APPROVED BY:

ROBIN M. GRIFFIN, AICP — DATE
EXECUTIVE DIRECTOR OF DEVELOPMENT SERVICES

EMILY TRUMAN, P.E., C.F.M. — DATE
CITY ENGINEER

GINA ELLISON, P.E. — DATE
PUBLIC WORKS DIRECTOR

MARK TUMMONS, CPRP — DATE
DIRECTOR OF PARKS AND RECREATION

CHIEF JOSHUA DAVIS — DATE
FIRE MARSHAL

OWNER/ DEVELOPER: CITY OF LEANDER
105 N. BRUSHY ST.
LEANDER, TEXAS 78641

ENGINEER/ SURVEYOR: WALKER PARTNERS, LLC
2700 EARL RUDDER FWY., SUITE 1600
COLLEGE STATION, TEXAS 77845
(979) 599-9870
ATTN: R. ALAN MUNGER, P.E., CFM
ATTN: KEVIN HESSEL, R.P.L.S.

SUBMITTAL DATE: MARCH 30, 2023

TDLR PROJECT NO. — **DATE**

CITY OF LEANDER

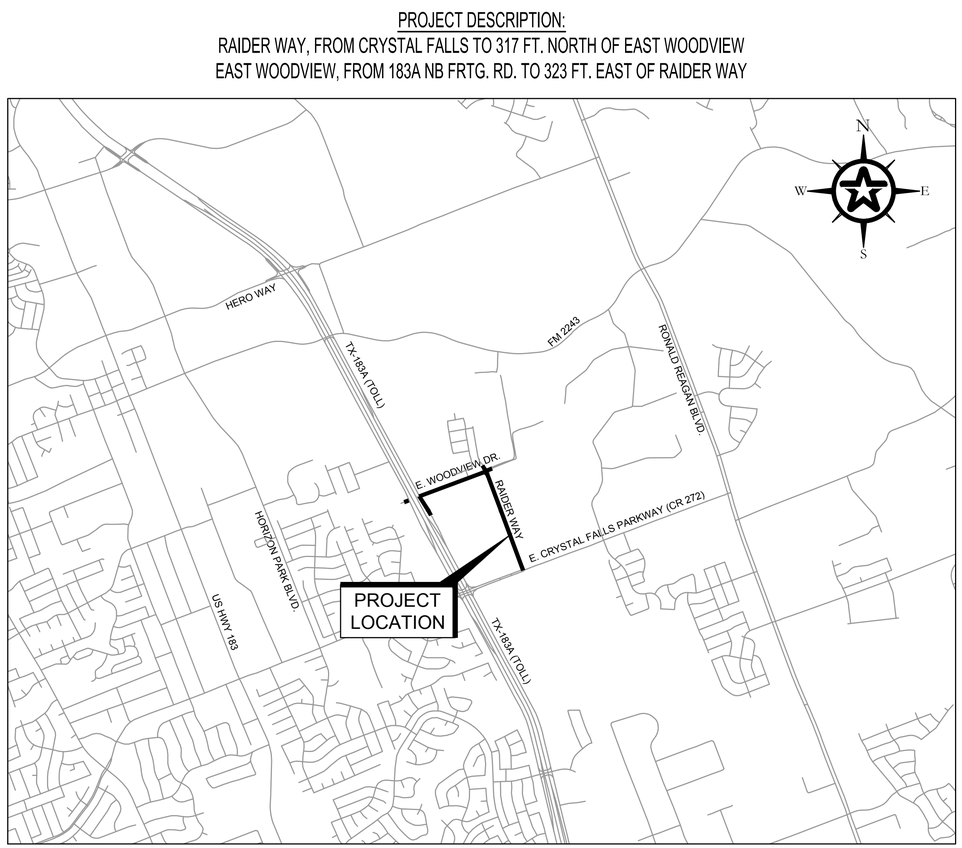
RAIDER WAY ROAD IMPROVEMENTS

CAPITAL IMPROVEMENT PLAN PROJECT CONSTRUCTION PLANS

LEANDER PROJECT NO. _____

CIP NO. 22-026

PROJECT DESCRIPTION:
RAIDER WAY, FROM CRYSTAL FALLS TO 317 FT. NORTH OF EAST WOODVIEW
EAST WOODVIEW, FROM 183A NB FRTG. RD. TO 323 FT. EAST OF RAIDER WAY



LOCATION MAP

0 1000 2000 4000
GRAPHIC SCALE (FEET)

SEE C000 FOR DRAWING INDEX

THE ENGINEER OF RECORD IS SOLELY RESPONSIBLE FOR THE COMPLETENESS, ACCURACY, REGULATORY COMPLIANCE, AND ADEQUACY OF THESE PLANS AND/OR SPECIFICATIONS WHETHER OR NOT THE PLANS AND/OR SPECIFICATIONS WERE REVIEWED BY THE CITY ENGINEER(S).

R. Alan Munger, PE — 3/30/2023
R. ALAN MUNGER, P.E., CFM — DATE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

REVISION #	DESCRIPTION	APPROVAL

Walker Partners
engineers | surveyors
T.B.P.E. REGISTRATION NO. 8053

100% DESIGN FOR REVIEW ONLY

3-00585 CIP 22-026 CITY OF LEANDER- RAIDER WAY ROAD IMPROVEMENTS

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585COVER1.DWG, CS COVER SHEET, 3/30/2023 7:51:35 AM, cschroeder

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REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

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03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C000
SHEET	OF

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REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

INDEX OF DRAWINGS

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R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
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GENERAL NOTES:

REVISED JUNE 22, 2022

ANY CHANGES TO THESE NOTES SHOULD BE CLOUDED ON THE PLAN SET.

CITY CONTACTS:
ENGINEERING MAIN LINE: 512-528-2766
PLANNING DEPARTMENT: 512-528-2750
PUBLIC WORKS MAIN LINE: 512-259-2640
STORMWATER INSPECTIONS: 512-285-0055
UTILITIES MAIN LINE: 512-259-1142
UTILITIES ON-CALL: 512-690-4760
UTILITY LOCATE REQUESTS locates@leandertx.gov

1. THE CONTRACTOR SHALL VERIFY ALL DEPTHS AND LOCATIONS OF EXISTING UTILITIES PRIOR TO ANY CONSTRUCTION. ANY DISCREPANCIES WITH CONSTRUCTION PLANS FOUND IN THE FIELD SHALL BE BROUGHT IMMEDIATELY TO THE ATTENTION OF THE ENGINEER.
2. THE CONTRACTOR SHALL CONTACT THE TEXAS EXCAVATION SYSTEM AT 1-800-344-8377 FOR EXISTING UTILITY LOCATIONS 48 HOURS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UTILITIES THAT ARE TO BE EXTENDED, TIED TO, CROSSED, OR ALTERED; OR SUBJECT TO DAMAGE/INCONVENIENCE BY THE CONSTRUCTION OPERATIONS.
3. CONTACT THE CITY OF LEANDER PUBLIC WORKS DEPARTMENT FOR EXISTING WATER AND WASTEWATER LOCATIONS 48 HOURS PRIOR TO CONSTRUCTION.
   a. LOCATE REQUESTS MUST INCLUDE A COPY OF YOUR 811 TICKET, THE CITY OF LEANDER IS ALLOWED UP TO 48 HOURS TO COMPLY WITH YOUR REQUEST, EXCLUDING WEEKENDS AND DESIGNATED CITY HOLIDAYS.
   b. REFRESH ALL LOCATES BEFORE 14 DAYS - LOCATE REFRESH REQUESTS MUST INCLUDE A COPY OF YOUR 811 TICKET, SUBMIT ALL REQUESTS TO LOCATES@LEANDERTX.GOV. TEXAS PIPELINE DAMAGE PREVENTION LAWS REQUIRE THAT A LOCATE REFRESH REQUEST BE SUBMITTED BEFORE 14 DAYS, OR IF LOCATION MARKERS ARE NO LONGER VISIBLE.
   c. REPORT PIPELINE DAMAGE IMMEDIATELY - IF YOU WITNESS OR EXPERIENCE PIPELINE EXCAVATION DAMAGE, PLEASE CONTACT THE CITY OF LEANDER BY PHONE AT 512-259-2640.
4. ANY CHANGES OR REVISIONS TO THESE PLANS MUST FIRST BE SUBMITTED TO THE CITY BY THE DESIGN ENGINEER FOR REVIEW AND WRITTEN APPROVAL PRIOR TO CONSTRUCTION OF THE REVISION.
5. A TRAFFIC CONTROL PLAN, IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, SHALL BE SUBMITTED TO THE CITY FOR REVIEW AND APPROVAL PRIOR TO ANY PARTIAL OR COMPLETE ROADWAY CLOSURES. TRAFFIC CONTROL PLANS SHALL BE SITE SPECIFIC AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER. LANE CLOSURES ON ARTERIALS AND ANY FULL ROAD CLOSURES REQUIRE MESSAGE BOARDS NOTIFYING THE PUBLIC ONE WEEK PRIOR TO THE CLOSURE.
6. NO WORK IS TO BE PERFORMED BETWEEN THE HOURS OF 9:00 P.M. AND 7:00 A.M. THE CITY INSPECTOR RESERVES THE RIGHT TO REQUIRE THE CONTRACTOR TO UNCOVER ALL WORK PERFORMED WITHOUT INSPECTION FURTHER, THERE IS A NOISE ORDINANCE IN EFFECT FOR CONSTRUCTION ACTIVITY BETWEEN THE HOURS OF 9:00 PM AND 7:00 AM. REQUESTS FOR EXCEPTIONS TO THE ORDINANCE MUST BE MADE TO LEANDER CITY COUNCIL.
7. CONTACT THE CITY INSPECTOR 4 DAYS PRIOR TO WORK TO SCHEDULE ANY INSPECTIONS ON WEEKENDS OR CITY HOLIDAYS.
8. NO STREET LIGHTS OR SIGNS OF ANY KIND ARE TO BE PLACED WITHIN ANY SIDEWALKS.
9. NO BLASTING IS ALLOWED.
10. ANY EXISTING UTILITIES, PAVEMENT, CURBS, SIDEWALKS, STRUCTURES, TREES, ETC., THAT ARE DAMAGED OR REMOVED SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO COST TO THE OWNER.
11. THE CONTRACTOR SHALL GIVE THE CITY OF LEANDER 48 HOURS NOTICE BEFORE BEGINNING EACH PHASE OF CONSTRUCTION. CONTACT ASSIGNED CITY INSPECTOR.
12. A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD WITH THE CONTRACTOR, DESIGN ENGINEER/PERMIT APPLICANT AND THE CITY OF LEANDER REPRESENTATIVES PRIOR TO INSTALLATION OF EROSION/SEDIMENTATION CONTROLS AND TREE PROTECTION MEASURES AND PRIOR TO BEGINNING ANY WORK. THE CONTRACTOR SHALL NOTIFY THE CITY OF LEANDER PLANNING DEPARTMENT PLANNING COORDINATOR AT LEAST THREE (3) DAYS PRIOR TO THE MEETING DATE.
13. THE CONTRACTOR AND ENGINEER SHALL KEEP ACCURATE RECORDS OF ALL CONSTRUCTION THAT DEVIATES FROM THE PLANS. THE ENGINEER SHALL FURNISH THE CITY OF LEANDER ACCURATE "RECORD DRAWINGS" FOLLOWING THE COMPLETION OF ALL CONSTRUCTION. THESE "RECORD DRAWINGS" SHALL MEET THE SATISFACTION OF THE ENGINEERING DEPARTMENTS PRIOR TO FINAL ACCEPTANCE
14. WHEN CONSTRUCTION IS BEING CARRIED OUT WITHIN EASEMENTS, THE CONTRACTOR SHALL CONFINE HIS WORK TO WITHIN THE PERMANENT AND TEMPORARY EASEMENTS. PRIOR TO ACCEPTANCE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ALL TRASH AND DEBRIS WITHIN THE PERMANENT EASEMENTS. CLEANUP SHALL BE TO THE SATISFACTION OF THE ENGINEER.
15. CONTRACTOR TO LOCATE, PROTECT, AND MAINTAIN BENCHMARKS, MONUMENTS, CONTROL POINTS AND PROJECT ENGINEERING REFERENCE POINTS. RE-ESTABLISH DISTURBED OR DESTROYED ITEMS BY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF TEXAS, AT NO ADDITIONAL COST TO OWNER.
16. THE CONTRACTOR SHALL PROTECT ALL EXISTING FENCES. IN THE EVENT THAT A FENCE MUST BE REMOVED, THE CONTRACTOR SHALL REPLACE SAID FENCE OR PORTION THEREOF WITH THE SAME TYPE OF FENCING TO A QUALITY OF EQUAL OR BETTER THAN THE ORIGINAL FENCE.
17. ALL CONSTRUCTION OPERATIONS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH APPLICABLE REGULATIONS OF THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA). OSHA STANDARDS MAY BE PURCHASED FROM THE GOVERNMENT PRINTING OFFICE; INFORMATION AND RELATED REFERENCE MATERIALS MAY BE PURCHASED FROM OSHA, 1033 LA POSADA DR. SUITE 375, AUSTIN, TEXAS 78752-3832.
18. ALL MATERIALS AND CONSTRUCTION PROCEDURES WITHIN THE SCOPE OF THIS CONTRACT WHERE NOT SPECIFICALLY COVERED IN THE PROJECT SPECIFICATIONS SHALL CONFORM TO ALL CITY OF LEANDER DETAILS AND CITY OF AUSTIN STANDARD SPECIFICATIONS.
19. PROJECT SPECIFICATIONS TAKE PRECEDENCE OVER PLANS AND SPECIAL CONDITIONS GOVERN OVER TECHNICAL SPECIFICATIONS.
20. HOT MIX ASPHALTIC CONCRETE PAVEMENT SHALL BE MINIMUM THICKNESS OF 2 INCHES WITH NO RECYCLED ASPHALT SHINGLES CONTENT.
21. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY QUESTIONS THAT MAY RISE CONCERNING THE INTENT, PLACEMENT, OR LIMITS OF DIMENSIONS OR GRADES NECESSARY FOR THE CONSTRUCTION OF THIS PROJECT.
22. CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUIRING ALL PERMITS, TESTS, APPROVALS AND ACCEPTANCES REQUIRED TO COMPLETE CONSTRUCTION OF THIS PROJECT.
23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION BETWEEN HIMSELF AND OTHER CONTRACTORS AND UTILITIES IN THE VICINITY OF THE PROJECT. THIS INCLUDES GAS, WATER, WASTEWATER, ELECTRICAL, TELEPHONE, CABLE TV AND STREET DRAINAGE WORK. ONCE THE CONTRACTOR BECOMES AWARE OF A POSSIBLE CONFLICT, IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE ENGINEER WITHIN TWENTY-FOUR (24) HOURS.
24. THE CONTRACTOR MUST OBTAIN A CONSTRUCTION WATER METER FOR ALL WATER USED DURING CONSTRUCTION. A COPY OF THIS PERMIT MUST BE CARRIED AT ALL TIMES BY ALL WHO USE WATER.
25. CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING ROADS AND DRIVES ADJACENT TO AND NEAR THE SITE FREE FROM SOIL, SEDIMENT AND DEBRIS. CONTRACTOR WILL NOT REMOVE SOIL, SEDIMENT OR DEBRIS FROM ANY AREA OR VEHICLE BY MEANS OF WATER. ONLY SHOVELING AND SWEEPING WILL BE ALLOWED. CONTRACTOR WILL BE RESPONSIBLE FOR DUST CONTROL FROM THE SITE.
26. THE CITY OF LEANDER SHALL NOT BE PETITIONED FOR ACCEPTANCE UNTIL ALL NECESSARY EASEMENT DOCUMENTS HAVE BEEN SIGNED AND RECORDED.
27. AN ENGINEER'S CONCURRENCE LETTER AND RECORD DRAWINGS SHALL BE SUBMITTED TO THE ENGINEERING DEPARTMENT PRIOR TO THE ISSUANCE OF CERTIFICATE OF COMPLETION OR SUBDIVISION ACCEPTANCE. THE ENGINEER AND CONTRACTOR SHALL VERIFY THAT ALL FINAL REVISIONS AND CHANGES HAVE BEEN MADE TO THE DIGITAL COPY PRIOR TO CITY SUBMITTAL. RECORD CONSTRUCTION DRAWINGS, INCLUDING ROADWAY AND ALL UTILITIES SHALL BE PROVIDED TO THE CITY IN DIGITAL FORMAT AS AUTOCAD ".DWG" FILES, MICROSTATION ".DGN" FILES OR ESRI ".SHP" FILES ON CD ROM. LINE WEIGHTS, LINE TYPES AND TEXT SIZE SHALL BE SUCH THAT IF HALF-SIZE PRINTS (11"X17") WERE PRODUCED, THE PLANS WOULD STILL BE LEGIBLE. ALL REQUIRED DIGITAL FILES SHALL CONTAIN A MINIMUM OF TWO CONTROL POINTS REFERENCED TO THE STATE PLANE GRID COORDINATE SYSTEM - TEXAS CENTRAL ZONE (4203), IN US SURVEY FEET AND SHALL INCLUDE ROTATION INFORMATION AND SCALE FACTOR REQUIRED TO REDUCE SURFACE COORDINATES TO GRID COORDINATES IN US SURVEY FEET
28. TREES IN EXISTING ROW SHOULD BE PROTECTED OR NOTED IN THE PLANS TO BE REMOVED.

CONSTRUCTION SEQUENCE NOTES:

1. REFERENCE SHEET C900 FOR CONSTRUCTION SEQUENCE NOTES.

EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL INSTALL EROSION/SEDIMENTATION CONTROLS AND TREE PROTECTIVE FENCING PRIOR TO ANY WORK (CLEARING, GRUBBING OR EXCAVATION). CONTACT STORMWATER INSPECTOR FOR ON SITE INSPECTION PRIOR TO BEGINNING CONSTRUCTION.
2. THE CONTRACTOR IS REQUIRED TO INSPECT THE CONTROLS AND FENCES AT WEEKLY INTERVALS AND AFTER SIGNIFICANT RAINFALL EVENTS TO ENSURE THAT THEY ARE FUNCTIONING PROPERLY. THE PERSON(S) RESPONSIBLE FOR MAINTENANCE OF CONTROLS AND FENCES SHALL IMMEDIATELY MAKE ANY NECESSARY REPAIRS TO DAMAGED AREAS. SILT ACCUMULATION AT CONTROLS MUST BE REMOVED WHEN THE DEPTH REACHES SIX (6) INCHES.
3. THE TEMPORARY SPOILS DISPOSAL SITE IS TO BE SHOWN IN THE EROSION CONTROL MAP.
4. ANY ON-SITE SPOILS DISPOSAL SHALL BE REMOVED PRIOR TO ACCEPTANCE UNLESS SPECIFICALLY SHOWN ON THE PLANS. THE DEPTH OF SPOIL SHALL NOT EXCEED 10 FEET IN ANY AREA.
5. ALL AREAS DISTURBED OR EXPOSED DURING CONSTRUCTION SHALL BE RESTORED WITH A MINIMUM OF 6 INCHES OF TOPSOIL AND COMPOST BLEND. TOPSOIL ON SINGLE FAMILY LOTS MAY BE INSTALLED WITH HOME CONSTRUCTION. THE TOPSOIL AND COMPOST BLEND SHALL CONSIST OF 75% TOPSOIL AND 25% COMPOST.
6. SEEDING FOR REESTABLISHING VEGETATION SHALL COMPLY WITH THE AUSTIN GROW GREEN GUIDE OR WILLIAMSON COUNTY'S PROTOCOL FOR SUSTAINABLE ROADSIDES (SPEC 164--WC001 SEEDING FOR EROSION CONTROL). RESEEDING VARIETIES OF BERMUDA SHALL NOT BE USED.
7. STABILIZED CONSTRUCTION ENTRANCE IS REQUIRED AT ALL POINTS WHERE CONSTRUCTION TRAFFIC IS EXITING THE PROJECT ONTO EXISTING PAVEMENT. LINEAR CONSTRUCTION PROJECTS MAY REQUIRE SPECIAL CONSIDERATION. ROADWAYS SHALL REMAIN CLEAR OF SILT AND MUD.
8. TEMPORARY STOP SIGNS SHOULD BE INSTALLED AT ALL CONSTRUCTION ENTRANCES WHERE A STOP CONDITION DOES NOT ALREADY EXIST.
9. IN THE EVENT OF INCLEMENT WEATHER THAT MAY RESULT IN A FLOODING SITUATION, THE CONTRACTOR SHALL REMOVE INLET PROTECTION MEASURES UNTIL SUCH TIME AS THE WEATHER EVENT HAS PASSED.

WATER AND WASTEWATER NOTES:

1. PRESSURE TAPS SHALL BE IN ACCORDANCE WITH CITY OF LEANDER STANDARD SPECIFICATIONS. THE CONTRACTOR SHALL PERFORM ALL EXCAVATION, ETC. AND SHALL FURNISH, INSTALL AND AIR TEST THE SLEEVE AND VALVE. A CITY OF LEANDER INSPECTOR MUST BE PRESENT WHEN THE CONTRACTOR MAKES A TAP, AND/OR ASSOCIATED TESTS. A MINIMUM OF TWO (2) WORKING DAYS NOTICE IS REQUIRED. "SIZE ON SIZE" TAPS WILL NOT BE PERMITTED UNLESS MADE BY THE USE OF AN APPROVED FULL-CIRCLE GASKETED TAPPING SLEEVE. CONCRETE BLOCKING SHALL BE PLACED BEHIND AND UNDER ALL TAP SLEEVES A MINIMUM OF 24 HOURS PRIOR TO THE BRANCH BEING PLACED INTO SERVICE. BLOCKING SHALL BE INSPECTED PRIOR TO BACKFILL.
2. FIRE HYDRANTS ON MAINS UNDER CONSTRUCTION SHALL BE SECURELY WRAPPED WITH A BLACK POLY WRAP BAG AND TAPED INTO PLACE. THE POLY WRAP SHALL BE REMOVED WHEN THE MAINS ARE ACCEPTED AND PLACED INTO SERVICE.
3. CURVILINEAR WASTEWATER DESIGN LAYOUT IS NOT PERMITTED.
4. THRUST BLOCKING OR RESTRAINTS SHALL BE IN ACCORDANCE WITH THE CITY OF LEANDER STANDARD SPECIFICATIONS AND REQUIRED AT ALL FITTINGS PER DETAIL OR MANUFACTURER'S RECOMMENDATION. ALL FITTINGS SHALL HAVE BOTH THRUST BLOCKING AND RESTRAINTS.
5. MANDREL TESTING WILL BE REQUIRED ON ALL WASTEWATER PIPE. PER TCEQ, THIS TEST MUST BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE AT LEAST 30 DAYS.
6. ALL NEWLY INSTALLED PIPES AND RELATED PRODUCTS MUST CONFORM TO AMERICAN NATIONAL STANDARDS INSTITUTE/NATIONAL SANITATION FOUNDATION (ANSI/NSF) STANDARD 61 AND MUST BE CERTIFIED BY AND ORGANIZATION ACCREDITED BY ANSI
7. DURING PERIODS OF EXTENDED DRY WEATHER, TRENCH BACKFILL MUST BE COMPACTED BY FLOODING THE TRENCHES AS DIRECTED BY THE CITY ENGINEER.
8. ALL WATER SERVICE, WASTEWATER SERVICE AND VALVE LOCATIONS SHALL BE APPROPRIATELY STAMPED AS FOLLOWS:

WATER SERVICE	"W" ON TOP OF CURB
WASTEWATER SERVICE	"S" ON TOP OF CURB
VALVE	"V" ON TOP OF CURB

9. TOOLS FOR STAMPING THE CURBS SHALL BE PROVIDED BY THE CONTRACTOR. OTHER APPROPRIATE MEANS OF STAMPING SERVICE AND VALVE LOCATIONS SHALL BE PROVIDED IN AREAS WITHOUT CURBS. SUCH MEANS OF STAMPING SHALL BE SPECIFIED BY THE ENGINEER AND ACCEPTED BY THE CITY OF LEANDER
10. ALL PLASTIC PIPES FOR USE IN PUBLIC WATER SYSTEMS MUST BEAR THE NATIONAL SANITATION FOUNDATION SEAL OF APPROVAL (NSF-PW) AND HAVE AN ASTM DESIGN PRESSURE RATING OF AT LEAST 200 PSI.
11. NO PIPE OR FITTING WHICH HAS BEEN USED FOR ANY PURPOSE OTHER THAN THE CONVEYANCE OF DRINKING WATER SHALL BE ACCEPTED OR RELOCATED FOR USE IN ANY PUBLIC DRINKING WATER SUPPLY.
12. TYPICAL DEPTH OF COVER FOR ALL WASTEWATER LINES SHALL BE 48" MINIMUM, WATER LINES SHALL BE 36" MINIMUM UNDER BOTH PAVEMENT AND NATURAL GROUND. STORM SEWER SHALL BE 24" MINIMUM UNDER NATURAL GROUND
13. THE HYDROSTATIC LEAKAGE RATE SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY AWWA FORMULAS.
14. ALL WATER MAINS, DISTRIBUTION LINES AND SERVICE LINES SHALL BE INSTALLED IN ENCASEMENT PIPE UNDERNEATH EXISTING STREETS AND OTHER PAVED SURFACES UNLESS APPROVED WITH PLANS.
15. ALL MECHANICAL RESTRAINTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
16. ALL DEAD-END WATER MAINS SHALL HAVE THRUST RESTRAINTS INSTALLED ON THE LAST THREE PIPE-LENGTHS (STANDARD 20' LAYING LENGTH), AT MINIMUM, AND THRUST BLOCKS INSTALLED ON THE PLUG. ADDITIONAL THRUST RESTRAINTS MAY BE REQUIRED BASED UPON THE MANUFACTURER'S RECOMMENDATIONS AND/OR CALCULATIONS BY THE ENGINEER OF RECORD.
17. WHERE WATER LINES CROSS WASTEWATER LINES AND THERE IS LESS THAN 9 FEET CLEARANCE BETWEEN LINES, THE WASTEWATER LINE SHALL BE PLACED SO THAT THE WASTEWATER PIPE SECTION IS CENTERED ON THE WATER LINE AND CONSTRUCTED IN ACCORDANCE WITH TCEQ CHAPTERS 217.53(b) AND 290.44(e).
18. PIPE MATERIAL FOR WATER MAINS SHALL BE PVC (AWWA C900-16 MIN. 235 PSI PRESSURE RATING). WATER SERVICES (2" OR LESS) SHALL BE POLYETHYLENE TUBING (BLACK, 200PSI, SDR-(9)). DUCTILE IRON PIPE (AWWA C115/C151, MIN. PRESSURE CLASS 250) MAY BE USED FOR WATER MAINS WITH THE EXPRESS APPROVAL OF CITY OF LEANDER ENGINEERING.
19. PIPE FOR PRESSURE WASTEWATER MAINS SHALL BE PVC (AWWA C900-16), GREEN AND MARKED FOR SEWER. PIPE MATERIAL FOR GRAVITY WASTEWATER MAINS SHALL BE PVC (ASTM D2241, D3034 MAX. SDR-26 OR PS115 F679) OR FIBERGLASS WITH PIPE STIFFNESS OF 72 PSI PER COA SPL WW-509.
20. ALL FIRE HYDRANT LEADS SHALL BE DUCTILE IRON PIPE (AWWA C115/C151 PRESSURE CLASS 350).
21. INTERIOR SURFACES OF ALL DUCTILE IRON POTABLE OR RECLAIMED WATER PIPE SHALL BE CEMENT-MORTAR LINED AND SEAL COATED AS REQUIRED BY AWWA C104.
22. ALL IRON PIPE AND FITTINGS SHALL BE WRAPPED WITH MINIMUM 8-MIL POLYETHYLENE.
23. THE CONTRACTOR SHALL CONTACT THE ENGINEERING DEPARTMENT INSPECTOR AT 528-2700 AT LEAST 48 HOURS PRIOR TO CONNECTING TO THE EXISTING WATER LINES.
24. ALL MANHOLES SHALL BE CONCRETE WITH CAST IRON RING AND COVER. TAPPING OF FIBERGLASS MANHOLES SHALL NOT BE ALLOWED.
25. EXISTING MANHOLES MODIFIED BY CONSTRUCTION ACTIVITY SHALL BE TESTED FOR LEAKAGE BY VACUUM. ANY EXISTING MANHOLE WHICH FAILS TO PASS THE VACUUM TEST SHALL BE CLOSELY EXAMINED BY THE INSPECTOR AND THE CONTRACTOR TO DETERMINE IF THE MANHOLE CAN BE REPAIRED. THEREAFTER, THE CONTRACTOR SHALL EITHER REPAIR OR REMOVE AND REPLACE THE MANHOLE AS DIRECTED.
26. PIPE CONNECTIONS TO EXISTING MANHOLES AND JUNCTION BOXES SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF AUSTIN SPECIFICATION 506.5.F.
27. LINE FLUSHING OR ANY ACTIVITY USING A LARGE QUANTITY OF WATER MUST BE COORDINATED WITH THE PUBLIC WORKS DEPARTMENT.
28. THE CONTRACTOR, AT HIS EXPENSE, SHALL PERFORM STERILIZATION OF ALL CONSTRUCTED POTABLE WATER LINES AND SHALL PROVIDE ALL EQUIPMENT (INCLUDING TEST GAUGES), SUPPLIES (INCLUDING CONCENTRATED CHLORINE DISINFECTING MATERIAL), AND NECESSARY LABOR REQUIRED FOR THE STERILIZATION PROCEDURE. THE STERILIZATION PROCEDURE SHALL BE MONITORED BY CITY OF LEANDER PERSONNEL. WATER SAMPLES WILL BE COLLECTED BY THE CITY OF LEANDER TO VERIFY EACH TREATED LINE HAS ATTAINED AN INITIAL CHLORINE CONCENTRATION OF 50 PPM. WHERE MEANS OF FLUSHING IS NECESSARY, THE CONTRACTOR, AT HIS EXPENSE, SHALL PROVIDE FLUSHING DEVICES AND REMOVE SAID DEVICES PRIOR TO FINAL ACCEPTANCE BY THE CITY OF LEANDER.
29. SAMPLING TAPS SHALL BE BROUGHT UP TO 3 FEET ABOVE GRADE AND SHALL BE EASILY ACCESSIBLE FOR CITY PERSONNEL. AT THE CONTRACTORS' REQUEST, AND IN HIS PRESENCE, SAMPLES FOR BACTERIOLOGICAL TESTING WILL BE COLLECTED BY THE CITY OF LEANDER NOT LESS THAN 24 HOURS AFTER THE TREATED LINE HAS BEEN FLUSHED OF THE CONCENTRATED CHLORINE SOLUTION AND CHARGED WITH WATER APPROVED BY THE CITY.
30. TESTING SHALL BE PERFORMED FOR ALL WASTEWATER PIPE INSTALLED AND PRESSURE PIPE HYDROSTATIC TESTING OF ALL WATER LINES CONSTRUCTED. THE OWNER'S CONTRACTOR SHALL PROVIDE ALL EQUIPMENT (INCLUDING PUMPS AND GAUGES), SUPPLIES AND LABOR NECESSARY TO PERFORM THE TESTS. THE CONTRACTOR SHALL NOTIFY THE CITY OF LEANDER ENGINEERING DEPARTMENT NO LESS THAN 48 HOURS PRIOR TO PERFORMING STERILIZATION, QUALITY TESTS, OR PRESSURE TESTS. A CITY OF LEANDER INSPECTOR SHALL BE PRESENT FOR ALL TESTS AND SHALL BE PAID FOR BY THE OWNER/CONTRACTOR. THESE SERVICES ARE PAID FOR AT THE TIME OF CONSTRUCTION PLAN SUBMITTAL.
31. THE CONTRACTOR SHALL NOT OPEN OR CLOSE ANY VALVE UNLESS AUTHORIZED BY THE CITY OF LEANDER.
32. ALL VALVE BOXES AND COVERS SHALL BE CAST IRON.
33. ALL WATER VALVE COVERS ARE TO BE PAINTED BLUE.
34. ALL WATER METER BOXES SHALL BE:

a. SINGLE, 1" METER AND BELOW	DFW37F-12-1CA, OR EQUAL
b. DUAL, 1" METERS AND BELOW	DFW39F-12-1CA, OR EQUAL
c. 1.5" SINGLE METER	DFW65C-14-1CA, OR EQUAL
d. 2" SINGLE METER	DFW1730F-12-1CA, OR EQUAL

35. SAND, AS DESCRIBED IN AUSTIN SPECIFICATION ITEM 510 PIPE, SHALL NOT BE USED AS BEDDING FOR WATER AND WASTEWATER LINES. ACCEPTABLE BEDDING MATERIALS ARE PIPE BEDDING STONE, PEA GRAVEL AND IN LIEU OF SAND, A NATURALLY OCCURRING OR MANUFACTURED STONE MATERIAL CONFORMING TO ASTM C33 FOR STONE QUALITY AND MEETING THE FOLLOWING GRADATION SPECIFICATION:

SIEVE SIZE	PERCENT RETAINED BY WEIGHT
1/2"	0
3/8"	0-2
#4	40-85
#10	95-100

36. THE CONTRACTOR IS HEREBY NOTIFIED THAT CONNECTING TO, SHUTTING DOWN, OR TERMINATING EXISTING UTILITY LINES MAY HAVE TO OCCUR AT OFF-PEAK HOURS. SUCH HOURS ARE USUALLY OUTSIDE NORMAL WORKING HOURS AND POSSIBLY BETWEEN 12 AM AND 6 AM.
37. ALL WASTEWATER CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) REGULATIONS, 30 TAC CHAPTER 213 AND 30 TAC CHAPTER 217, AS APPLICABLE. WHENEVER TCEQ AND CITY OF LEANDER SPECIFICATION CONFLICT, THE MORE STRINGENT SHALL APPLY.
38. MANHOLES SHALL BE COATED PER CITY OF AUSTIN SPL WW-511 (RAVEN 405 OR SPRAYWALL).
39. DENSITY TESTING FOR TRENCH BACKFILL LOCATED WITHIN THE LIMITS OF THE PAVED AREA IS TO BE DONE IN 12" LIFTS EVERY 500' AND AT LEAST ONCE PER LINE SEGMENT
40. ALL GRAVITY WASTEWATER MAINS TO BE TESTED BY CAMERA AND PAID FOR BY THE CONTRACTOR. CAMERA TESTING FOR WASTEWATER LINES IN ROADWAY SHALL OCCUR BEFORE PAVING. CONTRACTOR SHALL PROVIDE THE CITY WITH A DVD COPY OF THE FULL CAMERA INSPECTION.
41. RECLAIMED AND RECYCLED WATER LINE SHALL BE CONSTRUCTED OF "PURPLE PIPE." ALL RECLAIMED AND RECYCLED WATER VALVE COVERS SHALL BE SQUARE AND PAINTED PURPLE.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

GENERAL NOTES

03/22/2023
DATE

R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C002
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585NOTES.DWG, GENERAL NOTES, 3/30/2023 7:52:49 AM, cschroeder

STREET AND DRAINAGE NOTES:

1. ALL SIDEWALKS SHALL COMPLY WITH THE AMERICANS WITH DISABILITIES ACT. THE CITY OF LEANDER HAS NOT REVIEWED THESE PLANS FOR COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT, OR ANY OTHER ACCESSIBILITY LEGISLATION, AND DOES NOT WARRANTY OR APPROVE THESE PLANS FOR ANY ACCESSIBILITY STANDARDS.
2. PRIOR TO ACCEPTANCE THE ENGINEER SHALL SUBMIT DOCUMENTATION THAT THE IMPROVEMENTS WERE INSPECTED BY TDLR OR A REGISTERED ACCESSIBLITY SPECIALIST (RAS) AND ARE IN COMPLIANCE WITH THE REQUIREMENTS OF THE TABA.
3. CONTRACTOR SHALL PROVIDE QUALITY TESTING FOR ALL INFRASTRUCTURES TO BE ACCEPTED AND MAINTAINED BY THE CITY OF LEANDER AFTER COMPLETION. THE CONTRACTOR SHALL NOTIFY THE CITY OF LEANDER ENGINEERING DEPARTMENT AT 528-2700 NO LESS THAN 48 HOURS PRIOR TO ANY TESTING.
4. BACKFILL BEHIND THE CURB SHALL BE COMPACTED TO OBTAIN A MINIMUM OF 95% MAXIMUM DENSITY TO WITHIN 6" OF TOP OF CURB. MATERIAL USED SHALL BE PRIMARILY GRANULAR WITH NO ROCKS LARGER THAN 6" IN THE GREATEST DIMENSION. THE REMAINING 6" SHALL BE CLEAN TOPSOIL FREE FROM ALL CLODS AND SUITABLE FOR SUSTAINING PLANT LIFE
5. A MINIMUM OF 6" OF TOPSOIL SHALL BE PLACED BETWEEN THE CURB AND RIGHT-OF-WAY AND IN ALL DRAINAGE CHANNELS EXCEPT CHANNELS CUT IN STABLE ROCK.
6. DEPTH OF COVER FOR ALL CROSSINGS UNDER PAVEMENT, INCLUDING GAS, ELECTRIC TELEPHONE, CABLE TV, ETC., SHALL BE A MINIMUM OF 36" BELOW SUBGRADE.
7. STREET RIGHT-OF-WAY SHALL BE GRADED AT A SLOPE OF ¼" PER FOOT TOWARD THE CURB UNLESS OTHERWISE INDICATED. HOWEVER, IN NO CASE SHALL THE WIDTH OF RIGHT-OF-WAY AT ¼" PER FOOT SLOPE BE LESS THAN 10 FEET UNLESS A SPECIFIC REQUEST FOR AN ALTERNATE GRADING SCHEME IS MADE TO AND ACCEPTED BY THE CITY OF LEANDER PUBLIC WORKS DEPARTMENT.
8. BARRICADES BUILT TO THE CITY OF LEANDER STANDARDS SHALL BE ERECTED ON ALL DEAD-END STREETS AND AS NECESSARY DURING CONSTRUCTION TO MAINTAIN JOB AND PUBLIC SAFETY.
9. ALL REINFORCED CONCRETE PIPE SHALL BE MINIMUM CLASS III OF TONGUE AND GROOVE OR O-RING JOINT DESIGN.
10. THE CONTRACTOR IS TO NOTIFY THE ENGINEERING INSPECTOR 48 HOURS PRIOR TO THE FOLLOWING TESTING: PROOF ROLLING SUB-GRADE AND EVERY LIFT OF ROADWAY EMBANKMENT, IN-PLACE DENSITY TESTING OF EVERY BASE COURSE, AND ASPHALT CORES. ALL OF THIS TESTING MUST BE WITNESSED BY A CITY OF LEANDER REPRESENTATIVE.
11. THE CONTRACTOR MUST PROVIDE A PNEUMATIC TRUCK PER TXDOT SPEC FOR PROOF ROLLING.
12. AT INTERSECTIONS WHICH HAVE VALLEY DRAINAGE, THE CROWNS OF THE INTERSECTING STREETS WILL CULMINATE IN A DISTANCE OF 40 FEET FROM INTERSECTING CURB LINE UNLESS OTHERWISE NOTED.
13. AT THE INTERSECTION OF TWO 44' STREETS OR LARGER, THE CROWNS OF THE INTERSECTING STREETS WILL CULMINATE IN A DISTANCE OF 40 FEET FROM INTERSECTING CURB LINE UNLESS OTHERWISE NOTED.
14. A CURB LAYDOWN IS REQUIRED AT ALL POINTS WHERE THE PROPOSED SIDEWALK INTERSECTS THE CURB.
15. ALL STRIPING, WITH THE EXCEPTION OF STOP BARS, CROSS WALKS, WORDS AND ARROWS, IS TO BE TYPE II (WATER BASED). STOP BARS, CROSS WALKS, WORDS AND ARROWS REQUIRE TYPE I THERMOPLASTIC.
16. MANHOLE FRAMES, COVERS, VALVES, CLEAN-OUTS, ETC. SHALL BE RAISED TO GRADE PRIOR TO FINAL PAVEMENT CONSTRUCTION.
17. CONTRACTOR SHALL NOTIFY THE LEANDER ENGINEERING DEPARTMENT AT 528-2700 AT LEAST 48 HOURS PRIOR TO THE INSTALLATION OF ANY DRAINAGE FACILITY WITHIN A DRAINAGE EASEMENT OR STREET ROW. THE METHOD OF PLACEMENT AND COMPACTION OF BACKFILL IN THE CITY'S ROW MUST BE APPROVED PRIOR TO THE START OF BACKFILL OPERATIONS.
18. A STOP BAR SHALL BE PLACED AT ALL STOP SIGN LOCATIONS.
19. A MINIMUM OF SEVEN DAYS OF CURE TIME IS REQUIRED FOR HMAC PRIOR TO THE INTRODUCTION OF PUBLIC VEHICULAR TRAFFIC TO ANY STREETS.
20. THE GEOTECHNICAL ENGINEER SHALL INSPECT THE SUBGRADE FOR COMPLIANCE WITH THE DESIGN ASSUMPTIONS MADE DURING PREPARATION OF THE SOILS REPORT. ANY ADJUSTMENTS THAT ARE REQUIRED SHALL BE MADE THROUGH REVISIONS OF THE CONSTRUCTION PLANS.
21. GEOTECHNICAL INVESTIGATION INFORMATION AND PAVEMENT RECOMMENDATIONS WERE PROVIDED BY TSIT. PAVEMENT RECOMMENDATIONS ARE AS FOLLOWS:

6.3 **PAVEMENT SECTIONS**

TABLE (1) Roundabout Intersection Raider Way and E Woodview Drive

Annual ESALs	100,000		
ESALs for 25 Years, g =¾3.85	3,575,000		
Course Thicknesses (in)	Concrete Pavement JCRP TxDOT 360(in)	HMA Bondbreaker TxDOT 292 (in)	Cement Treated Base (Plant Mix) Class M (TxDOT 276) (in)
	8.0	1.0	6.0

Table 2 Raider Way Pavement

Annual ESALs	100,000			200,000			300,000			500,000		
ESALs for 25 years	3,575,000			7,150,000			10,725,000			17,875,000		
Course/Thicknesses (inches)	Surface Course TxDOT Ty C (in)	Binder Course TxDOT Ty B (in)	Aggregate Base Course Item 247 (in)	Surface Course (in)	Binder Course (in)	Aggregate Base Course (in)	Surface Course (in)	Binder Course (in)	Aggregate Base Course (in)	Surface Course (in)	Binder Course (in)	Aggregate Base Course (in)
Tensar TX5 Tri-axial Geogrid Module	4.0	-	14.00	3.5	3.0	12.0	3.0	3.0	14.0	3.0	3.0	18.0
Tensar DMs 6240 Bi-Axial Geogrid Module	3.0	3.0	13.0	3.0	3.0	18.0	-	-	-	-	-	-
Asphalt Concrete pavement w/o Geogrid	2.0	4.0	12.0									

Table 3 E Woodview Drive Pavement

Annual ESALs	100,000			200,000			300,000			500,000		
ESALs for 25 years	3,575,000			7,150,000			10,725,000			17,875,000		
Course/Thicknesses (inches)	Surface Course TxDOT Ty C (in)	Binder Course TxDOT Ty B (in)	Aggregate Base Course Item 247 (in)	Surface Course (in)	Binder Course (in)	Aggregate Base Course (in)	Surface Course (in)	Binder Course (in)	Aggregate Base Course (in)	Surface Course (in)	Binder Course (in)	Aggregate Base Course (in)
Tensar TX5 Tri-axial Geogrid Module	3.0	-	9.00	4.0	-	9.0	4.0	-	10.0	3.0	3.0	8.0
Tensar DMs 6240 Bi-Axial Geogrid Module	4.0	-	10.0	5.0	-	10.0	5.0	-	12.0	3.0	3.0	11.0
Asphalt Concrete pavement w/o Geogrid	2.0	4.0	10.0									

TRENCH SAFETY NOTES:

1. TRENCH SAFETY SYSTEMS TO BE UTILIZED FOR THIS PROJECT ARE DESCRIBED IN ITEM 509S "TRENCH SAFETY SYSTEMS" OF THE CITY OF AUSTIN STANDARD SPECIFICATIONS AND SHALL BE IN ACCORDANCE WITH THE LAWS OF THE STATE OF TEXAS AND THE U.S. OCCUPATION SAFETY AND HEALTH ADMINISTRATION REGULATIONS.

GRADING NOTES:

1. POSITIVE DRAINAGE SHALL BE MAINTAINED ON ALL SURFACE AREAS WITHIN THE SCOPE OF THIS PROJECT. CONTRACTOR SHOULD TAKE PRECAUTIONS NOT TO ALLOW ANY PONDING OF WATER.
2. THE CONTRACTOR SHALL CONSTRUCT EARTHEN EMBANKMENTS WITH SLOPES NO STEEPER THAN 3:1 AND COMPACT SOIL TO 95% OF MAXIMUM DENSITY IN ACCORDANCE WITH THE CITY OF AUSTIN STANDARD SPECIFICATIONS.
3. AREAS OF SOIL DISTURBANCE ARE LIMITED TO GRADING AND IMPROVEMENTS SHOWN. ALL OTHER AREAS WILL NOT BE DISTURBED.

BENCHMARK NOTES:

1. REFERENCE SHEET C006 FOR PROJECT BENCHMARK NOTES.

TCEQ REQUIREMENTS FOR EDWARDS AQUIFER CONTRIBUTING ZONE:

THE FOLLOWING TCEQ REQUIREMENTS (FORM TCEQ-0592A, REV. 7/15/15) ARE APPLICABLE TO ALL WORK THAT DISTURBS 5 OR MORE ACRES IN THE CONTRIBUTING ZONE OF THE EDWARDS AQUIFER IN HAYS, TRAVIS AND/OR WILLIAMSON COUNTIES AND MUST BE ADHERED TO BY THE CONTRACTOR AND ALL SUBCONTRACTORS:

1. A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START OF ANY GROUND DISTURBANCE OR CONSTRUCTION ACTIVITIES. THIS NOTICE MUST INCLUDE:
   - THE NAME OF THE APPROVED PROJECT;
   - THE ACTIVITY START DATE; AND
   - THE CONTACT INFORMATION OF THE PRIME CONTRACTOR.
2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT SHOULD BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED CONTRIBUTING ZONE PLAN (CZP) AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE ACTIVITIES, THE CONTRACTOR(S) SHOULD KEEP COPIES OF THE APPROVED PLAN AND APPROVAL LETTER ON-SITE.
3. NO HAZARDOUS SUBSTANCE STORAGE TANK SHALL BE INSTALLED WITHIN 150 FEET OF A WATER SUPPLY SOURCE, DISTRIBUTION SYSTEM, WELL, OR SENSITIVE FEATURE.
4. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THESE CONTROLS MUST REMAIN IN PLACE UNTIL THE DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.
5. ANY SEDIMENT THAT ESCAPES THE CONSTRUCTION SITE MUST BE COLLECTED AND PROPERLY DISPOSED OF BEFORE THE NEXT RAIN EVENT TO ENSURE IT IS NOT WASHED INTO THE SURFACE STREAMS, SENSITIVE FEATURES, ETC.
6. SEDIMENT MUST BE REMOVED FROM THE SEDIMENT TRAPS OR SEDIMENTATION BASINS WHEN IT OCCUPIES 50% OF THE BASIN'S DESIGN CAPACITY.
7. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER SHALL BE PREVENTED FROM BEING DISCHARGED OFFSITE.
8. ALL EXCAVATED MATERIAL THAT WILL BE STORED ON-SITE MUST HAVE PROPER E&S CONTROLS
9. IF PORTIONS OF THE SITE WILL HAVE A CEASE IN CONSTRUCTION ACTIVITY LASTING LONGER THAN 14 DAYS, SOILSTABILIZATION IN THOSE AREAS SHALL BE INITIATED AS SOON AS POSSIBLE PRIOR TO THE 14TH DAY OF INACTIVITY. IF ACTIVITY WILL RESUME PRIOR TO THE 21ST DAY, STABILIZATION MEASURES ARE NOT REQUIRED. IF DROUGHT CONDITIONS OR INCLEMENT WEATHER PREVENT ACTION BY THE 14TH DAY, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS POSSIBLE.
10. THE FOLLOWING INFORMATION SHOULD BE MAINTAINED AND MADE AVAILABLE TO THE TCEQ UPON REQUEST:
    - THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR;
    - THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE; AND
    - THE DATES WHEN STABILIZATION MEASURES ARE INITIATED
11. THE HOLDER OF ANY APPROVED CZP MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:
    A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY BEST MANAGEMENT PRACTICES (BMPS) OR STRUCTURE(S), INCLUDING BUT NOT LIMITED TO TEMPORARY OR PERMANENT PONDS, DAMS, BERMS, SILT FENCES, AND DIVERSIONARY STRUCTURES;
    B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED;
    C. ANY CHANGE THAT WOULD SIGNIFICANTLY IMPACT THE ABILITY TO PREVENT POLLUTION OF THE EDWARDS AQUIFER; OR
    D. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED AS UNDEVELOPED IN THE APPROVED CONTRIBUTING ZONE PLAN.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

GENERAL NOTES

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C003
SHEET	OF

G:\PROJECTS\3-0058S\2 DESIGN\2.0 CAD\3-00585NOTES.DWG, C003 GENERAL NOTES, 3/30/2023 7:52:53 AM, cschroeder

GENERAL NOTES:

1. PRIOR TO BEGINNING ANY CONSTRUCTION, THE CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF ALL KNOWN EXISTING UTILITIES WHICH WILL EITHER BE CONNECTED TO, ADJACENT, OR CROSSED, IF THERE ARE ANY CONFLICTS BETWEEN PROPOSED AND EXISTING UTILITIES, OR IF THE EXISTING UTILITIES ARE IN ANY WAY DIFFERENT FROM WHAT IS SHOWN ON THE DRAWINGS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE ENGINEER BEFORE PROCEEDING WITH ANY CONSTRUCTION. THE CONTRACTOR SHALL WORK WITH THE ENGINEER IN RESOLVING SUCH CONFLICTS BEFORE PROCEEDING WITH WORK.
2. WHEN UNLOCATED OR INCORRECTLY LOCATED UNDERGROUND PIPING, OR A BREAK LOCATED IN THE LINE, OR OTHER UTILITIES AND SERVICES ARE ENCOUNTERED DURING WORK OPERATIONS, NOTIFY THE APPLICABLE UTILITY COMPANY IMMEDIATELY TO OBTAIN PROCEDURE DIRECTIONS. COOPERATE WITH THE APPLICABLE UTILITY COMPANY IN MAINTAINING ACTIVE SERVICES IN OPERATION.
3. CONTRACTOR SHALL TAKE ALL DUE PRECAUTIONS TO PROTECT EXISTING FACILITIES AND FEATURES FROM DAMAGE DURING CONSTRUCTION, INCLUDING ALL FEATURES ON PRIVATE PROPERTY (TREES, LANDSCAPING IRRIGATION, FENCES, ETC.) AND FRANCHISE UTILITIES. ITEMS ARE TO BE REMOVED OR ABANDONED AS SHOWN ON DRAWINGS. ANY DAMAGE TO EXISTING FEATURES THAT ARE NOT CALLED TO BE REMOVED SHALL BE REPAIRED/RESTORED TO EXISTING OR BETTER CONDITIONS BY THE CONTRACTOR, AT NO ADDITIONAL COST TO THE OWNER.
4. PROTECT MAILBOXES AND OTHER FEATURES LOCATED WITHIN ROW. IF FEATURES CONFLICT WITH PROPOSED CONSTRUCTION, CONTRACTOR SHALL REMOVE, PROTECT, AND REINSTALL FEATURES ACCORDINGLY (TEMPORARY MAILBOXES WILL BE REQUIRED). PROTECTING INSTALLED FEATURES IS SUBSIDIARY TO OTHER BID ITEMS.
5. CONTRACTOR SHALL NOT STORE MATERIALS, EQUIPMENT OR OTHER CONSTRUCTION ITEMS ON ADJACENT PROPERTIES OR ROW WITHOUT THE PRIOR WRITTEN CONSENT OF THE PROPERTY OWNER OR THE CITY (FOR WITHIN ROW).
6. THE ENGINEER WILL ESTABLISH HORIZONTAL AND VERTICAL CONTROL ONE TIME PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROTECT ALL SURVEY CONTROL DURING CONSTRUCTION AND BE RESPONSIBLE FOR DAMAGED CONTROL.
7. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING ALL CONSTRUCTION STAKING AND PROVIDING CUT-SHEET DOCUMENTATION TO THE OWNER AND ENGINEER.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PROPERTY PINS FOR THE DURATION OF CONSTRUCTION. ANY PINS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
9. CONTRACTOR SHALL MAINTAIN A CLEAN CONSTRUCTION SITE AT ALL TIMES FREE FROM TRASH, LITTER, BLOWING DEBRIS, AND SILT RUNOFF.

DEMOLITION NOTES:

1. THE PREPARING RIGHT-OF-WAY ITEM SHALL BE USED TO PAY FOR ALL REMOVAL ITEMS EXCEPT THOSE WITH SEPARATE INDIVIDUAL BID ITEMS.
2. EXISTING PAVEMENT TO BE REMOVED (HMAC AND CONCRETE PAVEMENT, CURB, SIDEWALK, DRIVEWAY APRONS, ETC.) SHALL BECOME PROPERTY OF THE CONTRACTOR AND DISPOSED OF LEGALLY (BASE BID AND ALTERNATE BID).
3. CONTRACTOR SHALL KEEP EXISTING WATER AND WASTEWATER SYSTEMS IN SERVICE FOR THE DURATION OF THE PROJECT WHILE CONSTRUCTING PROPOSED IMPROVEMENTS.
4. CONTRACTOR SHALL SAW-CUT NEAT LINE WHERE NEW PAVEMENT ADJOINS EXISTING PAVEMENT TO REMAIN. RE. SAW-CUT NOTES BELOW:
   - 4.1. HMAC PAVING: SAW-CUT NEAT LINE AND PLACE PROPOSED HMAC FLUSH WITH EXISTING SURFACE AT LIMITS.
   - 4.2. CURB & GUTTER: SAW-CUT NEAT LINE AND DOWEL INTO EXISTING CURB & GUTTER AT LIMITS. CONTRACTOR TO MATCH FLOWLINES.
   - 4.3. DRIVEWAY AND SIDEWALKS: SAW-CUT NEAT LINE AND PLACE EXPANSION JOINT AT LIMITS.
5. ALL EXISTING FENCES ARE TO REMAIN UNLESS OTHERWISE NOTED ON THE DRAWINGS. ANY DAMAGE TO FENCES SHALL BE REPAIRED TO EQUAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE OWNER.

TREE PROTECTION REQUIREMENTS:

1. PRIOR TO CONSTRUCTION, ALL TREES TO BE PROTECTED (INDICATED ON PLANS OR AS DIRECTED BY ENGINEER) SHALL BE CLEARLY MARKED WITH 4' TALL ORANGE BARRICADE FENCE AND SIGNAGE TO PROTECT THE AREA UNDER THE CANOPY/DRIP LINE OF ANY PROTECTED TREE OR GROUP OF PROTECTED TREES. THE DRIP LINE IS THE OUTER EXTENT OF ANY BRANCHING AND/OR LEAVES. AT SELECT TREES, AS SHOWN ON THE PLANS OR DIRECTED BY THE ENGINEER, THE TREE PROTECTION LIMITS MAY ENCROACH WITHIN THE DRIPLINE TO ACCOMMODATE CONSTRUCTION. DO NOT EXCEED 24" GROUND PENETRATION WITH SUPPORT STAKES AT ANY LOCATION.
2. DURING CONSTRUCTION, THE CONTRACTOR SHALL:
   - A. PROHIBIT EMPLOYEES AND EQUIPMENT FROM ACCESSING AREAS WITHIN TREE PROTECTION LIMITS.
   - B. PROHIBIT CLEANING OF EQUIPMENT OR STORAGE OF MATERIALS AND DISPOSAL OF ANY WASTE MATERIAL, INCLUDING, BUT NOT LIMITED TO, PAINT, OIL, SOLVENTS, ASPHALT, CONCRETE, MORTAR, ETC., WITHIN TREE PROTECTION LIMITS.
   - C. PROHIBIT ATTACHMENTS OR WIRES OF ANY KIND, OTHER THAN THOSE OF A PROTECTIVE NATURE, TO ANY PROTECTED TREE.
   - D. PROHIBIT THE DISTURBANCE OF EXISTING GROUND/GRADES WITHIN TREE PROTECTION LIMITS.
3. IF ROOTS ARE EXPOSED WHEN PERFORMING EXCAVATIONS NEAR PROTECTED TREES, ROOTS SHALL BE CUT CLEANLY AT 90 DEGREE ANGLES (NO RIPPING, TEARING, OR PULLING).
4. ALL TREES TO BE REMOVED SHALL BE MARKED IN THE FIELD AND REVIEWED WITH THE ENGINEER AND OWNER PRIOR TO REMOVAL.
5. CONTRACTOR MAY BE FINANCIALLY RESPONSIBLE FOR TREES DAMAGED DUE TO CONTRACTOR'S NEGLECT.
6. WHEN DIRECTED BY OWNER, CONTRACTOR SHALL TRIM TREES. THIS WORK IS SUBSIDIARY TO PREPARING RIGHT-OF-WAY ITEM. REMOVE ALL LIMBS TO A POINT 10 FEET ABOVE NATURAL GROUND (OR 18' ABOVE PAVEMENT) UTILIZING THE FOLLOWING STEPS:
   - A. CUT 1/3 THROUGH BOTTOM OF LIMB 8" TO 12" AWAY FROM MAIN STEM OR TRUNK
   - B. REMOVE LIMB 4" TO 6" BEYOND THE FIRST CUT
   - C. REMOVE STUB WITH A SMOOTH CUT SO THAT TRACE COLLAR OF THE REMOVED LIMB PROTRUDES APPROXIMATELY ½" FROM MAIN STEM OR TRUNK.

PAVING CONSTRUCTION NOTES:

1. ALL ROAD WIDTHS, CURB RADII, AND CURB ALIGNMENT SHOWN INDICATE BACK OF CURB. ALL CURB ELEVATIONS PROVIDED ARE TO "TOP OF CURB" UNLESS OTHERWISE NOTED.
2. CONTRACTOR SHALL PROTECT ALL EXISTING AND/OR PROPOSED WATER, WASTEWATER, AND STORM DRAIN FACILITIES THROUGHOUT PAVING OPERATIONS. CONTRACTOR SHALL REPLACE ANY FACILITIES DAMAGED DURING PAVING OPERATIONS AT NO ADDITIONAL COST TO THE OWNER. ALL MANHOLES AND VALVES FALLING WITHIN PAVEMENT AREA SHALL BE ADJUSTED TO FINISHED GRADE AND SHALL BE SUBSIDIARY TO OTHER BID ITEMS.
3. CONTRACTOR SHALL MATCH EXISTING DRIVEWAY/SIDEWALK WITH EXPOSED AGGREGATE FINISH, IF APPLICABLE.
4. CONTRACTOR SHALL PROTECT ALL ADJOINING PAVEMENT DURING CONSTRUCTION. DAMAGES SHALL BE PREPARED AT CONTRACTOR'S EXPENSE.

WATER CONSTRUCTION NOTES:

1. CONTRACTOR SHALL KEEP EXISTING WATER MAIN AND PRIVATE SERVICE LINES IN SERVICE WHILE CONSTRUCTING PROPOSED WATER SYSTEM. CONTRACTOR SHALL CONSTRUCT AS MUCH PROPOSED WATERLINE AS POSSIBLE PRIOR TO TYING INTO EXISTING MAIN AND RECONNECTING SERVICES. CONTRACTOR SHALL COORDINATE SHUT-DOWNS, TIE-INS, AND TESTING OF THE WATER MAIN WITH THE CITY.
2. PAYMENT FOR CONCRETE ENCASEMENT OF WATERLINES AT UTILITY CROSSINGS IS SUBSIDIARY TO WATERLINE BID ITEMS.

DRAINAGE CONSTRUCTION NOTES:

1. PRIOR TO FINAL ACCEPTANCE, ALL DRAINAGE STRUCTURES AND EXTENSIONS SHALL BE CLEANED BY THE CONTRACTOR (SUBSIDIARY).
2. CONTRACTOR MAY PROVIDE PRE-CAST OR CAST-IN-PLACE BOX CULVERTS.
3. JPLACE NON-ERODIBLE MATERIAL (PNEUMATICALLY PLACED CONCRETE, CEMENT STABILIZED SAND, ETC.) ON CHANNEL BOTTOM AND SIDE SLOPES AT TEMPORARY CULVERT/STORM DRAIN ENDS TO MINIMIZE EROSION, AS DIRECTED BY OWNER (SUBSIDIARY).

ADA NOTES:

1. ALL ACCESSIBLE ROUTES AND CURB RAMPS SHALL COMPLY WITH PROPOSED RIGHT OF WAY ACCESSIBILITY GUIDELINES (PROWAG) LATEST EDITION.
2. CROSS SLOPE ON ALL ACCESSIBLE ROUTES AND CURB RAMPS SHALL NOT EXCEED 2%.
3. RUNNING SLOPES ON ALL ACCESSIBLE ROUTES SHALL NOT EXCEED 5%.
4. RUNNING SLOPE ON CURB RAMPS SHALL NOT EXCEED 8.33%.
5. LANDINGS SHALL BE PROVIDED AT THE TOP AND BOTTOM OF ALL RAMPS (MIN. 5' LONG X RAMP WIDTH). LANDING SLOPES SHALL NOT EXCEED 2% IN ANY DIRECTION, EXCEPT THAT LANDINGS AT THE BOTTOM OF CURB RAMPS INTO STREETS MAY HAVE A 5% MAX RUNNING SLOPE.
6. DETECTABLE WARNING DEVICES SHALL BE PROVIDED IN ALL RAMPS THAT CROSS PUBLIC ROADS; DETECTABLE WARNING DEVICES SHALL BE CONSTRUCTED FROM TRUNCATED BRICK PAVERS.
7. CONTRACTOR SHALL VERIFY FORMWORK IN FIELD TO ENSURE THAT PROPOSED GRADES COMPLY WITH T.A.S. PRIOR TO PLACING PERMANENT FEATURES. NOTIFY ENGINEER OF ANY FIELD DISCREPANCIES THAT MAY REQUIRE REVISIONS.

SPECIAL NOTES:

1. OWNER SHALL BE RESPONSIBLE FOR MATERIALS TESTING IN ACCORDANCE WITH APPLICABLE SPECIFICATIONS. CONTRACTOR SHALL COORDINATE TESTING WITH OWNER AND TESTING AGENCY. CONTRACTOR SHALL BEAR THE COST FOR RE-TESTS DUE TO FAILING TESTS.
2. STOCKPILE ALL TOPSOIL REMOVED FROM PROJECT SEPARATE FROM OTHER CUT/FILL MATERIALS. UTILIZE STOCKPILED TOPSOIL TO FINALIZE GRADES IN DISTURBED AREAS.
3. CONTRACTOR SHALL ATTEND PUBLIC EVENT PRIOR TO CONSTRUCTION TO INFORM CITIZENS ABOUT PROJECT AND ANTICIPATED SCHEDULE OF IMPACTS. TIME AND LOCATION OF EVENT ARE TO BE DETERMINED.
4. SEE PROJECT SPECIAL PROVISIONS FOR FIELD OFFICE REQUIREMENTS.

DESIGN: EAST WOODVIEW DRIVE

DESIGN SPEED:	30 MPH
FUNCTIONAL CLASSIFICATION:	NEIGHBORHOOD COLLECTOR
LIMITS:	FROM US 183A TO RAIDER WAY
TOTAL LENGTH:	2,059 LF

DESIGN: RAIDER WAY

DESIGN SPEED:	30 MPH
FUNCTIONAL CLASSIFICATION:	NEIGHBORHOOD COLLECTOR
LIMITS:	FROM EAST WOODVIEW DRIVE TO CRYSTAL FALLS PKWY.
TOTAL LENGTH:	3,171 LF

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 6053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

PROJECT-SPECIFIC NOTES

03/22/2023 — DATE
R. Alan Munger, PE — R. ALAN MUNGER

STATE OF TEXAS — R. ALAN MUNGER — 65341 — REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C004
SHEET	OF

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GENERAL PLAN REQUIREMENTS:

1. CONSTRUCTION WORK IN THE CTRMA ROW MUST BE SCHEDULED BETWEEN 9 AM AND 4PM MONDAY THROUGH FRIDAY. IF PEAK HOURS ARE REQUIRED OWNER WILL REQUEST IN WRITING AN EXCEPTION DETAILING THE VARIANCE AND MUST RECEIVE AN ACCEPTABLE RESPONSE IN WRITING FROM THE CTRMA BEFORE CONSTRUCTION BEGINS.
2. LANE CLOSURES (IF REQUIRED) WILL ONLY BE ALLOWED DURING DAY LIGHT HOURS BETWEEN 9 AM AND 4 PM MONDAY THROUGH FRIDAY, ALL DAY SATURDAY AND SUNDAY.
3. LANE CLOSURES ARE NOT ALLOWED IN INCLEMENT WEATHER OR IF THE PAVEMENT IS WET OR ICY.
4. THE CONTRACTOR MUST CONTACT THE CTRMA 48 HOURS PRIOR TO WORKING IN THE ROW. THE CONTACT PERSON'S NAME AND PHONE NUMBER WILL BE SHOWN ON THE APPROVED UTILITY PERMIT REQUEST FORM.
5. PRIOR TO BEGINNING CONSTRUCTION, THE OWNER OR HIS AUTHORIZED REPRESENTATIVE SHALL CONVENE A PRE-CONSTRUCTION MEETING BETWEEN THE OWNER, CONSULTING ENGINEER, CONTRACTOR, CTRMA AND ANY OTHER AFFECTED PARTIES.
6. THE DEVELOPER OR ITS CONTRACTOR WILL BE HELD RESPONSIBLE FOR KEEPING THE CTRMA ROADWAY FREE OF MUD, ROCKS, AND GENERAL DEBRIS.
7. CONSTRUCTION EQUIPMENT LEFT OVERNIGHT IN THE RIGHT OF WAY MUST BE SECTIONED OFF WITH ORANGE PLASTIC MESH FENCING, AND BE PLACED AT LEAST 30' OFF THE EDGE OF PAVEMENT. EQUIPMENT LOCATED CLOSER THAN 30' MUST BE PROTECTED BY TXDOT APPROVED CONCRETE TRAFFIC BARRIERS (CTB).
8. FIELD CREWS WILL NOT BE ALLOWED EXTENDED PARKING OF EQUIPMENT AND VEHICLES WITHIN THE CTRMA ROW.
9. BORE PITS LOCATED CLOSER THAN 30' FROM THE EDGE OF PAVEMENT MUST BE PROTECTED BY CONCRETE TRAFFIC BARRIERS (CTB) OR WATER FILLED BARRIERS WITH CTRMA APPROVAL. OPEN PITS MUST BE SEALED OFF BY ORANGE PLASTIC MESH FENCING, CONES AND DRUMS.
10. ALL EXISTING PAVED SIDE ROADS AND DRIVEWAYS LOCATED WITHIN THE CTRMA ROW MUST BE BORED AT A MINIMUM DEPTH OF 24".
11. TRAFFIC CONTROL MUST CONFORM TO THE CTRMA AND TXDOT REQUIREMENTS AND RECOMMENDATIONS, AND SHOULD MEET OR EXCEED THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
12. THE DEVELOPER AND/OR ITS CONTRACTOR MUST LOCATE ALL EXISTING UTILITY LINES PRIOR TO DOING ANY GROUND WORK LIKE BORING, DIGGING, TRENCHING, OR DRILLING WITHIN THE ROW.
13. THE PERMIT HOLDER WILL BE REQUIRED TO RESTORE THE GROUND TO ITS PRIOR STATE, AND REVEGETATE ALL DISTURBED AREAS WITH LIKE VEGETATION.
14. TREES WITH A TRUNK DIAMETER OF 6 INCHES OR MORE MUST BE BORED AT A MINIMUM DEPTH OF 24 INCHES FROM DRIPLINE TO DRIPLINE. THE CONTRACTOR CANNOT REMOVE ANY EXISTING TREE WITHOUT CTRMA APPROVAL.
15. FOR THE UTILITY CROSSING THE ROW THE MARKING SHALL BE PLACE AT THE EACH OF THE BORING AND THE UTILITIES PARALLEL TO THE ROW SHALL HAVE OBJECT MARKING EVERY 100FT WITHIN THE ROW.

SPECIAL PROVISIONS FOR RE-VEGETATION AND LANDSCAPING REQUIREMENTS:

1. THE PERMIT HOLDER IS SOLELY RESPONSIBLE FOR RE-VEGETATION AND REPLANTING OF ALL AREAS DAMAGED BY CONSTRUCTION.
2. RE-VEGETATION PRACTICES SHALL BE DONE IN ACCORDANCE WITH THE "2014 TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES": WORK SHALL BE DONE IN ACCORDANCE WITH "ITEM 160, TOPSOIL: ITEM 161, COMPOST: ITEM 162, SODDING FOR EROSION CONTROL, AND ITEM 166, FERTILIZER."
3. DAMAGED AREAS ON WHICH CONSTRUCTION HAS CEASED TEMPORARILY OR PERMANENTLY SHALL BE RE-VEGETATED WITHIN 14 DAYS UNLESS CONSTRUCTION IS SCHEDULED TO RESUME WITHIN 21 DAYS.
4. THE PERMIT HOLDER WILL BE HELD LIABLE AND RESPONSIBLE FOR SUCH AREAS UNTIL GROWTH IS REESTABLISHED TO THE SATISFACTION OF AN AUTHORIZED REPRESENTATIVE OF CTRMA.
5. THE CTRMA RESERVES THE RIGHT TO REQUIRE ADDITIONAL REVEGETATION MEASURES DEEMED NECESSARY AT ANY TIME AFTER CONSTRUCTION HAS BEGUN UNTIL THE CTRMA HAS ACCEPTED THE EROSION CONTROL MEASURES AND REVEGETATION MEASURES OF THE PERMIT HOLDER.
6. PRIOR TO RE-VEGETATION, THE DAMAGED AREA SHALL BE RESTORED TO ITS ORIGINAL LINES, GRADES AND CONTOURS. DITCHES SHALL BE RESTORED TO THEIR ORIGINAL CONTOURS AND WATER CARRYING CAPACITY. THE AREA SHALL BE SMOOTH AND FREE OF RUTS AND OTHER DEPRESSIONS. IF WEATHER CONDITIONS LIKE WIND AND RAIN CAUSE THE RE-VEGETATED AREA TO BE DAMAGED OR UNDERMINED THE AREA SHALL BE REWORKED AND RE-VEGETATED TO CTRMA SATISFACTIONS. THE WORK SHALL BE PERFORMED AS FOLLOWS:
   A. ALL DISTURBED AREAS SHALL RECEIVE SIX INCHES OF TOP SOIL PRIOR TO REVEGETATION.
   B. ALL DAMAGED AREAS SHALL BE SODDED IN ACCORDANCE WITH ITEM 166 WITH DROUGHT TOLERANT BERMUDA OR BUFFALO GRASS. CONTACT THE MOBILITY AUTHORITY FOR TYPE.
   C. WHEN NECESSARY, WATER SHALL BE PROVIDED TO PROMOTE GROWTH OF VEGETATION. ONLY WATER THAT IS CLEAN AND FREE OF SUBSTANCES HARMFUL TO THE GROWTH OF VEGETATION SHALL BE USED. USE WATERING EQUIPMENT, WHICH WILL INSURE THE UNIFORM DISTRIBUTION AND CONTROLLED APPLICATION OF WATER RATES. APPLY ¼ INCH OF WATER PER ACRE EVERY TWO WEEKS FOR A THREE-MONTH PERIOD OR LONGER IF NECESSARY FOR VEGETATION ESTABLISHMENT.
7. ALL LANDSCAPE BEDS, PLANTS, SHRUBS AND TREES DAMAGED DURING CONSTRUCTION MUST BE REPLACED WITH THE SAME TYPE AND SIZE AND WATERED FOR AN APPROPRIATE AMOUNT OF TIME FOR ESTABLISHMENT. COORDINATE WITH THE CTRMA PRIOR TO DAMAGING AND LANDSCAPE BEDS, PLANTS, SHRUBS AND TREES.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

CTRMA GENERAL NOTES AND PROVISIONS

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C004A
SHEET	OF

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ABS	ACRYLONITRILE – BUTADIENE – STYRENE
AC	ASPHALTIC CONCRETE
APPROX	APPROXIMATE
ARV	AIR RELEASE VALVE
ACP	ASBESTOS CEMENT PIPE
ALT	ALTERNATE
AWG	AMERICAN WIRE GAGE
BEG	BEGIN
BF	BLIND FLANGE
BFV	BUTTERFLY VALVE
B.I.W.	BEGIN INLET WING
?	BASELINE
BM	BENCH MARK
BC	BACK OF CURB
BW	BOTTOM OF WALL
CATV	CABLE TV
CB	CATCH BASIN
C–C	CENTER TO CENTER
CFS	CUBIC FEET PER SECOND
CIP	CAST IRON PIPE
CJ	CONTROL JOINT
?	CENTER LINE
CLBM	CRUSHED LIMESTONE BASE MATERIAL
CLR	CLEAR
CO	CLEANOUT
CMP	CORRUGATED METAL PIPE
CONC	CONCRETE
CONST	CONSTRUCT, CONSTRUCTION
CONT	CONTINUOUS
CTB	CEMENT TREATED BASE
CV	CHECK VALVE
CY	CUBIC YARD
C&G	CURB AND GUTTER
DA	DRAINAGE AREA
DE	DRAINAGE EASEMENT
DBL	DOUBLE
DET	DETAIL
DIA	DIAMETER
DI	DUCTILE IRON
DIP	DUCTILE IRON PIPE
DN	DOWN
DW	DRIVEWAY
DWG	DRAWING
E	EAST
EP	EDGE OF PAVEMENT
EA	EACH
EF	EACH FACE
E.I.W.	END INLET WING
EL	ELEVATION
EJ	EXPANSION JOINT
ENGR	ENGINEER
EQ	EQUAL
ER	END RETURN
EW	EACH WAY
EXC	EXCAVATE
EXP JT	EXPANSION JOINT
EX	EXISTING
FH	FIRE HYDRANT
FFE	FINISHED FLOOR ELEVATION
FG	FINISHED GRADE
?	FLOWLINE
FM	FORCE MAIN
FIC	FIBER OPTIC CABLE
FG	FINISHED GRADE
FT	FEET OR FOOT
FH	FIRE HYDRANT
G	GAS LINE
GA	GAUGE
GALV	GALVANIZED
GRND	GROUND
GV	GATE VALVE
HDWL	HEADWALL
HP	HIGH POINT OR HORSE POWER
HGL	HYDRAULIC GRADE LINE
HORIZ	HORIZONTAL
HW	HEAD WATER
HMAC	HOT MIXED ASPHALTIC CONCRETE

ID	INSIDE DIAMETER
IN	INCH
INCL	INCLUDE (D) (ING)
INSL	INSULATION OR INSULATED
INV	INVERT
IP	IRON PIPE OR IRON PIN
JT	JOINT
KV	KILOVOLT
L	LENGTH
LP	LOW POINT
LF	LINEAR FOOT
LG	LIP OF GUTTER
LSS	LIME–STABILIZED SUBGRADE
LT	LEFT
MTL	MATERIAL
MAX	MAXIMUM
MBGF	METAL BEAM GAURD FENCE
MED	MEDIUM
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
M&M	MEET AND MATCH
MO	MOTOR OPERATED
MP	MIDPOINT
N	NORTH
NC	NORMALLY CLOSED
NFV	NOT FIELD VERIFIED
NG	NATURAL GROUND
NTS	NOT TO SCALE
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
OC	ON CENTER
OD	OUTSIDE DIAMETER
OHEW	OVERHEAD ELECTRIC WIRE
OPNG	OPENING
OPP	OPPOSITE
OCEW	ON CENTER EACH WAY
PC	POINT OF CURVATURE OR PORTLAND CEMENT
PGL	PROPOSED GRADE LINE
PI	POINT OF INTERSECTION
℄	PROPERTY LINE
POB	POINT OF BEGINNING
PP	POWER POLE
PRC	POINT OF REVERSE CURVATURE
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PUE	PUBLIC UTILITY EASEMENT
PVC	POLYVINYL CHLORIDE OR POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INFLECTION
PVMT	PAVEMENT
PVT	POINT OF VERTICAL TANGENCY
PCC	POINT OF COMPOUND CURVATURE
Q	FLOW RATE, CUBIC FEET PER SECOND
R	RADIUS
ROW	RIGHT OF WAY
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
REF	REFERENCE OR REFER
REINF	REINFORCE OR REINFORCED
REQD	REQUIRED
REV	REVISION
RT	RIGHT
RP	RADIUS POINT

S	SOUTH
SCH	SCHEDULE
SD	STORM DRAIN
SF	SQUARE FOOT
SHT	SHEET
SIM	SIMILAR
SPEC	SPECIFICATION
SQ	SQUARE
STA	STATION
STD	STANDARD
STR	STRUCTURAL
STRM	STORM
SW	SIDEWALK
SWBT	SOUTHWESTERN BELL TELEPHONE CO.
SY	SQUARE YARD
SYM	SYMMETRICAL
SYS	SYSTEM
TBM	TEMPORARY BENCHMARK
TEL	TELEPHONE
TEMP	TEMPORARY
THK	THICK
TB	TOP OF BANK (BERM)
TC	TOP OF CURB
TG	TOP OF GRATE
TP	TOP OF PAVEMENT
TYP	TYPICAL
TW	TOP OF WALL
UE	UNDERGROUND ELECTRIC CABLE
UNO	UNLESS NOTED OTHERWISE
V	VELOCITY
VC	VERTICAL CURVE
VERT	VERTICAL
W	WEST
WL	WATERLINE
W/	WITH
W/O	WITHOUT
WM	WATER METER
WSEL	WATER SURFACE ELEVATION
WT	WEIGHT
WWF	WELDED WIRE FABRIC
WW	WASTE WATER

A1	ABBREVIATIONS
N.T.S.	

TBM
BORE LOCATION
TELEVISION RISER
CLEANOUT
FIRE HYDRANT
GAS METER
GATE VALVE
IRON PIPE FOUND
IRON ROD FOUND
IRON ROD SET
LIGHT POLE
MONUMENT FOUND
MONUMENT SET
SET 60D NAIL
MANHOLE
MAILBOX
PANEL MARKER
POWER POLE
WATER METER
WATER VALVE
SIGN
TELEPHONE RISER
TRAVERSE POINT
GUY WIRE
SHRUB
TREE

EX. EDGE OF PAVEMENT
BOUNDARY LINE
ROAD CENTERLINE
EX. RAILROAD
EX. FENCE
WASTEWATER LINE
EX. WATER LINE
EX. UNDERGROUND TELEVISION LINE
EX. AERIAL TELEVISION LINE
EX. UNDERGROUND TELEPHONE LINE
EX. ABOVE GROUND TELEPHONE LINE
EX. STORM DRAIN
EX. GASLINE
EX. FORCEMAIN
EX. CONTOUR LINE
EX. CONCRETE
EX. GRAVEL
EX. BUILDING

A8	SURVEY LEGEND
N.T.S.	

AUTOMATIC FLUSH VALVE
GATE VALVE
CHECK VALVE
PLUG VALVE
BUTTERFLY VALVE
QUICK DISCONNECT COUPLER
CAPPED END OR PLUGGED END
BLIND FLANGE
REDUCER OR INCREASER
BACKFLOW PREVENTOR
AIR VACUUM AND AIR RELEASE ASSEMBLY
GRATE INLET
BLOW–OFF ASSEMBLY
CENTRIFUGAL OR TURBINE PUMP OR FAN
FIRE HYDRANT & VALVE
CLEANOUT TO GRADE
MANHOLE
123.00 PROPOSED SPOT ELEVATION
JUNCTION BOX
CURB INLET
NEW FENCE
BOUNDARY LINE

A11	GENERAL SYMBOLS
N.T.S.	

F11	CIVIL SYMBOLS
N.T.S.	

SECTION IDENTIFICATION

A1 / C400 — SECTION NUMBER; DRAWING ON WHICH SECTION APPEARS

DETAIL IDENTIFICATION

A1 / C400 — DETAIL NUMBER; DRAWING ON WHICH DETAIL IS SHOWN

A1 / M100 — ELEVATION MARKER; DRAWING ON WHICH ELEV. IS SHOWN

MATERIALS LEGEND

CEMENT TREATED BASE
CRUSHED LIMESTONE
COURSE AGGREGATE
GRAVEL
TOPSOIL
EARTH (COMPACTED)
EARTH (UNDISTURBED)
CONCRETE
SAND
ASPHALT
RIP–RAP
MASONRY
STEEL
ALUMINUM
GRATING
CHECKERED PLATE
GROUT
BRICK

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

LEGENDS, ABBREVIATIONS AND SYMBOLS

03/22/2023 DATE
R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C005
SHEET	OF

G:\PROJECTS\3-005852 DESIGN\2.0 CAD\3-00585LEGEND_ABBREV.DWG, LEGENDS ABBREVIATIONS AND SYMBOLS, 3/30/2023 7:53:24 AM, cschroeder

PROJECT BENCHMARKS

TRAVERSE NUMBER	EASTING	NORTHING	ELEVATION	DESCRIPTION
2	3087033.28	10179203.38	956.50	MAG NAIL WITH WASHER STAMPED "WALKER PARTNERS"
3	3084931.33	10180354.94	985.76	1/2" IRON ROD WITH CAPSTAMPED "WALKER TRAV"
4	3085536.39	10180640.07	993.57	MAG NAIL WITH WASHER STAMPED WALKER PARTNERS IN ASPHALT
5	3086471.92	10180983.26	993.97	MAG NAIL WITH WASHER STAMPED WALKER PARTNERS IN ASPHALT
6	3086768.81	10180258.52	978.42	MAG NAIL WITH WASHER STAMPED WALKER PARTNERS IN ASPHALT
7	3087148.05	10179288.22	957.09	1/2" IRON ROD WITH CAP STAMPED "WALKER TRAV"
8	3087351.65	10178746.16	950.46	1/2" IRON ROD WITH CAP STAMPED "WALKER TRAV"

RAIDER WAY

LINE TABLE

LINE #	BEARING	DISTANCE	START POINT (N, E)	END POINT (N, E)	START STATION	END STATION
L1	N20° 55' 50"W	1006.55	10178281.7391,3087486.3584	10179221.8759, 3087126.7817	0+50.00	10+56.55
L2	N25° 18' 44"W	174.90	10179250.0030,3087114.7721	10179408.1113, 3087039.9929	10+87.15	12+62.05
L3	N21° 26' 27"W	207.51	10179432.9163,3087029.2709	10179626.0630, 3086953.4187	12+89.07	14+96.58
L4	N18° 06' 21"W	179.83	10179647.9705,3086945.5430	10179818.8944, 3086889.6576	15+19.87	16+99.69
L5	N21° 03' 29"W	705.71	10179838.3113,3086882.7505	10180496.8894, 3086629.1800	17+20.30	24+26.01
L6	N19° 18' 43"W	238.04	10180508.3297,3086624.9742	10180732.9730, 3086546.2522	24+38.20	26+76.24
L7	N21° 03' 29"W	250.96	10180744.4133,3086542.0463	10180978.6167, 3086451.8717	26+88.43	29+39.39
L8	N36° 59' 13"W	63.60	10181099.7770,3086384.6491	10181150.5803, 3086346.3841	30+78.40	31+42.00
L9	N29° 04' 17"W	7.60	10181208.4485,3086308.7621	10181215.0877, 3086305.0711	32+11.08	32+18.67

CURVE TABLE

CURVE #	DELTA	RADIUS	LENGTH	RADIUS PNT (N, E)	PC STATION	PT STATION
C1	4° 22' 55"	400.00	30.59	10179078.9819, 3086753.1759	10+56.55	10+87.15
C2	3° 52' 17"	400.00	27.03	10179579.1324, 3087401.5891	12+62.05	12+89.07
C3	3° 20' 06"	400.00	23.28	10179772.2791, 3087325.7369	14+96.58	15+19.87
C4	2° 57' 08"	400.00	20.61	10179694.5858, 3086509.4637	16+99.69	17+20.30
C5	1° 44' 46"	400.00	12.19	10180640.6149, 3087002.4668	24+26.01	24+38.20
C6	1° 44' 46"	400.00	12.19	10180600.6878, 3086168.7596	26+76.24	26+88.43
C7	15° 55' 44"	500.00	139.01	10180798.9599, 3085985.2633	29+39.39	30+78.40
C8	7° 54' 57"	500.00	69.08	10181451.3975, 3086745.7699	31+42.00	32+11.08

EAST WOODVIEW DRIVE

LINE TABLE

LINE #	BEARING	DISTANCE	START POINT (N, E)	END POINT (N, E)	START STATION	END STATION
L10	N68° 39' 37"E	797.06	10180224.8726,3084702.1994	10180514.9190, 3085444.6078	0+50.00	8+47.06
L11	N66° 46' 33"E	126.42	10180519.9069,3085456.7805	10180569.7569, 3085572.9539	8+60.21	9+86.63
L12	N68° 52' 42"E	952.46	10180575.2960,3085586.5453	10180918.5144, 3086475.0127	10+01.31	19+53.76

CURVE TABLE

CURVE #	DELTA	RADIUS	LENGTH	RADIUS PNT (N, E)	PC STATION	PT STATION
C9	1° 53' 04"	400.00	13.16	10180887.4946, 3085299.0488	8+47.06	8+60.21
C10	2° 06' 09"	400.00	14.68	10180202.1692, 3085730.6857	9+86.63	10+01.31

PRIVATE ROAD 921

LINE TABLE

LINE #	BEARING	DISTANCE	START POINT (N, E)	END POINT (N, E)	START STATION	END STATION
L13	N58° 50' 04"E	154.24	10180908.5395,3086478.8533	10180988.3610, 3086610.8330	0+00.00	1+54.24
L14	N65° 16' 20"E	103.54	10181014.6757,3086660.4351	10181057.9887, 3086754.4839	2+10.42	3+13.96
L15	N77° 19' 07"E	112.41	10181064.7188,3086774.3617	10181089.3968, 3086884.0321	3+34.99	4+47.40

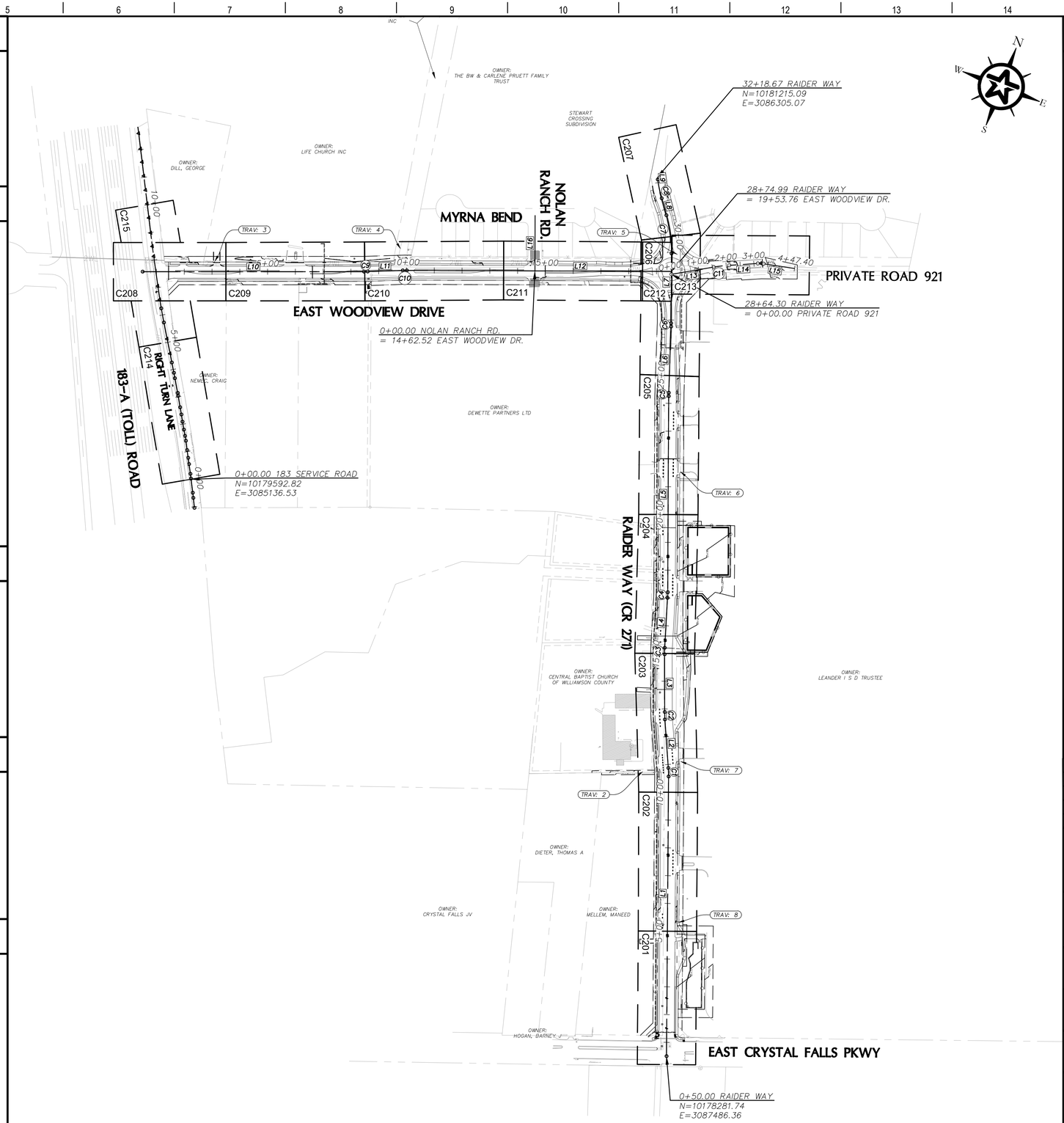
CURVE TABLE

CURVE #	DELTA	RADIUS	LENGTH	RADIUS PNT (N, E)	PC STATION	PT STATION
C11	6° 26' 16"	500.00	56.18	10180560.5233, 3086869.5895	1+54.24	2+10.42

NOLAN RANCH ROAD

LINE TABLE

LINE #	BEARING	DISTANCE	START POINT (N, E)	END POINT (N, E)	START STATION	END STATION
L16	N21° 07' 18"W	199.26	10180741.4941,3086016.7717	10180927.3684, 3085944.9678	0+00.00	1+99.26



SURVEYOR'S NOTES

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0 100 200 400
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

PROJECT LAYOUT

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C006
SHEET	OF

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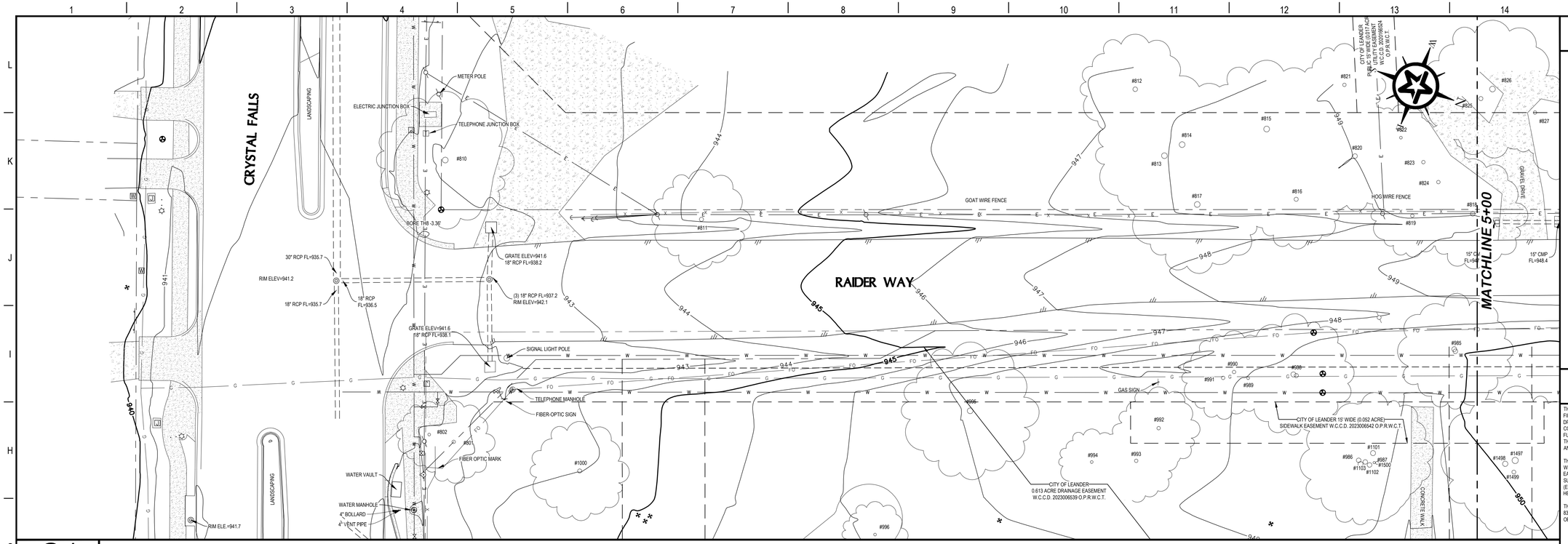
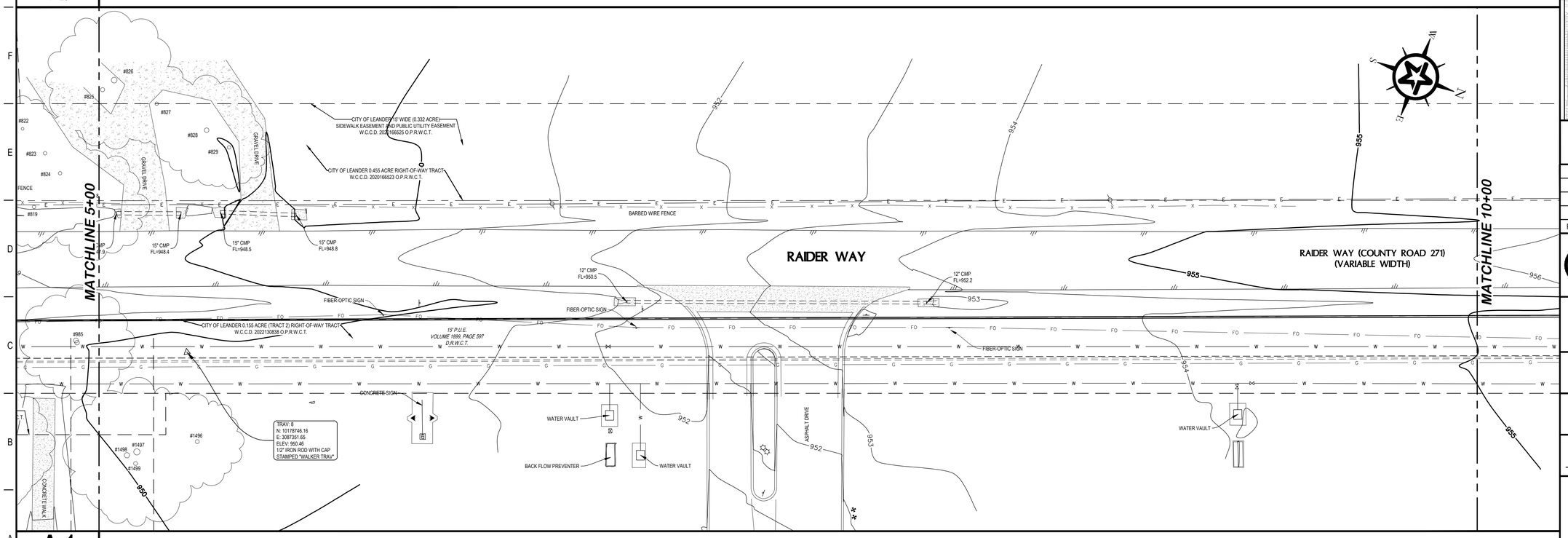


G1

1"=20'

RAIDER WAY ~ 0+00-5+00



A1

1"=20'

RAIDER WAY ~ 5+00-10+00

SURVEY LEGEND

= FIRE HYDRANT	= MAILBOX
= WATER VALVE	= GAS LINE
= WATER METER	= GAS METER
= WATER IRRIGATION CONTROL VALVE	= GAS REGULATOR VALVE
= WATER LINE	= FIBER OPTIC LINE
= TELEPHONE RISER	= FIBER OPTIC MANHOLE
= UNDERGROUND TELEPHONE	
= UTILITY POLE	
= GUY WIRE	
= ELECTRIC METER	
= ELECTRIC JUNCTION BOX	
= LIGHT POLE	
= OVERHEAD ELECTRIC LINE	
= FENCE	
= TRAFFIC SIGN	
= TREE	
= ASPHALT EDGE	
= CONCRETE	
= GRAVEL	
= SURVEY CONTROL POINT	
= FINISHED FLOOR (SPOT ELEVATION)	
P.R.W.C.T. = PUBLIC RECORDS WILLIAMSON COUNTY, TEXAS	
W.C.C.D. = WILLIAMSON COUNTY CLERK'S DOCUMENT	
O.P.R.W.C.T. = OFFICIAL PUBLIC RECORDS WILLIAMSON COUNTY, TEXAS	

SURVEYOR'S NOTES

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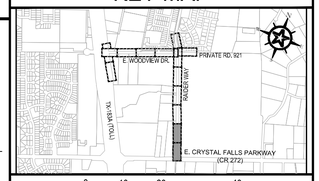
KEY MAP



0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TOPOGRAPHIC SURVEY
RAIDER WAY (STA. 0+00-10+00)

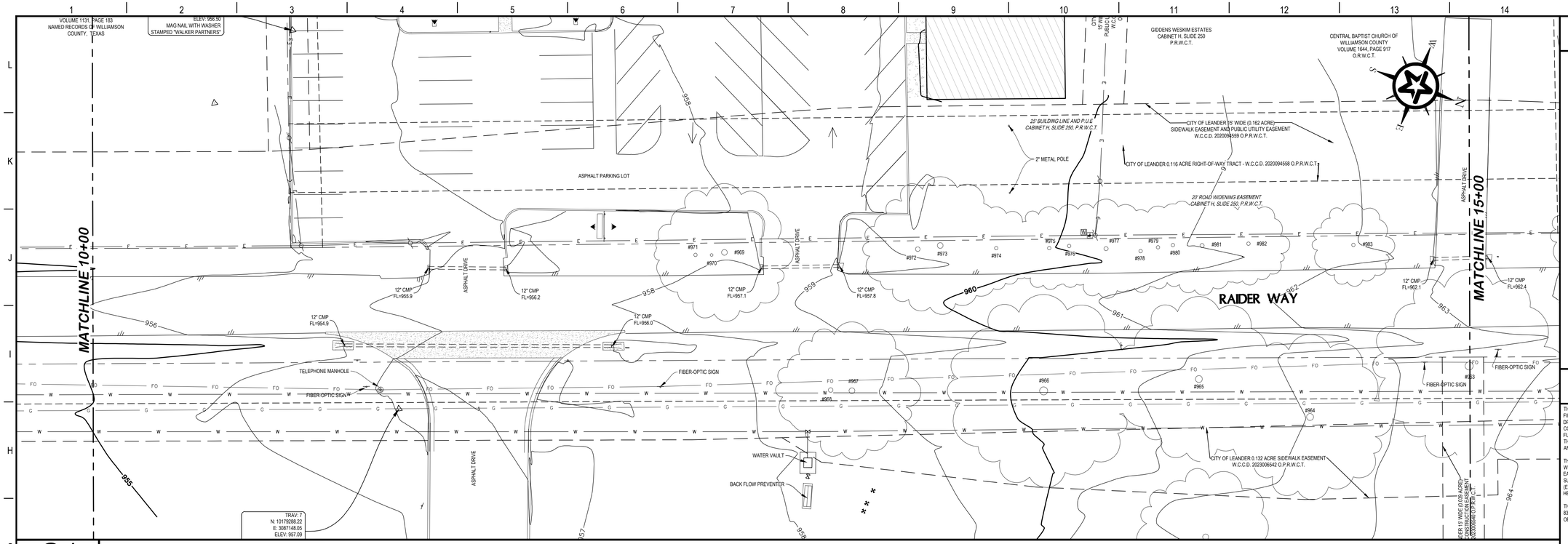
03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

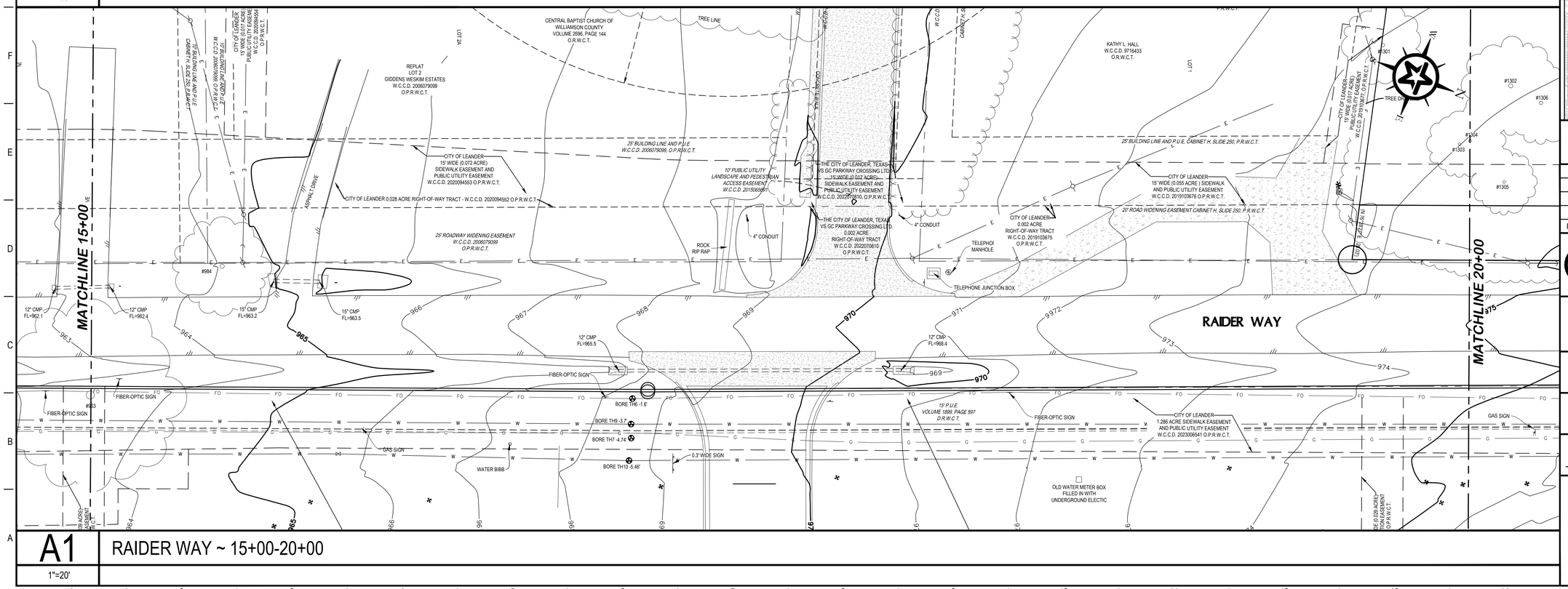
PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C007
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585TOPOGRAPHIC SURVEY.DWG, C007 RAIDER WAY (STA. 0+00-10+00), 3/30/2023 7:37:31 AM, cschroeder



G1 — RAIDER WAY ~ 10+00-15+00

1"=20'



A1 — RAIDER WAY ~ 15+00-20+00

1"=20'

SURVEY LEGEND

= FIRE HYDRANT	= MAILBOX
= WATER VALVE	= GAS LINE
= WATER METER	= GAS METER
= WATER IRRIGATION CONTROL VALVE	= GAS REGULATOR VALVE
= WATER LINE	= FIBER OPTIC LINE
= TELEPHONE RISER	= FIBER OPTIC MANHOLE
= UNDERGROUND TELEPHONE	
= UTILITY POLE	
= GUY WIRE	
= ELECTRIC METER	
= ELECTRIC JUNCTION BOX	
= LIGHT POLE	
= OVERHEAD ELECTRIC LINE	
= FENCE	
= TRAFFIC SIGN	
= TREE	
= ASPHALT EDGE	
= CONCRETE	
= GRAVEL	
= SURVEY CONTROL POINT	
= FINISHED FLOOR (SPOT ELEVATION)	
P.R.W.C.T. = PUBLIC RECORDS WILLIAMSON COUNTY, TEXAS	
W.C.C.D. = WILLIAMSON COUNTY CLERK'S DOCUMENT	
O.P.R.W.C.T. = OFFICIAL PUBLIC RECORDS WILLIAMSON COUNTY, TEXAS	

SURVEYOR'S NOTES

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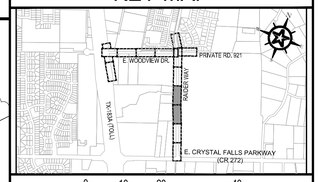
KEY MAP



0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TOPOGRAPHIC SURVEY
RAIDER WAY (STA. 10+00-20+00)

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C008
SHEET	OF

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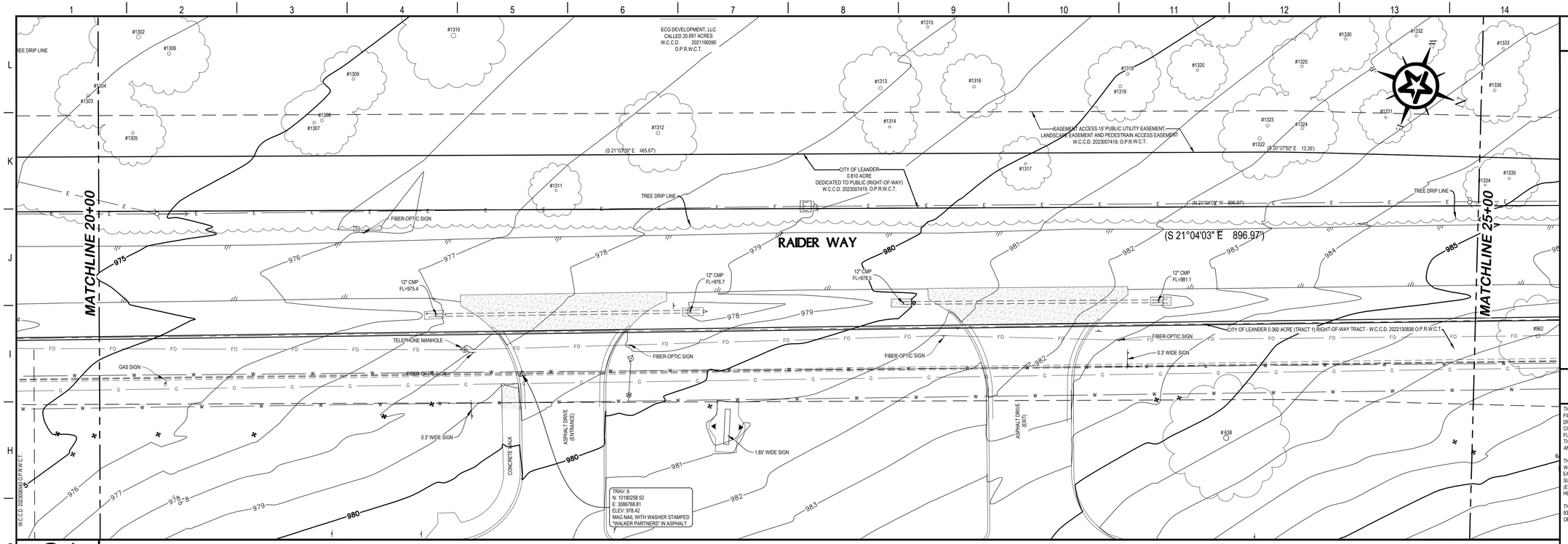
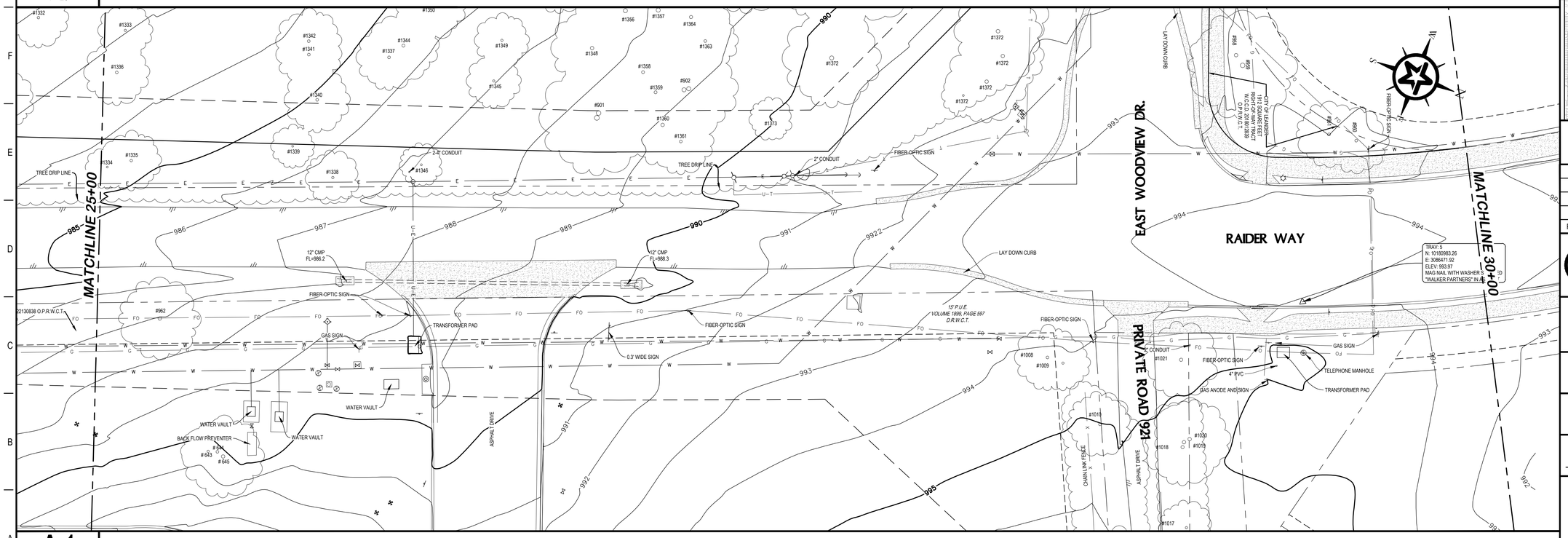


G1 — RAIDER WAY ~ 20+00-25+00

1"=20'



A1 — RAIDER WAY ~ 25+00-30+00

1"=20'

SURVEY LEGEND

	= FIRE HYDRANT		= MAILBOX
	= WATER VALVE	—G—	= GAS LINE
	= WATER METER		= GAS METER
	= WATER IRRIGATION CONTROL VALVE		= GAS REGULATOR VALVE
—W—	= WATER LINE	—FO—	= FIBER OPTIC LINE
	= TELEPHONE RISER		= FIBER OPTIC MANHOLE
— U-T —	= UNDERGROUND TELEPHONE		
	= UTILITY POLE		
	= GUY WIRE		
	= ELECTRIC METER		
	= ELECTRIC JUNCTION BOX		
	= LIGHT POLE		
— E —	= OVERHEAD ELECTRIC LINE		
— X —	= FENCE		
	= TRAFFIC SIGN		
	= TREE		
	= ASPHALT EDGE		
	= CONCRETE		
	= GRAVEL		
	= SURVEY CONTROL POINT		
	= FINISHED FLOOR (SPOT ELEVATION)		
P.R.W.C.T.	= PUBLIC RECORDS WILLIAMSON COUNTY, TEXAS		
W.C.C.D.	= WILLIAMSON COUNTY CLERK'S DOCUMENT		
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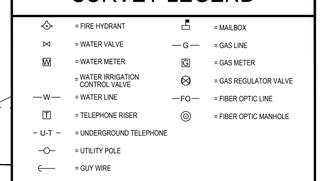
KEY MAP



0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TOPOGRAPHIC SURVEY
RAIDER WAY (STA. 20+00-30+00)

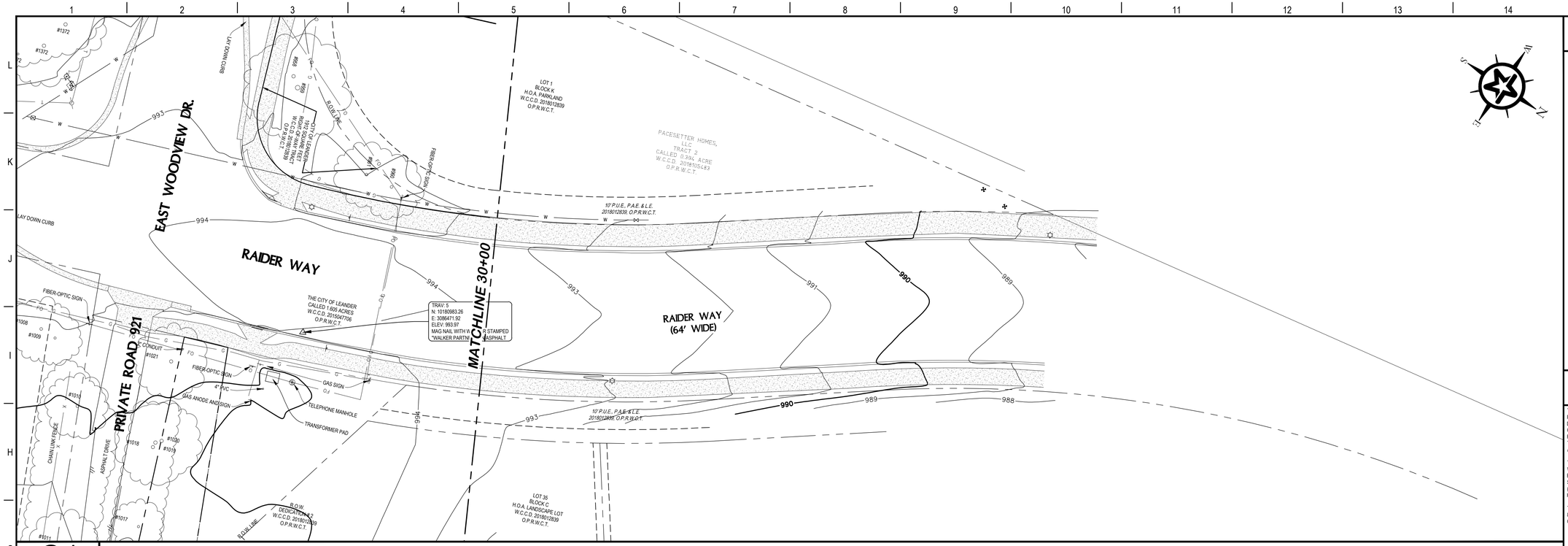
03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C009
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585TOPOGRAPHIC SURVEY.DWG, C009 RAIDER WAY (STA. 20+00-30+00), 3/30/2023 7:38:24 AM, cschroeder



G1

1"=20'

RAIDER WAY ~ 30+00-END

A1

NOT USED

SURVEY LEGEND

	= FIRE HYDRANT		= MAILBOX
	= WATER VALVE	—G—	= GAS LINE
	= WATER METER		= GAS METER
	= WATER IRRIGATION CONTROL VALVE		= GAS REGULATOR VALVE
—W—	= WATER LINE	—FO—	= FIBER OPTIC LINE
	= TELEPHONE RISER		= FIBER OPTIC MANHOLE
– U-T –	= UNDERGROUND TELEPHONE		
	= UTILITY POLE		
	= GUY WIRE		
	= ELECTRIC METER		
	= ELECTRIC JUNCTION BOX		
	= LIGHT POLE		
— E —	= OVERHEAD ELECTRIC LINE		
— X —	= FENCE		
	= TRAFFIC SIGN		
	= TREE		
	= ASPHALT EDGE		
	= CONCRETE		
	= GRAVEL		
	= SURVEY CONTROL POINT		
	= FINISHED FLOOR (SPOT ELEVATION)		
P.R.W.C.T.	= PUBLIC RECORDS WILLIAMSON COUNTY, TEXAS		
W.C.C.D.	= WILLIAMSON COUNTY CLERK'S DOCUMENT		
O.P.R.W.C.T.	= OFFICIAL PUBLIC RECORDS WILLIAMSON COUNTY, TEXAS		

SURVEYOR'S NOTES

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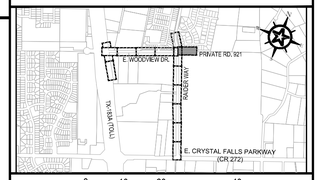
KEY MAP



0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 6053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TOPOGRAPHIC SURVEY
RAIDER WAY (STA. 30+00-END)

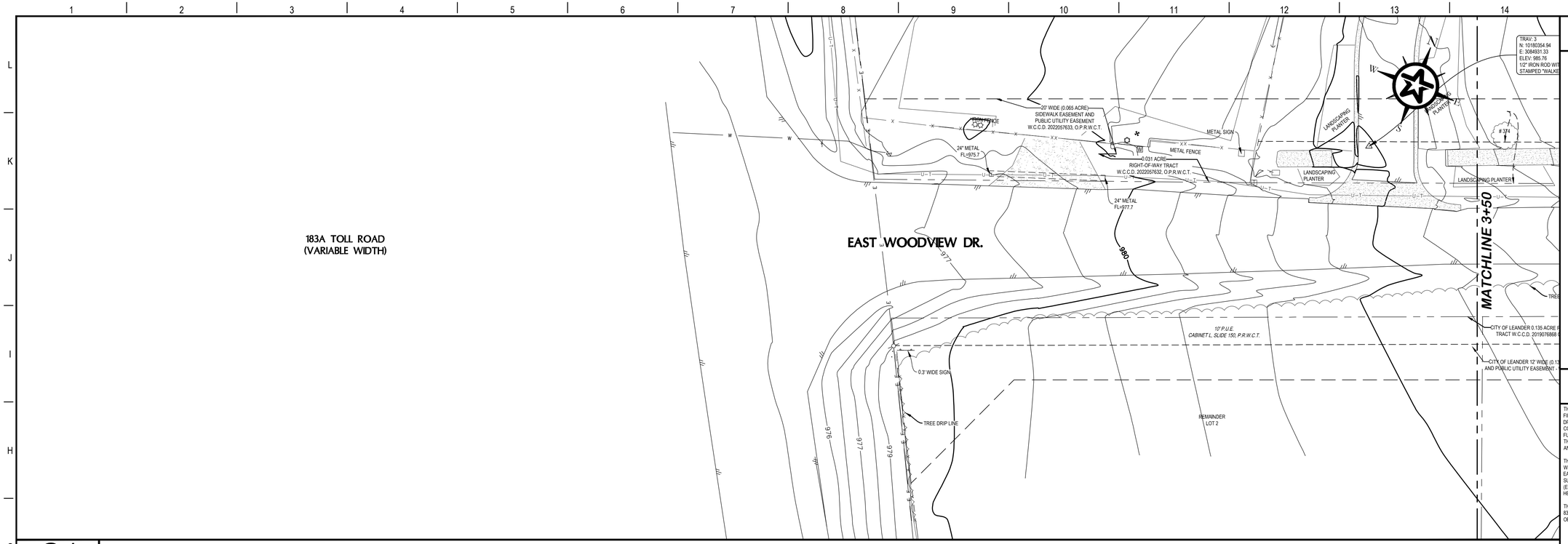
03/22/2023
DATE

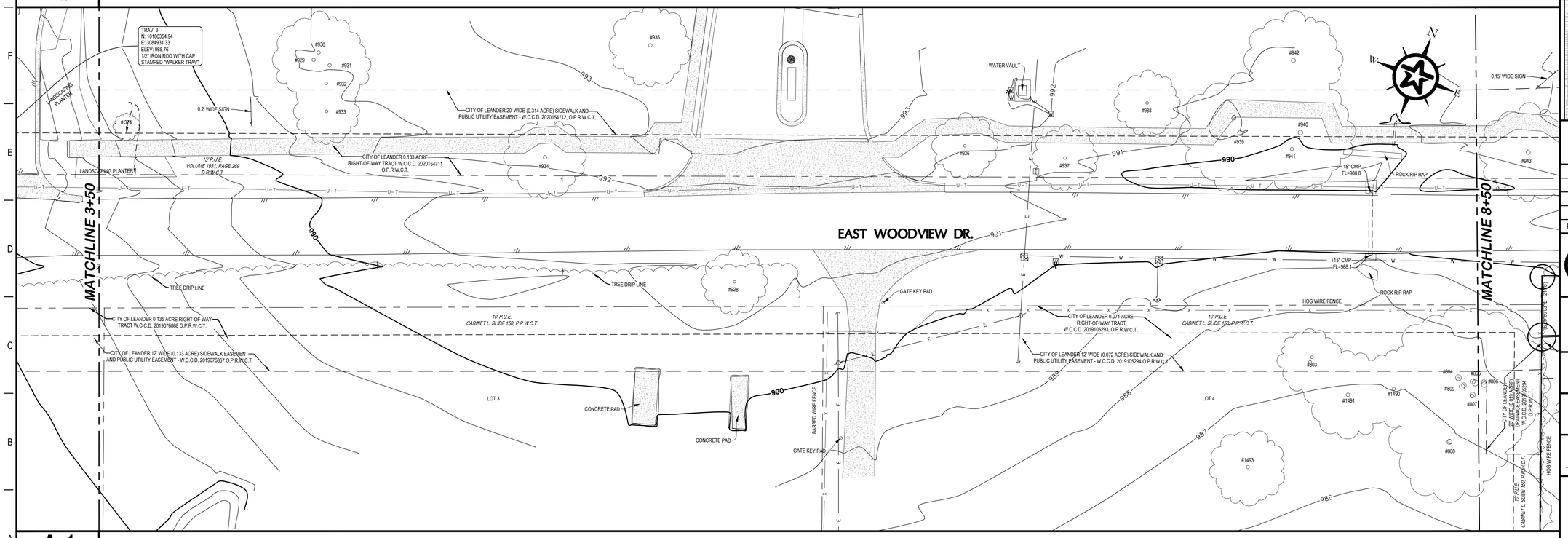
R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C010
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585TOPOGRAPHIC SURVEY.DWG, C010 RAIDER WAY (STA. 30+00-END), 3/30/2023 7:38:39 AM, cschroeder





SURVEY LEGEND

◇	= FIRE HYDRANT	▪	= MAILBOX
⋈	= WATER VALVE	—G—	= GAS LINE
W	= WATER METER	G	= GAS METER
	= WATER IRRIGATION CONTROL VALVE	⊗	= GAS REGULATOR VALVE
—W—	= WATER LINE	—FO—	= FIBER OPTIC LINE
T	= TELEPHONE RISER	◎	= FIBER OPTIC MANHOLE
—U-T—	= UNDERGROUND TELEPHONE		
—○—	= UTILITY POLE		
←—	= GUY WIRE		
E	= ELECTRIC METER		
J	= ELECTRIC JUNCTION BOX		
☼	= LIGHT POLE		
—E—	= OVERHEAD ELECTRIC LINE		
—X—	= FENCE		
	= TRAFFIC SIGN		
	= TREE		
	= ASPHALT EDGE		
	= CONCRETE		
	= GRAVEL		
△	= SURVEY CONTROL POINT		
⊗	= FINISHED FLOOR (SPOT ELEVATION)		
P.R.W.C.T.	= PUBLIC RECORDS WILLIAMSON COUNTY, TEXAS		
W.C.C.D.	= WILLIAMSON COUNTY CLERK'S DOCUMENT		
O.P.R.W.C.T.	= OFFICIAL PUBLIC RECORDS WILLIAMSON COUNTY, TEXAS		

SURVEYOR'S NOTES

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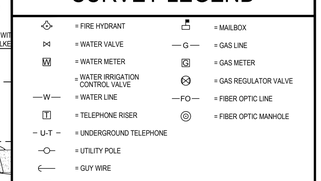
KEY MAP



0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TOPOGRAPHIC SURVEY
E. WOODVIEW DR. (STA. 0+00-8+50)

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

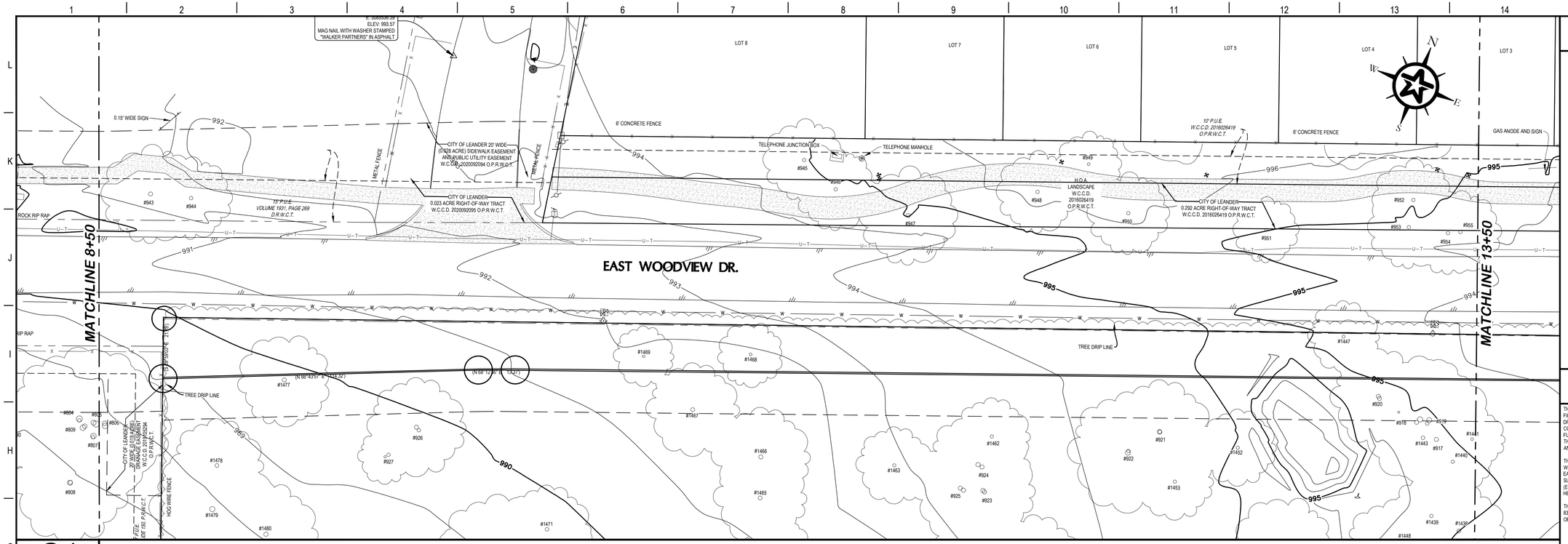
STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C011
SHEET	OF

G1 EAST WOODVIEW DRIVE ~ 0+00-3+50
1"=20'

A1 EAST WOODVIEW DRIVE ~ 3+50-8+50
1"=20'

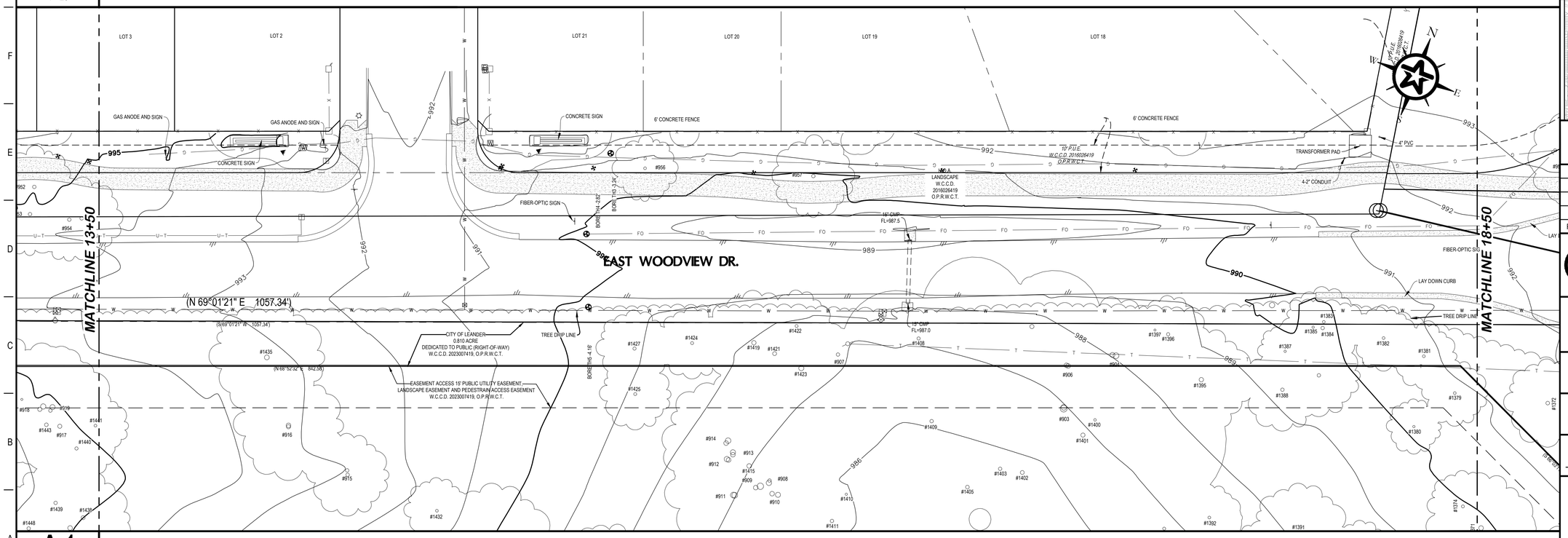
G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585TOPOGRAPHIC SURVEY.DWG, C011 E. WOODVIEW DR. (STA. 0+00-8+50), 3/30/2023 7:39:03 AM, cschroeder



G1

1"=20'

EAST WOODVIEW DRIVE ~ 8+50-13+50



A1

1"=20'

EAST WOODVIEW DRIVE ~ 13+50-18+50

SURVEY LEGEND

= FIRE HYDRANT	= MAILBOX
= WATER VALVE	= GAS LINE
= WATER METER	= GAS METER
= WATER IRRIGATION CONTROL VALVE	= GAS REGULATOR VALVE
= WATER LINE	= FIBER OPTIC LINE
= TELEPHONE RISER	= FIBER OPTIC MANHOLE
= UNDERGROUND TELEPHONE	
= UTILITY POLE	
= GUY WIRE	
= ELECTRIC METER	
= ELECTRIC JUNCTION BOX	
= LIGHT POLE	
= OVERHEAD ELECTRIC LINE	
= FENCE	
= TRAFFIC SIGN	
= TREE	
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= CONCRETE	
= GRAVEL	
= SURVEY CONTROL POINT	
= FINISHED FLOOR (SPOT ELEVATION)	
P.R.W.C.T. = PUBLIC RECORDS WILLIAMSON COUNTY, TEXAS	
W.C.C.D. = WILLIAMSON COUNTY CLERK'S DOCUMENT	
O.P.R.W.C.T. = OFFICIAL PUBLIC RECORDS WILLIAMSON COUNTY, TEXAS	

SURVEYOR'S NOTES

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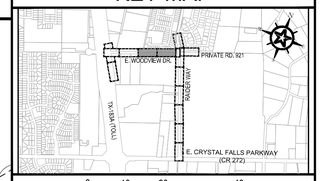
KEY MAP



0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TOPOGRAPHIC SURVEY
E. WOODVIEW DR. (STA. 8+50-18+50)

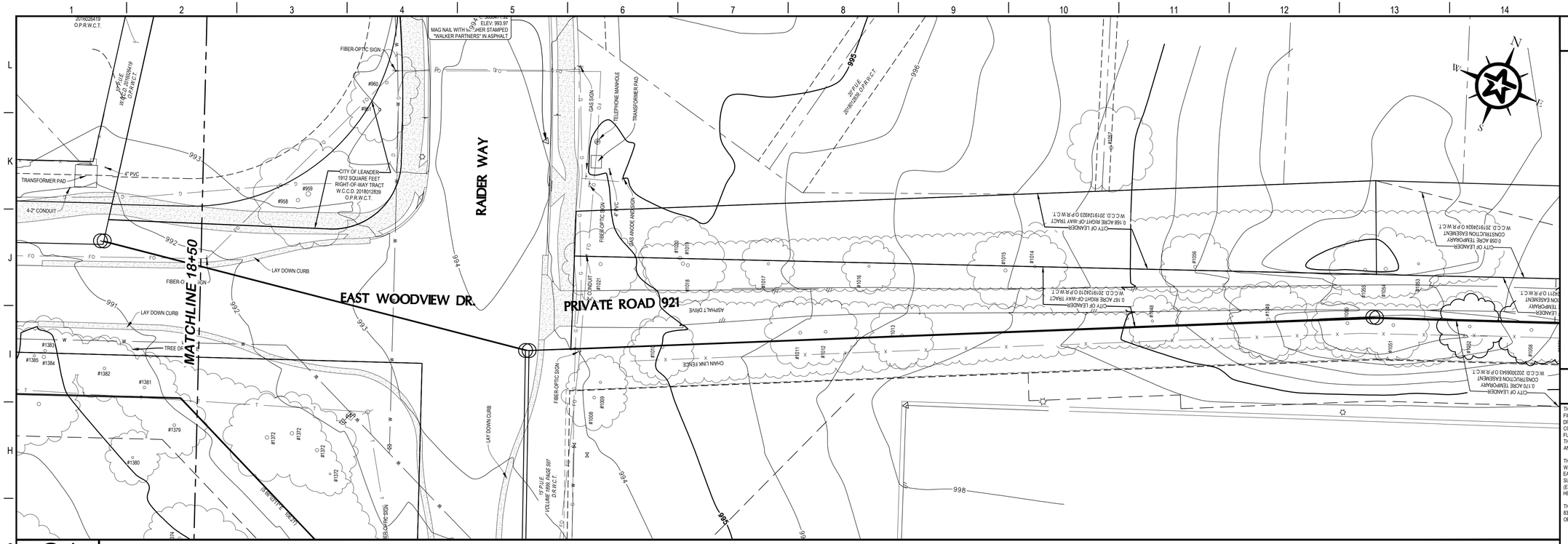
03/22/2023
DATE

R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C012
SHEET	OF

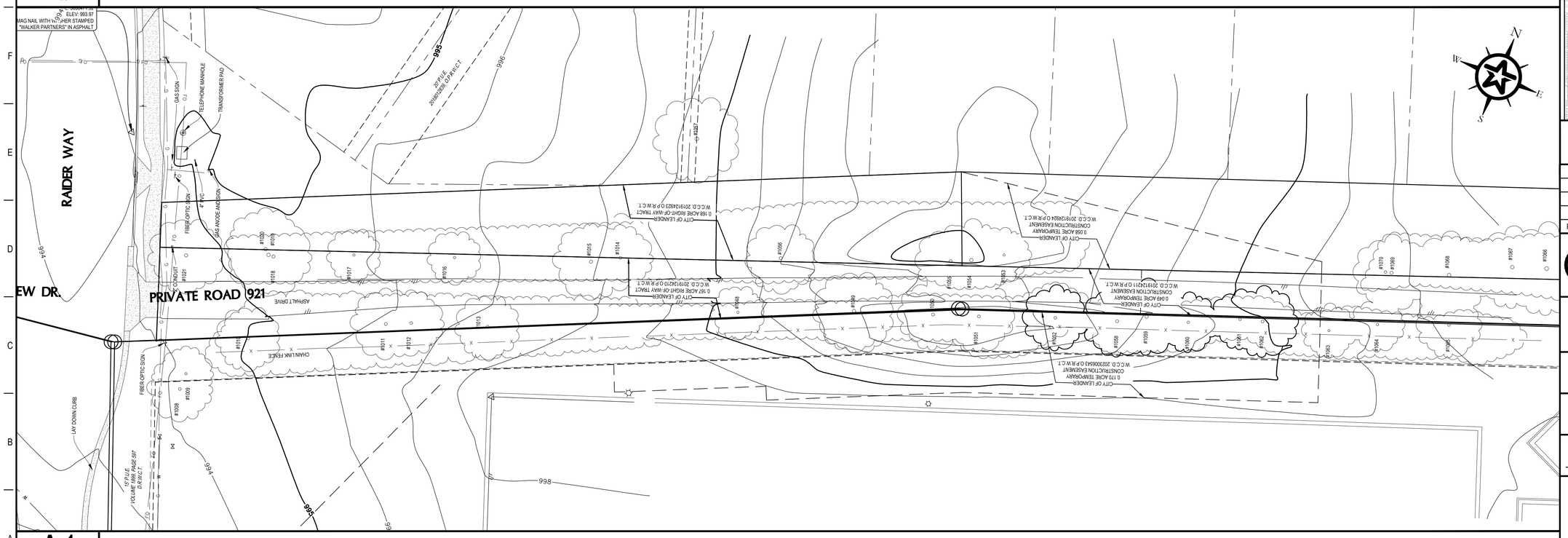
G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585TOPOGRAPHIC SURVEY.DWG, C012, E. WOODVIEW DR. (STA. 8+50-18+50), 3/30/2023 7:39:27 AM, cschroeder



G1

EAST WOODVIEW DRIVE ~ 18+50-END

1"=20'



A1

PRIVATE DRIVE 921 ~ 0+00-5+00

1"=20'

SURVEY LEGEND

= FIRE HYDRANT	= MAILBOX
= WATER VALVE	= GAS LINE
= WATER METER	= GAS METER
= WATER IRRIGATION CONTROL VALVE	= GAS REGULATOR VALVE
= WATER LINE	= FIBER OPTIC LINE
= TELEPHONE RISER	= FIBER OPTIC MANHOLE
= UNDERGROUND TELEPHONE	
= UTILITY POLE	
= GUY WIRE	
= ELECTRIC METER	
= ELECTRIC JUNCTION BOX	
= LIGHT POLE	
= OVERHEAD ELECTRIC LINE	
= FENCE	
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= CONCRETE	
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P.R.W.C.T. = PUBLIC RECORDS WILLIAMSON COUNTY, TEXAS	
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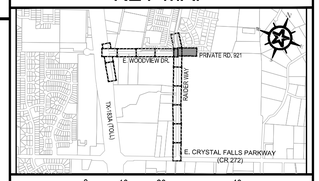


0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TOPOGRAPHIC SURVEY
E. WOODVIEW DR. (STA. 18+50-END)

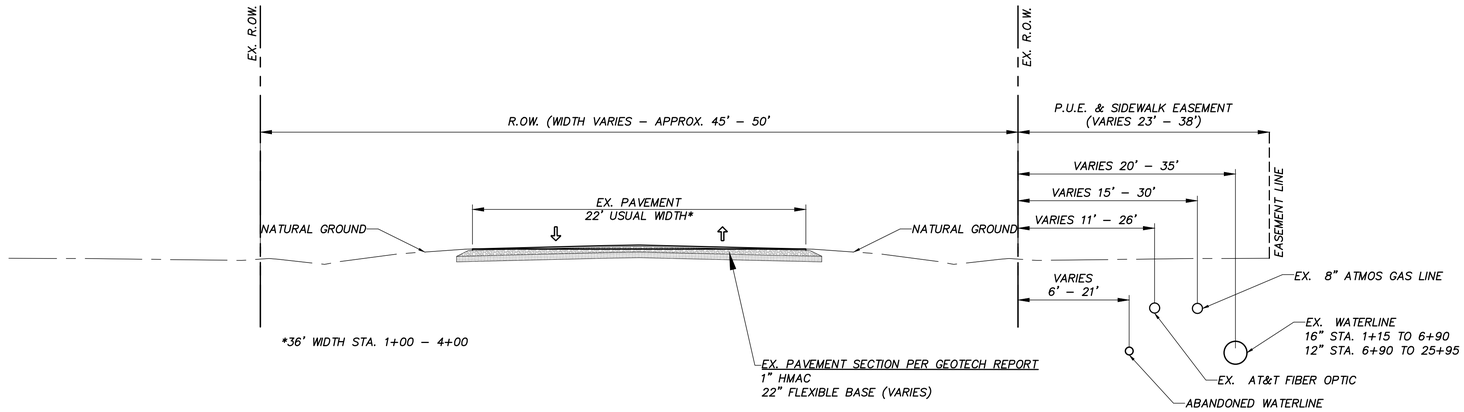
03/22/2023
DATE

R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

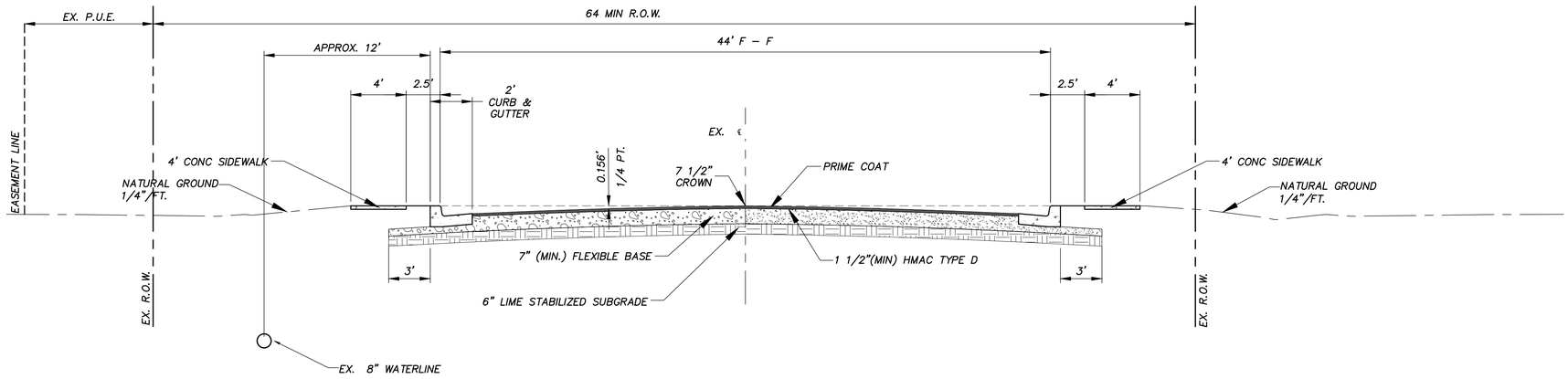
PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C013
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585TOPOGRAPHIC SURVEY.DWG, C013 E. WOODVIEW DR. (STA. 18+50-END)), 3/30/2023 7:39:50 AM, cschroeder



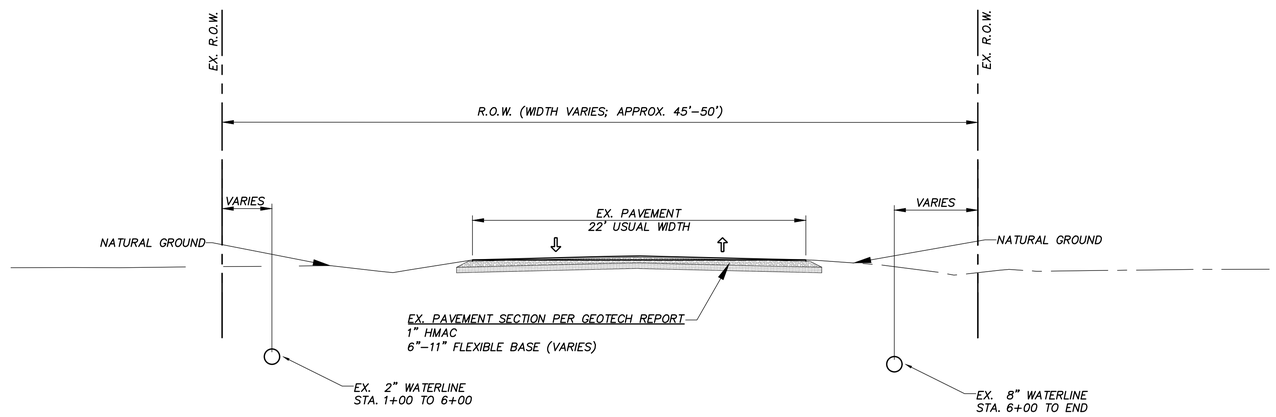
11 RAIDER WAY - EXISTING SECTION 1

N.T.S. STA. 1+00 TO STA. 29+00



E1 RAIDER WAY - EXISTING SECTION 2

N.T.S. STA. 29+00 TO STA. 32+20



A1 EAST WOODVIEW DRIVE - EXISTING SECTION

N.T.S. STA. 1+00 TO END

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

EXISTING TYPICAL SECTIONS

03/22/2023 DATE

R. ALAN MUNGER, P.E.

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C014
SHEET	OF

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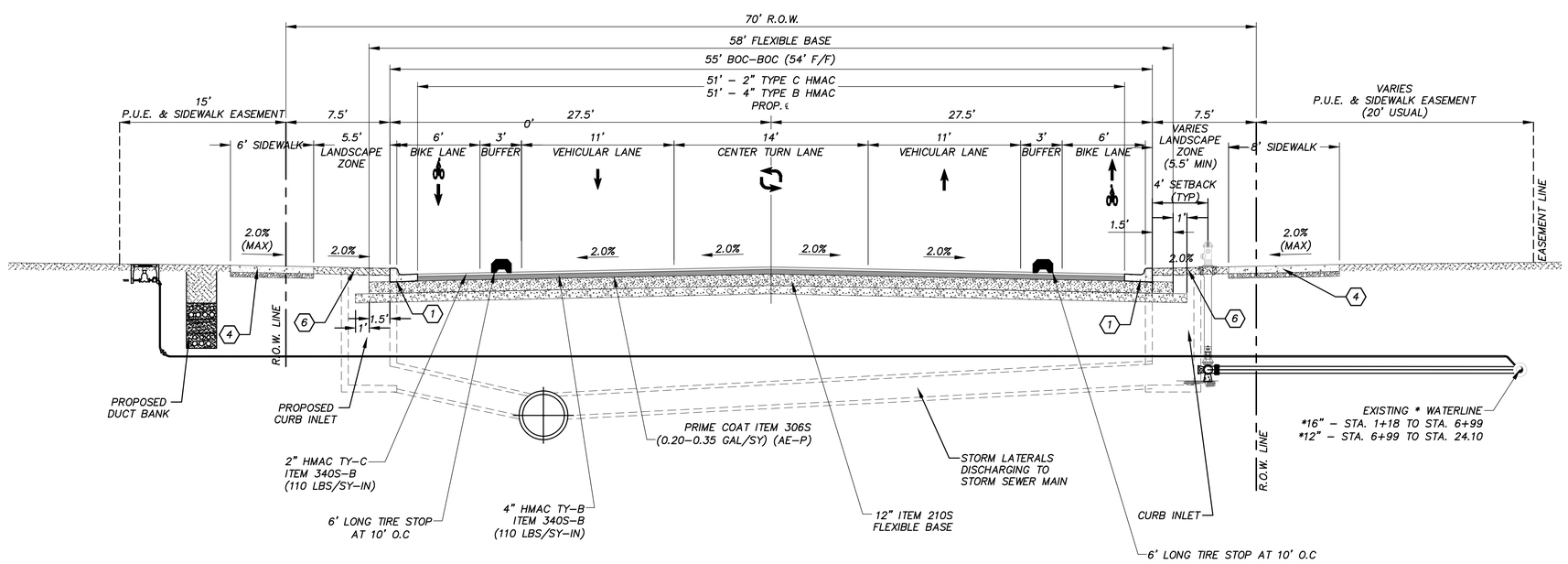
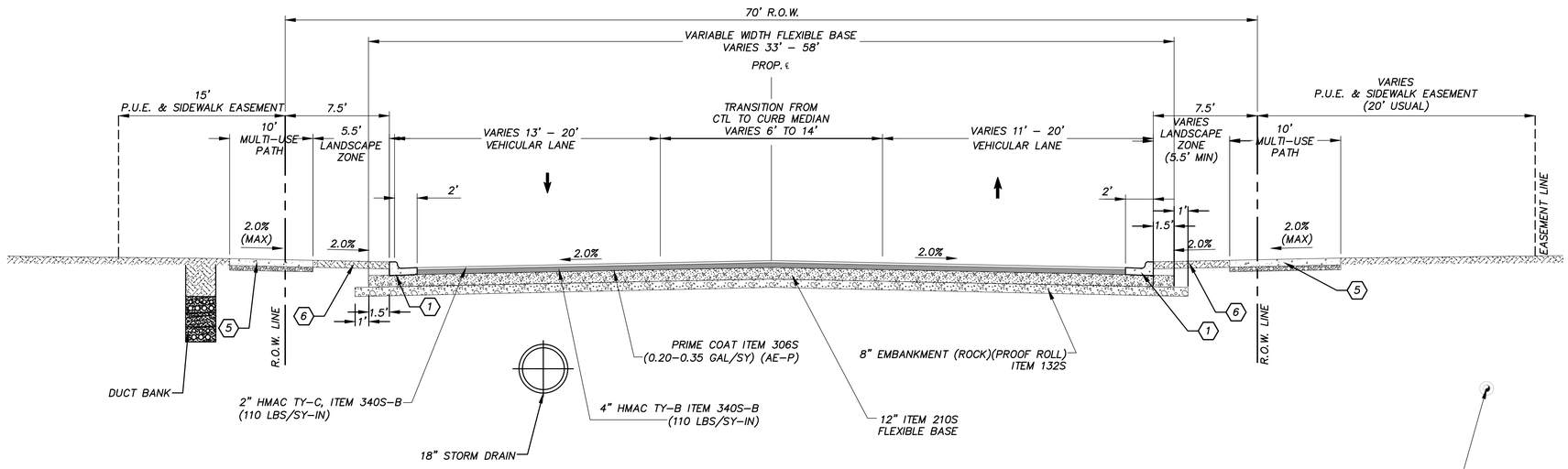


11 PROPOSED TYPICAL SECTION - RAIDER WAY (55' BOC - BOC)

N.T.S. FROM APPROXIMATELY STA. 1+04 TO STA. 24+00.57



A1 PROPOSED TYPICAL SECTION - RAIDER WAY

N.T.S. FROM APPROXIMATELY STA. 24+00.57 TO 25+91.14

KEY NOTES

1. STANDARD REINFORCED CURB & GUTTER
   RE: COA 430S–2 (RE: G5/####)
4. 4" REINFORCED CONCRETE SIDEWALK OVER 2" SAND CUSHION
   RE: COA 432S–1 (RE: A1/####)
5. 6" REINFORCED CONCRETE SIDEWALK OVER 2" SAND CUSHION
   RE: COA 432S–1 (RE: A1/####)
6. 4" TOPSOIL
   RE: COA 601–S

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TYPICAL SECTIONS - RAIDER

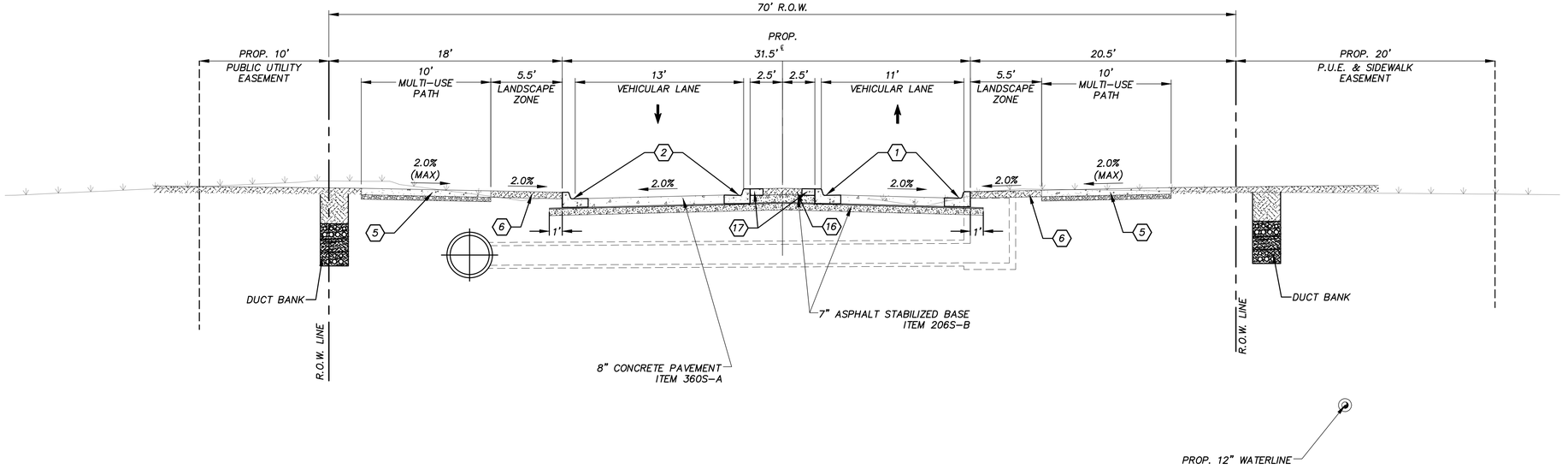
03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C015
SHEET	OF

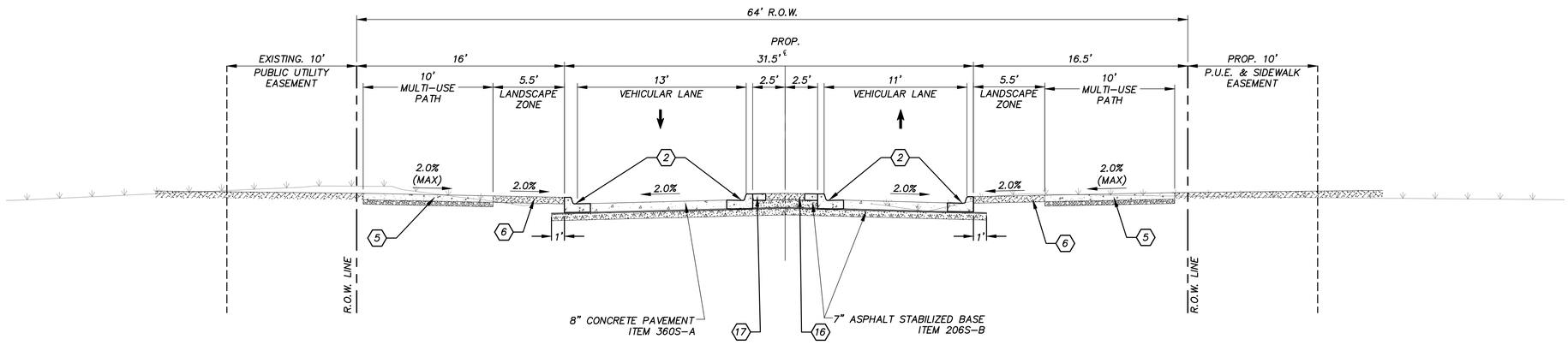
G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585TYPICAL SECTIONS.DWG, C015 TYPICAL SECTIONS - RAIDER, 3/30/2023 7:46:52 AM, cschroeder



11 PROPOSED TYPICAL SECTION - RAIDER WAY (31.5' BOC - BOC)

N.T.S.

