APPLEWHITE RD POSTED SPEED = 45 MPH
ROADWAY DESIGN SPEED = 45 MPH
ROADWAY CLASSIFICATION = ENHANCED SECONDARY ARTERIAL TYPE A
DISTURBED AREA =0.46 ACRES

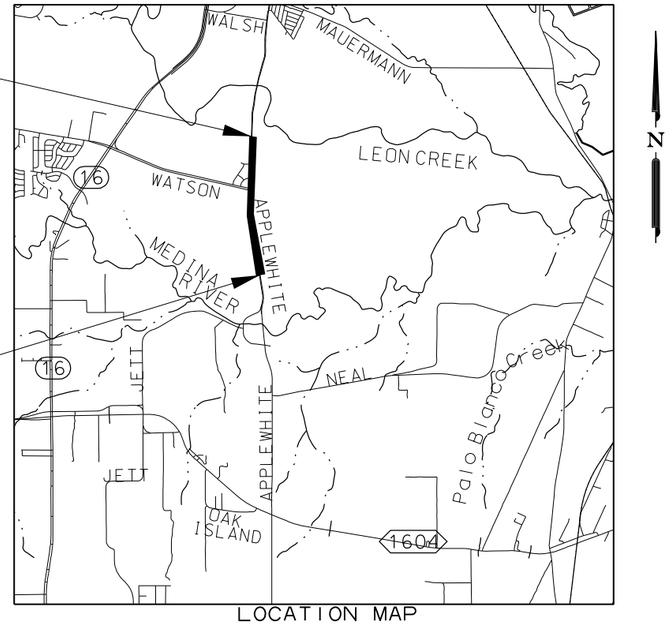
# CITY OF SAN ANTONIO

# PUBLIC WORKS DEPARTMENT

# TOYOTA SOUTHSIDE STREETS
# PROJECT NO. 23-04167

*END PROJECT*
*STA 184+00.00*

*BEGIN PROJECT*
*STA 108+00.00*




LOCATION MAP
NTS

*PLANS PREPARED BY:*


**PAPE-DAWSON**

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000
Texas Engineering Firm #470 I Texas Surveying Firm #10028800


STATE OF TEXAS
DAN THOMA
98622
LICENSED
PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

CITY OF SAN ANTONIO TEXAS

**PUBLIC WORKS**

*TDLR INSPECTION NOT REQUIRED*

THROUGH INNOVATION AND DEDICATION, WE BUILD AND MAINTAIN SAN ANTONIO'S INFRASTRUCTURE

| | | |
|---|---|---|
| | | GENERAL |
| 1 | | TITLE SHEET |
| 2 | | INDEX |
| 3 | | GENERAL NOTES |
| 4 | | SUPPLEMENTAL GENERAL NOTES |
| 5-6 | | HORIZONTAL AND VERTICAL CONTROL |
| 7-8 | | PROJECT LAYOUT |
| 9 | | EXISTING TYPICAL SECTIONS |
| 10 | | PROPOSED TYPICAL SECTIONS |
| 11 | | ESTIMATE AND QUANTITIES |
| 12-17 | | SUMMARY OF QUANTITIES |
| | | TCP |
| 18 | | TRAFFIC CONTROL PLAN NARRATIVE |
| 19-20 | | TRAFFIC CONTROL PLAN OVERALL LAYOUT |
| 21 | | TRAFFIC CONTROL PLAN PHASE 1 TYPICAL SECTIONS |
| 22 | | TRAFFIC CONTROL PLAN- PHASE 2 LAYOUT DETAIL |
| | | TCP STANDARDS |
| 23-34 | A | BC-21 (1-2) |
| 35 | A | TCP (2-4) - 18 |
| | | UTILITY |
| 36-46 | | UTILITY LAYOUT |
| | | ROADWAY |
| 47 | | HORIZONTAL ALIGNMENT DATA SHEET |
| 48-59 | | ROADWAY PLAN |
| 60 | | MISCELLANEOUS ROADWAY DETAILS |
| | | ROADWAY STANDARDS |
| 61 | A | MISCELLANEOUS CONSTRUCTION STANDARDS I (COSA) |
| 62 | A | NARROW MEDIAN (LESS THAN 4FT WIDE) DETAIL FOR RETROFIT ON EXISTING ROADWAY (COSA) |
| | | DRAINAGE |
| 63 | | DRAINAGE AREA MAP AND COMPUTATIONS |
| | | SIGNING & PAVEMENT MARKINGS |
| 64-73 | | PAVEMENT MARKINGS AND SIGNS |
| | | SIGNING & PAVEMENT MARKINGS STANDARDS |
| 74 | A | TYPICAL CROSSWALK DETAILS (COSA) |
| 75 | A | PAVEMENT MARKINGS WITH RAISED PAVEMENT MARKERS (COSA) |
| 76 | A | TURN LANE DETAILS 1 (COSA) |
| 77 | A | TURN LANE DETAILS 2 (COSA) |
| 78 | A | TWO-WAY LEFT-TURN LANE DETAILS 1 (COSA) |
| 79 | A | TWO-WAY LEFT-TURN LANE DETAILS 2 (COSA) |
| 80 | A | TURN LANE PAVEMENT MARKINGS (COSA) |
| 81 | A | GENERAL NOTES AND SIGN MOUNTING |
| 82 | A | D3 STREET NAME SIGN MOUNTING |
| 83 | A | BLANK SIGN DETAILS |
| | | TRAFFIC SIGNAL |
| 84 | | EXISTING CONDITIONS- APPLEWHITE ROAD AT FIRE STATION DRIVEWAY |
| 85 | | PROPOSED TRAFFIC SIGNAL LAYOUT-APPLEWHITE ROAD AT FIRE STATION DRIVEWAY |
| 86 | | PROPOSED CONDUIT AND CONDUCTOR SCHEDULE-APPLEWHITE ROAD AT FIRE STATION DRIVEWAY |
| 87 | | ELEVATION VIEWS- APPLEWHITE ROAD AT FIRE STATION DRIVEWAY |
| | | TRAFFIC SIGNAL STANDARDS |
| 88 | B | TS-FD-12 |
| 89-90 | B | SMA-80(1-2)-12 |
| 91 | B | TS-BP-20 |
| 92 | B | MA-C-12 |
| 93 | B | MA-D-12 |
| 94 | B | MA-DPD-20 |
| 95 | B | ED (1) - 25 |
| 96-99 | B | ED (3-6) - 25 |
| 100-103 | B | ED (8-11) - 25 |
| 104-105 | B | WZ (BTS-1-2) - 13 |
| 106 | B | MAST ARM MOUNTED SOLAR POWERED SCHOOL FLASHER ASSEMBLY |
| 107 | B | WIND VEOCITY AND ICE ZONES |
| | | ENVIRONMENTAL |
| 108-109 | | STORM WATER POLLUTION PREVENTION PLAN NARRATIVE |
| 110 | | EPIC |
| 111 | | STORM WATER POLLUTION GENERAL NOTES |
| 112-113 | | SW3P LAYOUT |
| | | ENVIRONMENTAL STANDARDS |
| 114 | A | TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 1 (COSA) |
| 115 | A | TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 2 (COSA) |

*THE STANDARD SHEETS SPECIFICALLY SHOWN HAVE BEEN SELECTED BY ME OR UNDER MY RESPOSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT*

A

STATE OF TEXAS
DAN THOMA
98622
LICENSED
PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

B

STATE OF TEXAS
JUSTIN W. CLARK
118715
LICENSED
PROFESSIONAL ENGINEER

JUSTIN W. CLARK, P.E. — 9/25/2025 DATE

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |


**PAPE-DAWSON**

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

*TOYOTA SOUTHSIDE STREETS*

*INDEX*

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 2 |


PRINTED ON: 9/25/2025 1:42:34 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S01-General\1332704_INDEX_B.dgn

## GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF SAN ANTONIO STANDARD SPECIFICATIONS FOR CONSTRUCTION JUNE 2008, OR LATEST.
2. NO EXTRA PAYMENT SHALL BE ALLOWED FOR WORK CALLED FOR ON THE PLANS, BUT NOT INCLUDED IN THE BID PROPOSAL. THIS INCIDENTAL WORK WILL BE REQUIRED AND SHALL BE INCLUDED IN THE PAY ITEM TO WHICH IT RELATES.
3. THE CONTRACTOR SHALL PROVIDE ACCESS FOR THE DELIVERY OF MAIL BY THE U.S. POSTAL SERVICE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING TO ITS ORIGINAL OR BETTER CONDITION ANY DAMAGE DONE TO EXISTING FENCES, CONCRETE ISLANDS, STREET PAVING, CURBS, SHRUBS, BUSHES OR DRIVEWAYS. (NO SEPARATE PAY ITEM).
5. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT ALL SIGNS AND BARRICADES ARE PROPERLY INSTALLED AND MAINTAINED. ALL LOCATIONS AND DISTANCES WILL BE DECIDED UPON IN THE FIELD BY THE CONTRACTOR, USING THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES". THE CITY'S CONSTRUCTION INSPECTOR AND TRAFFIC ENGINEERING REPRESENTATIVE WILL ONLY BE RESPONSIBLE TO INSPECT BARRICADES AND SIGNS. IF, IN THE OPINION OF THE TRAFFIC ENGINEERING REPRESENTATIVE AND THE CONSTRUCTION INSPECTOR, THE BARRICADES AND SIGNS DO NOT CONFORM TO ESTABLISHED STANDARDS OR ARE INCORRECTLY PLACED OR ARE INSUFFICIENT IN QUANTITY TO PROTECT THE GENERAL PUBLIC, THE CONSTRUCTION INSPECTOR SHALL HAVE THE OPTION TO STOP OPERATIONS UNTIL SUCH TIME AS THE CONDITIONS ARE CORRECTED.
6. IF THE NEED ARISES, ADDITIONAL BARRICADES AND DIRECTIONAL DEVICES MAY BE ORDERED BY THE TRAFFIC ENGINEERING REPRESENTATIVE AT THE CONTRACTOR'S EXPENSE.
7. DUE TO FEDERAL REGULATIONS TITLE 49, PART 192.171 C.P.S. MUST MAINTAIN ACCESS TO GAS VALVES AT ALL TIMES. THE CONTRACTOR MUST PROTECT AND WORK AROUND ANY GAS VALVES THAT ARE IN THE PROJECT AREA.
8. CONTRACTOR SHALL NOTIFY THE CITY INSPECTOR TWENTY FOUR (24) HOURS PRIOR TO BACKFILL OF ANY UTILITY TRENCHES TO SCHEDULE FOR DENSITY TEST AS REQUIRED.
9. CONTRACTOR SHALL PRESERVE ALL CONSTRUCTION STAKES, MARKS, ETC. IF ANY ARE DESTROYED OR REMOVED BY THE CONTRACTOR OR HIS EMPLOYEES, THEY SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.
10. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES PRIOR TO CONSTRUCTION TO DETERMINE THE LOCATION OF EXISTING UTILITIES. CONTRACTOR SHALL NOTIFY THE FOLLOWING AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO EXCAVATION OPERATION:

| | |
|---|---|
| SAN ANTONIO WATER SYSTEM (SAWS) | 233-2010 |
| BEXAR METROPOLITAN WATER DISTRICT (BEXAR MET) | 354-6538 / 357-5741 |
| COSA DRAINAGE | 206-8433 |
| COSA SIGNAL OPERATIONS | 207-7720 / 207-7765 |
| TEXAS STATE WIDE ONE CALL LOCATOR | 1-800-344-8377 |
| - CITY PUBLIC SERVICE ENERGY | |
| - TIME WARNER | |
| - AT&T | |
| - MCI | |

11. THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES INDICATED ON THE PLANS ARE TAKEN FROM AVAILABLE RECORDS AND ARE NOT GUARANTEED, BUT SHALL BE INVESTIGATED AND VERIFIED BY THE CONTRACTOR BEFORE STARTING WORK. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY DAMAGE TO AND FOR THE MAINTENANCE AND PROTECTION OF THE EXISTING UTILITIES EVEN IF THEY ARE NOT SHOWN ON THE PLANS. LOCATION AND DEPTH OF EXISTING UTILITIES SHOWN HERE ARE APPROXIMATE ONLY. ACTUAL LOCATIONS AND DEPTHS MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION AND HE SHALL BE RESPONSIBLE FOR PROTECTION OF SAME DURING CONSTRUCTION.
12. ALL WASTE MATERIAL SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE HIS SOLE REPONSIBILITY TO DISPOSE OF THIS MATERIAL OFF THE LIMITS OF THE PROJECT. NO WASTE MATERIAL SHALL BE PLACED IN EXISTING LOWS THAT WILL BLOCK OR ALTER FLOW LIMITS OF EXISTING ARTIFICIAL OR NATURAL DRAINAGE.
13. THE CONTRACTOR SHALL NOT PLACE ANY WASTE MATERIAL IN THE 100-YEAR FLOOD PLAIN WITHOUT FIRST OBTAINING AN APPROVED FLOOD PLAIN DEVELOPMENT PERMIT.
14. THE CONTRACTOR SHALL MAINTAIN ALL ADJOINING STREETS AND TRAVELED ROUTES FREE FROM SPILLED AND / OR TRACKED CONSTRUCTION MATERIALS AND / OR DEBRIS.
15. IF THE CONTRACTOR ENCOUNTERS ANY ARCHAEOLOGICAL DEPOSITS DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR MUST STOP EXCAVATION IMMEDIATELY, CONTACT THE CITY INSPECTOR, AND CALL THE CITY HISTORIC PRESERVATION OFFICE AT 207-7306 OR 207-3327 FOR AN ARCHAEOLOGICAL INVESTIGATION. THE CONTRACTOR CANNOT BEGIN EXCAVATION AGAIN WITHOUT WRITTEN PERMISSION FROM THE CITY.
    IF MORE THAN THREE (3) DAYS ARE REQUIRED FOR INVESTIGATION (NOT INCLUDING HOLIDAY AND WEEKENDS) AND IF THE CONTRACTOR IS UNABLE TO WORK IN OTHER AREAS, THEN THE CONTRACTOR WILL BE ALLOWED TO NEGOTIATE FOR ADDITIONAL CONSTRUCTION TIME UPON WRITTEN REQUEST WITHIN TEN (10) DAYS AFTER THE FIRST NOTICE TO THE CITY OF ARCHAEOLOGICAL INVESTIGATION FOR EACH EVENT.
    IF THE TIME REQUIRED FOR INVESTIGATION IS LESS THAN OR EQUAL TO THREE (3) DAYS FOR EACH EVENT, CONTRACT DURATION WILL NOT BE EXTENDED.
16. IF SUSPECTED CONTAMINATION IS ENCOUNTERED DURING CONSTRUCTION OPERATIONS, C.O.S.A. SHALL BE NOTIFIED IMMEDIATELY WHEN CONTAMINATED SOILS AND / OR GROUNDWATER ARE ENCOUNTERED AT LOCATIONS NOT IDENTIFIED IN THE PLANS. THE NOTIFICATION SHOULD INCLUDE THE STATION NUMBER, TYPE OF CONTAMINATED MEDIA, EVIDENCE OF CONTAMINATION AND MEASURES TAKEN TO CONTAIN THE CONTAMINATED MEDIA AND PREVENT PUBLIC ACCESS. THE CONTAMINATED SOIL AND / OR GROUNDWATER SHALL NOT BE REMOVED FROM THE LOCATION WITHOUT PRIOR C.O.S.A. APPROVAL.
    THE CONTRACTOR MUST STOP THE EXCAVATION IMMEDIATELY AND CONTACT THE C.O.S.A. INSPECTOR. THE CONTRACTOR CANNOT BEGIN EXCAVATION ACTIVITIES WITHOUT WRITTEN PERMISSION FROM THE CITY.
17. CONTRACTOR IS TO INCLUDE A MAILBOX POST BLOCKOUT FOR VACANT LOTS AND ALL RESIDENCES WHICH DO NOT HAVE MAILBOXES AT THE CURB. BLOCKOUTS ARE PROVIDED FOR FUTURE USE BY THE POST OFFICE.
18. CONTRACTOR SHALL NOT REMOVE OR ADJUST ANY VIA FACILITIES. THE CONTRACTOR MUST CONTACT VIA FOURTEEN DAYS PRIOR, FOR THE REMOVAL OF BENCHES, STOP POLES OR ANY OTHER VIA FACILITIES THAT MAY BE PRESENT. PLEASE PROVIDE THIRTY DAYS PRIOR NOTICE FOR SHELTER REMOVAL (TELEPHONE NOS: (210) 362-2155 OR (210) 362-2096). THE CONTRACTOR WILL BE LIABLE FOR ANY DAMAGES TO VIA FACILITIES NOT REMOVED BY VIA. THE CONTRACTOR IS REQUIRED TO REPLACE ALL FLATWORK REMOVED OR DAMAGED IN THE COURSE OF EXECUTING THE CONTRACT UNLESS OTHERWISE NOTED BY VIA. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROTECTING VIA FACILITIES IF ADJACENT TO WORK AREA.

## TREE PROTECTION AND PRESERVATION GENERAL NOTES

1. NO UTILITY OR STREET EXCAVATION WORK SHALL BEGIN IN AREAS WHERE TREE PRESERVATION AND TREATMENT MEASURES HAVE NOT BEEN COMPLETED AND APPROVED.
2. TREE PROTECTION FENCING SHALL BE REQUIRED. TREE PROTECTION FENCING SHALL BE INSTALLED, MAINTAINED AND REPAIRED BY THE CONTRACTOR DURING SITE CONSTRUCTION. DURING CONSTRUCTION ACTIVITY, AT LEAST A SIX-INCH LAYER OF COARSE MULCH SHALL BE PLACED AND MAINTAINED OVER THE ROOT PROTECTION ZONE (NO SEPARATE PAY ITEM).
3. THE CONTRACTOR SHALL AVOID CUTTING ROOTS LARGER THAN ONE INCH IN DIAMETER WHEN EXCAVATING NEAR EXISTING TREES. EXCAVATION IN THE VICINITY OF TREES SHALL PROCEED WITH CAUTION. THE CONTRACTOR SHALL CONTACT THE CITY INSPECTOR FOR GUIDANCE.
4. ROOTS WILL BE CUT WITH A ROCK SAW OR BY HAND, NOT BY AN EXCAVATOR OR OTHER ROAD CONSTRUCTION EQUIPMENT.
5. ALL CURB AND SIDEWALK WORK SHALL USE ALTERNATIVE CONSTRUCTION METHODS TO MINIMIZE EXTENSIVE ROOT DAMAGE TO TREES (REFER TO DETAILS).
6. EXPOSED ROOTS SHALL BE COVERED AT THE END OF THE DAY USING TECHNIQUES SUCH AS COVERING WITH SOIL, MULCH, OR WET BURLAP.
7. NO EQUIPMENT, VEHICLES OR MATERIALS SHALL OPERATE OR BE STORED WITHIN THE ROOT PROTECTION ZONE OF ANY TREE NEAR THE PROJECT. ROOT PROTECTION ZONE IS 1 FOOT OF RADIUS PER INCH OF TREE'S DIAMETER. A 10-INCH DIAMETER TREE WOULD HAVE A 10 FOOT RADIUS ROOT PROTECTION ZONE AROUND THE TREE. ROOTS OR BRANCHES IN CONFLICT WITH THE CONSTRUCTION SHALL BE CUT CLEANLY ACCORDING TO PROPER PRUNING METHODS. OAK WOUNDS SHALL BE PAINTED OVER WITHIN 30 MINUTES TO PREVENT OAK WILT.
8. SAPLINGS, SHRUBS OR BUSHES TO BE CLEARED FROM THE PROTECTED ROOT ZONE AREA OF A LARGE TREE SHALL BE REMOVED BY HAND AS DESIGNATED BY THE INSPECTOR.
9. NO WIRES, NAILS OR OTHER MATERIAL MAY BE ATTACHED TO PROTECTED TREES.
10. TREES, TREE LIMBS, BUSHES AND SHRUBS LOCATED IN THE CITY STREET OR ALLEY RIGHT-OF-WAY OR PERMANENT EASEMENTS WHICH INTERFERE WITH PROPOSED CONSTRUCTION ACTIVITIES SHALL BE PROPERLY PRUNED FOLLOWING THE ANSI A-300 STANDARDS FOR PRUNING. ALL TREE PRUNING SHALL BE COMPLETED BY A CITY OF SAN ANTONIO TREE MAINTENANCE LICENSED CONTRACTOR (ARTICLE 21-171, CITY CODE) ONLY AFTER APPROVAL FROM THE CAPITAL PROJECTS MANAGEMENT THROUGH THE INSPECTOR.
11. NO EXCESSIVE TREE TRIMMING WILL BE PERMITTED.
12. ALL DEBRIS GENERATED BY THE PRUNING AND TRIMMING OF THE TREES AND / OR BUSHES SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF PROPERLY (NO SEPARATE PAY ITEM).
13. TREES MUST BE MAINTAINED IN GOOD HEALTH THROUGHOUT THE CONSTRUCTION PROCESS. MAINTENANCE MAY INCLUDE, BUT NOT LIMITED TO: WATERING THE ROOT PROTECTION ZONE, WASHING FOLIAGE, FERTILIZATION, PRUNING, ADDITIONAL MULCH APPLICATIONS AND OTHER MAINTENANCE AS NEEDED ON THE PROJECT.
14. ANY TREE REMOVAL SHALL BE APPROVED BY THE CITY ARBORIST. (207-0278)
15. TREES WHICH ARE DAMAGED OR LOST DUE TO THE CONTRACTOR'S NEGLIGENCE DURING CONSTRUCTION SHALL BE MITIGATED TO THE CITY'S SATISFACTION.
16. TREE PLANTING FOR MITIGATION OR ENHANCEMENT: ALL PLANTED TREES SHALL BE MAINTAINED IN A HEALTHY CONDITION AT ALL TIMES. THIS INCLUDES IRRIGATION, FERTILIZING, PRUNING AND OTHER MAINTENANCE AS NEEDED ON THE PROJECT. TREES THAT DIE WITHIN TWELVE (12) MONTHS SHALL BE REPLACED WITH A TREE OF EQUAL SIZE AND SPECIES.

## ACCESSIBILITY REQUIREMENTS

1. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS AT ALL TIMES TO LOCAL RESIDENCES AND BUSINESSES.
2. WHEN THE WORK REQUIRES THE EXCAVATION OF THE STREET AND THE REMOVAL OF THE EXISTING DRIVEWAY APPROACHES AND SIDEWALKS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY ALL-WEATHER ACCESS TO THE BUSINESSES AND RESIDENCES. THE TEMPORARY DRIVEWAY APPROACHES SHALL BE CONSTRUCTED WITH FLEXIBLE BASE OR GRAVEL MATERIAL AT NO SEPARATE COST TO THE CITY.
3. PRIOR TO INITIATING THE CONSTRUCTION OF NEW DRIVEWAY APPROACHES, THE CONTRACTOR SHALL GIVE ADVANCE WARNING IN PERSON, OR IN WRITING, OF AT LEAST 48 HOURS TO EACH RESIDENCE THAT WILL BE IMMEDIATELY AFFECTED, SO THAT ALTERNATE PLANS MAY BE MADE BY THE RESIDENTS.
4. FOR BUSINESSES WITH MORE THAN ONE DRIVEWAY, AT LEAST ONE DRIVEWAY SHALL REMAIN OPEN WHILE THE OTHER NEW DRIVEWAY APPROACHES ARE CONSTRUCTED. FOR BUSINESSES WITH ONLY ONE DRIVEWAY, THE NEW DRIVEWAY APPROACH SHALL BE CONSTRUCTED IN HALF WIDTHS, UNLESS A TEMPORARY ASPHALT DRIVEWAY IS FIRST INSTALLED AT NO SEPARATE COST TO THE CITY.

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |

PAPE-DAWSON
2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000
Texas Engineering Firm #470 | Texas Surveying Firm #10028800

CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

*TOYOTA SOUTHSIDE STREETS*

# *CITY OF SAN ANTONIO GENERAL NOTES*

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 3 |

THE FOLLOWING CHANGES ARE MADE TO THE CITY OF SAN ANTONIO'S GENERAL NOTES:

1. *CONSTRUCTION DEMOLITION DEBRIS: IT IS THE CITY OF SAN ANTONIO'S PREFERENCE THAT CONSTRUCTION DEMOLITION DEBRIS BE RECYCLED OR REUSED TO THE FULLEST EXTENT POSSIBLE. CONSTRUCTION DEMOLITION DEBRIS INCLUDES, BUT IS NOT LIMITED TO, CONCRETE, ASPHALT, FLEX BASE MATERIAL, GRAVEL, AND SOIL. IT IS ALSO PREFERRED THAT VEGETATION REMOVED FROM THE LIMITS OF THE PROJECT BE TAKEN TO A FACILITY TO BE CONVERTED INTO MULCH OR COMPOST.*
2. *IT IS THE CITY OF SAN ANTONIO'S PREFERENCE THAT EXCAVATED SOILS FROM THE PROJECT BE REUSED WITHIN THE PROJECT TO THE FULLEST EXTENT POSSIBLE AS LONG AS THE SOIL IS WITHIN THE PARAMETERS OF THE SPECIFICATIONS.*
3. *IT IS THE CITY OF SAN ANTONIO'S PREFERENCE THAT EXISTING BASE MATERIAL BE REUSED WITHIN THE PROJECT LIMITS AS LONG AS IT IS WITHIN THE PARAMETERS OF THE SPECIFICATIONS.*
4. *CONTRACTOR TO USE WARM MIX ASPHALT IN PLACE OF HOT MIX ASPHALT.*
5. *CONTRACTOR TO USE LOW-CARBON BLENDED CEMENT, TYPE 1L PER TXDOT ITEM 421 (2024 SPEC BOOK) FOR ALL ELEMENTS.*
6. *CONTRACTOR TO USE 0% RECLAIMED ASPHALT PAVEMENT (RAP), 0% RAS, AND PG 76-22, SAC A IN THE TY D SURFACE COURSE LAYER PER SPECIFICATIONS.*
7. *CONTRACTOR TO USE MAX 20% RECLAIMED ASPHALT PAVEMENT (RAP), 0% RAS, AND PG 64-22 IN THE TY B BASE COURSE LAYER PER SPECIFICATIONS.*
8. *CONTRACTOR IS TO PROVIDE AN ENVIRONMENTAL PRODUCT DECLARATION FOR EACH MATERIAL USED ON THIS PROJECT WHEN AVAILABLE.THE DECLARATION IS TO BE INCLUDED IN THE MATERIAL SUBMITTAL TO BE REVIEWED BY THE ENGINEER. PAYMENT IS SUBSIDIARY TO THE PAY ITEM IN WHICH IT RELATES TO. NO SEPARATE PAY ITEM.*
9. *PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN ALL REQUIRED STORM WATER PERMITS, FEES, AND APPROVALS. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PERMITS REQUIRED FOR CONSTRUCTION IN DRAINAGE EASEMENTS, RIGHTS-OF-WAY, AND FLOODPLAINS.*
10. *THE CONTRACTOR SHALL NOTIFY STORM WATER ENGINEERING AT LEAST 24 HOURS PRIOR TO THE INSTALLATION OF ANY DRAINAGE FACILITY WITHIN A DRAINAGE EASEMENT OR STREET RIGHT-OF-WAY NOT INDICATED ON THE CONSTRUCTION PLANS.*
11. *THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING DRAINAGE FACILITIES FROM DAMAGE. ANY DAMAGE TO EXISTING DRAINAGE SYSTEMS, WHETHER OR NOT SHOWN ON THE PLANS, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPAIR AT HIS EXPENSE. THE CONTRACTOR SHALL NOTIFY STORM WATER ENGINEERING AT 210-206-8433 AS SOON AS CONFLICTS WITH UTILITIES ARE ENCOUNTERED OR ANY DRAINAGE SYSTEM IS DAMAGED DURING CONSTRUCTION.*
12. *CONSTRUCTION SPOILS WILL NOT BE ALLOWED TO BE DEPOSITED ANYWHERE WITHIN A DRAINAGE EASEMENT, RIGHT-OF-WAY OR FLOODPLAIN WITHIN THE LIMITS OF THE PROJECT AND SHALL BE DISPOSED OFFSITE IN COMPLIANCE WITH CURRENT APPLICABLE REGULATIONS.*
13. *NO STRUCTURE, FENCES, WALLS, LANDSCAPING, OR OTHER OBSTRUCTIONS THAT IMPEDE DRAINAGE SHALL BE PLACED WITHIN THE LIMITS OF THE DRAINAGE EASEMENTS SHOWN ON THE CONSTRUCTION DOCUMENTS.*
14. *UPON COMPLETION OF TRENCHING, THE AREA WILL BE BACKFILLED AND COMPACTED TO ITS ORIGINAL CONDITION. TRENCHES/BORE PITS TO BE OPEN AND UNATTENDED LONGER THAN 24 HOURS SHALL BE PROTECTED TO WITHSTAND ALL HYDRODYNAMIC AND HYDROSTATIC FORCES AND PREVENT DOWNSTREAM IMPACTS. TRENCHES/BORE PITS TO BE OPEN LONGER THAN 30 DAYS AFTER STARTING EXCAVATION SHALL BE BACKFILLED WITH A SEMI-PERMANENT REPAIR BACKFILL.*

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |


**PAPE-DAWSON**

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800

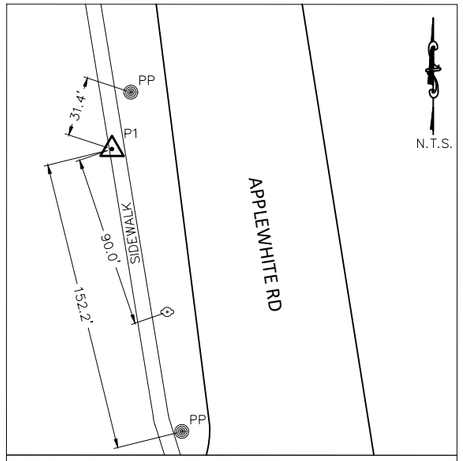

CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

*TOYOTA SOUTHSIDE STREETS*

# *SUPPLEMENTAL GENERAL NOTES*

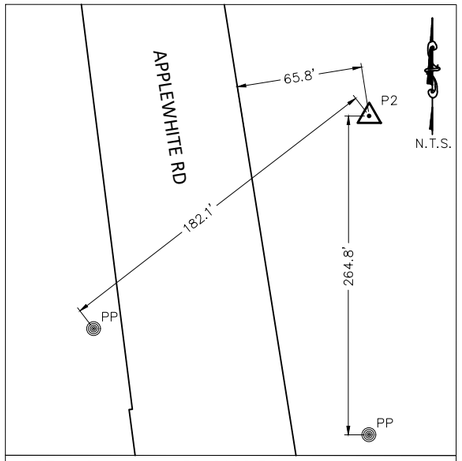
| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 4 |

## P1



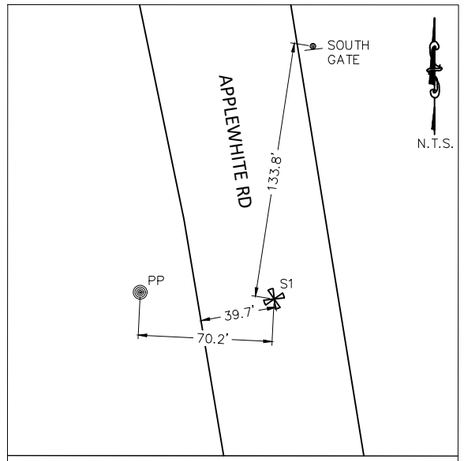

NORTHING – 13645045.73
EASTING – 2112067.40
ELELVATION – 582.53'
DESCRIPTION – SET 5/8" X 36" REBAR WITH A RED PLASTIC CAP STAMPED "PCI CONTROL", ON THE WEST SIDE OF APPLEWHITE RD; APPROX. 1,830 FEET SOUTH OF THE INTERSECTION OF APPLEWHITE ROAD AND LONE STAR PASS (MAIN GATE).

## P2



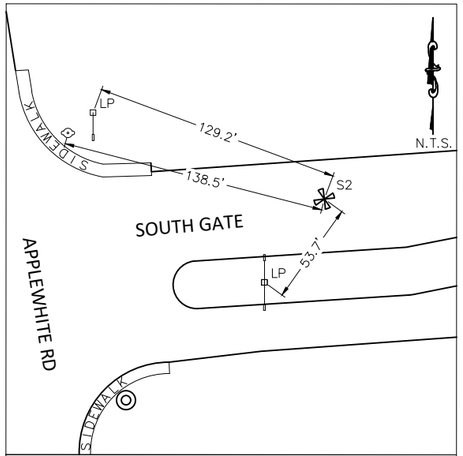

NORTHING – 13642908.52
EASTING – 2112586.34
ELELVATION – 570.31'
DESCRIPTION – SET 5/8" X 36" REBAR WITH A RED PLASTIC CAP STAMPED "PCI CONTROL", ON THE EAST RIGHT SIDE OF APPLEWHITE RD; APPROX. 460 FEET NORTH OF THE INTERSECTION OF APPLEWHITE ROAD AND SOUTH GATE ROAD.

## S1



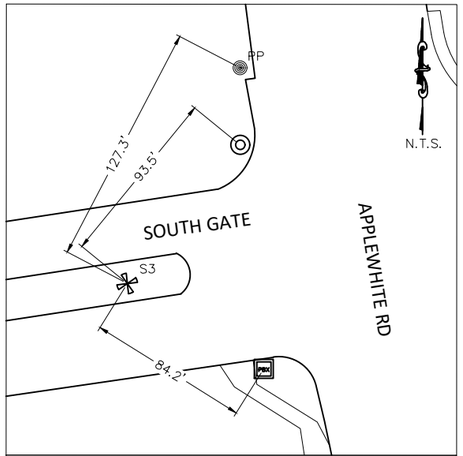

NORTHING – 13642090.73
EASTING – 2112616.94
ELELVATION – 564.06'
DESCRIPTION – SET MAG NAIL WITH METAL WASHER, IN THE MIDDLE TURNING LANE OF APPLEWHITE ROAD; APPROX. 330 FEET SOUTH OF THE INTERSECTION OF APPLEWHITE ROAD AND SOUTH GATE ROAD.

## S2



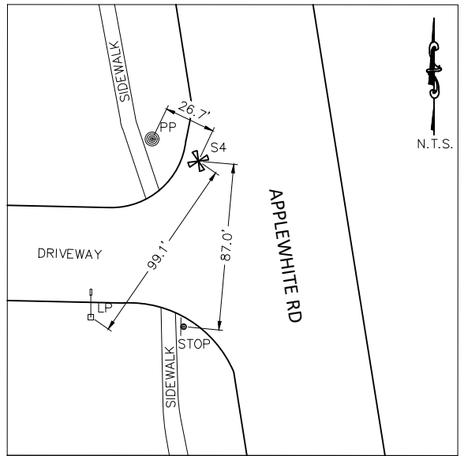

NORTHING – 13642469.41
EASTING – 2112740.55
ELELVATION – 563.99'
DESCRIPTION – SET MAG NAIL WITH METAL WASHER, IN THE NON-ACCESS LANE OF SOUTH GATE; APPROX. 180 FEET EAST OF THE INTERSECTION OF APPLEWHITE ROAD AND SOUTH GATE ROAD.

## S3




NORTHING – 13642394.72
EASTING – 2112427.05
ELELVATION – 567.30'
DESCRIPTION – SET PIN WITH A RED PLASTIC CAP STAMPED "PCI CONTROL", IN GRASS ISLAND BETWEEN SOUTH GATE LANES; APPROX. 140 FEET WEST OF THE CENTERLINE OF THE INTERSECTION OF APPLEWHITE ROAD AND SOUTH GATE ROAD.

## S4




NORTHING – 13643839.37
EASTING – 2112298.18
ELELVATION – 574.45'
DESCRIPTION – SET MAG NAIL WITH METAL WASHER, IN THE RETURN OF A CONCRETE DRIVEWAY ON THE WEST SIDE OF APPLEWHITE ROAD; APPROX. 1,450 FEET NORTH FROM THE INTERSECTION OF APPLEWHITE ROAD AND SOUTH GATE ROAD.

LEGEND

- ROAD PAVE EDGE
- CONCRETE SIDEWALK
- P1 CONTROL POINT
- TRAFFIC SIGNAL POLE
- MAG NAIL W/WASHER
- POWER BOX
- PP POWER POLE
- TRAFFIC SIGN
- FIRE HYDRANT
- LP LIGHT POLE

**NOTES**

THIS DOCUMENT WAS PREPARED FROM A SURVEY MADE UPON THE GROUND BY EMPLOYEES OF POZNECKI CAMARILLO AND THE ASSOCIATED FIELD WORK WAS COMPLETED IN APRIL 2025

THE BEARINGS SHOWN HEREIN WERE ESTABLISHED AND BASED UPON NAD 83, TEXAS STATE PLANE – SOUTH CENTRAL ZONE AND WERE DETERMINED FROM GPS OBSERVATIONS AT THE TIME OF THIS SURVEY.

A SURFACE ADJUSTMENT FACTOR OF 1.00017 WAS UTILIZED FOR THIS PROJECT. ALL COORDINATES AND DISTANCES SHOWN HEREON ARE SURFACE VALUES AND ARE IN U.S. SURVEY FEET.

ELEVATIONS ARE BASED UPON NAVD 88, GEOID MODEL 18. THE INITIAL ELEVATION OF CONTROL POINT P1 WAS DETERMINED FROM MULTIPLE GPS OBSERVATIONS AND UTILIZED AS THE BASIS OF THE ELEVATION DATUM FOR THIS PROJECT. DIFFERENTIAL LEVELING WAS UTILIZED TO ESTABLISH THE ELEVATION OF P2. THE ELEVATION OF CONTROL POINTS S1–S10 WAS ESTABLISHED BY AVERAGING MULTIPLE OBSERVATIONS ALONG WITH CHECKING INTO AFOREMENTIONED POINTS P1 AND P2.

STATE OF TEXAS
REGISTERED
JEFFREY SCOTT HALL
6907
PROFESSIONAL
LAND SURVEYOR

06/11/25

NOT TO SCALE

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


POZNECKI CAMARILLO
4401 NORTHWEST LOOP 410, SUITE 108
SAN ANTONIO, TEXAS, 78229
(210) 349-3273 (PH)
TBPE FIRM REGISTRATION #F-483 / TBPLS FIRM REGISTRATION #100423-00
(210) 349-4395 (FAX) http://www.pozcam.com/


CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

*TOYOTA SOUTHSIDE STREETS*

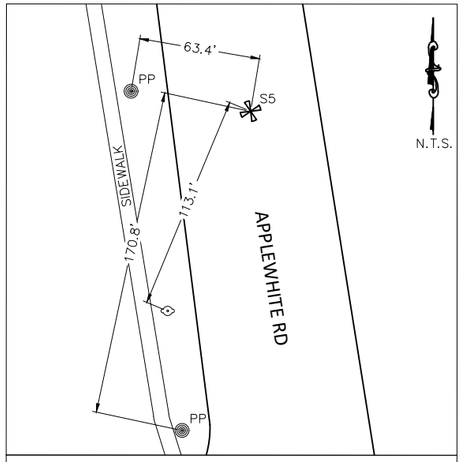
# *SECONDARY HORIZONTAL AND VERTICAL CONTROL*

*SHEET1 OF 2*

| | | | |
|---|---|---|---|
| 95% SUBMITTAL | PROJECT NO.: 23028-S02 | | DATE: 06/04/2025 |
| DRWN. BY: AA | DSGN. BY: AA | CHKD. BY: JSH | SHEET NO.: 5 |

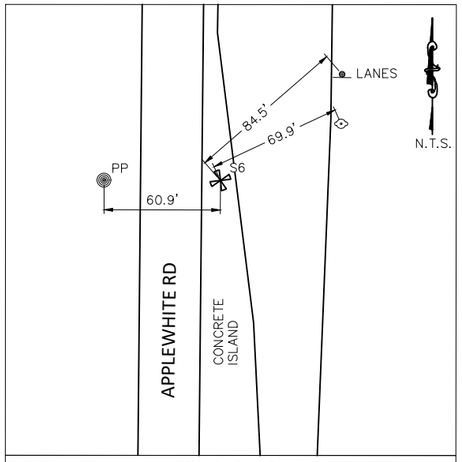
PLOT SCALE:$SCALE$ DGN MODEL: $$MODEL$$
PRINTED ON:$DATE$ PRINTED BY: $USER$
FILENAME: $FILE$ $TIME$

## S5



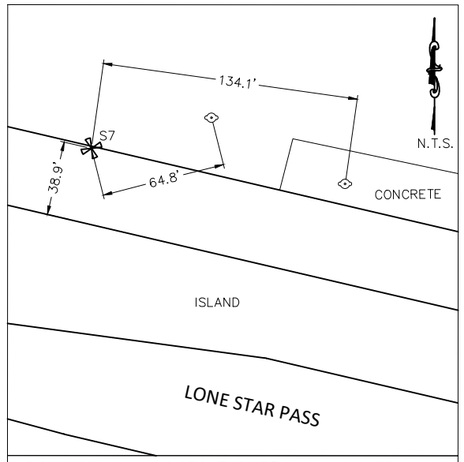

NORTHING – 13645065.03
EASTING – 2112139.79
ELEVATION – 581.09'
DESCRIPTION – SET MAG NAIL WITH METAL WASHER, IN THE MIDDLE TURNING LANE OF APPLEWHITE ROAD; APPROX. 1,875 FEET SOUTH OF THE INTERSECTION OF APPLEWHITE ROAD AND LONE STAR PASS (MAIN GATE).

## S6



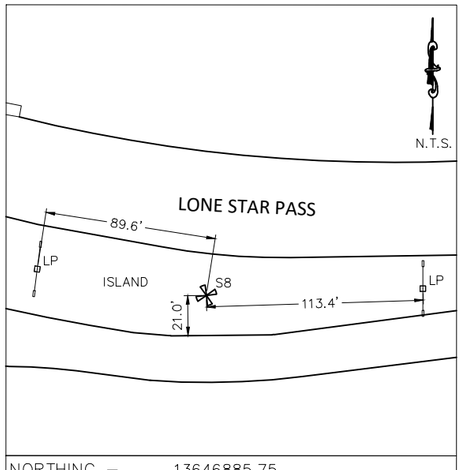

NORTHING – 13646494.10
EASTING – 2112074.67
ELEVATION – 588.75'
DESCRIPTION – SET MAG NAIL WITH METAL WASHER, IN THE CONCRETE ISLAND OF APPLEWHITE ROAD; APPROX. 700 FEET SOUTH OF THE INTERSECTION OF APPLEWHITE ROAD AND LONE STAR PASS (MAIN GATE).

## S7



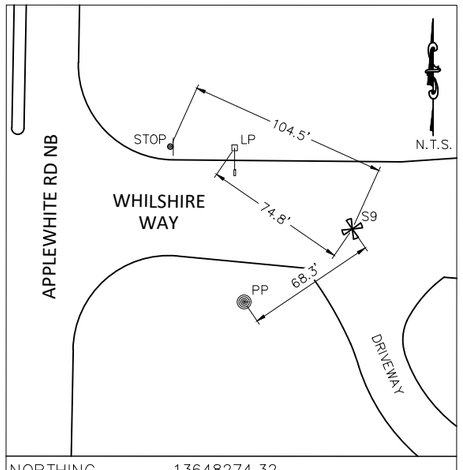

NORTHING – 13647101.55
EASTING – 2111713.06
ELEVATION – 586.97'
DESCRIPTION – SET MAG NAIL WITH METAL WASHER, ON THE NORTH SIDE OF LONE STAR PASS (MAIN GATE); APPROX. 400 FEET WEST FROM THE INTERSECTION OF APPLEWHITE ROAD AND LONE STAR PASS (MAIN GATE).

## S8



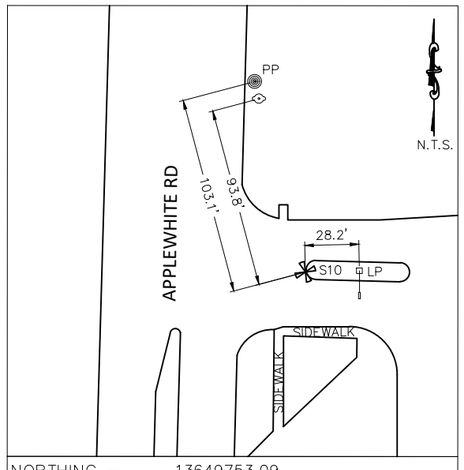

NORTHING – 13646885.75
EASTING – 2112340.49
ELEVATION – 588.06'
DESCRIPTION – SET PIN WITH A RED PLASTIC CAP STAMPED "PCI CONTROL", IN GRASS ISLAND OF LONE STAR PASS (MAIN GATE); APPROX. 260 FEET EAST OF THE INTERSECTION OF APPLEWHITE ROAD AND LONE STAR PASS (MAIN GATE).

## S9




NORTHING – 13648274.32
EASTING – 2112283.22
ELEVATION – 563.82'
DESCRIPTION – SET MAG NAIL WITH METAL WASHER, IN THE MIDDLE NON-ACCESS LANE OF WILSHIRE WAY (NORTH GATE); APPROX. 1,350 FEET SOUTH OF THE INTERSECTION OF APPLEWHITE ROAD AND LONE STAR PASS (MAIN GATE).

## S10




NORTHING – 13649753.09
EASTING – 2112206.25
ELEVATION – 550.26'
DESCRIPTION – SET MAG NAIL WITH METAL WASHER, IN FRONT OF THE ISLAND; APPROX. 1,500 FEET NORTH OF THE INTERSECTION OF APPLEWHITE ROAD AND WILSHIRE WAY (NORTH GATE).

LEGEND

- ROAD PAVE EDGE
- CONCRETE SIDEWALK
- P1 CONTROL POINT
- TRAFFIC SIGNAL POLE
- MAG NAIL W/WASHER
- POWER BOX
- PP POWER POLE
- TRAFFIC SIGN
- FIRE HYDRANT
- LP LIGHT POLE

**NOTES**

THIS DOCUMENT WAS PREPARED FROM A SURVEY MADE UPON THE GROUND BY EMPLOYEES OF POZNECKI CAMARILLO AND THE ASSOCIATED FIELD WORK WAS COMPLETED IN APRIL 2025

THE BEARINGS SHOWN HEREIN WERE ESTABLISHED AND BASED UPON NAD 83, TEXAS STATE PLANE – SOUTH CENTRAL ZONE AND WERE DETERMINED FROM GPS OBSERVATIONS AT THE TIME OF THIS SURVEY.

A SURFACE ADJUSTMENT FACTOR OF 1.00017 WAS UTILIZED FOR THIS PROJECT. ALL COORDINATES AND DISTANCES SHOWN HEREON ARE SURFACE VALUES AND ARE IN U.S. SURVEY FEET.

ELEVATIONS ARE BASED UPON NAVD 88, GEOID MODEL 18. THE INITIAL ELEVATION OF CONTROL POINT P1 WAS DETERMINED FROM MULTIPLE GPS OBSERVATIONS AND UTILIZED AS THE BASIS OF THE ELEVATION DATUM FOR THIS PROJECT. DIFFERENTIAL LEVELING WAS UTILIZED TO ESTABLISH THE ELEVATION OF P2. THE ELEVATION OF CONTROL POINTS S1–S10 WAS ESTABLISHED BY AVERAGING MULTIPLE OBSERVATIONS ALONG WITH CHECKING INTO AFOREMENTIONED POINTS P1 AND P2.

STATE OF TEXAS REGISTERED JEFFREY SCOTT HALL 6907 PROFESSIONAL LAND SURVEYOR

06/11/25

NOT TO SCALE

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


POZNECKI CAMARILLO
4401 NORTHWEST LOOP 410, SUITE 108
SAN ANTONIO, TEXAS, 78229
(210) 349-3273 (PH)
TBPE FIRM REGISTRATION #F-483 / TBPLS FIRM REGISTRATION #100423-00
(210) 349-4395 (FAX) http://www.pozcam.com/


CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

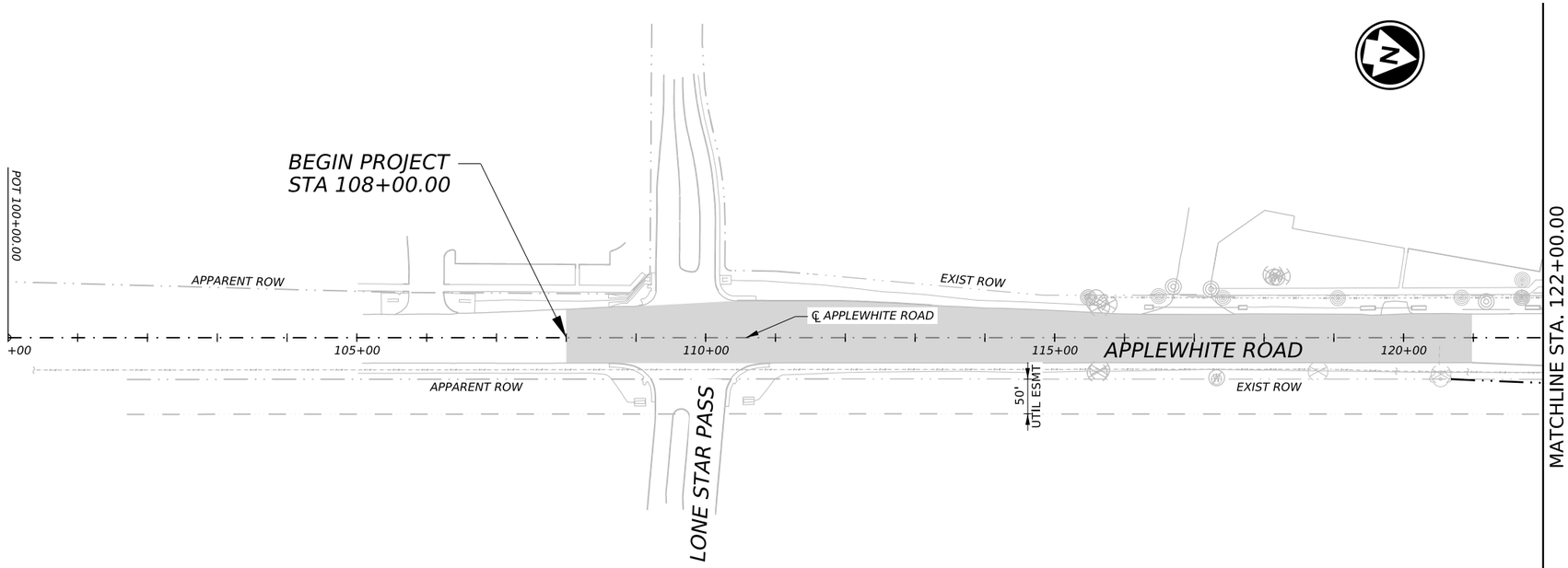
*TOYOTA SOUTHSIDE STREETS*

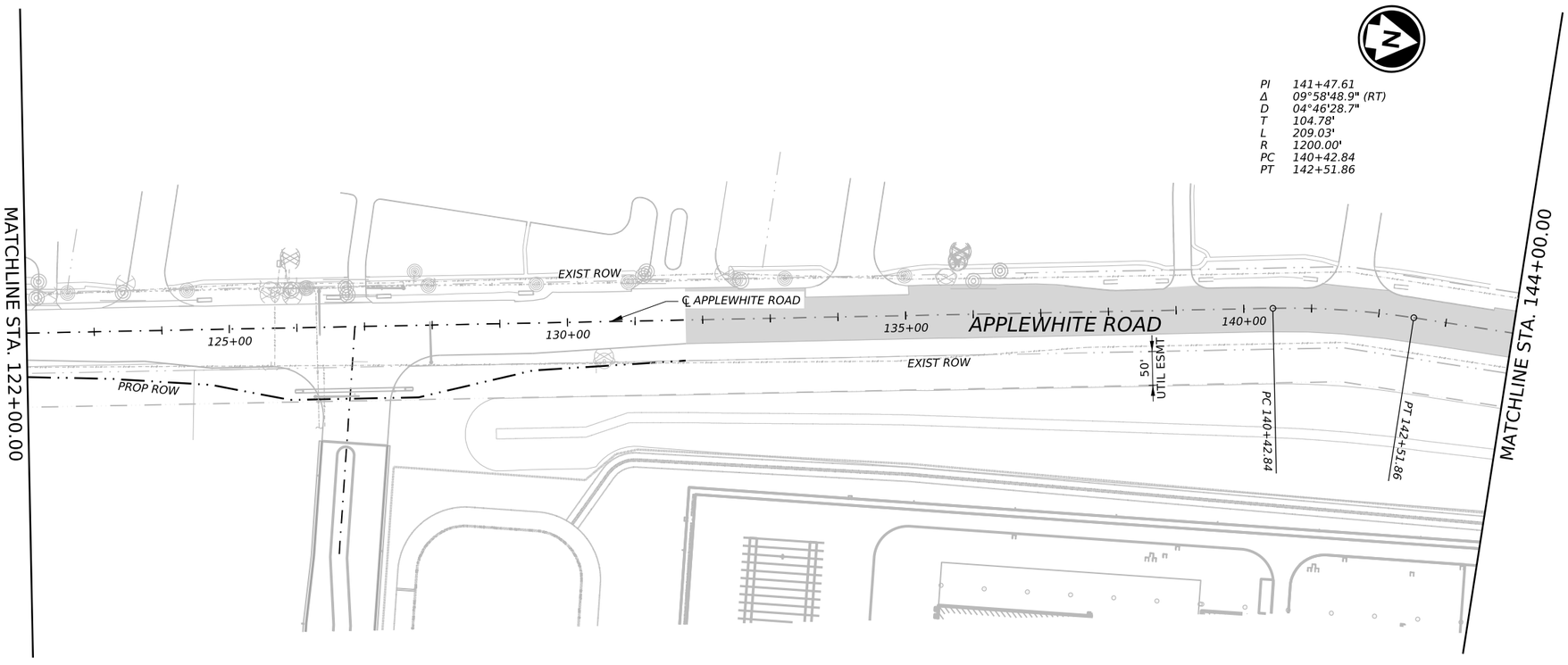
*SECONDARY HORIZONTAL AND VERTICAL CONTROL*

*SHEET 2 OF 2*

| | | | |
|---|---|---|---|
| 95% SUBMITTAL | PROJECT NO.: 23028-S02 | | DATE: 06/04/2025 |
| DRWN. BY: AA | DSGN. BY: AA | CHKD. BY: JSH | SHEET NO.: 6 |

PLOT SCALE:$SCALE$ DGN MODEL: $$MODEL$$
PRINTED ON: $DATE$ PRINTED BY: $USER$
FILENAME: $FILE$ $TIME$




## LEGEND

- EXIST ROW
- PROP ROW
- MILL AND INLAY
- PROP PAVEMENT
- MEDIAN REMOVAL
- BASE REPAIR
- EXIST CONC PAVEMEMENT TO REMAIN

## NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE INTERSECTION LAYOUT SHEETS FOR INTERSECTION DETAILS.
3. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
4. EXISTING FEATURES ARE SHOWN SCREENED BACK.

DESIGN

STATE OF TEXAS · THOMAS A HENZ · 142980 · LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS · DAN THOMA · 98622 · LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 100 200 300

SCALE: 1"= 200'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

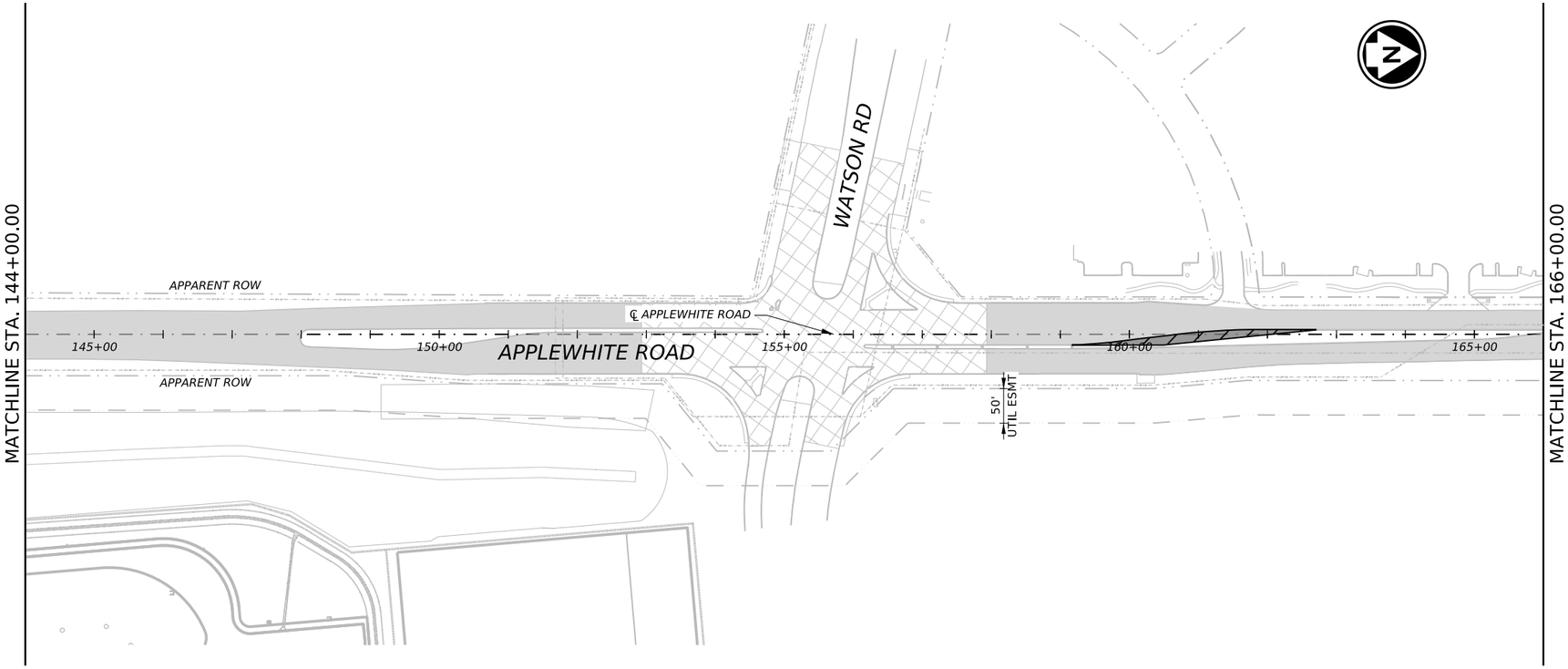
TOYOTA SOUTHSIDE STREETS

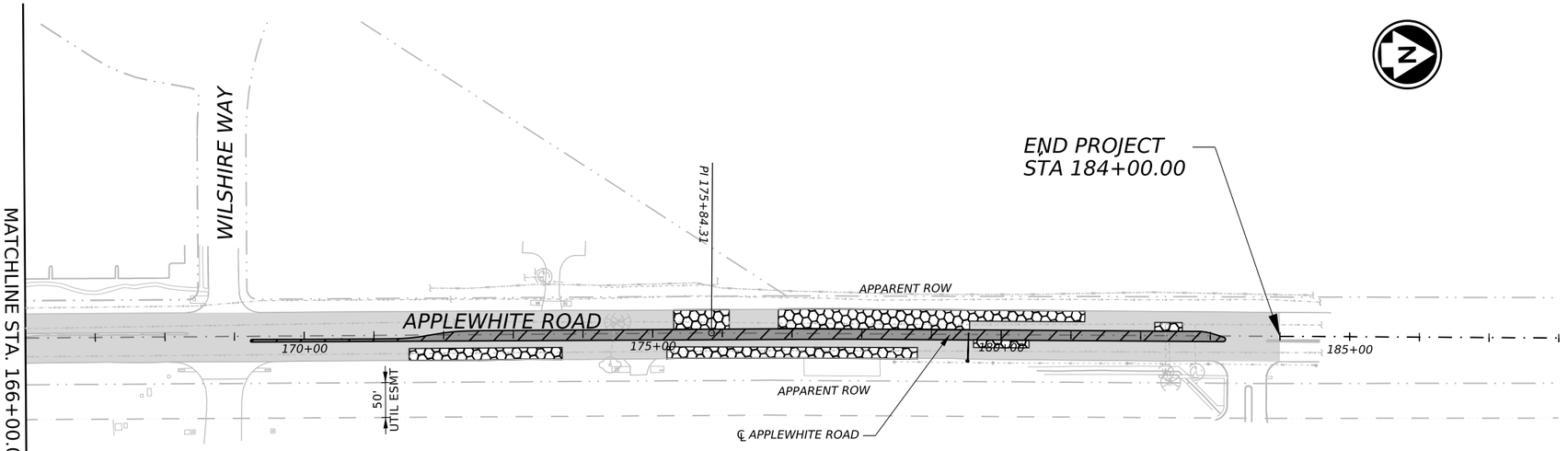
# PROJECT LAYOUT

SHEET 1 OF 2

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 7 |

PRINTED ON: 9/25/2025 1:42:55 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S01-General\1332704_PROJ_LAYOUT_01_B.dgn




## LEGEND

- EXIST ROW
- PROP ROW
- MILL AND INLAY
- PROP PAVEMENT
- MEDIAN REMOVAL
- BASE REPAIR
- EXIST CONC PAVEMEMENT TO REMAIN

## NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE INTERSECTION LAYOUT SHEETS FOR INTERSECTION DETAILS.
3. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
4. EXISTING FEATURES ARE SHOWN SCREENED BACK.

DESIGN

STATE OF TEXAS
THOMAS A HENZ
142980
LICENSED
PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS
DAN THOMA
98622
LICENSED
PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 100 200 300

SCALE: 1"= 200'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON
2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000
Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

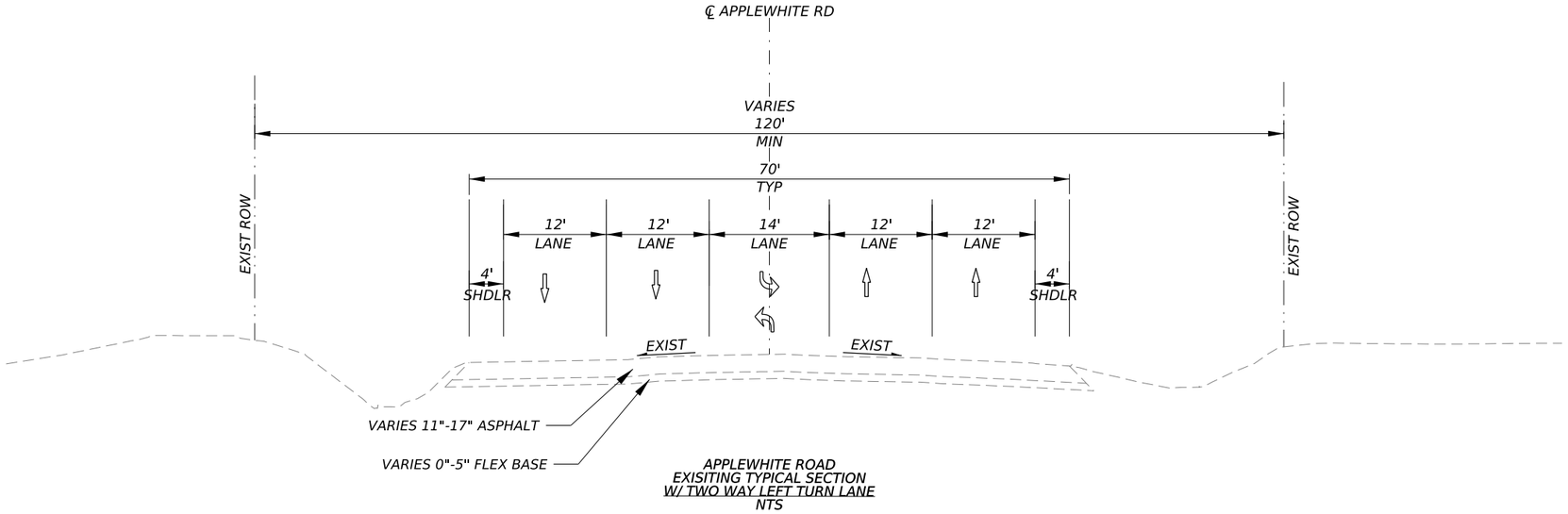
TOYOTA SOUTHSIDE STREETS

# PROJECT LAYOUT

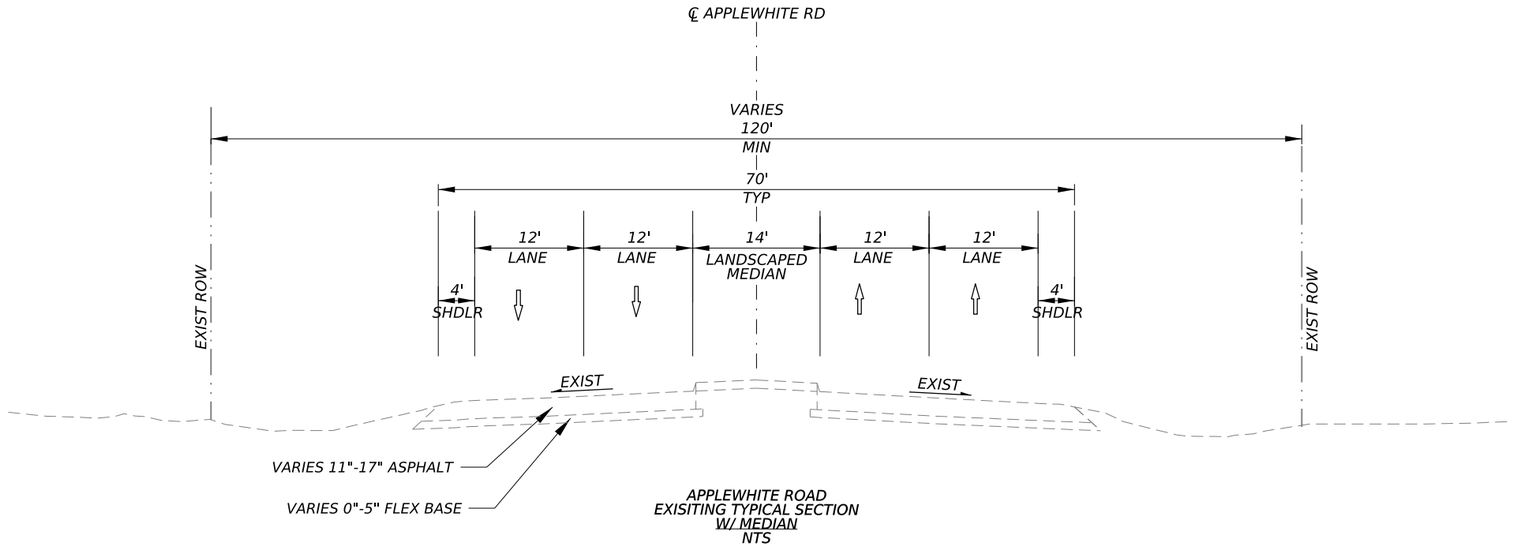
SHEET 2 OF 2

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 8 |


PRINTED ON: 9/25/2025 1:42:58 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S01-General\1332704_PROJ_LAYOUT_02_B.dgn




APPLEWHITE ROAD
EXISITING TYPICAL SECTION
W/ TWO WAY LEFT TURN LANE
NTS




APPLEWHITE ROAD
EXISITING TYPICAL SECTION
W/ MEDIAN
NTS

DESIGN

STATE OF TEXAS
THOMAS A HENZ
142980
LICENSED
PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS
DAN THOMA
98622
LICENSED
PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON
2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000
Texas Engineering Firm #470 | Texas Surveying Firm #10028800

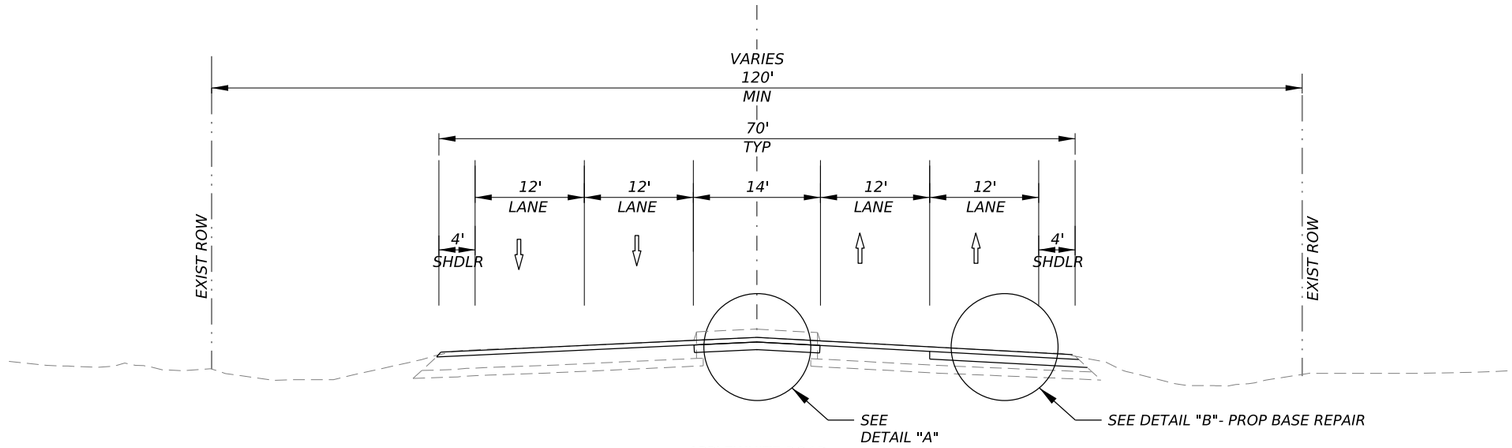

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TOYOTA SOUTHSIDE STREETS

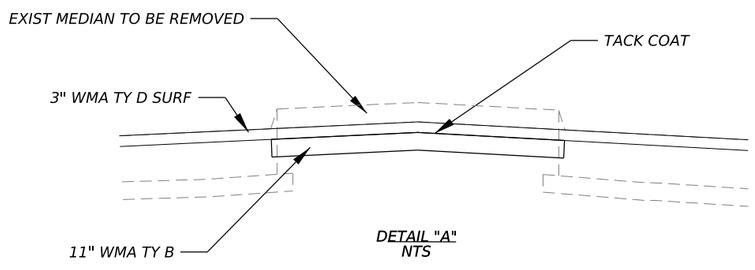
# EXISTING TYPICAL SECTIONS

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 9 |

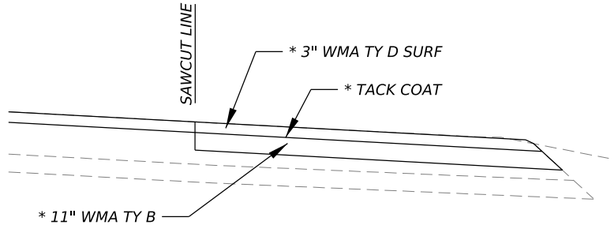
PRINTED ON: 9/25/2025 1:43:01 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S01-General\1332704_EX_TYP_B.dgn




APPLEWHITE ROAD
PROPOSED TYPICAL SECTION
MEDIAN REMOVAL & BASE REPAIRS
NTS
SEE PLAN SHEETS FOR LOCATIONS




DETAIL "A"
NTS




DETAIL "B"- PROP BASE REPAIR
NTS
* SUBSIDIARY TO ITEM 230.1
SEE ROADWAY PLAN SHEETS
FOR APPROX. LIMITS

NOTE:
EXACT LIMITS OF BASE REPAIR TO BE DETERMINED
IN THE FIELD AT THE DISCRETION OF THE ENGINEER

DESIGN

STATE OF TEXAS
THOMAS A HENZ
142980
LICENSED
PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS
DAN THOMA
98622
LICENSED
PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON
2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000
Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TOYOTA SOUTHSIDE STREETS

# PROPOSED TYPICAL SECTIONS

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 10 |

PRINTED ON: 9/25/2025 1:43:03 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S01-General\1332704_PROP_TYP_02_B.dgn

| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| **COSA** | | | |
| 100.1 | MOBILIZATION | LS | 1 |
| 100.2 | INSURANCE & BOND | LS | 1 |
| 101.1 | PREPARING OF ROW | LS | 1 |
| 103.1 | REMOVE CONCRETE CURB | LF | 3159 |
| 103.4 | REMOVE MISCELLANEOUS CONCRETE | SF | 931 |
| 104.1 | STREET EXCAVATION | CY | 864.0 |
| 203.1 | TACK COAT | GAL | 4872.00 |
| 208.1 | SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVEMENT (3 INCHES DEPTH) | SY | 44240 |
| 230.1 | FLEXIBLE PAVEMENT STRUCTURE REPAIR 14 INCHES COMPACTED | SY | 2616 |
| 240.2 | WMAC TY-B PG 64-22, 20% MAX RAP, 0% RAS (11 INCHES PAVEMENT THICKNESS) | SY | 2218 |
| 240.4 | WMAC TY-D SAC-A PG 76-22, 0% MAX RAP, 0% RAS (3 INCHES PAVEMENT THICKNESS) | SY | 46547 |
| 308.12 | DRILLED SHAFTS (36") | LF | 13 |
| 500.1 | CONCRETE CURB | LF | 368 |
| 530.1 | BARRICADES, SIGNS AND TRAFFIC HANDLING | LS | 1 |
| 531.11 | R3-5 RIGHT ONLY* (30" X 36") | EA | 1 |
| 531.49 | W9-2 LANE ENDS MERGE LEFT* (36" X 36") | EA | 2 |
| 535.1 | 4 INCH WIDE YELLOW LINE | LF | 14481 |
| 535.12 | WORD "ONLY" | WORD | 14 |
| 535.2 | 4 INCH WIDE WHITE LINE | LF | 3096 |
| 535.2B | 4 INCH WIDE BLACK LINE | LF | 284 |
| 535.22 | LANE REDUCTION ARROW | EA | 3 |
| 535.23 | MEDIAN NOSE YELLOW | EA | 3 |
| 535.4 | 8 INCH WIDE WHITE LINE | LF | 14259 |
| 535.5 | 12 INCH WIDE WHITE LINE | LF | 40 |
| 535.5B | 12 INCH WIDE BLACK LINE | LF | 1128 |
| 535.7 | 24 INCH WIDE WHITE LINE | LF | 756 |
| 535.72 | 24 INCH WIDE YELLOW LINE | LF | 404 |
| 535.8 | RIGHT WHITE ARROW | EA | 10 |
| 535.9 | LEFT WHITE ARROW | EA | 45 |
| 537.8 | PAVEMENT MARKER (TYPE II A A) | EA | 172 |
| 537.9 | PAVEMENT MARKER (TYPE IIC R) | EA | 529 |
| 540.1 | ROCK FILTER DAMS (INSTALL/REMOVE)(TYPE 4) | LF | 448 |
| 540.11 | GRAVEL FILTER BAGS | LF | 220 |
| 618.2 | CONDUIT (3 INCH/PVC SCHEDULE 40)(TRENCH) | LF | 190 |
| 618.5 | CONDUIT (3 INCH/PVC SCHEDULE 40)(BORE) | LF | 200 |
| 620.1 | ELECTRICAL CONDUCTORS (NO. 6)(BARE) | LF | 130 |
| 620.2 | ELECTRICAL CONDUCTORS (NO. 8)(BARE) | LF | 305 |
| 620.3 | ELECTRICAL CONDUCTORS (NO. 6)(INSULATED) | LF | 130 |
| 624.8 | GROUND BOXES TYPE D (162922) WITH APRON | EA | 2 |
| 628.1 | ELECTRICAL SERVICE (TYPE D) (120 / 240V) | EA | 1 |
| 628.21 | ELECTRICAL SERVICE DISCONNECT | EA | 1 |
| 636.1 | ALUMINUM SIGNS [A] | SF | 9 |
| 680.3 | WIND ARM DAMPER ASSEMBLY | EA | 1 |
| 682.1 | INSTALL VEHICLE SIGNAL SECTION WITH BACK PLATE (12 INCH)(1 | EA | 4 |
| 684.12 | TRAFFIC SIGNAL CABLES (TYPE A) (14 AWG) (9 CONDUCTOR) | LF | 265 |
| 685.1 | INSTALL ROADSIDE FLASHING BEACON ASSEMBLIES | EA | 1 |
| 685.3 | REMOVE ROADSIDE FLASHING BEACON ASSEMBLIES | EA | 1 |
| 686.4 | INSTALL TRAF. SIGNAL POLE ASSEM.(SINGLE 40' MA) | EA | 1 |
| 691.2 | ANTENNA [OMNI DIRECTIONAL] | EA | 1 |
| 691.3 | COAXIAL CABLE | LF | 30 |
| **TxDOT** | | | |
| 0503-7001 | PORTABLE CHANGEABLE MESSAGE SIGN | DAY | 60 |
| **SAWS CONSTRUCTION** | | | |
| **SAWS** | | | |
| 826 | VALVE BOX ADJUSTMENTS | EA | 2 |

PRINTED ON: 9/25/2025 1:43:04 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S01-General\1332704_EQ_B.dgn

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |

**PAPE–DAWSON**

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000
Texas Engineering Firm #470 | Texas Surveying Firm #10028800

CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

*TOYOTA SOUTHSIDE STREETS*

# *ESTIMATE AND QUANTITIES*

*SHEET 1 OF 1*

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 11 |

| | ITEM | 530.1 | 0503-7001 |
|---|---|---|---|
| | INTERSECTION | BARRICADES, SIGNS AND TRAFFIC HANDLING | PORTABLE CHANGEABLE MESSAGE SIGN |
| SHT NO | | LS | DAY |
| 12 | SUMMARY OF QUANTITIES | 1.0 | 60 |
| | TOTALS | 1.0 | 60 |

PRINTED ON: 9/25/2025 1:43:05 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S01-General\1332704_TCPSUM_01B.dgn

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |


PAPE-DAWSON
2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000
Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TOYOTA SOUTHSIDE STREETS

# SUMMARY OF QUANTITIES
# TCP

SHEET 1 OF 1

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 12 |

| | ITEM | 103.1 | 103.4 | 104.1 | 203.1 | 208.1 | 230.1 | 240.2 | 240.4 | 500.1 |
|---|---|---|---|---|---|---|---|---|---|---|
| SHT NO | INTERSECTION | REMOVE CONCRETE CURB | REMOVE MISCELLANEOUS CONCRETE | STREET EXCAVATION | TACK COAT | SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVEMENT (3 INCHES DEPTH) | FLEXIBLE PAVEMENT STRUCTURE REPAIR 14 INCHES COMPACTED DEPTH | WMAC TY-B PG 64-22, 20% MAX RAP, 0% RAS (11 INCHES PAVEMENT THICKNESS) | WMAC TY-D SAC-A PG 76-22, 0% MAX RAP, 0% RAS (3 INCHES PAVEMENT THICKNESS) | CONCRETE CURB |
| | | LF | SF | CY | GAL | SY | SY | SY | SY | LF |
| 48 | ROADWAY PLAN | | | | 428.00 | 4279 | | | 4279 | |
| 49 | ROADWAY PLAN | | | | 654.00 | 6531 | | | 6531 | |
| 50 | ROADWAY PLAN | | | | 38.00 | 376 | | | 376 | |
| 52 | ROADWAY PLAN | | | | 70.00 | 691 | | | 691 | |
| 53 | ROADWAY PLAN | | | | 636.00 | 6358 | | | 6358 | |
| 54 | ROADWAY PLAN | | | | 621.00 | 6210 | | | 6210 | |
| 55 | ROADWAY PLAN | | | | 400.00 | 3992 | | | 3992 | |
| 56 | ROADWAY PLAN | 353 | | 115.0 | 602.00 | 5429 | | 294 | 5722 | 368 |
| 57 | ROADWAY PLAN | 657 | 931 | 82.0 | 598.00 | 5562 | 194 | 210 | 5771 | |
| 58 | ROADWAY PLAN | 1600 | | 503.0 | 527.00 | 2674 | 2244 | 1293 | 3968 | |
| 59 | ROADWAY PLAN | 549 | | 164.0 | 298.00 | 2138 | 178 | 421 | 2559 | |
| | TOTALS | 3159 | 931 | 864.0 | 4872.00 | 44240 | 2616 | 2218 | 46457 | 368 |

PRINTED ON: 9/25/2025 1:43:05 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S01-General\1332704_RDWYSUM_01B.dgn

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |


PAPE-DAWSON
2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000
Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

*TOYOTA SOUTHSIDE STREETS*

# *SUMMARY OF QUANTITIES ROADWAY*

*SHEET 1 OF 1*

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 13 |

| | ITEM | 531.11 | 531.49 | 535.1 | 535.12 | 535.2 | 535.22 | 535.23 | 535.4 |
|---|---|---|---|---|---|---|---|---|---|
| SHT NO | INTERSECTION | R3-5 RIGHT ONLY* (30" X 36") | W9-2 LANE ENDS MERGE LEFT* (36" X 36") | 4 INCH WIDE YELLOW LINE | WORD "ONLY" | 4 INCH WIDE WHITE LINE | LANE REDUCTION ARROW | MEDIAN NOSE YELLOW | 8 INCH WIDE WHITE LINE |
| | | EA | EA | LF | WORD | LF | EA | EA | LF |
| 64 | PAVEMENT MARKINGS AND SIGNS | | | 780 | 4 | 146 | | 1 | 1068 |
| 65 | PAVEMENT MARKINGS AND SIGNS | | | 1938 | 1 | 397 | | 1 | 1755 |
| 66 | PAVEMENT MARKINGS AND SIGNS | | | 84 | | 25 | | | 97 |
| 67 | PAVEMENT MARKINGS AND SIGNS | | | 1188 | 1 | 238 | 1 | | 918 |
| 68 | PAVEMENT MARKINGS AND SIGNS | 1 | | 2000 | | 400 | | | 944 |
| 69 | PAVEMENT MARKINGS AND SIGNS | | | 2020 | | 397 | | 1 | 1700 |
| 70 | PAVEMENT MARKINGS AND SIGNS | | 2 | 1317 | 6 | 322 | 2 | | 2718 |
| 71 | PAVEMENT MARKINGS AND SIGNS | | | 1571 | 1 | 400 | | | 1834 |
| 72 | PAVEMENT MARKINGS AND SIGNS | | | 1868 | 1 | 396 | | | 1705 |
| 73 | PAVEMENT MARKINGS AND SIGNS | | | 1715 | | 375 | | | 1520 |
| | TOTALS | 1 | 2 | 14481 | 14 | 3096 | 3 | 3 | 14259 |

| | ITEM | 535.5 | 535.7 | 535.72 | 535.8 | 535.9 | 537.8 | 537.9 | 535.2B | 535.5B |
|---|---|---|---|---|---|---|---|---|---|---|
| SHT NO | INTERSECTION | 12 INCH WIDE WHITE LINE | 24 INCH WIDE WHITE LINE | 24 INCH WIDE YELLOW LINE | RIGHT WHITE ARROW | LEFT WHITE ARROW | PAVEMENT MARKER (TYPE II A A) | PAVEMENT MARKER (TYPE IIC R) | 4 INCH WIDE BLACK LINE | 12 INCH WIDE BLACK LINE |
| | | LF | LF | LF | EA | EA | EA | EA | LF | LF |
| 64 | PAVEMENT MARKINGS AND SIGNS | | 381 | 79 | 2 | 3 | 44 | 47 | 85 | 572 |
| 65 | PAVEMENT MARKINGS AND SIGNS | | | 93 | | 8 | 69 | 58 | | |
| 66 | PAVEMENT MARKINGS AND SIGNS | | | | | | | 3 | | |
| 67 | PAVEMENT MARKINGS AND SIGNS | 40 | | | 2 | 4 | | 31 | | |
| 68 | PAVEMENT MARKINGS AND SIGNS | | | | 1 | 4 | | 44 | | |
| 69 | PAVEMENT MARKINGS AND SIGNS | | | 190 | 1 | 4 | 38 | 62 | | |
| 70 | PAVEMENT MARKINGS AND SIGNS | | 375 | | 4 | 10 | | 143 | 199 | 556 |
| 71 | PAVEMENT MARKINGS AND SIGNS | | | | | 2 | | 51 | | |
| 72 | PAVEMENT MARKINGS AND SIGNS | | | 42 | | 6 | 21 | 51 | | |
| 73 | PAVEMENT MARKINGS AND SIGNS | | | | | 4 | | 39 | | |
| | TOTALS | 40 | 756 | 404 | 10 | 45 | 172 | 529 | 284 | 1128 |

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |


**PAPE-DAWSON**

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

*TOYOTA SOUTHSIDE STREETS*

# *SUMMARY OF QUANTITIES SIGNING AND PAVEMENT MARKINGS*

*SHEET 1 OF 1*

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 14 |


PRINTED ON: 9/25/2025 1:43:06 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S01-General\1332704_SPMSUM_01B.dgn

| ITEM | 308.12 | 618.2 | 618.5 | 620.1 | 620.2 | 620.3 | 624.8 |
|---|---|---|---|---|---|---|---|
| INTERSECTION | DRILLED SHAFTS (36") | CONDUIT (3 INCH/PVC SCHEDULE 40)(TRENCH) | CONDUIT (3 INCH/PVC SCHEDULE 40)(BORE) | ELECTRICAL CONDUCTORS (NO. 6)(BARE) | ELECTRICAL CONDUCTORS (NO. 8)(BARE) | ELECTRICAL CONDUCTORS (NO. 6)(INSULATED) | GROUND BOXES TYPE D (162922) WITH APRON |
| | LF | LF | LF | LF | LF | LF | EA |
| APPLEWHITE ROAD AT FIRE STATION DRIVEWAY | 13 | 190 | 200 | 130 | 305 | 130 | 2 |
| TOTALS | 13 | 190 | 200 | 130 | 305 | 130 | 2 |

| ITEM | 628.1 | 628.21 | 636.1 | 680.3 | 682.1 | 684.12 | 685.1 |
|---|---|---|---|---|---|---|---|
| INTERSECTION | ELECTRICAL SERVICE (TYPE D) (120 / 240V) | ELECTRICAL SERVICE DISCONNECT | ALUMINUM SIGNS [A] | WIND ARM DAMPER ASSEMBLY | INSTALL VEHICLE SIGNAL SECTION WITH BACK PLATE (12 INCH)(1 SECTION) | TRAFFIC SIGNAL CABLES (TYPE A) (14 AWG) (9 CONDUCTOR) | INSTALL ROADSIDE FLASHING BEACON ASSEMBLIES |
| | EA | EA | SF | EA | EA | LF | EA |
| APPLEWHITE ROAD AT FIRE STATION DRIVEWAY | 1 | 1 | 9 | 1 | 4 | 265 | 1 |
| TOTALS | 1 | 1 | 9 | 1 | 4 | 265 | 1 |

| ITEM | 685.3 | 686.4 | 691.2 | 691.3 |
|---|---|---|---|---|
| INTERSECTION | REMOVE ROADSIDE FLASHING BEACON ASSEMBLIES | INSTALL TRAF. SIGNAL POLE ASSEM.(SINGLE 40' MA) | ANTENNA [OMNI DIRECTIONAL] | COAXIAL CABLE |
| | EA | EA | EA | LF |
| APPLEWHITE ROAD AT FIRE STATION DRIVEWAY | 1 | 1 | 1 | 30 |
| TOTALS | 1 | 1 | 1 | 30 |

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

*TOYOTA SOUTHSIDE STREETS*

# *SUMMARY OF QUANTITIES TRAFFIC*

*SHEET 1 OF 1*

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 15 |


PRINTED ON: 9/25/2025 12:56:30 PM PRINTED BY: USER: Dabizeye
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S01-General\1332704_SUM_TRAFFIC_01B.dgn

| | ITEM | 540.1 | 540.11 |
|---|---|---|---|
| SHT NO | INTERSECTION | ROCK FILTER DAMS (INSTALL/REMOVE) (TYPE 4) | GRAVEL FILTER BAGS |
| | | LF | LF |
| 112 | SW3P LAYOUT | 130 | |
| 113 | SW3P LAYOUT | 318 | 220 |
| | TOTALS | 448 | 220 |

PRINTED ON: 9/25/2025 1:43:08 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S01-General\1332704_SW3PSUM_01B.dgn

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |


PAPE-DAWSON
2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000
Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TOYOTA SOUTHSIDE STREETS

# SUMMARY OF QUANTITIES
# SW3P

SHEET 1 OF 1

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 16 |

| | ITEM | 826 |
|---|---|---|
| | INTERSECTION | VALVE BOX ADJUSTMENTS |
| SHT NO | | EA |
| 58 | ROADWAY PLAN | 2 |
| | TOTALS | 2 |

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

*TOYOTA SOUTHSIDE STREETS*

# *SUMMARY OF QUANTITIES SAWS*

*SHEET 1 OF 1*

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 17 |


PRINTED ON: 9/25/2025 1:43:09 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S01-General\1332704_SAWS_SUM_B.dgn

**ALL PHASES:**

1. INSTALL CONSTRUCTION BARRICADES, CHANNELIZING DEVICES, WORK ZONE SIGNING, AND STRIPING AS SHOWN ON PLANS AND/OR AS DIRECTED BY THE ENGINEER.
2. ACCESS TO ADJOINING PROPERTIES SHALL BE MAINTAINED AT ALL TIMES. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ACCESS WITH ADJOINING PROPERTY OWNERS DURING PHASE/STEP CHANGES.
3. INSTALL ADVANCE WARNING SIGNS AT PROJECT LIMITS AS SHOWN ON PLANS AND/OR AS DIRECTED BY ENGINEER.
4. LOCATION AND SPACING OF ADVANCED WARNING AND TEMPORARY SIGNS ARE APPROXIMATE. CONTRACTOR SHALL REFER TO TXDOT TCP STANDARD BC(1)-21 THRU BC(12)-21 AND TMUTCD FOR ACTUAL SIGN SPACING REQUIREMENTS. SIGNS MAY BE ADJUSTED DUE TO FIELD CONDITIONS AND SAFETY TO TRAVELING PUBLIC.
5. CONTRACTOR SHALL EVALUATE THE LOCATION OF EXISTING SIGNS TO ENSURE NO CONFLICTS WITH THE TRAFFIC CONTROL PLANS. EXISTING SIGNS MAY BE ADJUSTED DUE TO FIELD CONDITIONS AND SAFETY TO TRAVELING PUBLIC.
6. CHANNELIZING DEVICE LOCATIONS SHOWN ON THE TRAFFIC CONTROL PLAN SHEETS ARE APPROXIMATE. ACTUAL LOCATIONS SHALL BE DETERMINED IN THE FIELD USING SUGGESTED SPACING SHOWN ON THE TCP STANDARDS.
7. ADDITIONAL SIGNS, BARRICADES AND/OR OTHER CHANNELIZING DEVICES MAY BE NEEDED, REQUIRED, AND/OR ADJUSTED TO MATCH FIELD CONDITIONS AS DIRECTED BY THE ENGINEER.
8. CONTRACTOR TO PROVIDE 3:1 TRAVERSABLE SAFETY SLOPE ON ANY DROP OFF NOT BEHIND BARRIER AND GREATER THAN 2" OUTSIDE WORK HOURS WHEN CONTRACTOR IS NOT PRESENT AND CONSTRUCTION ACTIVITES ARE NOT TAKING PLACE.

