVE DATE MARCH 5, 2008), INCLUDING N.O.I. AND N.O.T. SUBMITTAL AND MS4 NOTIFICATION.

DEMOLITION

1. AFTER REMOVAL OF PIPING AND STRUCTURES DESIGNATED IN PLANS, EXCAVATIONS SHALL BE BACKFILLED USING NATIVE MATERIAL AND COMPACTED TO 95% STANDARD PROCTER DENSITY.

2. EXISTING PIPE LEFT IN PLACE AFTER DEMOLITION/REMOVAL ACTIVITIES SHALL BE PLUGGED OR CAPPED USING RESTRAINED FITTING. IF RESTRAINED FITTINGS CAN NOT BE USED THEN THRUST BLOCKING SHALL BE INSTALLED.

3. THE CONTRACTOR WILL BE REQUIRED TO CONTACT THE ENGINEER AND OWNER TO COORDINATE ANY DEMOLITION ACTIVITIES AT LEAST 48 HOURS PRIOR TO INITIATING ANY SUCH ACTIVITY.

4. THE CONTRACTOR IS REQUIRED TO DISPOSE OF ALL MATERIALS AND PAY FOR ALL FEES RELATING TO DISPOSAL OF ALL MATERIAL IN COMPLIANCE WITH TCEQ AND EPA RULES AND REGULATIONS AT PERMITTED DISPOSAL SITES AND PROVIDE ALL HAULING MANIFESTS. THIS PROJECT WILL NOT BE ACCEPTED UNTIL CONTRACTOR PRODUCES THIS DOCUMENTATION.

5. REMOVAL OF THE EXISTING IMPROVEMENTS SHALL BE AS REQUIRED FOR THE PROJECT. THOSE MATERIALS SHALL BE REMOVED AND DISPOSED OF IN A PROPER AND LEGAL MANNER PER FEDERAL, STATE, AND OR LOCAL LAWS AND ORDINANCES.

6. IF AN HAZZARDOUS MATERIAL ARE ENCOUNTERED THE OWNER SHALL BE NOTIFIED. THOSE MATERIALS SHALL BE REMOVED AND DISPOSED OF IN A MANNER AS APPROVED BY ALL GOVERNING AGENCIES AND IN A LANDFILL OR DISPOSAL FACILITY LICENSED TO ACCEPT HAZZARDOUS MATERIAL.

7. PRE DEMOLITION PHOTOGRAPHS SHALL BE TAKEN THAT SHOW EXISTING CONDITIONS OF THE SITE AND ADJOINING STRUCTURES TO REMAIN. PHOTOS SHALL INCLUDE DAMAGE TO FINISH SURFACES THAT MIGHT BE MISCONSTRUED AS DAMAGE CAUSED BY DEMOLITION OPERATIONS.

8. EXISTING BUILDINGS, PAVEMENTS, SIDEWALKS, CURBS, DRIVEWAYS, ELECTRICAL TRANSFORMERS, DITCHES, DRAINAGE PIPES AND STRUCTURES, FENCES, LAWNS, TREES, BUSHES, MAILBOXES, SIGNS, POWER POLES, ETC, TO REMAIN SHALL BE PROTECTED FROM DAMAGE BY THE CONTRACTOR. ANY DAMAGE DURING CONSTRUCTION SHALL BE RESTORED, RECONSTRUCTED OR REPLACED BY THE CONTRACTOR AT HIS EXPENSE. ALL DAMAGES SHALL BE RESTORED OR REPLACED TO AT LEAST THEIR ORIGINAL CONDITION OR AS REQUIRED OR DICTATED BY FEDERAL, STATE, COUNTY, CITY OR LOCAL GOVERNING AGENCIES.

9. SAW CUT THE EDGES OF PAVED AREAS CLEAN, NEAT AND TRUE TO LINE SO NO UNWANTED CHIPPING OR BREAKING OF EXISTING PAVEMENT TO REMAIN WILL OCCUR.

10. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INSPECT EACH DAY AND REMOVE ALL MUD, DIRT, GRAVEL AND LOOSE MATERIALS TRACKED DUMPED, SPILLED OR WIND BLOWN AT EACH CONSTRUCTION SITE ONTO OTHER SITES, RIGHT OF WAYS, PUBLIC OR PRIVATE STREETS OR ROADS, DRIVEWAYS, YARDS OR SIDEWALKS. THE CONTRACTOR MUST CLEAN OR PICK UP DAILY IF NECESSARY. THE CONTRACTOR SHALL REDUCE THE AIRBORNE DUST DURING THE ENTIRE DEMOLITION SCHEDULE. WATER MAY BE USED AS A REDUCER.

11. IT IS THE RESPONSIBILITY OF THE CONTRACTOR OR CONTRACTORS TO OBTAIN ALL FEDERAL, STATE, COUNTY, CITY, AND LOCAL PERMITS FOR ANY AND ALL WORK REQUIRED UNLESS OTHERWISE NOTED. THIS SHALL INCLUDE ALL SUBMITTALS AS REQUIRED INCLUDING STORMWATER POLLUTION PREVENTION PLAN. THE CONTRACTOR OR CONTRACTORS ARE RESPONSIBLE TO PAY FOR ALL THE REQUIRED PERMITS BY ANY OR ALL AGENCIES MENTIONED ABOVE UNLESS OTHERWISE NOTED BY THE CONTRACT OR SPECIFICATIONS.

12. REMOVAL OF EXISTING CONCRETE OR OTHER PAVED AREAS SHALL INCLUDE ALL AGGREGATE BASE MATERIALS. AREAS TO BE REMOVED SHALL BE SAW CUT CLEAN, NEAT AND TRUE TO LINE. REMOVE ALL NON ORGANIC MATTER THAT WOULD INTERFERE WITH THE GROWTH OF VEGETATION.

13. THE CONTRACTOR SHALL ABANDON AND CAP ANY PORTION OF PIPE LINE (STORM, IRRIGATION, ETC.) FOUND WITHIN THE PROPOSED PIPE TRENCH, AT THE ENGINEERS REQUEST. ONCE APPROVED BY THE ENGINEER, THE PIPE TO BE ABANDONED SHALL BE CAPPED AND SEALED WITH CEMENT AT BOTH ENDS OF THE TRENCH. THIS SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS UNLESS OTHERWISE STATED.

14. THE CONTRACTOR SHALL REMOVE ALL FENCES LOCATED WITHIN THE EASEMENTS, INTERFERING WITH CONSTRUCTION OPERATION AND PROVIDE TEMPORARY FENCING DURING CONSTRUCTION. REMOVED FENCES SHALL BE REPLACED WITH A NEW FENCE OR UNDAMAGED ORIGINAL FENCING. REMOVAL AND REPLACEMENT OF EXISTING AND TEMPORARY FENCES SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST AND REFLECTED IN THE UNIT BID PRICES FOR VARIOUS ITEMS LISTED IN THE PROPOSAL UNLESS NOTED OTHERWISE.

15. ABANDONED FITTINGS, VALVES, EQUIPMENT, ETC, SHALL BE RECOVERED AND STOCKPILED AT A SECURE LOCATION BY THE CONTRACTOR FOR SALVAGE BY THE OWNER. HOWEVER, ALL RELATED ITEMS THAT ARE UNWANTED BY THE OWNER SHALL BECOME PROPERTY OF THE CONTRACTOR AND DISPOSED OF IN AN APPROPRIATE MANNER.

16. ALL EXISTING PIPES THAT ARE TO BE ABANDONED IN PLACE OR REMOVED MAY NOT BE SHOWN. WHERE PIPING IS TO BE ABANDONED AND MUST REMAIN IN SERVICE UNTIL COMPLETION OF OTHER PHASES OF WORK, AND IT CONFLICTS WITH NEW PIPING, TEMPORARILY RELOCATE PIPING (BY-PASS) AND PROVIDE ALL NECESSARY EQUIPMENT AND MATERIALS AS REQUIRED TO MAINTAIN SERVICE AT NO ADDITIONAL COST TO THE OWNER UNLESS OTHERWISE SHOWN IN THE BID FORM.

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED PROFESSIONAL ENGINEER

HIDALGO COUNTY DRAINAGE DISTRICT NO. 1

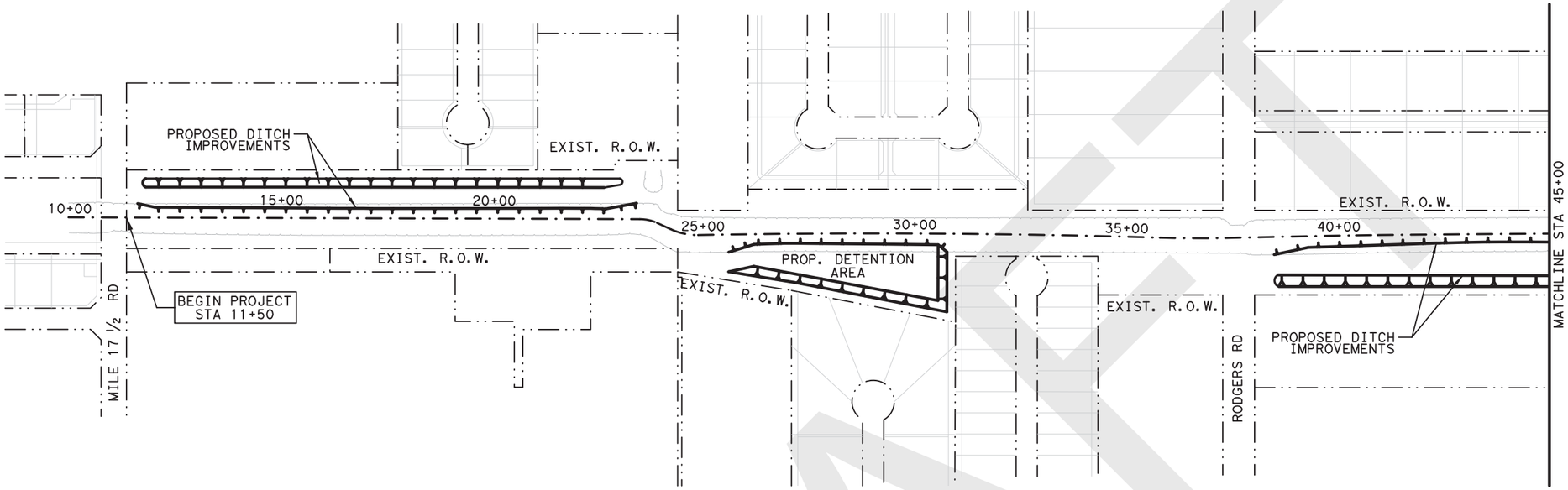
HIDALGO COUNTY PRECINCT FOUR

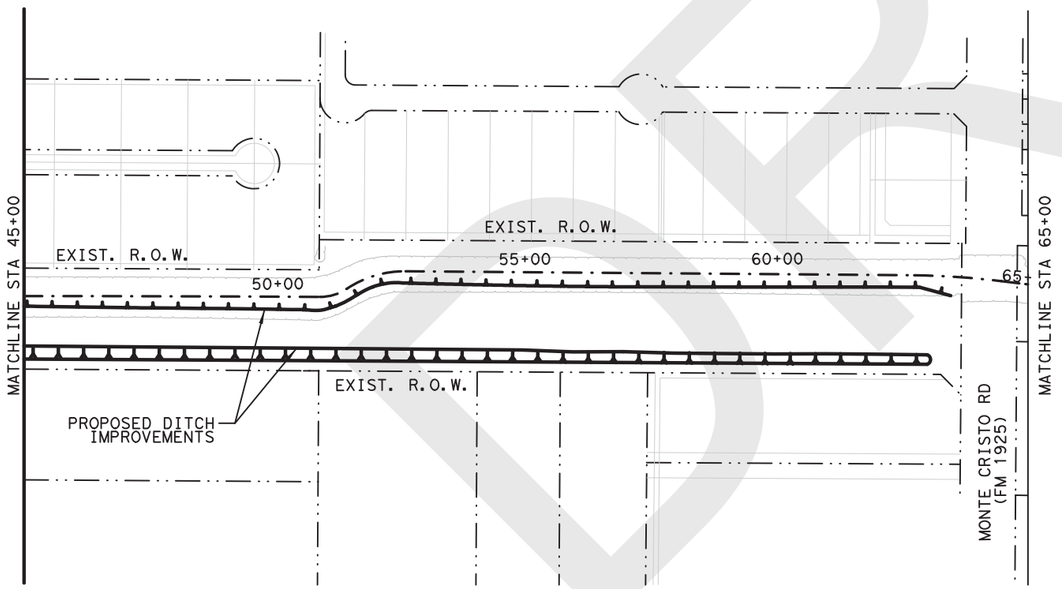
TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
TEDSI
TBPE F-1640
1201 Interstate Highway 2
Mission, Texas 78572
(956) 424-7898

B2Z ENGINEERING
TBPE FIRM NO. F-11187

NORTH MAIN DRAIN III
PHASE I
GENERAL NOTES

DN:		CONT	SECT	JOB	HIGHWAY
CK DN:					
DW:		DIST	COUNTY		SHEET NO.
CK DW:			Hidalgo		4
TR:					
CK TR:					





PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

Ponciano N. Longoria, P.E.

PONCIANO N. LONGORIA — 6/1/2023 DATE

HIDALGO COUNTY DRAINAGE DISTRICT No. 1

HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
Houston • Mission • San Antonio

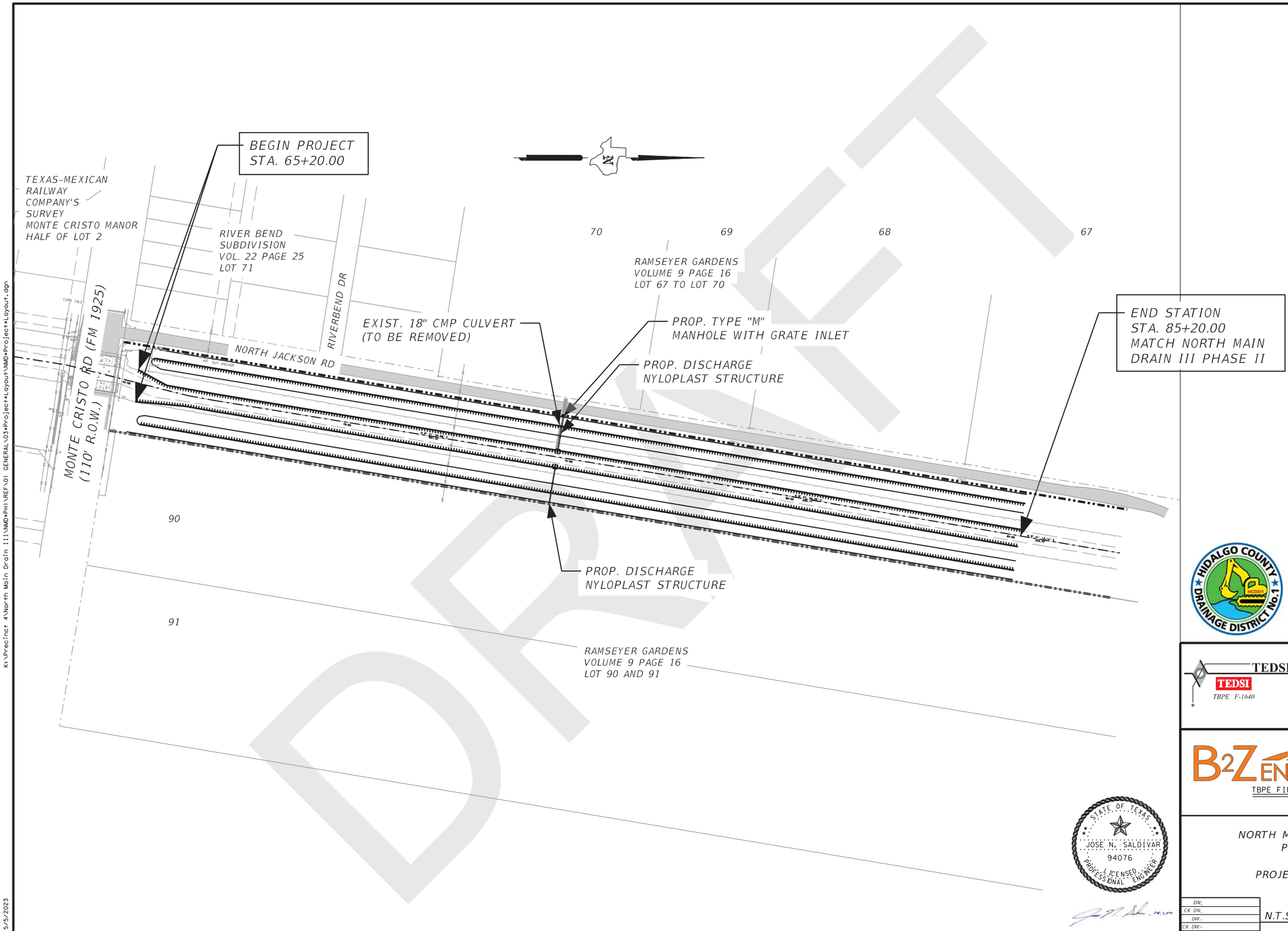
NORTH MAIN DRAIN III - PHASE I
PROJECT LAYOUT

SCALE: 1" = 300' SHEET 1 OF 2

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		5

STATE	DIST.	COUNTY	
TEXAS	PHR	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.

DATE: 6/1/2023 9:00:31 AM
FILE: pw:\\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\2022\2022-2135-01 - North Main Drain III Phase II\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\General\NORTH MAIN DRAIN III_PROJECT_LAYOUT.dgn



K:\Precinct 4\North Main Drain III\NMD-PH1\REF\01 GENERAL\03-Project*\Layout*\NMD-Project*Layout.dgn

5/5/2023

HIDALGO COUNTY DRAINAGE DISTRICT No.1 — HCDD1

HIDALGO COUNTY 4 — PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 Interstate Highway 2
Mission, Texas 78572
(956) 424-7898
TEDSI
TBPE F-1640

B2Z ENGINEERING
TBPE FIRM NO. F-11187

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED PROFESSIONAL ENGINEER

NORTH MAIN DRAIN III
PHASE I

PROJECT LAYOUT

DN:	N.T.S.	SHEET 2 OF 2	
CK DN:			
DW:			
CK DW:	PROJECT		SHEET NO.
TR:	NORTH MAIN DRAIN III		6
CK TR:			

Beginning chain NMD_CL description

Point CL01 N 16,644,124.1300 E 1,086,911.9250 Sta 10+00.00

Course from CL01 to PC NMD_CL1 N 9° 04′ 06.88" E Dist 1,347.3502

Curve Data

Curve NMD_CL1

P.I.	Station		23+68.56	N	16,645,475.5530	E 1,087,127.8412
	Delta	=	23° 57′ 13.75" (RT)			
	Degree	=	57° 17′ 44.81"			
	Tangent	=	21.2135			
	Length	=	41.8073			
	Radius	=	100.0000			
	External	=	2.2253			
	Long Chord	=	41.5035			
	Mid. Ord.	=	2.1769			
P.C.	Station		23+47.35	N	16,645,454.6388	E 1,087,124.2897
P.T.	Station		23+89.16	N	16,645,493.2239	E 1,087,139.5780
C.C.				N	16,645,437.8969	E 1,087,222.8782
	Back	=	N 9° 38′ 16.19" E			
	Ahead	=	N 33° 35′ 29.94" E			
	Chord Bear	=	N 21° 36′ 53.06" E			

Course from PT NMD_CL1 to PC NMD_CL2 N 33° 35′ 29.94" E Dist 35.9937

Curve Data

Curve NMD_CL2

P.I.	Station		24+58.96	N	16,645,551.3708	E 1,087,178.1985
	Delta	=	25° 24′ 16.71" (LT)			
	Degree	=	38° 11′ 49.87"			
	Tangent	=	33.8103			
	Length	=	66.5092			
	Radius	=	150.0000			
	External	=	3.7633			
	Long Chord	=	65.9657			
	Mid. Ord.	=	3.6712			
P.C.	Station		24+25.15	N	16,645,523.2067	E 1,087,159.4923
P.T.	Station		24+91.66	N	16,645,584.8366	E 1,087,183.0133
C.C.				N	16,645,606.1972	E 1,087,034.5420
	Back	=	N 33° 35′ 29.94" E			
	Ahead	=	N 8° 11′ 13.23" E			
	Chord Bear	=	N 20° 53′ 21.58" E			

Curve Data

Curve NMD_CL3

P.I.	Station		30+36.36	N	16,646,124.4761	E 1,087,257.0682
	Delta	=	2° 49′ 08.84" (RT)			
	Degree	=	0° 15′ 31.79"			
	Tangent	=	544.6972			
	Length	=	1,089.1745			
	Radius	=	22,136.3544			
	External	=	6.7005			
	Long Chord	=	1,089.0647			
	Mid. Ord.	=	6.6985			
P.C.	Station		24+91.66	N	16,645,584.8366	E 1,087,183.0133
P.T.	Station		35+80.83	N	16,646,659.8203	E 1,087,357.5747
C.C.				N	16,642,575.2620	E 1,109,113.8283
	Back	=	N 7° 48′ 50.10" E			
	Ahead	=	N 10° 37′ 58.94" E			
	Chord Bear	=	N 9° 13′ 24.52" E			

Curve Data

Curve NMD_CL4

P.I.	Station		36+58.19	N	16,646,735.8477	E 1,087,371.8482
	Delta	=	2° 57′ 14.80" (LT)			
	Degree	=	1° 54′ 35.49"			
	Tangent	=	77.3556			
	Length	=	154.6770			
	Radius	=	3,000.0000			
	External	=	0.9971			
	Long Chord	=	154.6598			
	Mid. Ord.	=	0.9968			
P.C.	Station		35+80.83	N	16,646,659.8203	E 1,087,357.5747
P.T.	Station		37+35.51	N	16,646,812.5096	E 1,087,382.1846
C.C.				N	16,647,213.3747	E 1,084,409.0874
	Back	=	N 10° 37′ 58.94" E			
	Ahead	=	N 7° 40′ 44.13" E			
	Chord Bear	=	N 9° 09′ 21.54" E			

Curve Data

Curve NMD_CL5

P.I.	Station		38+89.56	N	16,646,965.1752	E 1,087,402.7687
	Delta	=	0° 07′ 40.50" (RT)			
	Degree	=	0° 02′ 29.47"			
	Tangent	=	154.0470			
	Length	=	308.0940			
	Radius	=	138,001.1044			
	External	=	0.0860			
	Long Chord	=	308.0939			
	Mid. Ord.	=	0.0860			
P.C.	Station		37+35.51	N	16,646,812.5096	E 1,087,382.1846
P.T.	Station		40+43.61	N	16,647,117.7945	E 1,087,423.6935
C.C.				N	16,628,372.5691	E 1,224,145.7522
	Back	=	N 7° 40′ 44.13" E			
	Ahead	=	N 7° 48′ 24.63" E			
	Chord Bear	=	N 7° 44′ 34.38" E			

Course from PT NMD_CL5 to PC NMD_CL6 N 8° 18′ 58.58" E Dist 51.2036

Curve Data

Curve NMD_CL6

P.I.	Station		45+90.32	N	16,647,658.7574	E 1,087,502.7683
	Delta	=	0° 36′ 57.76" (RT)			
	Degree	=	0° 03′ 43.79"			
	Tangent	=	495.5081			
	Length	=	991.0066			
	Radius	=	92,169.5456			
	External	=	1.3319			
	Long Chord	=	991.0019			
	Mid. Ord.	=	1.3319			
P.C.	Station		40+94.81	N	16,647,168.4597	E 1,087,431.0994
P.T.	Station		50+85.82	N	16,648,148.2562	E 1,087,579.7047
C.C.				N	16,633,837.3117	E 1,178,631.4592
	Back	=	N 8° 18′ 58.58" E			
	Ahead	=	N 8° 55′ 56.34" E			
	Chord Bear	=	N 8° 37′ 27.46" E			

Curve Data

Curve NMD_CL7

P.I.	Station		51+15.14	N	16,648,177.2388	E 1,087,584.1333
	Delta	=	34° 00′ 17.36" (LT)			
	Degree	=	59° 45′ 19.16"			
	Tangent	=	29.3191			
	Length	=	56.9068			
	Radius	=	95.8840			
	External	=	4.3824			
	Long Chord	=	56.0752			
	Mid. Ord.	=	4.1909			
P.C.	Station		50+85.82	N	16,648,148.2562	E 1,087,579.7047
P.T.	Station		51+42.72	N	16,648,203.7420	E 1,087,571.5956
C.C.				N	16,648,162.7393	E 1,087,484.9209
	Back	=	N 8° 41′ 15.79" E			
	Ahead	=	N 25° 19′ 01.57" W			
	Chord Bear	=	N 8° 18′ 52.89" W			

Curve Data

Curve NMD_CL8

P.I.	Station		52+06.49	N	16,648,261.3807	E 1,087,544.3289
	Delta	=	34° 42′ 31.24" (RT)			
	Degree	=	28° 04′ 51.86"			
	Tangent	=	63.7628			
	Length	=	123.6017			
	Radius	=	204.0370			
	External	=	9.7311			
	Long Chord	=	121.7204			
	Mid. Ord.	=	9.2881			
P.C.	Station		51+42.72	N	16,648,203.7420	E 1,087,571.5956
P.T.	Station		52+66.32	N	16,648,324.2888	E 1,087,554.7338
C.C.				N	16,648,290.9939	E 1,087,756.0359
	Back	=	N 25° 19′ 01.57" W			
	Ahead	=	N 9° 23′ 29.67" E			
	Chord Bear	=	N 7° 57′ 45.95" W			

Course from PT NMD_CL8 to PC NMD_CL9 N 9° 01′ 29.37" E Dist 1,007.5896

Curve Data

Curve NMD_CL9

P.I.	Station		63+60.36	N	16,649,404.7807	E 1,087,726.3478
	Delta	=	6° 35′ 48.10" (RT)			
	Degree	=	3° 49′ 10.99"			
	Tangent	=	86.4460			
	Length	=	172.7010			
	Radius	=	1,500.0000			
	External	=	2.4889			
	Long Chord	=	172.6057			
	Mid. Ord.	=	2.4848			
P.C.	Station		62+73.91	N	16,649,319.4050	E 1,087,712.7867
P.T.	Station		64+46.62	N	16,649,488.0332	E 1,087,749.6271
C.C.				N	16,649,084.0941	E 1,089,194.2147
	Back	=	N 9° 01′ 31.77" E			
	Ahead	=	N 15° 37′ 19.87" E			
	Chord Bear	=	N 12° 19′ 25.82" E			

Course from PT NMD_CL9 to PC NMD_CL10 N 15° 37′ 19.87" E Dist 48.1931

Curve Data

Curve NMD_CL10

P.I.	Station		65+73.92	N	16,649,610.6309	E 1,087,783.9082
	Delta	=	6° 02′ 15.92" (LT)			
	Degree	=	3° 49′ 10.99"			
	Tangent	=	79.1072			
	Length	=	158.0681			
	Radius	=	1,500.0000			
	External	=	2.0845			
	Long Chord	=	157.9949			
	Mid. Ord.	=	2.0816			
P.C.	Station		64+94.81	N	16,649,534.4460	E 1,087,762.6051
P.T.	Station		66+52.88	N	16,649,688.6339	E 1,087,797.0796
C.C.				N	16,649,938.3851	E 1,086,318.0176
	Back	=	N 15° 37′ 19.87" E			
	Ahead	=	N 9° 35′ 03.95" E			
	Chord Bear	=	N 12° 36′ 11.91" E			

Course from PT NMD_CL10 to CL02 N 9° 35′ 03.95" E Dist 2,092.2208

Point CL02 N 16,651,751.6500 E 1,088,145.4360 Sta 87+45.10

Ending chain NMD_CL description

STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED
PROFESSIONAL ENGINEER

PONCIANO N. LONGORIA — 6/1/2023 DATE

HIDALGO COUNTY DRAINAGE DISTRICT NO. 1

HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
TEDSI Consulting Engineers
Texas ★ Missouri ★ San Antonio

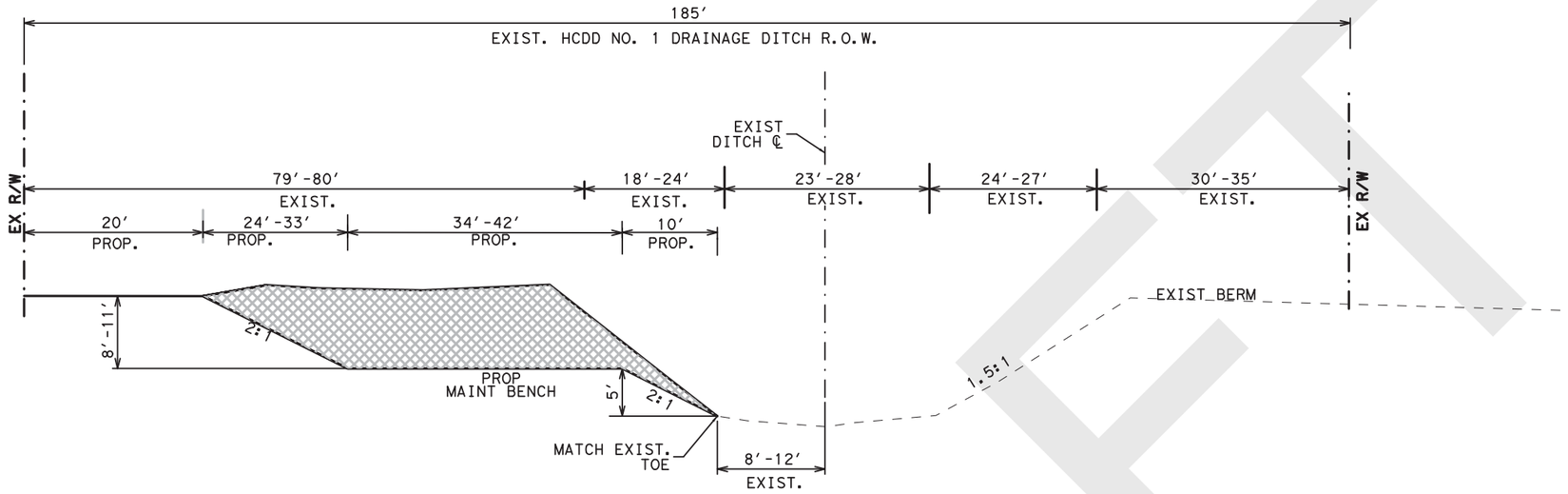
NORTH MAIN DRAIN III - PHASE I
HORIZONTAL ALIGNMENT DATA

SHEET 1 OF 1

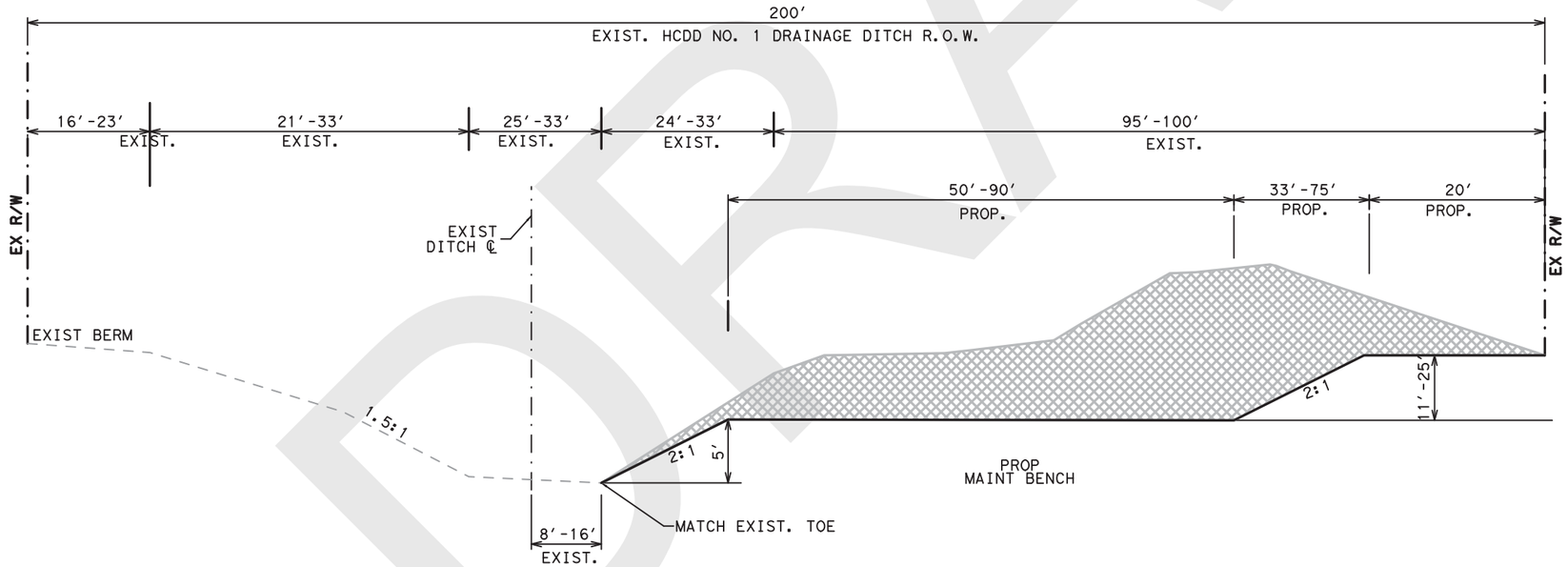
FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		7

STATE	DIST.	COUNTY	
TEXAS	PHR	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.

DATE: 6/1/2023 9:00:35 AM
FILE: pw:\\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\20222022-2135-01 - North Main Drain III Phase II\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\General\NORTH MAIN DRAIN -HALN.dgn



PROPOSED TYPICAL SECTION 1
STATION 11+40 TO STATION 23+40



PROPOSED TYPICAL SECTION 2
STATION 38+78.09 TO STATION 50+80

LEGEND

DITCH EXCAVATION

NOTE:
1. REFER TO PLAN & PROFILE SHEETS FOR FLOWLINES

STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER

PONCIANO N. LONGORIA — 6/1/2023 DATE

HIDALGO COUNTY DRAINAGE DISTRICT NO. 1
HCDD
HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
TEDSI

NORTH MAIN DRAIN III - PHASE I

PROPOSED TYPICAL SECTIONS

N.T.S.

SHEET 1 OF 3

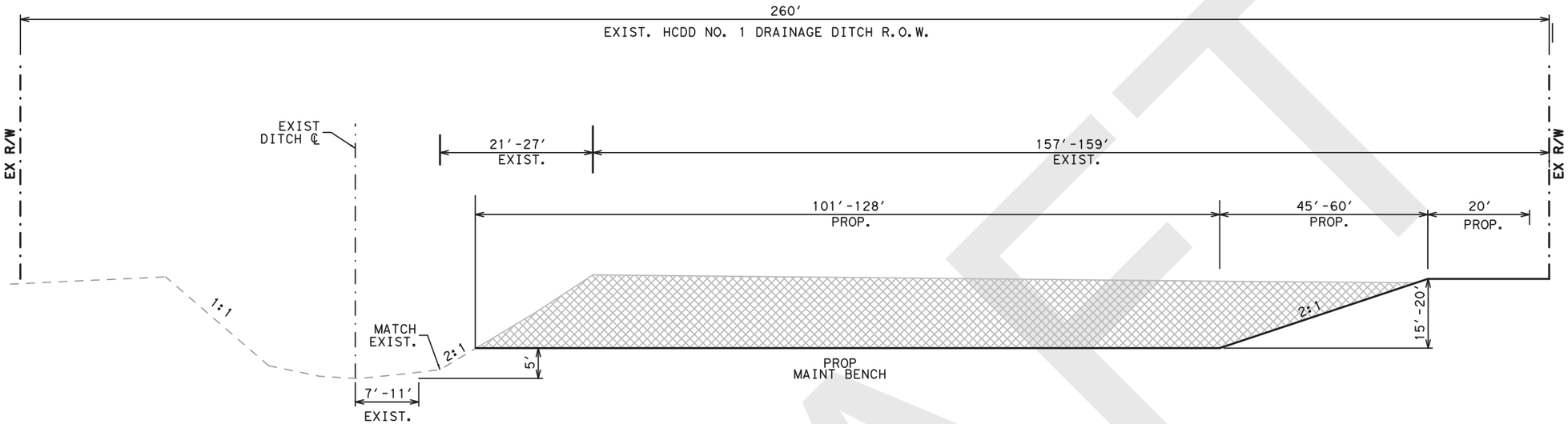
FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		8

STATE	DIST.	COUNTY
TEXAS	PHR	HIDALGO

CONT.	SECT.	JOB	HIGHWAY NO.

DRAFT

DATE: 6/1/2023 9:00:39 AM
FILE: pw:\\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\2022\2022-2135-01 - North Main Drain III Phase II\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\General\NORTH MAIN DRAIN - PROP TYPICALS_combined.dgn



PROPOSED TYPICAL SECTION 3
STATION 50+80 TO STATION 63+60

LEGEND

DITCH EXCAVATION

NOTE:
1. REFER TO PLAN & PROFILE SHEETS FOR FLOWLINES

STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER

6/1/2023
PONCIANO N. LONGORIA — DATE

HIDALGO COUNTY DRAINAGE DISTRICT NO. 1

HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers

NORTH MAIN DRAIN III - PHASE I

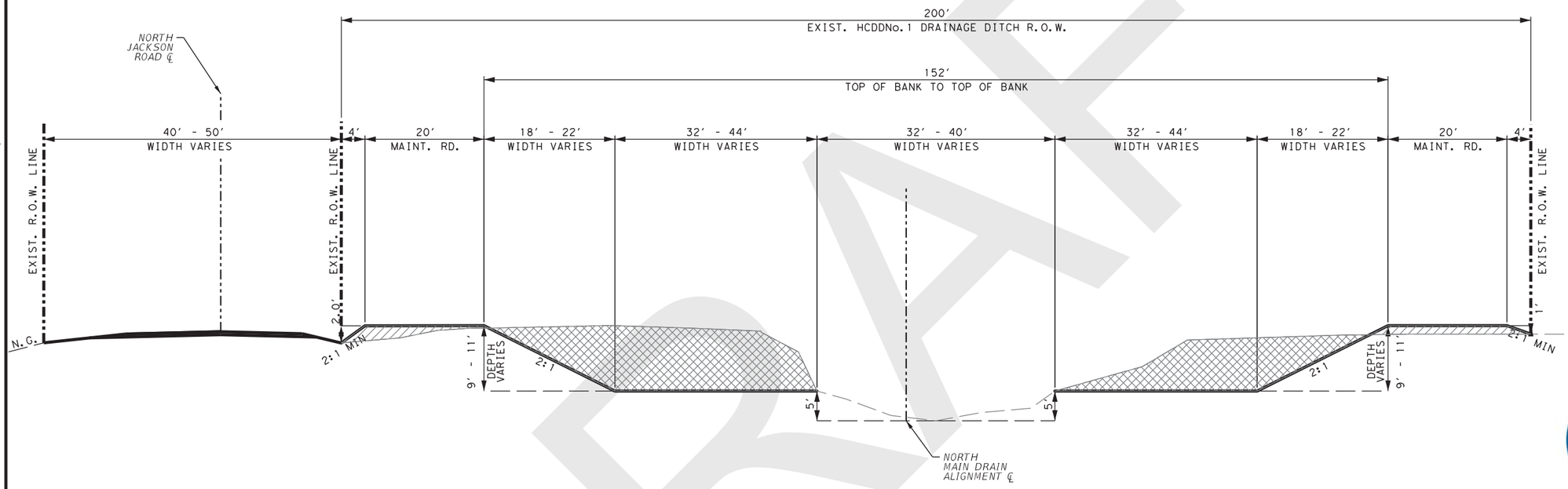
PROPOSED
TYPICAL SECTIONS

N.T.S.

SHEET 2 OF 3

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		9

STATE	DIST.	COUNTY	
TEXAS	PHR	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.



LEGEND

DENOTES DITCH EXCAVATION

DENOTES DITCH FILL

DENOTES EXISTING DRAINAGE DITCH

NOTES

1 REFER TO PLAN & PROFILE SHEETS FOR FLOWLINES

2 GRADING TOWARDS NEAREST INLETS SHALL NOT EXCEED 1' OF DROP

EXISTING & PROPOSED TYPICAL SECTION

FM 1925 TO 2000' NORTH OF FM 1925

STA. 65+20.00 TO STA. 85+20.00

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 Interstate Highway 2
Mission, Texas 78572
(956) 424-7898
TBPE F-1640

B2Z ENGINEERING
TBPE FIRM NO. F-11187

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED PROFESSIONAL ENGINEER

NORTH MAIN DRAIN III
PHASE I

EXISTING & PROPOSED
TYPICAL SECTION

DN:	N.T.S.	SHEET 3 OF 3	
CK DN:			
DW:		PROJECT	SHEET NO.
CK DW:		NORTH MAIN DRAIN III	10
TR:			
CK TR:			

K:\Precinct 4\North Main Drain III\MMD•PH1\REF\NMD•TYP.dgn

5/5/2023

SUMMARY OF QUANTITIES

SUMMARY OF QUANTITIES																	
	1555	2360	2221	2221	2221	2221	2221	2221	2221	2972	2972	2315	2315	2490	2510	3310	3310
LOCATION	Barricades, Sign, and Traffic Handling	Erosion Control	Remove 18" (Pipe)	Remove 24" (Pipe)	Remove (Inlet)	Remove Tree	Remove & Reinstall MBGF	Remove Steel Gate	Tie In To Existing 15" Pipes	Install MBGF	Install Steel Gate	Excavation Drain	Fill Drain	Trench Protection	Type "M" Manhole W/Grate Inlet	Nyloplast Structure (Complete) Polypropylene (HPP) Corrugated Wall Pipe	Concrete Rip Rap PSI 3600
	LS	LS	LF	LF	EA	EA	LF	EA	LS	LF	EA	CY	LS	LF	EA	LS	CY
SHEET 1 of 15	1	1					67	1			1	185,053					
SHEET 2 of 15				50	1											1	4
SHEET 3 of 15																	49
SHEET 5 of 15																	17
SHEET 6 of 15							63										
SHEET 10 of 15																	22
SHEET 12 of 15						19						12,618	923				
SHEET 13 of 15			58		1	18			1	147		16,970	1,899	176	1	2	4
SHEET 14 of 15						16						17,069	1,208				
SHEET 15 of 15												9,157	416				
TOTALS	1	1	58	50	2	53	130	1	1	147	1	240,867	4,446	176	1	3	96

HIDALGO COUNTY DRAINAGE DISTRICT No.1 — HCDD1

HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 Interstate Highway 2
Mission, Texas 78572
(956) 424-7898
TEDSI
TBPE F-1640

B2Z ENGINEERING
TBPE FIRM NO. F-11187

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED PROFESSIONAL ENGINEER

6/1/2023

NORTH MAIN DRAIN III
PHASE I

SUMMARY OF ESTIMATED QUANTITIES

DN:	
CK DN:	
DW:	N.T.S.
CK DW:	PROJECT: NORTH MAIN DRAIN III
TR:	SHEET NO. 11
CK TR:	

K:\Precinct 4\North Main Drain III\NMD4PH1\REF\01 GENERAL\05-E&O\NMD4E&O.dgn

6/1/2023

EARTHWORK SUMMARY		
STATION	AREA	CUT
	SF	CY
12+00 TO 13+00	558	2065
13+00 TO 14+00	573	2121
14+00 TO 15+00	611	2265
15+00 TO 16+00	638	2362
16+00 TO 17+00	663	2455
17+00 TO 18+00	681	2522
18+00 TO 19+00	635	2352
19+00 TO 20+00	671	2485
20+00 TO 21+00	684	2533
21+00 TO 22+00	680	2518
22+00 TO 23+00	676	2504
23+00 TO 24+00	790	2924
26+00 TO 27+00	657	2434
27+00 TO 28+00	809	2996
28+00 TO 29+00	1082	4008
29+00 TO 30+00	1265	4686
30+00 TO 31+00	1447	5360
38+00 TO 39+00	867	3211
39+00 TO 40+00	1494	5535
40+00 TO 41+00	1596	5913
41+00 TO 42+00	1729	6404
42+00 TO 43+00	1619	5995
43+00 TO 44+00	1578	5843
44+00 TO 45+00	1566	5799
45+00 TO 46+00	1529	5664
46+00 TO 47+00	1487	5507
47+00 TO 48+00	1346	4984
48+00 TO 49+00	1226	4539
49+00 TO 50+00	1043	3863
50+00 TO 51+00	1047	3879
51+00 TO 52+00	1181	4375
52+00 TO 53+00	1758	6510
53+00 TO 54+00	1712	6340
54+00 TO 55+00	1638	6068
55+00 TO 56+00	1536	5690
56+00 TO 57+00	1478	5473
57+00 TO 58+00	1432	5302
58+00 TO 59+00	1409	5217
59+00 TO 60+00	1411	5224
60+00 TO 61+00	1426	5283
61+00 TO 62+00	1438	5326
62+00 TO 63+00	1467	5432
63+00 TO 63+60	1478	3285
TOTAL:		185,250

STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER

PONCIANO N. LONGORIA — 6/1/2023 DATE

HIDALGO COUNTY DRAINAGE DISTRICT No. 1

HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
Houston ♦ Mission ♦ San Antonio

NORTH MAIN DRAIN III - PHASE I
EARTHWORK SUMMARY

SHEET 1 OF 2

FED.RD. DIV.NO.	PROJECT NO.		SHEET NO.
6			12
STATE	DIST.	COUNTY	
TEXAS	PHR	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.