FROM APPROXIMATELY STA. 25+91.14 TO STA. 28+05



A1 PROPOSED TYPICAL SECTION - RAIDER WAY (31.5' BOC - BOC)

N.T.S.

FROM APPROXIMATELY STA. 29+45 TO STA. 31+09.46

KEY NOTES

- (2) MONOLITHIC CURB, ITEM 360S-B RE: COA 4305-2
- (5) 6" REINFORCED CONCRETE SIDEWALK OVER 2" SAND CUSHION RE: COA 432S-1
- (6) 4" TOPSOIL RE: 601-S
- (16) LANDSCAPE PAVERS RE: TXDOT ITEM 528
- (17) 6" CONCRETE EDGE - RIPRAP (CONC) RE: TXDOT ITEM 432

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TYPICAL SECTIONS - RAIDER

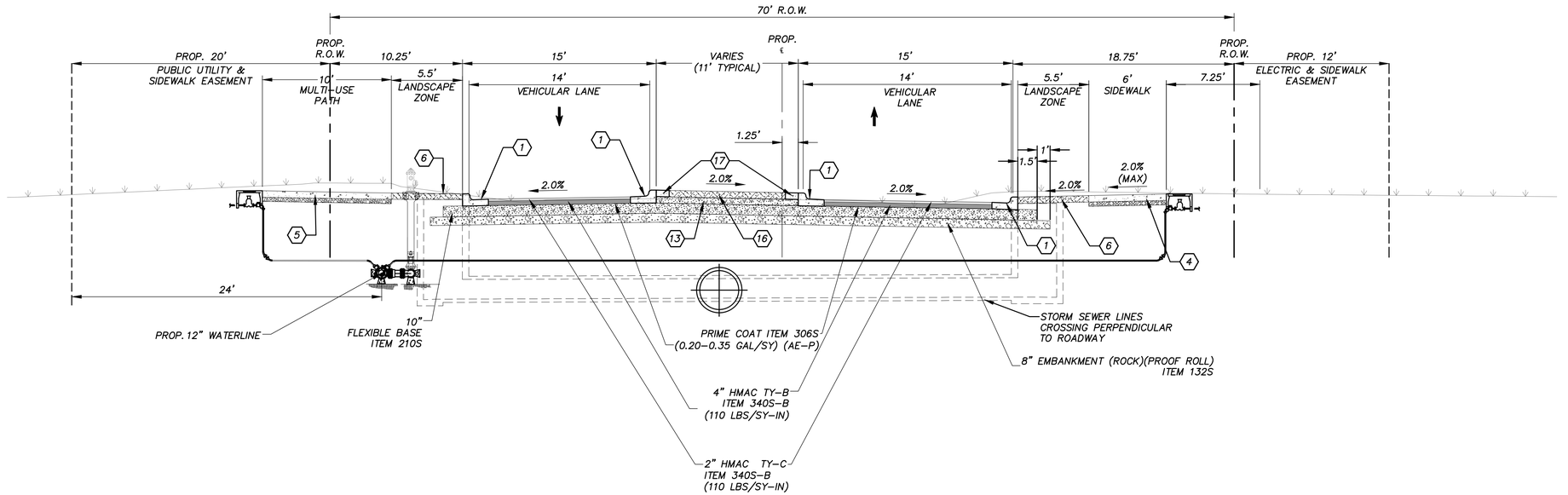
03/22/2023
DATE

R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C016
SHEET	OF

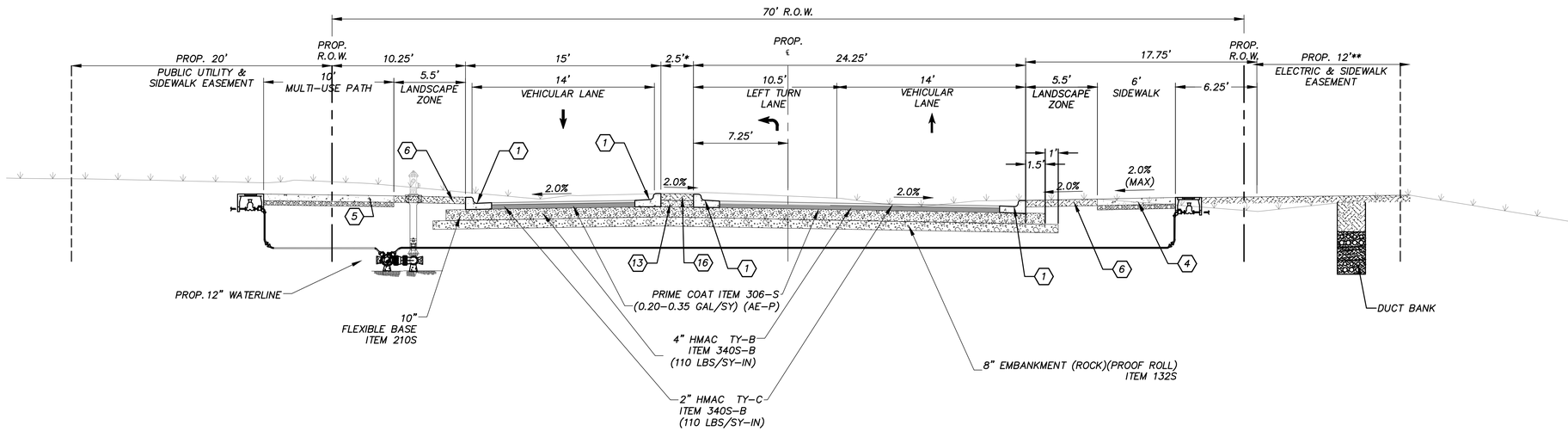
G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585TYPICAL SECTIONS.DWG, C016 TYPICAL SECTIONS - RAIDER, 3/30/2023 7:46:58 AM, cschroeder



G1

N.T.S.

FROM APPROXIMATELY STA. 10+30 to STA. 12+15



*SEE C202-C212 FOR LIMITS OF MEDIAN.

**12' PROP. EASEMENT WEST OF STA. 8+94.07
15' PROP. EASEMENT EAST OF STA. 8+94.07

A1

PROPOSED TYPICAL SECTION - E. WOODVIEW DRIVE (45' BOC - BOC)

N.T.S.

FROM APPROXIMATELY STA. 4+43.16 TO STA. 6+51.85 AND STA. 13+25 TO STA. 14+25

KEY NOTES

1. STANDARD REINFORCED CURB & GUTTER RE: COA 430S-2 (RE: G5/####)
4. 4" REINFORCED CONCRETE SIDEWALK OVER 2" SAND CUSHION RE: COA 432S-1 (RE: A1/####)
5. 6" REINFORCED CONCRETE SIDEWALK OVER 2" SAND CUSHION RE: COA 432S-1 (RE: A1/####)
6. 4" TOPSOIL RE: COA 601-S
13. 6" ASPHALT STABILIZED BASE RE: COA 206S-B
16. LANDSCAPE PAVERS RE: TXDOT ITEM 528
17. 6" CONCRETE EDGE - RIPRAP (CONC) RE: TXDOT ITEM 432

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TYPICAL SECTIONS - WOODVIEW

03/22/2023
DATE

R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C017
SHEET	OF

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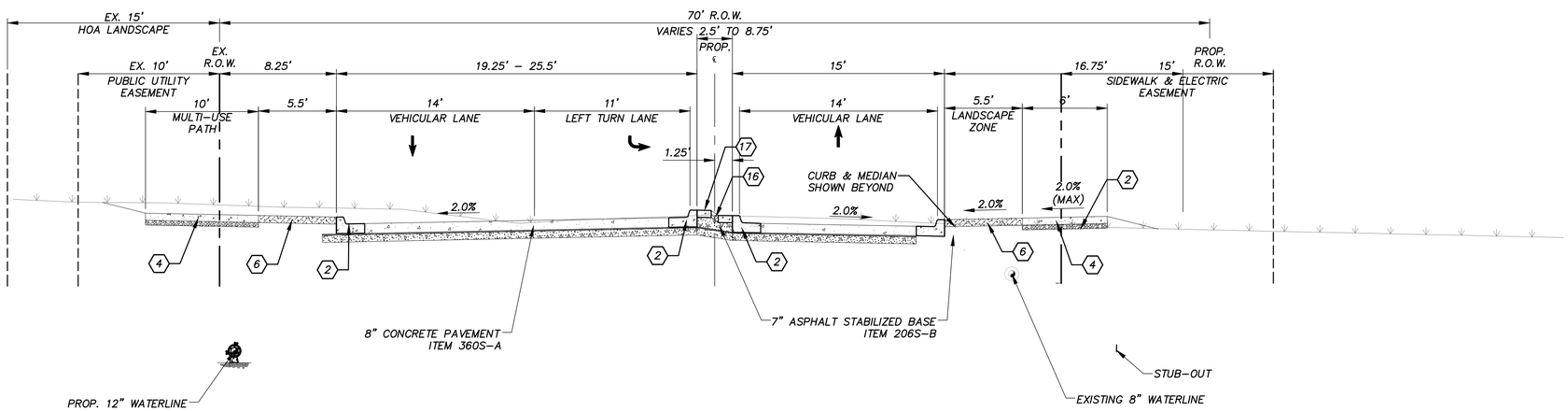
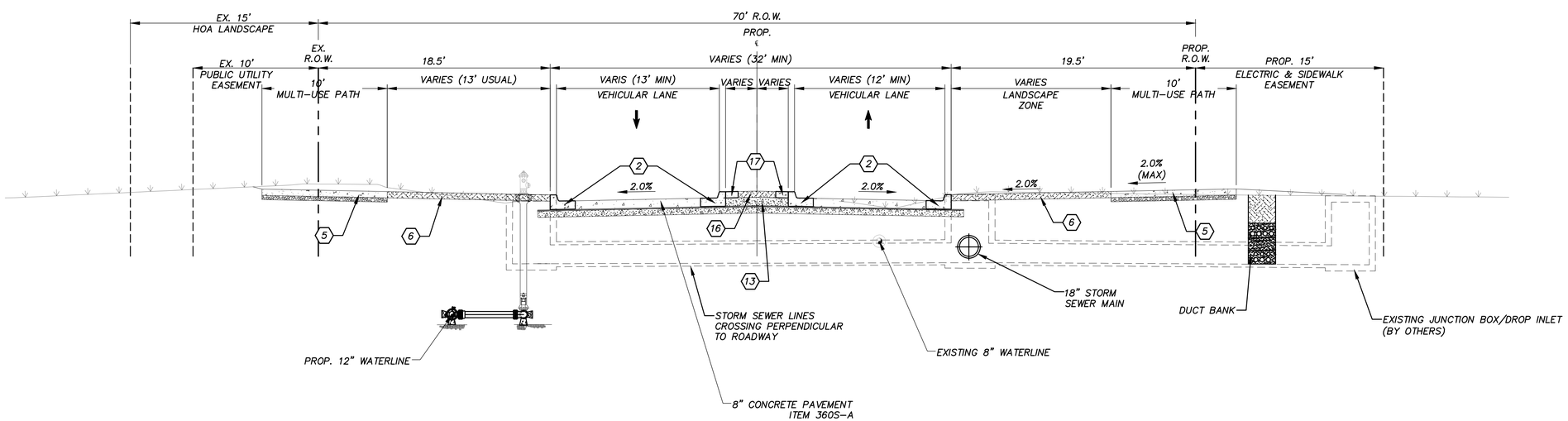


G1 PROPOSED TYPICAL SECTION - E. WOODVIEW DRIVE

N.T.S. | FROM APPROXIMATELY STA. 15+02.3 TO STA. 16+14.04



A1 PROPOSED TYPICAL SECTION - E. WOODVIEW DRIVE

N.T.S. | FROM APPROXIMATELY STA. 16+15 TO STA. 18+50

KEY NOTES

1. STANDARD REINFORCED CURB & GUTTER RE: COA 430S-2 (RE: G5/####)
2. MONOLITHIC CURB, ITEM 360S-B RE: COA 430S-2
4. 4" REINFORCED CONCRETE SIDEWALK OVER 2" SAND CUSHION RE: COA 432S-1 (RE: A1/####)
5. 6" REINFORCED CONCRETE SIDEWALK OVER 2" SAND CUSHION RE: COA 432S-1 (RE: A1/####)
6. 4" TOPSOIL RE: COA 601-S
13. 6" ASPHALT STABILIZED BASE RE: COA 206S-B
16. LANDSCAPE PAVERS RE: TXDOT ITEM 528
17. 6" CONCRETE EDGE – RIPRAP (CONC) RE: TXDOT ITEM 432

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TYPICAL SECTIONS - WOODVIEW

03/22/2023 DATE

R. ALAN MUNGER, PE

STATE OF TEXAS · R. ALAN MUNGER · 65341 · REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C018
SHEET	OF

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KEY NOTES

(2) MONOLITHIC CURB
RE: COA 360S–B

(3) RIBBON CURB
RE: ___/C___

(4) 4" REINFORCED CONCRETE SIDEWALK OVER 2" SAND CUSHION
RE: COA 432S–4

(5) 6" REINFORCED CONCRETE SIDEWALK OVER 2" SAND CUSHSION
RE: COA 432S–6

(6) 4" TOPSOIL
RE: COA 601–5

(13) 6" ASPHALT STABILIZED BASE
RE: COA 206S–B

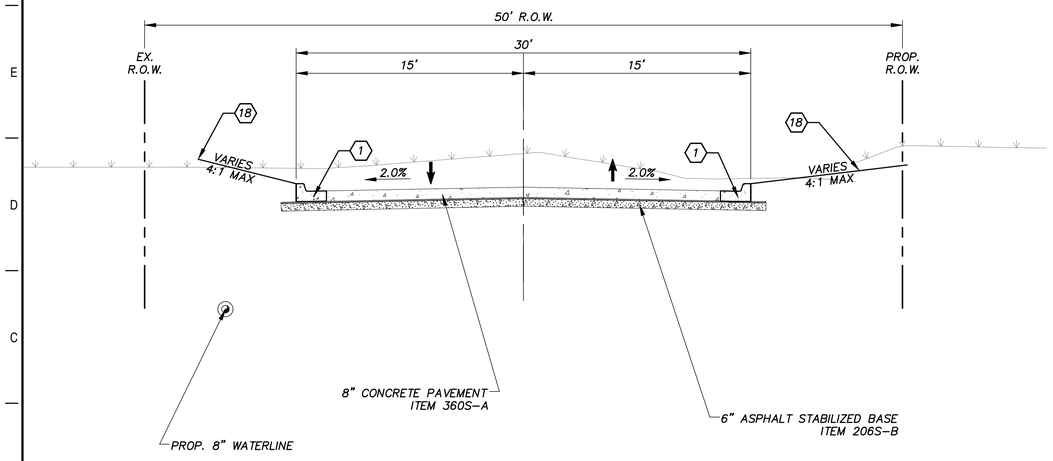
(16) LANDSCAPE PAVERS
RE: TXDOT ITEM 528

(17) 6" CONCRETE EDGE – RIPRAP (CONC)
RE: TXDOT ITEM 432

(18) BERMUDA BLOCK SOD
RE: COA 602S–A

G1 NOT USED

N.T.S.

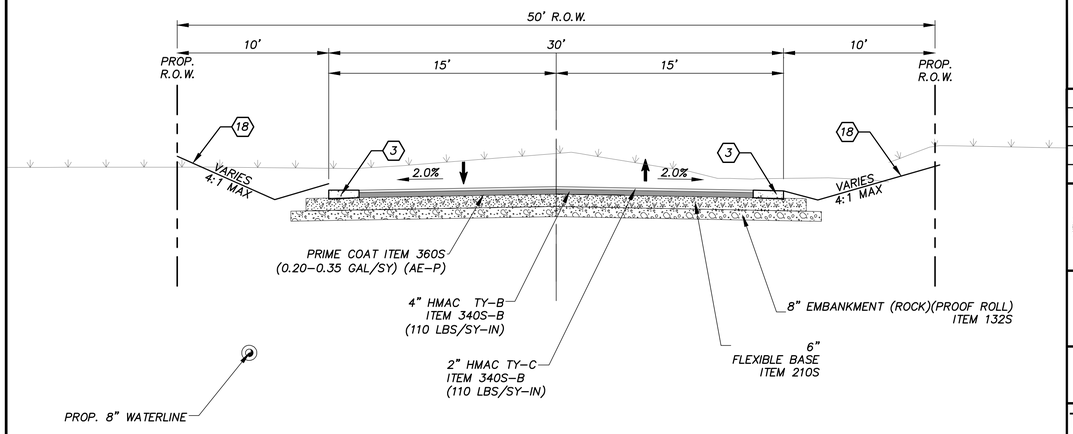


PR 921 TYPICAL

A1 PROPOSED TYPICAL SECTION - PR 921 (30' BOC - BOC)

N.T.S.

FROM APPROXIMATELY STA. 1+15 TO STA. 1+87.21



PR 921
STA 1+87.21 to 3+24.51

A8 PROPOSED TYPICAL SECTION - PR 921 (30' BOC - BOC)

N.T.S.

FROM APPROXIMATELY STA. 1+87.21 TO STA. 3+24.51

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TYPICAL SECTIONS - WOODVIEW & PR921

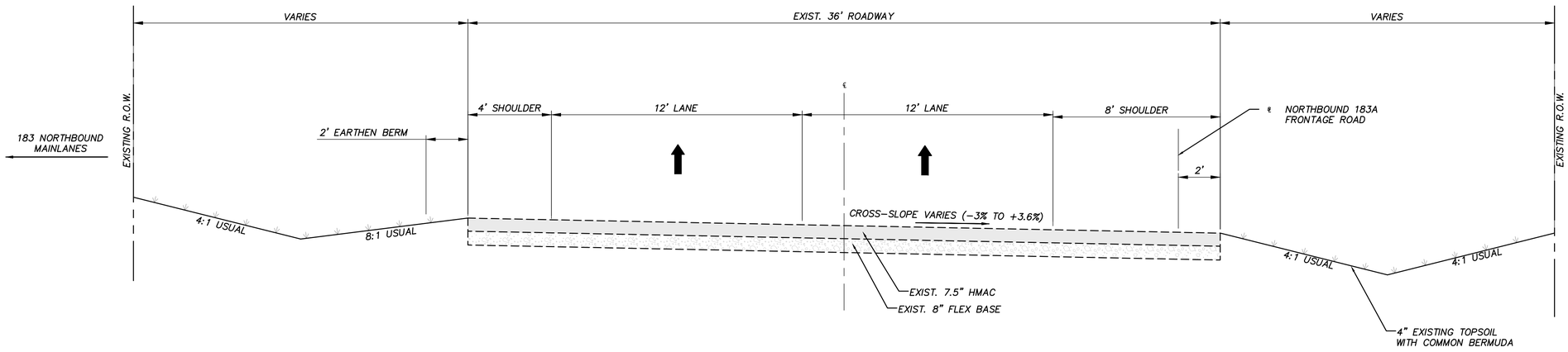
03/22/2023
DATE

R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

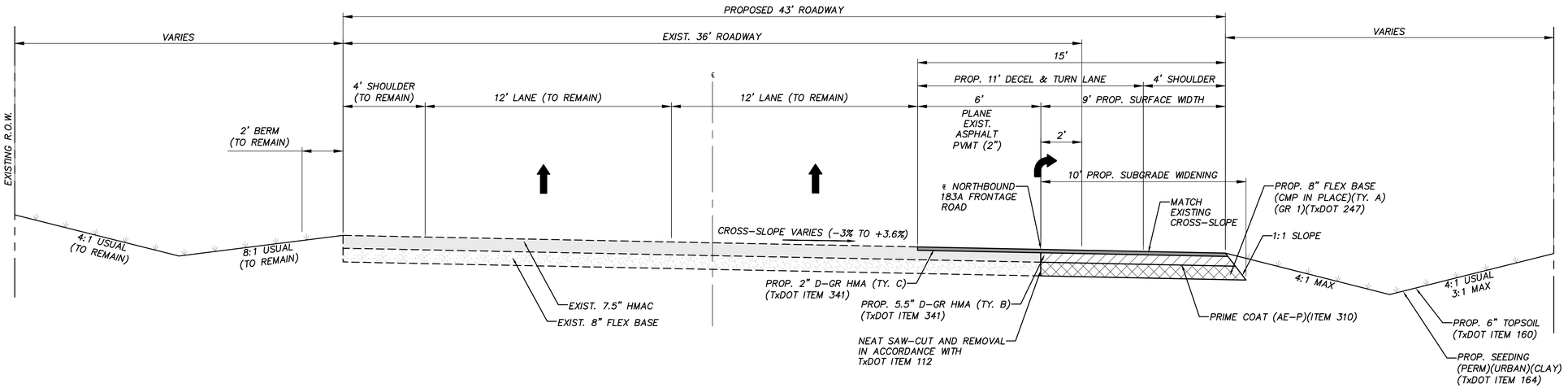
PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C019
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585TYPICAL SECTIONS.DWG, C019 TYPICAL SECTIONS - WOODVIEW & PR921, 3/30/2023 7:47:17 AM, cschroeder



G1 — EXISTING 183A NORTHBOUND FRONTAGE ROAD

N.T.S.



A1 — PROPOSED 183A NORTHBOUND FRONTAGE ROAD

N.T.S.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TYPICAL SECTIONS - CTRMA 183A NB FRONTAGE ROAD

03/22/2023 — DATE

R. ALAN MUNGER, PE

STATE OF TEXAS — R. ALAN MUNGER — 65341 — REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C020
SHEET	OF

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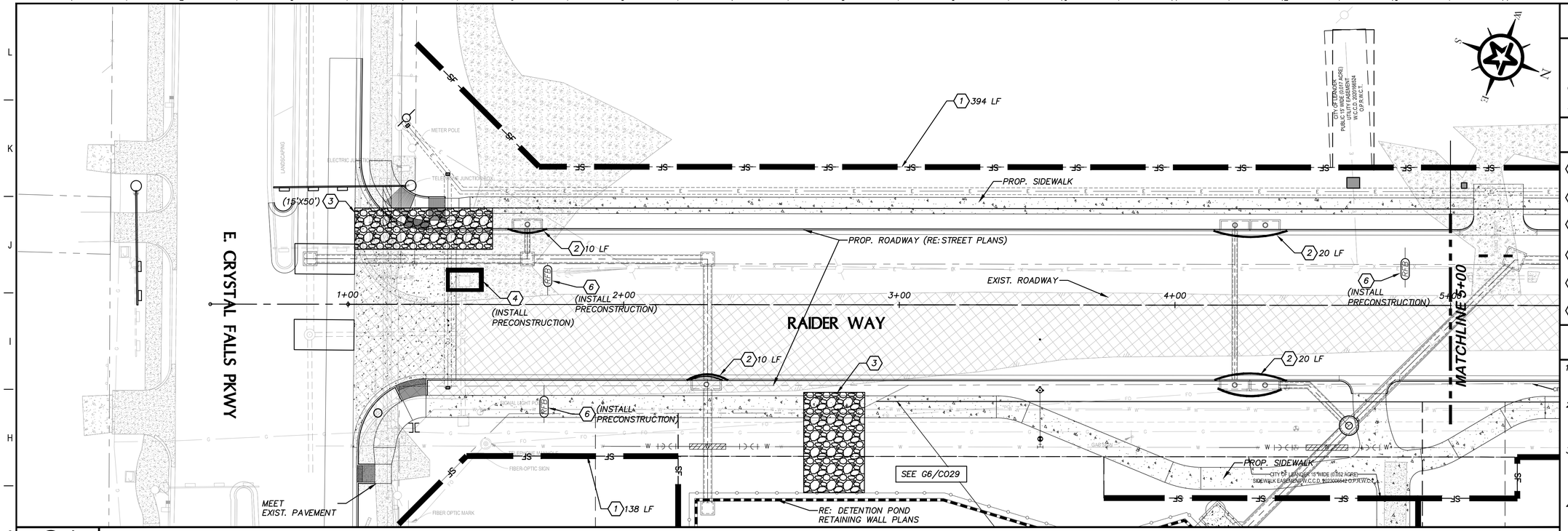
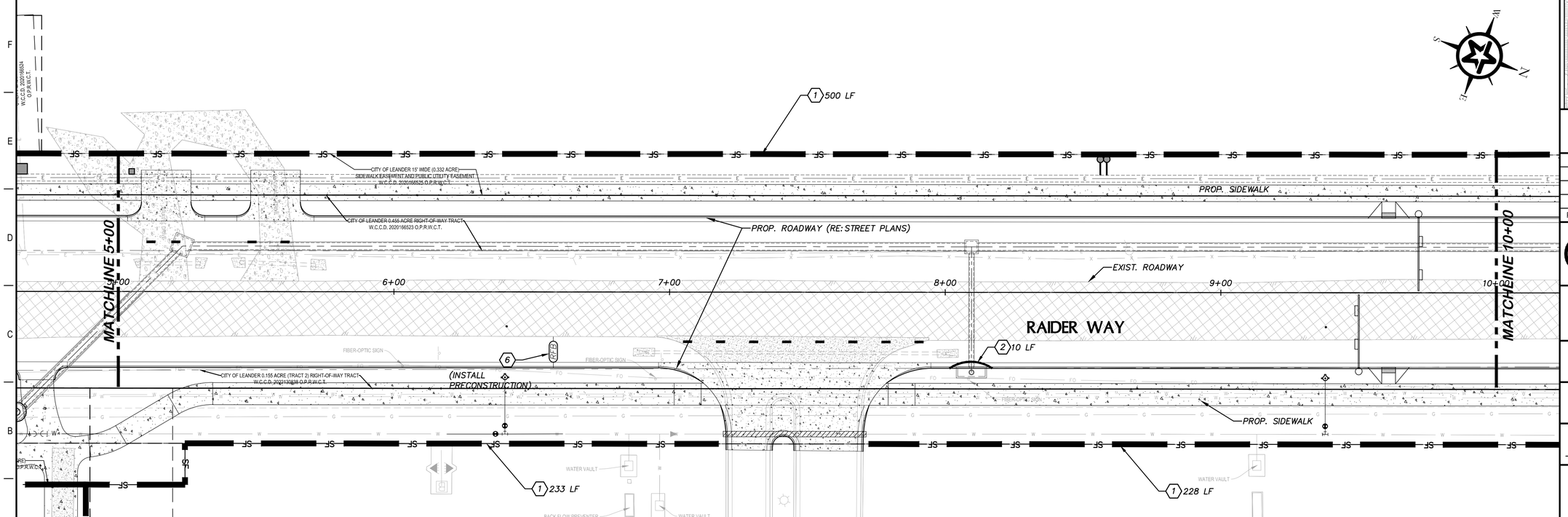


G1 RAIDER WAY - STA. 1+00 - 5+00



A1 RAIDER WAY - STA. 5+00 - 10+00

LEGEND

- STABILIZED CONSTRUCTION ENTRANCE
- SF — SILT FENCE ASSEMBLY
- RFB — ROCK FILTER BERM

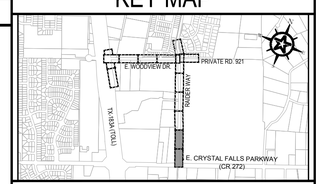
KEY NOTES

1. SILT FENCE ASSEMBLY (RE: COA STANDARD DETAIL 642S–1)
2. CURB INLET SEDIMENT CONTROL DEVICE (RE: TxDOT SPEC ITEM 7012)
3. STABILIZED CONTROL ENTRANCE (RE: COA STANDARD DETAIL 641S–1)
4. GRATE INLET PROTECTION (RE: COA STANDARD DETAIL 632S–1)
5. CONCRETE TRUCK WASH OUT AREA (RE: COL STANDARD DETAIL 303–1)
6. ROCK FILTER BERM (RE: COA STANDARD DETAIL 639S–1)

GENERAL NOTES

1. ALL DISTURBED AREAS ON 6:1 OR STEEPER SLOPE SHALL BE REVEGETATED USING SOIL RETENTION BLANKET PER TXDOT SPEC 169.
2. REMOVE AND REPLACE SILT FENCE ASSEMBLY AS NECESSARY TO CONSTRUCT DRIVEWAYS, STORM DRAINAGE AND UTILITY CROSSINGS.
3. REMOVE SEDIMENT CONTROL DEVICES AFTER ALL DISTURBED AREAS HAVE BEEN LANDSCAPED OR STABILIZED WITH PERMANENT EROSION CONTROL MEASURES AS SPECIFIED IN THE PROJECT NOTES.
4. CONTRACTOR STORAGE AND STAGING AREAS ARE NOT DEPICTED. CONTRACTOR TO PREPARE PLAN AND IMPLEMENT IN ACCORDANCE WITH EROSION AND SEDIMENTATION CONTROL (SPEC 31 25 13).

KEY MAP



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GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

EROSION CONTROL PLAN (STA. 0+00-10+00)

03/22/2023 DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS — R. ALAN MUNGER — 65341 — REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C021
SHEET	OF

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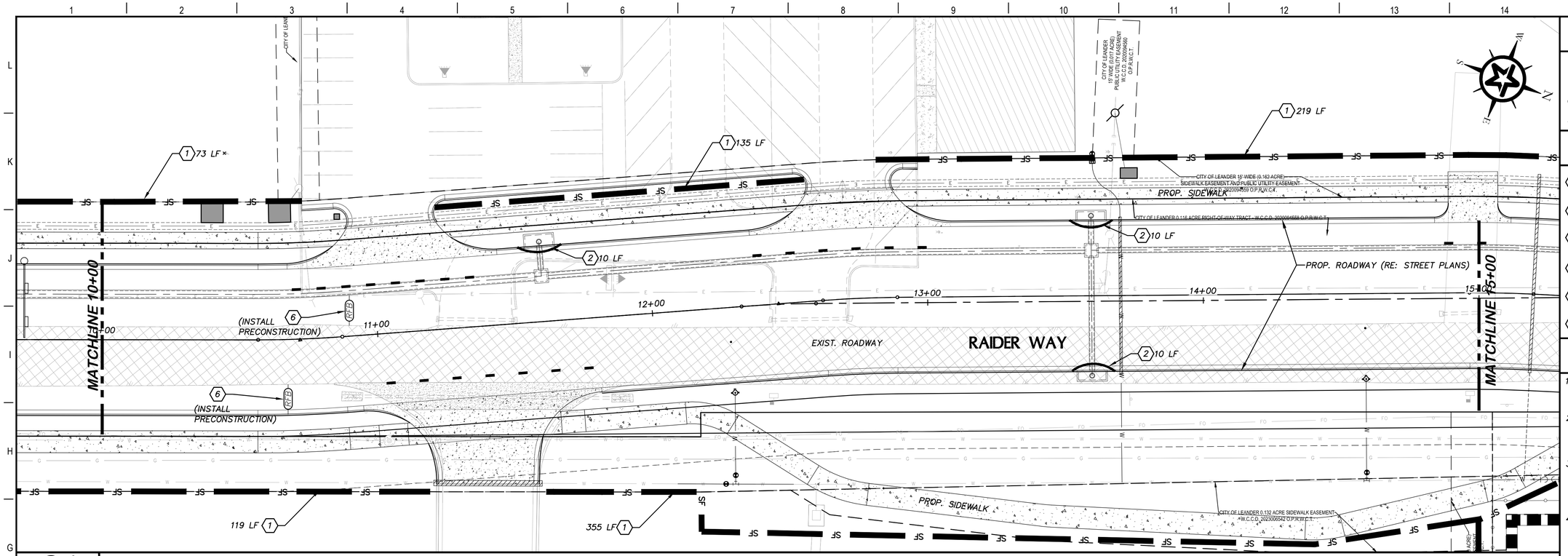
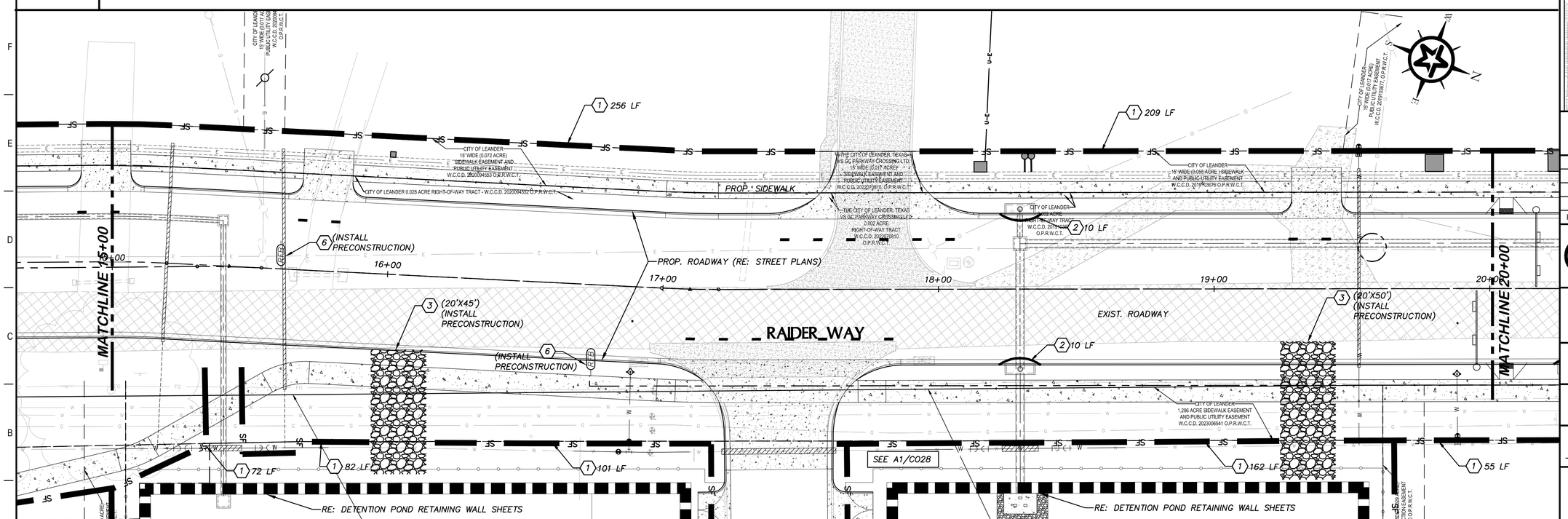




LEGEND

- STABILIZED CONSTRUCTION ENTRANCE
- SF — SILT FENCE ASSEMBLY
- RF/B — ROCK FILTER BERM

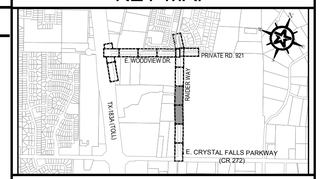
KEY NOTES

1. SILT FENCE ASSEMBLY (RE: COA STANDARD DETAIL 642S–1)
2. CURB INLET SEDIMENT CONTROL DEVICE (RE: TxDOT SPEC ITEM 7012)
3. STABILIZED CONTROL ENTRANCE (RE: COA STANDARD DETAIL 641S–1)
4. GRATE INLET PROTECTION (RE: COA STANDARD DETAIL 632S–1)
5. CONCRETE TRUCK WASH OUT AREA (RE: COL STANDARD DETAIL 303–1)
6. ROCK FILTER BERM (RE: COA STANDARD DETAIL 639S–1)

GENERAL NOTES

1. ALL DISTURBED AREAS ON 6:1 OR STEEPER SLOPE SHALL BE REVEGETATED USING SOIL RETENTION BLANKET PER TXDOT SPEC 169.
2. REMOVE AND REPLACE SILT FENCE ASSEMBLY AS NECESSARY TO CONSTRUCT DRIVEWAYS, STORM DRAINAGE AND UTILITY CROSSINGS.
3. REMOVE SEDIMENT CONTROL DEVICES AFTER ALL DISTURBED AREAS HAVE BEEN LANDSCAPED OR STABILIZED WITH PERMANENT EROSION CONTROL MEASURES AS SPECIFIED IN THE PROJECT NOTES.
4. CONTRACTOR STORAGE AND STAGING AREAS ARE NOT DEPICTED. CONTRACTOR TO PREPARE PLAN AND IMPLEMENT IN ACCORDANCE WITH EROSION AND SEDIMENTATION CONTROL (SPEC 31 25 13).

KEY MAP



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GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

EROSION CONTROL PLAN (STA. 10+00-20+00)

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS — R. ALAN MUNGER — 65341 — REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C022
SHEET	OF

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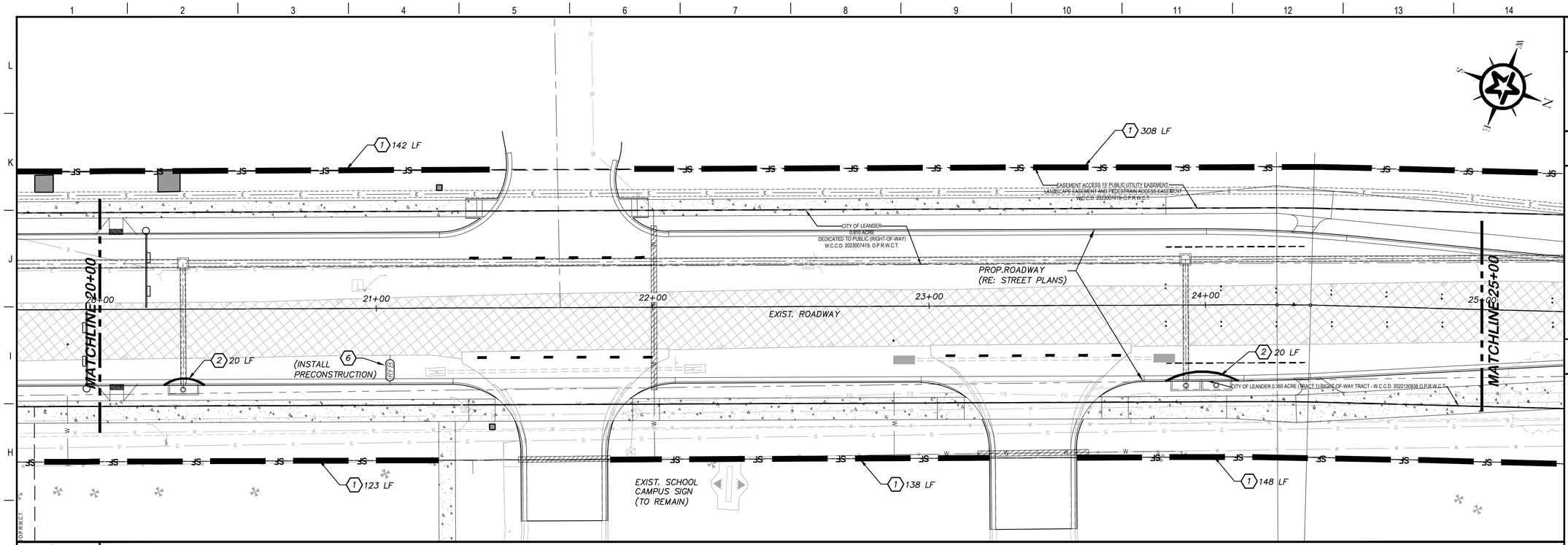
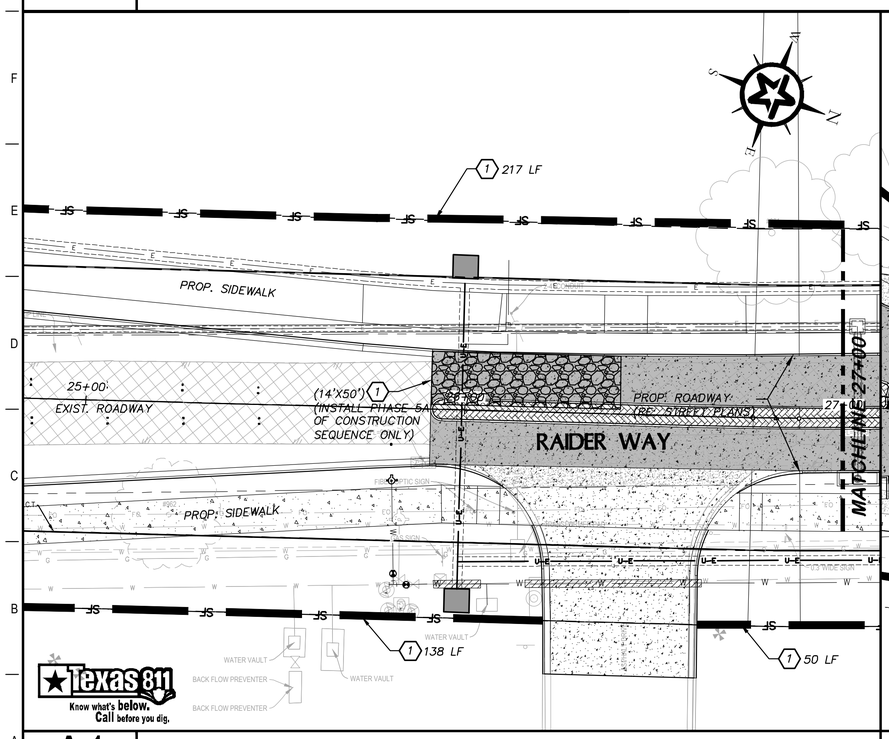
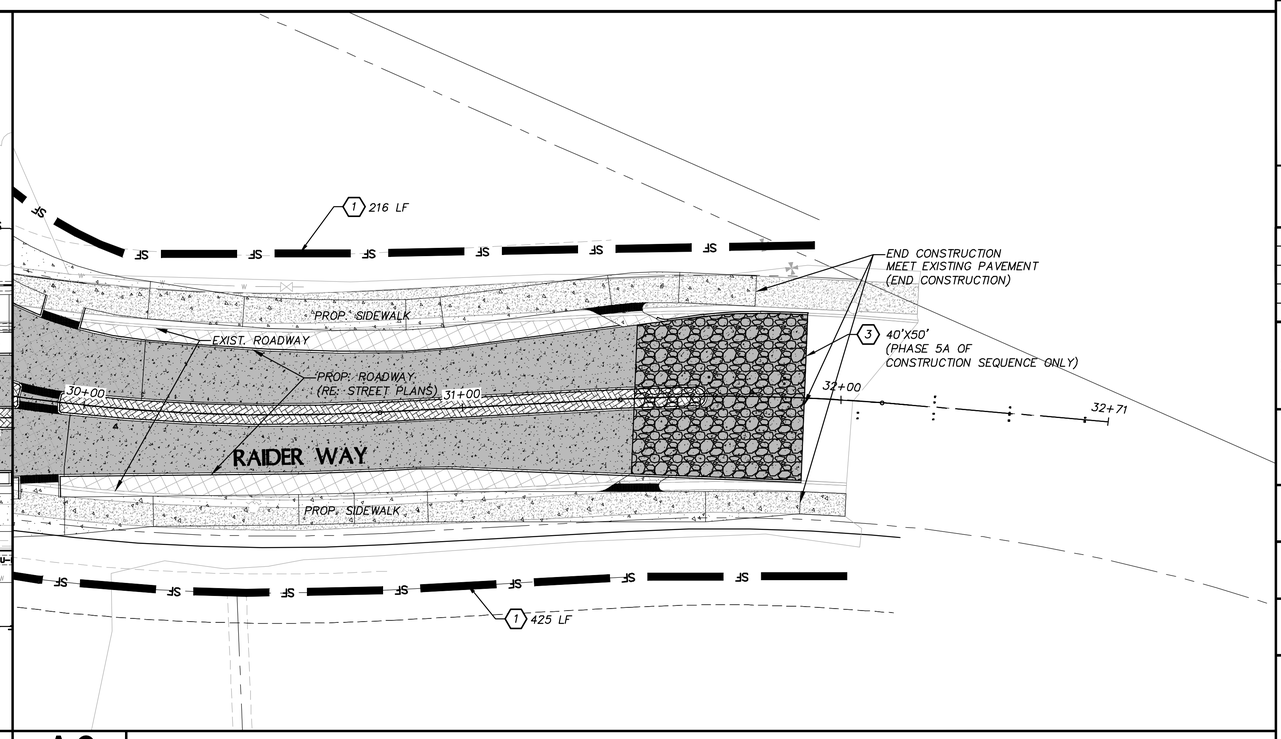


G1 RAIDER WAY - STA. 20+00 - 25+00



A1 RAIDER WAY - STA. 25+00 - 27+00



A6 RAIDER WAY - STA. 30+00 - END

LEGEND

- STABILIZED CONSTRUCTION ENTRANCE
- SF — SILT FENCE ASSEMBLY
- RFB — ROCK FILTER BERM

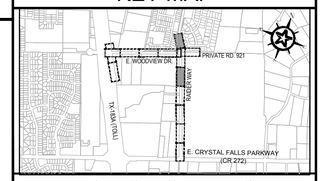
KEY NOTES

1. SILT FENCE ASSEMBLY (RE: COA STANDARD DETAIL 642S–1)
2. CURB INLET SEDIMENT CONTROL DEVICE (RE: TxDOT SPEC ITEM 7012)
3. STABILIZED CONTROL ENTRANCE (RE: COA STANDARD DETAIL 641S–1)
4. GRATE INLET PROTECTION (RE: COA STANDARD DETAIL 632S–1)
5. CONCRETE TRUCK WASH OUT AREA (RE: COL STANDARD DETAIL 303–1)
6. ROCK FILTER BERM (RE: COA STANDARD DETAIL 639S–1)

GENERAL NOTES

1. ALL DISTURBED AREAS ON 6:1 OR STEEPER SLOPE SHALL BE REVEGETATED USING SOIL RETENTION BLANKET PER TXDOT SPEC 169.
2. REMOVE AND REPLACE SILT FENCE ASSEMBLY AS NECESSARY TO CONSTRUCT DRIVEWAYS, STORM DRAINAGE AND UTILITY CROSSINGS.
3. REMOVE SEDIMENT CONTROL DEVICES AFTER ALL DISTURBED AREAS HAVE BEEN LANDSCAPED OR STABILIZED WITH PERMANENT EROSION CONTROL MEASURES AS SPECIFIED IN THE PROJECT NOTES.
4. CONTRACTOR STORAGE AND STAGING AREAS ARE NOT DEPICTED. CONTRACTOR TO PREPARE PLAN AND IMPLEMENT IN ACCORDANCE WITH EROSION AND SEDIMENTATION CONTROL (SPEC 31 25 13).

KEY MAP



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GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

EROSION CONTROL PLAN (STA. 20+00-END)

03/22/2023 DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C023
SHEET	OF

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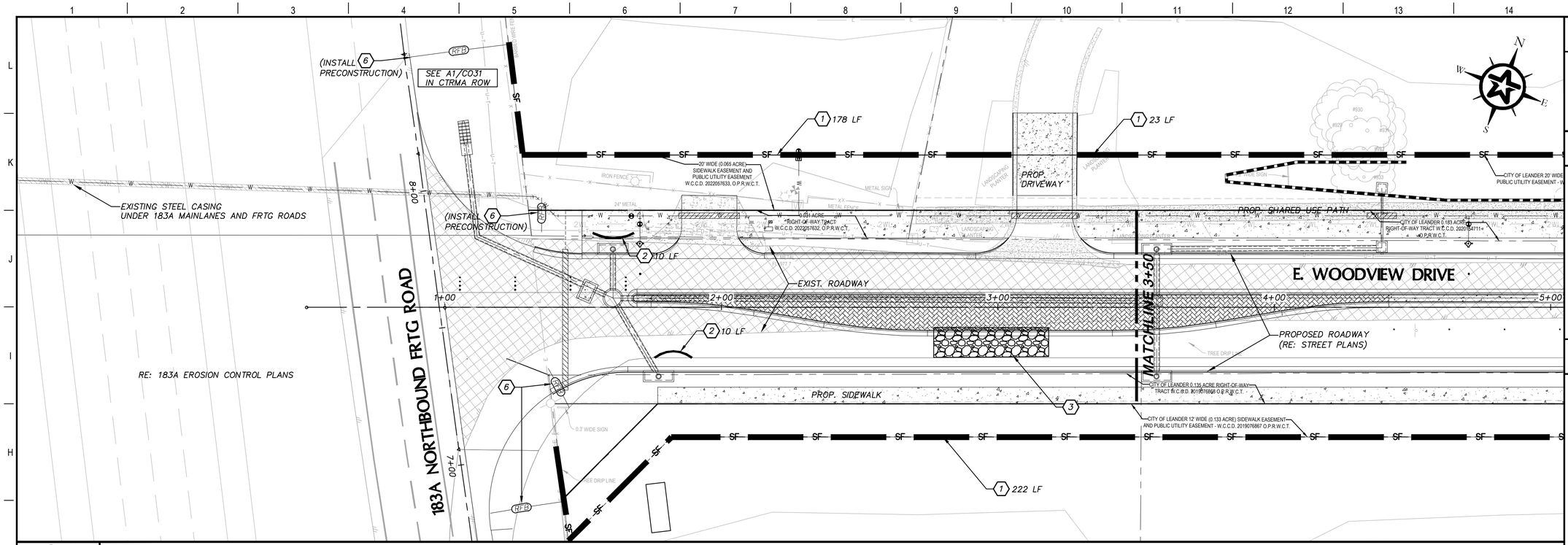
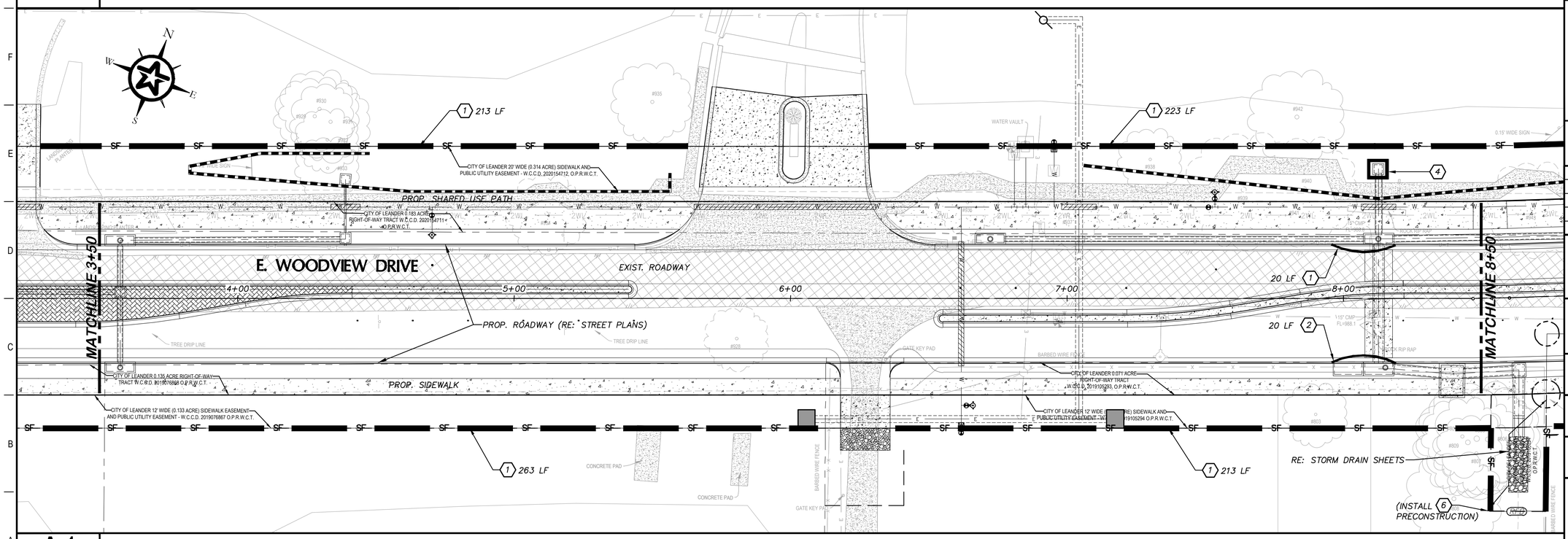


G1 WOODVIEW DRIVE - STA. 1+00 - 3+50



A1 WOODVIEW DRIVE - STA. 3+50 - 8+50

LEGEND

- STABILIZED CONSTRUCTION ENTRANCE
- SF — SILT FENCE ASSEMBLY
- RFB — ROCK FILTER BERM

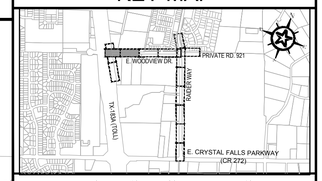
KEY NOTES

1. SILT FENCE ASSEMBLY (RE: COA STANDARD DETAIL 642S–1)
2. CURB INLET SEDIMENT CONTROL DEVICE (RE: TxDOT SPEC ITEM 7012)
3. STABILIZED CONTROL ENTRANCE (RE: COA STANDARD DETAIL 641S–1)
4. GRATE INLET PROTECTION (RE: COA STANDARD DETAIL 632S–1)
5. CONCRETE TRUCK WASH OUT AREA (RE: COL STANDARD DETAIL 303–1)
6. ROCK FILTER BERM (RE: COA STANDARD DETAIL 639S–1)

GENERAL NOTES

1. ALL DISTURBED AREAS ON 6:1 OR STEEPER SLOPE SHALL BE REVEGETATED USING SOIL RETENTION BLANKET PER TXDOT SPEC 169.
2. REMOVE AND REPLACE SILT FENCE ASSEMBLY AS NECESSARY TO CONSTRUCT DRIVEWAYS, STORM DRAINAGE AND UTILITY CROSSINGS.
3. REMOVE SEDIMENT CONTROL DEVICES AFTER ALL DISTURBED AREAS HAVE BEEN LANDSCAPED OR STABILIZED WITH PERMANENT EROSION CONTROL MEASURES AS SPECIFIED IN THE PROJECT NOTES.
4. CONTRACTOR STORAGE AND STAGING AREAS ARE NOT DEPICTED. CONTRACTOR TO PREPARE PLAN AND IMPLEMENT IN ACCORDANCE WITH EROSION AND SEDIMENTATION CONTROL (SPEC 31 25 13).

KEY MAP



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GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

EROSION CONTROL PLAN (STA. 1+00-8+50)

03/22/2023 DATE

R. ALAN MUNGER, PE

STATE OF TEXAS — R. ALAN MUNGER — 65341 — REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C024
SHEET	OF

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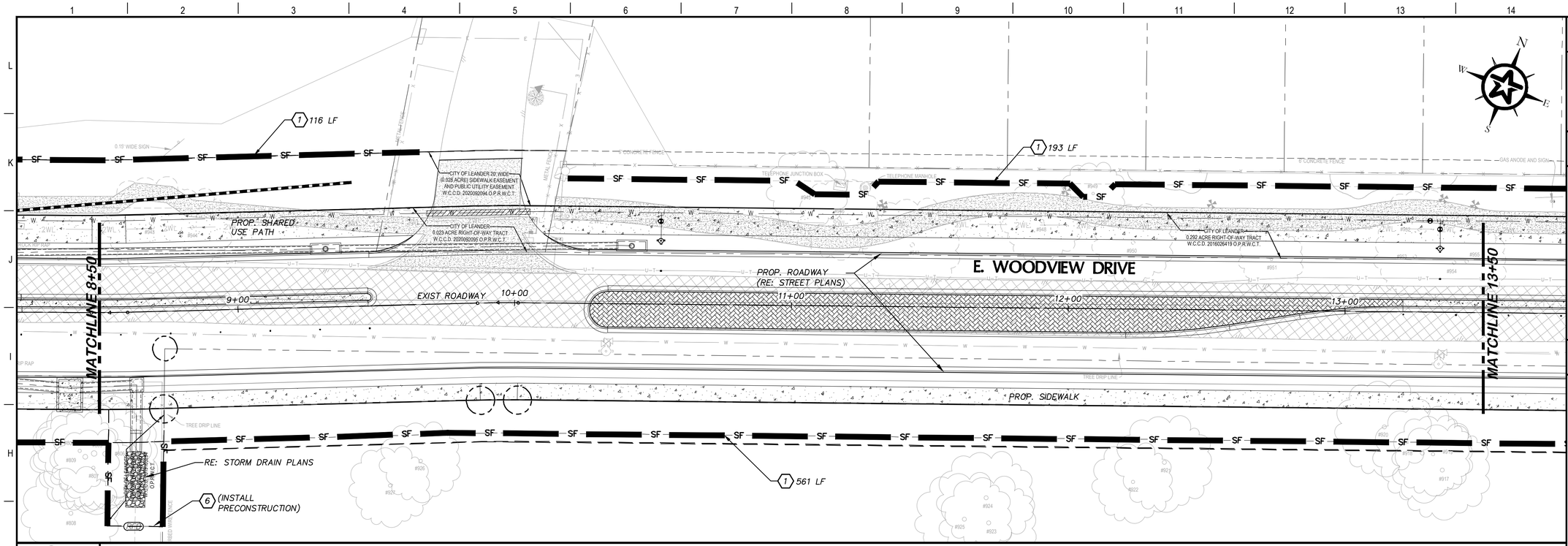
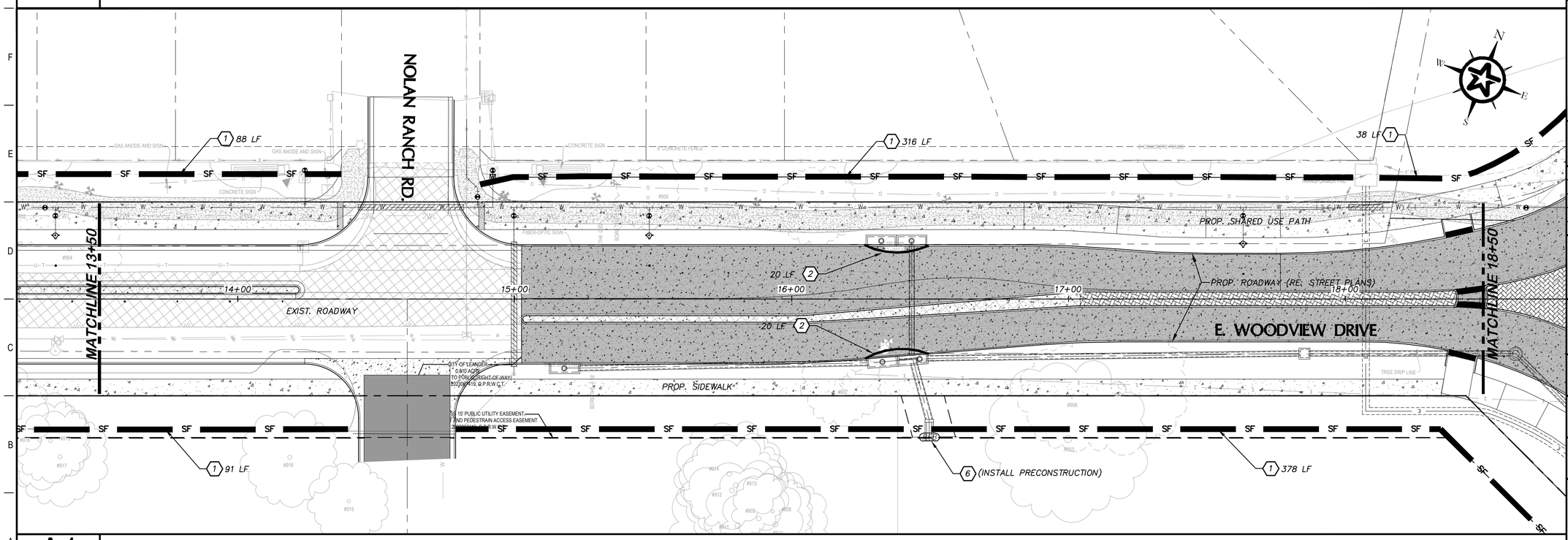


G1 WOODVIEW DRIVE - STA. 8+50 - 13+50



A1 WOODVIEW DRIVE - STA. 13+50 - 18+50

LEGEND

- STABILIZED CONSTRUCTION ENTRANCE
- SF — SILT FENCE ASSEMBLY
- RFB — ROCK FILTER BERM

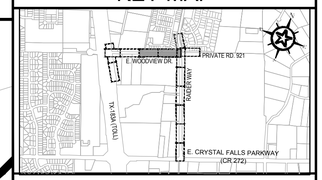
KEY NOTES

1. SILT FENCE ASSEMBLY (RE: COA STANDARD DETAIL 642S–1)
2. CURB INLET SEDIMENT CONTROL DEVICE (RE: TxDOT SPEC ITEM 7012)
3. STABILIZED CONTROL ENTRANCE (RE: COA STANDARD DETAIL 641S–1)
4. GRATE INLET PROTECTION (RE: COA STANDARD DETAIL 632S–1)
5. CONCRETE TRUCK WASH OUT AREA (RE: COL STANDARD DETAIL 303–1)
6. ROCK FILTER BERM (RE: COA STANDARD DETAIL 639S–1)

GENERAL NOTES

1. ALL DISTURBED AREAS ON 6:1 OR STEEPER SLOPE SHALL BE REVEGETATED USING SOIL RETENTION BLANKET PER TXDOT SPEC 169.
2. REMOVE AND REPLACE SILT FENCE ASSEMBLY AS NECESSARY TO CONSTRUCT DRIVEWAYS, STORM DRAINAGE AND UTILITY CROSSINGS.
3. REMOVE SEDIMENT CONTROL DEVICES AFTER ALL DISTURBED AREAS HAVE BEEN LANDSCAPED OR STABILIZED WITH PERMANENT EROSION CONTROL MEASURES AS SPECIFIED IN THE PROJECT NOTES.
4. CONTRACTOR STORAGE AND STAGING AREAS ARE NOT DEPICTED. CONTRACTOR TO PREPARE PLAN AND IMPLEMENT IN ACCORDANCE WITH EROSION AND SEDIMENTATION CONTROL (SPEC 31 25 13).

KEY MAP



0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

EROSION CONTROL PLAN (STA. 8+50-18+50)

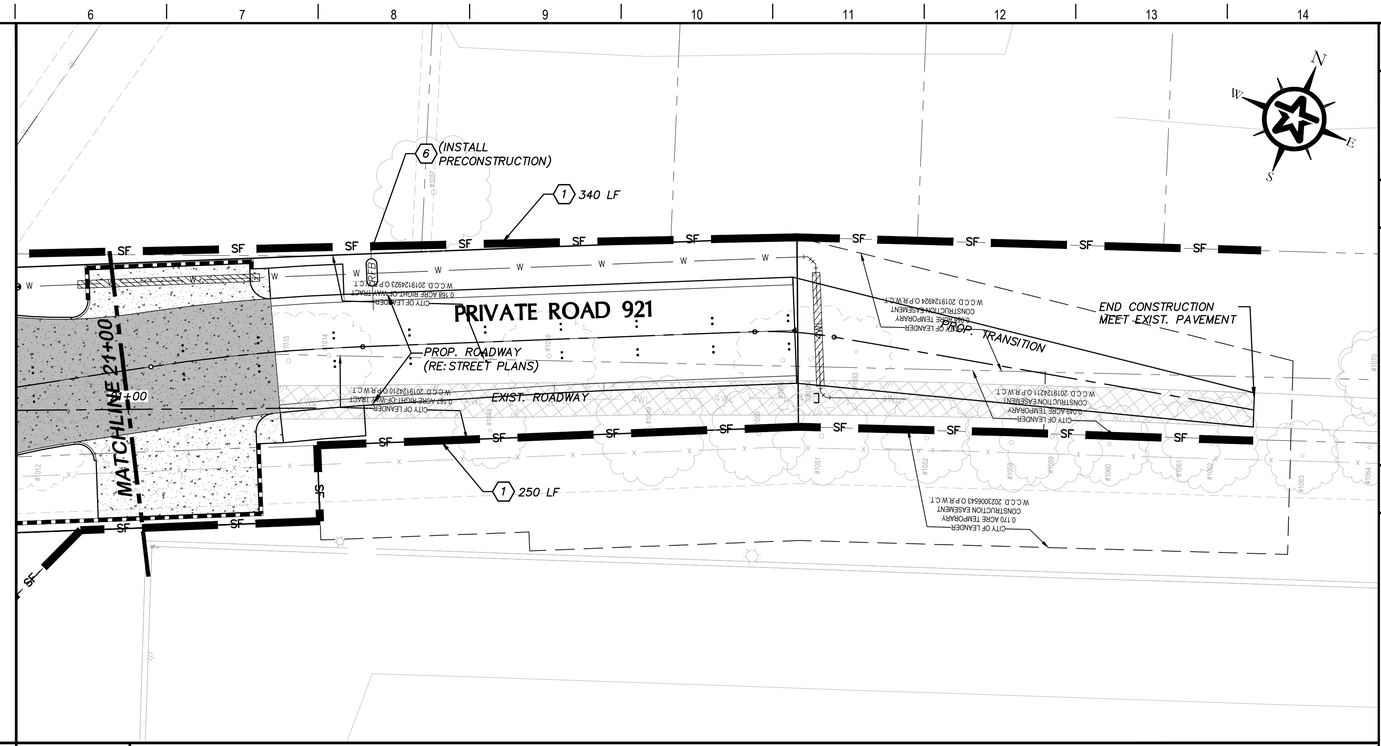
03/22/2023 DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C025
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585EROSION CONTROL PLAN.DWG, EROSION CONTROL PLAN (STA. 8+50-18+50), 3/28/2023 10:03:18 AM, cpadron-martinez



G1 NOT USED

G6 WOODVIEW DRIVE - STA. 21+00 - END

A1 NOT USED

LEGEND

- STABILIZED CONSTRUCTION ENTRANCE
- SF — SILT FENCE ASSEMBLY
- RFB — ROCK FILTER BERM

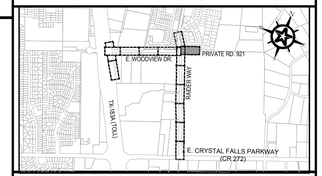
KEY NOTES

1. SILT FENCE ASSEMBLY (RE: COA STANDARD DETAIL 642S–1)
2. CURB INLET SEDIMENT CONTROL DEVICE (RE: TxDOT SPEC ITEM 7012)
3. STABILIZED CONTROL ENTRANCE (RE: COA STANDARD DETAIL 641S–1)
4. GRATE INLET PROTECTION (RE: COA STANDARD DETAIL 632S–1)
5. CONCRETE TRUCK WASH OUT AREA (RE: COL STANDARD DETAIL 303–1)
6. ROCK FILTER BERM (RE: COA STANDARD DETAIL 639S–1)

GENERAL NOTES

1. ALL DISTURBED AREAS ON 6:1 OR STEEPER SLOPE SHALL BE REVEGETATED USING SOIL RETENTION BLANKET PER TXDOT SPEC 169.
2. REMOVE AND REPLACE SILT FENCE ASSEMBLY AS NECESSARY TO CONSTRUCT DRIVEWAYS, STORM DRAINAGE AND UTILITY CROSSINGS.
3. REMOVE SEDIMENT CONTROL DEVICES AFTER ALL DISTURBED AREAS HAVE BEEN LANDSCAPED OR STABILIZED WITH PERMANENT EROSION CONTROL MEASURES AS SPECIFIED IN THE PROJECT NOTES.
4. CONTRACTOR STORAGE AND STAGING AREAS ARE NOT DEPICTED. CONTRACTOR TO PREPARE PLAN AND IMPLEMENT IN ACCORDANCE WITH EROSION AND SEDIMENTATION CONTROL (SPEC 31 25 13).

KEY MAP



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GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

EROSION CONTROL PLAN
PRIVATE ROAD 921

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C026
SHEET	OF

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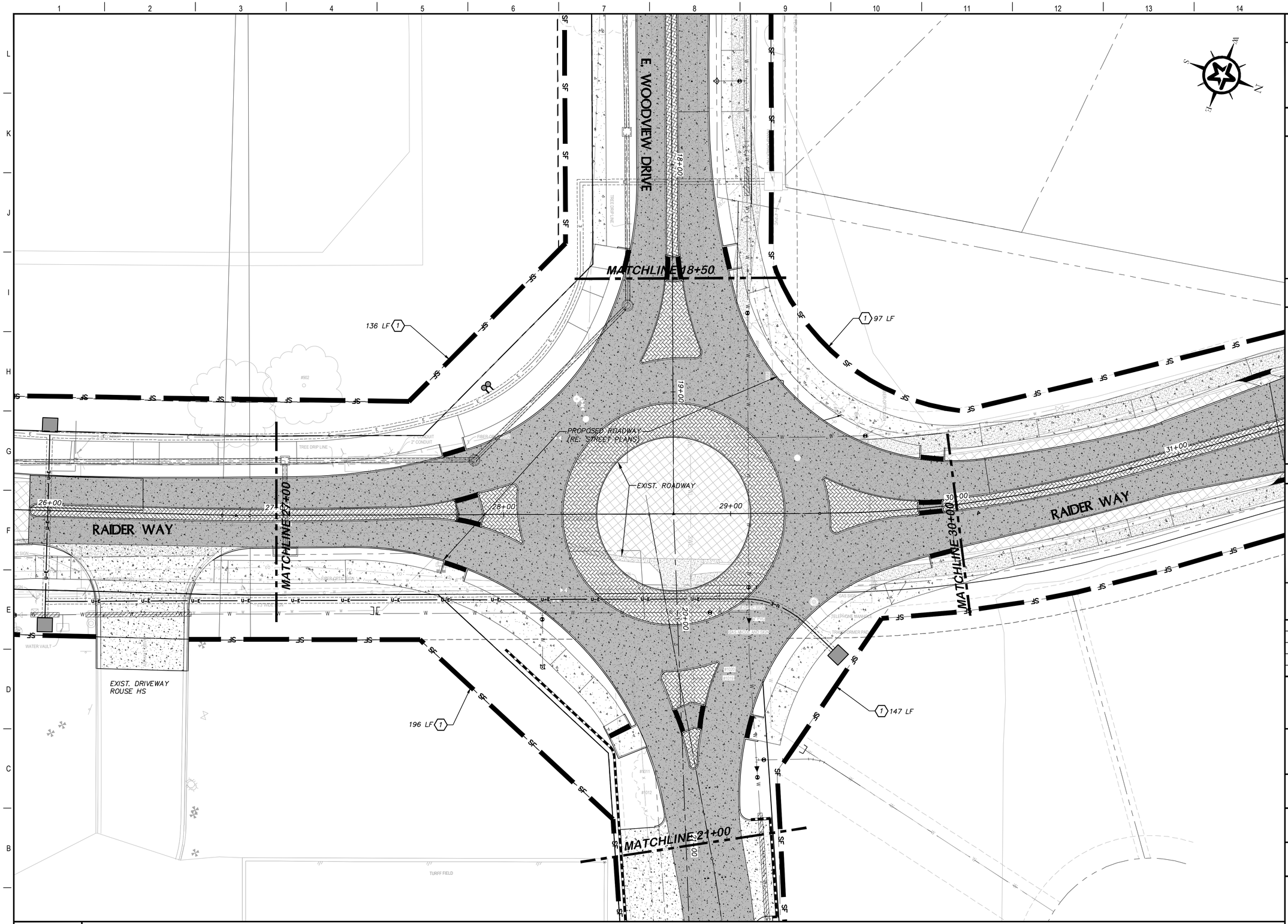

LEGEND

- STABILIZED CONSTRUCTION ENTRANCE
- SF — SILT FENCE ASSEMBLY
- RFB — ROCK FILTER BERM

KEY NOTES

1. SILT FENCE ASSEMBLY (RE: COA STANDARD DETAIL 642S–1)
2. CURB INLET SEDIMENT CONTROL DEVICE (RE: TxDOT SPEC ITEM 7012)
3. STABILIZED CONTROL ENTRANCE (RE: COA STANDARD DETAIL 641S–1)
4. GRATE INLET PROTECTION (RE: COA STANDARD DETAIL 632S–1)
5. CONCRETE TRUCK WASH OUT AREA (RE: COL STANDARD DETAIL 303–1)
6. ROCK FILTER BERM (RE: COA STANDARD DETAIL 639S–1)

GENERAL NOTES

1. ALL DISTURBED AREAS ON 6:1 OR STEEPER SLOPE SHALL BE REVEGETATED USING SOIL RETENTION BLANKET PER TXDOT SPEC 169.
2. REMOVE AND REPLACE SILT FENCE ASSEMBLY AS NECESSARY TO CONSTRUCT DRIVEWAYS, STORM DRAINAGE AND UTILITY CROSSINGS.
3. REMOVE SEDIMENT CONTROL DEVICES AFTER ALL DISTURBED AREAS HAVE BEEN LANDSCAPED OR STABILIZED WITH PERMANENT EROSION CONTROL MEASURES AS SPECIFIED IN THE PROJECT NOTES.
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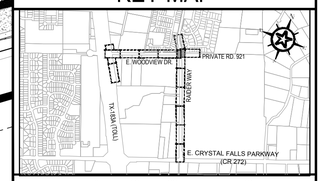
KEY MAP



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GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

EROSION CONTROL PLAN ROUNDABOUT

03/22/2023 DATE

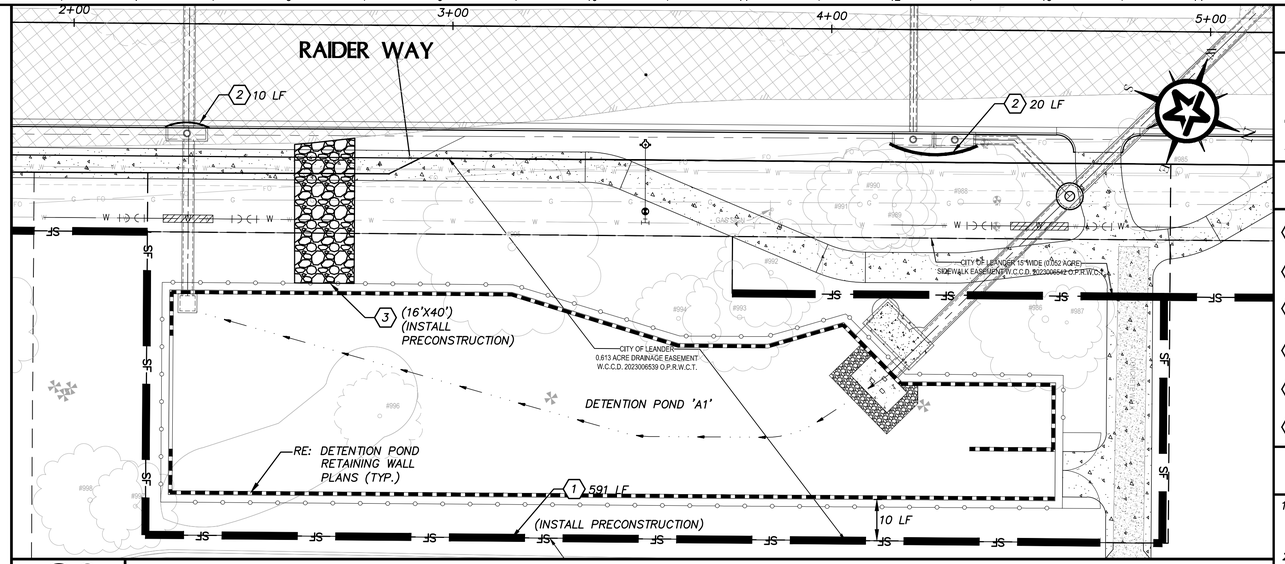
R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

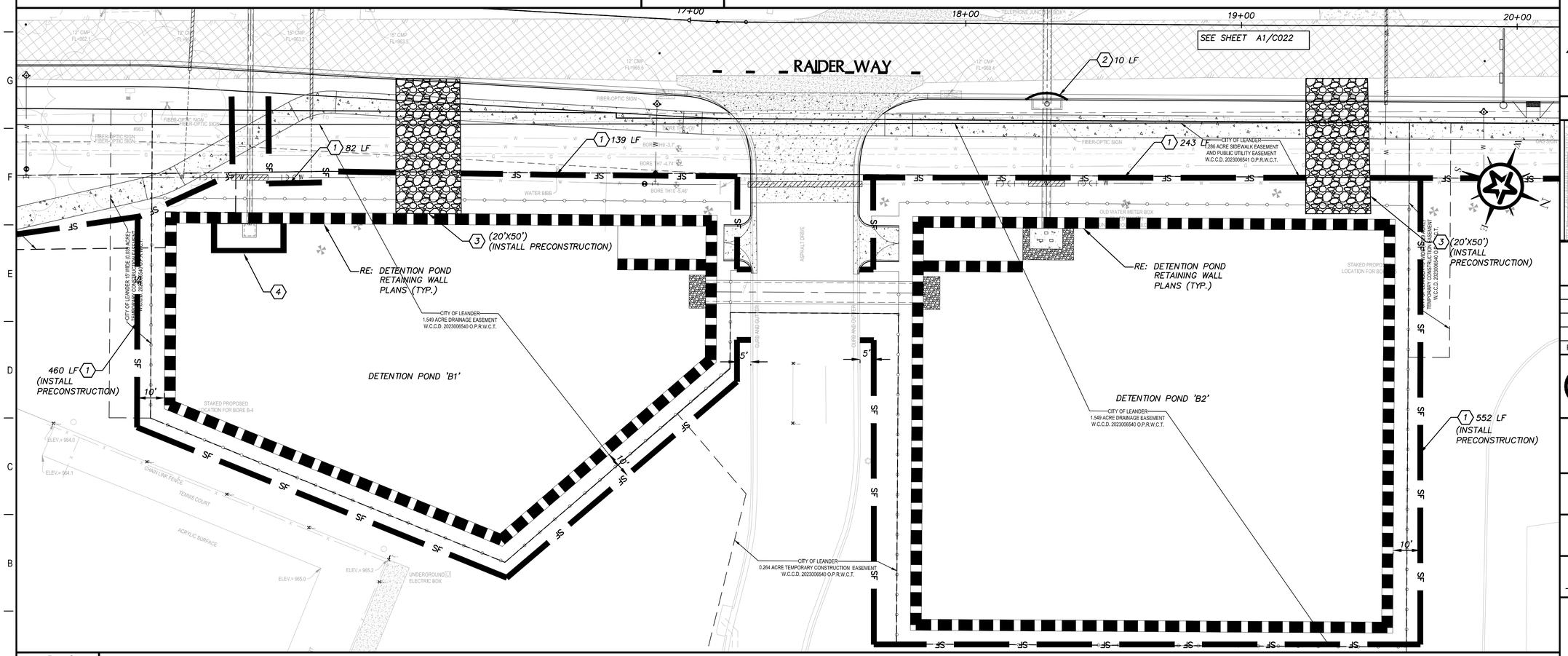
PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C027
SHEET	OF

A1 ROUNDABOUT

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585EROSION CONTROL PLAN.DWG, EROSION CONTROL PLAN ROUNDABOUT, 3/28/2023 10:14:43 AM, cpadron-martinez



G6 | RAIDER WAY - DETENTION POND



A1 | RAIDER WAY - DETENTION POND

LEGEND

- STABILIZED CONSTRUCTION ENTRANCE
- SF — SILT FENCE ASSEMBLY
- RFB — ROCK FILTER BERM

KEY NOTES

1. SILT FENCE ASSEMBLY (RE: COA STANDARD DETAIL 642S–1)
2. CURB INLET SEDIMENT CONTROL DEVICE (RE: TxDOT SPEC ITEM 7012)
3. STABILIZED CONTROL ENTRANCE (RE: COA STANDARD DETAIL 641S–1)
4. GRATE INLET PROTECTION (RE: COA STANDARD DETAIL 632S–1)
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6. ROCK FILTER BERM (RE: COA STANDARD DETAIL 639S–1)

GENERAL NOTES

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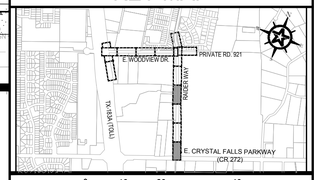
KEY MAP



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GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

EROSION CONTROL PLAN DETENTION PONDS

03/22/2023 (DATE)
R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS — R. ALAN MUNGER 65341 — REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C028
SHEET	OF

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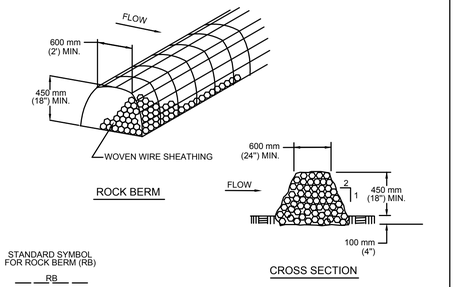


STANDARD SYMBOL
FOR ROCK BERM (RB)

RB

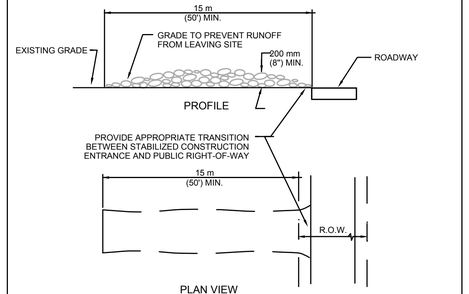
NOTES:

1. USE ONLY OPEN GRADED ROCK 75 to 125 mm (3 to 5") DIAMETER FOR ALL CONDITIONS.
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 25 mm (1") OPENING AND MINIMUM WIRE DIAMETER OF 12.9 mm (20 GAUGE).
3. THE ROCK BERM SHALL BE INSPECTED DAILY OR AFTER EACH RAIN, AND THE STONE AND/OR FABRIC CORE-WOVEN SHEATHING SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED, DUE TO SEDIMENT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
4. IF SEDIMENT REACHES A DEPTH EQUAL TO ONE-THIRD THE HEIGHT OF THE BERM OR 150 mm (6"), WHICHEVER IS LESS, THE SEDIMENT SHALL BE REMOVED AND DISPOSED OF ON AN APPROVED SITE AND IN A MANNER THAT WILL NOT CREATE A SEDIMENTION PROBLEM.
5. WHEN THE SITE IS COMPLETELY STABILIZED,THE BERM AND ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	ROCK BERM	
RECORD COPY SIGNED BY MORGAN BYARS 8/24/2010 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 639S-1

G1 ROCK BERM

N.T.S.



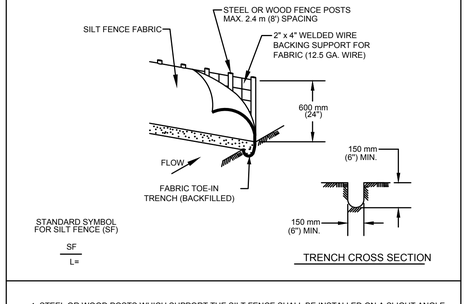
NOTES:

1. STONE SIZE: 75-125 mm (3-5") OPEN GRADED ROCK.
2. LENGTH: AS EFFECTIVE BUT NOT LESS THAN 15 m (50').
3. THICKNESS: NOT LESS THAN 200 mm (8").
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.
5. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE AND DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS REPAIR AND CLEAN OUT OF ANY MEASURE DEVICES USED TO TRAP SEDIMENT. ALL SEDIMENTS THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	STABILIZED CONSTRUCTION ENTRANCE	
RECORD COPY SIGNED BY J. PATRICK MURPHY *5/23/00* ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 641S-1

G5 STABILIZED CONSTRUCTION ENTRANCE

N.T.S.



STANDARD SYMBOL
FOR SILT FENCE (SF)

SF

L=

1. STEEL OR WOOD POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 300 mm (12 INCHES). IF WOOD POSTS CANNOT ACHIEVE 300 mm (12 inches) DEPTH, USE STEEL POSTS.

2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW.

3. THE TRENCH MUST BE A MINIMUM OF 150 mm (6 inches) DEEP AND 150 mm (6 inches) WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

4. SILT FENCE FABRIC SHOULD BE SECURELY FASTENED TO EACH STEEL OR WOOD SUPPORT POST OR TO WOVEN WIRE , WHICH IS IN TURN ATTACHED TO THE STEEL OR WOOD FENCE POST.

5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTY AS NEEDED.

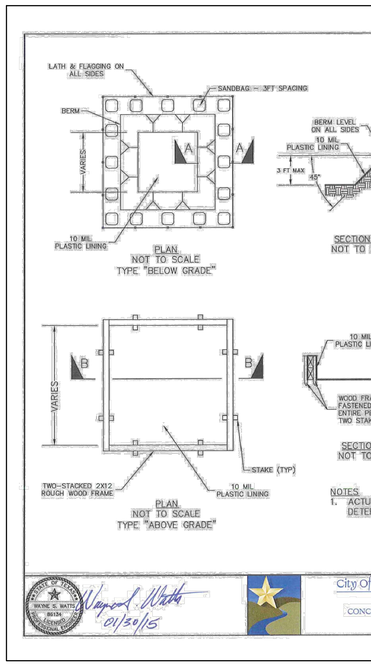
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150 mm (6 inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	SILT FENCE	
RECORD COPY SIGNED BY MORGAN BYARS *09/01/2011* ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 642S-1

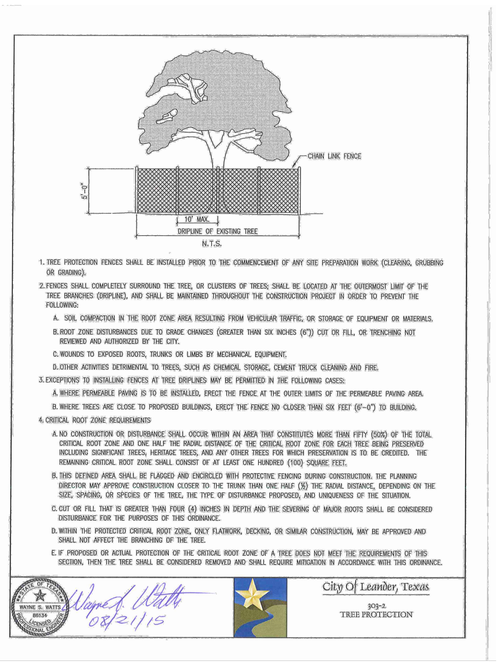
G9 SILT FENCE

N.T.S.



A1 CONCRETE WASHOUT

N.T.S.



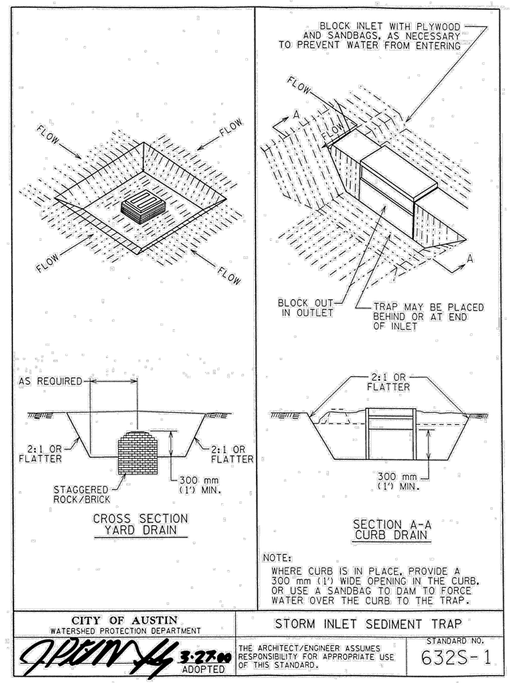
1. TREE PROTECTION FENCES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR GRADING).
2. FENCES SHALL COMPLETELY SURROUND THE TREE, OR CLUSTERS OF TREES; SHALL BE LOCATED AT THE OUTERMOST LIMIT OF THE TREE BRANCHES (DRIPLINE), AND SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROJECT IN ORDER TO PREVENT THE FOLLOWING:
   A. SOIL COMPACTION IN THE ROOT ZONE AREA RESULTING FROM VEHICULAR TRAFFIC, OR STORAGE OF EQUIPMENT OR MATERIALS.
   B. ROOT ZONE DISTURBANCES DUE TO GRADE CHANGES (GREATER THAN SIX INCHES (6")) CUT OR FILL, OR TRENCHING NOT REVIEWED AND AUTHORIZED BY THE CITY.
   C. WOUNDS TO EXPOSED ROOTS, TRUNKS OR LIMBS BY MECHANICAL EQUIPMENT.
   D. OTHER ACTIVITIES DETRIMENTAL TO TREES, SUCH AS CHEMICAL STORAGE, CEMENT TRUCK CLEANING AND FIRE.
3. EXCEPTIONS TO INSTALLING FENCES AT TREE DRIPLINES MAY BE PERMITTED IN THE FOLLOWING CASES:
   A. WHERE PERMEABLE PAVING IS TO BE INSTALLED, ERECT THE FENCE AT THE OUTER LIMITS OF THE PERMEABLE PAVING AREA.
   B. WHERE TREES ARE CLOSE TO PROPOSED BUILDINGS, ERECT THE FENCE NO CLOSER THAN SIX FEET (6'-0") TO BUILDING.
4. CRITICAL ROOT ZONE REQUIREMENTS
   A. NO CONSTRUCTION OR DISTURBANCE SHALL OCCUR WITHIN AN AREA THAT CONSTITUTES MORE THAN FIFTY (50%) OF THE TOTAL CRITICAL ROOT ZONE AND ONE HALF THE RADIAL DISTANCE OF THE CRITICAL ROOT ZONE FOR EACH TREE BEING PRESERVED INCLUDING SIGNIFICANT TREES, HERITAGE TREES, AND ANY OTHER TREES FOR WHICH PRESERVATION IS TO BE CREDITED. THE REMAINING CRITICAL ROOT ZONE SHALL CONSIST OF AT LEAST ONE HUNDRED (100) SQUARE FEET.
   B. THIS DEFINED AREA SHALL BE FLAGGED AND ENCIRCLED WITH PROTECTIVE FENCING DURING CONSTRUCTION. THE PLANNING DIRECTOR MAY APPROVE CONSTRUCTION CLOSER TO THE TRUNK THAN ONE HALF (½) THE RADIAL DISTANCE, DEPENDING ON THE SIZE, SPACING, OR SPECIES OF THE TREE, THE TYPE OF DISTURBANCE PROPOSED, AND UNIQUENESS OF THE SITUATION.
   C. CUT OR FILL THAT IS GREATER THAN FOUR (4) INCHES IN DEPTH AND THE SEVERING OF MAJOR ROOTS SHALL BE CONSIDERED DISTURBANCE FOR THE PURPOSES OF THIS ORDINANCE.
   D. WITHIN THE PROTECTED CRITICAL ROOT ZONE, ONLY FLATWORK, DECKING, OR SIMILAR CONSTRUCTION, MAY BE APPROVED AND SHALL NOT AFFECT THE BRANCHING OF THE TREE.
   E. IF PROPOSED OR ACTUAL PROTECTION OF THE CRITICAL ROOT ZONE OF A TREE DOES NOT MEET THE REQUIREMENTS OF THIS SECTION, THEN THE TREE SHALL BE CONSIDERED REMOVED AND SHALL REQUIRE MITIGATION IN ACCORDANCE WITH THIS ORDINANCE.

STATE OF TEXAS
WAYNE S. WATTS
86534
LICENSED
PROFESSIONAL
ENGINEER
Wayne S. Watts
08/21/15

City Of Leander, Texas
303-2
TREE PROTECTION

A5 TREE PROTECTION

N.T.S.



NOTE:
WHERE CURB IS IN PLACE, PROVIDE A 300 mm (1') WIDE OPENING IN THE CURB, OR USE A SANDBAG TO DAM TO FORCE WATER OVER THE CURB TO THE TRAP.

CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT	STORM INLET SEDIMENT TRAP	
3-27-00 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 632S-1

A9 STORM INLET SEDIMENT TRAP

N.T.S.

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors

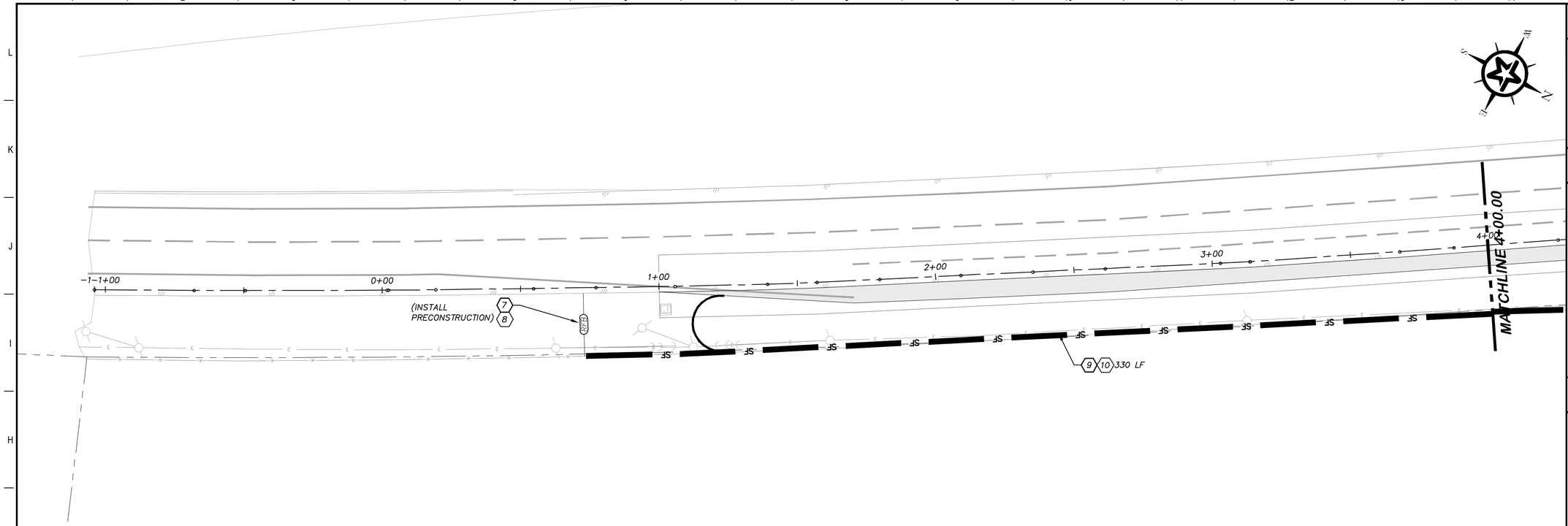
CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

EROSION CONTROL DETAILS

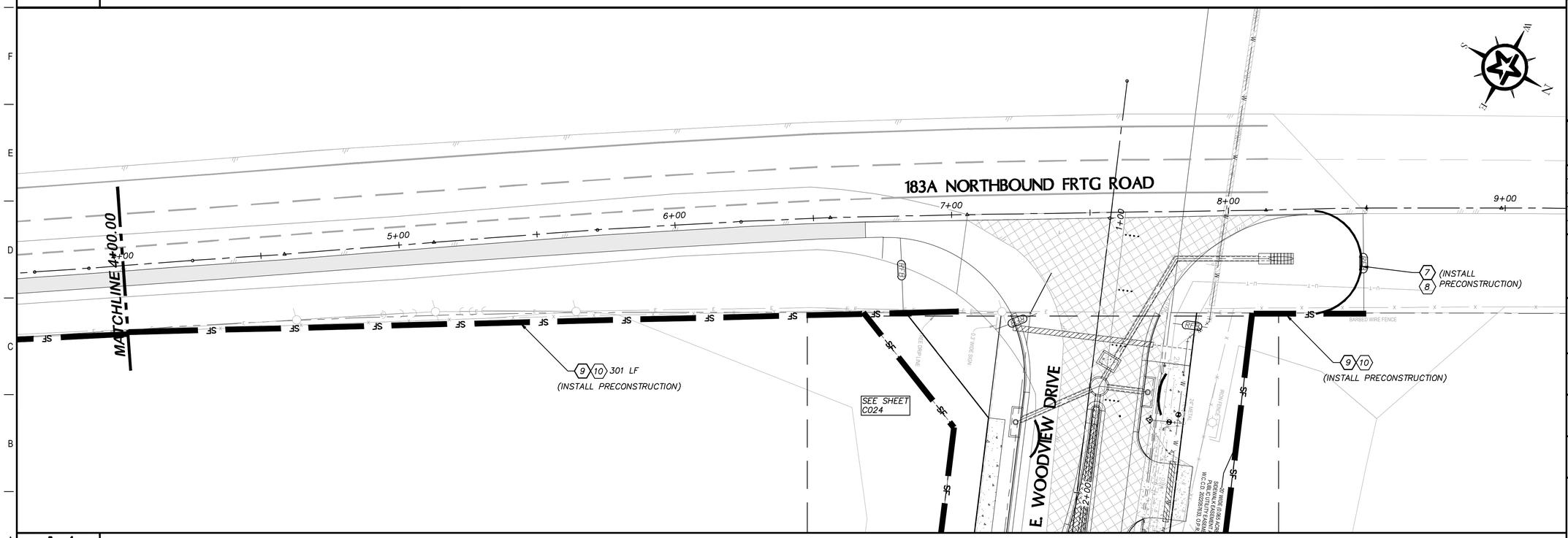
PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C029
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-ES.DWG, EROSION CONTROL DETAILS, 3/28/2023 9:28:19 AM, cpadron-martinez



G1

US-183A SERVICE ROAD - STA. 0+00 - 4+00



A1

US-183A SERVICE ROAD - STA. 4+00 - 9+00

LEGEND

- CONSTRUCTION EXIT SILT CONTROL
- CONCRETE TRUCK WASH OUT AREA
- SF — SILT FENCE ASSEMBLY

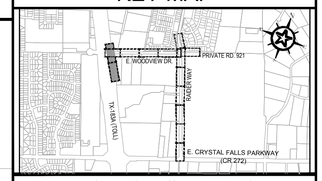
KEY NOTES

7. ROCK FILTER DAM (TY 1) (INSTALL) TXDOT ITEM 516
8. ROCK FILTER DAMS (REMOVE) TXDOT ITEM 506
9. TEMP SEDIMENT CONT. FENCE (INSTALL) TXDOT ITEM 506
10. TEMP SEDIMENT CONT. FENCE (REMOVE)

GENERAL NOTES

1. ALL DISTURBED AREAS ON 6:1 OR STEEPER SLOPE SHALL BE REVEGETATED USING SOIL RETENTION BLANKET PER TXDOT SPEC 169.
2. REMOVE AND REPLACE SILT FENCE ASSEMBLY AS NECESSARY TO CONSTRUCT DRIVEWAYS, STORM DRAINAGE AND UTILITY CROSSINGS.
3. REMOVE SEDIMENT CONTROL DEVICES AFTER ALL DISTURBED AREAS HAVE BEEN LANDSCAPED OR STABILIZED WITH PERMANENT EROSION CONTROL MEASURES AS SPECIFIED IN THE PROJECT NOTES.

KEY MAP



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GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

EROSION CONTROL PLAN 183A SERVICE ROAD

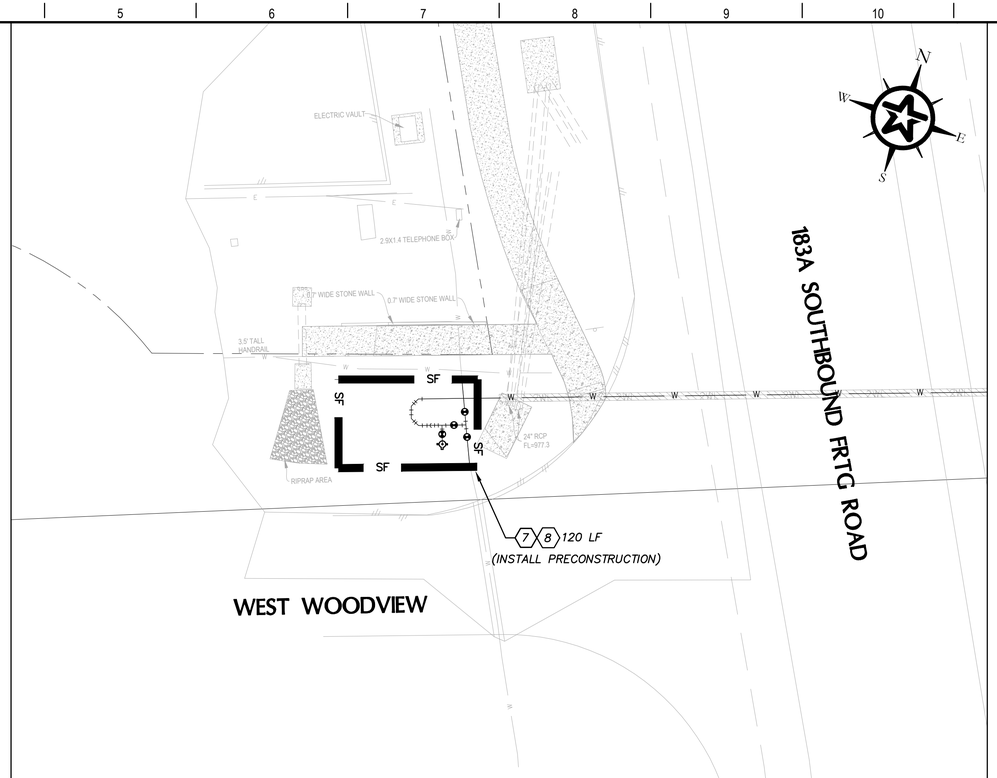
03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C030
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585EROSION CONTROL PLAN.DWG, C030 EROSION CONTROL PLAN 183A SERVICE ROAD, 3/28/2023 10:16:30 AM, cpadron-martinez



G4 WEST WOODVIEW NEAR US-183A SERVICE ROAD SOUTHBOUND

LEGEND

- CONSTRUCTION EXIT SILT CONTROL
- CONCRETE TRUCK WASH OUT AREA
- SF — SILT FENCE ASSEMBLY

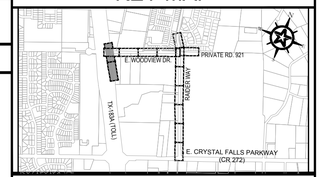
KEY NOTES

7. ROCK FILTER DAM (TY 1) (INSTALL) TXDOT ITEM 516
8. ROCK FILTER DAMS (REMOVE) TXDOT ITEM 506
9. TEMP SEDIMENT CONT. FENCE (INSTALL) TXDOT ITEM 506
10. TEMP SEDIMENT CONT. FENCE (REMOVE)

GENERAL NOTES

1. ALL DISTURBED AREAS ON 6:1 OR STEEPER SLOPE SHALL BE REVEGETATED USING SOIL RETENTION BLANKET PER TXDOT SPEC 169.
2. REMOVE AND REPLACE SILT FENCE ASSEMBLY AS NECESSARY TO CONSTRUCT DRIVEWAYS, STORM DRAINAGE AND UTILITY CROSSINGS.
3. REMOVE SEDIMENT CONTROL DEVICES AFTER ALL DISTURBED AREAS HAVE BEEN LANDSCAPED OR STABILIZED WITH PERMANENT EROSION CONTROL MEASURES AS SPECIFIED IN THE PROJECT NOTES.

KEY MAP



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GRAPHIC SCALE (FEET)

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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

EROSION CONTROL PLAN 183A SERVICE ROAD

03/22/2023 DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

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DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
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DRAWING NO.	C030A
SHEET	OF

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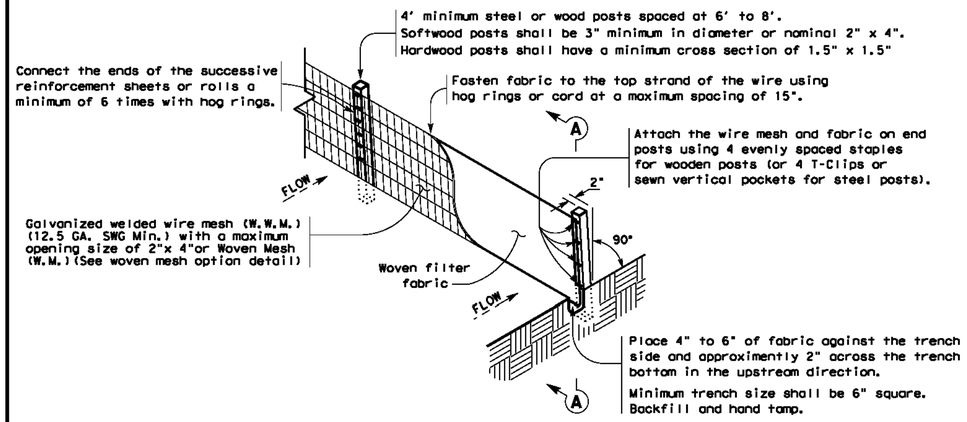
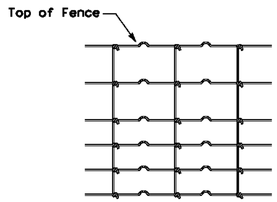
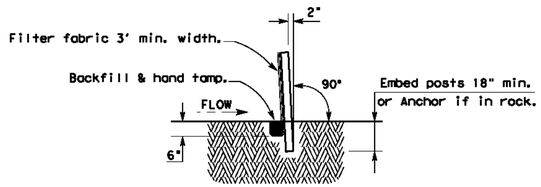


TEMPORARY SEDIMENT CONTROL FENCE

SCF





SECTION A-A

HINGE JOINT KNOT WOVEN MESH (OPTION) DETAIL

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

SEDIMENT CONTROL FENCE USAGE GUIDELINES

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

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

LEGEND

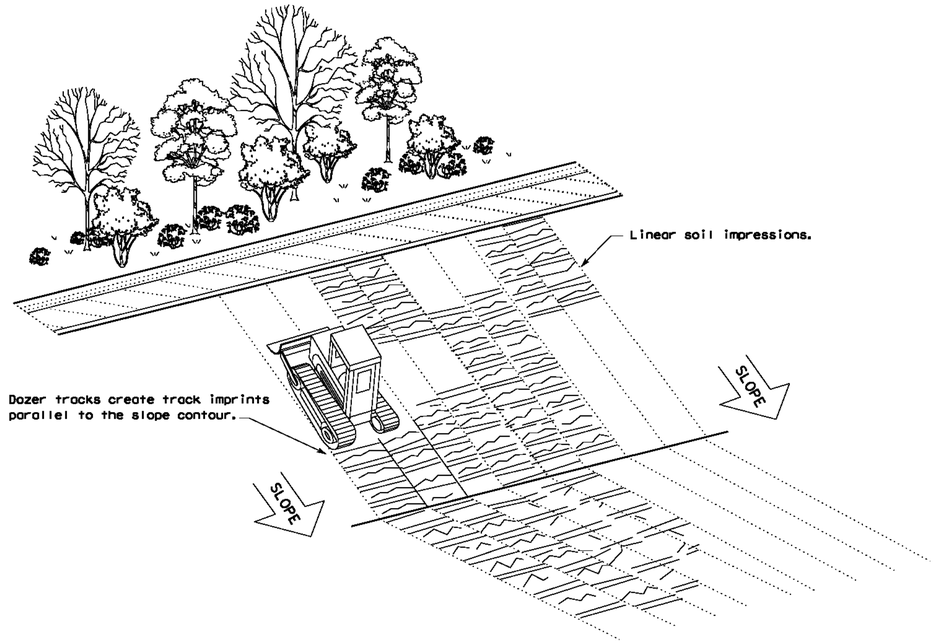
Sediment Control Fence

SCF

DATE
FILE

GENERAL NOTES

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



VERTICAL TRACKING

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
FENCE & VERTICAL TRACKING
EC(1)-16

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

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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - EC(1)-16

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DESIGNED	RAM
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CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C031
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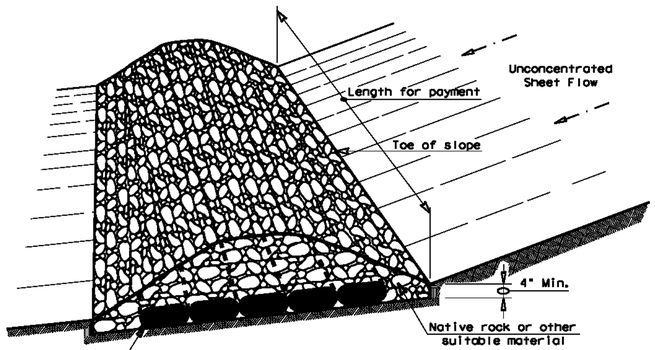
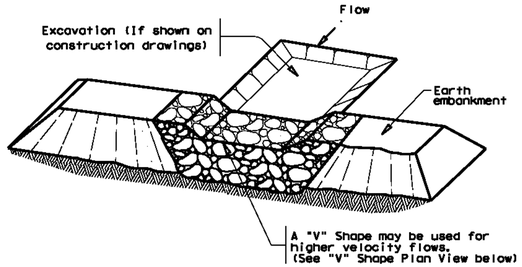


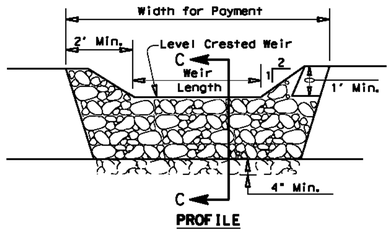
FILTER DAM AT TOE OF SLOPE

RFD1

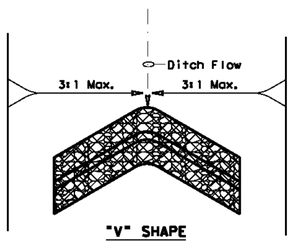


FILTER DAM AT SEDIMENT TRAP

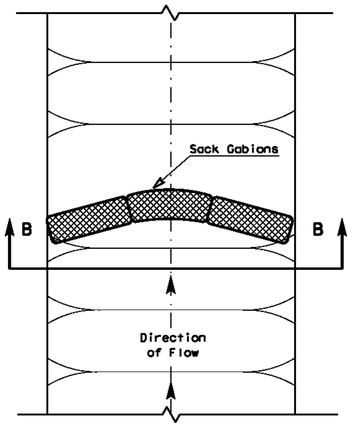
RFD1 — OR — RFD2



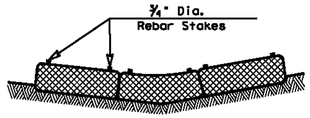
PROFILE



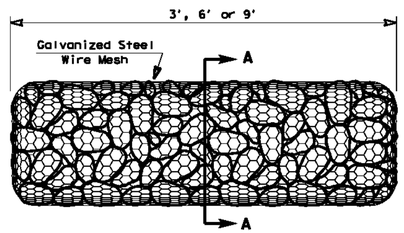
"V" SHAPE
PLAN VIEW



PLAN VIEW

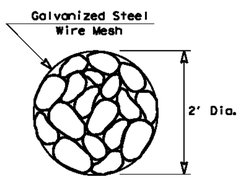


SECTION B-B

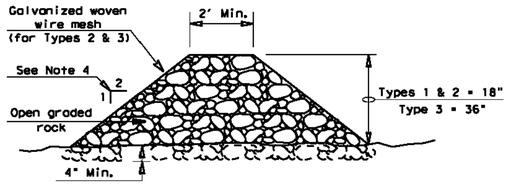


TYPE 4 (SACK GABIONS)

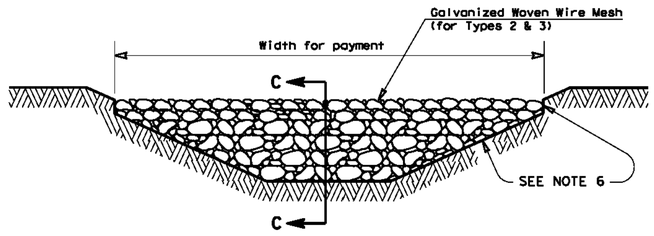
RFD4



SECTION A-A



SECTION C-C



FILTER DAM AT CHANNEL SECTIONS

RFD1 — OR — RFD2 — OR — RFD3

ROCK FILTER DAM USAGE GUIDELINES

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

Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity flows (approximently 8 Ft/Sec or more) in which aggregate wash out may occur. Sandbags may be used at the embedded foundation (4" deep min.) for better filtering efficiency of low flows if called for on the plans or directed by the Engineer.

Type 2 (18" high with wire mesh) (3" to 6" aggregate): Type 2 may be used in ditches and at dike or swale outlets.

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

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

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

GENERAL NOTES

1. If shown on the plans or directed by the Engineer, filter dams should be placed near the toe of slopes where erosion is anticipated, upstream and/or downstream at drainage structures, and in roadway ditches and channels to collect sediment.
2. Materials (aggregate, wire mesh, sandbags, etc.) shall be as indicated by the specification for "Rock Filter Dams for Erosion and Sedimentation Control".
3. The rock filter dam dimensions shall be as indicated on the SW3P plans.
4. Side slopes should be 2:1 or flatter. Dams within the safety zone shall have sideslopes of 6:1 or flatter.
5. Maintain a minimum of 1' between top of rock filter dam weir and top of embankment for filter dams at sediment traps.
6. Filter dams should be embedded a minimum of 4" into existing ground.
7. The sediment trap for ponding of sediment laden runoff shall be of the dimensions shown on the plans.
8. Rock filter dam types 2 & 3 shall be secured with 20 gauge galvanized woven wire mesh with 1" diameter hexagonal openings. The aggregate shall be placed on the mesh to the height & slopes specified. The mesh shall be folded at the upstream side over the aggregate and tightly secured to itself on the downstream side using wire ties or hog rings. For in stream use, the mesh should be secured or staked to the stream bed prior to aggregate placement.
9. Sack Gabions should be staked down with ¾" dia. rebar stakes, and have a double-twisted hexagonal weave with a nominal mesh opening of 2 ½" x 3 ¼"
10. Flow outlet should be onto a stabilized area (vegetation, rock, etc.).
11. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

PLAN SHEET LEGEND

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

DATE:
FILE:

REV.	DESCRIPTION	DATE

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

EC(2)-16

FILE: ec216	DN: TxDOT		CK: KM	DW: VP	CK/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB		HIGHWAY
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RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - EC(2)-16

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PROJECT NO.	3-00585
DRAWING NO.	C032
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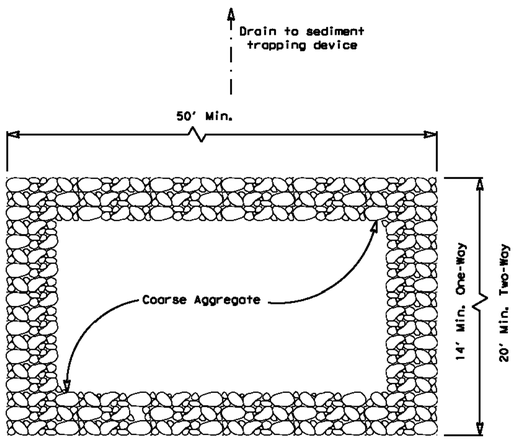

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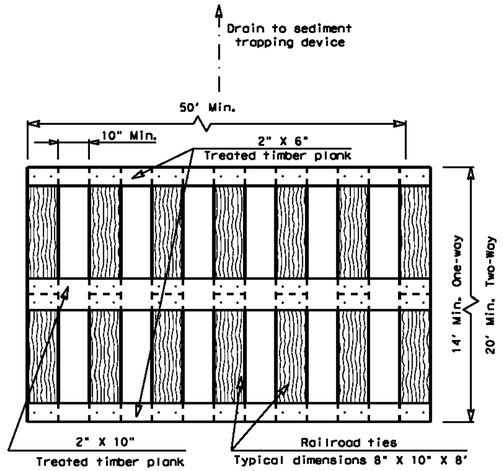

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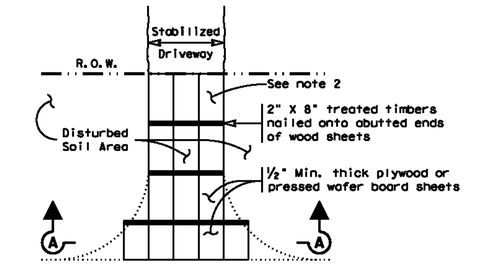

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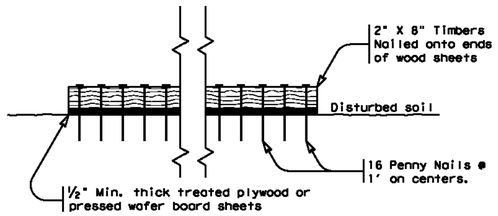
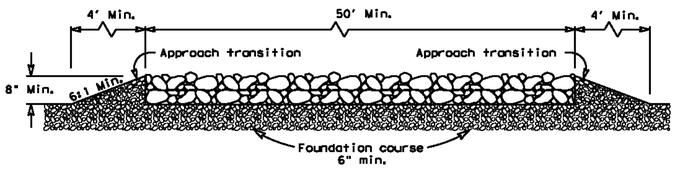


SECTION A-A

CONSTRUCTION EXIT (TYPE 3)

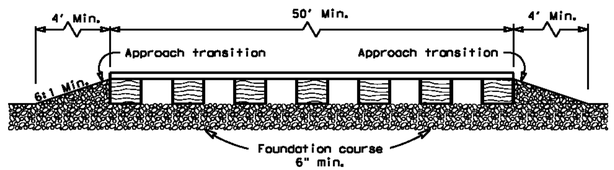
SHORT TERM



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 1)

ROCK CONSTRUCTION (LONG TERM)



ELEVATION VIEW

CONSTRUCTION EXIT (TYPE 2)

TIMBER CONSTRUCTION (LONG TERM)

GENERAL NOTES (TYPE 1)

1. The length of the type 1 construction exit shall be as indicated on the plans, but not less than 50'.
2. The coarse aggregate should be open graded with a size of 4" to 8".
3. The approach transitions should be no steeper than 6:1 and constructed as directed by the Engineer.
4. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other materials approved by the Engineer.
5. The construction exit shall be graded to allow drainage to a sediment trapping device.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
7. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 2)

1. The length of the type 2 construction exit shall be as indicated on the plans, but not less than 50'.
2. The treated timber planks shall be attached to the railroad ties with ½"x 6" min. lag bolts. Other fasteners may be used as approved by the Engineer.
3. The treated timber planks shall be #2 grade min., and should be free from large and loose knots.
4. The approach transitions shall be no steeper than 6:1 and constructed as directed by the Engineer.
5. The construction exit foundation course shall be flexible base, bituminous concrete, portland cement concrete or other material as approved by the Engineer.
6. The construction exit should be graded to allow drainage to a sediment trapping device.
7. The guidelines shown hereon are suggestions only and may be modified by the Engineer.
8. Construct exits with a width of at least 14 ft. for one-way and 20 ft. for two-way traffic for the full width of the exit, or as directed by the engineer.

GENERAL NOTES (TYPE 3)

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

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

CONSTRUCTION EXITS

EC(3)-16

FILE: ec316	DN: TxDOT	CK: KM	DW: VP	CK: LS
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	#DST#	#CTY#		#EC(3)-16

DATE: #DATE#
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REV. | DESCRIPTION | DATE

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RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - EC(3)-16

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CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C033
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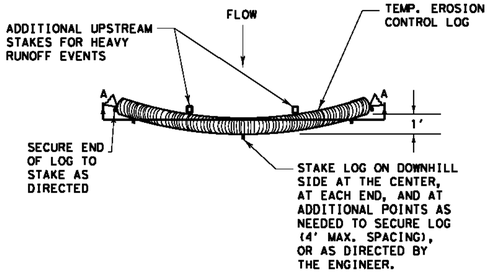

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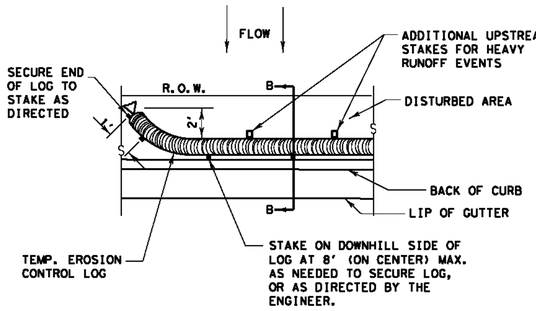

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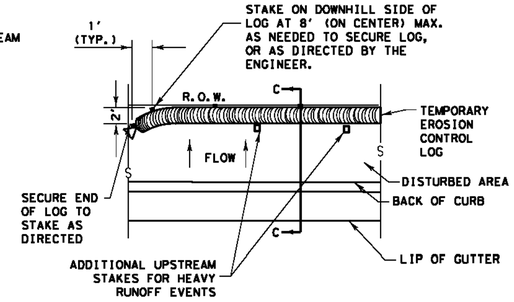

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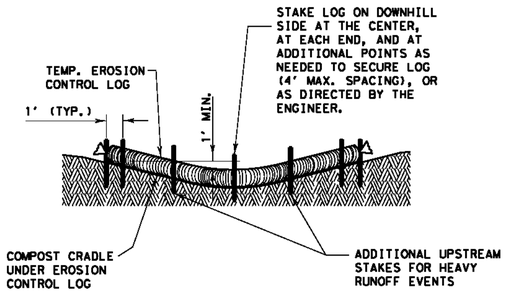
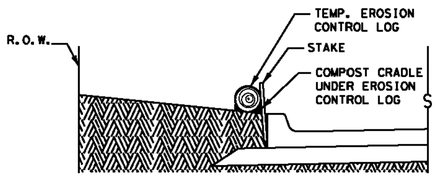


SECTION A-A

EROSION CONTROL LOG DAM

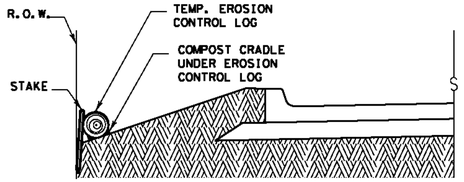
CL-D



SECTION B-B

EROSION CONTROL LOG AT BACK OF CURB

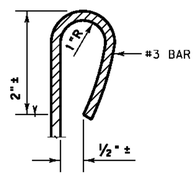
CL-BOC



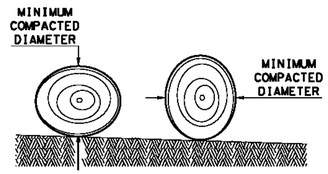
SECTION C-C

EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY

CL-ROW



REBAR STAKE DETAIL



DIAMETER MEASUREMENTS OF EROSION CONTROL LOGS SPECIFIED IN PLANS

LEGEND

CL-D	EROSION CONTROL LOG DAM
CL-BOC	EROSION CONTROL LOG AT BACK OF CURB
CL-ROW	EROSION CONTROL LOG AT EDGE OF RIGHT-OF-WAY
CL-SST	EROSION CONTROL LOGS ON SLOPES STAKE AND TRENCHING ANCHORING
CL-SSL	EROSION CONTROL LOGS ON SLOPES STAKE AND LASHING ANCHORING
CL-DI	EROSION CONTROL LOG AT DROP INLET
CL-CI	EROSION CONTROL LOG AT CURB INLET
CL-GI	EROSION CONTROL LOG AT CURB & GRATE INLET

GENERAL NOTES:

1. EROSION CONTROL LOGS SHALL BE INSTALLED IN ACCORDANCE WITH MANFACTURER'S RECOMMENDATIONS, OR AS DIRECTED BY THE ENGINEER.
2. LENGTHS OF EROSION CONTROL LOGS SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED.
3. UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE LOG WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
4. FILL LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE THE MINIMUM COMPACTED DIAMETER SPECIFIED IN THE PLANS WITHOUT EXCESSIVE DEFORMATION.
5. STAKES SHALL BE 2" X 2" WOOD OR #3 REBAR, 2'-4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED BY THE ENGINEER.
6. DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.
7. COMPOST CRADLE MATERIAL IS INCIDENTAL & WILL NOT BE PAID FOR SEPARATELY.
8. SANDBAGS USED AS ANCHORS SHALL BE PLACED ON TOP OF LOGS & SHALL BE OF SUFFICIENT SIZE TO HOLD LOGS IN PLACE.
9. TURN THE ENDS OF EACH ROW OF LOGS UPSLOPE TO PREVENT RUNOFF FROM FLOWING AROUND THE LOG.
10. FOR HEAVY RUNOFF EVENTS, ADDITIONAL UPSTREAM STAKES MAY BE NECESSARY TO KEEP LOG FROM FOLDING IN ON ITSELF.

SEDIMENT BASIN & TRAP USAGE GUIDELINES

An erosion control log sediment trap may be used to filter sediment out of runoff draining from an unstabilized area.

Log Traps: The drainage area for a sediment trap should not exceed 5 acres. The trap capacity should be 1800 CF/Acre (0.5" over the drainage area).

Control logs should be placed in the following locations:
1. Within drainage ditches spaced as needed or min. 500' on center
2. Immediately preceding ditch inlets or drain inlets
3. Just before the drainage enters a water course
4. Just before the drainage leaves the right of way
5. Just before the drainage leaves the construction limits where drainage flows away from the project.

