Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\General\1228504_TSH.dgn

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
	GENERAL
1	TITLE SHEET
2	EXISTING TYPICAL SECTIONS
3-7	PROPOSED TYPICAL SECTIONS
8-9	GENERAL NOTES
10	PROJECT LAYOUT
11	SUMMARY OF QUANTITIES
12	SUMMARY OF SMALL SIGNS
13-14	HORIZONTAL AND VERTICAL CONTROL SHEET
	TRAFFIC CONTROL PLAN AND ENVIRONMENTAL
15	TRAFFIC CONTROL PLAN NARRATIVE
16-19	TCP TYPICAL SECTIONS
20	ADVANCE WARNING SIGNS LAYOUT
21	DETOUR LAYOUT
22	TCP & SW3P LAYOUT - PHASE I
23	TCP & SW3P LAYOUT - PHASE II
24-26	TCP & SW3P LAYOUT - PHASE III
27-31	TCP & SW3P LAYOUT - PHASE IV
32-36	TCP & SW3P LAYOUT - PHASE V
	TRAFFIC CONTROL PLAN AND ENVIRONMENTAL - STANDARDS
37-48	* BC(1)-21 THRU BC(12)-21
49	* WZ(RCD) - 13
50	* WZ(BRK) - 13
51	* TCP(2-1) - 18
52	* TCP(2-2) - 18
53	* TCP(2-3) - 23
54	* TCP(3-1) - 13
55	* TCP(3-3) - 14
56-57	* CSB(1)-10
58	* ABSORB (M) - 19
59	* SLED - 19
60	* TREATMENT FOR VARIOUS EDGE CONDITIONS
61-62	* STORM WATER POLLUTION PREVENTION PLAN (SW3P) NARRATIVE
63	* ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS (SAT DIST)
64-66	* EC (1) - 16 THRU EC(3) - 16
	ROADWAY
67	HORIZONTAL ALIGNMENT DATA
68-71	REMOVAL PLAN
72-76	ROADWAY PLAN & PROFILE
77-78	ROADWAY PLAN
79	DRIVEWAY SUMMARY SHEET
	ROADWAY - STANDARDS
80	* MISCELLANEOUS CURB AND SIDEWALK DETAILS (SAT DIST)
81-84	* PED-18
	DRAINAGE
85	EXISTING DRAINAGE AREA MAP & COMPUTATIONS
86	PROPOSED DRAINAGE AREA MAP & COMPUTATIONS
87-91	DRAINAGE PLAN LAYOUT
92	CULVERT LAYOUT CULVERT PR-02A
93	CULVERT LAYOUT CULVERT PR-02
94-95	CULVERT HYDRAULIC DATA SHEETS
96	CULVERT HYDRAULIC CALCULATIONS
	DRAINAGE - STANDARDS
97	* BOX CULVERT SUPPLEMENT (BCS)
98	* CONCRETE WINGWALLS WITH FLARED WINGS (FWO)
99-100	* SAFETY END TREATMENT (SETB-PD)
101	* EXTENDED CURB DETAILS (ECD)
102-103	* MULTIPLE BOX CULVERTS CAST-IN-PLACE (MC-5-20)
104	* MULTIPLE BOX CULVERTS CAST-IN-PLACE MISCELLANEOUS DETAILS
105-106	* SINGLE BOX CULVERT CAST-IN-PLACE (SCC-5&6)
107	* SINGLE BOX CULVERT CAST-IN-PLACE -MISCELLANEOUS DETAILS (SCC-MD)
108-110	* SIDEWALK BRIDGE
111-112	* STONE RIPRAP
	TRAFFIC
113-119	SIGNING AND PAVEMENT MARKINGS LAYOUT
120	SIGN DETAIL
	TRAFFIC - STANDARDS
121-122	* TSR(3) -13 THRU TSR(4) -13
123	* SMD(GEN) -08
124-126	* SMD(SLIP-1) -08 THRU SMD (SLIP-3) -08
127	* RAD (SAT DIST)
128-130	* PM(1) -22 THRU PM(3)- 22
131	* TCD-05 (SAT DIST)
132	* TWLTL (1) -22 (SAT DIST)
133	* TWLTL (6) -22 (SAT DIST)
	CROSS SECTIONS
134-167	CROSS SECTIONS

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION NOVEMBER 1, 2014 AND SPECIFICATION ITEMS LISTED AND DATED AS FOLLOWS, SHALL GOVERN ON THIS PROJECT.

TALLEYHO IMROVEMENTS
TAMARON VALLEY & SH 211

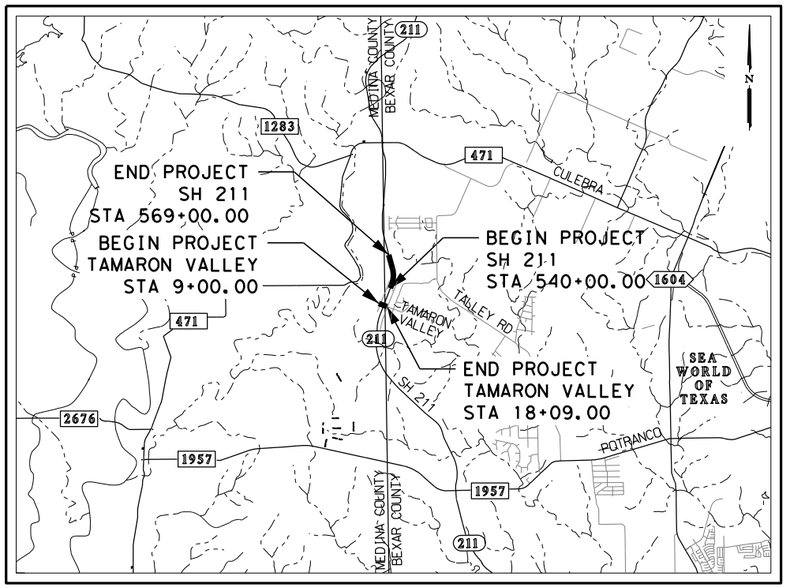
PLANS OF PROPOSED
SH 211 TURN LANES,
TAMARON VALLEY WIDENING
AND FULL DEPTH RECONSTRUCTION

SAN ANTONIO, TEXAS
BEXAR AND MEDINA COUNTY

TOTAL PROJECT LENGTH = 0.69 MILES

LIMITS: FROM 0.63 MILES NORTH OF TAMARON VALLEY TO 1.03 MILES NORTH OF TAMARON VALLEY AND FROM 0.11 MILES WEST OF SH211 TO 0.03 MILES EAST OF SH 211

CONSISTING OF: ASPHALT WIDENING, FULL DEPTH RECONSTRUCTION, DRIVEWAYS, GRADING, DRAINAGE, SIGNS AND PAVEMENT MARKINGS



SCALE: NTS

EXCEPTIONS: NONE
EQUATIONS: NONE
RR X-ING'S: NONE

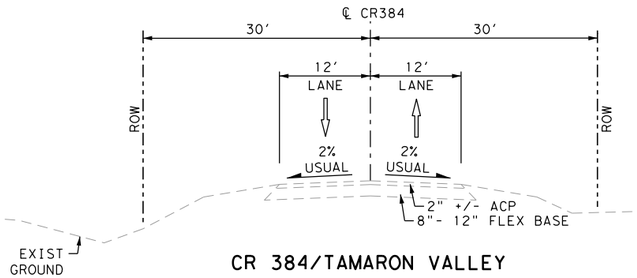
DESIGN SPEED
SH 211 = 60 MPH
TAMARON VALLEY= 30 MPH

REGISTERED ACCESSIBILITY SPECIALIST INSPECTION REQUIRED
TDLR NO. TABS2024007904
PEDESTRIAN ELEMENTS LIMITS ON TAMARON VALLEY ARE
STA 9+00.00 TO STA 13+75.00

THE STANDARD SHEETS SPECIFICALLY SHOWN WITH PRECEDING (*), HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

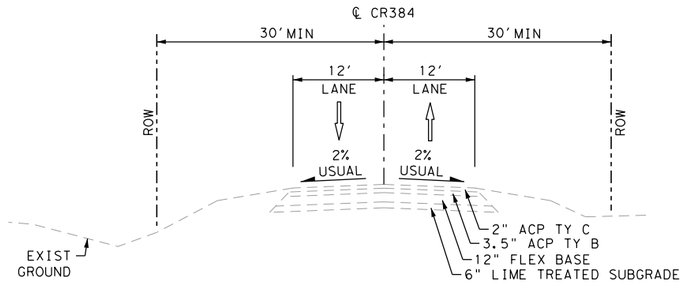
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800



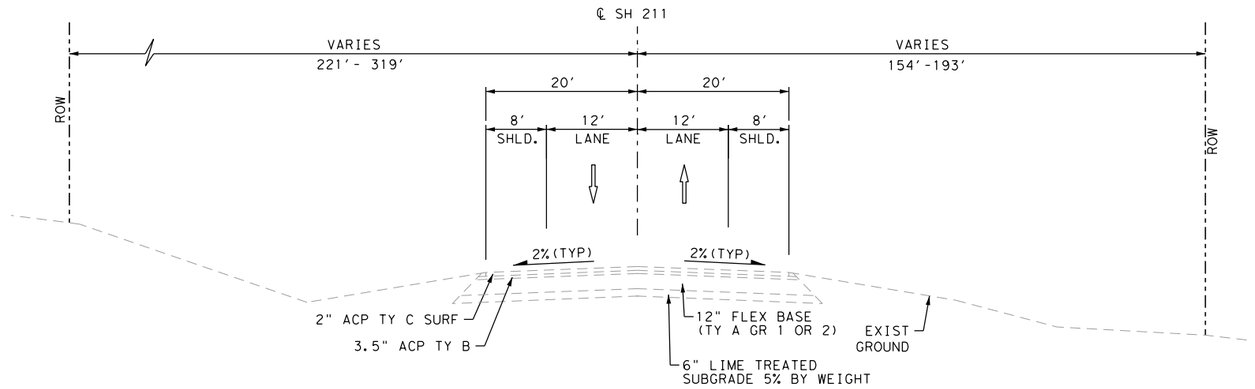
CR 384/TAMARON VALLEY
EXISTING TYPICAL SECTION

NTS
STA 9+00.00 TO STA 12+00.00



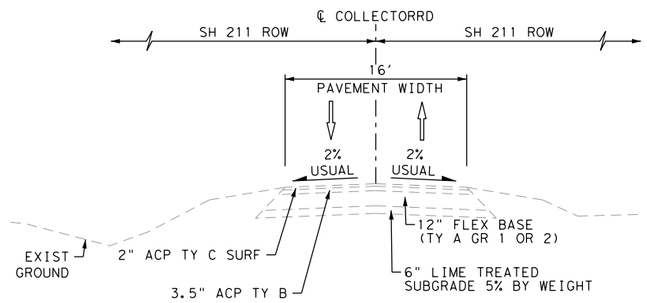
CR 384/TAMARON VALLEY
EXISTING TYPICAL SECTION

NTS
STA 12+00.00 TO STA 15+00.00
STA 15+00.00 TO STA 18+09.00



SH 211
EXISTING TYPICAL SECTION

NTS
STA 544+90.33 TO STA 565+69.64



COLLECTOR RD
EXISTING TYPICAL SECTION

NTS
STA 100+82.28 TO STA 102+94.51

LEGEND

- EXISTING ROW
- EXISTING TRAFFIC ARROWS
- PROPOSED TRAFFIC ARROWS

NOTES:
1. EXISTING PAVEMENT WAS DETERMINED FROM SH 211 AS BUILTS.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

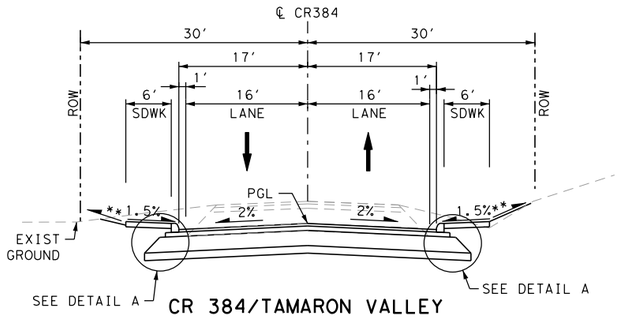
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

EXISTING TYPICAL SECTIONS

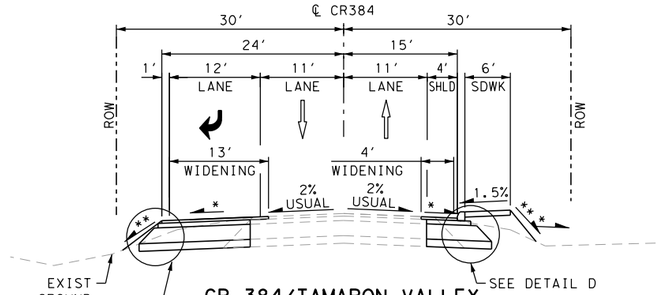
95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 2

Plotted on: 1/22/2024
Design Filename: P:\122\85\04\Design\Civil\General\1228504_TYP01.dgn



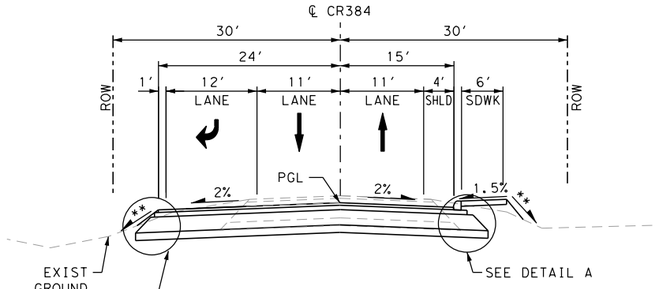
CR 384/TAMARON VALLEY
PROPOSED TYPICAL SECTION

NTS
STA 9+00 TO STA 11+00



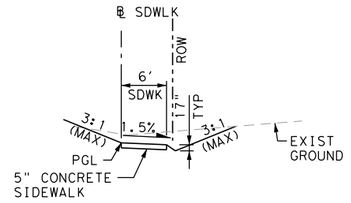
CR 384/TAMARON VALLEY
PROPOSED TYPICAL SECTION

NTS
STA 12+00 TO STA 12+50



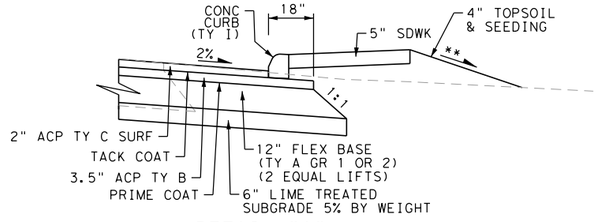
CR 384/TAMARON VALLEY
PROPOSED TYPICAL SECTION

NTS
STA 11+00 TO STA 12+00

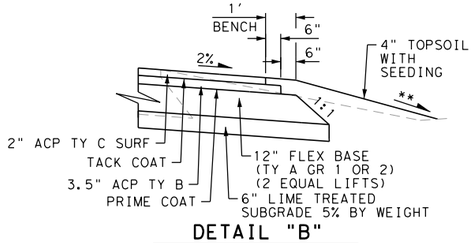


CR 384/TAMARON VALLEY
PROPOSED SIDEWALK TYPICAL SECTION

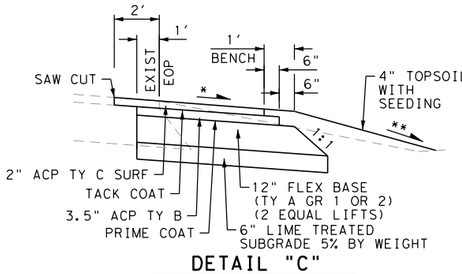
NTS
STA 10+00 TO STA 10+92.51



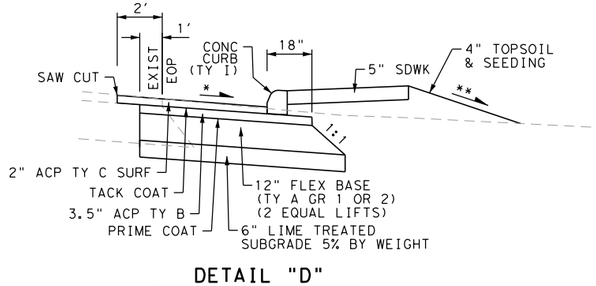
DETAIL "A"
CR 384/TAMARON VALLEY



DETAIL "B"
CR 384/TAMARON VALLEY



DETAIL "C"
CR 384/TAMARON VALLEY



DETAIL "D"
CR 384/TAMARON VALLEY

LEGEND

- EXISTING ROW
- EXISTING TRAFFIC ARROWS
- PROPOSED TRAFFIC ARROWS

NOTES:
1. TACK COAT MUST BE APPLIED BETWEEN ALL HMA LIFTS.
2. HMA WIDENING IS 4' MINIMUM WIDTH.
3. GORE LIMITS ARE STA 13+95.83 TO STA 14+55.10.
4. REFER TO ROADWAY PLAN AND PROFILE SHEETS FOR SIDEWALK LIMITS.
5. REFER TO DRAINAGE SHEETS FOR DITCH INFORMATION.

* MATCH EXIST CROSS SLOPE
** 4:1 TYP, 6:1 MIN, 3:1 MAX
*** SEE PNP SHEET75 FOR FOR SIDE WALK DETAILS

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

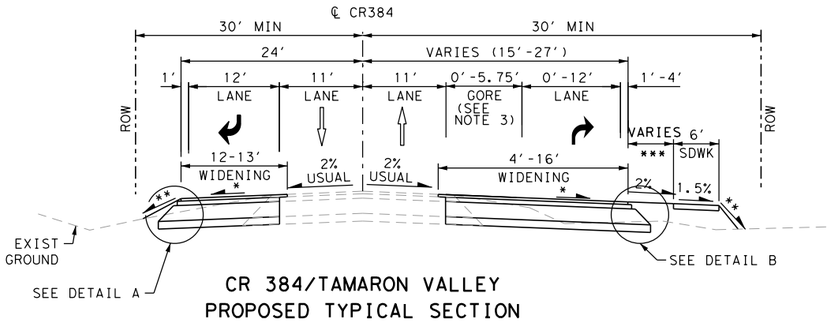
PROPOSED TYPICAL SECTIONS

15

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 3

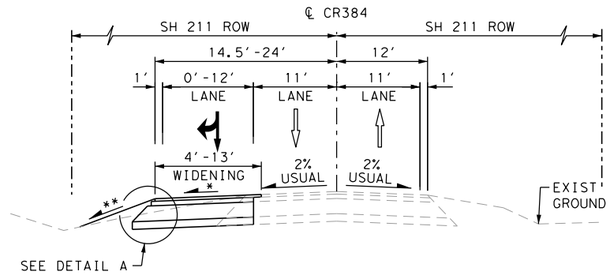
Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\General\1228504_TYP04.dgn



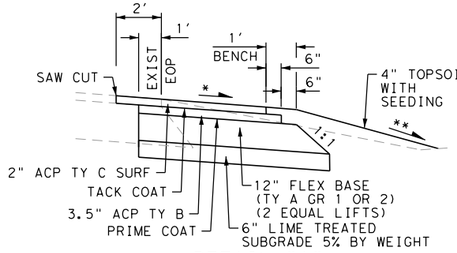
CR 384/TAMARON VALLEY
PROPOSED TYPICAL SECTION

NTS
STA 12+50 TO STA 15+00

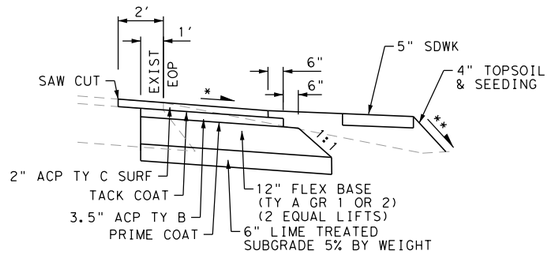


CR 384/TAMARON VALLEY
PROPOSED TYPICAL SECTION

NTS
STA 15+00 TO STA 16+60.96



DETAIL "A"
CR 384/TAMARON VALLEY



DETAIL "B"
CR 384/TAMARON VALLEY

LEGEND

- EXISTING ROW
- EXISTING TRAFFIC ARROWS
- PROPOSED TRAFFIC ARROWS

NOTES:
1. TACK COAT MUST BE APPLIED BETWEEN ALL HMA LIFTS.
2. HMA WIDENING IS 4' MINIMUM WIDTH.
3. GORE LIMITS ARE STA 13+95.83 TO STA 14+55.10.
4. REFER TO ROADWAY PLAN AND PROFILE SHEETS FOR SIDEWALK LIMITS.
5. REFER TO DRAINAGE SHEETS FOR DITCH INFORMATION.

* MATCH EXIST CROSS SLOPE
** 4:1 TYP, 6:1 MIN, 3:1 MAX
*** SEE PNP SHEET75 FOR FOR SIDE WALK DETAILS

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

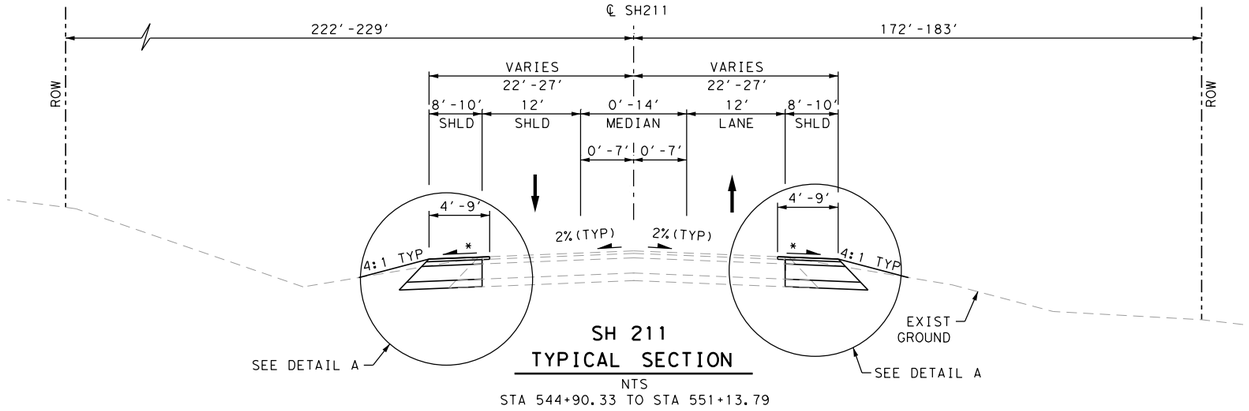
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

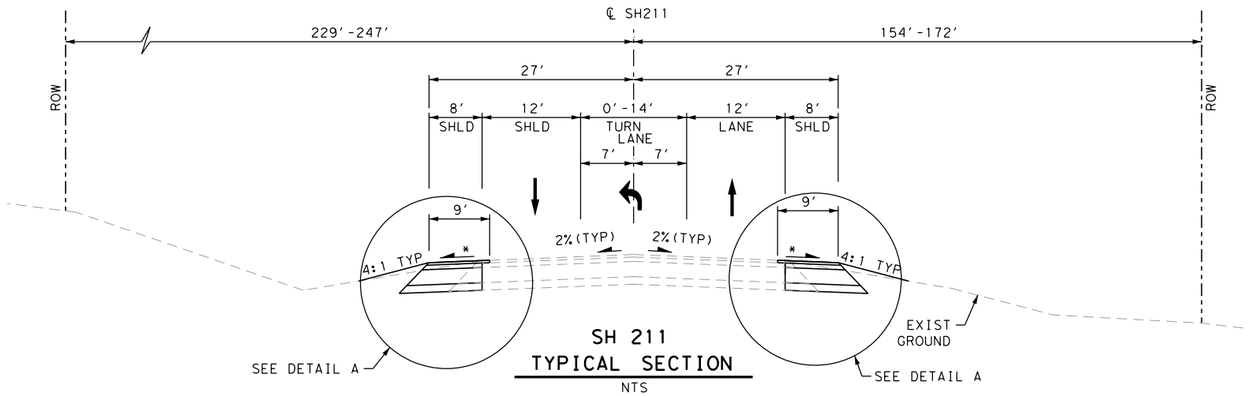
TALLEYHO IMPROVEMENTS

PROPOSED TYPICAL SECTIONS

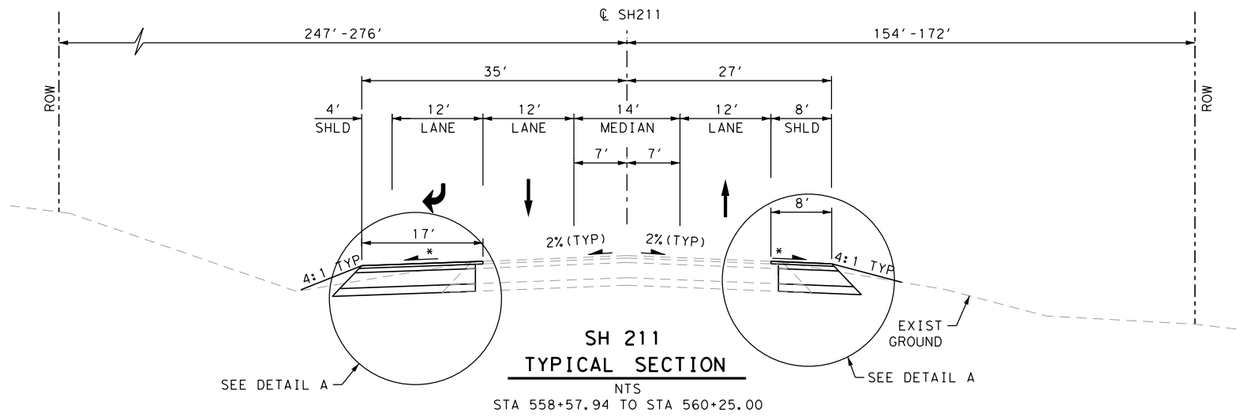
95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY:	CHKD. BY: BC	SHEET NO.: 4



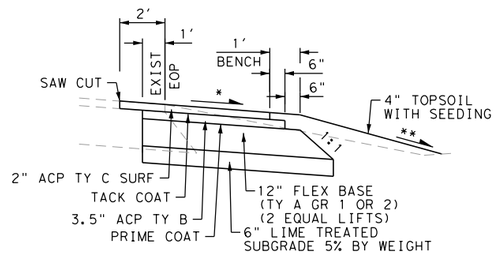
SH 211
TYPICAL SECTION
NTS
STA 544+90.33 TO STA 551+13.79



SH 211
TYPICAL SECTION
NTS
STA 551+13.79 TO STA 558+57.94



SH 211
TYPICAL SECTION
NTS
STA 558+57.94 TO STA 560+25.00



DETAIL "A"
SH 211

LEGEND

- EXISTING ROW
- EXISTING TRAFFIC ARROWS
- PROPOSED TRAFFIC ARROWS

NOTES:
1. TACK COAT MUST BE APPLIED BETWEEN ALL HMA LIFTS.
2. HMA WIDENING IS 4' MINIMUM WIDTH.

* MATCH EXIST CROSS SLOPE
** 4:1 TYP, 6:1 MIN, 3:1 MAX

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

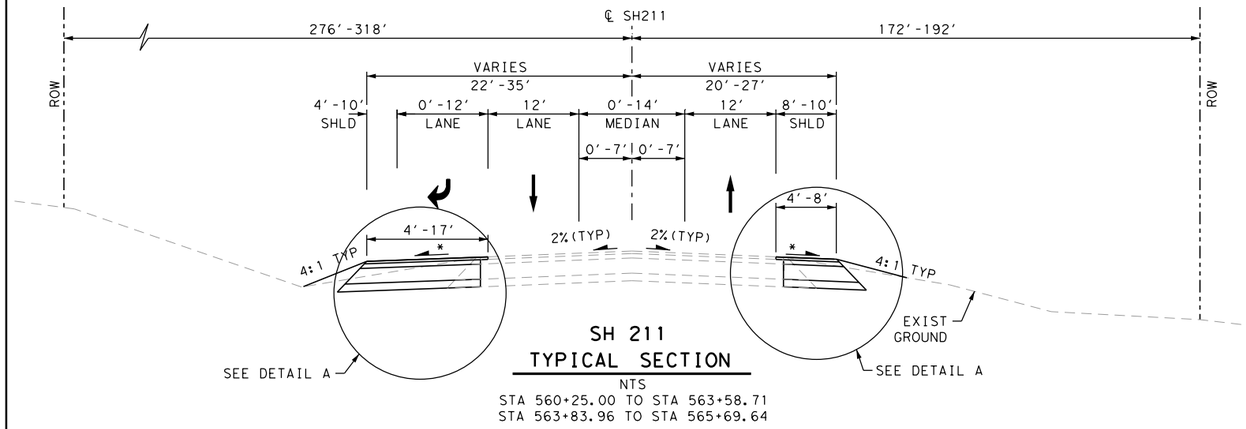
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

PROPOSED TYPICAL SECTIONS

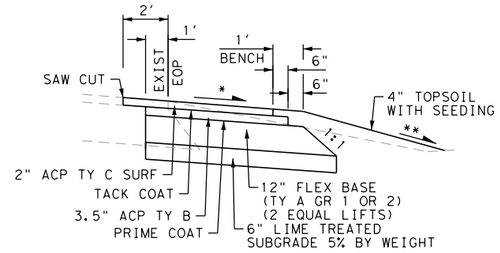
95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 5

Design Filename: P:\122\85\04\Design\Civil\General\1228504_TYP02.dgn



SH 211
TYPICAL SECTION

NTS
STA 560+25.00 TO STA 563+58.71
STA 563+83.96 TO STA 565+69.64



DETAIL "A"
SH 211

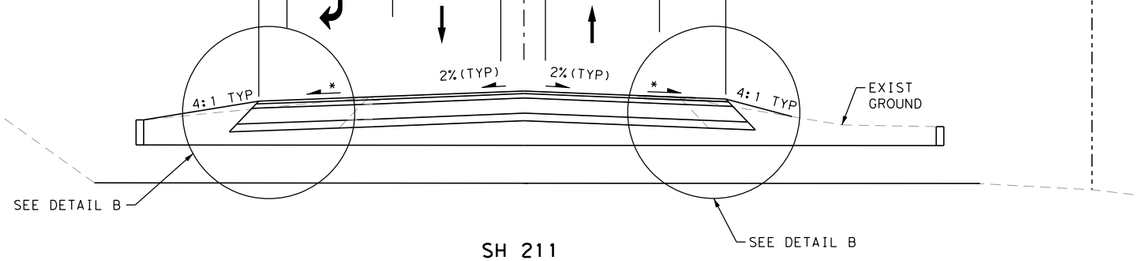
* = MATCH EXIST CROSS SLOPE
** = 4:1 TYP, 3:1 MAX

LEGEND

- EXISTING ROW
- EXISTING TRAFFIC ARROWS
- PROPOSED TRAFFIC ARROWS

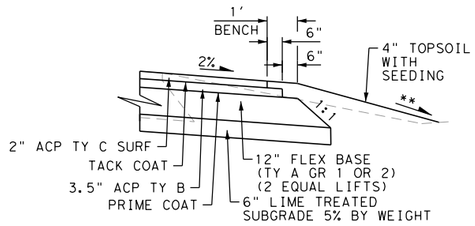
NOTES:
1. TACK COAT MUST BE APPLIED BETWEEN ALL HMA LIFTS.
2. HMA WIDENING IS 4' MINIMUM WIDTH.

* MATCH EXIST CROSS SLOPE
** 4:1 TYP, 6:1 MIN, 3:1 MAX



SH 211
TYPICAL SECTION

NTS
STA 563+50.71 TO STA 563+83.96



DETAIL "B"
SH 211

* = MATCH EXIST CROSS SLOPE
** = 4:1 TYP, 3:1 MAX

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

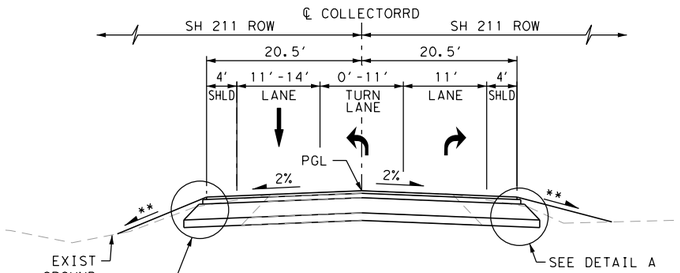
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

PROPOSED TYPICAL SECTIONS

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 6

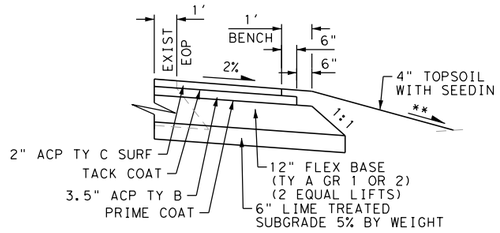
Design Filename: P:\122\85\04\Design\Civil\General\1228504_TYP03.dgn



COLLECTOR RD
PROPOSED TYPICAL SECTION

NTS

STA 100+82.28 TO STA 102+94.51



DETAIL "A"

COLLECTOR RD

LEGEND

EXISTING ROW

EXISTING TRAFFIC ARROWS

PROPOSED TRAFFIC ARROWS

NOTES:
1. TACK COAT MUST BE APPLIED BETWEEN ALL HMA LIFTS.
2. HMA WIDENING IS 4' MINIMUM WIDTH.

* MATCH EXIST CROSS SLOPE
** 4:1 TYP, 6:1 MIN, 3:1 MAX

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

PROPOSED TYPICAL SECTIONS

SHEET 5 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 7

Plotted on: 1/22/2024
Design Filename: P:\122\85\04\Design\Civil\General\1228504_TYP06.dgn

TXDOT CONSTRUCTION GENERAL NOTES

1. THE DESIGN AND CONSTRUCTION WILL PROVIDE FOR PRESERVING ALL EXISTING FEATURES IN OR NEAR THE STATE RIGHT OF WAY BEING AFFECTED BY THE WIDENING. THIS INCLUDES BUT IS NOT LIMITED TO, EXISTING DRIVEWAY GATE SET-BACKS, RELOCATION OF ELECTRONIC PRIVATE PROPERTY GATES, MAILBOX TURNOUTS, MAIL BOXES AND SUPPORTS, CATTLE GUARDS, ROADWAY SIGNING, EXISTING RIP-RAP OR OTHER PERMANENT EROSION CONTROL FEATURES, DIVERSIONARY BERMS, SWALES, DITCHES, AMOUNT AND CONFIGURATION OF DRIVEWAY FLARES AND DRIVEWAY CENTERLINE PROFILE, METAL BEAM GUARD FENCE AND END TREATMENTS, ETC. EXISTING DRIVEWAY CULVERTS AND SAFETY END TREATMENTS IF EFFECTED BY ROADWAY WIDENING WILL BE RECONSTRUCTED TO PRESERVE EXISTING FRONT SLOPE RATES. THE COORDINATION OF ITEMS THAT EFFECT EXISTING PRIVATE PROPERTY ACCESS, MAIL DELIVERY, ETC. IS THE RESPONSIBILITY OF THE DEVELOPER. THE WRITTEN CONCURRENCE OF ANY EFFECTED PROPERTY OWNERS FOR CONSTRUCTION EFFECTING THEIR DRIVEWAYS OR MAILBOX TURNOUTS MUST BE OBTAINED AND PROVIDED TXDOT PRIOR TO TXDOT DRIVEWAY PERMITS BEING ISSUED.

2. FOR WORK IN STATE RIGHT OF WAY, THE DEVELOPER IS RESPONSIBLE FOR COORDINATION OF, OBTAINING PERMITS FOR, AND COMPLYING WITH ANY AND ALL STATE AND FEDERAL REGULATORY AGENCIES AND ALL APPLICABLE LAWS, RULES AND REGULATIONS PERTAINING TO THE REGULATION OF DRAINAGE, PRESERVATION OF CULTURAL RESOURCES, NATURAL RESOURCES AND THE ENVIRONMENT. THE DEVELOPER IS RESPONSIBLE FOR DETERMINING IF THE PROJECT IS IN AN ENVIRONMENTALLY SENSITIVE AREA SUCH AS WITHIN THE RECHARGE OR CONTRIBUTING ZONE OF PROTECTED AQUIFERS, AND ACT IN ACCORDANCE WITH ALL RESOURCE AGENCY REGULATIONS. IF TXDOT HAS A CZP OR WPAP ON FILE WITH TCEQ, THE DEVELOPER IS RESPONSIBLE FOR AMENDING TXDOT'S PERMIT, OBTAINING TCEQ APPROVAL AND PROVIDING TXDOT WITH THE APPROVED AMENDED PERMIT. THE AMENDED PERMIT WILL ADDRESS THE RELOCATION OF ANY TXDOT PERMANENT BMP'S INCLUDING VEGETATIVE FILTER STRIPS THAT MAY BE IMPACTED BY WORK DONE WITHIN TXDOT ROW. IF TXDOT DOES NOT HAVE A CZP OR WPAP ON FILE WITH TCEQ, ANY PERMANENT BMP'S INCLUDING VEGETATIVE FILTER STRIPS, THAT MAY BE REQUIRED IN ORDER TO TREAT ADDITIONAL IMPERVIOUS COVER PLACED IN TXDOT ROW WILL BE LOCATED IN PRIVATE PROPERTY AND THE DEVELOPER WILL PROVIDE TXDOT WITH EVIDENCE OF TCEQ APPROVAL OF THE ADDITIONAL IMPERVIOUS COVER. THE DEVELOPER MAY NOT OPERATE UNDER RESOURCE AGENCY ENVIRONMENTAL CLEARANCE OF A PREVIOUS OR ONGOING TXDOT PROJECT, BUT WILL BE REQUIRED TO OBTAIN SEPARATE RESOURCE/ENVIRONMENTAL AGENCY CLEARANCE.

3. IF WASTE AREAS OR MATERIAL SOURCE AREAS RESULT FROM THIS PROJECT, THE CONTRACTOR IS REMINDED TO FOLLOW THE REQUIREMENTS OF THE TEXAS AGGREGATE QUARRY AND PIT SAFETY ACT. IN ADDITION, IT IS REQUESTED THAT THESE AREAS NOT BE VISIBLE FROM ANY HIGHWAY ON THE STATE SYSTEM.

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

4. ANY TREES EXISTING WITHIN STATE RIGHT OF WAY ARE THE NATURAL RESOURCES OF THE STATE AND WILL BE PROTECTED. IN THE EVENT THAT TREES MUST BE REMOVED, TXDOT WRITTEN PERMISSION WILL BE RECEIVED IN ADVANCE AND WILL IDENTIFY THE SPECIFIC TREES BY SPECIES, DIAMETER AND LOCATION TO BE REMOVED. THE DEVELOPER WILL BE FINED FOR ANY UNPERMITTED REMOVAL OF TREES.

4.5. IN THE EVENT THAT THERE ARE AREAS OF PUBLIC ROW DEDICATION RESULTING FROM THE PLATTING PROCESS, THE AREA WITHIN THE PUBLIC ROW DEDICATION DOES NOT PASS INTO TXDOT OWNERSHIP AS A RESULT OF PLATTING. HOWEVER, THE DEVELOPER WILL REMOVE ANY OLD FENCING, GATES AND UNSIGHTLY VEGETATION WITHIN THE AREA OF THE ROW DEDICATION, LEAVING ITIN AN AESTHETICALLY PLEASING CONDITION. THE AREA OF ROW DEDICATION WILL NOT BE MOWED OR OTHERWISE MAINTAINED BY TXDOT. PRIOR TO REMOVAL OF TREES IN THE AREA OF ROW DEDICATION, THE TREES WILL FIRST BE EVALUATED IN ACCORDANCE WITH THE REQUIREMENTS OF LOCAL TREE PROTECTION ORDINANCES AND THE WRITTEN CONCURRENCE OF THE LOCAL JURIDICTION WILL BE PROVIDED TO TXDOT

5. THE DEVELOPER WILL MAINTAIN AT THE PROJECT SITE, AND MAKE AVAILABLE UPON REQUEST, COPIES OF ALL APPROVED ENVIRONMENTAL PLANS AND PERMITS RELATING TO WORK IN STATE RIGHT OF WAY.

6. PRIOR TO BEGINNING GRADING ACTIVITY THE CONTRACTOR WILL SET AND MAINTAIN ROADWAY STATIONING, CONTROL POINTS, MARKS, STAKES TO ESTABLISH LINES, SLOPES, GRADES AND CENTERLINES.

7. ANY SLOPES IN STATE RIGHT OF WAY WHICH BECOME STEEPER THAN 3:1 AS A RESULT OF THE WORK WILL BE TREATED WITH 4" THICK REINFORCED CONCRETE RIPRAP AND BE TREATED WITH METAL BEAM GUARD FENCE. THIS MAY ENTAIL ADDITIONAL RIP-RAP BEYOND THAT SHOWN IN THE PLANS.

7.5. UNLESS OTHERWISE SHOWN ON THE PLANS, WHERE EXISTING CONCRETE RIP-RAP IS REMOVED, MODIFIED OR EXTENDED, THE PORTION TO BE REMOVED WILL BE NEATLY SAW-CUT PRIOR TO REMOVAL AND THE NEW RIP-RAP WILL BE FORMED TO MATCH THE EXISTING LINES AND GRADES OF THE EXISTING RIP-RAP AND WILL BE DOWELED INTO THE EXISTING RIP-RAP WITH #3 BARS ON 12" CENTERS. THE DOWEL BARS WILL BE EPOXIED IN PLACE WITH EPOXY MEETING TXDOT REQUIREMENTS. THE MINIMUM EMBEDMENT LENGTH IS 9 INCHES. THIS APPLIES TO ANY TYPE OF CONCRETE RIP-RAP INCLUDING METAL BEAM GUARD FENCE OR CABLE BARRIER MOW STRIPS.

8. DUANE HOFFERICHTER (830) 609-0707 NEW BRAUNFELS, TRAVIS YOUNG (830) 303-0130 SEGUIN, CHAD LUX (830) 816-2430 BOERNE, MARK ANDREWS (830) 393-3144 FLORESVILLE, TXDOT MAINTENANCE OFFICE WILL BE CONTACTED BY THE CONTRACTOR 48 HOURS PRIOR TO WORK OCCURING IN THE STATE RIGHT OF WAY.

9. STATE RIGHT OF WAY WILL NOT BE USED AS AN AREA FOR CONTRACTOR PARKING OR FOR STAGING THE RECEIPT OF MATERIALS OR EQUIPMENT.

10. TRAFFIC CONTROL AND CONSTRUCTION BARRICADES WILL MEET THE REQUIREMENTS OF THE TEXAS MUTCD.

11. THE CONTRACTOR WILL PROVIDE ADVANCE NOTIFICATION TO THE ENGINEER OF IMPENDING/UPCOMING LANE CLOSURES FOR ALL TEMPORARY AND/OR PERMANENT LANE, RAMP, CONNECTOR, FRONTAGE, SHOULDER, MEDIAN, CROSSOVER,ETC. CLOSURES OR DETOURS.

12. ACCESS TO ADJOINING PROPERTY MUST BE MAINTAINED AT ALL TIMES.

13. UNLESS OTHERWISE NOTED IN THE PLANS AND/OR AS DIRECTED BY THE AREA ENGINEER OR MAINTENANCE SUPERVISOR, DAILY LANE CLOSURES SHALL BE LIMITED ACCORDING TO THE FOLLOWING RESTRICTIONS:
NIGHTTIME: MAINTENANCE SUPERVISOR AND/OR AREA ENGINEER APPROVAL REQUIRED. (WITH UNIFORM OFF DUTY LAW ENFORCEMENT OFFICERS).
WEEKEND CLOSURES: MAINTENANCE SUPERVISOR AND/OR AREA ENGINEER APPROVAL REQUIRED.

14. NO LANE CLOSURES OR ROADWAY CLOSURES WILL BE PERMITTED FOR THE FOLLOWING KEY DATES AND/OR SPECIAL EVENTS:
BETWEEN DECEMBER 15 AND JANUARY 1
WEDNESDAY BEFORE THANKSGIVING THRU SUNDAY AFTER THANKSGIVING
SATURDAY AND SUNDAY BEFORE MEMORIAL DAY OR LABOR DAY
SATURDAY OR SUNDAY WHEN JULY 4TH FALLS ON A FRIDAY OR MONDAY

15. AT NO TIME WILL THE ROADWAY TRAVEL WAY BE BLOCKED.

16. LANE CLOSURES WILL ONLY BE PERMITTED WITH 48 HOUR PRIOR APPROVAL OF THE TXDOT MAINTENANCE SUPERVISOR. LANE CLOSURES WILL BE PERMITTED ONLY BETWEEN 9:00 A.M. AND 4:00 P.M. MONDAY THROUGH FRIDAY.

16.5. FOR LANE CLOSURES ON TWO-LANE TWO-WAY ROADWAYS, INCLUDING DURING PILOT CAR OPERATIONS, FLAGGERS WILL BE PLACED AT THE BEGINNING AND END OF THE WORK ZONE AS WELL AS AT EACH INDIVIDUAL DRIVEWAY AND SIDE ROAD INTERSECTION WITHIN THE LIMIT OF THE WORK ZONE AND EXTENDING FOR A MINIMUM OF THE BEGINNING OF ADVANCED WARNING SIGNS EITHER END OF THE WORK ZONE TO CONTROL, WARN AND DIRECT SIDE ROAD AND DRIVEWAY TRAFFIC OF THE CHANGE IN TRAFFIC OPERATIONS. WHENEVER ONE WAY TRAFFIC CONTROL IS ACCOMPLISHED BY TRAFFIC SIGNALS WORK ZONE FLAGGERS WILL BE SIMILARLY STATIONED AT EACH INDIVIDUAL DRIVEWAY AND SIDE ROAD INTERSECTION WITHIN THE LIMITS OF THE WORK ZONE AND EXTENDING FOR A MINIMUM OF THE BEGINNING OF THE ADVANCED WARNING SIGNS EITHER END OF THE WORK ZONE. ALL FLAGGERS WILL BE IN CONSTANT RADIO CONTACT.

17. A MINIMUM 3:1 (H:V) TEMPORARY SAFETY SLOPE OF STABLE COMPACTED MATERIAL WILL BE REQUIRED ADJACENT TO THE STATE HIGHWAY EDGE OF PAVEMENT AT ALL TIMES DURING NON WORKING HOURS.

18. ONLY ONE SIDE OF THE ROADWAY WILL BE OPEN TO CONSTRUCTION AT A TIME. WORK WILL BE COMPLETED AND PAVEMENT EDGES BACKFILLED ON ONE SIDE OF THE ROAD BEFORE WORK WILL BEGIN ON THE OPPOSITE SIDE OF THE ROADWAY.

19. ALL MILLING, PAVING AND SEAL COAT OPERATIONS SHALL PROCEED IN THE DIRECTION OF TRAFFIC.

20. ANY PAVEMENT EDGE DROP-OFFS BETWEEN 1 AND 2 INCHES IN HEIGHT WILL HAVE CW 8-11 WARNING SIGNS ANY PAVEMENT EDGE DROP-OFF 2 INCHES OR GREATER WILL HAVE A 3:1 COMPACTED SAFETY SLOPE AND CW 8-9A OR CW 8-11 SIGNS PLUS CHANNELIZING DEVICES. PAVEMENT EDGES WILL BE SHOULDERED UP WITH COMPACTED EMBANKMENT MATERIAL AND 4 INCHES OF TOPSOIL AS SOON AS POSSIBLE AFTER PAVING IS COMPLETED ON THE SIDE OF THE ROAD BEING WIDENED.

21. PROOF ROLLING OF SUBGRADE IS REQUIRED AND SHALL BE WITNESSED BY TXDOT PRIOR TO PLACEMENT O PAVEMENT STRUCTURE UNLESS OTHERWISE APPROVED BY THE TXDOT MAINTENANCE SUPERVISOR. THE REQUIREMEN FOR PROOF-ROLLING OF SUBGRADE IS NOT SUPERSEDED BY ANY OTHER REQUIREMENTS INCLUDING THOSE OF ANY GEOTECHNICAL REPORT.

22. ALL FLEXIBLE BASE WILL HAVE A MINIMUM PLASTICITY INDEX OF 4.

23. ALL COURSES OF ASPHALTIC CONCRETE PAVEMENT (REGARDLESS OF TYPE) WILL BE PLACED WITH A ASPHALT PAVING EQUIPMENT MEETING THE REQUIREMENTS OF TXDOT ITEM 320, "EQUIPMENT FOR ASPHALT CONCRETE PAVEMENT", UNLESS OTHERWISE APPROVED BY THE MAINTENANCE SUPERVISOR.

23.5 TACK COAT WILL BE APPLIED WITH AN ASPHALT DISTRIBUTOR AND SPREAD ACROSS THE SURFACE RECEIVING THE TACK COAT BY MULTIPLE PASSES OF A PNEUMATIC ROLLER. THE APPLICATION OF TACK COAT AND THE NUMBER OF PASSES OF THE PNEUMATIC ROLLER WILL BE SUFFICIENT TO MAKE THE SURFACE AND AND EXPOSED EDGES CONSISTENTLY BLACK WITH NO AREAS DEVOID OF TACK. ASPHALT FOR TACK COAT SHAL MEET TXDOT SPECS AND BE FROM A TXDOT APPROVED SOURCE.

24. ALL SURFACE AGGREGATES WILL MEET THE REQUIREMENTS OF TXDOT FRICTION CLASSIFICATION "B" AND WILL MEET PG BINDER GRADE 70-22.

25. ALL SURFACE ASPHALT CONCRETE PAVEMENT WILL B UNDER-SEALED WITH A ONE COURSE SURFACE TREATMENT

26. ALL ASPHALTIC CONCRETE PAVEMENT USED IN BASE COURSES WILL BE TYPE "A" OR "B" AND WILL MEET PG BINDER GRADE 64-22.

27. ALL PAVEMENT WIDENING INCLUDING SHOULDERS WILL MATCH THE EXISTING PAVEMENT CROSS SLOPE.

28. ALL PAVEMENT MARKINGS WILL BE TYPE I THERMOPLASTIC (100 MIL) WITH UNDER-SEAL MEETING THE REQUIREMENTS OF TXDOT ITEM 666,REFLECTORIZED PAVEMENT MARKINGS. THE CONTRACTOR WILL PLACE GUIDE MARKS IN ACCORDANCE WITH ITEM 666 AND WILL MAKE ARRANGEMENTS FOR TXDOT INSPECTION OF THE PAVEMENT MARKING LAYOUT PRIOR TO PLACEMENT OF STRIPING. EQUIPMENT USED FOR THE PLACEMENT OF STRIPING WILL MEET THE PRODUCTION REQUIREMENTS OF ITEM 666 UNLESS OTHERWISE APPROVED IN ADVANCE BY THE TXDOT MAINTENANCE SUPERVISOR.

29. EXISTING PAVEMENT MARKINGS THAT CONFLICT WITH PROPOSED PAVEMENT MARKINGS WILL BE LIGHTLY GROUND IN A MANNER THAT DOES NOT DAMAGE THE PAVEMENT SURFACE, TO REMOVE ANY PAVEMENT MARKING ACCUMULATION, AND WILL BE COVERED WITH A STRIP SEAL OF 18" MINIMUM WIDTH, CONSISTING OF PRECOATED GRADE 5, FRICTION CLASS B AGGREGATE.

30. ALL MATERIALS AND CONSTRUCTION METHODS USED IN STATE RIGHT OF WAY WILL MEET TXDOT SPECIFICATIONS. THIS SUPERSEDES ALL OTHER SPECIFICATIONS IN THE PLANS.

31. ALL TURN LANE CONCRETE PAVEMENT IN STATE ROW WILL MEET THE REQUIREMENTS OF TXDOT ITEM 360 CLASS P CONCRETE AND WILL BE BATCHED AT CONCRETE PLANS HAVING A CURRENT APPROVED MIX DESIGN. CLASS P CONCRETE SHALL HAVE 7 AND 28 DAY COMPRESSIVE STRENGTH OF 3200 PSI AND 4400 PSI RESPECTIVELY.

32. WHEN WIDENING EXISTING CONCRETE PAVEMENTS, JOINTS IN THE NEW PAVEMENT WILL MATCH JOINTS IN EXISTING PAVEMENT AND CURB.

33. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT TXDOT APPROVED MATERIALS, MIX DESIGNS, APPROVED SOURCES AND PRODUCTS ARE USED FOR ALL WORK IN STATE ROW. THE CONTRACTOR WILL ARRANGE FOR THE SERVICES OF A QUALIFIED TESTING LABORATORY FOR ALL ITEMS REQUIRING TESTING AND WILL NOTIFY TXDOT OF ANY DISCREPANCIES BETWEEN TEST RESULTS AND TXDOT SPECS IN A TIMELY MANNER. THE CONTRACTOR WILL PROVIDE TO TXDOT INVOICES AND TESTING RESULTS AS SOON THEY ARE AVAILABLE. FAILURE TO DO THIS WILL RESULT IN REJECTION OF THE WORK.

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

GENERAL NOTES

SHEET 1 OF 2

95% SUBMITTAL	PROJECT NO.: 1228504		DATE:1/22/2024
DRWN. BY: CL	DSGN. BY:BC	CHKD. BY:BC	SHEET NO.: 8

34. SAWING OF CONTRACTION/CONSTRUCTION JOINTS IN CONCRETE PAVEMENT WILL BE ACCOMPLISHED AS SOON AS PERSONNEL CAN WALK ON THE CONCRETE WITHOUT DAMAGING THE SURFACE REGARDLESS OF TIME OF DAY OR WEATHER CONDITIONS. STAND-BY POWER DRIVEN CONCRETE SAWS WILL BE PROVIDED DURING THE SAWING OPERATION. CURING COMPOUND WILL BE RE-APPLIED TO THE SAWED JOINT IMMEDIATELY UPON SAWING THE JOINT.

35. GUARDRAIL SGT'S WILL BE TYPE 3 UNLESS OTHERWISE APPROVED BY THE TXDOT MAINTENANCE SUPERVISOR. GUARDRAIL MOW STRIP PLACED ADJACENT TO OTHER CONCRETE RIP-RAP WILL BE SEPARATED BY A FORMED CONSTRUCTION JOINT.

36. ANY CONCRETE CURB TO BE REMOVED WILL BE SAW-CUT AT THE LIMITS OF REMOVAL AND BE REMOVED ENTIRELY. SLICING THE TOP PORTION OF THE CURB OFF AND LEAVING REMAINING PORTION OF CURB IN PLACE IS UNACCEPTABLE.

37. ANY DAMAGE TO TXDOT FACILITIES WILL BE REPAIRED AT NO EXPENSE TO THE STATE, TO TXDOT'S SATISFACTION.

38. SIDEWALKS PLACED IN THE HIGHWAY RIGHT-OF-WAY WILL BE A MINIMUM WIDTH OF FIVE FEET OR COMPLY WITH THE MORE STRINGENT WIDTH AS REQUIRED BY CITY ORDINANCE AND WILL MEET ALL OTHER REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT. PEDESTRIAN RAMPS WILL BE PROVIDED AT STREET AND DRIVEWAY INTERSECTIONS AS SHOWN ON THE CURRENT STATE STANDARD FOR PEDESTRIAN FACILITIES. COLOR CONTRAST AND TEXTURING OF PEDESTRIAN RAMPS WILL BE PLACE AT STREET INTERSECTION RAMPS ONLY AS SHOWN ON THE CURRENT STATE STANDARD FOR PEDESTRIAN FACILITIES. PEDESTRIAN RAMPS AT DRIVEWAY INTERSECTIONS WILL NOT RECEIVE ANY COLOR CONTRAST OR TEXTURING. METAL PLATING FOR SIDEWALK BRIDGES WILL MATCH THE TYPICAL WIDTH OF THE APPROACH SIDEWALK. HIS MAY RESULT IN A WIDTH THAT IS GREATER THAN SHOWN IN THE STANDARD DETAILS INCLUDED IN THE PLANS.

39. THE CONTRACTOR WILL USE BEST MANAGEMENT PRACTICES (BMP'S) TO MINIMIZE EROSION AND SEDIMENTATION IN THE STATE RIGHT OF WAY RESULTING FROM THE PROPOSED CONSTRUCTION. RE-VEGETATION OF DISTURBED AREAS WILL BE COMPLETED IN ACCORDANCE WITH TXDOT STANDARD SPECIFICATIONS. PERMANENT VEGETATIVE COVER MUST ACHIEVE 70% COVERAGE PRIOR TO PROJECT ACCEPTANCE. SOIL RETENTION BLANKETS MAY BE REQUIRED TO PREVENT EROSION OF TOPSOIL PRIOR TO VEGETATION RE-ESTABLISHMENT

40. PRIOR TO SEEDING OR RE-VEGETATION THE FRONT SLOPES WILL BE SHOULDERED UP WITH TOPSOIL TO ELIMINATE ANY PAVEMENT EDGE DROP-OFF.

41. MUD TRACKED ONTO THE ROADWAY FROM THE SITE WILL BE IMMEDIATELY REMOVED TO THE SATISFACTION OF TXDOT.

42. IT WILL BE THE DEVELOPER/OWNER'S RESPONSIBILITY TO CLEAN OUT, TO THE STATE'S SATISFACTION, ANY DRAINAGE STRUCTURE OR STORM SEWER SYSTEM THAT BECOMES SILTED AS A RESULT OF THEIR OPERATIONS.

43. THE ADJUSTMENT OF ANY UTILITIES IN STATE RIGHT OF WAY OR ADJACENT PRIVATE EASEMENT WILL BE THE RESPONSIBILITY OF THE DEVELOPER/OWNER'S.

44. THE CONTRACTOR IS RESPONSIBLE FOR PLACING AND MAINTAINING EXISTING SIGNS ON TXDOT APPROVED TEMPORARY MOUNTS UNTIL PERMANENT SIGNS ARE PLACED.

45. THE FINAL PLACEMENT OF PERMANENT SIGNS WILL BE COORDINATED PRIOR TO PLACEMENT WITH THE LOCAL TXDOT MAINTENANCE SUPERVISOR.

46. FOR WORK WITHIN THE STATE RIGHT OF WAY WHERE REMOVAL OF MATERIALS OR DEBRIS WITHIN THE CONSTRUCTION LIMITS AND NOT INCORPORATED IN THE FINISHED ROADWAY SECTION OF RIGHT OF WAY, WILL BE DISPOSED OF IN A MANNER ACCEPTABLE TO THE MAINTENANCE SUPERVISOR AT NO EXPENSE TO THE STATE. MATERIALS THAT ARE NOT DETERMINED TO BE SALVAGEABLE BY THE MAINTENANCE SUPERVISOR BECOME THE PROPERTY OF THE CONTRACTOR FOR PROPER DISPOSAL AT THEIR EXPENSE. MATERIALS DETERMINED TO BE SALVAGEABLE WILL BE RETURNED TO THE STATE AND DELIVERED TO THE LOCATION AS DETERMINED BY THE MAINTENANCE SUPERVISOR.

47. REGARDLESS OF ERRORS AND OMISSIONS IN INFORMATION PROVIDED IN THE PLANS OR CROSS-SECTIONS THE PERMITEE IS RESPONSIBLE FOR POSITIVE DRAINAGE OUTFALLS WITHIN AND OFF THE LIMITS OF THE PROJECT.

47.5. KEEP THE SIGNALS IN OPERATION AT ALL TIMES EXCEPT WHEN NECESSARY FOR SPECIFIC INSTALLATION OPERATIONS, INCLUDING ANY MODIFICATIONS TO EXISTING SIGNAL HEADS TO MAINTAIN CLEAR VISIBILITY AT ALL TIMES. WHEN IT IS NECESSARY FOR A SIGNAL TO BE TURNED OFF, HIRE OFF DUTY POLICE OFFICERS TO CONTROL THE TRAFFIC UNTIL THE SIGNALS ARE BACK IN SATISFACTORY CONDITION.

48. (FOR WORK IN CITY OF NEW BRAUNFELS) ALL TRAFFIC SIGNALS ON THE STATE HIGHWAY SYSTEM WITHIN THE NEW BRAUNFELS CITY LIMITS WITH THE EXCEPTION OF SIGNALS ON IH 35, ARE THE RESPONSIBILITY OF THE CITY OF NEW BRAUNFELS AND THE CITY OF NEW BRAUNFELS WILL PERFORM CONSTRUCTION INSPECTION. CONTACT GARRY FORD, P.E (830) 221-4645, 48 HOURS PRIOR TO THE NEED FOR ANY INSPECTIONS. ALSO WHEN NON-TRAFFIC SIGNAL WORK IS BEING PERFORMED WITHIN 400 FEET OF AN EXISTING SIGNALIZED INTERSECTION, FLASHING BEACON OR SCHOOL ZONE FLASHER OR OTHER TYPE OF SIGNAL; IF WITHIN THE CITY OF NEW BRAUNFELS AREA OF RESPONSIBILITY CONTACT GARRY FORD, P.E. TO DETERMINE/VERIFY THE LOCATION OF LOOP DETECTORS, CONDUIT, GROUND-BOXES, ETC. FOR ALL OTHER LOCATIONS, CONTACT TXDOT REPRESENTATIVE, EDUARDO VILLALON, P.E., AT (210) 615-6308, E-MAIL IS EDUARDON.VILLALON@TXDOT.GOV. THE CONTRACTOR IS RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY SIGNAL EQUIPMENT DAMAGED BY CONSTRUCTION OPERATIONS. THE METHOD OF REPAIR OR REPLACEMENT SHALL BE PRE-APPROVED AND INSPECTED. DEPENDING ON THE TYPE AND EXTENT OF THE DAMAGE, THE ENGINEER RESERVES THE RIGHT TO PERFORM THE REPAIR OR REPLACEMENT WORK AND THE CONTRACTOR WILL BE BILLED FOR THIS WORK. WHEN WORKING NEAR AERIAL ELECTRICAL LINES OR UTILITY POLES, COMPLY WITH FEDERAL, STATE AND LOCAL REGULATIONS.

49. (FOR AREAS OTHER THAN CITY OF NEW BRAUNFELS) WHEN NON-TRAFFIC SIGNAL WORK IS BEING PERFORMED WITHIN 400 FEET OF AN EXISTING SIGNALIZED INTERSECTION, FLASHING BEACON OR SCHOOL ZONE FLASHER OR OTHER TYPE OF SIGNAL; CONTACT TXDOT REPRESENTATIVE, EDUARDO VILLALON, P.E., AT (210) 615-6308, E-MAIL IS EDUARDON.VILLALON@TXDOT.GOV. THE CONTRACTOR IS RESPONSIBLE FOR REPAIR OR REPLACEMENT OF ANY SIGNAL EQUIPMENT DAMAGED BY CONSTRUCTION OPERATIONS. THE METHOD OF REPAIR OR REPLACEMENT SHALL BE PRE-APPROVED AND INSPECTED. DEPENDING ON THE TYPE AND EXTENT OF THE DAMAGE, TXDOT RESERVES THE RIGHT TO PERFORM THE REPAIR OR REPLACEMENT WORK AND THE CONTRACTOR WILL BE BILLED FOR THIS WORK.WHEN WORKING NEAR AERIAL ELECTRICAL LINES OR UTILITY POLES, COMPLY WITH FEDERAL, STATE AND LOCAL REGULATIONS.

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

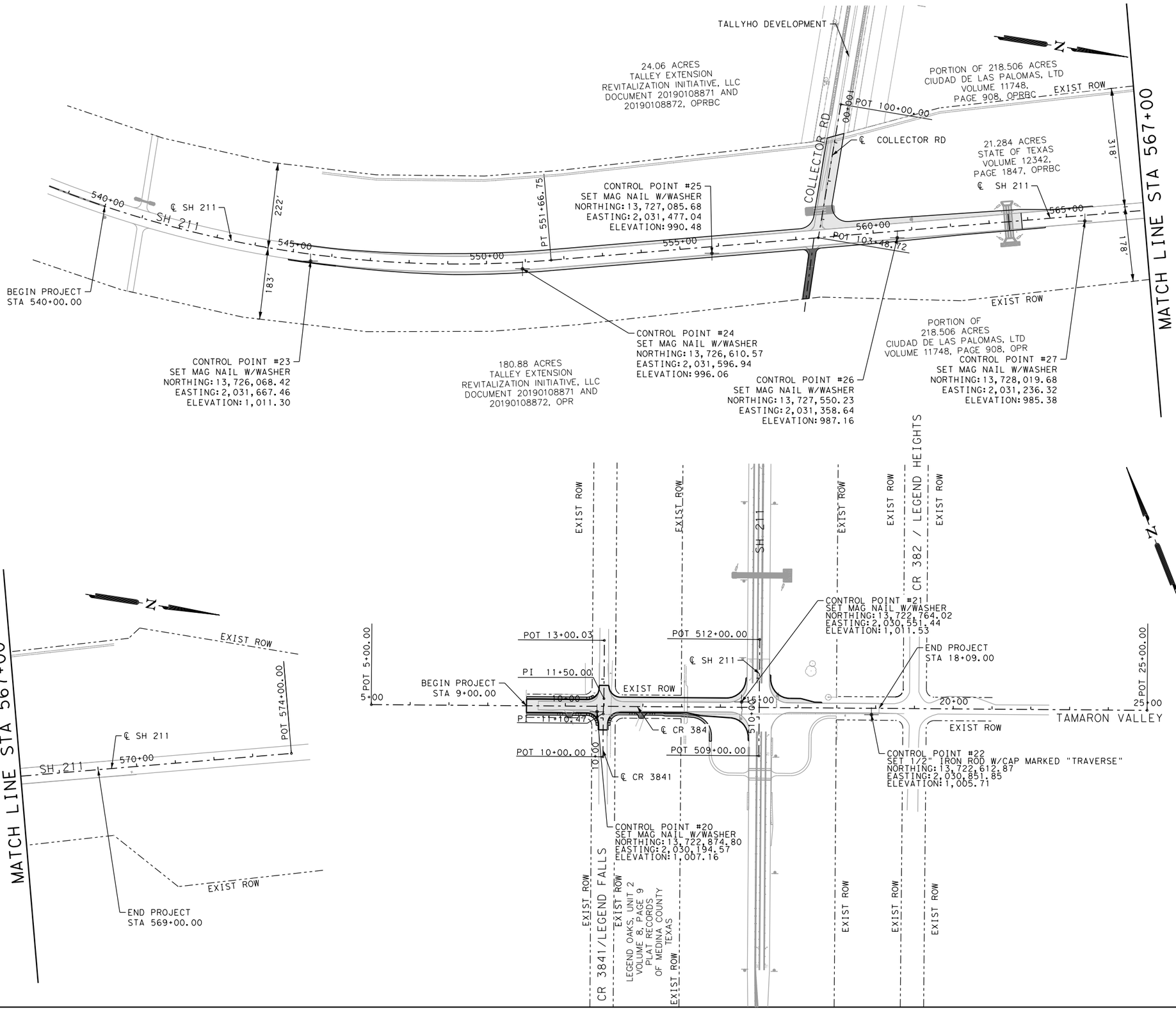
TALLEYHO IMPROVEMENTS

GENERAL NOTES

SHEET 2 OF 2

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 9

Plotted on: 1/22/2024
Design Filename: P:\122\85\04\Design\Civil\General\1228504_GEN02.dgn



DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 125 250 375
SCALE: 1"= 250'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

PROJECT LAYOUT

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 10

ITEM	DESCRIPTION	UNIT	QTY
0100-6002	PREPARING ROW	STA	29.0
0104-6009	REMOVING CONC (RIPRAP)	SY	56
0104-6015	REMOVING CONC (SIDEWALKS)	SY	77
0104-6017	REMOVING CONC (DRIVEWAYS)	SY	39
0105-6029	REMOVE STAB BASE & ASPH PAV (24")	SY	2166
0110-6001	EXCAVATION (ROADWAY)	CY	3883.0
0132-6004	EMBANKMENT (FINAL)(DENS CONT)(TY B)	CY	1070.0
0160-6003	FURNISHING AND PLACING TOPSOIL (4")	SY	10029
0164-6003	BROADCAST SEED (PERM) (RURAL) (CLAY	SY	10029
0168-6001	VEGETATIVE WATERING	MG	339.00
0247-6041	FL BS (CMP IN PLC)(TYA GR1-2)(FNAL POS	CY	2457.0
0260-6006	LIME TRT (EXST MATL) (6")	SY	1350
0260-6016	LIME (HYD, COM, OR QK(SLURRY))	TON	16.0
0310-6027	PRIME COAT(MC-30 OR AE-P)	GAL	1554.44
0403-6001	TEMPORARY SPL SHORING	SF	75
0432-6001	RIPRAP (CONC)(4 IN)	CY	25.0
0432-6014	RIPRAP (STONE TY R)(DRY)(6 IN)	CY	6.8
0459-6007	GABION MATTRESSES (GALV)(12 IN)	SY	63
0462-6006	CONC BOX CULV (5 FT X 2 FT)	LF	86
0462-6050	CONC BOX CULV (5 FT X 2 FT)(EXTEND)	LF	168
0466-6150	WINGWALL (FW - 0) (HW=3 FT)	EA	2
0467-6001	SET (PIPE RUNNER ASSEMBLY)	EA	2
0467-6174	SET (TY I)(S= 5 FT)(HW= 3 FT)(6:1) (P)	EA	2
0480-6001	CLEAN EXIST CULVERTS	EA	2
0496-6004	REMOV STR (SET)	EA	2
0496-6005	REMOV STR (WINGWALL)	EA	2
0496-6008	REMOV STR (BOX CULVERT)	LF	24
0502-6001	BARRICADES, SIGNS AND TRAFFIC HANDLIN	MO	6
0506-6002	ROCK FILTER DAMS (INSTALL) (TY 2)	LF	532
0506-6011	ROCK FILTER DAMS (REMOVE)	LF	532
0506-6020	CONSTRUCTION EXITS (INSTALL) (TY 1)	SY	1100
0506-6024	CONSTRUCTION EXITS (REMOVE)	SY	1100
0506-6038	TEMP SEDMT CONT FENCE (INSTALL)	LF	6454
0506-6039	TEMP SEDMT CONT FENCE (REMOVE)	LF	6454
0508-6001	CONSTRUCTING DETOURS	SY	1115
0512-6005	PORT CTB (FUR & INST)(F-SHAPE)(TY 1)	LF	750
0512-6029	PORT CTB (MOVE)(F-SHAPE)(TY 1)	LF	720
0512-6053	PORT CTB (REMOVE)(F-SHAPE)(TY 1)	LF	750
0529-6001	CONC CURB (TY I)	LF	500
0529-6020	CONC CURB & GUTTER (ARMOR CURB)	LF	14
0530-6005	DRIVEWAYS (ACP)	SY	312
0531-6002	CONC SIDEWALKS (5")	SY	410
0531-6019	CURB RAMPS (TY 2)	SY	53
0531-6027	CURB RAMPS (TY 10)	SY	54
0545-6001	CRASH CUSH ATTEN (INST)	EA	4
0545-6003	CRASH CUSH ATTEN (MOVE & RESET)	EA	4
0545-6005	CRASH CUSH ATTEN (REMOVE)	EA	4
0550-6003	CHAIN LINK FENCE (REMOVE)	LF	61
0550-6006	GATE (REMOVE)	EA	1
0644-6001	IN SM RD SN SUP&AM TY10BWG(1)SA(P)	EA	12
0644-6004	IN SM RD SN SUP&AM TY10BWG(1)SA(T)	EA	1
0644-6068	RELOCATE SM RD SN SUP&AM TY 10BWG	EA	4
0644-6076	REMOVE SM RD SN SUP&AM	EA	2
0662-6048	WK ZN PAV MRK REMOV (REFL) TY I-C	EA	4
0662-6050	WK ZN PAV MRK REMOV (REFL) TY II-A-A	EA	350
0662-6063	WK ZN PAV MRK REMOV (W)4"(SLD)	LF	1100
0662-6067	WK ZN PAV MRK REMOV (W)6"(SLD)	LF	11925
0662-6075	WK ZN PAV MRK REMOV (W)24"(SLD)	LF	60
0662-6080	WK ZN PAV MRK REMOV (W)(ARROW)	EA	1
0662-6095	WK ZN PAV MRK REMOV (Y)4"(SLD)	LF	1780
0662-6098	WK ZN PAV MRK REMOV (Y)6"(SLD)	LF	13500
0666-6030	REFL PAV MRK TY I (W)8"(DOT)(100MIL)	LF	150
0666-6036	REFL PAV MRK TY I (W)8"(SLD)(100MIL)	LF	1776
0666-6048	REFL PAV MRK TY I (W)24"(SLD)(100MIL)	LF	200
0666-6054	REFL PAV MRK TY I (W)(ARROW)(100MIL)	EA	10
0666-6078	REFL PAV MRK TY I (W)(WORD)(100MIL)	EA	8
0666-6102	REF PAV MRK TY I(W)36"(YLD TRI)(100MIL)	EA	5
0666-6156	REFL PAV MRK TY I(Y)(MED NOSE)(100MIL	EA	1
0666-6170	REFL PAV MRK TY II (W) 4" (SLD)	LF	1640
0666-6174	REFL PAV MRK TY II (W) 6" (SLD)	LF	3894
0666-6176	REFL PAV MRK TY II (W) 8" (DOT)	LF	150
0666-6178	REFL PAV MRK TY II (W) 8" (SLD)	LF	1776
0666-6182	REFL PAV MRK TY II (W) 24" (SLD)	LF	67
0666-6184	REFL PAV MRK TY II (W) (ARROW)	EA	10
0666-6192	REFL PAV MRK TY II (W) (WORD)	EA	8
0666-6199	REFL PAV MRK TY II (W) 36" (YLD TRI)	EA	5
0666-6207	REFL PAV MRK TY II (Y) 4" (SLD)	LF	2148
0666-6210	REFL PAV MRK TY II (Y) 6" (SLD)	LF	8268
0666-6217	REFL PAV MRK TY II (Y) (MED NOSE)	EA	1
0666-6303	RE PM W/RET REQ TY I (W)4"(SLD)(100MIL)	LF	1640
0666-6309	RE PM W/RET REQ TY I (W)6"(SLD)(100MIL)	LF	3894
0666-6315	RE PM W/RET REQ TY I (Y)4"(SLD)(100MIL)	LF	2148
0666-6321	RE PM W/RET REQ TY I (Y)6"(SLD)(100MIL)	LF	8268

ITEM	DESCRIPTION	UNIT	QTY
0672-6007	REFL PAV MRKR TY I-C	EA	146
0672-6009	REFL PAV MRKR TY II-A-A	EA	434
0677-6001	ELIM EXT PAV MRK & MRKS (4")	LF	16500
0677-6007	ELIM EXT PAV MRK & MRKS (24")	LF	60
3076-6006	D-GR HMA TY-B PG70-22	TON	1386
3076-6033	D-GR HMA TY-C SAC-B PG76-22	TON	813
3076-6066	TACK COAT	GAL	720
6185-6002	TMA (STATIONARY)	DAY	244
6185-6005	TMA (MOBILE OPERATION)	DAY	60
7171-6031	GRAVEL DRIVE (REMOVE & REPLACE)	SY	58
7211-6041	REMOVE ASPHALT DRIVEWAY PAVEMENT	SY	713

NOTES FOR CONTRACTOR'S INFORMATION PURPOSES:

1. ITEM 168-6001 USES AN APPLICATION RATE OF 1.3 GAL WATER EACH WEEK PER SQUARE YARD OF AN AREA THAT HAS TOPSOIL AND IS SEEDED. FOR AN ESTIMATED DURATION OF 26 WEEKS.
2. ITEM 260-6016 USES A UNIT WEIGHT OF 100 LBS/CF AT A 5% APPLICATION RATE THAT EQUATES TO ABOUT 23 LBS PER SQUARE YARD.
3. ITEM 310-6027 USES AN APPLICATION RATE OF 0.20 GAL PER SQUARE YARD.
4. ITEMS 3076-6006 AND 3076-6033 USES AN APPLICATION RATE OF 110 LBS/SY AT 1" THICK.
5. ITEM 3076-6066 USES AN APPLICATION RATE OF 0.10 GAL PER SQUARE YARD.

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

SUMMARY OF QUANTITIES

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 11

SUMMARY OF SMALL SIGNS

PLAN SHEET NO.	SIGN NO.	SIGN NOMENCLATURE	SIGN	DIMENSIONS	FLAT ALUMINUM (TYPE A)	EXAL ALUMINUM (TYPE G)	SM RD SGN ASSM TY XXXXX (X) XX (X-XXXX) POST TYPE: FRP = Fiberglass, TWT = Thin-Wall, 10BWG = 10 BWG, S80 = Sch 80	POSTS: 1 or 2	ANCHOR TYPE: UA=Universal Conc, UB=Universal Bolt, SA=Slipbase-Conc, SB=Slipbase-Bolt, WS=Wedge Steel, WP=Wedge Plastic	MOUNTING DESIGNATION: PREFABRICATED: P = "Plain", T = "T", U = "U"	MOUNTING DESIGNATION: 1EXT or 2EXT = # of Ext, BM = Extruded Wind Beam, WC = 1.12 #/ft Wing Channel, EXAL= Extruded Alum Sign Panels	BRIDGE MOUNT CLEARANCE SIGNS (See Note 2) TY = TYPE: TY N, TY S
113	1-1	R1-1		30" X 30"	X		10BWG	1	SA	P		
113	1-2	R1-1		30" X 30"	X		10BWG	1	SA	P		
113	1-3	R3-7R		30" X 30"	X		10BWG	1	SA	P		
114	2-1	R3-7R		36" X 36"	X		10BWG	1	SA	P		
114	2-2	R3-5R		30" X 36"	X		10BWG	1	SA	P		
114	2-3	R1-2		48"X48"X48"	X		10BWG	1	SA	T		
114	2-4	R3-5R		30" X 36"	X		10BWG	1	SA	P		
114	2-5	R3-8		30" X 30"	X		10BWG	1	SA	P		
115	3-1	R4-1		24" X 30"	X		10BWG	1	SA	P		
117	5-1	R3-7R		36" X 36"	X		10BWG	1	SA	P		
117	5-2	R3-5R		30" X 36"	X		10BWG	1	SA	P		
119	7-1	R1-1		36" X 36"	X		10BWG	1	SA	P		
		W4-4P		24" X 12"								
119	7-2	R3-8		30" X 30"	X		10BWG	1	SA	P		

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080"
7.5 to 15	0.100"
Greater than 15	0.125"

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

NOTE:

1. Sign supports shall be located as shown on the plans, except that the Engineer may shift the sign supports, within design guidelines, where necessary to secure a more desirable location or to avoid conflict with utilities. Unless otherwise shown on the plans, the Contractor shall stake and the Engineer will verify all sign support locations.

2. For installation of bridge mount clearance signs, see Bridge Mounted Clearance Sign Assembly (BMCS)Standard Sheet.

3. For Sign Support Descriptive Codes, see Sign Mounting Details Small Roadside Signs General Notes & Details SMD(GEN).

DATE: 1/22/2024 2:36:47 PM
FILE: P:\22\85\04\Design\Civil\General\1228504_SOSS01.dgn

Texas Department of Transportation

Traffic Operations Division Standard

SUMMARY OF SMALL SIGNS

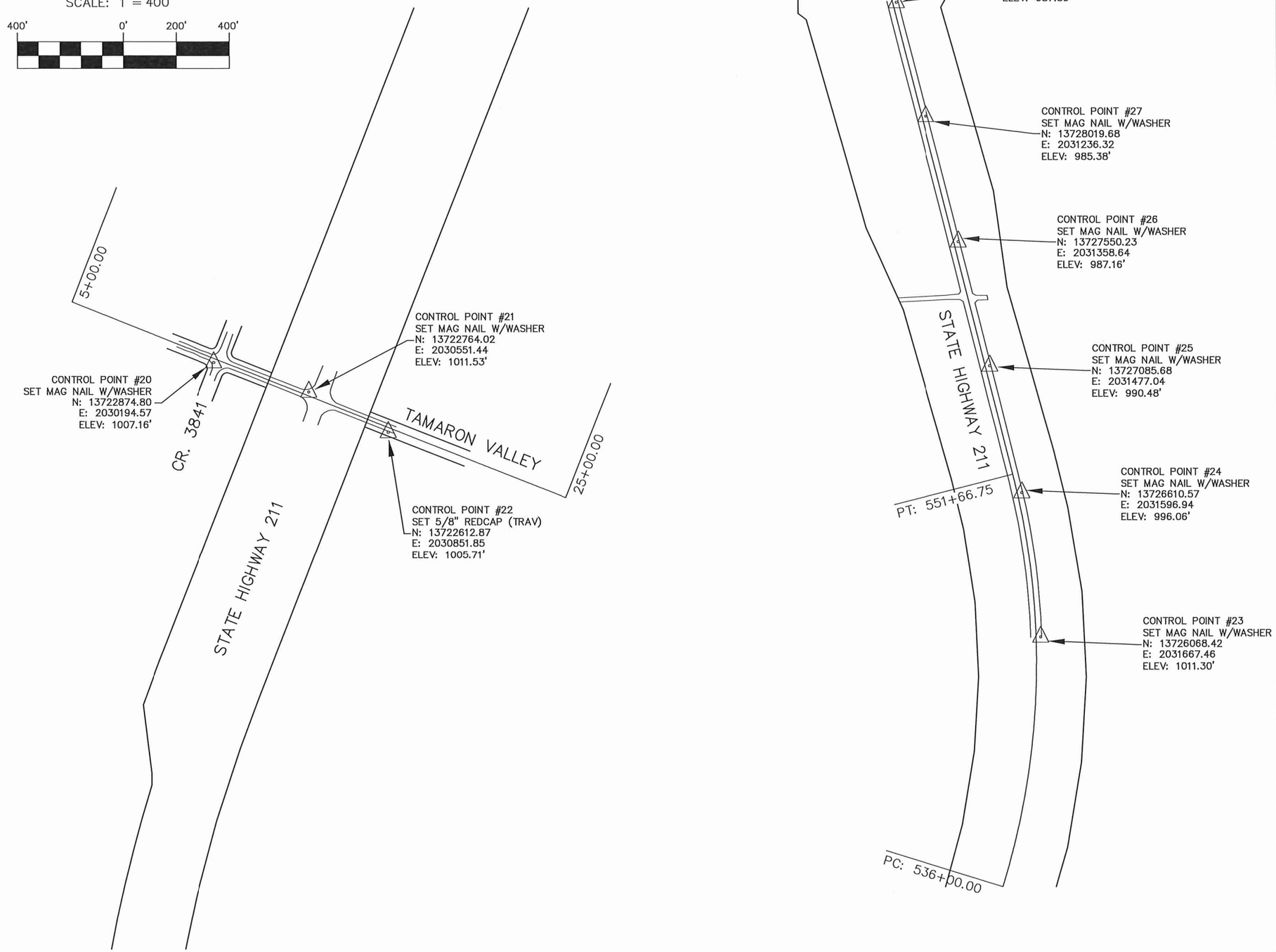
SOSS

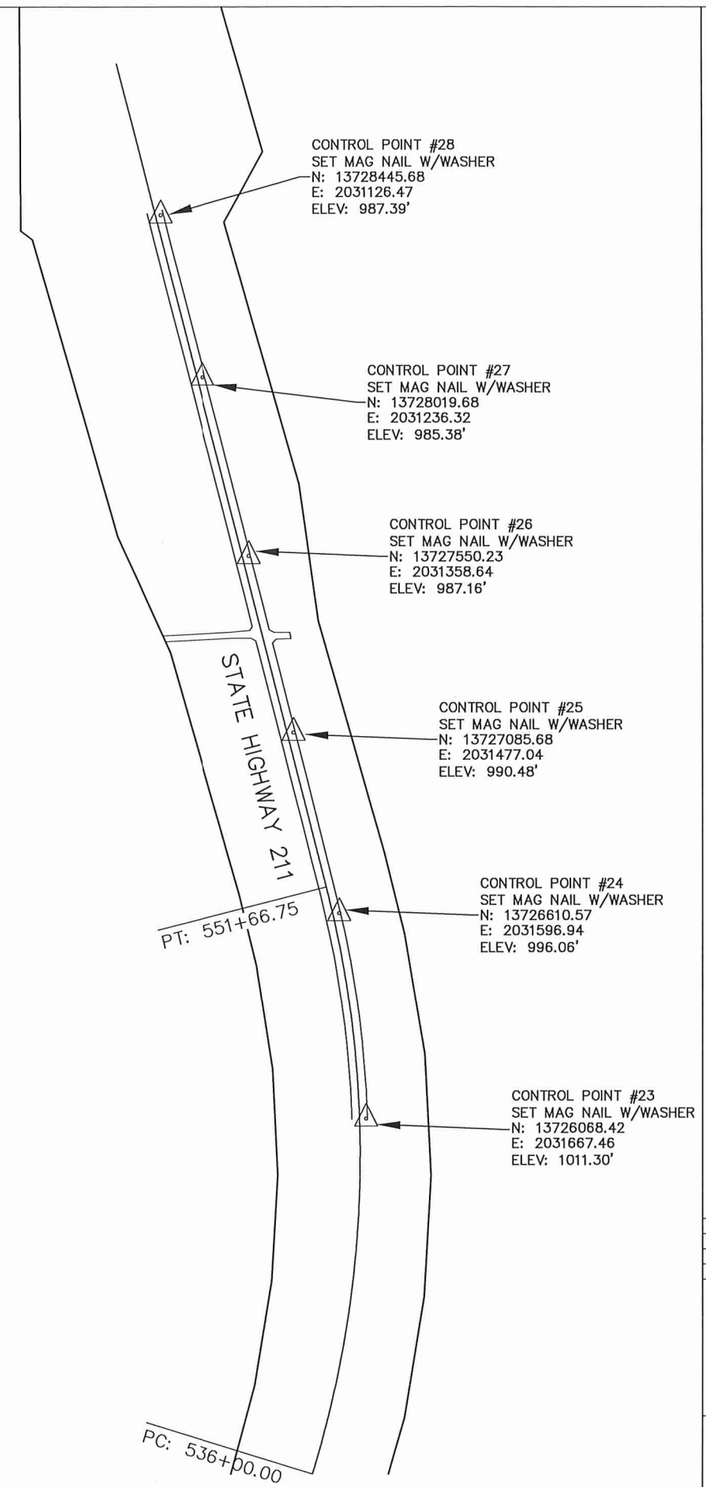
FILE: sums16.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT May 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
4-16	DIST	COUNTY		SHEET NO.
8-16	SAT	BX / ME		12

AUGUST 28, 2023

SCALE: 1"= 400'

400' 0' 200' 400'





NOTES:

1. COORDINATES SHOWN ARE DISPLAYED AS SURFACE VALUES IN U.S. SURVEY FEET, BASED ON THE NORTH AMERICAN DATUM OF 1983 (NA2011) EPOCH 2010.00 FROM THE TEXAS COORDINATE SYSTEM ESTABLISHED FOR THE SOUTH CENTRAL ZONE, WITH A SURFACE ADJUSTMENT FACTOR OF 1.00017 APPLIED.

2. ELEVATIONS SHOWN ARE BASED ON NAVD88 (GEOID 12B), AND ESTABLISHED BY RTK OBSERVATIONS AND DOUBLE RUN DIGITAL LEVEL LOOPS.

LEGEND

△ CP	CONTROL POINT
N.T.S.	NOT TO SCALE
SH 211	STATE HIGHWAY 211
STA	STATION
RD	ROAD
DR	DRIVE
LN	LANE
CR	COUNTY ROAD

STATE OF TEXAS
REGISTERED
ERIC J. SNELL
6527
PROFESSIONAL
LAND SURVEYOR

11-2-23

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

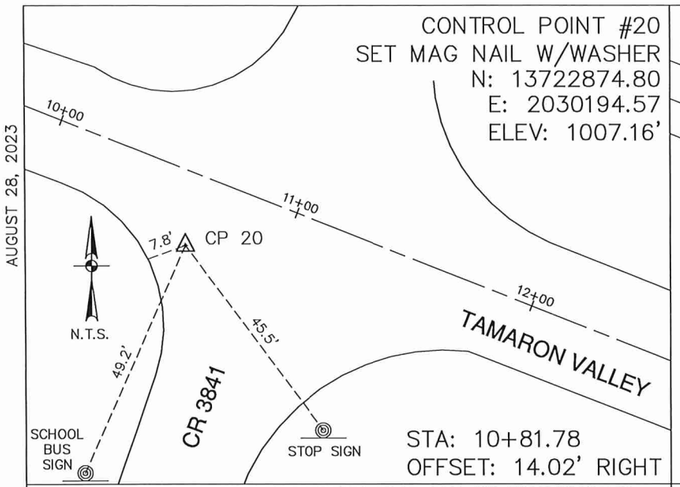
TALLEYHO IMPROVEMENTS

HORIZONTAL AND VERTICAL CONTROL SHEET

SHEET 1 OF 2

60% SUBMITTAL	PROJECT NO.: 1228504		DATE: 11/01/23
DRWN. BY: JK	DSGN. BY: JK	CHKD. BY: EJS	SHEET NO.: 13

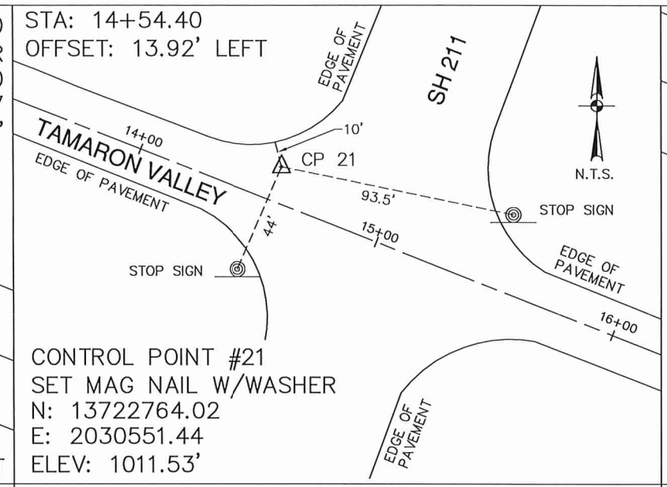
Design Filename: N:\Transpo\Civil\12285-04\Control Sheets\12285-04_CTL SHT.dwg



CONTROL POINT #20
SET MAG NAIL W/WASHER
N: 13722874.80
E: 2030194.57
ELEV: 1007.16'

STA: 10+81.78
OFFSET: 14.02' RIGHT

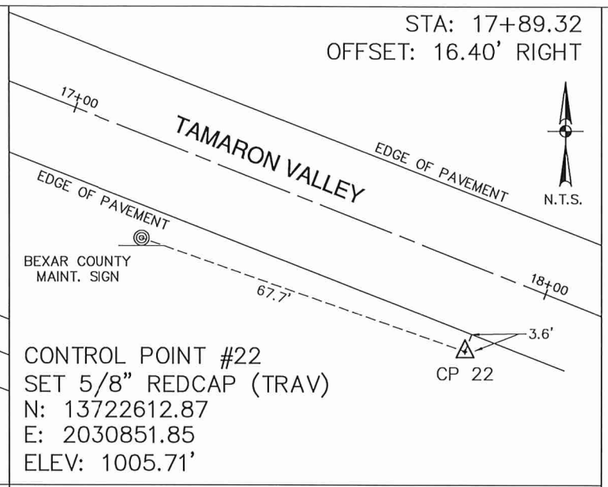
MAG NAIL WITH WASHER AT THE INTERSECTION OF CR. 3841 AND TAMARON VALLEY APPROXIMATELY 418 FEET NORTHWEST OF THE INTERSECTION OF SH 211 AND TAMARON VALLEY.



STA: 14+54.40
OFFSET: 13.92' LEFT

CONTROL POINT #21
SET MAG NAIL W/WASHER
N: 13722764.02
E: 2030551.44
ELEV: 1011.53'

MAG NAIL WITH WASHER AT THE INTERSECTION OF SH 211 AND TAMARON VALLEY.



STA: 17+89.32
OFFSET: 16.40' RIGHT

CONTROL POINT #22
SET 5/8" REDCAP (TRAV)
N: 13722612.87
E: 2030851.85
ELEV: 1005.71'

5/8" IRON ROD WITH CAP MARKED "TRAVERSE" ON THE SOUTH SIDE OF TAMARON VALLEY APPROXIMATELY 290 FEET SOUTHEAST OF THE INTERSECTION OF SH 211 AND TAMARON VALLEY.

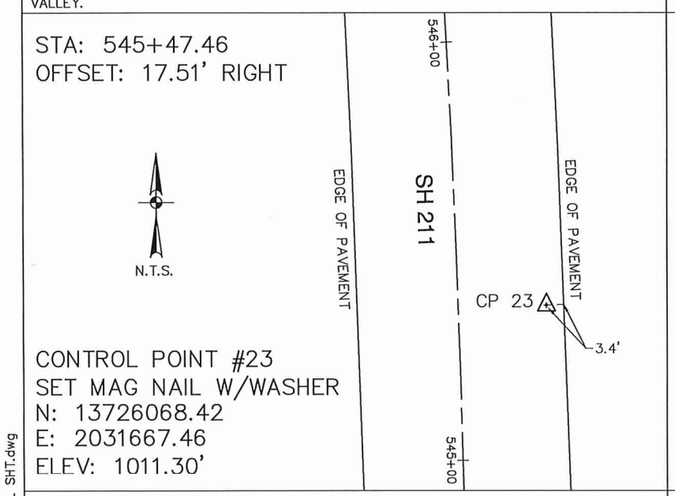
NOTES:

1. COORDINATES SHOWN ARE DISPLAYED AS SURFACE VALUES IN U.S. SURVEY FEET, BASED ON THE NORTH AMERICAN DATUM OF 1983 (NA2011) EPOCH 2010.00 FROM THE TEXAS COORDINATE SYSTEM ESTABLISHED FOR THE SOUTH CENTRAL ZONE, WITH A SURFACE ADJUSTMENT FACTOR OF 1.00017 APPLIED.

2. ELEVATIONS SHOWN ARE BASED ON NAVD88 (GEOID 12B), AND ESTABLISHED BY RTK OBSERVATIONS AND DOUBLE RUN DIGITAL LEVEL LOOPS.

LEGEND

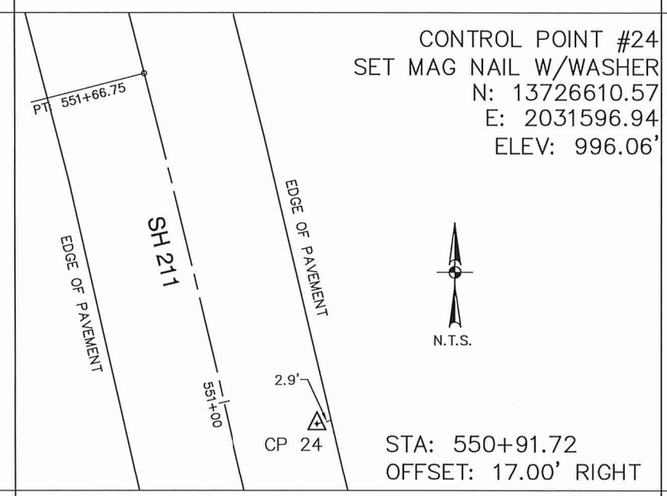
△ CP	CONTROL POINT
N.T.S.	NOT TO SCALE
SH 211	STATE HIGHWAY 211
STA	STATION
RD	ROAD
DR	DRIVE
LN	LANE
CR	COUNTY ROAD



STA: 545+47.46
OFFSET: 17.51' RIGHT

CONTROL POINT #23
SET MAG NAIL W/WASHER
N: 13726068.42
E: 2031667.46
ELEV: 1011.30'

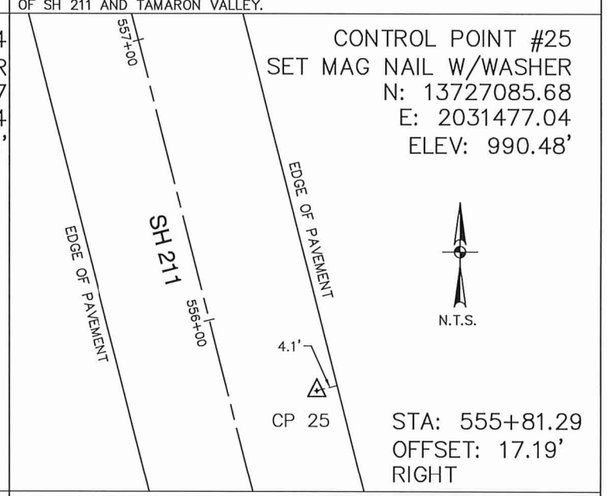
MAG NAIL WITH WASHER ON THE EAST SIDE OF SH 211 APPROXIMATELY 3,526 FEET (0.67 MILES) NORTH OF THE INTERSECTION OF SH 211 AND TAMARON VALLEY.



CONTROL POINT #24
SET MAG NAIL W/WASHER
N: 13726610.57
E: 2031596.94
ELEV: 996.06'

STA: 550+91.72
OFFSET: 17.00' RIGHT

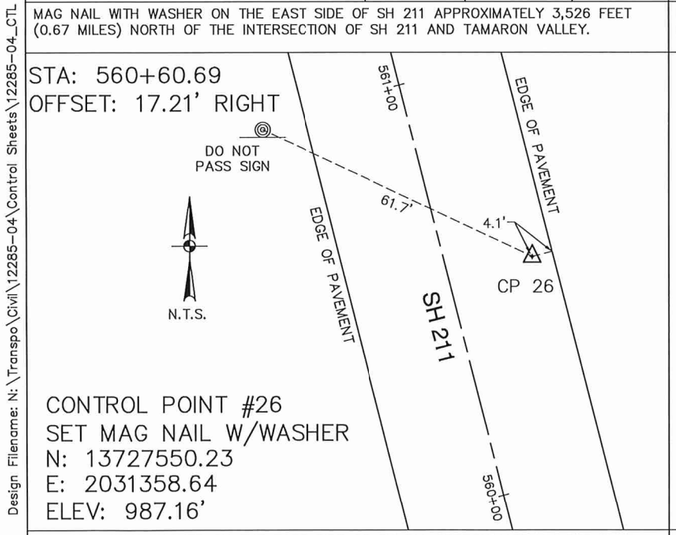
MAG NAIL WITH WASHER ON THE EAST SIDE OF SH 211 APPROXIMATELY 4,068 FEET (0.77 MILES) NORTH OF THE INTERSECTION OF SH 211 AND TAMARON VALLEY.



CONTROL POINT #25
SET MAG NAIL W/WASHER
N: 13727085.68
E: 2031477.04
ELEV: 990.48'

STA: 555+81.29
OFFSET: 17.19' RIGHT

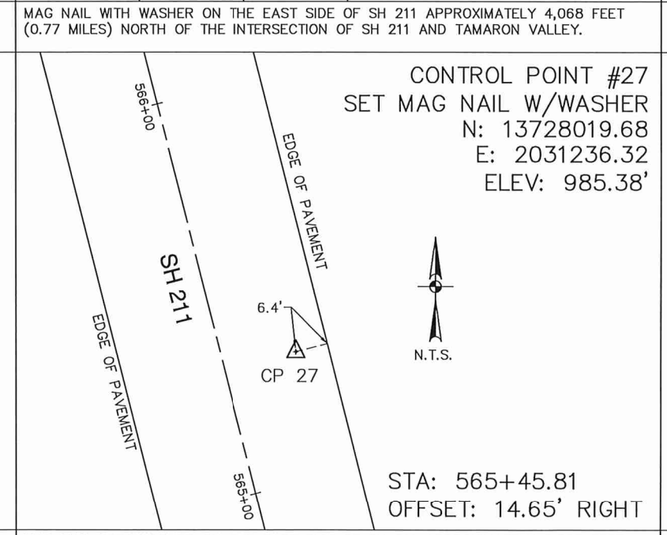
MAG NAIL WITH WASHER ON THE EAST SIDE OF SH 211 APPROXIMATELY 4,559 FEET (0.86 MILES) NORTH OF THE INTERSECTION OF SH 211 AND TAMARON VALLEY.



STA: 560+60.69
OFFSET: 17.21' RIGHT

CONTROL POINT #26
SET MAG NAIL W/WASHER
N: 13727550.23
E: 2031358.64
ELEV: 987.16'

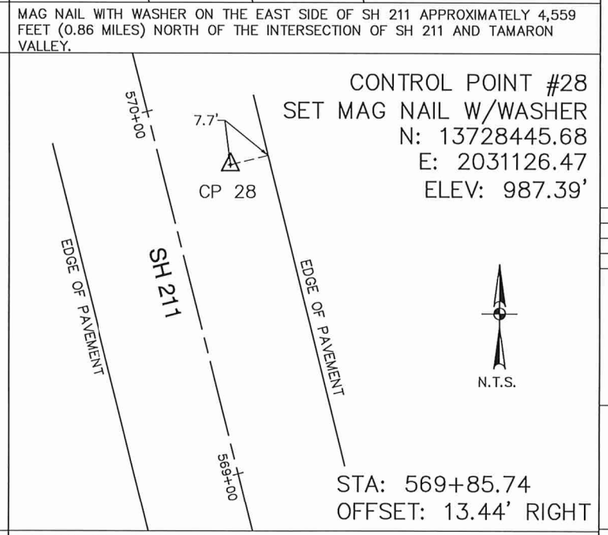
MAG NAIL WITH WASHER ON THE EAST SIDE OF SH 211 APPROXIMATELY 5,039 FEET (0.95 MILES) NORTH OF THE INTERSECTION OF SH 211 AND TAMARON VALLEY.



CONTROL POINT #27
SET MAG NAIL W/WASHER
N: 13728019.68
E: 2031236.32
ELEV: 985.38'

STA: 565+45.81
OFFSET: 14.65' RIGHT

MAG NAIL WITH WASHER ON THE EAST SIDE OF SH 211 APPROXIMATELY 5,523 FEET (1.05 MILES) NORTH OF THE INTERSECTION OF SH 211 AND TAMARON VALLEY.



CONTROL POINT #28
SET MAG NAIL W/WASHER
N: 13728445.68
E: 2031126.47
ELEV: 987.39'

STA: 569+85.74
OFFSET: 13.44' RIGHT

MAG NAIL WITH WASHER ON THE EAST SIDE OF SH 211 APPROXIMATELY 5,962 FEET (1.13 MILES) NORTH OF THE INTERSECTION OF SH 211 AND TAMARON VALLEY.

STATE OF TEXAS
REGISTERED
ERIC J. SNELL
6527
PROFESSIONAL
LAND SURVEYOR

11-2-23

REV. NO.	DATE	DESCRIPTION	BY

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

HORIZONTAL AND VERTICAL CONTROL SHEET

SHEET 2 OF 2

60% SUBMITTAL	PROJECT NO.: 1228504		DATE: 11/01/23
DRWN. BY: JK	DSGN. BY: JK	CHKD. BY: EJS	SHEET NO.: 14

AUGUST 28, 2023

Design Filename: N:\Transpo\Civil\12285-04\Control Sheets\12285-04_CTL SHT.dwg

TCP NARRATIVE

NOTE:
1. REFER TO THE GENERAL NOTES SHEET FOR TXDOT CONSTRUCTION GENERAL NOTES.

SPECIAL NOTE:
1. A MINIMUM OF 3:1 (H:V) TEMPORARY SAFETY SLOPE OF STABLE COMPACTED MATERIAL WILL BE REQUIRED ADJACENT TO ANY DROP OFF THAT IS GREATER THAN 2". THIS IS REQUIRED ALONG THE ENTIRE PROJECT DURING NON WORKING HOURS.
2. ALL DRIVEWAYS ARE TO BE BUILT IN HALVES TO ALLOW ACCESS AT ALL TIMES. IF A PROPERTY HAS A SECOND ACCESS POINT THE DRIVEWAYS ARE TO BE CONSTRUCTED ONE AT A TIME.

TAMARON VALLEY SEQUENCE OF WORK

PHASE I
1. INSTALL ADVANCE WARNING SIGNS ALONG APPROACH ROADWAY ON BOTH ENDS OF THE PROJECT AS SHOWN ON THE TCP STANDARDS.
2. INSTALL TEMPORARY EROSION CONTROL MEASURES.
3. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES INCLUDING CHANNELIZATION DEVICES AND SIGNAGE, ACCORDING TO THE PLANS AND TCP (2-1b)-18 ALONG TAMARON VALLEY AND SH 211.
4. SHIFT TRAFFIC AND CONSTRUCT ROADWAY WIDENING ON TAMARON VALLEY, ACCORDING TO THE PLANS.

PHASE II
1. INSTALL ADVANCE WARNING SIGNS ALONG APPROACH ROADWAY ON BOTH ENDS OF THE PROJECT AS SHOWN ON THE TCP STANDARDS.
2. INSTALL TEMPORARY EROSION CONTROL MEASURES ALONG TAMARON VALLEY.
3. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES INCLUDING CHANNELIZATION DEVICES AND SIGNAGE USE TXDOT TCP (2-2A)-18 ON LEGEND FALLS(REFER TO SHEET 52). CLOSE DOWN TAMARON VALLEY BETWEEN LEGEND FALLS AND SH 211.
4. SHIFT TRAFFIC AND CONSTRUCT FULL DEPTH PAVEMENT ACCORDING TO THE PLANS. PROPERTY ACCESS ALONG CR3841 AND CR384 TO BE MAINTAINED UTILIZING THE DETOUR LAYOUT (SHEET 21).
5. TOPSOIL AND SEEDING TO BE INSTALLED AFTER PHASE III DURING FINAL CLEANUP.

PHASE III
1. INSTALL ADVANCE WARNING SIGNS ALONG APPROACH ROADWAY ON BOTH ENDS OF THE PROJECT AS SHOWN ON THE TCP STANDARDS.
2. INSTALL TEMPORARY EROSION CONTROL MEASURES.
3. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES INCLUDING CHANNELIZATION DEVICES AND SIGNAGE (USE TXDOT TCP (2-2a)-18 ALONG LEGEND FALLS). INSTALL PERMANENT PAVEMENT MARKINGS ACCORDING TO THE PLANS. UTILIZE TCP (3-1c)-13 AND TCP (3-3b)-14.
4. INSTALL TOPSOIL AND SEEDING.
5. INSTALL REMAINING PAVEMENT MARKINGS UTILIZING TCP (3-1c)-13 AND TCP(3-3b)-14.
6. FINAL CLEANUP
7. REFER TO SH 211 SEQUENCE OF WORK FOR PHASE III WORK ON SH 211.

SH 211 SEQUENCE OF WORK

PHASE III
1. INSTALL ADVANCE WARNING SIGNS ALONG APPROACH ROADWAY ON BOTH ENDS OF THE PROJECT AS SHOWN ON THE ADVANCE WARNING SIGNS LAYOUT, TCP & SW3P LAYOUT AND TCP STANDARDS.
2. INSTALL TEMPORARY EROSION CONTROL MEASURES.
3. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES INCLUDING CHANNELIZATION DEVICES AND SIGNAGE ACCORDING TO THE PLANS AND TCP (2-1a)-18.
4. SHIFT TRAFFIC AND CONSTRUCT ROADWAY WIDENING (TEMPORARY AND PERMANENT) ON SH 211 ON EAST SIDE OF THE ROADWAY.

PHASE IV
1. INSTALL ADVANCE WARNING SIGNS ALONG APPROACH ROADWAY ON BOTH ENDS OF THE PROJECT AS SHOWN ON THE ADVANCE WARNING SIGNS LAYOUT, TCP & SW3P LAYOUT AND TCP STANDARDS.
2. INSTALL TEMPORARY EROSION CONTROL MEASURES.
3. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES INCLUDING CHANNELIZATION DEVICES, SIGNAGE AND PORTABLE CTB ACCORDING TO THE PLANS AND TCP (2-3b)-23.
4. SHIFT TRAFFIC AND REMOVE HEADWALL, CONSTRUCT ROADWAY WIDENING, FULL DEPTH CONSTRUCTION, COLLECTOR ROAD, CONSTRUCT LIMITS SHOWN ON THE PLANS. THIS IS TO BE DONE ON THE WEST SIDE OF THE ROADWAY. THE CONTRACTOR IS TO RESTRICT FLOW TO THE NEW CULVERT BARREL UNTIL AFTER PHASE V.

PHASE V
1. INSTALL ADVANCE WARNING SIGNS ALONG APPROACH ROADWAY ON BOTH ENDS OF THE PROJECT AS SHOWN ON THE ADVANCE WARNING SIGNS LAYOUT, TCP & SW3P LAYOUT AND TCP STANDARDS.
2. INSTALL TEMPORARY EROSION CONTROL MEASURES.
3. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES INCLUDING CHANNELIZATION DEVICES, SIGNAGE AND PORTABLE CTB ACCORDING TO THE PLANS AND TCP (2-3b)-23.
4. SHIFT TRAFFIC AND REMOVE HEADWALL, CONSTRUCT ROADWAY WIDENING, FULL DEPTH CONSTRUCTION, CONSTRUCT CULVERT AND OBLITERATE TEMPORARY PAVEMENT AS SHOWN ON THE PLANS. THIS IS TO BE DONE ON THE EAST SIDE OF THE ROADWAY.
5. FINAL CLEANUP AND OBLITERATE TEMPORARY PAVEMENT ON THE WEST SIDE.

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

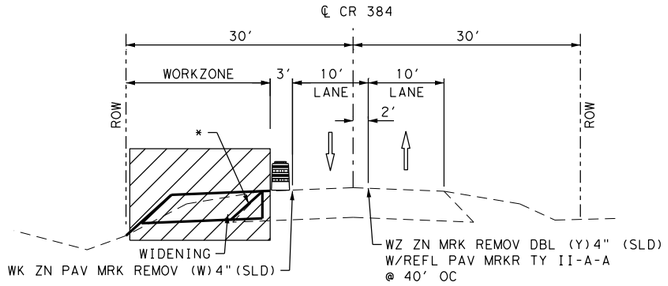
INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

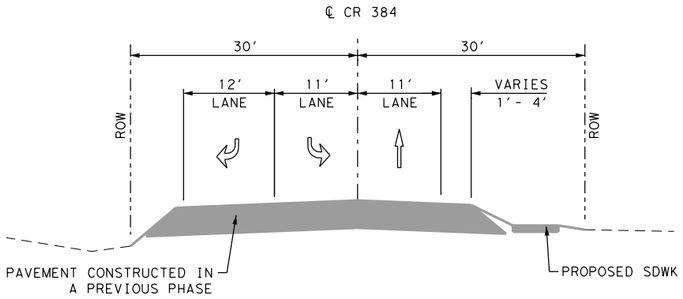
TRAFFIC CONTROL PLAN NARRATIVE

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 15



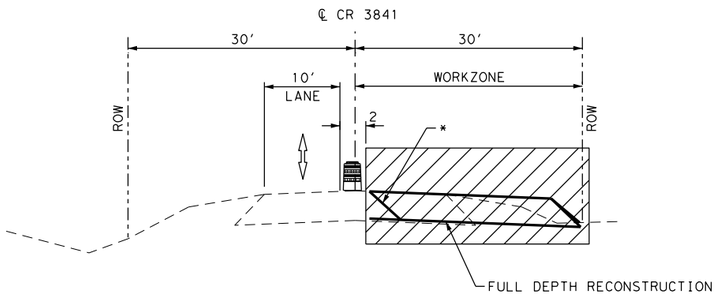
CR 384/TAMARON VALLEY
TCP PHASE I TYPICAL SECTION

NTS
STA 15+24.82 TO STA 18+65.00



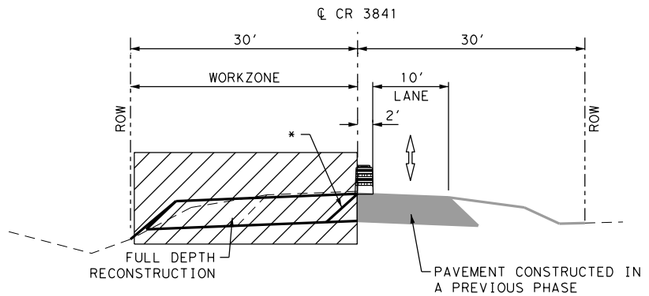
CR 384/TAMARON VALLEY
TCP PHASE III TYPICAL SECTION

NTS
STA 10+99.00 TO STA 14+76.34



CR 3841/LEGEND FALLS
TCP PHASE II TYPICAL SECTION

NTS
STA 10+69.34 TO STA 11+84.03



LEGEND FALLS
TCP PHASE III TYPICAL SECTION

NTS
STA 10+69.34 TO STA 11+84.04

LEGEND

- CHANNELIZING DEVICE
- PERMANENT CONSTRUCTION
- TEMPORARY CONSTRUCTION
- PAVEMENT CONSTRUCTED IN A PREVIOUS PHASE

* = DROP OFF CONDITIONS GREATER THAN 2" MUST HAVE A 3:1 SLOPE AT THE END OF EACH DAY.

** = TEMPORARY SPECIAL SHORING.

TCP NOTES:

1. FOR ADDITIONAL DETAILS, SEE TxDOT TCP STANDARD SHEETS AND TCP TYPICAL SECTION SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED.
4. CONTRACTOR TO MATCH WORK ZONE PAVEMENT MARKINGS TO EXISTING PAVEMENT MARKINGS AT EACH END OF THE PROJECT.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD.
6. ALL SIGN LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATIONS IN THE FIELD.
7. CONTRACTOR TO IDENTIFY CONSTRUCTION EXITS LOCATIONS IN THE FIELD.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

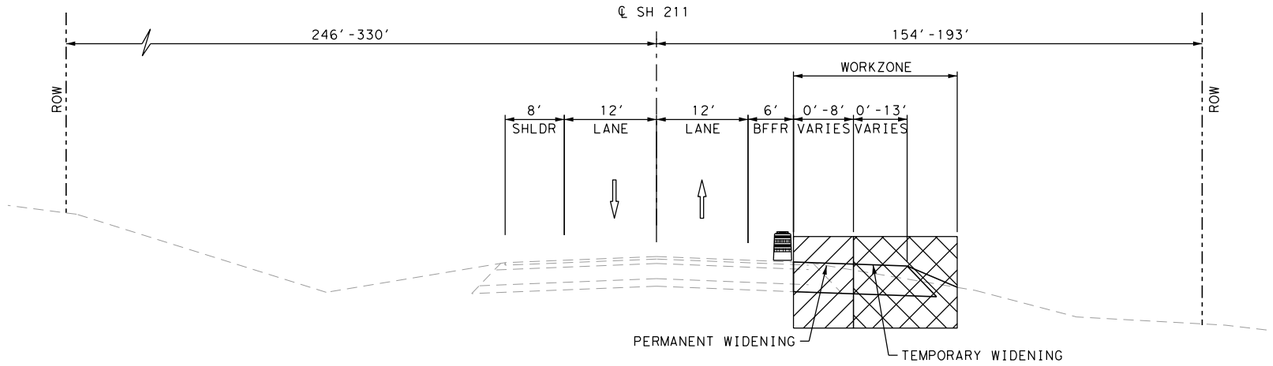
TCP TYPICAL SECTIONS

SHEET 1 OF 4

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 16

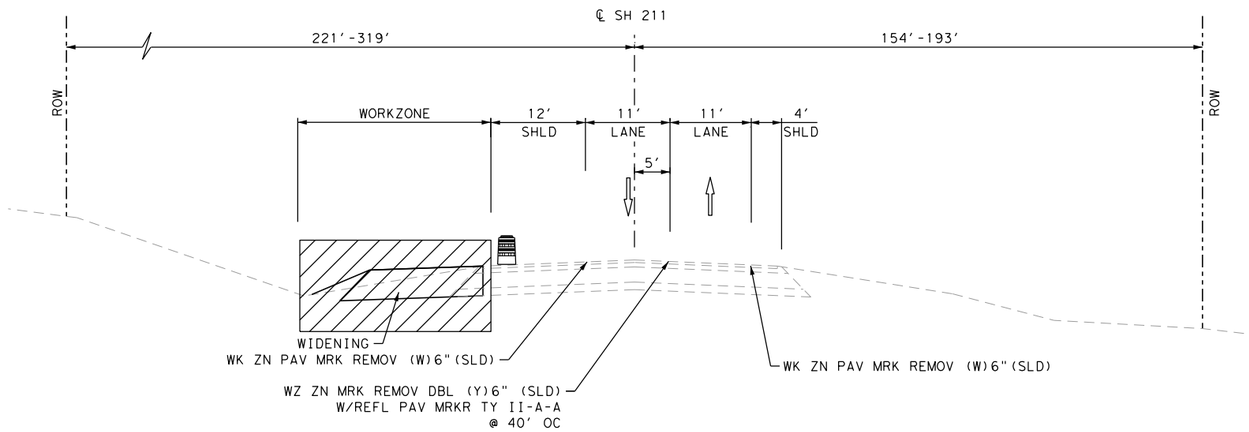
Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\TCP\1228504_TCP_TYP02.dgn



SH 211
TCP PHASE III TYPICAL SECTION

NTS
STA 558+13.80 TO STA 569+33.21



SH 211
TCP PHASE IV TYPICAL SECTION

NTS
STA 544+90.33 TO STA 562.04.40

LEGEND

- CHANNELIZING DEVICE
- PERMANENT CONSTRUCTION
- TEMPORARY CONSTRUCTION
- PAVEMENT CONSTRUCTED IN A PREVIOUS PHASE

* = DROP OFF CONDITIONS GREATER THAN 2" MUST HAVE A 3:1 SLOPE AT THE END OF EACH DAY.

** = TEMPORARY SPECIAL SHORING.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

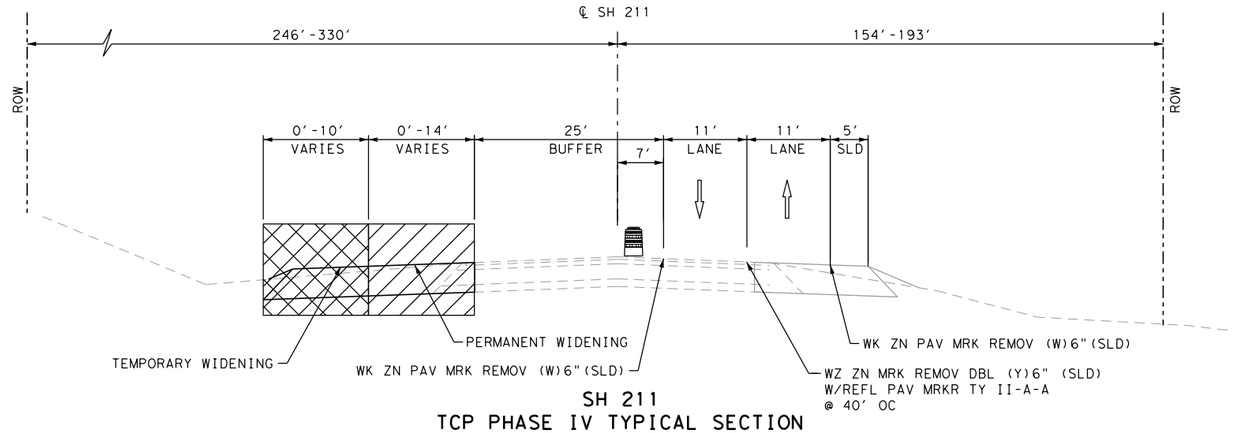
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

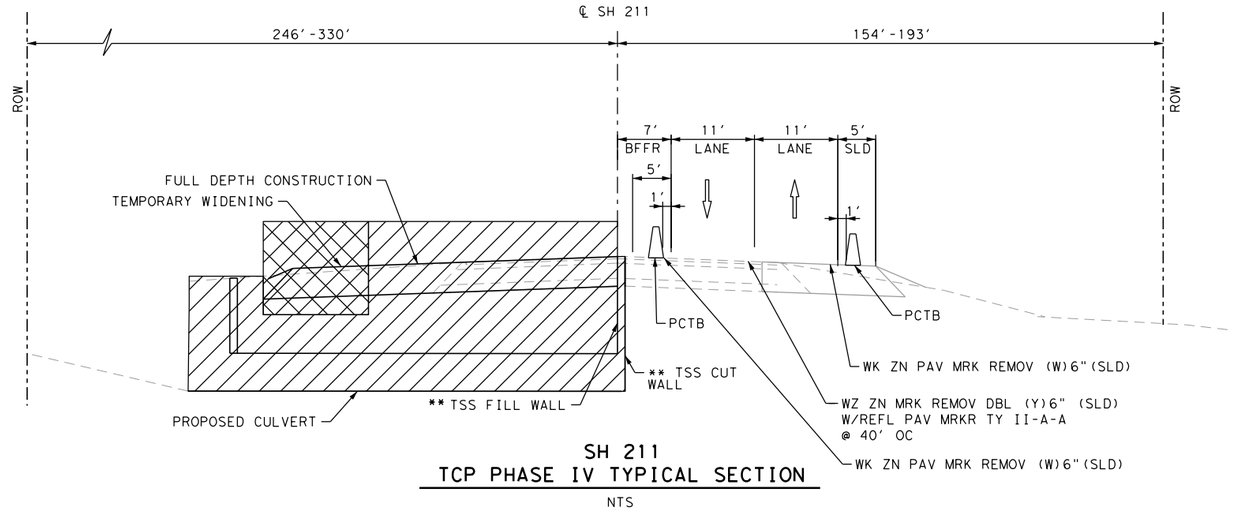
TCP TYPICAL SECTIONS

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 17



SH 211
TCP PHASE IV TYPICAL SECTION

NTS
STA 562+04.40 TO STA 563+58.62
STA 563+83.96 TO STA 567+84.10



SH 211
TCP PHASE IV TYPICAL SECTION

NTS
STA 563+50.71 TO STA 563+83.96

** = TEMPORARY SPECIAL SHORING.

LEGEND

CHANNELIZING DEVICE

PERMANENT CONSTRUCTION

TEMPORARY CONSTRUCTION

PAVEMENT CONSTRUCTED IN A PREVIOUS PHASE

* = DROP OFF CONDITIONS GREATER THAN 2" MUST HAVE A 3:1 SLOPE AT THE END OF EACH DAY.