**PHASE 1:**

**EXISTING MEDIAN REMOVAL AND PROPOSED PAVEMENT CONSTRUCTION**

1. INSTALL ADVANCE WARNING SIGNS ACCORDING TO ALL APPLICABLE TXDOT TCP, BC, AND WZ STANDARD SHEETS
2. INSTALL SWPPP ITEMS AS SHOWN IN THE PLANS
3. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES AS SHOWN IN THE PLANS AND ACCORDING TO TCP (2-4)-18 AND ALL OTHER APPLICABLE TXDOT BC AND WZ STANDARD SHEETS. SHIFT TRAFFIC TO PHASE 1 CONFIGURATION SHOWN ON PLANS
4. REMOVE EXISTING FLASHING BEACON AND INSTALL PROPOSED FLASHING BEACON AS SHOWN IN PLANS.
5. REMOVE EXISTING MEDIANS AND COMPLETE FULL DEPTH CONSTRUCTION OF PAVEMENT UP TO THE FIRST LIFT OF THE TYPE D WMAC SURFACE COURSE AT THE FOLLOWING LOCATIONS:
   A) STA 159+17.00 TO STA 162+70.00
   B) STA 169+24.00 TO STA 183+22.00
6. ALL PROPOSED CONSTRUCTION SHOWN IN PHASE 1 MUST BE COMPLETE PRIOR TO MOVING TO PHASE 2.

**PHASE 2:**

**PROPOSED PAVEMENT BASE REPAIRS AND MILL AND INLAY**

1. INSTALL/ADJUST ADVANCE WARNING SIGNS ACCORDING TO ALL APPLICABLE TXDOT TCP, BC, AND WZ STANDARD SHEETS
2. INSTALL/ADJUST SWPPP ITEMS AS SHOWN IN THE PLANS
7. INSTALL TEMPORARY TRAFFIC CONTROL DEVICES AS SHOWN ON "TRAFFIC CONTROL PLAN- PHASE 2 LAYOUT DETAIL" AND ACCORDING TO TCP (2-4)-18 AND ALL OTHER APPLICABLE TXDOT BC AND WZ STANDARD SHEETS. SHIFT TRAFFIC TO PHASE 2 CONFIGURATION SHOWN ON PLANS
3. COMPLETE BASE REPAIR RECONSTRUCTION AT THE LOCATIONS SHOWN ON THE PLANS. CONTRACTOR TO USE APPLICABLE TXDOT STANDARDS TO CLOSE ONLY ONE LANE AT A TIME TO COMPLETE BASE REPAIR.
4. MILL 3" OF EXISITING PAVEMENT TO THE LIMITS AT THE BEGINNING AND END OF THE PROJECT AS SHOWN IN THE PLANS AND PLACE FINAL LIFT OF TYPE D WMAC SURFACE COURSE.
5. REMOVE ALL APPLICABLE CONSTRUCTION MARKINGS AND PLACE PERMANENT PAVEMENT MARKINGS AS SHOWN IN THE PLANS.
6. OPEN ALL LANES TO TRAFFIC
7. UPON COMPLETION OF FINAL CONSTRUCTION ITEMS, PERFORM FINAL CLEAN UP. REMOVE ALL TCP BARRICADES, SIGNS, CHANNELIZING DEVICES, PAVEMENT MARKINGS, AND EROSION/SEDIMENT CONTROL DEVICES AFTER WRITTEN APPROVAL AND ACCEPTANCE OF THE PROJECT BY THE ENGINEER.

*DESIGN*

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

*APPROVAL*

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |


**PAPE-DAWSON**

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800

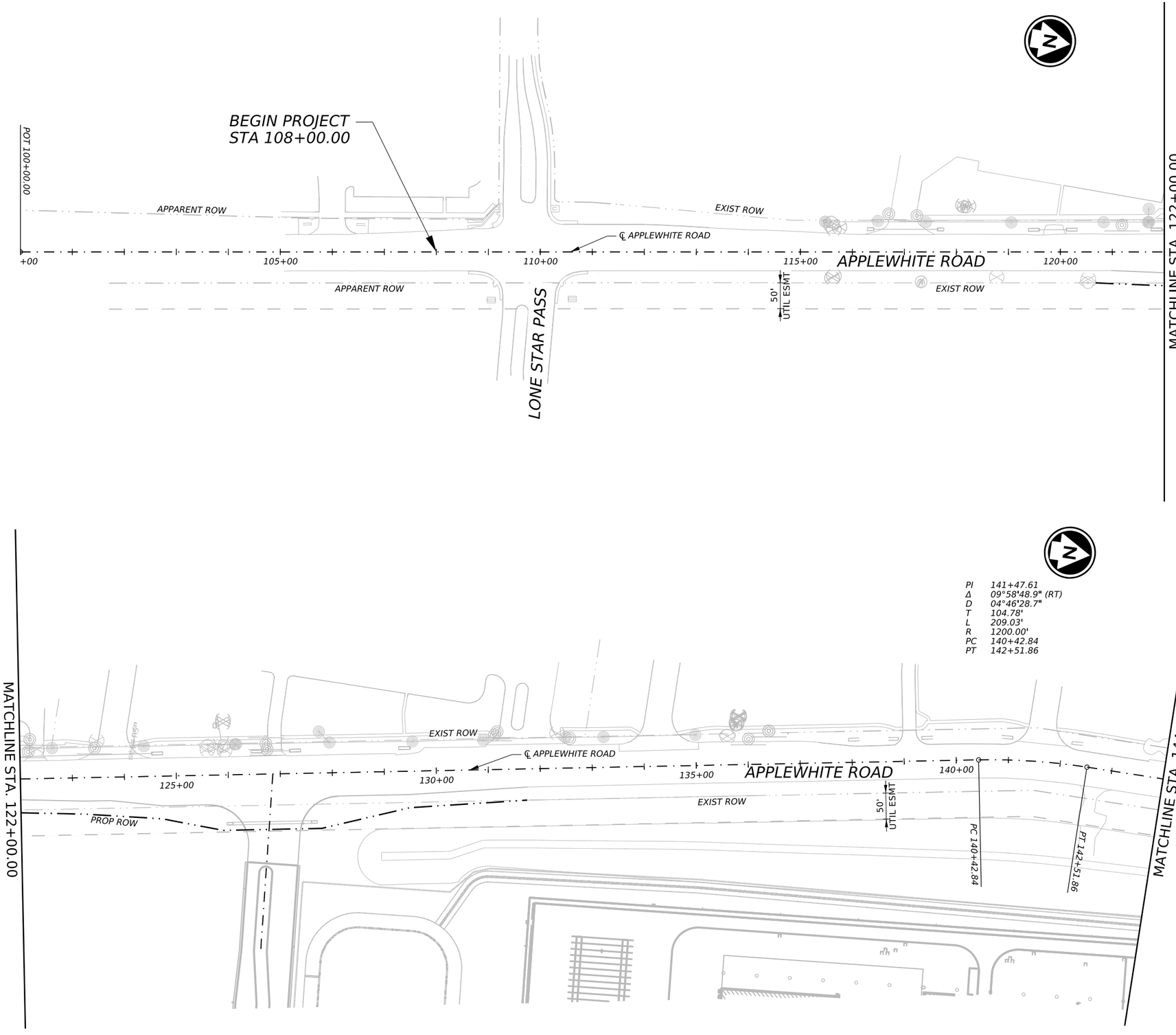

CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

*TOYOTA SOUTHSIDE STREETS*

*TRAFFIC CONTROL PLAN NARRATIVE*

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 18 |

PRINTED ON: 9/25/2025 1:43:09 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S02-TCP\133270 4_TCP_NARR_B.dgn




## LEGEND

- PHASE 1 CONSTRUCTION
- PHASE 2 CONSTRUCTION

## NOTES

1. FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 100 200 300

SCALE: 1"= 200'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

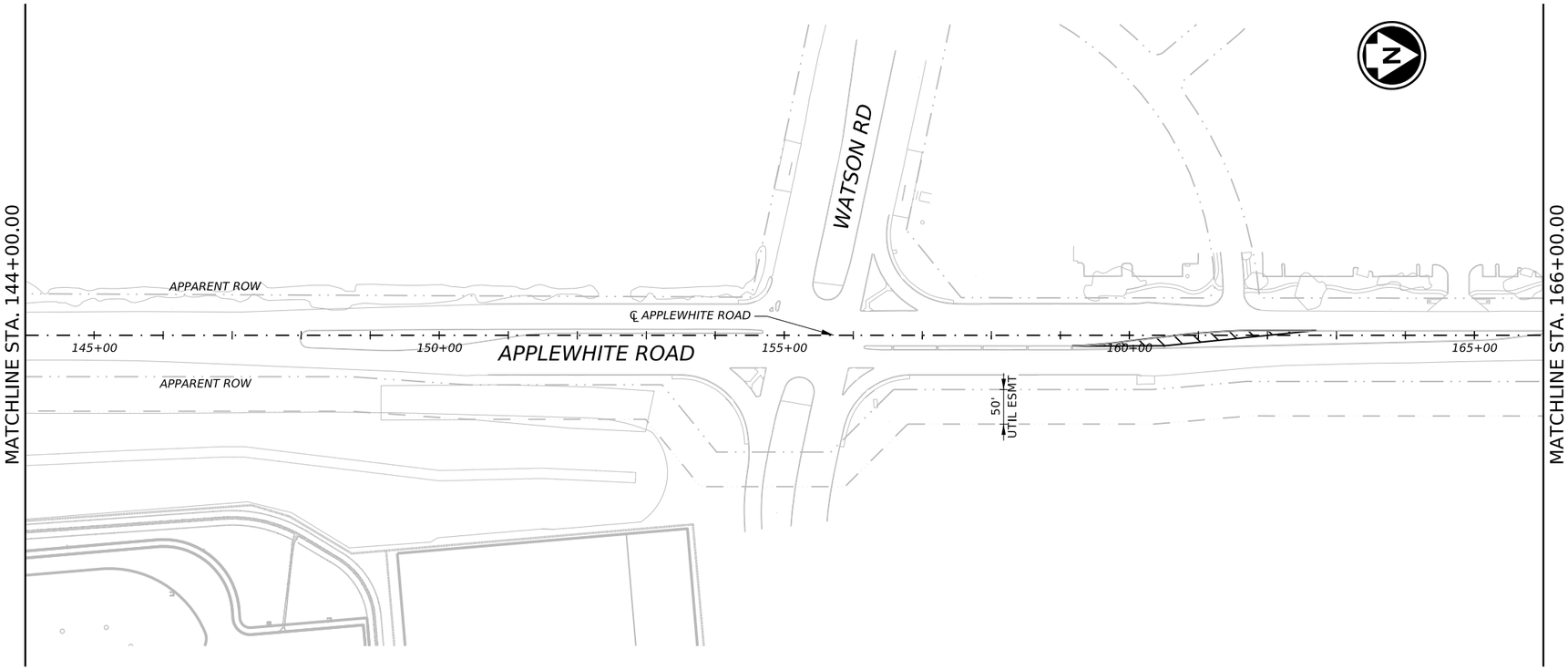
*TOYOTA SOUTHSIDE STREETS*

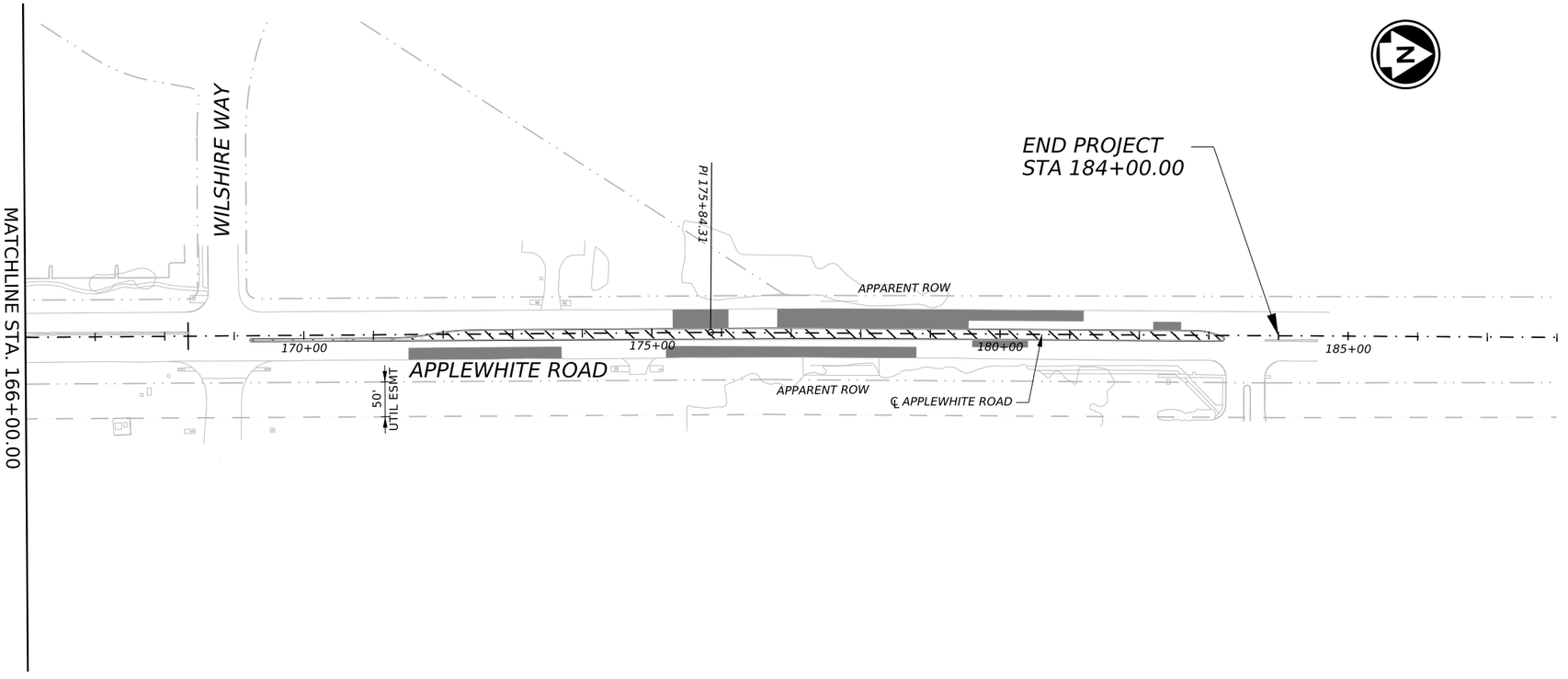
# TRAFFIC CONTROL PLAN OVERALL LAYOUT

SHEET 1 OF 2

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 19 |

PRINTED ON: 9/25/2025 1:43:21 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S02-TCP\1332704_TCP_LAY_01_B.dgn




## LEGEND

PHASE 1 CONSTRUCTION

PHASE 2 CONSTRUCTION

## NOTES

1. FOR ADDITIONAL DETAILS SEE TxDOT TCP STANDARD SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. EXISTING PAVEMENT MARKINGS CONFLICTING WITH WORK ZONE PAVEMENT MARKINGS SHALL BE REMOVED. THIS WORK IS CONSIDERED SUBSIDIARY TO THE WORK ZONE PAVEMENT MARKING ITEMS.

DESIGN

STATE OF TEXAS
THOMAS A HENZ
142980
LICENSED
PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS
DAN THOMA
98622
LICENSED
PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 100 200 300

SCALE: 1"= 200'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

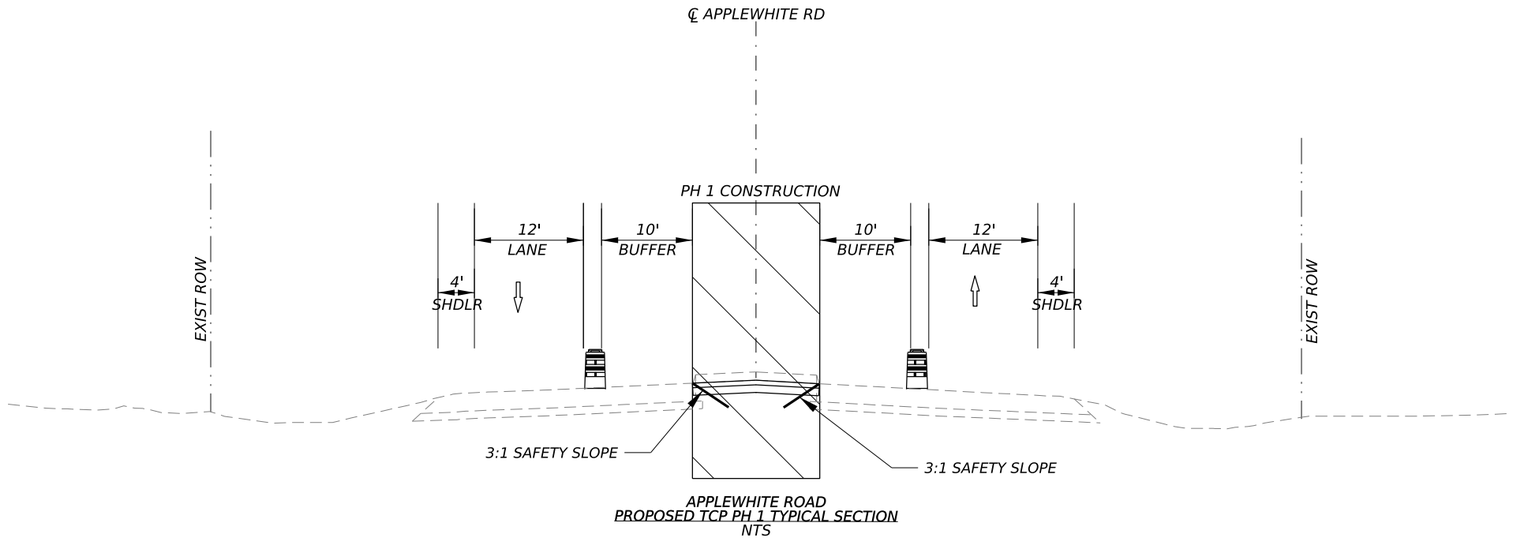
TOYOTA SOUTHSIDE STREETS

# TRAFFIC CONTROL PLAN OVERALL LAYOUT

SHEET 2 OF 2

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 20 |

PRINTED ON: 9/25/2025 1:43:24 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S02-TCP\1332704_TCP_LAY_02_B.dgn




APPLEWHITE ROAD
PROPOSED TCP PH 1 TYPICAL SECTION
NTS

## NOTES

1. FOR ADDITIONAL DETAILS SEE TCP NARRATIVE SHEET AND TCP PLAN SHEETS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. CONTRACTOR TO PROVIDE 3:1 TRAVERSABLE SAFETY SLOPE ON ANY DROP OFF NOT BEHIND BARRIER AND GREATER THAN 2" OUTSIDE WORK HOURS WHEN CONTRACTOR IS NOT PRESENT AND CONSTRUCTION ACTIVITES ARE NOT TAKING PLACE.

DESIGN

STATE OF TEXAS
THOMAS A HENZ
142980
LICENSED
PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS
DAN THOMA
98622
LICENSED
PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |


**PAPE-DAWSON**
2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000
Texas Engineering Firm #470 | Texas Surveying Firm #10028800

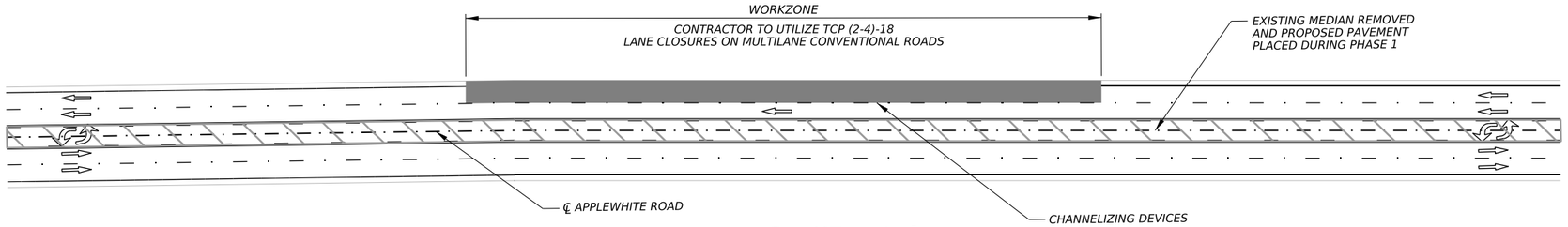

CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

*TOYOTA SOUTHSIDE STREETS*

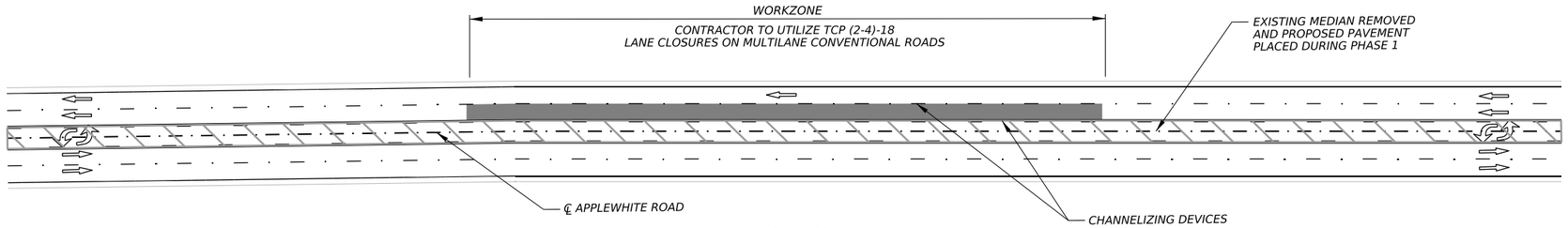
# TRAFFIC CONTROL PLAN
# PHASE 1 TYPICAL SECTIONS

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 21 |

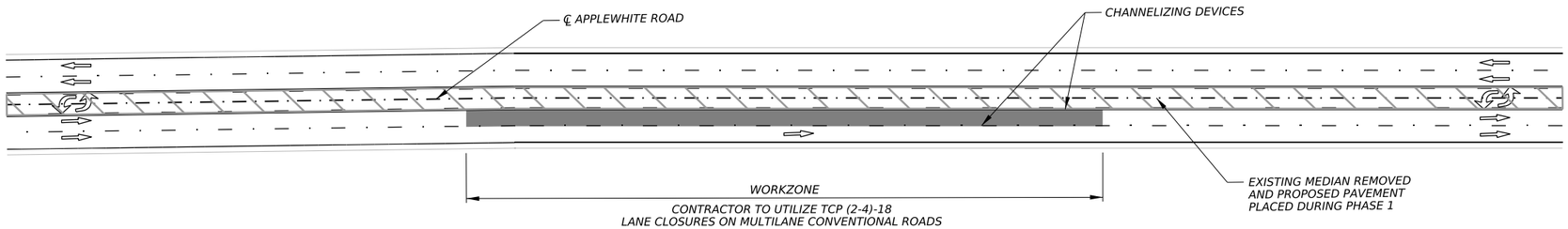
PRINTED ON: 9/25/2025 1:43:25 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S02-TCP\1332704_TCP_TYP_B.dgn



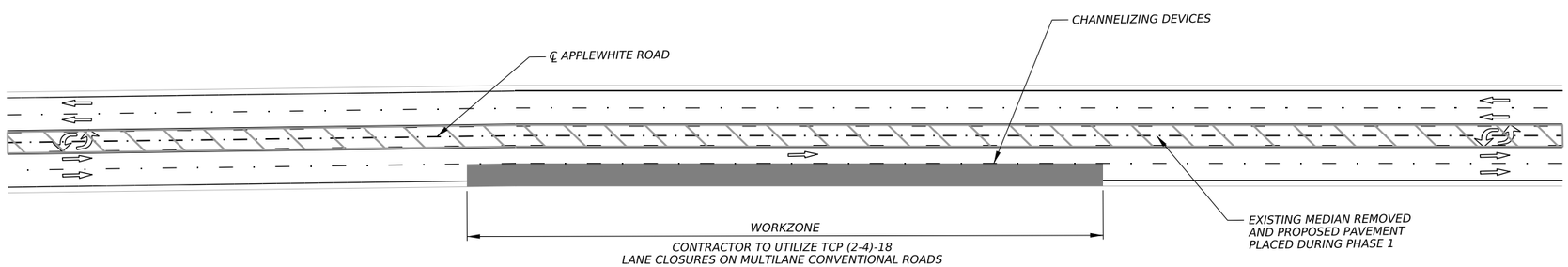

## PHASE 2- STEP A




## PHASE 2- STEP B




## PHASE 2- STEP C




## PHASE 2- STEP D

### LEGEND

CONSTRUCTION ZONE

PROPOSED PAVEMENT

### NOTES

1. FOR ADDITIONAL DETAILS SEE TCP NARRATIVE SHEET AND TCP PLAN SHEETS.
2. CONTRACTOR TO PROVIDE 3:1 TRAVERSABLE SAFETY SLOPE ON ANY DROP OFF NOT BEHIND BARRIER AND GREATER THAN 2" OUTSIDE WORK HOURS WHEN CONTRACTOR IS NOT PRESENT AND CONSTRUCTION ACTIVITES ARE NOT TAKING PLACE.

DESIGN

STATE OF TEXAS · THOMAS A HENZ · 142980 · LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS · DAN THOMA · 98622 · LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

NOT TO SCALE

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

PAPE-DAWSON
2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000
Texas Engineering Firm #470 | Texas Surveying Firm #10028800

CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TOYOTA SOUTHSIDE STREETS

# TRAFFIC CONTROL PLAN
# PHASE 2 LAYOUT DETAIL

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 22 |

PRINTED ON: 9/25/2025 1:43:26 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S02-TCP\133272704_TCP_PH2_PLAN_B.dgn

DATE:
FILE:

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

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

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

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

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

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

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

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

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

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

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

11. Traffic control devices should be in place only while work is actually in progress or a definite need exists.

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

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

## WORKER SAFETY NOTES:

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

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

## COMPLIANT WORKZONE TRAFFIC CONTROL DEVICES

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

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

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



Texas Department of Transportation

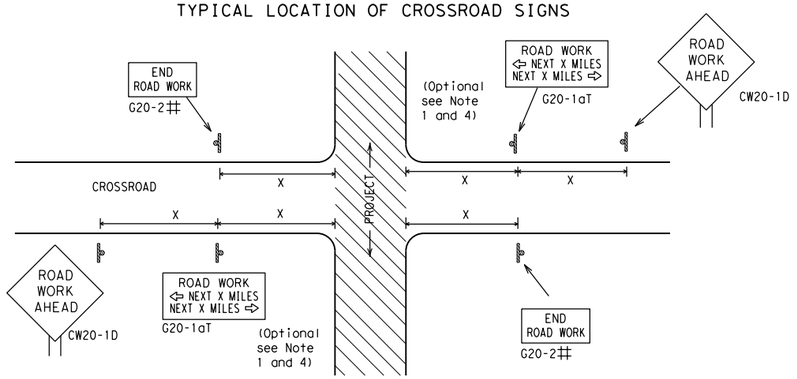
Traffic Safety Division Standard

# BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

# BC(1)-21

| FILE: bc-21.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT November 2002 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS 4-03 7-13 9-07 8-14 5-10 5-21 | DIST | COUNTY | | SHEET NO. 23 |

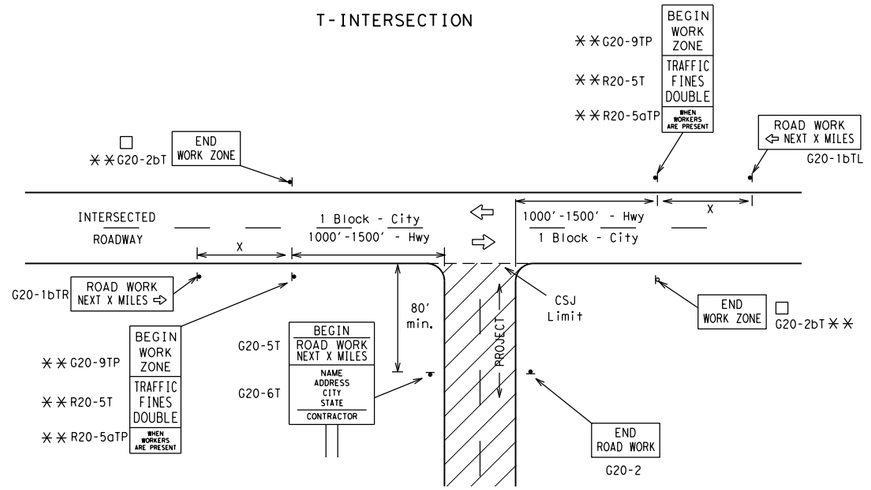
## TYPICAL LOCATION OF CROSSROAD SIGNS




## ## 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.

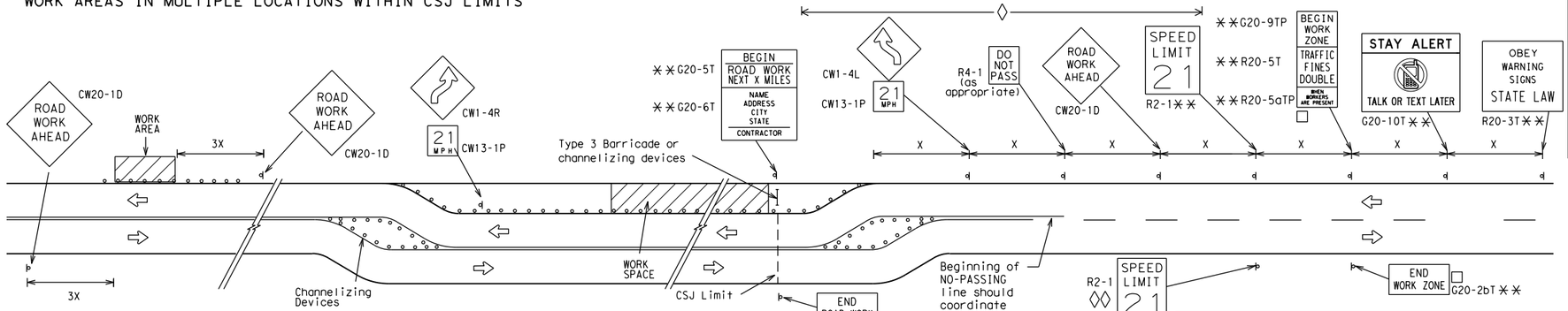
△ Minimum distance from work area to first Advance Warning sign nearest the work area and/or distance between each additional sign.

## 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.

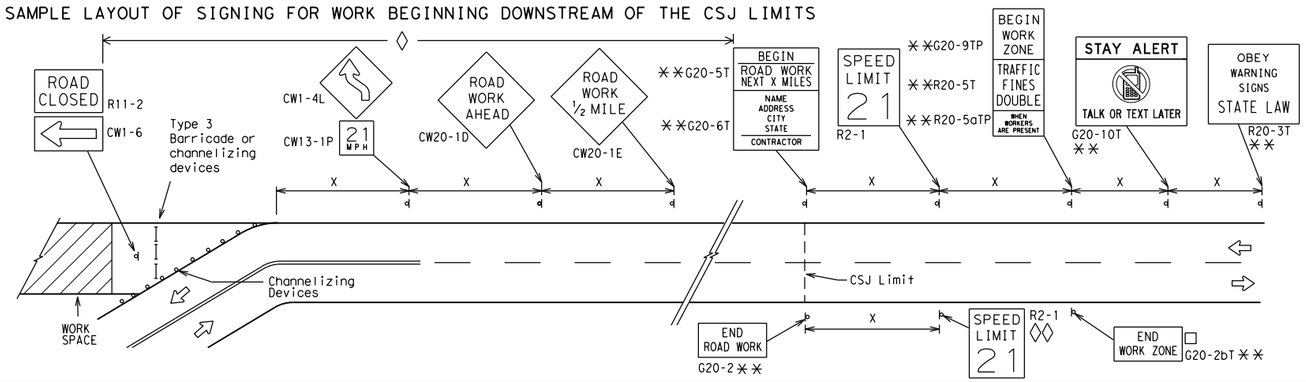
## WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS

## 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 | | | | |
| 9-07 8-14 | DIST | COUNTY | | SHEET NO. |
| 7-13 5-21 | | | | 24 |

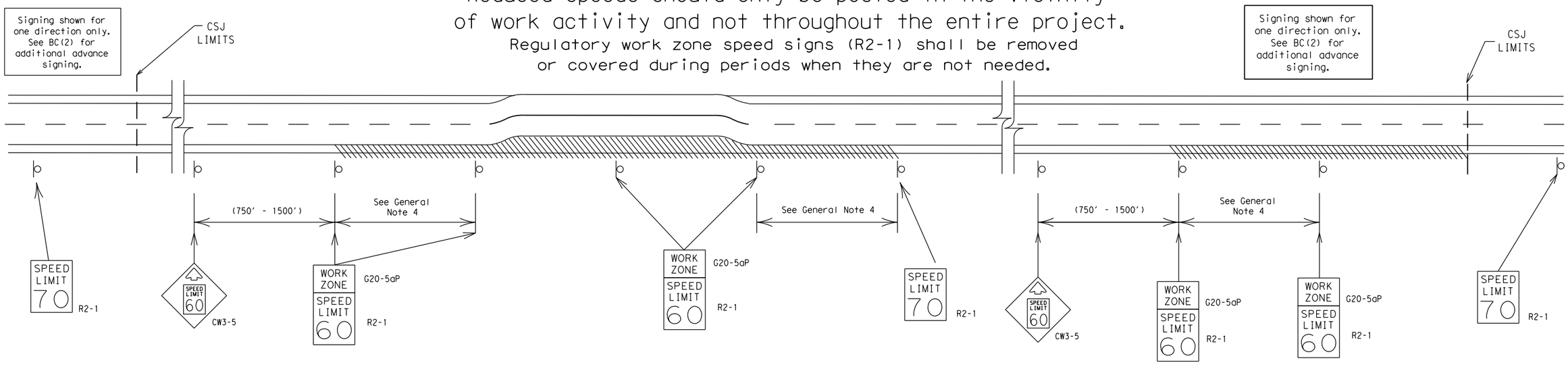
DATE:
FILE:

# 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.



Texas Department of Transportation | Traffic Safety Division Standard

## BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

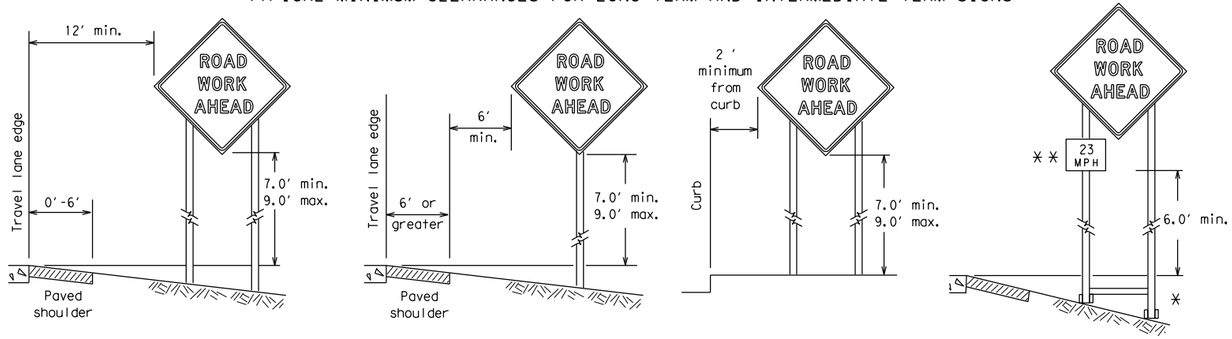
## BC(3)-21

| FILE: bc-21.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT November 2002 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS 9-07 8-14 7-13 5-21 | DIST | COUNTY | | SHEET NO. 25 |

DATE:
FILE:

DATE: 9/25/2025 1:43:29 PM
FILE: P:\133\27\04\Design\ORD\4-Design\Plan Set\S02-TCP\2-Standards\bc-21 (1).dgn

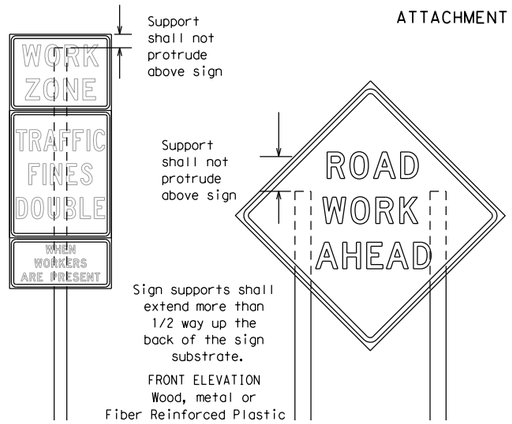
## TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

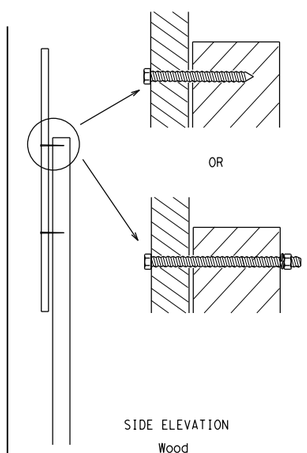



⁎ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

⁎⁎ 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



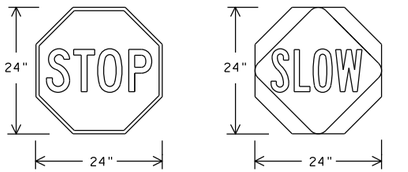

Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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.




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

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

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

## GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

## SIGN MOUNTING HEIGHT

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

## SIZE OF SIGNS

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

## SIGN SUBSTRATES

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

## REFLECTIVE SHEETING

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

## SIGN LETTERS

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

## REMOVING OR COVERING

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

## SIGN SUPPORT WEIGHTS

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

## FLAGS ON SIGNS

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



Texas Department of Transportation

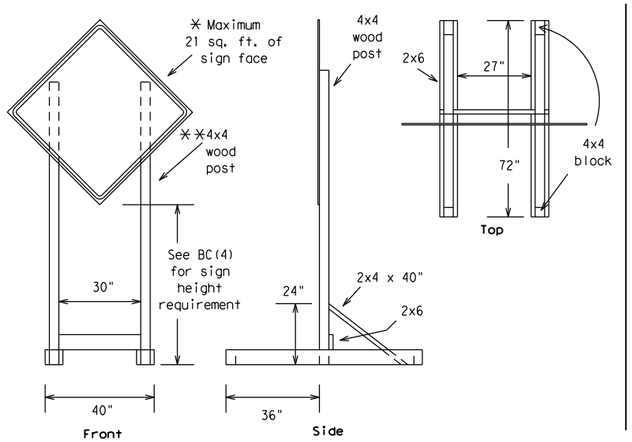
Traffic Safety Division Standard

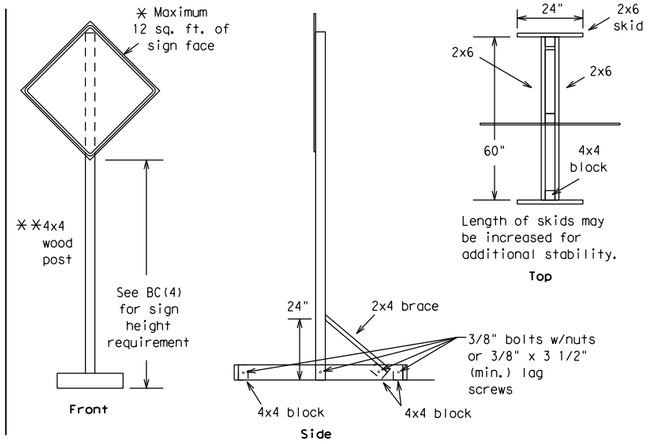
# BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

# BC(4)-21

| FILE: bc-21.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT November 2002 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| 9-07 8-14 | DIST | COUNTY | | SHEET NO. |
| 7-13 5-21 | | | | 26 |

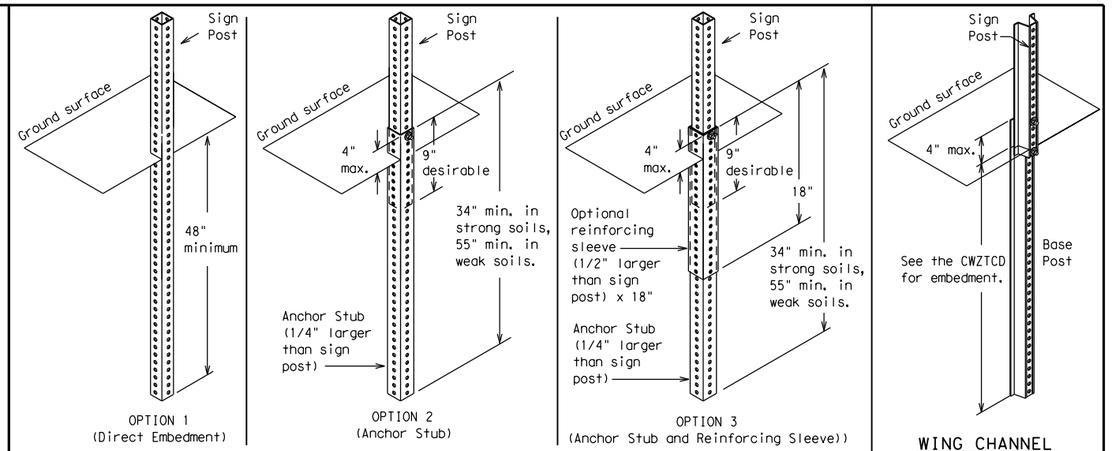
DATE: 9/25/2025 1:43:30 PM
FILE: P:\133\27\04\Design\ORD\4-Design\Plan Set\S02-TCP\2-Standards\bc-21 (1).dgn



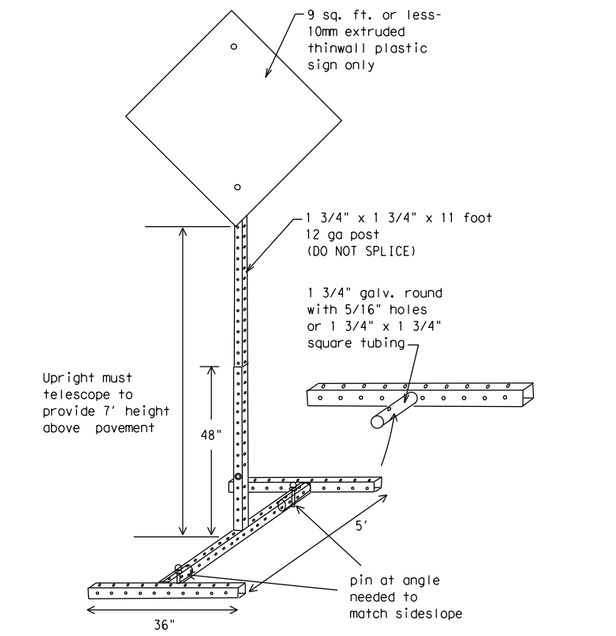

# SKID MOUNTED WOOD SIGN SUPPORTS

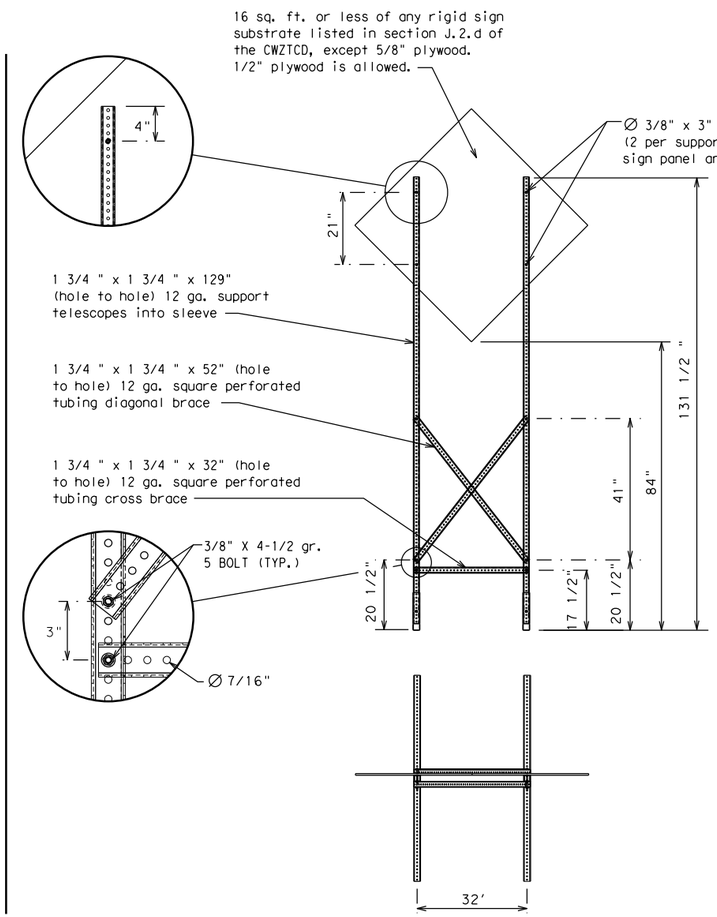
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

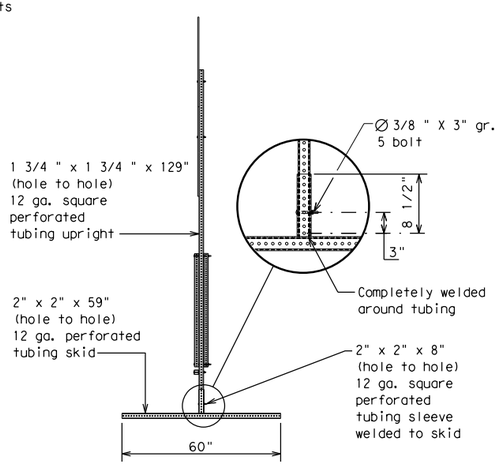



# GROUND MOUNTED SIGN SUPPORTS

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 | | | | |
| 9-07 8-14 | DIST | COUNTY | | SHEET NO. |
| 7-13 5-21 | | | | 27 |

DATE: 9/25/2025 1:43:31 PM
FILE: P:\133\27\04\Design\ORD\4-Design\Plan Set\S02-TCP\2-Standards\bc-21 (1).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 *

### 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-25 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

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

** See Application Guidelines Note 6.

### APPLICATION GUIDELINES

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

### WORDING ALTERNATIVES

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

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

### FULL MATRIX PCMS SIGNS

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



Texas Department of Transportation

Traffic Safety Division Standard

# BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

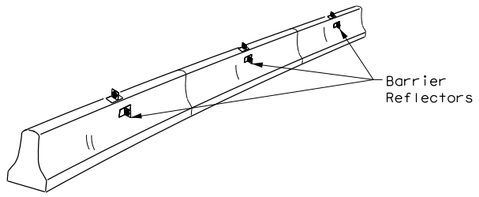
# BC(6)-21

| FILE: bc-21.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| © TxDOT November 2002 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| 9-07 8-14 | DIST | COUNTY | | SHEET NO. |
| 7-13 5-21 | | | | 28 |

100

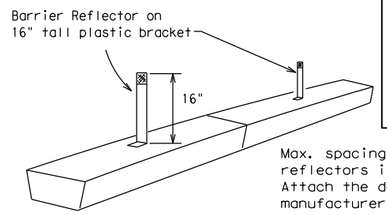
DATE: 9/25/2025 1:43:32 PM
FILE: P:\133x27\04\Design\ORD\4-Design\Plan Set\S02-TCP\2-Standards\bc-21 (1).dgn

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.

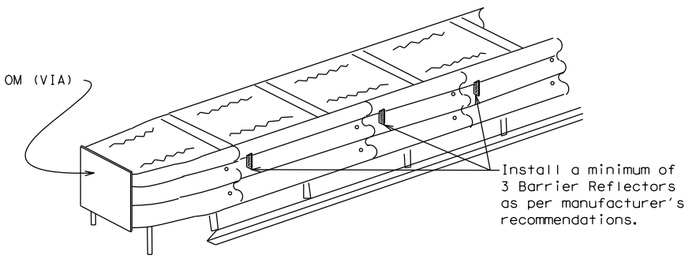



Max. spacing of barrier reflectors is 20 feet. Attach the delineators as per manufacturer's recommendations.

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.

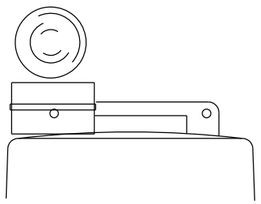



DELINEATION OF END TREATMENTS

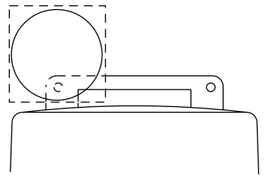
**END TREATMENTS FOR CTB'S USED IN WORK ZONES**

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

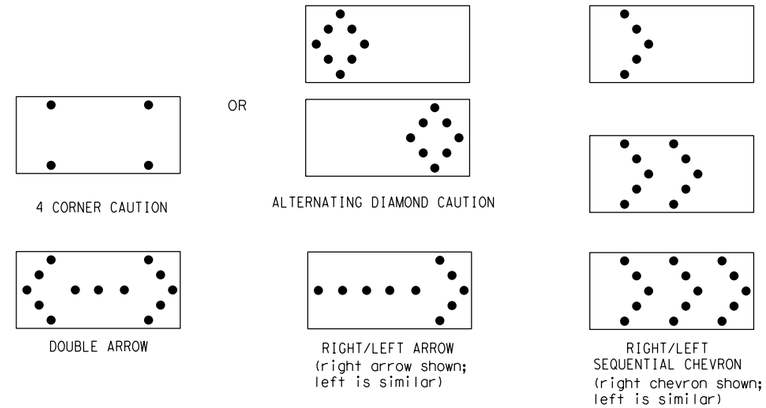
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing 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:




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

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

**ATTENTION**

Flashing Arrow Boards shall be equipped with automatic dimming devices.

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

# FLASHING ARROW BOARDS

## TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CWZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
6. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.



Texas Department of Transportation

Traffic Safety Division Standard

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

# BC(7)-21

| FILE: bc-21.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT November 2002 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| 9-07 8-14 | DIST | COUNTY | | SHEET NO. |
| 7-13 5-21 | | | | 29 |

101

DATE: 9/25/2025 1:43:32 PM
FILE: P:\133\27\04\Design\ORD\4-Design\Plan Set\S02-TCP\2-Standards\bc-21 (1).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:

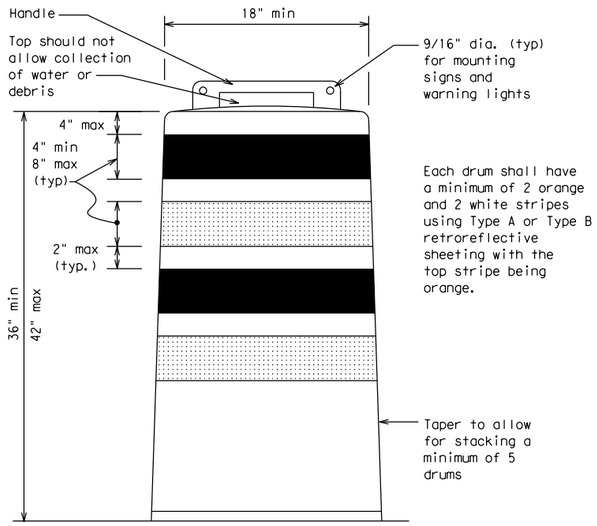
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

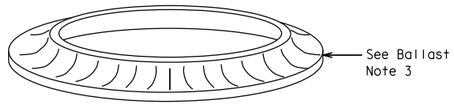
## RETROREFLECTIVE SHEETING

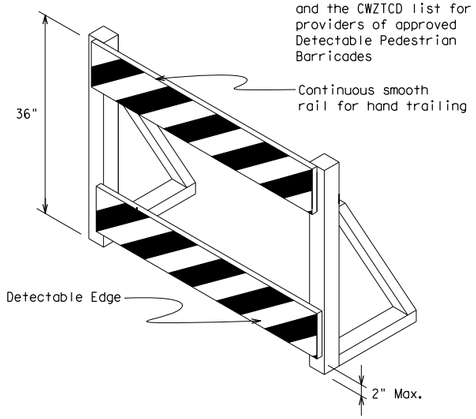
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials," Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

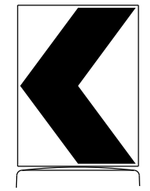


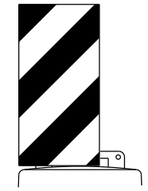




## DETECTABLE PEDESTRIAN BARRICADES

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

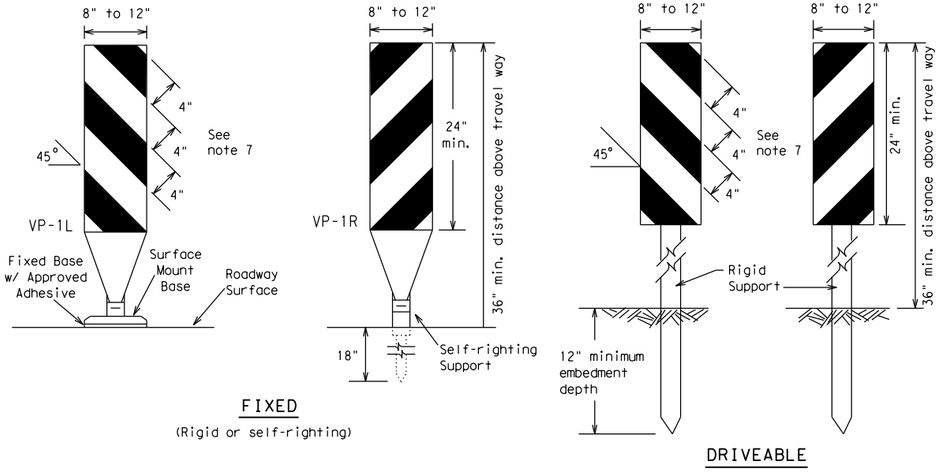
# BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

## BC(8)-21

| FILE: bc-21.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT November 2002 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| 4-03 8-14 | DIST | COUNTY | | SHEET NO. |
| 9-07 5-21 | | | | 30 |
| 7-13 | | | | |

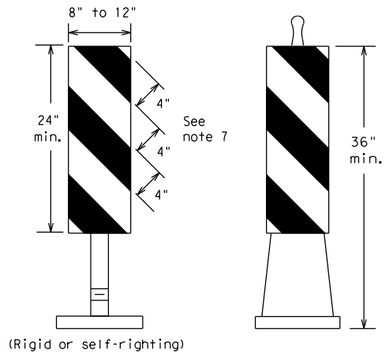
102

DATE: 9/25/2025 1:43:33 PM
FILE: P:\133\27\04\Design\ORD\4-Design\Plan Set\S02-TCP\2-Standards\bc-21 (1).dgn




FIXED
(Rigid or self-righting)

DRIVEABLE

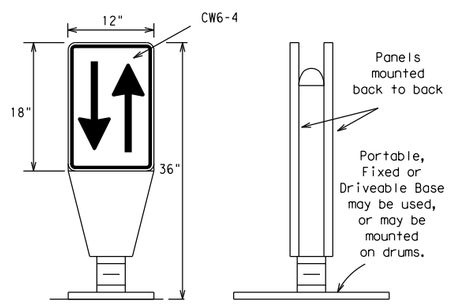



(Rigid or self-righting)

PORTABLE

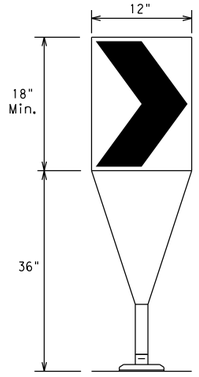
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is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



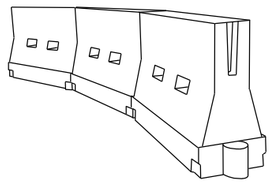

Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

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

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

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



Texas Department of Transportation | Traffic Safety Division Standard

# BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

# BC(9)-21

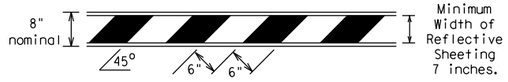
| FILE: bc-21.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT November 2002 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| 9-07 8-14 | DIST | COUNTY | | SHEET NO. |
| 7-13 5-21 | | | | 31 |

DATE: 9/25/2025 1:43:34 PM
FILE: P:\133\27\04\Design\ORD\4-Design\Plan Set\S02-TCP\2-Standards\bc-21 (1).dgn

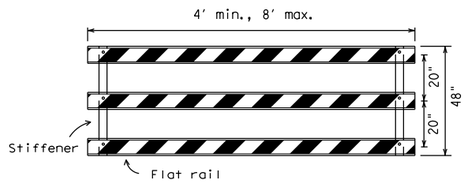
## TYPE 3 BARRICADES

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.



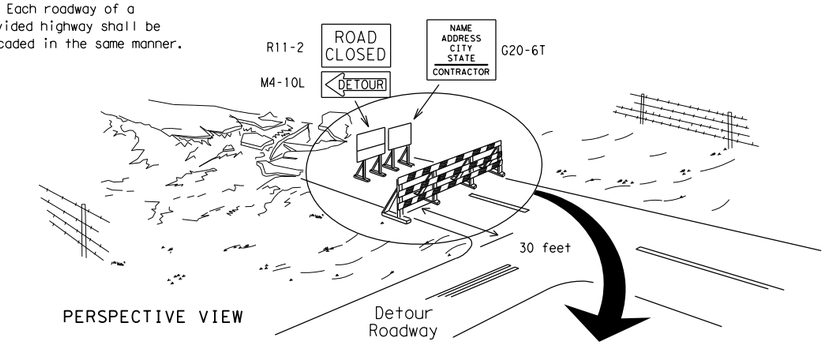

TYPICAL STRIPING DETAIL FOR BARRICADE RAIL




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

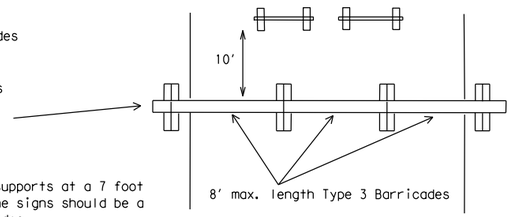
TYPICAL PANEL DETAIL
FOR SKID OR POST TYPE BARRICADES

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




PERSPECTIVE VIEW

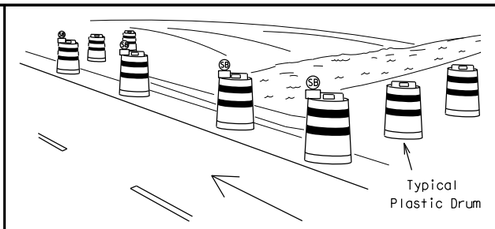
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.




PLAN VIEW

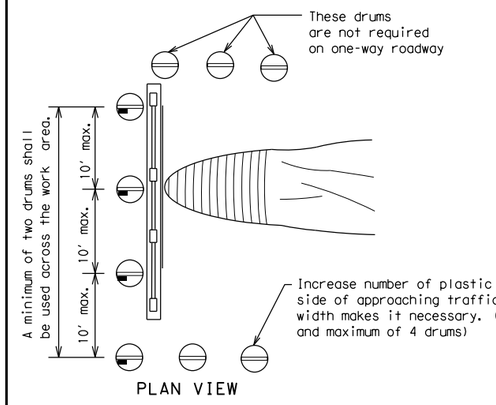
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION




PERSPECTIVE VIEW

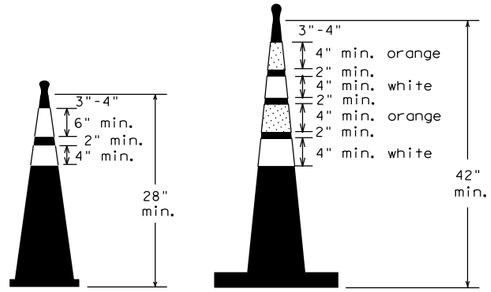
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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



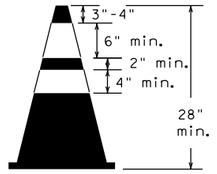

PLAN VIEW

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

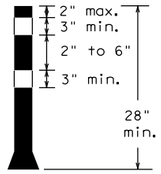
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS




Two-Piece cones




One-Piece cones

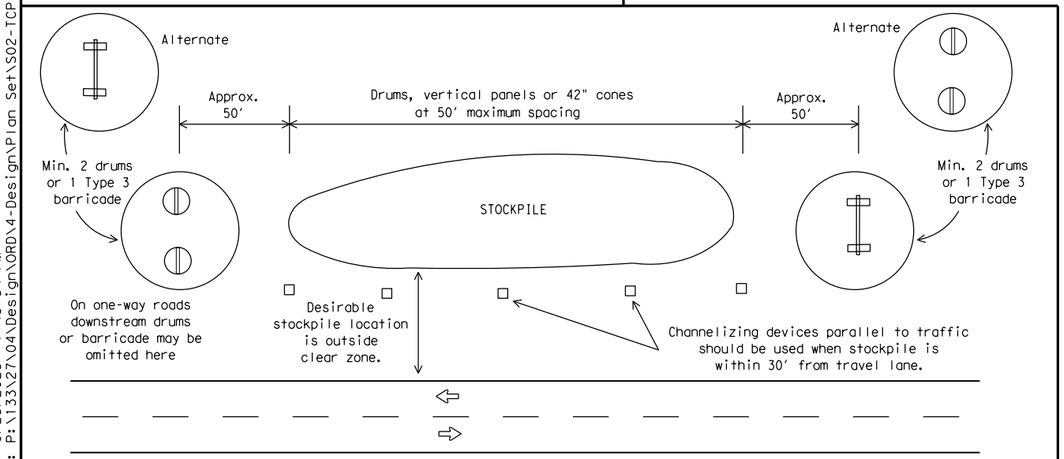



Tubular Marker

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 | | | | |
| 9-07 8-14 | DIST | COUNTY | | SHEET NO. |
| 7-13 5-21 | | | | 32 |

104

DATE: 9/25/2025 1:43:35 PM
FILE: P:\133\27\04\Design\ORD\4-Design\Plan Set\S02-TCP\2-Standards\bc-21 (1).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.

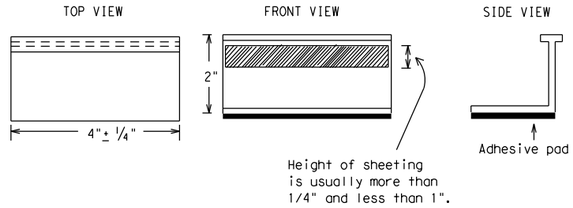
## MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

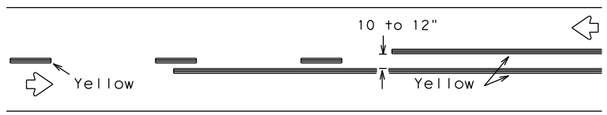
# BC(11)-21

| 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 | DIST | COUNTY | | SHEET NO. |
| 11-02 8-14 | | | | 33 |

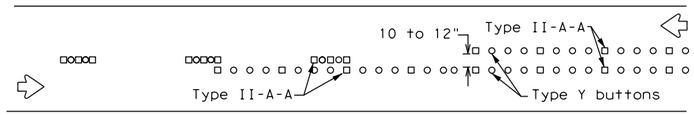
105

DATE: 9/25/2025 1:43:35 PM
FILE: P:\133\27\04\Design\ORD\4-Design\Plan Set\S02-TCP\2-Standards\bc-21 (1).dgn

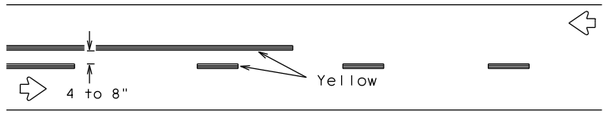
# PAVEMENT MARKING PATTERNS



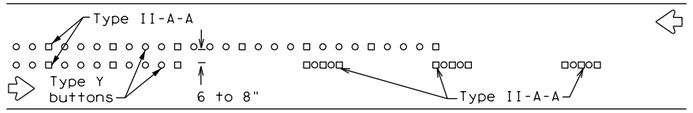

REFLECTORIZED PAVEMENT MARKINGS - PATTERN A




RAISED PAVEMENT MARKERS - PATTERN A



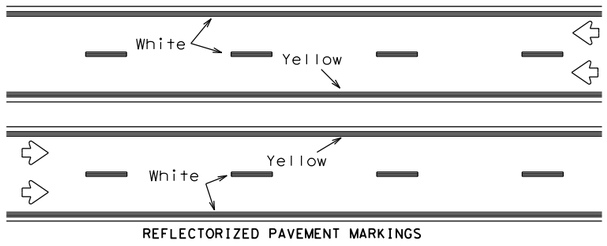

REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



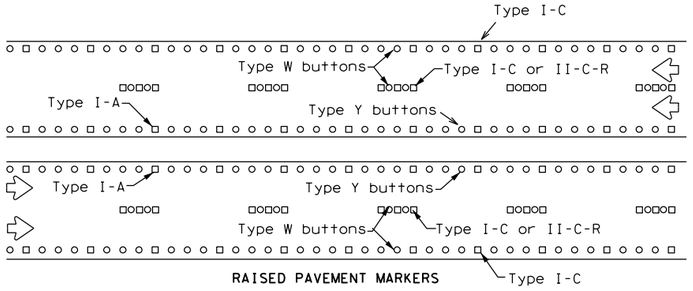

RAISED PAVEMENT MARKERS - PATTERN B

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



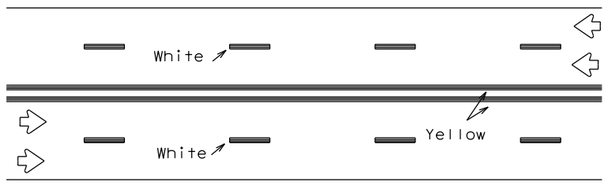

REFLECTORIZED PAVEMENT MARKINGS



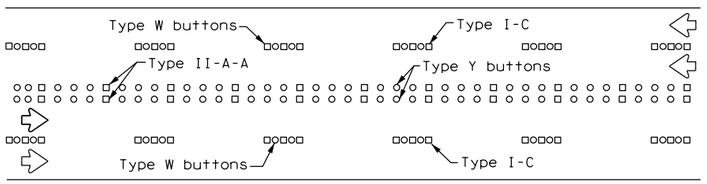

RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

## EDGE & LANE LINES FOR DIVIDED HIGHWAY



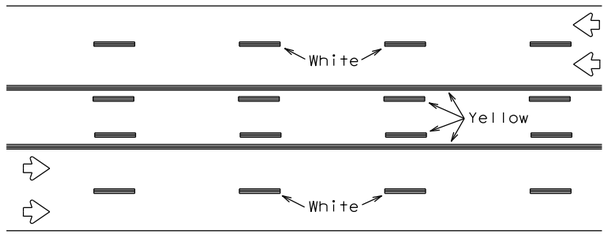

REFLECTORIZED PAVEMENT MARKINGS



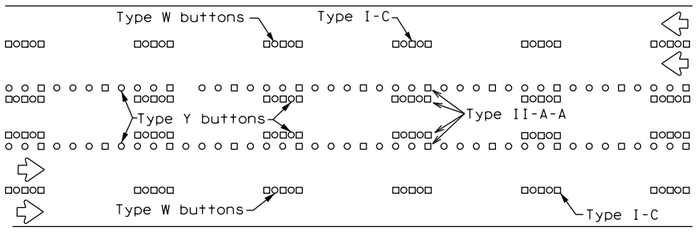

RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

## LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS




REFLECTORIZED PAVEMENT MARKINGS




RAISED PAVEMENT MARKERS

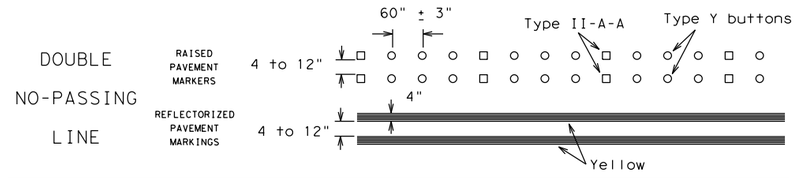
Prefabricated markings may be substituted for reflectorized pavement markings.

## TWO-WAY LEFT TURN LANE

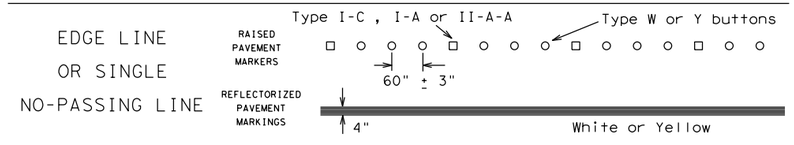
# STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

## SOLID LINES

### DOUBLE NO-PASSING LINE

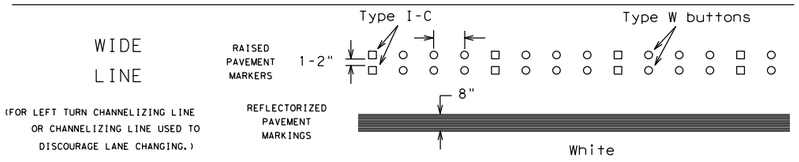



### EDGE LINE OR SINGLE NO-PASSING LINE



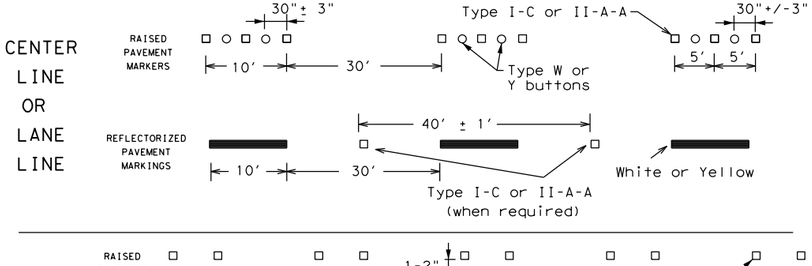

### WIDE LINE

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

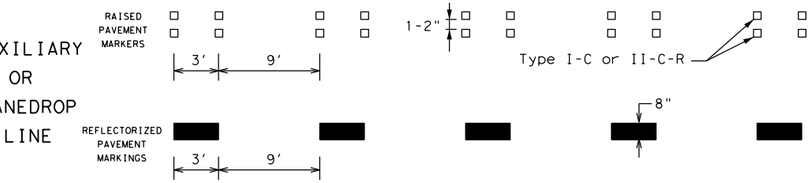



## BROKEN LINES

### CENTER LINE OR LANE LINE

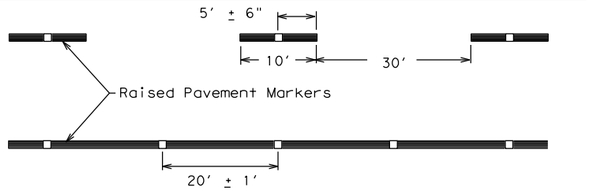



### AUXILIARY OR LANEDROP LINE




### 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."

SHEET 12 OF 12

Texas Department of Transportation

Traffic Safety Division Standard

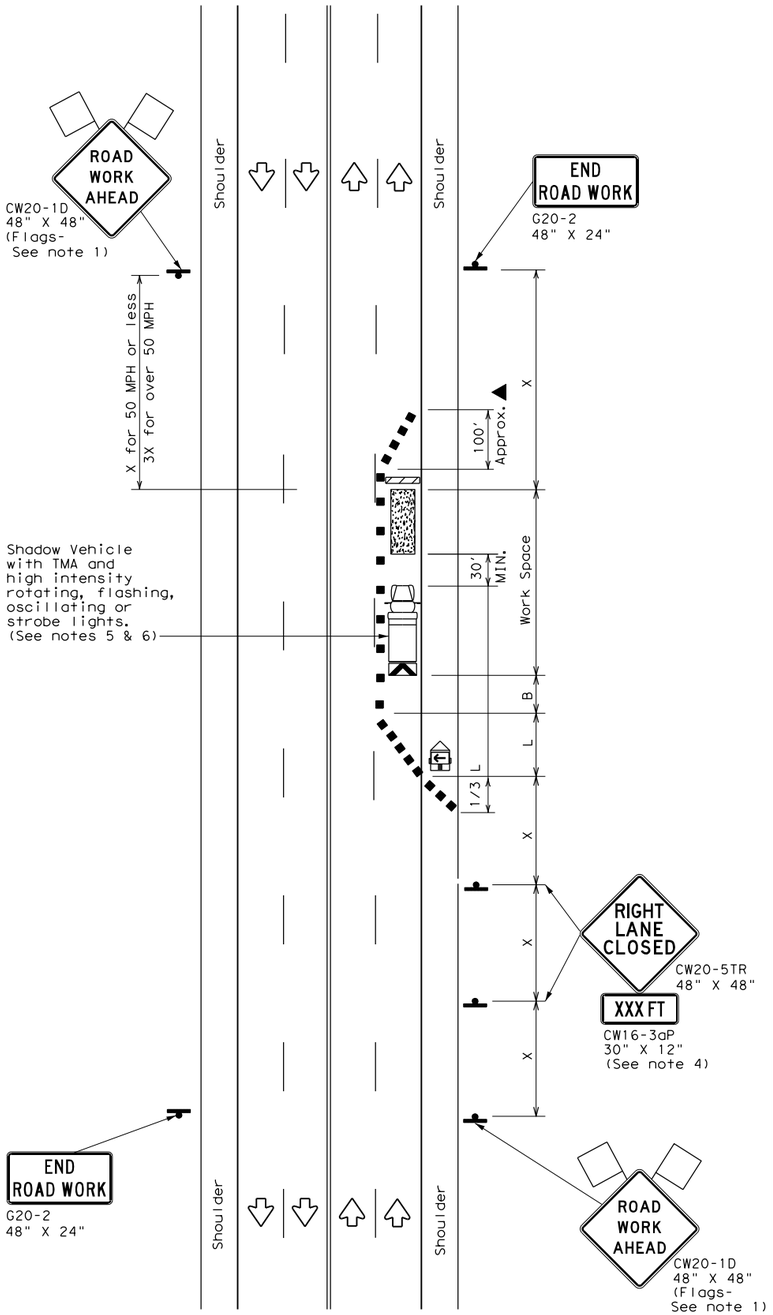
# BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

## BC(12)-21

| FILE: bc-21.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT February 1998 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS 1-97 9-07 5-21 2-98 7-13 11-02 8-14 | DIST | COUNTY | | SHEET NO. 34 |

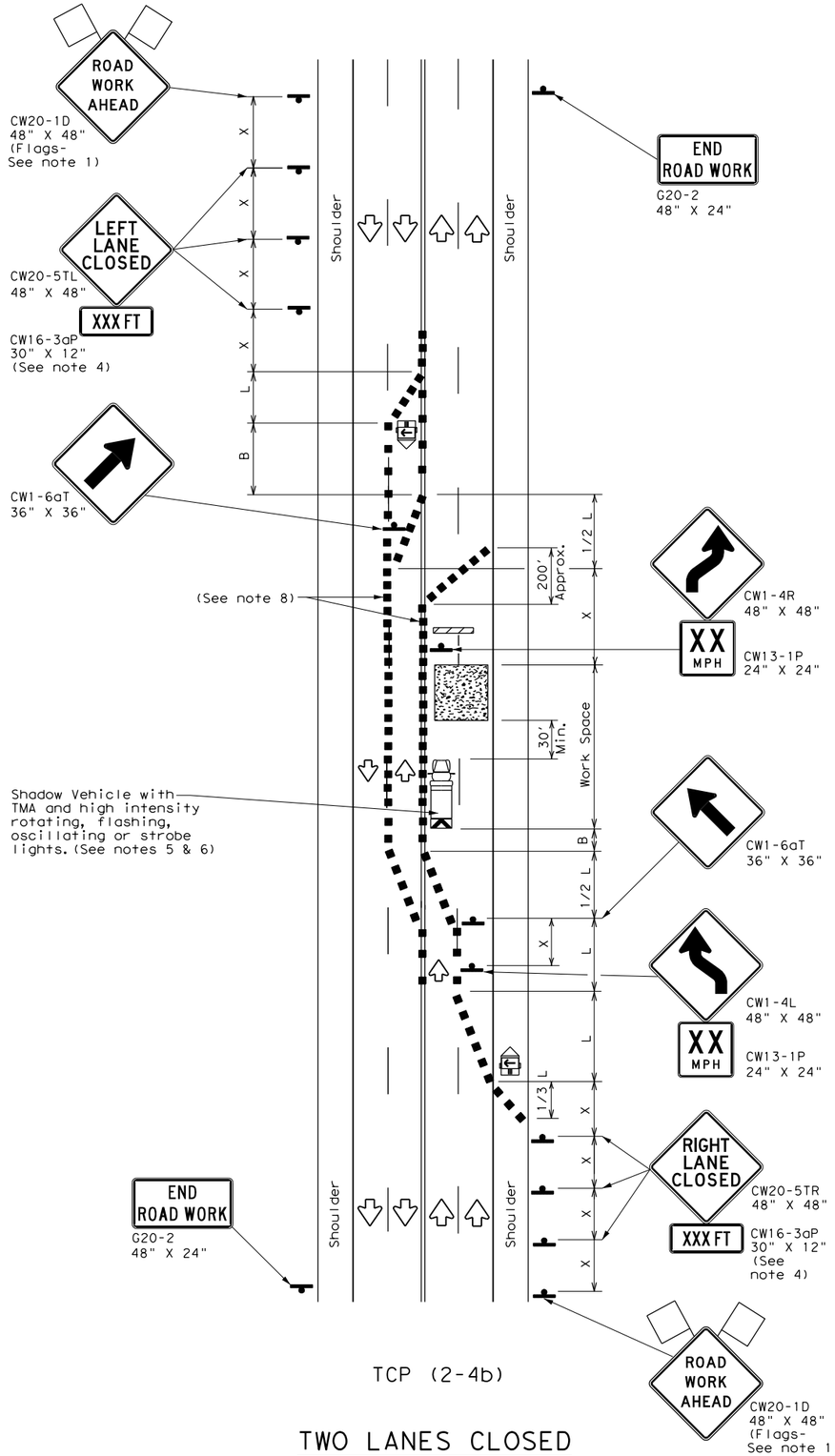
106

DATE: 9/25/2025 1:43:36 PM
FILE: P:\133\27\04\Design\ORD\4-Design\Plan Set\S02-TCP\2-Standards\tcp2-4-18.dgn




TCP (2-4a)

## ONE LANE CLOSED




TCP (2-4b)

## TWO LANES CLOSED

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

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

* Conventional Roads Only

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

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

## GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The downstream taper is optional. When used, it should be 100 feet minimum length per lane.
4. For short term applications, when post mounted signs are not used, the distance legend may be shown on the sign face rather than on a CW16-3aP supplemental plaque.
5. 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.
6. Additional Shadow Vehicles with TMAs may be positioned in each closed lane, on the shoulder or off the paved surface, next to those shown in order to protect a wider work space.

### TCP (2-4a)

7. If this TCP is used for a left lane closure, CW20-5TL "LEFT LANE CLOSED"signs shall be used and channelizing devices shall be placed on the centerline to protect the work space from opposing traffic with the arrow board placed in the closed lane near the end of the merging taper.

### TCP (2-4b)

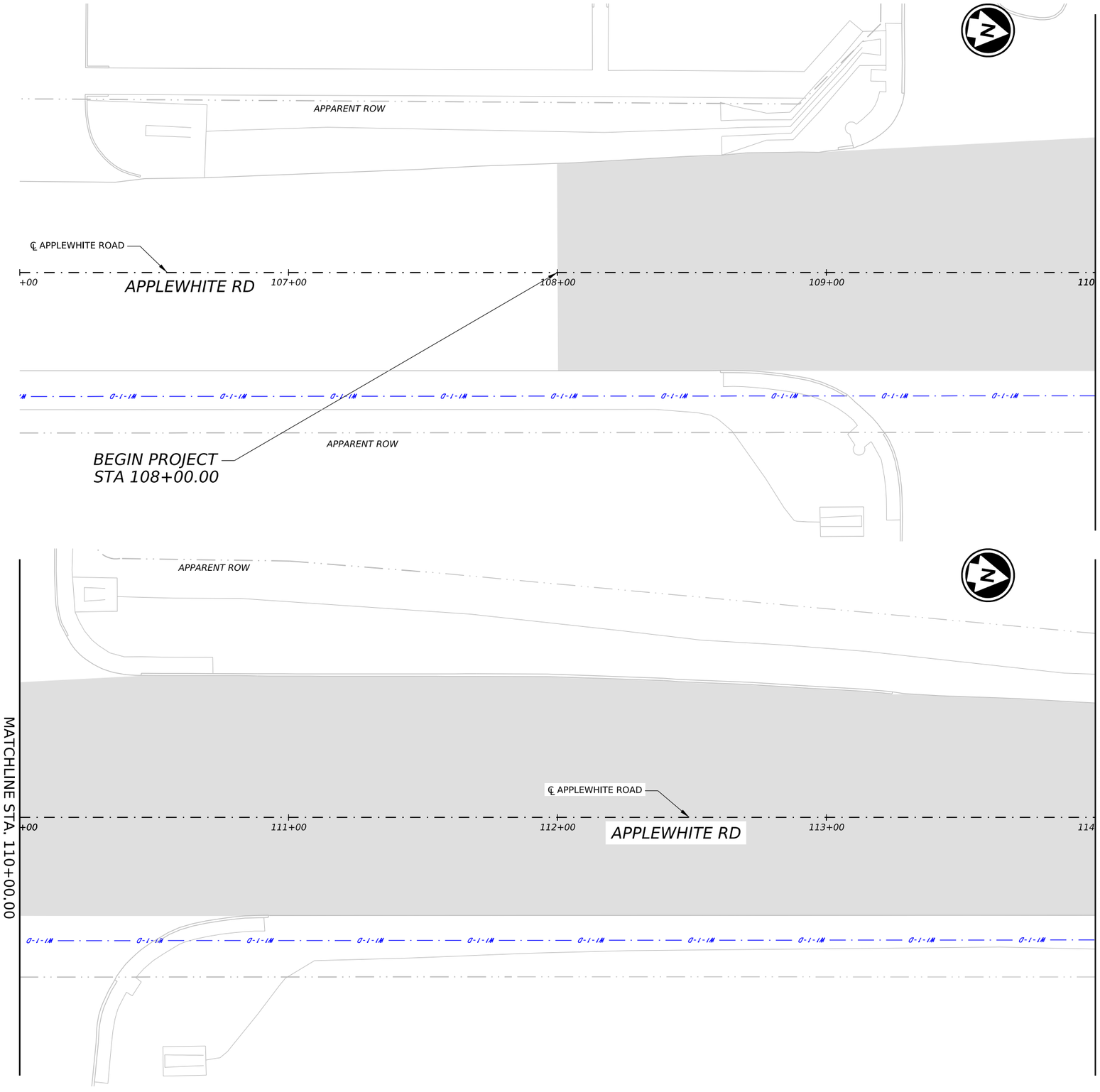
8. For shorter durations where traffic is directed over a yellow centerline, channelizing devices which separate two-way traffic should be spaced on tapers at 20' or 15' if posted speeds are 35 mph or slower, and for tangent sections, at 1/2(S) where S is the speed in mph. This tighter devices spacing is intended for the area of conflicting markings, not the entire work zone.