The logs should be cleaned when the sediment has accumulated to a depth of 1/2 the log diameter.

Cleaning and removal of accumulated sediment deposits is incidental and will not be paid for separately.

DATE:
FILE:

SHEET 1 OF 3

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

EC(9)-16

FILE: ec916	DN: TxDOT	CK: KM	DW: LS/PT	CK: LS		
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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - EC(9)-16

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C034
SHEET	OF

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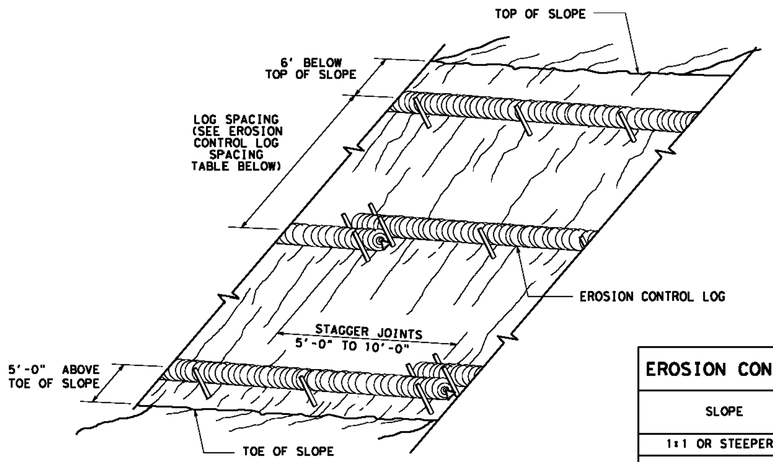
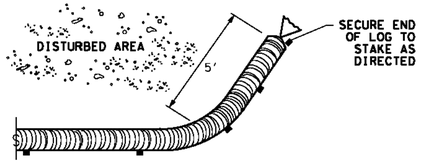


EROSION CONTROL LOGS ON SLOPES
STAKE AND TRENCHING ANCHORING

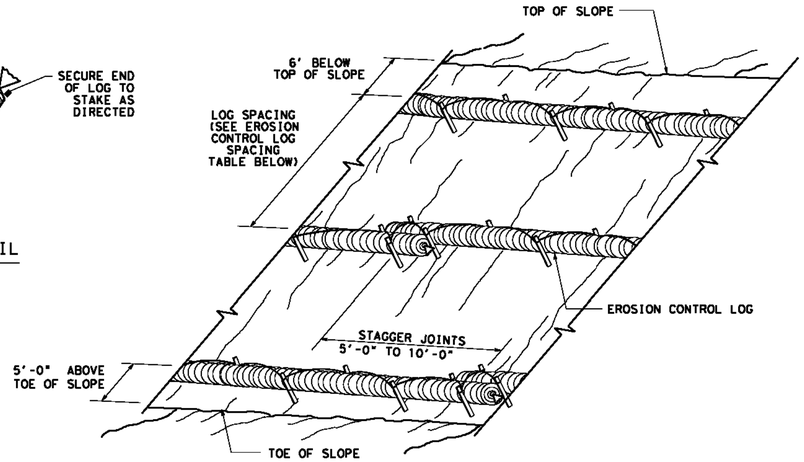
CL-SST



END SECTION RAP DETAIL

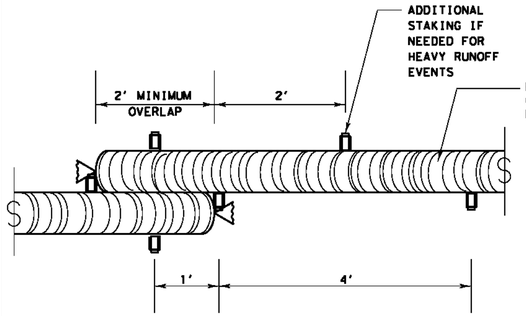
EROSION CONTROL LOG SPACING TABLE				
SLOPE	LOG DIAMETER			
	6"	8"	12"	18"
1:1 OR STEEPER	5'	10'	15'	20'
2:1	10'	20'	30'	40'
3:1	15'	30'	45'	60'
4:1 OR FLATTER	20'	40'	60'	80'

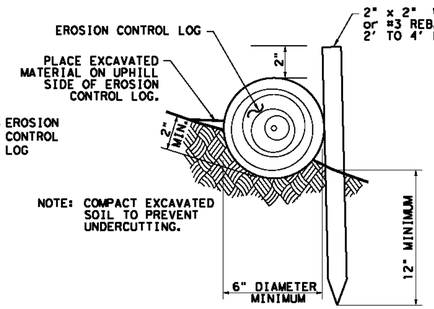
* ADJUSTMENTS CAN BE MADE FOR SOIL TYPE:
SOFT, LOAMY SOILS-ADJUST ROWS CLOSER TOGETHER;
HARD, ROCKY SOILS- ADJUST ROWS FARTHER APART



EROSION CONTROL LOGS ON SLOPES
STAKE AND LASHING ANCHORING

CL-SSL

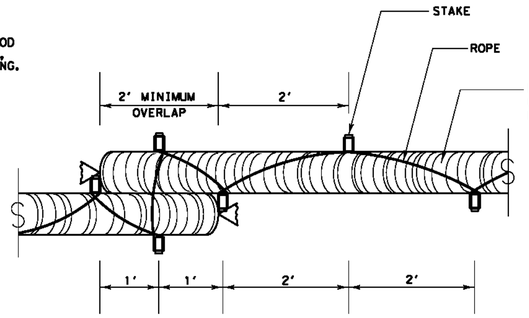


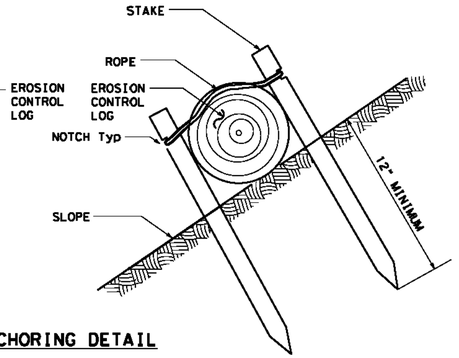


STAKE AND TRENCHING ANCHORING DETAIL

CL-SST

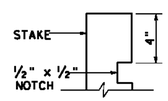
TRENCH DEPTH TABLE	
LOG DIAMETER	DEPTH
6"	2"
8"	3"
12"	4"
18"	5"





STAKE AND LASHING ANCHORING DETAIL

CL-SSL



STAKE NOTCH DETAIL

SHEET 2 OF 3

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES
EROSION CONTROL LOG
EC(9)-16

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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

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CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C035
SHEET	OF

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FILE:

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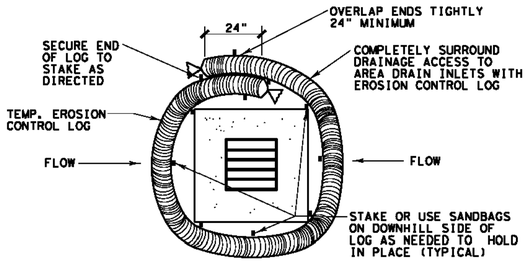
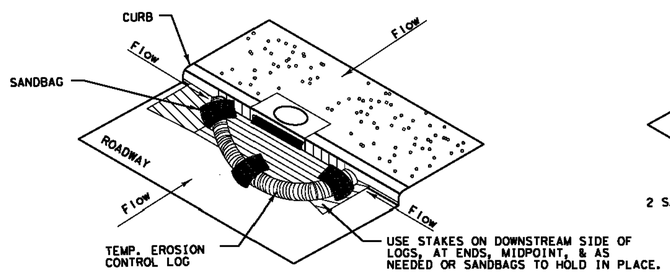


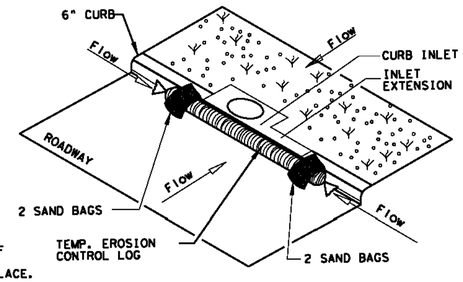
EROSION CONTROL LOG AT DROP INLET

CL-DI



EROSION CONTROL LOG AT CURB INLET

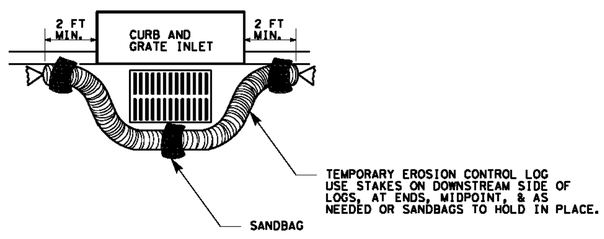
CL-CI



EROSION CONTROL LOG AT CURB INLET

CL-CI

NOTE:
EROSION CONTROL LOGS USED AT CURB INLETS SHOULD ONLY BE USED IF THEY WILL NOT IMPEDE TRAFFIC OR FLOOD THE ROADWAY OR WHEN THE STORM SEWER SYSTEM IS NOT FULLY FUNCTIONAL.

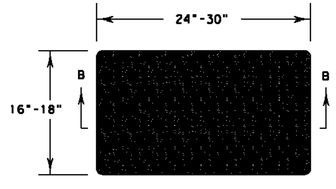


EROSION CONTROL LOG AT CURB & GRADE INLET

CL-GI



SECTION B-B



SANDBAG DETAIL

SHEET 3 OF 3

Texas Department of Transportation — Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

EROSION CONTROL LOG

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TRAFFIC CONTROL NOTES

1. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN IN CONFORMANCE WITH TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD), LATEST EDITION, FOR ENGINEER'S REVIEW FOR EACH PHASE INDICATING TRAFFIC PATTERNS, PAVEMENT MARKINGS, SIGNS, AND OTHER TRAFFIC CONTROL DEVICES. ALL WORK WITHIN CTRMA R.O.W. WILL BE COVERNED BY TxDOT SPECIFICATIONS AND CONSTRUCTION STANDARDS. ALL WORK WITHIN CITY OF LEANDER R.O.W. AND EASEMENTS WILL BE GOVERNED BY CITY SPECIFICATIONS AND APPLICABLE STANDARDS.

2. ALL SIGNS, BARRICADES, TRAFFIC CONTROL DEVICES, PUBLIC COORDINATION, ETC REQUIRED FOR THE SAFE MOVEMENT OF TRAFFIC (SHOWN HERE AND SHOWN IN CONTRACTOR'S TCP), SHALL BE SUBSIDIARY TO TRAFFIC CONTROL PLAN IMPLEMENTATION ITEM.

3. TEMPORARY PAVEMENT MARKINGS SHALL BE UTILIZED FOR TRAFFIC PATTERN CHANGES THAT WILL LAST MORE THAN THREE CONSECUTIVE DAYS AND NIGHTS. THIS SHALL BE ADDRESSED IN CONTRACTOR'S T.C.P. COST FOR TEMPORARY PAVEMENT MARKINGS (AND REMOVAL) IS SUBSIDIARY TO TRAFFIC CONTROL PLAN IMPLEMENTATION ITEM.

4. TRAFFIC CONTROL DEVICES SHALL BE MAINTAINED IN PROPER WORKING ORDER (CLEANING, STRAIGHTENING, COVERING/REMOVING, RE-SETTING, ETC) AT ALL TIMES.

5. EXISTING SIGNS SHALL REMAIN IN PLACE AND MAINTAINED UNTIL PROJECT COMPLETION OR TRAFFIC CONTROL PHASING REQUIRES EARLIER REMOVAL/RELOCATION. EXISTING SIGNS (THOSE IN GOOD CONDITION) MAY BE RELOCATED ONTO TEMPORARY MOUNTS DURING CONSTRUCTION AS PART OF CONTRACTOR'S TRAFFIC CONTROL PLAN. ALL REQUIRED SIGNS (TEMPORARY OR PERMANENT) SHALL BE INSTALLED AND IN PLACE PRIOR TO IMPLEMENTING TRAFFIC PATTERN CHANGES.

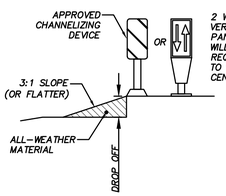
6. ONE LANE OF TRAFFIC IS ALLOWED ONLY WHEN FLAGGERS ARE PRESENT; OTHERWISE, TWO LANES OF 2-WAY TRAFFIC MUST BE MAINTAINED. FULL CLOSURES WITH DETOURS SHALL ONLY BE ALLOWED WHERE SHOWN HERE, UNLESS APPROVED OTHERWISE.

7. ALL DETOUR ROUTES TO BE APPROVED BY CITY TRAFFIC ENGINEER.

8. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING GENERAL SAFETY ADJACENT TO THE PROJECT AREA, INCLUDING THE PERSONAL SAFETY OF THE CONSTRUCTION CREW AND GENERAL PUBLIC, (WHICH INCLUDES STUDENTS TRAVELING ON BICYCLES AND SIDEWALKS).

9. A MINIMUM LATERAL BUFFER OF 6 FEET OR MORE WITH CHANNELIZATION DEVICES SHALL BE PROVIDED BETWEEN EDGE OF TRAVEL LANE AND EXCAVATION OPERATIONS. DURING NON-WORK HOURS, CONTRACTOR SHALL CLOSE ALL EXCAVATIONS WITHIN 10 FEET OF TRAVEL LANES. THE TRENCH EXCAVATION SAFETY PLAN MAY REQUIRE THESE DISTANCES TO BE GREATER. ALLOWED OPEN EXCAVATIONS SHALL HAVE ORANGE SAFETY FENCE WHEN WORK IS NOT OCCURRING.

10. DURING NON-WORK HOURS, PAVEMENT EDGE DROP OFFS GREATER THAN 2 INCHES DEEP WITHIN 10 FEET OF TRAVEL LANE SHALL BE SHOULDERED UP WITH ALL-WEATHER MATERIAL (MAX 3:1 SLOPE). VERTICAL PANELS AND SIGNS CW 8-9a ARE REQUIRED AT ALL TIMES FOR PAVEMENT DROP-OFFS GREATER THAN 2 INCHES DEEP WITHIN 10 FEET OF TRAVEL LANE.



PVMT EDGE DROP-OFF DETAIL

1. LESS THAN 2 INCHES: CW 8-11 SIGNS ARE REQUIRED.
2. GREATER THAN 2 INCHES BUT LESS THAN 24 INCHES: VERTICAL PANELS AND EITHER CW 8-9a OR CW 8-11 SIGNS ARE REQUIRED.
3. GREATER THAN 24 INCHES: POSITIVE BARRIER REQUIRED.
4. PAVEMENT EDGE DROP OFF CONDITIONS SHOULD NOT BE IN PLACE FOR THE EXTENDED PERIODS OF TIME. DROP OFFS SHOULD BE SAFETY SLOPED WITH AN ALL WEATHER MATERIAL AT THE END OF EACH WORK DAY OR AS DIRECTED BY THE ENGINEER.
5. THE SAFETY SLOPE WILL BE CONSTRUCTED WITH AN ALL-WEATHER MATERIAL SUCH AS RAP, WHICH IS CLEAN AND FREE OF DEBRIS AND LARGE ROCKS.

11. DURING NON-WORKING HOURS, EQUIPMENT AND MATERIALS SHALL BE LOCATED IN POSITIONS THAT WILL NOT ENDANGER TRAVELING PUBLIC.

12. CONTRACTOR SHALL NOTIFY CITY AND PUBLIC ONE WEEK PRIOR TO TRAFFIC PATTERN CHANGES AND DETOURS. PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE PLACED IN EACH TRAVEL DIRECTION FOR ONE WEEK PRIOR TO CLOSURE. PCMS ARE SUBSIDIARY TO TRAFFIC CONTROL PLAN IMPLEMENTATION ITEM.

13. CONTRACTOR SHALL MAINTAIN INTERIM PAVEMENT SURFACES (INCLUDING DUST CONTROL), SUBSIDIARY TO VARIOUS BID ITEMS.

14. TEMPORARY PAVEMENT SURFACES:
    a. CONTRACTOR SHALL MAINTAIN SUITABLE ALL-WEATHER DRIVING SURFACES IN ALL AREAS OF TRAVELING PUBLIC THROUGHOUT CONSTRUCTION, INCLUDING NIGHTS AND WEEKENDS.
    b. PROVIDE SMOOTH VERTICAL TRANSITIONS THROUGHOUT CONSTRUCTION, AS APPROVED BY CITY.
    c. CONTRACTOR SHALL MAINTAIN SUITABLE DRIVING SURFACES ACROSS OR ALONG UTILITY TRENCHES UNTIL STREETS ARE RECONSTRUCTED. REFER TO BCS UNITED DEVELOPMENT ORDINANCE SPECIFICATION.
    d. ALL TEMPORARY PAVEMENT SHALL BE SUBSIDIARY TO VARIOUS BID ITEMS.

15. THE USE OF STEEL PLATES MUST BE IN ACCORDANCE WITH CITY OF AUSTIN DETAIL 804S AND ARE ALLOWED ON HMAC PAVEMENTS ONLY IN ACCORDANCE WITH STEEL PLATING DETAILS.

16. CONTRACTOR SHALL MAINTAIN POSITIVE STORMWATER DRAINAGE THROUGHOUT CONSTRUCTION ACTIVITIES AND SHALL NOT IMPEDE STORMWATER FLOW ACROSS PAVEMENT OR FROM FLOWING INTO UNDERGROUND STORM DRAIN SYSTEM. CONTRACTOR SHALL NOT ALLOW DRAINAGE TO ADVERSELY IMPACT ANY PRIVATE PROPERTIES.

17. CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE AT CURB INLET OPENINGS DURING INTERIM PHASES WHEN FINAL PAVEMENT COURSE IS NOT PRESENT (GUTTER NOTCHES, ETC).

18. IF THE CONTRACTOR DAMAGES EXISTING SIGNAGE, THE SIGNAGE SHALL BE REPLACED IMMEDIATELY TO EQUAL OR BETTER CONDITION AT CONTRACTOR'S EXPENSE.

19. CONTRACTOR SHALL MAINTAIN ALL-WEATHER ACCESS TO PROPERTIES AT ALL TIMES, UNLESS COORDINATED OTHERWISE WITH PROPERTY OWNERS. SHOULD IT BE REQUIRED THAT LOCAL RESIDENTS BE DENIED ACCESS TO THEIR DRIVEWAYS, THE CONTRACTOR SHALL NOTIFY THE PROPERTY OWNER AT A MINIMUM 72 HOURS PRIOR TO THE CLOSURE OF THEIR ACCESS. THE NOTICE SHALL INCLUDE SPECIFIC INFORMATION REGARDING THE PROPOSED CONSTRUCTION ACTIVITIES AND THE LENGTH OF TIME REQUIRED BEFORE ACCESS WILL BE RESTORED.

20. MAILBOXES SHALL BE MAINTAINED IN GOOD CONDITIONS AND LOCATED AT APPROVED MAIL CARRIER LOCATIONS THROUGHOUT CONSTRUCTION. PROVIDE TEMPORARY MAILBOXES AS NECESSARY (PER TXDOT STANDARDS, SUBSIDIARY TO BARRICADES AND TRAFFIC HANDLING ITEM). PERMANENT MAILBOXES SHALL BE PROVIDED AT COMPLETION OF CONSTRUCTION.

21. THE CONTRACTOR IS ALERTED TO THE PRESENCE OF EXISTING PUBLIC AND FRANCHISE UTILITIES THROUGHOUT THE PROJECT. CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY UPON DISCOVERY OF CONFLICTS BETWEEN EXISTING LIVE UTILITIES AND PROPOSED CONSTRUCTION. IF FURTHER RELOCATION IS REQUIRED, THE CONTRACTOR SHALL COOPERATE WITH THE ENGINEER AND THE UTILITY OWNER, INCLUDING CEASING WORK IN THE AREA AND CONTINUING PROGRESS IN OTHER AREAS.

22. CONSTRUCTION IN AREAS IMPACTING TRAFFIC MUST BE PURSUED DILIGENTLY BY THE CONTRACTOR. IF, IN THE OPINION OF THE ENGINEER, CONSTRUCTION IS NOT PROCEEDING WITH DUE DILIGENCE, THE ENGINEER MAY REQUIRE THE CONTRACTOR TO ALTER THE WORK PLAN TO EXPEDITE COMPLETION IN THE AREAS OF CONCERN. IN PARTICULAR, THE FOLLOWING MILESTONE TABLE LISTS LOCATIONS WHERE TIME IS OF THE ESSENCE AND MILESTONES ARE ESTABLISHED AS PART OF THE CONTRACT.

23. CALENDAR DAY IS DEFINED AS ANY DAY OF THE WEEK; NO DAYS BEING EXCEPTED. WORK ON SUNDAYS, AND/OR LEGAL HOLIDAYS SHALL BE COORDINATED WITH AND APPROVED BY THE CITY.

EROSION CONTROL SEQUENCE NARRATIVE

GENERAL
1. SW3P SHALL BE IMPLEMENTED PRIOR TO COMMENCEMENT OF CONSTRUCTION AND/OR SWITCHING TRAFFIC IN EACH PHASE.
2. A MEETING WITH CONTRACTOR AND ENGINEER SHALL BE HELD 14 DAYS PRIOR TO ANY EROSION CONTROL CHANGES.

PHASE 1
1. CONSTRUCTION ENTRANCES.
2. SILT FENCE INSTALLATION
3. ROCK FILTER DAMS
4. CONCRETE WASHOUTS ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR WILL ESTABLISH CONCRETE WASHOUTS IN A MANNER THAT RESPECTS THE SW3P PLAN AND DOES NOT HINDER TRAFFIC FLOW.

PHASE 2
1. CONSTRUCTION ENTRANCES.
2. SILT FENCE INSTALLATION
3. EROSION CONTROL LOGS (CURB INLETS, STORM GRATES, ETC)
4. CONCRETE WASHOUTS ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR WILL ESTABLISH CONCRETE WASHOUTS IN A MANNER THAT RESPECTS THE SW3P PLAN AND DOES NOT HINDER TRAFFIC FLOW.

PHASE 3
1. CONSTRUCTION ENTRANCES.
2. SILT FENCE INSTALLATION
3. EROSION CONTROL LOGS (CURB INLETS, STORM GRATES, ETC)
4. CONCRETE WASHOUTS ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR WILL ESTABLISH CONCRETE WASHOUTS IN A MANNER THAT RESPECTS THE SW3P PLAN AND DOES NOT HINDER TRAFFIC FLOW.

PHASE 4
1. CONSTRUCTION ENTRANCES.
2. SILT FENCE INSTALLATION
3. EROSION CONTROL LOGS (CURB INLETS, STORM GRATES, ETC)
4. CONCRETE WASHOUTS ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR WILL ESTABLISH CONCRETE WASHOUTS IN A MANNER THAT RESPECTS THE SW3P PLAN AND DOES NOT HINDER TRAFFIC FLOW.

PHASE 5
1. CONSTRUCTION ENTRANCES.
2. SILT FENCE INSTALLATION
3. EROSION CONTROL LOGS (CURB INLETS, STORM GRATES, ETC)
4. CONCRETE WASHOUTS ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR WILL ESTABLISH CONCRETE WASHOUTS IN A MANNER THAT RESPECTS THE SW3P PLAN AND DOES NOT HINDER TRAFFIC FLOW.

PHASE 6
1. CONSTRUCTION ENTRANCES.
2. SILT FENCE INSTALLATION
3. EROSION CONTROL LOGS (CURB INLETS, STORM GRATES, ETC)
4. CONCRETE WASHOUTS ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR WILL ESTABLISH CONCRETE WASHOUTS IN A MANNER THAT RESPECTS THE SW3P PLAN AND DOES NOT HINDER TRAFFIC FLOW.

PHASE 7
1. CONSTRUCTION ENTRANCES.
2. SILT FENCE INSTALLATION
3. EROSION CONTROL LOGS (CURB INLETS, STORM GRATES, ETC)
4. CONCRETE WASHOUTS ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR WILL ESTABLISH CONCRETE WASHOUTS IN A MANNER THAT RESPECTS THE SW3P PLAN AND DOES NOT HINDER TRAFFIC FLOW.

PHASE 8
1. CONSTRUCTION ENTRANCES.
2. SILT FENCE INSTALLATION
3. EROSION CONTROL LOGS (CURB INLETS, STORM GRATES, ETC)
4. CONCRETE WASHOUTS ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR WILL ESTABLISH CONCRETE WASHOUTS IN A MANNER THAT RESPECTS THE SW3P PLAN AND DOES NOT HINDER TRAFFIC FLOW.

TCP STANDARDS

THE CONTRACTOR SHALL UTILIZE TMUTCD TYPICAL APPLICATIONS, TXDOT BARRICADE AND CONSTRUCTION STANDARDS, AND THE FOLLOWING TXDOT TRAFFIC CONTROL STANDARDS TO PREPARE THE PROJECT TCP:
TCP(2-1)-18, TCP(2-4)-18, TCP(2-5)-18, WZ(TD)-17, WZ(STPM)-13, WZ(VL)-13, AND WZ(RCD)-13.

CONSTRUCTION SEQUENCE NARRATIVE

GENERAL
1. SW3P AND TRAFFIC CONTROL SHALL BE IMPLEMENTED PRIOR TO COMMENCEMENT OF CONSTRUCTION AND/OR SWITCHING TRAFFIC IN EACH PHASE.
2. PAVEMENT LIMITS ARE DESCRIBED IN BELOW SEQUENCE; DRAINAGE, GRADING, AND UTILITIES SHALL BE CONSTRUCTED IN THE SAME PHASE AS THEIR RESPECTIVE PAVEMENT LIMITS. SOME UTILITY AND DRAINAGE FEATURES MAY NEED TO BE CONSTRUCTED OUT OF PHASE ACROSS EXISTING PAVEMENT; IF THIS IS THE CASE, CONTRACTOR SHALL MAINTAIN ONE LANE OF TRAFFIC DURING DAY (TWO LANES OF TRAFFIC AT NIGHT), REPAIR PAVEMENT SURFACE, AND PROVIDE SMOOTH PAVEMENT TRANSITIONS (SUBSIDIARY).
3. A MEETING WITH CONTRACTOR AND ENGINEER SHALL BE HELD 14 DAYS PRIOR TO ANY TRAFFIC SWITCH TO DISCUSS TCP DEVICES, SCHEDULE, ADVERTISING, ETC.
4. ALL FULL CLOSURES/DETOURS SHALL BE ADVERTISED ONE WEEK IN ADVANCE ON PCMS (ONE IN EACH DIRECTION).
5. TOP HMAC COURSE SHALL NOT BE PLACED UNTIL CONCLUSION OF PROJECT.
6. PHASES MUST BE COMPLETED CONSECUTIVELY EXCEPT AS NOTED.

TRAFFIC REMAINS ON EXISTING PAVEMENT THROUGH PHASE 2

PHASE 1
1. PREPARE RIGHT-OF-WAY ALONG RAIDER WAY, EAST WOODVIEW AND PR 921.
2. CONSTRUCT ALL DRY UTILITIES IN ACCORDANCE WITH PLANS.
3. CONSTRUCT ALL WATER LINES AND WATER LINE ADJUSTMENTS ACCORDANCE WITH PLANS.
4. EXCAVATE DETENTION PONDS A, B1, B2.
5. TRAFFIC REMAINS ON EXISTS PAVEMENT SURFACE.

PHASE 2
1. USING 1-LANE CLOSURE ON CRYSTAL FALLS WB, CONSTRUCT STORM SEWER FROM CRYSTAL FALLS PARKWAY TO DETENTION POND A. THIS WORK SHALL BE CONSTRUCTED AT NIGHTS AND ON WEEKENDS AS ALLOWED BY CITY. STEEL PLATES SHALL BE USED UNTIL PIPE IS BACKFILLED AND TEMPORARY SURFACE CONSTRUCTED. CURB INLETS WILL BE CONSTRUCTED IN 2 STAGES. FIRST STAGE WILL BE COMPLETED TO HEIGHT OF CONSTRUCTION JOINT SHOWN ON DETAILS. CONSTRUCT DRY STACK RETAINING WALLS
2. CONSTRUCT ALL REMAINING STORM SEWER IN DRAINAGE AREA 'A' & 'B' EXCEPT FOR LATERAL A1g AND 10' CURB INLET @ STA. 13+59.52, 27.50' RIGHT.
3. CONSTRUCT PROPOSED PAVEMENT ON WESTERN PORTION OF RAIDER WAY FROM CRYSTAL FALLS TO STA. 24+00.
4. TRAFFIC REMAINS ON EXISTING PAVEMENT.

PHASE 3
1. PLACE SOUTHBOUND TRAFFIC ON NEWLY CONSTRUCTED PAVEMENT FROM CRYSTAL FALLS TO STA. 24+00. NORTHBOUND LANE TO REMAIN ON EXISTING PAVEMENT.
2. REMOVE EXISTING RAIDER WAY SOUTHBOUND PAVEMENT SUCH THAT PROPOSED PAVEMENT MAY BE FULLY CONSTRUCTED 3' RIGHT OF RAIDER WAY CENTERLINE FROM CRYSTAL FALLS PARKWAY TO STA. 24+00.

PHASE 4
1. PLACE ALL RAIDER WAY TRAFFIC ON NEWLY CONSTRUCTED PAVEMENT FROM CRYSTAL FALLS TO STA. 24+00.
2. REMOVE REMAINDER OF EXIST RAIDER WAY ROADWAY TO STA. 24+00.
3. CONSTRUCT CURB INLET AND LATERAL A1g.
4. COMPLETE ROADWAY, CURB AND GUTTER, INLET TOPS, ON EASTERN PORTION OF RAIDER WAY, AND ALL SIDEWALKS.
5. COMPLETE TRAFFIC SIGNALS AND BLOCK TRAFFIC SIGNALS.

PHASE 5A (MAY BE CONSTRUCTED IN ACCORDANCE WITH LISD CALENDAR REQUIREMENTS AFTER PHASE 2)
1. WITH FULL CLOSURE OF RAIDER WAY (FROM STA. 24+00 TO STA. 32+00) AND EAST WOODVIEW (FROM STA 15+00 TO STA 19+00), PROVIDE FOR PR 921 LOCAL TRAFFIC ONLY. CONSTRUCT ROUNDABOUT, RAIDER WAY FROM STA. 24+00 TO STA. 32+00 AND EAST WOODVIEW FROM STA 15+00. THIS WORK MUST BE SUBSTANTIALLY COMPLETE WITHIN 75 DAYS DURING LISD SUMMER RECESS.

PHASE 5B
1. TRAFFIC WILL DETOUR VIA NOLAN RANCH.
2. RE-OPEN RAIDER WAT TO ALL TRAFFIC, CLOSE NOLAN RANCH AND EAST WOODVIEW INTERSECTION FOR FULL WIDTH RECONSTRUCTION FROM STA. 10+00 TO STA 15+00.

PHASE 6
1. CONSTRUCT STORM SEWER FOR DRAINAGE AREA 'C'.
2. CONSTRUCT EAST WOODVIEW FULL WIDTH FROM STA. 6+00 TO STA. 10+00 WITH A FULL CLOSURE.

PHASE 7
1. CONSTRUCT EAST WOODVIEW FULL WIDTH FROM STA 2+50 TO STA. 6+00.

PHASE 8
1. CLOSE RIGHT SHOULDER OF NB 183A FRTG RD., INSTALL PROTECTIVE CONCRETE BARRIER, MASH TL-3 COMPLIANT CRASH CUSHION ATTENUATOR, AND WIDEN FOR RIGHT TURN LANE. CONSTRUCT STORM DRAIN FOR DRAINAGE AREA 'D' AND EAST WOODVIEW PAVEMENT FULL WIDTH WEST OF STA 2+50.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

CONSTRUCTION SEQUENCING & TRAFFIC CONTROL NOTES

03/22/2023 DATE
R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C037
SHEET	OF

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MYRNA BEND

NOLAN RANCH TRL

PRIVATE ROAD 921

EAST WOODVIEW DRIVE

183-A (TOLL) ROAD

RAIDER WAY (CR 271)

EAST CRYSTAL FALLS PKWY

TRAFFIC CONTROL PLAN LEGEND

- PHASES 1, 2, & 3
- PHASE 4
- PHASE 5A
- PHASE 5B
- PHASE 6
- PHASE 7
- PHASE 8

NOTES:

1. TRAFFIC CONTROL SIGNAGE/DEVICES MAY BE MODIFIED DUE TO FIELD CONDITIONS. SIGN SPACING & LOCATION SHALL BE IN ACCORDANCE WITH CURRENT MUTCD STANDARDS. LOCATIONS AND SPACINGS SHOWN ARE FOR INFORMATIONAL PURPOSES ONLY.
2. ANY AND ALL CHANGES TO TRAFFIC CONTROL MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO MODIFICATION BEING IMPLEMENTED. CHANGES AND MODIFICATION TO TRAFFIC CONTROL PLAN AND DEVICES SHALL BE SUBSIDIARY TO TRAFFIC CONTROL.
3. CONTRACTOR TO PROVIDE TRANSITION GRADING AT ALL PAVEMENT DROP-OFFS WHEN THE DROP OFF IS GREATER THAN 2 INCHES.
4. ALL DRIVEWAYS TO BE CONSTRUCTED IN A MANNER THAT WILL ALLOW CONTINUOUS USE OF DRIVEWAY. I.E., ONE-HALF OF DRIVEWAY AT A TIME.

0 75 150 300

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

CONSTRUCTION SEQUENCE OVERALL PHASING MAP

03/22/2023
DATE

R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C038
SHEET	OF

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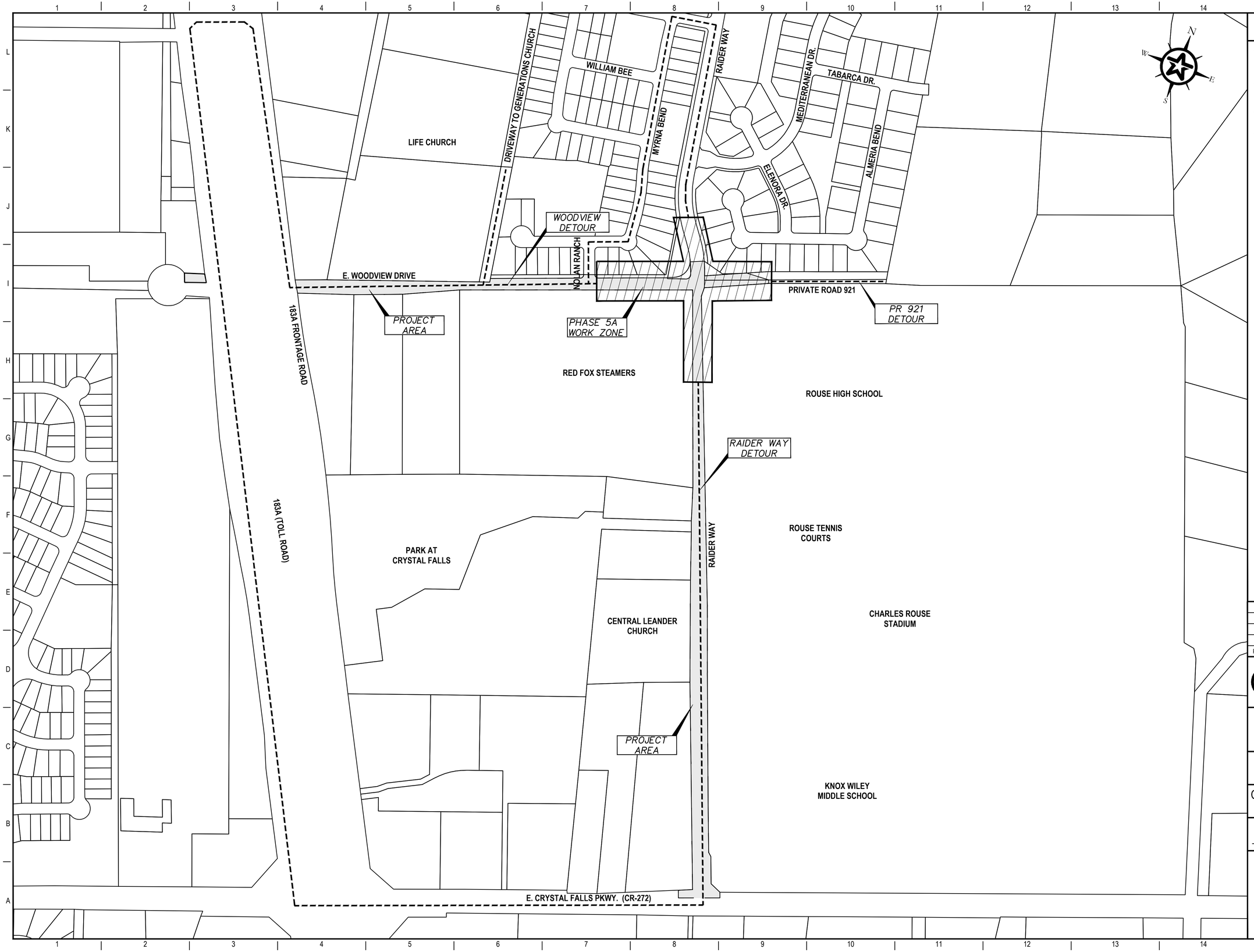

GENERAL NOTES

1. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH TxMUTCD FOR EACH PHASE TO CITY PRIOR TO BEGINNING CONSTRUCTION.
2. CONTRACTOR SHALL NOT BLOCK TRAFFIC ACCESS TO NOLAN RANCH DURING PHASE 5a CONSTRUCTION. PROVIDE TRAFFIC CONTROL OR FLAGGERS AS NECESSARY.
3. PHASE 5a MUST BE SUBSTANTIALLY COMPLETE PRIOR TO COMMENCING PHASE 5b.
4. CONTRACTOR MUST PROVIDE FOR LOCAL TRAFFIC TO PRIVATE ROAD 921 AT ALL TIMES.

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

CONSTRUCTION SEQUENCE PLAN PHASE 5A

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C039
SHEET	OF

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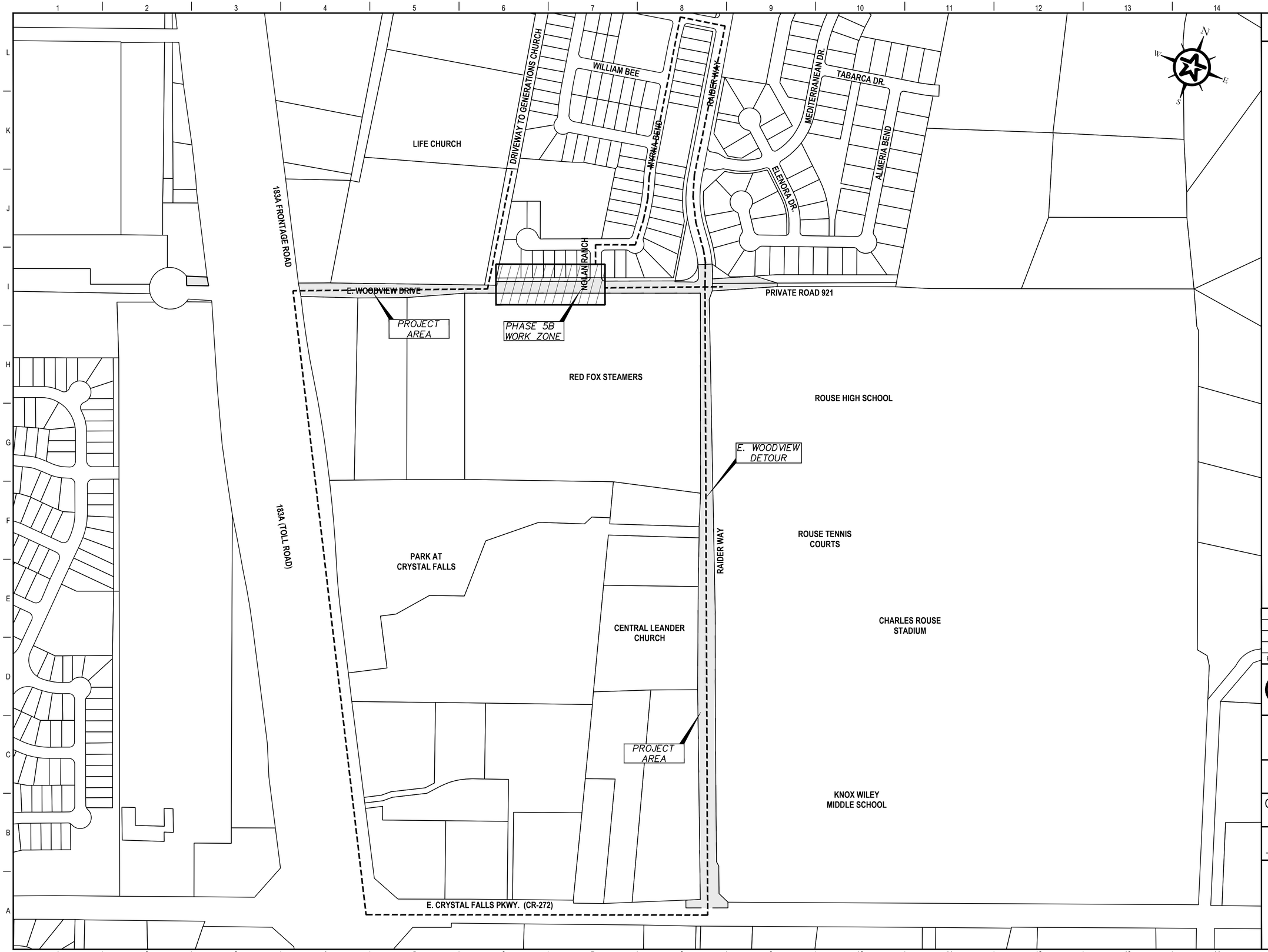

GENERAL NOTES

1. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH TxMUTCD FOR EACH PHASE TO CITY PRIOR TO BEGINNING CONSTRUCTION.
2. PHASE 5b MUST BE SUBSTANTIALLY COMPLETE PRIOR TO COMMENCING PHASE 6.

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

CONSTRUCTION SEQUENCE PLAN PHASE 5B

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C040
SHEET	OF

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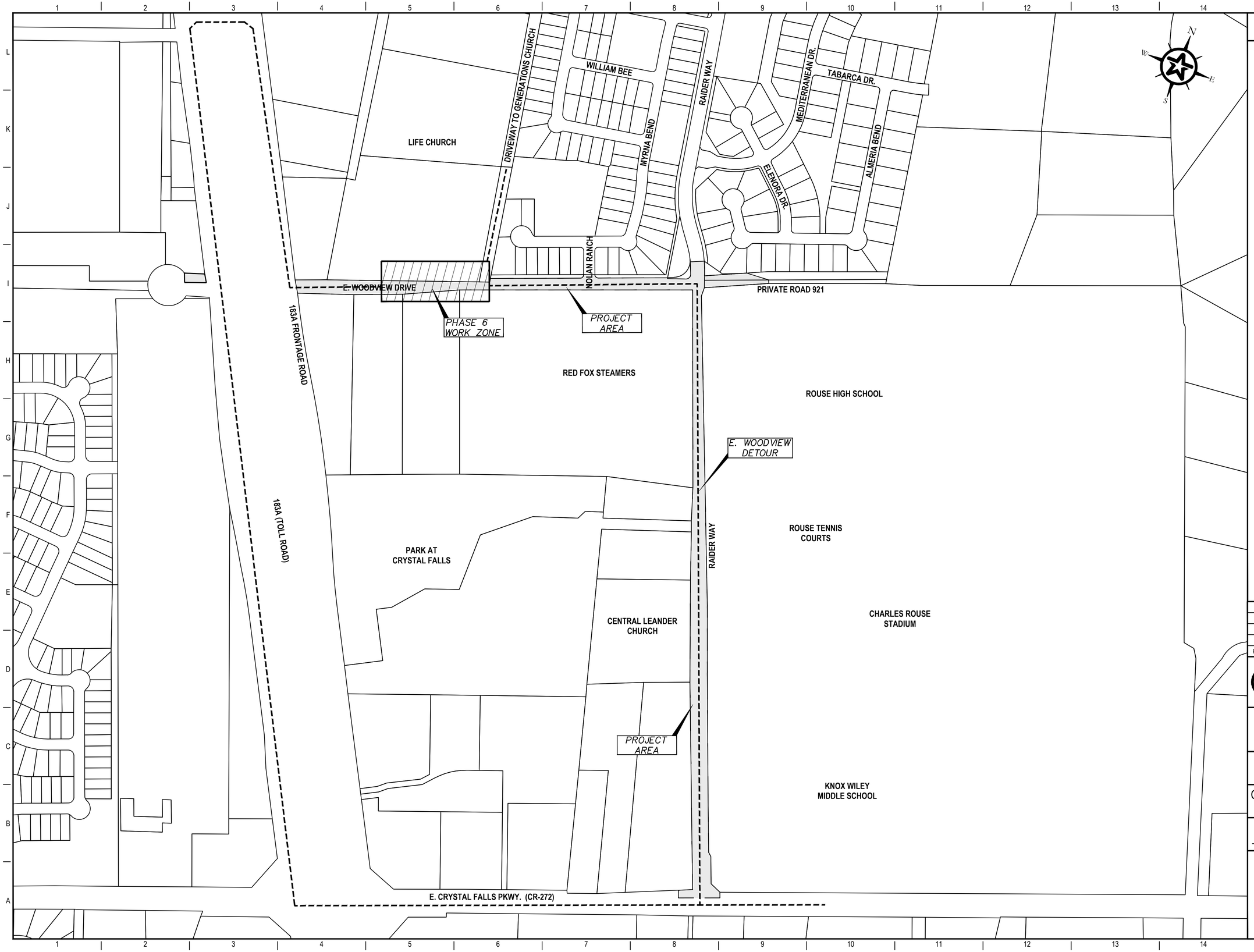

GENERAL NOTES

1. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH TxMUTCD FOR EACH PHASE TO CITY PRIOR TO BEGINNING CONSTRUCTION.
2. CONTRACTOR SHALL NOT BLOCK TRAFFIC ACCESS TO DRIVEWAYS DURING PHASE 6 CONSTRUCTION. PROVIDE TRAFFIC CONTROL OR FLAGGERS AS NECESSARY.
3. PHASE 6 MUST BE SUBSTANTIALLY COMPLETE PRIOR TO COMMENCING PHASE 7.

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

CONSTRUCTION SEQUENCE PLAN PHASE 6

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C041
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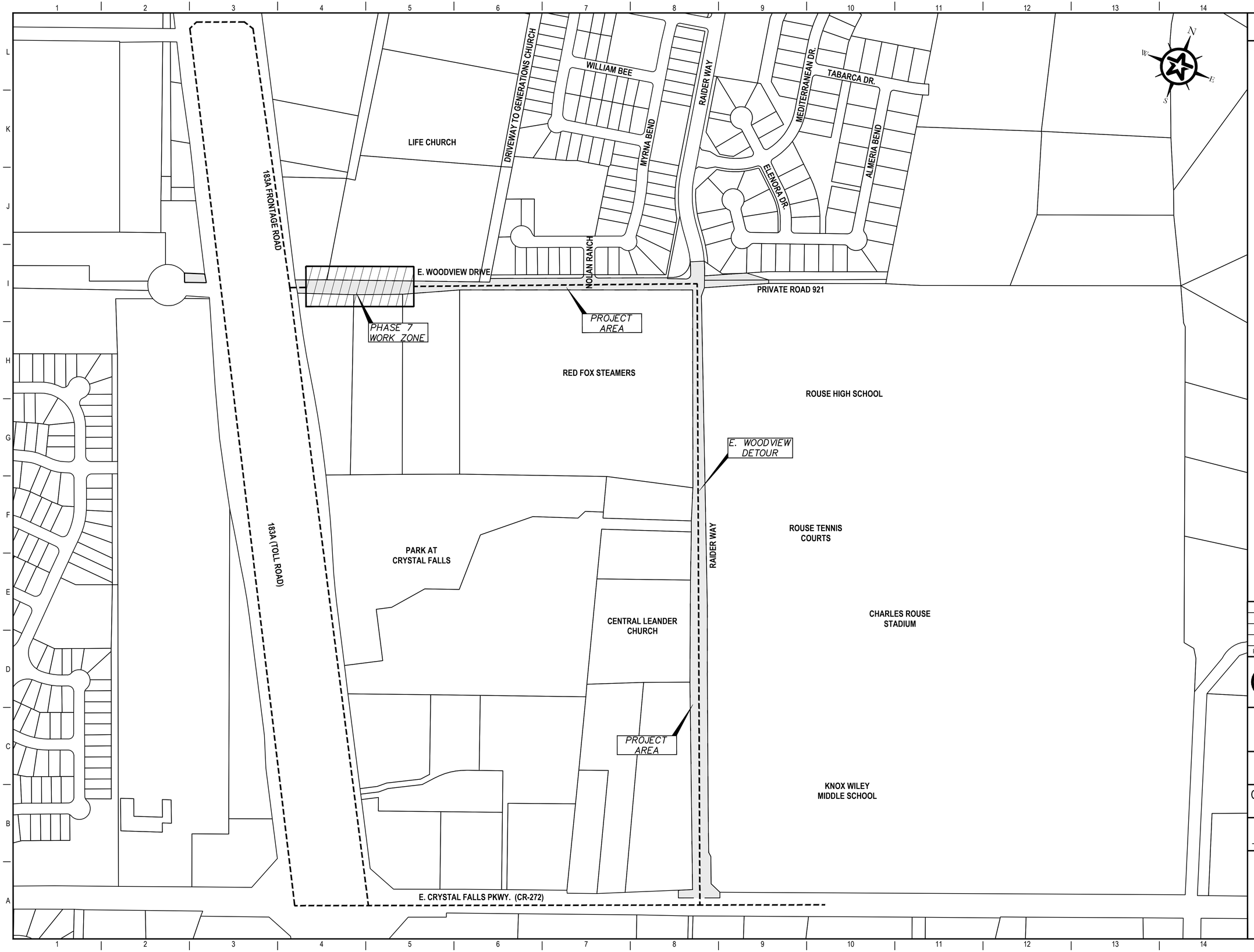

GENERAL NOTES

1. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH TxMUTCD FOR EACH PHASE TO CITY PRIOR TO BEGINNING CONSTRUCTION.
2. CONTRACTOR SHALL NOT BLOCK TRAFFIC ACCESS TO DRIVEWAYS DURING PHASE 7 CONSTRUCTION. PROVIDE TRAFFIC CONTROL OR FLAGGERS AS NECESSARY.
3. PHASE 7 MUST BE SUBSTANTIALLY COMPLETE PRIOR TO COMMENCING PHASE 8.

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

CONSTRUCTION SEQUENCE PLAN PHASE 7

03/22/2023
DATE

R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C042
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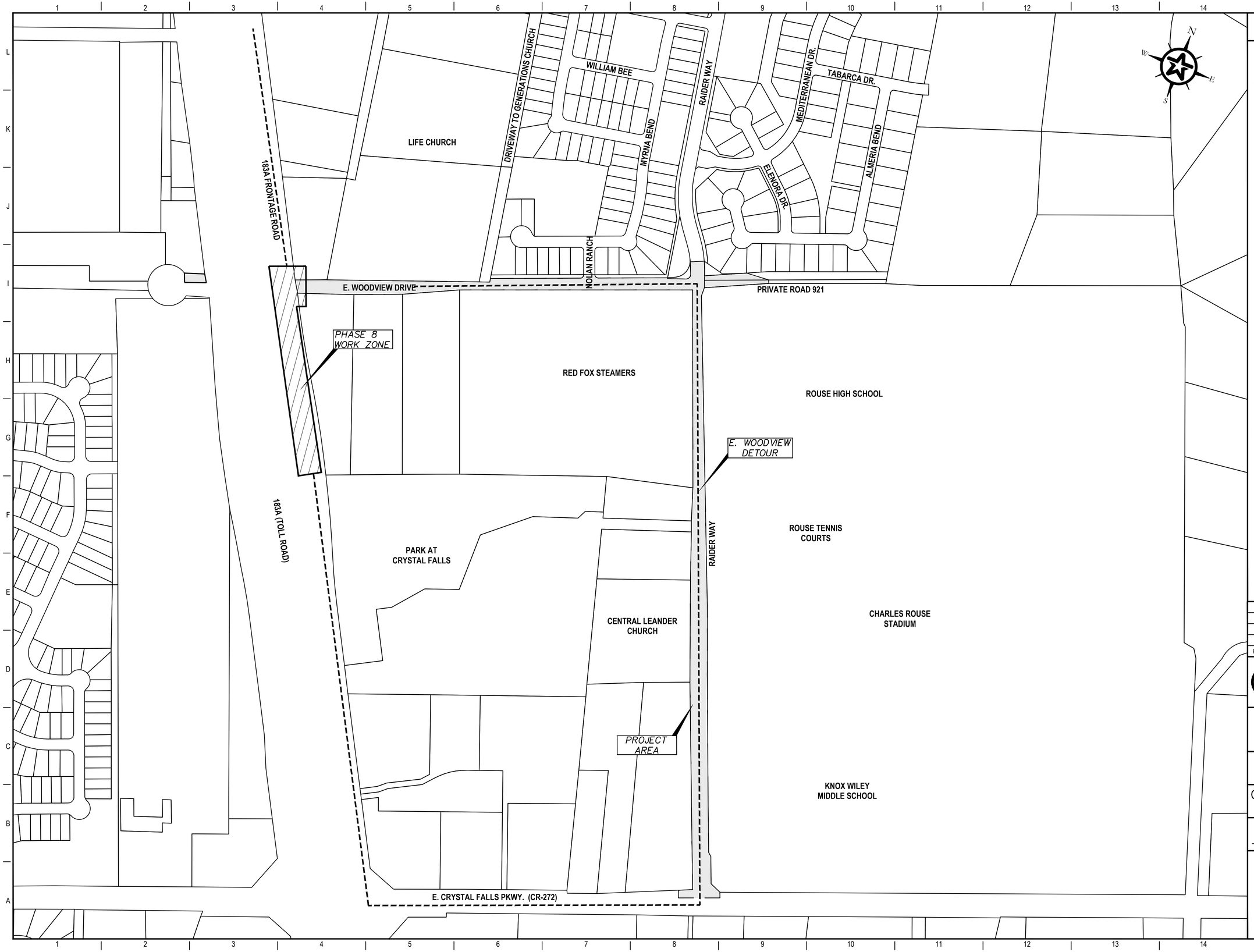

GENERAL NOTES

1. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH TxMUTCD FOR EACH PHASE TO CITY PRIOR TO BEGINNING CONSTRUCTION.
2. CONTRACTOR SHALL NOT BLOCK DRIVEWAY ACCESS TO EAST WOODVIEW DURING PHASE 8 CONSTRUCTION. PROVIDE TRAFFIC CONTROL OR FLAGGERS AS NECESSARY.

REV.	DESCRIPTION	DATE

Walker Partners
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T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

CONSTRUCTION SEQUENCE PLAN PHASE 8

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
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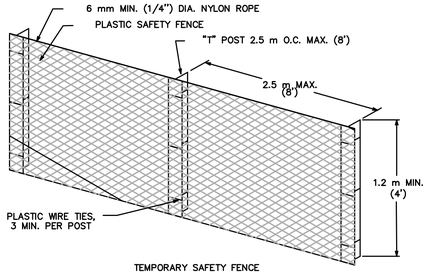
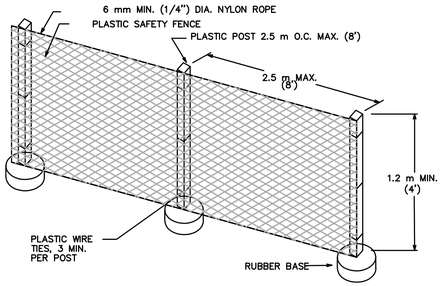


TEMPORARY SAFETY FENCE

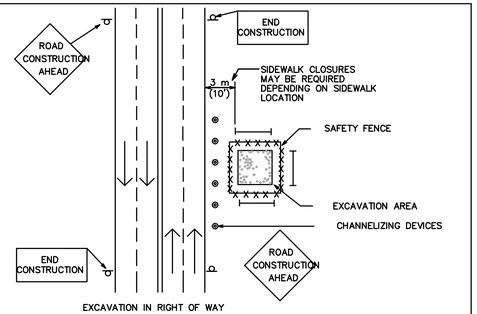


PORTABLE SAFETY FENCE

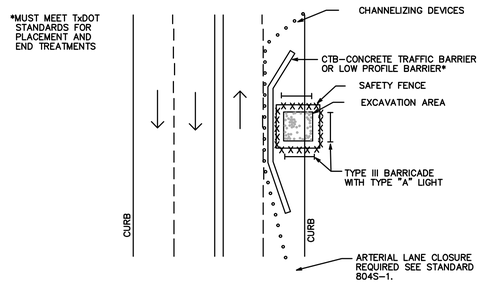
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		SAFETY FENCE	
RECORD COPY SIGNED BY SAM ANGOORI	04/03/09 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S–4 1 OF 9

1. SAFETY FENCE SHALL BE USED TO PROTECT ALL EXCAVATIONS IN THE RIGHT–OF–WAY.
2. SAFETY FENCES SHALL BE USED TO SEPARATE CONSTRUCTION ACTIVITIES FROM PEDESTRIAN.
3. ALL SAFETY FENCING SHALL BE PLASTIC, 1,200 mm (48") MINIMUM HEIGHT AND ORANGE IN COLOR.
4. SAFETY FENCE USED WITHIN THE ROADWAY SHALL BE REFLECTORIZED WITH A MINIMUM OF TWO (2) STRIPS OF RETROREFLECTIVE MATERIAL, A MINIMUM OF 25 mm (1") WIDE, THE LENGTH OF THE FENCE OR DELINEATED BY CHANNELIZING DEVICES.
5. SAFETY FENCE USED TO SEPARATE SIDEWALKS FROM CONSTRUCTION ACTIVITIES SHALL HAVE MINIMUM ENCROACHMENT TO THE SIDEWALK.
6. AS A MINIMUM, SAFETY FENCING IS REQUIRED IN AREAS ADJACENT TO EXCAVATIONS GREATER THAN OR EQUAL TO 150 mm (6").
7. SAFETY FENCING SHALL BE PAID FOR UNDER ITEM 803S, "BARRICADES, SIGNS AND TRAFFIC HANDLING", PAY ITEM NO. 803S–SF.
8. PORTABLE SAFETY FENCE MOUNTS SHALL BE APPROVED BY THE TRANSPORTATION DIVISION PRIOR TO CONSTRUCTION.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		SAFETY FENCE	
RECORD COPY SIGNED BY SAM ANGOORI	04/03/09 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S–4 2 OF 9

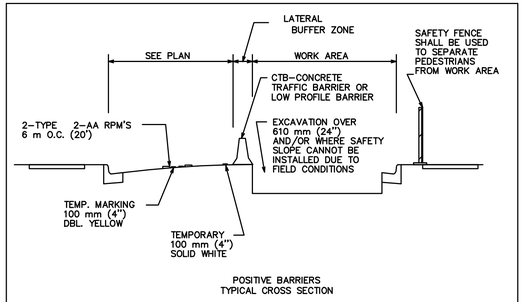


EXCAVATION IN RIGHT OF WAY

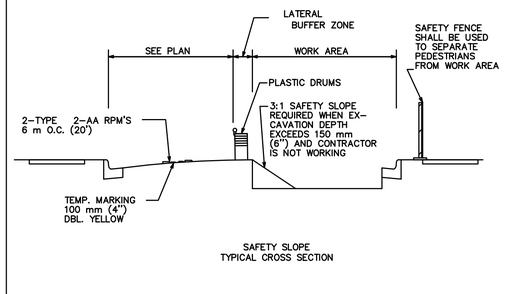


EXCAVATION IN ROADWAY

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		LARGE EXCAVATION	
RECORD COPY SIGNED BY SAM ANGOORI	04/03/09 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S–4 3 OF 9

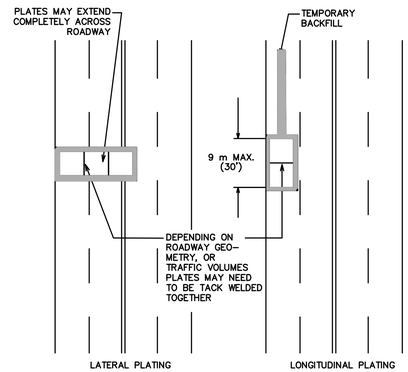


POSITIVE BARRIERS
TYPICAL CROSS SECTION

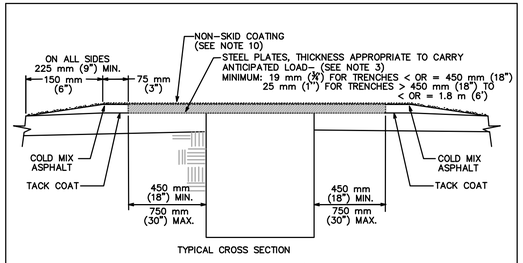


SAFETY SLOPE
TYPICAL CROSS SECTION

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		WORK AREA PROTECTION	
RECORD COPY SIGNED BY SAM ANGOORI	04/03/09 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S–4 4 OF 9

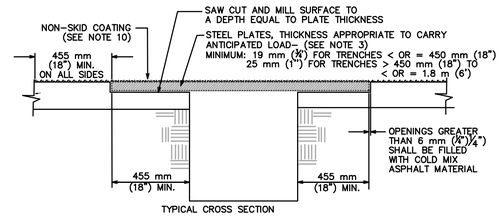


CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		STEEL PLATING	
RECORD COPY SIGNED BY SAM ANGOORI	04/03/09 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S–4 5 OF 9



TYPICAL CROSS SECTION

CASE I– LOW TRAFFIC VOLUME/LIMITED IN–SERVICE TIME



TYPICAL CROSS SECTION

CASE II– EXTENDED IN–SERVICE PLATING AND/OR HEAVILY–TRAFFICKED ROADS/STREETS (HMAC PAVEMENTS ONLY)

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		STEEL PLATING	
RECORD COPY SIGNED BY SAM ANGOORI	04/03/09 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 804S–4 6 OF 9

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

SAFETY FENCE DETAILS

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C044
SHEET	OF

A1 SAFETY FENCE DETAILS

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NOTES:

1. WHERE TRAFFIC MUST CROSS TRENCHES, THE CONTRACTOR SHALL PROVIDE SUITABLE BRIDGES.

2. THE USE OF STEEL PLATES SHALL BE APPROVED BY THE RIGHT OF WAY MANAGEMENT DIVISION OF WATERSHED PROTECTION AND DEVLOPMENT DEPARTMENT PRIOR TO INITIATION OF CONSTRUCTION.

3. THE THICKNESS OF PLATES FOR TRENCH WIDTHS EXCEEDING 1.8 m (6') SHALL BE ESTABLISHED IN AN ANALYSIS COMPLETED BY A LICENSED PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF TEXAS. THE ANALYSIS SHALL BE BASED ON HS-20 TRAFFIC LOADING WITH A MAXIMUM PLATE DEFLECTION OF 50 mm (2") WHEN EXPERIENCING SAID LOADING. FOR SITUATIONS WHERE MULTIPLE LAYERS OF PLATES (OR STACKED PLATES) ARE TO BE EMPLOYED, THE SEAMS (IE. THE INTER-FACE BETWEEN PLACED SIDE-BY-SIDE) OF THE UPPER LAYER SHALL BE PLACED PERPENDICULAR TO THE SEAMS OF THE UNDERLYING PLATES.

4. WHEN APPROVED, THE TYPE OF PLATE INSTALLATION SHALL BE BASED ON THE ANTICIPATED LENGTH OF TIME THE PLATE WILL BE IN SERVICE:
CASE I: A CASE I INSTALLATION SHALL APPLY FOR NO LONGER THAN A 2 WEEK PERIOD.
CASE II: A CASE II INSTALLATION SHALL APPLY FOR NO LONGER THAN 2 WEEK PERIOD.

5. THE TOPSIDE OF THE STEEL PLATE SHALL BE FLAT AND FREE OF ANY CLIPS, CHAINS, ATTACHMENTS, WELDMENTS OR SURFACE IRREGULARITIES.

6. PLATES WITH A PERMANENT DISPLACEMENT (I.E. DISPLACEMENT ANYWHERE ON THE SURFACE OF THE PLATE WITH RESPECT TO A PLANE FORMED BY THE OUTSIDE EDGES) THAT EXCEEDS 12 mm (½") SHALL NOT BE USED FOR PLATING PURPOSES. PLATES THAT DEVELOP A PERMANENT DISPLACEMENT EXCEEDING 12 mm (½") DURING SERVICE SHALL BE REMOVED AND REPLACED.

7. THE PLATES SHALL BE PROVIDED WITH APPROPRIATE NUMBER OF KEYHOLE SLOTS OR CIRCULAR HOLES FOR HANDLING, LIFTING, INSTALLATION AND REMOVAL PURPOSES.

8. THE CONTRACTOR SHOULD AVOID USING A LONG SERIES OF PLATES THAT RUN PARALLEL TO VEHICULAR TRAFFIC WHEELS PATHS.

9. ADDITIONAL METHODS OF SECURING PLATES MAY BE REQUIRED DEPENDING ON FIELD CONDITIONS.

10. FOR PLATES 1.8 M (6') OR GREATER IN DIRECTION OF TRAFFIC, A NON-SKID COATING SHOULD BE APPLIED TO THE ENTIRE SURFACE AREA OF ALL PLATES, AS WELL AS ADJACENT AREAS. THE NON-SKID COATING SHALL BE TCA (TEXTURED COATING OF AMERICA, INC.) STRATA-GRIP DECK COATING SYSTEM; SLIPFIX, INC. SPS (SLIP PROTECTION SURFACE) OR AN EQUIVALENT PRODUCT APPROVED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		STEEL PLATING	
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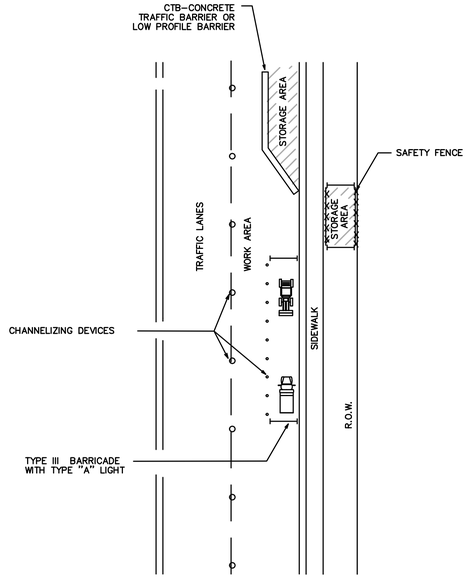

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1. STORAGE OF EQUIPMENT AND MATERIALS SHALL BE RESTRICTED TO LOCATIONS WHERE DRIVER SIGHT DISTANCES TO TRAFFIC, PEDESTRIANS, BUSINESSES AND SIDE STREET INTERSECTIONS ARE NOT OBSTRUCTED OR WHERE AN UNSIGHTLY APPEARANCE. AS DETERMINED BY THE ENGINEER, WILL NOT EXIST.

2. EQUIPMENT MUST BE PARKED AS FAR AWAY FROM THE TRAVELWAYS AS PRACTICAL.

3. TOTAL AREA USED FOR EQUIPMENT STORAGE SHALL BE KEPT TO A MINIMUM.

4. ALL MATERIALS STORED IN THE RIGHT-OF-WAY MUST BE MAINTAINED IN A NEAT AND ORGANIZED MANNER.

5. MATERIALS STORED MAY NOT BE MORE THAN 915 mm (36") IN HEIGHT.

6. ALL MATERIALS STORED MUST BE USED WITHIN THREE (3) DAYS.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		MATERIAL AND EQUIPMENT STORAGE	
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G1 SAFETY FENCE DETAILS

A1 TEMPORARY TRENCH REPAIR ASPHALT SURFACE

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

SAFETY FENCE DETAILS

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C045
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-ROAD.DWG, C045 SAFETY FENCE DETAILS, 3/28/2023 9:47:31 AM, cpadron-martinez

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BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. The development and design of the Traffic Control Plan (TCP) is the responsibility of the Engineer.
3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.
4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.
5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets," the TxDOT "Roadway Design Manual" or engineering judgment.
6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.
7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.
9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.
10. 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

SHEET 1 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-21

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Walker Partners engineers | surveyors

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - BC(1)-21

PM	RAM
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CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C046
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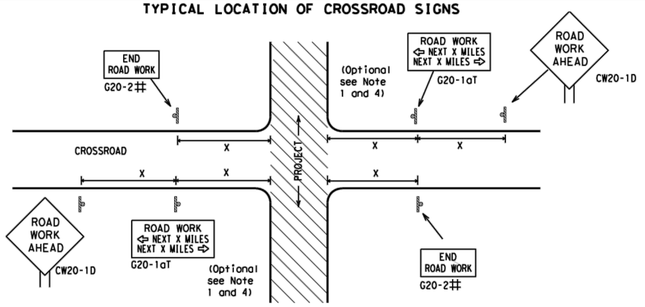
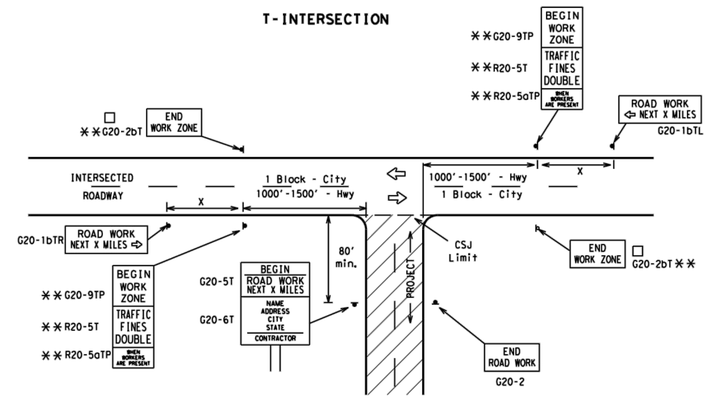
TYPICAL LOCATION OF CROSSROAD SIGNS



T-INTERSECTION



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

SIZE

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

SPACING

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

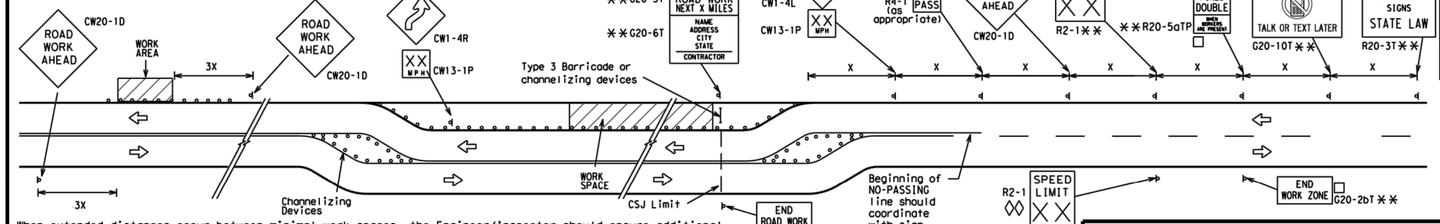
* For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

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

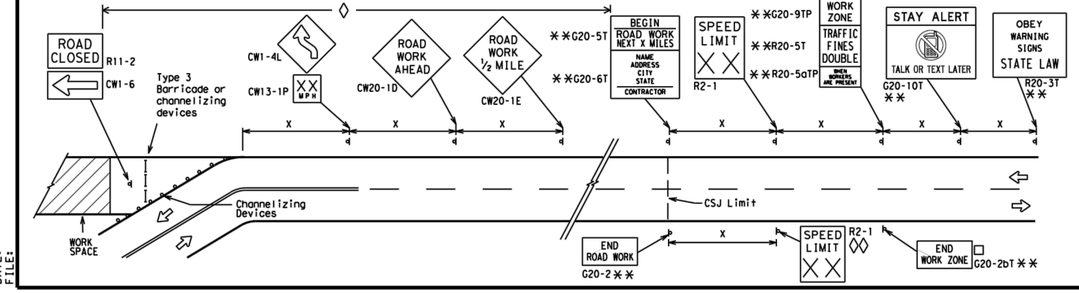
WORK AREAS IN MULTIPLE LOCATIONS WITHIN CSJ LIMITS



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

SAMPLE LAYOUT OF SIGNING FOR WORK BEGINNING AT THE CSJ LIMITS

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



NOTES

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

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

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

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

◊◊ Contractor will install a regulatory speed limit sign at the end of the work zone.

LEGEND

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

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Texas Department of Transportation

Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-21

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7-13 5-21				

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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - BC(2)-21

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CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C047
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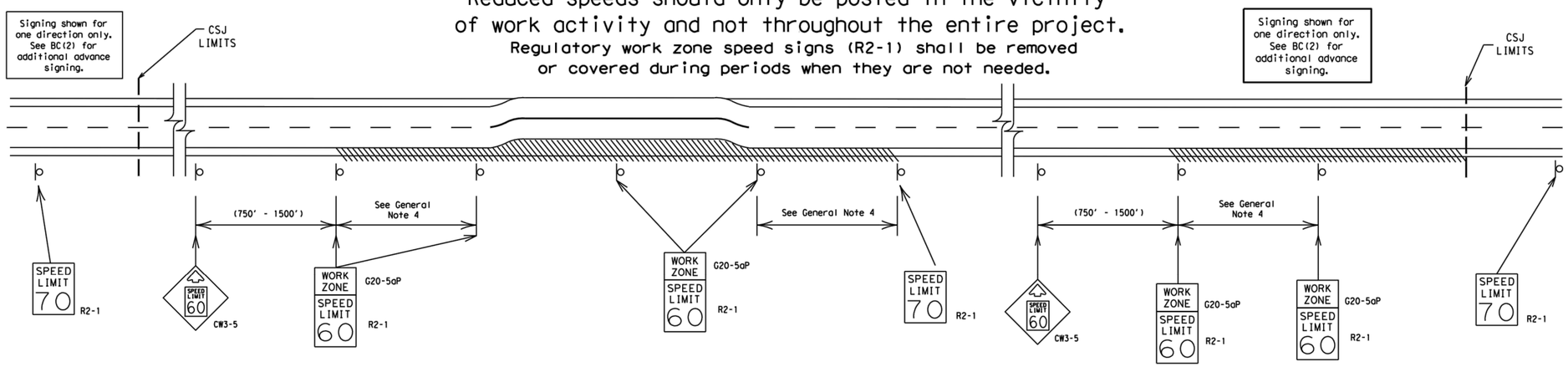
TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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

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

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



GUIDANCE FOR USE:

LONG/INTERMEDIATE TERM WORK ZONE SPEED LIMITS

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

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

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

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

SHORT TERM WORK ZONE SPEED LIMITS

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

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Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-21

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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - BC(3)-21

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C048
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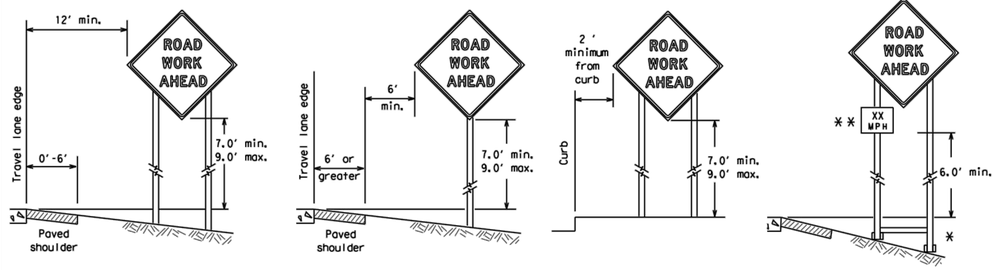
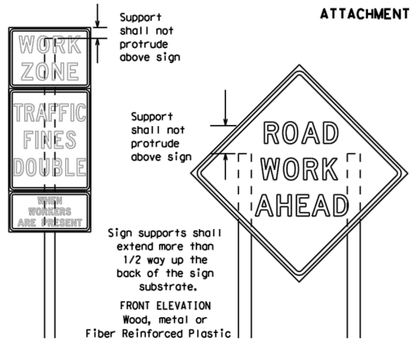
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS

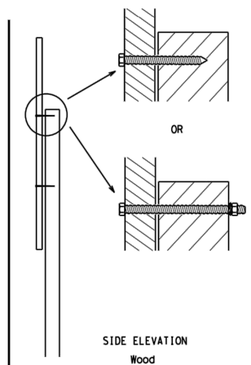


* When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

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

ATTACHMENT FOR SIGN SUPPORTS





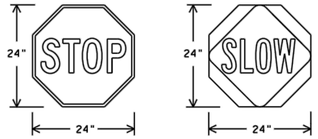
Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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

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

STOP/SLOW PADDLES

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



Background - Red
Legend & Border - White

Background - Orange
Legend & Border - Black

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

CONTRACTOR REQUIREMENTS FOR MAINTAINING PERMANENT SIGNS WITHIN THE PROJECT LIMITS

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

GENERAL NOTES FOR WORK ZONE SIGNS

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

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

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

SIGN MOUNTING HEIGHT

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

SIZE OF SIGNS

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

SIGN SUBSTRATES

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

REFLECTIVE SHEETING

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

SIGN LETTERS

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

REMOVING OR COVERING

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

SIGN SUPPORT WEIGHTS

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

FLAGS ON SIGNS

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

Texas Department of Transportation | Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TEMPORARY SIGN NOTES

BC(4)-21

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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - BC(4)-21

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C049
SHEET	OF

DATE:
FILE: G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT.DWG, TXDOT DETAILS - BC(4)-21, 3/28/2023 9:48:17 AM, cpadron-martinez

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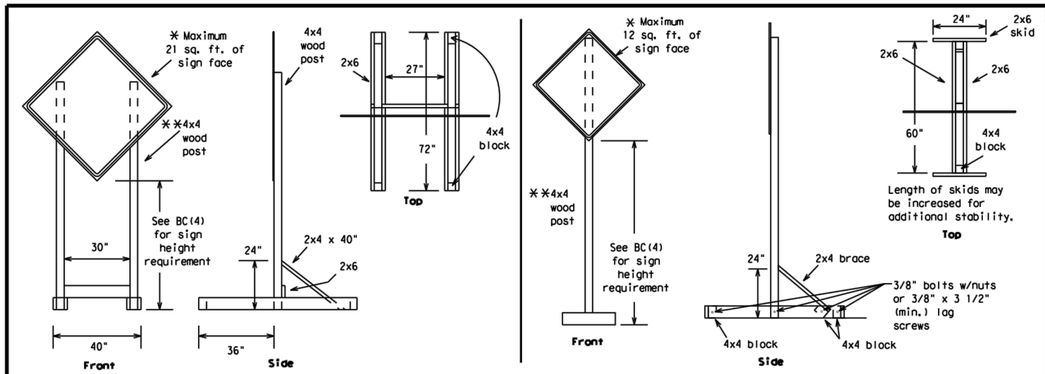
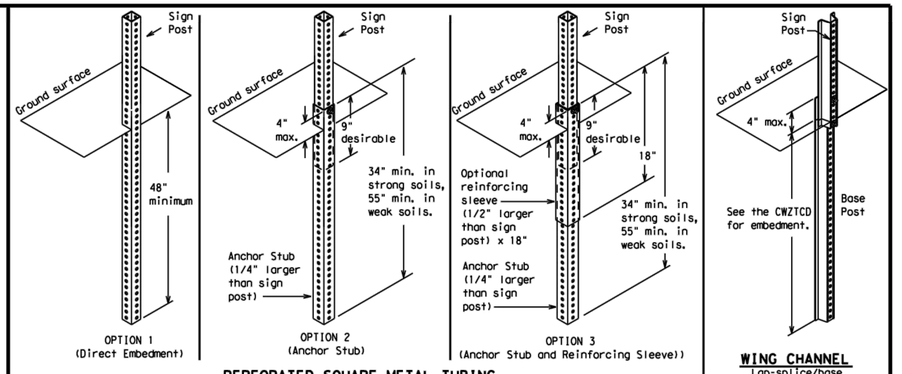


SKID MOUNTED WOOD SIGN SUPPORTS

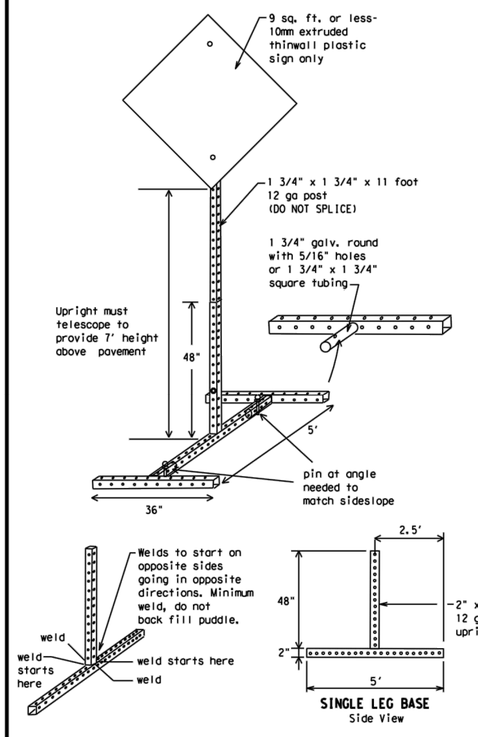
* LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS

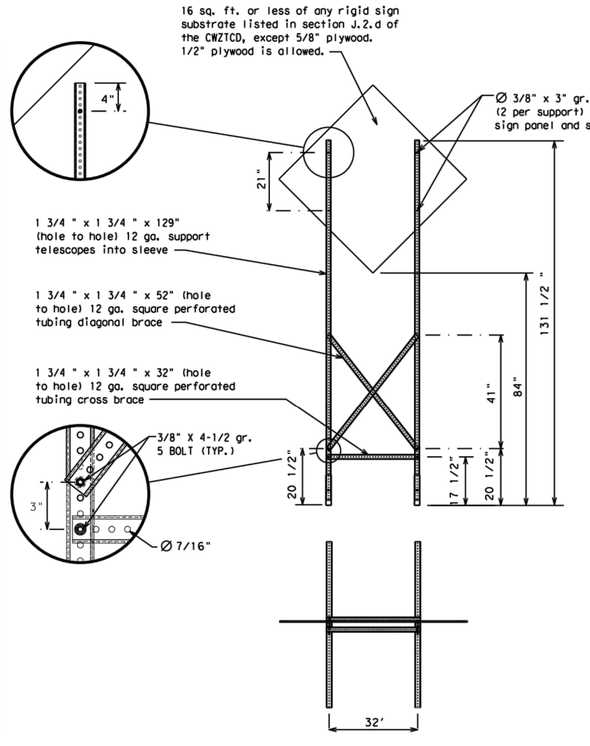


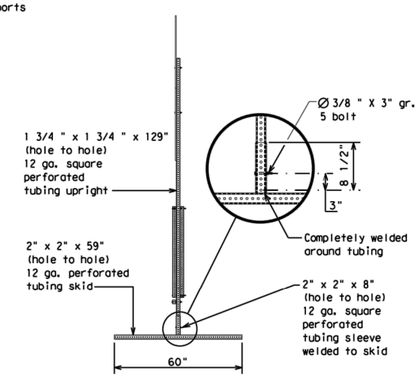
PERFORATED SQUARE METAL TUBING

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

DATE:
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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.

SHEET 5 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-21

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DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C050
SHEET	OF

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

PORTABLE CHANGEABLE MESSAGE SIGNS

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

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

* 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.

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Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-21

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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - BC(6)-21

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DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C051
SHEET	OF

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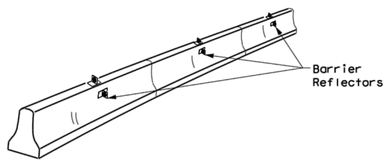
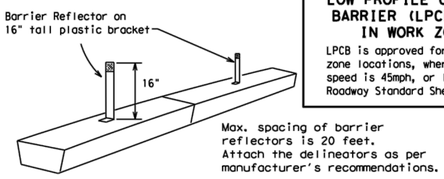
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost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



CONCRETE TRAFFIC BARRIER (CTB)

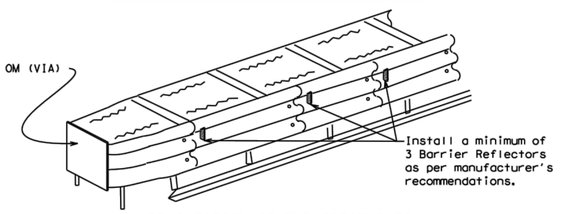
3. Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector.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



LOW PROFILE CONCRETE BARRIER (LPCB)

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.

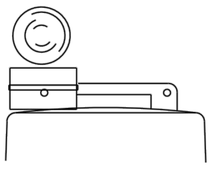


DELINEATION OF END TREATMENTS

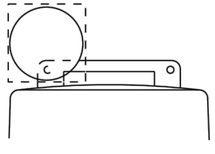
END TREATMENTS FOR CTB'S USED IN WORK ZONES

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.

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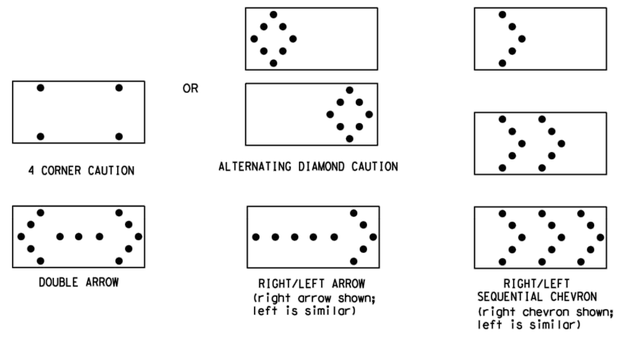
Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

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.

SHEET 7 OF 12

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
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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - BC(7)-21

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C052
SHEET	OF

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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:

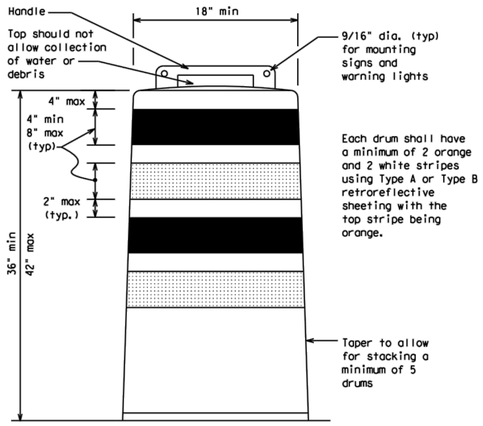
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

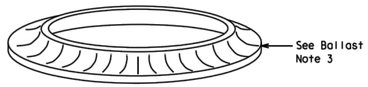
RETROREFLECTIVE SHEETING

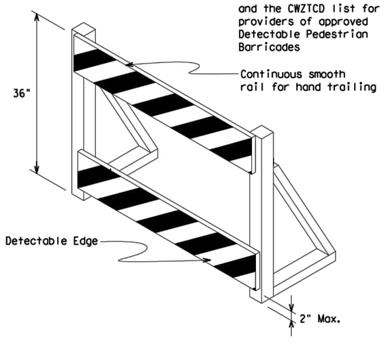
1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A or Type B reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall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

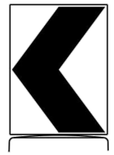




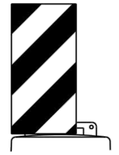


DETECTABLE PEDESTRIAN BARRICADES

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.

SHEET 8 OF 12

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
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RAIDER WAY ROAD IMPROVEMENTS

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CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C053
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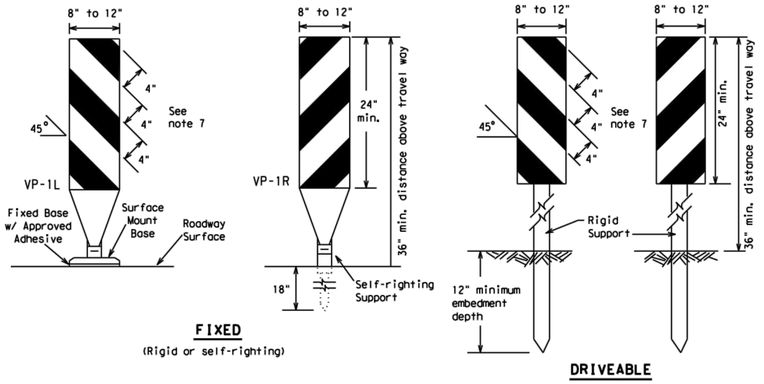
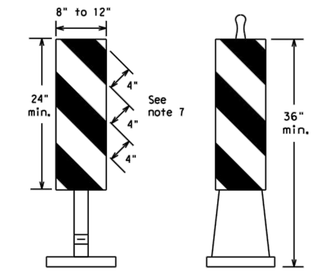


FIXED
(Rigid or self-righting)

DRIVEABLE

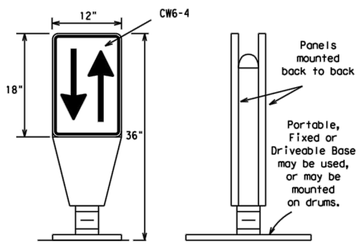


(Rigid or self-righting)

PORTABLE

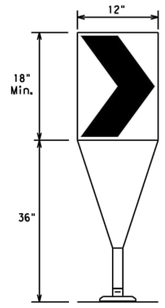
VERTICAL PANELS (VPs)

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.



OPPOSING TRAFFIC LANE DIVIDERS (OTLD)

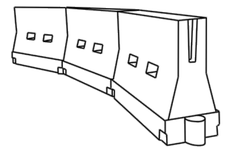
1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The 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.



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



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

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.

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

SHEET 9 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-21

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REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - BC(9)-21

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C054
SHEET	OF

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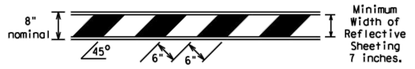
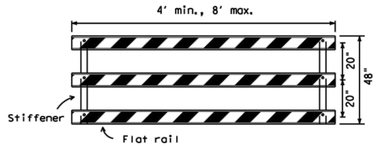
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



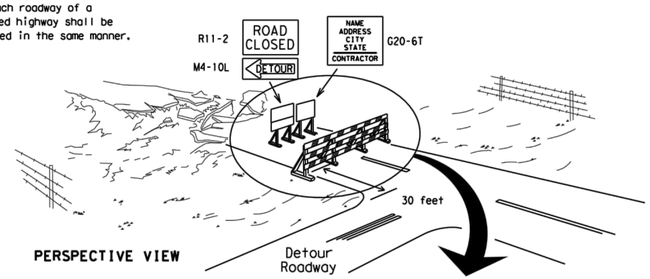
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

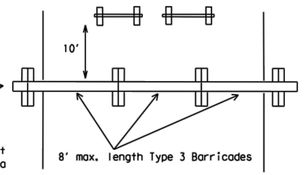
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

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



PERSPECTIVE VIEW

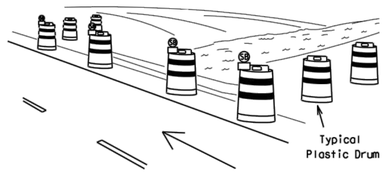
The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

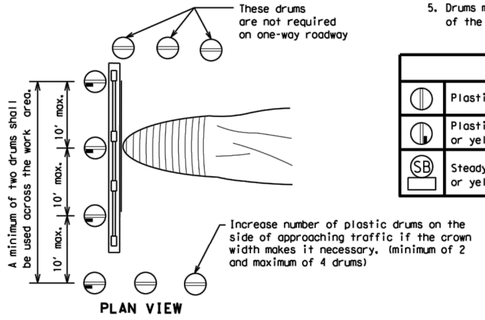
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

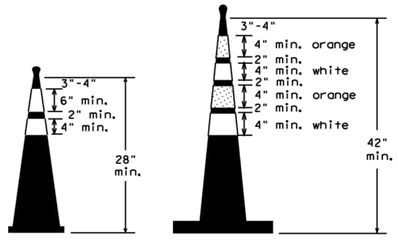
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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

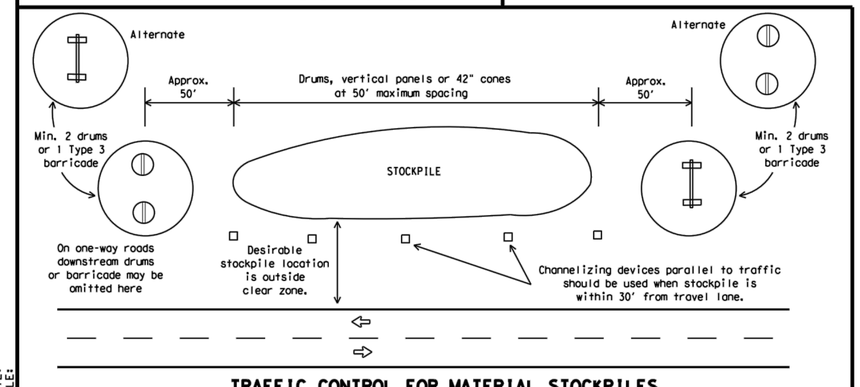


Two-Piece cones | One-Piece cones | Tubular Marker

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

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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
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RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - BC(10)-21

PM	RAM
DESIGNED	RAM
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PROJECT NO.	3-00585
DRAWING NO.	C055
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WORK ZONE PAVEMENT MARKINGS

GENERAL

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

RAISED PAVEMENT MARKERS

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

PREFABRICATED PAVEMENT MARKINGS

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

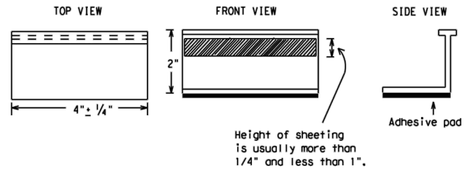
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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

REMOVAL OF PAVEMENT MARKINGS

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

Temporary Flexible-Reflective Roadway Marker Tabs



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

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

RAISED PAVEMENT MARKERS USED AS GUIDEMARKS

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

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

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

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

SHEET 11 OF 12

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-21

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11-02 8-14				

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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - BC(11)-21

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CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C056
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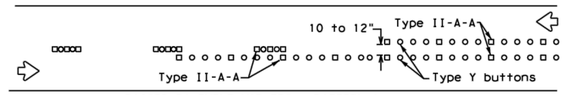
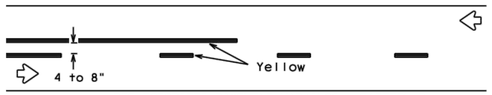
PAVEMENT MARKING PATTERNS



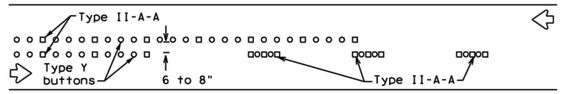
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



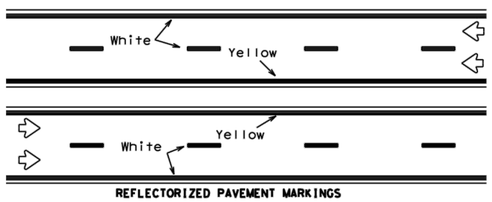
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



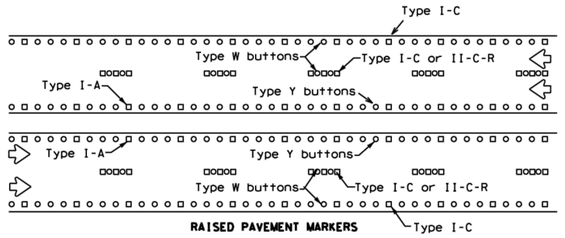
RAISED PAVEMENT MARKERS - PATTERN B

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



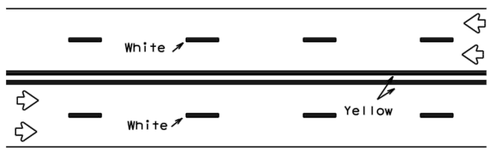
REFLECTORIZED PAVEMENT MARKINGS



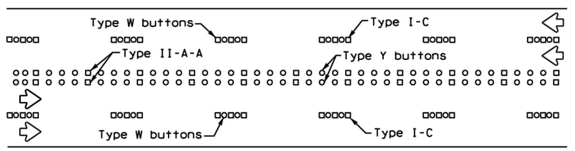
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



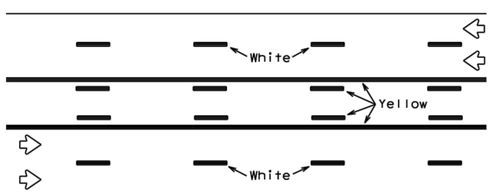
REFLECTORIZED PAVEMENT MARKINGS



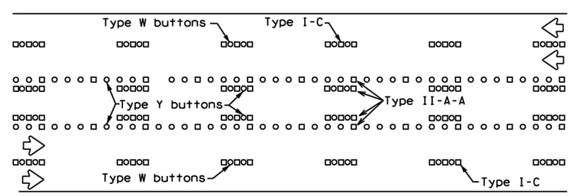
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

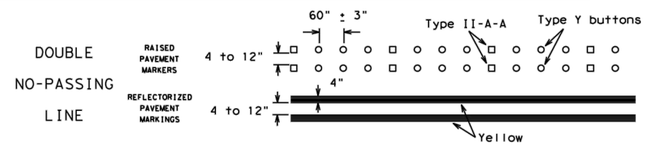
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

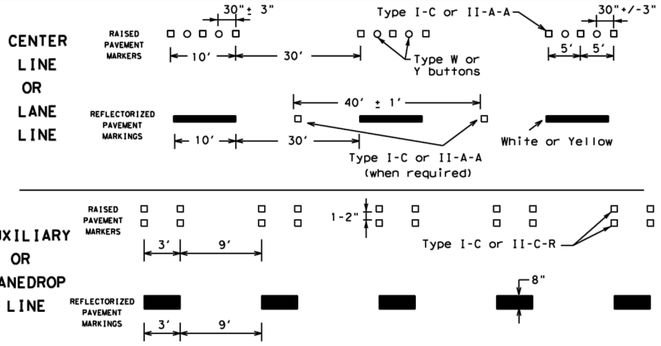
DATE:
FILE:

STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

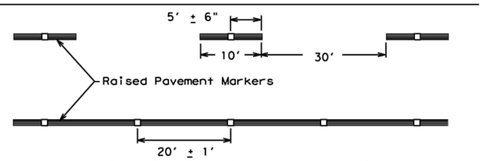


BROKEN LINES



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

SHEET 12 OF 12

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

Texas Department of Transportation — Traffic Safety Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

BC(12)-21

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RAIDER WAY ROAD IMPROVEMENTS

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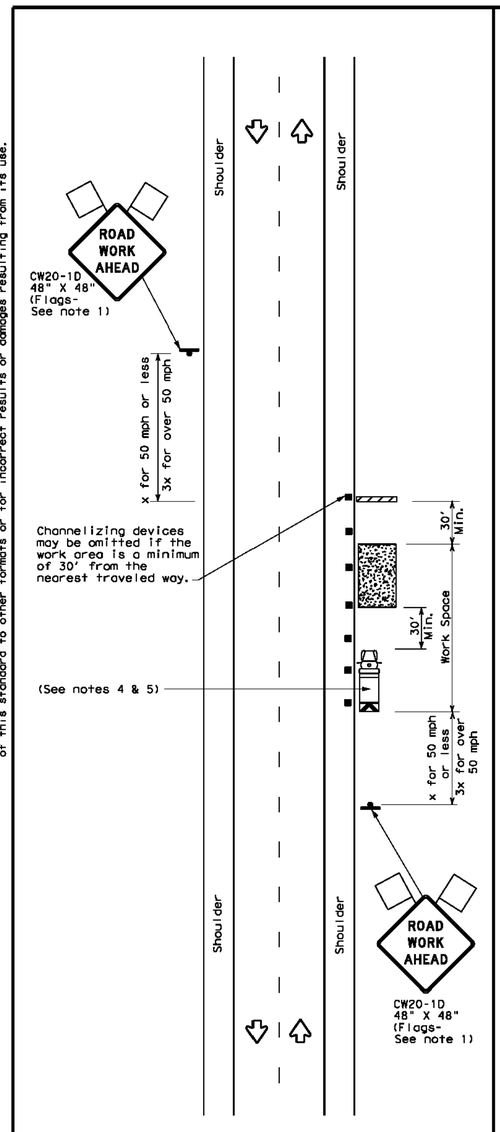
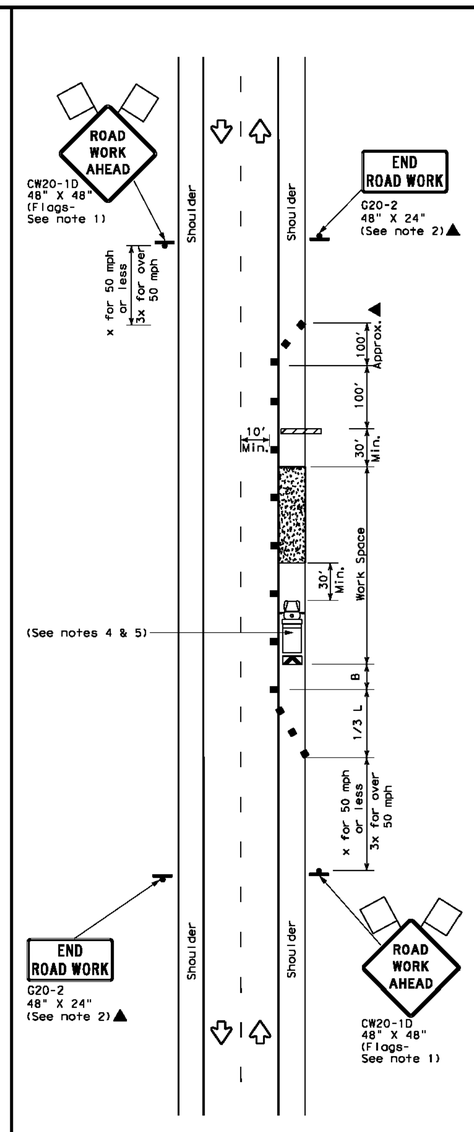


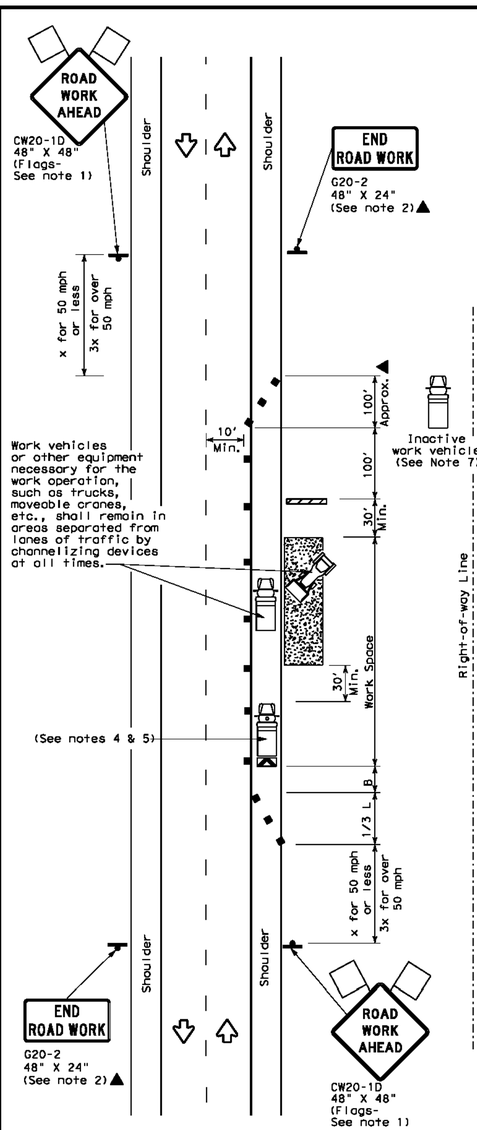
TCP (2-1a)

WORK SPACE NEAR SHOULDER
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER
Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER
Conventional Roads

DATE:
FILE:

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

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

* Conventional Roads Only

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

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

GENERAL NOTES

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

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

TCP(2-1)-18

FILE: tcp2-1-18.dgn	DN:	CK:	DW:	CK:
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REVISIONS 2-94 4-98 8-95 2-12 1-97 2-18	DIST	COUNTY		SHEET NO.

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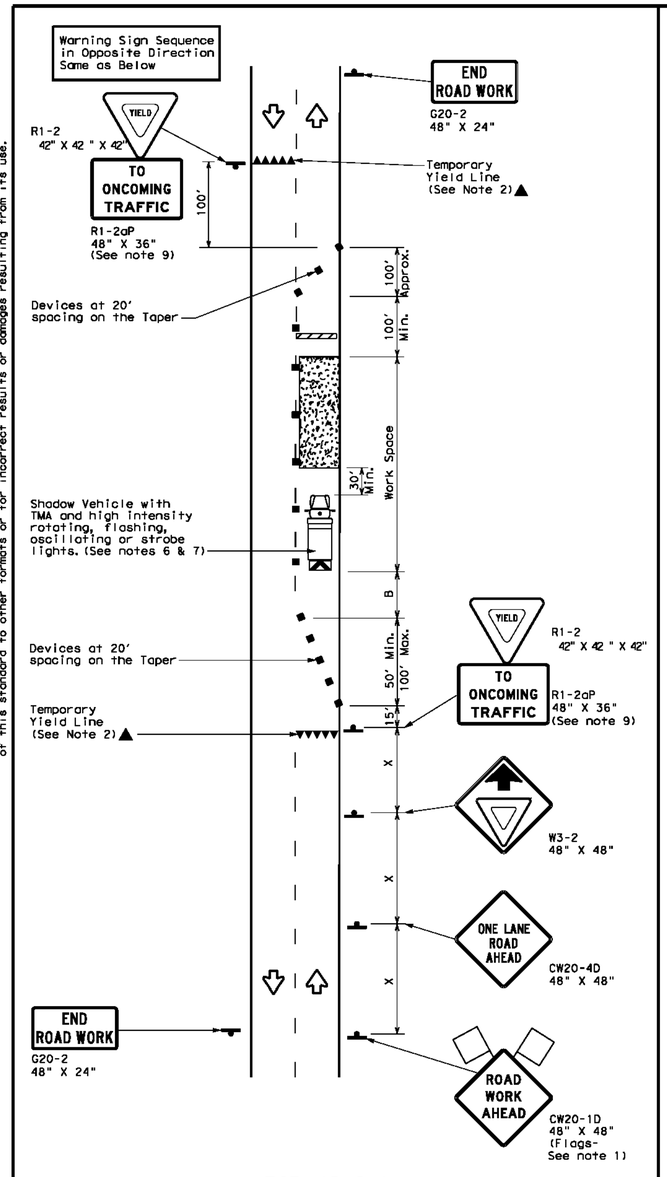
CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - TCP(2-1)-18

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C058
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - TCP(2-1)-18, 3/28/2023 9:49:46 AM, cpadron-martinez



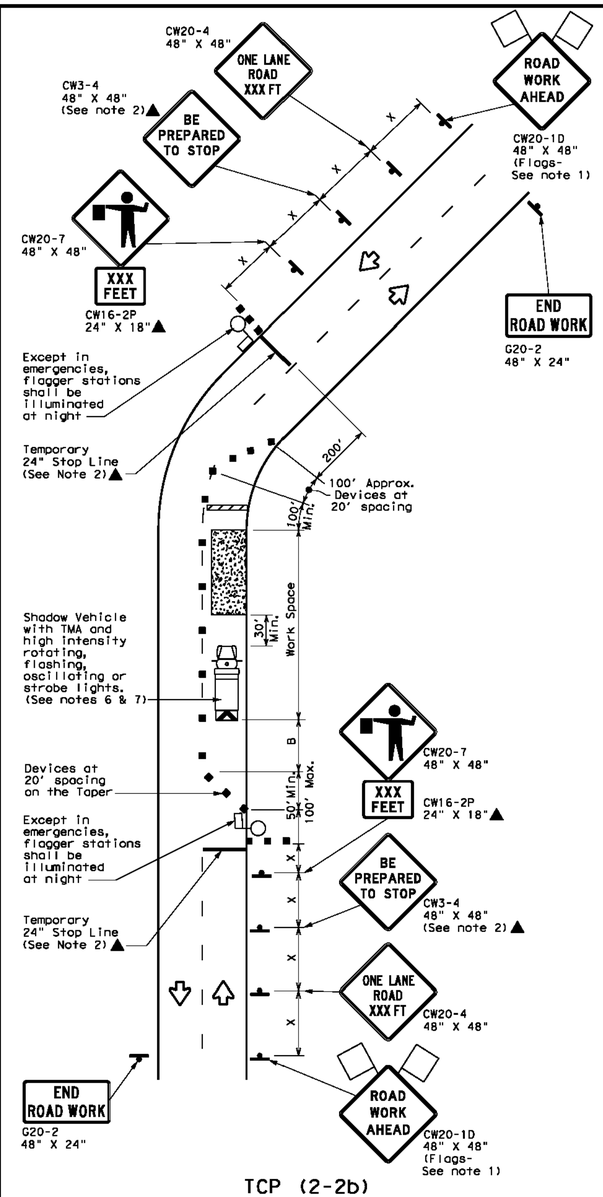
TCP (2-2a)

2-LANE ROADWAY WITHOUT PAVED SHOULDERS

ONE LANE TWO-WAY

CONTROL WITH YIELD SIGNS

(Less than 2000 ADT - See Note 9)



TCP (2-2b)

2-LANE ROADWAY WITHOUT PAVED SHOULDERS

ONE LANE TWO-WAY

CONTROL WITH FLAGGERS

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

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	L= WS²/60	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L=WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only

** Taper lengths have been rounded off.

L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

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

GENERAL NOTES

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

TCP (2-2a)

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

TCP (2-2b)

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

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(2-2)-18

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

1162

REV.	DESCRIPTION	DATE

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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - TCP(2-2)-18

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C059
SHEET	OF

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FILE:

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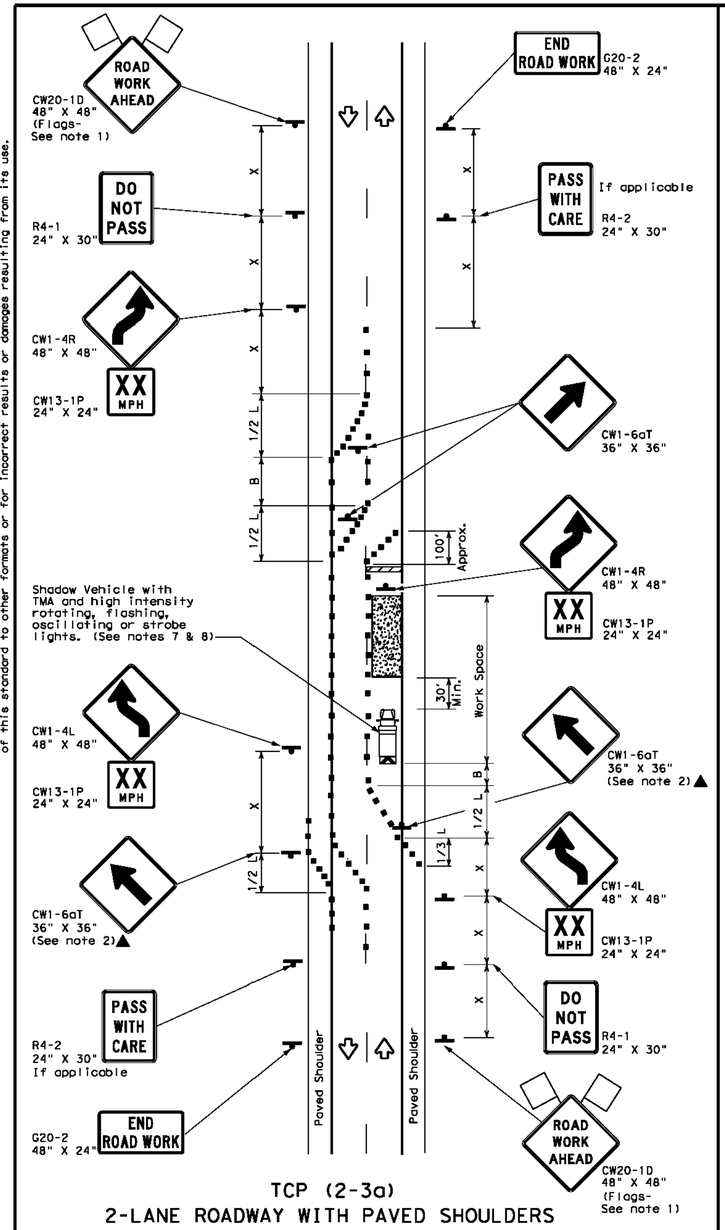
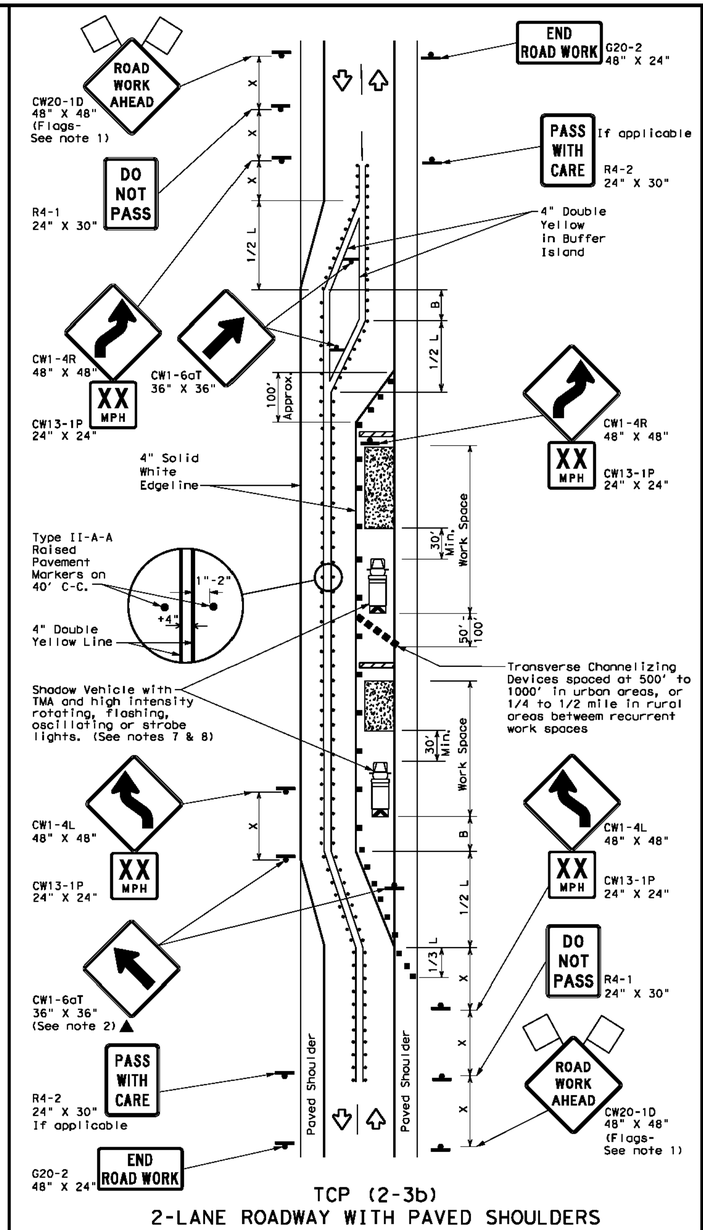


TCP (2-3a)
2-LANE ROADWAY WITH PAVED SHOULDERS
ONE LANE CLOSED
ADEQUATE FIELD OF VIEW



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

DATE:
FILE:

LEGEND			
	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board		Raised Pavement Markers Ty II-AA
	Sign		Traffic Flow
	Flag		Flagger

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

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

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
				TCP(2-3b) ONLY
			✓	✓

GENERAL NOTES

1. Flags attached to signs where shown, are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. When work space will be in place less than three days existing pavement markings may remain in place. Channelizing devices shall be used to separate traffic.
4. Flagger control should NOT be used unless roadway conditions or heavy traffic volume require additional emphasis to safely control traffic. Flagger should be positioned at end of traffic queue.
5. The R4-1 "DO NOT PASS," R4-2 " PASS WITH CARE" and construction regulatory speed zone signs may be installed within CW20-1D "ROAD WORK AHEAD" signs. Proper spacing of signs shall be maintained.
6. Conflicting pavement marking shall be removed for long term projects.
7. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted.
8. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect a wider work space.

TCP (2-3a)

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

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS

TCP(2-3)-18

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

1163 1

REV.	DESCRIPTION	DATE

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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - TCP(2-3)-18

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C060
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - TCP(2-3)-18, 3/28/2023 9:49:49 AM, cpadron-martinez

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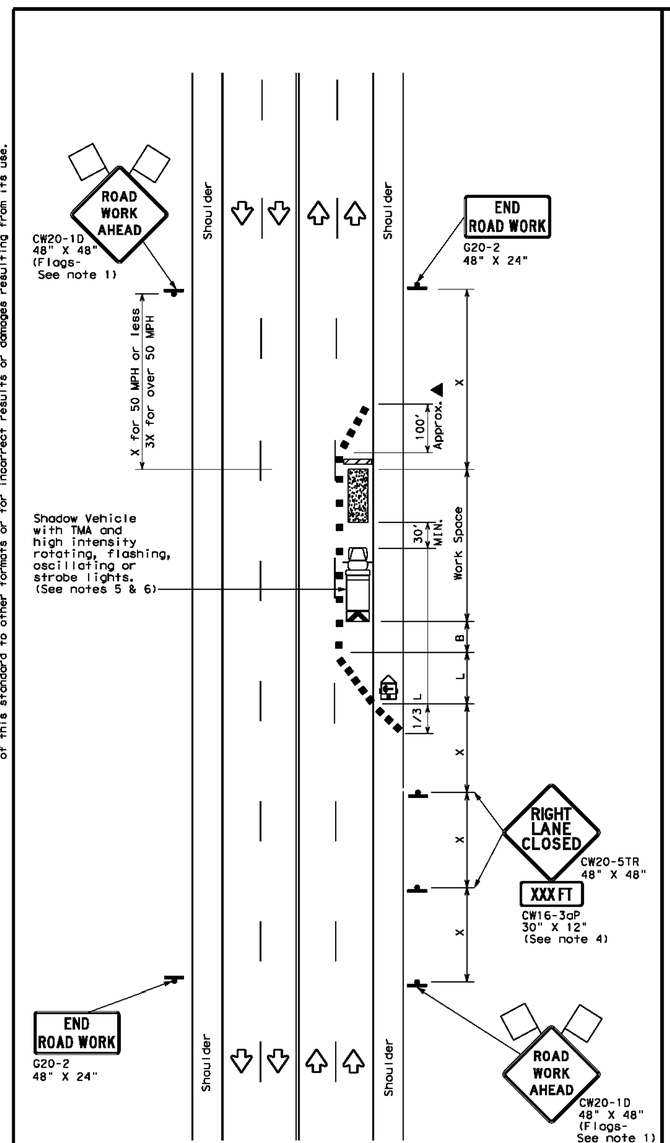
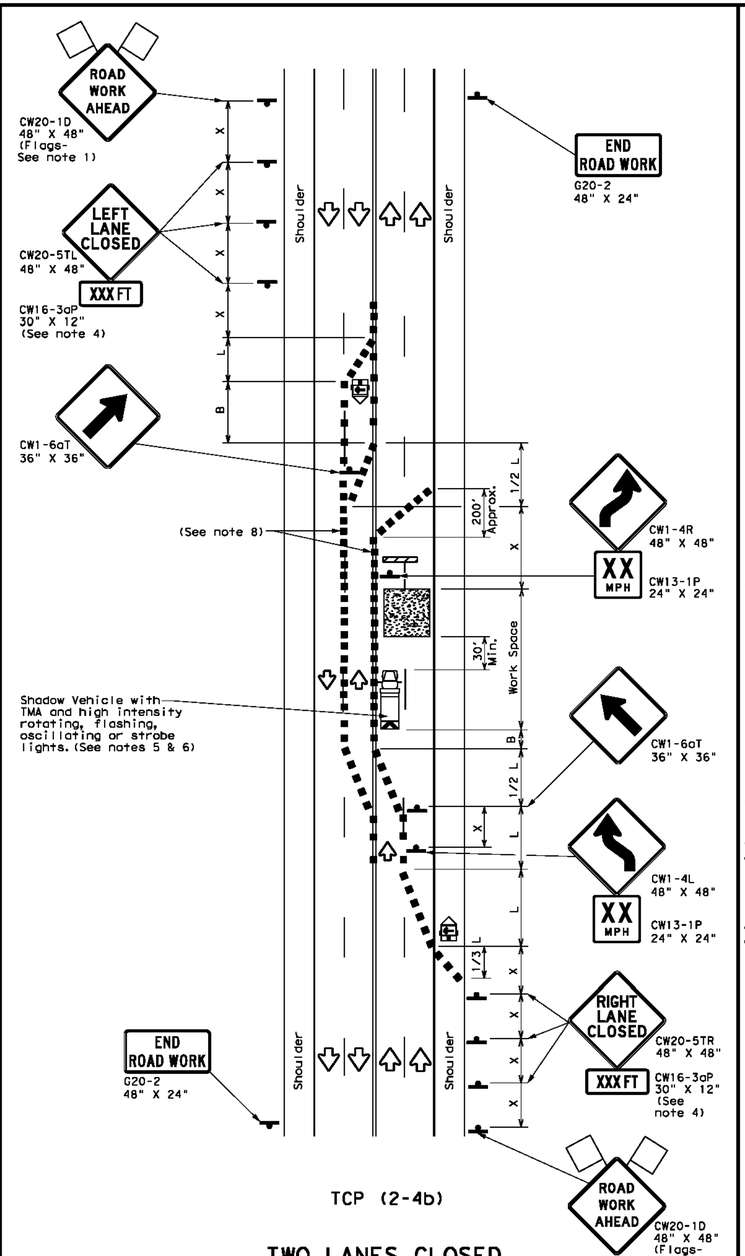


TCP (2-4a)

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:
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REVISIONS 8-95 3-03 1-97 2-12 4-98 2-18	DIST	COUNTY		SHEET NO.

164

REV.	DESCRIPTION	DATE

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RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - TCP(2-4)-18

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C061
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - TCP(2-4)-18, 3/28/2023 9:49:50 AM, cpatron-martinez

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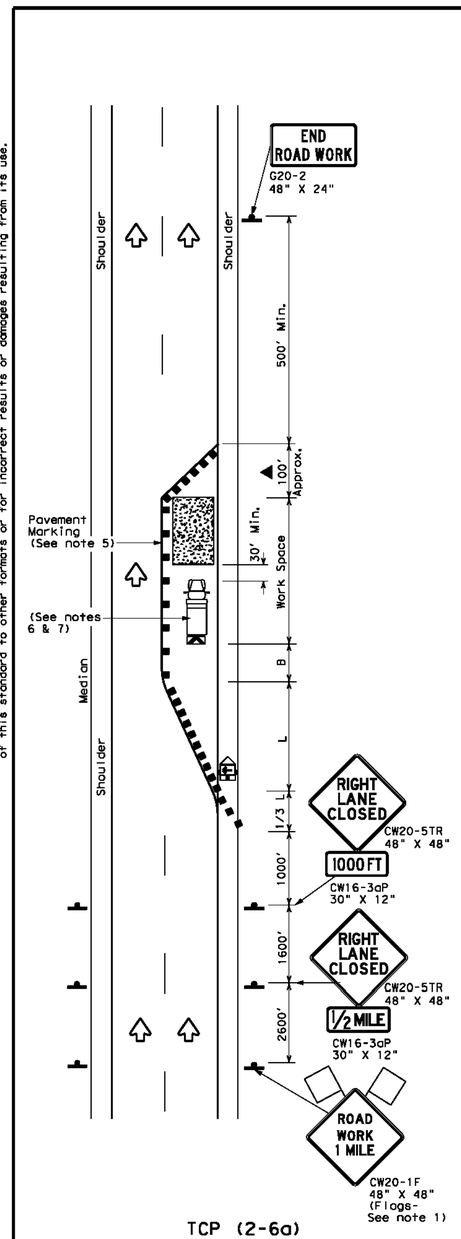
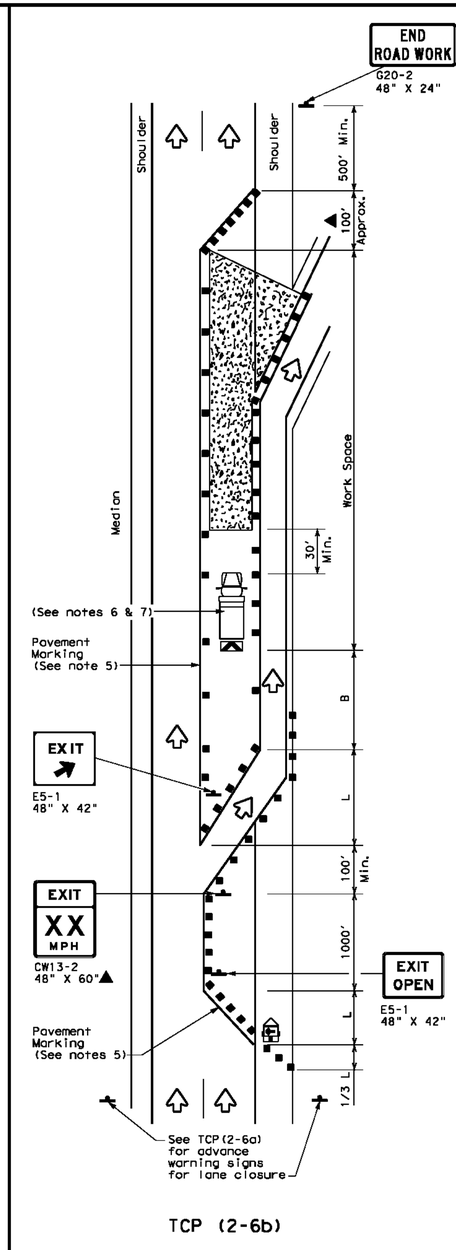


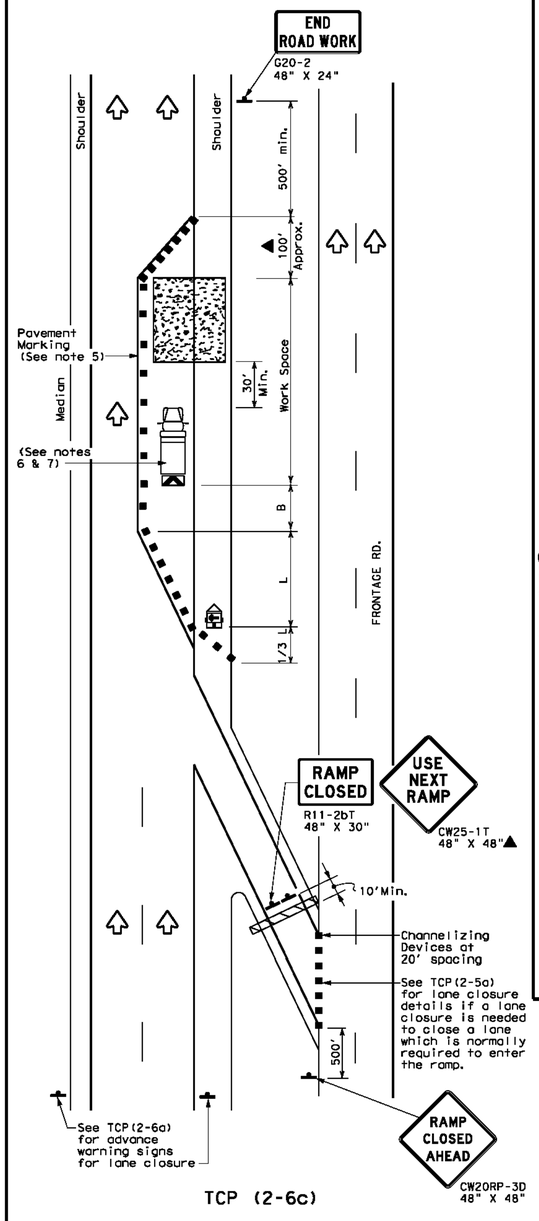
TCP (2-6a)

ONE LANE CLOSURE



TCP (2-6b)

LANE CLOSURE NEAR EXIT RAMPS



TCP (2-6c)

LANE CLOSURE NEAR ENTRANCE RAMPS

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. Channelizing devices used to close lanes may be supplemented with the Chevron Alignment Sign placed on every other channelizing device. Chevrons may be attached to plastic drums as per BC Standards.
4. Channelizing devices used along the work space or along tangent sections may be supplemented with vertical panels (VP) placed on everyother channelizing device. If night time conditions make it difficult to see at least two VPs, the VPs may be placed on each channelizing device.
5. The placement of pavement markings may be omitted on intermediate-term stationary work zones with the approval of the Engineer.
6. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. Shadow Vehicle with TMA and high intensity rotating, flashing, oscillating or strobe lights. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA.
7. 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.

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN LANE CLOSURES ON DIVIDED HIGHWAYS

TCP(2-6)-18

FILE: tcp2-6-18.dgn	DN:	CK:	DW:	CK:
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REVISIONS				
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 2-12				
1-97 2-18				

1661

REV.	DESCRIPTION	DATE

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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - TCP(2-6)-18

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C062
SHEET	OF

DATE:
FILE:

G:\PROJECTS\3-005855\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - TCP(2-6)-18, 3/28/2023 9:49:51 AM, cpadron-martinez

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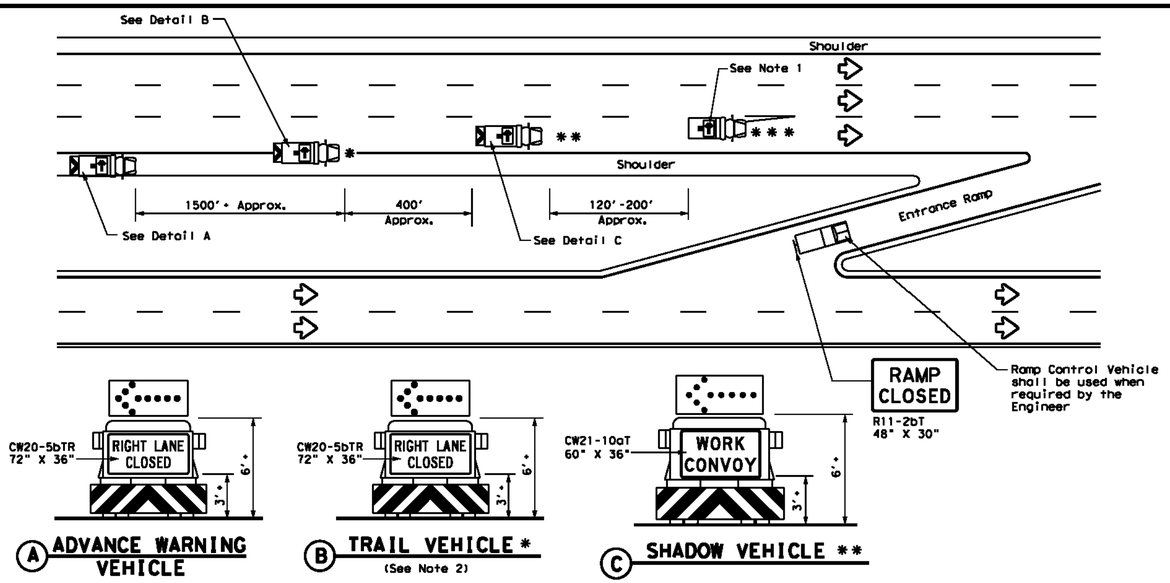
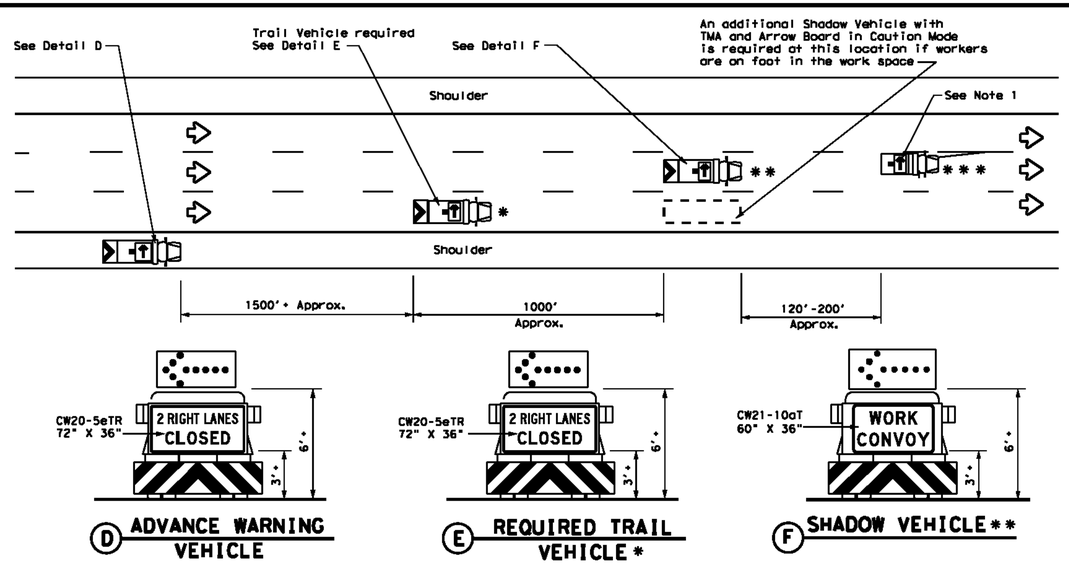


RIGHT LANE CLOSURE ON DIVIDED HIGHWAY - TCP(3-2a)



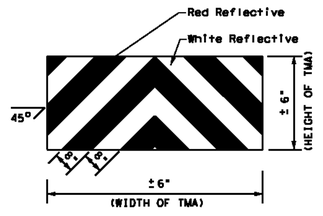
INTERIOR LANE CLOSURE ON MULTI-LANE DIVIDED HIGHWAY - TCP(3-2b)

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

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

GENERAL NOTES

1. ADVANCE WARNING, TRAIL and SHADOW vehicles shall be equipped with Type B or Type C flashing arrow boards as per the Barricade and Construction (BC) standards. Arrow boards on WORK vehicles will be optional based on the type of work being performed. The arrow boards shall be operated from inside the vehicle.
2. For TCP(3-2a) the Engineer will determine if the TRAIL VEHICLE is required based on prevailing roadway conditions, traffic volume, and sight distance restrictions. All other vehicles shown for both TCP(3-2a) and TCP(3-2b) are required.
3. The use of amber high intensity rotating, flashing, oscillating, or strobe lights on vehicles are required. Blue high intensity rotating, flashing, oscillating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
4. The use of truck mounted attenuators (TMA) on the ADVANCE WARNING, SHADOW, and TRAIL vehicles are required.
5. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DMS 8300, Type A.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE may vary according to terrain, work activity and other factors.
9. Standard 48" X 48" diamond shaped warning signs with the same message as those shown may be used where adequate mounting space exists.
10. The signs shown should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or a truck mounted changeable message sign (TMCMS) with a minimum character height of 12", and displaying the same legend may be substituted for these signs. An appropriate directional arrow display, simulating the size and legibility of the flashing arrow board, must be used in the second phase of the PCMS/TMCMS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
11. Standard diamond shape versions of the CW20-5 series signs may be used as an option if the rectangular signs shown are not available.
12. The principles on this sheet may be used to close lanes from the left side of the roadway considering the number of lanes, shoulder width, sight distance, and ramp frequency.
13. Signs and flashing arrow board modes shall be appropriately altered when implementing left lane closures or interior closures which close the left lanes.
14. The Advance Warning Vehicle may straddle the edgeline when shoulder width makes it necessary.