** = TEMPORARY SPECIAL SHORING.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

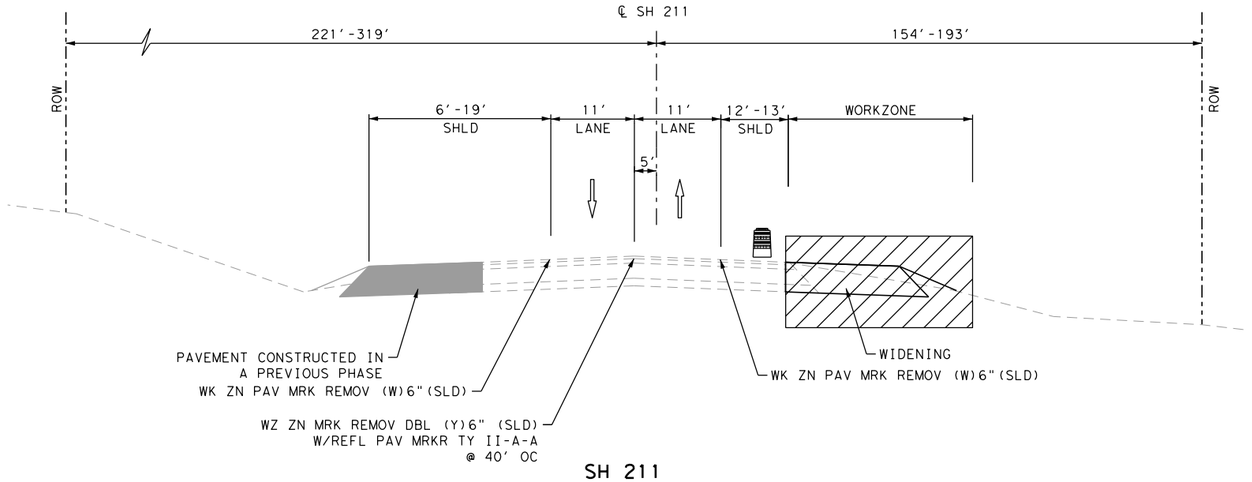
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

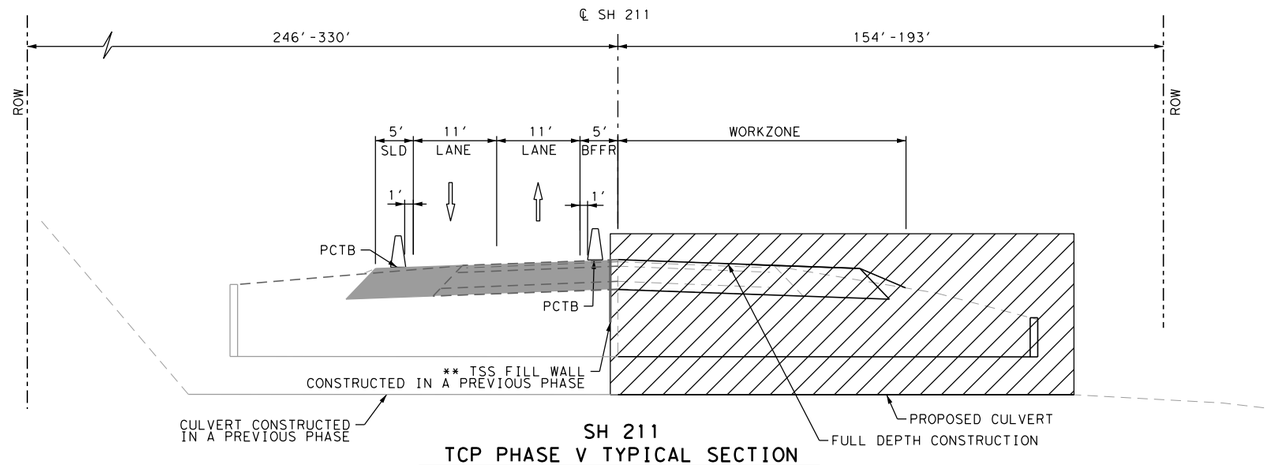
TCP TYPICAL SECTIONS

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 18



SH 211
TCP PHASE V TYPICAL SECTION

NTS
STA 544+90.33 TO STA 558+13.79



SH 211
TCP PHASE V TYPICAL SECTION

NTS
STA 563+50.71 TO STA 563+83.96

** = TEMPORARY SPECIAL SHORING.

LEGEND

- CHANNELIZING DEVICE
- PERMANENT CONSTRUCTION
- TEMPORARY CONSTRUCTION
- PAVEMENT CONSTRUCTED IN A PREVIOUS PHASE

* = DROP OFF CONDITIONS GREATER THAN 2" MUST HAVE A 3:1 SLOPE AT THE END OF EACH DAY.

** = TEMPORARY SPECIAL SHORING.

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

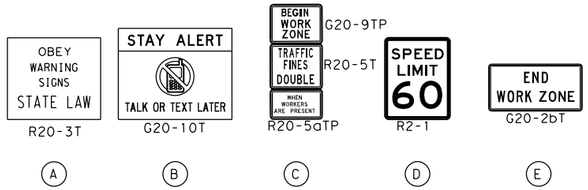
TCP TYPICAL SECTIONS

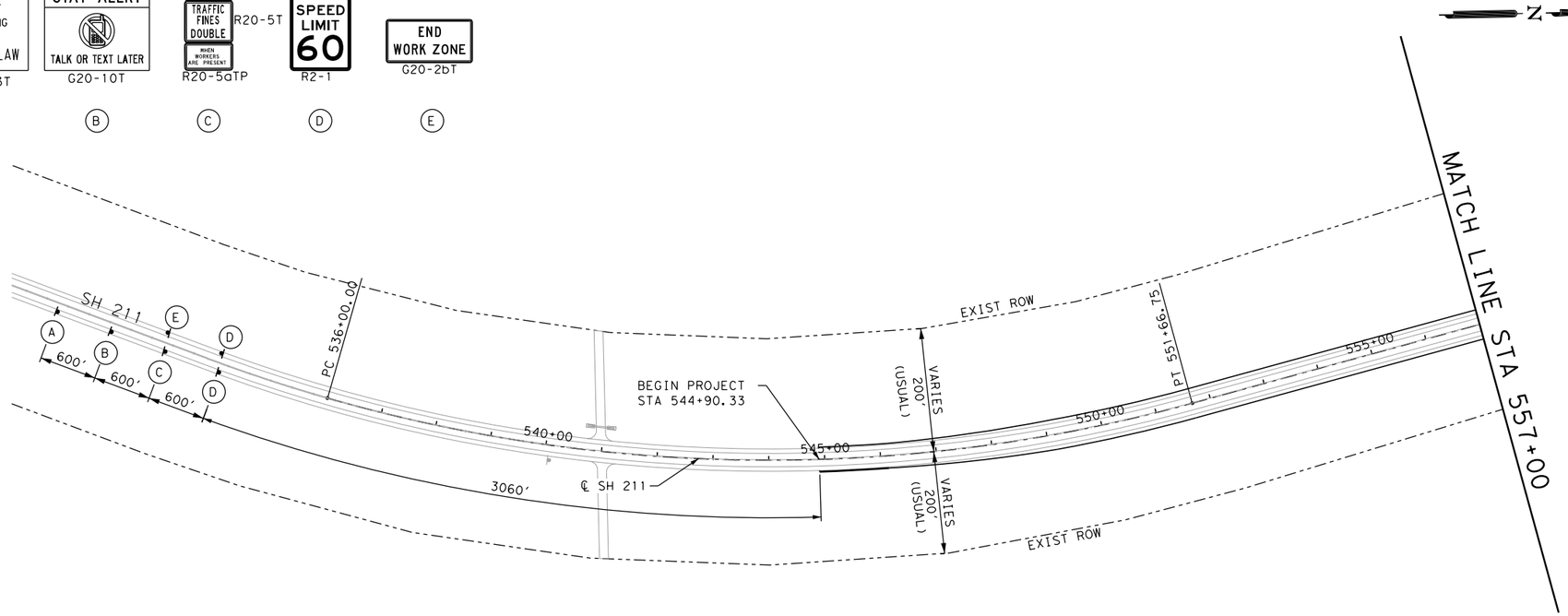
SHEET 4 OF 4

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 19

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\TCP\1228504_TCP_TYP04.dgn



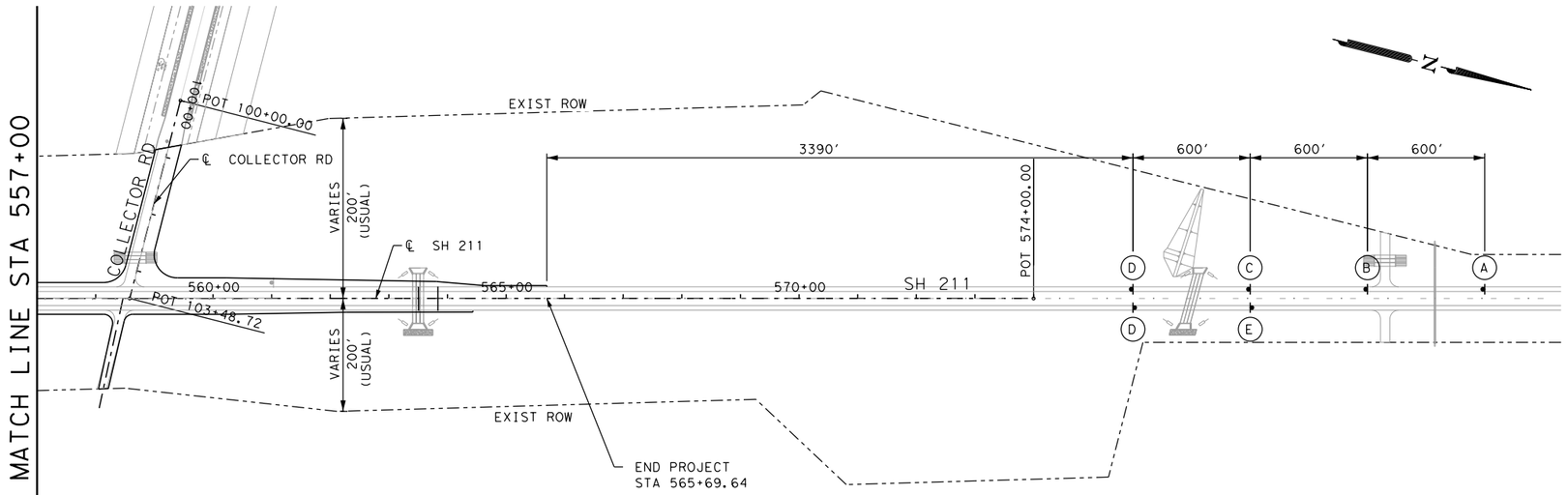


LEGEND

- (X) SIGN DESIGNATION
- TCP SIGN
- EXISTING RIGHT OF WAY (ROW)

NOTES

1. ADVANCE WARNING SIGNS ARE TO REMAIN IN PLACE FOR THE DURATION OF THE PROJECT.
2. REFER TO BC STANDARDS FOR ADDITIONAL DETAILS.
3. PROVIDE AND MAINTAIN ALL BARRICADE, WARNING SIGNS, FLASHING LIGHTS, AND TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH TXDOT BC AND TCP STANDARDS, AND PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
4. COVER OR REMOVE EXISTING SIGNS THAT ARE IN IN CONFLICT WITH CONSTRUCTION SIGNS.
5. REFER TO TCP & SW3P LAYOUT SHEETS FOR THE LOCATIONS OF THE ADVANCE WARNING SIGNS PLACEMENT IN SPECIFIC PHASES.



DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

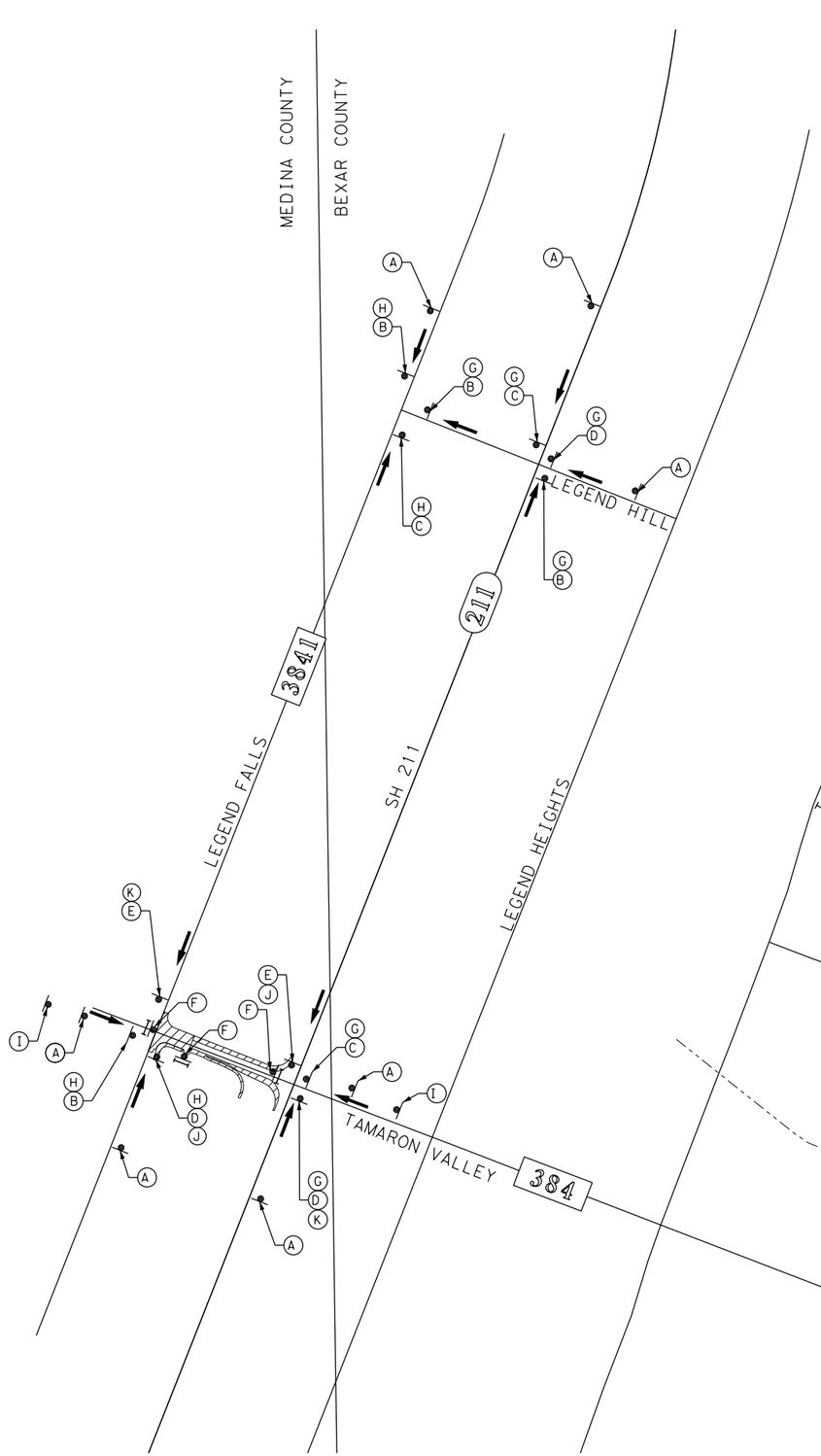
0 125 250 375
SCALE: 1"= 250'

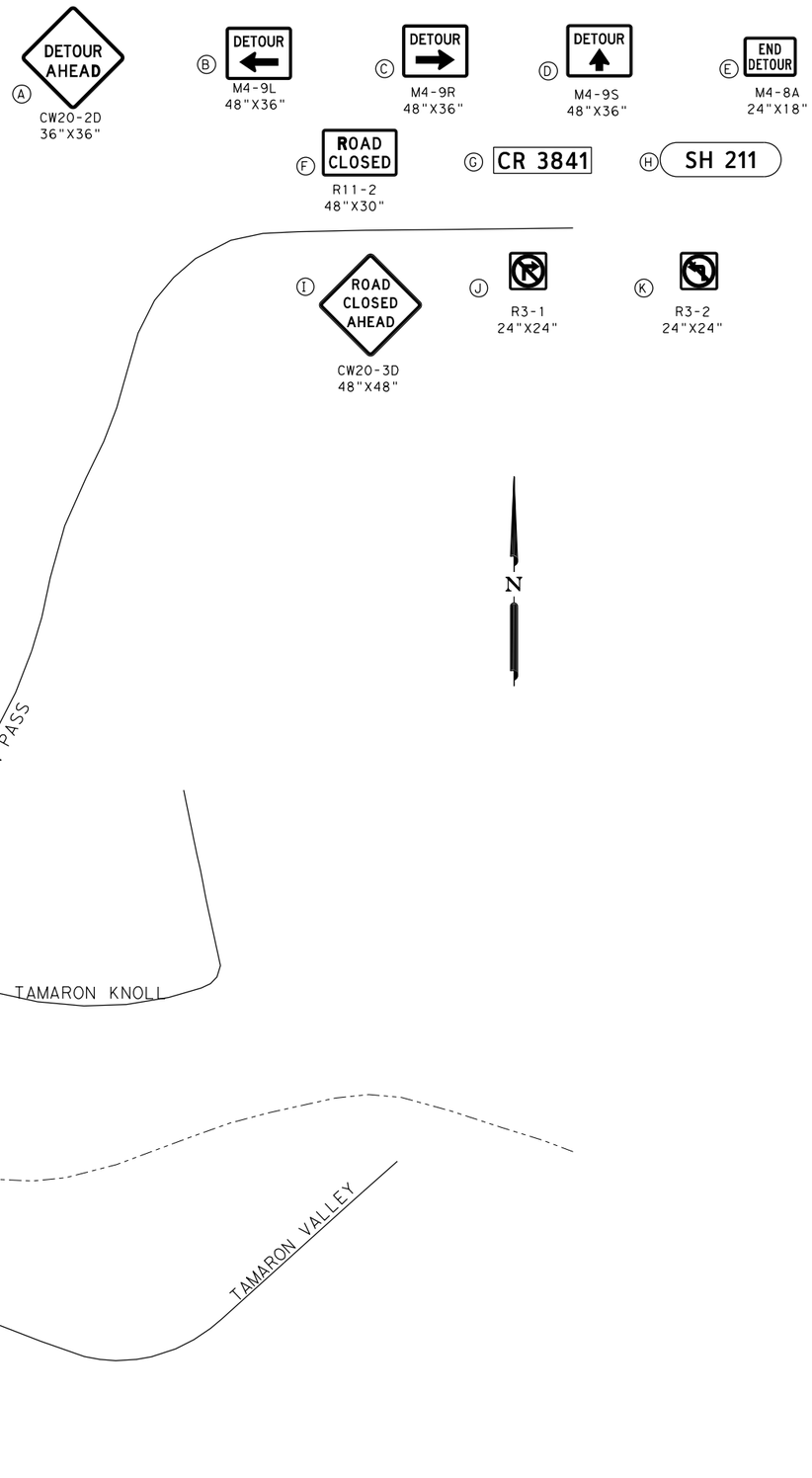
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

ADVANCE WARNING SIGNS LAYOUT

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 20





LEGEND

- TYPE III BARRICADE
- SIGN
- TRAFFIC FLOW ARROWS
- CONSTRUCTION WORK ZONE

TCP NOTES:

1. THIS DETOUR IS TO BE IN EFFECT DURING PHASE II. REFER TO SHEET 23
2. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 200 400 600
SCALE: 1"= 400'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

DETOUR LAYOUT

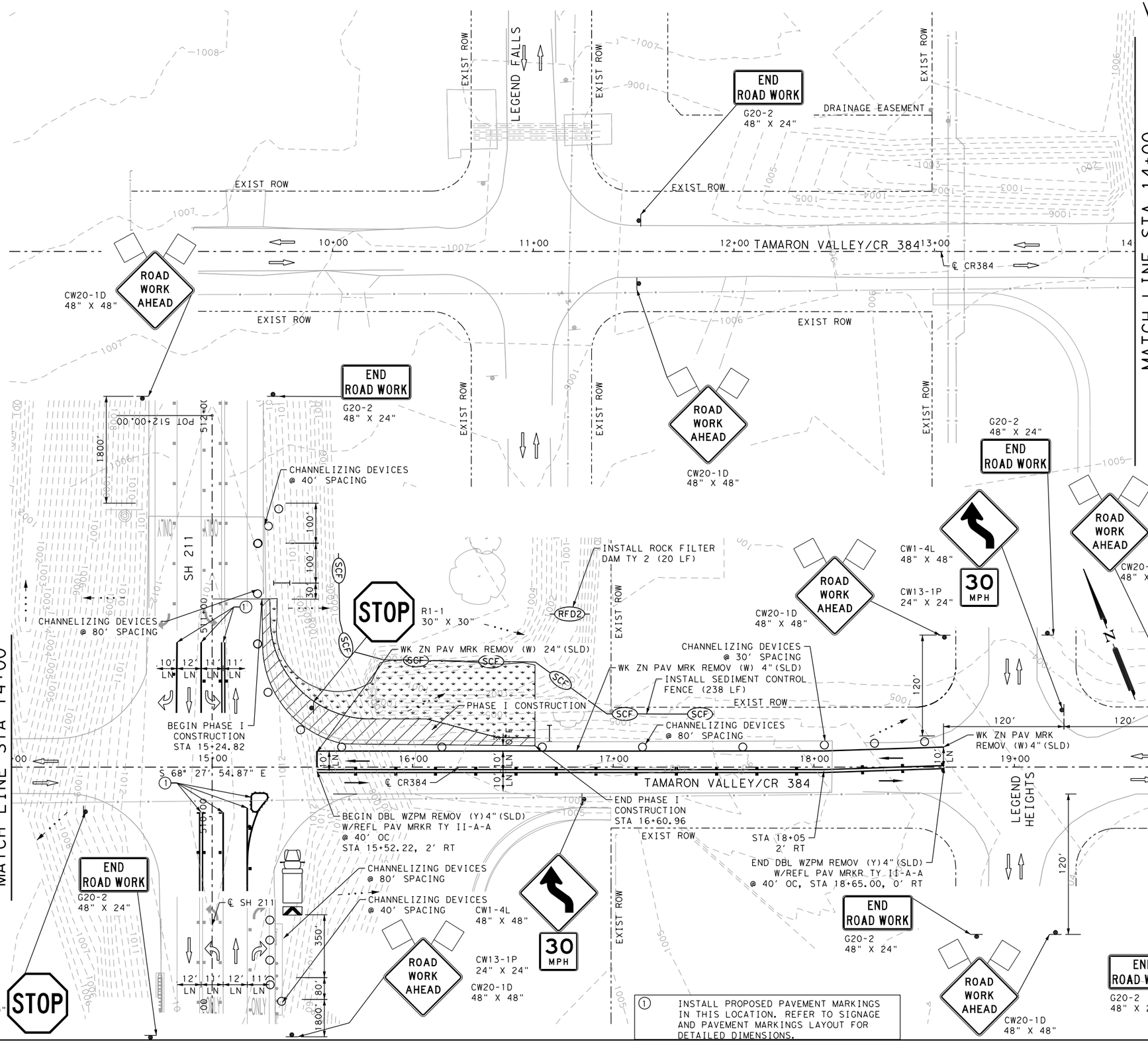
95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 21

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\TCP\1228504_TCP_DETOUR.dgn

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\TCP\Phase I\1228504_TCP1_01.dgn



TCP - SW3P LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM (TY 2)
- TOPSOIL AND SEEDING
- CONCRETE DITCH
- 650 — CONTOURS
- DRAINAGE FLOW ARROW
- TYPE III BARRICADE
- CHANNELIZING DEVICES
- SIGN
- EXIST TRAFFIC FLOW ARROW
- TEMPORARY TRAFFIC FLOW ARROW
- PROPOSED CONSTRUCTION
- CONSTRUCTION COMPLETED IN A PREVOUS PHASE

TCP NOTES:

1. FOR ADDITIONAL DETAILS, SEE TxDOT TCP STANDARD SHEETS AND TCP TYPICAL SECTION SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED.
4. CONTRACTOR TO MATCH WORK ZONE PAVEMENT MARKINGS TO EXISTING PAVEMENT MARKINGS AT EACH END OF THE PROJECT.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD.
6. ALL SIGN LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATIONS IN THE FIELD.
7. CONTRACTOR TO IDENTIFY CONSTRUCTION EXITS LOCATIONS IN THE FIELD.

SW3P NOTES:

1. FOR MORE INFORMATION SEE TxDOT TEMPORARY EROSION CONTROL MEASURE STANDARDS.
2. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED IN THE FIELD.
3. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
4. SW3P CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
5. ALL SW3P CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITION AT ALL TIMES.

① INSTALL PROPOSED PAVEMENT MARKINGS IN THIS LOCATION. REFER TO SIGNAGE AND PAVEMENT MARKINGS LAYOUT FOR DETAILED DIMENSIONS.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

TCP & SW3P LAYOUT

PHASE I

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 22

NOTE: REFER TO SHEET 21 FOR DETOUR LAYOUT FOR THIS PHASE.

G20-2 48" X 24" END ROAD WORK

R11-2 60"X30" ROAD CLOSED

EXIST ROW

REFER TO TCP(2-2a)-18 FOR ONE LANE TWO WAY TRAFFIC CONTROL OPERATION

BEGIN PHASE II CONSTRUCTION STA 10+99.00

CW20-1D 48" X 48" ROAD WORK AHEAD

CHANNELIZING DEVICES @ 80' SPACING

G20-2 48" X 24" END ROAD WORK

INSTALL ROCK FILTER DAM TY 2 (25 LF)

CHANNELIZING DEVICES @ 40' SPACING

CHANNELIZING DEVICES @ 80' SPACING

END PHASE 2 CONSTRUCTION STA 14+69.60

R11-2 60"X30" ROAD CLOSED

R1-1 30" X 30" STOP

CHANNELIZING DEVICES @ 5' SPACING

R3-5R 30" X 36" ONLY

50' R

CHANNELIZING DEVICES @ 80' SPACING

CHANNELIZING DEVICES @ 40' SPACING

INSTALL SEDIMENT CONTROL FENCE (60 LF)

G20-2 48" X 24" END ROAD WORK

CW20-1D 48" X 48" ROAD WORK AHEAD

LEFT LANE IS CLOSED FOR THE DURATION OF THIS PHASE

MATCH LINE STA 14+00

SH 211

℄ SH 211

℄ CR384

TAMARON VALLEY/CR 384

℄ CR 384

LEGEND FALLS

LEGEND HEIGHTS

CHANNELIZING DEVICES @ 40' SPACING

INSTALL SEDIMENT CONTROL FENCE (100LF)

DRAINAGE EASEMENT

INSTALL ROCK FILTER DAM TY 2 (40LF)

PHASE II CONSTRUCTION

INSTALL SEDIMENT CONTROL FENCE (330 LF)

INSTALL SEDIMENT CONTROL FENCE (20 LF)

CW1-4L 48" X 48"

CW13-1P 24" X 24" 30 MPH

CW20-1D 48" X 48" ROAD WORK AHEAD

G20-2 48" X 24" END ROAD WORK

CW20-1D 48" X 48" ROAD WORK AHEAD

G20-2 48" X 24" END ROAD WORK

CW20-1D 48" X 48" ROAD WORK AHEAD

① PROPOSED PAVEMENT MARKINGS, REFER TO SIGNING AND PAVEMENT MARKINGS LAYOUT FOR DETAILS DIMENSIONS.

TCP - SW3P LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM (TY 2)
- TOPSOIL AND SEEDING
- CONCRETE DITCH
- 650 — CONTOURS
- DRAINAGE FLOW ARROW
- TYPE III BARRICADE
- CHANNELIZING DEVICES
- SIGN
- EXIST TRAFFIC FLOW ARROW
- TEMPORARY TRAFFIC FLOW ARROW
- PROPOSED CONSTRUCTION
- CONSTRUCTION COMPLETED IN A PREVOUS PHASE

TCP NOTES:

1. FOR ADDITIONAL DETAILS, SEE TxDOT TCP STANDARD SHEETS AND TCP TYPICAL SECTION SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED.
4. CONTRACTOR TO MATCH WORK ZONE PAVEMENT MARKINGS TO EXISTING PAVEMENT MARKINGS AT EACH END OF THE PROJECT.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD.
6. ALL SIGN LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATIONS IN THE FIELD.
7. CONTRACTOR TO IDENTIFY CONSTRUCTION EXITS LOCATIONS IN THE FIELD.

SW3P NOTES:

1. FOR MORE INFORMATION SEE TxDOT TEMPORARY EROSION CONTROL MEASURE STANDARDS.
2. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED IN THE FIELD.
3. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
4. SW3P CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
5. ALL SW3P CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITION AT ALL TIMES.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

TCP & SW3P LAYOUT
PHASE II

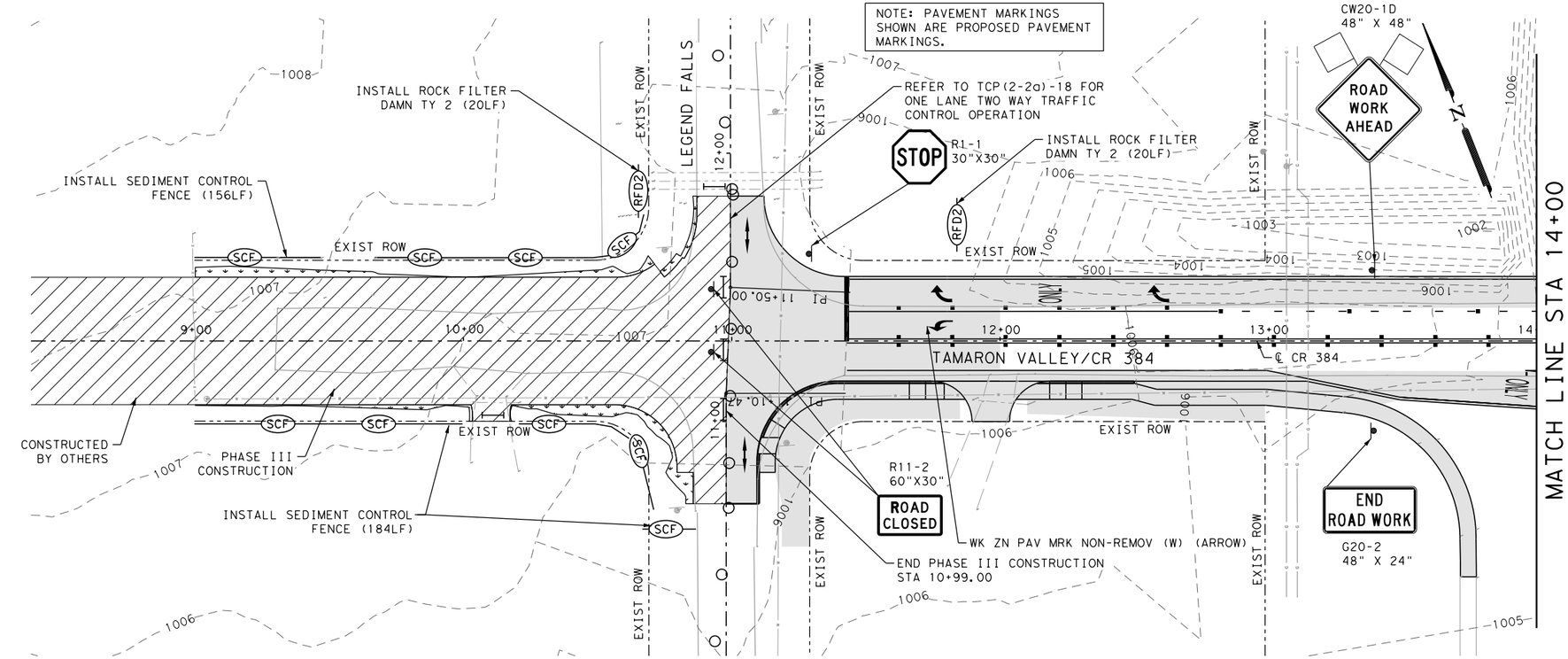
95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 23

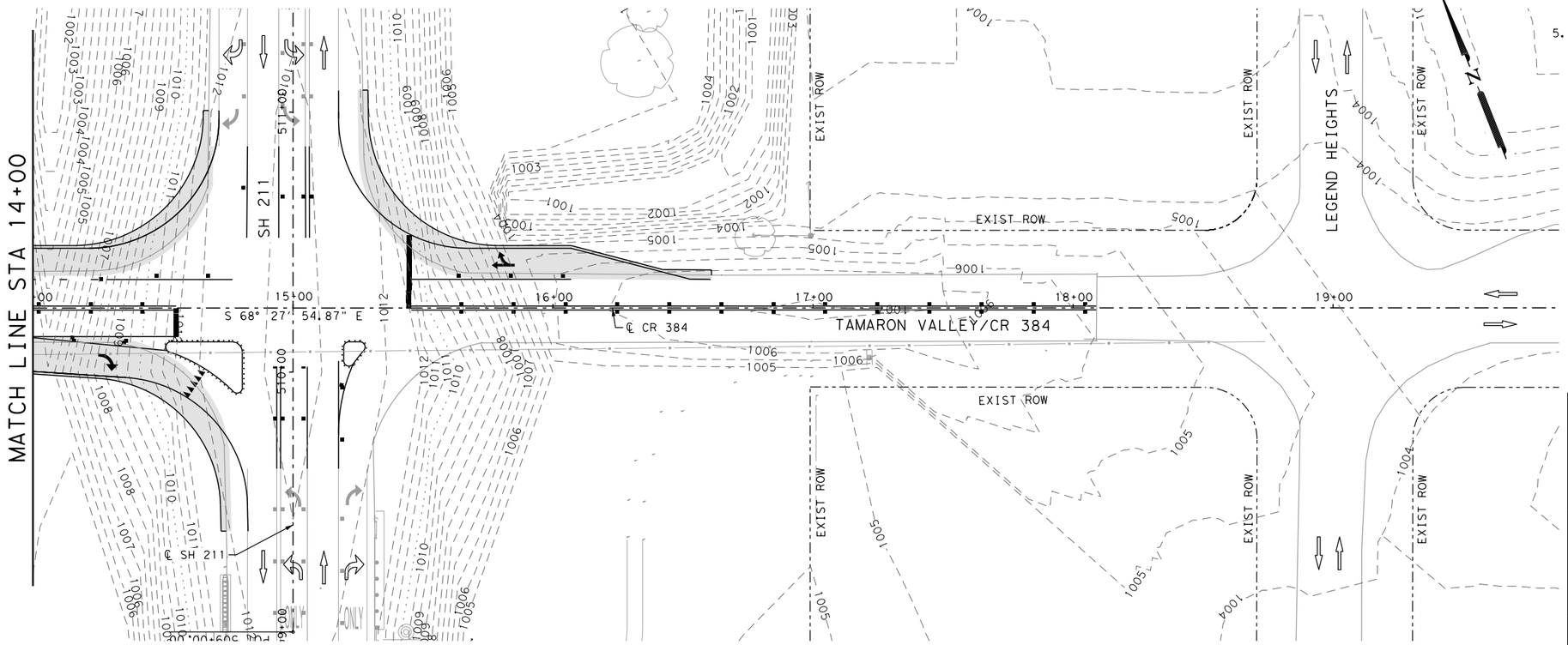
Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\TCP\Phase II\1228504_TCP2_01.dgn

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\TCP\Phase III\1228504_TCP3_01.dgn





TCP - SW3P LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM (TY 2)
- TOPSOIL AND SEEDING
- 650 — CONTOURS
- DRAINAGE FLOW ARROW
- TYPE III BARRICADE
- CHANNELIZING DEVICES
- SIGN
- EXIST TRAFFIC FLOW ARROW
- TEMPORARY TRAFFIC FLOW ARROW
- PROPOSED CONSTRUCTION
- CONSTRUCTION COMPLETED IN A PREVOUS PHASE

TCP NOTES:

1. FOR ADDITIONAL DETAILS, SEE TxDOT TCP STANDARD SHEETS AND TCP TYPICAL SECTION SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED.
4. CONTRACTOR TO MATCH WORK ZONE PAVEMENT MARKINGS TO EXISTING PAVEMENT MARKINGS AT EACH END OF THE PROJECT.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD.
6. ALL SIGN LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATIONS IN THE FIELD.
7. CONTRACTOR TO IDENTIFY CONSTRUCTION EXITS LOCATIONS IN THE FIELD.

SW3P NOTES:

1. FOR MORE INFORMATION SEE TxDOT TEMPORARY EROSION CONTROL MEASURE STANDARDS.
2. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED IN THE FIELD.
3. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
4. SW3P CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
5. ALL SW3P CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITION AT ALL TIMES.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

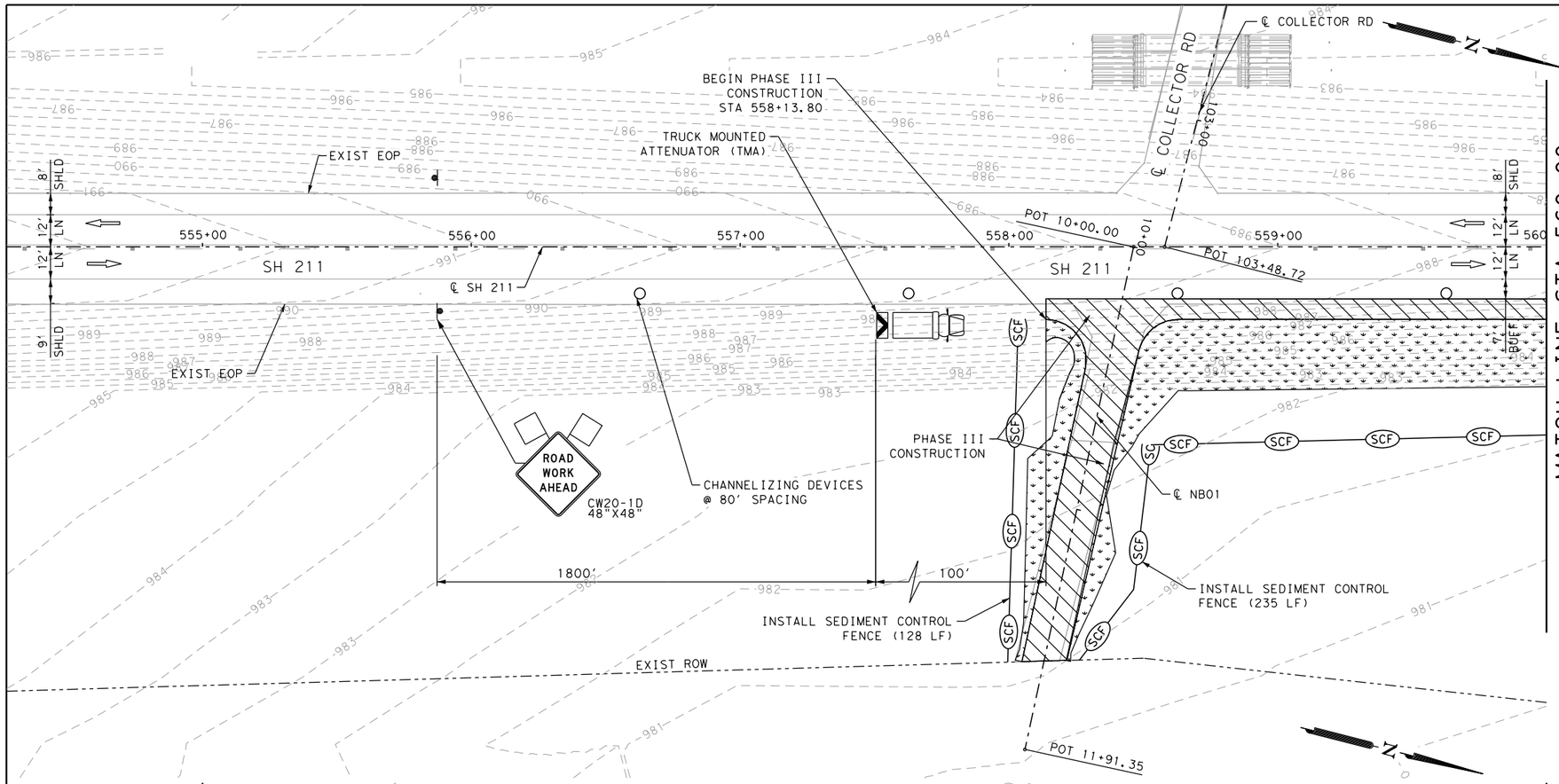
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

TCP & SW3P LAYOUT
PHASE III

SHEET 1 OF 3

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 24



TCP - SW3P LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM (TY 2)
- TOPSOIL AND SEEDING
- 650 — CONTOURS
- DRAINAGE FLOW ARROW
- TYPE III BARRICADE
- CHANNELIZING DEVICES
- SIGN
- EXIST TRAFFIC FLOW ARROW
- TEMPORARY TRAFFIC FLOW ARROW
- PROPOSED CONSTRUCTION
- CONSTRUCTION COMPLETED IN A PREVOUS PHASE
- TEMPORARY PAVEMENT

TCP NOTES:

1. FOR ADDITIONAL DETAILS, SEE TxDOT TCP STANDARD SHEETS AND TCP TYPICAL SECTION SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED.
4. CONTRACTOR TO MATCH WORK ZONE PAVEMENT MARKINGS TO EXISTING PAVEMENT MARKINGS AT EACH END OF THE PROJECT.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD.
6. ALL SIGN LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATIONS IN THE FIELD.
7. CONTRACTOR TO IDENTIFY CONSTRUCTION EXITS LOCATIONS IN THE FIELD.

SW3P NOTES:

1. FOR MORE INFORMATION SEE TxDOT TEMPORARY EROSION CONTROL MEASURE STANDARDS.
2. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED IN THE FIELD.
3. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
4. SW3P CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
5. ALL SW3P CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITION AT ALL TIMES.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

TCP &SW3P LAYOUT

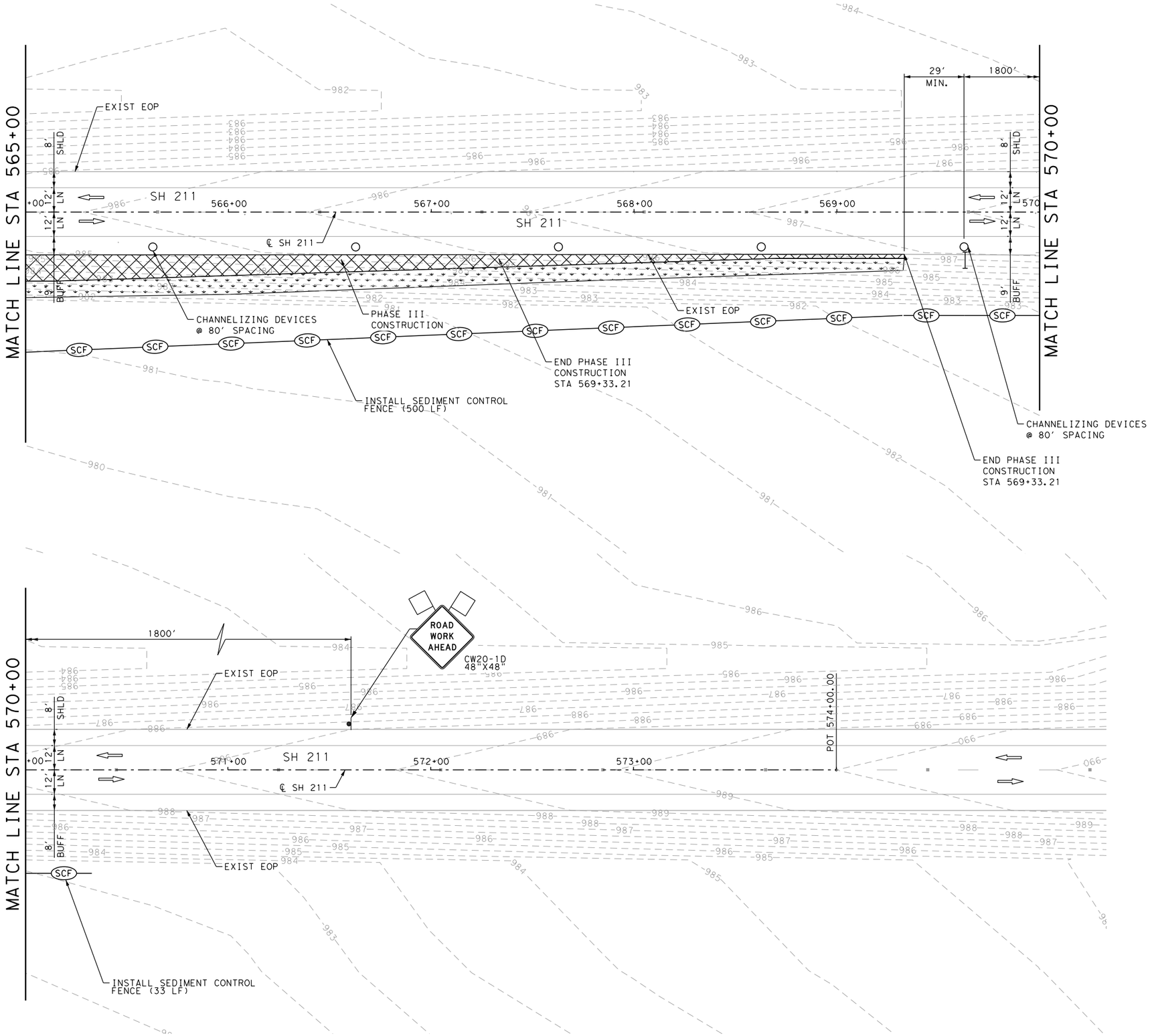
PHASE III
BEGIN TO STA 565+00

SHEET 2 OF 3

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 25

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\TCP\PhaseIII\1228504_TCP3_02.dgn



TCP - SW3P LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM (TY 2)
- TOPSOIL AND SEEDING
- 650 — CONTOURS
- DRAINAGE FLOW ARROW
- TYPE III BARRICADE
- CHANNELIZING DEVICES
- SIGN
- EXIST TRAFFIC FLOW ARROW
- TEMPORARY TRAFFIC FLOW ARROW
- PROPOSED CONSTRUCTION
- CONSTRUCTION COMPLETED IN A PREVOUS PHASE
- TEMPORARY PAVEMENT

TCP NOTES:

1. FOR ADDITIONAL DETAILS, SEE TxDOT TCP STANDARD SHEETS AND TCP TYPICAL SECTION SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED.
4. CONTRACTOR TO MATCH WORK ZONE PAVEMENT MARKINGS TO EXISTING PAVEMENT MARKINGS AT EACH END OF THE PROJECT.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD.
6. ALL SIGN LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATIONS IN THE FIELD.
7. CONTRACTOR TO IDENTIFY CONSTRUCTION EXITS LOCATIONS IN THE FIELD.

SW3P NOTES:

1. FOR MORE INFORMATION SEE TxDOT TEMPORARY EROSION CONTROL MEASURE STANDARDS.
2. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED IN THE FIELD.
3. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
4. SW3P CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
5. ALL SW3P CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITION AT ALL TIMES.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

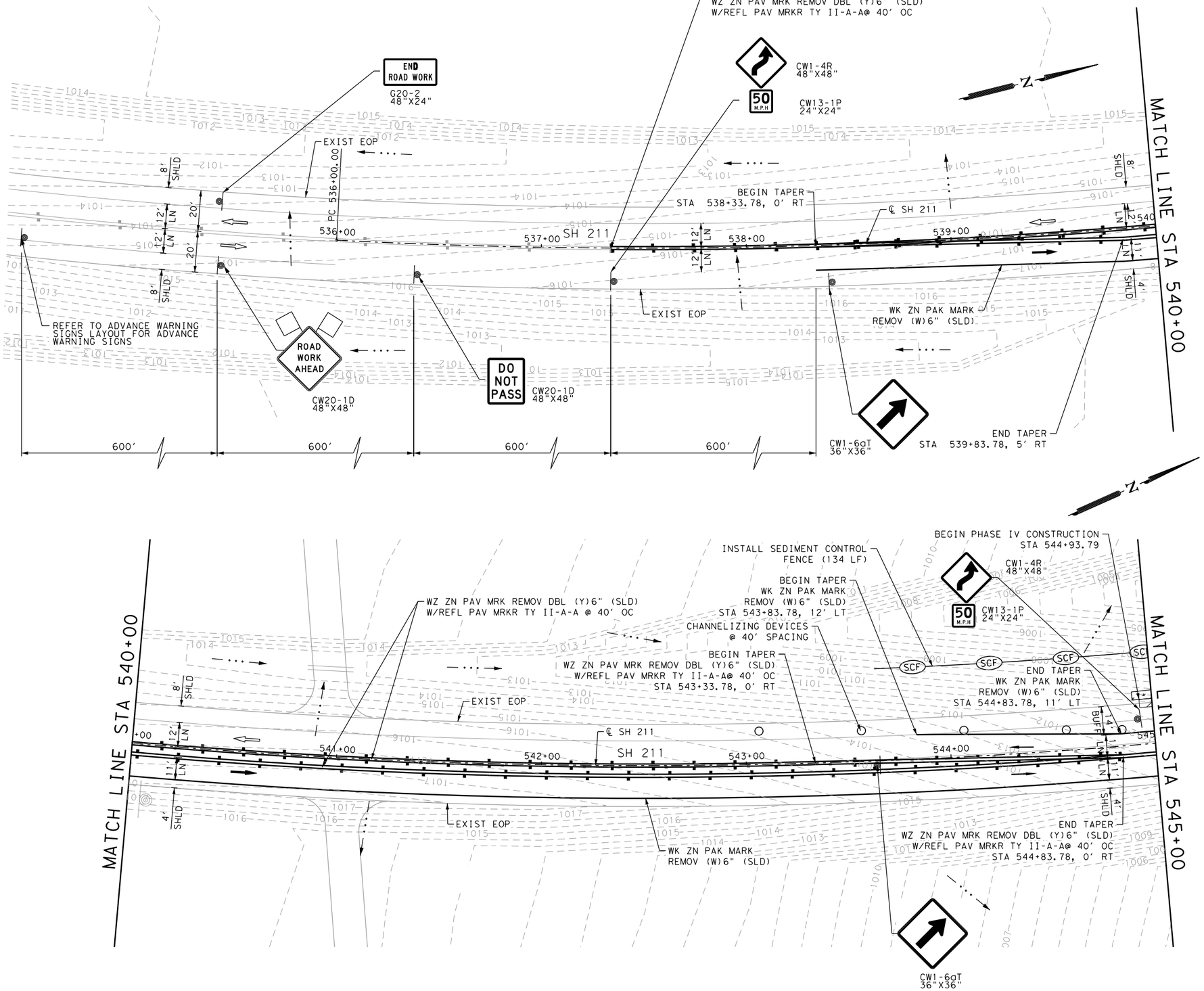
TCP &SW3P LAYOUT

PHASE III

STA 565+00 TO END

SHEET 3 OF 3

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 26



TCP - SW3P LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM (TY 2)
- TOPSOIL AND SEEDING
- 650 — CONTOURS
- DRAINAGE FLOW ARROW
- TYPE III BARRICADE
- CHANNELIZING DEVICES
- SIGN
- EXIST TRAFFIC FLOW ARROW
- TEMPORARY TRAFFIC FLOW ARROW
- PROPOSED CONSTRUCTION
- CONSTRUCTION COMPLETED IN A PREVOUS PHASE

TCP NOTES:

1. FOR ADDITIONAL DETAILS, SEE TxDOT TCP STANDARD SHEETS AND TCP TYPICAL SECTION SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED.
4. CONTRACTOR TO MATCH WORK ZONE PAVEMENT MARKINGS TO EXISTING PAVEMENT MARKINGS AT EACH END OF THE PROJECT.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD.
6. ALL SIGN LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATIONS IN THE FIELD.
7. CONTRACTOR TO IDENTIFY CONSTRUCTION EXITS LOCATIONS IN THE FIELD.

SW3P NOTES:

1. FOR MORE INFORMATION SEE TxDOT TEMPORARY EROSION CONTROL MEASURE STANDARDS.
2. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED IN THE FIELD.
3. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
4. SW3P CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
5. ALL SW3P CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITION AT ALL TIMES.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

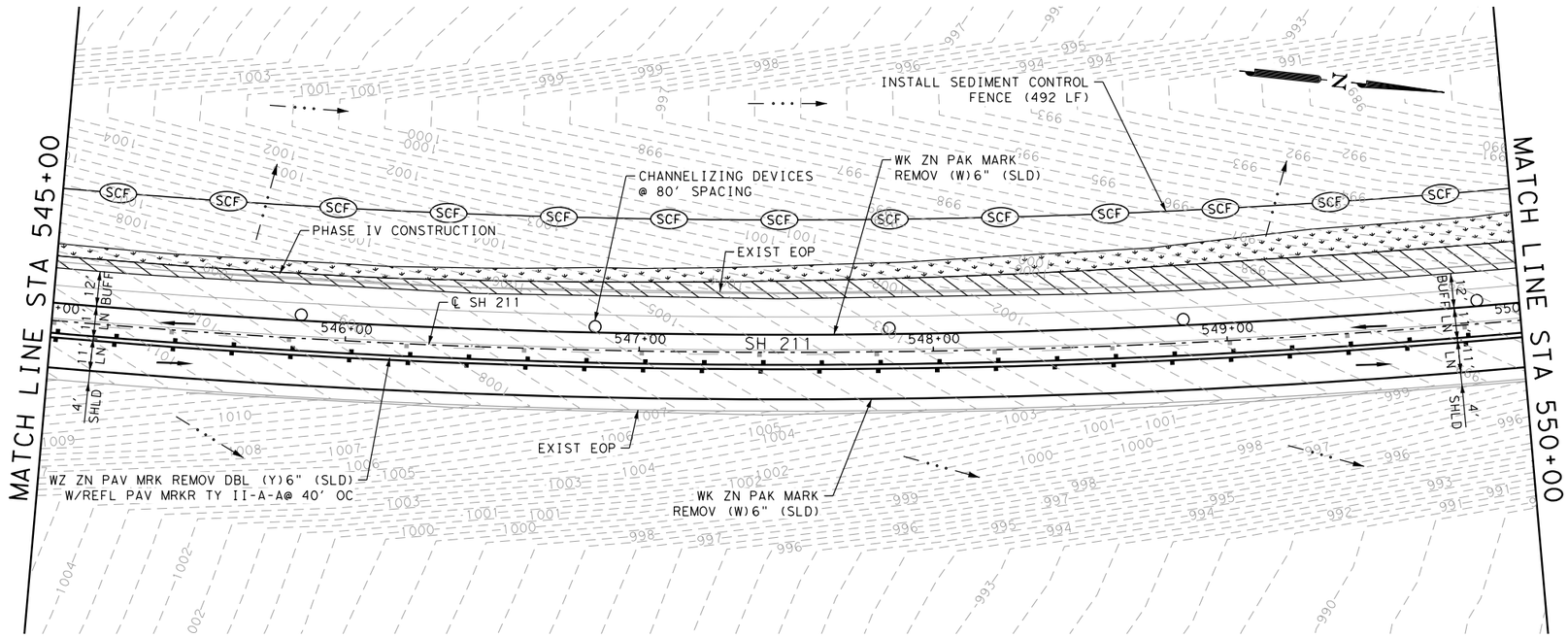
TCP & SW3P LAYOUT

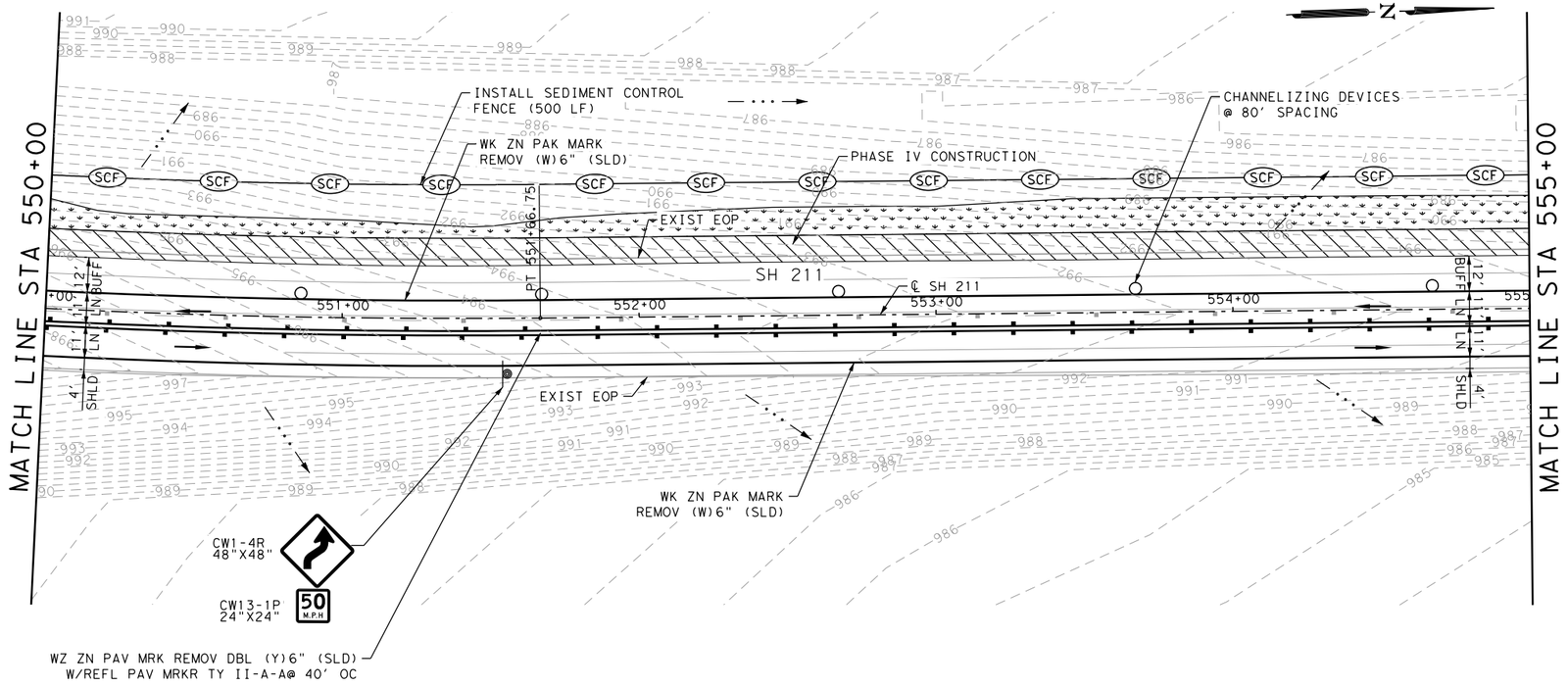
PHASE IV
BEGIN PROJECT TO STA 545+00
SHEET 1 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 27

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\TCP\PhaseIV\1228504_TCP4_01.dgn





TCP - SW3P LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM (TY 2)
- TOPSOIL AND SEEDING
- 650 — CONTOURS
- DRAINAGE FLOW ARROW
- TYPE III BARRICADE
- CHANNELIZING DEVICES
- SIGN
- EXIST TRAFFIC FLOW ARROW
- TEMPORARY TRAFFIC FLOW ARROW
- PROPOSED CONSTRUCTION
- CONSTRUCTION COMPLETED IN A PREVOUS PHASE

TCP NOTES:

1. FOR ADDITIONAL DETAILS, SEE TxDOT TCP STANDARD SHEETS AND TCP TYPICAL SECTION SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED.
4. CONTRACTOR TO MATCH WORK ZONE PAVEMENT MARKINGS TO EXISTING PAVEMENT MARKINGS AT EACH END OF THE PROJECT.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD.
6. ALL SIGN LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATIONS IN THE FIELD.
7. CONTRACTOR TO IDENTIFY CONSTRUCTION EXITS LOCATIONS IN THE FIELD.

SW3P NOTES:

1. FOR MORE INFORMATION SEE TxDOT TEMPORARY EROSION CONTROL MEASURE STANDARDS.
2. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED IN THE FIELD.
3. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
4. SW3P CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
5. ALL SW3P CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITION AT ALL TIMES.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

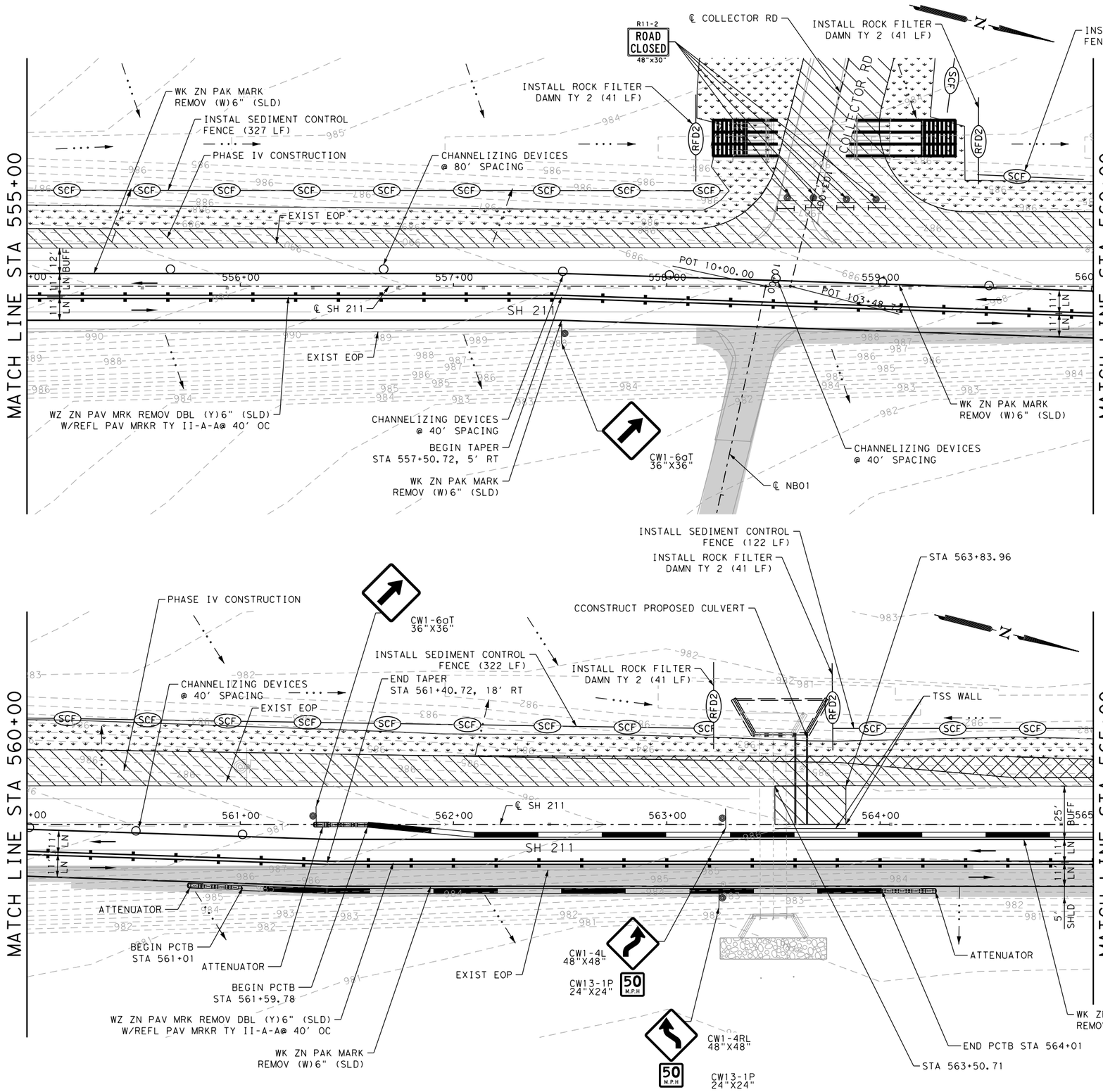
TCP & SW3P LAYOUT

PHASE IV
STA 545+00 TO STA 555+00
SHEET 2 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 28

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\TCP\PhaseIV\1228504_TCP4_02.dgn



TCP - SW3P LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM (TY 2)
- TOPSOIL AND SEEDING
- 650 — CONTOURS
- DRAINAGE FLOW ARROW
- TYPE III BARRICADE
- CHANNELIZING DEVICES
- SIGN
- EXIST TRAFFIC FLOW ARROW
- TEMPORARY TRAFFIC FLOW ARROW
- PROPOSED CONSTRUCTION
- CONSTRUCTION COMPLETED IN A PREVOUS PHASE
- TEMPORARY PAVEMENT

TCP NOTES:

1. FOR ADDITIONAL DETAILS, SEE TxDOT TCP STANDARD SHEETS AND TCP TYPICAL SECTION SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED.
4. CONTRACTOR TO MATCH WORK ZONE PAVEMENT MARKINGS TO EXISTING PAVEMENT MARKINGS AT EACH END OF THE PROJECT.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD.
6. ALL SIGN LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATIONS IN THE FIELD.
7. CONTRACTOR TO IDENTIFY CONSTRUCTION EXITS LOCATIONS IN THE FIELD.

SW3P NOTES:

1. FOR MORE INFORMATION SEE TxDOT TEMPORARY EROSION CONTROL MEASURE STANDARDS.
2. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED IN THE FIELD.
3. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
4. SW3P CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
5. ALL SW3P CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITION AT ALL TIMES.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

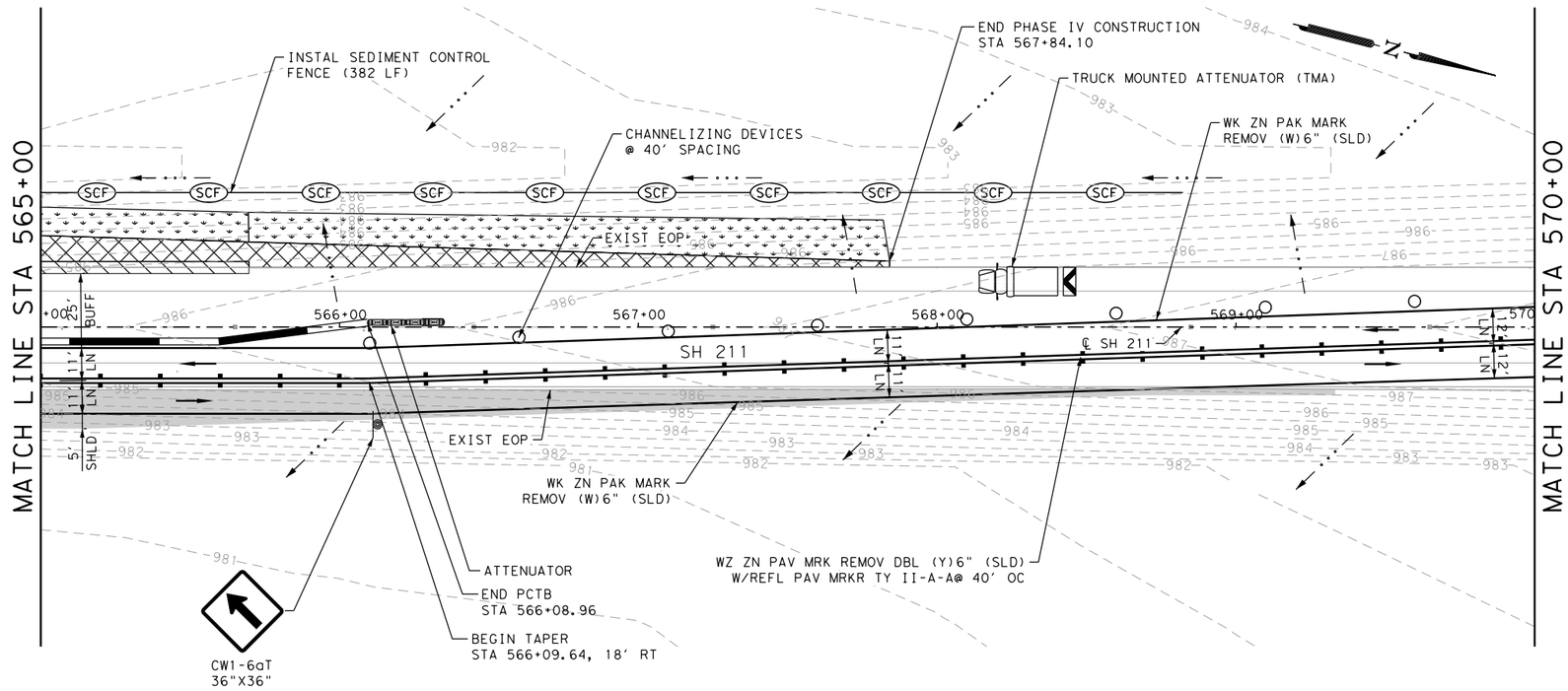
TCP & SW3P LAYOUT

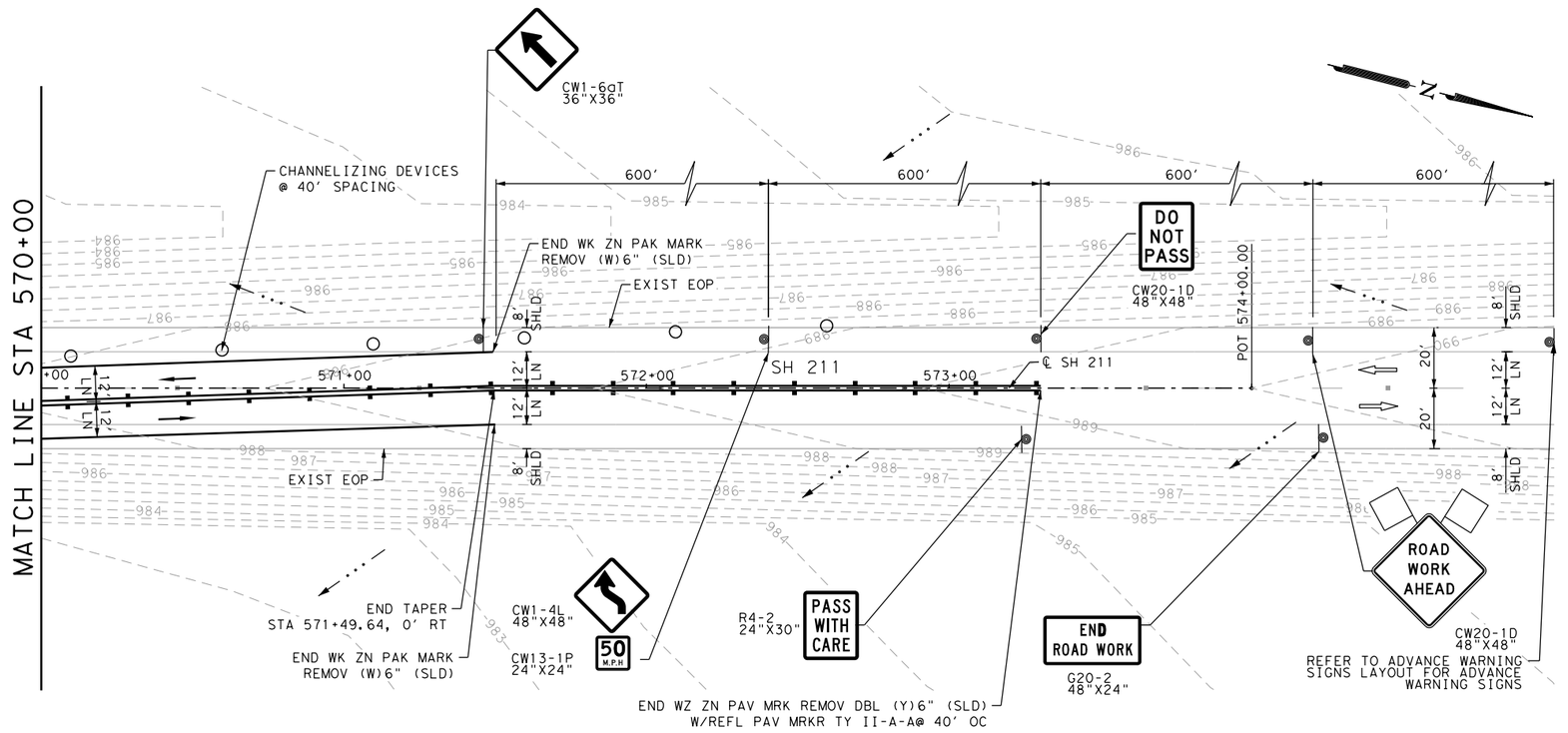
PHASE IV
STA 555+00 TO STA 565+00
SHEET 3 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 29

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\TCP\PhaseIV\1228504_TCP4_03.dgn





TCP - SW3P LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM (TY 2)
- TOPSOIL AND SEEDING
- 650 — CONTOURS
- DRAINAGE FLOW ARROW
- TYPE III BARRICADE
- CHANNELIZING DEVICES
- SIGN
- EXIST TRAFFIC FLOW ARROW
- TEMPORARY TRAFFIC FLOW ARROW
- PROPOSED CONSTRUCTION
- CONSTRUCTION COMPLETED IN A PREVOUS PHASE
- TEMPORARY PAVEMENT

TCP NOTES:

1. FOR ADDITIONAL DETAILS, SEE TxDOT TCP STANDARD SHEETS AND TCP TYPICAL SECTION SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED.
4. CONTRACTOR TO MATCH WORK ZONE PAVEMENT MARKINGS TO EXISTING PAVEMENT MARKINGS AT EACH END OF THE PROJECT.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD.
6. ALL SIGN LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATIONS IN THE FIELD.
7. CONTRACTOR TO IDENTIFY CONSTRUCTION EXITS LOCATIONS IN THE FIELD.

SW3P NOTES:

1. FOR MORE INFORMATION SEE TxDOT TEMPORARY EROSION CONTROL MEASURE STANDARDS.
2. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED IN THE FIELD.
3. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
4. SW3P CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
5. ALL SW3P CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITION AT ALL TIMES.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

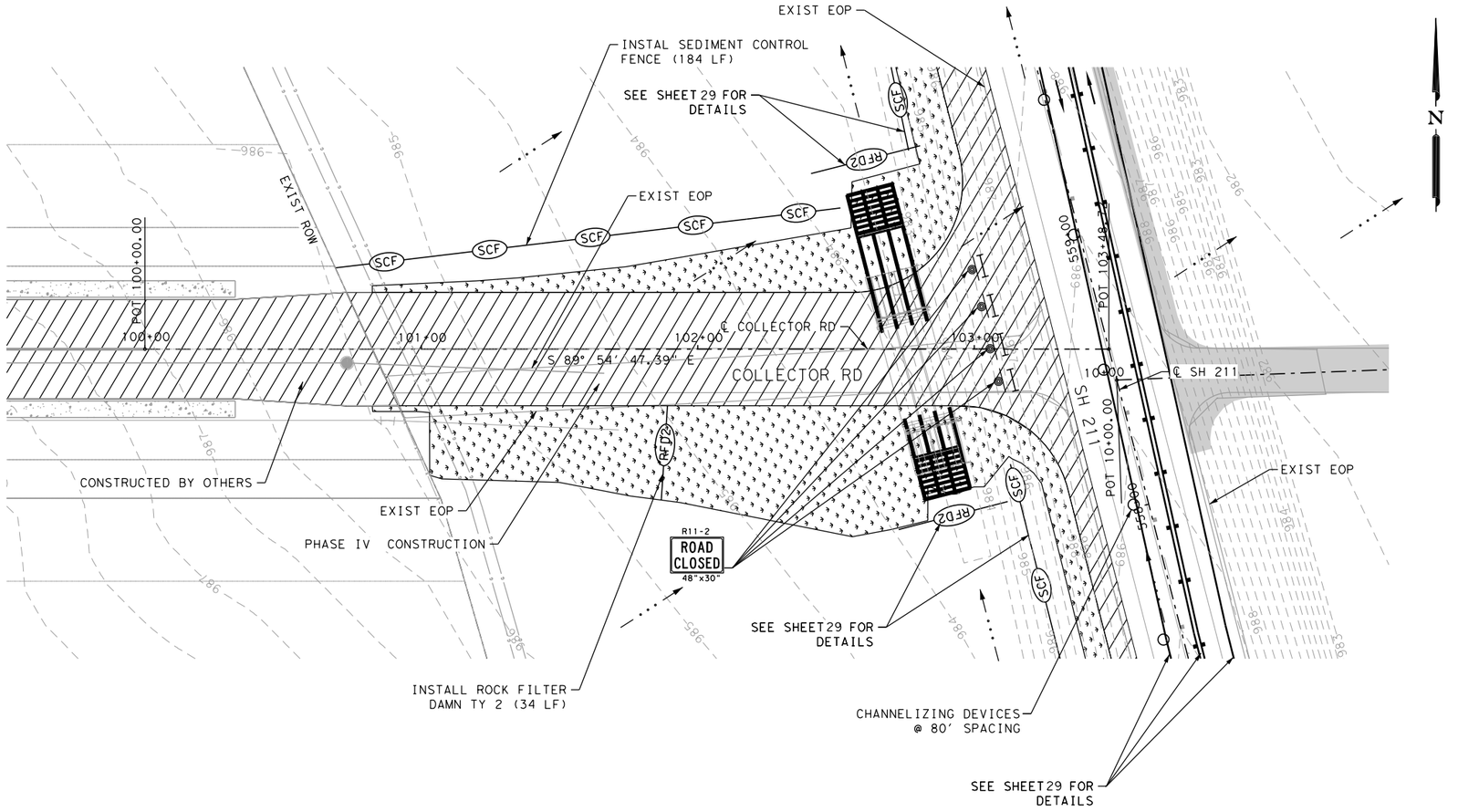
TCP & SW3P LAYOUT

PHASE IV
STA 565+00 TO END PROJECT
SHEET 4 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 30

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\TCP\PhaseIV\1228504_TCP4_04.dgn



TCP - SW3P LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM (TY 2)
- TOPSOIL AND SEEDING
- 650 — CONTOURS
- DRAINAGE FLOW ARROW
- TYPE III BARRICADE
- CHANNELIZING DEVICES
- SIGN
- EXIST TRAFFIC FLOW ARROW
- TEMPORARY TRAFFIC FLOW ARROW
- PROPOSED CONSTRUCTION
- CONSTRUCTION COMPLETED IN A PREVOUS PHASE

TCP NOTES:

1. FOR ADDITIONAL DETAILS, SEE TxDOT TCP STANDARD SHEETS AND TCP TYPICAL SECTION SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED.
4. CONTRACTOR TO MATCH WORK ZONE PAVEMENT MARKINGS TO EXISTING PAVEMENT MARKINGS AT EACH END OF THE PROJECT.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD.
6. ALL SIGN LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATIONS IN THE FIELD.
7. CONTRACTOR TO IDENTIFY CONSTRUCTION EXITS LOCATIONS IN THE FIELD.

SW3P NOTES:

1. FOR MORE INFORMATION SEE TxDOT TEMPORARY EROSION CONTROL MEASURE STANDARDS.
2. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED IN THE FIELD.
3. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
4. SW3P CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
5. ALL SW3P CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITION AT ALL TIMES.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

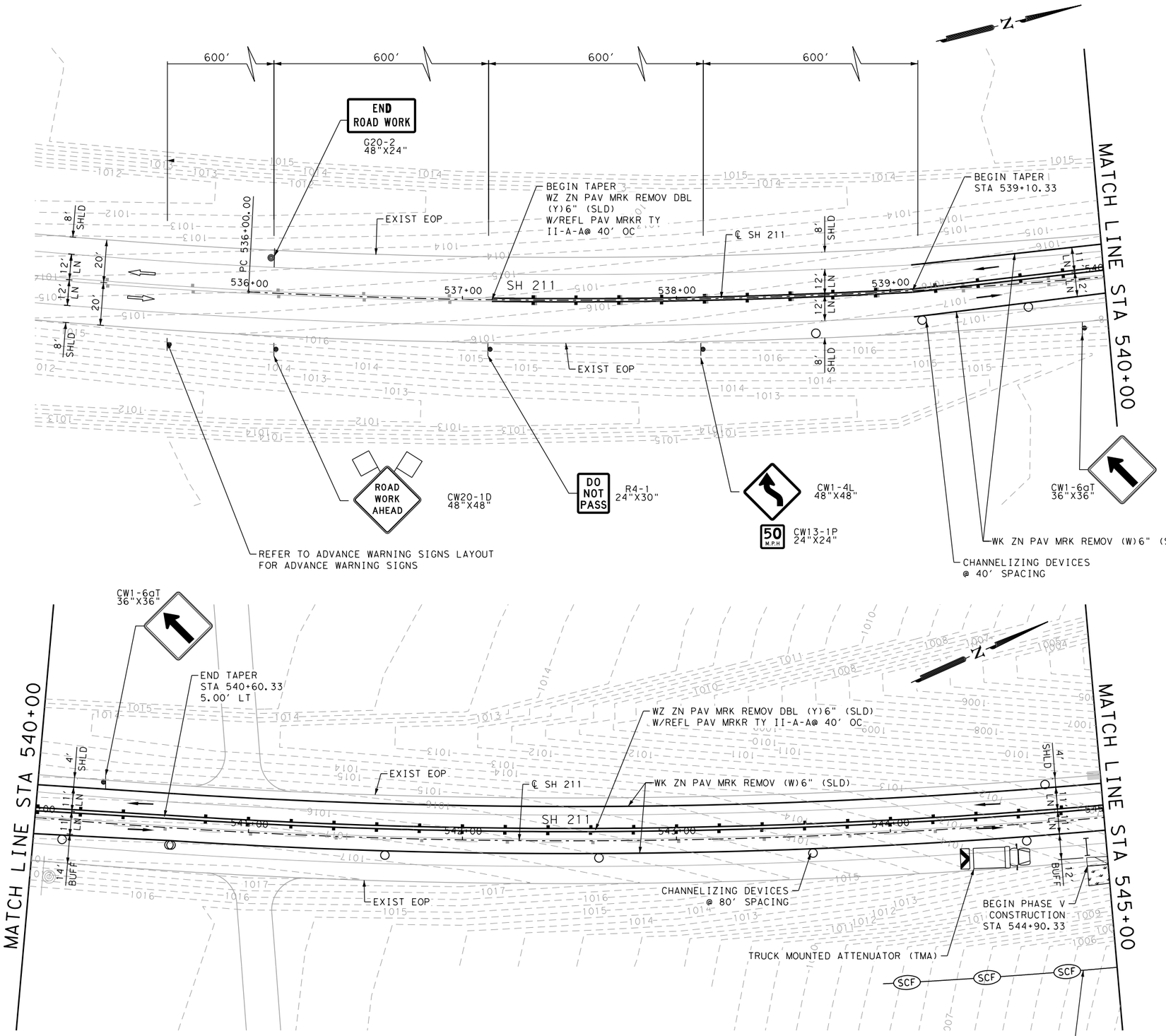
TCP & SW3P LAYOUT
PHASE IV

SHEET 5 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 31

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\TCP\PhaseIV\1228504_TCP4_05.dgn



TCP - SW3P LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM (TY 2)
- TOPSOIL AND SEEDING
- 650 — CONTOURS
- DRAINAGE FLOW ARROW
- TYPE III BARRICADE
- CHANNELIZING DEVICES
- SIGN
- EXIST TRAFFIC FLOW ARROW
- TEMPORARY TRAFFIC FLOW ARROW
- PROPOSED CONSTRUCTION
- CONSTRUCTION COMPLETED IN A PREVOUS PHASE

TCP NOTES:

1. FOR ADDITIONAL DETAILS, SEE TxDOT TCP STANDARD SHEETS AND TCP TYPICAL SECTION SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED.
4. CONTRACTOR TO MATCH WORK ZONE PAVEMENT MARKINGS TO EXISTING PAVEMENT MARKINGS AT EACH END OF THE PROJECT.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD.
6. ALL SIGN LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATIONS IN THE FIELD.
7. CONTRACTOR TO IDENTIFY CONSTRUCTION EXITS LOCATIONS IN THE FIELD.

SW3P NOTES:

1. FOR MORE INFORMATION SEE TxDOT TEMPORARY EROSION CONTROL MEASURE STANDARDS.
2. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED IN THE FIELD.
3. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
4. SW3P CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
5. ALL SW3P CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITION AT ALL TIMES.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

TCP & SW3P LAYOUT

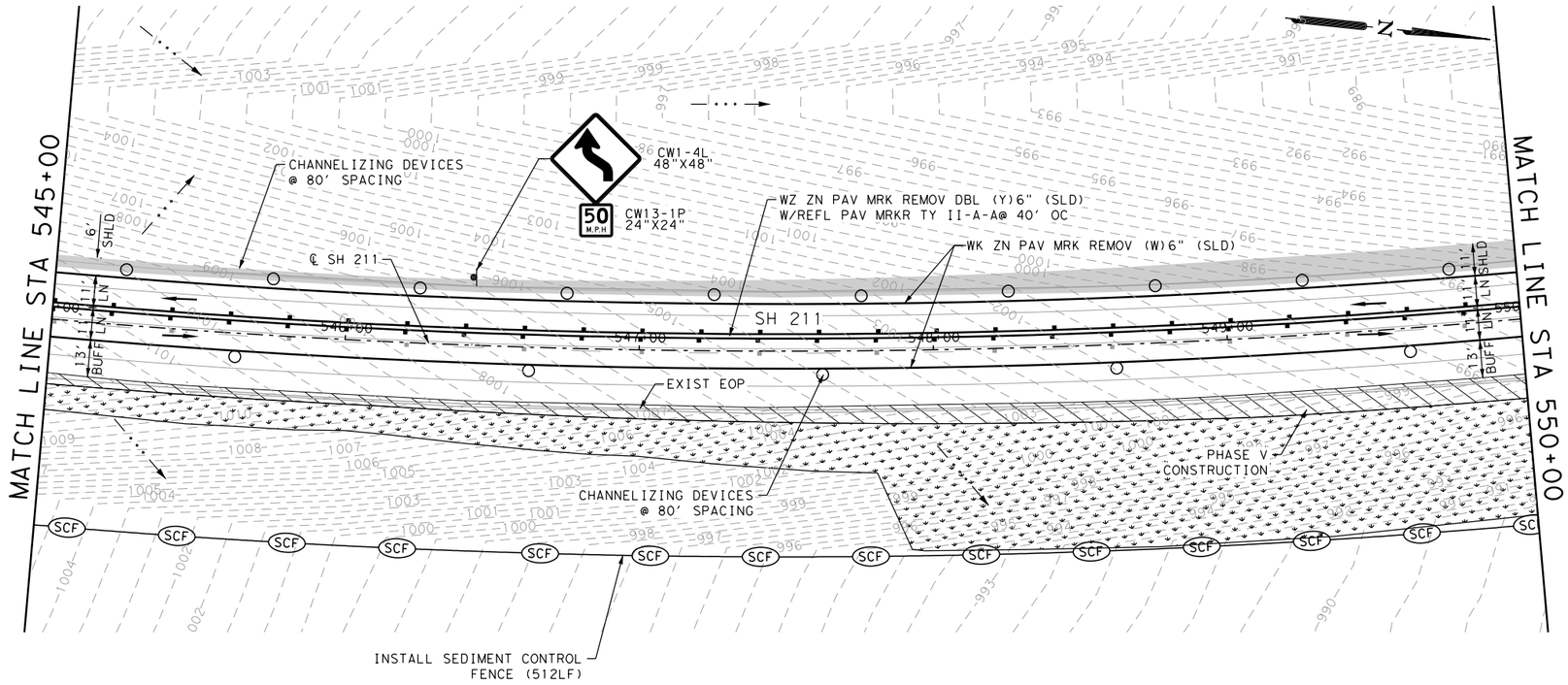
PHASE V
STA 535+00 TO STA 545+00

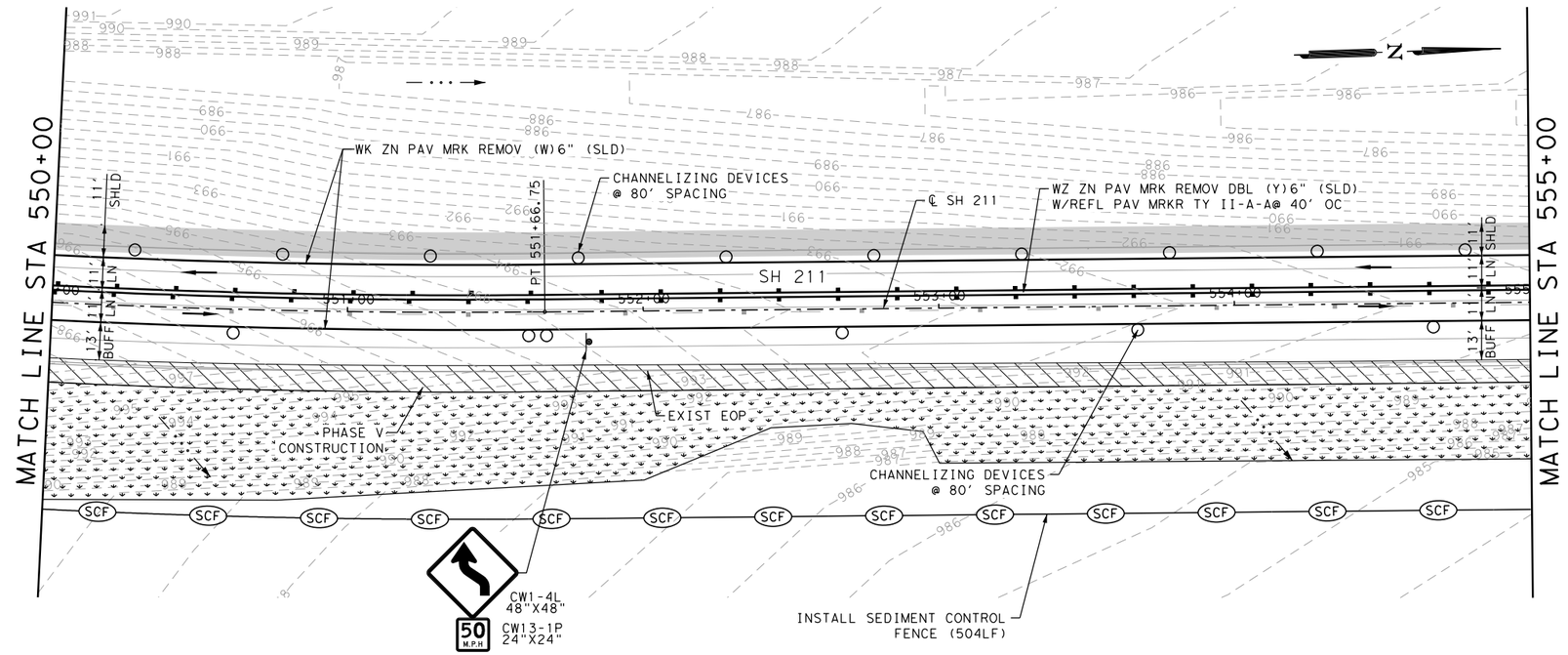
SHEET 10F 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 32

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\TCP\PhaseV\1228504_TCP5_01.dgn





TCP - SW3P LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM (TY 2)
- TOPSOIL AND SEEDING
- 650 — CONTOURS
- DRAINAGE FLOW ARROW
- TYPE III BARRICADE
- CHANNELIZING DEVICES
- SIGN
- EXIST TRAFFIC FLOW ARROW
- TEMPORARY TRAFFIC FLOW ARROW
- PROPOSED CONSTRUCTION
- CONSTRUCTION COMPLETED IN A PREVOUS PHASE

TCP NOTES:

1. FOR ADDITIONAL DETAILS, SEE TxDOT TCP STANDARD SHEETS AND TCP TYPICAL SECTION SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED.
4. CONTRACTOR TO MATCH WORK ZONE PAVEMENT MARKINGS TO EXISTING PAVEMENT MARKINGS AT EACH END OF THE PROJECT.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD.
6. ALL SIGN LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATIONS IN THE FIELD.
7. CONTRACTOR TO IDENTIFY CONSTRUCTION EXITS LOCATIONS IN THE FIELD.

SW3P NOTES:

1. FOR MORE INFORMATION SEE TxDOT TEMPORARY EROSION CONTROL MEASURE STANDARDS.
2. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED IN THE FIELD.
3. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
4. SW3P CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
5. ALL SW3P CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITION AT ALL TIMES.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

TCP & SW3P LAYOUT

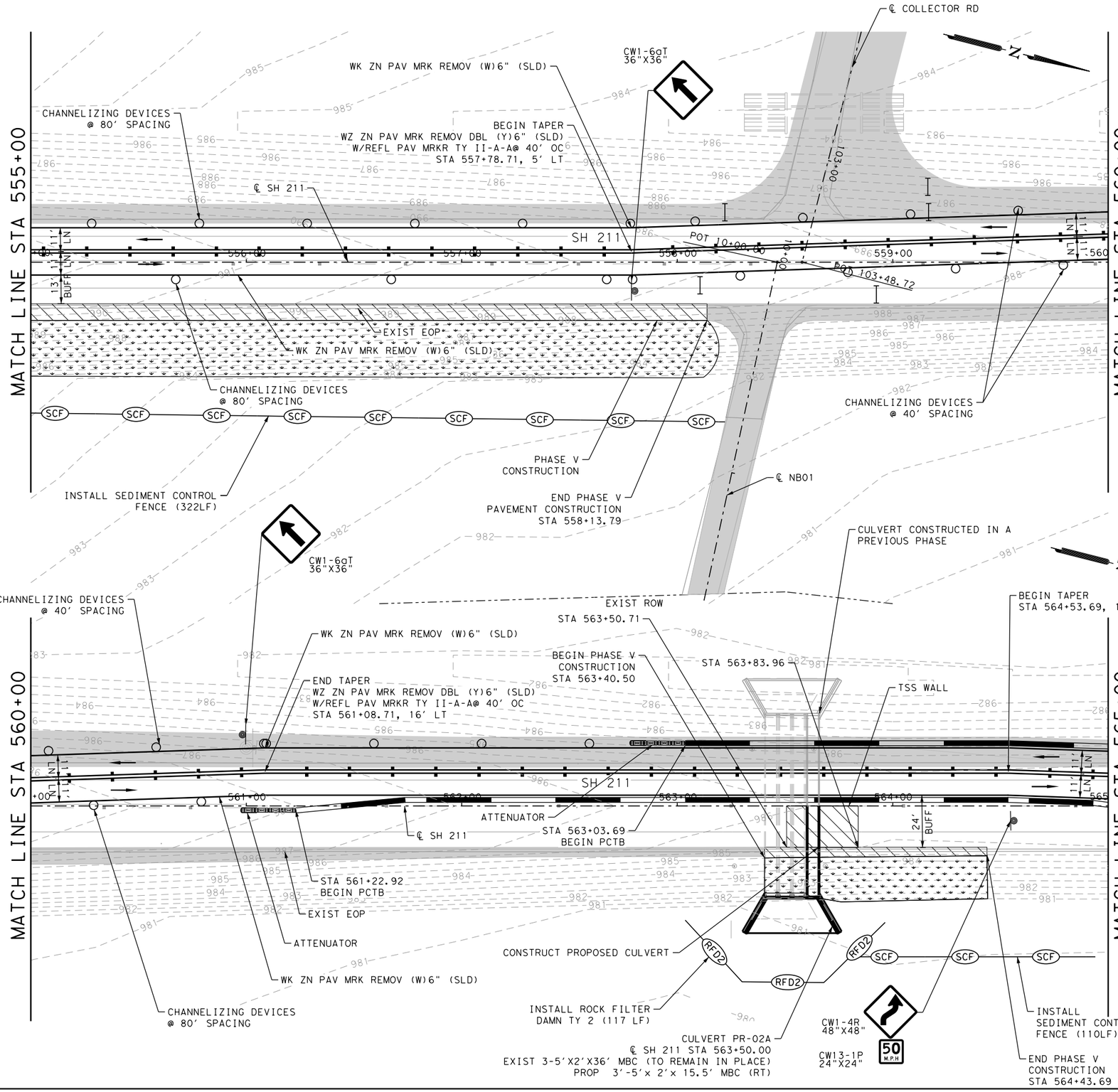
PHASE V
STA 545+00 TO STA 555+00
SHEET 2 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 33

Plotted on: 1/22/2024
Design Filename: P:\122\85\04\Design\Civil\TCP\Phase V\1228504_TCP5_02.dgn

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\TCP\PhaseV\1228504_TCP5_03.dgn



TCP - SW3P LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM (TY 2)
- TOPSOIL AND SEEDING
- 650 — CONTOURS
- DRAINAGE FLOW ARROW
- TYPE III BARRICADE
- CHANNELIZING DEVICES
- SIGN
- EXIST TRAFFIC FLOW ARROW
- TEMPORARY TRAFFIC FLOW ARROW
- PROPOSED CONSTRUCTION
- CONSTRUCTION COMPLETED IN A PREVOUS PHASE

TCP NOTES:

1. FOR ADDITIONAL DETAILS, SEE TxDOT TCP STANDARD SHEETS AND TCP TYPICAL SECTION SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED.
4. CONTRACTOR TO MATCH WORK ZONE PAVEMENT MARKINGS TO EXISTING PAVEMENT MARKINGS AT EACH END OF THE PROJECT.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD.
6. ALL SIGN LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATIONS IN THE FIELD.
7. CONTRACTOR TO IDENTIFY CONSTRUCTION EXITS LOCATIONS IN THE FIELD.

SW3P NOTES:

1. FOR MORE INFORMATION SEE TxDOT TEMPORARY EROSION CONTROL MEASURE STANDARDS.
2. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED IN THE FIELD.
3. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
4. SW3P CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
5. ALL SW3P CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITION AT ALL TIMES.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

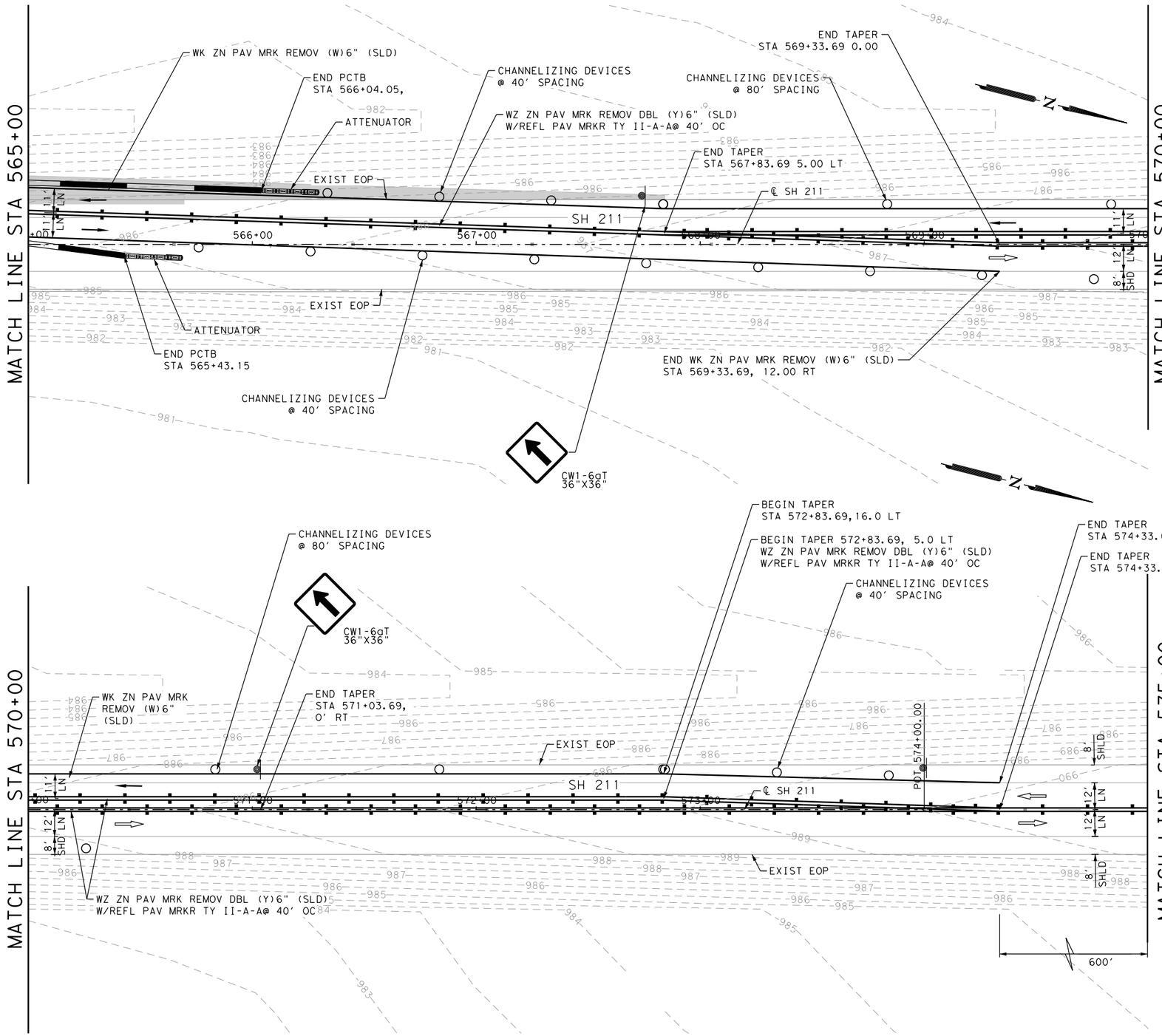
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

TCP & SW3P LAYOUT

PHASE V
STA 555+00 TO STA 565+00
SHEET 3 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 34



TCP - SW3P LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM (TY 2)
- TOPSOIL AND SEEDING
- 650 — CONTOURS
- DRAINAGE FLOW ARROW
- TYPE III BARRICADE
- CHANNELIZING DEVICES
- SIGN
- EXIST TRAFFIC FLOW ARROW
- TEMPORARY TRAFFIC FLOW ARROW

TCP NOTES:

1. FOR ADDITIONAL DETAILS, SEE TxDOT TCP STANDARD SHEETS AND TCP TYPICAL SECTION SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED.
4. CONTRACTOR TO MATCH WORK ZONE PAVEMENT MARKINGS TO EXISTING PAVEMENT MARKINGS AT EACH END OF THE PROJECT.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD.
6. ALL SIGN LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATIONS IN THE FIELD.
7. CONTRACTOR TO IDENTIFY CONSTRUCTION EXITS LOCATIONS IN THE FIELD.

SW3P NOTES:

1. FOR MORE INFORMATION SEE TxDOT TEMPORARY EROSION CONTROL MEASURE STANDARDS.
2. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED IN THE FIELD.
3. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
4. SW3P CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
5. ALL SW3P CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITION AT ALL TIMES.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

TCP & SW3P LAYOUT

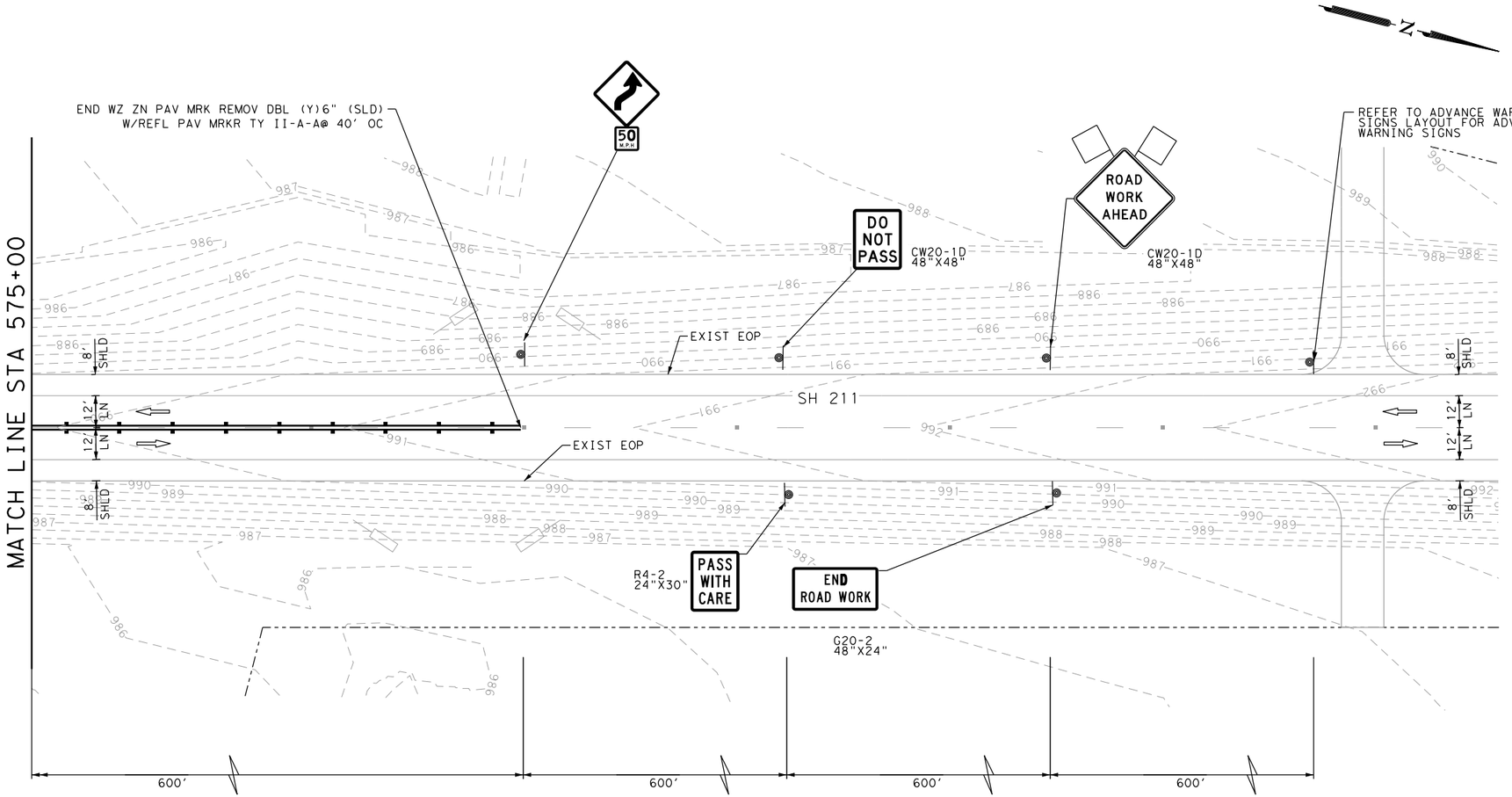
PHASE V

STA 565+00 TO END PROJECT

SHEET 4 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 35

Plotted on: 1/22/2024
Design Filename: P:\122\85\04\Design\Civil\TCP\Phase V\1228504_TCP5_04.dgn



Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\TCP\Phase\1228504_TCP5_05.dgn

TCP - SW3P LEGEND

- SCF — SEDIMENT CONTROL FENCE
- RFD2 — ROCK FILTER DAM (TY 2)
- TOPSOIL AND SEEDING
- 650 — CONTOURS
- DRAINAGE FLOW ARROW
- TYPE III BARRICADE
- CHANNELIZING DEVICES
- SIGN
- EXIST TRAFFIC FLOW ARROW
- TEMPORARY TRAFFIC FLOW ARROW

TCP NOTES:

1. FOR ADDITIONAL DETAILS, SEE TxDOT TCP STANDARD SHEETS AND TCP TYPICAL SECTION SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED.
4. CONTRACTOR TO MATCH WORK ZONE PAVEMENT MARKINGS TO EXISTING PAVEMENT MARKINGS AT EACH END OF THE PROJECT.
5. CONTRACTOR TO MAINTAIN ACCESS TO ALL DRIVEWAYS AT ALL TIMES THROUGHOUT THE CONSTRUCTION PERIOD.
6. ALL SIGN LOCATIONS ARE APPROXIMATE. CONTRACTOR TO VERIFY EXACT LOCATIONS IN THE FIELD.
7. CONTRACTOR TO IDENTIFY CONSTRUCTION EXITS LOCATIONS IN THE FIELD.

SW3P NOTES:

1. FOR MORE INFORMATION SEE TxDOT TEMPORARY EROSION CONTROL MEASURE STANDARDS.
2. CONSTRUCTION ENTRANCE/EXIT LOCATIONS TO BE DETERMINED IN THE FIELD.
3. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED OR AS APPROVED BY THE ENGINEER.
4. SW3P CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH THE DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
5. ALL SW3P CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITION AT ALL TIMES.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

TCP & SW3P LAYOUT

PHASE V

STA 565+00 TO END PROJECT

SHEET 5 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 36

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

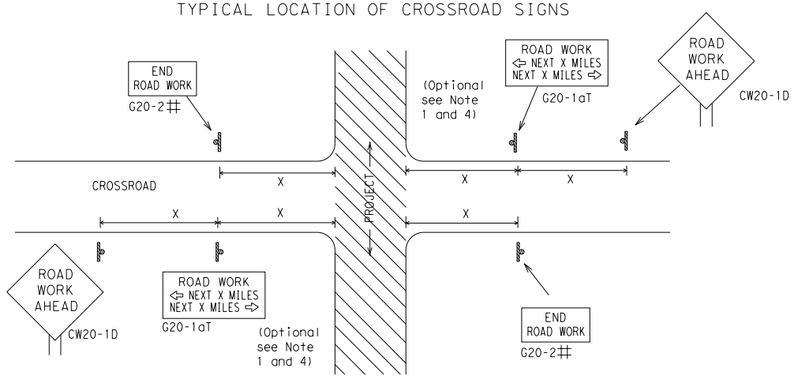
BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

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				SH 211
9-07 8-14	DIST	COUNTY		SHEET NO.
5-10 5-21	SAT	BX / ME		37

DATE: 1/22/2024 2:38:14 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\bc-21.dgn

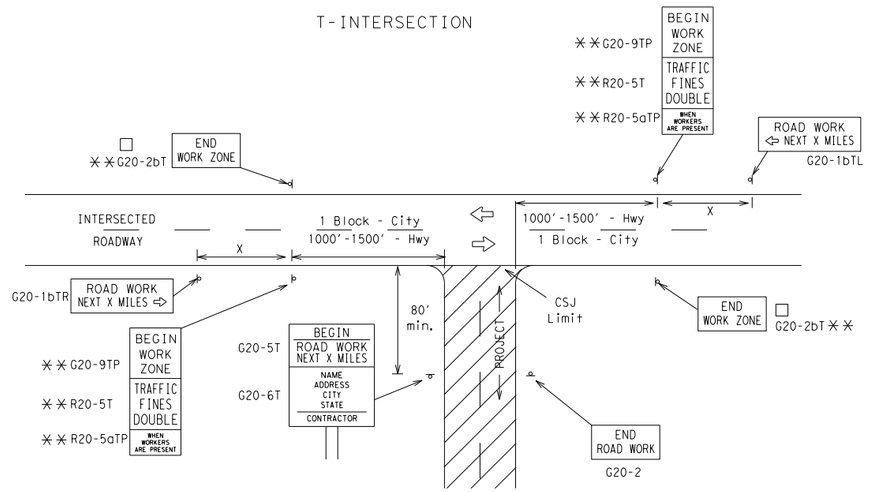
TYPICAL LOCATION OF CROSSROAD SIGNS



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.

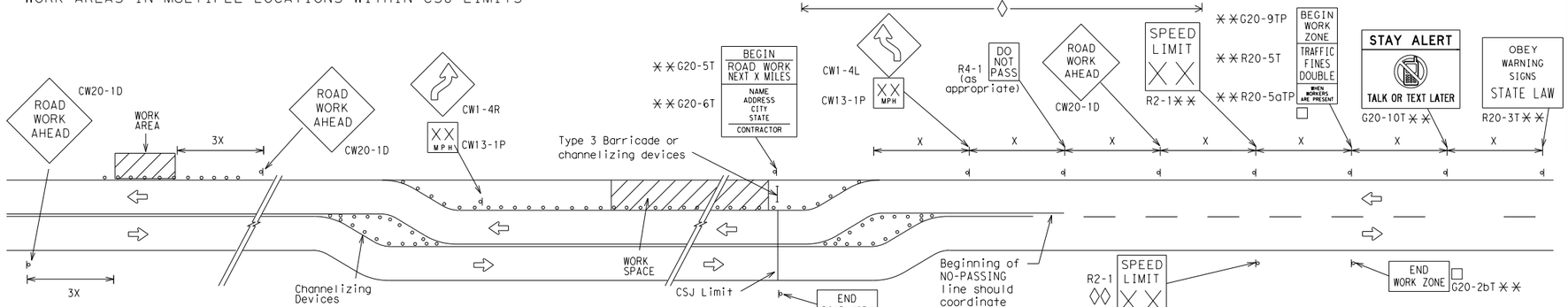
△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

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.

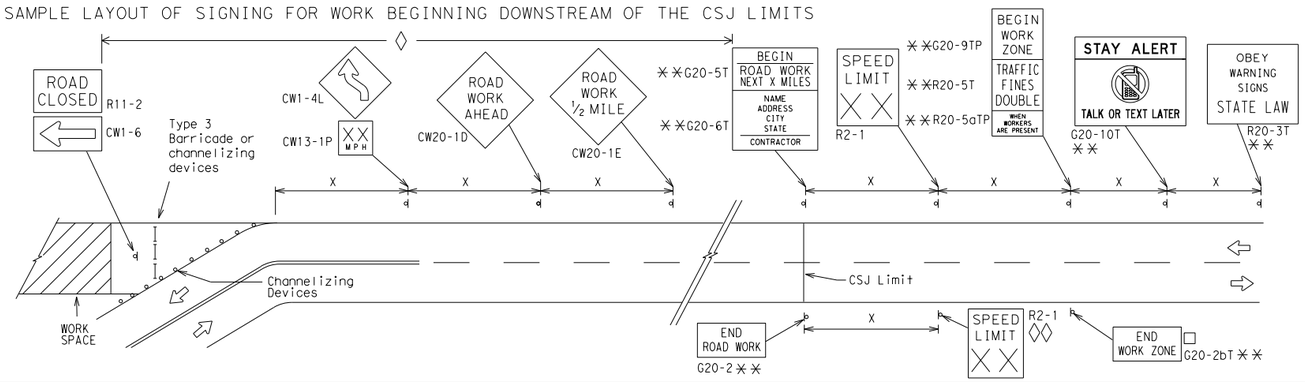
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS



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

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



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				SH 211
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BX / ME		38

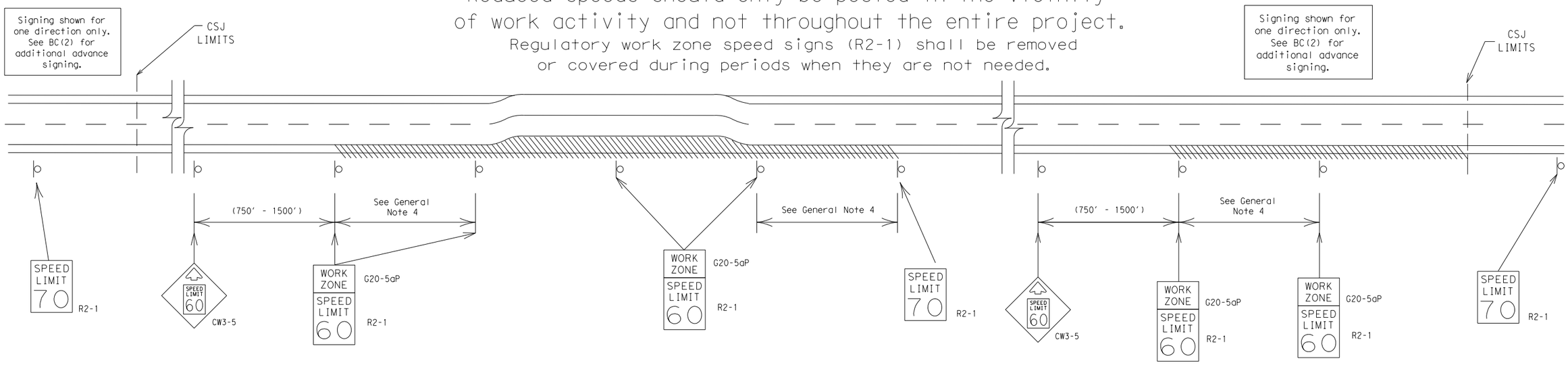
DATE: 1/22/2024 2:38:15 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\bc-21.dgn

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: 1/22/2024 2:38:15 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\bc-21.dgn

SHEET 3 OF 12

Texas Department of Transportation | Traffic Safety Division Standard

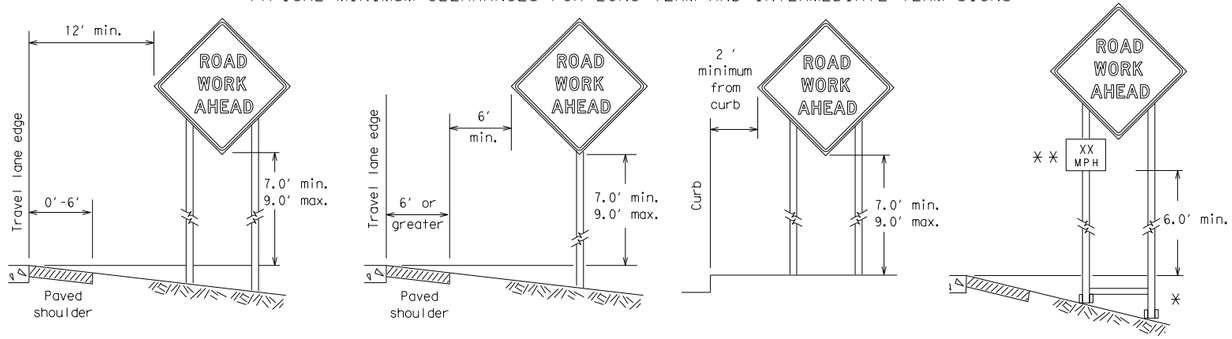
BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

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				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		39

97

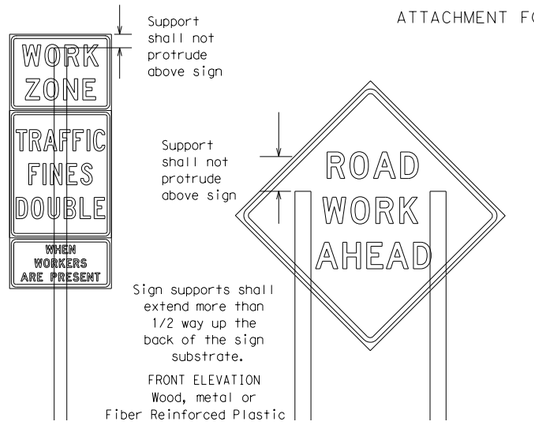
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

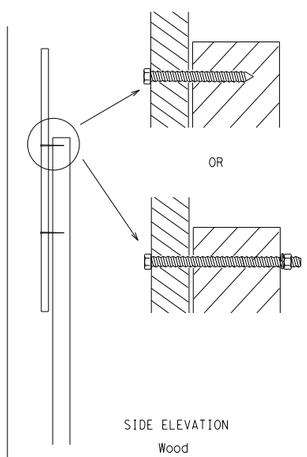


⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

⁎⁎ 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





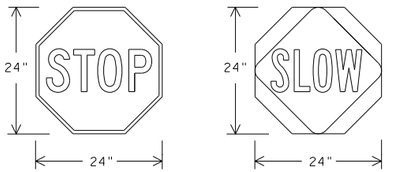
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

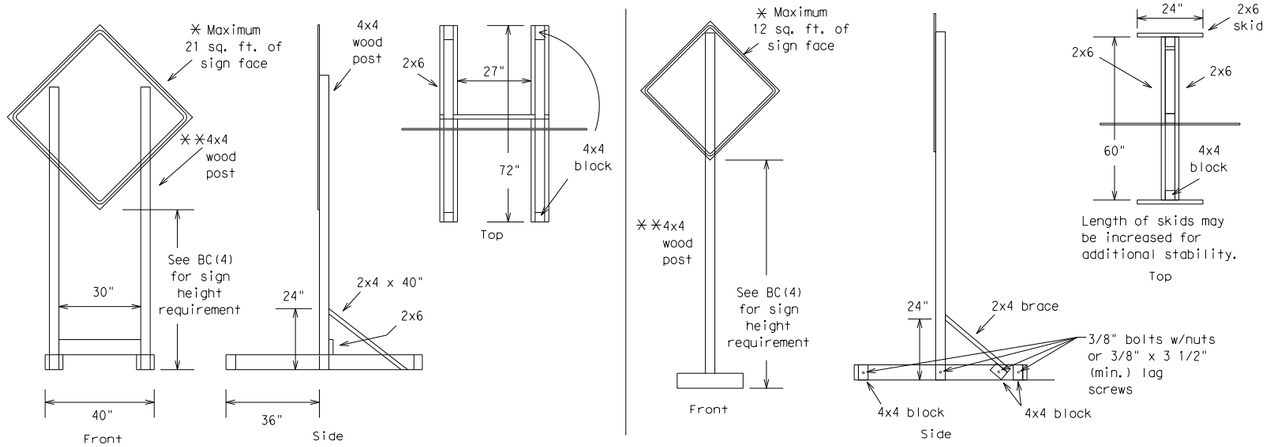
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

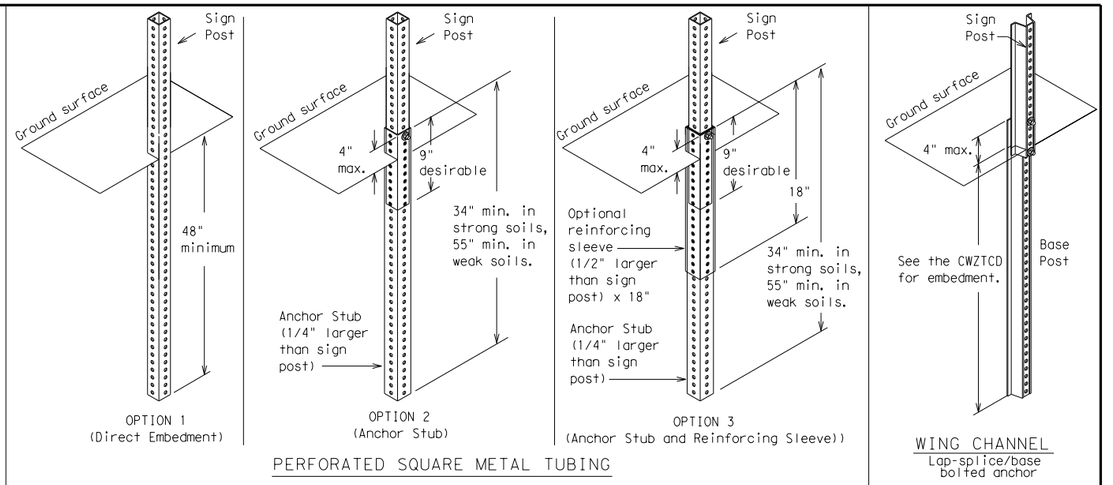
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BX / ME		40

DATE: 1/22/2024 2:38:16 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\bc-21.dgn



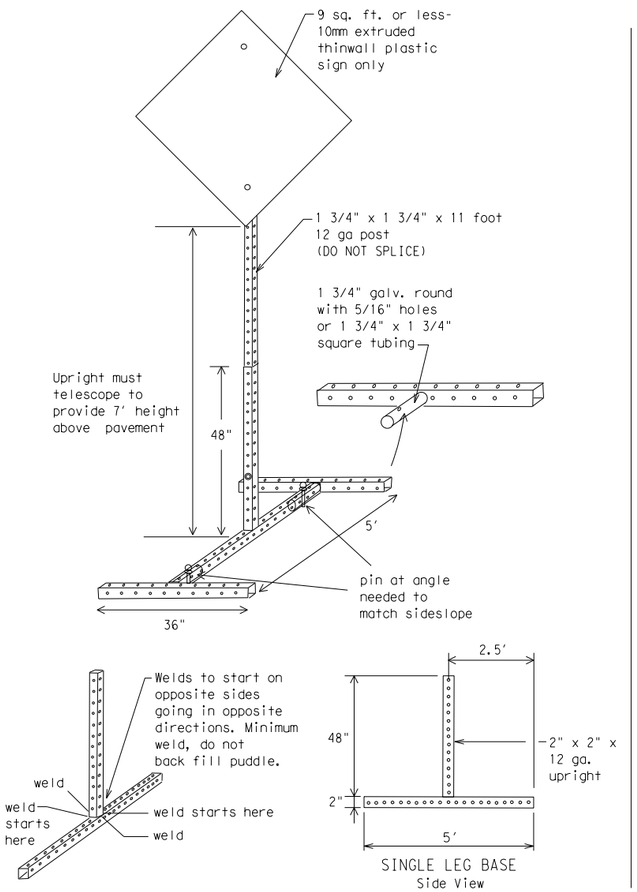
SKID MOUNTED WOOD SIGN SUPPORTS

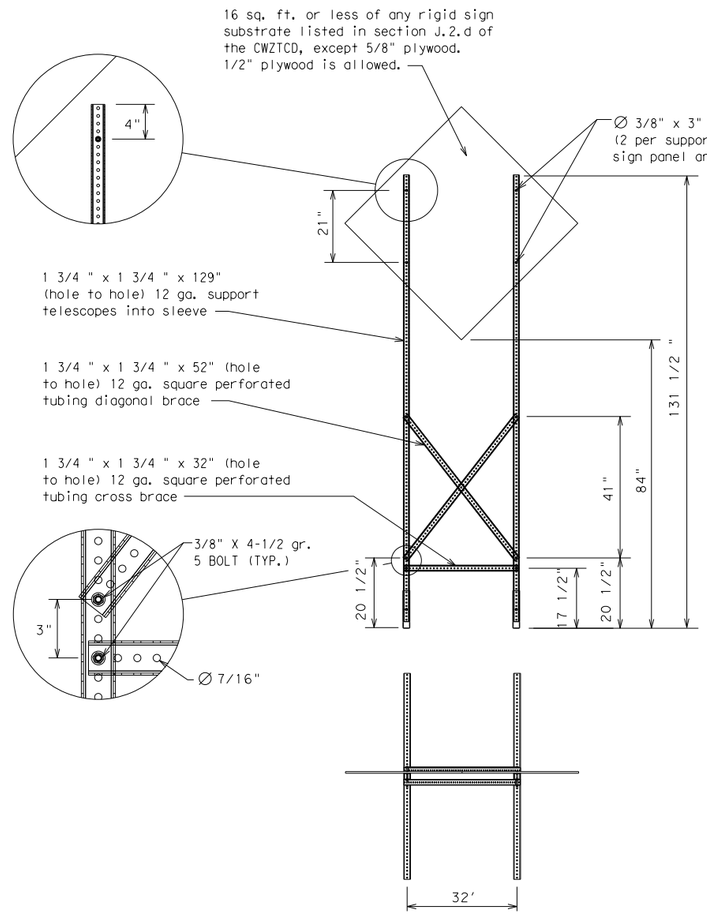
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

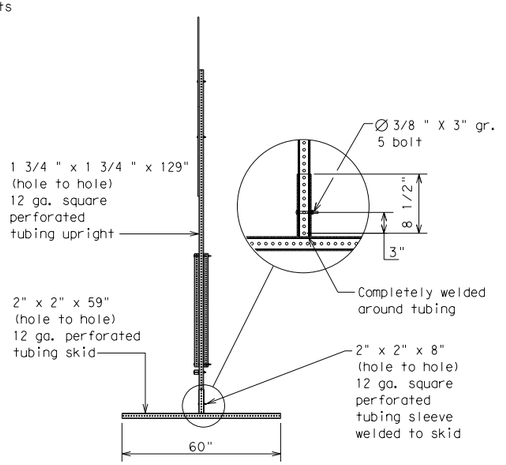


GROUND MOUNTED SIGN SUPPORTS

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				SH 211
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BX / ME		41

DATE: 1/22/2024 2:38:17 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\bc-21.dgn

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

MERGE RIGHT	FORM X LINES RIGHT
DETOUR NEXT X EXITS	USE XXXXX RD EXIT
USE EXIT XXX	USE EXIT I-XX NORTH
STAY ON US XXX SOUTH	USE I-XX E TO I-XX N
TRUCKS USE US XXX N	WATCH FOR TRUCKS
WATCH FOR TRUCKS	EXPECT DELAYS
EXPECT DELAYS	PREPARE TO STOP
REDUCE SPEED XXX FT	END SHOULDER USE
USE OTHER ROUTES	WATCH FOR WORKERS
STAY IN LANE *	

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

Location List

AT FM XXXX
BEFORE RAILROAD CROSSING
NEXT X MILES
PAST US XXX EXIT
XXXXXXX TO XXXXXXX
US XXX TO FM XXXX

Warning List

SPEED LIMIT XX MPH
MAXIMUM SPEED XX MPH
MINIMUM SPEED XX MPH
ADVISORY SPEED XX MPH
RIGHT LANE EXIT
USE CAUTION
DRIVE SAFELY
DRIVE WITH CARE

** Advance Notice List

TUE-FRI XX AM- X PM
APR XX-XX X PM-X AM
BEGINS MONDAY
BEGINS MAY XX
MAY X-X XX PM - XX AM
NEXT FRI-SUN
XX AM TO XX PM
NEXT TUE AUG XX
TONIGHT XX PM- XX AM

** 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)

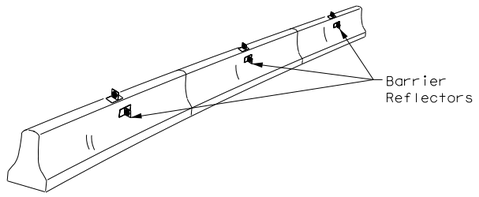
BC(6)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BX / ME		42

100

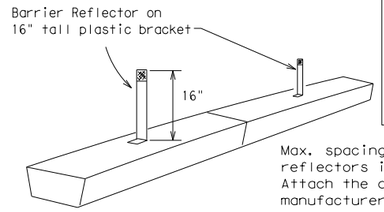
DATE: 1/22/2024 2:38:17 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\bc-21.dgn

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.