Texas Department of Transportation | Traffic Operations Division Standard

# TRAFFIC CONTROL PLAN
# LANE CLOSURES ON MULTILANE CONVENTIONAL ROADS

# TCP(2-4)-18

| FILE: tcp2-4-18.dgn | DN: | CK: | DW: | CK: |
|---|---|---|---|---|
| © TxDOT December 1985 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS 8-95 3-03 | | | | |
| 1-97 2-12 | DIST | COUNTY | | SHEET NO. |
| 4-98 2-18 | | | | 35 |




## LEGEND

- OHE-1 — OVERHEAD CPS ELECTRIC LINE
- E1-1 — UNDERGROUND CPS ELECTRIC LINE
- W1-1 — SAWS WATERLINE
- SS1-1 — SAWS WASTEWATER LINE
- FOC1 — TOYOTA FIBER OPTIC LINE
- FOC2 — AT&T FIBER OPTIC LINE
- G1-1 — CPS GAS LINE

- MILL & INLAY
- PROP PAVEMENT
- BASE REPAIR
- MEDIAN REMOVAL
- EXIST CONC PAVEMENT TO REMAIN
- WATER VALVE
- WATER METER
- GAS VALVE
- OVERHEAD POWER POLE
- TELEPHONE MANHOLE
- FIRE HYDRANT
- CONFLICT
- CONFLICT RESOLVED
- CONFLICT AREA

## NOTES

1. EXISITNG FEATURES ARE SHOWN SCREENED BACK.
2. ALL UTILITIES SHAOWN ARE APPROXIMATE. CONTRACTOR TO USE SUE DATA SHEETS AND VERIFY DEPTHS AND LOCATIONS PRIOR TO START OF CONSTRUCTION.
3. UTILITY LINESTYLES THAT INDICATE "D" ARE BASED ON SUE LEVEL D INFORMATION. UTILITY LINESTYLES THAT INDICATE "C" ARE BASED ON SUE LEVEL C INFORMATION. SUE LEVEL B LINETYLES HAVE NO DESIGNATION.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

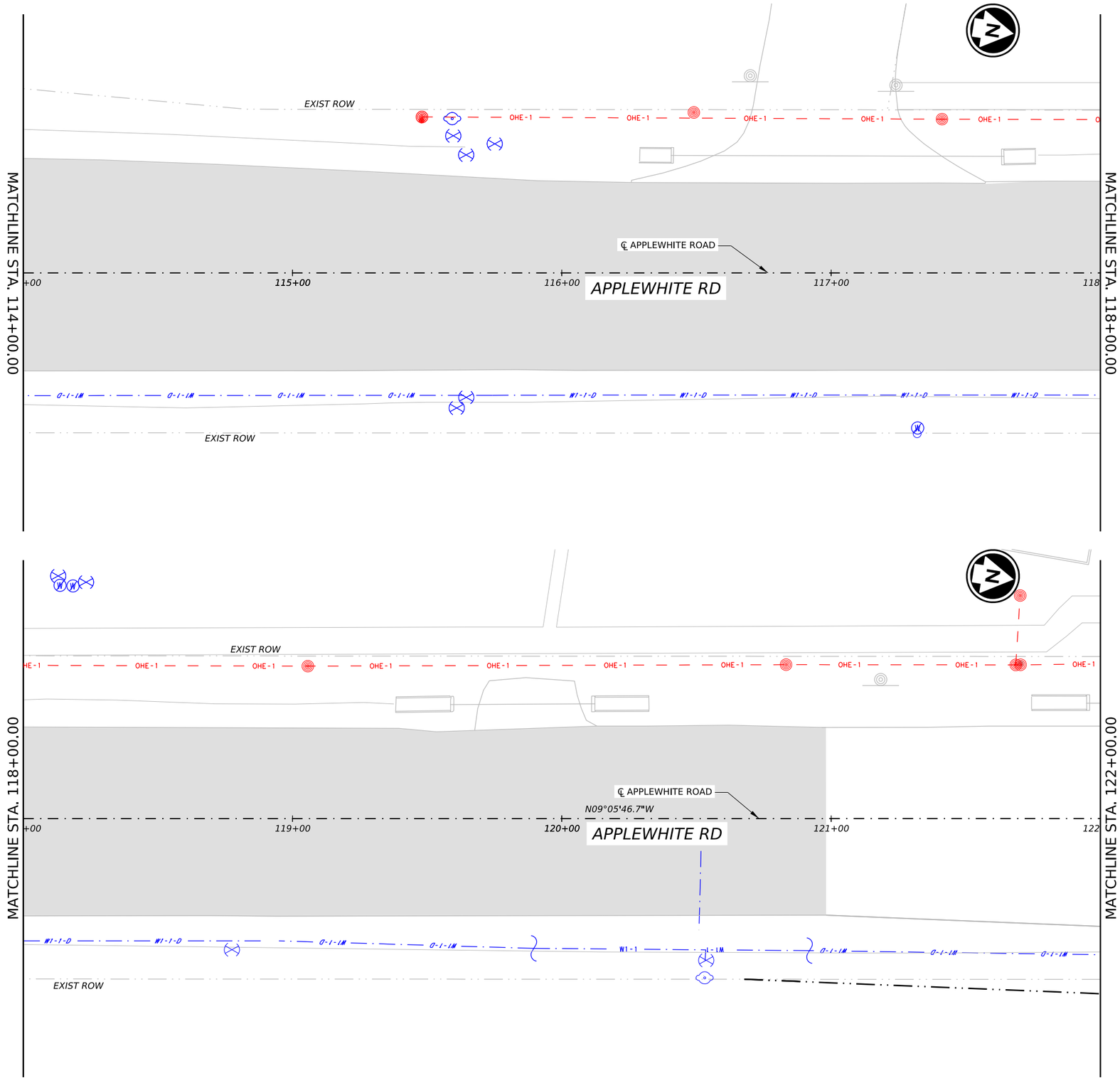
TOYOTA SOUTHSIDE STREETS

# UTILITY LAYOUT

SHEET 1 OF 11

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 36 |

PRINTED ON: 9/25/2025 1:49:39 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S06-Utilities\1332704_UTIL_01.1_B.dgn




## LEGEND

- OHE-1 — OVERHEAD CPS ELECTRIC LINE
- E1-1 — UNDERGROUND CPS ELECTRIC LINE
- W1-1 — SAWS WATERLINE
- SS1-1 — SAWS WASTEWATER LINE
- FOC1 — TOYOTA FIBER OPTIC LINE
- FOC2 — AT&T FIBER OPTIC LINE
- G1-1 — CPS GAS LINE

- MILL & INLAY
- PROP PAVEMENT
- BASE REPAIR
- MEDIAN REMOVAL
- EXIST CONC PAVEMENT TO REMAIN
- WATER VALVE
- WATER METER
- GAS VALVE
- OVERHEAD POWER POLE
- TELEPHONE MANHOLE
- FIRE HYDRANT
- CONFLICT
- CONFLICT RESOLVED
- CONFLICT AREA

## NOTES

1. EXISITNG FEATURES ARE SHOWN SCREENED BACK.
2. ALL UTILITIES SHAOWN ARE APPROXIMATE. CONTRACTOR TO USE SUE DATA SHEETS AND VERIFY DEPTHS AND LOCATIONS PRIOR TO START OF CONSTRUCTION.
3. UTILITY LINESTYLES THAT INDICATE "D" ARE BASED ON SUE LEVEL D INFORMATION. UTILITY LINESTYLES THAT INDICATE "C" ARE BASED ON SUE LEVEL C INFORMATION. SUE LEVEL B LINETYLES HAVE NO DESIGNATION.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

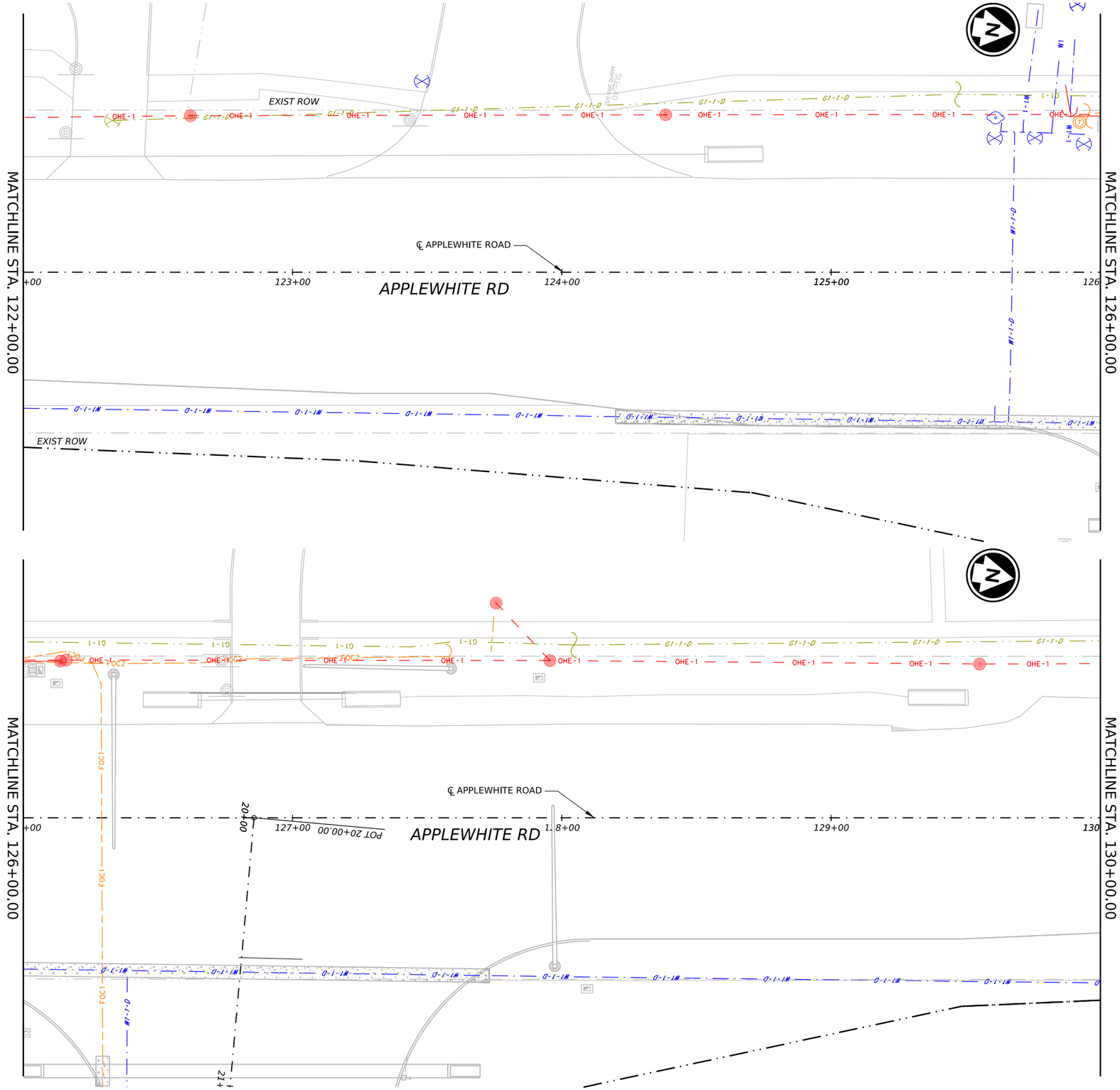
TOYOTA SOUTHSIDE STREETS

UTILITY LAYOUT

SHEET 2 OF 11

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 37 |

PRINTED ON: 9/25/2025 1:49:42 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S06-Utilities\1332704_UTIL_01.1_B-1.dgn




## LEGEND

- OHE-1 — OVERHEAD CPS ELECTRIC LINE
- E1-1 — UNDERGROUND CPS ELECTRIC LINE
- W1-1 — SAWS WATERLINE
- SS1-1 — SAWS WASTEWATER LINE
- FOC1 — TOYOTA FIBER OPTIC LINE
- FOC2 — AT&T FIBER OPTIC LINE
- G1-1 — CPS GAS LINE

- MILL & INLAY
- PROP PAVEMENT
- BASE REPAIR
- MEDIAN REMOVAL
- EXIST CONC PAVEMENT TO REMAIN
- WATER VALVE
- WATER METER
- GAS VALVE
- OVERHEAD POWER POLE
- TELEPHONE MANHOLE
- FIRE HYDRANT
- CONFLICT
- CONFLICT RESOLVED
- CONFLICT AREA

## NOTES

1. EXISITNG FEATURES ARE SHOWN SCREENED BACK.
2. ALL UTILITIES SHAOWN ARE APPROXIMATE. CONTRACTOR TO USE SUE DATA SHEETS AND VERIFY DEPTHS AND LOCATIONS PRIOR TO START OF CONSTRUCTION.
3. UTILITY LINESTYLES THAT INDICATE "D" ARE BASED ON SUE LEVEL D INFORMATION. UTILITY LINESTYLES THAT INDICATE "C" ARE BASED ON SUE LEVEL C INFORMATION. SUE LEVEL B LINETYLES HAVE NO DESIGNATION.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

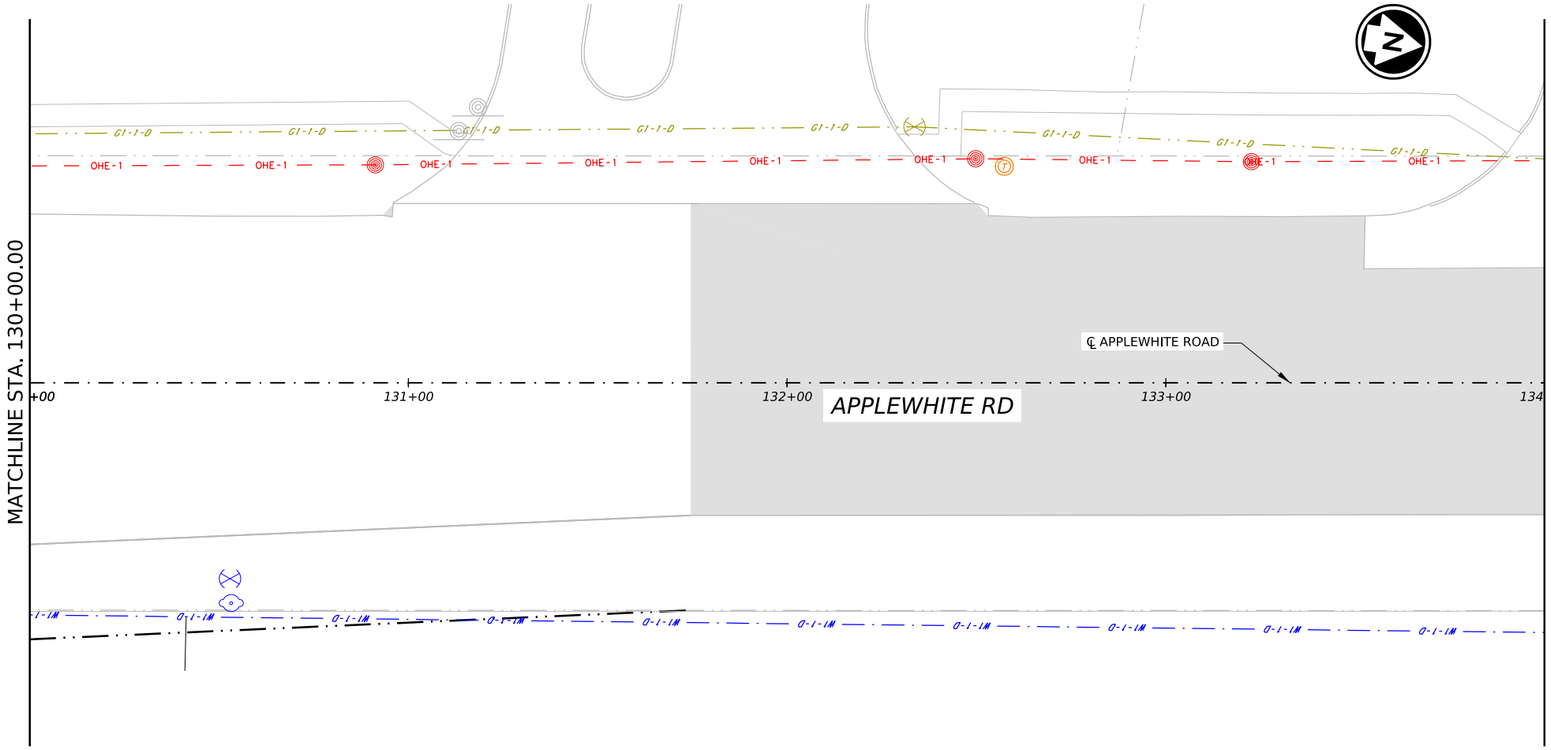
TOYOTA SOUTHSIDE STREETS

# UTILITY LAYOUT

SHEET 3 OF 11

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 38 |


PRINTED ON: 9/25/2025 1:49:44 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S06-Utilities\1332704_UTIL_01.1_B-2.dgn




## LEGEND

- OHE-1 — OVERHEAD CPS ELECTRIC LINE
- E1-1 — UNDERGROUND CPS ELECTRIC LINE
- W1-1 — SAWS WATERLINE
- SS1-1 — SAWS WASTEWATER LINE
- FOC1 — TOYOTA FIBER OPTIC LINE
- FOC2 — AT&T FIBER OPTIC LINE
- G1-1 — CPS GAS LINE

- MILL & INLAY
- PROP PAVEMENT
- BASE REPAIR
- MEDIAN REMOVAL
- EXIST CONC PAVEMENT TO REMAIN
- WATER VALVE
- WATER METER
- GAS VALVE
- OVERHEAD POWER POLE
- TELEPHONE MANHOLE
- FIRE HYDRANT
- CONFLICT
- CONFLICT RESOLVED
- CONFLICT AREA

## NOTES

1. EXISITNG FEATURES ARE SHOWN SCREENED BACK.
2. ALL UTILITIES SHAOWN ARE APPROXIMATE. CONTRACTOR TO USE SUE DATA SHEETS AND VERIFY DEPTHS AND LOCATIONS PRIOR TO START OF CONSTRUCTION.
3. UTILITY LINESTYLES THAT INDICATE "D" ARE BASED ON SUE LEVEL D INFORMATION. UTILITY LINESTYLES THAT INDICATE "C" ARE BASED ON SUE LEVEL C INFORMATION. SUE LEVEL B LINETYLES HAVE NO DESIGNATION.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

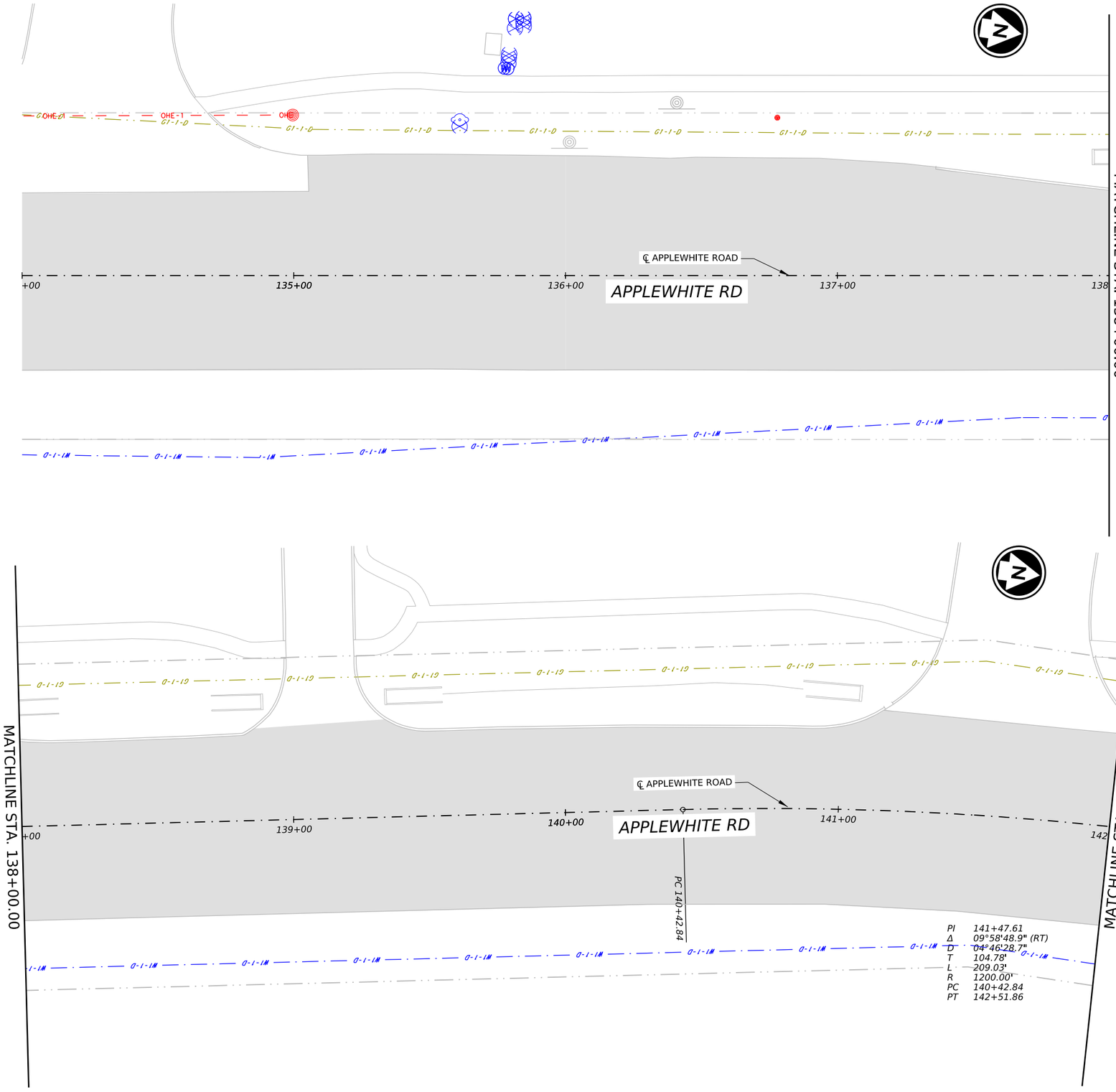
TOYOTA SOUTHSIDE STREETS

UTILITY LAYOUT

SHEET 4 OF 11

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 39 |

PRINTED ON: 9/25/2025 1:49:56 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S06-Utilities\1332704_UTIL_01.1_B-3.dgn




## LEGEND

- OHE-1 — OVERHEAD CPS ELECTRIC LINE
- E1-1 — UNDERGROUND CPS ELECTRIC LINE
- W1-1 — SAWS WATERLINE
- SS1-1 — SAWS WASTEWATER LINE
- FOC1 — TOYOTA FIBER OPTIC LINE
- FOC2 — AT&T FIBER OPTIC LINE
- G1-1 — CPS GAS LINE

- MILL & INLAY
- PROP PAVEMENT
- BASE REPAIR
- MEDIAN REMOVAL
- EXIST CONC PAVEMENT TO REMAIN
- WATER VALVE
- WATER METER
- GAS VALVE
- OVERHEAD POWER POLE
- TELEPHONE MANHOLE
- FIRE HYDRANT
- CONFLICT
- CONFLICT RESOLVED
- CONFLICT AREA

## NOTES

1. EXISITNG FEATURES ARE SHOWN SCREENED BACK.
2. ALL UTILITIES SHAOWN ARE APPROXIMATE. CONTRACTOR TO USE SUE DATA SHEETS AND VERIFY DEPTHS AND LOCATIONS PRIOR TO START OF CONSTRUCTION.
3. UTILITY LINESTYLES THAT INDICATE "D" ARE BASED ON SUE LEVEL D INFORMATION. UTILITY LINESTYLES THAT INDICATE "C" ARE BASED ON SUE LEVEL C INFORMATION. SUE LEVEL B LINETYLES HAVE NO DESIGNATION.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

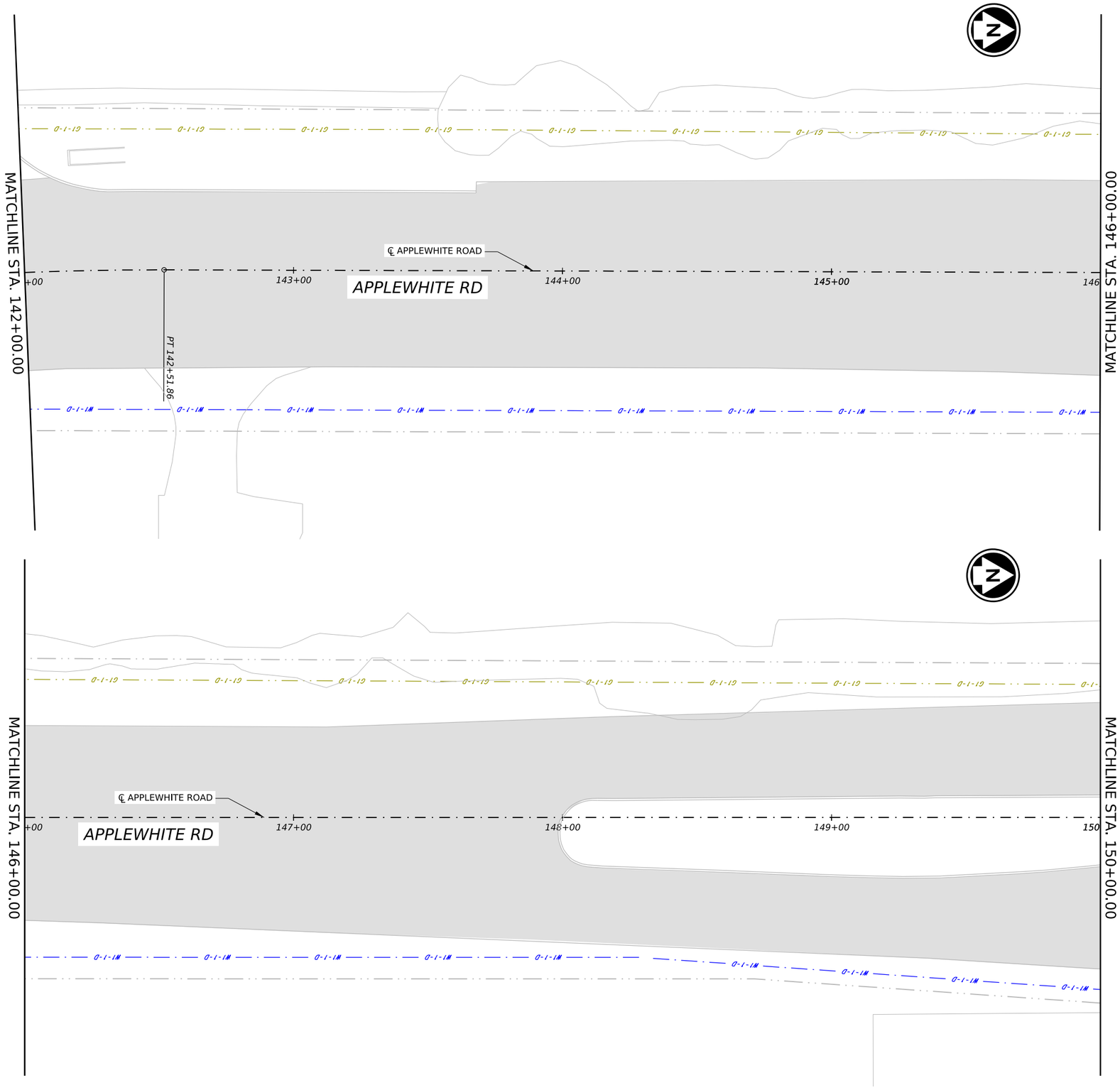
TOYOTA SOUTHSIDE STREETS

# UTILITY LAYOUT

SHEET 5 OF 11

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 40 |


PRINTED ON: 9/25/2025 1:49:59 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S06-Utilities\1332704_UTIL_01_B.dgn




## LEGEND

- OVERHEAD CPS ELECTRIC LINE
- UNDERGROUND CPS ELECTRIC LINE
- SAWS WATERLINE
- SAWS WASTEWATER LINE
- TOYOTA FIBER OPTIC LINE
- AT&T FIBER OPTIC LINE
- CPS GAS LINE
- MILL & INLAY
- PROP PAVEMENT
- BASE REPAIR
- MEDIAN REMOVAL
- EXIST CONC PAVEMENT TO REMAIN
- WATER VALVE
- WATER METER
- GAS VALVE
- OVERHEAD POWER POLE
- TELEPHONE MANHOLE
- FIRE HYDRANT
- CONFLICT
- CONFLICT RESOLVED
- CONFLICT AREA

## NOTES

1. EXISITNG FEATURES ARE SHOWN SCREENED BACK.
2. ALL UTILITIES SHAOWN ARE APPROXIMATE. CONTRACTOR TO USE SUE DATA SHEETS AND VERIFY DEPTHS AND LOCATIONS PRIOR TO START OF CONSTRUCTION.
3. UTILITY LINESTYLES THAT INDICATE "D" ARE BASED ON SUE LEVEL D INFORMATION. UTILITY LINESTYLES THAT INDICATE "C" ARE BASED ON SUE LEVEL C INFORMATION. SUE LEVEL B LINETYLES HAVE NO DESIGNATION.

DESIGN

STATE OF TEXAS · THOMAS A HENZ · 142980 · LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS · DAN THOMA · 98622 · LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

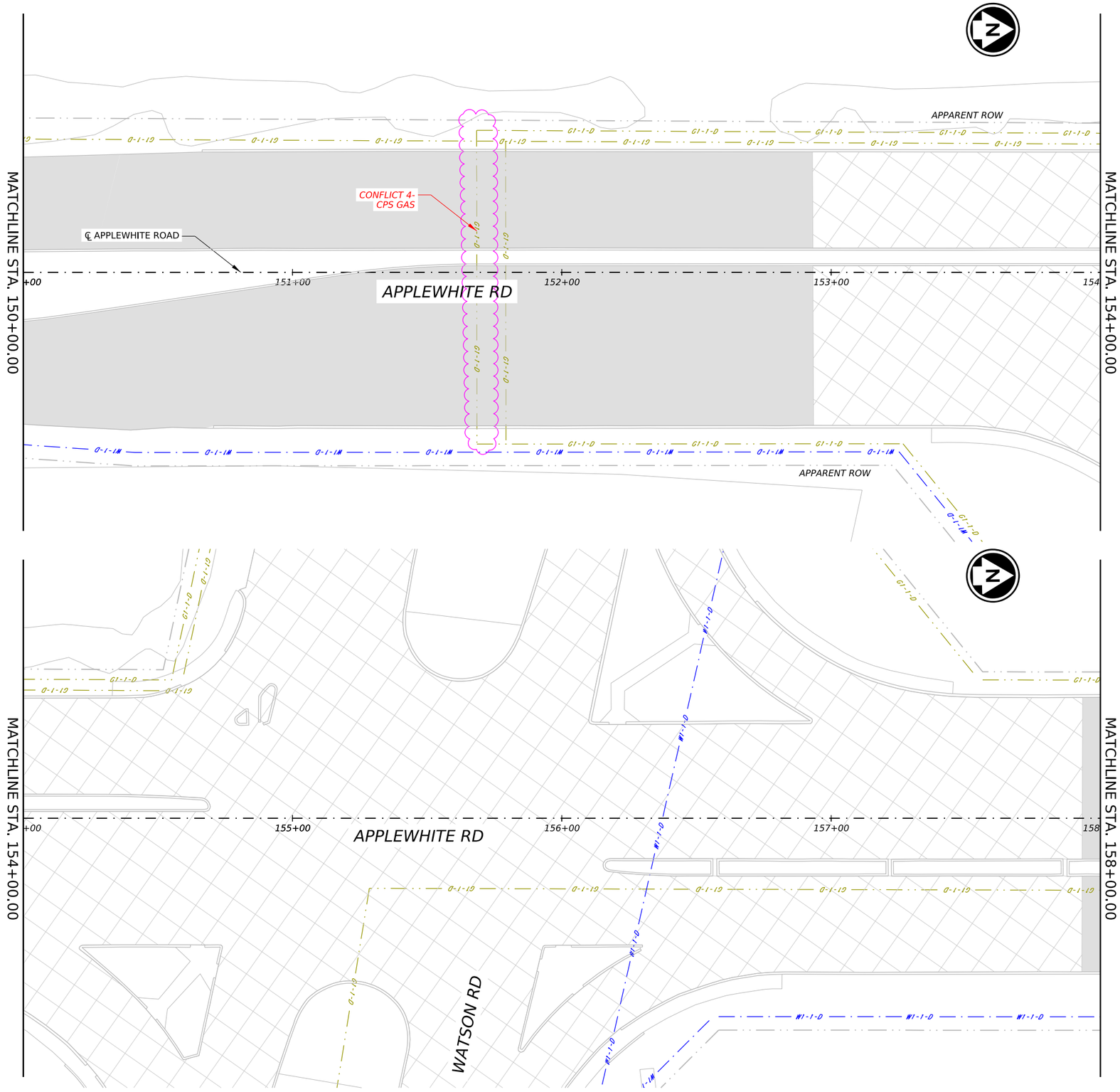
TOYOTA SOUTHSIDE STREETS

# UTILITY LAYOUT

SHEET 6 OF 11

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 41 |

PRINTED ON: 9/25/2025 1:50:01 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S06-Utilities\1332704_UTIL_02_B.dgn




## LEGEND

- OVERHEAD CPS ELECTRIC LINE (OHE-1)
- UNDERGROUND CPS ELECTRIC LINE (E1-1)
- SAWS WATERLINE (W1-1)
- SAWS WASTEWATER LINE (SS1-1)
- TOYOTA FIBER OPTIC LINE (FOC1)
- AT&T FIBER OPTIC LINE (FOC2)
- CPS GAS LINE (G1-1)
- MILL & INLAY
- PROP PAVEMENT
- BASE REPAIR
- MEDIAN REMOVAL
- EXIST CONC PAVEMENT TO REMAIN
- WATER VALVE
- WATER METER
- GAS VALVE
- OVERHEAD POWER POLE
- TELEPHONE MANHOLE
- FIRE HYDRANT
- CONFLICT
- CONFLICT RESOLVED
- CONFLICT AREA

## NOTES

1. EXISITNG FEATURES ARE SHOWN SCREENED BACK.
2. ALL UTILITIES SHAOWN ARE APPROXIMATE. CONTRACTOR TO USE SUE DATA SHEETS AND VERIFY DEPTHS AND LOCATIONS PRIOR TO START OF CONSTRUCTION.
3. UTILITY LINESTYLES THAT INDICATE "D" ARE BASED ON SUE LEVEL D INFORMATION. UTILITY LINESTYLES THAT INDICATE "C" ARE BASED ON SUE LEVEL C INFORMATION. SUE LEVEL B LINETYLES HAVE NO DESIGNATION.

DESIGN

STATE OF TEXAS · THOMAS A HENZ · 142980 · LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS · DAN THOMA · 98622 · LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

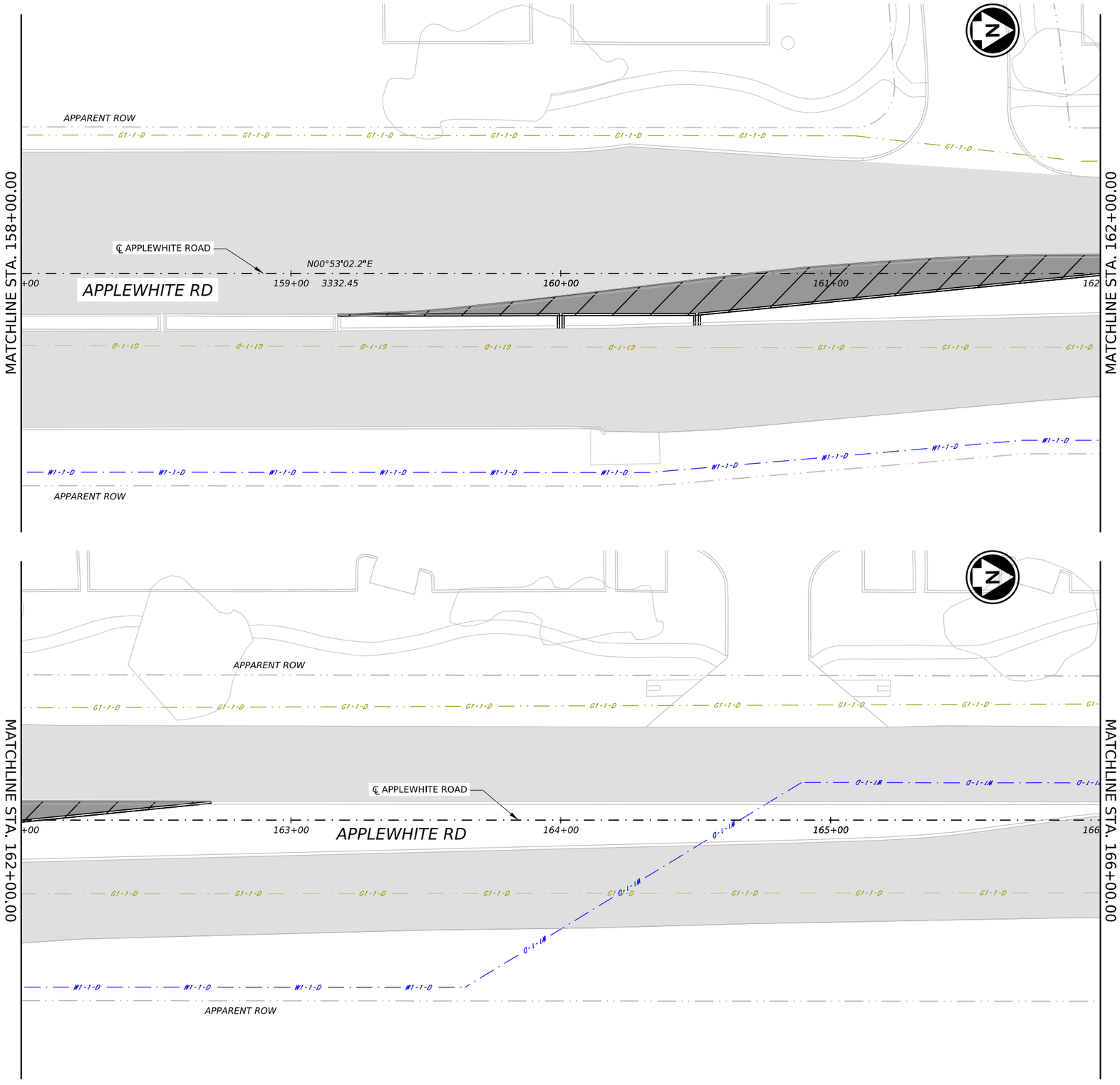
TOYOTA SOUTHSIDE STREETS

# UTILITY LAYOUT

SHEET 7 OF 11

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 42 |

PRINTED ON: 9/25/2025 1:50:03 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Sets\S06-Utilities\1332704_UTIL_03_B.dgn




## LEGEND

- OVERHEAD CPS ELECTRIC LINE
- UNDERGROUND CPS ELECTRIC LINE
- SAWS WATERLINE
- SAWS WASTEWATER LINE
- TOYOTA FIBER OPTIC LINE
- AT&T FIBER OPTIC LINE
- CPS GAS LINE
- MILL & INLAY
- PROP PAVEMENT
- BASE REPAIR
- MEDIAN REMOVAL
- EXIST CONC PAVEMENT TO REMAIN
- WATER VALVE
- WATER METER
- GAS VALVE
- OVERHEAD POWER POLE
- TELEPHONE MANHOLE
- FIRE HYDRANT
- CONFLICT
- CONFLICT RESOLVED
- CONFLICT AREA

## NOTES

1. EXISITNG FEATURES ARE SHOWN SCREENED BACK.
2. ALL UTILITIES SHAOWN ARE APPROXIMATE. CONTRACTOR TO USE SUE DATA SHEETS AND VERIFY DEPTHS AND LOCATIONS PRIOR TO START OF CONSTRUCTION.
3. UTILITY LINESTYLES THAT INDICATE "D" ARE BASED ON SUE LEVEL D INFORMATION. UTILITY LINESTYLES THAT INDICATE "C" ARE BASED ON SUE LEVEL C INFORMATION. SUE LEVEL B LINETYLES HAVE NO DESIGNATION.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

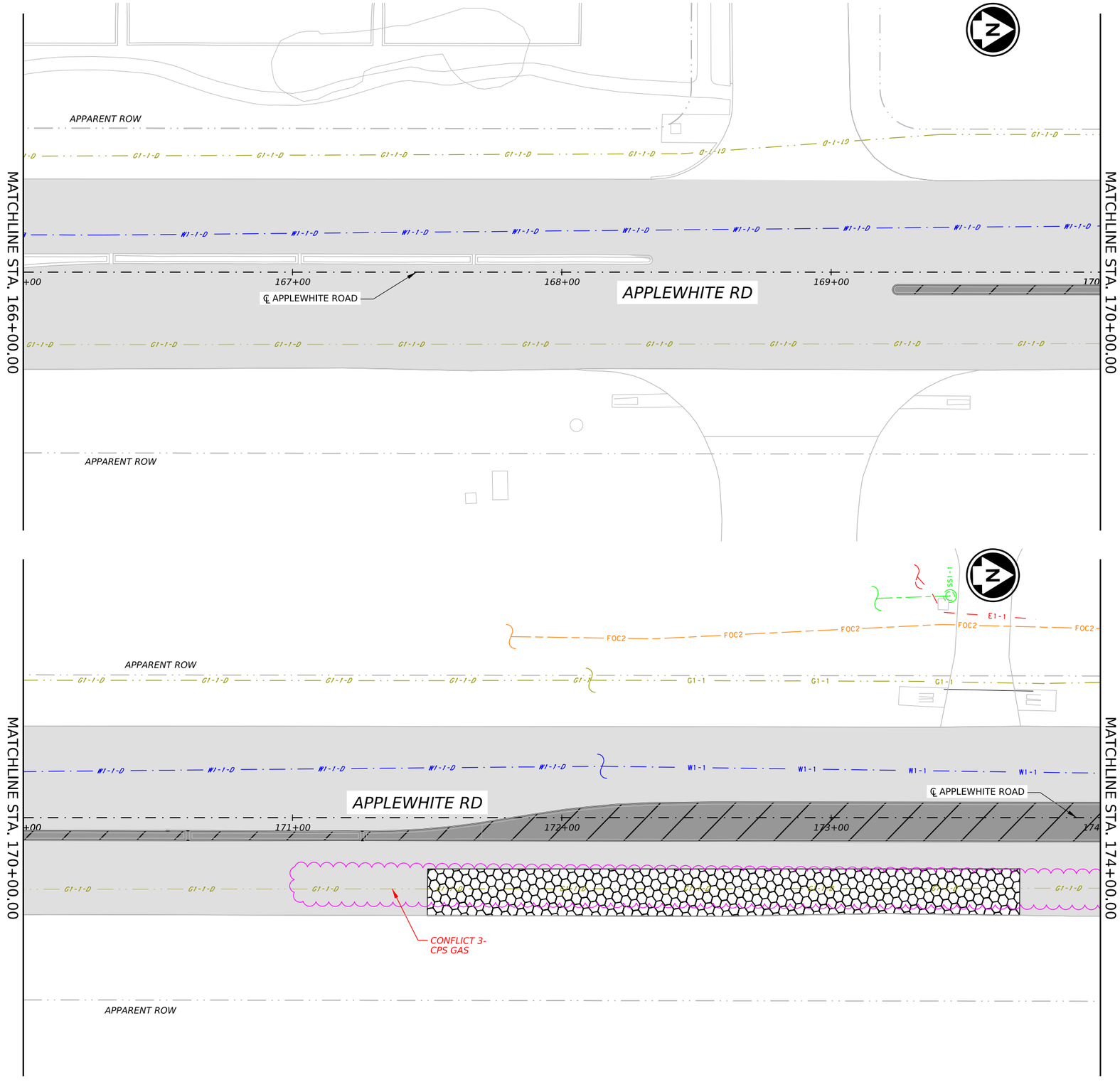
TOYOTA SOUTHSIDE STREETS

# UTILITY LAYOUT

SHEET 8 OF 11

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 43 |

PRINTED ON: 9/25/2025 1:50:05 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S06-Utilities\1332704_UTIL_04_B.dgn




## LEGEND

- OHE-1 — OVERHEAD CPS ELECTRIC LINE
- E1-1 — UNDERGROUND CPS ELECTRIC LINE
- W1-1 — SAWS WATERLINE
- SS1-1 — SAWS WASTEWATER LINE
- FOC1 — TOYOTA FIBER OPTIC LINE
- FOC2 — AT&T FIBER OPTIC LINE
- G1-1 — CPS GAS LINE

- MILL & INLAY
- PROP PAVEMENT
- BASE REPAIR
- MEDIAN REMOVAL
- EXIST CONC PAVEMENT TO REMAIN
- WATER VALVE
- WATER METER
- GAS VALVE
- OVERHEAD POWER POLE
- TELEPHONE MANHOLE
- FIRE HYDRANT
- CONFLICT
- CONFLICT RESOLVED
- CONFLICT AREA

## NOTES

1. EXISITNG FEATURES ARE SHOWN SCREENED BACK.
2. ALL UTILITIES SHAOWN ARE APPROXIMATE. CONTRACTOR TO USE SUE DATA SHEETS AND VERIFY DEPTHS AND LOCATIONS PRIOR TO START OF CONSTRUCTION.
3. UTILITY LINESTYLES THAT INDICATE "D" ARE BASED ON SUE LEVEL D INFORMATION. UTILITY LINESTYLES THAT INDICATE "C" ARE BASED ON SUE LEVEL C INFORMATION. SUE LEVEL B LINETYLES HAVE NO DESIGNATION.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

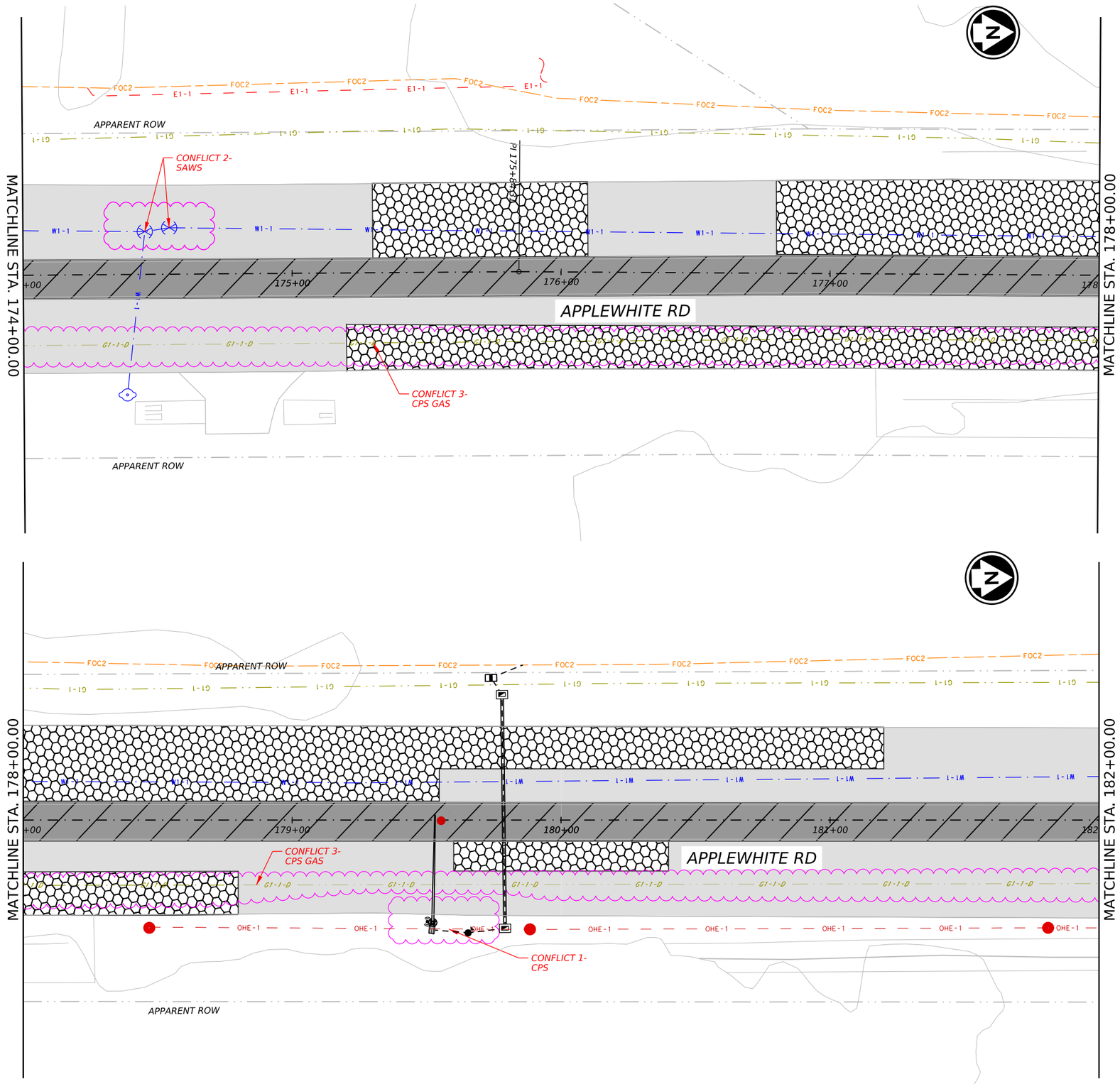
TOYOTA SOUTHSIDE STREETS

# UTILITY LAYOUT

SHEET 9 OF 11

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 44 |

PRINTED ON: 9/25/2025 1:50:07 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S06-Utilities\1332704_UTIL_05_B.dgn




## LEGEND

- OHE-1 — OVERHEAD CPS ELECTRIC LINE
- E1-1 — UNDERGROUND CPS ELECTRIC LINE
- W1-1 — SAWS WATERLINE
- SS1-1 — SAWS WASTEWATER LINE
- FOC1 — TOYOTA FIBER OPTIC LINE
- FOC2 — AT&T FIBER OPTIC LINE
- G1-1 — CPS GAS LINE

- MILL & INLAY
- PROP PAVEMENT
- BASE REPAIR
- MEDIAN REMOVAL
- EXIST CONC PAVEMENT TO REMAIN
- WATER VALVE
- WATER METER
- GAS VALVE
- OVERHEAD POWER POLE
- TELEPHONE MANHOLE
- FIRE HYDRANT
- CONFLICT
- CONFLICT RESOLVED
- CONFLICT AREA

## NOTES

1. EXISITNG FEATURES ARE SHOWN SCREENED BACK.
2. ALL UTILITIES SHAOWN ARE APPROXIMATE. CONTRACTOR TO USE SUE DATA SHEETS AND VERIFY DEPTHS AND LOCATIONS PRIOR TO START OF CONSTRUCTION.
3. UTILITY LINESTYLES THAT INDICATE "D" ARE BASED ON SUE LEVEL D INFORMATION. UTILITY LINESTYLES THAT INDICATE "C" ARE BASED ON SUE LEVEL C INFORMATION. SUE LEVEL B LINETYLES HAVE NO DESIGNATION.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 I Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

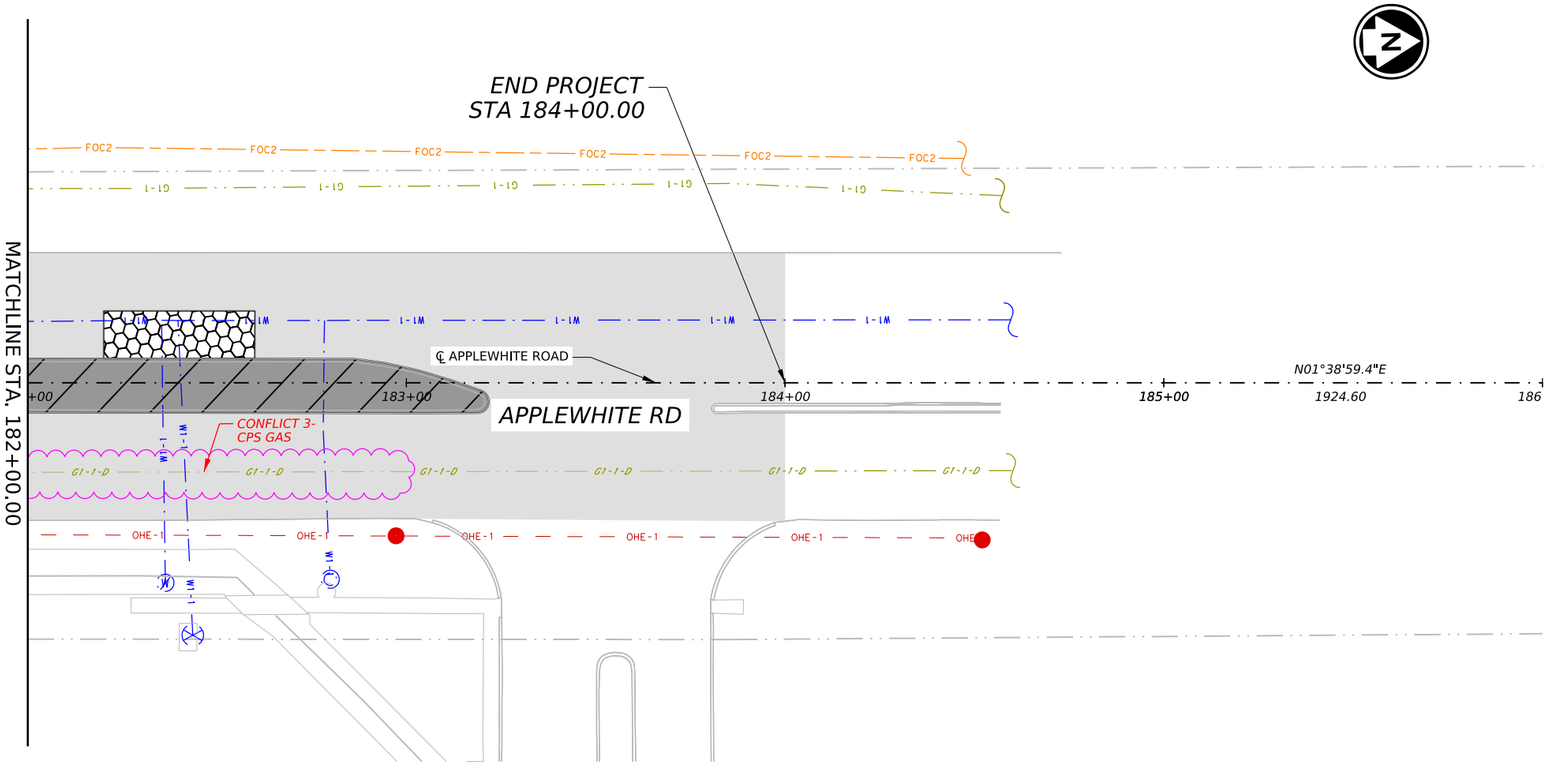
TOYOTA SOUTHSIDE STREETS

# UTILITY LAYOUT

SHEET 10 OF 11

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 45 |

PRINTED ON: 9/25/2025 1:50:08 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S06-Utilities\1332704_UTIL_06_B.dgn




## LEGEND

- OHE-1 — OVERHEAD CPS ELECTRIC LINE
- E1-1 — UNDERGROUND CPS ELECTRIC LINE
- W1-1 — SAWS WATERLINE
- SS1-1 — SAWS WASTEWATER LINE
- FOC1 — TOYOTA FIBER OPTIC LINE
- FOC2 — AT&T FIBER OPTIC LINE
- G1-1 — CPS GAS LINE

- MILL & INLAY
- PROP PAVEMENT
- BASE REPAIR
- MEDIAN REMOVAL
- EXIST CONC PAVEMENT TO REMAIN
- WATER VALVE
- WATER METER
- GAS VALVE
- OVERHEAD POWER POLE
- TELEPHONE MANHOLE
- FIRE HYDRANT
- CONFLICT
- CONFLICT RESOLVED
- CONFLICT AREA

## NOTES

1. EXISITNG FEATURES ARE SHOWN SCREENED BACK.
2. ALL UTILITIES SHAOWN ARE APPROXIMATE. CONTRACTOR TO USE SUE DATA SHEETS AND VERIFY DEPTHS AND LOCATIONS PRIOR TO START OF CONSTRUCTION.
3. UTILITY LINESTYLES THAT INDICATE "D" ARE BASED ON SUE LEVEL D INFORMATION. UTILITY LINESTYLES THAT INDICATE "C" ARE BASED ON SUE LEVEL C INFORMATION. SUE LEVEL B LINETYLES HAVE NO DESIGNATION.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TOYOTA SOUTHSIDE STREETS

# UTILITY LAYOUT

SHEET 11 OF 11

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 46 |


PRINTED ON: 9/25/2025 1:50:10 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S06-Utilities\1332704_UTIL_07_B.dgn

HORIZONTAL ALIGNMENT REPORT

Alignment name: CL APPLEWHITE_RD
Alignment description:
Report Created: Monday, April 21, 2025
Time: 5:02:21 PM

| | STATION | X | Y |
|---|---|---|---|
| POT | 10000.000 R1 | 2112718.360 | 13641451.848 |
| PC | 14042.836 R1 | 2112079.210 | 13645443.841 |
| Tangential Direction: | N9.096°W | | |
| Tangential Length: | 4042.836 | | |
| PC | 14042.836 R1 | 2112079.145 | 13645444.250 |
| PI | 14147.613 R1 | 2112062.580 | 13645547.710 |
| CC | | 2113264.054 | 13645633.963 |
| PT | 14251.861 R1 | 2112064.197 | 13645652.475 |
| Radius: | 1200.000 | | |
| Delta: | 9.980°Right | | |
| Degree of Curvature(Arc): | 4.775° | | |
| Length: | 209.026 | | |
| Tangent: | 104.778 | | |
| Chord: | 208.761 | | |
| Middle Ordinate: | 4.548 | | |
| External: | 4.566 | | |
| Tangent Back Direction: | N9.096°W | | |
| Radial Direction: | N80.904°E | | |
| Chord Direction: | N4.106°W | | |
| Radial Direction: | S89.116°E | | |
| Tangent Ahead Direction: | N0.884°E | | |
| PT | 14251.861 R1 | 2112064.196 | 13645652.475 |
| PI | 17584.312 R1 | 2112115.606 | 13648984.529 |
| Tangential Direction: | N0.884°E | | |
| Tangential Length: | 3332.451 | | |
| PI | 17584.312 R1 | 2112115.606 | 13648984.529 |
| PC | 19508.909 R1 | 2112171.018 | 13650908.329 |
| Tangential Direction: | N1.650°E | | |
| Tangential Length: | 1924.598 | | |
| PC | 19508.909 R1 | 2112171.018 | 13650908.329 |
| PI | 19596.207 R1 | 2112173.531 | 13650995.590 |
| CC | | 2113370.520 | 13650873.779 |
| PT | 19683.198 R1 | 2112188.648 | 13651081.569 |
| Radius: | 1200.000 | | |
| Delta: | 8.322°Right | | |
| Degree of Curvature(Arc): | 4.775° | | |
| Length: | 174.289 | | |
| Tangent: | 87.298 | | |
| Chord: | 174.136 | | |
| Middle Ordinate: | 3.163 | | |
| External: | 3.171 | | |
| Tangent Back Direction: | N1.650°E | | |
| Radial Direction: | S88.350°E | | |
| Chord Direction: | N5.811°E | | |
| Radial Direction: | S80.028°E | | |
| Tangent Ahead Direction: | N9.972°E | | |
| PT | 19683.198 R1 | 2112188.648 | 13651081.569 |
| POT | 19759.042 R1 | 2112201.781 | 13651156.268 |
| Tangential Direction: | N9.972°E | | |
| Tangential Length: | 75.844 | | |

PRINTED ON: 9/25/2025 1:43:38 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S03-Roadway\1332704_HALN_B.dgn

DESIGN

STATE OF TEXAS
THOMAS A HENZ
142980
LICENSED
PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS
DAN THOMA
98622
LICENSED
PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON
2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000
Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

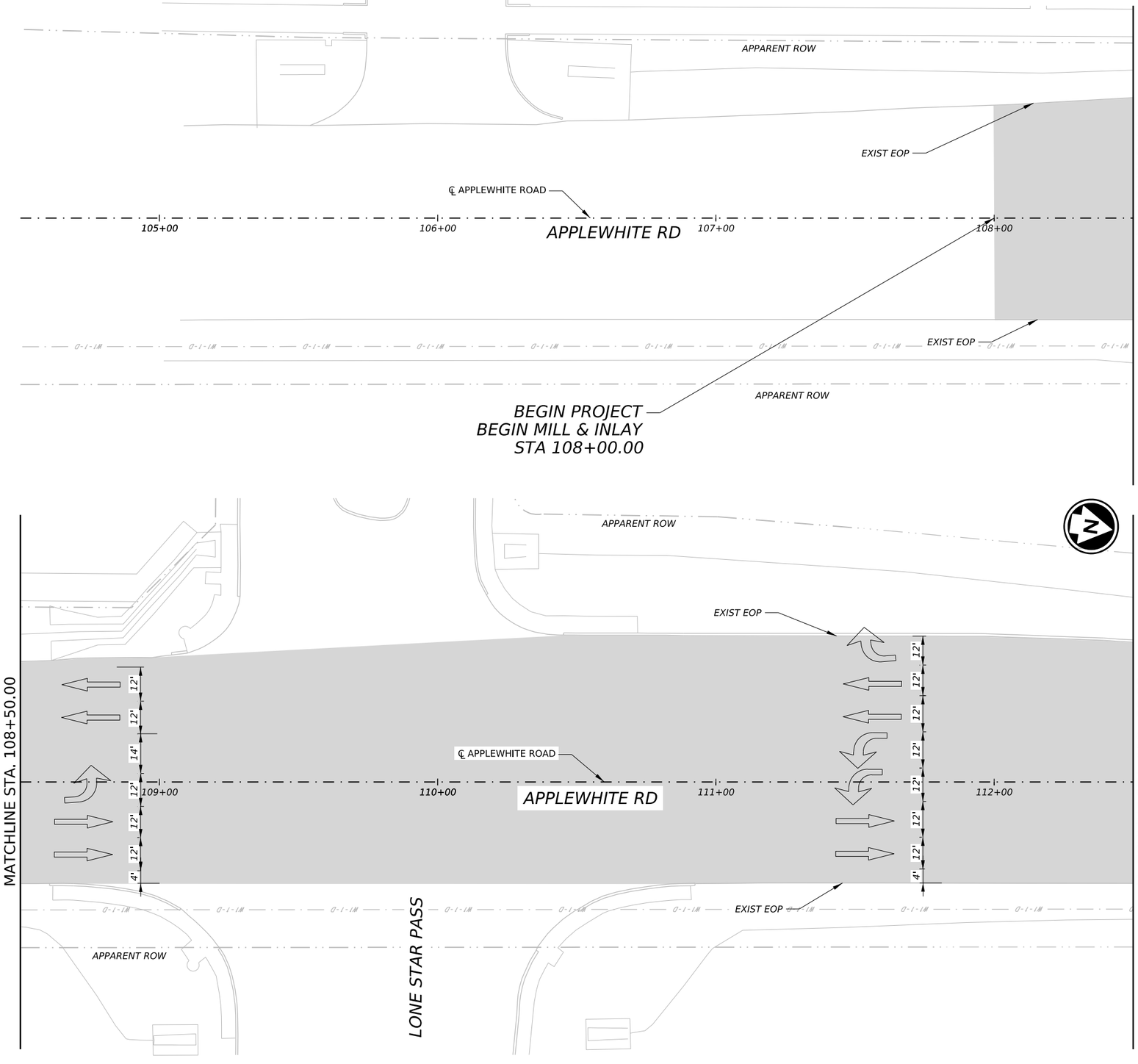
TOYOTA SOUTHSIDE STREETS

HORRIZONTAL ALIGNMENT
DATA SHEET

SHEET 1 OF 1

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 47 |

| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 203.1 | TACK COAT | GAL | 428.00 |
| 208.1 | SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVEMENT (3 INCHES DEPTH) | SY | 4279 |
| 240.4 | WMAC TY-D SAC-A PG 76-22, 0% MAX RAP, 0% RAS (3 INCHES PAVEMENT THICKNESS) | SY | 4279 |




## LEGEND

- TRAFFIC FLOW ARROW
- EXIST ROW
- PROP ROW
- MILL AND INLAY
- PROP PAVEMENT
- MEDIAN REMOVAL
- BASE REPAIR
- EXIST CONC PAVEMENT TO REMAIN

## NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. EXISTING FEATURES ARE SHOWN SCREENED BACK.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TOYOTA SOUTHSIDE STREETS

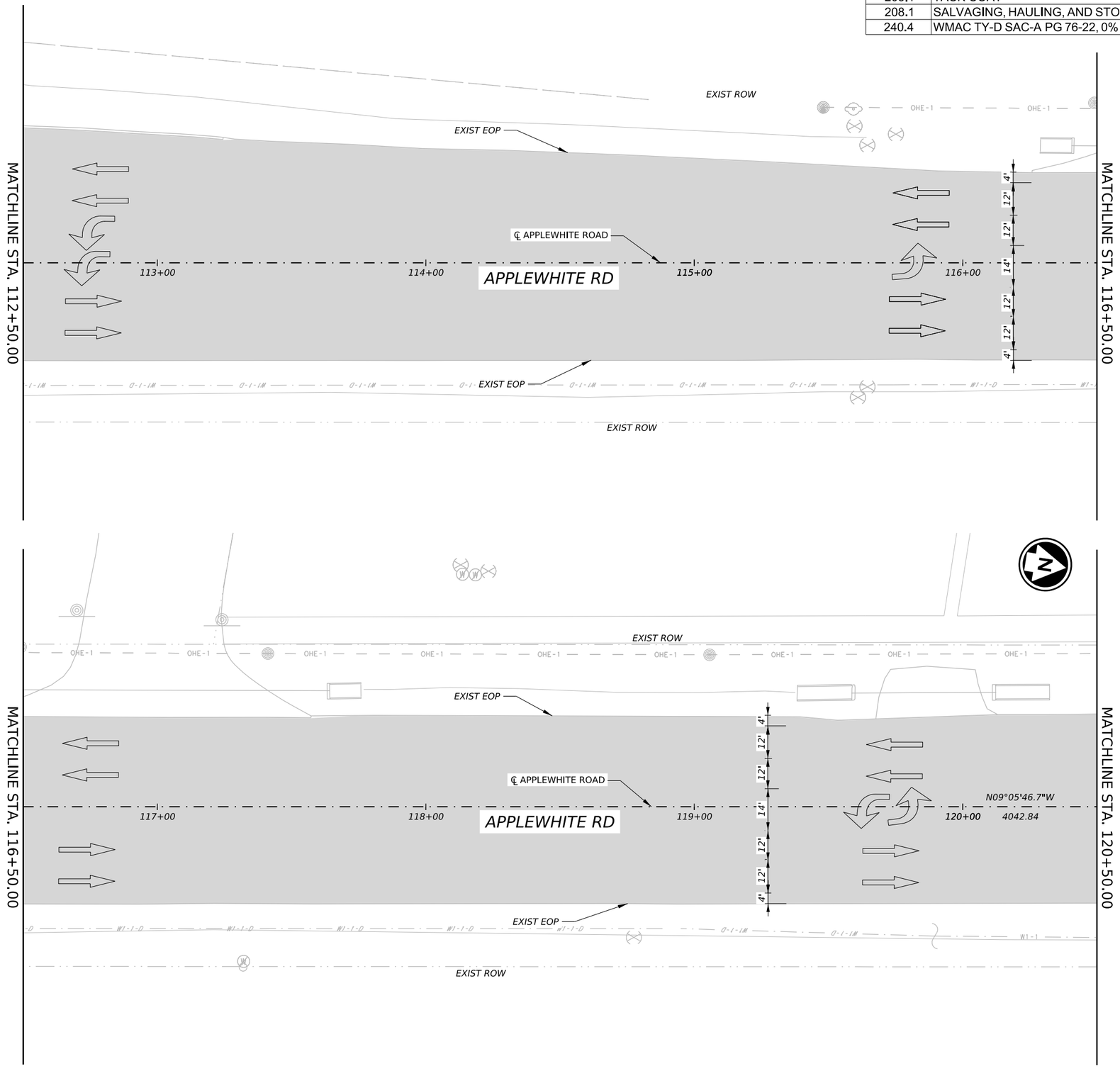
# ROADWAY PLAN

SHEET 1 OF 12

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 48 |

PRINTED ON: 9/25/2025 1:43:49 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S03-Roadway\13327O4_RDWY_PLAN_02_B.dgn

| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 203.1 | TACK COAT | GAL | 654.00 |
| 208.1 | SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVEMENT (3 INCHES DEPTH) | SY | 6531 |
| 240.4 | WMAC TY-D SAC-A PG 76-22, 0% MAX RAP, 0% RAS (3 INCHES PAVEMENT THICKNESS) | SY | 6531 |




## LEGEND

- TRAFFIC FLOW ARROW
- EXIST ROW
- PROP ROW
- MILL AND INLAY
- PROP PAVEMENT
- MEDIAN REMOVAL
- BASE REPAIR
- EXIST CONC PAVEMENT TO REMAIN

## NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. EXISTING FEATURES ARE SHOWN SCREENED BACK.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TOYOTA SOUTHSIDE STREETS

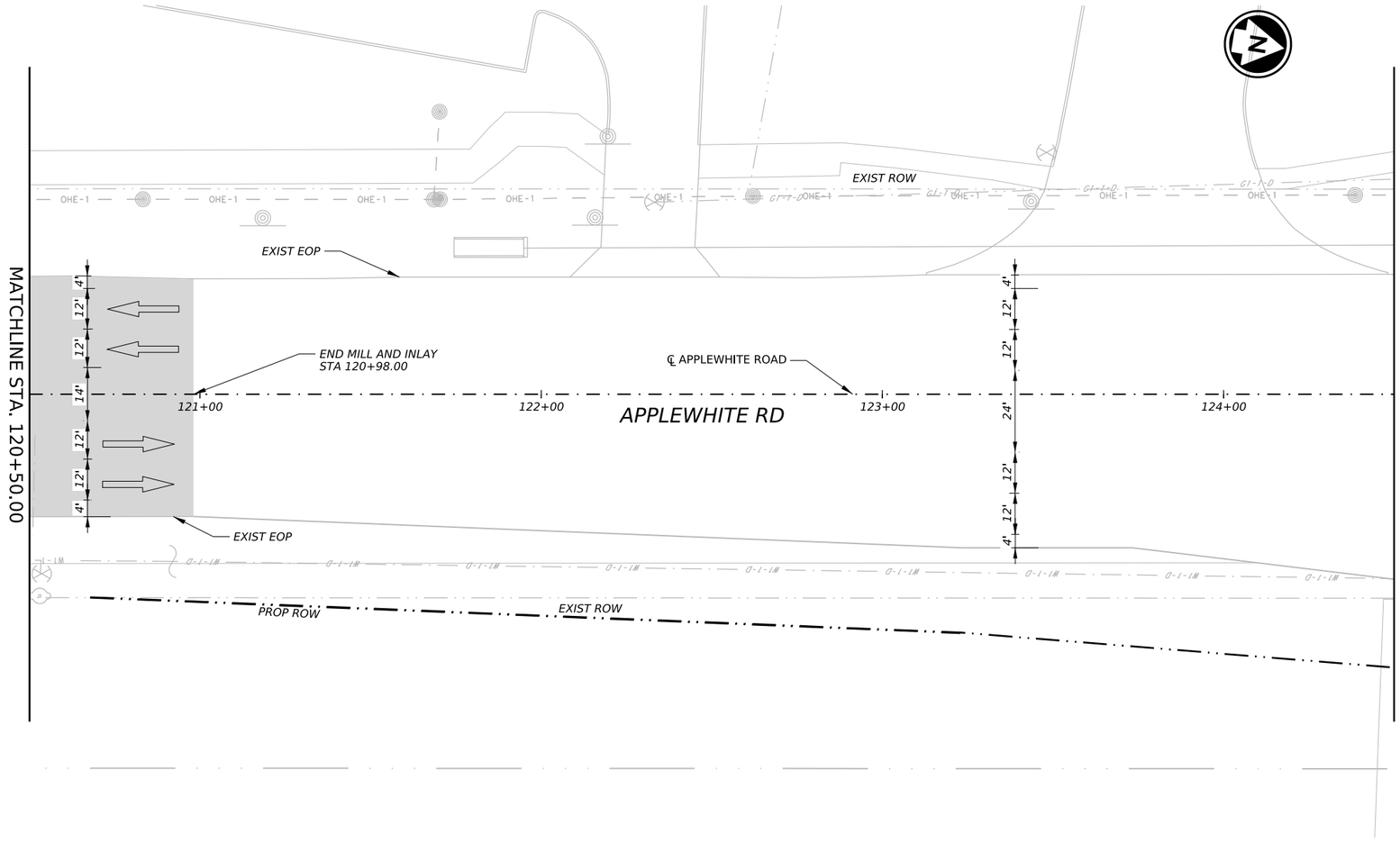
# ROADWAY PLAN

SHEET 2 OF 12

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 49 |

PRINTED ON: 9/25/2025 1:43:52 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S03-Roadway\1332704_RDWY_PLAN_03_B.dgn

| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 203.1 | TACK COAT | GAL | 38.00 |
| 208.1 | SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVEMENT (3 INCHES DEPTH) | SY | 376 |
| 240.4 | WMAC TY-D SAC-A PG 76-22, 0% MAX RAP, 0% RAS (3 INCHES PAVEMENT THICKNESS) | SY | 376 |




## LEGEND

- TRAFFIC FLOW ARROW
- EXIST ROW
- PROP ROW
- MILL AND INLAY
- PROP PAVEMENT
- MEDIAN REMOVAL
- BASE REPAIR
- EXIST CONC PAVEMENT TO REMAIN

## NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. EXISTING FEATURES ARE SHOWN SCREENED BACK.

DESIGN

STATE OF TEXAS
THOMAS A HENZ
142980
LICENSED
PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS
DAN THOMA
98622
LICENSED
PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60
SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON
2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000
Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TOYOTA SOUTHSIDE STREETS

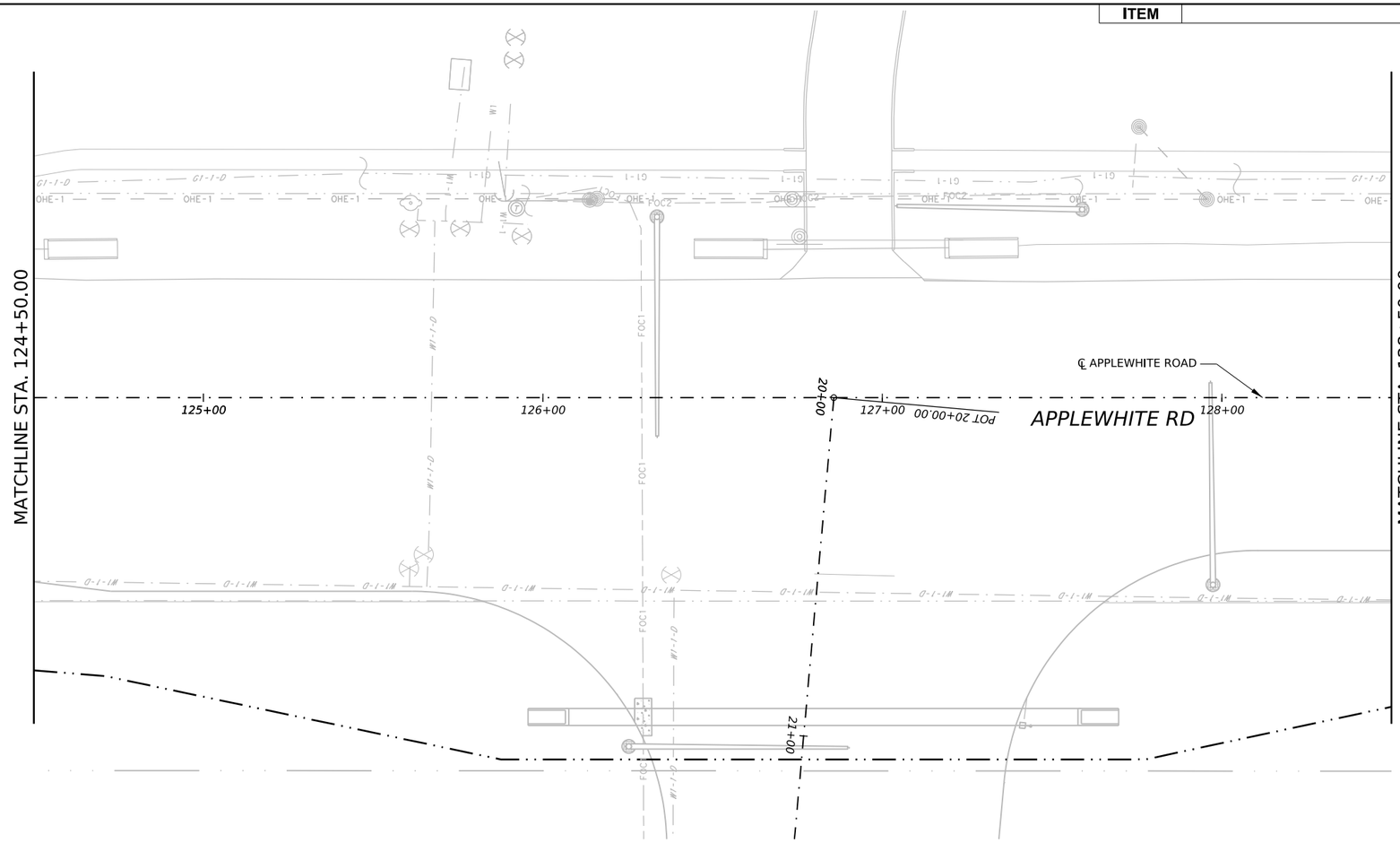
# ROADWAY PLAN

SHEET 3 OF 12

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 50 |

PRINTED ON: 9/25/2025 1:43:58 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S03-Roadway\1332704_RDWY_PNP_01_B.dgn

| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|




## LEGEND

- TRAFFIC FLOW ARROW
- EXIST ROW
- PROP ROW
- MILL AND INLAY
- PROP PAVEMENT
- MEDIAN REMOVAL
- BASE REPAIR
- EXIST CONC PAVEMENT TO REMAIN

## NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. EXISTING FEATURES ARE SHOWN SCREENED BACK.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TOYOTA SOUTHSIDE STREETS

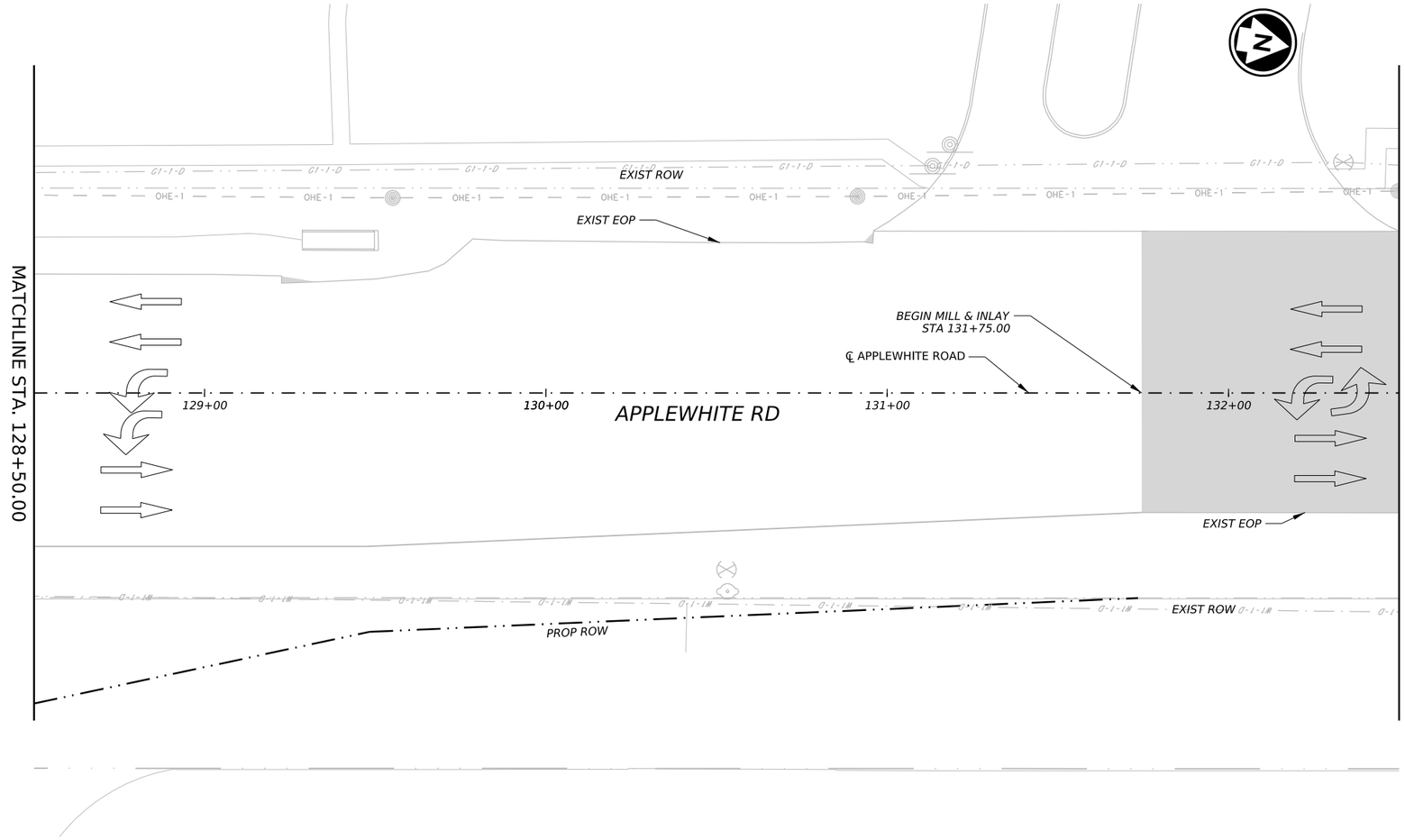
# ROADWAY PLAN

SHEET 4 OF 12

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 51 |


PRINTED ON: 9/25/2025 1:44:00 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S03-Roadway\1332704_RDWY_PNP_02_B.dgn

| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 203.1 | TACK COAT | GAL | 70.00 |
| 208.1 | SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVEMENT (3 INCHES DEPTH) | SY | 691 |
| 240.4 | WMAC TY-D SAC-A PG 76-22, 0% MAX RAP, 0% RAS (3 INCHES PAVEMENT THICKNESS) | SY | 691 |




## LEGEND

- TRAFFIC FLOW ARROW
- EXIST ROW
- PROP ROW
- MILL AND INLAY
- PROP PAVEMENT
- MEDIAN REMOVAL
- BASE REPAIR
- EXIST CONC PAVEMENT TO REMAIN

## NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. EXISTING FEATURES ARE SHOWN SCREENED BACK.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

*TOYOTA SOUTHSIDE STREETS*

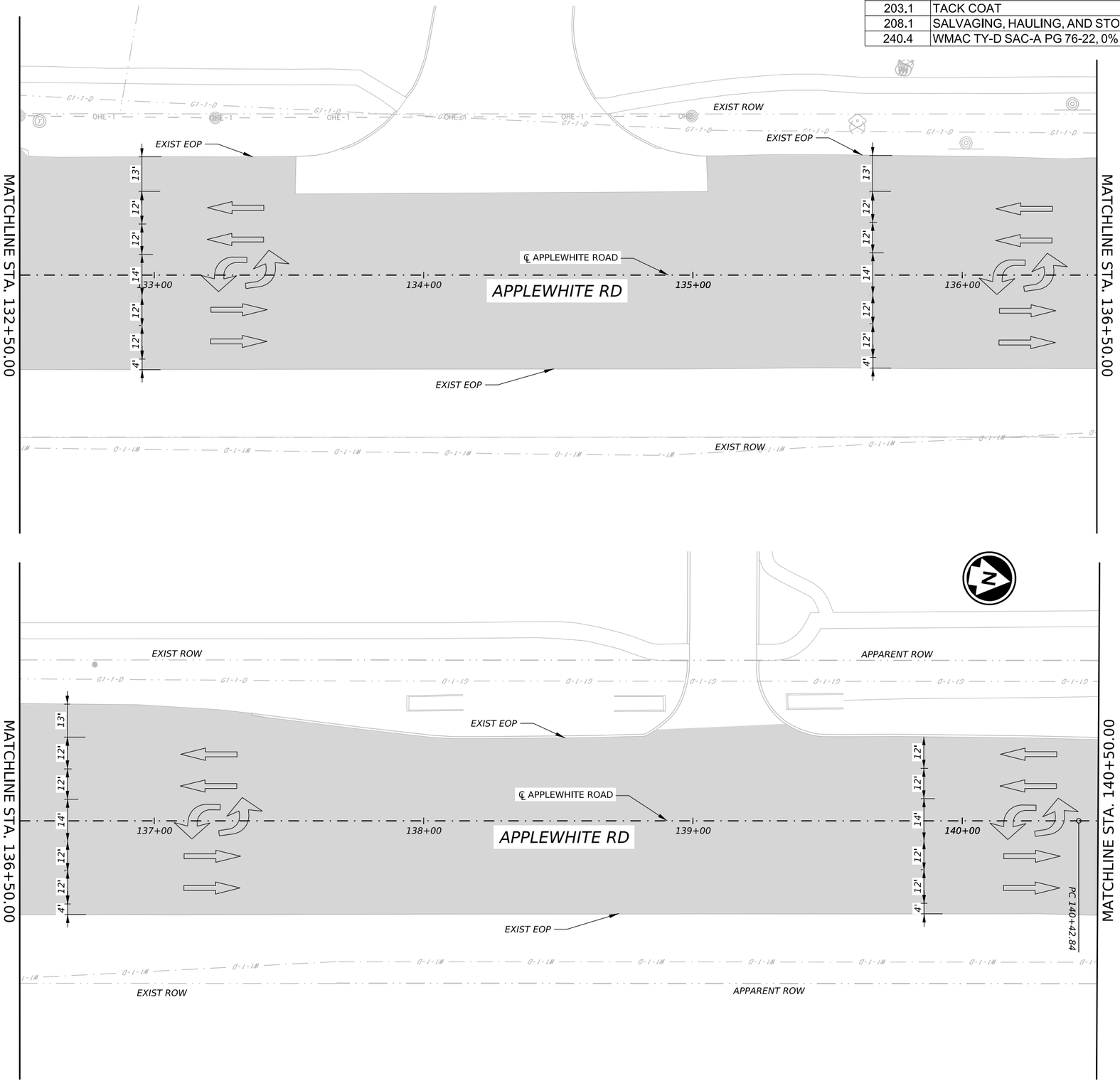
*ROADWAY PLAN*

*SHEET 5 OF 12*

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 52 |

PRINTED ON: 9/25/2025 1:44:03 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S03-Roadway\1332704_RDWY_PNP_03_B.dgn

| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 203.1 | TACK COAT | GAL | 636.00 |
| 208.1 | SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVEMENT (3 INCHES DEPTH) | SY | 6358 |
| 240.4 | WMAC TY-D SAC-A PG 76-22, 0% MAX RAP, 0% RAS (3 INCHES PAVEMENT THICKNESS) | SY | 6358 |




## LEGEND

- TRAFFIC FLOW ARROW
- EXIST ROW
- PROP ROW
- MILL AND INLAY
- PROP PAVEMENT
- MEDIAN REMOVAL
- BASE REPAIR
- EXIST CONC PAVEMENT TO REMAIN

## NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. EXISTING FEATURES ARE SHOWN SCREENED BACK.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

TOYOTA SOUTHSIDE STREETS

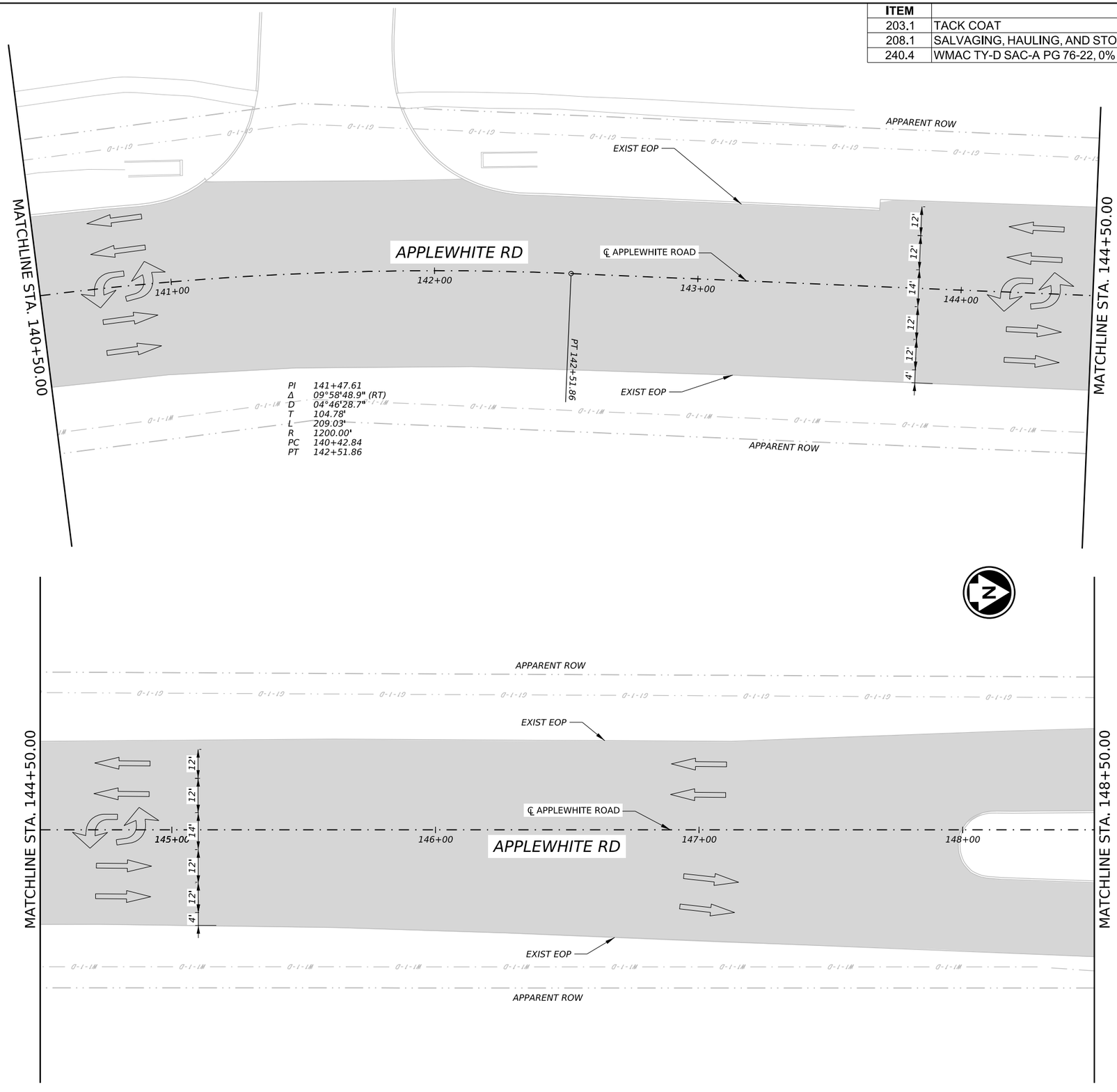
# ROADWAY PLAN

SHEET 6 OF 12

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 53 |

PRINTED ON: 9/25/2025 1:44:05 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S03-Roadway\1332704_RDWY_PLAN_04_B.dgn

| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 203.1 | TACK COAT | GAL | 621.00 |
| 208.1 | SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVEMENT (3 INCHES DEPTH) | SY | 6210 |
| 240.4 | WMAC TY-D SAC-A PG 76-22, 0% MAX RAP, 0% RAS (3 INCHES PAVEMENT THICKNESS) | SY | 6210 |




## LEGEND

- TRAFFIC FLOW ARROW
- EXIST ROW
- PROP ROW
- MILL AND INLAY
- PROP PAVEMENT
- MEDIAN REMOVAL
- BASE REPAIR
- EXIST CONC PAVEMENT TO REMAIN

## NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. EXISTING FEATURES ARE SHOWN SCREENED BACK.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TOYOTA SOUTHSIDE STREETS

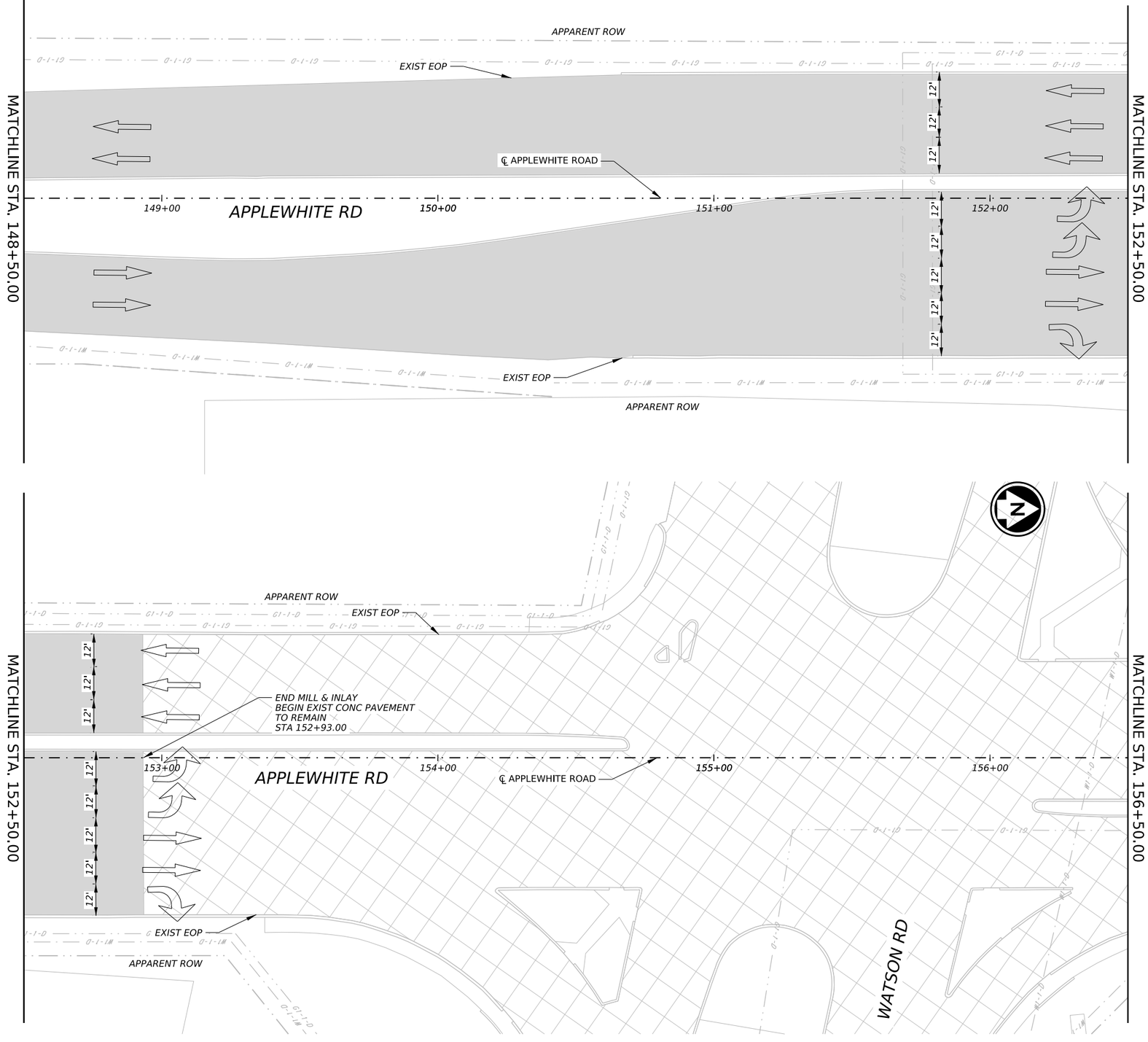
# ROADWAY PLAN

SHEET 7 OF 12

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 54 |

PRINTED ON: 9/25/2025 1:44:07 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S03-Roadway\1332704_RDWY_PLAN_05_B.dgn

| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 203.1 | TACK COAT | GAL | 400.00 |
| 208.1 | SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVEMENT (3 INCHES DEPTH) | SY | 3992 |
| 240.4 | WMAC TY-D SAC-A PG 76-22, 0% MAX RAP, 0% RAS (3 INCHES PAVEMENT THICKNESS) | SY | 3992 |