STRIPING FOR TMA

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS DIVIDED HIGHWAYS

TCP(3-2)-13

FILE: tcp3-2.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
REVISIONS				
2-94 4-98	DIST	COUNTY		SHEET NO.
8-95 7-13				
1-97				
176				

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RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - TCP(3-2)-18

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C063
SHEET	OF

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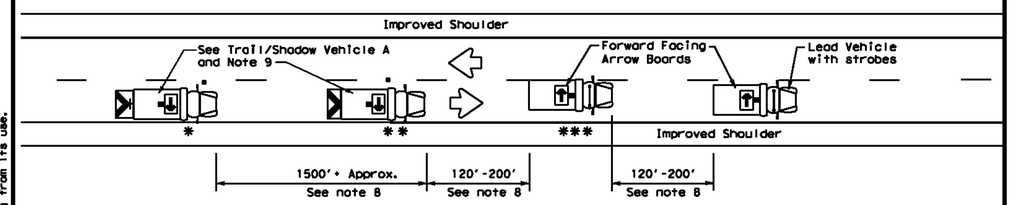
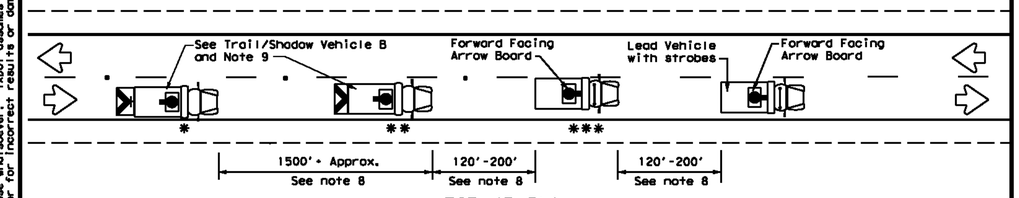


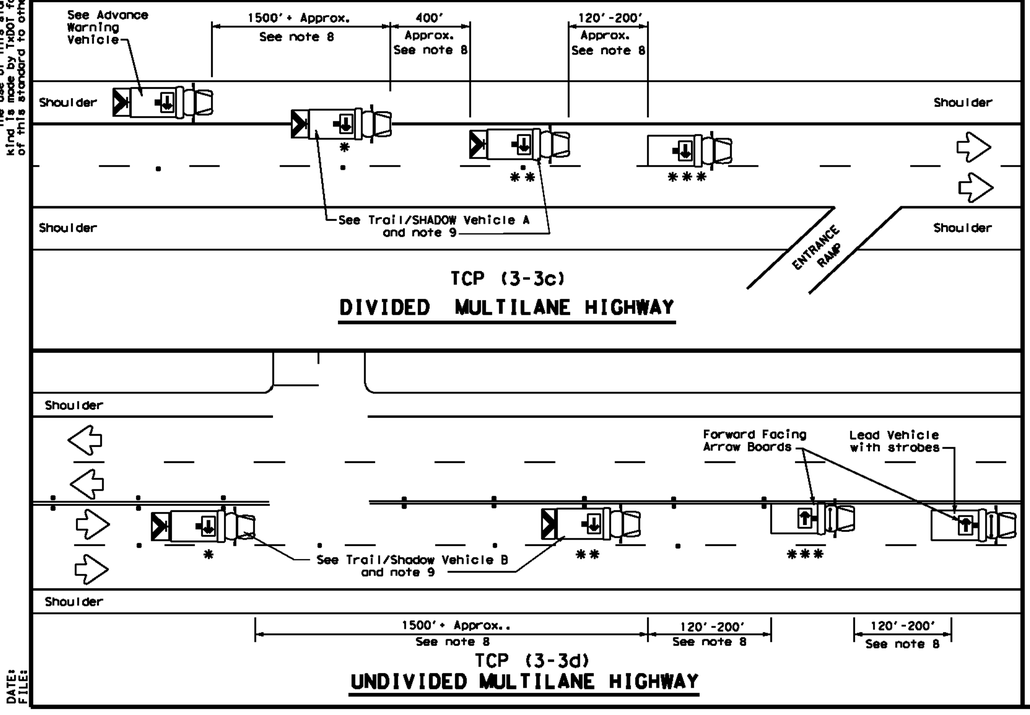
TCP (3-3a)

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



TCP (3-3b)

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

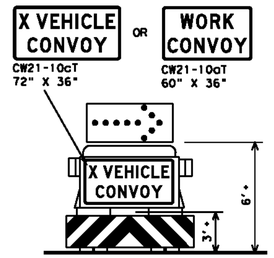


TCP (3-3c)

DIVIDED MULTILANE HIGHWAY

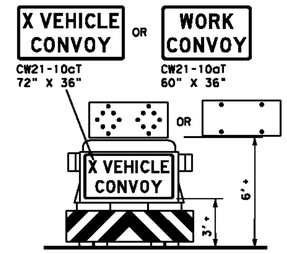
TCP (3-3d)

UNDIVIDED MULTILANE HIGHWAY



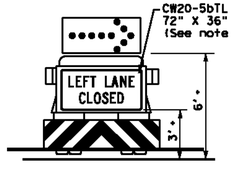
TRAIL/SHADOW VEHICLE A

with RIGHT Directional display
Flashing Arrow Board

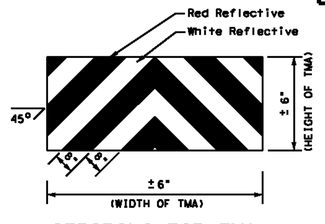


TRAIL/SHADOW VEHICLE B

with Flashing Arrow Board
in Caution Mode



ADVANCE WARNING VEHICLE



STRIPING FOR TMA

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

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

GENERAL NOTES

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

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC CONTROL PLAN MOBILE OPERATIONS RAISED PAVEMENT MARKER INSTALLATION/ REMOVAL

TCP(3-3)-14

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1-97 7-14					

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TXDOT DETAILS - TCP(3-3)-18

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C064
SHEET	OF

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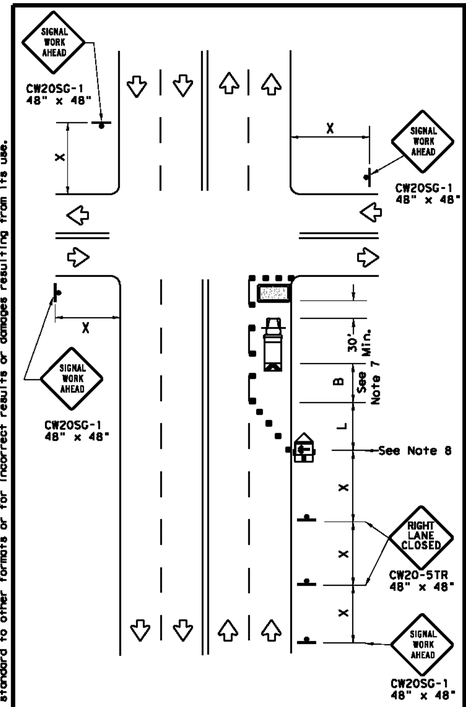
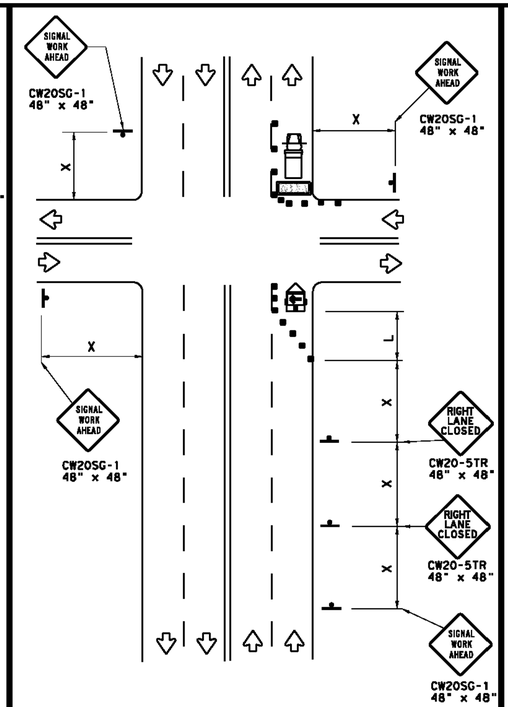


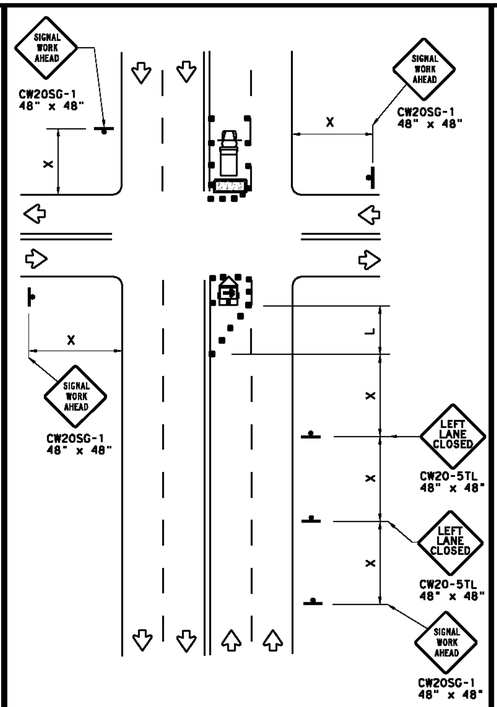
NEAR SIDE LANE CLOSURE

SHORT DURATION OR SHORT TERM STATIONARY



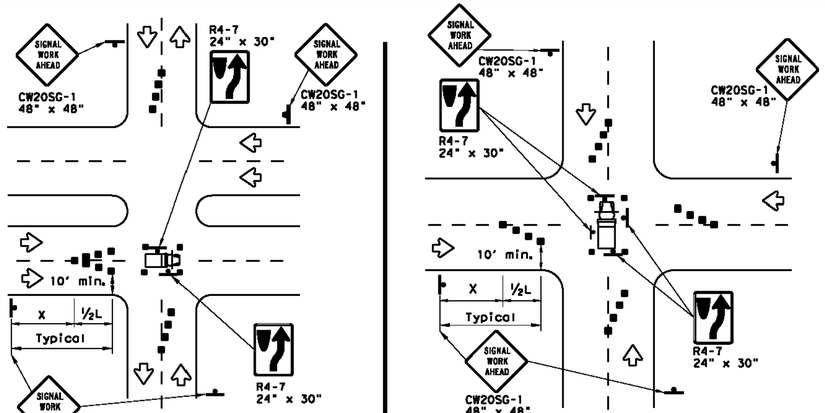
FAR SIDE RIGHT LANE CLOSURE

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		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.

SHEET 1 OF 2

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
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TXDOT DETAILS - WZ(BTS-1)-13

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C065
SHEET	OF

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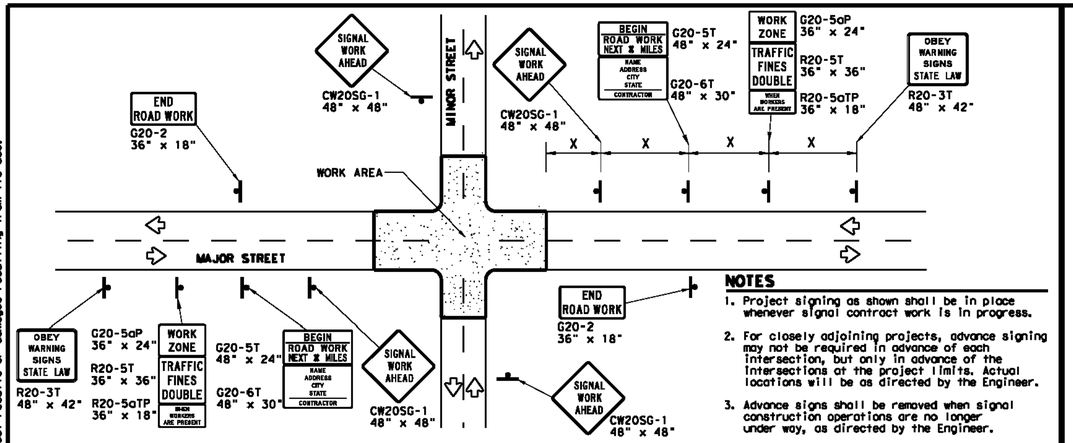


TYPICAL ADVANCE SIGNAL PROJECT SIGNING

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

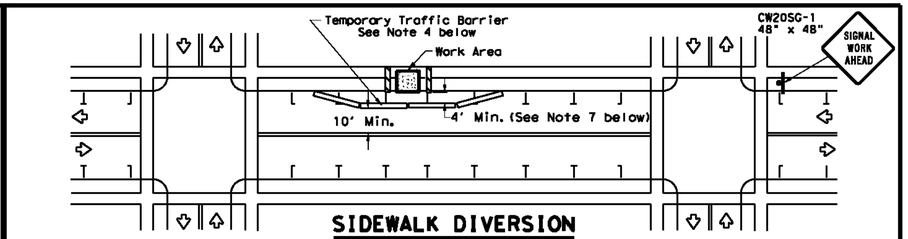
1. Weights used to keep signs from turning over should be sandbags filled with dry, cohesionless material.
2. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight.
3. Rock, concrete, iron, steel or other solid objects will not be permitted for use as sign support 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

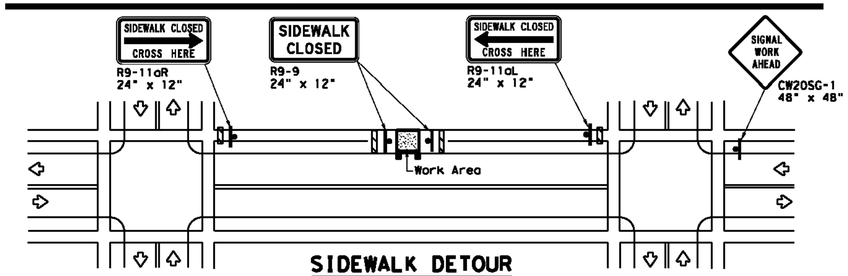
DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
FLEXIBLE ROLL-UP REFLECTIVE SIGNS	DMS-8310

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

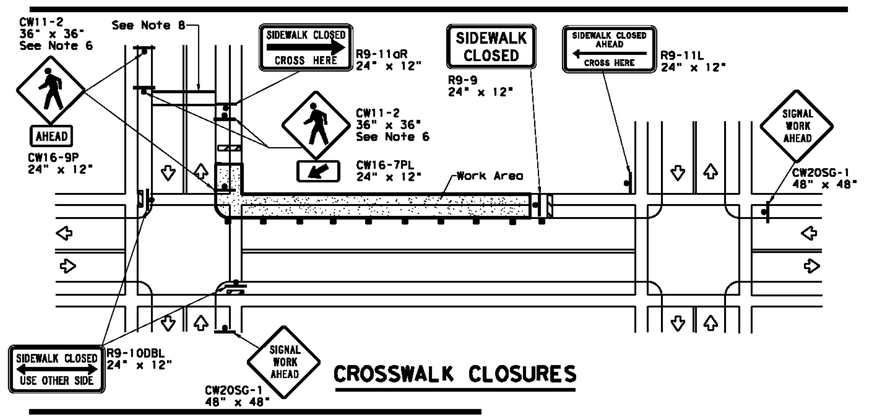
Only pre-qualified products shall be used. A copy of the "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found at the following web address:
http://www.txdot.gov/txdot_library/publications/construction.htm



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.

SHEET 2 OF 2

Texas Department of Transportation — Traffic Operations Division Standard

TRAFFIC SIGNAL WORK BARRICADES AND SIGNS

WZ(BTS-2)-13

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2-98 10-99 7-13	DIST	COUNTY		SHEET NO.
4-98 3-03				

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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - WZ(BTS-2)-13

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C066
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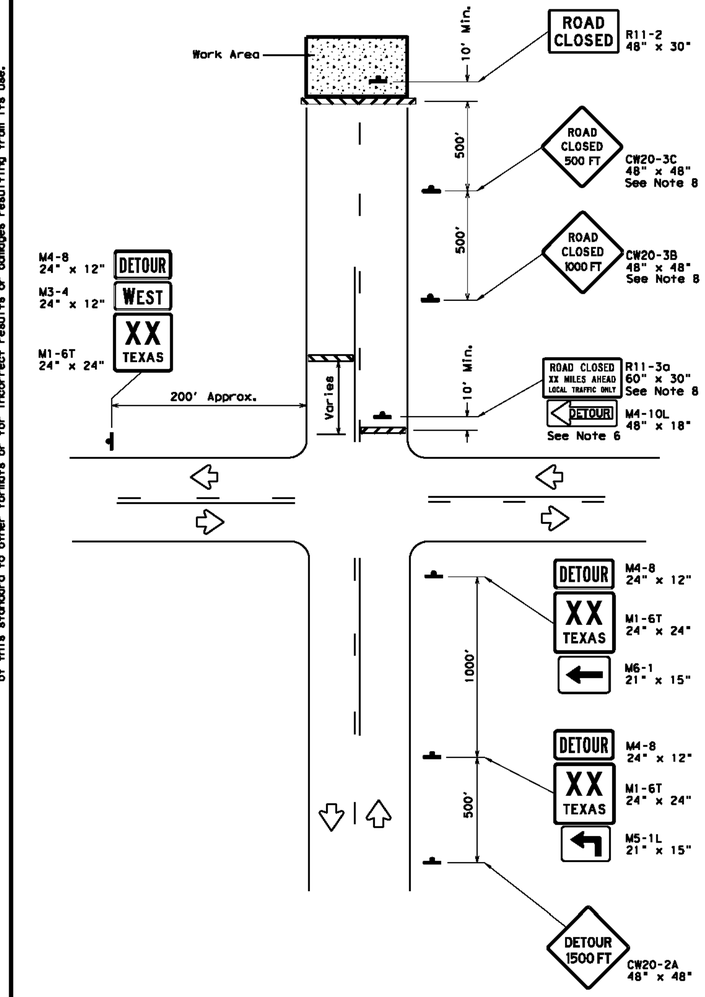
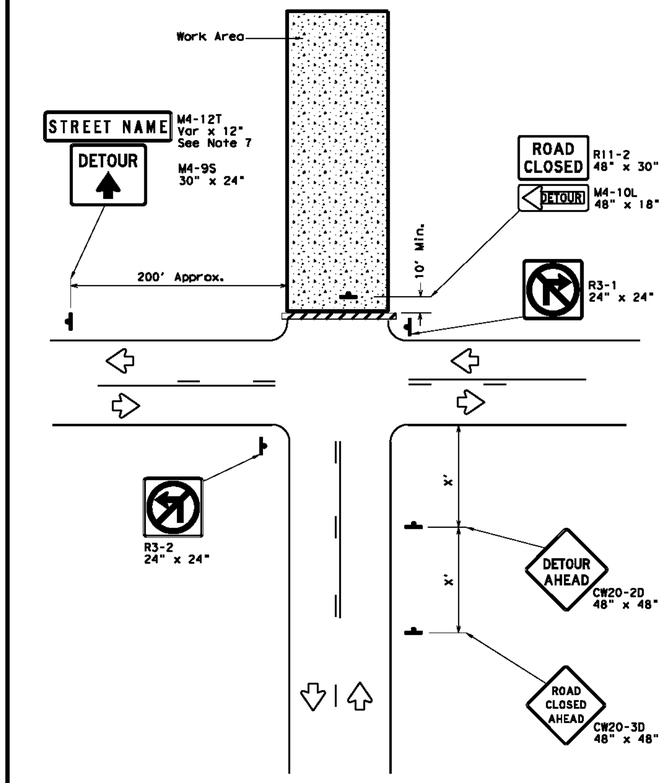


ROAD CLOSURE BEYOND THE INTERSECTION

Signing for a Numbered Route with an Off-Site Detour



ROAD CLOSURE AT THE INTERSECTION

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

LEGEND	
	Type 3 Barricade
	Sign

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

* Conventional Roads Only

GENERAL NOTES

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

Texas Department of Transportation | *Traffic Operations Division Standard*

WORK ZONE ROAD CLOSURE DETAILS

WZ(RCD)-13

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TXDOT DETAILS - WZ(RCD)-13

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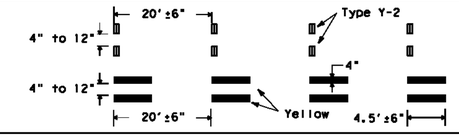
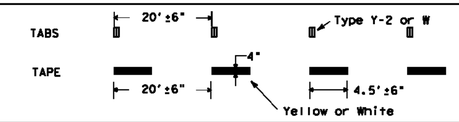
WORK ZONE SHORT TERM PAVEMENT MARKINGS DETAILS

SOLID LINES

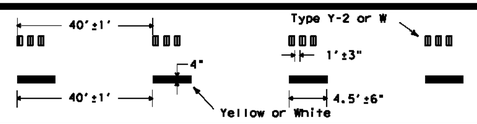
DOUBLE NO-PASSING LINE



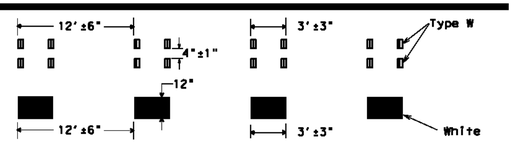
SINGLE NO-PASSING LINE or CHANNELIZATION LINE



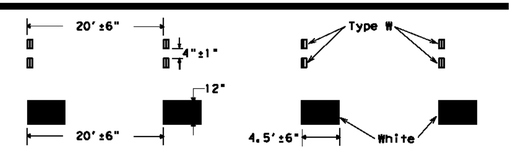
BROKEN LINES
(FOR CENTER LINE OR LANE LINE)



WIDE DOTTED LINES
(FOR LANE DROP LINES)



WIDE GORE MARKINGS



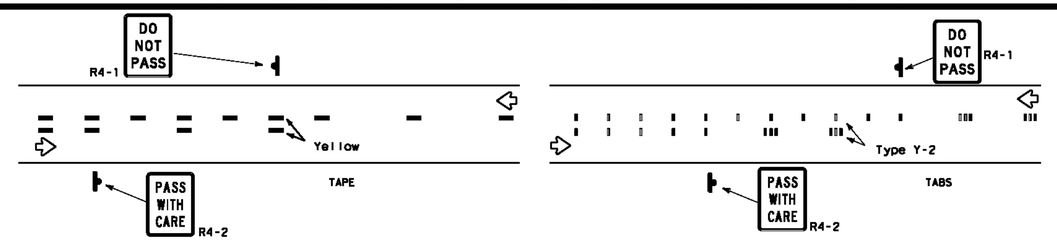
NOTES:

1. Short term pavement markings may be prefabricated markings (stick down tape) or temporary flexible-reflective roadway marker tabs unless otherwise specified elsewhere in plans.
2. Short term pavement markings shall NOT be used to simulate edge lines.
3. Dimensions indicated on this sheet are typical and approximate. Variations in size and height may occur between markers or devices made by manufacturers, by as much as 1/4 inch, unless otherwise noted.
4. Temporary flexible-reflective roadway marker tabs will require normal maintenance replacement when used on roadways with an ADT per lane of up to 7500 vehicles with no more than 10% truck mix. When roadways exceed these values, additional maintenance replacement of devices should be planned.
5. No segment of roadway open to traffic shall remain without permanent pavement markings for a period greater than 14 calendar days. The Contractor will be responsible for maintaining short term pavement markings until permanent pavement markings are in place. When the Contractor is responsible for placement of permanent pavement markings, no segment of roadway shall remain without permanent pavement markings for a period greater than 14 calendar days unless weather conditions prohibit placement. Permanent pavement markings shall be placed as soon as weather permits.
6. For two lane, two-way roadways, DO NOT PASS signs shall be erected to mark the beginning of sections where passing is prohibited and PASS WITH CARE signs shall be erected to mark the beginning of sections where passing is permitted. Signs shall be in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and may be used to indicate the limits of no-passing zones for up to 14 calendar days. Permanent pavement markings should then be placed.
7. For low volume two lane, two-way roadways of 4000 ADT or less, no-passing lines may be omitted when approved by the Engineer. DO NOT PASS and PASS WITH CARE signs shall be erected (see note 6).
8. For exit gores where a lane is being dropped place wide gore markings or retroreflective channelizing devices to guide motorist through the exit. If channelizing devices are to be used it should be noted elsewhere in the plans. One piece cones are not allowed for this purpose.

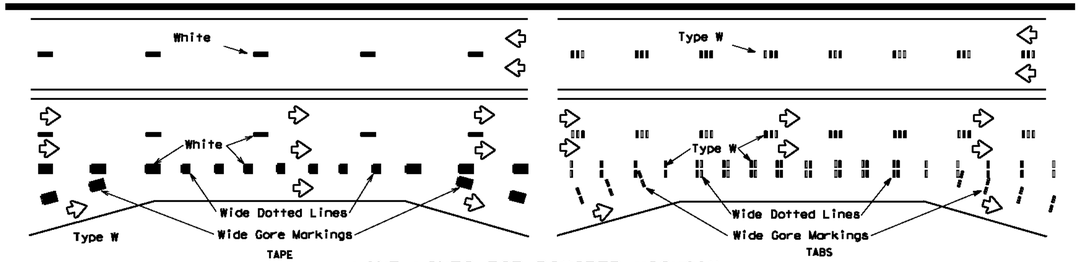
TEMPORARY FLEXIBLE, REFLECTIVE ROADWAY MARKER TABS (TABS)

1. Temporary flexible-reflective roadway marker tabs detailed on this sheet will be designated Type Y-2 (two amber reflective surfaces with yellow body); Type Y (one amber reflective surface with yellow body); and Type W (one white or silver reflective surface with white body). Additional details may be found on BC(11).
2. Tabs shall meet requirements of Departmental Material Specification DMS-8242.
3. When dry, tabs shall be visible for a minimum distance of 200 feet during normal daylight hours and when illuminated by automobile low-beam head light at night, unless sight distance is restricted by roadway geometrics.
4. No two consecutive tabs nor four tabs per 1000 feet of line shall be missing or fail to meet the visual performance requirements of Note 3.

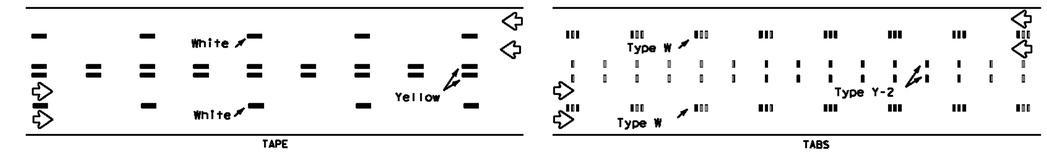
WORK ZONE SHORT TERM PAVEMENT MARKINGS PATTERNS



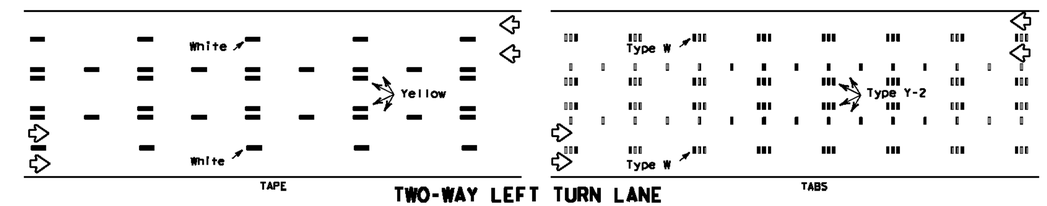
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



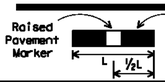
LANE LINES FOR DIVIDED HIGHWAY



LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



TWO-WAY LEFT TURN LANE



If raised pavement markers are used to supplement REMOVABLE short term markings, the markers shall be applied to the top of the tape at the approximate mid length of the tape. This allows an easier removal of raised markers and tape.

PREFABRICATED PAVEMENT MARKINGS

1. Temporary Removable Prefabricated Pavement Markings shall meet the requirements of DMS-8241.
2. Non-removable Prefabricated Pavement Markings shall meet the requirements of either DMS-8240 "Permanent Prefabricated Pavement Markings" or DMS-8243 "Temporary Construction-Grade Prefabricated Pavement Markings."

RAISED PAVEMENT MARKERS

1. All raised pavement markers used for work zone markings shall meet the requirements of Item 672, "RAISED PAVEMENT MARKERS" and DMS-4200.

DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS) & MATERIAL PRODUCER LISTS (MPL)

1. DMSs referenced above can be found along with embedded links to their respective MPLs at the following website:
   http://www.txdot.gov/business/contractors_consultants/material_specifications/default.htm

Texas Department of Transportation

Traffic Operations Division Standard

WORK ZONE SHORT TERM PAVEMENT MARKINGS

WZ(STPM)-13

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1-97	DIST	COUNTY		SHEET NO.
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RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - WZ(STPM)-13

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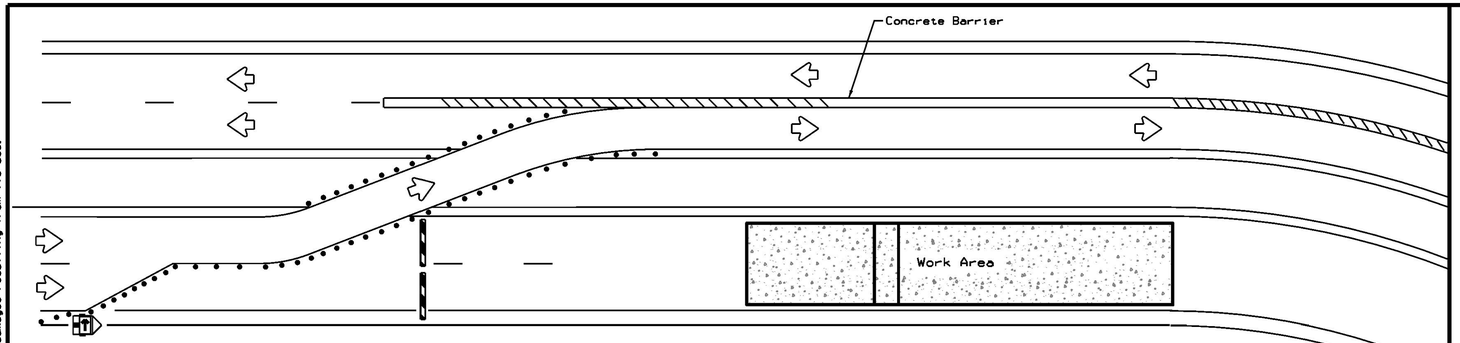


BARRIER DELINEATION WITH MODULAR GLARE SCREENS

NOTES:

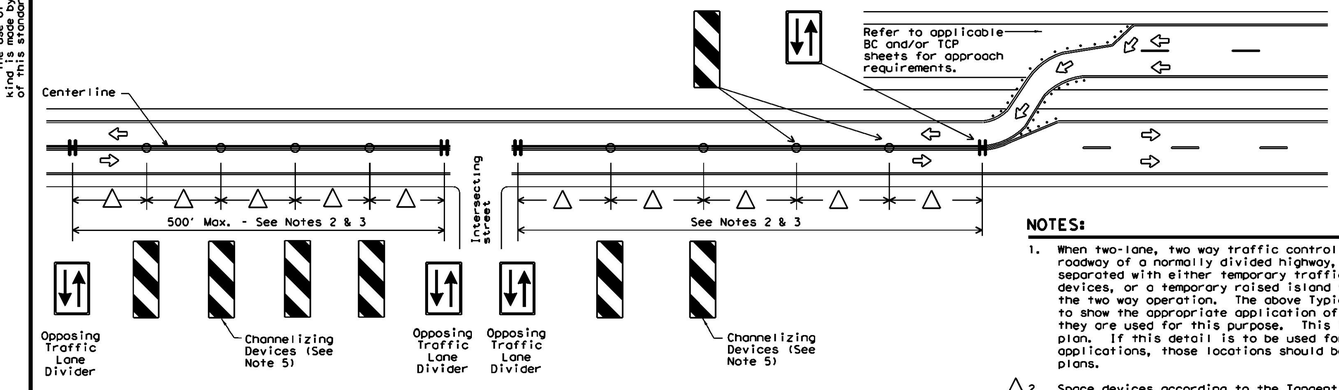
1. Length of Safety Glare screen will be specified elsewhere in the plans.
2. The cumulative nominal length of the modular safety glare screen units shall equal the length of the individual sections of temporary concrete traffic barrier on which they are installed so the joint between barrier sections will not be spanned by any one safety glare screen unit.
3. Screen Panel/blades will be designed such that reflective sheeting conforming with Departmental Material Specification DMS-8300, Sign Face Materials, Type B or C Yellow, minimum size of 2 inches by 12 inches can be attached to the edge of the panel/blade. The sheeting shall be attached to one glare screen panel/blade per section of concrete barrier not to exceed a spacing of 30 feet. Barrier reflectors are not necessary when panel/blades are installed with reflective sheeting as described.
4. Payment for these devices will be under statewide Special Specification "Modular Glare Screens for Headlight Barrier."
5. This detail is only intended to show types of locations where Glare Screens would be appropriate. Required signing and other devices shall be as shown elsewhere in the plans.

LEGEND	
	Type 3 Barricade
• • •	Channelizing Devices
	Trailer Mounted Flashing Arrow Board
	Sign
\\\\	Safety glare screen

DEPARTMENTAL MATERIAL SPECIFICATIONS	
SIGN FACE MATERIALS	DMS-8300
DELINEATORS AND OBJECT MARKERS	DMS-8600
MODULAR GLARE SCREENS FOR HEADLIGHT BARRIER	DMS-8610

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/business/resources/producer-list.html



VERTICAL PANELS & OPPOSING TRAFFIC LANE DIVIDERS (OTLD) SEPARATING TWO-WAY TRAFFIC ON NORMALLY DIVIDED HIGHWAYS

NOTES:

1. When two-lane, two way traffic control must be maintained on one roadway of a normally divided highway, opposing traffic shall be separated with either temporary traffic barriers, channelizing devices, or a temporary raised island throughout the length of the two way operation. The above Typical Application is intended to show the appropriate application of channelizing devices when they are used for this purpose. This is not a traffic control plan. If this detail is to be used for other types of roads or applications, those locations should be stated elsewhere in the plans.
2. △ Space devices according to the Tangent Spacing shown on the Device Spacing table on BC(9) but not exceeding 100'.
3. Every fifth device should be an OTLD except when spaced closer to accommodate an intersection. An OTLD should be the first device on each side of intersecting streets or roads.
4. Locations where surface mount bases with adhesives or self-righting devices will be required in order to maintain them in their proper position should be noted elsewhere in the plans.
5. Channelizing devices are to be vertical panels, 42" cones or tubular markers that are at least 36" tall. Tubular markers used to separate traffic should have a rubber base weighing at least 30 pounds. Tubular markers that are 42" tall or more shall have four bands of reflective material as detailed for 42" cones on BC(10). Tubular markers less than 42" but at least 36" tall shall have three bands of 3" wide white reflective material spaced 2" apart. Reflective material shall meet DMS-8300, Type A.

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TRAFFIC CONTROL PLAN TYPICAL DETAILS

WZ(TD)-17

FILE:	wztd-17.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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TXDOT DETAILS - WZ(TD)-17

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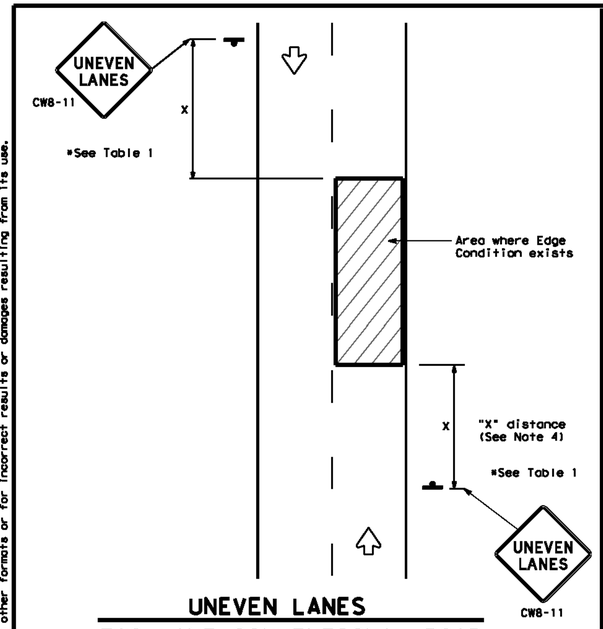
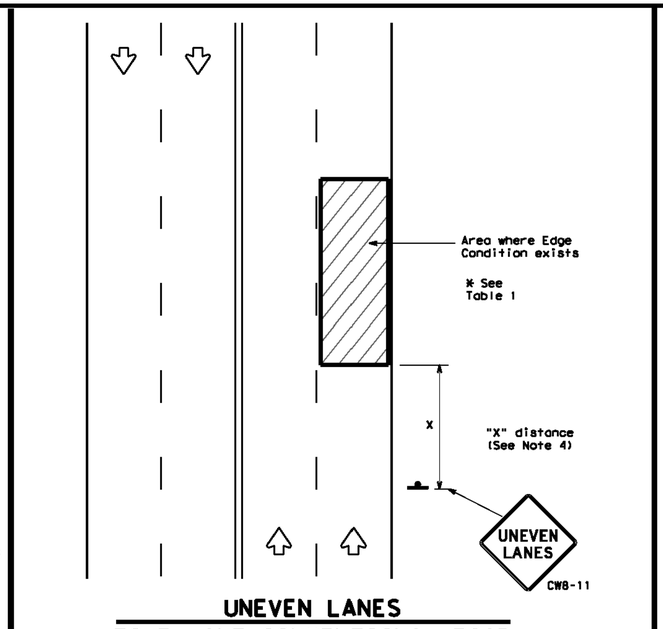
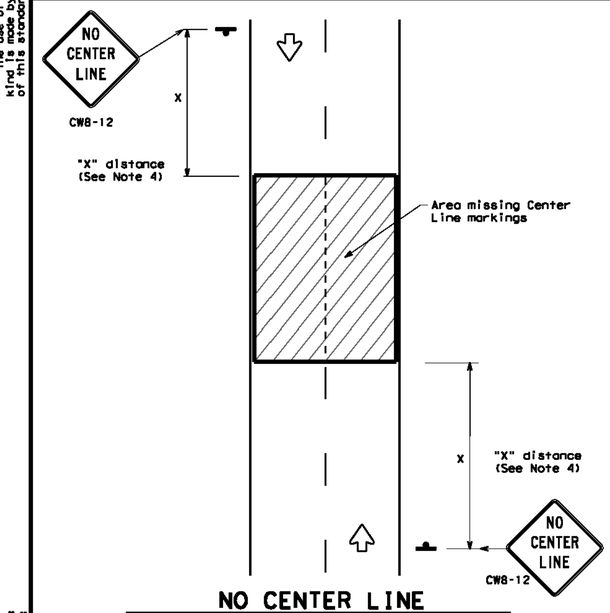


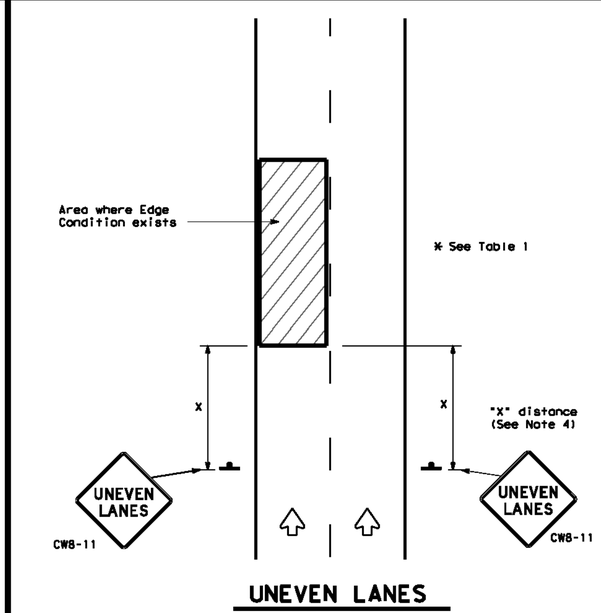
UNEVEN LANES
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
FOUR LANE CONVENTIONAL ROAD



NO CENTER LINE
TWO LANE CONVENTIONAL ROAD



UNEVEN LANES
DIVIDED ROADWAY

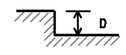
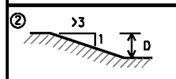
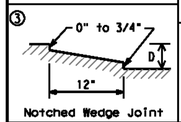
DEPARTMENTAL MATERIAL SPECIFICATIONS	
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240
TEMPORARY (REMOVABLE) PREFABRICATED PAVEMENT MARKINGS	DMS-8241
SIGN FACE MATERIALS	DMS-8300

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

GENERAL NOTES

1. If spalling or holes occur, ROUGH ROAD (CW8-8) signs should be placed in advance of the condition and be repeated every two miles where the condition persists.
2. UNEVEN LANES (CW8-11) signs shall be installed in advance of the condition and repeated every mile. Signs installed along the uneven lane condition may be supplemented with the NEXT XX MILES (CW7-3aP) plaque or Advisory Speed (CW13-1P) plaque.
3. NO CENTER LINE (CW8-12) signs and temporary pavement markings as per the WZ(STPM) standard shall be installed if yellow centerlines separating two way traffic are obscured or obliterated. Repeat NO CENTER LINE signs every two miles where the center line markings are not in place. The signs and markings shall remain in place until permanent pavement markings are installed.
4. Signs shall be spaced at the distances recommended as per BC standards.
5. Additional signs may be required as directed by the Engineer. Signs shall remain in place until final surface is applied. Signs shall be considered subsidiary to Item 502 "BARRICADES, SIGNS AND TRAFFIC HANDLING."
6. Signs shall be fabricated and mounted on supports as shown on the BC standards and/or listed on the "Compliant Work Zone Traffic Control Devices" list.
7. Short term markings shall not be used to simulate edge lines.
8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition.

TABLE 1

Edge Condition	Edge Height (D)	* Warning Devices
① 	Less than or equal to: 1¼" (maximum-planing) 1½" (typical-overlay)	Sign: CW8-11
	Distance "D" may be a maximum of 1 1/4 " for planing operations and 2" for overlay operations if uneven lanes with edge condition 1 are open to traffic after work operations cease.	
② 	Less than or equal to 3"	Sign: CW8-11
③  Notched Wedge Joint	Distance "D" may be a maximum of 3" if uneven lanes with edge condition 2 or 3 are open to traffic after work operations cease. Uneven lanes should not be open to traffic when "D" is greater than 3".	

TRAFFIC CONTROL DURING PLANING, OVERLAY AND LEVELING OPERATIONS ARE SHOWN ELSEWHERE IN THE PLANS.

MINIMUM WARNING SIGN SIZE	
Conventional roads	36" x 36"
Freeways/expressways, divided roadways	48" x 48"

Texas Department of Transportation — Traffic Operations Division Standard

SIGNING FOR UNEVEN LANES

WZ(UL)-13

FILE:	wzul-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT	April 1992	CONT	SECT	JOB	HIGHWAY
REVISIONS					
8-95 2-98 T-13		DIST	COUNTY		SHEET NO.
1-97 3-03					112

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - WZ(UL)-13

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C070
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - WZ(UL)-13, 3/28/2023 9:50:06 AM, cpadron-martinez

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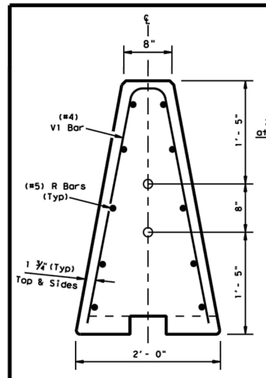
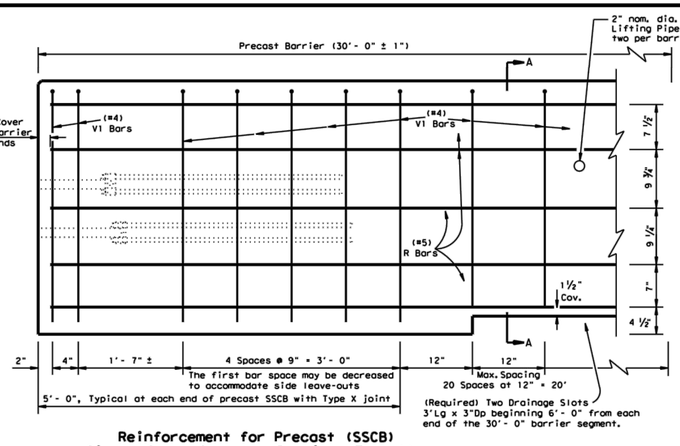


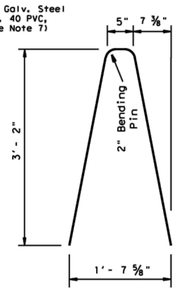
End View
Precast Barrier

Pipe locations for Joint Type X connection



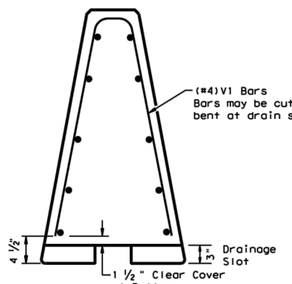
Reinforcement for Precast (SSCB)
Single Slope Concrete Barrier (Type 1)

Showing reinforcement for Joint Connection (Type X)



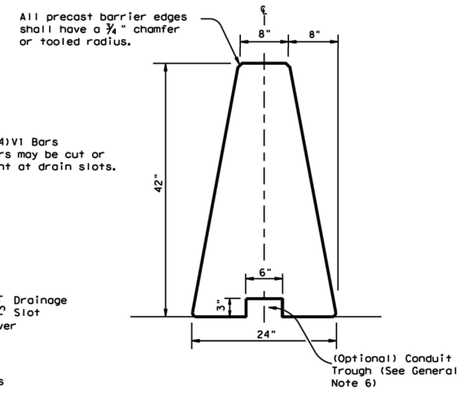
V1 Bar
#4 Rebar

Note:
V1 Bars above the drainage slots may bent to accomodate 1 ½" clear cover as directed by the Engineer.



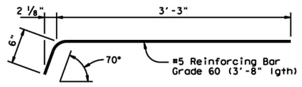
Section A-A

Steel Placement at (Required) Drainage Slots



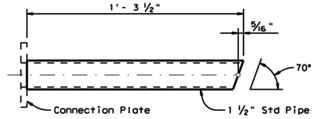
Single Slope Concrete Traffic Barrier

Precast SSCB barrier may be connected to cast-in-place SSBC. The joint connection "Types" may be used in the cast-in-place barrier, to match the precast barrier connection.



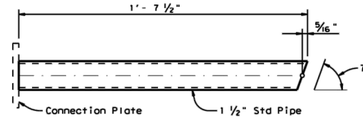
DEFORMED BAR ANCHOR DETAILS

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



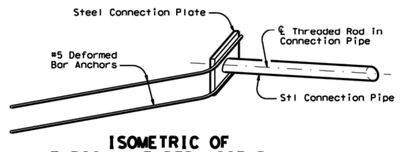
UPPER CONNECTION PIPE DETAILS

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



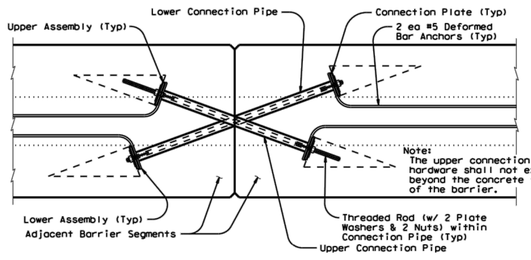
LOWER CONNECTION PIPE DETAILS

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



ISOMETRIC OF TYPICAL WELDED ASSEMBLY

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



TYPE X JOINT INSTALLATION DETAIL

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

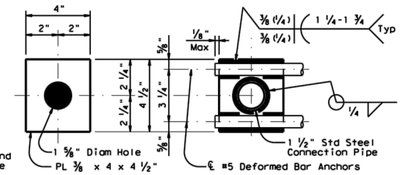
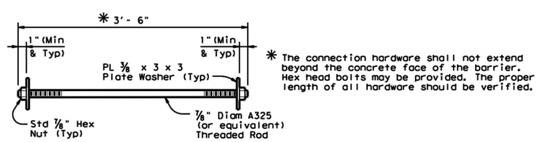


PLATE DIMENSIONS **WELDING DETAILS**

CONNECTION PLATE DETAILS

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

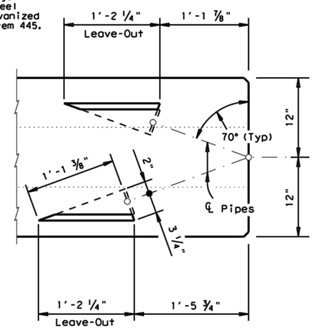


✱ The connection hardware shall not extend beyond the concrete face of the barrier. Hex head bolts may be provided. The proper length of all hardware should be verified.

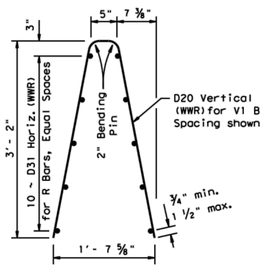
CONNECTION BOLT OR THREADED ROD DETAIL

Two (2) Threaded Rods (Or Equivalent Hex Hd. Bolts) (w/ Two (2) PL ⅜ x 3 x 3 Plate Washers & Two (2) Std Hex Nuts) required per Joint.

Weight of one precast 30 ft. (SSCB) segment = Approx. 10.5 Tons or 717 lbs per ft.



BARRIER PLAN AT JOINT



Welded Wire Reinforcement (WWR) Option for Bars R and V1

(WWR) General Notes

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

DATE:
FILE:

General Notes

1. Concrete shall be Class H with a minimum compressive strength of 3,600 psi.
2. Where used, rebar reinforcement shall be Grade 60 and conform to ASTM A615.
3. Precast barrier length shall be 30 ft. unless otherwise specified on the plans.
4. All precast barrier edges shall have a ¾" chamfer or a tooled radius.
5. All concrete, reinforcement, joint connection systems, grout etc. as shown, are considered as part of the barrier payment.
6. Conduit trough when required shall be shown elsewhere on the plans, or as directed by the Engineer.
7. Regardless of the method of handling, barrier lifting points shall be approx. 7.5 feet from the ends of the barrier. Lifting devices and attachments to barrier sections shall be approved by the Engineer.
8. Surface finishing and grouting (where required) shall be two parts sand one part cement with enough water to make the mixture plastic. Grouting shall be done in a manner that will assure a smooth surface. Surface finishing shall be considered subsidiary to the various bid items.
9. All steel assemblies shall be galvanized after fabrication in accordance with Item 445, "Galvanizing."

REV.	DESCRIPTION	DATE

SHEET 1 OF 2

Texas Department of Transportation — Design Division Standard

SINGLE SLOPE CONCRETE BARRIER

PRECAST BARRIER
(TYPE 1)

SSCB(2)-10

FILE: sscb210.dgn	DN: TxDOT	CK: AM	DW: BD	CK:
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REVISIONS	DIST	COUNTY		SHEET NO.

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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - SSCB(2)-10

PM	RAM
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CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C071
SHEET	OF

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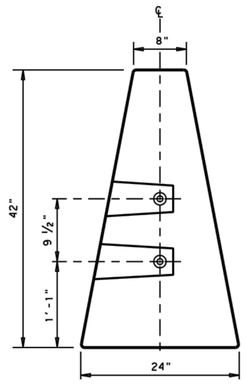
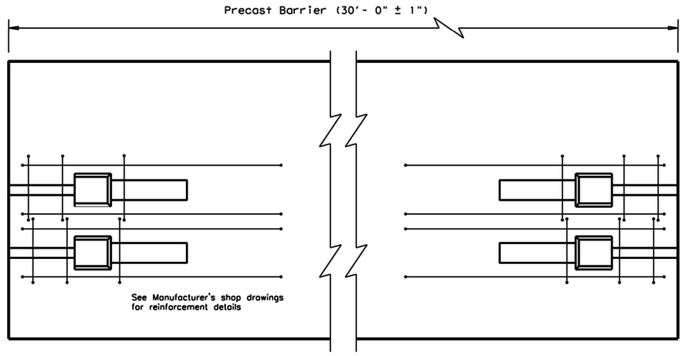
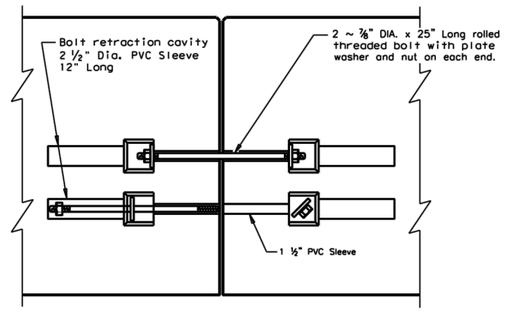


END VIEW
"QUICK-BOLT" POCKET LOCATIONS

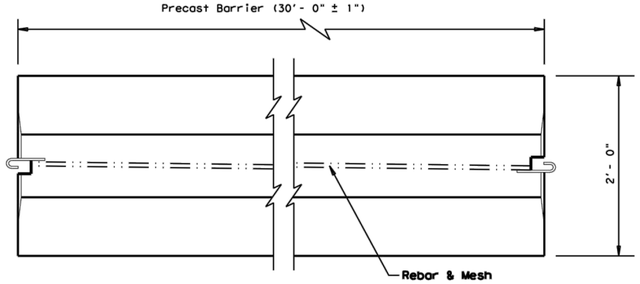


ELEVATION VIEW
"QUICK-BOLT" (SSCB)
See Manufacturer's shop drawing for additional details

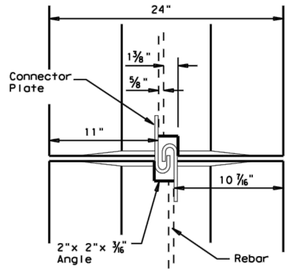


ELEVATION VIEW SHOWING JOINT CONNECTION
"QUICK-BOLT"

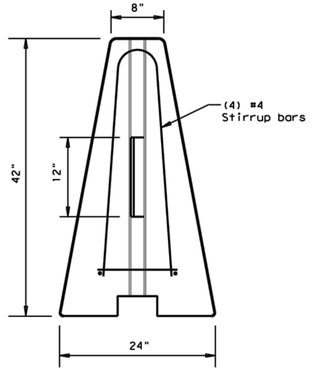
Joint Connection (Type Q)



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



VIEW FROM ABOVE
J-J HOOK CONNECTION



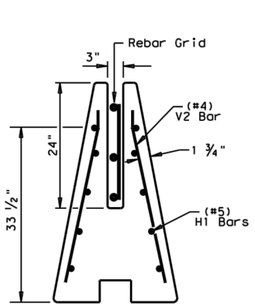
END VIEW

Proprietary Joint Connections (SSCB)

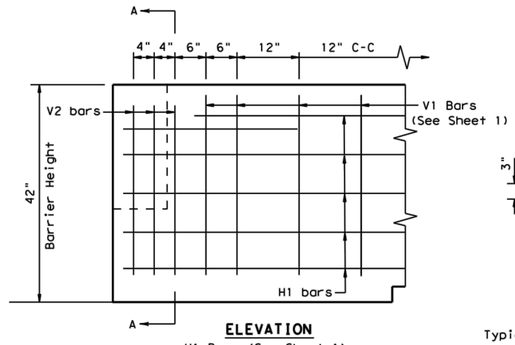
Two proprietary joint connections are acceptable as alternates to the (Type X) connection shown, here on. These joint connections types are:

J-J Hooks by Easi-Set Industries, (800)547-4045
Quick-Bolt by Bexar Concrete, (210)497-3773

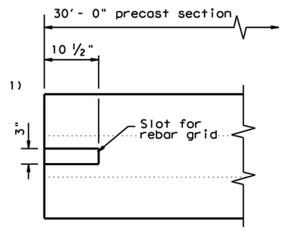
If one of these connection systems are exclusively specified in the plans, prior approval for sole source use must be obtained. Details of the connection components and barrier reinforcement for these systems, will be shown on the manufacturer's shop drawing(s) furnished to the Engineer.



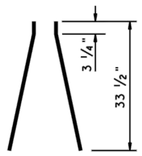
SECTION A-A
Showing (Type R) Rebar Grid



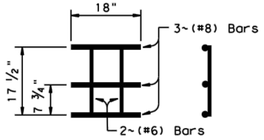
ELEVATION
V1 Bars (See Sheet 1)



TOP VIEW
JOINT CONNECTION
Typical at both ends of barrier segment



(#4) V2 BARS
6 ~ two piece bars per barrier segment



WELDED REBAR GRID

Joint Connection (Type R)

DATE:
FILE:

SHEET 2 OF 2

Texas Department of Transportation — Design Division Standard

SINGLE SLOPE CONCRETE BARRIER

PRECAST BARRIER
(TYPE 1)

SSCB(2)-10

FILE: sscb210.dgn	DN: TxDOT	CK: AM	DW: VP	CK:
©TxDOT December 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - SSCB(2)-10

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C072
SHEET	OF

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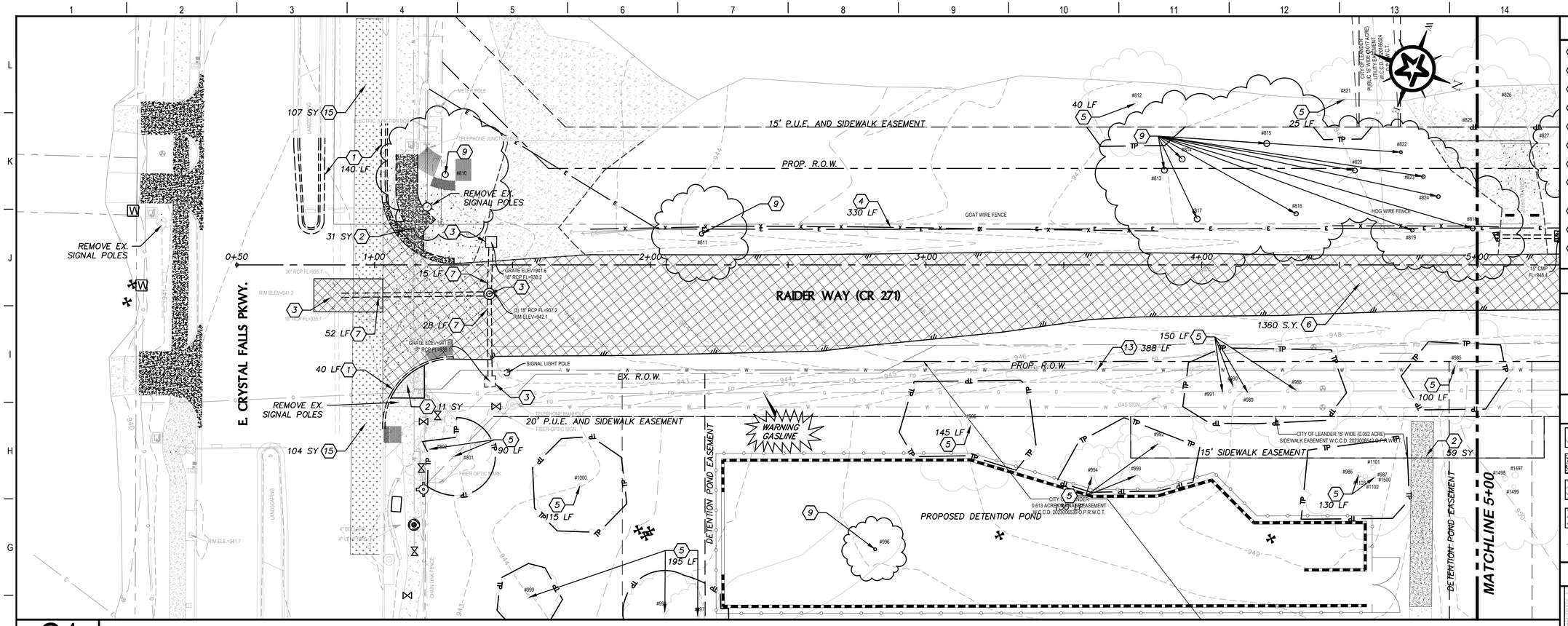
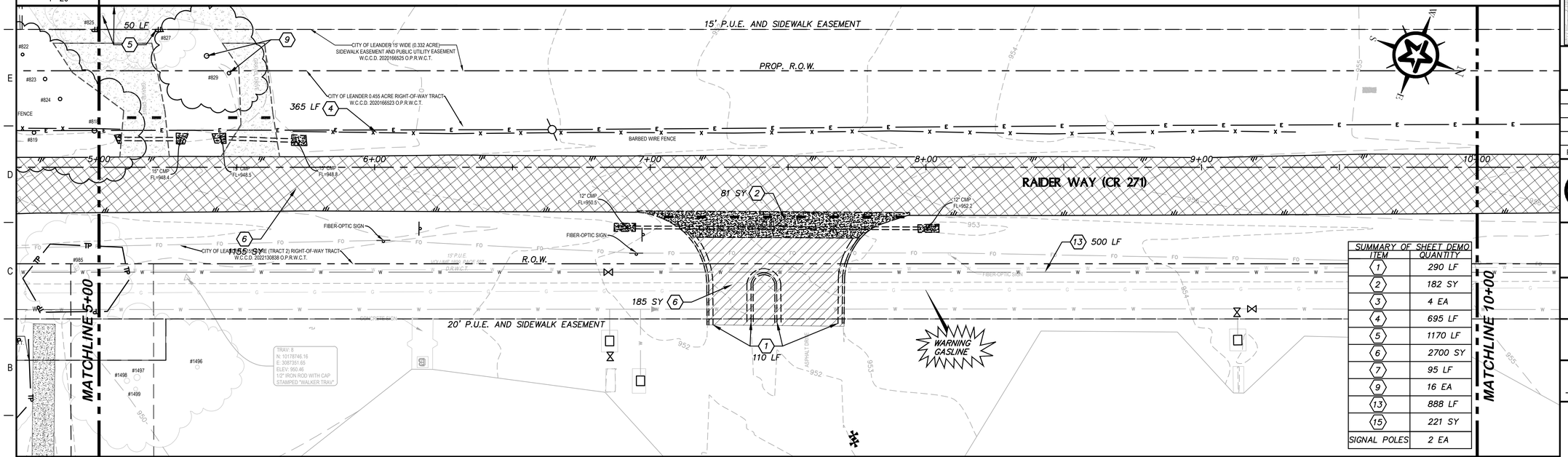




KEY NOTES

1. REMOVE P.C. CONCRETE CURB. ITEM 104S-A
2. REMOVE P.C. CONCRETE SIDEWALK AND DRIVEWAY. ITEM 104S-C
3. REMOVE INLET OR JUNCTION BOX. ITEM 104S-G
4. REMOVAL AND RELOCATION OF EX. FENCES ITEM 702S
5. TREE PROTECTION. ITEM 610S (RE: G8/C107 & L2.04)
6. REMOVE STABILIZED BASE AND ASPHALT PAVEMENT. ITEM 315S
7. REMOVE 18" STORM PIPE. ITEM 510
8. REMOVE WATERLINE-ANY DIAMETER. PIPE EXCAVATION & BACKFILL. (RE: COA ITEM 510. ASD.)
9. REMOVE EXISTING TREE. ITEM 610S (RE: L2.04)
13. 4" ABANDON WATER LINE & GROUT FILL (RE: ITEM 510-GR)
15. ASPHALT SURFACE MILLING (2") (RE: ITEM 315S-A)

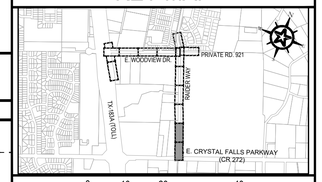
GENERAL NOTES

1. ALL EXISTING UTILITIES MUST BE FIELD VERIFIED BEFORE PERFORMING ANY WORK. IT IS THE RESPONSIBILITY OF THE UTILITY COMPANY TO VERIFY THE LOCATION OF EXISTING UTILITIES THAT MAY CONFLICT WITH CONSTRUCTION.
2. CONTRACTOR TO DELIVER SALVAGED FIRE HYDRANTS TO CITY OF LEANDER PUBLIC WORKS, 607 MUNICIPAL DRIVE, LEANDER, TX 76410. CONTACT PHONE: 512-259-2640

DEMOLITION LEGEND

- REMOVE EXISTING ASPHALT
- REMOVE EXISTING CONCRETE
- RECLAIM, SALVAGE AND STOCKPILE
- MILLING OF HMAC PAVEMENT
- EXISTING W.L. TO BE ABANDONED

KEY MAP



0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DEMOLITION PLAN
RAIDER WAY
STA. 0+00-10+00

03/22/2023 DATE
R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

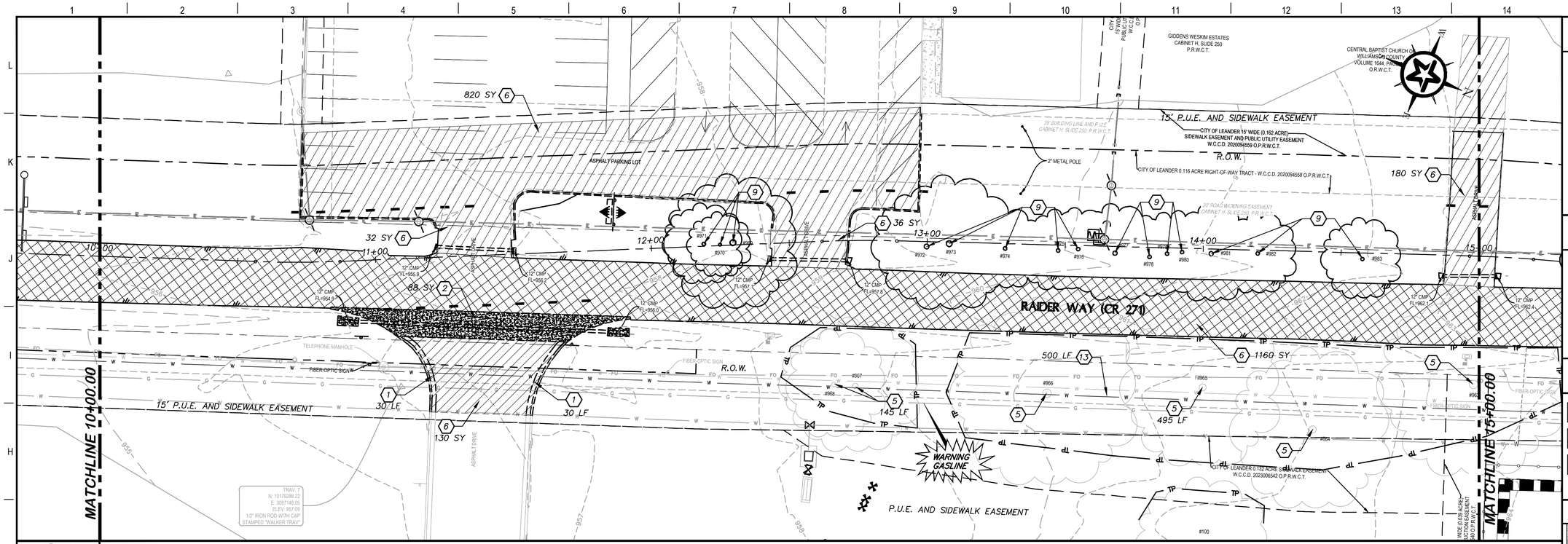
PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C100
SHEET	OF

SUMMARY OF SHEET DEMO	
ITEM	QUANTITY
1	290 LF
2	182 SY
3	4 EA
4	695 LF
5	1170 LF
6	2700 SY
7	95 LF
9	16 EA
13	888 LF
15	221 SY
SIGNAL POLES	2 EA

G1 | RAIDER WAY ~ 0+00-5+00 | 1"=20'

A1 | RAIDER WAY ~ 5+00-10+00 | 1"=20'

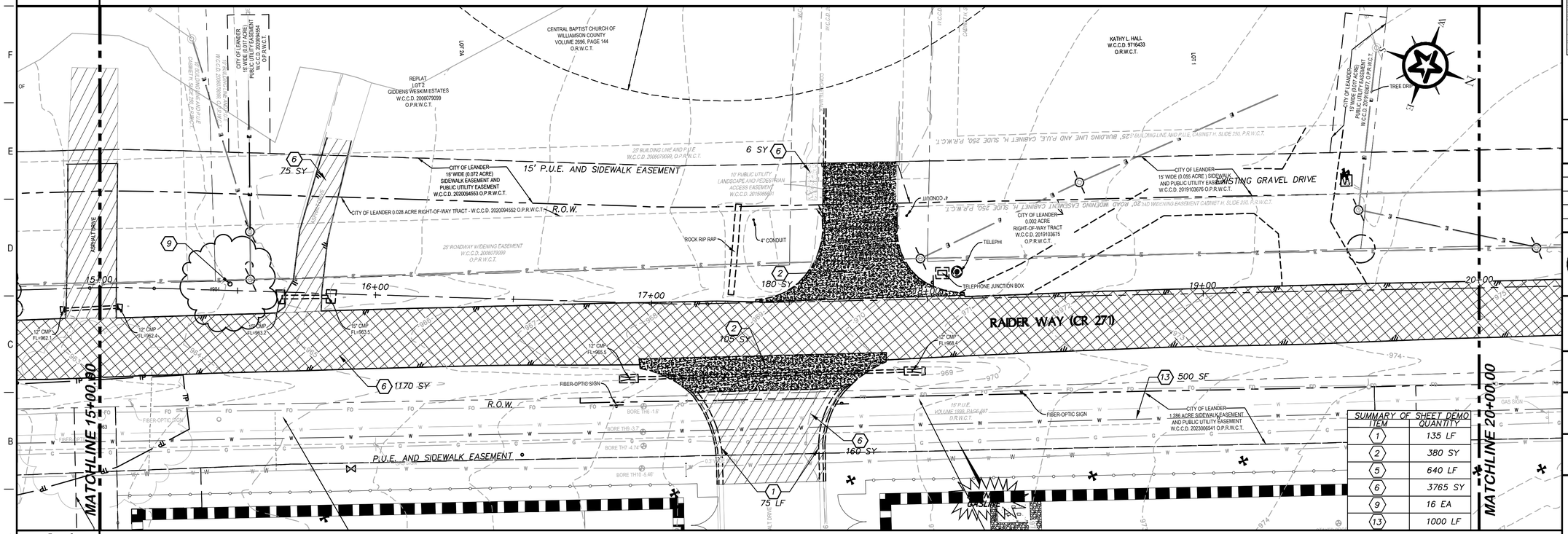
G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DEMO.DWG, C100 STA. 0+00-10+00, 3/30/2023 5:35:37 PM, cschroeder



G1

RAIDER WAY ~ 10+00-15+00

1"=20'



A1

RAIDER WAY ~ 15+00-20+00

1"=20'

SUMMARY OF SHEET DEMO	
ITEM	QUANTITY
1	135 LF
2	380 SY
5	640 LF
6	3765 SY
9	16 EA
13	1000 LF

KEY NOTES

1. REMOVE P.C. CONCRETE CURB. ITEM 104S–A
2. REMOVE P.C. CONCRETE SIDEWALK AND DRIVEWAY. ITEM 104S–C
5. TREE PROTECTION. ITEM 610S (RE: G8/C107 & L2.04)
6. REMOVE STABILIZED BASE AND ASPHALT PAVEMENT. ITEM 315S
9. REMOVE EXISTING TREE. ITEM 610S (RE: L2.04)
13. 4" ABANDON WATER LINE & GROUT FILL (RE: ITEM 510–GR)

GENERAL NOTES

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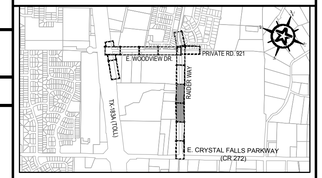
DEMOLITION LEGEND

- REMOVE EXISTING ASPHALT
- REMOVE EXISTING CONCRETE
- RECLAIM, SALVAGE AND STOCKPILE
- w — EXISTING W.L. TO BE ABANDONED

KEY MAP



0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DEMOLITION PLAN
RAIDER WAY
STA. 10+00-20+00

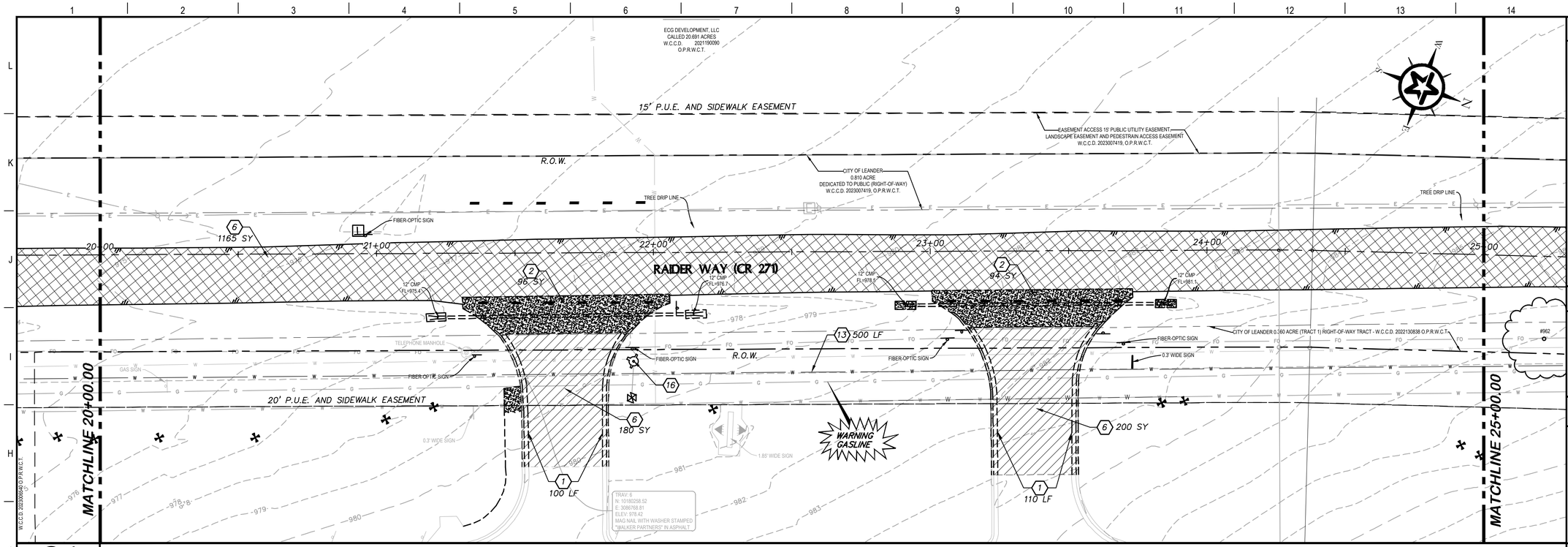
03/22/2023
DATE

R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C101
SHEET	OF

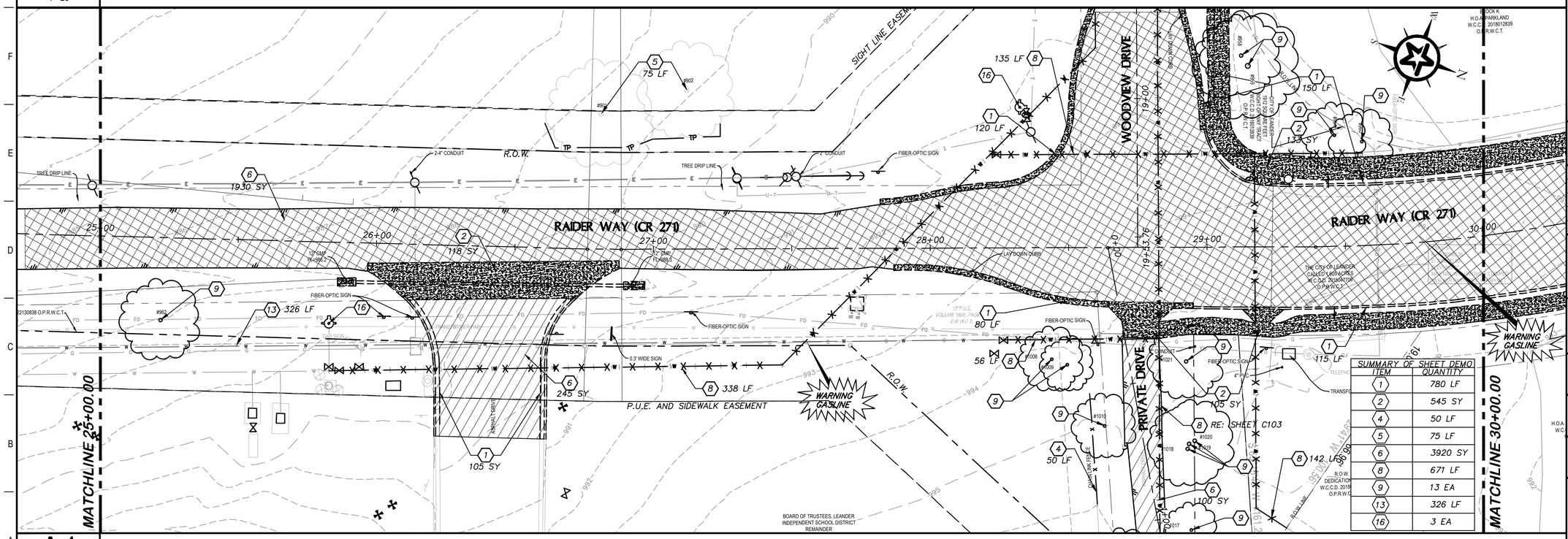
G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DEMO.DWG, C101 STA. 10+00-20+00, 3/28/2023 9:04:24 AM, cpadron-martinez



G1

1"=20'

RAIDER WAY ~ 20+00-25+00



A1

1"=20'

RAIDER WAY ~ 25+00-30+00

KEY NOTES

1. REMOVE P.C. CONCRETE CURB. ITEM 104S-A
2. REMOVE P.C. CONCRETE SIDEWALK AND DRIVEWAY. ITEM 104S-C
3. REMOVE INLET OR JUNCTION BOX. ITEM 104S-G
4. REMOVAL AND RELOCATION OF EX. FENCES ITEM 702S
5. TREE PROTECTION. ITEM 610S (RE: G8/C107 & L2.04)
6. REMOVE STABILIZED BASE AND ASPHALT PAVEMENT. ITEM 315S
7. REMOVE 18" STORM PIPE. ITEM 510
8. REMOVE WATERLINE-ANY DIAMETER. PIPE EXCAVATION & BACKFILL. (RE: COA ITEM 510. ASD.)
9. REMOVE EXISTING TREE. ITEM 610S (RE: L2.04)
12. 2" ABANDON WATER LINE & GROUT FILL (RE: ITEM 510-GR)
13. 4" ABANDON WATER LINE & GROUT FILL (RE: ITEM 510-GR)
15. ASPHALT SURFACE MILLING (2") (RE: ITEM 315S-A)
16. SALVAGE ALL EXISTING FH ALONG PROPOSED WATERLINE AND PROVIDE TO CITY OF LEANDER

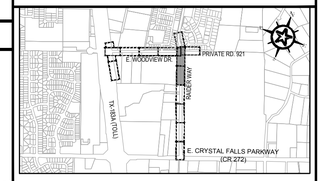
GENERAL NOTES

1. ALL EXISTING UTILITIES MUST BE FIELD VERIFIED BEFORE PERFORMING ANY WORK. IT IS THE RESPONSIBILITY OF THE UTILITY COMPANY TO VERIFY THE LOCATION OF EXISTING UTILITIES THAT MAY CONFLICT WITH CONSTRUCTION.
2. CONTRACTOR TO DELIVER SALVAGED FIRE HYDRANTS TO CITY OF LEANDER PUBLIC WORKS, 607 MUNICIPAL DRIVE, LEANDER, TX 76410. CONTACT PHONE: 512-259-2640

DEMOLITION LEGEND

- REMOVE EXISTING ASPHALT
- REMOVE EXISTING CONCRETE
- RECLAIM, SALVAGE AND STOCKPILE
- EXISTING W.L. TO BE REMOVED
- EXISTING W.L. TO BE ABANDONED

KEY MAP



0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DEMOLITION PLAN
RAIDER WAY
STA. 20+00-30+00

03/22/2023
DATE

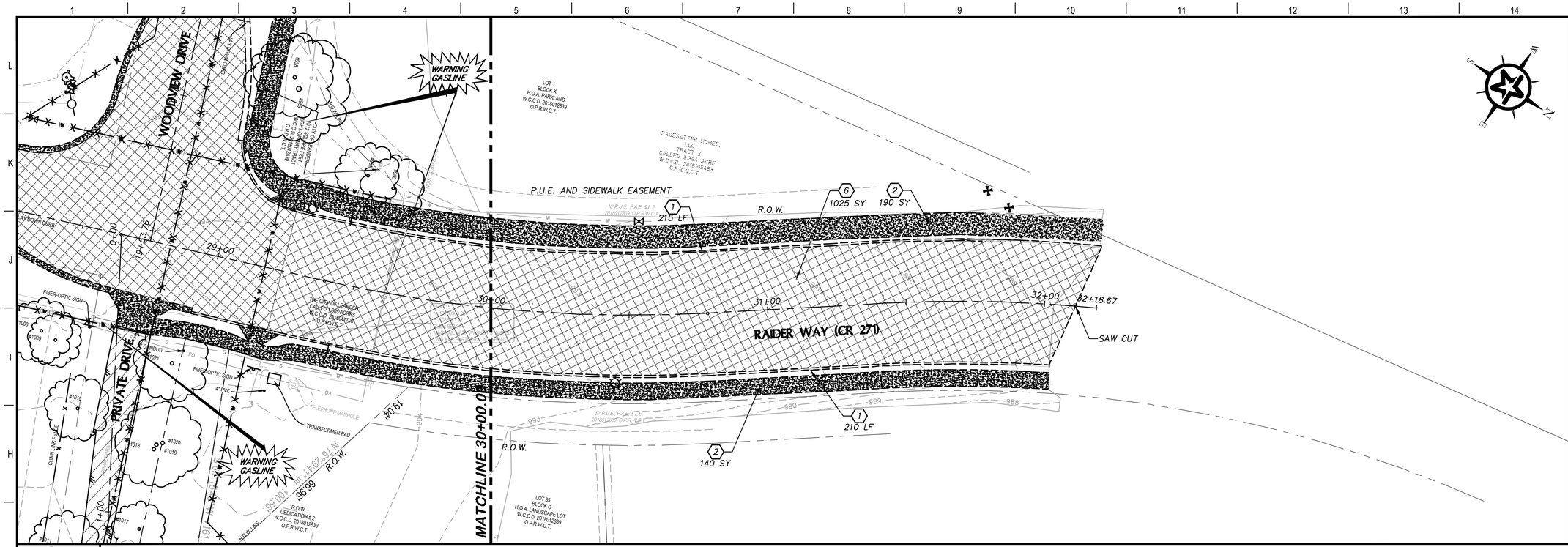
R. ALAN MUNGER, P.E.

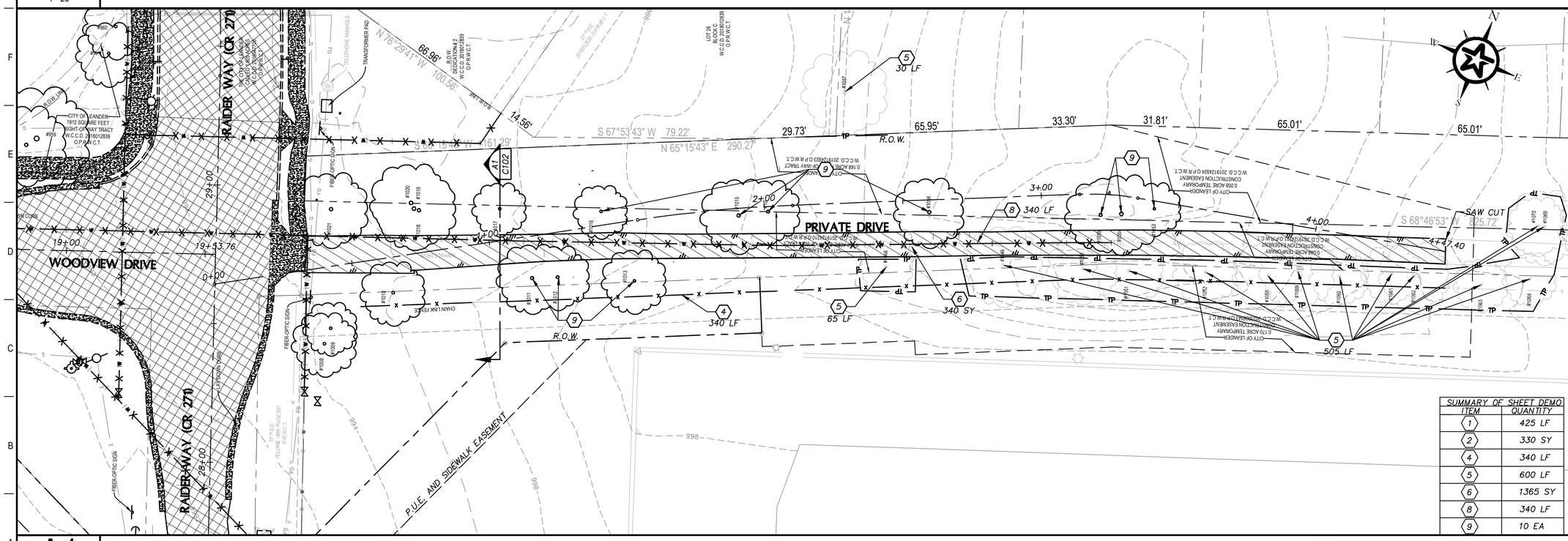
STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

SUMMARY OF SHEET DEMO	
ITEM	QUANTITY
1	780 LF
2	545 SY
4	50 LF
5	75 LF
6	3920 SY
8	671 LF
9	13 EA
13	326 LF
16	3 EA

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C102
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DEMO.DWG, C102 STA. 20+00-30+00, 3/28/2023 9:05:51 AM, cpadron-martinez





G1 — RAIDER WAY ~ 30+00-END — 1"=20'

A1 — PRIVATE ROAD 921

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

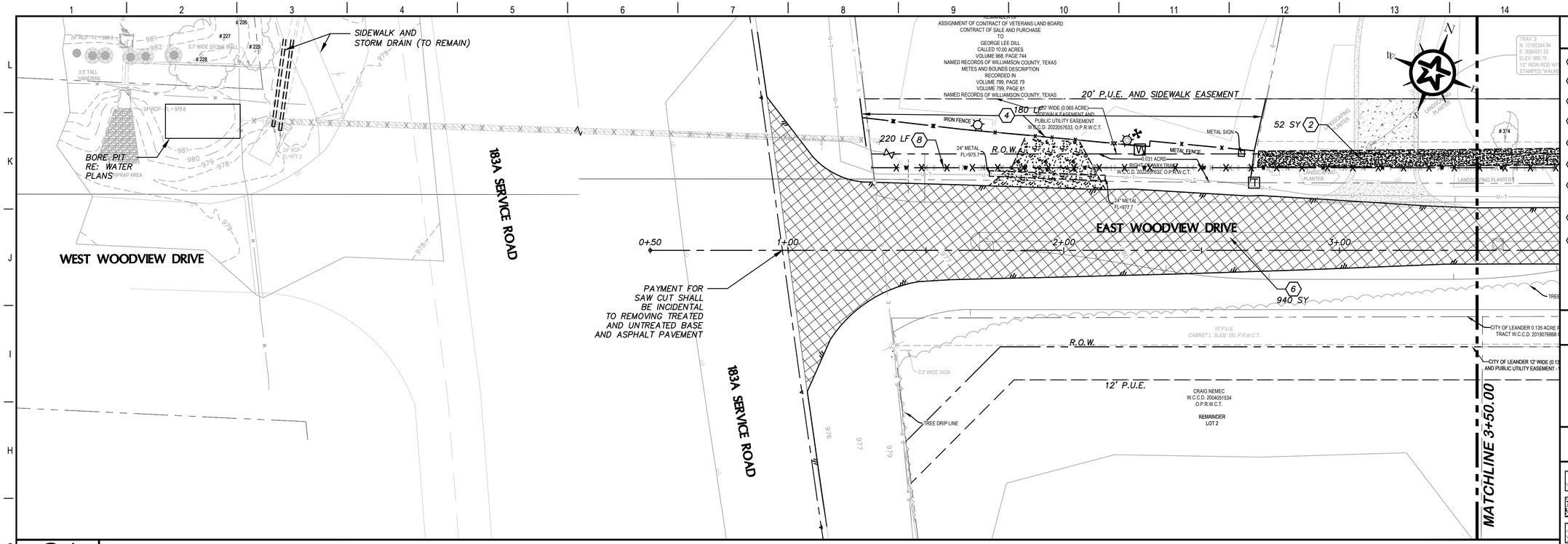
DEMOLITION PLAN
RAIDER WAY
STA. 30+00-END

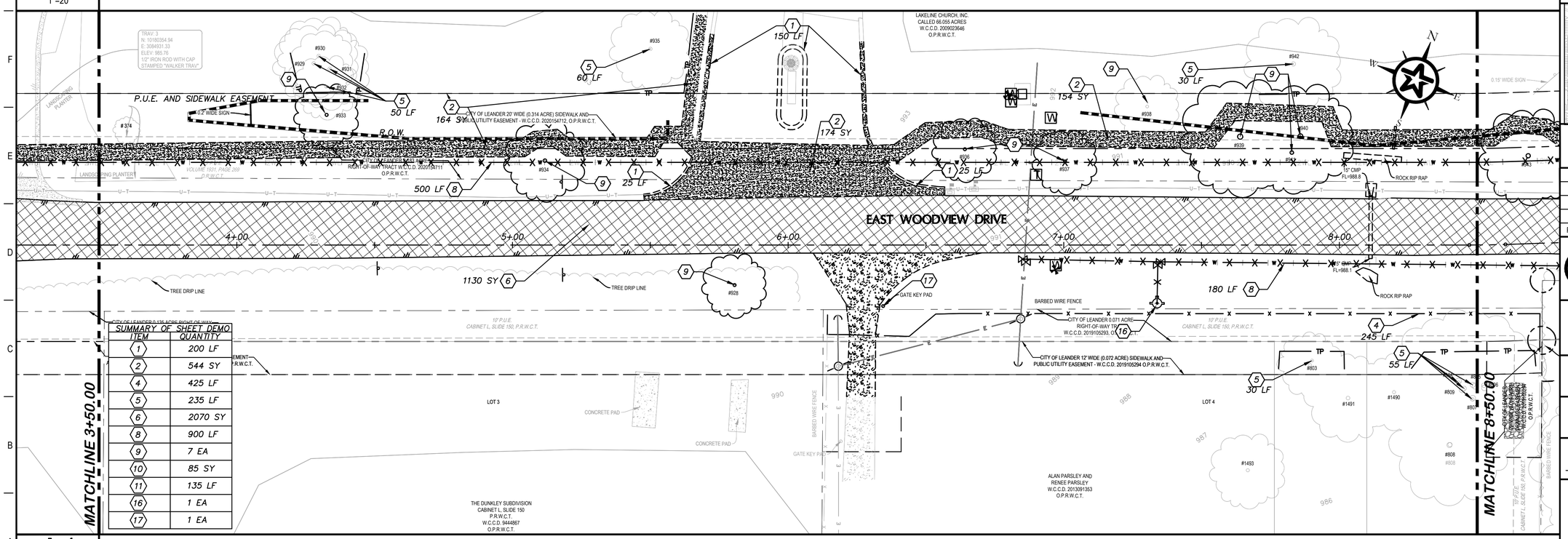
03/22/2023 — DATE
R. Alan Munger, PE — R. ALAN MUNGER

STATE OF TEXAS — R. ALAN MUNGER — 65341 — REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C103
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DEMO.DWG, C103 STA. 30+00-END, 3/28/2023 9:07:21 AM, cpadron-martinez





SUMMARY OF SHEET DEMO	
ITEM	QUANTITY
1	200 LF
2	544 SY
4	425 LF
5	235 LF
6	2070 SY
8	900 LF
9	7 EA
10	85 SY
11	135 LF
16	1 EA
17	1 EA

KEY NOTES

1. REMOVE P.C. CONCRETE CURB. ITEM 104S-A
2. REMOVE P.C. CONCRETE SIDEWALK AND DRIVEWAY. ITEM 104S-C
3. REMOVE INLET OR JUNCTION BOX. ITEM 104S-G
4. REMOVAL AND RELOCATION OF EX. FENCES ITEM 702S
5. TREE PROTECTION. ITEM 610S (RE: G8/C107 & L2.04)
6. REMOVE STABILIZED BASE AND ASPHALT PAVEMENT. ITEM 315S
8. REMOVE WATERLINE--ANY DIAMETER. PIPE EXCAVATION & BACKFILL (RE: COA ITEM 510. ASD.)
16. SALVAGE ALL EXISTING FH ALONG PROPOSED WATERLINE AND PROVIDE TO CITY OF LEANDER
17. CONTRACTOR TO REMOVE SPECIAL ORNAMENTAL GATE AND KEY PAD (IF NECESSARY) AND REPLACE BACK TO EXISTING CONDITION.

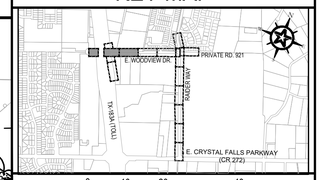
GENERAL NOTES

1. ALL EXISTING UTILITIES MUST BE FIELD VERIFIED BEFORE PERFORMING ANY WORK. IT IS THE RESPONSIBILITY OF THE UTILITY COMPANY TO VERIFY THE LOCATION OF EXISTING UTILITIES THAT MAY CONFLICT WITH CONSTRUCTION.
2. CONTRACTOR TO DELIVER SALVAGED FIRE HYDRANTS TO CITY OF LEANDER PUBLIC WORKS, 607 MUNICIPAL DRIVE, LEANDER, TX 76410. CONTACT PHONE: 512-259-2640

DEMOLITION LEGEND

- REMOVE EXISTING ASPHALT
- REMOVE EXISTING CONCRETE
- RECLAIM, SALVAGE AND STOCKPILE
- EXISTING W.L. TO BE REMOVED

KEY MAP



REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DEMOLITION PLAN
EAST WOODVIEW DR.
STA. 0+00-8+50

03/22/2023 DATE
R. Alan Munger, PE
R. ALAN MUNGER

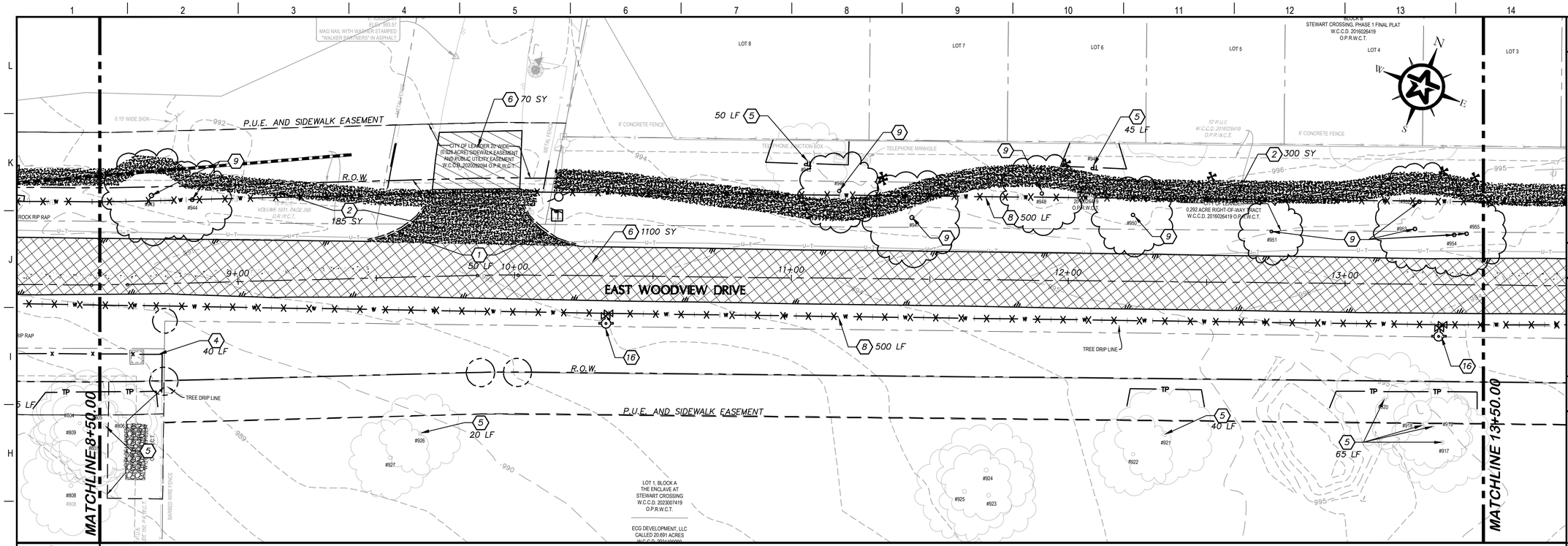
STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C104
SHEET	OF

G1 — 1"=20' — EAST WOODVIEW DRIVE ~ 0+00-3+50

A1 — 1"=20' — EAST WOODVIEW DRIVE ~ 3+50-8+50

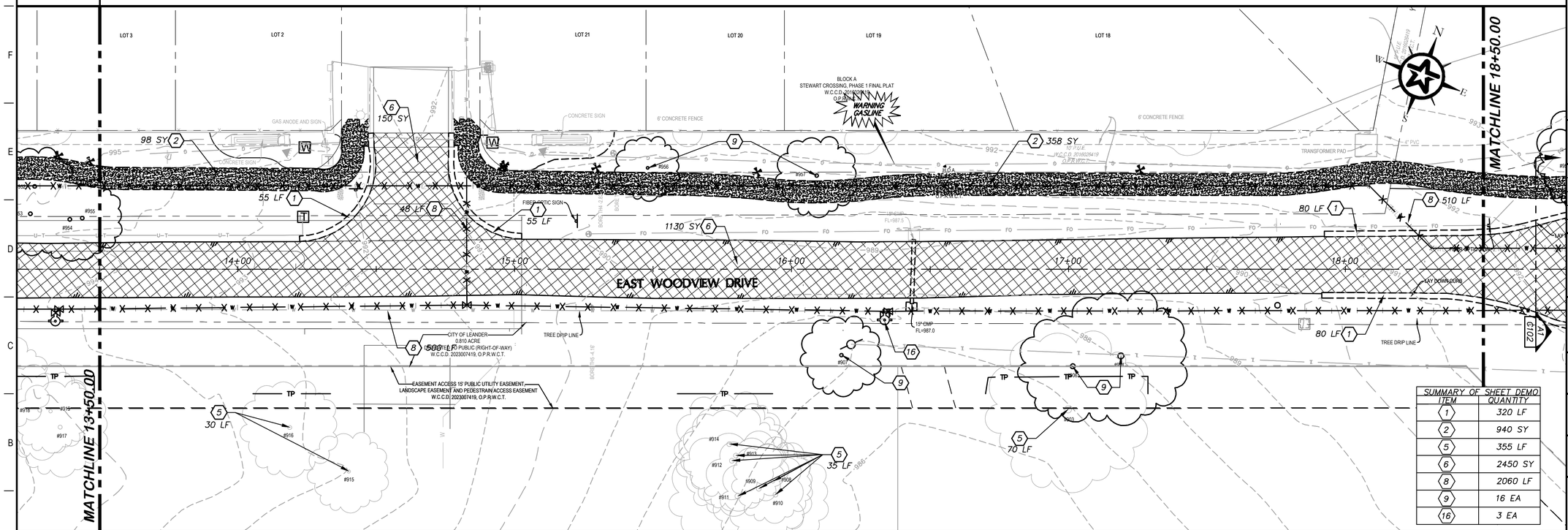
G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DEMO.DWG, C104 STA. 0+00-8+50, 3/30/2023 5:38:14 PM, cschroeder



G1

EAST WOODVIEW DRIVE ~ 8+50-13+50

1"=20'



A1

EAST WOODVIEW DRIVE ~ 13+50-18+50

1"=20'

KEY NOTES

1. REMOVE P.C. CONCRETE CURB. ITEM 104S-A
2. REMOVE P.C. CONCRETE SIDEWALK AND DRIVEWAY. ITEM 104S-C
3. REMOVE INLET OR JUNCTION BOX. ITEM 104S-G
4. REMOVAL AND RELOCATION OF EX. FENCES ITEM 702S
5. TREE PROTECTION. ITEM 610S (RE: G8/C107 & L2.04)
6. REMOVE STABILIZED BASE AND ASPHALT PAVEMENT. ITEM 315S
8. REMOVE WATERLINE-ANY DIAMETER. PIPE EXCAVATION & BACKFILL. (RE: COA ITEM 510. ASD.)
16. SALVAGE ALL EXISTING FH ALONG PROPOSED WATERLINE AND PROVIDE TO CITY OF LEANDER

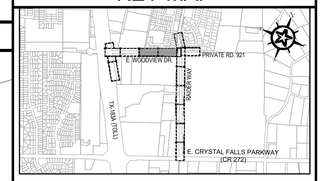
GENERAL NOTES

1. ALL EXISTING UTILITIES MUST BE FIELD VERIFIED BEFORE PERFORMING ANY WORK. IT IS THE RESPONSIBILITY OF THE UTILITY COMPANY TO VERIFY THE LOCATION OF EXISTING UTILITIES THAT MAY CONFLICT WITH CONSTRUCTION.
2. CONTRACTOR TO DELIVER SALVAGED FIRE HYDRANTS TO CITY OF LEANDER PUBLIC WORKS, 607 MUNICIPAL DRIVE, LEANDER, TX 76410. CONTACT PHONE: 512-259-2640

DEMOLITION LEGEND

- REMOVE EXISTING ASPHALT
- REMOVE EXISTING CONCRETE
- RECLAIM, SALVAGE AND STOCKPILE
- EXISTING W.L. TO BE REMOVED

KEY MAP



GRAPHIC SCALE (FEET)

0 10 20 40

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DEMOLITION PLAN
EAST WOODVIEW DR.
STA. 8+50-18+50

SUMMARY OF SHEET DEMO

ITEM	QUANTITY
1	320 LF
2	940 SY
5	355 LF
6	2450 SY
8	2060 LF
9	16 EA
16	3 EA

03/22/2023
DATE

R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C105
SHEET	OF

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TYPICAL TREE PROTECTION NOTES:

1. DETAILS AND NOTES ON THIS SHEET APPLY TO ALL TREES IDENTIFIED FOR PROTECTION ELSEWHERE IN THE PLANS OR BY THE ENGINEER.
2. CRITICAL ROOT ZONE (CRZ)=1 FEET PER 1 CALIPER INCH OF TRUNK DIAMETER.

CONSTRUCTION IMPACT MITIGATION:

1. TREES IMPACTED BY CONSTRUCTION ACTIVITIES SHALL BE WATERED DEEPLY ONCE A WEEK DURING PERIODS OF HOT DRY WEATHER AS DEFINED BY THE ENGINEER. SPRAY CROWNS WITH WATER MONTHLY IF NEEDED TO REMOVE HEAVY ACCUMULATIONS OF DUST.

PROTECTIVE FENCE:

1. PLACE 4 FEET HIGH PROTECTIVE FENCE AT THE EDGE OF THE CRITICAL ROOT ZONE OF ALL TREES. NO EXCAVATION, FILLING, SOIL COMPACTION, PARKING OR EQUIPMENT STORAGE IS ALLOWED WITHIN THE FENCED AREA.
2. WHERE RIGHT OF WAY WIDTH IS INADEQUATE THROUGHOUT THE CRITICAL ROOT ZONE SO THAT A CONSTRUCTION ZONE PARTIALLY OVERLAPS THE ROOT ZONE, PLACE FENCE WITHIN 2 FEET OF CONSTRUCTION ZONE.

TRUNK PROTECTION:

1. WHEN A PROTECTIVE FENCE IS ADJUSTED, PLACE THE FENCE AS FAR AS POSSIBLE FROM THE TREE TRUNK.
2. WHERE ADJUSTMENTS RESULTS IN A PROTECTIVE FENCE, BEING CLOSER THAN 6 FEET FROM A TREE TRUNK, THE TREE TRUNK SHALL BE PROTECTED WITH STRAPPED ON PLANKING TO A HEIGHT OF 10 FEET, OR THE HEIGHT OF THE LOWEST MAJOR BRANCHING, WHICHEVER IS LESS.

ROOT ZONE PROTECTION:

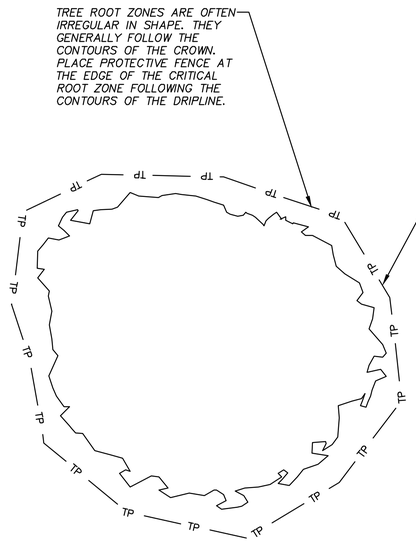
1. COVER UNPROTECTED PARTS OF THE ROOT ZONE BEYOND THE PROPOSED CONSTRUCTION ZONE WITH 3 INCHES OF MULCH OR SMOOTH GRAVEL TO MINIMIZE COMPACTION.
2. WHEN CONCRETE OR LIME STABILIZED BASE IS PLACED DIRECTLY ADJACENT TO OR CROSSING INTO THE ROOT ZONE OF A TREE, USE PLASTIC VAPOR BARRIER BENEATH SIDEWALKS OR SOLID VERTICAL ROOT BARRIER ALONG THE EDGE OF ADJACENT CONSTRUCTION AS SHOWN IN THE PLANS.
3. WHERE SHOWN ELSEWHERE IN PLANS, SUBSTITUTE DRY LAID LANDSCAPE PAVERS FOR CONCRETE SIDEWALK WITHIN THE CRITICAL ROOT ZONE.
4. VEHICULAR TRAFFIC, STOCKPILING OR STORAGE OF MATERIALS, PARKING OF EQUIPMENT AND REFUELING EQUIPMENT IS PROHIBITED IN PROTECTED AREAS.

BORING, TRENCHING, GRADING, AND PRUNING:

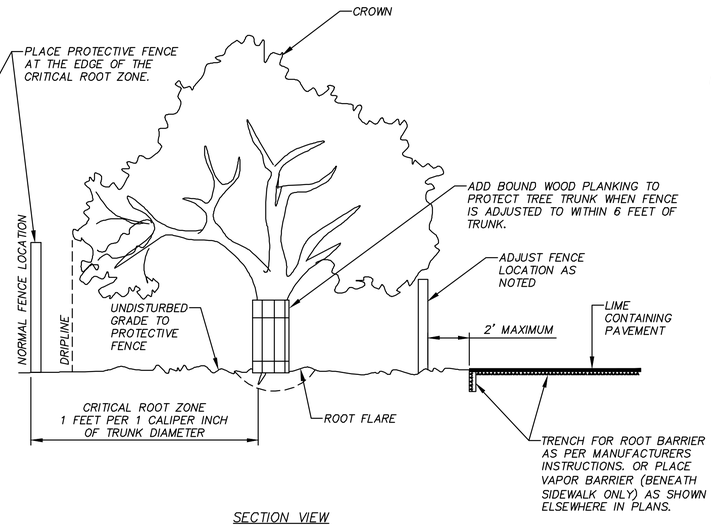
1. WHERE SHOWN ELSEWHERE IN PLANS, PROPOSED UNDERGROUND UTILITIES CROSSING UNDER PROTECTED AREAS SHALL BE BORED BENEATH CRITICAL ROOT ZONES. BORES SHOULD AVOID CROSSING DIRECTLY BENEATH ROOT FLARE. BORES SHALL BE A MINIMUM OF 4 FEET BELOW EXISTING GRADE.
2. NO TRENCHING, EXCAVATION, FILLING, OR COMPACTION IS ALLOWED WITHIN THE CRITICAL ROOT ZONE EXCEPT AS SPECIFICALLY IDENTIFIED IN THE PLANS AND APPROVED BY THE ENGINEER.
3. WHEN GRADE MUST BE CUT WITHIN THE CRITICAL ROOT ZONE SAW CUT ROOTS TO THE DEPTH OF THE PROPOSED DISTURBANCE ALONG EDGE OF THE PROPOSED DISTURBANCE BEFORE EXCAVATION IS BEGUN.
4. ANY ROOTS EXPOSED BY CONSTRUCTION SHALL BE PRUNED FLUSH WITH THE SOIL. BACKFILL ROOT AREAS WITH GOOD QUALITY TOPSOIL AS SOON AS POSSIBLE. IF EXPOSED ROOT AREAS ARE NOT TO BE BACKFILLED WITHIN TWO (2) DAYS, THEY SHALL BE TEMPORARILY COVERED WITH A MINIMUM OF SIX (6) INCHES OF ORGANIC MULCH.
5. EXCEPT FOR WORK WITHIN THE LIMITS OF EXISTING AND PROPOSED ROADWAY PAVEMENT, GRADING WITHIN THE CRITICAL ROOT ZONE SHALL BE DONE BY HAND OR SMALL EQUIPMENT AND GRADE SHALL BE ALTERED NO MORE THAN FOUR (4) INCHES. NO SOIL DISTURBANCE IS ALLOWED ON THE ROOT FLARE UNDER ANY CIRCUMSTANCES.
6. ANY PRUNING TO PROVIDE CLEARANCE FOR STRUCTURES, VEHICULAR TRAFFIC, AND CONSTRUCTION EQUIPMENT SHALL BE PERFORMED BEFORE CONSTRUCTION DAMAGE MIGHT OCCUR. ALL PRUNING MUST BE DONE ACCORDING TO STANDARDS OF THE INTERNATIONAL ARBORIST ASSOCIATION.
7. DISINFECT PRUNING TOOLS WITH 70 PERCENT METHYL ALCOHOL OR CHLORINE SOLUTION BETWEEN EACH TREE.

WOUND REPAIR:

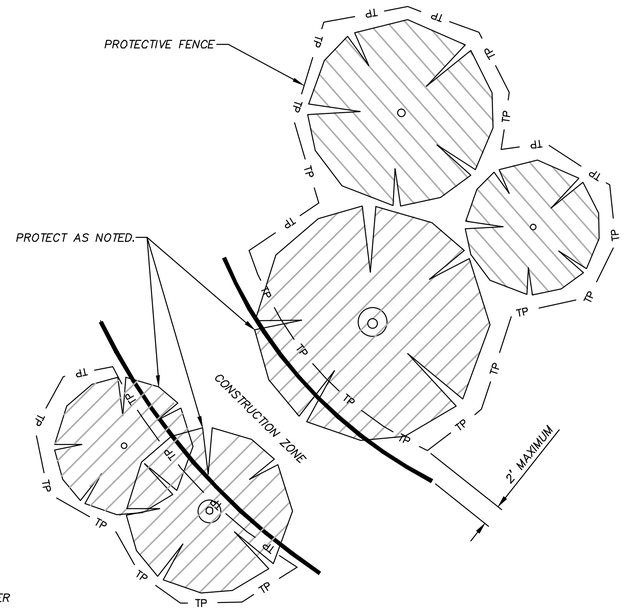
1. REPAIR ANY WOUNDS TO TREE TRUNKS AND LIMBS WITHIN 24 HOURS OF OCCURRENCE. TREATING OF WOUNDS MUST BE DONE ACCORDING TO RECOGNIZED, APPROVED STANDARDS OF THE INDUSTRY.



PLAN VIEW

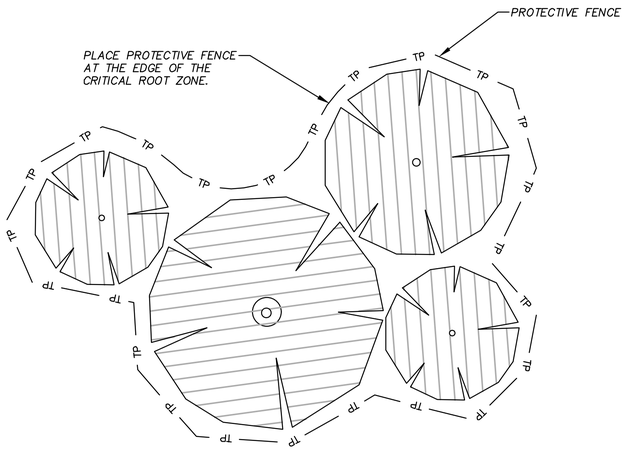


SECTION VIEW



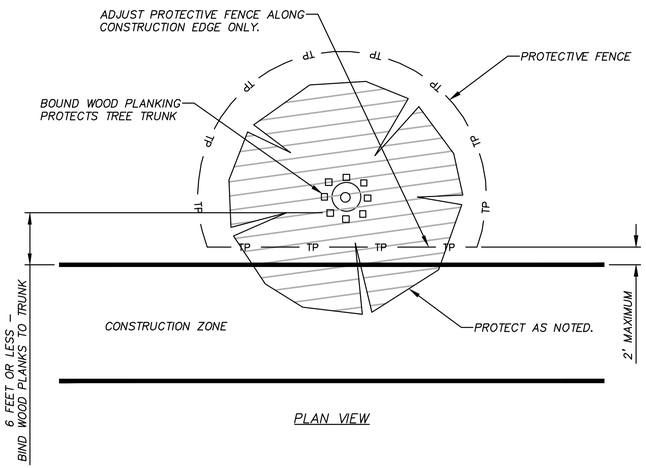
PLAN VIEW

LINEAR CONSTRUCTION THROUGH STAND OF TREES



PLAN VIEW

TYPICAL TREE GROUPING PROTECTION



PLAN VIEW

PAVING UNDER TREES

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TREE PROTECTION NOTES AND DETAILS

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C106

SHEET 8 OF 201

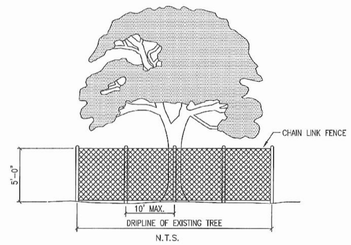
G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TREE-PROT-NOTES.DWG, TREE PROTECTION NOTES AND DETAILS, 3/28/2023 9:12:01 AM, cpadron-martinez

G1 NOT USED

N.T.S.

G8 TREE PROTECTION

N.T.S.



N.T.S.

1. TREE PROTECTION FENCES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR GRADING).
2. FENCES SHALL COMPLETELY SURROUND THE TREE, OR CLUSTERS OF TREES; SHALL BE LOCATED AT THE OUTERMOST LIMIT OF THE TREE BRANCHES (DRIPLINE), AND SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROJECT IN ORDER TO PREVENT THE FOLLOWING:
   - A. SOIL COMPACTION IN THE ROOT ZONE AREA RESULTING FROM VEHICULAR TRAFFIC, OR STORAGE OF EQUIPMENT OR MATERIALS.
   - B. ROOT ZONE DISTURBANCES DUE TO GRADE CHANGES (GREATER THAN SIX INCHES (6")) CUT OR FILL, OR TRENCHING NOT REVIEWED AND AUTHORIZED BY THE CITY.
   - C. WOUNDS TO EXPOSED ROOTS, TRUNKS OR LIMBS BY MECHANICAL EQUIPMENT.
   - D. OTHER ACTIVITIES DETRIMENTAL TO TREES, SUCH AS CHEMICAL STORAGE, CEMENT TRUCK CLEANING AND FIRE.
3. EXCEPTIONS TO INSTALLING FENCES AT TREE DRIPLINES MAY BE PERMITTED IN THE FOLLOWING CASES:
   - A. WHERE PERMEABLE PAVING IS TO BE INSTALLED, ERECT THE FENCE AT THE OUTER LIMITS OF THE PERMEABLE PAVING AREA.
   - B. WHERE TREES ARE CLOSE TO PROPOSED BUILDINGS, ERECT THE FENCE NO CLOSER THAN SIX FEET (6'-0") TO BUILDING.
4. CRITICAL ROOT ZONE REQUIREMENTS
   - A. NO CONSTRUCTION OR DISTURBANCE SHALL OCCUR WITHIN AN AREA THAT CONSTITUTES MORE THAN FIFTY (50%) OF THE TOTAL CRITICAL ROOT ZONE AND ONE HALF THE RADIAL DISTANCE OF THE CRITICAL ROOT ZONE FOR EACH TREE BEING PRESERVED INCLUDING SIGNIFICANT TREES, HERITAGE TREES, AND ANY OTHER TREES FOR WHICH PRESERVATION IS TO BE CREDITED. THE REMAINING CRITICAL ROOT ZONE SHALL CONSIST OF AT LEAST ONE HUNDRED (100) SQUARE FEET.
   - B. THIS DEFINED AREA SHALL BE FLAGGED AND ENCIRCLED WITH PROTECTIVE FENCING DURING CONSTRUCTION. THE PLANNING DIRECTOR MAY APPROVE CONSTRUCTION CLOSER TO THE TRUNK THAN ONE HALF (½) THE RADIAL DISTANCE, DEPENDING ON THE SIZE, SPACING, OR SPECIES OF THE TREE, THE TYPE OF DISTURBANCE PROPOSED, AND UNIQUENESS OF THE SITUATION.
   - C. CUT OR FILL THAT IS GREATER THAN FOUR (4) INCHES IN DEPTH AND THE SEVERING OF MAJOR ROOTS SHALL BE CONSIDERED DISTURBANCE FOR THE PURPOSES OF THIS ORDINANCE.
   - D. WITHIN THE PROTECTED CRITICAL ROOT ZONE, ONLY FLATWORK, DECKING, OR SIMILAR CONSTRUCTION, MAY BE APPROVED AND SHALL NOT AFFECT THE BRANCHING OF THE TREE.
   - E. IF PROPOSED OR ACTUAL PROTECTION OF THE CRITICAL ROOT ZONE OF A TREE DOES NOT MEET THE REQUIREMENTS OF THIS SECTION, THEN THE TREE SHALL BE CONSIDERED REMOVED AND SHALL REQUIRE MITIGATION IN ACCORDANCE WITH THIS ORDINANCE.

STATE OF TEXAS · WAYNE S. WATTS · 98134 · LICENSED PROFESSIONAL ENGINEER

Wayne S. Watts 08/21/15

City Of Leander, Texas

303-2
TREE PROTECTION

A1 NOT USED

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

LEANDER STANDARD TREE PROTECTION DETAIL

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C107
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TREE-PROT-NOTES.DWG, C107 LEANDER STANDARD TREE PROTECTION DETAIL, 3/28/2023 9:12:03 AM, cpadron-martinez

RAIDER WAY

LINE TABLE						
LINE #	BEARING	DISTANCE	START POINT (N, E)	END POINT (N, E)	START STATION	END STATION
L1	N20° 55' 50"W	1006.55	10178281.7391,3087486.3584	10179221.8759, 3087126.7817	0+50.00	10+56.55
L2	N25° 18' 44"W	174.90	10179250.0030,3087114.7721	10179408.1113, 3087039.9929	10+87.15	12+62.05
L3	N21° 26' 27"W	207.51	10179432.9163,3087029.2709	10179626.0630, 3086953.4187	12+89.07	14+96.58
L4	N18° 06' 21"W	179.83	10179647.9705,3086945.5430	10179818.8944, 3086889.6576	15+19.87	16+99.69
L5	N21° 03' 29"W	705.71	10179838.3113,3086882.7505	10180496.8894, 3086629.1800	17+20.30	24+26.01
L6	N19° 18' 43"W	238.04	10180508.3297,3086624.9742	10180732.9730, 3086546.2522	24+38.20	26+76.24
L7	N21° 03' 29"W	250.96	10180744.4133,3086542.0463	10180978.6167, 3086451.8717	26+88.43	29+39.39
L8	N36° 59' 13"W	63.60	10181099.7770,3086384.6491	10181150.5803, 3086346.3841	30+78.40	31+42.00
L9	N29° 04' 17"W	7.60	10181208.4485,3086308.7621	10181215.0877, 3086305.0711	32+11.08	32+18.67

CURVE TABLE						
CURVE #	DELTA	RADIUS	LENGTH	RADIUS PNT (N, E)	PC STATION	PT STATION
C1	4° 22' 55"	400.00	30.59	10179078.9819, 3086753.1759	10+56.55	10+87.15
C2	3° 52' 17"	400.00	27.03	10179579.1324, 3087401.5891	12+62.05	12+89.07
C3	3° 20' 06"	400.00	23.28	10179772.2791, 3087325.7369	14+96.58	15+19.87
C4	2° 57' 08"	400.00	20.61	10179694.5858, 3086509.4637	16+99.69	17+20.30
C5	1° 44' 46"	400.00	12.19	10180640.6149, 3087002.4668	24+26.01	24+38.20
C6	1° 44' 46"	400.00	12.19	10180600.6878, 3086168.7596	26+76.24	26+88.43
C7	15° 55' 44"	500.00	139.01	10180798.9599, 3085985.2633	29+39.39	30+78.40
C8	7° 54' 57"	500.00	69.08	10181451.3975, 3086745.7699	31+42.00	32+11.08

EAST WOODVIEW DRIVE

LINE TABLE						
LINE #	BEARING	DISTANCE	START POINT (N, E)	END POINT (N, E)	START STATION	END STATION
L10	N68° 39' 37"E	797.06	10180224.8726,3084702.1994	10180514.9190, 3085444.6078	0+50.00	8+47.06
L11	N66° 46' 33"E	126.42	10180519.9069,3085456.7805	10180569.7569, 3085572.9539	8+60.21	9+86.63
L12	N68° 52' 42"E	952.46	10180575.2960,3085586.5453	10180918.5144, 3086475.0127	10+01.31	19+53.76

CURVE TABLE						
CURVE #	DELTA	RADIUS	LENGTH	RADIUS PNT (N, E)	PC STATION	PT STATION
C9	1° 53' 04"	400.00	13.16	10180887.4946, 3085299.0488	8+47.06	8+60.21
C10	2° 06' 09"	400.00	14.68	10180202.1692, 3085730.6857	9+86.63	10+01.31

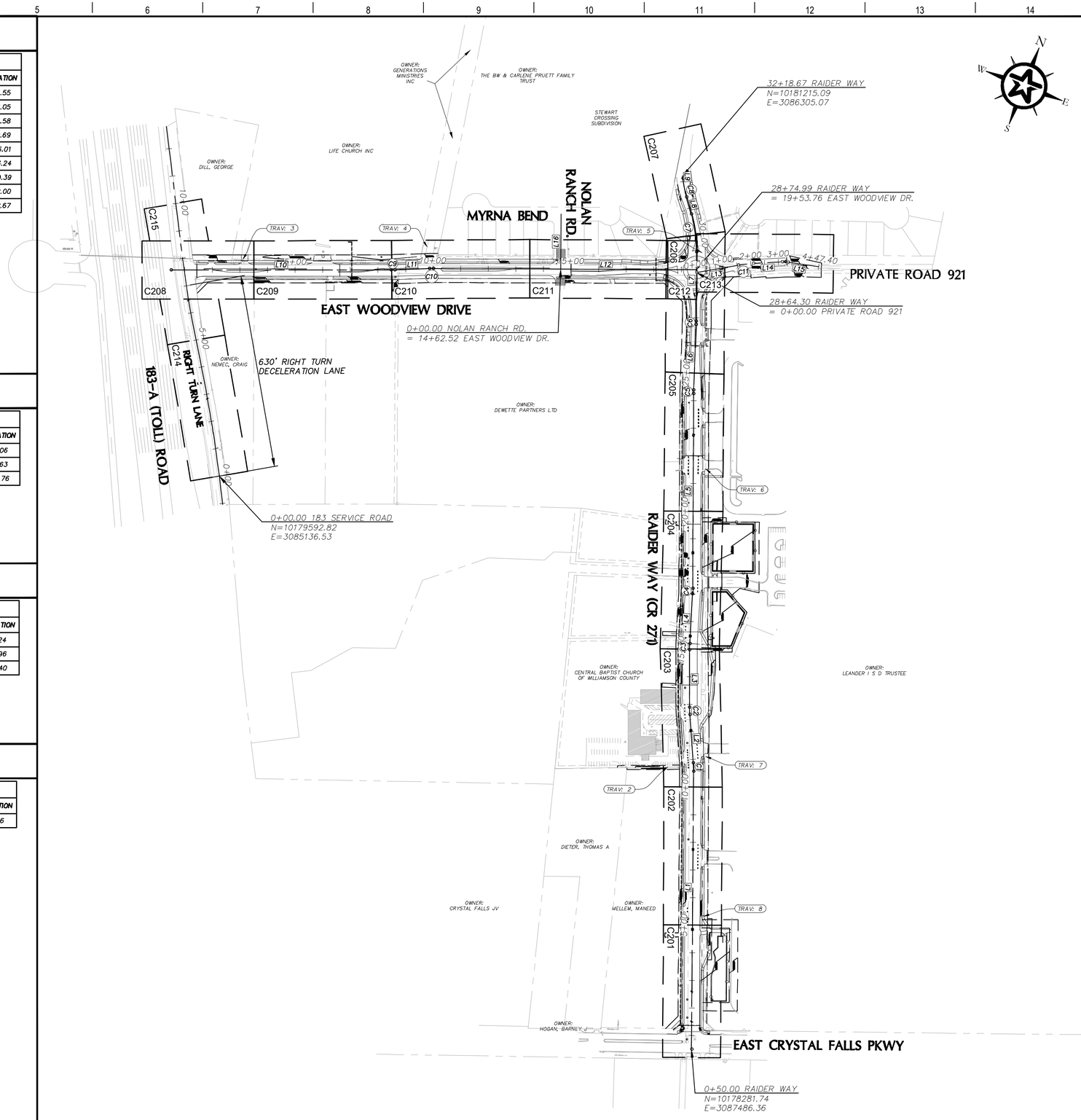
PRIVATE ROAD 921

LINE TABLE						
LINE #	BEARING	DISTANCE	START POINT (N, E)	END POINT (N, E)	START STATION	END STATION
L13	N58° 50' 04"E	154.24	10180908.5395,3086478.8533	10180988.3610, 3086610.8330	0+00.00	1+54.24
L14	N65° 16' 20"E	103.54	10181014.6757,3086660.4351	10181057.9887, 3086754.4839	2+10.42	3+13.96
L15	N77° 19' 07"E	112.41	10181064.7188,3086774.3617	10181089.3968, 3086884.0321	3+34.99	4+47.40

CURVE TABLE						
CURVE #	DELTA	RADIUS	LENGTH	RADIUS PNT (N, E)	PC STATION	PT STATION
C11	6° 26' 16"	500.00	56.18	10180560.5233, 3086869.5895	1+54.24	2+10.42

NOLAN RANCH ROAD

LINE TABLE						
LINE #	BEARING	DISTANCE	START POINT (N, E)	END POINT (N, E)	START STATION	END STATION
L16	N21° 07' 18"W	199.26	10180741.4941,3086016.7717	10180927.3684, 3085944.9678	0+00.00	1+99.26



NOTES

THE COORDINATES AND ELEVATIONS ARE BASED UPON STATE PLANE COORDINATE SYSTEM, NAD 83, TEXAS CENTRAL ZONE, NAVD 88 ACQUIRED FROM GLOBAL POSITIONING SYSTEM OBSERVATIONS. THE COORDINATES SHOWN HEREON ARE GRID COORDINATES.

0 100 200 400

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

OVERALL STREET LAYOUT MAP

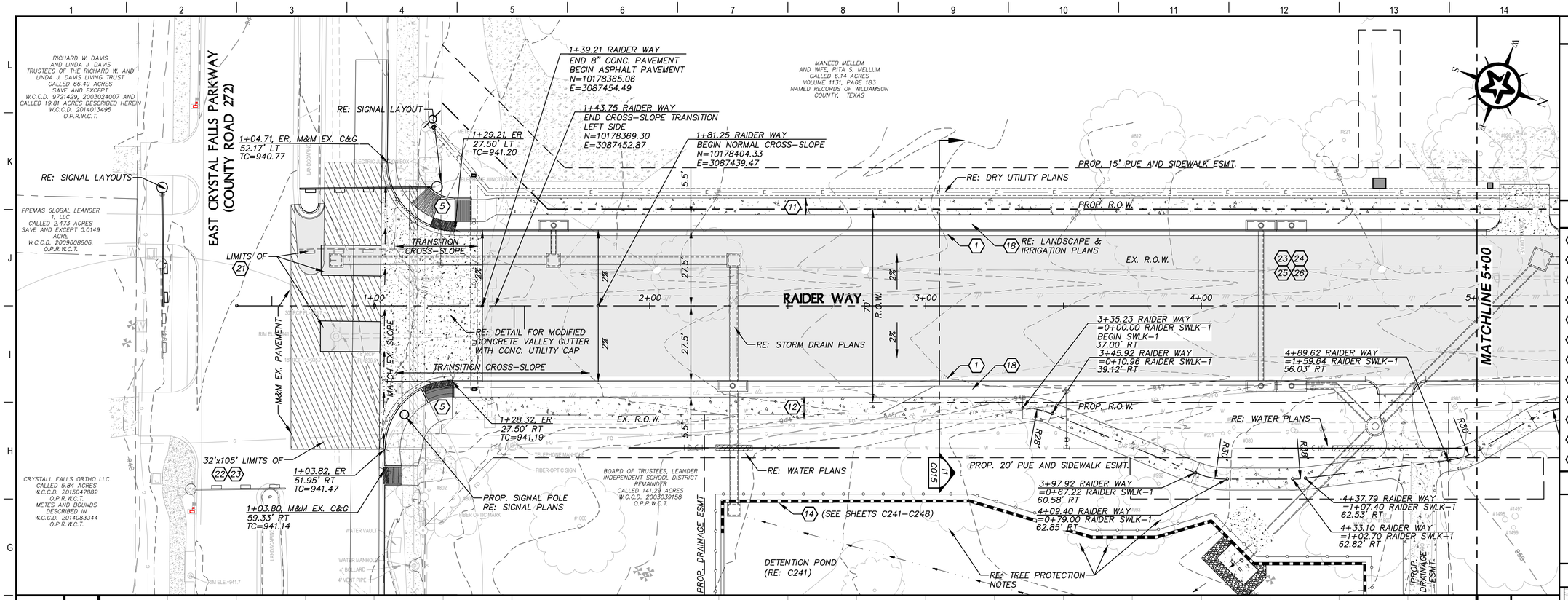
03/30/2023
DATE

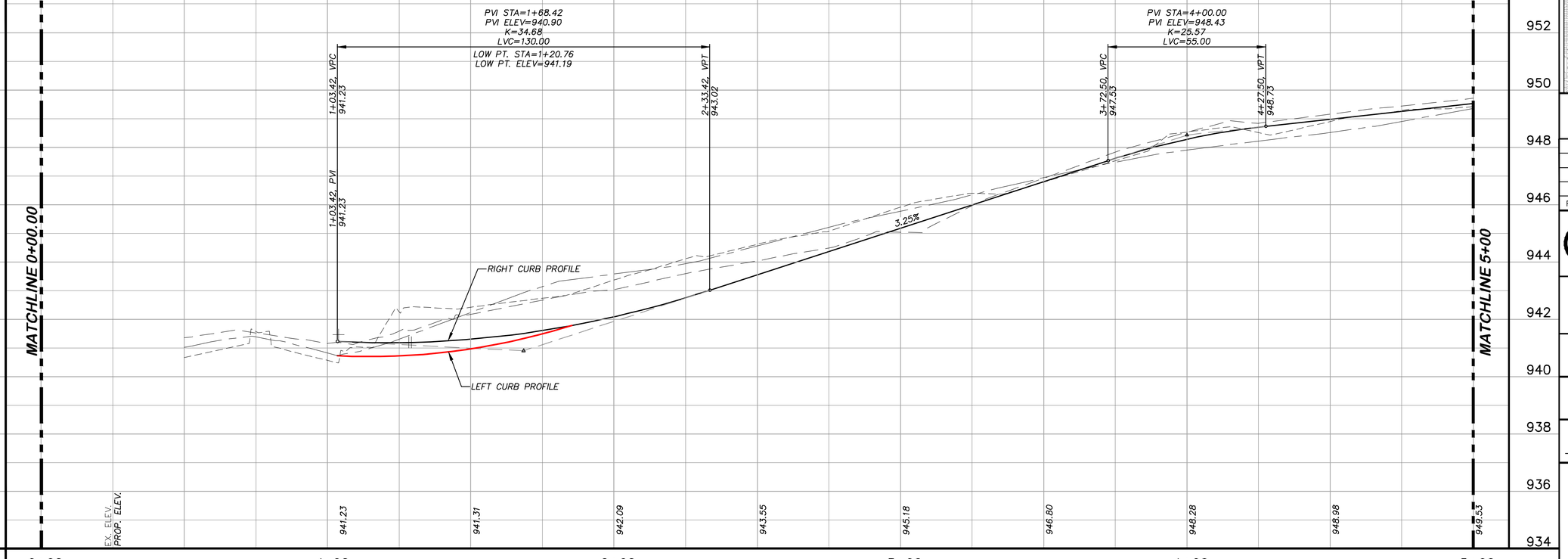
R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C200
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585 OVERALL STREET LAYOUT.DWG, OVERALL STREET LAYOUT MAP, 3/31/2023 12:38:38 PM, MCastelli





GENERAL NOTES

1. RE: C006 FOR ROADWAY ALIGNMENTS AND CURVE TABLES
2. RE: C014-C020 FOR STREET TYPICAL SECTIONS
3. WHERE PROP CURB & GUTTER TIES INTO EXISTING CURB & GUTTER, TRANSITION TO EXISTING GUTTER CROSS-SLOPE WILL BE 5'
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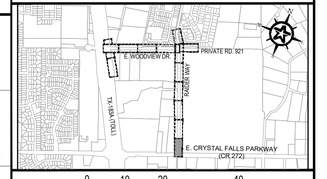
KEY NOTES

1	REINFORCED CURB & GUTTER (RE: G5/####)
5	COA 432S (RE: C237)
11	6' WIDE 4" REINF. CONC. SIDEWALK (A1 C236)
12	8' WIDE 4" REINF. CONC. SIDEWALK (A1 C236)
14	RETAINING WALL
18	FURNISHING AND PLACING TOPSOIL (4") (RE: COA 601S)
21	FULL DEPTH ASPHALTIC CONCRETE PAVEMENT TRENCH REPAIR (RE: G1/####)
22	MILLING ASPHALTIC PAVEMENT (RE: COA 315S)
23	HOT MIX ASPHALTIC CONCRETE PAVEMENT (2") TY-C (RE: COA 340S)
24	HOT MIX ASPHALTIC PAVEMENT (4") TY-B (RE: COA 340S)
25	PRIME COAT (AE-P) (RE: COA 306S)
26	12" FLEX BASE (RE: COA 210S)

PROFILE LEGEND

DRIVEWAY XXX	DRIVEWAY NUMBER (RE: C223-C231)
N.G. ~ CENTERLINE	T.O.C. ~ LT & RT
N.G. ~ 25' LEFT	T.O.C. ~ LEFT
N.G. ~ 25' RIGHT	T.O.C. ~ RIGHT

KEY MAP



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GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STREET IMPROVEMENTS
RAIDER WAY
STA. 0+00-5+00

03/30/2023
DATE
R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C201
SHEET	OF

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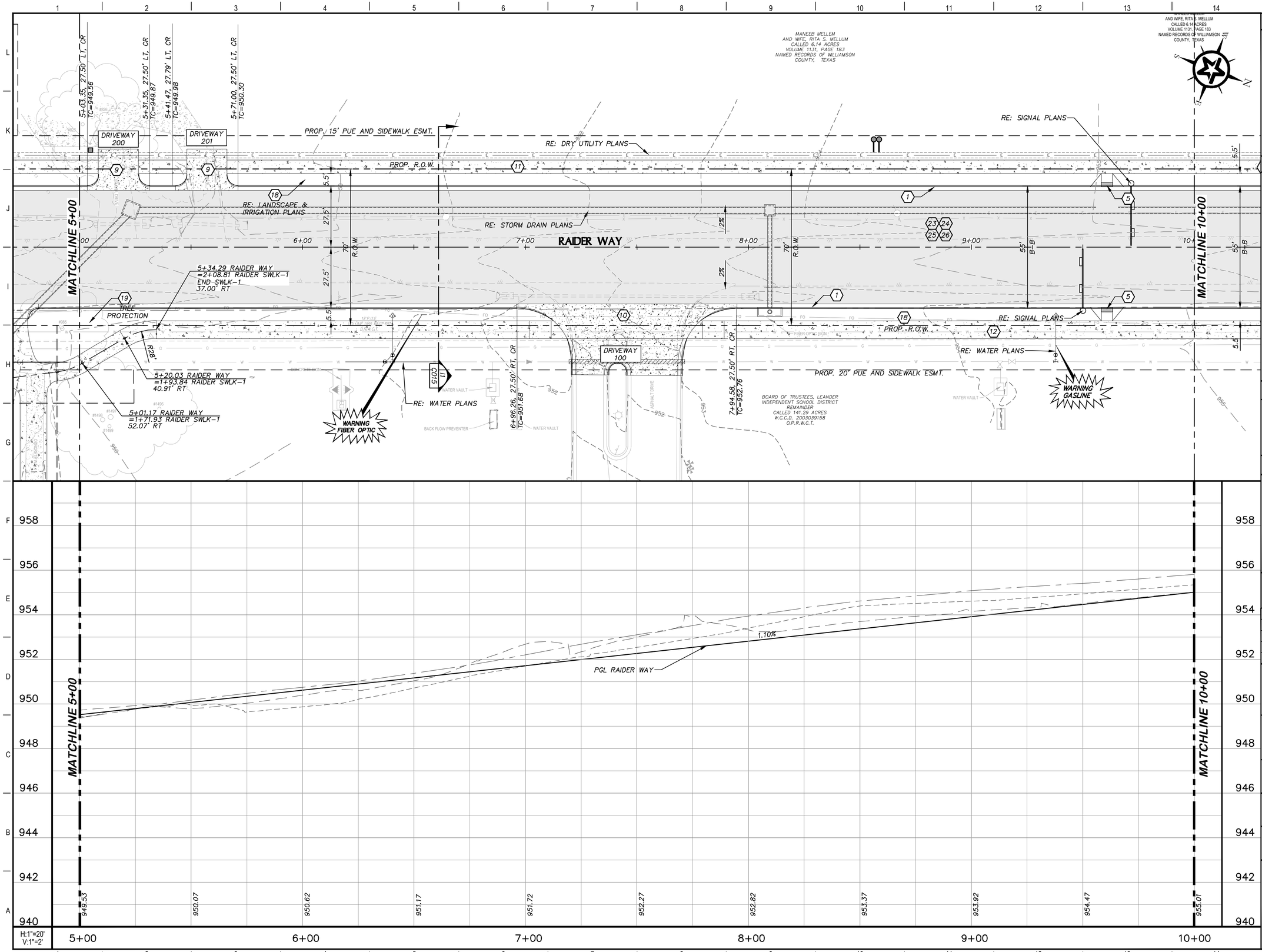

GENERAL NOTES

1. RE: C006 FOR ROADWAY ALIGNMENTS AND CURVE TABLES
2. RE: C014–C020 FOR STREET TYPICAL SECTIONS
3. WHERE PROP CURB & GUTTER TIES INTO EXISTING CURB & GUTTER, TRANSITION TO EXISTING GUTTER CROSS–SLOPE WILL BE 5'
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KEY NOTES

1	REINFORCED CURB & GUTTER (RE: G5/####)
5	COA 432S (RE: C236)
9	TYPE I DRIVEWAY (AUSTIN 433F–1)
10	TYPE II DRIVEWAY (AUSTIN 433F–2)
11	6' WIDE 4" REINF. CONC. SIDEWALK (A1 C235)
12	8' WIDE 4" REINF. CONC. SIDEWALK (A1 C235)
14	RETAINING WALL
18	FURNISHING AND PLACING TOPSOIL (4") (RE: COA 601S)
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22	MILLING ASPHALTIC PAVEMENT (RE: COA 315S)
23	HOT MIX ASPHALTIC CONCRETE PAVEMENT (2") TY–C (RE: COA 340S)
24	HOT MIX ASPHALTIC PAVEMENT (4") TY–B (RE: COA 340S)
25	PRIME COAT (AE–P) (RE: COA 306S)
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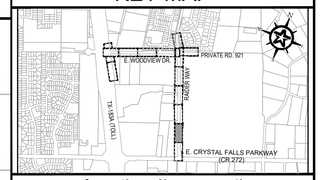
PROFILE LEGEND

DRIVEWAY XXX — DRIVEWAY NUMBER (RE: C223–C231)

N.G. ~ CENTERLINE	T.O.C. ~ LT & RT
N.G. ~ 25' LEFT	T.O.C. ~ LEFT
N.G. ~ 25' RIGHT	T.O.C. ~ RIGHT

KEY MAP



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GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STREET IMPROVEMENTS
RAIDER WAY
STA. 5+00-10+00

03/30/2023
DATE

R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C202
SHEET	OF

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MANEEB MELLEM AND WIFE, RITA S. MELLUM CALLED 6.14 ACRES VOLUME 1131, PAGE 183 NAMED RECORDS OF WILLIAMSON COUNTY, TEXAS

TRAV. 2 N: 10179203.38 E: 3087033.28 ELEV: 956.50 MAG NAIL WITH WASHER STAMPED "WALKER PARTNERS"

RE: CHURCH OFF-SITE PLANS – C232

GIDDENS WESKIM ESTATES CABINET H, SLIDE 250 P.R.W.C.T.

CENTRAL BAPTIST CHURCH OF WILLIAMSON COUNTY VOLUME 1644, PAGE 917 O.R.W.C.T.

DRIVEWAY 202

DRIVEWAY 203

DRIVEWAY 204

DRIVEWAY 101

RE: DRY UTILITY PLANS

PROP. 15' PUE AND SIDEWALK ESMT.

PROP. R.O.W.

RE: LANDSCAPE & IRRIGATION PLAN

RE: STORM DRAIN PLANS

RAIDER WAY

MATCHLINE 10+00

MATCHLINE 15+00

12+08.45 RAIDER WAY =0+00.00 RAIDER SWLK–2 BEGIN SWLK–2 37.00' RT

12+26.08 RAIDER WAY =0+17.81 RAIDER SWLK–2 42.48' RT

12+53.70 RAIDER WAY =0+52.14 RAIDER SWLK–2 62.87' RT

12+75.26 RAIDER WAY =0+73.31 RAIDER SWLK–2 71.17' RT

13+40.83 RAIDER WAY =1+36.93 RAIDER SWLK–2 79.45' RT

13+44.16 RAIDER WAY =1+40.28 RAIDER SWLK–2 79.76' RT

14+36.38 RAIDER WAY =2+32.85 RAIDER SWLK–2 85.07' RT

14+49.85 RAIDER WAY =2+46.22 RAIDER SWLK–2 83.94' RT

RE: WATER PLANS

RE: TREE PROTECTION NOTES

EX. R.O.W.

PROP. PUE AND SIDEWALK ESMT.

WARNING FIBER OPTIC

WARNING GASLINE

BOARD OF TRUSTEES, LEANDER INDEPENDENT SCHOOL DISTRICT REMAINDER CALLED, 141.29 ACRES W.C.C.D. 2003039158 O.P.R.W.C.T.

TRAV. 7 N: 10179288.22 E: 3087148.05 ELEV: 957.09 1/2" IRON ROD WITH CAP STAMPED "WALKER TRAV."