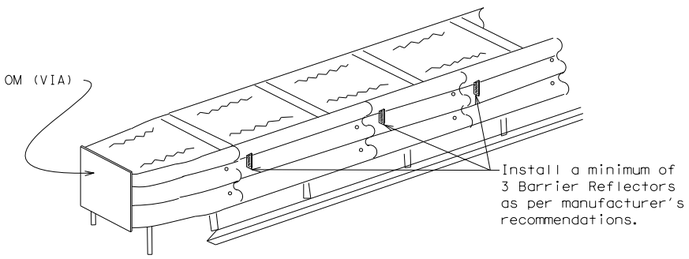


Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

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.

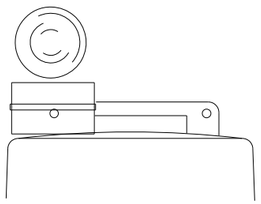


DELINEATION OF END TREATMENTS

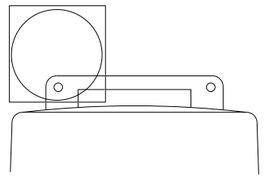
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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



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



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

WARNING LIGHTS

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

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

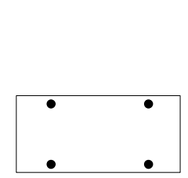
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

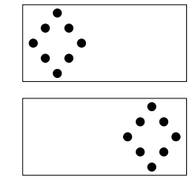
Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

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

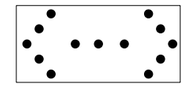


4 CORNER CAUTION

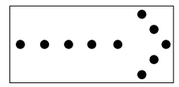
OR



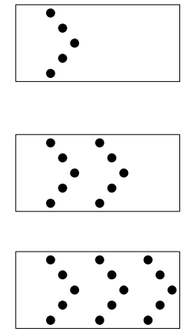
ALTERNATING DIAMOND CAUTION



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				SH 211
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BX / ME		43

101

DATE: 1/22/2024 2:38:18 PM
FILE: P:\122485\04\Design\Civil\Standards\TCP\bc-21.dgn

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:

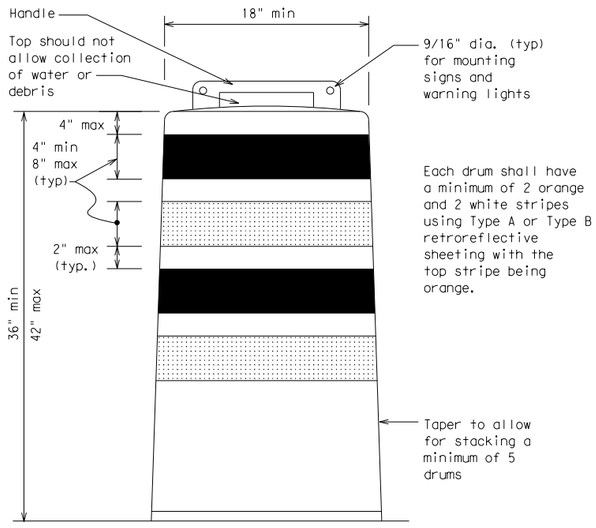
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

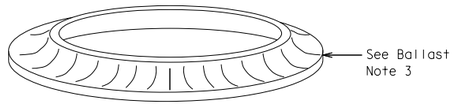
RETROREFLECTIVE SHEETING

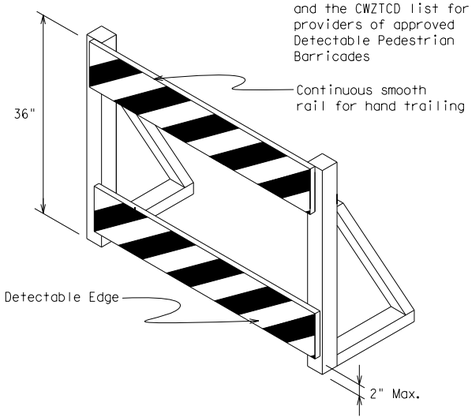
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

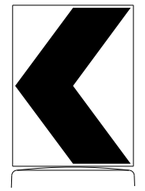




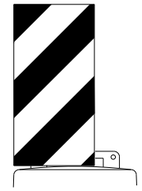


DETECTABLE PEDESTRIAN BARRICADES

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

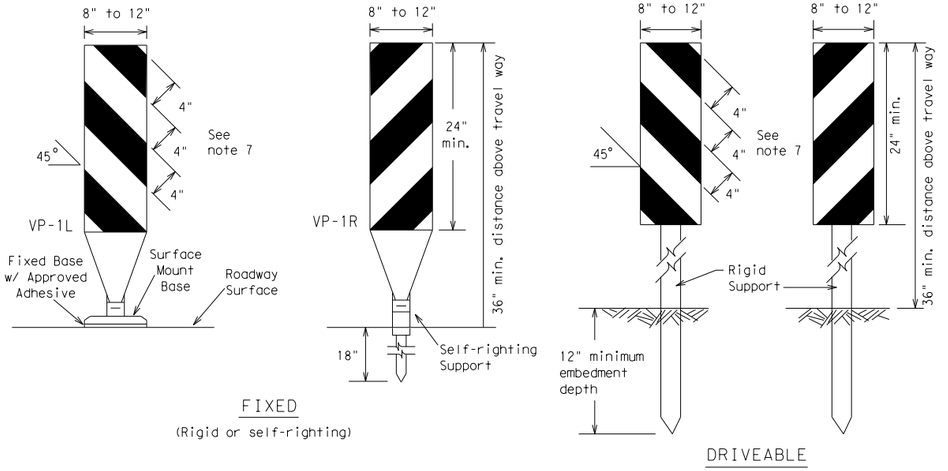
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-21

FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
4-03 8-14	DIST	COUNTY		SHEET NO.
9-07 5-21	SAT	BX / ME		44
7-13				

102

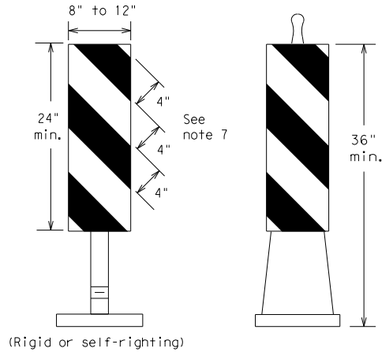
DATE: 1/22/2024 2:38:18 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\bc-21.dgn



FIXED

(Rigid or self-righting)

DRIVEABLE

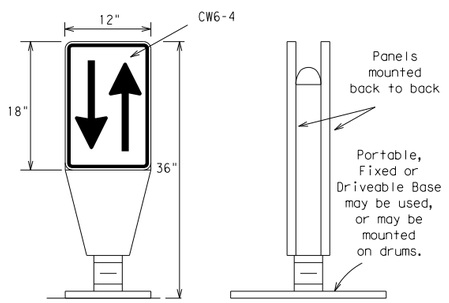


(Rigid or self-righting)

PORTABLE

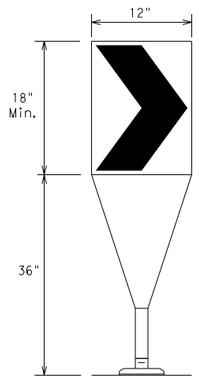
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is 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)



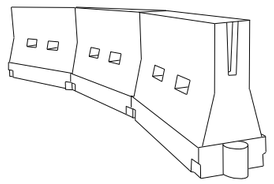
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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				SH 211
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BX / ME		45

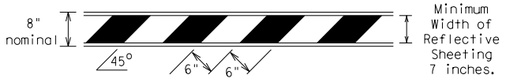
103

DATE: 1/22/2024 2:38:19 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\bc-21.dgn

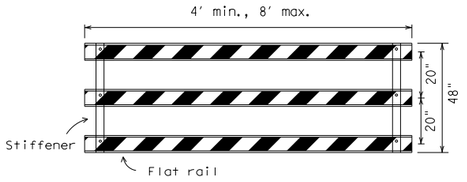
TYPE 3 BARRICADES

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.



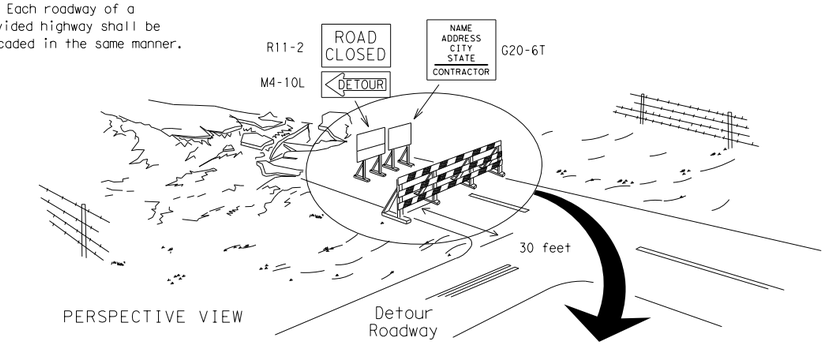
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

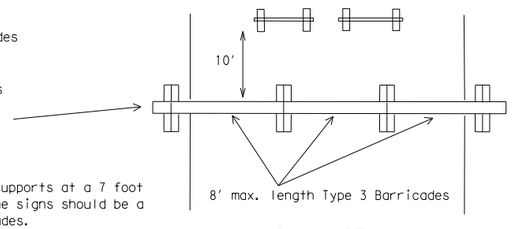
Each roadway of a divided highway shall be barricaded in the same manner.



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.

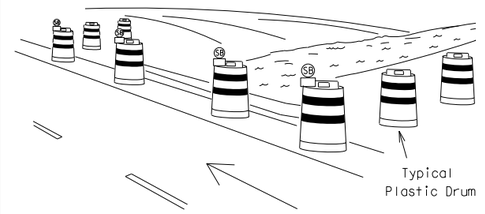
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

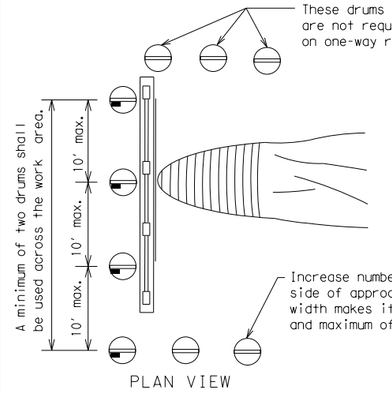
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

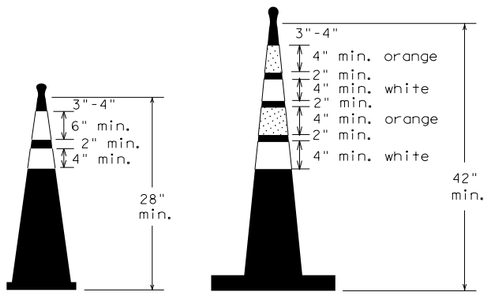
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



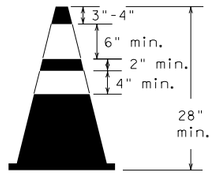
PLAN VIEW

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

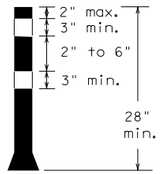
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



Two-Piece cones



One-Piece cones

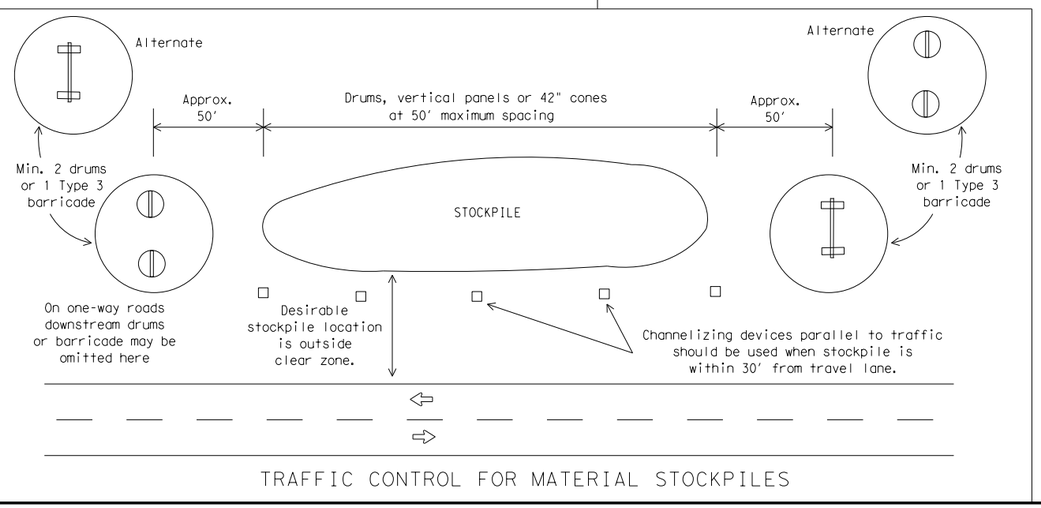


Tubular Marker

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

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				SH 211
9-07 8-14	DIST	COUNTY		SHEET NO.
7-13 5-21	SAT	BX / ME		46

104

DATE: 1/22/2024 2:38:20 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\bc-21.dgn

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.

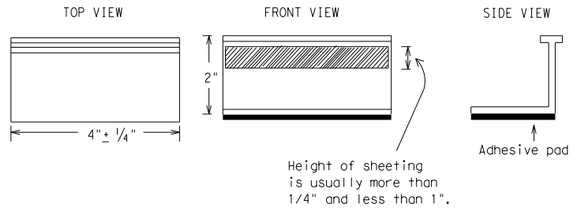
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

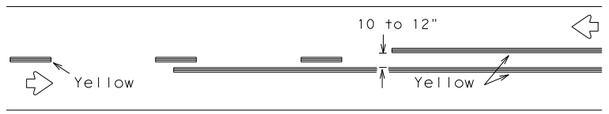
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-98 9-07 5-21 1-02 7-13 11-02 8-14				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		47

105

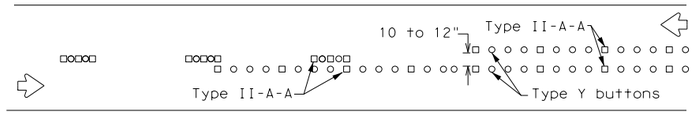
DATE: 1/22/2024 2:38:20 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\bc-21.dgn

DATE: 1/22/2024 2:38:21 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\bc-21.dgn

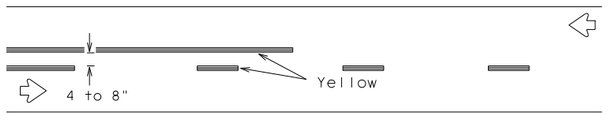
PAVEMENT MARKING PATTERNS



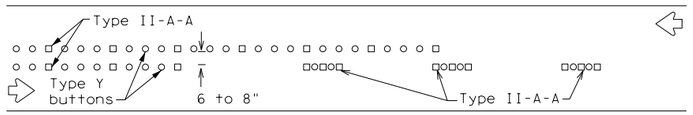
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



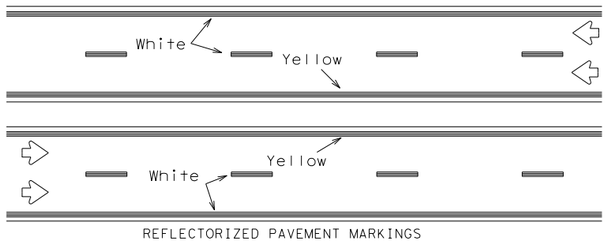
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



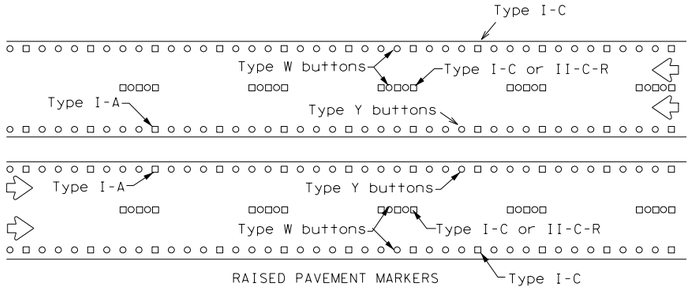
RAISED PAVEMENT MARKERS - PATTERN B

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



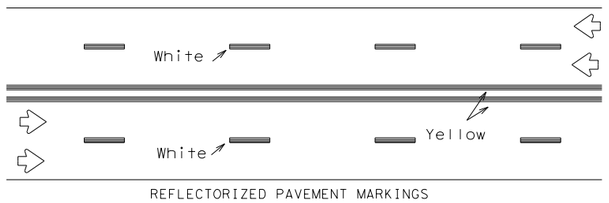
REFLECTORIZED PAVEMENT MARKINGS



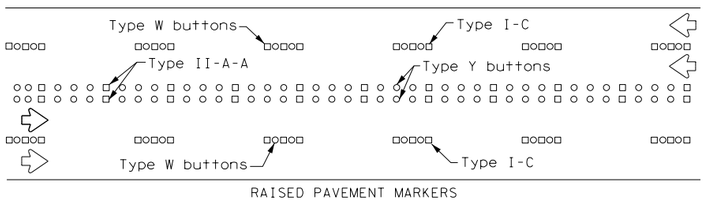
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



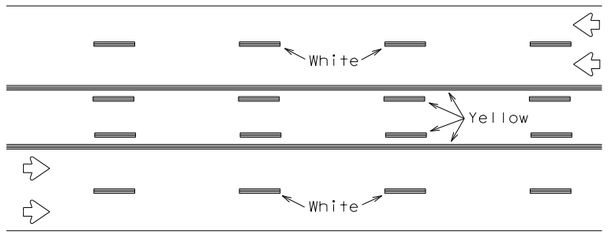
REFLECTORIZED PAVEMENT MARKINGS



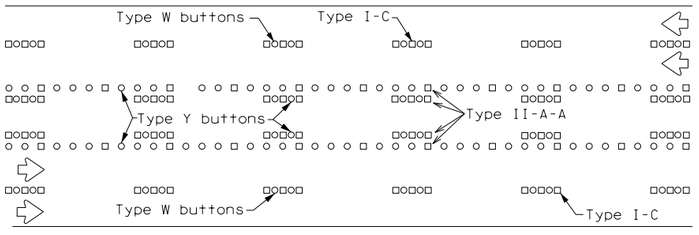
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

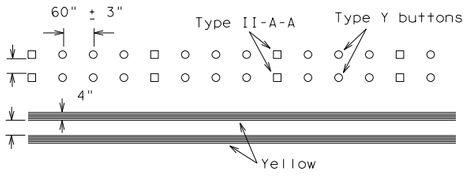
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

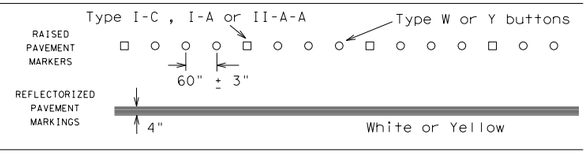
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

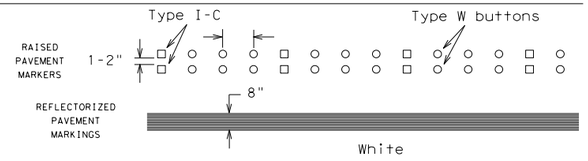


EDGE LINE OR SINGLE NO-PASSING LINE



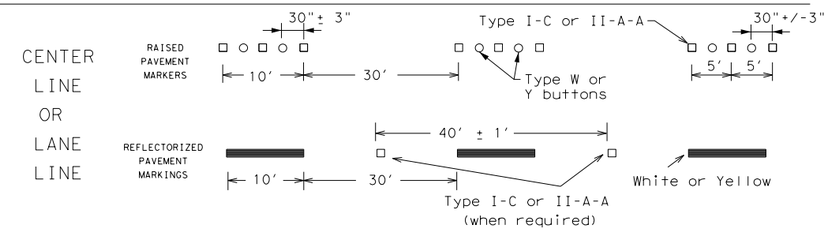
WIDE LINE

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

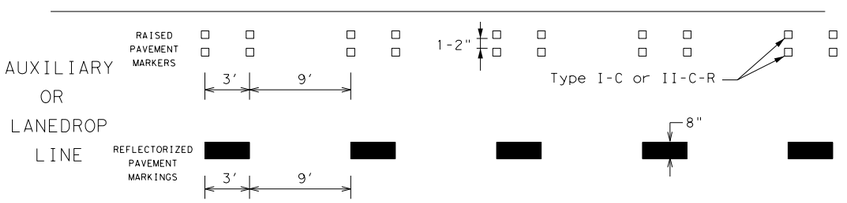


BROKEN LINES

CENTER LINE OR LANE LINE

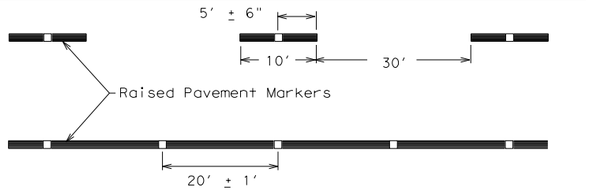


AUXILIARY OR LANEDROP LINE



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

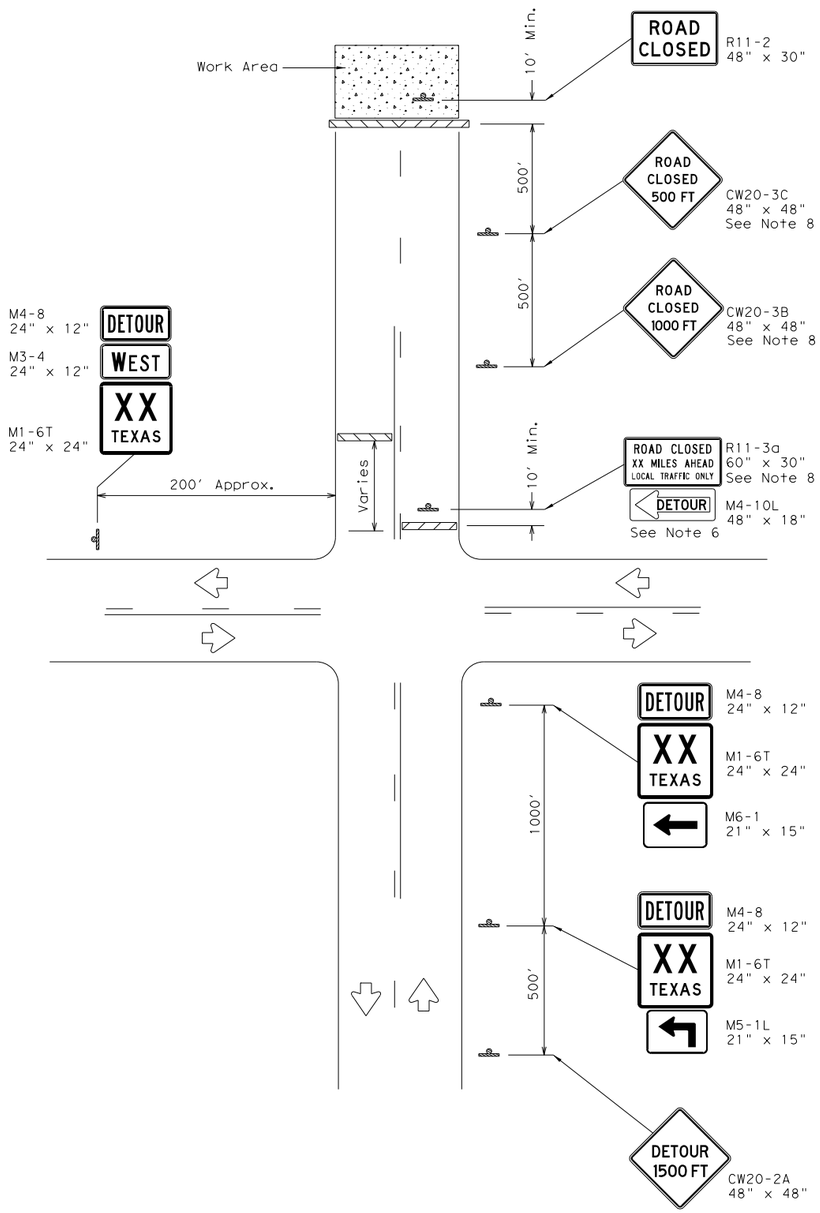
Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

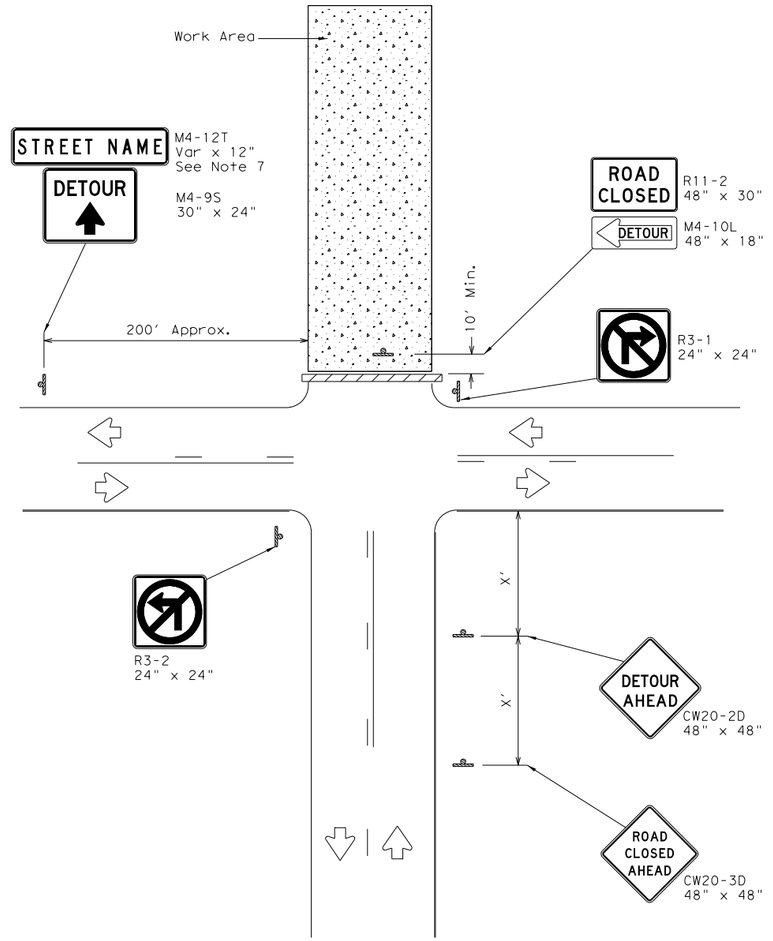
FILE: bc-21.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		48

DATE: 1/22/2024 2:38:22 PM
FILE: P:\122X85\04\Design\Civil\Standards\TCP\wzrcd-13.dgn



ROAD CLOSURE BEYOND THE INTERSECTION

Signing for a Numbered Route with an Off-Site Detour



ROAD CLOSURE AT THE INTERSECTION

Signing for an Un-numbered Route with an Off-Site Detour

LEGEND	
	Type 3 Barricade
	Sign

Posted Speed *	Minimum Sign Spacing "X" Distance
30	120'
35	160'
40	240'
45	320'
50	400'
55	500'
60	600'
65	700'
70	800'
75	900'

* Conventional Roads Only

GENERAL NOTES

1. This sheet is intended to provide details for temporary work zone road closures. For permanent road closure details see the D&OM standards.
2. Barricades used shall meet the requirements shown on Barricade and Construction Standard BC(10) and listed on the Compliant Work Zone Traffic Control Devices list (CWZTCD).
3. Stockpiled materials shall not be placed on the traffic side of barricades.
4. Barricades at the road closure should extend from pavement edge to pavement edge.
5. Detour signing shown is intended to illustrate the type of signing that is appropriate for numbered routes or un-numbered routes as labeled. It does not indicate the full extent of detour signing required. Detour routes should be signed as shown elsewhere in the plans.
6. If the road is open for a significant distance beyond the intersection or there are significant origin/destination points beyond the intersection, the signs and barricades at this location should be located at the edge of the traveled way.
7. The Street Name (M4-12T) sign is to be placed above the DETOUR (M4-9S) sign.
8. For urban areas where there is a shorter distance between the intersection and the actual closure location, the ROAD CLOSED XX MILES AHEAD (R11-3a) sign may be replaced with a ROAD CLOSED TO THRU TRAFFIC (R11-4) sign. If adequate space does not exist between the intersection and the closure a single ROAD CLOSED AHEAD (CW20-3D) sign spaced as per the table above may replace the ROAD CLOSED 1000 FT (CW20-3B) and ROAD CLOSED 500 FT (CW20-3C) signs.
9. Signs and barricades shown shall be subsidiary to Item 502. Locations where these details will be required shall be as shown elsewhere in the plans.

Texas Department of Transportation

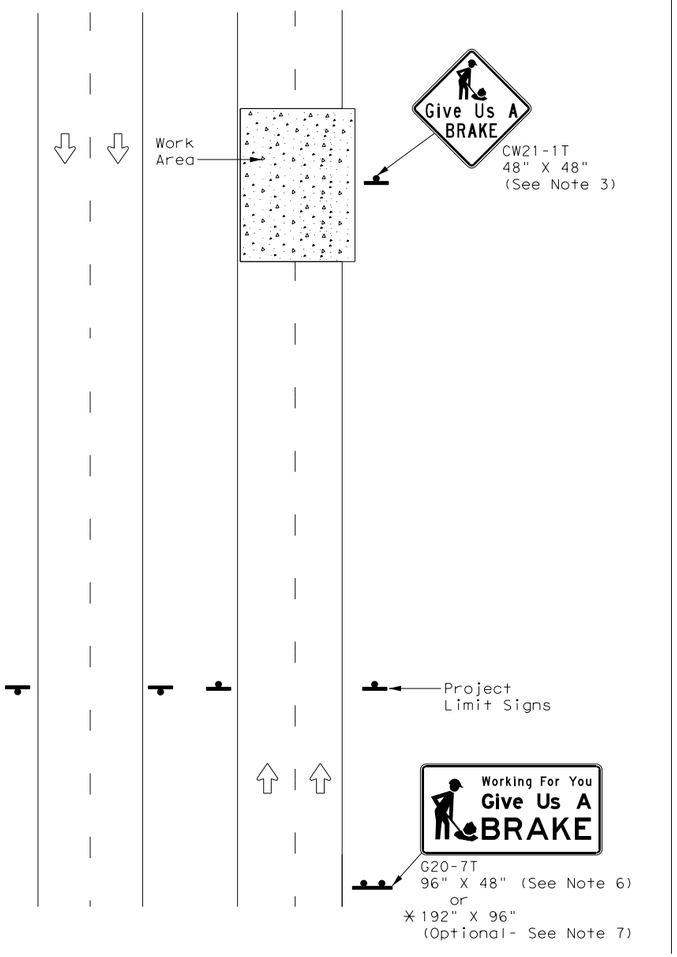
Traffic Operations Division Standard

WORK ZONE ROAD CLOSURE DETAILS

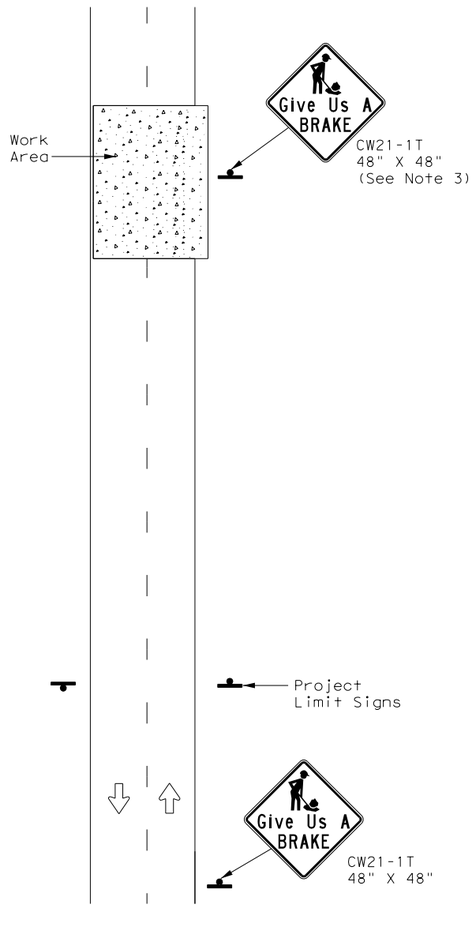
WZ(RCD)-13

FILE: wzrcd-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
1-97 4-98 7-13	DIST	COUNTY		SHEET NO.
2-98 3-03	SAT	BX / ME		49

DATE: 1/22/2024 2:38:23 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\wzbrk-13.dgn



DIVIDED HIGHWAY



UNDIVIDED HIGHWAY

SIGNS ARE SHOWN FOR ONE DIRECTION OF TRAVEL

✳ When the optional larger WORKING FOR YOU GIVE US A BRAKE (G20-7T) 192" x 96" sign is required, the locations shall be noted elsewhere in the plans.

SUMMARY OF LARGE SIGNS

BACKGROUND COLOR	SIGN DESIGNATION	SIGN	SIGN DIMENSIONS	REFLECTIVE SHEETING	SQ FT	GALVANIZED STRUCTURAL STEEL			DRILLED SHAFT 24" DIA. (LF)
						Size	(LF) ①	(LF) ②	
Orange	G20-7T	Working For You Give Us A BRAKE	96" X 48"	Type B_{FL} or C_{FL}	32	▲	▲	▲	▲
Orange	G20-7T	Working For You Give Us A BRAKE	192" X 96"	Type B_{FL} or C_{FL}	128	W8x18	16	17	12

▲ See Note 6 Below

LEGEND	
	Sign
	Large Sign
	Traffic Flow

DEPARTMENTAL MATERIAL SPECIFICATIONS

PLYWOOD SIGN BLANKS	DMS-7100
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

COLOR	USAGE	SHEETING MATERIAL
ORANGE	BACKGROUND	TYPE B_{FL} OR TYPE C_{FL}
BLACK	LEGEND & BORDERS	NON-REFLECTIVE ACRYLIC FILM

GENERAL NOTES

1. See BC and SMD sheets for additional sign support details.
2. Sign locations shall be approved by the Engineer.
3. For projects more than two miles in length, Give Us a BRAKE signs should be repeated halfway through the project. The Give Us a Brake (CW21-1T) may be used for this purpose.
4. Work zone speed limits are sometimes used in conjunction with GIVE US A BRAKE signing. See BC(3) for location and spacing of construction speed zone signing when required.
5. Give Us a Brake (CW21-1T) signs and supports shall be considered subsidiary to Item 502, "Barricades, Signs and Traffic Handling."
6. The 96" X 48" Working For You Give Us A BRAKE (G20-7T) may use a 1/2" or 5/8" plywood substrate or 0.125" aluminum sheeting substrate and may be supported by two 4" x 6" wood posts with drilled holes for breakaway as per BC(5) and will be subsidiary to Item 502.
7. The Working For You Give Us A BRAKE (G20-7T) 192" X 96" sign shall be paid for under the following specification items:
   Item 636 - Aluminum Signs
   Item 647 - Large Roadside Sign Supports and Assemblies.
   Item 416 - Drilled Shaft Foundations
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.

Texas Department of Transportation

Traffic Operations Division Standard

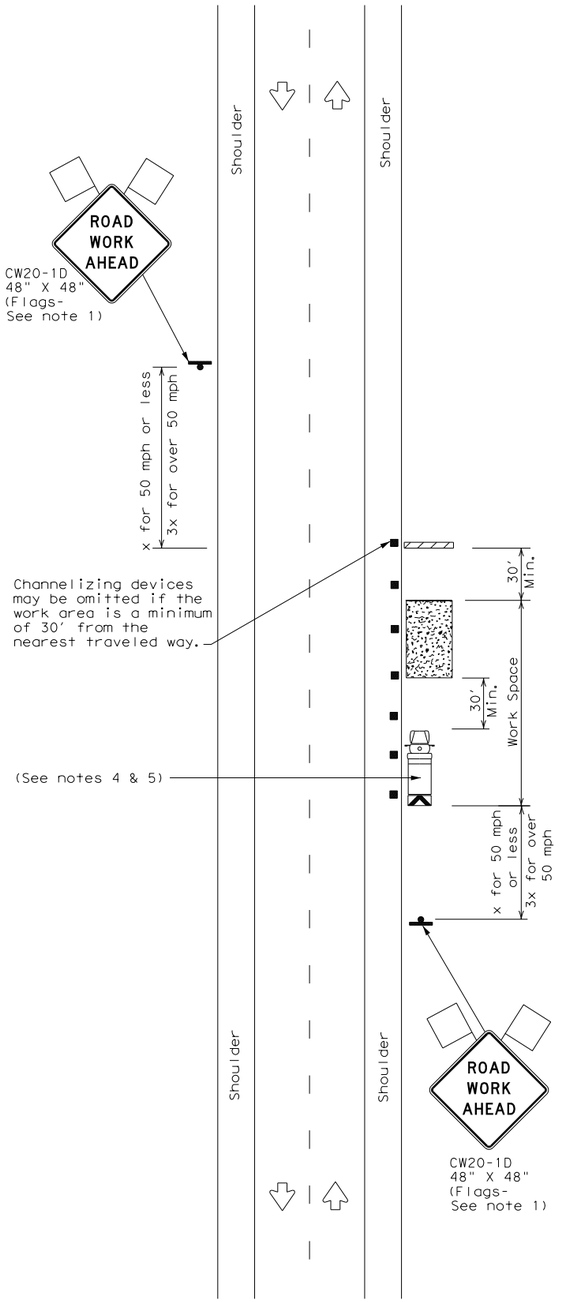
WORK ZONE "GIVE US A BRAKE" SIGNS

WZ(BRK)-13

FILE: wzbrk-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT August 1995	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
6-96 5-98 7-13 8-96 3-03	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		50

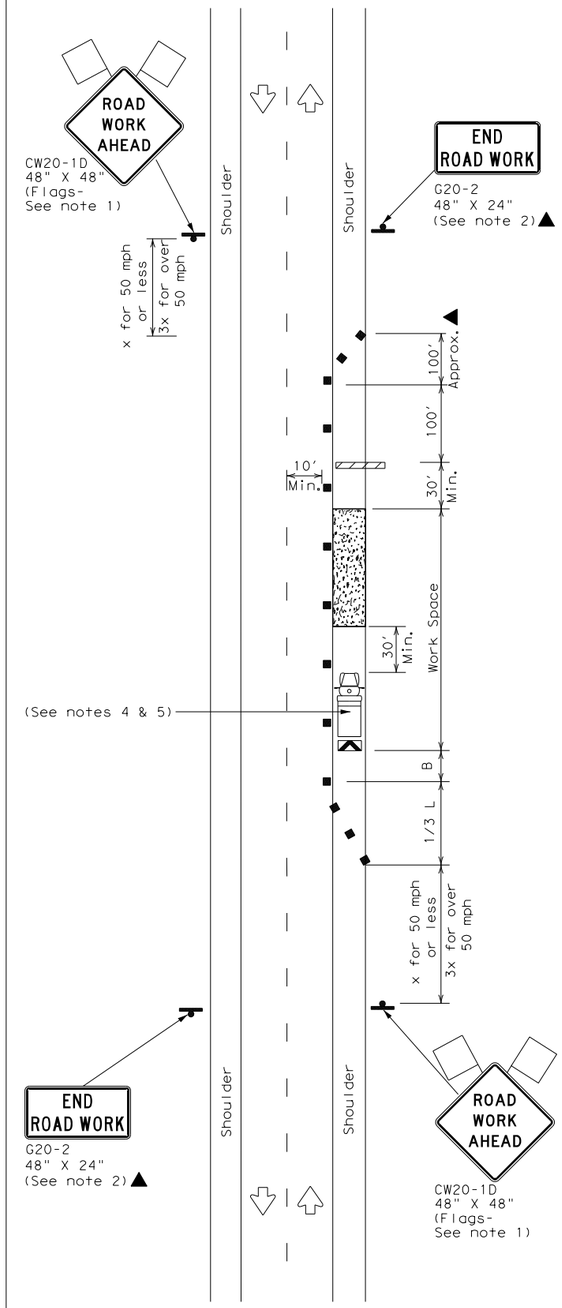
116

DATE: 1/22/2024 2:38:25 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\tcp2-1-18.dgn



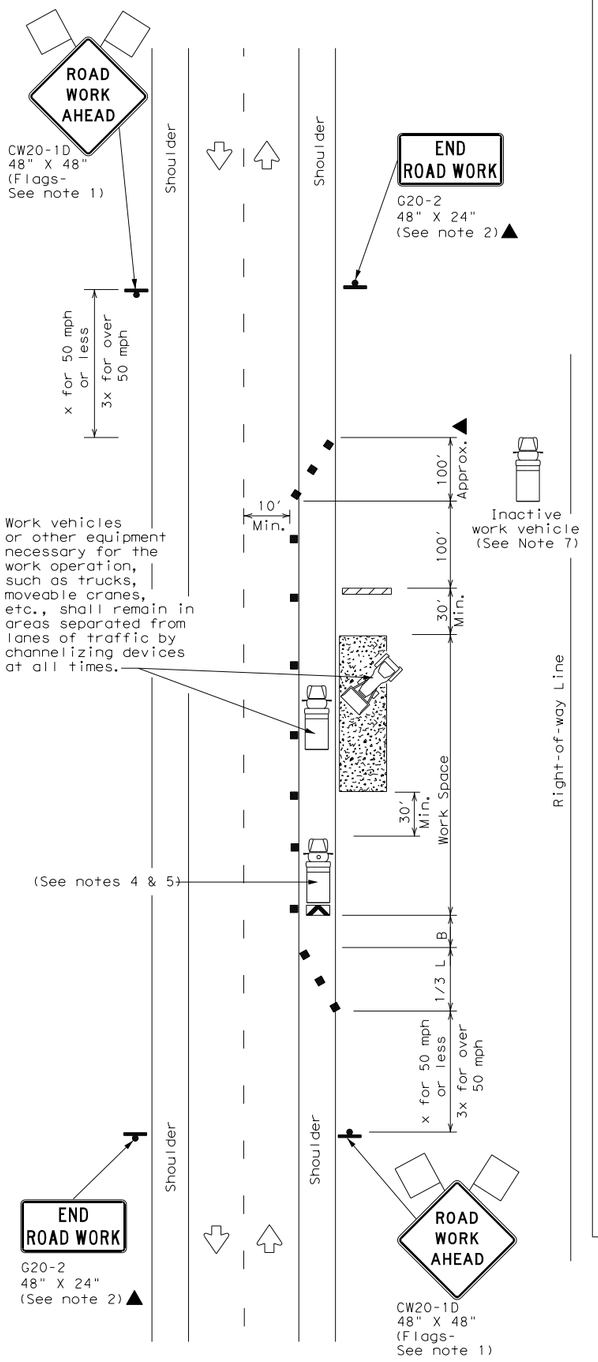
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated in the plans, or for routine maintenance work, when approved by the Engineer.
3. Stockpiled material should be placed a minimum of 30 feet from nearest traveled way.
4. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
5. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.
6. See TCP(5-1) for shoulder work on divided highways, expressways and freeways.
7. Inactive work vehicles or other equipment should be parked near the right-of-way line and not parked on the paved shoulder.
8. CW21-5 "SHOULDER WORK" signs may be used in place of CW20-1D "ROAD WORK AHEAD" signs for shoulder work on conventional roadways.

Texas Department of Transportation

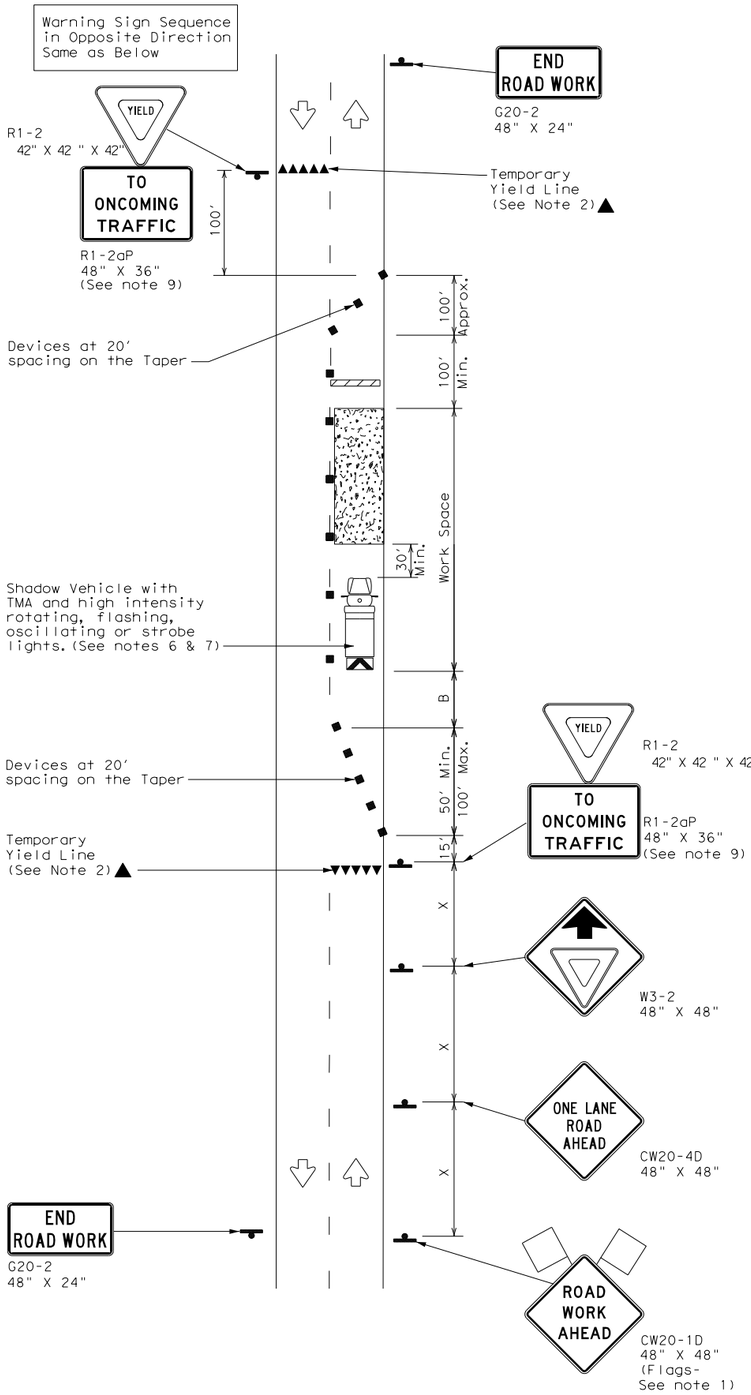
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

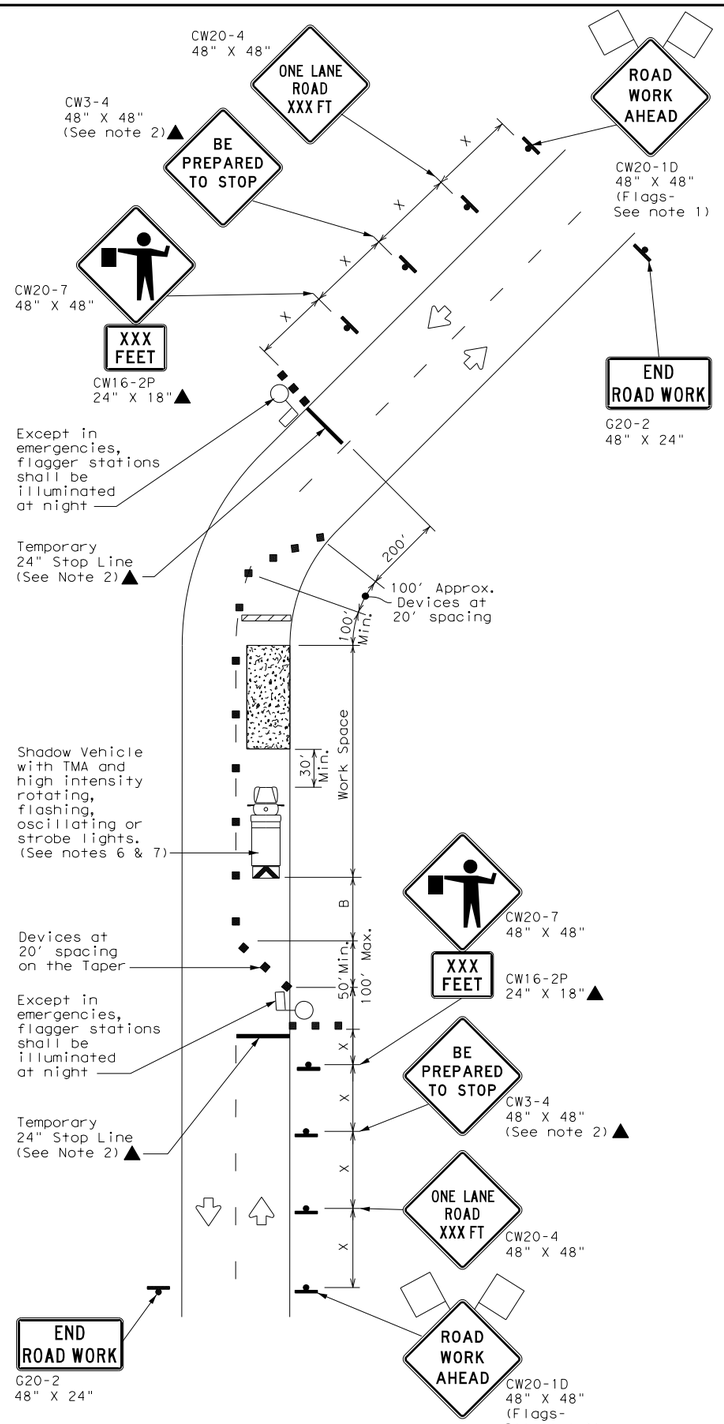
TCP(2-1)-18

FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12	SAT	BX / ME		51
1-97 2-18				

DATE: 1/22/2024 2:38:26 PM
FILE: P:\122X85\04\Design\Civil\Standards\TCP\tcp2-2-18.dgn



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



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

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

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

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

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

GENERAL NOTES

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

TCP (2-2a)

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

TCP (2-2b)

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

Texas Department of Transportation

Traffic Operations Division Standard

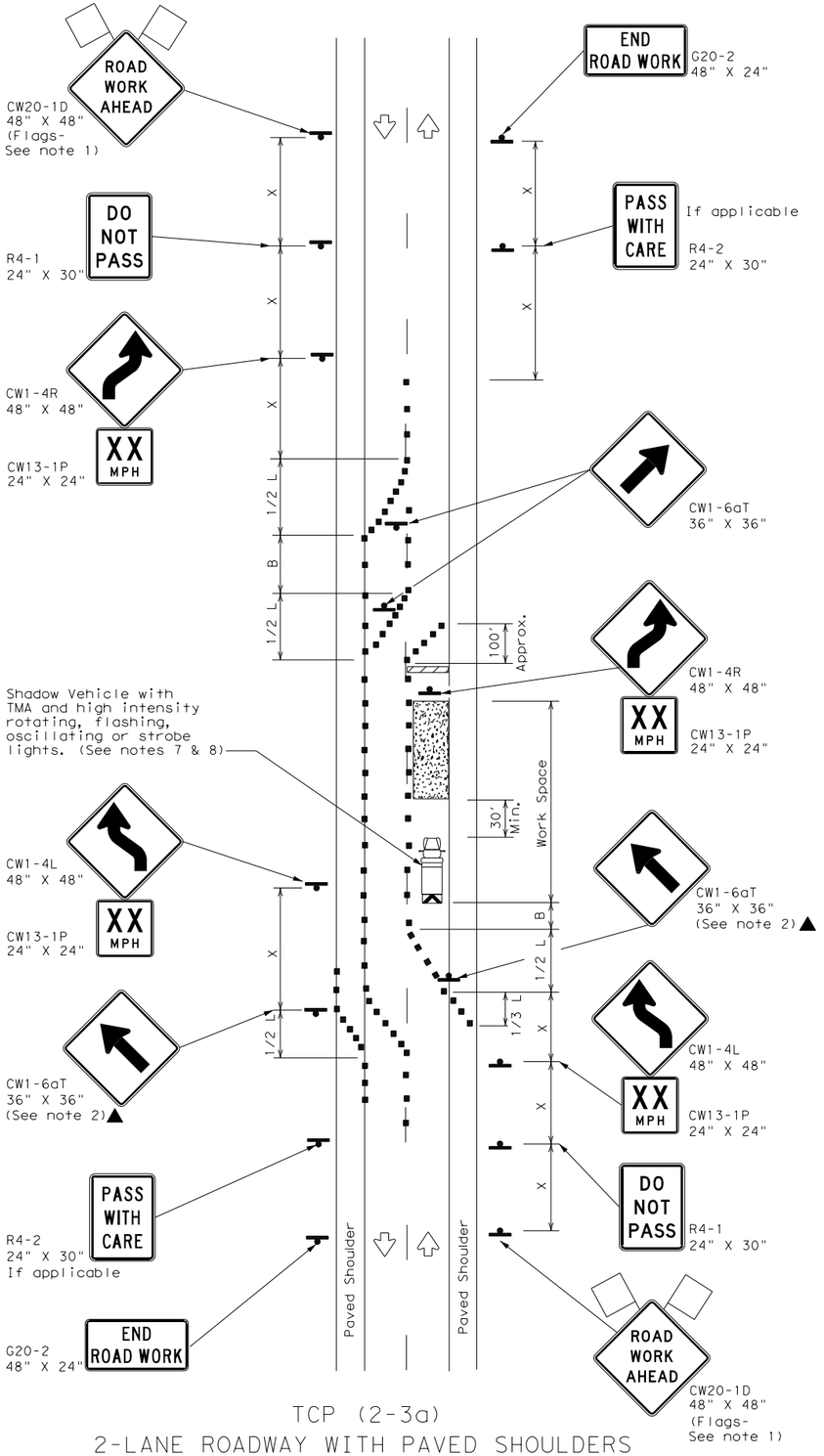
TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(2-2)-18

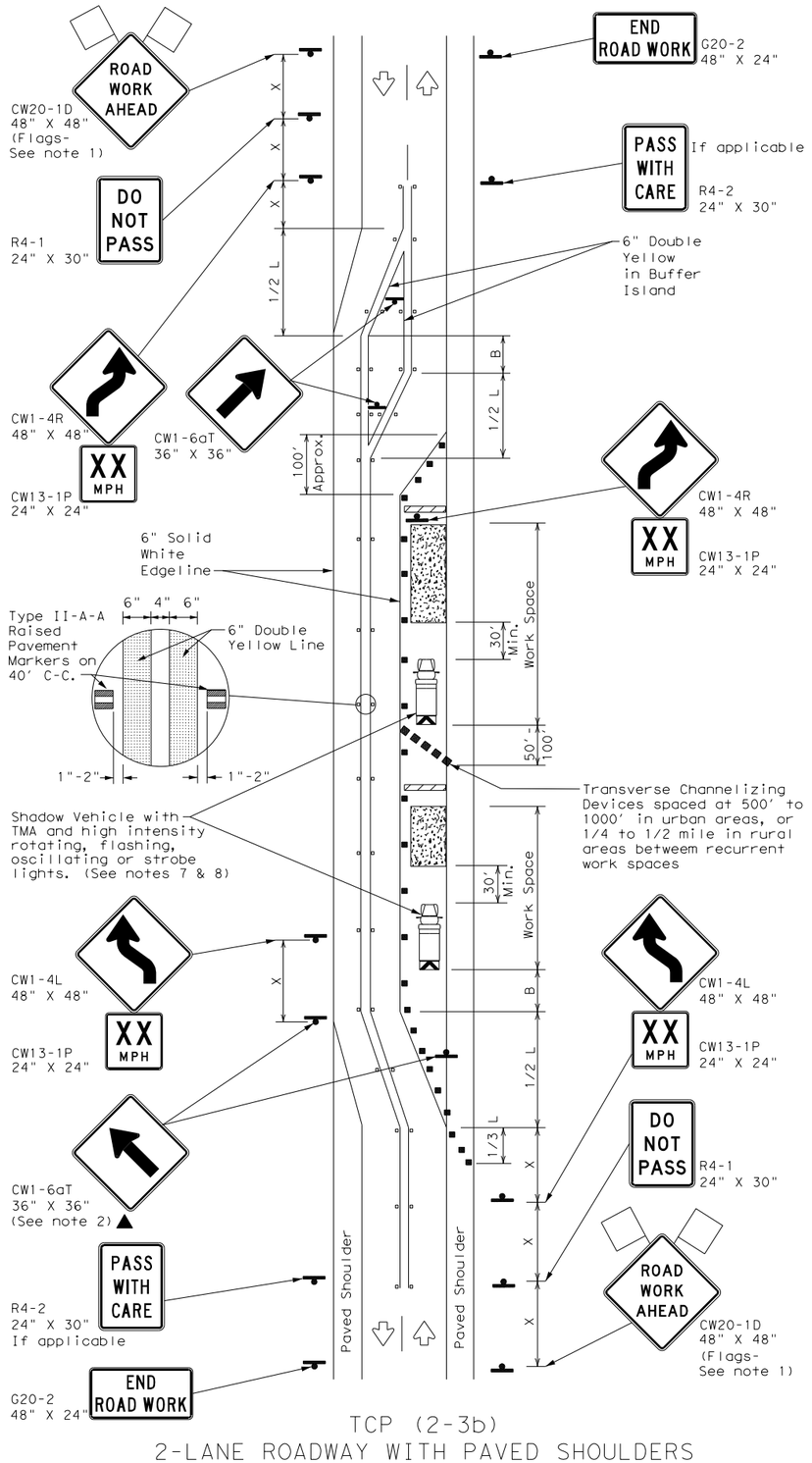
FILE: tcp2-2-18.dgn	DN:	CK:	DW:	CK:
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03 1-97 2-12 4-98 2-18				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		52

162

DATE: 1/22/2024 2:38:27 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\tcp2-3-23.dgn



TCP (2-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS
ONE LANE CLOSED
ADEQUATE FIELD OF VIEW



TCP (2-3b)
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		Raised Pavement Markers Ty II-AA
	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
				TCP(2-3b)ONLY
			✓	✓

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. When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
4. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Flagger should be positioned at end of traffic queue.
5. The R4-1 "DO NOT PASS," R4-2 " PASS WITH CARE" and construction regulatory speed zone signs may be installed within CW20-1D "ROAD WORK AHEAD" signs. Proper spacing of signs shall be maintained.
6. Conflicting pavement marking shall be removed for long term projects.
7. 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.
8. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-3a)

9. Conflicting pavement markings shall be removed for long-term projects. For shorter durations 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 speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter device spacing is intended for the area of the conflicting markings, not the entire work zone.

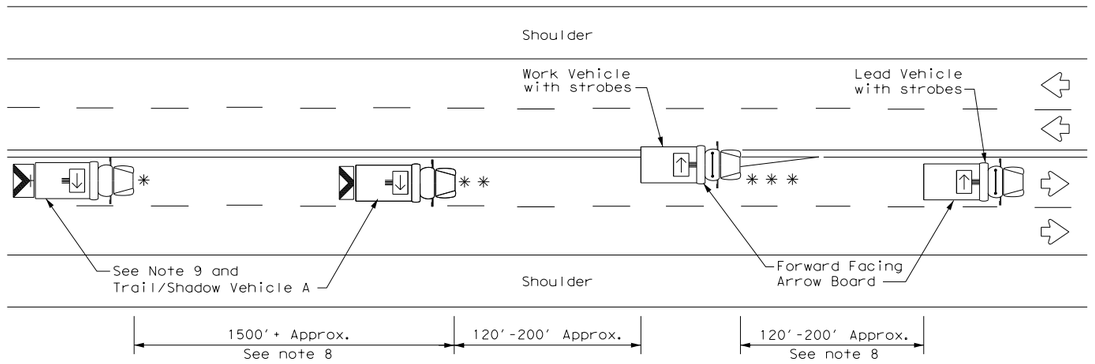
Texas Department of Transportation
Traffic Safety Division Standard

TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS

TCP(2-3)-23

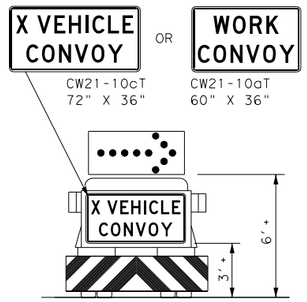
FILE: tcp(2-3)-23.dgn	DN:	CK:	DW:	CK:
© TxDOT April 2023	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-85 4-98 2-18				SH 211
8-95 3-03 4-23	DIST	COUNTY		SHEET NO.
1-97 2-12	SAT	BX / ME		53

163



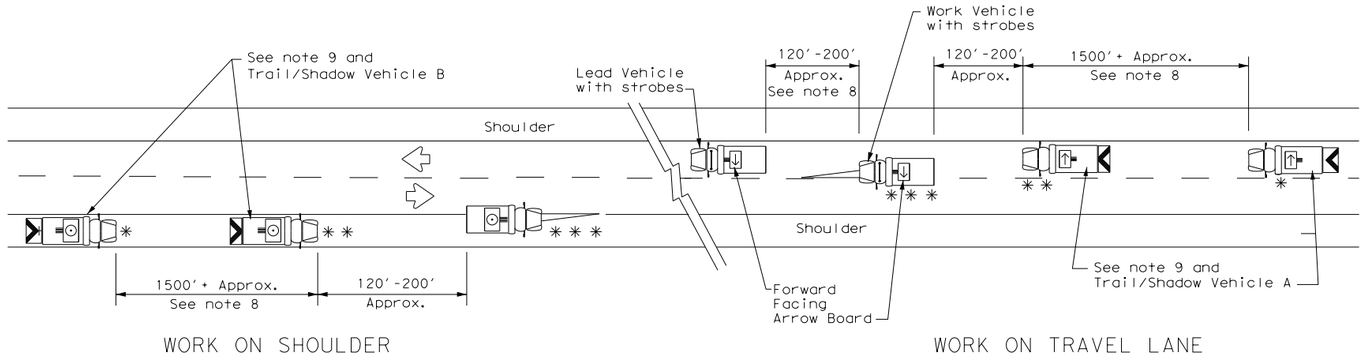
TCP (3-1a)

UNDIVIDED MULTILANE ROADWAY



TRAIL/SHADOW VEHICLE A

with RIGHT Directional display Flashing Arrow Board

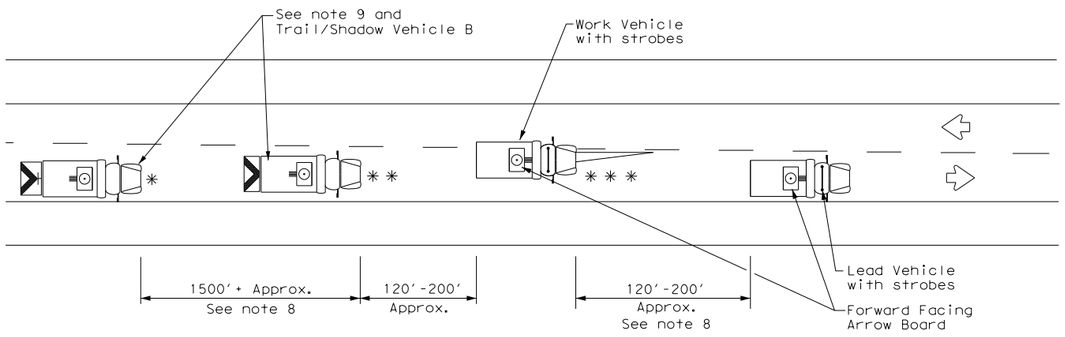


WORK ON SHOULDER

WORK ON TRAVEL LANE

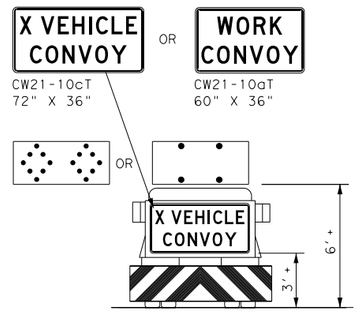
TCP (3-1b)

TWO-WAY ROADWAY WITH PAVED SHOULDERS



TCP (3-1c)

TWO-WAY ROADWAY WITHOUT PAVED SHOULDERS



TRAIL/SHADOW VEHICLE B

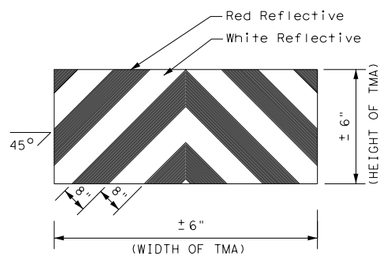
with Flashing Arrow Board in CAUTION display

LEGEND			
*	Trail Vehicle	ARROW BOARD DISPLAY	
* *	Shadow Vehicle		
* * *	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow		CAUTION (Alternating Diamond or 4 Corner Flash)

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

GENERAL NOTES

1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used the WORK vehicle must be equipped with an arrow board. The Engineer will determine if the LEAD VEHICLE and/or TRAIL VEHICLE are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. "X VEHICLE CONVOY" (CW21-10cT) or "WORK CONVOY" (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" X 48" diamond shaped "WORK CONVOY"(CW21-10T) or "X VEHICLE CONVOY" (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The "X VEHICLE CONVOY" sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a "DO NOT PASS" (R4-1) sign should be placed on the back of the rearmost protection vehicle.



STRIPING FOR TMA

Texas Department of Transportation

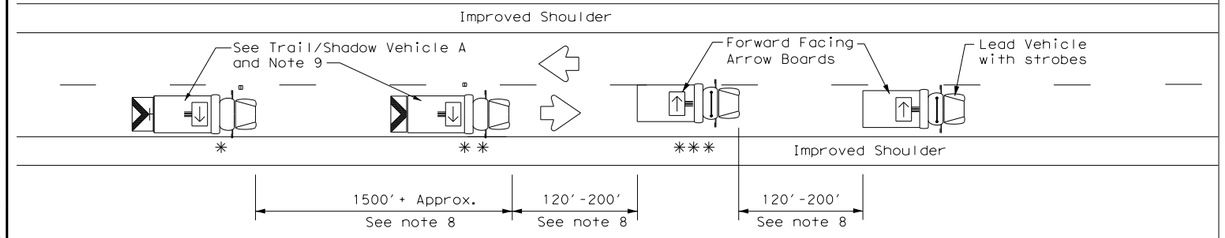
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS UNDIVIDED HIGHWAYS

TCP(3-1)-13

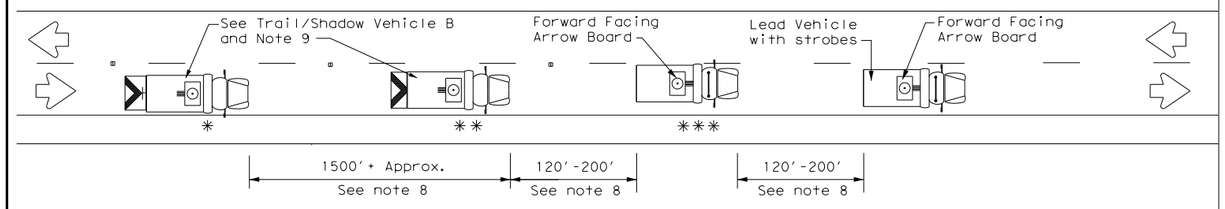
FILE: tcp3-1.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS 2-94 4-98 8-95 7-13 1-97				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		54

DATE: 1/22/2024 2:38:28 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\tcp3-1.dgn



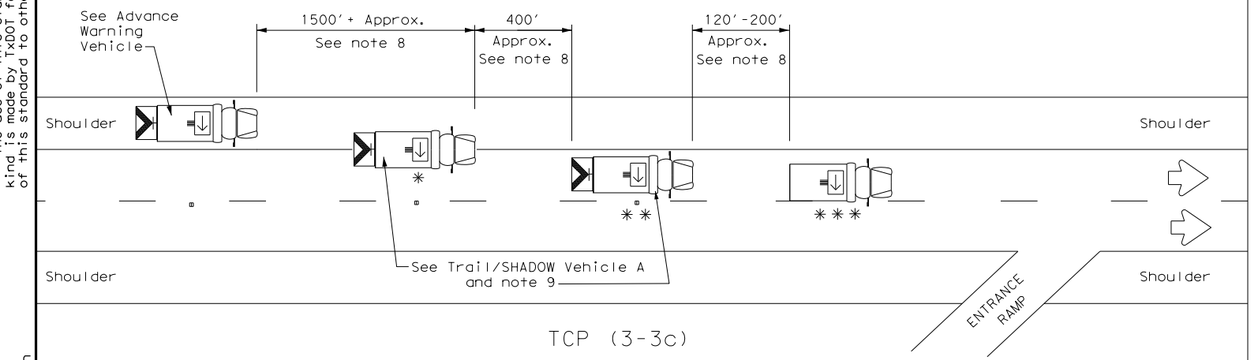
TCP (3-3a)

TWO LANE HIGHWAY WITH PAVED SHOULDERS (WORK ON TRAVEL LANE)



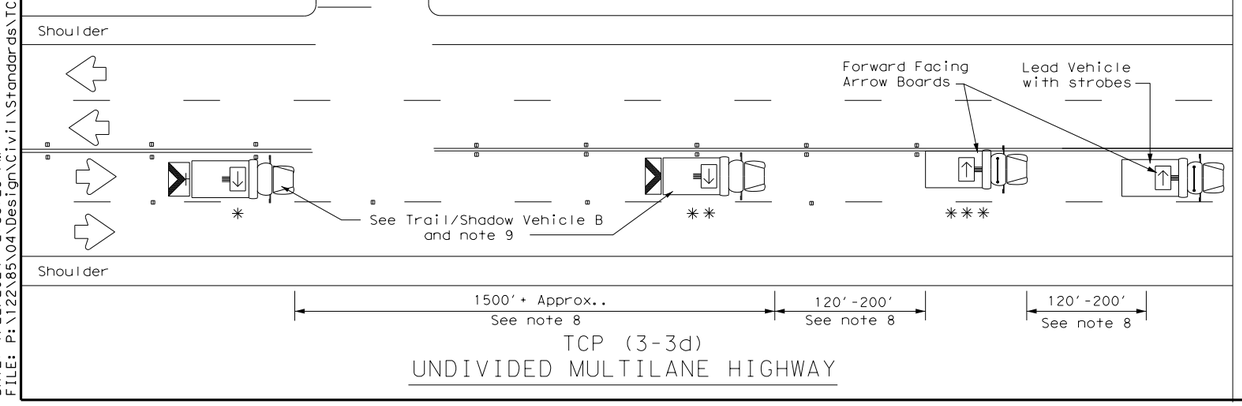
TCP (3-3b)

TWO LANE HIGHWAY WITHOUT PAVED SHOULDERS (WORK ON TRAVEL LANE)



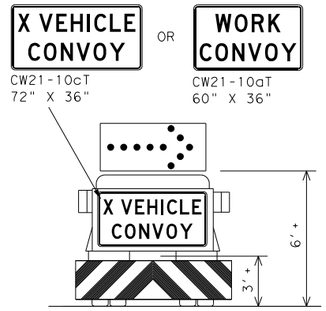
TCP (3-3c)

DIVIDED MULTILANE HIGHWAY



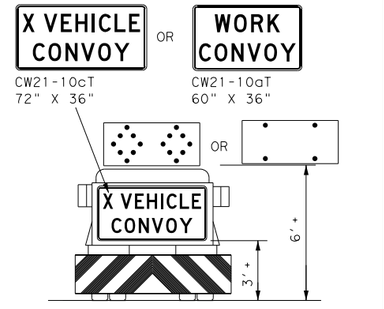
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



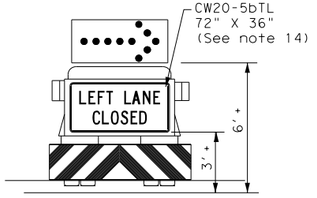
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

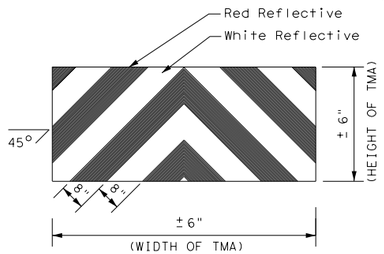


TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board
in Caution Mode



ADVANCE WARNING VEHICLE



STRIPING FOR TMA

LEGEND			
*	Trail Vehicle	ARROW BOARD DISPLAY	
**	Shadow Vehicle		
***	Work Vehicle		RIGHT Directional
	Heavy Work Vehicle		LEFT Directional
	Truck Mounted Attenuator (TMA)		Double Arrow
	Traffic Flow		CAUTION (Alternating Diamond or 4 Corner Flash)

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

GENERAL NOTES

1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used on two way roads the WORK vehicle must have an arrow board. For divided roadways, the arrow board on the WORK vehicle is optional based on the type of work being performed. The Engineer will determine if the LEAD vehicle and/or TRAIL vehicle are required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating, or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE, ADVANCE WARNING and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL MATERIAL SPECIFICATION DMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. X VEHICLE CONVOY (CW21-10cT) or WORK CONVOY (CW21-10aT) signs shall be used on TRAIL VEHICLES and SHADOW VEHICLES as shown. As an option 48" x 48" diamond shaped WORK CONVOY (CW21-10T) or X VEHICLE CONVOY (CW21-10bT) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY sign shall have the number of the convoy vehicles displayed on the sign in the number designation "X" location. The X VEHICLE CONVOY sign shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
10. For divided highways with two or three lanes in one direction, the appropriate LEFT LANE CLOSED (CW20-5bTL), RIGHT LANE CLOSED (CW20-5bTR), or CENTER LANE CLOSED (CW20-5dT) sign should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board may be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
11. A double arrow shall not be displayed on the arrow board on the Advance Warning Vehicle.
12. For divided highways with three or four lanes in each direction, use TCP(3-2).
13. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
14. The Advance Warning Vehicle may straddle the edgeline when Shoulder width makes it necessary.
15. On two-lane two-way roadways, the work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motorists are not allowed to pass the work convoy, a DO NOT PASS (R4-1) sign should be placed on the back of the rearmost protection vehicle.

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS RAISED PAVEMENT MARKER INSTALLATION/ REMOVAL

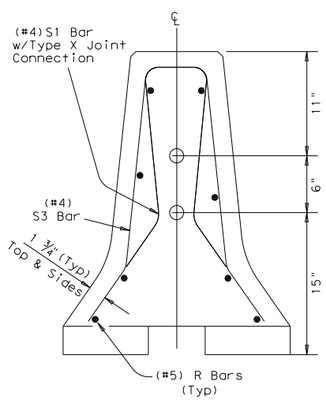
TCP(3-3)-14

FILE: tcp3-3.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT September 1987	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13				
1-97 7-14	SAT	BX / ME		55

177

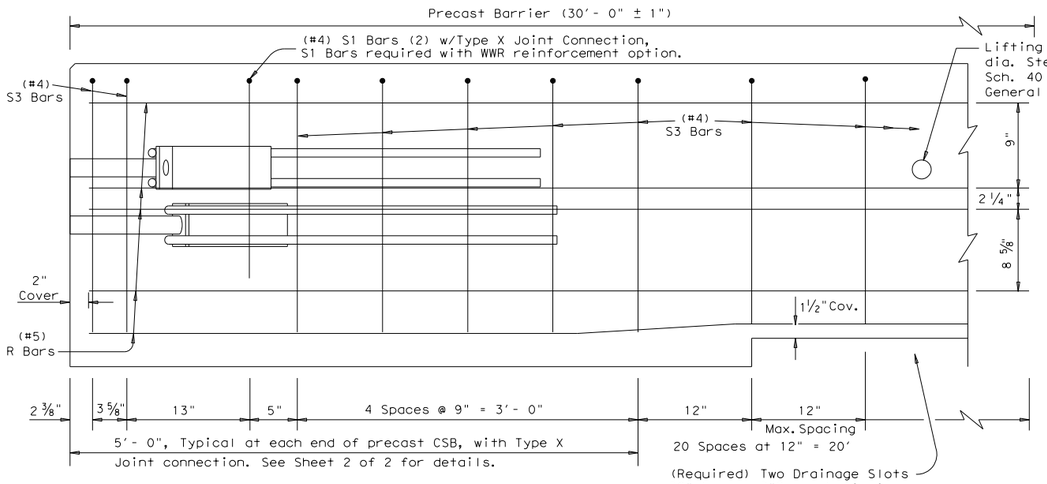
DATE: 1/22/2024 2:38:29 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\tcp3-3.dgn

DATE: 1/22/2024 2:38:31 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\csb110.dgn



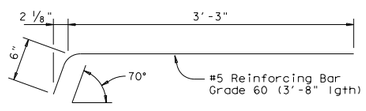
End View
Precast Barrier

See sheet 2 of 3 for Joint connection Type X



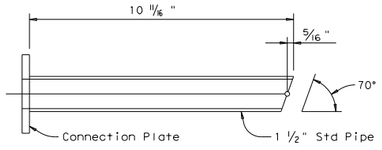
Reinforcement for Precast (CSB)
Concrete Safety Barrier (Type 1)

Showing reinforcement for Joint Type X



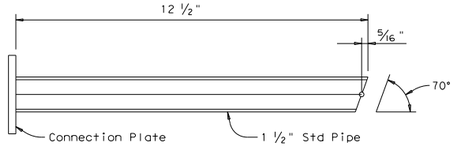
DEFORMED BAR ANCHOR DETAILS

Two (2) Bars required per assembly.
Eight (8) required per Joint.



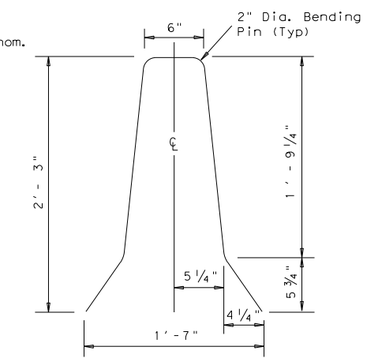
UPPER CONNECTION PIPE DETAILS

One (1) Steel Pipe required per Upper Assembly.
Two (2) required per Joint.

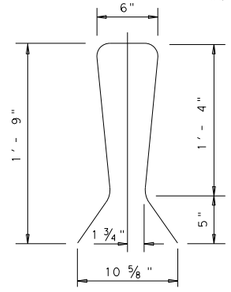


LOWER CONNECTION PIPE DETAILS

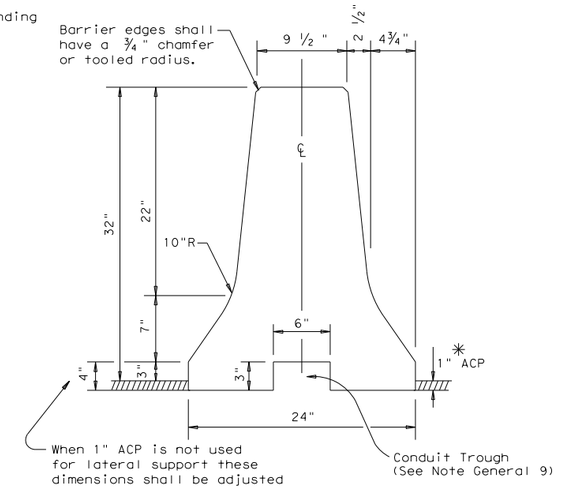
One (1) Steel Pipe required per Lower Assembly.
Two (2) required per Joint.



S3 Bar
#4 Bar



S1 Bar
#4 Bar (2)
(Joint Type X)

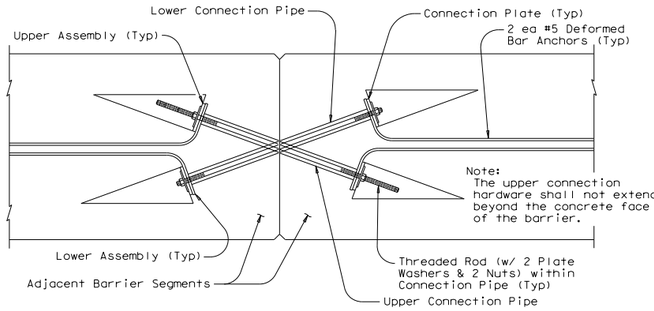


Concrete Safety Barrier

✳ When 1" ACP is "not" used as lateral support for permanent barrier placement. A permissible method of attaining the equivalent lateral support may be used, See CSB(6) sheet.

GENERAL NOTES

1. Concrete shall be Class H with a minimum compressive strength of 3,600 psi.
2. Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
3. Precast barrier length shall be 30 ft. unless otherwise specified on the plans.
4. All precast barrier edges shall have a 3/4" chamfer or tooled radius.
5. All concrete, reinforcement, joint connection systems, grout etc. as shown, are considered as part of the barrier payment.
6. All steel assemblies for joint shall be galvanized after fabrication in accordance with Item 445, "Galvanizing."
7. Regardless of the method of handling, barrier lifting points shall be approx. 7.5 feet from the ends of the barrier. Lifting devices and attachments to barrier sections shall be approved by the Engineer.
8. Surface finishing and grouting (where required) shall be two parts sand one part cement with enough water to make the mixture plastic. Grouting shall be done in a manner that will assure a smooth surface. Surface finishing shall be considered subsidiary to the various bid items involved.
9. Conduit trough when required shall be shown elsewhere on the plans, or as directed by the Engineer.



TYPE X JOINT INSTALLATION DETAIL

Barrier reinforcing and Type X Joint Leave-Out dimensions not shown for clarity.

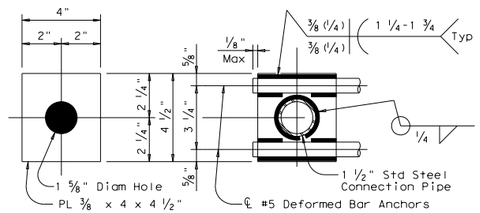
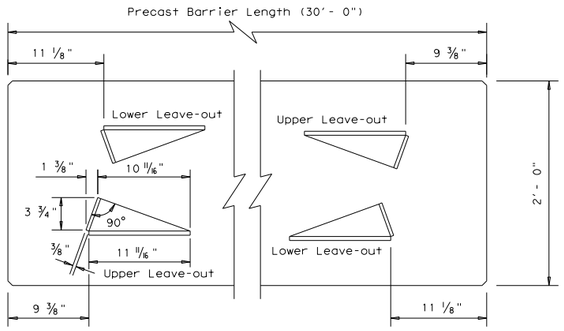


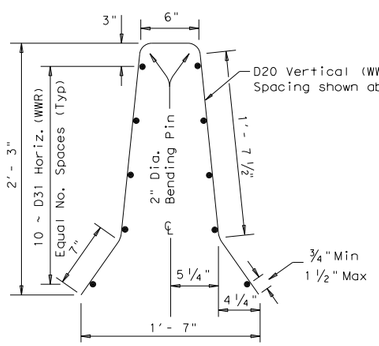
PLATE DIMENSIONS WELDING DETAILS

CONNECTION PLATE DETAILS

One (1) Plate required per assembly.
Four (4) required per Joint. All steel fittings for joint Type X shall be galvanized after fabrication in accordance with Item 445.



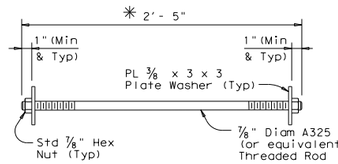
BARRIER PLAN AT END JOINTS



Welded Wire Reinforcement
(WWR) Option for Bars R and S3

(WWR) General Notes

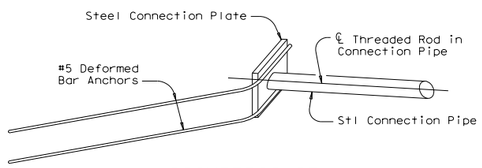
1. Deformed Welded Wire Reinforcement (WWR) shall conform to ASTM A497.
2. Welded wire cage may be cut or bent to accommodate the Type X joint connection and drainage slots, as directed by the Engineer.
3. All reinforcement shall comply with Item 440, "Reinforcing Steel."
4. Combinations of reinforcing steel and WWR will be permitted, as directed by the Engineer. The dimension from the end of the barrier section to the first wire shall not exceed 3".



CONNECTION BOLT OR THREADED ROD DETAIL

Two (2) Threaded Rods (Or Equivalent Hex Hd. Bolts)
(w/ Two (2) PL 3/8 x 3 x 3 Plate Washers & Two (2) Std Hex Nuts) required per Joint.

✳ The connection hardware shall not extend beyond the concrete face of the barrier. Hex head bolts may be provided. The proper length of all hardware should be verified.



ISOMETRIC OF TYPICAL WELDED ASSEMBLY

Four (4) [2 Upper & 2 Lower] Assemblies required per Joint.

Weight of one Precast 30 ft. (CSB) segment = Approx. 6.5 Tons or 440 lbs per ft.

SHEET 1 OF 2

Texas Department of Transportation | Design Division Standard

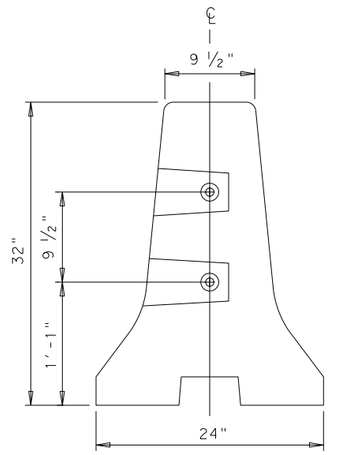
CONCRETE SAFETY BARRIER (F-SHAPE)

PRECAST BARRIER (TYPE 1)

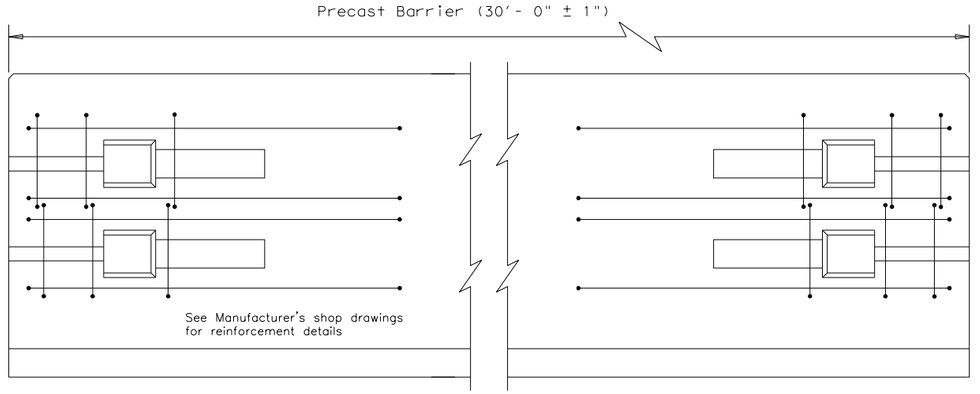
CSB(1)-10

FILE: csb110.dgn	DN: TxDOT	CK: AM	DW: BD	CK: VP
©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		56

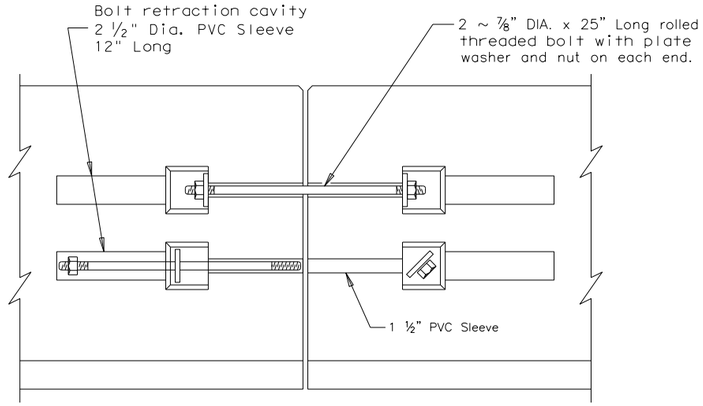
DATE: 1/22/2024 2:38:31 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\csb110.dgn



END VIEW (CSB) QUICK-BOLT
QUICK-BOLT POCKET LOCATIONS

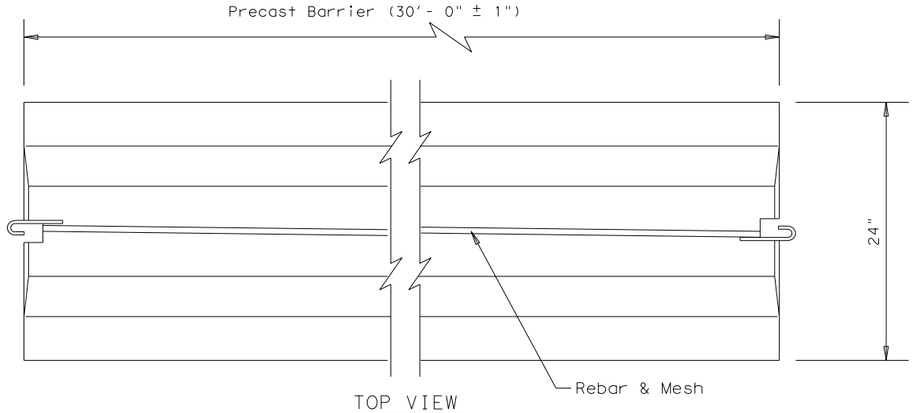


ELEVATION (CSB) QUICK-BOLT
See Manufacturer's shop drawing for additional details

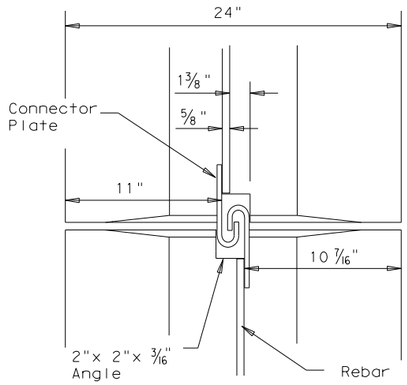


ELEVATION VIEW SHOWING JOINT CONNECTION
"QUICK-BOLT"

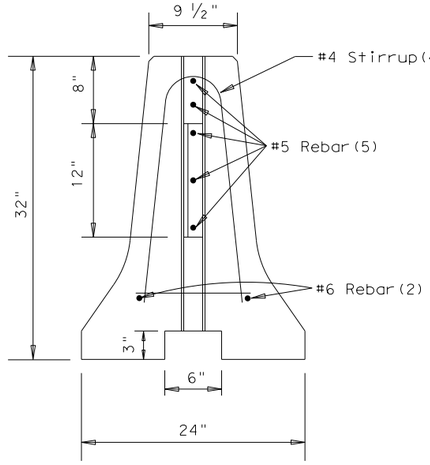
Joint Connection (Type Q)



TOP VIEW
PRECAST (CSB) WITH J-J HOOKS
See Manufacturer's shop drawing for additional details



VIEW FROM ABOVE
J-J HOOK CONNECTION



END VIEW
J-J HOOK CONNECTION

Joint Connection (Type J)

Proprietary Joint Connections (CSB)
Two proprietary joint connections are acceptable as alternates to the (Type X) connection shown, here on. These joint connections types are: J-J Hooks by Easi-Set Industries, (800)547-4045 Quick-Bolt by Bexar Concrete, (210)497-3773 If one of these connection systems are exclusively specified in the plans, prior approval for sole source use must be obtained. Details of the connection components and barrier reinforcement for these systems, will be shown on the manufacturer's shop drawing(s) furnished to the Engineer.

Texas Department of Transportation | Design Division Standard

CONCRETE SAFETY BARRIER (F-SHAPE)

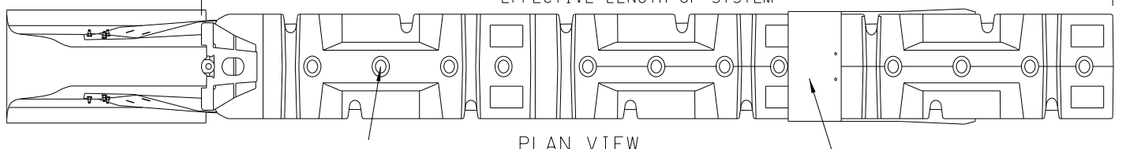
PRECAST BARRIER
(TYPE 1)

CSB(1)-10

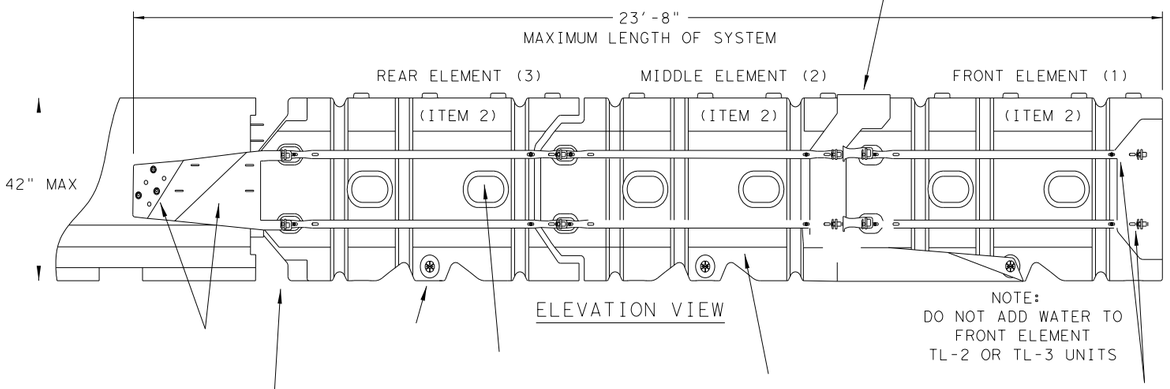
FILE: csb110.dgn	DN: TxDOT	CK: AM	DW: BD	CK: VP
©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		57

DATE: 1/22/2024
FILE: P:\122\85\04\Design\Civil\Standards\TCP\absorbm19.dgn

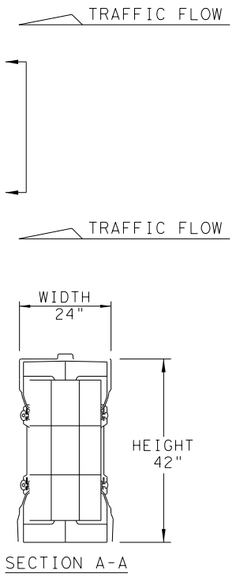
SYSTEM SHOWN - ABSORB-M TL-3



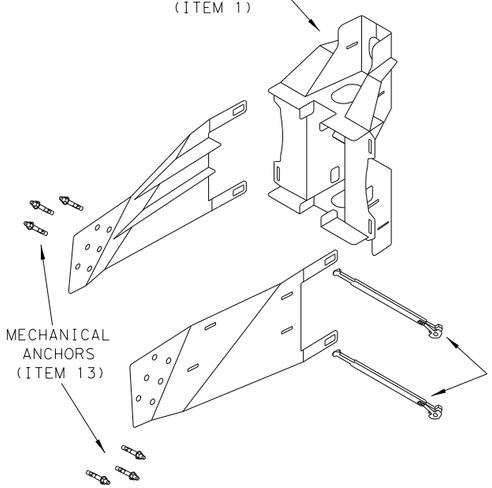
PLAN VIEW



ELEVATION VIEW



SECTION A-A



TEST LEVEL	NUMBER OF ELEMENTS	EFFECTIVE LENGTH	MAXIMUM LENGTH
TL-2	2	14'- 7 3/4"	17'- 4"
TL-3	3	20'- 11 3/4"	23'- 8"

GENERAL NOTES

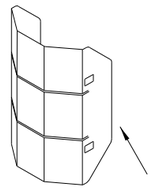
1. FOR SPECIFIC INFORMATION REGARDING THE INSTALLATION AND TECHNICAL GUIDANCE, CONTACT: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800. 180 RIVER ROAD, RIO VISTA, CA 94571
2. THE ABSORB-M SYSTEM IS ONLY APPROVED FOR USE IN (TEMPORARY WORK ZONE) LOCATIONS.
3. THE ABSORB-M IS A WATER FILLED NON-REDIRECTIVE, GATING CRASH CUSHION THAT DOES NOT NEED TO BE ATTACHED TO A FOUNDATION AND CAN BE INSTALLED ON TOP OF CONCRETE, ASPHALT, OR ANY SURFACE CAPABLE OF BEARING THE WEIGHT OF THE SYSTEM.
4. MAXIMUM PERMISSIBLE CROSS-SLOPE IS 8%.
5. THE INSTALLATION AREA SHOULD BE FREE FROM CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
6. THE ABSORB-M SHOULD BE LOCATED APPROXIMATELY PARALLEL WITH THE BARRIER.
7. THE USE OF THE ABSORB-M IS RESTRICTED TO A BARRIER HEIGHT OF UP TO 42 INCHES.
8. DO NOT ADD WATER TO FRONT ELEMENT (TL-2 OR TL-3 UNIT).

BILL OF MATERIALS (BOM) ABSORB-M TL-3 & TL-2 SYSTEMS			QTY	QTY
ITEM #	PART NUMBER	PART DESCRIPTION	TL-2 SYSTEM	TL-3 SYSTEM
1	BSI-1809036-00	TRANSITION-(GALV)	1	1
* 2	BSI-1808002-00	PRE-ASSEMBLED ABSORBING (ELEMENTS)	2	3
* 3	BSI-4004598	FILL CAPS	8	12
* 4	BSI-4004599	DRAIN PLUGS	2	3
* 5	BSI-1809053-00	TENSION STRAP-(GALV)	8	12
* 6	BSI-2001998	C-SCR FH 3/8-16 X 1 1/2 GR5 PLT	8	12
* 7	BSI-2001999	C-SCR FH 3/8-16 X 1 GR5 PLT	8	12
8	BSI-1809035-00	MIDNOSE-(GALV)	1	1
9	BSI-1808014-00	NOSE PLATE	1	1
10	BSI-1809037-00	TRANSITION STRAP (LEFT-HAND)-(GALV)	1	1
11	BSI-1809038-00	TRANSITION STRAP (RIGHT-HAND)-(GALV)	1	1
12	BSI-1808005-00	PIN ASSEMBLY	8	10
13	BSI-2002001	ANC MECH 5/8-11X5 (GALV)	6	6
14	ABSORB-M	INSTALLATION AND INSTRUCTIONS MANUAL	1	1

* COMPONENTS PRE-ASSEMBLED WITH ELEMENT ASSEMBLY

DELINEATION DECAL PLACEMENT GUIDE

TRAFFIC FLOW LEFT-SIDE BARRIER | TRAFFIC FLOW BOTH-SIDE BARRIER | TRAFFIC FLOW RIGHT-SIDE BARRIER



NOSE PLATE

** NOTE: (PROVIDED BY OTHERS)
ENGINEER OR CONTRACTOR SHALL COORDINATE WITH THE MANUFACTURER FOR THE CORRECT DECAL PER TRAFFIC FLOW, LEFT, RIGHT OR BOTH-SIDES.

NOTE:
APPLY A HIGH REFLECTIVE DECAL TO THE NOSE PLATE. DELINEATION DECAL ORIENTATION IS SHOWN ON THE CONSTRUCTION PLAN SET AND SHALL BE IN ACCORDANCE WITH THE TEXAS MUTCD FOR (TRAFFIC CONTROL DEVICES). DECALs ARE AVAILABLE FOR TRAFFIC FLOW ON THE LEFT-SIDE, BOTH -SIDES AND RIGHT-SIDE.

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE ABSORB-M, IT IS NOT INTENDED TO REPLACE THE INSTALLATION INSTRUCTIONS MANUAL.

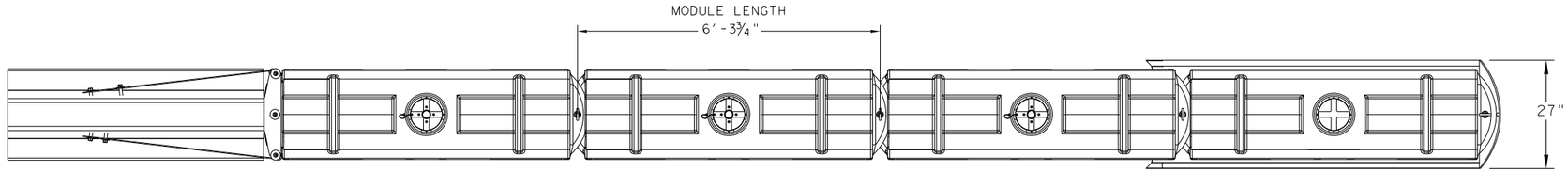
SACRIFICIAL

Texas Department of Transportation — Design Division Standard

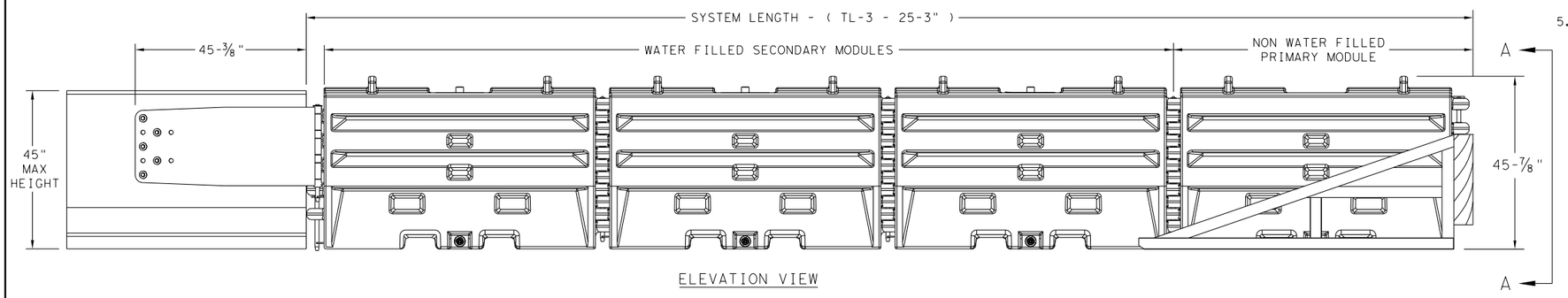
LINDSAY TRANSPORTATION SOLUTIONS
CRASH CUSHION
(MASH TL-3 & TL-2)
TEMPORARY - WORK ZONE
ABSORB(M)-19

FILE: absorbm19	DN: TxDOT	CK: KM	DW: VP	CK:
© TxDOT: JULY 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		58

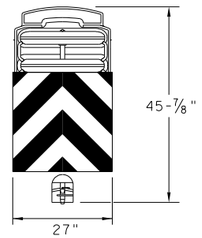
DATE: 1/22/2024
FILE: P:\122485\04\Design\Civil\Standards\TCP\sled19.dgn



PLAN VIEW



ELEVATION VIEW

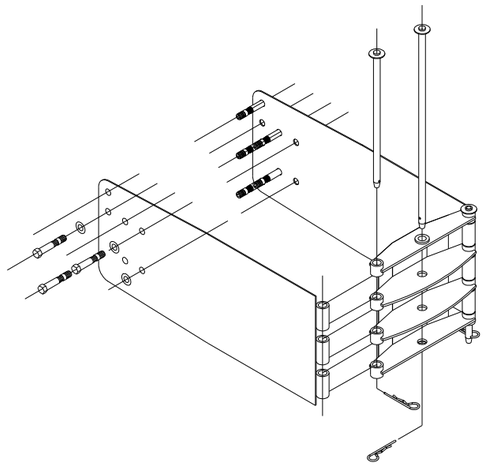


SECTION A-A

NOSE SHEETING PANEL DELINEATION

NOTE:
SEE INSTALLATION MANUAL FOR CUSTOMIZED DELINEATION NOSE SHEETING FOR DECAL PLACEMENT.

TEST LEVEL	NUMBER OF SECONDARY MODULES	SYSTEM LENGTH
TL-3	3	25' 3"



SLED TRANSITION COMPONENTS FOR ATTACHMENT TO CMB

NOTE:
SEE MANUFACTURER'S INSTALLATION MANUAL FOR FURTHER DETAILS.

TRANSITION OPTIONS
SLED TRANSITION TO CONCRETE TRAFFIC BARRIER (TEMPORARY OR PERMANENT)
SLED TRANSITION TO STEEL TRAFFIC BARRIER (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO PLASTIC TRAFFIC BARRIER (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO W-BEAM OR THRIE BEAM GUARD RAIL (CONTACT MFGR FOR PROPER TRANSITION)
SLED TRANSITION TO CONCRETE BRIDGE ABUTMENT

GENERAL NOTES

1. REFER TO THE INSTALLATION MANUAL FOR SPECIFIC SYSTEM ASSEMBLY AND MODULE ORIENTATION. FOR ADDITIONAL INFORMATION, CONTACT TRAFFIX, INC. AT (949) 361-5663.
2. THE SLED SYSTEM IS A MASH APPROVED TEST LEVEL 3 (TL-3) CRASH CUSHION APPROVED FOR USE IN TEMPORARY WORK ZONES. THE SLED SYSTEM IS A NON-REDIRECTIVE, GATING CRASH CUSHION THAT DOES NOT NEED TO BE ATTACHED TO THE GROUND AND CAN BE INSTALLED ON CONCRETE, ASPHALT, GRAVEL OR COMPACTED SOIL.
3. MAXIMUM PERMISSIBLE CROSS SLOPE IS 8° (DEGREES) (14%).
4. THE INSTALLATION AREA SHOULD BE FREE FROM CURBS, ELEVATED OBJECTS, OR DEPRESSIONS.
5. THE SLED SYSTEM CAN BE ATTACHED TO:

- CONCRETE BARRIER, TEMPORARY OR PERMANENT, 45" MAXIMUM HEIGHT
- STEEL BARRIER
- PLASTIC BARRIER
- CONCRETE BRIDGE ABUTMENTS
- W-BEAM GUARD RAIL
- THRIE BEAM GUARD RAIL

BILL OF MATERIAL		
PART NUMBER	DESCRIPTION	QTY: TL-3
45131	TRANSITION FRAME, GALVANIZED	1
45150	TRANSITION PANEL, GALVANIZED	2
45147-CP	TRANSITION SHORT DROP PIN W/ KEEPER PIN, GALVANIZED	2
45148-CP	TRANSITION LONG DROP PIN W/ KEEPER PIN, GALVANIZED	1
45050	ANCHOR BOLTS	9
12060	WASHER, 3/4" ID X 2" OD	9
45044-Y	SLED YELLOW WATER FILLED MODULE	3
45044-YH	SLED YELLOW "NO FILL" MODULE	1
45044-S	CIS (CONTAINMENT IMPACT SLED), GALVANIZED	1
45043-CP	T-PIN W/ KEEPER PIN	4
18009-B-I	FILL CAP W/ "DRIVE BY" FLOAT INDICATOR	3
45033-RC-B	DRAIN PLUG	3
45032-DPT	DRAIN PLUG REMOVAL TOOL	1

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE SLED, IT IS NOT INTENDED TO REPLACE THE INSTALLATION INSTRUCTIONS MANUAL.

SACRIFICIAL

Texas Department of Transportation

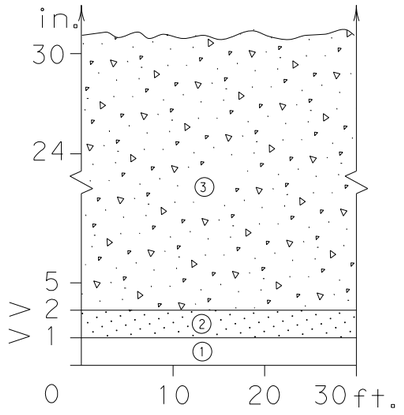
Design Division Standard

SLED
CRASH CUSHION
TL-3 MASH COMPLIANT
(TEMPORARY, WORK ZONE)
SLED-19

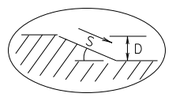
FILE: sled19.dgn	DN: TxDOT	CK: KM	DW: VP	CK:
©TxDOT: DECEMBER 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		59

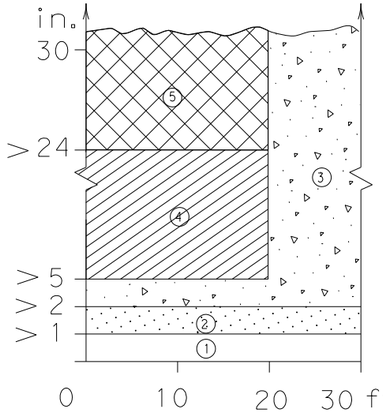
DEFINITION OF TREATMENT ZONES FOR VARIOUS EDGE CONDITIONS

Edge Height (D) in Inches versus Lateral Clearance (Y) in Feet

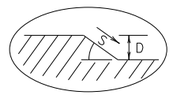


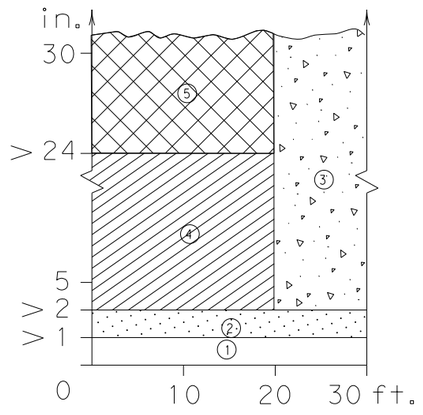
Edge Condition I
S = (3:1) (or flatter)



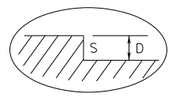


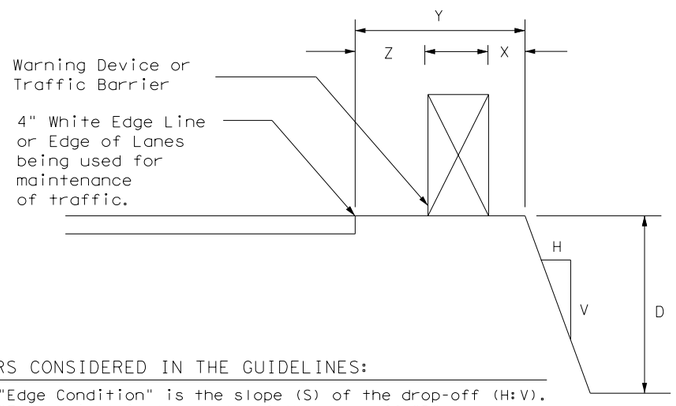
Edge Condition II
S = ((2.99):1) to (1:1)





Edge Condition III
S is steeper than (1:1)





FACTORS CONSIDERED IN THE GUIDELINES:

1. The "Edge Condition" is the slope (S) of the drop-off (H:V). The "Edge Height is the depth of the drop-off "D".

2. Distance "X" is to be the maximum practical under job conditions. Two feet minimum for high speed conditions. Distance "Y" is the lateral clearance from edge of travel lane to edge of dropoff. Distance "Z" does not have a minimum.

3. In addition to the factors considered in the guidelines, each construction zone drop-off situation should be analyzed individually, taking into account other variables, such as: traffic mix, posted speed in the construction zone, horizontal curvature, and the practicality of the treatment options.

4. The conditions for indicating the use of positive or protective barriers are given by Zone-5 and Figure-1. Traffic barriers are primarily applicable for high speed conditions. Urban areas with speeds of 30 mph or less may have a lesser need for signing, delineation, and barriers. Right-angled edges, however, with "D" greater than 2 inches and located within a lateral offset of 6 feet, may indicate a higher level of treatment.

5. If the distance "Y" must be less than 3 feet, the use of a positive barrier may not be feasible. In such a case, consider either: 1) narrowing the lanes to a desired 11 to 12 feet or 10 foot minimum (see CW20-8 sign), or 2) provide an edge slope such as Edge Condition I.

Zone	Treatment Types Guidelines:
①	No treatment
②	CW 8-11 "Uneven Lanes" signs.
③	CW 8-9a Shoulder Drop-Off" or CW 8-11 signs plus vertical panels.
④	CW8-9a or CW 8-11, signs plus drums. Where restricted space precludes the use of drums, use vertical panels. An edge slope to that of the profered Edge Condition I.
⑤	Check indications (Figure-1) for possitive barrier. Where positive barrier is not indicated, the treatment shown above for Zone-4 may be used after consideration of other applicable factors.

Edge Condition Notes:

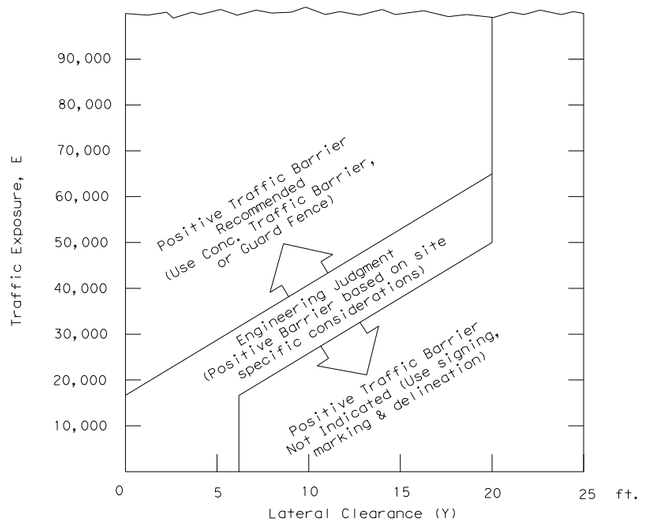
1. Edge Condition I: Most vehicles are able to traverse an edge condition with a slope rate of (3 to 1) or flatter. The slope must be constructed with a compacted material capable of supporting vehicles.

2. Edge Condition II: Most vehicles are able to traverse an edge condition with a slope between (2.99 to 1) and (1 to 1) so long as "D" does not exceed 5 inches. Under-carriage drag on most automobiles will occur when "D" exceeds 6 inches. As "D" exeeds 24 inches, the possibility for rollover is greater in most vehicles.

3. Edge Condition III: When slopes are greater than (1 to 1) and where "D" is greater than 2 inches, a more difficult control factor may exist for some vehicles, if not properly treated. For example, where "D" is greater than 2 inches and up to 24 inches different types of vehicles may experience different steering control at different edge heights. Automobiles might experience more steering control differential when "D" is greater than 2 inches and up to 5 inches. Trucks, particularly those with high loads, have more steering control differential when "D" is greater than 5 inches and up to 24 inches. When "D" exceeds 24 inches, the possibility of rollover is greater for most vehicles.

4. Milling or overlay operations that result in Edge Condition III should not be in place without appropriate warning treatments, and these conditions should not be left in place for extended periods of time.

FIGURE-1: CONDITIONS INDICATING USE OF POSITIVE BARRIER FOR ZONE 5 (▨)



1. E = ADT x T
   Where ADT is that portion of the average daily traffic volume traveling within 20 feet (generally two adjacent lanes) of the edge dropoff condition; and, T is the duration time in years of the dropoff condition.

2. Figure-1 provides a practical approach to the use of positive barriers for the protection of vehicles from pavement drop-offs. Other factors, such as the presence of heavy machinery, construction workers, or the mix and volume of traffic may make the use of positive barriers appropriate, even when the edge condition alone may not justify the use of a barrier.

3. An approved end treatment should be provided for any positive barrier end located within the clear zone.

These guidelines apply to temporary traffic control areas or work zones where continuous pavement edges or drop-offs exists parallel and adjacent to a lane used by traffic. The edge conditions may be present between shoulders and travel lanes, between adjacent or opposing travel lanes, or at intermediate points across the width of the paved surface. Due to the variability in construction operations, tolerances in the variables may be allowed by the engineer. These guidelines do not apply to short term operations. These guidelines do not constitute a rigid standard or policy; rather, they are guidance to be used in conjunction with engineering judgement. These guidelines may be updated on the Design Division's on-line manuals.

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

Texas Department of Transportation

Traffic Safety Division Standard

TREATMENT FOR VARIOUS EDGE CONDITIONS

FILE: edgecon.dgn	DN:	CK:	DW:	CK:
©TxDOT August 2000	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
03-01 08-01 9-21	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		60

DATE: 1/22/2024 2:38:35 PM
FILE: P:\122X85\04\Design\Civil\Standards\TCP\edgecon-21.dgn

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). The Texas Department of Transportation (TxDOT) ensures that project specifications include adequate best management practices (BMPs) for this project.

This SWP3 is consistent with requirements specified in applicable stormwater plans and the projects environmental permits, issues, and commitments (EPICs). A copy of the CGP is included in Attachment 2.12 of the SWP3 binder.

1.0 SITE/PROJECT DESCRIPTION

1.1 PROJECT CONTROL SECTION JOB (CSJ):

1.2 PROJECT LIMITS:

From: 0.63 MILES NORTH OF TAMARON VALLEY (0.11 MILES WEST OF SH 211)

To: 1.03 MILES NORTH OF TAMARON VALLEY (0.03 MILES EAST OF SH 211)

1.3 PROJECT COORDINATES:

BEGIN: (Lat) -98.80267 (-98.80803) ,(Long) 29.48490 (29.47617)

END: (Lat) -98.80377 (-98.80547) ,(Long) 29.49037 (29.47570)

1.4 TOTAL PROJECT AREA (Acres): 6.16

1.5 TOTAL AREA TO BE DISTURBED (Acres): 4.04

1.6 NATURE OF CONSTRUCTION ACTIVITY:

ASPHALT WIDENING, FULL DEPTH RECONSTRUCTION, DRIVEWAYS, GRADING, DRAINAGE, SIGNS AND PAVEMENT MARKINGS

1.7 MAJOR SOIL TYPES:

Soil Type	Description
BRANYON CLAY	0 TO 1 PERCENT SLOPES
MONTELL CLAY	0 TO 1 PERCENT SLOPES

1.8 PROJECT SPECIFIC LOCATIONS (PSLs):

PSLs must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. PSLs may be identified during preconstruction meetings or during the construction process. Please choose from the options below:

- ☐ PSLs determined during preconstruction meeting
- ☒ PSLs determined during construction
- ☐ No PSLs planned for construction

Type	Sheet #s

All off-ROW PSLs required by the Contractor are the Contractor's responsibility. The Contractor shall secure all permits required by local, state, federal laws for off-ROW PSLs. The contractor shall provide diagrams, areas of disturbance, acreage, and BMPs for all off-ROW PSLs within one mile of the project.

1.9 CONSTRUCTION ACTIVITIES:

(Use the following list as a starting point when developing the Construction Activity Schedule and Ceasing Record in Attachment 2.5.)

- ☒ Mobilization
- ☒ Install sediment and erosion controls
- ☒ Blade existing topsoil into windrows, prep ROW, clear and grub
- ☒ Remove existing pavement
- ☒ Grading operations, excavation, and embankment
- ☒ Excavate and prepare subgrade for proposed pavement widening
- ☒ Remove existing culverts, safety end treatments (SETs)
- ☐ Remove existing metal beam guard fence (MBGF), bridge rail
- ☒ Install proposed pavement per plans
- ☒ Install culverts, culvert extensions, SETs
- ☐ Install mow strip, MBGF, bridge rail
- ☒ Place flex base
- ☒ Rework slopes, grade ditches
- ☐ Blade windrowed material back across slopes
- ☒ Revegetation of unpaved areas
- ☒ Achieve site stabilization and remove sediment and erosion control measures
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.10 POTENTIAL POLLUTANTS AND SOURCES:

- ☒ Sediment laden stormwater from stormwater conveyance over disturbed area
- ☒ Fuels, oils, and lubricants from construction vehicles, equipment, and storage
- ☒ Solvents, paints, adhesives, etc. from various construction activities
- ☐ Transported soils from offsite vehicle tracking
- ☒ Construction debris and waste from various construction activities
- ☐ Contaminated water from excavation or dewatering pump-out water
- ☐ Sanitary waste from onsite restroom facilities
- ☒ Trash from various construction activities/receptacles
- ☐ Long-term stockpiles of material and waste
- ☐

- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.11 RECEIVING WATERS:

Receiving waters must be depicted on the Environmental Layout Sheets in Attachment 1.2 of this SWP3. Include Segment # for receiving waters.