## LEGEND

- TRAFFIC FLOW ARROW
- EXIST ROW
- PROP ROW
- MILL AND INLAY
- PROP PAVEMENT
- MEDIAN REMOVAL
- BASE REPAIR
- EXIST CONC PAVEMENT TO REMAIN

## NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. EXISTING FEATURES ARE SHOWN SCREENED BACK.

DESIGN

STATE OF TEXAS · THOMAS A HENZ · 142980 · LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS · DAN THOMA · 98622 · LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TOYOTA SOUTHSIDE STREETS

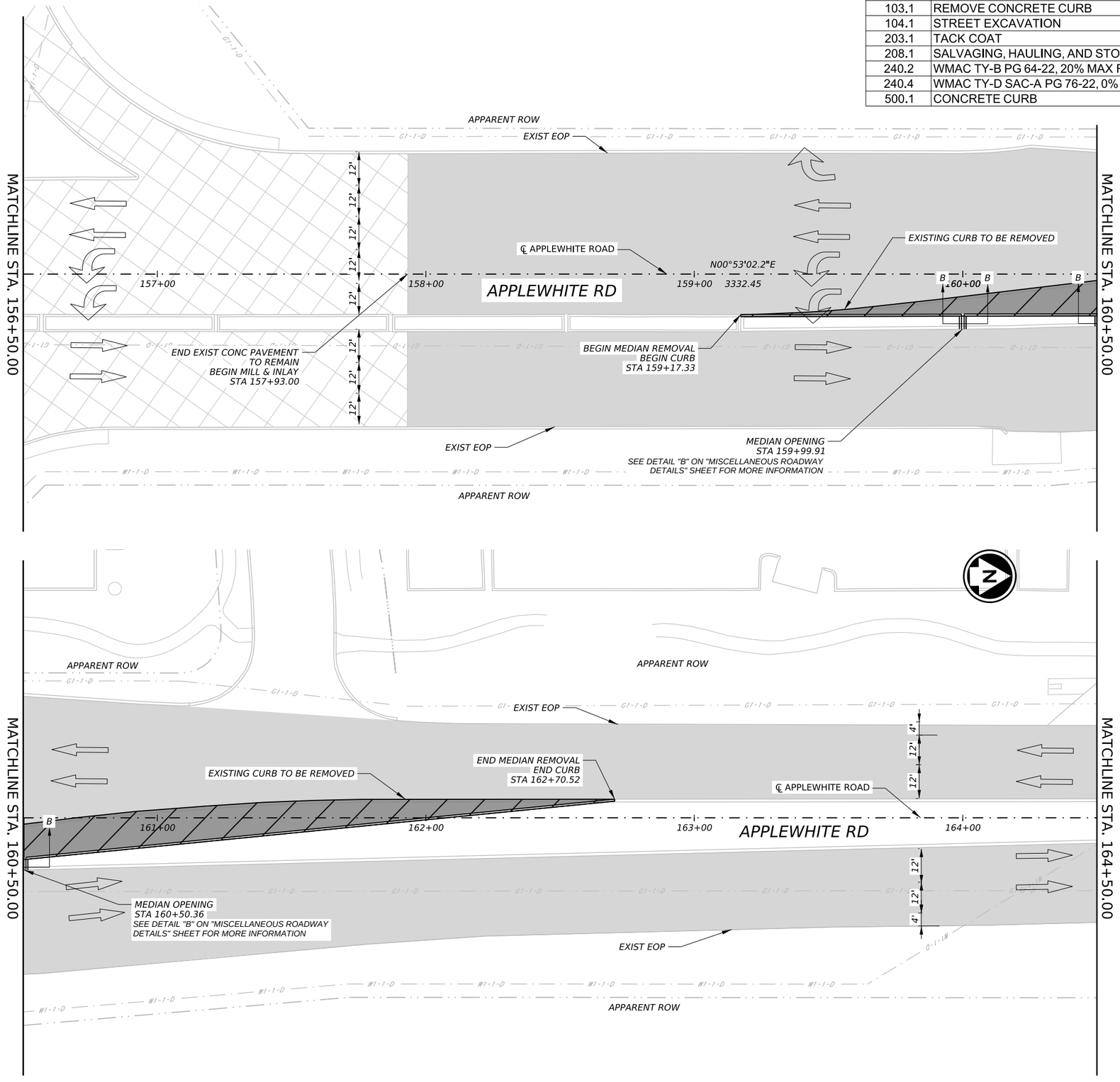
# ROADWAY PLAN

SHEET 8 OF 12

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 55 |

PRINTED ON: 9/25/2025 1:44:09 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S03-Roadway\1332704_RDWY_PLAN_06_B.dgn

| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 103.1 | REMOVE CONCRETE CURB | LF | 353 |
| 104.1 | STREET EXCAVATION | CY | 115.0 |
| 203.1 | TACK COAT | GAL | 602.00 |
| 208.1 | SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVEMENT (3 INCHES DEPTH) | SY | 5429 |
| 240.2 | WMAC TY-B PG 64-22, 20% MAX RAP, 0% RAS (11 INCHES PAVEMENT THICKNESS) | SY | 294 |
| 240.4 | WMAC TY-D SAC-A PG 76-22, 0% MAX RAP, 0% RAS (3 INCHES PAVEMENT THICKNESS) | SY | 5722 |
| 500.1 | CONCRETE CURB | LF | 368 |




## LEGEND

- TRAFFIC FLOW ARROW
- EXIST ROW
- PROP ROW
- MILL AND INLAY
- PROP PAVEMENT
- MEDIAN REMOVAL
- BASE REPAIR
- EXIST CONC PAVEMENT TO REMAIN

## NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. EXISTING FEATURES ARE SHOWN SCREENED BACK.

DESIGN

STATE OF TEXAS · THOMAS A HENZ · 142980 · LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS · DAN THOMA · 98622 · LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TOYOTA SOUTHSIDE STREETS

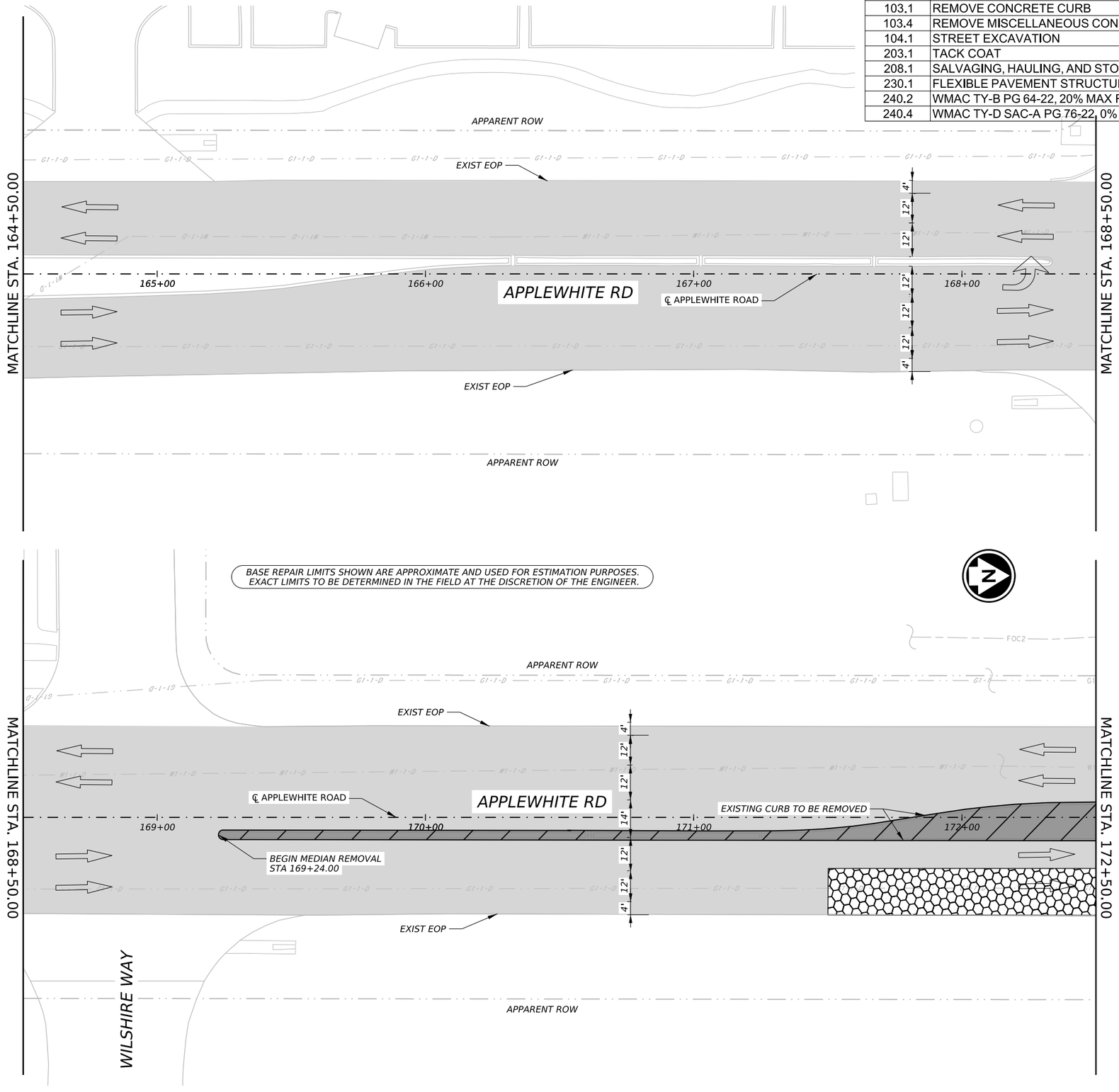
# ROADWAY PLAN

SHEET 9 OF 12

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 56 |

PRINTED ON: 9/25/2025 1:44:12 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S03-Roadway\1332704_RDWY_PLAN_07_B.dgn

| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 103.1 | REMOVE CONCRETE CURB | LF | 657 |
| 103.4 | REMOVE MISCELLANEOUS CONCRETE | SF | 931 |
| 104.1 | STREET EXCAVATION | CY | 82.0 |
| 203.1 | TACK COAT | GAL | 598.00 |
| 208.1 | SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVEMENT (3 INCHES DEPTH) | SY | 5562 |
| 230.1 | FLEXIBLE PAVEMENT STRUCTURE REPAIR 14 INCHES COMPACTED DEPTH | SY | 194 |
| 240.2 | WMAC TY-B PG 64-22, 20% MAX RAP, 0% RAS (11 INCHES PAVEMENT THICKNESS) | SY | 210 |
| 240.4 | WMAC TY-D SAC-A PG 76-22, 0% MAX RAP, 0% RAS (3 INCHES PAVEMENT THICKNESS) | SY | 5771 |




## LEGEND

- TRAFFIC FLOW ARROW
- EXIST ROW
- PROP ROW
- MILL AND INLAY
- PROP PAVEMENT
- MEDIAN REMOVAL
- BASE REPAIR
- EXIST CONC PAVEMENT TO REMAIN

## NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. EXISTING FEATURES ARE SHOWN SCREENED BACK.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TOYOTA SOUTHSIDE STREETS

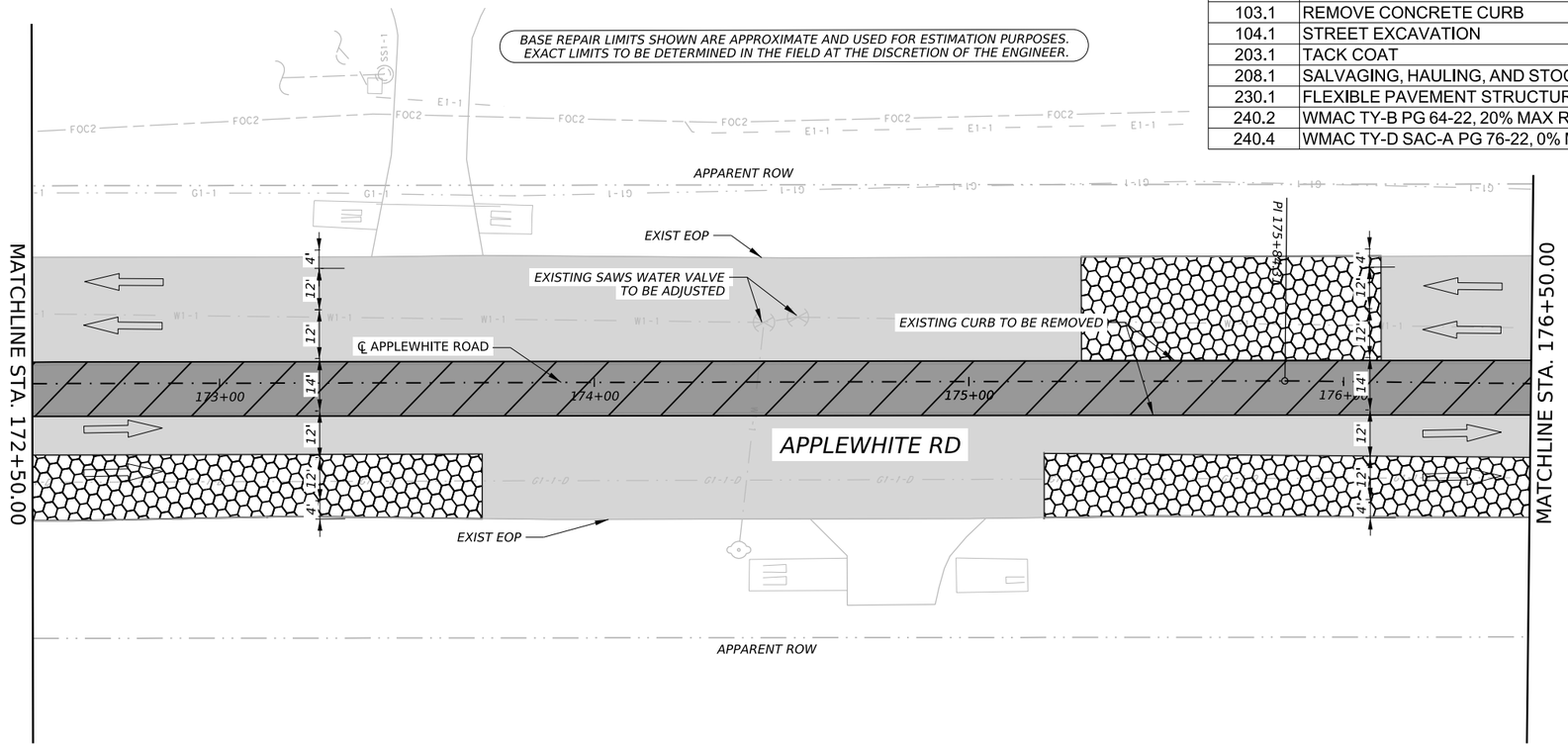
# ROADWAY PLAN

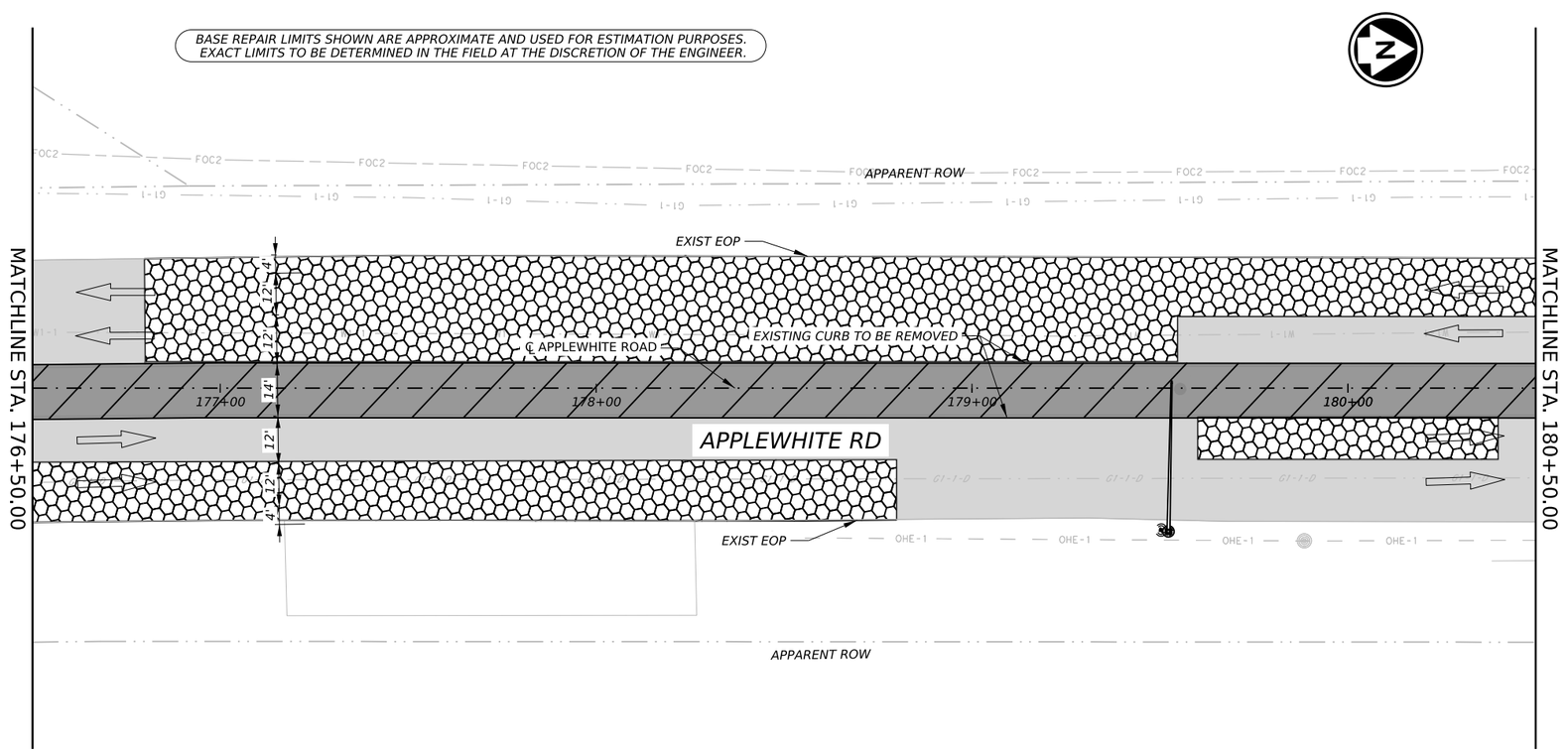
SHEET10OF 12

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 57 |

PRINTED ON: 9/25/2025 1:44:14 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S03-Roadway\1332704_RDWY_PLAN_08_B.dgn

| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 103.1 | REMOVE CONCRETE CURB | LF | 1600 |
| 104.1 | STREET EXCAVATION | CY | 503.0 |
| 203.1 | TACK COAT | GAL | 527.00 |
| 208.1 | SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVEMENT (3 INCHES DEPTH) | SY | 2674 |
| 230.1 | FLEXIBLE PAVEMENT STRUCTURE REPAIR 14 INCHES COMPACTED DEPTH | SY | 2244 |
| 240.2 | WMAC TY-B PG 64-22, 20% MAX RAP, 0% RAS (11 INCHES PAVEMENT THICKNESS) | SY | 1293 |
| 240.4 | WMAC TY-D SAC-A PG 76-22, 0% MAX RAP, 0% RAS (3 INCHES PAVEMENT THICKNESS) | SY | 3968 |




## LEGEND

- TRAFFIC FLOW ARROW
- EXIST ROW
- PROP ROW
- MILL AND INLAY
- PROP PAVEMENT
- MEDIAN REMOVAL
- BASE REPAIR
- EXIST CONC PAVEMENT TO REMAIN

## NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. EXISTING FEATURES ARE SHOWN SCREENED BACK.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TOYOTA SOUTHSIDE STREETS

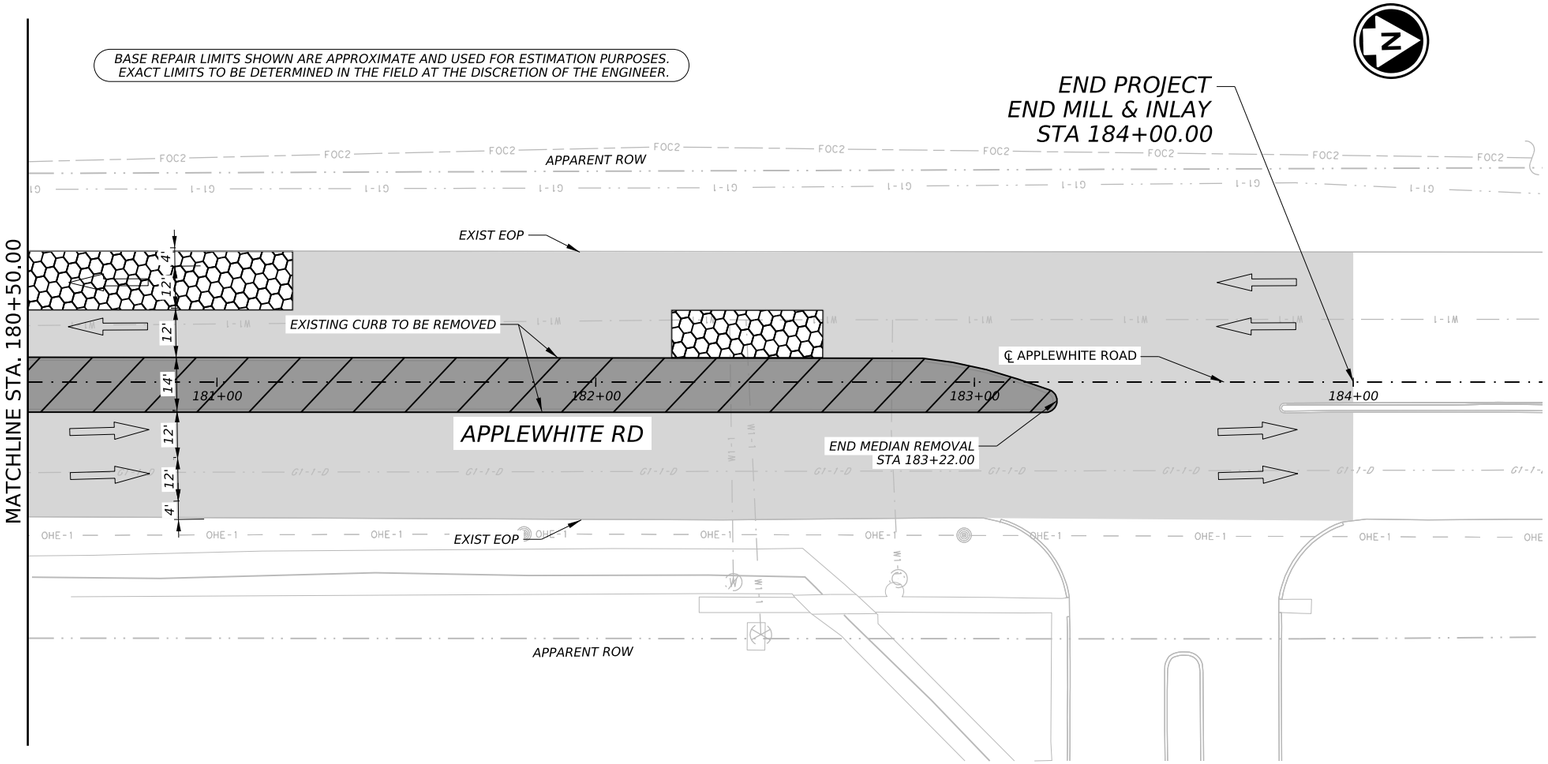
ROADWAY PLAN

SHEET11OF 12

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 58 |

PRINTED ON: 9/25/2025 1:44:16 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S03-Roadway\1332704_RDWY_PLAN_09_B.dgn

| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 103.1 | REMOVE CONCRETE CURB | LF | 549 |
| 104.1 | STREET EXCAVATION | CY | 164.0 |
| 203.1 | TACK COAT | GAL | 298.00 |
| 208.1 | SALVAGING, HAULING, AND STOCKPILING RECLAIMABLE ASPHALTIC PAVEMENT (3 INCHES DEPTH) | SY | 2138 |
| 230.1 | FLEXIBLE PAVEMENT STRUCTURE REPAIR 14 INCHES COMPACTED DEPTH | SY | 178 |
| 240.2 | WMAC TY-B PG 64-22, 20% MAX RAP, 0% RAS (11 INCHES PAVEMENT THICKNESS) | SY | 421 |
| 240.4 | WMAC TY-D SAC-A PG 76-22, 0% MAX RAP, 0% RAS (3 INCHES PAVEMENT THICKNESS) | SY | 2559 |




## LEGEND

- TRAFFIC FLOW ARROW
- EXIST ROW
- PROP ROW
- MILL AND INLAY
- PROP PAVEMENT
- MEDIAN REMOVAL
- BASE REPAIR
- EXIST CONC PAVEMENT TO REMAIN

## NOTES

1. SEE HORIZONTAL ALIGNMENT DATA SHEETS FOR HORIZONTAL ALIGNMENT DATA.
2. SEE PAVEMENT MARKING SHEETS FOR STRIPING AND TRAFFIC FLOW DETAILS.
3. EXISTING FEATURES ARE SHOWN SCREENED BACK.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

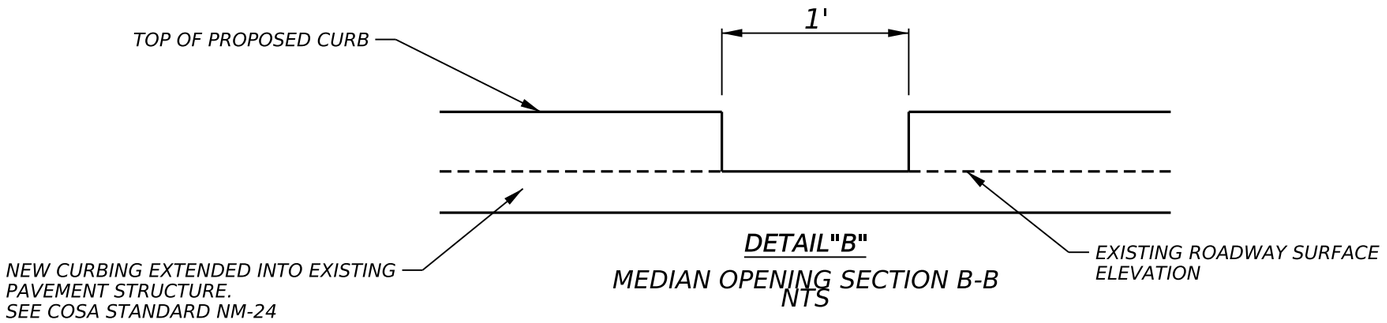
TOYOTA SOUTHSIDE STREETS

ROADWAY PLAN

SHEET12OF 12

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 59 |

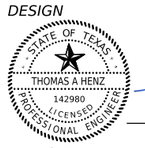
PRINTED ON: 9/25/2025 1:44:19 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S03-Roadway\1332704_RDWY_PLAN_10_B.dgn




**DETAIL"B"**

MEDIAN OPENING SECTION B-B
NTS

DESIGN




THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL


DAN THOMA, P.E. — 9/25/2025 DATE

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

**PAPE-DAWSON**
2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000
Texas Engineering Firm #470 | Texas Surveying Firm #10028800

CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

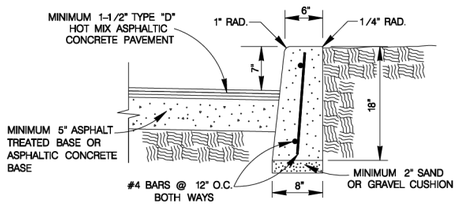
*TOYOTA SOUTHSIDE STREETS*

# MISCELLANEOUS ROADWAY DETAILS

SHEET 1 OF 1

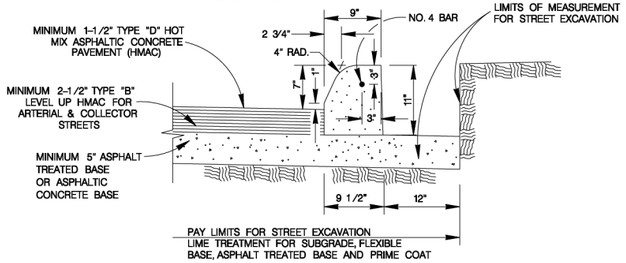
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 60 |

PRINTED ON: 9/25/2025 1:44:40 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S03-Roadway\1332704_MISC_RDWY_DET_01_B.dgn



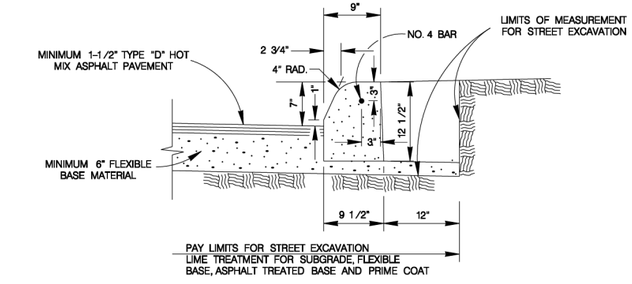

## HEADER CURB

ITEM 500 ON SAND OR GRAVEL
SCALE : 1"=2'



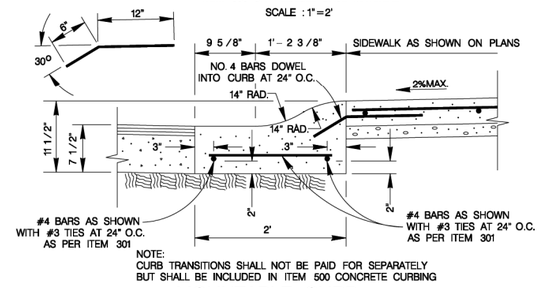

## CONCRETE CURB

ITEM 500 ON ASPHALT TREATED BASE OR ASPHALTIC CONCRETE BASE
SCALE : 1"=2'




## CONCRETE CURB

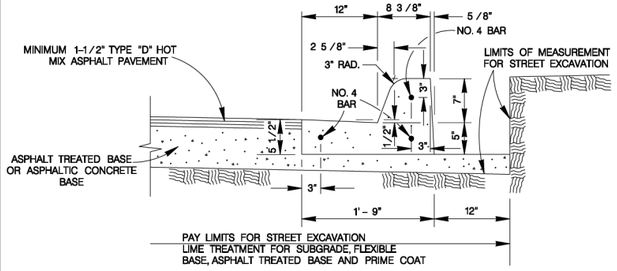
ITEM 500 ON FLEXIBLE BASE MATERIAL
SCALE : 1"=2'




NOTE:
CURB TRANSITIONS SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN ITEM 500 CONCRETE CURBING

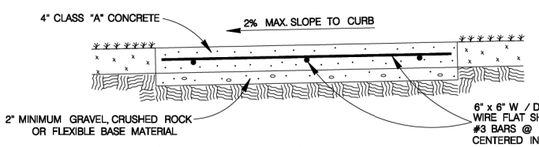
## MOUNTABLE CURB

ITEM 500 ON COMPACTED SUBGRADE
SCALE : 1"=2'



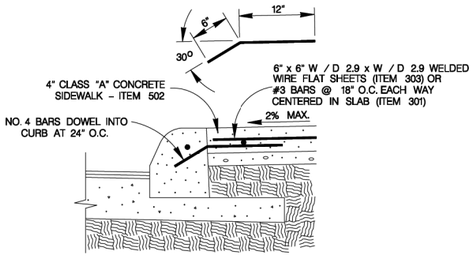

## TYPICAL CURB & GUTTER DETAIL

ITEM 500 ON ASPHALT TREATED BASE OR ASPHALTIC CONCRETE BASE
SCALE : 1"=2'



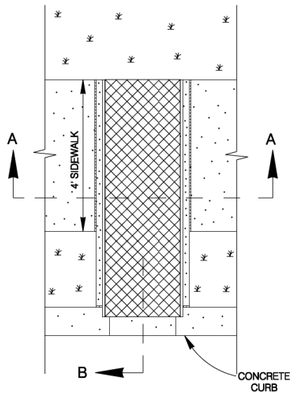

## CONCRETE SIDEWALK SECTION

ITEM 502
SCALE : 1"=2'



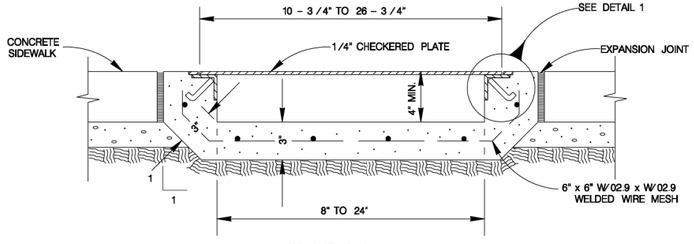

## CONCRETE SIDEWALK ABUTTING CURB SECTION

ITEM 502
SCALE : 1"=2'



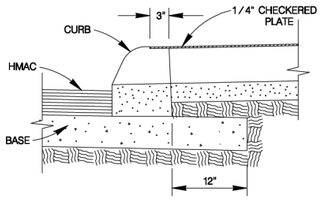

## CONCRETE SIDEWALK DRAIN DETAIL

SCALE : 1"=4'



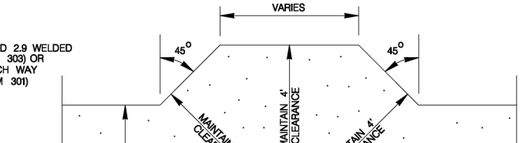

## SECTION A–A

SCALE=1 : 12




## SECTION B

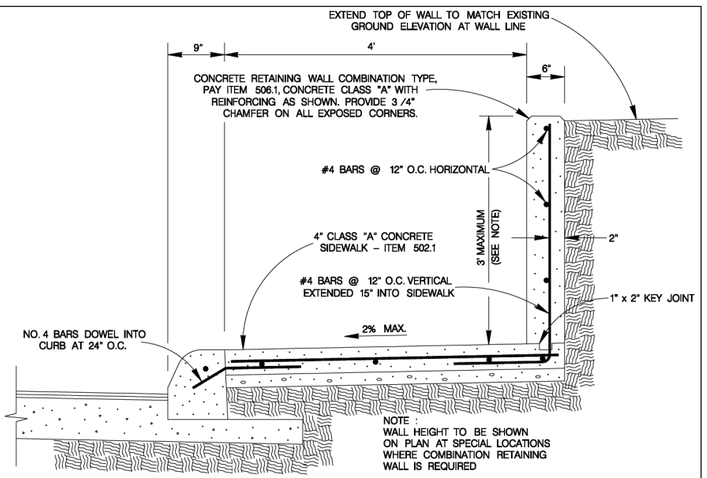
SCALE : 1"=2'




NOTE :
THIS DETAIL TO BE USED WHENEVER A POWER POLE ENCROACHES ON SIDEWALK. A MINIMUM UNOBSTRUCTED CLEARANCE OF 4' IS TO BE MAINTAINED AROUND THE POLE AT THE LOCATIONS.

## CONCRETE SIDEWALK @ UTILITY POWER POLE DETAIL

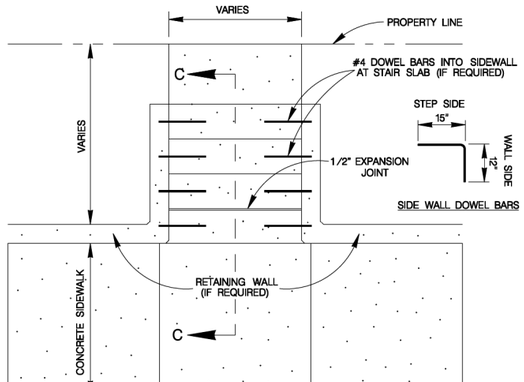
SCALE : 1"=4'




NOTE :
WALL HEIGHT TO BE SHOWN ON PLAN AT SPECIAL LOCATIONS WHERE COMBINATION RETAINING WALL IS REQUIRED

## CONCRETE RETAINING WALL – COMBINATION TYPE

ITEM 506
SCALE : 1"=2'

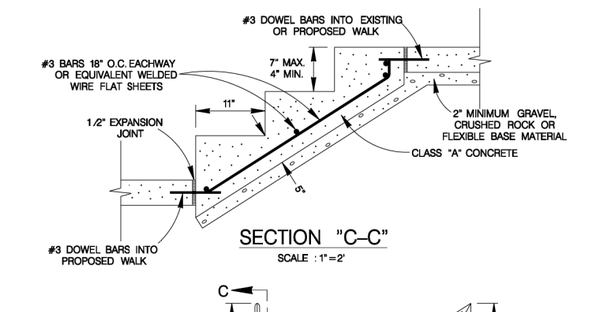



## PLAN VIEW

SCALE : 1"=4'

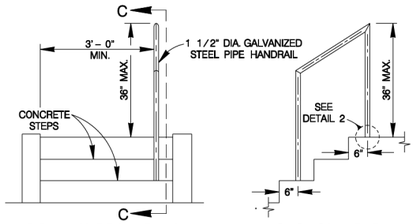
## CONCRETE STEPS

ITEM 524




## SECTION "C–C"

SCALE : 1"=2'




## PIPE HANDRAIL DETAIL

PROFILE VIEW
SCALE : 1"=4'

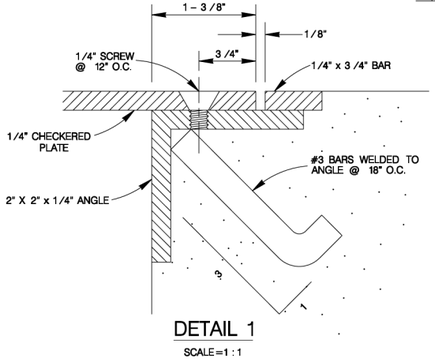
## SECTION "D–D"

FRONT VIEW
SCALE : 1"=4'

NOTES :
1. PLACE STEPS TO CONFORM WITH PROPOSED PARKWAY GRADING
2. 1-1/2" DIA GALVANIZED STEEL PIPE HANDRAIL REQUIRED ON ONE SIDE OF THE STEPS WHEN 3 OR MORE RISERS ARE USED, OR AS DESIGNED BY ENGINEER. TO BE PAID UNDER ITEM 522

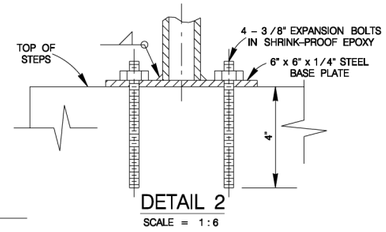
## HANDRAIL FOR CONCRETE STEPS

ITEM 522




## DETAIL 1

SCALE=1 : 1




## DETAIL 2

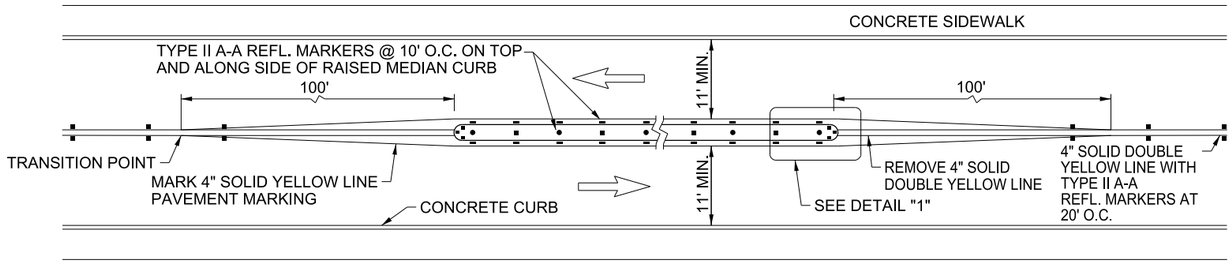
SCALE = 1 : 6

MAY 2009

CITY OF SAN ANTONIO
CAPITAL IMPROVEMENTS MANAGEMENT SERVICES DEPARTMENT

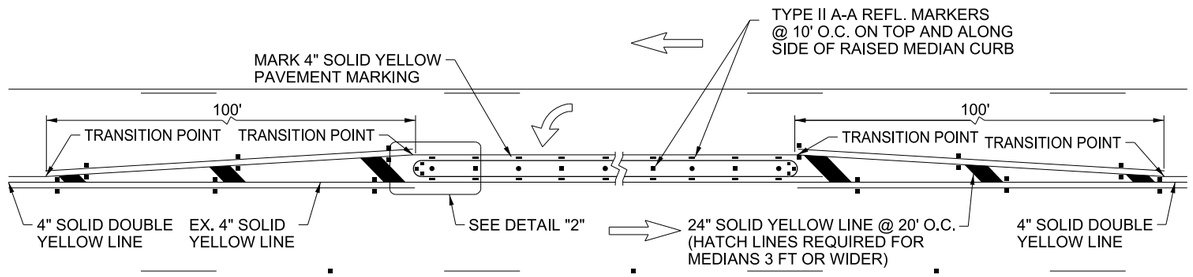
# MISCELLANEOUS CONSTRUCTION STANDARDS I

| | | | |
|---|---|---|---|
| 100% % SUBMITTAL | PROJECT NO.: 23-04167 | | DATE: 9/25/2025 |
| DRWN. BY: V. VASQUEZ | DSGN. BY: | CHKD. BY: R.S. HOSSEINI, P.E. | SHEET NO.: 61 OF 115 |



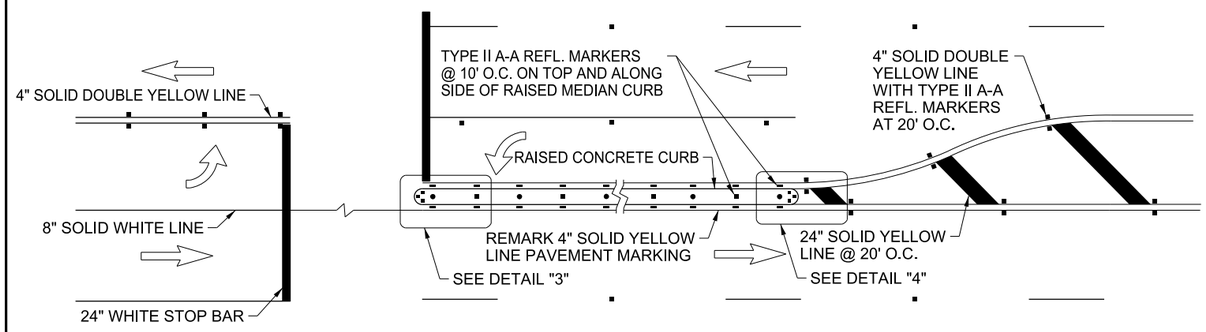

## RAISED CONCRETE MEDIAN TWO-WAY TRAFFIC PLACEMENT OVER A DOUBLE YELLOW

NOT TO SCALE




## RAISED CONCRETE MEDIAN PLACEMENT WITHIN A TWO-WAY LEFT TURN LANE

NOT TO SCALE

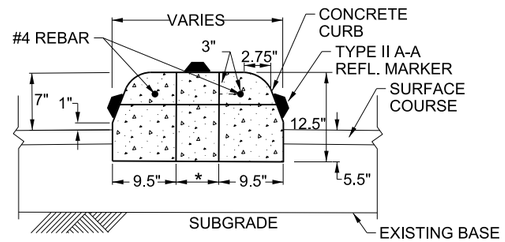



## RAISED CONCRETE MEDIAN PLACEMENT WITHIN A LEFT TURN LANE

NOT TO SCALE

## GENERAL NOTES:

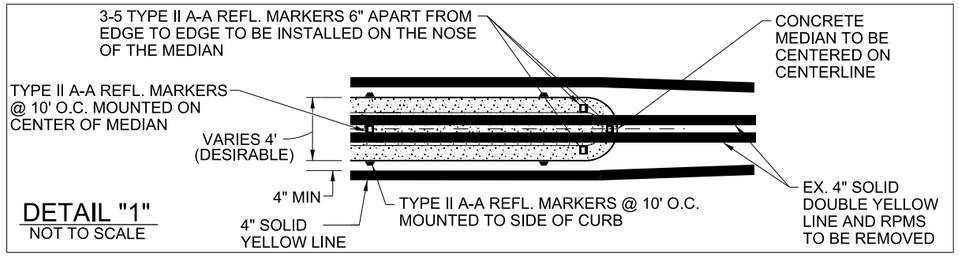
1. NEW CURBING SHALL EXTEND 5.5" INTO EXISTING PAVEMENT STRUCTURE.
2. IF FLEXIBLE BASE IS ENCOUNTERED, IT SHALL BE RECOMPACTED USING A HAND HELD VIBRATORY COMPACTOR.
3. SAW-CUT PAVEMENT 12" OUTSIDE OF PROPOSED MEDIAN FOOTPRINT.
4. ASIDE FROM LONG LANE LINE MARKINGS, ALL OTHER PAVEMENT MARKINGS SHALL BE PREFORMED MATERIAL. HOT-APPLIED MARKINGS MAY BE USED ONLY IF APPROVED BY PWD - TRAFFIC ENGINEERING & OPERATIONS.
5. SIDE MOUNT RPM SHALL BE APPLIED WITH EPOXY AND TOP MOUNT RPM WITH EPOXY OR BITUMINOUS.
6. YELLOW EDGE LINES ADJACENT TO RAISED ISLAND ARE REQUIRED, REFER TO TRMRM-24.




*DIMENSION MAY VARY WIDTH 10" OR GREATER BETWEEN CURBS SHALL REQUIRE 3" WIRE MESH REINFORCEMENT

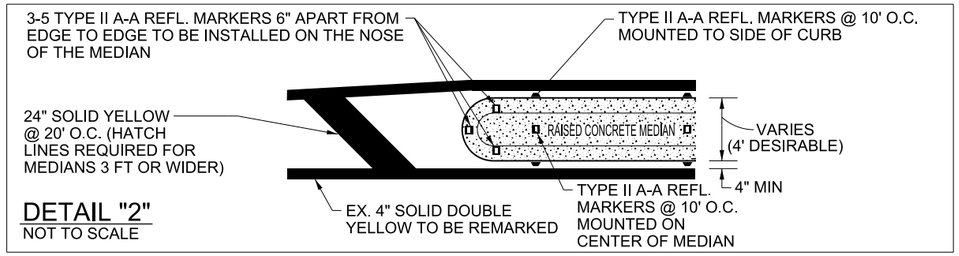
## BACK-TO-BACK CURB DETAIL FOR RETROFIT OF EXISTING ROADWAY

NOT TO SCALE



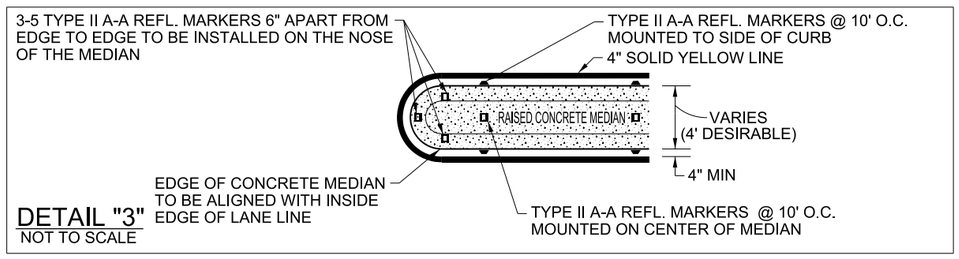

## DETAIL "1"

NOT TO SCALE



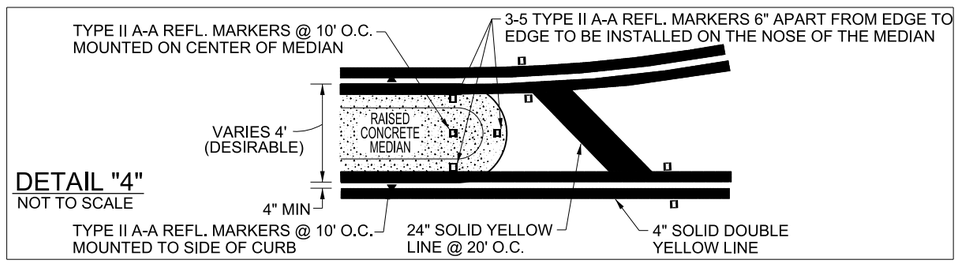

## DETAIL "2"

NOT TO SCALE




## DETAIL "3"

NOT TO SCALE




## DETAIL "4"

NOT TO SCALE

SEPTEMBER 2024

CITY OF SAN ANTONIO

PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING STANDARDS

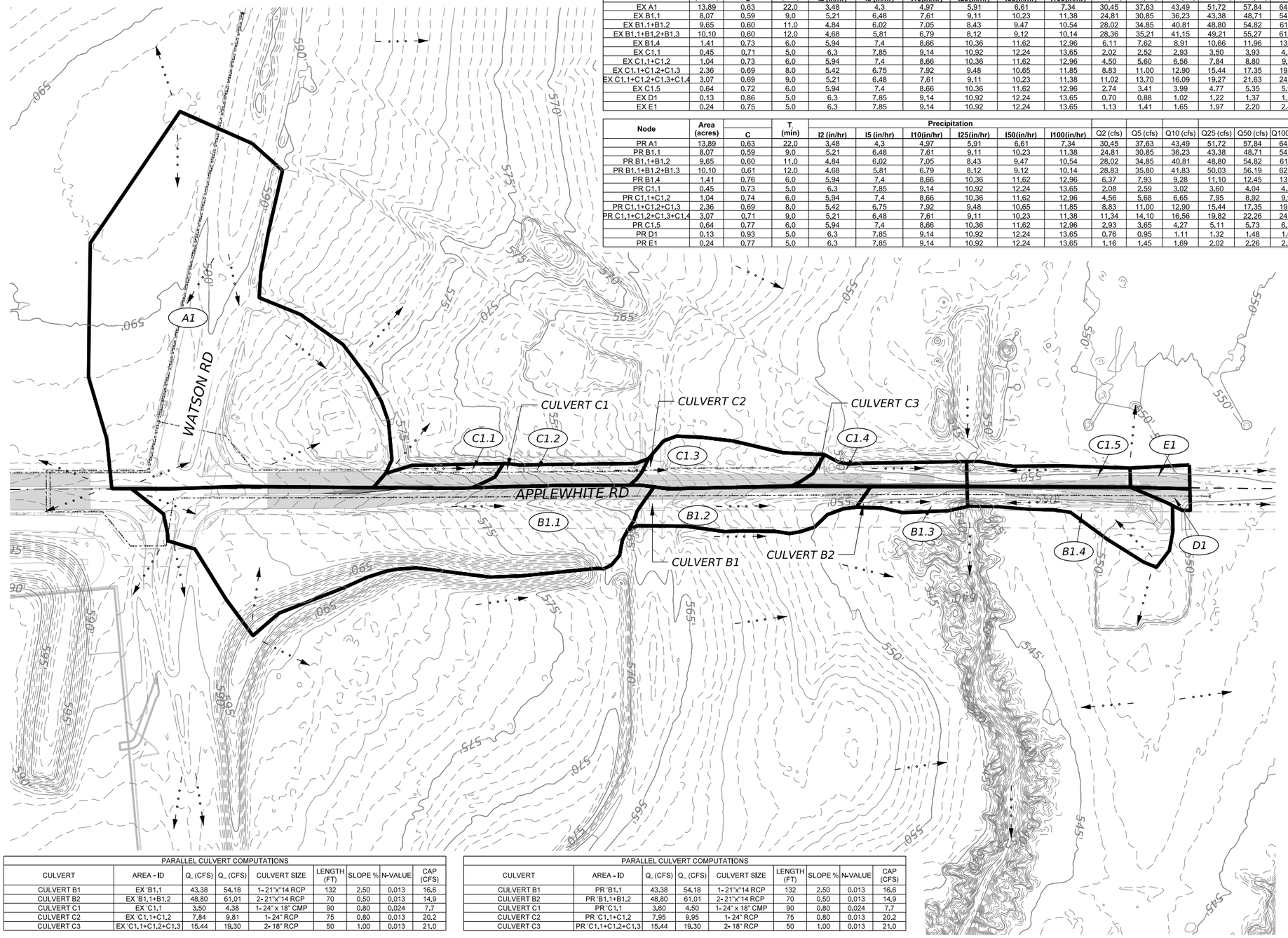
NARROW MEDIAN (LESS THAN 4FT WIDE) DETAIL FOR RETROFIT ON EXISTING ROADWAY

SHEET 01 OF 01 NM-24

| | | | |
|---|---|---|---|
| 100% % SUBMITTAL | PROJECT NO.: | | DATE: 9/25/2025 |
| DRWN. BY: | DSGN. BY: | CHKD. BY: L BANDA, P.E. | SHEET NO.: 62 OF 115 |

| Node | Area (acres) | C | T (min) | Precipitation | | | | | | Q2 (cfs) | Q5 (cfs) | Q10 (cfs) | Q25 (cfs) | Q50 (cfs) | Q100 (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | I2 (in/hr) | I5 (in/hr) | I10(in/hr) | I25(in/hr) | I50(in/hr) | I100(in/hr) | | | | | | |
| EX A1 | 13,89 | 0,63 | 22,0 | 3,48 | 4,3 | 4,97 | 5,91 | 6,61 | 7,34 | 30,45 | 37,63 | 43,49 | 51,72 | 57,84 | 64,23 |
| EX B1,1 | 8,07 | 0,59 | 9,0 | 5,21 | 6,48 | 7,61 | 9,11 | 10,23 | 11,38 | 24,81 | 30,85 | 36,23 | 43,38 | 48,71 | 54,18 |
| EX B1,1+B1,2 | 9,65 | 0,60 | 11,0 | 4,84 | 6,02 | 7,05 | 8,43 | 9,47 | 10,54 | 28,02 | 34,85 | 40,81 | 48,80 | 54,82 | 61,01 |
| EX B1,1+B1,2+B1,3 | 10,10 | 0,60 | 12,0 | 4,68 | 5,81 | 6,79 | 8,12 | 9,12 | 10,14 | 28,36 | 35,21 | 41,15 | 49,21 | 55,27 | 61,45 |
| EX B1,4 | 1,41 | 0,73 | 6,0 | 5,94 | 7,4 | 8,66 | 10,36 | 11,62 | 12,96 | 6,11 | 7,62 | 8,91 | 10,66 | 11,96 | 13,34 |
| EX C1,1 | 0,45 | 0,71 | 5,0 | 6,3 | 7,85 | 9,14 | 10,92 | 12,24 | 13,65 | 2,02 | 2,52 | 2,93 | 3,50 | 3,93 | 4,38 |
| EX C1,1+C1,2 | 1,04 | 0,73 | 6,0 | 5,94 | 7,4 | 8,66 | 10,36 | 11,62 | 12,96 | 4,50 | 5,60 | 6,56 | 7,84 | 8,80 | 9,81 |
| EX C1,1+C1,2+C1,3 | 2,36 | 0,69 | 8,0 | 5,42 | 6,75 | 7,92 | 9,48 | 10,65 | 11,85 | 8,83 | 11,00 | 12,90 | 15,44 | 17,35 | 19,30 |
| EX C1,1+C1,2+C1,3+C1,4 | 3,07 | 0,69 | 9,0 | 5,21 | 6,48 | 7,61 | 9,11 | 10,23 | 11,38 | 11,02 | 13,70 | 16,09 | 19,27 | 21,63 | 24,07 |
| EX C1,5 | 0,64 | 0,72 | 6,0 | 5,94 | 7,4 | 8,66 | 10,36 | 11,62 | 12,96 | 2,74 | 3,41 | 3,99 | 4,77 | 5,35 | 5,97 |
| EX D1 | 0,13 | 0,86 | 5,0 | 6,3 | 7,85 | 9,14 | 10,92 | 12,24 | 13,65 | 0,70 | 0,88 | 1,02 | 1,22 | 1,37 | 1,53 |
| EX E1 | 0,24 | 0,75 | 5,0 | 6,3 | 7,85 | 9,14 | 10,92 | 12,24 | 13,65 | 1,13 | 1,41 | 1,65 | 1,97 | 2,20 | 2,46 |

| Node | Area (acres) | C | T (min) | Precipitation | | | | | | Q2 (cfs) | Q5 (cfs) | Q10 (cfs) | Q25 (cfs) | Q50 (cfs) | Q100 (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | I2 (in/hr) | I5 (in/hr) | I10(in/hr) | I25(in/hr) | I50(in/hr) | I100(in/hr) | | | | | | |
| PR A1 | 13,89 | 0,63 | 22,0 | 3,48 | 4,3 | 4,97 | 5,91 | 6,61 | 7,34 | 30,45 | 37,63 | 43,49 | 51,72 | 57,84 | 64,23 |
| PR B1,1 | 8,07 | 0,59 | 9,0 | 5,21 | 6,48 | 7,61 | 9,11 | 10,23 | 11,38 | 24,81 | 30,85 | 36,23 | 43,38 | 48,71 | 54,18 |
| PR B1,1+B1,2 | 9,65 | 0,60 | 11,0 | 4,84 | 6,02 | 7,05 | 8,43 | 9,47 | 10,54 | 28,02 | 34,85 | 40,81 | 48,80 | 54,82 | 61,01 |
| PR B1,1+B1,2+B1,3 | 10,10 | 0,61 | 12,0 | 4,68 | 5,81 | 6,79 | 8,12 | 9,12 | 10,14 | 28,83 | 35,80 | 41,83 | 50,03 | 56,19 | 62,47 |
| PR B1,4 | 1,41 | 0,76 | 6,0 | 5,94 | 7,4 | 8,66 | 10,36 | 11,62 | 12,96 | 6,37 | 7,93 | 9,28 | 11,10 | 12,45 | 13,89 |
| PR C1,1 | 0,45 | 0,73 | 5,0 | 6,3 | 7,85 | 9,14 | 10,92 | 12,24 | 13,65 | 2,08 | 2,59 | 3,02 | 3,60 | 4,04 | 4,50 |
| PR C1,1+C1,2 | 1,04 | 0,74 | 6,0 | 5,94 | 7,4 | 8,66 | 10,36 | 11,62 | 12,96 | 4,56 | 5,68 | 6,65 | 7,95 | 8,92 | 9,95 |
| PR C1,1+C1,2+C1,3 | 2,36 | 0,69 | 8,0 | 5,42 | 6,75 | 7,92 | 9,48 | 10,65 | 11,85 | 8,83 | 11,00 | 12,90 | 15,44 | 17,35 | 19,30 |
| PR C1,1+C1,2+C1,3+C1,4 | 3,07 | 0,71 | 9,0 | 5,21 | 6,48 | 7,61 | 9,11 | 10,23 | 11,38 | 11,34 | 14,10 | 16,56 | 19,82 | 22,26 | 24,76 |
| PR C1,5 | 0,64 | 0,77 | 6,0 | 5,94 | 7,4 | 8,66 | 10,36 | 11,62 | 12,96 | 2,93 | 3,65 | 4,27 | 5,11 | 5,73 | 6,39 |
| PR D1 | 0,13 | 0,93 | 5,0 | 6,3 | 7,85 | 9,14 | 10,92 | 12,24 | 13,65 | 0,76 | 0,95 | 1,11 | 1,32 | 1,48 | 1,65 |
| PR E1 | 0,24 | 0,77 | 5,0 | 6,3 | 7,85 | 9,14 | 10,92 | 12,24 | 13,65 | 1,16 | 1,45 | 1,69 | 2,02 | 2,26 | 2,52 |




## LEGEND

- DRAINAGE AREA BOUNDARY
- 850 EXISTING CONTOUR
- FLOW ARROW
- DA-XX INTERIOR DRAINAGE AREA

## NOTES

1. C-VALUES AND DRAINAGE AREAS WERE DEVLOPED USING COSA HYDRAULIC DESIGN MANUAL.
2. FREQUENCIES WERE DEVLOPING USING THE ATLAS 14 2-YR, 5-YR, 10-YR, 25-YR, 50-YR, AND 100-YR STORM EVENT.
3. EXISTING CONTOURS ARE SHOWN SCREENED BACK (I.E. FADED).

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 150 300 450

SCALE: 1"= 300'

| PARALLEL CULVERT COMPUTATIONS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CULVERT | AREA - ID | $Q_{25}$ (CFS) | $Q_{100}$ (CFS) | CULVERT SIZE | LENGTH (FT) | SLOPE % | N-VALUE | CAP (CFS) |
| CULVERT B1 | EX 'B1,1 | 43,38 | 54,18 | 1- 21"x"14 RCP | 132 | 2,50 | 0,013 | 16,6 |
| CULVERT B2 | EX 'B1,1+B1,2 | 48,80 | 61,01 | 2- 21"x"14 RCP | 70 | 0,50 | 0,013 | 14,9 |
| CULVERT C1 | EX 'C1,1 | 3,50 | 4,38 | 1- 24" x 18" CMP | 90 | 0,80 | 0,024 | 7,7 |
| CULVERT C2 | EX 'C1,1+C1,2 | 7,84 | 9,81 | 1- 24" RCP | 75 | 0,80 | 0,013 | 20,2 |
| CULVERT C3 | EX 'C1,1+C1,2+C1,3 | 15,44 | 19,30 | 2- 18" RCP | 50 | 1,00 | 0,013 | 21,0 |

| PARALLEL CULVERT COMPUTATIONS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| CULVERT | AREA - ID | $Q_{25}$ (CFS) | $Q_{100}$ (CFS) | CULVERT SIZE | LENGTH (FT) | SLOPE % | N-VALUE | CAP (CFS) |
| CULVERT B1 | PR 'B1,1 | 43,38 | 54,18 | 1- 21"x"14 RCP | 132 | 2,50 | 0,013 | 16,6 |
| CULVERT B2 | PR 'B1,1+B1,2 | 48,80 | 61,01 | 2- 21"x"14 RCP | 70 | 0,50 | 0,013 | 14,9 |
| CULVERT C1 | PR 'C1,1 | 3,60 | 4,50 | 1- 24" x 18" CMP | 90 | 0,80 | 0,024 | 7,7 |
| CULVERT C2 | PR 'C1,1+C1,2 | 7,95 | 9,95 | 1- 24" RCP | 75 | 0,80 | 0,013 | 20,2 |
| CULVERT C3 | PR 'C1,1+C1,2+C1,3 | 15,44 | 19,30 | 2- 18" RCP | 50 | 1,00 | 0,013 | 21,0 |

| DITCH COMPUTATIONS - RATIONAL METHOD | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DRN AREA | COMPUTED FLOW (CFS) | COMPUTED FLOW (CFS) | LONG. SLOPE (%) | DITCH DEPTH (FT) | N-VALUE | BOTTOM WIDTH (FT) | FRONT SLOPE (H:1) | BACK SLOPE (H:1) | DITCH VEL. (FT/S) | DITCH FLOW DEPTH (FT) | DITCH VEL. (FT/S) | DITCH FLOW DEPTH (FT) |
| | Q25 | Q100 | | | | | | | V25 | D25 | V100 | D100 |
| EX B1.1+B1.2+B1.3 | 49.21 | 61.45 | 2.00% | 1.5 | 0.035 | 0 | 3 | 6 | 4.87 | 1.50 | 5.14 | 1.63 |
| EX B1.4 | 10.66 | 13.34 | 0.50% | 1 | 0.015 | 0 | 3 | 6 | 3.73 | 0.80 | 3.94 | 0.87 |
| EX C1.1+C1.2+C1.3+C1.4 | 19.27 | 24.07 | 2.00% | 1 | 0.035 | 0 | 6 | 10 | 3.36 | 0.83 | 3.56 | 0.92 |
| EX C1.5 | 4.77 | 5.97 | 0.50% | 1 | 0.035 | 0 | 6 | 10 | 1.41 | 0.65 | 1.49 | 0.71 |
| EX D1 | 1.22 | 1.53 | 0.50% | 0.5 | 0.035 | 0 | 6 | 50 | 0.74 | 0.24 | 0.78 | 0.27 |
| EX E1 | 1.97 | 2.46 | 0.50% | 0.5 | 0.035 | 0 | 6 | 50 | 0.83 | 0.29 | 0.88 | 0.32 |

| DITCH COMPUTATIONS - RATIONAL METHOD | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DRN AREA | COMPUTED FLOW (CFS) | COMPUTED FLOW (CFS) | LONG. SLOPE (%) | DITCH DEPTH (FT) | N-VALUE | BOTTOM WIDTH (FT) | FRONT SLOPE (H:1) | BACK SLOPE (H:1) | DITCH VEL. (FT/S) | DITCH FLOW DEPTH (FT) | DITCH VEL. (FT/S) | DITCH FLOW DEPTH (FT) |
| | Q25 | Q100 | | | | | | | V25 | D25 | V100 | D100 |
| PR B1.1+B1.2+B1.3 | 50.03 | 62.47 | 2.00% | 1.5 | 0.035 | 0 | 3 | 6 | 4.89 | 1.51 | 5.17 | 1.64 |
| PR B1.4 | 11.10 | 13.89 | 0.50% | 1 | 0.015 | 0 | 3 | 6 | 3.76 | 0.81 | 3.98 | 0.88 |
| PR C1.1+C1.2+C1.3+C1.4 | 19.82 | 24.76 | 2.00% | 1 | 0.035 | 0 | 6 | 10 | 3.39 | 0.86 | 3.58 | 0.93 |
| PR C1.5 | 5.11 | 6.39 | 0.50% | 1 | 0.035 | 0 | 6 | 10 | 1.44 | 0.67 | 1.52 | 0.73 |
| PR D1 | 1.32 | 1.65 | 0.50% | 0.5 | 0.035 | 0 | 6 | 50 | 0.75 | 0.25 | 0.79 | 0.28 |
| PR E1 | 2.02 | 2.52 | 0.50% | 0.5 | 0.035 | 0 | 6 | 50 | 0.84 | 0.29 | 0.88 | 0.32 |

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |

**PAPE–DAWSON**

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800

CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

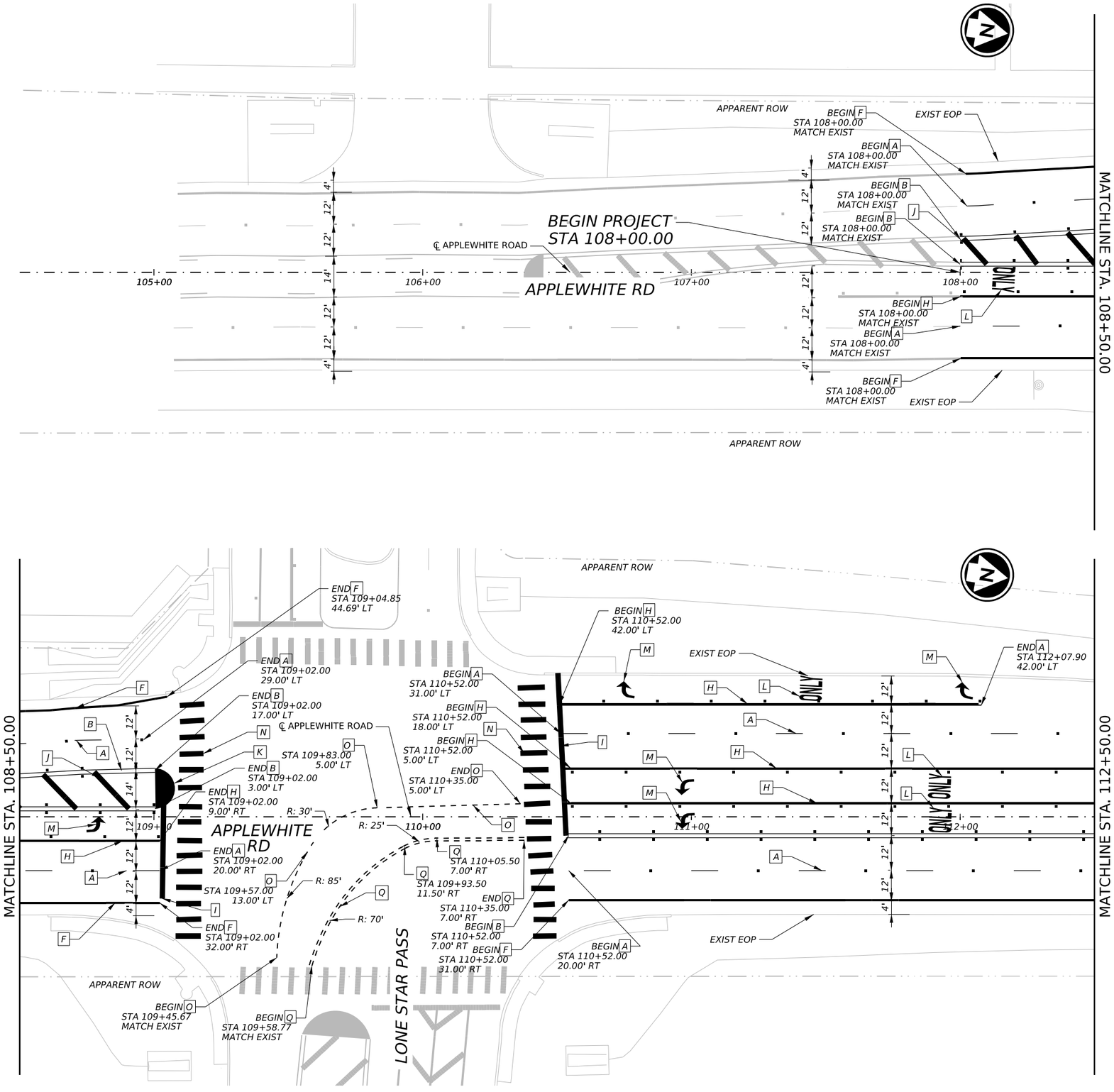
*TOYOTA SOUTHSIDE STREETS*

# *DRAINAGE AREA MAP AND COMPUTATIONS*

*SHEET 1 OF 1*

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 63 |

PRINTED ON: 9/25/2025 1:45:08 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S05-Drainage\1332704_DA_01_B.dgn




| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 535.1 | 4 INCH WIDE YELLOW LINE | LF | 780 |
| 535.12 | WORD "ONLY" | WOR | 4 |
| 535.2 | 4 INCH WIDE WHITE LINE | LF | 146 |
| 535.23 | MEDIAN NOSE YELLOW | EA | 1 |
| 535.4 | 8 INCH WIDE WHITE LINE | LF | 1068 |
| 535.7 | 24 INCH WIDE WHITE LINE | LF | 381 |
| 535.72 | 24 INCH WIDE YELLOW LINE | LF | 79 |
| 535.8 | RIGHT WHITE ARROW | EA | 2 |
| 535.9 | LEFT WHITE ARROW | EA | 3 |
| 537.8 | PAVEMENT MARKER (TYPE II A A) | EA | 44 |
| 537.9 | PAVEMENT MARKER (TYPE IIC R) | EA | 47 |
| 535.2B | 4 INCH WIDE BLACK LINE | LF | 85 |
| 535.5B | 12 INCH WIDE BLACK LINE | LF | 572 |

## LEGEND

- A 4" BRKN (W) STRIPE W/ TY II C-R @ 40' OC
- B 4" DBL SLD (Y) STRIPE W/ TY II A-A @ 20' OC
- C 4" SLD AND BRKN (Y) STRIPE W/ TY II A-A @ 40' OC
- D 4" SLD (Y) STRIPE
- E 4" (W)- 10' DASH @ 40' OC
- F 8" SLD (W) STRIPE
- G 8" SLD (Y) STRIPE
- H 8" SLD (W) STRIPE W/ TY II C-R @ 20' OC
- I 24" SLD (W) STRIPE
- J 24" SLD (Y) STRIPE
- K MEDIAN NOSE (Y) W/ TY II A-A @ 2' OC
- L WHITE WORD
- M WHITE ARROW
- N 24" SLD (W) W/ DBL 12" BLACK SLD
- O 8" (W)- 2' DASH @ 6' OC W/ DBL 4" BLACK SLD
- P 8" (W)- 2' DASH @ 6' OC
- Q 4" (Y)- DBL 2' DASH @ 6' OC
- R 12" SLD (W) STRIPE

PROPOSED SIGN

## NOTES

1. SEE COSA TYPICAL STANDARD SHEETS FOR ADDITIONAL DETAILS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

STATE OF TEXAS · THOMAS A HENZ · 142980 · LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS · DAN THOMA · 98622 · LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TOYOTA SOUTHSIDE STREETS

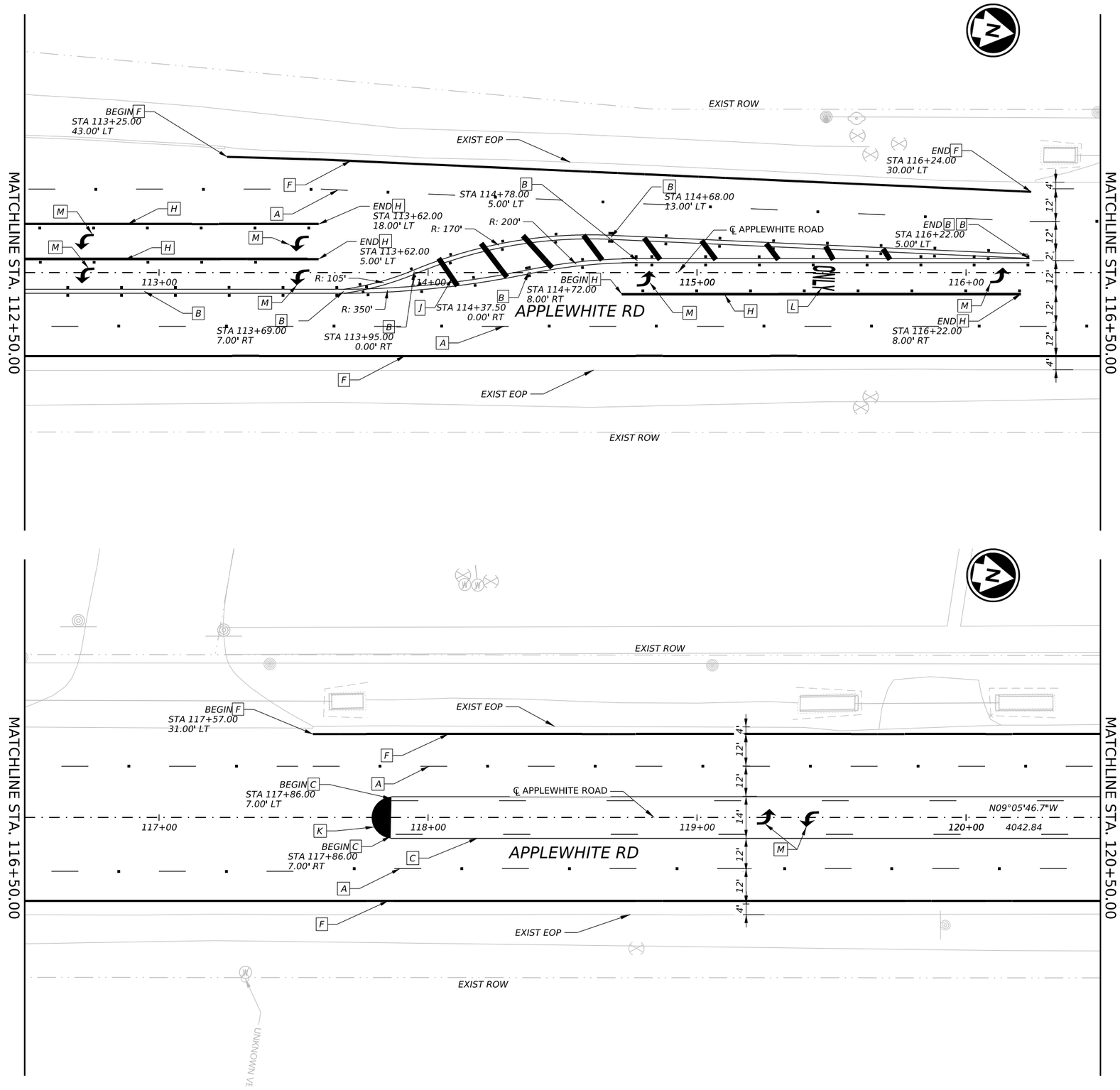
# PAVEMENT MARKINGS AND SIGNS

SHEET 1 OF 10

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 64 |

PRINTED ON: 9/25/2025 1:45:19 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S08-Traffic\S8.3-PM & Signing\1332704_SPM_PLAN_02_B.dgn

| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 535.1 | 4 INCH WIDE YELLOW LINE | LF | 1938 |
| 535.12 | WORD "ONLY" | WOR | 1 |
| 535.2 | 4 INCH WIDE WHITE LINE | LF | 397 |
| 535.23 | MEDIAN NOSE YELLOW | EA | 1 |
| 535.4 | 8 INCH WIDE WHITE LINE | LF | 1755 |
| 535.72 | 24 INCH WIDE YELLOW LINE | LF | 93 |
| 535.9 | LEFT WHITE ARROW | EA | 8 |
| 537.8 | PAVEMENT MARKER (TYPE II A A) | EA | 69 |
| 537.9 | PAVEMENT MARKER (TYPE IIC R) | EA | 58 |




## LEGEND

- A 4" BRKN (W) STRIPE W/ TY II C-R @ 40' OC
- B 4" DBL SLD (Y) STRIPE W/ TY II A-A @ 20' OC
- C 4" SLD AND BRKN (Y) STRIPE W/ TY II A-A @ 40' OC
- D 4" SLD (Y) STRIPE
- E 4" (W)- 10' DASH @ 40' OC
- F 8" SLD (W) STRIPE
- G 8" SLD (Y) STRIPE
- H 8" SLD (W) STRIPE W/ TY II C-R @ 20' OC
- I 24" SLD (W) STRIPE
- J 24" SLD (Y) STRIPE
- K MEDIAN NOSE (Y) W/ TY II A-A @ 2' OC
- L WHITE WORD
- M WHITE ARROW
- N 24" SLD (W) W/ DBL 12" BLACK SLD
- O 8" (W)- 2' DASH @ 6' OC W/ DBL 4" BLACK SLD
- P 8" (W)- 2' DASH @ 6' OC
- Q 4" (Y)- DBL 2' DASH @ 6' OC
- R 12" SLD (W) STRIPE
- PROPOSED SIGN

## NOTES

1. SEE COSA TYPICAL STANDARD SHEETS FOR ADDITIONAL DETAILS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

STATE OF TEXAS · THOMAS A HENZ · 142980 · LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS · DAN THOMA · 98622 · LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

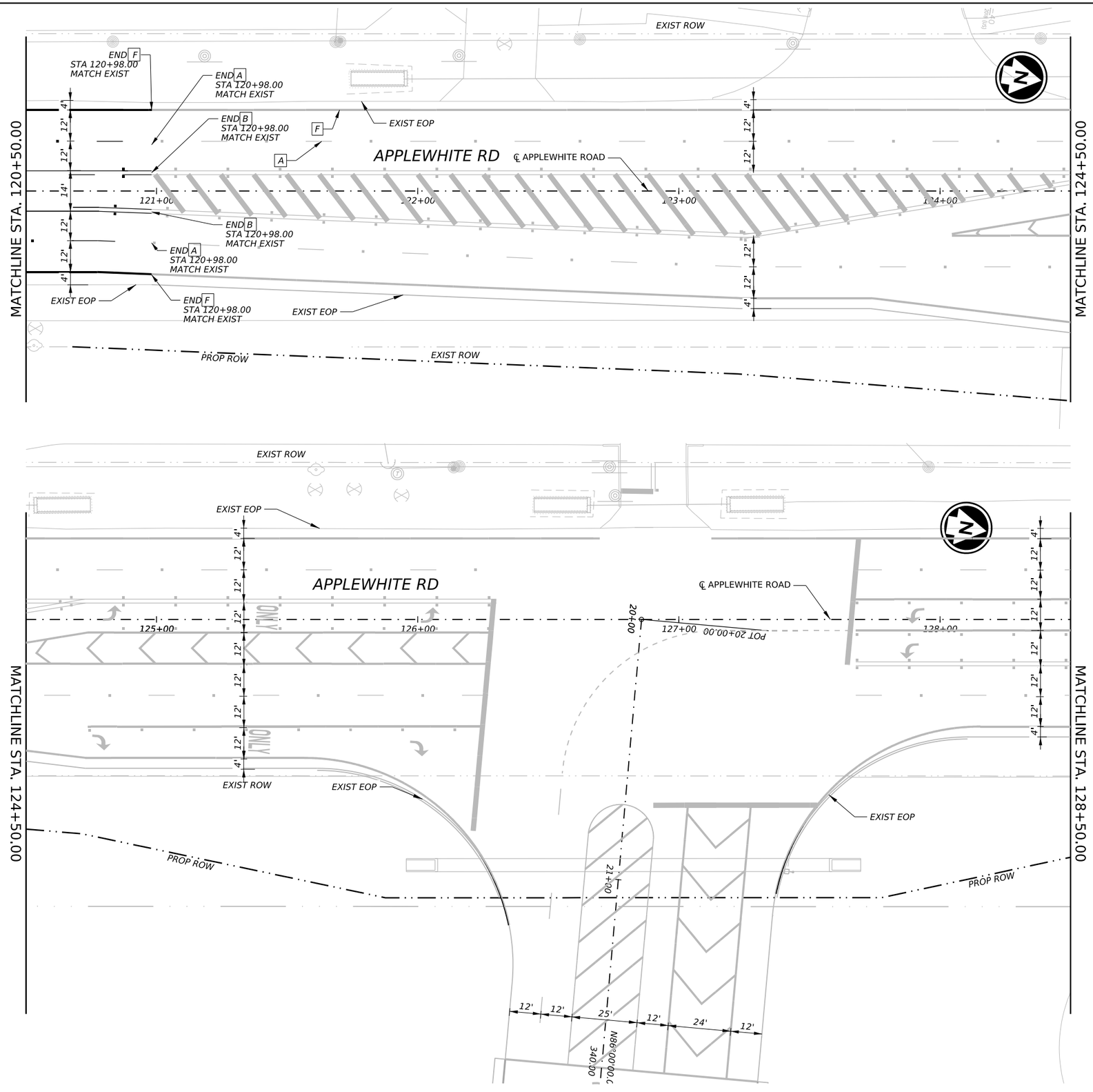
*TOYOTA SOUTHSIDE STREETS*

# PAVEMENT MARKINGS AND SIGNS

SHEET 2 OF 10

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 65 |


PRINTED ON: 9/25/2025 1:45:21 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S08-Traffic\S8.3-PM & Signing\13332704_SPM_PLAN_03_B.dgn




| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 535.1 | 4 INCH WIDE YELLOW LINE | LF | 84 |
| 535.2 | 4 INCH WIDE WHITE LINE | LF | 25 |
| 535.4 | 8 INCH WIDE WHITE LINE | LF | 97 |
| 537.9 | PAVEMENT MARKER (TYPE IIC R) | EA | 3 |

## LEGEND

- A 4" BRKN (W) STRIPE W/ TY II C-R @ 40' OC
- B 4" DBL SLD (Y) STRIPE W/ TY II A-A @ 20' OC
- C 4" SLD AND BRKN (Y) STRIPE W/ TY II A-A @ 40' OC
- D 4" SLD (Y) STRIPE
- E 4" (W)- 10' DASH @ 40' OC
- F 8" SLD (W) STRIPE
- G 8" SLD (Y) STRIPE
- H 8" SLD (W) STRIPE W/ TY II C-R @ 20' OC
- I 24" SLD (W) STRIPE
- J 24" SLD (Y) STRIPE
- K MEDIAN NOSE (Y) W/ TY II A-A @ 2' OC
- L WHITE WORD
- M WHITE ARROW
- N 24" SLD (W) W/ DBL 12" BLACK SLD
- O 8" (W)- 2' DASH @ 6' OC W/ DBL 4" BLACK SLD
- P 8" (W)- 2' DASH @ 6' OC
- Q 4" (Y)- DBL 2' DASH @ 6' OC
- R 12" SLD (W) STRIPE
- PROPOSED SIGN

## NOTES

1. SEE COSA TYPICAL STANDARD SHEETS FOR ADDITIONAL DETAILS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

STATE OF TEXAS
THOMAS A HENZ
142980
LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS
DAN THOMA
98622
LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60
SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON
2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000
Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

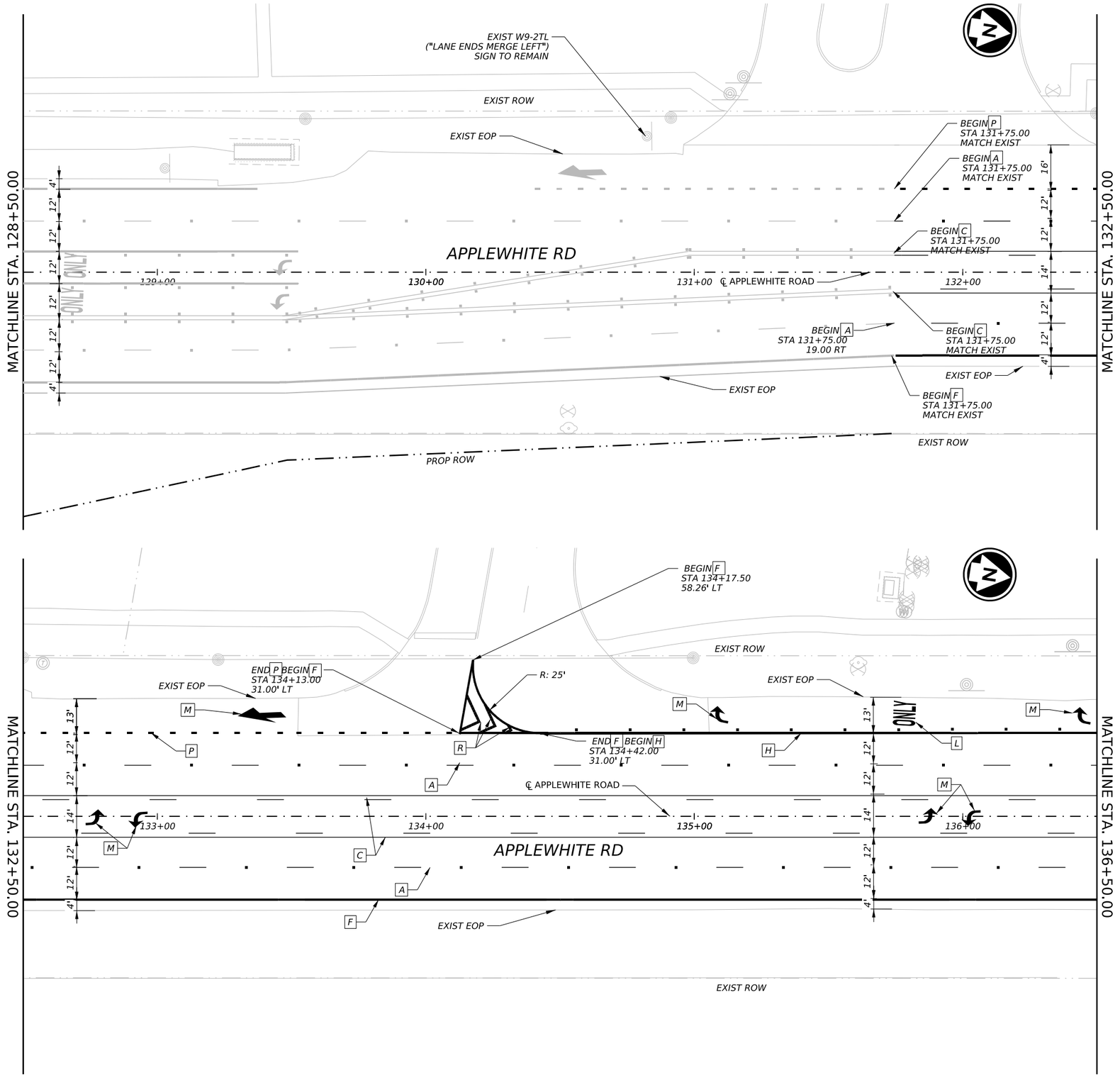
TOYOTA SOUTHSIDE STREETS

# PAVEMENT MARKINGS AND SIGNS

SHEET 3 OF 10

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 66 |

PRINTED ON: 9/25/2025 1:45:25 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S08-Traffic\S8.3-PM & Signing\13332704_SPM_PLAN_04_B.dgn




| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 535.1 | 4 INCH WIDE YELLOW LINE | LF | 1188 |
| 535.12 | WORD "ONLY" | WOR | 1 |
| 535.2 | 4 INCH WIDE WHITE LINE | LF | 238 |
| 535.22 | LANE REDUCTION ARROW | EA | 1 |
| 535.4 | 8 INCH WIDE WHITE LINE | LF | 918 |
| 535.5 | 12 INCH WIDE WHITE LINE | LF | 40 |
| 535.8 | RIGHT WHITE ARROW | EA | 2 |
| 535.9 | LEFT WHITE ARROW | EA | 4 |