DATE: 6/1/2023 9:00:48 AM
FILE: pw:\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\2022\2022-2135-01 - North Main Drain III Phase I\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\General\NORTH MAIN DRAIN-earthwork.dgn

End Area Volume Report															
Report Created: 2/16/2023															
Time: 3:22pm															
Cross Section Set Name:	NMD														
Alignment Name:	NMD														
Input Grid Factor:	1	Note:	All units in this report are in feet, square feet and cubic feet unless specified otherwise.												
Baseline	---------- Station Quantities ----------								---------- Added Quantities ----------						
Station	---------- Cut ----------				---------- Fill ----------				-------- Cut --------			-------- Fill --------			Mass
	Factor	Area	Volume	Adjusted	Factor	Area	Volume	Adjusted	Factor	Volume	Adjusted	Factor	Volume	Adjusted	Ordinate
6+520.0000 R1	1	0	0	0	1	74	0	0							0
6+600.0000 R1	1	661	26461.4	26461.4	1	40	4546.6	4546.6							21914.8
6+700.0000 R1	1	685	67344.3	67344.3	1	52	4589	4589							84670
6+800.0000 R1	1	768	72683.5	72683.5	1	49	5048.3	5048.3							152305.2
6+900.0000 R1	1	918	84289.7	84289.7	1	53	5078.1	5078.1							231516.8
7+000.0000 R1	1	881	89900.9	89900.9	1	60	5659.7	5659.7							315758
7+100.0000 R1	1	846	86322	86322	1	69	6468.2	6468.2							395611.8
7+200.0000 R1	1	814	83012.6	83012.6	1	80	7429.8	7429.8							471194.6
7+300.0000 R1	1	802	80801.3	80801.3	1	42	6075.4	6075.4							545920.4
7+400.0000 R1	1	697	74927.4	74927.4	1	96	6885.5	6885.5							613962.3
7+500.0000 R1	1	652	67435	67435	1	147	12127.2	12127.2							669270
7+600.0000 R1	1	662	65679.7	65679.7	1	99	12284.8	12284.8							722664.9
7+700.0000 R1	1	703	68246.9	68246.9	1	65	8180.5	8180.5							782731.2
7+800.0000 R1	1	765	73422.7	73422.7	1	35	5007.8	5007.8							851146.1
7+900.0000 R1	1	841	80322.2	80322.2	1	34	3479	3479							927989.3
8+000.0000 R1	1	817	82927.6	82927.6	1	34	3426.8	3426.8							1007490
8+100.0000 R1	1	774	79582.6	79582.6	1	75	5491.7	5491.7							1081581
8+200.0000 R1	1	753	76365.3	76365.3	1	65	7020.3	7020.3							1150926
8+300.0000 R1	1	738	74553.3	74553.3	1	54	5948.2	5948.2							1219531
8+400.0000 R1	1	788	76291.3	76291.3	1	14	3415.7	3415.7							1292407
8+500.0000 R1	1	814	80065.9	80065.9	1	16	1537.2	1537.2							1370935
8+520.0000 R1	1	818	16320	16320	1	17	335.4	335.4							1386920
Grand Total:			1506956	1506956			120035.5	120035.5							

K:\Precinct 4\North Main Drain III\NMD+PH1\REF\01 GENERAL\EW+QTYS.dgn

5/5/2023

HIDALGO COUNTY DRAINAGE DISTRICT No.1 — HCDD1

HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 Interstate Highway 2
Mission, Texas 78572
(956) 424-7898
TEDSI TBPE F-1640

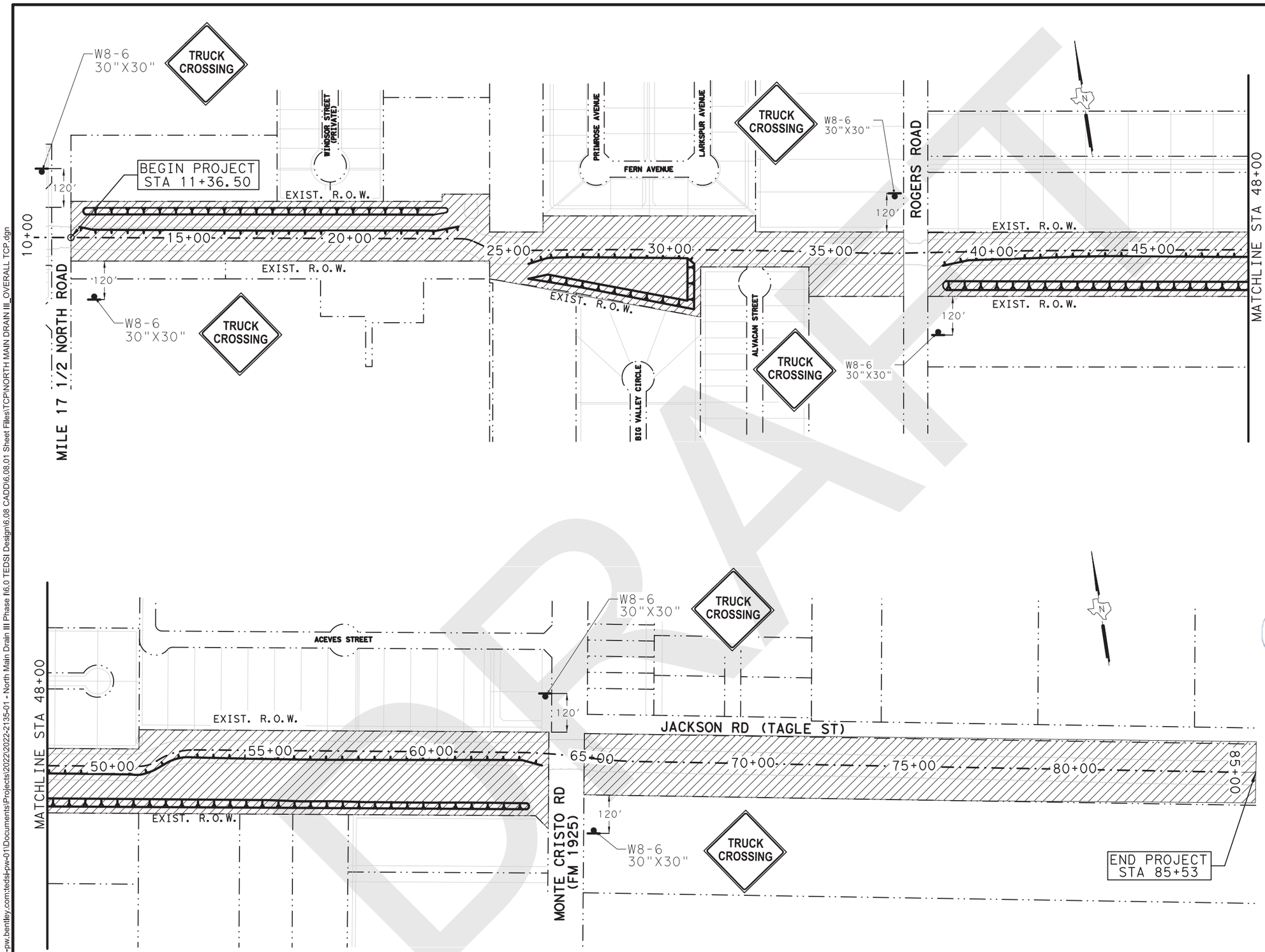
B2Z ENGINEERING
TBPE FIRM NO. F-11187

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED PROFESSIONAL ENGINEER

NORTH MAIN DRAIN III
PHASE I

EARTHWORK QUANTITIES

DN:		
CK DN:	N.T.S.	SHEET 2 OF 2
DW:	PROJECT	SHEET NO.
CK DW:	NORTH MAIN DRAIN III	13
TR:		
CK TR:		



PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

6/1/2023
PONCIANO N. LONGORIA — DATE

HIDALGO COUNTY DRAINAGE DISTRICT No. 1
HIDALGO COUNTY PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
HOUSTON • MISSION • SAN ANTONIO

NORTH MAIN DRAIN III - PHASE I
TRAFFIC CONTROL PLAN

SCALE 1" = 300'

SHEET 1 OF 1

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		14

STATE	DIST.	COUNTY
TEXAS	PHR	HIDALGO

CONT.	SECT.	JOB	HIGHWAY NO.

DATE: 6/1/2023 9:00:56 AM
FILE: pw:\\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\2022\2022-2135-01 - North Main Drain III Phase II\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\TCP\NORTH MAIN DRAIN III_OVERALL TCP.dgn

DATE:
FILE:

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. Where highway construction or maintenance work is being undertaken, other than mobile operations as defined by the Texas Manual on Uniform Traffic Control Devices, CSJ limit signs are required. CSJ limit signs are shown on BC(2). The OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits. For mobile operations, CSJ limit signs are not required.

11. 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 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," or equivalent revisions, and 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.

2. Except in emergency situations, flagger stations shall be illuminated when flagging is used at night.

COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

1. Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources.

2. Work zone traffic control devices shall be compliant with the Manual for Assessing safety Hardware (MASH).

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 Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

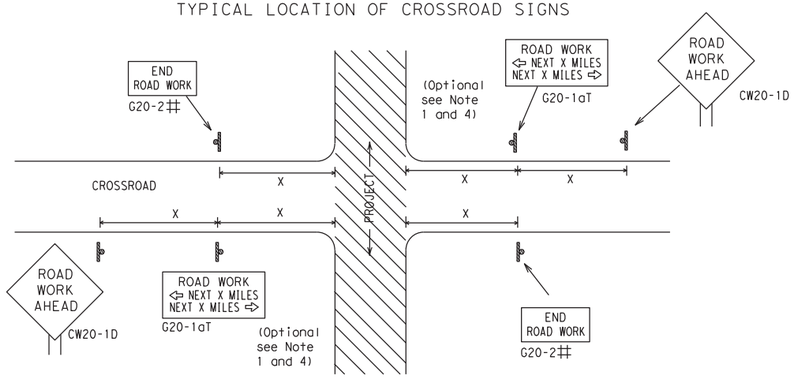
BC(1)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-03 7-13				
9-07 8-14	DIST	COUNTY		SHEET NO.
5-10 5-21	PHR	HIDALGO		15

95

DATE:
FILE:

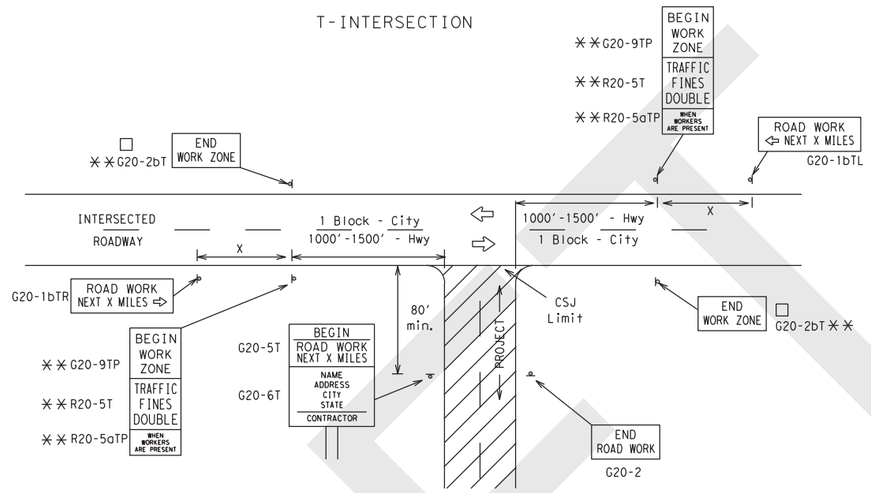
TYPICAL LOCATION OF CROSSROAD SIGNS



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 as per TMUTCD Part 5. 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"
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]

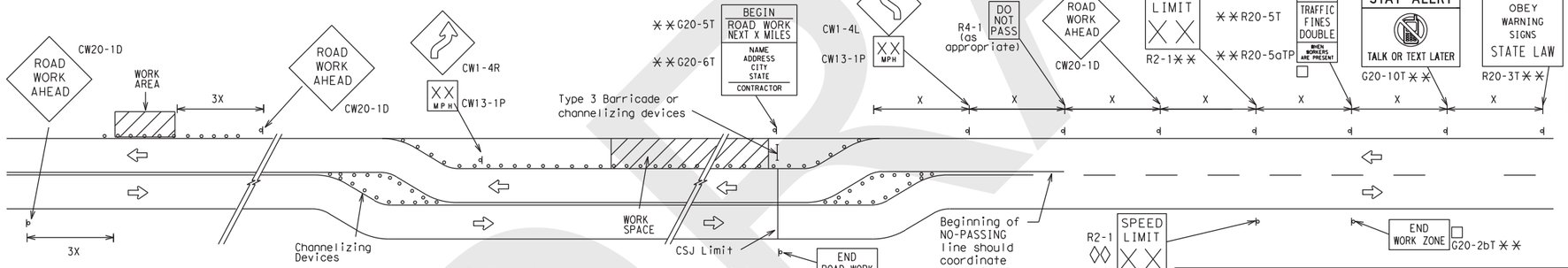
✳ For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

△ 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 as per TMUTCD Part 5. 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.

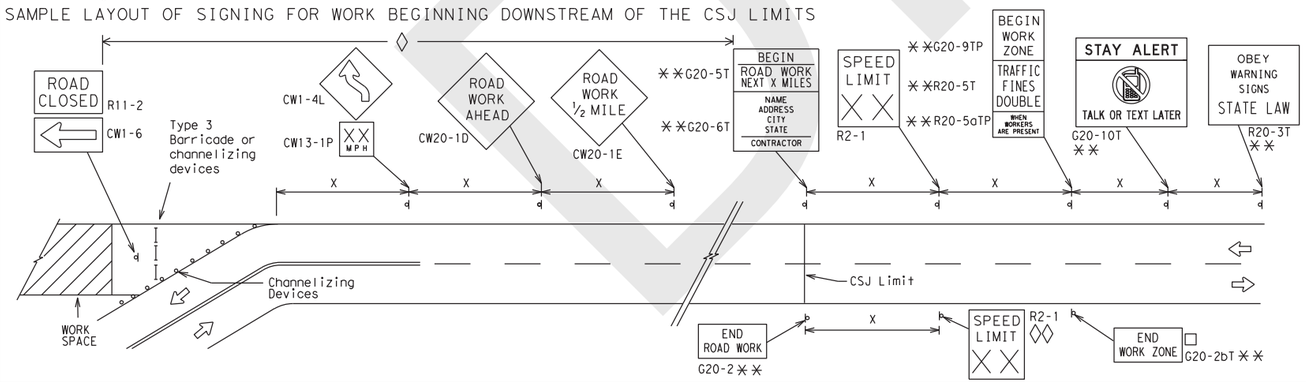
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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 AT THE CSJ LIMITS

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING DOWNSTREAM OF 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.

✳✳ CSJ limit signing is required for highway construction and maintenance work, with the exception of mobile operations.

◊ 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 Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

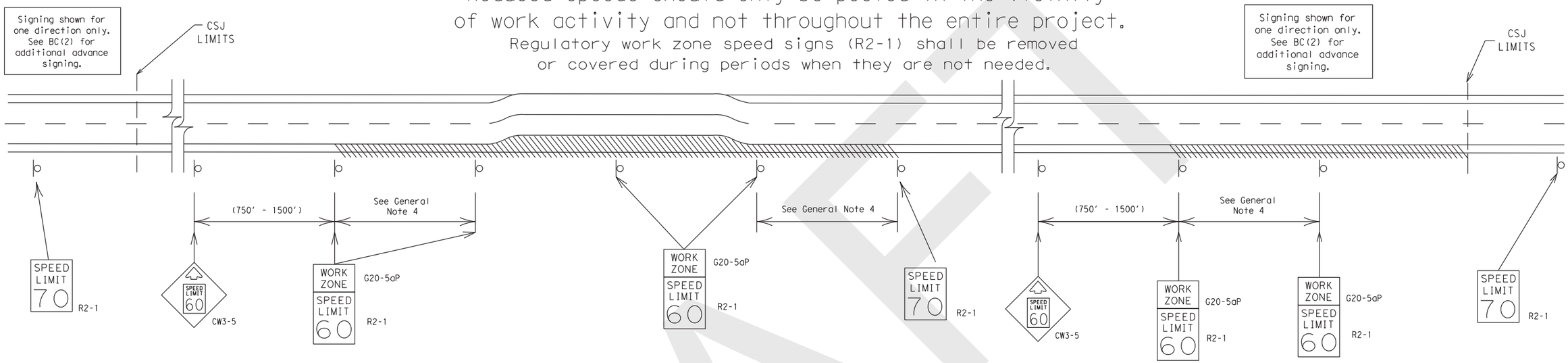
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	HIDALGO		16

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 traveled 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.

DATE:
FILE:

Texas Department of Transportation | Traffic Safety Division Standard

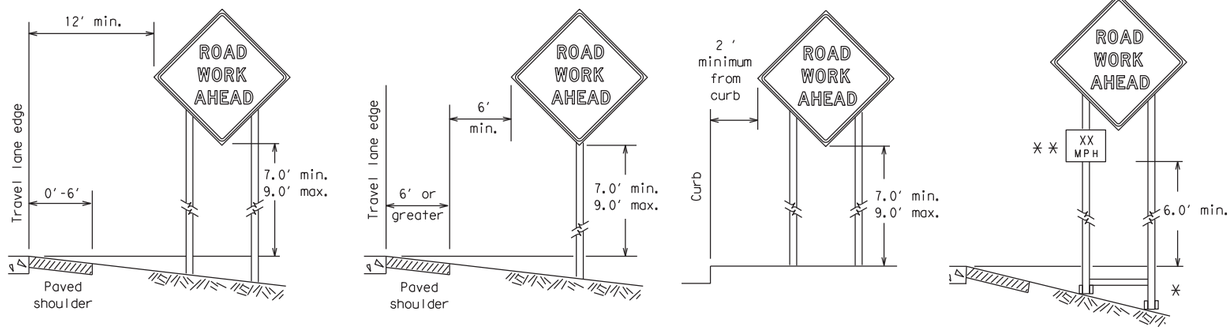
BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 9-07 8-14 7-13 5-21	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		17

DATE:
FILE:

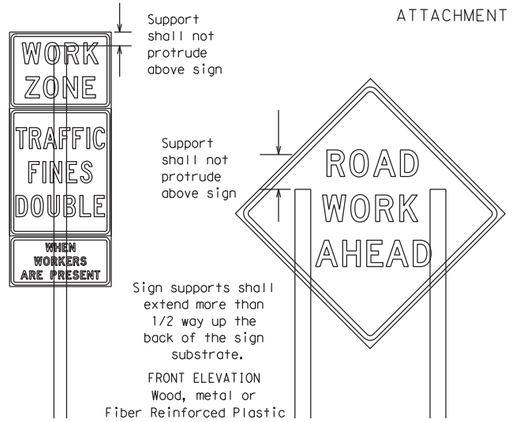
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

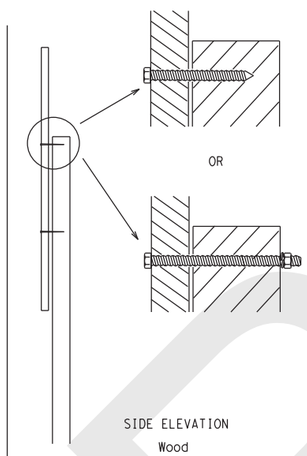


⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

⁎⁎ 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





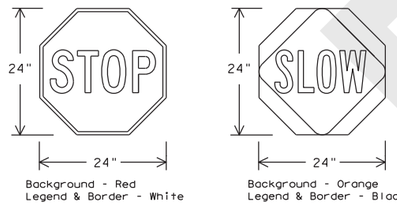
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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.

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.

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".
2. STOP/SLOW paddles shall be retroreflectorized when used at night.
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.



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

SHEETING REQUIREMENTS (WHEN USED AT NIGHT)		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	ORANGE	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDER	WHITE	TYPE B OR C SHEETING
LEGEND & BORDER	BLACK	ACRYLIC NON-REFLECTIVE FILM

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, specific service (LOGO), 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. For details for covering large guide signs see the TS-CD standard.
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 standard sheets, TLRS standard sheets or the CWZTCD list. The signs shall meet the required mounting heights shown on the BC, or the SMD standard sheets 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) for small roadside signs. Supports for temporary large roadside signs shall meet the requirements detailed on the Temporary Large Roadside Signs (TLRS) standard sheets. 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.

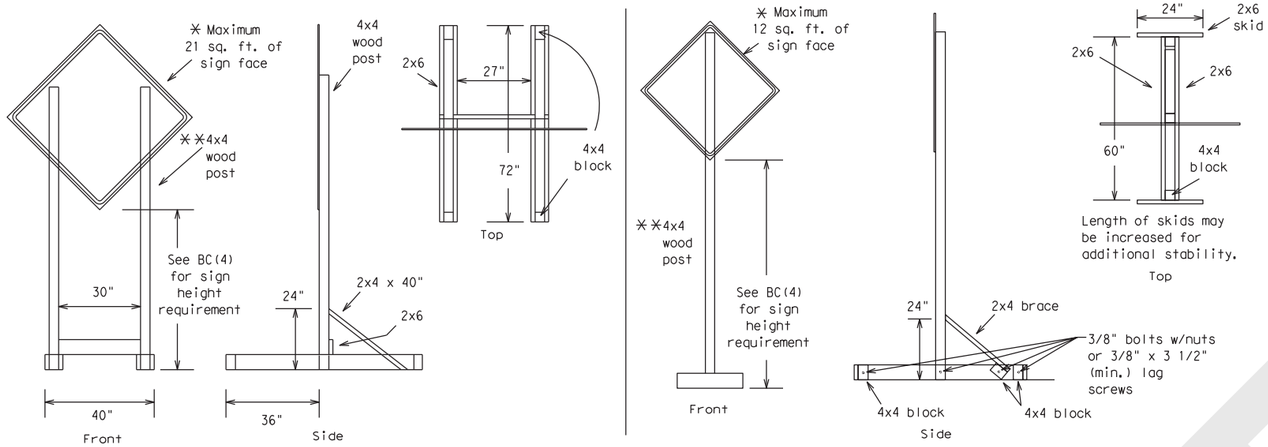
Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

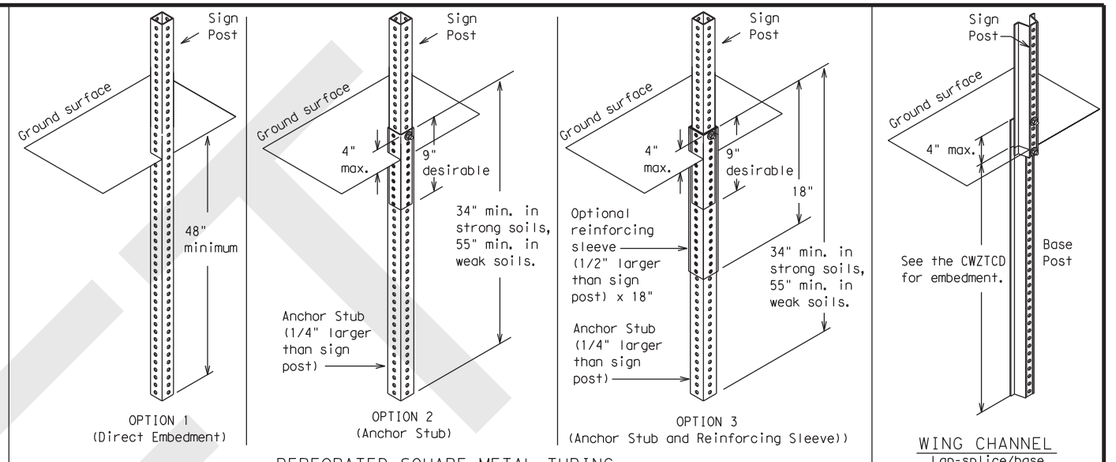
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	HIDALGO		18

DATE:
FILE:



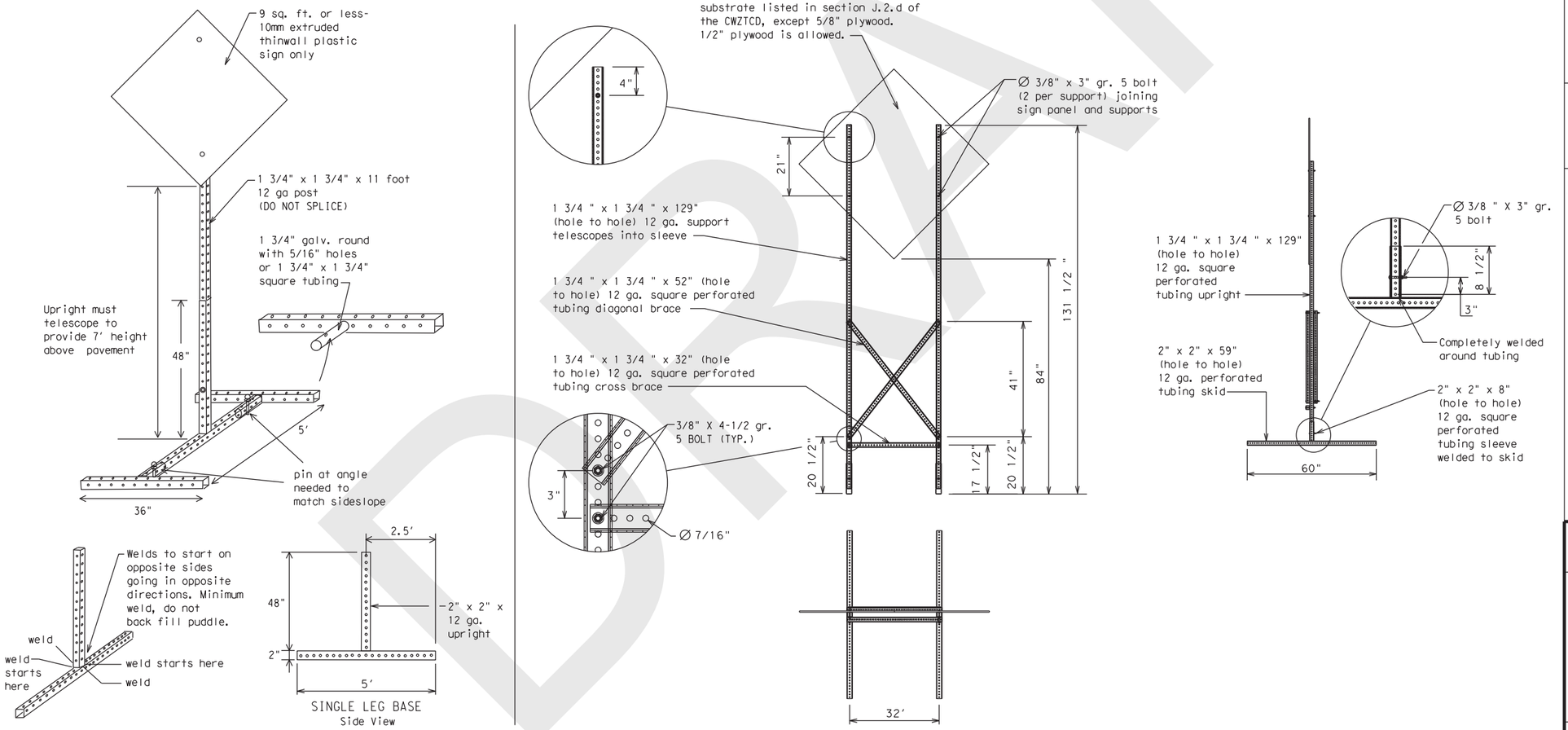
SKID MOUNTED WOOD SIGN SUPPORTS

* 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.



SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID 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 Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	HIDALGO		19

DATE:
FILE:

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		Other Condition List	
FREEWAY CLOSED X MILE	FRONTAGE ROAD CLOSED	ROADWORK XXX FT	ROAD REPAIRS XXXX FT
ROAD CLOSED AT SH XXX	SHOULDER CLOSED XXX FT	FLAGGER XXXX FT	LANE NARROWS XXXX FT
ROAD CLSD AT FM XXXX	RIGHT LN CLOSED XXX FT	RIGHT LN NARROWS XXXX FT	TWO-WAY TRAFFIC XX MILE
RIGHT X LANES CLOSED	RIGHT X LANES OPEN	MERGING TRAFFIC XXXX FT	CONST TRAFFIC XXX FT
CENTER LANE CLOSED	DAYTIME LANE CLOSURES	LOOSE GRAVEL XXXX FT	UNEVEN LANES XXXX FT
NIGHT LANE CLOSURES	I-XX SOUTH EXIT CLOSED	DETOUR X MILE	ROUGH ROAD XXXX FT
VARIOUS LANES CLOSED	EXIT XXX CLOSED X MILE	ROADWORK PAST SH XXXX	ROADWORK NEXT FRI-SUN
EXIT CLOSED	RIGHT LN TO BE CLOSED	BUMP XXXX FT	US XXX EXIT X MILES
MALL DRIVEWAY CLOSED	X LANES CLOSED TUE - FRI	TRAFFIC SIGNAL XXXX FT	LANES SHIFT *
XXXXXXXX BLVD CLOSED			

* 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 Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

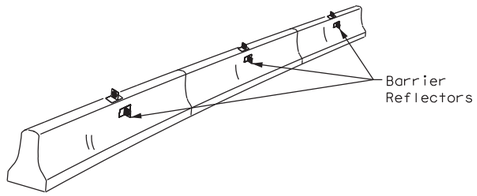
BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	HIDALGO		20

100

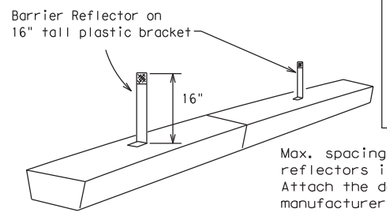
DATE:
FILE:

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.

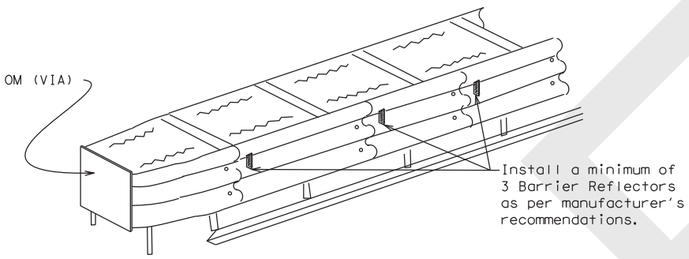


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

LOW PROFILE CONCRETE BARRIER (LPCB)

LOW PROFILE CONCRETE BARRIER (LPCB) USED IN WORK ZONES

LPCB is approved for use in work zone locations, where the posted speed is 45mph, or less. See Roadway Standard Sheet LPCB.



DELINEATION OF END TREATMENTS

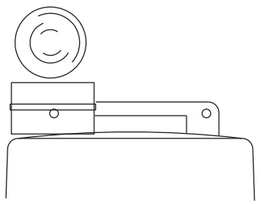
END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet the apppropriate crashworthy standards as defined in the Manual for Assessing Safety Hardware (MASH). Refer to the CWZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS

WARNING LIGHTS

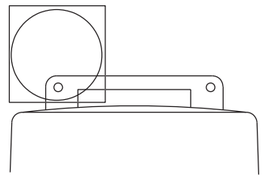
1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this 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.



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

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.



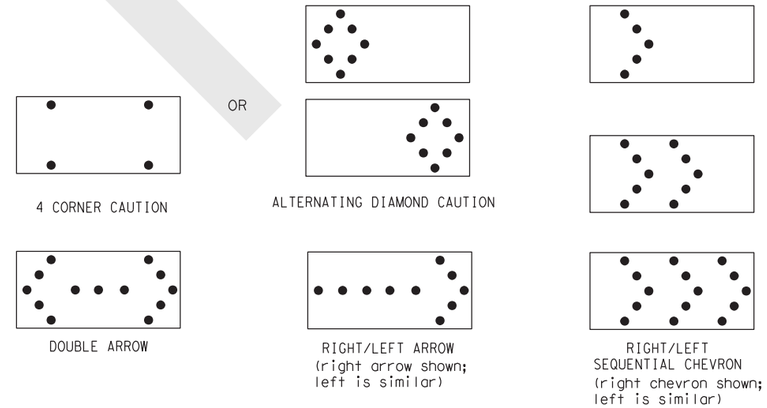
Warning reflector may be round or square.Must have a yellow reflective surface area of at least 30 square inches

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:



4 CORNER CAUTION

ALTERNATING DIAMOND CAUTION

DOUBLE ARROW

RIGHT/LEFT ARROW
(right arrow shown;
left is similar)

RIGHT/LEFT
SEQUENTIAL CHEVRON
(right chevron shown;
left is similar)

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 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 Safety Division Standard

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

BC(7)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	HIDALGO		21

101

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:

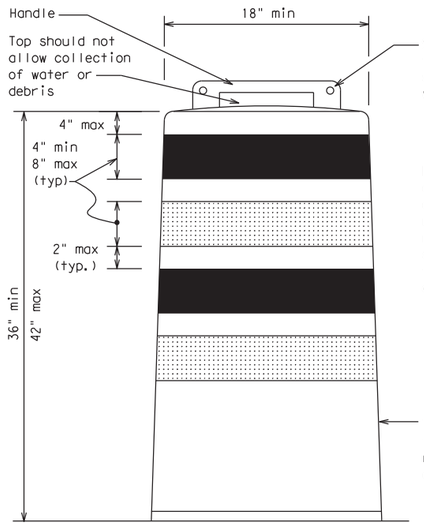
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents 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.

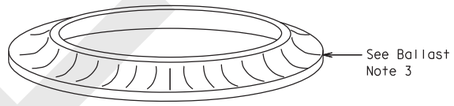
RETROREFLECTIVE SHEETING

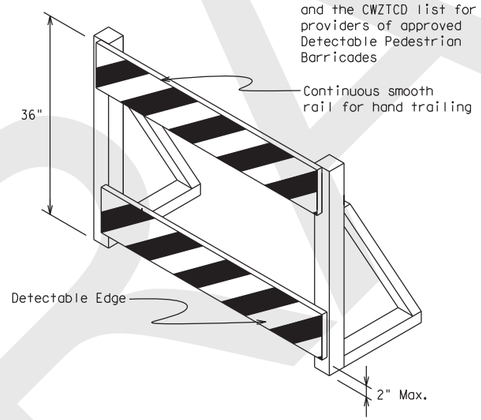
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall 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.

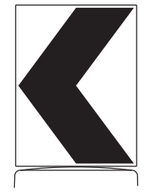




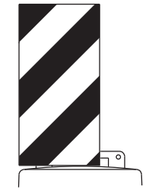


DETECTABLE PEDESTRIAN BARRICADES

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. Refer to WZ(BTS-2) for Pedestrian Control requirements for Sidewalk Diversions, Sidewalk Detours and Crosswalk Closures.
2. Where pedestrians with visual disabilities normally use the closed sidewalk, a Detectable Pedestrian Barricade shall be placed across the full width of the closed sidewalk instead of a Type 3 Barricade.
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 (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 should 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 or Type B. 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 Safety Division Standard

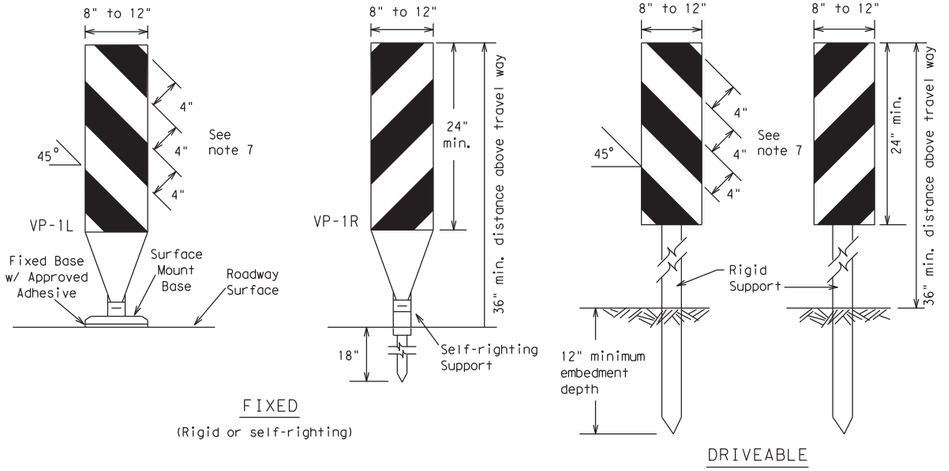
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	PHR	HIDALGO		22
7-13				

102

DATE:
FILE:



FIXED

(Rigid or self-righting)

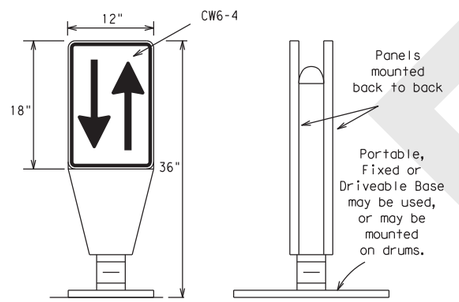
DRIVEABLE

(Rigid or self-righting)

PORTABLE

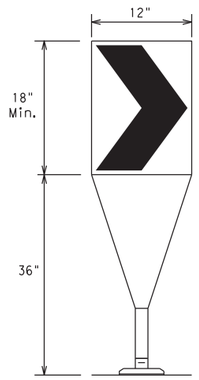
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual for additional requirements on the use 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 or Type B 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)



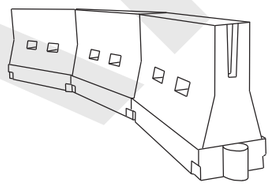
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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). Place reflective sheeting 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 Manual for Assessing Safety Hardware (MASH) 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 ✳✳			Suggested Maximum Spacing of Channelizing Devices	
		10′ Offset	11′ Offset	12′ Offset	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 Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

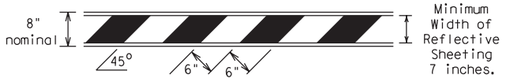
BC(9)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	PHR	HIDALGO		23

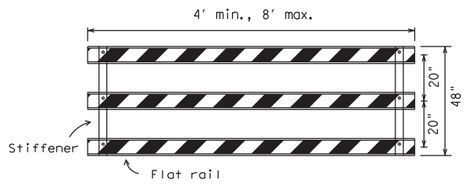
TYPE 3 BARRICADES

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 or Type B conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



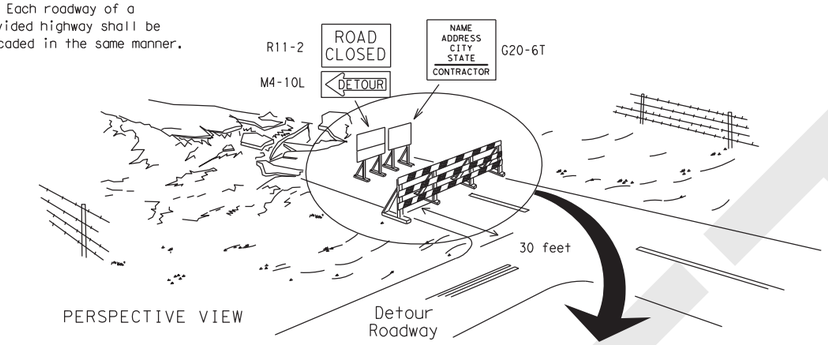
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

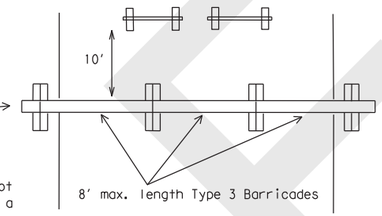
Each roadway of a divided highway shall be barricaded in the same manner.



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.

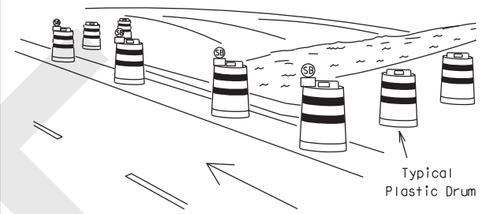
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

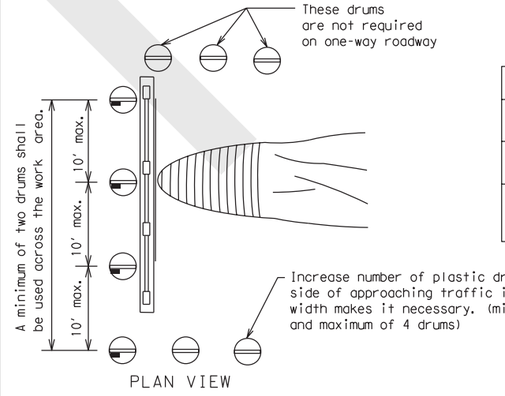
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

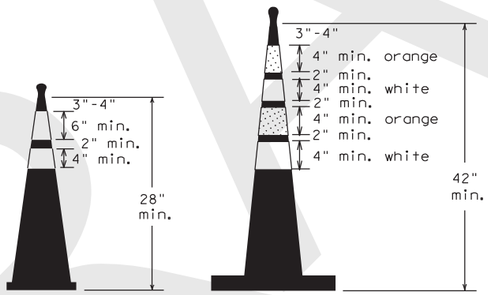
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder 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.



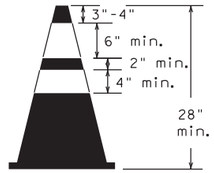
PLAN VIEW

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

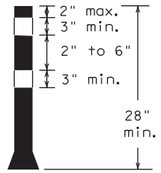
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

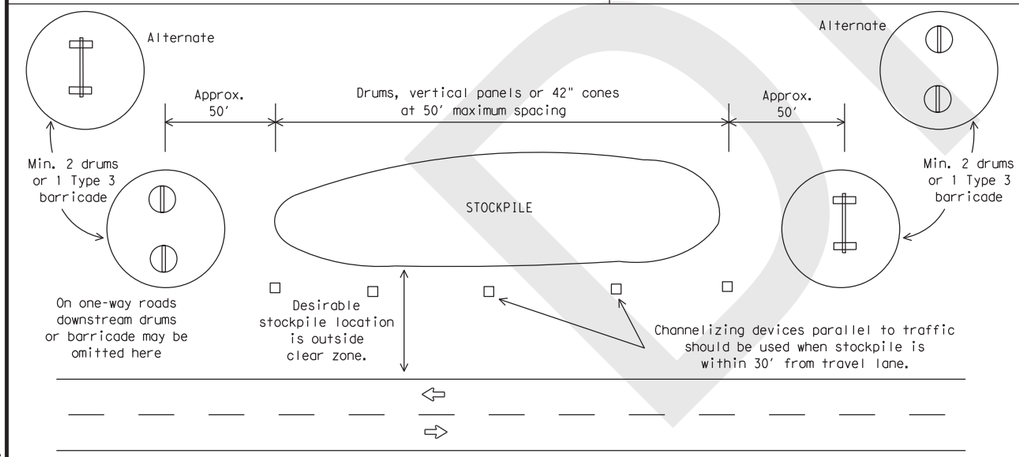


Tubular Marker

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 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 or Type B.
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

DATE:
FILE:

SHEET 10 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 9-07 8-14 7-13 5-21	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		24

104

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.