PVI STA=14+25.00
PVI ELEV=960.25
K=51.96
LVC=70.00

10+56.55, PC 955.64

10+87.15, PT 955.97

11+90.00, PVI 957.10

12+62.05, PC 958.07

12+89.07, PT 958.43

13+90.00, VPC 959.78

14+60.00, VPT 961.19

14+96.58, PC 962.17

1.10%

1.34%

PGL RAIDER WAY

955.01 955.56 956.11 956.66 957.23 957.90 958.57 959.24 959.92 960.93 962.27

H:1"=20'
V:1"=2'

10+00 11+00 12+00 13+00 14+00 15+00

GENERAL NOTES

1. RE: C006 FOR ROADWAY ALIGNMENTS AND CURVE TABLES
2. RE: C014–C020 FOR STREET TYPICAL SECTIONS
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12	8' WIDE 4" REINF. CONC. SIDEWALK (A1 C235)
14	RETAINING WALL
15	PERMANENT MAILBOX AFTER CONSTRUCTION (RE: C242–C245) RE: TRAFFIC CONTROL NOTES FOR TEMP. MAILBOXES DURING CONSTRUCTION
18	FURNISHING AND PLACING TOPSOIL (4") (RE: COA 601S)
21	FULL DEPTH ASPHALTIC CONCRETE PAVEMENT TRENCH REPAIR (RE: G1/C237)
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PROFILE LEGEND

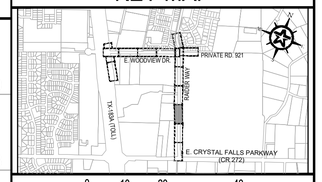
DRIVEWAY XXX — DRIVEWAY NUMBER (RE: C223–C231)

N.G. ~ CENTERLINE — T.O.C. ~ LT & RT

N.G. ~ 25' LEFT — T.O.C. ~ LEFT

N.G. ~ 25' RIGHT — T.O.C. ~ RIGHT

KEY MAP



0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STREET IMPROVEMENTS
RAIDER WAY
STA. 10+00–15+00

03/30/2023 DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C203
SHEET	OF

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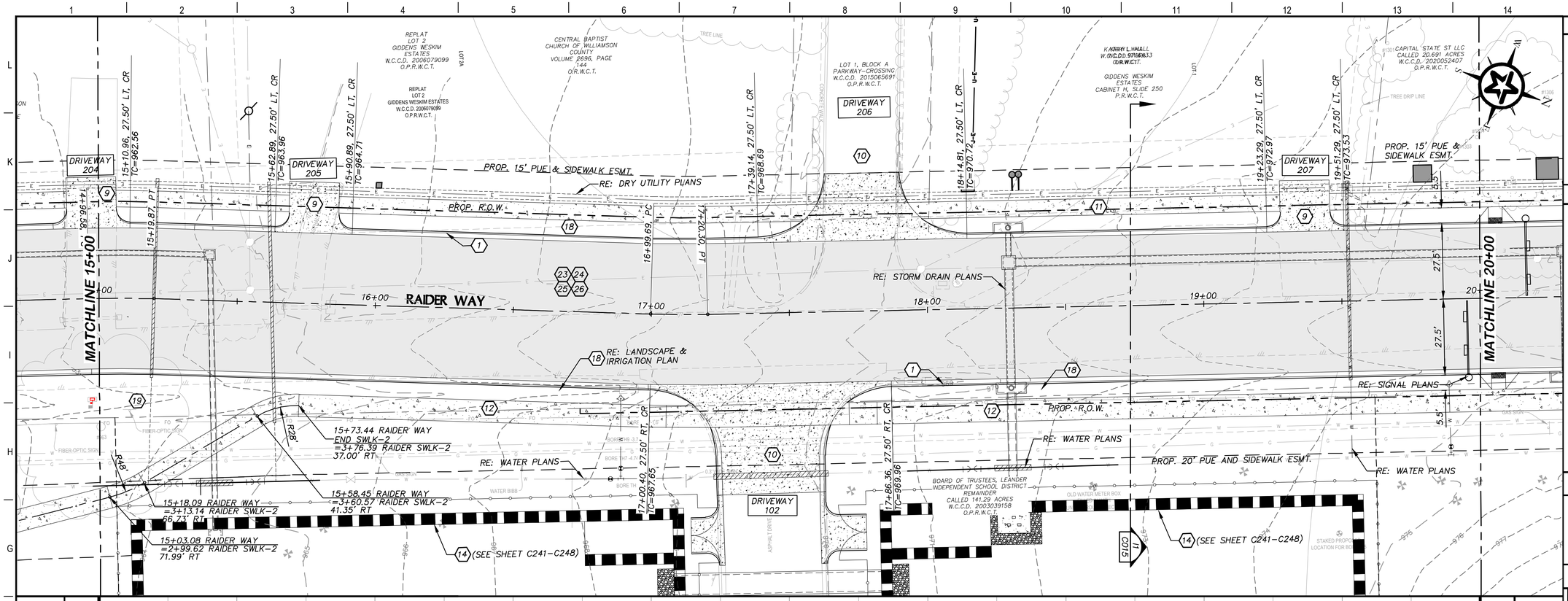

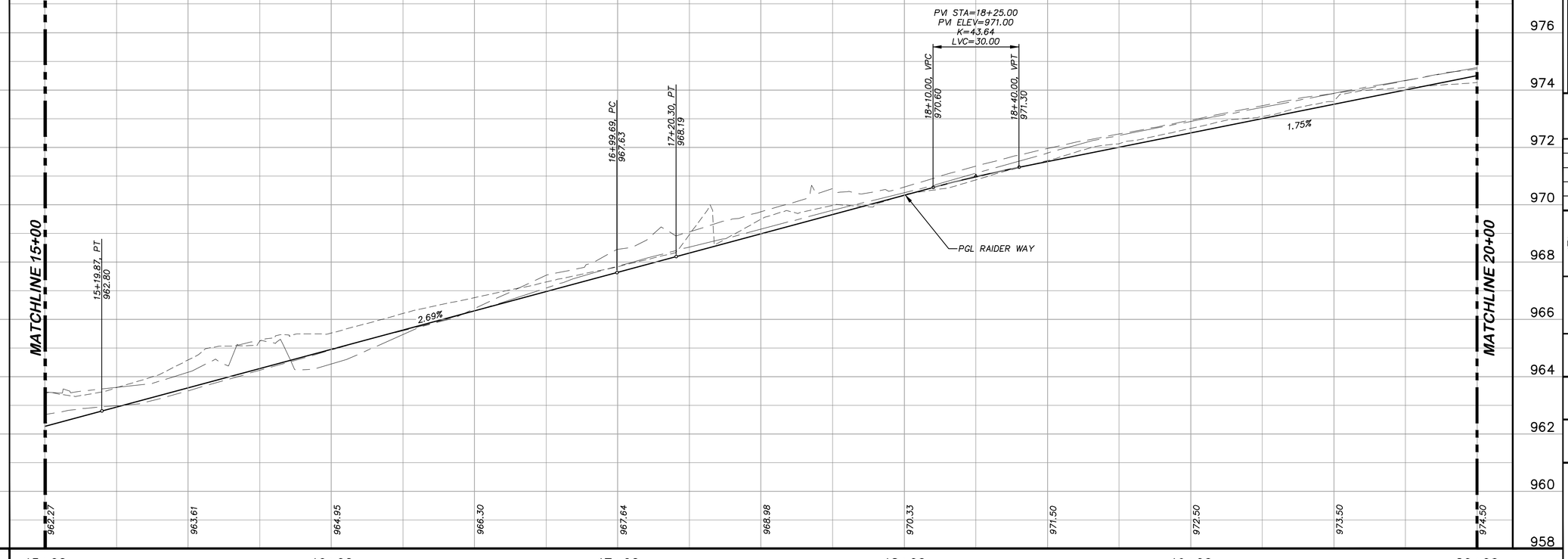

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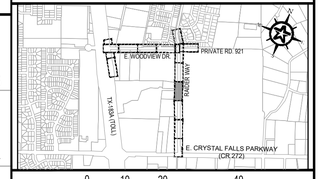
PROFILE LEGEND

DRIVEWAY XXX — DRIVEWAY NUMBER (RE: C223-C231)

N.G. ~ CENTERLINE — T.O.C. ~ LT & RT
N.G. ~ 25' LEFT — T.O.C. ~ LEFT
N.G. ~ 25' RIGHT — T.O.C. ~ RIGHT

KEY MAP



0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STREET IMPROVEMENTS
RAIDER WAY
STA. 15+00-20+00

03/30/2023 — DATE
R. ALAN MUNGER, PE

STATE OF TEXAS — R. ALAN MUNGER — 65341 — REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C204
SHEET	OF

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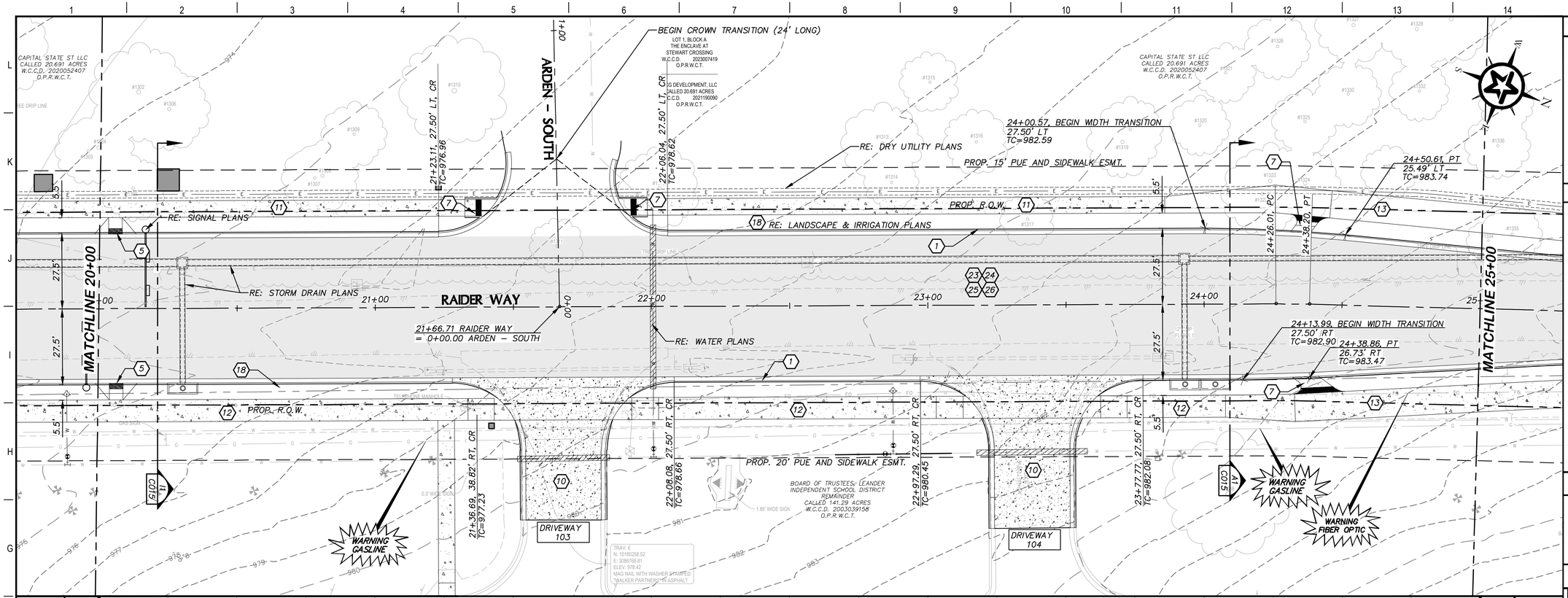
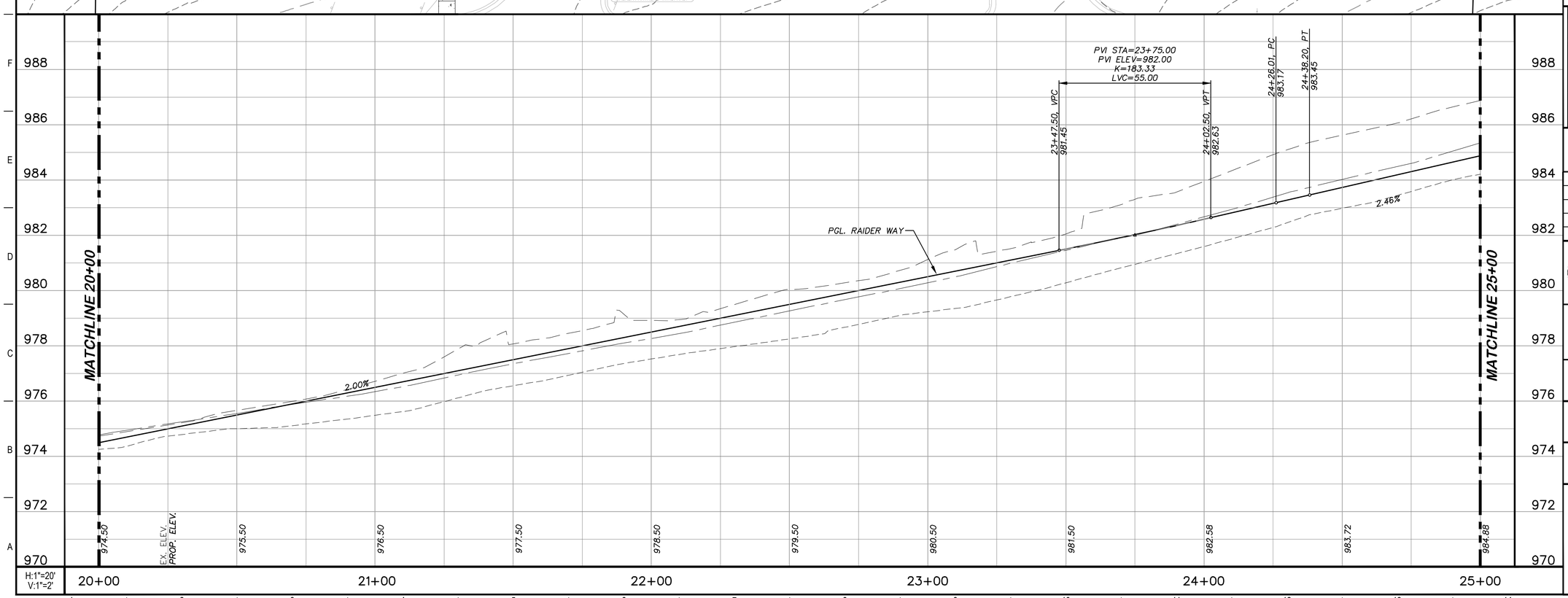




GENERAL NOTES

1. RE: C006 FOR ROADWAY ALIGNMENTS AND CURVE TABLES
2. RE: C014–C020 FOR STREET TYPICAL SECTIONS
3. WHERE PROP CURB & GUTTER TIES INTO EXISTING CURB & GUTTER, TRANSITION TO EXISTING GUTTER CROSS–SLOPE WILL BE 5'
4. ALL CALLOUTS AND DIMENSIONS ALONG CURB ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.
5. ALL EXISTING UTILITIES MUST BE FIELD VERIFIED PRIOR TO PERFORMING ANY ACTIVITY. IT IS THE RESPONSIBILITY OF THE UTILITY COMPANY TO VERIFY LOCATION OF EXISTING UTILITIES THAT MAY CONFLICT WITH CONSTRUCTION.

KEY NOTES

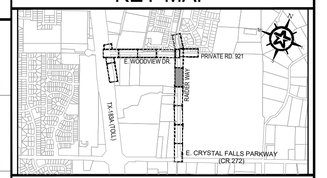
1	REINFORCED CURB & GUTTER (RE: G5/####)
5	COA 432S (RE: C236)
7	TxDOT TYPE 7 RAMP (TxDOT 531)
10	TYPE II DRIVEWAY (AUSTIN 433F–2)
11	6' WIDE 4" REINF. CONC. SIDEWALK (A1 C235)
12	8' WIDE 4" REINF. CONC. SIDEWALK (A1 C235)
14	RETAINING WALL
18	FURNISHING AND PLACING TOPSOIL (4") (RE: COA 601S)
21	FULL DEPTH ASPHALTIC CONCRETE PAVEMENT TRENCH REPAIR (RE: G1/C237)
22	MILLING ASPHALTIC PAVEMENT (RE: COA 315S)
23	HOT MIX ASPHALTIC CONCRETE PAVEMENT (2") TY–C (RE: COA 340S)
24	HOT MIX ASPHALTIC PAVEMENT (4") TY–B (RE: COA 340S)
25	PRIME COAT (AE–P) (RE: COA 306S)
26	12" FLEX BASE (RE: COA 210S)

PROFILE LEGEND

DRIVEWAY XXX — DRIVEWAY NUMBER (RE: C223–C231)

N.G. ~ CENTERLINE	T.O.C. ~ LT & RT
N.G. ~ 25' LEFT	T.O.C. ~ LEFT
N.G. ~ 25' RIGHT	T.O.C. ~ RIGHT

KEY MAP



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GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STREET IMPROVEMENTS
RAIDER WAY
STA. 20+00-25+00

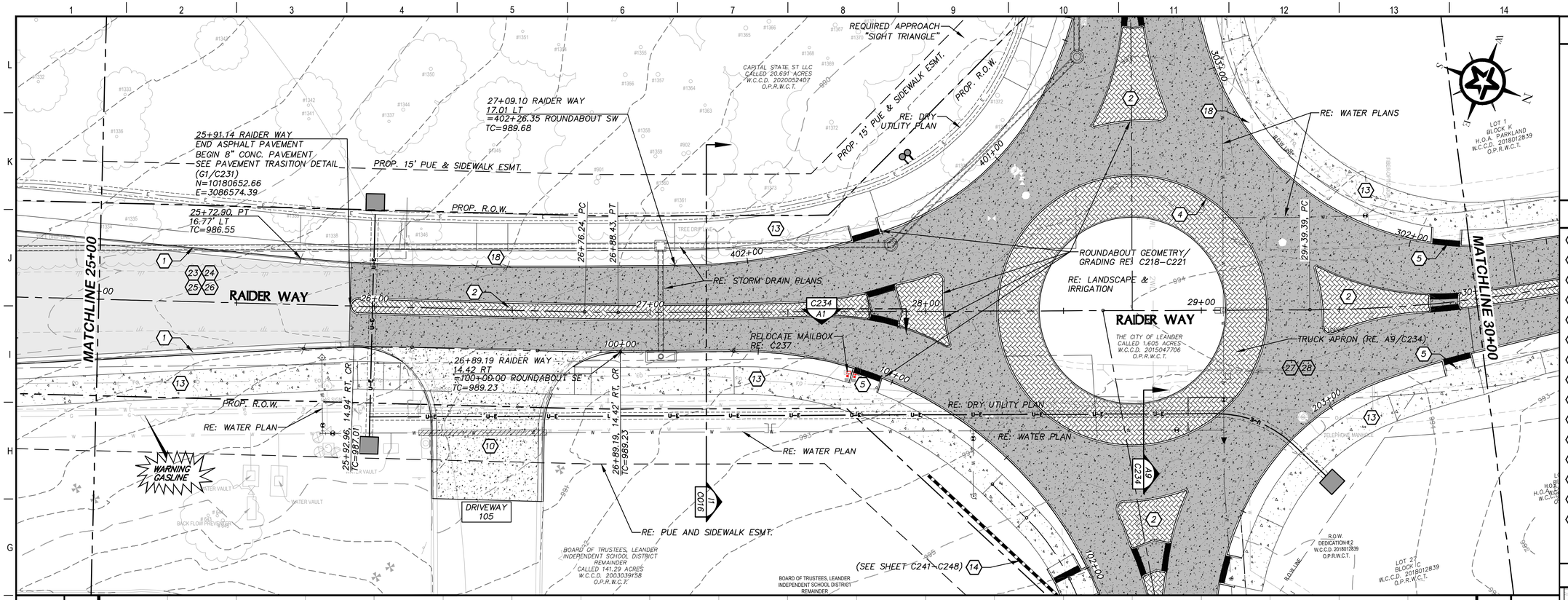
03/30/2023
DATE

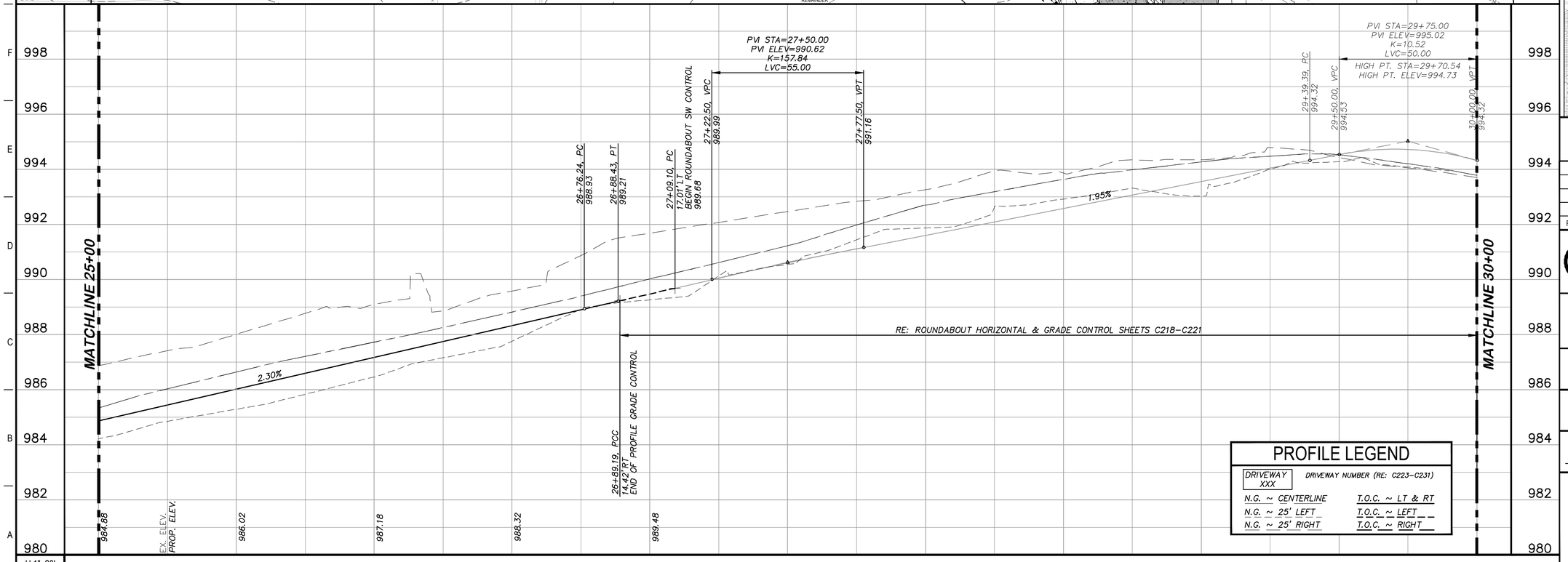
R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C205
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STREET-RAIDER.DWG, C205 20+00-25+00, 3/31/2023 12:46:22 PM, MCastelli





GENERAL NOTES

1. RE: C006 FOR ROADWAY ALIGNMENTS AND CURVE TABLES
2. RE: C014–C020 FOR STREET TYPICAL SECTIONS
3. WHERE PROP CURB & GUTTER TIES INTO EXISTING CURB & GUTTER, TRANSITION TO EXISTING GUTTER CROSS–SLOPE WILL BE 5'
4. ALL CALLOUTS AND DIMENSIONS ALONG CURB ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.
5. ALL EXISTING UTILITIES MUST BE FIELD VERIFIED PRIOR TO PERFORMING ANY ACTIVITY. IT IS THE RESPONSIBILITY OF THE UTILITY COMPANY TO VERIFY LOCATION OF EXISTING UTILITIES THAT MAY CONFLICT WITH CONSTRUCTION.

KEY NOTES

1. REINFORCED CURB & GUTTER (RE: G5/C232)
2. DOWELED CURB (RE: A1/C230)
4. ROUNDABOUT MOUNTABLE CURB (RE: G9/####)
5. COA 432S (RE: C234)
10. TYPE II DRIVEWAY (RE: A1/C235)
13. 10' WIDE 6" REINF. CONC. SIDEWALK (RE: A1/C233)
14. RETAINING WALL
18. FURNISHING AND PLACING TOPSOIL (4") (RE: 601S)
20. LANDSCAPE PAVERS (RE: C232)
23. HOT MIX ASPHALTIC CONCRETE PAVEMENT (2") TY–C (RE: COA 340S)
24. HOT MIX ASPHALTIC PAVEMENT (4") TY–B (RE: COA 340S)
25. PRIME COAT (AE–P) (RE: COA 306S)
26. 12" FLEX BASE (RE: COA 210S)
27. 8" P.C. CONCRETE PAVEMENT (RE: A1/C229)
28. 7" ASPHALT STABILIZED BASE (RE: COA 206S)

KEY MAP



REV.	DESCRIPTION	DATE

PROFILE LEGEND

DRIVEWAY XXX	DRIVEWAY NUMBER (RE: C223–C231)
N.G. ~ CENTERLINE	T.O.C. ~ LT & RT
N.G. ~ 25' LEFT	T.O.C. ~ LEFT
N.G. ~ 25' RIGHT	T.O.C. ~ RIGHT

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STREET IMPROVEMENTS
RAIDER WAY
STA. 25+00–30+00

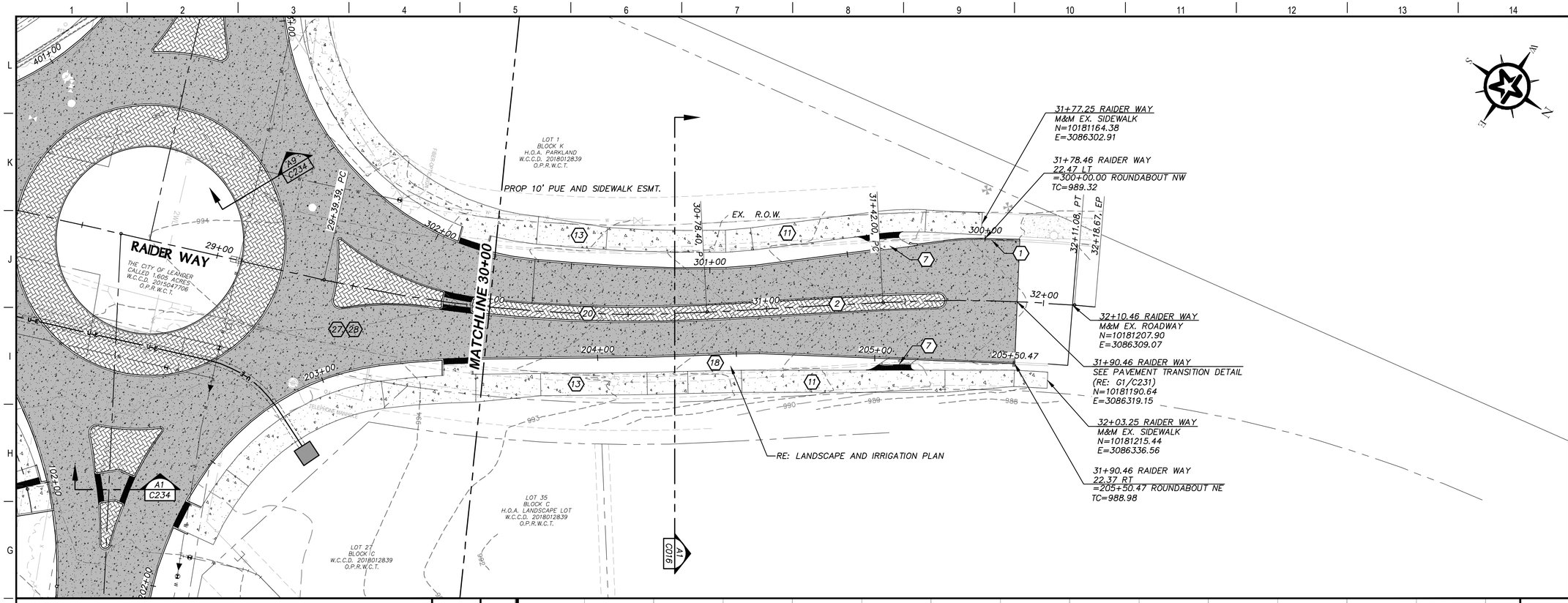
03/30/2023
DATE

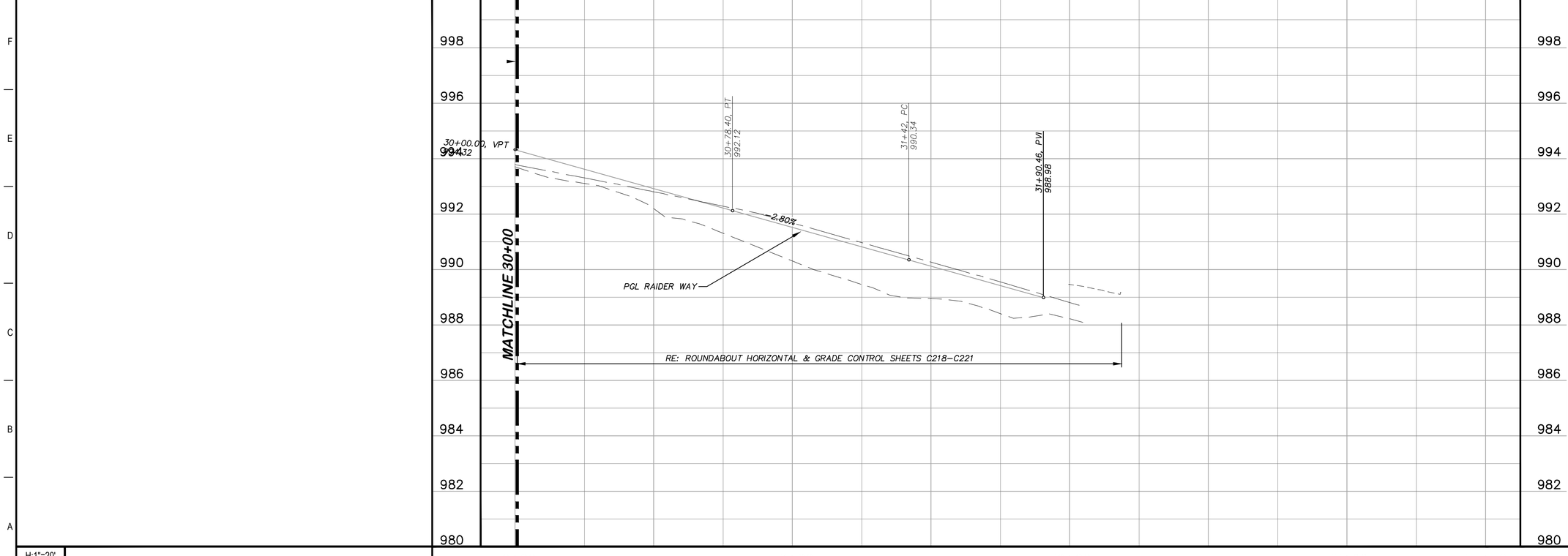
R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C206
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STREET-RAIDER.DWG, C206 25+00-30+00, 3/31/2023 12:47:15 PM, MCastelli





GENERAL NOTES

1. RE: C006 FOR ROADWAY ALIGNMENTS AND CURVE TABLES
2. RE: C014–#### FOR STREET TYPICAL SECTIONS
3. WHERE PROP CURB & GUTTER TIES INTO EXISTING CURB & GUTTER, TRANSITION TO EXISTING GUTTER CROSS–SLOPE WILL BE 5'
4. ALL CALLOUTS AND DIMENSIONS ALONG CURB ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.
5. ALL EXISTING UTILITIES MUST BE FIELD VERIFIED PRIOR TO PERFORMING ANY ACTIVITY. IT IS THE RESPONSIBILITY OF THE UTILITY COMPANY TO VERIFY LOCATION OF EXISTING UTILITIES THAT MAY CONFLICT WITH CONSTRUCTION.

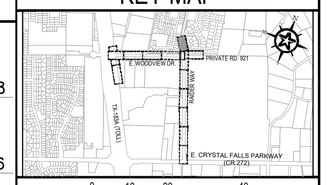
KEY NOTES

1	REINFORCED CURB & GUTTER (RE: G5/####)
2	DOWELED CURB (RE: A1/C230)
7	COA 432S (RE: ####)
11	6' WIDE 4" REINF. CONC. SIDEWALK (RE: A1/####)
13	10' WIDE 6" REINF. CONC. SIDEWALK (RE: A1/####)
18	FURNISHING AND PLACING TOPSOIL (4") (RE: COA 601S)
20	LANDSCAPE PAVERS (RE: C232)
27	8" P.C. CONCRETE PAVEMENT (RE: A1/229)
28	7" ASPHALT STABILIZED BASE (RE: COA 206S)

PROFILE LEGEND

DRIVEWAY XXX	DRIVEWAY NUMBER (RE: C223–C231)
N.G. ~ CENTERLINE	T.O.C. ~ LT & RT
N.G. ~ 25' LEFT	T.O.C. ~ LEFT
N.G. ~ 25' RIGHT	T.O.C. ~ RIGHT

KEY MAP



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GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STREET IMPROVEMENTS
RAIDER WAY
STA. 30+00.00-END

03/30/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C207
SHEET	OF

H:1"=20'
V:1"=2'

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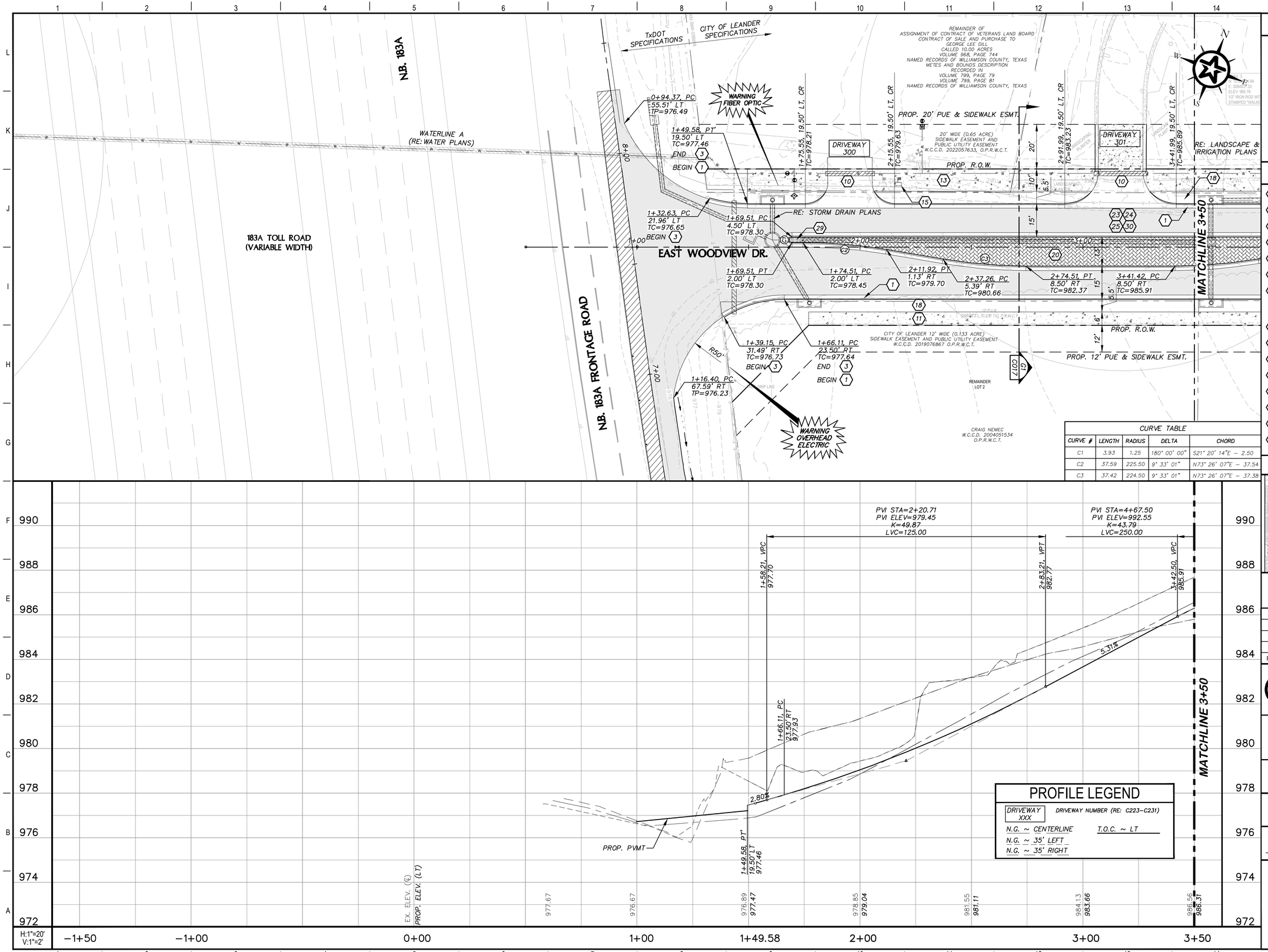


CURVE TABLE				
CURVE #	LENGTH	RADIUS	DELTA	CHORD
C1	3.93	1.25	180° 00' 00"	S21° 20' 14"E – 2.50
C2	37.59	225.50	9° 33' 01"	N73° 26' 07"E – 37.54
C3	37.42	224.50	9° 33' 01"	N73° 26' 07"E – 37.38

PROFILE LEGEND

DRIVEWAY XXX — DRIVEWAY NUMBER (RE: C223–C231)

N.G. ~ CENTERLINE — T.O.C. ~ LT

N.G. ~ 35' LEFT

N.G. ~ 35' RIGHT

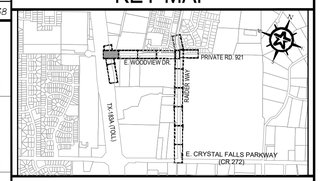
GENERAL NOTES

1. RE: C006 FOR ROADWAY ALIGNMENTS AND CURVE TABLES
2. RE: C014–#### FOR STREET TYPICAL SECTIONS
3. WHERE PROP CURB & GUTTER TIES INTO EXISTING CURB & GUTTER, TRANSITION TO EXISTING GUTTER CROSS–SLOPE WILL BE 5'
4. ALL CALLOUTS AND DIMENSIONS ALONG CURB ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.
5. ALL EXISTING UTILITIES MUST BE FIELD VERIFIED PRIOR TO PERFORMING ANY ACTIVITY. IT IS THE RESPONSIBILITY OF THE UTILITY COMPANY TO VERIFY LOCATION OF EXISTING UTILITIES THAT MAY CONFLICT WITH CONSTRUCTION.

KEY NOTES

1. REINFORCED CURB & GUTTER (RE: G5/C233)
2. DOWELED CURB (RE: A1/C230)
3. RIBBON CURB (RE: A8/C230)
10. TYPE II DRIVEWAY (RE: A1/C235)
11. 6' WIDE 4" REINF. CONC. SIDEWALK (RE: A1/C233)
13. 10' WIDE 6" REINF. CONC. SIDEWALK (RE: A1/C233)
15. PERMANENT MAILBOX AFTER CONSTRUCTION (RE: C237) RE: TRAFFIC CONTROL NOTES FOR TEMPORARY MAILBOXES DURING CONSTRUCTION
16. SAW–CUT EX. PVMT. MIN. 1', MATCH EX. GRADE AND CONSTRUCT PVMT.
18. FURNISHING AND PLACING TOPSOIL (4") (RE: COA 601S)
20. LANDSCAPE PAVERS (RE: C232)
23. HOT MIX ASPHALTIC CONCRETE PAVEMENT (2") TY–C (RE: COA 340S)
24. HOT MIX ASPHALTIC PAVEMENT (4") TY–B (RE: COA 340S)
25. PRIME COAT (AE–P) (RE: COA 306S)
29. CONCRETE MEDIAN NOSE (RE: G8/C230)
30. 10" FLEX BASE (RE: COA 210S)

KEY MAP



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GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STREET PLAN & PROFILE
EAST WOODVIEW DR
STA. 1+00-3+50

03/30/2023
DATE

R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C208

SHEET XXX OF 201

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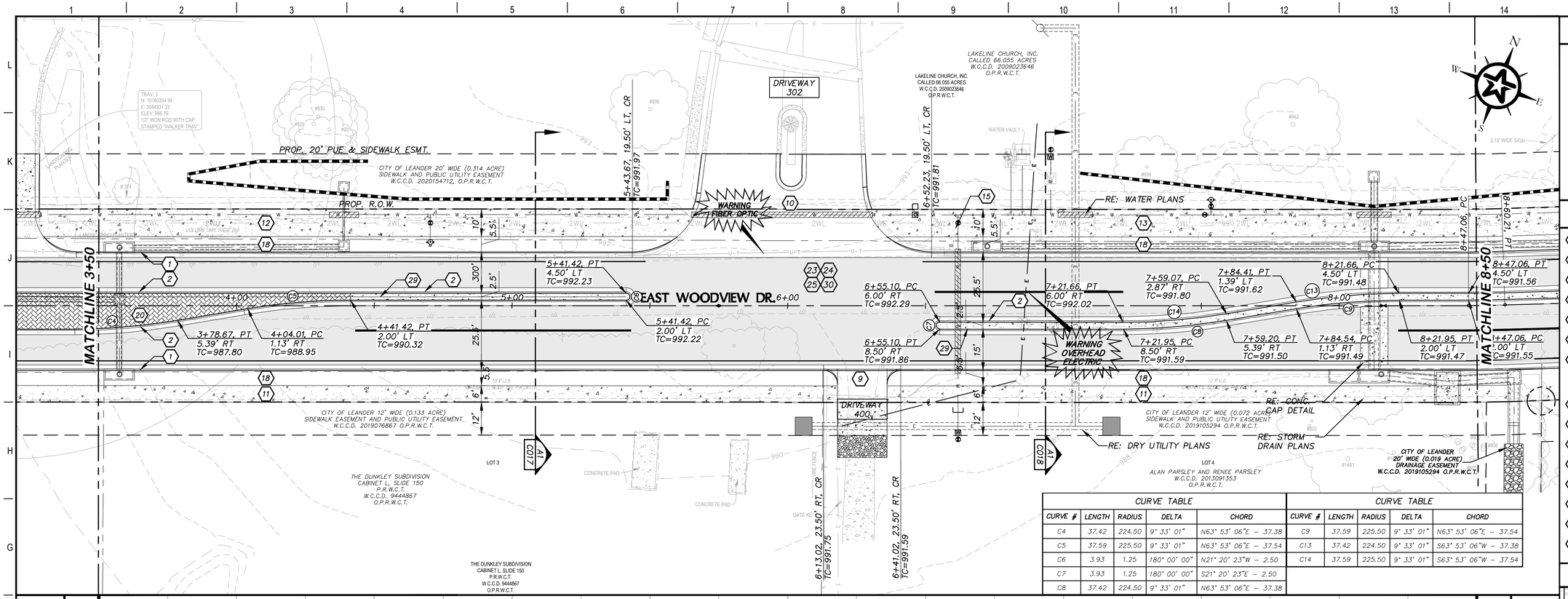
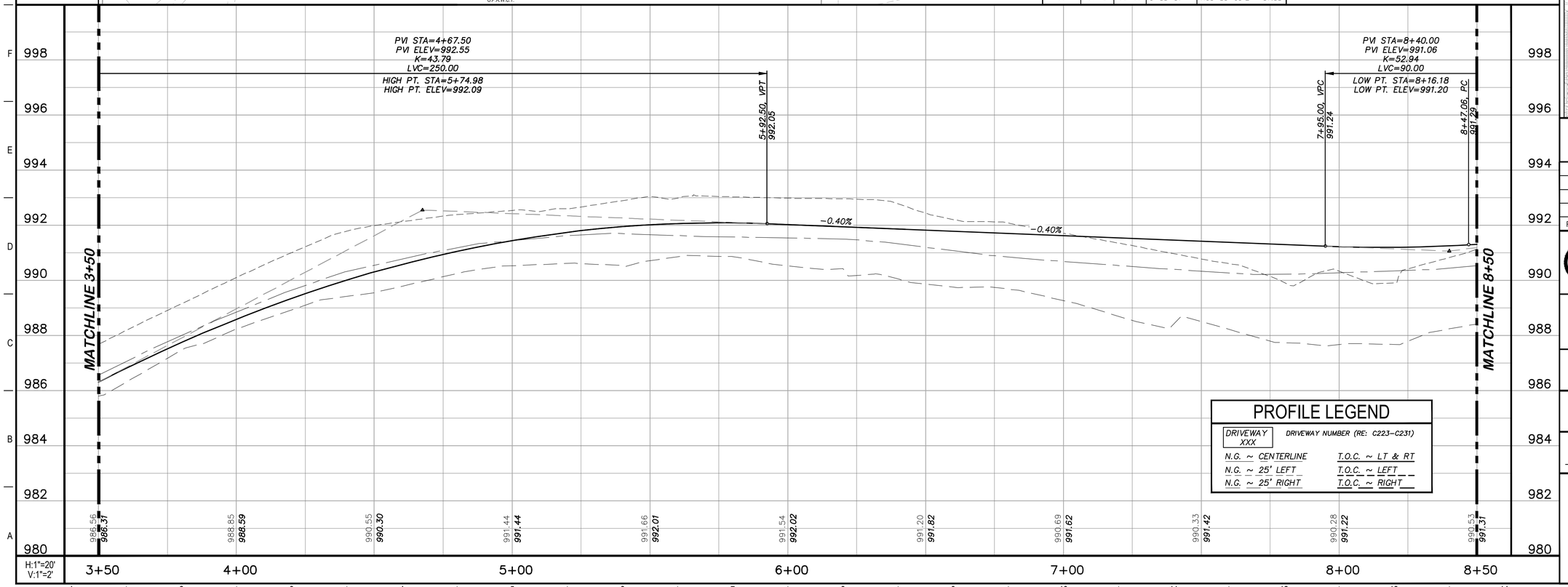


CURVE TABLE				
CURVE #	LENGTH	RADIUS	DELTA	CHORD
C4	37.42	224.50	9° 33' 01"	N63° 53' 06"E – 37.38
C5	37.59	225.50	9° 33' 01"	N63° 53' 06"E – 37.54
C6	3.93	1.25	180° 00' 00"	N21° 20' 23"W – 2.50
C7	3.93	1.25	180° 00' 00"	S21° 20' 23"E – 2.50
C8	37.42	224.50	9° 33' 01"	N63° 53' 06"E – 37.38

CURVE TABLE				
CURVE #	LENGTH	RADIUS	DELTA	CHORD
C9	37.59	225.50	9° 33' 01"	N63° 53' 06"E – 37.54
C13	37.42	224.50	9° 33' 01"	S63° 53' 06"W – 37.38
C14	37.59	225.50	9° 33' 01"	S63° 53' 06"W – 37.54



PROFILE LEGEND

DRIVEWAY XXX — DRIVEWAY NUMBER (RE: C223–C231)	
N.G. ~ CENTERLINE	T.O.C. ~ LT & RT
N.G. ~ 25' LEFT	T.O.C. ~ LEFT
N.G. ~ 25' RIGHT	T.O.C. ~ RIGHT

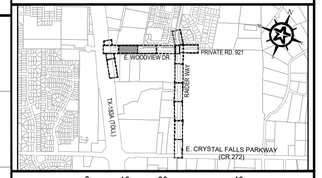
GENERAL NOTES

1. RE: C006 FOR ROADWAY ALIGNMENTS AND CURVE TABLES
2. RE: C014–#### FOR STREET TYPICAL SECTIONS
3. WHERE PROP CURB & GUTTER TIES INTO EXISTING CURB & GUTTER, TRANSITION TO EXISTING GUTTER CROSS–SLOPE WILL BE 5'
4. ALL CALLOUTS AND DIMENSIONS ALONG CURB ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.
5. ALL EXISTING UTILITIES MUST BE FIELD VERIFIED PRIOR TO PERFORMING ANY ACTIVITY. IT IS THE RESPONSIBILITY OF THE UTILITY COMPANY TO VERIFY LOCATION OF EXISTING UTILITIES THAT MAY CONFLICT WITH CONSTRUCTION.

KEY NOTES

1. REINFORCED CURB & GUTTER (RE: G5/C232)
2. DOWELED CURB (RE: A1/C230)
3. RIBBON CURB (RE: A8/C230)
10. TYPE II DRIVEWAY (RE: A1/####)
11. 6' WIDE 4" REINF. CONC. SIDEWALK (RE: A1/####)
13. 10' WIDE 6" REINF. CONC. SIDEWALK (RE: A1/####)
15. PERMANENT MAILBOX AFTER CONSTRUCTION (RE: C242–C245) RE: TRAFFIC CONTROL NOTES FOR TEMPORARY MAILBOXES DURING CONSTRUCTION
16. SAW–CUT EX. PVMT. MIN. 1' MATCH EX. GRADE AND CONSTRUCT PVMT.
18. FURNISHING AND PLACING TOPSOIL (4") (RE: COA 601S)
20. LANDSCAPE PAVERS (RE: C232)
23. HOT MIX ASPHALTIC CONCRETE PAVEMENT (2") TY–C (RE: COA 340S)
24. HOT MIX ASPHALTIC PAVEMENT (4") TY–B (RE: COA 340S)
25. PRIME COAT (AE–P) (RE: COA 306S)
29. CONCRETE MEDIAN NOSE (RE: G8/C230)
30. 10" FLEX BASE (RE: COA 210S)

KEY MAP



REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STREET PLAN & PROFILE
EAST WOODVIEW DR
STA. 3+50–8+50

03/30/2023 — DATE
R. ALAN MUNGER, PE

STATE OF TEXAS — R. ALAN MUNGER — 65341 — REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C209

SHEET XXX OF 201

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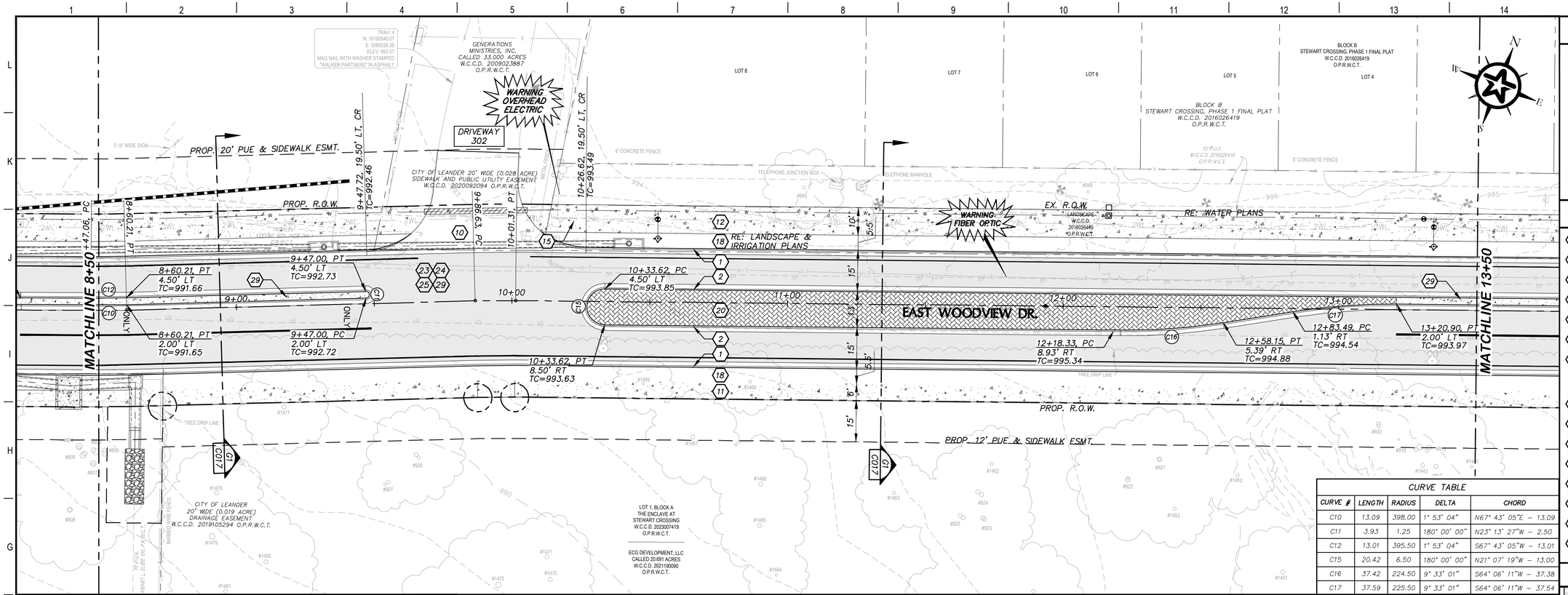
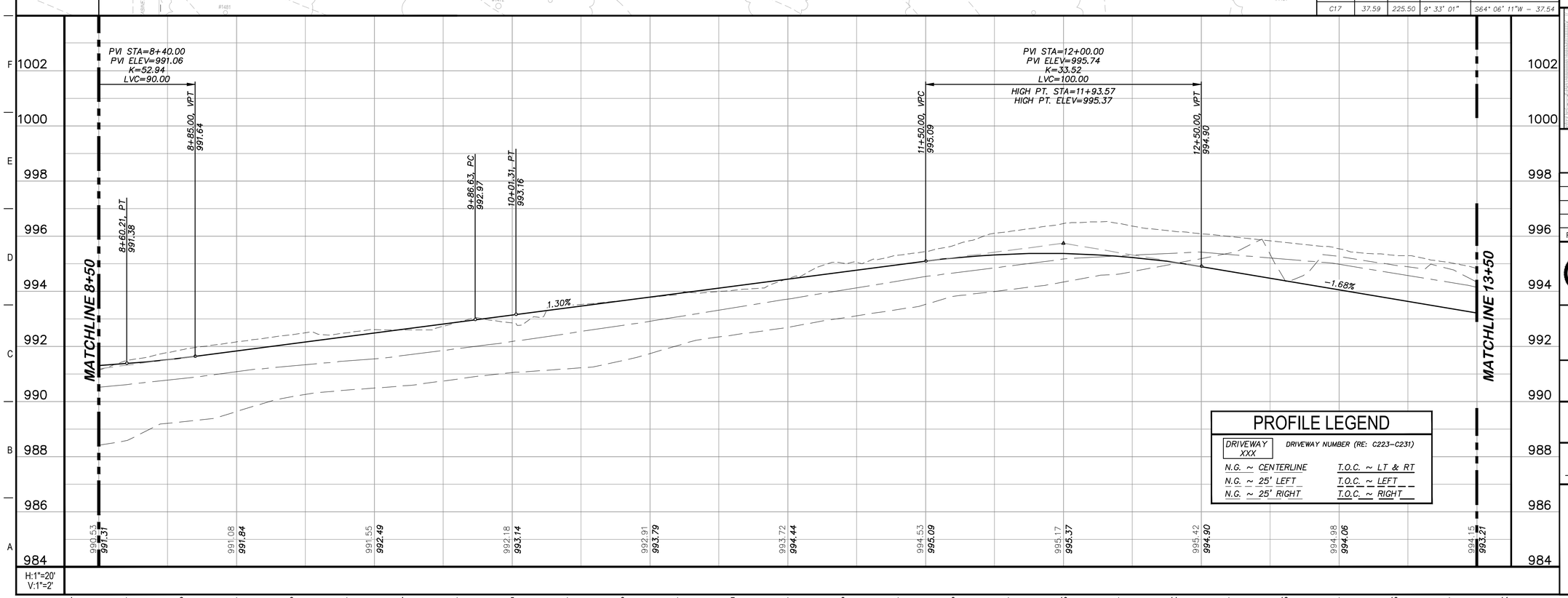




PROFILE LEGEND

DRIVEWAY XXX	DRIVEWAY NUMBER (RE: C223–C231)
N.G. ~ CENTERLINE	T.O.C. ~ LT & RT
N.G. ~ 25' LEFT	T.O.C. ~ LEFT
N.G. ~ 25' RIGHT	T.O.C. ~ RIGHT

CURVE TABLE

CURVE #	LENGTH	RADIUS	DELTA	CHORD
C10	13.09	398.00	1° 53' 04"	N67° 43' 05"E – 13.09
C11	3.93	1.25	180° 00' 00"	N23° 13' 27"W – 2.50
C12	13.01	395.50	1° 53' 04"	S67° 43' 05"W – 13.01
C15	20.42	6.50	180° 00' 00"	N21° 07' 19"W – 13.00
C16	37.42	224.50	9° 33' 01"	S64° 06' 11"W – 37.38
C17	37.59	225.50	9° 33' 01"	S64° 06' 11"W – 37.54

GENERAL NOTES

1. RE: C006 FOR ROADWAY ALIGNMENTS AND CURVE TABLES
2. RE: C014–#### FOR STREET TYPICAL SECTIONS
3. WHERE PROP CURB & GUTTER TIES INTO EXISTING CURB & GUTTER, TRANSITION TO EXISTING GUTTER CROSS–SLOPE WILL BE 5'
4. ALL CALLOUTS AND DIMENSIONS ALONG CURB ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.
5. ALL EXISTING UTILITIES MUST BE FIELD VERIFIED PRIOR TO PERFORMING ANY ACTIVITY. IT IS THE RESPONSIBILITY OF THE UTILITY COMPANY TO VERIFY LOCATION OF EXISTING UTILITIES THAT MAY CONFLICT WITH CONSTRUCTION.

KEY NOTES

1. REINFORCED CURB & GUTTER (RE: G5/C232)
2. DOWELED CURB (RE: A1/C230)
3. RIBBON CURB (RE: A8/C230)
10. TYPE II DRIVEWAY (RE: A1/####)
11. 6' WIDE 4" REINF. CONC. SIDEWALK (RE: A1/####)
12. 8' WIDE 4" REINF. CONC. SIDEWALK (RE: A1/####)
15. PERMANENT MAILBOX AFTER CONSTRUCTION (RE: C242–C245) RE: TRAFFIC CONTROL NOTES FOR TEMPORARY MAILBOXES DURING CONSTRUCTION
16. SAW–CUT EX. PVMT. MIN. 1', MATCH EX. GRADE AND CONSTRUCT PVMT.
18. FURNISHING AND PLACING TOPSOIL (4") (RE: COA 601S)
20. LANDSCAPE PAVERS (RE: C232)
23. HOT MIX ASPHALTIC CONCRETE PAVEMENT (2") TY–C (RE: COA 340S)
24. HOT MIX ASPHALTIC PAVEMENT (4") TY–B (RE: COA 340S)
25. PRIME COAT (AE–P) (RE: COA 306S)
29. CONCRETE MEDIAN NOSE (RE: G8/C230)
30. 10" FLEX BASE (RE: COA 210S)

KEY MAP



0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STREET PLAN & PROFILE
EAST WOODVIEW DR
STA. 8+50–13+50

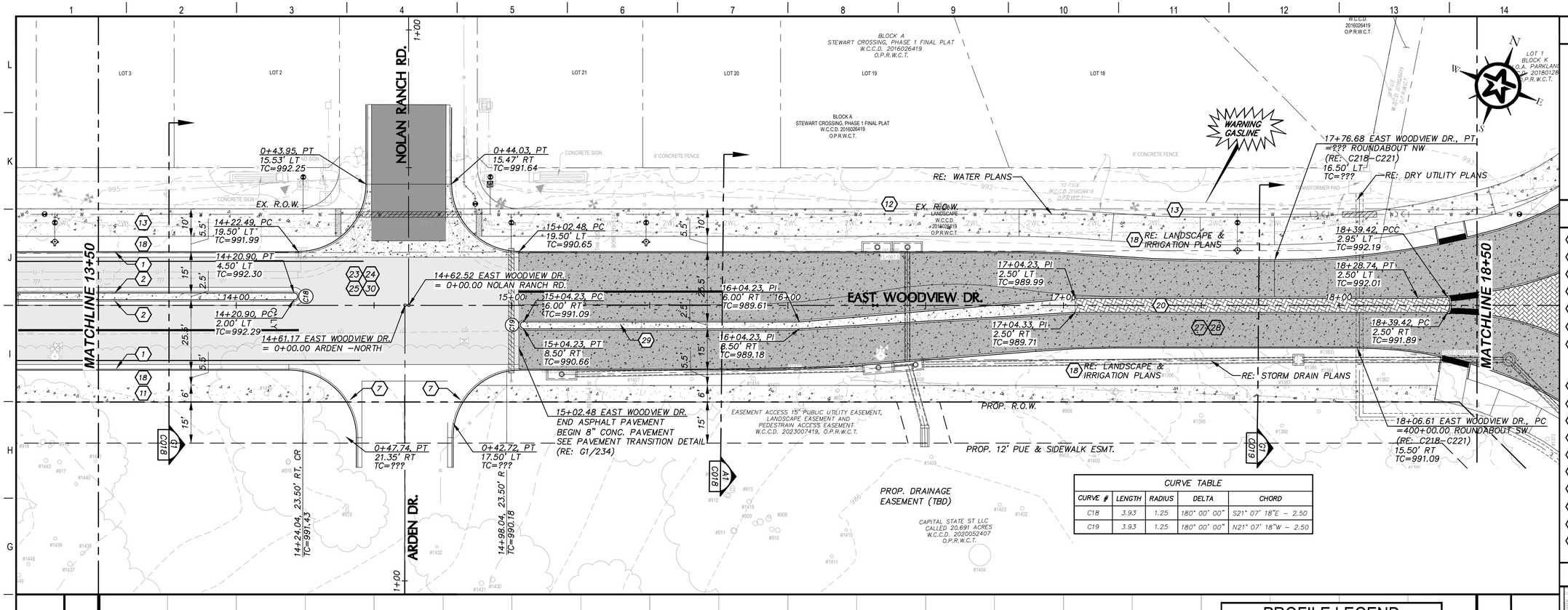
03/30/2023
DATE

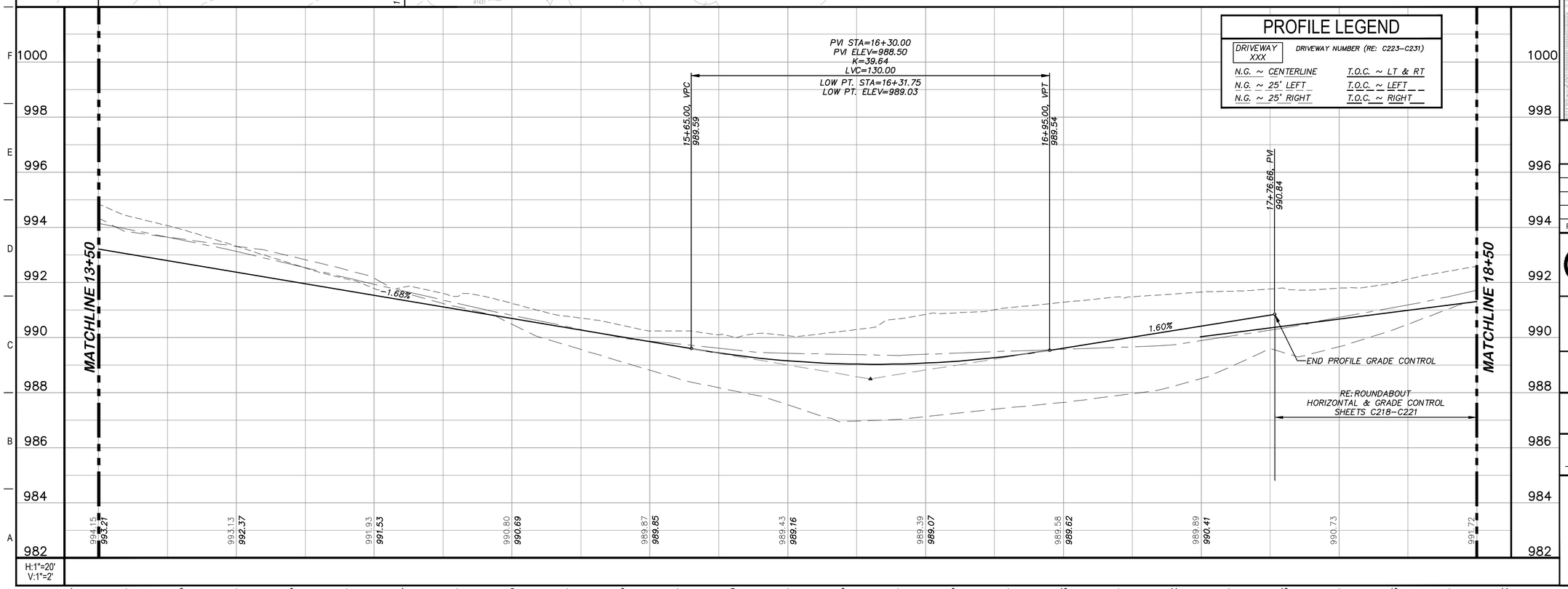
R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C210
	SHEET XXX OF 201

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STREET-WOODVIEW.DWG, C210 STA. 8+50-13+50, 3/31/2023 12:52:11 PM, MCastelli





GENERAL NOTES

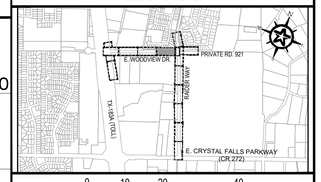
1. RE: C006 FOR ROADWAY ALIGNMENTS AND CURVE TABLES
2. RE: C014–#### FOR STREET TYPICAL SECTIONS
3. WHERE PROP CURB & GUTTER TIES INTO EXISTING CURB & GUTTER, TRANSITION TO EXISTING GUTTER CROSS–SLOPE WILL BE 5'
4. ALL CALLOUTS AND DIMENSIONS ALONG CURB ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.
5. ALL EXISTING UTILITIES MUST BE FIELD VERIFIED PRIOR TO PERFORMING ANY ACTIVITY. IT IS THE RESPONSIBILITY OF THE UTILITY COMPANY TO VERIFY LOCATION OF EXISTING UTILITIES THAT MAY CONFLICT WITH CONSTRUCTION.

KEY NOTES

1. REINFORCED CURB & GUTTER (RE: G5/C232)
2. DOWELED CURB (RE: A1/C230)
3. RIBBON CURB (RE: A8/C230)
10. TYPE II DRIVEWAY (RE: A1/####)
11. 6' WIDE 4" REINF. CONC. SIDEWALK (RE: A1/####)
13. 10' WIDE 6" REINF. CONC. SIDEWALK (RE: A1/####)
15. PERMANENT MAILBOX AFTER CONSTRUCTION (RE: C242–C245) RE: TRAFFIC CONTROL NOTES FOR TEMPORARY MAILBOXES DURING CONSTRUCTION
16. SAW–CUT EX. PVMT. MIN. 1' MATCH EX. GRADE AND CONSTRUCT PVMT.
18. FURNISHING AND PLACING TOPSOIL (4") (RE: COA 601S)
20. LANDSCAPE PAVERS (RE: C232)
23. HOT MIX ASPHALTIC CONCRETE PAVEMENT (2") TY–C (RE: COA 340S)
24. HOT MIX ASPHALTIC PAVEMENT (4") TY–B (RE: COA 340S)
25. PRIME COAT (AE–P) (RE: COA 306S)
27. 8" P.C. CONCRETE PAVEMENT (RE: A1/232)
28. 6" ASPHALT STABILIZED BASE (RE: COA 206S)
29. CONCRETE MEDIAN NOSE (RE: G8/C230)
30. 10" FLEX BASE (RE: COA 210S)

CURVE TABLE				
CURVE #	LENGTH	RADIUS	DELTA	CHORD
C18	3.93	1.25	180° 00' 00"	S21° 07' 18"E – 2.50
C19	3.93	1.25	180° 00' 00"	N21° 07' 18"W – 2.50

KEY MAP



REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STREET PLAN & PROFILE
EAST WOODVIEW DR
STA. 13+50-18+50

03/30/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C211

SHEET XXX OF 201

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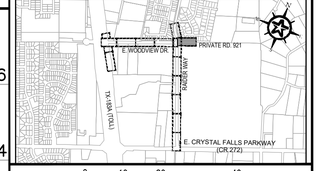
GENERAL NOTES

1. RE: C006 FOR ROADWAY ALIGNMENTS AND CURVE TABLES
2. RE: C014-####FOR STREET TYPICAL SECTIONS
3. WHERE PROP CURB & GUTTER TIES INTO EXISTING CURB & GUTTER, TRANSITION TO EXISTING GUTTER CROSS-SLOPE WILL BE 5'
4. ALL CALLOUTS AND DIMENSIONS ALONG CURB ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.
5. ALL EXISTING UTILITIES MUST BE FIELD VERIFIED PRIOR TO PERFORMING ANY ACTIVITY. IT IS THE RESPONSIBILITY OF THE UTILITY COMPANY TO VERIFY LOCATION OF EXISTING UTILITIES THAT MAY CONFLICT WITH CONSTRUCTION.

KEY NOTES

(1) REINFORCED CURB & GUTTER (RE: G5/C232)
(2) DOWELED CURB (RE: A1/C230)
(3) RIBBON CURB (RE: A8/C230)
(4) ROUNDABOUT MOUNTABLE CURB (RE: G9/####)
(5) COA 432S (RE: C237)
(10) TYPE II DRIVEWAY (RE: A1/####)
(11) 6' WIDE 4" REINF. CONC. SIDEWALK (RE: A1/####)
(12) 8' WIDE 4" REINF. CONC. SIDEWALK (RE: A1/####)
(13) 10' WIDE 6" REINF. CONC. SIDEWALK (RE: A1/####)
(18) FURNISHING AND PLACING TOPSOIL (4") (RE: COA 601S)
(20) LANDSCAPE PAVERS (RE: C232)
(23) HOT MIX ASPHALTIC CONCRETE PAVEMENT (2") TY-C (RE: COA 340S)
(24) HOT MIX ASPHALTIC PAVEMENT (4") TY-B (RE: COA 340S)
(25) PRIME COAT (AE-P) (RE: COA 306S)
(27) 8" P.C. CONCRETE PAVEMENT (RE: A1/232)
(28) 6" ASPHALT STABILIZED BASE (RE: COA 206S)
(30) 10" FLEX BASE (RE: COA 210S)

KEY MAP



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GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STREET PLAN & PROFILE
PRIVATE ROAD 921
STA. 0+00-END

03/30/2023 DATE
R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C212
	SHEET XXX OF 201

H:1"=20'
V:1"=2'

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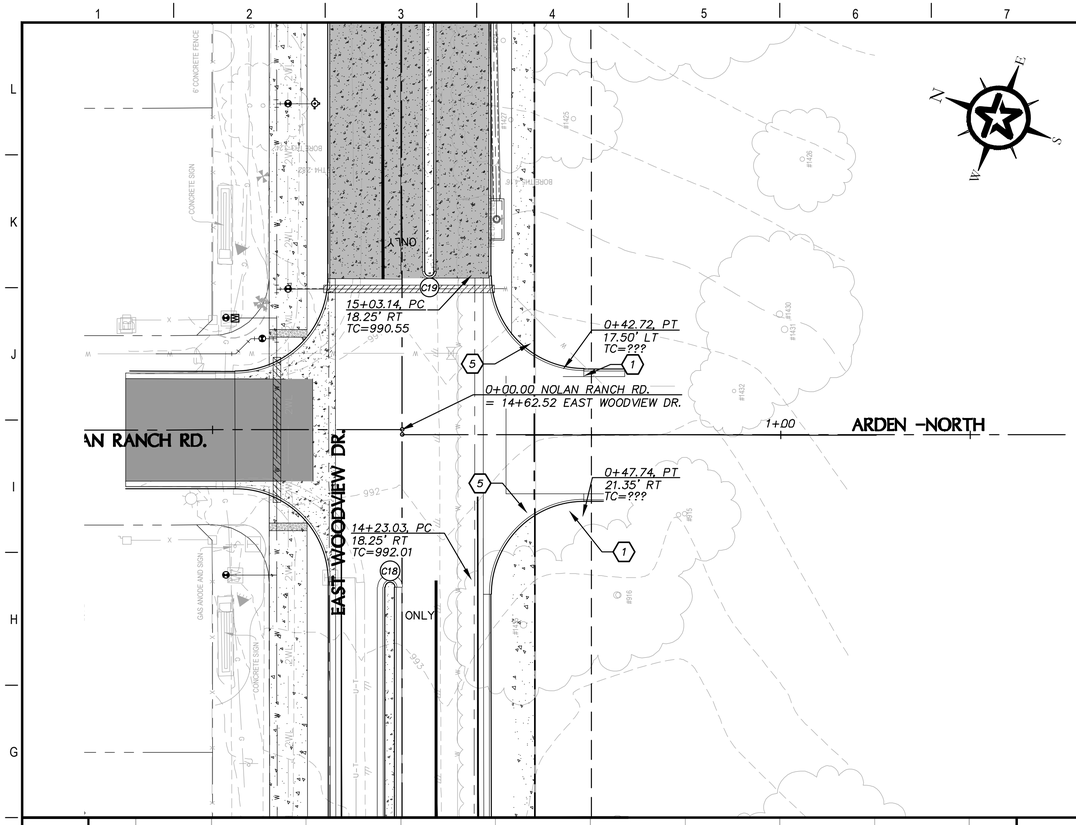
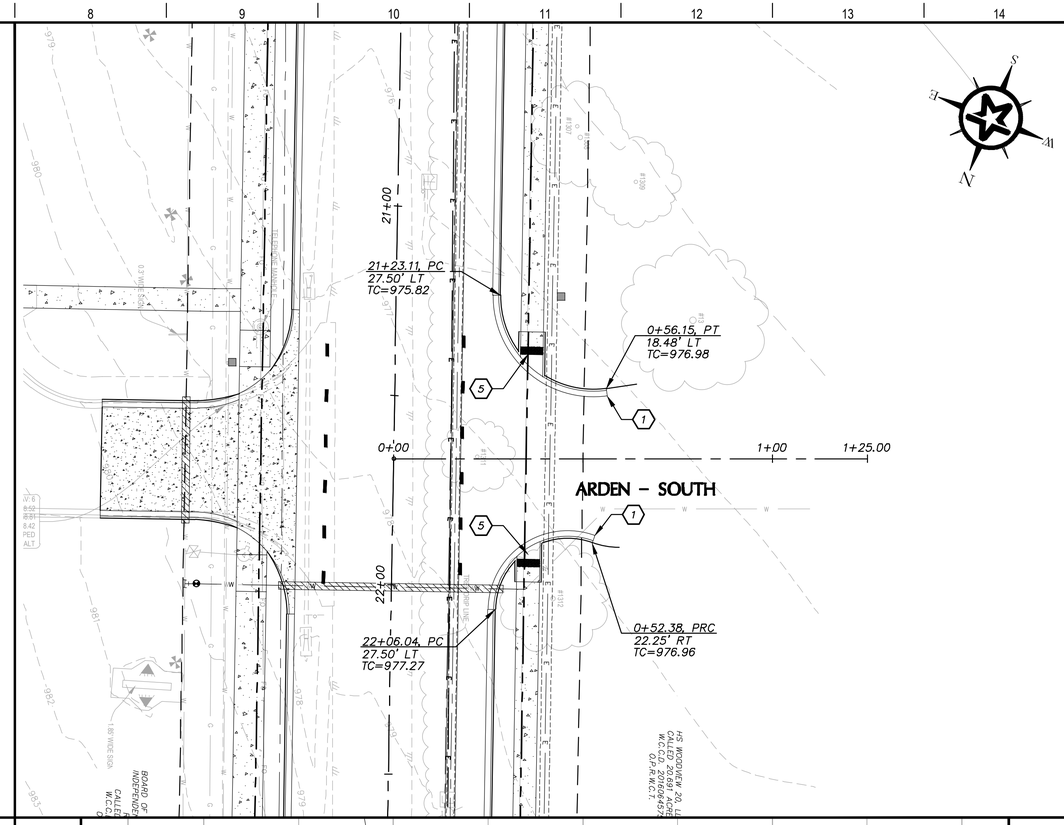
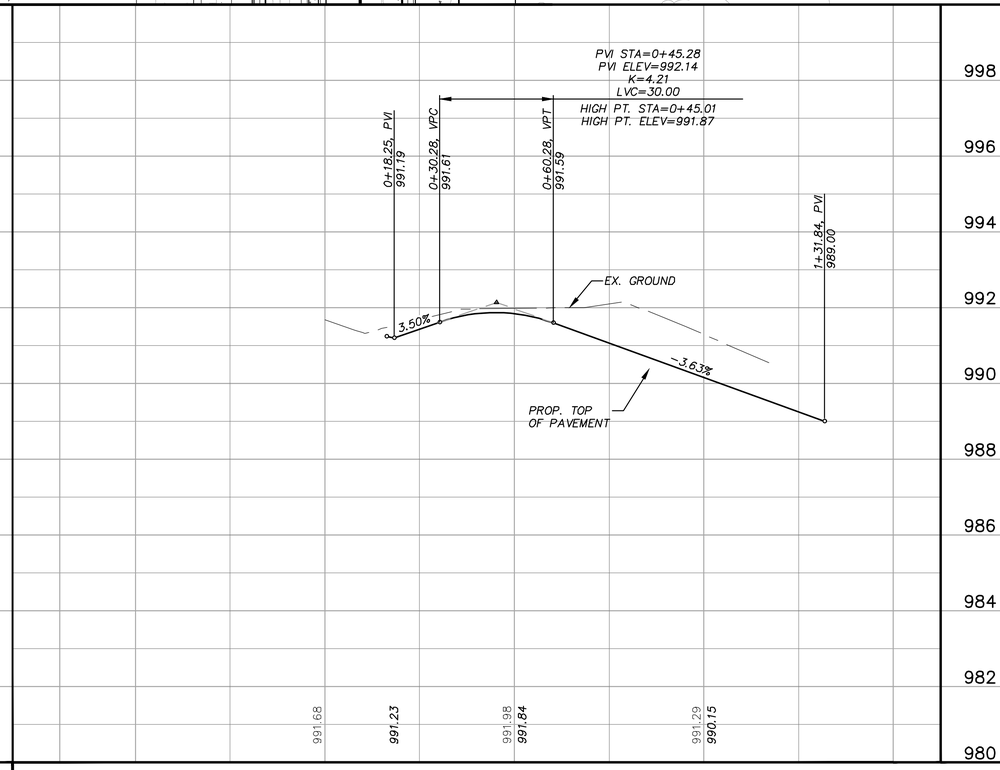
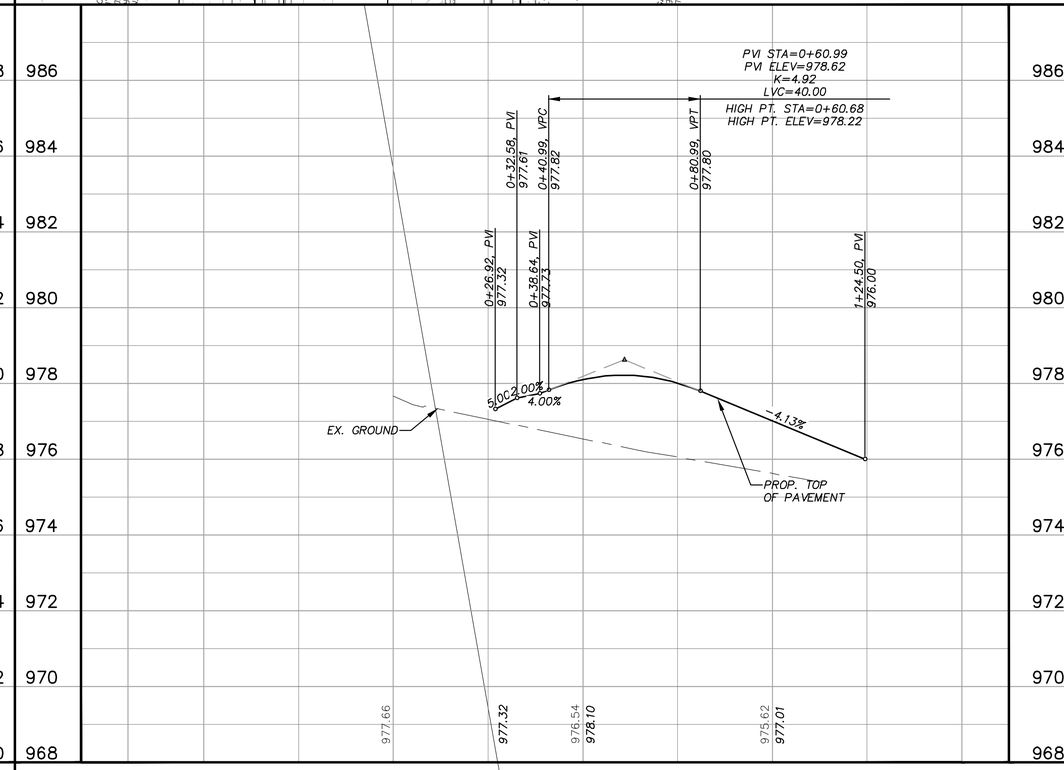








H:1"=20'
V:1"=2'

GENERAL NOTES

1. RE: C006 FOR ROADWAY ALIGNMENTS AND CURVE TABLES
2. RE: C014-#### FOR STREET TYPICAL SECTIONS
3. WHERE PROP CURB & GUTTER TIES INTO EXISTING CURB & GUTTER, TRANSITION TO EXISTING GUTTER CROSS-SLOPE WILL BE 5'
4. ALL CALLOUTS AND DIMENSIONS ALONG CURB ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.
5. ALL EXISTING UTILITIES MUST BE FIELD VERIFIED PRIOR TO PERFORMING ANY ACTIVITY. IT IS THE RESPONSIBILITY OF THE UTILITY COMPANY TO VERIFY LOCATION OF EXISTING UTILITIES THAT MAY CONFLICT WITH CONSTRUCTION.

KEY NOTES

(1) REINFORCED CURB & GUTTER (RE: G5/####)

(5) COA 432S (RE: 237)

PROFILE LEGEND

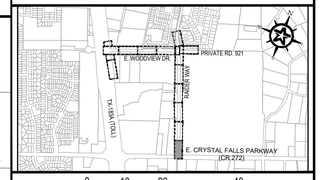
DRIVEWAY XXX — DRIVEWAY NUMBER (RE: C223-C231)

N.G. ~ CENTERLINE — T.O.C. ~ LT & RT

N.G. ~ 25' LEFT — T.O.C. ~ LEFT

N.G. ~ 25' RIGHT — T.O.C. ~ RIGHT

KEY MAP



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GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STREET PLAN & PROFILE

ARDEN NORTH & SOUTH

03/30/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C213
	SHEET XXX OF 201

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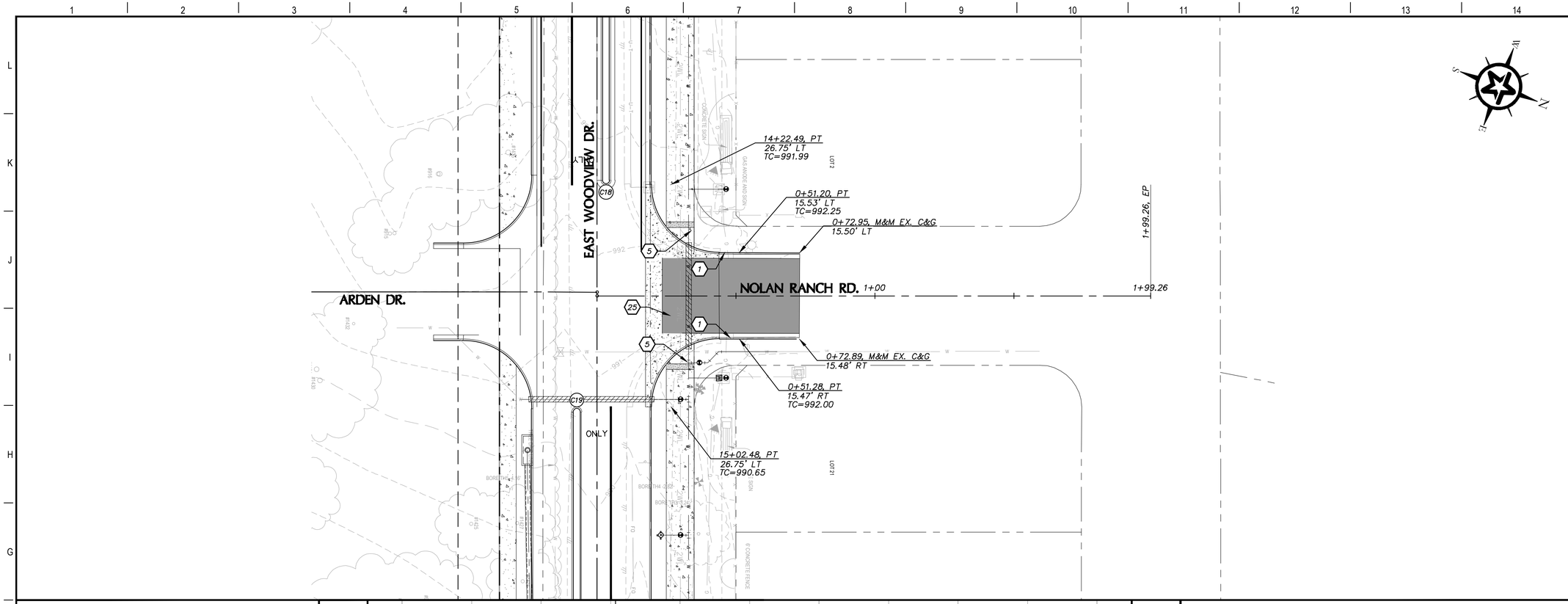
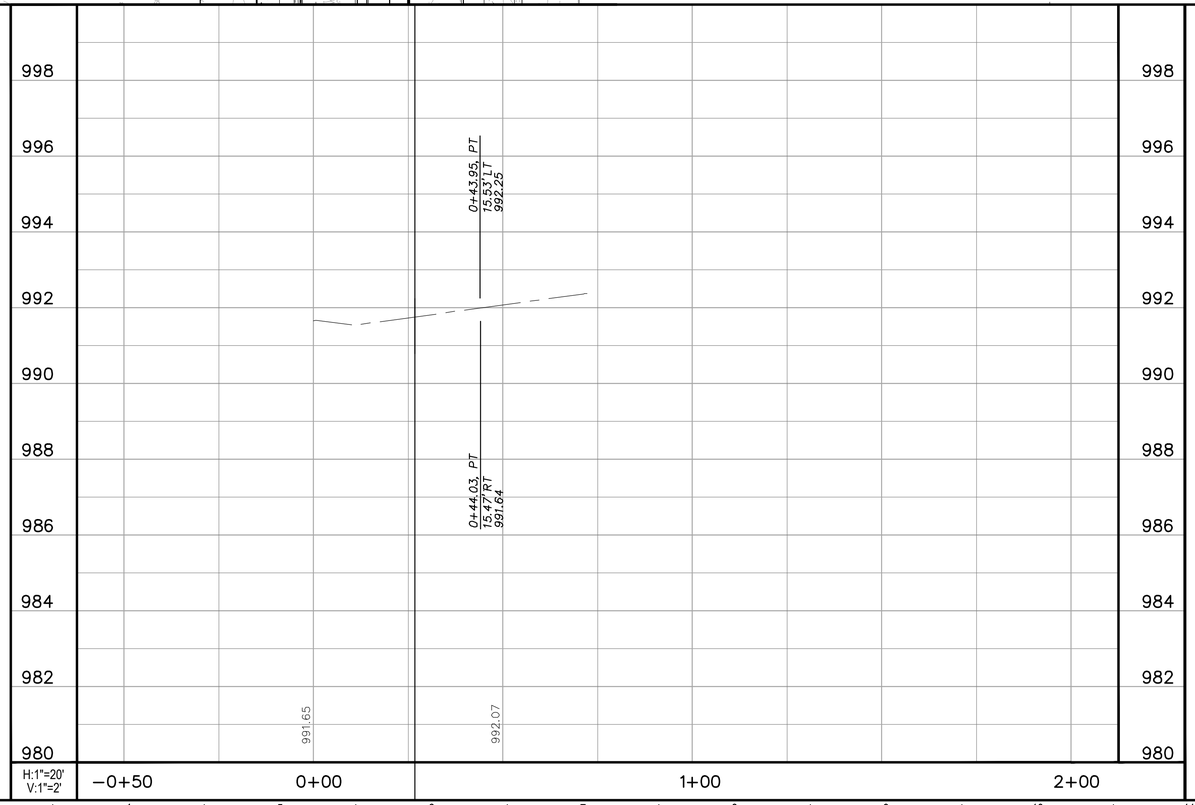




GENERAL NOTES

1. RE: C006 FOR ROADWAY ALIGNMENTS AND CURVE TABLES
2. RE: C014-#### FOR STREET TYPICAL SECTIONS
3. WHERE PROP CURB & GUTTER TIES INTO EXISTING CURB & GUTTER, TRANSITION TO EXISTING GUTTER CROSS-SLOPE WILL BE 5'
4. ALL CALLOUTS AND DIMENSIONS ALONG CURB ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.
5. ALL EXISTING UTILITIES MUST BE FIELD VERIFIED PRIOR TO PERFORMING ANY ACTIVITY. IT IS THE RESPONSIBILITY OF THE UTILITY COMPANY TO VERIFY LOCATION OF EXISTING UTILITIES THAT MAY CONFLICT WITH CONSTRUCTION.

KEY NOTES

(1) REINFORCED CURB & GUTTER (RE: G5/####)

(5) COA 432S (RE: C237)

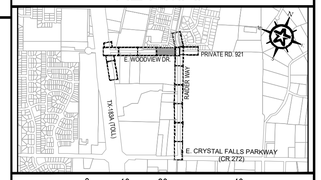
(25) CONCRETE VALLEY GUTTER (AUSTIN 436S-2)

PROFILE LEGEND

DRIVEWAY XXX — DRIVEWAY NUMBER (RE: C223-C231)

N.G. ~ CENTERLINE	T.O.C. ~ LT & RT
N.G. ~ 25' LEFT	T.O.C. ~ LEFT
N.G. ~ 25' RIGHT	T.O.C. ~ RIGHT

KEY MAP



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GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STREET PLAN & PROFILE

NOLAN RANCH RD

03/30/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C214

SHEET XXX OF 201

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MATCHLINE 30+50

301+47.56, PT

301+61.58, PC

LOT 1
BLOCK K
H.O.A. PARKLAND
W.C.C.D. 2018012839
O.P.R.W.C.T.

203+55.94, PT

203+21.15, PCC

29+39.39, PC

LOT 27
BLOCK C
W.C.C.D. 2018012839
O.P.R.W.C.T.

LOT 26
BLOCK C
W.C.C.D. 2018012839
O.P.R.W.C.T.

202+50.80, PRC

201+75.09, PC

1+49.78, PT

202+0001+90

2+05.96, PT

17+76.66 EAST WOODVIEW DR.
16.50 LT
=303+86.63 ROUNDABOUT NW
TC=990.92

303+86.63, PT

303+03.88, PCC

303+00

MATCHLINE 17+50

MATCHLINE 2+00

PRIVATE ROAD 921

28+74.99 RAIDER WAY
= 19+53.76 EAST WOODVIEW DR.

19+53.76

19+00

18+00

EAST WOODVIEW DR.

400+00

17.75'

R33.75'

0+00

28+64.30 RAIDER WAY
= 0+00.00 PRIVATE ROAD 921

R48.75'

29+00

28+41.24 RAIDER WAY
= 0+00.00 ROUNDABOUT SW

ROUNDABOUT SW

401+00

400+72.26, PCC

400+00.00, PC

18+06.61 EAST WOODVIEW DR.
15.50 RT
=400+00.00 ROUNDABOUT SW
TC=991.21

102+00

102+74.61, PC

102+38.04, PT

101+00

401+49.47, PCC

HS WOODVIEW 20, LLC
CALLED 20.691 ACRES
W.C.C.D. 2016064575
O.P.R.W.C.T.

BOARD OF TRUSTEES, LEANDER
INDEPENDENT SCHOOL DISTRICT
REMAINDER
CALLED 141.29 ACRES
W.C.C.D. 20030039158
O.P.R.W.C.T.

RAIDER WAY

22+00

402+00

100+41.36, PRC

12'

27+09.10 RAIDER WAY
17.01 LT
=402+26.35 ROUNDABOUT SW
TC=990.05

402+26.35, PT

14.5'

26+88.88 RAIDER WAY
14.41 RT
=100+00.00 ROUNDABOUT SE
TC=989.57

27+00

100+00

26+88.43, PT

26+76.24, PC

MATCHLINE 26+50

TREE DRIP LINE

FIBER-OPTIC LINE

CONCRETE FENCE

TURF FIELD

CURVE TABLE

CURVE #	LENGTH	RADIUS	DELTA	CHORD
C1	71.20	1514.50	2° 41' 37"	N20° 39' 32"W – 71.19
C2	196.67	139.50	80° 46' 40"	N18° 23' 00"E – 180.78
C3	43.59	499.50	5° 00' 00"	N61° 16' 20"E – 43.58
C8	56.57	515.00	6° 17' 36"	S62° 07' 32"W – 56.54
C9	75.71	124.50	34° 50' 34"	S76° 24' 01"W – 74.55
C10	70.35	89.50	45° 02' 09"	N63° 39' 37"W – 68.55
C11	34.79	299.50	6° 39' 20"	N37° 48' 53"W – 34.77
C16	142.30	99.50	81° 56' 20"	S12° 04' 36"W – 130.48
C17	82.76	299.50	15° 49' 56"	S60° 57' 44"W – 82.50
C20	72.26	149.50	27° 41' 42"	N82° 43' 33"E – 71.56
C21	77.21	99.50	44° 27' 34"	S61° 11' 49"E – 75.29
C22	76.88	249.50	17° 39' 18"	S30° 08' 23"E – 76.58
C23	26.17	1499.50	1° 00' 00"	S20° 48' 43"E – 26.17
C30	102.63	1502.50	3° 54' 49"	N21° 16' 08"W – 102.61
C31	16.97	86.00	11° 18' 33"	N17° 34' 16"W – 16.95
C32	0.71	0.50	81° 45' 40"	N52° 47' 50"W – 0.65
C33	0.76	0.50	87° 35' 40"	S9° 52' 04"W – 0.69
C34	24.30	126.50	11° 00' 17"	S28° 25' 37"E – 24.26
C35	94.42	1497.50	3° 36' 45"	S21° 07' 06"E – 94.40
C36	0.79	0.50	90° 15' 43"	N41° 11' 29"E – 0.71
C37	18.84	86.00	12° 33' 14"	N2° 20' 15"E – 18.81
C38	1.18	0.50	134° 49' 35"	N58° 47' 56"W – 0.92
C39	23.04	69.50	18° 59' 32"	S63° 17' 02"W – 22.93
C40	4.89	2.50	112° 08' 39"	S16° 42' 29"W – 4.15
C41	13.94	128.00	6° 14' 23"	S36° 14' 39"E – 13.93
C42	0.81	0.50	93° 12' 38"	S79° 43' 47"E – 0.73
C43	21.32	69.50	17° 34' 40"	N61° 03' 21"E – 21.24
C44	4.96	2.50	113° 44' 26"	N12° 58' 28"E – 4.19
C45	31.49	98.00	18° 24' 41"	N34° 41' 24"W – 31.36
C46	4.26	502.63	0° 29' 07"	N25° 43' 37"W – 4.26
C47	0.86	0.50	98° 31' 02"	N75° 13' 42"W – 0.76
C48	0.79	0.50	90° 30' 25"	S26° 17' 40"W – 0.71
C49	41.69	96.50	24° 45' 18"	S6° 34' 54"E – 41.37
C50	1.17	0.50	133° 31' 45"	S60° 58' 07"E – 0.92
C51	0.72	0.50	82° 51' 55"	N14° 04' 49"E – 0.66
C52	84.50	502.50	9° 38' 05"	N32° 10' 11"W – 84.40
C56	80.84	497.50	9° 18' 36"	S32° 19' 55"E – 80.75
C57	2.71	96.50	1° 36' 26"	S26° 52' 24"E – 2.71
C61	0.70	0.50	79° 57' 20"	N28° 54' 02"E – 0.64
C62	0.73	0.50	83° 19' 00"	N74° 17' 07"W – 0.66
C63	10.69	127.00	4° 49' 18"	S66° 28' 03"W – 10.68
C68	0.82	0.50	93° 40' 22"	S57° 54' 49"E – 0.73
C69	36.80	96.50	21° 51' 07"	N86° 10' 33"E – 36.58
C70	1.16	0.50	133° 08' 53"	N30° 31' 39"E – 0.92
C71	23.44	69.50	19° 19' 33"	N26° 23' 01"W – 23.33
C72	5.06	2.50	115° 54' 14"	N74° 40' 22"W – 4.24
C73	31.30	128.50	13° 57' 23"	S54° 21' 13"W – 31.22
C74	0.82	0.50	93° 57' 32"	S14° 21' 09"W – 0.73
C75	4.94	2.50	113° 09' 37"	S78° 50' 10"E – 4.17
C76	13.59	112.00	6° 57' 13"	N48° 03' 38"E – 13.58
C77	0.82	0.50	94° 13' 48"	N4° 25' 20"E – 0.73
C78	0.78	0.50	89° 13' 53"	N53° 42' 24"W – 0.70
C79	18.70	90.50	11° 50' 14"	S87° 35' 47"W – 18.66
C80	1.17	0.50	134° 21' 07"	S26° 20' 20"W – 0.92
C81	22.54	69.50	18° 34' 51"	S31° 32' 48"E – 22.44
C82	0.75	0.50	85° 54' 55"	S85° 39' 04"E – 0.68
C83	14.36	110.50	7° 26' 41"	N55° 06' 43"E – 14.35
C84	4.33	1.50	165° 12' 51"	N26° 56' 23"W – 2.98
C86	15.10	92.37	9° 22' 07"	S75° 06' 12"W – 15.09
C87	0.73	0.50	83° 11' 50"	S32° 30' 28"W – 0.66
C88	0.72	0.50	82° 22' 57"	S67° 15' 39"E – 0.66

KEY NOTES

(2) PEDESTRIAN RAMP
TYP. @ SPLITTER ISLANDS

(3) PERPENDICULAR CURB RAMP

(4) MOUNTABLE CURB

(5) TRUCK APRON

(6) MAIL, GARBAGE COLLECTION, & TRUCK TURNAROUND

0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

LINE TABLE

LINE #	BEARING	DISTANCE
L3	N58° 46' 20"E	36.57
L9	N34° 29' 13"W	61.79
L11	S28° 53' 34"E	14.02
L12	S68° 52' 42"W	27.00
L16	S21° 18' 43"E	34.56
L17	N68° 52' 42"E	100.51
L20	S53° 39' 54"W	6.06
L22	S86° 19' 20"W	2.42
L23	N53° 39' 54"E	9.36
L24	N86° 19' 20"E	4.75
L29	N68° 52' 42"E	132.35
L30	N09° 05' 27"W	5.40
L31	S68° 52' 42"W	98.24
L33	N42° 41' 34"W	8.14
L34	S09° 05' 27"E	2.71
L35	S42° 41' 34"E	5.03
L36	S71° 32' 53"W	2.94
L37	S55° 30' 47"W	1.87
L38	N71° 32' 53"E	2.24
L39	N55° 30' 47"E	1.97
L40	N32° 37' 37"W	2.11
L41	N11° 04' 38"W	2.61
L42	S32° 37' 37"E	3.36
L43	S11° 04' 38"E	3.19

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

HORIZONTAL CONTROL

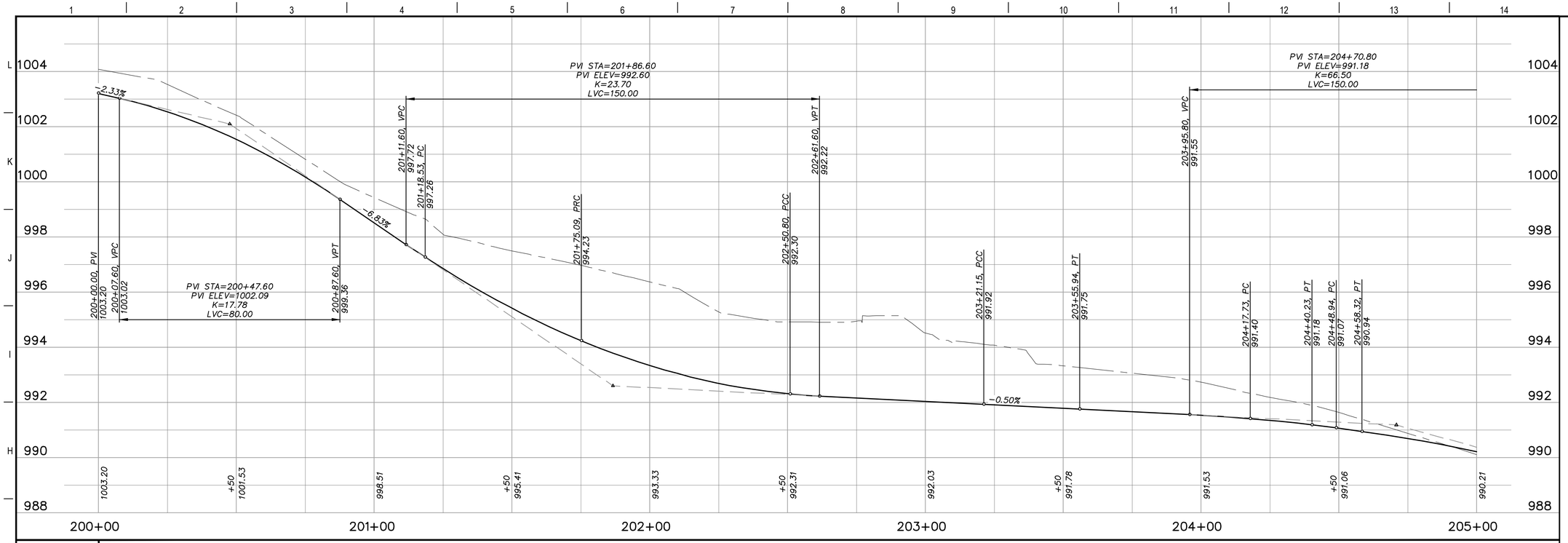
03/30/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

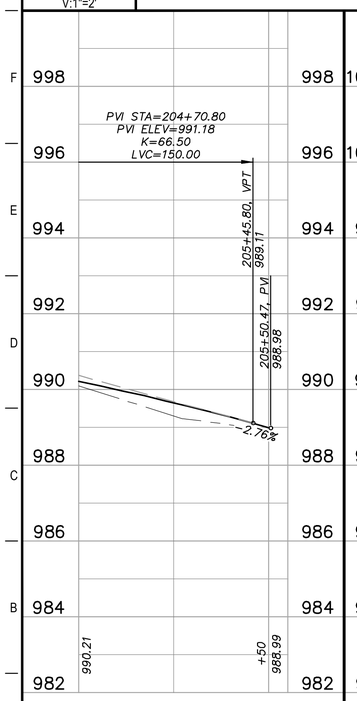
PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C216
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STREET-ROUNDABOUT.DWG, C218 HORIZONTAL CONTROL, 3/31/2023 1:00:17 PM, MCastelli



G1 — ROUNDABOUT NE ~ 200+00 - 205+00

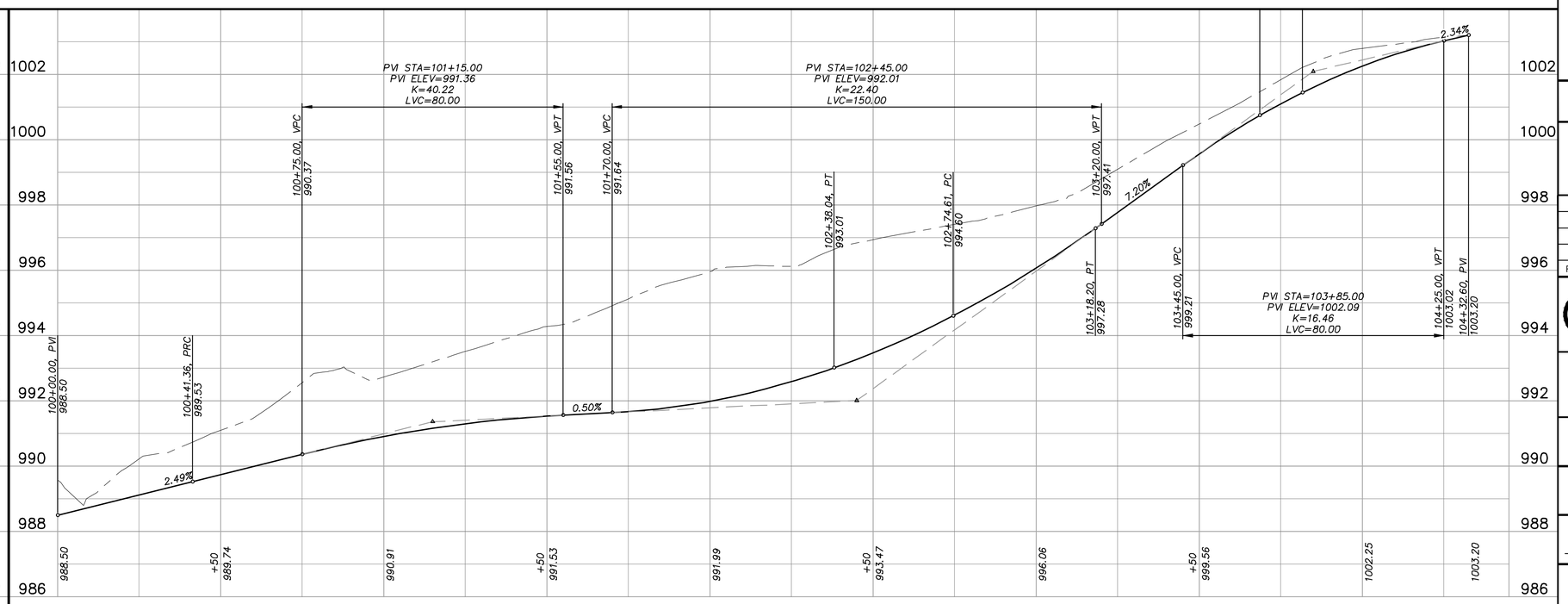
H:1"=20'
V:1"=2'



A1 — ROUNDABOUT NE ~ 205+00 - END

H:1"=20'
V:1"=2'

XX



A3 — ROUNDABOUT SE ~ 100+00 - END

H:1"=20'
V:1"=2'

PROFILE LEGEND

N.G. ~ CENTERLINE

T.O.C. ~ CENTERLINE

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

ROUNDABOUT PROFILES

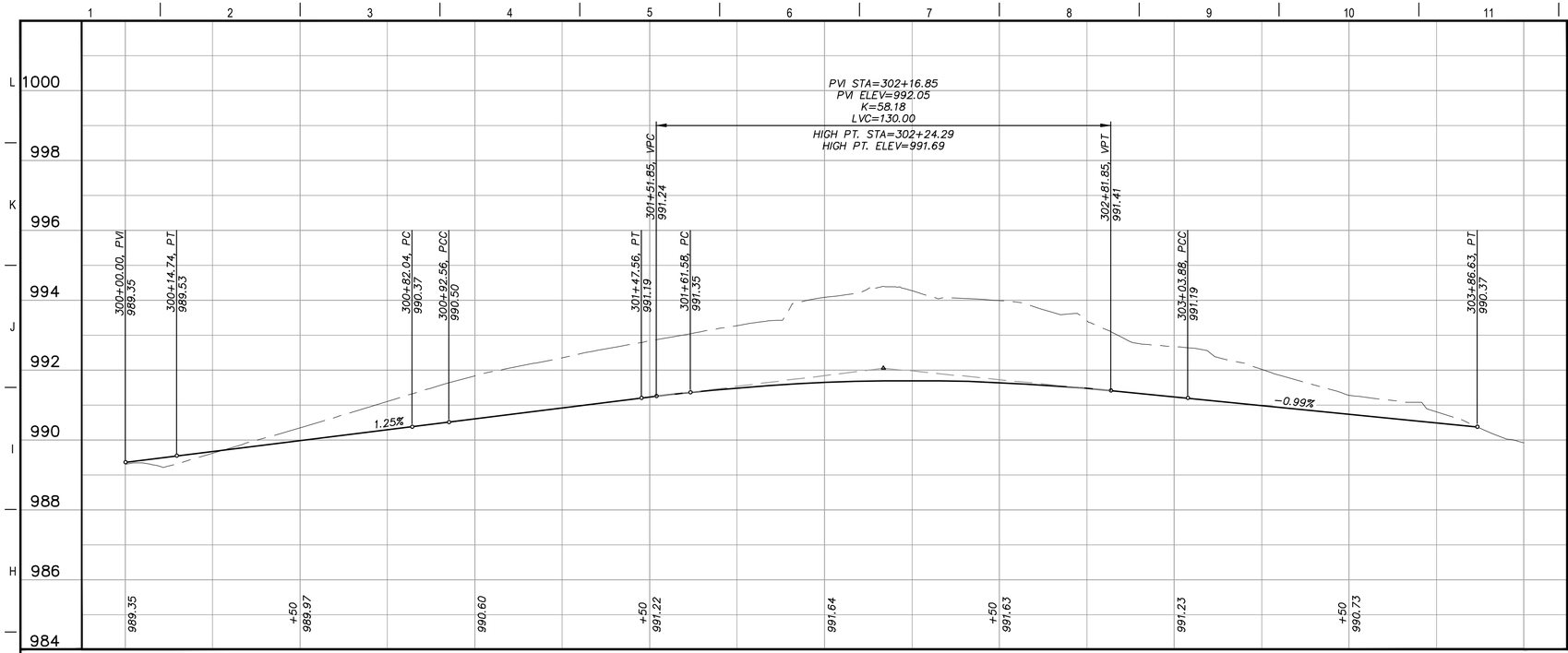
03/30/2023
DATE

R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C217
SHEET	OF

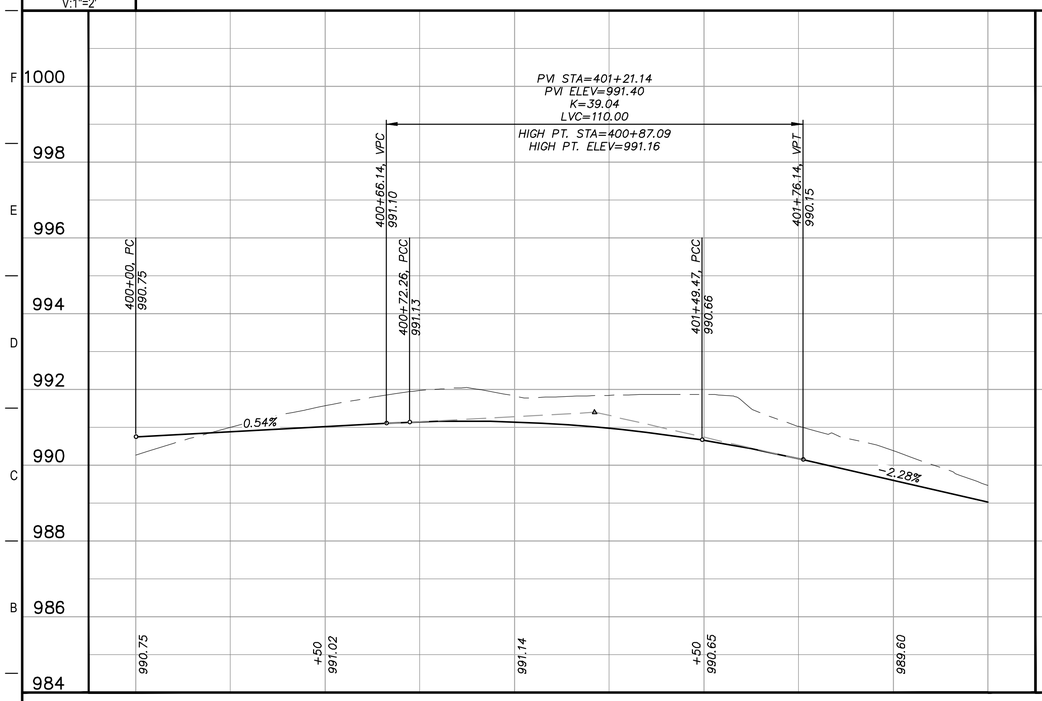
G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STREET-ROUNDABOUT.DWG, C219 ROUNDABOUT PROFILES, 3/31/2023 1:01:26 PM, MCastelli



G1

H:1"=20'
V:1"=2'

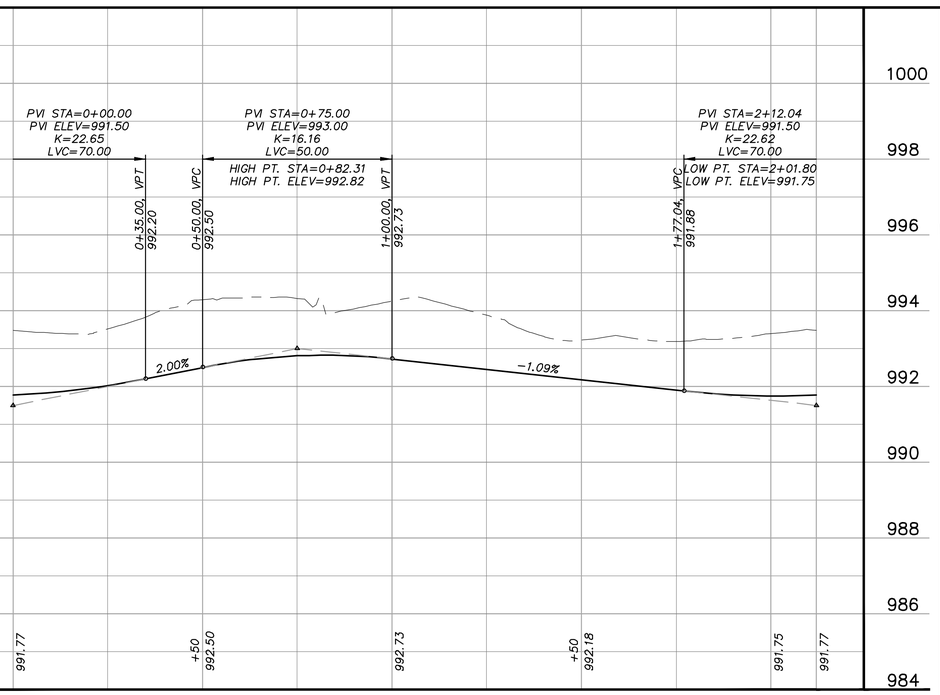
ROUNDABOUT NW~300+00 - END



A1

H:1"=20'
V:1"=2'

ROUNDABOUT SW ~ 400+00 - END



A8

H:1"=20'
V:1"=2'

ROUNDABOUT 33.75' ~ 0+00 - END

PROFILE LEGEND

N.G. ~ CENTERLINE

T.O.C. ~ CENTERLINE

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

ROUNDABOUT PROFILES

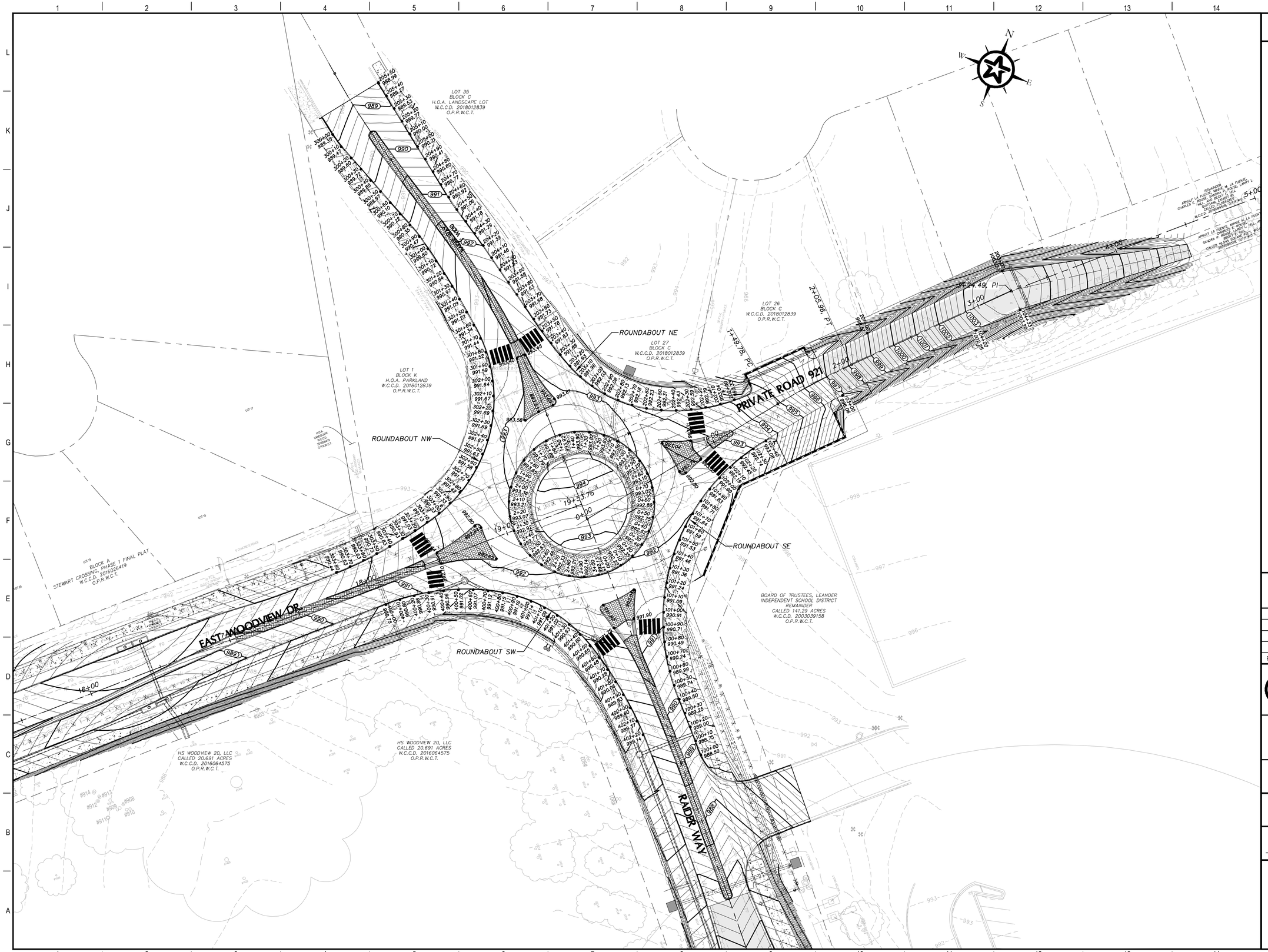
03/30/2023
DATE

R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C218
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STREET-ROUNDABOUT.DWG, C220 ROUNDABOUT PROFILES, 3/31/2023 1:02:37 PM, MCastelli



LEGEND

100+00 992.50 — STATION / TOP OF CURB ELEVATION

0 15 30 60

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

ROUNDABOUT GRADING

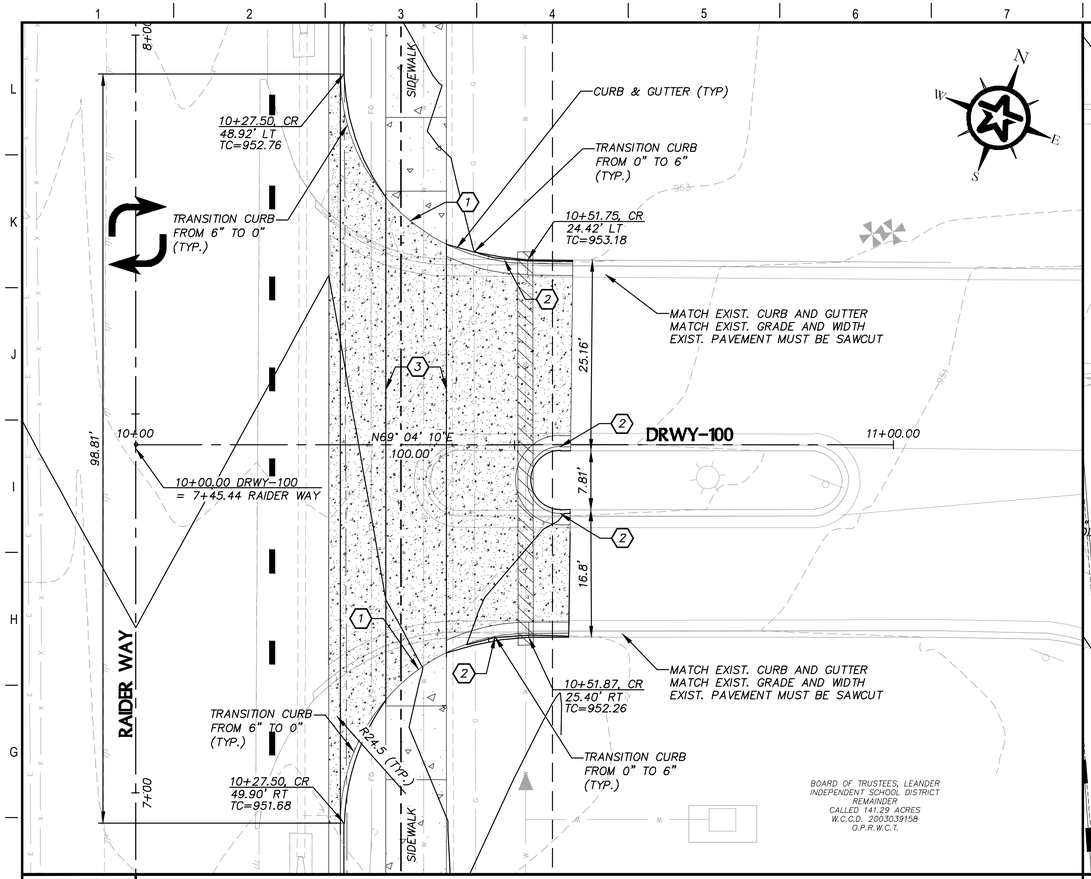
03/30/2023 — DATE

R. Alan Munger, PE — R. ALAN MUNGER

STATE OF TEXAS — R. ALAN MUNGER — 65341 — REGISTERED PROFESSIONAL ENGINEER

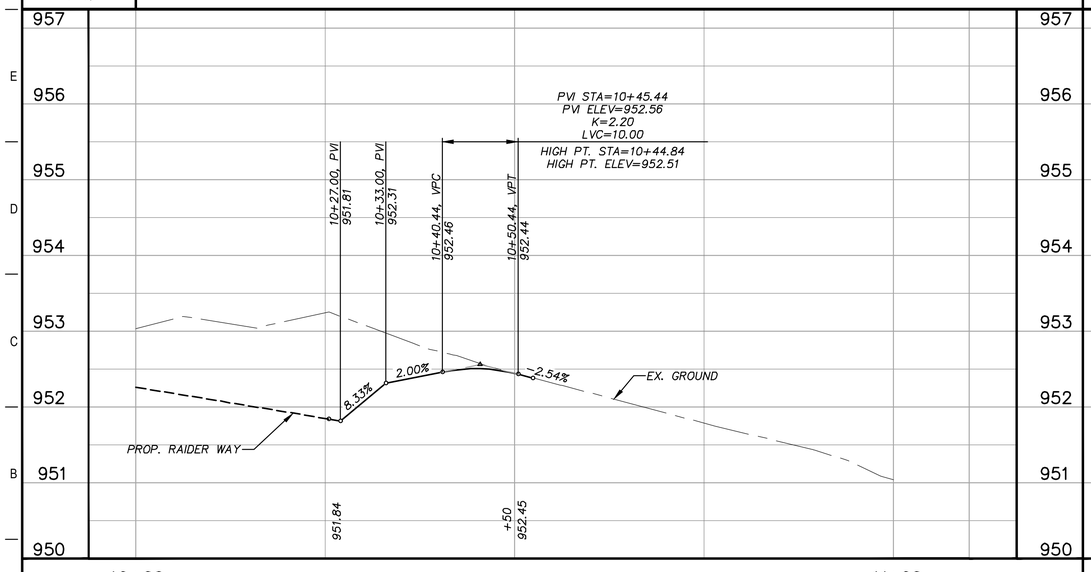
PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C219
SHEET	OF

G:\PROJECTS\3-005852 DESIGN\2.0 CAD\3-00585STREET-ROUNDABOUT.DWG, C221 ROUNDABOUT GRADING, 3/31/2023 1:03:05 PM, MCastelli



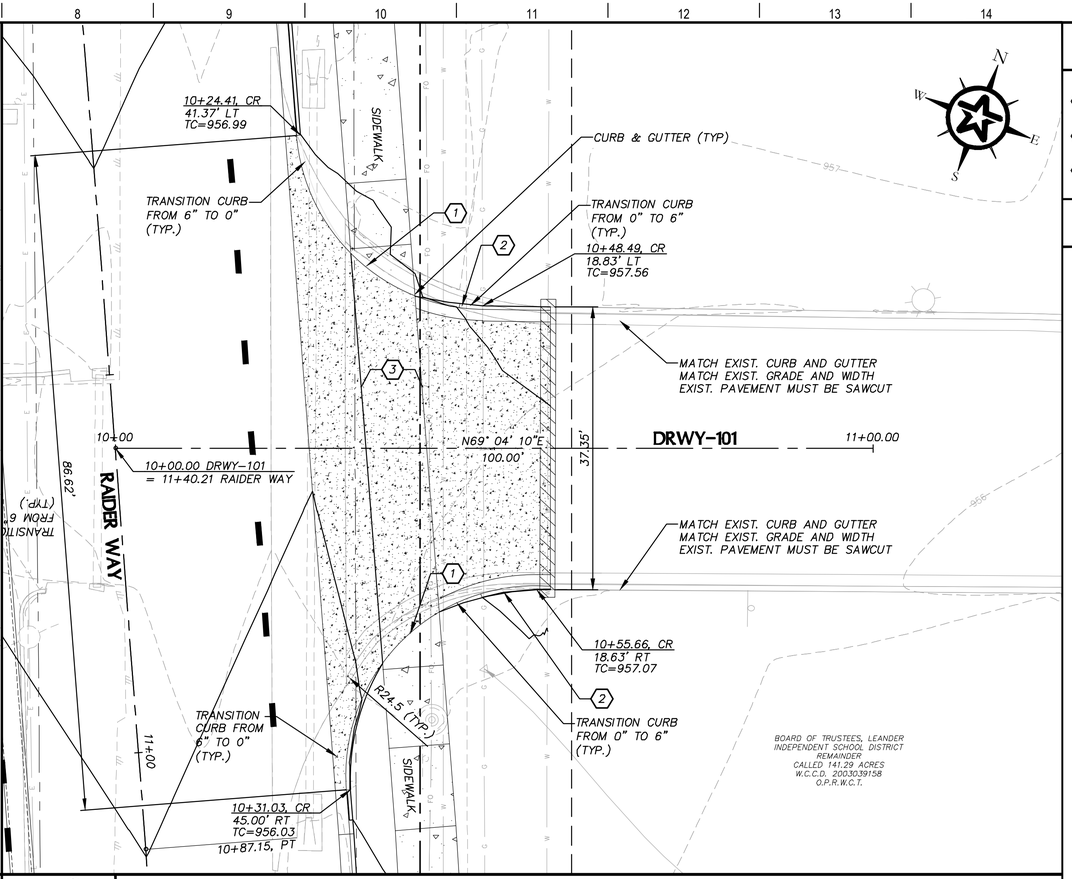
F1 DRIVEWAY 100 - PLAN TYPE II DRIVEWAY (6")

1"=10'



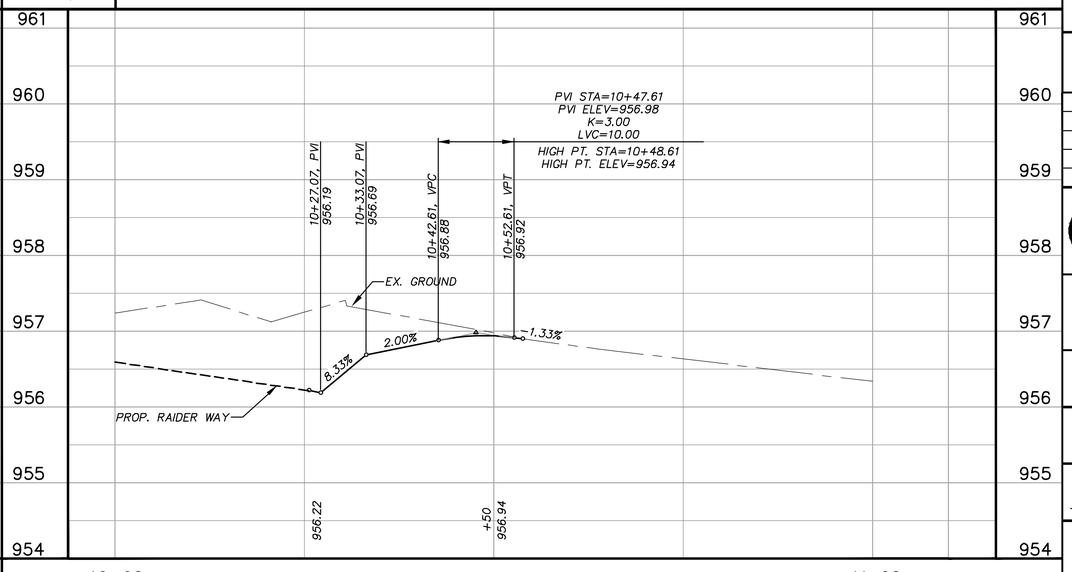
A1 DRIVEWAY 100 - PROFILE

H:1"=10'
V:1"=1'



F8 DRIVEWAY 101 - PLAN TYPE II DRIVEWAY (7")

1"=10'



A8 DRIVEWAY 101 - PROFILE

H:1"=10'
V:1"=1'

KEY NOTES

1. PREFORMED ASPHALT EXPANSION JOINT FOR CONCRETE (INCIDENTAL TO SIDEWALK)
2. PAINT CURB "FIRE LANE"
3. PAVEMENT THICKNESS TO MATCH DRIVEWAY DRIVEWAY LONGITUDINAL SLOPE 2%

GENERAL NOTES

1. ELEVATIONS AND OFFSETS REFERENCE ROADWAY AT PAVEMENTS EDGE (LIP OF GUTTER) UNLESS OTHERWISE NOTED.
2. BASELINE INFORMATION SHOWN ON SHEET C006.
3. CONTRACTOR TO PROVIDE CONCRETE FINISH (BROOM FINISH)
4. CONTRACTOR TO EXTEND DRIVEWAY LENGTH IF THE PROPOSED CONNECTION POINT IS WITHIN 2–3 FEET OF AN EXISTING JOINT.
5. PROVIDE JOINTS AT ALL ABUTTING VERTICAL CONCRETE SURFACES SUCH AS CURBS, EXISTING DRIVEWAYS, ETC.
6. REF. CONCRETE DRIVEWAY DETAILS ON SHEET ####.
7. DRIVEWAY CROSS–SLOPE GRADED TO DRAIN AS DIRECTED BY ENGINEER.
8. DRIVEWAY CONSTRUCTION MAY REQUIRE TEMPORARY CONSTRUCTION EASEMENTS (TCE). CONTRACTOR WILL BE PROVIDED TCE FOR WORK OUTSIDE LIMITS OF PROJECT ROW FOR DRIVEWAY CONSTRUCTION BY THE ENGINEER PRIOR TO COMMENCING DRIVEWAY WORK. CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 48 HOURS PRIOR TO BEGINNING WORK REQUIRING TCE.

0 5 10 20
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RAIDER WAY DRIVEWAYS

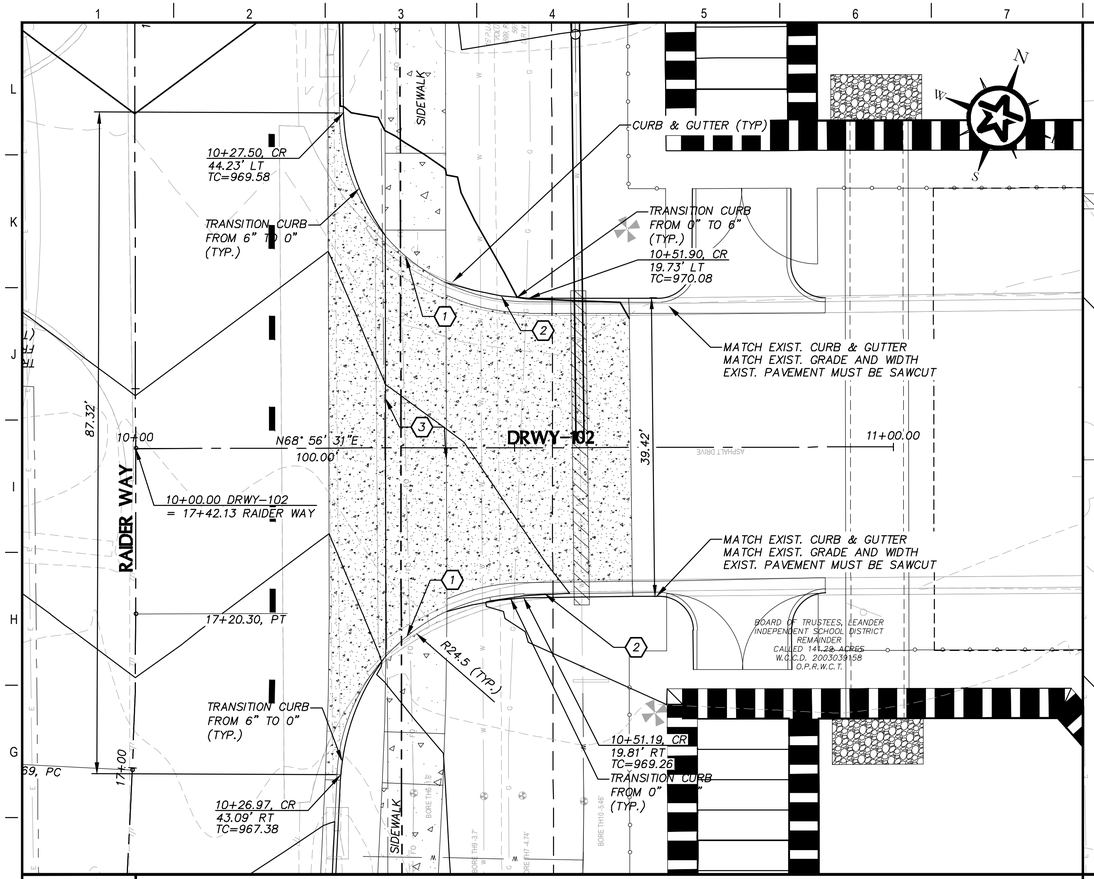
03/30/2023
DATE

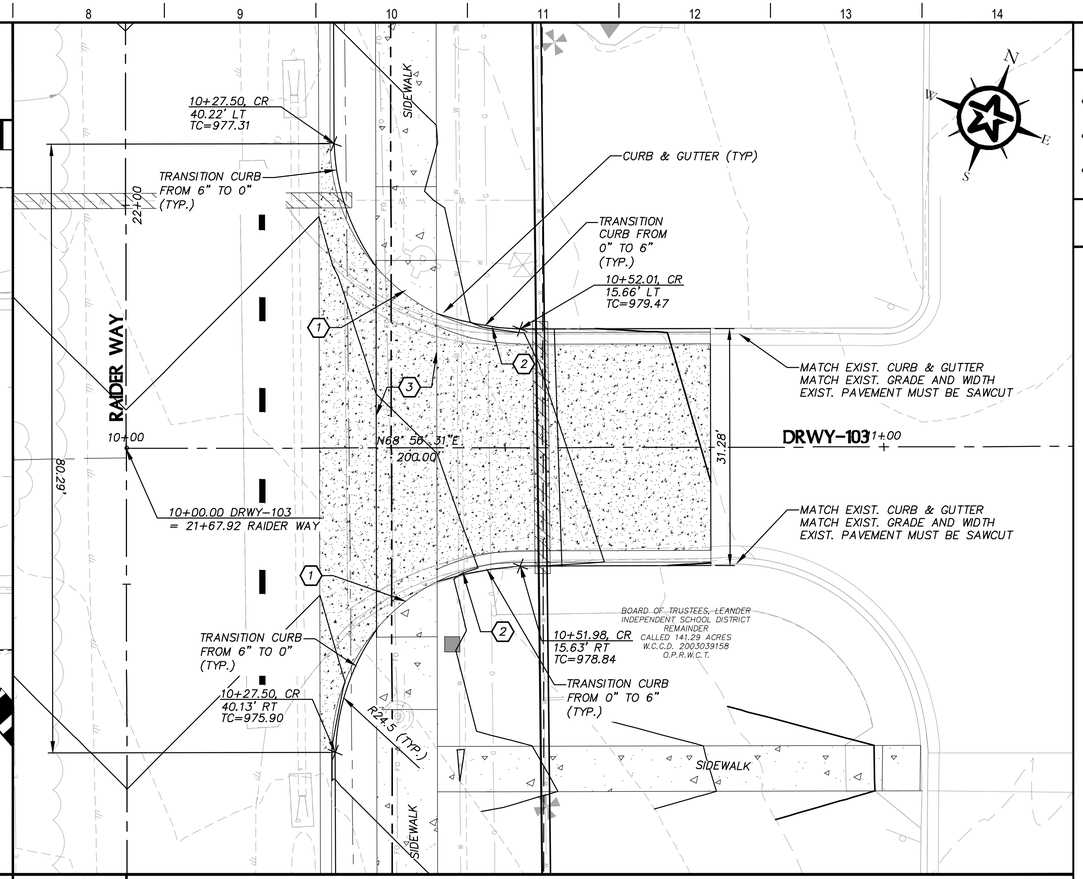
R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C220
	SHEET XXX OF 201

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STREET-DRIVEWAYS.DWG, C220 RAIDER WAY DRIVEWAYS, 3/31/2023 1:05:14 PM, MCastelli





KEY NOTES

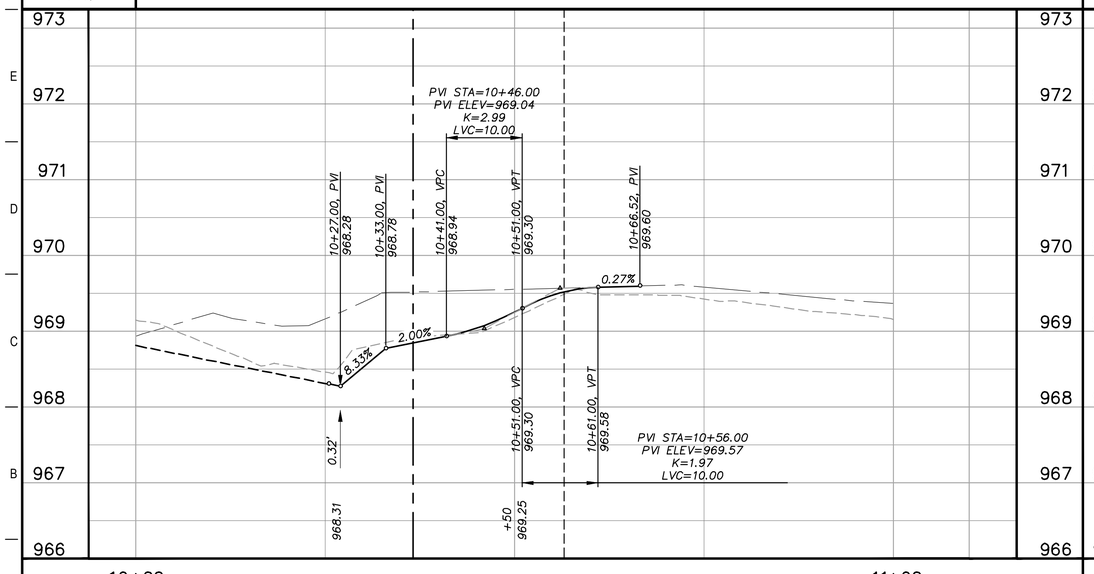
1. PREFORMED ASPHALT EXPANSION JOINT FOR CONCRETE (INCIDENTAL TO SIDEWALK)
2. PAINT CURB "FIRE LANE"
3. PAVEMENT THICKNESS TO MATCH DRIVEWAY DRIVEWAY LONGITUDINAL SLOPE 2%

GENERAL NOTES

1. ELEVATIONS AND OFFSETS REFERENCE ROADWAY AT PAVEMENTS EDGE (LIP OF GUTTER) UNLESS OTHERWISE NOTED.
2. BASELINE INFORMATION SHOWN ON SHEET C006.
3. CONTRACTOR TO PROVIDE CONCRETE FINISH (BROOM FINISH)
4. CONTRACTOR TO EXTEND DRIVEWAY LENGTH IF THE PROPOSED CONNECTION POINT IS WITHIN 2–3 FEET OF AN EXISTING JOINT.
5. PROVIDE JOINTS AT ALL ABUTTING VERTICAL CONCRETE SURFACES SUCH AS CURBS, EXISTING DRIVEWAYS, ETC.
6. REF. CONCRETE DRIVEWAY DETAILS ON SHEET ####.
7. DRIVEWAY CROSS–SLOPE GRADED TO DRAIN AS DIRECTED BY ENGINEER.
8. DRIVEWAY CONSTRUCTION MAY REQUIRE TEMPORARY CONSTRUCTION EASEMENTS (TCE). CONTRACTOR WILL BE PROVIDED TCE FOR WORK OUTSIDE LIMITS OF PROJECT ROW FOR DRIVEWAY CONSTRUCTION BY THE ENGINEER PRIOR TO COMMENCING DRIVEWAY WORK. CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 48 HOURS PRIOR TO BEGINNING WORK REQUIRING TCE.