Tributaries	Classified Waterbody
MEDIO CREEK	MEDINA LAKE

* Add (*) for impaired waterbodies with pollutant in ().

1.12 ROLES AND RESPONSIBILITIES: TxDOT

- ☒ Development of plans and specifications
- ☒ Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- ☒ Post Construction Site Notice
- ☒ Submit NOI/CSN to local MS4
- ☒ Perform SWP3 inspections
- ☒ Maintain SWP3 records and update to reflect daily operations
- ☒ Complete and submit Notice of Termination to TCEQ
- ☒ Maintain SWP3 records for 3 years
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.13 ROLES AND RESPONSIBILITIES: CONTRACTOR

- ☒ Day To Day Operational Control
- ☐ Submit Notice of Intent (NOI) to TCEQ (≥5 acres)
- ☐ Post Construction Site Notice
- ☐ Submit NOI/CSN to local MS4
- ☒ Maintain schedule of major construction activities
- ☒ Install, maintain and modify BMPs
- ☐ Complete and submit Notice of Termination to TCEQ
- ☒ Maintain SWP3 records for 3 years
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

1.14 LOCAL MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) OPERATOR COORDINATION:

MS4 Entity

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

July 2023 Sheet 1 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.	SHEET NO.
6		61

STATE	STATE DIST.	COUNTY
TEXAS	SAT	BX / ME

CONT.	SECT.	JOB	HIGHWAY NO.
			SH 211

STORMWATER POLLUTION PREVENTION PLAN (SWP3):

2.0 BEST MANAGEMENT PRACTICES (BMPs) AND CONTROLS, INSPECTION, AND MAINTENANCE

The Contractor shall be the responsible party for implementing the BMPs described herein and for complying with the SWP3 for control of erosion and sedimentation during day-to-day operations. The Contractor shall implement changes to this SWP3 approved by TxDOT within the times specified in this SWP3 or the CGP.

2.1 EROSION CONTROL AND SOIL STABILIZATION BMPs:

T / P

- ☐ ☐ Protection of Existing Vegetation
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Soil Retention Blankets
- ☐ ☐ Geotextiles
- ☐ ☐ Mulching/ Hydromulching
- ☐ ☐ Soil Surface Treatments
- ☐ ☐ Temporary Seeding
- ☐ ☒ Permanent Planting, Sodding or Seeding
- ☐ ☐ Biodegradable Erosion Control Logs
- ☒ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Vertical Tracking
- ☐ ☐ Interceptor Swale
- ☐ ☐ Riprap
- ☐ ☐ Diversion Dike
- ☐ ☐ Temporary Pipe Slope Drain
- ☐ ☐ Embankment for Erosion Control
- ☐ ☐ Paved Flumes
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

2.2 SEDIMENT CONTROL BMPs:

T / P

- ☐ ☐ Biodegradable Erosion Control Logs
- ☐ ☐ Dewatering Controls
- ☐ ☐ Inlet Protection
- ☒ ☐ Rock Filter Dams/ Rock Check Dams
- ☐ ☐ Sandbag Berms
- ☒ ☐ Sediment Control Fence
- ☒ ☐ Stabilized Construction Exit
- ☐ ☐ Floating Turbidity Barrier
- ☐ ☐ Vegetated Buffer Zones
- ☐ ☐ Vegetated Filter Strips
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____
- ☐ ☐ Other: _____

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

Sediment control BMPs requiring design capacity calculations (See SWP3 Attachment 1.3.):

T / P

- ☐ ☐ Sediment Trap
  - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
  - ☐ 3,600 cubic feet of storage per acre drained
- ☐ ☐ Sedimentation Basin
  - ☒ Not required (<10 acres disturbed)
  - ☐ Required (>10 acres) and implemented.
    - ☐ Calculated volume runoff from 2-year, 24-hour storm for each acre of disturbed area
    - ☐ 3,600 cubic feet of storage per acre drained
  - ☐ Required (>10 acres), but not feasible due to:
    - ☐ Available area/Site geometry
    - ☐ Site slope/Drainage patterns
    - ☐ Site soils/Geotechnical factors
    - ☐ Public safety
    - ☐ Other: _____

2.3 PERMANENT CONTROLS:

(Coordinate post-construction BMPs with appropriate TxDOT maintenance sections.)

BMPs To Be Left In Place Post Construction:

Type	Stationing	
	From	To
SEEDING (SH 211)	544+90.33	565+69.64
SEEDING (TAMARON VALLEY)	9+00.00	16+60.96

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.4 OFFSITE VEHICLE TRACKING CONTROLS:

- ☐ Excess dirt/mud on road removed daily
- ☐ Haul roads dampened for dust control
- ☐ Loaded haul trucks to be covered with tarpaulin
- ☒ Stabilized construction exit
- ☐ Daily street sweeping
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.5 POLLUTION PREVENTION MEASURES:

- ☐ Chemical Management
- ☐ Concrete and Materials Waste Management
- ☐ Debris and Trash Management
- ☐ Dust Control
- ☐ Sanitary Facilities
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____
- ☐ Other: _____

2.6 VEGETATED BUFFER ZONES:

Natural vegetated buffers shall be maintained as feasible to protect adjacent surface waters. If vegetated natural buffer zones are not feasible due to site geometry, the appropriate additional sediment control measures have been incorporated into this SWP3.

Type	Stationing	
	From	To

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in Attachment 1.2 of this SWP3

2.7 ALLOWABLE NON-STORMWATER DISCHARGES:

- ☐ Fire hydrant flushings
- ☐ Irrigation drainage
- ☒ Pavement washwater (where spills or leaks have not occurred, and detergents are not used)
- ☒ Potable water sources
- ☒ Springs
- ☒ Uncontaminated groundwater
- ☒ Water used to wash vehicles or control dust
- ☒ Other allowable non-stormwater discharges as allowed by TPDES GP TXR150000.

2.8 DEWATERING:

2.9 INSPECTIONS:

2.10 MAINTENANCE:

Control measures shall be properly installed according to specifications. If it is determined that a BMP or control measure is not operating effectively, maintenance must be accomplished as soon as possible and before the next anticipated rain event, but in no case later than 7 calendar days after being able to access the site. Maintenance shall be performed by the Contractor as indicated on the Field Inspection and Maintenance Report Form 2118 and retained in Attachment 2.5 of this SWP3.

STORMWATER POLLUTION PREVENTION PLAN (SWP3)

July 2023 Sheet 2 of 2

Texas Department of Transportation

FED. RD. DIV. NO.	PROJECT NO.		SHEET NO.
6			62
STATE	STATE DIST.	COUNTY	
TEXAS	SAT	BX / ME	
CONT.	SECT.	JOB	HIGHWAY NO.
			SH 211

1/22/2024 2:38:39 PM
P:\122X85\04\Design\Civil\Standards\SW3P\epic(SAT).dgn

I. STORMWATER POLLUTION PREVENTION-CLEAN WATER ACT SECTION 402

Texas Pollutant Discharge Elimination System (TPDES) TXR 150000: Stormwater Discharge Permit or Construction General Permit (CGP) required for projects with 1 or more acres distrubed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

☐ No Action Required ☒ Required Action

Action No.

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

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

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

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

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

☒ No Permit Required

☐ Nationwide Permit (NWP) 14 - Pre-construction Notice (PCN) not Required

☐ Nationwide Permit 14 - PCN Required

☐ Individual 404 Permit Required

☐ Other Nationwide Permit Required: NWP# _____

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

1.

2.

3.

4.

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

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

III. CULTURAL RESOURCES

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

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

IV. VEGETATION RESOURCES

Preserve native vegetation to the extent practical. Contractor must adhere to Construction Specification Requirements Specs 162,164, 192, 193, 506, 730, 751, 752 in order to comply with requirements for invasive species, beneficial landscaping, and tree/brush removal commitments.

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

4.

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

☐ No Action Required ☒ Required Action

Action No.

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

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

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

2. See Item 5 in General Notes.

3.

4.

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

VI. HAZARDOUS MATERIALS OR CONTAMINATION ISSUES

General (applies to all projects):

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

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

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

Contact the Engineer if any of the follwing are detected:

* Dead or distressed vegetation (not identified as normal)
* Trash piles, drums, canister, barrels, etc.
* Undesirable smells or odors
* Evidence of leaching or seepage of substances

Hazardous Materials or Contamination Issues Specific to this Project:

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

Does the project involve the demolition of a span bridge?

☐ Yes ☒ No (No further action required)

If "Yes", a pre- demolition notification must be submitted to the Texas Department of State Health Services. The contractor shall contact TxDOT's Project Engineer 25 calendar days prior to the demolition of the bridges(s) on the project to assist with the notification.

VII. OTHER ENVIRONMENTAL ISSUES

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

☐ No Action Required ☒ Required Action

Action No.

1. IN THE EVENT THAT BURIED OBJECTS OR OBVIOUSLY AFFECTED SOILS AND/OR GROUNDWATER ARE ENCOUNTERED, EXCAVATION ACTIVITIES SHALL STOP AND AN ENVIROMENTAL PROFESSIONAL SHALL BE CALLED TO ASSES THE SOURCE OF THE HIGHLY AFFECTED AREA. THE ENVIRONMENTAL PROFFESIONAL WILL COLLECT A SAMPLE OF THE OBVIOUSLY AFFECTED SOILS AND/OR GROUNDWATER FOR LABORATORY ANALYSIS, AND DIRECT MANAGEMENT AND STAGING OF THE AFFECTED MEDIA. FOR THIS PROJECT, OBVIOUSLY AFFECTED SOILS WILL BE THOSE WITH SIGNIFICANT STAINING AND/OR PETROLEUM HYDROCARBON OR CHEMICAL ODOR, OR PRESENCE OF MUNICIPAL SOLID WASTE

2.

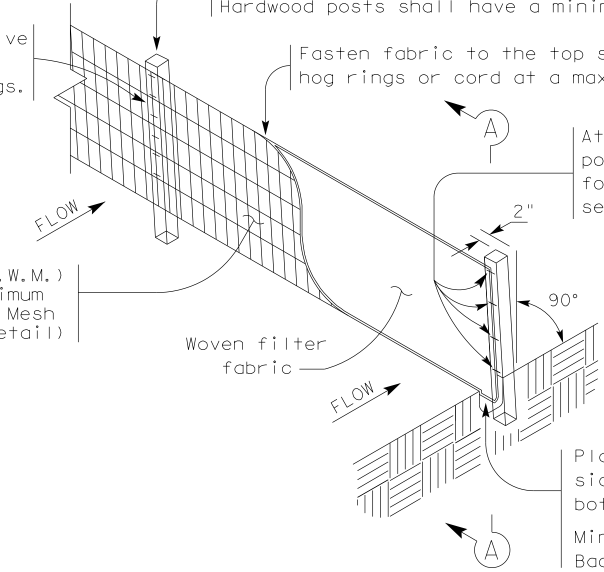
3.

Texas Department of Transportation
San Antonio District Standard

ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

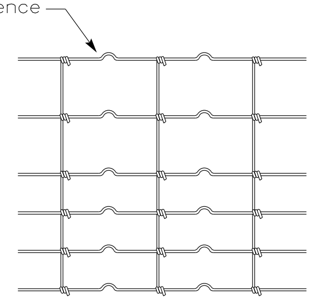
EPIC

FILE: epic_2015-10-09_SAT.dgn	DN: TxDOT	CK: TxDOT	DW: BW		CK: GAG
©TxDOT OCTOBER 2015	CONT	SECT	JOB	HIGHWAY	
REVISIONS				SH 211	
	DIST	COUNTY		SHEET NO.	
	SAT	BX / ME		63	



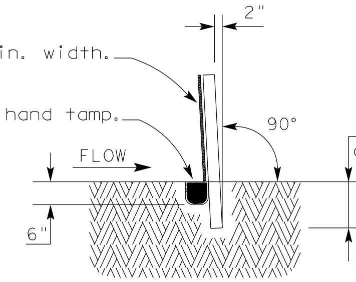
TEMPORARY SEDIMENT CONTROL FENCE

SCF



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.



SECTION A-A

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.

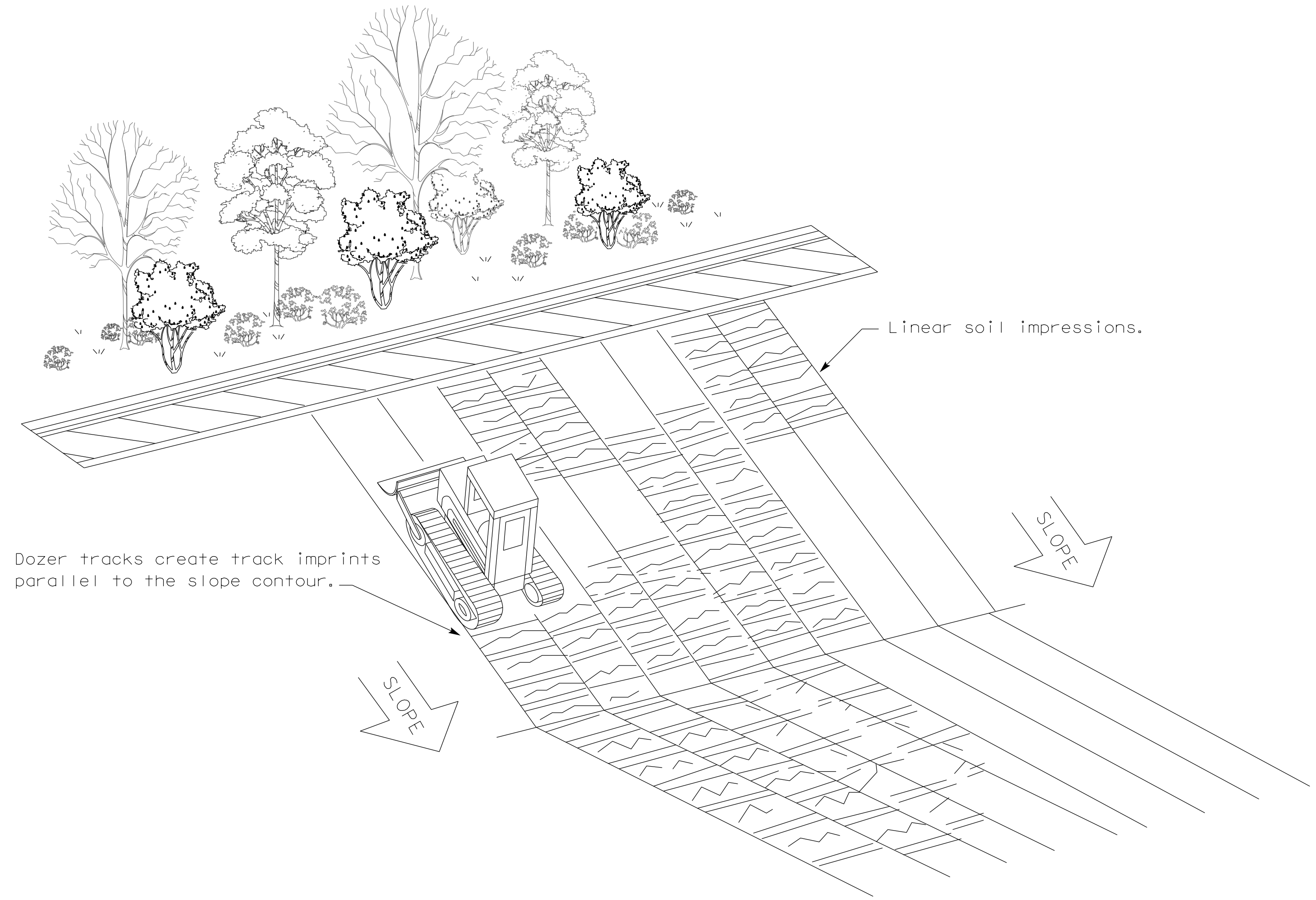
LEGEND

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

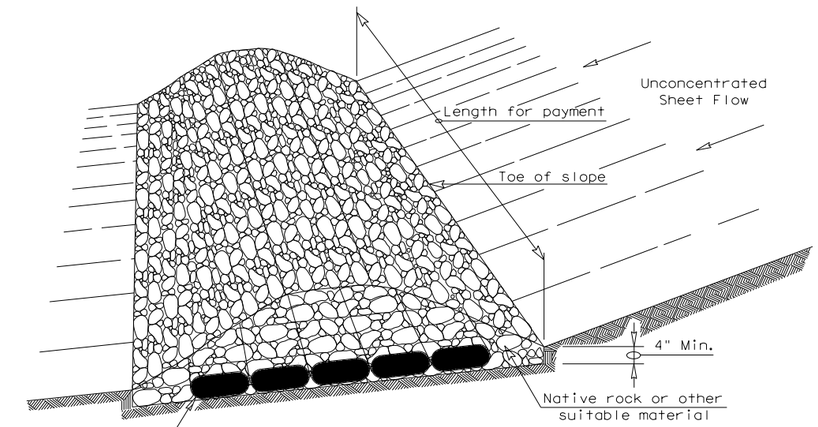
FENCE & VERTICAL TRACKING

EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		64

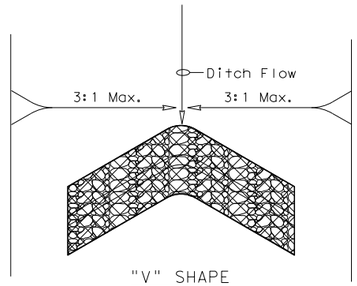
PF1122\85\04\Design\Civil\Standards\SW3P\ec116.dgn
10/22/2024

DATE: 1/22/2024
FILE: P:\122\85\04\Design\Civil\Standards\SW3P\ec216.dgn



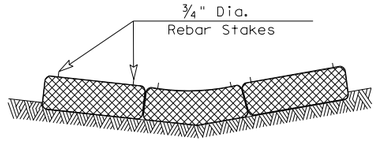
FILTER DAM AT TOE OF SLOPE

RFD1



"V" SHAPE
PLAN VIEW

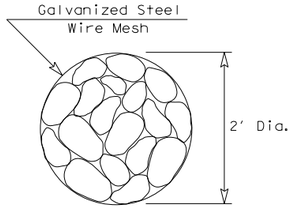
PLAN VIEW



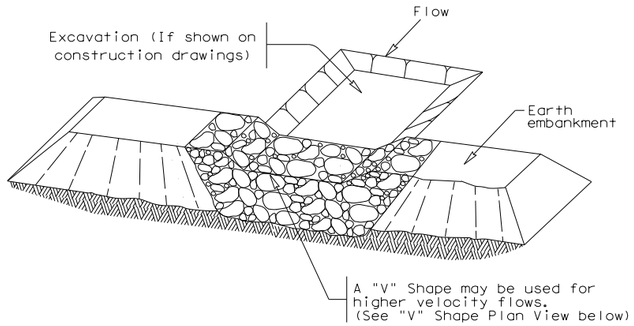
SECTION B-B

TYPE 4 (SACK GABIONS)

RFD4

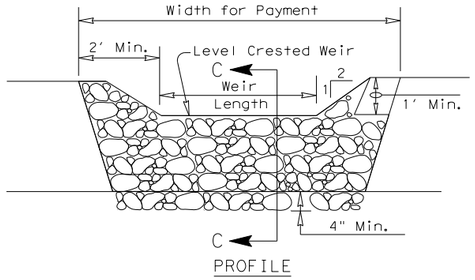


SECTION A-A

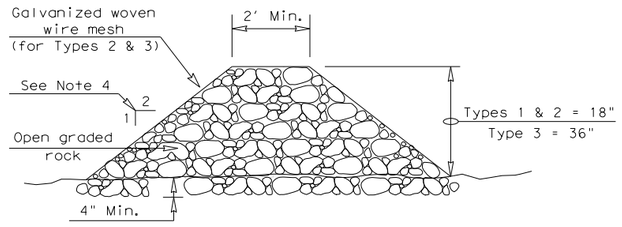


FILTER DAM AT SEDIMENT TRAP

RFD1 OR RFD2



PROFILE



SECTION C-C

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.

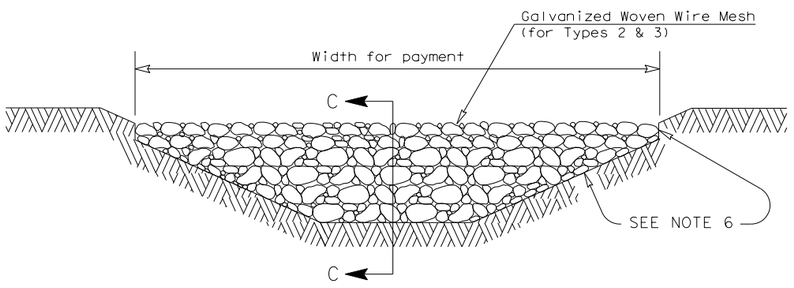
Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity 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.



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.

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

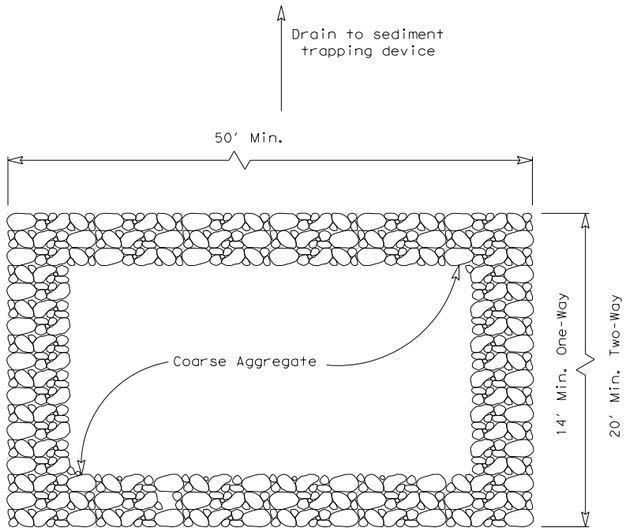
TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

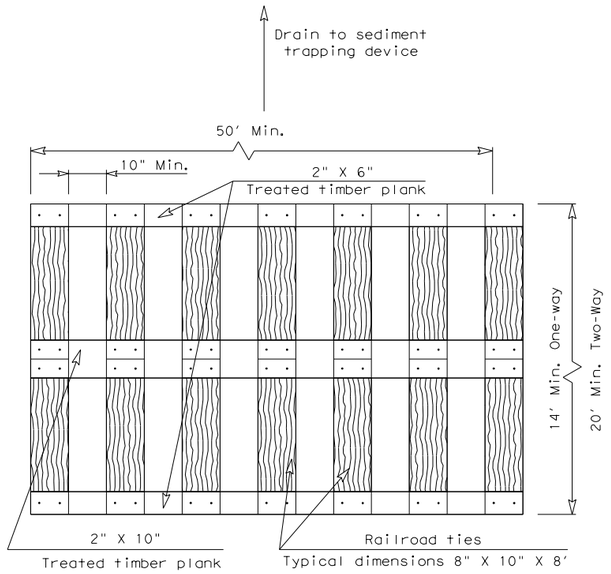
EC(2)-16

FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		65

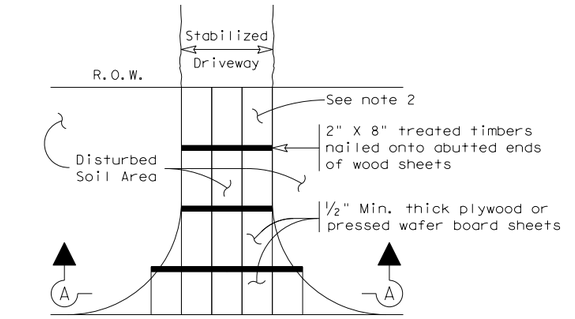
DATE: 1/22/2024
FILE: P:\122\85\04\Design\Civil\Standards\SW3P\ec316.dgn



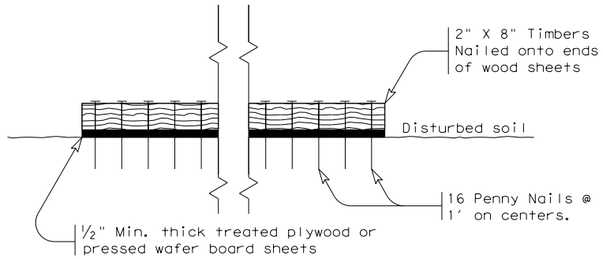
PLAN VIEW



PLAN VIEW



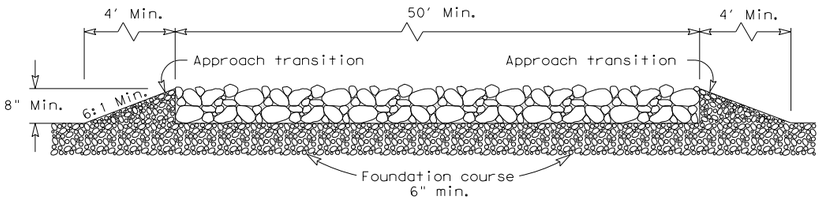
PLAN VIEW



SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

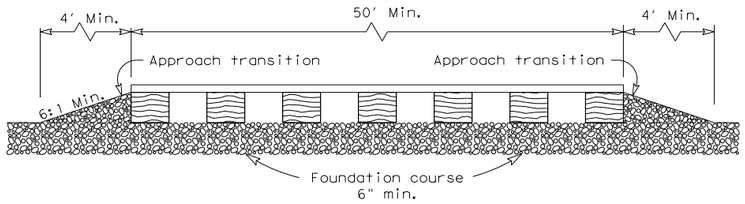
SHORT TERM



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				SH 211	
	DIST	COUNTY		SHEET NO.	
	SAT	BX / ME		66	

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\General\1228504_HALN_DATA.dgn

EXISTING ℄ SH 211

Chain SH211 contains:
CUR SH2111 SH21102

Beginning chain SH211 description

			Curve Data			
Curve SH2111			*----------*			
P.I. Station		544+03.51	N	13,725,901.14	E	2,031,761.27
Delta	=	31° 20′ 06.28"	(LT)			
Degree	=	2° 00′ 00.00"				
Tangent	=	803.51				
Length	=	1,566.75				
Radius	=	2,864.79				
External	=	110.55				
Long Chord	=	1,547.30				
Mid. Ord.	=	106.44				
P.C. Station		536+00.00	N	13,725,132.88	E	2,031,525.89
P.T. Station		551+66.75	N	13,726,679.75	E	2,031,562.78
C.C.			N	13,725,972.07	E	2,028,786.77
Back	= N 17° 02′ 01.03" E					
Ahead	= N 14° 18′ 05.25" W					
Chord Bear	= N 1° 21′ 57.89" E					

Course from PT SH2111 to SH21102 N 14° 18′ 05.25" W Dist 2,233.25

Point SH21102 N 13,728,843.78 E 2,031,011.12 Sta 574+00.00

Ending chain SH211 description

EXISTING ℄ CR 384/TAMARON VALLEY

Chain CR384 contains:
2 3

Beginning chain CR384 description

Point 2 N 13,723,101.40 E 2,029,658.55 Sta 5+00.00

Course from 2 to 3 S 68° 27′ 54.87" E Dist 2,000.00

Point 3 N 13,722,367.26 E 2,031,518.94 Sta 25+00.00

Ending chain CR384 description

℄ COLLECTOR RD

Chain COLLECTORRD contains:
COLLECTOR01 COLLECTOR02

Beginning chain COLLECTORRD description

Point COLLECTOR01 N 13,727,350.04 E 2,031,043.33 Sta 100+00.00

Course from COLLECTOR01 to COLLECTOR02 S 89° 54′ 47.39" E Dist 348.72

Point COLLECTOR02 N 13,727,349.51 E 2,031,392.04 Sta 103+48.72

Ending chain COLLECTORRD description

℄ EB01

Chain EB01 contains:
EB01 EB02

Beginning chain EB01 description

Point EB01 N 13,722,914.08 E 2,030,133.22 Sta 10+00.00

Course from EB01 to EB02 S 21° 32′ 05.13" W Dist 45.00

Point EB02 N 13,722,872.22 E 2,030,116.71 Sta 10+45.00

Ending chain EB01 description

EXISTING ℄ CR 3841/LEGEND FALLS

Chain CR3841 contains:
CR384101 CR384102 CR384103 CR384104

Beginning chain CR3841 description

Point CR384101 N 13,722,761.00 E 2,030,166.99 Sta 10+00.00

Course from CR384101 to CR384102 N 21° 32′ 05.13" E Dist 110.47

Point CR384102 N 13,722,863.76 E 2,030,207.53 Sta 11+10.47

Course from CR384102 to CR384103 N 23° 51′ 33.53" E Dist 39.53

Point CR384103 N 13,722,899.91 E 2,030,223.52 Sta 11+50.00

Course from CR384103 to CR384104 N 21° 32′ 17.51" E Dist 150.04

Point CR384104 N 13,723,039.47 E 2,030,278.60 Sta 13+00.03

Ending chain CR3841 description

℄ SIDEWALK

Chain SIDEWALK contains:
CUR SDWLK1 SDWLK02

Beginning chain SIDEWALK description

			Curve Data			
Curve SDWLK1			*----------*			
P.I. Station		10+48.38	N	13,722,755.61	E	2,030,465.59
Delta	=	84° 46′ 49.51"	(RT)			
Degree	=	108° 06′ 18.88"				
Tangent	=	48.38				
Length	=	78.42				
Radius	=	53.00				
External	=	18.76				
Long Chord	=	71.46				
Mid. Ord.	=	13.86				
P.C. Station		10+00.00	N	13,722,777.53	E	2,030,422.46
P.T. Station		10+78.42	N	13,722,710.67	E	2,030,447.68
C.C.			N	13,722,730.28	E	2,030,398.45
Back	= S 63° 03′ 37.03" E					
Ahead	= S 21° 43′ 12.48" W					
Chord Bear	= S 20° 40′ 12.27" E					

Course from PT SDWLK1 to SDWLK02 S 21° 08′ 48.96" W Dist 14.09

Point SDWLK02 N 13,722,697.53 E 2,030,442.60 Sta 10+92.51

Ending chain SIDEWALK description

℄ NB01

Chain NB01 contains:
NB01 NB02

Beginning chain NB01 description

Point NB01 N 13,727,338.34 E 2,031,394.89 Sta 10+00.00

Course from NB01 to NB02 N 87° 54′ 13.26" E Dist 191.35

Point NB02 N 13,727,345.34 E 2,031,586.12 Sta 11+91.35

Ending chain NB01 description

℄ EB02

Chain EB02 contains:
EB10 EB11

Beginning chain EB02 description

Point EB10 N 13,722,845.72 E 2,030,306.46 Sta 10+00.00

Course from EB10 to EB11 S 21° 32′ 05.13" W Dist 45.00

Point EB11 N 13,722,803.86 E 2,030,289.95 Sta 10+45.00

Ending chain EB02 description

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

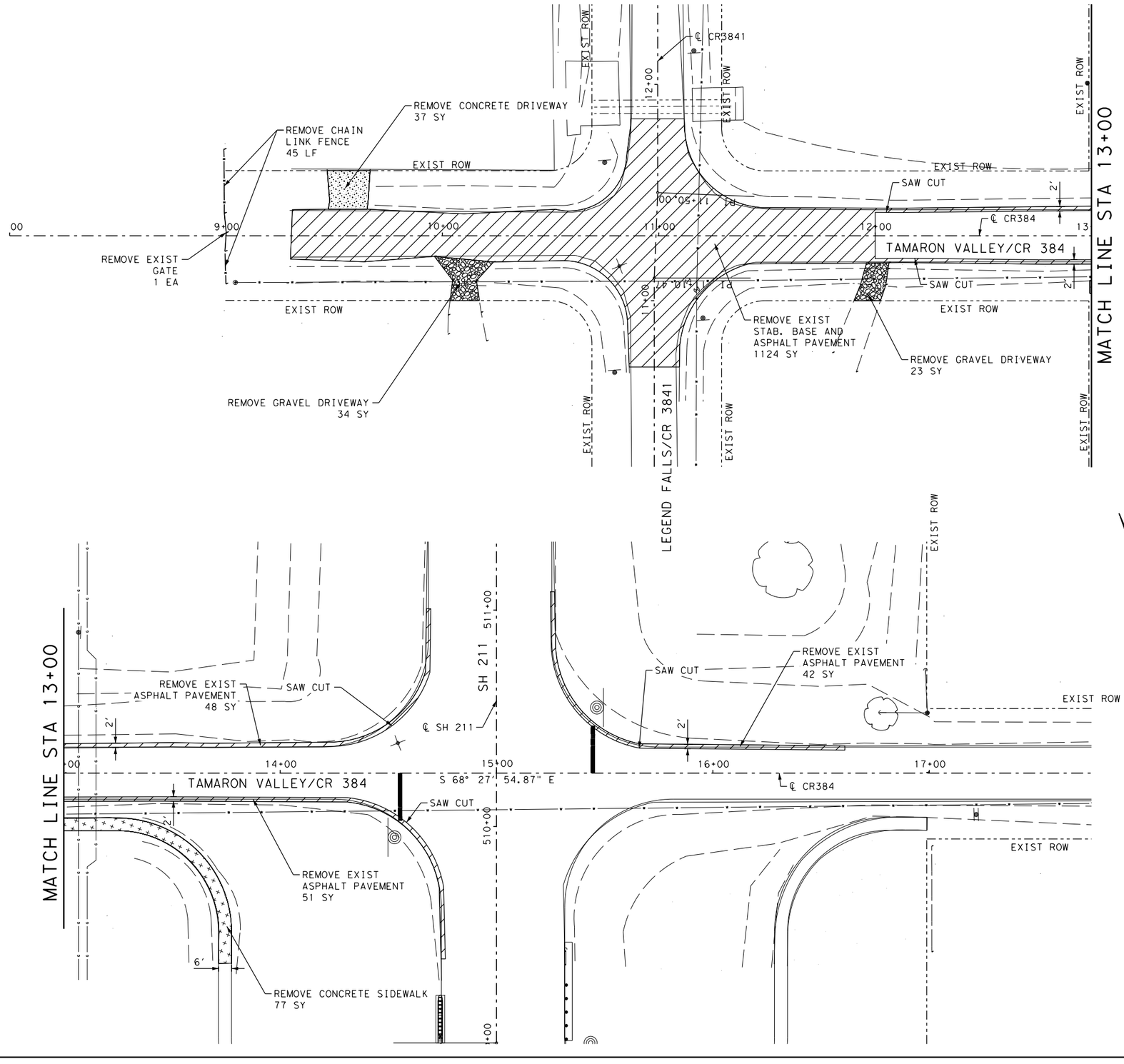
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

HORIZONTAL ALIGNMENT DATA

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 67



LEGEND

- STAB. BASE AND ASPHALT PAVEMENT REMOVAL
- ASPHALT DRIVEWAY PAVEMENT REMOVAL
- CONCRETE DRIVEWAY REMOVAL
- CONCRETE SIDEWALK REMOVAL
- GRAVEL DRIVEWAY REMOVAL
- CHAIN LINK FENCE REMOVAL
- GATE REMOVAL
- OH E — EXIST. OVERHEAD ELECTRIC LINE
- W — EXISTING WATER LINE
- G — EXISTING GAS LINE

NOTES

1. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL VEGETATION IN DIRECT CONFLICT WITH EARTHWORK LIMITS. NO SEPARATE PAY ITEM FOR TREE REMOVAL.
2. ALL APPLICABLE EROSION AND SEDIMENT CONTROL DEVICES SHALL BE IN PLACE PRIOR TO GROUND DISTURBING ACTIVITIES.
3. CALL THE TEXAS STATE WIDE ONE CALL LOCATOR NUMBER 1-800-344-8377, 48 HOURS BEFORE BEGINNING ANY EXCAVATION.
4. CONTRACTOR SHALL PROVIDE FOR ADEQUATE SAFETY SYSTEMS THAT COMPLY WITH, AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. EMPLOYEE OR SAFETY CONSULTANT SHALL DEVELOP AND IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
5. REFER TO ROADWAY SHEETS FOR DETAILED DIMENSIONS OF PROPOSED CONSTRUCTION.
6. REFER TO PROJECT LAYOUT FOR RIGHT OF WAY LOCATION ALONG CORRIDOR.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

REMOVAL PLAN

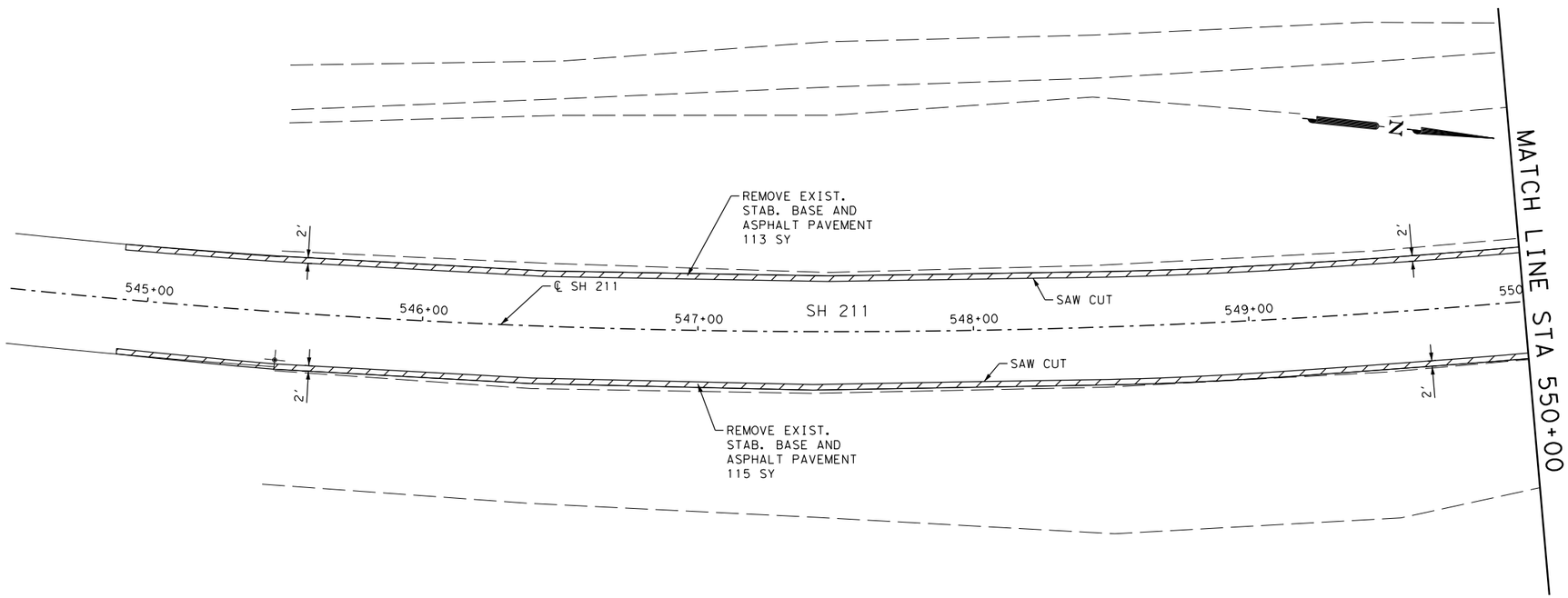
TAMARON VALLEY/CR384

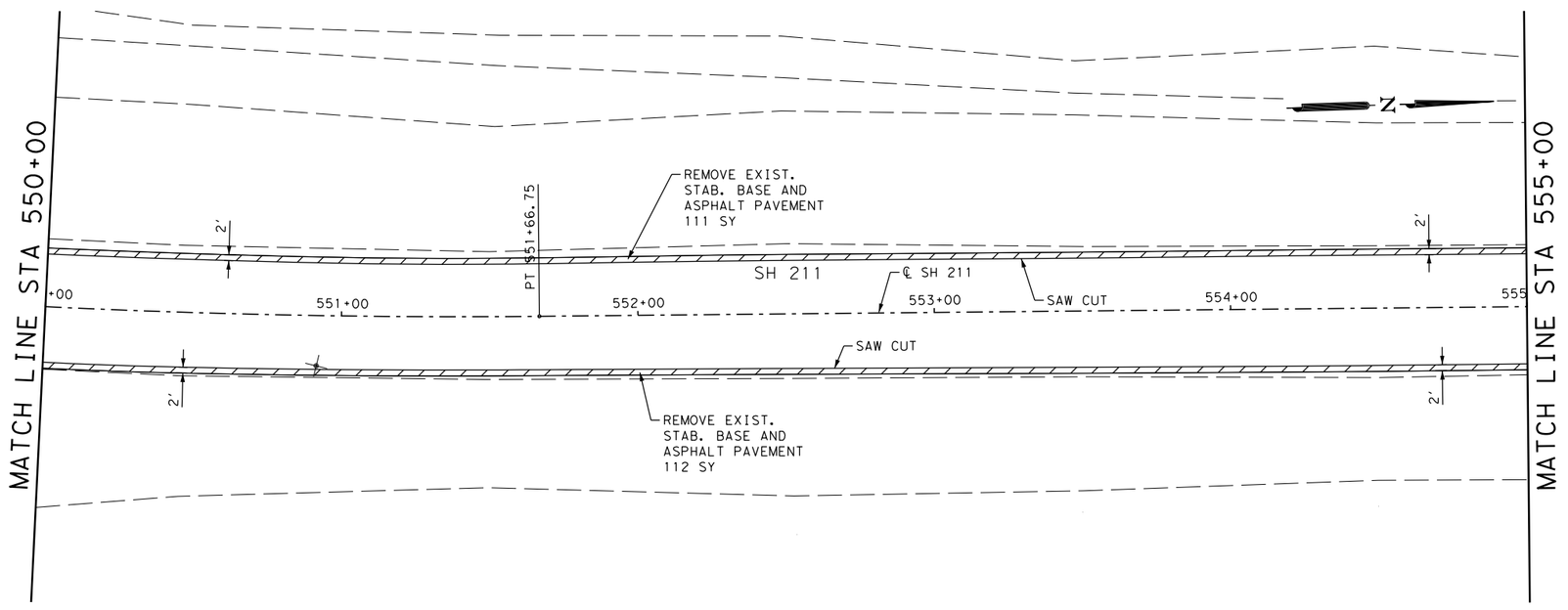
SHEET 1 OF 4

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 68

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\Roadway\RMVL\1228504_RMV04.dgn





LEGEND

STAB. BASE AND ASPHALT PAVEMENT REMOVAL

ASPHALT DRIVEWAY PAVEMENT REMOVAL

NOTES

1. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL VEGETATION IN DIRECT CONFLICT WITH EARTHWORK LIMITS. NO SEPARATE PAY ITEM FOR TREE REMOVAL.
2. ALL APPLICABLE EROSION AND SEDIMENT CONTROL DEVICES SHALL BE IN PLACE PRIOR TO GROUND DISTURBING ACTIVITIES.
3. CALL THE TEXAS STATE WIDE ONE CALL LOCATOR NUMBER 1-800-344-8377, 48 HOURS BEFORE BEGINNING ANY EXCAVATION.
4. CONTRACTOR SHALL PROVIDE FOR ADEQUATE SAFETY SYSTEMS THAT COMPLY WITH, AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. EMPLOYEE OR SAFETY CONSULTANT SHALL DEVELOP AND IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
5. REFER TO ROADWAY SHEETS FOR DETAILED DIMENSIONS OF PROPOSED CONSTRUCTION.
6. REFER TO PROJECT LAYOUT FOR RIGHT OF WAY LOCATION ALONG CORRIDOR.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

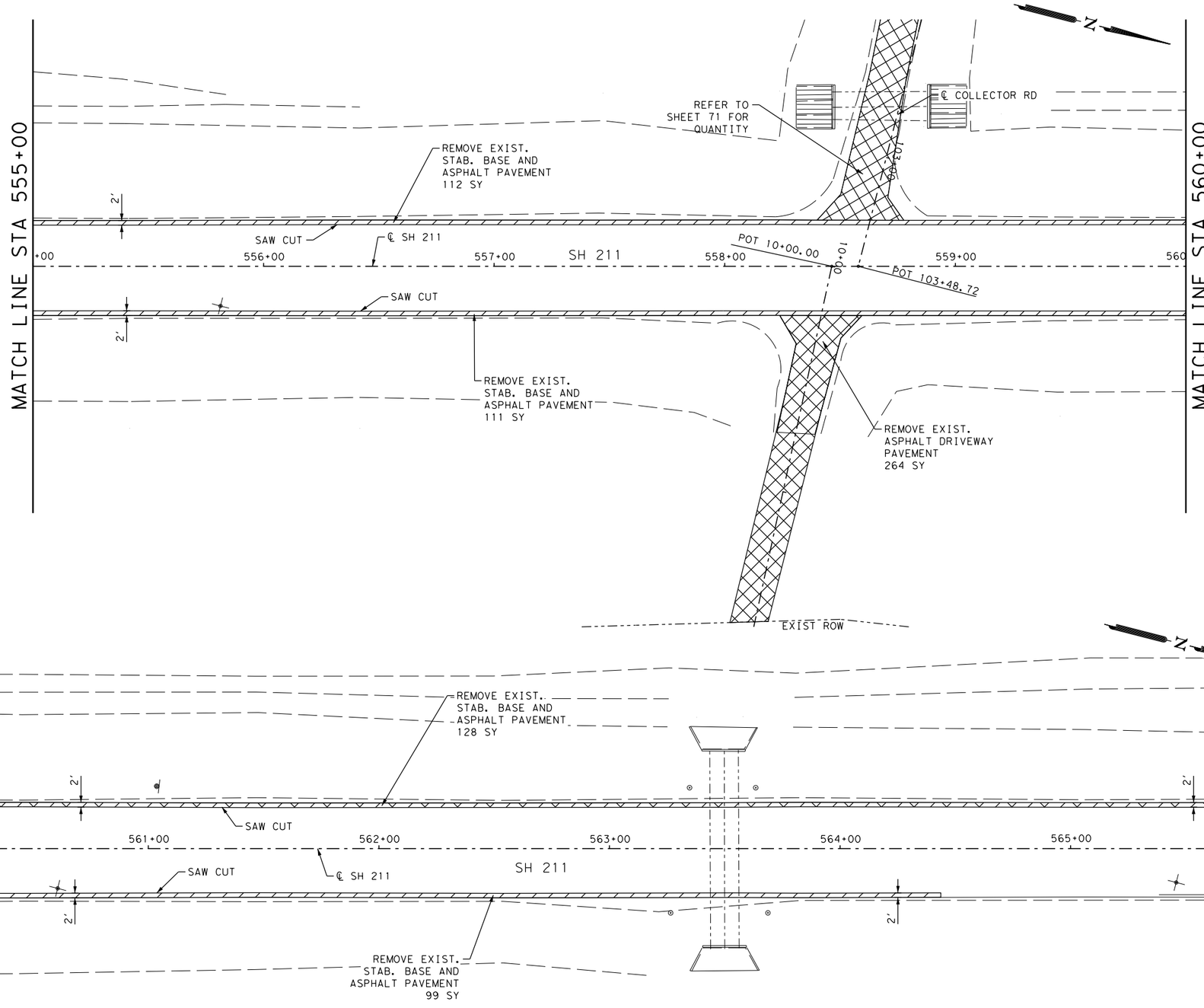
TALLEYHO IMPROVEMENTS

REMOVAL PLAN

BEGIN PROJECT TO STA 555+00

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 69

Plotted on: 1/22/2024
Design Filename: P:\122\85\04\Design\Civil\Roadway\RMVL\1228504_RMV01.dgn



LEGEND

- STAB. BASE AND ASPHALT PAVEMENT REMOVAL
- ASPHALT DRIVEWAY PAVEMENT REMOVAL

NOTES

1. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL VEGETATION IN DIRECT CONFLICT WITH EARTHWORK LIMITS. NO SEPARATE PAY ITEM FOR TREE REMOVAL.
2. ALL APPLICABLE EROSION AND SEDIMENT CONTROL DEVICES SHALL BE IN PLACE PRIOR TO GROUND DISTURBING ACTIVITIES.
3. CALL THE TEXAS STATE WIDE ONE CALL LOCATOR NUMBER 1-800-344-8377, 48 HOURS BEFORE BEGINNING ANY EXCAVATION.
4. CONTRACTOR SHALL PROVIDE FOR ADEQUATE SAFETY SYSTEMS THAT COMPLY WITH, AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. EMPLOYEE OR SAFETY CONSULTANT SHALL DEVELOP AND IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
5. REFER TO ROADWAY SHEETS FOR DETAILED DIMENSIONS OF PROPOSED CONSTRUCTION.
6. REFER TO PROJECT LAYOUT FOR RIGHT OF WAY LOCATION ALONG CORRIDOR.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

REMOVAL PLAN

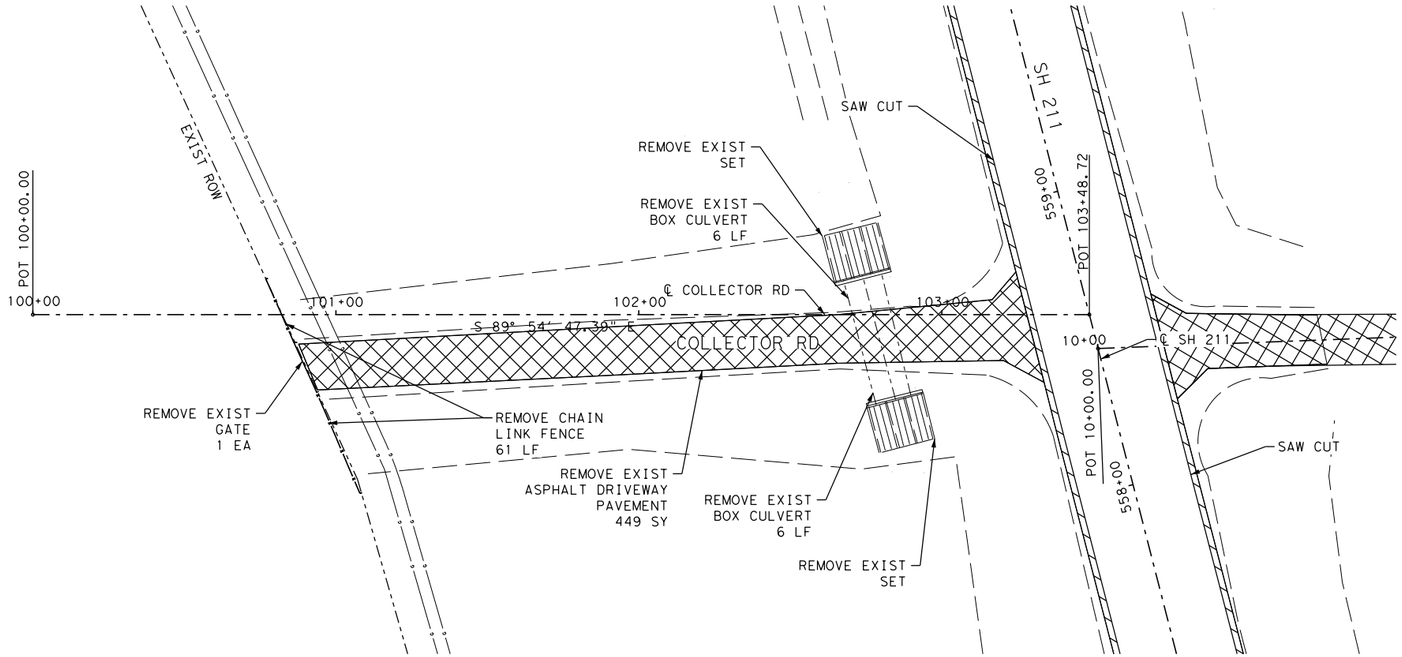
STA 555+00 TO END PROJECT

SHEET 3 OF 4

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 70

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\Roadway\RMVL\1228504_RMV02.dgn



N

LEGEND

- STAB. BASE AND ASPHALT PAVEMENT REMOVAL
- ASPHALT DRIVEWAY PAVEMENT REMOVAL
- CONCRETE DRIVEWAY REMOVAL
- CONCRETE SIDEWALK REMOVAL
- GRAVEL DRIVEWAY REMOVAL
- CHAIN LINK FENCE REMOVAL
- GATE REMOVAL
- OH E — EXIST. OVERHEAD ELECTRIC LINE
- W — EXISTING WATER LINE
- G — EXISTING GAS LINE

NOTES

1. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF ALL VEGETATION IN DIRECT CONFLICT WITH EARTHWORK LIMITS. NO SEPARATE PAY ITEM FOR TREE REMOVAL.
2. ALL APPLICABLE EROSION AND SEDIMENT CONTROL DEVICES SHALL BE IN PLACE PRIOR TO GROUND DISTURBING ACTIVITIES.
3. CALL THE TEXAS STATE WIDE ONE CALL LOCATOR NUMBER 1-800-344-8377, 48 HOURS BEFORE BEGINNING ANY EXCAVATION.
4. CONTRACTOR SHALL PROVIDE FOR ADEQUATE SAFETY SYSTEMS THAT COMPLY WITH, AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. EMPLOYEE OR SAFETY CONSULTANT SHALL DEVELOP AND IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
5. REFER TO ROADWAY SHEETS FOR DETAILED DIMENSIONS OF PROPOSED CONSTRUCTION.
6. REFER TO PROJECT LAYOUT FOR RIGHT OF WAY LOCATION ALONG CORRIDOR.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

REMOVAL PLAN

COLLEGE RD

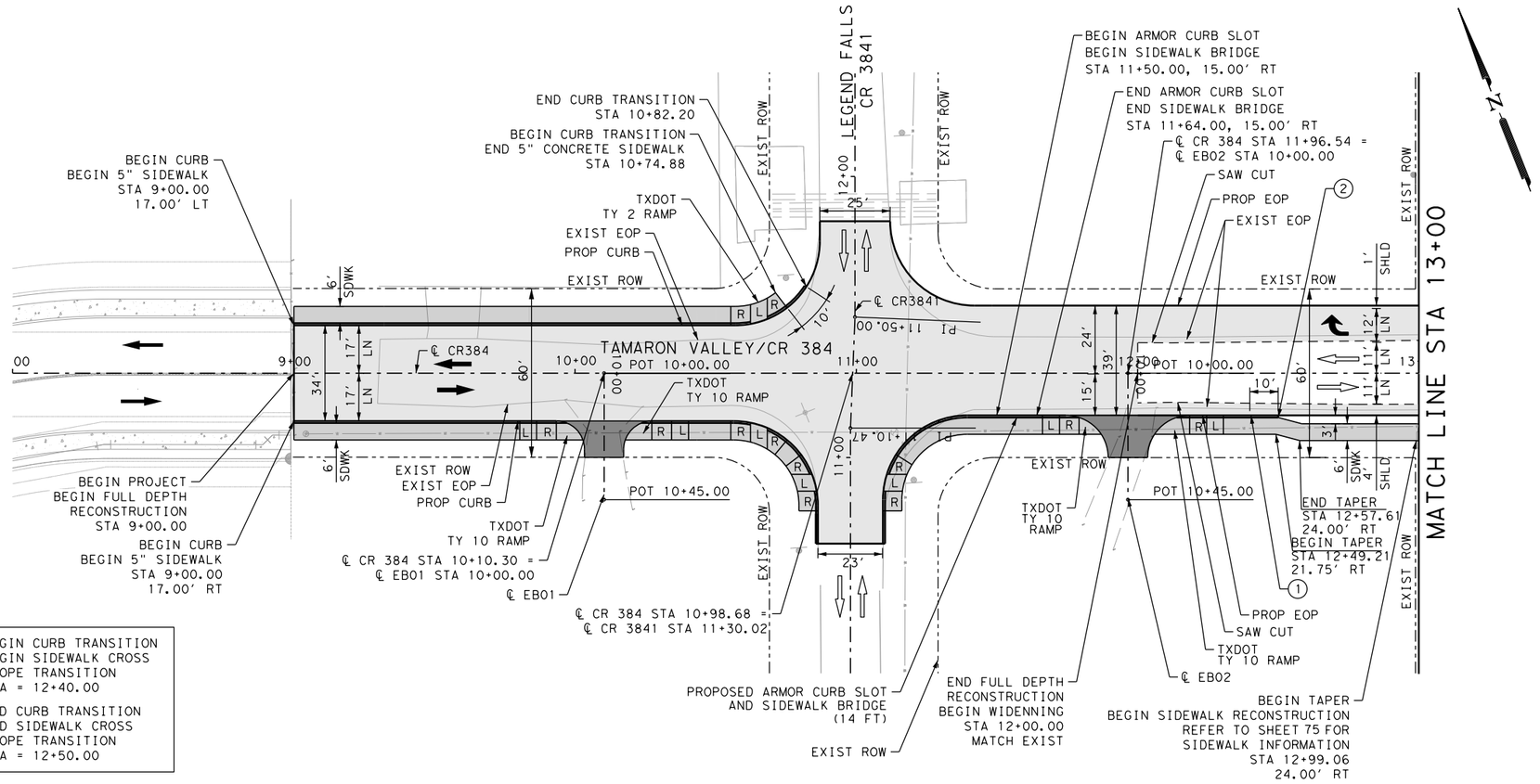
SHEET 4 OF 4

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 71

Plotted on: 1/22/2024

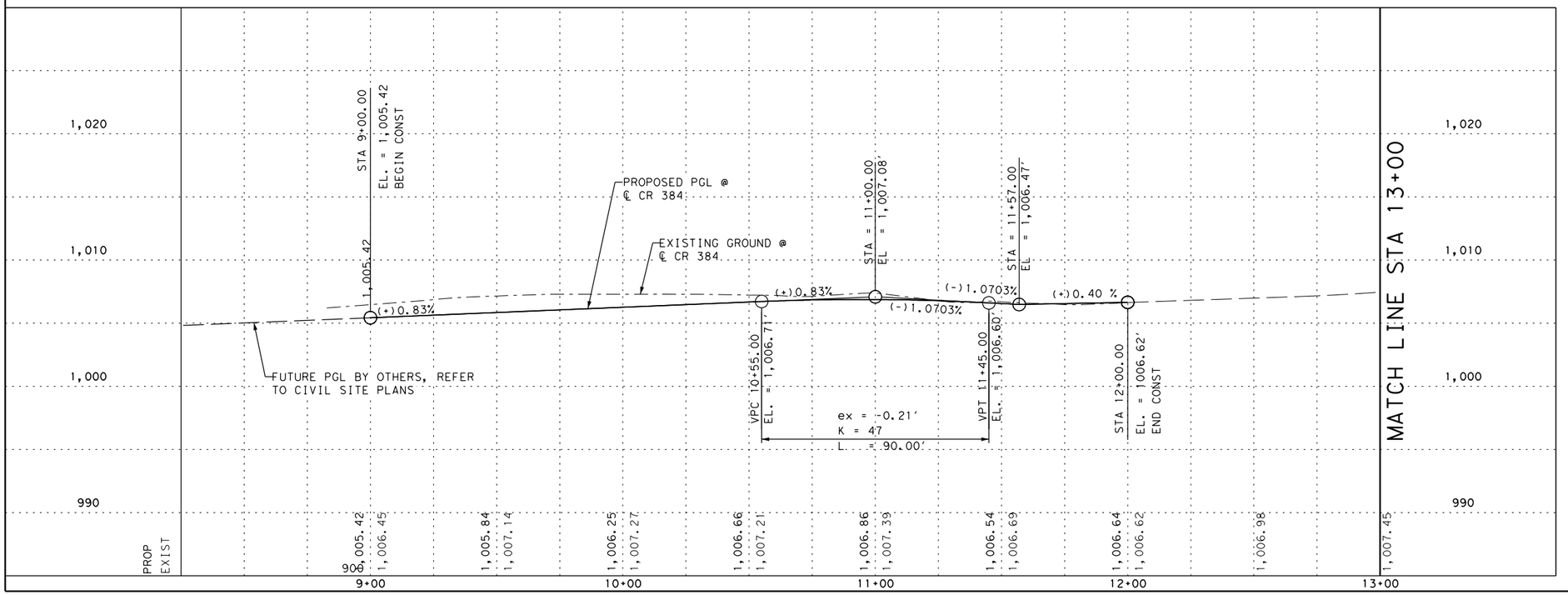
Design Filename: P:\122\85\04\Design\Civil\Roadway\RMVL\1228504_RMV03.dgn

Plotted on: 1/22/2024



① BEGIN CURB TRANSITION
BEGIN SIDEWALK CROSS
SLOPE TRANSITION
STA = 12+40.00

② END CURB TRANSITION
END SIDEWALK CROSS
SLOPE TRANSITION
STA = 12+50.00



Design Filename: P:\122\85\04\Design\Civil\Roadway\1228504_TAM01.dgn

LEGEND

- PROPOSED ASPHALT
- PROPOSED CONCRETE SIDEWALK
- PROPOSED DRIVEWAY
- R — RAMP
- L — LANDING
- XXX — DRIVEWAY NUMBER
- EXISTING ROW
- EXISTING TRAFFIC FLOW ARROWS
- PROPOSED TRAFFIC FLOW ARROWS
- OH E — EXIST. OVERHEAD ELECTRIC LINE
- W — EXISTING WATER LINE
- G — EXISTING GAS LINE
- EOP — EDGE OF PAVEMENT

NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. CALL THE TEXAS STATE WIDE ONE CALL LOCATOR NUMBER 1-800-344-8377, 48 HOURS BEFORE BEGINNING ANY EXCAVATION.
4. CONTRACTOR SHALL PROVIDE FOR ADEQUATE SAFETY SYSTEMS THAT COMPLY WITH, AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. EMPLOYEE OR SAFETY CONSULTANT SHALL DEVELOP AND IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
5. SAW CUTTING OF EXISTING PAVEMENT IS SUBSIDIARY TO THE VARIOUS BID ITEMS. NO SEPARATE PAY ITEM.
6. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50

SCALE: PLAN 1"= 50' PROFILE 1"= 5'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

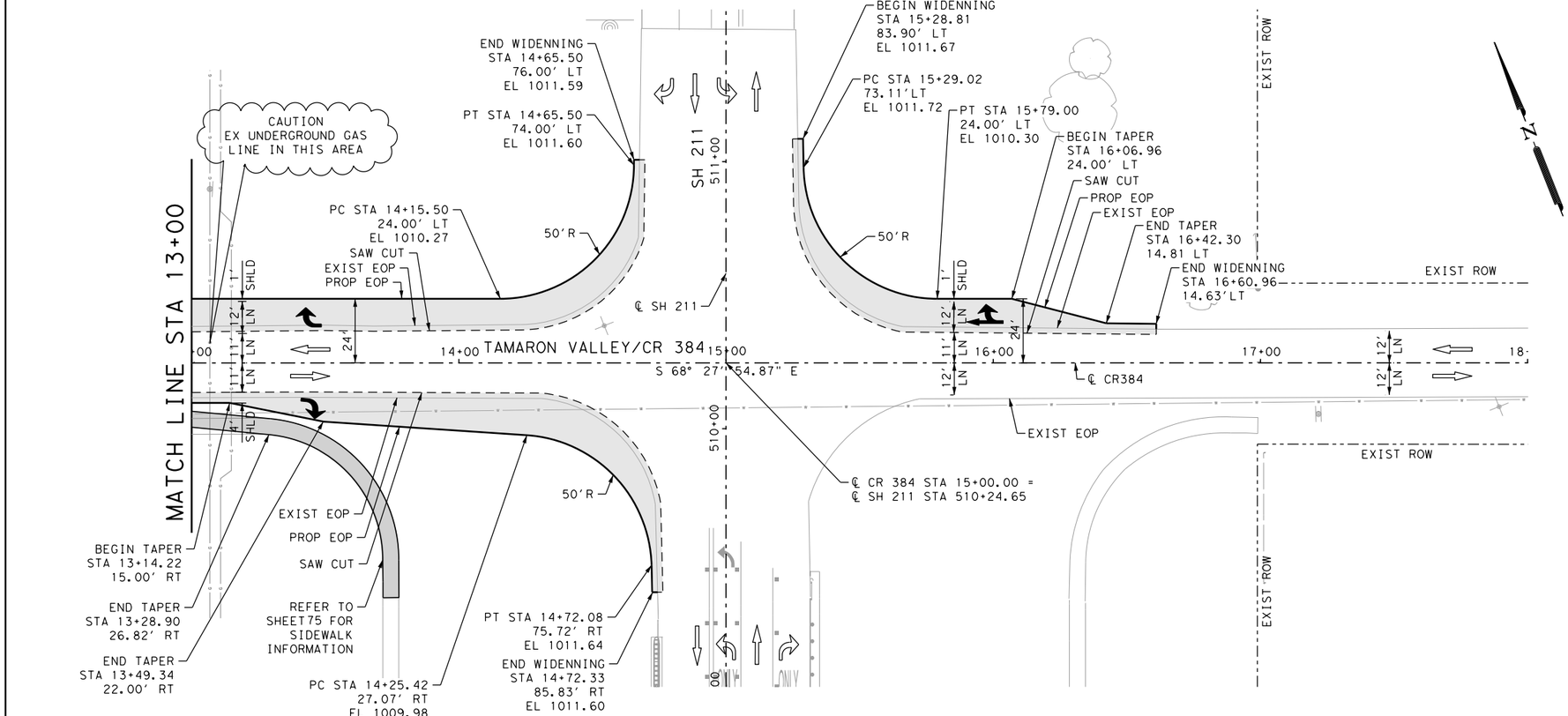
ROADWAY PLAN & PROFILE

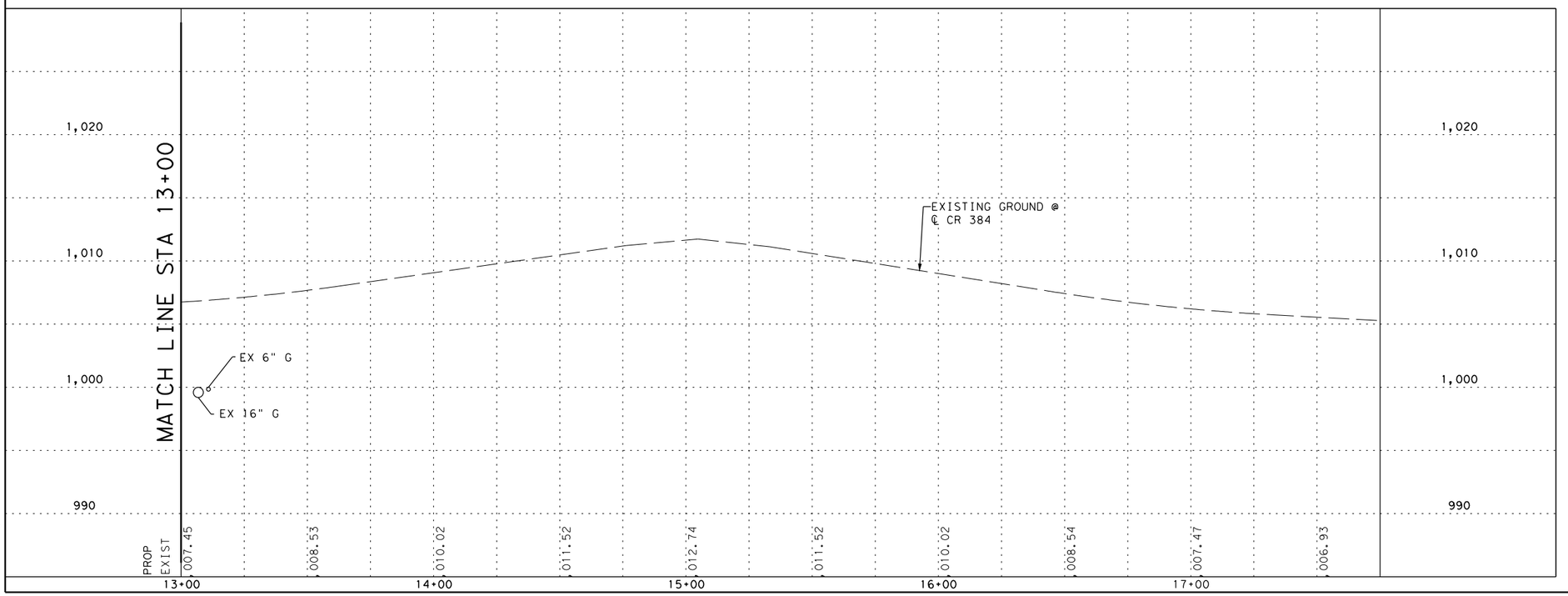
BEGIN PROJECT TO STA 13+00

SHEET 1 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 72

Plotted on: 1/22/2024





Design Filename: P:\122\85\04\Design\Civil\Roadway\1228504_TAM02.dgn

LEGEND

- PROPOSED ASPHALT
- PROPOSED CONCRETE SIDEWALK
- PROPOSED DRIVEWAY
- R — RAMP
- L — LANDING
- XXX — DRIVEWAY NUMBER
- EXISTING ROW
- EXISTING TRAFFIC FLOW ARROWS
- PROPOSED TRAFFIC FLOW ARROWS
- OH E — EXIST. OVERHEAD ELECTRIC LINE
- W — EXISTING WATER LINE
- G — EXISTING GAS LINE
- EOP — EDGE OF PAVEMENT

NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. CALL THE TEXAS STATE WIDE ONE CALL LOCATOR NUMBER 1-800-344-8377, 48 HOURS BEFORE BEGINNING ANY EXCAVATION.
4. CONTRACTOR SHALL PROVIDE FOR ADEQUATE SAFETY SYSTEMS THAT COMPLY WITH, AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. EMPLOYEE OR SAFETY CONSULTANT SHALL DEVELOP AND IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
5. SAW CUTTING OF EXISTING PAVEMENT IS SUBSIDIARY TO THE VARIOUS BID ITEMS. NO SEPARATE PAY ITEM.
6. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50

SCALE: PLAN 1"= 50' PROFILE 1"= 5'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

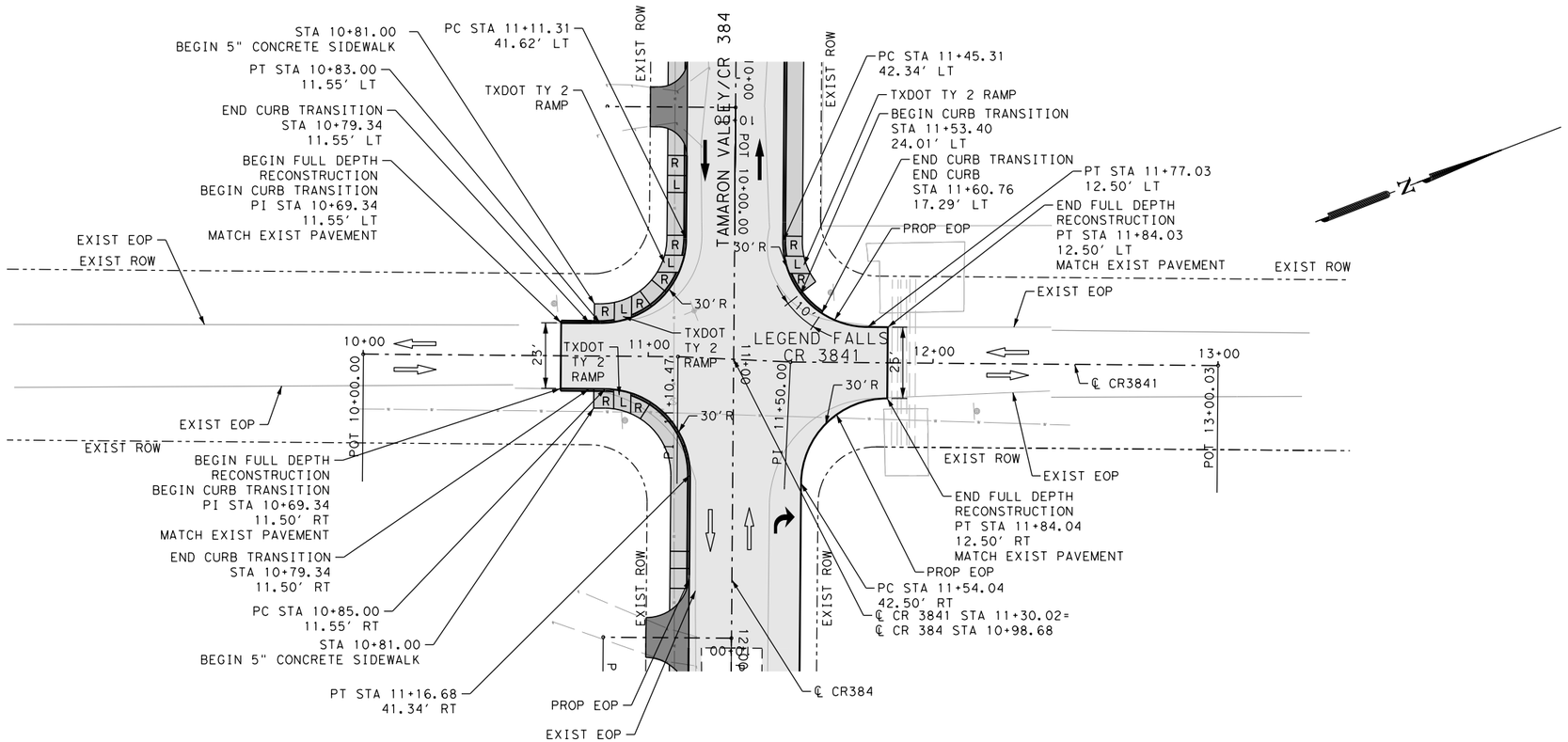
TALLEYHO IMPROVEMENTS

ROADWAY PLAN & PROFILE

STA 13+00 TO END PROJECT

SHEET 2 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 73

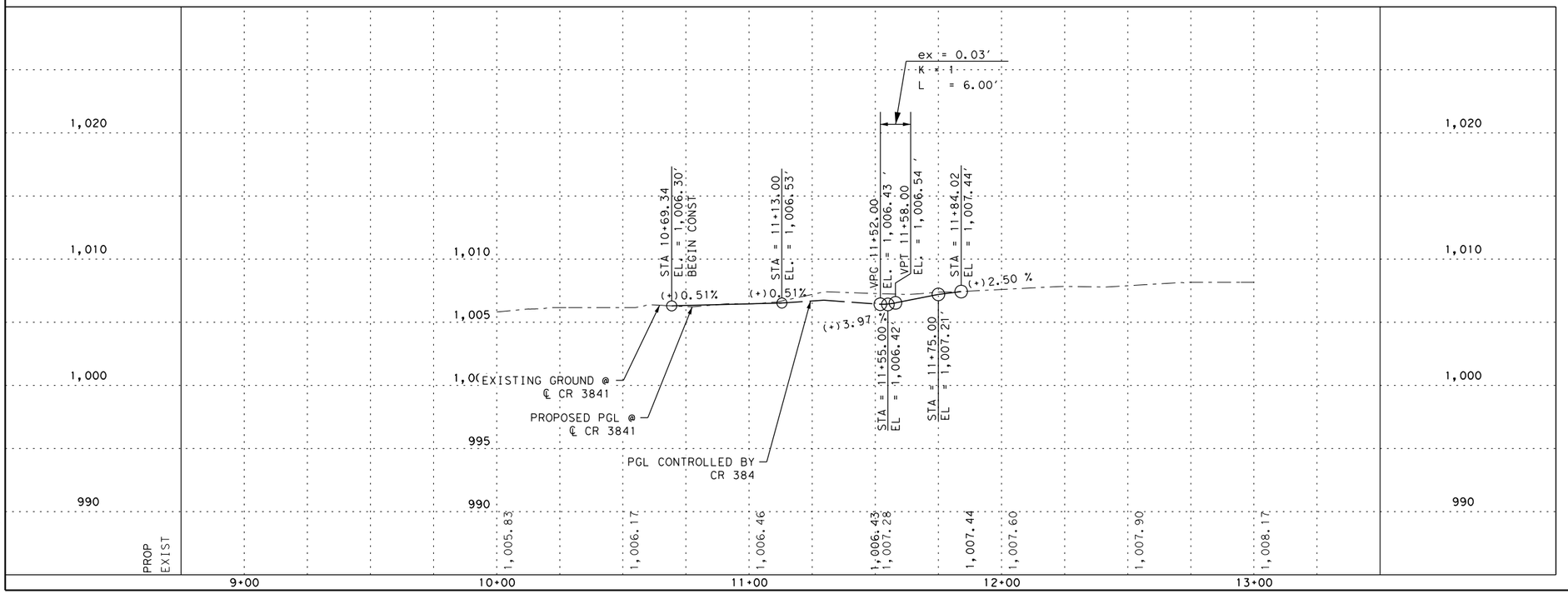


LEGEND

- PROPOSED ASPHALT
- PROPOSED CONCRETE SIDEWALK
- PROPOSED DRIVEWAY
- R — RAMP
- L — LANDING
- XXX — DRIVEWAY NUMBER
- EXISTING ROW
- EXISTING TRAFFIC FLOW ARROWS
- PROPOSED TRAFFIC FLOW ARROWS
- OH E — EXIST. OVERHEAD ELECTRIC LINE
- W — EXISTING WATER LINE
- G — EXISTING GAS LINE
- EOP — EDGE OF PAVEMENT

NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. CALL THE TEXAS STATE WIDE ONE CALL LOCATOR NUMBER 1-800-344-8377, 48 HOURS BEFORE BEGINNING ANY EXCAVATION.
4. CONTRACTOR SHALL PROVIDE FOR ADEQUATE SAFETY SYSTEMS THAT COMPLY WITH, AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. EMPLOYEE OR SAFETY CONSULTANT SHALL DEVELOP AND IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
5. SAW CUTTING OF EXISTING PAVEMENT IS SUBSIDIARY TO THE VARIOUS BID ITEMS. NO SEPARATE PAY ITEM.
6. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED



DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50

SCALE: PLAN 1"= 50' PROFILE 1"= 5'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

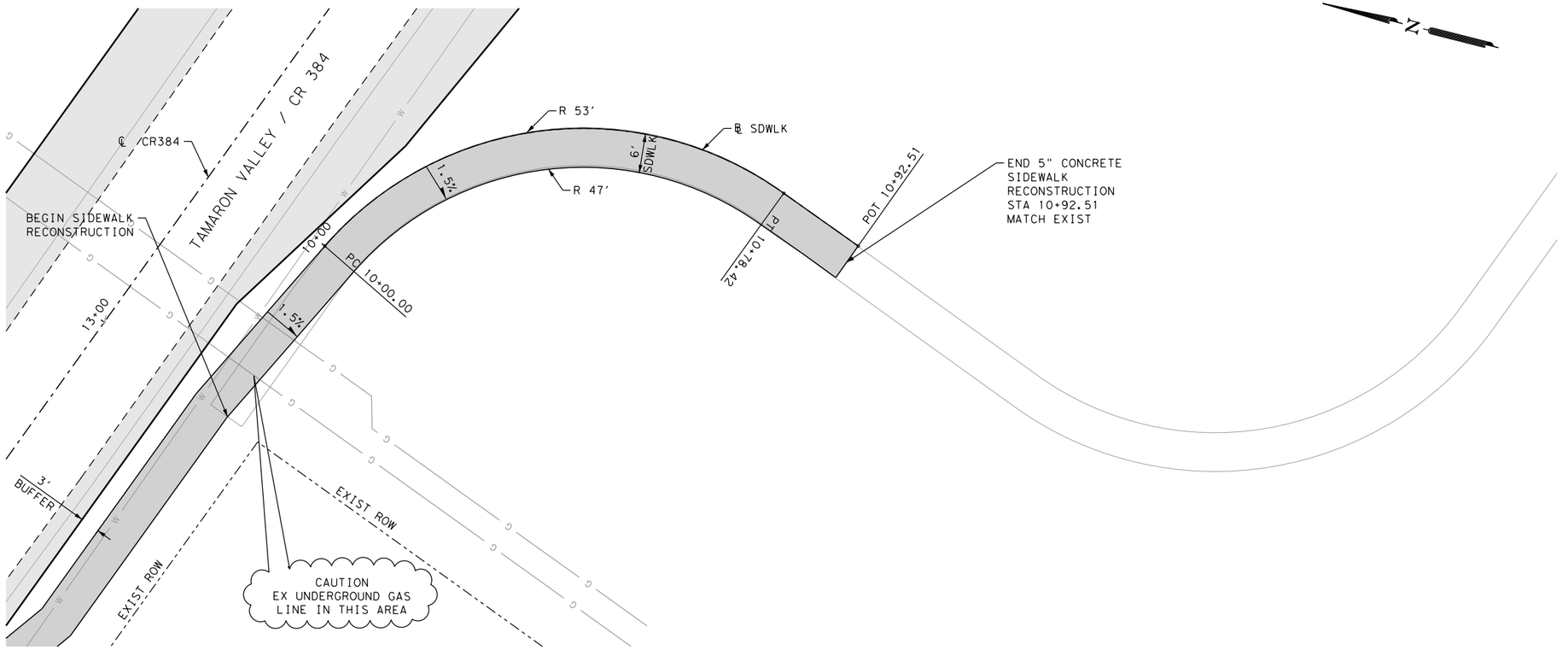
ROADWAY PLAN & PROFILE

SHEET 3 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 74

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\Roadway\1228504_LE001.dgn

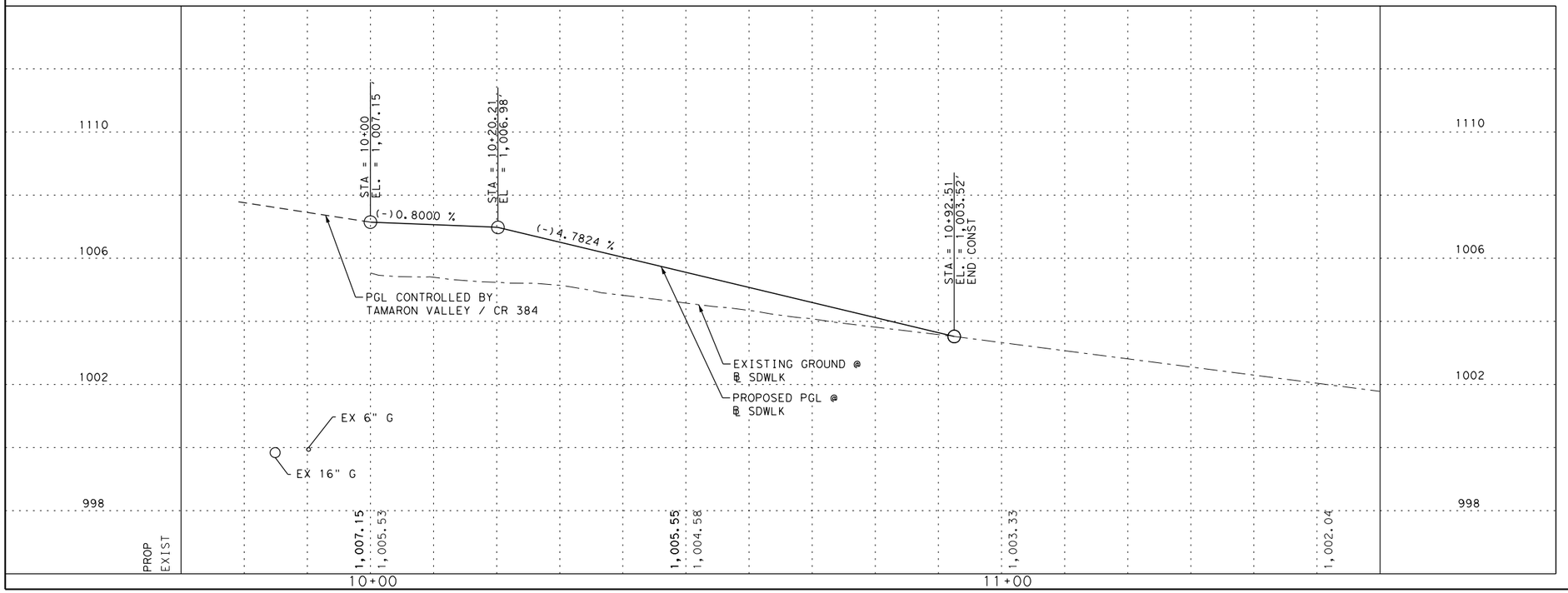


LEGEND

	PROPOSED ASPHALT
	PROPOSED CONCRETE SIDEWALK
	PROPOSED DRIVEWAY
R	RAMP
L	LANDING
XXX	DRIVEWAY NUMBER
	EXISTING ROW
	EXISTING TRAFFIC FLOW ARROWS
	PROPOSED TRAFFIC FLOW ARROWS
OH E	EXIST. OVERHEAD ELECTRIC LINE
W	EXISTING WATER LINE
G	EXISTING GAS LINE
EOP	EDGE OF PAVEMENT

NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. CALL THE TEXAS STATE WIDE ONE CALL LOCATOR NUMBER 1-800-344-8377, 48 HOURS BEFORE BEGINNING ANY EXCAVATION.
4. CONTRACTOR SHALL PROVIDE FOR ADEQUATE SAFETY SYSTEMS THAT COMPLY WITH, AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. EMPLOYEE OR SAFETY CONSULTANT SHALL DEVELOP AND IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
5. SAW CUTTING OF EXISTING PAVEMENT IS SUBSIDIARY TO THE VARIOUS BID ITEMS. NO SEPARATE PAY ITEM.
6. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED



DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 10 20

SCALE: PLAN 1"= 20' PROFILE 1"= 2'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

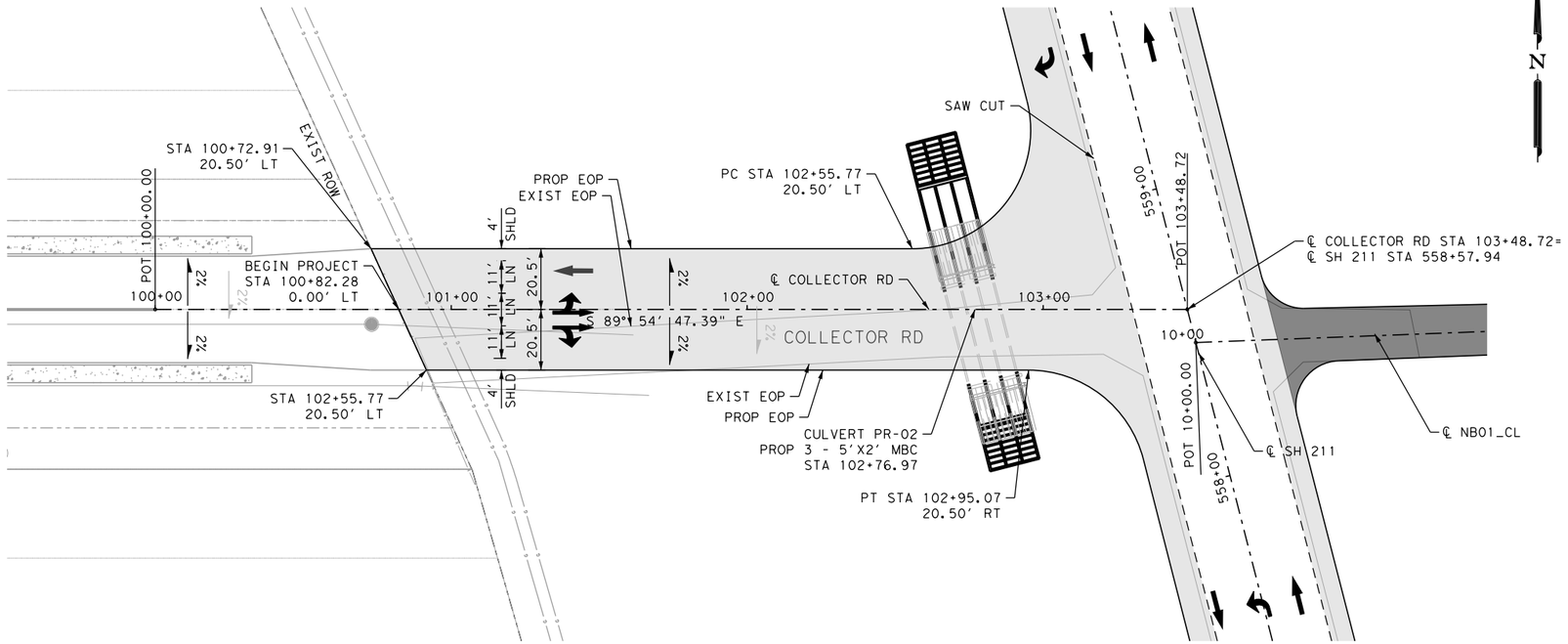
ROADWAY PLAN & PROFILE

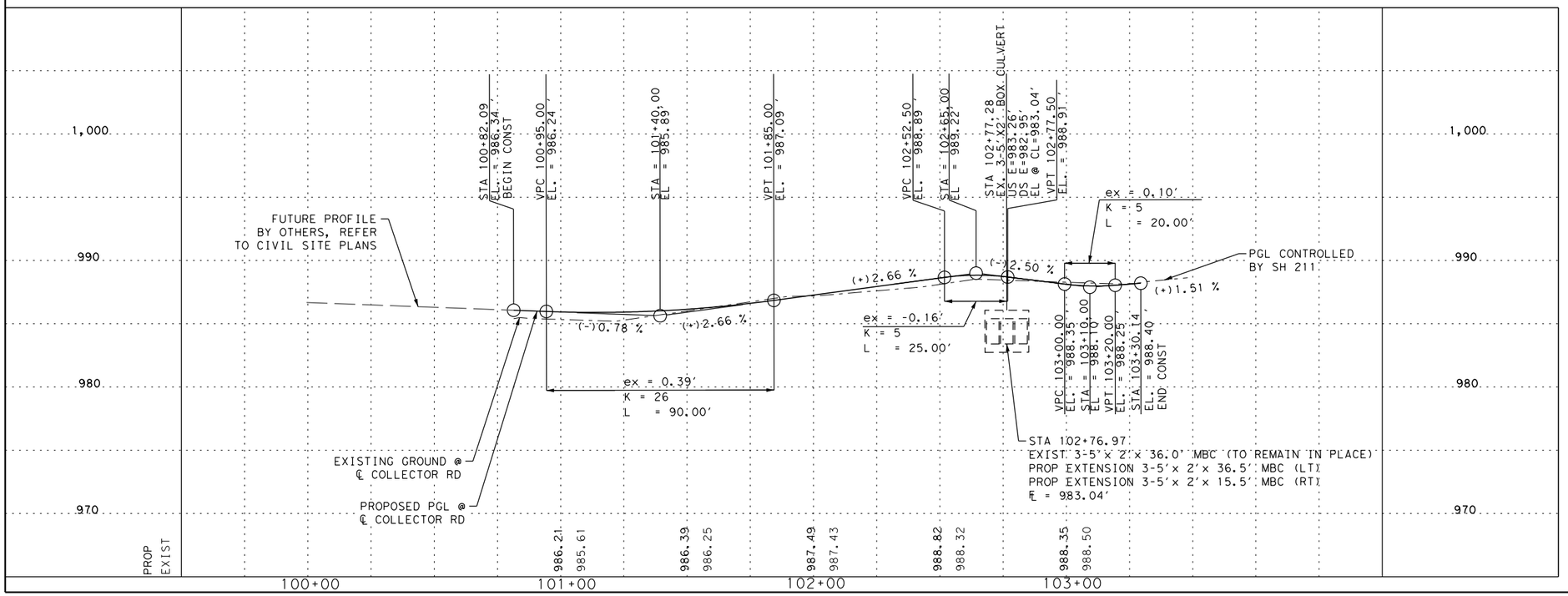
PEDESTRIAN SIDEWALK

SHEET 4 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 75

Plotted on: 1/22/2024





NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. CALL THE TEXAS STATE WIDE ONE CALL LOCATOR NUMBER 1-800-344-8377, 48 HOURS BEFORE BEGINNING ANY EXCAVATION.
4. CONTRACTOR SHALL PROVIDE FOR ADEQUATE SAFETY SYSTEMS THAT COMPLY WITH, AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. EMPLOYEE OR SAFETY CONSULTANT SHALL DEVELOP AND IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
5. SAW CUTTING OF EXISTING PAVEMENT IS SUBSIDIARY TO THE VARIOUS BID ITEMS. NO SEPARATE PAY ITEM.
6. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50

SCALE: PLAN 1"= 50' PROFILE 1"= 5'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

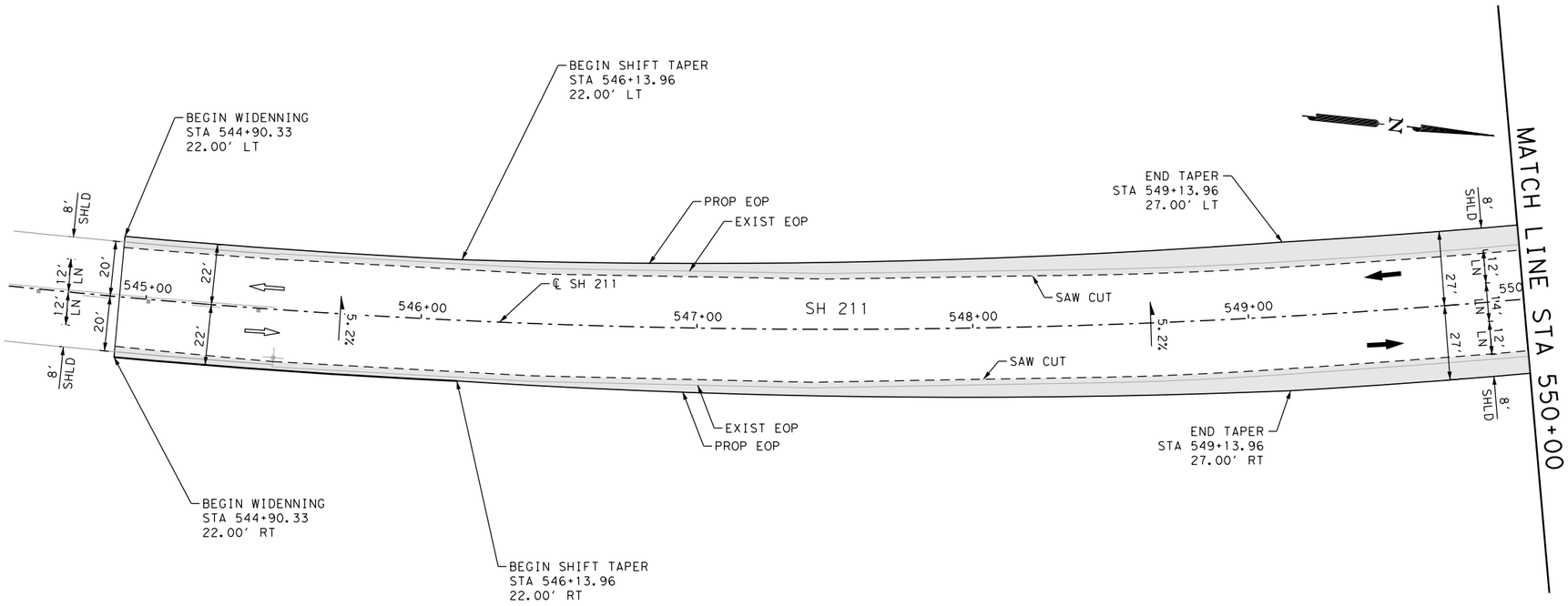
TALLEYHO IMPROVEMENTS

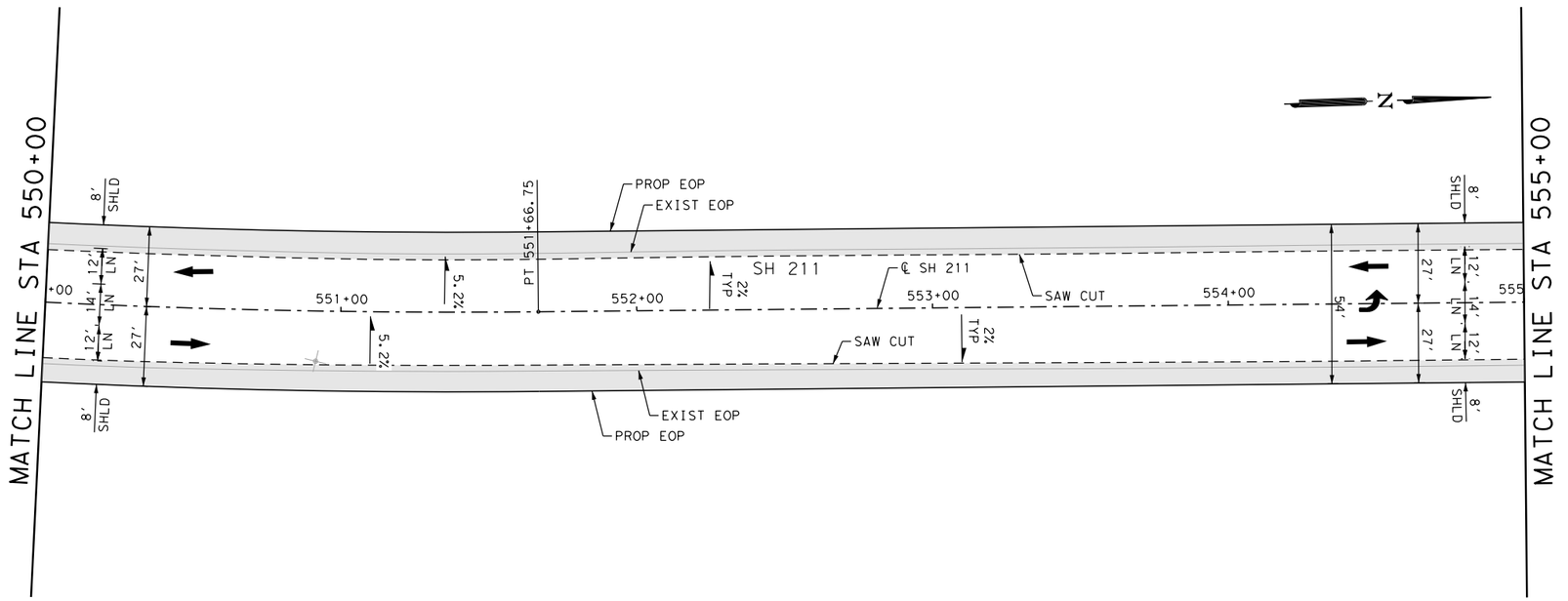
ROADWAY PLAN & PROFILE

SHEET 5 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 76

Design Filename: P:\122\85\04\Design\Civil\Roadway\1228504_RDWY03.dgn





LEGEND

- PROPOSED ASPHALT
- PROPOSED CONCRETE SIDEWALK
- PROPOSED DRIVEWAY
- R — RAMP
- L — LANDING
- XXX — DRIVEWAY NUMBER
- EXISTING TRAFFIC FLOW ARROWS
- PROPOSED TRAFFIC FLOW ARROWS

NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. CALL THE TEXAS STATE WIDE ONE CALL LOCATOR NUMBER 1-800-344-8377, 48 HOURS BEFORE BEGINNING ANY EXCAVATION.
4. CONTRACTOR SHALL PROVIDE FOR ADEQUATE SAFETY SYSTEMS THAT COMPLY WITH, AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. EMPLOYEE OR SAFETY CONSULTANT SHALL DEVELOP AND IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
5. SAW CUTTING OF EXISTING PAVEMENT IS SUBSIDIARY TO THE VARIOUS BID ITEMS. NO SEPARATE PAY ITEM.
6. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
7. REFER TO PROJECT LAYOUT FOR RIGHT OF WAY LOCATION ALONG CORRIDOR.
8. PAVEMENT WIDENING CROSS SLOPE IS TO MATCH EXISTING CROSS SLOPE AT ALL LOCATIONS.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

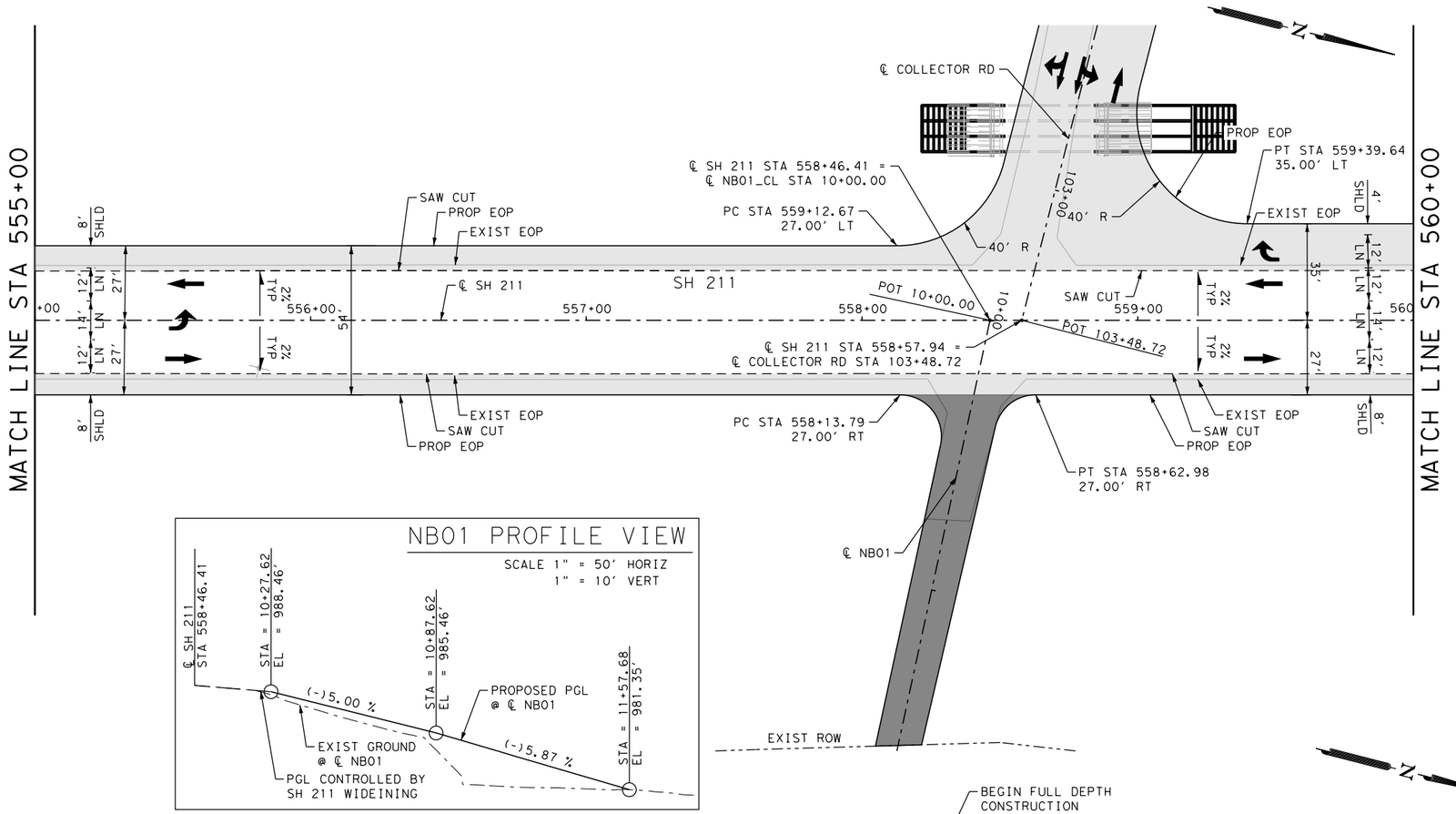
ROADWAY PLAN

BEGIN PROJECT TO STA 555+00

SHEET 1 OF 2

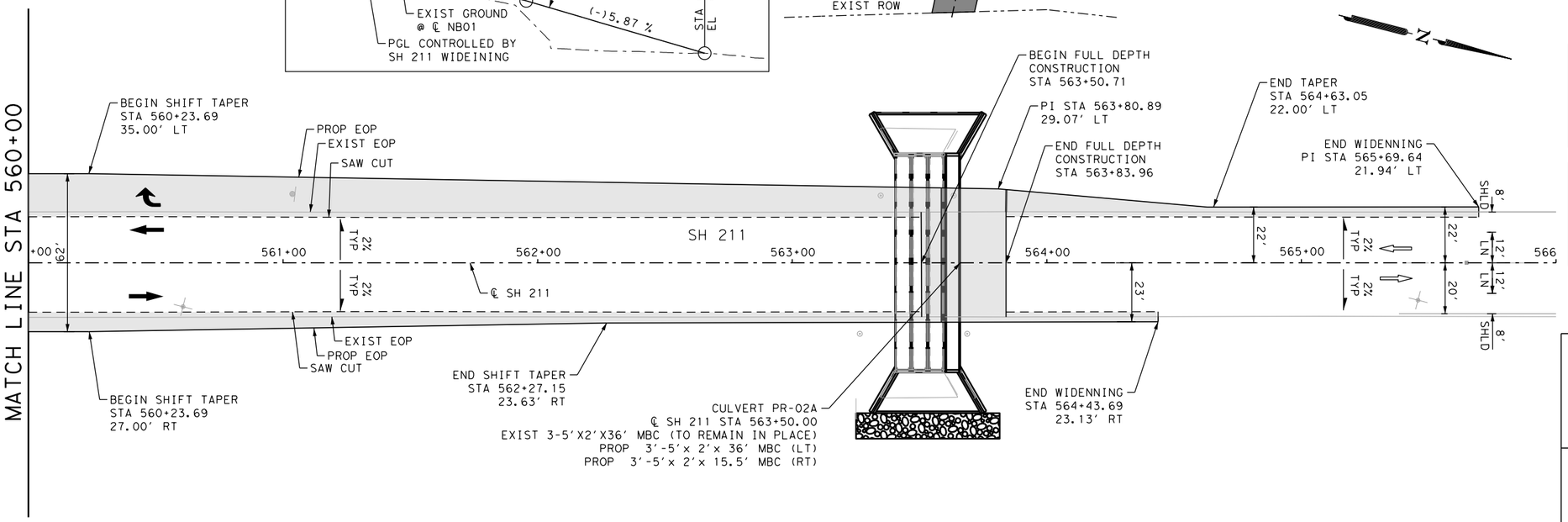
95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 77

Design Filename: P:\122\85\04\Design\Civil\Roadway\1228504_RDWY01.dgn



NB01 PROFILE VIEW

SCALE 1" = 50' HORIZ
1" = 10' VERT



LEGEND

- PROPOSED ASPHALT
- PROPOSED CONCRETE SIDEWALK
- PROPOSED DRIVEWAY
- R — RAMP
- L — LANDING
- XXX — DRIVEWAY NUMBER
- EXISTING TRAFFIC FLOW ARROWS
- PROPOSED TRAFFIC FLOW ARROWS

NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. CALL THE TEXAS STATE WIDE ONE CALL LOCATOR NUMBER 1-800-344-8377, 48 HOURS BEFORE BEGINNING ANY EXCAVATION.
4. CONTRACTOR SHALL PROVIDE FOR ADEQUATE SAFETY SYSTEMS THAT COMPLY WITH, AS A MINIMUM, OSHA STANDARDS FOR TRENCH EXCAVATIONS. EMPLOYEE OR SAFETY CONSULTANT SHALL DEVELOP AND IMPLEMENT A TRENCH SAFETY PROGRAM IN ACCORDANCE WITH OSHA STANDARDS GOVERNING THE PRESENCE AND ACTIVITIES OF INDIVIDUALS WORKING IN AND AROUND TRENCH EXCAVATION.
5. SAW CUTTING OF EXISTING PAVEMENT IS SUBSIDIARY TO THE VARIOUS BID ITEMS. NO SEPARATE PAY ITEM.
6. EXISTING FEATURES ARE SHOWN SCREENED BACK; i.e. FADED
7. REFER TO PROJECT LAYOUT FOR RIGHT OF WAY LOCATION ALONG CORRIDOR.
8. PAVEMENT WIDENING CROSS SLOPE IS TO MATCH EXISTING CROSS SLOPE AT ALL LOCATIONS.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

ROADWAY PLAN

STA 555+00 TO END PROJECT

SHEET 2 OF 2

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 78

Design Filename: P:\122\85\04\Design\Civil\Roadway\1228504_RDWY02.dgn

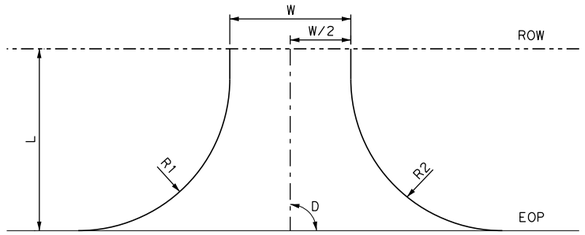
PLAN SHEET No.	DRWY No.	ROAD NAME	DRWY C/L STA.	OFFSET	MATERIAL	WIDTH (W)	LENGTH (L)		PROP SLOPE (S)		EXIST SLOPE (S)		RADIUS (R)		DEFLECTION ANGLE (D)
							L1	L2	S1	S2	S1	S2	R1	R2	
						FT	FT	FT	%	%	%	%	FT	FT	°
78	NB01	SH211	558+46.41	27' RT	ASPH	16	60	70	N/A	N/A	N/A	N/A	15	15	77.8
72	EB01	CR 384	10+10.30	17' RT	ASPH	14	7	6	1.50	3.93	-3.98	n/a	10	10	90
72	EB02	CR 384	11+96.54	15' RT	ASPH	14	7	8	1.50	-3.44	2.34	-2.64	15	15	90

NOTES:

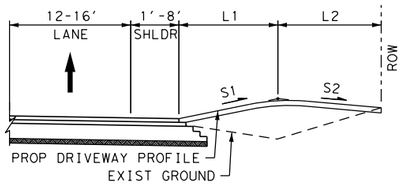
1. CONTRACTOR TO ENSURE NO DROP-OFF BETWEEN ROADWAY AND DRIVEWAYS DURING CONSTRUCTION WORK HOURS.
2. CONTRACTOR TO MATCH EXISTING LIMITS OF DRIVEWAYS, UNLESS OTHERWISE NOTED ON PLANS.
3. REFER TO PLAN SHEETS FOR GEOMETRIC DESIGN DETAILS.
4. WHERE SIDEWALK IS PRESENT, SLOPE AND LENGTH OF CURB TRANSITION SHOULD MATCH THE SIDEWALK AND MEET ADA REQUIREMENTS.
5. REFER SHEET 78 FOR NB01 PROFILE INFORMATION.

DRIVEWAY DETAIL

NTS



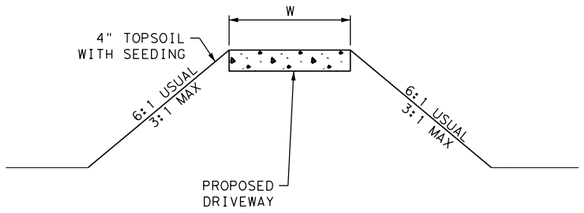
PLAN



PROFILE

DRIVEWAY PROFILE DETAIL

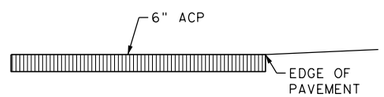
NTS



SECTION

TYPICAL PAVEMENT SECTION

NTS



DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

NOT TO SCALE

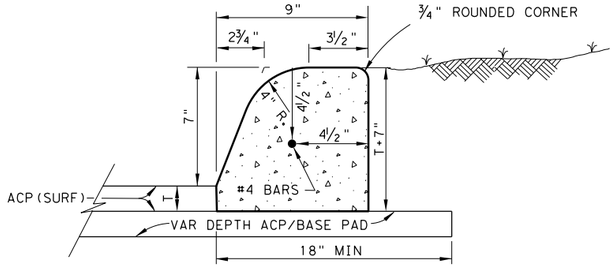
PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

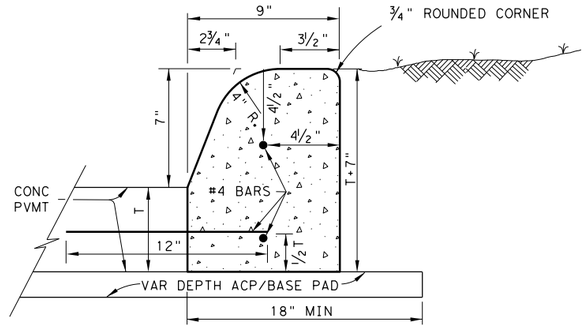
DRIVEWAY SUMMARY SHEET

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 79



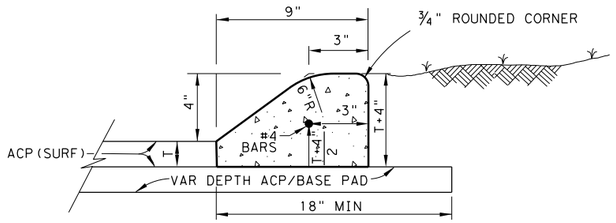
CONCRETE CURB (TYPE 1)

W/ ACP



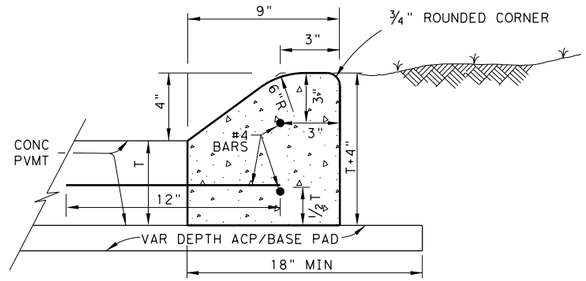
CONCRETE CURB (TYPE 1)

W/ CONC PAVEMENT



CONCRETE CURB (TYPE 2)

W/ ACP

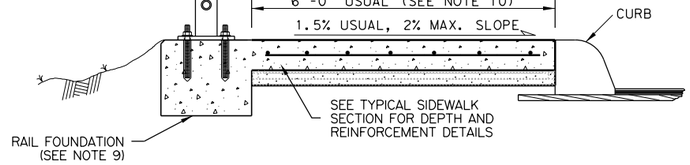


CONCRETE CURB (TYPE 2)

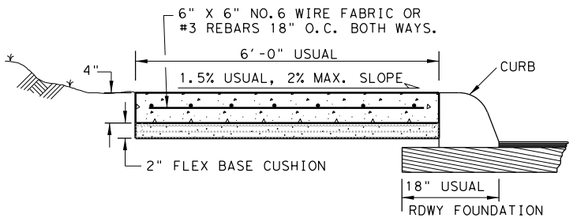
W/ CONC PAVEMENT

GENERAL NOTES:

1. CONCRETE CURB TYPE 1 AND 2 SHOWN SHALL MEET THE MINIMUM SPECIFICATION REQUIREMENTS OF CLASS "A" CONCRETE PER ITEM 529 AND 421.
2. ALL REINFORCING STEEL SHALL BE GRADE 60
3. WHERE CONCRETE CURB IS PLACED ON EXISTING CONCRETE PAVEMENT, THE PAVEMENT SHALL BE DRILLED AND THE REINFORCING BARS GROUTED IN PLACE.
4. EXPANSION AND CONTRACTION JOINTS SHALL BE CONSTRUCTED TO MATCH PAVEMENT JOINTS IN ALL CURBS AND CURB AND GUTTER ADJACENT TO JOINTED CONCRETE PAVEMENT. WHERE PLACEMENT OF CURB OR CURB AND GUTTER IS NOT ADJACENT TO CONCRETE PAVEMENT, EXPANSION JOINTS SHALL BE PROVIDED AT STRUCTURES, CURB RETURNS AT STREETS, AND AT LOCATIONS DIRECTED BY THE ENGINEER.
5. VERTICAL AND HORIZONTAL DOWEL BARS AND TRANSVERSE REINFORCING BARS SHALL BE PLACED AT 4 FEET C-C, UNLESS OTHERWISE SHOWN.
6. ONE-HALF INCH EXPANSION JOINT MATERIAL SHALL BE PROVIDED WHERE CURB OR CURB AND GUTTER IS ADJACENT TO SIDEWALK OR RIPRAP. THIS IS SUBSIDIARY TO THE CURB, ITEM 529.
7. LAYDOWN CURB AT DRIVEWAYS WILL BE PAID AS SUBSIDIARY TO ITEM 530.
8. FOR SIDEWALK DETAILS AT DRIVEWAYS, SEE SAN ANTONIO DISTRICT STANDARD "DRIVEWAY DETAILS".
9. SEE PEDESTRIAN HANDRAIL DETAILS STANDARD "PRD" FOR MORE INFORMATION. CONCRETE RAIL FOUNDATION TO BE POURED WITH THE SIDEWALK BUT PAYMENT IS SUBSIDIARY TO ITEM 450 "RAILING".
10. CLEAR SIDEWALK WIDTH EXCLUDING THE PEDESTRIAN RAIL FOUNDATION SHALL BE 6' UNLESS OTHERWISE SPECIFIED IN THE PLANS

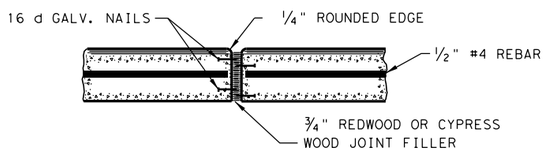


TYPICAL SIDEWALK SECTION
WITH PEDESTRIAN RAIL



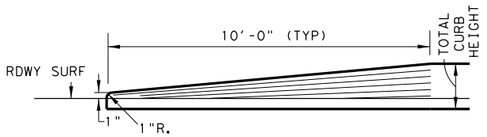
TYPICAL SIDEWALK SECTION

GROOVED JOINTS IN THE SIDE WALK SHALL BE AT A MAX. SPACING OF 10 FT. AND SHALL HAVE ¾" EXPANSION JOINTS AT A MAX. SPACING OF 60' AND TO COINSIDE WITH THE CURB EXP. JOINTS.



TYPICAL CURB EXPANSION JOINT DETAIL

EXPANSION JOINTS TO BE PLACED AT BEGINNING AND END OF CURVES, DRIVEWAYS WHEELCHAIR RAMPS, INLETS, ILLUMINATION/ SIGNAL FOUNDATIONS AND OTHER FIXED OBJECTS.



TRANSITION FOR CONCRETE CURB ENDS

SEE CURB DETAIL FOR REINFORCEMENT

Texas Department of Transportation
San Antonio District

MISCELLANEOUS CURB AND SIDEWALK DETAILS

San Antonio District Standard
Sheet (1 of 2)

T:Engdata/Standards/MiscCurbdetails.dgn

ORIGINAL DRAWING DATE:

REVISIONS
09-01-08
10-10-17 sidewalk width equals 6' usual
07-22-20 9" curb + curb w/ conc pvmt det.
- -

PREPARED BY AND FOR USE OF TxDoT.

STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
	6		80

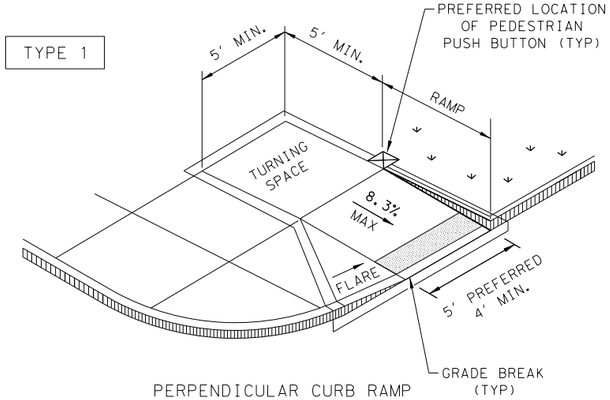
COUNTY	CONTROL	SECTION	JOB	HIGHWAY
BX / ME				SH 211

1/22/2024 2:39:06 PM

P:\122\05\04\Design\Civil\Standards\Roadway\miscurbdetails.dgn

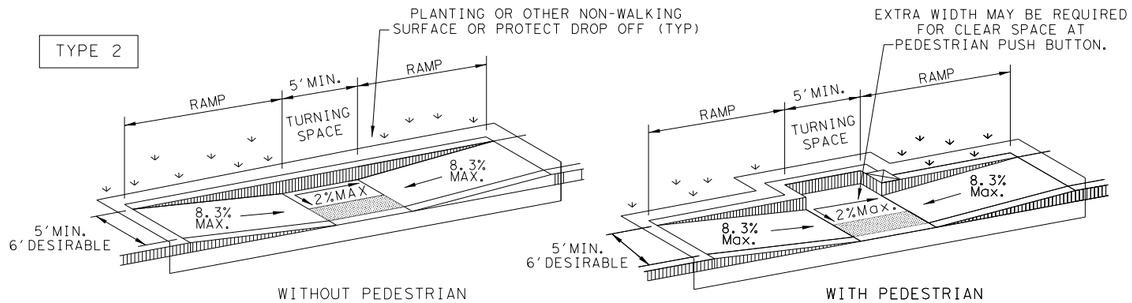
DATE: 1/22/2024
FILE: P:\122\85\04\Design\Civil\Standards\Roadway\ped18.dgn

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

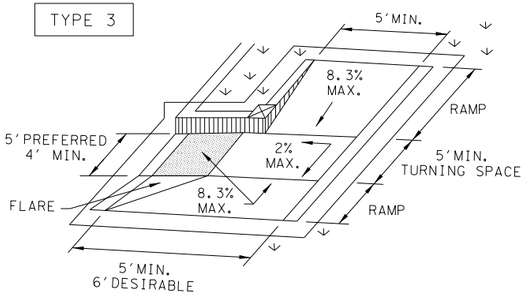


WITHOUT PEDESTRIAN PUSH BUTTON

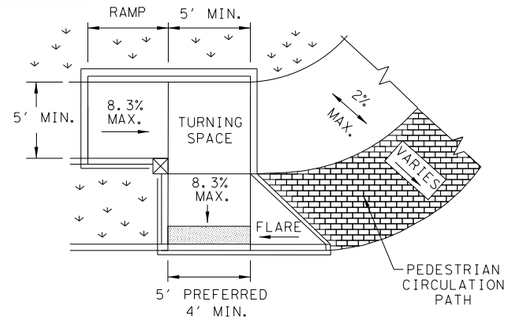
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

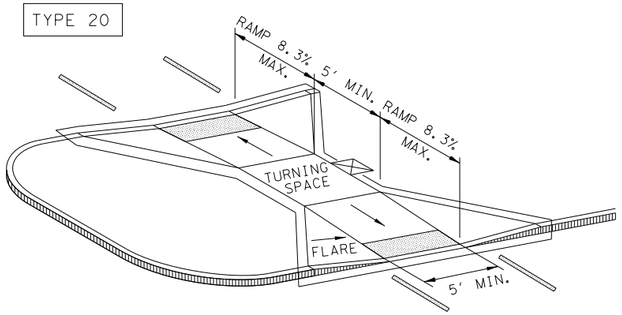


TYPE 6



COMBINATION CURB RAMPS

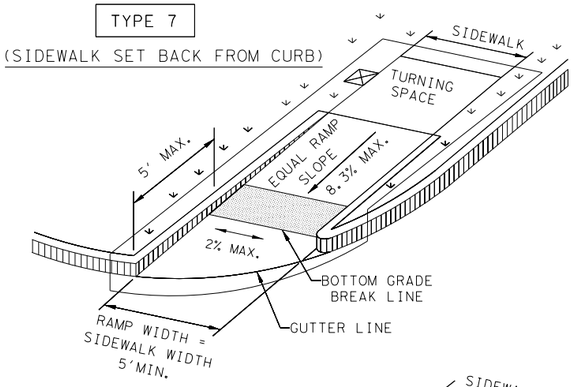
TYPE 20



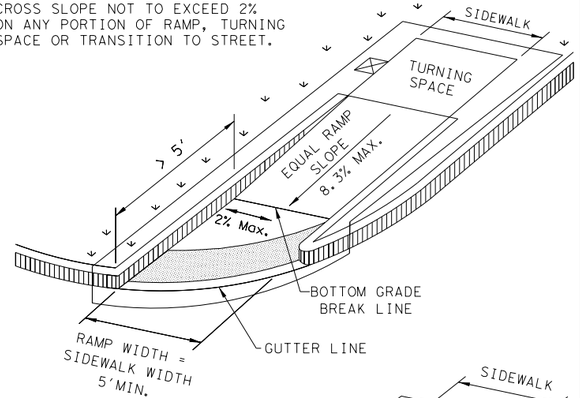
CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

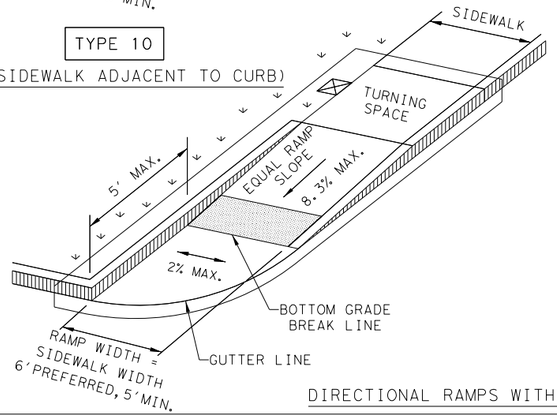


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

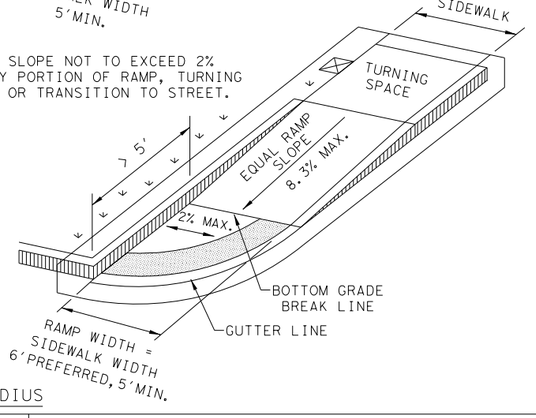


TYPE 10

(SIDEWALK ADJACENT TO CURB)

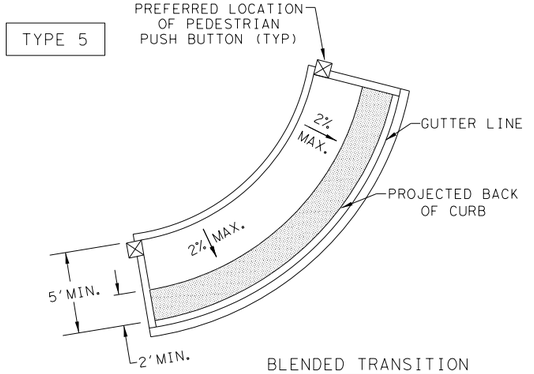


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

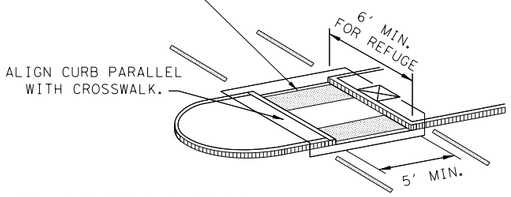
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

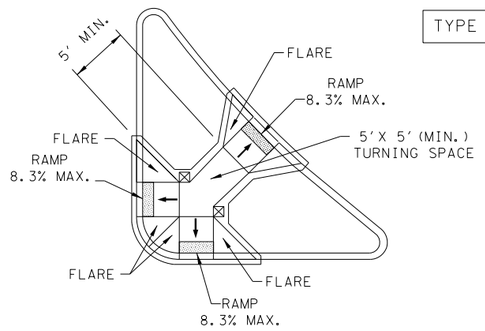
TYPE 21

INSTALL DETECTABLE WARNING SURFACE AT EACH END OF THE CUT-THROUGH RAMP WITH A MINIMUM 2' USUAL SIDEWALK SURFACE BETWEEN. IF MEDIAN IS LESS THAN 6' WIDE, ELIMINATE DETECTABLE WARNING SURFACES.