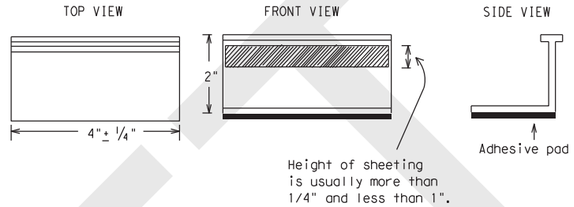
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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 Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

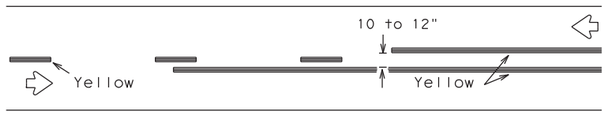
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-98 9-07 5-21				
1-02 7-13	DIST	COUNTY		SHEET NO.
11-02 8-14	PHR	HIDALGO		25

105

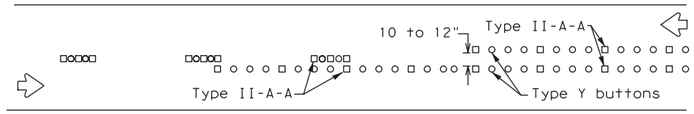
DATE:
FILE:

DATE:
FILE:

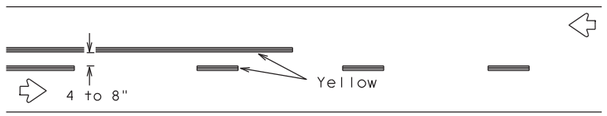
PAVEMENT MARKING PATTERNS



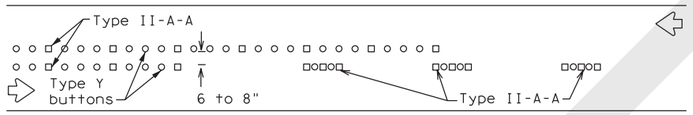
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



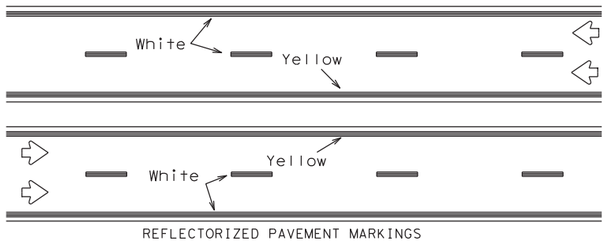
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



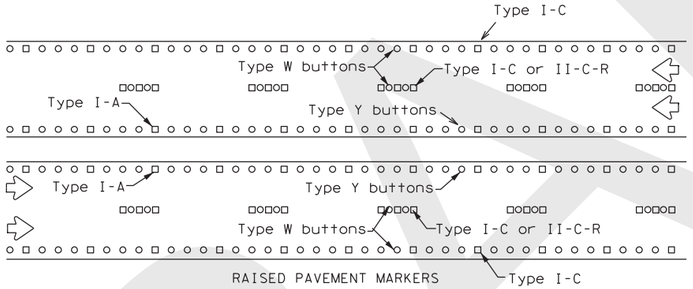
RAISED PAVEMENT MARKERS - PATTERN B

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



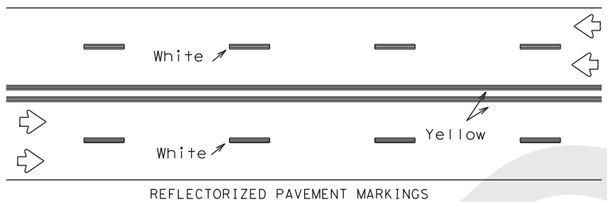
REFLECTORIZED PAVEMENT MARKINGS



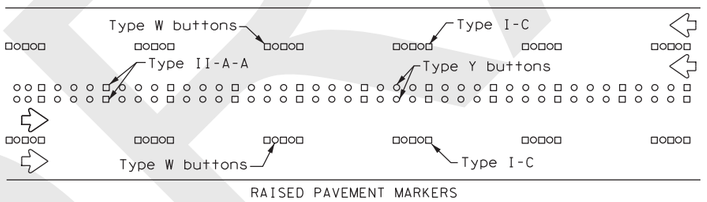
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



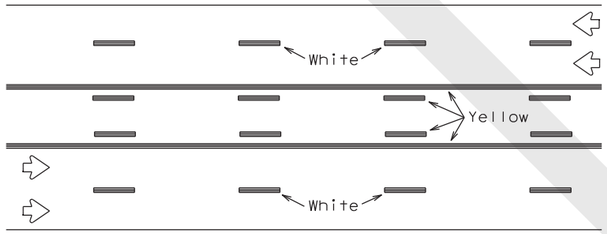
REFLECTORIZED PAVEMENT MARKINGS



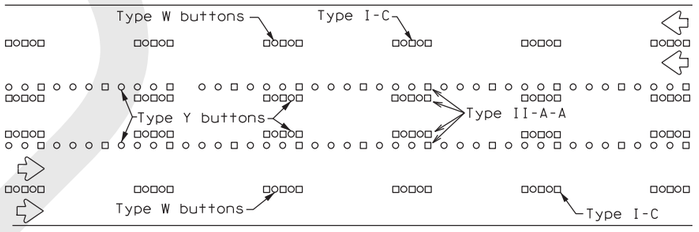
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

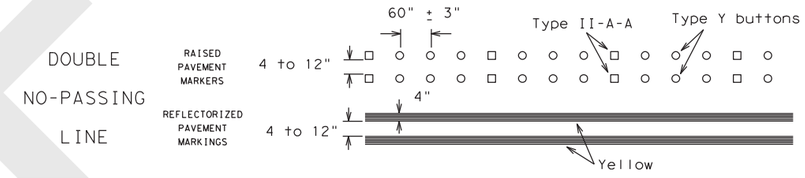
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

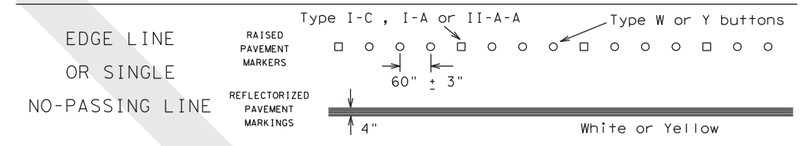
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

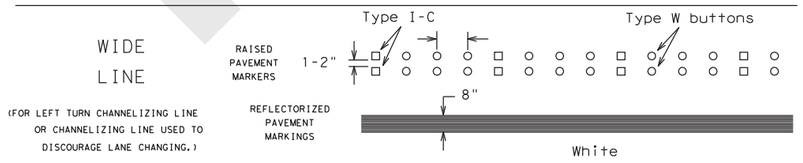


EDGE LINE OR SINGLE NO-PASSING LINE



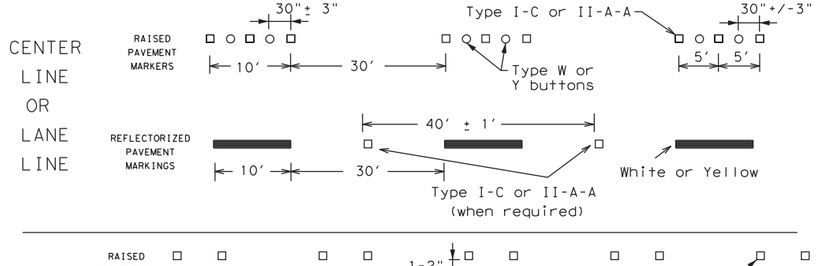
WIDE LINE

(FOR LEFT TURN CHANNELIZING LINE OR CHANNELIZING LINE USED TO DISCOURAGE LANE CHANGING.)

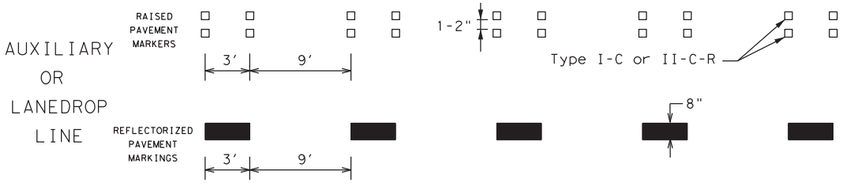


BROKEN LINES

CENTER LINE OR LANE LINE

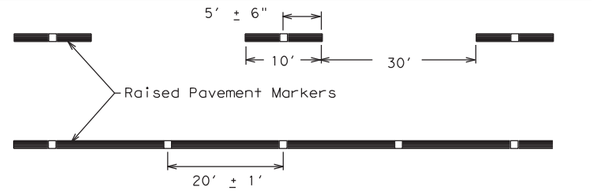


AUXILIARY OR LANEDROP LINE



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 Safety Division Standard

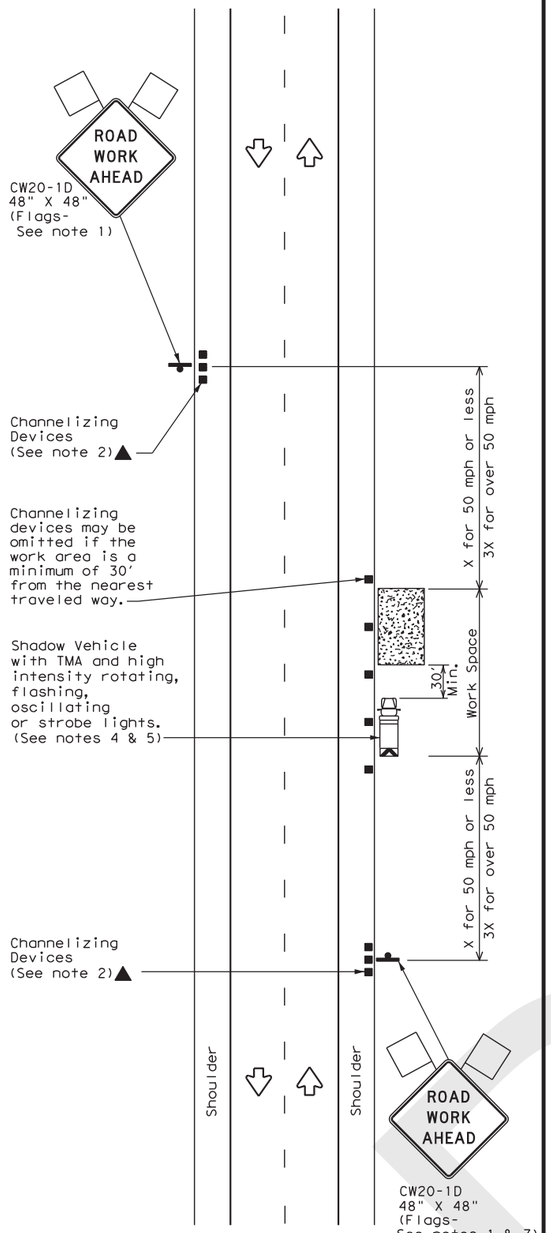
BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		26

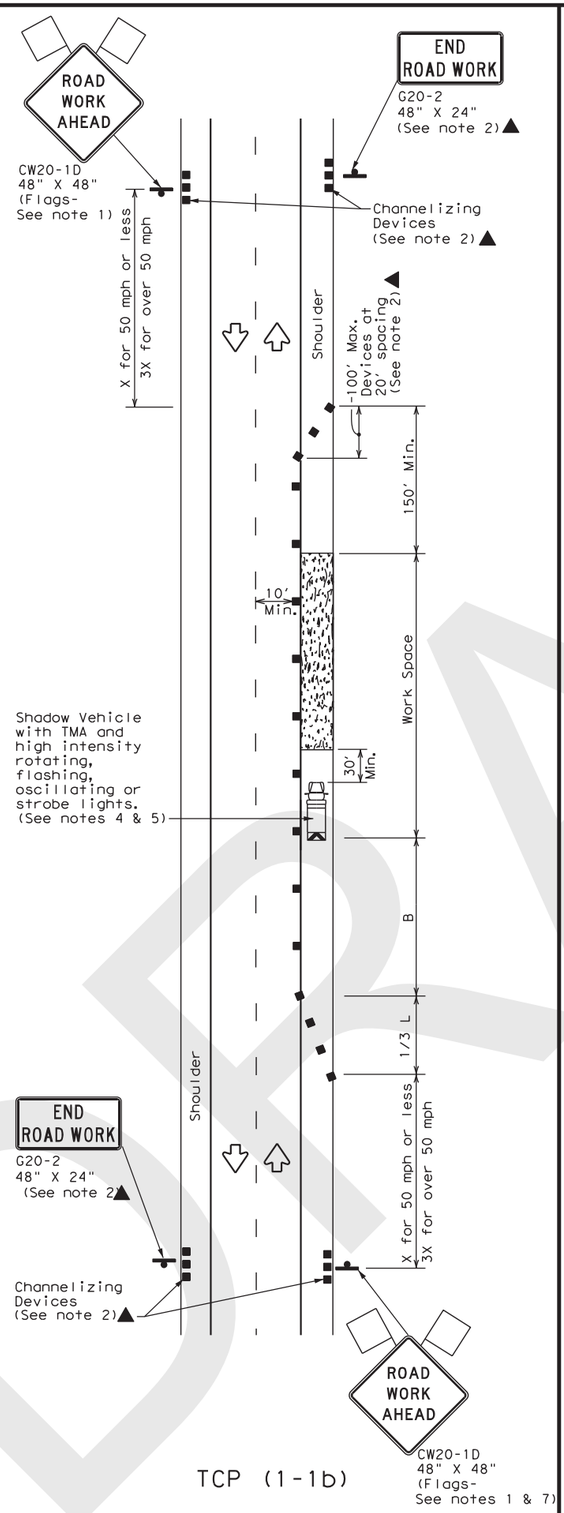
106

DATE:
FILE:



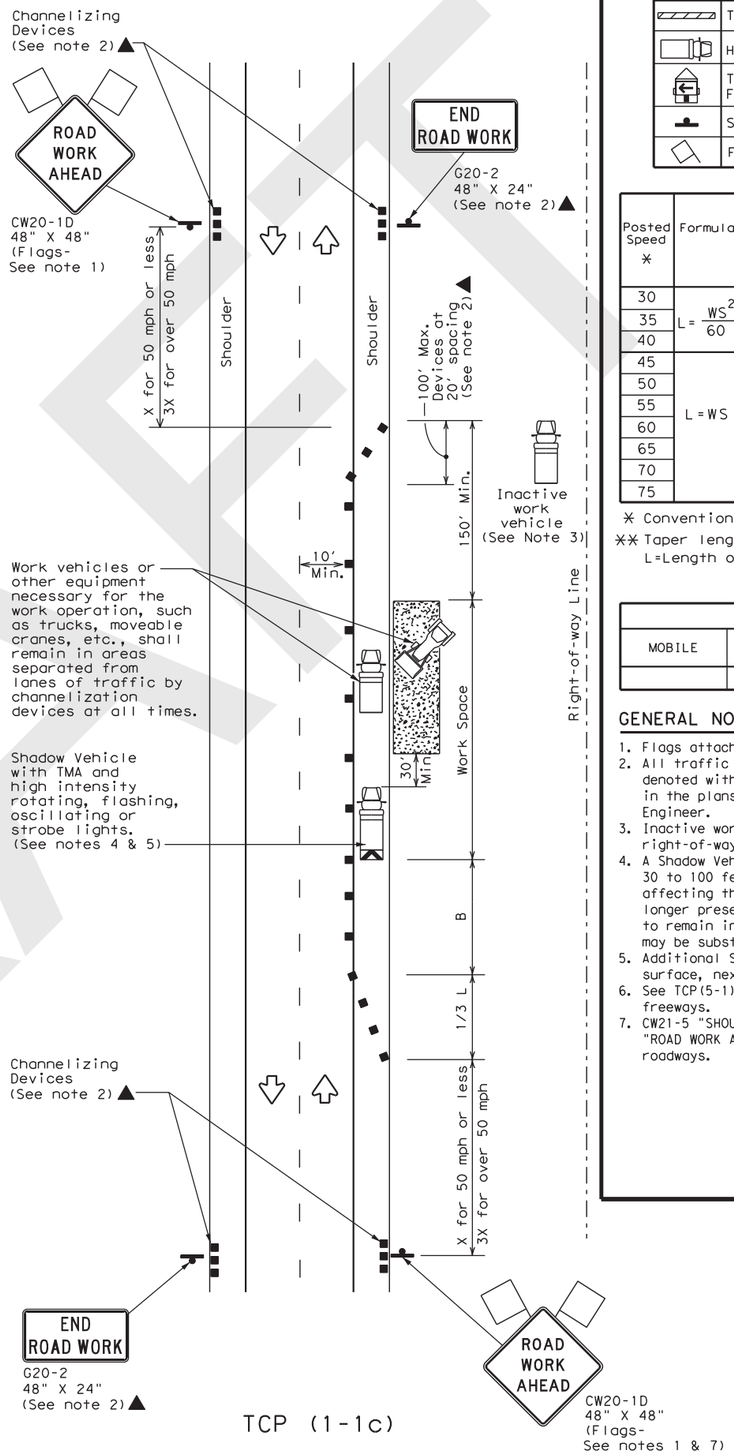
TCP (1-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (1-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (1-1c)

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 elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
4. 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 wider work spaces.
6. See TCP(5-1)for shoulder work on divided highways, expressways and freeways.
7. CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

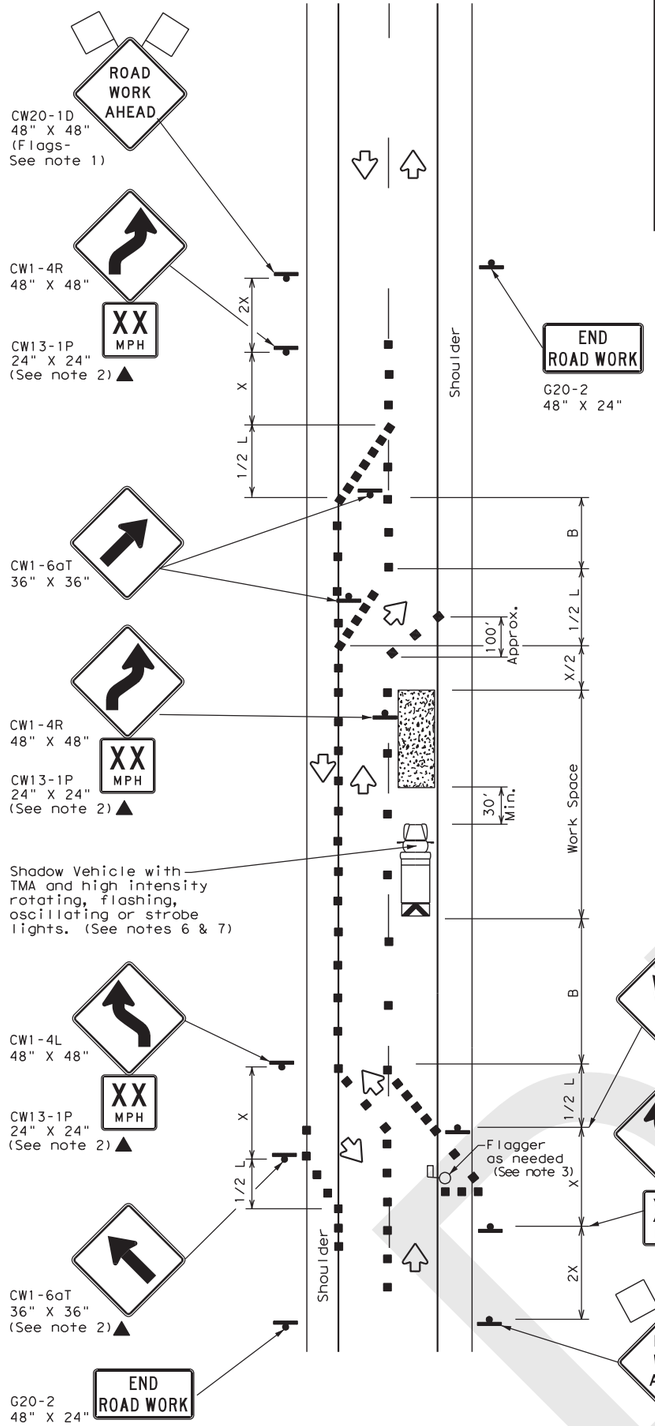
TCP(1-1)-18

FILE: tcp1-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 2-12 1-97 2-18	DIST	COUNTY		SHEET NO.
	PHR	HIDALGO		27

151

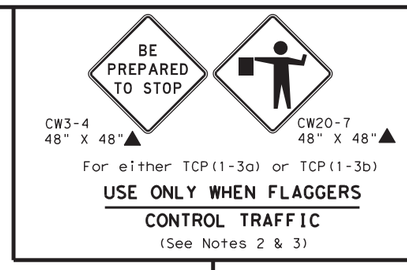
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

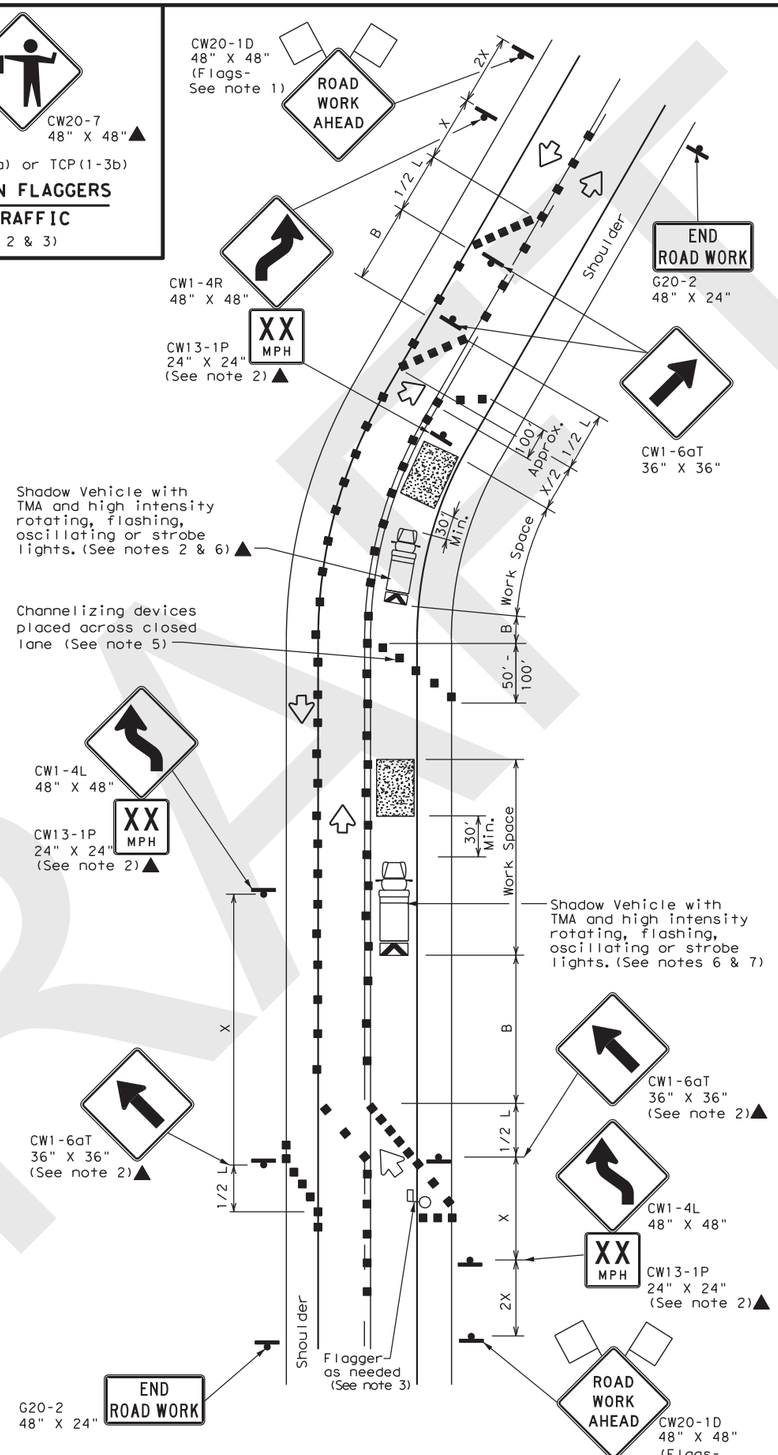
DATE:
FILE:



TCP (1-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW





TCP (1-3b)
2-LANE ROADWAY WITH PAVED SHOULDERS

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

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 elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Additional flaggers may be positioned in advance of traffic queues to alert traffic to reduce speed.
4. DO NOT PASS, PASS WITH CARE and construction regulatory speed zone signs may be installed downstream of the ROAD WORK AHEAD signs.
5. When the work zone is made up of several work spaces, channelizing devices should be placed laterally across the closed lane to re-emphasize closure. Laterally placed channelizing devices should be repeated every 500 to 1000 feet in urban areas and every 1/4 to 1/2 mile in rural areas.
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.
7. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
8. Where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20', or 15' if posted speed are 35 mph or slower, and for tangent sections, at 1/2S where S is the speed in mph. This tighter device spacing is intended for the area of conflicting markings not the entire work zone.

Texas Department of Transportation

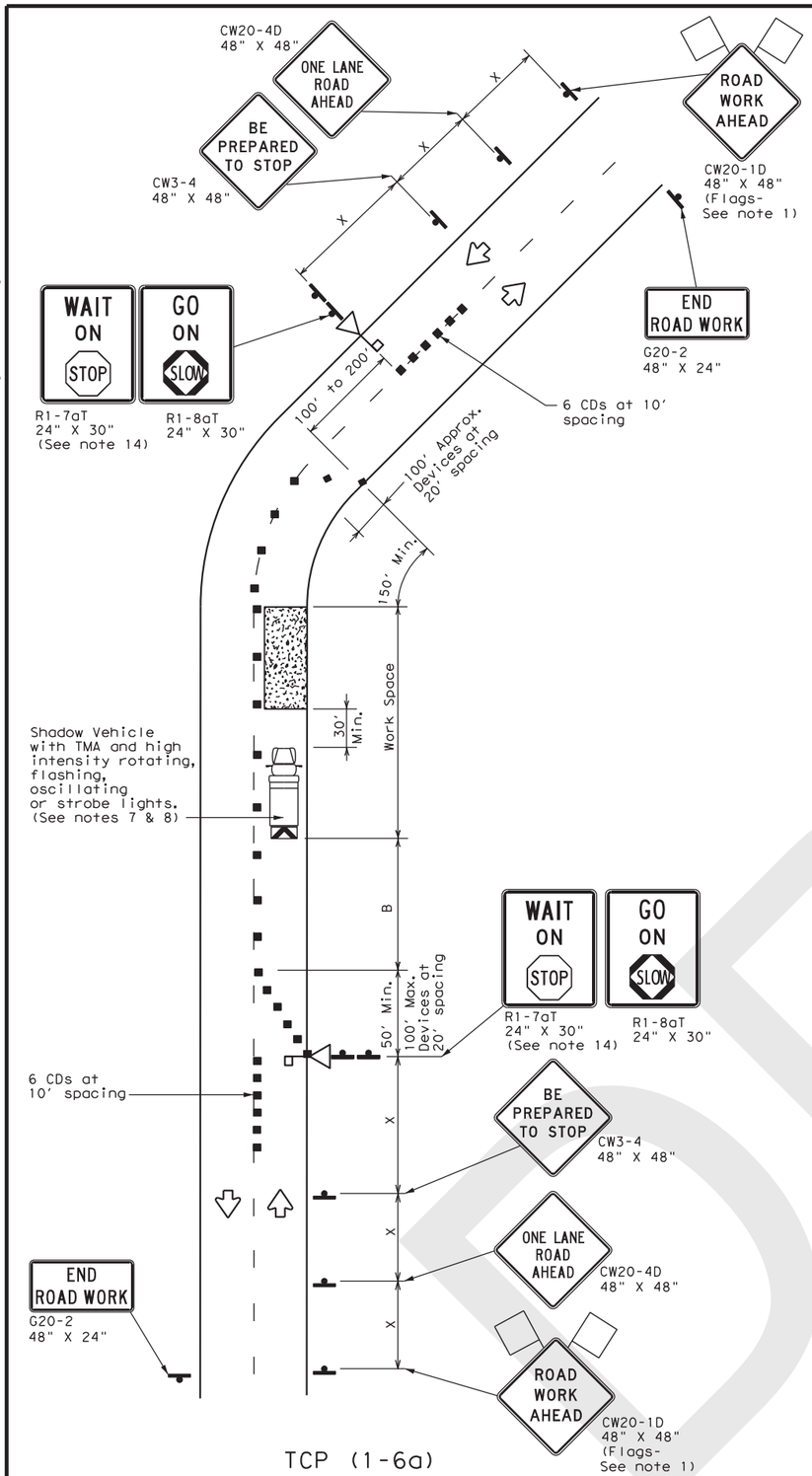
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
TRAFFIC SHIFTS ON TWO LANE ROADS

TCP(1-3)-18

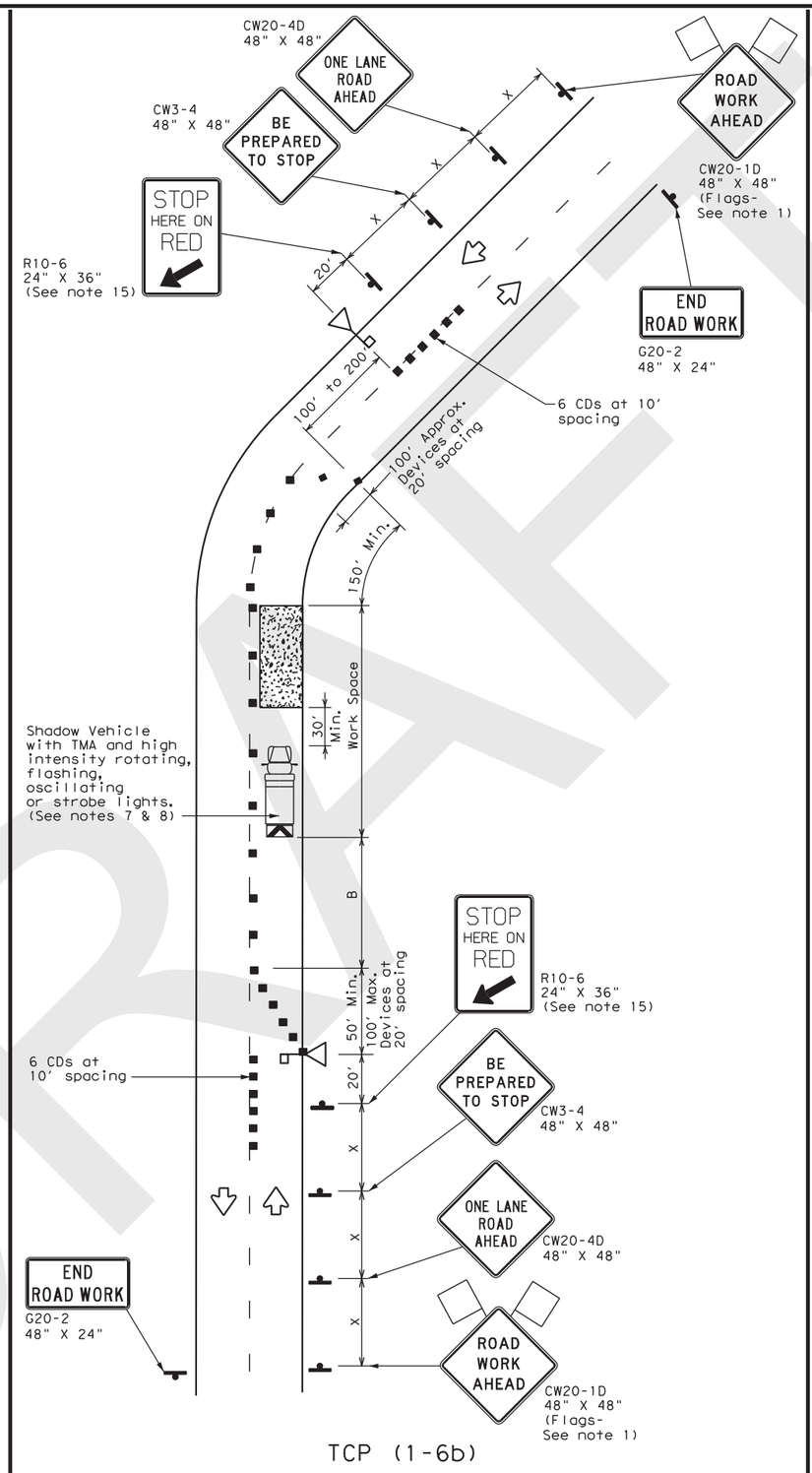
FILE: tcp1-3-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS				
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12				28
1-97 2-18				

DATE:
FILE:



TCP (1-6a)

ONE LANE TWO-WAY CONTROL WITH STOP/SLOW AFADs



TCP (1-6b)

ONE LANE TWO-WAY CONTROL WITH RED/YELLOW LENS AFADs

LEGEND			
	Type 3 Barricade		Channelizing Devices (CDs)
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Automated Flagger Assistance Device (AFAD)	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. AFADs shall only be used in situations where there is one lane of approaching traffic in the direction to be controlled.
3. Adequate stopping sight distance must be provided to each AFAD location for approaching traffic. (See table above).
4. Each AFAD shall be operated by a qualified/certified flagger. Flaggers operating AFADs shall not leave them unattended while they are in use.
5. One flagger may operate two AFADs only when the flagger has an unobstructed view of both AFADs and of the approaching traffic in both directions.
6. When pilot cars are used, a flagger controlling traffic shall be located on each approach. AFADs shall not be operated by the pilot car operator.
7. All AFADs shall be equipped with gate arms with an orange or fluorescent red-orange flag attached to the end of the gate arm. The flag shall be a minimum of 16" square.
8. 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.
9. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.
10. Flaggers should use two-way radios or other methods of communication to control traffic.
11. Length of work space should be based on the ability of flaggers to communicate.
12. 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 AFAD.
13. Channelizing devices on the center line may be omitted when a pilot car is leading traffic and approved by the Engineer.
14. The R1-7aT "WAIT ON STOP" sign and the R1-8aT "GO ON SLOW" sign shall be installed at the AFAD location on separate supports or they may be fabricated as one 48" x 30" sign. They shall not obscure the face of the STOP/SLOW AFAD.
15. The R10-6 "STOP HERE ON RED" arrow sign shall be offset so as not to obscure the lenses of the AFAD.

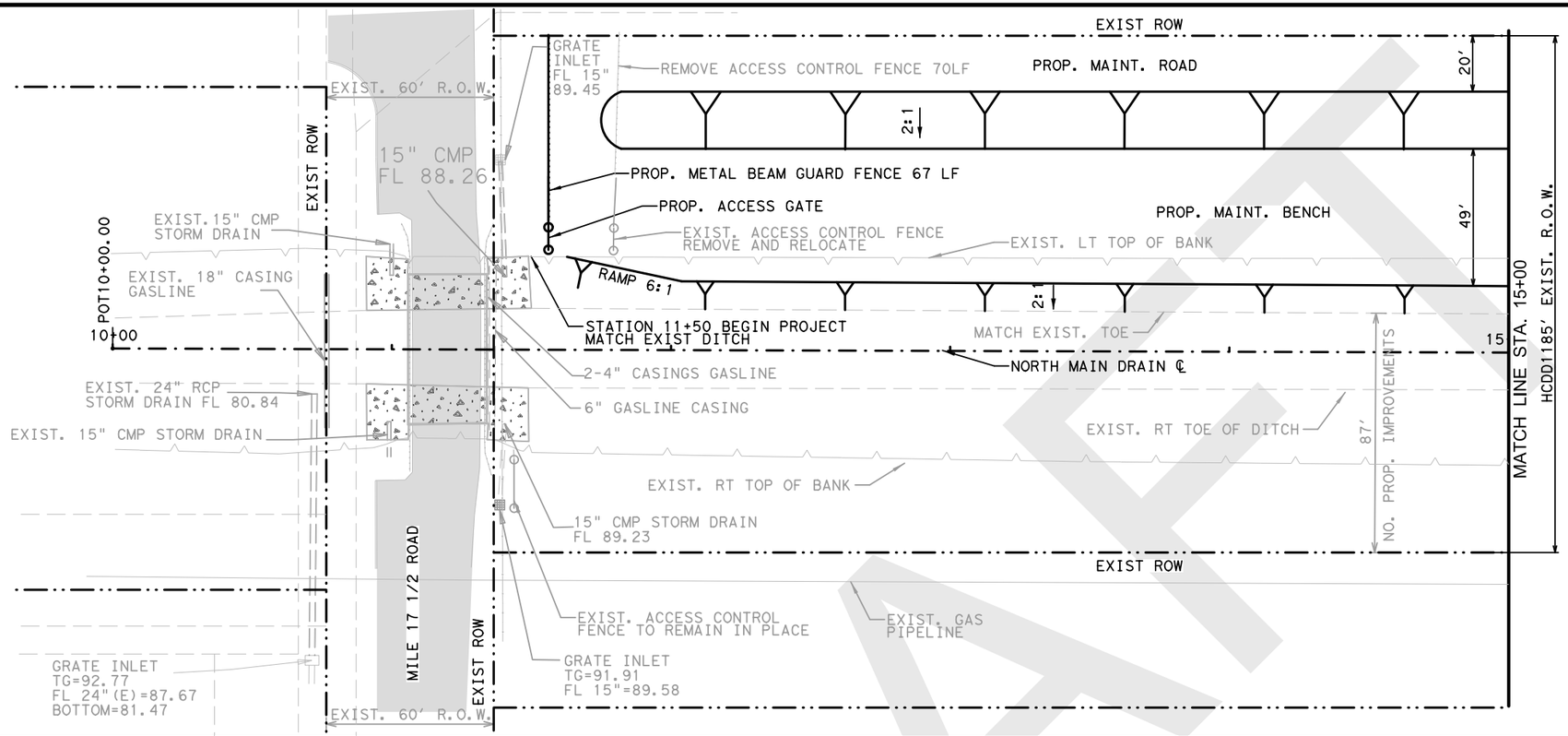
Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
AUTOMATED FLAGGER ASSISTANCE DEVICES (AFADS)

TCP(1-6)-18

FILE: tcp1-6-18.dgn	DN:	CK:	DW:	CK:
©TxDOT February 2012	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-18	DIST	COUNTY		SHEET NO. 29



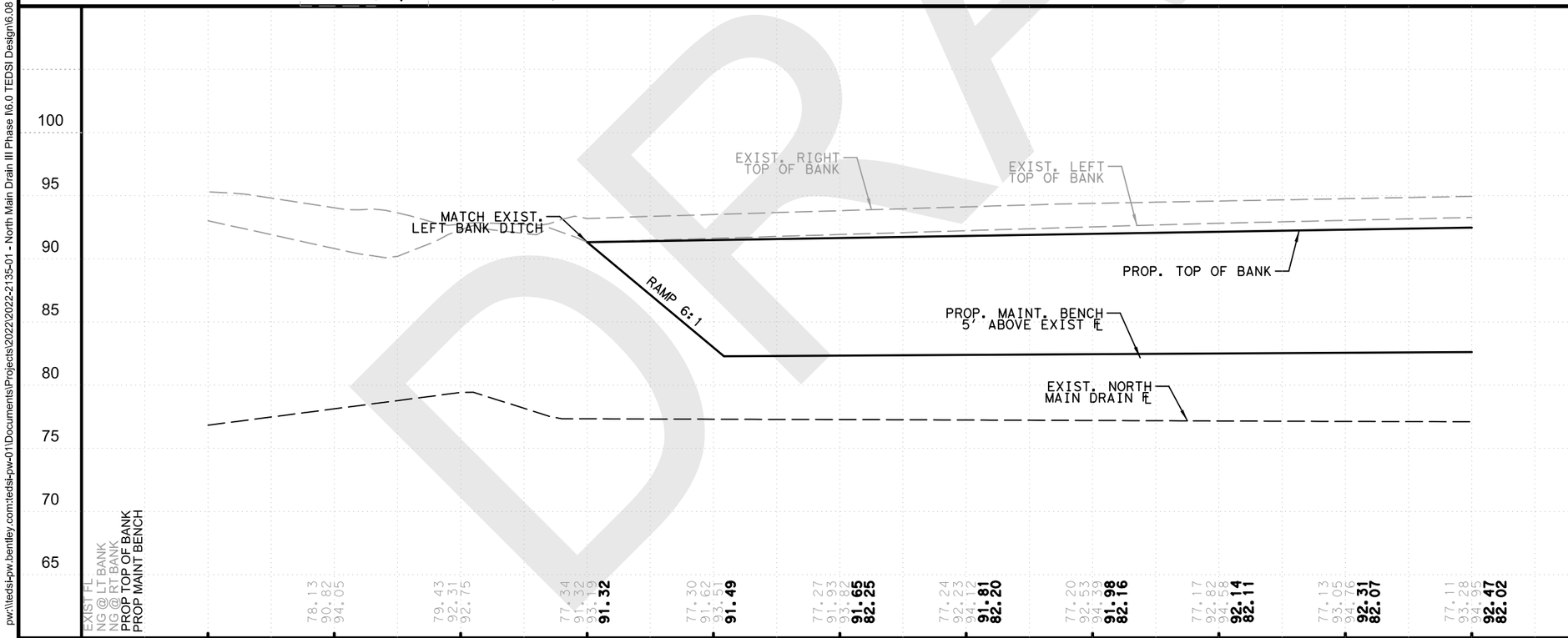
LEGEND

OHE — OVERHEAD ELECTRIC LINE

EXISTING ROW

0 10 20 30 40 50

SCALE 1" = 50'



STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER

PONCIANO N. LONGORIA — 6/8/2023 DATE

HIDALGO COUNTY DRAINAGE DISTRICT No. 1

HIDALGO COUNTY PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
HOUSTON • MISSION • SAN ANTONIO

NORTH MAIN DRAIN III - PHASE I

PLAN & PROFILE
STATION 10+00 - STATION 14+40

SCALE
HORZ. 1" = 50'
VERT. 1" = 5'

SHEET 1 OF 15

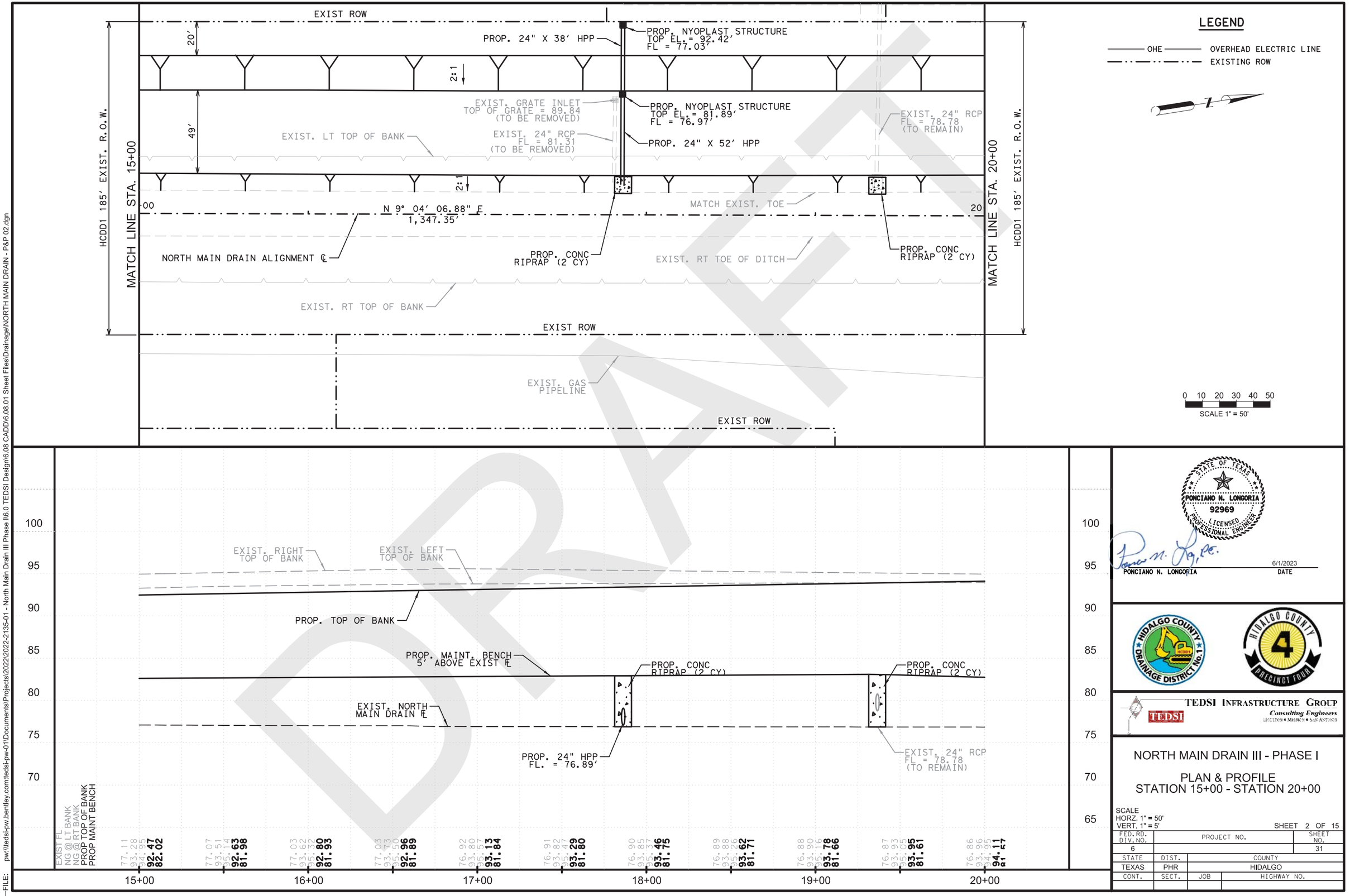
FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		30

STATE	DIST.	COUNTY
TEXAS	PHR	HIDALGO

CONT.	SECT.	JOB	HIGHWAY NO.