## LEGEND

- [A] 4" BRKN (W) STRIPE W/ TY II C-R @ 40' OC
- [B] 4" DBL SLD (Y) STRIPE W/ TY II A-A @ 20' OC
- [C] 4" SLD AND BRKN (Y) STRIPE W/ TY II A-A @ 40' OC
- [D] 4" SLD (Y) STRIPE
- [E] 4" (W)- 10' DASH @ 40' OC
- [F] 8" SLD (W) STRIPE
- [G] 8" SLD (Y) STRIPE
- [H] 8" SLD (W) STRIPE W/ TY II C-R @ 20' OC
- [I] 24" SLD (W) STRIPE
- [J] 24" SLD (Y) STRIPE
- [K] MEDIAN NOSE (Y) W/ TY II A-A @ 2' OC
- [L] WHITE WORD
- [M] WHITE ARROW
- [N] 24" SLD (W) W/ DBL 12" BLACK SLD
- [O] 8" (W)- 2' DASH @ 6' OC W/ DBL 4" BLACK SLD
- [P] 8" (W)- 2' DASH @ 6' OC
- [Q] 4" (Y)- DBL 2' DASH @ 6' OC
- [R] 12" SLD (W) STRIPE
- PROPOSED SIGN

## NOTES

1. SEE COSA TYPICAL STANDARD SHEETS FOR ADDITIONAL DETAILS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

STATE OF TEXAS · THOMAS A HENZ · 142980 · LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS · DAN THOMA · 98622 · LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

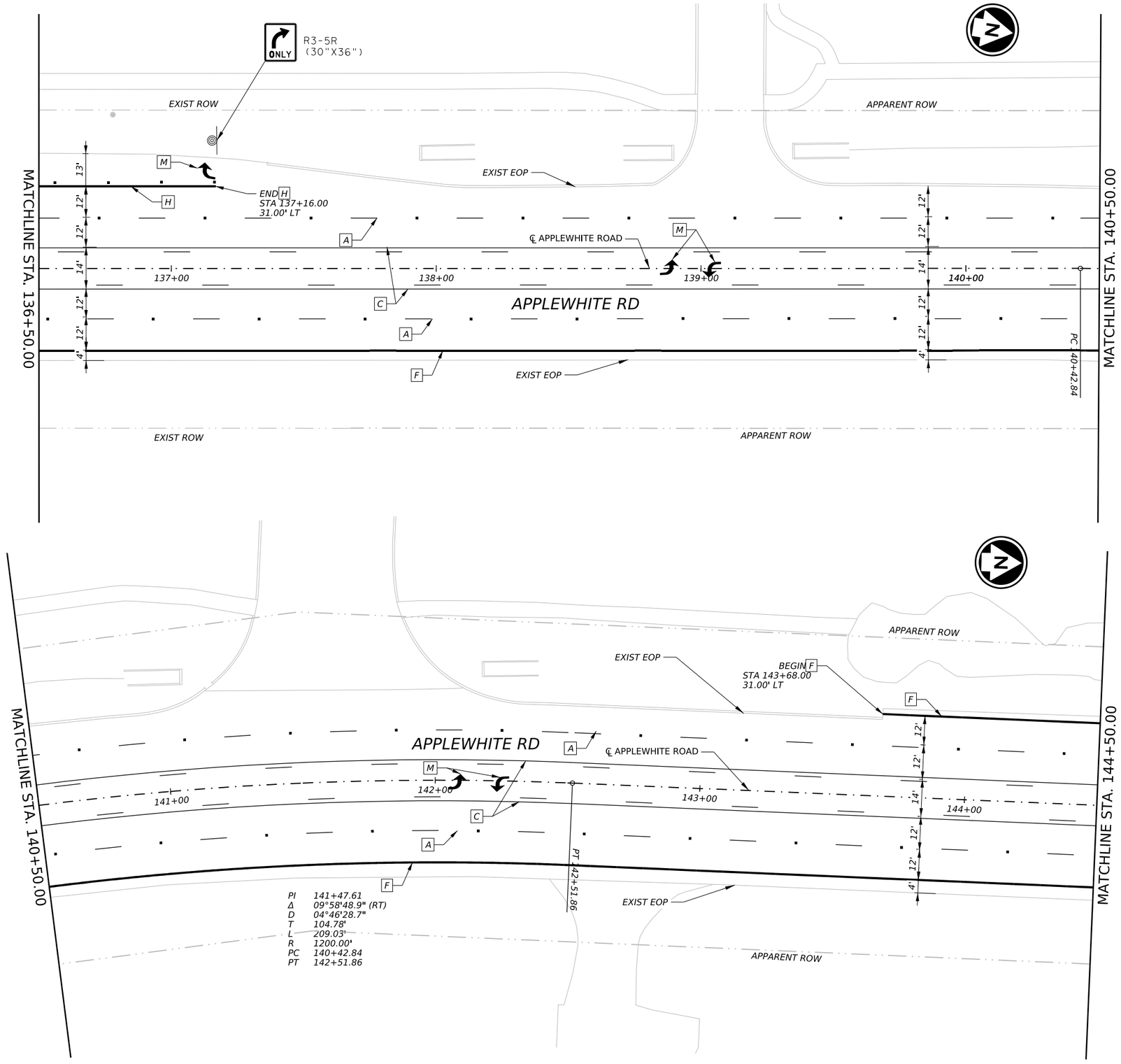
*TOYOTA SOUTHSIDE STREETS*

# PAVEMENT MARKINGS AND SIGNS

SHEET 4 OF 10

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 67 |


PRINTED ON: 9/25/2025 1:45:28 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S08-Traffic\S8.3-PM & Signing\13332704_SPM_PLAN_05_B.dgn




| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 531.11 | R3-5 RIGHT ONLY* (30" X 36") | EA | 1 |
| 535.1 | 4 INCH WIDE YELLOW LINE | LF | 2000 |
| 535.2 | 4 INCH WIDE WHITE LINE | LF | 400 |
| 535.4 | 8 INCH WIDE WHITE LINE | LF | 944 |
| 535.8 | RIGHT WHITE ARROW | EA | 1 |
| 535.9 | LEFT WHITE ARROW | EA | 4 |
| 537.9 | PAVEMENT MARKER (TYPE IIC R) | EA | 44 |

## LEGEND

- A 4" BRKN (W) STRIPE W/ TY II C-R @ 40' OC
- B 4" DBL SLD (Y) STRIPE W/ TY II A-A @ 20' OC
- C 4" SLD AND BRKN (Y) STRIPE W/ TY II A-A @ 40' OC
- D 4" SLD (Y) STRIPE
- E 4" (W)- 10' DASH @ 40' OC
- F 8" SLD (W) STRIPE
- G 8" SLD (Y) STRIPE
- H 8" SLD (W) STRIPE W/ TY II C-R @ 20' OC
- I 24" SLD (W) STRIPE
- J 24" SLD (Y) STRIPE
- K MEDIAN NOSE (Y) W/ TY II A-A @ 2' OC
- L WHITE WORD
- M WHITE ARROW
- N 24" SLD (W) W/ DBL 12" BLACK SLD
- O 8" (W)- 2' DASH @ 6' OC W/ DBL 4" BLACK SLD
- P 8" (W)- 2' DASH @ 6' OC
- Q 4" (Y)- DBL 2' DASH @ 6' OC
- R 12" SLD (W) STRIPE
- PROPOSED SIGN

## NOTES

1. SEE COSA TYPICAL STANDARD SHEETS FOR ADDITIONAL DETAILS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

STATE OF TEXAS · THOMAS A HENZ · 142980 · LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS · DAN THOMA · 98622 · LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

TOYOTA SOUTHSIDE STREETS

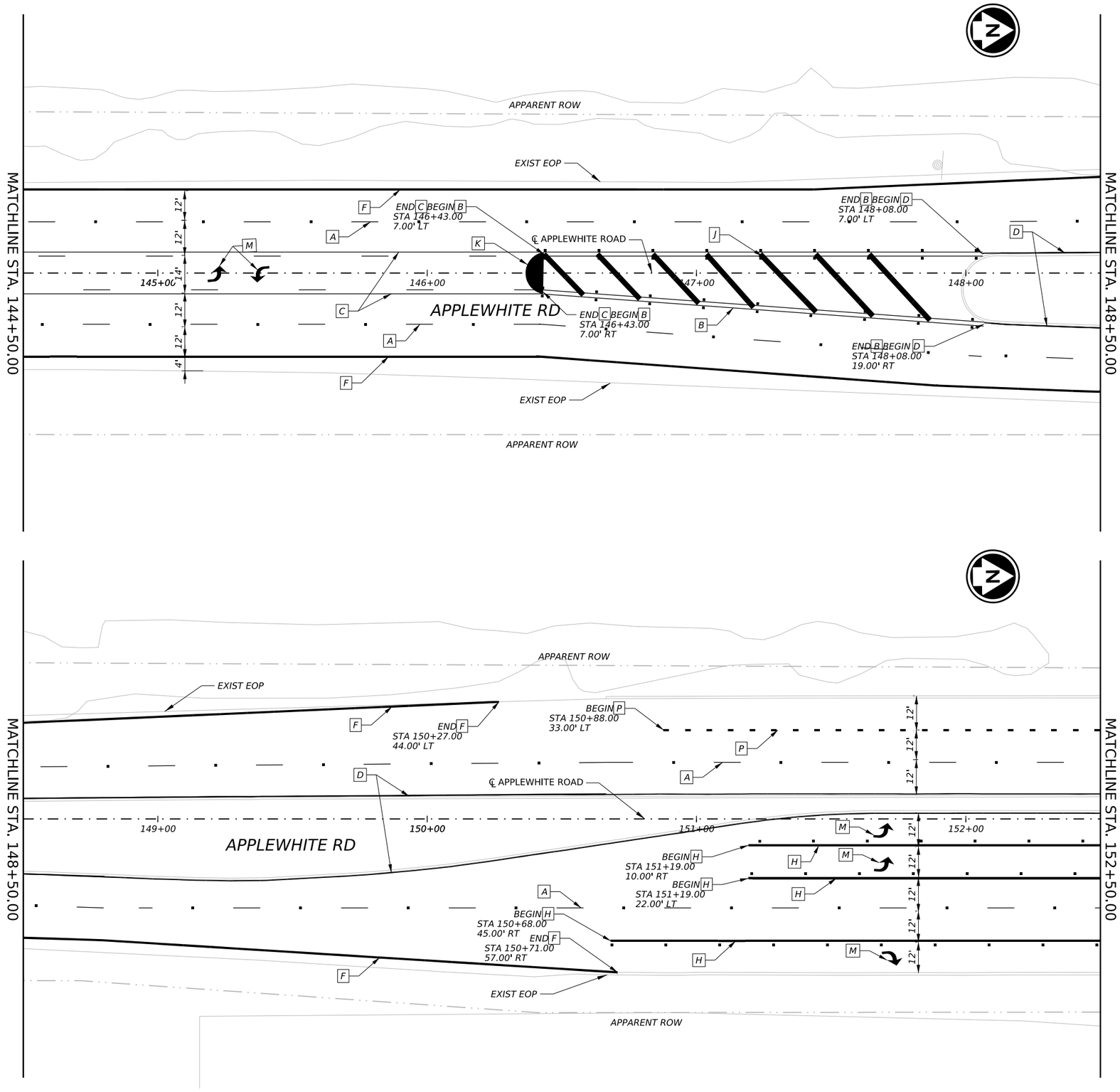
# PAVEMENT MARKINGS AND SIGNS

SHEET 5 OF 10

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 68 |


PRINTED ON: 9/25/2025 1:45:30 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S08-Traffic\S8.3-PM & Signing\13332704_SPM_PLAN_06_B.dgn

| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 535.1 | 4 INCH WIDE YELLOW LINE | LF | 2020 |
| 535.2 | 4 INCH WIDE WHITE LINE | LF | 397 |
| 535.23 | MEDIAN NOSE YELLOW | EA | 1 |
| 535.4 | 8 INCH WIDE WHITE LINE | LF | 1700 |
| 535.72 | 24 INCH WIDE YELLOW LINE | LF | 190 |
| 535.8 | RIGHT WHITE ARROW | EA | 1 |
| 535.9 | LEFT WHITE ARROW | EA | 4 |
| 537.8 | PAVEMENT MARKER (TYPE II A A) | EA | 38 |
| 537.9 | PAVEMENT MARKER (TYPE IIC R) | EA | 62 |




## LEGEND

- A 4" BRKN (W) STRIPE W/ TY II C-R @ 40' OC
- B 4" DBL SLD (Y) STRIPE W/ TY II A-A @ 20' OC
- C 4" SLD AND BRKN (Y) STRIPE W/ TY II A-A @ 40' OC
- D 4" SLD (Y) STRIPE
- E 4" (W)- 10' DASH @ 40' OC
- F 8" SLD (W) STRIPE
- G 8" SLD (Y) STRIPE
- H 8" SLD (W) STRIPE W/ TY II C-R @ 20' OC
- I 24" SLD (W) STRIPE
- J 24" SLD (Y) STRIPE
- K MEDIAN NOSE (Y) W/ TY II A-A @ 2' OC
- L WHITE WORD
- M WHITE ARROW
- N 24" SLD (W) W/ DBL 12" BLACK SLD
- O 8" (W)- 2' DASH @ 6' OC W/ DBL 4" BLACK SLD
- P 8" (W)- 2' DASH @ 6' OC
- Q 4" (Y)- DBL 2' DASH @ 6' OC
- R 12" SLD (W) STRIPE
- PROPOSED SIGN

## NOTES

1. SEE COSA TYPICAL STANDARD SHEETS FOR ADDITIONAL DETAILS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

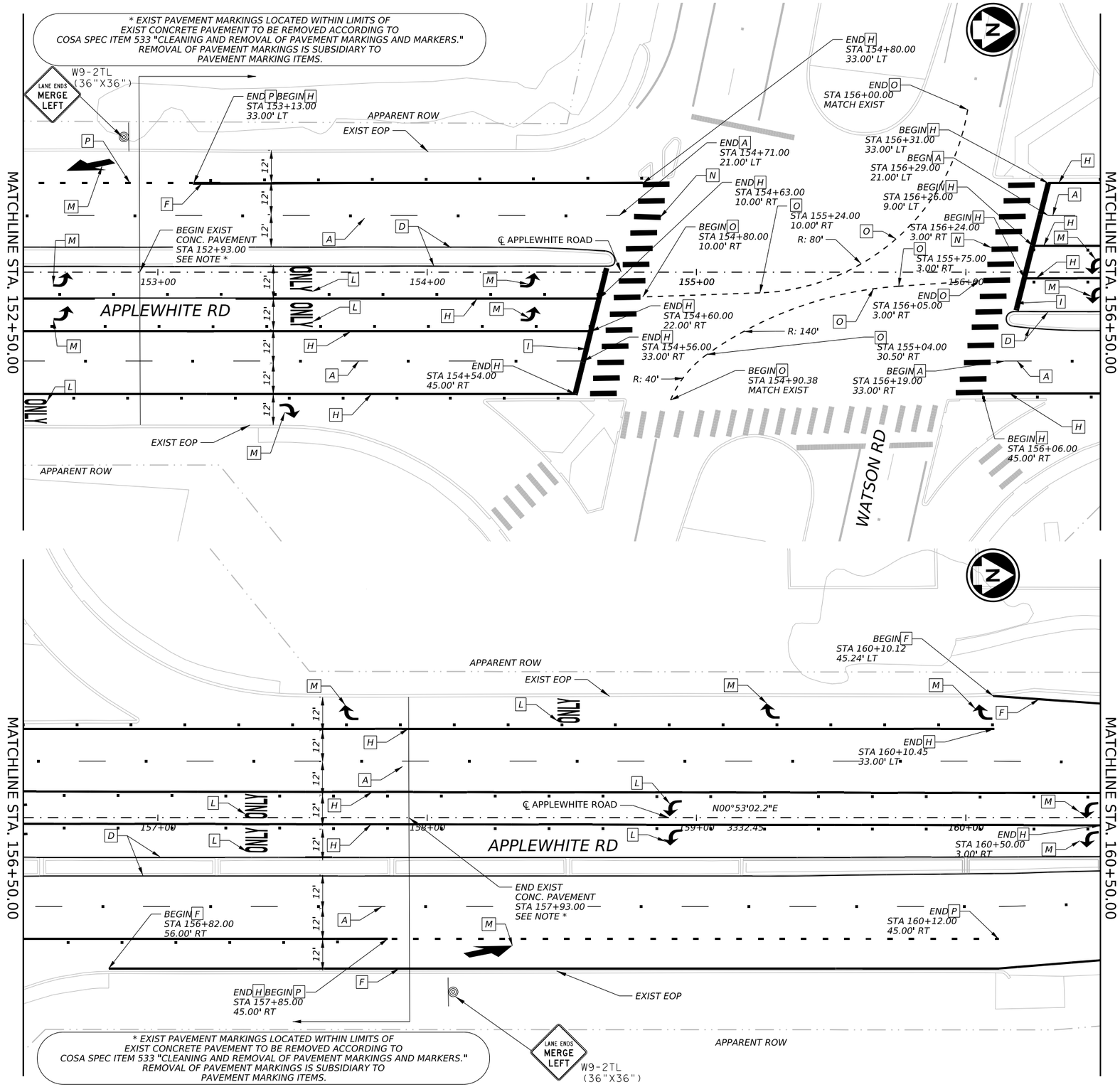
TOYOTA SOUTHSIDE STREETS

# PAVEMENT MARKINGS AND SIGNS

SHEET 6 OF 10

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 69 |


PRINTED ON: 9/25/2025 1:45:32 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S08-Traffic\S8.3-PM & Signing\13332704_SPM_PLAN_07_B.dgn




| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 531.49 | W9-2 LANE ENDS MERGE LEFT* (36" X 36") | EA | 2 |
| 535.1 | 4 INCH WIDE YELLOW LINE | LF | 1317 |
| 535.12 | WORD "ONLY" | WOR | 6 |
| 535.2 | 4 INCH WIDE WHITE LINE | LF | 322 |
| 535.22 | LANE REDUCTION ARROW | EA | 2 |
| 535.4 | 8 INCH WIDE WHITE LINE | LF | 2718 |
| 535.7 | 24 INCH WIDE WHITE LINE | LF | 375 |
| 535.8 | RIGHT WHITE ARROW | EA | 4 |
| 535.9 | LEFT WHITE ARROW | EA | 10 |
| 537.9 | PAVEMENT MARKER (TYPE IIC R) | EA | 143 |
| 535.2B | 4 INCH WIDE BLACK LINE | LF | 199 |
| 535.5B | 12 INCH WIDE BLACK LINE | LF | 556 |

## LEGEND

- A — 4" BRKN (W) STRIPE W/ TY II C-R @ 40' OC
- B — 4" DBL SLD (Y) STRIPE W/ TY II A-A @ 20' OC
- C — 4" SLD AND BRKN (Y) STRIPE W/ TY II A-A @ 40' OC
- D — 4" SLD (Y) STRIPE
- E — 4" (W)- 10' DASH @ 40' OC
- F — 8" SLD (W) STRIPE
- G — 8" SLD (Y) STRIPE
- H — 8" SLD (W) STRIPE W/ TY II C-R @ 20' OC
- I — 24" SLD (W) STRIPE
- J — 24" SLD (Y) STRIPE
- K — MEDIAN NOSE (Y) W/ TY II A-A @ 2' OC
- L — WHITE WORD
- M — WHITE ARROW
- N — 24" SLD (W) W/ DBL 12" BLACK SLD
- O — 8" (W)- 2' DASH @ 6' OC W/ DBL 4" BLACK SLD
- P — 8" (W)- 2' DASH @ 6' OC
- Q — 4" (Y)- DBL 2' DASH @ 6' OC
- R — 12" SLD (W) STRIPE
- PROPOSED SIGN

## NOTES

1. SEE COSA TYPICAL STANDARD SHEETS FOR ADDITIONAL DETAILS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TOYOTA SOUTHSIDE STREETS

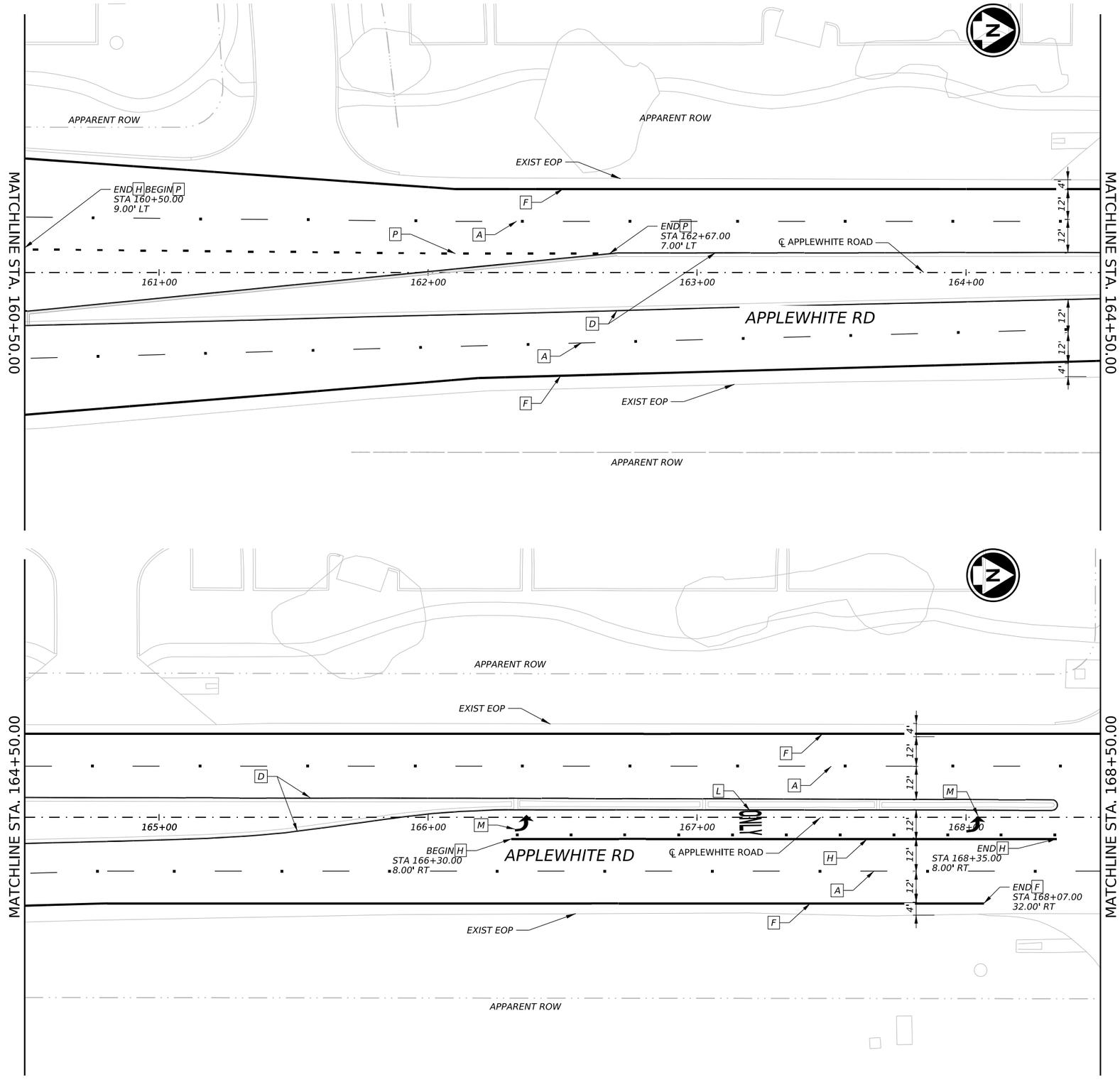
# PAVEMENT MARKINGS AND SIGNS

SHEET 7 OF 10

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 70 |


PRINTED ON: 9/25/2025 1:45:34 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S08-Traffic\S8.3-PM & Signing\1332704_SPM_PLAN_08_B.dgn

| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 535.1 | 4 INCH WIDE YELLOW LINE | LF | 1571 |
| 535.12 | WORD "ONLY" | WOR | 1 |
| 535.2 | 4 INCH WIDE WHITE LINE | LF | 400 |
| 535.4 | 8 INCH WIDE WHITE LINE | LF | 1834 |
| 535.9 | LEFT WHITE ARROW | EA | 2 |
| 537.9 | PAVEMENT MARKER (TYPE IIC R) | EA | 51 |




## LEGEND

- A 4" BRKN (W) STRIPE W/ TY II C-R @ 40' OC
- B 4" DBL SLD (Y) STRIPE W/ TY II A-A @ 20' OC
- C 4" SLD AND BRKN (Y) STRIPE W/ TY II A-A @ 40' OC
- D 4" SLD (Y) STRIPE
- E 4" (W)- 10' DASH @ 40' OC
- F 8" SLD (W) STRIPE
- G 8" SLD (Y) STRIPE
- H 8" SLD (W) STRIPE W/ TY II C-R @ 20' OC
- I 24" SLD (W) STRIPE
- J 24" SLD (Y) STRIPE
- K MEDIAN NOSE (Y) W/ TY II A-A @ 2' OC
- L WHITE WORD
- M WHITE ARROW
- N 24" SLD (W) W/ DBL 12" BLACK SLD
- O 8" (W)- 2' DASH @ 6' OC W/ DBL 4" BLACK SLD
- P 8" (W)- 2' DASH @ 6' OC
- Q 4" (Y)- DBL 2' DASH @ 6' OC
- R 12" SLD (W) STRIPE
- PROPOSED SIGN

## NOTES

1. SEE COSA TYPICAL STANDARD SHEETS FOR ADDITIONAL DETAILS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

STATE OF TEXAS · THOMAS A HENZ · 142980 · LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS · DAN THOMA · 98622 · LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

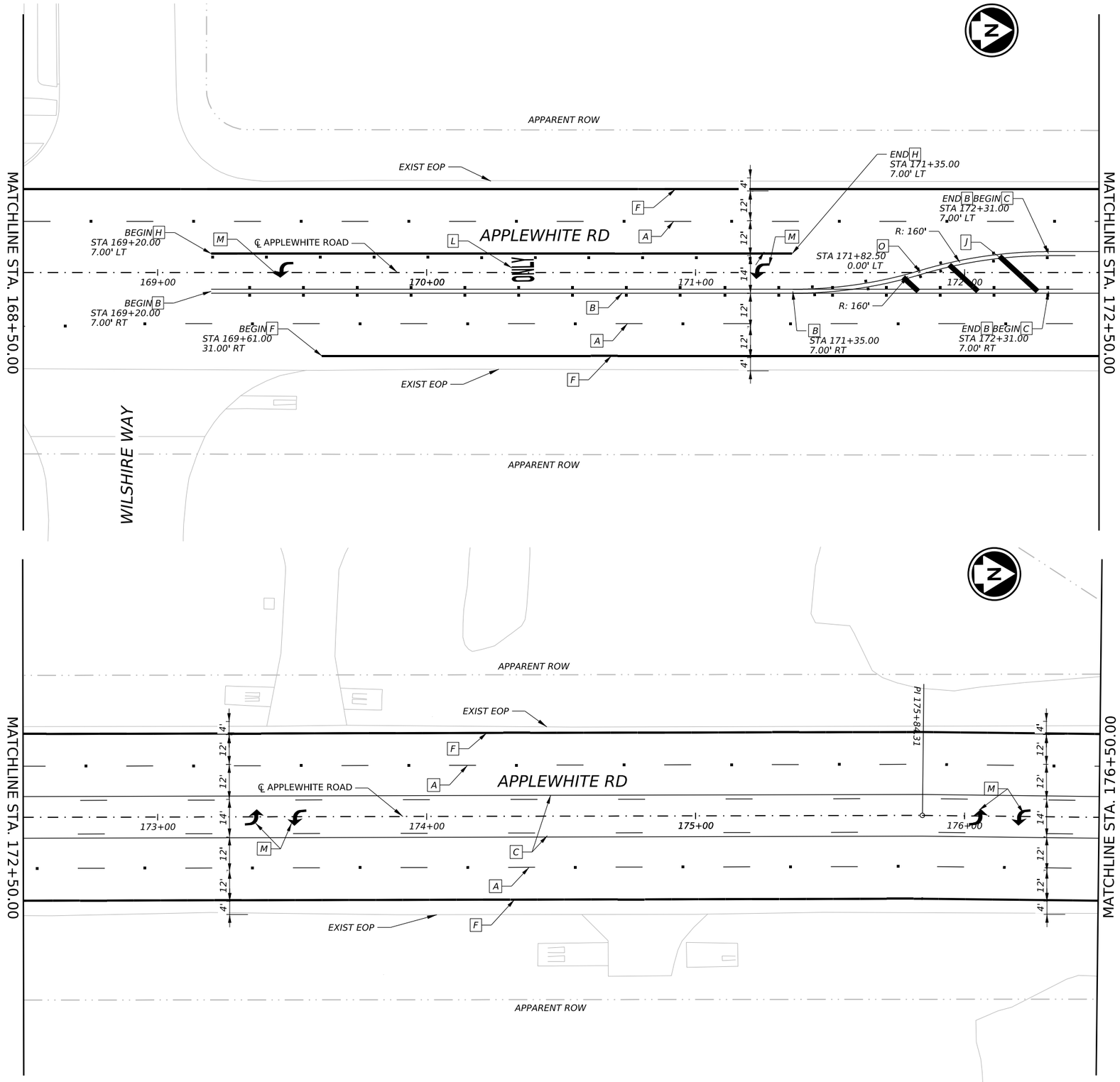
*TOYOTA SOUTHSIDE STREETS*

# PAVEMENT MARKINGS AND SIGNS

SHEET 8 OF 10

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 71 |


PRINTED ON: 9/25/2025 1:45:37 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S08-Traffic\S8.3-PM & Signing\13332704_SPM_PLAN_09_B.dgn




| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 535.1 | 4 INCH WIDE YELLOW LINE | LF | 1868 |
| 535.12 | WORD "ONLY" | WOR | 1 |
| 535.2 | 4 INCH WIDE WHITE LINE | LF | 396 |
| 535.4 | 8 INCH WIDE WHITE LINE | LF | 1705 |
| 535.72 | 24 INCH WIDE YELLOW LINE | LF | 42 |
| 535.9 | LEFT WHITE ARROW | EA | 6 |
| 537.8 | PAVEMENT MARKER (TYPE II A A) | EA | 21 |
| 537.9 | PAVEMENT MARKER (TYPE IIC R) | EA | 51 |

## LEGEND

- A 4" BRKN (W) STRIPE W/ TY II C-R @ 40' OC
- B 4" DBL SLD (Y) STRIPE W/ TY II A-A @ 20' OC
- C 4" SLD AND BRKN (Y) STRIPE W/ TY II A-A @ 40' OC
- D 4" SLD (Y) STRIPE
- E 4" (W)- 10' DASH @ 40' OC
- F 8" SLD (W) STRIPE
- G 8" SLD (Y) STRIPE
- H 8" SLD (W) STRIPE W/ TY II C-R @ 20' OC
- I 24" SLD (W) STRIPE
- J 24" SLD (Y) STRIPE
- K MEDIAN NOSE (Y) W/ TY II A-A @ 2' OC
- L WHITE WORD
- M WHITE ARROW
- N 24" SLD (W) W/ DBL 12" BLACK SLD
- O 8" (W)- 2' DASH @ 6' OC W/ DBL 4" BLACK SLD
- P 8" (W)- 2' DASH @ 6' OC
- Q 4" (Y)- DBL 2' DASH @ 6' OC
- R 12" SLD (W) STRIPE
- PROPOSED SIGN

## NOTES

1. SEE COSA TYPICAL STANDARD SHEETS FOR ADDITIONAL DETAILS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

STATE OF TEXAS · THOMAS A HENZ · 142980 · LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS · DAN THOMA · 98622 · LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

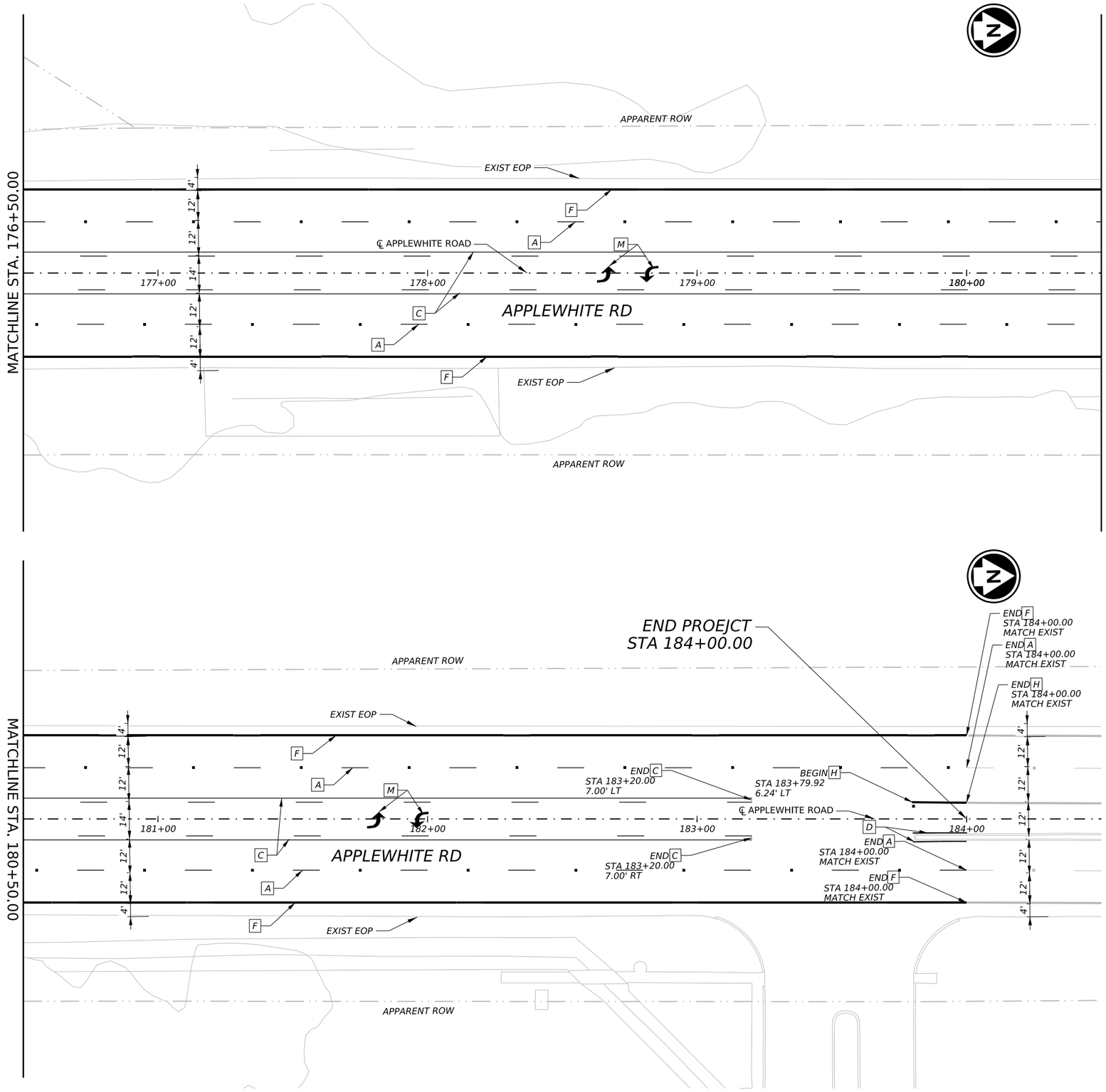
TOYOTA SOUTHSIDE STREETS

# PAVEMENT MARKINGS AND SIGNS

SHEET 9 OF 10

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 72 |


PRINTED ON: 9/25/2025 1:45:39 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S08-Traffic\S8.3-PM & Signing\1332704_SPM_PLAN_10_B.dgn




| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 535.1 | 4 INCH WIDE YELLOW LINE | LF | 1715 |
| 535.2 | 4 INCH WIDE WHITE LINE | LF | 375 |
| 535.4 | 8 INCH WIDE WHITE LINE | LF | 1520 |
| 535.9 | LEFT WHITE ARROW | EA | 4 |
| 537.9 | PAVEMENT MARKER (TYPE IIC R) | EA | 39 |

## LEGEND

- A 4" BRKN (W) STRIPE W/ TY II C-R @ 40' OC
- B 4" DBL SLD (Y) STRIPE W/ TY II A-A @ 20' OC
- C 4" SLD AND BRKN (Y) STRIPE W/ TY II A-A @ 40' OC
- D 4" SLD (Y) STRIPE
- E 4" (W)- 10' DASH @ 40' OC
- F 8" SLD (W) STRIPE
- G 8" SLD (Y) STRIPE
- H 8" SLD (W) STRIPE W/ TY II C-R @ 20' OC
- I 24" SLD (W) STRIPE
- J 24" SLD (Y) STRIPE
- K MEDIAN NOSE (Y) W/ TY II A-A @ 2' OC
- L WHITE WORD
- M WHITE ARROW
- N 24" SLD (W) W/ DBL 12" BLACK SLD
- O 8" (W)- 2' DASH @ 6' OC W/ DBL 4" BLACK SLD
- P 8" (W)- 2' DASH @ 6' OC
- Q 4" (Y)- DBL 2' DASH @ 6' OC
- R 12" SLD (W) STRIPE
- PROPOSED SIGN

## NOTES

1. SEE COSA TYPICAL STANDARD SHEETS FOR ADDITIONAL DETAILS.
2. EXISTING FEATURES ARE SHOWN SCREENED BACK.
3. ALL DIMENSIONS ARE TO FACE OF CURB AND/OR CENTER OF PAVEMENT MARKINGS, UNLESS OTHERWISE INDICATED.

DESIGN

STATE OF TEXAS · THOMAS A HENZ · 142980 · LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS · DAN THOMA · 98622 · LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 20 40 60

SCALE: 1"= 40'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

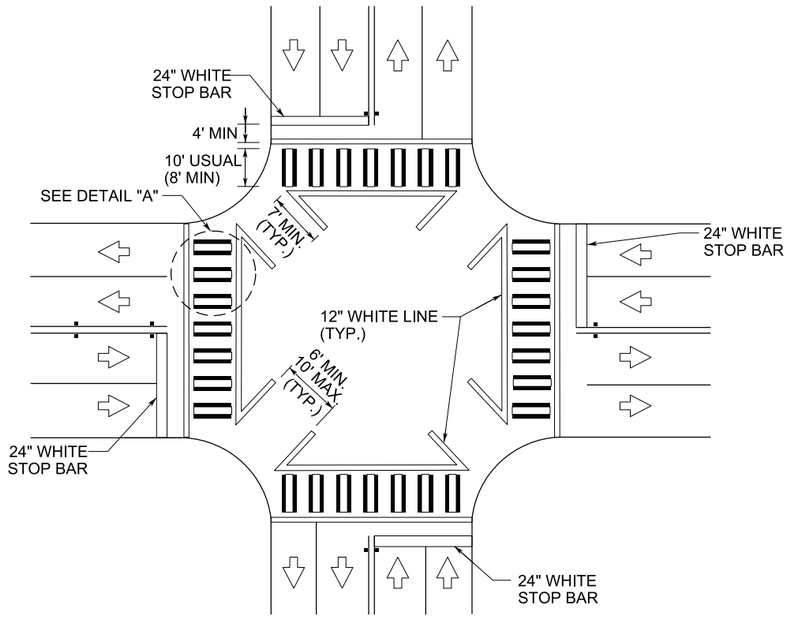
*TOYOTA SOUTHSIDE STREETS*

# PAVEMENT MARKINGS AND SIGNS

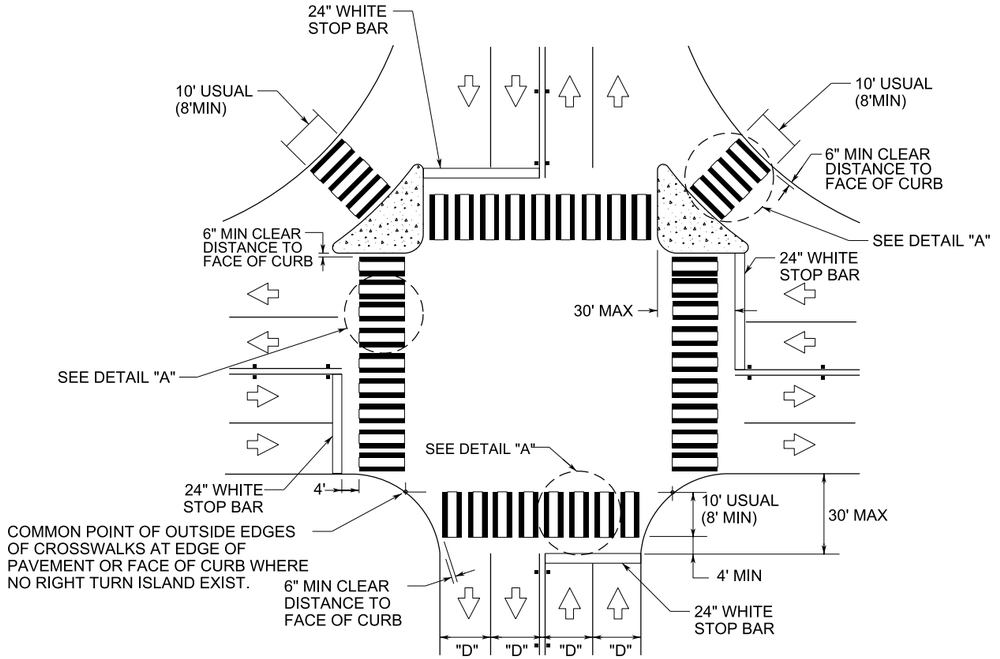
SHEET10OF 10

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 73 |

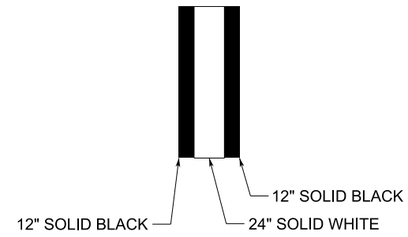

PRINTED ON: 9/25/2025 1:45:41 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S08-Traffic\S8.3-PM & Signing\13332704_SPM_PLAN_11_B.dgn



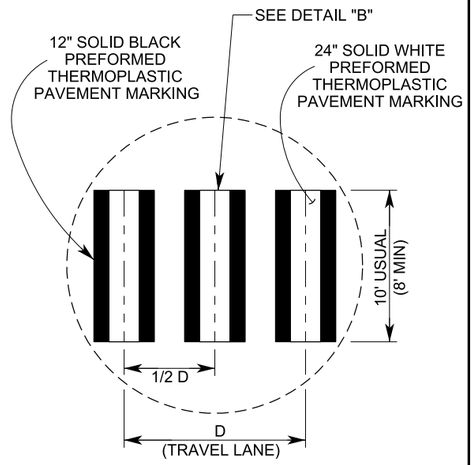

EXCLUSIVE PEDESTRIAN PHASE



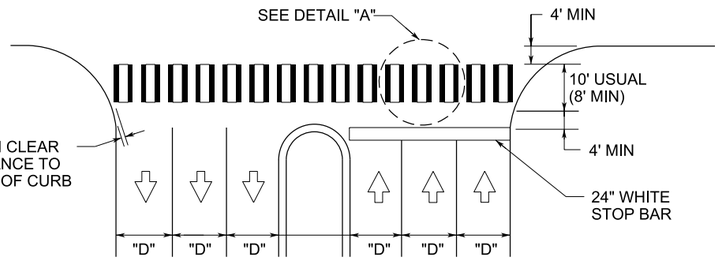

INTERSECTION WITH RIGHT TURN ISLANDS



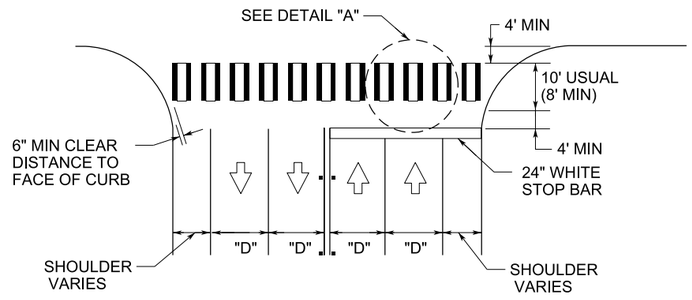

DETAIL B



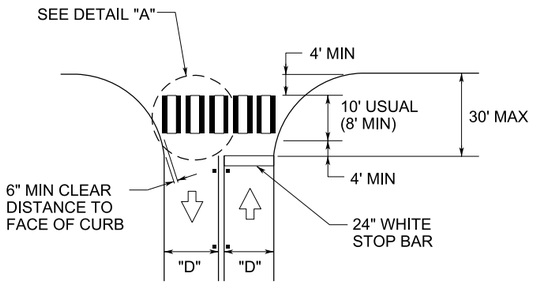

DETAIL A



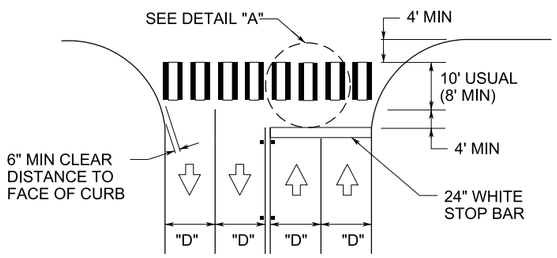

MULTI - LANES



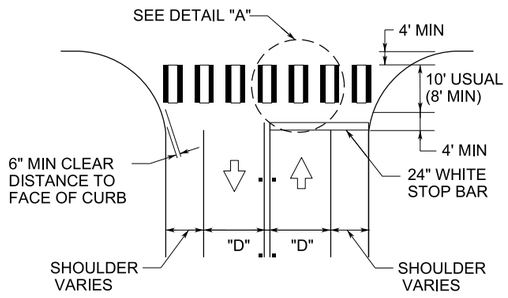

FOUR LANES WITH SHOULDERS




TWO LANES




FOUR LANES




TWO LANES WITH SHOULDERS

## GENERAL NOTES

1. "D" IS EQUAL TO THE WIDTH OF TRAVEL LANE. SEE TEXAS MUTCD 3B.18
2. PREFORMED THERMOPLASTIC SHALL BE USED FOR ALL CROSSWALK PAVEMENT MARKINGS.
3. PREFORMED THERMOPLASTIC MATERIAL SHALL BE SUPPLIED BY A MANUFACTURER LISTED ON TxDOT'S MATERIAL PRODUCER LIST (MPL).

SEPTEMBER 2024

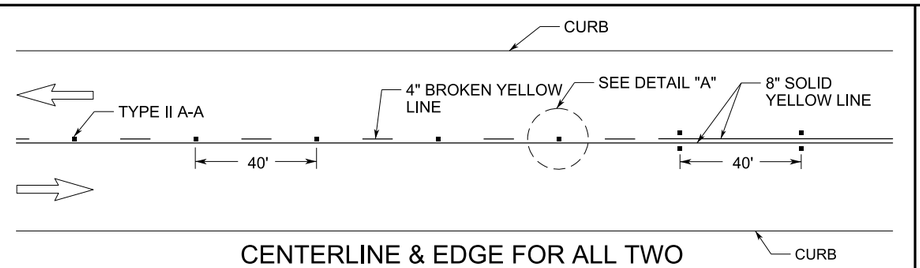
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

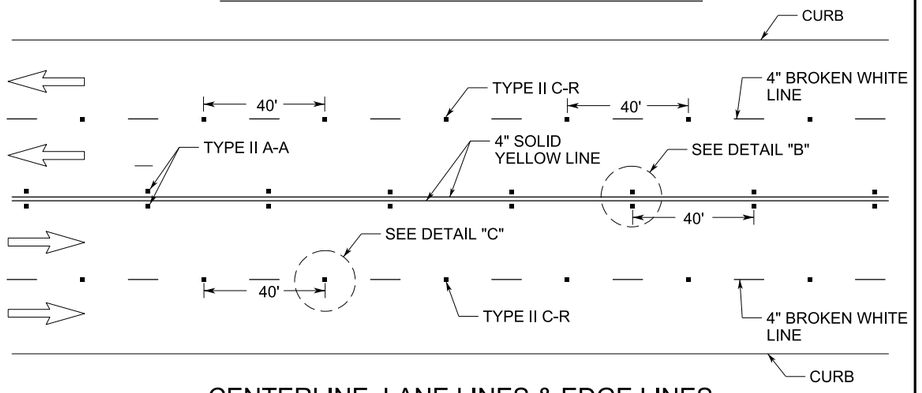
# TYPICAL CROSSWALK DETAILS

SHEET 01 OF 01 TCD-24

| | | | |
|---|---|---|---|
| 100% % SUBMITTAL | PROJECT NO.: 23-04167 | | DATE: 9/25/2025 |
| DRWN. BY: | DSGN. BY: | CHKD. BY: L BANDA, P.E. | SHEET NO.: 74 OF 115 |




## CENTERLINE & EDGE FOR ALL TWO LANE STREETS WITH PASSING ZONE

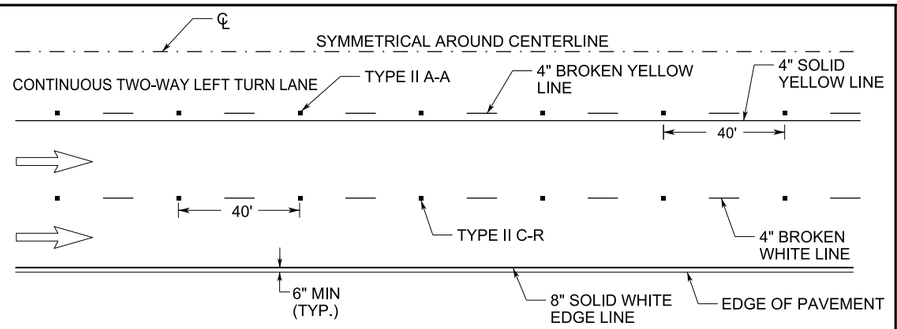



## CENTERLINE, LANE LINES & EDGE LINES FOR FOUR LANE TWO-WAY STREETS

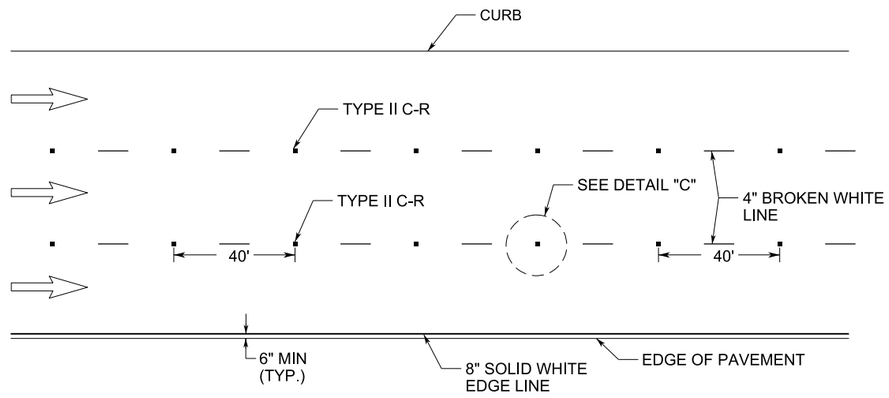
RAISED PAVEMENT MARKERS TYPE II C-R SHALL HAVE CLEAR FACE TOWARD NORMAL TRAFFIC AND RED FACE TOWARD WRONG-WAY TRAFFIC.




DETAIL "A" DETAIL "B" DETAIL "C"




## CENTERLINE, LANE LINES, & EDGE LINES FOR TWO-WAY LEFT TURN LANE




## LANE LINES & EDGE LINES FOR ONE-WAY MULTILANE STREET

RAISED PAVEMENT MARKERS TYPE II C-R SHALL HAVE CLEAR FACE TOWARD NORMAL TRAFFIC AND RED FACE TOWARD WRONG-WAY TRAFFIC.

| *POSTED SPEED | FORMULA |
|---|---|
| <45 | $L=\frac{WS^2}{60}$ |
| ≥45 | L= WS |

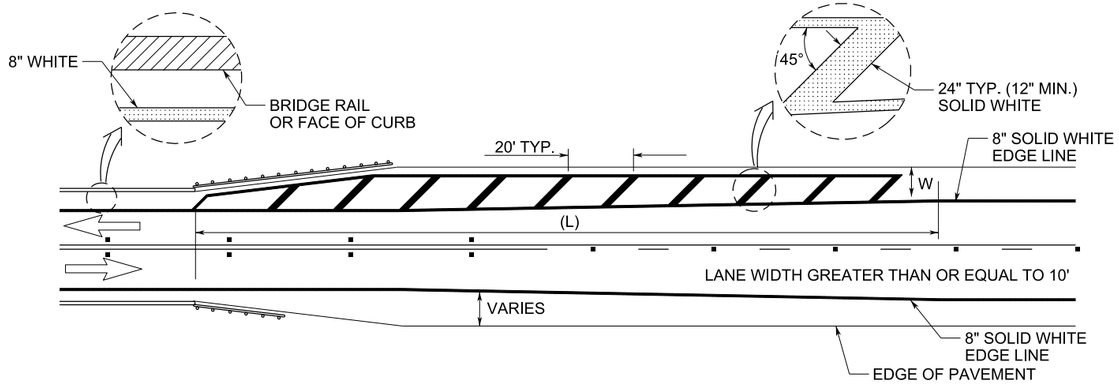
## TABLE 1 - TYPICAL LENGTH (L)

*85TH PERCENTILE SPEED MAY BE USED ON ROADS WHERE TRAFFIC SPEEDS NORMALLY EXCEED THE POSTED SPEED LIMIT. CROSSHATCHING LENGTH SHOULD BE ROUNDED UP TO NEAREST 5 FOOT INCREMENT.

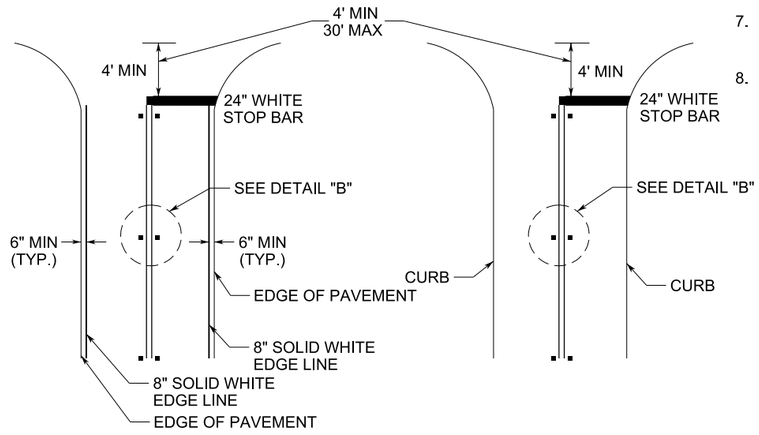
L= LENGTH OF CROSSHATCHING (FT)
W= WIDTH OF OFFSET (FT)
S= POSTED SPEED (MPH)

## GENERAL NOTES:

1. EDGELINE ADJACENT TO CURB AND GUTTER IS NOT REQUIRED IN ALL CASES, HOWEVER SHALL BE PLACED AS DIRECTED BY THE ENGINEER.
2. THE TRAVELED WAY INCLUDES ONLY THAT PORTION OF THE ROADWAY USED FOR VEHICULAR TRAVEL AND NOT THE PARKING LANES, SIDEWALKS, BERMS AND SHOULDERS. THE TRAVELED WAYS SHALL BE MEASURED FROM THE INSIDE OF EDGELINE TO INSIDE OF EDGELINE OF A TWO LANE ROADWAY.
3. ALL RAISED PAVEMENT MARKERS PLACED IN BROKEN LINES SHALL BE PLACED IN LINE WITH AND MIDWAY BETWEEN THE STRIPES.
4. ON CONCRETE PAVEMENTS THE RAISED PAVEMENT MARKERS SHOULD BE PLACED TO ONE SIDE OF THE LONGITUDINAL JOINTS.
5. ALL PAVEMENT MARKING MATERIAL SHALL MEET THE REQUIRED MATERIAL SPECIFICATIONS AS SPECIFIED BY CITY OF SAN ANTONIO STANDARD SPECIFICATIONS.
6. ASIDE FROM LONG LANE LINE MARKINGS, ALL OTHER PAVEMENT MARKINGS SHALL BE PREFORMED MATERIAL. HOT-APPLIED MARKINGS MAY BE USED ONLY IF APPROVED BY PWD - TRAFFIC ENGINEERING AND OPERATIONS.
7. FOR GUARD FENCE DETAILS, REFER ELSEWHERE IN THE PLANS.
8. YELLOW EDGE LINES ADJACENT TO RAISED ISLAND ARE REQUIRED. REF TRMRM-24




## ROADWAYS WITH REDUCED SHOULDER WIDTHS ACROSS BRIDGE OR CULVERT




## GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

SEPTEMBER 2024

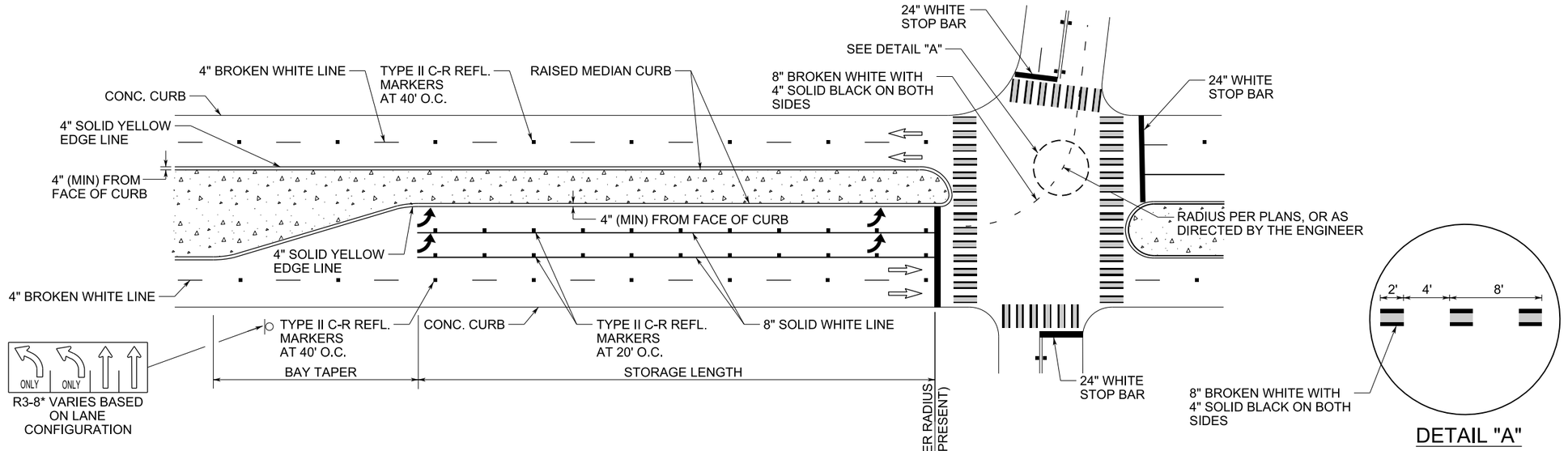
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

PAVEMENT MARKINGS WITH RAISED PAVEMENT MARKERS

SHEET 01 OF 01 PM&RPM-24

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 23-04167 | | DATE: 9/25/2025 |
| DRWN. BY: | DSGN. BY: | CHKD. BY: L BANDA, P.E. | SHEET NO.: 75 OF 115 |

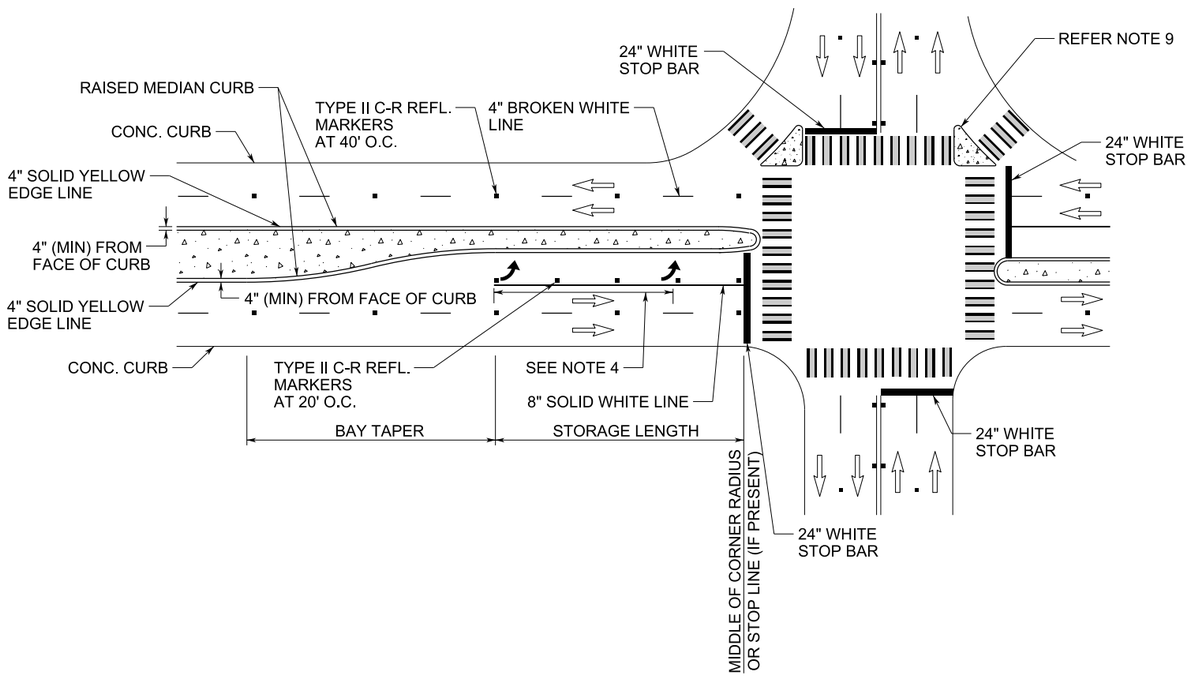



DETAIL "A"

| MINIMUM TURN BAY REVERSE CURVE TAPER LENGTHS | |
|---|---|
| POSTED SPEED (MPH) | DUAL LT LANES (FT) |
| 25-35 | 150' |
| 40-45 | 150' |
| 50-55 | 250' |

| MINIMUM STORAGE LENGTH | |
|---|---|
| POSTED SPEED (MPH) | MINIMUM LENGTH (FT) |
| 40 OR LESS | 110' |
| 45 OR MORE | 150' |

## DUAL LEFT (RAISED MEDIAN)




## LEFT-TURN LANE (RAISED MEDIAN)

## GENERAL NOTES:

1. THE POSTED SPEED LIMIT IS TYPICALLY EQUAL TO THE DESIGN SPEED MINUS 5 MPH.
2. THE DIMENSIONS GIVEN FOR DUAL LEFT (RAISED MEDIAN) IN THE MINIMUM LENGTH TABLES ON THIS SHEET ARE ALSO APPLICABLE FOR DUAL RIGHT-TURN LANES.
3. STORAGE LENGTHS LONGER THAN THE MINIMUMS LISTED ON THIS DRAWING MAY BE DETERMINED USING TRAFFIC ENGINEERING ANALYSIS.
4. FOR THE PLACEMENT OF PAVEMENT ARROWS AND WORDS SEE THE TURN LANE PAVEMENT MARKING STANDARD SHEET, REFER TO TLPM-24.
5. REFER TO STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS AND TURN LANE DETAILS STANDARD SHEETS.
6. REFER TO TYPICAL CROSSWALK DETAILS STANDARD FOR CROSSWALK DETAILS.
7. WHITE EDGE LINES AT EDGE OF PAVEMENT ARE REQUIRED WHERE CURBS ARE NOT PRESENT.
8. WHITE EDGE LINE ADJACENT TO CURB AND GUTTER IS NOT REQUIRED.
9. YELLOW EDGE LINES ADJACENT TO RAISED ISLAND ARE REQUIRED, REFER TO TRMRM-24.
10. ASIDE FROM LONG LANE LINE MARKINGS, ALL OTHER PAVEMENT MARKINGS SHALL BE PREFORMED MATERIAL. HOT-APPLIED MARKINGS MAY BE USED ONLY IF APPROVED BY PWD - TRAFFIC ENGINEERING AND OPERATIONS.

SEPTEMBER 2024

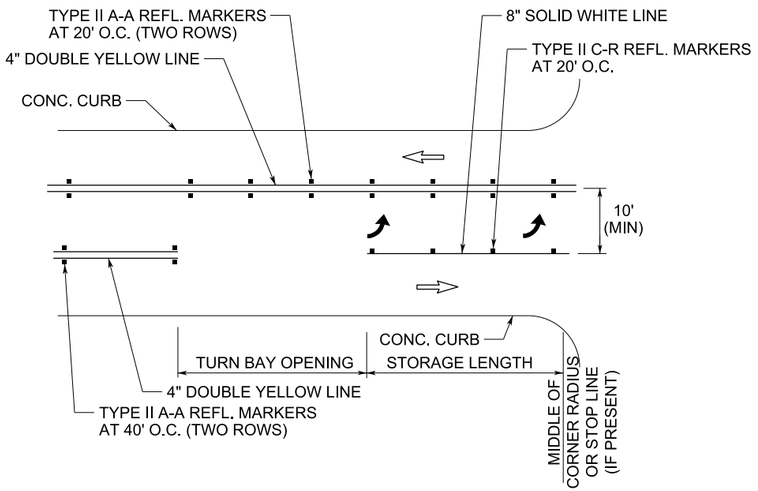
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

TURN LANE DETAILS 1

SHEET 01 OF 02 TLD-(1)-24

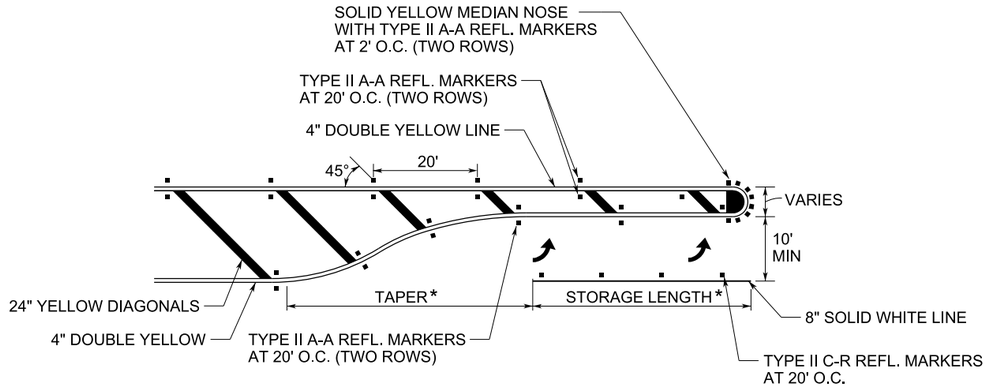
| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 23-04167 | | DATE: 9/25/2025 |
| DRWN. BY: | DSGN. BY: | CHKD. BY: L BANDA, P.E. | SHEET NO.: 76 OF 115 |

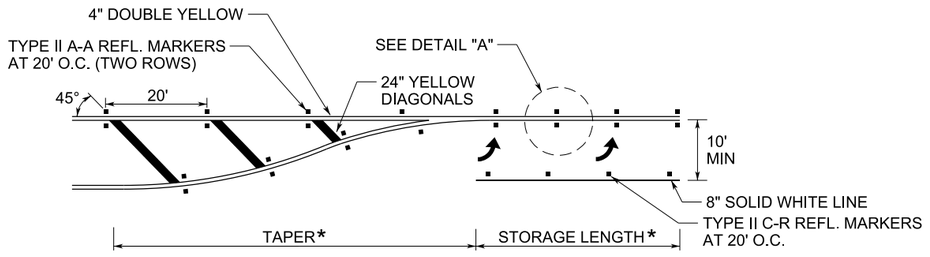



| MINIMUM TURN BAY OPENINGS | |
|---|---|
| POSTED SPEED (MPH) | MINIMUM OPENING (FT) |
| 25-35 | 60' |
| ≥ 40 | 100' |

| MINIMUM STORAGE LENGTH | |
|---|---|
| POSTED SPEED (MPH) | MINIMUM OPENING (FT) |
| 40 OR LESS | 110' |
| 45 OR MORE | 150' |

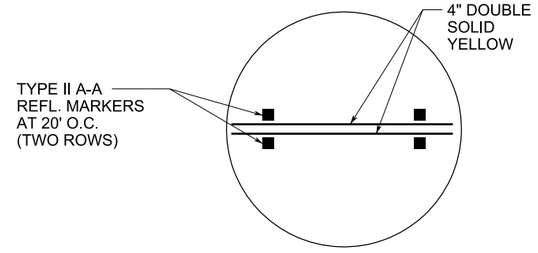
## LEFT-TURN LANE




## PAINTED MEDIAN LEFT TURN BAY DETAILS

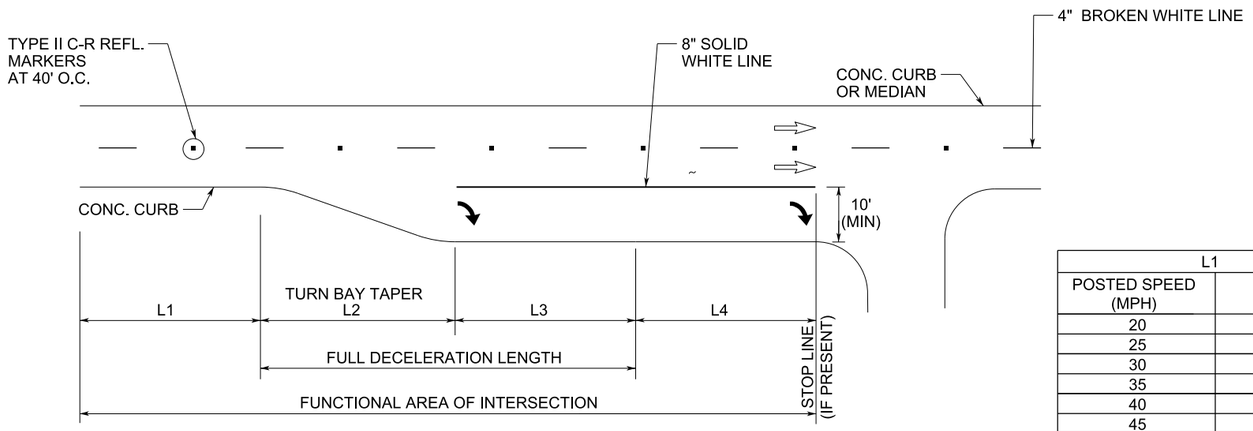
* USE MINIMUM TURN BAY REVERSE CURVE TAPER LENGTH AND MINIMUM STORAGE LENGTH TABLES FOR "LEFT-TURN LANE (RAISED MEDIAN)".




## DETAIL "A"

## GENERAL NOTES:

1. THE POSTED SPEED LIMIT IS TYPICALLY EQUAL TO THE DESIGN SPEED MINUS 5 MPH.
2. STORAGE LENGTHS LONGER THAN THE MINIMUMS LISTED ON THIS DRAWING MAY BE DETERMINED USING TRAFFIC ENGINEERING ANALYSIS OR APPROXIMATE CALCULATIONS.
3. FOR THE PLACEMENT OF PAVEMENT ARROWS AND WORDS SEE TURN LANE PAVEMENT MARKINGS STANDARD SHEET.
4. REFER TO APPLICABLE STANDARD PAVEMENT MARKINGS WITH REFLECTIVE RAISED PAVEMENT MARKERS AND TURN LANE DETAILS STANDARD SHEETS.
5. REFER TO BICYCLE PAVEMENT MARKINGS STANDARD SHEET FOR TYPE AND PLACEMENT.
6. WHITE EDGE LINES AT EDGE OF PAVEMENT ARE REQUIRED WHERE CURBS ARE NOT PRESENT.
7. WHITE EDGE LINE ADJACENT TO CURB AND GUTTER IS NOT REQUIRED.
8. BICYCLE SYMBOL MARKING SHALL FACE THRU LANE OF TRAFFIC.
9. ASIDE FROM LONG LANE LINE MARKINGS, ALL OTHER PAVEMENT MARKINGS SHALL BE PERFORMED. HOT-APPLIED PAVEMENT MARKINGS MAY BE USED ONLY IF APPROVED BY PWD TRAFFIC ENGINEERING & OPERATIONS.
10. ASSUMES A TURNING VEHICLE HAS "CLEARED THE THROUGH LANE" WHEN IT HAS MOVED LATERALLY APPROXIMATELY 9 FT SO THAT A FOLLOWING THROUGH VEHICLE CAN PASS WITHOUT ENCROACHING UPON THE ADJACENT TRAFFIC LANE.
11. THE SPEED DIFFERENTIAL BETWEEN THE TURNING VEHICLE AND FOLLOWING THROUGH VEHICLES IS 10 MPH WHEN THE TURNING VEHICLE "CLEARS THE THROUGH TRAFFIC LANE".
12. 5.8 FT/S^2 DECELERATION WHILE MOVING FROM THE THROUGH LANE INTO THE TURN LANE; 6.5 FT/S^2 AVERAGE DECELERATION AFTER COMPLETING LATERAL SHIFT INTO THE TURN LANE.
13. YELLOW EDGE LINES ADJACENT TO RAISED ISLAND ARE REQUIRED, REFER TO TRMRM-24.




## UNSIGNALIZED RIGHT-TURN LANE

| L1 | |
|---|---|
| POSTED SPEED (MPH) | LENGTH (FT) |
| 20 | 75' |
| 25 | 95' |
| 30 | 115' |
| 35 | 130' |
| 40 | 150' |
| 45 | 170' |
| 50 | 185' |
| 55 | 205' |
| 60 | 225' |
| 65 | 240' |
| 70 | 260' |

| DESIRABLE FULL DECELERATION LENGTHS | |
|---|---|
| (L2+L3) | |
| POSTED SPEED (MPH) | LENGTH (FT) |
| 20 | 70' |
| 25 | 115' |
| 30 | 160' |
| 35 | 220' |
| 40 | 275' |
| 45 | 350' |
| 50 | 425' |
| 55 | 515' |
| 60 | 605' |
| 65 | 720' |
| 70 | 820' |

SEPTEMBER 2024

CITY OF SAN ANTONIO

PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

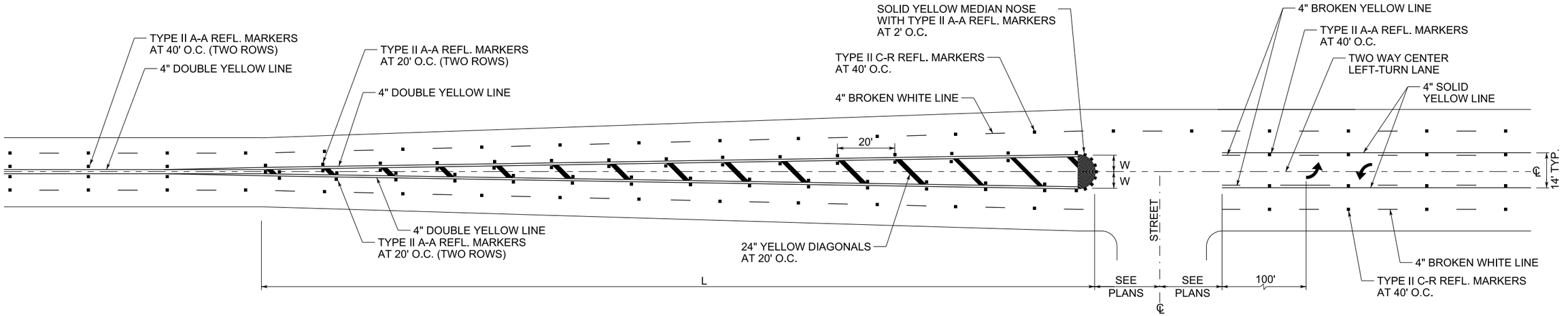
TURN LANE DETAILS 2

SHEET 02 OF 02

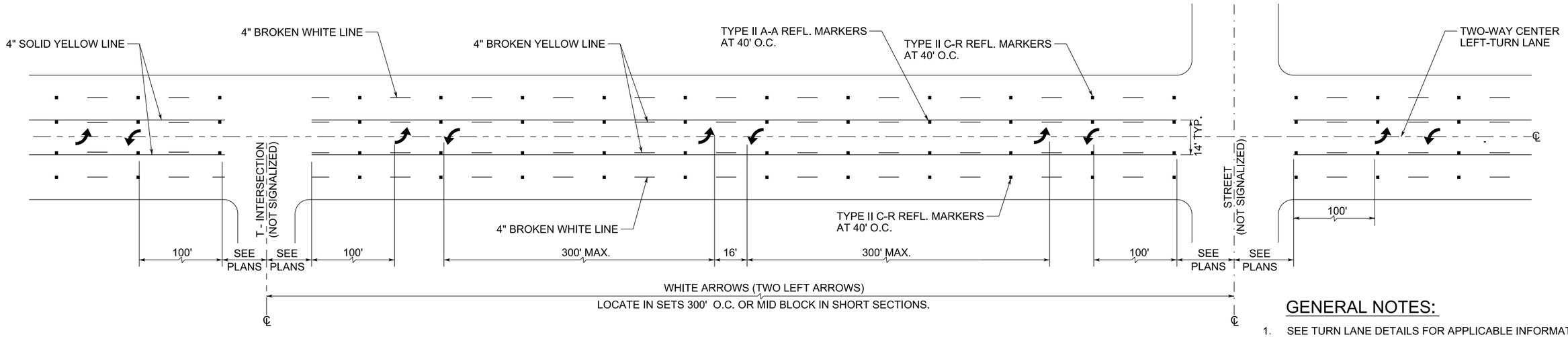
TLD-(2)-24

| 100% SUBMITTAL | PROJECT NO.: 23-04167 | DATE: 9/25/2025 |
|---|---|---|
| DRWN. BY: | DSGN. BY: | CHKD. BY: L BANDA, P.E. |

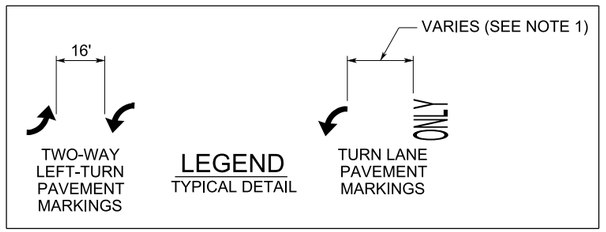
SHEET NO.: 77 OF 115




## TYPICAL TRANSITION AT BEGINNING AND END OF TWO-WAY CENTER LEFT-TURN LANE




## TWO-WAY LEFT-TURN LANE DETAILS NON-SIGNALIZED INTERSECTIONS




| POSTED SPEED * | FORMULA |
|---|---|
| < 45 | $L=\frac{WS^2}{60}$ |
| ≥ 40 | L= WS |

## TABLE 1 - TYPICAL LENGTH (L)

* 85TH PERCENTILE SPEED MAY BE USED ON ROADS WHERE TRAFFIC SPEEDS NORMALLY EXCEED THE POSTED SPEED LIMIT. CROSSHATCHING LENGTH SHOULD BE ROUNDED UP TO NEAREST 5 FOOT INCREMENT.

L= LENGTH OF CROSSHATCHING (FT)
W= WIDTH OF OFFSET (FT)
S= POSTED SPEED (MPH)

## GENERAL NOTES:

1. SEE TURN LANE DETAILS FOR APPLICABLE INFORMATION (TLPM-24).
2. SEE "PAINTED MEDIAN LEFT - TURN BAY DETAILS" ON LEFT TURN AND RIGHT TURN LANE DESIGN STANDARD SHEET 2 FOR APPLICABLE STANDARDS.
3. ASIDE FROM LONG LANE LINE MARKINGS, ALL OTHER PAVEMENT MARKINGS SHALL BE PREFORMED MATERIAL. HOT-APPLIED MARKINGS MAY BE USED ONLY IF APPROVED BY PWD TRAFFIC ENGINEERING & OPERATIONS.

SEPTEMBER 2024

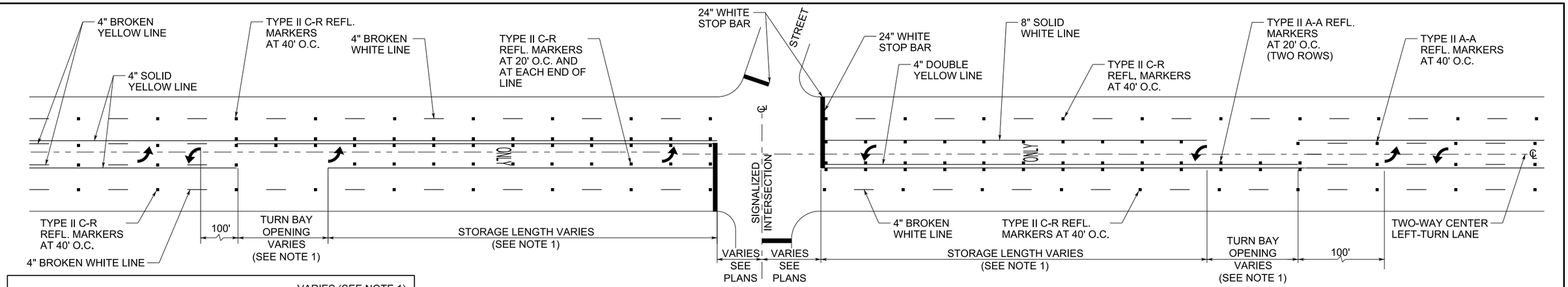
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

TWO-WAY LEFT-TURN LANE DETAILS 1

SHEET 01 OF 02 TWLTLD-(1)-24

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 23-04167 | | DATE: 9/25/2025 |
| DRWN. BY: | DSGN. BY: | CHKD. BY: L BANDA, P.E. | SHEET NO.: 78 OF 115 |




16'

LEGEND

TYPICAL DETAIL

VARIES (SEE NOTE 1)

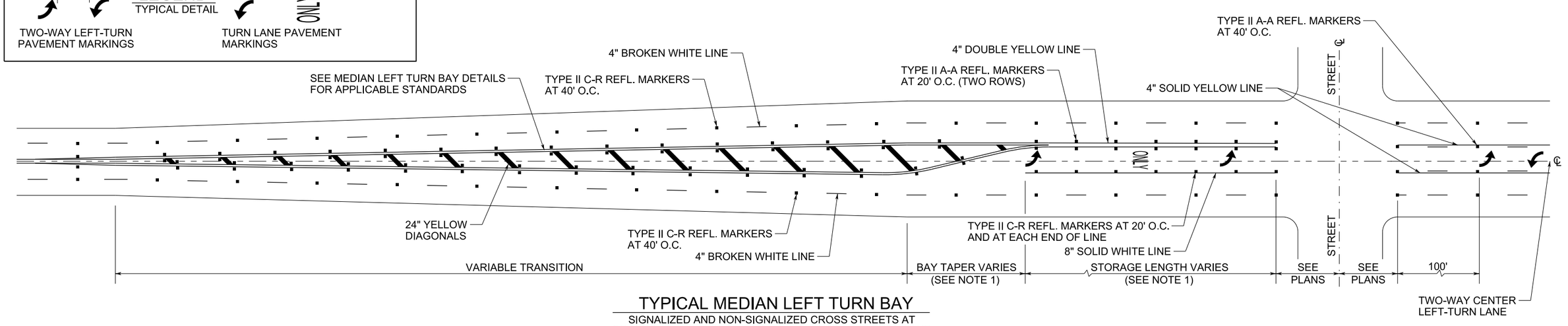
ONLY

TWO-WAY LEFT-TURN PAVEMENT MARKINGS

TURN LANE PAVEMENT MARKINGS

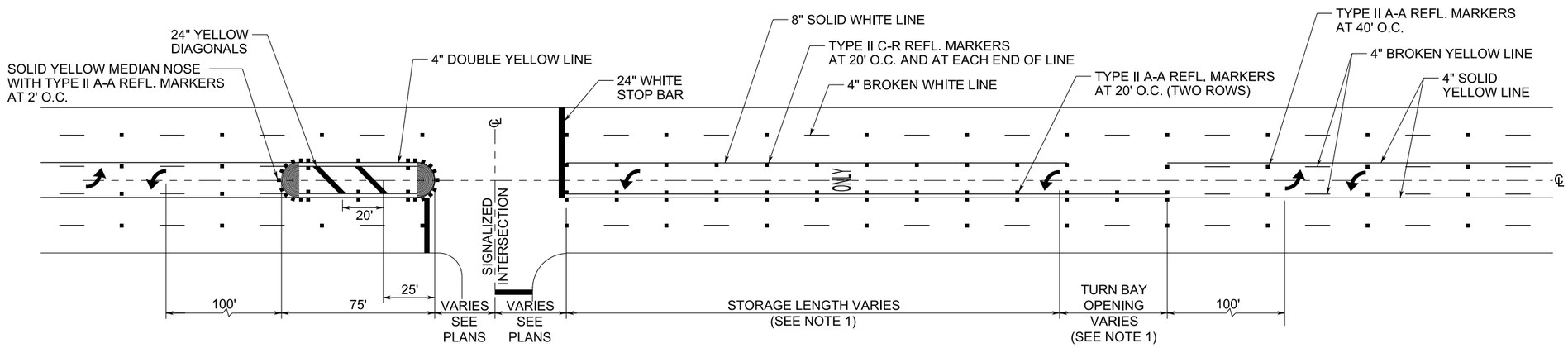
## TYPICAL TWO-WAY LEFT-TURN LANE DETAILS

SIGNALIZED INTERSECTION




## TYPICAL MEDIAN LEFT TURN BAY

SIGNALIZED AND NON-SIGNALIZED CROSS STREETS AT BEGINNING AND END OF TWO-WAY CENTER LEFT-TURN LANE




## TYPICAL TWO-WAY LEFT-TURN LANE DETAILS

SIGNALIZED T INTERSECTION

## GENERAL NOTES:

1. SEE TURN LANE DESIGN DETAILS FOR APPLICABLE INFORMATION, REFER TLPM-24
2. ASIDE FROM LONG LANE LINE MARKINGS, ALL OTHER PAVEMENT MARKINGS SHALL BE PREFORMED MATERIAL. HOT-APPLIED MARKINGS MAY BE USED ONLY IF APPROVED BY PWD TRAFFIC ENGINEERING & OPERATIONS.
3. YELLOW EDGE LINES ADJACENT TO RAISED ISLAND ARE REQUIRED, REFER TO TRMRM-24.