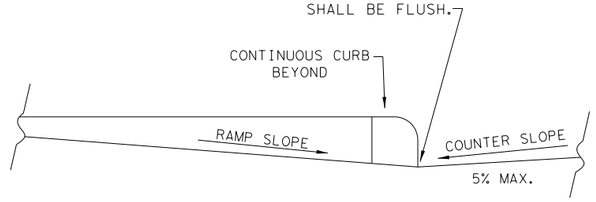
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

BOTTOM GRADE BREAK OF CURB RAMP WILL NORMALLY BE AT GUTTER LINE. SURFACE SLOPES AT GRADE BREAKS SHALL BE FLUSH.



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

SEE GENERAL NOTES ON SHEET 2 OF 4 FOR MORE INFORMATION.

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

SHEET 1 OF 4

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		81

DATE: 1/22/2024
FILE: P:\122\85\04\Design\Civil\Standards\Roadway\ped18.dgn

GENERAL NOTES

CURB RAMPS

1. Install a curb ramp or blended transition at each pedestrian street crossing.
2. All slopes shown are maximum allowable. Cross slopes of 1.5% and lesser running should be used. Adjust curb ramp length or grade of approach sidewalks as directed.
3. Maximum allowable cross slope on sidewalk and curb ramp surfaces is 2%.
4. The minimum sidewalk width is 5′. Where the sidewalk is adjacent to the back of curb, a 6′ sidewalk width is desirable. Where a 5′ sidewalk cannot be provided due to site constraints, sidewalk width may be reduced to 4′ for short distances. 5′x 5′ passing areas at intervals not to exceed 200′ are required.
5. Turning Spaces shall be 5′x 5′ minimum. Cross slope shall be maximum 2%.
6. Clear space at the bottom of curb ramps shall be a minimum of 4′x 4′ wholly contained within the crosswalk and wholly outside the parallel vehicular travel path.
7. Provide flared sides where the pedestrian circulation path crosses the curb ramp. Flared sides shall be sloped at 10% maximum, measured parallel to the curb. Returned curbs may be used only where pedestrians would not normally walk across the ramp, either because the adjacent surface is planted, substantially obstructed, or otherwise protected.
8. Additional information on curb ramp location, design, light reflective value and texture may be found in the latest draft of the Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG) as published by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board).
9. To serve as a pedestrian refuge area, the median should be a minimum of 6′ wide, measured from back of curbs. Medians should be designed to provide accessible passage over or through them.
10. Small channelization islands, which do not provide a minimum 5′x 5′ landing at the top of curb ramps, shall be cut through level with the surface of the street.
11. Crosswalk dimensions, crosswalk markings and stop bar locations shall be as shown elsewhere in the plans. At intersections where crosswalk markings are not required, curb ramps shall align with theoretical crosswalks unless otherwise directed.
12. Provide curb ramps to connect the pedestrian access route at each pedestrian street crossing. Handrails are not required on curb ramps.
13. Curb ramps and landings shall be constructed and paid for in accordance with Item 531 "Sidewalks".
14. Place concrete at a minimum depth of 5" for ramps, flares and landings, unless otherwise directed.
15. Furnish and install No. 3 reinforcing steel bars at 18" o.c. both ways, unless otherwise directed.
16. Provide a smooth transition where the curb ramps connect to the street.
17. Curbs shown on sheet 1 within the limits of payment are considered part of the curb ramp for payment, whether it is concrete curb, gutter, or combined curb and gutter.
18. Existing features that comply with applicalble standards may remain in place unless otherwise shown on the plans.

DETECTABLE WARNING MATERIAL

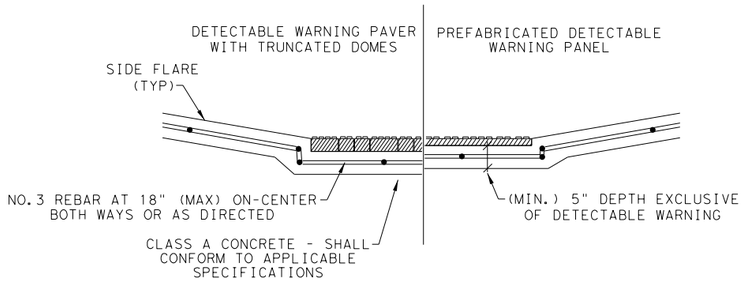
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material adjacent to uncolored concrete, unless specified elsewhere in the plans.
20. Detectable Warning Materials must meet TxDOT Departmental Materials Specification DMS 4350 and be listed on the Material Producer List. Install products in accordance with manufacturer's specifications.
21. Detectable warning surfaces must be firm, stable and slip resistant.
22. Detectable warning surfaces shall be a minimum of 24 inches in depth in the direction of pedestrian travel, and extend the full width of the curb ramp or landing where the pedestrian access route enters the street.
23. Detectable warning surfaces shall be located so that the edge nearest the curb line is at the back of curb and neither end of that edge is greater than 5 feet from the back of curb. Detectable warning surfaces may be curved along the corner radius.
24. Shaded areas on Sheet 1 of 4 indicate the approximate location for the detectable warning surface for each curb ramp type.

DETECTABLE WARNING PAVERS (IF USED)

25. Furnish detectable warning paver units meeting all requirements of ASTM C-936, C-33. Lay in a two by two unit basket weave pattern or as directed.
26. Lay full-size units first followed by closure units consisting of at least 25 percent (25%) of a full unit. Cut detectable warning paver units using a power saw.

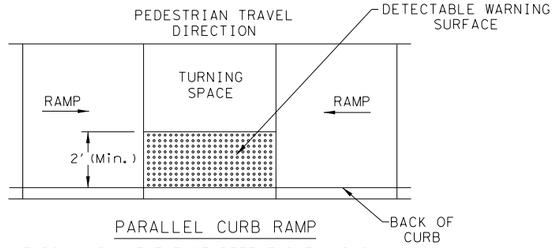
SIDEWALKS

27. Provide clear ground space at operable parts, including pedestrian push buttons. Operable parts shall be placed within unobstructed reach range specified in PROWAG section R406.
28. Place traffic signal or illumination poles, ground boxes, controller boxes, signs, drainage facilities and other items so as not to obstruct the pedestrian access route or clear ground space.
29. Street grades and cross slopes shall be as shown elsewhere in the plans.
30. Changes in level greater than 1/4 inch are not permitted.
31. The least possible grade should be used to maximize accessibility. The running slope of sidewalks and crosswalks within the public right of way may follow the grade of the parallel roadway. Where a continuous grade greater than five percent (5%) must be provided, handrails may be desirable to improve accessibility. Handrails may also be needed to protect pedestrians from potentially hazardous conditions. If provided, handrails shall comply with PROWAG R409.
32. Handrail extensions shall not protrude into the usable landing area or into intersecting pedestrian routes.
33. Driveways and turnouts shall be constructed and paid for in accordance with Item "Intersections, Driveways and Turnouts". Sidewalks shall be constructed and paid for in accordance with Item, "Sidewalks".
34. Sidewalk details are shown elsewhere in the plans.



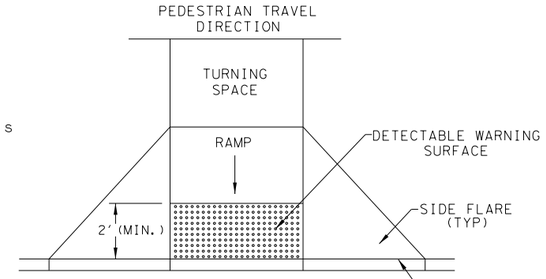
SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

DETECTABLE WARNING SURFACE DETAILS



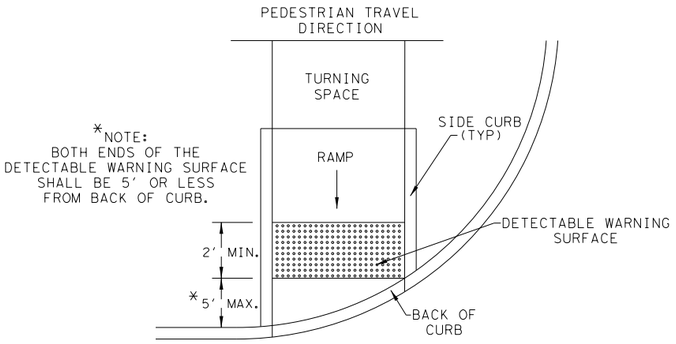
PARALLEL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON LANDING AT STREET EDGE.



PERPENDICULAR CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



DIRECTIONAL CURB RAMP

TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

Texas Department of Transportation | Design Division Standard

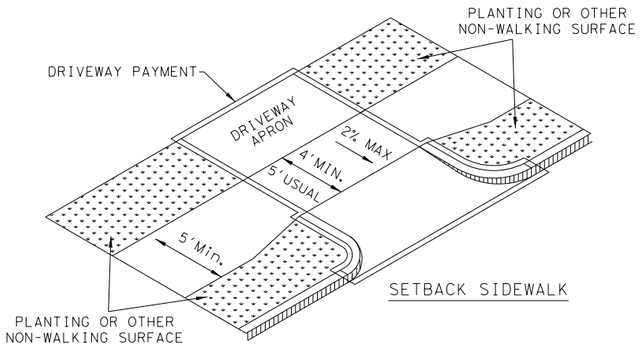
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

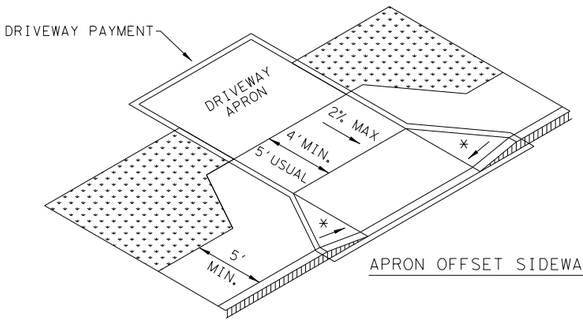
FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		82

DATE: 1/22/2024
FILE: P:\122\85\04\Design\Civil\Standards\Roadway\ped18.dgn

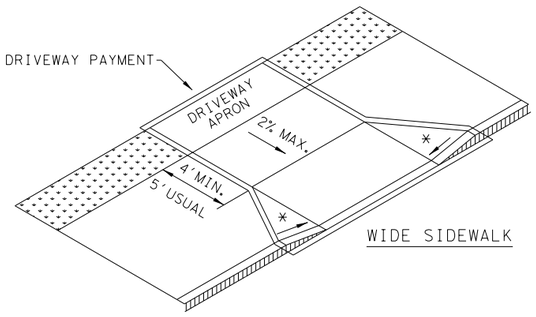
SIDEWALK TREATMENT AT DRIVEWAYS



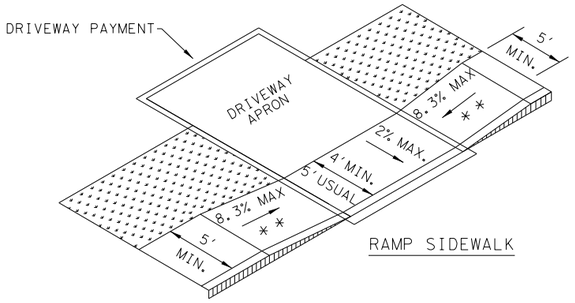
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

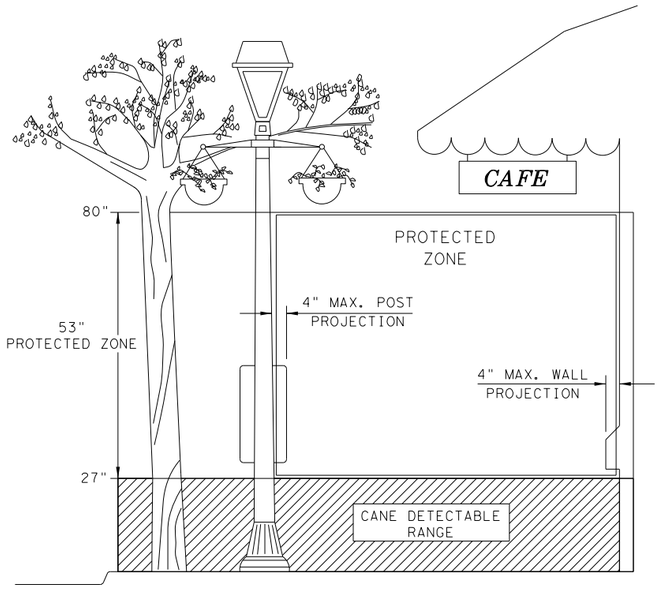


RAMP SIDEWALK

NOTES:

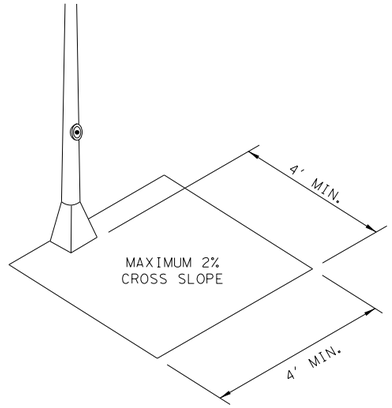
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

* * IF CURB HEIGHT IS GREATER THAN 6 INCHES, USE GRADE LESS THAN OR EQUAL TO 5%. HANDRAIL AND DETECTABLE WARNING ARE NOT REQUIRED.

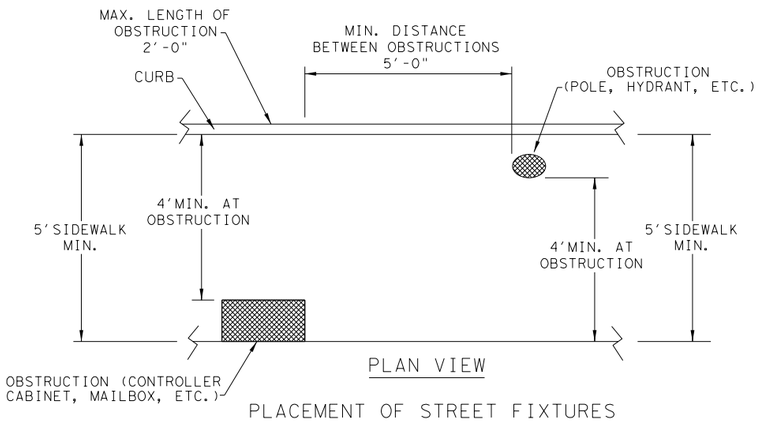


PROTECTED ZONE

NOTE: IN PEDESTRIAN CIRCULATION AREA, MAXIMUM 4" PROJECTION FOR POST OR WALL MOUNTED OBJECTS BETWEEN 27" AND 80" ABOVE THE SURFACE.



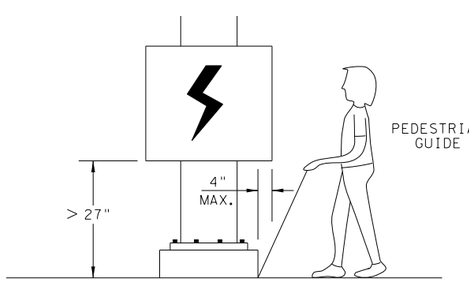
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



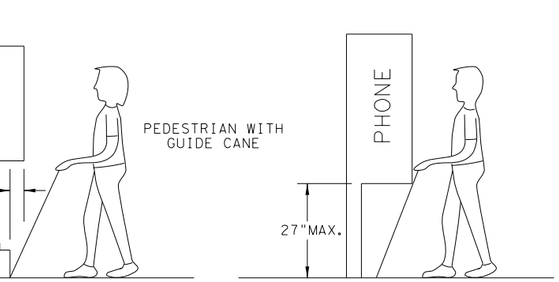
PLAN VIEW

PLACEMENT OF STREET FIXTURES

NOTE: ITEMS NOT INTENDED FOR PUBLIC USE. MINIMUM 4' X 4' CLEAR GROUND SPACE REQUIRED AT PUBLIC USE FIXTURES.



WHEN AN OBSTRUCTION OF A HEIGHT GREATER THAN 27" FROM THE SURFACE WOULD CREATE A PROTRUSION OF MORE THAN 4" INTO THE PEDESTRIAN CIRCULATION AREA, CONSTRUCT ADDITIONAL CURB OR FOUNDATION AT THE BOTTOM TO PROVIDE A MAXIMUM 4" OVERHANG.



PROTRUDING OBJECTS OF A HEIGHT ≤27" ARE DETECTABLE BY CANE AND DO NOT REQUIRE ADDITIONAL TREATMENT.

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

Texas Department of Transportation

Design Division Standard

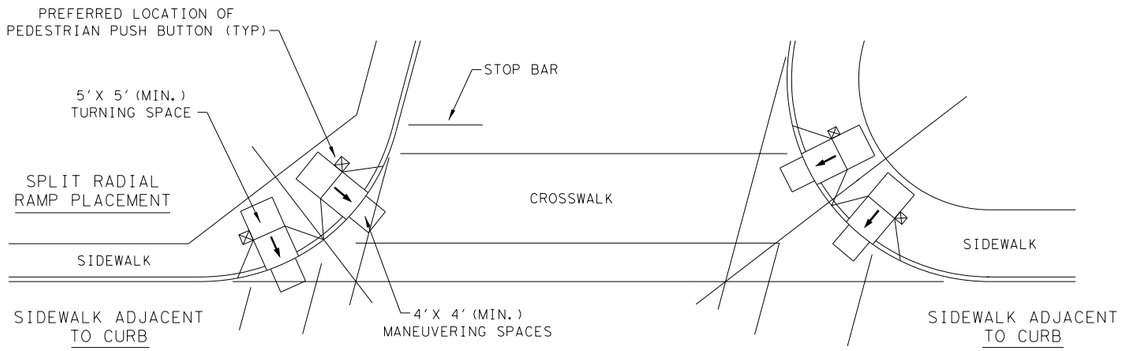
PEDESTRIAN FACILITIES CURB RAMPS

PED-18

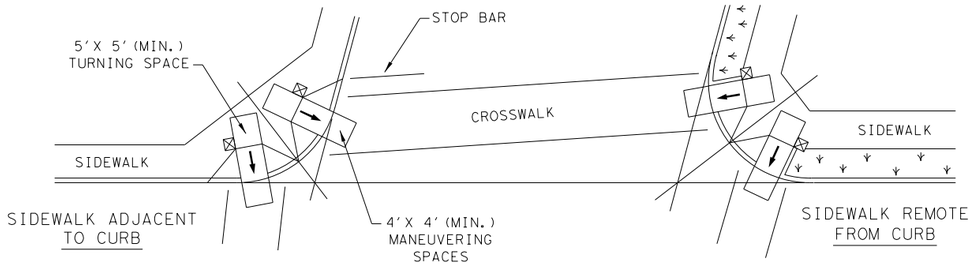
FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG	
	CONT	SECT	JOB	HIGHWAY	
REVISIONS REVISED 08,2005 REVISED 06,2012 REVISED 01,2018				SH 211	
	DIST	COUNTY		SHEET NO.	
	SAT	BX / ME		83	

DATE: 1/22/2024
FILE: P:\122\85\04\Design\Civil\Standards\Roadway\ped18.dgn

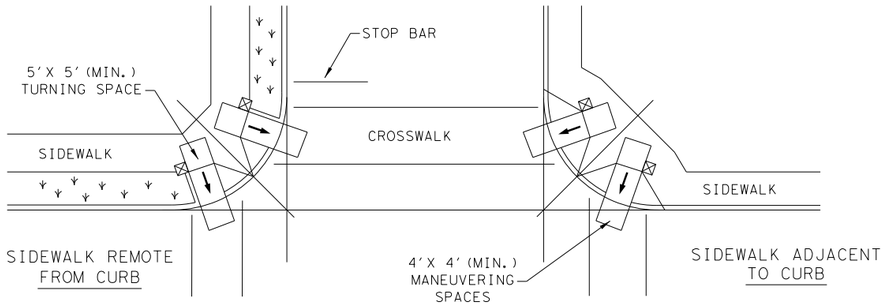
TYPICAL CROSSING LAYOUTS
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



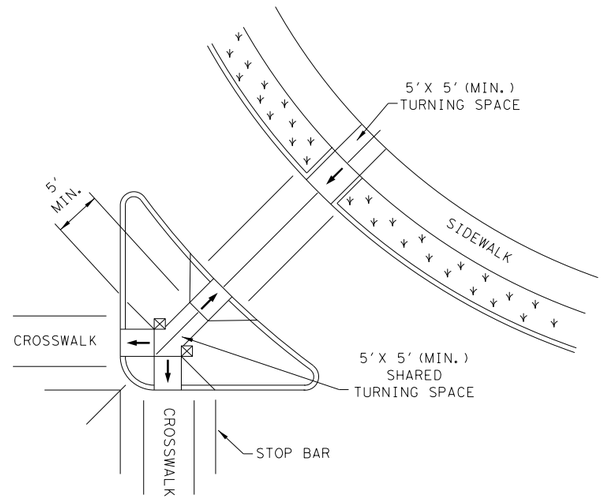
SKEWED INTERSECTION WITH "LARGE" RADIUS



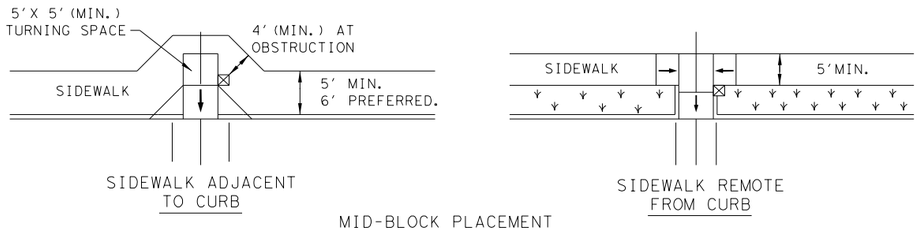
SKEWED INTERSECTION WITH "SMALL" RADIUS



NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND



MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE. →

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON (IF APPLICABLE). ☒

DENOTES PLANTING OR NON-WALKING SURFACE NOT PART OF PEDESTRIAN CIRCULATION PATH.

SHEET 4 OF 4

Texas Department of Transportation | Design Division Standard

PEDESTRIAN FACILITIES
CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT		DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB		HIGHWAY
REVISIONS					SH 211
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY			SHEET NO.
	SAT	BX / ME			84

LEGEND

- R.O.W.
- DRAINAGE AREA BOUNDARY
- EXISTING CONTOUR
- FLOW ARROW
- (X-X) INTERIOR DRAINAGE AREA

NOTES

1. THE RATIONAL METHOD WAS USED FOR DRAINAGE AREAS LESS THAN 200-ACRES FOLLOWING THE METHODOLOGY DESCRIBED IN THE TXDOT HYDRAULIC DESIGN MANUAL, CH 4 SEC 12 (SEPTEMBER 2019).
2. EXISTING 2-FT CONTOURS WERE DEVELOPED USING THE SH 211 PS&E PROPOSED TIN FILE, DATED 9-27-2022.
3. EX-01 IS TAKEN AS THE TOTAL AREA OF EX-01A AND EX-01B AT THE OUTFALL OF EX-01B.
4. EX-02 IS TAKEN AS THE TOTAL AREA OF EX-02A AND EX-02B AT THE OUTFALL OF EX-02B.

OVERALL CONTRIBUTING DRAINAGE AREAS LESS THAN 200-ARCES									
RATIONAL METHOD				10-YEAR STORM FREQUENCY		25-YEAR STORM FREQUENCY		100-YEAR STORM FREQUENCY	
DRAINAGE AREA ID	AREA (ACRE)	RUNOFF COEFFICIENT	TC (MIN)	I (IN/HR)	Q (CFS)	I (IN/HR)	Q (CFS)	I (IN/HR)	Q (CFS)
EX-01A	95.6	0.33	84.8	2.28	71.9	2.81	88.6	3.68	116.1
EX-01B	27.2	0.45	41.2	3.64	44.6	4.45	54.5	5.74	70.3
EX-01	122.8	0.36	81.7	2.33	103.0	2.88	127.3	3.77	166.7
EX-02A	39.7	0.32	29.9	4.40	55.9	5.35	68.0	6.85	87.0
EX-02B	125.8	0.30	42.5	3.57	134.7	4.37	164.9	5.64	212.9
EX-02	165.5	0.31	42.5	3.57	183.2	4.37	224.2	5.64	289.4

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: CHRISTOPHER MAX GREEN
P.E. SERIAL NO: 145842
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 300 600 900
SCALE: 1"= 600'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

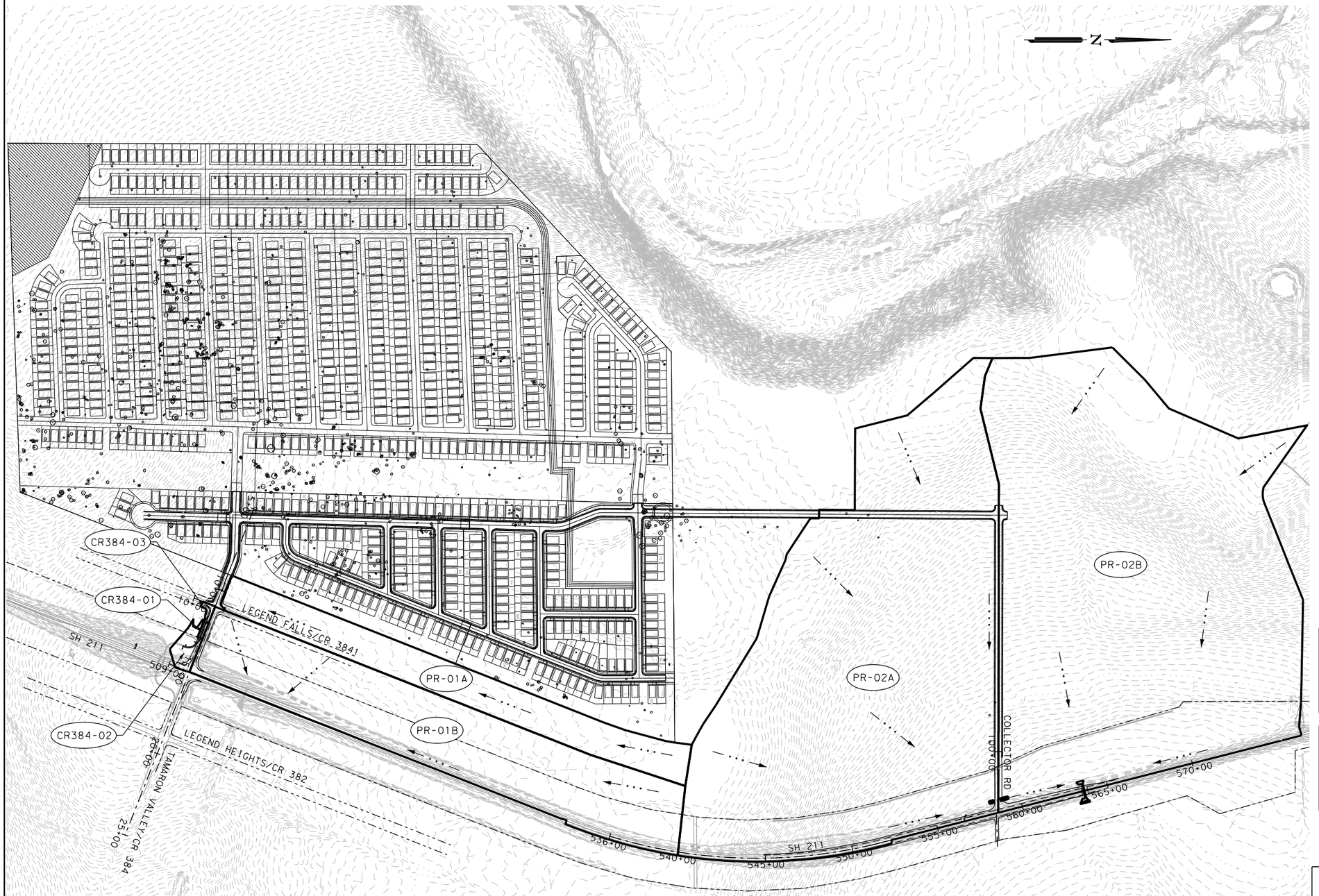
EXISTING DRAINAGE AREA MAP & COMPUTATIONS

SHEET 1 OF 1

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 85

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\Drainage\1228504_DAM01.dgn



LEGEND

- R.O.W.
- DRAINAGE AREA BOUNDARY
- EXISTING CONTOUR
- FLOW ARROW
- (X-X) INTERIOR DRAINAGE AREA

NOTES

1. THE RATIONAL METHOD WAS USED FOR DRAINAGE AREAS LESS THAN 200-ACRES FOLLOWING THE METHODOLOGY DESCRIBED IN THE TXDOT HYDRAULIC DESIGN MANUAL, CH 4 SEC 12 (SEPTEMBER 2019).
2. EXISTING 2-FT CONTOURS WERE DEVELOPED USING THE SH 211 PS&E PROPOSED TIN FILE, DATED 9-27-2022.
3. REFER TO SITE DEVELOPMENT PLANS FOR ADJACENT DRAINAGE AREA INFORMATION.
4. PR-01 IS TAKEN AS THE TOTAL AREA OF PR-01A AND PR-01B AT THE OUTFALL OF PR-01B.
5. PR-02 IS TAKEN AS THE TOTAL AREA OF PR-02A AND PR-02B AT THE OUTFALL OF PR-02B.
6. TOTAL CR384-02 IS TAKEN AS THE SUM OF CR384-01 AND CR384-02 AND IS USED FOR ANALYSIS.

OVERALL CONTRIBUTING DRAINAGE AREAS LESS THAN 200-ARCES

RATIONAL METHOD				10-YEAR STORM FREQUENCY		25-YEAR STORM FREQUENCY		100-YEAR STORM FREQUENCY	
DRAINAGE AREA ID	AREA (ACRE)	RUNOFF COEFFICIENT	TC (MIN)	I (IN/HR)	Q (CFS)	I (IN/HR)	Q (CFS)	I (IN/HR)	Q (CFS)
PR-01A	13.0	0.52	40.0	3.71	25.2	4.53	30.7	5.84	39.6
PR-01B	27.2	0.45	41.4	3.63	44.4	4.44	54.3	5.72	70.0
PR-01	40.2	0.48	42.2	3.59	69.3	4.39	84.8	5.66	109.3
PR-02A	78.2	0.33	36.6	3.91	100.9	4.77	123.0	6.13	158.1
PR-02B	85.4	0.31	42.2	3.59	95.0	4.39	116.2	5.66	149.8
PR-02	163.5	0.32	42.2	3.59	187.9	4.39	229.7	5.66	296.2
CR384-01	0.07	0.74	10.0	7.25	0.37	8.71	0.44	10.9	0.56
CR384-02	0.70	0.46	10.0	7.25	2.34	8.71	2.81	10.9	3.52
TOTAL CR384-02	-	-	-	-	2.71	-	3.25	-	4.08
CR384-03	0.11	0.70	10.0	7.25	0.56	8.71	0.67	10.9	0.84

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: CHRISTOPHER MAX GREEN
P.E. SERIAL NO: 145842
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 300 600 900
SCALE: 1"= 600'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

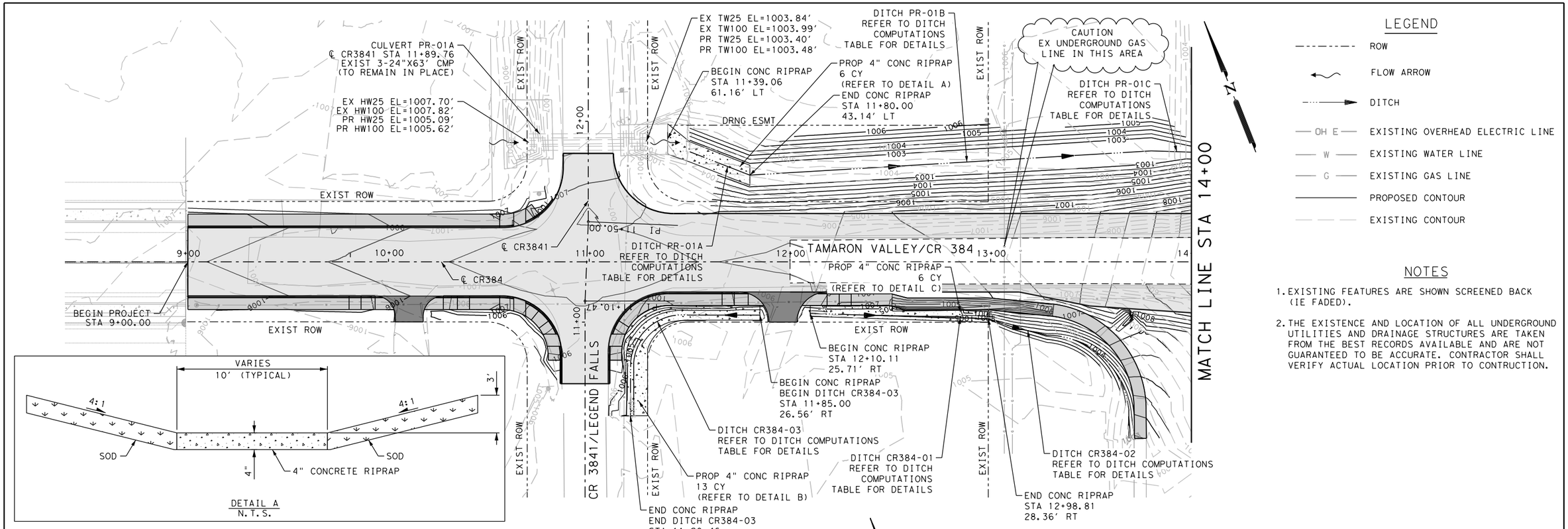
PROPOSED DRAINAGE AREA MAP & COMPUTATIONS

SHEET 1 OF 1

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 86

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\Drainage\1228504_DAM02.dgn



DITCH COMPUTATIONS (HYDRAULIC TOOLBOX, v5.2)

DITCH NAME	ALIGNMENT	START STA	OFFSET	ELEV	ALIGNMENT	END STA	OFFSET	ELEV	Q 10-YEAR	SLOPE	DITCH DEPTH	N-VALUE	BOTTOM WIDTH	FRONT SLOPE	BACK SLOPE	DITCH VELOCITY	DITCH SHEAR	DITCH FLOW DEPTH
				(FT)				(FT)	(CFS)	(FT/FT)	(FT)		(FT)	(H:1)	(H:1)	(FT/S)	(LB/FT²)	(FT)
PR-01A	CR 384	11+50.00	54.83 LT	1002.82	CR 384	11+80.00	43.14 LT	1002.79	69.3	0.0009	1.5	0.011	10	4	4	3.80	0.069	1.22
PR-01B	CR 384	11+80.00	43.14 LT	1002.79	CR 384	13+80.00	55.20 LT	1002.61	69.3	0.0009	3.0	0.035	10	4	4	1.65	0.125	2.22
PR-01C	CR 384	13+80.00	55.20 LT	1002.61	CR 384	14+04.00	75.36 LT	1002.57	69.3	0.0009	3.0	0.035	-	-	-	-	-	-
CR384-01	CR 384	12+10.11	25.71 RT	1005.04	CR 384	12+98.81	28.36 RT	1004.91	0.37	0.0015	0.5	0.011	0	3	3	1.40	0.027	0.30
CR384-02	CR 384	12+98.81	28.36 RT	1004.91	CR 384	13+68.92	87.93 RT	1002.78	2.71	0.0190	1.4	0.035	0	3	3	2.53	0.709	0.60
CR384-03	CR 384	11+85.00	26.56 RT	1005.10	CR 384	11+20.46	76.64 RT	1004.94	0.56	0.0016	0.3	0.011	3	3	3	1.71	0.013	0.13

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: CHRISTOPHER MAX GREEN
P.E. SERIAL NO: 145842
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

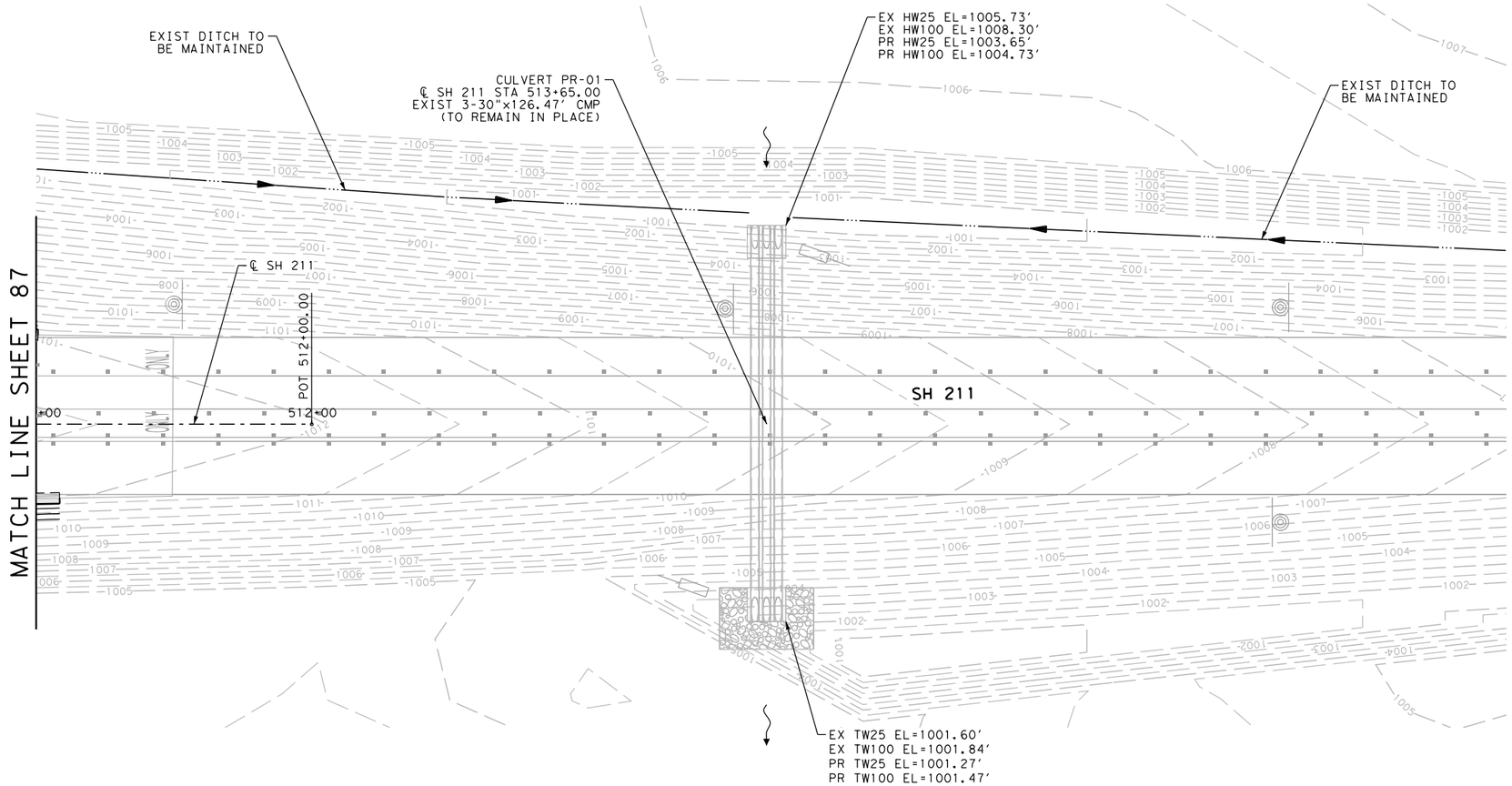
DRAINAGE PLAN LAYOUT

SHEET 1 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 87

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\Drainage\1228504_DRN01.dgn



LEGEND

- ROW
- FLOW ARROW
- DITCH
- OH E — EXISTING OVERHEAD ELECTRIC LINE
- W — EXISTING WATER LINE
- G — EXISTING GAS LINE
- PROPOSED CONTOUR
- EXISTING CONTOUR

NOTES

1. EXISTING FEATURES ARE SHOWN SCREENED BACK (IE FADED).
2. THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL VERIFY ACTUAL LOCATION PRIOR TO CONTRUCTION.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: CHRISTOPHER MAX GREEN
P.E. SERIAL NO: 145842
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

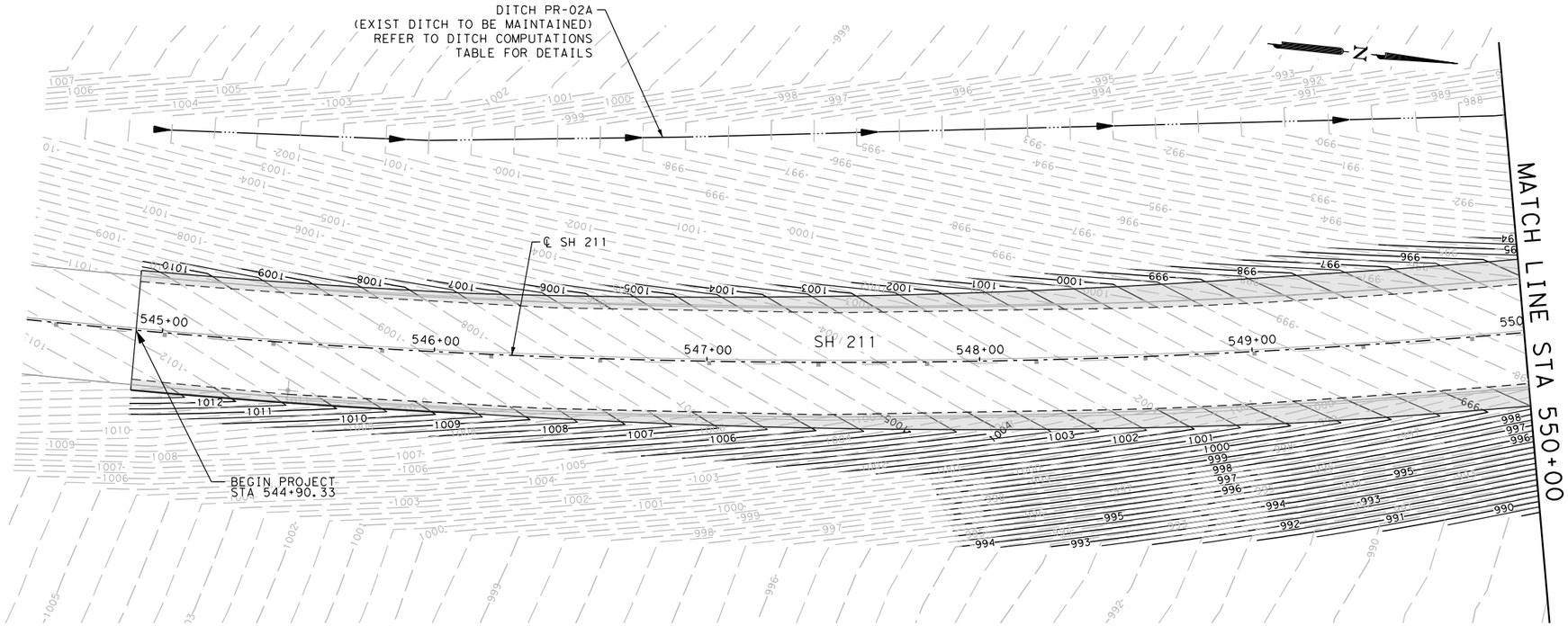
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

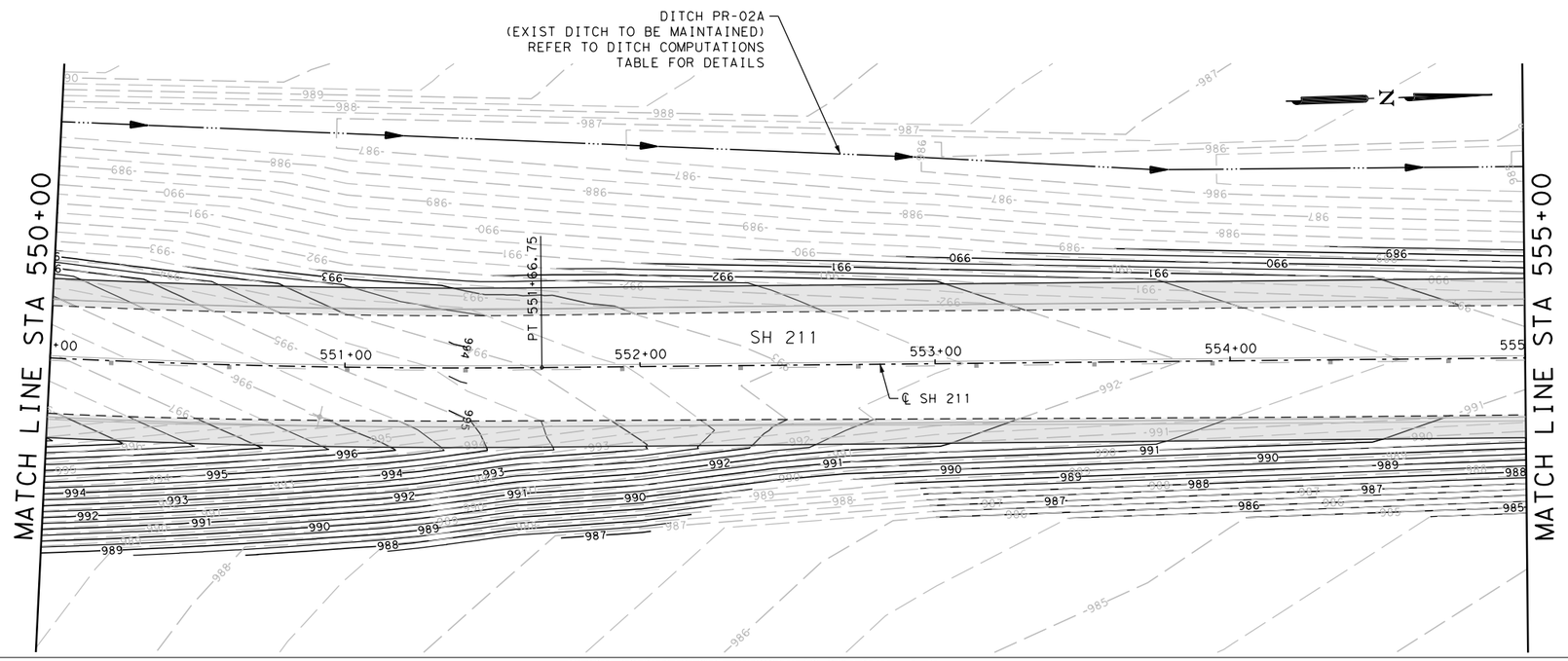
TALLEYHO IMPROVEMENTS

DRAINAGE PLAN LAYOUT

SHEET 2 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 88





LEGEND

- ROW
- FLOW ARROW
- DITCH
- OH E — EXISTING OVERHEAD ELECTRIC LINE
- W — EXISTING WATER LINE
- G — EXISTING GAS LINE
- PROPOSED CONTOUR
- EXISTING CONTOUR

NOTES

1. EXISTING FEATURES ARE SHOWN SCREENED BACK (IE FADED).
2. THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL VERIFY ACTUAL LOCATION PRIOR TO CONTRUCTION.

DITCH COMPUTATIONS (HYDRAULIC TOOLBOX, v5.2)

DITCH NAME	ALIGNMENT	START STA	OFFSET	ELEV	ALIGNMENT	END STA	OFFSET	ELEV	Q 10-YEAR	SLOPE	DITCH DEPTH	N-VALUE	BOTTOM WIDTH	FRONT SLOPE	BACK SLOPE	DITCH VELOCITY	DITCH SHEAR	DITCH FLOW DEPTH
				(FT)				(FT)	(CFS)	(FT/FT)	(FT)		(FT)	(H:1)	(H:1)	(FT/S)	(LB/FT²)	(FT)
PR-02A	SH 211	544+90.33	74.04 LT	1003.20	SH 211	557+11.69	64.66 LT	983.38	100.9	0.0162	3.0	0.035	10	4	7.5	4.87	1.232	1.22

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: CHRISTOPHER MAX GREEN
P.E. SERIAL NO: 145842
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

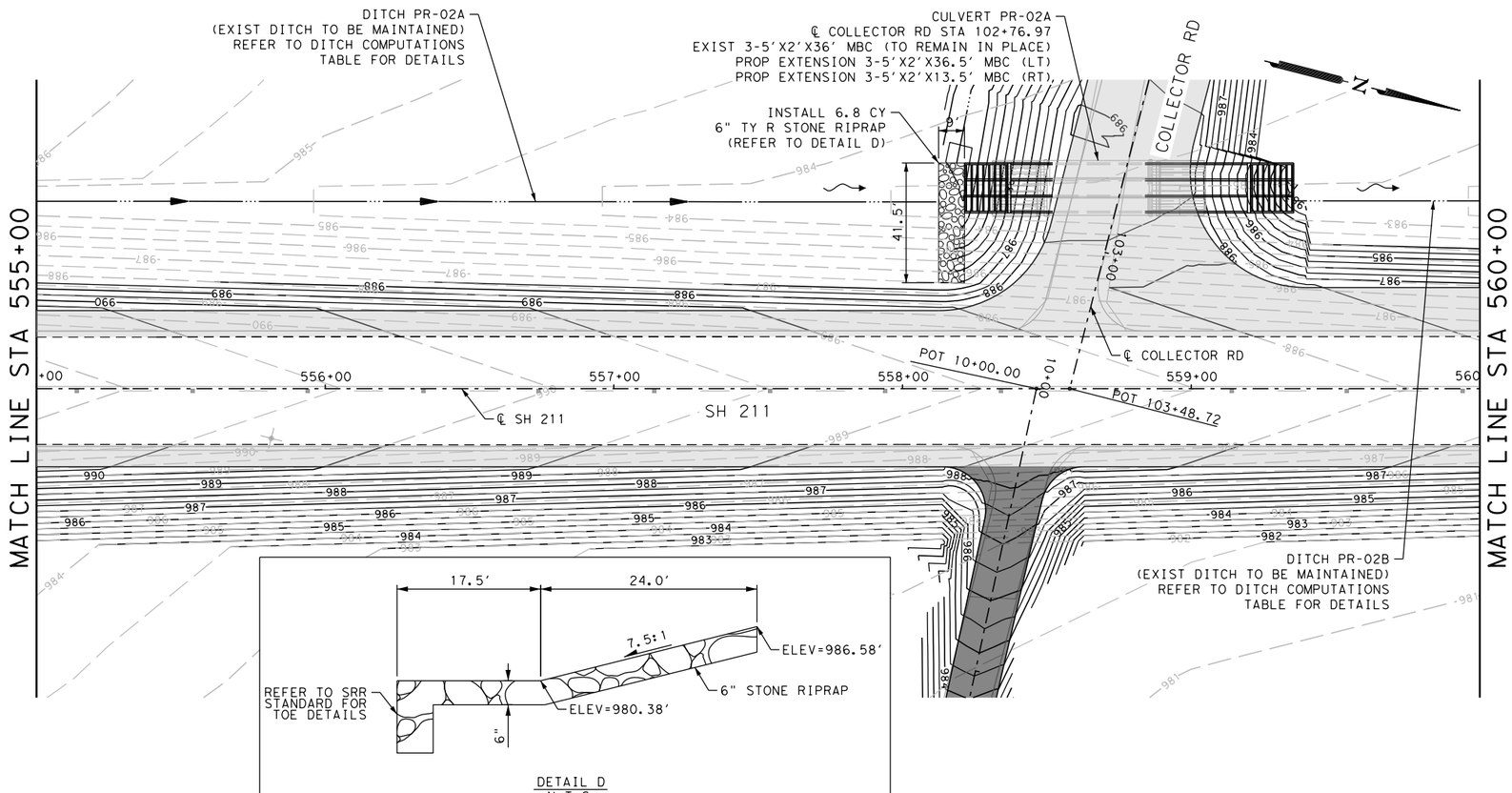
TALLEYHO IMPROVEMENTS

DRAINAGE PLAN LAYOUT

SHEET 3 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 89

Design Filename: P:\122\85\04\Design\Civil\Drainage\1228504_DRN03.dgn



LEGEND

- ROW
- FLOW ARROW
- DITCH
- OH E — EXISTING OVERHEAD ELECTRIC LINE
- W — EXISTING WATER LINE
- G — EXISTING GAS LINE
- PROPOSED CONTOUR
- EXISTING CONTOUR

NOTES

1. EXISTING FEATURES ARE SHOWN SCREENED BACK (IE FADED).
2. THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL VERIFY ACTUAL LOCATION PRIOR TO CONTRUCTION.

DITCH COMPUTATIONS (HYDRAULIC TOOLBOX, v5.2)

DITCH NAME	ALIGNMENT	START STA	OFFSET	ELEV	ALIGNMENT	END STA	OFFSET	ELEV	Q 10-YEAR	SLOPE	DITCH DEPTH	N-VALUE	BOTTOM WIDTH	FRONT SLOPE	BACK SLOPE	DITCH VELOCITY	DITCH SHEAR	DITCH FLOW DEPTH
				(FT)				(FT)	(CFS)	(FT/FT)	(FT)		(FT)	(H:1)	(H:1)	(FT/S)	(LB/FT²)	(FT)
PR-02A	SH 211	544+90.33	74.04 LT	1003.20	SH 211	557+11.69	64.66 LT	983.38	100.9	0.0162	3.0	0.035	10	4	7.5	4.87	1.232	1.22
PR-02B	SH 211	559+36.00	65.00 LT	982.80	SH 211	563+50.00	58.50 LT	981.20	187.9	0.0039	3.0	0.035	10	4	8.7	3.35	0.556	2.29
PR-02C	SH 211	563+50.00	58.50 LT	981.20	SH 211	574+00.00	55.50 LT	984.83	187.9	0.0035	3.0	0.035	10	4	8	3.26	0.519	2.38

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: CHRISTOPHER MAX GREEN
P.E. SERIAL NO: 145842
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

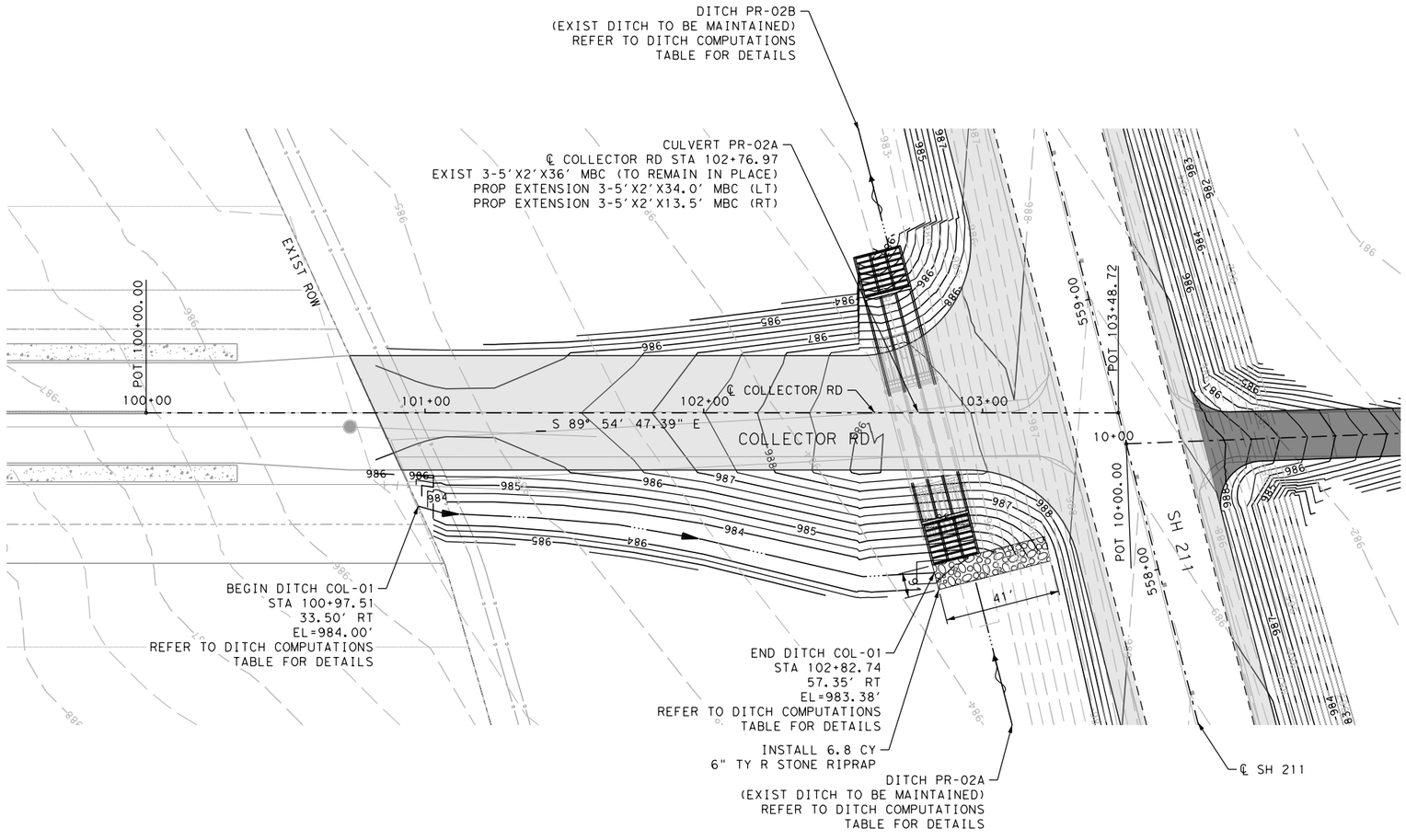
DRAINAGE PLAN LAYOUT

STA 555+00 TO END PROJECT

SHEET 4 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 90

Design Filename: P:\122\85\04\Design\Civil\Drainage\1228504_DRN04.dgn



N

LEGEND

- ROW
- FLOW ARROW
- DITCH
- PROPOSED CULVERT
- EXISTING CULVERT
- OH E — EXIST. OVERHEAD ELECTRIC LINE
- W — EXISTING WATER LINE
- G — EXISTING GAS LINE

NOTES

1. EXISTING FEATURES ARE SHOWN SCREEN BACK, (IE FADED).
2. THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL VERIFY ACTUAL LOCATION PRIOR TO CONSTRUCTION.
3. BOX LENGTHS SHOWN ARE PAY LENGTHS. BOX SLOPES ARE BASED ON CENTER-TO-CENTER LENGTHS SHOWN IN THE COMPUTATIONS.
4. CONTRACTOR TO VERIFY ALL EXISTING STRUCTURE ELEVATIONS.
5. CROSS CULVERTS ARE DESIGNED FOR A 25-YR STORM EVENT WITH A CHECK ON THE 100-YR STORM EVENT.
6. CONTRACTOR WILL PREMIX THE LIME TREATED SUBGRADE AT LOCATIONS WHERE PROPOSED CULVERTS WILL ENCROACH IN THE LIME TREATED SUBGRADE.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: CHRISTOPHER MAX GREEN
P.E. SERIAL NO: 145842
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

DITCH COMPUTATIONS (HYDRAULIC TOOLBOX, v5.2)

DITCH NAME	ALIGNMENT	START STA	OFFSET	ELEV	ALIGNMENT	END STA	OFFSET	ELEV	Q 10-YEAR	SLOPE	DITCH DEPTH	N-VALUE	BOTTOM WIDTH	FRONT SLOPE	BACK SLOPE	DITCH VELOCITY	DITCH SHEAR	DITCH FLOW DEPTH
				(FT)				(FT)	(CFS)	(FT/FT)	(FT)		(FT)	(H:1)	(H:1)	(FT/S)	(LB/FT²)	(FT)
PR-02A	SH 211	544+90.33	74.04 LT	1003.20	SH 211	557+11.69	64.66 LT	983.38	100.9	0.0162	3.0	0.035	10	4	7.5	4.87	1.232	1.22
PR-02B	SH 211	559+36.00	65.00 LT	982.80	SH 211	563+50.00	58.50 LT	981.20	187.9	0.0039	3.0	0.035	10	4	8.7	3.35	0.556	2.29
COL-01	COLLECTOR RD	100+97.51	33.50 RT	984.00	COLLECTOR RD	102+83.04	58.55 RT	983.38	61.9	0.0033	2.0	0.035	8	6	4	2.49	0.323	1.57

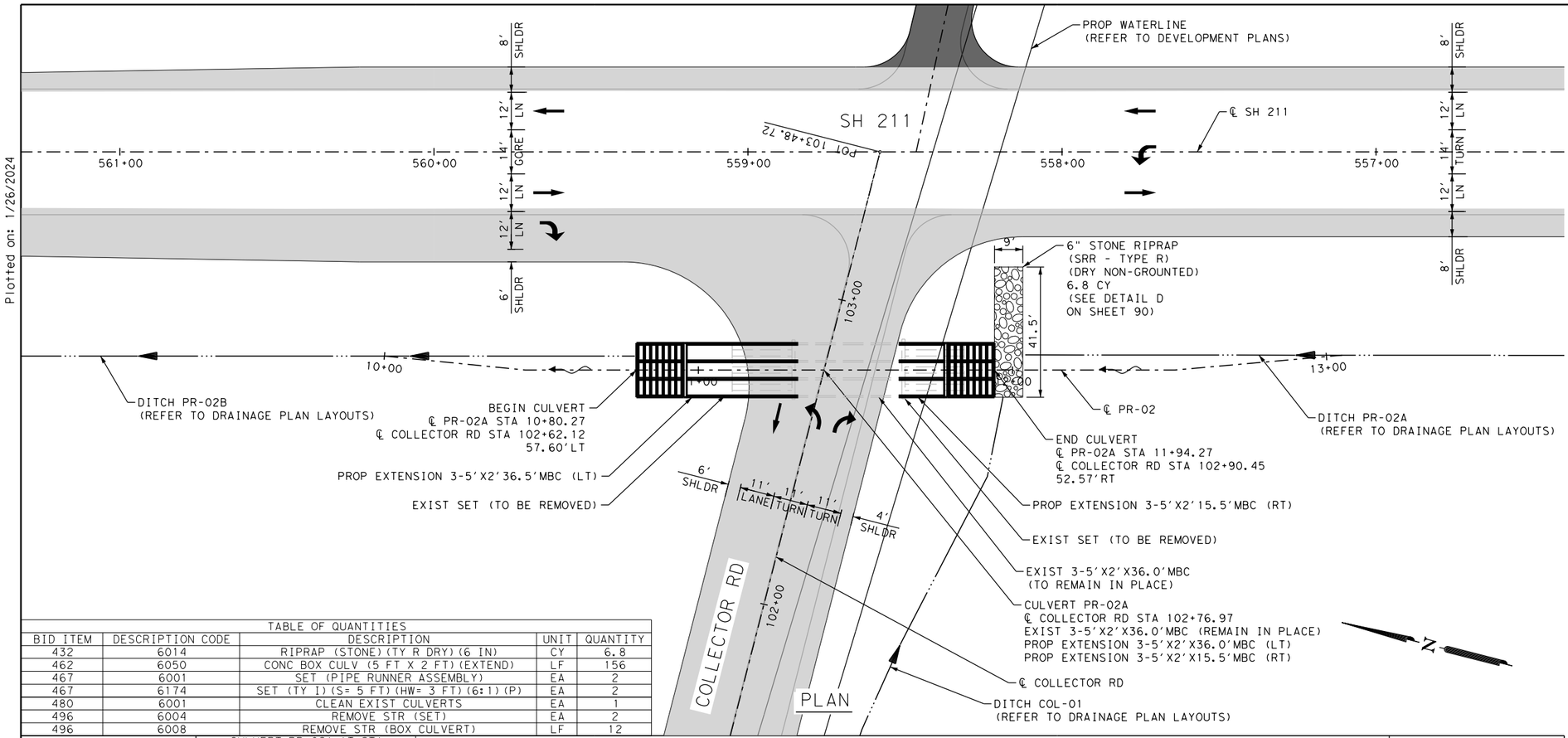
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

DRAINAGE PLAN LAYOUT

SHEET 5 OF 5

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 91



LEGEND

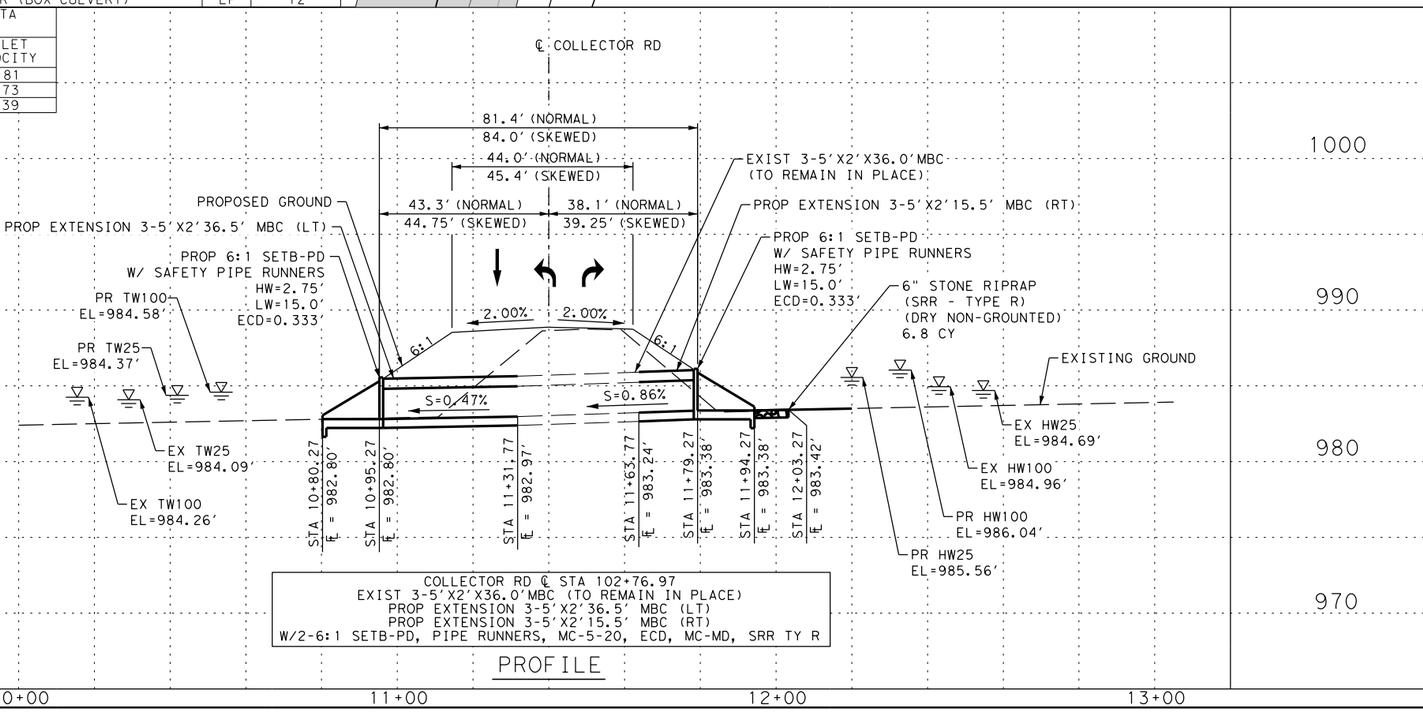
- ROW
- FLOW ARROW
- DITCH
- PROPOSED CULVERT
- EXISTING CULVERT
- OH E — EXIST. OVERHEAD ELECTRIC LINE
- W — EXISTING WATER LINE
- G — EXISTING GAS LINE

NOTES

1. EXISTING FEATURES ARE SHOWN SCREEN BACK, (IE FADED).
2. THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL VERIFY ACTUAL LOCATION PRIOR TO CONSTRUCTION.
3. BOX LENGTHS SHOWN ARE PAY LENGTHS. BOX SLOPES ARE BASED ON CENTER-TO-CENTER LENGTHS SHOWN IN THE COMPUTATIONS.
4. CONTRACTOR TO VERIFY ALL EXISTING STRUCTURE ELEVATIONS.
5. CROSS CULVERTS ARE DESIGNED FOR A 25-YR STORM EVENT WITH A CHECK ON THE 100-YR STORM EVENT.
6. CONTRACTOR WILL PREMIX THE LIME TREATED SUBGRADE AT LOCATIONS WHERE PROPOSED CULVERTS WILL ENCROACH IN THE LIME TREATED SUBGRADE.

TABLE OF QUANTITIES				
BID ITEM	DESCRIPTION CODE	DESCRIPTION	UNIT	QUANTITY
432	6014	RIPRAP (STONE) (TY R DRY) (6 IN)	CY	6.8
462	6050	CONC BOX CULV (5 FT X 2 FT) (EXTEND)	LF	156
467	6001	SET (PIPE RUNNER ASSEMBLY)	EA	2
467	6174	SET (TY I) (S= 5 FT) (HW= 3 FT) (6:1) (P)	EA	2
480	6001	CLEAN EXIST CULVERTS	EA	1
496	6004	REMOVE STR (SET)	EA	2
496	6008	REMOVE STR (BOX CULVERT)	LF	12

CULVERT PR-02A AT STA 102+76.97		
STORM FREQUENCY	FLOW (CFS)	OUTLET VELOCITY
10	100.9	6.81
25	123.0	7.73
100	158.1	8.39



COLLECTOR RD ℄ STA 102+76.97
EXIST 3-5'X2'X36.0'MBC (TO REMAIN IN PLACE)
PROP EXTENSION 3-5'X2'36.5' MBC (LT)
PROP EXTENSION 3-5'X2'15.5' MBC (RT)
W/2-6:1 SETB-PD, PIPE RUNNERS, MC-5-20, ECD, MC-MD, SRR TY R

PROFILE

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: CHRISTOPHER MAX GREEN
P.E. SERIAL NO: 145842
DATE: 1/26/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/26/2024

0 20 40

SCALE: PLAN 1"= 40' PROFILE 1"= 10'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

CULVERT LAYOUT
CULVERT PR-02A

SHEET 1 OF 2

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/26/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 92

Plotted on: 1/26/2024

Design Filename: P:\122\85\04\Design\Civil\Drainage\1228504_CULV01.dgn

DATE:1/26/2024

TABLE OF QUANTITIES				
BID ITEM	DESCRIPTION CODE	DESCRIPTION	UNIT	QUANTITY
104	6009	REMOVING CONC (RIPRAP)	SY	55.5
459	6007	GABION MATTRESSES (GALV)(12IN)	SY	62.7
462	6006	CONC BOX CULV (5 FT X 2 FT)	LF	86
462	6050	CONC BOX CULV (5 FT X 2 FT)(EXTEND)	LF	12
466	6150	WINGWALL (FW-0)(HW=3 FT)	EA	2
480	6001	CLEAN EXIST CULVERTS	EA	1
496	6005	REMOVE STR (WINGWALL)	EA	2
496	6008	REMOVE STR (BOX CULVERT)	LF	12

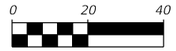
DESIGN SPEED = 60 MPH

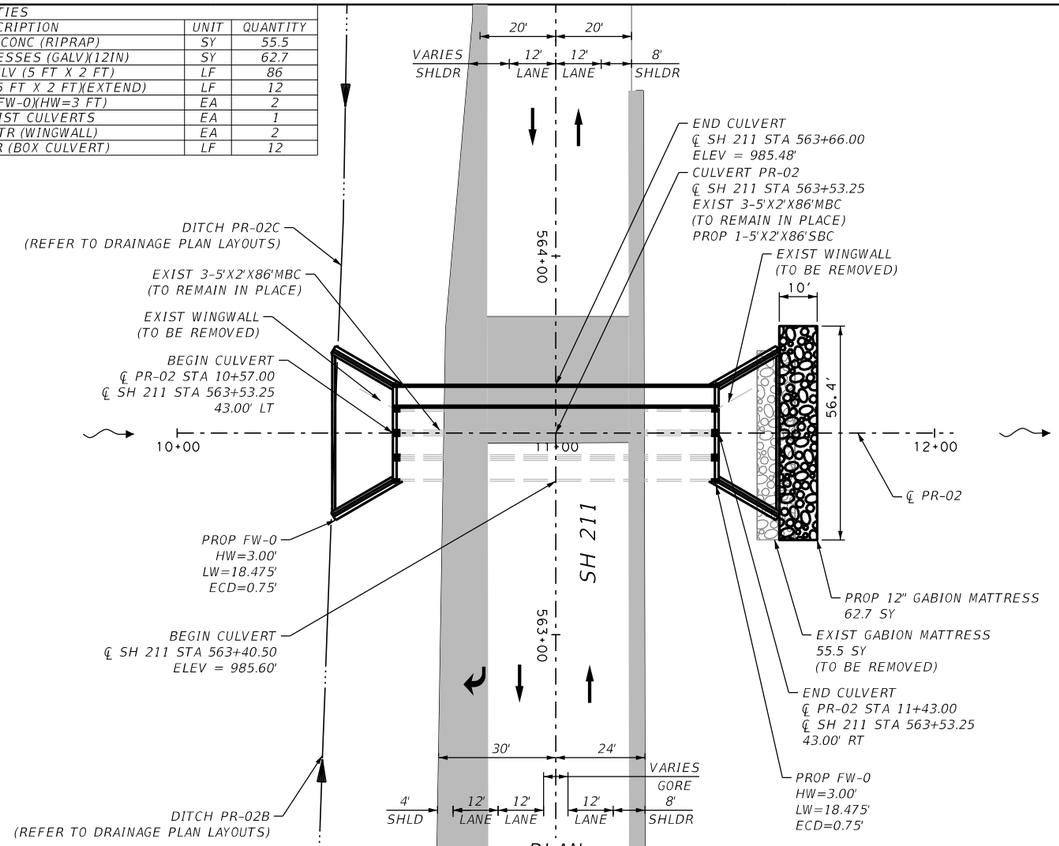
TRAFFIC DATA:
ADT (2020) = 20,800
ADT (2050) = 40,300
FUNCTIONAL CLASSIFICATION: MAJOR COLLECTOR

NBI: XX-XXX-X-XXXX-XX-XXX

HL 93 LOADING

SCALE: PLAN 1"= 40' PROFILE 1"= 10'





PLAN

EXIST ROW

LEGEND

- ROW
- FLOW ARROW
- DITCH
- PROPOSED CULVERT
- EXISTING CULVERT
- OH E — EXIST. OVERHEAD ELECTRIC LINE
- W — EXISTING WATER LINE
- G — EXISTING GAS LINE

NOTES

1. EXISTING FEATURES ARE SHOWN SCREEN BACK, (IE FADED).
2. THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES AND DRAINAGE STRUCTURES ARE TAKEN FROM THE BEST RECORDS AVAILABLE AND ARE NOT GUARANTEED TO BE ACCURATE. CONTRACTOR SHALL VERIFY ACTUAL LOCATION PRIOR TO CONSTRUCTION.
3. BOX LENGTHS SHOWN ARE PAY LENGTHS. BOX SLOPES ARE BASED ON CENTER-TO-CENTER LENGTHS SHOWN IN THE COMPUTATIONS.
4. CONTRACTOR TO VERIFY ALL EXISTING STRUCTURE ELEVATIONS.
5. CROSS CULVERTS ARE DESIGNED FOR A 25-YR STORM EVENT WITH A CHECK ON THE 100-YR STORM EVENT.
6. CONTRACTOR WILL PREMIX THE LIME TREATED SUBGRADE AT LOCATIONS WHERE PROPOSED CULVERTS WILL ENCROACH IN THE LIME TREATED SUBGRADE.

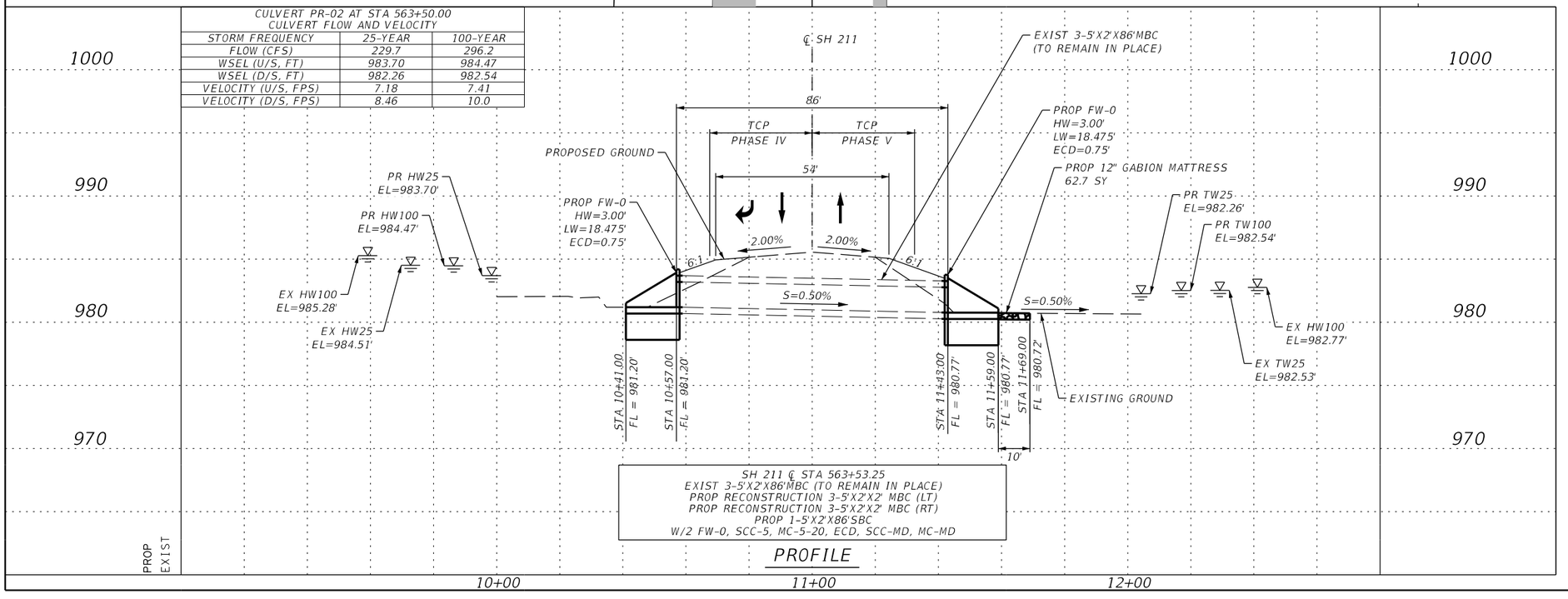
DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: CHRISTOPHER MAX GREEN
P.E. SERIAL NO: 145842
DATE: 1/26/2024

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/26/2024

CULVERT PR-02 AT STA 563+50.00 CULVERT FLOW AND VELOCITY		
STORM FREQUENCY	25-YEAR	100-YEAR
FLOW (CFS)	229.7	296.2
WSEL (U/S, FT)	983.70	984.47
WSEL (D/S, FT)	982.26	982.54
VELOCITY (U/S, FPS)	7.18	7.41
VELOCITY (D/S, FPS)	8.46	10.0



SH 211 ℄ STA 563+53.25
EXIST 3-5'X2'X86'MBC (TO REMAIN IN PLACE)
PROP RECONSTRUCTION 3-5'X2'X2' MBC (LT)
PROP RECONSTRUCTION 3-5'X2'X2' MBC (RT)
PROP 1-5'X2'X86'SBC
W/2 FW-0, SCC-5, MC-5-20, ECD, SCC-MD, MC-MD

PROFILE

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

Texas Department of Transportation

TALLEYHO IMPROVEMENTS

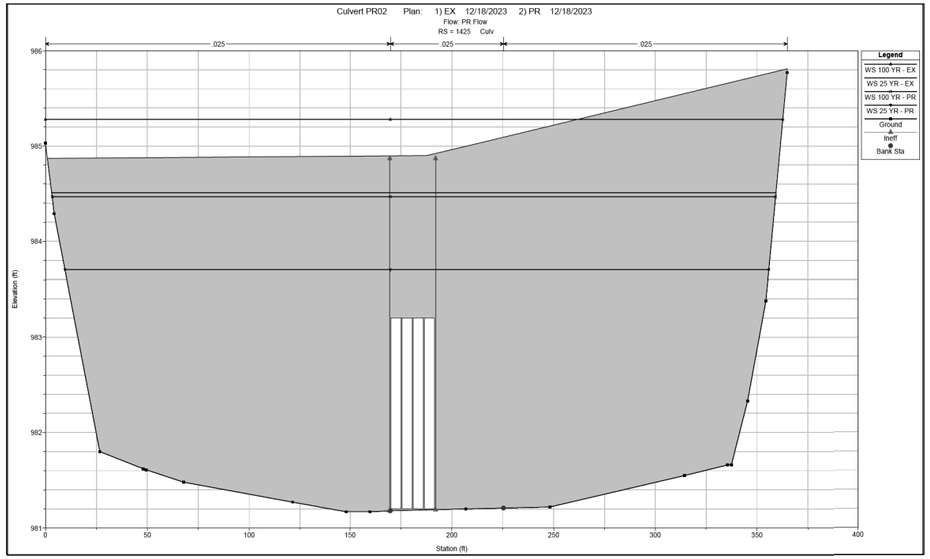
CULVERT LAYOUT CULVERT PR-02

SHEET 2 OF 2

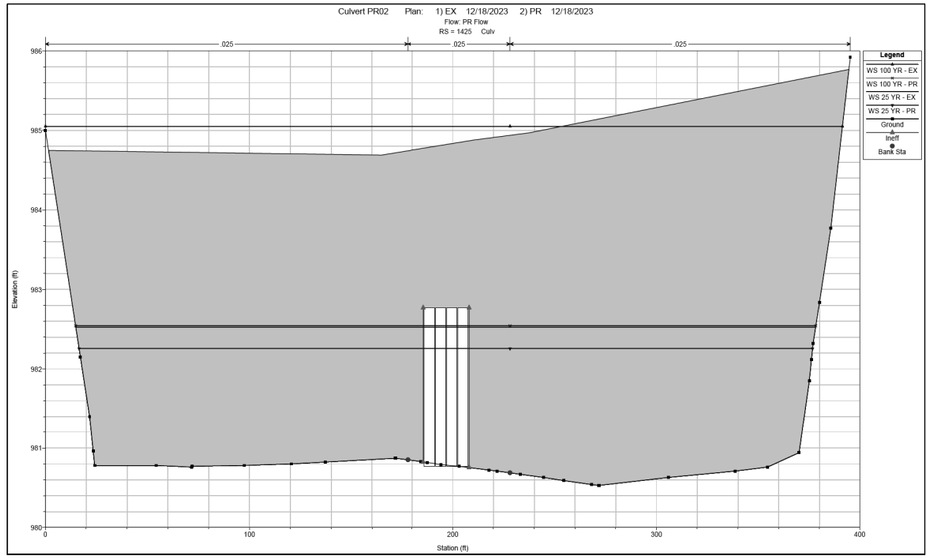
FILE: SEE FILE PATH	DN: CMG	CK: YJ	DW: CMG	CK: SJT
©TxDOT 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS	–	–	–	–
	DIST	COUNTY		SHEET NO.
	SAT	BEXAR		93

Design Filename: P:\122\85\04\Design\Civil\Drainage\1228504_CULV02.dgn

EXISTING/PROPOSED STREAM CROSS-SECTION @ NB SH 211



EXISTING/PROPOSED STREAM CROSS-SECTION @ SB SH 211



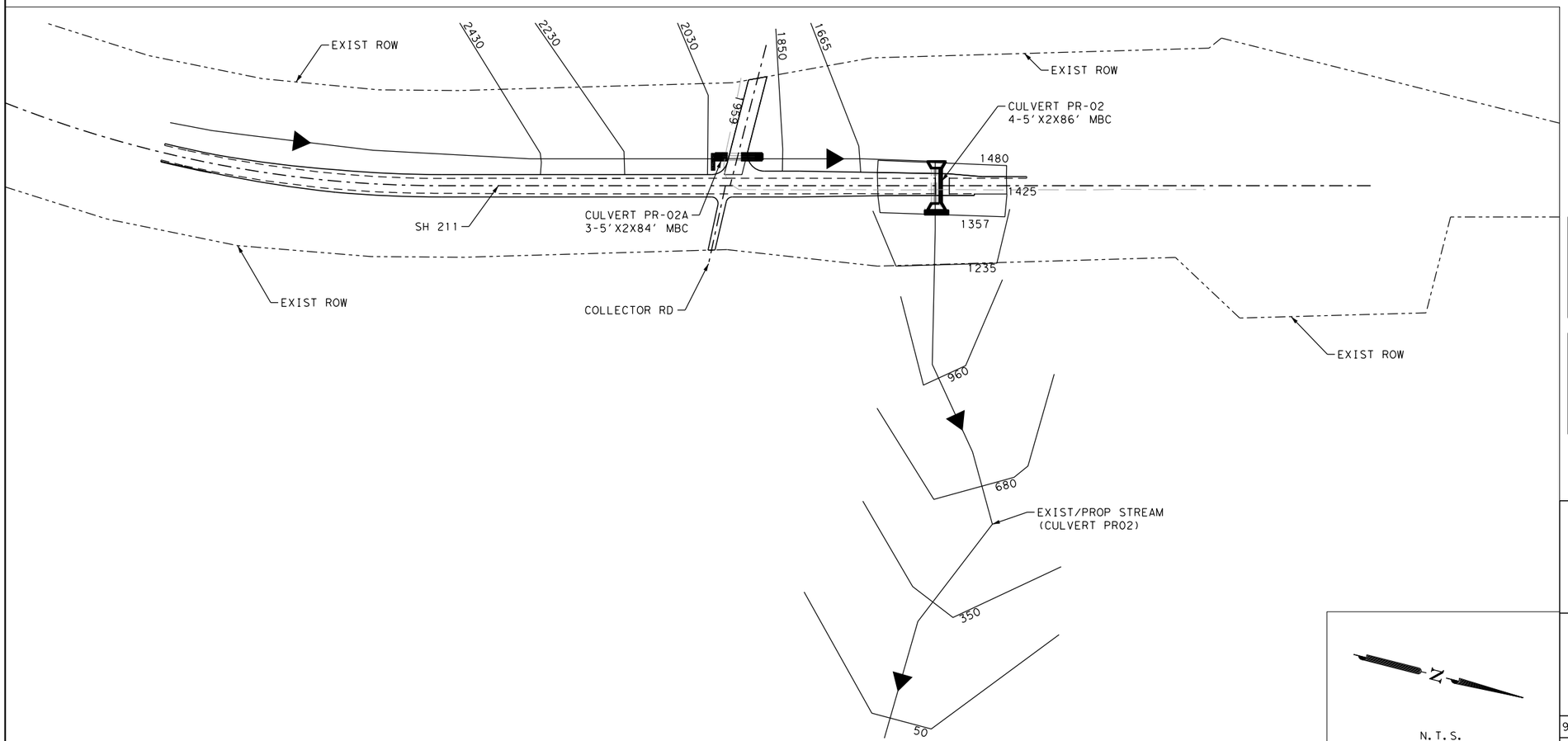
NOTES

1. USACE HEC-RAS VERSION 6.3 WAS UTILIZED FOR THE ANALYSIS.
2. HEC-RAS MODELS WERE DEVELOPED USING THE SH 211 PS&E PROPOSED TIN FILE, DATED 9-27-2022.
3. THIS SITE HAS NO ZONE DESIGNATION BY FEMA.
4. ALL ELEVATIONS ARE BASED ON THE NAVD88 VERTICAL DATUM.

REFERENCES

1. TXDOT'S HYDRAULIC DESIGN MANUAL, DATED 09-2019.
2. THE SH 211 PS&E PROPOSED TIN FILE, DATED 9-27-2022.

CROSS-SECTION LOCATION KEY MAP



DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: CHRISTOPHER MAX GREEN
P.E. SERIAL NO: 145842
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

N.T.S.

TALLEYHO IMPROVEMENTS

CULVERT HYDRAULIC DATA SHEETS

SHEET 1 OF 2

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 94

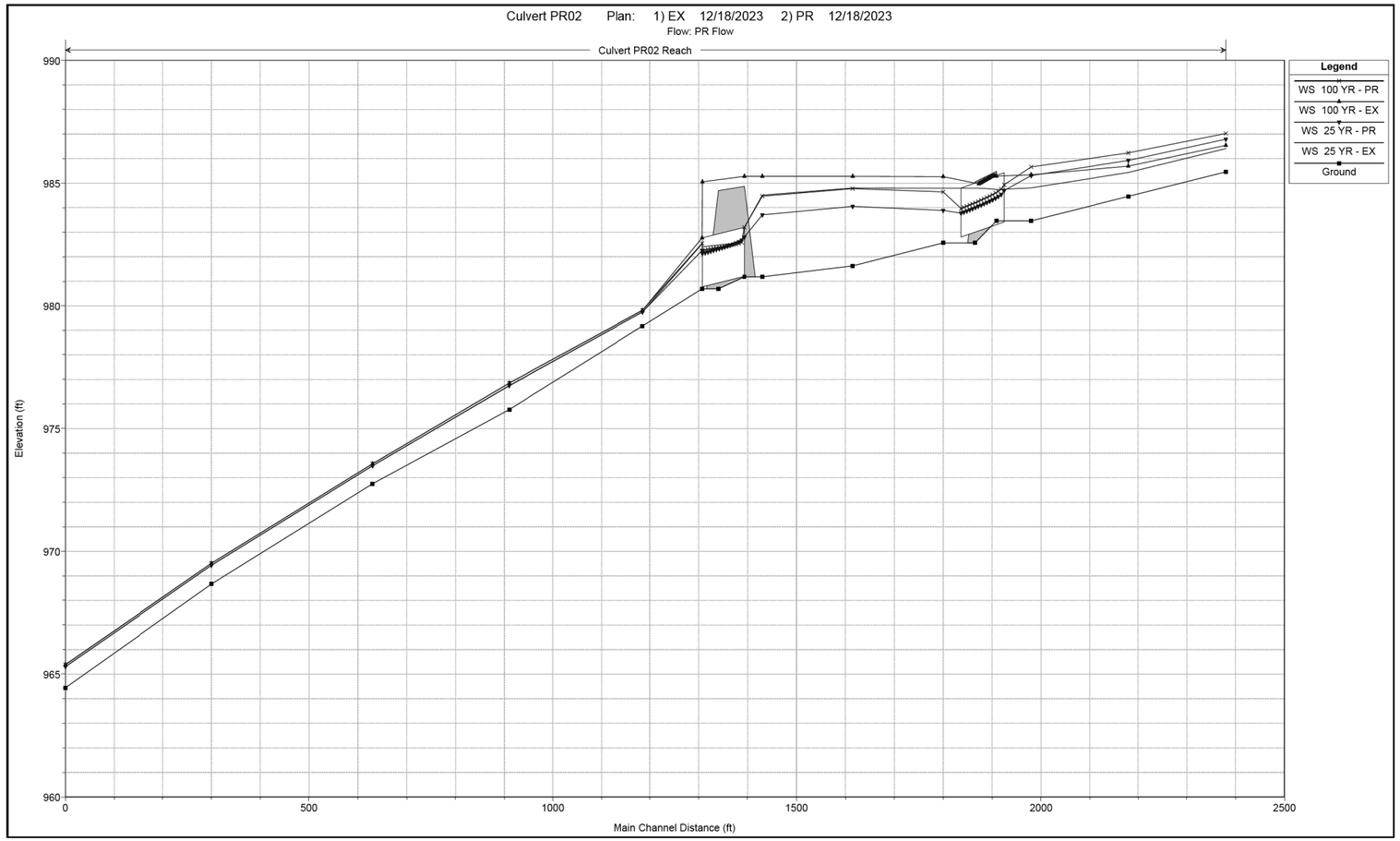
Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\Drainage\1228504_HDS01.dgn

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\Drainage\1228504_HDS02.dgn

WSEL PROFILE ALONG CULVERT PR02



HYDRAULIC COMPUTATIONS

HEC-RAS RIVER STA	DESIGN FREQUENCY 25-YR							DESIGN FREQUENCY 100-YR						
	FLOWS (CFS)		COMPUTED WATER SURFACE ELEVATION (FT)			VELOCITY (FPS)		FLOWS (CFS)		COMPUTED WATER SURFACE ELEVATION (FT)			VELOCITY (FPS)	
	EXIST	PROP	EXIST	PROP	RISE	EXIST	PROP	EXIST	PROP	EXIST	PROP	RISE	EXIST	PROP
2430	68.0	123.0	986.41	986.79	0.38	4.72	5.36	87.0	158.1	986.54	987.02	0.48	5.08	5.36
2230	68.0	123.0	985.43	985.92	0.49	3.38	2.92	87.0	158.1	985.69	986.23	0.54	2.83	2.60
2030	68.0	123.0	984.81	985.31	0.50	3.38	4.36	87.0	158.1	985.34	985.66	0.32	3.03	4.65
1959	PR-02A @ COLLECTOR RD (RS 1959)													
1850	68.0	123.0	984.79	983.89	-0.90	1.97	6.18	87.0	158.1	985.26	984.65	-0.61	2.06	4.91
1665	224.2	229.7	984.80	984.05	-0.75	1.05	1.80	289.4	296.2	985.27	984.77	-0.50	1.06	1.42
1480	224.2	229.7	984.51	983.70	-0.81	3.97	4.05	289.4	296.2	985.28	984.47	-0.81	0.23	4.01
1425	PR-02 @ SH 211 (RS 1425)													
1357	224.2	229.7	982.53	982.26	-0.27	7.54	6.95	289.4	296.2	982.77	982.54	-0.23	0.41	7.49
1235	224.2	229.7	979.74	979.75	0.01	2.49	2.52	289.4	296.2	979.81	979.82	0.01	2.79	2.81
960	224.2	229.7	976.74	976.75	0.01	4.52	4.52	289.4	296.2	976.85	976.85	0.00	4.70	4.73
680	224.2	229.7	973.48	973.49	0.01	2.81	2.83	289.4	296.2	973.56	973.57	0.01	3.05	3.07
350	224.2	229.7	969.43	969.44	0.01	4.12	4.15	289.4	296.2	969.51	969.52	0.01	4.45	4.48
50	224.2	229.7	965.30	965.30	0.00	3.69	3.71	289.4	296.2	965.39	965.39	0.00	3.98	4.01

NOTES

1. USACE HEC-RAS VERSION 6.3 WAS UTILIZED FOR THE ANALYSIS.
2. HEC-RAS MODELS WERE DEVELOPED USING THE SH 211 PS&E PROPOSED TIN FILE, DATED 9-27-2022.
3. THIS SITE HAS NO ZONE DESIGNATION BY FEMA.
4. ALL ELEVATIONS ARE BASED ON THE NAVD88 VERTICAL DATUM.

REFERENCES

1. TXDOT'S HYDRAULIC DESIGN MANUAL, DATED 09-2019.
2. THE SH 211 PS&E PROPOSED TIN FILE, DATED 9-27-2022.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: CHRISTOPHER MAX GREEN
P.E. SERIAL NO: 145842
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

CULVERT HYDRAULIC DATA SHEETS

SHEET 2 OF 2

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 95

Plotted on: 1/22/2024

CULVERT HYDRAULIC DATA (HY-8, v7.8)

STATION	ROADWAY	DESCRIPTION	DRAINAGE AREA ID	ALLOWABLE HEADWATER (FT)	10 YEAR							25 YEAR (DESIGN)							100 YEAR (CHECK)							COMMENTS
					FLOW "Q"	HW ELEV	HW DEPTH	TW ELEV	TW DEPTH	OUTLET VEL	TW VEL	FLOW "Q"	HW ELEV	HW DEPTH	TW ELEV	TW DEPTH	OUTLET VEL	TW VEL	FLOW "Q"	HW ELEV	HW DEPTH	TW ELEV	TW DEPTH	OUTLET VEL	TW VEL	
					(CPS)	(FT)	(FT)	(FT)	(FT)	(FT/S)	(FT/S)	(CPS)	(FT)	(FT)	(FT)	(FT)	(FT/S)	(FT/S)	(CPS)	(FT)	(FT)	(FT)	(FT)	(FT/S)	(FT/S)	
11+89.76	CR 3841	(EXIST) 3 - 24" X 63' CMP	EX-01A	1007.51	71.9	1007.61	4.60	1003.73	0.89	7.56	3.49	88.6	1007.70	4.69	1003.84	1.00	7.62	3.71	116.1	1007.82	4.81	1003.99	1.15	7.70	4.01	
			PR-01A		25.2	1004.84	1.83	1003.34	0.50	5.13	2.52	30.7	1005.09	2.08	1003.40	0.56	5.50	2.68	39.6	1005.62	2.61	1003.48	0.64	6.07	2.91	
513+65.00	SH 211	(EXIST) 3 - 30" X 126.47' RCP	EX-01	1009.64	103.0	1004.42	4.01	1001.60	1.64	8.19	3.17	127.3	1005.73	5.32	1001.60	1.82	9.35	3.36	166.7	1008.30	7.89	1001.84	2.06	11.6	3.61	
			PR-01		69.3	1003.05	2.64	1001.13	1.35	7.00	2.85	84.8	1003.65	3.24	1001.27	1.49	7.42	3.01	109.3	1004.73	4.32	1001.47	1.69	8.47	3.22	
102+76.97	COLLECTOR RD	(EXIST) 3 - 5' X 2' X 36' MBC	EX-02A	988.70	55.9	984.52	1.26	983.98	1.03	3.62	3.65	68.0	984.69	1.43	984.09	1.14	3.96	3.87	87.0	984.96	1.70	984.26	1.31	7.32	4.16	
		(PROP) 3 - 5' X 2' X 36.5' MBC (LT) (PROP) 3 - 5' X 2' X 15.5' MBC (RT)	PR-02A	988.73	100.9	985.27	1.89	984.21	1.41	6.81	4.12	123.0	985.56	2.18	984.37	1.57	7.73	4.60	158.1	986.04	2.66	984.58	1.78	8.39	4.94	

CULVERT HYDRAULIC DATA (HEC-RAS, v6.3)
BRIDGE CLASS CULVERTS

STATION	ROADWAY	DESCRIPTION	DRAINAGE AREA ID	ALLOWABLE HEADWATER (FT)	10 YEAR							25 YEAR (DESIGN)							100 YEAR (CHECK)							COMMENTS
					FLOW "Q"	HW ELEV	HW DEPTH	TW ELEV	TW DEPTH	OUTLET VEL	TW VEL	FLOW "Q"	HW ELEV	HW DEPTH	TW ELEV	TW DEPTH	OUTLET VEL	TW VEL	FLOW "Q"	HW ELEV	HW DEPTH	TW ELEV	TW DEPTH	OUTLET VEL	TW VEL	
					(CPS)	(FT)	(FT)	(FT)	(FT)	(FT/S)	(FT/S)	(CPS)	(FT)	(FT)	(FT)	(FT)	(FT/S)	(FT/S)	(CPS)	(FT)	(FT)	(FT)	(FT)	(FT/S)	(FT/S)	
563+50.00	SH 211	(EXIST) 3 - 5' X 2' X 86' MBC	EX-02	985.32	183.2	983.86	2.66	982.31	1.54	7.88	7.01	224.2	984.51	3.31	982.53	1.76	9.13	7.54	289.4	985.28	4.08	982.77	2.00	8.84	9.01	
		(PROP) 4 - 5' X 2' X 86' MBC	PR-02	984.78	187.9	983.35	2.15	982.08	1.31	7.97	6.45	229.7	983.70	2.50	982.26	1.49	8.46	6.95	296.2	984.47	3.27	982.54	1.77	10.0	7.49	

CULVERT INPUT DATA (HY-8, v7.8)

STATION	ROADWAY	DESCRIPTION	DRAINAGE AREA ID	INLET STATION (FT)	INLET ELEV (FT)	UPPER BREAK STATION (FT)	UPPER BREAK ELEV (FT)	LOWER BREAK STATION (FT)	LOWER BREAK ELEV (FT)	OUTLET STATION (FT)	OUTLET ELEV (FT)	TAILWATER DATA
11+89.76	CR 3841	(EXIST) 3 - 24" X 63' CMP	EX-01A	0	1003.01	-	-	-	-	63.00	1002.99	TRAPZ CH, BOT WIDTH =16, SS=8:1, CH S=0.0113 FT/FT, "n"=0.035, CH INVERT EL=1002.99 FT
			PR-01A									
513+65.00	SH 211	(EXIST) 3 - 30" X 126.47' RCP	EX-01	0	1000.41	-	-	-	-	126.47	999.78	TRAPZ CH, BOT WIDTH =10, SS=6:1, CH S=0.005 FT/FT, "n"=0.035, CH INVERT EL=999.78 FT
			PR-01									
102+76.97	COLLECTOR RD	(EXIST) 3 - 5' X 2' X 36' MBC	EX-02A	0	983.26	-	-	-	-	36.00	982.95	TRAPZ CH, BOT WIDTH =10.8, SS=4:1, CH S=0.01 FT/FT, "n"=0.035, CH INVERT EL=982.95 FT
		(PROP) 3 - 5' X 2' X 36.5' MBC (LT) (PROP) 3 - 5' X 2' X 15.5' MBC (RT)	PR-02A	0	983.38	47.50	982.97	-	-	84.00	982.80	TRAPZ CH, BOT WIDTH =10.8, SS=4:1, CH S=0.01 FT/FT, "n"=0.035, CH INVERT EL=982.80 FT
563+50.00	SH 211	(EXIST) 3 - 5' X 2' X 86' MBC	EX-02	0	981.20	-	-	-	-	86.00	980.77	TRAPZ CH, BOT WIDTH =40, SS=10:1, CH S=0.014 FT/FT, "n"=0.035, CH INVERT EL=980.77 FT
			PR-02									

CULVERT INPUT DATA (HEC-RAS, v6.3)

STATION	ROADWAY	DESCRIPTION	DRAINAGE AREA ID	DIST. TO UPSTREAM XS (FT)	ENTRANCE LOSS COEFF.	EXIT LOSS COEFF.	CULV MANNING'S "n"	UPSTREAM INVERT ELEV (FT)	DOWNSTREAM INVERT ELEV (FT)	DOWNSTREAM BOUNDARY CONDITIONS (FT/FT)	MANNING'S "n" VALUE		
											LOB	CHANNEL	ROB
563+50.00	SH 211	(EXIST) 3 - 5' X 2' X 86' MBC	EX-02	36.5	0.4	1	0.013	981.20	980.77	NORMAL DEPTH, S=0.0123	0.025	0.025	0.025
		(PROP) 4 - 5' X 2' X 86' MBC	PR-02	36.5	0.4	1	0.011	981.20	980.77	NORMAL DEPTH, S=0.0123	0.025	0.025	0.025

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: CHRISTOPHER MAX GREEN
P.E. SERIAL NO: 145842
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

CULVERT HYDRAULIC CALCULATIONS

SHEET 1 OF 1

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 96

Design Filename: P:\122\85\04\Design\Civil\Drainage\1228504_HDS03.dgn

Culvert Station and/or Creek Name followed by applicable end (Lt, Rt or Both)	Description of Box Culvert No. Spans ~ Span X Height	Max Fill Height (Ft)	Applicable Box Culvert Standard (4)	Applicable Wingwall or End Treatment Standard	Skew Angle (0°,15°, 30° or 45°)	Side Slope or Channel Slope Ratio (SL:1)	T Culvert Top Slab Thickness (In)	U Culvert Wall Thickness (In)	C Estimated Curb Height (Ft)	Hw (1) Height of Wingwall (Ft)	A Curb to End of Wingwall (Ft)	B Offset of End of Wingwall (Ft)	Lw Length of Longest Wingwall (Ft)	Ltw Culvert Toewall Length (Ft)	Atw Anchor Toewall Length (Ft)	Riprap Apron (CY)	Class "C" Conc (Curb) (2) (CY)	Class "C" Conc (Wingwall) (3) (CY)	Total Wingwall Area (SF)
PR-02A STA 102+76.97 (RT)	3 - 5' X 2'	3.21	MC-5-20	SETB-PD	0°	6:1	8	7	0.333	2.75	N/A	N/A	15.00	N/A	17.333	0.0	0.2	7.9	N/A
PR-02A STA 102+76.97 (LT)	3 - 5' X 2'	3.21	MC-5-20	SETB-PD	0°	6:1	8	7	0.333	2.75	N/A	N/A	15.00	N/A	17.333	0.0	0.2	7.9	N/A
PR-02 STA 563+53.25 (RT)	4 - 5' X 2'	2.07	SCC-5	FW-0	0°	6:1	6	6	0.75	3.00	16.00	9.238	18.475	N/A	N/A	8.7	0.7	4.8	62
PR-02 STA 563+53.25 (LT)	4 - 5' X 2'	2.07	SCC-5	FW-0	0°	6:1	6	6	0.75	3.00	16.00	9.238	18.475	25.50	N/A	0.0	0.7	5.8	62

NOTES:
Skew = 0° on SW-0, FW-0, SETB-CD, SETB-SW-0, and SETB-FW-0 standard sheets;
30° maximum for safety end treatment

SL:1 = Horizontal : 1 Vertical
- Side slope at culvert for flared or straight wingwalls.
- Channel slope for parallel wingwalls.
- Slope must be 3:1 or flatter for safety end treatments.

T = Box culvert top slab thickness. Dimension can be found on the applicable box culvert standard sheet.

U = Box culvert wall thickness. Dimension can be found on the applicable box culvert standard sheet.

C = Curb height

See applicable wing or end treatment standard sheets for calculations of Hw, A, B, Lw, Ltw, Atw, and Total Wingwall Area.

Hw = Height of wingwall

A = Distance from face of curb to end of wingwall (not applicable to parallel or straight wingwalls)

B = Offset of end of wingwall (not applicable to parallel or straight wingwalls)

Lw = Length of longest wingwall.

Ltw = Length of culvert toewall (not applicable when using riprap apron)

Atw = Length of anchor toewall (applicable to safety end treatment only)
Total Wingwall Area = Wingwall area in sq. ft. for two wingwalls (one structure end) if Lt or Rt.
Area for four wingwalls (two structure ends) if Both.

(1) Round the wall heights shown to the nearest foot for bidding purposes.

(2) Concrete volume shown is for box culvert curb only. For curbs using the Box Culvert Rail Mounting Details (RAC) standard sheet quantities shown must be increased by a factor of 2.25. If Class S concrete is required for the top slab of the culvert, also provide Class S concrete for the curb. Curb concrete is considered part of the Box Culvert for payment.

(3) Concrete volume shown is total of wings, footings, culvert toewall (if any), anchor toewalls (if any) and wingwall toewalls. Riprap aprons, culverts, and curb quantities are not included.

(4) Regardless of the type of culvert shown on this sheet, the Contractor has the option of furnishing cast-in-place or precast culverts unless otherwise shown elsewhere on the plans. If the Contractor elects to provide culverts of a different type than those shown on this sheet, it is the Contractor's responsibility to make the necessary adjustments to the dimensions and quantities shown.

SPECIAL NOTE:

This sheet is a supplement to the box culvert standards. It is to be filled out by the culvert specifier and provides dimensions for the construction of the box culvert wingwalls and safety end treatments.

An Excel 2010 spreadsheet to assist in completing this table can be downloaded from the Bridge Standards (English) web page on the TxDOT web site. The completed sheet must be signed, sealed, and dated by a licensed Professional Engineer.

DESIGN

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: CHRISTOPHER MAX GREEN
P.E. SERIAL NO: 145842
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW
DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

Texas Department of Transportation

Bridge Division Standard

BOX CULVERT SUPPLEMENT
WINGS AND END TREATMENTS

BCS

FILE: CD-BCS-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		97

DATE:
FILE:

DATE: 1/22/2024 2:40:15 PM
FILE: P:\122185.04\Design\Civil\Standards\Drainage\CD-FW0-20.dgn

TABLE OF DIMENSIONS AND REINFORCING STEEL
(Wings for one structure end)

Maximum Wingwall Height Hw	W	X	Y	Z	Variable Reinforcing Bars J1 Size	Bars J1 Spa	Bars J2 Size	Bars J2 Spa	Estimated Quantities per ft of wing length (2~wings) (3) Reinf (Lb/Ft)	Conc (CY/Ft)
2'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	33.73	0.248
3'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.07	0.261
3'-6"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	37.74	0.273
4'-0"	2'-5"	1'-0"	9"	7"	#4	1'-0"	#4	1'-0"	38.41	0.285
4'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	41.75	0.330
5'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.09	0.343
5'-6"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	45.75	0.355
6'-0"	3'-2"	1'-6"	1'-0"	7"	#4	1'-0"	#4	1'-0"	46.42	0.367
7'-0"	3'-8"	1'-9"	1'-3"	7"	#4	1'-0"	#4	1'-0"	52.77	0.414
8'-0"	4'-2"	2'-0"	1'-6"	8"	#5	1'-0"	#4	1'-0"	60.19	0.486
9'-0"	4'-8"	2'-3"	1'-9"	8"	#4	6"	#4	6"	81.49	0.535
10'-0"	5'-2"	2'-6"	2'-0"	8"	#5	6"	#4	6"	97.25	0.584
11'-0"	5'-8"	2'-9"	2'-3"	8"	#6	6"	#5	6"	133.65	0.634
12'-0"	6'-2"	3'-0"	2'-6"	9"	#7	6"	#5	6"	162.29	0.721
13'-0"	6'-8"	3'-3"	2'-9"	11"	#7	6"	#5	6"	178.80	0.856
14'-0"	7'-2"	3'-6"	3'-0"	1'-0"	#8	6"	#5	6"	216.78	0.959
15'-0"	7'-8"	4'-0"	3'-0"	1'-1"	#9	6"	#6	6"	283.06	1.068
16'-0"	8'-2"	4'-6"	3'-0"	1'-3"	#9	6"	#6	6"	297.02	1.234

TABLE OF WINGWALL REINFORCING
(2~wings)

Bar	Size	No.	Spa
D	#5	~	1'-0"
E	#4	~	1'-0"
F	#4	~	1'-0"
G	#6	4	~
M	#4	4	~
P	#4	~	1'-0"
R	#5	6	~
V	#4	~	1'-0"

TABLE OF ESTIMATED CULVERT TOEWALL QUANTITIES

Bar	Size	No.	Spa
L	#4	~	1'-6"
Q	#4	1	~
Reinf (Lb/Ft)			2.45
Conc (CY/Ft)			0.037

WING DIMENSION FORMULAS:
(All values are in feet.)

Hw = H + T + C – 0.250'
A = (Hw – 0.333') (SL)
B = (A) tangent (30°)
Lw = (A) ÷ cosine (30°)

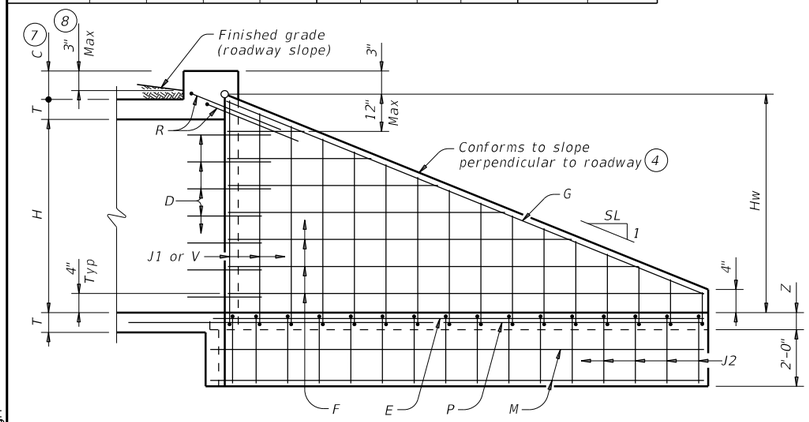
For cast-in-place culverts:
Ltw = (N) (S) + (N + 1) (U)

For precast culverts:
Ltw = (N) (2U + S) + (N – 1) (0.5')

Total wingwall area (two wings ~ SF) = (Hw + 0.333') (Lw)

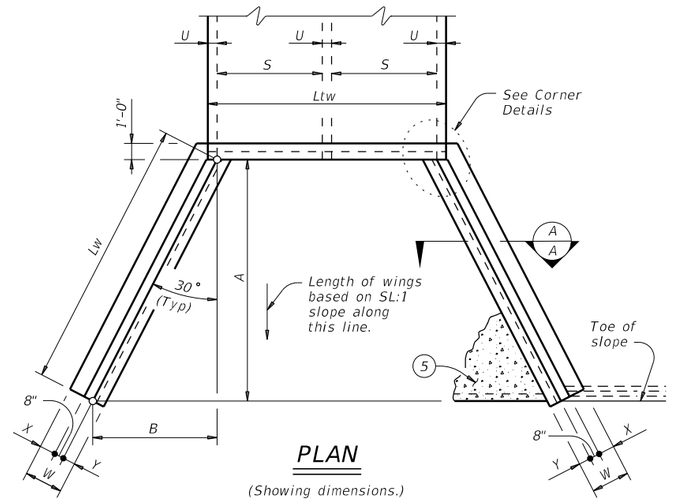
Hw = Height of wingwall
SL:1 = Side slope ratio (horizontal:1 vertical)
Lw = Length of wingwall
Ltw = Culvert toewall length
N = Number of culvert spans

See applicable box culvert standard sheet for H, S, T, and U values.



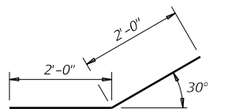
INSIDE ELEVATION

(Showing reinforcing. Culvert and culvert toewall reinforcing not shown for clarity.)

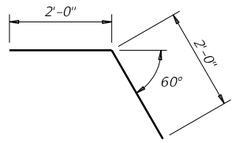


PLAN

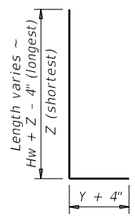
(Showing dimensions.)



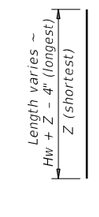
BARS D



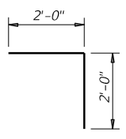
BARS R



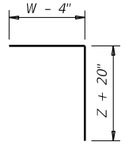
BARS J1



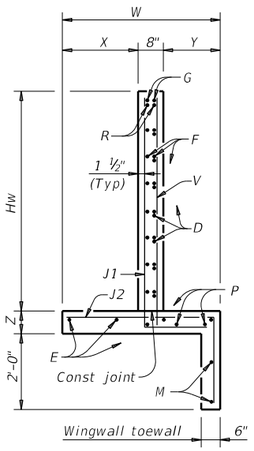
BARS V



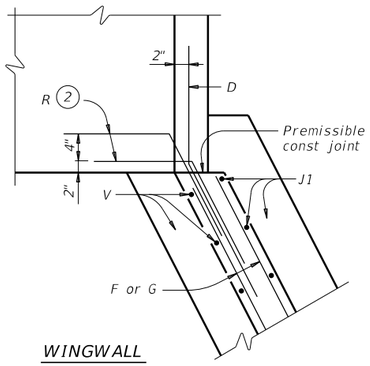
BARS L



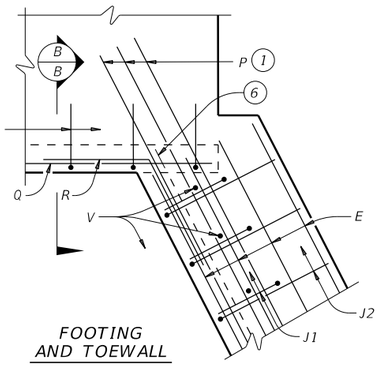
BARS J2



SECTION A-A



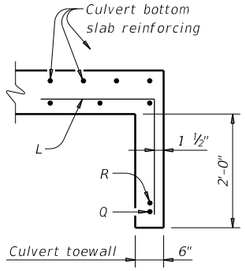
WINGWALL



FOOTING AND TOEWALL

CORNER DETAILS

(Culvert and culvert toewall reinforcing not shown for clarity.)



SECTION B-B (5)

(1) Extend Bars P 3'-0" minimum into bottom slab of box culvert.

(2) Adjust as necessary to maintain 1 1#2" clear cover and 4" minimum between bars.

(3) Quantities shown are based on an average wing height for two wings (one structure end). To determine total quantities for two wings, multiply the tabulated values by Lw.

(4) Recommended values of side slope are: 2:1, 3:1, 4:1, and 6:1.

(5) When shown elsewhere on the plans, construct 5" deep concrete riprap. Payment for riprap is as required by Item 432, "Riprap." Unless otherwise shown on the plans or directed by the Engineer, provide a 6" wide by 1'-6" deep reinforced concrete toewall along all edges of the riprap adjacent to natural ground; reinforce the toewall by extending typical riprap reinforcing into the toewall; and extend construction joints or grooved joints oriented in the direction of flow across the full distance of the riprap at intervals of approximately 20'. When such riprap is provided, the culvert toewall shown in SECTION B-B will not be required.

(6) At Contractor's option, culvert toewall may be ended flush with wingwall toewall. Adjust reinforcing as needed.

(7) 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0, refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Box Culvert Rail Mounting Details (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

(8) For vehicle safety, the following requirements must be met:
- For structures without bridge rail, construct curbs no more than 3" above finished grade.
- For structures with bridge rail, construct curbs flush with finished grade.

Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

MATERIAL NOTES:
Provide Class C concrete (f'c=3,600 psi).
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
In riprap concrete synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing unless noted otherwise.

GENERAL NOTES:
Designed according to AASHTO LRFD Bridge Design Specifications.
When structure is founded on solid rock, depth of toewalls for culverts and wingwalls may be reduced or eliminated as directed by the Engineer.
See Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.
The quantities for concrete and reinforcing steel resulting from the formulas given on this sheet are for Contractor's information only.

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing dimensions are out-to-out of bars.

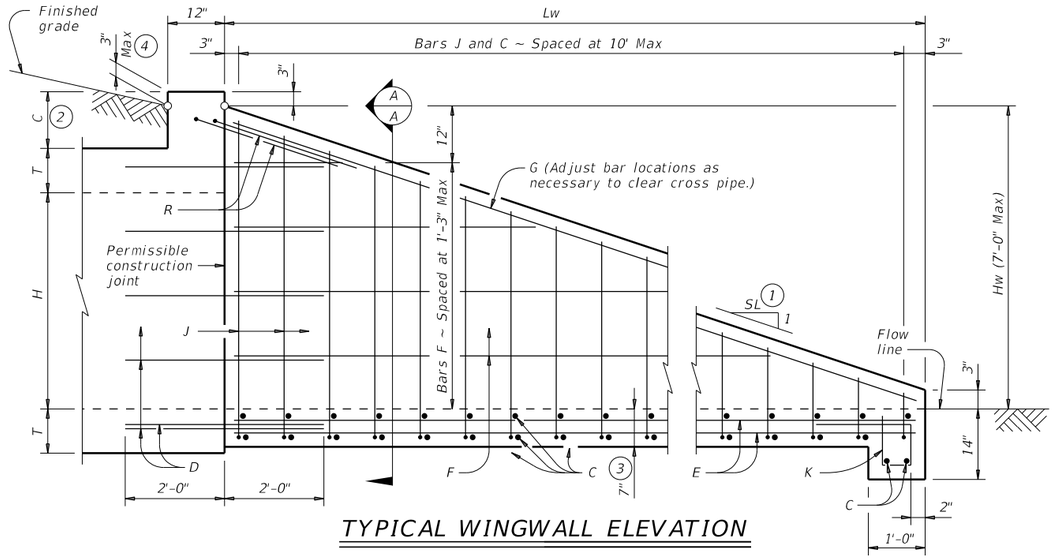
Texas Department of Transportation

Bridge Division Standard

CONCRETE WINGWALLS
WITH FLARED WINGS FOR 0° SKEW BOX CULVERTS

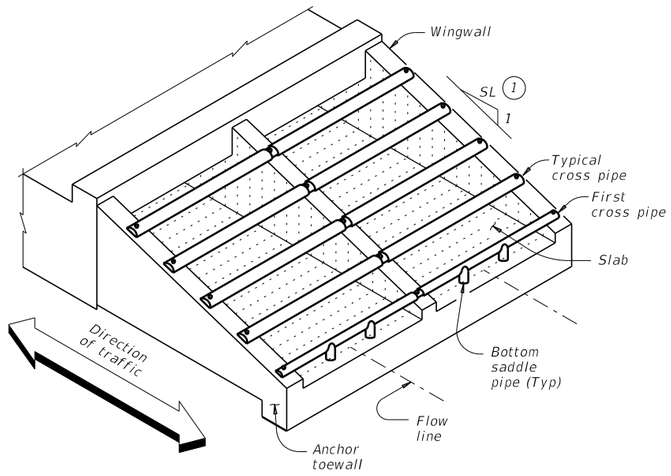
FW-0

FILE: CD-FW0-20.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020 REVISIONS	CONT	SECT	JOB	HIGHWAY
				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		98



TYPICAL WINGWALL ELEVATION

(Cross pipes not shown for clarity.)