DRAFT

DATE: 6/8/2023 3:36:03 PM
FILE: pw:\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\2022\2022-2135-01 - North Main Drain III Phase II\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\Drainage\NORTH MAIN DRAIN - P&P 01.dgn



STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER

PONCIANO N. LONGORIA — 6/1/2023 DATE

HIDALGO COUNTY DRAINAGE DISTRICT No. 1

HIDALGO COUNTY PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
Houston • Mission • San Antonio

NORTH MAIN DRAIN III - PHASE I

PLAN & PROFILE
STATION 15+00 - STATION 20+00

SCALE
HORZ. 1" = 50'
VERT. 1" = 5'

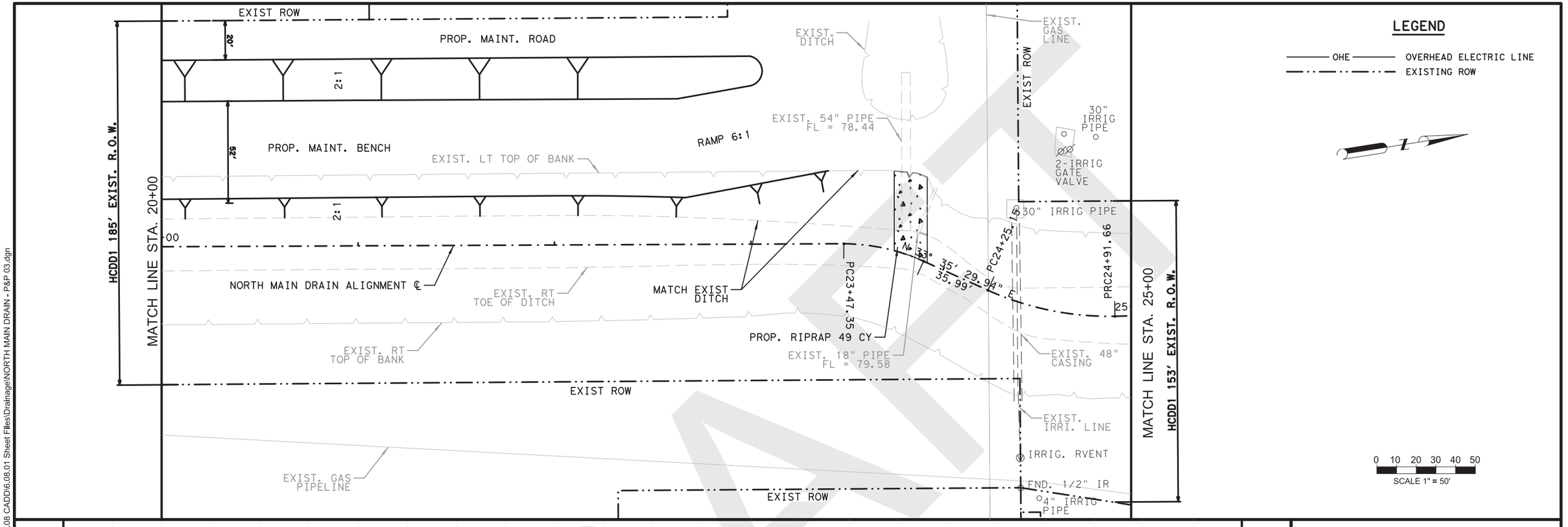
SHEET 2 OF 15

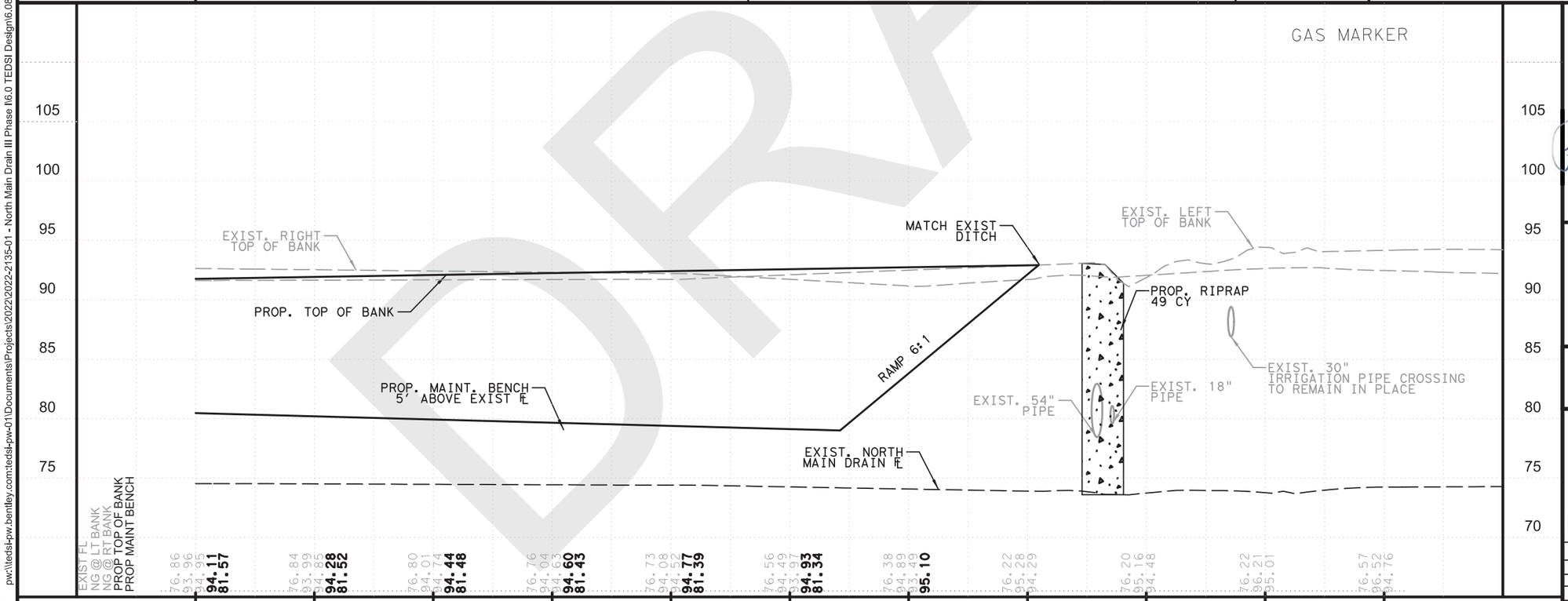
FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		31

STATE	DIST.	COUNTY
TEXAS	PHR	HIDALGO

CONT.	SECT.	JOB	HIGHWAY NO.

DATE: 6/1/2023 10:29:34 AM
FILE: pw:\\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\2022\2022-2135-01 - North Main Drain III Phase II\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\Drainage\NORTH MAIN DRAIN - P&P 02.dgn





STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER

Ponciano N. Longoria, P.E.

6/1/2023
PONCIANO N. LONGORIA — DATE

HIDALGO COUNTY DRAINAGE DISTRICT NO. 1

HIDALGO COUNTY PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
Houston • Mission • San Antonio

NORTH MAIN DRAIN III - PHASE I

PLAN & PROFILE
STATION 20+00 - STATION 25+00

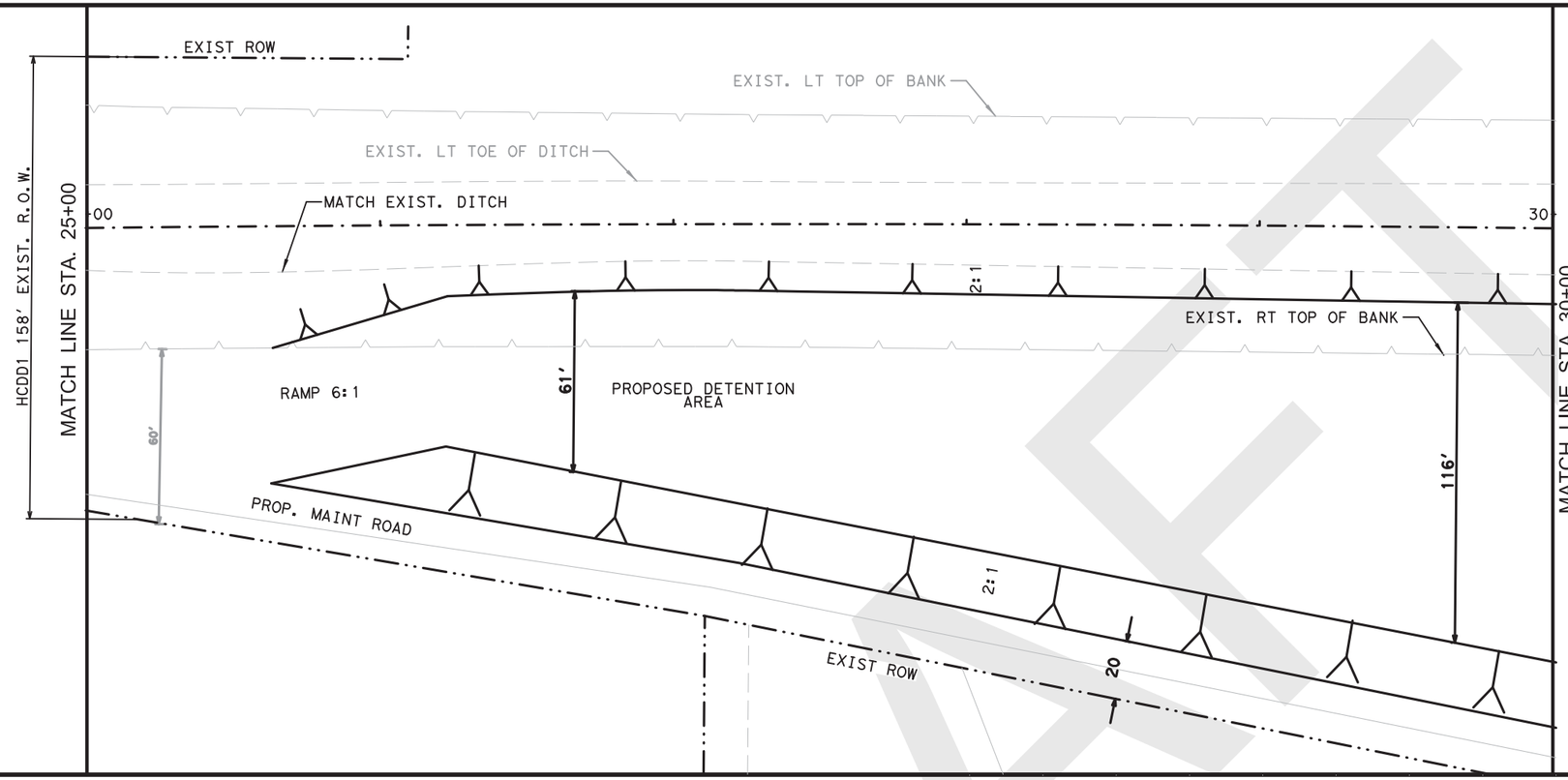
SCALE
HORZ. 1" = 50'
VERT. 1" = 5'

SHEET 3 OF 15

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		32

STATE	DIST.	COUNTY
TEXAS	PHR	HIDALGO
CONT.	SECT.	JOB / HIGHWAY NO.

DATE: 6/1/2023 9:02:32 AM
FILE: pw:\\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\2022\2022-2135-01 - North Main Drain III Phase II\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\Drainage\NORTH MAIN DRAIN - P&P 03.dgn



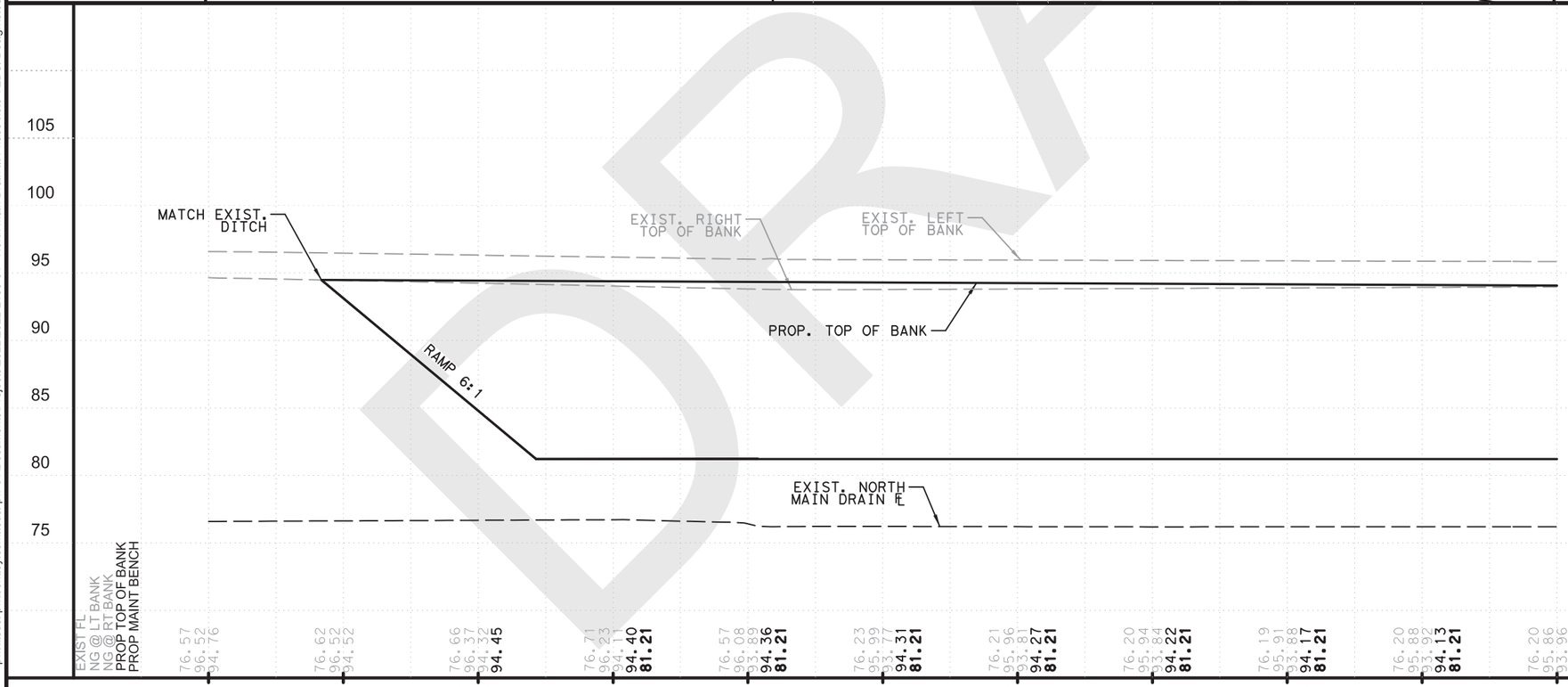
LEGEND

OHE — OVERHEAD ELECTRIC LINE

EXISTING ROW

0 10 20 30 40 50

SCALE 1" = 50'



PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

PONCIANO N. LONGORIA — 6/1/2023 DATE

HIDALGO COUNTY DRAINAGE DISTRICT No. 1 — HCDD1

HIDALGO COUNTY PRECINCT FOUR 4

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
HOUSTON • MISSION • SAN ANTONIO

NORTH MAIN DRAIN III - PHASE I

PLAN & PROFILE
STATION 25+00 - STATION 30+00

SCALE
HORZ. 1" = 50'
VERT. 1" = 5'

SHEET 4 OF 15

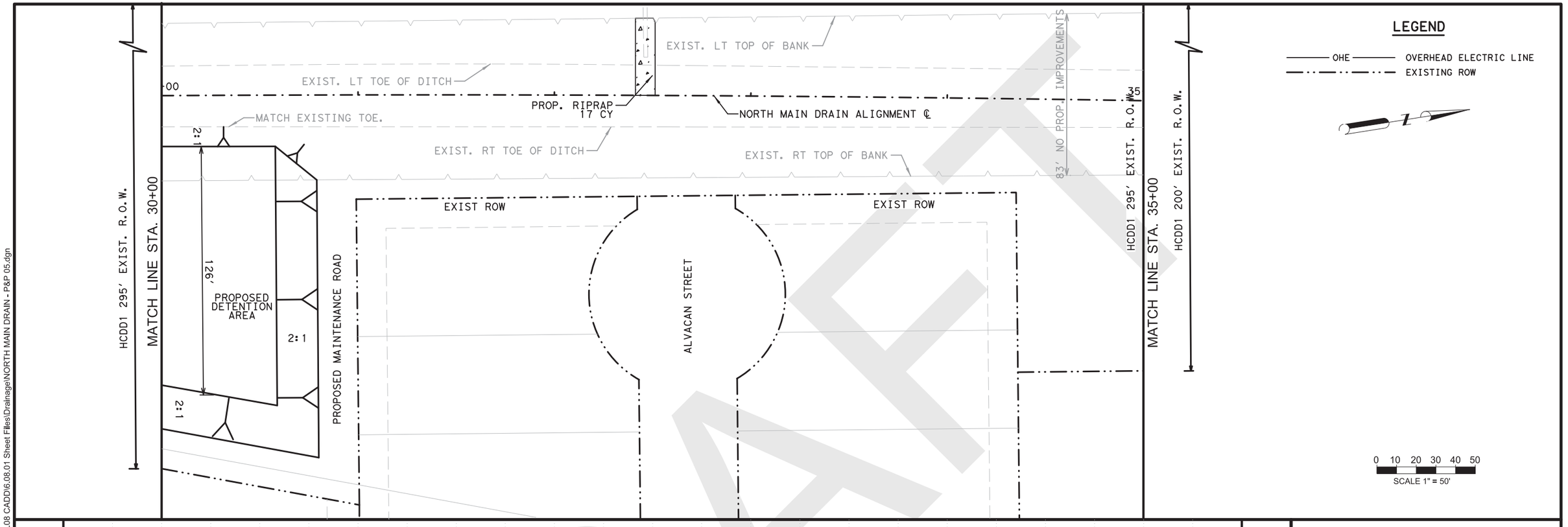
FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		33

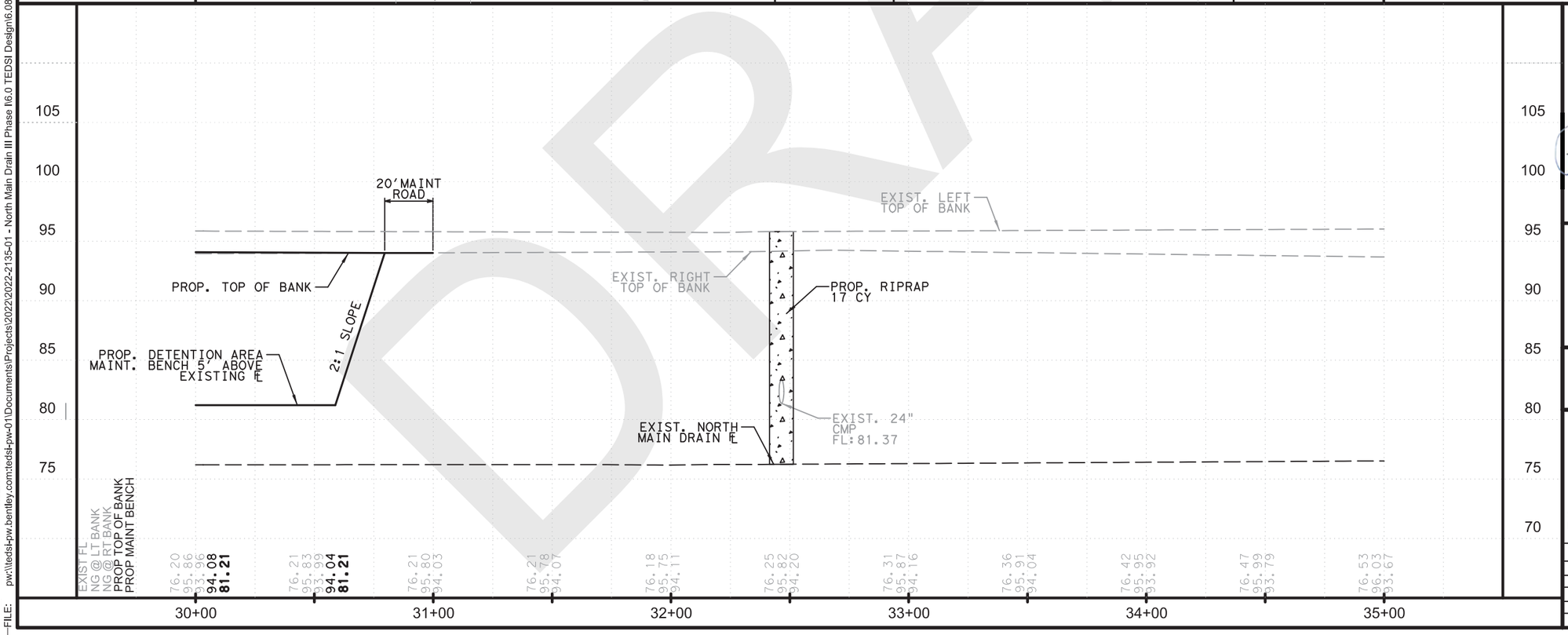
STATE	DIST.	COUNTY
TEXAS	PHR	HIDALGO

CONT.	SECT.	JOB	HIGHWAY NO.

DRAFT

DATE: 6/1/2023 9:02:36 AM
FILE: pw:\\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\2022\2022-2135-01 - North Main Drain III Phase II\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\Drainage\NORTH MAIN DRAIN - P&P 04.dgn





PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

Ponciano N. Longoria, P.E.

PONCIANO N. LONGORIA — 6/1/2023 DATE

HIDALGO COUNTY DRAINAGE DISTRICT No. 1 — HCDD1

HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
HOUSTON • MISSION • SAN ANTONIO

NORTH MAIN DRAIN III - PHASE I

PLAN & PROFILE
STATION 30+00 - STATION 35+00

SCALE
HORZ. 1" = 50'
VERT. 1" = 5'

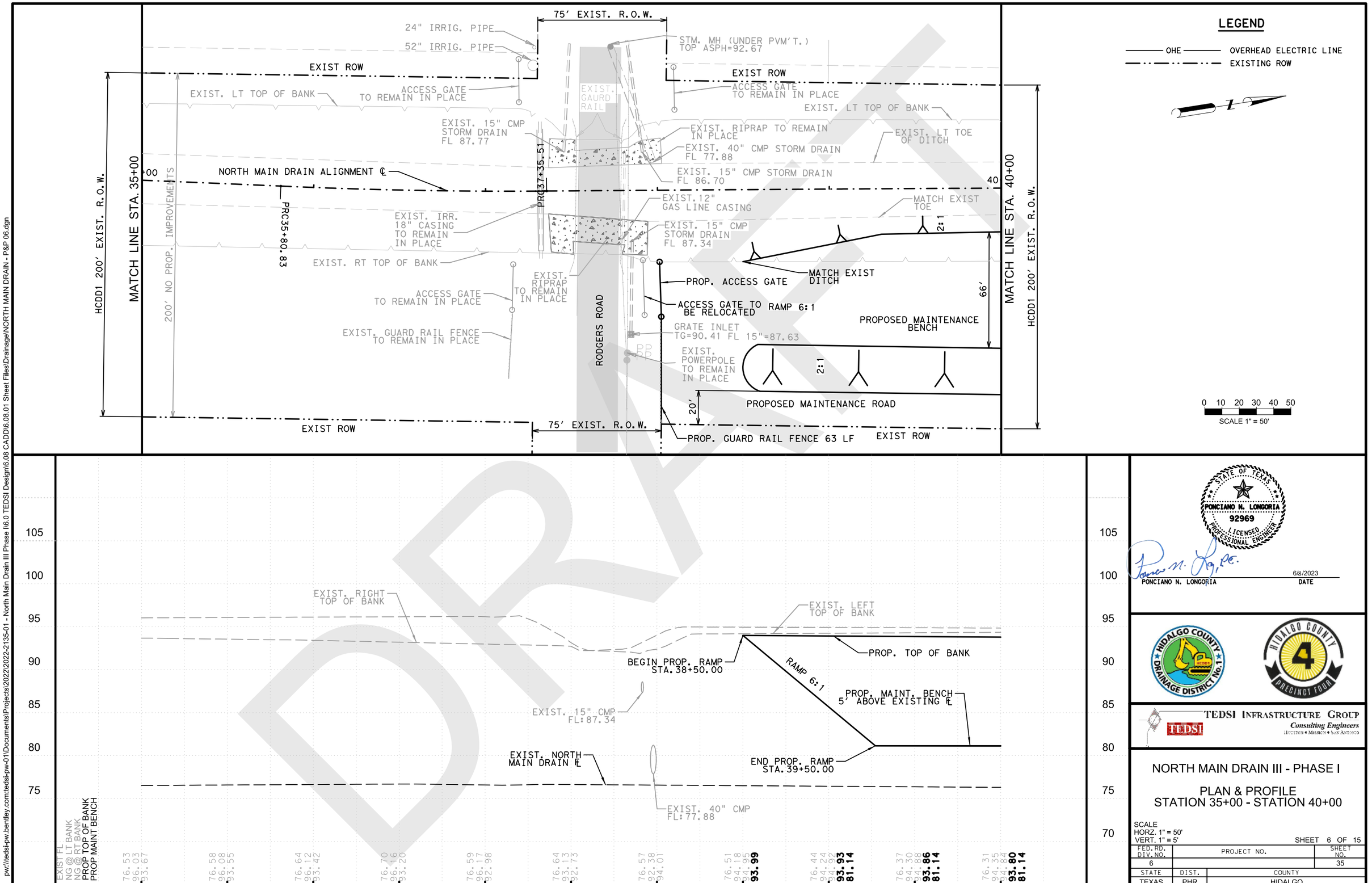
SHEET 5 OF 15

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		34

STATE	DIST.	COUNTY
TEXAS	PHR	HIDALGO

CONT.	SECT.	JOB	HIGHWAY NO.

DATE: 6/1/2023 9:02:41 AM
FILE: pw:\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\2022\2022-2135-01 - North Main Drain III Phase II\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\Drainage\NORTH MAIN DRAIN - P&P 05.dgn



STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED
PROFESSIONAL ENGINEER

PONCIANO N. LONGORIA — 6/8/2023 DATE

HIDALGO COUNTY DRAINAGE DISTRICT NO.1

HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
HOUSTON • MISSION • SAN ANTONIO

NORTH MAIN DRAIN III - PHASE I

PLAN & PROFILE
STATION 35+00 - STATION 40+00

SCALE
HORZ. 1" = 50'
VERT. 1" = 5'

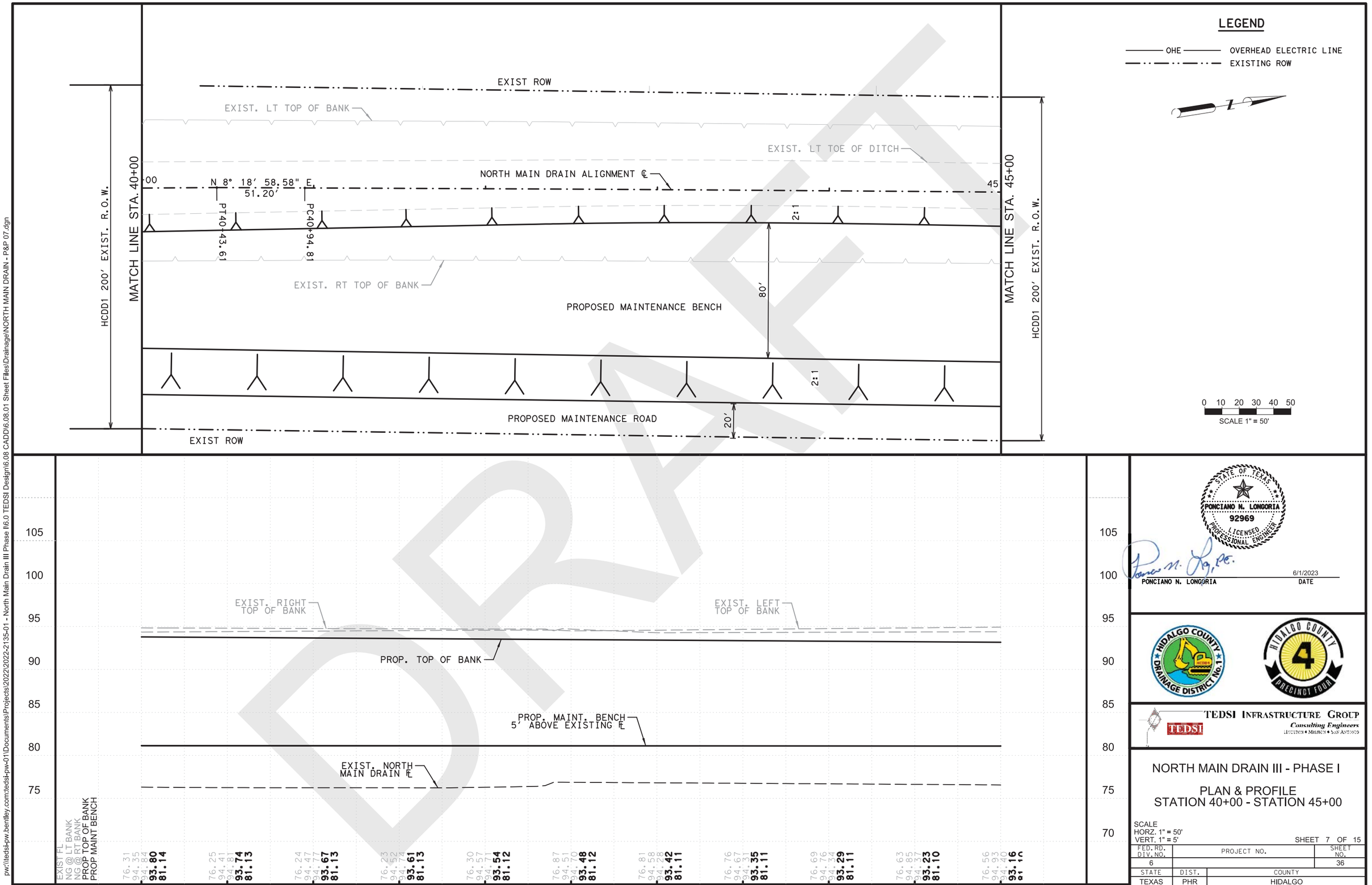
SHEET 6 OF 15

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		35

STATE	DIST.	COUNTY
TEXAS	PHR	HIDALGO

CONT.	SECT.	JOB	HIGHWAY NO.

DATE: 6/1/2023 9:02:45 AM
FILE: pw:\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\2022\2022-2135-01 - North Main Drain III Phase II\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\Drainage\NORTH MAIN DRAIN - P&P 06.dgn



PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

6/1/2023
PONCIANO N. LONGORIA — DATE

HIDALGO COUNTY DRAINAGE DISTRICT NO. 1
HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
HOUSTON • MISSION • SAN ANTONIO

NORTH MAIN DRAIN III - PHASE I

PLAN & PROFILE
STATION 40+00 - STATION 45+00

SCALE
HORZ. 1" = 50'
VERT. 1" = 5'

SHEET 7 OF 15

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		36

STATE	DIST.	COUNTY
TEXAS	PHR	HIDALGO

CONT.	SECT.	JOB	HIGHWAY NO.

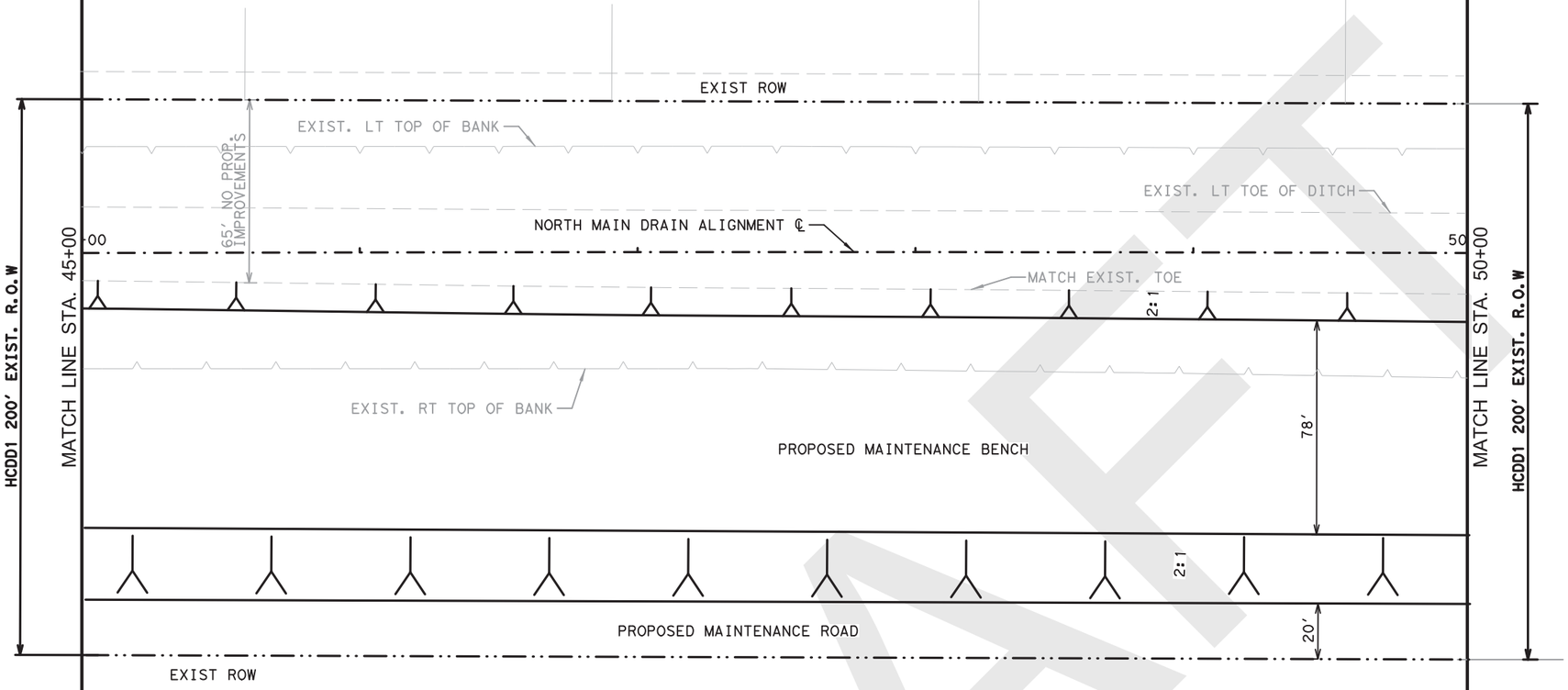
DRAFT

DATE: 6/1/2023 10:29:38 AM
FILE: pw:\\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\2022\2022-2135-01 - North Main Drain III Phase II\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\Drainage\NORTH MAIN DRAIN - P&P 07.dgn

LEGEND

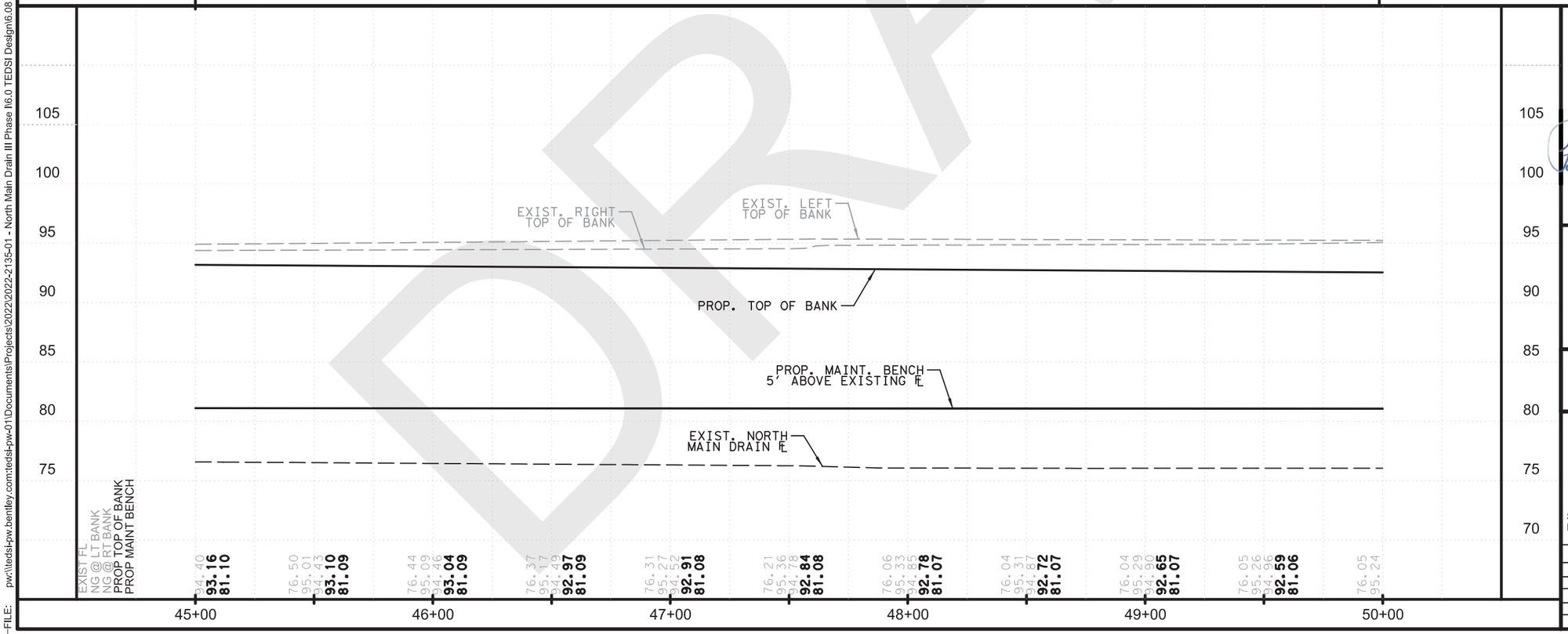
OHE — OVERHEAD ELECTRIC LINE

EXISTING ROW



0 10 20 30 40 50

SCALE 1" = 50'



STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER

PONCIANO N. LONGORIA — 6/1/2023 DATE

HIDALGO COUNTY DRAINAGE DISTRICT NO. 1

HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
HOUSTON • MISSION • SAN ANTONIO

NORTH MAIN DRAIN III - PHASE I

PLAN & PROFILE
STATION 45+00 - STATION 50+00

SCALE
HORZ. 1" = 50'
VERT. 1" = 5'

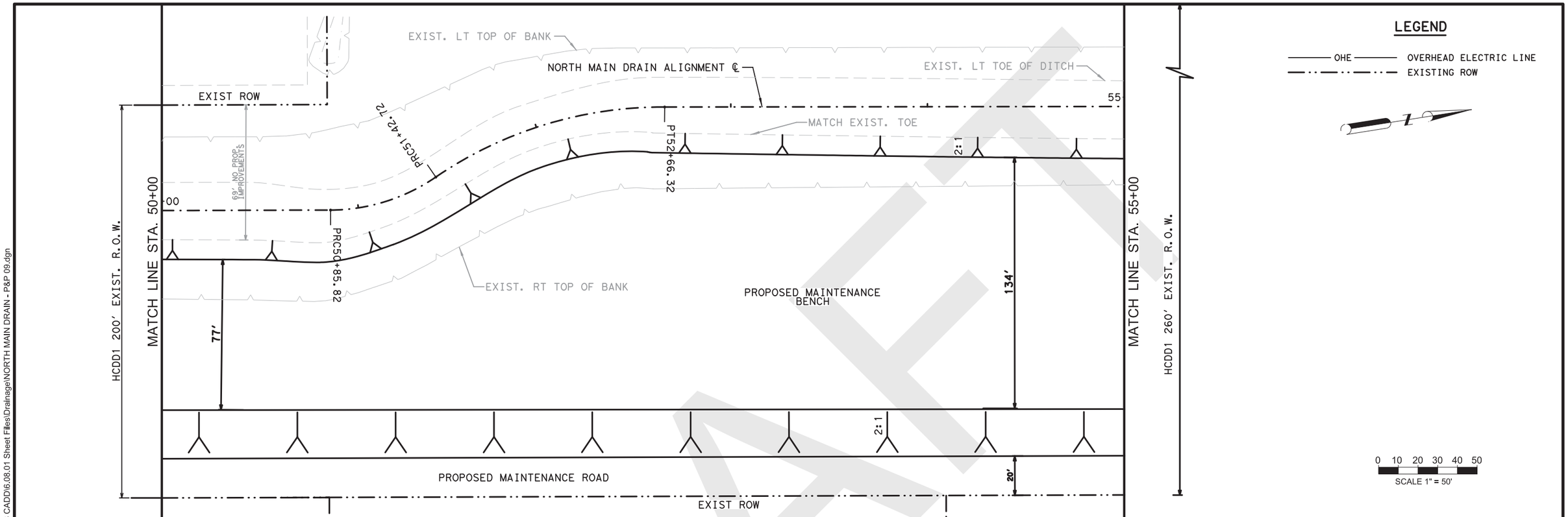
SHEET 8 OF 15

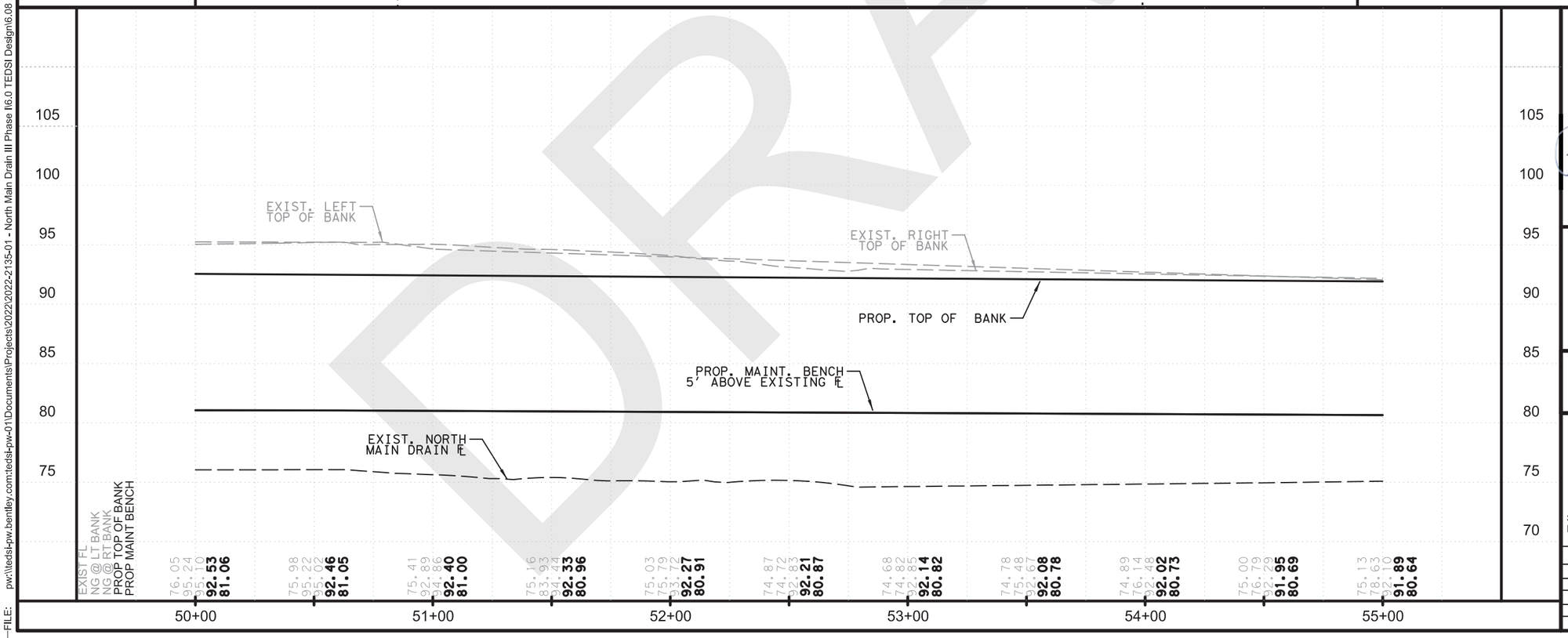
FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		37

STATE	DIST.	COUNTY
TEXAS	PHR	HIDALGO

CONT.	SECT.	JOB	HIGHWAY NO.

DATE: 6/1/2023 9:02:54 AM
FILE: pw:\\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\2022\2022-2135-01 - North Main Drain III Phase II\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\Drainage\NORTH MAIN DRAIN - P&P 08.dgn





PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

Ponciano N. Longoria, P.E.

6/1/2023
PONCIANO N. LONGORIA — DATE

HIDALGO COUNTY DRAINAGE DISTRICT NO.1

HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
HOUSTON • MISSION • SAN ANTONIO

NORTH MAIN DRAIN III - PHASE I

PLAN & PROFILE
STATION 50+00 - STATION 55+00

SCALE
HORZ. 1" = 50'
VERT. 1" = 5'

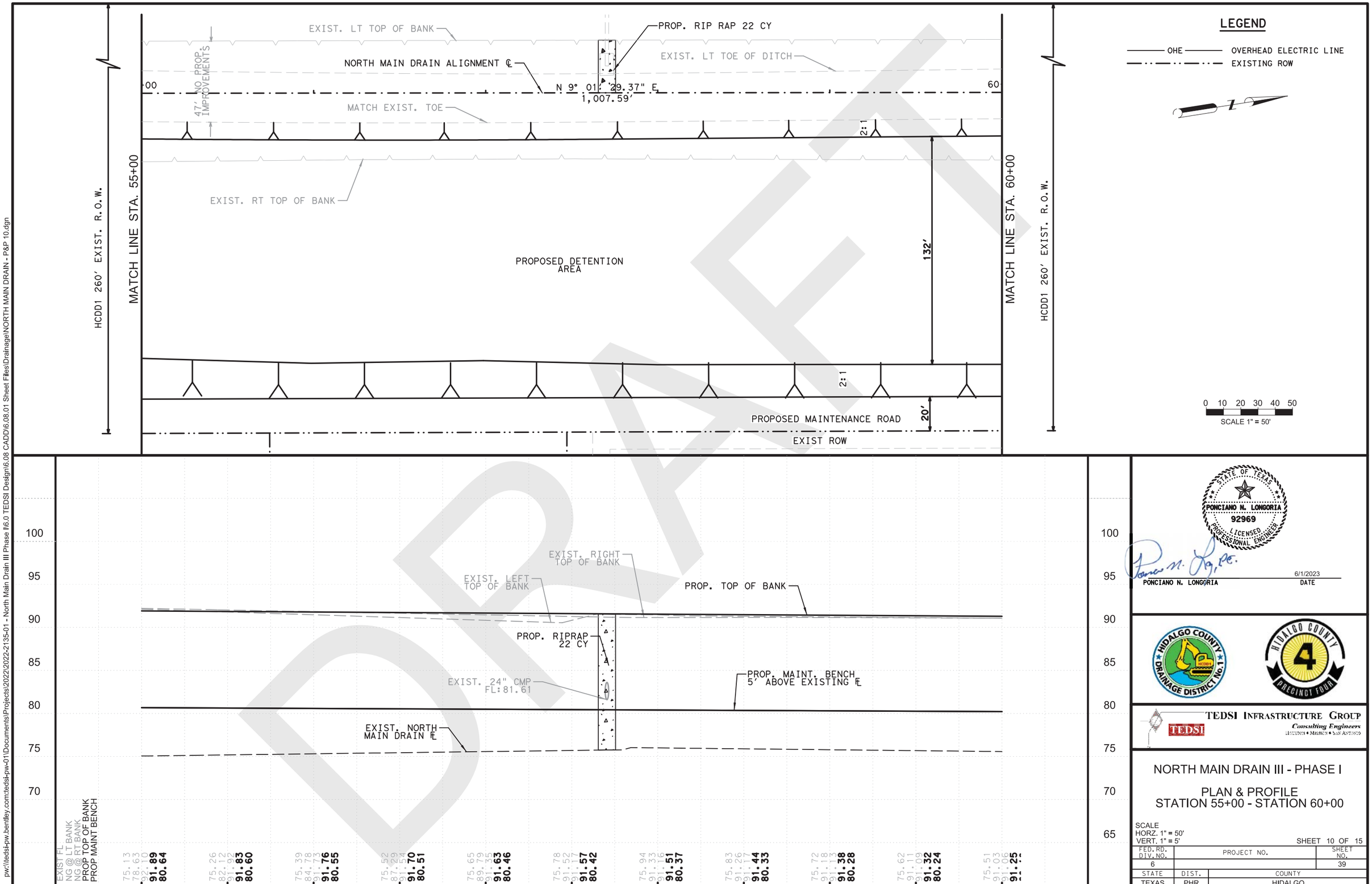
SHEET 9 OF 15

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		38

STATE	DIST.	COUNTY
TEXAS	PHR	HIDALGO

CONT.	SECT.	JOB	HIGHWAY NO.