F1 DRIVEWAY 102 - PLAN — TYPE II DRIVEWAY (7")

1"=10'

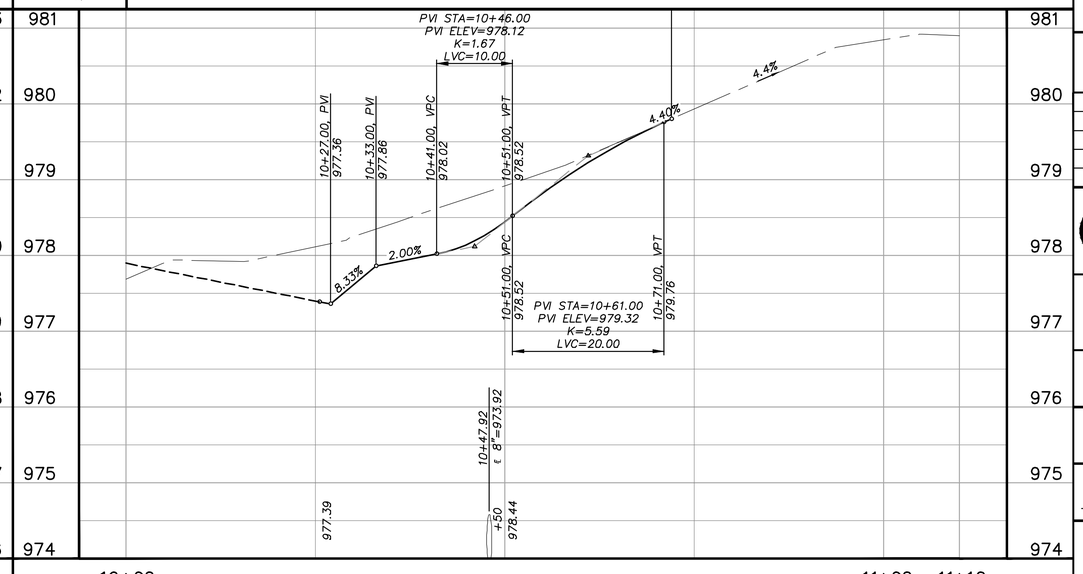


A1 DRIVEWAY 102 - PROFILE

H:1"=10'
V:1"=1'

F8 DRIVEWAY 103 - PLAN — TYPE II DRIVEWAY (6")

1"=10'



A8 DRIVEWAY 103 - PROFILE

H:1"=10'
V:1"=1'

0 5 10 20
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

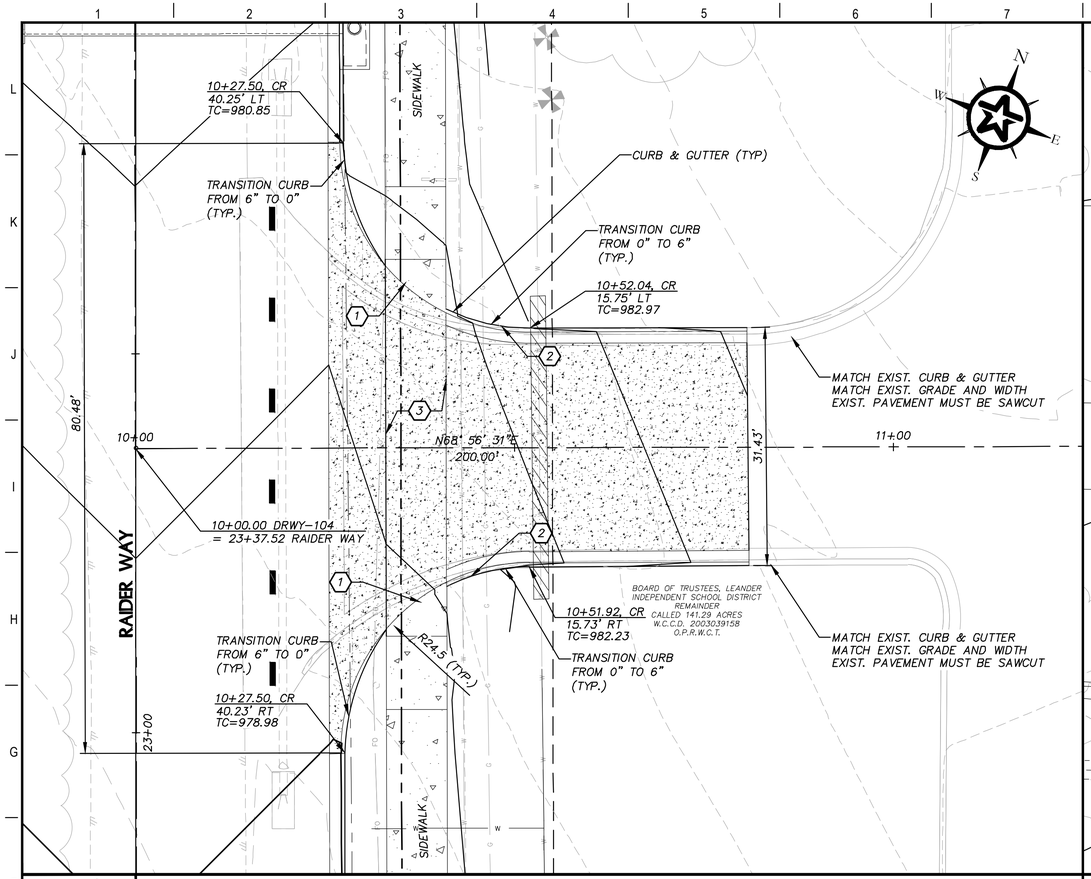
RAIDER WAY DRIVEWAYS

03/30/2023
DATE
R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C221
	SHEET 100 OF 201

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STREET-DRIVEWAYS.DWG, C221 RAIDER WAY DRIVEWAYS, 3/31/2023 1:05:40 PM, MCastelli

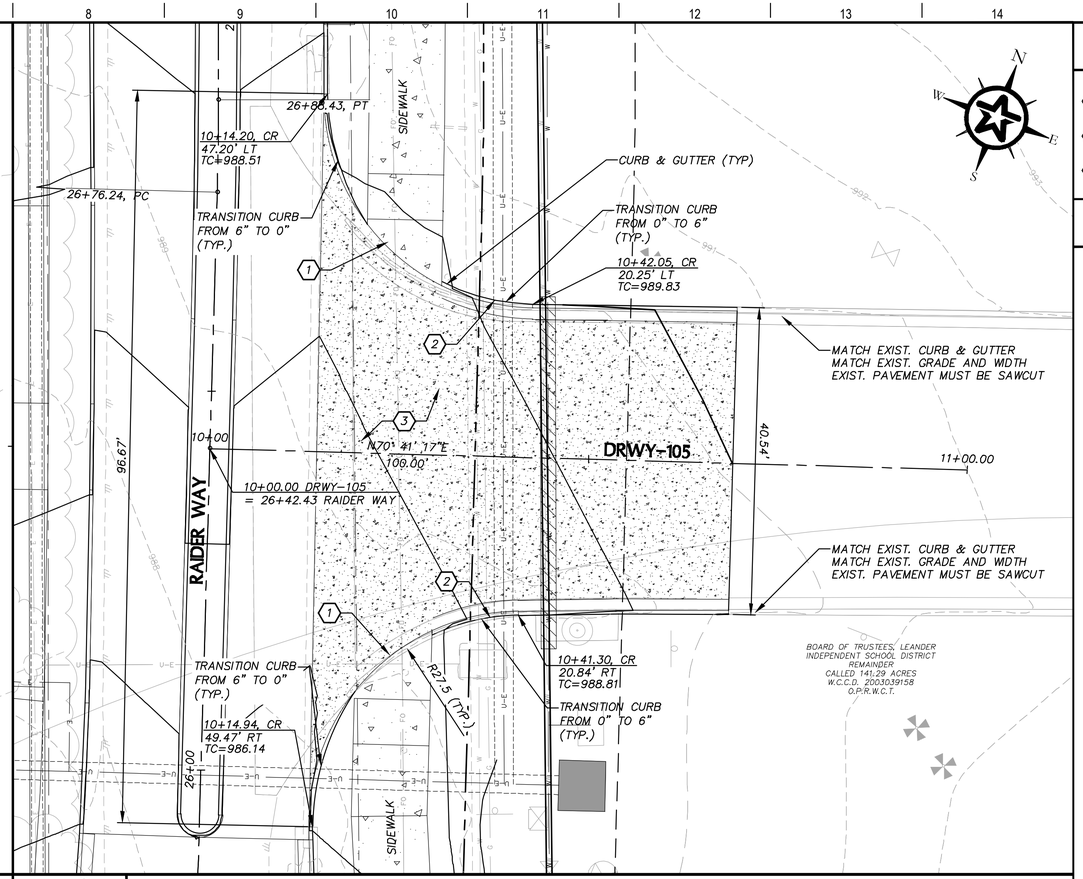


F1 DRIVEWAY 104 - PLAN TYPE II DRIVEWAY (6")

1"=10'

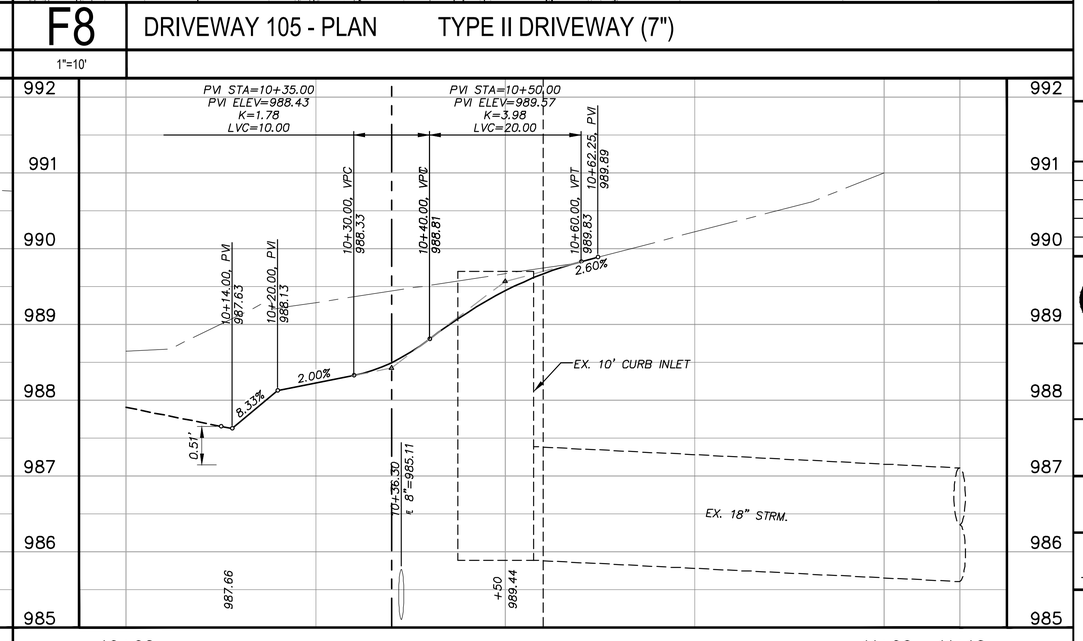
A1 DRIVEWAY 104 - PROFILE

H:1"=10'
V:1"=1'



F8 DRIVEWAY 105 - PLAN TYPE II DRIVEWAY (7")

1"=10'



A8 DRIVEWAY 105 - PROFILE

H:1"=10'
V:1"=1'

KEY NOTES

1. PREFORMED ASPHALT EXPANSION JOINT FOR CONCRETE (INCIDENTAL TO SIDEWALK)
2. PAINT CURB "FIRE LANE"
3. PAVEMENT THICKNESS TO MATCH DRIVEWAY DRIVEWAY LONGITUDINAL SLOPE 2%

GENERAL NOTES

1. ELEVATIONS AND OFFSETS REFERENCE ROADWAY AT PAVEMENTS EDGE (LIP OF GUTTER) UNLESS OTHERWISE NOTED.
2. BASELINE INFORMATION SHOWN ON SHEET C006.
3. CONTRACTOR TO PROVIDE CONCRETE FINISH (BROOM FINISH)
4. CONTRACTOR TO EXTEND DRIVEWAY LENGTH IF THE PROPOSED CONNECTION POINT IS WITHIN 2-3 FEET OF AN EXISTING JOINT.
5. PROVIDE JOINTS AT ALL ABUTTING VERTICAL CONCRETE SURFACES SUCH AS CURBS, EXISTING DRIVEWAYS, ETC.
6. REF. CONCRETE DRIVEWAY DETAILS ON SHEET ####.
7. DRIVEWAY CROSS-SLOPE GRADED TO DRAIN AS DIRECTED BY ENGINEER.
8. DRIVEWAY CONSTRUCTION MAY REQUIRE TEMPORARY CONSTRUCTION EASEMENTS (TCE). CONTRACTOR WILL BE PROVIDED TCE FOR WORK OUTSIDE LIMITS OF PROJECT ROW FOR DRIVEWAY CONSTRUCTION BY THE ENGINEER PRIOR TO COMMENCING DRIVEWAY WORK. CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 48 HOURS PRIOR TO BEGINNING WORK REQUIRING TCE.

GRAPHIC SCALE (FEET) 0 5 10 20

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

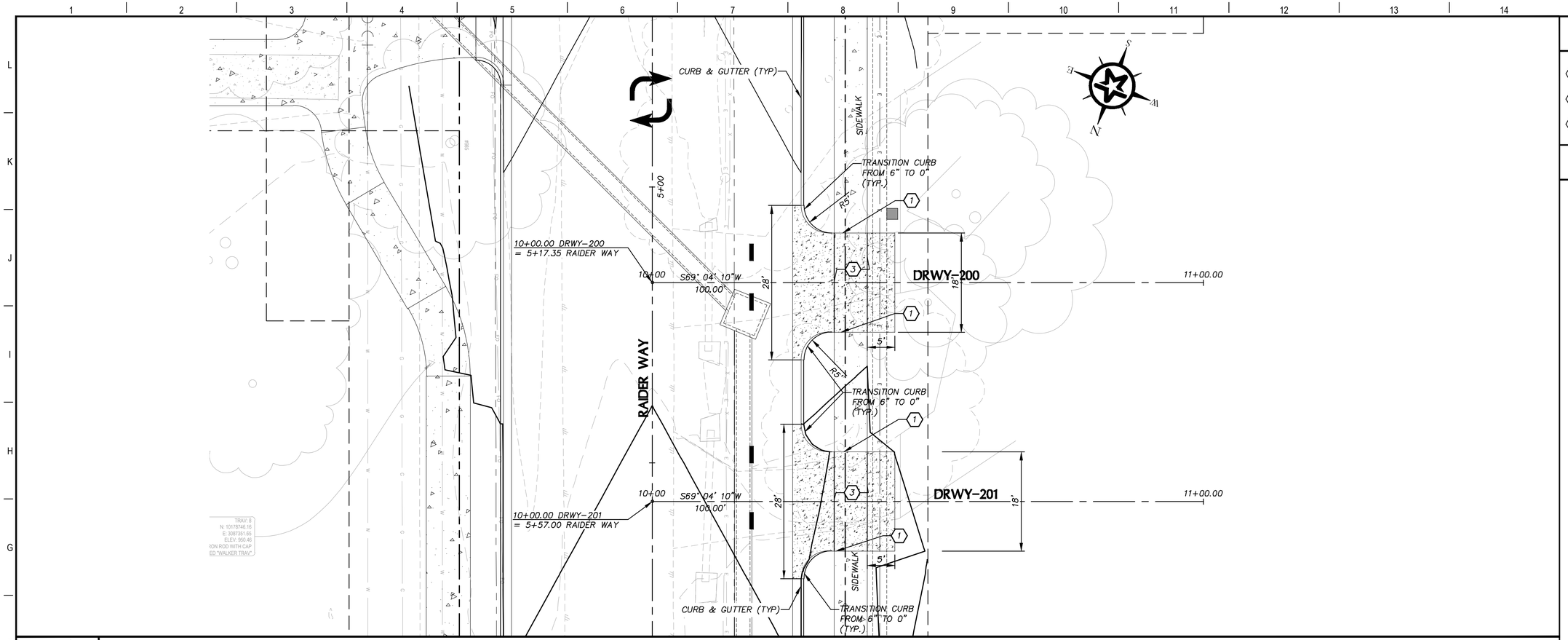
RAIDER WAY DRIVEWAYS

03/30/2023 DATE
R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C222
	SHEET XXX OF 201

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STREET-DRIVEWAYS.DWG, C222 RAIDER WAY DRIVEWAYS, 3/31/2023 1:06:09 PM, MCastelli



KEY NOTES

1. PREFORMED ASPHALT EXPANSION JOINT FOR CONCRETE (INCIDENTAL TO SIDEWALK)
2. PAINT CURB "FIRE LANE"
3. PAVEMENT THICKNESS TO MATCH DRIVEWAY DRIVEWAY LONGITUDINAL SLOPE 2%

GENERAL NOTES

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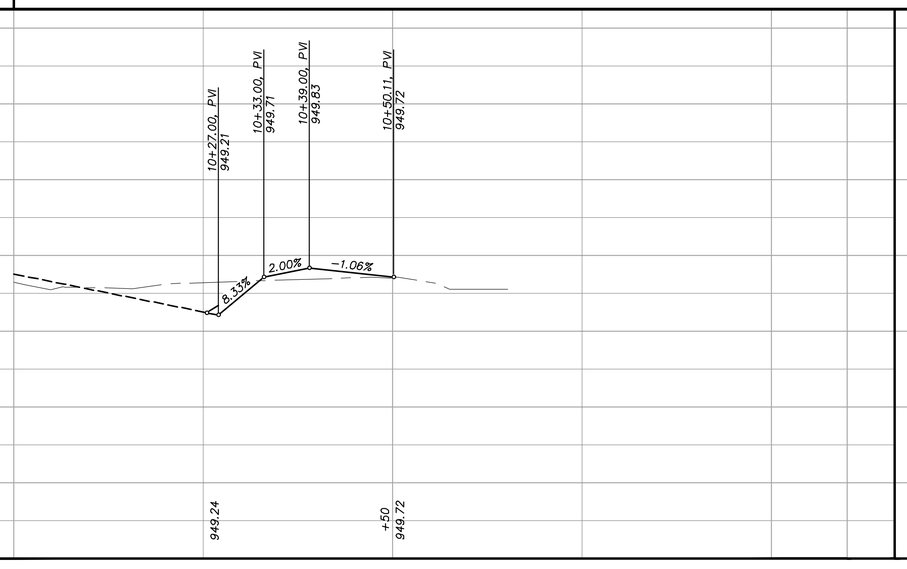
8. DRIVEWAY CONSTRUCTION MAY REQUIRE TEMPORARY CONSTRUCTION EASEMENTS (TCE). CONTRACTOR WILL BE PROVIDED TCE FOR WORK OUTSIDE LIMITS OF PROJECT ROW FOR DRIVEWAY CONSTRUCTION BY THE ENGINEER PRIOR TO COMMENCING DRIVEWAY WORK. CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 48 HOURS PRIOR TO BEGINNING WORK REQUIRING TCE.

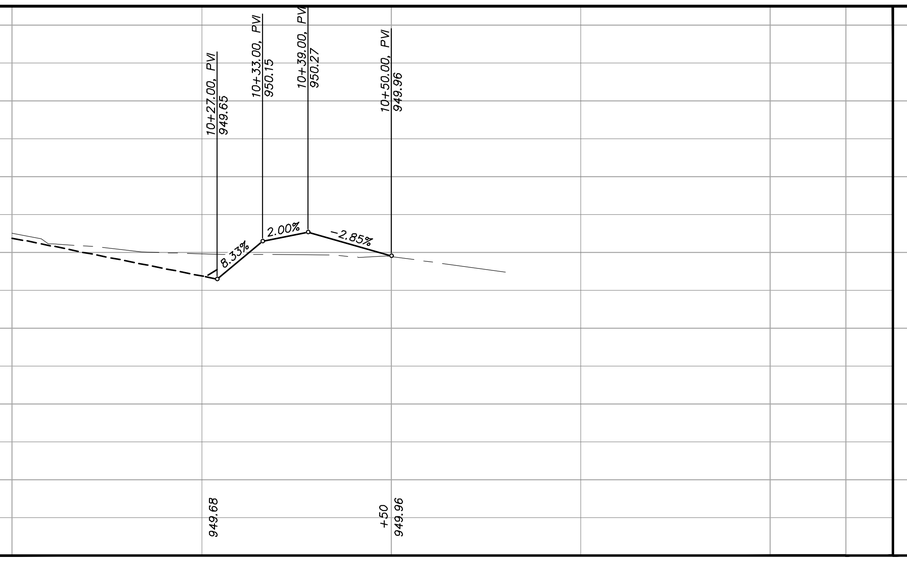
F1 DRIVEWAY 200 - PLAN — TYPE II DRIVEWAY (5")

1"=10'



A1 DRIVEWAY 200 - PROFILE

H:1"=10'
V:1"=1'



A8 DRIVEWAY 201 - PROFILE

H:1"=10'
V:1"=1'

0 5 10 20
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

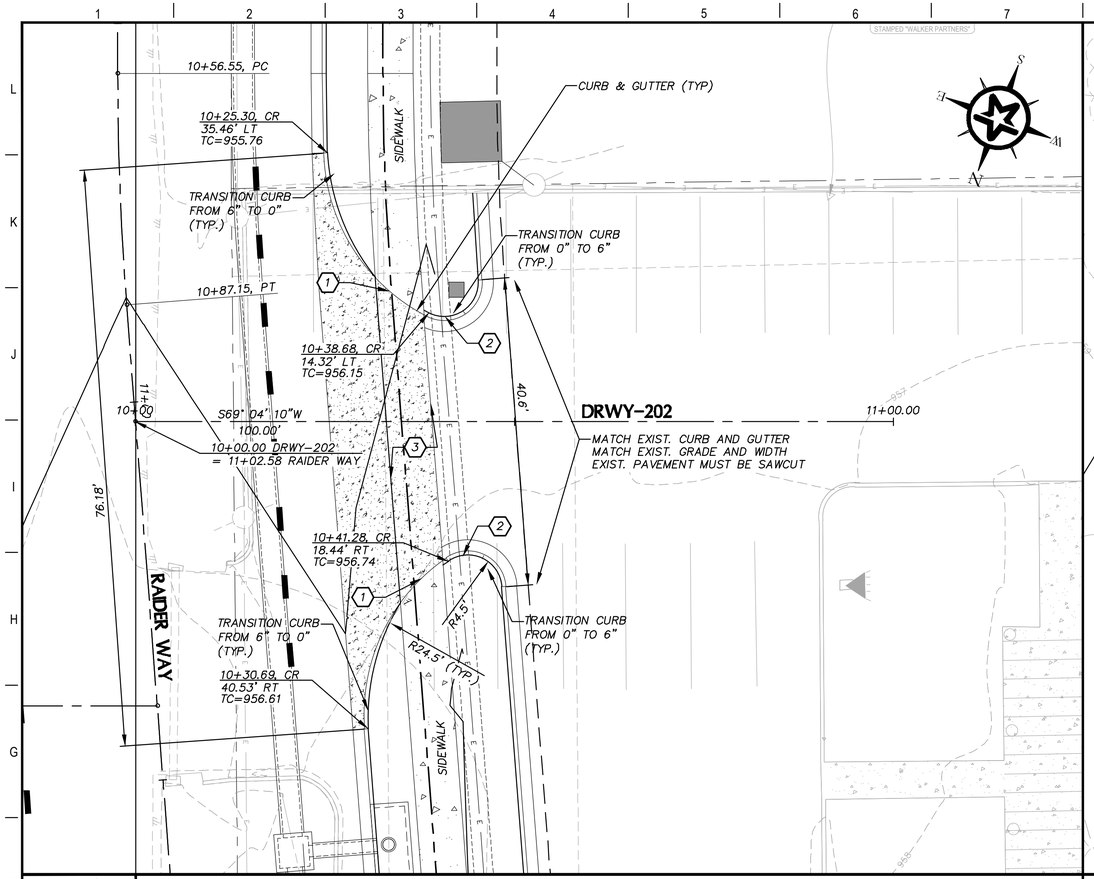
RAIDER WAY DRIVEWAYS

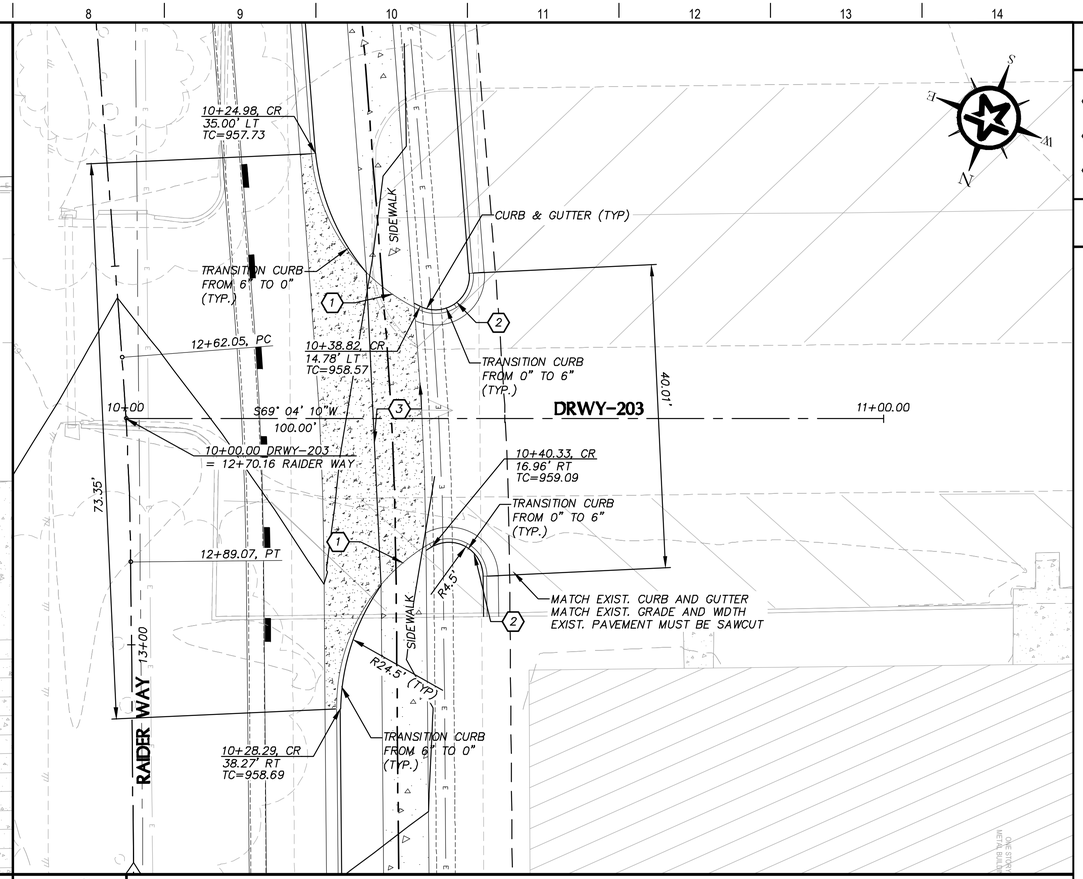
03/30/2023 DATE
R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C223
	SHEET XXX OF 201

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STREET-DRIVEWAYS.DWG, C223 RAIDER WAY DRIVEWAYS, 3/31/2023 1:06:33 PM, MCastelli





KEY NOTES

1. PREFORMED ASPHALT EXPANSION JOINT FOR CONCRETE (INCIDENTAL TO SIDEWALK)
2. PAINT CURB "FIRE LANE"
3. PAVEMENT THICKNESS TO MATCH DRIVEWAY DRIVEWAY LONGITUDINAL SLOPE 2%

GENERAL NOTES

1. ELEVATIONS AND OFFSETS REFERENCE ROADWAY AT PAVEMENTS EDGE (LIP OF GUTTER) UNLESS OTHERWISE NOTED.
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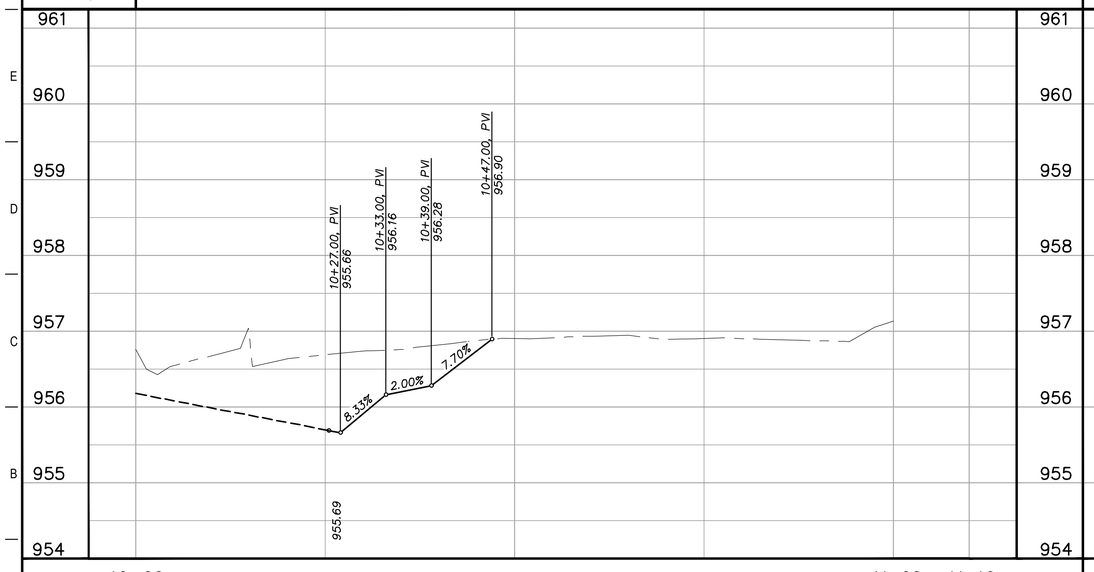
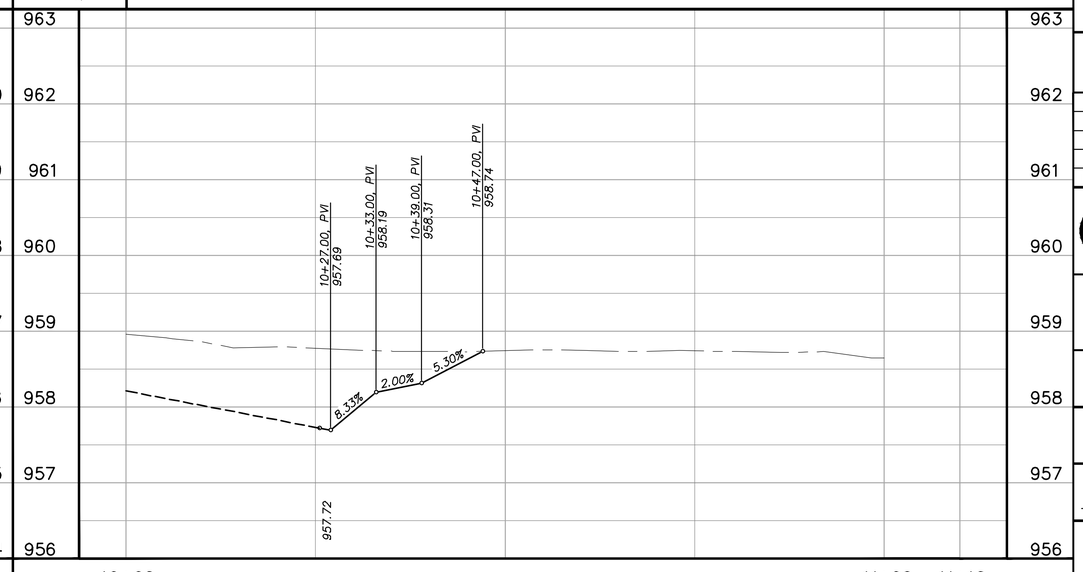
6. REF. CONCRETE DRIVEWAY DETAILS ON SHEET ####.
7. DRIVEWAY CROSS–SLOPE GRADED TO DRAIN AS DIRECTED BY ENGINEER.
8. DRIVEWAY CONSTRUCTION MAY REQUIRE TEMPORARY CONSTRUCTION EASEMENTS (TCE). CONTRACTOR WILL BE PROVIDED TCE FOR WORK OUTSIDE LIMITS OF PROJECT ROW FOR DRIVEWAY CONSTRUCTION BY THE ENGINEER PRIOR TO COMMENCING DRIVEWAY WORK. CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 48 HOURS PRIOR TO BEGINNING WORK REQUIRING TCE.

F1 DRIVEWAY 202 - PLAN TYPE II DRIVEWAY (7")
1"=10'

F8 DRIVEWAY 203 - PLAN TYPE II DRIVEWAY (7")
1"=10'





A1 DRIVEWAY 202 - PROFILE
H:1"=10'
V:1"=1'

A8 DRIVEWAY 203 - PROFILE
H:1"=10'
V:1"=1'

GRAPHIC SCALE (FEET)
0 5 10 20

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RAIDER WAY DRIVEWAYS

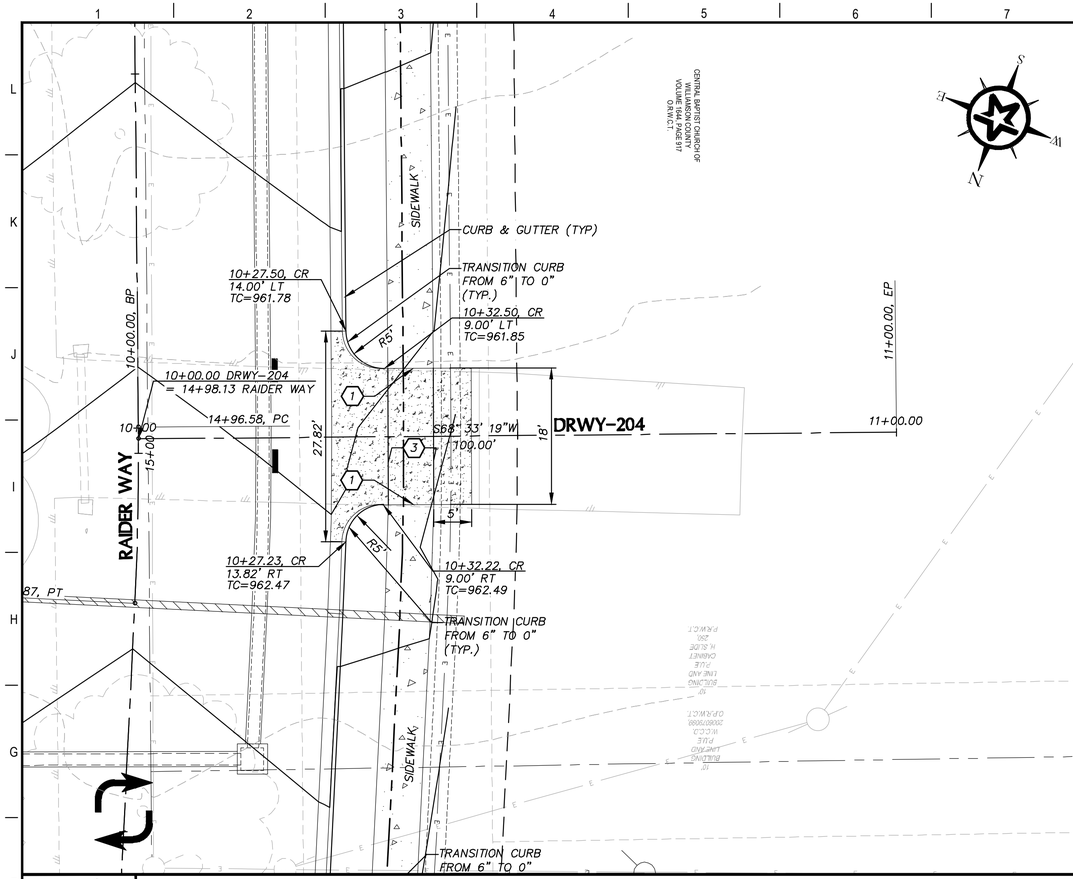
03/30/2023
DATE

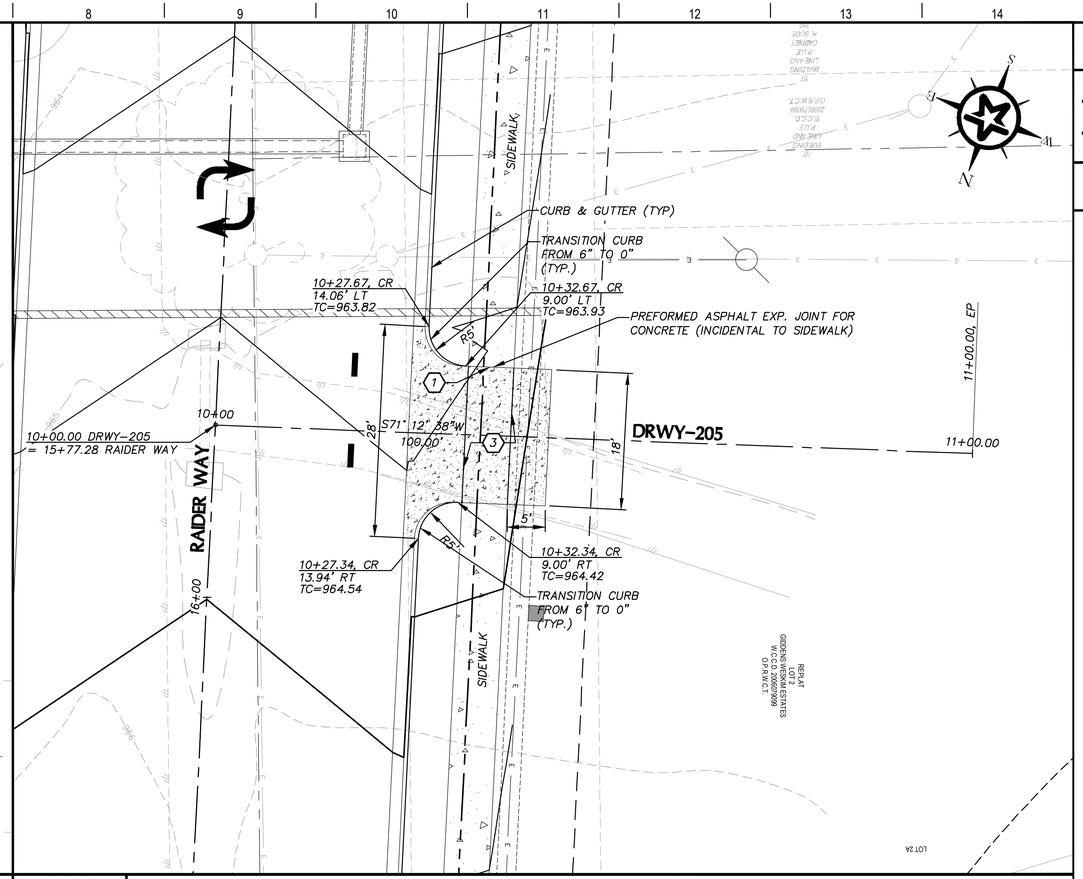
R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C224
	SHEET XXX OF 201

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STREET-DRIVEWAYS.DWG, C224 RAIDER WAY DRIVEWAYS, 3/31/2023 1:07:02 PM, MCastelli





KEY NOTES

1. PREFORMED ASPHALT EXPANSION JOINT FOR CONCRETE (INCIDENTAL TO SIDEWALK)
3. PAVEMENT THICKNESS TO MATCH DRIVEWAY LONGITUDINAL SLOPE 2%

GENERAL NOTES

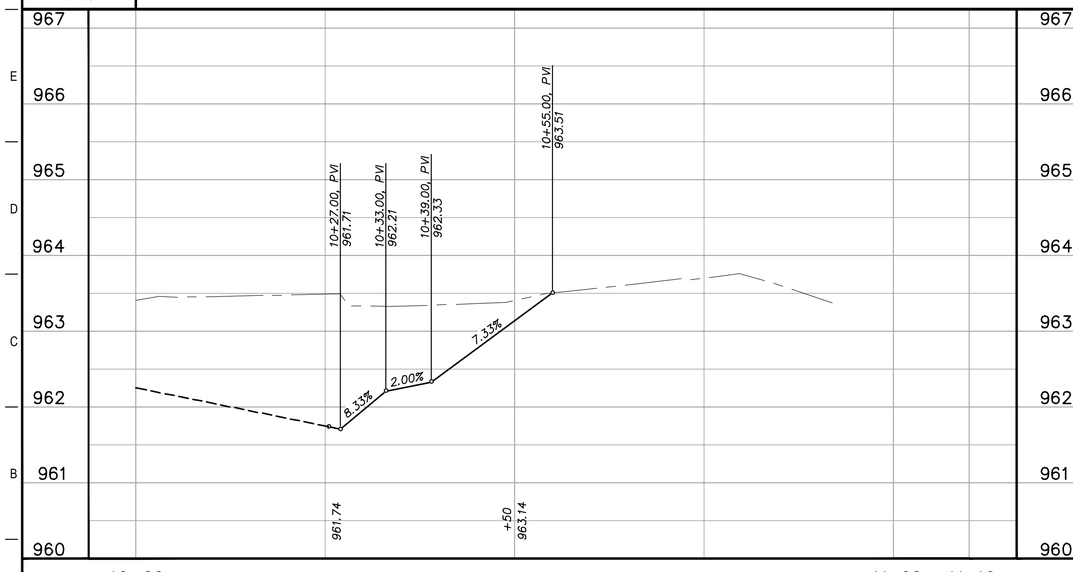
1. ELEVATIONS AND OFFSETS REFERENCE ROADWAY AT PAVEMENTS EDGE (LIP OF GUTTER) UNLESS OTHERWISE NOTED.
2. BASELINE INFORMATION SHOWN ON SHEET C006.
3. CONTRACTOR TO PROVIDE CONCRETE FINISH (BROOM FINISH)
4. CONTRACTOR TO EXTEND DRIVEWAY LENGTH IF THE PROPOSED CONNECTION POINT IS WITHIN 2-3 FEET OF AN EXISTING JOINT.
5. PROVIDE JOINTS AT ALL ABUTTING VERTICAL CONCRETE SURFACES SUCH AS CURBS, EXISTING DRIVEWAYS, ETC.
6. REF. CONCRETE DRIVEWAY DETAILS ON SHEET ####.
7. DRIVEWAY CROSS-SLOPE GRADED TO DRAIN AS DIRECTED BY ENGINEER.
8. DRIVEWAY CONSTRUCTION MAY REQUIRE TEMPORARY CONSTRUCTION EASEMENTS (TCE). CONTRACTOR WILL BE PROVIDED TCE FOR WORK OUTSIDE LIMITS OF PROJECT ROW FOR DRIVEWAY CONSTRUCTION BY THE ENGINEER PRIOR TO COMMENCING DRIVEWAY WORK. CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 48 HOURS PRIOR TO BEGINNING WORK REQUIRING TCE.

F1 DRIVEWAY 204 - PLAN TYPE II DRIVEWAY (5")

1"=10'

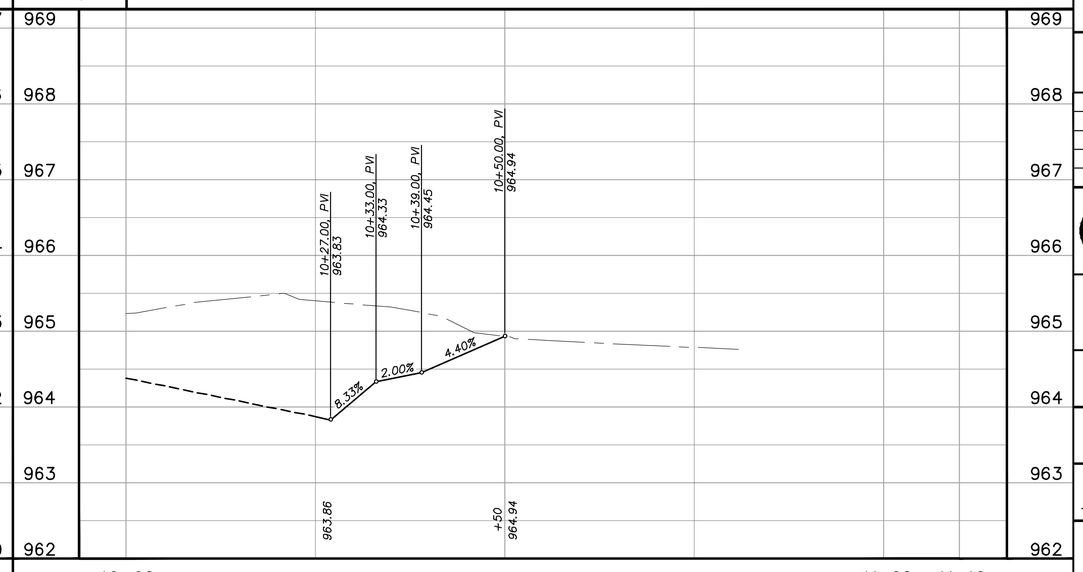
F8 DRIVEWAY 205 - PLAN TYPE II DRIVEWAY (5")

1"=10'



A1 DRIVEWAY 204 - PROFILE

H:1"=10'
V:1"=1'



A8 DRIVEWAY 205 - PROFILE

H:1"=10'
V:1"=1'

0 5 10 20
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RAIDER WAY DRIVEWAYS

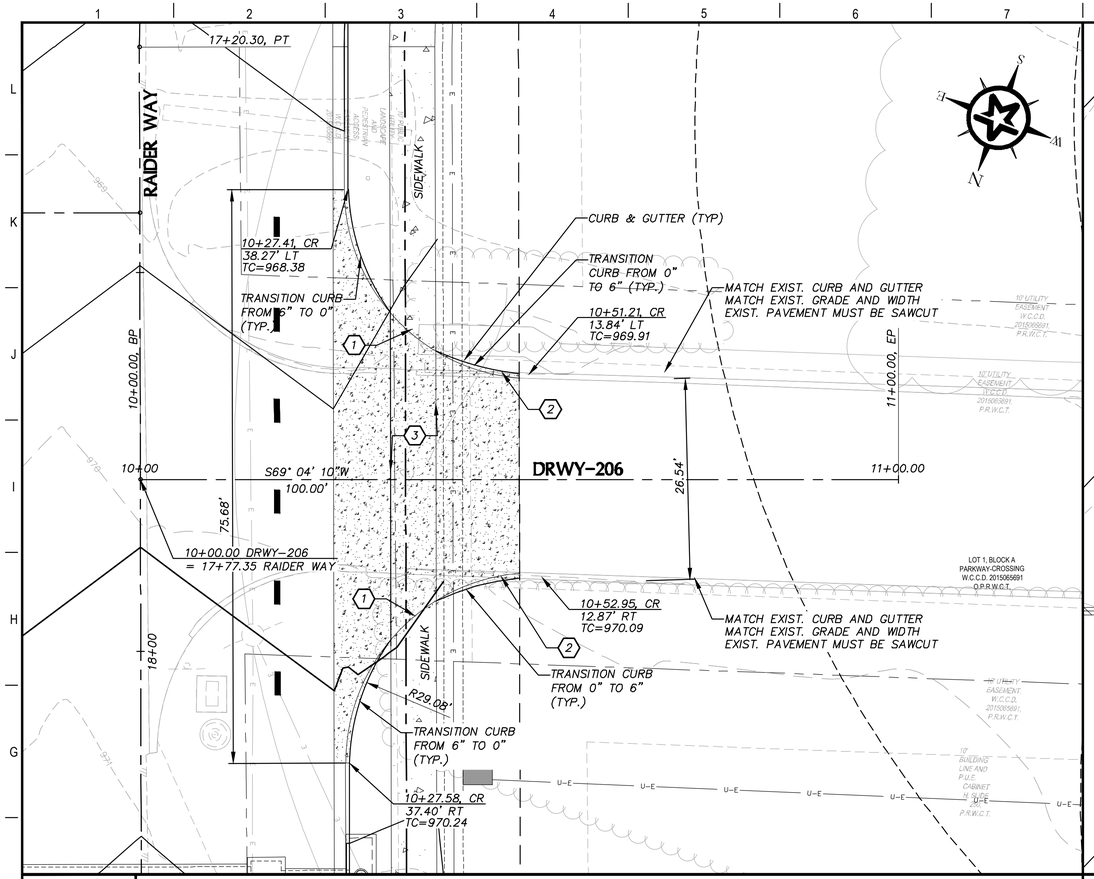
03/30/2023
DATE

R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

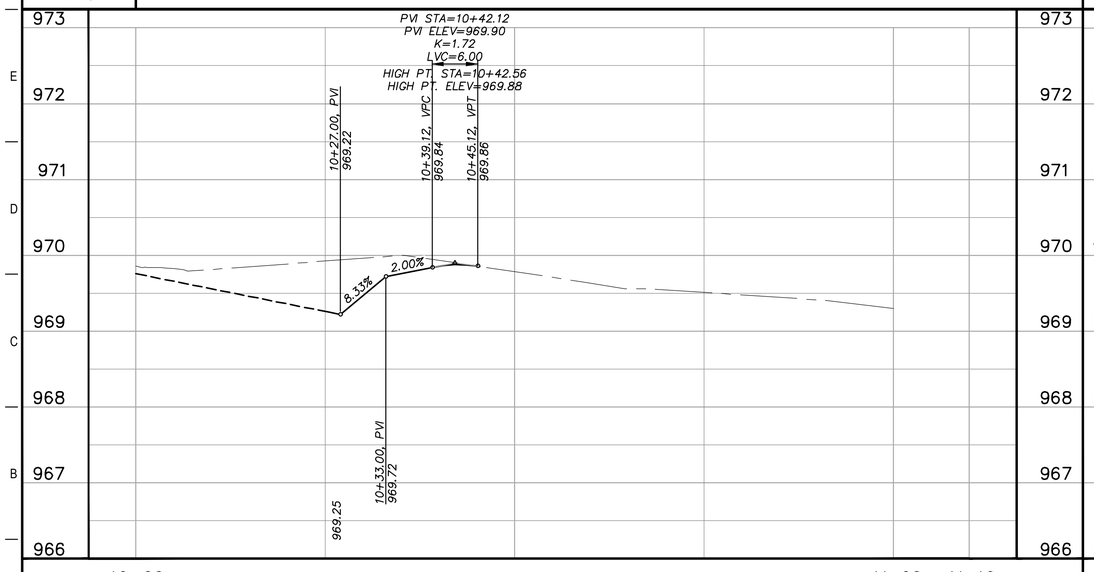
PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C225
	SHEET XXX OF 201

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STREET-DRIVEWAYS.DWG, C225 RAIDER WAY DRIVEWAYS, 3/31/2023 1:07:34 PM, MCastelli



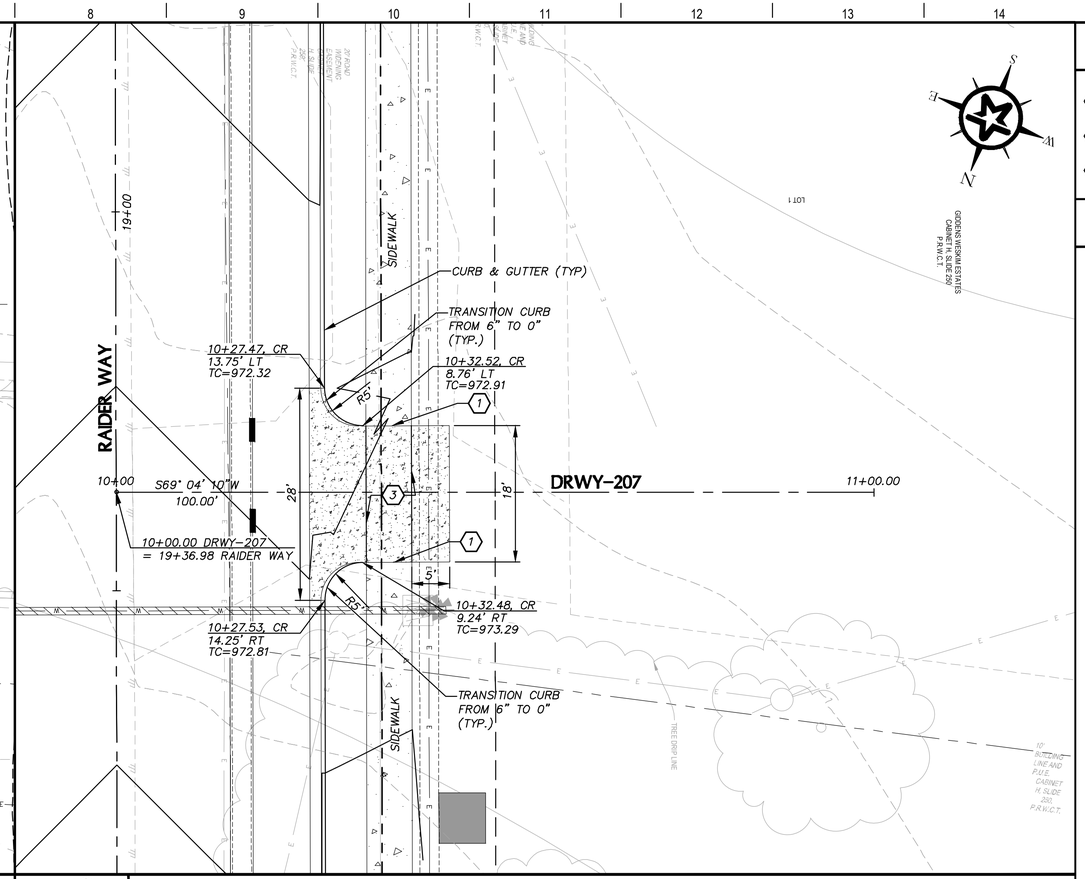
F1 DRIVEWAY 206 - PLAN TYPE II DRIVEWAY (7")

1"=10'



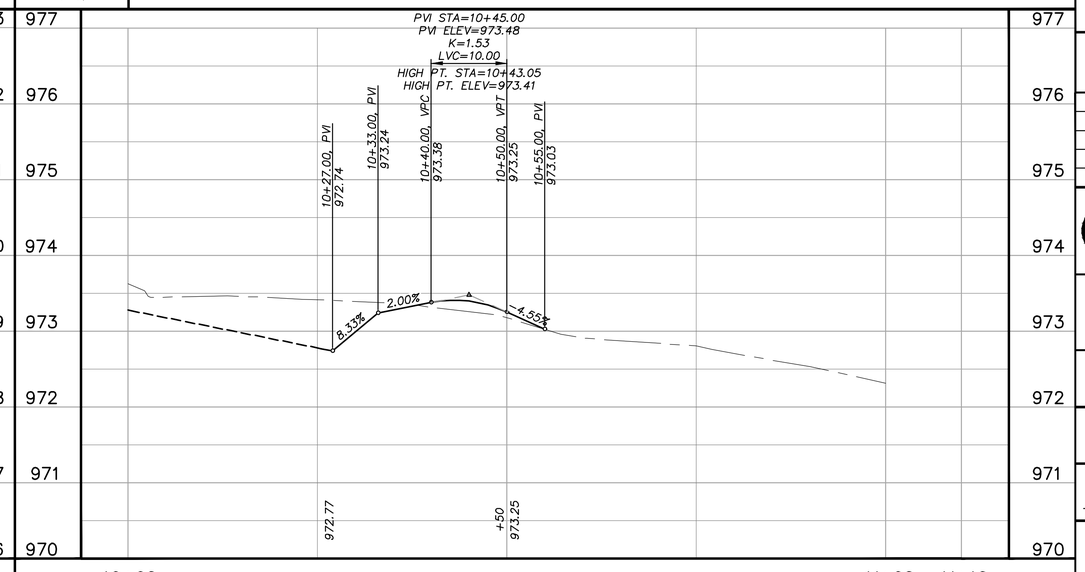
A1 DRIVEWAY 206 - PROFILE

H:1"=10'
V:1"=1'



F8 DRIVEWAY 207 - PLAN TYPE II DRIVEWAY (5")

1"=10'



A8 DRIVEWAY 207 - PROFILE

H:1"=10'
V:1"=1'

KEY NOTES

1. PREFORMED ASPHALT EXPANSION JOINT FOR CONCRETE (INCIDENTAL TO SIDEWALK)
2. PAINT CURB "FIRE LANE"
3. PAVEMENT THICKNESS TO MATCH DRIVEWAY DRIVEWAY LONGITUDINAL SLOPE 2%

GENERAL NOTES

1. ELEVATIONS AND OFFSETS REFERENCE ROADWAY AT PAVEMENTS EDGE (LIP OF GUTTER) UNLESS OTHERWISE NOTED.
2. BASELINE INFORMATION SHOWN ON SHEET C006.
3. CONTRACTOR TO PROVIDE CONCRETE FINISH (BROOM FINISH)
4. CONTRACTOR TO EXTEND DRIVEWAY LENGTH IF THE PROPOSED CONNECTION POINT IS WITHIN 2-3 FEET OF AN EXISTING JOINT.
5. PROVIDE JOINTS AT ALL ABUTTING VERTICAL CONCRETE SURFACES SUCH AS CURBS, EXISTING DRIVEWAYS, ETC.
6. REF. CONCRETE DRIVEWAY DETAILS ON SHEET ####.
7. DRIVEWAY CROSS-SLOPE GRADED TO DRAIN AS DIRECTED BY ENGINEER.
8. DRIVEWAY CONSTRUCTION MAY REQUIRE TEMPORARY CONSTRUCTION EASEMENTS (TCE). CONTRACTOR WILL BE PROVIDED TCE FOR WORK OUTSIDE LIMITS OF PROJECT ROW FOR DRIVEWAY CONSTRUCTION BY THE ENGINEER PRIOR TO COMMENCING DRIVEWAY WORK. CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 48 HOURS PRIOR TO BEGINNING WORK REQUIRING TCE.

0 5 10 20
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RAIDER WAY DRIVEWAYS

03/30/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C226
	SHEET XXX OF 201

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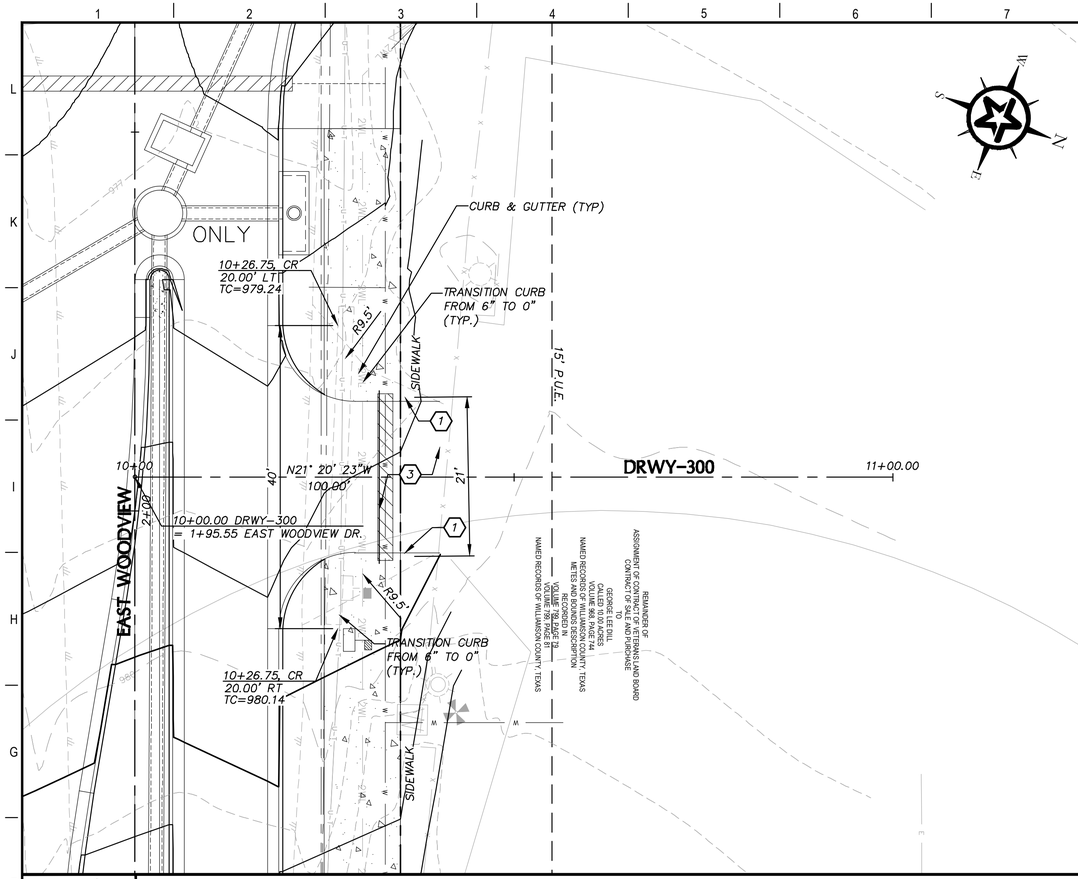
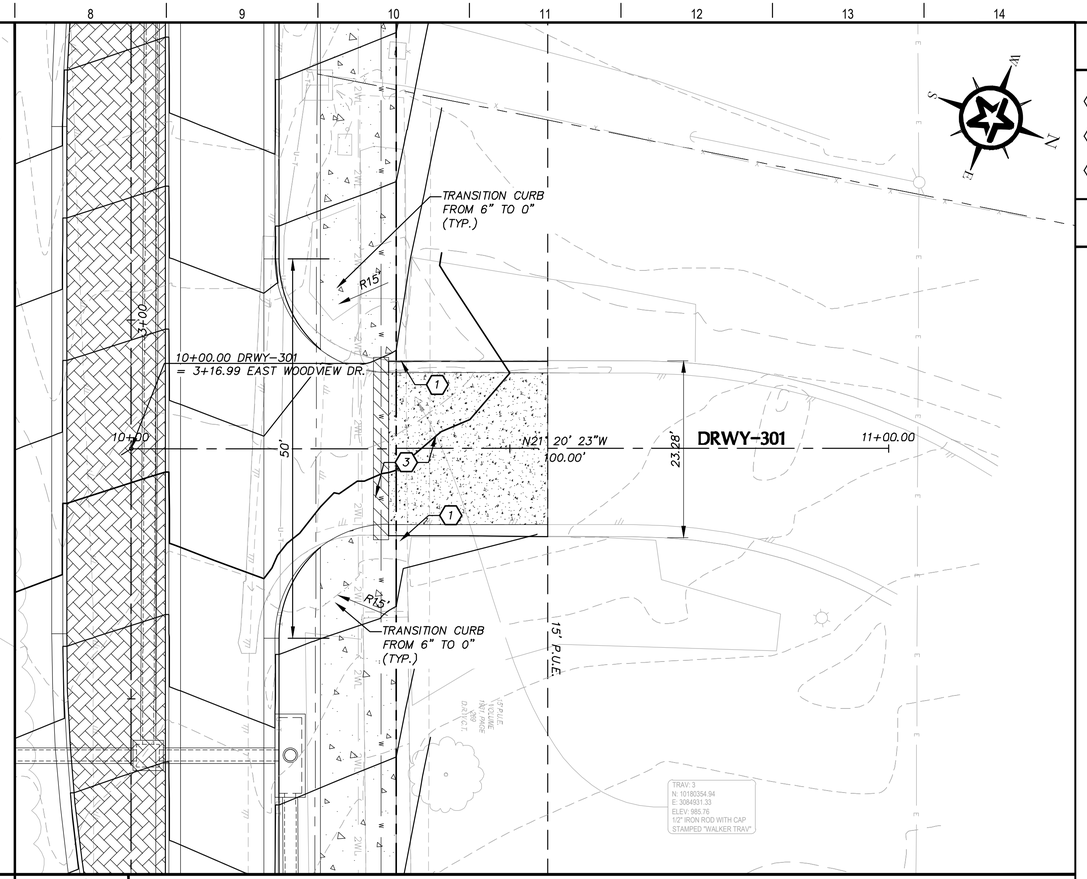


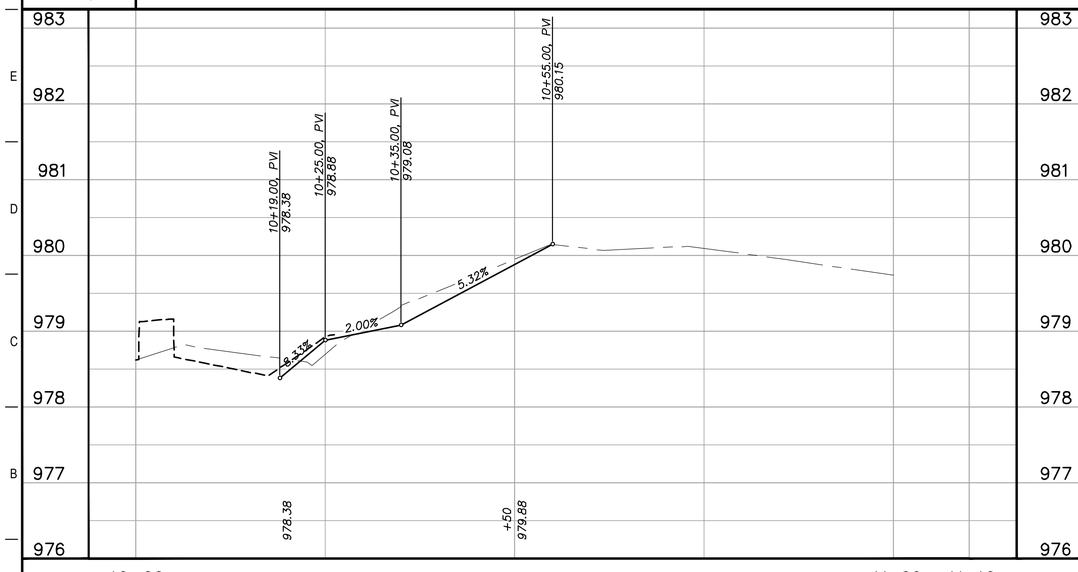
F1 DRIVEWAY 300 - PLAN TYPE II DRIVEWAY (7")

1"=10'



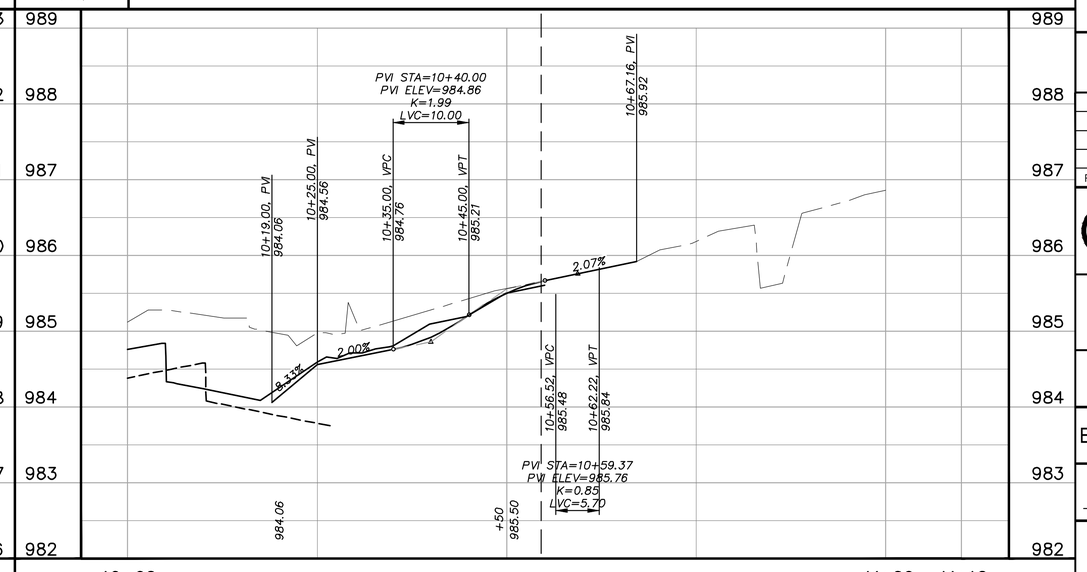
F8 DRIVEWAY 301 - PLAN TYPE II DRIVEWAY (7")

1"=10'



A1 DRIVEWAY 300 - PROFILE

H:1"=10'
V:1"=1'



A8 DRIVEWAY 301 - PROFILE

H:1"=10'
V:1"=1'

KEY NOTES

1. PREFORMED ASPHALT EXPANSION JOINT FOR CONCRETE (INCIDENTAL TO SIDEWALK)
2. PAINT CURB "FIRE LANE"
3. PAVEMENT THICKNESS TO MATCH DRIVEWAY DRIVEWAY LONGITUDINAL SLOPE 2%

GENERAL NOTES

1. ELEVATIONS AND OFFSETS REFERENCE ROADWAY AT PAVEMENTS EDGE (LIP OF GUTTER) UNLESS OTHERWISE NOTED.
2. BASELINE INFORMATION SHOWN ON SHEET C006.
3. CONTRACTOR TO PROVIDE CONCRETE FINISH (BROOM FINISH)
4. CONTRACTOR TO EXTEND DRIVEWAY LENGTH IF THE PROPOSED CONNECTION POINT IS WITHIN 2-3 FEET OF AN EXISTING JOINT.
5. PROVIDE JOINTS AT ALL ABUTTING VERTICAL CONCRETE SURFACES SUCH AS CURBS, EXISTING DRIVEWAYS, ETC.
6. REF. CONCRETE DRIVEWAY DETAILS ON SHEET ####.
7. DRIVEWAY CROSS-SLOPE GRADED TO DRAIN AS DIRECTED BY ENGINEER.
8. DRIVEWAY CONSTRUCTION MAY REQUIRE TEMPORARY CONSTRUCTION EASEMENTS (TCE). CONTRACTOR WILL BE PROVIDED TCE FOR WORK OUTSIDE LIMITS OF PROJECT ROW FOR DRIVEWAY CONSTRUCTION BY THE ENGINEER PRIOR TO COMMENCING DRIVEWAY WORK. CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 48 HOURS PRIOR TO BEGINNING WORK REQUIRING TCE.

GRAPHIC SCALE (FEET) 0 5 10 20

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

EAST WOODVIEW DR. DRIVEWAYS

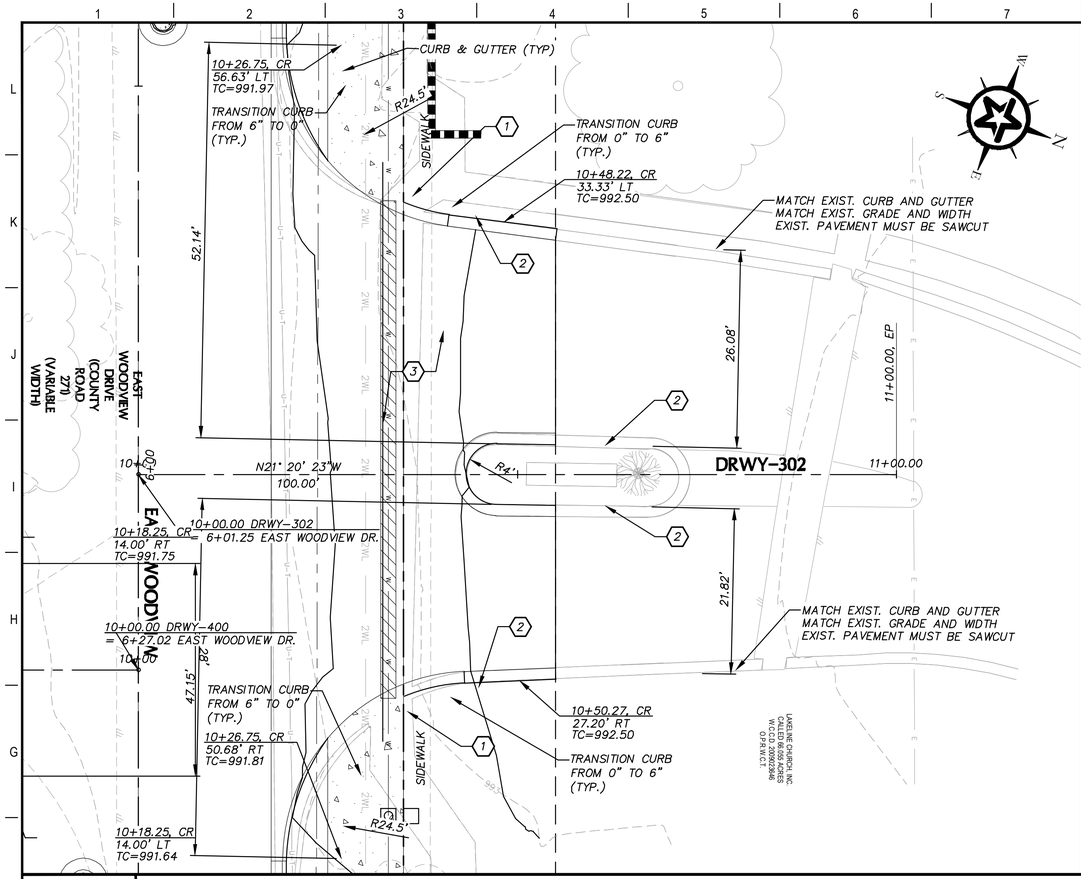
03/30/2023
DATE

R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

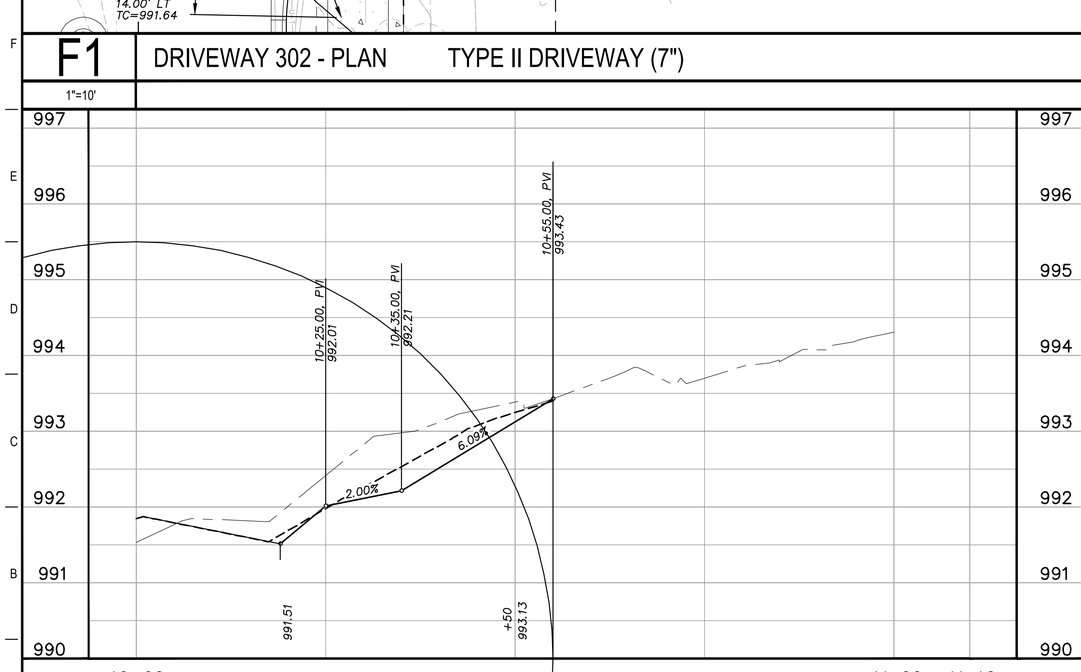
PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C227
	SHEET XXX OF 201

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STREET-DRIVEWAYS.DWG, C227 EAST WOODVIEW DR. DRIVEWAYS, 3/31/2023 1:08:36 PM, MCastelli



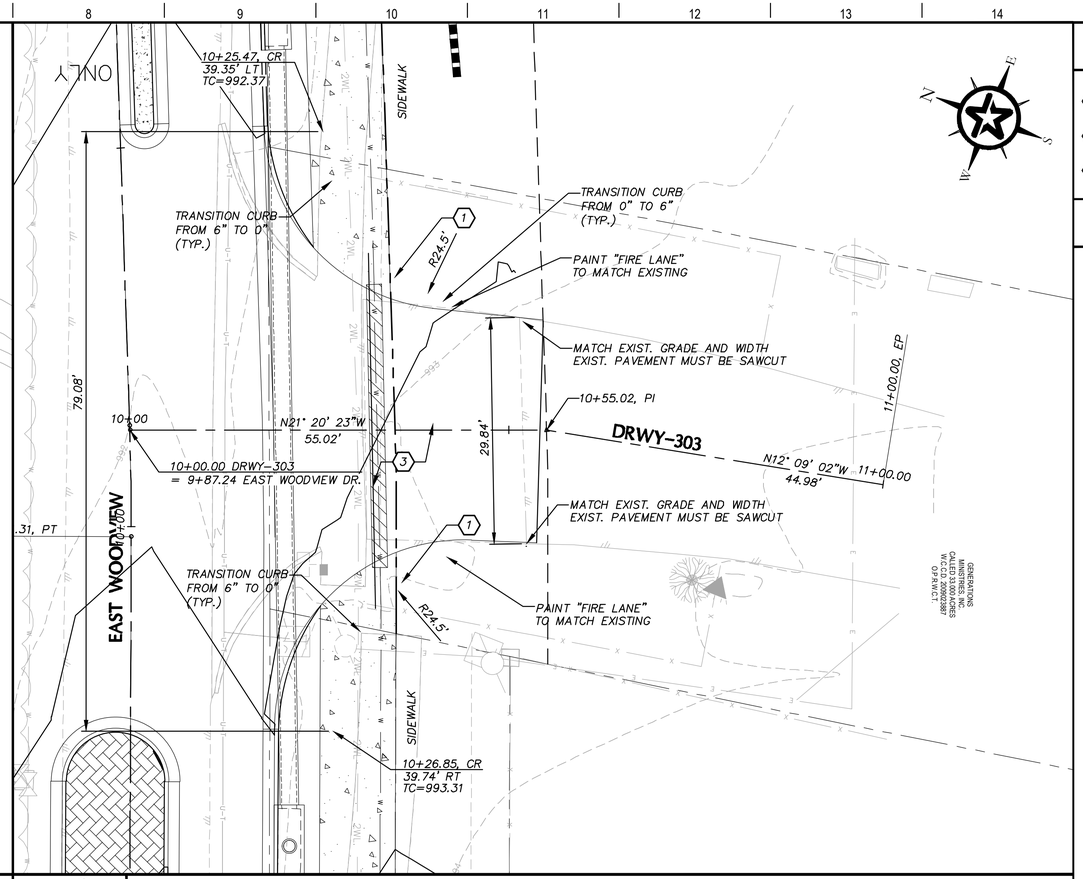
F1 DRIVEWAY 302 - PLAN TYPE II DRIVEWAY (7")

1"=10'



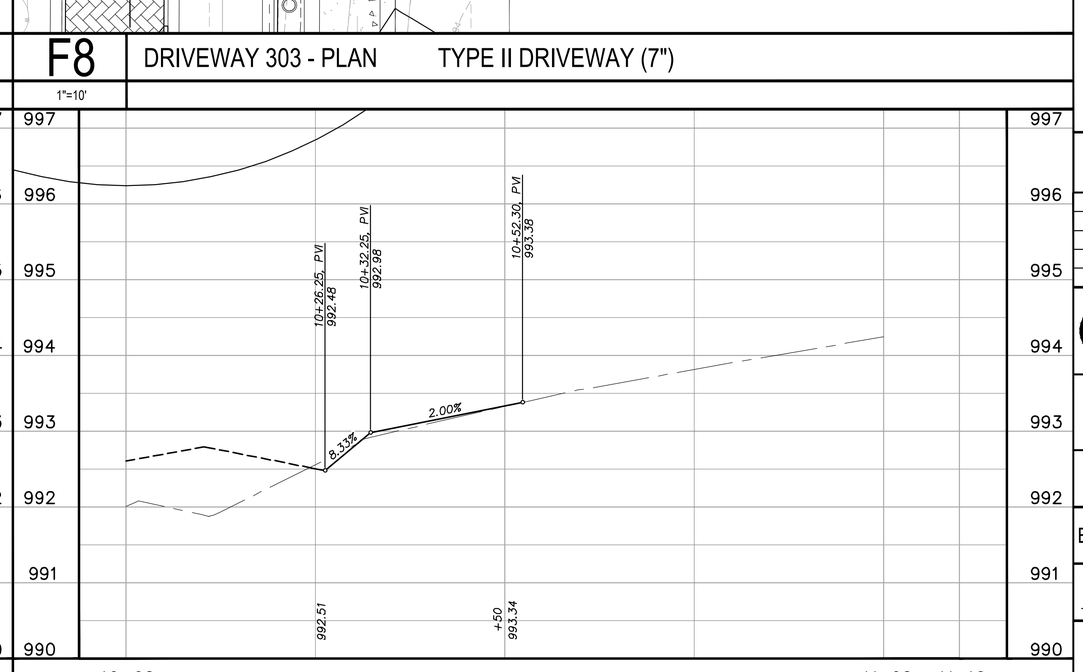
A1 DRIVEWAY 302 - PROFILE

H:1"=10'
V:1"=1'



F8 DRIVEWAY 303 - PLAN TYPE II DRIVEWAY (7")

1"=10'



A8 DRIVEWAY 303 - PROFILE

H:1"=10'
V:1"=1'

KEY NOTES

1. PREFORMED ASPHALT EXPANSION JOINT FOR CONCRETE (INCIDENTAL TO SIDEWALK)
2. PAINT CURB "FIRE LANE"
3. PAVEMENT THICKNESS TO MATCH DRIVEWAY DRIVEWAY LONGITUDINAL SLOPE 2%

GENERAL NOTES

1. ELEVATIONS AND OFFSETS REFERENCE ROADWAY AT PAVEMENTS EDGE (LIP OF GUTTER) UNLESS OTHERWISE NOTED.
2. BASELINE INFORMATION SHOWN ON SHEET C006.
3. CONTRACTOR TO PROVIDE CONCRETE FINISH (BROOM FINISH)
4. CONTRACTOR TO EXTEND DRIVEWAY LENGTH IF THE PROPOSED CONNECTION POINT IS WITHIN 2-3 FEET OF AN EXISTING JOINT.
5. PROVIDE JOINTS AT ALL ABUTTING VERTICAL CONCRETE SURFACES SUCH AS CURBS, EXISTING DRIVEWAYS, ETC.
6. REF. CONCRETE DRIVEWAY DETAILS ON SHEET ####.
7. DRIVEWAY CROSS-SLOPE GRADED TO DRAIN AS DIRECTED BY ENGINEER.
8. DRIVEWAY CONSTRUCTION MAY REQUIRE TEMPORARY CONSTRUCTION EASEMENTS (TCE). CONTRACTOR WILL BE PROVIDED TCE FOR WORK OUTSIDE LIMITS OF PROJECT ROW FOR DRIVEWAY CONSTRUCTION BY THE ENGINEER PRIOR TO COMMENCING DRIVEWAY WORK. CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 48 HOURS PRIOR TO BEGINNING WORK REQUIRING TCE.

GRAPHIC SCALE (FEET) 0 5 10 20

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

EAST WOODVIEW DR. DRIVEWAYS

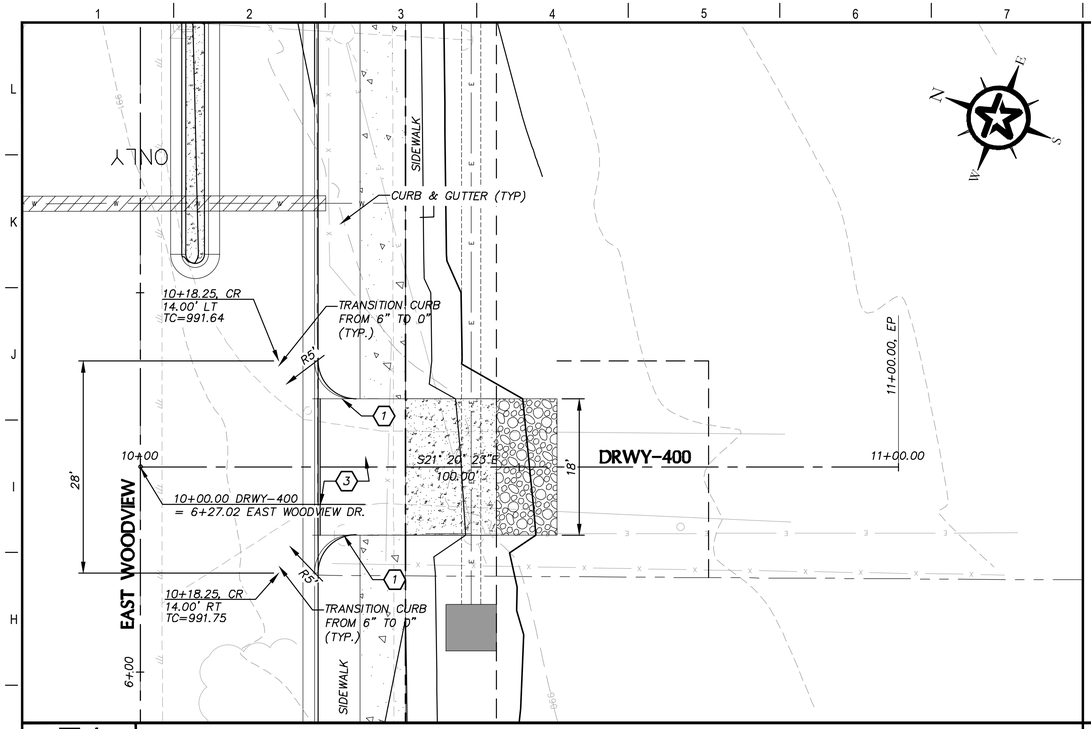
03/30/2023 DATE

R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

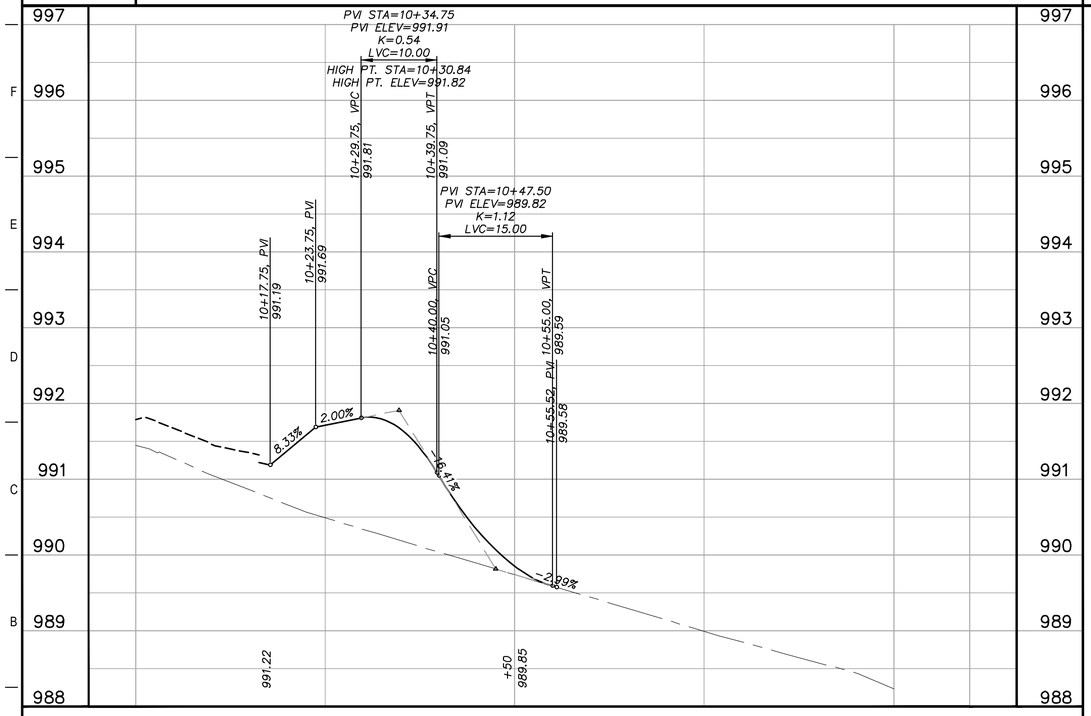
PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C228
	SHEET XXX OF 201

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STREET-DRIVEWAYS.DWG, C228 EAST WOODVIEW DR. DRIVEWAYS, 3/31/2023 1:09:05 PM, MCastelli



F1 DRIVEWAY 400 - PLAN TYPE II DRIVEWAY (5")

1"=10'



A1 DRIVEWAY 400 - PROFILE

H:1"=10'
V:1"=1'

F8 NOT USED

A8 NOT USED

KEY NOTES

1. PREFORMED ASPHALT EXPANSION JOINT FOR CONCRETE (INCIDENTAL TO SIDEWALK)
2. PAINT CURB "FIRE LANE"
3. PAVEMENT THICKNESS TO MATCH DRIVEWAY DRIVEWAY LONGITUDINAL SLOPE 2%

GENERAL NOTES

1. ELEVATIONS AND OFFSETS REFERENCE ROADWAY AT PAVEMENTS EDGE (LIP OF GUTTER) UNLESS OTHERWISE NOTED.
2. BASELINE INFORMATION SHOWN ON SHEET C006.
3. CONTRACTOR TO PROVIDE CONCRETE FINISH (BROOM FINISH)
4. CONTRACTOR TO EXTEND DRIVEWAY LENGTH IF THE PROPOSED CONNECTION POINT IS WITHIN 2-3 FEET OF AN EXISTING JOINT.
5. PROVIDE JOINTS AT ALL ABUTTING VERTICAL CONCRETE SURFACES SUCH AS CURBS, EXISTING DRIVEWAYS, ETC.
6. REF. CONCRETE DRIVEWAY DETAILS ON SHEET ####.
7. DRIVEWAY CROSS-SLOPE GRADED TO DRAIN AS DIRECTED BY ENGINEER.
8. DRIVEWAY CONSTRUCTION MAY REQUIRE TEMPORARY CONSTRUCTION EASEMENTS (TCE). CONTRACTOR WILL BE PROVIDED TCE FOR WORK OUTSIDE LIMITS OF PROJECT ROW FOR DRIVEWAY CONSTRUCTION BY THE ENGINEER PRIOR TO COMMENCING DRIVEWAY WORK. CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST 48 HOURS PRIOR TO BEGINNING WORK REQUIRING TCE.

0 5 10 20
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

C232 EAST WOODVIEW DR. DRIVEWAYS

03/30/2023
DATE
R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C229

SHEET XXX OF 201

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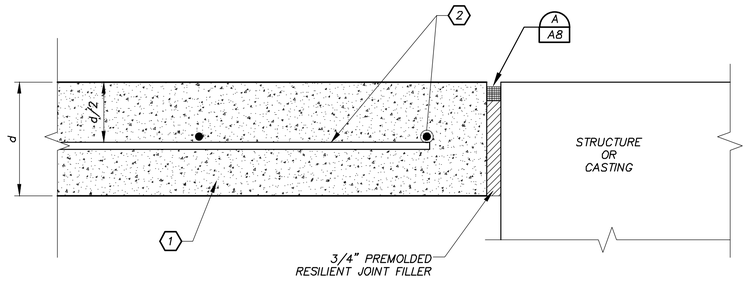
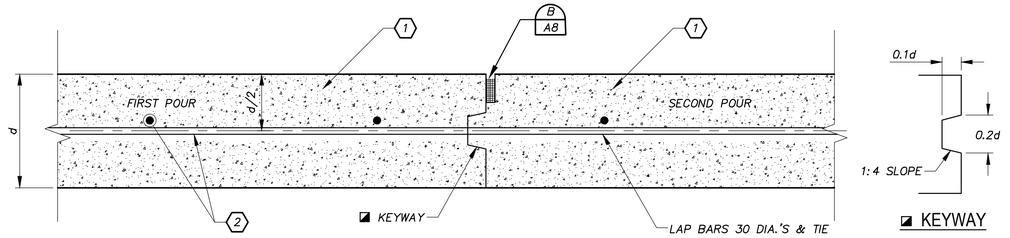


NOTE: REINFORCING STEEL SHALL STOP 3" FROM JOINT.

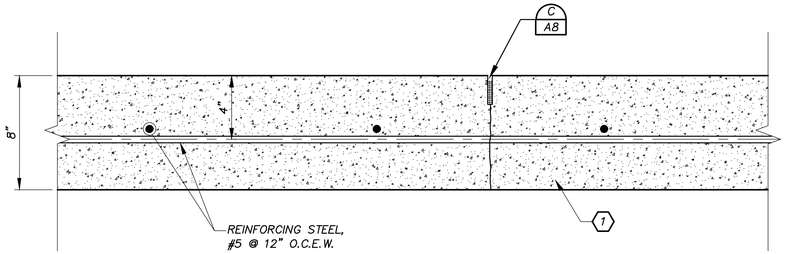
I1 ISOLATION JOINT

SPECIFICATION SECTION: CITY OF AUSTIN 360S AND 433S — SCALE: N.T.S.



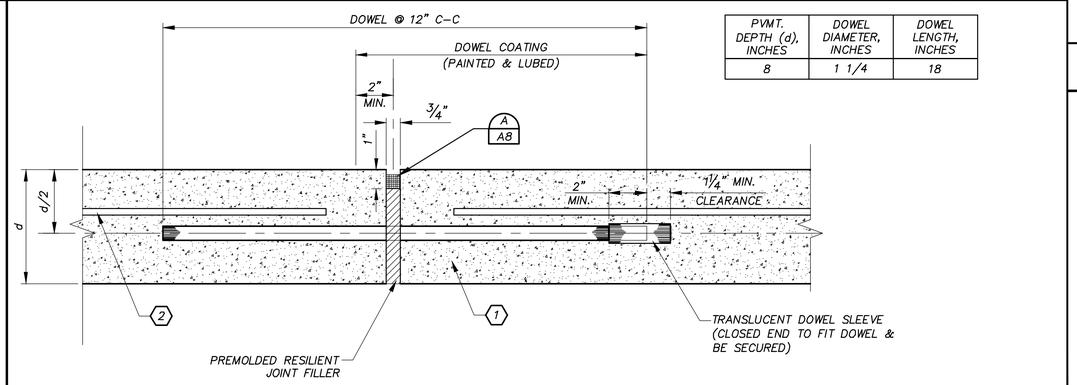
I8 CONSTRUCTION JOINT

SPECIFICATION SECTION: CITY OF AUSTIN 408S — SCALE: N.T.S.



E1 SAWED CONTRACTION JOINT

SPECIFICATION SECTION: 32 13 13 - CONCRETE PAVING — SCALE: N.T.S.

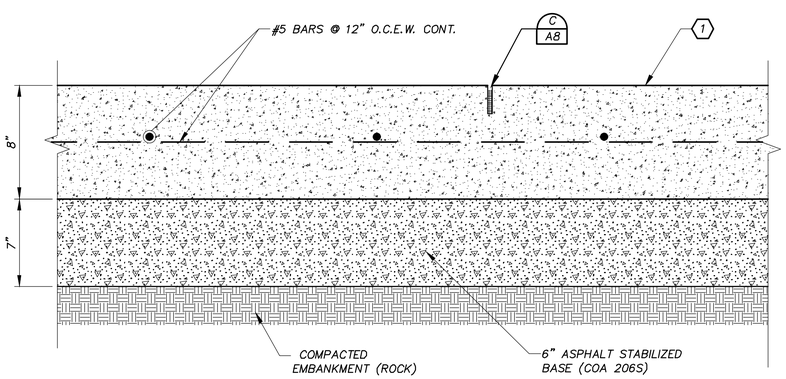


PVMT. DEPTH (d), INCHES	DOWEL DIAMETER, INCHES	DOWEL LENGTH, INCHES
8	1 1/4	18

NOTES: 1. DOWEL SUPPORT SHALL BE OF A METHOD APPROVED BY ENGINEER.
2. REINFORCING STEEL SHALL STOP 3" ON EITHER SIDE OF JOINT.

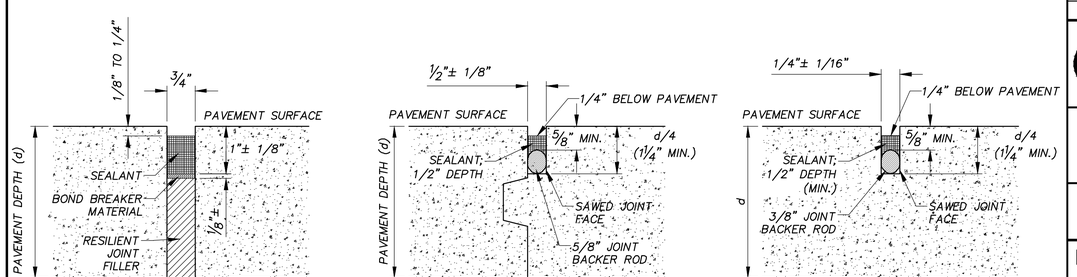
E8 EXPANSION JOINT

SPECIFICATION SECTION: CITY OF AUSTIN 408S — SCALE: N.T.S.



A1 TYPICAL P.C. CONCRETE PAVEMENT SECTION

SPECIFICATION SECTION: CITY OF AUSTIN 360S — SCALE: N.T.S.



A8 DETAILS OF JOINT SEALER IN CONCRETE PAVING

SPECIFICATION SECTION: CITY OF AUSTIN 408S — SCALE: N.T.S.

SPECIAL NOTES FOR REINFORCED CONCRETE PAVING

1. ALL REINFORCED CONCRETE PAVING SHALL BE IN ACCORDANCE WITH SPECIFICATION COA 360S – "CONCRETE PAVEMENT."
2. ALL REINFORCING STEEL SHALL BE IN ACCORDANCE WITH SPECIFICATION 406S – "REINFORCED STEEL."
3. SPACING OF ALL JOINTS AND JOINT TYPES SHALL BE IN ACCORDANCE WITH THE AMERICAN CONCRETE PAVEMENT ASSOCIATION'S GUIDELINES.

LEGEND

- SEALANT
- BOND BREAKER MATERIAL
- PREMOLDED RESILIENT JOINT FILLER
- JOINT BACKER ROD MATERIAL (CLOSED CELL RESILIENT FOAM OR SPONGE RUBBER)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

REINFORCED CONCRETE PAVING DETAILS

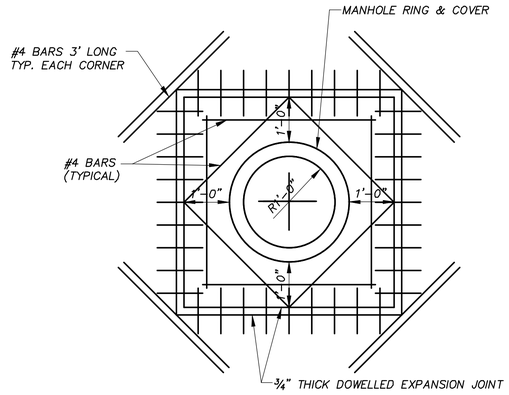
03/30/2023 — DATE

R. Alan Munger, PE — R. ALAN MUNGER

STATE OF TEXAS — R. ALAN MUNGER — 65341 — REGISTERED PROFESSIONAL ENGINEER

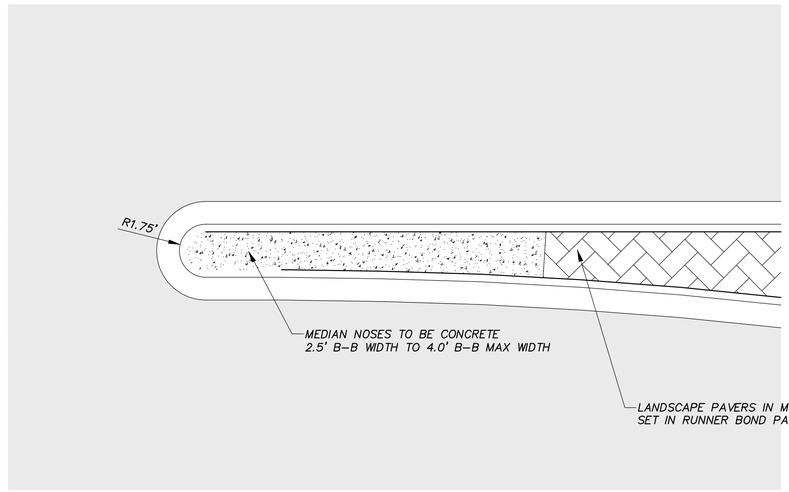
PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C229
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-ROAD.DWG, C229 REINFORCED CONCRETE PAVING DETAILS, 3/31/2023 1:09:58 PM, MCastelli



G1 MANHOLE BLOCKOUT STORM MANHOLE IN CONCRETE PAVEMENT

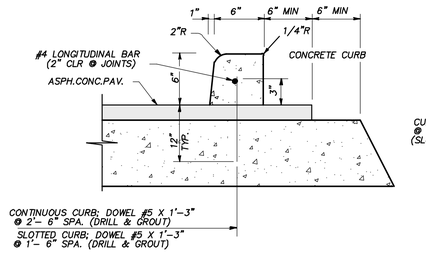
N.T.S.



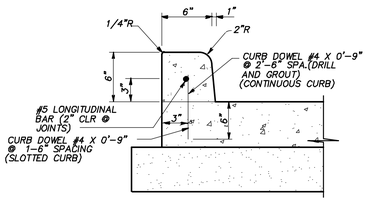
NOTE:
SEE NOTE 2 AT
DETAIL A1/C230

G8 CONCRETE MEDIAN NOSE DETAIL

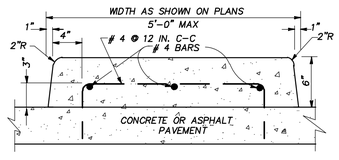
N.T.S.



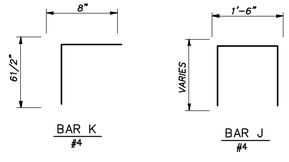
SHOWN ON EXISTING OR PROPOSED ACP PAVEMENT
(PAY ITEM 529-6011) – FOR CONTINUOUS



SHOWN ON EXISTING OR PROPOSED
CONCRETE PAVEMENT
(PAY ITEM 529-6011) – FOR CONTINUOUS



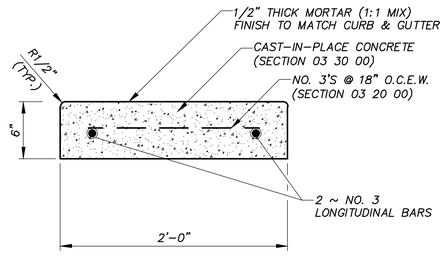
ITEM 536-6001 CONCRETE MEDIAN
SEE NOTE 2



NOTES:
1. DRILL AND GROUT BARS SHOWN AS PER ITEM 420.4.7.10, 6" EMBEDMENT, MINIMUM ON CONC.
2. INSTALL A 2 INCH DRAINAGE OPENING AT 10 FT C-C WHEN CURB/ISLAND IS NOT ON TOP OF CROSS SECTION. (LOCATED ON A 2 OR 3 PERCENT TRANSVERSE GRADE, OR SUPERELEVATION.)

A1 CONCRETE CURB (DOWEL) (6 IN.)

N.T.S.



NOTE: RE. CURB & GUTTER DETAIL FOR "NOTES" FOR CONCRETE & JOINTING.

A8 RIBBON CURB

N.T.S.

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

ROADWAY DETAILS

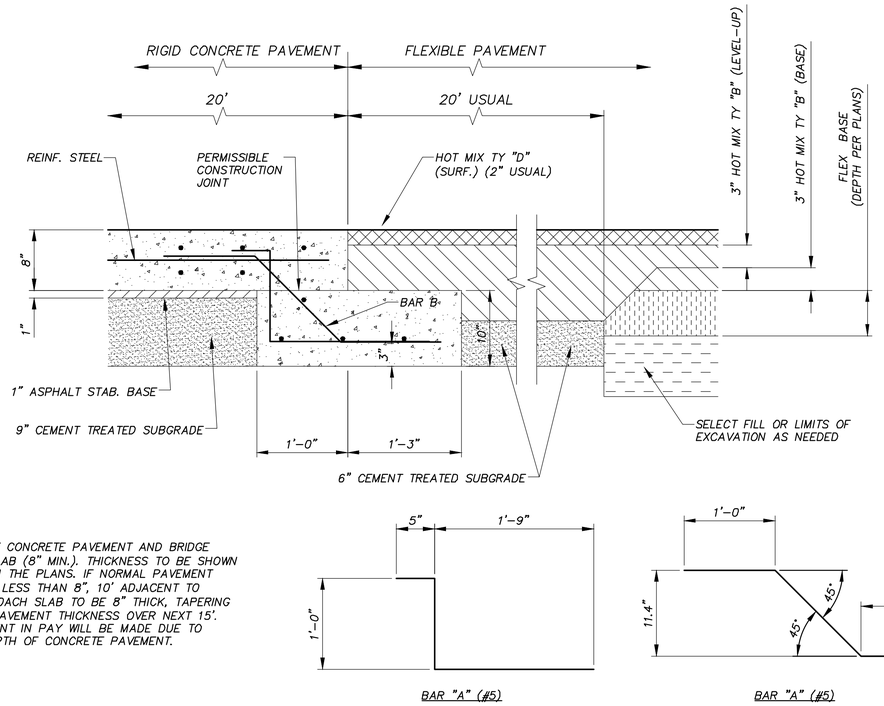
03/30/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C230
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-ROAD.DWG, C230 ROADWAY DETAILS, 3/31/2023 1:10:01 PM, MCastelli



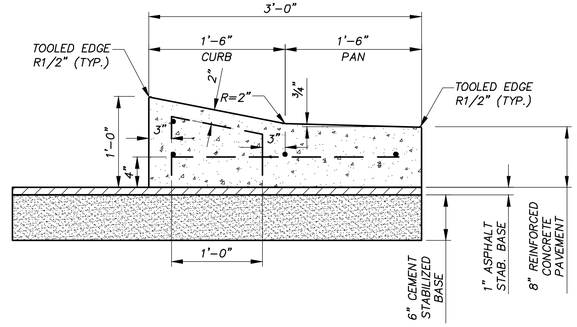
THICKNESS OF CONCRETE PAVEMENT AND BRIDGE APPROACH SLAB (8" MIN.). THICKNESS TO BE SHOWN ELSEWHERE IN THE PLANS. IF NORMAL PAVEMENT THICKNESS IS LESS THAN 8", 10' ADJACENT TO BRIDGE APPROACH SLAB TO BE 8" THICK, TAPERING TO NORMAL PAVEMENT THICKNESS OVER NEXT 15'. NO ADJUSTMENT IN PAY WILL BE MADE DUE TO INCREASE DEPTH OF CONCRETE PAVEMENT.

BAR "A" (#5)

BAR "A" (#5)

G1 CONCRETE PAVEMENT TERMINUS AT HOT MIX TRANSITION OR TEMPORARY PAVEMENT

N.T.S.



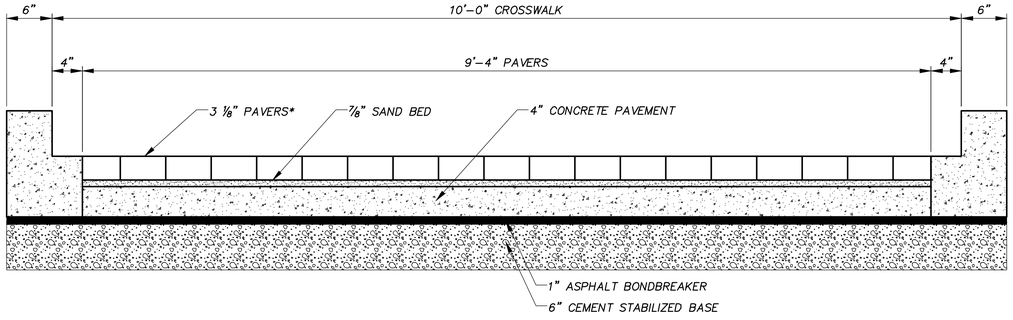
NOTES:
1. 1.0 LBS. OF APPROVED NON-METALLIC FIBER MESH PER C/Y IN 4"x18" CURBS.
2. #3 RE-BAR STIRRUPS TO BE PLACED AT INTERVALS OF 2' (FT) C-C.
3. #4 RE-BAR LONGITUDINAL SHAL BE TIED TO EACH STIRRUP.

G9 4"x18" MOUNTABLE CURB DETAIL

N.T.S.

GENERAL NOTES

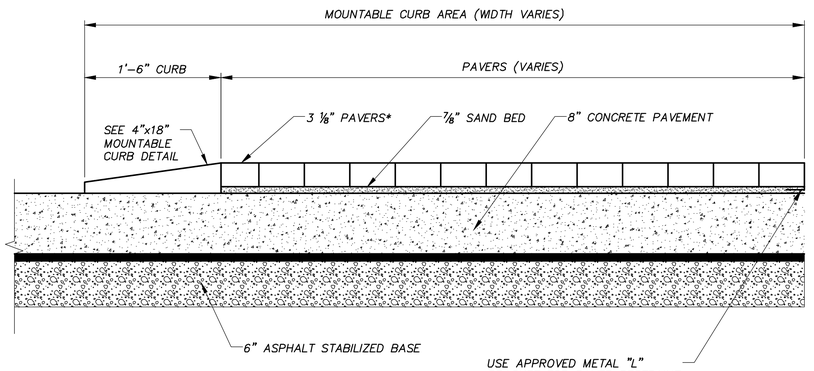
1. CROSSWALK AND TRUCK APRON PAVERS SHALL BE PAVESTONE 80ML OR APPROVED EQUAL.
2. ADJUST SAND BED TO MATCH TOP OF PAVERS FLUSH WITH TOP OF 4" MOUNTABLE CURB.



* SPLITTER ISLAND PAVERS TO BE PAVESTONE MAXLOCK 8cm OR EQUAL AND RIVER RED IN COLOR

A1 CROSS SECTION OF SPLITTER ISLAND CUT THROUGH

N.T.S.



* NOTE: TRUCK APRON PAVERS TO BE PAVESTONE MAXLOCK 8cm OR EQUAL AND RIVER RED IN COLOR

A9 CROSS SECTION OF TRUCK APRON

N.T.S.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

ROADWAY DETAILS

03/30/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C231
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-ROAD.DWG, ROADWAY DETAILS, 3/31/2023 1:10:04 PM, MCastelli

GENERAL PAVER NOTES:
1. Reference Item 528, Colored Textured Concrete and Landscape Pavers, of the Texas Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges 2014 for specifications, dimensions, volumes and measurements not shown. NOTE: Item 528 references several ASTM standard specifications required as part of this Item.
2. Locate and stake all underground conduits and utilities associated with but not limited to: CTMS, CTMS power supply, lighting, signal wires and detectors, gas, electrical, telephone, fiber optics, etc.
3. Locate and stake existing ground boxes, inlets, culverts, manholes, etc. within the project area with a 4' wooden stake, painted orange. Maintain the stakes in place for duration of construction period of the contract. Remove stakes when directed by Engineer.
4. Repair and/or replacement of any damaged underground conduits or utilities, structures, pavement, riprap, equipment, materials, slopes, vegetation, surfaces, etc. at no expense to the Department.

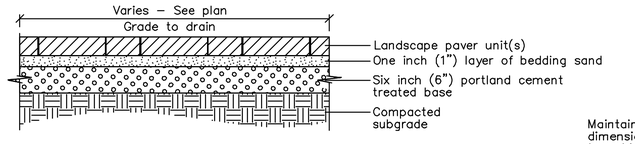
MATERIALS:
1. Use "Class B" concrete for concrete edge for pavers shown in detail. Concrete edge is paid for separately under Item 432-6003 RIPRAP(CONC)(6 IN) CY.
2. Use portland cement treated base which meets the requirements of Item 276, Strength L. Portland cement treated base is subsidiary to Item 528.
3. Use bedding sand described in Item 528.2.2.2. Bedding sand is subsidiary to Item 528.
4. Use paver unit type and color type as shown. Submit sample units for approval by Engineer prior to construction with manufacturer's information certifying that paver units:
   a. Meet the requirements of Item 528.2.2.1. Pavers. including:
      1) Portland cements conform to ASTM C 150
      2) Fly ash conforms to ASTM C 618
      3) Aggregates conform to ASTM C 33 – 07
      4) Color pigments conform to ASTM C 979
   b. Are manufactured so all grey cement products are produced with a concrete mix design that contains a pigment loading that represents, by weight, 3% of the total cementitious weight of the batch. White cement products will contain sufficient pigment to achieve the specified color. Pigment dispensing will be accomplished by automated equipment designed to meter pigment granules accurately to the concrete mixer within +/– 1/2 ounce per 10 pounds of pigment.
   c. Are manufactured using accelerating plasticizer and an efflorescence reducer. Follow manufacturer's application rates, but in no case dose admixture less than 8 ounces per 100 pounds of cementitious material.
   d. Are manufactured by a standard process on equipment capable of creating a four color blend with a full range of colors to occur on each pallet.
5. Use joint sand described in Item 528.2.2.3. Joint sand is subsidiary to ITEM 528.

SUBMITTALS
1. The following submittals are required to ensure conformance with specifications:
   a. Certification from the manufacturer stating that the pavers have been tested and meet all the requirements of ASTM C 936.
   b. Mix design, including information indicating percentage of fly ash to be used as cementitious material = less than or equal to 20%.
   c. Current mill certificate from cement supplier for grey cement. Meets all requirements of ASTM C 150.
   d. Current mill certificate from cement supplier for white cement. Meets requirements of ASTM C 150.
   e. Material certification information for fly ash. Meets requirements of ASTM C 618.
   f. Current quality test reports and gradation results of stockpiles from aggregate supplier for sand and gravel products.
   g. Pigment suppliers information.
   h. Complete technical data for admixtures including information relating to percentage of total cementitious material in mix design.
   i. Technical data and specifications for equipment used in dispensing pigment to mixing equipment.

CONSTRUCTION METHODS:
1. Provide a minimum 10'X10' (100SF) mock-up adjacent to Pat Bryson Municipal Hall at 201 N. Brushy Street. Remove mock-up as directed by Engineer.
2. Locate and stake all items and/or limits of landscape pavers and related work in the field. Receive approval from Engineer prior to continuing.
3. Item 528.3.2.2, receive approval from Engineer before covering base material.
4. Maintain a straight joint line orientation both directions in pattern with no deviation more than 1/8 inch in a ten foot horizontal dimension.
5. Maintain vertical elevation of paver units with no surface elevation deviation greater than 3/8 inch under a ten foot straight edge.
6. Item 528.3.2.5, complete a minimum of two sweepings of joint sand, complete additional sweepings to fill the joints to the approval of the Engineer. Leave surplus sand on the surface during construction period. Sweep and clean all excess joint sand, soil, foreign material, and/or stains from pavers as directed by Engineer.
7. Immediately remove and replace paver units damaged during installation.

PAVER COLOR

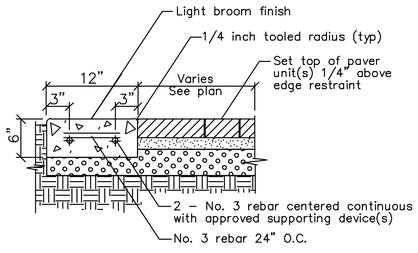
Pavers shall be "River Red" and placed with a Running Bond Field Pattern.



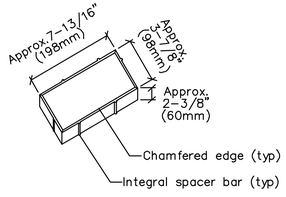
PAVERS ON PORTLAND CEMENT TREATED BASE

SUBMITTALS RECEIVED FROM CONTRACTOR? YES | NO

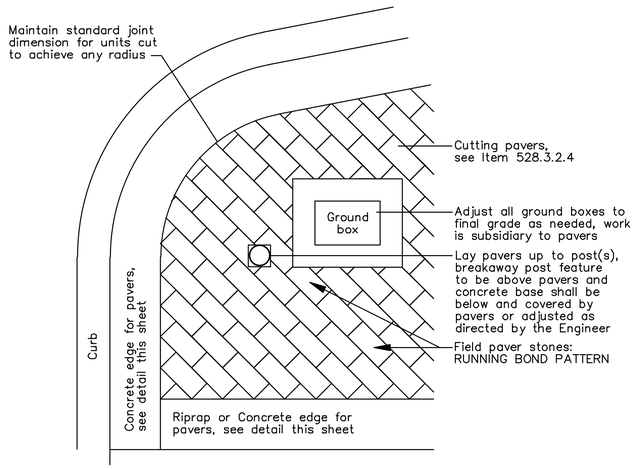
FOR ENGINEER'S USE TO ENSURE ALL SUBMITTALS ARE RECEIVED



CONCRETE EDGE FOR PAVERS (CL B RIPRAP)



PAVER UNIT



PAVER PATTERN LAYOUT

REQUIRED ITEMS:
- Item 432-6003 RIPRAP(CONC)(6 IN) CY
- Item 528-6004 LANDSCAPE PAVERS SY

APPROVED EQUAL NOTE:
Reference to manufacturer's trade name or product is for the purpose of identificatin only, Contractor is permitted to furnish like materials of other manufacturers provided they are of equal quality and comply with specifications for this project. All materials for consideration as an "approved equal" must be submitted to the Engineer at the preconstruction meeting. Consideration for late submittals will only be for any materials, shown in plans, which become unavailable as required.

Texas Department of Transportation
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HOUSTON DISTRICT

LANDSCAPE PAVERS

SHEET 1 OF 1

Details not to scale

FILE:	FED DIV	STATE	PROJECT NUMBER			SHEET
	6	TEXAS				
REVISED: OCT 2014 for 2014 specs	DIST	COUNTY	CONTROL	SECT	JOB	HIGHWAY
	12					

STD K-2

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

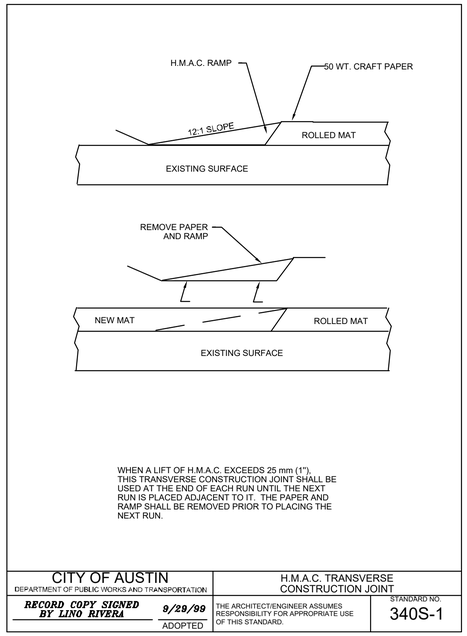
TXDOT DETAILS - LANDSCAPE PAVERS (MODIFIED)

03/30/2023 DATE
R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS · R. ALAN MUNGER · 65341 · REGISTERED PROFESSIONAL ENGINEER

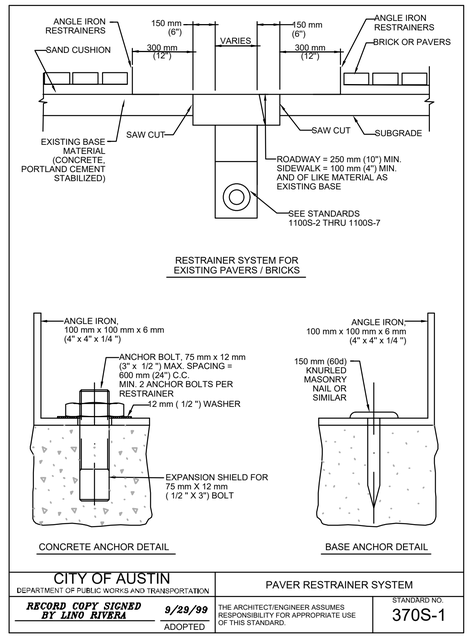
PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C232
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - LANDSCAPE PAVERS (MODIFIED), 3/31/2023 1:11:18 PM, MCastelli



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION	H.M.A.C. TRANSVERSE CONSTRUCTION JOINT	
RECORD COPY SIGNED BY LINO RIVERA 9/29/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 340S-1

G1 HMAC TRANSVERSE CONSTRUCTION JOINT — N.T.S.



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION	PAVER RESTRAINER SYSTEM	
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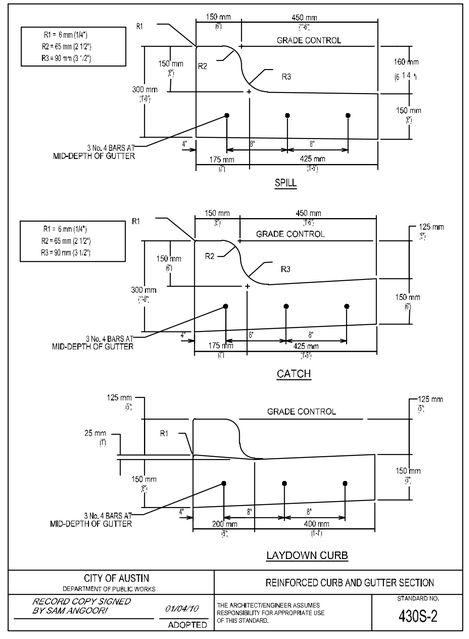
G5 PAVER RESTRAINER SYSTEM — N.T.S.



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	REINFORCED CURB AND GUTTER SECTION	
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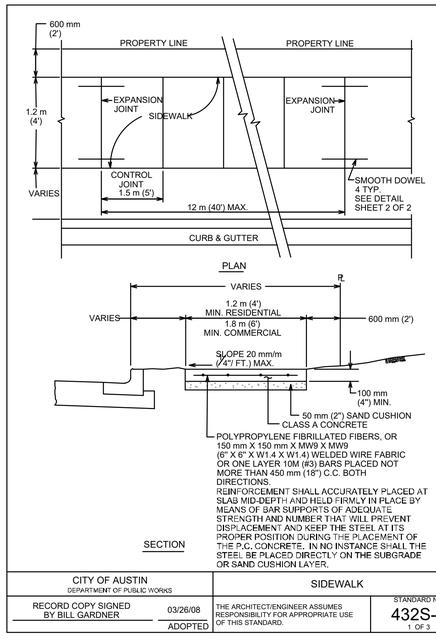
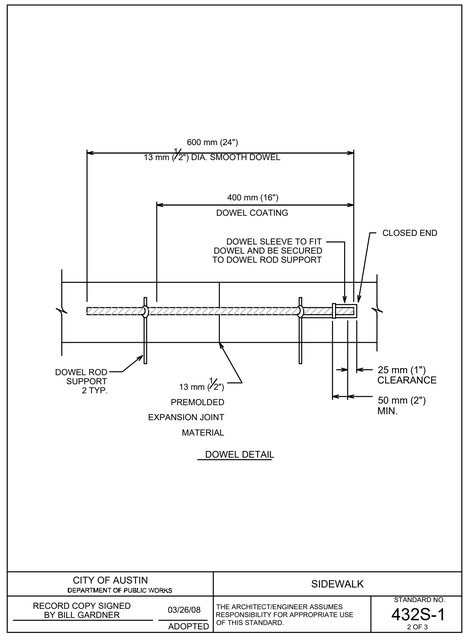
G5 REINFORCED CURB AND GUTTER SECTION — N.T.S.



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	SIDEWALK	
RECORD COPY SIGNED BY BILL GARDNER 03/26/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S-1 1 OF 3



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	SIDEWALK	
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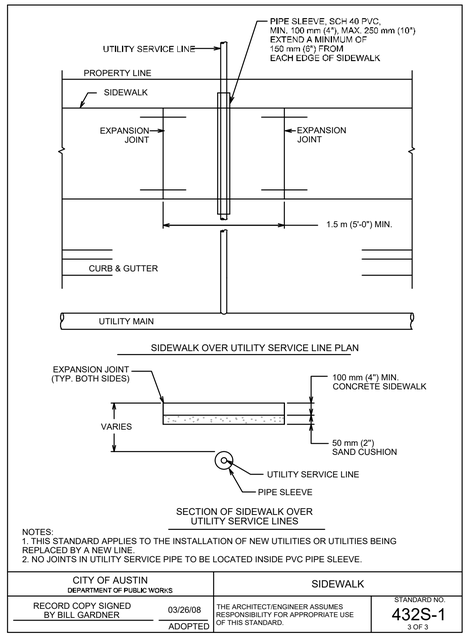
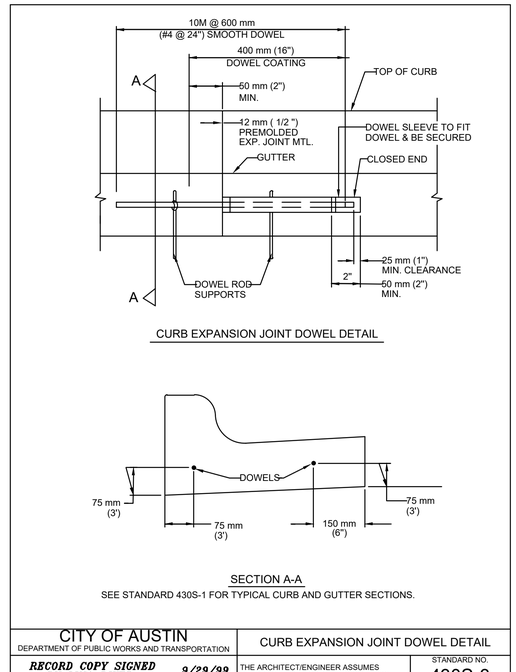


CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	SIDEWALK	
RECORD COPY SIGNED BY BILL GARDNER 03/26/08 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S-1 3 OF 3

A1 SIDEWALK DETAILS — N.T.S.



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION	CURB EXPANSION JOINT DOWEL DETAIL	
RECORD COPY SIGNED BY LINO RIVERA 9/29/99 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 430S-3

A11 CURB EXPANSION JOINT DETAIL — N.T.S.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

CITY OF AUSTIN ROADWAY DETAILS

03/30/2023 DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS — R. ALAN MUNGER — 65341 — REGISTERED PROFESSIONAL ENGINEER

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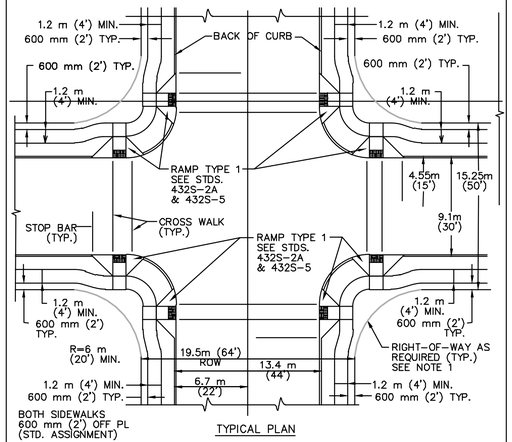
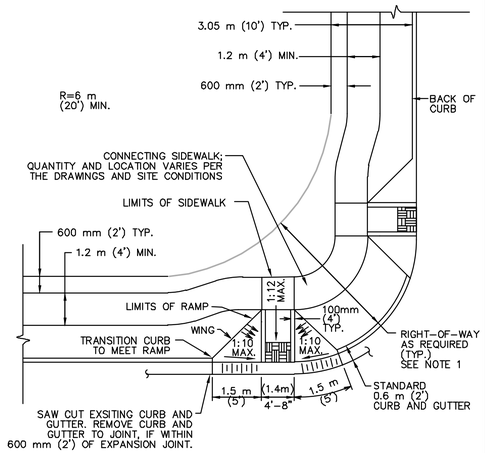
G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-ROAD.DWG, CITY OF AUSTIN ROADWAY DETAILS, 3/31/2023 1:11:58 PM, MCastelli



TYPICAL PLAN

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPE 1 CURB RAMPS–FULL INTERSECTION	
RECORD COPY SIGNED BY BILL GARDNER	03/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S–3 1 OF 3



TYPICAL PLAN

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPE 1 CURB RAMPS–FULL INTERSECTION	
RECORD COPY SIGNED BY BILL GARDNER	03/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S–3 2 OF 3

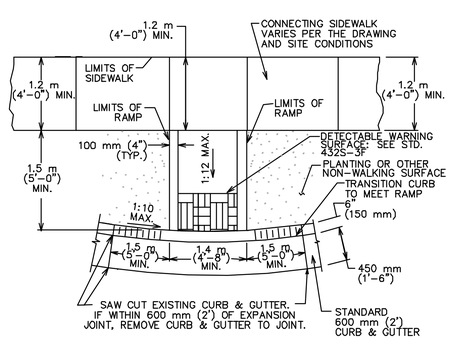
GENERAL NOTES:

1. THIS STANDARD IS APPICABLE FOR RAMP CONSTRUCTION WITHIN RIGHT–OF–WAY OR EASEMENT ONLY.
2. THIS STANDARD REPRESENTS A TYPICAL CURB RAMP DESIGN FOR A NEWLY CONSTRUCTED INTERSECTION WITH A 6 m (20') RADIUS. LARGER RADII, STREET GRADES, LIMITED SIGHT DISTANCES, STREET CLASSIFICATION, SIGNALIZATION AND OTHER FACTORS MAY REQUIRE THE ENGINEER OR DESIGNATED REPRESENTATIVE TO MODIFY THIS STANDARD. SUFFICIENT RIGHT–OF–WAY SHALL BE DEDICATED SUCH THAT THE ENTIRE CURB RAMP, INCLUDING LANDING, AND THE INTER–CONNECTING SIDEWALK ARE CONTAINED WITHIN THE RIGHT–OF–WAY.
3. THE CURB, GUTTER AND RAMP SYSTEM SHALL BE CONFIGURED TO MAINTAIN ALL RUNOFF FROM A 25 YEAR FREQUENCY STORM WITHIN THE RIGHT–OF–WAY (DRAINAGE CRITERIA MANUAL SECTION 1.2.2.B). WHEN THERE IS AN ELEVATION DIFFERENCE BETWEEN THE BOTTOM OF RAMPS (IE, ELEVATION AT THE GUTTER) WITHIN A QUADRANT OF AN INTERSECTION, THE LOWER ELEVATION RAMP SHALL BE CONSTRUCTED WITH A POSITIVE RAMP SLOPE OF 1:12 IN ACCORDANCE WITH STANDARDS 432S–5, 432S–5A AND 432S–5B.
4. STANDARD ASSIGNMENT OF SIDEWALKS IS 600 mm (2') OFF PROPERTY LINE, EXCEPT AS INDICATED ON THE DRAWINGS.
5. ALTHOUGH CURB RAMPS MAY BE PLACED WITHIN THE RADIUS, PLACING THE RAMP OUTSIDE OF THE RADIUS WILL ALLOW FOR THE GREATEST DIFFERENCE IN ELEVATION BETWEEN THE RAMPS.
6. WINGS ARE REQUIRED ONLY IF PEDESTRIANS WOULD NORMALLY CROSS THE RAMP.
7. LANDINGS SHALL BE FLAT AND MATCH PT, PC OR TOP OF CURB ELEVATION.
8. CURB RAMPS WILL BE PERPENDICULAR TO ROADWAY CENTERLINES AND SHALL ALIGN WITH EACH OTHER.
9. GRADES ON SIDEWALKS LEADING TO OR FROM THE RAMPS SHALL FOLLOW CURB GRADES.
10. THE SLOPE OF THE SIDEWALK WHICH IS LOCATED WITHIN THE RADIUS AND CONNECTS TWO CURB RAMPS SHALL NOT EXCEED 1:20. THE DEVELOPER, AS PART OF THE CURB RAMP INSTALLATION, SHALL CONSTRUCT THIS CONNECTING SIDEWALK.
11. STRIPING AND SIGNAGE NOT REQUIRED IN ALL INSTANCES. STOP BARS, IF REQUIRED, SHALL BE LOCATED 1.2 m (4') FROM CROSSWALK.
12. IF A MEDIAN EXTENDS INTO THE CROSSWALK AREA, AN OPENING SHALL BE PROVIDED IN THE MEDIAN THE SAME WIDTH AS THE CURB RAMP.
13. CURB INLETS SHALL NOT BE LOCATED WITHIN 3.0 m (10') OF A CURB RAMP.
14. GUTTER SHALL PROVIDE SMOOTH TRANSITION TO RAMPS.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPE 1 CURB RAMPS–FULL INTERSECTION	
RECORD COPY SIGNED BY BILL GARDNER	03/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S–3 3 OF 3

G1 TYPE 1 CURB RAMP - FULL INTERSECTION

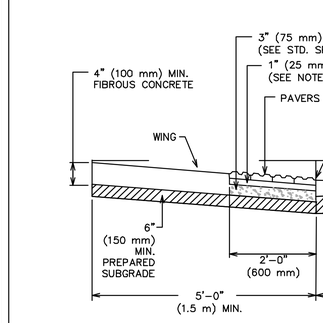
N.T.S.



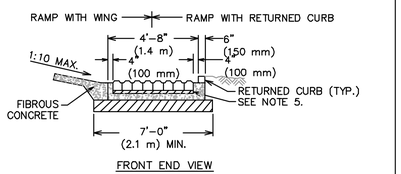
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPE 1B SIDEWALK CURB RAMP	
RECORD COPY SIGNED BY BILL GARDNER	9/14/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S–5B

G12 TYPE 1B CURB RAMP

N.T.S.



CROSS SECTION



FRONT END VIEW

GENERAL NOTES:

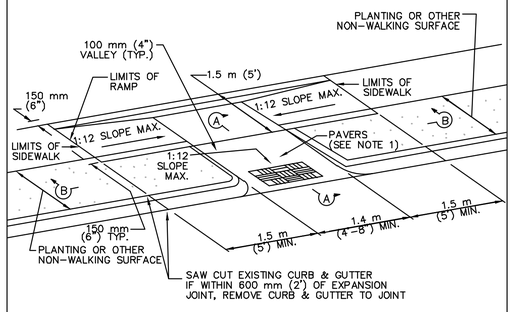
1. THIS STANDARD IS APPLICABLE FOR RAMP CONSTRUCTION ON CITY PROPERTY AND EASEMENT AREAS ONLY.
2. PAVERS ARE REQUIRED FOR ALL CURB RAMP INSTALLATIONS.
3. PAVERS WILL HAVE DETECTABLE WARNING THAT CONSISTS OF RAISED TRUNCATED DOMES WITH A DIAMETER OF 0.9" (23 mm), A NOMINAL HEIGHT OF 0.2" (5 mm) AND A NOMINAL CENTER TO CENTER SPACING OF 2.35" (60 mm) AND SHALL CONSTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT–ON–DARK OR DARK–ON–LIGHT (Re: ADAAG SECTION 4.29.2). MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE. PAVER PATTERN SHALL BE BASKET WEAVE UNLESS DIRECTED OTHERWISE BY THE ENGINEER OR DESIGNATED REPRESENTATIVE.
4. TYPICAL SIDEWALK WIDTHS AND CURB RADII ARE SHOWN FOR ILLUSTRATION ONLY. REFER TO THE TRANSPORTATION CRITERIA MANUAL FOR SIDEWALK WIDTHS, CURB RADII AND CURB BASIS.
5. THE PERMISSIBLE CONSTRUCTION JOINT BETWEEN THE PAVERS AND THE ADJOINING SURFACE SHALL BE LIMITED TO 1/4" (6 mm) JOINT SIZE. GAPS LARGER THAN 1/4" (6 mm) MUST BE APPROVED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE. ALL JOINTS BETWEEN BRICKS AND ADJOINING SURFACE SHALL BE MORTAR FILLED UNLESS DIRECTED OTHERWISE BY THE ENGINEER OR DESIGNATED REPRESENTATIVE.
6. MORTAR SHALL CONFORM TO STD. SPECIFICATION ITEM SECTION 403S.3.5, MORTAR AND GROUT. ALL OTHER CONCRETE SHALL CONFORM TO STD. SPECIFICATION ITEM 403S, CONCRETE FOR STRUCTURES, UNLESS OTHERWISE NOTED.
7. CURB RAMPS WITH RETURNED CURB MAY ONLY BE USED WHERE PEDESTRIANS WOULD NOT NORMALLY WALK DIAGONALLY ACROSS THE RAMP.

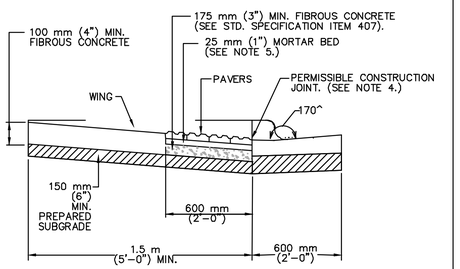
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		DETECTABLE WARNING–PAVER (CITY PROPERTY/EASEMENTS)	
RECORD COPY SIGNED BY BILL GARDNER	06/21/07 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S–2A 1 OF 2

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		DETECTABLE WARNING–PAVER (CITY PROPERTY/EASMENTS)	
RECORD COPY SIGNED BY BILL GARDNER	06/21/07 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S–2A 2 OF 2

A1 DETECTABLE WARNING - PAVER

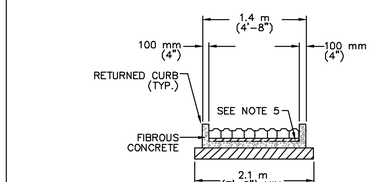
N.T.S.