SEPTEMBER 2024

CITY OF SAN ANTONIO

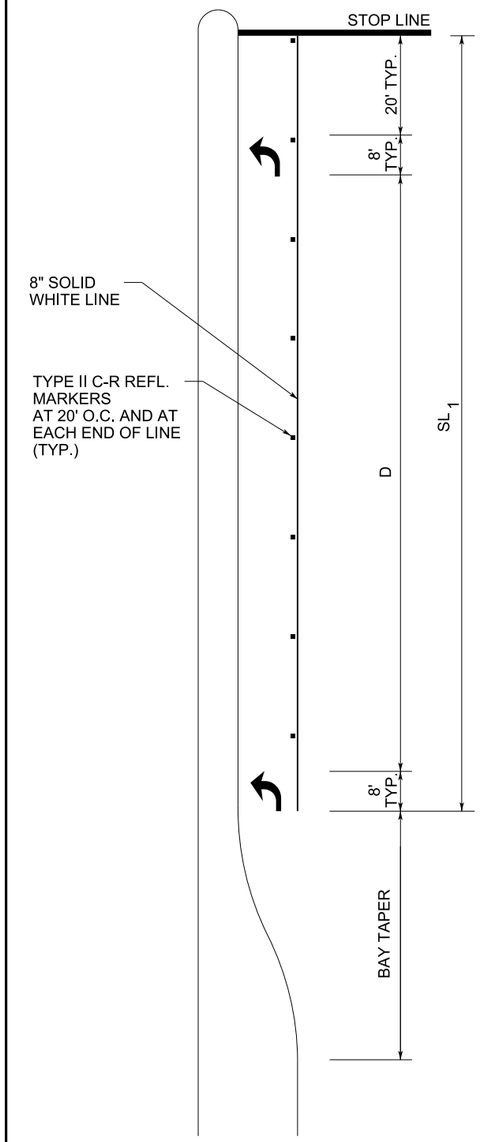
PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

TWO-WAY LEFT-TURN LANE DETAILS 2

SHEET 02 OF 02 TWLTLD-(2)-24

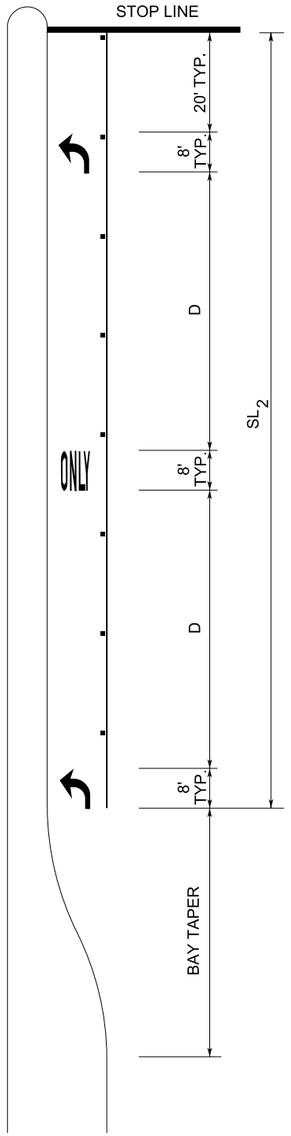
| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 23-04167 | | DATE: 9/25/2025 |
| DRWN. BY: | DSGN. BY: | CHKD. BY: L BANDA, P.E. | SHEET NO.: 79 OF 115 |




## CASE 1

SL < 110'

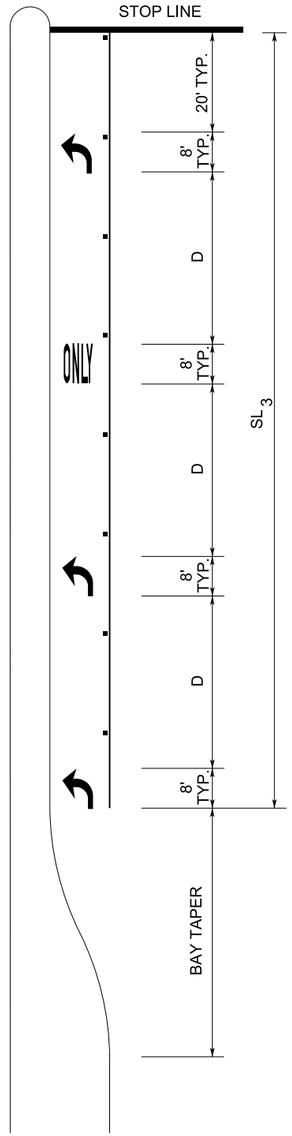
D = SL - 36




## CASE 2

110' < SL < 200'

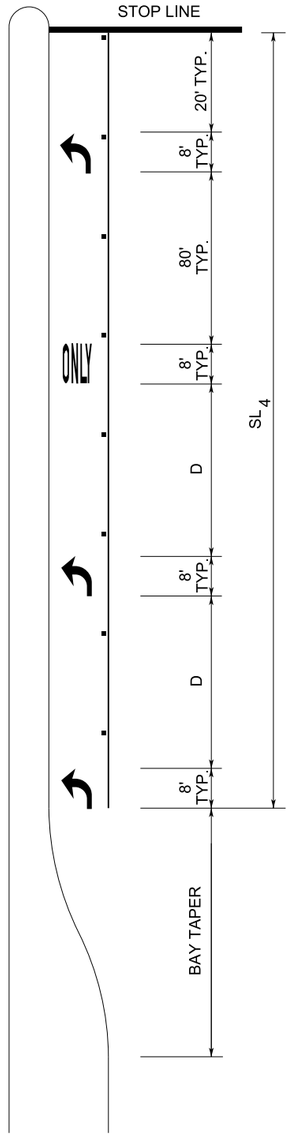
D = (SL - 44) / 2




## CASE 3

201' < SL < 300'

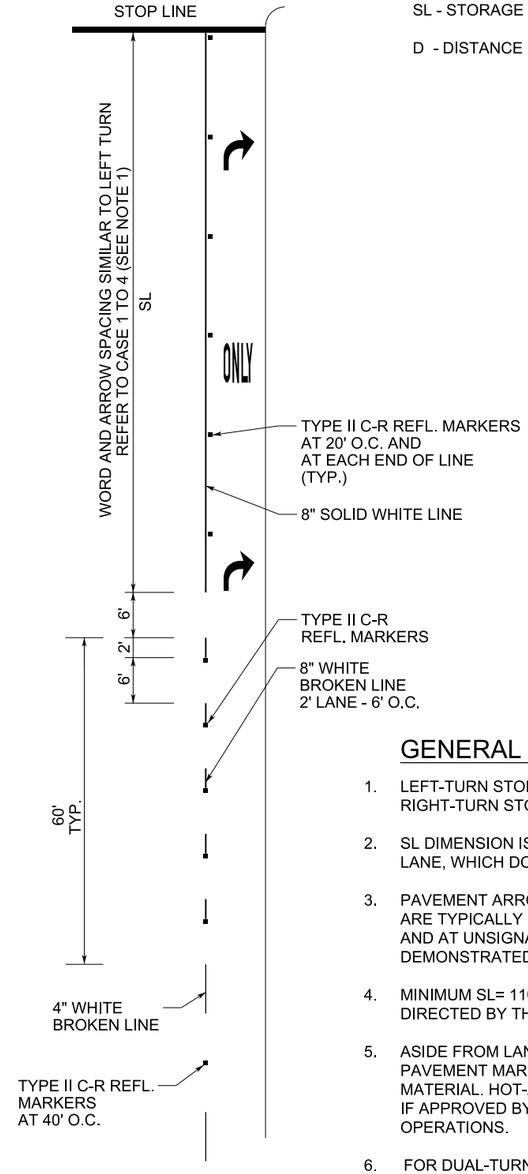
D = (SL - 52) / 3




## CASE 4

SL > 300'

D = (SL - 132) / 2




## RIGHT TURN LANE DROP

## KEY

SL - STORAGE LENGTH (FEET)

D - DISTANCE BETWEEN ARROWS AND LEGENDS (FEET)

## GENERAL NOTES:

1. LEFT-TURN STORAGE LANE DETAILS ALSO APPLY TO RIGHT-TURN STORAGE LANES.
2. SL DIMENSION IS FROM STOP LINE TO END OF TURN LANE, WHICH DOES NOT INCLUDE TAPER LENGTH.
3. PAVEMENT ARROWS AND “ONLY”LEGEND MARKINGS ARE TYPICALLY USED AT SIGNALIZED INTERSECTIONS AND AT UNSIGNALIZED INTER - SECTIONS WHERE A DEMONSTRATED NEED EXISTS.
4. MINIMUM SL= 110'. SL MAY BE LESS THAN 110 FEET AS DIRECTED BY THE CITY TRAFFIC ENGINEER.
5. ASIDE FROM LANE LINE MARKINGS, ALL OTHER PAVEMENT MARKINGS SHALL BE PREFORMED MATERIAL. HOT-APPLIED MARKINGS MAY BE USED ONLY IF APPROVED BY PWD TRAFFIC ENGINEERING & OPERATIONS.
6. FOR DUAL-TURN LANES, DIMENSIONS SHALL BE THE SAME FOR EACH LANE.
7. YELLOW EDGE LINES ADJACENT TO RAISED ISLAND ARE REQUIRED, REFER TO TRMRM-24.

SEPTEMBER 2024

CITY OF SAN ANTONIO

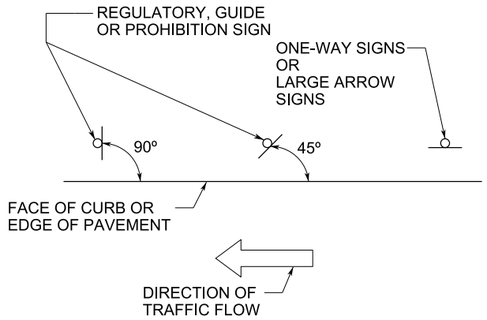
PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

# TURN LANE PAVEMENT MARKINGS

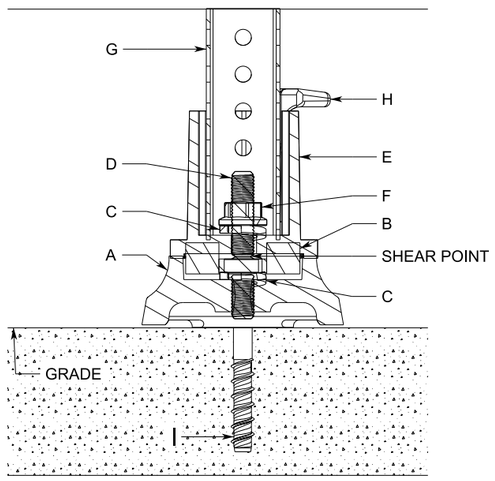
SHEET 01 OF 01 TLPM-24

| | | | |
|---|---|---|---|
| 100% % SUBMITTAL | PROJECT NO.: 23-04167 | | DATE: 9/25/2025 |
| DRWN. BY: | DSGN. BY: | CHKD. BY: L BANDA, P.E. | SHEET NO.: 80 OF 115 |




## TYPICAL GROUND MOUNTED SIGN ORIENTATION

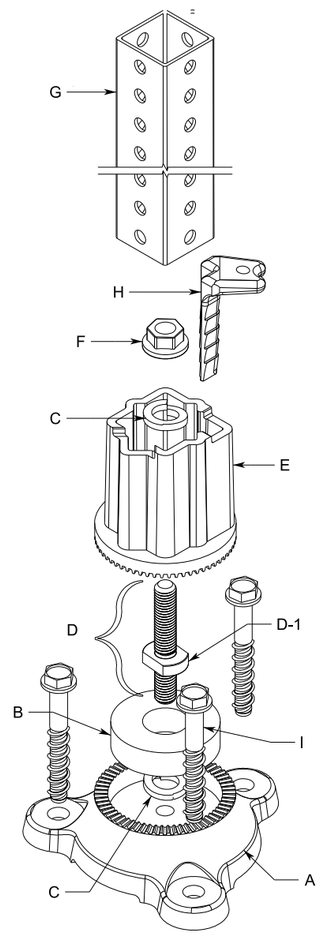
NOTE:
XCESSORIES SQUARED DEVELOPMENT KLEEN BREAK MODEL 425 OR APPROVED EQUIVALENT AS APPROVED BY THE ENGINEER.



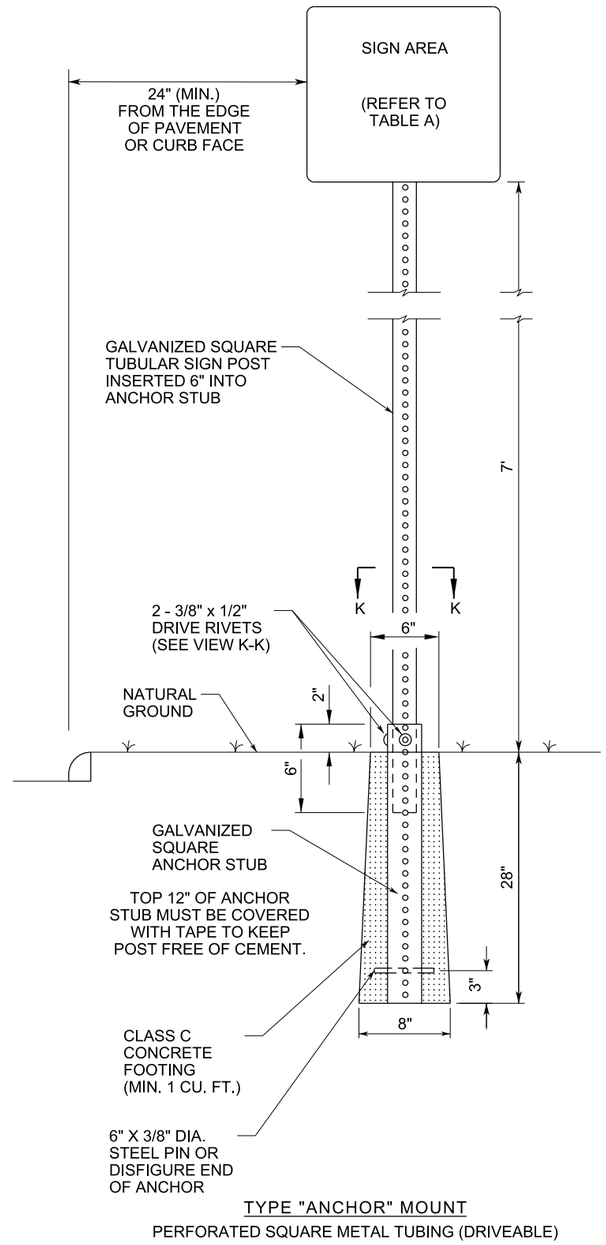

PARTS LIST

| | |
|---|---|
| A | SURFACE MOUNT ANCHOR BASE |
| B | 3" O.D. x 1.3" I.D. x 0.825" RUBBER BUSHING |
| C | LOCK WASHER |
| D | 5/8"-11 x 4" SHEAR BOLT |
| D-1 | SHOULDER |
| E | TOP HALF COUPLER |
| F | 5/8"-11 SERRATED FLANGE NUT |
| G | SIGN SUPPORT 2" SQUARE POST |
| H | SIGN SUPPORT LOCKING WEDGE |
| I | CONCRETE MOUNTING FASTENER (NOT INCLUDED) |

## TYPE SURFACE / FLANGE MOUNT




## TYPE SURFACE / FLANGE MOUNT EXPANDED VIEW




TYPE "ANCHOR" MOUNT

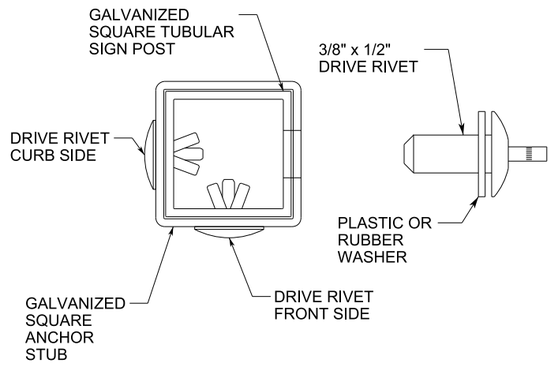
PERFORATED SQUARE METAL TUBING (DRIVEABLE)

## TYPICAL GROUND SIGN INSTALLATION

| TABLE A | | |
|---|---|---|
| METAL TUBING | SIGN AREA | |
| | ≤ 10 SQ. FT. | > 10 SQ. FT. |
| GALVANIZED SQUARE TUBULAR SIGN POST (PERFORATED) | 1-3/4" x 1-3/4" (14 GAUGE) | 2" x 2" (12 GAUGE) |
| GALVANIZED SQUARE ANCHOR STUB (PERFORATED) | 2" x 2" (12 GAUGE) | 2-1/4" x 2-1/4" (12 GAUGE) |

NOTE:

1. A MINIMUM OF TWO (2) DRIVE RIVETS SHALL BE USED; ONE ON THE FRONT SIDE AND ONE ON THE CURB SIDE OF THE POLE.




VIEW K-K

## GENERAL NOTES:

1. THE EXISTING SIGNS LOCATED ON THE JOBSITE ARE THE PROPERTY OF THE CITY OF SAN ANTONIO. THROUGHOUT THE PERIOD OF THE CONTRACT, THE CONTRACTOR SHALL PROTECT THESE SIGNS SUCH THAT THEY ARE NOT DAMAGED IN THE COURSE OF CONSTRUCTION ACTIVITY.
2. PRIOR TO THE START OF CONSTRUCTION, ALL EXISTING SIGNS WITHIN THE AREA OF CONSTRUCTION WILL BE INVENTORIED AND DOCUMENTED JOINTLY BY THE CONSTRUCTION INSPECTOR AND THE CONTRACTOR. THIS DOCUMENT WILL BE JOINTLY SIGNED BY BOTH PARTIES REFLECTING THE SIGN TYPE, SIZE, SIGN CONDITION, SIGN LOCATION, REFLECTIVITY ADEQUACY, ETC. THE CONTRACTOR IS HELD ACCOUNTABLE FOR THESE SIGNS THROUGHOUT THE PROJECT AND AT THE PROJECTS COMPLETION.
3. ALL GROUND MOUNTED SIGNS SHALL USE HIGH INTENSITY REFLECTIVE SHEETING.

SEPTEMBER 2024

CITY OF SAN ANTONIO

PUBLIC WORKS DEPARTMENT

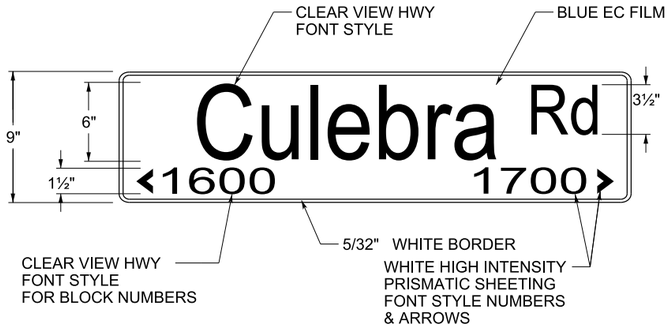
TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

GENERAL NOTES AND SIGN MOUNTING

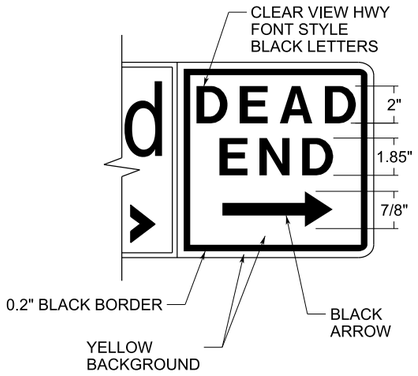
SHEET 01 OF 04

SM(1)-24

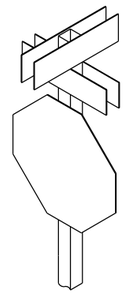
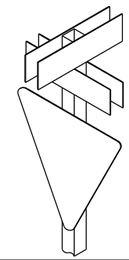
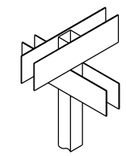
| | | | |
|---|---|---|---|
| 100% % SUBMITTAL | PROJECT NO.: 23-04167 | | DATE: 9/25/2025 |
| DRWN. BY: | DSGN. BY: | CHKD. BY: L BANDA, P.E. | SHEET NO.: 81 OF 115 |




9" D3 - STREET NAME SIGN


9" D3 WITH DEAD END
OR NO OUTLET SIGNAGE

| STREET SIGN ASSEMBLY EXAMPLES | DESCRIPTION | UNIT | QUANTITY |
|---|---|---|---|
| STOP SIGN WITH 2 STREET NAMES  | R1-1 STOP | EA. | 1 |
| | 9-IN STREET NAME PLATE | EA. | 4 |
| YIELD SIGN WITH 2 STREET NAMES  | R1-2 YIELD | EA. | 1 |
| | 9-IN STREET NAME PLATE | EA. | 4 |
| 2 STREET SIGNS  | 9-IN STREET NAME SIGN | EA. | 2 |
| | 9-IN STREET NAME PLATE | EA. | 2 |

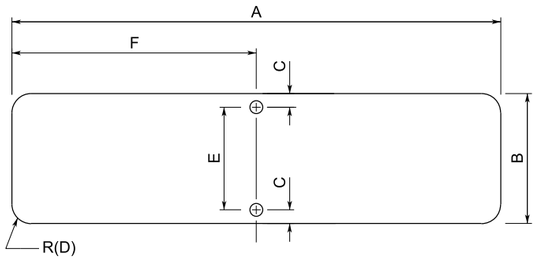
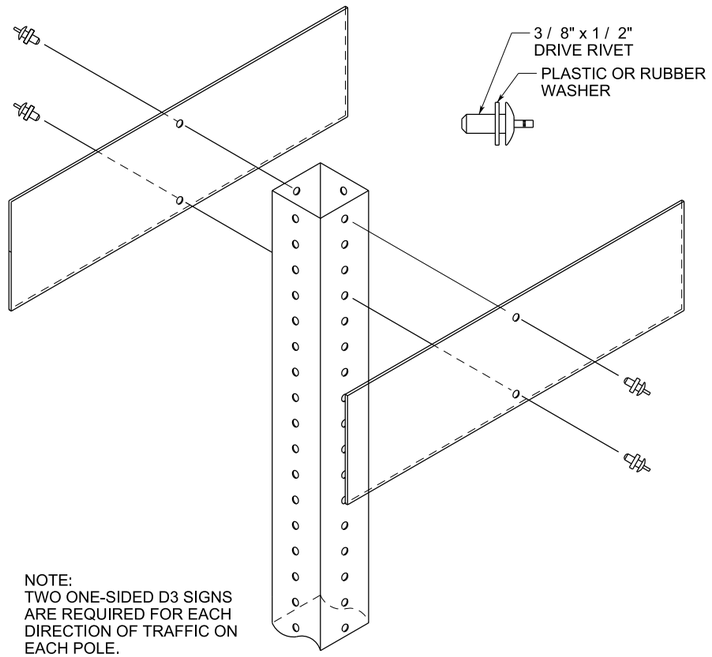



TABLE - D3 SIGNS

| A | B | C | D | E | F | T |
|---|---|---|---|---|---|---|
| 24" | 9" | 1 / 2" | 1 / 2" | 8" | 12" | 1 / 8" |
| 30" | 9" | 1 / 2" | 1 / 2" | 8" | 15" | 1 / 8" |
| 36" | 9" | 1 / 2" | 1 / 2" | 8" | 18" | 1 / 8" |
| 42" | 9" | 1 / 2" | 1 / 2" | 8" | 21" | 1 / 8" |
| 48" | 9" | 1 / 2" | 1 / 2" | 8" | 24" | 1 / 8" |
| 54" | 9" | 1 / 2" | 1 / 2" | 8" | 27" | 1 / 8" |

NOTE:
A 30" LONG OR GREATER PLATE SHALL BE USED WHEN A "DEAD END" OR "NO OUTLET" SUPPLEMENT IS REQUIRED.




NOTE:
TWO ONE-SIDED D3 SIGNS ARE REQUIRED FOR EACH DIRECTION OF TRAFFIC ON EACH POLE.

D3 SIGN TO POLE INSTALLATION

| | |
|---|---|
| HEIGHT | 9" (228 mm) |
| LENGTH | 24" (600 MM) MIN.<br>54" (1350 MM) MAX.<br>6" (150 MM) INCREMENTS OF LENGTH |
| THICKNESS | 1 / 8" (3MM) |
| SUBSTRATE | ALUMINUM ALLOY,<br>5052-H38 (ASTM B-209)<br>GOLD CHROMATE FINISH |
| SIGN FACE MATERIALS | BLUE FILM OVER<br>HIGH INTENSITY<br>FP-85, SECTION 718<br>AND L-S-300C |
| LEGENDS AND SYMBOLS | SERIES D (USUAL)<br>SERIES C OR B FOR<br>MAXIMUM LENGTH<br>SIGN BLANK,<br>IF NECESSARY |
| COLOR | WHITE LEGEND ON<br>BLUE BACKGROUND |
| LETTER TRACKING | STREET NAME 0%<br>BLOCK NUMBERS 25% |

## GENERAL NOTES:

"9-INCH STREET NAME" SIGN (1-EA.) INCLUDES THE INSTALLATION OF (2) ONE-SIDED D3 SIGNS. THIS SHALL BE FULL COMPENSATION FOR MATERIALS AND LABOR AS DESCRIBED IN C.O.S.A. STANDARD SPECIFICATIONS AND GROUND SIGN MOUNTING STANDARD DETAIL.

"9-INCH STREET NAME PLATE" (1-EA.) INCLUDES THE INSTALLATION OF (2) ONE-SIDED D3 SIGNS ON TOP OF EXISTING SIGN (I.E., STOP - SIGN OR YIELD SIGN), EXTRA LENGTH POLE AND APPURTENANCES REQUIRED TO MEET SPECIFICATIONS.

SEPTEMBER 2024

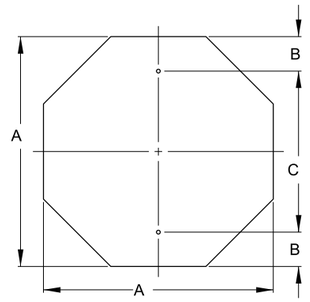
CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STARDARDS

D3 STREET NAME SIGN MOUNTING

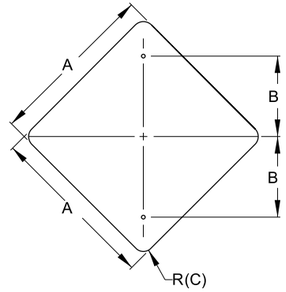
SHEET 02 OF 02 SM(2)-24

| | | | |
|---|---|---|---|
| 100% % SUBMITTAL | PROJECT NO.: 23-04167 | | DATE: 9/25/2025 |
| DRWN. BY: | DSGN. BY: | CHKD. BY: L BANDA, P.E. | SHEET NO.: 82 OF 115 |



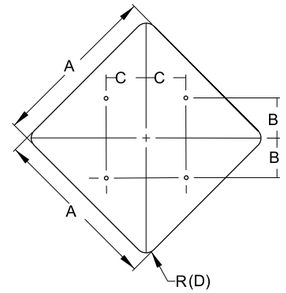

## OCTAGONAL

| A | B | C | T |
|---|---|---|---|
| 18 | 3 | 18 | 0.080 |
| 30 | 3 | 24 | 0.080 |
| 36 | 3 | 30 | 0.100 |
| 48 | 3 | 36 | 0.100 |



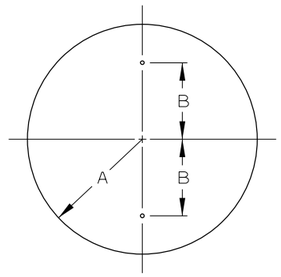

## DIAMOND (A)

| A | B | C | T |
|---|---|---|---|
| 18 | 9 | 1 1 / 2 | 0.080 |
| 24 | 12 | 1 1 / 2 | 0.080 |
| 30 | 15 | 1 7 / 8 | 0.080 |
| 36 | 18 | 2 1 / 4 | 0.100 |



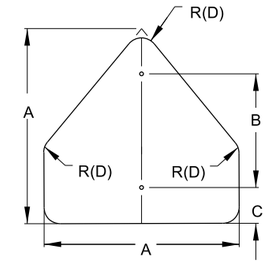

## DIAMOND (B)

| A | B | C | D | T |
|---|---|---|---|---|
| 48 | 15 | 15 | 3 | 0.100 |



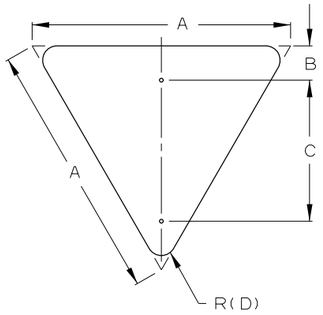

## CIRCLE

| A | B | T |
|---|---|---|
| 18 | 15 | 0.100 |



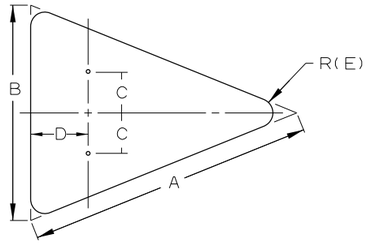

## PENTAGON (SCHOOL)

| A | B | C | D | T |
|---|---|---|---|---|
| 30 | * | 3 | * | 0.100 |
| 36 | 24 | 3 | 2 1/4 | 0.100 |
| 48 | * | * | 3 | 0.100 |



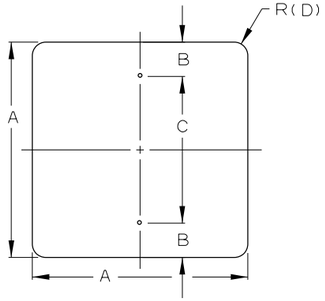

## EQUILATERAL TRIANGLE

| A | B | C | D | T |
|---|---|---|---|---|
| 18 | 2 | 18 | 2 | 0.100 |
| 30 | 2 | 24 | 2 | 0.100 |
| 36 | 2 | 24 | 2 | 0.100 |
| 48 | 2 | 24 | 2 | 0.100 |
| 60 | 2 | 24 | 2 | 0.100 |



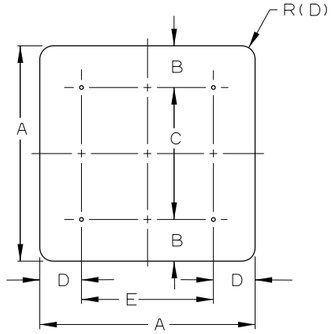

## ISOSCELES TRIANGLE

| A | B | C | D | E | T |
|---|---|---|---|---|---|
| 40 | 30 | 7 1 / 2 | 12 | 7 | 0.080 |
| 48 | 36 | 9 | 15 | 2 1 / 2 | 0.100 |
| 64 | 48 | 10 1 / 2 | 18 | 2 3 / 4 | 0.100 |



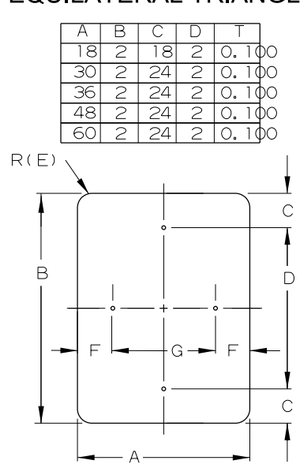

## SQUARE (A)

| A | B | C | D | T |
|---|---|---|---|---|
| 18 | 1 1 / 2 | 15 | 2 1 / 2 | 0.080 |
| 24 | 3 | 18 | 1 1 / 2 | 0.080 |
| 30 | 3 | 24 | 1 7 / 8 | 0.080 |



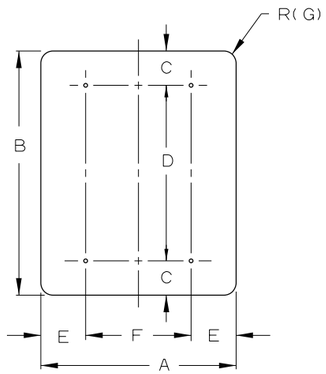

## SQUARE (B)

| A | B | C | D | E | F | T |
|---|---|---|---|---|---|---|
| 36 | * | * | * | * | * | 0.100 |
| 48 | 6 | 36 | 9 | 30 | 3 | 0.100 |



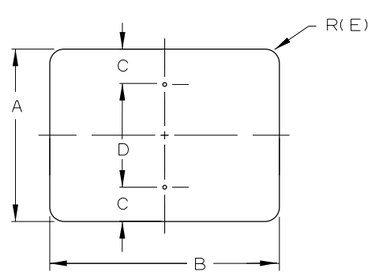

## VERTICAL / HORIZONTAL RECTANGLE

| A | B | C | D | E | F | G | T |
|---|---|---|---|---|---|---|---|
| 12 | 18 | 1 1 / 2 | 15 | 1 1 / 2 | 1 1 / 2 | 9 | 0.080 |
| 12 | 36 | 3 | 30 | 1 1 / 2 | 1 1 / 2 | 9 | 0.080 |
| 18 | 24 | 1 1 / 2 | 21 | 1 1 / 2 | 1 1 / 2 | 15 | 0.080 |
| 24 | 30 | 3 | 24 | 1 1 / 2 | 3 | 18 | 0.080 |
| 24 | 36 | 3 | 30 | 1 1 / 2 | 3 | 18 | 0.080 |
| 24 | 48 | 6 | 36 | 1 7 / 8 | 3 | 18 | 0.080 |
| 30 | 36 | 3 | 30 | 1 7 / 8 | 3 | 24 | 0.080 |
| 36 | 48 | 3 | 30 | 1 7 / 8 | 3 | 24 | 0.080 |
| 48 | 60 | 3 | 30 | 1 7 / 8 | 3 | 24 | 0.080 |



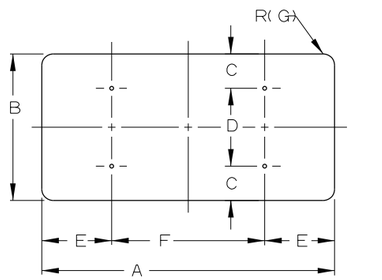

## VERTICAL RECTANGLE

| A | B | C | D | E | F | G | T |
|---|---|---|---|---|---|---|---|
| 5 | 7 3 / 4 | 1 | 6 | 2 3 / 4 | 1 | 1 / 2 | 0.100 |
| 48 | 60 | 6 | 48 | 9 | 30 | 3 | 0.100 |




## HORIZONTAL RECTANGLE

| A | B | C | D | E | T |
|---|---|---|---|---|---|
| 6 | 12 | 1 | 4 | 1 / 2 | 0.080 |
| 6 | 18 | 1 | 4 | 1 / 2 | 0.080 |
| 20 | 36 | 1 1 / 2 | 7 | 2 1 / 2 | 0.200 |
| 21 | 15 | 1 1 / 2 | 12 | 2 1 / 2 | 0.200 |
| 24 | 12 | 1 1 / 2 | 9 | 2 1 / 2 | 0.200 |
| 24 | 18 | 3 | 12 | 1 1 / 2 | 0.200 |
| 30 | 15 | 1 1 / 2 | 12 | 2 1 / 2 | 0.200 |
| 30 | 24 | 3 | 18 | 1 1 / 2 | 0.200 |
| 36 | 12 | 1 1 / 2 | 9 | 2 1 / 2 | 0.200 |




## HORIZONTAL RECTANGLE

| A | B | C | D | E | F | G | T |
|---|---|---|---|---|---|---|---|
| 36 | 24 | 3 | 18 | 6 | 24 | 1 1 / 2 | 0.210 |
| 48 | 24 | 3 | 18 | 9 | 30 | 1 7 / 8 | 0.310 |
| 48 | 36 | 6 | 24 | 9 | 30 | 2 1 / 4 | 0.410 |
| 48 | 24 | 2 | 20 | 2 | 44 | 1 7 / 8 | 0.310 |
| 48 | 36 | 3 | 30 | 3 | 42 | 2 1 / 4 | 0.410 |
| 48 | 36 | 6 | 24 | 12 | 36 | 2 1 / 4 | 0.410 |
| 60 | 30 | 3 | 24 | 3 | 42 | 1 7 / 8 | 0.310 |
| 60 | 24 | 2 | 20 | 2 | 56 | 1 1 / 2 | 0.210 |
| 60 | 36 | 3 | 30 | 3 | 54 | 2 1 / 4 | 0.410 |
| 60 | 24 | 3 | 18 | 12 | 36 | 1 1 / 2 | 0.210 |
| 60 | 30 | 3 | 24 | 3 | 54 | 1 1 / 2 | 0.310 |

## GENERAL NOTES:

1. ALL BLANKS TO BE ALUMINUM ALLOY NO. 5052-H38.
2. “T” DENOTES THICKNESS OF SIGN BLANKS.
3. ALL HOLES SHALL BE 3/8” DIAMETER DRILLED OR PUNCHED AS SHOWN ON EACH BLANK DETAIL AND SHALL BE FREE OF BURRS AND OR ROUGH EDGES.
4. SIGN BLANK CORNERS TO BE ROUNDED AS SHOWN ON EACH DETAIL.
5. ALL SIGN BLANK TO BE ETCHED, DEGREASED, AND HAVE AN ALODINE FINISH PRIOR TO APPLICATION OF LEGENDS.
6. ALL DETAILS ARE NOT TO SCALE.
7. ALL DEMENSIONS ARE IN INCHES.
8. * HOLE PLACEMENT AS INDICATED ON THE PLANS.

SEPTEMBER 2024

CITY OF SAN ANTONIO

PUBLIC WORKS DEPARTMENT

TRAFFIC ENGINEERING AND OPERATIONS STANDARDS

BLANK SIGN DETAILS

SHEET 03 OF 04

SM(3)-24

| | | |
|---|---|---|
| 100% % SUBMITTAL | PROJECT NO.: 23-04167 | DATE: 9/25/2025 |
| DRWN. BY: | DSGN. BY: | CHKD. BY: L BANDA, P.E. / SHEET NO.: 83 OF 115 |

## LEGEND

- SIGNAL POLE
- VEHICLE SIGNAL HEAD
- TRAFFIC FLOW DIRECTION
- OVERHEAD ELECTRINE LINE
- EXIST ROW
- EXIST ELECTRIC SERVICE
- CABLE RUN (TRENCH)

## EXISTING TRAFFIC SIGNS

| | | |
|---|---|---|
| | W11-8 (36" X 36") | S1 |

## EXISTING TRAFFIC SIGNAL HEADS

12" LED
VEHICLE SIGNAL SECTIONS
WITH RETROREFLECTIVE
BACKPLATES

| | |
|---|---|
| SIGNAL FACES | |
| KEY | 1 |
| QTY | 3 |

REMOVE AND SALVAGE EXISTING POLE, FOUNDATION, AND EQUIPMENT

EXIST TRANSFORMER ON POLE

**APPLEWHITE RD**
POSTED SPEED 45 MPH

**APPLEWHITE RD**
POSTED SPEED 45 MPH

**FIRE STATION DWY**
ASSUMED SPEED 30 MPH

APPROX. 260FT

0 20 40 60
SCALE: 1"= 40'

NOTES:
1. ALL DIMENSIONS ARE IN FEET UNLESS SPECIFIED OTHERWISE.
2. ALL EXISTING FEATURES AND EQUIPMENT TO REMAIN SHOWED SCREENED BACK i.e. FADED. ALL EQUIPMENT SHOWN BLACK TO BE RELOCATED OR REMOVED.
3. CONTRACTOR SHALL COORDINATE ALL REMOVAL OF TRAFFIC EQUIPMENT WITH THE CITY OF SAN ANTONIO.
4. CONTRACTOR SHALL REMOVE AND DELIVER ANY EQUIPMENT DEEMED SALVAGEABLE TO CITY OF SAN ANTONIO SIGNAL SHOP. CONTACT THE CITY TRAFFIC ENGINEER AT 210-207-4507.
5. UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL CALL FOR LOCATES PRIOR TO COMMENCING EXCAVATION. ALL UTILITY LOCATIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
6. ALL ITEMS NOT SPECIFICALLY CALLED OUT IN THESE PLANS TO BE REMOVED, SHALL REMAIN.

CONTRACTOR SHALL CONTACT DIGTESS @ 1-800-DIG-TESS OR TEXAS-811 FOR UTILITY LOCATION AT LEAST 72 HOURS PRIOR TO BEGINNING CONSTRUCTION

CAUTION:
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT UNDERGROUND UTILITIES INCLUDING GAS ARE KNOWN TO EXIST IN THE VICINITY OF THIS WORK. CONTRACTOR SHALL CALL FOR LOCATES PRIOR TO BEGINNING WORK AND SHALL EXERCISE CAUTION WHEN INSTALLING SIGNAL EQUIPMENT INCLUDING POLE FOUNDATIONS AND CONDUITS

*DESIGN*

STATE OF TEXAS · GRANT R WUEBBEN · 129717 · LICENSED PROFESSIONAL ENGINEER

GRANT R WUEBBEN, P.E. — 9/25/2025 DATE

*APPROVAL*

STATE OF TEXAS · JUSTIN W. CLARK · 118715 · LICENSED PROFESSIONAL ENGINEER

JUSTIN W. CLARK, P.E. — 9/25/2025 DATE

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|


**PAPE-DAWSON**
2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000
Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

*TOYOTA SOUTHSIDE STREETS*

*EXISTING CONDITION*
*APPLEWHITE ROAD*
*AT FIRE STATION DRIVEWAY*

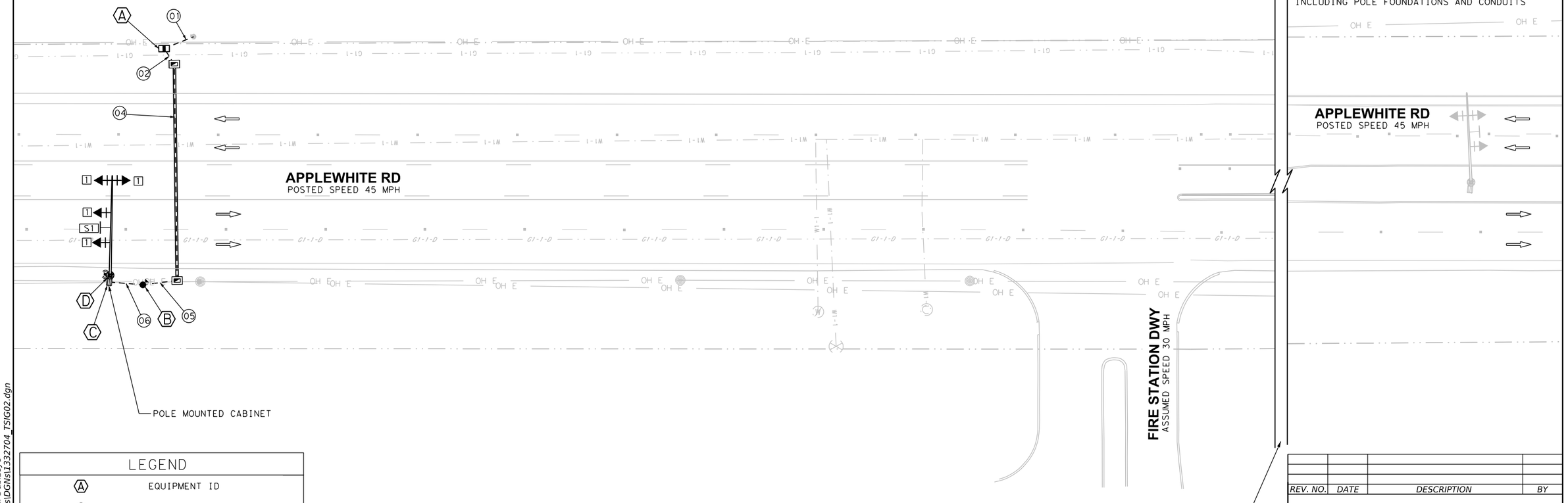
| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 84 |


PRINTED ON: 9/25/2025 12:58:29 PM PRINTED BY: USER: Dabizeye
FILENAME: P:\133\27\04\Design\ORD\4-Design\Traffic\1-Signals\DGNs\1332704_EXIST02.dgn

NOTES:
1. ALL DIMENSIONS SHOWN ARE IN FEET UNLESS SPECIFIED OTHERWISE. (ALL EXISTING FEATURES ARE SHOWN SCREENED BACK i.e. FADED).
2. CONTRACTOR SHALL POTHOLE SIGNAL POLE FOUNDATION LOCATIONS NEAR UNDERGROUND UTILITIES PRIOR TOINSTALLING POLE FOUNDATION.
3. UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL CALL FOR LOCATES PRIOR TO COMMENCING EXCAVATION. ALL UTILITY LOCATIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR.
4. LOCATION OF TRAFFIC SIGNAL POLES, CABINET AND ELECTRICAL SERVICE SHALL BE VERIFIED AND APPROVED BY COSA PRIOR TO CONSTRUCTION. SIDEWALK SHALL BE EXTENDED UP TO THE POLES, AS NEEDED, TO PROVIDE PEDESTRIAN ACCESS TO THE PEDESTRIAN PUSH BUTTONS.
5. CONTRACTOR SHALL CONNECT FIELD WIRING TO CONTROLLER.
6. SIGNAL HEADS SHALL HAVE A MINIMUM OF 18.5 FEET OF CLEARANCE ABOVE THE ROADWAY SURFACE. ALL SIGNAL HEADS SHALL HAVE BACK PLATES.
7. NEATLY CAP/COIL ALL WIRES AND CABLES IN GROUND BOX OR AT TERMINATION.
8. SIGNAL OPERATION WILL BE MONITORED AFTER CONSTRUCTION AND MODIFIED AS NECESSARY.
9. CONTRACTOR SHALL REMOVE AND DELIVER ANY EQUIPMENT DEEMED SALVAGEABLE TO THE TRANSPORTATION AND INFRASTRUCTURE MANAGEMENT CENTER AT 210-207-8462.
10. THE CONTRACTOR SHALL CONTACT THE CITY TRAFFIC ENGINEER AT 210-207-4507 A MINIMUM SEVEN (7) DAYS PRIOR TO BEGINNING OF CONSTRUCTION.
11. SCHOOL FLASHER STANDARD PROVIDED FOR REFERENCE, NO SOLAR POWER NECESSARY, FOLLOW THE LAYOUT OF ITEMS AS SHOWN IN ELEVATION SHEET.

CONTRACTOR SHALL CONTACT DIGTESS @ 1-800-DIG-TESS OR TEXAS-811 FOR UTILITY LOCATION AT LEAST 72 HOURS PRIOR TO BEGINNING CONSTRUCTION

CAUTION:
THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT UNDERGROUND UTILITIES INCLUDING GAS ARE KNOWN TO EXIST IN THE VICINITY OF THIS WORK. CONTRACTOR SHALL CALL FOR LOCATES PRIOR TO BEGINNING WORK AND SHALL EXERCISE CAUTION WHEN INSTALLING SIGNAL EQUIPMENT INCLUDING POLE FOUNDATIONS AND CONDUITS




## LEGEND

| | |
|---|---|
| A | EQUIPMENT ID |
| 01 | CABLE RUN ID |
| | SIGNAL POLE |
| | VEHICLE SIGNAL HEAD |
| | POLE MOUNTED CONTROLLER |
| | GROUND BOX |
| | CABLE RUN (TRENCH) |
| | TRAFFIC FLOW DIRECTION |
| | ITS RADIO (DUAL) |
| | ELECTRIC SERVICE DISCONNECT |
| | ELECTRIC SERVICE |
| | CABLE RUN (BORE) |
| | EXIST ROW |

## TRAFFIC SIGNAL HEADS

12" LED
VEHICLE SIGNAL SECTIONS
WITH RETROREFLECTIVE
BACKPLATES

| | |
|---|---|
| SIGNAL FACES | Y |
| KEY | 1 |
| QTY | 4 |

## PROPOSED TRAFFIC SIGNS

| | | |
|---|---|---|
| | W11-8 (36" X 36") | S1 |

DESIGN

STATE OF TEXAS — GRANT R WUEBBEN — 129717 — LICENSED PROFESSIONAL ENGINEER

GRANT R WUEBBEN, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — JUSTIN W. CLARK — 118715 — LICENSED PROFESSIONAL ENGINEER

JUSTIN W. CLARK, P.E. — 9/25/2025 DATE

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON
2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000
Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

TOYOTA SOUTHSIDE STREETS

# PROPOSED TRAFFIC SIGNAL LAYOUT
APPLEWHITE ROAD
AT FIRE STATION DRIVEWAY

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 85 |

PRINTED ON: 9/25/2025 12:58:54 PM PRINTED BY: USER: Dabizeye
FILENAME: P:\133\27\04\Design\ORD\4-Design\Traffic\1-Signals\DGNs\1332704_TSIG02.dgn

## CONDUIT AND CONDUCTOR SCHEDULE

| RUN NUMBER | | | | 01 | 02 | 04 | 05 | 06 |
|---|---|---|---|---|---|---|---|---|
| CONDUIT SIZE (INCHES) | | | | 3 | 3 | 3 | 3 | 3 |
| NUMBER OF CONDUITS | | | | 1 | 1 | 2 | 2 | 2 |
| LENGTH OF RUN (FT) | | | | 100 | 10 | 90 | 15 | 15 |
| TRENCH(T)/BORE(B)/EXISTING(E) | | | | T | T | B | T | T |
| CABLE | CIRCUIT | | | NUMBER OF CONDUCTORS | | | | |
| #6 XHHW | 120/240V HOT & COMMON | | | CABLES PULLED BY ELECTRIC COMPANY | 1 | 1 | 1 | |
| #6 BARE | GROUND (ELECTRIC SERVICE) | | | | 1 | 1 | 1 | |
| #8 BARE | BARE BOND GROUND | | | | | 2 | 2 | 3 |
| 9 COND. #14 AWG TYPE "A" | VEHICLE SIGNALS | Ø | 2 | | | | | |

## POLE SCHEDULE

| POLE | | | | D |
|---|---|---|---|---|
| POLE TYPE (SMA/LMA/DMA/PED) | | | | SMA |
| POLE HEIGHT (FEET) | | | | 19 |
| MAST ARM LENGTH (FEET) | | | | 40 |
| FOUNDATION TYPE | | | | 36-A |
| FOUNDATION DEPTH (FEET) | | | | 13 |
| CABLE | CIRCUIT | | | |
| #8 BARE | BARE BOND GROUND | | | 1 |
| 9 COND. #14 AWG TYPE "A" | VEHICLE SIGNALS | Ø | 2 | 4 |

## POLE & EQUIPMENT INFORMATION

| ID | DESCRIPTION/ATTACHMENTS | NORTHING | EASTING | FND. ELEV |
|---|---|---|---|---|
| A | INSTALL CPS ENERGY METER WITH TXDOT TYPE D PEDESTAL SERVICE | EXISTING | | |
| B | INSTALL ELECTRIC SERVICE DISCONNECT ON FREESTANDING PEDESTAL POLE | N/A | N/A | N/A |
| C | INSTALL ROADSIDE FLASHING BEACON UNIT CABINET AND CONTROLLER WITH RADIO. | N/A | N/A | N/A |
| D | INSTALL 19 FT SMA-80 ON 13 FT DRILLED SHAFT FND. (36-A) WITH 40 FT MAST ARM, ONE (1) WIND DAMPER, ONE (1) W11-8 SIGN, AND FOUR (4) VEHICLE SIGNAL HEADS | 13649351.2 | 2112164.3 | LEVEL W/ ROADWAY CROWN |

SIGNS SHALL BE ATTACHED TO POLES AND MAST ARMS AS SHOWN ON PLANS.

## ELECTRICAL SERVICE DATA

| ELEC. SERVICE ID | ELECTRICAL SERVICE DESCRIPTION | SERVICE CONDUIT SIZE | SERVICE CONDUCTORS NO./SIZE | SAFETY SWITCH AMPS | MAIN CKT. BKR. POLE/ AMP | TWO - POLE CONTACTOR AMPS | PANELBD/ LOAD CENTER AMP RATING | CIRCUIT NO. | BRANCH CKT. BKR. POLE/ AMPS | BRANCH CIRCUIT AMPS | KVA LOAD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TL-# | ELEC SERV TY D (120/240)060(NS)AL(N)PS(U) | 3" | 3/#6 | N/A | 2P/60 | N/A | 100 | A (FLASHER) | 1P/50 | 40 | 4.8 |

*DESIGN*

STATE OF TEXAS — GRANT R WUEBBEN — 129717 — LICENSED PROFESSIONAL ENGINEER

GRANT R WUEBBEN, P.E. — 9/25/2025 DATE

*APPROVAL*

STATE OF TEXAS — JUSTIN W. CLARK — 118715 — LICENSED PROFESSIONAL ENGINEER

JUSTIN W. CLARK, P.E. — 9/25/2025 DATE

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |


**PAPE–DAWSON**

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

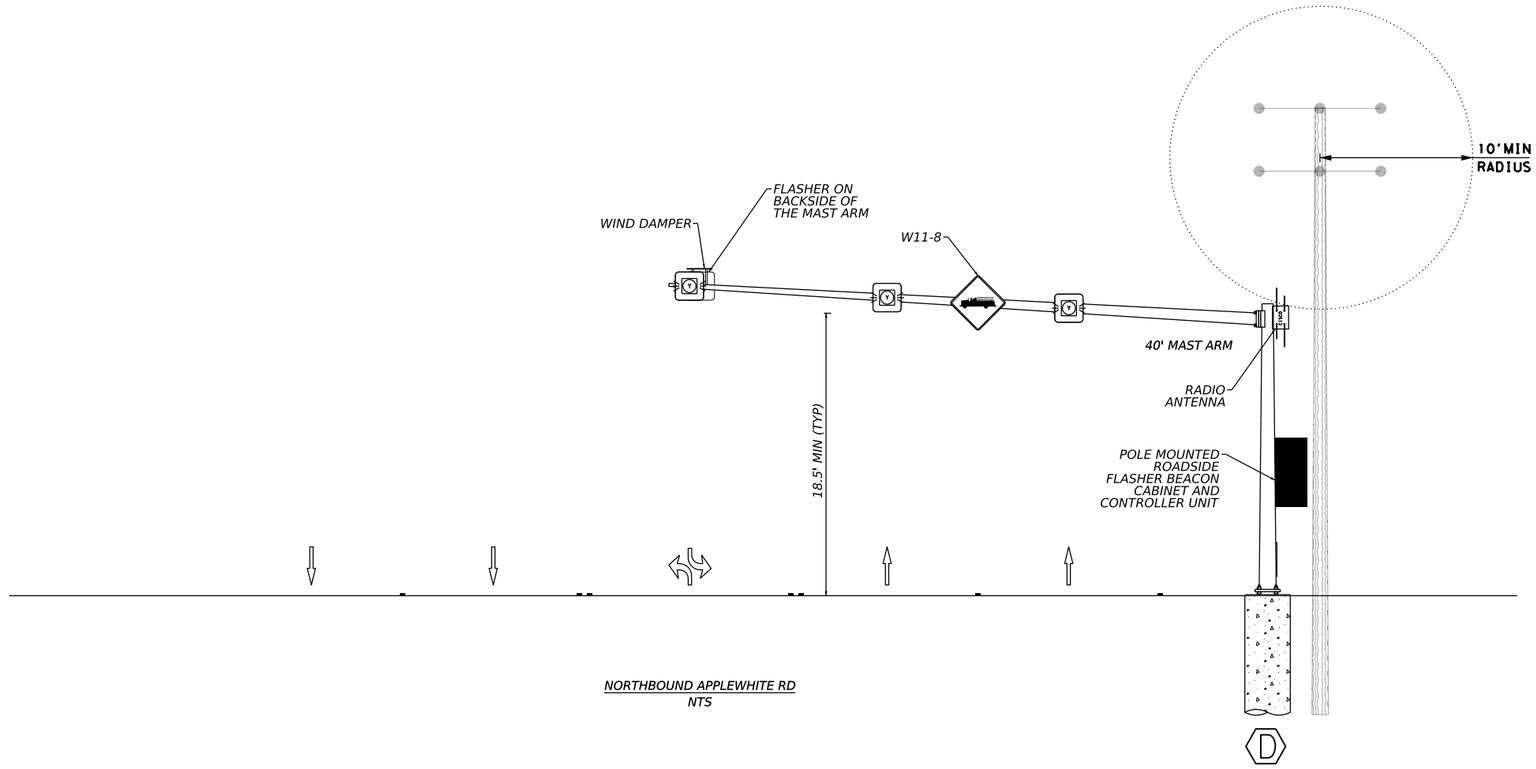
*TOYOTA SOUTHSIDE STREETS*

# *PROPOSED CONDUIT AND CONDUCTOR SCHEDULE*

*APPLEWHITE ROAD*
*AT FIRE STATION DRIVEWAY*

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 86 |


PRINTED ON: 9/25/2025 12:58:57 PM PRINTED BY: USER: Dabizeye
FILENAME: P:\133\27\04\Design\ORD\4-Design\Traffic\1-Signals\DGNs\1332704_CCS_FS.dgn




NORTHBOUND APPLEWHITE RD
NTS

DESIGN

STATE OF TEXAS
GRANT R WUEBBEN
129717
LICENSED
PROFESSIONAL ENGINEER

GRANT R WUEBBEN, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS
JUSTIN W. CLARK
118715
LICENSED
PROFESSIONAL ENGINEER

JUSTIN W. CLARK, P.E. — 9/25/2025 DATE

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |
| | | | |
| | | | |


**PAPE-DAWSON**

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

*TOYOTA SOUTHSIDE STREETS*

# *ELEVATION VIEWS*
*APPLEWHITE ROAD*
*AT FIRE STATION DRIVEWAY*

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 87 |

PRINTED ON: 9/25/2025 1:00:27 PM PRINTED BY: USER: Dabizeye
FILENAME: P:\133\27\04\Design\ORD\4-Design\Traffic\1-Signals\DGNs\133270 4_ELEV_FS.dgn

## FOUNDATION DESIGN TABLE

| FDN TYPE | DRILLED SHAFT DIA | REINFORCING STEEL | | EMBEDDED DRILLED SHAFT LENGTH-ft ④, ⑤, ⑥ | | | ANCHOR BOLT DESIGN ① | | | | FOUNDATION DESIGN LOAD ② | | TYPICAL APPLICATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | VERT BARS | SPIRAL & PITCH | TEXAS CONE PENETROMETER N blows/ft | | | ANCHOR BOLT DIA | Fy (ksi) | BOLT CIR DIA | ANCHOR TYPE | MOMENT K-ft | SHEAR Kips | |
| | | | | 10 | 15 | 40 | | | | | | | |
| 24-A | 24" | 4- #5 | #2 at 12" | 5.7 | 5.3 | 4.5 | ¾" | 36 | 12 ¾" | 1 | 10 | 1 | Pedestal pole, pedestal mounted controller. |
| 30-A | 30" | 8- #9 | #3 at 6" | 11.3 | 10.3 | 8.0 | 1 ½" | 55 | 17" | 2 | 87 | 3 | Mast arm assembly. (see Selection Table) |
| 36-A | 36" | 10- #9 | #3 at 6" | 13.2 | 12.0 | 9.4 | 1 ¾" | 55 | 19" | 2 | 131 | 5 | Mast arm assembly. (see Selection Table) 30' strain pole with or without luminaire. |
| 36-B | 36" | 12- #9 | #3 at 6" | 15.2 | 13.6 | 10.4 | 2" | 55 | 21" | 2 | 190 | 7 | Mast arm assembly. (see Selection Table) Strain pole taller than 30' & strain pole with mast arm |
| 42-A | 42" | 14- #9 | #3 at 6" | 17.4 | 15.6 | 11.9 | 2 ¼" | 55 | 23" | 2 | 271 | 9 | Mast arm assembly. (see Selection Table) |

## NOTES:

① Anchor bolt design develops the foundation capacity given under Foundation Design Loads.

② Foundation Design Loads are the allowable moments and shears at the base of the structure.

③ Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.

④ Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.

⑤ If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.

⑥ Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

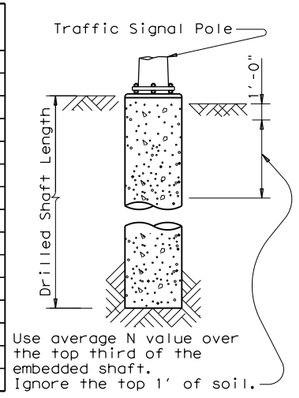
## FOUNDATION SUMMARY TABLE ③

| LOCATION IDENTIFICATION | AVG. N BLOW /ft. | FDN TYPE | NO. EA | DRILLED SHAFT LENGTH ⑥ (FEET)* | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | 24-A | 30-A | 36-A | 36-B | 42-A |
| POLE D | 10 | 36-A | 1 | | | 13 | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| TOTAL DRILLED SHAFT LENGTHS | | | | | | 13 | | |

*NO ADDITIONAL PAY WILL BE PROVIDED FOR ROCK DRILLING, CONTRACTOR TO ASSUME ROCK WILL BE ENCOUNTERED.

## FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)

| | | FDN 30-A | FDN 36-A | FDN 36-B | FDN 42-A |
|---|---|---|---|---|---|
| 80 MPH DESIGN WIND SPEED | MAX SINGLE ARM LENGTH | 32' | 48' | | |
| | MAXIMUM DOUBLE ARM LENGTH COMBINATIONS | 24' X 24' | | | |
| | | 28' X 28' | | | |
| | | 32' X 28' | 32' X 32' | | |
| | | | 36' X 36' | | |
| | | | 40' X 36' | | |
| | | | 44' X 28' | 44' X 36' | |
| 100 MPH DESIGN WIND SPEED | MAX SINGLE ARM LENGTH | | 36' | 44' | |
| | MAXIMUM DOUBLE ARM LENGTH COMBINATIONS | | 24' X 24' | | |
| | | | 28' X 28' | | |
| | | | 32' X 24' | 32' X 32' | |
| | | | | 36' X 36' | |
| | | | | 40' x24' | 40' X 36' |
| | | | | | 44' x 36' |

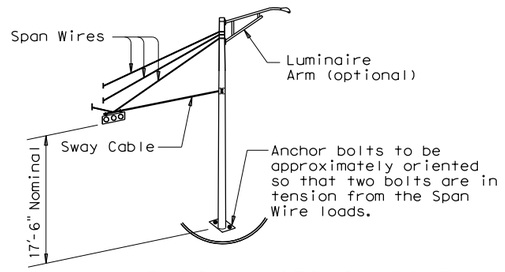



## ANCHOR BOLT & TEMPLATE SIZES

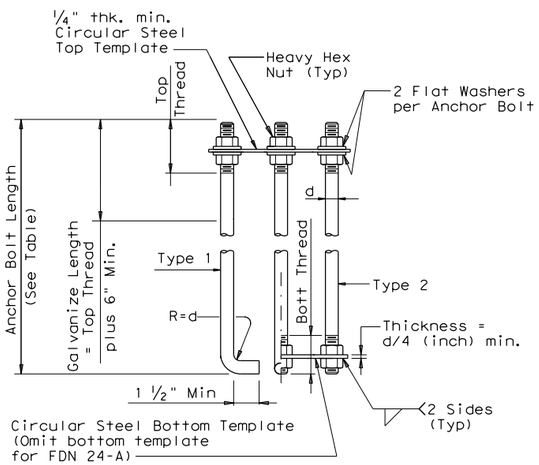
| BOLT DIA IN. | ⑦ BOLT LENGTH | TOP THREAD | BOTTOM THREAD | BOLT CIRCLE | R2 | R1 |
|---|---|---|---|---|---|---|
| ¾" | 1'-6" | 3" | — | 12 ¾" | 7 ⅛" | 5 ⅝" |
| 1 ½" | 3'-4" | 6" | 4" | 17" | 10" | 7" |
| 1 ¾" | 3'-10" | 7" | 4 ½" | 19" | 11 ¼" | 7 ¾" |
| 2" | 4'-3" | 8" | 5" | 21" | 12 ½" | 8 ½" |
| 2 ¼" | 4'-9" | 9" | 5 ½" | 23" | 13 ¾" | 9 ¼" |

⑦ Min dimensions given, longer bolts are acceptable.

EXAMPLE:
1. For 80mph design wind speed, foundation 30-A can support up to a 32' arm with another arm up to 28'
2. For 100mph design wind speed, foundation 36-A can support a single 36' mast arm.



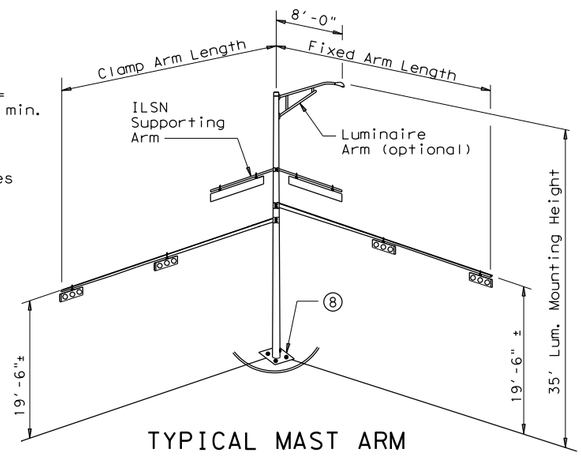

## TYPICAL STRAIN POLE ASSEMBLY



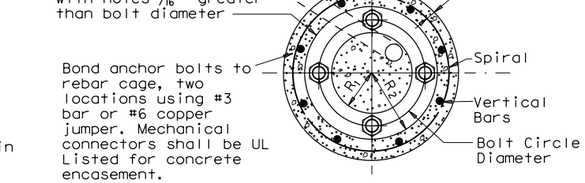

HOOKED ANCHOR (TYPE 1) NUT ANCHOR (TYPE 2)

## ANCHOR BOLT ASSEMBLY

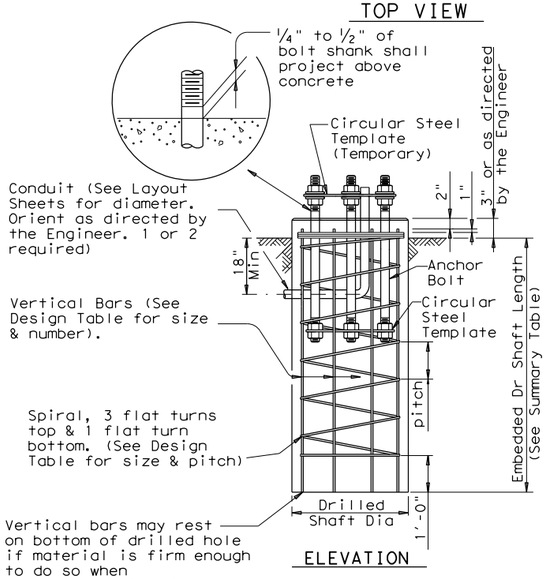
⑧ Orient anchor bolts orthogonal with the fixed arm direction to ensure that two bolts are in tension under dead load.




## TYPICAL MAST ARM ASSEMBLY




TOP VIEW




ELEVATION

## FOUNDATION DETAILS

## GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto.

Reinforcing steel shall conform to Item 440, "Reinforcing Steel".

Concrete shall be Class "C".

Threads for anchor bolts and nuts shall be rolled or cut threads of 8UN series up to 2" in diameter or UNC series for all sizes. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.

Anchor bolts that are larger than 1" in diameter shall conform to "alloy steel" or "medium-strength mild steel" per Item 449, "Anchor Bolts". Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Galvanize a minimum of the top end thread length plus 6" for all anchor bolts unless otherwise noted. Exposed washers and exposed nuts shall be galvanized. All galvanizing shall be in accordance with Item 445, "Galvanizing".

Templates and embedded nuts need not be galvanized. Lubricate and tighten anchor bolts when erecting the structure in accordance with Item 449, "Anchor Bolts".

Texas Department of Transportation
Traffic Operations Division

# TRAFFIC SIGNAL POLE FOUNDATION

# TS-FD-12



| DN: MS | CK: JSY | DW: MAO/MMF | CK: JSY/TEB |
|---|---|---|---|

REVISIONS
5-96
11-99
1-12

| CONT | SECT | JOB | HIGHWAY |
|---|---|---|---|
| | | | |

| DIST | COUNTY | SHEET NO. |
|---|---|---|
| | | 88 |

DATE:
FILE:

DATE: 9/25/2025
FILE: P:\133\27\04\Design\ORD\4-Design\Plan Set\S08-Traffic\S8.1-Signals\84-Standards\sma-80.dgn

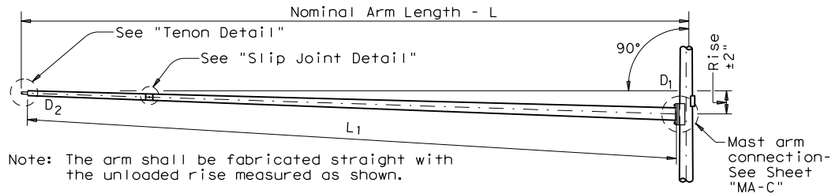
| Arm Length | ROUND POLES | | | | | POLYGONAL POLES | | | | | Foundation Type |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | $D_B$ | $D_{19}$ | $D_{24}$ | $D_{30}$ | ① thk | $D_B$ | $D_{19}$ | $D_{24}$ | $D_{30}$ | ① thk | |
| ft. | in. | in. | in. | in. | in. | in. | in. | in. | in. | in. | |
| 20 | 10.5 | 7.8 | 7.1 | 6.3 | .179 | 11.5 | 8.5 | 7.7 | 6.8 | .179 | 30-A |
| 24 | 11.0 | 8.3 | 7.6 | 6.8 | .179 | 12.0 | 9.0 | 8.2 | 7.3 | .179 | 30-A |
| 28 | 11.5 | 8.8 | 8.1 | 7.3 | .179 | 12.5 | 9.5 | 8.7 | 7.8 | .179 | 30-A |
| 32 | 12.5 | 9.8 | 9.1 | 8.3 | .179 | 12.0 | 9.0 | 8.2 | 7.3 | .239 | 30-A |
| 36 | 12.0 | 9.3 | 8.6 | 7.8 | .239 | 12.5 | 9.5 | 8.7 | 7.8 | .239 | 36-A |
| 40 | 12.0 | 9.3 | 8.6 | 7.8 | .239 | 13.5 | 10.5 | 9.7 | 8.8 | .239 | 36-A |
| 44 | 12.5 | 9.8 | 9.1 | 8.3 | .239 | 14.0 | 11.0 | 10.2 | 9.3 | .239 | 36-A |
| 48 | 13.0 | 10.3 | 9.6 | 8.8 | .239 | 15.0 | 12.0 | 11.2 | 10.3 | .239 | 36-A |

| Arm Length | ROUND ARMS | | | | | POLYGONAL ARMS | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | $L_1$ | $D_1$ | $D_2$ | ① thk | Rise | $L_1$ | $D_1$ | ② $D_2$ | ① thk | Rise |
| ft. | ft. | in. | in. | in. | | ft. | in. | in. | in. | |
| 20 | 19.1 | 6.5 | 3.8 | .179 | 1′-9" | 19.1 | 7.0 | 3.5 | .179 | 1′-8" |
| 24 | 23.1 | 7.5 | 4.3 | .179 | 1′-10" | 23.1 | 7.5 | 3.5 | .179 | 1′-9" |
| 28 | 27.1 | 8.0 | 4.2 | .179 | 1′-11" | 27.1 | 8.0 | 3.5 | .179 | 1′-10" |
| 32 | 31.0 | 9.0 | 4.7 | .179 | 2′-1" | 31.0 | 9.0 | 3.5 | .179 | 2′-0" |
| 36 | 35.0 | 9.5 | 4.6 | .179 | 2′-4" | 35.0 | 10.0 | 3.5 | .179 | 2′-1" |
| 40 | 39.0 | 9.5 | 4.1 | .239 | 2′-8" | 39.0 | 9.5 | 3.5 | .239 | 2′-3" |
| 44 | 43.0 | 10.0 | 4.1 | .239 | 2′-11" | 43.0 | 10.0 | 3.5 | .239 | 2′-6" |
| 48 | 47.0 | 10.5 | 4.1 | .239 | 3′-4" | 47.0 | 11.0 | 3.5 | .239 | 2′-9" |

$D_B$ = Pole Base O.D.
$D_{19}$ = Pole Top O.D. with no Luminaire and no ILSN
$D_{24}$ = Pole Top O.D. with ILSN w/out Luminaire
$D_{30}$ = Pole Top O.D. with Luminaire
$D_1$ = Arm Base O.D.
$D_2$ = Arm End O.D.
$L_1$ = Shaft Length
$L$ = Nominal Arm Length

① Thickness shown are minimums, thicker materials may be used.

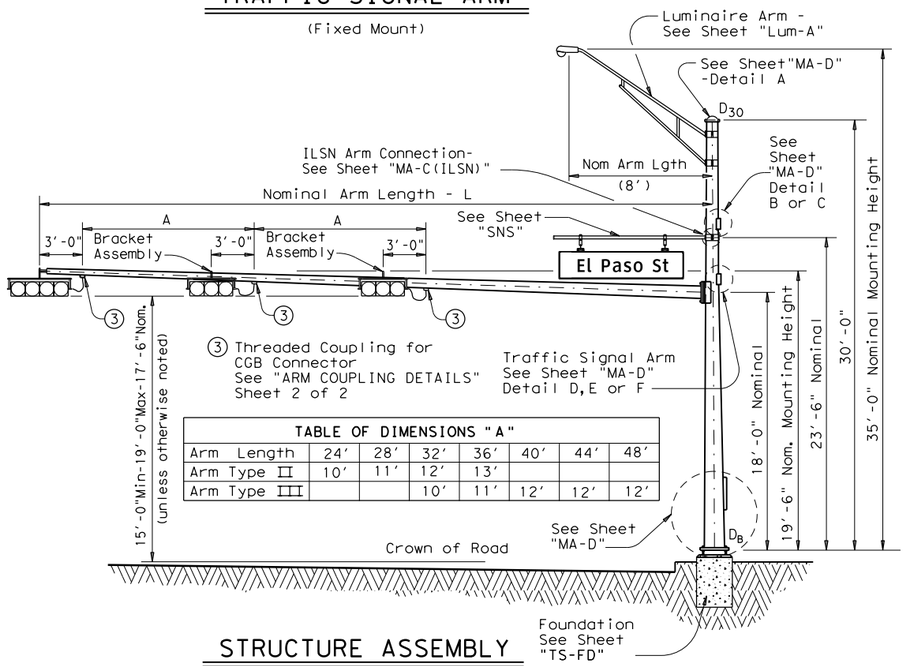
② $D_2$ may be increased by up to 1" for polygonal arms.




Note: The arm shall be fabricated straight with the unloaded rise measured as shown.

## TRAFFIC SIGNAL ARM

(Fixed Mount)




| TABLE OF DIMENSIONS "A" | | | | | | | |
|---|---|---|---|---|---|---|---|
| Arm Length | 24′ | 28′ | 32′ | 36′ | 40′ | 44′ | 48′ |
| Arm Type II | 10′ | 11′ | 12′ | 13′ | | | |
| Arm Type III | | | 10′ | 11′ | 12′ | 12′ | 12′ |

## STRUCTURE ASSEMBLY

## SHIPPING PARTS LIST

Ship each pole with the following attached: enlarged hand hole, pole cap, fixed-arm connection bolts and washers and any additional hardware listed in the table.

| Nominal Arm Length | 30′ Poles With Luminaire | | 24′ Poles With ILSN | | 19′ Poles With No Luminaire and No ILSN | |
|---|---|---|---|---|---|---|
| | Above hardware plus: One (or two if ILSN attached) small hand hole, clamp-on simplex | | Above hardware plus one small hand hole | | See note above | |
| ft | Designation | Quantity | Designation | Quantity | Designation | Quantity |
| 20 | 20L-80 | | 20S-80 | | 20-80 | |
| 24 | 24L-80 | | 24S-80 | | 24-80 | |
| 28 | 28L-80 | | 28S-80 | | 28-80 | |
| 32 | 32L-80 | | 32S-80 | | 32-80 | |
| 36 | 36L-80 | | 36S-80 | | 36-80 | |
| 40 | 40L-80 | | 40S-80 | | 40-80 | 1 |
| 44 | 44L-80 | | 44S-80 | | 44-80 | |
| 48 | 48L-80 | | 48S-80 | | 48-80 | |

Traffic Signal Arms (1 per Pole) Ship each arm with the listed equipment attached

| Nominal Arm Length | Type I Arm (1 Signal) | | Type II Arm (2 Signals) | | Type III Arm (3 Signals) | |
|---|---|---|---|---|---|---|
| | 1 CGB connector | | 1 Bracket Assembly and 2 CGB Connectors | | 2 Bracket Assemblies and 3 CGB Connectors | |
| ft | Designation | Quantity | Designation | Quantity | Designation | Quantity |
| 20 | 20I-80 | | | | | |
| 24 | 24I-80 | | 24II-80 | | | |
| 28 | 28I-80 | | 28II-80 | | | |
| 32 | | | 32II-80 | | 32III-80 | |
| 36 | | | 36II-80 | | 36III-80 | |
| 40 | | | | | 40III-80 | 1 |
| 44 | | | | | 44III-80 | |
| 48 | | | | | 48III-80 | |

Luminaire Arms (1 per 30′ pole)

| Nominal Arm Length | Quantity |
|---|---|
| 8′ Arm | |
| | |

ILSN Arm (Max. 2 per pole) Ship with clamps, bolts and washers

| Nominal Arm Length | Quantity |
|---|---|
| 7′ Arm | |
| 9′ Arm | |
| | |

Anchor Bolt Assemblies (1 per pole)

| Anchor Bolt Diameter | Anchor Bolt Length | Quantity |
|---|---|---|
| 1 ½" | 3′-4" | |
| 1 ¾" | 3′-10" | 1 |
| | | |

Each anchor bolt assembly consists of the following: Top and Bottom templates, 4 anchor bolts, 8 nuts, 8 flat washers, and 4 nut anchor devices (Type 2) per Standard Drawing "TS-FD".

Templates may be removed for shipment.



Texas Department of Transportation
Traffic Operations Division

# TRAFFIC SIGNAL SUPPORT STRUCTURES

## SINGLE MAST ARM ASSEMBLY

## (80 MPH WIND ZONE)

## SMA-80(1)-12

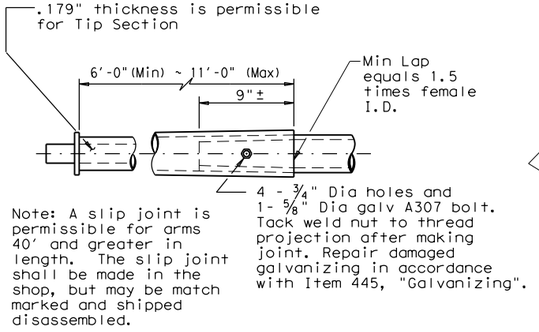


| DN: MS | CK: JSY | DW: MMF | CK: JSY |
|---|---|---|---|
| CONT | SECT | JOB | HIGHWAY |
| | | | |
| DIST | COUNTY | | SHEET NO. |
| | | | 89 |

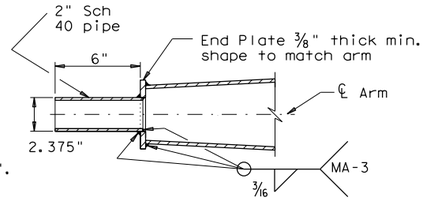
REVISIONS
5-96
11-99
1-12

122A

DATE: 9/25/2025
FILE: P:\133\27\04\Design\ORD\4-Design\Plan Set\S08-Traffic\S8.1-Signals\84-Standards\sma-80.dgn



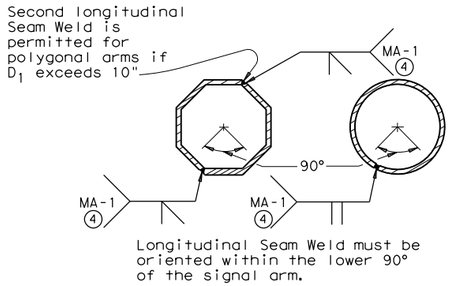

## SLIP JOINT DETAIL




## TENON DETAIL

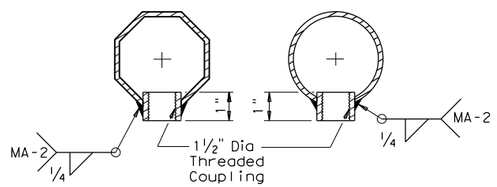
Stainless steel bands (or Cables) and cast bracket as in "Astro-Brac", "Sky Bracket" or "Easy Bracket" with 1 ½" Dia Threaded Coupling.

## BRACKET ASSEMBLY




## ARM WELD DETAIL

④ 60% Min. penetration 100% pemetration within 6" of circumferential base welds.




## ARM COUPLING DETAILS

## VIBRATION WARNING

Mast Arms of SMA and DMA structures and clamp-on Arms of LMA structures of approximately 40 ft or longer are subject to harmonic vertical vibrations in light wind conditions due to the aeroelastic characteristics of a few of the myriads of possible combinations of the following: signal numbers, weights and positions; existence/solidity of backplates; presence of additional attachments to the arm, such as signs and cameras; arm-wind orientation; and arm-pole stiffness.

Such vibrations may cause fatigue damage to the structure and may lead to galloping in moderate wind conditions which may further damage the structure and alarm the public. Tests have indicated that when wind is blowing toward the back side of signal heads having un-vented backplates attached the probability of unacceptable harmonic vibration and/or galloping is rather high.

If backplates are not required for improved visibility they should not be applied to the signal heads or, if they must be applied, they should be vented as a first and inexpensive measure to mitigate vibrations.

The traffic signal mast arms shall be visually inspected in 5 to 20 mph wind conditions after installation of signal heads and any attachments, including any required backpates. If vertical movements with a total excursion (maximum upward excursion to maximum downward excursion) of more than approximately 8" are observed at the arm tip, a damping plate shall be fitted to the arm. See "Damping Plate Mounting Details" on standard sheet, MA-DPD-10.

This visual inspection shall be repeated after each modification of the structure that could affect its aeroelastic response. Excessive vibrations shall not be allowed to continue for more than two days.

## GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto. Design Wind Speed equals 80 mph plus a 1.3 gust factor.

Poles are designed to support one 8'-0" luminaire arm, one 9'-0" internally lighted street name sign and one traffic signal arm with a length as tabulated. The specified luminaire load applied at the end of the luminaire arm equals 60 lbs vertical dead load plus the horizontal wind load on an effective projected area of 1.6 sq ft. The specified internally lighted street name sign load applied 4.5 ft from the centerline of the pole equals 85 lbs vertical dead load plus horizontal wind load on an effective projected area of 11.5 sq ft. The specified signal load applied at the end of the traffic signal arm equals 180 lbs vertical dead load plus the horizontal wind load on an effective projected area of 32.4 sq ft (actual area times drag coefficient).

See Standard Sheet "MA-D" for pole details, "MA-C" for traffic signal arm connection details, "MA-C (ILSN)" for internally lighted street name sign arm connection details, "LUM-A" for luminaire arm and connection details, "SNS" for internally lighted street name sign details, and "TS-FD" for anchor bolt and foundation details. See "MA-C" for material specifications.

Fabrication shall be in accordance with Item 686, "Traffic Signal Pole Assemblies (Steel)" and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Materials, fabrication tolerances, and shipping practices shall meet the requirements of this sheet and Item 686, "Traffic Signal Pole Assemblies (Steel)".

Unless otherwise noted, all parts shall be galvanized in accordance with Item 445, "Galvanizing", after fabrication.

Deviation from the details and dimensions shown herein require submission of shop drawings in accordance with Item 441, "Steel Structures". Alternate designs are not acceptable.