DATE: 6/1/2023 10:29:42 AM
FILE: pw:\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\2022\2022-2135-01 - North Main Drain III Phase II\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\Drainage\NORTH MAIN DRAIN - P&P 09.dgn



STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER

PONCIANO N. LONGORIA — 6/1/2023 DATE

HIDALGO COUNTY DRAINAGE DISTRICT NO.1

HIDALGO COUNTY PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
HOUSTON • MISSION • SAN ANTONIO

NORTH MAIN DRAIN III - PHASE I

PLAN & PROFILE
STATION 55+00 - STATION 60+00

SCALE
HORZ. 1" = 50'
VERT. 1" = 5'

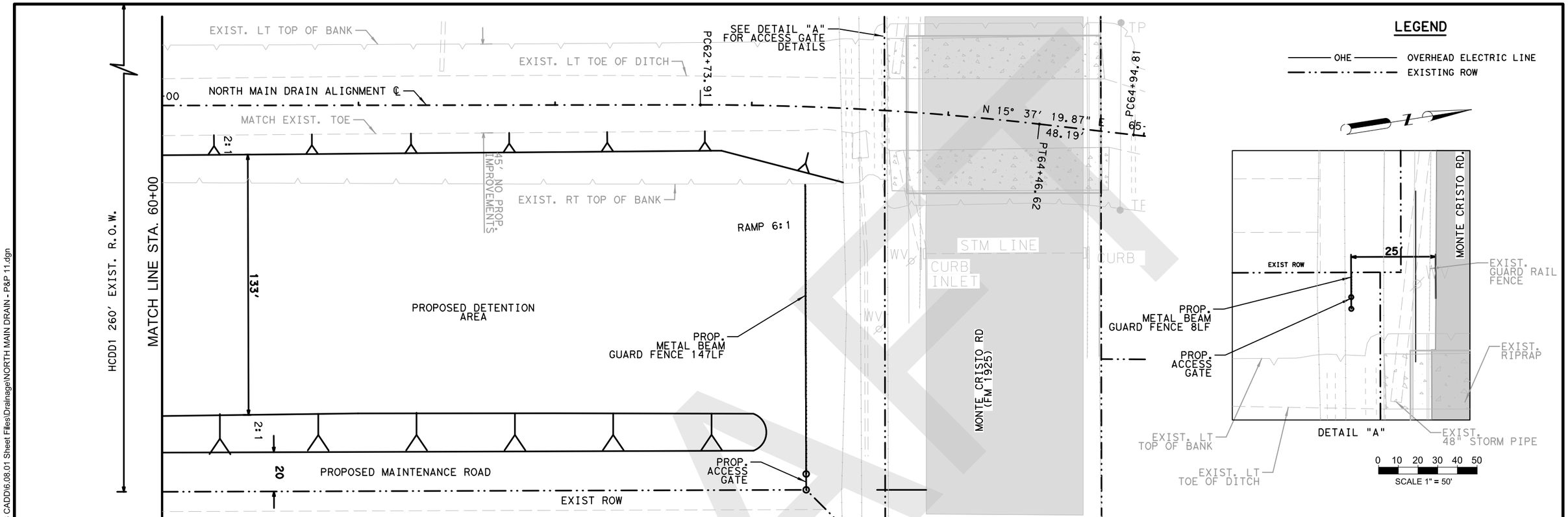
SHEET 10 OF 15

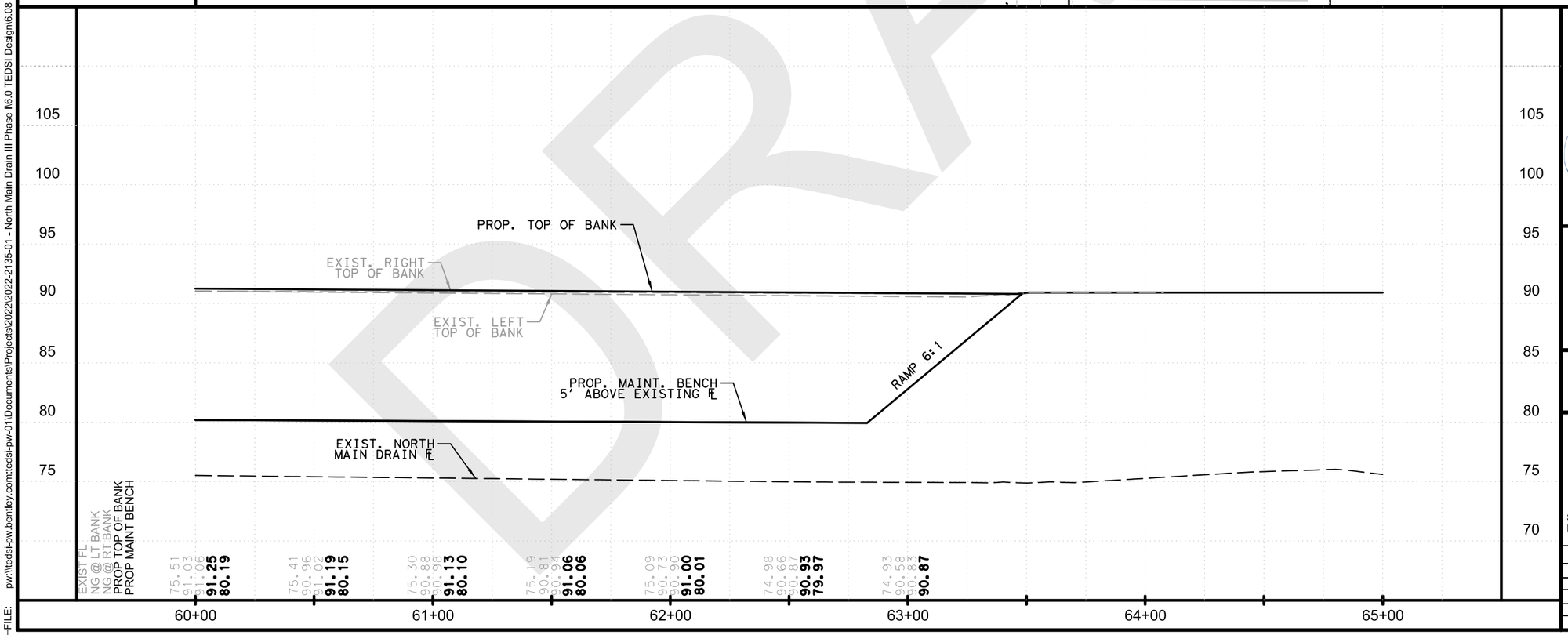
FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		39

STATE	DIST.	COUNTY
TEXAS	PHR	HIDALGO

CONT.	SECT.	JOB	HIGHWAY NO.

DATE: 6/1/2023 9:03:04 AM
FILE: pw:\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\20222022-2135-01 - North Main Drain III Phase II\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\Drainage\NORTH MAIN DRAIN - P&P 10.dgn





PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS

Ponciano N. Longoria, P.E.

6/1/2023
PONCIANO N. LONGORIA — DATE

HIDALGO COUNTY DRAINAGE DISTRICT NO. 1

HIDALGO COUNTY PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
HOUSTON • MISSION • SAN ANTONIO

NORTH MAIN DRAIN III - PHASE I

PLAN & PROFILE
STATION 60+00 - STATION 65+00

SCALE
HORZ. 1" = 50'
VERT. 1" = 5'

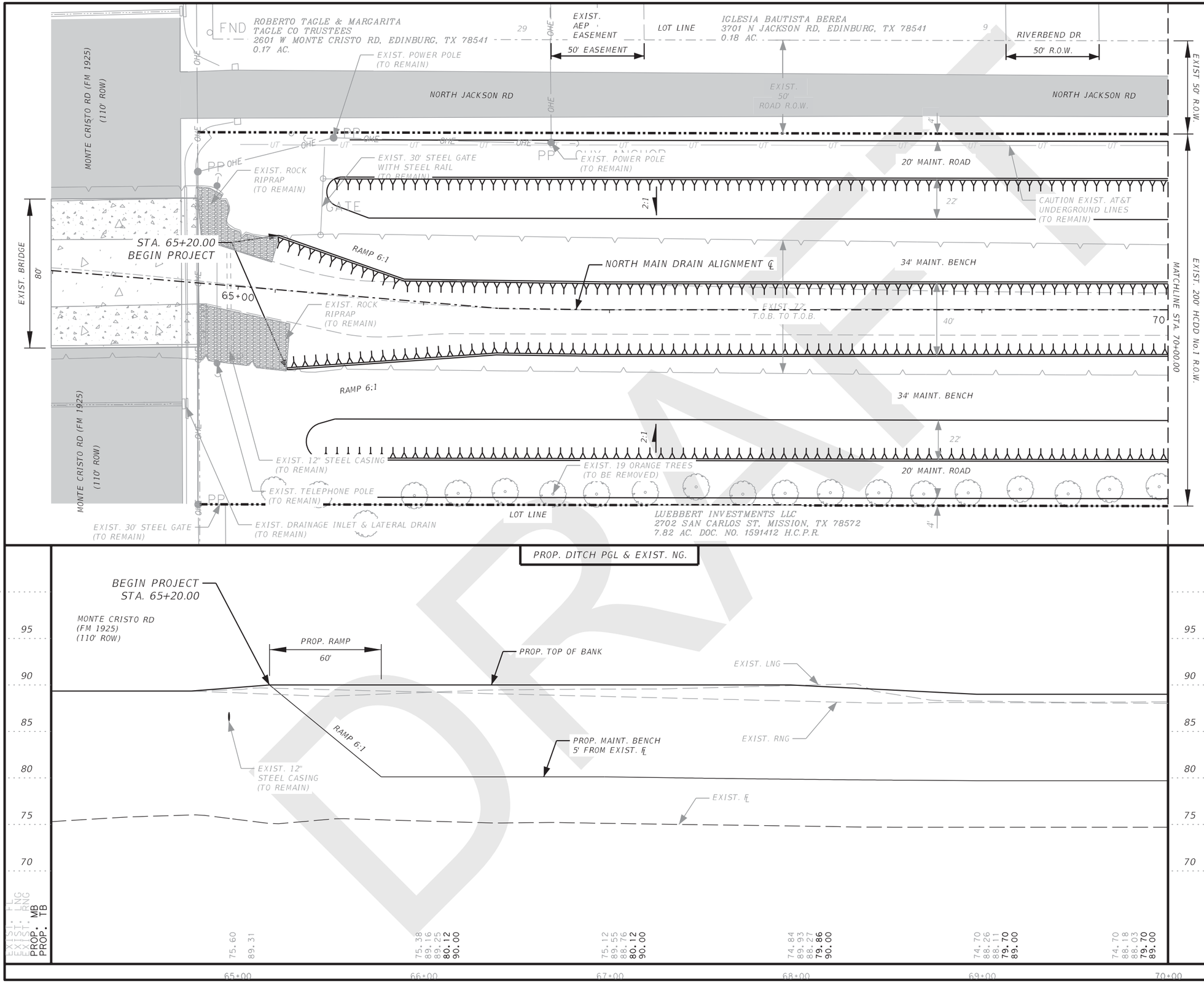
SHEET 11 OF 15

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		40

STATE	DIST.	COUNTY
TEXAS	PHR	HIDALGO

CONT.	SECT.	JOB	HIGHWAY NO.

DATE: 6/8/2023 3:37:12 PM
FILE: pw:\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\2022\2022-2135-01 - North Main Drain III Phase II\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\Drainage\NORTH MAIN DRAIN - P&P 11.dgn



SUMMARY TABLE

ITEM	ITEM DESCRIPTION	UNIT	QTY
02221	REMOVE TREE	EA	19
02315	DITCH EXCAVATION	CY	12018
02330	DITCH EMBANKMENT	CY	923

LEGEND

UT — UNDERGROUND TELEPHONE

OHE — OVER HEAD ELECTRIC

NOTE

REFER TO HCDD1 ITEM DETAILS SHEET FOR INLET, DRAIN PIPE, AND EROSION PROTECTION DETAILS

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED PROFESSIONAL ENGINEER

HIDALGO COUNTY DRAINAGE DISTRICT No.1 HCDD1

HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
TEDSI TBPE F-1640
1201 Interstate Highway 2
Mission, Texas 78572
(956) 424-7898

B2Z ENGINEERING
TBPE FIRM NO. F-11187

NORTH MAIN DRAIN III
PHASE I
PLAN & PROFILE
STA. 65+20 TO STA. 70+00

SCALE:
HOR: 1"= 50'
VER: 1"= 5'

DN:	
CK DN:	
DW:	
CK DW:	
TR:	
CK TR:	

SHEET 12 OF 15

PROJECT	SHEET NO.
NORTH MAIN DRAIN III	41

5/5/2023 K:\Precinct 4\North Main Drain III\NMD+PH1\REF\04 DRAINAGE\NMD+PP01.dgn

LOPEZ VICTOR
4314 TAGLE ST
EDINBURG, TX 78541
0.62 AC.

LOT LINE

END 1" IP

EXIST. OVERHEAD ELECTRIC LINE (TO REMAIN)

ARTURO ALVAREZ
DOC. NO. 3392393
H.C.P.R.

TIE IN TO EXIST. 15" PIPES

EXIST. 15" CMP CULVERT
FL 83.79'
(TIE IN TO PROP. INLET)

EXIST. 15" CMP CULVERT
FL 83.97'
(TIE IN TO PROP. TYPE "M" MANHOLE)

EXIST. 50' R.O.W.

EXIST. 50' ROAD R.O.W.

NORTH JACKSON RD

EXIST. 40' ROAD R.O.W.

EXIST 40' R.O.W.

PROP. TYPE "M" MANHOLE WITH GRATE INLET (TO BE PAID AS LUMP SUM)
TOP 87.00'
FL 76.50'

20' MAINT. ROAD

EXIST. TYPE "C" INLET (TO BE REMOVED)

PROP. 24"x46' HPP

CAUTION EXIST. AT&T UNDERGROUND LINES (TO REMAIN)

2:1

22'

PROP. NYLOPLAST STRUCTURE
TOP 79.82'
FL 76.00'

EXIST. 18"x58' CMP CULVERT (TO BE REMOVED)

PROP. 24"x42' HPP

34' MAINT. BENCH

PROP. CONC. RIPRAP (2 CY)

NORTH MAIN DRAIN ALIGNMENT ℄

N 9° 21' 54.68" E
997.32'

EXIST. 69' T.O.B. TO T.O.B.

40'

FL 76.12'

00

75+00

MATCHLINE STA. 70+00.00

EXIST. 200.1' HCDD No.1 R.O.W.

MATCHLINE STA. 76+00.00

EXIST. 200' HCDD No.1 R.O.W.

PROP. NYLOPLAST STRUCTURE
TOP 79.82'
FL 76.00'

EXIST. 18 ORANGE TREES (TO BE REMOVED)

PROP. 18"x42' HPP

20' MAINT. ROAD

PROP. 18"x46' HPP

4'

LUEBBERT INVESTMENTS LLC
2702 SAN CARLOS ST, MISSION, TX 78572
7.82 AC. DOC. NO. 1591412 H.C.P.R.

PROP. NYLOPLAST STRUCTURE
TOP 87.00'
FL 76.50'

OHE

UT

SUMMARY TABLE

ITEM	ITEM DESCRIPTION	UNIT	QTY
02221	REMOVE STR (INLET)	EA	1
02221	REMOVE STR (PIPES)	LS	1
02221	REMOVE TREE	EA	18
02221	TIE IN TO EXIST. 15" PIPES	LS	1
02315	DITCH EXCAVATION	CY	16970
02330	DITCH EMBANKMENT	CY	1899
02490	TRENCH PROTECTION SYSTEM	LF	176
02506	18" POLYVINYL CHLORIDE PIPE (PVC) 90° ELBOW	EA	1
02506	24" POLYVINYL CHLORIDE PIPE (PVC) 90° ELBOW	EA	1
02510	NYLOPLAST STRUCTURE (COMPLETE) POLYPROPYLENE (HPP) CORRUGATED WALL PIPE	LS	2
02510	TYPE"M"MAHOLE W/GRATE INLET	EA	1
03310	CONCRETE RIPRAP(5")(3,600 psi)	CY	4

LEGEND

UT — UNDERGROUND TELEPHONE
OHE — OVER HEAD ELECTRIC

NOTE

REFER TO HCDD1 ITEM DETAILS SHEET FOR INLET, DRAIN PIPE, AND EROSION PROTECTION DETAILS

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED PROFESSIONAL ENGINEER

PROP. DITCH PGL & EXIST. NG.

95
90
85
80
75
70

PROP. TOP OF BANK

EXIST. LNG
EXIST. RNG

PROP. MAINT. BENCH
5' FROM EXIST. ℄

EXIST. ℄

STA. 74+73, 7' L & 17' R
PROP. 18" HPP
℄=76.12' L & R

EXIST. FL	74.71	74.73	74.75	74.78	74.84	74.90
EXIST. LNG	88.24	87.95	87.64	85.65	85.28	88.01
EXIST. RNG	87.95	87.91	87.91	87.91	87.92	87.57
PROP. MB	79.71	79.73	79.75	79.78	79.84	79.90
PROP. TB	89.00	89.00	89.00	89.00	89.00	89.00

70+00 71+00 72+00 73+00 74+00 75+00 76+00

HIDALGO COUNTY DRAINAGE DISTRICT No.1 HCDD1

HIDALGO COUNTY PRECINCT FOUR 4

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 Interstate Highway 2
Mission, Texas 78572
(956) 424-7898
TEDSI
TBPE F-1640

B2Z ENGINEERING
TBPE FIRM NO. F-11187

NORTH MAIN DRAIN III
PHASE I
PLAN & PROFILE
STA. 70+00 TO STA. 76+00

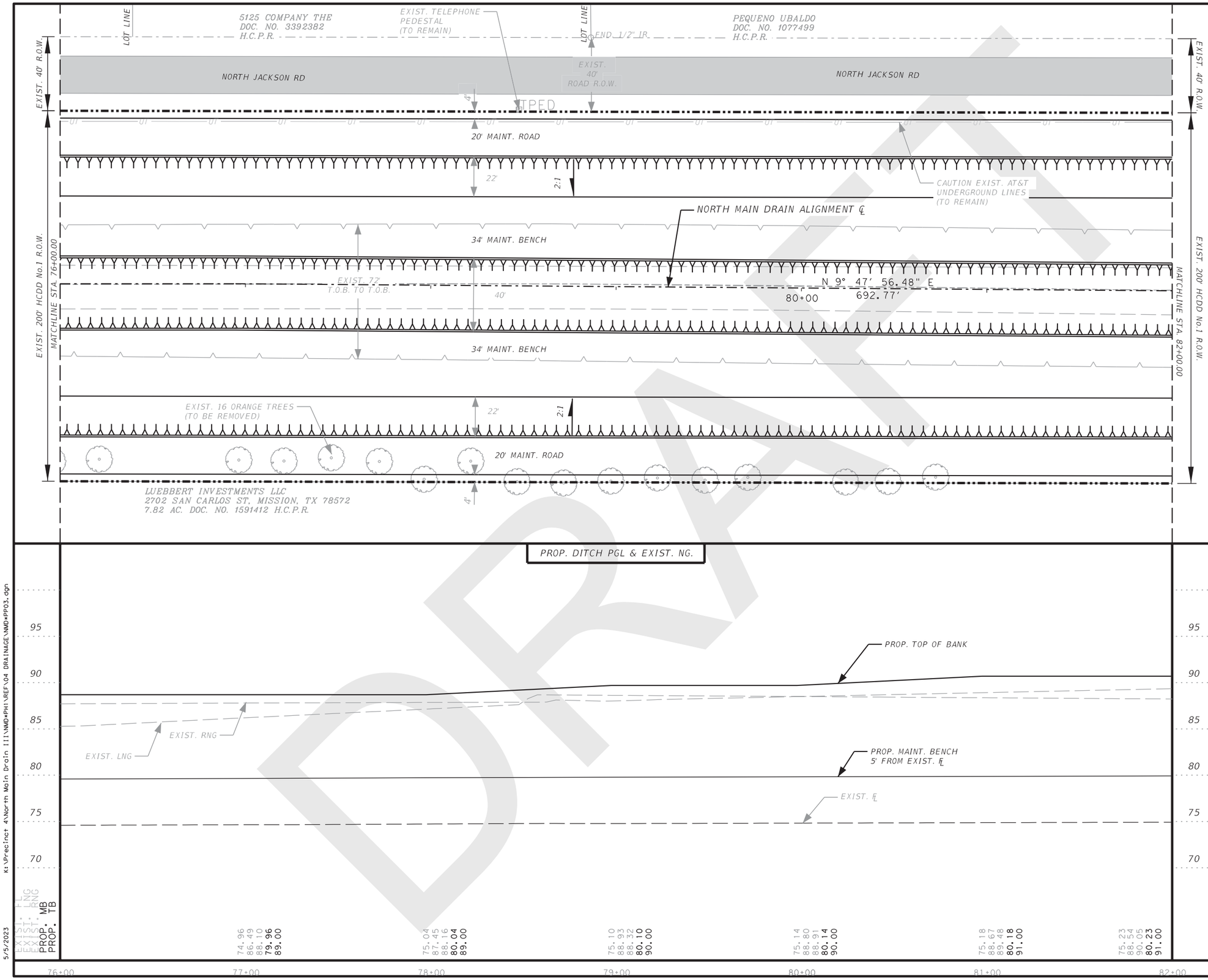
SCALE:
HOR: 1"= 50'
VER: 1"= 5'

DN:	
CK DN:	
DW:	
CK DW:	
TR:	
CK TR:	

SHEET 13 OF 15

PROJECT	SHEET NO.
NORTH MAIN DRAIN III	42

5/5/2023
K:\Precinct 4\North Main Drain III\NMD+PH1\REF\04 DRAINAGE\NMD+PP02.dgn



SUMMARY TABLE

ITEM	ITEM DESCRIPTION	UNIT	QTY
02221	REMOVE TREE	EA	16
02315	DITCH EXCAVATION	CY	17069
02330	DITCH EMBANKMENT	CY	1208

LEGEND

UT — UNDERGROUND TELEPHONE

TPED — AT&T TELEPHONE PEDESTAL

NOTE

REFER TO HCDD1 ITEM DETAILS SHEET FOR INLET, DRAIN PIPE, AND EROSION PROTECTION DETAILS

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED PROFESSIONAL ENGINEER

HIDALGO COUNTY DRAINAGE DISTRICT No.1 — HCDD1

HIDALGO COUNTY PRECINCT FOUR 4

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 Interstate Highway 2
Mission, Texas 78572
(956) 424-7898
TEDSI
TBPE F-1640

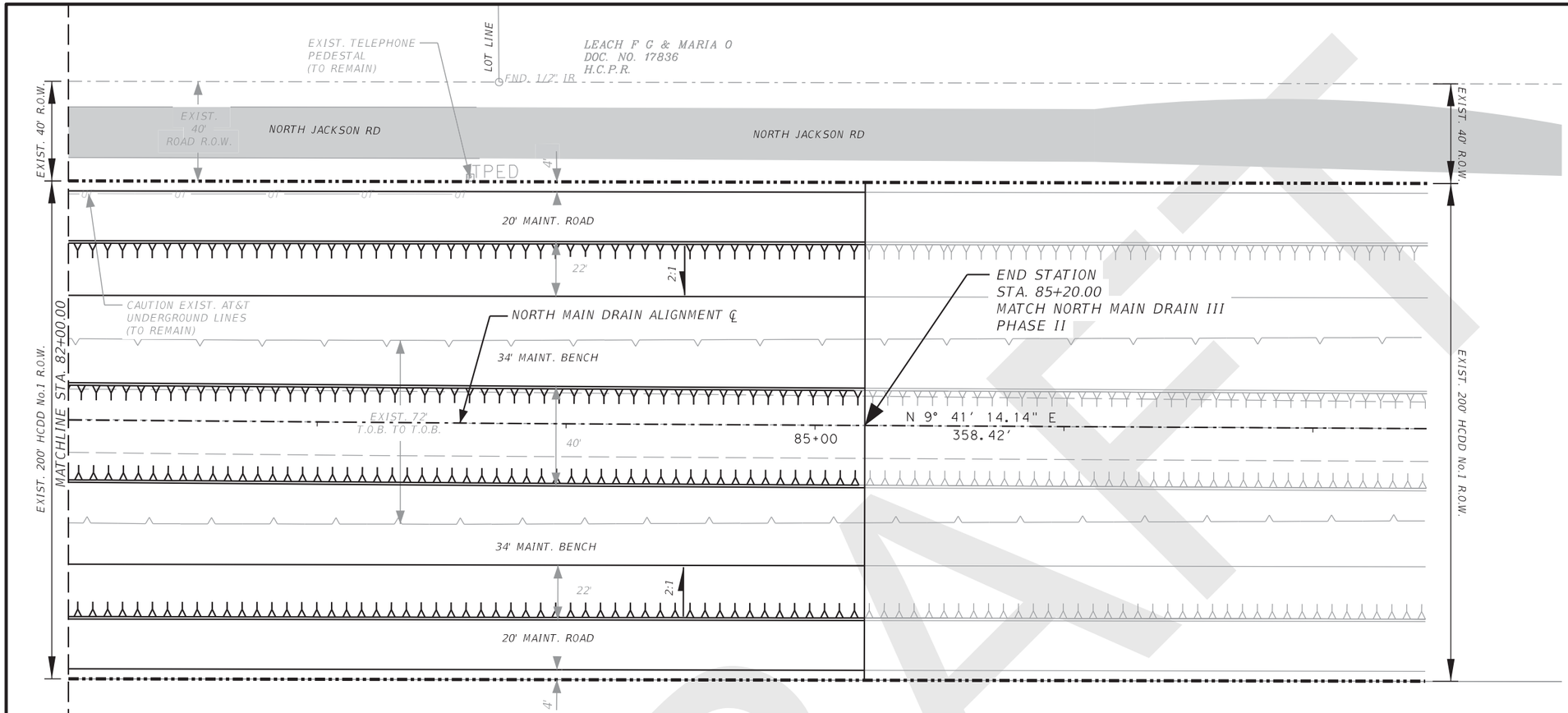
B2Z ENGINEERING
TBPE FIRM NO. F-11187

NORTH MAIN DRAIN III
PHASE I
PLAN & PROFILE
STA. 76+00 TO STA. 82+00

SCALE:
HOR: 1"= 50'
VER: 1"= 5'

DN:		
CK DN:		
DW:		SHEET 14 OF 15
CK DW:	PROJECT	SHEET NO.
TR:	NORTH MAIN DRAIN III	43
CK TR:		

5/5/2023
K:\Precinct 4\North Main Drain III\NMD\PH1\REF\04 DRAINAGE\NMD-PP03.dgn



SUMMARY TABLE

ITEM	ITEM DESCRIPTION	UNIT	QTY
02315	DITCH EXCAVATION	CY	9157
02330	DITCH EMBANKMENT	CY	416

LEGEND

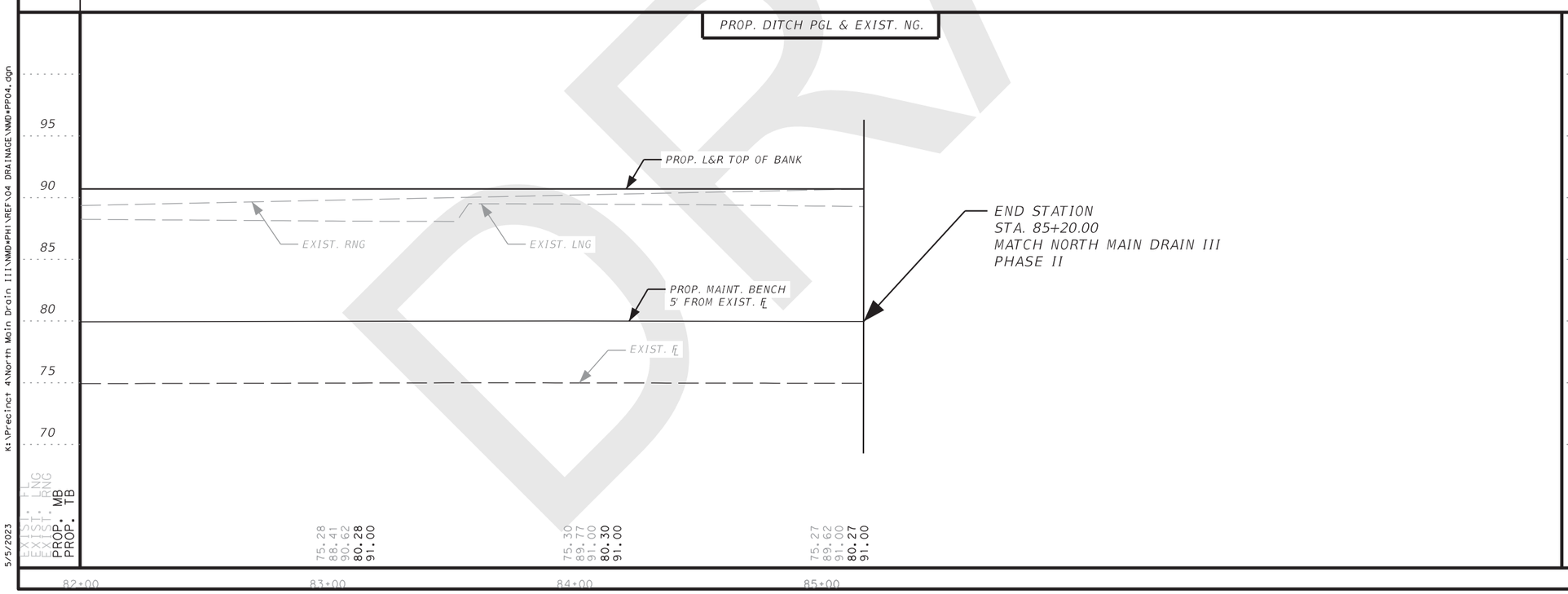
UT — UNDERGROUND TELEPHONE

TPED AT&T TELEPHONE PEDESTAL

NOTE

REFER TO HCDD1 ITEM DETAILS SHEET FOR INLET, DRAIN PIPE, AND EROSION PROTECTION DETAILS

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED PROFESSIONAL ENGINEER



HIDALGO COUNTY DRAINAGE DISTRICT No.1 — HCDD1

HIDALGO COUNTY PRECINCT FOUR 4

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 Interstate Highway 2
Mission, Texas 78572
(956) 424-7898
TBPE F-1640

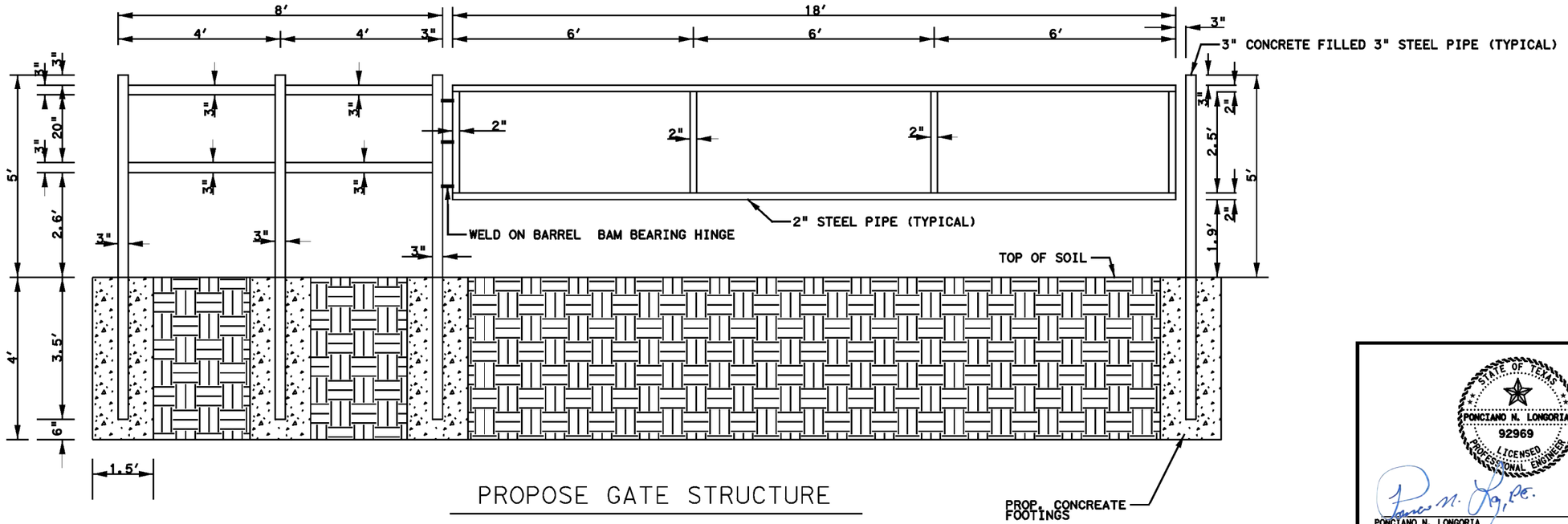
B2Z ENGINEERING
TBPE FIRM NO. F-11187

NORTH MAIN DRAIN III
PHASE I
PLAN & PROFILE
STA. 82+00 TO STA. 85+20

SCALE:
HOR: 1"= 50'
VER: 1"= 5'

DN:		
CK DN:		SHEET 15 OF 15
DW:		
CK DW:	PROJECT	SHEET NO.
TR:	NORTH MAIN DRAIN III	44
CK TR:		

5/5/2023
K:\Precinct 4\North Main Drain III\NMD+PH1\REF\04 DRAINAGE\NMD+PP04.dgn



PROPOSE GATE STRUCTURE

NOTES
1. ALL PIPES SHALL BE MADE OF STEEL

2. ALL PIPES SHALL BE PAINTED YELLOW

3. WELD ON BARREL BAM BEARING HINGE SHALL BE USED.

4. GATE STRUCTURE SHALL COMPLY WITH SPECIFICATION SECTION 02997, 02999, 03310.

STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER

PONCIANO N. LONGORIA — 6/7/2023 DATE

HIDALGO COUNTY DRAINAGE DISTRICT No.1

HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
Houston • Mission • San Antonio

NORTH MAIN DRAIN III - PHASE I ACCESS GATE DETAIL

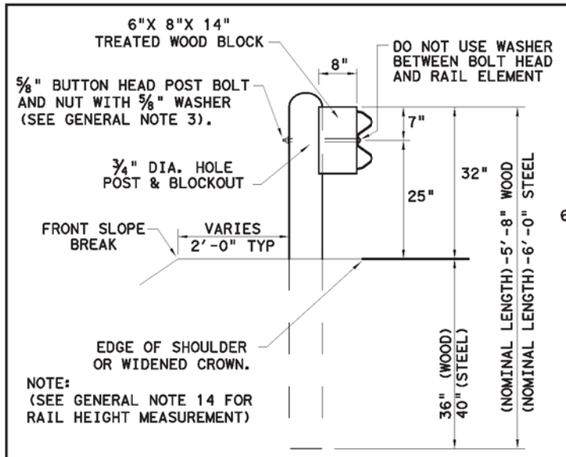
SHEET 1 OF 1

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		44A

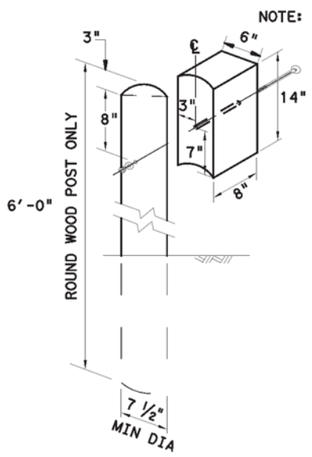
STATE	DIST.	COUNTY	
TEXAS	PHR	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.

DATE: 6/7/2023 4:54:42 PM
FILE: pw:\\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\2022\2022-2135-01 - North Main Drain III Phase II\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\General\north main drain gate.dgn

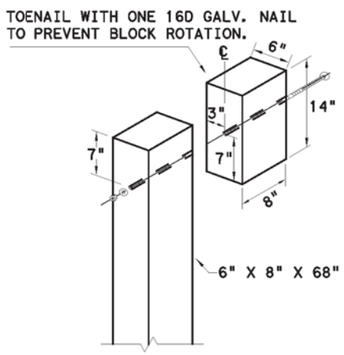
DATE:
FILE:



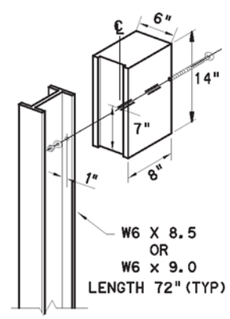
TYPICAL POST PLACEMENT



WOOD BLOCK TO
ROUND WOOD POST

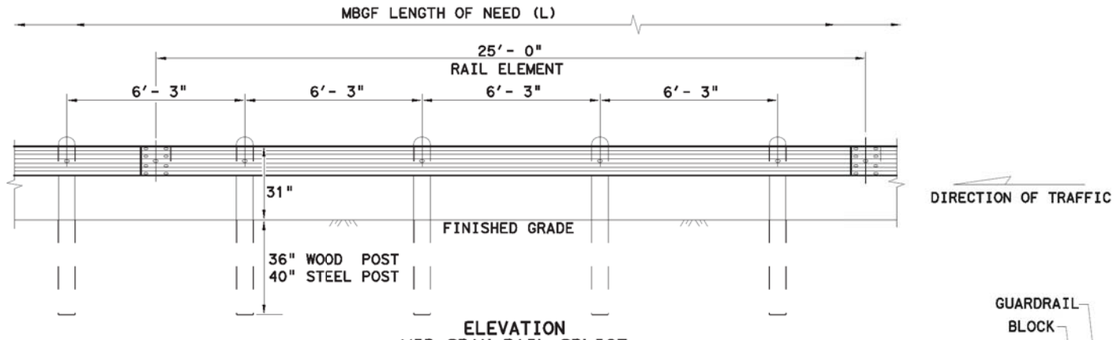


WOOD BLOCK TO
RECTANGULAR WOOD POST



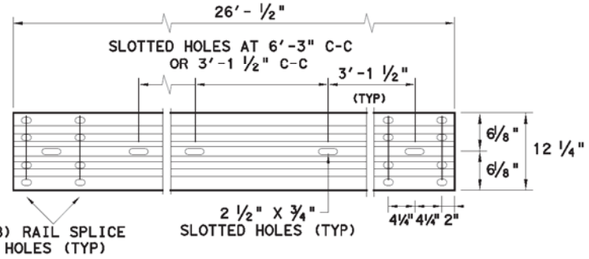
ROUTED WOOD BLOCK
TO I-BEAM STEEL POST

NOTE: ** "WOOD" INDICATES DIMENSIONS FOR BOTH ROUND AND RECTANGULAR WOOD POST SYSTEMS.



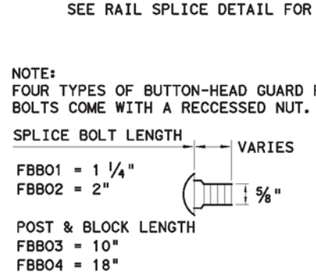
ELEVATION
MID-SPAN RAIL SPLICE

SHOWING A 25'- 0" SECTION OF W-BEAM RAIL. (SEE GENERAL NOTE 2)



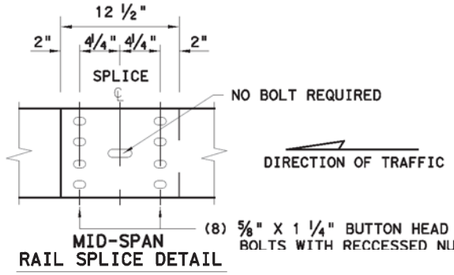
ELEVATION 25'- 0" (NOM.) W-BEAM SECTION

NOTES: SEE GENERAL NOTE 2 FOR ALLOWABLE RAIL TYPES.
SEE RAIL SPLICE DETAIL FOR REQUIRED HARDWARE.



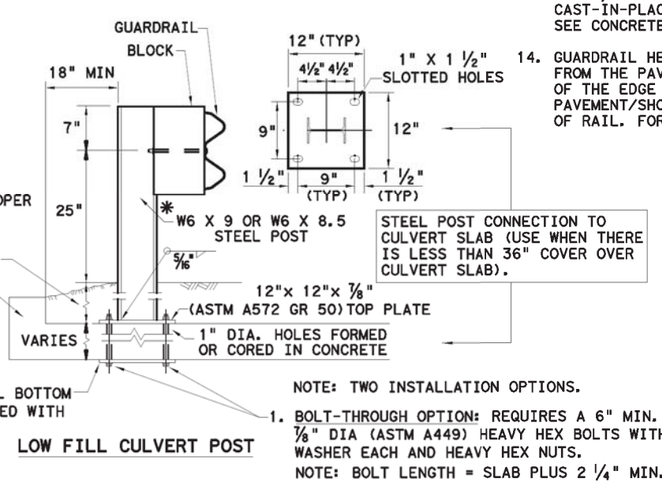
BUTTON HEAD BOLT

NOTE: SEE GENERAL NOTE 3 FOR SPLICE & POST BOLT DETAILS.



MID-SPAN
RAIL SPLICE DETAIL

NOTE: GF(31), MID-SPAN RAIL SPLICES ARE REQUIRED WITH 6'-3" POST SPACINGS.



LOW FILL CULVERT POST

NOTE: TWO INSTALLATION OPTIONS.

1. BOLT-THROUGH OPTION: REQUIRES A 6" MIN. SLAB THICKNESS. ⅞" DIA (ASTM A449) HEAVY HEX BOLTS WITH TWO HARDENED WASHER EACH AND HEAVY HEX NUTS.
   NOTE: BOLT LENGTH = SLAB PLUS 2 ¼" MIN.

2. EPOXY ANCHOR OPTION: THIS OPTION MAY ONLY BE USED IF THE CULVERT SLAB IS 9" MIN. THICK. THREADED ANCHOR RODS MUST BE ⅞" DIA. ASTM A449 OR A193 GRADE B7 WITH HEAVY HEX NUT, AND ONE HARDENED WASHER EACH. EMBED ANCHOR RODS 6" WITH HILTI HIT RE 500 EPOXY ADHESIVE. OTHER TYPE III CLASS C EPOXY ADHESIVES MEETING THE REQUIREMENTS OF DMS-6100, "EPOXIES AND ADHESIVES", MAY BE USED IF IT CAN BE DEMONSTRATED THAT THEY MEET OR EXCEED THE STRENGTH OF HILTI HIT RE 500 WITH THE SAME EMBEDMENT DEPTH AND THREADED ROD DIA. FOLLOW THE MANUFACTURER'S REQUIREMENTS FOR INSTALLING EPOXIED THREADED RODS. EXTEND RODS ¼" MIN. BEYOND NUT.

NOTE: CULVERTS OF 25 FT. OR LESS, SEE GF(31)LS STANDARD FOR "LONG SPAN" OPTION.

NOTE: TRANSISTIONS TO BRIDGE RAILS OR TRAFFIC BARRIERS.
SEE GF(31)TL3 TR STANDARD FOR HIGH-SPEED TL-3 TRANSITIONS.
SEE GF(31)TL2 TR STANDARD FOR LOW-SPEED TL-2 TRANSITIONS.