SECTION A–A

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		COMBINED SIDEWALK CURB RAMP WITH PAVERS	
RECORD COPY SIGNED BY BILL GARDNER	03/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S–3F 1 OF 2



SECTION B–B

GENERAL NOTES:

1. THIS STANDARD IS APPLICABLE FOR RAMP CONSTRUCTION WITHIN RIGHT–OF–WAY OR EASEMENT ONLY.
2. PAVERS WILL HAVE DETECTABLE WARNING THAT CONSISTS OF RAISED TRUNCATED DOMES WITH A DIAMETER OF 23 mm (0.9"), A NOMINAL HEIGHT OF 5 mm (0.2") AND A NOMINAL CENTER TO CENTER SPACING OF 60 mm (2.35") AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT–ON–DARK OR DARK–ON–LIGHT (Re: ADAAG SECTION 4.29.2). MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE. A BASKET WEAVE PAVER PATTERN SHALL BE USED UNLESS DIRECTED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE. PAVER PATTERN VARIES PER MANUFACTURER'S RECOMMENDATIONS. REFER TO STANDARD DETAIL 432S–5 FOR PAVER BASE PREPARATION DETAILS.
3. THE CURB, GUTTER AND RAMP SYSTEM SHALL BE CONFIGURED TO MAINTAIN ALL RUNOFF FROM A 25 YEAR FREQUENCY STORM WITHIN THE RIGHT–OF–WAY (DRAINAGE CRITERIA MANUAL SECTION 1.2.2.B).
4. TYPICAL SIDEWALK WIDTHS AND CURB RADII ARE SHOWN FOR ILLUSTRATION ONLY. REFER TO THE TRANSPORTATION CRITERIA MANUAL FOR SIDEWALK WIDTHS, CURB RADII AND CURB BASIC REQUIREMENTS.
5. THE PERMISSIBLE CONSTRUCTION JOINT BETWEEN THE PAVERS AND THE ADJOINING SURFACE SHALL BE LIMITED TO 6 mm (¼") JOINT SIZE. GAPS LARGER THAN 6 mm (¼") MUST BE APPROVED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE. ALL JOINTS BETWEEN BRICKS AND ADJOINING SURFACE SHALL BE MORTAR FILLED UNLESS DIRECTED OTHERWISE BY THE ENGINEER OR DESIGNATED REPRESENTATIVE.
6. MORTAR SHALL CONFORM TO STD. SPECIFICATION ITEM SECTION 403S.3.5, MORTAR AND GROUT. ALL OTHER CONCRETE SHALL CONFORM TO STD. SPECIFICATION ITEM 403S, CONCRETE FOR STRUCTURES, UNLESS OTHERWISE NOTED.
7. CURB RAMPS WITH 100 mm (4") CONCRETE VALLEY MAY ONLY BE USED WHERE PEDESTRIANS WOULD NOT NORMALLY WALK DIAGONALLY ACROSS THE RAMP.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		COMBINED SIDEWALK CURB RAMP WITH PAVERS	
RECORD COPY SIGNED BY BILL GARDNER	03/13/06 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 432S–3F 2 OF 2

A8 COMBINED SIDEWALK RAMP WITH PAVERS

N.T.S.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

CITY OF AUSTIN ROADWAY DETAILS

03/30/2023 DATE

R. Alan Munger, PE
R. ALAN MUNGER

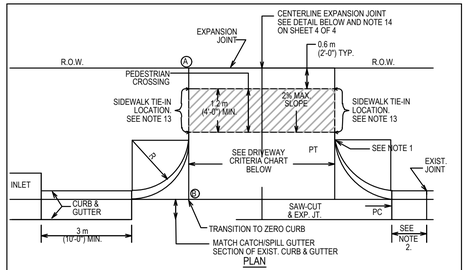
STATE OF TEXAS · R. ALAN MUNGER · 65341 · REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C234
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-ROAD.DWG, C234, 3/31/2023 1:12:01 PM, MCastelli

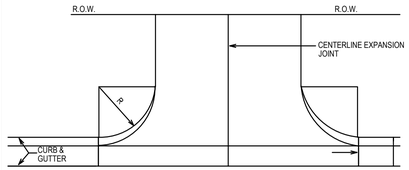
G1 TYPE 1 DRIVEWAY (RESIDENTIAL USE ONLY)

N.T.S.



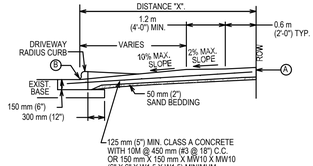
PLAN

NOTE: ALL DRIVEWAYS SHALL BE SLOPED TOWARDS THE STREET FROM THE R.O.W. LINE. ELEVATION OF POINT Ⓐ ABOVE POINT Ⓑ IS TYPICALLY A MINIMUM OF 150 mm (6") PLUS 20 mm/m (¼" RISE/FOOT) OVER DISTANCE "X" IN METERS (FEET).



PLAN

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPE I DRIVEWAY (1 & 2 FAMILY RESIDENTIAL USE ONLY)	
RECORD COPY SIGNED BY SAM ANGOORI	10/19/09	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 433S-1
ADOPTED			1 OF 4



125 mm (5") MIN. CLASS A CONCRETE WITH 10M @ 450 mm (#3 @ 18") C.C. OR 150 mm X 150 mm X MW10 X MW10 (6" X 6" X W1.5 X W1.5) MINIMUM.

REINFORCEMENT SHALL ACCURATELY PLACED AT SLAB MID-DEPTH AND HELD FIRMLY IN PLACE BY MEANS OF BAR SUPPORTS OF ADEQUATE STRENGTH AND NUMBER THAT WILL PREVENT DISPLACEMENT AND KEEP THE STEEL AT ITS PROPER POSITION DURING THE PLACEMENT OF THE P.C. CONCRETE. IN NO INSTANCE SHALL THE STEEL BE PLACED DIRECTLY ON THE SUBGRADE OR SAND CUSHION LAYER.

CROSS SECTION

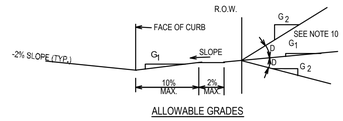
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPE I DRIVEWAY (1 & 2 FAMILY RESIDENTIAL USE ONLY)	
RECORD COPY SIGNED BY SAM ANGOORI	10/19/09	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 433S-1
ADOPTED			2 OF 4

DRIVEWAY CRITERIA	WIDTH METERS (FEET)		
USE	MIN.	OPT.	MAX.
SIN. FAMILY	3.66 (12)	5.50 (18)	11.80 (25)
DUPLEX	4.56 (15)	5.50 (18)	11.80 (25)
TOWN HOME	4.56 (15)	5.50 (18)	11.80 (25)

*OPTIMUM

RADIUS DIMENSION METERS (FEET)			
USE	MIN.	OPT.	MAX.
SINGLE FAMILY	1.5 (5)	1.5 (5)	3.0 (10)
DUPLEX	1.5 (5)	2.4 (8)	3.0 (10)
TOWN HOME	1.5 (5)	2.4 (8)	3.0 (10)

*OPTIMUM



ALLOWABLE GRADES

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPE I DRIVEWAY (1 & 2 FAMILY RESIDENTIAL USE ONLY)	
RECORD COPY SIGNED BY SAM ANGOORI	10/19/09	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 433S-1
ADOPTED			3 OF 4

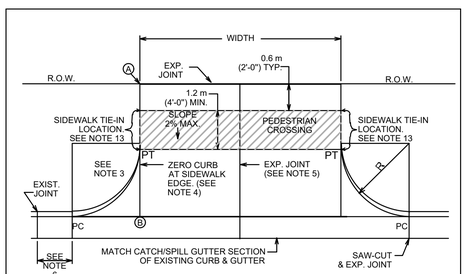
NOTES:

1. "ZERO" CURB AT PT OR SIDEWALK EDGE, WHICHEVER IS ENCOUNTERED FIRST. THE DRIVEWAY EDGE SHALL BE SMOOTHLY TRANSITIONED INTO THE SIDEWALK BEGINNING AT THE RADIUS PC LINE.
2. IF DIMENSION IS LESS THAN 1.5 METERS (5 FEET), REMOVE CURB AND GUTTER TO EXISTING JOINT AND POUR MONOLITHICALLY WITH THE DRIVEWAY.
3. IF THE BASE IS OVER EXCAVATED WHERE THE CURB AND GUTTER WAS REMOVED, BACKFILL WITH CONCRETE MONOLITHICALLY WITH THE DRIVEWAY.
4. ALL DRIVEWAYS MUST BE CONSTRUCTED WITHIN THE STREET FRONTAGE OF THE SUBJECT PROPERTY AS DETERMINED BY EXTENDING THE SIDE PROPERTY LINES TO THE CURB.
5. DRIVEWAYS SHALL NOT EXCEED 70% OF A LOTS' STREET FRONTAGE.
6. TYPE I DRIVEWAYS ARE TO BE LOCATED NO CLOSER TO THE CORNER OF INTER-SECTING RIGHTS-OF-WAY THAN 60% OF PARCEL FRONTAGE OR 15 METERS (50 FEET); WHICHEVER IS LESS.
7. DRIVEWAYS SHALL NOT BE CONSTRUCTED WITHIN THE CURB RETURN OF A STREET INTERSECTION.
8. SINGLE FAMILY LOTS LIMITED TO ONE DRIVEWAY EXCEPT FOR APPROVED SEMICIRCULAR DRIVES.
9. WHEN TWO DRIVEWAYS ARE USED (ONE PER UNIT, TWO MAXIMUM) FOR DUPLEXES AND TOWN HOMES, SINGLE FAMILY STANDARDS SHALL APPLY.
10. WHILE THE PROPERTY OWNER REMAINS RESPONSIBLE FOR GRADE BREAKS WITHIN PRIVATE PROPERTY, THE FIRE DEPARTMENT SHOULD BE CONSULTED WHERE THE DRIVEWAY IS ESSENTIAL TO EMERGENCY VEHICLE ACCESS AND "G2" IS GREATER THAN 15%. "G1" PLUS "D" SHOULD NOT EXCEED 15%.
11. SEE TRANSPORTATION MANUAL SECTION 5 FOR OTHER DRIVEWAY REQUIREMENTS.
12. USE 12 mm (½") ASPHALT BOARD, OR OTHER APPROVED MATERIAL, FOR CURB AND GUTTER EXPANSION JOINTS.
13. THE SIDEWALK, REGARDLESS OF ITS LOCATION WITH RESPECT TO THE CURB OR PROPERTY LINE, SHALL BE CONNECTED TO THE DRIVEWAY AT THESE LOCATIONS.
14. PLACE AN EXPANSION JOINT DOWN THE CENTER OF ALL DRIVEWAYS.
15. WATER METER BOXES AND WASTEWATER CLEAN OUTS ARE PROHIBITED FROM BEING LOCATED IN DRIVEWAY AREAS.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPE I DRIVEWAY (1 & 2 FAMILY RESIDENTIAL USE ONLY)	
RECORD COPY SIGNED BY SAM ANGOORI	10/19/09	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 433S-1
ADOPTED			4 OF 4

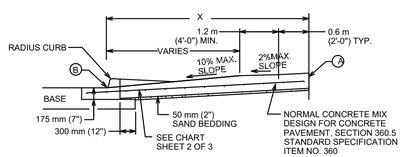
A1 TYPE 2 DRIVEWAY

N.T.S.



PLAN

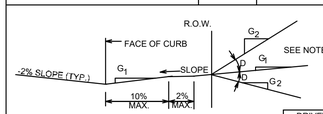
NOTE: ALL DRIVEWAYS SHALL BE SLOPED TOWARDS THE STREET FROM THE R.O.W. LINE. ELEVATION OF POINT Ⓐ ABOVE POINT Ⓑ IS, TYPICALLY A MINIMUM OF 150 mm (6") PLUS 20 mm/m (¼" RISE/FOOT) OVER DISTANCE "X" IN METERS (FEET).



CROSS SECTION

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPE II DRIVEWAY	
RECORD COPY SIGNED BY CUONG TRAN	02/24/10	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 433S-2
ADOPTED			1 OF 2

USE	THICKNESS	REINFORCEMENT
DRIVEWAYS FOR PASSENGER VEHICLE PARKING LOTS	150 mm (6") MIN.	125 mm (5") MIN. CONCRETE WITH ONE LAYER OF 13M (#4) BARS PLACED ON CHAIRS AT MIDDEPTH OF SLAB AT NO MORE THAN 450 mm (18") O.C. BOTH DIRECTIONS
ALL OTHERS	175 mm (7") MIN.	125 mm (5") MIN. CONCRETE WITH ONE LAYER OF 13M (#4) BARS PLACED ON CHAIRS AT MIDDEPTH OF SLAB AT NO MORE THAN 450 mm (18") O.C. BOTH DIRECTIONS



ALLOWABLE GRADES

DRIVEWAY VOLUME (ADT)	D=GRADE CHANGE	
	STD.	MAX
>1500	0%	3%
500-1500	3%	6%
< 500	6%	15%

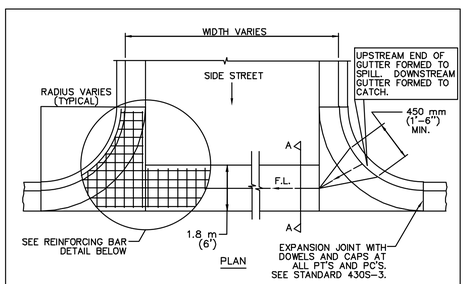
NOTES:

1. ALL TYPE II DRIVEWAYS SHALL HAVE RADIUS ENDS.
2. DRIVEWAY WIDTHS AND RADII DIMENSIONS, ONE/TWO WAY TRAVEL REQUIREMENTS, AND GEOMETRIC LAY-OUT ARE HIGHLY VARIABLE, SUBJECT TO SITE SPECIFIC CONDITIONS AND REQUIREMENTS. SEE TRANSPORTATION CRITERIA MANUAL, SECTION 5 "DRIVEWAYS".
3. THE DRIVEWAY EDGE SHALL BE SMOOTHLY TRANSITIONED INTO THE SIDEWALK TIE-IN LOCATION BEGINNING AT THE RADIUS PC LINE.
4. "ZERO" CURB AT PT OR SIDEWALK EDGE, WHICHEVER IS ENCOUNTERED FIRST.
5. PLACE AN EXPANSION JOINT DOWN THE CENTER OF DRIVEWAY ALL DRIVEWAYS.
6. IF DIMENSION IS LESS THAN 1.5 METERS (5 FEET), REMOVE CURB AND GUTTER TO EXISTING JOINT AND POUR MONOLITHICALLY WITH DRIVEWAY.
7. IF THE BASE IS OVER-EXCAVATED WHERE THE CURB AND GUTTER WERE REMOVED, BACKFILL WITH CONCRETE MONOLITHICALLY WITH THE DRIVEWAY.
8. TYPE II DRIVEWAYS ARE TO BE LOCATED NO CLOSER TO THE CORNER OF INTERSECTING RIGHT OF WAY THAN 60% OF PARCEL FRONTAGE AT 30 METERS (100 FEET) WHICHEVER IS LESS.
9. DRIVEWAY SHALL NOT BE CONSTRUCTED WITHIN THE CURB RETURN OF A STREET INTERSECTION.
10. WHILE THE PROPERTY OWNER REMAINS RESPONSIBLE FOR GRADE BREAKS WITHIN PRIVATE PROPERTY, THE FIRE DEPARTMENT SHALL BE CONSULTED WHERE THE DRIVEWAY IS ESSENTIAL TO EMERGENCY VEHICLE ACCESS AND "G2 IS GREATER THAN 15%.
11. USE 12 MM (1/2") ASPHALT BOARD OR OTHER APPROVED MATERIAL FOR CURB AND GUTTER EXPANSION JOINTS. SIDEWALK, AT THE R.O.W. LINE AND AT MIDWIDTH, SEE NOTE 5.
12. SEE TRANSPORTATION CRITERIA MANUAL, SECTION 5 FOR OTHER DRIVEWAY REQUIREMENTS.
13. THE SIDEWALK, REGARDLESS OF ITS LOCATION WITH RESPECT TO THE CURB OR PROPERTY LINE, SHALL BE CONNECTED TO THE DRIVEWAY AT THESE LOCATIONS.
14. WATER METER BOXES AND WASTEWATER CLEAN OUTS ARE PROHIBITED FROM BEING LOCATED IN DRIVEWAY AREAS.

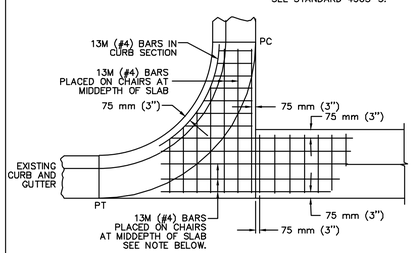
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		TYPE II DRIVEWAY	
RECORD COPY SIGNED BY CUONG TRAN	02/24/10	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 433S-2
ADOPTED			2 OF 2

G8 CONCRETE VALLEY GUTTER

N.T.S.



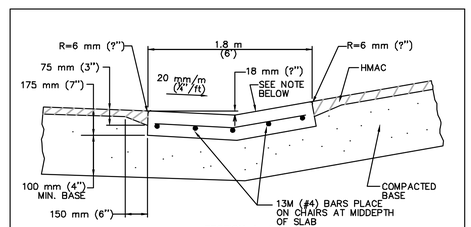
PLAN



REINFORCING BAR DETAIL

NOTE:
ALTERNATE 13M (#4) BARS PLACED ON CHAIRS AT MIDDEPTH OF SLAB TO BE CONTINUOUS ACROSS EXPANSION JOINT. BREAK BOND 150 mm (6") ON EACH SIDE OF EXPANSION JOINT.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		CONCRETE VALLEY GUTTER	
RECORD COPY SIGNED BY BILL GARDNER	06/12/06	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 436S-2
ADOPTED			1 OF 2



SECTION A–A

NOTE:
ADJUST SLOPE FROM 20 mm/m (?"/ft) MINIMUM TO THE SLOPE OF THE SIDE STREET.

NOTES:

1. MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO THE CITY OF AUSTIN STANDARD SPECIFICATIONS.
2. CONCRETE FOR THE VALLEY GUTTER SHALL BE CLASS A, ITEM 403S, "CONCRETE FOR STRUCTURES".
3. MONOLITHIC CURB AND GUTTER SHALL BE MEASURED BY PLAN QUANTITY PER SQUARE FEET AND PAID AS VALLEY GUTTER.
4. THE UPSTREAM CURB MID POINT MUST BE AT OR LOWER THAN THE BEGINNING P.C. AND 0.5% MINIMUM HIGHER THAN THE OPPOSING MID POINT.
5. ALLOWABLE CONSTRUCTION JOINT AT THE CENTER LINE WHEN TRAFFIC FLOW MUST BE MAINTAINED, CONSTRUCTED AS A CONTROL JOINT.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		CONCRETE VALLEY GUTTER	
RECORD COPY SIGNED BY BILL GARDNER	06/12/06	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 436S-2
ADOPTED			2 OF 2

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

CITY OF AUSTIN ROADWAY DETAILS

03/30/2023
DATE

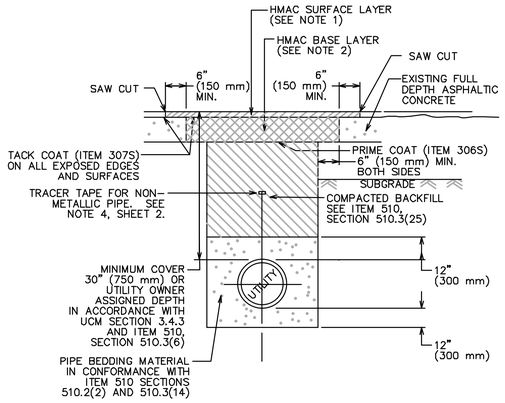
R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C235
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-ROAD.DWG, C235, 3/31/2023 1:12:03 PM, MCastelli

REPAIR OF FULL DEPTH ASPHALTIC CONCRETE (UCM SECTION 5.5.13)



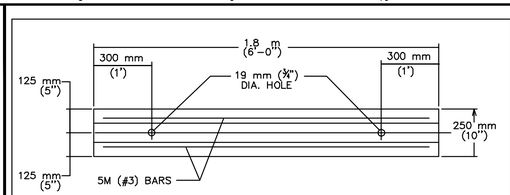
NOTES:

1. REPLACEMENT AC SURFACE LAYER SHALL BE OF THE TYPE AND THICKNESS BASED ON FUNCTIONAL CLASSIFICATION.
   a) MIN. 2" (50 mm) HMAC TYPE "D" FOR TRENCH REPAIR IN LOCAL/RESIDENTIAL STREETS.
   b) MIN. 3" (75 mm) HMAC TYPE "C" FOR TRENCH REPAIR IN COLLECTOR/ARTERIAL STREETS.
   SEE ITEM 340S, SECTION 340S.4.
2. THE COMBINED THICKNESS OF THE REPLACEMENT AC SURFACE AND BASE LAYERS SHALL MATCH THE THICKNESS OF EXISTING FULL DEPTH AC LAYER. HOWEVER, THE REPLACEMENT AC BASE LAYER SHALL BE A MINIMUM THICKNESS OF 6" (150 mm) OF TYPE A OR B HMA. A BASE LAYER TYPE THAT MATCHES THE NEW HMA SURFACE LAYER (SEE NOTE 1) MAY BE USED, IF THE TOTAL REPAIR AREA IS LESS THAN 300 SQUARE YARDS (250 SQUARE METERS).
3. CLASS "J" PC CONCRETE (ITEM 403S) OR CONTROLLED LOW STRENGTH MATERIAL (CLSM) MAY BE SUBSTITUTED IN THESE REPAIRS FOR THE FLEXIBLE BASE AND COMPACTED BACKFILL. PC CONCRETE GREATER THAN A 2 SACK MIX WILL NOT BE ALLOWED.
4. AS PER CITY OF AUSTIN STANDARD SPECIFICATION 510, SECTION 510.2(8)(c)15, FOR ALL NON-METALLIC PIPE, DIRECTLY ABOVE THE CENTERLINE OF THE PIPE AND A MINIMUM OF 12" (300 mm) BELOW THE SUBGRADE, OR A MINIMUM OF 18" (450 mm) BELOW FINISHED GRADE ON AREAS OUTSIDE THE LIMITS OF PAVEMENT, SHALL BE PLACED INDUCTIVE TRACER TAPE IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS. THE TAPE SHALL BE ENCASED IN A PROTECTIVE, INERT, PLASTIC JACKET AND COLOR CODED IN ACCORDANCE WITH APWA UNIFORM COLOR CODE.

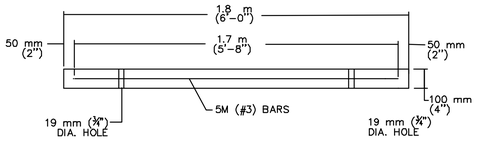
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		FULL DEPTH ASPHALTIC CONCRETE PAVEMENT TRENCH REPAIR	
RECORD COPY SIGNED BY BILL GARDNER	9/14/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 1100S-5 1 OF 2

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		FULL DEPTH ASPHALTIC CONCRETE PAVEMENT TRENCH REPAIR	
RECORD COPY SIGNED BY BILL GARDNER	9/14/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 1100S-5 2 OF 2

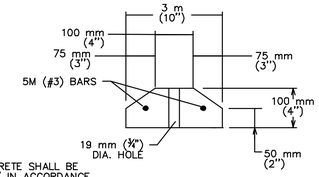
G1 FULL DEPTH ASPHALTIC CONCRETE PAVEMENT TRENCH REPAIR — N.T.S.



PLAN



LONGITUDINAL SECTION



ALL CONCRETE SHALL BE CLASS "A" IN ACCORDANCE WITH ITEM 403S.

CROSS SECTION

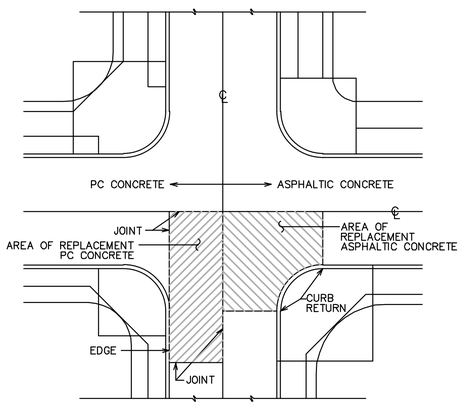
CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		PARKING LOT BUMPER CURB	
RECORD COPY SIGNED BY BILL GARDNER	3/15/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 439S-1
APPROVED			

G8 CONCRETE BUMPER CURB — N.T.S.

G11 NOT USED — N.T.S.

REPAIR OF NEW STREETS and ARTERIAL STREETS in GOOD CONDITION (UCM SECTION 5.3.3 and 5.3.4)

TYPICAL RESTORATION FOR EXCAVATION IN INTERSECTIONS



TYPICAL PLAN

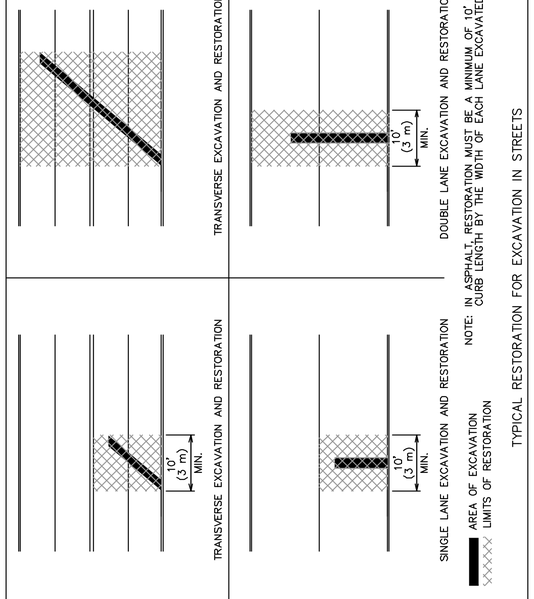
TRENCH REPAIRS WITHIN PORTLAND CEMENT CONCRETE PAVEMENTS NOTE:

IF ANY PART OF THE TRENCH REPAIR FALLS WITHIN AN INTERSECTION, THEN THE ENTIRE CONCRETE SLAB FROM JOINT TO JOINT AND JOINT TO EDGE SHALL BE REPLACED, UNLESS OTHERWISE DIRECTED IN WRITING BY THE DIRECTOR.

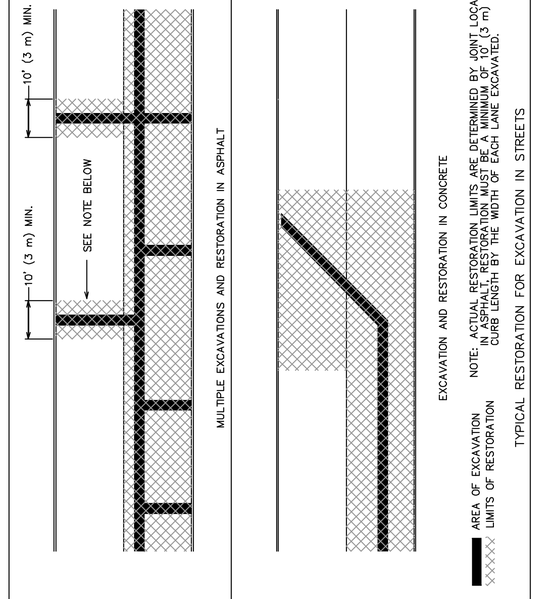
TRENCH REPAIRS WITHIN ASPHALTIC CONCRETE PAVEMENTS NOTES:

1. IF ANY PART OF THE TRENCH REPAIR FALLS WITHIN AN INTERSECTION, DEFINED FROM CURB RETURN TO CURB RETURN, THE ENTIRE QUADRANT OF THE EXISTING SURFACE SHALL BE REPLACED, UNLESS OTHERWISE DIRECTED IN WRITING BY THE ENGINEER OR DESIGNATED REPRESENTATIVE.
2. A QUADRANT IS DEFINED AS THE CROSS-HATCHED AREA IN THE ABOVE DETAIL.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		STREET REPAIR REQUIREMENTS	
RECORD COPY SIGNED BY BILL GARDNER	9/14/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 1100S-7 1 OF 3



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		STREET REPAIR REQUIREMENTS	
RECORD COPY SIGNED BY BILL GARDNER	9/14/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 1100S-7 2 OF 3



CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS		STREET REPAIR REQUIREMENTS	
RECORD COPY SIGNED BY BILL GARDNER	9/14/05 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 1100S-7 3 OF 3

A1 STREET REPAIR REQUIREMENTS — N.T.S.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

CITY OF AUSTIN ROADWAY DETAILS

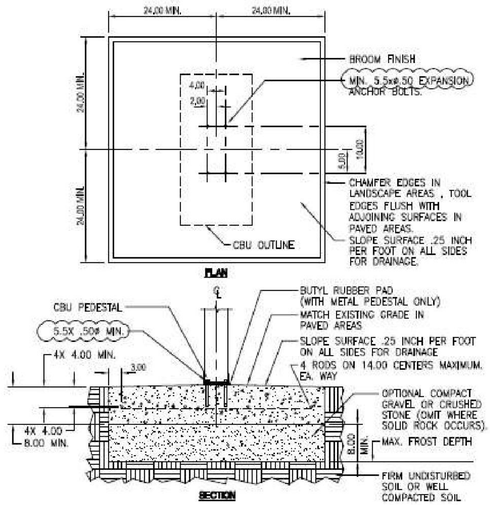
03/30/2023 DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS — R. ALAN MUNGER — 65341 — REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C236
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-ROAD.DWG, C236, 3/31/2023 1:12:06 PM, MCastelli

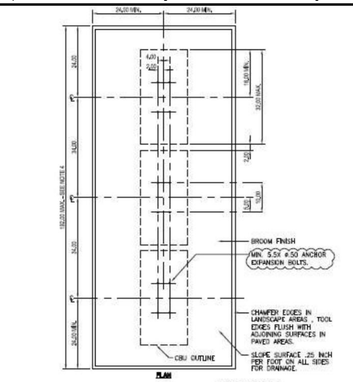


NOTES:

1. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3,000 PSI @ 28 DAYS, CONTAIN 4% MIN. – 6% MAX. AIR ENTRAINMENT AND BE PLACED WITH A 3.50–4.50 SLUMP IN ACCORDANCE WITH ACI 301
2. REINFORCING STEEL RODS SHALL CONFORM TO ASTM A615, GRADE 60.
3. EXPANSION BOLTS SHALL BE EQUIVALENT TO THE FOLLOWING PROVIDERS:
   a. HILTI KWIK BOLT (www.us.hilti.com) II–1/2" DIAMETER x 5–1/2" OVERALL LENGTH
      GALVANIZED, CATALOG #: 000–453–696
      KB II 12–512, STAINLESS STEEL: CATALOG #: 000–454–744
      ENSURE THAT THE MIN. EMBEDMENT IN CONCRETE IS AT LEAST 3–1/2".
   b. ITW RAMSET REDHEAD TRUBOLT (www.ramset–redhead.com)
      GALVANIZED, 1/2" DIAMETER x 7" OVERALL LENGTH; CATALOG NUMBER: WS–1270G
      ENSURE THAT THE MIN. EMBEDMENT IN CONCRETE IS AT LEAST 4–1/8".
   C. RAWL STUD (www.rawl.com)
      GALVANIZED, 1/2" DIAMETER x 5–1/2" OVERALL LENGTH; CATALOG NUMBER: 7724
      ENSURE THAT THE MIN. EMBEDMENT IN CONCRETE IS AT LEAST 4".

G1	CLUSTER BOX UNIT INSTALLATION SINGLE UNIT
N.T.S.	

NOTES TO A/E:



NOTES:

1. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3,000 PSI @ 28 DAYS, CONTAIN 4% MIN. – 6% MAX. AIR ENTRAINMENT AND BE PLACED WITH A 3.50 – 4.50 SLUMP IN ACCORDANCE WITH ACI 301
2. REINFORCING STEEL RODS SHALL CONFORM TO ASTM A615, GRADE 60.
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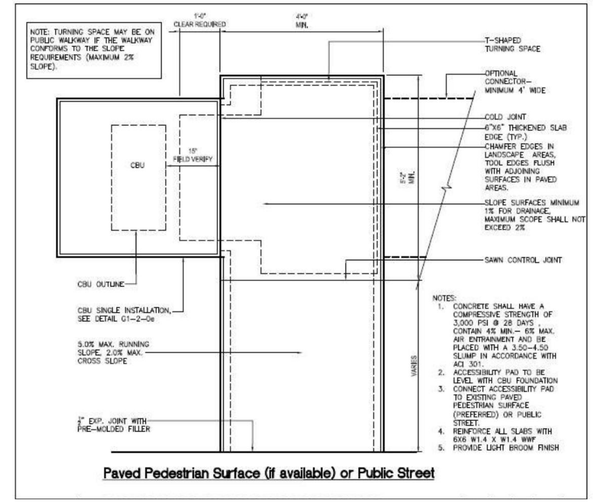
      GALVANIZED, CATALOG #: 000–453–696
      KB II 12–512, STAINLESS STEEL: CATALOG #: 000–454–744
      ENSURE THAT THE MIN. EMBEDMENT IN CONCRETE IS AT LEAST 3–1/2".
   b. ITW RAMSET REDHEAD TRUBOLT (www.ramset–redhead.com)
      GALVANIZED, 1/2" DIAMETER x 7" OVERALL LENGTH; CATALOG NUMBER: WS–1270G
      ENSURE THAT THE MIN. EMBEDMENT IN CONCRETE IS AT LEAST 4–1/8".
   C. RAWL STUD (www.rawl.com)
      GALVANIZED, 1/2" DIAMETER x 5–1/2" OVERALL LENGTH; CATALOG NUMBER: 7724
      ENSURE THAT THE MIN. EMBEDMENT IN CONCRETE IS AT LEAST 4".
4. A 3 CBU CONFIGURATION IS DEPICTED. A 2 OR 4 CBU CONFIGURATION MAY BE USED AS LONG AS THEY ARE ARRANGED IN GROUPS SUCH THAT THE OVERALL DIMENSION OF THE CONCRETE BASE DOES NOT EXCEED 16 FEET.

G6	CLUSTER BOX UNIT INSTALLATION MULTIPLE UNIT
N.T.S.	

NOTES TO A/E:

1. IF THE ACCESSIBLE ROUTE FROM THE CBU(s) CONNECTS WITH A STREET OR OTHER PAVED SURFACE AT A VERTICAL CURB, A CURB RAMP SHOULD BE INSTALLED IN ACCORDANCE WITH RE–4 REQUIREMENTS.

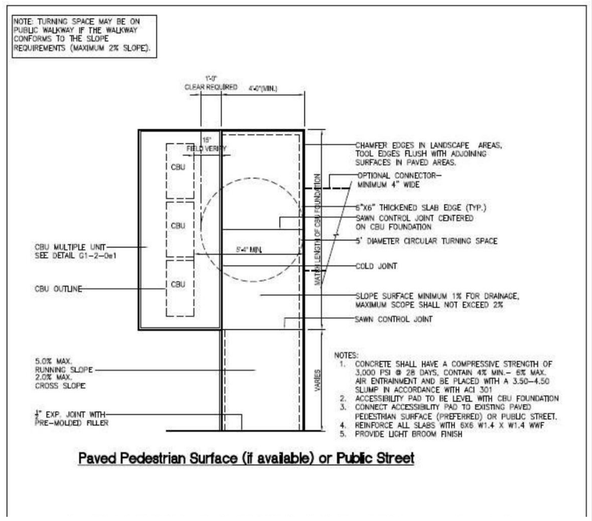


Paved Pedestrian Surface (if available) or Public Street

G6	CLUSTER BOX UNIT ACCESS MANEUVERING SPACE - SINGLE UNIT
N.T.S.	

NOTES TO A/E:

1. IF THE ACCESSIBLE ROUTE FROM THE CBU(s) CONNECTS WITH A STREET OR OTHER PAVED SURFACE AT A VERTICAL CURB, A CURB RAMP SHOULD BE INSTALLED IN ACCORDANCE WITH RE–4 REQUIREMENTS.

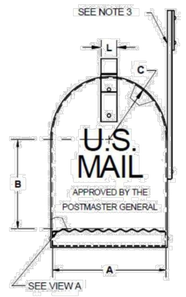


Paved Pedestrian Surface (if available) or Public Street

A1	CLUSTER BOX UNIT ACCESS MANEUVERING SPACE - SINGLE UNIT
N.T.S.	

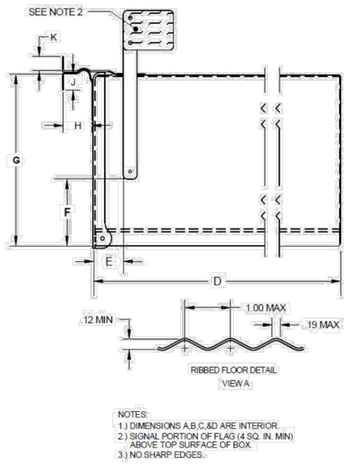
CUSTOMERS ARE <u>REQUIRED</u> TO COMNTACT THE LOCAL POST OFFICE BEFORE INSTALLING THE MAILBOX TO ENSURE ITS CORRECT PLACEMENT AND HEIGHT AT THE STREET. GENERALLY, MAILBOXES ARE INSTALLED AT A HEIGHT OF 41–45 INCHES FROM THE ROAD SURFACE TO EITHER THE INSIDE SURFACE OF THE MAILBOX THAT THE MAIL IS PLACED ON BY THE CARRIER OR TO THE LOWEST EDGE OF MAIL ENTRY (FOR LOCKED MAIL SLOT DESIGNS) AND ARE SET BACK 6–8 INCHES FROM THE FRONT FACE OF CURB OR ROAD EDGE TO THE MAILBOX DOOR.

USPS-STD-7C



DIM	MIN	MAX	DIM	MIN	MAX
A	6.25	11.00	G	6.00	15.00
B	4.50	8.25	H	1.00	2.12
C	3.12R	5.50R	J	1.00	2.00
D	18.56	22.81	K	.50	.87
E	~	2.00	L	.87	1.25
F	3.75	8.50			

UNITS:INCHES



NOTES:
1.) DIMENSIONS A,B,C,&D ARE INTERIOR.
2.) SIGNAL PORTION OF FLAG (4 SQ. IN. MIN) ABOVE TOP SURFACE OF BOX.
3.) NO SHARP EDGES.

A1	TRADITIONAL MAILBOX
N.T.S.	

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

USPS MAILBOX DETAIL

03/30/2023 DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C237
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-ROAD.DWG, USPS MAILBOX DETAIL, 3/31/2023 1:12:12 PM, MCastelli

G1 NOT USED

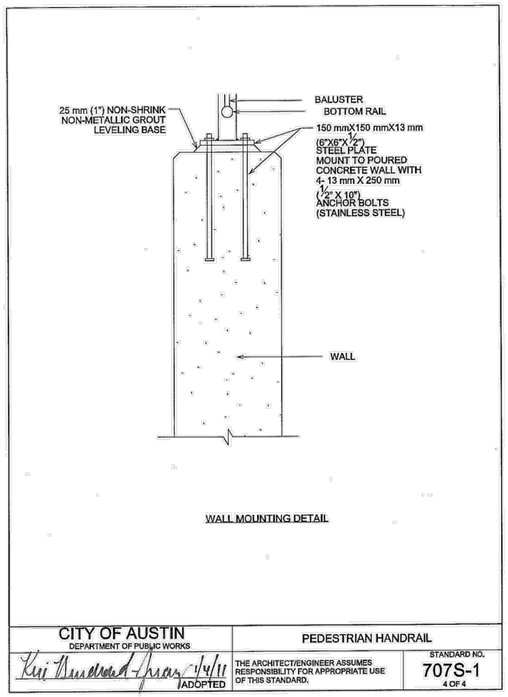
N.T.S.

G5 NOT USED

N.T.S.

G9 CITY OF AUSTIN PEDESTRIAN HANDRAIL

N.T.S. SHEET 4 OF 4



WALL MOUNTING DETAIL

CITY OF AUSTIN
DEPARTMENT OF PUBLIC WORKS
Keir Bundschuh-Gray 1/4/11
ADOPTED

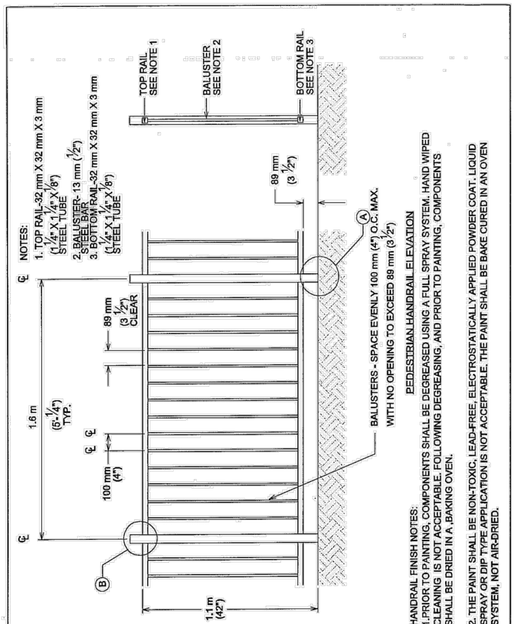
PEDESTRIAN HANDRAIL

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

STANDARD NO. 707S-1
4 OF 4

A1 CITY OF AUSTIN PEDESTRIAN HANDRAIL

N.T.S. SHEET 1 OF 4



NOTES:
1. TOP RAIL-32 mm X 32 mm X 3 mm ½" X ½" X 1/8") STEEL TUBE
2. BALUSTER- 13 mm (½") SQUARE BAR
3. BOTTOM RAIL-32 mm X 32 mm X 3 mm (1¼" X 1¼" X 1/8") STEEL TUBE

PEDESTRIAN HANDRAIL ELEVATION

HANDRAIL FINISH NOTES:
1.PRIOR TO PAINTING, COMPONENTS SHALL BE DEGREASED USING A FULL SPRAY SYSTEM, HAND WIPED CLEANING IS NOT ACCEPTABLE, FOLLOWING DEGREASING, AND PRIOR TO PAINTING, COMPONENTS SHALL BE DRIED IN A ,BAKING OVEN.
2. THE PAINT SHALL BE NON-TOXIC, LEAD-FREE, ELECTROSTATICALLY APPLIED POWDER COAT, LIQUID SPRAY OR DIP "TYPE APPLICATION IS NOT ACCEPTABLE. THE PAINT SHALL BE BAKE CURED IN AN OVEN SYSTEM, NOT AIR-DRIED.

CITY OF AUSTIN
DEPARTMENT OF PUBLIC WORKS
Keir Bundschuh-Gray 1/4/11
ADOPTED

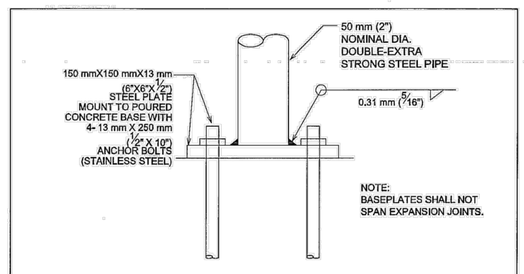
PEDESTRIAN HANDRAIL

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

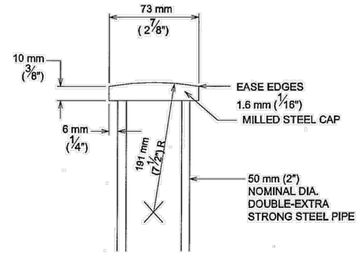
STANDARD NO. 707S-1
1 OF 4

A5 CITY OF AUSTIN PEDESTRIAN HANDRAIL

N.T.S. SHEET 2 OF 4



A. BASE PLATE DETAIL



B. CAP SECTION

CITY OF AUSTIN
DEPARTMENT OF PUBLIC WORKS
Keir Bundschuh-Gray 1/4/11
ADOPTED

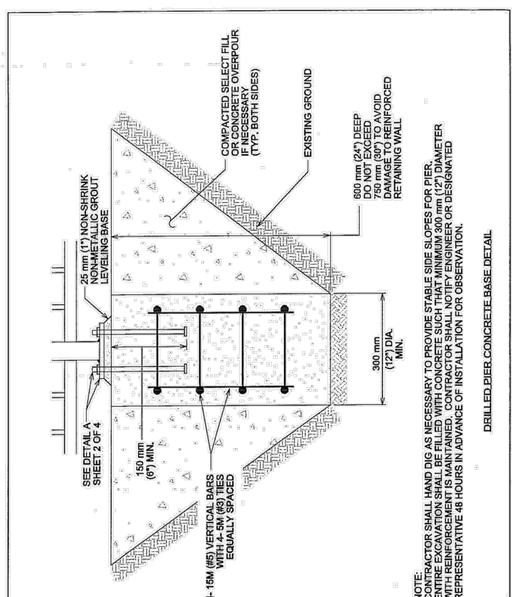
PEDESTRIAN HANDRAIL

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

STANDARD NO. 707S-1
2 OF 4

A5 CITY OF AUSTIN PEDESTRIAN HANDRAIL

N.T.S. SHEET 3 OF 4



NOTE:
CONTRACTOR SHALL HAND DIG AS NECESSARY TO PROVIDE STABLE SIDE SLOPES FOR PIER. ENTIRE EXCAVATION SHALL BE FREE OF LOOSE SOIL AND MUST BE LIMITED TO 1.5 TIMES PIER DIAMETER WITH REINFORCEMENT IS MAINTAINED. CONTRACTOR SHALL NOTIFY ENGINEER OR DESIGNATED REPRESENTATIVE 48 HOURS IN ADVANCE OF INSTALLATION FOR OBSERVATION.

DRILLED PIER CONCRETE BASE DETAIL

CITY OF AUSTIN
DEPARTMENT OF PUBLIC WORKS
Keir Bundschuh-Gray 1/4/11
ADOPTED

PEDESTRIAN HANDRAIL

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.

STANDARD NO. 707S-1
3 OF 4

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

CITY OF AUSTIN PEDESTRIAN HANDRAIL DETAIL

03/30/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

BM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C237A
SHEET	OF

G:\PROJECTS\3-005852 DESIGN\2.0 CAD\3-005852DETAILS-ROAD.DWG, CITY OF AUSTIN PEDESTRIAN HANDRAIL DETAIL, 3/31/2023 1:12:15 PM, MCastelli

1+00.00 183-A NORTHBOUND FRONTAGE ROAD
BEGIN 2' TO 11' SUBGRADE WIDENING
N=10179681.23
E=3085089.74

1+70.13 183-A NORTHBOUND FRONTAGE ROAD
END WIDENING TRANSITION
BEGIN 11' SUBGRADE WIDENING
N=10179746.17
E=3085061.51

275' EXISTING SUPERELEVATION TRANSITION

WILLIAMSON COUNTY
EXHIBIT "B" – PARCEL 51
CALLED 2.099 ACRES
W.C.C.D. 2004089789
O.P.R.W.C.T.

CRAIG NEMEC
W.C.C.D. 2004051534
O.P.R.W.C.T.

3% EXISTING CROSS-SLOPE

BL 183-A NB FRTG. RD

0+00

1+00

2+00

3+00

4+00

5+00

2' MIN. WIDENING

LIMITS OF GRADING
LIMITS OF SEEDING

VARIES

105 106

4' EX. SHLDR.

12' EX. LANE

12' EX. LANE

11' PROP. TURN LANE

4' PROP. SHLDR.

104 15' WIDTH

N.B. 183A FRONTAGE

EDGE OF EX. PVMT.

100 6' WIDTH

6' WALL WIDTH

2% EXISTING CROSS-SLOPE

973 974 975 976 977 978

WARNING OVERHEAD ELECTRIC

107 101 102 103

A8 C020

MATCHLINE 5+00 (SEE SHEET C239)

NOTE: ALL PROPOSED WIDENING TO MATCH EXISTING CROSS-SLOPES

1+00.00, PVI
971.96

2+35.33, PVI
972.90

3+41.63, PVI
974.52

PROP. EDGE OF SHOULDER

EX. PVMT.

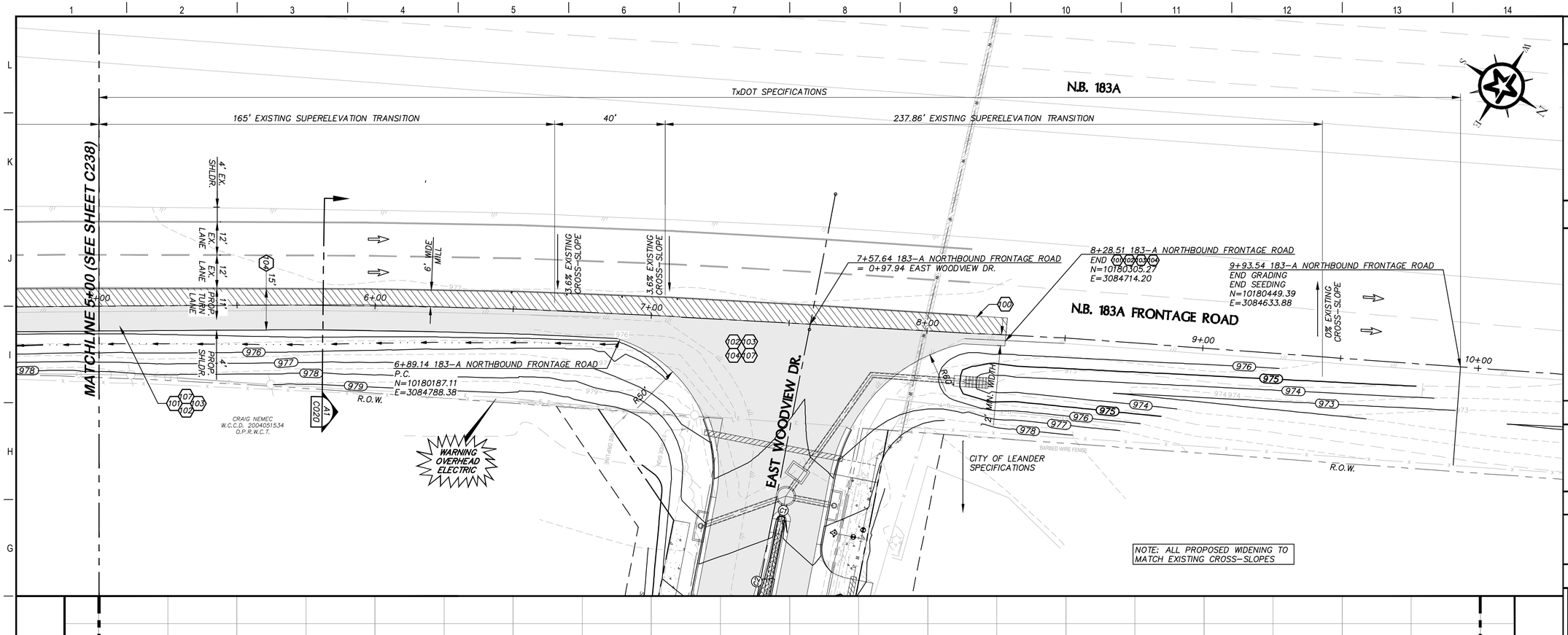
DITCH PROFILE

0.70%

1.52%

0.35%

| | | |



GENERAL NOTES

1. RE: C006 FOR ROADWAY ALIGNMENTS AND CURVE TABLES
2. RE: C014–C020 FOR STREET TYPICAL SECTIONS
3. WHERE PROP CURB & GUTTER TIES INTO EXISTING CURB & GUTTER, TRANSITION TO EXISTING GUTTER CROSS–SLOPE WILL BE 5'
4. ALL CALLOUTS AND DIMENSIONS ALONG CURB ARE TO BACK OF CURB UNLESS OTHERWISE NOTED.
5. ALL EXISTING UTILITIES MUST BE FIELD VERIFIED PRIOR TO PERFORMING ANY ACTIVITY. IT IS THE RESPONSIBILITY OF THE UTILITY COMPANY TO VERIFY LOCATION OF EXISTING UTILITIES THAT MAY CONFLICT WITH CONSTRUCTION.

KEY NOTES

- 100 PLANE EXISTING ASPHALT PAVEMENT (2") (TxDOT ITEM 354)
- 101 SUBGRADE WIDENING (TxDOT ITEM 112)
- 102 FLEX BASE (CMP IN PLACE)(TY A)(GR 1) (8")(TxDOT ITEM 247)
- 103 5.5" DENSE GRADE HMA TY–B (TxDOT ITEM 341)
- 104 2" D–GR HMA TY–C (TxDOT ITEM 341)
- 105 6" TOPSOIL (TxDOT ITEM 160)
- 106 SEEDING (PERM)(URBAN)(CLAY) (TxDOT ITEM 164)
- 107 PRIME COAT (AE–P)(TxDOT ITEM 310)

LEGEND

MILL & OVERLAY

SUBGRADE WIDENING

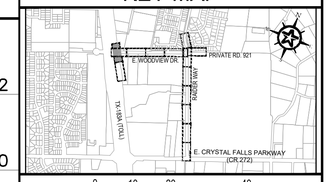
PROFILE LEGEND

DRIVEWAY XXX — DRIVEWAY NUMBER

N.G. ~ CENTERLINE

DITCH FLOWLINE

KEY MAP



0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STREET PLAN & PROFILE
N.B. 183A FRONTAGE (STA. 5+00-END)

03/30/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C239
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STREET-WOODVIEW.DWG, N.B. 183A FRONTAGE (STA. 5+00-END), 3/31/2023 1:14:07 PM, MCastelli

DISCLAIMER:
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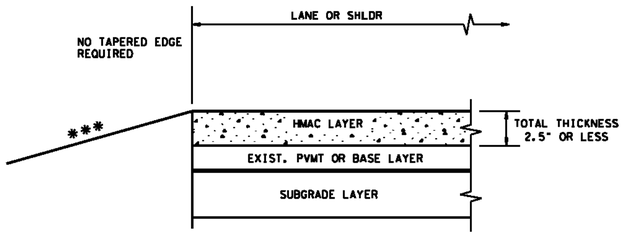
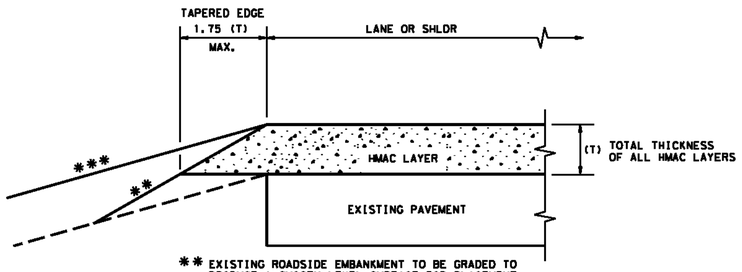


*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

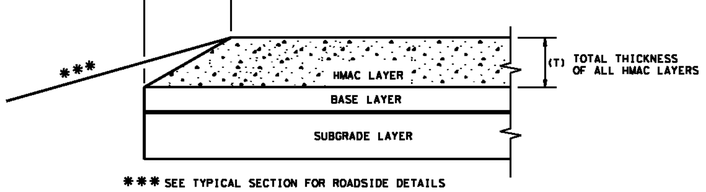
CONDITION - 1
THIN HMAC SURFACES OR HMAC OVERLAY WITH THICKNESS OF 2.5" OR LESS



** EXISTING ROADSIDE EMBANKMENT TO BE GRADED TO PRODUCE A SMOOTH LEVEL SURFACE FOR PLACEMENT OF TAPERED EDGE. THIS WORK IS SUBSIDIARY TO THE VARIOUS BID ITEMS.

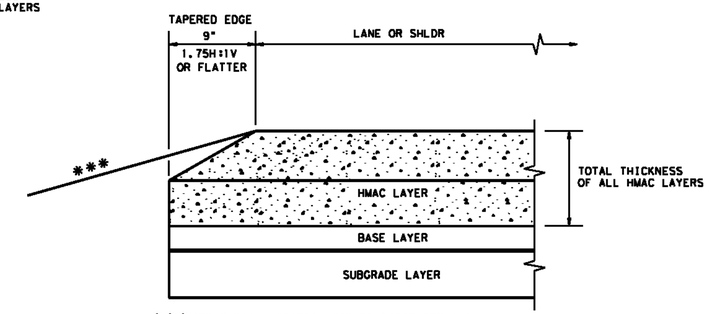
*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 2
OVERLAY OF EXISTING PAVEMENT HMAC THICKNESS 2.5" TO 5"



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 3
NEW OR RECONSTRUCTED PAVEMENT HMAC THICKNESS 2.5" TO 5"



*** SEE TYPICAL SECTION FOR ROADSIDE DETAILS

CONDITION - 4
NEW OR RECONSTRUCTED PAVEMENT HMAC THICKNESS 5" OR GREATER

(NOT TO SCALE)

DATE:
FILE:

GENERAL NOTES

1. UNLESS OTHERWISE SHOWN IN THE PLANS, A VERTICAL EDGE IS PERMISSIBLE FOR HMAC PLACED GREATER THAN 5" BELOW THE EDGE OF PAVEMENT AND FOR THICKNESS OF HMAC LESS THAN 2.5".
2. FOR FURTHER INFORMATION REGARDING THE ROADSIDE AND PAVEMENT DETAILS, SEE TYPICAL SECTIONS.
3. PAYMENT FOR TAPERED EDGE WILL BE IN ACCORDANCE WITH APPLICABLE ITEMS IN THE CONTRACT.
4. THE SLOPE OF THE TAPERED EDGE SHALL BE 1.75H:1V OR FLATTER.
5. THE TAPERED EDGE SHALL BE PRODUCED BY USE OF A SCREED ATTACHMENT CAPABLE OF PRODUCING A SMOOTH COMPACTED SURFACE. ADDITIONAL COMPACTING EFFORT BEHIND THE SCREED IS NOT REQUIRED.

Texas Department of Transportation | Design Division Standard

TAPERED EDGE DETAILS
HMAC PAVEMENT
TE(HMAC)-11

FILE: tehmac11.dgn	DN: TxDOT	CK: RL	DW: KB	CK:
©TxDOT January 2011	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - TE(HMAC)-11

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C240
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT.DWG, TXDOT DETAILS - TE(HMAC)-11, 3/29/2023 7:53:59 PM, cschroeder

Z:\2018 JOBS\304.18 RAIDER WAY ROAD IMPROVEMENTS\FEI PLANS WITH WALKER PARTNERS TITLE BLOCK\304.18 SP1 (WP C254).DWG, MODEL, 11/28/2018 5:40:22 PM, ########

POND OUTLET STRUCTURE
RE. CXXXX/XX
N=10178476.57
E=3087490.33

TW=946.80
BW=938.25

TW=946.80
BW=938.40

TW=945.80
BW=938.40

TW=945.80
BW=938.85

TW=946.80
BW=938.85

30'
EMERGENCY SPILLWAY

0+00

TW=946.80
BW=939.40

RW2

TW=946.80
BW=940.50

TW=946.80
BW=940.25

TW=946.80
BW=939.90

TW=946.80
BW=940.30

RW3

949
948
947

TW=946.80
BW=940.50

TW=946.80
BW=941.00

2+50.00, EP

948.19+

1+00

2+00

2+50.00

RW2

TW=946.80
BW=941.00

TW=946.80
BW=940.75

RW3

TW=946.80
BW=940.75

939
940
941
942
943

NOTE FROM FALKOFSKE: This plan was developed directly from Walker Partners, LLC. Detention Pond Plan dated August 21, 2018, Drawing No. C311. This plan is for the sole purpose of showing what retaining wall sections to use where and to comment on the site as necessary with regards to the retaining walls. Contractor shall review final Civil Plans for other notes with regard to the site prior to constructing Masonry Stone Retaining Walls.

SEE RW4 FOR PIPE CROSSING DETAILS.

RW2

TW=946.80
BW=939.00

TW=946.80
BW=939.50

947

TW=946.80
BW=946.80

MAINTENANCE ACCESS RAMP (4:1)

946.06+

946.34+

946.55+

946.80+

947.03+

947.36+

947.31+

Falkofske Engineering, Inc.
Structural Engineering Consultants
TX Reg. Engineering Firm F-4038
722 North Fielder Road
Arlington, Texas 76012
(817) 261-8300
FEI JOB NO. 304.18

0 5 10 20
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DETENTION POND RETAINING WALL PLAN

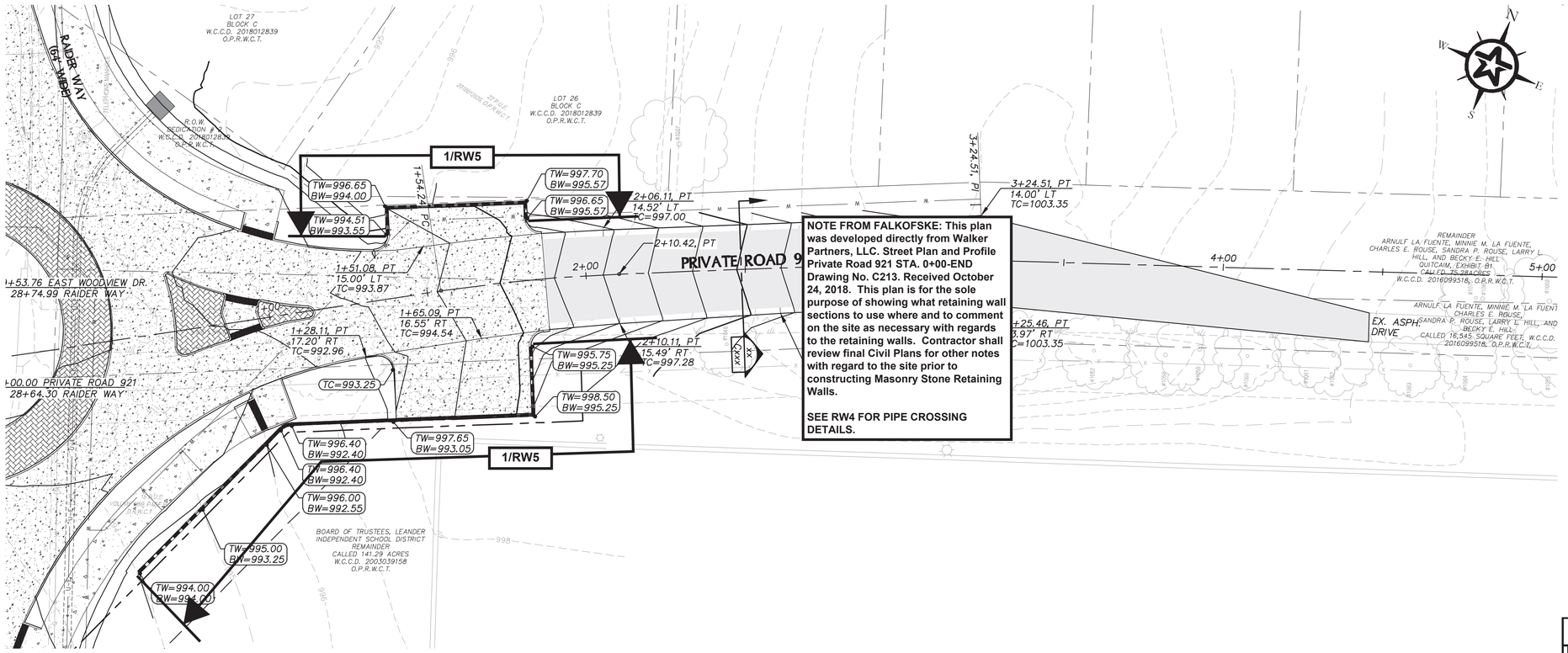
11-28-18
DATE

Aaron M. Berkes
NAME

STATE OF TEXAS
AARON M. BERKES
107754
LICENSED
PROFESSIONAL ENGINEER
11-28-18

PM	AMB
DESIGNED	AMB
DRAFTED	EJC
CHECKED	AMB
PROJECT NO.	3-00585

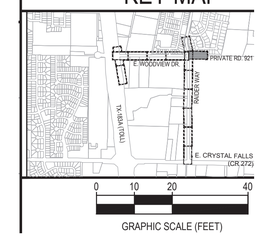
DRAWING NO.
C241



NOTE FROM FALKOFSKE: This plan was developed directly from Walker Partners, LLC. Street Plan and Profile Private Road 921 STA. 0+00-END Drawing No. C213. Received October 24, 2018. This plan is for the sole purpose of showing what retaining wall sections to use where and to comment on the site as necessary with regards to the retaining walls. Contractor shall review final Civil Plans for other notes with regard to the site prior to constructing Masonry Stone Retaining Walls.

SEE RW4 FOR PIPE CROSSING DETAILS.

KEY MAP



Falkofske Engineering, Inc.
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722 North Fielder Road
Arlington, Texas 76012
(817) 261-8300
FEI JOB NO. 304.18

0 5 10 20
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

ROUNDABOUT RETAINING WALL PLAN

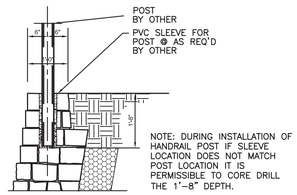
11-28-18 DATE — Aaron M. Berkes NAME

STATE OF TEXAS
AARON M. BERKES
107754
LICENSED
PROFESSIONAL ENGINEER
11-28-18

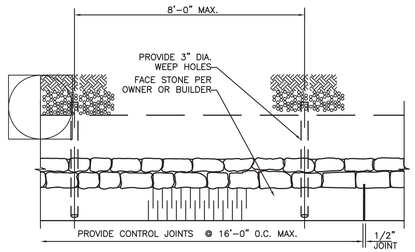
PM	AMB
DESIGNED	AMB
DRAFTED	EJC
CHECKED	AMB
PROJECT NO.	3-00585

DRAWING NO.
C242

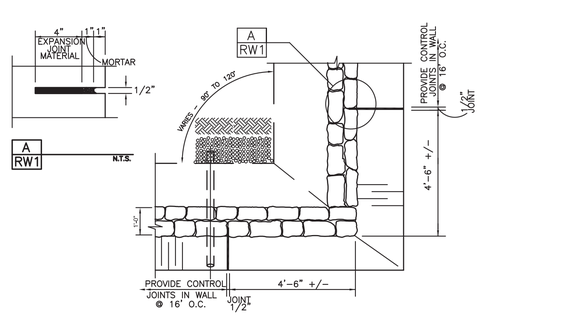
Z:\2018 JOBS\304.18 RAIDER WAY ROAD IMPROVEMENTS\FEI PLANS WITH WALKER PARTNERS TITTLE BLOCK\304.18 SP2 (WP C255).DWG, MODEL, 11/28/2018 5:41:54 PM, ########



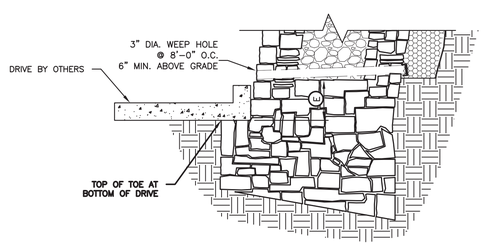
1 RW1 WALL SECTION W/HANDRAIL POST CONTRACTOR OPTION N.T.S.



2 RW1 TYPICAL PLAN VIEW AT BASE N.T.S.



3 RW1 TYPICAL PLAN VIEW AT CORNERS N.T.S.



4 RW1 CROSS SECTION OF WALL WITH CURB ON TOP OF TOE N.T.S.

GENERAL NOTES

1. Design

1.1. Design Codes

International Building Code, 2015 Edition

1.2. Geotechnical Report

Firm: ARIAS GEOPROFESSIONALS, INC.
Report No. 2018-497 Dated: August 31, 2018
Allowable Bearing Capacity 2500 psf and 4000 psf

1.3. Design Parameters

Soil Parameters:

Soil Type*	Friction Angle	Cohesion (psf)	Unit Weight (pcf)
Retained Backfill (On site clay)	28 deg	0 psf	120 pcf
Foundation Soils (2500 psf)	28 deg	0 psf	120 pcf
Foundation Soils (4000 psf)	35 deg	0 psf	135 pcf

*See materials below for a description of each Soil Type.

Factors of Safety:

External Stability
a. Minimum Factor of Safety Against Base Sliding (Static Condition) 1.5
b. Minimum Factor of Safety Against Overturning 2.0
c. Minimum Factor of Safety Against Global Stability 1.5
d. Minimum Factor of Safety for Bearing Capacity 3.0

Design Loading:

Lateral earth pressures are calculated using Coulombs Lateral Earth Pressure Theory. Designs have been performed to accept loading per the proposed loading conditions based on the Civil Grading Plans. A live loading of 250 psf has been used for all walls supporting areas subject to firelane loading.

Retaining walls should not have solid fence (such as wood fence) placed on top of wall other than that shown on these plans. Retaining walls shall not have additional surcharge placed above wall other than that shown on these plans. Retaining walls shall not have slope at base or top of wall that exceed that which is shown on these plans. The retaining walls noted above require special design.

2. Materials

2.1. Soil Types

a. Retained Backfill
a.a. On site clayey soils
a.b. Properly compacted on-site fill soils, verification by others.
a.c. Free draining granular backfill, clean, non-plastic, relatively well-graded.

b. Foundation Soils (Allowable Bearing = 2500 psf min)
b.a. Bearing on Hard Natural Undisturbed Clayey or Sandy Soils
b.b. Friction Angle between Base of Wall and Soil - 19 deg

c. Foundation Soils (Allowable Bearing = 4000 psf min)
c.a. Bearing on Bedrock
c.b. Friction Angle between Base of Wall and Soil - 23 deg
c.c. Bedrock Passive Pressure at toe = 400 psf

d. Drainage Material
d.a. Free draining granular backfill, clean, non-plastic, relatively well-graded.

2.2. Dimension Stone

a. Average Density of masonry wall varies from 135pcf to 145pcf.
b. Stone size varies from 4" to 18".
c. Face stone shall be coordinated between contractor and owner/developer.
d. Recycled concrete 4" to 18" may be used in place of dimension stone, contractors option.

2.3. Rebar/Welded Wire Fabric (If Required)

a. All steel reinforcement shall be new billet steel conforming to ASTM A-615, Grade 60 with fy=60ksi.
b. All reinforcement shall not have deleterious material on it.
c. All welded wire fabric shall have minimum fy=65ksi and be hot dip galvanized.

2.4. Drainage Materials

a. Weep pipes shall be PVC or corrugated HDPE pipe.
b. Drainage zone shall be separated from retained backfill by mirafi 140N filter fabric or approved equal.

2.5 Portland Cement Mortar for Retaining Wall Construction.

The portland cement mortar used for construction of the masonry stone retaining walls shall be provided with the following proportions per cubic yard of concrete. The portland cement mortar supplier shall provide "batch tickets" clearly indicating that the appropriate amount of materials are provided in each truck load. The batch tickets shall clearly indicate the amount batched, the date, the project name and shall be provided to Falkofske Engineering, Inc. for review, documentation, and file.

Contents	Amount per cubic yard	Specific Gravity	Volume ft^3
Type 1 Portland cement:	451 lbs	3.15	2.29
Type F Fly Ash	113 lbs	2.93	0.62
Fine Aggregate (sand):	2746 lbs	2.59	16.99
Potable Water	367 lbs	44 Gallons	5.88
Sika Air (or equivalent)	(AS REQ'D) oz	4.5%	1.22
			27.0 Total

Note: the portland cement mortar supplier material weights may vary slightly based on the specific gravity of the materials used.

Concrete retarders may be used at the discretion of the masonry wall contractor. A greater amount of retarder is typically used during hot periods and a less amount of retarder is typically used during cool weather.

Please note that the above proportions will provide a portland cement mortar with a compressive strength of about f'c = 2500 psi. Falkofske Engineering, Inc. does not require any concrete testing provided the above proportions are verified by way of the "batch tickets".

3. Construction

3.1 Preparation Work

a. Prior to grading or excavation of the site, confirm the location of the retaining walls and all underground features, including utility location within the area of construction. Ensure surrounding structures are protected from effects of wall excavation, and construction.
b. Coordinate installation of underground utilities and other improvements with wall installation.

3.2 Excavation

a. If a mortared footing is over-excavated, then the dimension stone shall be placed mortared. If a dry stone footing is over excavated, then the dimension stone does not need to be mortared.
b. Fill over-excavated area in front of the wall footing with compacted on site soils before the wall construction exceeds 4 feet in height.
c. In areas where the walls are installed in a cut, the required excavation shall extend horizontally to the extent of the width of the retaining wall. The wall may be built to the cut. If the wall is over cut, then soil shall either be compacted or the drainage zone may be widened.

3.3 Wall Construction

a. The wall shall be constructed to the dimensions as shown on these plans. Front leads, back leads,and string lines shall be set for each wall. Care shall be taken to install the mortar zones the correct thickness, and to place drainage behind the wall as required.
b. Control joints shall be installed at a maximum of 16'-0" o.c. per these plans.
c. Weep pipes shall be placed at 8'-0" o.c. max.
d. Face rock type shall be coordinated between the architect, owner, and retaining wall contractor.

3.4 Retained Backfill Placement

a. Retained backfill shall be placed per the recommendations of the geotechnical engineer, but should not be less than 93% Standard Proctor Maximum Dry Density (ASTM D698).
b. Fill should be placed in maximum 8" thick compacted lifts.
c. Large compaction equipment (equipment heavier than 7,500 lb) shall remain a minimum of 1.5x the height of the wall away from the back of the wall for a period of 2 weeks from the time of construction.
d. After a period of 2 weeks from the time of construction large compaction equipment may be used behind the wall but shall stay a minimum of 5'-0" away from the back of the wall.
e. Soil placed with in 5'-0" of the back of the wall shall be placed using handheld compaction equipment.
f. If the wall is in a cut situation the wall may be built up to the cut. If the wall is overcut the drainage zone may be widened to the cut or compacted fill may be placed between the drainage zone and the cut.

3.6 Retaining Wall Performance, Maintenance, and Other Comments

a. Control joints are provided in the retaining wall to allow for minor movements due to settlement and shrink swell of the soils. Some cracking may occur in the face of the retaining wall. This cracking, if minor (less than 3/8"), may be cosmetically repaired as desired.
b. The retaining walls are designed to allow surface water to flow over the tops of the retaining walls. Care should be taken during and after construction to not allow water to pond behind the retaining walls, as this can have a negative impact on the stability of the retaining walls.
c. If downspouts are located near the back of the retaining wall they should either be plumbed through the retaining wall to drain below the wall or collected and tied into the storm sewer system. Perforated subsurface pipes shall not be used behind the retaining walls.
d. Positive drainage over the top of the walls shall be maintained throughout the life of the structure. If swales are placed behind the wall they shall remain clean and free draining. If water is found to be ponding in the swale it shall be fixed to allow water to freely drain as soon as possible.
e. Any broken sprinklers behind the retaining wall shall be turned off and repaired as soon as possible.

3.7 Cold Weather Construction of Retaining Walls

Construction Requirements for temperatures between 40°F and 32°F:

a. Water and aggregates used in mortar shall not be heated above 140°F.
b. Mortar sand or mixing water shall be heated to produce mortar temperatures between 40°F and 120°F at the time of mixing.

Construction Requirements for temperatures between 32°F and 25°F:

a. The guidelines above for construction requirements for temperatures between 40°F and 32°F and the following shall be met.
b. The mortar temperature shall be maintained above freezing until used in masonry stone retaining wall.
c. Visible ice and snow shall be removed from the top surface of existing foundations and masonry to receive new construction. These surfaces shall be heated to above freezing, using methods that do not result in damage.
d. Newly constructed masonry shall be completely covered with weather-resistive membrane for 48 hours after being completed.

Construction Requirements for temperatures between 25°F and 20°F:

a. The guidelines above for construction requirements for temperatures between 40°F and 32°F, the construction guidelines for temperatures between 32°F and 25°F , and the following shall be met,
b. Masonry (raw stone) surfaces under construction shall be heated to 40°F.
c. Wind breaks or enclosures shall be provided when the wind velocity exceeds 15 miles per hour.
d. Newly constructed masonry shall be completely covered with weather-resistive insulating blankets, or equal protection, for 48 hours after being completed.

The above procedures comes from sections 2104.3.2.1, 2104.3.2.2, 2104.3.2.3, 2104.3.3.3, and 2104.3.3.4 of the International Building Code, and is in compliance with Masonry Standards Joint Committee recommendations for cold weather construction of masonry structures.

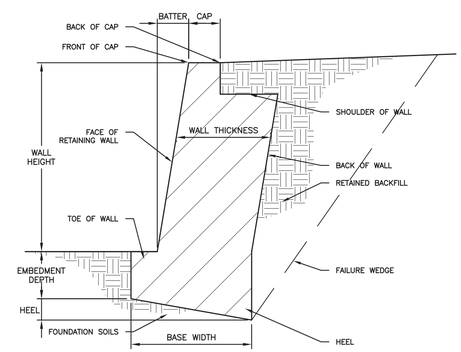
4. Construction Observations

4.1 Construction Observations by Falkofske Engineering, Inc.

a. Falkofske Engineering, Inc. will perform construction observation, but only as a means of verification of the contractors quality control performance.
b. Falkofske Engineering, Inc. will act as the Special Inspector for this project. Contractor shall contact Falkofske Engineering to set up inspections, at least 1 day before construction starts.
c. All required materials testing shall be performed by an approved materials testing laboratory.
d. Falkofske Engineering, inc. is not responsible for means, methods, and material furnished by the retaining wall contractor.

4.2 Construction Observations by Others

a. Construction observations as required by the city shall be coordinated by the contractor.



LEGEND

FALKOFSKE ENGINEERING
Falkofske Engineering, Inc.
Structural Engineering Consultants
TX Reg. Engineering Firm F-4038
722 North Fielder Road
Arlington, Texas 76012
(817) 261-8300
FEI JOB NO. 304.18

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RETAINING WALL DETAILS

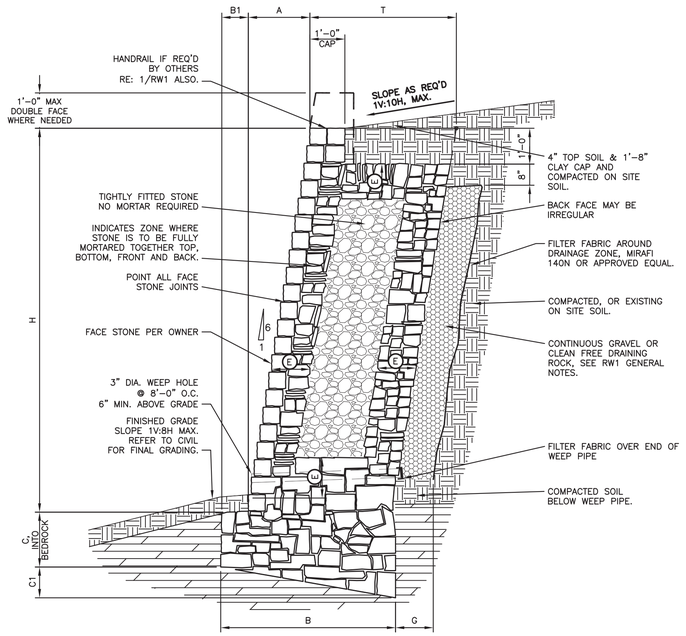
11-28-18 DATE
Aaron M. Berkes NAME

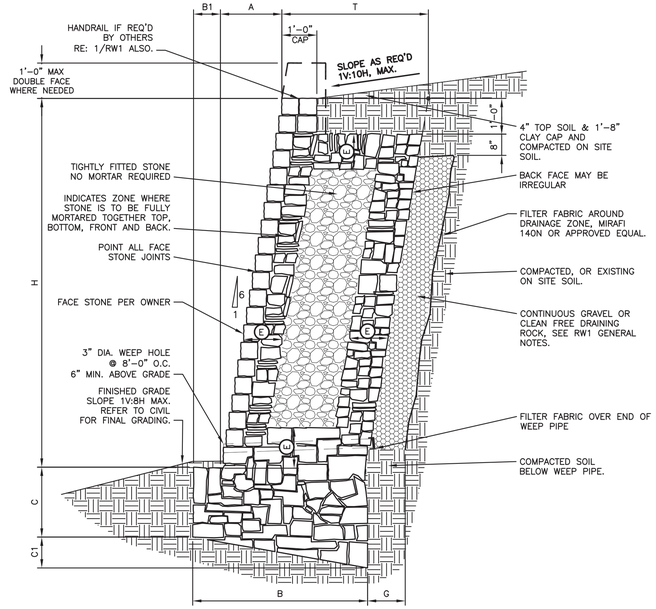
STATE OF TEXAS
AARON M. BERKES
107154
LICENSED
PROFESSIONAL ENGINEER
11-28-18

PM	AMB
DESIGNED	AMB
DRAFTED	EJC
CHECKED	AMB
PROJECT NO.	3-00585

DRAWING NO.
C243

Z:\2018 JOBS\304.18 RAIDER WAY ROAD IMPROVEMENTS\FEI PLANS WITH WALKER PARTNERS TITLE BLOCK\304.18 RW1 (WP C256).DWG, MODEL, 11/28/2018 5:46:21 PM, ########





MASONRY WALL SCHEDULE
4000 psf – BEARING CAPACITY (BEARING ON BEDROCK SEE GENERAL NOTES SHEET RW1)

WALL HEIGHT H	BASE WIDTH B	TOE B1	BASE DEPTH (TOE) C	BASE DEPTH (HEEL) C1	BATTER A	FULLY MORTARED ZONE E	THICKNESS OF WALL T	DRAINAGE ZONE THICKNESS G	BEARING CAPACITY
1'–0"	1'–0"	0'–0"	0'–6"	0'–2"	0'–2"	FULLY MORTARED	1'–0"	1'–0"	4000 psf
2'–0"	1'–0"	0'–0"	0'–6"	0'–2"	0'–4"	FULLY MORTARED	1'–0"	1'–0"	
3'–0"	1'–5"	0'–3"	0'–9"	0'–3"	0'–6"	FULLY MORTARED	1'–2"	1'–0"	
4'–0"	1'–10"	0'–4"	0'–9"	0'–4"	0'–8"	FULLY MORTARED	1'–6"	1'–0"	
5'–0"	2'–5"	0'–5"	1'–0"	0'–5"	0'–10"	0'–8"	2'–0"	1'–0"	
6'–0"	2'–10"	0'–6"	1'–0"	0'–6"	1'–0"	0'–10"	2'–4"	1'–0"	
7'–0"	3'–4"	0'–7"	1'–0"	0'–7"	1'–2"	0'–10"	2'–9"	1'–0"	
8'–0"	3'–10"	0'–8"	1'–3"	0'–8"	1'–4"	1'–0"	3'–2"	1'–0"	
9'–0"	4'–4"	0'–9"	1'–3"	0'–9"	1'–6"	1'–0"	3'–7"	1'–0"	

WALL DESIGN CRITERIA

BEARING Qa	SLOPE TOP β	SLOPE BOT β1	ACTIVE PRESSURE Φa	PASSIVE PRESSURE Φp	FRICTION ANGLE BASE δ	SLOPE OF BACK OF WALL α	SURCHARGE q
4000PSF	5.71 deg	7.13 deg	28 deg	400 PSF	23 deg	99.46 deg	0 psf

USE THIS SCHEDULE FOR 2/RW2

MASONRY WALL SCHEDULE
2500 psf – BEARING CAPACITY (HARD NATURAL UNDISTURBED SOILS SEE GENERAL NOTES SHEET RW1)

WALL HEIGHT H	BASE WIDTH B	TOE B1	BASE DEPTH (TOE) C	BASE DEPTH (HEEL) C1	BATTER A	FULLY MORTARED ZONE E	THICKNESS OF WALL T	DRAINAGE ZONE THICKNESS G	BEARING CAPACITY
1'–0"	1'–0"	0'–0"	1'–0"	0'–2"	0'–2"	FULLY MORTARED	1'–0"	1'–0"	2500 psf
2'–0"	1'–2"	0'–2"	1'–0"	0'–3"	0'–4"	FULLY MORTARED	1'–0"	1'–0"	
3'–0"	1'–5"	0'–3"	1'–3"	0'–3"	0'–6"	FULLY MORTARED	1'–2"	1'–0"	
4'–0"	1'–11"	0'–4"	1'–6"	0'–5"	0'–8"	FULLY MORTARED	1'–7"	1'–0"	
5'–0"	2'–5"	0'–5"	1'–6"	0'–6"	0'–10"	0'–8"	2'–0"	1'–0"	
6'–0"	2'–10"	0'–6"	1'–9"	0'–6"	1'–0"	0'–10"	2'–4"	1'–0"	
7'–0"	3'–3"	0'–7"	2'–0"	0'–8"	1'–2"	0'–10"	2'–8"	1'–0"	
8'–0"	3'–10"	0'–8"	2'–3"	0'–9"	1'–4"	1'–0"	3'–2"	1'–0"	
9'–0"	4'–8"	0'–9"	2'–6"	0'–11"	1'–6"	1'–0"	3'–11"	1'–0"	

WALL DESIGN CRITERIA

BEARING Qa	SLOPE TOP β	SLOPE BOT β1	ACTIVE PRESSURE Φa	PASSIVE PRESSURE Φp	FRICTION ANGLE BASE δ	SLOPE OF BACK OF WALL α	SURCHARGE q
2500PSF	5.71 deg	7.13 deg	28 deg	28 deg	19 deg	99.46 deg	0 psf

USE THIS SCHEDULE FOR 1/RW2

2 RW2 — TYPICAL WALL SECTION
BEARING IN BEDROCK
MAX SLOPE ABOVE WALL 1V:10H
MAX SLOPE BELOW WALL 1V:8H

1 RW2 — TYPICAL WALL SECTION
BEARING IN CLAYEY OR SANDY SOILS
MAX SLOPE ABOVE WALL 1V:10H
MAX SLOPE BELOW WALL 1V:8H

Falkofske Engineering, Inc.
Structural Engineering Consultants
TX Reg. Engineering Firm F-4038
722 North Fielder Road
Arlington, Texas 76012
(817) 261-8300
FEI JOB NO. 304.18

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RETAINING WALL DETAILS

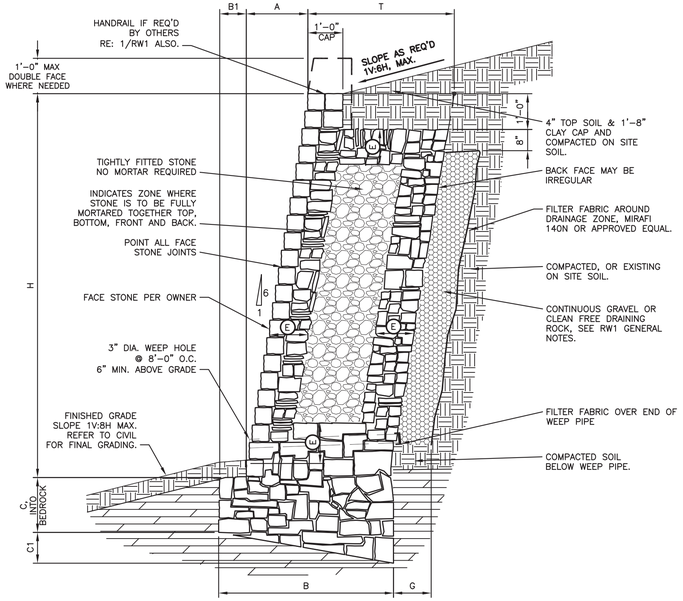
11-28-18 DATE — Aaron M. Berkes NAME

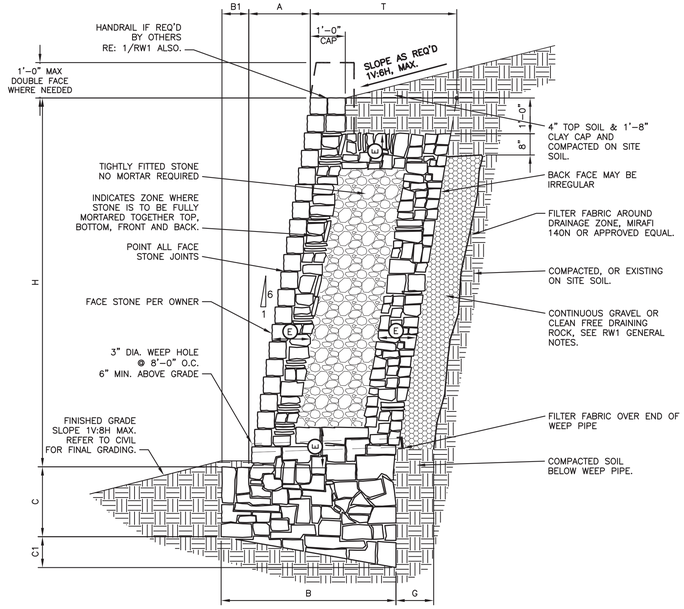
STATE OF TEXAS — AARON M. BERKES — 107154 — LICENSED PROFESSIONAL ENGINEER — 11-28-18

PM	AMB
DESIGNED	AMB
DRAFTED	EJC
CHECKED	AMB
PROJECT NO.	3-00585

DRAWING NO. C244

Z:\2018 JOBS\304.18 RAIDER WAY ROAD IMPROVEMENTS\FEI PLANS WITH WALKER PARTNERS TITLE BLOCK\304.18 RW2 (WIP C257).DWG, MODEL, 11/28/2018 6:13:31 PM, ########





MASONRY WALL SCHEDULE
4000 psf – BEARING CAPACITY (BEARING ON BEDROCK SEE GENERAL NOTES SHEET RW1)

WALL HEIGHT H	BASE WIDTH B	TOE B1	BASE DEPTH (TOE) C	BASE DEPTH (HEEL) C1	BATTER A	FULLY MORTARED ZONE E	THICKNESS OF WALL T	DRAINAGE ZONE THICKNESS G	BEARING CAPACITY
1'-0"	1'-0"	0'-0"	0'-6"	0'-2"	0'-2"	FULLY MORTARED	1'-0"	1'-0"	4000 psf
2'-0"	1'-2"	0'-2"	0'-6"	0'-3"	0'-4"	FULLY MORTARED	1'-0"	1'-0"	
3'-0"	1'-6"	0'-3"	0'-9"	0'-4"	0'-6"	FULLY MORTARED	1'-3"	1'-0"	
4'-0"	1'-10"	0'-4"	0'-9"	0'-5"	0'-8"	FULLY MORTARED	1'-6"	1'-0"	
5'-0"	2'-6"	0'-5"	1'-0"	0'-6"	0'-10"	0'-8"	2'-1"	1'-0"	
6'-0"	3'-0"	0'-6"	1'-0"	0'-7"	1'-0"	0'-10"	2'-6"	1'-0"	
7'-0"	3'-6"	0'-7"	1'-0"	0'-8"	1'-2"	0'-10"	2'-11"	1'-0"	

WALL DESIGN CRITERIA

BEARING Qa	SLOPE TOP β	SLOPE BOT β1	ACTIVE PRESSURE Ka	PASSIVE PRESSURE Kp	FRICTION ANGLE BASE δ	SLOPE OF BACK OF WALL α	SURCHARGE q
4000PSF	9.46 deg	7.13 deg	28 deg	400 PSF	23 deg	99.46 deg	0 psf

USE THIS SCHEDULE FOR 2/RW3

MASONRY WALL SCHEDULE
2500 psf – BEARING CAPACITY (HARD NATURAL UNDISTURBED SOILS SEE GENERAL NOTES SHEET RW1)

WALL HEIGHT H	BASE WIDTH B	TOE B1	BASE DEPTH (TOE) C	BASE DEPTH (HEEL) C1	BATTER A	FULLY MORTARED ZONE E	THICKNESS OF WALL T	DRAINAGE ZONE THICKNESS G	BEARING CAPACITY
1'-0"	1'-0"	0'-0"	1'-0"	0'-2"	0'-2"	FULLY MORTARED	1'-0"	1'-0"	2500 psf
2'-0"	1'-2"	0'-2"	1'-0"	0'-3"	0'-4"	FULLY MORTARED	1'-0"	1'-0"	
3'-0"	1'-6"	0'-3"	1'-3"	0'-4"	0'-6"	FULLY MORTARED	1'-3"	1'-0"	
4'-0"	2'-0"	0'-4"	1'-6"	0'-4"	0'-8"	FULLY MORTARED	1'-8"	1'-0"	
5'-0"	2'-6"	0'-5"	1'-6"	0'-6"	0'-10"	0'-8"	2'-1"	1'-0"	
6'-0"	3'-0"	0'-6"	1'-9"	0'-7"	1'-0"	0'-10"	2'-6"	1'-0"	
7'-0"	3'-7"	0'-7"	2'-0"	0'-8"	1'-2"	0'-10"	3'-0"	1'-0"	

WALL DESIGN CRITERIA

BEARING Qa	SLOPE TOP β	SLOPE BOT β1	ACTIVE PRESSURE Ka	PASSIVE PRESSURE Kp	FRICTION ANGLE BASE δ	SLOPE OF BACK OF WALL α	SURCHARGE q
2500PSF	9.46 deg	7.13 deg	28 deg	28 deg	19 deg	99.46 deg	0 psf

USE THIS SCHEDULE FOR 1/RW3

2 / RW3 — TYPICAL WALL SECTION
BEARING IN BEDROCK
MAX SLOPE ABOVE WALL 1V:6H

1 / RW3 — TYPICAL WALL SECTION
BEARING IN CLAYEY OR SANDY SOILS
MAX SLOPE ABOVE WALL 1V:6H

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Arlington, Texas 76012
(817) 261-8300
FEI JOB NO. 304.18

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RETAINING WALL DETAILS

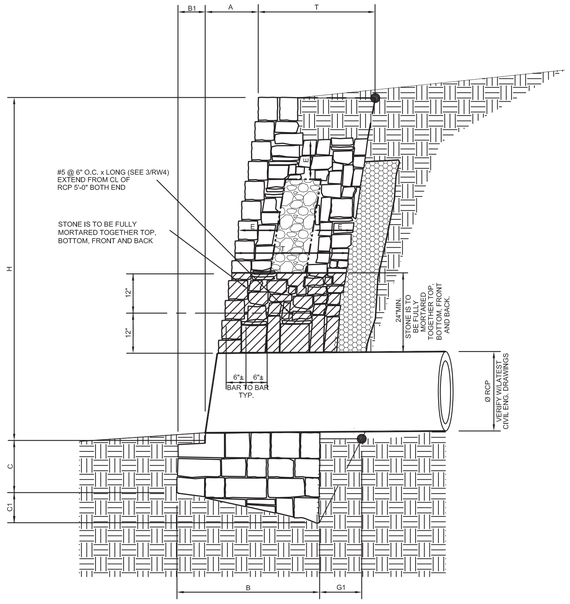
11-28-18 DATE — Aaron M. Berkes NAME

STATE OF TEXAS — AARON M. BERKES — 107154 — LICENSED PROFESSIONAL ENGINEER — 11-28-18

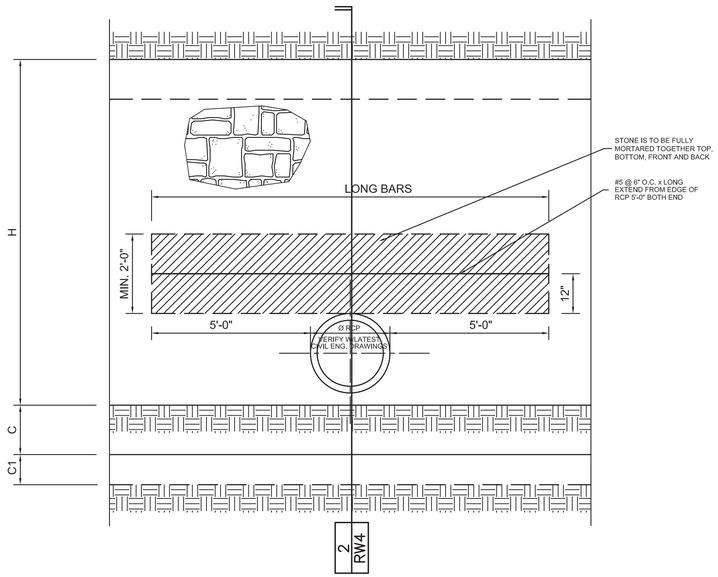
PM	AMB
DESIGNED	AMB
DRAFTED	EJC
CHECKED	AMB
PROJECT NO.	3-00585

DRAWING NO. C245

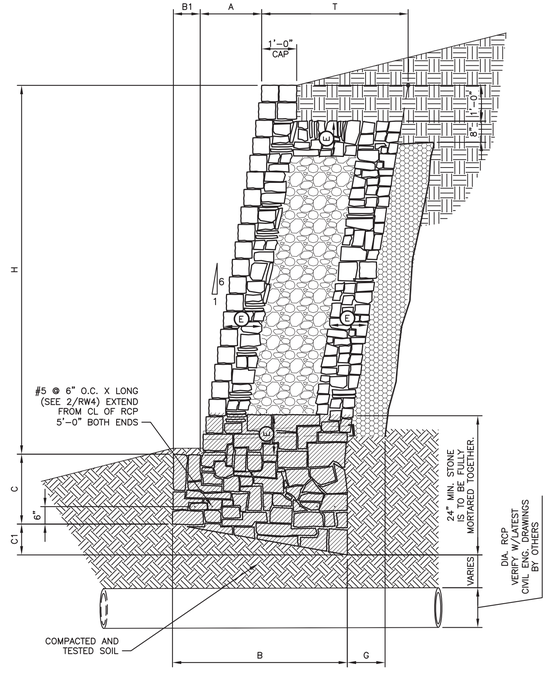
Z:\2018 JOBS\304.18 RAIDER WAY ROAD IMPROVEMENTS\FEI PLANS WITH WALKER PARTNERS TITLE BLOCK\304.18 RW3 (WIP C258).DWG, MODEL, 11/28/2018 5:48:44 PM, ########



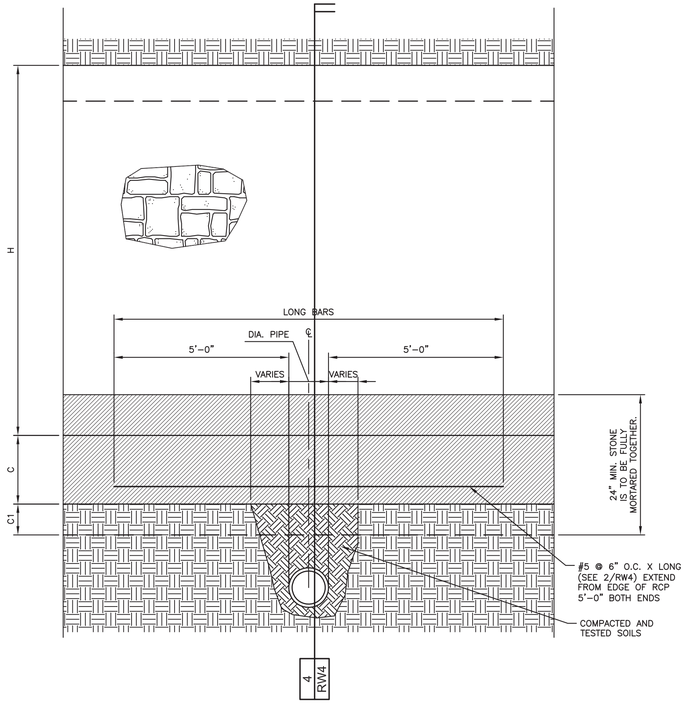
2 / RW4 WALL SECTION W/RCP



1 / RW4 WALL ELEVATION W/RCP



4 / RW4 WALL SECTION W/RCP BELOW WALL



3 / RW4 WALL ELEVATION W/RCP BELOW WALL

Falkofske Engineering, Inc.
Structural Engineering Consultants
TX Reg. Engineering Firm F-4038
722 North Fielder Road
Arlington, Texas 76012
(817) 261-8300
FEI JOB NO. 304.18

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RETAINING WALL DETAILS

11-28-18 DATE — Aaron M. Berkes NAME

STATE OF TEXAS — AARON M. BERKES — 107154 — LICENSED PROFESSIONAL ENGINEER — 11-28-18

PM	AMB
DESIGNED	AMB
DRAFTED	EJC
CHECKED	AMB
PROJECT NO.	3-00585

DRAWING NO. C246

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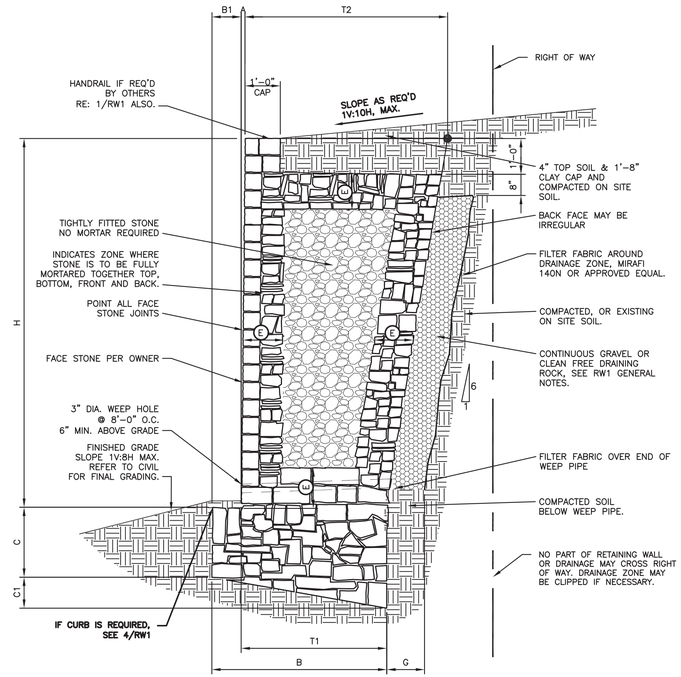


MASONRY WALL SCHEDULE
1500 psf – BEARING CAPACITY (STIFF NATURAL UNDISTURBED SOILS OR COMPACTED AND TESTED SOILS SEE GENERAL NOTES SHEET RW1)

WALL HEIGHT H	BASE WIDTH B	TOE B1	BASE DEPTH (TOE) C	BASE DEPTH (HEEL) C1	BATTER A	FULLY MORTARED ZONE E	THICKNESS OF WALL T1	THICKNESS OF WALL T2	DRAINAGE ZONE THICKNESS G	BEARING CAPACITY
1'-0"	1'-0"	0'-0"	0'-6"	0'-2"	1/4"	FULLY MORTARED	1'-0"	1'-2"	1'-0"	1500 psf
2'-0"	1'-2"	0'-2"	0'-9"	0'-3"	1/2"	FULLY MORTARED	1'-0"	1'-4"	1'-0"	
3'-0"	1'-6"	0'-3"	0'-9"	0'-4"	3/4"	FULLY MORTARED	1'-3"	1'-9"	1'-0"	
4'-0"	2'-1"	0'-5"	1'-0"	0'-5"	1"	FULLY MORTARED	1'-8"	2'-4"	1'-0"	

WALL DESIGN CRITERIA

BEARING Qa	SLOPE TOP β	SLOPE BOT β1	ACTIVE PRESSURE Ka	PASSIVE PRESSURE Kp	FRICTION ANGLE BASE δ	SLOPE OF BACK OF WALL α	SURCHARGE q
1500PSF	5.71 deg	7.13 deg	26 deg	26 deg	17 deg	99.46 deg	0 psf

USE THIS SCHEDULE FOR 1/RW5

1 RW5 TYPICAL VERTICAL WALL SECTION - 1V:10H MAX SLOPE ABOVE WALL
BEARING IN CLAYEY OR SANDY SOILS

FALKOFSKE ENGINEERING
Falkofske Engineering, Inc.
Structural Engineering Consultants
TX Reg. Engineering Firm F-4038
722 North Fielder Road
Arlington, Texas 76012
(817) 261-8300
FEI JOB NO. 304.18

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RETAINING WALL DETAILS

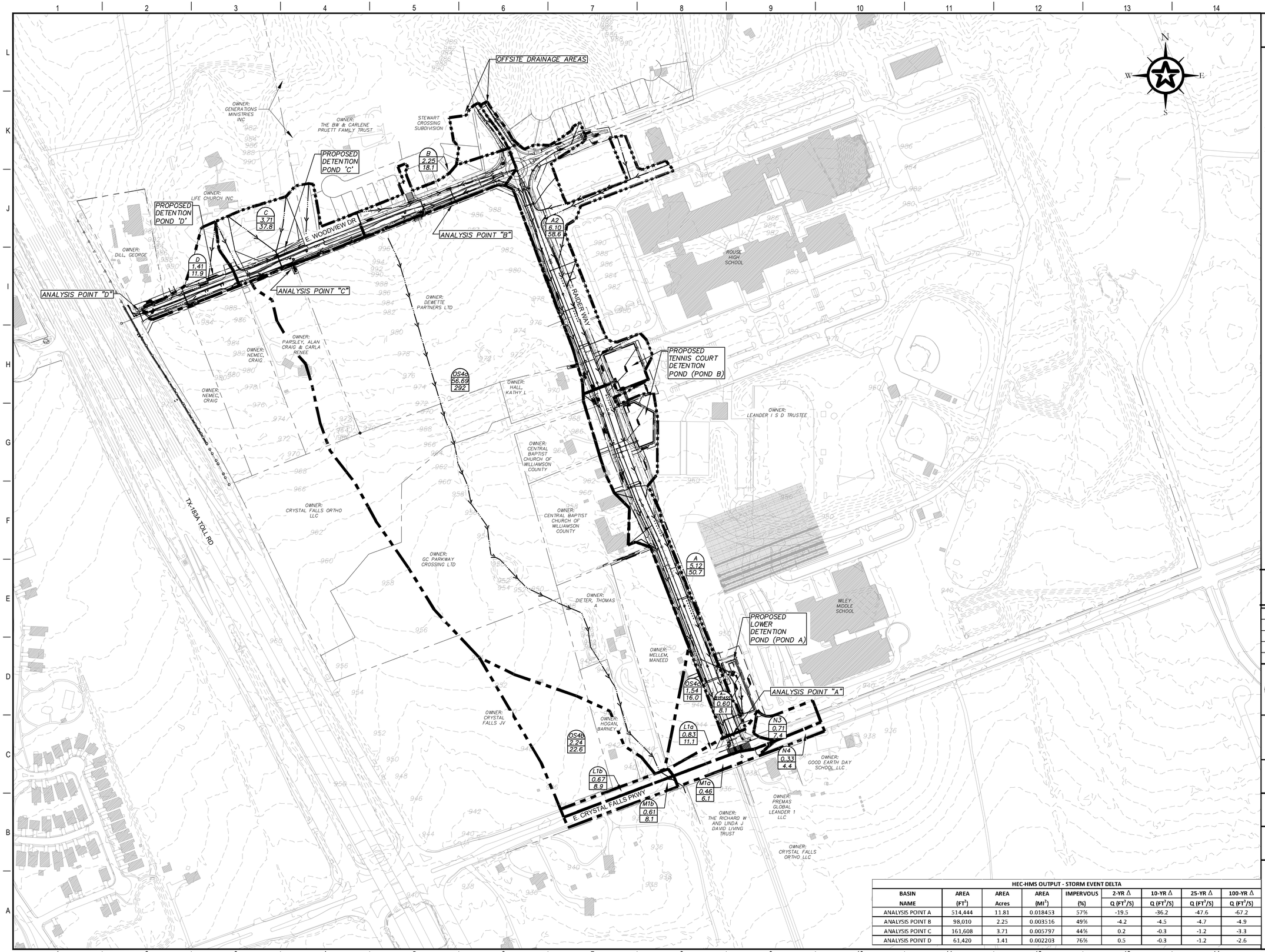
11-28-18 DATE
Aaron M. Berkes NAME

STATE OF TEXAS
AARON M. BERKES
107154
LICENSED PROFESSIONAL ENGINEER
11-28-18

PM	AMB
DESIGNED	AMB
DRAFTED	EJC
CHECKED	AMB
PROJECT NO.	3-00585

DRAWING NO.
C247

Z:\2018 JOBS\304.18 RAIDER WAY ROAD IMPROVEMENTS\FEI PLANS WITH WALKER PARTNERS TITLE BLOCK\304.18 RW5 (WIP C260).DWG, MODEL, 11/28/2018 5:50:47 PM, ########



LEGEND

BOUNDARY DESCRIPTIONS

- DRAINAGE BASIN BOUNDARY
- DRAINAGE AREA BOUNDARY
- DRAINAGE SUB-AREA BOUNDARY
- TIME OF CONCENTRATION (ALTERNATE FLOW PATH)
- OTHER FLOW PATH

SUB-AREA DESCRIPTION

A 1 a
- DRAINAGE SUB-AREA ID
- DRAINAGE AREA ID
- DRAINAGE BASIN ID

SUB-AREA LABELS

A / 0.45 / 1.50
- DRAINAGE SUB-AREA DESIGNATION
- AREA IN ACRES
- "Q" 100-YEAR STORM (CFS) RATIONAL METHOD

0 100 200 400
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

HEC-HMS OUTPUT - STORM EVENT DELTA

BASIN NAME	AREA (FT^2)	AREA Acres	AREA (MI^2)	IMPERVOUS (%)	2-YR Δ Q (FT^3/S)	10-YR Δ Q (FT^3/S)	25-YR Δ Q (FT^3/S)	100-YR Δ Q (FT^3/S)
ANALYSIS POINT A	514,444	11.81	0.018453	57%	-19.5	-36.2	-47.6	-67.2
ANALYSIS POINT B	98,010	2.25	0.003516	49%	-4.2	-4.5	-4.7	-4.9
ANALYSIS POINT C	161,608	3.71	0.005797	44%	0.2	-0.3	-1.2	-3.3
ANALYSIS POINT D	61,420	1.41	0.002203	76%	0.5	-0.3	-1.2	-2.6

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

OVERALL DRAINAGE AREA MAP

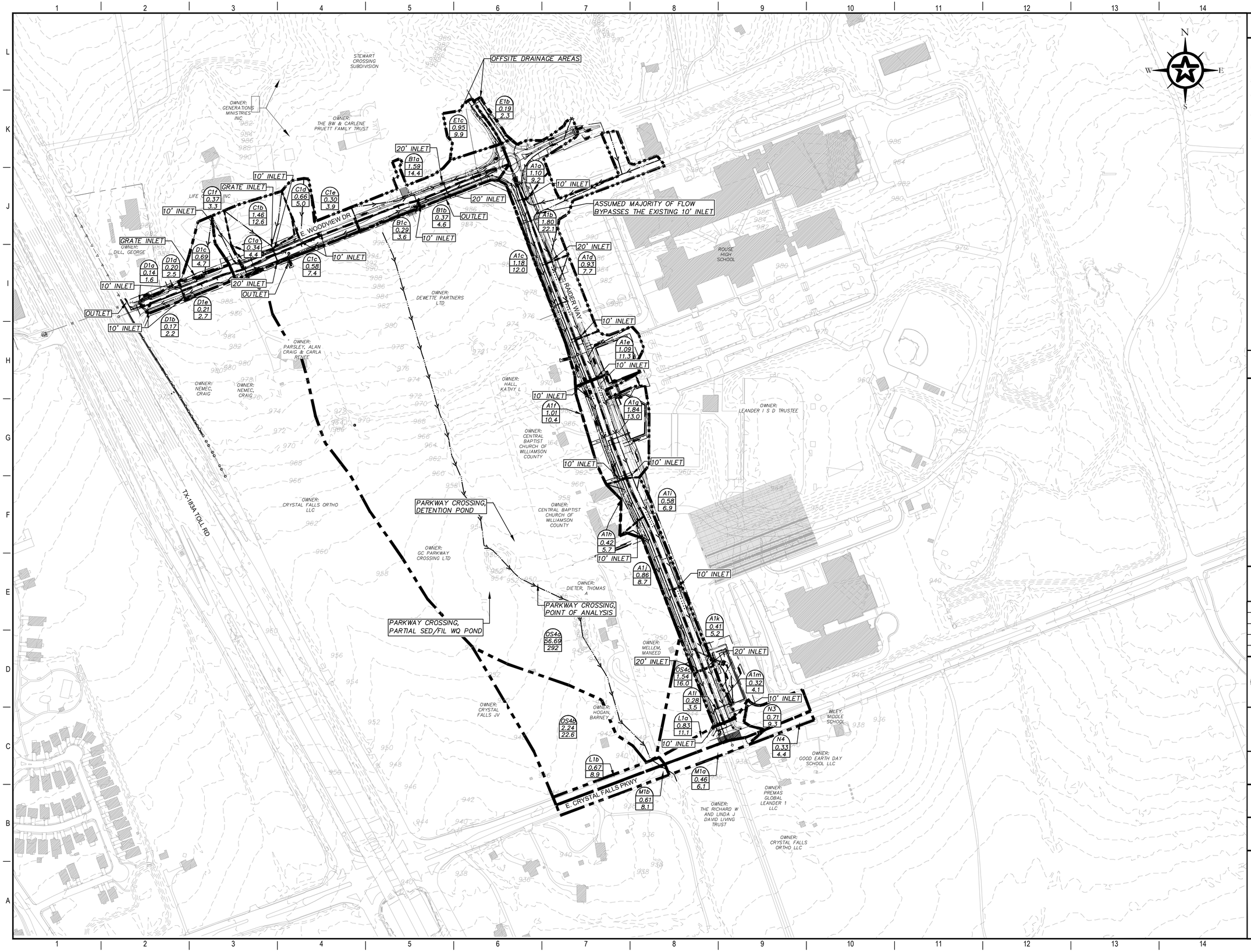
3/30/2023
DATE

DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C300

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DRAINAGEMAP.DWG, C300 OVERALL DRAINAGE AREA MAP, 3/29/2023 3:57:58 PM, pthomas



LEGEND

BOUNDARY DESCRIPTIONS

- DRAINAGE BASIN BOUNDARY
- DRAINAGE AREA BOUNDARY
- DRAINAGE SUB-AREA BOUNDARY
- TIME OF CONCENTRATION (ALTERNATE FLOW PATH)
- OTHER FLOW PATH

SUB-AREA DESCRIPTION

A 1 9
- DRAINAGE SUB-AREA ID
- DRAINAGE AREA ID
- DRAINAGE BASIN ID

SUB-AREA LABELS

A
0.45
1.50
- DRAINAGE SUB-AREA DESIGNATION
- AREA IN ACRES
- "Q" 100-YEAR STORM (CFS) RATIONAL METHOD

GENERAL NOTES

1. PARKWAY CROSSING POND IS DESIGNED FOR 55.72 ACRES.
2. PARKWAY CROSSING POND CURRENTLY ACCEPTS 51.79 ACRES.
3. PARKWAY CROSSING POND CONTAINS 3.93 ACRES EXCESS CAPACITY.

0 100 200 400
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

INTERNAL DRAINAGE AREA MAP

3/30/2023
DATE

David P. Smith
DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C301

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DRAINAGEMAP.DWG, INTERNAL DRAINAGE AREA MAP, 3/29/2023 3:58:03 PM, pthomas

RAIDER WAY - CURB INLETS ON GRADE (Type G-1) CALCULATION SUMMARY: 25 YEAR

Inlet No.	Drainage Area	Q_{25}	Q_{pass}	Q_a	Slope %	Gutter Depression a (ft.)	Water Depth y_0 (ft.)	Ponded Width (ft.)	Reduction Factor	Q_a/L_a	L_a	Inlet Length (ft.)	L/L_a	ratio of gutter depression to gutter water depth	Q/Q_a	Q	Q_{pass} (Q_a-Q)	Remarks
I3-A1a	A1a	6.23	0.00	6.23	2.46	0.58	0.24	12.1	1.0	0.83	7.47	10	1.34	2.40	1.00	6.23	0.00	Bypasses to I2-A1b
I4-A1b	A1b	14.94	0.00	14.94	2.46	0.58	0.34	16.8	1.0	1.06	14.10	20	1.42	1.73	1.00	14.94	0.00	Bypasses to I7-A1d
I5-A1d	A1d	5.15	0.00	5.15	1.75	0.58	0.24	12.0	1.0	0.63	8.14	10	1.23	2.42	1.00	5.15	0.00	Bypasses to I5-A1e
I7-A1e	A1e	7.52	0.00	7.52	2.59	0.58	0.26	12.9	1.0	0.70	10.74	10	0.93	2.26	0.99	7.46	0.06	Bypasses to I6-A1g
I8-A1g	A1g	13.05	0.06	8.65	1.34	0.58	0.31	15.3	1.0	0.93	9.34	10	1.07	1.89	1.00	8.65	0.00	Bypasses to I8-A1i
I11-A1i	A1i	6.89	0.30	7.19	1.10	0.58	0.30	14.8	1.0	0.80	8.15	10	1.23	1.95	1.00	7.19	0.00	Bypasses to I12-A1k
I13-A1k	A1k	5.20	0.00	5.20	1.10	0.58	0.26	13.1	1.0	0.73	7.11	10	1.41	2.21	1.00	5.20	0.00	Bypasses to I12-A1m
I15-A1m	A1m	4.09	0.00	4.09	1.57	0.58	0.22	11.2	1.0	0.57	7.16	10	1.40	2.58	1.00	4.09	0.00	Bypasses to existing inlet in Crystal Falls Pkwy
I6-A1c	A1c	8.12	0.00	8.12	2.59	0.58	0.26	13.2	1.0	0.73	11.09	10	0.90	2.19	0.98	8.00	0.12	Bypasses to I3-A1f
I9-A1f	A1f	6.97	0.12	7.10	1.34	0.58	0.28	14.2	1.0	0.83	8.60	10	1.16	2.04	1.00	7.10	0.00	Bypasses to I9-A1h
I10-A1h	A1h	3.91	0.00	3.91	1.10	0.58	0.24	11.8	1.0	0.62	6.31	10	1.58	2.46	1.00	3.91	0.00	Bypasses to I10-A1j
I12-A1j	A1j	5.91	0.00	5.91	1.10	0.58	0.28	13.8	1.0	0.79	7.51	10	1.33	2.10	1.00	5.91	0.00	Bypasses to I11-A1l
I14-A1l	A1l	2.37	0.00	2.37	1.57	0.58	0.18	9.2	1.0	0.26	5.69	10	1.76	3.17	1.00	2.37	0.00	Bypasses to existing inlet in Crystal Falls Pkwy

EAST WOODVIEW DRIVE - CURB INLETS ON GRADE (Type G-1) CALCULATION SUMMARY: 25 YEAR

Inlet No.	Drainage Area	Q_{25}	Q_{pass}	Q_a	Slope %	Gutter Depression a (ft.)	Water Depth y_0 (ft.)	Ponded Width (ft.)	Reduction Factor	Q_a/L_a	L_a	Inlet Length (ft.)	L/L_a	ratio of gutter depression to gutter water depth	Q/Q_a	Q	Q_{pass} (Q_a-Q)	Remarks
I2-B1c	B1c	2.44	0.00	2.44	2.03	0.58	0.18	6.2	1.0	0.39	6.21	10	1.61	1.23	1.00	2.44	0.00	Bypasses to I2-B1b
I4-C1d	C1d	3.30	0.00	3.30	1.30	0.58	0.21	8.1	1.0	0.53	6.18	10	1.62	1.23	1.00	3.30	0.00	Bypasses to I1-C1a
I5-C1e	C1e	2.65	0.00	2.65	1.30	0.58	0.20	7.3	1.0	0.47	5.63	10	1.77	1.23	1.00	2.65	0.00	Bypasses to I4-C1d
I6-C1f	C1f	2.22	0.00	2.22	1.30	0.58	0.19	6.6	1.0	0.42	5.23	10	1.91	1.23	1.00	2.22	0.00	Bypasses to I1-C1a
I1-D1a	D1a	1.06	0.00	1.06	2.09	0.58	0.13	6.4	1.0	0.24	4.42	10	2.26	1.23	1.00	1.06	0.00	Bypasses to CTRMA Channel
I2-D1b	D1b	1.50	0.00	1.50	2.09	0.58	0.15	7.3	1.0	0.29	5.12	10	1.95	1.23	1.00	1.50	0.00	Bypasses to CTRMA Channel
I4-D1d	D1d	1.68	0.00	1.68	2.09	0.58	0.15	7.6	1.0	0.31	5.36	10	1.86	1.23	1.00	1.68	0.00	Bypasses to I1-D1a
I5-D1e	D1e	1.86	0.00	1.86	2.09	0.58	0.16	7.9	1.0	0.33	5.59	10	1.79	1.23	1.00	1.86	0.00	Bypasses to I2-D1b

EAST WOODVIEW DRIVE - CURB INLETS IN SUMPS (Type S-1) CALCULATION SUMMARY: 25 YEAR

Inlet No.	Drainage Area	Q_{25}	Q_{pass}	Q_a	Slope %	Gutter Depression a (ft.)	Water Depth y_0 (ft.)	Ponded Width (ft.)	Reduction Factor	Inlet Length (ft.)	Q_{WEIR}	Q_{PASS}	$Q_{ORIFICE}$	Q_{PASS}	SX	Z	REMARKS
I1-B1a	B1a	9.59	0	9.59	1.60	0.58	0.31	12.78	1.00	20	13.35	-3.76	52.78	0	0.02	50	100% CAPTURED
I2-B1b	B1b	3.11	0	3.11	1.60	0.58	0.20	7.47	1.00	20	7.80	-4.70	49.53	0	0.02	50	100% CAPTURED
I2-C1a	C1a	3.01	0	3.01	1.30	0.58	0.21	7.74	1.00	10	4.52	-1.52	24.85	0	0.02	50	100% CAPTURED
I3-C1c	C1c	5.00	0	5.00	1.30	0.58	0.25	9.92	1.00	20	10.36	-5.36	51.05	0	0.02	50	100% CAPTURED

G1 25-YR INLET CALCULATIONS

RAIDER WAY - CURB INLETS ON GRADE (Type G-1) CALCULATION SUMMARY: 100 YEAR

Inlet No.	Drainage Area	Q_{100}	Q_{pass}	Q_a	Slope %	Gutter Depression a (ft.)	Water Depth y_0 (ft.)	Ponded Width (ft.)	Reduction Factor	Q_a/L_a	L_a	Inlet Length (ft.)	L/L_a	ratio of gutter depression to gutter water depth	Q/Q_a	Q	Q_{pass} (Q_a-Q)	Remarks
I3-A1a	A1a	9.25	0.00	9.25	2.46	0.58	0.28	14.0	1.0	1.05	8.82	10	1.13	2.07	1.00	9.25	0.00	Bypasses to I2-A1b
I4-A1b	A1b	22.10	0.00	22.10	2.46	0.58	0.39	19.4	1.0	1.33	16.62	20	1.20	1.49	1.00	22.10	0.00	Bypasses to I7-A1d
I5-A1d	A1d	7.71	0.00	7.71	1.75	0.58	0.28	14.0	1.0	0.80	9.65	10	1.04	2.08	1.00	7.71	0.00	Bypasses to I5-A1e
I7-A1e	A1e	11.27	0.00	11.27	2.59	0.58	0.30	15.0	1.0	0.89	12.72	10	0.79	1.94	0.94	10.57	0.70	Bypasses to I6-A1g
I8-A1g	A1g	13.05	0.70	13.75	1.34	0.58	0.36	18.2	1.0	1.21	11.35	10	0.88	1.59	0.98	13.45	0.30	Bypasses to I8-A1i
I11-A1i	A1i	6.89	0.30	7.19	1.10	0.58	0.30	14.8	1.0	0.80	8.15	10	1.23	1.95	1.00	7.19	0.00	Bypasses to I12-A1k
I13-A1k	A1k	5.20	0.00	5.20	1.10	0.58	0.26	13.1	1.0	0.73	7.11	10	1.41	2.21	1.00	5.20	0.00	Bypasses to I12-A1m
I15-A1m	A1m	4.09	0.00	4.09	1.57	0.58	0.22	11.2	1.0	0.57	7.16	10	1.40	2.58	1.00	4.09	0.00	Bypasses to existing inlet in Crystal Falls Pkwy
I6-A1c	A1c	11.98	0.00	11.98	2.59	0.58	0.31	15.3	1.0	0.92	13.05	10	0.77	1.90	0.93	11.10	0.88	Bypasses to I3-A1f
I9-A1f	A1f	10.45	0.88	11.32	1.34	0.58	0.34	17.0	1.0	1.08	10.46	10	0.96	1.71	1.00	11.28	0.04	Bypasses to I9-A1h
I10-A1h	A1h	5.74	0.04	5.78	1.10	0.58	0.27	13.7	1.0	0.78	7.43	10	1.35	2.12	1.00	5.78	0.00	Bypasses to I10-A1j
I12-A1j	A1j	8.72	0.00	8.72	1.10	0.58	0.32	15.9	1.0	0.99	8.83	10	1.13	1.82	1.00	8.72	0.00	Bypasses to I11-A1l
I14-A1l	A1l	3.50	0.00	3.50	1.57	0.58	0.21	10.6	1.0	0.39	6.70	10	1.49	2.74	1.00	3.50	0.00	Bypasses to existing inlet in Crystal Falls Pkwy

EAST WOODVIEW DRIVE - CURB INLETS ON GRADE (Type G-1) CALCULATION SUMMARY: 100 YEAR

Inlet No.	Drainage Area	Q_{100}	Q_{pass}	Q_a	Slope %	Gutter Depression a (ft.)	Water Depth y_0 (ft.)	Ponded Width (ft.)	Reduction Factor	Q_a/L_a	L_a	Inlet Length (ft.)	L/L_a	ratio of gutter depression to gutter water depth	Q/Q_a	Q	Q_{pass} (Q_a-Q)	Remarks
I2-B1c	B1c	3.60	0.00	3.60	2.03	0.58	0.20	7.6	1.0	0.49	7.32	10	1.37	1.23	1.00	3.60	0.00	Bypasses to I2-B1b
I4-C1d	C1d	5.04	0.00	5.04	1.30	0.58	0.25	10.0	1.0	0.68	7.38	10	1.36	1.23	1.00	5.04	0.00	Bypasses to I1-C1a
I5-C1e	C1e	3.91	0.00	3.91	1.30	0.58	0.23	8.8	1.0	0.59	6.63	10	1.51	1.23	1.00	3.91	0.00	Bypasses to I4-C1d
I6-C1f	C1f	3.34	0.00	3.34	1.30	0.58	0.22	8.2	1.0	0.54	6.21	10	1.61	1.23	1.00	3.34	0.00	Bypasses to I1-C1a
I1-D1a	D1a	1.57	0.00	1.57	2.09	0.58	0.15	7.4	1.0	0.30	5.21	10	1.92	1.23	1.00	1.57	0.00	Bypasses to CTRMA Channel
I2-D1b	D1b	2.21	0.00	2.21	2.09	0.58	0.17	8.5	1.0	0.37	6.02	10	1.66	1.23	1.00	2.21	0.00	Bypasses to CTRMA Channel
I4-D1d	D1d	2.48	0.00	2.48	2.09	0.58	0.18	8.8	1.0	0.39	6.32	10	1.58	1.23	1.00	2.48	0.00	Bypasses to I1-D1a
I5-D1e	D1e	2.73	0.00	2.73	2.09	0.58	0.18	9.2	1.0	0.42	6.58	10	1.52	1.23	1.00	2.73	0.00	Bypasses to I2-D1b

EAST WOODVIEW DRIVE - CURB INLETS IN SUMPS (Type S-1) CALCULATION SUMMARY: 100 YEAR

Inlet No.	Drainage Area	Q_{100}	Q_{pass}	Q_a	Slope %	Gutter Depression a (ft.)	Water Depth y_0 (ft.)	Ponded Width (ft.)	Reduction Factor	Inlet Length (ft.)	Q_{WEIR}	Q_{PASS}	$Q_{ORIFICE}$	Q_{PASS}	SX	Z	REMARKS
I1-B1a	B1a	14.40	0	14.40	2.03	0.58	0.34	14.54	1.00	20	15.18	-0.78	53.82	0	0.02	50	100% CAPTURED
I2-B1b	B1b	4.59	0	4.59	2.03	0.58	0.22	8.55	1.00	20	8.93	-4.34	50.21	0	0.02	50	100% CAPTURED
I2-C1a	C1a	4.43	0	4.43	1.30	0.58	0.24	9.36	1.00	10	5.47	-1.04	25.35	0	0.02	50	100% CAPTURED
I3-C1c	C1c	7.37	0	7.37	1.30	0.58	0.29	11.89	1.00	20	12.42	-5.04	52.25	0	0.02	50	100% CAPTURED

A1 100-YR INLET CALCULATIONS

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRAINAGE CALCULATIONS

3/30/2023
DATE

DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C302

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DRAINAGEMAP.DWG, DRAINAGE CALCULATIONS, 3/29/2023 3:58:04 PM, pthomas

HEC-HMS OUTPUT - EXISTING

BASIN NAME	AREA (FT^2)	AREA Acres	AREA (MI^2)	IMPERVOUS (%)	PERVIOUS (%)	T_C (min)	2-YR Q (FT^3/S)	10-YR Q (FT^3/S)	25-YR Q (FT^3/S)	100-YR Q (FT^3/S)
A	493,534.80	11.82	0.018469	29%	71%	26.8	28.8	48.7	62.4	85.7
B	84,070.80	2.12	0.003313	31%	69%	7.5	7.9	13.2	16.8	23.0
C	166,399.20	3.82	0.005969	34%	66%	10.6	14.1	23.6	30.1	41.1
D	58,806.00	1.35	0.002109	38%	62%	10.9	5.0	8.3	10.6	14.4

SCS TYPE "D" SOILS
SCS CURVE NUMBER - 84
SCS UNIT HYDROGRAPH METHOD
HEC-HMS FREQUENCY STORM RAINFALL DISTRIBUTION

DEPTH DURATION FREQUENCY RAINFALL								
Year	5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR
2	0.511	1.02	1.88	2.30	2.54	2.97	3.43	3.92
10	0.766	1.53	2.82	3.58	4.05	4.85	5.60	6.36
25	0.943	1.88	3.47	4.51	5.18	6.28	7.23	8.16
100	1.25	2.48	4.59	6.19	7.27	8.97	10.3	11.5

I1 EXISTING: HEC-HMS CALCULATIONS

RATIONAL METHOD FLOW CALCULATIONS: EXISTING CONDITIONS

BASIN NAME	AREA (AC)	IMPERVOUS %	PERVIOUS %	T_C (MIN)	2-YR C	2-YR I	2-YR Q	10-YR C	10-YR I	10-YR Q	25-YR C	25-YR I	25-YR Q	100-YR C	100-YR I	100-YR Q
A	11.81	30%	70%	26.8	0.43	3.10	15.66	0.49	4.66	27.18	0.54	5.75	36.46	0.61	7.65	55.42
B	2.12	39%	61%	7.5	0.47	5.47	5.45	0.54	8.19	9.32	0.58	10.07	12.40	0.66	13.35	18.64
C	3.82	44%	56%	10.6	0.49	4.84	9.10	0.56	7.24	15.52	0.61	8.90	20.60	0.68	11.80	30.86
D	1.35	43%	57%	10.9	0.49	4.79	3.15	0.56	7.16	5.38	0.60	8.81	7.14	0.68	11.68	10.71

C-Values				
	2	10	25	100
Impervious	0.75	0.83	0.88	0.97
Pervious	0.29	0.35	0.39	0.46

IDF Curve Values			
Year	a	b	c
2	58	11.27	0.805
10	77	10.53	0.775
25	89	10.16	0.759
100	106	9.46	0.732

$I=a/(t+b)^c$

I5 EXISTING: RATIONAL METHOD CALCULATIONS

Label	Upstream Structure	Rise (Unified) (ft)	Flow (cfs)	Length (Unified) (ft)	Velocity (ft/s)	Depth (Normal) (ft)	Depth (Critical) (ft)	Upstream Structure Velocity Head (In-Governing) (ft)	Friction Slope (ft/ft)	Headloss (ft)	Energy Grade Line (In) (ft)	Upstream Structure Headloss Coefficient	Upstream Structure Headloss (ft)	Structure Energy Grade Line (In) (ft)	Structure Hydraulic Grade Line (In) (ft)	Elevation Crown (Start) (ft)	Elevation Ground (Start) (ft)
BY OTHERS (SSL-A)	IX-B1b (SSL-A)	2.0	14.0	181.1	10.54	0.88	1.35	0.60	0.017	3.06	984.95	0.00	0.00	987.09	984.35	985.00	988.12
P4-B1b (SSL-A)	JB1-B1b (SSL-A)	1.5	5.6	76.4	3.17	1.11	0.91	0.16	0.002	0.19	985.00	0.20	0.03	985.04	984.88	983.66	990.37
P5-B1b (SSL-A)	MH1-B1b (SSL-A)	1.5	5.5	95.9	3.12	1.10	0.90	0.15	0.002	0.22	984.67	0.55	0.08	984.76	984.61	983.41	990.65
P3-B1b (SSL-A)	MH-1	1.5	5.7	146.7	8.72	0.59	0.92	0.39	0.012	1.71	986.81	1.00	0.00	986.96	986.42	987.00	989.08
P6-B1b (SSL-A)	MH2-B1b (SSL-A)	1.5	5.4	83.5	3.05	1.07	0.89	0.14	0.002	0.19	984.31	0.55	0.08	984.39	984.24	983.11	990.28
P1-B1a (SSL-A)	I1-B1a (SSL-A)	2.0	12.1	44.6	4.59	1.57	1.25	0.39	0.004	0.16	987.58	0.00	0.00	987.58	987.19	987.75	989.29
P2-B1b (SSL-A)	I2-B1b (SSL-A)	2.0	14.0	19.8	18.76	0.57	1.35	0.60	0.024	0.47	987.45	0.00	0.00	987.45	986.85	987.50	989.07
P8-A1a (SSL-A)	JB2-A1a (SSL-A)	1.5	11.4	310.9	9.96	0.93	1.29	0.77	0.014	4.44	983.42	0.83	0.64	984.06	983.29	982.86	989.05
P7-A1a (SSL-A)	I3-A1a (SSL-A)	1.5	6.4	40.2	12.54	0.49	0.98	0.43	0.056	2.23	986.39	0.00	0.00	986.39	985.96	986.48	988.91
P9-A1b (SSL-A)	I4-A1b (SSL-A)	1.5	22.3	44.0	12.63	(N/A)	1.48	2.48	0.038	1.69	981.40	0.00	0.00	981.40	978.92	977.75	981.38
P10-A1c (SSL-A)	JB3-A1b (SSL-A)	2.0	28.8	362.8	12.22	1.40	1.84	1.40	0.015	5.55	977.75	0.69	0.97	978.72	977.31	976.50	980.93
P11-A1d (SSL-A)	I5-A1d (SSL-A)	1.5	7.8	45.5	4.42	0.62	1.08	0.30	0.005	0.21	972.01	0.00	0.00	972.01	971.71	971.06	974.22
P12-A1d (SSL-A)	JB4-A1c (SSL-A)	2.5	35.8	200.5	7.28	1.40	2.03	0.82	0.006	1.3	971.39	0.35	0.29	971.68	970.85	969.40	973.90
P13-A1c (SSL-A)	I6-A1c (SSL-A)	1.5	12.1	12.5	6.82	0.63	1.32	0.72	0.011	0.14	970.19	0.00	0.00	970.19	969.46	966.83	970.60
P14-A1e (SSL-A)	JB5-A1e (SSL-A)	2.5	46.6	45.5	9.49	2.05	2.25	1.40	0.011	0.5	968.76	0.71	1.00	969.76	968.36	965.80	970.28
P16-A1e (SSL-A)	MH-8	1.5	2.5	36.0	7.44	0.37	0.60	0.22	0.025	0.92	957.32	0.84	0.19	957.51	957.29	958.00	963.00
P18-A1g (SSL-A)	I8-A1g (SSL-A)	1.5	12.7	45.5	13.45	0.79	1.34	0.90	0.027	1.25	957.15	0.00	0.00	957.15	956.24	956.40	959.75
P19-A1f (SSL-A)	I9-A1f (SSL-A)	1.5	10.5	12.6	19.98	0.51	1.25	0.70	0.073	0.92	956.72	0.00	0.00	956.72	956.02	956.27	959.41
P20-A1f (SSL-A)	JB6-A1i (SSL-A)	2.0	23.6	84.5	7.52	1.47	1.72	0.88	0.009	0.79	954.84	0.84	0.74	955.57	954.69	953.50	959.08
P17-A1e (SSL-A)	BEND2 (SSL-A)	1.5	2.5	149.2	7.00	0.38	0.60	0.22	0.005	0.74	956.32	0.23	0.05	956.37	956.15	957.00	962.11
P22-A1h (SSL-A)	I10-A1h (SSL-A)	1.5	5.8	12.5	11.12	0.51	0.93	0.40	0.028	0.35	952.52	0.00	0.00	952.52	952.12	952.68	956.81
P21-A1f (SSL-A)	BEND3 (SSL-A)	2.0	23.5	115.3	7.48	1.69	1.72	0.87	0.009	1.06	953.50	0.23	0.20	953.70	952.83	952.50	957.95
P25-A1i (SSL-A)	I11-A1i (SSL-A)	1.5	6.9	45.5	3.92	0.57	1.02	0.24	0.004	0.17	950.29	0.00	0.00	950.29	950.05	949.85	952.96
P23-A1h (SSL-A)	IXX-10 (SSL-A)	2.5	27.9	88.4	10.03	1.38	1.80	0.52	0.004	0.35	951.91	0.35	0.18	952.09	951.58	951.50	956.49
P26-A1i (SSL-A)	JB7-A1i (SSL-A)	2.5	32.4	286.2	6.60	1.60	1.94	0.68	0.005	1.52	949.79	0.35	0.24	950.03	949.35	947.50	952.63
P24-A1h (SSL-A)	MH 36 (SSL-A)	2.5	27.8	261.7	5.66	1.37	1.80	0.50	0.004	1.02	951.25	0.24	0.12	951.37	950.87	950.50	955.52
P27-A1i (SSL-A)	JB6-A1h (SSL-A)	2.5	31.6	76.4	6.45	2.01	1.92	0.65	0.005	0.39	947.64	0.55	0.36	948.00	947.36	944.70	949.49
P31-A1k (SSL-A)	MH3-A1k (SSL-A)	3.0	40.0	64.7	5.66	2.45	2.06	0.50	0.003	0.2	946.80	0.40	0.20	947.00	946.5	944.30	949.44
P30-A1k (SSL-A)	I87-<DA> (SSL-A)	2.0	11.4	12.0	3.61	0.58	1.21	0.20	0.002	0.03	947.11	0.55	0.11	947.22	947.01	944.08	948.87
P32-A1k (SSL-A)	MH4-A1k (SSL-A)	3.0	39.8	11.0	5.63	1.64	2.05	0.49	0.003	0.03	946.31	0.20	0.10	946.40	945.91	944.10	949.42
P28-A1j (SSL-A)	I12-A1j (SSL-A)	1.5	6.4	55.0	3.59	1.04	0.97	0.20	0.003	0.17	947.72	0.31	0.06	947.79	947.58	945.50	948.55
P29-A1k (SSL-A)	I13-A1k (SSL-A)	2.0	11.4	24.2	3.63	0.62	1.21	0.21	0.002	0.05	947.35	0.59	0.12	947.47	947.27	945.25	948.15
P38-A1m (SSL-A)	I15-A1m (SSL-A)	1.5	0.6	45.5	4.57	0.20	0.30	0.00	0.000	0.00	938.29	0.00	0.00	938.29	938.28	938.50	942.34
P37-A1l (SSL-A)	I14-A1l (SSL-A)	1.5	0.6	12.5	3.81	0.23	0.30	0.00	0.000	0.00	938.29	0.00	0.00	938.29	938.28	938.66	942.34
P39-A1m (SSL-A)	JB10-A1m (SSL-A)	2.5	16.3	78.8	6.49	1.27	1.36	0.23	0.001	0.10	938.22	0.00	0.06	938.23	938.05	938.50	942.02
P85-<DA> (SSL-A)	JB11-A1m (SSL-A)	2.5	17.3	313.0	6.36	1.35	1.41	0.22	0.001	0.46	938.00	0.00	0.12	938.08	937.9	938.10	941.00
P2-C1a (SSL-C)	I2-C1a (SSL-C)	2.0	27.4	56.5	4.56	1.71	1.37	0.32	0.003	0.15	990.96	0.27	0.09	991.05	990.73	989.39	991.34
P1-C1b (SSL-C)	I1-C1b (SSL-C)	1.5	13.6	17.0	7.68	(N/A)	1.37	0.92	0.014	0.24	991.66	0.00	0.00	991.66	990.49	988.93	990.49
P3-C1c (SSL-C)	I3-C1c (SSL-C)	2.0	33.4	14.3	12.64	0.88	1.57	0.78	0.023	0.32	989.60	1.38	1.08	990.68	989.9	989.25	990.95
P4-C1c (SSL-C)	I101-<DA> (SSL-C)	2.0	33.4	2.5	5.56	1.99	1.57	0.71	0.004	0.01	989.28	1.00	0.00	989.28	988.56	988.92	992.00
P2-D1b (SSL-D)	I2-D1b (SSL-D)	1.5	5.0	35.5	2.84	0.67	0.86	0.13	-0.004	-0.16	978.86	0.24	0.03	978.89	978.77	976.21	979.19
P1-D1a (SSL-D)	I1-D1a (SSL-D)	1.5	8.9	19.8	5.04	(N/A)	1.15	0.39	0.003	0.05	979.18	0.20	0.08	979.26	978.87	975.90	978.96
P3-D1b (SSL-D)	JB1-D1a (SSL-D)	1.5	12.9	35.0	7.30	(N/A)	1.35	0.83	0.013	0.45	978.31	0.80	0.66	978.97	978.14	975.80	978.67
P6-D1b (SSL-D)	JB2-D1a (SSL-D)	1.5	12.9	24.6	7.28	1.04	1.35	0.82	0.013	0.31	977.01	0.63	0.52	977.53	976.7	975.50	977.51
P7-D1b (SSL-D)	45 (SSL-D)	1.5	12.8	36.5	7.27	(N/A)	1.35	0.82	0.012	0.45	976.03	0.40	0.33	976.37	975.54	975.04	977.26
CO-2	MH-1	2.0	14.0	10.3	0.00	(N/A)	1.35	0.45	0.004	0.04	987.49	1.00	0.00	986.96	986.42	987.50	989.08
CO-3	MH-2	3.0	321.0	134.0	8.92	(N/A)	2.81	1.24	0.006	0.84	939.06	0.00	0.00	939.06	937.82	937.00	938.00
CO-5	C8-1	1.5	1.0	52.3	0.57	0.26	0.37	0.00	0.000	0.00	938.13	1.00	0.00	938.13	938.12	938.00	942.00
CO-6	MH-5	2.5	15.0	98.3	7.58	1.06	1.31	0.52	0.005	0.49	939.03	0.60	0.31	939.03	938.82	939.70	946.78
CO-7	MH-4	2.5	15.0	78.1	6.38	1.21	1.31	0.27	0.001	0.11	938.39	0.00	0.15	938.48	938.26	938.90	943.60
CO-8	MH-6	2.5	15.0	13.6	3.06	(N/A)	1.31	0.21	0.001	0.02	939.35	1.00	0.00	939.35	939.15	939.70	946.80
CO-9	MH-7	1.5	2.5	95.2	5.26	0.47	0.60	0.22	0.008	0.79	958.32	0.60	0.13	958.46	958.23	959.00	964.00
CO-10	I7-A1e (SSL-A)	3.0	55.0	45.0	7.78	2.29	2.41	0.94	0.006	0.26	967.45	0.27	0.25	967.70	966.76	965.30	970.60

A1 100-YR HGL CALCULATIONS

HEC-HMS OUTPUT - PROPOSED

BASIN NAME	AREA (FT^2)	AREA Acres	AREA (MI^2)	IMPERVOUS (%)	PERVIOUS (%)	T_C (min)	2-YR Q (FT^3/S)	10-YR Q (FT^3/S)	25-YR Q (FT^3/S)	100-YR Q (FT^3/S)
A2	265,716	6.10	0.009531	56%	44%	12.7	21.8	34.6	43.5	58.6
B	98,010	2.25	0.003516	49%	51%	7.0	8.7	14.0	17.7	23.9
B - TO TENNIS POND							5.0	5.4	5.6	5.8
TENNIS POND INFLOW							26.7	39.9	49.0	64.4
TENNIS POND OUTFLOW							2.9	3.4	3.7	4.3
TENNIS POND PEAK STORAGE (ACRE-FEET)							0.97	1.80	2.49	3.90
TENNIS POND PEAK ELEVATION (FT MSL)							962.40	963.54	964.30	965.82
A	223,027	5.12	0.008000	56%	44%	13.8	18.3	29.6	37.4	50.7
LOWER POND INFLOW							20.5	32.3	40.4	54.1
LOWER POND OUTLFOW							8.7	10.9	17.4	14.8
LOWER POND PEAK STORAGE (ACRE-FEET)							0.36	0.69	0.95	1.46
LOWER POND PEAK ELEVATION (FT MSL)							940.90	942.16	943.12	944.98
A - BYPASS	26,136	0.60	0.000938	72%	28%	5.0	3.1	4.8	6.0	8.1
UPSTREAM OF CRYSTAL FALLS PARKWAY (ANALYSIS POINT A)							**9.3**	**12.5**	**14.8**	**18.5**
CRYSTAL FALLS PARKWAY 30" RCP AT CULVERT							13.1	18.8	22.7	29.3
ANALYSIS POINT B							**3.7**	**8.7**	**12.1**	**18.1**
POND C INFLOW (C1b)	63,598	1.46	0.002281	44%	56%	8.9	5.7	9.4	11.9	16.2
POND C OUTFLOW							5.4	8.5	9.8	12.1
POND C PEAK STORAGE (ACRE-FEET)							0.02	0.03	0.05	0.08
POND C PEAK ELEVATION (FT MSL)							989.33	989.92	990.27	990.96
C - REMAINING	98,010	2.25	0.003516	55%	45%	7.1	9.3	15.7	20.0	27.4
ANALYSIS POINT C							**14.3**	**23.3**	**28.9**	**37.8**
POND D INFLOW (D1c)	30,056	0.69	0.001078	21%	79%	10.1	2.5	4.2	5.5	7.5
POND D OUTFLOW							2.5	3.3	3.5	3.9
POND D PEAK STORAGE (ACRE-FEET)							0.00	0.01	0.02	0.05
POND DPEAK ELEVATION (FT MSL)							987.49	989.15	989.79	990.86
D - REMAINING	31,363	0.72	0.001125	76%	24%	7.2	3.3	5.1	6.3	8.4
ANALYSIS POINT D							**5.6**	**8.1**	**9.5**	**11.9**

SCS TYPE "D" SOILS
SCS CURVE NUMBER - 84
SCS UNIT HYDROGRAPH METHOD
HEC-HMS FREQUENCY STORM RAINFALL DISTRIBUTION

DEPTH DURATION FREQUENCY RAINFALL								
Year	5-MIN	15-MIN	60-MIN	2-HR	3-HR	6-HR	12-HR	24-HR
2	0.511	1.02	1.88	2.30	2.54	2.97	3.43	3.92
10	0.766	1.53	2.82	3.58	4.05	4.85	5.60	6.36
25	0.943	1.88	3.47	4.51	5.18	6.28	7.23	8.16
100	1.25	2.48	4.59	6.19	7.27	8.97	10.3	11.5

I10 PROPOSED: HEC-HMS CALCULATIONS

RATIONAL METHOD FLOW CALCULATIONS: PROPOSED CONDITIONS

BASIN NAME	AREA (AC)	IMPERVOUS %	PERVIOUS %	T_C (MIN)	2-YR C	2-YR I	2-YR Q	10-YR C	10-YR I	10-YR Q	25-YR C	25-YR I	25-YR Q	100-YR C	100-YR I	100-YR Q
A1a	1.10	60%	40%	12.7	0.57	4.50	2.80	0.64	6.73	4.72	0.68	8.28	6.23	0.77	10.97	9.25
A1b	1.80	70%	30%	5.0	0.61	6.14	6.78	0.69	9.19	11.37	0.73	11.30	14.94	0.82	15.00	22.10
A1c	1.18	75%	25%	10.0	0.64	4.95	3.70	0.71	7.40	6.19	0.76	9.11	8.12	0.84	12.07	11.98
A1d	0.93	45%	55%	10.0	0.50	4.95	2.28	0.57	7.40	3.88	0.61	9.11	5.15	0.69	12.07	7.71
A1e	1.09	45%	55%	5.0	0.50	6.14	3.33	0.57	9.19	5.67	0.61	11.30	7.52	0.69	15.00	11.27
A1f	1.01	45%	55%	5.0	0.50	6.14	3.08	0.57	9.19	5.25	0.61	11.30	6.97	0.69	15.00	10.45
A1g	1.84	25%	75%	10.0	0.41	4.95	3.69	0.47	7.40	6.40	0.51	9.11	8.59	0.59	12.07	13.05
A1h	0.42	90%	10%	5.0	0.70	6.14	1.80	0.78	9.19	2.99	0.83	11.30	3.91	0.92	15.00	5.74
A1i	0.58	65%	35%	5.0	0.59	6.14	2.10	0.66	9.19	3.53	0.71	11.30	4.65	0.79	15.00	6.89
A1j	0.86	75%	25%	10.0	0.64	4.95	2.69	0.71	7.40	4.51	0.76	9.11	5.91	0.84	12.07	8.72
A1k	0.41	75%	25%	5.0	0.64	6.14	1.60	0.71	9.19	2.68	0.76	11.30	3.52	0.84	15.00	5.20
A1l	0.28	75%	25%	5.0	0.64	6.14	1.08	0.71	9.19	1.81	0.76	11.30	2.37	0.84	15.00	3.50
A1m	0.32	75%	25%	5.0	0.64	6.14	1.26	0.71	9.19	2.11	0.76	11.30	2.77	0.84	15.00	4.09
B1a	1.59	40%	60%	7.0	0.47	5.59	4.22	0.54	8.37	7.21	0.59	10.29	9.59	0.66	13.64	14.40
B1b	0.37	72%	28%	5.0	0.62	6.14	1.41	0.70	9.19	2.37	0.74	11.30	3.11	0.83	15.00	4.59
B1c	0.29	72%	28%	5.0	0.62	6.14	1.11	0.70	9.19	1.85	0.74	11.30	2.44	0.83	15.00	3.60
C1a	0.34	80%	20%	5.0	0.66	6.14	1.37	0.73	9.19	2.29	0.78	11.30	3.01	0.87	15.00	4.43
C1b	1.46	44%	56%	8.9	0.49	5.17	3.71	0.56	7.73	6.33	0.61	9.50	8.40	0.68	12.59	12.58
C1c	0.58	76%	24%	5.0	0.64	6.14	2.28	0.71	9.19	3.81	0.76	11.30	5.00	0.85	15.00	7.37
C1d	0.66	20%	80%	7.1	0.38	5.57	1.40	0.45	8.33	2.45	0.49	10.24	3.30	0.56	13.58	5.04
C1e	0.30	80%	20%	5.0	0.66	6.14	1.21	0.73	9.19	2.02	0.78	11.30	2.65	0.87	15.00	3.91
C1f	0.37	40%	60%	7.1	0.47	5.57	0.98	0.54	8.33	1.67	0.59	10.24	2.22	0.66	13.58	3.34
D1a	0.14	72%	28%	7.2	0.62	5.55	0.48	0.70	8.29	0.81	0.74	10.20	1.06	0.83	13.52	1.57
D1b	0.17	80%	20%	5.0	0.66	6.14	0.69	0.73	9.19	1.15	0.78	11.30	1.50	0.87	15.00	2.21
D1c	0.69	21%	79%	10.1	0.39	4.93	1.32	0.45	7.37	2.29	0.49	9.07	3.09	0.57	12.02	4.70
D1d	0.20	72%	28%	5.0	0.62	6.14	0.76	0.70	9.19	1.28	0.74	11.30	1.68	0.83	15.00	2.48
D1e	0.21	80%	20%	5.0	0.66	6.14	0.85	0.73	9.19	1.42	0.78	11.30	1.86	0.87	15.00	2.73
*E1b	0.19	70%	30%	5.0	0.61	6.14	0.71	0.69	9.19	1.20	0.73	11.30	1.57	0.82	15.00	2.33
*E1c	0.95	60%	40%	7.0	0.57	5.59	3.01	0.64	8.37	5.07	0.68	10.29	6.69	0.77	13.64	9.93

*OFFSITE DRAINAGE AREAS

C-Values				
	2	10	25	100
Impervious	0.75	0.83	0.88	0.97
Pervious	0.29	0.35	0.39	0.46

IDF Curve Values			
Year	a	b	c
2	58	11.27	0.805
10	77	10.53	0.775
25	89	10.16	0.759
100	106	9.46	0.732

$I=a/(t+b)^c$

A8 PROPOSED: RATIONAL METHOD CALCULATIONS

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRAINAGE CALCULATIONS

3/30/2023 DATE

David P. Smith
DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C302A

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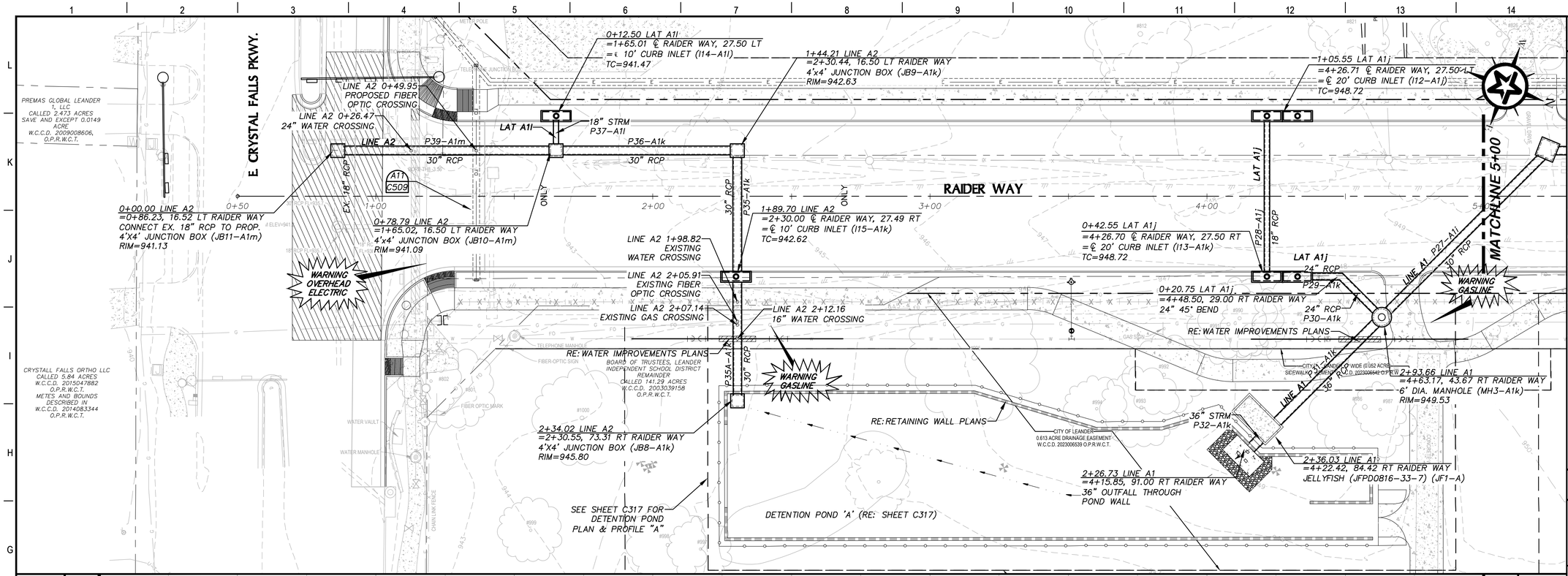
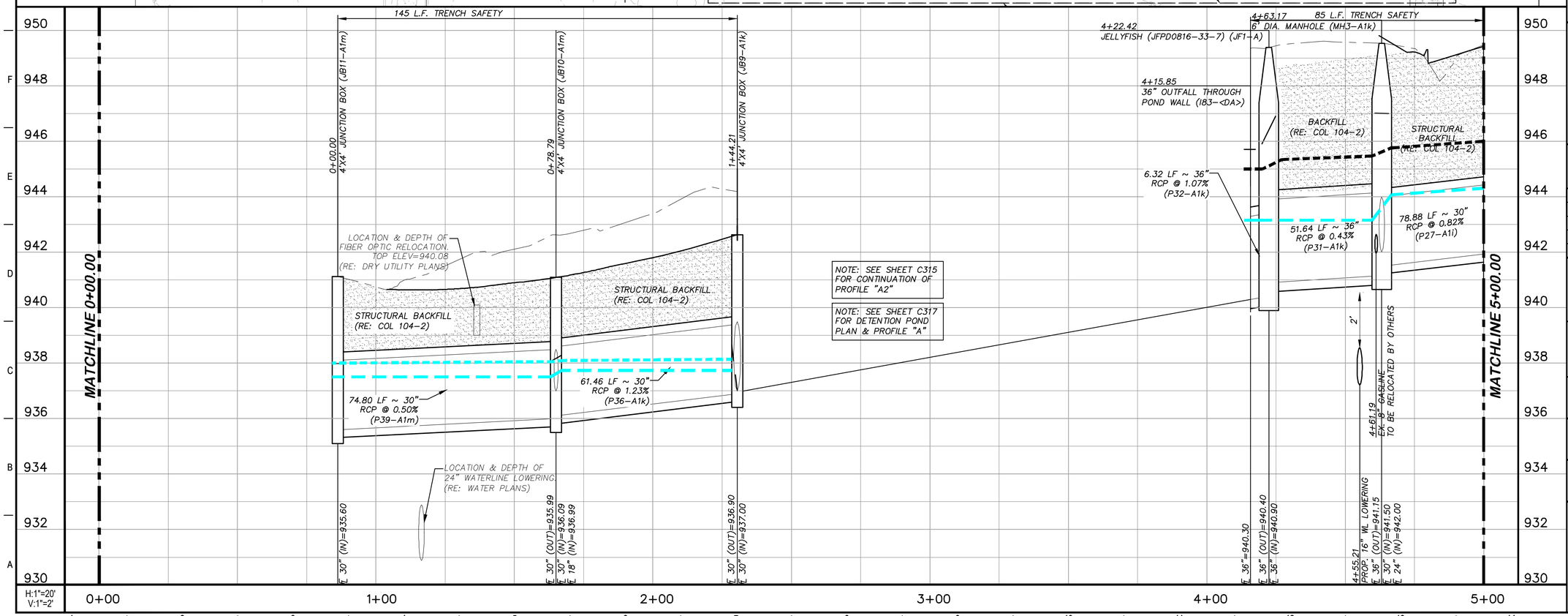




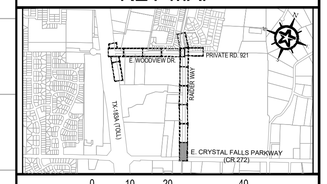
GENERAL NOTES

1. ALL STORM IMPROVEMENTS SHALL BE INSTALLED PER CITY OF AUSTIN SPECIFICATIONS AND DETAILS UNLESS OTHERWISE NOTED. PRECAST MANUFACTURER SHALL SUBMIT SEALED DESIGNS AND SHOP DRAWINGS FOR REVIEW AND APPROVAL.
2. RE: CITY OF LEANDER 104–1 & 104–2 FOR STORM TRENCHING, EMBEDMENT, AND BACKFILL REQUIREMENTS.
3. WORK ON STORM DRAIN SYSTEM A & B SHALL NOT COMMENCE PRIOR TO COMPLETION OF DETENTION PONDS.
4. ALL WORK ON PRIVATE PROPERTIES SHALL NOT ENCROACH OUTSIDE OF EASEMENTS. ALL WORK SHALL BE SCHEDULED, COMMUNICATED, AND COORDINATED WITH PROPERTY OWNERS.
5. ALL STORM DRAIN PIPE SHALL BE CLASS III REINFORCED CONCRETE PIPE UNLESS OTHERWISE SPECIFIED.
6. ALL STATION AND OFFSET CALLOUTS FOR STORM DRAIN STRUCTURES ARE TO THE BACK OF CURB AT THE LOCATIONS INDICATED BELOW.
7. ALL STATION AND OFFSET CALLOUTS FOR MANHOLE STRUCTURES ARE TO CENTER OF MANHOLE.
8. ALL INLET TOPS TO BE CAST–IN–PLACE.
9. ALL PROPOSED STORM DRAIN SHALL BE BACKFILLED WITH BACKFILL AS SHOWN– CONTRACTOR SHALL INCLUDE BACKFILL COST IN UNIT PRICE FOR ITEM.
10. SEE SHEET C323 FOR DETAILS REFERENCING JELLYFISH WATER QUALITY CONTROLS, WEIR STRUCTURES, AND TCEQ PERMIT REQUIREMENTS.