Texas Department of Transportation
Traffic Operations Division

# TRAFFIC SIGNAL SUPPORT STRUCTURES

## SINGLE MAST ARM ASSEMBLY

## (80 MPH WIND ZONE)

## SMA-80(2)-12



| DN: MS | CK: JSY | DW: MMF | CK: JSY |
|---|---|---|---|

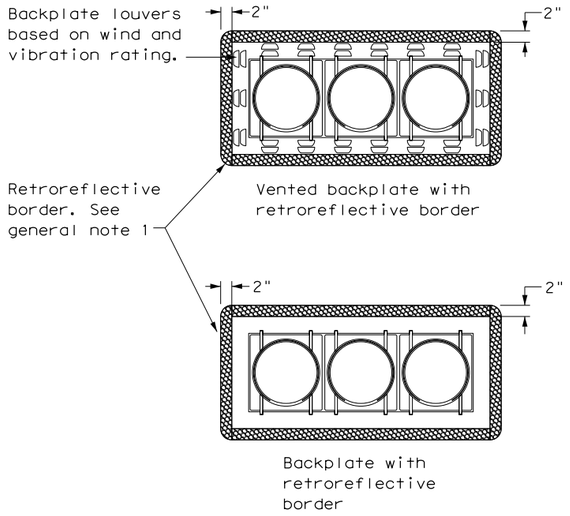
REVISIONS
5-96
1-12

| CONT | SECT | JOB | HIGHWAY |
|---|---|---|---|
| | | | |

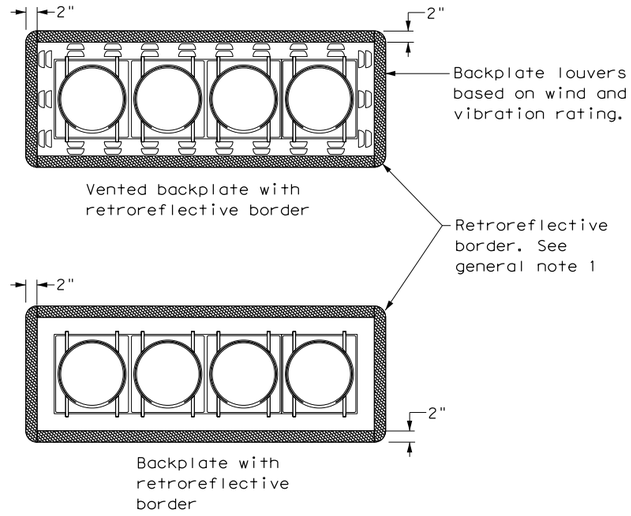
| DIST | COUNTY | SHEET NO. |
|---|---|---|
| | | 90 |

122B

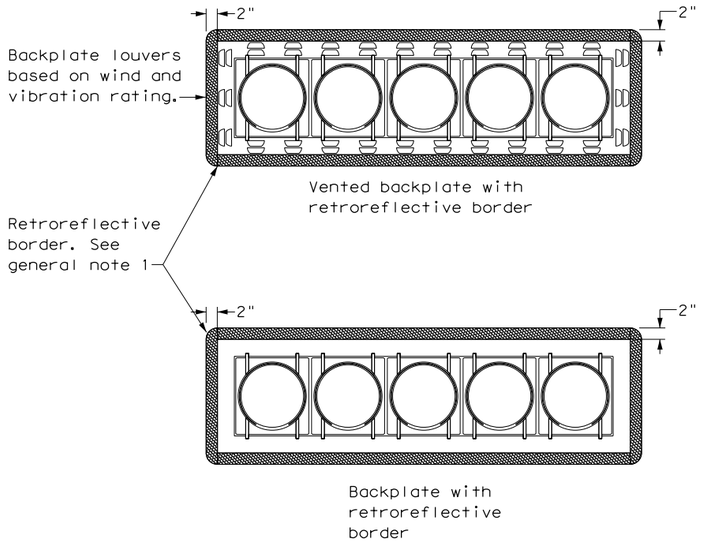
DATE: 9/25/2025
FILE: P:\133\27\04\Design\ORD\4-Design\Plan Set\S08-Traffic\S8.1-Signals\ts-bp-20.dgn



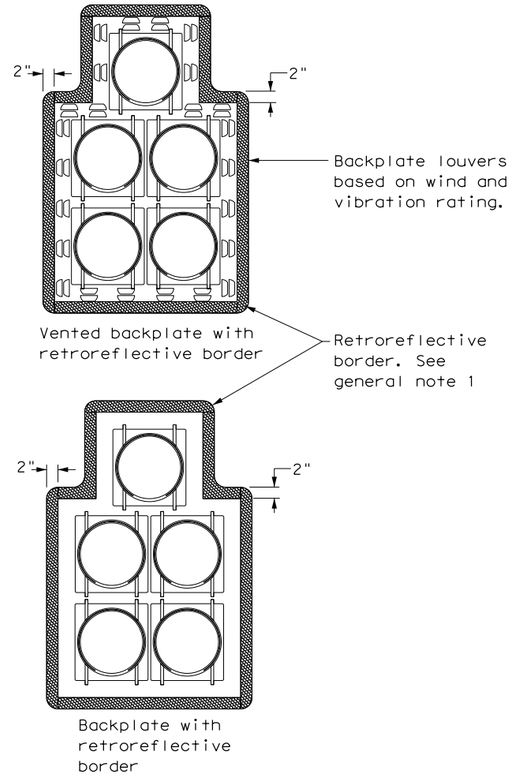

## THREE-SECTION HEAD
HORIZONTAL OR VERTICAL



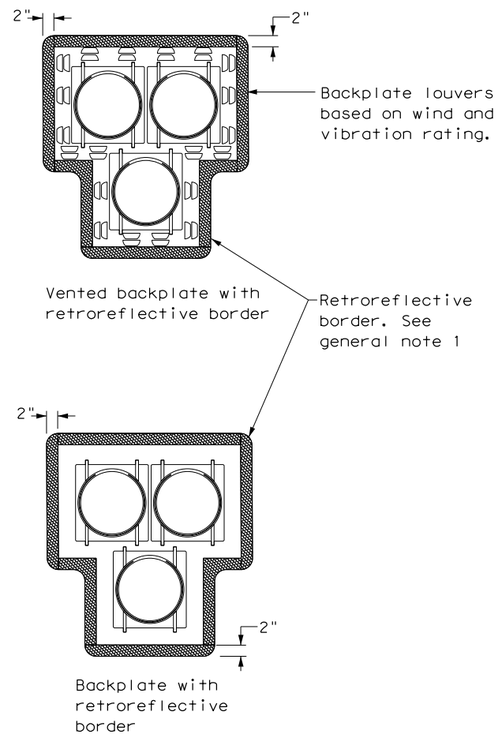

## FOUR-SECTION HEAD
HORIZONTAL OR VERTICAL




## FIVE-SECTION HEAD
HORIZONTAL OR VERTICAL




## FIVE-SECTION HEAD
CLUSTER




## PEDESTRIAN HYBRID
BEACON

## GENERAL NOTES:

1. Backplates are optional for traffic signals and pedestrian hybrid beacons. When backplates are used, a 2-inch wide fluorescent yellow AASHTO Type $B_{FL}$ or $C_{FL}$ retroreflective border conforming to TxDOT DMS-8300 is required. Place on all approaches when used.
2. Signal head and backplate compatability must be verified by the contractor prior to installation.
3. When using backplates on signal heads, venting is preferred to reduce cyclic vibration stress.
4. When a vented backplate is used, the retroreflective border must not be placed over the louvers.
5. This standard sheet applies to all signal heads with backplates, including but not limited to:
   - Pole mounted
   - Overhead mounted
   - Span wire mounted
   - Mast arm mounted
   - Vertical signal heads
   - Horizontal signal heads
   - Clustered signal heads
   - Pedestrian hybrid beacons

Texas Department of Transportation

Traffic Safety Division Standard

# TRAFFIC SIGNAL HEAD WITH BACKPLATE

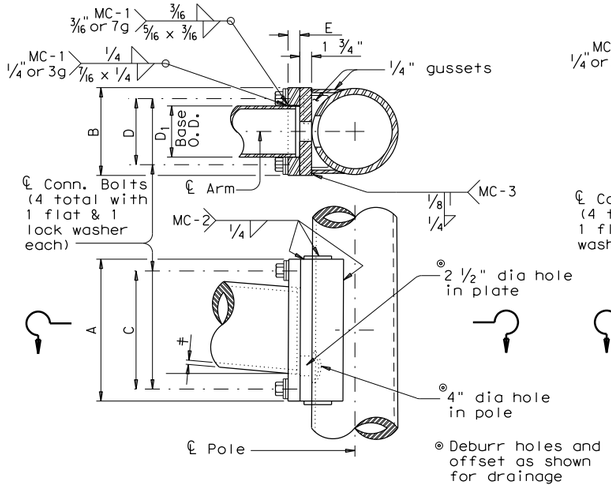
# TS-BP-20

| FILE: ts-bp-20.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT June 2020 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| | DIST | COUNTY | | SHEET NO. |
| | | | | 91 |

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: 9/25/2025
FILE: P:\133\27\04\Design\ORD\4-Design\Plan Set\S08-Traffic\S8.1-Signals\84-Standards\mac.dgn

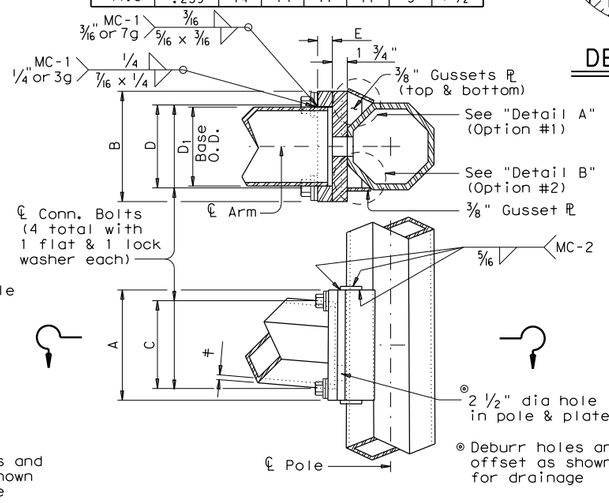
| ARM SIZE $D_1$ | ARM SIZE ǂ | A | B | C | D | E | CONN BOLT DIA |
|---|---|---|---|---|---|---|---|
| in. | in. | in. | in. | in. | in. | in. | in. |
| 6.5 | .179 | 12 | 9 | 9 | 6 | 1 ¾ | 1 |
| 7.5 | .179 | 13 | 9 | 10 | 6 | 1 ¾ | 1 |
| 8.0 | .179 | 14 | 10 | 11 | 7 | 2 | 1 ¼ |
| 9.0 | .179 | 16 | 11 | 13 | 8 | 2 | 1 ¼ |
| 9.5 | .179 | 17 | 12 | 14 | 9 | 2 | 1 ¼ |
| 9.5 | .239 | 18 | 12 | 15 | 9 | 2 | 1 ¼ |
| 10.0 | .239 | 18 | 12 | 15 | 9 | 2 | 1 ¼ |
| 10.5 | .239 | 18 | 13 | 15 | 10 | 3 | 1 ½ |
| 11.0 | .239 | 18 | 13 | 15 | 10 | 3 | 1 ½ |



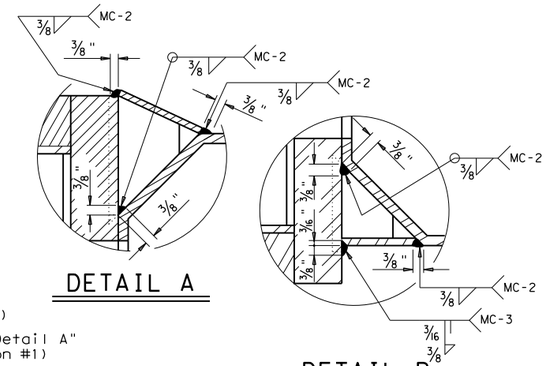

FIXED MOUNT DETAIL 1

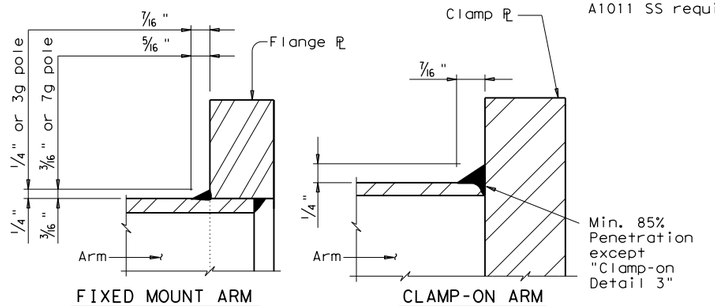
| ARM SIZE $D_1$ | ARM SIZE ǂ | A | F | CONN. BOLTS No. | CONN. BOLTS Dia | PIN BOLTS No. | PIN BOLTS Dia |
|---|---|---|---|---|---|---|---|
| in. | in. | in. | in. | ea. | in. | ea. | in. |
| 6.5 | .179 | 12 | 6 | 4 | 1 | 2 | 5/8 |
| 7.5 | .179 | 14 | 8 | 4 | 1 | 2 | 5/8 |
| 8.0 | .179 | 14 | 8 | 4 | 1 | 2 | 5/8 |
| 9.0 | .179 | 16 | 10 | 4 | 1 | 2 | 5/8 |
| 9.5 | .179 | 18 | 12 | 4 | 1 1/4 | 3 | 5/8 |
| 9.5 | .239 | 18 | 12 | 4 | 1 1/4 | 3 | 5/8 |
| 10.0 | .239 | 18 | 12 | 4 | 1 1/4 | 3 | 5/8 |

| ARM SIZE $D_1$ | ARM SIZE ǂ | A | B | C | D | E | CONN BOLT DIA |
|---|---|---|---|---|---|---|---|
| in. | in. | in. | in. | in. | in. | in. | in. |
| 7.0 | .179 | 11 | 11 | 8 | 8 | 1 ¾ | 1 ¼ |
| 7.5 | .179 | 11 | 11 | 8 | 8 | 1 ¾ | 1 ¼ |
| 8.0 | .179 | 11 | 11 | 8 | 8 | 2 | 1 ¼ |
| 9.0 | .179 | 13 | 13 | 10 | 10 | 2 | 1 ¼ |
| 10.0 | .179 | 13 | 13 | 10 | 10 | 2 | 1 ¼ |
| 9.5 | .239 | 13 | 13 | 10 | 10 | 2 | 1 ¼ |
| 10.0 | .239 | 14 | 14 | 11 | 11 | 2 | 1 ½ |
| 11.0 | .239 | 14 | 14 | 11 | 11 | 3 | 1 ½ |
| 11.5 | .239 | 14 | 14 | 11 | 11 | 3 | 1 ½ |




FIXED MOUNT DETAIL 2




ARM BASE WELD DETAILS

| ARM SIZE $D_1$ | ARM SIZE ǂ | A | F | CONN. BOLTS No. | CONN. BOLTS Dia | PIN BOLTS No. | PIN BOLTS Dia |
|---|---|---|---|---|---|---|---|
| in. | in. | in. | in. | ea. | in. | ea. | in. |
| 6.5 | .179 | 12 | 6 | 4 | 1 | 2 | 5/8 |
| 7.5 | .179 | 14 | 8 | 4 | 1 | 2 | 5/8 |
| 8.0 | .179 | 14 | 8 | 4 | 1 | 2 | 5/8 |
| 9.0 | .179 | 16 | 10 | 4 | 1 | 2 | 5/8 |
| 9.5 | .179 | 18 | 12 | 6 | 1 | 3 | 5/8 |
| 9.5 | .239 | 18 | 12 | 6 | 1 | 3 | 5/8 |
| 10.0 | .239 | 18 | 12 | 6 | 1 | 3 | 5/8 |

| MATERIALS | |
|---|---|
| Round Shafts or Polygonal Shafts ① | ASTM A595 Gr.A, A588, A1008 HSLAS Gr.50 Class 2, A1011 HSLAS Gr.50 Class 2, A572 Gr.50 or A1011 SS Gr.50 ② |
| Plates ① | ASTM A36, A588, or A572 Gr.50 |
| Connection Bolts | ASTM A325 or A449, except where noted |
| Pin Bolts | ASTM A325 |
| Pipe ① | ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50, A1011 HSLAS-F Gr.50 |
| Misc. Hardware | Galvanized steel or stainless steel or as noted |

① ASTM A572, A1008 HSLAS, A1011 HSLAS, A1008 HSLAS-F, A1011 HSLAS-F or A1011 SS may have higher yield strengths but shall not have less elongation than the grade indicated.

② ASTM A1011 SS Gr.50 material shall also have a minimum elongation of 18 percent in 8 inches or 23 percent in 2 inches. Material thickness in excess of those stipulated under A1011 SS will be acceptable providing the material meets all other A1011 SS requirements and the requirements of this item.

## GENERAL NOTES:

Clamp-on details are used for the second arm on dual mast arm assemblies. A Maximum 1 ½" wide vertical slotted hole shall be cut in the front clamp plate to facilitate drainage during galvanizing. The slot shall be centered behind the arm and shall be no longer than the arm diameter minus 1"

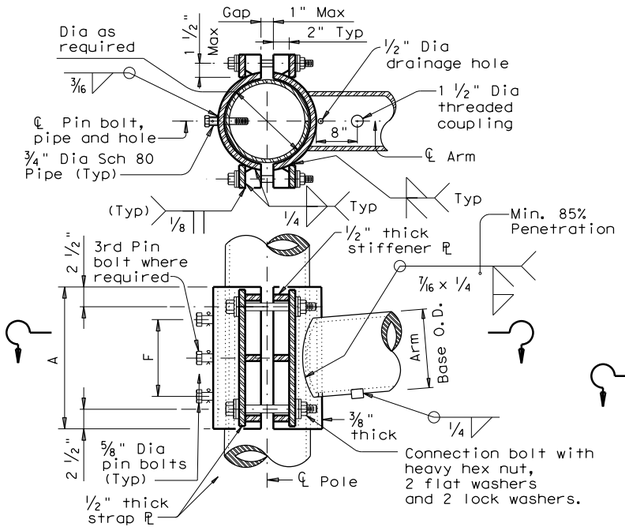
Fixed mount details are used for single mast arm assemblies and for the first arm on dual mast arm assemblies.

Where duplicate parts occur on a detail, welds shown for one part shall apply to all similar parts on the detail.

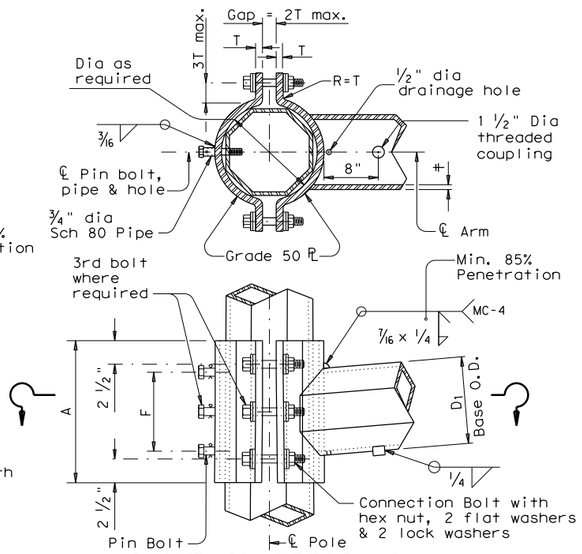
Pin bolts are required to prevent rotation of clamp-on arms under design wind forces.

## NOTE:

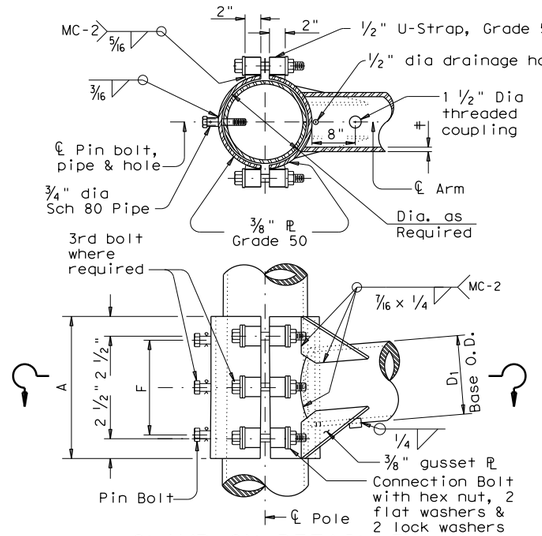
Pin bolts shall be A325 with threads excluded from the shear plane. Pin bolt and ¾" dia pipe shall have 3/16" dia holes for a 1/8" dia galvanized cotter pin. Back clamp plate shall be furnished with a ¾" dia hole for each pin bolt. An 11/16" dia hole for each pin bolt shall be field drilled through the pole after arm orientations have been approved by the Engineer.




CLAMP-ON DETAIL 1




CLAMP-ON DETAIL 2




CLAMP-ON DETAIL 3

Texas Department of Transportation
Traffic Operations Division

# STANDARD ASSEMBLY FOR TRAFFIC SIGNAL SUPPORT STRUCTURES

## MAST ARM CONNECTIONS

## MA-C-12

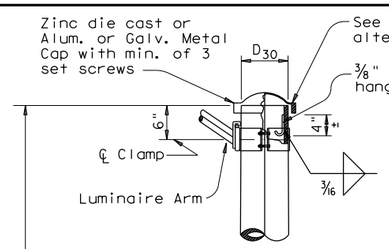


| DN: MS | CK: JSY | DW: MMF | CK: JSY |
|---|---|---|---|
| CONT | SECT | JOB | HIGHWAY |
| DIST | COUNTY | | SHEET NO. |
| | | | 92 |

REVISIONS
5-96
5-09
1-12

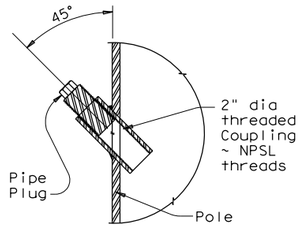
126A

DATE: 9/25/2025
FILE: P:\133\27\04\Design\ORD\4-Design\Plan Set\S08-Traffic\S8.1-Signals\84-Standards\mad.dgn

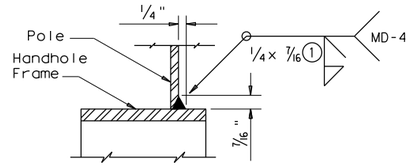



## DETAIL A

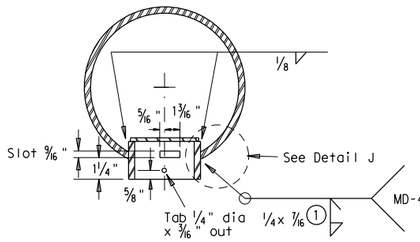
(for pole with luminaire)




## POLE COUPLING DETAIL

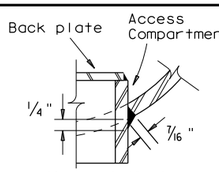



## DETAIL G

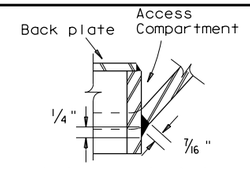



## SECTION X-X

Opening for access compartment shall be no more than 1/16 inch wider than the access compartment itself.

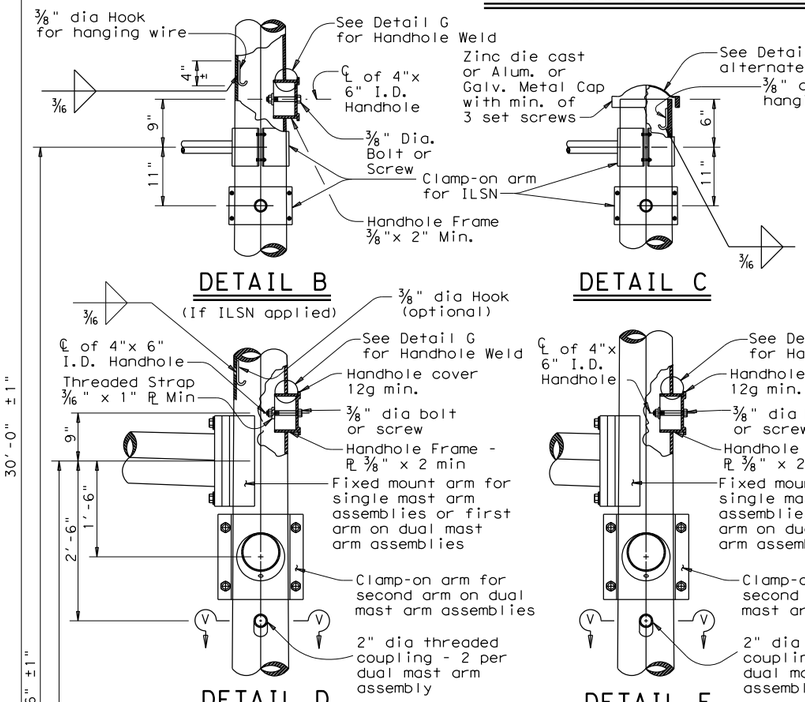



Round Pole




Polygonal Pole

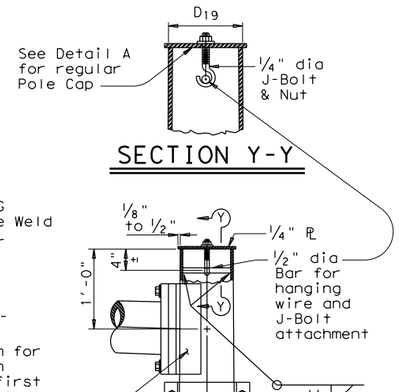
## DETAIL J



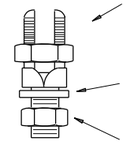

## DETAIL B

(If ILSN applied)

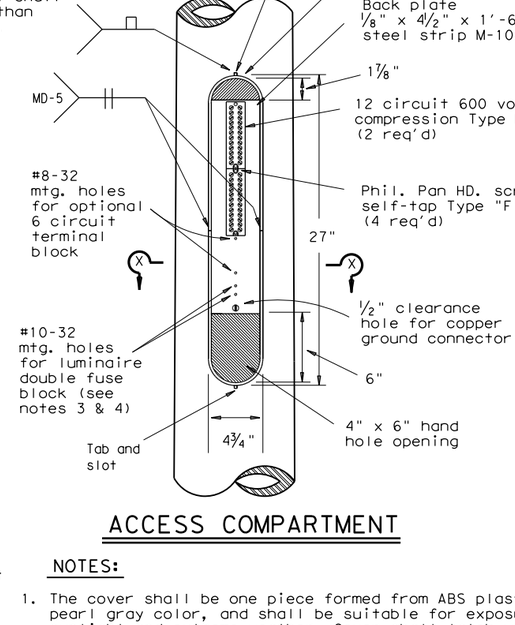
## DETAIL C




## SECTION Y-Y




## COPPER GROUND CONNECTOR




## ACCESS COMPARTMENT




## DETAIL D

(for 30' pole with luminaire and ILSN sign)



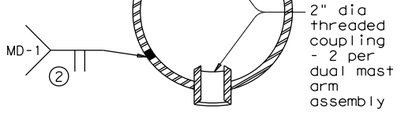

## DETAIL E

(for 24' pole with ILSN sign and no luminaire)

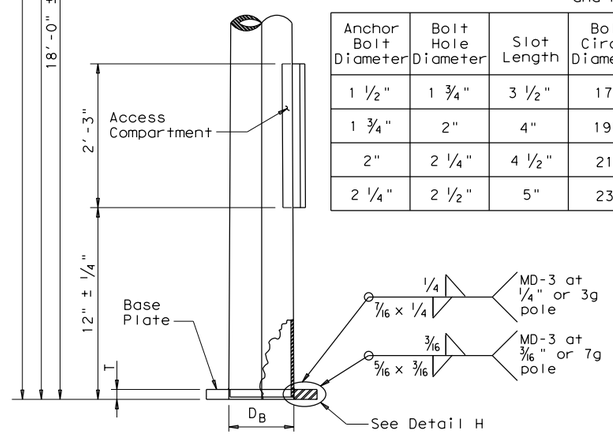



## DETAIL F

(for 19' pole with no ILSN sign and no luminaire)

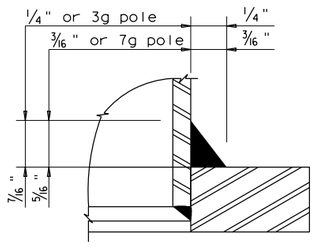



## SECTION V-V

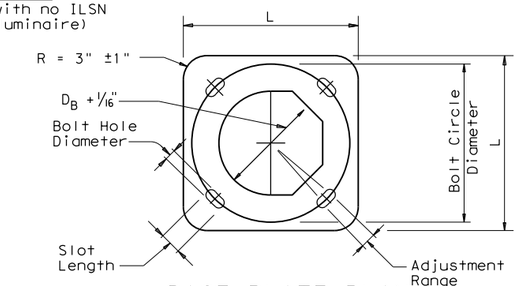



## POLE ELEVATION

| Anchor Bolt Diameter | Bolt Hole Diameter | Slot Length | Bolt Circle Diameter | Base ℞ Dim. L x T | Adjust. Range |
|---|---|---|---|---|---|
| 1 1/2" | 1 3/4" | 3 1/2" | 17" | 18" x 1 1/2" | 13.4° |
| 1 3/4" | 2" | 4" | 19" | 20" x 1 3/4" | 13.5° |
| 2" | 2 1/4" | 4 1/2" | 21" | 22" x 2" | 13.6° |
| 2 1/4" | 2 1/2" | 5" | 23" | 24" x 2 1/4" | 13.7° |




## DETAIL H




## BASE PLATE PLAN

(1) 85% Min. penetration

(2) 60% Min. penetration 100% pemetration within 6" of circumferential base welds.

## NOTES:

1. The cover shall be one piece formed from ABS plastic, shall be a pearl gray color, and shall be suitable for exposure to harsh sunlight and extreme weather. Cover shall latch with two screw latches and shall fit tightly to the enclosure ring to create a rainproof seal. Latch screws shall be 1/4-20 stainless flat socket head screws with tamper proof feature.
2. The pole manufacturer shall provide with each pole a separate kit consisting of: one cover with two latching assemblies, two terminal strips (Marathon #985GP12CU or approved equal), four #8-32 x 1 1/4" self tapping type "F" stainless steel pan head screws, and one ground connector (Blackburn TTC, Burndy KC22J12T13, or Ilsco SSS-5). The traffic signal contractor shall install the kit items in the field.
3. The screw hole spacing on the enclosure back plate shall be for two Marathon #985GP12 terminal strips, one Marathon #985GP06CU terminal strip, and one Bussmann #BM6032B fuse block.
4. Install one Bussmann #BM6032B, Littelfuse #L60030M-2C, or Ferraz-Shawmut #30352 fuse block for poles where luminaires are to be installed.

Texas Department of Transportation
Traffic Operations Division

# TRAFFIC SIGNAL SUPPORT STRUCTURES MAST ARM POLE DETAILS

MA-D-12



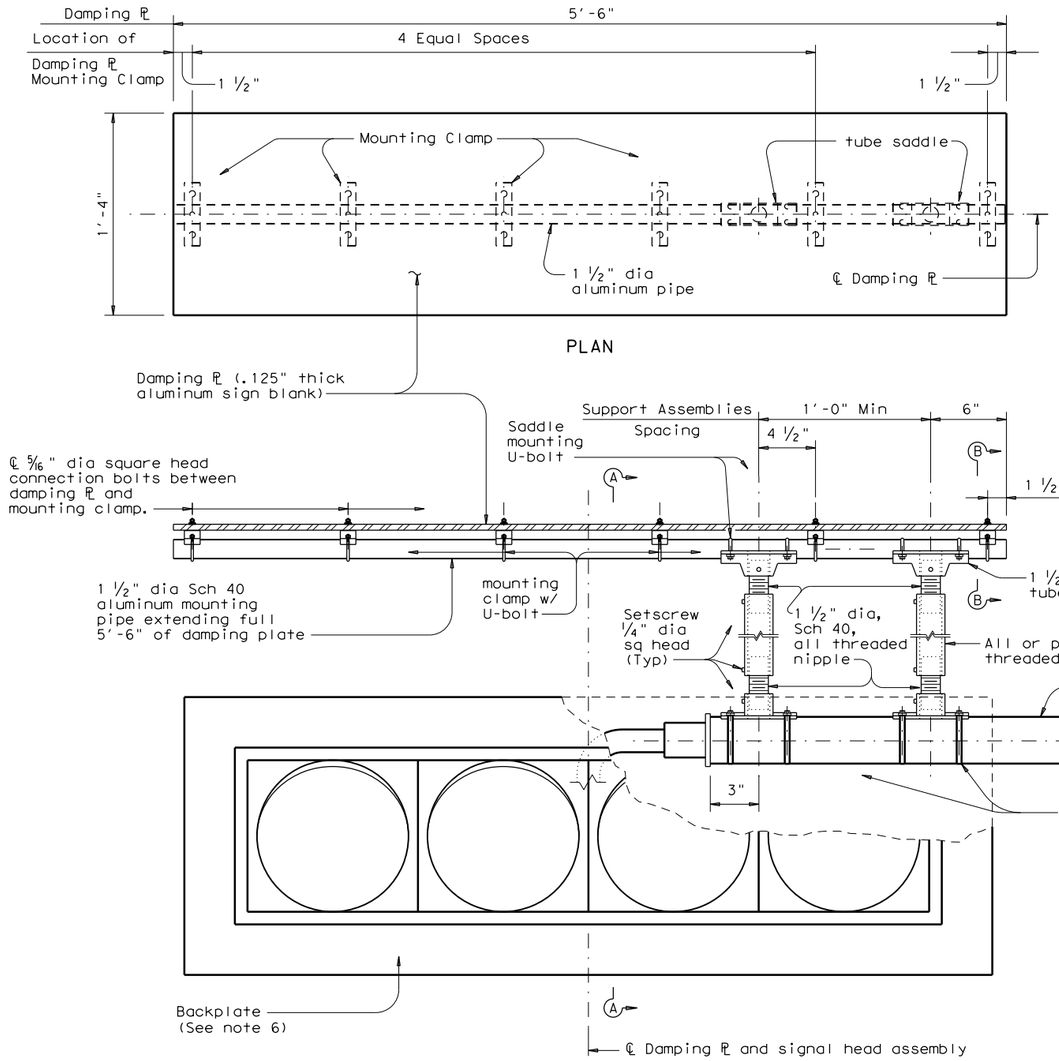
| DN: MS | CK: JSY | DW: FDN | CK: CAL |
|---|---|---|---|

REVISIONS
8-99
1-12

| CONT | SECT | JOB | HIGHWAY |
|---|---|---|---|
| | | | |

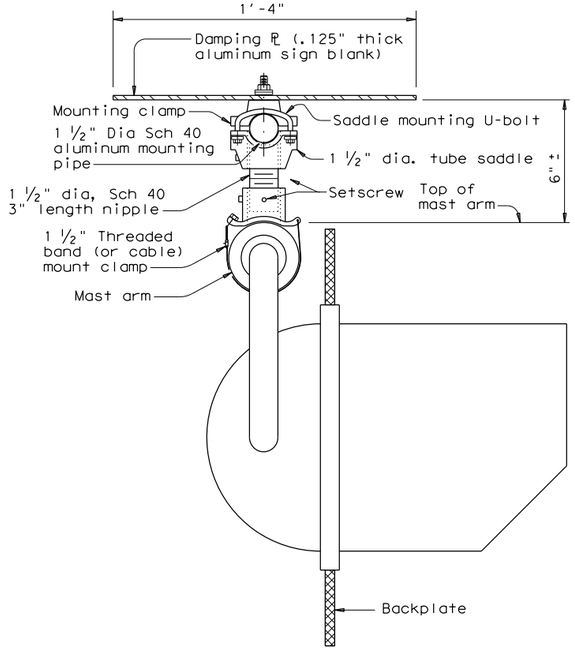
| DIST | COUNTY | SHEET NO. |
|---|---|---|
| | | 93 |

DATE:
FILE:




## DAMPING PLATE MOUNTING DETAILS

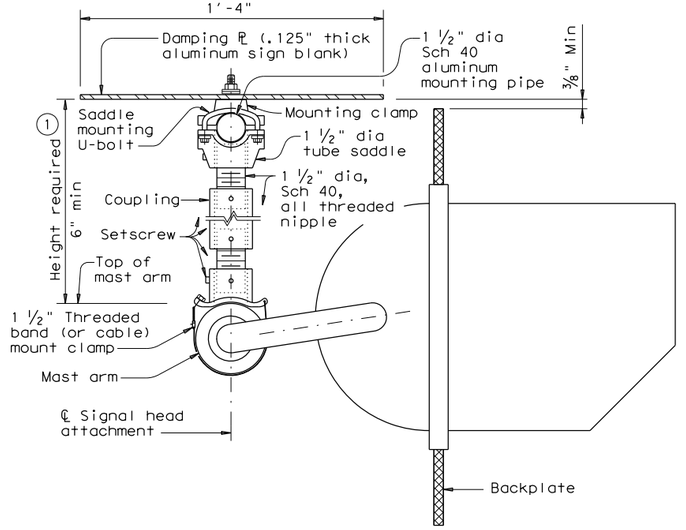
(Showing alternate placement of signal head)




SECTION A-A

(Showing standard placement of signal head)

(Mounting clamp U-bolt is not shown for clarity)

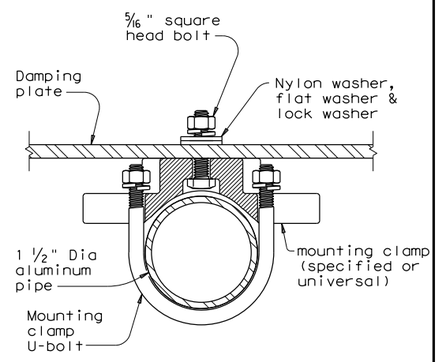



SECTION A-A

(Showing alternate placement of signal head)

(Mounting clamp U-bolt is not shown for clarity)

| ① Recommended supporting assemblies to achieve required height for horizontal section heads | | | |
|---|---|---|---|
| Height required | One nipple each length | Two nipples each length plus | One coupling each length |
| 6"-6 ¾" | 3" | - | - |
| 7"-8 ½" | 4" | - | - |
| 9"-10 ½" | 6" | - | - |
| 11"-15 ½" | - | 4" | 5" |
| 16"-24" | - | 6" | 10" |




SECTION B-B

(Showing damping plate attachment)

## GENERAL NOTES:

1. In accordance with the findings of TxDOT sponsored research, the installation of a damping plate in accordance with the details shown here at the end of signal mast arms of SMA and DMA standard structures reduces excessive harmonic vertical vibration, and thus fatigue damage. Any deviation from these details may reduce the effectiveness of this damping device.
2. Aluminum sign blank for damping plate will conform to Departmental Material Specifications DMS-7110. Materials for mast arm mounting clamp and tube saddle will be aluminum castings or aluminum alloys as in accordance with manufacturers' stipulations. Mounting pipe, pipe nipple and coupling will be aluminum alloy 6061-T6 or 6063-T6. Damping plate mounting clamp and u-bolt assemblies will conform to Standard sheet SMD(GEN). U-bolts for saddle mounting will have a minimum yield strength of 36 ksi.
3. Damping plate will be mounted horizontally. Position centerline of damping plate to align with centerline of mast arm or horizontal signal head assembly. Vertical clearance between signal head (with or without backing plate) and bottom of damping plate will be maintained as shown. The attachments shown here are examples only, other supporting details which meet both alignment and vertical clearance requirements are also acceptable.
4. Unless stipulated by the manufacturers, all steel parts will be galvanized finish in accordance with Standard Specification Item 445, "Galvanizing".
5. Contractor will verify applicable field dimensions before the installation.
6. Backplates are optional for traffic signals. When backplates are used, Backplates will have a 2-inch fluorescent yellow AASHTO Type $B_{FL}$ or $C_{FL}$ retroreflective border conforming to TxDOT DMS-8300 "Sign Face Materials." See Sheet TS-BP-20 for backplate details.

Texas Department of Transportation

Traffic Safety Division Standard

# MAST ARM DAMPING PLATE DETAILS

## MA-DPD-20

| FILE: ma-dpd-20.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT January 2012 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| 6-20 | DIST | COUNTY | | SHEET NO. |
| | | | | 94 |

DATE:
FILE:

## GENERAL NOTES FOR ALL ELECTRICAL WORK

1. The location of all conduits, junction boxes, ground boxes, and electrical services is diagrammatic and may be shifted to accommodate field conditions.

2. Provide new, unused, and undamaged materials. Ensure that all materials and installations comply with the National Electrical Code (NEC), TxDOT standards and specifications, National Electrical Manufacturers Association (NEMA), and are listed by Underwriters Laboratories (UL) or a Nationally Recognized Testing Lab (NRTL). NRTLs such as CSA Group, Intertek Testing Services, or FM Approvals can be considered equivalent to UL. Where reference is made to NEMA listed devices, International Electrotechnical Commission (IEC) listed devices will not be considered an acceptable equal to NEMA. Faulty fabrication or poor workmanship in any material, equipment, or installation is justification for rejection. Replace or reinstall rejected material or equipment at no additional cost to the Department.

3. Miscellaneous nuts, bolts, and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is 1/2 in. or less in diameter.

4. Provide the following test equipment as required by the Engineer to confirm compliance with the contract and the NEC: voltmeter, ammeter, megohm meter (1000 volt DC), ground resistance tester, torque wrenches, and torque screwdrivers. Ensure all equipment has been properly calibrated within the last year. Provide calibration certification to the Engineer upon request. Operate test equipment during inspection as requested by the Engineer.

5. Install grounding as shown on the plans and in accordance with the NEC. Ensure all metallic conduits, metal poles, luminaires, and metal enclosures are bonded to an equipment grounding conductor. Provide stranded bare copper or green insulated grounding conductors. Ground rods, connectors, and bonding jumpers are subsidiary to the various bid items.

6. When required by the Engineer, notify the Department in writing of materials from the Material Producer List (MPL) intended for use on each project. Prequalified materials are listed on the MPL on TxDOT's website under "Roadway Illumination and Electrical Supplies." No substitutions will be allowed for materials on this list.

## CONDUIT

### A. MATERIALS

1. Provide conduit, junction boxes, fittings, and hardware per TxDOT Departmental Material Specification DMS-11030, "Conduit" and Item 618, "Conduit" of TxDOT's "Standard Specifications for Construction and Maintenance of Highways, Streets, And Bridges," latest edition. Provide conduits listed under Item 618 on the MPL under "Roadway Illumination and Electrical Supplies." Provide conduit types according to the descriptive code or as shown on the plans. Do not substitute other types of conduits for those shown. Provide Liquidtight Flexible Metal Conduit (LFMC) when flexible conduit is called for on galvanized steel Rigid Metal Conduit (RMC) systems. Provide Liquidtight Flexible Nonmetallic Conduit (LFNC) when flexible conduit is called for on Polyvinyl Chloride (PVC) systems.

2. Provide galvanized steel RMC for all exposed conduits, unless otherwise shown on the plans. Properly bond all metal conduits.

3. Unless otherwise shown on the plans, provide junction boxes with a minimum size as shown in the following table, which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes are present, count the conductors as if all are of the larger size. For situations not applicable to this table, size junction boxes per the NEC.

**JUNCTION BOX SIZES**

| AWG | 3 CONDUCTORS | 5 CONDUCTORS | 7 CONDUCTORS |
|---|---|---|---|
| #1 | 10" x 10" x 4" | 12" x 12" x 4" | 16" x 16" x 4" |
| #2 | 8" x 8" x 4" | 10" x 10" x 4" | 12" x 12" x 4" |
| #4 | 8" x 8" x 4" | 10" x 10" x 4" | 10" x 10" x 4" |
| #6 | 8" x 8" x 4" | 8" x 8" x 4" | 10" x 10" x 4" |
| #8 | 8" x 8" x 4" | 8" x 8" x 4" | 8" x 8" x 4" |

4. Junction boxes with internal volumes up to 100 cu. in. and that are supported by entering raceways must have threaded entries or hubs identified for the intended purpose and be supported by connection of two or more rigid metal conduits. Secure conduit within 3 ft. of the box or within 18 in. of the box if all conduit entries are on the same side. Mechanically secure all junction boxes with an internal volume greater than 100 cu. in.

5. Provide hot dipped galvanized cast iron or sand cast aluminum outlet boxes for junction boxes containing only 10 AWG or 12 AWG conductors. Do not use die cast aluminum boxes. Size outlet boxes according to the NEC.

6. Do not use Intermediate Metal Conduit (IMC) or Electrical Metallic Tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes sized as directed above, listed and approved for outdoor use, unless otherwise noted on the plans. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.

7. Provide PVC junction boxes intended for outdoor use on PVC conduit systems, unless otherwise noted on the plans.

8. Provide PVC elbows, unless otherwise shown in the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system.

### A. MATERIALS (CONTINUED)

9. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in. below grade or bottom of the ground box, ground the RMC elbow with a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. Elbows are subsidiary to various bid items.

10. When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to DMS-11060, "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors according to DMS-11030 for PVC conduit bid under Item 618. Provide conduit of the size and schedule as shown on the plans. Do not extend HDPE conduit into ground boxes or foundations. Provide PVC elbows at all ground boxes and foundations.

11. Use two-hole straps or strut straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized strut straps or stand-off straps are allowed on the service riser conduit.

### B. CONSTRUCTION METHODS

1. Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.

2. Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surfaces of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit supports within 3 ft. of all enclosures and conduit terminations.

3. Do not attach conduit supports directly to pre-stressed concrete beams, except as shown specifically in the plans or as approved by the Engineer.

4. Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.

5. When placing conduit in the subgrade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the subbase of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items: 110, "Excavation;" 400, "Excavation and Backfill for Structures;" 401, "Flowable Backfill;" 402, "Trench Excavation Protection;" and 403, "Temporary Special Shoring."

6. During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly affix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.

7. Ensure conduit entry into the top of an enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.

8. Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding bushing on all metal conduit terminations.

9. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.

10. Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).

11. After completion of conductor installation, immediately seal ends of all conduits emerging from ground with duct seal, expandable foam, or other methods approved by the Engineer. Do not use silicone caulking. Do not use duct tape as a permanent seal.

12. File smooth the cut ends of all mounting strut and conduit. To avoid overspray, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% min. zinc content as specified on DMS-8103 and listed on the MPL for Galvanizing Repair Paints) before installing. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with zinc rich paint as an alternative for materials required to be galvanized.

13. For all conduits, ensure the burial depth is 18" min. For conduits placed under a roadway, ensure the burial depth is 24" min.

Texas Department of Transportation

Traffic Safety Division Standard

# ELECTRICAL DETAILS CONDUITS & NOTES

## ED(1)-25

| FILE: | ed1-25.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|---|
| ©TxDOT | April 2025 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | | |
| 1-92 3-03 4-25 | | DIST | COUNTY | | SHEET NO. |
| 4-98 5-03 | | | | | 95 |
| 12-00 10-14 | | | | | |

71A

DATE:
FILE:

# ELECTRICAL CONDUCTORS

## A. MATERIAL INFORMATION

1. Provide Type XHHW insulated copper conductors in accordance with Departmental Material Specification DMS-11040, "Conductors" and Item 620, "Electrical Conductors." Provide conductors as listed on the Material Producer List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620.

2. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape at each accessible location.

3. Insulated grounding conductors may be substituted for bare conductors, unless otherwise shown in the plans. Insulated grounding conductors must be color coded green in accordance with Note 2.

4. Provide a 6 AWG bare solid copper grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS-11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.

5. Where two or more circuits are present in one conduit or enclosure, permanently label the conductors of each branch circuit by attaching a non-metallic, weather resistant tag around both circuit conductors at each accessible location. Provide one-piece tags with two $\frac{3}{16}$" straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.

6. Use listed compression connectors, mechanical lugs, terminal blocks, or split bolt connectors for splicing as specified in DMS-11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

## B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system.

2. Leave 2 ft. to 3 ft. of length for each conductor up to the splice in ground boxes. Leave 3 ft. to 4 ft. of length for each conductor in ground boxes when pulled through with no splice. Leave 1 ft. to 1.5 ft. of length for each conductor at enclosures and pole bases. Leave 1.5 ft. to 3 ft. of length as required by electric utility for conductors exiting weatherheads.

3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression connectors, mechanical lugs, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between each conductor and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned or overheated is considered defective and must be replaced.

4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.

5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.

6. Support conductors in illumination poles with a J-hook at the top of the pole.

7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.

8. Replace conductors and cables that are damaged or that fail an insulation resistance test at no additional cost to the Department.

9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.

## B. CONSTRUCTION METHODS (CONTINUED)

10. Do not terminate more than one conductor under a single lug unless it is rated for multiple conductors. Do not exceed the lug's listing for maximum number and size of conductors allowed.

11. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure a waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.

12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor in the conduit. Bond all EGCs together at every accessible location. For ITS installations, bond and ground metal ground box covers and other metal equipment as shown on ITS standards.

## C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.

2. Provide a ground fault circuit interrupter (GFCI) for powering portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.

3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.

4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. When installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.

5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

# GROUND RODS & GROUNDING ELECTRODES

## A. MATERIAL INFORMATION

1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS-11040 and the plans. Larger diameter or longer length rods may be called for in some locations. Concrete encased grounding electrodes may be called for in some locations including electrical services — see plan sheets.

## B. CONSTRUCTION METHODS

1. Furnish and install ground rods in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.

2. Do not place ground rods in the same drilled hole as a timber or concrete pole.

3. Install ground rods so the imprinted part number is at the upper end of the rod.

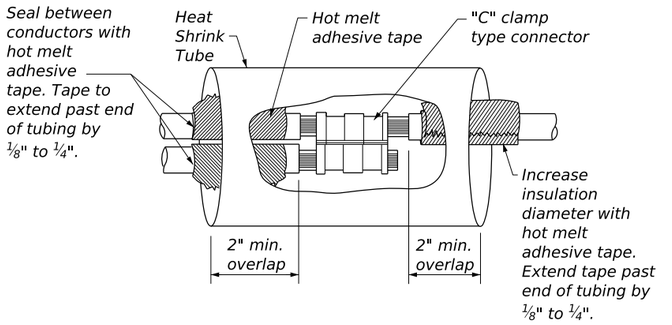
4. Remove all non-conductive material such as concrete splatter from the rod at the clamp location.

5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of 4 in.

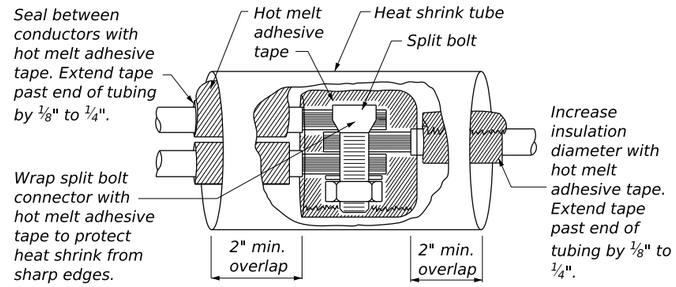
6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding bushing and properly sized bonding jumper on each end of the metal conduit.

7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.

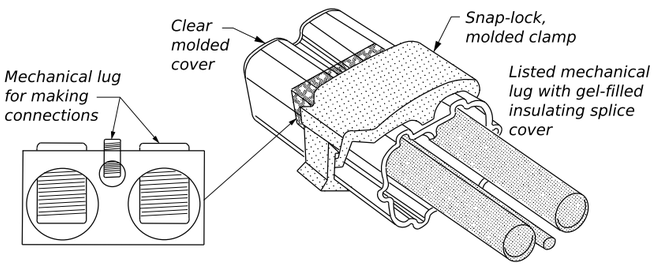
## COMPRESSION SPLICE
### OPTION 1




## SPLIT BOLT SPLICE
### OPTION 2




## GEL-FILLED INSULATED SPLICE
### OPTION 3




Texas Department of Transportation

Traffic Safety Division Standard

# ELECTRICAL DETAILS CONDUCTORS

# ED(3)-25

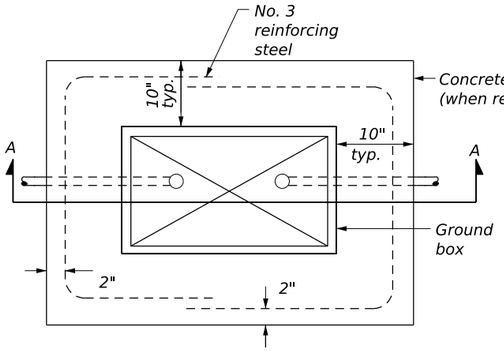
| FILE: ed3-25.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT April 2025 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| 1-92 12-00 10-14<br>10-93 3-03 4-25<br>4-98 5-03 | DIST | COUNTY | | SHEET NO. |
| | | | | 96 |

71C

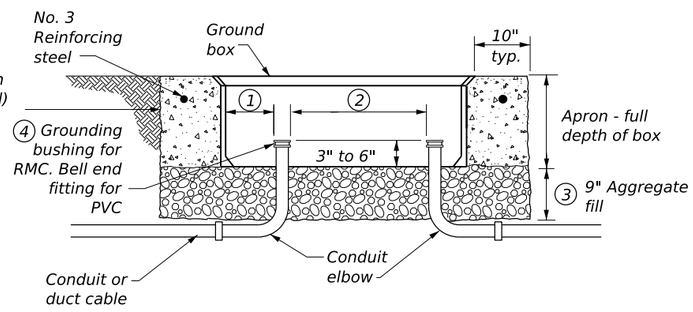
DATE:
FILE:

# APRON FOR GROUND BOX

**PLAN VIEW**




**SECTION A - A**




*SECTION A - A NOTES:*

1. *Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.*
2. *Maintain sufficient space between conduits to allow for proper installation of bushing.*
3. *Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.*
4. *Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.*

| GROUND BOXES | |
|---|---|
| TYPE | OUTSIDE DIMENSIONS (Width x Length X Depth) |
| A | 12" X 23" X 11" |
| B | 12" X 23" X 22" |
| C | 16" X 29" X 11" |
| D | 16" X 29" X 22" |
| E | 12" X 23" X 17" |

## NOTES:

### A. MATERIALS

1. *Provide polymer concrete ground boxes measuring 16 in. x 30 in. x 24 in. (W x L x D) or smaller in accordance with Departmental Material Specification DMS-11070, "Ground Boxes" and Item 624, "Ground Boxes."*
2. *Provide Type A, B, C, D, and E ground boxes as shown in the plans and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.*
3. *Ensure ground box cover is correctly labeled in accordance with DMS-11070.*
4. *Provide larger ground boxes in accordance with Item 624 and as shown in the plans.*

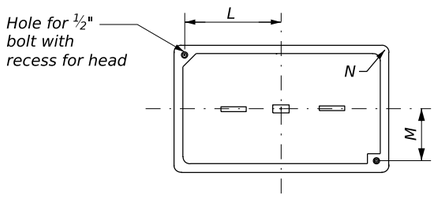
### B. CONSTRUCTION METHODS

1. *Before setting ground box and after placing and capping conduits, lay an aggregate bed a minimum of 9 in. deep that extends 10 in. beyond the sides of the ground box. Provide coarse aggregate sized 3/4 in. to 2 in., with no more than 20% material passing through a no. 8 sieve, and as defined by the current ASTM C33/33M standard. Clean aggregate and dirt from conduits according to Item 618.*
2. *Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.*
3. *Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.*
4. *Install all conduits and elbows in a professional and skillful manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.*
5. *Temporarily seal all conduits in the ground box until conductors are installed.*
6. *Permanently seal conduits immediately after the completion of conductor installation. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit seal. Do not use silicone caulk as a sealant.*
7. *Bond all equipment grounding conductors in a ground box together with listed connectors.*
8. *When a Type B or D ground box is stacked to meet volume requirements, an appropriately sized hole may be cut for conduit entry in the side wall at least 18 in. below grade.*
9. *If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper that is the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.*
10. *If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.*
11. *Bond metal ground box covers to the grounding conductor with a tank ground type lug.*

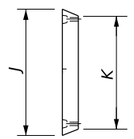
| GROUND BOX COVERS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| TYPE | DIMENSIONS | | | | | | | |
| | H | I | J | K | L | M | N | P |
| A, B & E | 23 ¼" | 23" | 13 ¾" | 13 ½" | 9 ⅞" | 5 ⅛" | 1 ⅜" | 2" |
| C & D | 30 ½" | 30 ¼" | 17 ½" | 17 ¼" | 13 ¼" | 6 ¾" | 1 ⅜" | 2" |

## GROUND BOX COVER

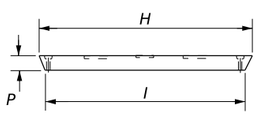
**PLAN VIEW**




**END**




**SIDE**




Texas Department of Transportation

Traffic Safety Division Standard

# ELECTRICAL DETAILS GROUND BOXES

## ED(4)-25

| FILE: ed4-25.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| © TxDOT April 2025 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| 1-92 3-03 4-25<br>4-98 5-03<br>12-00 10-14 | DIST | COUNTY | | SHEET NO. |
| | | | | 97 |

71D

## ELECTRICAL SERVICES NOTES

1. Provide electrical services in accordance with Electrical Details standard sheets, Departmental Material Specification (DMS)-11080, "Electrical Services" and Item 628, "Electrical Services." Provide electrical service types A, C, and D, as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 628. Provide other service types as detailed on the plans.

2. Coordinate with the Engineer and the utility provider for metering and compliance with utility requirements. Primary line extensions, connection charges, meter charges, and other charges by the utility company to provide power to the location are paid for in accordance with Item 628. Get approval for the costs associated with these charges prior to engaging the utility company to do the work. Consult with the utility provider to determine costs and requirements, and coordinate the work as approved.

3. Provide a Master Lock, Model No. 2, M1, or 6121, keyed to code 2195. Master Lock 2195 keys and locks become property of the Department. Unless otherwise approved, do not energize electrical service equipment until locks are installed.

4. Enclosures with external disconnects that de-energize all equipment inside the enclosure do not need a dead front trim. Protect incoming line terminations from incidental contact as required by the NEC.

5. When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.

6. Provide wiring and electrical components rated for 75°C. Provide red, black, and white colored XHHW service entrance conductors of minimum size 6 American Wire Gauge (AWG). Identify conductors per ED(3). Ensure each service entrance conductor exits through a separately bushed non-metallic opening in the weatherhead. The lengths of the conductors outside the weatherhead are to be 1.5 ft. to 3 ft. as required by electric utility.

7. Provide rigid metal conduit (RMC) for all conduits on service, except for the ½ in. PVC conduit containing the electrical service grounding electrode conductor. Size the service entrance conduit as shown in the plans. Ensure conduit for branch circuit entry to enclosure is the same size as shown on the layout sheets for branch circuit conduit. Extend all rigid metal conduits a minimum of 6 in. underground and then couple to the type and schedule of the conduit shown on the plans. Install a grounding bushing on the RMC where it terminates in the service enclosure.

8. Use of liquidtight flexible metal conduit (LFMC) is allowed between the meter and service enclosure when they are mounted 90 to 180 degrees from each other. Size this LFMC the same size as the service entrance conduit. LFMC must not exceed 3 ft. in length. Strap LFMC within 1 ft. of each end. Terminate each end of the LFMC with a grounding bushing or fitting. The LFMC must contain a grounded (neutral) conductor. Ensure bends in LFMC do not exceed 180 degrees. A pull test is required on all installed conductors, with at least 6 in. of free conductor movement demonstrated to the satisfaction of the Engineer.

9. Ensure all mounting hardware and installation details of services conform to utility company specifications.

10. Provide the following documents in the electrical service document pocket: schematic drawing unique to the service from the UL 508 shop; plan sheet showing Electrical Service Data Chart for the service; plan sheets for the circuits powered by the service; and red lined plan sheets if installation differs from the original design. Reduce larger sheets to 8 ½ in. x 11 in. and laminate all documents.

11. When providing an "Off The Shelf" Type D or Type T service, provide laminated plan sheets detailing equipment and branch circuits supplied by that service. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in. before laminating. When the enclosure has no door pocket, deliver these drawings to the Engineer before completion of the work.

12. Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a watertight conduit hub or meter hub.

## MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

1. Field drill flange-mounted remote operator handle, if needed, to ensure handle is lockable in both the "On" and "Off" positions.

2. When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

## PHOTOELECTRIC CONTROL

1. Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

**ELECTRICAL SERVICE DATA (EXAMPLE) ∗**

| ELEC. SERVICE ID | PLAN SHEET NUMBER | ELECTRICAL SERVICE DESCRIPTION | SERVICE CONDUIT SIZE ∗∗ | SERVICE CONDUCTORS NO./SIZE | SAFETY SWITCH AMPS | MAIN CKT. BKR. POLE/AMPS | LIGHTING CONTACTOR AMPS | PANELBOARD/ LOADCENTER AMP RATING | BRANCH CIRCUIT ID | BRANCH CKT. BKR. POLE/AMPS | BRANCH CIRCUIT AMPS | KVA LOAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SB 183 | 289 | ELC SRV TY A 240/480 100(SS)AL(E)SF(U) | 2" | 3/#2 | 100 | 2P/100 | 2P/100 | N/A | Lighting NB | 2P/40 | 26 | 28.1 |
| | | | | | | | | | Lighting SB | 2P/40 | 25 | |
| | | | | | | | | | Underpass | 1P/20 | 15 | |
| | | | | | | | | | | | | |
| NB Access | 30 | ELC SRV TY D 120/240 060(NS)SS(E)TS(O) | 1 ¼" | 3/#6 | N/A | 2P/60 | 2P/30 | 100 | Sig. Controller | 1P/30 | 23 | 5.3 |
| | | | | | | | | | Luminaires | 2P/20 | 9 | |
| | | | | | | | | | CCTV | 1P/20 | 3 | |
| | | | | | | | | | | | | |
| 2nd & Main | 58 | ELC SRV TY T 120/240 000(NS)GS(N)SP(O) | 1 ¼" | 3/#6 | N/A | N/A | N/A | 70 | Flashing Beacon 1 | 1P/20 | 4 | 1.0 |
| | | | | | | | | | Flashing Beacon 2 | 1P/20 | 4 | |

∗ Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.

∗∗ Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National Electrical Code.

## ELECTRICAL SERVICE BID ITEM DESCRIPTIONS

**ELEC SERV TY X XXX/XXX XXX(XX)XX(X)XX(X)**

SCHEMATIC TYPE

SERVICE VOLTAGE

DISCONNECT AMP RATING
NOTE: 000 indicates main lug only, typically Type T

SAFETY SWITCH
(SS) = Safety Switch Ahead of Meter - Check with Utility
(NS) = No Safety Switch Ahead of Meter - Check with Utility

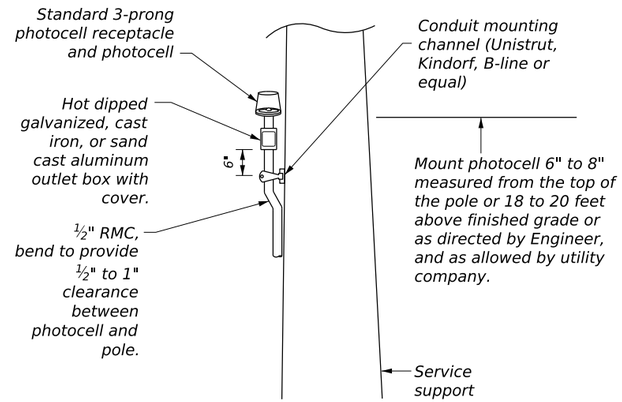
ENCLOSURE TYPE
GS = Galvanized steel ("off the shelf")
SS = Stainless steel (Custom Enclosure) - See MPL
AL = Aluminum (Custom Enclosure) - See MPL

PHOTOCELL MOUNTING LOCATION
(E) = Inside Service/Enclosure Mounted
(T) = Top of pole
(L) = Luminaire mounted
(N) = None - No Photocell or Lighting Contactor Required

SERVICE SUPPORT TYPE
GC = Granite concrete
OC = Other concrete
TP = Timber pole
SP = Steel pole
SF = Steel frame
OT = Pole by others or paid for separately
EX = Existing pole
TS = Service on traffic signal pole
PS = Pedestal Service

SERIVCE FEED
O = Overhead Service Feed from Utility
U = Underground Service Feed from Utility

## TOP MOUNTED PHOTOCELL




Install conduit strap maximum 3 ft. from box. Spacing between straps supporting conduit is 5 ft. maximum.

Texas Department of Transportation

Traffic Safety Division Standard

# ELECTRICAL DETAILS SERVICE NOTES & DATA

# ED(5)-25

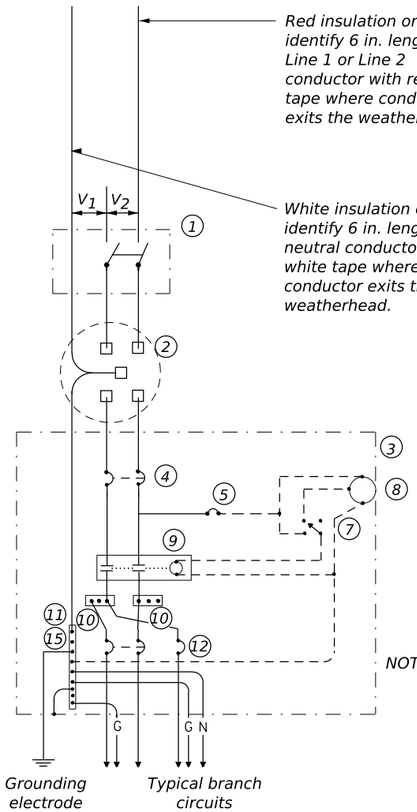
| FILE: ed5-25.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT April 2025 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| 4-98 10-14<br>12-00 4-25<br>3-03 | DIST | COUNTY | | SHEET NO. |
| | | | | 98 |

71E

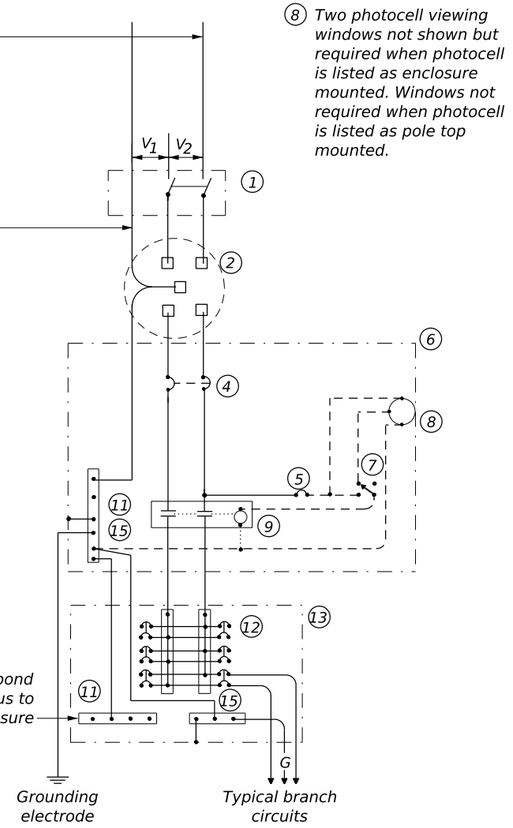
DATE:
FILE:

DATE:
FILE:

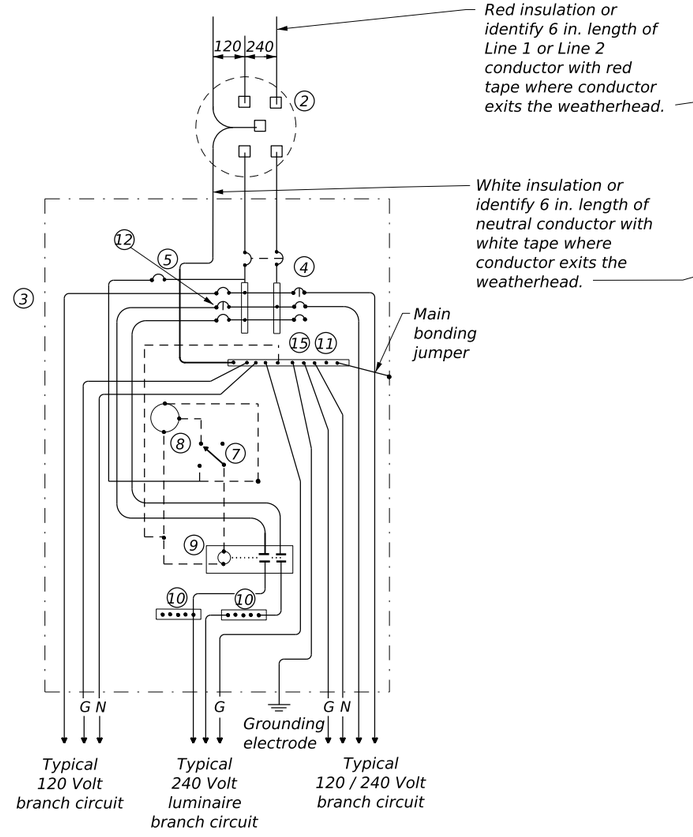
## TYPE A
**THREE WIRE**



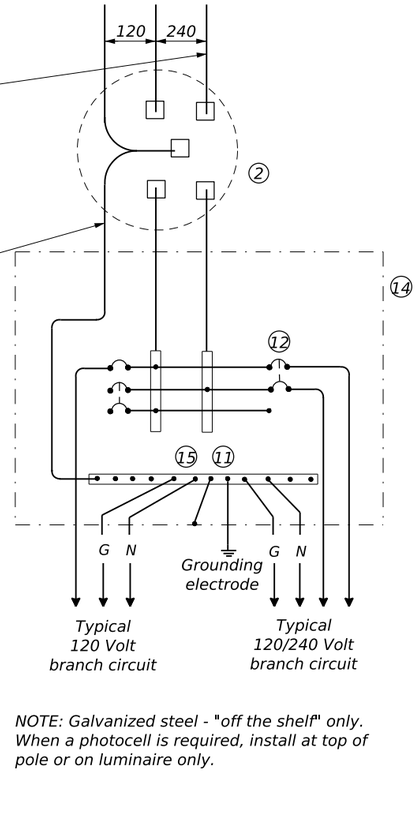

## TYPE C
**THREE WIRE**




## TYPE D - CUSTOM
**120/240 VOLTS - THREE WIRE**




## TYPE T
**120/240 VOLTS - THREE WIRE**




NOTE: Galvanized steel - "off the shelf" only. When a photocell is required, install at top of pole or on luminaire only.

| WIRING LEGEND | |
|---|---|
| ——— | Power Wiring |
| – – – – – | Control Wiring |
| ——N—— | Neutral Conductor |
| ——G—— | Equipment grounding conductor (always required) |

**SCHEMATIC NOTES:**

1. Safety Switch (when required)
2. Meter (when required - verify with electric utility provider)
3. Service Assembly Enclosure
4. Main Disconnect Breaker (See Electrical Service Data)
5. Circuit Breaker, 15 Amp (Control Circuit)
6. Auxiliary Enclosure
7. Control Station ("H-O-A" Switch)
8. Photo Electric Control (enclosure-mounted shown)
9. Lighting Contactor
10. Power Distribution Terminal Blocks
11. Neutral Bus
12. Branch Circuit Breaker (See Electrical Service Data)
13. Separate Circuit Breaker Panelboard
14. Load Center
15. Ground Bus

Texas Department of Transportation

Traffic Safety Division Standard

# ELECTRICAL DETAILS SERVICE SCHEMATICS AND NOTES

# ED(6)-25

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| FILE: ed6-25.dgn | | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT | | |
| ©TxDOT April 2025 | | CONT | SECT | JOB | HIGHWAY | | |
| REVISIONS | | | | | | | |
| 4-98 10-14<br>12-00 4-25<br>3-03 | | DIST | COUNTY | | SHEET NO. | | |
| | | | | | 99 | | |

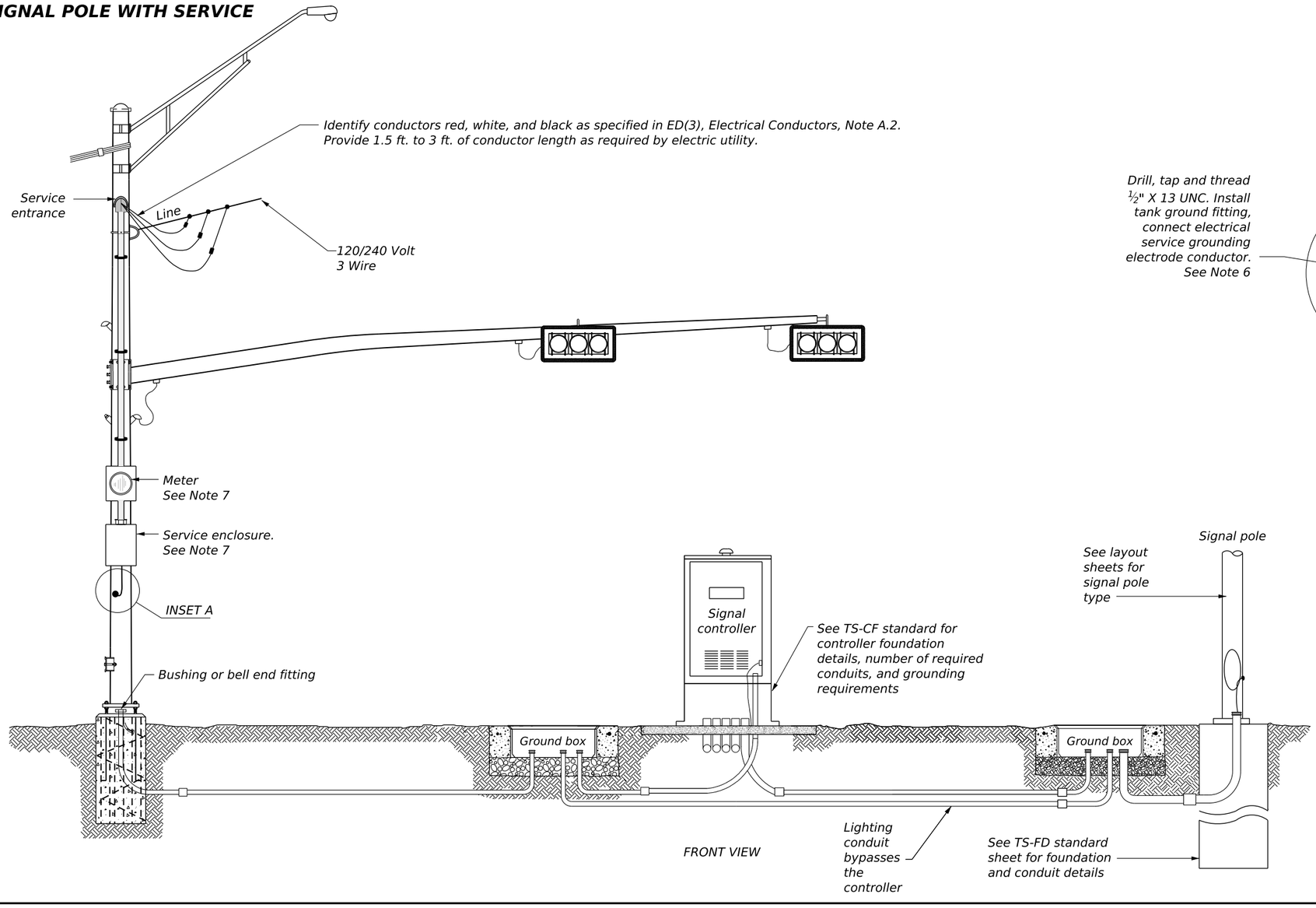
71F

DATE:
FILE:

## NOTES:

1. *Do not pass luminaire conductors through the signal controller cabinet.*
2. *Include an equipment grounding conductor in all conduits throughout the electrical system. Bond all exposed metal parts to the grounding conductor.*
3. *Provide roadway luminaires, when required, in accordance with Item 610, "Roadway Illumination Assemblies," except for performance testing of luminaires. Test installed roadway luminaires for proper operation as a part of the associated traffic signal system test.*
4. *Ground internally lighted street name (ILSN) signs to the pole with a 12 AWG green XHHW conductor.*
5. *Bond anchor bolts to rebar cage in two locations using #3 bars or 6 AWG stranded copper conductors. Use listed mechanical connectors rated for embedment in concrete. See TXDOT standard TS-FD for further details.*
6. *Drill and tap signal poles for ½ in. x 13 UNC tank ground fitting. Provide and install tank ground fitting 4 in. to 6 in. directly below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Connect the electrical service grounding electrode conductor to the tank ground fitting. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. See Inset A detail for further information. Size service entrance conduit and branch circuit conduit as shown in the plans.*
7. *Mount electrical service enclosure and meter to signal pole with stainless steel bands. Ensure bands are at least ¾ in. wide. Secure enclosures to bands using two-bolt brackets. Install brackets near top and bottom of each enclosure. Install properly sized stainless steel washers on each bolt in the enclosure. Band or drill and tap properly sized stand-off straps to signal pole for attaching conduit.*
8. *Lock all enclosures and bolt down all ground box covers before applying power to the signal installation.*
9. *Terminate conduits entering the top of enclosures with a watertight conduit hub or meter hub. Install a grounding bushing on all metal conduits not connected to conduit-sealing hub or threaded boss. Bond the grounding bushing to the ground bus with a bonding jumper. Seal all conduits entering enclosures with duct seal or expanding foam. Do not use silicone to seal conduit ends.*

## SIGNAL POLE WITH SERVICE




FRONT VIEW

**INSET A**




Texas Department of Transportation

Traffic Safety Division Standard

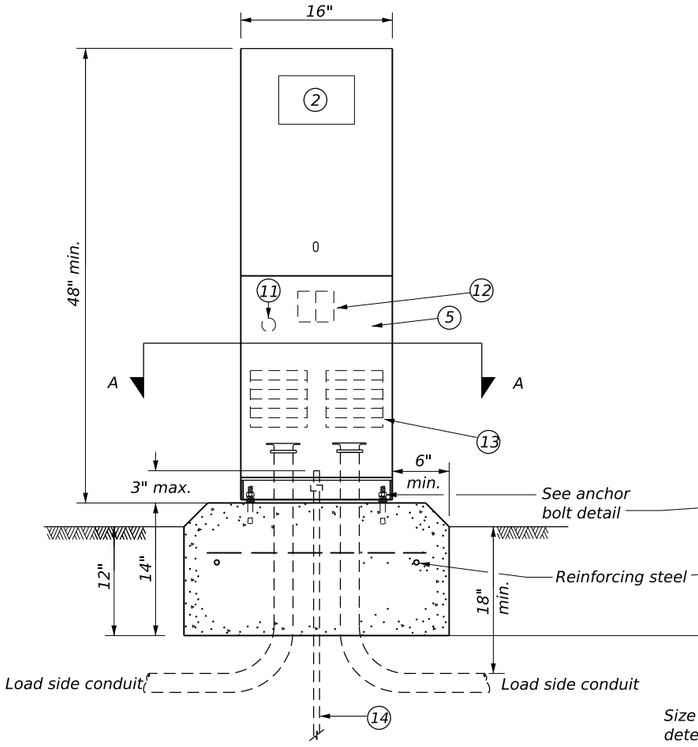
# ELECTRICAL DETAILS TYPICAL TRAFFIC SIGNAL SYSTEM DETAILS

# ED(8)-25

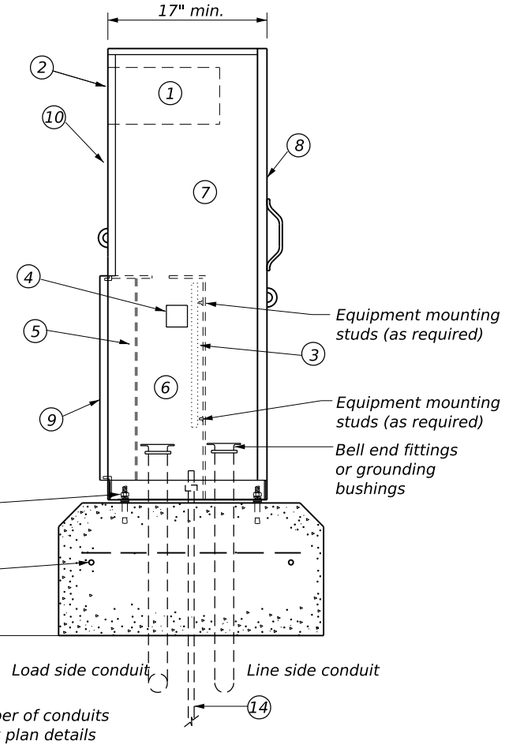
| FILE: ed8-25.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT April 2025 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS 1-92 3-03 4-25 4-98 5-03 12-00 10-14 | DIST | COUNTY | | SHEET NO. 100 |

71H

FRONT VIEW

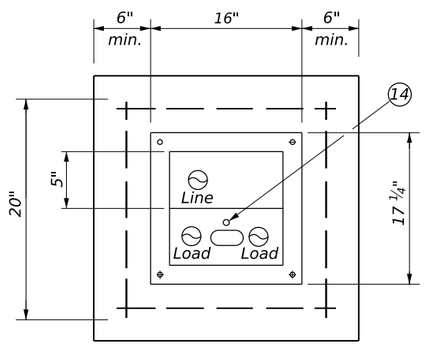



SIDE VIEW

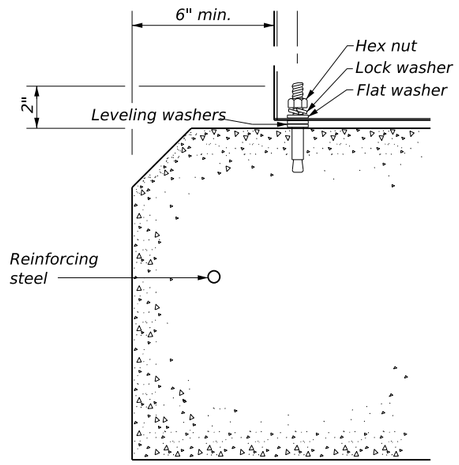



NOTE: Type D shown, Type A similar except that Type A shall have circuit breakers (CB) mounted on an equipment mounting panel. CB handles shall protrude through hinged deadfront trim.

SECTION A-A




**ANCHOR BOLT DETAIL**




***DETAIL CALLOUTS:***

1. Meter socket (when required)
2. Meter socket window (when required)
3. Equipment mounting panel
4. Photoelectric control window (when required)
5. Hinged deadfront trim
6. Load side conduit area
7. Line side conduit area
8. Utility access door, with handle
9. Pedestal door
10. Hinged meter access
11. Control station (H-O-A switch)
12. Main disconnect
13. Branch circuit breakers
14. Copper clad ground rod (in load side of cabinet) - 5/8" x 10'

***NOTES:***

1. *Manufacture pedestal electrical services in accordance with Departmental Material Specifications DMS-11080, "Electrical Services," DMS-11085, "Electrical Services-Pedestal (PS)" and Item 628, "Electrical Services." Provide pedestal electrical services listed on the Material Producer list (MPL) under "Roadway Illumination and Electrical Supplies," Item 628. Ensure all mounting hardware and installation details of services meet utility company specifications. Contact the local utility company for approval of pedestal details prior to installing the electrical pedestal service. Submit any changes required by the utility company prior to manufacturing the pedestal enclosure.*
2. *When a meter socket is required, provide a socket with a 100 amp (minimum) rating that complies with local utility requirements.*
3. *Provide concrete for pedestal service foundations in accordance with Item 656, "Foundations for Traffic Control Devices" except that concrete will not be paid for directly but is considered subsidiary to Item 628.*
4. *Provide #4 reinforcing steel for foundations in accordance with Item 440, "Reinforcement for Concrete."*
5. *Install ½ in. X 2 1/16 in. minimum length concrete single expansion type anchors for mounting pedestal enclosure to foundation. Match anchor location to mounting holes in each corner of enclosure. Secure each of the four corners of the pedestal enclosure to the anchors in the foundation with a ½ in. galvanized or stainless steel machine thread bolt, a properly sized locknut and a flat washer.*
6. *Finish top of concrete foundation in a professional and skillful manner. If leveling washers are used, ensure no more than ⅛ in. of gap exists at any corner. Do not exceed a maximum dip or rise in the foundation of ⅛ in. per foot. Ensure the top of the service enclosure is level front to back and side to side within ¼ in. Repair rocking or movement of the service enclosure at no additional cost to the Department.*
7. *Do not use liquidtight flexible metal conduit (LFMC) on pedestal services.*
8. *Ensure all elbows in the foundation are sized to meet utility provider's conduit requirements for underground conduit and feeders. PVC conduit extensions may be installed provided the ends of the rigid metal conduits are more than 2 in. below the top of the concrete foundation. Where extension conduits are metal, grounding bushings must be installed with a properly terminated bonding jumper.*

Texas Department of Transportation

Traffic Safety Division Standard

# ELECTRICAL DETAILS PEDESTAL SERVICE TYPE PS

# ED(9)-25

| FILE: | ed9-25.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|---|
| ©TxDOT | April 2025 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | | |
| 4-98 5-03<br>12-00 10-14<br>3-03 4-25 | | DIST | COUNTY | | SHEET NO. |
| | | | | | 101 |

71J

DATE:
FILE:

DATE:
FILE:

## GENERAL NOTES:

1. For overhead services, install a one point rack or eye bolt bracket 6 in. to 12 in. below the weatherhead as a service drop anchoring point for the electric utility. Attaching bolt must pass through the pole and use a nut, washer, and locking washer on the other side. Self-tapping screws or lag bolts are not permitted.
2. Identify service entrance conductors red, white, and black as specified in ED(3), Electrical Conductors, Note A.2. Provide 1.5 ft. to 3 ft. of conductor length as required by electric utility.
3. Install Type A and Type C services so that the center of the grip of the service's external disconnect handle in the on position is no more than 6 ft. 7 in. above grade.

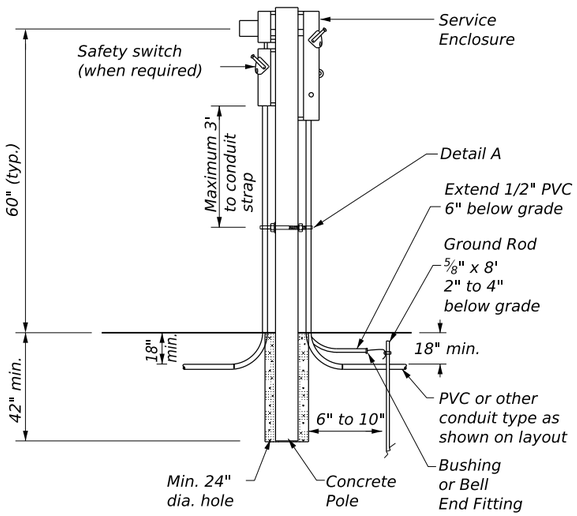
### GRANITE CONCRETE (GC) & OTHER CONCRETE (OC) SERVICE NOTES

1. Ensure electrical service support structures bid as type Granite Concrete (GC) or Other Concrete (OC) meet the requirements of DMS-11080, "Electrical Services."
2. Provide prestressed concrete poles suitable for direct embedment into the ground without special foundations.
3. Verify poles are marked as required on DMS-11080. Location of marking should be approximately 4 ft. above final grade. Use the two-point pickup locations when handling pole in horizontal position, and one-point pickup location for use in raising the pole to a vertical position. These marks are small but conspicuous.
4. Embed poles 42 in. or 10% of the length plus 2 ft., whichever is greater.
5. Furnish and install galvanized or stainless steel channel strut 1 ½ in. or 1 ⅝ in. wide by 1 in. up to 3 ¾ in. deep (Unistrut, Kindorf, B-line or equal). Attach channel strut with stainless steel concrete anchors (max. 1 in. depth), square U-bolts or back to back channel strut with long bolts, or other secure mounting as approved by the Engineer. Ensure bolts are galvanized in accordance with ASTM A153. Do not stack channel struts.

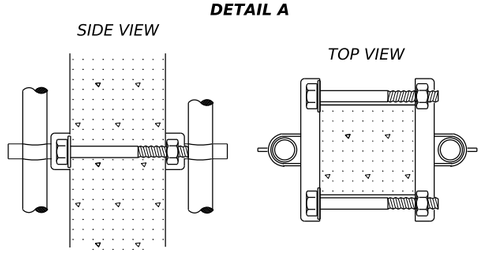
### TIMBER POLE (TP) SERVICE NOTES

1. Ensure electrical service support is a class 5 treated timber pole as per Item 627, "Treated Timber Poles." Embed timber pole to depth required in Item 627.
2. Gain pole as required to provide flat surface for each channel. Gain timber pole to ⅝ in. max. depth and 1 ⅞ in. max. height. Gain pole in a professional and skillful manner.
3. Mount meter and service equipment on stainless steel or galvanized channel (Unistrut, Kindorf, or equal). Provide channel sized 1 in. to 3 ¾ in. maximum depth, and 1 ½ in. to 1 ⅝ in. maximum width. File smooth the cut ends of galvanized channel and paint with zinc rich paint before installing on pole. Secure each channel section to timber pole with two galvanized or stainless steel lag bolts, ¼ in. minimum diameter by 1 ½ in. minimum length. Use a galvanized or stainless steel flat washer on each lag bolt. Do not stack channel.
4. When excess length must be trimmed from poles, trim from the top end only.
5. Install point of attachment below weatherhead.

## TYPES GC(U) & OC(U)
### UNDERGROUND SERVICE

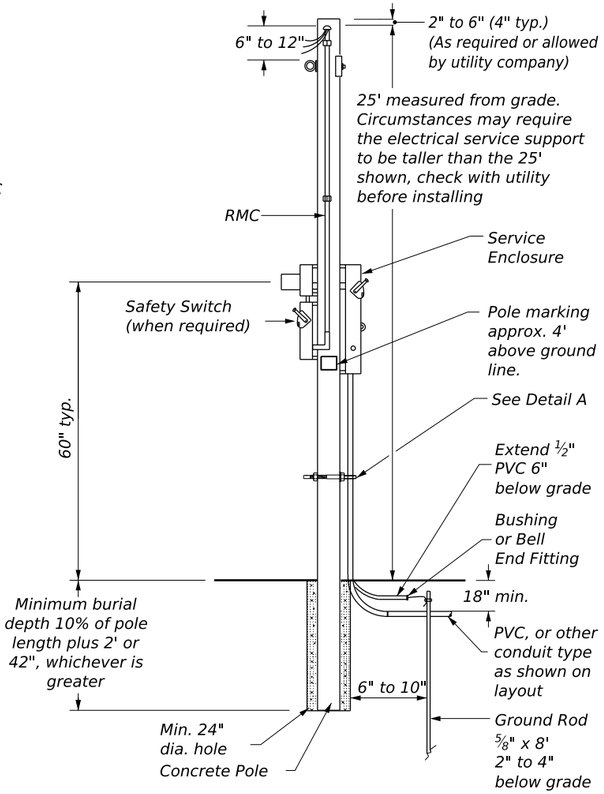



**DETAIL A**

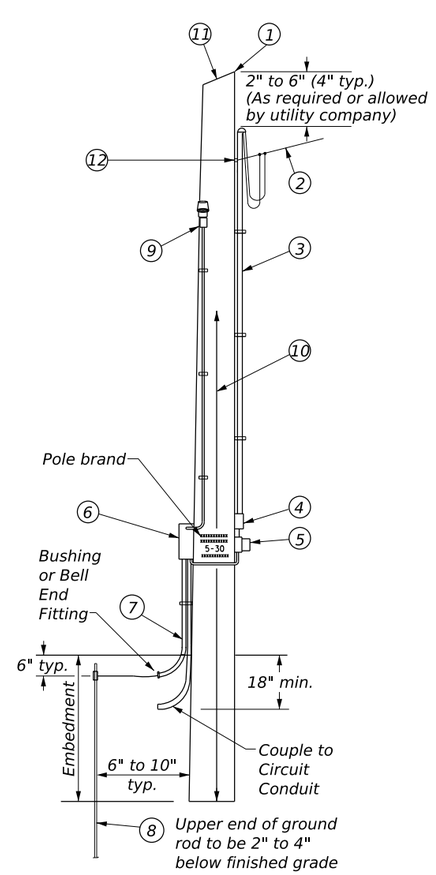



See GC & OC Note 5. Before installing channel that has been cut, file sharp edges and paint with zinc-rich paint. Ensure there is no paint splatter on the pole.

## TYPES GC(O) & OC(O)
### OVERHEAD SERVICE




## TYPE TP(O)
### OVERHEAD SERVICE




### DETAIL CALLOUTS:

1. Class 5 pole, height as required
2. Service drop from utility company (attached below weatherhead)
3. Service conduit (RMC) and service entrance conductors - one red, one black, one white (see Electrical Service Data)
4. Safety switch (when required)
5. Meter (when required)
6. Service enclosure
7. 6 AWG solid bare copper grounding electrode conductor in ½ in. PVC to ground rod - extend conduit 6 in. underground.
8. ⅝ in. x 8 ft. copper clad ground rod - drive ground rod to a depth of 2 in. to 4 in. below grade.
9. See pole-top mounted photocell detail on ED(5).
10. When required by the serving utility provide bare 6 AWG copper conductor. Run wire from pole top to butt wrap or copper butt plate. Protect conductor with non-conductive material to a height of 8 ft. above finished grade.
11. When required by utility, cut top of pole at an angle to enhance rain run off.
12. Point of attachment (typ.)

Texas Department of Transportation

Traffic Safety Division Standard

# ELECTRICAL DETAILS SERVICE SUPPORT TYPES GC, OC, & TP

# ED(10)-25

| FILE: ed10-25.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| © TxDOT April 2025 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS 4-98 10-14 12-00 4-25 3-03 | DIST | COUNTY | | SHEET NO. 102 |

71K

DATE:
FILE:

## NOTES:

1. Provide duct cable in accordance with Departmental Material Specification DMS-11060, "Duct Cable" and Special Specification 6000, "Duct Cable." Provide duct cable as listed on the Material Producer List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Special Specification 6000 - Duct Cable. Provide and install duct cable according to NEC Article 354, Nonmetallic Underground Conduit with Conductors (NUCC).

2. Provide High-Density Polyethylene (HDPE) conduit in accordance with DMS-11030 and Item 618, "Conduit." Provide HDPE as listed on the MPL on the Department web site under "Roadway Illumination and Electrical Supplies," Item 618.

3. Supply duct cable with a minimum 2 in. diameter, unless otherwise shown in the plans. Provide duct cable and HDPE conduit as shown by descriptive code or on the plans. Bend duct cable and HDPE conduit as recommended by the manufacturer, with a minimum bending radius of 26 in. for 2 in. duct. Follow manufacturers' recommendations when handling duct cable and HDPE conduit reels and during installation of duct cable and HDPE conduit.

4. Do not splice conductors within duct cable or HDPE conduit. Couple duct cable and HDPE entering a ground box or foundation to a PVC elbow. When galvanized steel rigid metal conduit (RMC) elbows are called for in the plans and any portion of the RMC elbow is buried less than 18 in. from possible contact, ground the RMC elbow.

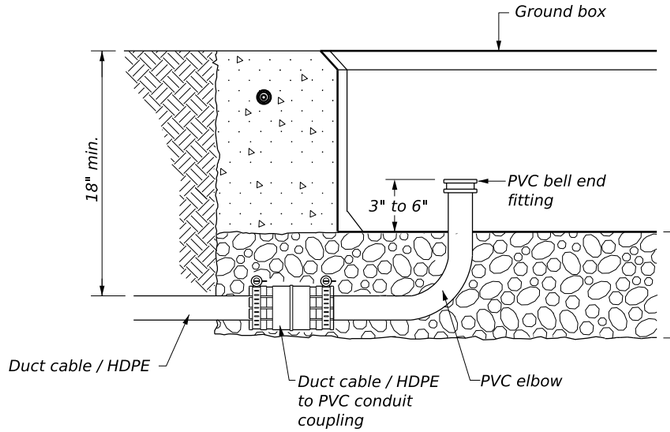
5. When conduit casing is called for in the plans, extend duct cable or HDPE conduit through the conduit casing in one continuous length without connection to the casing.

6. Seal the ends of duct cable or HDPE conduit with duct seal, expandable foam, or other approved method after installation.

7. Provide minimum cover of 24 in. under roadways, 18 in. in other locations, or as shown on the plans.

8. Furnish and install listed fittings to couple duct cable or HDPE conduit to other types of conduit. Duct cable and HDPE conduit may be field-threaded and spliced with PVC or RMC threaded couplings; connected with listed tie-wrap fittings; connected using listed couplings made of HDPE with stainless steel external banding clamps and locking rings; connected with approved electrofusion conduit couplings; or connected using an approved chemical fusion method using an epoxy or adhesive specifically designed for HDPE couplings and connectors. Install connectors in accordance with manufacturer's instructions. Do not use PVC glue on HDPE. Do not use water pipe fittings, or connect conduit with heat shrink tubing.

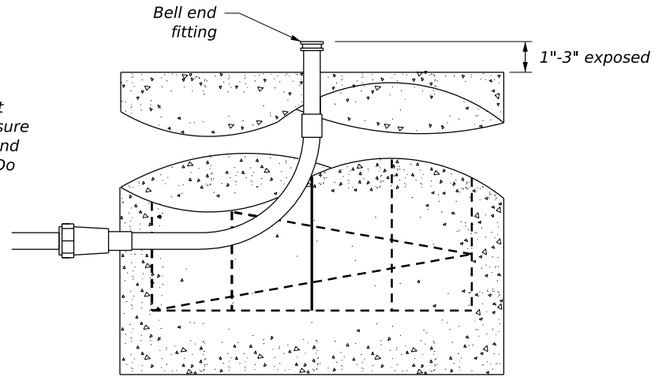
## DUCT CABLE/HDPE AT GROUND BOX




When the upper end of an RMC elbow does not enter the ground box,it may be extended with a SCH-40 PVC conduit nipple and bell end, provided there is a minimum of 18 in. of cover over all parts of the elbow. If not, a rigid extension and ground bushing is required.