GENERAL NOTES

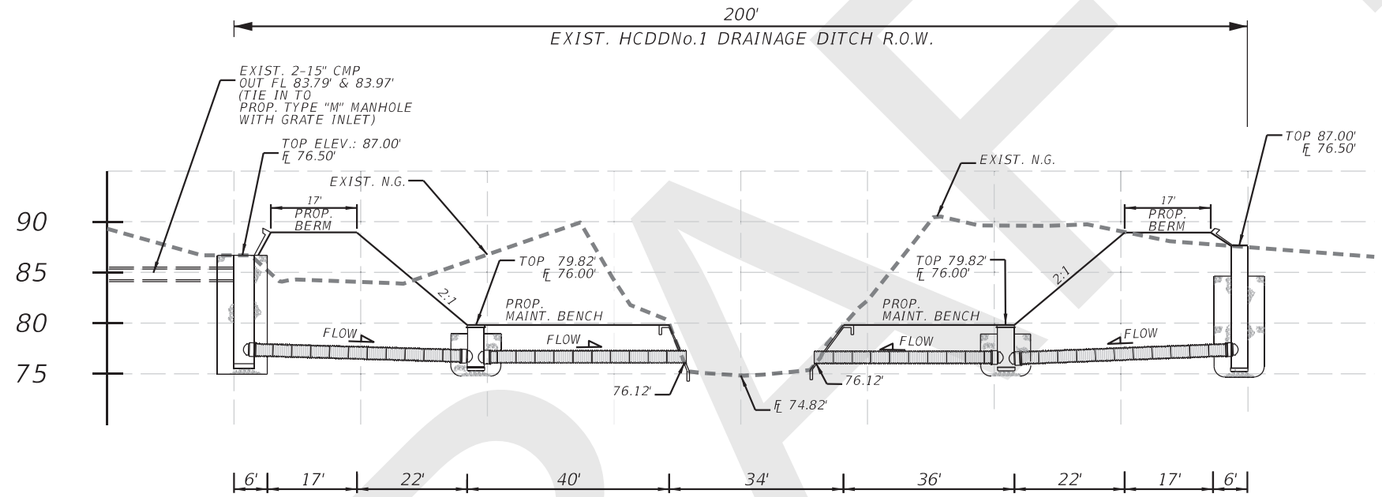
1. THE TYPE OF POST (ROUND WOOD POST, RECTANGULAR WOOD POST, OR STEEL POST) WILL BE AS SHOWN IN THE PLANS. THE EXACT POSITION OF MBGF SHALL BE SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. STEEL POSTS TO BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING."
2. RAIL ELEMENTS SHALL MEET THE REQUIREMENTS OF ITEM 540, "METAL BEAM GUARD FENCE" EXCEPT AS MODIFIED IN THE PLANS. THE CONTRACTOR MAY FURNISH RAIL ELEMENTS OF 25'- 0", OR 12'- 6" (NOM.) LENGTHS. RAIL ELEMENTS MAY HAVE SLOTTED HOLES AT 3'-1 ½" C-C OR 6'-3" C-C. A SPECIAL LENGTH OF RAIL MAY BE MANUFACTURED TO ACCOMMODATE THE DOWNSTREAM ANCHOR TERMINAL (DAT) AND THE TRANSITION SECTIONS OF GUARDRAIL.
3. BUTTON HEAD "POST BOLTS & NUTS" SHALL MEET THE REQUIREMENTS OF (ASTM A307), AND SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND ⅝" WASHER (FWC16a) AND NOT MORE THAN 1" BEYOND IT. TRIM REMAINING BOLT LENGTH TO MEET REQUIRED LENGTH.
4. FITTINGS (BOLTS, NUTS, AND WASHERS) SHALL BE GALVANIZED IN ACCORDANCE WITH ITEM 445, "GALVANIZING." FITTINGS SHALL BE SUBSIDIARY TO THE BID ITEM.
5. CROWN SHALL BE WIDENED TO ACCOMMODATE THE METAL BEAM GUARD FENCE.
6. THE LATERAL APPROACH TO THE GUARD FENCE, SHALL HAVE A MAXIMUM SLOPE OF 1V:10H.
7. IF SHOWN ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER, THE GUARD FENCE MAY BE FLARED AT A RATE OF 25:1 OR FLATTER.
8. UNLESS OTHERWISE SHOWN IN THE PLANS, GUARD FENCE PLACED IN THE VICINITY OF CURBS SHALL BE POSITIONED SO THAT THE FACE OF CURB IS LOCATED DIRECTLY BELOW OR BEHIND THE FACE OF THE RAIL. RAIL PLACED OVER CURBS SHALL BE INSTALLED SO THAT THE POST BOLT IS LOCATED APPROXIMATELY 25 INCHES ABOVE THE GUTTER PAN OR EDGE OF SHOULDER.
9. APPLICATIONS IN SOLID ROCK ARE ONLY ALLOWED WITH STEEL POSTS. IF SOLID ROCK IS ENCOUNTERED WITHIN 0 TO 18" OF THE FINISHED GRADE, DRILL A 24" DIA. HOLE, 24" INTO THE ROCK. IF SOLID ROCK IS ENCOUNTERED BELOW 18", DRILL A 12" DIA. HOLE, 12" INTO THE ROCK OR TO THE STANDARD EMBEDMENT DEPTH, WHICHEVER MAYBE LESS. ANY EXCESS POST LENGTH, AFTER MEETING THESE DEPTHS, MAY BE FIELD CUT TO ENSURE PROPER GUARDRAIL MOUNTING HEIGHT. BACKFILL WITH COARSE AGGREGATE MATERIAL.
10. POSTS SHALL NOT BE SET IN CONCRETE, OF ANY DEPTH.
11. SPECIAL FABRICATION WILL BE REQUIRED AT INSTALLATION LOCATIONS HAVING A CURVATURE OF LESS THAN 150 FT. RADIUS.
12. UNLESS OTHERWISE SHOWN IN THE PLANS, A COMPOSITE MATERIAL BLOCK THAT MEETS THE REQUIREMENTS OF DMS-7210, "COMPOSITE MATERIAL POSTS AND BLOCKS FOR METAL BEAM GUARD FENCE" MAY BE SUBSTITUTED FOR BLOCKS OF SIMILAR DIMENSIONS. THE CONSTRUCTION DIVISION, TXDOT MAINTAINS A MATERIAL PRODUCER LIST (MPL) FOR PRODUCERS OF MATERIALS CONFORMING TO DMS-7210 ONLY PRODUCERS ON THE MPL MAY FURNISH COMPOSITE MATERIAL BLOCKS.
13. FOR THE LOW FILL CULVERT OPTION, POSTS LOCATED PARTIALLY OR WHOLLY BETWEEN PRECAST BOX CULVERT UNITS, THE USE OF A CAST-IN-PLACE CONCRETE CLOSURE BETWEEN BOXES IS REQUIRED. THE LENGTH OF THE CAST-IN-PLACE CONCRETE CLOSURE SHALL ACCOMMODATE THE PLACEMENT OF THE LOW FILL CULVERT OPTION. SEE CONCRETE CLOSURE DETAILS ON BRIDGE STANDARD SCP-MD.
14. GUARDRAIL HEIGHT MEASUREMENT: WHEN THE GUARDRAIL IS LOCATED ABOVE PAVEMENT, MEASURE THE HEIGHT FROM THE PAVEMENT TO THE TOP OF THE W-BEAM RAIL. WHEN THE GUARDRAIL IS LOCATED UP TO 2 FT. OFF OF THE EDGE OF PAVEMENT OR FOR A PAVEMENT OVERLAY, USE A 10-FOOT STRAIGHTEDGE TO EXTEND THE PAVEMENT/SHOULDER SLOPE TO THE BACK OF RAIL, MEASURE FROM THE BOTTOM OF STRAIGHTEDGE TO THE TOP OF RAIL. FOR GUARDRAIL LOCATED DOWN A 10:1 SLOPE, MEASURE FROM THE NOMINAL TERRAIN.

Texas Department of Transportation

Design Division Standard

METAL BEAM GUARD FENCE
TL-3 MASH COMPLIANT
GF(31)-19

FILE: gf3119.dgn	DN: TxDOT	CK: KM	DW: VP	CK: CGL/AG
©TxDOT: NOVEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				44B



FIELD DRAIN AT STA 74+73.00

K:\Precinct 4\North Main Drain III\NMD•PH1\REF\CORR\NMD•XSECTIONS.dgn

5/5/2023

HIDALGO COUNTY DRAINAGE DISTRICT No.1 — HCDD1

HIDALGO COUNTY 4 — PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 Interstate Highway 2
Mission, Texas 78572
(956) 424-7898
TBPE F-1640

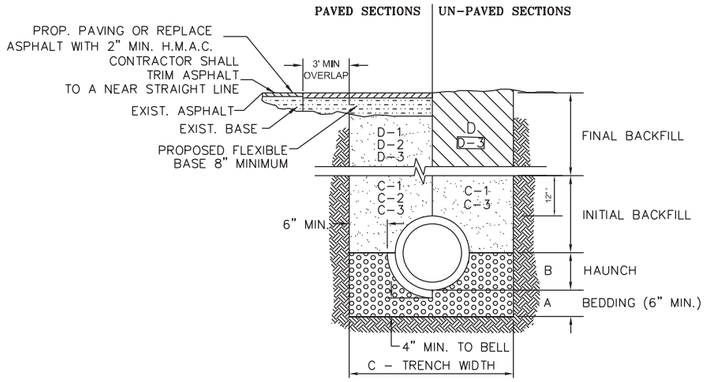
B2Z ENGINEERING
TBPE FIRM NO. F-11187

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED PROFESSIONAL ENGINEER

NORTH MAIN DRAIN III
PHASE I

FIELD DRAIN CROSS SECTION

DN:	N.T.S.		SHEET 1 OF 1
CK DN:			
DW:	PROJECT		SHEET NO.
CK DW:	NORTH MAIN DRAIN III		45
TR:			
CK TR:			



STORM TRENCH BEDDING AND BACKFILL DETAILS

N.T.S

A. BEDDING FOR RCP CLASS III, HIGH PERFORMANCE POLYPROPYLENE OR CORRUGATED PVC STORM DRAIN PIPE – SAND AND/OR GRAVEL MIX BEDDING PLACED BEFORE PIPE IS LAID UP TO FLOW OF PIPE (MIN. COMPACTED THICKNESS = 6") – PIT RUN GRAVEL $\frac{3}{4}$" MAX SIZE.

B. HAUNCH FOR RCP CLASS III, HIGH PERFORMANCE POLYPROPYLENE OR CORRUGATED PVC STORM DRAIN PIPE – SHALL BE CLASS I OR CLASS II (ASTM D2321) BACKFILL MATERIAL COMPACTED TO 92% S.P.D., 8" LOOSE LIFTS, MECHANICAL COMPACTION.

C. TRENCH WIDTH – SHALL BE BELL O.D. X 1.5 + 12". MINIMUM TRENCH WIDTH SHALL EQUAL STRUCTURE WIDTH + 4 FT. THROUGHOUT THE HEIGHT OF THE STRUCTURE.

C-1 INITIAL BACKFILL FOR RCP CLASS III STORM DRAIN PIPE ON CITY STREETS, PARKING AREAS, DRIVEWAYS, COUNTY ROADS & UNPAVED AREAS – SHALL BE SOIL TYPE A1, A2, A3 WITH A MAXIMUM P.I. OF 19 (AASHTO M145) COMPACTED TO 92% S.P.D., 8" LOOSE LIFTS, MECHANICAL COMPACTION.

C-2 INITIAL BACKFILL FOR RCP CLASS III STORM DRAIN PIPE ON STATE MAINTAINED ROADWAYS – COMPACTED SAND/CEMENT STABILIZED BACKFILL WITH 7% PORTLAND CEMENT, COMPACTED TO 92% S.P.D. AS PER ASTM D4253 AND ASTM D698, 8" LOOSE LIFTS, MECHANICAL COMPACTION.

C-3 INITIAL BACKFILL FOR HIGH PERFORMANCE POLYPROPYLENE OR CORRUGATED PVC STORM DRAIN PIPE – SHALL BE CLASS I OR CLASS II WITH A MAXIMUM P.I. OF 19 (ASTM D2321) BACKFILL MATERIAL COMPACTED TO 92% S.P.D., 8" LOOSE LIFTS, MECHANICAL COMPACTION.

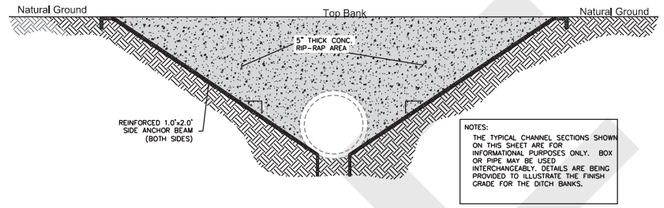
D. FINAL BACKFILL FOR RCP CLASS III, HIGH PERFORMANCE POLYPROPYLENE OR CORRUGATED PVC STORM DRAIN PIPE UNDER UNPAVED SECTIONS – SHALL BE CLASS I, II, III OR IV, COMPACTED TO 92% S.P.D. (12" LOOSE LIFT, MECHANICAL COMPACTION).

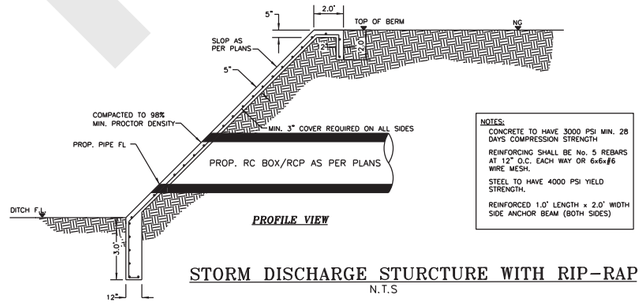
D-1 FINAL BACKFILL FOR RCP CLASS III, HIGH PERFORMANCE POLYPROPYLENE OR CORRUGATED PVC STORM DRAIN PIPE ON CITY STREETS, PARKING AREAS, DRIVEWAYS AND COUNTY ROADS– SHALL BE SOIL TYPE A1, A2, A3 WITH A MAXIMUM P.I. OF 19 (AASHTO M145) COMPACTED TO 92% S.P.D., 8" LOOSE LIFTS, MECHANICAL COMPACTION.

D-2 FINAL BACKFILL FOR RCP CLASS III, HIGH PERFORMANCE POLYPROPYLENE OR CORRUGATED PVC STORM DRAIN PIPE ON STATE MAINTAINED ROADWAYS – COMPACTED SAND/CEMENT STABILIZED BACKFILL WITH 7% PORTLAND CEMENT, COMPACTED TO 92% S.P.D. AS PER ASTM D4253 AND ASTM D698, 8" LOOSE LIFTS, MECHANICAL COMPACTION.

D-3 FINAL BACKFILL FOR STRUCTURES (INLETS, MANHOLES, ETC.) – STRUCTURES UNDER THE ROADWAY AND UP TO 5 FT BEYOND THE EDGE OF PAVEMENT/BACK OF CURB SHALL HAVE CLASS I OR CLASS II (ASTM D2321) OR SOIL TYPE A1, A2, OR A3 (AASHTO M145) WITH A MAXIMUM P.I. OF 19 BACKFILL MATERIAL. STRUCTURES BEYOND 5 FT FROM THE E.O.P./B.O.C. SHALL HAVE CLASS I, II, III OR IV (ASTM D2321) BACKFILL MATERIAL. FOUNDATION PREPARATION (WELLPOINTS, MINIMUM 4" GRAVEL OR CEMENTS STABILIZATION, OR APPROVED SUBSTITUTE) SHALL BE REQUIRED WHEN TRENCH BOTTOM IS UNSTABLE. BACKFILLING AT STRUCTURES SHALL BE PLACED IN UNIFORM LAYERS, MOISTENED AS REQUIRED TO APPROXIMATE OPTIMUM MOISTURE CONTENT AND COMPACTED TO 95% S.P.D. (USE RELATIVE DENSITY TEST PER ASTM D4253 & ASTM D698). THE THICKNESS OF EACH LOOSE LAYER SHALL NOT EXCEED 8".

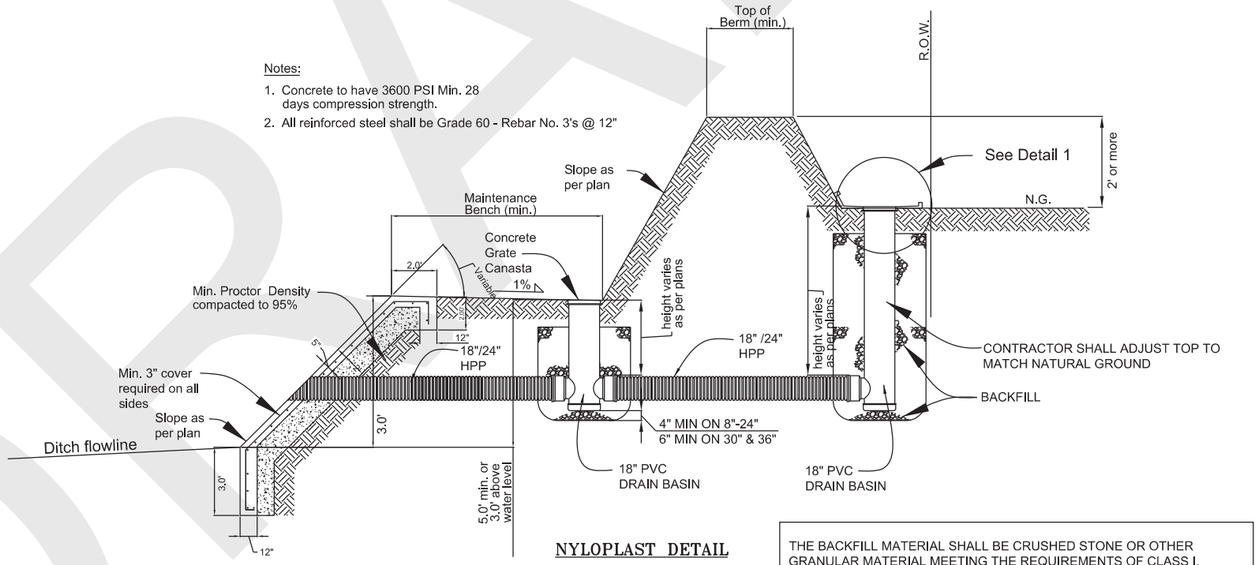
NOTES:
1. MAXIMUM COVER SHALL BE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.
2. FOR D-1 AND D-2 THE COMPACTION REQUIREMENT SHALL BE 95% S.P.D. WITHIN 12 IN. BELOW THE FLEXIBLE BASE.
3. FOR PAVED SECTIONS THE ABOVE REQUIREMENTS SHALL APPLY WHEN ANY PART OF THE TRENCH WIDTH IS WITHIN 5 FT. FROM THE E.O.P./B.O.C.
4. THE ABOVE REQUIREMENTS SHALL APPLY TO UTILITY PIPELINES AND UTILITY STRUCTURES OF OTHER UTILITY ENTITIES.





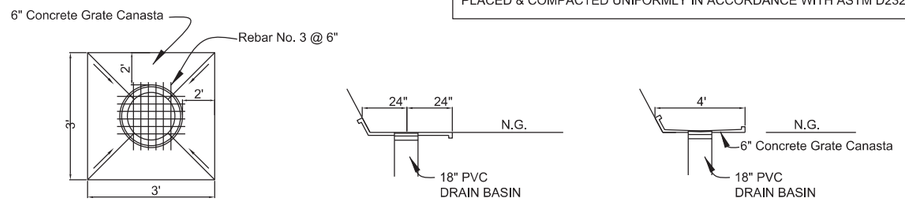
STORM DISCHARGE STURCTURE WITH RIP-RAP

N.T.S



NYLOPLAST DETAIL

THE BACKFILL MATERIAL SHALL BE CRUSHED STONE OR OTHER GRANULAR MATERIAL MEETING THE REQUIREMENTS OF CLASS I, CLASS II, OR CLASS III MATERIAL AS DEFINED IN ASTM D2321. BEDDING & BACKFILL FOR SURFACE DRAINAGE INLETS SHALL BE PLACED & COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D2321.



DETAIL 1

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED PROFESSIONAL ENGINEER

HIDALGO COUNTY DRAINAGE DISTRICT No.1 HCDD1

HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
TEDSI
TBPE F-1640
1201 Interstate Highway 2
Mission, Texas 78572
(956) 424-7898

B2Z ENGINEERING
TBPE FIRM NO. F-11187

NORTH MAIN DRAIN III PHASE I HCDD1 ITEM DETAILS

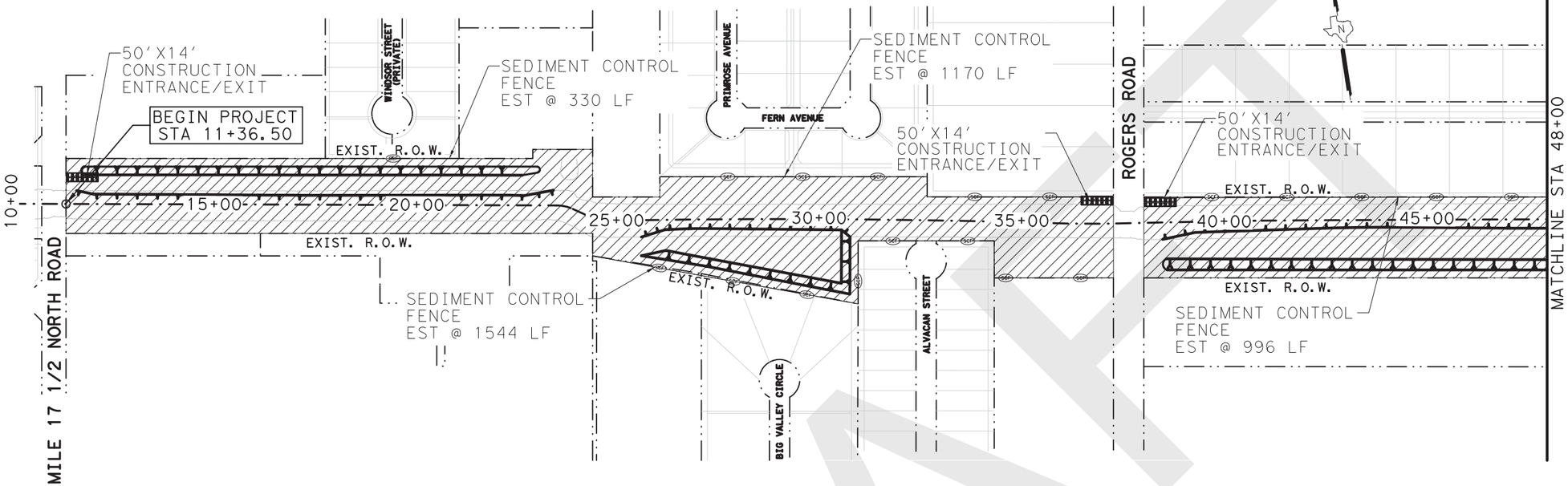
SCALE:
HOR: 1"= 60'
VER: 1"= 6'

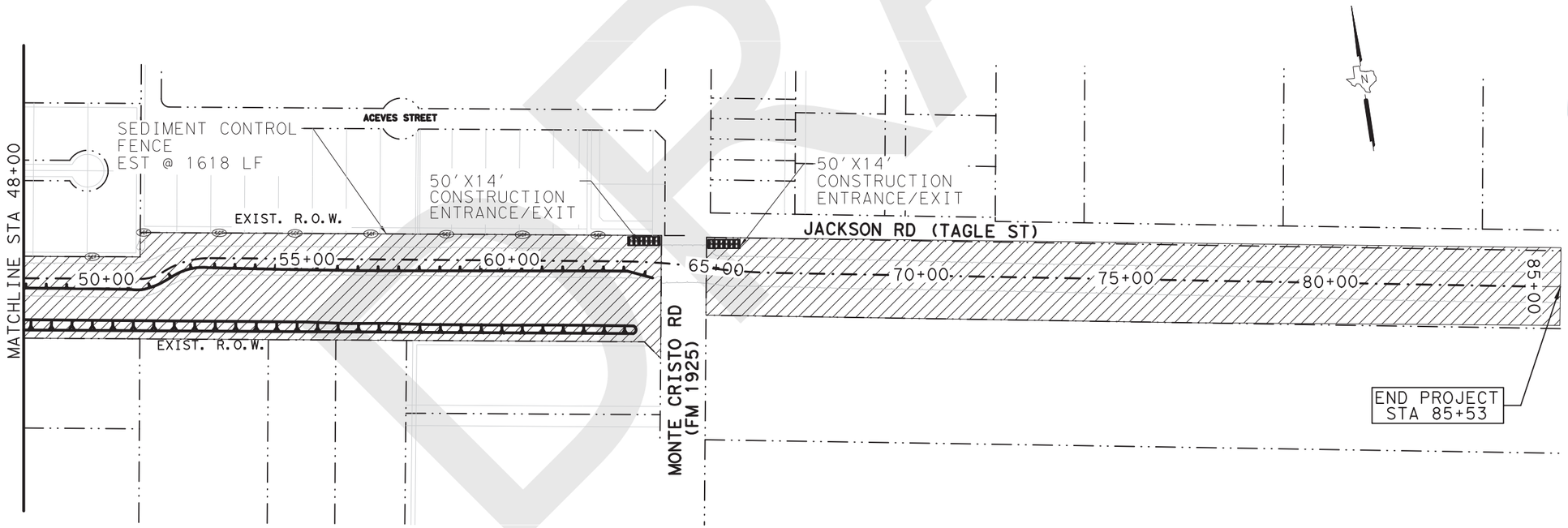
SHEET 1 OF 1

DN:		CONT	SECT	JOB	HIGHWAY
CK DN:					
DW:					
CK DW:		DIST	COUNTY		SHEET NO.
TR:			Hidalgo		46
CK TR:					

K:\Precinct 4\North Main Drain III\NMD*PH1\REF\04 DRAINAGE\HCDD1 ITEM DETAILS.dgn
5/5/2023
5:35:57 PM

LEGEND	
	CONSTRUCTION AREA
	CONSTRUCTION TRUCK EXIT/ENTRANCE GRID
SCF	SEDIMENT CONTROL FENCE





0 60 120 180 240 300

STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER

Ponciano N. Longoria, P.E.

6/1/2023
PONCIANO N. LONGORIA — DATE

HIDALGO COUNTY DRAINAGE DISTRICT NO.1

HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
HOUSTON ♦ MISSION ♦ SAN ANTONIO

NORTH MAIN DRAIN III - PHASE I

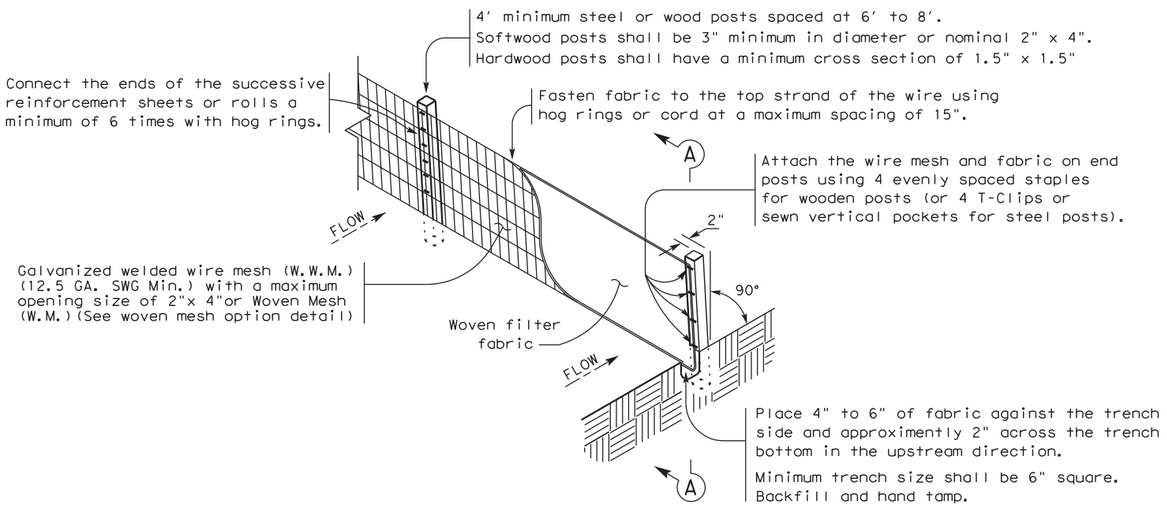
SW3P LAYOUT

SCALE 1" = 300' — SHEET 1 OF 1

FED.RD. DIV.NO.	PROJECT NO.	SHEET NO.
6		47

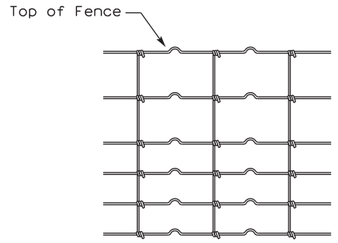
STATE	DIST.	COUNTY	
TEXAS	PHR	HIDALGO	
CONT.	SECT.	JOB	HIGHWAY NO.

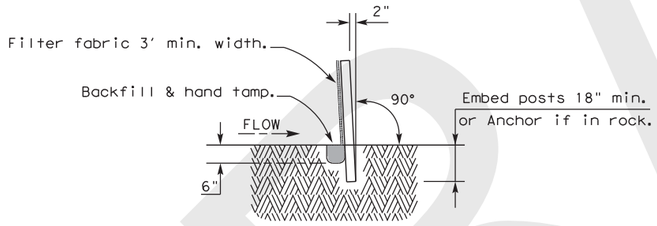
DATE: 6/1/2023 9:03:21 AM
FILE: pw:\\tedsi-pw.bentley.com:tedsi-pw-01\Documents\Projects\2022\2022-2135-01 - North Main Drain III Phase II\6.0 TEDSI Design\6.08 CADD\6.08.01 Sheet Files\SW3P\NORTH MAIN DRAIN III_SW3P.dgn



TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

Galvanized hinge joint knot woven mesh (12.5 GA.SWG Min.) requires a minimum of five horizontal wires spaced at a maximum of 12 inches apart and all vertical wires spaced at a maximum of 12 inches apart.

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 maximum 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.

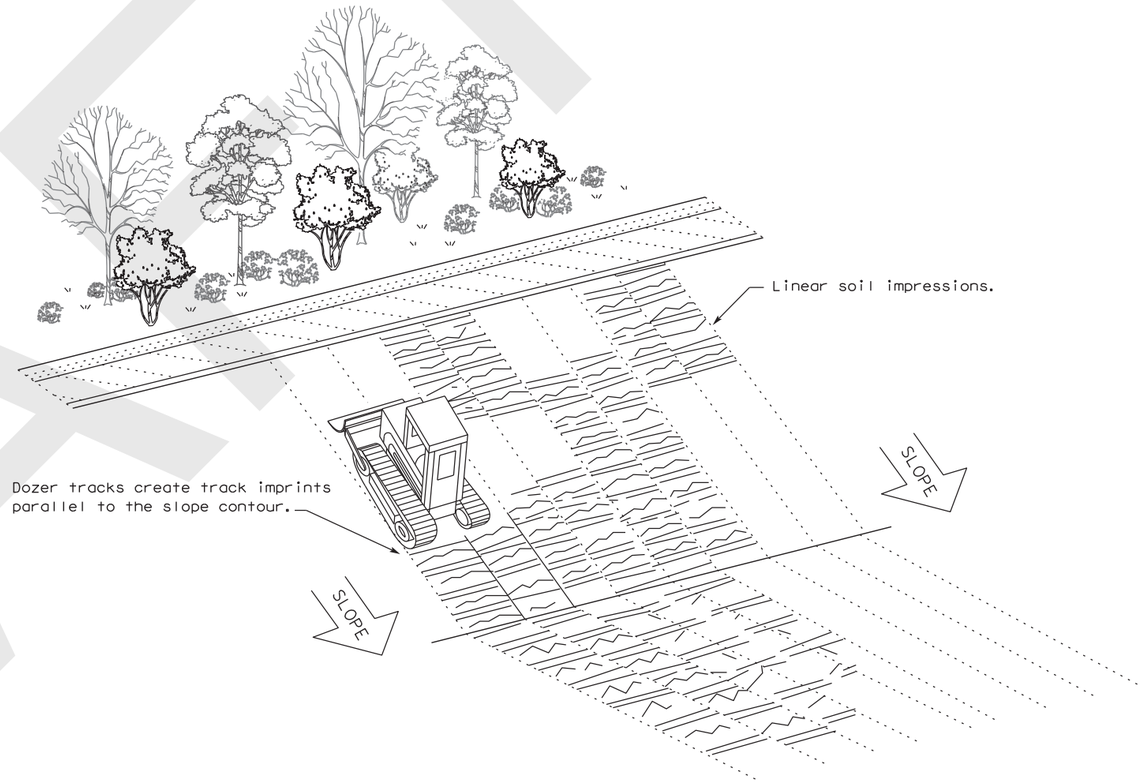
LEGEND

Sediment Control Fence

SCF

GENERAL NOTES

1. Vertical tracking is required on projects where soil distributing activities have occurred unless otherwise approved.
2. Perform vertical tracking on slopes to temporarily stabilize soil.
3. Provide equipment with a track undercarriage capable of producing linear soil impressions measuring a minimum of 12" in length by 2" to 4" in width by 1/2" to 2" in depth.
4. Do not exceed 12" between track impressions.
5. Install continous linear track impressions where the minimum 12" length impressions are perpendicular to the slope or direction of water flow.



VERTICAL TRACKING

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

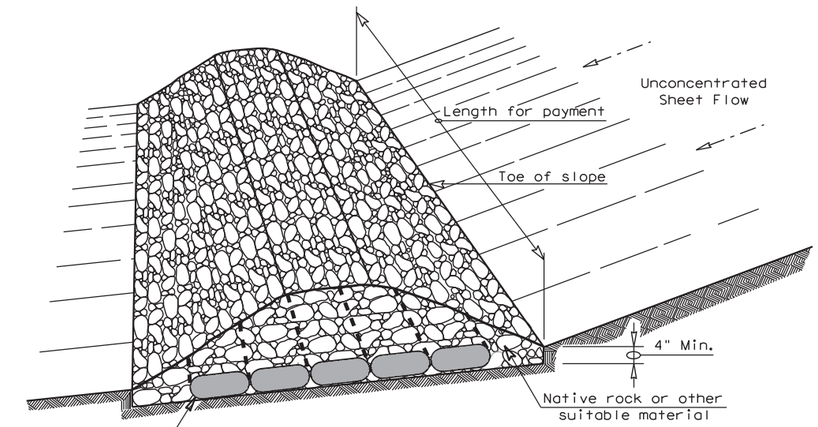
FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS					
	DIST	COUNTY		SHEET NO.	
				48	

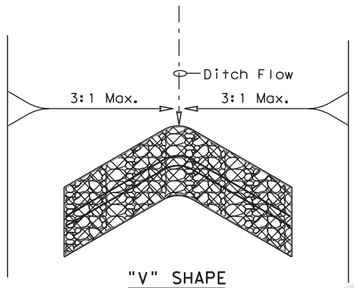
DATE
FILE

DATE:
FILE:

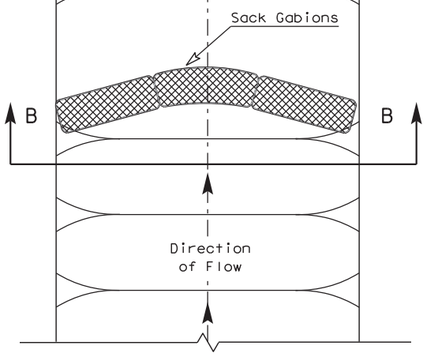


FILTER DAM AT TOE OF SLOPE

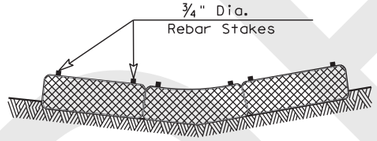
RFD1



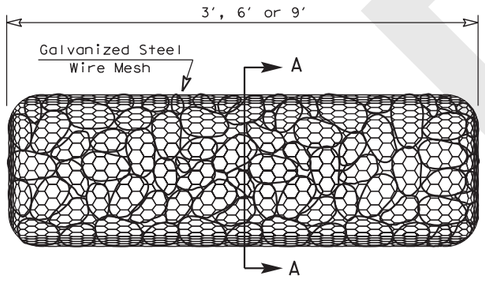
"V" SHAPE
PLAN VIEW



PLAN VIEW

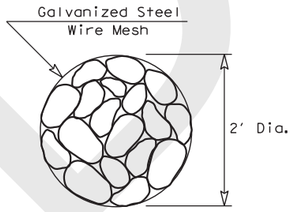


SECTION B-B

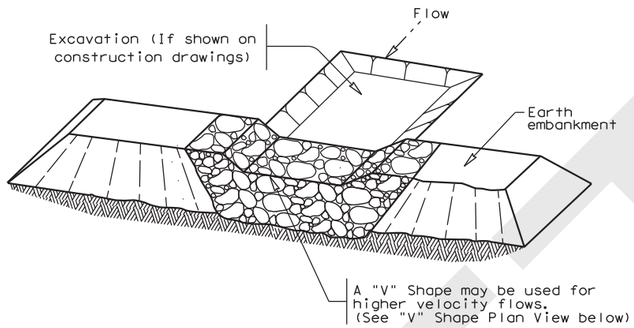


TYPE 4 (SACK GABIONS)

RFD4

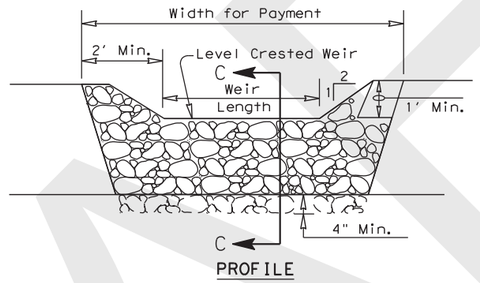


SECTION A-A

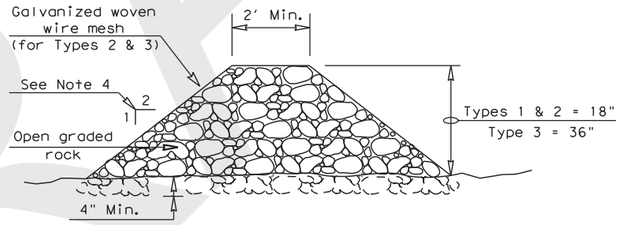


FILTER DAM AT SEDIMENT TRAP

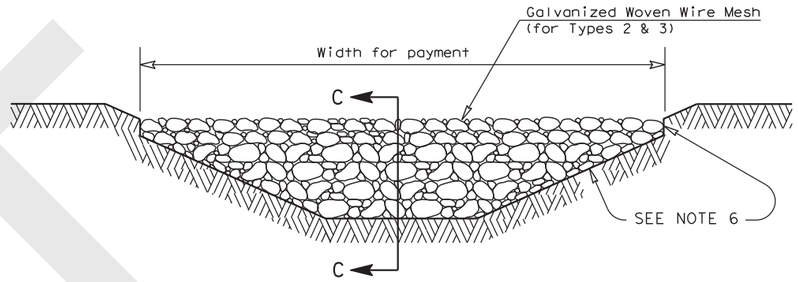
RFD1 OR RFD2



PROFILE



SECTION C-C



FILTER DAM AT CHANNEL SECTIONS

RFD1 OR RFD2 OR RFD3

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. For 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, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 ½" x 3 ¼"
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.

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) (3" to 6" aggregate): 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 (approximently 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) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

Type 3 (36" high with wire mesh) (4" to 8" aggregate): Type 3 may be used in stream flow and should be secured to the stream bed.

Type 4 (Sack gabions) (3" to 6" aggregate): Type 4 May be used in ditches and smaller channels to form an erosion control dam.

Type 5: Provide rock filter dams as shown on plans.