ISOMETRIC VIEW OF TYPICAL INSTALLATION

(Showing bolted anchor option.)

WING DIMENSION CALCULATIONS:

$Hw = H + T + C - 0.250'$

$Lw = (Hw - 0.250')\ (SL)$

For cast-in-place culverts:

$Atw = (N)\ (S) + (N + 1)\ (U)$

For precast culverts:

$Atw = (N)\ (2U + S) + (N - 1)\ (0.500')$

Total Wingwall Area (SF)
$= (0.5)\ (Hw + 0.250')\ (Lw)\ (N - 1)$

Total Concrete Volume (CY)
$= [(\text{Wingwall Area})\ (0.583') +$
$(Lw)\ (Atw)\ (0.583') +$
$(Atw)\ (1.000')\ (1.167' - 0.583')] \div (27)$

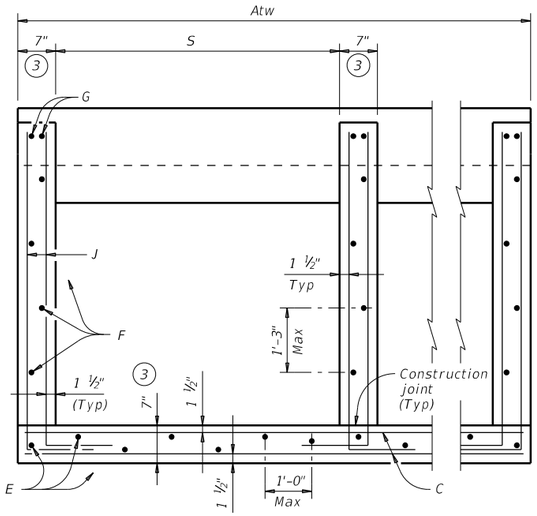
Total Reinforcing (Lb)
$= (1.55)\ (Lw)\ (Atw) +$
$(4.43)\ (Atw) +$
$(K)\ (Hw)\ (N + 1)\ (\sqrt{Lw})$

C = Height of curb above top of top slab (feet)
Hw = Height of wingwall (feet)
K = Constant value for use in formulas

Slope SL:1	K
6:1 ~	10.41

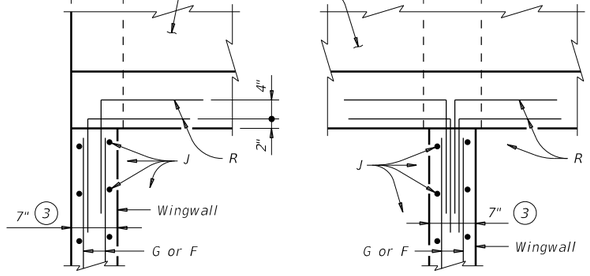
Atw = Anchor toewall length (feet)
Lw = Length of wingwall (feet)
N = Number of culvert barrels
SL:1 = Side slope ratio (horizontal : 1 vertical)

See applicable box culvert standard for H, S, T, and U values.



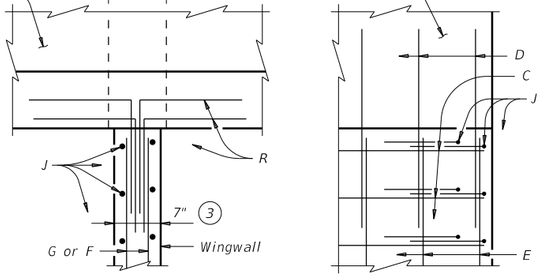
SECTION A-A

(Showing typical wingwall and wing slab reinforcing. Pipe runners not shown for clarity.)



AT TOP OF EXTERIOR WINGWALL

(Cast-in-place culvert)

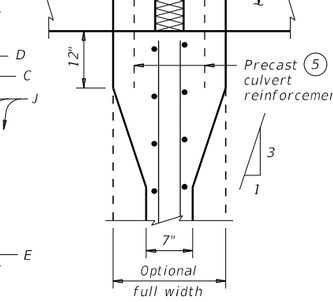


AT TOP OF INTERIOR WINGWALL

(Cast-in-place culvert)

AT OUTSIDE OF BOTTOM SLAB

(Cast-in-place culvert)



AT INTERIOR WINGWALL

(Precast culvert)

PLAN VIEWS OF CORNER DETAILS

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Adjust reinforcing as necessary to provide a minimum clear cover of 1½".
Provide Class "C" concrete (f`c = 3,600 psi).
Provide pipe runners, cross pipes, and anchor pipes meeting the requirements of ASTM A53 (Type E or S, Gr B), ASTM A500 Gr B, or API 5LX52.
Provide ASTM A307 bolts.
Galvanize all steel components, except the concrete reinforcing, unless required elsewhere in the plans, after fabrication.
Repair galvanizing damaged during transport or construction in accordance with Item 445, "Galvanizing."

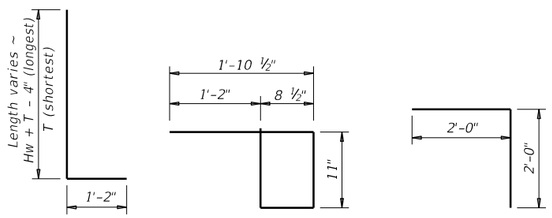
GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
The safety end treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the cross pipes.
Cross pipes are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.
The quantities for concrete, reinforcing steel, and cross pipes resulting from the formulas given herein are for Contractor's information only.
See the Box Culvert Supplement (BCS) standard sheet for additional dimensions and information.
Alternate design drawings bearing the seal of a professional engineer will be acceptable for precast construction of the safety end treatments.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing dimensions are out-to-out of bars.

TABLE OF REINFORCING BAR SIZES AND SPACING

Bar	Size	Spacing
C	#4	10" Max
D	#4	Match F and E
E	#4	1'- 0" Max
F	#4	1'- 3" Max
G	#6	As shown
J	#4	10" Max
K	#4	1'- 0" Max
R	#4	As shown



1. Provide 6:1 or flatter slope.
2. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures without railing and curbs taller than 1'-0", refer to Extended Curb Details the Extended Curb Details (ECD) standard sheet.
3. Wingwall and slab thicknesses may be the same as the adjacent culvert wall and slab thicknesses (7" Minimum). If thicknesses greater than the minimum (7") are used, no changes will be made in quantities and no additional compensation will be allowed.
4. For vehicle safety, reduce height, if necessary, to provide a maximum 3" projection above finished grade. No changes will be made in quantities and no additional compensation will be allowed for this work.
5. For culverts with C = 0", the precast culvert reinforcing may extend 1'-0" minimum into wingwall. Wingwall bars D and R may be omitted. Otherwise, refer to the Wingwall Connection detail on the Box Culvert Precast Miscellaneous Details (SCP-MD) standard sheet.

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

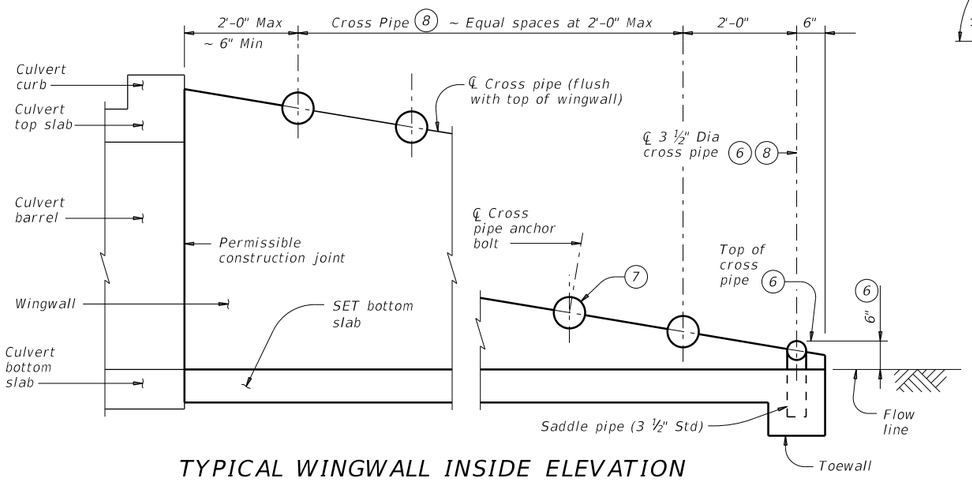
SAFETY END TREATMENT
FOR BOX CULVERTS (MAXIMUM Hw = 7'-0")
TYPE I ~ PARALLEL DRAINAGE

SETB-PD

FILE: CD-SETBPD-22.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 06-2022 ~ Wing dimensions				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		99

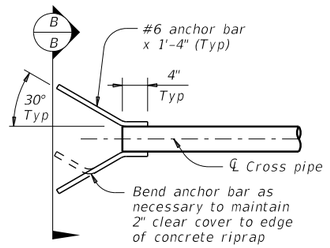
DATE:
FILE:

DATE:
FILE:

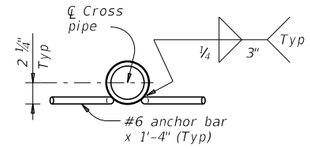


TYPICAL WINGWALL INSIDE ELEVATION

(Showing installation of cross pipes.)

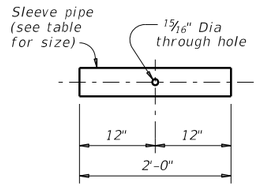


PART PLAN



SECTION B-B

OPTIONAL ANCHOR BAR DETAILS



SLEEVE PIPE DETAILS (9)

REQUIRED PIPE SIZES (8)		
Culvert Span Sizes	Cross Pipe Size	Sleeve Pipe Size (9)
First Pipe	3 ½" STD	2 ½" STD
30" to 42"	4" STD	3" STD
48" to 72"	5" STD	4" STD
78" to 120"	6" STD	5" STD

STANDARD PIPE SIZES		
Pipe Size	Pipe O.D.	Pipe I.D.
2 ½" STD	2.875"	2.469"
3" STD	3.500"	3.068"
3 ½" STD	4.000"	3.548"
4" STD	4.500"	4.026"
5" STD	5.563"	5.047"
6" STD	6.625"	6.065"

(6) The proper installation of the first cross pipe is critical for vehicle safety. Place the top of the first cross pipe at no more than 6" above the flow line.

(7) Always install the third cross pipe from the bottom of the culvert using a bolted connection. Take care to ensure that concrete does not flow into this cross pipe so as to permit disassembly of the bolted connection to allow cleanout access.

(8) Provide cross pipes and sleeve pipes (if required) as shown in the Required Pipe Sizes table. Provide 3 1#2" saddle pipes for the 3 1#2" first cross pipe.

(9) At Contractor's option, make the cross pipe continuous across the inside wingwalls. If this option is selected, omit the sleeve pipe and make a 15#16" diameter throughhole in the cross pipe to accept the anchor bolt at the centerline of each interior wingwall.

(10) Provide riprap when using the Optional Anchor Bar details. Riprap is included in the bid price for Safety End Treatment. Provide riprap in accordance with Item 432, "Riprap."

SECTION THROUGH INSTALLATION OF TYPICAL FULL CROSS PIPE

(Anchor details and dimensions are similar to those shown below in Section Through Installation of 3 ½" First Cross Pipe detail.)

SECTION THROUGH INSTALLATION OF 3 ½" FIRST CROSS PIPE

OUTSIDE CULVERT BARREL WITH OPTIONAL ANCHOR BARS & RIPRAP

OUTSIDE CULVERT BARREL WITH BOLTED ANCHOR

INSIDE CULVERT BARREL

CROSS PIPE INSTALLATION DETAILS

SHEET 2 OF 2

Texas Department of Transportation

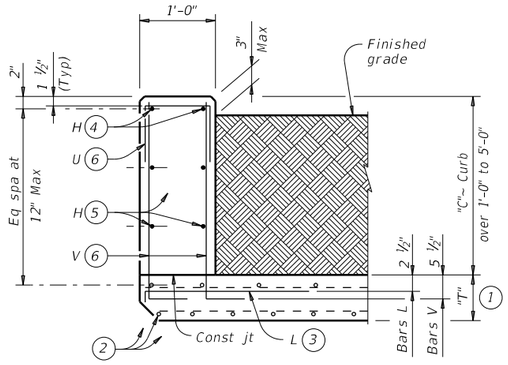
Bridge Division Standard

SAFETY END TREATMENT
FOR BOX CULVERTS (MAXIMUM Hw = 7'-0")
TYPE I ~ PARALLEL DRAINAGE

SETB-PD

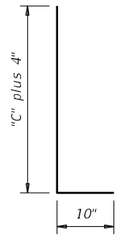
FILE: CD-SETBPD-22.dgn	DN: GAF	CK: CAT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS 06-2022 ~ Wing dimensions				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		100

DATE:
FILE:

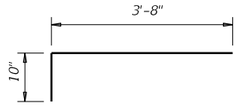


TYPICAL SECTION

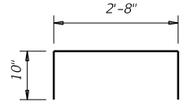
Used for curbs over 1'-0" to 5'-0"



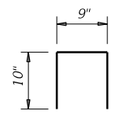
BARS V (#5) (6)
Spaced at 12" Max



BARS L (#5) (3)
Spaced at 12" Max



OPTIONAL BARS L (#5) (3) (7)
Spaced at 12" Max



BARS U (#4) (6)
Spaced at 12" Max

(1) "T" is equal to the culvert top slab thickness. For precast boxes with slabs less than 8" thick, see SCP-MD standard for additional details.

(2) Adjust normal culvert slab bars as necessary to clear obstructions.

(3) Place bars L as shown. Tilt hook as necessary to maintain cover.

(4) Place normal culvert curb bars H(#4) as shown. Adjust as necessary to clear obstructions.

(5) Additional bars H(#4) as required to maintain 12" Max spacing.

(6) Replace normal culvert curb bars K with one bar U and two bars V as shown spaced at 12" Max. Adjust length of bars V as necessary to maintain clear cover.

(7) Optional bars L are to be used only for precast box culverts with 3'-0" closure pour.

(8) Quantities shown are for Contractor's information only. Quantities are per linear foot of curb length. The value in table can be interpolated for intermediate values of curb height, "C". Quantity includes bars K (when applicable).

TABLE OF ESTIMATED CURB QUANTITIES (8)

Curb Height "C"	Conc (CY/LF)	Reinf Steel (Lb/LF)
1'-0"	0.037	10.4
1'-6"	0.056	14.5
2'-0"	0.074	15.6
2'-6"	0.093	18.0
3'-0"	0.111	19.0
3'-6"	0.130	21.3
4'-0"	0.148	22.4
4'-6"	0.167	24.8
5'-0"	0.185	25.9

CONSTRUCTION NOTES:

Adjust reinforcing steel as necessary to provide 1 ¼" cover.
For vehicle safety, top of the curb must not project more than 3" above the finished grade.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class "C" concrete (f'_c = 3,600 psi) minimum for curbs.
Provide bar laps, where required, as follows:
- Uncoated or galvanized ~ #4 = 1'-8" Min

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
These extended curb details have sufficient strength to allow for future retrofit of Type T631 or T631LS railing. These details are suitable for use with PR11, PR22 and PR3 type rails. These details are not suitable for the mounting of other rail types. For new construction using T631 or T631LS railing, use the T631-CM standard.
This Curb is considered as part of the Box Culvert for payment.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

Texas Department of Transportation

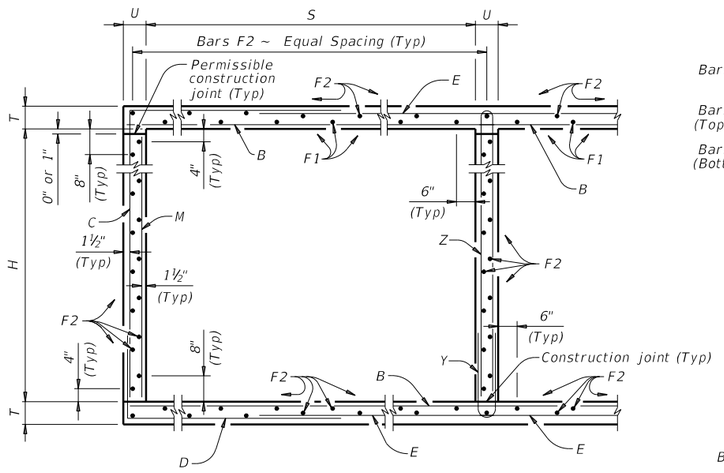
Bridge Division Standard

EXTENDED CURB DETAILS
FOR BOX CULVERTS WITH CURBS OVER 1'-0" TO 5'-0" TALL

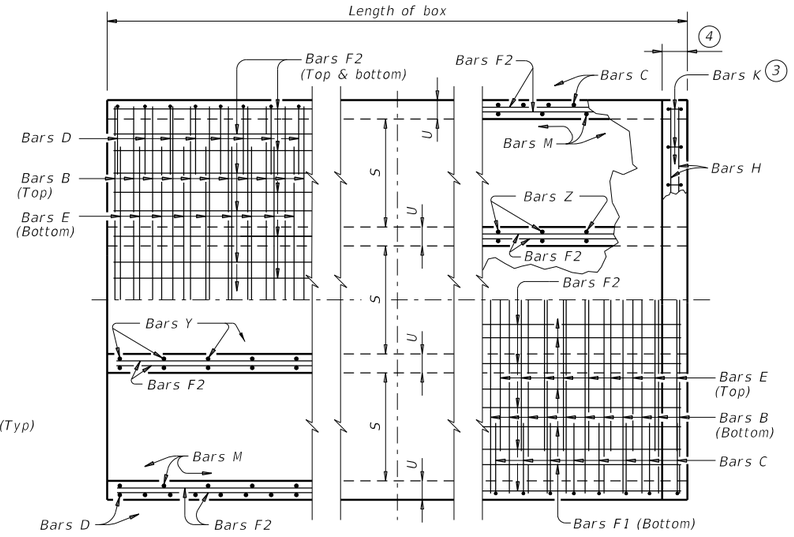
ECD

FILE: CD-ECD-20.dgn	DN: GAF	CK: TxDOT	DW: TxDOT	CK: GAF
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		101

DATE:
FILE:

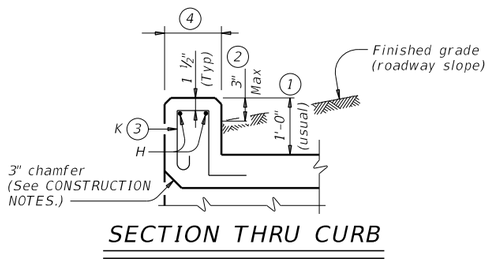


TYPICAL SECTION



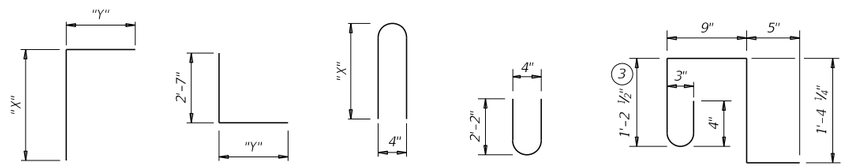
BOTTOM SLAB TOP SLAB

PART PLANS



SECTION THRU CURB

TABLE OF BAR DIMENSIONS		
H	"X"	"Y"
2'-0"	2'-6 ½"	3'-8 ½"
3'-0"	3'-6 ½"	3'-8 ½"
4'-0"	4'-6 ½"	3'-8 ½"
5'-0"	5'-6 ½"	3'-8 ½"



1. 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

2. For vehicle safety, the following requirements must be met:
   - For structures without bridge rail, construct curbs no more than 3" above finished grade.
   - For structures with bridge rail, construct curbs flush with finished grade.

   Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

3. For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.

4. 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR
Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).

CONSTRUCTION NOTES:

Do not use permanent forms.
Chamfer the bottom edge of the top slab 3" at the entrance.
Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed, and Bars Y and Z may be reversed.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'c = 4,000 psi) for top slabs of:
- culverts with overlay,
- culverts with 1-to-2 course surface treatment, or
- culverts with the top slab as the final riding surface.

Provide bar laps, where required, as follows:
- Uncoated or galvanized ~ #4 = 1'-8" Min
- Uncoated or galvanized ~ #5 = 2'-1" Min
- Uncoated or galvanized ~ #6 = 2'-6" Min

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
See the Multiple Box Culverts Cast-In-Place Miscellaneous Detail (MC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE

5'-0" SPAN
0' TO 20' FILL

MC-5-20

FILE: CD-MC520-20.dgn	DN: TBE	CK:	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		102

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:

NUMBER OF SPANS	SECTION DIMENSIONS				BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																																QUANTITIES					
					Bars B					Bars C & D							Bars E					Bars F1 ~ #4				Bars F2 ~ #4				Bars M ~ #4				Bars Y & Z ~ #4						Bars H 4 ~ #4		Bars K		Per Foot of Barrel		Curb		Total	
	S	H	T	U	No.	Size	Spa	Length	Wt	No.	Size	Spa	Bars C Length	Bars C Wt	Bars D Length	Bars D Wt	No.	Size	Spa	Length	Wt	No.	Spa	Length	Wt	No.	Spa	Length	Wt	No.	Spa	Length	Wt	No.	Spa	Bars Y Length	Bars Y Wt	Bars Z Length	Bars Z Wt	Length	Wt	No.	Wt	Conc (CY)	Renf (Lb)	Conc (CY)	Renf (Lb)	Conc (CY)	Renf (Lb)
2	5' – 0"	2' – 0"	8"	7"	108	#5	9"	11' – 6"	1,295	108	#5	9"	6' – 3"	704	6' – 4"	713	108	#5	9"	8' – 8"	976	8	18"	39' – 9"	212	38	18"	39' – 9"	1,009	108	9"	2' – 0"	144	54	9"	4' – 7"	165	5' – 3"	189	11' – 6"	31	26	72	0.710	135.2	0.9	103	29.3	5,510
3	5' – 0"	2' – 0"	8"	7"	108	#5	9"	17' – 1"	1,924	108	#5	9"	6' – 3"	704	6' – 4"	713	108	#5	9"	14' – 3"	1,605	12	18"	39' – 9"	319	54	18"	39' – 9"	1,434	108	9"	2' – 0"	144	108	9"	4' – 7"	331	5' – 3"	379	17' – 1"	46	38	106	1.029	188.8	1.3	152	42.4	7,705
4	5' – 0"	2' – 0"	8"	7"	108	#5	9"	22' – 8"	2,553	108	#5	9"	6' – 3"	704	6' – 4"	713	108	#5	9"	19' – 10"	2,234	16	18"	39' – 9"	425	70	18"	39' – 9"	1,859	108	9"	2' – 0"	144	162	9"	4' – 7"	496	5' – 3"	568	22' – 8"	61	48	134	1.348	242.4	1.7	195	55.6	9,891
5	5' – 0"	2' – 0"	8"	7"	108	#5	9"	28' – 3"	3,182	108	#5	9"	6' – 3"	704	6' – 4"	713	108	#5	9"	25' – 5"	2,863	20	18"	39' – 9"	531	86	18"	39' – 9"	2,284	108	9"	2' – 0"	144	216	9"	4' – 7"	661	5' – 3"	758	28' – 3"	75	60	167	1.667	296.0	2.1	242	68.8	12,082
6	5' – 0"	2' – 0"	8"	7"	108	#5	9"	33' – 10"	3,811	108	#5	9"	6' – 3"	704	6' – 4"	713	108	#5	9"	31' – 0"	3,492	24	18"	39' – 9"	637	102	18"	39' – 9"	2,708	108	9"	2' – 0"	144	270	9"	4' – 7"	827	5' – 3"	947	33' – 10"	90	70	195	1.986	349.6	2.5	285	82.0	14,268
2	5' – 0"	3' – 0"	8"	7"	108	#6	9"	11' – 6"	1,865	108	#5	9"	7' – 3"	817	6' – 4"	713	108	#5	9"	8' – 8"	976	8	18"	39' – 9"	212	44	18"	39' – 9"	1,168	108	9"	3' – 0"	216	54	9"	4' – 7"	165	7' – 3"	262	11' – 6"	31	26	72	0.775	159.9	0.9	103	31.9	6,497
3	5' – 0"	3' – 0"	8"	7"	108	#6	9"	17' – 1"	2,771	108	#5	9"	7' – 3"	817	6' – 4"	713	108	#5	9"	14' – 3"	1,605	12	18"	39' – 9"	319	62	18"	39' – 9"	1,646	108	9"	3' – 0"	216	108	9"	4' – 7"	331	7' – 3"	523	17' – 1"	46	38	106	1.115	223.5	1.3	152	45.9	9,093
4	5' – 0"	3' – 0"	8"	7"	108	#6	9"	22' – 8"	3,677	108	#5	9"	7' – 3"	817	6' – 4"	713	108	#5	9"	19' – 10"	2,234	16	18"	39' – 9"	425	80	18"	39' – 9"	2,124	108	9"	3' – 0"	216	162	9"	4' – 7"	496	7' – 3"	785	22' – 8"	61	48	134	1.456	287.2	1.7	195	59.9	11,682
5	5' – 0"	3' – 0"	8"	7"	108	#6	9"	28' – 3"	4,583	108	#5	9"	7' – 3"	817	6' – 4"	713	108	#5	9"	25' – 5"	2,863	20	18"	39' – 9"	531	98	18"	39' – 9"	2,602	108	9"	3' – 0"	216	216	9"	4' – 7"	661	7' – 3"	1,046	28' – 3"	75	60	167	1.796	350.8	2.1	242	73.9	14,274
6	5' – 0"	3' – 0"	8"	7"	108	#6	9"	33' – 10"	5,488	108	#5	9"	7' – 3"	817	6' – 4"	713	108	#5	9"	31' – 0"	3,492	24	18"	39' – 9"	637	116	18"	39' – 9"	3,080	108	9"	3' – 0"	216	270	9"	4' – 7"	827	7' – 3"	1,308	33' – 10"	90	70	195	2.137	414.5	2.5	285	88.0	16,863
2	5' – 0"	4' – 0"	8"	7"	108	#6	9"	11' – 6"	1,865	108	#5	9"	8' – 3"	929	6' – 4"	713	108	#5	9"	8' – 8"	976	8	18"	39' – 9"	212	44	18"	39' – 9"	1,168	108	9"	4' – 0"	289	54	9"	4' – 7"	165	9' – 3"	334	11' – 6"	31	26	72	0.840	166.3	0.9	103	34.5	6,754
3	5' – 0"	4' – 0"	8"	7"	108	#6	9"	17' – 1"	2,771	108	#5	9"	8' – 3"	929	6' – 4"	713	108	#5	9"	14' – 3"	1,605	12	18"	39' – 9"	319	62	18"	39' – 9"	1,646	108	9"	4' – 0"	289	108	9"	4' – 7"	331	9' – 3"	667	17' – 1"	46	38	106	1.202	231.8	1.3	152	49.4	9,422
4	5' – 0"	4' – 0"	8"	7"	108	#6	9"	22' – 8"	3,677	108	#5	9"	8' – 3"	929	6' – 4"	713	108	#5	9"	19' – 10"	2,234	16	18"	39' – 9"	425	80	18"	39' – 9"	2,124	108	9"	4' – 0"	289	162	9"	4' – 7"	496	9' – 3"	1,001	22' – 8"	61	48	134	1.564	297.2	1.7	195	64.3	12,083
5	5' – 0"	4' – 0"	8"	7"	108	#6	9"	28' – 3"	4,583	108	#5	9"	8' – 3"	929	6' – 4"	713	108	#5	9"	25' – 5"	2,863	20	18"	39' – 9"	531	98	18"	39' – 9"	2,602	108	9"	4' – 0"	289	216	9"	4' – 7"	661	9' – 3"	1,335	28' – 3"	75	60	167	1.926	362.7	2.1	242	79.1	14,748
6	5' – 0"	4' – 0"	8"	7"	108	#6	9"	33' – 10"	5,488	108	#5	9"	8' – 3"	929	6' – 4"	713	108	#5	9"	31' – 0"	3,492	24	18"	39' – 9"	637	116	18"	39' – 9"	3,080	108	9"	4' – 0"	289	270	9"	4' – 7"	827	9' – 3"	1,668	33' – 10"	90	70	195	2.288	428.1	2.5	285	94.0	17,408
2	5' – 0"	5' – 0"	8"	7"	108	#6	9"	11' – 6"	1,865	108	#5	9"	9' – 3"	1,042	6' – 4"	713	108	#5	9"	8' – 8"	976	8	18"	39' – 9"	212	50	18"	39' – 9"	1,328	108	9"	5' – 0"	361	54	9"	4' – 7"	165	11' – 3"	406	11' – 6"	31	26	72	0.904	176.7	0.9	103	37.0	7,171
3	5' – 0"	5' – 0"	8"	7"	108	#6	9"	17' – 1"	2,771	108	#5	9"	9' – 3"	1,042	6' – 4"	713	108	#5	9"	14' – 3"	1,605	12	18"	39' – 9"	319	70	18"	39' – 9"	1,859	108	9"	5' – 0"	361	108	9"	4' – 7"	331	11' – 3"	812	17' – 1"	46	38	106	1.288	245.3	1.3	152	52.8	9,965
4	5' – 0"	5' – 0"	8"	7"	108	#6	9"	22' – 8"	3,677	108	#5	9"	9' – 3"	1,042	6' – 4"	713	108	#5	9"	19' – 10"	2,234	16	18"	39' – 9"	425	90	18"	39' – 9"	2,390	108	9"	5' – 0"	361	162	9"	4' – 7"	496	11' – 3"	1,217	22' – 8"	61	48	134	1.672	313.9	1.7	195	68.6	12,750
5	5' – 0"	5' – 0"	8"	7"	108	#6	9"	28' – 3"	4,583	108	#5	9"	9' – 3"	1,042	6' – 4"	713	108	#5	9"	25' – 5"	2,863	20	18"	39' – 9"	531	110	18"	39' – 9"	2,921	108	9"	5' – 0"	361	216	9"	4' – 7"	661	11' – 3"	1,623	28' – 3"	75	60	167	2.056	382.5	2.1	242	84.3	15,540
6	5' – 0"	5' – 0"	8"	7"	108	#6	9"	33' – 10"	5,488	108	#5	9"	9' – 3"	1,042	6' – 4"	713	108	#5	9"	31' – 0"	3,492	24	18"	39' – 9"	637	130	18"	39' – 9"	3,452	108	9"	5' – 0"	361	270	9"	4' – 7"	827	11' – 3"	2,029	33' – 10"	90	70	195	2.439	451.0	2.5	285	100.1	18,326

HL93 LOADING SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE

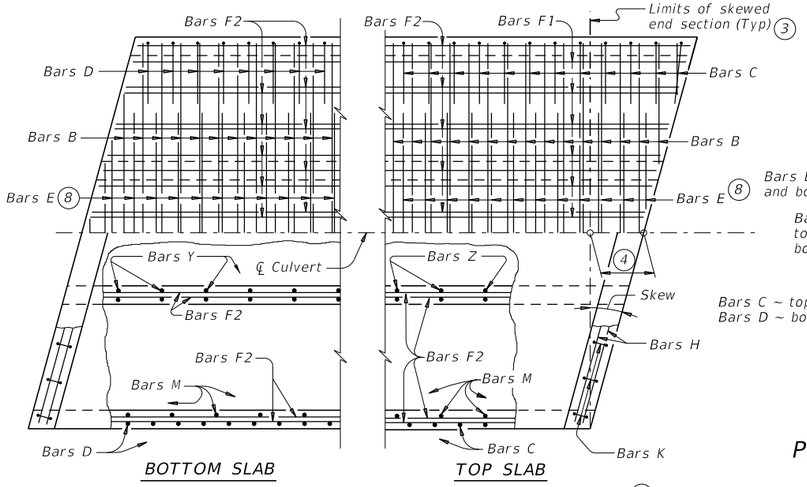
5'-0" SPAN

0' TO 20' FILL

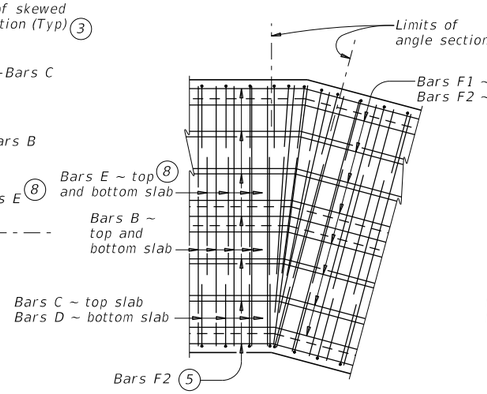
MC-5-20

FILE: CD-MC520-20.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		103

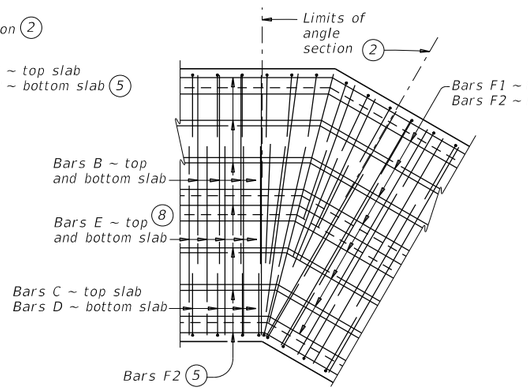
DATE:
FILE:



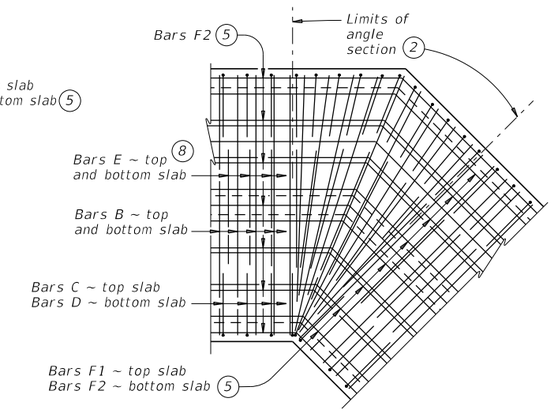
PLAN OF SKEWED ENDS ~ FROM 0° TO 15° 7



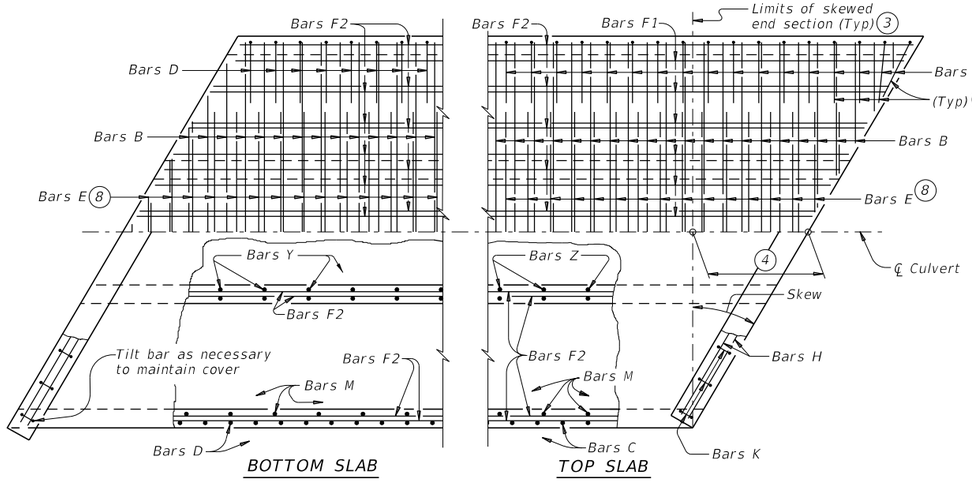
PLAN OF ANGLE SECTION ~ FROM 0° TO 15°



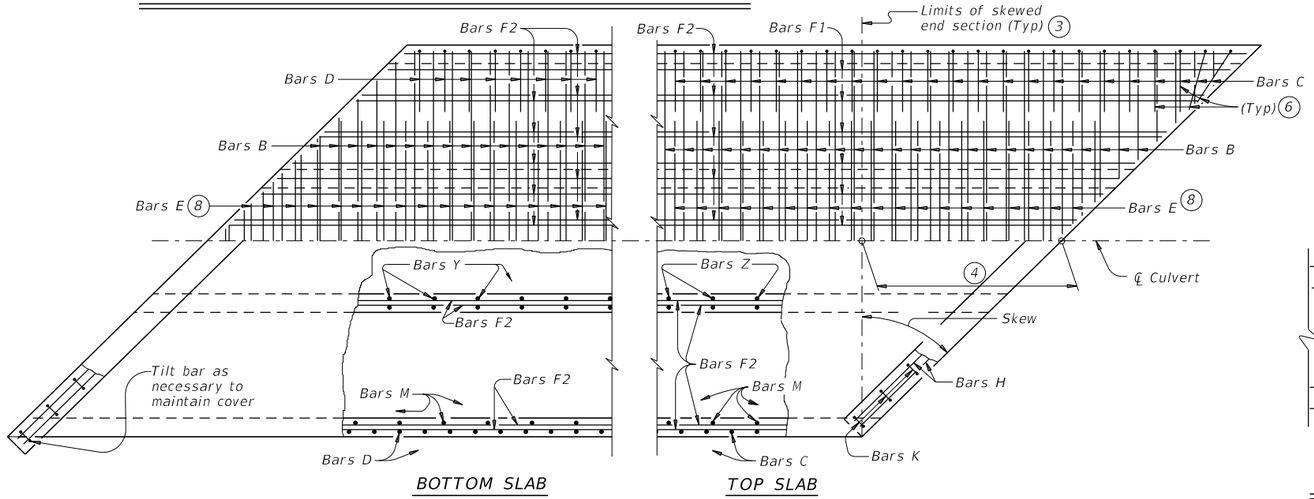
PLAN OF ANGLE SECTION ~ OVER 15° TO 30°



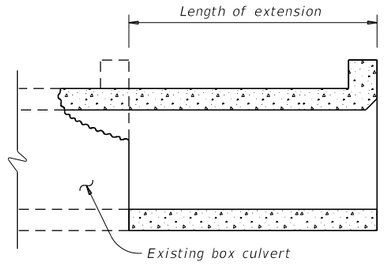
PLAN OF ANGLE SECTION ~ OVER 30° TO 45°



PLAN OF SKEWED ENDS ~ OVER 15° TO 30°



PLAN OF SKEWED ENDS ~ OVER 30° TO 45°



LENGTHENING DETAIL 1

(1) For skewed box culverts with less than 2'-0" of fill, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension.

For non-skewed box culverts with less than 2'-0" of fill and for skewed or non-skewed culverts with a fill depth of 2'-0" or greater, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension. Alternatively, if the box is non-skewed, embed #6 anchor bars with a Type III, Class C, D, E, or F anchor adhesive into the existing walls, top and bottom slab at 1'-6" center-to-center spacing. Minimum embedment depth is 8". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, of 26.4 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing." Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.

Break back wings and apron as necessary to install the extension. Clean and extend the exposed wingwall and apron reinforcing into the extension. When lengthening existing box culverts with dimensions different than current standard dimensions, form horizontal and vertical transitions as directed by the Engineer. Match bottom slabs to maintain an uninterrupted flow line. Field bend existing and new reinforcing into transitions and maintain specified cover requirements. For top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface, adjust the "H" dimension to provide a smooth riding surface.

(2) When the spacing between Bars B or Bars E becomes less than half of the normal spacing, cut bars to avoid conflict.

(3) The length of Bars B and Bars E will vary in the skewed end sections.

(4) [One half of overall width] x [tangent of the skew angle]

(5) Place Bars F1 and F2 continuously through the angle section. Bend Bars F1 and F2 to remain parallel to the walls of the box culvert.

(6) When necessary to avoid conflict in acute corners, shorten the slab extension leg of Bars C and Bars D to a minimum of 1'-6" for skews of 30° thru 45°.

(7) At the Contractor's option, for skews of 15° or less, place Bars B, C, D, and E parallel to the skewed end while maintaining spacing along centerline of box. Increase lengths of Bars B and Bars E shown on the Multiple Box Culverts Cast-In-Place (MC) standard sheets to accommodate the skew.

(8) Extend Bars E as shown on the MC standard sheet for direct traffic culverts.

CONSTRUCTION NOTES:

Do not use permanent forms.
When required, lap Bars H 1'-8" for uncoated or galvanized bars.
Provide a minimum of 1 ½" clear cover.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel, if required elsewhere in the plans.
Provide Class C concrete (f'c = 3,600 psi) with these exceptions: provide Class S concrete (f'c = 4,000 psi) for top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.
Refer to Multiple Box Culverts Cast-in-Place (MC) standard sheets for details of straight sections of culvert.
For skewed sections and angle sections, refer to Multiple Box Culverts Cast-in-Place (MC) standard sheets for slab and wall dimensions, bar sizes, maximum bar spacing, and any other details not shown.
For skewed ends with curbs, adjust length of Bars H, number of Bars K, curb concrete volume, and reinforcing steel weight by dividing the values shown on the Multiple Box Culverts Cast-In-Place (MC) standard sheets by the cosine of the skew angle.

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation

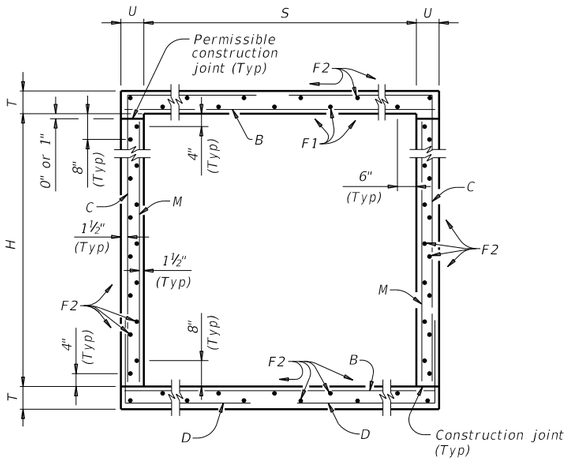
Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE MISCELLANEOUS DETAILS

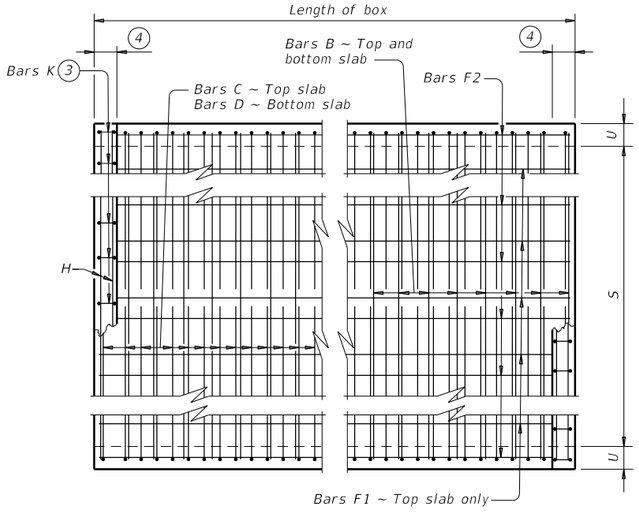
MC-MD

FILE: CD-MC-MD-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		104

DATE: 1/22/2024 2:40:24 PM
FILE: P:\122\85\04\Design\Civil\Standards\Drainage\CD-SCC56-21.dgn



TYPICAL SECTION



PLAN OF REINF STEEL

(1) 0" Min to 5'-0" Max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail or curbs taller than 1'-0", refer to the Extended Curb Details (ECD) standard sheet. For structures with T631 or T631LS bridge rail, refer to the Mounting Details for T631 & T631LS Rails (T631-CM) standard sheet. Refer to the Rail Anchorage Curb (RAC) standard sheet for structures with bridge rail other than T631 or T631LS.

(2) For vehicle safety, the following requirements must be met:
- For structures without bridge rail, construct curbs no more than 3" above finished grade.
- For structures with bridge rail, construct curbs flush with finished grade.

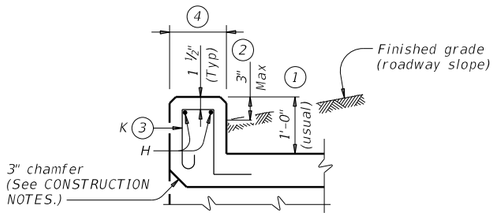
Reduce curb heights, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(3) For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.

(4) 1'-0" typical. 2'-3" when the Rail Anchorage Curb (RAC) standard sheet is referred to elsewhere in the plans.

The Contractor may replace Bars B, C, D, E, F1, F2, M, Y, and/or Z with deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes. The lap length required for WWR is never less than the lap length required for uncoated #4 bars.

Example conversion: Replacing No. 6 Gr 60 at 6" Spacing with WWR.
Required WWR = (0.44 sq. in. per 0.5 ft.) x (60 ksi / 70 ksi) = 0.755 sq. in. per ft.
If D30.6 wire is used to meet the 0.755 sq. in. per ft. requirement in this example, the required spacing = (0.306 sq. in.) / (0.755 sq. in. per ft.) x (12 in. per ft.) = 4.86" Max spacing. Required lap length for the provided D30.6 wire is 2'-1" (the same minimum lap length required for uncoated #5 bars, as listed under MATERIAL NOTES).



SECTION THRU CURB

CONSTRUCTION NOTES:

Do not use permanent forms.
Chamfer the bottom edge of the top slab 3" at the entrance.
Optionally, raise construction joints shown at the flow line by a maximum of 6". If this option is taken, Bars M may be cut off or raised, Bars C and D may be reversed.

MATERIAL NOTES:

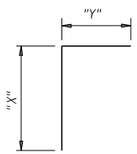
Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel if required elsewhere in the plans.
Provide Class C concrete (f'_c = 3,600 psi) for culvert barrel and curb, with the following exceptions: provide Class S concrete (f'_c = 4,000 psi) for top slabs of:
- culverts with overlay,
- culverts with 1-to-2 course surface treatment, or
- culverts with the top slab as the final riding surface.

Provide bar laps, where required, as follows:
- Uncoated or galvanized ~ #4 = 1'-8" Min
- Uncoated or galvanized ~ #5 = 2'-1" Min
- Uncoated or galvanized ~ #6 = 2'-6" Min

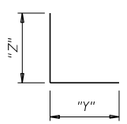
GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications for the range of fill heights shown.
See the Single Box Culverts Cast-In-Place Miscellaneous Detail (SCC-MD) standard sheet for details pertaining to skewed ends, angle sections, and lengthening.

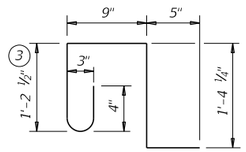
Cover dimensions are clear dimensions, unless noted otherwise.
Reinforcing bar dimensions shown are out-to-out of bar.



BARS C



BARS D



BARS K (#4)
(Spa = 1'-0" Max)
(Length = 4'-2")

HL93 LOADING SHEET 1 OF 2

Texas Department of Transportation
Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE
0' TO 30' FILL

SCC-5 & 6

FILE: CD-SCC56-21.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
04/2021 Updated X values.	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		105

SECTION DIMENSIONS				FILL HEIGHT (5)	BILLS OF REINFORCING STEEL (For Box Length = 40 feet)																										QUANTITIES					
					Bars B					Bars C							Bars D							Bars M ~ #4				Bars F1 ~ #4 at 18" Spa			Bars F2 ~ #4 at 18" Spa			Bars H 4 ~ #4		Bars K		Per Foot of Barrel		Curb		Total	
S	H	T	U		No.	Size	Spa	Length	Weight	No.	Size	Spa	Length	Weight	" X "	" Y "	No.	Size	Spa	Length	Weight	" Y "	" Z "	No.	Spa	Length	Weight	No.	Length	Wt	No.	Length	Weight	Length	Wt	No.	Wt	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
5' – 0"	2' – 0"	8"	7"	26'	108	#6	9"	5' – 11"	960	108	#5	9"	6' – 3"	704	2' – 6"	3' – 9"	108	#5	9"	6' – 5"	723	3' – 9"	2' – 8"	108	9"	2' – 0"	144	4	39' – 9"	106	22	39' – 9"	584	5' – 11"	16	14	39	0.391	80.5	0.5	55	16.1	3,276
5' – 0"	2' – 0"	9"	7"	30'	108	#6	9"	5' – 11"	960	108	#5	9"	6' – 4"	713	2' – 7"	3' – 9"	108	#5	9"	6' – 6"	732	3' – 9"	2' – 9"	108	9"	2' – 0"	144	4	39' – 9"	106	22	39' – 9"	584	5' – 11"	16	14	39	0.429	81.0	0.5	55	17.6	3,294
5' – 0"	3' – 0"	8"	7"	26'	108	#6	9"	5' – 11"	960	108	#5	9"	7' – 3"	817	3' – 6"	3' – 9"	108	#5	9"	6' – 5"	723	3' – 9"	2' – 8"	108	9"	3' – 0"	216	4	39' – 9"	106	26	39' – 9"	690	5' – 11"	16	14	39	0.434	87.8	0.5	55	17.8	3,567
5' – 0"	3' – 0"	9"	7"	30'	108	#6	9"	5' – 11"	960	108	#5	9"	7' – 4"	826	3' – 7"	3' – 9"	108	#5	9"	6' – 6"	732	3' – 9"	2' – 9"	108	9"	3' – 0"	216	4	39' – 9"	106	26	39' – 9"	690	5' – 11"	16	14	39	0.472	88.3	0.5	55	19.3	3,585
5' – 0"	4' – 0"	8"	7"	26'	108	#6	9"	5' – 11"	960	108	#5	9"	8' – 3"	929	4' – 6"	3' – 9"	108	#5	9"	6' – 5"	723	3' – 9"	2' – 8"	108	9"	4' – 0"	289	4	39' – 9"	106	26	39' – 9"	690	5' – 11"	16	14	39	0.477	92.4	0.5	55	19.5	3,752
5' – 0"	4' – 0"	9"	7"	30'	108	#6	9"	5' – 11"	960	108	#5	9"	8' – 4"	939	4' – 7"	3' – 9"	108	#5	9"	6' – 6"	732	3' – 9"	2' – 9"	108	9"	4' – 0"	289	4	39' – 9"	106	26	39' – 9"	690	5' – 11"	16	14	39	0.515	92.9	0.5	55	21.1	3,771
5' – 0"	5' – 0"	8"	7"	26'	108	#6	9"	5' – 11"	960	108	#5	9"	9' – 3"	1,042	5' – 6"	3' – 9"	108	#5	9"	6' – 5"	723	3' – 9"	2' – 8"	108	9"	5' – 0"	361	4	39' – 9"	106	30	39' – 9"	797	5' – 11"	16	14	39	0.521	99.7	0.5	55	21.3	4,044
5' – 0"	5' – 0"	9"	7"	30'	108	#6	9"	5' – 11"	960	108	#5	9"	9' – 4"	1,051	5' – 7"	3' – 9"	108	#5	9"	6' – 6"	732	3' – 9"	2' – 9"	108	9"	5' – 0"	361	4	39' – 9"	106	30	39' – 9"	797	5' – 11"	16	14	39	0.559	100.2	0.5	55	22.8	4,062
6' – 0"	2' – 0"	8"	7"	20'	108	#6	9"	6' – 11"	1,122	108	#5	9"	6' – 7"	742	2' – 6"	4' – 1"	108	#5	9"	6' – 9"	760	4' – 1"	2' – 8"	108	9"	2' – 0"	144	5	39' – 9"	133	25	39' – 9"	664	6' – 11"	18	16	45	0.440	89.1	0.5	63	18.1	3,628
6' – 0"	2' – 0"	9"	7"	26'	108	#6	9"	6' – 11"	1,122	162	#5	6"	6' – 8"	1,126	2' – 7"	4' – 1"	162	#5	6"	6' – 10"	1,155	4' – 1"	2' – 9"	108	9"	2' – 0"	144	5	39' – 9"	133	25	39' – 9"	664	6' – 11"	18	16	45	0.485	108.6	0.5	63	19.9	4,407
6' – 0"	2' – 0"	10"	8"	30'	108	#6	9"	7' – 1"	1,149	162	#5	6"	6' – 10"	1,155	2' – 8"	4' – 2"	162	#5	6"	7' – 0"	1,183	4' – 2"	2' – 10"	82	12"	2' – 0"	110	5	39' – 9"	133	25	39' – 9"	664	7' – 1"	19	18	50	0.551	109.9	0.5	69	22.6	4,463
6' – 0"	3' – 0"	8"	7"	20'	108	#6	9"	6' – 11"	1,122	108	#5	9"	7' – 7"	854	3' – 6"	4' – 1"	108	#5	9"	6' – 9"	760	4' – 1"	2' – 8"	108	9"	3' – 0"	216	5	39' – 9"	133	29	39' – 9"	770	6' – 11"	18	16	45	0.484	96.4	0.5	63	19.9	3,918
6' – 0"	3' – 0"	9"	7"	26'	108	#6	9"	6' – 11"	1,122	162	#5	6"	7' – 8"	1,295	3' – 7"	4' – 1"	162	#5	6"	6' – 10"	1,155	4' – 1"	2' – 9"	108	9"	3' – 0"	216	5	39' – 9"	133	29	39' – 9"	770	6' – 11"	18	16	45	0.528	117.3	0.5	63	21.6	4,754
6' – 0"	3' – 0"	10"	8"	30'	108	#6	9"	7' – 1"	1,149	162	#5	6"	7' – 10"	1,324	3' – 8"	4' – 2"	162	#5	6"	7' – 0"	1,183	4' – 2"	2' – 10"	82	12"	3' – 0"	164	5	39' – 9"	133	29	39' – 9"	770	7' – 1"	19	18	50	0.601	118.1	0.5	69	24.6	4,792
6' – 0"	4' – 0"	8"	7"	20'	108	#6	9"	6' – 11"	1,122	108	#5	9"	8' – 7"	967	4' – 6"	4' – 1"	108	#5	9"	6' – 9"	760	4' – 1"	2' – 8"	108	9"	4' – 0"	289	5	39' – 9"	133	29	39' – 9"	770	6' – 11"	18	16	45	0.527	101.0	0.5	63	21.6	4,104
6' – 0"	4' – 0"	9"	7"	26'	108	#6	9"	6' – 11"	1,122	162	#5	6"	8' – 8"	1,464	4' – 7"	4' – 1"	162	#5	6"	6' – 10"	1,155	4' – 1"	2' – 9"	108	9"	4' – 0"	289	5	39' – 9"	133	29	39' – 9"	770	6' – 11"	18	16	45	0.571	123.3	0.5	63	23.4	4,996
6' – 0"	4' – 0"	10"	8"	30'	108	#6	9"	7' – 1"	1,149	162	#5	6"	8' – 10"	1,493	4' – 8"	4' – 2"	162	#5	6"	7' – 0"	1,183	4' – 2"	2' – 10"	82	12"	4' – 0"	219	5	39' – 9"	133	29	39' – 9"	770	7' – 1"	19	18	50	0.650	123.7	0.5	69	26.5	5,016
6' – 0"	5' – 0"	8"	7"	20'	108	#6	9"	6' – 11"	1,122	108	#5	9"	9' – 7"	1,080	5' – 6"	4' – 1"	108	#5	9"	6' – 9"	760	4' – 1"	2' – 8"	108	9"	5' – 0"	361	5	39' – 9"	133	33	39' – 9"	876	6' – 11"	18	16	45	0.570	108.3	0.5	63	23.3	4,395
6' – 0"	5' – 0"	9"	7"	26'	108	#6	9"	6' – 11"	1,122	162	#5	6"	9' – 8"	1,633	5' – 7"	4' – 1"	162	#5	6"	6' – 10"	1,155	4' – 1"	2' – 9"	108	9"	5' – 0"	361	5	39' – 9"	133	33	39' – 9"	876	6' – 11"	18	16	45	0.614	132.0	0.5	63	25.1	5,343
6' – 0"	5' – 0"	10"	8"	30'	108	#6	9"	7' – 1"	1,149	162	#5	6"	9' – 10"	1,661	5' – 8"	4' – 2"	162	#5	6"	7' – 0"	1,183	4' – 2"	2' – 10"	82	12"	5' – 0"	274	5	39' – 9"	133	33	39' – 9"	876	7' – 1"	19	18	50	0.700	131.9	0.5	69	28.5	5,345
6' – 0"	6' – 0"	8"	7"	20'	108	#6	9"	6' – 11"	1,122	108	#5	9"	10' – 7"	1,192	6' – 6"	4' – 1"	108	#5	9"	6' – 9"	760	4' – 1"	2' – 8"	108	9"	6' – 0"	433	5	39' – 9"	133	37	39' – 9"	982	6' – 11"	18	16	45	0.613	115.6	0.5	63	25.0	4,685
6' – 0"	6' – 0"	9"	7"	26'	108	#6	9"	6' – 11"	1,122	162	#5	6"	10' – 8"	1,802	6' – 7"	4' – 1"	162	#5	6"	6' – 10"	1,155	4' – 1"	2' – 9"	108	9"	6' – 0"	433	5	39' – 9"	133	37	39' – 9"	982	6' – 11"	18	16	45	0.657	140.7	0.5	63	26.8	5,690
6' – 0"	6' – 0"	10"	8"	30'	108	#6	9"	7' – 1"	1,149	162	#5	6"	10' – 10"	1,830	6' – 8"	4' – 2"	162	#5	6"	7' – 0"	1,183	4' – 2"	2' – 10"	82	12"	6' – 0"	329	5	39' – 9"	133	37	39' – 9"	982	7' – 1"	19	18	50	0.749	140.2	0.5	69	30.5	5,675

(5) For direct traffic culverts (fill height ≤ 2 ft.), identify the required box size and select the option with the minimum fill height.

DATE: 1/22/2024 2:40:25 PM
FILE: P:\122\85\04\Design\Civil\Standards\Drainage\CD-SCC56-21.dgn

HL93 LOADING SHEET 2 OF 2

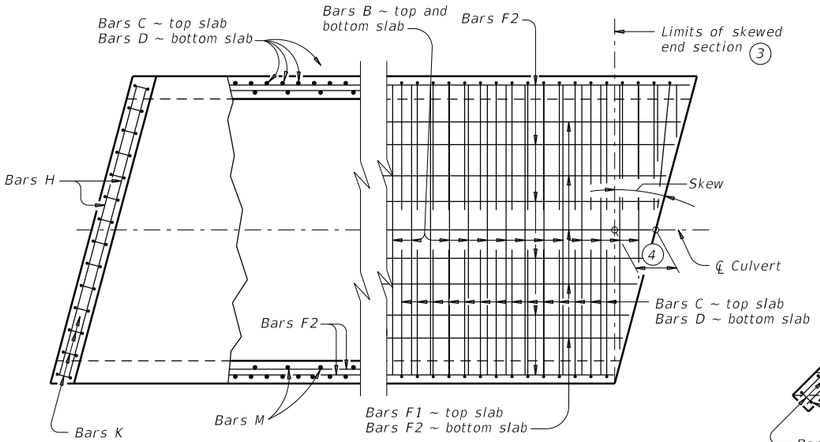
Texas Department of Transportation

Bridge Division Standard

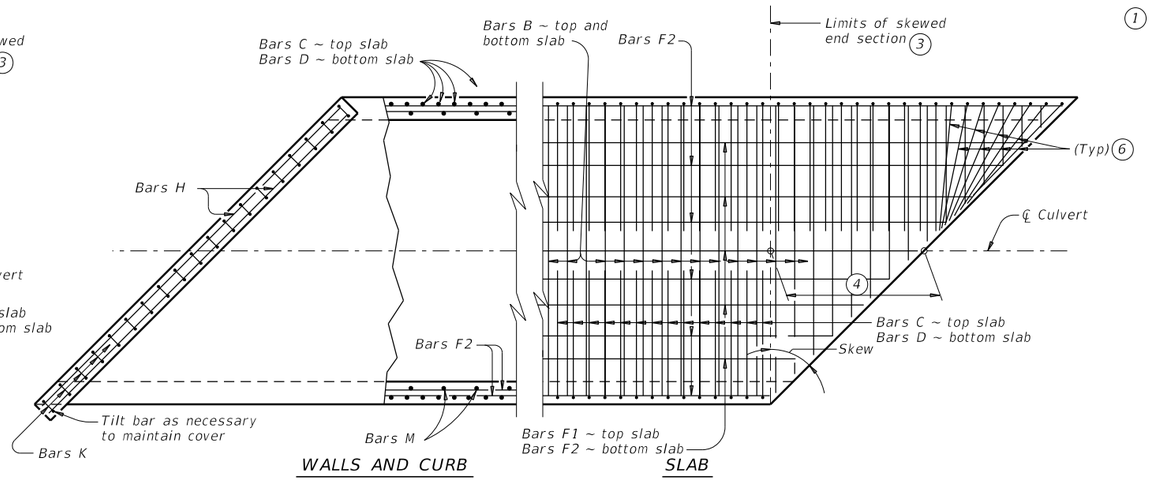
SINGLE BOX CULVERTS CAST-IN-PLACE 0' TO 30' FILL

SCC-5 & 6

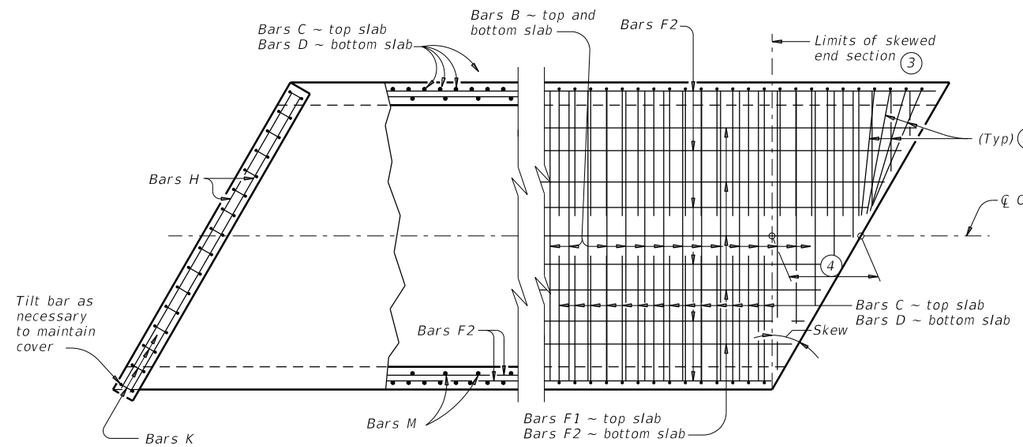
FILE: CD-SCC56-21.dgn	DN: TBE	CK: BMP	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
04/2021 Updated X values.	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		106



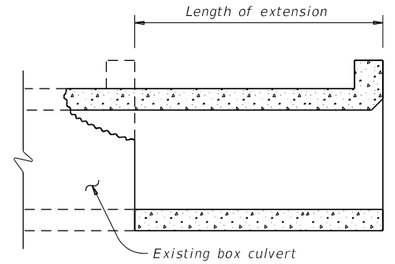
PLAN OF SKEWED ENDS ~ FROM 0° TO 15° (7)



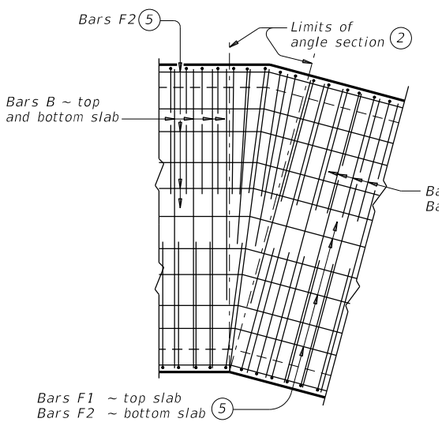
PLAN OF SKEWED ENDS ~ OVER 30° TO 45°



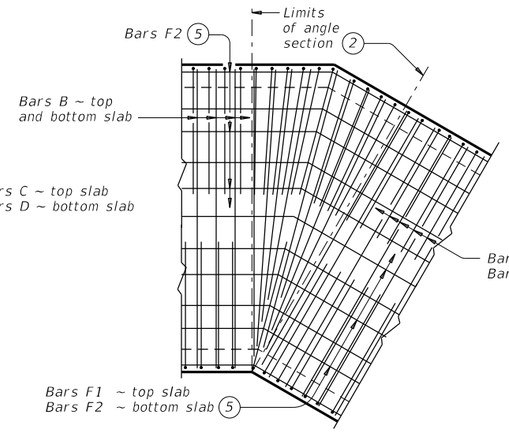
PLAN OF SKEWED ENDS ~ OVER 15° TO 30°



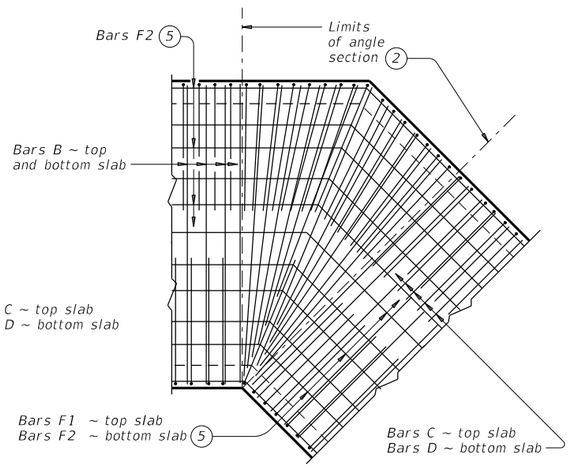
LENGTHENING DETAIL (1)



PLAN OF ANGLE SECTION ~ FROM 0° TO 15°



PLAN OF ANGLE SECTION ~ OVER 15° TO 30°



PLAN OF ANGLE SECTION ~ OVER 30° TO 45°

(1) For skewed box culverts with less than 2'-0" of fill, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars in the extension.

For non-skewed box culverts with less than 2'-0" of fill and for skewed or non-skewed culverts with a fill depth of 2'-0" or greater, break back the top slab to provide a 1'-10" minimum lap of the existing longitudinal bars with the longitudinal bars in the extension. Alternatively, if the box is non-skewed, embed #6 anchor bars with a Type III, C, D , E, or F anchor adhesive into the existing walls, top and bottom slab at 1'-6" center-to-center spacing. Minimum embedment depth is 8". Anchor adhesive chosen must be able to achieve a basic bond strength in tension, Nba, of 26.4 kips. Submit signed and sealed calculations or the manufacturer's published literature showing the proposed anchor adhesive's ability to develop this load to the Engineer for approval prior to use. Anchor installation, including hole size, drilling, and clean out, must be in accordance with Item 450, "Railing." Test adhesive anchors in accordance with Item 450.3.3, "Tests." Test 3 anchors per 100 anchors installed.

Break back wings and apron as necessary to install the extension. Clean and extend the exposed wingwall and apron reinforcing into the extension. When lengthening existing box culverts with dimensions different than current standard dimensions, form horizontal and vertical transitions as directed by the Engineer. Match bottom slabs to maintain an uninterrupted flow line. Field bend existing and new reinforcing into transitions and maintain specified cover requirements. For top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface, adjust the "H" dimension to provide a smooth riding surface.

(2) When the spacing between Bars B becomes less than half of the normal spacing, cut bars to avoid conflict.

(3) The length of Bars B vary in the skewed end sections.

(4) [One half of overall width] x [tangent of the skew angle]

(5) Place Bars F1 and F2 continuously through the angle section. Bend Bars F1 and F2 to remain parallel to the walls of the box culvert.

(6) When necessary to avoid conflict in acute corners, shorten the slab extension leg of Bars C and Bars D to a minimum of 1'-6" for skews of 30° thru 45°.

(7) At the Contractor's option, for skews of 15° or less, place Bars B, C, and D parallel to the skewed end while maintaining spacing along centerline of box. Increase lengths of Bars B shown on the Single Box Culverts Cast-In-Place (SCC) standards sheets to accommodate the skew.

CONSTRUCTION NOTES:

Do not use permanent forms.
When required, lap Bars H 1'-8" for uncoated or galvanized bars.
Provide a minimum of 1 ½" clear cover.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.
Provide galvanized reinforcing steel, if required elsewhere in the plans.
Provide Class C concrete (f'c = 3,600 psi) with these exceptions:
provide Class S concrete (f'c = 4,000 psi) for top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

Refer to Single Box Culverts Cast-in-Place (SCC) standard sheets for details of straight sections of culvert.

For skewed sections and angle sections, refer to Single Box Culverts Cast-in-Place (SCC) standard sheets for slab and wall dimensions, bar sizes, maximum bar spacing, and any other details not shown.

For skewed ends with curbs, adjust length of Bars H, number of Bars K, curb concrete volume, and reinforcing steel weight by dividing the values shown on the culvert Single Box Culverts Cast-In-Place (SCC) standard sheets by the cosine of the skew angle.

Cover dimensions are clear dimensions, unless noted otherwise.

HL93 LOADING

Texas Department of Transportation

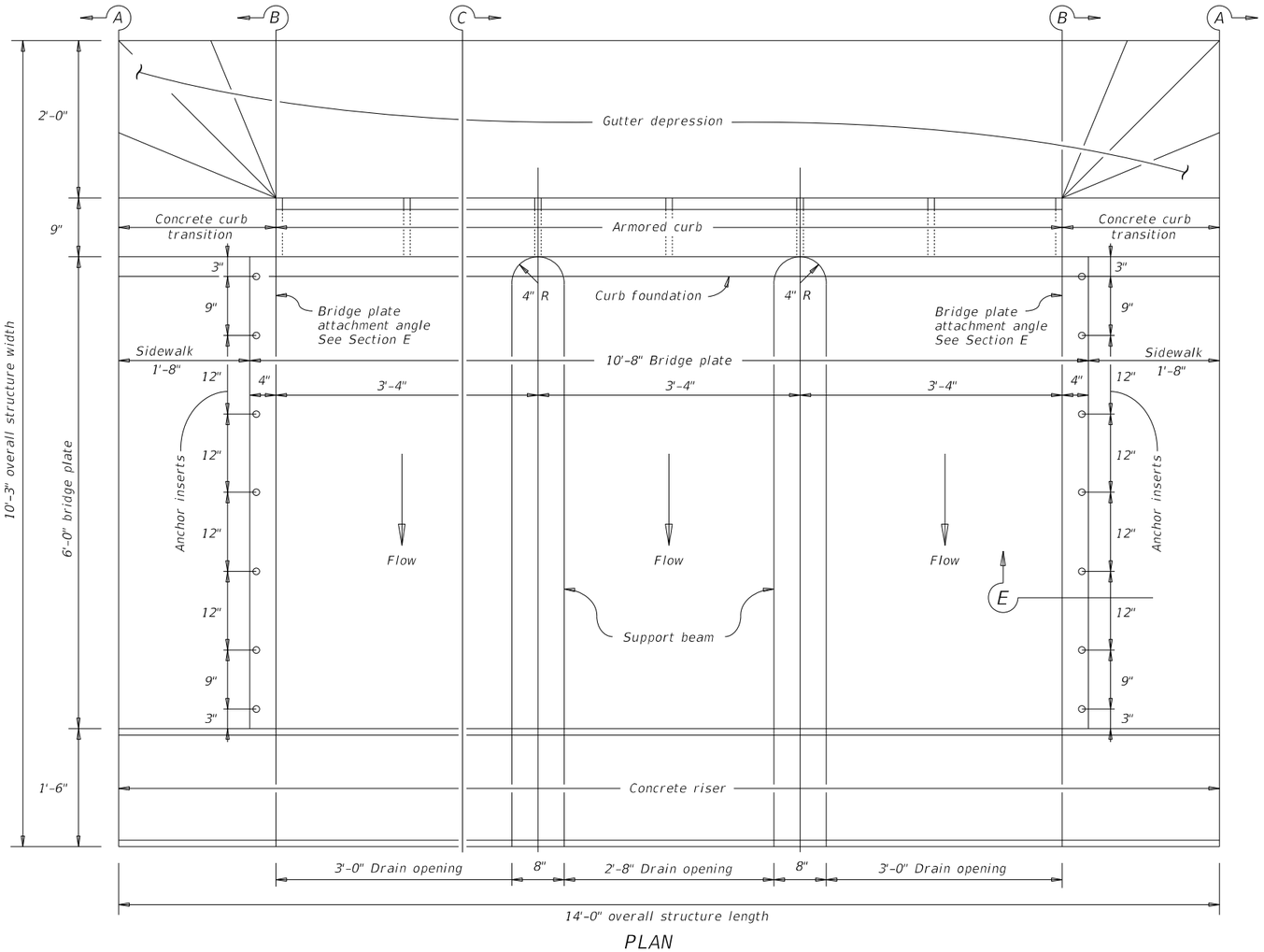
Bridge Division Standard

SINGLE BOX CULVERTS CAST-IN-PLACE MISCELLANEOUS DETAILS

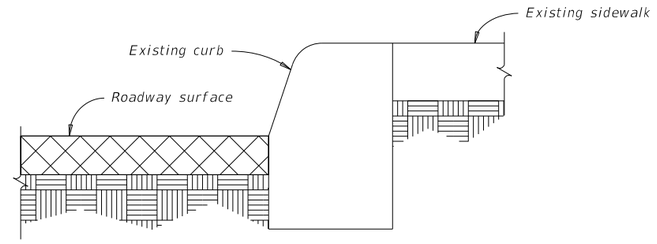
SCC-MD

FILE: CD-SCC-MD-20.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT February 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		107

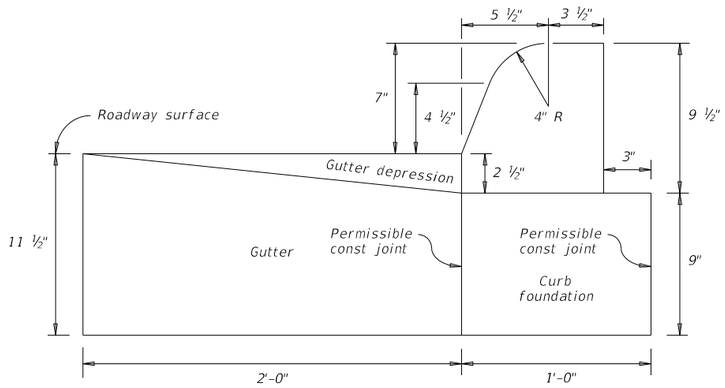
DATE: 1/22/2024 2:40:27 PM
FILE: P:\122\85\04\Design\Civil\Standards\Drainage\CD-SCC-MD-20.dgn



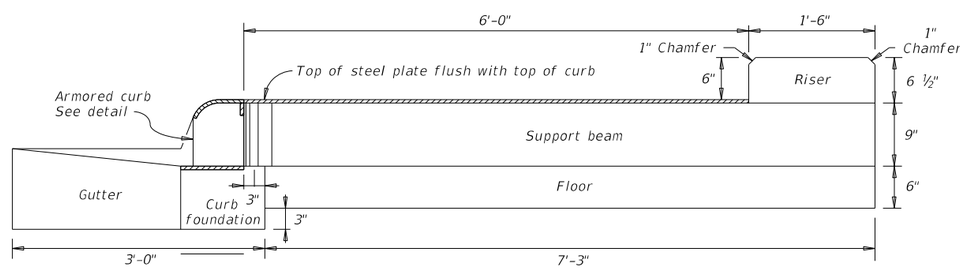
PLAN



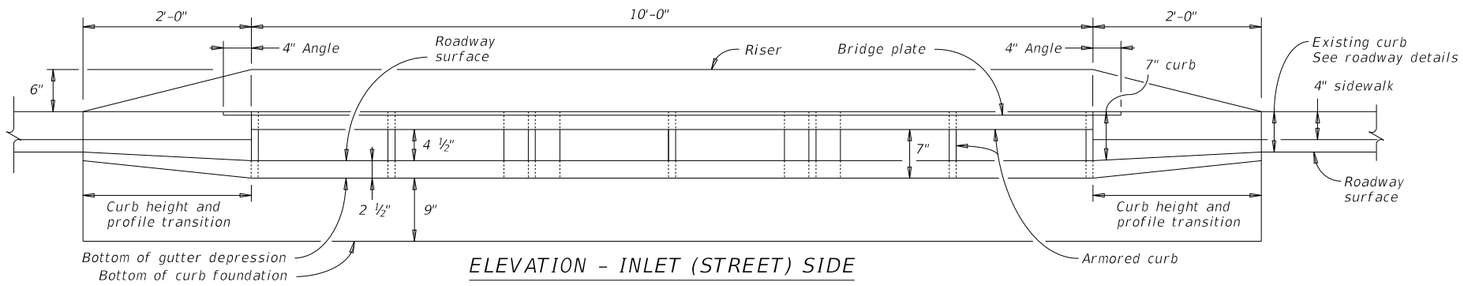
SECTION A



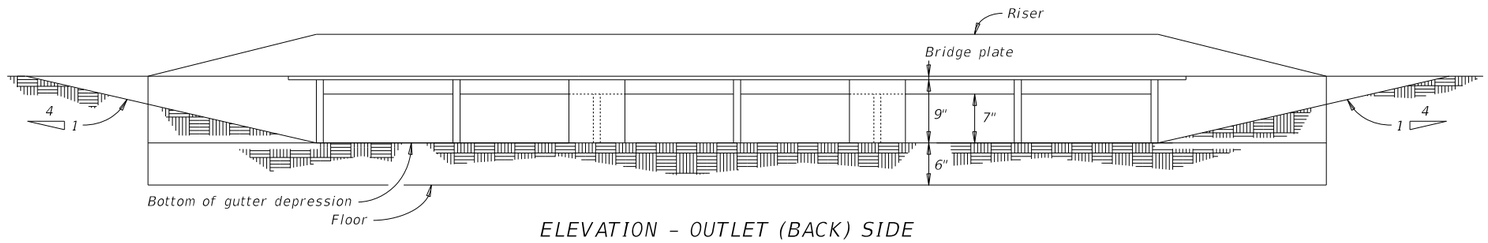
SECTION B DIMENSIONS



SECTION C DIMENSIONS



ELEVATION – INLET (STREET) SIDE



ELEVATION – OUTLET (BACK) SIDE

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing bar dimensions are out-to-out of bar.

Contractor is responsible for verifying all dimensions and quantities in the field before beginning work.

SHEET 1 OF 3

Texas Department of Transportation
San Antonio District (Structural Design)

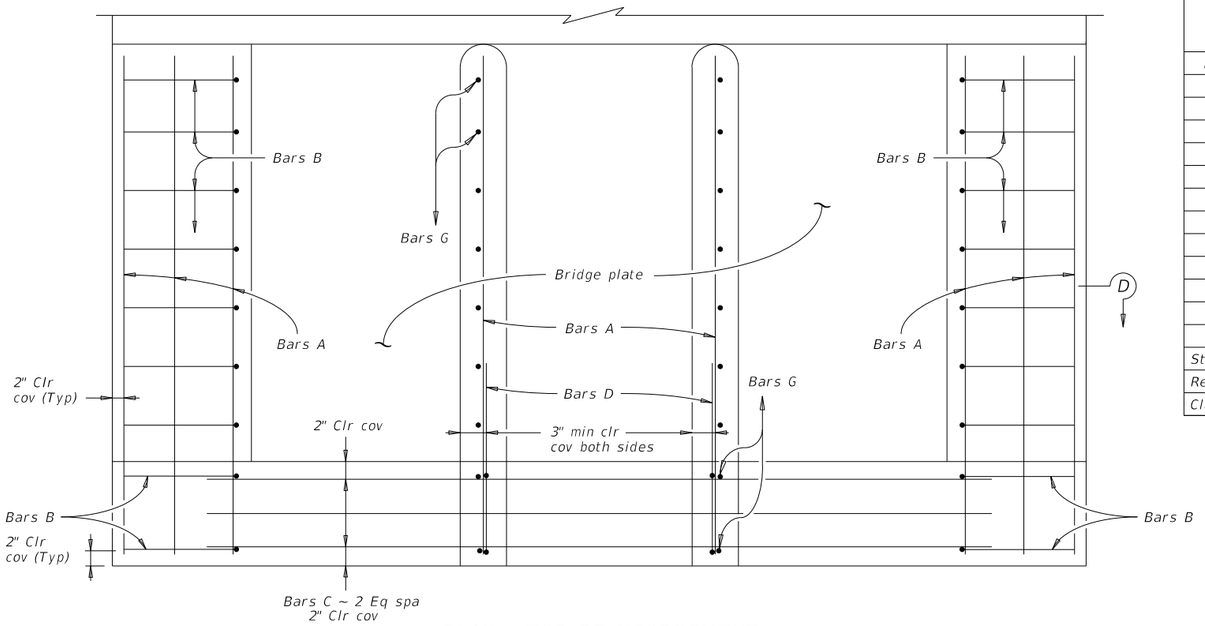
SIDEWALK BRIDGE

SAN ANTONIO DISTRICT STANDARD

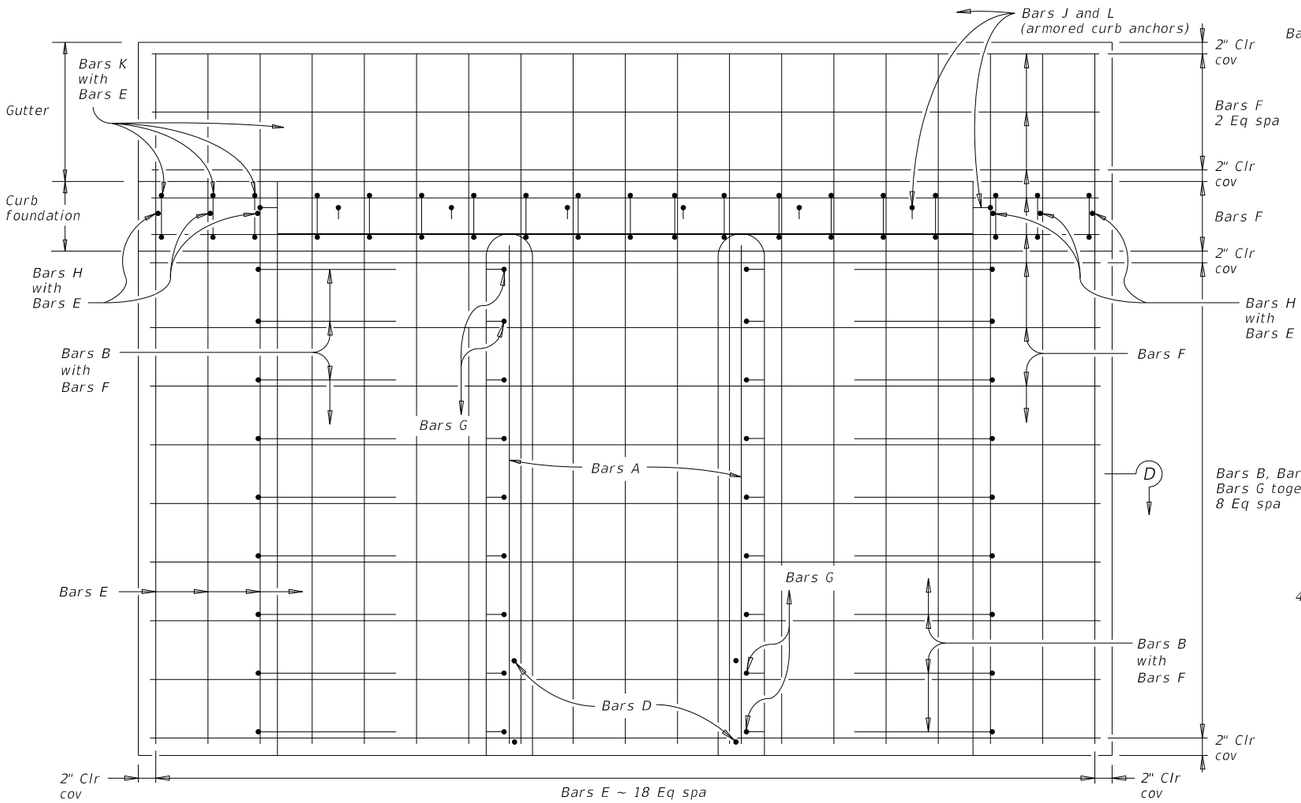
DN: BCL	CK:	FILENAME: SA District Sidewalk Bridge.dgn		
DW: SRF	CK:	ORIGINAL DRAWING DATE: January 2020		
DIST	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		COUNTY
SAT	6			COUNTY
CONTROL	SECTION	JOB	SHEET NO.	ROUTE
0000	00	000	000	ROUTE

REVISIONS:

SHEET NO.108



PLAN - TOP REINFORCEMENT

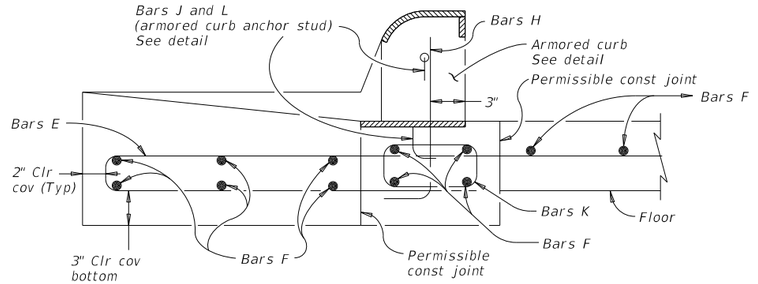


PLAN - BOTTOM REINFORCEMENT

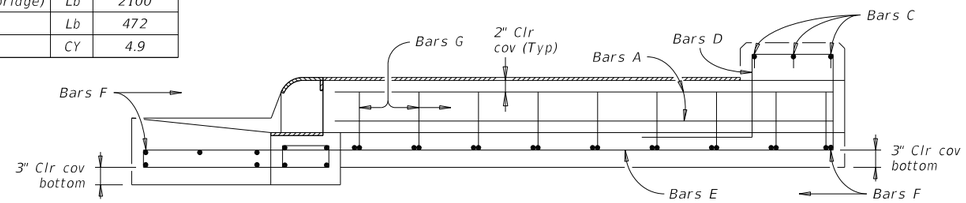
TABLE OF ESTIMATED QUANTITIES

For Contractor information only.

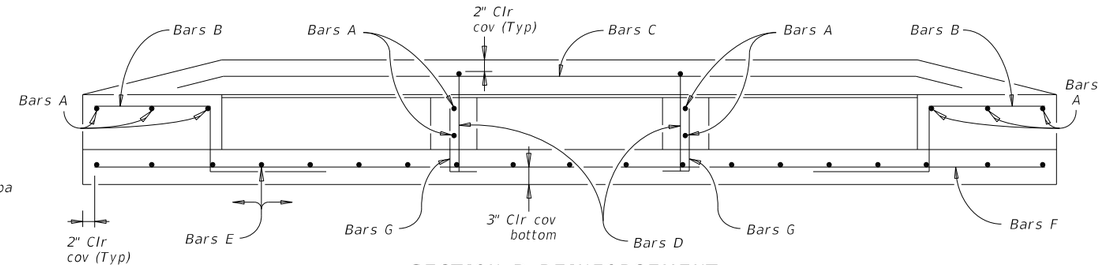
Bar	No.	Size	Length	Weight
A	10	#4	7'-2"	48
B	18	#4	4'-3"	52
C	3	#4	11'-4"	23
D	2	#4	5'-6"	8
E	19	#4	12'-10"	163
F	14	#4	13'-8"	128
G	18	#4	1'-6"	18
H	6	#4	1'-10"	8
I	6	#4	0'-8"	3
J	2	#4	0'-9"	1
K	19	#3	2'-6"	18
L	6	#4	0'-5"	2
Struct. steel (Misc. non bridge)			Lb	2100
Reinforcing Steel			Lb	472
Class "C" Concrete			CY	4.9



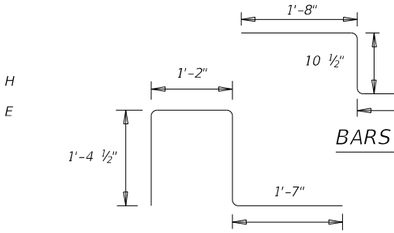
SECTION B REINFORCEMENT



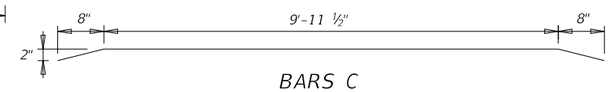
SECTION C REINFORCEMENT



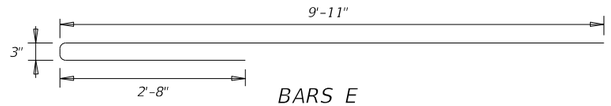
SECTION D REINFORCEMENT



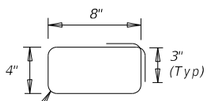
BARS B



BARS C

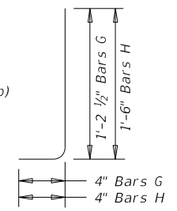


BARS E



BARS K

1" Dia. bending pin typ all bars



BARS G AND H

Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing bar dimensions are out-to-out of bar.

Contractor is responsible for verifying all dimensions and quantities in the field before beginning work.

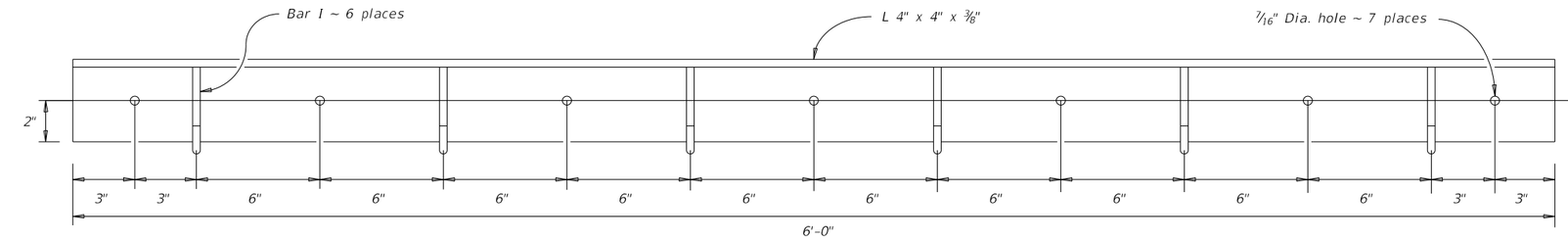
Texas Department of Transportation
San Antonio District (Structural Design)

SIDEWALK BRIDGE

SAN ANTONIO DISTRICT STANDARD

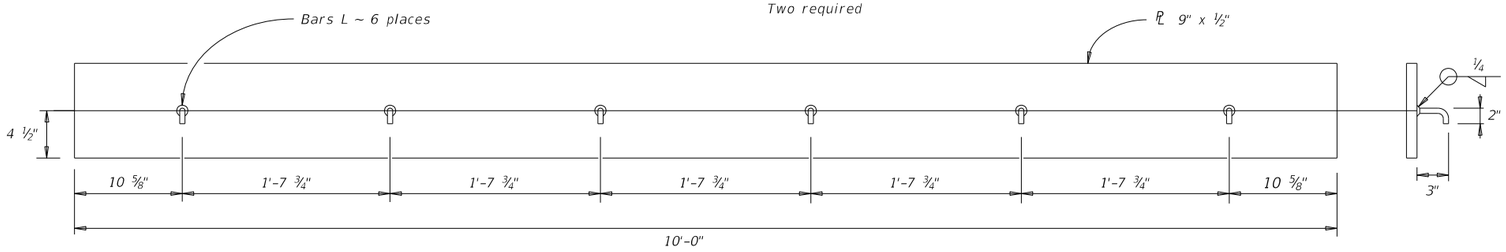
DN: BCL	CK:	FILENAME: SA District Sidewalk Bridge.dgn		
DW: SRF	CK:	ORIGINAL DRAWING DATE: January 2020		
DIST	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		COUNTY
SAT	6			COUNTY
CONTROL	SECTION	JOB	SHEET NO.	ROUTE
0000	00	000	000	ROUTE

REVISIONS:

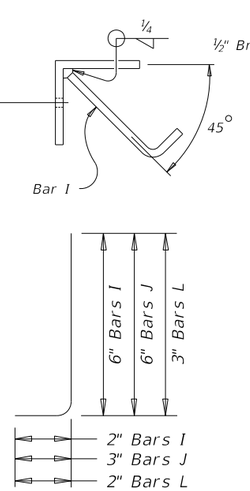


BRIDGE PLATE ATTACHMENT ANGLE

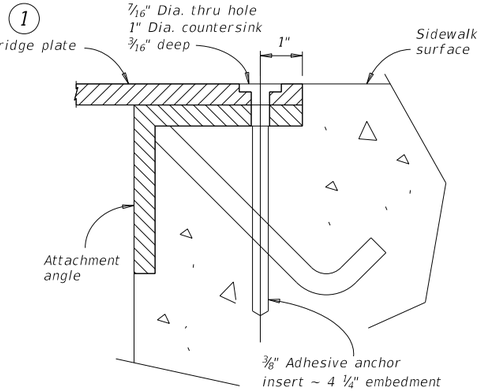
Two required



FLOOR PLATE



BARS I, J, AND L



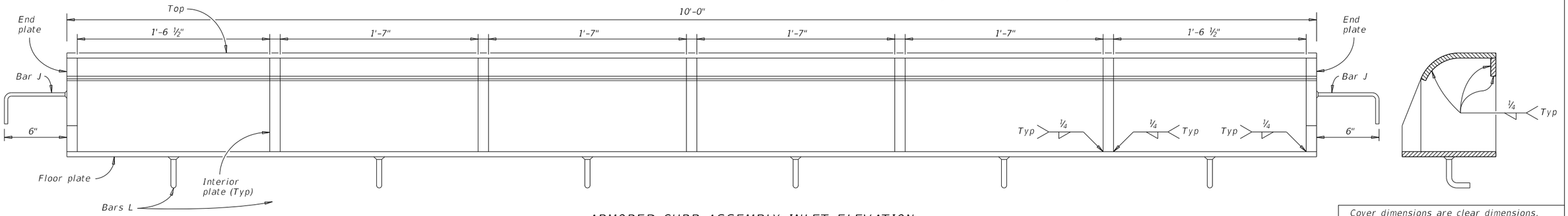
SECTION E

APPROVED SLIP RESISTANT PLATE	
Product	Manufacturer Website
Algrip™, Steel	www.algrip.com
Mebac® #3, Steel	www.harscoikg.com
SlipNOT® Grade 2, Steel	www.slipnot.com

(1) Provide cover plates fabricated with a product from this list. No exceptions are permitted.

GENERAL NOTES:

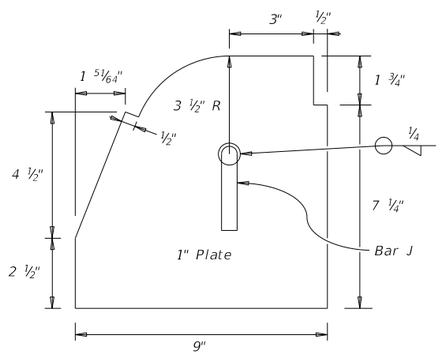
Provide Class A concrete (f'c = 3000 psi).
Provide Grade 60 reinforcing steel.
Structural steel components must be Grade A36.
All exposed edges of the armored curb must receive a ⅛" bevel.
All structural steel components must be galvanized after fabrication in accordance with Item 445, "Galvanizing".
Galvanizing damaged during transport or construction must be repaired in accordance with the Specification.
The bridge plate must be hot-dip galvanized slip resistant steel (see table). Checker or diamond plate is not allowed, nor are slip resistant tapes, films, or non-metallic coatings.
Adhesive anchor system must be HIT HY 150 H.I.S. internally threaded inserts as furnished by Hilti, Inc., Tulsa, OK, or approved equivalent.
Sidewalk bridge, including all labor, armored curb, bridge plate, and other material complete and in place must be paid for under Item 465, "Inlet (Comp) (Ty Sidewalk Bridge)" by location.
Shop drawings will not require the Engineer's approval if fabrication is in accordance with the details shown.



ARMORED CURB ASSEMBLY INLET ELEVATION

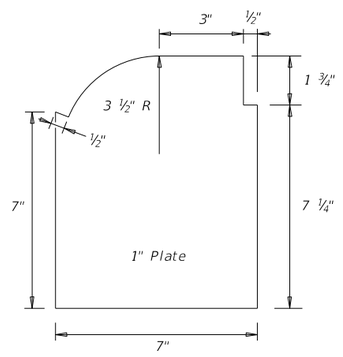
Cover dimensions are clear dimensions, unless noted otherwise. Reinforcing bar dimensions are out-to-out of bar.

Contractor is responsible for verifying all dimensions and quantities in the field before beginning work.



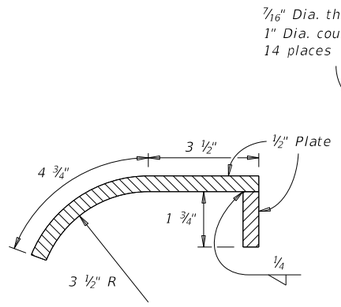
END PLATE

Two required



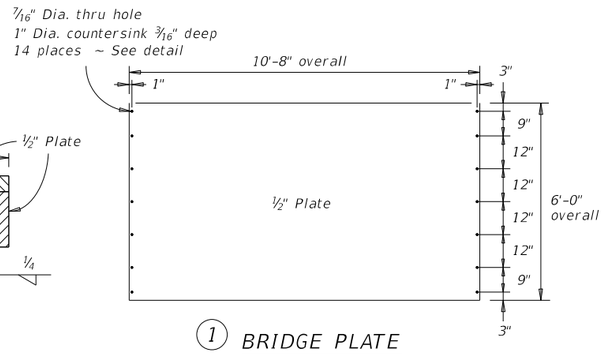
INTERIOR PLATE

Five required



TOP (SECTION)

10'-0" length



(1) BRIDGE PLATE

Hole location dimensions to center of hole

SHEET 3 OF 3

Texas Department of Transportation
San Antonio District (Structural Design)
Prepared by and for the use of TxDOT

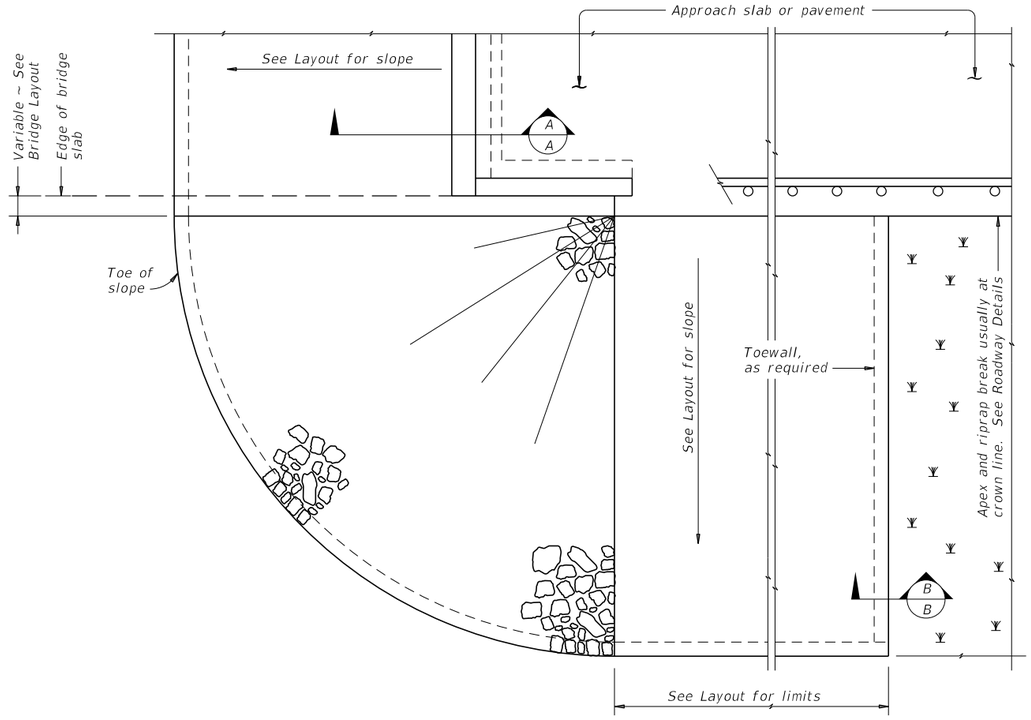
SIDEWALK BRIDGE

SAN ANTONIO DISTRICT STANDARD

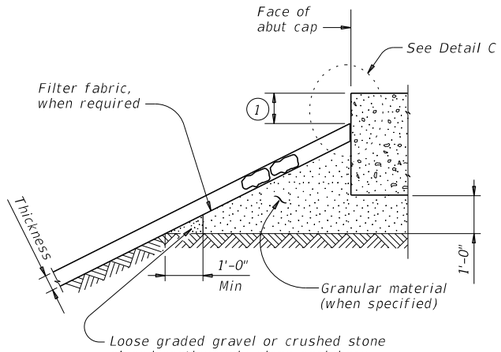
DN: BCL	CK:	FILENAME: SA District Sidewalk Bridge.dgn		
DW: SRF	CK:	ORIGINAL DRAWING DATE: January 2020		
DIST	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		COUNTY
SAT	6			COUNTY
CONTROL	SECTION	JOB	SHEET NO.	ROUTE
0000	00	000	000	ROUTE

REVISIONS:

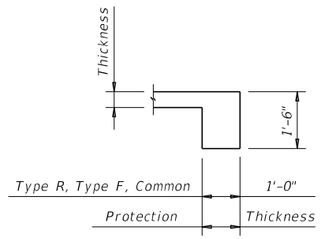
DATE:
FILE:



PLAN

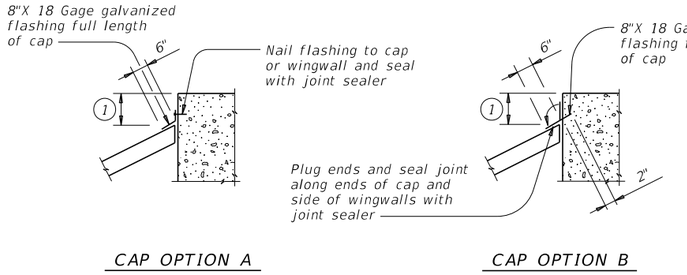


SECTION A-A AT CAP



SECTION B-B

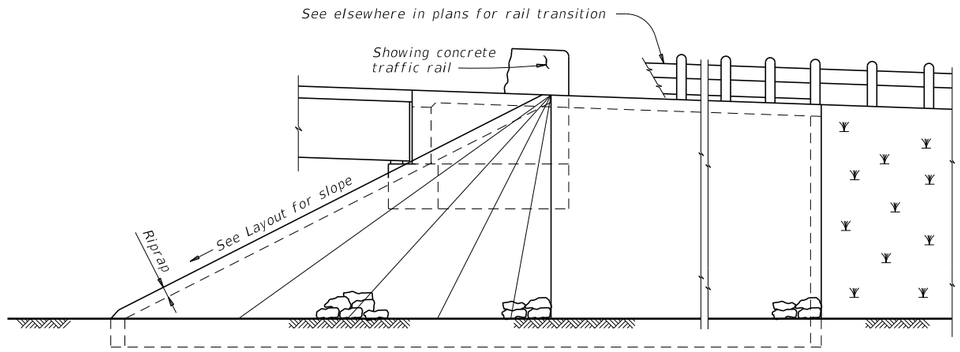
Provide toewall when shoulder drain is located adjacent to limits of stone riprap. Omit toewall when thickness of protection riprap is greater than 18".



CAP OPTION A

CAP OPTION B

DETAIL C



ELEVATION

GENERAL NOTES:
Refer to Item 432, "Riprap" for stone size and gradation, and construction details. See Layout for limits and thickness of riprap specified.
See elsewhere in plans for locations and details of shoulder drains.

(1) Top of cap to top of riprap dimension varies as directed by the Engineer. Provide 9" Min for beam/slab type bridges and 1'-6" for slab span, box beam, or slab beam bridges.

Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

FILE: MS-SRR-19.dgn	DN: AES	CK: JGD	DW: BWH	CK: AES
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				111

DATE:
FILE:

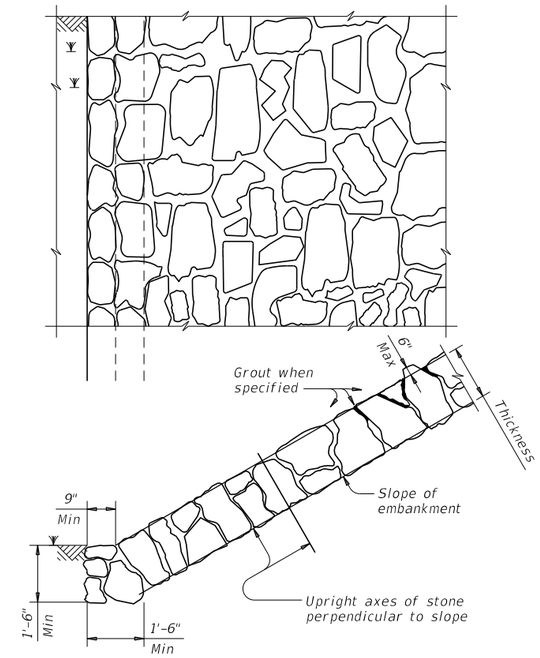


FIGURE 1 ~ TYPE R STONE RIPRAP

dry or grouted

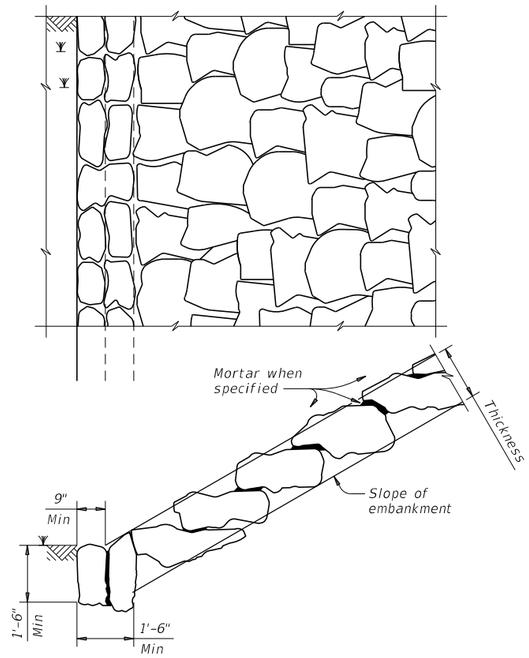


FIGURE 2 ~ TYPE F STONE RIPRAP

dry or mortared

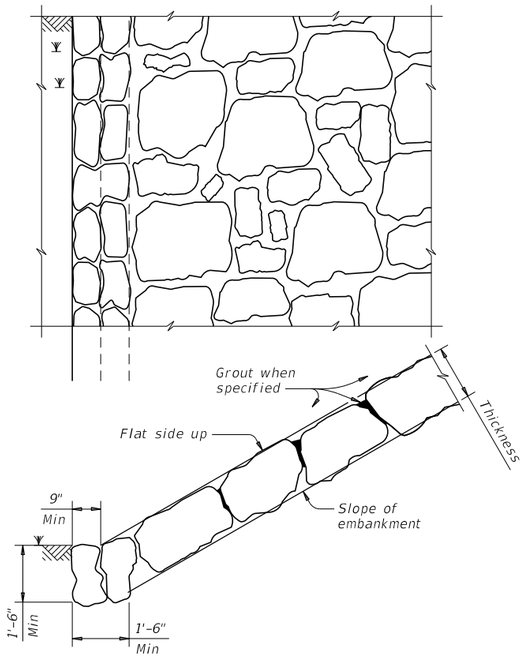


FIGURE 3 ~ TYPE F STONE RIPRAP

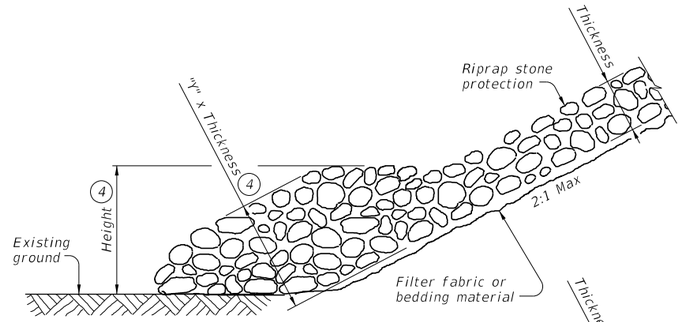
grouted

(2) Provide bedding material instead of filter fabric if shown elsewhere in plans. See Layout for thickness of bedding material.

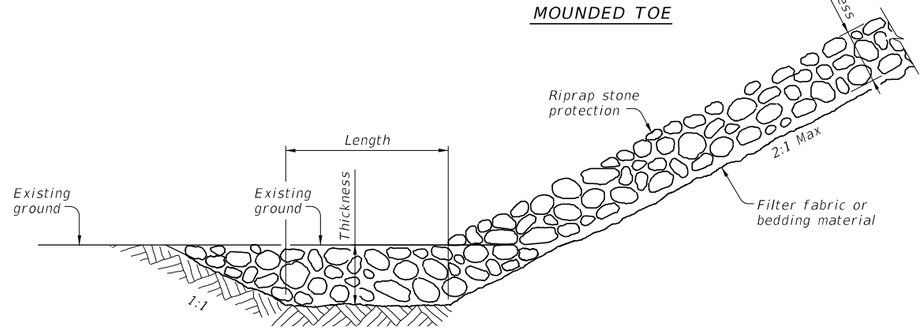
(3) Minimum toe depth is the larger of the maximum scour depth or 2 times the riprap thickness.

(4) "Y" and Height need to be defined. See layout or detail sheet for values if this option is used.

(5) List Stone Protection as size (XX inch) and thickness (YY inch) on the layout.
Example: Riprap (Stone Protection) XX inch, Thickness = YY inch.



MOUNDED TOE



EXTENDED ROCK FILLED TRENCH

PROTECTION STONE RIPRAP TOE OPTIONS (5)

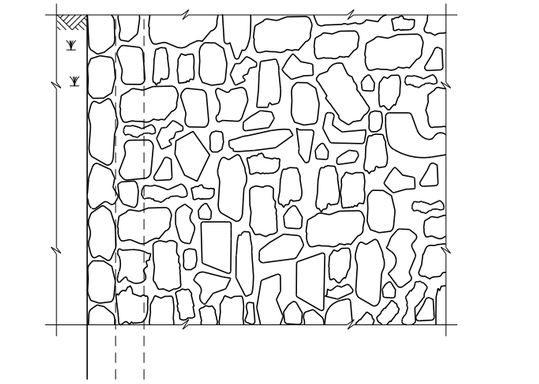


FIGURE 4 ~ COMMON STONE RIPRAP

dry or grouted

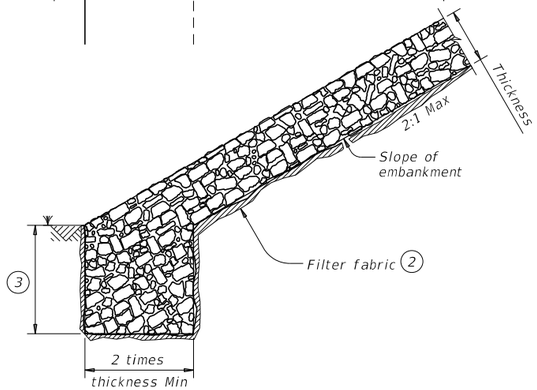


FIGURE 5 ~ PROTECTION STONE RIPRAP (5)

SHEET 2 OF 2

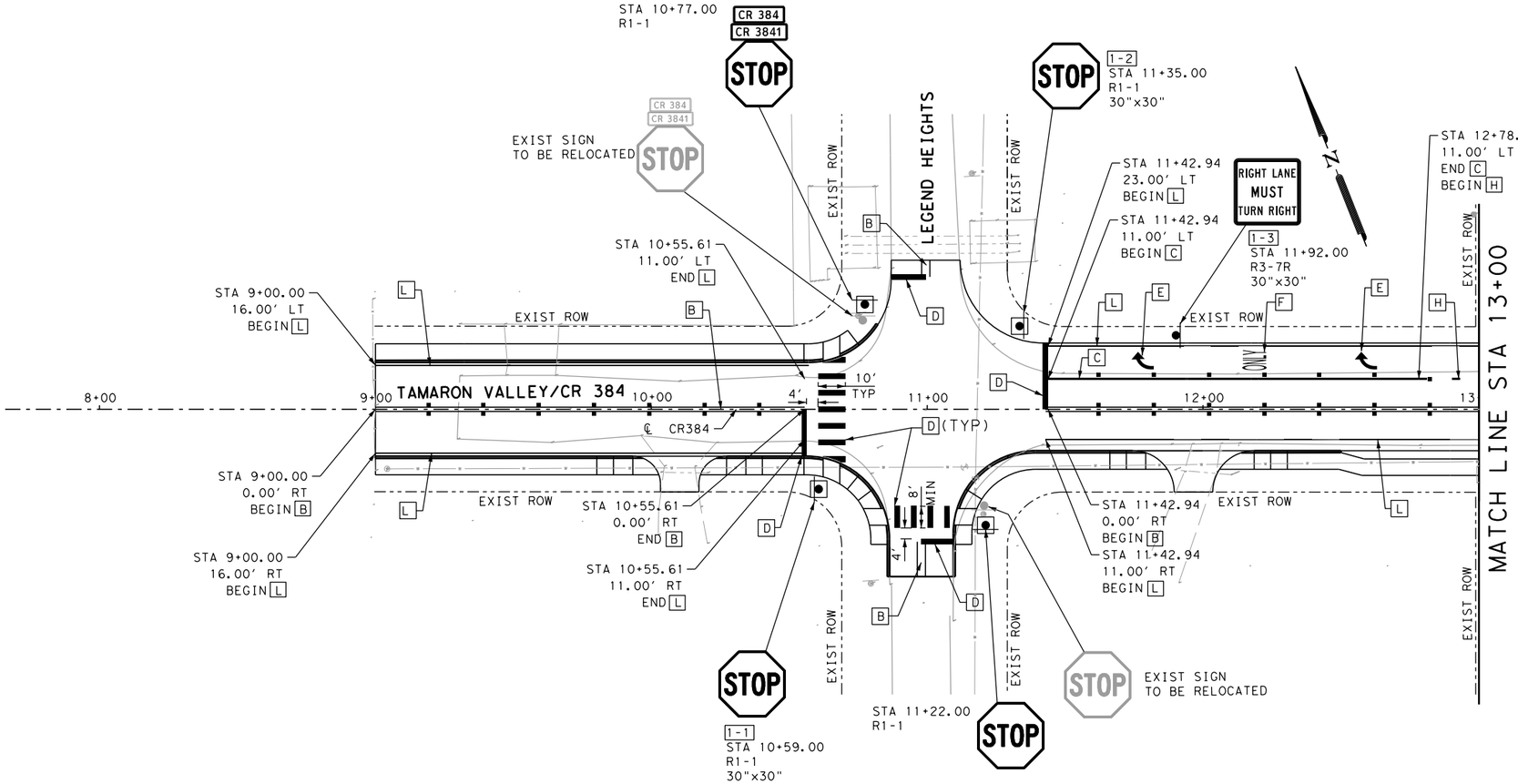
Texas Department of Transportation

Bridge Division Standard

STONE RIPRAP

SRR

FILE: MS-SRR-19.dgn	DN: AES	CK: JGD	DW: BWH	CK: AES
©TxDOT April 2019	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				112



PAVEMENT MARKINGS LEGEND

A	6" SLD (W) STRIPE
B	4" DBL SLD (Y) STRIPE W/DBL TY II A-A @ 40' OC
C	8" SLD (W) STRIPE W/TY I-C @ 20' OC
D	24" SLD (W) STRIPE STOP LINE
E	WHITE ARROW
F	WHITE WORD
G	MEDIAN NOSE (Y) W/ TY II A-A @ 2' OC
H	8" DOTTED (W) STRIPE W/TY I-C @ 48' OC
I	36" YIELD LINES (W)
J	8" SLD (W) W/ TY I-C @ 2'OC & 1' ON RADII
K	4" DBL SLD (Y) STRIPE W/TY II-A-A @ 20'OC
L	4" SLD (W) STRIPE
M	6" DBL SLD W/RET REQ (Y) STRIPE W/DBL TY II A-A @ 40' OC
N	8" SLD (W) STRIPE W/ DBL TY I-C @ 20' OC
●/—	PROPOSED SIGN W/RIPRAP APRON
◎	EXISTING SIGN
X-X	SIGN DESIGNATION

NOTES

1. FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL SIGN LOCATIONS ARE APPROXIMATE. EXACT LOCATIONS ARE TO BE STAKED OUT BY THE CONTRACTOR AND APRROVED BY THE ENGINEER PRIOR TO INSTALLATION.
4. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT AND OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.
5. CONTRACTOR TO MATCH PROPOSED PAVEMENT MARKINGS WITH EXISTING PAVEMENT MARKINGS AT BOTH ENDS OF THE PROJECT.
6. ALL TYPE I PAVEMENT MARKINGS SHALL BE 100 MIL THICK.
7. TYPE II MARKINGS TO BE USED AS PAVEMENT SEALER FOR ALL TYPE I PAVEMENT MARKINGS.
8. ANY EXISTING PAVEMENT MARKINGS REMOVED IN THE TCP THAT IS NOT SHOWN IN THE SIGNING AND PAVEMENT MARKING LAYOUT IS CONSIDERED SUBSIDIARY TO OTHER ITEMS OF WORK.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

SIGNING AND PAVEMENT MARKINGS LAYOUT

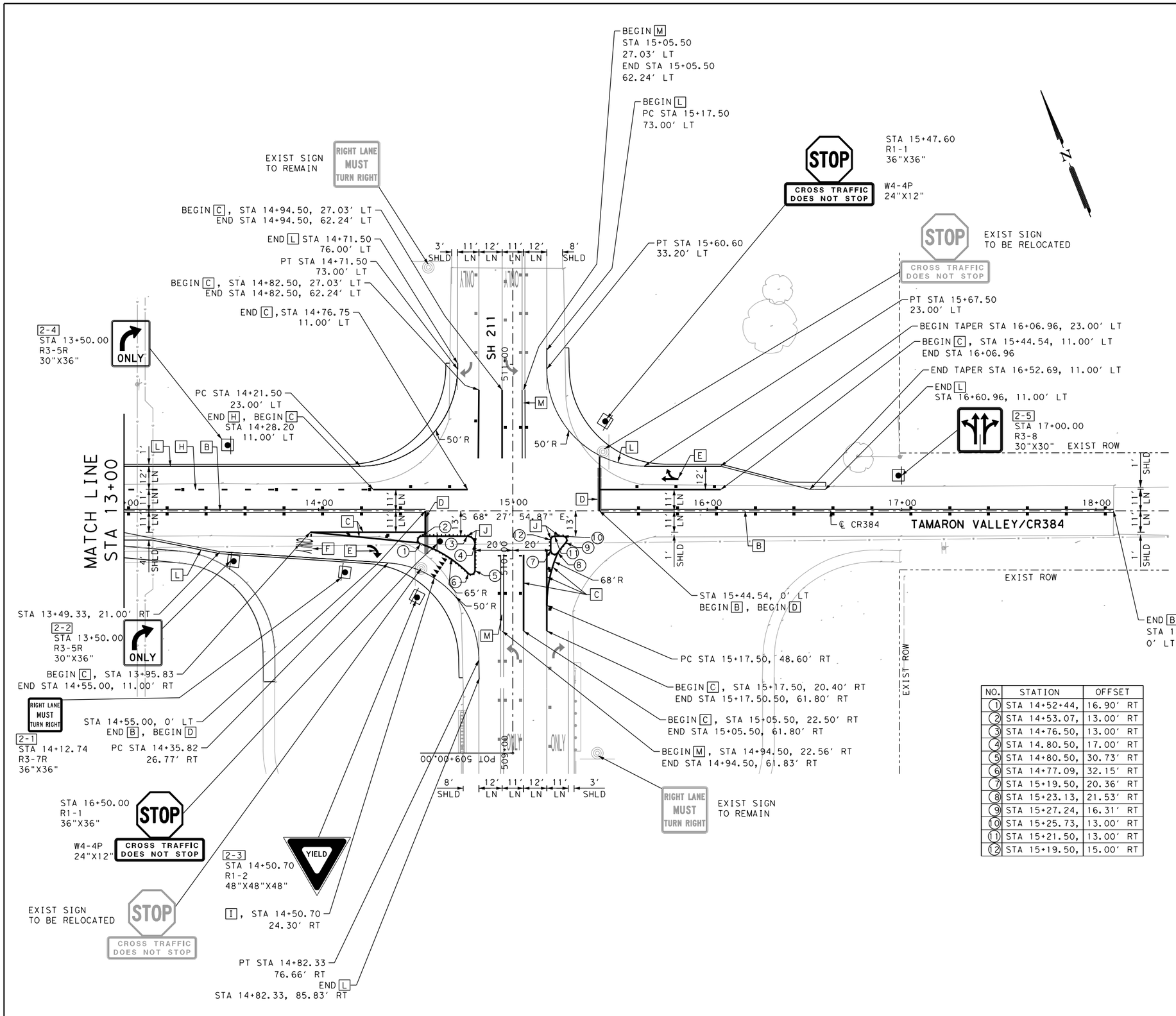
BEGIN PROJECT TO STA 13+00

SHEET 1 OF 7

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 113

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\Traffic\1228504_TAM_PM01.dgn



PAVEMENT MARKINGS LEGEND

A	6" SLD (W) STRIPE
B	4" DBL SLD (Y) STRIPE W/DBL TY II A-A @ 40' OC
C	8" SLD (W) STRIPE W/TY I-C @ 20' OC
D	24" SLD (W) STRIPE STOP LINE
E	WHITE ARROW
F	WHITE WORD
G	MEDIAN NOSE (Y) W/ TY II A-A @ 2' OC
H	8" DOTTED (W) STRIPE W/TY I-C @ 48' OC
I	36" YIELD LINES (W)
J	8" SLD (W) W/ TY I-C @ 2'OC & 1' ON RADII
K	4" DBL SLD (Y) STRIPE W/TY II-A-A @ 20'OC
L	4" SLD (W) STRIPE
M	6" DBL SLD W/RET REQ (Y) STRIPE W/DBL TY II A-A @ 40' OC
N	8" SLD (W) STRIPE W/ DBL TY I-C @ 20' OC
●/RIPRAP	PROPOSED SIGN W/RIPRAP APRON
◎	EXISTING SIGN
X-X	SIGN DESIGNATION

NOTES

1. FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL SIGN LOCATIONS ARE APPROXIMATE. EXACT LOCATIONS ARE TO BE STAKED OUT BY THE CONTRACTOR AND APRROVED BY THE ENGINEER PRIOR TO INSTALLATION.
4. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT AND OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.
5. CONTRACTOR TO MATCH PROPOSED PAVEMENT MARKINGS WITH EXISTING PAVEMENT MARKINGS AT BOTH ENDS OF THE PROJECT.
6. ALL TYPE I PAVEMENT MARKINGS SHALL BE 100 MIL THICK.
7. TYPE II MARKINGS TO BE USED AS PAVEMENT SEALER FOR ALL TYPE I PAVEMENT MARKINGS.
8. ANY EXISTING PAVEMENT MARKINGS REMOVED IN THE TCP THAT IS NOT SHOWN IN THE SIGNING AND PAVEMENT MARKING LAYOUT IS CONSIDERED SUBSIDIARY TO OTHER ITEMS OF WORK.