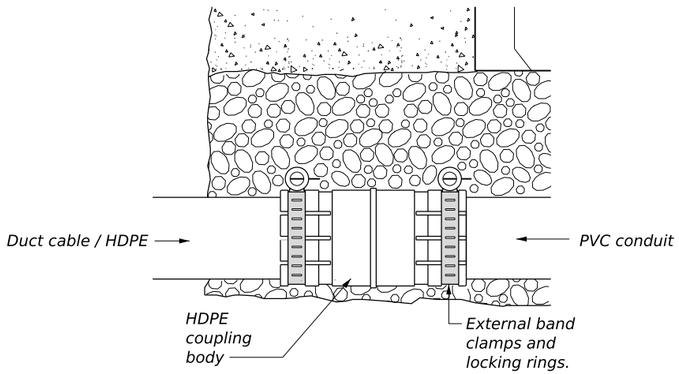
Bed of aggregate is to be a minimum of 9 in. deep, placed under and not in the ground box. Ensure the aggregate does not encroach into the interior of the box.

## DUCT CABLE / HDPE AT FOUNDATION

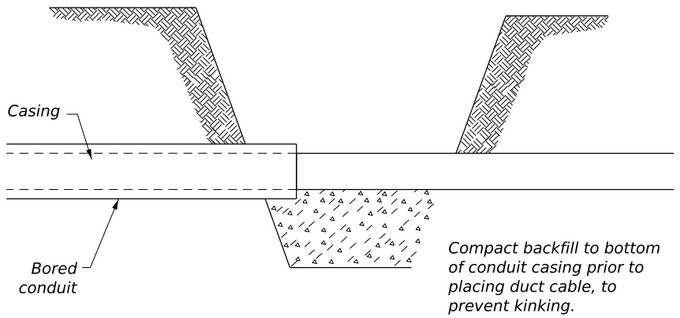



Couple duct to conduit elbow at foundations. Ensure conductors extend into pole base. Do not splice conductors in conduit.

## DUCT CABLE / HDPE TO PVC




## BORE PIT DETAIL




Compact backfill to bottom of conduit casing prior to placing duct cable, to prevent kinking.

Texas Department of Transportation

Traffic Safety Division Standard

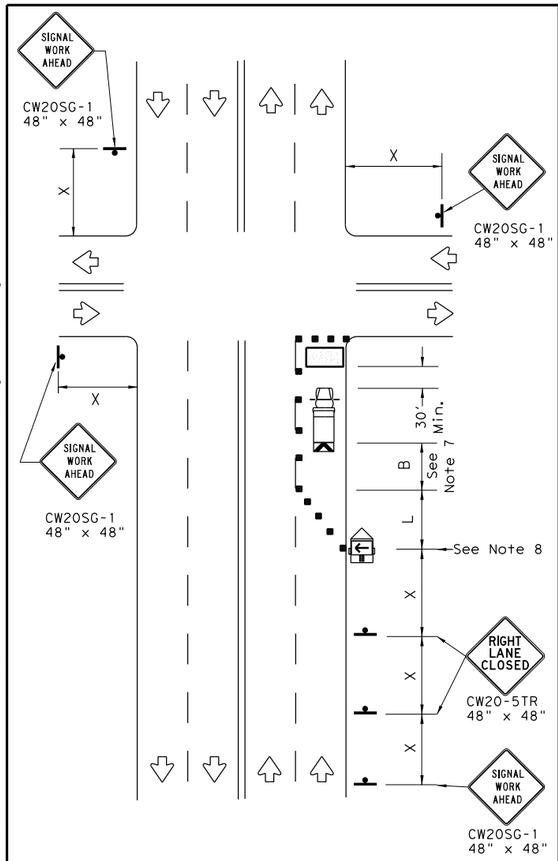
# ELECTRICAL DETAILS DUCT CABLE/ HDPE CONDUIT

# ED(11)-25

| FILE: ed11-25.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT April 2025 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| 4-98 10-14<br>12-00 4-25<br>3-03 | DIST | COUNTY | | SHEET NO. |
| | | | | 103 |

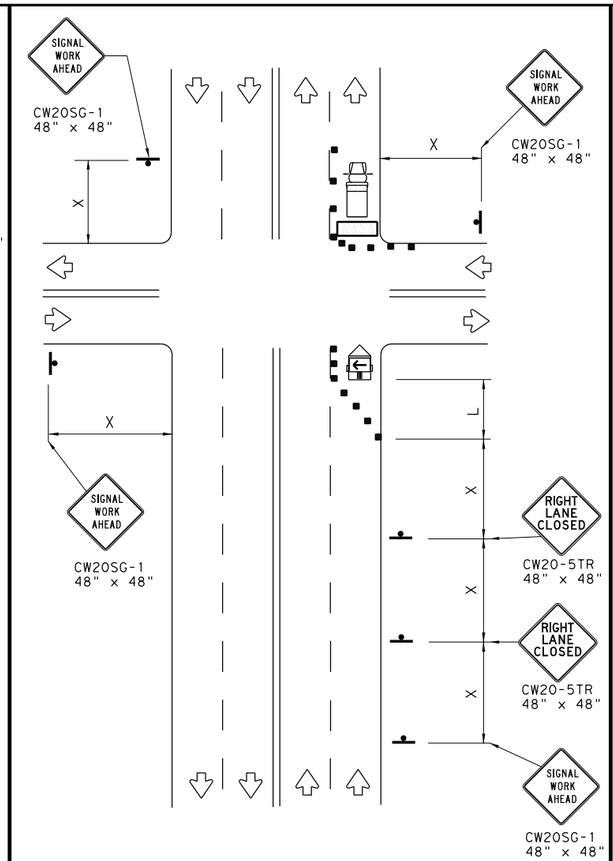
71L

DATE:
FILE:



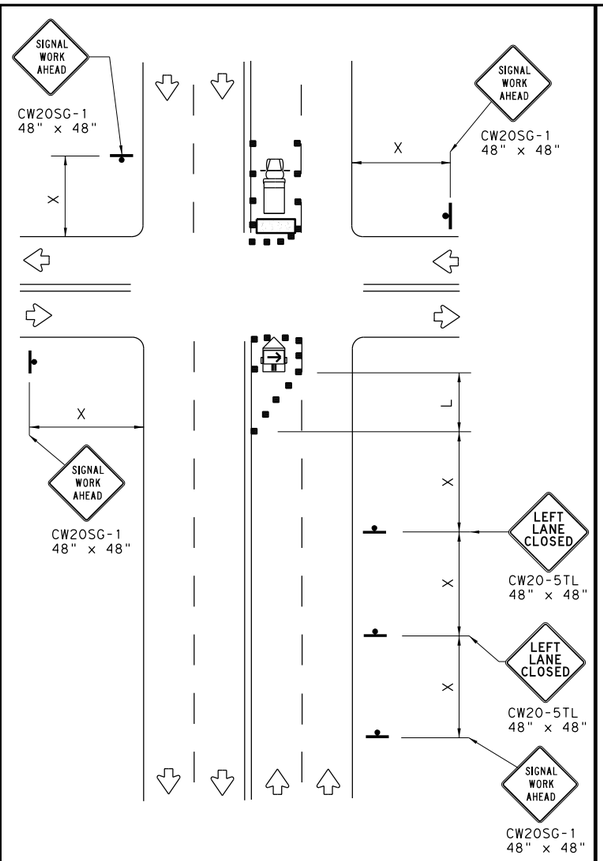

## NEAR SIDE LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



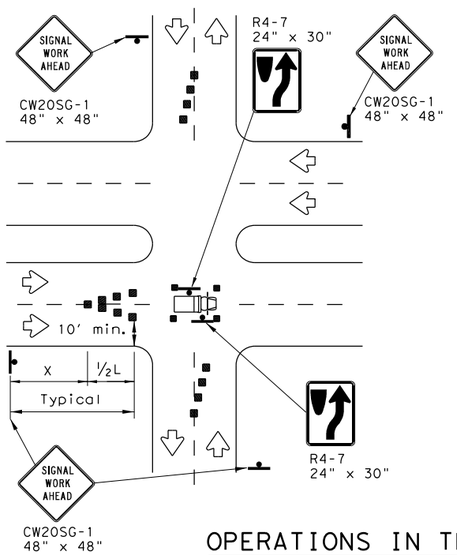

## FAR SIDE RIGHT LANE CLOSURE

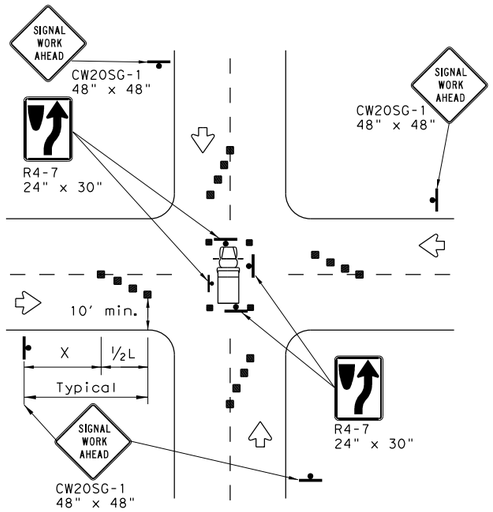
SHORT DURATION OR SHORT TERM STATIONARY




## FAR SIDE LEFT LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY




## OPERATIONS IN THE INTERSECTION

SHORT DURATION

## GENERAL NOTES

1. The minimum size channelizing device is the 28" cone. 42" Two-piece cones, drums, vertical panels or barricades will be required when the device must be left unattended at night.
2. Obstructions or hazards at the work area shall be clearly marked and delineated at all times.
3. Flaggers and Flagger Symbol (CW20-7) signs may be required according to field conditions.
4. Vehicles parked in roadway shall be equipped with at least two high intensity rotating, flashing, oscillating or strobe type lights.
5. High level warning devices (flag trees) may be used at corners of the vehicle.
6. When work operations are performed on existing signals, the signals may be placed in flashing red mode when approved by the engineer. If existing signals do not have power, All-Way Stop (R1-1 and R1-3P) signs may be implemented when approved by the engineer.
7. For Short-Term Stationary work the buffer space "B" from the above table should be used if field conditions permit. For Short Duration (less than 1 hour) any buffer space provided will enhance the safety of the setup.
8. The arrow board at this location may be omitted for Short Duration work if the work vehicle has an arrow board in operation. As an option, the arrow board may be placed at the end of the taper in the closed lane if space is not available at the beginning of the taper.
9. Signs and devices for the NEAR SIDE LANE CLOSURE may be altered for a left lane closure by using a LEFT LANE CLOSED (CW20-5TL) and adding channelizing devices on the centerline to protect the work space from opposing traffic.

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

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

* Conventional Roads Only

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

WORKERS IN BUCKET TRUCKS SHALL NOT WORK ABOVE OPEN LANES OF TRAFFIC.



Texas Department of Transportation

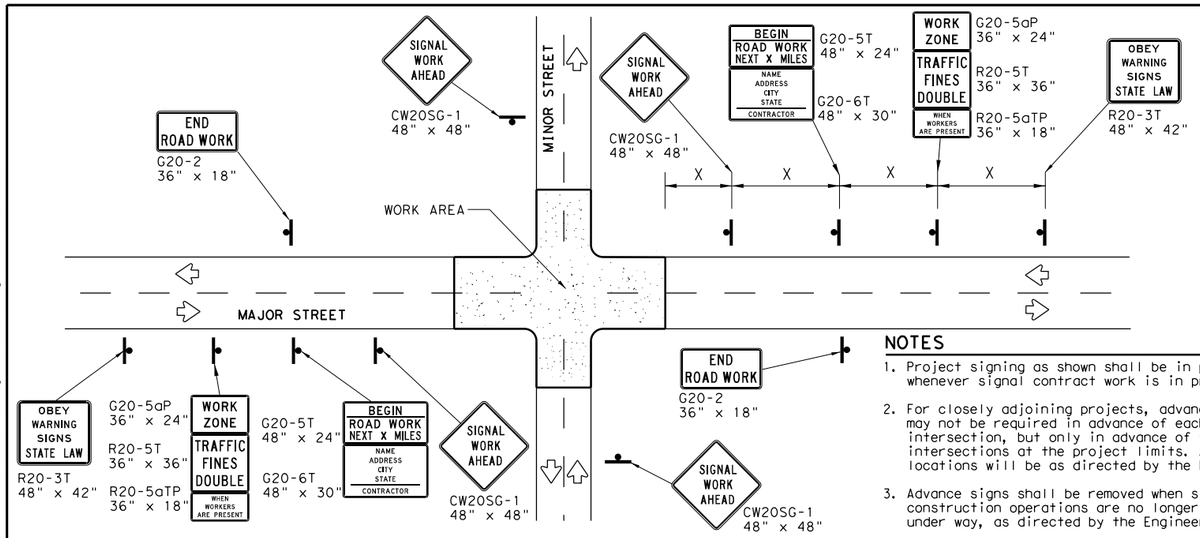
Traffic Operations Division Standard

# TRAFFIC SIGNAL WORK TYPICAL DETAILS

## WZ(BTS-1)-13

| FILE: wzbts-13.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| © TxDOT April 1992 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| 2-98 10-99 7-13 | DIST | COUNTY | | SHEET NO. |
| 4-98 3-03 | | | | 104 |

DATE:
FILE:




# TYPICAL ADVANCE SIGNAL PROJECT SIGNING

FOR LONG TERM and INTERMEDIATE-TERM STATIONARY WORK OPERATIONS

## NOTES

1. Project signing as shown shall be in place whenever signal contract work is in progress.
2. For closely adjoining projects, advance signing may not be required in advance of each intersection, but only in advance of the intersections at the project limits. Actual locations will be as directed by the Engineer.
3. Advance signs shall be removed when signal construction operations are no longer under way, as directed by the Engineer.
4. Warning sign spacing shown is typical for both directions.
5. See the Table on sheet 1 of 2 for Typical warning sign spacing.

## GENERAL NOTES FOR WORK ZONE SIGNS

1. Signs shall be installed and maintained in a straight and plumb condition.
2. Wooden sign posts shall be painted white.
3. Barricades shall NOT be used as sign supports.
4. Nails shall NOT be used to attach signs to any support.
5. All signs shall be installed in accordance with the plans or as directed by the Engineer.
6. The Contractor shall furnish the sign design shown in the plans or in the "Standard Highway Sign Designs for Texas" (SHSD).
7. The Contractor shall furnish sign supports and substrates listed in the "Compliant Work Zone Traffic Control Device List" (CWZTCD), installed as per the manufacturer's recommendations.
8. Temporary signs that have damaged or cracked substrates and/or damaged or marred reflective sheeting shall be replaced as directed by the Engineer.
9. 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".
10. Damaged wood posts shall be replaced. Splicing wood posts will not be allowed.

## DURATION OF WORK

1. Work zone durations are defined in Part 6, Section 6G.02 of the Texas Manual on Uniform Traffic Control Devices (TMUTCD).

## SIGN MOUNTING HEIGHT

1. Sign height of Long-term/Intermediate-term warning signs shall be as shown on Figure 6F-1 of the TMUTCD.
2. Sign height of Short-term/Short Duration warning signs shall be as shown on Figure 6F-2 of the TMUTCD.
3. Regulatory signs shall be mounted at least 7 feet, but not more than 9 feet, above the paved surface regardless of work duration.

## REMOVING OR COVERING

1. When sign messages may be confusing or do not apply, the signs shall be removed or completely covered, unless otherwise approved by the Engineer.
2. 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. Burlap, or heavy materials such as plywood or aluminum shall not be used to cover signs.
3. Duct tape or other adhesive material shall NOT be affixed to a sign face.
4. Signs and anchor stubs shall be removed and holes back filled upon completion of the work.

## REFLECTIVE SHEETING

1. All signs shall be retroreflective and constructed of sheeting meeting the requirements of the DMS and color usage table shown on this sheet.

## SIGN SUPPORT WEIGHTS

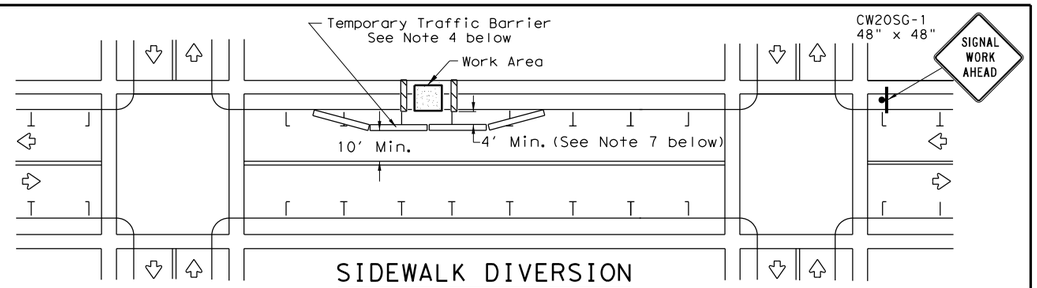
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support 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 fastners. 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.

| LEGEND | |
|---|---|
| | Sign |
| | Channelizing Devices |
| | Type 3 Barricade |

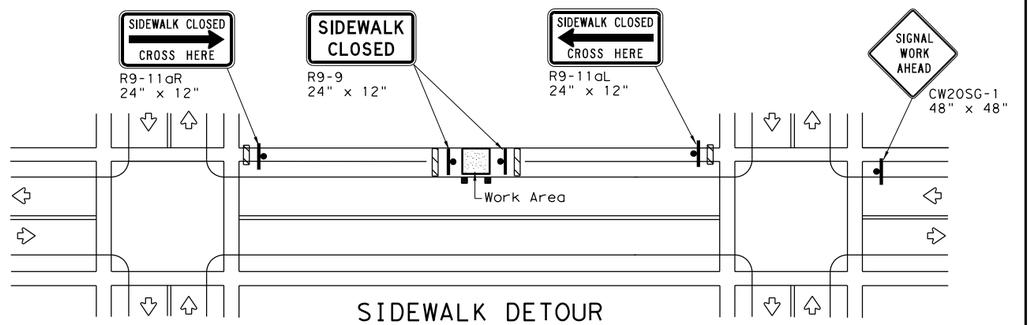
| DEPARTMENTAL MATERIAL SPECIFICATIONS | |
|---|---|
| SIGN FACE MATERIALS | DMS-8300 |
| FLEXIBLE ROLL-UP REFLECTIVE SIGNS | DMS-8310 |

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

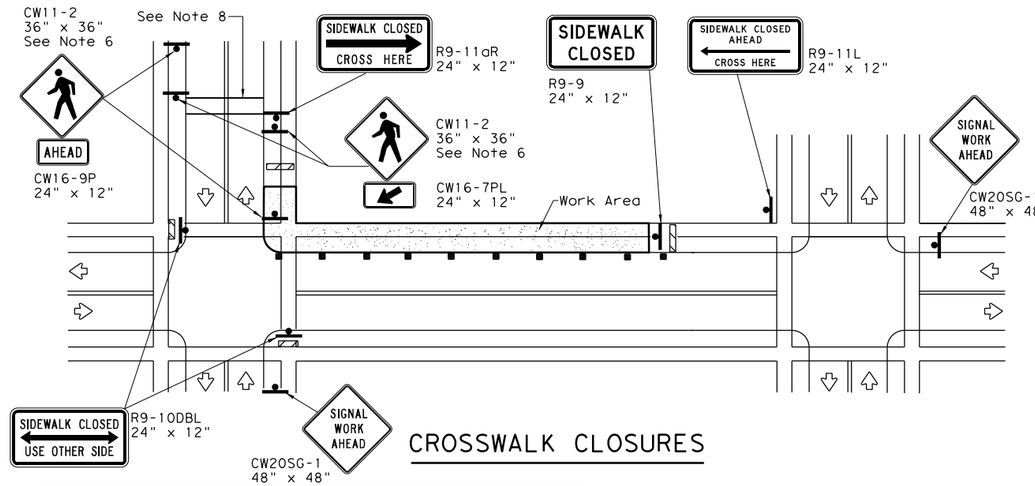
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm




## SIDEWALK DIVERSION




## SIDEWALK DETOUR




## CROSSWALK CLOSURES

## PEDESTRIAN CONTROL

1. Holes, trenches or other hazards shall be adequately protected by covering, delineating or surrounding the hazard with orange plastic pedestrian fencing or longitudinal channelizing devices, or as directed by the Engineer.
2. "CROSSWALK CLOSURES" as detailed above will require the Engineer's approval prior to installation.
3. R9 series signs shown may be placed on supports detailed on the BC standards or CWZTCD list, or when fabricated from approved lightweight plastic substrates, they may be mounted on top of a plastic drum at or near the location shown.
4. For speeds less than 45 mph longitudinal channelizing devices may be used instead of traffic barriers when approved by the Engineer. Attenuation of blunt ends and installation of water filled devices shall be as per BC(9) and manufacturer's recommendations.
5. Location of devices are for general guidance. Actual device spacing and location must be field adjusted to meet actual conditions.
6. Where pedestrians with visual disabilities normally use the closed sidewalk Detectable Pedestrian Barricades should be used instead of the Type 3 Barricades shown.
7. The width of existing sidewalk should be maintained if practical.
8. Pavement markings for mid-block crosswalks shall be paid for under the appropriate bid items.
9. When crosswalks or other pedestrian facilities are closed or relocated, temporary facilities shall be detectable and shall include accessibility features consistent with the features present in the existing pedestrian facility.



Texas Department of Transportation

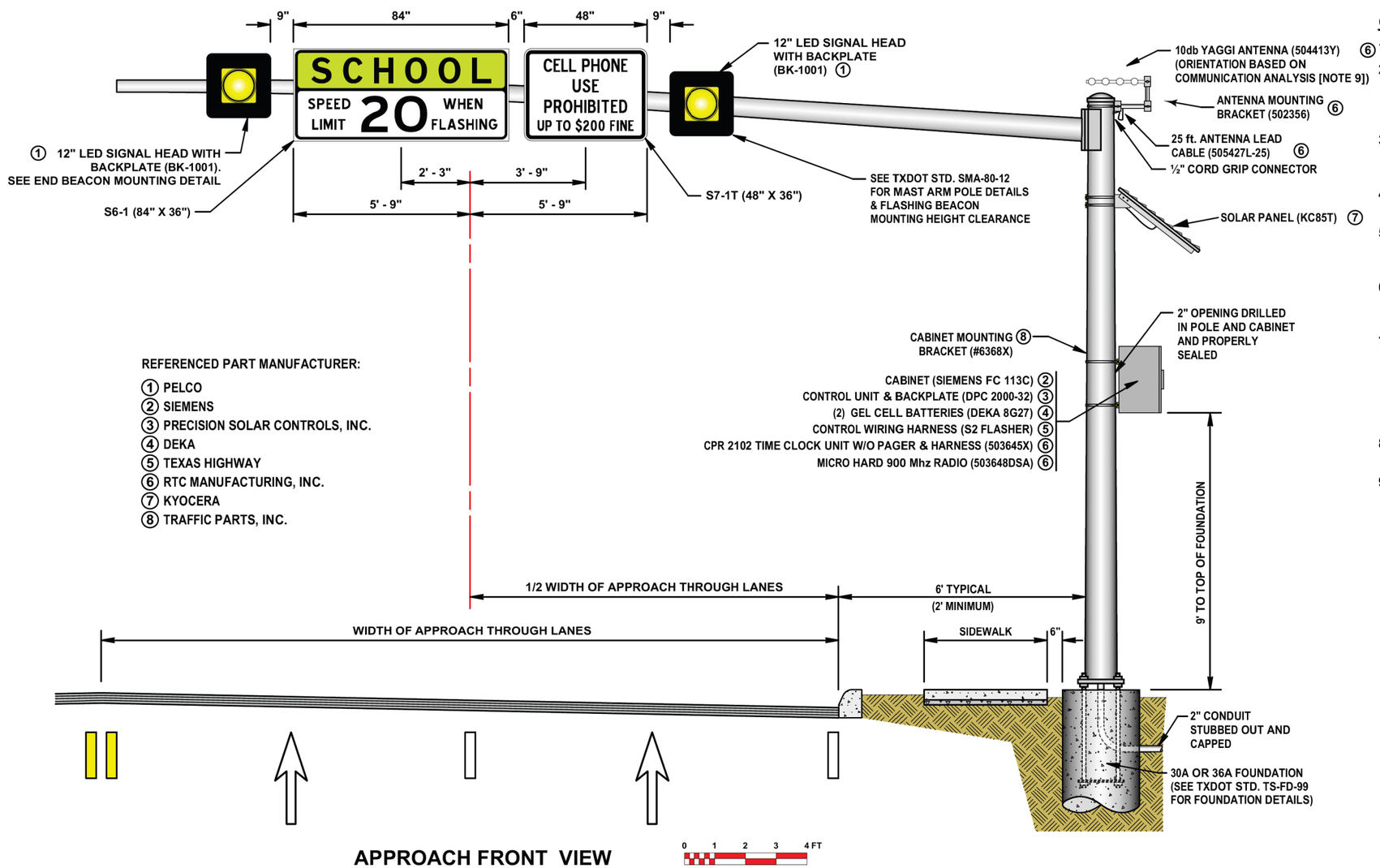
Traffic Operations Division Standard

# TRAFFIC SIGNAL WORK BARRICADES AND SIGNS

# WZ(BTS-2)-13

| FILE: wzbts-13.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| ©TxDOT April 1992 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS | | | | |
| 2-98 10-99 7-13 | DIST | COUNTY | | SHEET NO. |
| 4-98 3-03 | | | | 105 |

115



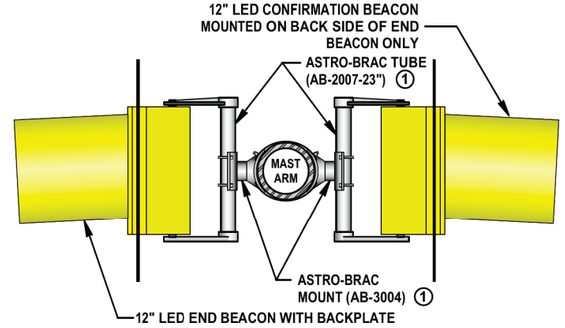

APPROACH FRONT VIEW

REFERENCED PART MANUFACTURER:

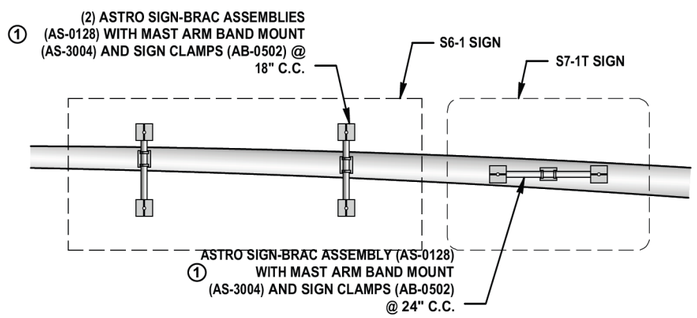
① PELCO
② SIEMENS
③ PRECISION SOLAR CONTROLS, INC.
④ DEKA
⑤ TEXAS HIGHWAY
⑥ RTC MANUFACTURING, INC.
⑦ KYOCERA
⑧ TRAFFIC PARTS, INC.

## GENERAL NOTES

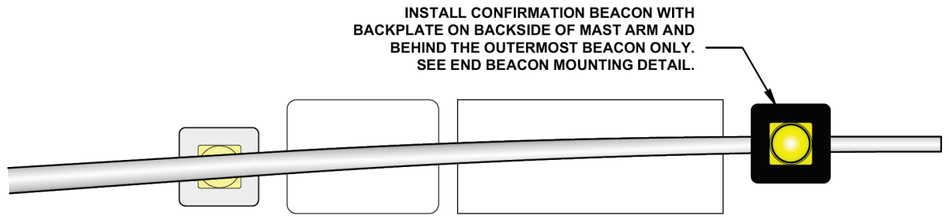
1. SPEED LIMIT LEGEND SHALL BE AS SPECIFIED BY THE ENGINEER.
2. MAST ARM LENGTH SHALL BE LONG ENOUGH TO PROVIDE SIGN PLACEMENT AND BEACON SPACING AS INDICATED. FOUNDATION WIDTH AND DEPTH WILL DEPEND ON MAST ARM LENGTH USED. REFER TO SHEET TS-FD-99 FOR FOUNDATION INFORMATION.
3. A CONFIRMATION BEACON WITH BACKPLATE SHALL BE PROVIDED ON THE BACK SIDE OF THE MAST ARM OPPOSITE THE OUTERMOST FRONT FACING BEACON.
4. SOLAR PANEL SHALL BE ORIENTED TO PROVIDE THE MAXIMUM EXPOSURE TO THE SUN.
5. MANUFACTER'S NAMES AND PRODUCT NUMBERS ARE PROVIDED FOR REFERENCE ONLY. EQUIVALENT PRODUCTS MAY BE USED WITH APPROVAL FROM THE ENGINEER.
6. MAST ARM SCHOOL FLASHER TO BE USED FOR MULTI-LANE ROADWAYS AND ROADWAYS WITH POSTED SPEEDS GREATER THAN 35 MPH. FOR OTHER LOCATIONS THE ROADSIDE FLASHER ASSEMBLY SHOULD BE USED.
7. THE WIRING FOR THE BEACONS SHALL BE A THHN/THWN #16 AWG STRANDED CONDUCTOR WITH THE FOLLOWING COLOR ASSIGNMENTS:
   LAMP + = WHITE
   LAMP 1 = BLUE (LEFT FRONT BEACON)
   LAMP 2 = YELLOW (RIGHT FRONT BEACON)
   LAMP 3 = GREY (REAR BEACON)
8. THE CONTRACTOR SHALL COIL AN EXTRA 12 INCHES OF WIRING AT THE BEACONS AND THE CABINET
9. THE CONTRACTOR SHALL FURNISH A FULLY OPERATIONAL SCHOOL FLASHER COMMUNICATIONS SYSTEM. ADDITIONAL COMMUNICATIONS REPEATER STATIONS AND/OR MASTER RADIOS MAY BE REQUIRED IN ORDER TO ENABLE COMMUNICATIONS FROM THE SCHOOL FLASHER LOCATION BACK TO THE TRAFFIC MANAGEMENT CENTER. A COMMUNICATIONS ANALYSIS SHOULD BE COMPLETED BY CONSOLIDATED TRAFFIC CONTROLS, INC. ( (817) 265-3421) TO DETERMINE WHICH ADDITIONAL COMPONENTS ARE REQUIRED.




END BEACON MOUNTING DETAILS




FRONT VIEW
SIGN MOUNTING
DETAIL




REAR VIEW
CONFIRMATION BEACON DETAIL

CITY OF SAN ANTONIO
TRANSPORTATION AND CAPITAL IMPROVEMENTS
TRAFFIC MANAGEMENT

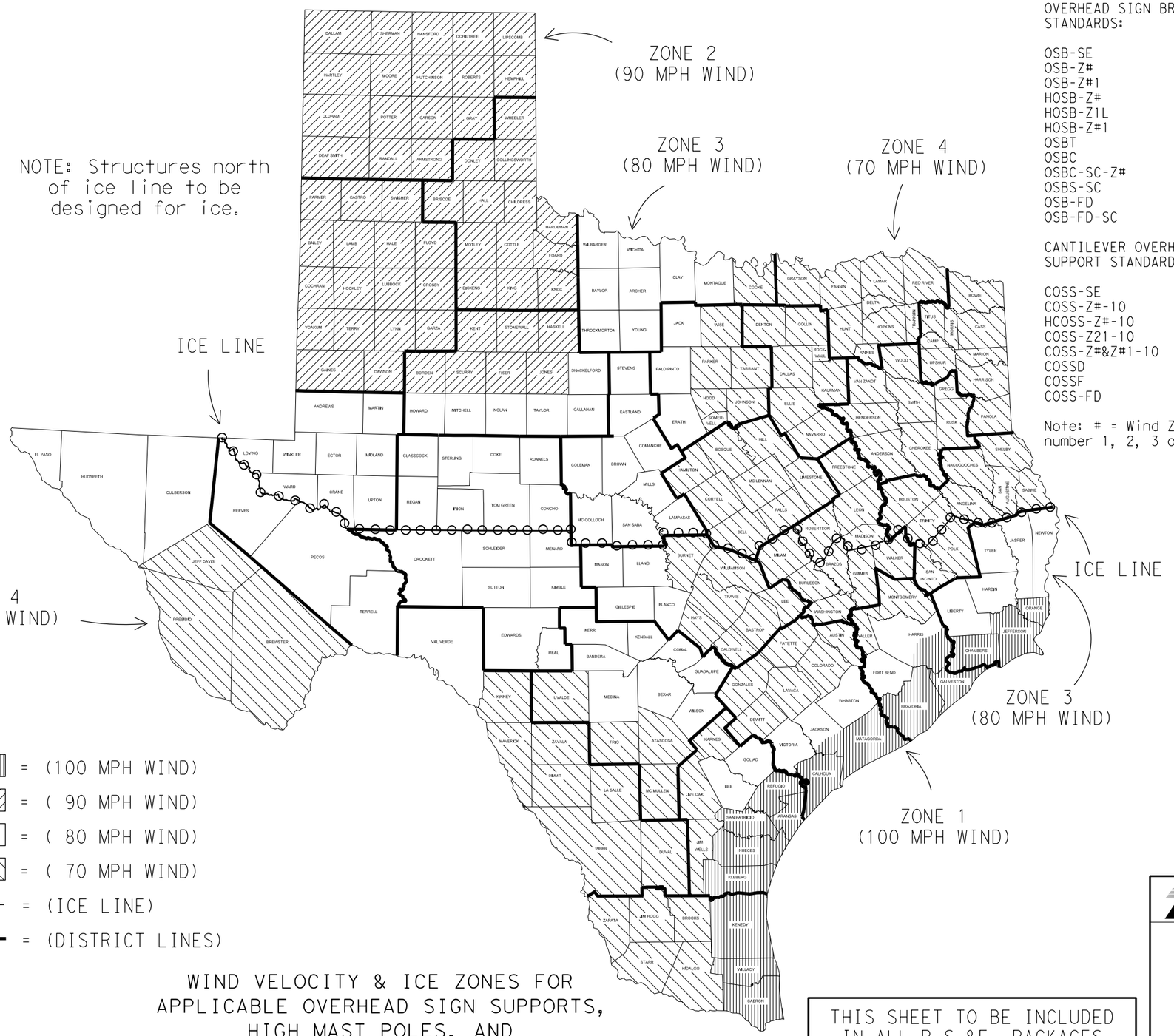
TRAFFIC SIGNAL STANDARDS

# MAST ARM MOUNTED SOLAR POWERED SCHOOL FLASHER ASSEMBLY

| | | | |
|---|---|---|---|
| DRWN: MSJ | APVD: DPW | DATE: 10/08/07 | TS-MASF-14 (SHEET 1 OF 1) |
| RVSD: MAB | APVD: DPW | DATE: 04/04/12 | |
| RVSD: MSJ | APVD: TCI | DATE: 09/22/14 | 106 |

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:




LEGEND

ZONE 1 - = (100 MPH WIND)
ZONE 2 - = ( 90 MPH WIND)
ZONE 3 - = ( 80 MPH WIND)
ZONE 4 - = ( 70 MPH WIND)
= (ICE LINE)
= (DISTRICT LINES)

## APPLICABLE STANDARDS SHEETS

OVERHEAD SIGN BRIDGE STANDARDS:

OSB-SE
OSB-Z#
OSB-Z#1
HOSB-Z#
HOSB-Z1L
HOSB-Z#1
OSBT
OSBC
OSBC-SC-Z#
OSBS-SC
OSB-FD
OSB-FD-SC

CANTILEVER OVERHEAD SIGN SUPPORT STANDARDS:

COSS-SE
COSS-Z#-10
HCOSS-Z#-10
COSS-Z21-10
COSS-Z#&Z#1-10
COSSD
COSSF
COSS-FD

Note: # = Wind Zone number 1, 2, 3 or 4

HIGH MAST ILLUMINATION POLE STANDARDS:

HMIP-98
HMIF-98

WALKWAYS AND BRACKETS STANDARDS:

SWW
SB(SWL-1)

TRAFFIC SIGNAL POLE STANDARDS:

SP-80
SP-100
SMA-80
SMA-100
DMA-80
DMA-100
MA-C
MAC(ILSN)
MAD-D
TS-FD
LUM-A
CFA
LMA
TS-C
MA-DPD

FOR HARRIS CO. ONLY
Zone line is just North of US 90, around on the North, West and South sides of IH 610 and down the West side of SH 288.

FOR JACKSON CO. ONLY
Zone line is just North of SH 616.

## WIND VELOCITY & ICE ZONES FOR APPLICABLE OVERHEAD SIGN SUPPORTS, HIGH MAST POLES, AND TRAFFIC SIGNAL POLES

Based on 50 Year Mean Recurrence Interval of Fastest Mile Wind Velocity at 33 feet height.

THIS SHEET TO BE INCLUDED IN ALL P.S.&E. PACKAGES CONTAINING ONE OR MORE OF THE APPLICABLE STANDARD SHEETS LISTED HEREON

Texas Department of Transportation

Traffic Operations Division Standard

# WIND VELOCITY AND ICE ZONES

## WV & IZ-14

| FILE: windice.dgn | DN: TxDOT | CK: TxDOT | DW: TxDOT | CK: TxDOT |
|---|---|---|---|---|
| © TxDOT April 1996 | CONT | SECT | JOB | HIGHWAY |
| REVISIONS 8-14-Added list of applicable standards, restricting use to structures designed for Fastest Mile wind speeds. | DIST | COUNTY | | SHEET NO. 107 |

## STORMWATER POLLUTION PREVENTION PLAN (SWP3):

This SWP3 has been developed in accordance with the TPDES Construction General Permit TXR150000 (CGP). City of San Antonio (COSA) ensures that project specifications include adequate best management practices (BMPs) for this project.

For all projects with soil disturbing activity the Contractor will maintain a SWP3 with all pertinent records, correspondence, environmental documents, etc. at the project field office. If no field office is available, then this SW3P shall be kept in the Contractor's local office.

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 the SWP3 binder.

### 1.0 SITE/PROJECT DESCRIPTION

**1.1 COSA Project No.:**
23-04167

**1.2 PROJECT LIMITS:**
From: APPROX 1510' NORTH OF WILSHIRE WAY

To: APPROX. 175' SOUTH OF LONE STAR PASS

**1.3 PROJECT COORDINATES:**
BEGIN: (Lat) 29°15'12.0"N ,(Long) 98°32'57.2"W

END: (Lat) 29°16'26.8"N ,(Long) 98°33'02.0"W

**1.4 TOTAL PROJECT AREA (Acres):** 19.24 AC

**1.5 TOTAL AREA TO BE DISTURBED (Acres):** 0.46 AC

**1.6 NATURE OF CONSTRUCTION ACTIVITY:**
MILL AND INLAY OF ROADWAY SURFACE, EXTENSION OF EXISTING LEFT TURN LANES, AND TRAFFIC SIGNAL WORK

**1.7 MAJOR SOIL TYPES:**

| Soil Type | Description |
|---|---|
| DUVAL LOAMY FINE SAND<br>LOIRE CLAY LOAM<br>WILCO LOAMY FINE SAND | 0% TO 5% SLOPES<br>0% TO 2% SLOPES<br>0% TO 3% SLOPES |
| BRANYON CLAY<br>LEWISVILLE SILTY CLAY<br>SUNEV CLAY LOAM | 0% TO 1% SLOPES<br>1% TO 3% SLOPES<br>0% TO 1% SLOPES |
| WILLACY LOAM | 0% TO 1% SLOPES |
| | |
| | |
| | |
| | |

**1.8 PROJECT SPECIFIC LOCATIONS (PSLs):**
PSLs must be depicted on the Environmental Layout Sheets in 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 |
|---|---|
| Storage/staging area(s) | TBD |
| | |
| | |
| | |
| | |

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)

- ☒ 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 this SWP3. Include Segment # for receiving waters.

| Tributaries | Classified Waterbody |
|---|---|
| | MEDINA RIVER* - SEG ID 1903 (BACTERIA) |
| UNNAMED TRIBUTARY TO THE MS4 | |
| | |
| | |
| | |
| | |

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

**1.12 ROLES AND RESPONSIBILITIES: COSA**

- ☒ 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 Notices
- ☒ 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: Perform SWP3 inspections
- ☐ Other: _____
- ☐ Other: _____

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

| MS4 Entity |
|---|
| San Antonio Water Service (SAWS) |
| |
| |
| |

# STORMWATER POLLUTION PREVENTION PLAN (SWP3)

CITY OF SAN ANTONIO PUBLIC WORKS



| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
|---|---|---|---|
| | 23-04167 | | 108 |
| STATE | STATE DIST. | COUNTY | |
| TEXAS | | | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| | | | |

## 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 COSA 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: Gravel Filter Bags
- ☐ ☐ 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: Disturbed areas shall be stabilized within 14 days unless construction activities will resume within 21 days.

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in this SWP3

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

**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 COSA maintenance sections.)

BMPs To Be Left In Place Post Construction:

| Type | Stationing | |
|---|---|---|
| | From | To |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in 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 |
| N/A | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Refer to the Environmental Layout Sheets/ SWP3 Layout Sheets located in 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:

Dewatering discharges of accumulated stormwater, groundwater, and surface water including discharges from dewatering of trenches, excavations, foundations, vaults, and other points of accumulation are prohibited unless managed by appropriate controls to prevent and minimize the offsite discharge of sediment and other pollutants.

### 2.9 INSPECTIONS:

All disturbed areas and erosion and sediment control devices shall be inspected at least once every seven (7) days. Inspections shall be performed by the Contractor, documented on the field inspection report form, and retained in this SWP3.

### 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, documented on the field inspection report form, and retained in this SWP3.

## STORMWATER POLLUTION PREVENTION PLAN (SWP3)



CITY OF SAN ANTONIO PUBLIC WORKS

| FED. RD. DIV. NO. | PROJECT NO. | | SHEET NO. |
|---|---|---|---|
| | 23-04167 | | 109 |
| STATE | STATE DIST. | COUNTY | |
| TEXAS | | | |
| CONT. | SECT. | JOB | HIGHWAY NO. |
| | | | |

DATE:
FILE:

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

TPDES TXR 150000: Stormwater Discharge Permit or Construction General Permit required for projects with 1 or more acres disturbed soil. Projects with any disturbed soil must protect for erosion and sedimentation in accordance with Item 506.

List MS4 Operator(s) that may receive discharges from this project. They may need to be notified prior to construction activities.

1. SAN ANTONIO WATER SYSTEM

2.

☐ 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 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 TCEQ, EPA or other inspectors.

4. When Contractor project specific locations (PSL's) increase disturbed soil area to 5 acres or more, submit NOI to TCEQ and the Engineer.

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

USACE Permit required for filling, dredging, excavating or other work in any water bodies, rivers, creeks, streams, wetlands or wet areas.

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

☒ No Permit Required

☐ Nationwide Permit 14 - PCN not Required (less than 1/10th acre waters or wetlands affected)

☐ Nationwide Permit 14 - PCN Required (1/10 to <1/2 acre, 1/3 in tidal waters)

☐ 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 planned to control erosion, sedimentation and post-project TSS.

1.

2.

3.

4.

The elevation of the ordinary high water marks of any areas requiring work to be performed in the waters of the US requiring the use of a nationwide permit can be found on the Bridge Layouts.

Best Management Practices:

| 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 | ☐ Grassy Swales |

## III. CULTURAL RESOURCES

Refer to COSA 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.

2.

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 immediate area, and contact the Engineer immediately.

### LIST OF ABBREVIATIONS

| | | | |
|---|---|---|---|
| BMP: | Best Management Practice | SPCC: | Spill Prevention Control and Countermeasure |
| CGP: | Construction General Permit | SW3P: | Storm Water Pollution Prevention Plan |
| DSHS: | Texas Department of State Health Services | PCN: | Pre-Construction Notification |
| FHWA: | Federal Highway Administration | PSL: | Project Specific Location |
| MOA: | Memorandum of Agreement | TCEQ: | Texas Commission on Environmental Quality |
| MOU: | Memorandum of Understanding | TPDES: | Texas Pollutant Discharge Elimination System |
| MS4: | Municipal Separate Stormwater Sewer System | TPWD: | Texas Parks and Wildlife Department |
| MBTA: | Migratory Bird Treaty Act | TxDOT: | Texas Department of Transportation |
| NOT: | Notice of Termination | T&E: | Threatened and Endangered Species |
| NWP: | Nationwide Permit | USACE: | U.S. Army Corps of Engineers |
| NOI: | Notice of Intent | USFWS: | U.S. Fish and Wildlife Service |

## 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 following 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

Does the project involve any bridge class structure rehabilitation or replacements (bridge class structures not including box culverts)?

☐ Yes ☒ No

If "No", then no further action is required.
If "Yes", then COSA is responsible for completing asbestos assessment/inspection.

Are the results of the asbestos inspection positive (is asbestos present)?

☐ Yes ☒ No

If "Yes", then COSA must retain a DSHS licensed asbestos consultant to assist with the notification, develop abatement/mitigation procedures, and perform management activities as necessary. The notification form to DSHS must be postmarked at least 15 working days prior to scheduled demolition.

If "No", then COSA is still required to notify DSHS 15 working days prior to any scheduled demolition.

In either case, the Contractor is responsible for providing the date(s) for abatement activities and/or demolition with careful coordination between the Engineer and asbestos consultant in order to minimize construction delays and subsequent claims.

Any other evidence indicating possible hazardous materials or contamination discovered on site. Hazardous Materials or Contamination Issues Specific to this Project:

☒ No Action Required ☐ Required Action

Action No.

1.

2.

3.

## VII. OTHER ENVIRONMENTAL ISSUES

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

☐ No Action Required ☐ Required Action

Action No.

1.

2.

3.

CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

# ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

# EPIC

| | | | | | |
|---|---|---|---|---|---|
| FILE: epic.dgn | DN: TxDOT | CK: RG | DW: VP | CK: AR | |
| ©TxDOT: February 2015 | CONT | SECT | JOB | HIGHWAY | |
| REVISIONS | | | | | |
| 12-12-2011 (DS) | DIST | COUNTY | | SHEET NO. | |
| 05-07-14 ADDED NOTE SECTION IV. | | | | | |
| 01-23-2015 SECTION I (CHANGED ITEM 1122 TO ITEM 506, ADDED GRASSY SWALES. | | | | 110 | |

# EPA & TCEQ Construction General Permit - Checklist of Record Keeping Responsibilities
# City of San Antonio (COSA) - January-2015

**ENGINEER**

Pre Construction

- Design of structural controls
- Development of SWP3
- Development of SWP3 site diagram(s) including grading plans/contours anticipated at initial, interim and final grade
- Development of project phasing schedule
- Water Pollution Abatement Plan (WPAP) (Edwards Aquifer)
- AST Plan (Edwards Aquifer)
- Environmental Preconstruction Meeting

During Construction

- Evaluation of BMP effectiveness
- Review of SWP3 Modifications

Post Construction

- Close Out Inspection
  - o Ensure removal of temporary BMPs,
  - o Verify correct installation of permanent BMPs,
  - o Assess final stabilization achieved to allow Notice of Termination

**COSA CONSTRUCTION PROJECT MANAGER**

Pre Construction

- Review SWP3 Plans
- Environmental Preconstruction Meeting
- Conduct SWP3 Training (EPA only)

Construction

- Ensure inspection are performed and document every 7 days
- Ensure maintenance of up to date copies of SWP3 and associated records
  - o Corrective Action Documentation- within 7 days of time of discovery (EPA)
  - o Maintenance- document if unable to fix/install item within 7 days. (EPA)
- Ensure records of rainfall events are being maintained
  - o Rainfall during normal business hours that measures 0.25 inches or greater (EPA)
    - o Rainfall- record of total rainfall measured and the approximate beginning and ending dates of winter or drought conditions resulting in monthly frequency of inspections (TCEQ)
- Follow Up on incidents and spill reports to ensure proper corrective actions
  - o Construction Manager would be responsible for notifying COSA Environmental of a Reportable Quantity Release (e.g., sheen on water, 25 gallons of "oil" to land, etc.)
  - o Provide a description of spills and incidents & information obtained regarding quality and quantity of stormwater discharges to COSA Environmental.
- Ensure completing of the Grading Log (dates when activities start and end) and Construction Activities Log (daily)
  - o Ensure Construction Activities Log includes dates when construction activities temporarily or permanently cease on site (TCEQ) and dates when stabilization measures are initiated
- Ensure upkeep of the on-site Material Inventory
- Coordinate between Contractor, COSA, and Engineer when the SWP3 requires modification and/or when BMPs are not effective, are missing, or need maintenance/repair
- Ensure contractor is noting SWP3 accordingly (Dates of installment of BMPs, removal of BMPs, maintenance of BMPS, concrete washout pits date of install and removal, etc.)

Post Construction

- Close Out Inspection
  - o Ensure removal of temporary BMPs,
  - o Verify correct installation of permanent BMPs,
  - o Assess final stabilization achieved to allow Notice of Termination

**COSA ENVIRONMENTAL GROUP**

Pre Construction

- Review SWP3 Plans
- File Construction Site Notice with SAWS
- Environmental Preconstruction Meeting
- Conduct SWP3 Training (EPA only)
- Post Construction Site Notice

Construction

- Ensure inspection are performed and document every 7 days
- Ensure a designated SW3P inspector certifies all inspection reports.
- Ensure maintenance of up to date copies of SWP3 and associated records
  - o Corrective Action Documentation- within 7 days of time of discovery
  - o Maintenance- document if unable to fix/install item within 7 days.
- Ensure records of rainfall events are being maintained
  - o Rainfall during normal business hours that measures 0.25 inches or greater (EPA)
  - o Rainfall- record of total rainfall measured and the approximate beginning and ending dates of winter or drought conditions resulting in monthly frequency of inspections (TCEQ)
- Follow Up on incidents and spill reports to ensure proper corrective actions
  - o Conduct TCEQ notification as required for spills above a reportable quantity (e.g., sheen on water, 25 gallons of "oil" to land, etc.)
- Ensure completion of the Grading Log (dates when activities start and end) and Construction Activities Log (daily)
  - o Ensure Construction Activities Log includes dates when construction activities temporarily or permanently cease on site (TCEQ) and dates when stabilization measures are initiated
- Ensure upkeep of the on-site Material Inventory
- Coordinate between Construction Project Manager, Contractor, and Engineer when the SWP3 requires modification and/or when BMPs are not effective, are missing, or need maintenance/repair
- Ensure contractor is noting SWP3 accordingly (Dates of installment of BMPs, removal of BMPs, maintenance of BMPS, concrete washout pits date of install and removal, etc.)

Post Construction

- Close Out Inspection
  - o Ensure removal of temporary BMPs,
  - o Verify correct installation of permanent BMPs,
  - o Ensure removal of posted SW3P documents
  - o Assess final stabilization achieved to allow Notice of Termination
- Obtain and file all records associated with the TPDES/NPDES Permit activities at the project for 3 years
- File Notice of Termination, when appropriate
- Terminate Construction Site Notice with SAWS

**CONTRACTOR**

**Pre Construction**

- **Review SWP3 Plans**
- **File Construction Site Notice with SAWS**
- Provide the name, company, and certification of the stormwater inspector (COSA Ordiance Sec. 34-805 (q))
- **Environmental Preconstruction Meeting**
- **Conduct SWP3 Training (EPA only)**
- **Post Construction Site Notice**

**Construction**

- **Conduct inspections every 7 days and maintain records of inspections and corrective actions**
- Ensure a designated SW3P inspector certifies all inspection reports.
- **Maintain up to date copies of SWP3 and associated records**
  - **o Corrective Action Documentation- within 7 days of time of discovery (EPA)**
  - **o Maintenance- document if unable to fix/install item within 7 days. (EPA)**
- **Record rainfall events and maintain documentation with the SWP3**
  - **o Rainfall during normal business hours that measures 0.25 inches or greater (EPA)**
  - **o Rainfall- record of total rainfall measured and the approximate beginning and ending dates of winter or drought conditions resulting in monthly frequency of inspections (TCEQ)**
- **Follow Up on incidents and spill reports to ensure proper corrective actions**
  - **o Notify Construction Site Project Manager immediately of spills above a reportable quantity (e.g., sheen on water, 25 gallons of "oil" to land, etc.)**
  - **o Provide a description of spills and incidents & information obtained regarding quality and quantity of stormwater discharges to the Project Manager, as necessary.**
- **Complete the Grading Log (dates when activities start and end) and Construction Activities Log (daily)**
  - **o Ensure Construction Activities Log includes dates when construction activities temporarily or permanently cease on site (TCEQ) and dates when stabilization measures are initiated**
- **Maintain an on-site Material Inventory**
- **Update SWP3 to depict actual locations and types of BMPs, potential pollutant sources, etc., as the project proceeds.**
- **Coordinate between Construction Project Manager, COSA Environmental, and Engineer when the SWP3 requires modification and/or when BMPs are not effective, are missing, or need maintenance/repair**
- **Ensure SWP3 is being noted accordingly (Dates of installment of BMPs, removal of BMPs, maintenance of BMPS, concrete washout pits date of install and removal, etc.)**

**CONTRACTOR (Cont'd)**

**Post Construction**

- **Close Out Inspection**
  - **o Ensure removal of temporary BMPs,**
  - **o Verify correct installation of permanent BMPs,**
  - **o Assess final stabilization achieved to allow Notice of Termination**
  - o Ensure removal of posted SW3P documents
- **Provide COSA Environmental with copies of all records associated with the TPDES/NPDES Permit**
- **Maintain a copy of these records for Contractor Permit compliance for 3 years following submittal of the Notice of Termination**
- **File Notice of Termination, when appropriate**

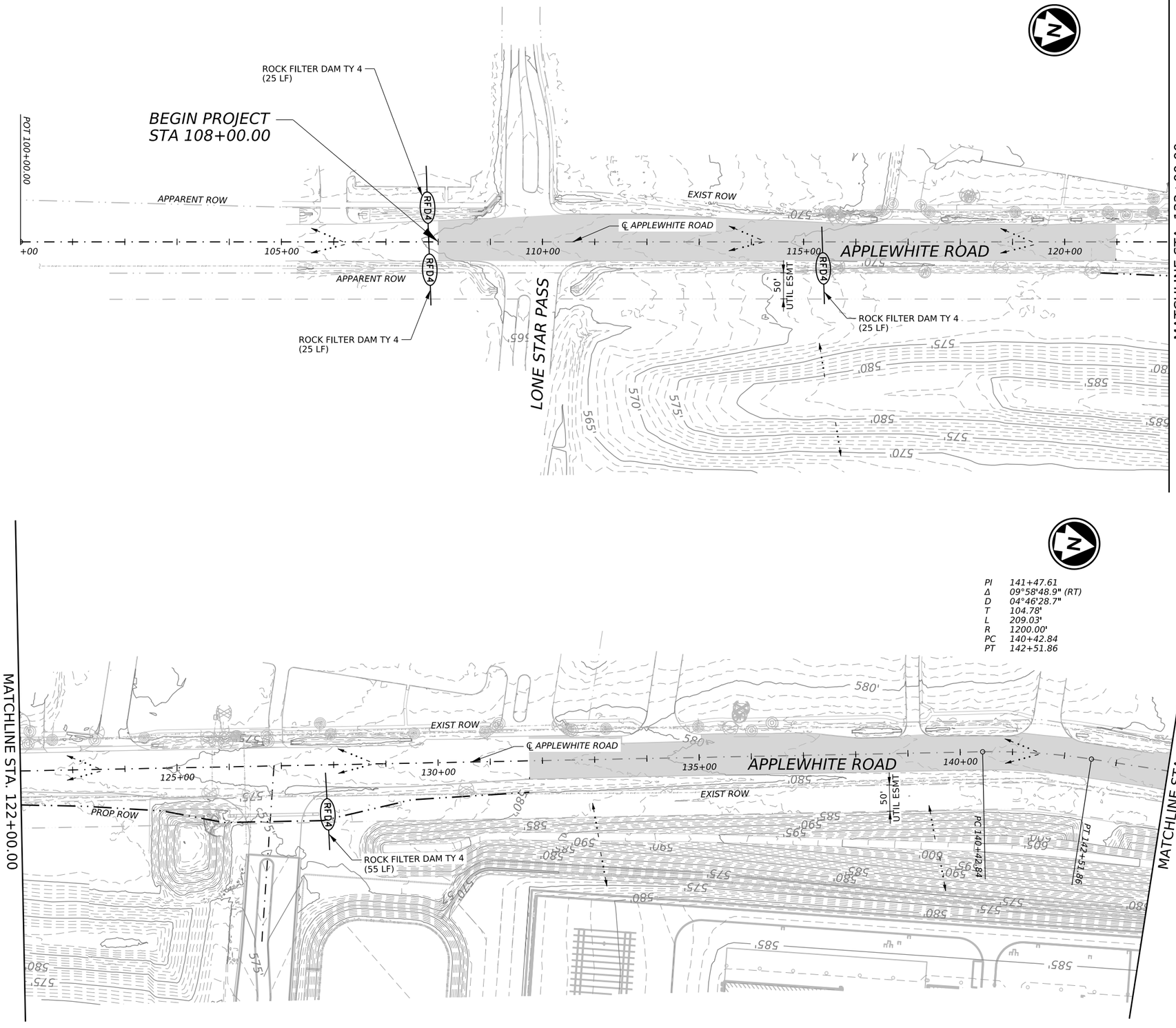
JANUARY 2015

PUBLIC WORKS

STORM WATER POLLUTION GENERAL NOTES

| | | | |
|---|---|---|---|
| 100% SUBMITTAL | PROJECT NO.: 23-04167 | | DATE: 9/25/2025 |
| DRWN. BY: | DSGN. BY: | CHKD. BY: | SHEET NO.: 111 |

| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 540.1 | ROCK FILTER DAMS (INSTALL/REMOVE)(TYPE 4) | LF | 130 |




## LEGEND

- MILL AND INLAY
- PROP PAVEMENT
- BASE REPAIR
- RFD4 — ROCK FILTER DAM TY 4
- 850 — EXISTING CONTOUR
- FLOW ARROW
- GRAVEL FILTER BAGS

## NOTES

1. REFER TO TEMP. EROSION CONTROL MEASURE STANDARDS FOR ADDTIONAL INFORMATION.
2. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED PER SPEC.
3. SW3P CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
4. ALL SW3P CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITION AT ALL TIMES.
5. ROCK FILTER DAM IS PURPOSELY SHOWN PAST ROW LINES FOR CLARITY. FEATURE SHOULD REMAIN WITHIN ROW OR CONSTRUCTION EASEMENT IF PRESENT

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 100 200 300

SCALE: 1"= 200'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |

**PAPE-DAWSON**

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800

CITY OF SAN ANTONIO
**PUBLIC WORKS DEPARTMENT**

*TOYOTA SOUTHSIDE STREETS*

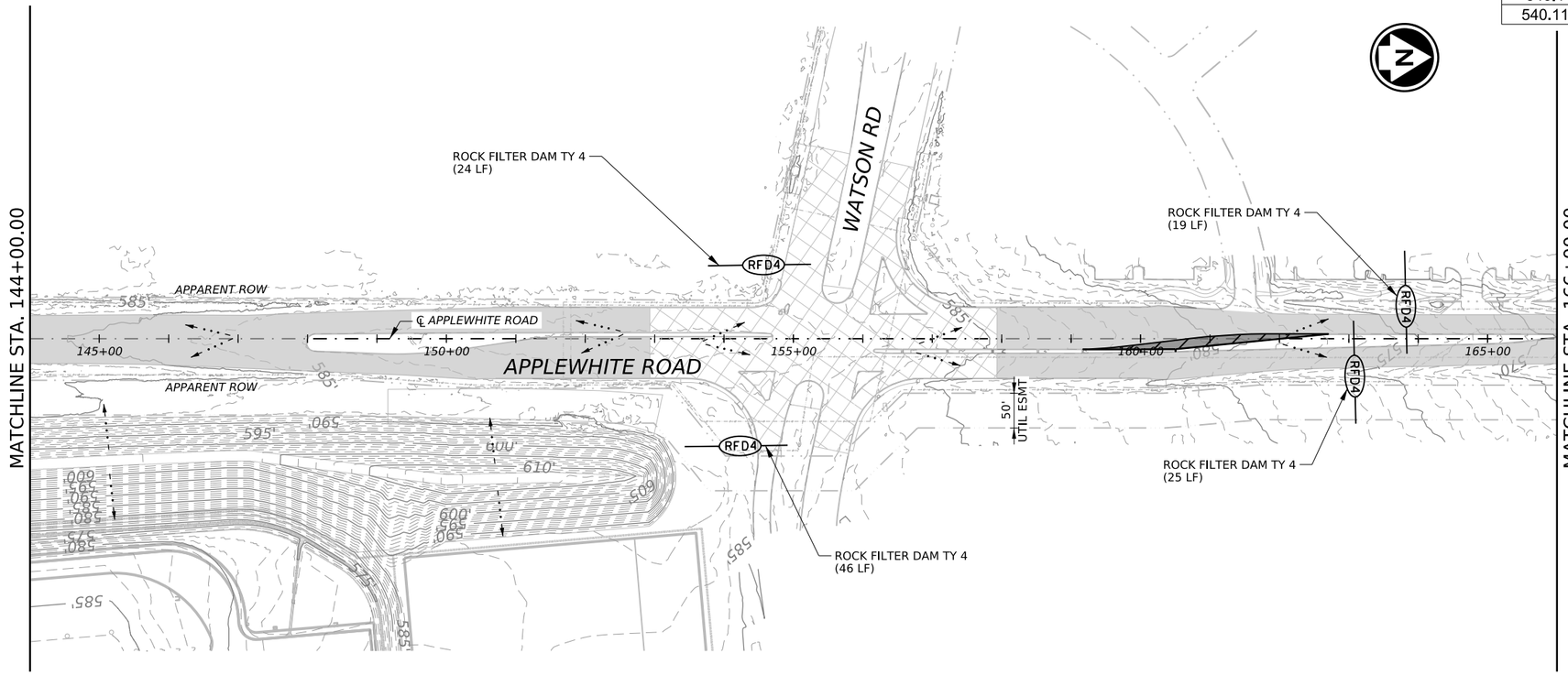
# SW3P LAYOUT

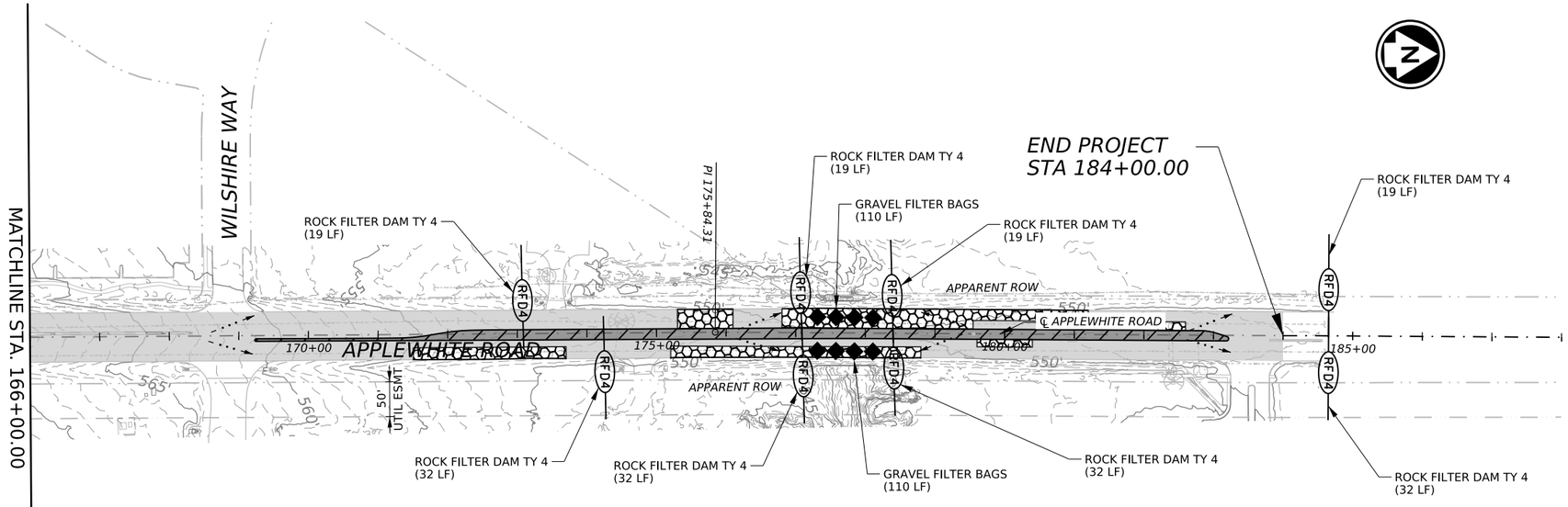
SHEET 1 OF 2

| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 112 |

PRINTED ON: 9/25/2025 1:46:28 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S09-Environmental\1332704_SW3P_01_B.dgn

| ITEM | DESCRIPTION | UNIT | QTY |
|---|---|---|---|
| 540.1 | ROCK FILTER DAMS (INSTALL/REMOVE)(TYPE 4) | LF | 318 |
| 540.11 | GRAVEL FILTER BAGS | LF | 220 |




## LEGEND

- MILL AND INLAY
- PROP PAVEMENT
- BASE REPAIR
- RFD4 — ROCK FILTER DAM TY 4
- 850 — EXISTING CONTOUR
- FLOW ARROW
- GRAVEL FILTER BAGS

## NOTES

1. REFER TO TEMP. EROSION CONTROL MEASURE STANDARDS FOR ADDTIONAL INFORMATION.
2. SW3P CONTROL MEASURES INSTALLED DURING CONSTRUCTION ARE TO REMAIN IN PLACE UNTIL GRASS COVER IS ACHIEVED PER SPEC.
3. SW3P CONTROLS MAY NEED TO BE MODIFIED IN THE FIELD TO ACCOMPLISH DESIRED AFFECT. ALL MODIFICATIONS ARE TO BE NOTED ON THIS SHEET AND SIGNED BY THE RESPONSIBLE PARTY.
4. ALL SW3P CONTROLS ARE TO BE MAINTAINED AND IN WORKING CONDITION AT ALL TIMES.
5. ROCK FILTER DAM IS PURPOSELY SHOWN PAST ROW LINES FOR CLARITY. FEATURE SHOULD REMAIN WITHIN ROW OR CONSTRUCTION EASEMENT IF PRESENT

DESIGN

STATE OF TEXAS — THOMAS A HENZ — 142980 — LICENSED PROFESSIONAL ENGINEER

THOMAS A HENZ, P.E. — 9/25/2025 DATE

APPROVAL

STATE OF TEXAS — DAN THOMA — 98622 — LICENSED PROFESSIONAL ENGINEER

DAN THOMA, P.E. — 9/25/2025 DATE

0 100 200 300

SCALE: 1"= 200'

| REV. NO. | DATE | DESCRIPTION | BY |
|---|---|---|---|
| | | | |


PAPE-DAWSON

2000 NW Loop 410 | San Antonio, TX 78213 | 210.375.9000

Texas Engineering Firm #470 | Texas Surveying Firm #10028800


CITY OF SAN ANTONIO
PUBLIC WORKS DEPARTMENT

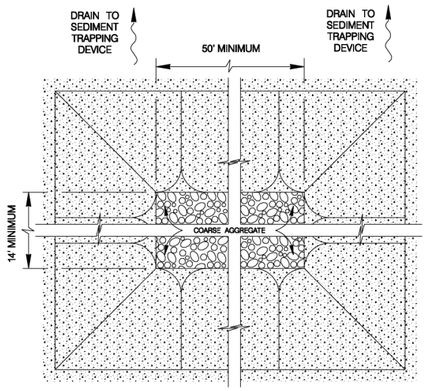
TOYOTA SOUTHSIDE STREETS

# SW3P LAYOUT

SHEET 2 OF 2

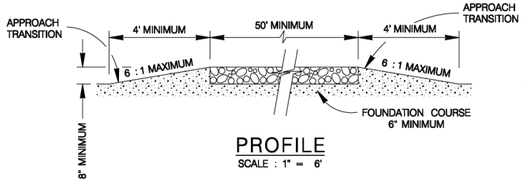
| 100% SUBMITTAL | PROJECT NO.: 133-27-04 | | DATE: 9/25/2025 |
|---|---|---|---|
| DRWN. BY: AD | DSGN. BY: AD | CHKD. BY: TH | SHEET NO.: 113 |

PRINTED ON: 9/25/2025 1:46:37 PM PRINTED BY: USER: thenz
FILENAME: P:\133\27\04\Design\ORD\4-Design\Plan Set\S09-Environmental\1332704_SW3P_02_B.dgn




PLAN

SCALE : 1" = 6'



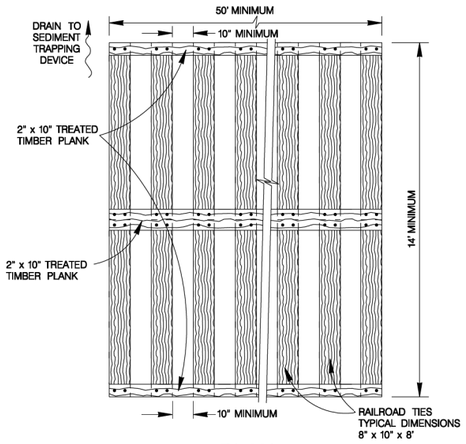

PROFILE

SCALE : 1" = 6'

GENERAL NOTES

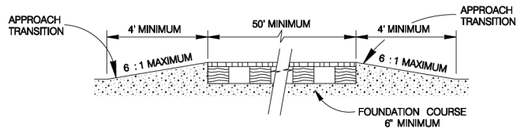
1. THE LENGTH OF THE TYPE 1 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, BUT NOT LESS THAN 50'.
2. THE COARSE AGGREGATE SHOULD BE OPEN GRADED WITH A SIZE OF 4" TO 8".
3. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6 : 1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
4. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE, BITUMINOUS CONCRETE, PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT SHALL BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

## CONSTRUCTION EXIT – TYPE 1




PLAN

SCALE : 1" = 6'



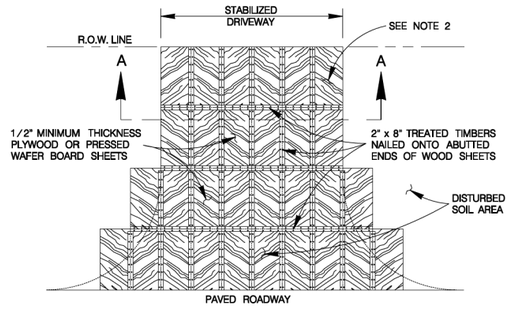

PROFILE

SCALE : 1" = 6'

GENERAL NOTES

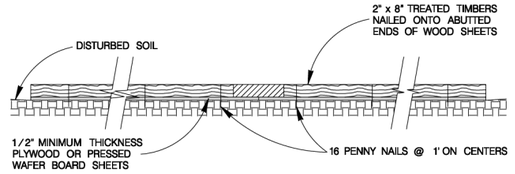
1. THE LENGTH OF THE TYPE 2 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, BUT NOT LESS THAN 50'.
2. THE TREATED TIMBER PLANKS SHALL BE ATTACHED TO THE RAILROAD TIES WITH 1/2" x 6" MIN. LAG BOLTS. OTHER FASTENERS MAY BE USED AS APPROVED BY THE ENGINEER.
3. THE TREATED TIMBER PLANKS SHALL BE #2 GRADE MIN., AND SHOULD BE FREE FROM LARGE AND LOOSE KNOTS.
4. THE APPROACH TRANSITIONS SHOULD BE NO STEEPER THAN 6 : 1 AND CONSTRUCTED AS DIRECTED BY THE ENGINEER.
5. THE CONSTRUCTION EXIT FOUNDATION COURSE SHALL BE FLEXIBLE BASE, BITUMINOUS CONCRETE, PORTLAND CEMENT CONCRETE OR OTHER MATERIAL AS APPROVED BY THE ENGINEER.
6. THE CONSTRUCTION EXIT SHOULD BE GRADED TO ALLOW DRAINAGE TO A SEDIMENT TRAPPING DEVICE.
7. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

## CONSTRUCTION EXIT – TYPE 2




PLAN

SCALE : 1" = 20'



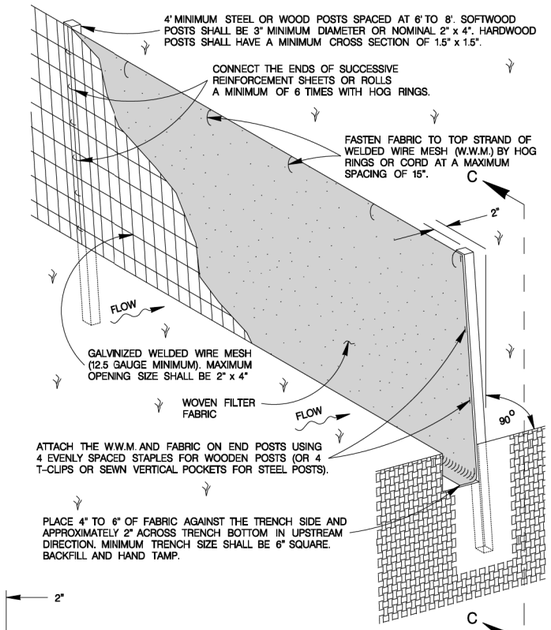

SECTION A–A

SCALE : 1" = 2'

GENERAL NOTES

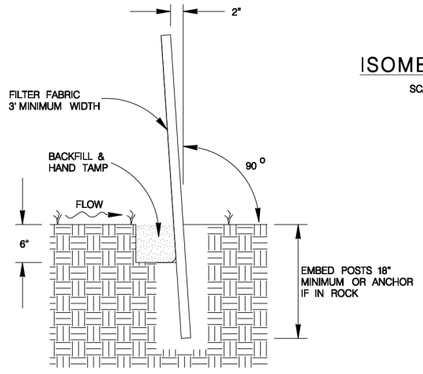
1. THE LENGTH OF THE TYPE 3 CONSTRUCTION EXIT SHALL BE AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
2. THE TYPE 3 CONSTRUCTION EXIT MAY BE CONSTRUCTED FROM OPEN GRADED CRUSHED STONE WITH A SIZE OF 2 TO 4 INCHES SPREAD A MINIMUM OF 4 INCHES THICK TO THE LIMITS SHOWN ON THE PLANS.
3. THE 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.

## CONSTRUCTION EXIT – TYPE 3




ISOMETRIC VIEW

SCALE : 1" = 2'




SECTION C–C

SCALE : 1" = 2'

SEDIMENT CONTROL FENCE USAGE GUIDELINES

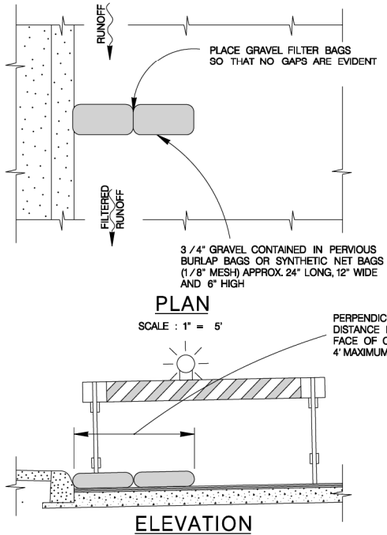
A SEDIMENT CONTROL FENCE MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUN-OFF. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED.

SEDIMENT CONTROL FENCE SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 100 GPM /FT SQUARED. SEDIMENT CONTROL FENCE IS NOT RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA LARGER THAN 2 ACRES.

GENERAL NOTES

1. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

## TEMPORARY SEDIMENT CONTROL FENCE




PLAN

SCALE : 1" = 5'

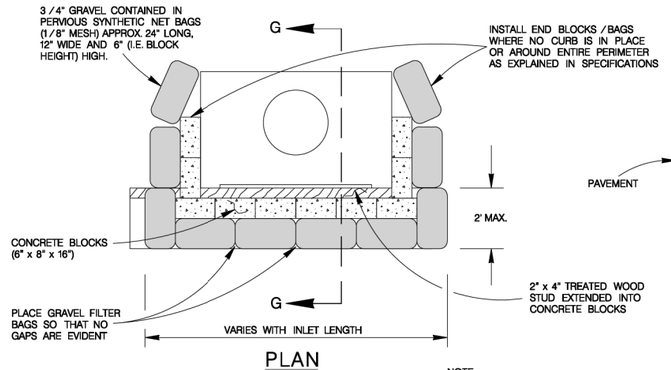



ELEVATION

SCALE : 1" = 5'

NOTE:
STRADDLE GRAVEL FILTER BAGS WITH TYPE 1 BARRICADES MOUNTED WITH TYPE "A" FLASHING WARNING LIGHT. SEE BARRICADE CONSTRUCTION SIGN DETAILS. PLACE FLASHING LIGHTS AWAY FROM GUTTER, FLUSH WITH OUTSIDE EDGE OF BAG CONFIGURATION.

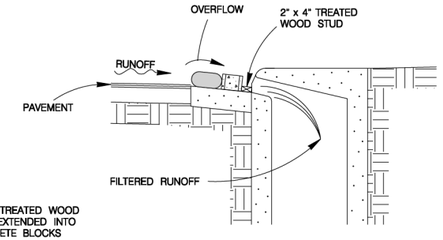
## GRAVEL FILTER BAGS




PLAN

SCALE : 1" = 5'

NOTE:
GRAVEL FILTERS CAN BE USED ON PAVEMENT OR BARE GROUND.




SECTION G–G

SCALE : 1" = 5'

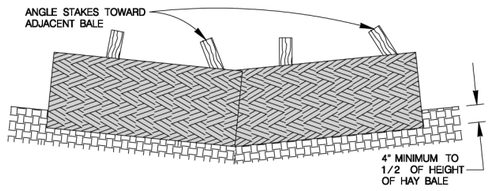
## CURB INLET GRAVEL FILTER

JANUARY 2005

PUBLIC WORKS

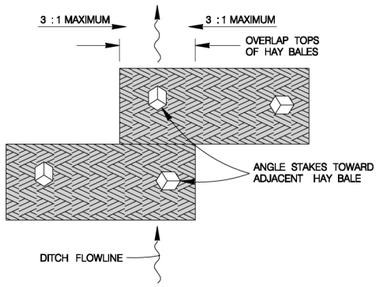
# TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 1

| | | | |
|---|---|---|---|
| 95 % SUBMITTAL | PROJECT NO.: 23-04167 | | DATE: 9/25/2025 |
| DRWN. BY: V. VASQUEZ | DSGN. BY: | CHKD. BY: | SHEET NO. 114 OF 115 |



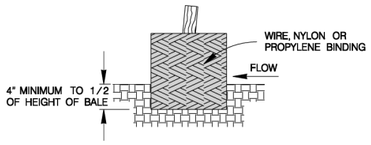

PROFILE VIEW

SCALE : 1" = 2'



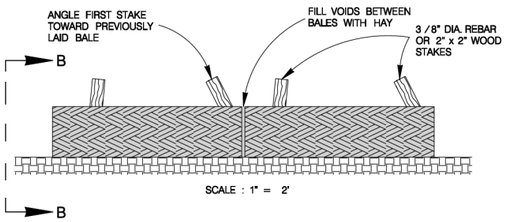

PLAN VIEW

SCALE : 1" = 2'




SECTION B–B

SCALE : 1" = 2'




SCALE : 1" = 2'

## BALED HAY USAGE GUIDELINES

A BAILED HAY INSTALLATION MAY BE CONSTRUCTED NEAR THE DOWNSTREAM PERIMETER OF A DISTURBED AREA ALONG A CONTOUR TO INTERCEPT SEDIMENT FROM OVERLAND RUNOFF. A TWO YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE TO BE FILTERED. THE INSTALLATION SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 5 GPM /FT SQUARED OF CROSS SECTIONAL AREA. BALED HAY MAY BE USED AT THE FOLLOWING LOCATIONS:

1. WHERE THE RUNOFF APPROACHING THE BALED HAY FLOWS OVER DISTURBED SOIL FOR LESS THAN 100'. IF THE SLOPE OF THE DISTURBED SOIL EXCEEDS 10 %, THE LENGTH OF SLOPE UPSTREAM OF THE BAILED HAY SHOULD BE LESS THAN 50'.
2. WHERE THE INSTALLATION WILL BE REQUIRED FOR LESS THAN 3 MONTHS.
3. WHERE THE CONTRIBUTING DRAINAGE AREA IS LESS THAN 1/2 ACRE.

FOR BALED HAY INSTALLATIONS IN SMALL DITCHES, THE FOLLOWING ADDITIONAL CONDITIONAL CONSIDERATIONS APPLY:

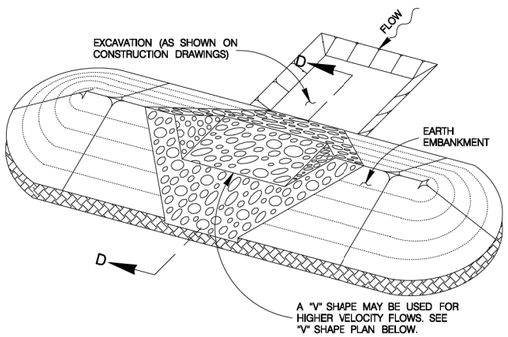
1. THE DITCH SIDESLOPES SHOULD BE GRADED AS FLAT AS POSSIBLE TO MAXIMIZE THE DRAINAGE FLOW RATE THRU THE HAY.
2. THE DITCH SHOULD BE GRADED LARGE ENOUGH TO CONTAIN THE OVERLAPPING DRAINAGE WHEN SEDIMENT HAS FILLED TO THE TOP OF THE BAILED HAY.

BALES SHOULD BE REPLACED USUALLY EVERY 2 MONTHS OR MORE OFTEN DURING WET WEATHER WHEN LOSS OF STRUCTURAL INTERGRITY IS ACCELERATED.

## GENERAL NOTES

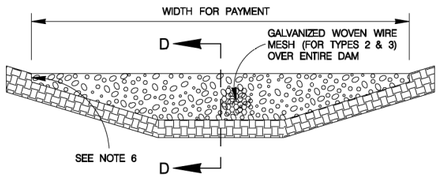
1. HAY BALES SHALL BE A MINIMUM OF 30" IN LENGTH AND WEIGH A MINIMUM OF 50 LBS.
2. HAY BALES SHALL BE BOUND BY EITHER WIRE OR NYLON OR POLYPROPYLENE STRING. THE BALES SHALL BE COMPOSED ENTIRELY OF VEGETABLE MATTER.
3. HAY BALES SHALL BE EMBEDDED IN THE SOIL A MININMUM OF 4" AND, WHERE POSSIBLE, ONE-HALF THE HEIGHT OF THE BALE.
4. HAY BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES. THE BALES SHALL BE PLACED WITH BINDINGS PARALLEL TO THE GROUND.
5. HAY BALES SHALL BE SECURELY ANCHORED IN PLACE WITH 3 /8" DIA. REBAR OR 2" x 2" WOOD STAKES DRIVEN THROUGH THE BALES. THE FIRST STAKE SHALL BE ANGLED TOWARDS THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER.
6. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

BALED HAY FOR EROSION CONTROL



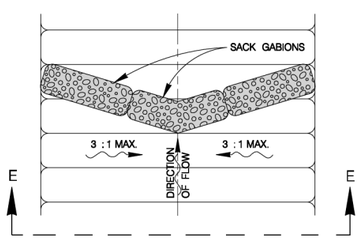

TYPE 1 & 2 FILTER DAM AT SEDIMENT TRAP

SCALE : 1" = 10'



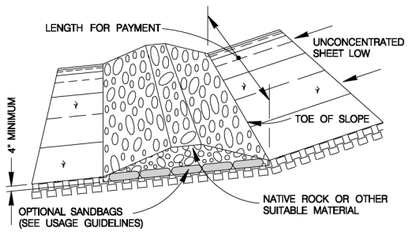

TYPE 1, 2 & 3 FILTER DAM AT CHANNEL SECTIONS

SCALE : 1" = 6'



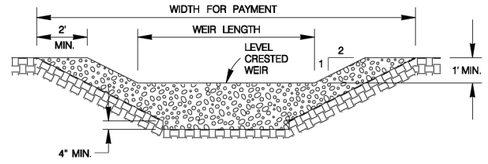

PLAN VIEW

SCALE : 1" = 10'



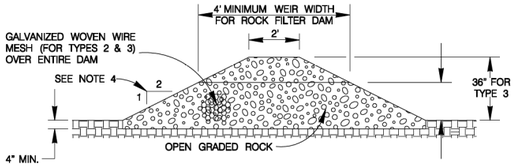

TYPE 1 FILTER DAM AT TOE OF SLOPE

SCALE : 1" = 10'



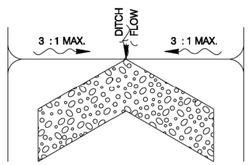

PROFILE OF TYPE 1 & 2 FILTER DAM AT SEDIMENT TRAP

SCALE : 1" = 6'



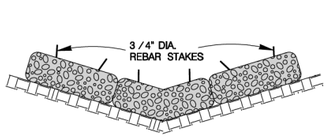

SECTION D–D

SCALE : 1" = 6'



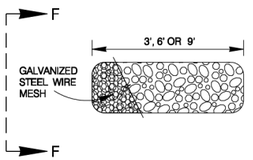

"V" SHAPE PLAN VIEW

NOT TO SCALE




SECTION E–E

SCALE : 1" = 10'




TYPE 4 SACK GABION DETAIL

SCALE : 1" = 6'


SECTION F–F

SCALE : 1" = 6'

TYPE 4 FILTER DAM AT DITCHES & SMALLER CHANNELS PLAN VIEW

## ROCK FILTER DAM USAGE GUIDELINES

ROCK FILTER DAMS SHOULD BE CONSTRUCTED DOWNSTREAM FROM DISTURBED AREAS TO INTERCEPT SEDIMENT FROM OVERLOAD RUNOFF AND /OR CONCENTRATED FLOW. THE DAMS SHOULD BE SIZED TO FILTER A MAXIMUM FLOW THRU RATE OF 60 GPM /FT SQUARED OF CROSS SECTIONAL AREA.. A 2 YEAR STORM FREQUENCY MAY BE USED TO CALCULATE THE FLOW RATE.

TYPE 1 (18" HIGH WITH NO WIRE MESH) :

TYPE 1 MAY BE USED AT THE TOE OF SLOPES, AROUND INLETS IN SMALL DITCHES AND AT DIKE OR SWALE OUTLETS. THIS TYPE OF DAM IS RECOMMENDED TO CONTROL EROSION FROM A DRAINAGE AREA OF 5 ACRES OR LESS. TYPE 1 MAY NOT BE USED IN CONCENTRATED HIGH VELOCITY FLOWS (APPROXIMATELY 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 AS DIRECTED BY THE ENGINEER.

TYPE 2 (18" HIGH WITH WIRE MESH) :

TYPE 2 MAY BE USED IN DITCHES AND AT DIKE OR SWALE OUTLETS.

TYPE 3 (36" HIGH WITH WIRE MESH) :

TYPE 3 MAY BE USED IN STREAM FLOW AND SHOULD BE SECURED TO THE STREAM BED.

TYPE 4 (SACK GABIONS) :

TYPE 4 MAY BE USED IN DITCHES AND SMALLER CHANNELS TO FORM AN EROSION CONTROL DAM.

## GENERAL NOTES

1. IF SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER, FILTER DAMS SHOULD BE PLACED NEAR THE TOE OF SLOPES WHERE EROSION IS ANTICIPATED, UPSTREAM AND / OR DOWNSTREAM AT DRAINAGE STRUCTURES, AND IN ROADWAY DITCHES AND CHANNELS TO COLLECT SEDIMENT.
2. MATERIALS (AGGREGATE, WIRE MESH, SANDBAGS, ETC.) SHALL BE AS INDICATED BY THE SPECIFICATION FOR ROCK FILTER DAMS FOR EROSION AND SEDIMENTATION CONTROL.
3. THE ROCK FILTER DAM DIMENSIONS SHALL BE AS INDICATED ON THE STORM WATER POLLUTION PREVENTION PLANS.
4. SIDE SLOPES SHOULD BE 2 : 1 OR FLATTER. DAMS WITHIN THE SAFETY ZONE SHALL HAVE SIDE SLOPES 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 THE 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 AND SLOPES SPECIFIED. THE MESH SHALL BE FOLDED AT THE UPSTREAM SIDE OVER THE AGGREGATE AND TIGHTLY SECURED TO ITSELF ON THE DOWNSTREAM SIDE USING WIRE TIES OR HOG RINGS. IN STREAM USE, THE MESH SHOULD BE SECURED OR STAKED TO THE STREAM BED PRIOR TO AGGREGATE PLACEMENT.
9. SACK GABIONS SHOULD BE STAKED DOWN WITH 3 /4" DIA. REBAR STAKES.
10. FLOW OUTLET SHOULD BE ONTO A STABILIZED AREA (VEGETATION, ROCK, ETC.).
11. THE GUIDELINES SHOWN HEREON ARE SUGGESTIONS ONLY AND MAY BE MODIFIED BY THE ENGINEER.

ROCK FILTER DAMS

JANUARY 2005

PUBLIC WORKS

# TEMPORARY EROSION, SEDIMENT & WATER POLLUTION CONTROL MEASURES STANDARDS 2

| | | | |
|---|---|---|---|
| 95 % SUBMITTAL | PROJECT NO.: 23-04167 | | DATE: 9/25/2025 |
| DRWN. BY: V. VASQUEZ | DSGN. BY: | CHKD. BY: | SHEET NO.: 115 OF 115 |