PLAN SHEET LEGEND

Type 1 Rock Filter Dam	RFD1
Type 2 Rock Filter Dam	RFD2
Type 3 Rock Filter Dam	RFD3
Type 4 Rock Filter Dam	RFD4

Texas Department of Transportation

Design Division Standard

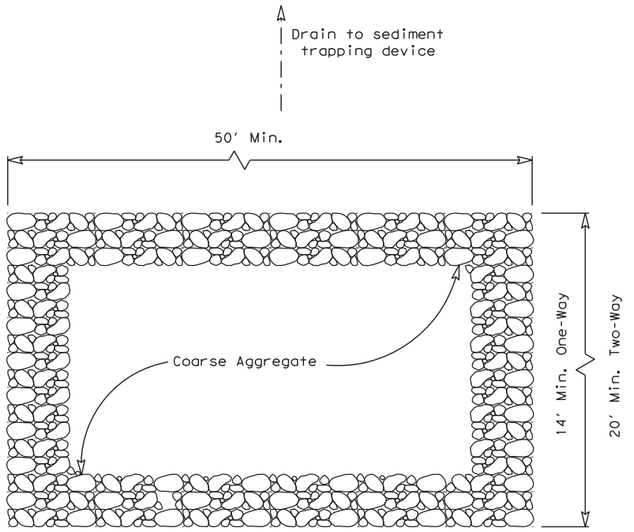
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

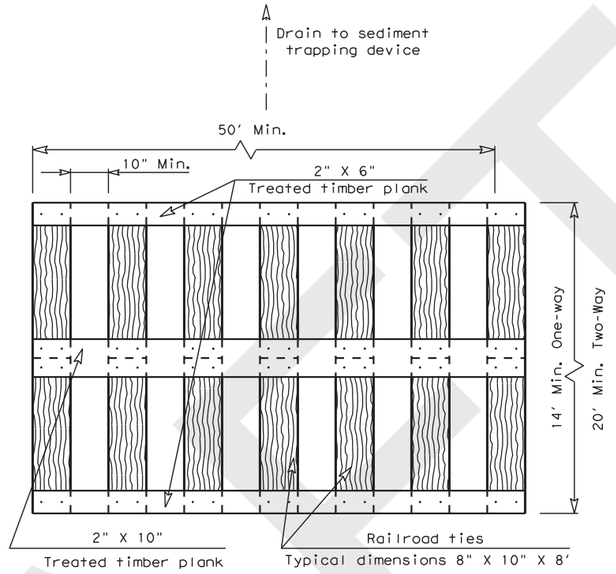
EC(2)-16

FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				49

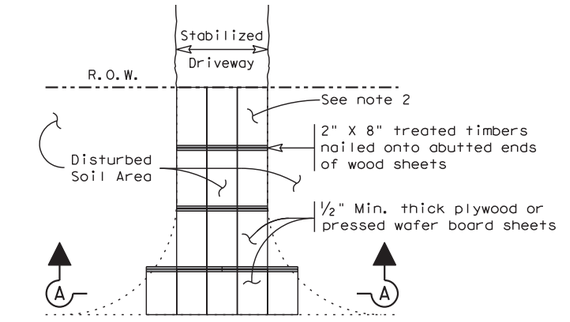
DATE:
FILE:



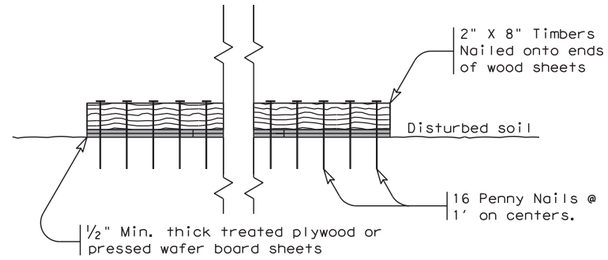
PLAN VIEW



PLAN VIEW



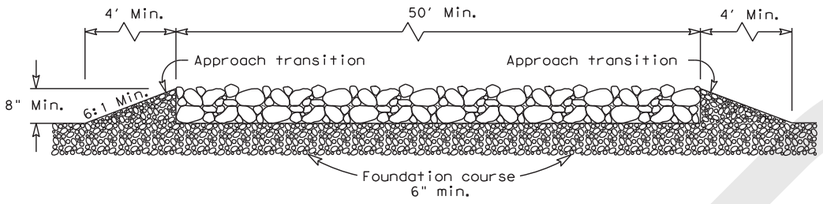
PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

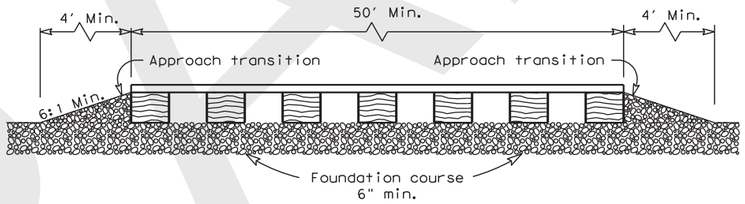
SHORT TERM



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

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 materialas 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.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 2)

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.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

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

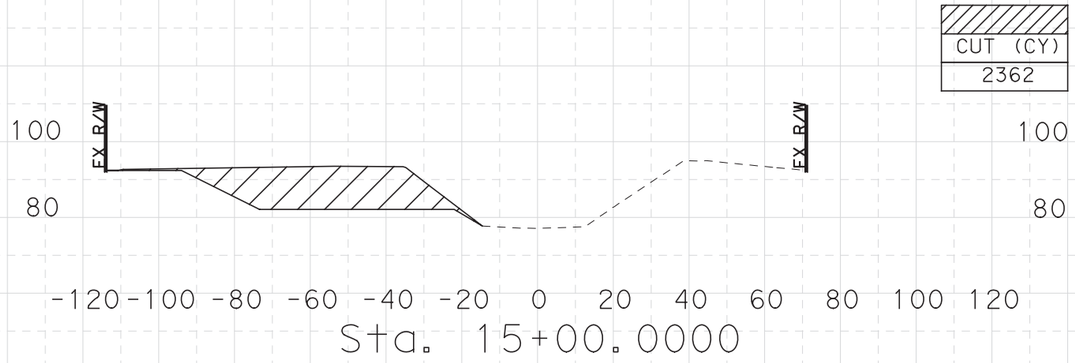
Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

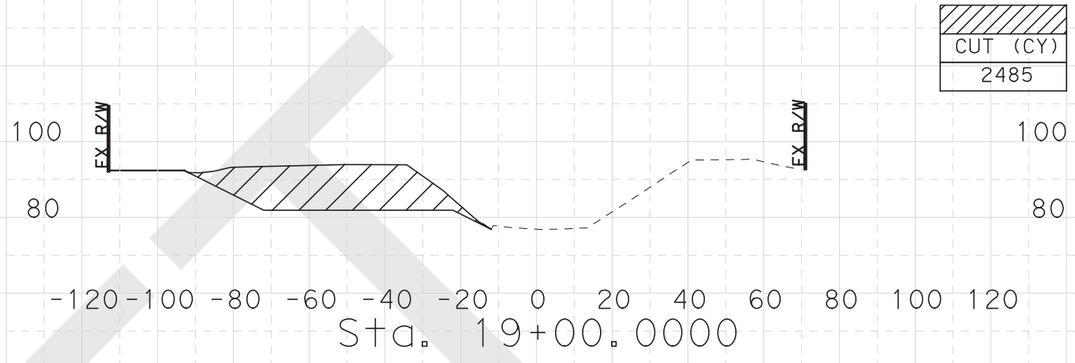
CONSTRUCTION EXITS

EC(3)-16

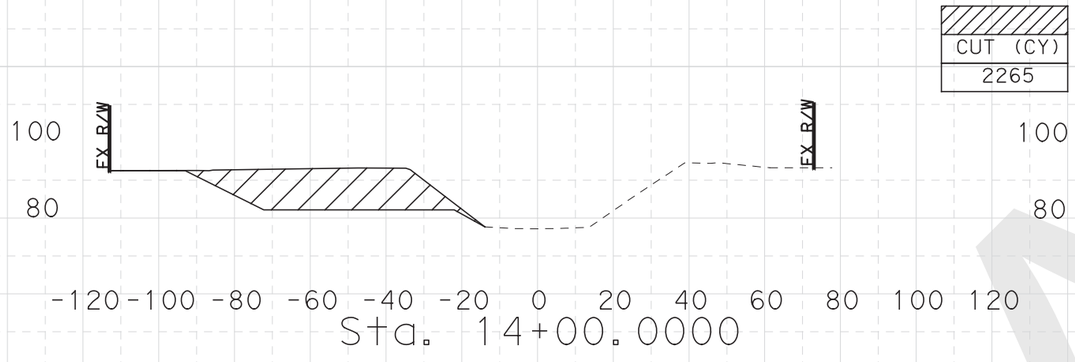
FILE: ec316	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				50



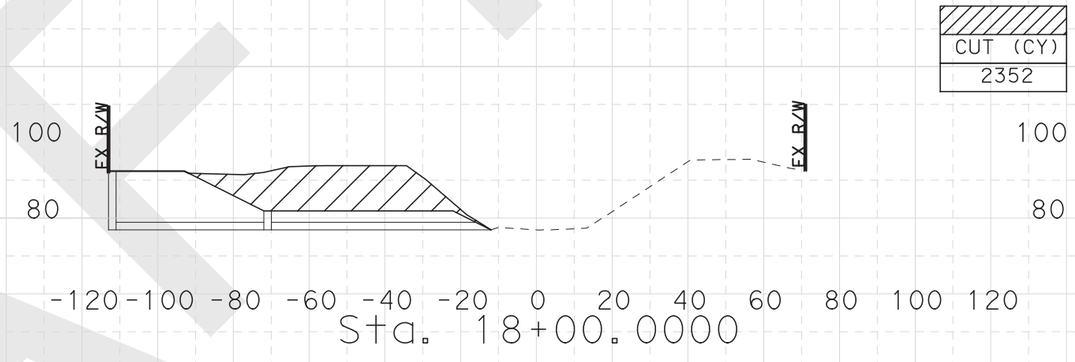
Sta. 15+00.0000



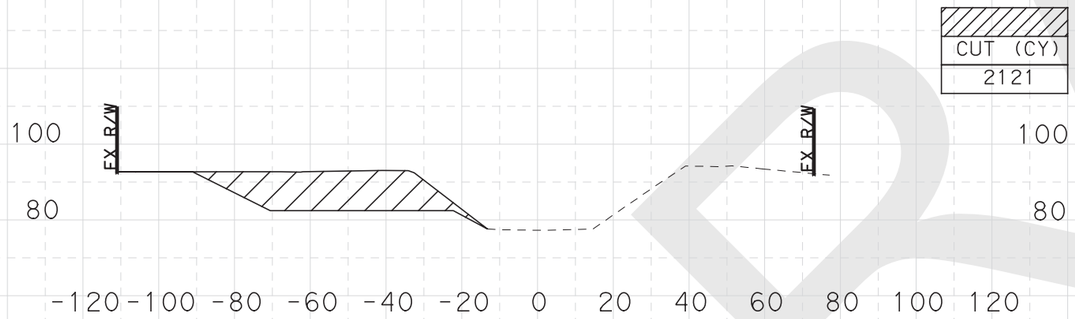
Sta. 19+00.0000



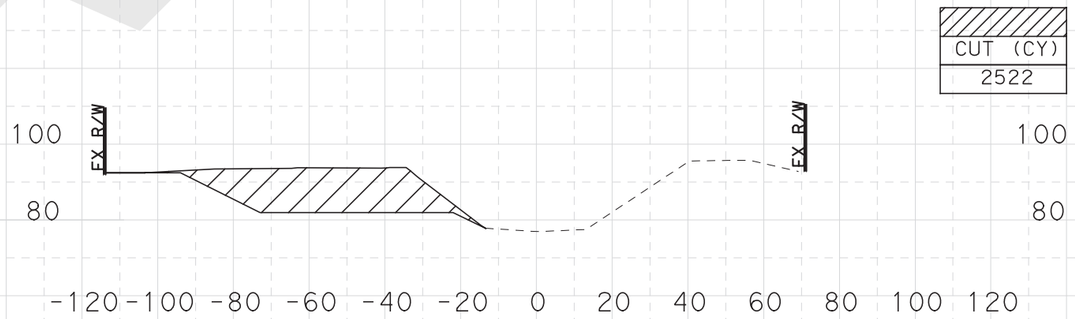
Sta. 14+00.0000



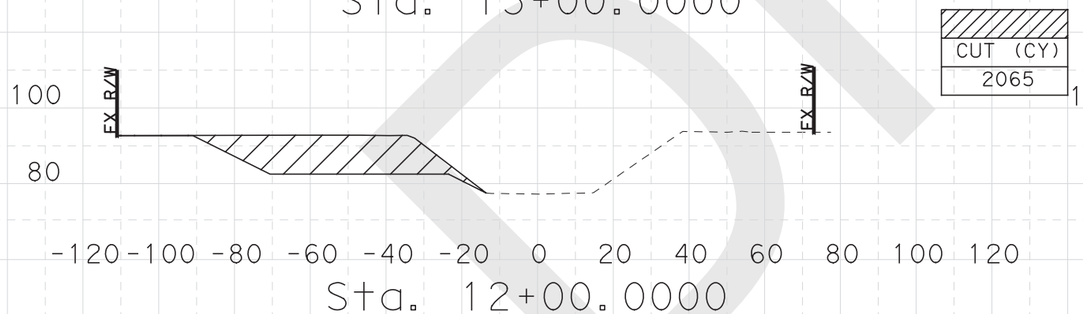
Sta. 18+00.0000



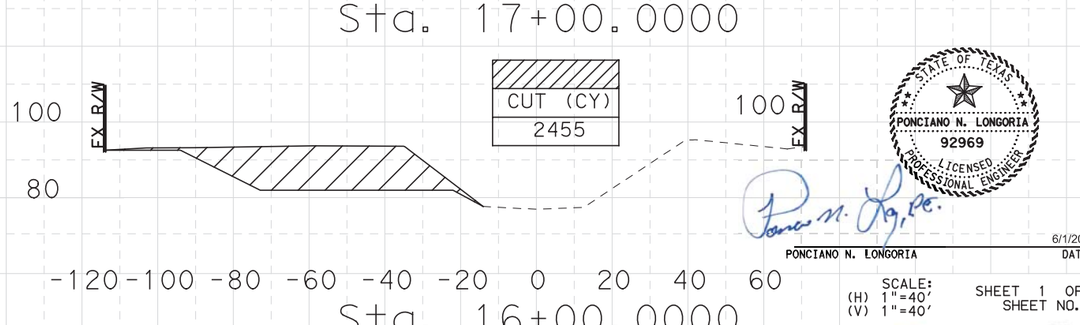
Sta. 13+00.0000



Sta. 17+00.0000



Sta. 12+00.0000



Sta. 16+00.0000

STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER

PONCIANO N. LONGORIA — 6/1/2023
DATE

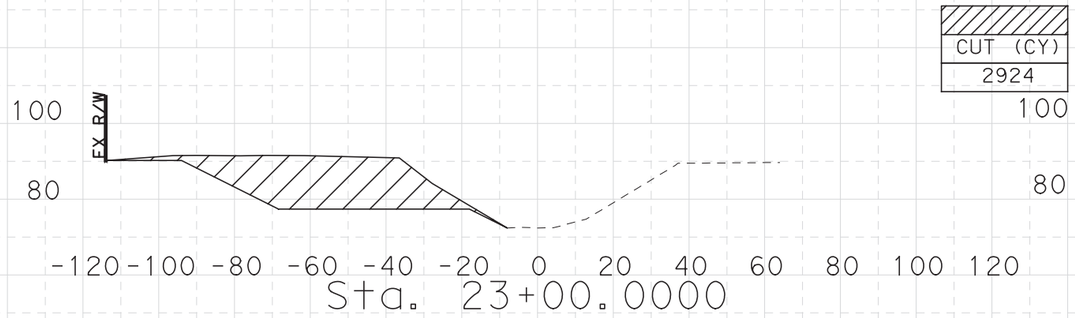
SCALE:
(H) 1"=40'
(V) 1"=40'

SHEET 1 OF 6
SHEET NO. 51

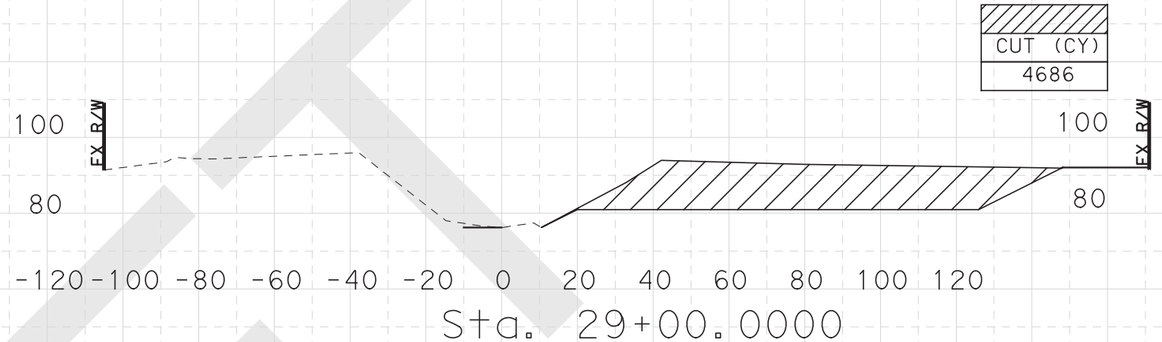
HIDALGO COUNTY DRAINAGE DISTRICT No.1

HIDALGO COUNTY 4 PRECINCT FOUR

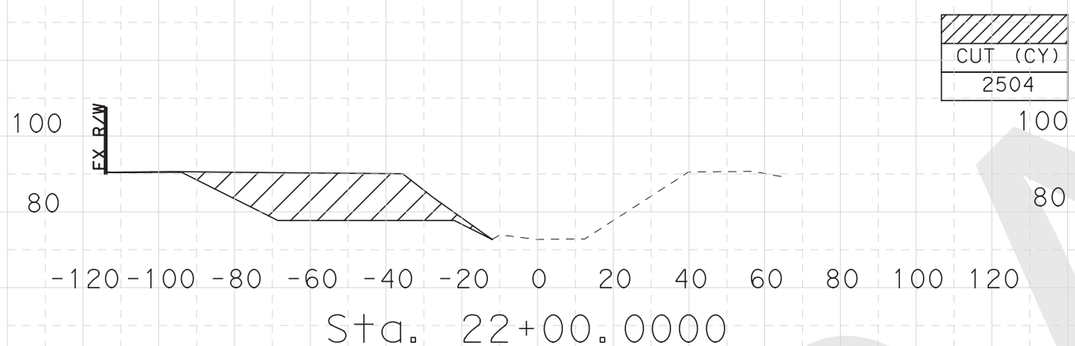
TEDSI INFRASTRUCTURE GROUP
Consulting Engineers



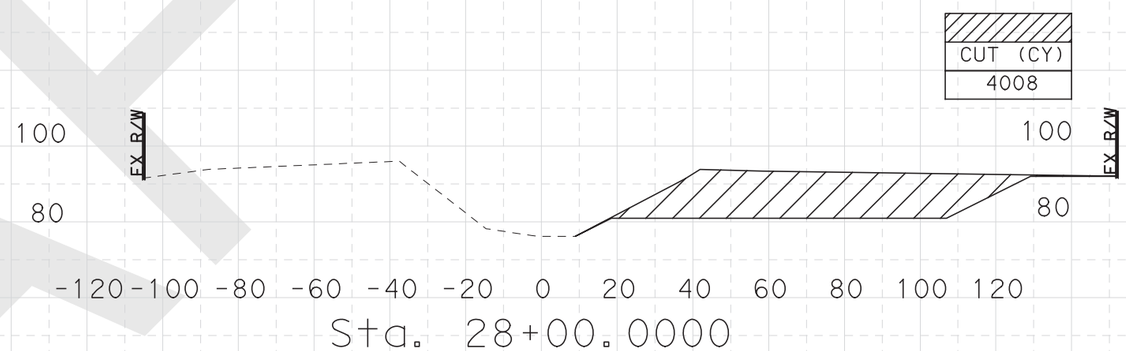
Sta. 23+00.0000



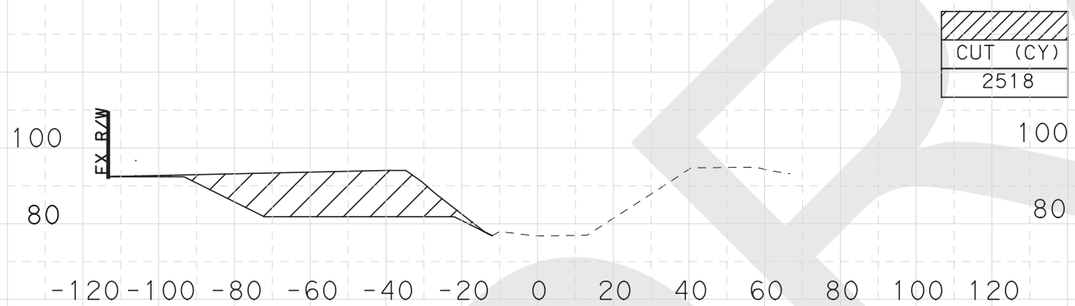
Sta. 29+00.0000



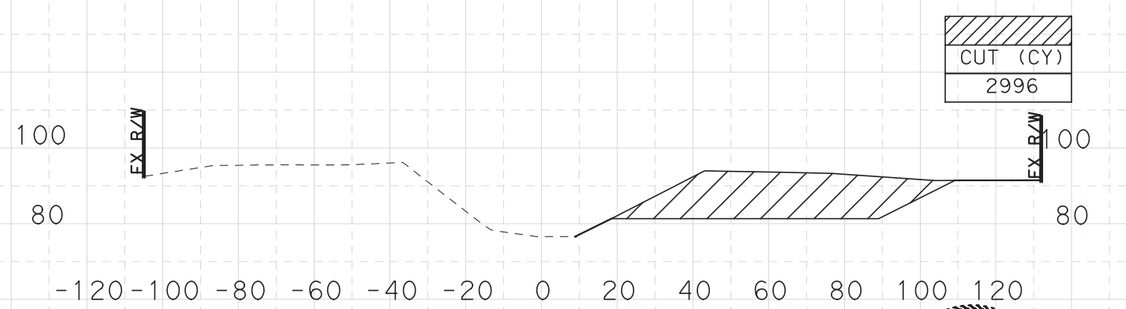
Sta. 22+00.0000



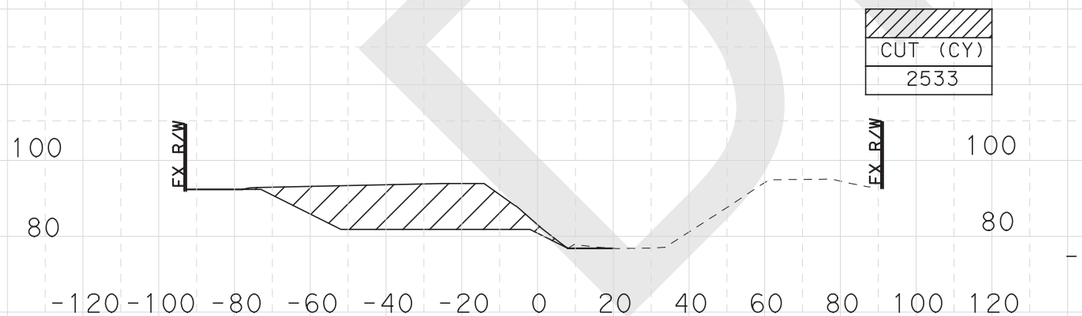
Sta. 28+00.0000



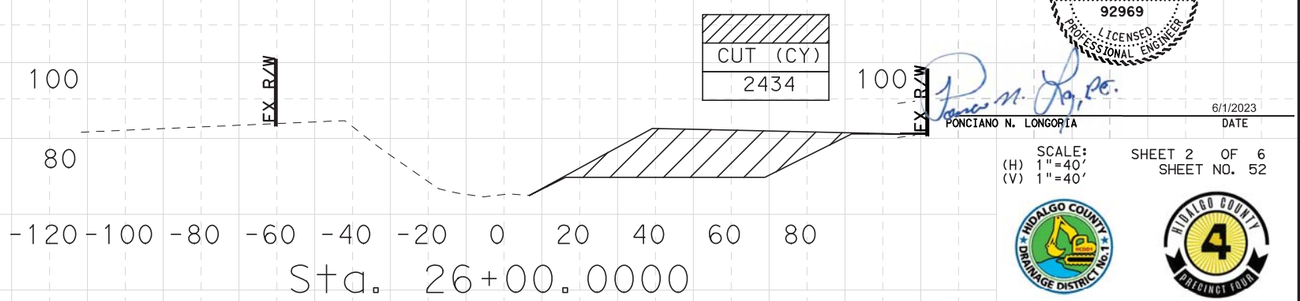
Sta. 21+00.0000



Sta. 27+00.0000



Sta. 20+00.0000



Sta. 26+00.0000

STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER

Ponciano N. Longoria, P.E.

6/1/2023
PONCIANO N. LONGORIA — DATE

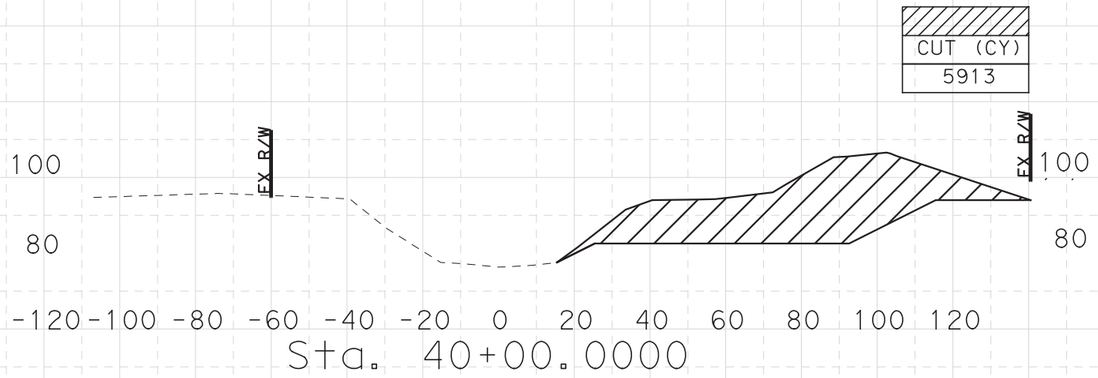
SCALE:
(H) 1"=40'
(V) 1"=40'

SHEET 2 OF 6
SHEET NO. 52

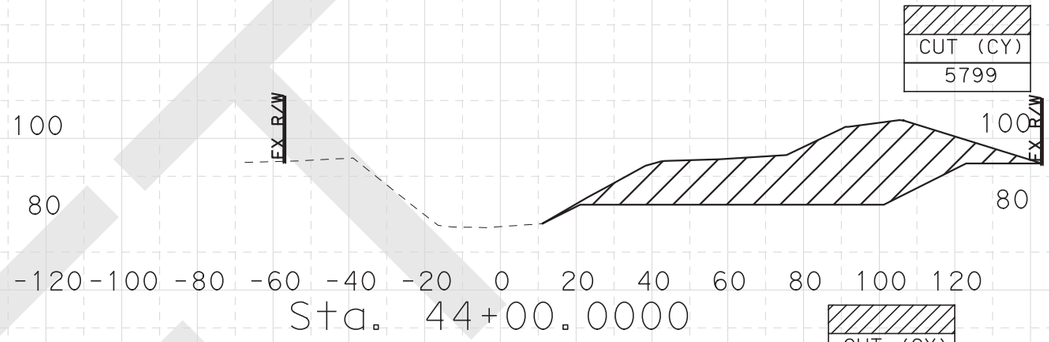
HIDALGO COUNTY DRAINAGE DISTRICT NO.1

HIDALGO COUNTY 4 PRECINCT FOUR

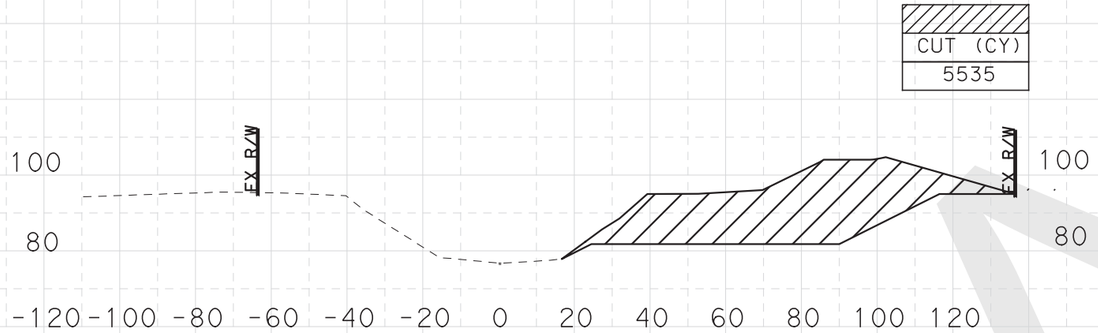
TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
TEDSI



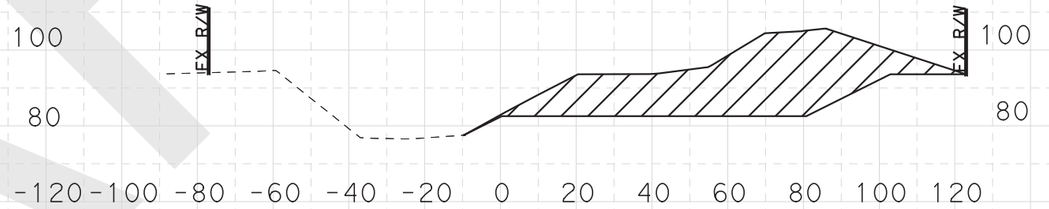
Sta. 40+00.0000



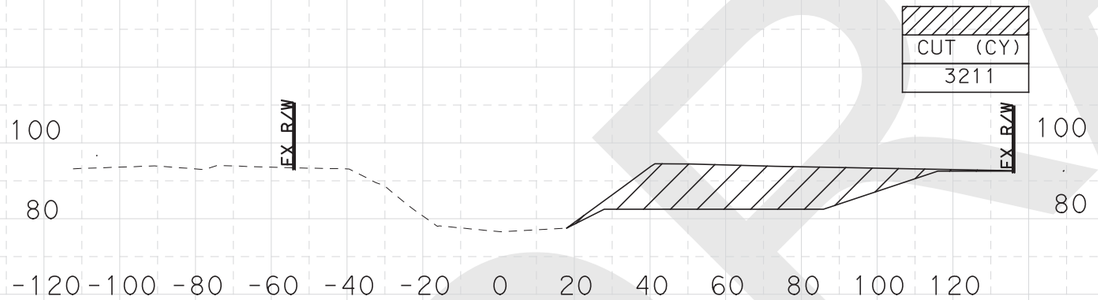
Sta. 44+00.0000



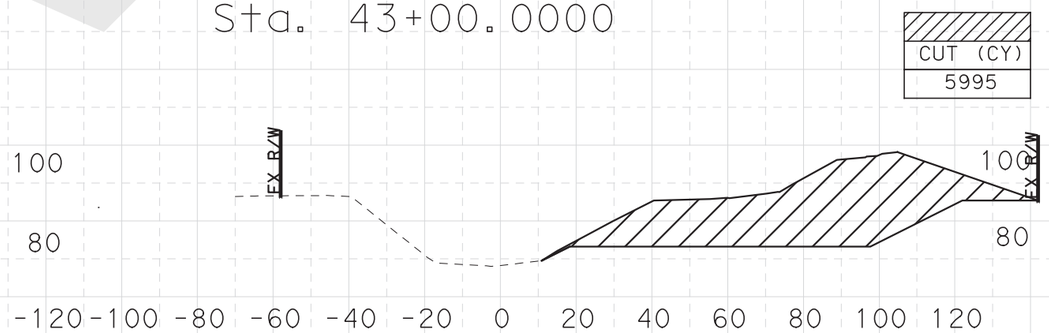
Sta. 39+00.0000



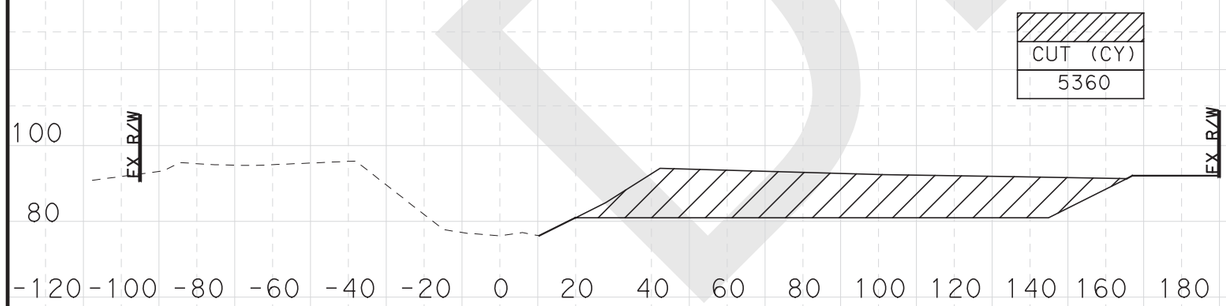
Sta. 43+00.0000



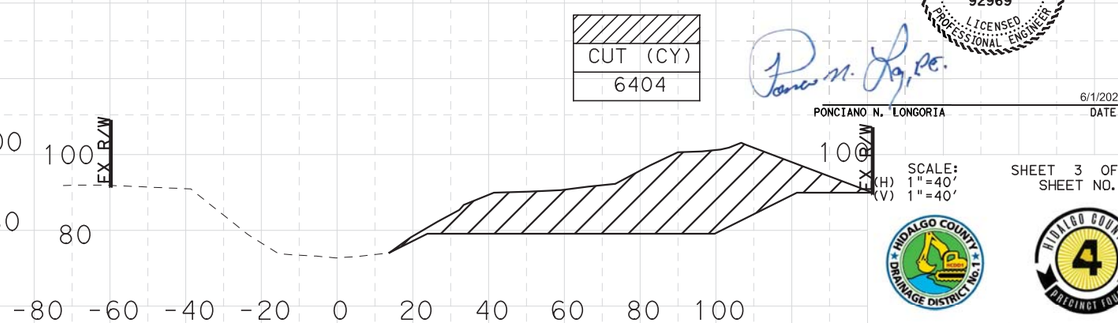
Sta. 38+00.0000



Sta. 42+00.0000



Sta. 30+00.0000



Sta. 41+00.0000

STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER

Ponciano N. Longoria, P.E.

PONCIANO N. LONGORIA — 6/1/2023 DATE

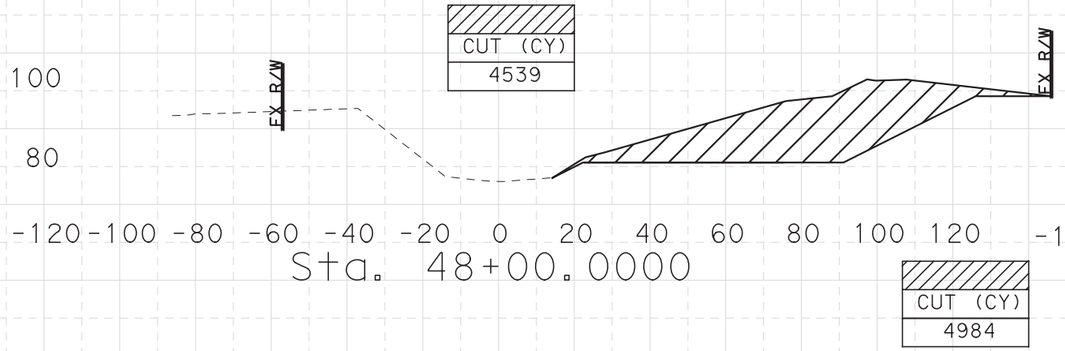
SCALE:
(H) 1"=40'
(V) 1"=40'

SHEET 3 OF 6
SHEET NO. 53

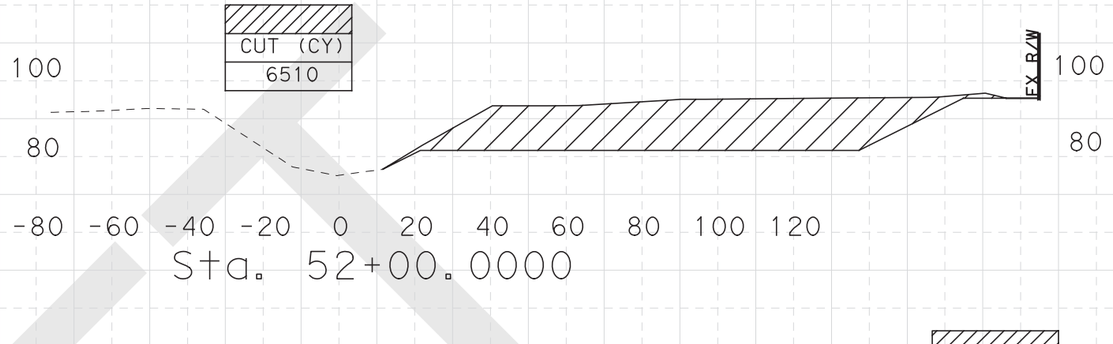
HIDALGO COUNTY DRAINAGE DISTRICT NO. 1

HIDALGO COUNTY 4 PRECINCT FOUR

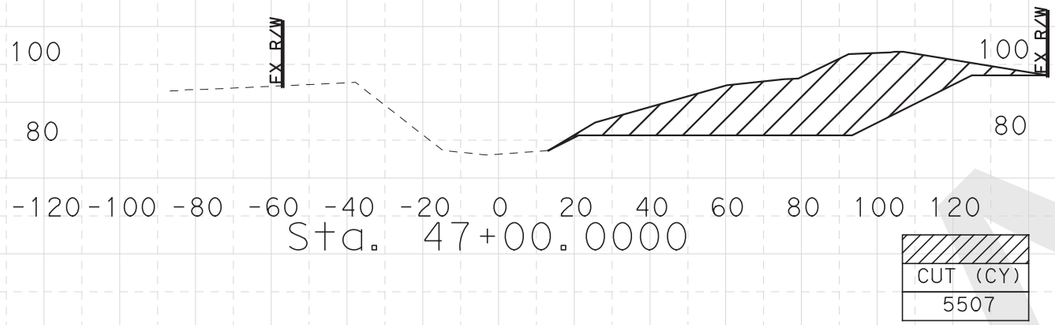
TEDSI INFRASTRUCTURE GROUP
Consulting Engineers



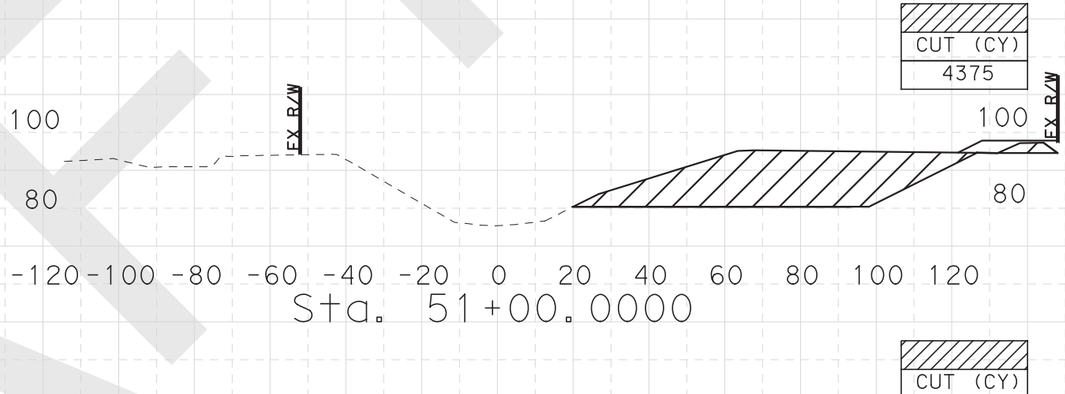
Sta. 48+00.0000



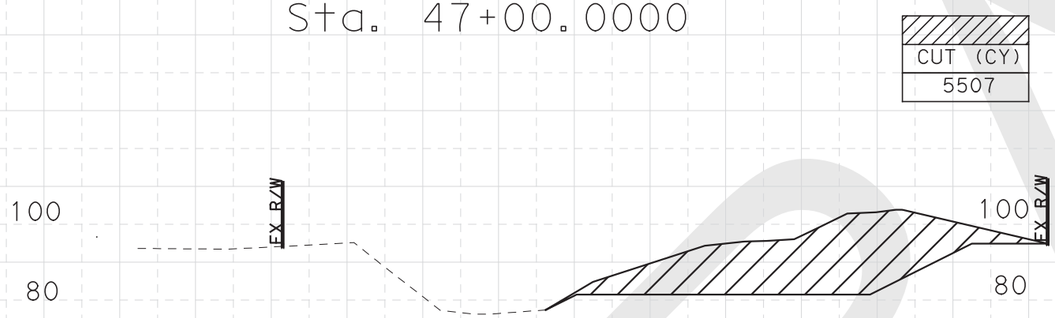
Sta. 52+00.0000



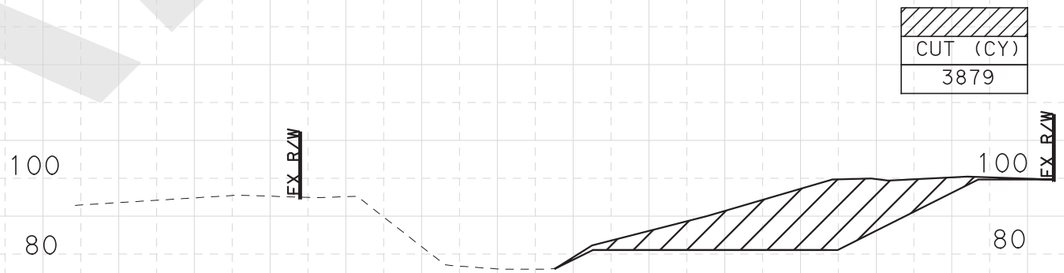
Sta. 47+00.0000



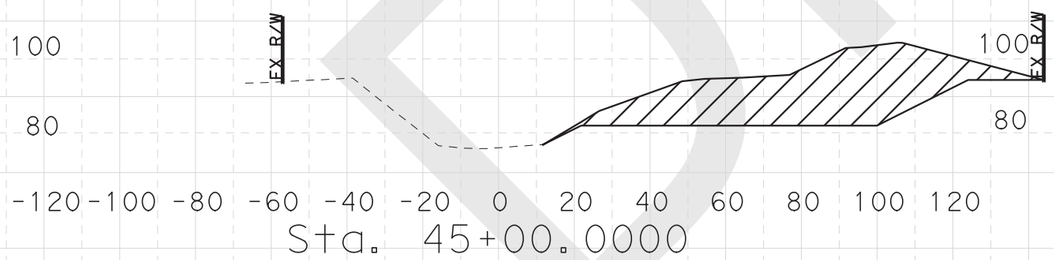
Sta. 51+00.0000



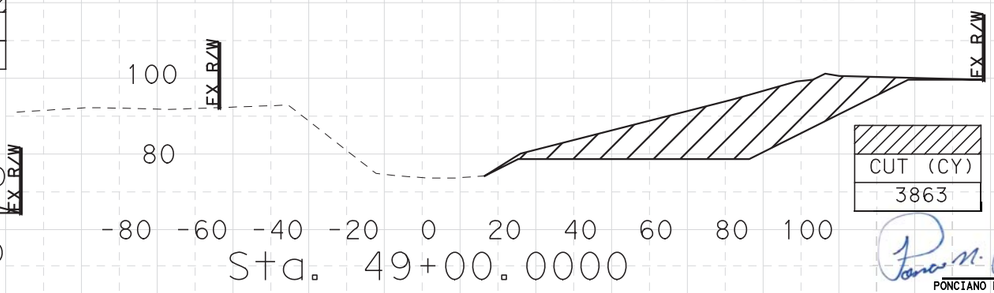
Sta. 46+00.0000



Sta. 50+00.0000



Sta. 45+00.0000



Sta. 49+00.0000

STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER

PONCIANO N. LONGORIA

6/1/2023
DATE

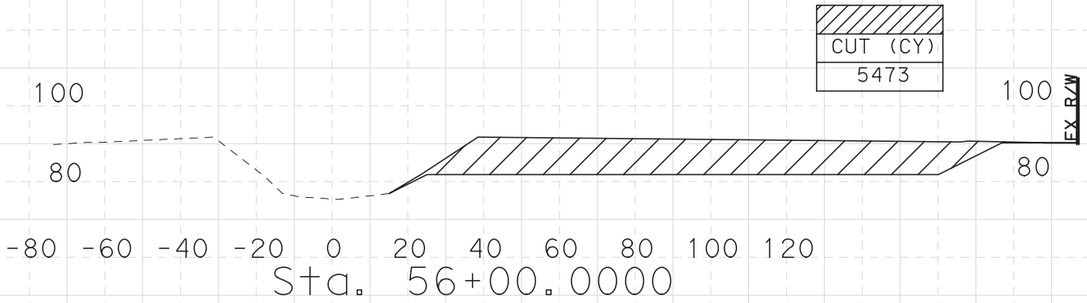
SCALE:
(H) 1"=40'
(V) 1"=40'

SHEET 4 OF 6
SHEET NO. 54

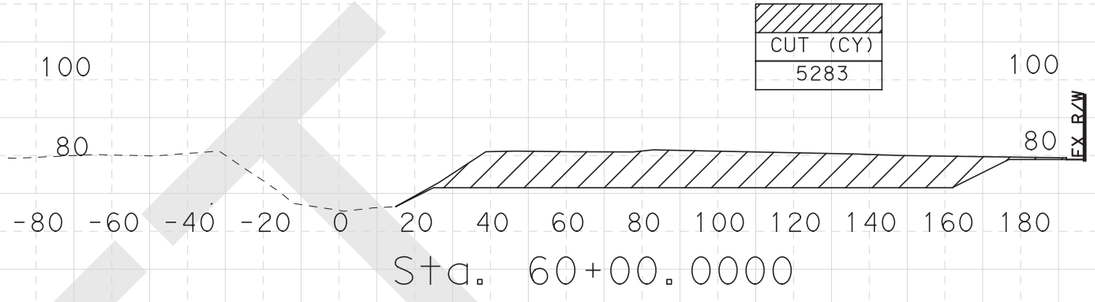
HIDALGO COUNTY DRAINAGE DISTRICT NO. 1

HIDALGO COUNTY 4 PRECINCT FOUR

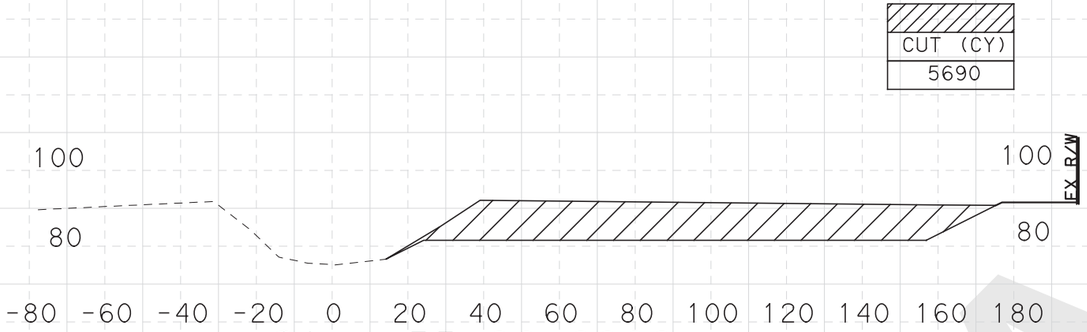
TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 Interstate Highway 2
Mission, Texas 78573
(956) 424-7808
TBPE F-1640