NO.	STATION	OFFSET
1	STA 14+52+44,	16.90' RT
2	STA 14+53.07,	13.00' RT
3	STA 14+76.50,	13.00' RT
4	STA 14.80.50,	17.00' RT
5	STA 14+80.50,	30.73' RT
6	STA 14+77.09,	32.15' RT
7	STA 15+19.50,	20.36' RT
8	STA 15+23.13,	21.53' RT
9	STA 15+27.24,	16.31' RT
10	STA 15+25.73,	13.00' RT
11	STA 15+21.50,	13.00' RT
12	STA 15+19.50,	15.00' RT

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

SIGNING AND PAVEMENT MARKINGS LAYOUT

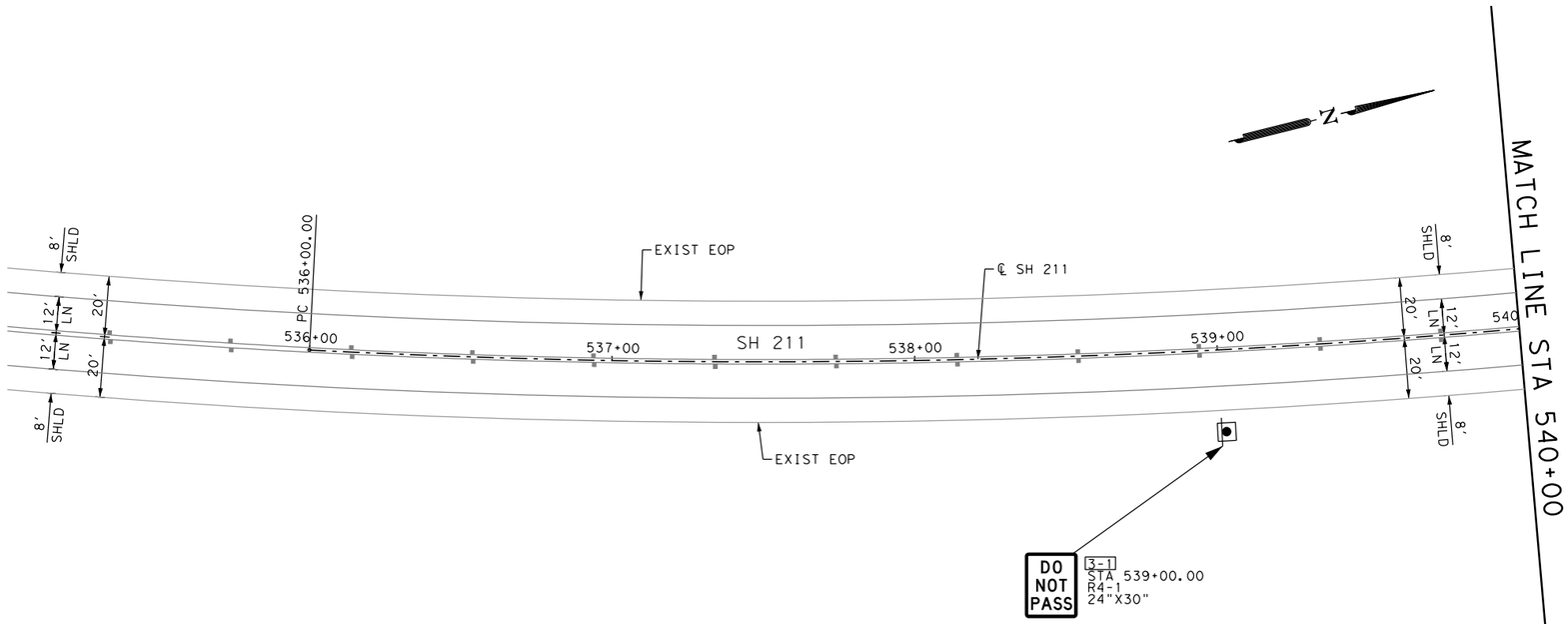
STA 13+00 TO END PROJECT

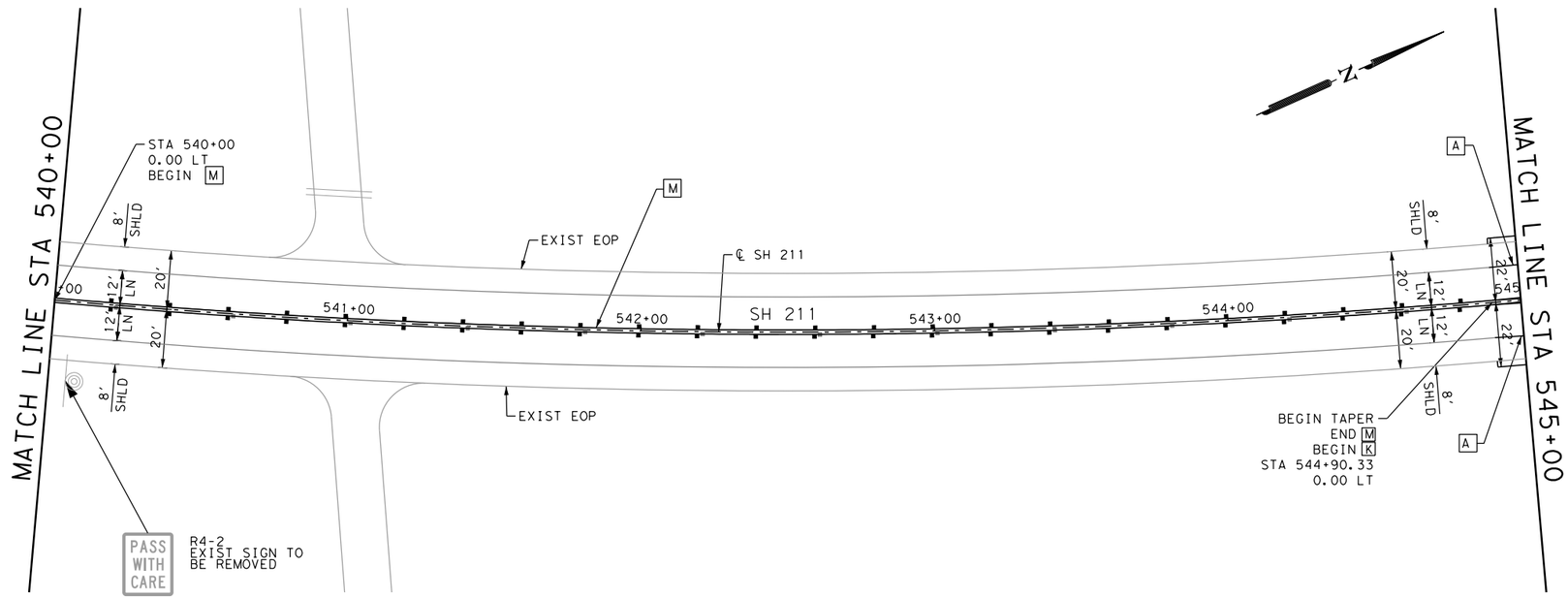
SHEET 2 OF 7

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 114

Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\Traffic\1228504_TAM_PM02.dgn





PAVEMENT MARKINGS LEGEND

A	6" SLD (W) STRIPE
B	4" DBL SLD (Y) STRIPE W/DBL TY II A-A @ 40' OC
C	8" SLD (W) STRIPE W/TY I-C @ 20' OC
D	24" SLD (W) STRIPE STOP LINE
E	WHITE ARROW
F	WHITE WORD
G	MEDIAN NOSE (Y) W/ TY II A-A @ 2' OC
H	8" DOTTED (W) STRIPE W/TY I-C @ 48' OC
I	36" YIELD LINES (W)
J	8" SLD (W) W/ TY I-C @ 2'OC & 1' ON RADII
K	4" DBL SLD (Y) STRIPE W/TY II-A-A @ 20'OC
L	4" SLD (W) STRIPE
M	6" DBL SLD W/RET REQ (Y) STRIPE W/DBL TY II A-A @ 40' OC
N	8" SLD (W) STRIPE W/ DBL TY I-C @ 20' OC
●	PROPOSED SIGN W/RIPRAP APRON
◎	EXISTING SIGN
X-X	SIGN DESIGNATION

NOTES

1. FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL SIGN LOCATIONS ARE APPROXIMATE. EXACT LOCATIONS ARE TO BE STAKED OUT BY THE CONTRACTOR AND APRROVED BY THE ENGINEER PRIOR TO INSTALLATION.
4. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT AND OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.
5. CONTRACTOR TO MATCH PROPOSED PAVEMENT MARKINGS WITH EXISTING PAVEMENT MARKINGS AT BOTH ENDS OF THE PROJECT.
6. ALL TYPE I PAVEMENT MARKINGS SHALL BE 100 MIL THICK.
7. TYPE II MARKINGS TO BE USED AS PAVEMENT SEALER FOR ALL TYPE I PAVEMENT MARKINGS.
8. ANY EXISTING PAVEMENT MARKINGS REMOVED IN THE TCP THAT IS NOT SHOWN IN THE SIGNING AND PAVEMENT MARKING LAYOUT IS CONSIDERED SUBSIDIARY TO OTHER ITEMS OF WORK.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

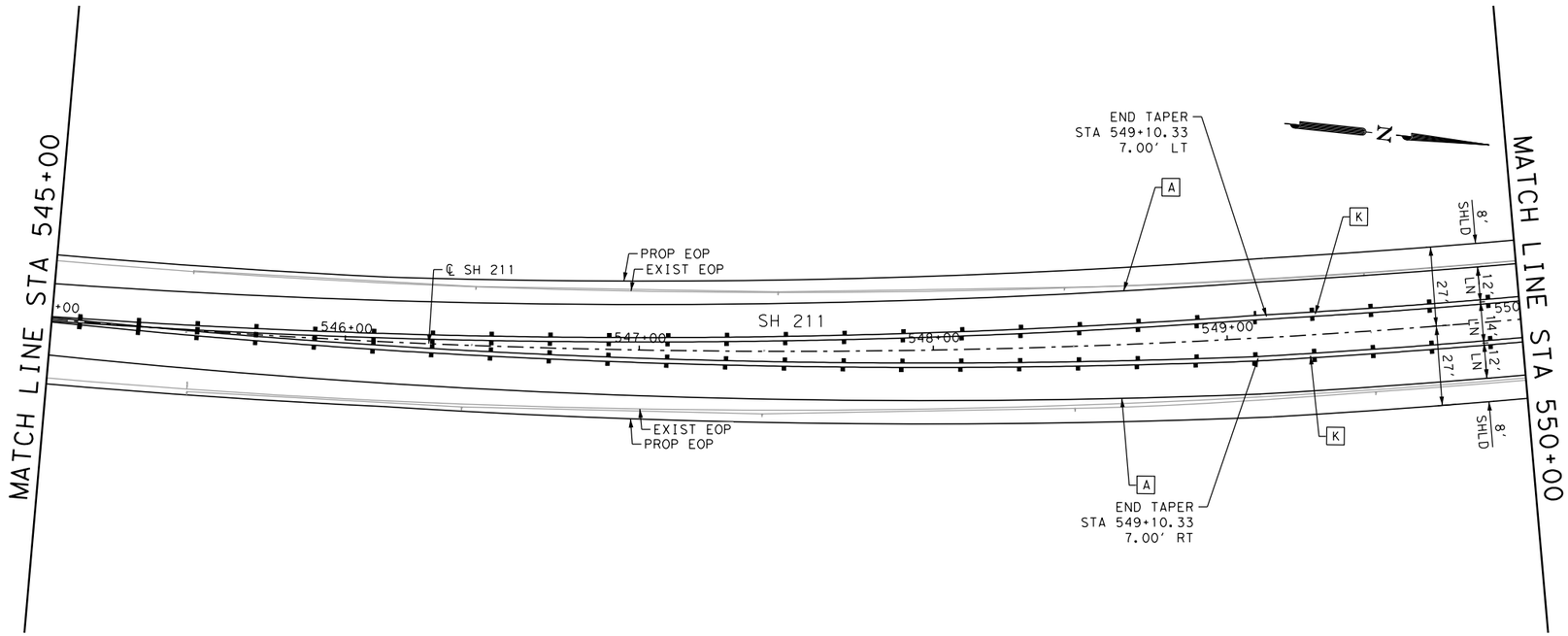
SIGNING AND PAVEMENT MARKINGS LAYOUT

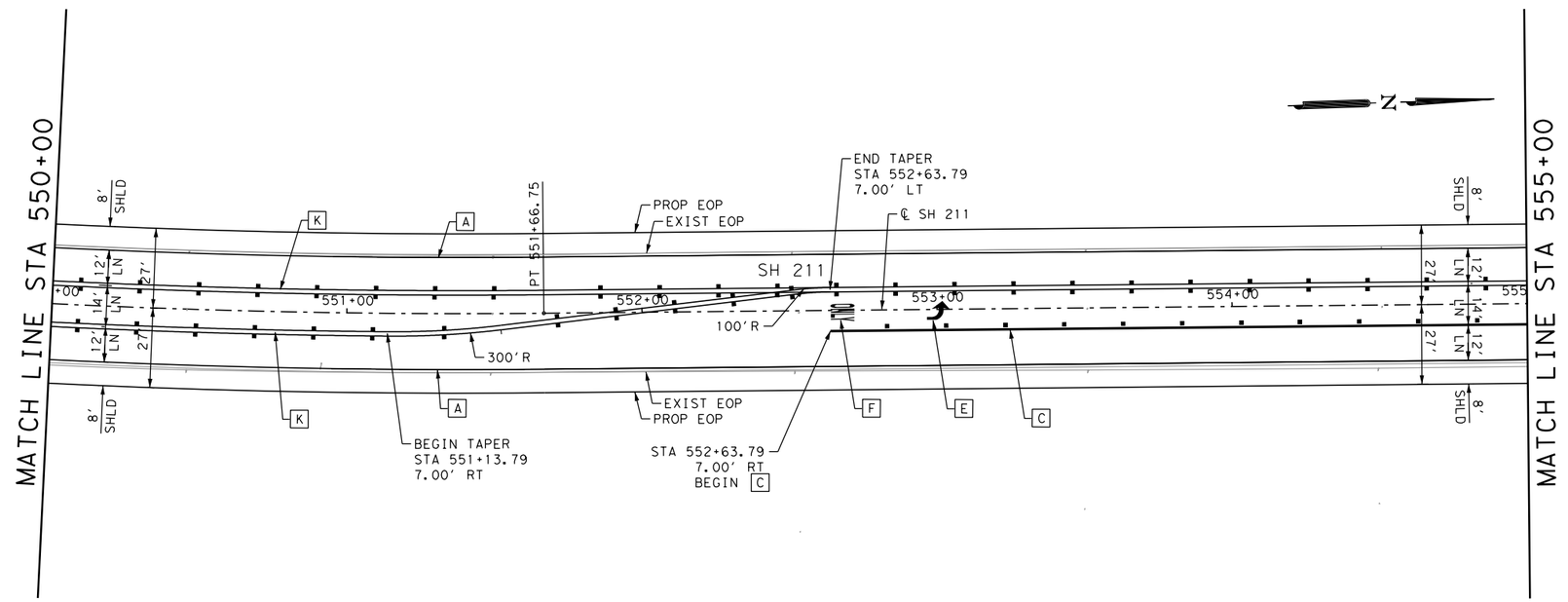
BEGIN PROJECT TO STA 545+00

SHEET 3 OF 7

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 115

Design Filename: P:\122\85\04\Design\Civil\Traffic\1228504_PM01.dgn





PAVEMENT MARKINGS LEGEND

- A — 6" SLD (W) STRIPE
- B — 4" DBL SLD (Y) STRIPE W/DBL TY II A-A @ 40' OC
- C — 8" SLD (W) STRIPE W/TY I-C @ 20' OC
- D — 24" SLD (W) STRIPE STOP LINE
- E — WHITE ARROW
- F — WHITE WORD
- G — MEDIAN NOSE (Y) W/ TY II A-A @ 2' OC
- H — 8" DOTTED (W) STRIPE W/TY I-C @ 48' OC
- I — 36" YIELD LINES (W)
- J — 8" SLD (W) W/ TY I-C @ 2'OC & 1' ON RADII
- K — 4" DBL SLD (Y) STRIPE W/TY II-A-A @ 20'OC
- L — 4" SLD (W) STRIPE
- M — 6" DBL SLD W/RET REQ (Y) STRIPE W/DBL TY II A-A @ 40' OC
- N — 8" SLD (W) STRIPE W/ DBL TY I-C @ 20' OC
- PROPOSED SIGN W/RIPRAP APRON
- EXISTING SIGN
- X-X — SIGN DESIGNATION

NOTES

1. FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL SIGN LOCATIONS ARE APPROXIMATE. EXACT LOCATIONS ARE TO BE STAKED OUT BY THE CONTRACTOR AND APRROVED BY THE ENGINEER PRIOR TO INSTALLATION.
4. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT AND OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.
5. CONTRACTOR TO MATCH PROPOSED PAVEMENT MARKINGS WITH EXISTING PAVEMENT MARKINGS AT BOTH ENDS OF THE PROJECT.
6. ALL TYPE I PAVEMENT MARKINGS SHALL BE 100 MIL THICK.
7. TYPE II MARKINGS TO BE USED AS PAVEMENT SEALER FOR ALL TYPE I PAVEMENT MARKINGS.
8. ANY EXISTING PAVEMENT MARKINGS REMOVED IN THE TCP THAT IS NOT SHOWN IN THE SIGNING AND PAVEMENT MARKING LAYOUT IS CONSIDERED SUBSIDIARY TO OTHER ITEMS OF WORK.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

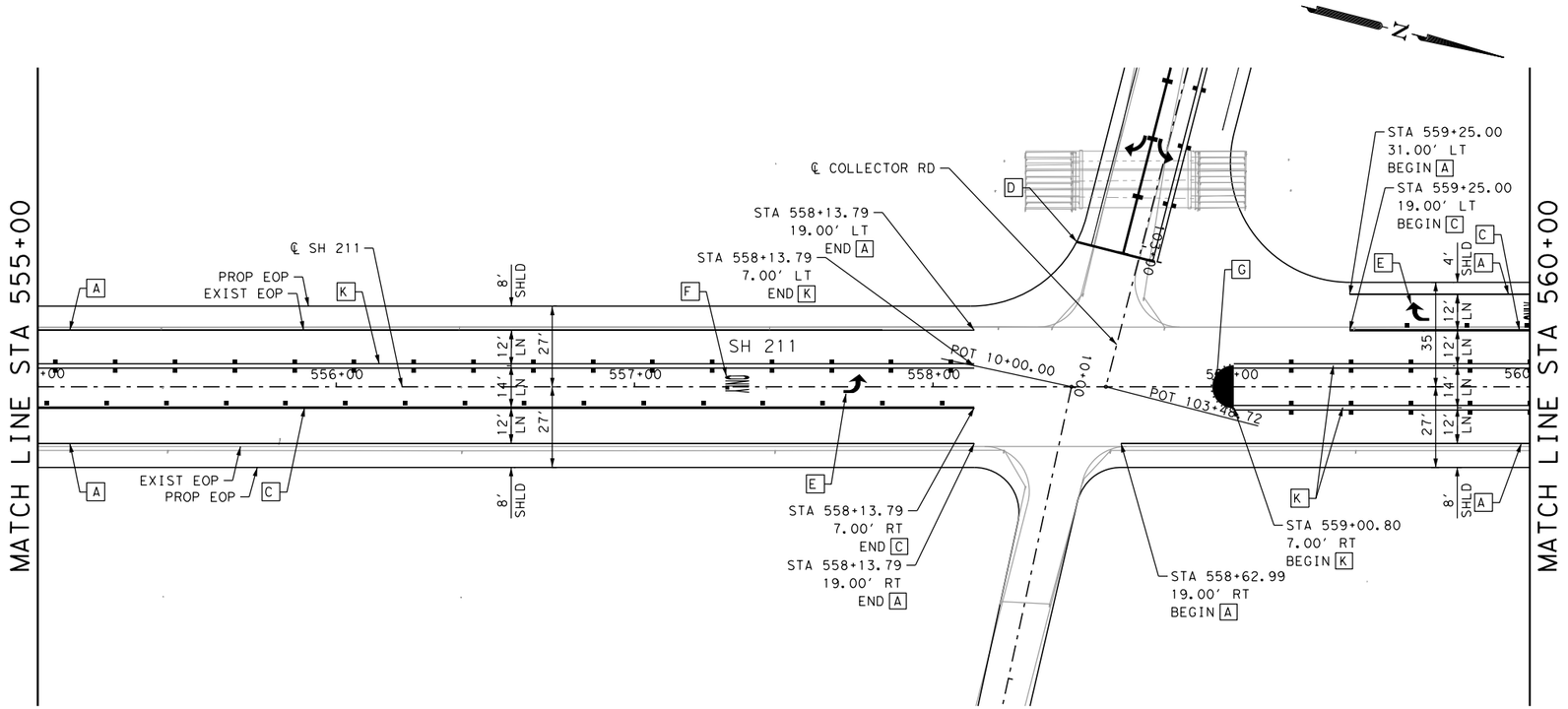
SIGNING AND PAVEMENT MARKINGS LAYOUT

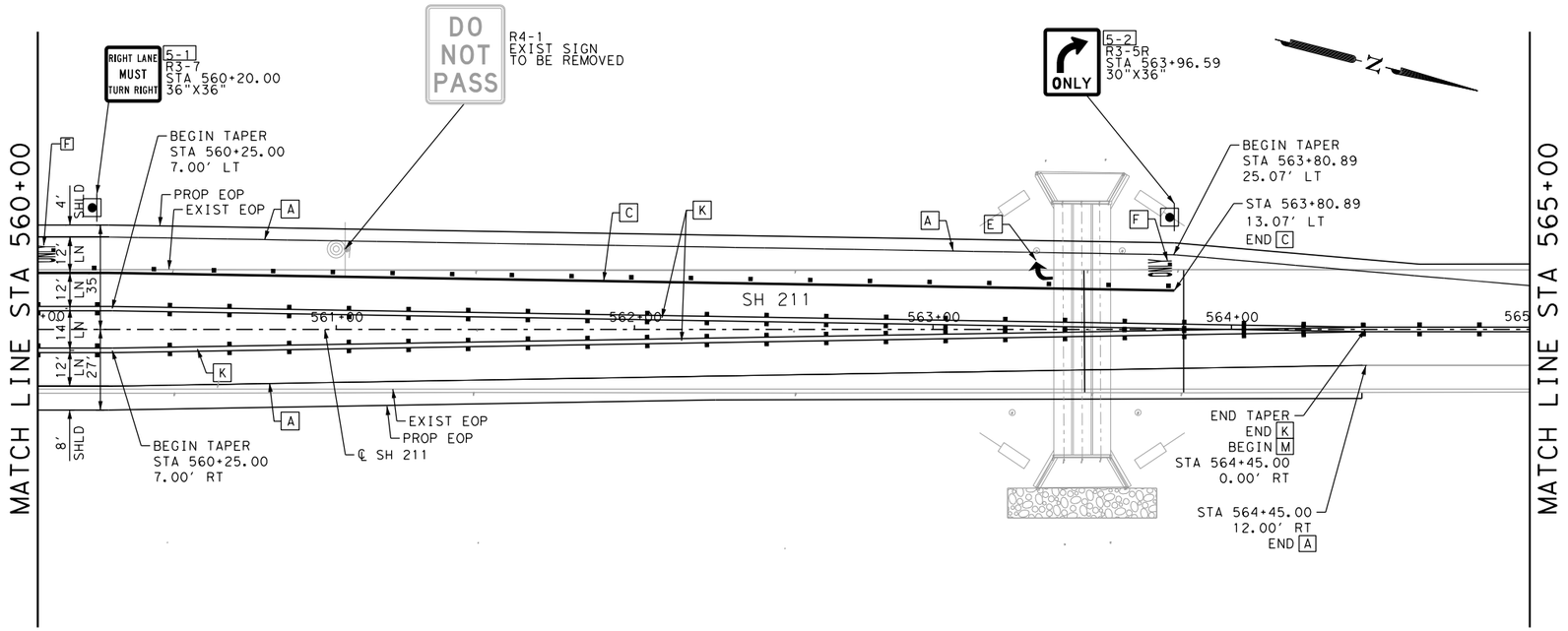
STA 545+00 TO STA 555+00

SHEET 4 OF 7

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 116

Design Filename: P:\122\85\04\Design\Civil\Traffic\1228504_PM02.dgn





PAVEMENT MARKINGS LEGEND

- A — 6" SLD (W) STRIPE
- B — 4" DBL SLD (Y) STRIPE W/DBL TY II A-A @ 40' OC
- C — 8" SLD (W) STRIPE W/TY I-C @ 20' OC
- D — 24" SLD (W) STRIPE STOP LINE
- E — WHITE ARROW
- F — WHITE WORD
- G — MEDIAN NOSE (Y) W/ TY II A-A @ 2' OC
- H — 8" DOTTED (W) STRIPE W/TY I-C @ 48' OC
- I — 36" YIELD LINES (W)
- J — 8" SLD (W) W/ TY I-C @ 2'OC & 1' ON RADII
- K — 4" DBL SLD (Y) STRIPE W/TY II-A-A @ 20'OC
- L — 4" SLD (W) STRIPE
- M — 6" DBL SLD W/RET REQ (Y) STRIPE W/DBL TY II A-A @ 40' OC
- N — 8" SLD (W) STRIPE W/ DBL TY I-C @ 20' OC
- PROPOSED SIGN W/RIPRAP APRON
- EXISTING SIGN
- X-X — SIGN DESIGNATION

NOTES

1. FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL SIGN LOCATIONS ARE APPROXIMATE. EXACT LOCATIONS ARE TO BE STAKED OUT BY THE CONTRACTOR AND APRROVED BY THE ENGINEER PRIOR TO INSTALLATION.
4. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT AND OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.
5. CONTRACTOR TO MATCH PROPOSED PAVEMENT MARKINGS WITH EXISTING PAVEMENT MARKINGS AT BOTH ENDS OF THE PROJECT.
6. ALL TYPE I PAVEMENT MARKINGS SHALL BE 100 MIL THICK.
7. TYPE II MARKINGS TO BE USED AS PAVEMENT SEALER FOR ALL TYPE I PAVEMENT MARKINGS.
8. ANY EXISTING PAVEMENT MARKINGS REMOVED IN THE TCP THAT IS NOT SHOWN IN THE SIGNING AND PAVEMENT MARKING LAYOUT IS CONSIDERED SUBSIDIARY TO OTHER ITEMS OF WORK.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

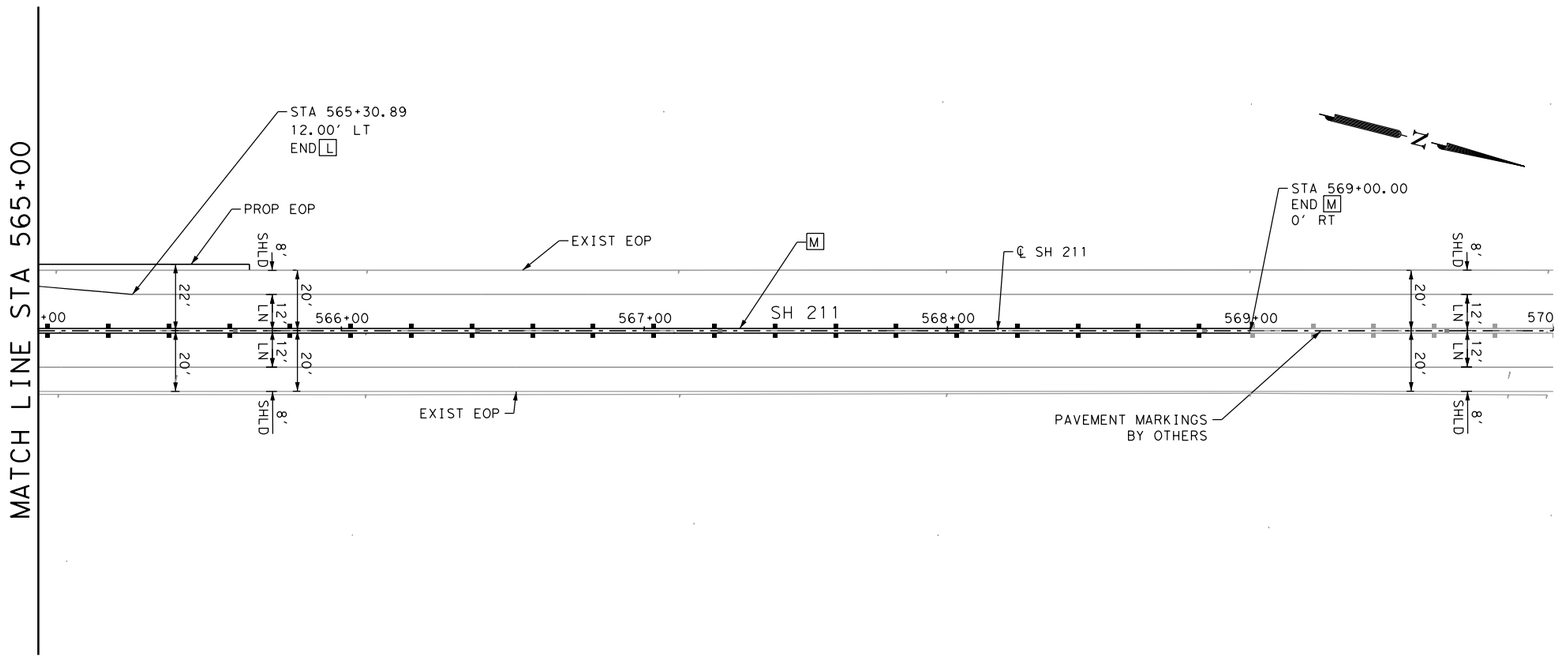
SIGNING AND PAVEMENT MARKINGS LAYOUT

STA 555+00 TO STA 565+00

SHEET 5 OF 7

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 117

Design Filename: P:\122\85\04\Design\Civil\Traffic\1228504_PM03.dgn



PAVEMENT MARKINGS LEGEND

A	6" SLD (W) STRIPE
B	4" DBL SLD (Y) STRIPE W/DBL TY II A-A @ 40' OC
C	8" SLD (W) STRIPE W/TY I-C @ 20' OC
D	24" SLD (W) STRIPE STOP LINE
E	WHITE ARROW
F	WHITE WORD
G	MEDIAN NOSE (Y) W/ TY II A-A @ 2' OC
H	8" DOTTED (W) STRIPE W/TY I-C @ 48' OC
I	36" YIELD LINES (W)
J	8" SLD (W) W/ TY I-C @ 2'OC & 1' ON RADII
K	4" DBL SLD (Y) STRIPE W/TY II-A-A @ 20'OC
L	4" SLD (W) STRIPE
M	6" DBL SLD W/RET REQ (Y) STRIPE W/DBL TY II A-A @ 40' OC
N	8" SLD (W) STRIPE W/ DBL TY I-C @ 20' OC
●	PROPOSED SIGN W/RIPRAP APRON
	EXISTING SIGN
X-X	SIGN DESIGNATION

NOTES

1. FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL SIGN LOCATIONS ARE APPROXIMATE. EXACT LOCATIONS ARE TO BE STAKED OUT BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
4. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT AND OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.
5. CONTRACTOR TO MATCH PROPOSED PAVEMENT MARKINGS WITH EXISTING PAVEMENT MARKINGS AT BOTH ENDS OF THE PROJECT.
6. ALL TYPE I PAVEMENT MARKINGS SHALL BE 100 MIL THICK.
7. TYPE II MARKINGS TO BE USED AS PAVEMENT SEALER FOR ALL TYPE I PAVEMENT MARKINGS.
8. ANY EXISTING PAVEMENT MARKINGS REMOVED IN THE TCP THAT IS NOT SHOWN IN THE SIGNING AND PAVEMENT MARKING LAYOUT IS CONSIDERED SUBSIDIARY TO OTHER ITEMS OF WORK.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1"= 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

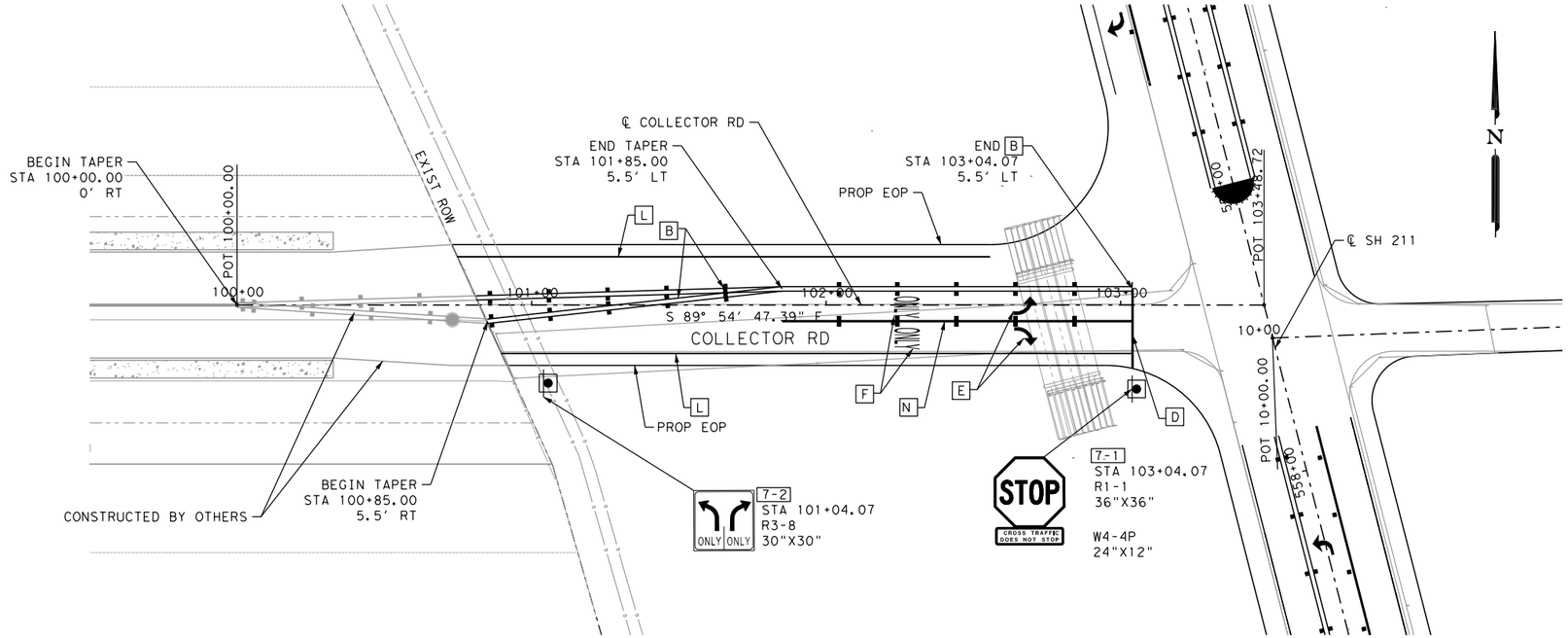
TALLEYHO IMPROVEMENTS

SIGNING AND PAVEMENT MARKINGS LAYOUT

STA 565+00 TO END PROJECT

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 118

Design Filename: P:\122\85\04\Design\Civil\Traffic\1228504_PM04.dgn



PAVEMENT MARKINGS LEGEND

A	6" SLD (W) STRIPE
B	4" DBL SLD (Y) STRIPE W/DBL TY II A-A @ 40' OC
C	8" SLD (W) STRIPE W/TY I-C @ 20' OC
D	24" SLD (W) STRIPE STOP LINE
E	WHITE ARROW
F	WHITE WORD
G	MEDIAN NOSE (Y) W/ TY II A-A @ 2' OC
H	8" DOTTED (W) STRIPE W/TY I-C @ 48' OC
I	36" YIELD LINES (W)
J	8" SLD (W) W/ TY I-C @ 2'OC & 1' ON RADII
K	4" DBL SLD (Y) STRIPE W/TY II-A-A @ 20'OC
L	4" SLD (W) STRIPE
M	6" DBL SLD W/RET REQ (Y) STRIPE W/DBL TY II A-A @ 40' OC
N	8" SLD (W) STRIPE W/ DBL TY I-C @ 20' OC
●	PROPOSED SIGN W/RIPRAP APRON
◎	EXISTING SIGN
X-X	SIGN DESIGNATION

NOTES

1. FOR ADDITIONAL DETAILS SEE TxDOT TYPICAL STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL SIGN LOCATIONS ARE APPROXIMATE. EXACT LOCATIONS ARE TO BE STAKED OUT BY THE CONTRACTOR AND APRROVED BY THE ENGINEER PRIOR TO INSTALLATION.
4. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT AND OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.
5. CONTRACTOR TO MATCH PROPOSED PAVEMENT MARKINGS WITH EXISTING PAVEMENT MARKINGS AT BOTH ENDS OF THE PROJECT.
6. ALL TYPE I PAVEMENT MARKINGS SHALL BE 100 MIL THICK.
7. TYPE II MARKINGS TO BE USED AS PAVEMENT SEALER FOR ALL TYPE I PAVEMENT MARKINGS.
8. ANY EXISTING PAVEMENT MARKINGS REMOVED IN THE TCP THAT IS NOT SHOWN IN THE SIGNING AND PAVEMENT MARKING LAYOUT IS CONSIDERED SUBSIDIARY TO OTHER ITEMS OF WORK.

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

0 25 50 75
SCALE: 1" = 50'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

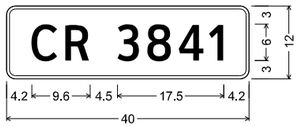
SIGNING AND PAVEMENT MARKINGS LAYOUT

SHEET 7 OF 7

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: OH	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 19

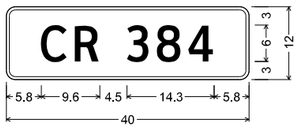
Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\Traffic\1228504_COL_PM01.dgn



D3-1G(2) 8in;
1.5" Radius, 0.5" Border, White on Green;
"CR 3841", ClearviewHwy-3-W;
Table of distances between letter and object lefts

	C	R	3	8	4	1	
4.2	5.6	8.5	5.0	5.1	5.0	2.4	4.2



D3-1G(2) 8In;
1.5" Radius, 0.5" Border, White on Green;
"CR 384", ClearviewHwy-3-W;
Table of distances between letter and object lefts

	C	R	3	8	4	
5.8	5.6	8.5	5.0	5.1	4.2	5.8

DESIGN

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: BRET CHAPMAN
P.E. SERIAL NO: 127293
DATE: 1/22/2024

APPROVAL

INTERIM REVIEW

DOCUMENT INCOMPLETE. NOT INTENDED FOR PERMIT, BIDDING OR CONSTRUCTION.
ENGINEER: SHANE J. TULLY
P.E. SERIAL NO: 99446
DATE: 1/22/2024

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS

SIGN DETAIL

95% SUBMITTAL	PROJECT NO.: 1228504		DATE: 1/22/2024
DRWN. BY: CL	DSGN. BY: BC	CHKD. BY: BC	SHEET NO.: 120

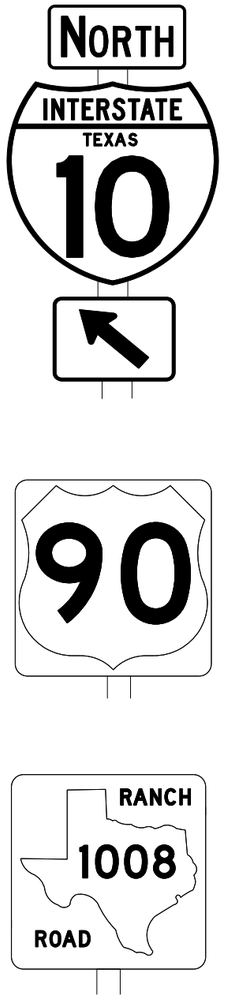
Plotted on: 1/22/2024

Design Filename: P:\122\85\04\Design\Civil\Traffic\1228504_SIGN_DETAIL.dgn

DATE: 1/22/2024 2:41:00 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\tsr3-13.dgn

REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

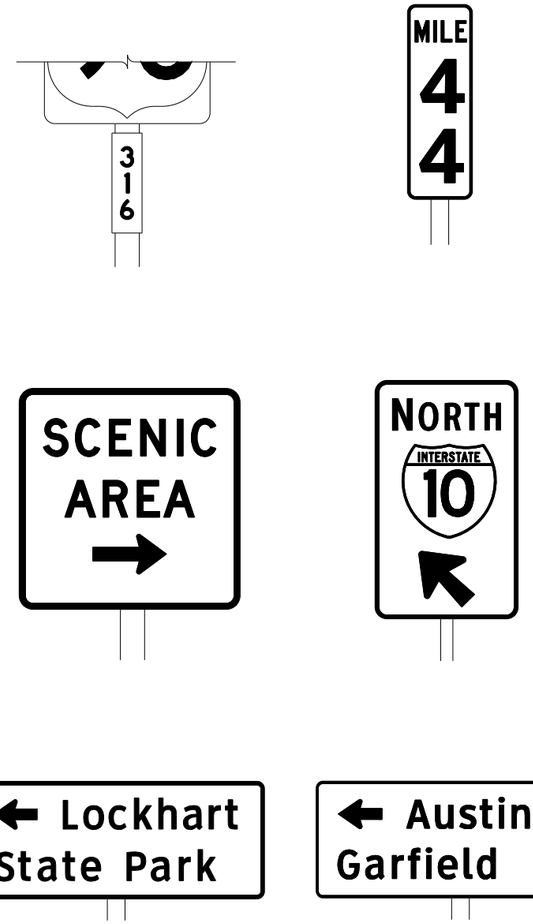
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



TYPICAL EXAMPLES

REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING



TYPICAL EXAMPLES

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).

2. White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white Federal Highway Administration (FHWA) Standard Highway Alphabets, when not specified in the SHSD, or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

3. Route sign legend (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets B, C, D, E, Emod or F).

4. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.

5. Independent mounted route sign with white or colored legend and borders shall be applied by screening process with transparent color ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof. White legend, symbols and borders on all other signs shall be cut-out white sheeting applied to colored background sheeting.

6. Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius should be trimmed or rounded.

7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.

8. Mounting details of roadside signs are shown in the "SMD series" Standard Plan Sheets.

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(3)-13

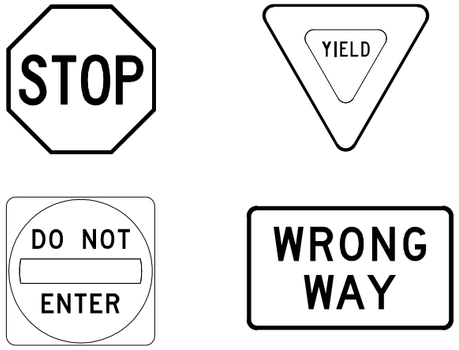
FILE: tsr3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	SAT	BX / ME		121

3

DATE: 1/22/2024 2:41:01 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\tsr4-13.dgn

REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS

(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

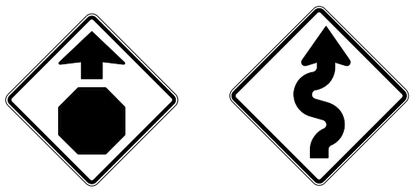
REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS

(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND, BORDERS AND SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS

TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
6. Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

ALUMINUM SIGN BLANKS THICKNESS	
Square Feet	Minimum Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

The Standard Highway Sign Designs for Texas (SHSD) can be found at the following website.

http://www.txdot.gov/

Texas Department of Transportation

Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(4)-13

FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
© TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08	SAT	BX / ME		122

4

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

Post Type

- FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
- TWT = Thin-Walled Tubing (see SMD(TWT))
- 10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
- S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

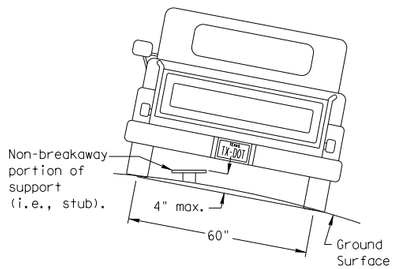
Anchor Type

- UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
- UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
- WS = Wedge Anchor Steel - (see SMD(TWT))
- WP = Wedge Anchor Plastic (see SMD(TWT))
- SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
- SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation

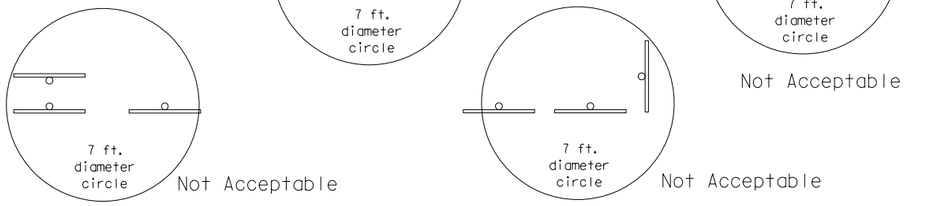
- P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
- T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
- U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
- IF REQUIRED
- 1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
- BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
- WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
- EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-1))

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



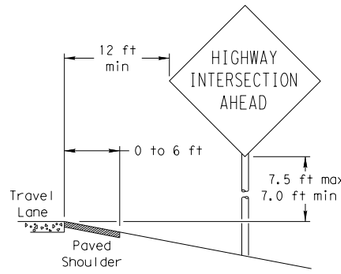
To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

No more than 2 sign posts should be located within a 7 ft. circle.



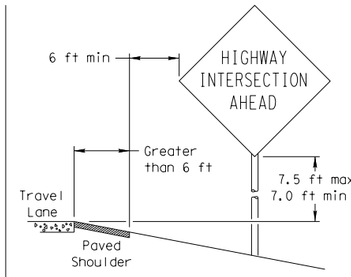
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

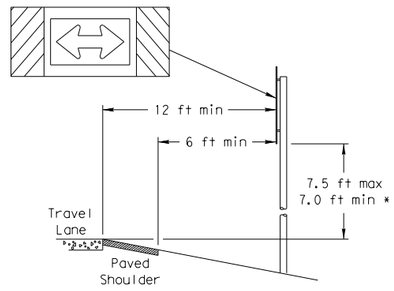
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



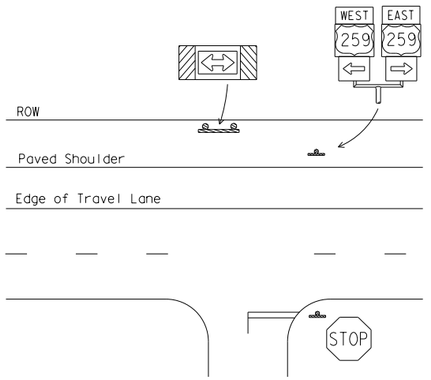
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

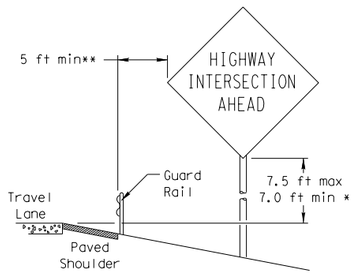
T-INTERSECTION



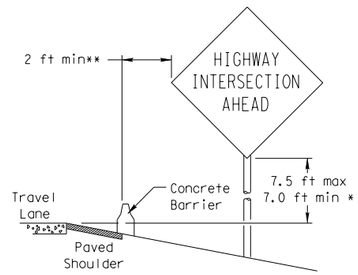
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

- * Signs shall be mounted using the following condition that results in the greatest sign elevation:
  - (1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or
  - (2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

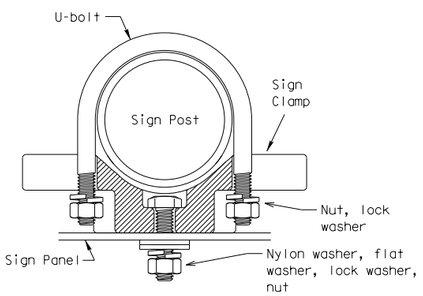
The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is:
http://www.txdot.gov/publications/traffic.htm

TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

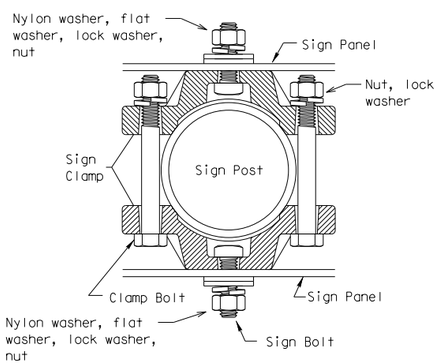


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

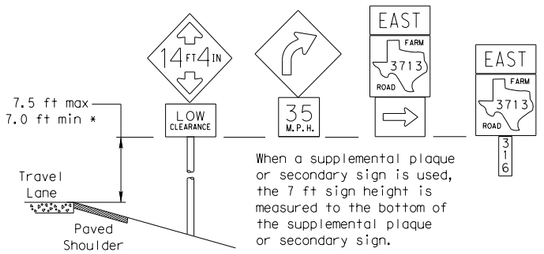
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



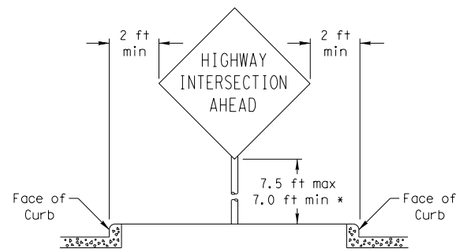
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



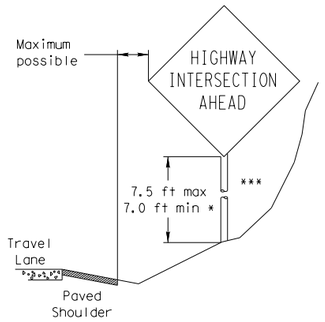
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

9-08 REVISIONS

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

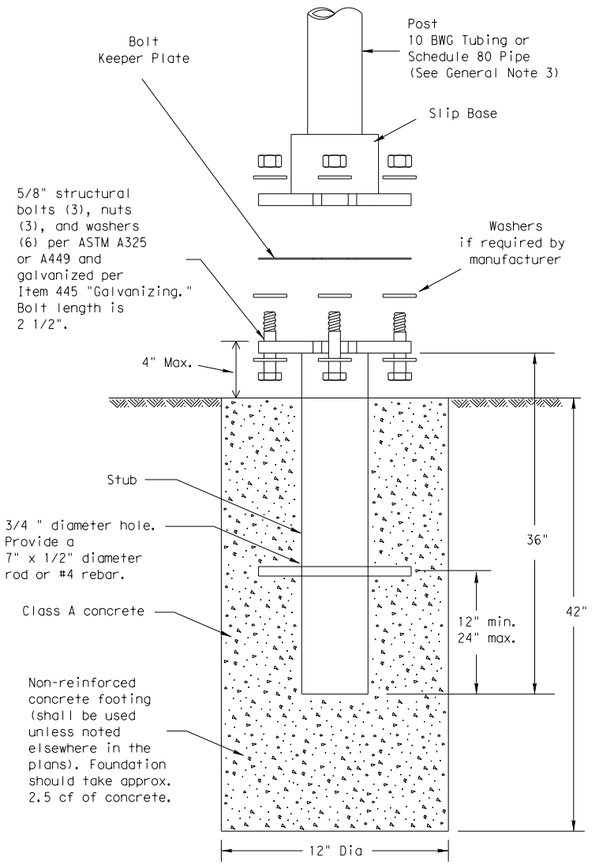
CONT	SECT	JOB	HIGHWAY
			SH 211

DIST	COUNTY	SHEET NO.
SAT	BX / ME	123

26A

DATE: 1/22/2024 2:41:02 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\smdgen.dgn

TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   - 0.134" nominal wall thickness
   - Seamless or electric-resistance welded steel tubing or pipe
   - Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   - Other steels may be used if they meet the following:
     - 55,000 PSI minimum yield strength
     - 70,000 PSI minimum tensile strength
     - 20% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   - Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   - Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.

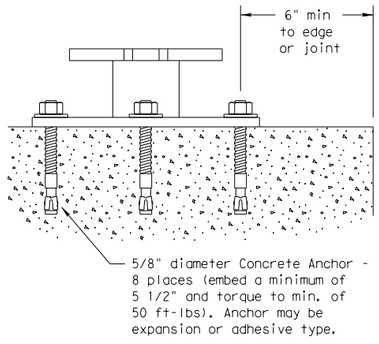
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum yield strength
     - 62,000 PSI minimum tensile strength
     - 21% minimum elongation in 2"
   - Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   - Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   - Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

Texas Department of Transportation
Traffic Operations Division

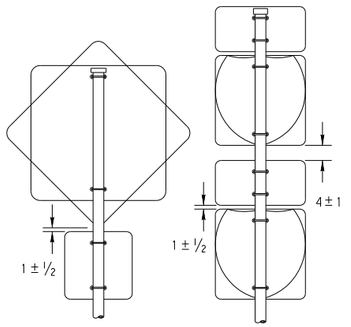
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

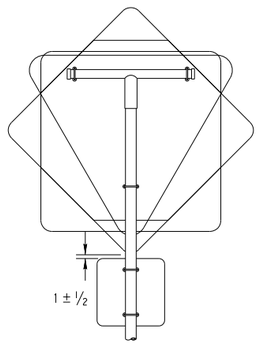
©TxDOT July 2002	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
REVISIONS	CONT	SECT	JOB	HIGHWAY
9-08				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		124

26B

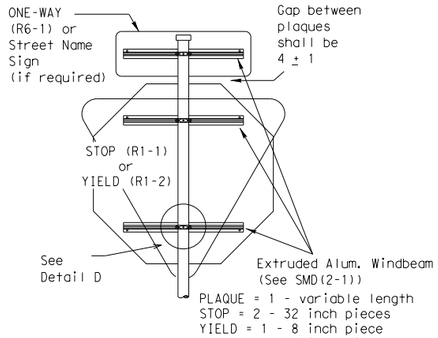
DATE: 1/22/2024 2:41:03 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\smds1.dgn



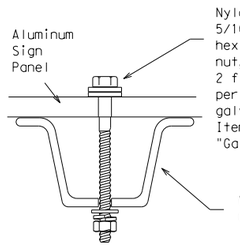
SM RD SGN ASSM TY XXXXX(1)XX(P)



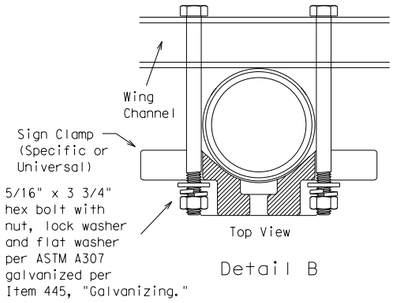
SM RD SGN ASSM TY XXXXX(1)XX(T)



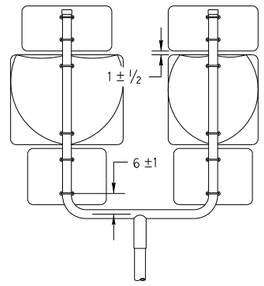
SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



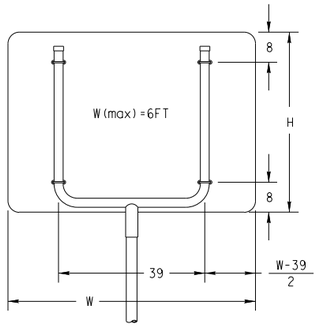
Detail A



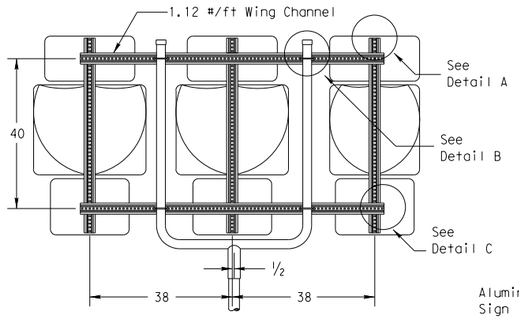
Detail B



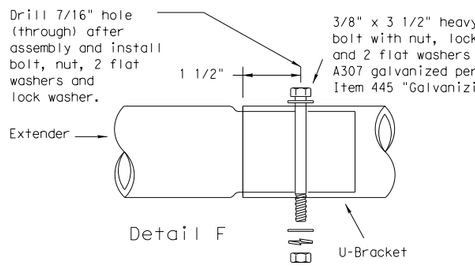
SM RD SGN ASSM TY XXXXX(1)XX(U)



SM RD SGN ASSM TY XXXXX(1)XX(U)

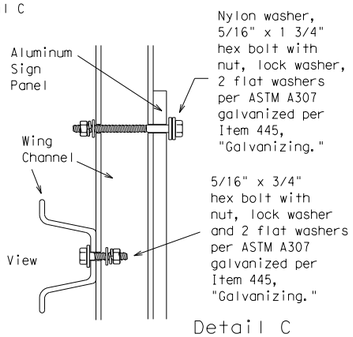


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)

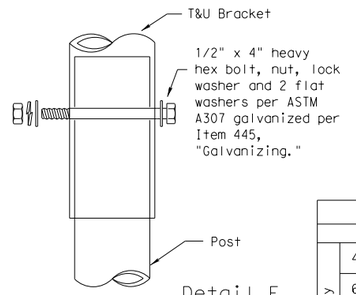


Detail F

Splices shall only be allowed behind the sign substrate.



Detail C



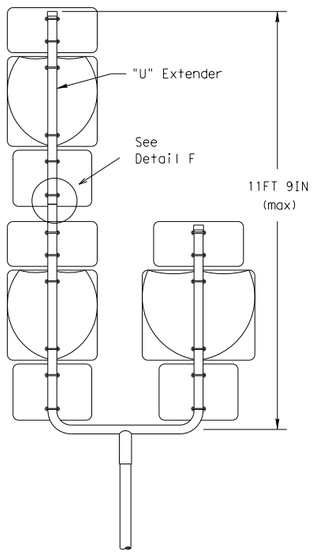
Detail E

GENERAL NOTES:

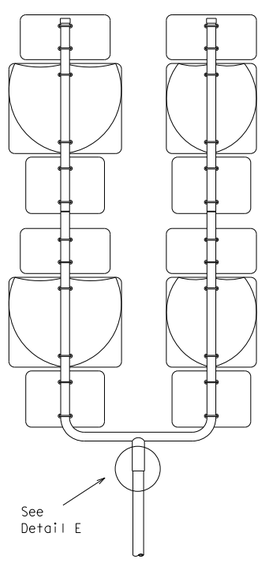
1.

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

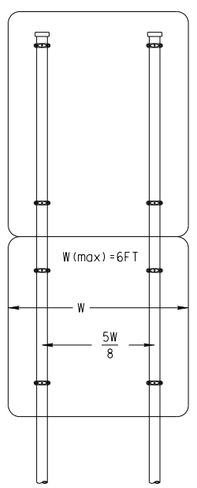
2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.



SM RD SGN ASSM TY S80(1)XX(U-1EXT)

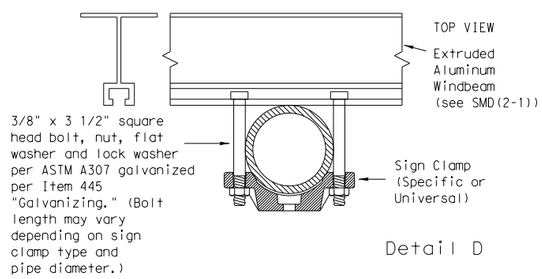


SM RD SGN ASSM TY S80(1)XX(U-2EXT)

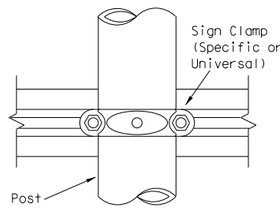


SM RD SGN ASSYM TY XXXXX(2)XX(P)

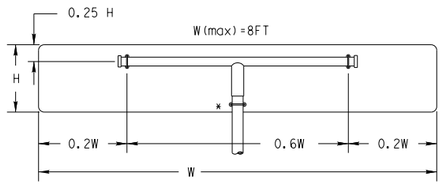
SIDE VIEW



Detail D



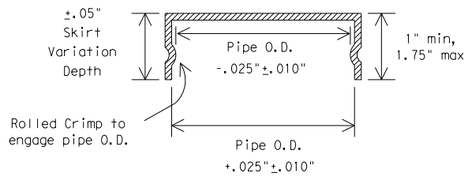
REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)



SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

All dimensions are in english unless detailed otherwise.

FRICTION CAP DETAIL



Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

Texas Department of Transportation
Traffic Operations Division

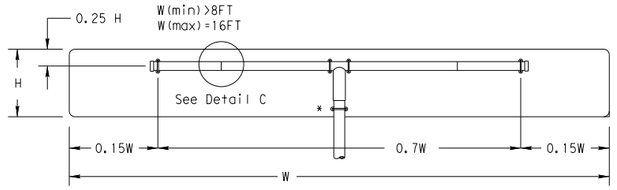
SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		125

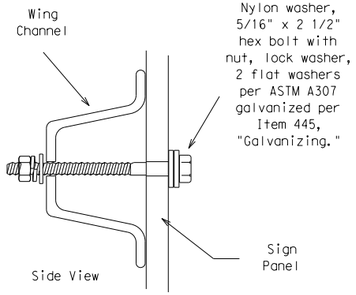
26C

DATE: 1/22/2024 2:41:04 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\smds2.dgn

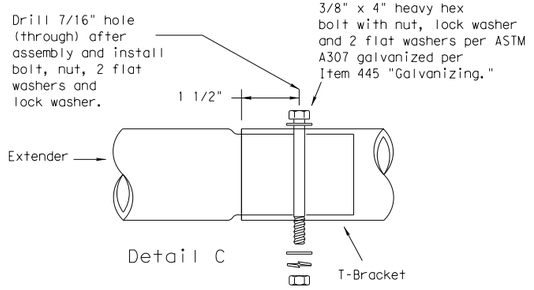


SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)

(* - See Note 12)

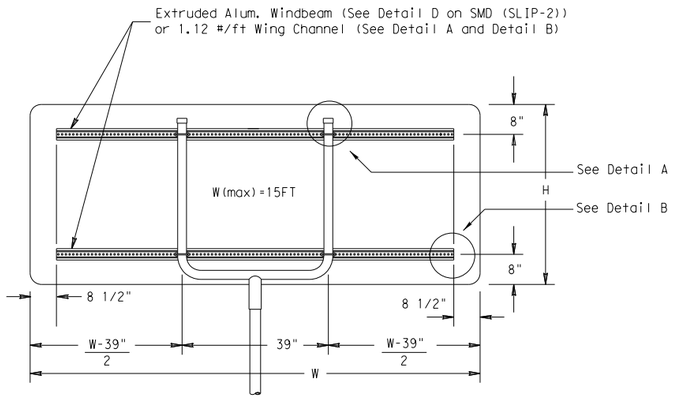


Detail B

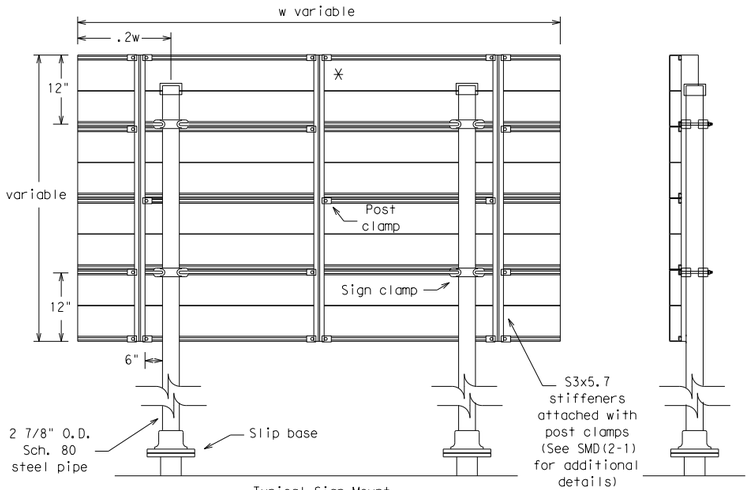


Detail C

Splices shall only be allowed behind the sign substrate.



SM RD SGN ASSM TY XXXXX(1)XX(U-XX)

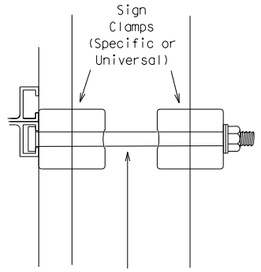


Typical Sign Mount

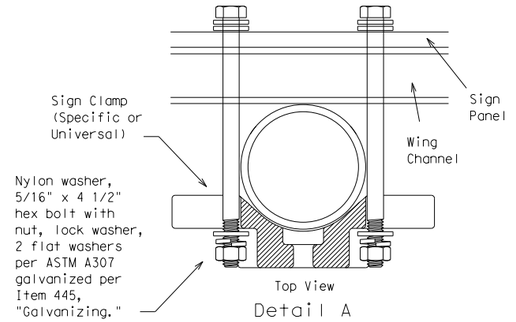
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

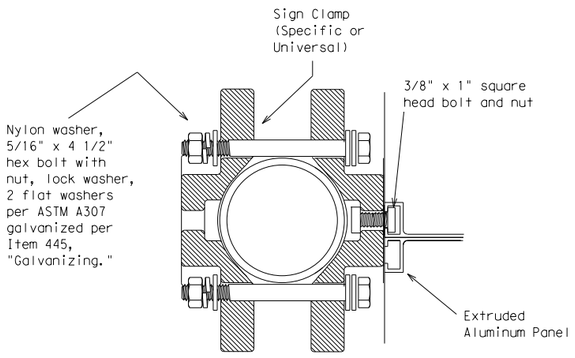
See Detail E for clamp installation



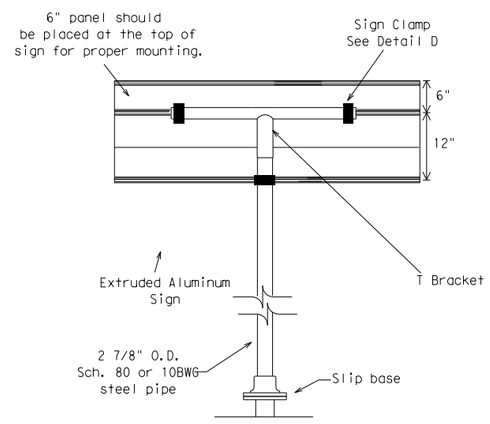
Detail E



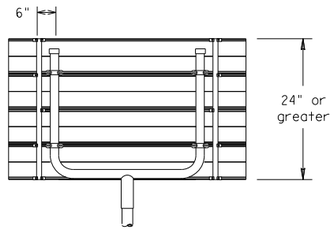
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details

See Detail E
for clamp installation

GENERAL NOTES:

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Sign blanks shall be the sizes and shapes shown on the plans.
11. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

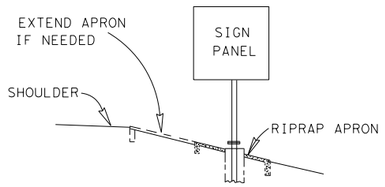
SMD(SLIP-3)-08

REVISIONS
9-08

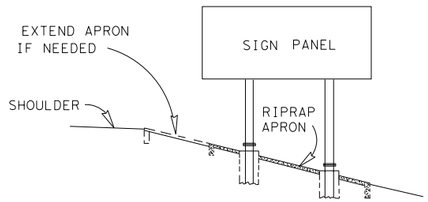
DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
CONT	SECT	JOB	HIGHWAY
			SH 211
DIST	COUNTY		SHEET NO.
SAT	BX / ME		126

26D

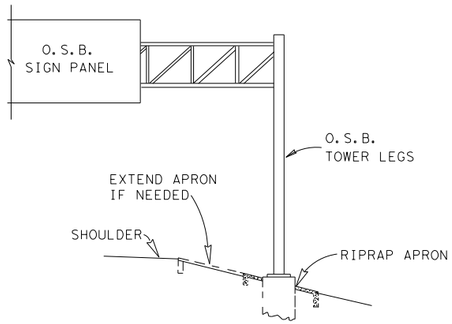
DATE: 1/22/2024 2:41:05 PM
FILE: P:\122\85\04\Design\Civil\Standards\TCP\smds3.dgn



TYPICAL ELEVATION
SINGLE POST



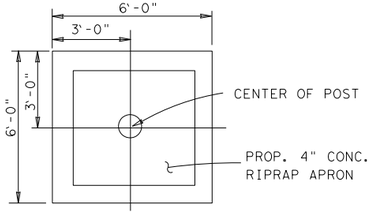
TYPICAL ELEVATION
MULTIPLE POST



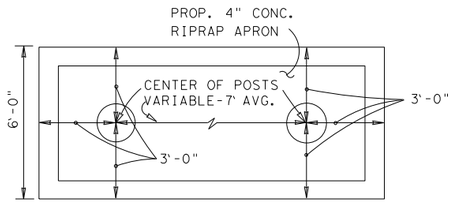
TYPICAL ELEVATION
OVERHEAD SIGN BRIDGE

NOTES:

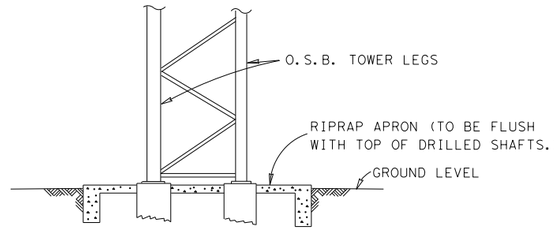
1. CLASS "B" CONCRETE RIPRAP TO BE PLACED AS SHOWN IN DETAILS AND APPROVED BY THE ENGINEER. THIS WORK SHALL BE DONE IN ACCORDANCE WITH ITEM 432.
2. SMALL SIGNS AS DIRECTED BY THE ENGINEER.



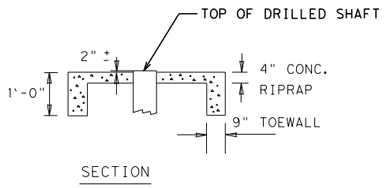
TOP VIEW



TOP VIEW

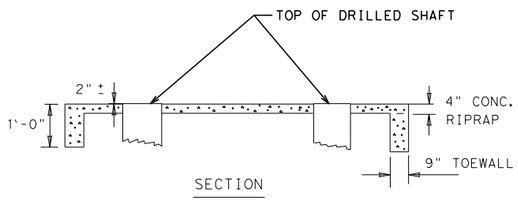


SIDE VIEW ELEVATION



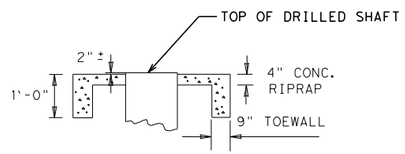
SECTION

SINGLE POST GROUND MOUNT
ESTIMATED AT 0.80 CU. YDS. PER SITE



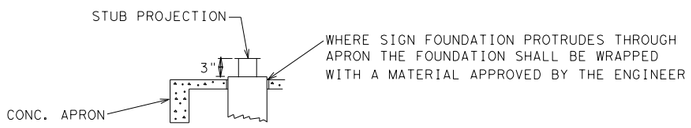
SECTION

MULTIPLE POST GROUND MOUNT
ESTIMATED AT 1.5 CU. PER SITE

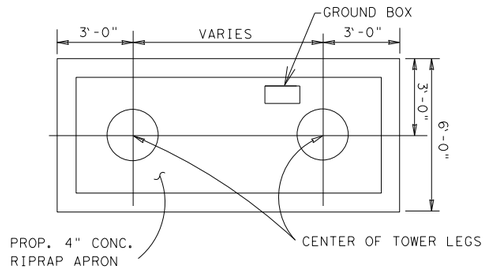


SECTION

OVERHEAD SIGN BRIDGE
ESTIMATED AT 1.5 CU. YDS. PER SITE



SECTION DETAIL



TOP VIEW

REV.: 2-17

Texas Department of Transportation

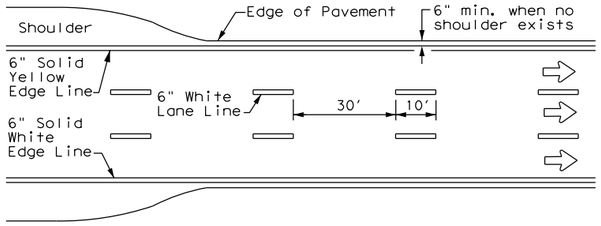
San Antonio District Standard

RIP-RAP APRON DETAILS FOR SIGN FOUNDATIONS

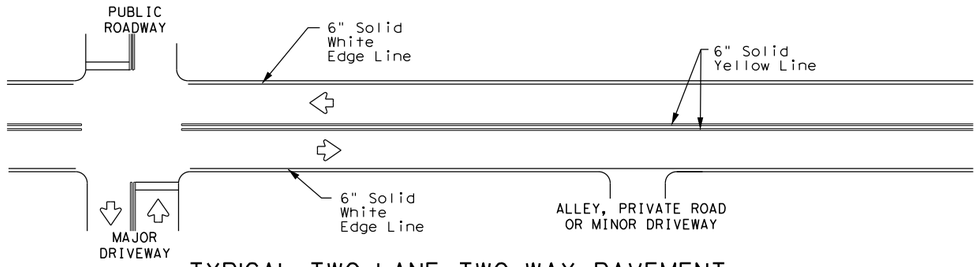
RAD

FHWA TEXAS DIVISION	FEDERAL AID PROJECT		SHEET NO.
			127
STATE	DIST.	COUNTY	
TEXAS	SAT	BX / ME	
CONT.	SECT.	JOB	HIGHWAY NO.
			SH 211

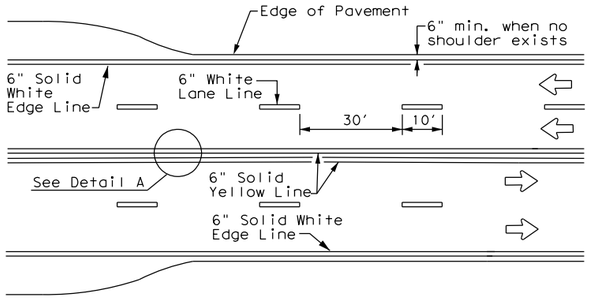
1/22/2024
P:\122\85\04\Design\Civil\Standards\Signing\rip-rap_apron_details_v7.dgn

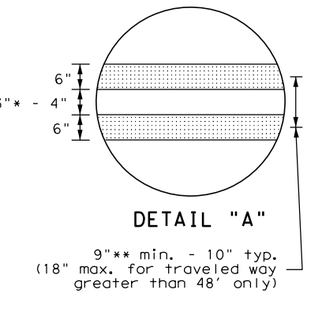


EDGE LINE AND LANE LINES
ONE-WAY ROADWAY
WITH OR WITHOUT SHOULDERS



TYPICAL TWO-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS

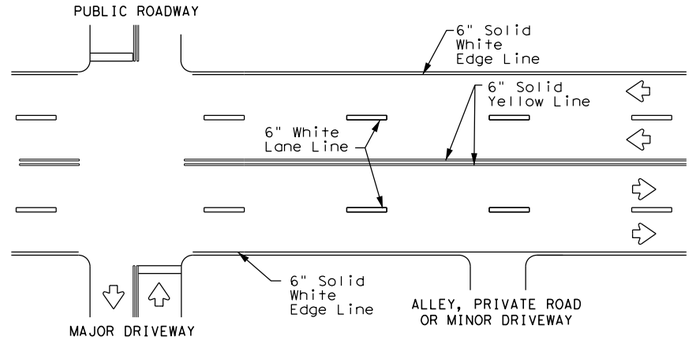




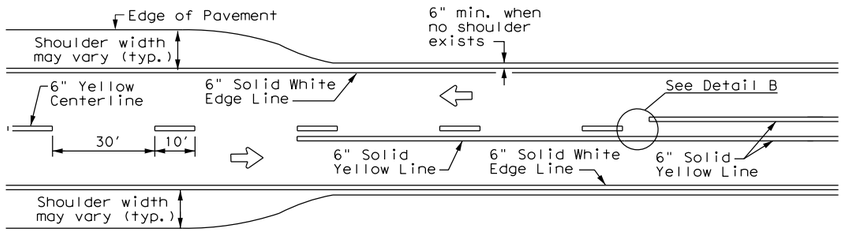
CENTERLINE AND LANE LINES
FOUR LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS

* 2" minimum for restripe projects when approved by the Engineer.

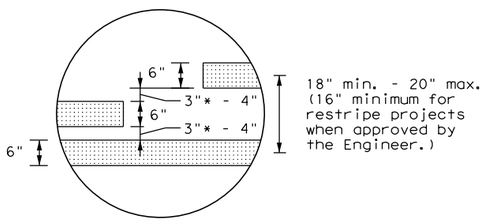
** 8" minimum for restripe projects when approved by the Engineer.



TYPICAL MULTI-LANE, TWO-WAY PAVEMENT
MARKINGS THROUGH INTERSECTIONS

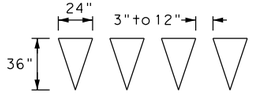


TWO LANE TWO-WAY ROADWAY
WITH OR WITHOUT SHOULDERS



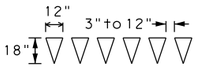
DETAIL "B"

* 2" minimum for restripe projects when approved by the Engineer.

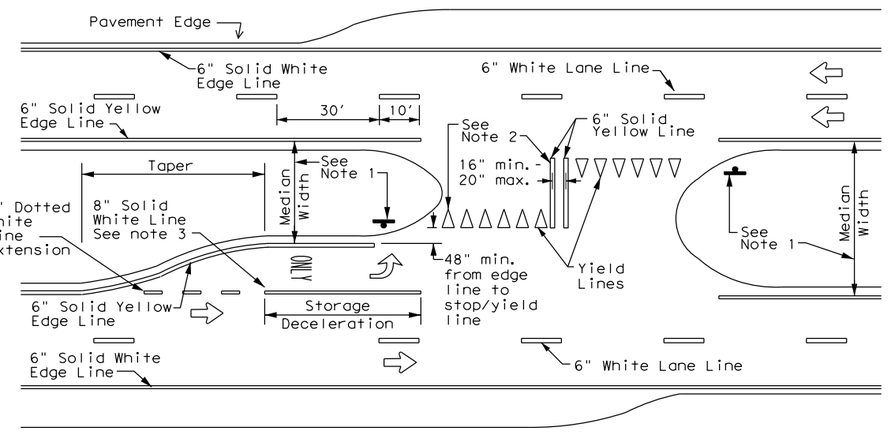


For posted speed on road being marked equal to or greater than 45 MPH.

YIELD LINES



For posted speed on road being marked equal to or less than 40 MPH.



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

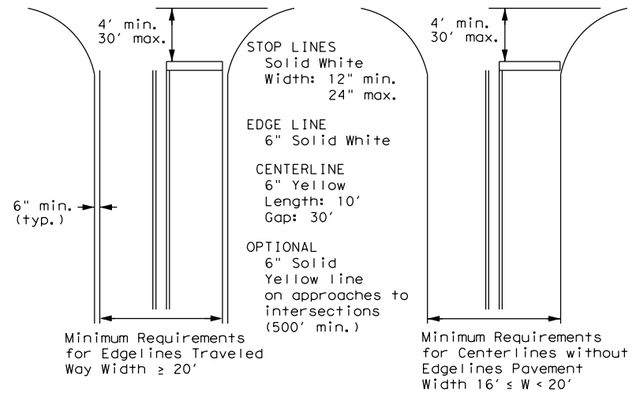
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections.
   Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs and stop bars are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop lines/yield lines) when a 50' or greater median centerline can be placed. Stop lines shall only be used with stop signs. Yield lines shall only be used with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

GENERAL NOTES

1. Edge line striping shall be as shown in the plans or as directed by the Engineer. The edge line should not be placed less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edge lines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the center of edge line to the center of edge line of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



NOTE: Traveled way is exclusive of shoulder widths. Refer to General Note 2 for additional details.

GUIDE FOR PLACEMENT OF STOP LINES,
EDGE LINE & CENTERLINE
Based on Traveled Way and Pavement Widths
for Undivided Roadways

Texas Department of Transportation

Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

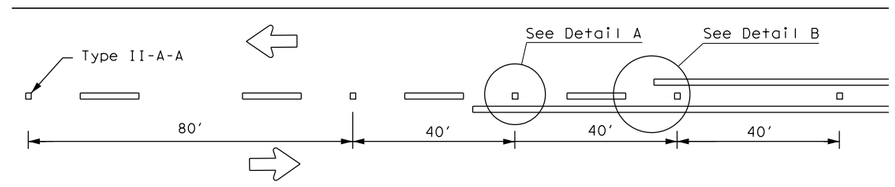
PM(1)-22

FILE: pm1-22.dgn	DN:	CK:	DW:	CK:
© TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
11-78 8-00 6-20				
8-95 3-03 12-22	DIST	COUNTY		SHEET NO.
5-00 2-12	SAT	BX / ME		128

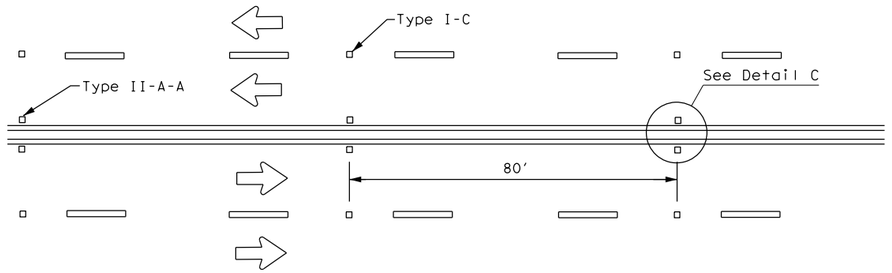
22A

DATE: 1/22/2024 2:41:07 PM
FILE: P:\122\85\04\Design\Civil\Standards\PavementMarkers\pm1-22.dgn

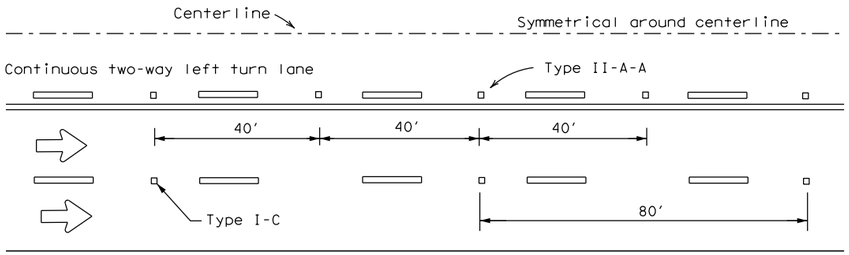
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE



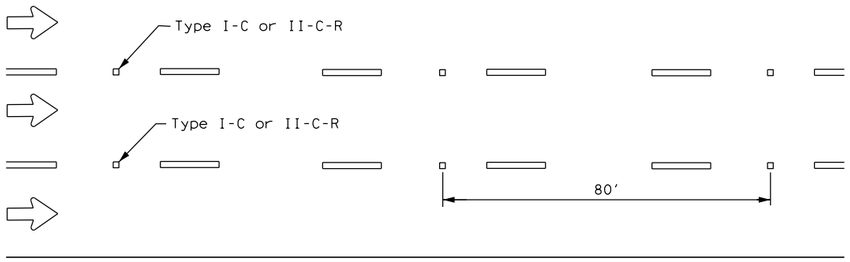
CENTERLINE FOR ALL TWO LANE TWO-WAY ROADWAYS



CENTERLINE & LANE LINES
FOR FOUR LANE TWO-WAY ROADWAYS



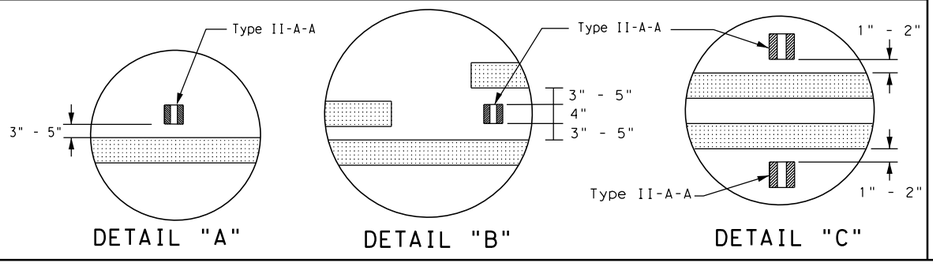
CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE

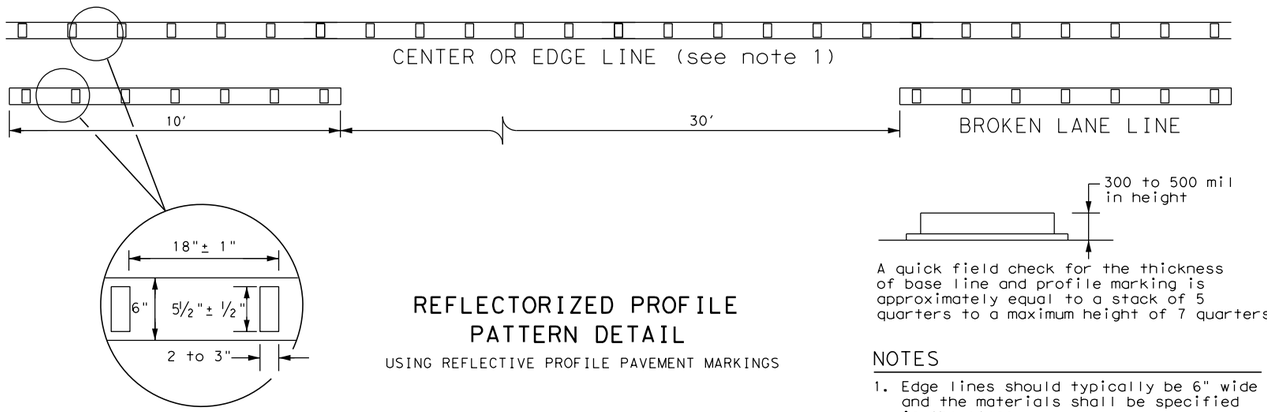


LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

See Note 3.





6" EDGE LINE, 6" CENTERLINE
OR 6" LANE LINE

REFLECTORIZED PROFILE
PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

NOTES

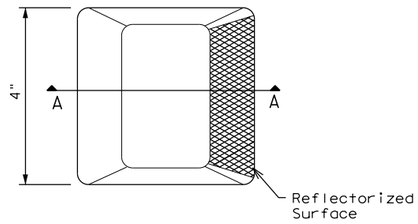
1. Edge lines should typically be 6" wide and the materials shall be specified in the plans.
2. Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

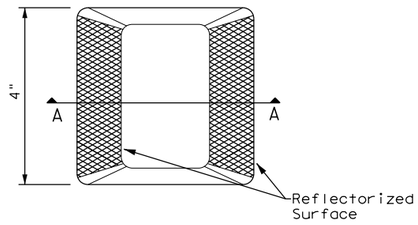
1. All raised pavement markers placed along broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.
3. Use raised pavement marker Type I-C with undivided roadways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

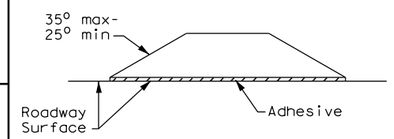
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation

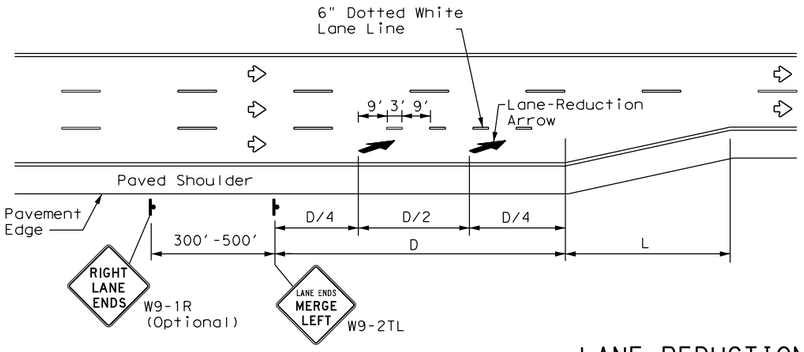
Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS PM(2)-22

FILE: pm2-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-77 8-00 6-20 4-92 2-10 12-22 5-00 2-12				SH 211
	DIST	COUNTY		SHEET NO.
	SAT	BX / ME		129

22B

DATE: 1/22/2024 2:41:08 PM
FILE: P:\122\85\04\Design\Civil\Standards\PavementMarkers\pm2-22.dgn

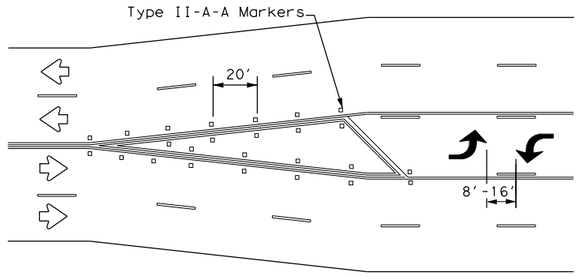


LANE REDUCTION

NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional RIGHT LANE ENDS (W9-1R) sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.

ADVANCED WARNING SIGN DISTANCE (D)		
Posted Speed	D (ft)	L (ft)
30 MPH	460	$L=\frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	



A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

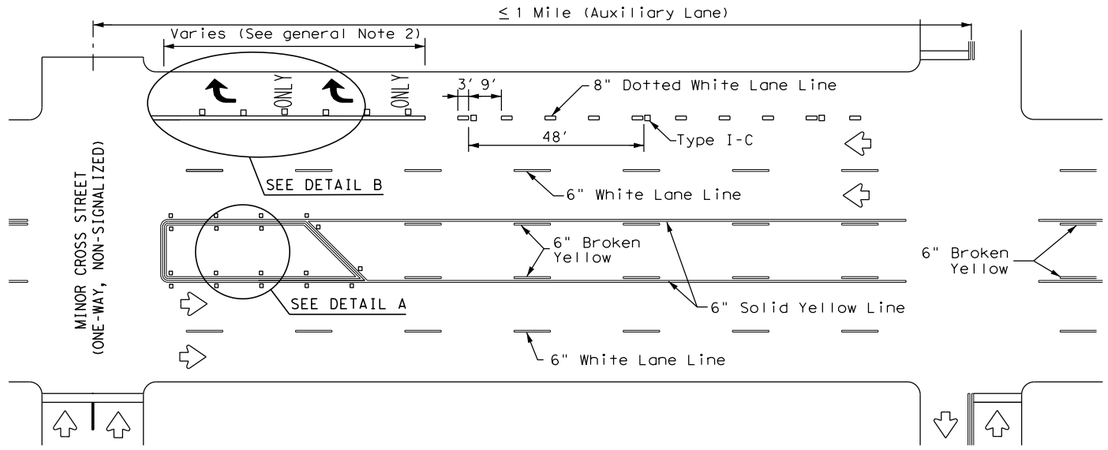
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

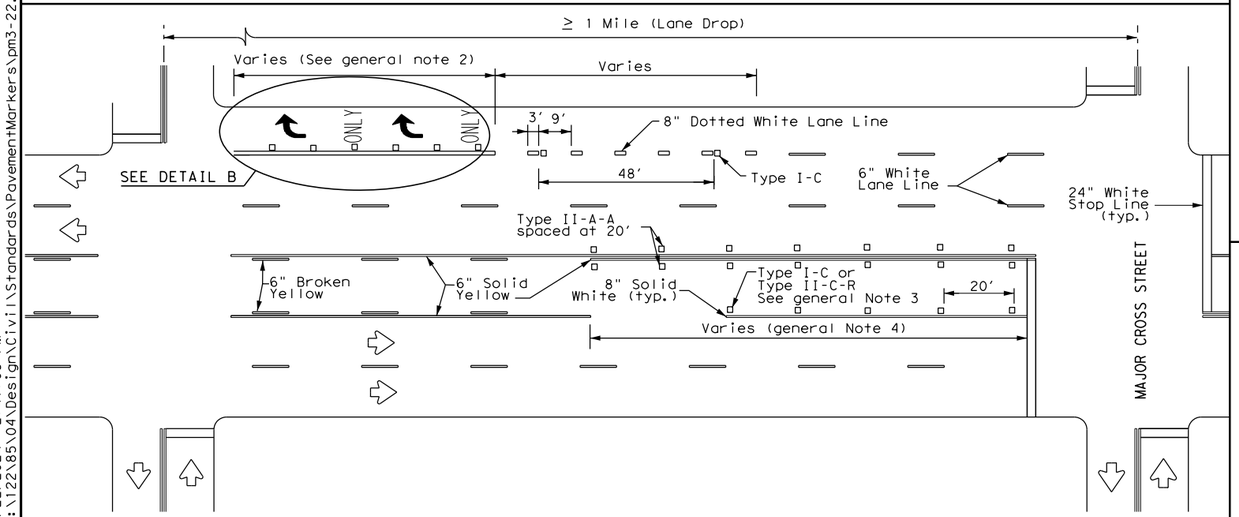
1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
2. When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
3. Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
4. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer. See Chapter 3 of the Roadway Design Manual for additional information on turning lanes or storage lengths.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

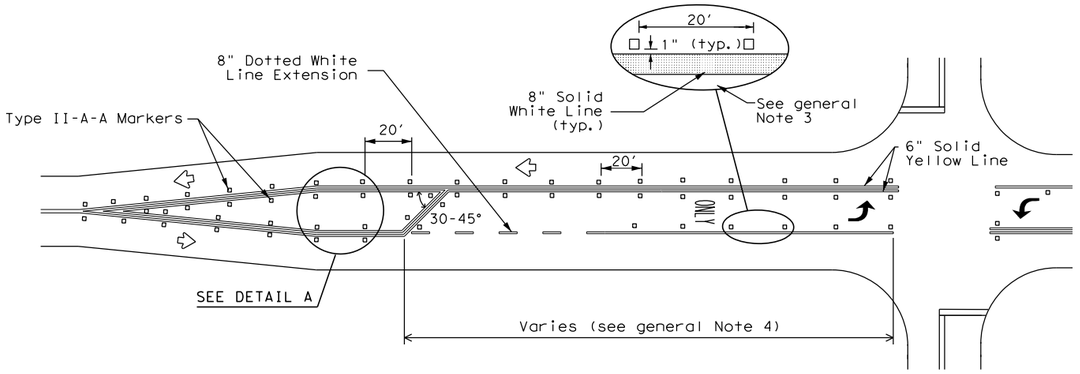
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



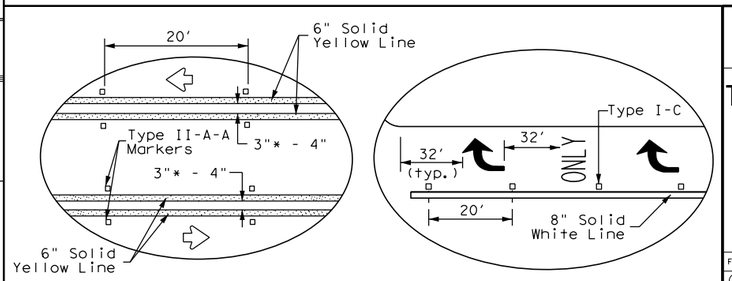
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



TYPICAL TWO-LANE ROADWAY INTERSECTION WITH LEFT TURN BAYS



* 2" minimum allowed for restripe projects when approved by the Engineer.

Texas Department of Transportation

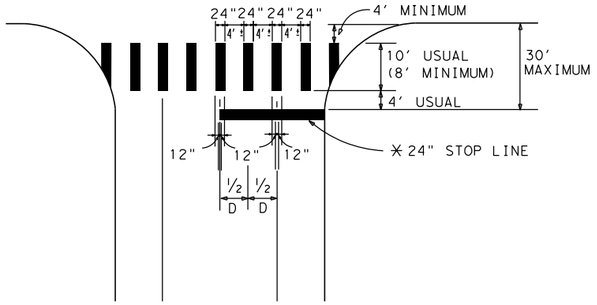
Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS PM(3)-22

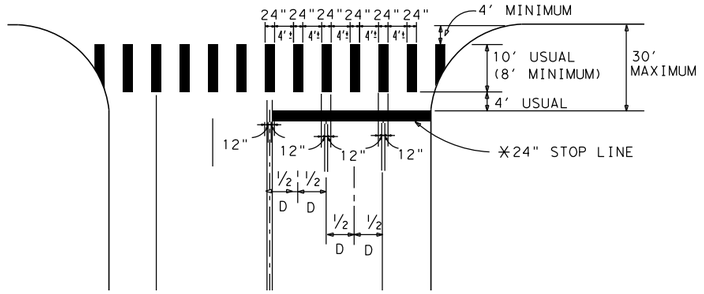
FILE: pm3-22.dgn	DN:	CK:	DW:	CK:
©TxDOT December 2022	CONT	SECT	JOB	HIGHWAY
REVISIONS				SH 211
4-98 3-03 6-20	DIST	COUNTY		SHEET NO.
5-00 2-10 12-22	SAT	BX / ME		130
8-00 2-12				

22C

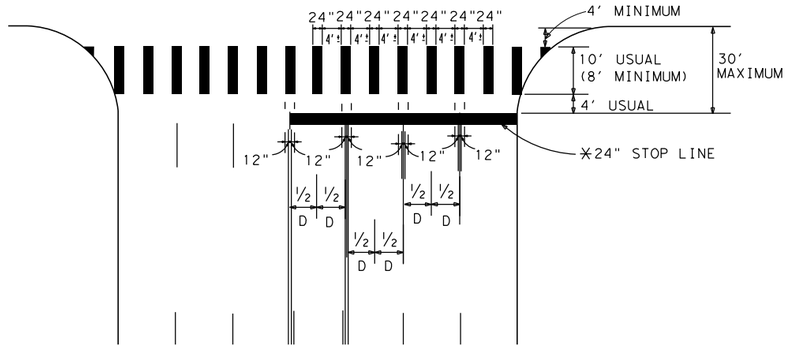
DATE: 1/22/2024 2:41:09 PM
FILE: P:\122\85\04\Design\Civil\Standards\PavementMarkers\pm3-22.dgn



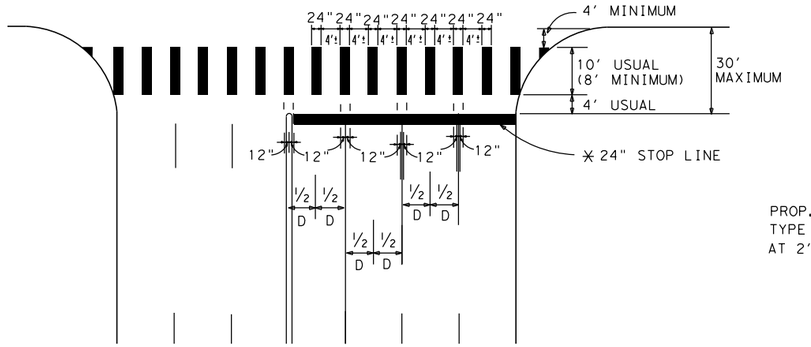
TWO LANES WITH SHOULDERS



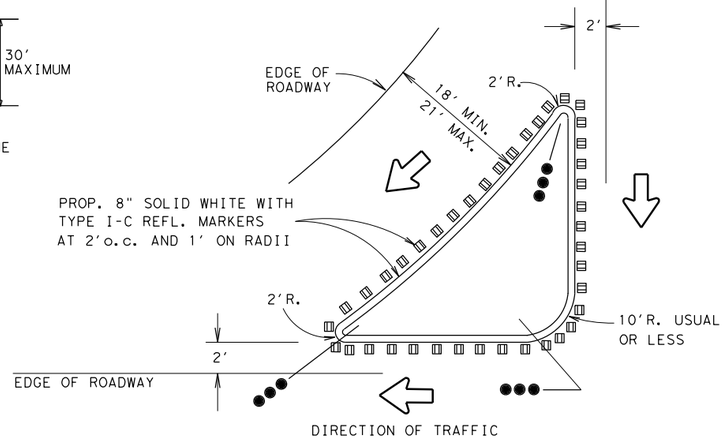
FOUR LANES WITH SHOULDERS



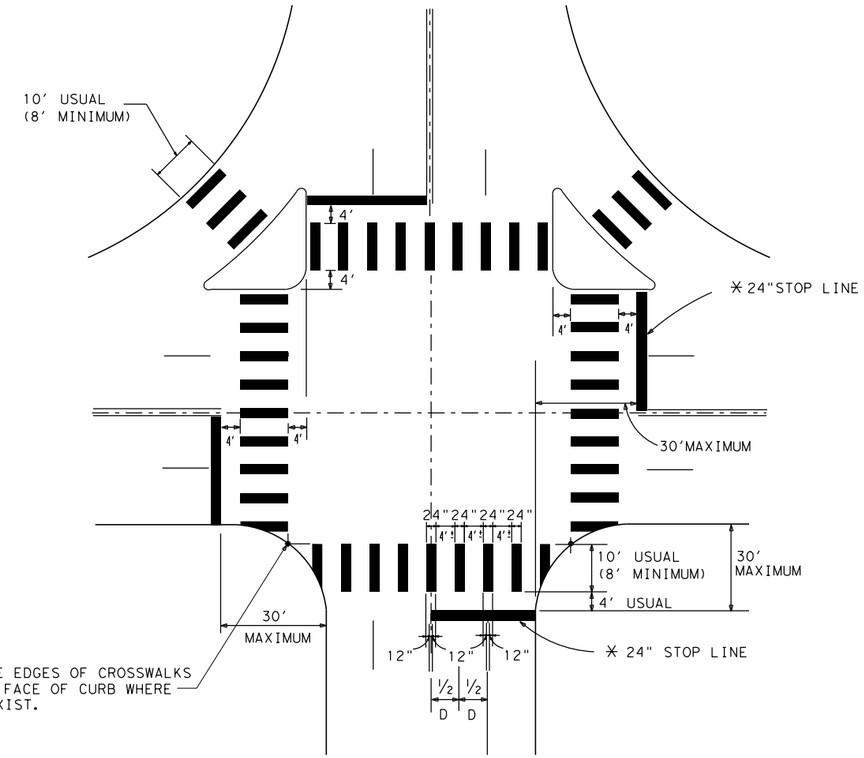
MULTI - LANES



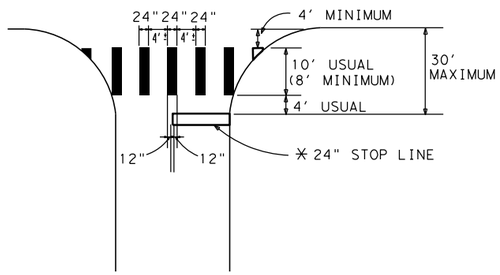
MULTI - LANE WITH MEDIAN



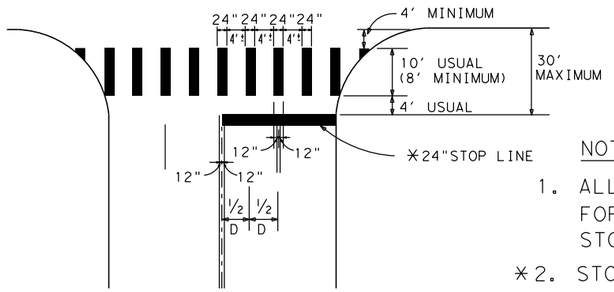
TYPICAL RIGHT TURN ISLAND
WITH DELINEATION



INTERSECTION WITH RIGHT - TURN ISLANDS



TWO LANES



FOUR LANES

NOTES:

1. ALL LONGITUDINAL LINES FORMING CROSSWALK AND STOP LINES SHALL BE WHITE
2. ✳ STOP LINES AS REQUIRED ON DETAILED PAVEMENT MARKING PLANS.
3. "D" IS EQUAL TO ONE HALF THE DISTANCE.

LEVELS DISPLAYED ACC:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63		

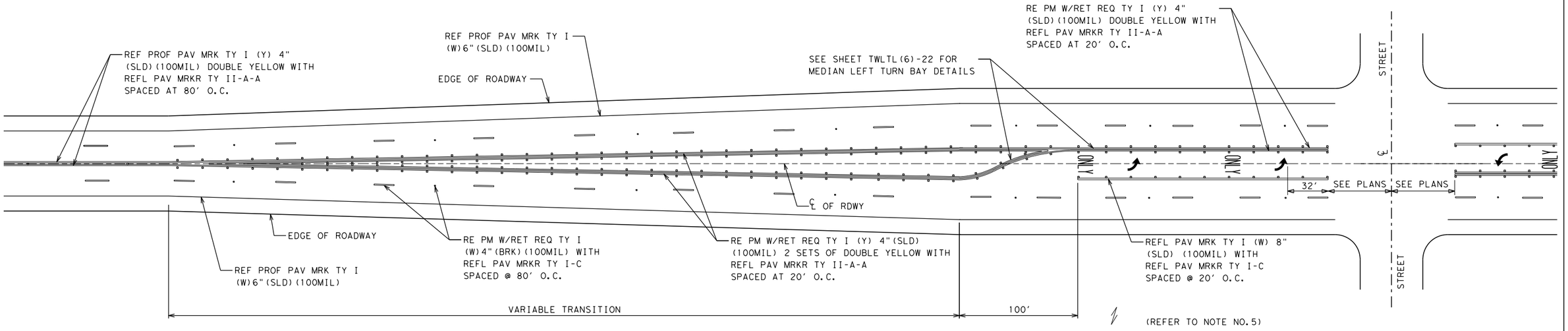
San Antonio District Standard

TYPICAL CROSSWALK DETAILS

TCD-05

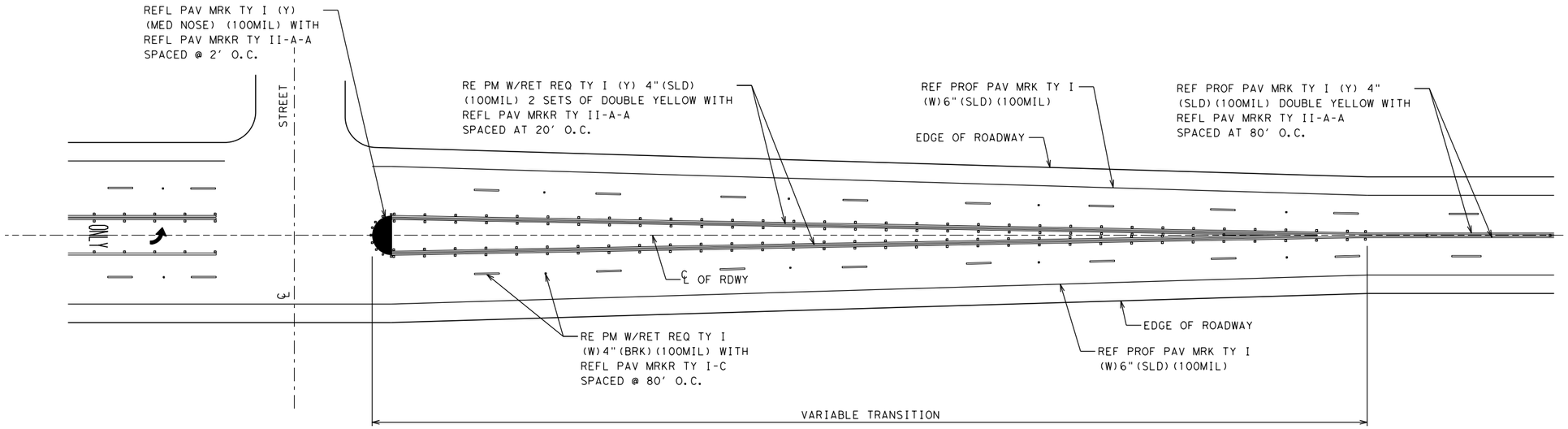
 Texas Department of Transportation

REVISIONS	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
DEC 1999	6			131
AUG 2005	STATE	DIST.	COUNTY	
	TEXAS	SAT	BX / ME	
	CONT.	SECT.	JOB	HIGHWAY NO.
				SH 211



TYPICAL MEDIAN LEFT TURN BAY (FOR USE ON RURAL ROADS)

SIGNALIZED AND NON-SIGNALIZED CROSS STREETS
WITH LEFT TURN BAY

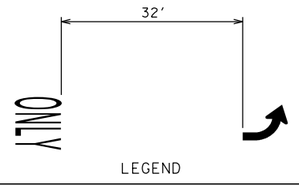


TYPICAL TRANSITION

LEFT TURN BAY END CONDITION AND ROADWAY TRANSITION

NOTES:

1. PAVEMENT MARKERS SHOULD BE IN ACCORDANCE WITH STATE STANDARDS PM(2)-20 (POSITIONING GUIDANCE).
2. PAVEMENT MARKING ARROWS SHALL COMPLY TO TEXAS MUTCD
3. LEFT TURN BAY LAYOUT, TWO SETS OF "WORDS" AND "ARROWS" SHALL BE USED IF THE LENGTH OF THE BAY IS EQUAL TO OR GREATER THAN 180 FEET. THE BOTTOM OF THE FIRST "ONLY" SHALL BE PLACED AT THE BEGINNING OF THE TURN BAY LANE LINE AS SHOWN ABOVE.
4. REFER TO TXDOT STANDARD PM(3)-20 FOR MORE TURN LANE DETAILS.
5. REFER TO TXDOT ROADWAY DESIGN MANUAL FOR DECELERATION AND STORAGE LENGTH.



LEGEND

TYPICAL DETAIL
(PLACE LEGENDS IN ACCORDANCE TO STATE STANDARD PM(3)-20)

Texas Department of Transportation

San Antonio District Standard

TWO WAY LEFT TURN LANE AND LEFT TURN BAYS - RURAL ROADS

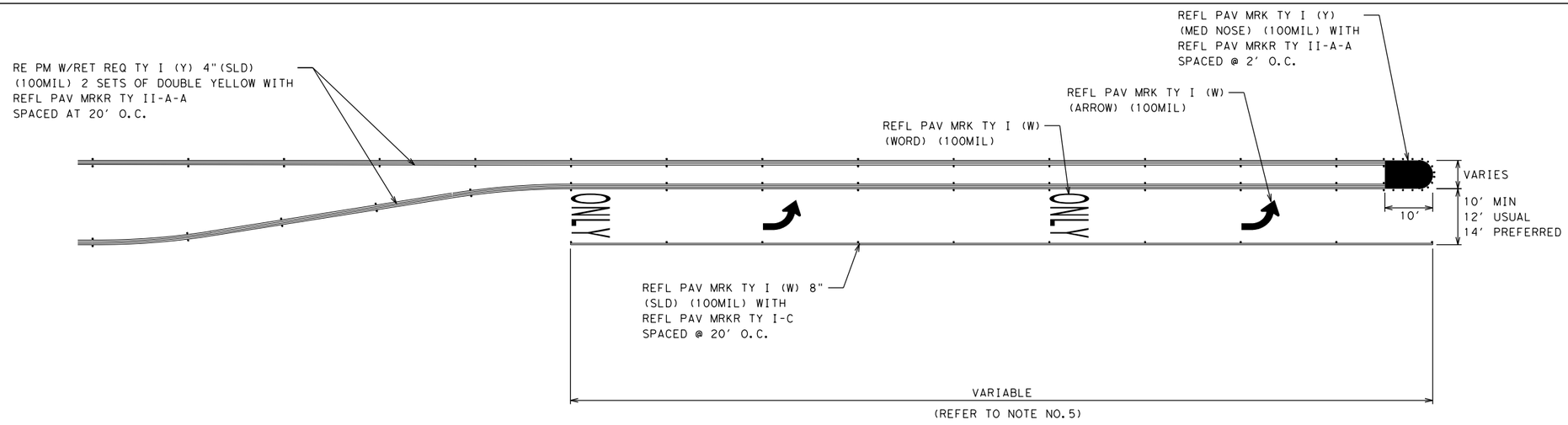
SCALE: NS

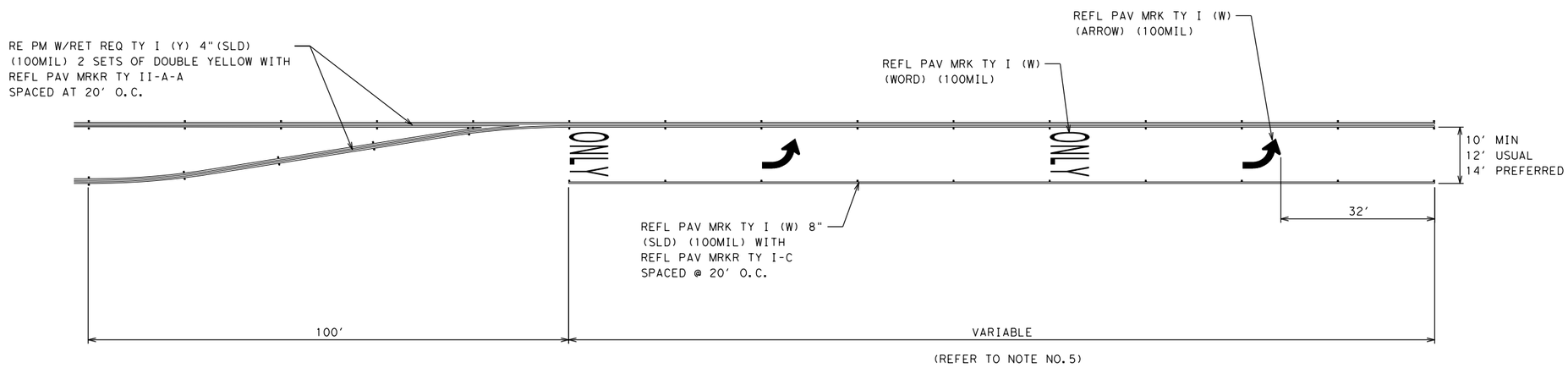
TWLTL(1)-22

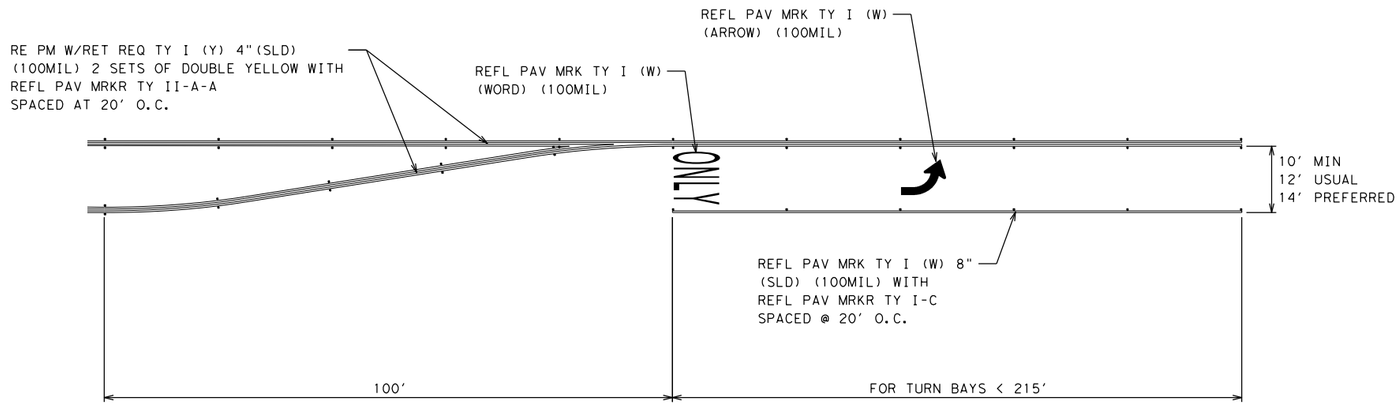
REVISIONS	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.			SHEET NO.
MAY 2010	6				132
MAY 2018	STATE	DIST.	COUNTY		
MAY 2022	TEXAS	SAT	BX / ME		
	CONT.	SECT.	JOB	HIGHWAY NO.	
				SH 211	

DRAWN BY: TED
CHECKED BY: G.G./OMG REVISED BY: JC03
REVISED ON: 5-18
1/22/2024 2:41:12 PM
P:\122\85\04\Design\Civil\Standards\PavementMarkers\twltl.dgn

DRAWN BY: TED
CHECKED BY: G.G./OMG REVISED BY: JC03
REVISED ON: 5-18
1/22/2024 2:41:12 PM
P:\122\85\04\Design\Civil\Standards\PavementMarkers\twltl.dgn







MEDIAN LEFT TURN BAY DETAILS

NOTES:

1. PAVEMENT MARKERS SHOULD BE IN ACCORDANCE WITH STATE STANDARDS PM(2)-20 (POSITIONING GUIDANCE).
2. PAVEMENT MARKING ARROWS SHALL COMPLY TO TEXAS MUTCD
3. LEFT TURN BAY LAYOUT, TWO SETS OF "WORDS" AND "ARROWS" SHALL BE USED IF THE LENGTH OF THE BAY IS EQUAL TO OR GREATER THAN 180 FEET. THE BOTTOM OF THE FIRST "ONLY" SHALL BE PLACED AT THE BEGINNING OF THE TURN BAY LANE LINE AS SHOWN ABOVE.
4. REFER TO TXDOT STANDARD PM(3)-20 FOR MORE TURN LANE DETAILS.
5. REFER TO TXDOT ROADWAY DESIGN MANUAL FOR DECELERATION AND STORAGE LENGTH.

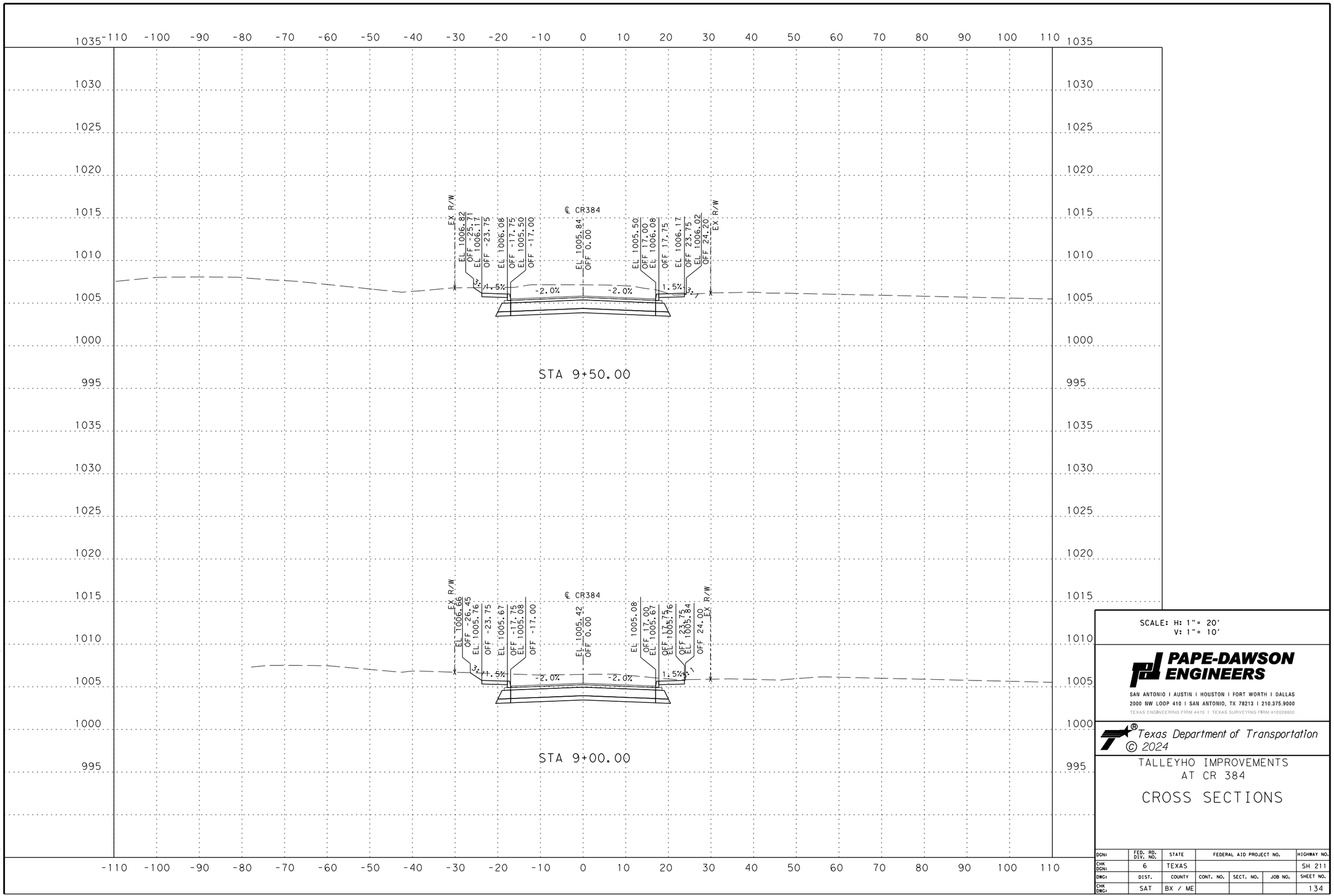
San Antonio District Standard

TWO WAY LEFT TURN LANE AND LEFT TURN BAYS - URBAN ROADS

SCALE: NS

TWLTL(6)-22

REVISIONS	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
MAY 2010	6			133
MAY 2018	STATE	DIST.	COUNTY	
MAY 2022	TEXAS	SAT	BX / ME	
	CONT.	SECT.	JOB	HIGHWAY NO.
				SH 211



Plotted on: 1/22/2024

Design Filename: ...\Xsec\1228504_XSEC_CR384.dgn

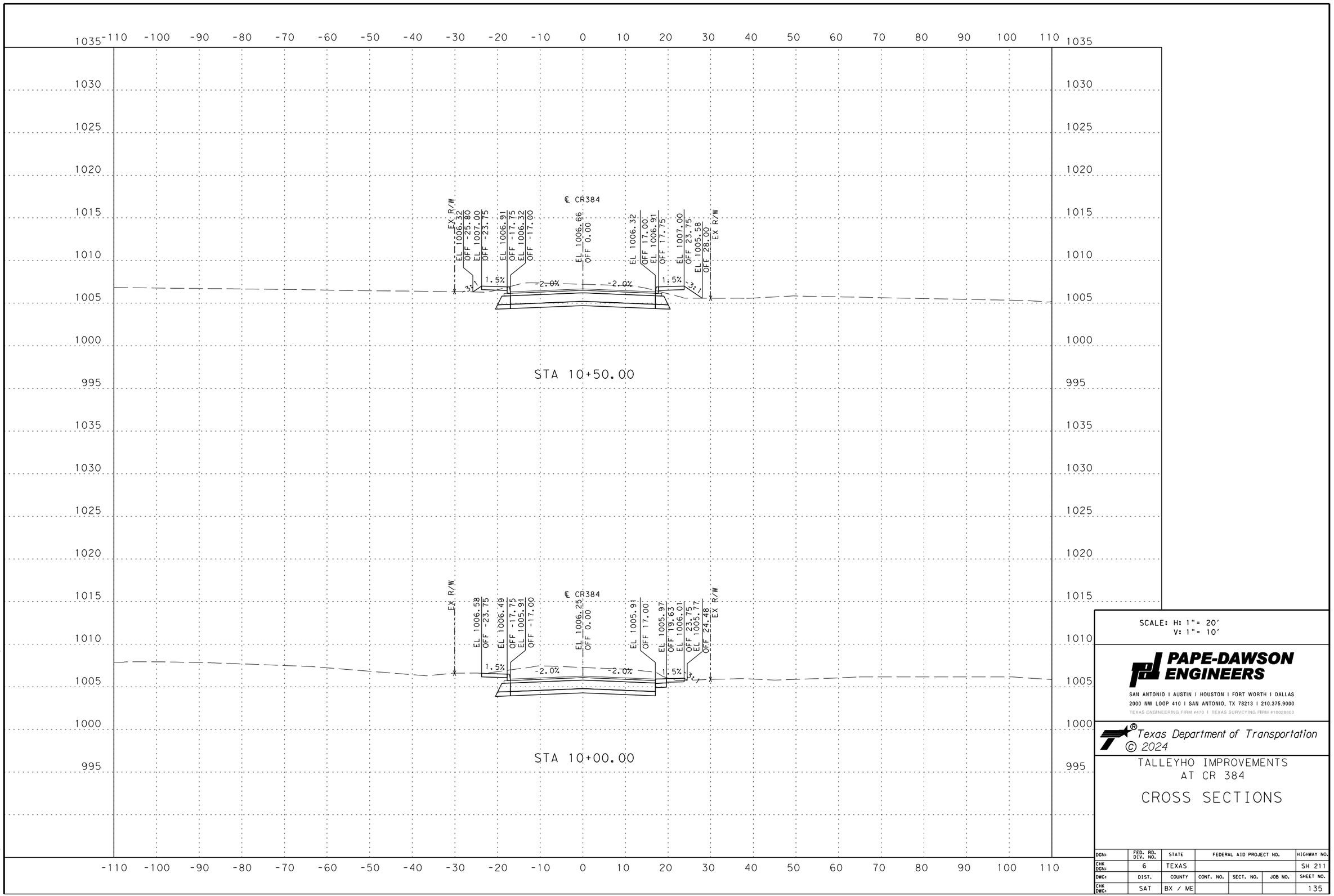
SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS AT CR 384

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				134



Plotted on: 1/22/2024

Design Filename: ...\Xsec\1228504_XSEC_CR384.dgn

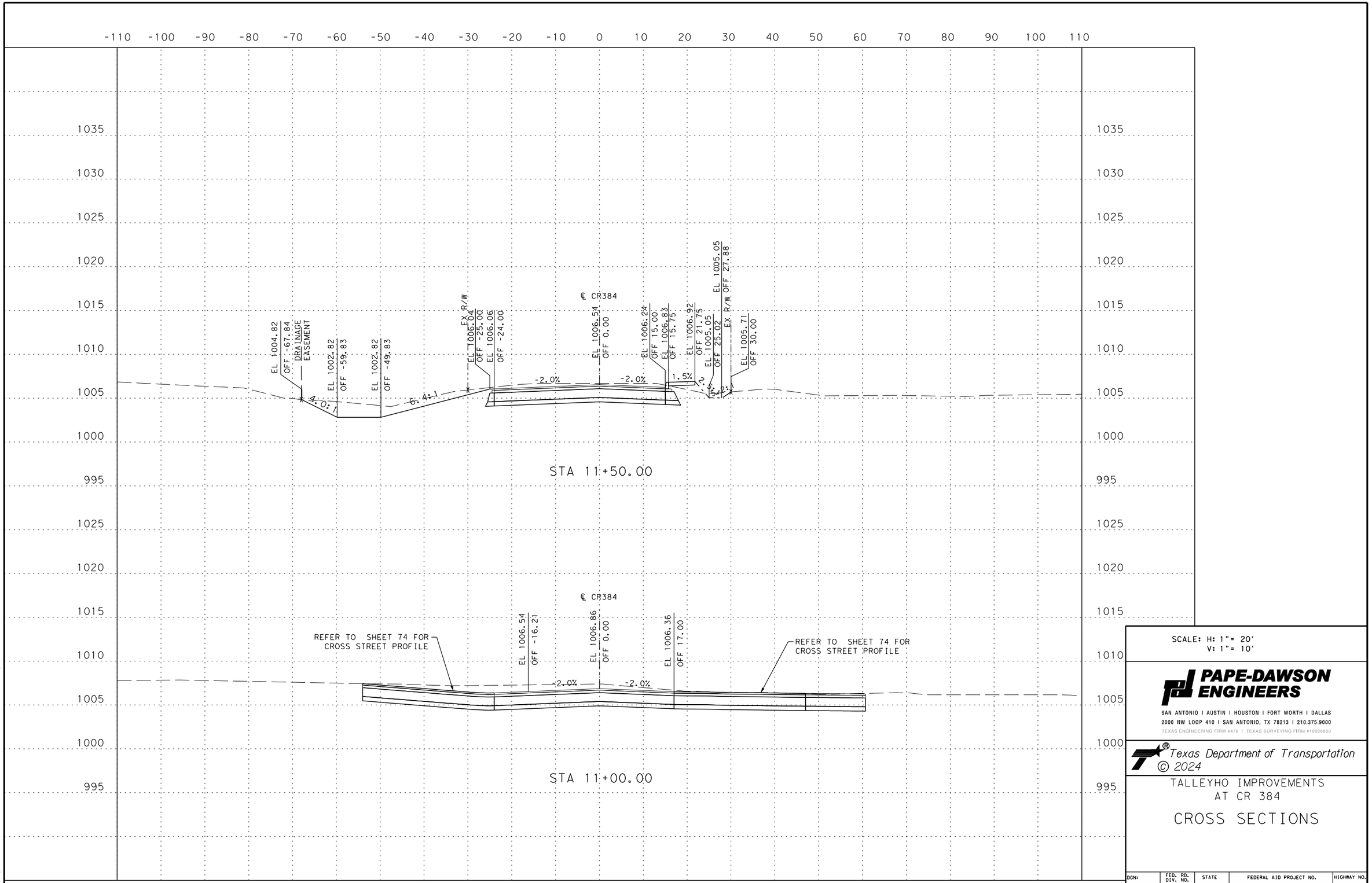
SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS AT CR 384

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				135



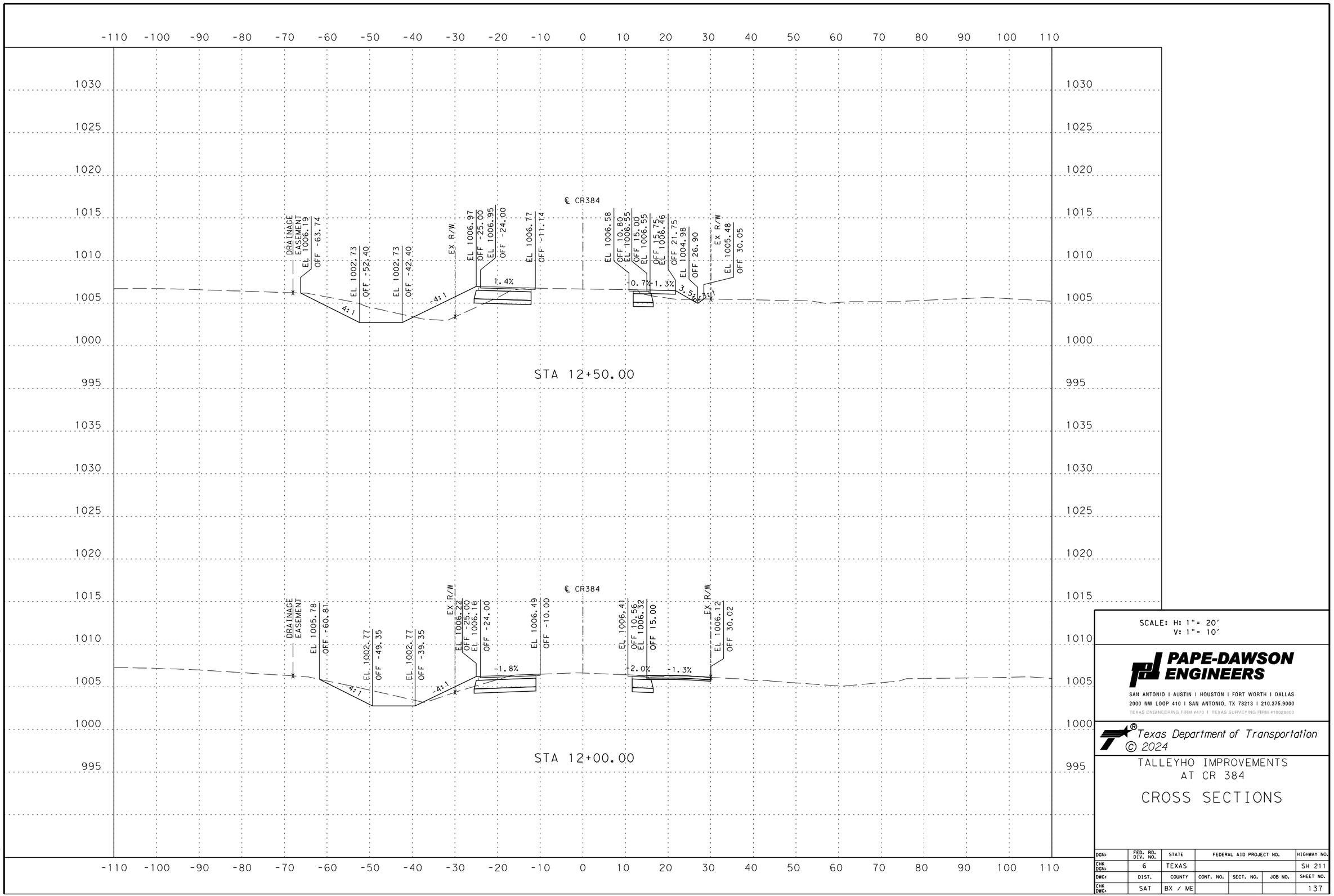
SCALE: H: 1" = 20'
V: 1" = 10'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS AT CR 384

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				136



Plotted on: 1/22/2024

Design Filename: ...\Xsec\1228504_XSEC_CR384.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS

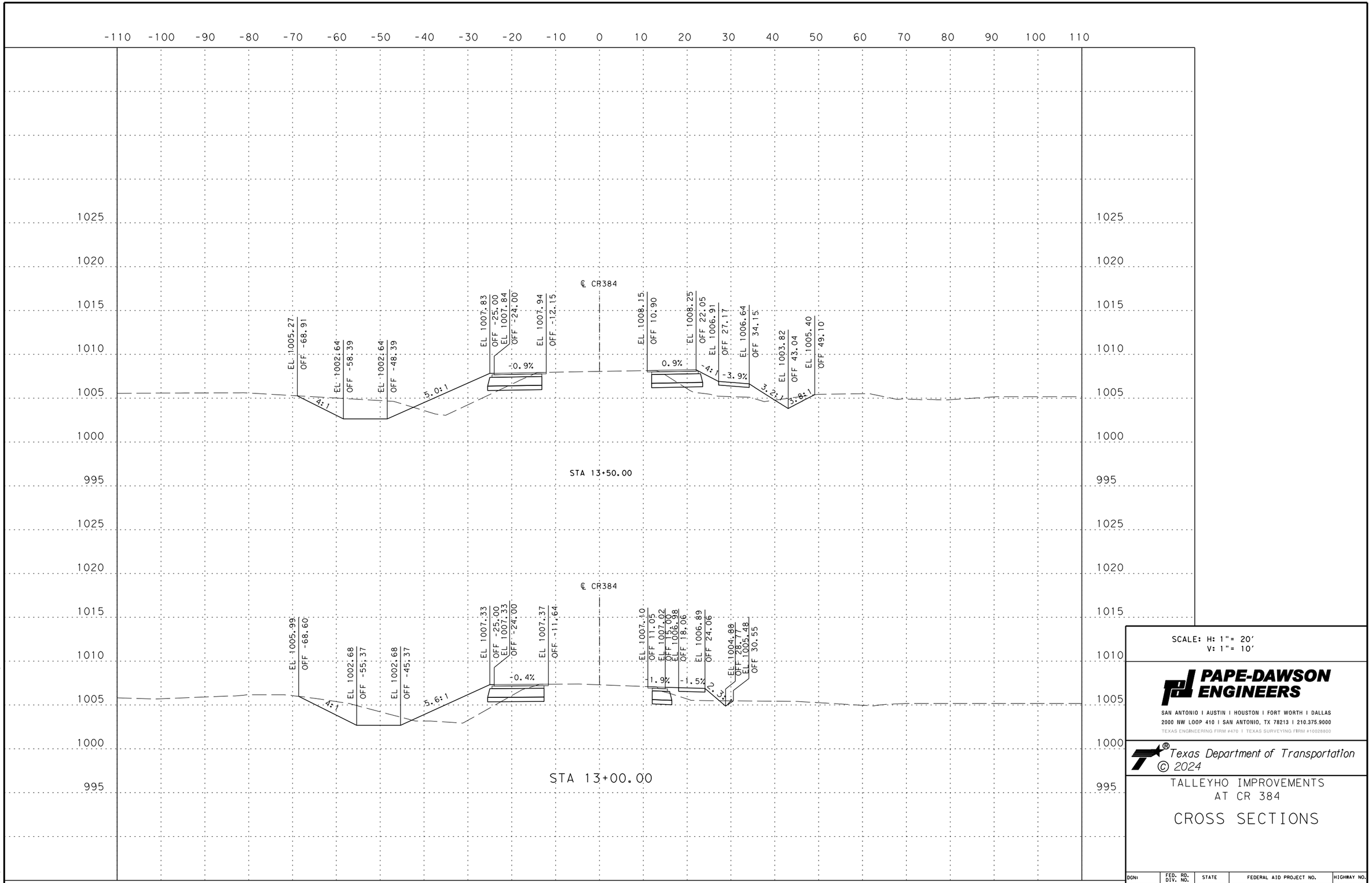
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS AT CR 384

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				137

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_CR384.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

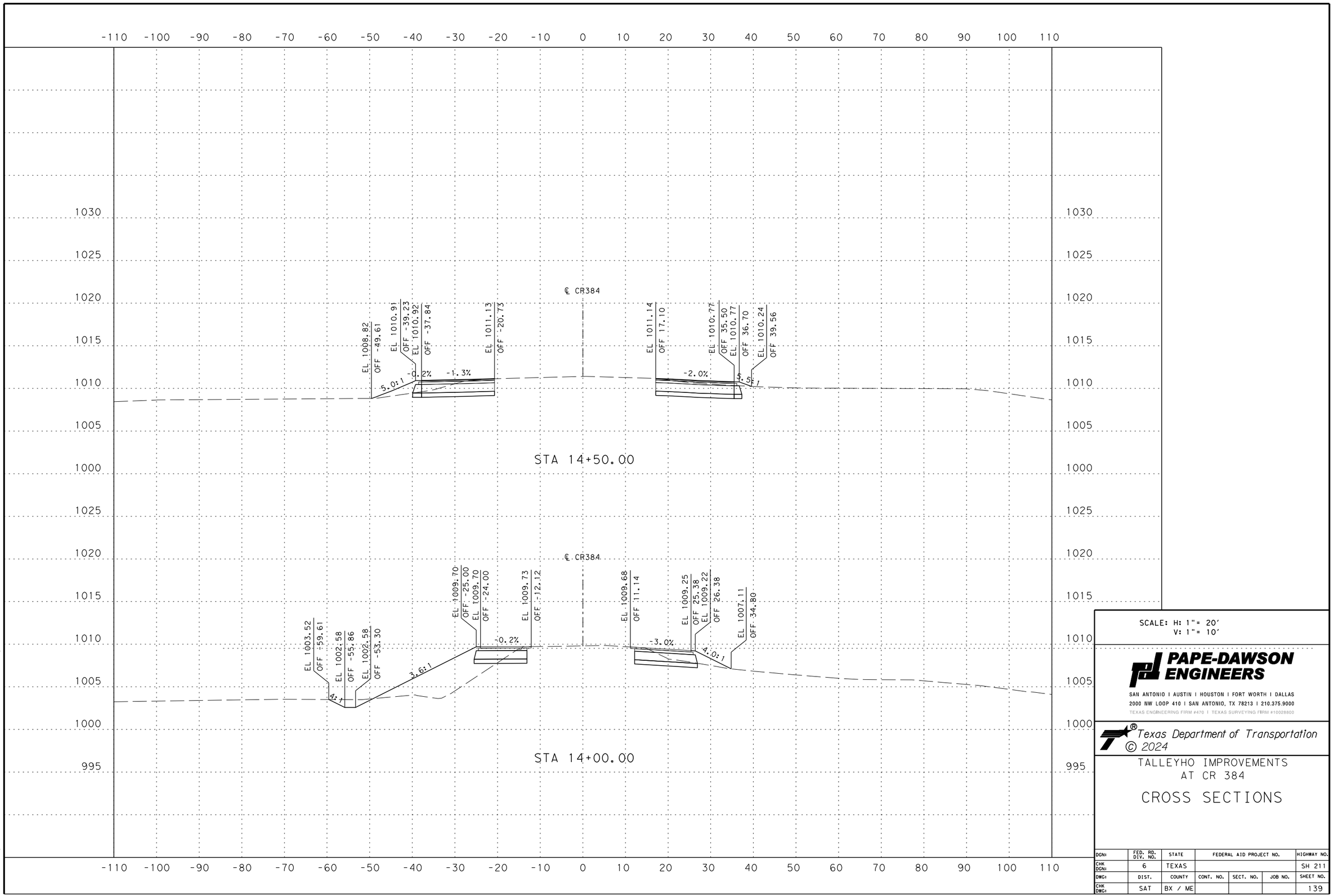
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS AT CR 384

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				138

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_CR384.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

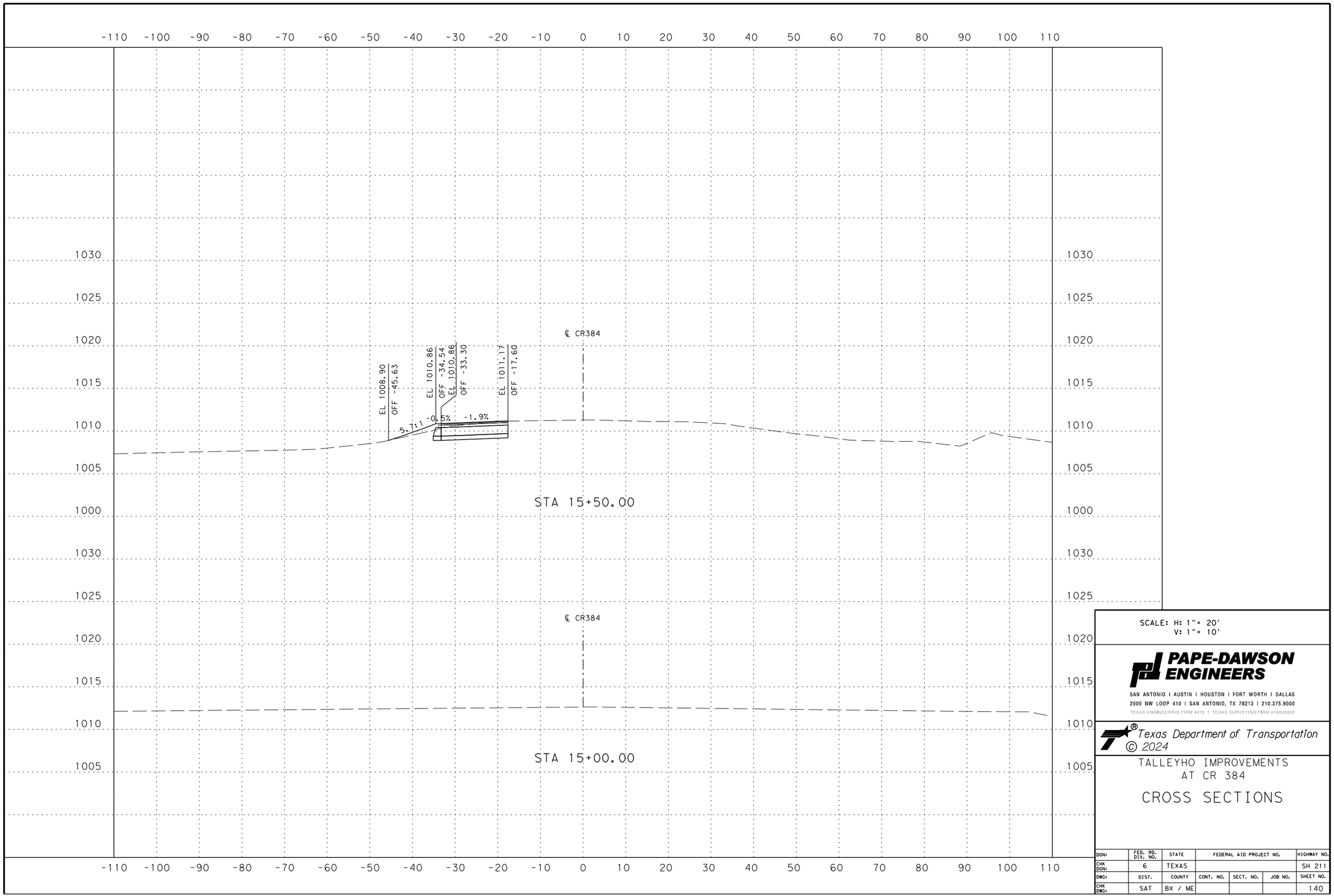
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS AT CR 384

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				139

Plotted on: 1/22/2024



SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

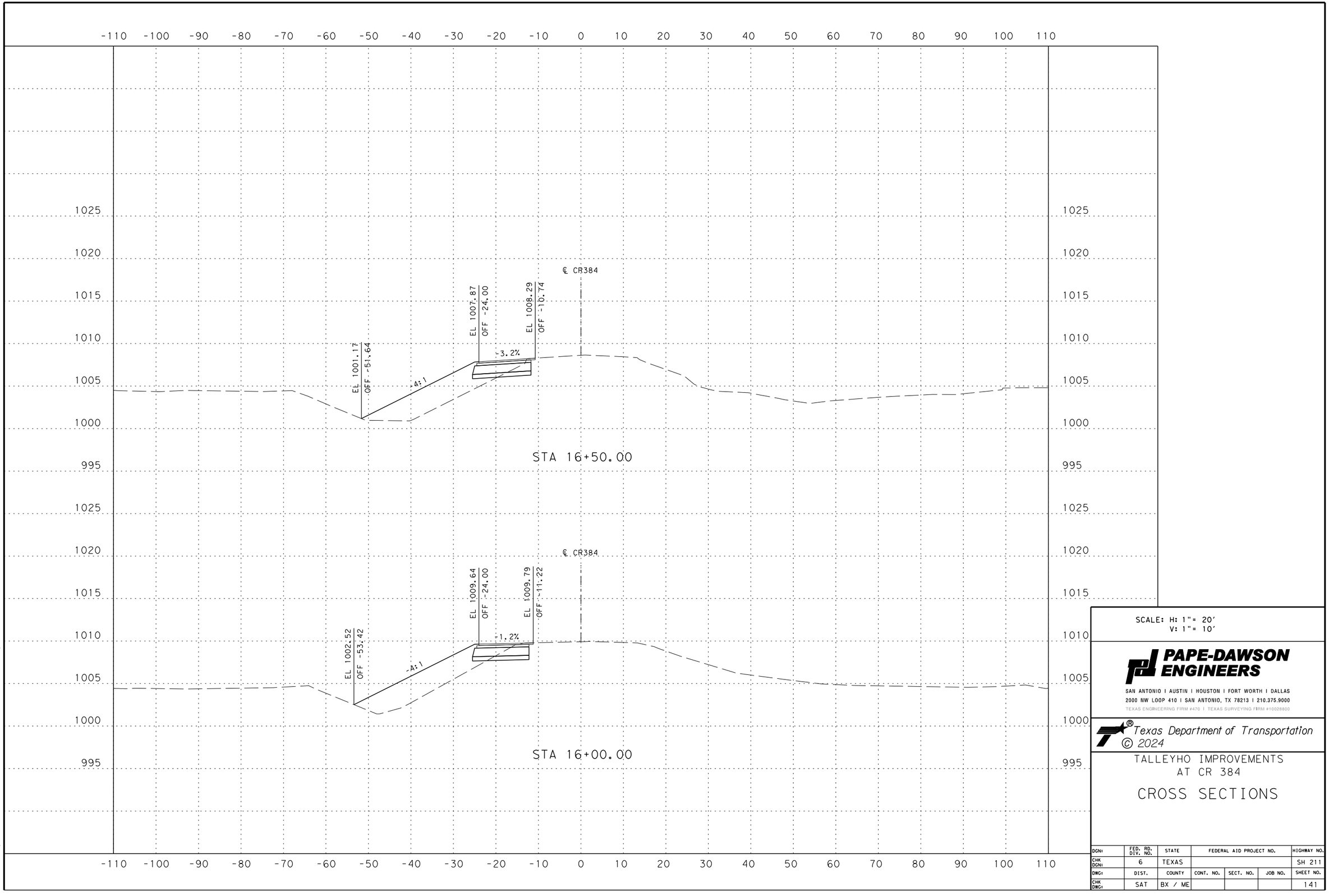
TALLEYHO IMPROVEMENTS AT CR 384

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				140

Design Filename: ...\Xsec\1228504_XSEC_CR384.dgn

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_CR384.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

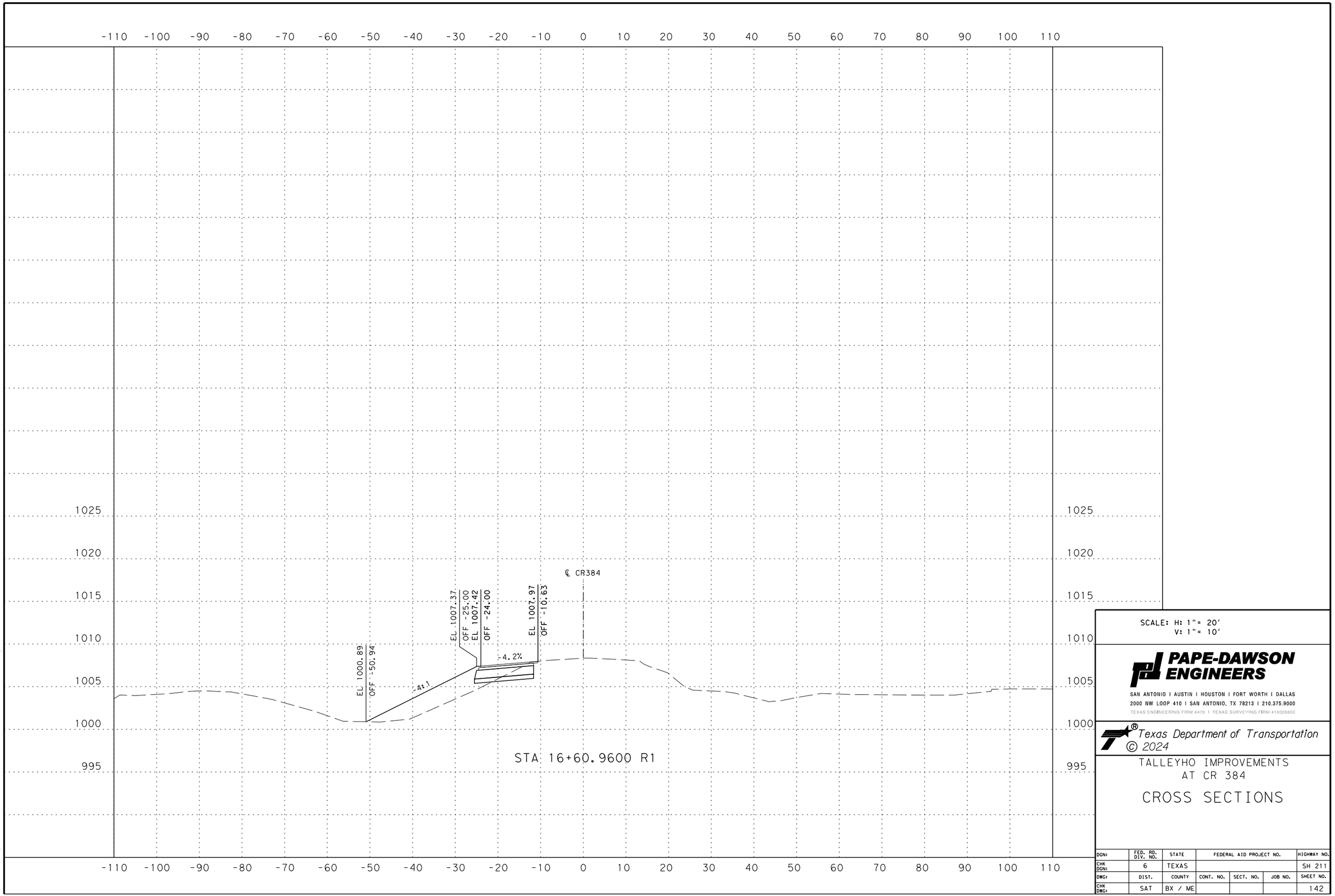
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS
AT CR 384

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				141

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_CR384.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

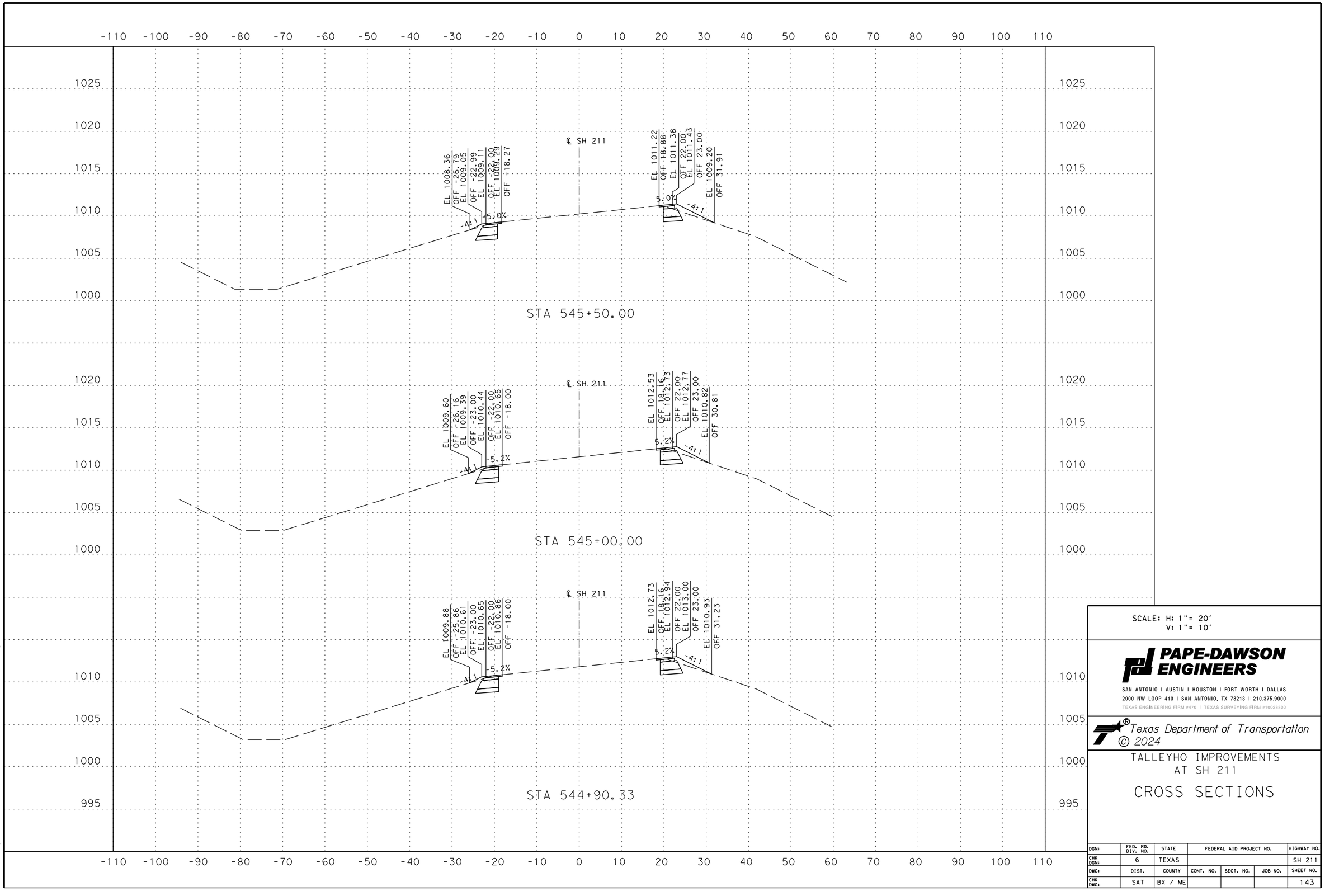
TALLEYHO IMPROVEMENTS
AT CR 384

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				142

Plotted on: 1/22/2024

Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn



SCALE: H: 1"= 20'
V: 1"= 10'

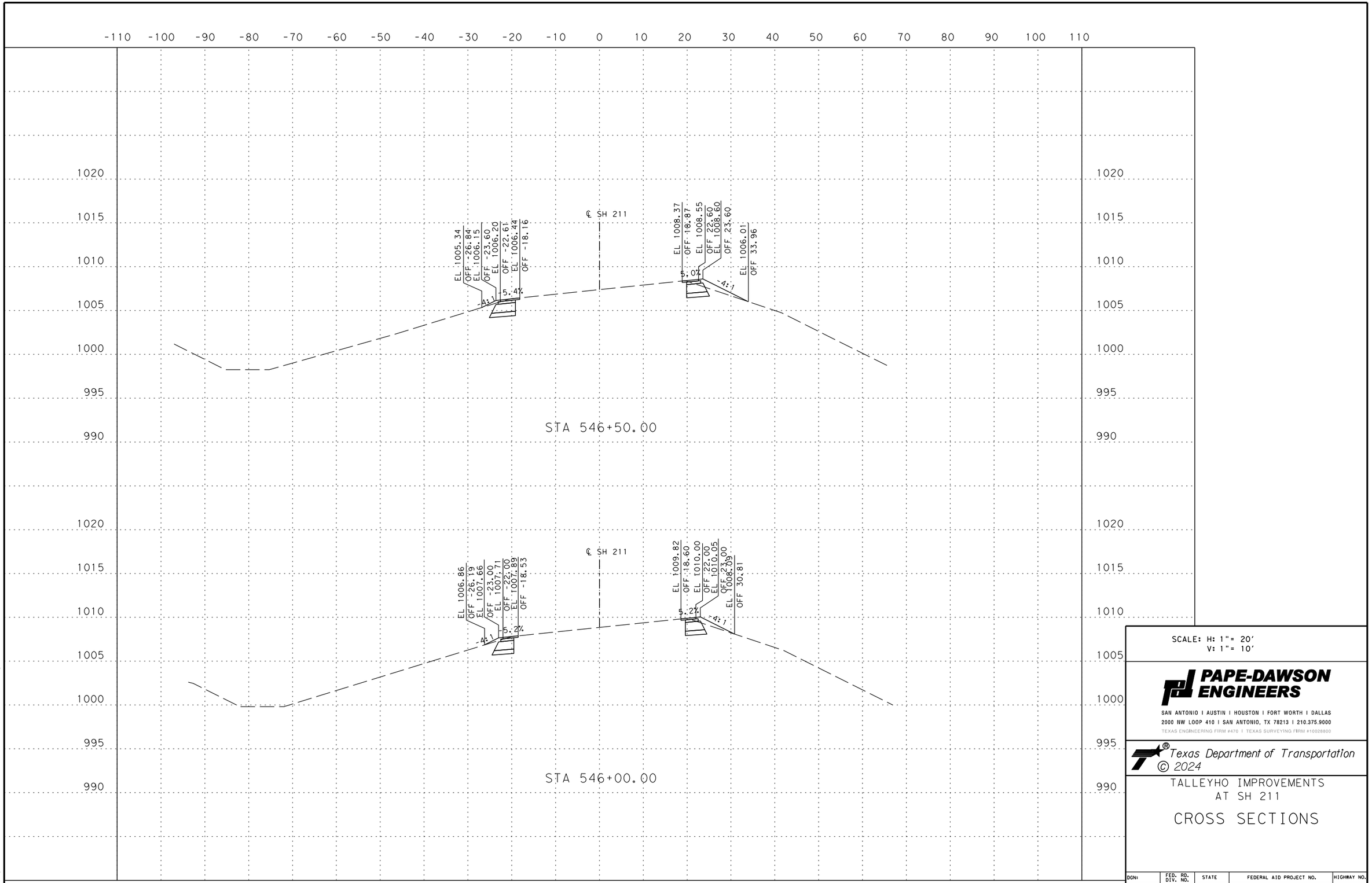
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				143

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS

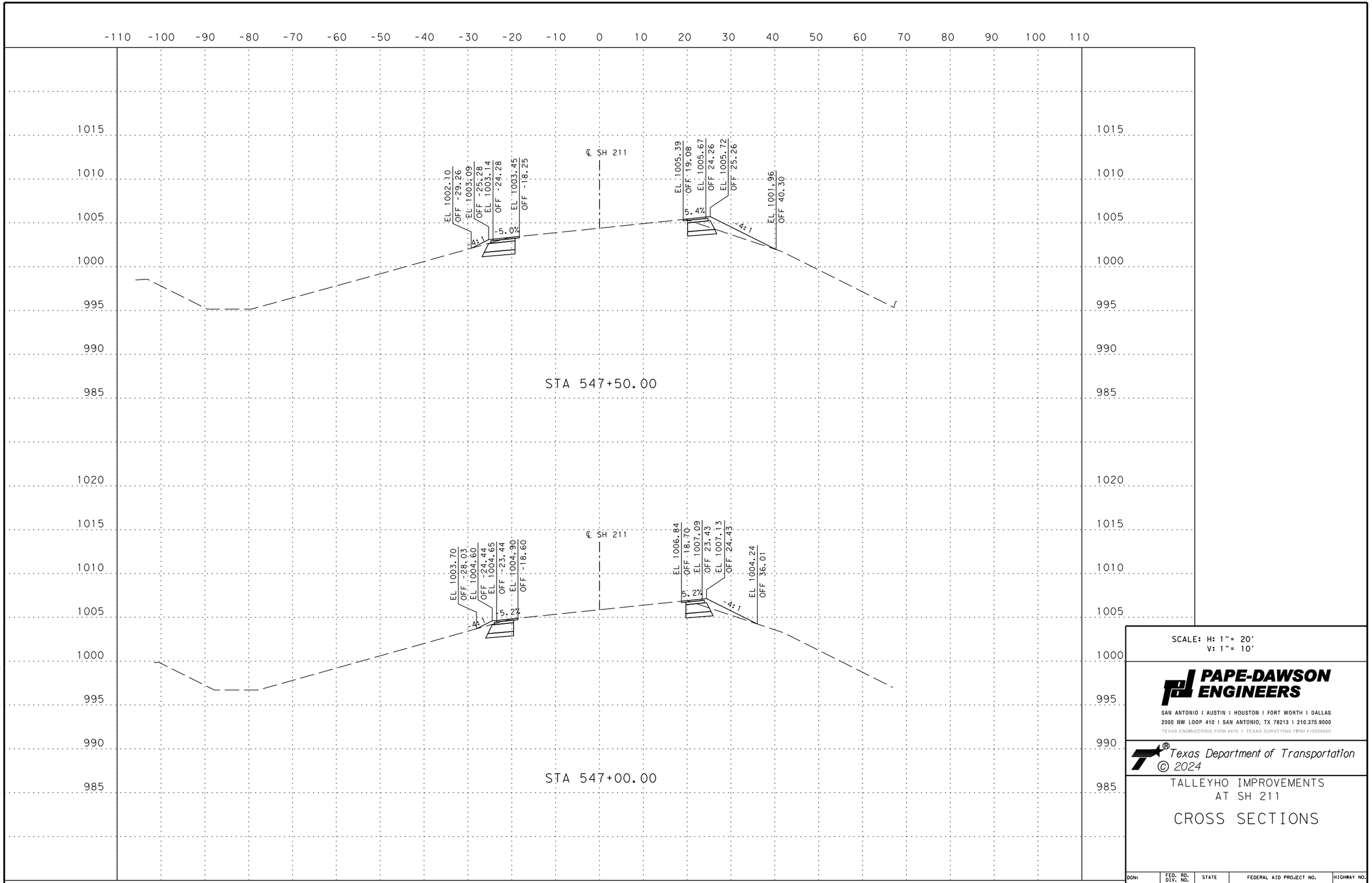
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				144

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

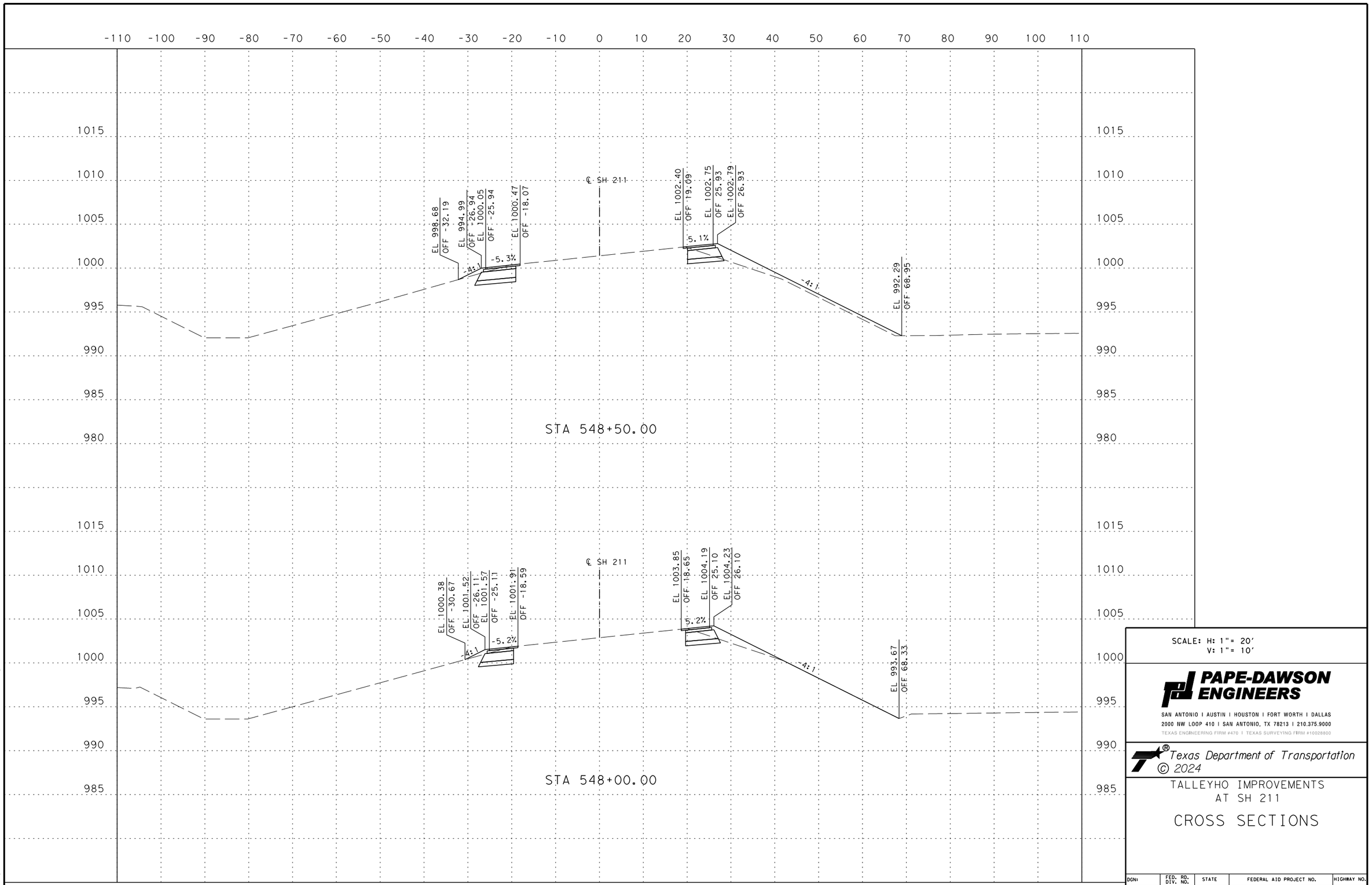
SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS
AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				145



Plotted on: 1/22/2024

Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS

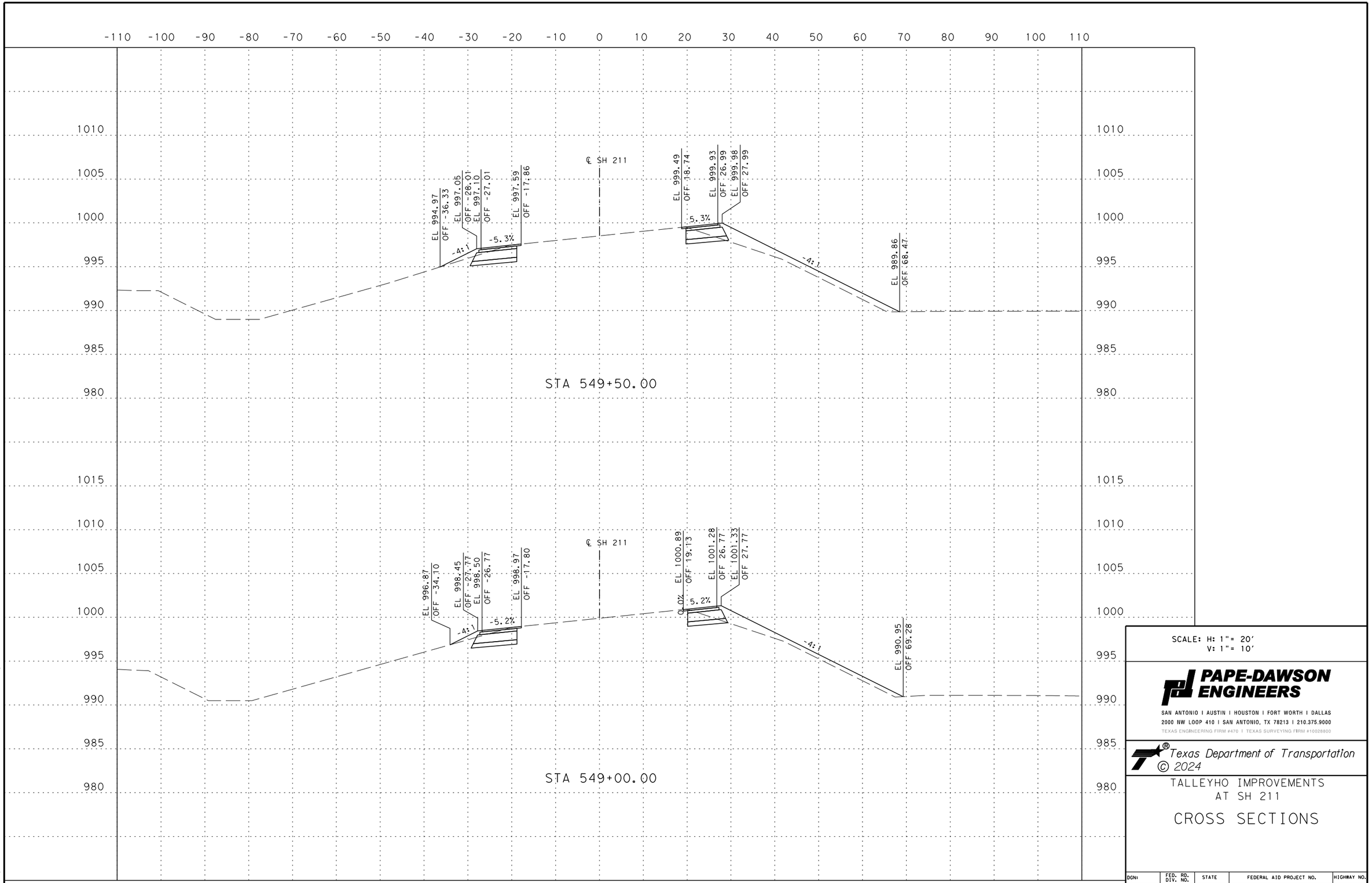
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS
AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				146

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

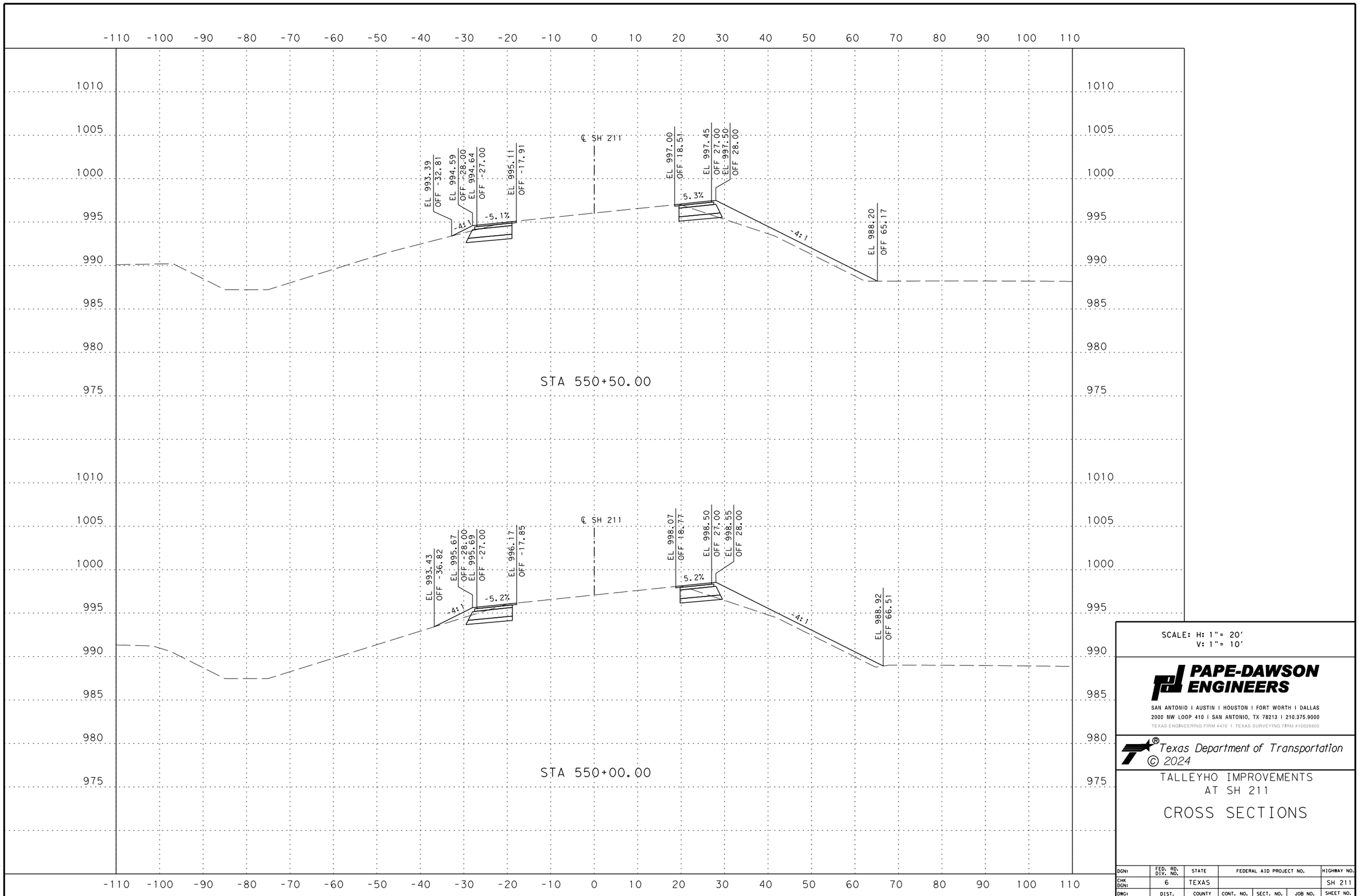
Texas Department of Transportation

TALLEYHO IMPROVEMENTS
AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				147

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS

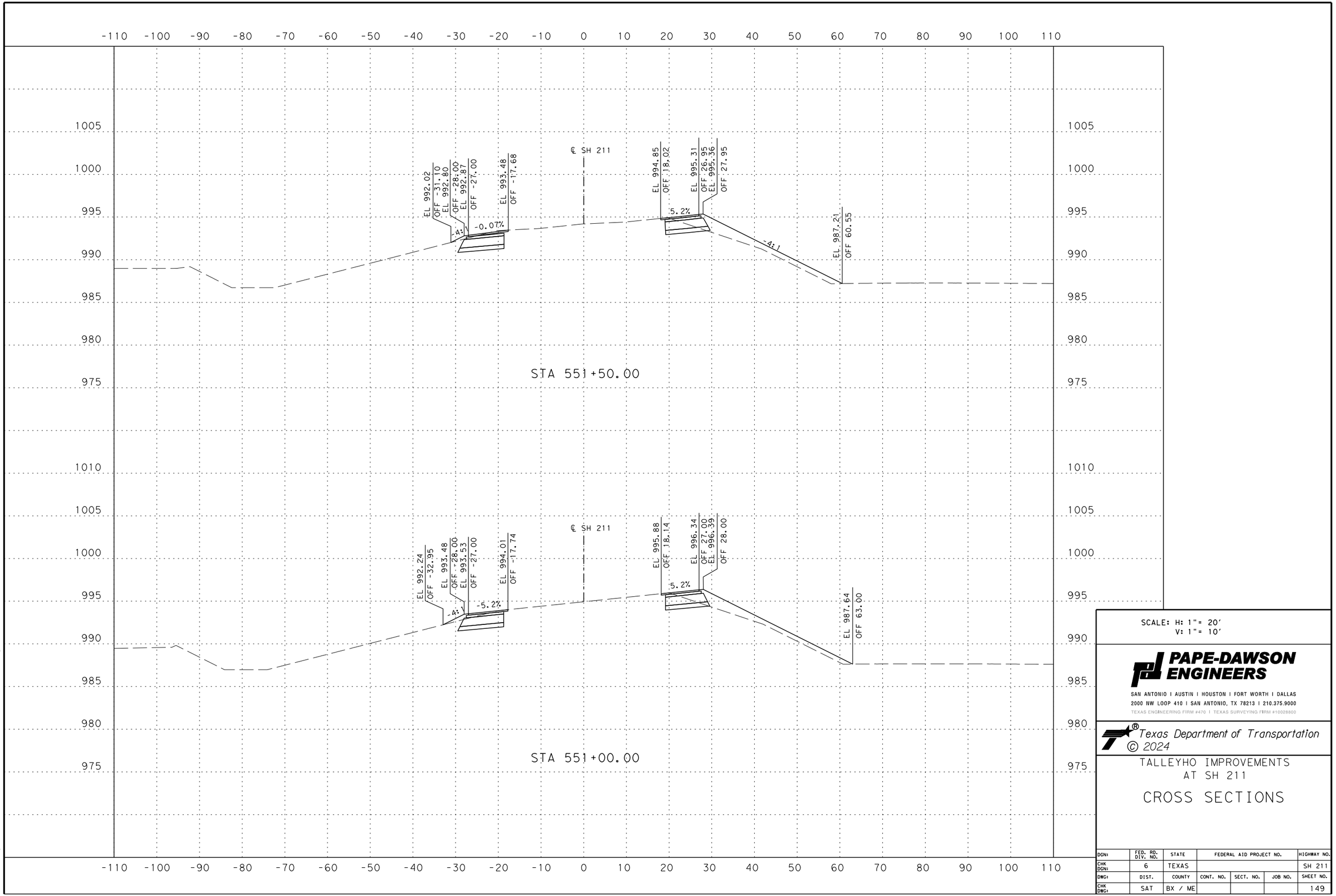
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				148

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS

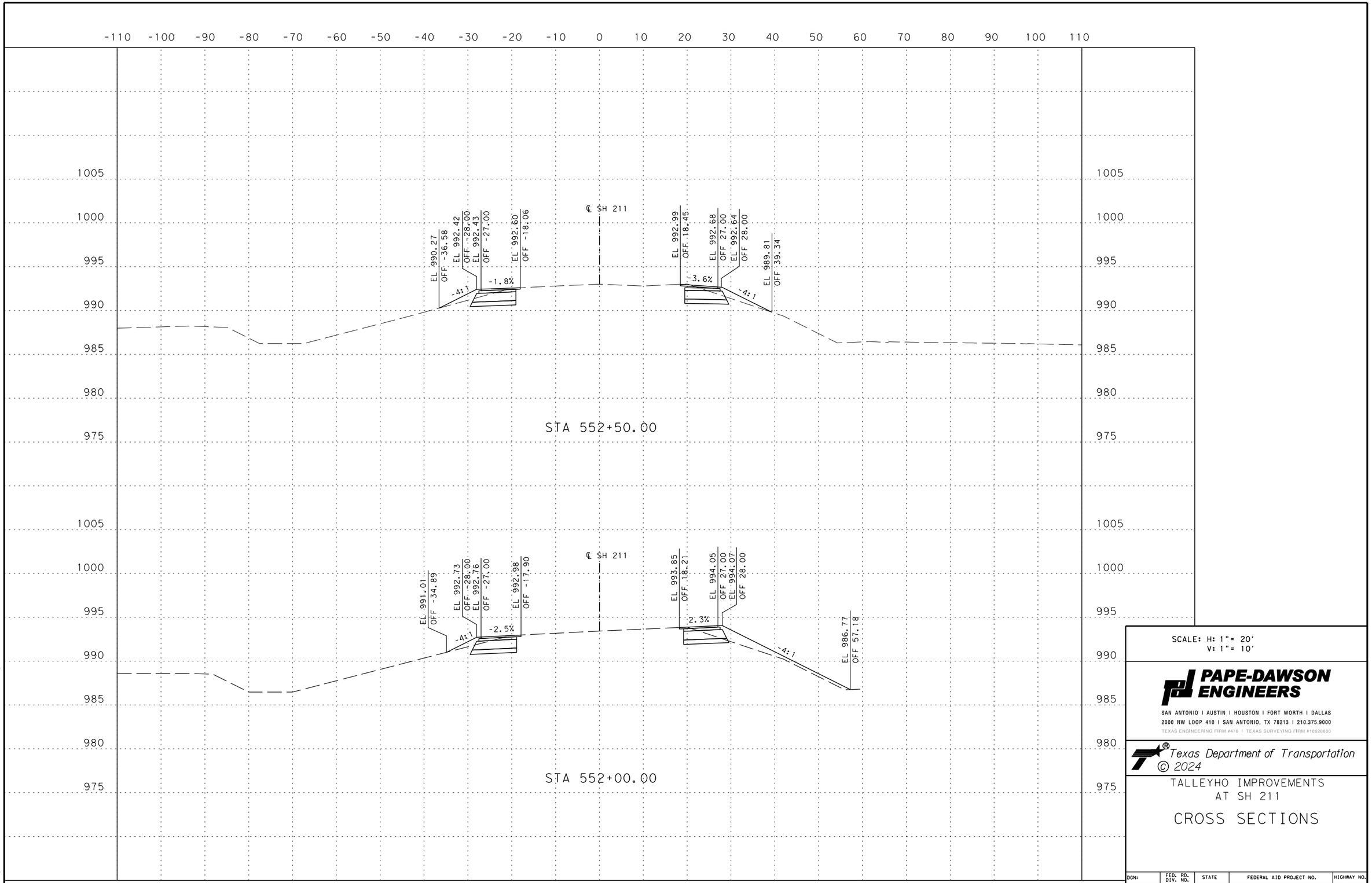
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				149

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

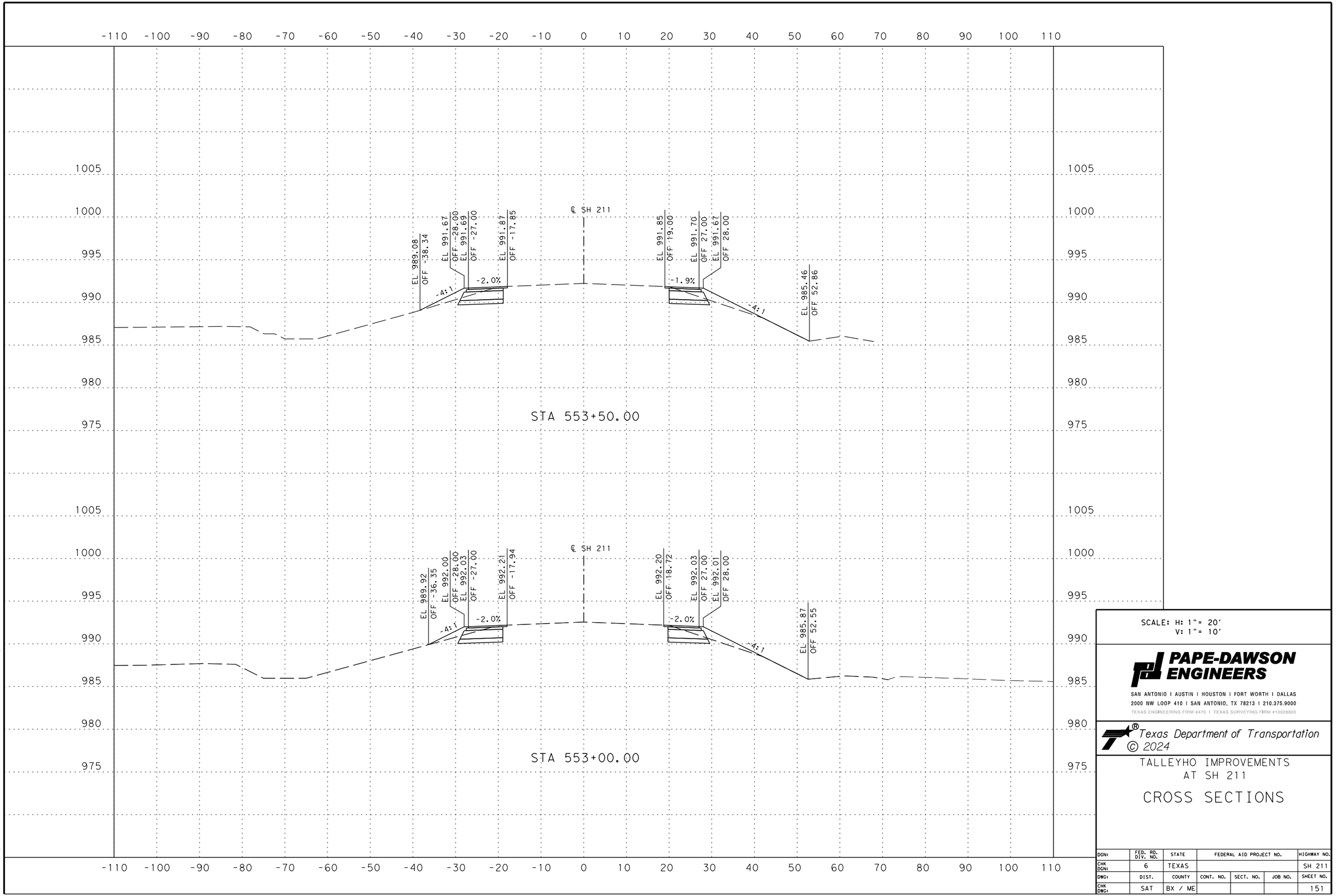
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				150

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

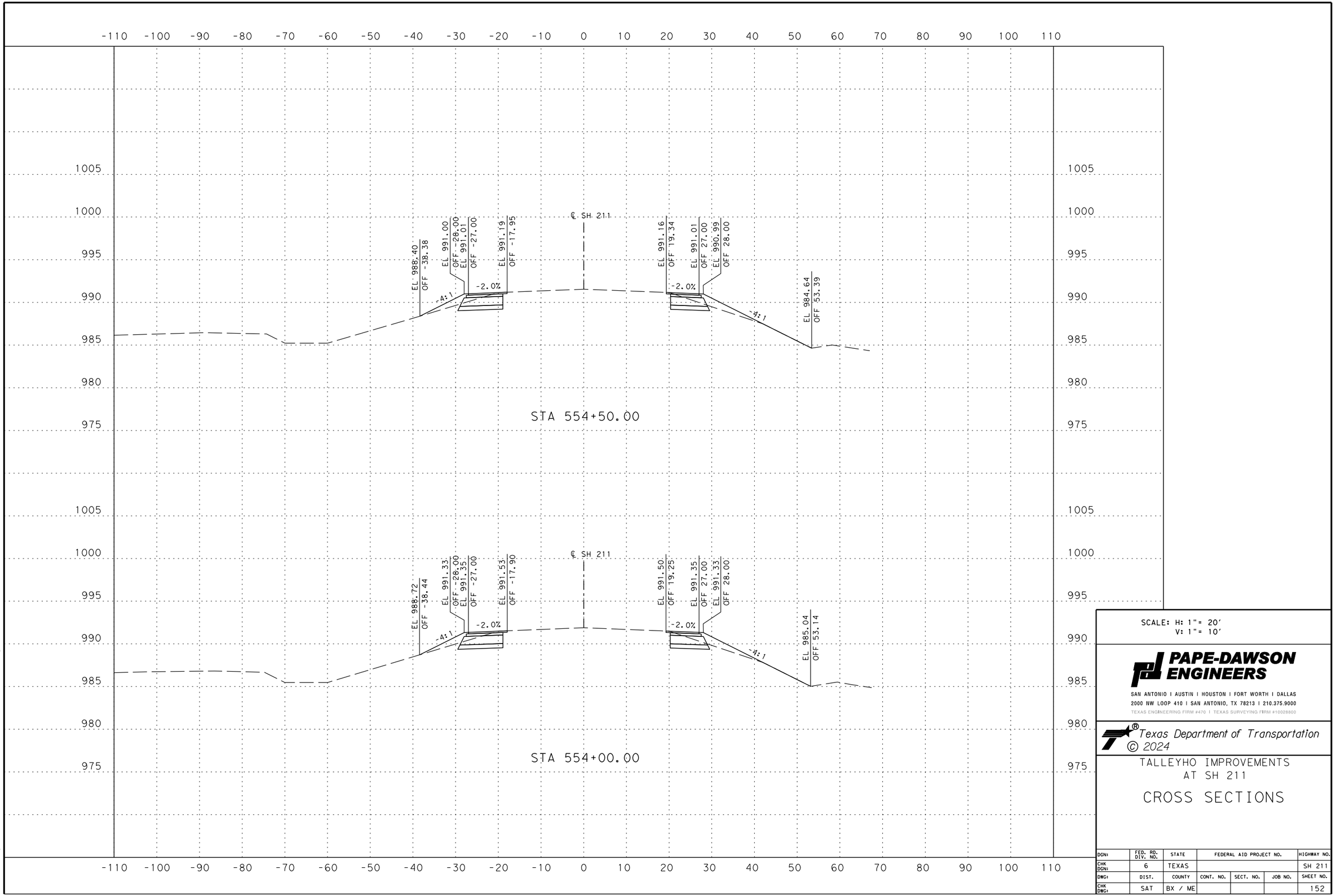
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				151

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

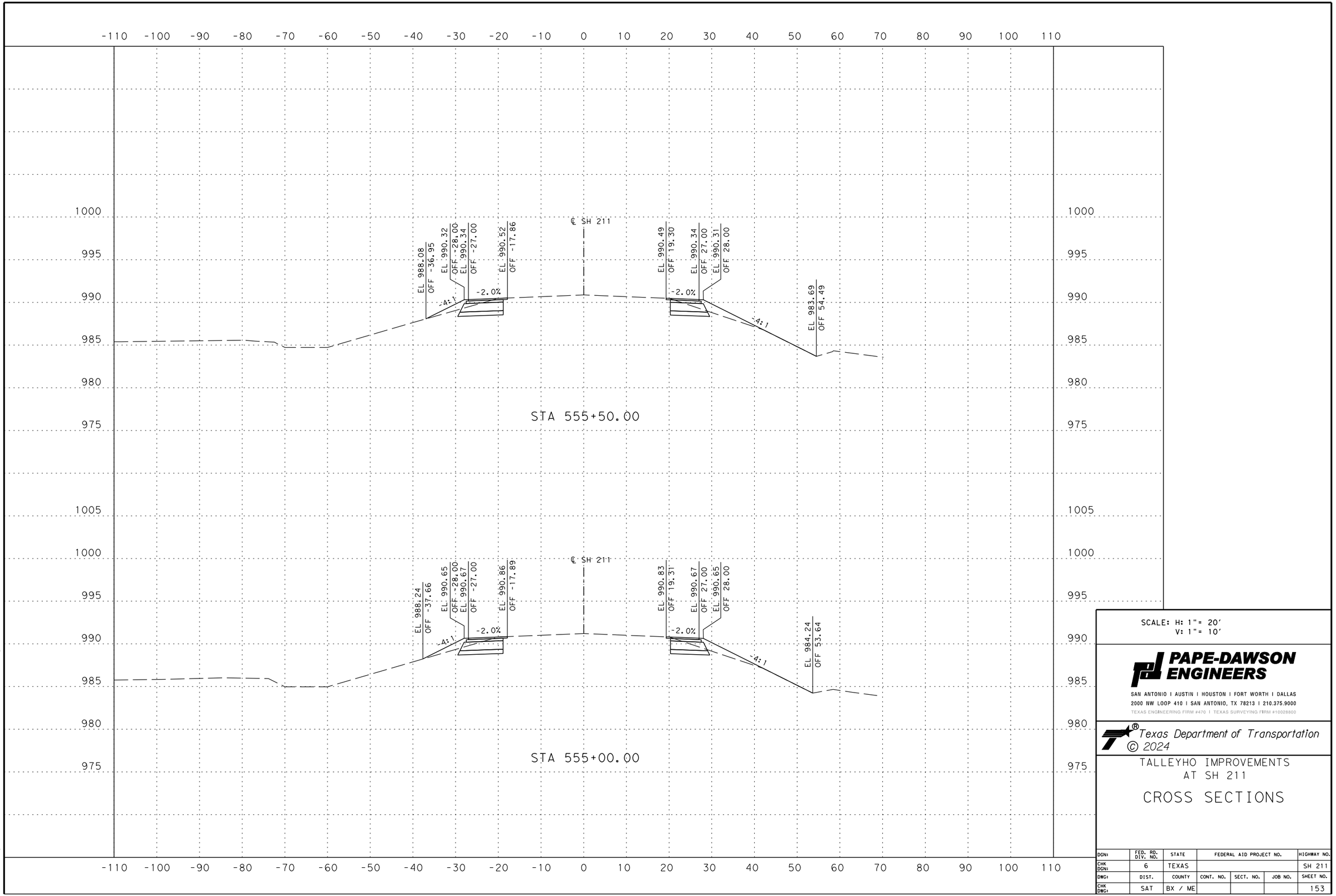
SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS
AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				152



Plotted on: 1/22/2024

Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

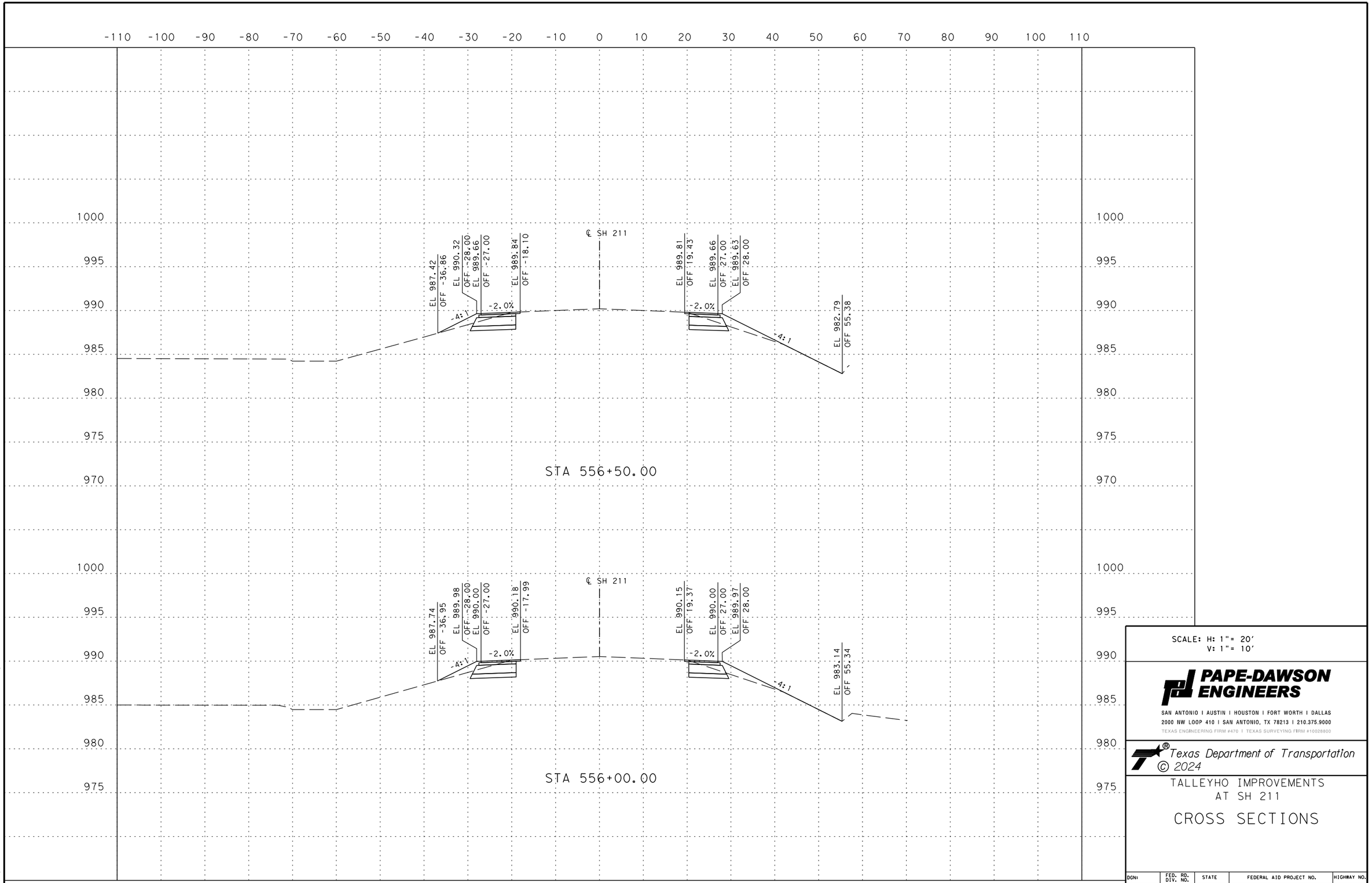
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				153

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

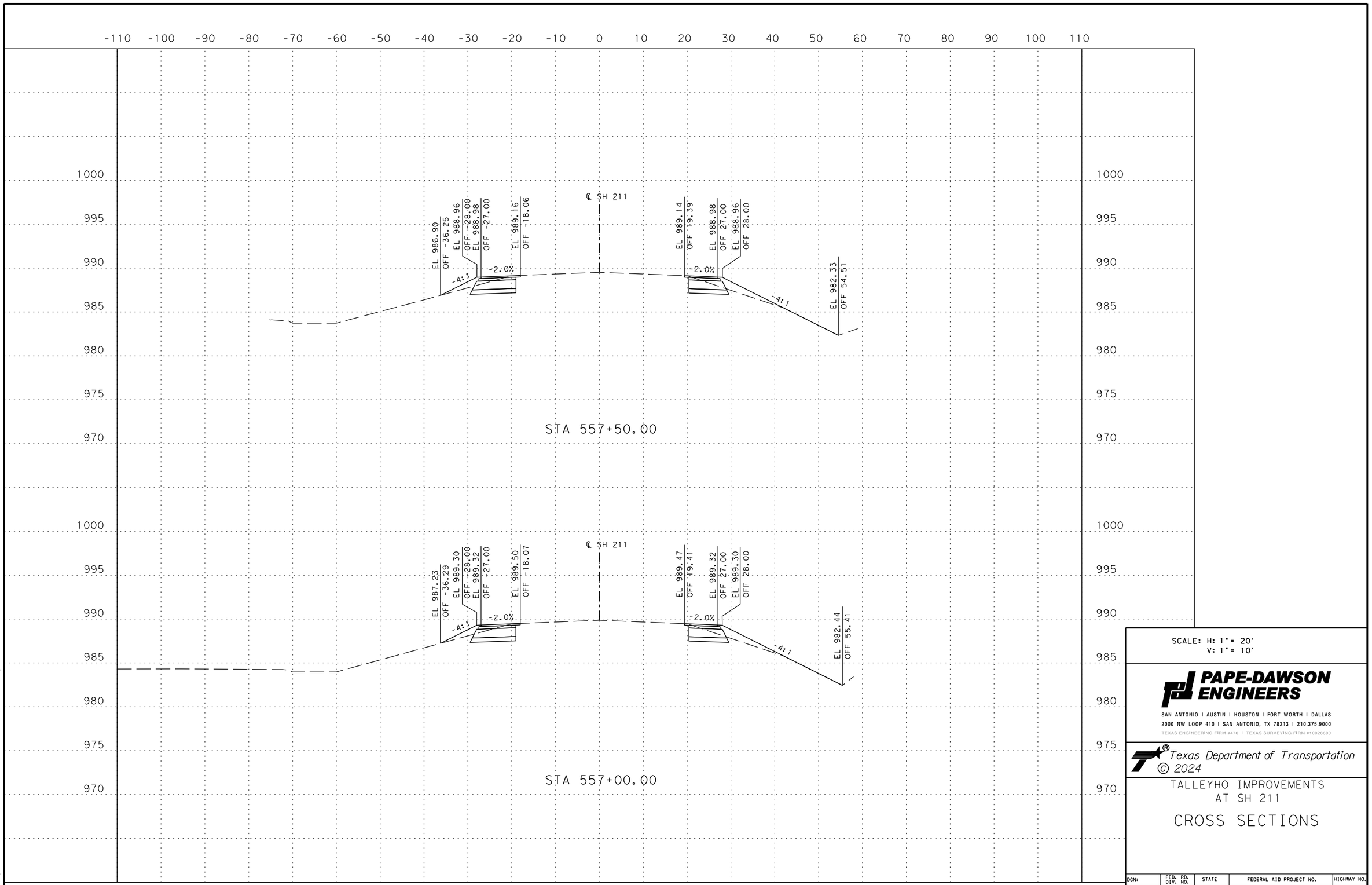
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS
AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				154

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS

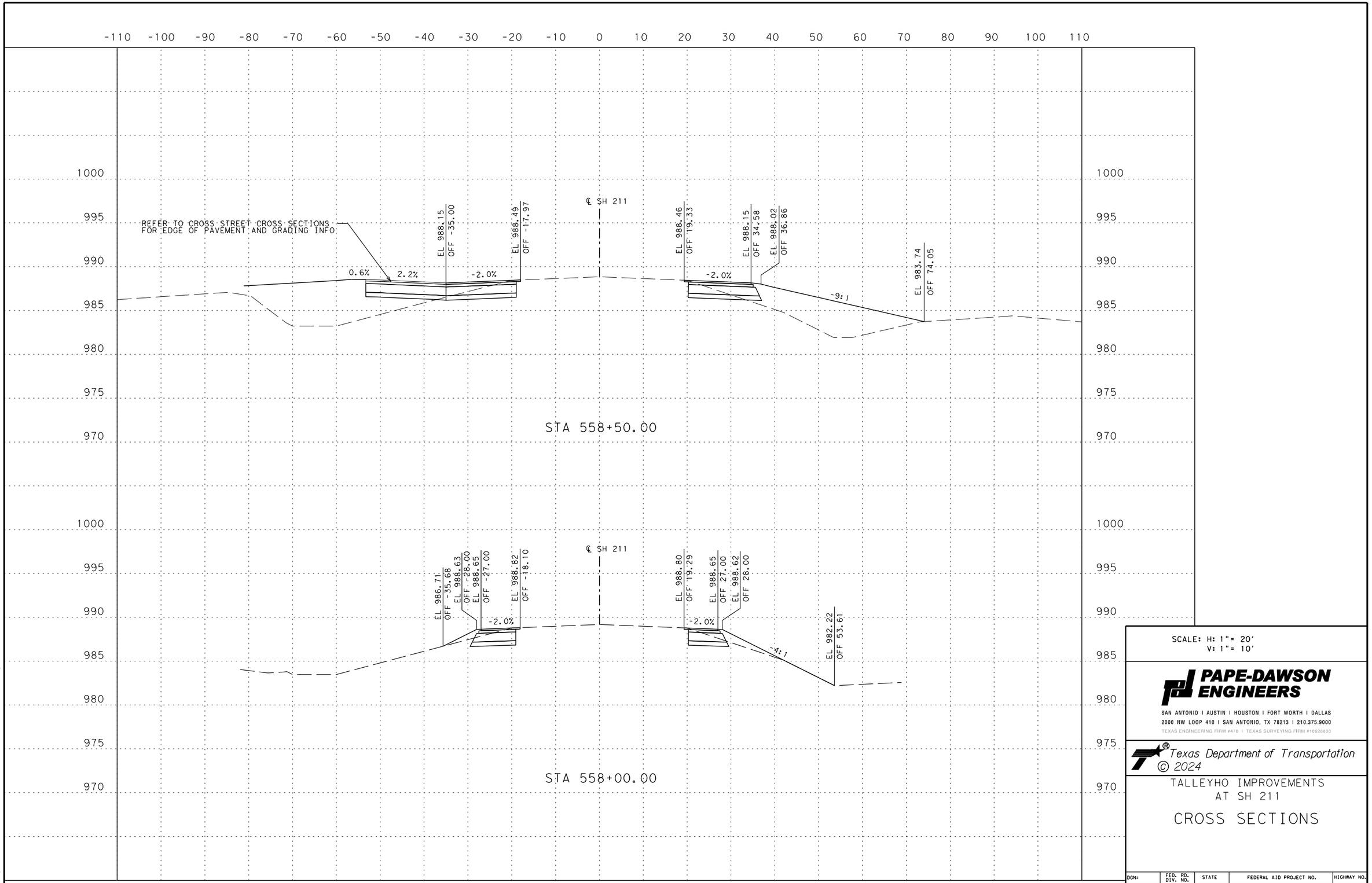
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				155

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

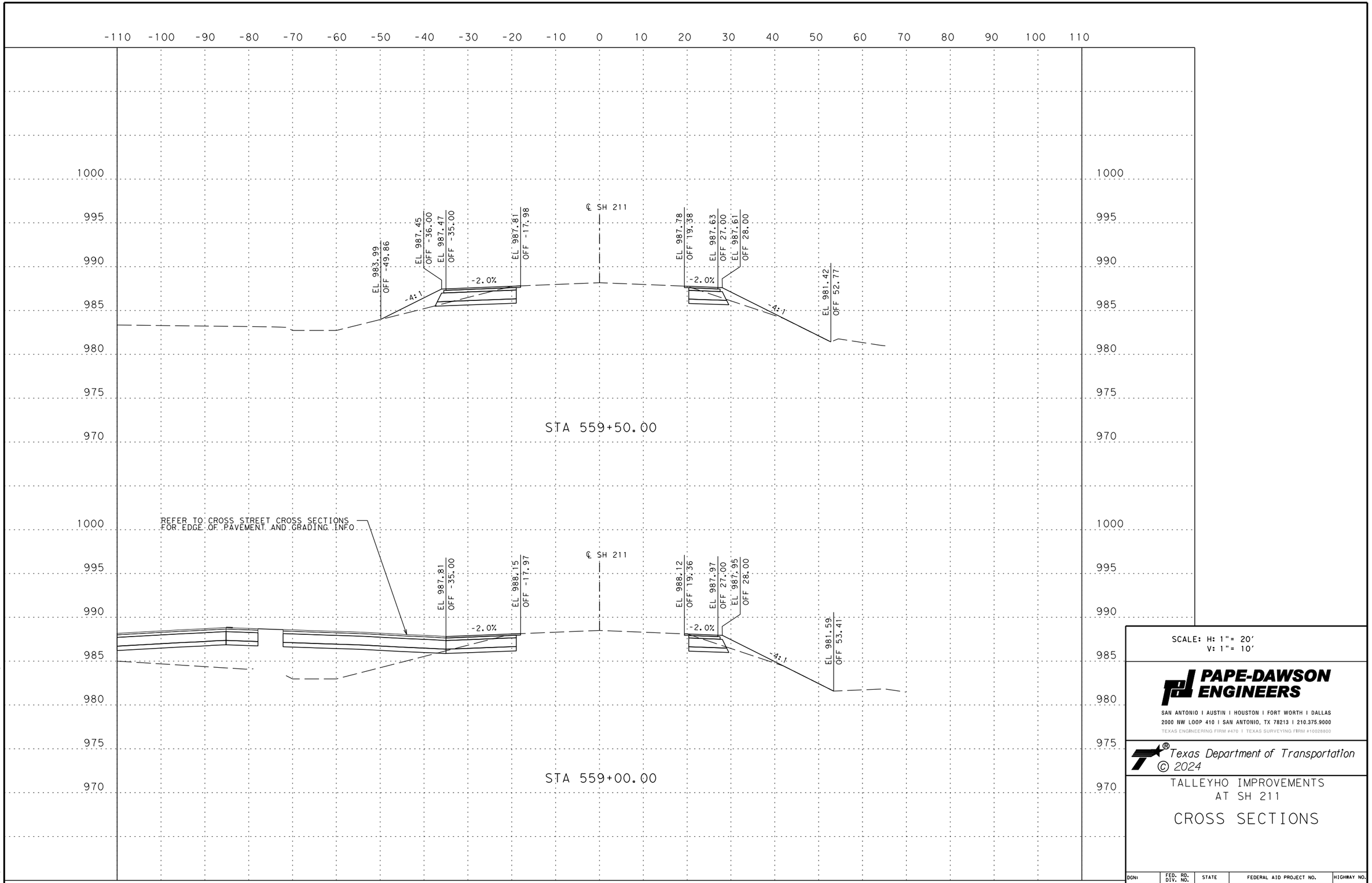
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS
AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				156

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS

SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

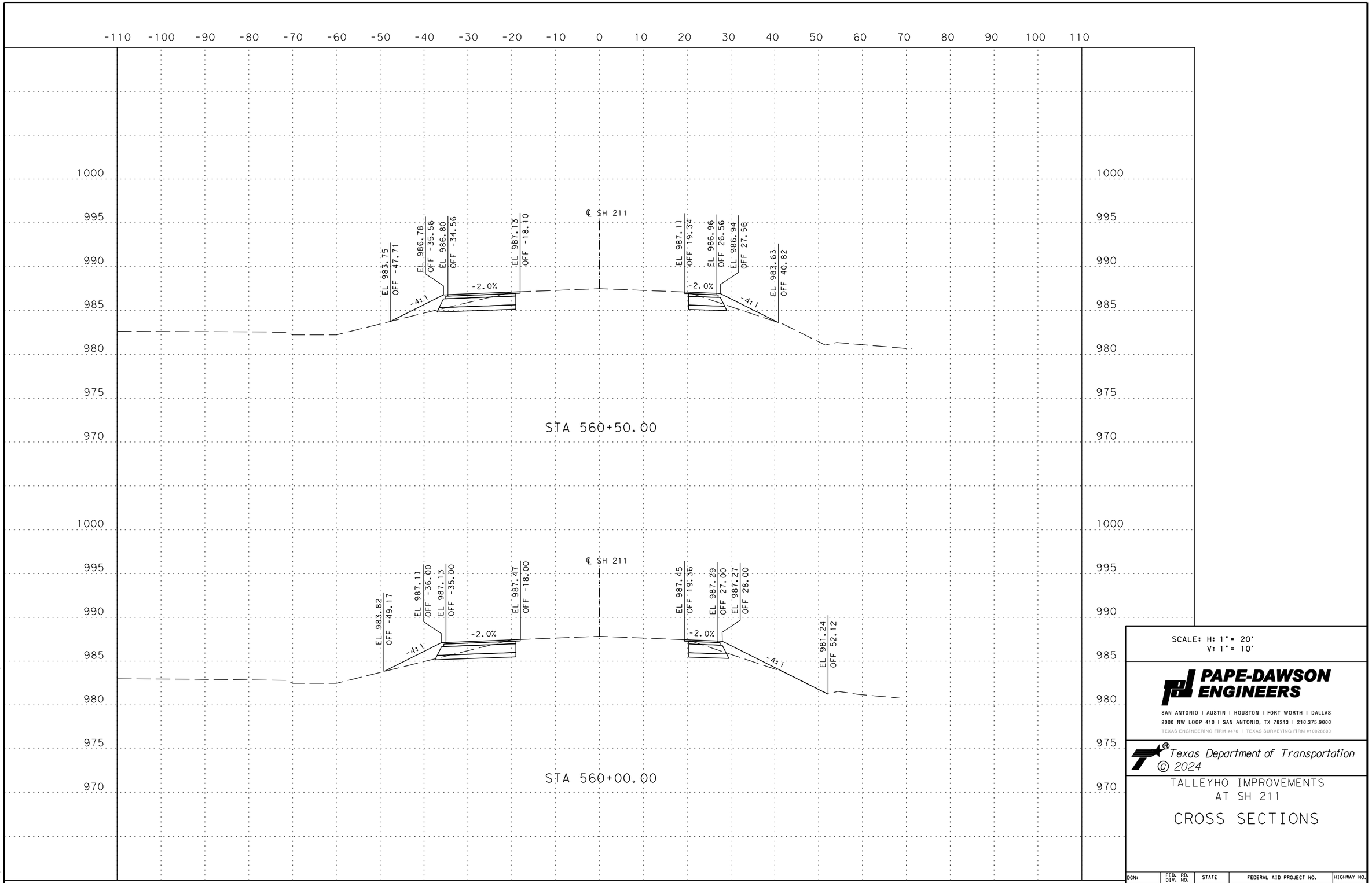
Texas Department of Transportation

TALLEYHO IMPROVEMENTS
AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				157

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

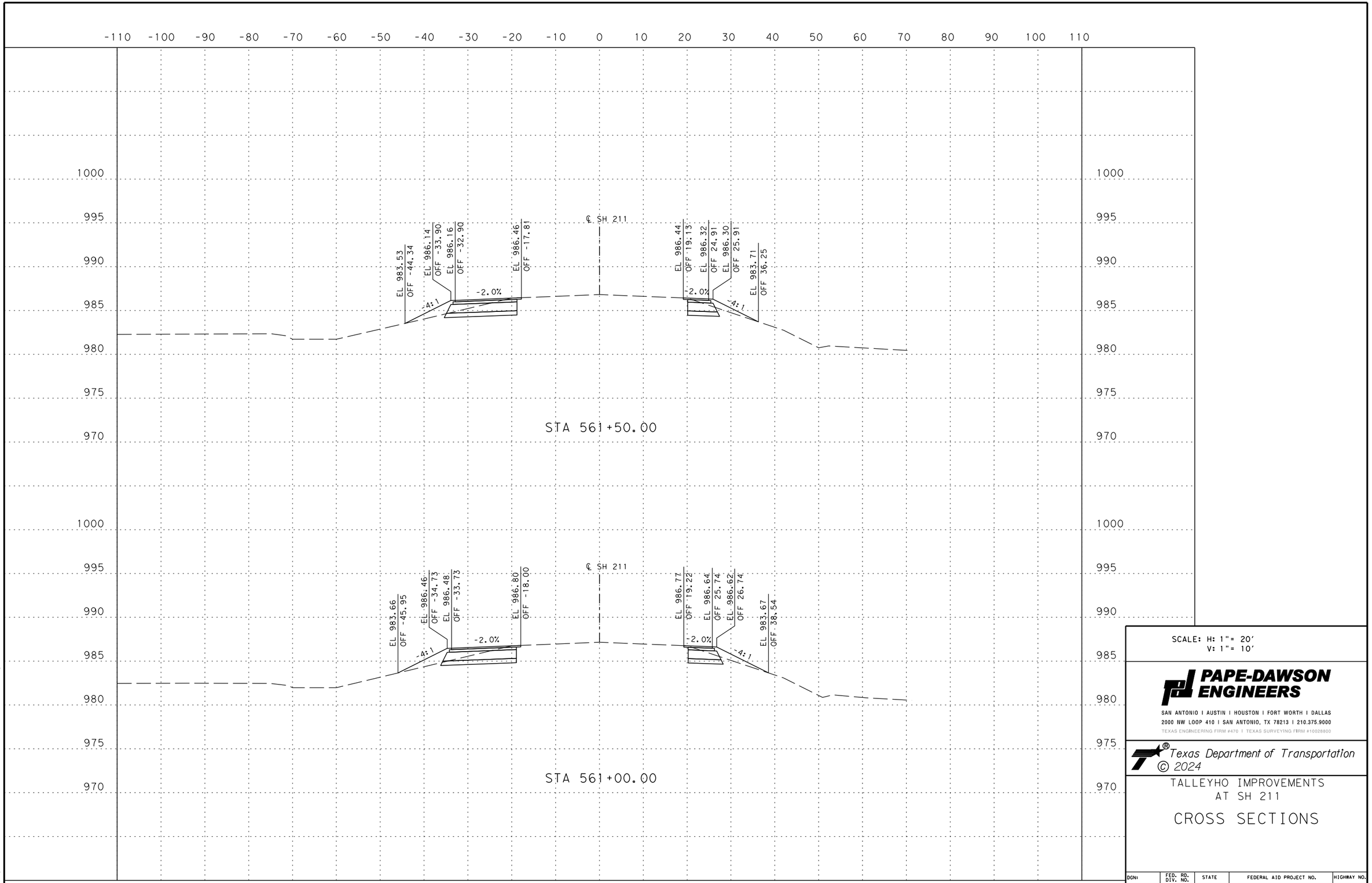
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				158

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

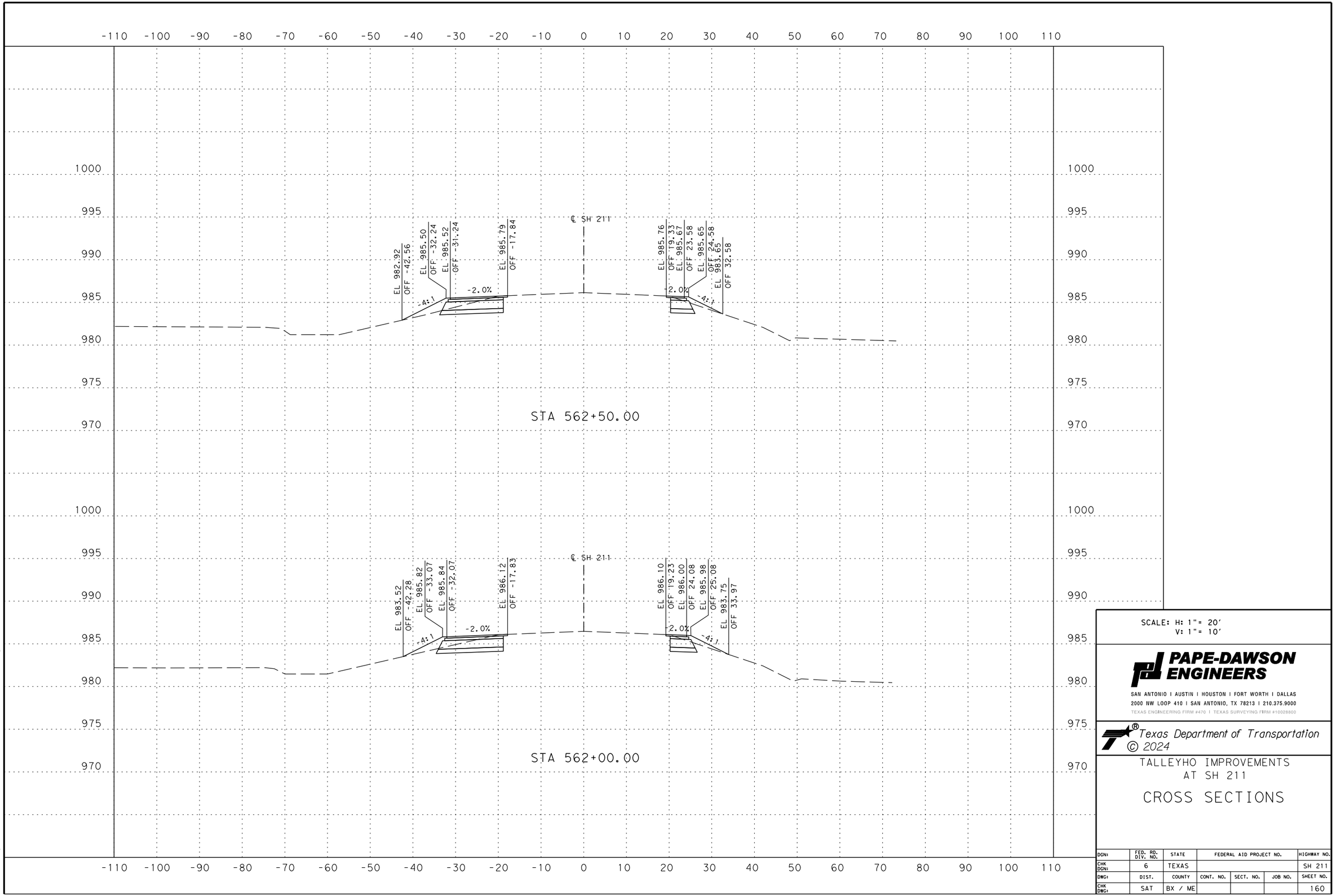
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS
AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				159

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

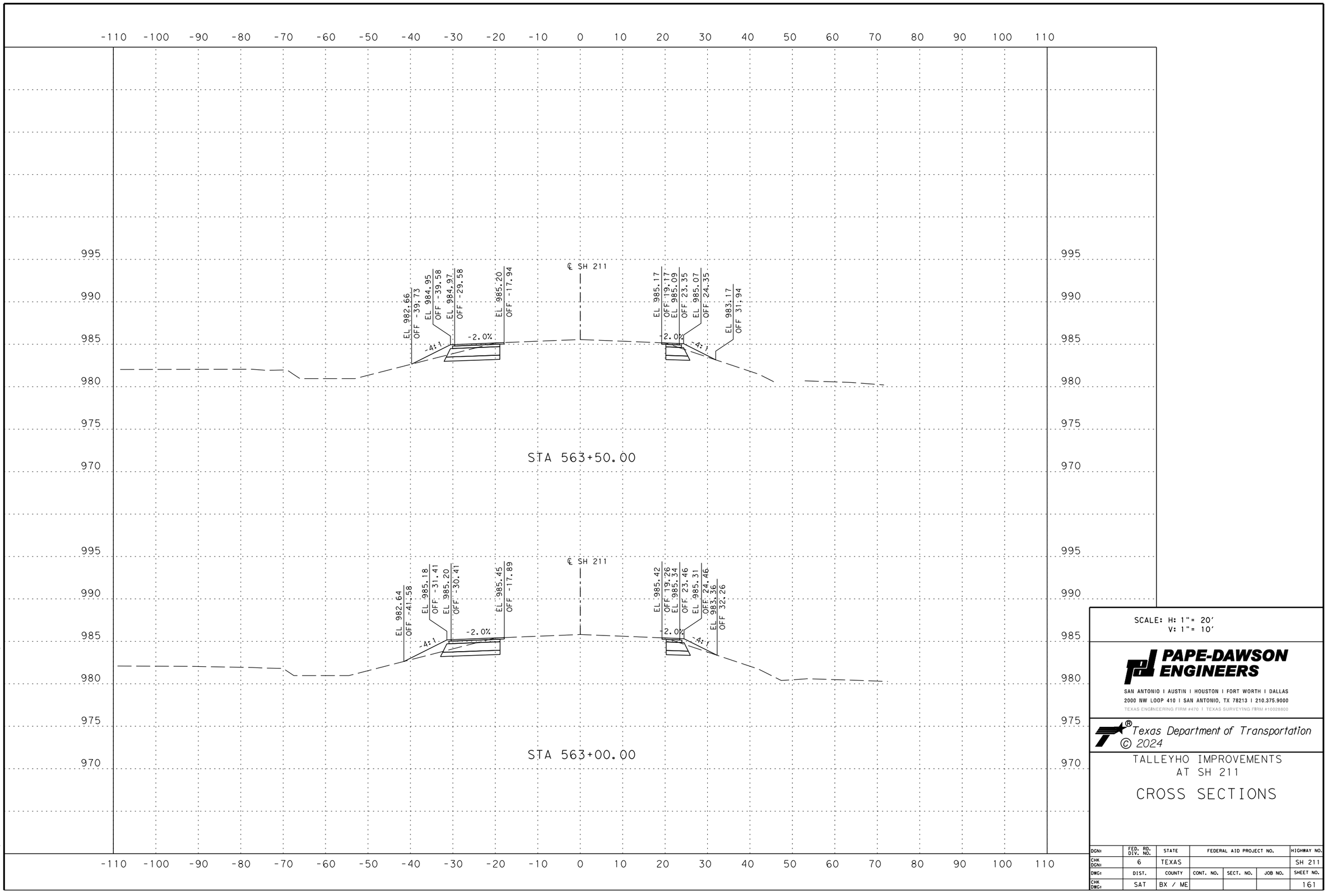
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				160

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

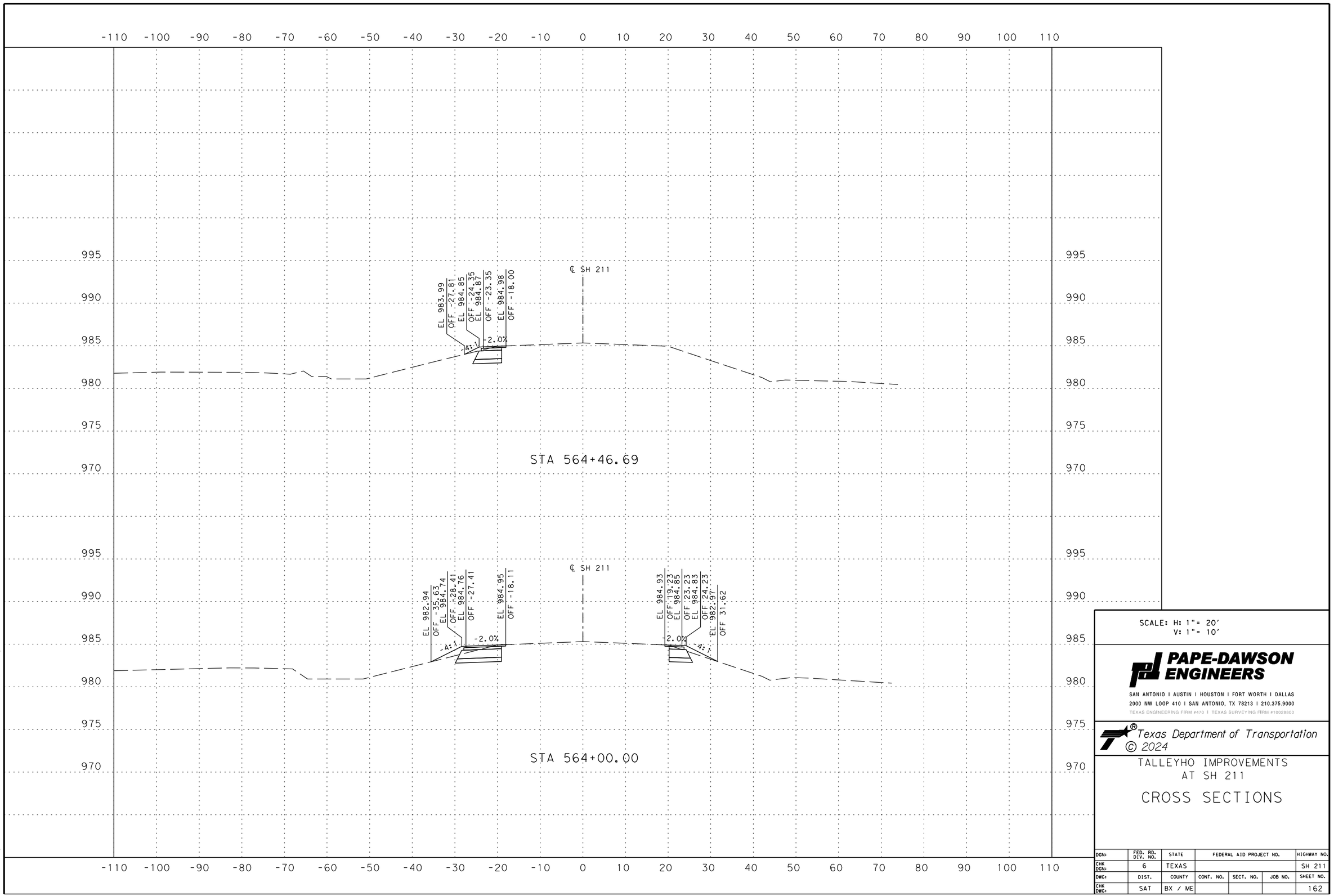
TALLEYHO IMPROVEMENTS
AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				161

Plotted on: 1/22/2024

Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn



SCALE: H: 1"= 20'
V: 1"= 10'

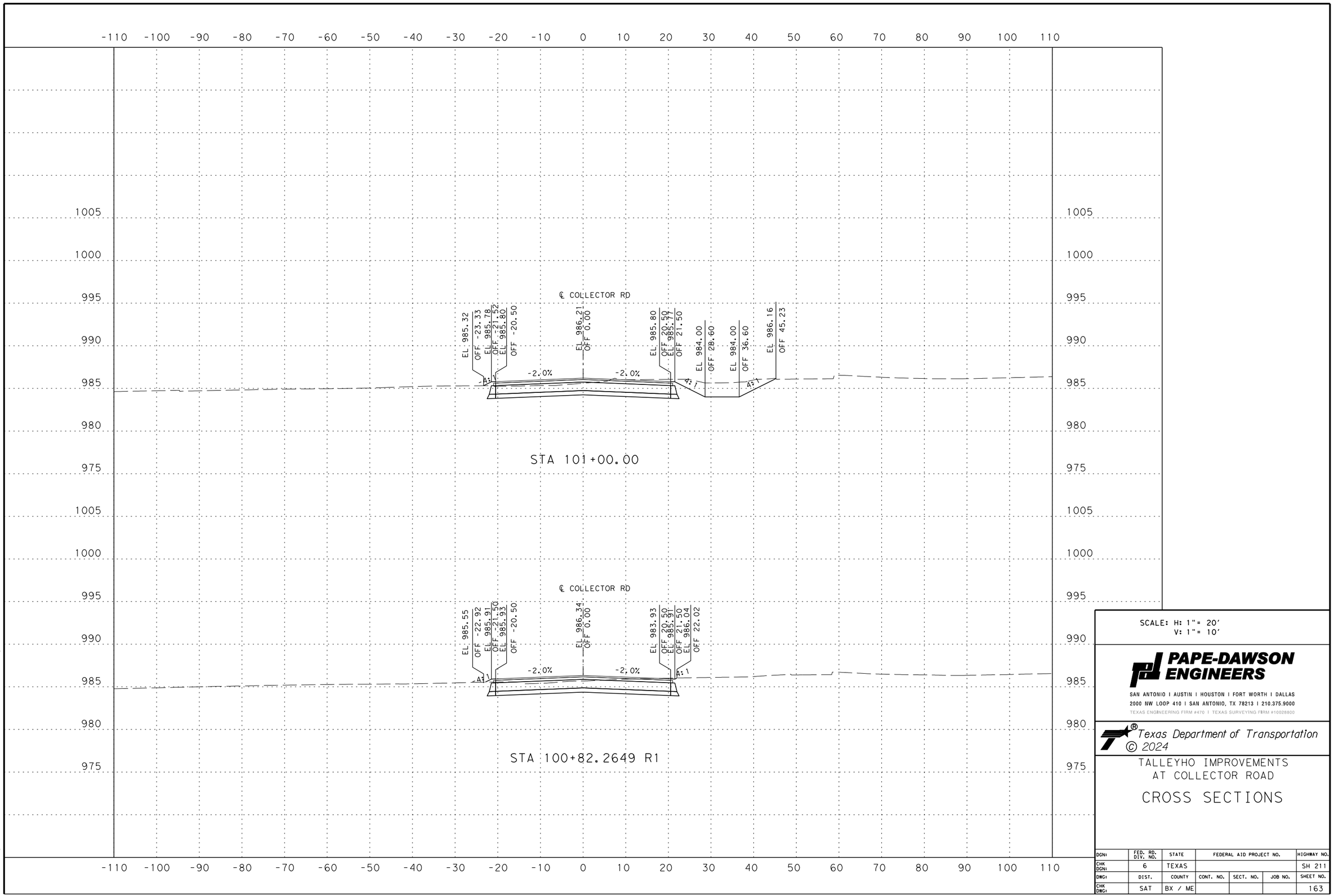
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS AT SH 211

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				162

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

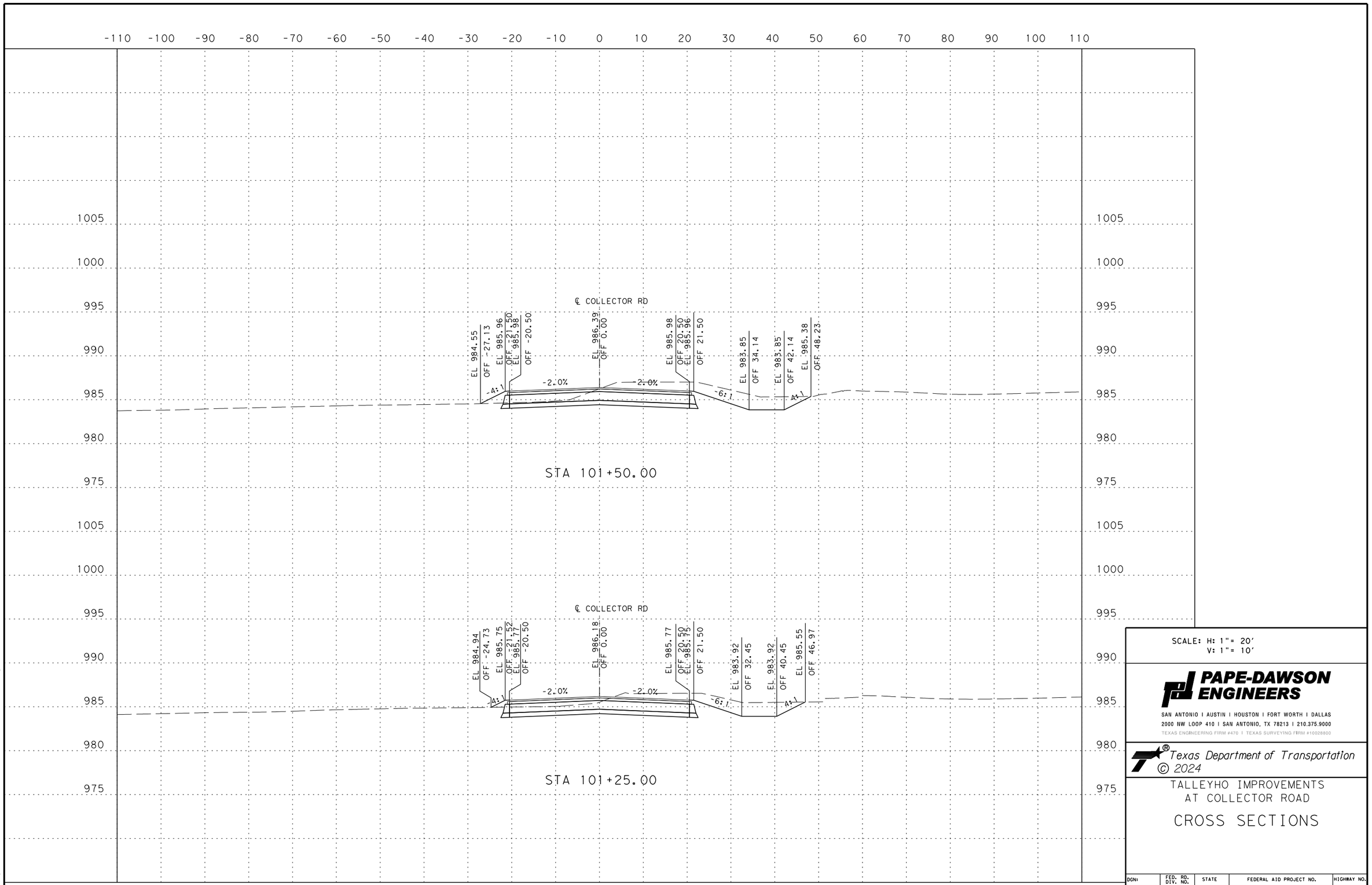
SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS
AT COLLECTOR ROAD

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				163



Plotted on: 1/22/2024

Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

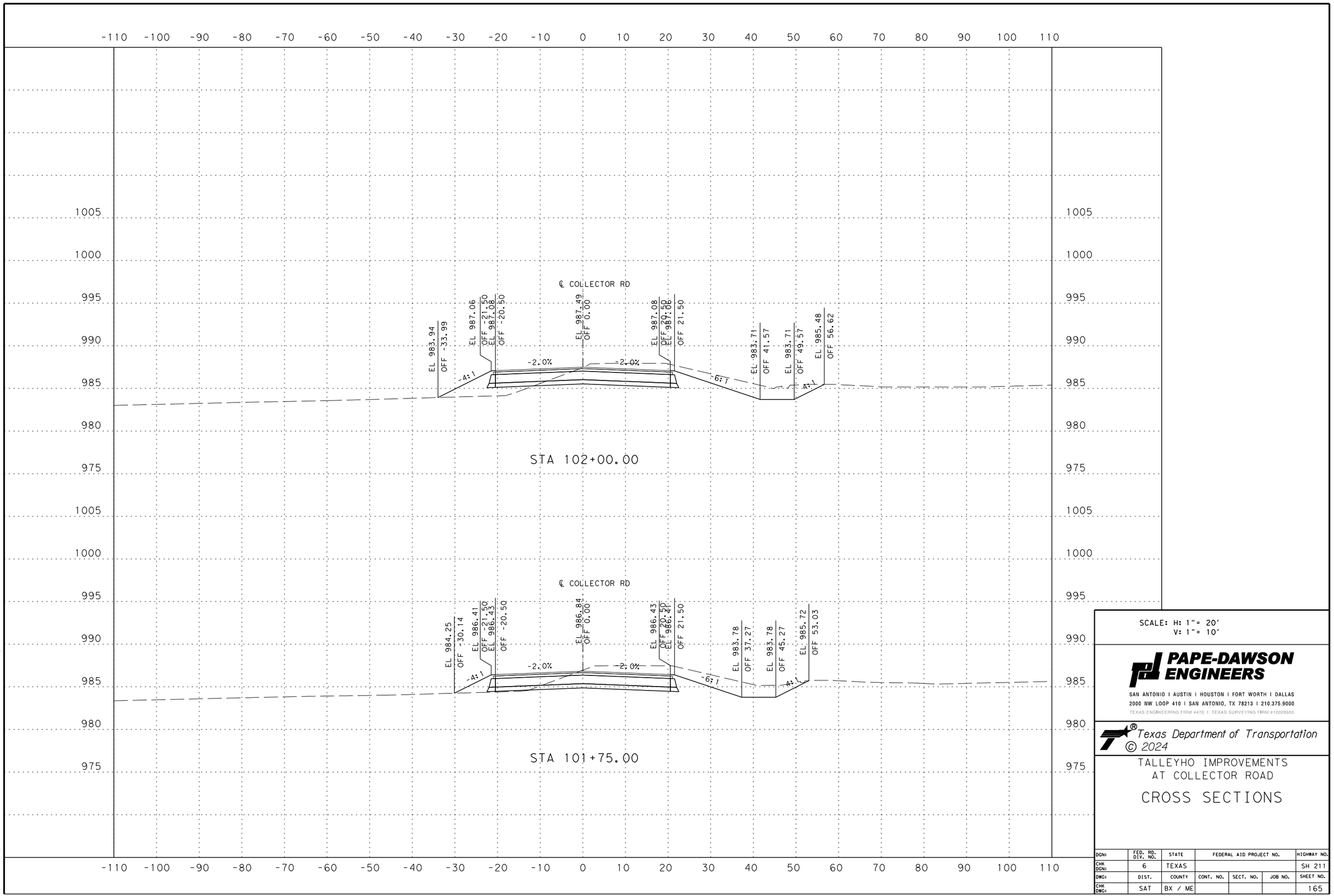
SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS
SAN ANTONIO I AUSTIN I HOUSTON I FORT WORTH I DALLAS
2000 NW LOOP 410 I SAN ANTONIO, TX 78213 I 210.375.9000
TEXAS ENGINEERING FIRM #470 I TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS AT COLLECTOR ROAD

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				164



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

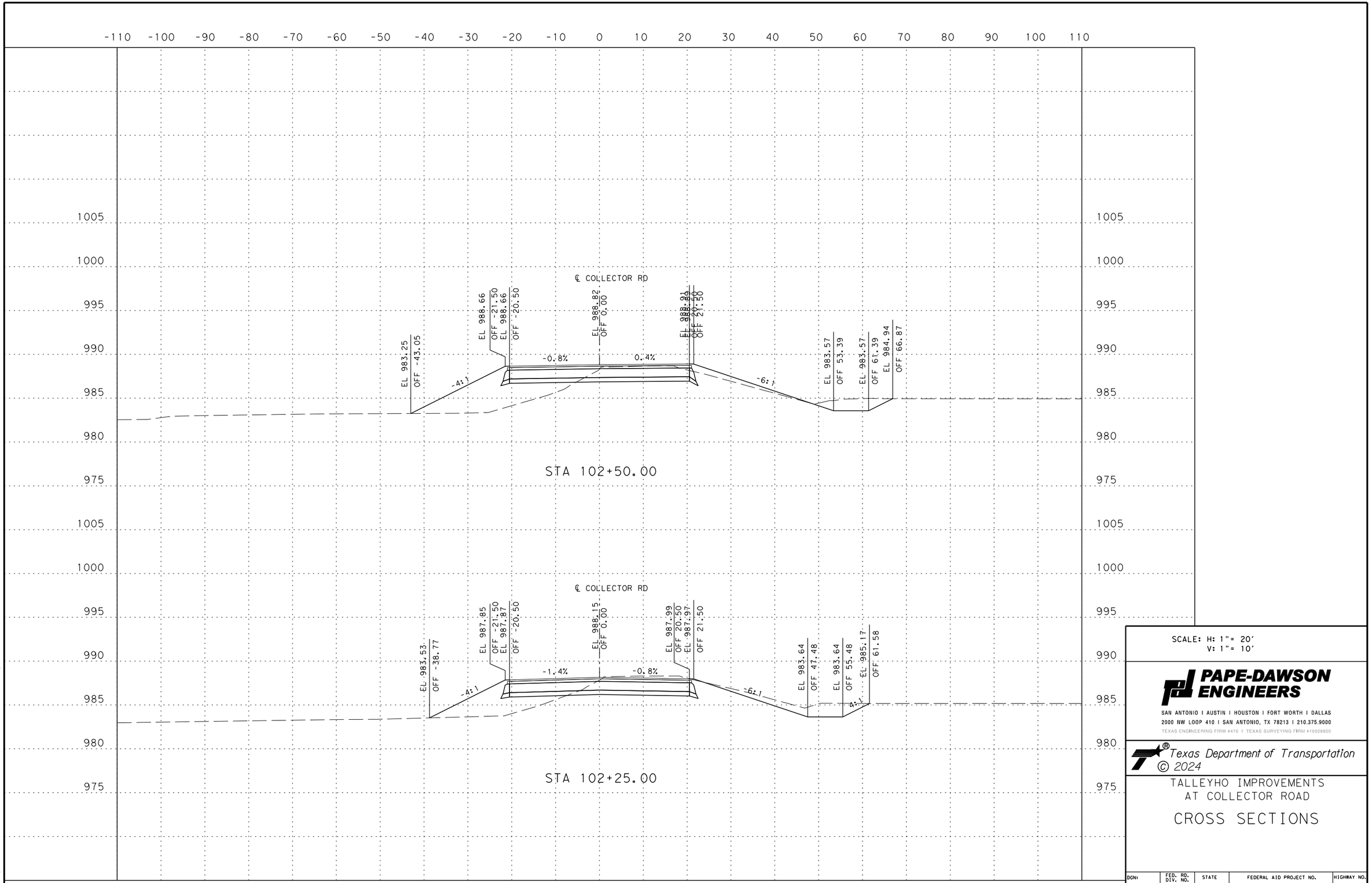
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS
AT COLLECTOR ROAD

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				165

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

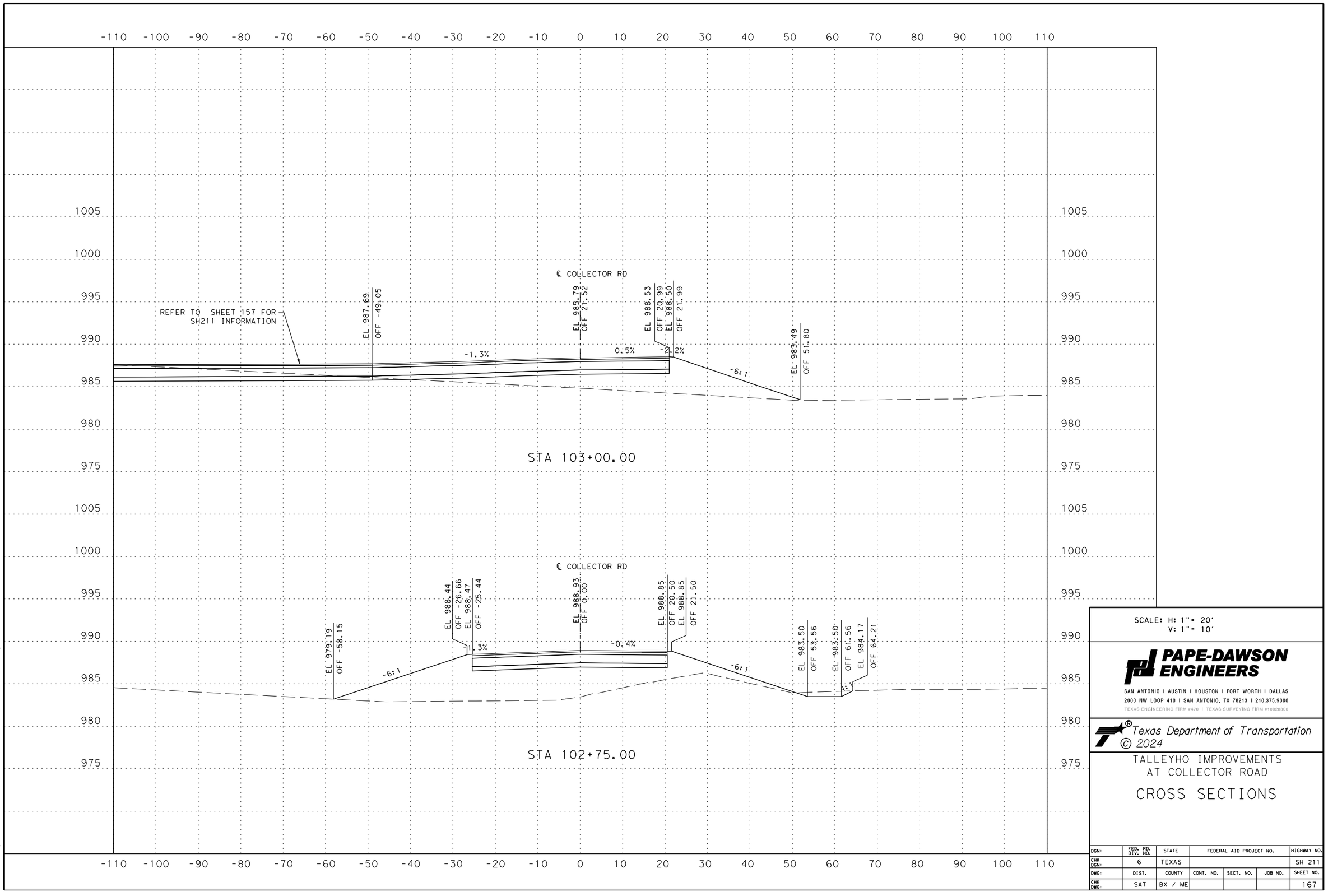
PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS
AT COLLECTOR ROAD

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				166

Plotted on: 1/22/2024



Design Filename: ...\Xsec\1228504_XSEC_SH211.dgn

SCALE: H: 1"= 20'
V: 1"= 10'

PAPE-DAWSON ENGINEERS
SAN ANTONIO | AUSTIN | HOUSTON | FORT WORTH | DALLAS
2000 NW LOOP 410 | SAN ANTONIO, TX 78213 | 210.375.9000
TEXAS ENGINEERING FIRM #470 | TEXAS SURVEYING FIRM #10028800

TALLEYHO IMPROVEMENTS
AT COLLECTOR ROAD

CROSS SECTIONS

DGN:	FED. RD. DIV. NO.	STATE	FEDERAL AID PROJECT NO.			HIGHWAY NO.
CHK DGN:	6	TEXAS				SH 211
DWG:	DIST.	COUNTY	CONT. NO.	SECT. NO.	JOB NO.	SHEET NO.
CHK DWG:	SAT	BX / ME				167