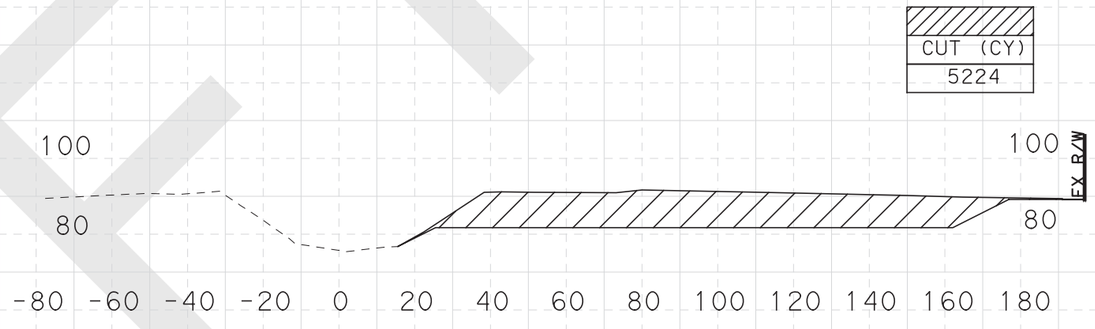
Sta. 56+00.0000



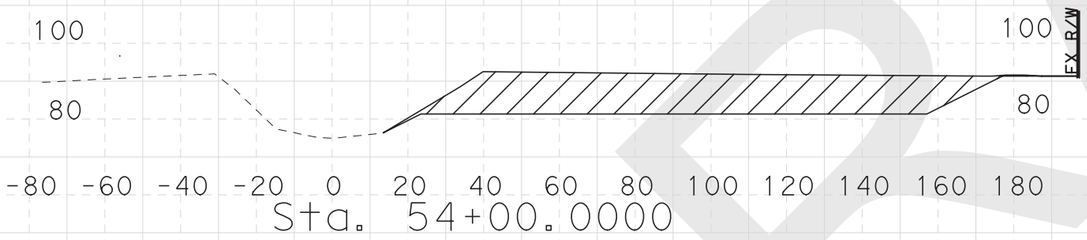
Sta. 60+00.0000



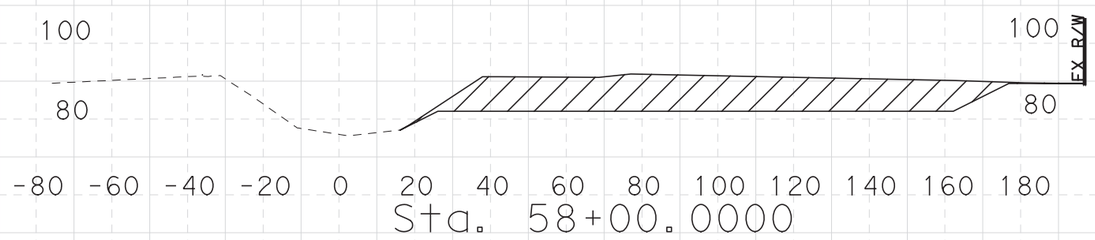
Sta. 55+00.0000



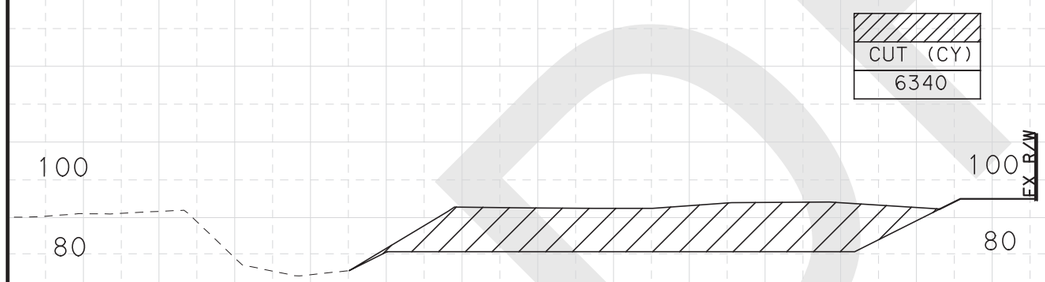
Sta. 59+00.0000



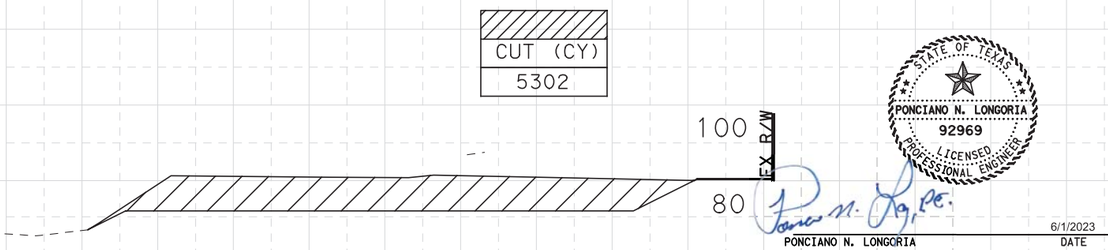
Sta. 54+00.0000



Sta. 58+00.0000



Sta. 53+00.0000



Sta. 57+00.0000

STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED
PROFESSIONAL ENGINEER

PONCIANO N. LONGORIA — 6/1/2023
PONCIANO N. LONGORIA — DATE

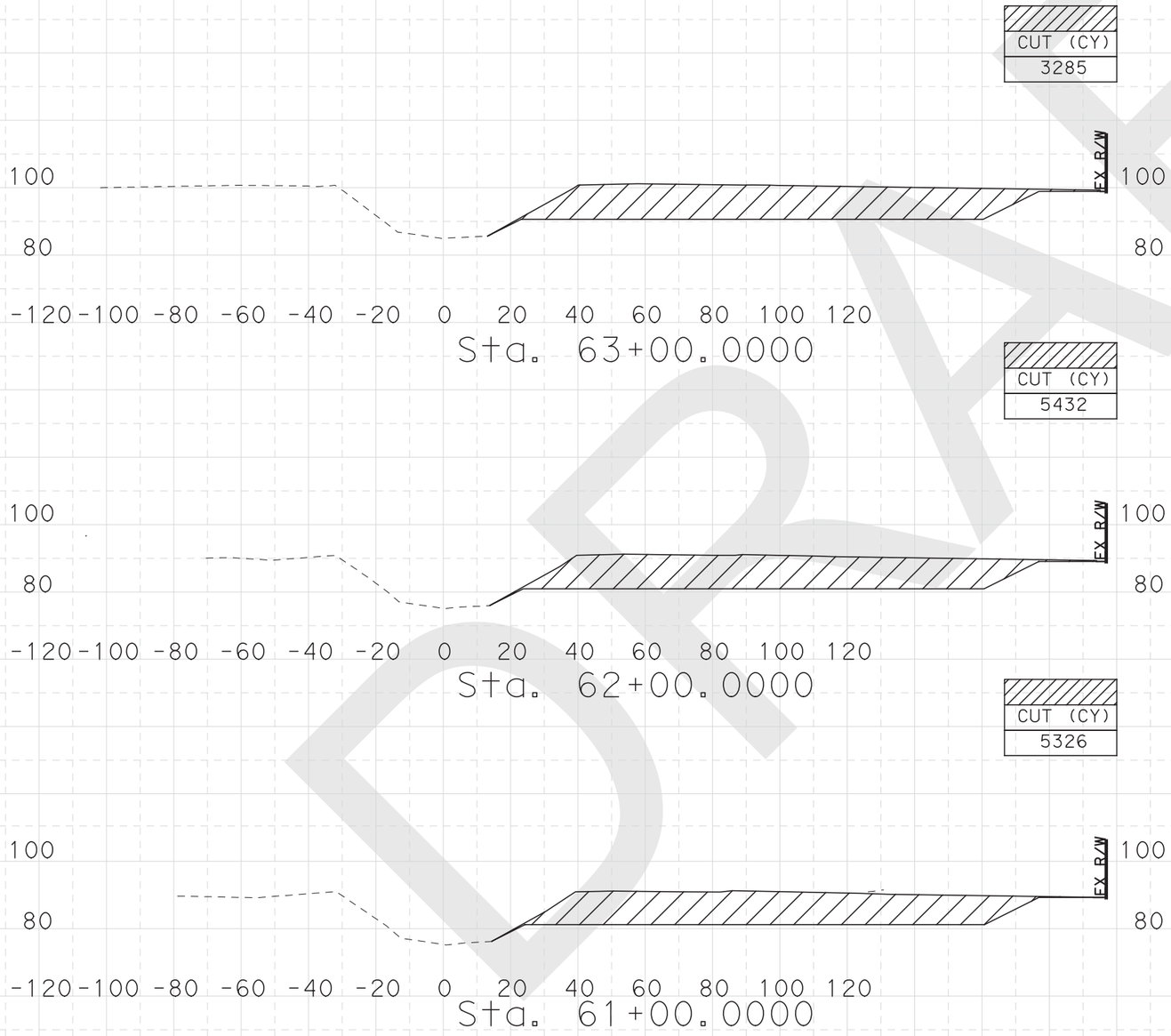
SCALE:
(H) 1"=40'
(V) 1"=40'

SHEET 5 OF 6
SHEET NO. 55

HIDALGO COUNTY DRAINAGE DISTRICT NO.1

HIDALGO COUNTY PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers



STATE OF TEXAS
PONCIANO N. LONGORIA
92969
LICENSED PROFESSIONAL ENGINEER

PONCIANO N. LONGORIA

6/1/2023
DATE

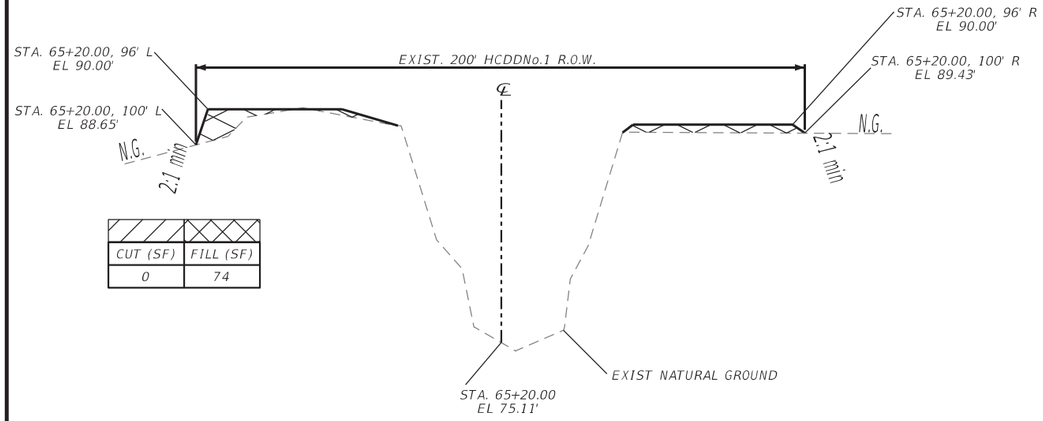
SCALE:
(H) 1"=40'
(V) 1"=40'

SHEET 6 OF 6
SHEET NO. 56

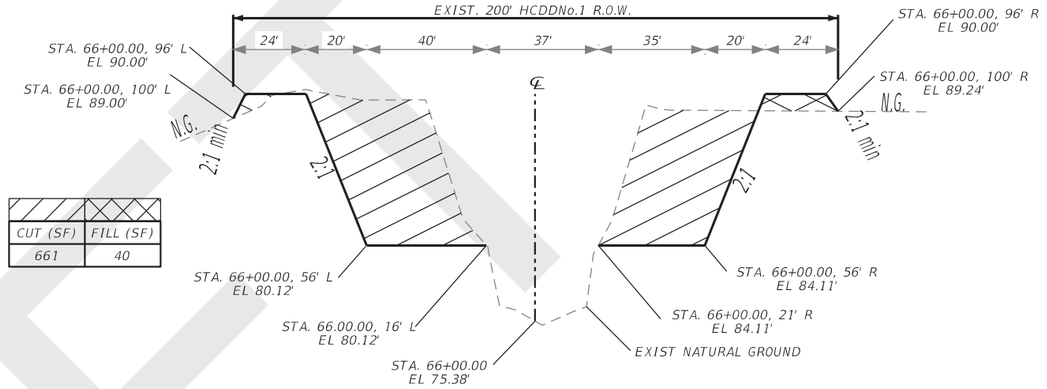
HIDALGO COUNTY DRAINAGE DISTRICT NO.1

HIDALGO COUNTY 4 PRECINCT FOUR

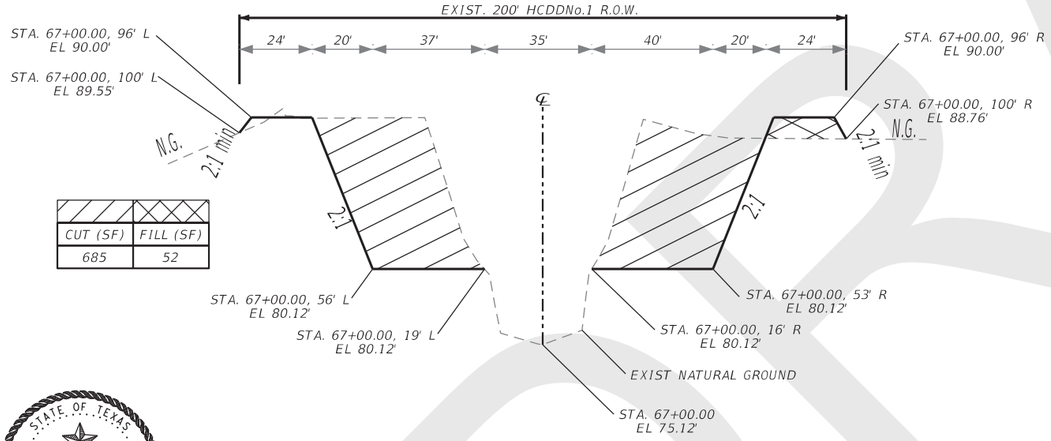
TEDSI INFRASTRUCTURE GROUP
Consulting Engineers



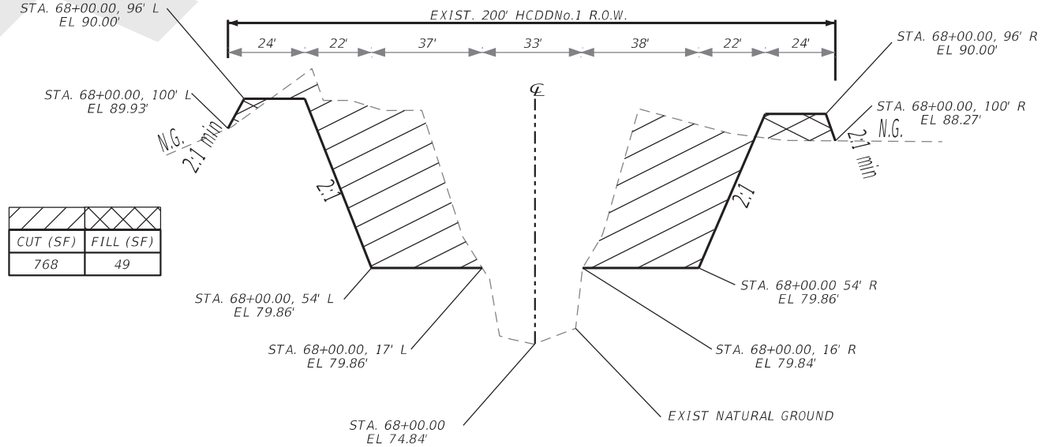
STA. 65+20.00



STA. 66+00.00



STA. 67+00.00



STA. 68+00.00

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED
PROFESSIONAL ENGINEER

SHEET 1 OF 6

B2Z ENGINEERING
TBPE FIRM NO. F-11187

HIDALGO COUNTY DRAINAGE DISTRICT No.1

NORTH MAIN DRAIN III PHASE I
CROSS SECTIONS

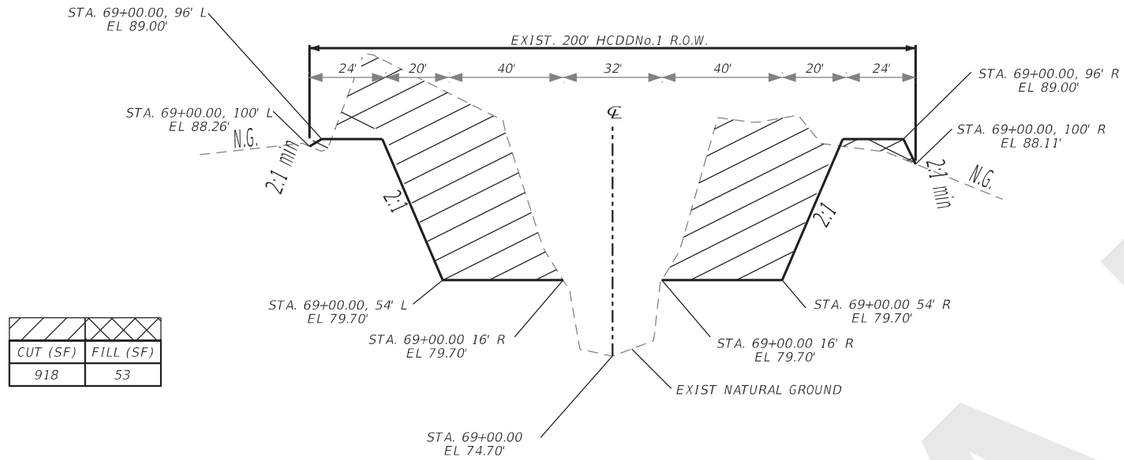
NOT TO SCALE

HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 Interstate Highway 2
Mission, Texas 78572
(956) 424-7898
TEDSI TBPE F-1640

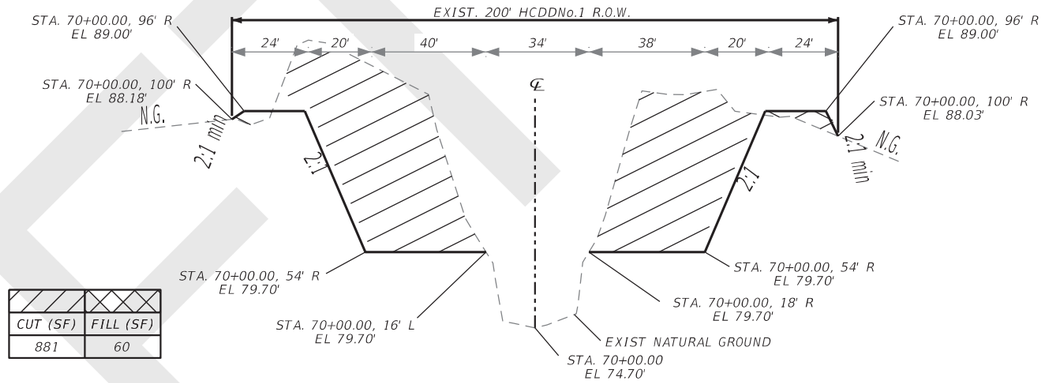
5/5/2023

K:\Precinct 4\North Main Drain III\NMD*PH1\REF\CORR\XS\XS*SH1.dgn



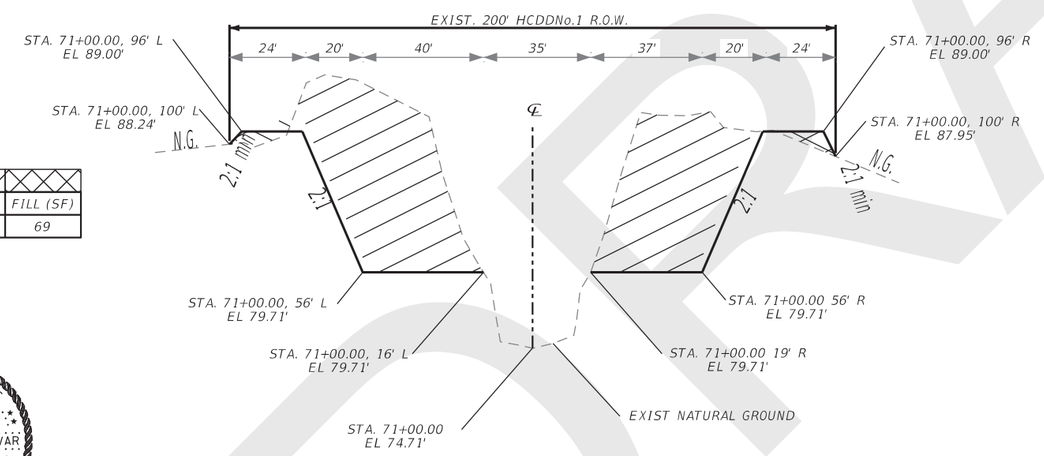
CUT (SF)	FILL (SF)
918	53

STA. 69+00.00



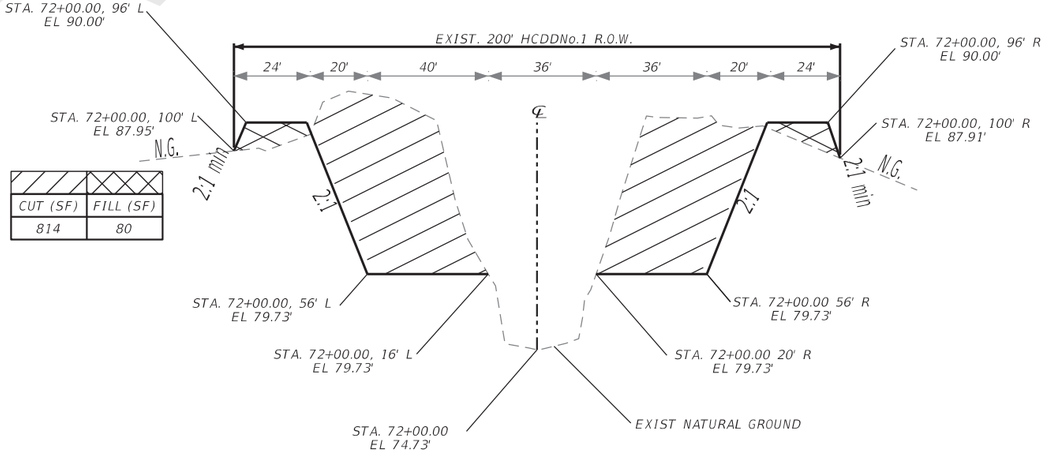
CUT (SF)	FILL (SF)
881	60

STA. 70+00.00



CUT (SF)	FILL (SF)
846	69

STA. 71+00.00



CUT (SF)	FILL (SF)
814	80

STA. 72+00.00

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED PROFESSIONAL ENGINEER

SHEET 2 OF 6

B2Z ENGINEERING
TBPE FIRM NO. F-11187

HIDALGO COUNTY DRAINAGE DISTRICT NO.1

NORTH MAIN DRAIN III PHASE I
CROSS SECTIONS

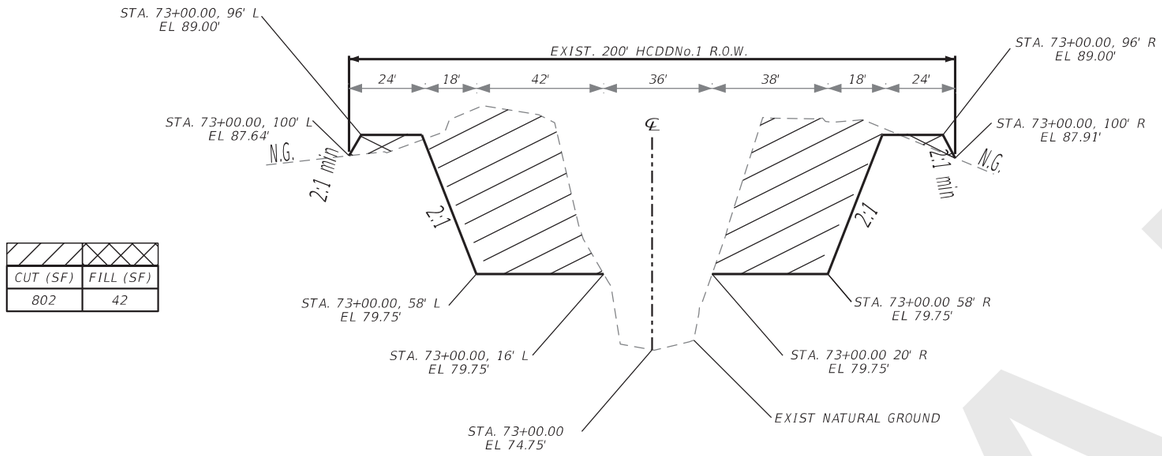
NOT TO SCALE

HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 Interstate Highway 2
Mission, Texas 78572
(956) 424-7898
TBPE F-1640

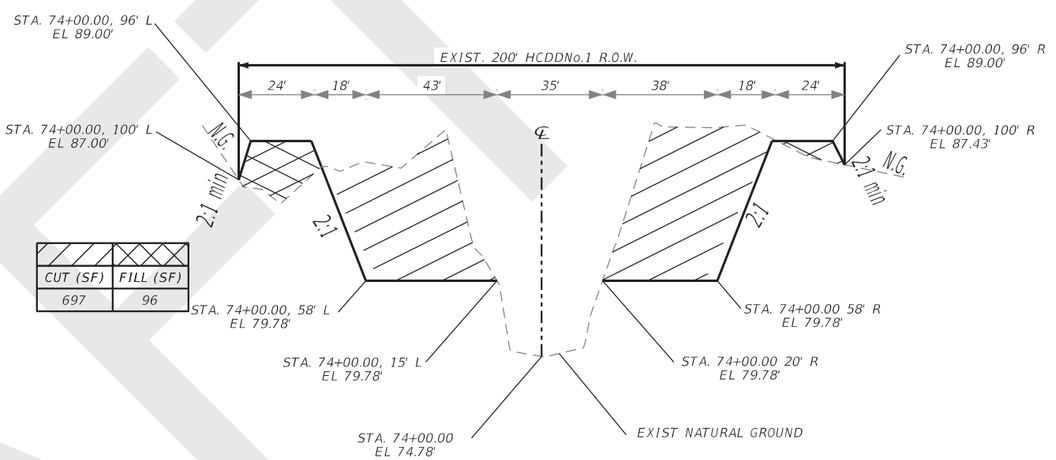
K:\Precinct 4\North Main Drain III\MND*PH1\REF\CORR\XS\XS*SH1.dgn

5/5/2023



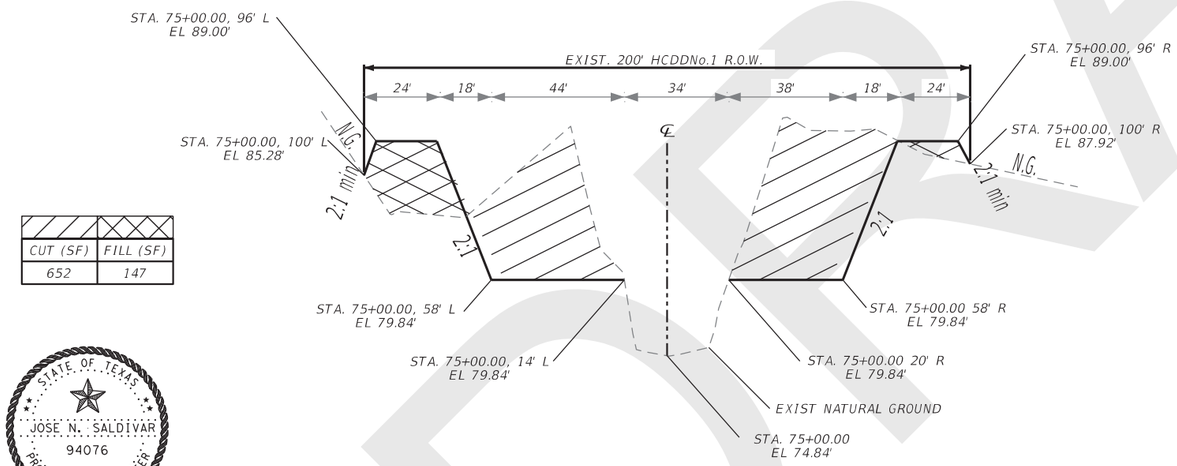
CUT (SF)	FILL (SF)
802	42

STA. 73+00.00



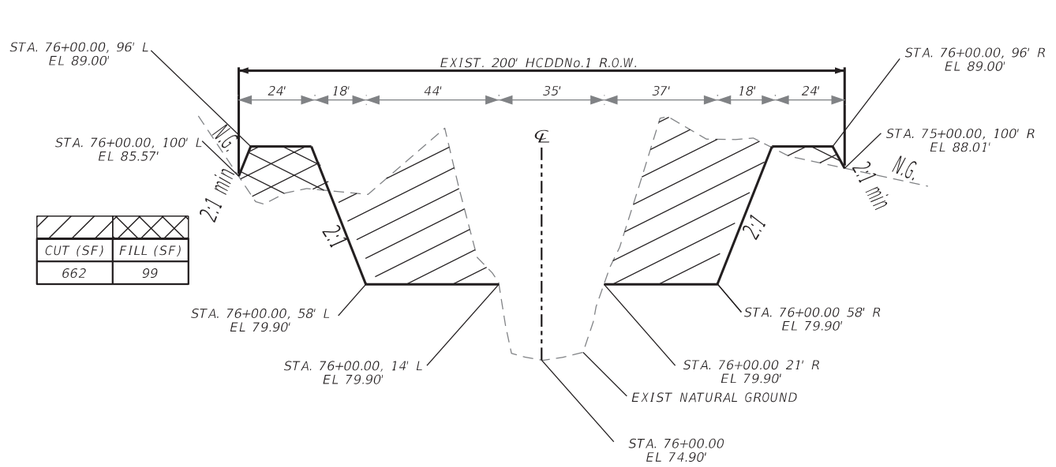
CUT (SF)	FILL (SF)
697	96

STA. 74+00.00



CUT (SF)	FILL (SF)
652	147

STA. 75+00.00



CUT (SF)	FILL (SF)
662	99

STA. 76+00.00

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED
PROFESSIONAL ENGINEER

SHEET 3 OF 6

B2Z ENGINEERING
TBPE FIRM NO. F-11187

HIDALGO COUNTY DRAINAGE DISTRICT NO.1

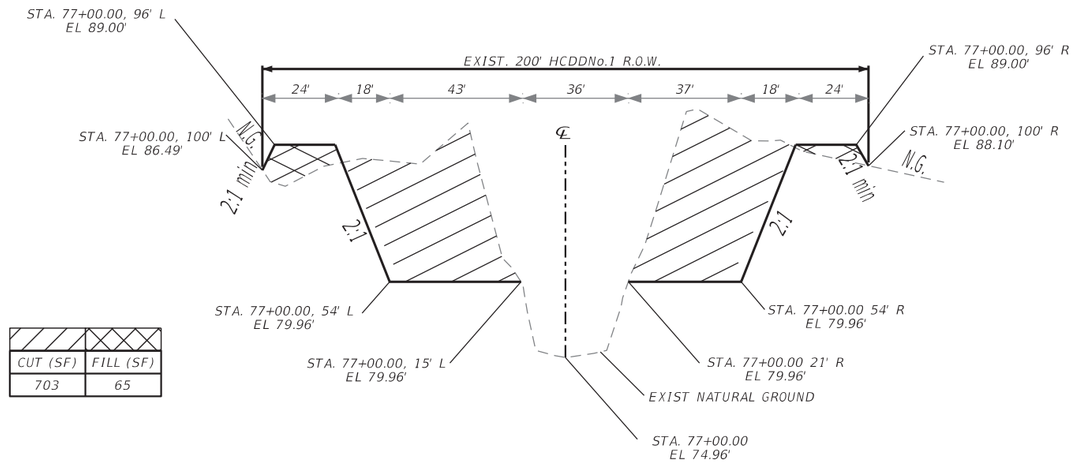
NORTH MAIN DRAIN III PHASE I
CROSS SECTIONS

NOT TO SCALE

HIDALGO COUNTY 4 PRECINCT FOUR

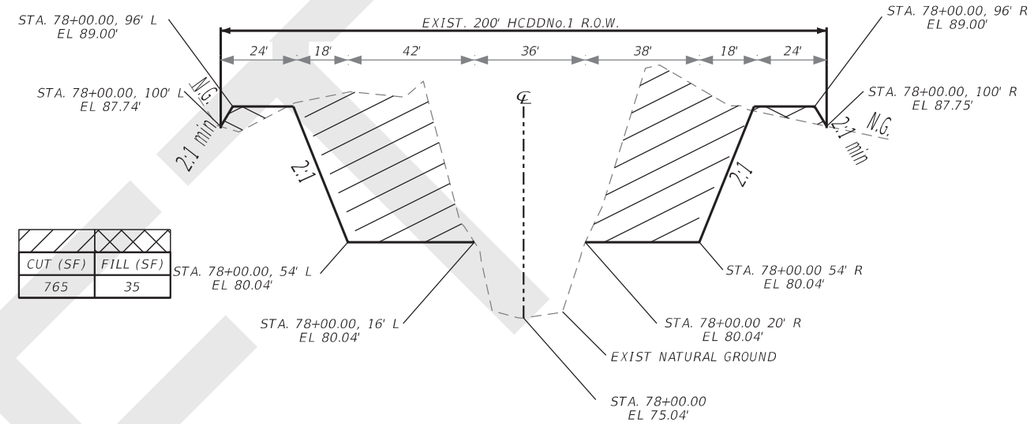
TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 Interstate Highway 2
Mission, Texas 78572
(956) 424-7898
TEDSI TBPE F-1640

K:\Precinct 4\North Main Drain III\MD*PH1\REF\CORR\XS\XS*SH1.dgn
5/5/2023



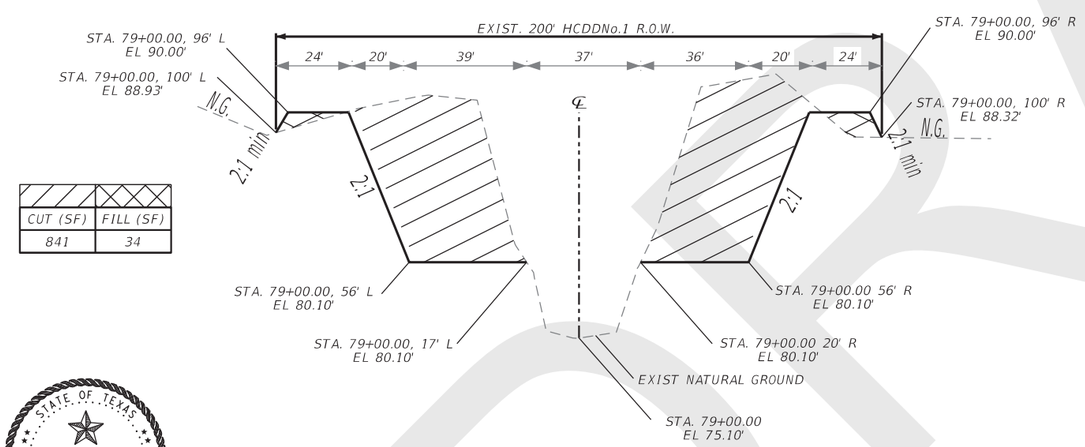
CUT (SF)	FILL (SF)
703	65

STA. 77+00.00



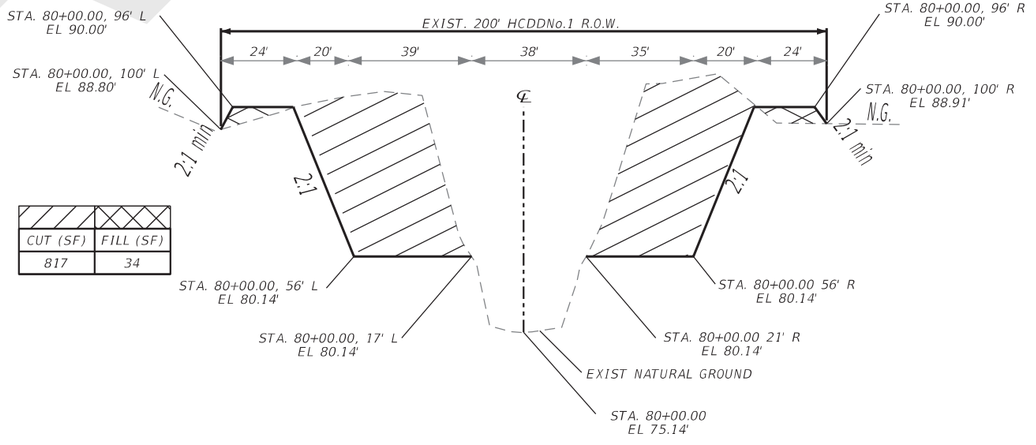
CUT (SF)	FILL (SF)
765	35

STA. 78+00.00



CUT (SF)	FILL (SF)
841	34

STA. 79+00.00



CUT (SF)	FILL (SF)
817	34

STA. 80+00.00

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED PROFESSIONAL ENGINEER

SHEET 4 OF 6

B2Z ENGINEERING
TBPE FIRM NO. F-11187

HIDALGO COUNTY DRAINAGE DISTRICT No.1

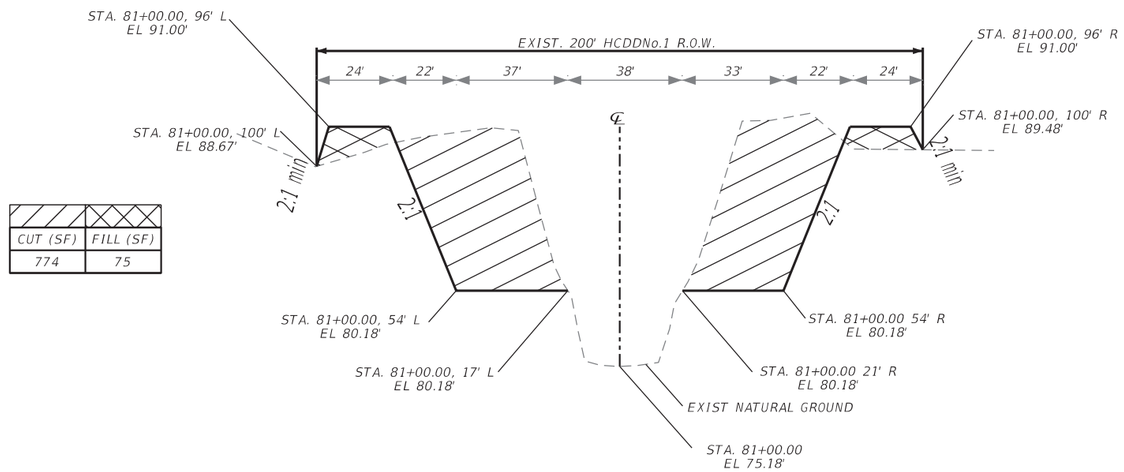
NORTH MAIN DRAIN III PHASE I
CROSS SECTIONS

NOT TO SCALE

HIDALGO COUNTY 4 PRECINCT FOUR

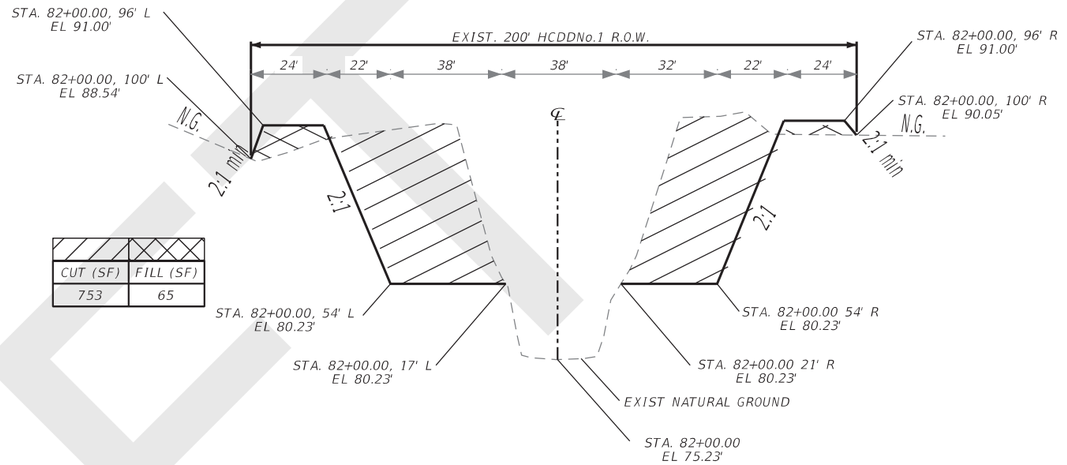
TEDSI INFRASTRUCTURE GROUP
TEDSI
TBPE F-1640
Consulting Engineers
1201 Interstate Highway 2
Mission, Texas 78572
(956) 424-7898

K:\Precinct 4\North Main Drain III\MD*PH1\REF\CORR\XS\XS*SH1.dgn
5/5/2023



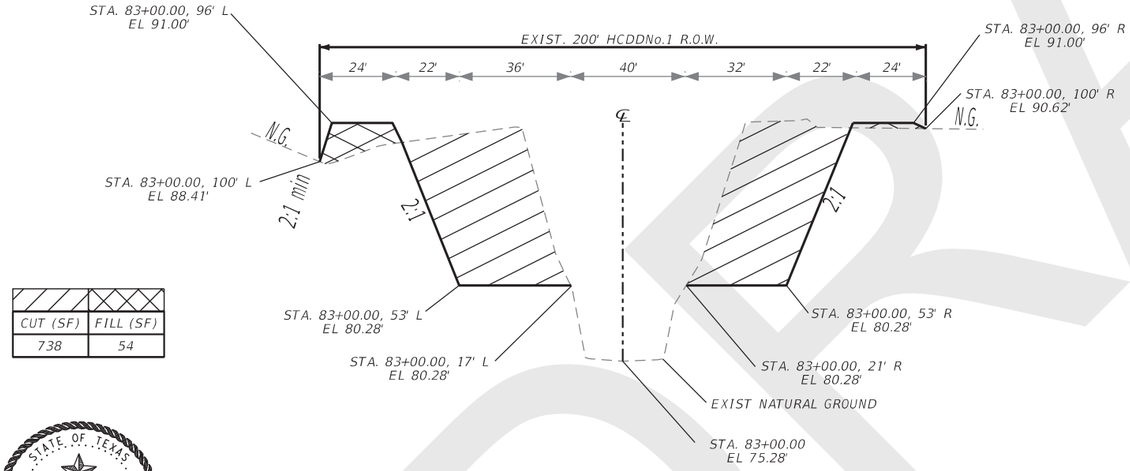
CUT (SF)	FILL (SF)
774	75

STA. 81+00.00



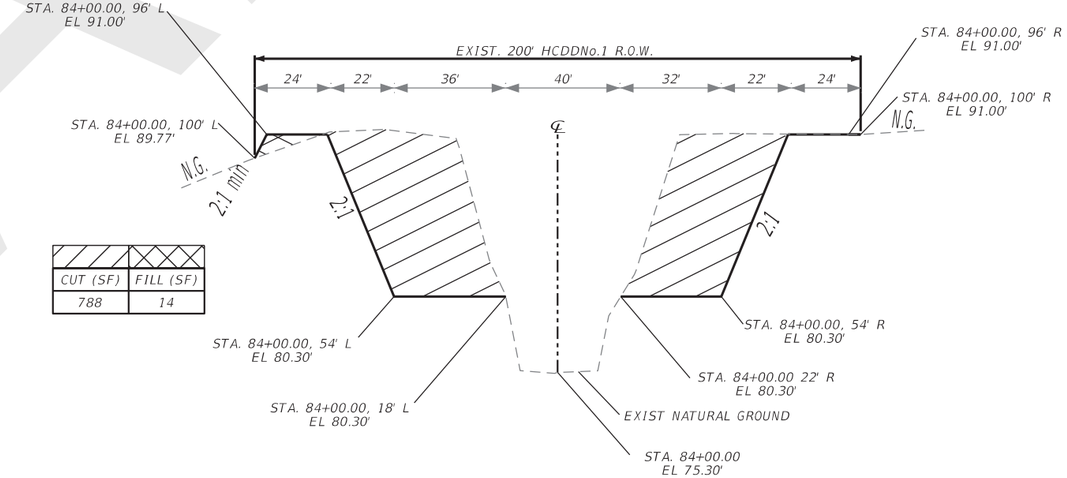
CUT (SF)	FILL (SF)
753	65

STA. 82+00.00



CUT (SF)	FILL (SF)
738	54

STA. 83+00.00



CUT (SF)	FILL (SF)
788	14

STA. 84+00.00

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED PROFESSIONAL ENGINEER

SHEET 5 OF 6

NORTH MAIN DRAIN III PHASE I
CROSS SECTIONS

NOT TO SCALE

B2Z ENGINEERING
TBPE FIRM NO. F-11187

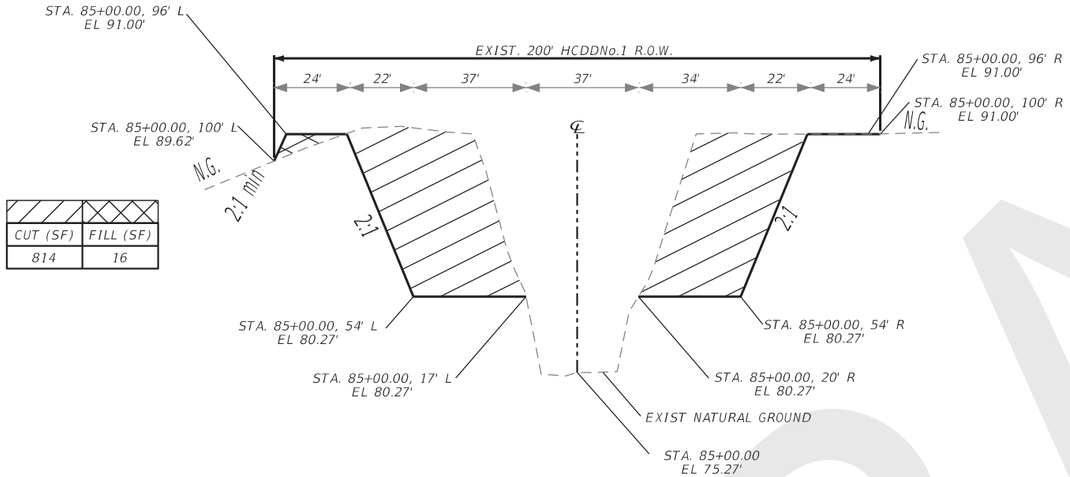
HIDALGO COUNTY DRAINAGE DISTRICT NO.1

HIDALGO COUNTY PRECINCT FOUR 4

TEDSI INFRASTRUCTURE GROUP
Consulting Engineers
1201 Interstate Highway 2
Mission, Texas 78572
(956) 424-7898
TBPE F-1640

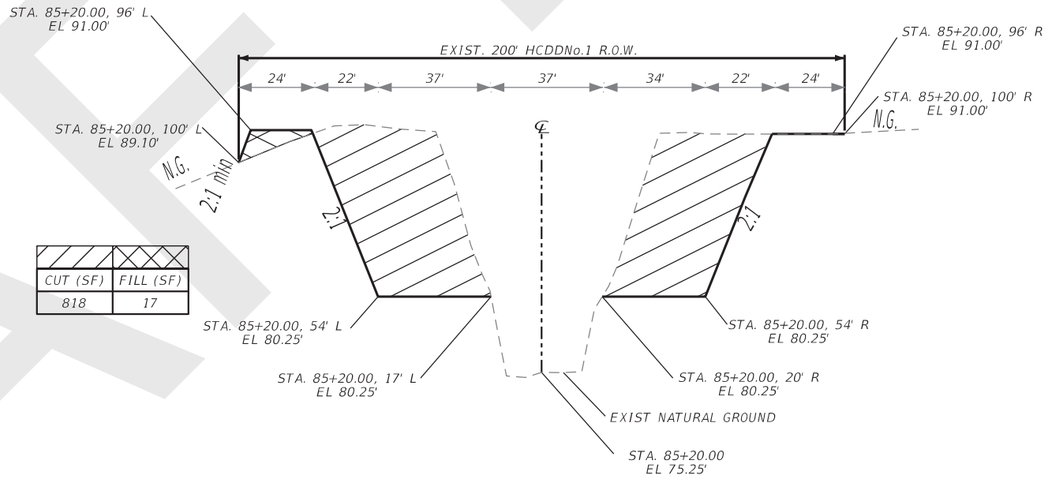
5/5/2023

K:\Precinct 4\North Main Drain III\NMD•PH1\REF\CORR\XS\XS•SH1.dgn



CUT (SF)	FILL (SF)
814	16

STA. 84+00.00



CUT (SF)	FILL (SF)
818	17

STA. 85+20.00

STATE OF TEXAS
JOSE N. SALDIVAR
94076
LICENSED
PROFESSIONAL ENGINEER

B2Z ENGINEERING
TBPE FIRM NO. F-11187

HIDALGO COUNTY DRAINAGE DISTRICT No.1

NORTH MAIN DRAIN III PHASE I
CROSS SECTIONS

NOT TO SCALE

HIDALGO COUNTY 4 PRECINCT FOUR

TEDSI INFRASTRUCTURE GROUP
TEDSI
TBPE F-1640
Consulting Engineers
1201 Interstate Highway 2
Mission, Texas 78572
(956) 424-7898