PROFILE LEGEND

- PROPOSED FG
- EXISTING ROAD ℄
- H.G.L. ~ 25–YR STORM
- H.G.L. ~ 100–YR STORM

KEY MAP



0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRAINAGE PLAN & PROFILE (STA. 0+00–5+00)

3/30/2023
DATE

David P. Smith
DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C303

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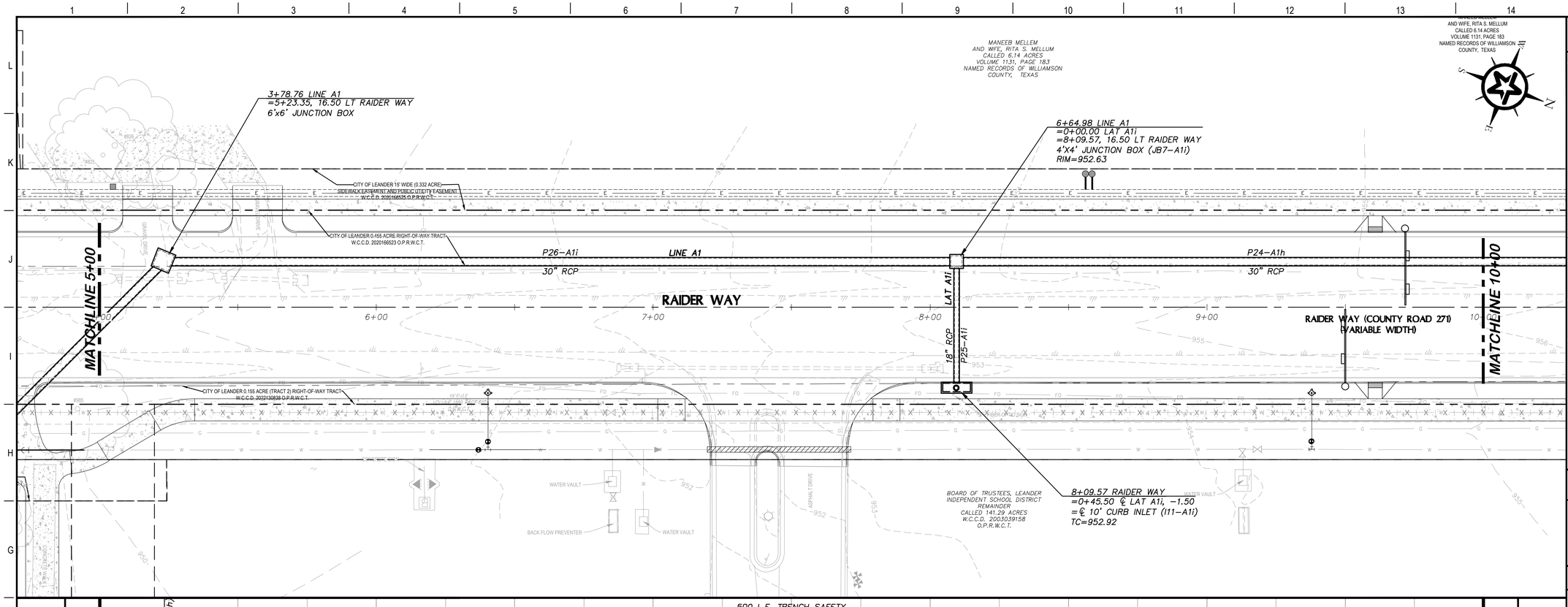


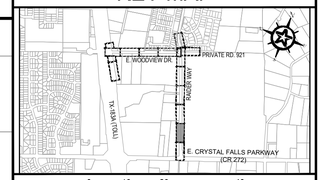
GENERAL NOTES

1. ALL STORM IMPROVEMENTS SHALL BE INSTALLED PER CITY OF AUSTIN SPECIFICATIONS AND DETAILS UNLESS OTHERWISE NOTED. PRECAST MANUFACTURER SHALL SUBMIT SEALED DESIGNS AND SHOP DRAWINGS FOR REVIEW AND APPROVAL.
2. RE: CITY OF LEANDER 104-1 & 104-2 FOR STORM TRENCHING, EMBEDMENT, AND BACKFILL REQUIREMENTS.
3. WORK ON STORM DRAIN SYSTEM A & B SHALL NOT COMMENCE PRIOR TO COMPLETION OF DETENTION PONDS.
4. ALL WORK ON PRIVATE PROPERTIES SHALL NOT ENCROACH OUTSIDE OF EASEMENTS. ALL WORK SHALL BE SCHEDULED, COMMUNICATED, AND COORDINATED WITH PROPERTY OWNERS.
5. ALL STORM DRAIN PIPE SHALL BE CLASS III REINFORCED CONCRETE PIPE UNLESS OTHERWISE SPECIFIED.
6. ALL STATION AND OFFSET CALLOUTS FOR STORM DRAIN STRUCTURES ARE TO THE BACK OF CURB AT THE LOCATIONS INDICATED BELOW.
7. ALL STATION AND OFFSET CALLOUTS FOR MANHOLE STRUCTURES ARE TO CENTER OF MANHOLE.
8. ALL INLET TOPS TO BE CAST-IN-PLACE.
9. ALL PROPOSED STORM DRAIN SHALL BE BACKFILLED WITH BACKFILL AS SHOWN- CONTRACTOR SHALL INCLUDE BACKFILL COST IN UNIT PRICE FOR ITEM.
10. SEE SHEET C323 FOR DETAILS REFERENCING JELLYFISH WATER QUALITY CONTROLS, WEIR STRUCTURES, AND TCEQ PERMIT REQUIREMENTS.

PROFILE LEGEND

- PROPOSED FG
- EXISTING ROAD ℄
- H.G.L. ~ 25-YR STORM
- H.G.L. ~ 100-YR STORM

KEY MAP



REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRAINAGE PLAN & PROFILE
(STA. 5+00-10+00)

3/30/2023
DATE

DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C304

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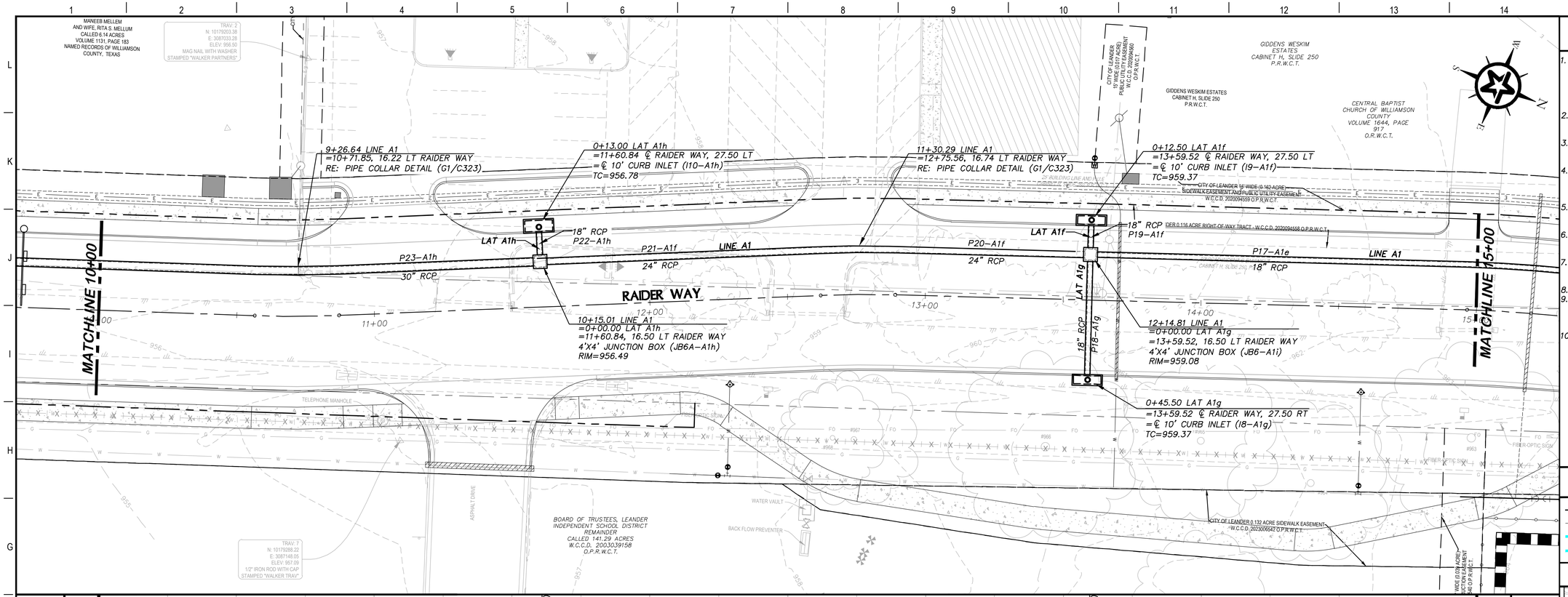

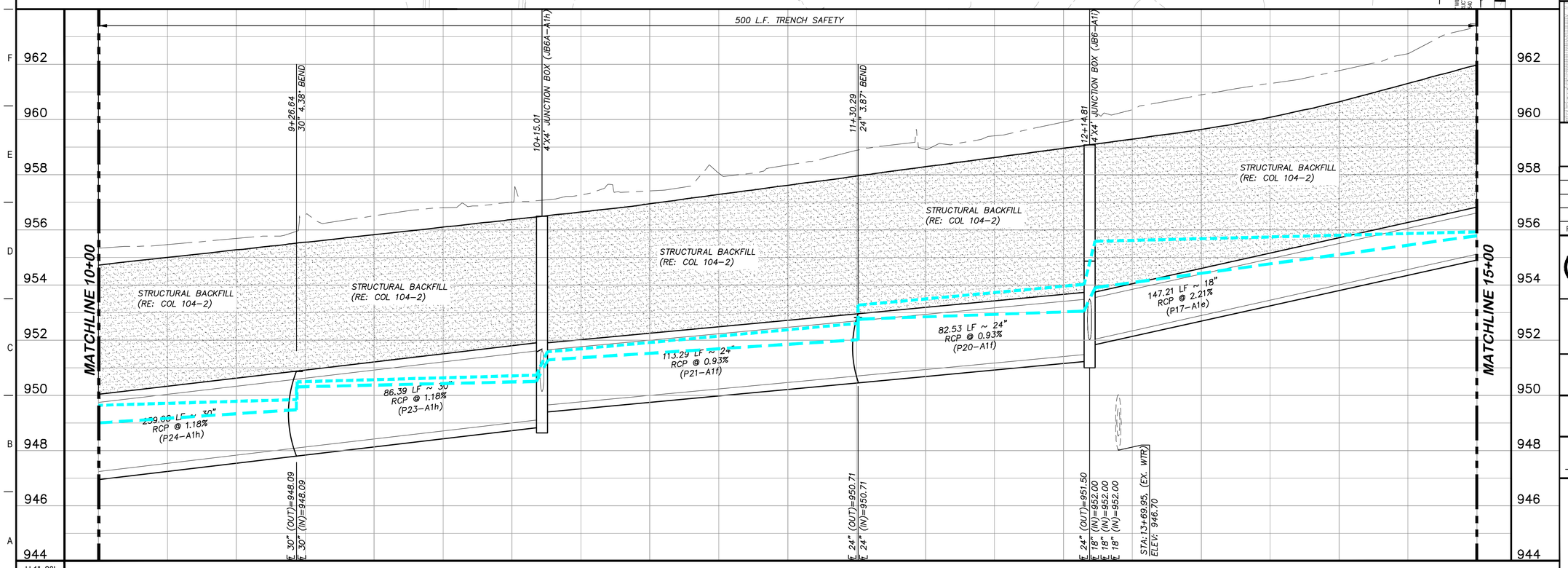

H:1"=20'
V:1"=2'

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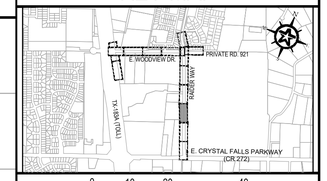
PROFILE LEGEND

- PROPOSED FG
- EXISTING ROAD ℄
- H.G.L. ~ 25–YR STORM
- H.G.L. ~ 100–YR STORM

KEY MAP



0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRAINAGE PLAN & PROFILE
(STA. 10+00–15+00)

3/30/2023
DATE

David P. Smith
DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C305

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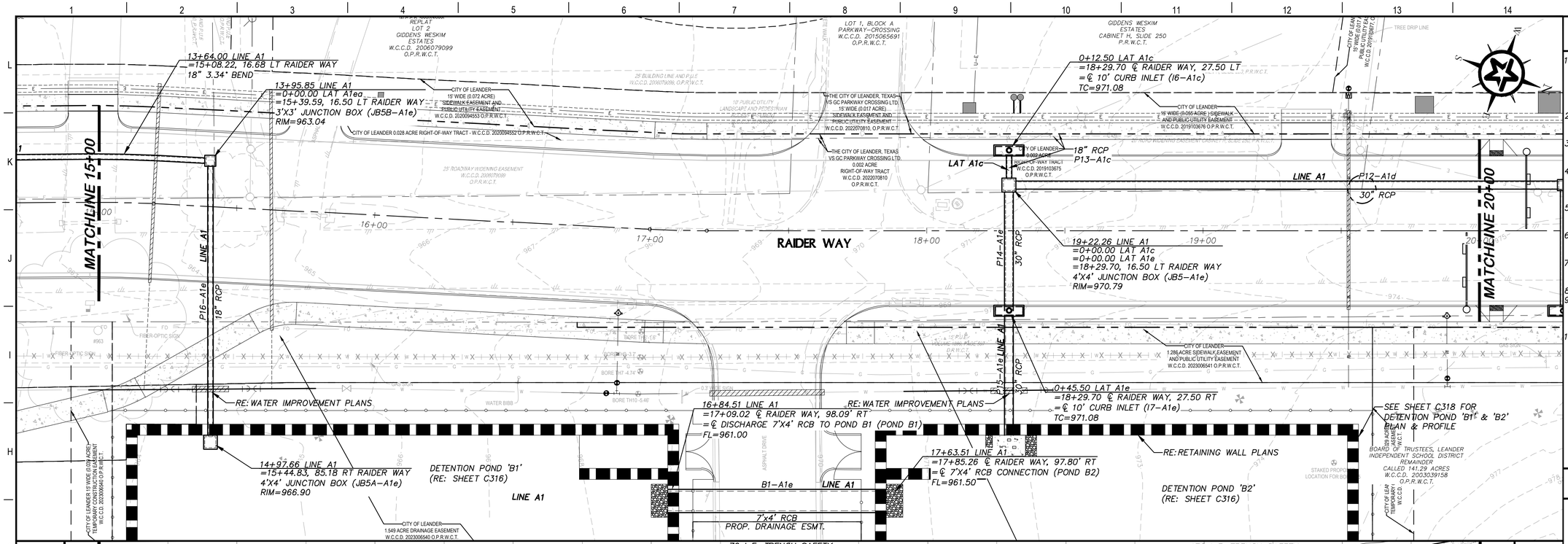

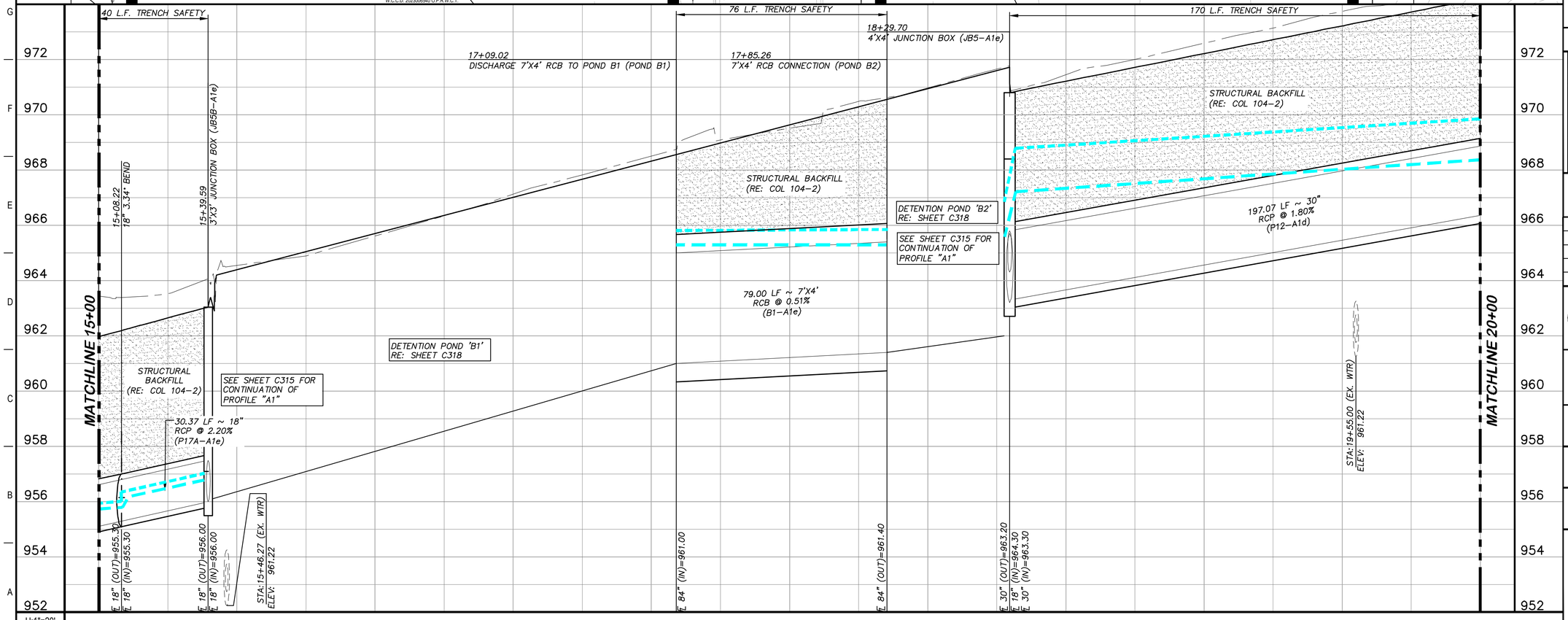

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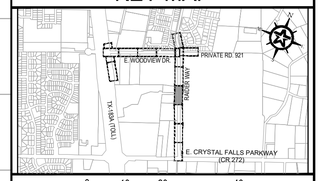
PROFILE LEGEND

- PROPOSED FG
- EXISTING ROAD ℄
- H.G.L. ~ 25–YR STORM
- H.G.L. ~ 100–YR STORM

KEY MAP



0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRAINAGE PLAN & PROFILE
(STA. 15+00–20+00)

3/30/2023
DATE

David P. Smith
DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C306

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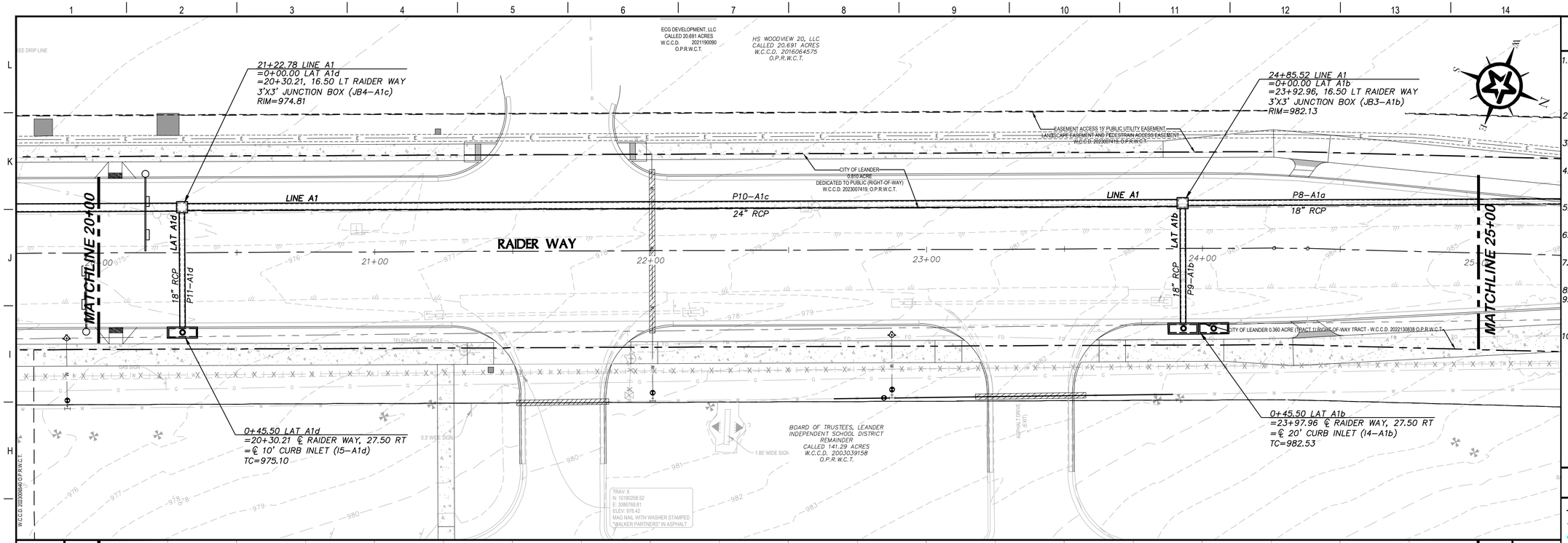

GENERAL NOTES

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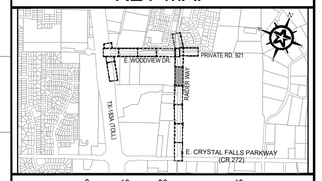
10. SEE SHEET C323 FOR DETAILS REFERENCING JELLYFISH WATER QUALITY CONTROLS, WEIR STRUCTURES, AND TCEQ PERMIT REQUIREMENTS.

PROFILE LEGEND

- PROPOSED FG
- EXISTING ROAD ℄
- H.G.L. ~ 25–YR STORM
- H.G.L. ~ 100–YR STORM

KEY MAP



0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRAINAGE PLAN & PROFILE
(STA. 20+00-25+00)

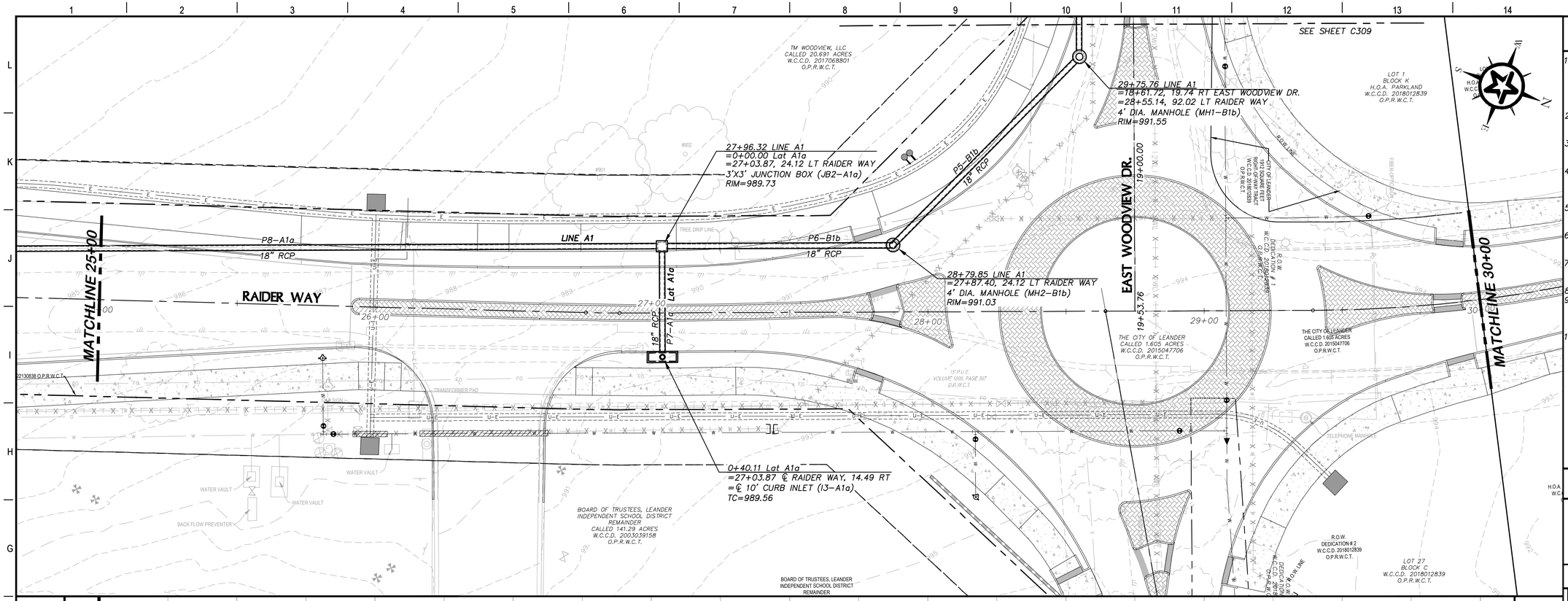
3/30/2023
DATE

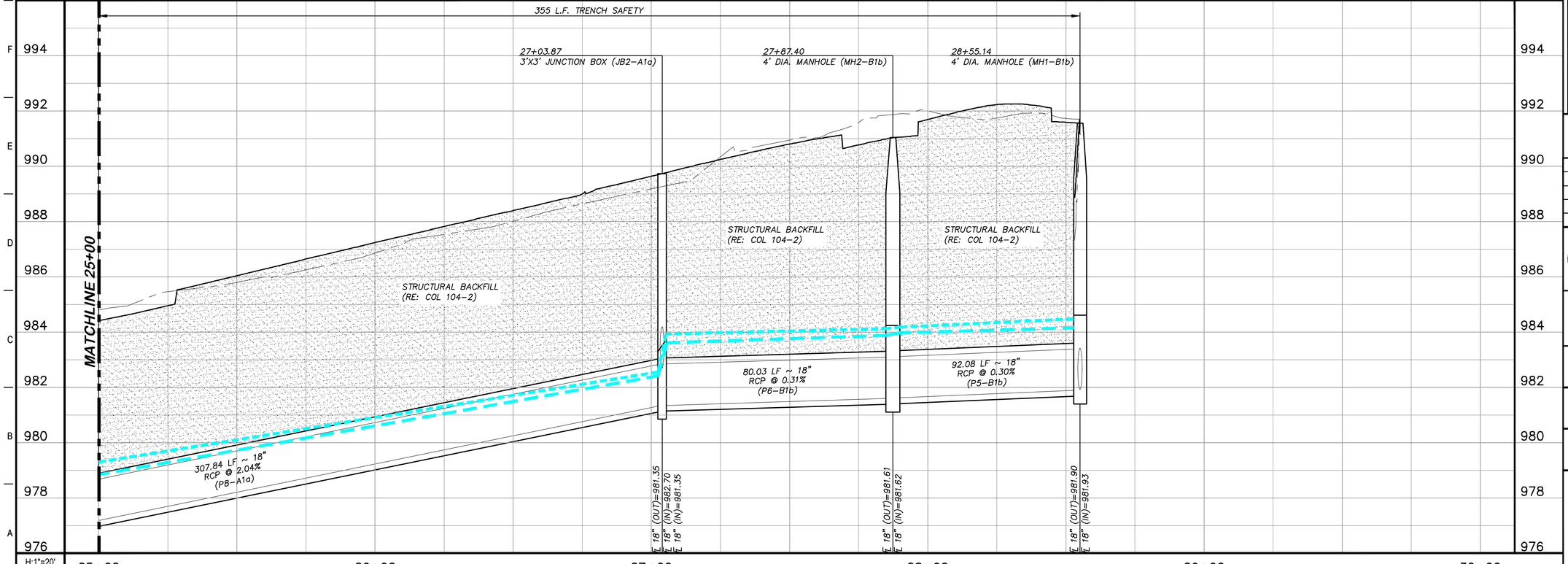
David P. Smith
DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C307

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STORM.DWG, C307 DRAINAGE PLAN & PROFILE (STA. 20+00-25+00), 3/29/2023 4:07:20 PM, pthomas





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PROFILE LEGEND

- PROPOSED FG
- EXISTING ROAD ℄
- H.G.L. ~ 25-YR STORM
- H.G.L. ~ 100-YR STORM

KEY MAP



0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRAINAGE PLAN & PROFILE
(STA. 25+00-30+00)

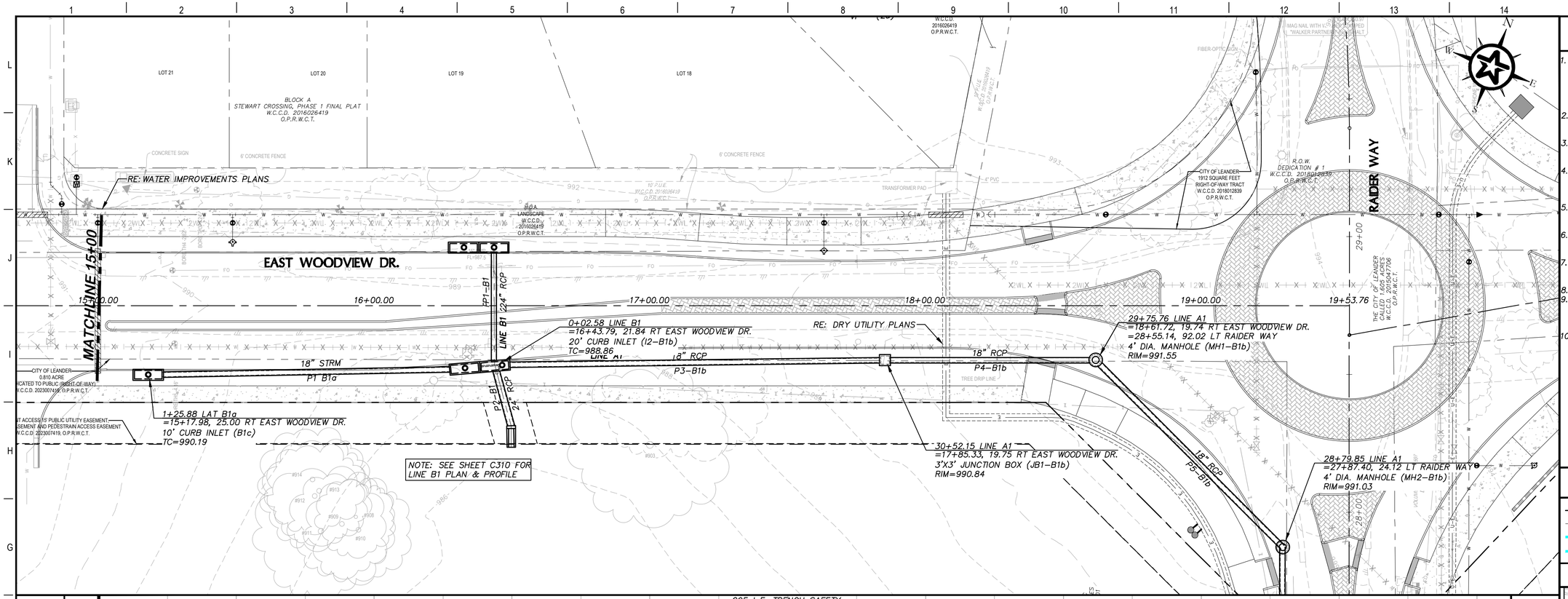
3/30/2023
DATE

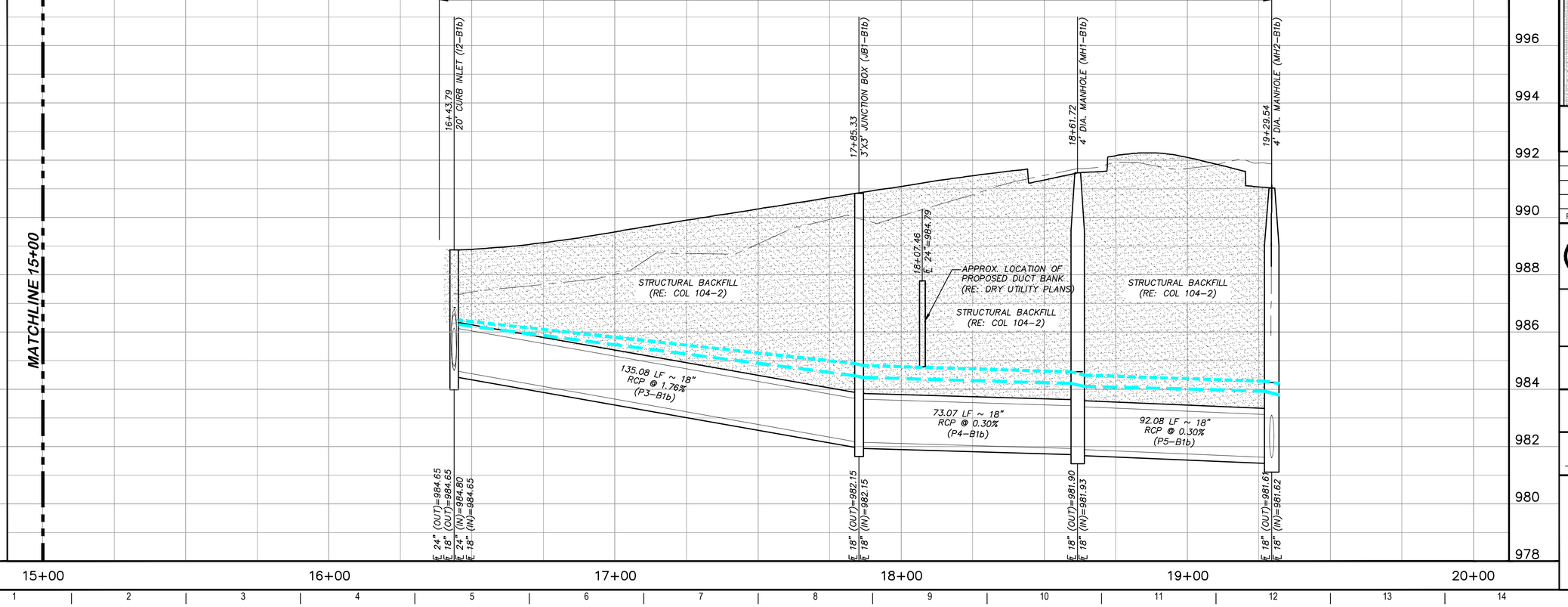
David P. Smith
DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C308

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STORM.DWG, C308 DRAINAGE PLAN & PROFILE (STA. 25+00-30+00), 3/29/2023 4:08:29 PM, pthomas





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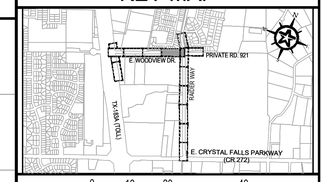
PROFILE LEGEND

- PROPOSED FG
- EXISTING ROAD ℄
- H.G.L. ~ 25-YR STORM
- H.G.L. ~ 100-YR STORM

KEY MAP



0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRAINAGE PLAN & PROFILE
(STA. 15+00 - END)

3/30/2023
DATE

David P. Smith
DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C309

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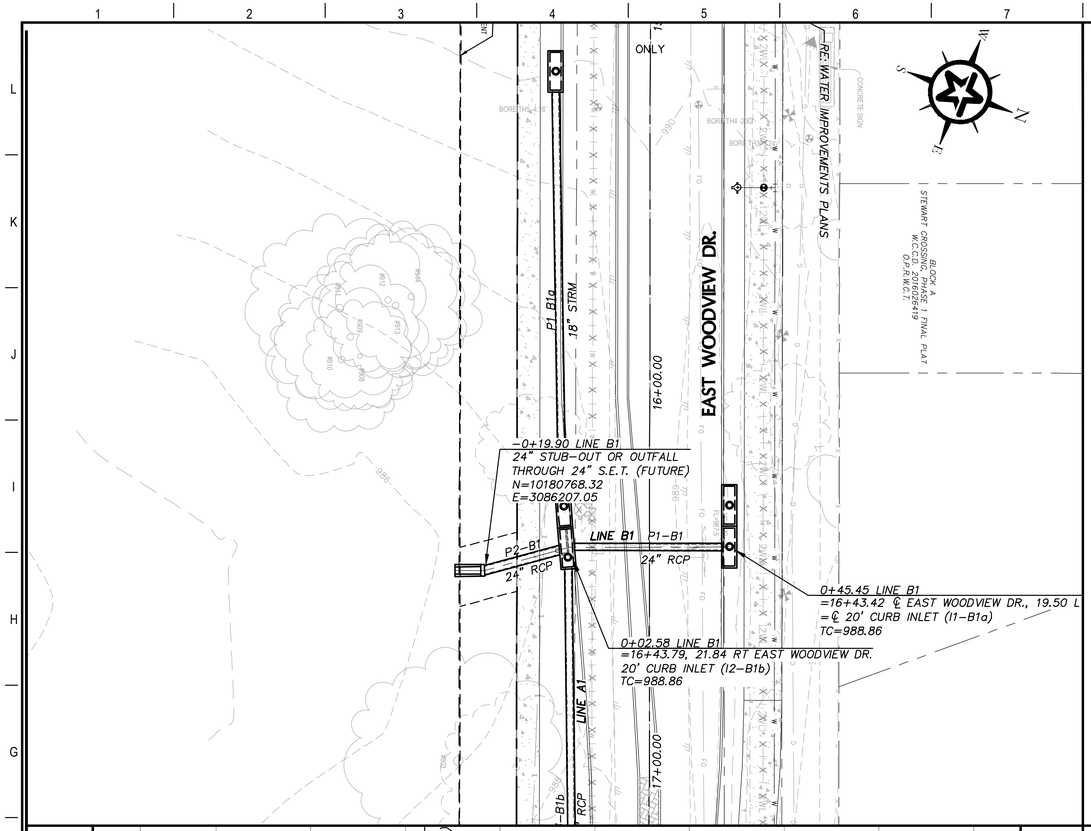

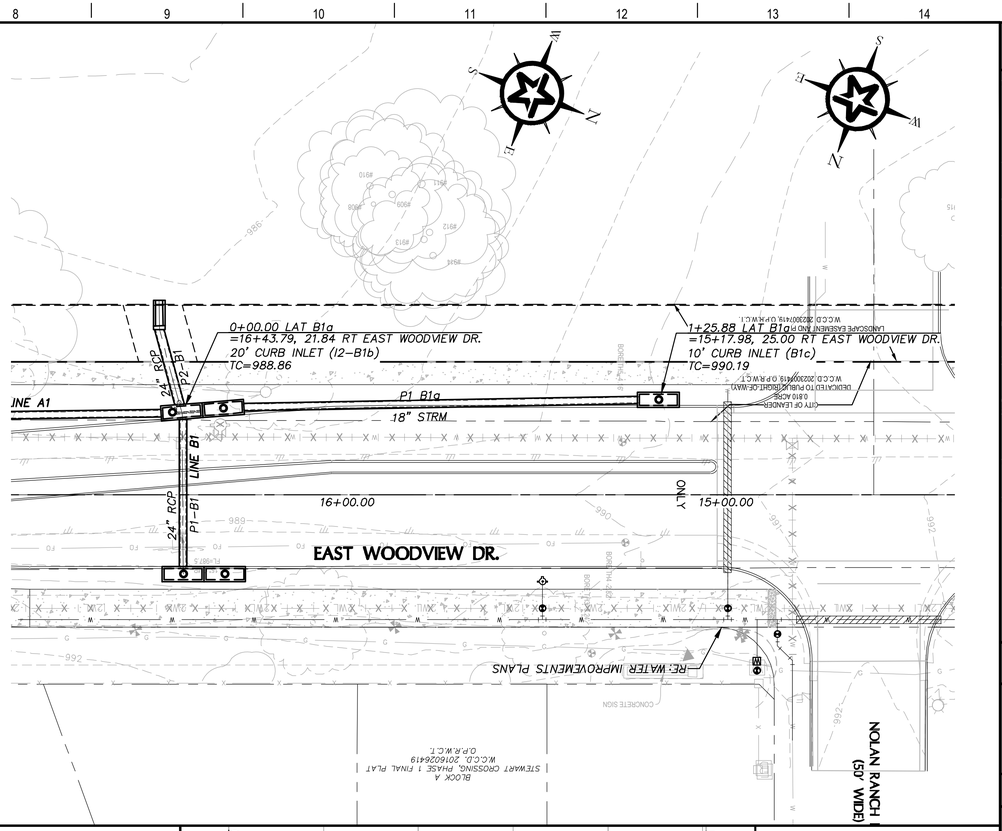

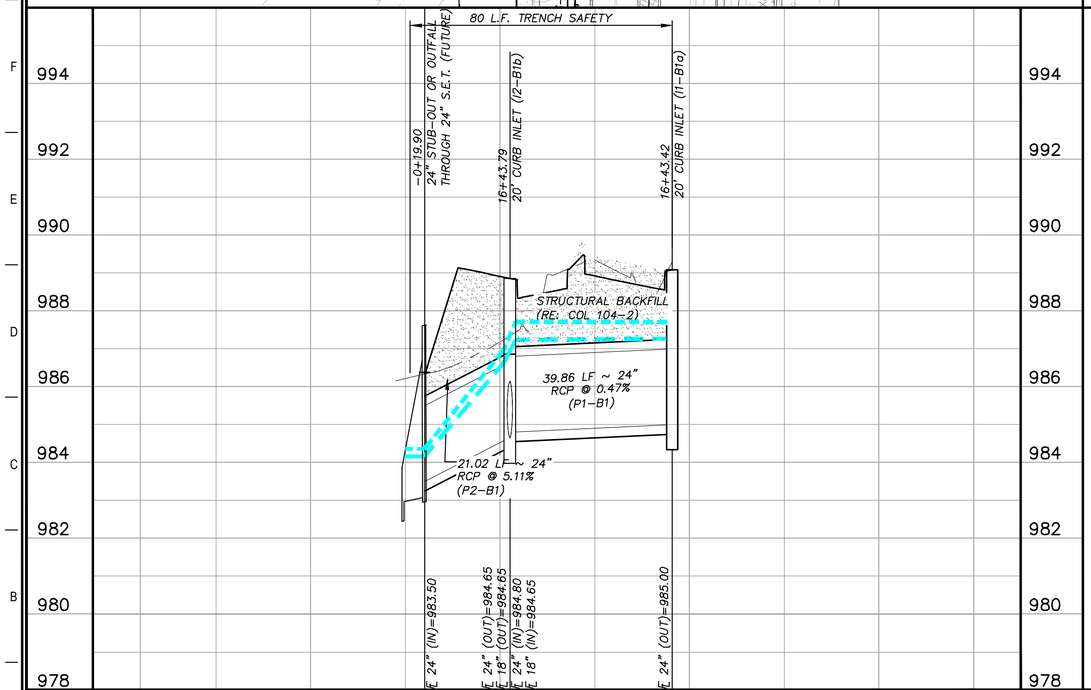

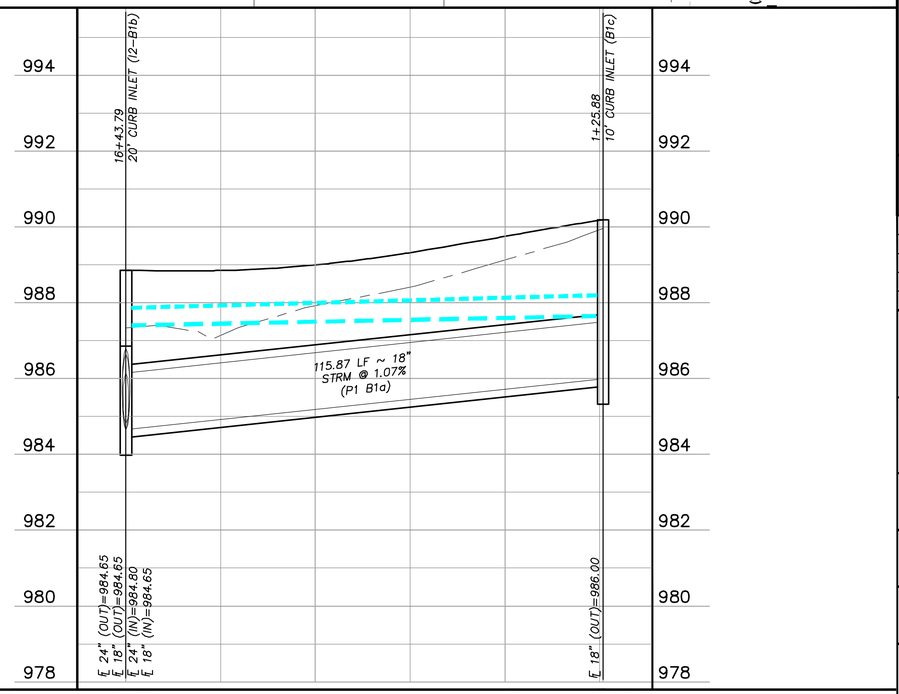

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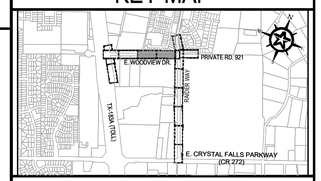
11. SEE SHEET C315 FOR LINE C1C LATERAL PROFILES.

PROFILE LEGEND

- PROPOSED FG
- EXISTING ROAD ℄
- H.G.L. ~ 25-YR STORM
- H.G.L. ~ 100-YR STORM

KEY MAP



REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STORM DRAIN LINE 'B'

3/30/2023 — DAVID P. SMITH

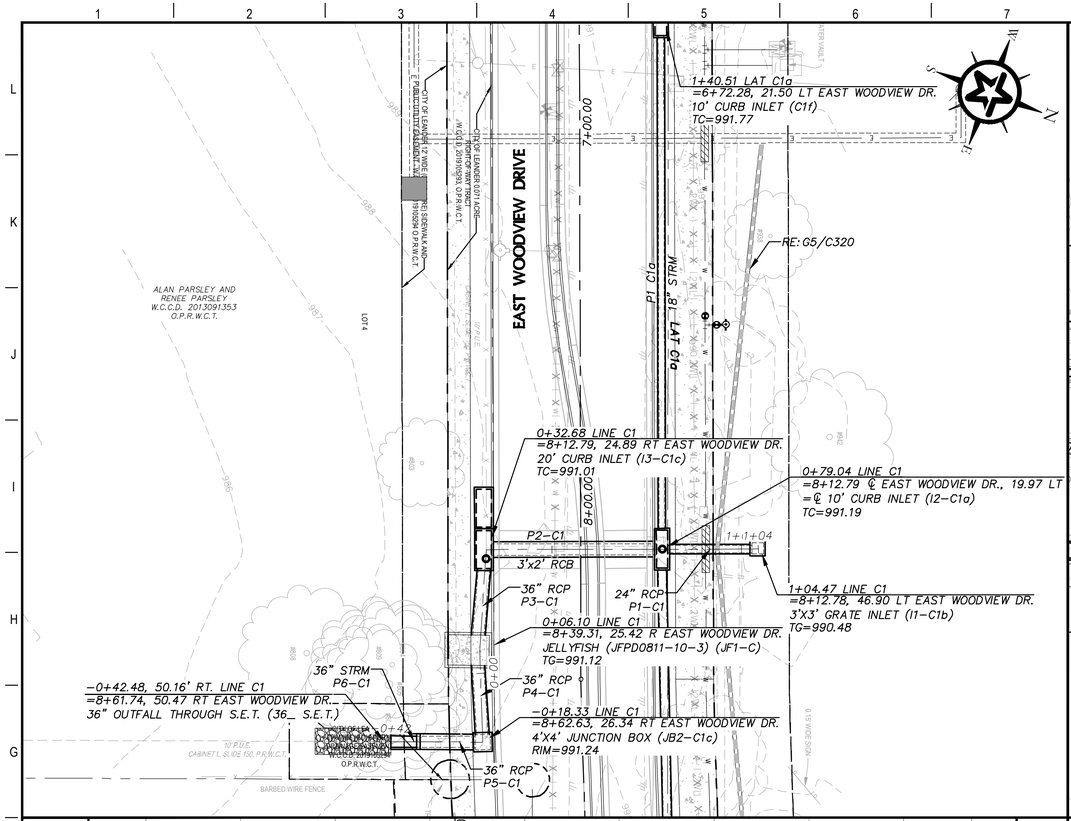
STATE OF TEXAS — DAVID P. SMITH — 56239 — REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C310

A1 STORM DRAIN LINE B1 ~ 0+00-END — H:1"=20' V:1"=2'

A8 STORM LATERAL 'B1a' — H:1"=20' V:1"=2'

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STORM.DWG, STORM DRAIN LINE 'B', 3/29/2023 4:10:52 PM, pthomas


EAST WOODVIEW DRIVE
1+40.51 LAT C1a
=6+72.28, 21.50 LT EAST WOODVIEW DR.
10' CURB INLET (C1f)
TC=991.77
RE: G5/C320
P1 C1a
18" LAT STRM
0+32.68 LINE C1
=8+12.79, 24.89 RT EAST WOODVIEW DR.
20' CURB INLET (I3-C1c)
TC=991.01
0+79.04 LINE C1
=8+12.79 ℄ EAST WOODVIEW DR., 19.97 LT
=℄ 10' CURB INLET (I2-C1a)
TC=991.19
1+04.47 LINE C1
=8+12.78, 46.90 LT EAST WOODVIEW DR.
3'X3' GRATE INLET (I1-C1b)
TG=990.48
P2-C1
3'x2' RCB
1+1+04
36" RCP
P3-C1
24" RCP
P1-C1
0+06.10 LINE C1
=8+39.31, 25.42 R EAST WOODVIEW DR.
JELLYFISH (JFPD0811-10-3) (JF1-C)
TG=991.12
36" STRM
P6-C1
36" RCP
P4-C1
-0+42.48, 50.16' RT. LINE C1
=8+61.74, 50.47 RT EAST WOODVIEW DR.
36" OUTFALL THROUGH S.E.T. (36_ S.E.T.)
-0+18.33 LINE C1
=8+62.63, 26.34 RT EAST WOODVIEW DR.
4'X4' JUNCTION BOX (JB2-C1c)
RIM=991.24
36" RCP
P5-C1
ALAN PARSLEY AND RENEE PARSLEY W.C.C.D. 2013091353 O.P.R.W.C.T.
CITY OF LEANDER 0.071 ACRE W.C.C.D. 2019093393 O.P.R.W.C.T.
CITY OF LEANDER 0.071 ACRE W.C.C.D. 2019093393 O.P.R.W.C.T.
LOT 4
LOT 3
LOT 2
LOT 1
10' P.U.E. CABINET L, SLIDE 150, P.R.W.C.T.
BARBED WIRE FENCE
O.P.R.W.C.T.
TREE DRIP LINE
#808
#809
#810
#811
#812
#813
#814
#815
#816
#817
#818
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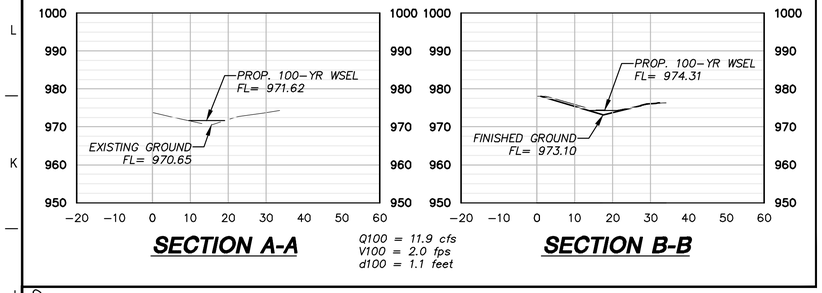

GENERAL NOTES

1. ALL STORM IMPROVEMENTS SHALL BE INSTALLED PER CITY OF AUSTIN SPECIFICATIONS AND DETAILS UNLESS OTHERWISE NOTED. PRECAST MANUFACTURER SHALL SUBMIT SEALED DESIGNS AND SHOP DRAWINGS FOR REVIEW AND APPROVAL.
2. RE: CITY OF LEANDER 104-1 & 104-2 FOR STORM TRENCHING, EMBEDMENT, AND BACKFILL REQUIREMENTS.
3. WORK ON STORM DRAIN SYSTEM A & B SHALL NOT COMMENCE PRIOR TO COMPLETION OF DETENTION PONDS.
4. ALL WORK ON PRIVATE PROPERTIES SHALL NOT ENCROACH OUTSIDE OF EASEMENTS. ALL WORK SHALL BE SCHEDULED, COMMUNICATED, AND COORDINATED WITH PROPERTY OWNERS.
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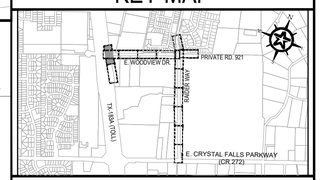
6. ALL STATION AND OFFSET CALLOUTS FOR STORM DRAIN STRUCTURES ARE TO THE BACK OF CURB AT THE LOCATIONS INDICATED BELOW.
7. ALL STATION AND OFFSET CALLOUTS FOR MANHOLE STRUCTURES ARE TO CENTER OF MANHOLE.
8. ALL INLET TOPS TO BE CAST-IN-PLACE.
9. ALL PROPOSED STORM DRAIN SHALL BE BACKFILLED WITH BACKFILL AS SHOWN- CONTRACTOR SHALL INCLUDE BACKFILL COST IN UNIT PRICE FOR ITEM.
10. SEE SHEET C.323 FOR DETAILS REFERENCING JELLYFISH WATER QUALITY CONTROLS, WEIR STRUCTURES, AND TCEQ PERMIT REQUIREMENTS.

PROFILE LEGEND

- PROPOSED FG
- EXISTING ROAD ℄
- H.G.L. ~ 25-YR STORM
- H.G.L. ~ 100-YR STORM

KEY MAP



REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STORM DRAIN LINE 'D'
(STA. 0+00-1+50)

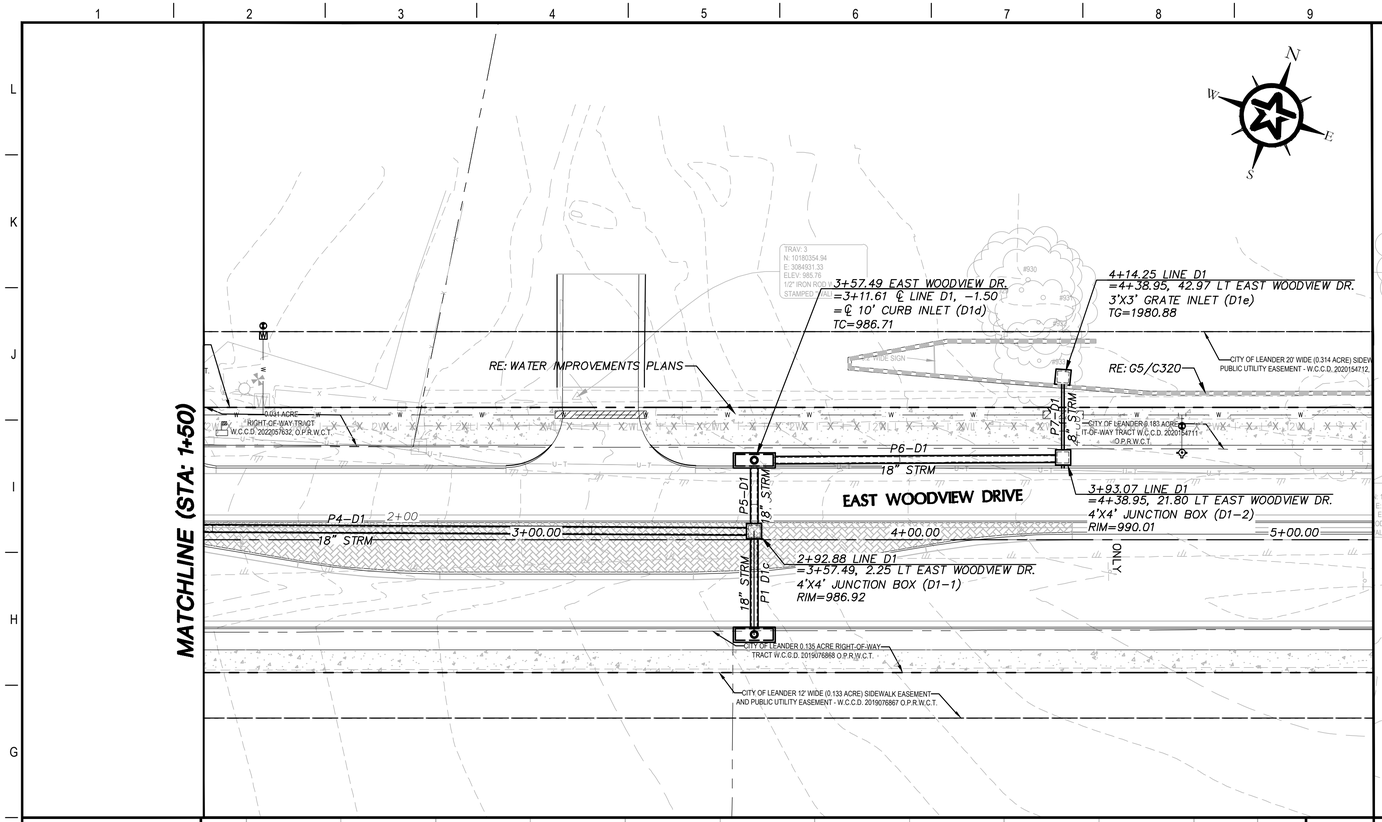
3/30/2023
DATE

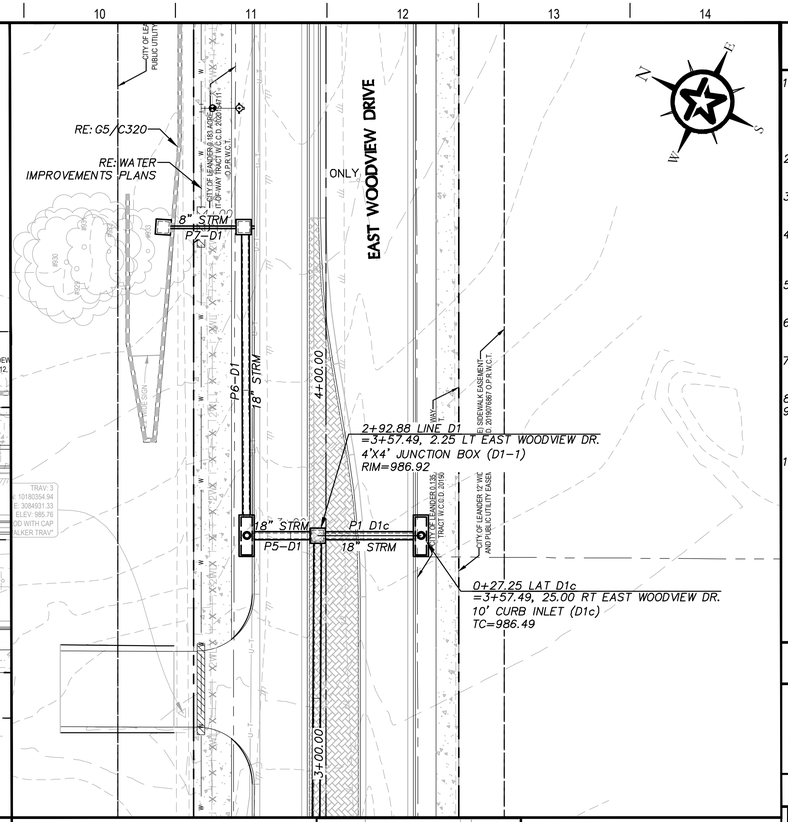
David P. Smith
DAVID P. SMITH

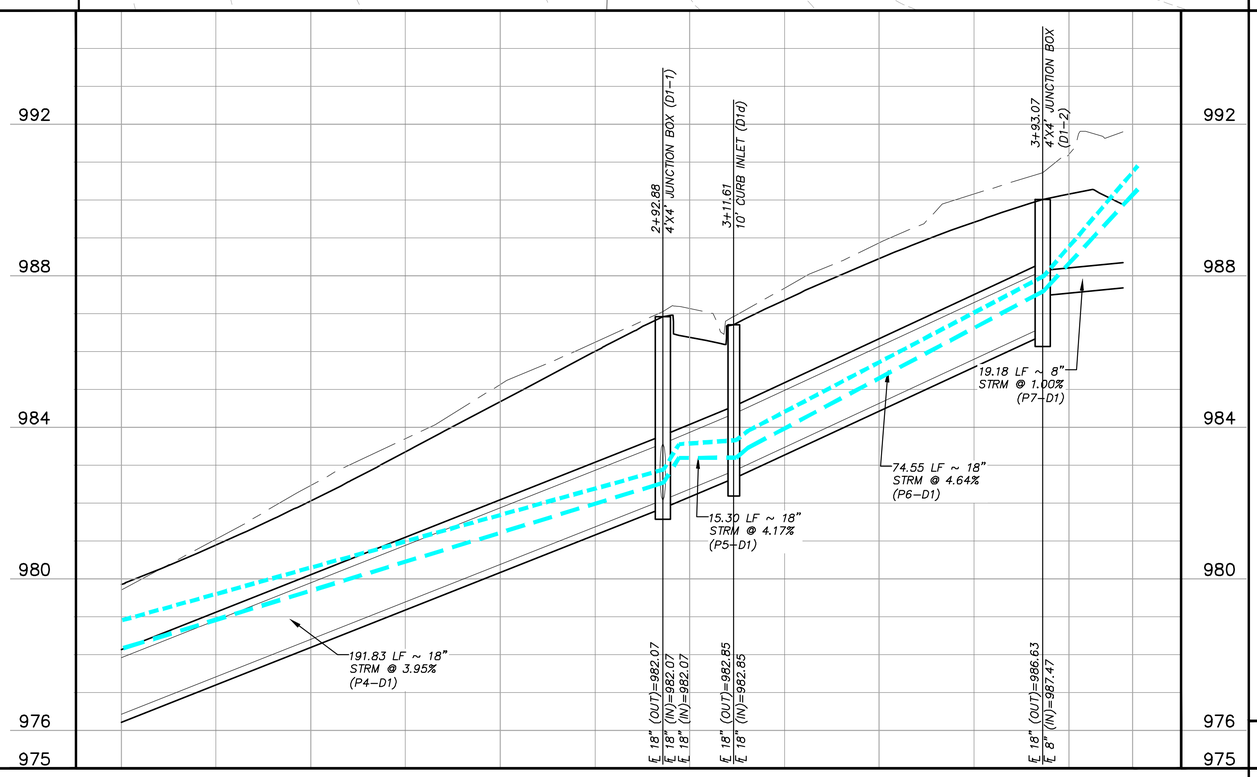
STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED
PROFESSIONAL ENGINEER

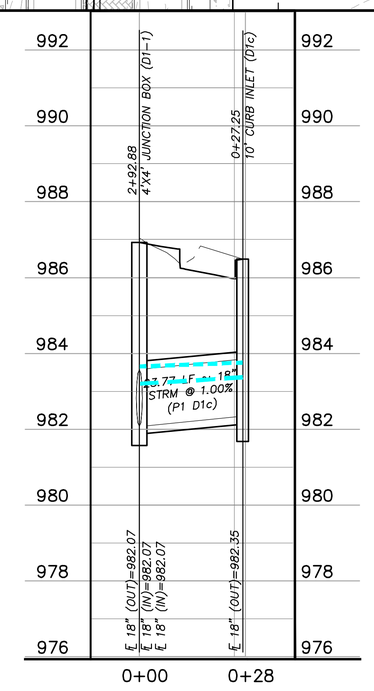
PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C312

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STORM.DWG, STORM DRAIN LINE 'D' (STA. 0+00-1+50), 3/29/2023 4:13:30 PM, pthomas









GENERAL NOTES

1. ALL STORM IMPROVEMENTS SHALL BE INSTALLED PER CITY OF AUSTIN SPECIFICATIONS AND DETAILS UNLESS OTHERWISE NOTED. PRECAST MANUFACTURER SHALL SUBMIT SEALED DESIGNS AND SHOP DRAWINGS FOR REVIEW AND APPROVAL.
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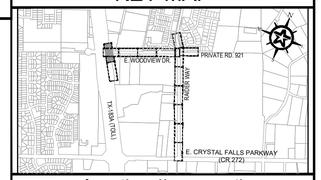
PROFILE LEGEND

- PROPOSED FG
- EXISTING ROAD ℄
- H.G.L. ~ 25–YR STORM
- H.G.L. ~ 100–YR STORM

KEY MAP



0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STORM DRAIN LINE 'D' (STA. 1+50-END)

3/30/2023
DATE

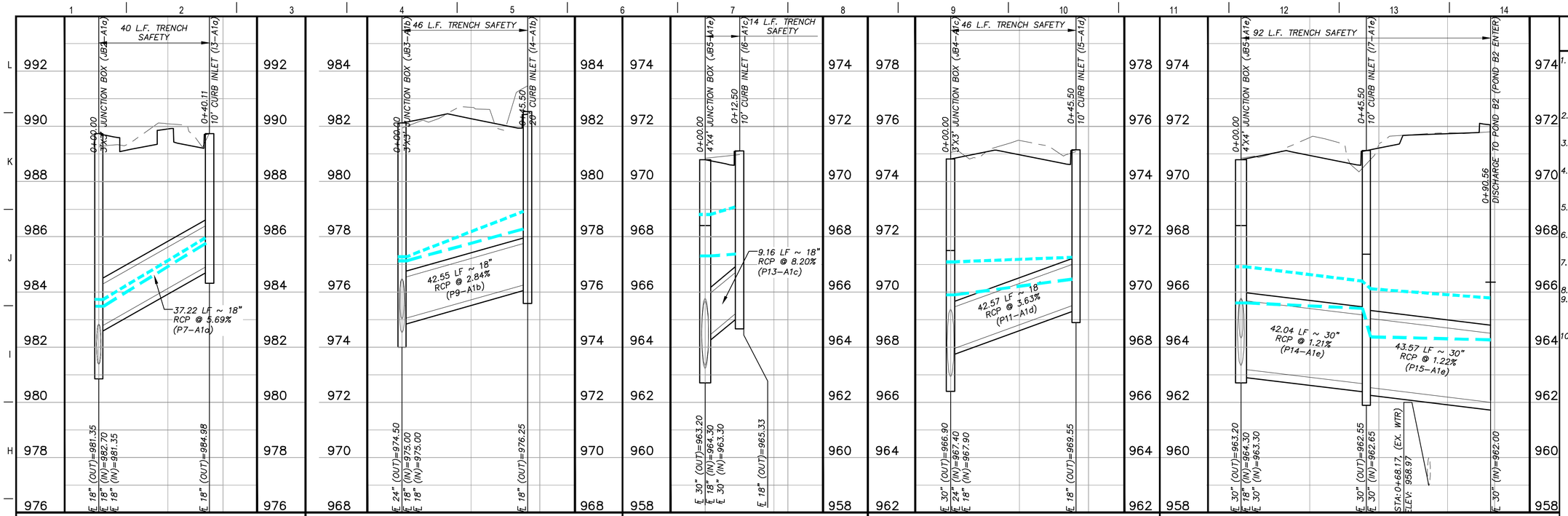
DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C313

G10 STORM LATERAL 'D1c'

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STORM.DWG, STORM DRAIN LINE 'D' (STA. 1+50-END), 3/29/2023 4:15:15 PM, pthomas



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9. ALL PROPOSED STORM DRAIN SHALL BE BACKFILLED WITH BACKFILL AS SHOWN- CONTRACTOR SHALL INCLUDE BACKFILL COST IN UNIT PRICE FOR ITEM.
10. ALL PROPOSED STORM DRAIN LATERALS SHALL BE BACKFILLED WITH STRUCTURAL BACKFILL (COL 104-2). CONTRACTOR SHALL INCLUDE BACKFILL COST IN UNIT PRICE FOR ITEM.

PROFILE LEGEND

- PROPOSED FG
- EXISTING ROAD ℄
- H.G.L. ~ 25-YR STORM
- H.G.L. ~ 100-YR STORM

GRAPHIC SCALE (FEET): 0 10 20 40

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STORM DRAIN LATERAL PROFILES

3/30/2023 DATE

DAVID P. SMITH

STATE OF TEXAS — DAVID P. SMITH — 56239 — REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C314

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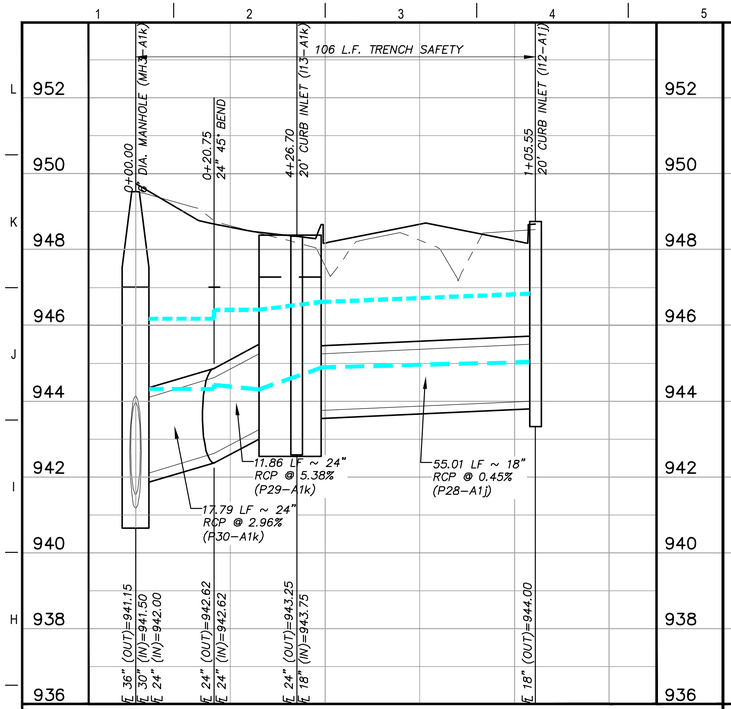
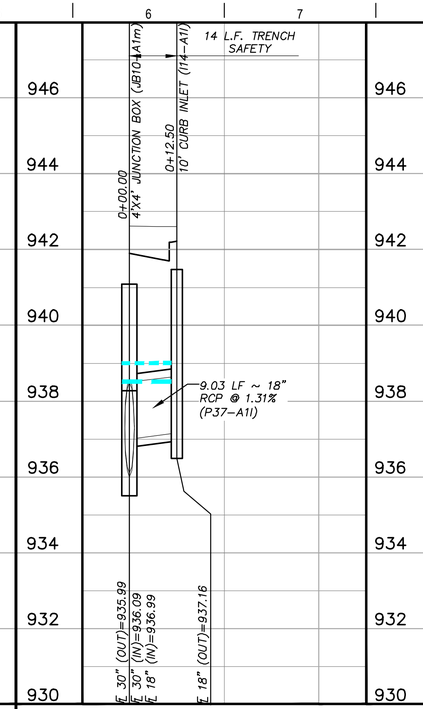


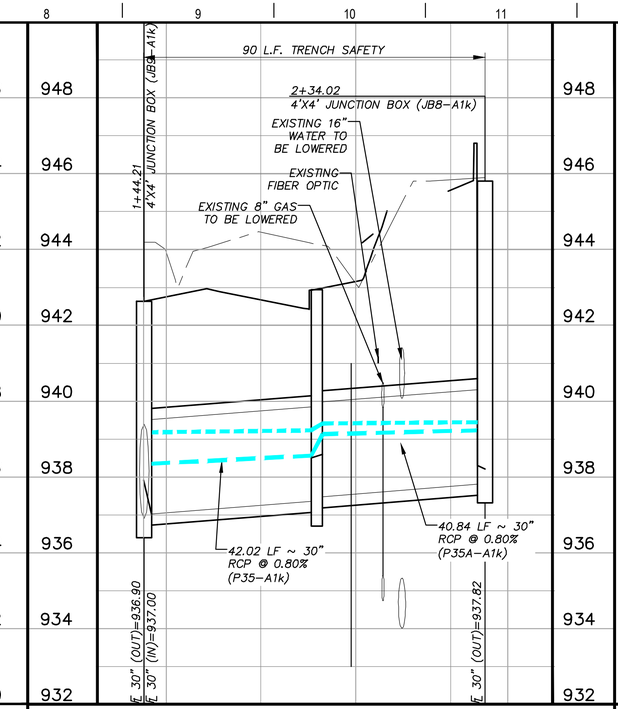
G1 — STORM LATERAL 'A1j'

H:1"=20' V:1"=2'



G5 — STORM LATERAL 'A1l'

H:1"=20' V:1"=2'



G8 — STORM LINE 'A2' ~ STA. 1+44.21-END

H:1"=20' V:1"=2'

XX — NOT USED

H:1"=20' V:1"=2'

GENERAL NOTES

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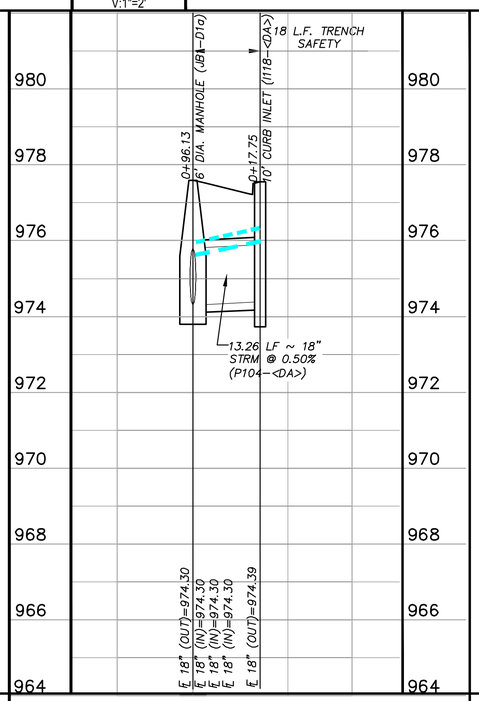
10. ALL PROPOSED STORM DRAIN LATERALS SHALL BE BACKFILLED WITH STRUCTURAL BACKFILL (COL 104-2). CONTRACTOR SHALL INCLUDE BACKFILL COST IN UNIT PRICE FOR ITEM.

XX — NOT USED

H:1"=20' V:1"=2'

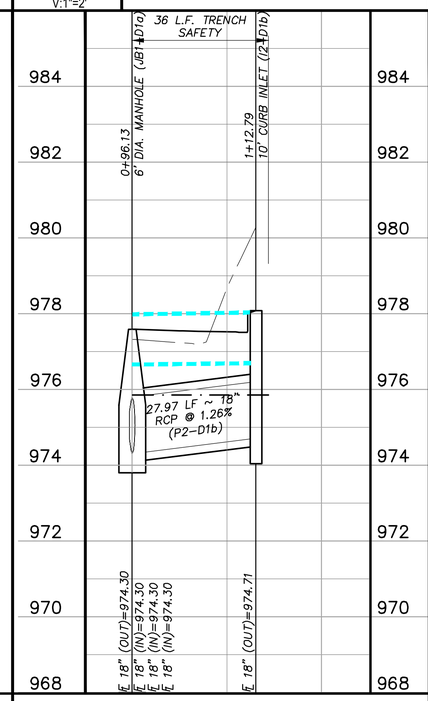


A3 — STORM LINE LATERAL D1a

H:1"=20' V:1"=2'

XX — NOTE USED

H:1"=20' V:1"=2'



A11 — STORM LATERAL 'D1b'

H:1"=20' V:1"=2'

PROFILE LEGEND

- PROPOSED FG
- EXISTING ROAD ℄
- H.G.L. ~ 25-YR STORM
- H.G.L. ~ 100-YR STORM

0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STORM DRAIN LATERAL PROFILES

3/30/2023 — DATE

David P. Smith — DAVID P. SMITH

STATE OF TEXAS — DAVID P. SMITH — 56239 — REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C315

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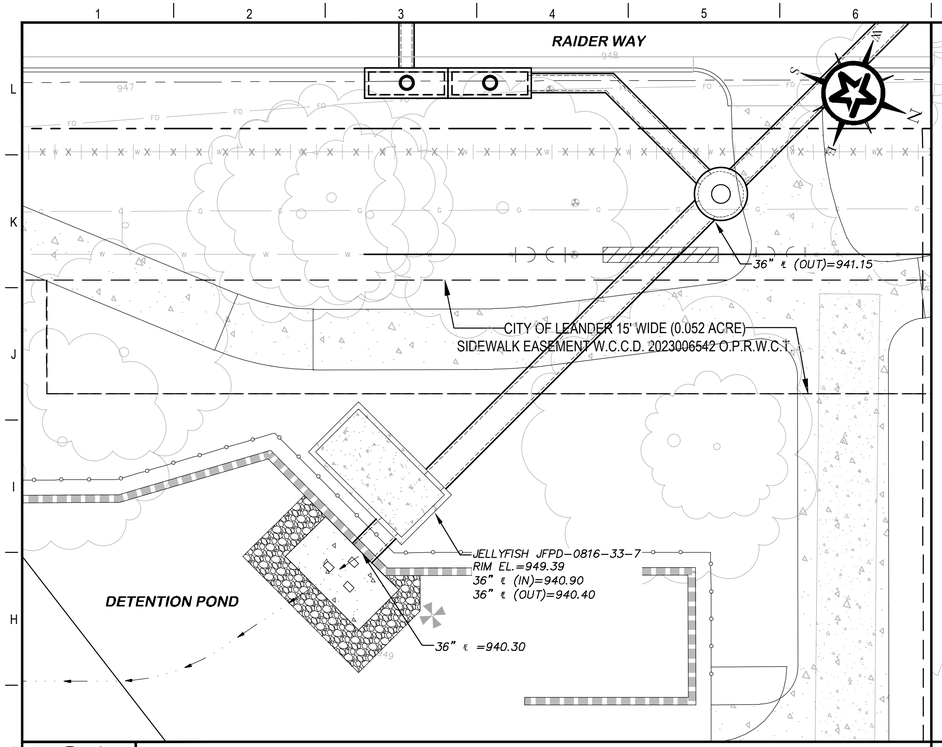
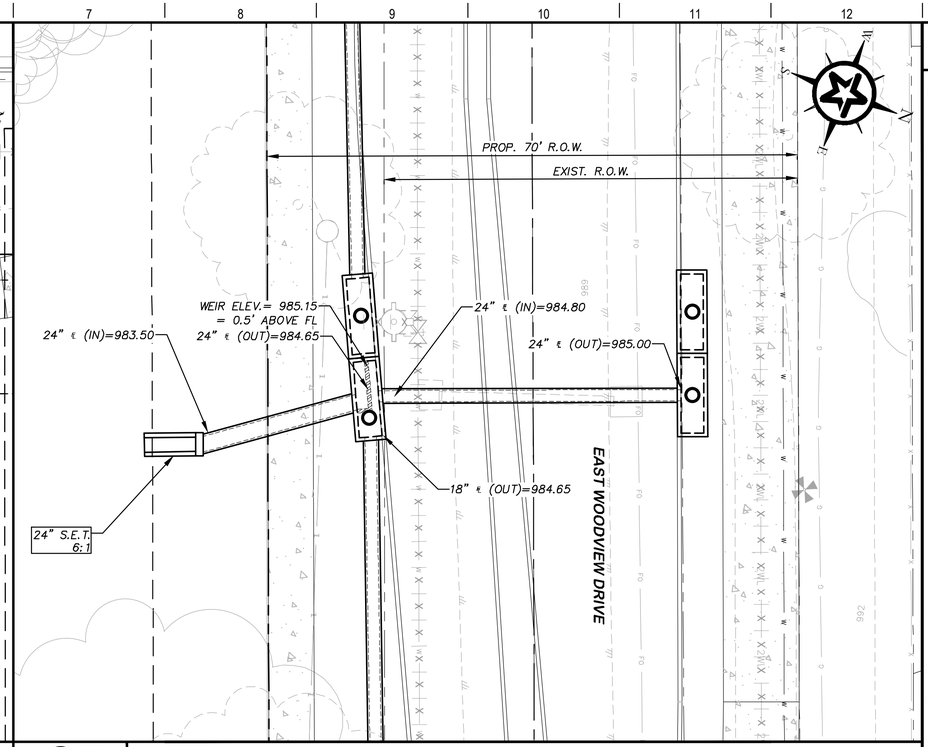


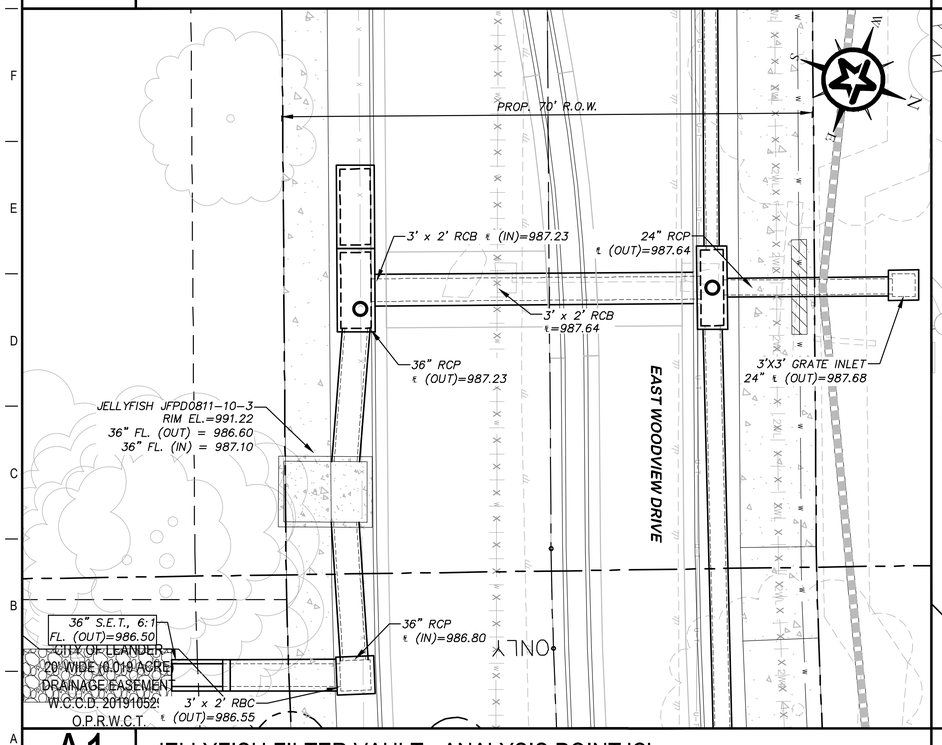
G1 JELLYFISH FILTER VAULT - LINE A1

1"=10'



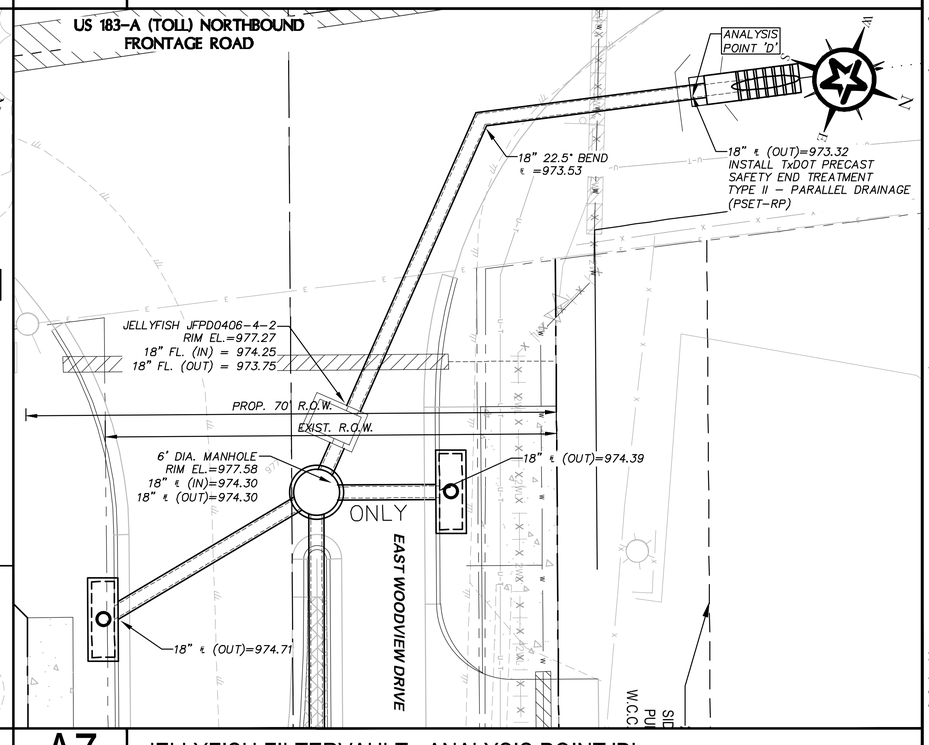
G7 BYPASS LINE - ANALYSIS POINT 'B'

1"=10'



A1 JELLYFISH FILTER VAULT - ANALYSIS POINT 'C'

1"=10'



A7 JELLYFISH FILTERVAULT - ANALYSIS POINT 'D'

1"=10'

GENERAL NOTES

1. A WRITTEN NOTICE OF CONSTRUCTION MUST BE SUBMITTED TO THE TCEQ REGIONAL OFFICE AT LEAST 48 HOURS PRIOR TO THE START OF ANY GROUND DISTURBANCE OR CONSTRUCTION ACTIVITIES. THIS NOTICE MUST INCLUDE:
   - THE NAME OF THE APPROVED PROJECT;
   - THE ACTIVITY START DATE; AND
   - THE CONTACT INFORMATION OF THE PRIME CONTRACTOR.
2. ALL CONTRACTORS CONDUCTING REGULATED ACTIVITIES ASSOCIATED WITH THIS PROJECT SHOULD BE PROVIDED WITH COMPLETE COPIES OF THE APPROVED CONTRIBUTING ZONE PLAN (CZP) AND THE TCEQ LETTER INDICATING THE SPECIFIC CONDITIONS OF ITS APPROVAL. DURING THE COURSE OF THESE REGULATED ACTIVITIES, THE CONTRACTOR(S) SHOULD KEEP COPIES OF THE APPROVED PLAN AND APPROVAL LETTER ON-SITE.
3. NO HAZARDOUS SUBSTANCE STORAGE TANK SHALL BE INSTALLED WITHIN 150 FEET OF A WATER SUPPLY SOURCE, DISTRIBUTION SYSTEM, WELL, OR SENSITIVE FEATURE.
4. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY, ALL TEMPORARY EROSION AND SEDIMENTATION (E&S) CONTROL MEASURES MUST BE PROPERLY INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS. IF INSPECTIONS INDICATE A CONTROL HAS BEEN USED INAPPROPRIATELY, OR INCORRECTLY, THE APPLICANT MUST REPLACE OR MODIFY THE CONTROL FOR SITE SITUATIONS. THESE CONTROLS MUST REMAIN IN PLACE UNTIL THE DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.
5. ANY SEDIMENT THAT ESCAPES THE CONSTRUCTION SITE MUST BE COLLECTED AND PROPERLY DISPOSED OF BEFORE THE NEXT RAIN EVENT TO ENSURE IT IS NOT WASHED INTO SURFACE STREAMS, SENSITIVE FEATURES, ETC.
6. SEDIMENT MUST BE REMOVED FROM THE SEDIMENT TRAPS OR SEDIMENTATION BASINS WHEN IT OCCUPIES 50% OF THE BASIN'S DESIGN CAPACITY.
7. LITTER, CONSTRUCTION DEBRIS, AND CONSTRUCTION CHEMICALS EXPOSED TO STORMWATER SHALL BE PREVENTED FROM BEING DISCHARGED OFFSITE.
8. ALL EXCAVATED MATERIAL THAT WILL BE STORED ON-SITE MUST HAVE PROPER E&S CONTROLS.
9. IF PORTIONS OF THE SITE WILL HAVE A CEASE IN CONSTRUCTION ACTIVITY LASTING LONGER THAN 14 DAYS, SOIL STABILIZATION IN THOSE AREAS SHALL BE INITIATED AS SOON AS POSSIBLE PRIOR TO THE 14TH DAY OF INACTIVITY. IF ACTIVITY WILL RESUME PRIOR TO THE 21ST DAY, STABILIZATION MEASURES ARE NOT REQUIRED. IF DROUGHT CONDITIONS OR INCLEMENT WEATHER PREVENT ACTION BY THE 14TH DAY, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS POSSIBLE.
10. THE FOLLOWING RECORDS SHOULD BE MAINTAINED AND MADE AVAILABLE TO THE TCEQ UPON REQUEST:
    - THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR;
    - THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE; AND
    - THE DATES WHEN STABILIZATION MEASURES ARE INITIATED.
11. THE HOLDER OF ANY APPROVED CZP MUST NOTIFY THE APPROPRIATE REGIONAL OFFICE IN WRITING AND OBTAIN APPROVAL FROM THE EXECUTIVE DIRECTOR PRIOR TO INITIATING ANY OF THE FOLLOWING:
    A. ANY PHYSICAL OR OPERATIONAL MODIFICATION OF ANY BEST MANAGEMENT PRACTICES (BMPS) OR STRUCTURE(S), INCLUDING BUT NOT LIMITED TO TEMPORARY OR PERMANENT PONDS, DAMS, BERMS, SILT FENCES, AND DIVERSIONARY STRUCTURES;
    B. ANY CHANGE IN THE NATURE OR CHARACTER OF THE REGULATED ACTIVITY FROM THAT WHICH WAS ORIGINALLY APPROVED;
    C. ANY CHANGE THAT WOULD SIGNIFICANTLY IMPACT THE ABILITY TO PREVENT POLLUTION OF THE EDWARDS AQUIFER; OR
    D. ANY DEVELOPMENT OF LAND PREVIOUSLY IDENTIFIED AS UNDEVELOPED IN THE APPROVED CONTRIBUTING ZONE PLAN.

AUSTIN REGIONAL OFFICE
12100 PARK 35 CIRCLE, BUILDING A
AUSTIN, TEXAS 78753-1808
PHONE (512) 339-2929
FAX (512) 339-3795

0 5 10 20

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

WATER QUALITY PLAN STRUCTURES

3/30/2023
DATE

DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C316

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585STORM.DWG, WATER QUALITY PLAN STRUCTURES, 3/29/2023 4:20:17 PM, pthomas

POND OUTLET STRUCTURE
RE. A1/C320
N=10178476.57
E=3087490.33

TW=946.00
BW=938.25

FG=938.10

TW=946.00
BW=938.25

BW=938.85
TW=946.50

TW=946.50
BW=939.00

TW=946.80
BW=939.50

TW=946.80

CITY OF LEANDER
0.613 ACRE DRAINAGE EASEMENT
W.C.C.D. 2023006539 O.P.R.W.C.T.

TW=946.80
BW=939.90

FG=939.00

FG=939.40

FG=939.85

FG=940.00

TW=946.80
BW=940.25

TW=946.80
BW=940.50

22 SY – 12" ROCK
RIPRAP 2' THICK

TW=946.80
BW=940.30

3 ENERGY DISSIPATORS
ON 8' x 14' x 6" REINF.
CONCRETE SLAB W/ 12"
TURNDOWN ON ALL SIDES.
RE: G1/C320 FOR
DISSIPATOR & REINFORCING
DETAILS.

RE: RETAINING WALL PLANS

6' HIGH CHAIN LINK
FENCE W/ PVC
COATED FABRIC
RE: G8/C322

TW=946.80
BW=940.30

TW=946.80
BW=940.75

TW=940.75
BW=940.75

MAINTENANCE
ACCESS RAMP
(4:1)

TW=946.80
BW=946.40

DRWY 99

TYPE 2 DRWY

12'
MAINT. DRWY

R5'

CITY OF LEANDER 15' WIDE (0.052 ACRE)
SIDEWALK EASEMENT W.C.C.D. 2023006542 O.P.R.W.C.T.

12'
MAINT. DRWY

7" REINF. CONC.
PAVEMENT

TW=946.80
BW=941.00

TW=946.80
BW=941.00

STORM WATER
FACILITY SIGN
RE: A12/C321

FG=946.70
FG=946.70

PIPE GATE RE: G8/C322

0+00
1+00
2+00
2+50.00

946.06+
946.34+
946.55+
946.80+
947.03+
947.36+
947.31+

POND A INFLOW	20.5	32.3	40.4	54.1
POND A OUTFLOW	8.7	10.9	17.4	14.8
POND A PEAK STORAGE (ACRE-FEET)	0.36	0.69	0.95	1.46
POND A PEAK ELEVATION (FT MSL)	940.90	942.16	943.12	944.98

TOP OF WALL EL.=946.00 (U.N.O.)

100 YR. W.S. EL.=944.98

25 YR. W.S. EL.=943.12

10 YR. W.S. EL.=942.16

2 YR. W.S. EL.=940.90

FL 15" (IN) = 938.10

FL 30" (OUT) = 937.82

1+90.00, 42" RCP
12.03 LT
940.30

POND ACCESS

H:1"=10'
V:1"=2'

0 5 10 20
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DETENTION POND 'A' PLAN AND SECTION

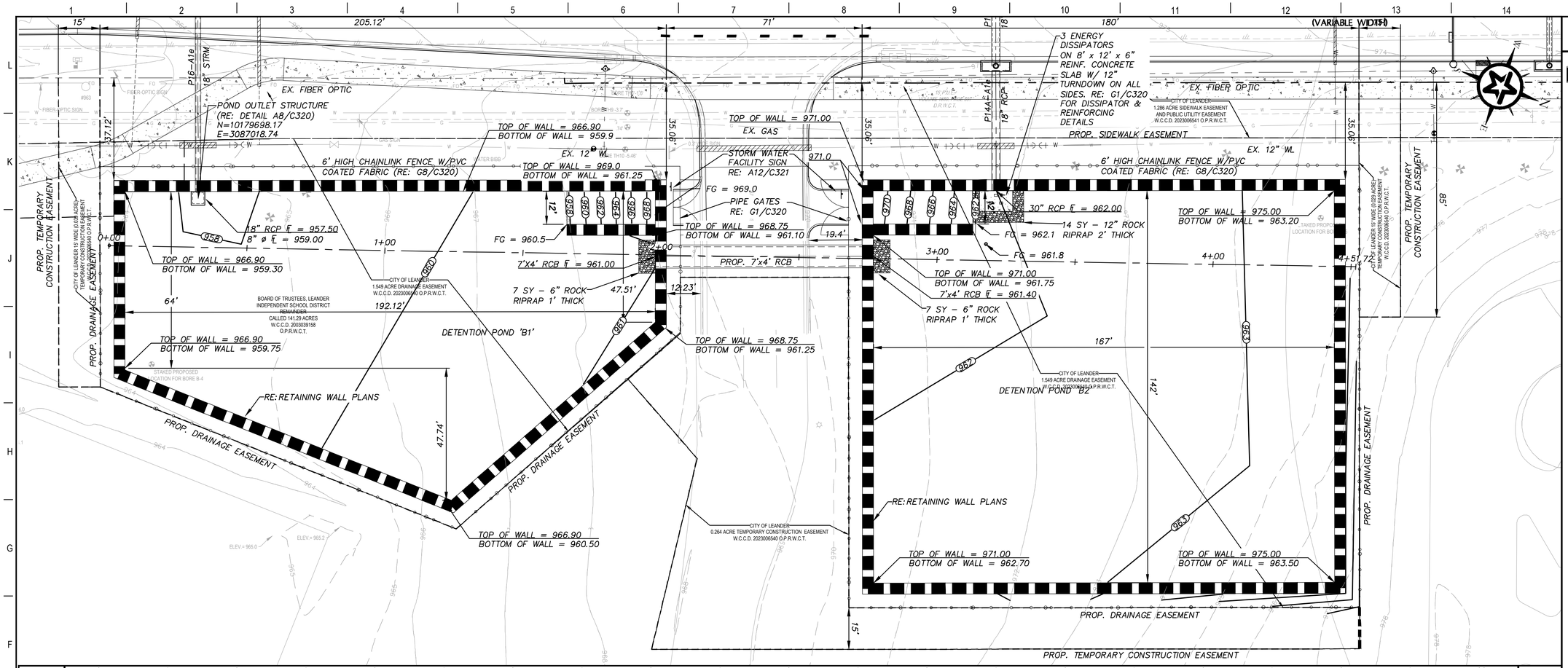
3/30/2023
DATE

DAVID P. SMITH

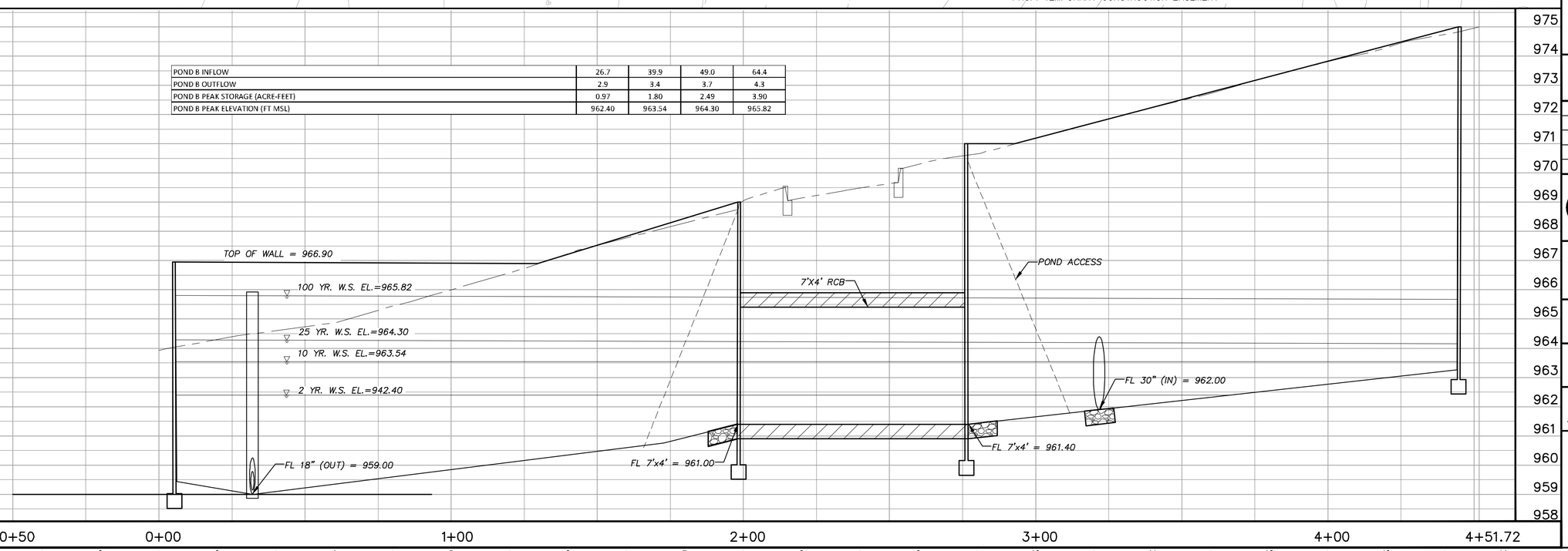
STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C317

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETENTION.DWG, DETENTION POND 'A' PLAN AND SECTION, 3/29/2023 4:21:53 PM, pthomas



POND B INFLOW	26.7	39.9	49.0	64.4
POND B OUTFLOW	2.9	3.4	3.7	4.3
POND B PEAK STORAGE (ACRE-FEET)	0.97	1.80	2.49	3.90
POND B PEAK ELEVATION (FT MSL)	962.40	963.54	964.30	965.82



LEGEND

DRY STACK RETAINING WALL

0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DETENTION POND 'B' (TENNIS COURT) PLAN AND SECTION

3/30/2023
DATE

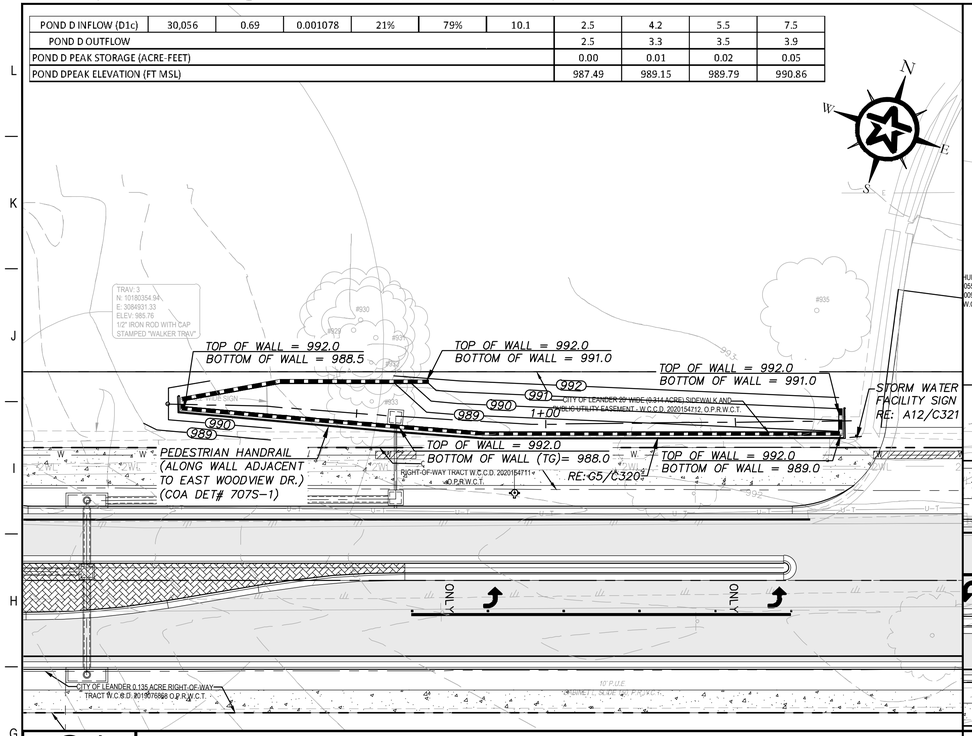
David P. Smith
DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C318

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\EXHIBITS\TENNIS COURT PONDS\3-00585DETENTION_TENNIS COURTS.DWG, DETENTION POND 'B' (TENNIS COURT) PLAN AND SECTION, 3/29/2023 4:24:32 PM, pthomas

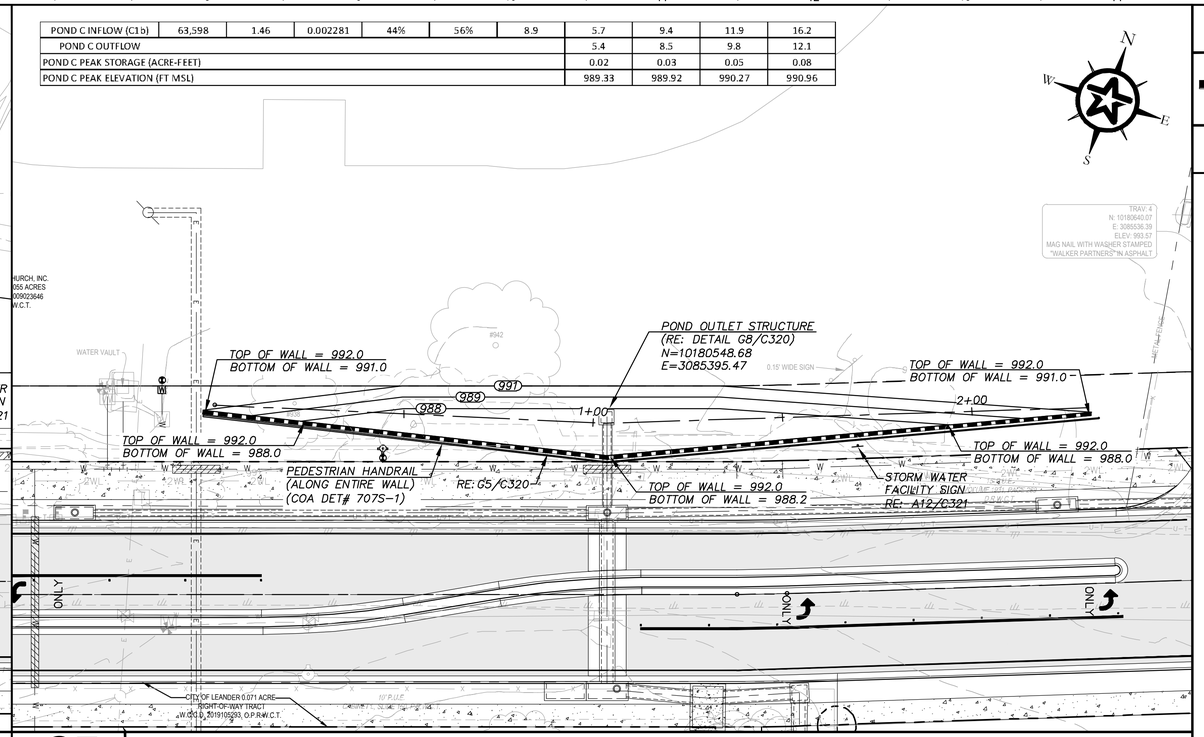
POND D INFLOW (D1c)	30,056	0.69	0.001078	21%	79%	10.1	2.5	4.2	5.5	7.5
POND D OUTFLOW							2.5	3.3	3.5	3.9
POND D PEAK STORAGE (ACRE-FEET)							0.00	0.01	0.02	0.05
POND DPEAK ELEVATION (FT MSL)							987.49	989.15	989.79	990.86



G1 DETENTION POND D (PLAN)

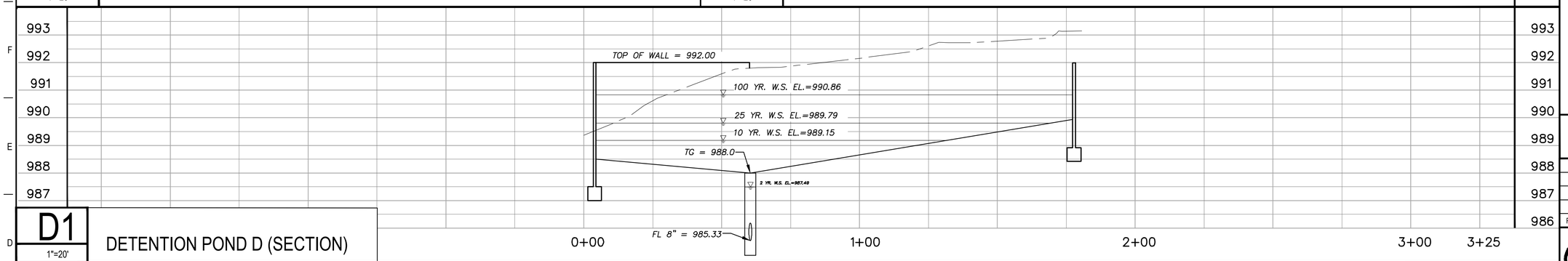
1"=20'

POND C INFLOW (C1b)	63,598	1.46	0.002281	44%	56%	8.9	5.7	9.4	11.9	16.2
POND C OUTFLOW							5.4	8.5	9.8	12.1
POND C PEAK STORAGE (ACRE-FEET)							0.02	0.03	0.05	0.08
POND C PEAK ELEVATION (FT MSL)							989.33	989.92	990.27	990.96



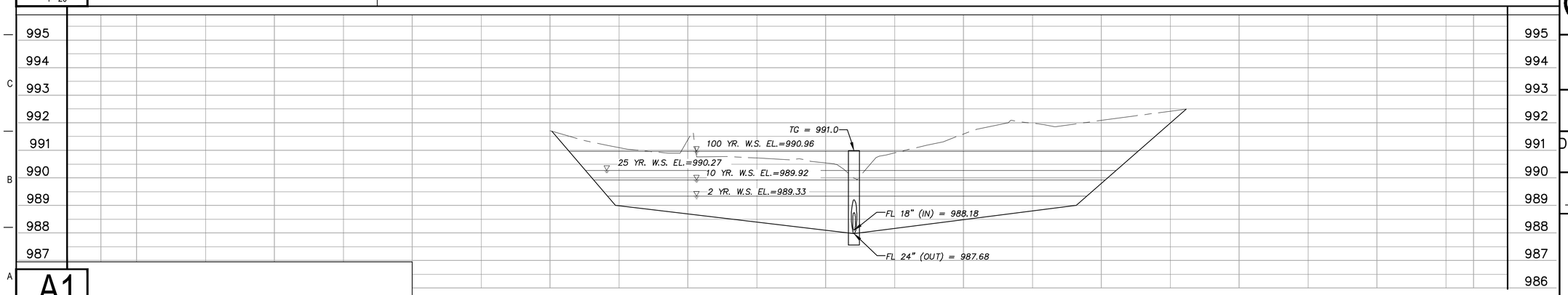
G7 DETENTION POND C (PLAN)

1"=20'



D1 DETENTION POND D (SECTION)

1"=20'



A1 DETENTION POND C (SECTION)

1"=20'

LEGEND

DRY STACK RETAINING WALL

GENERAL NOTES

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DETENTION PONDS 'C' AND 'D' PLAN AND SECTION

3/30/2023 DATE

David P. Smith DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C319

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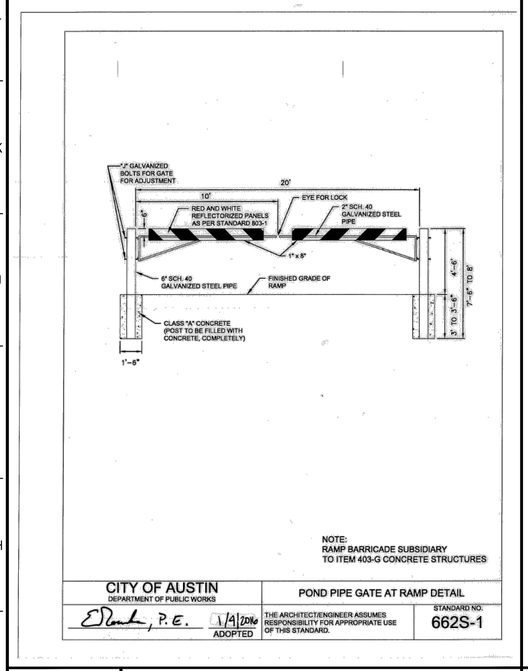
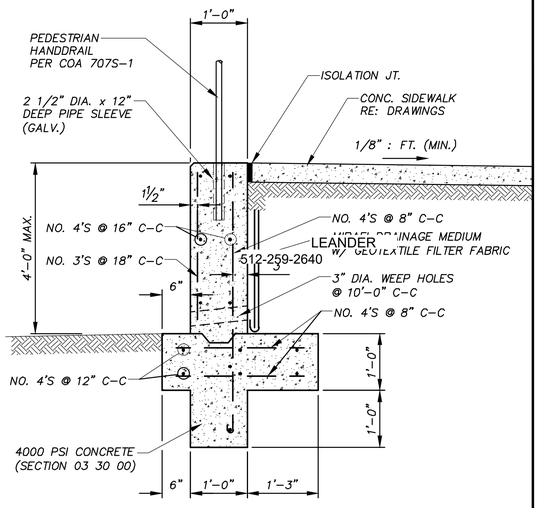


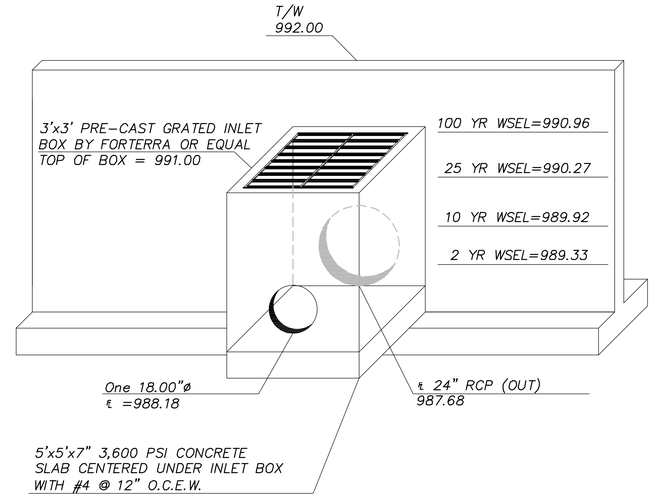
G1 PIPE GATE AT RAMP

N.T.S.



G5 CONCRETE WALL RETAINING WALL

N.T.S.



G8 DETENTION OUTLET STRUCTURE POND 'C'

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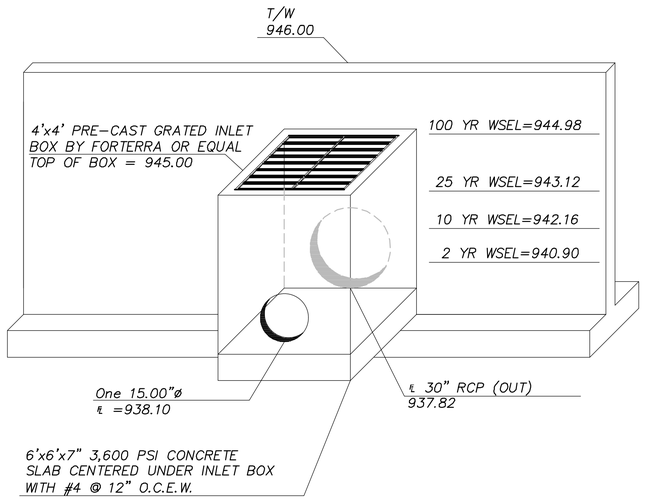
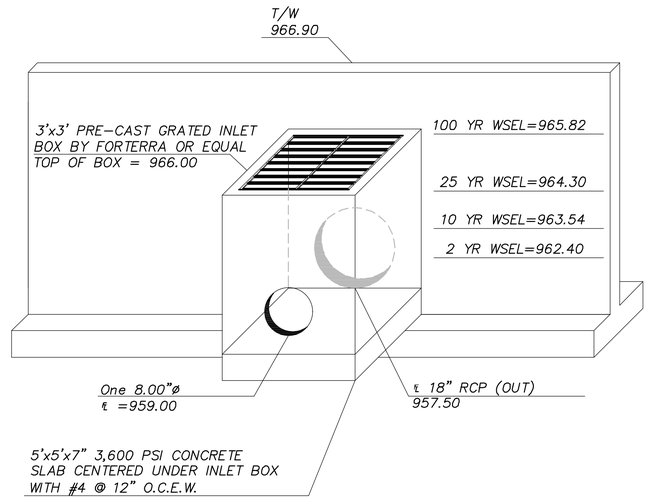


A1 DETENTION OUTLET STRUCTURE POND 'A'

N.T.S.



A8 DETENTION OUTLET STRUCTURE POND 'B'

N.T.S.

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DETENTION POND DETAILS

3/30/2023
DATE

DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C320

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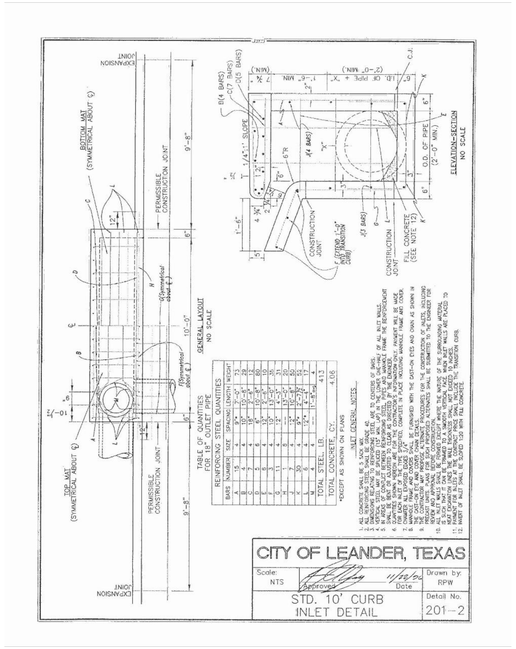
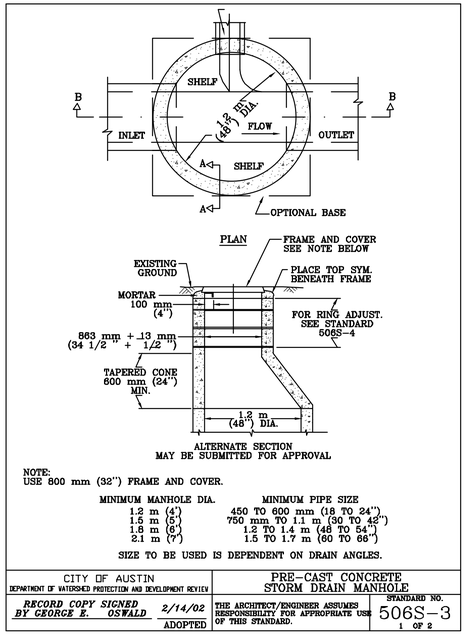
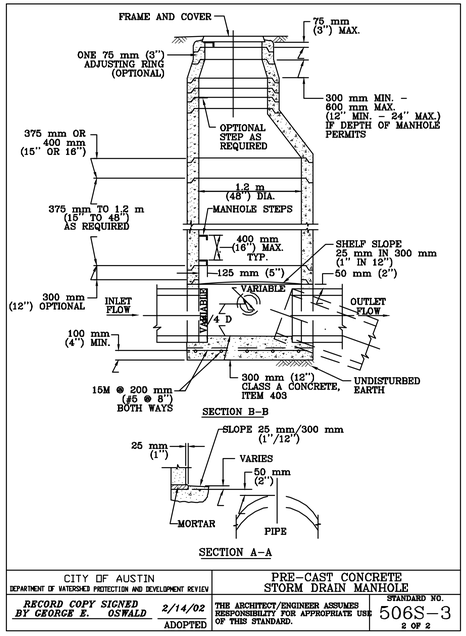


G1 STANDARD 10' CURB INLET

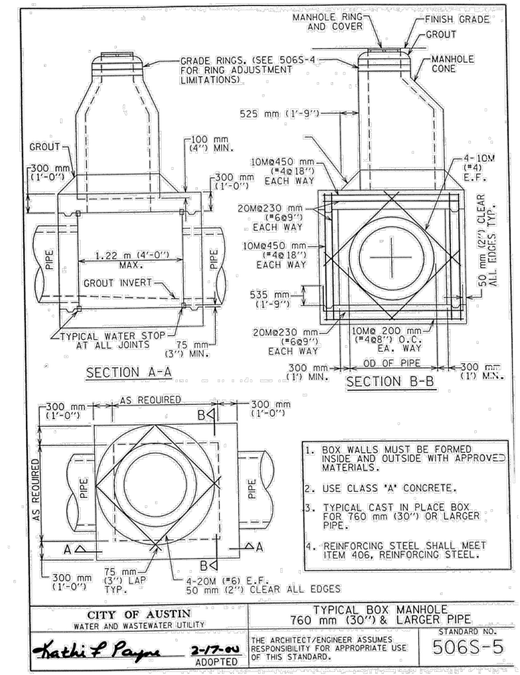
N.T.S.





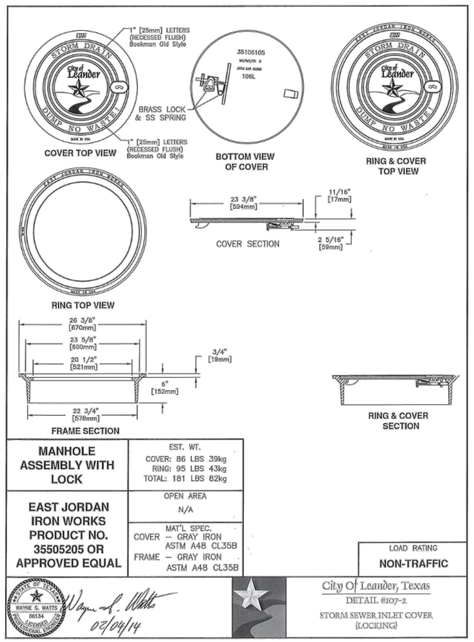
G5 PRECAST STORM MANHOLE

N.T.S.



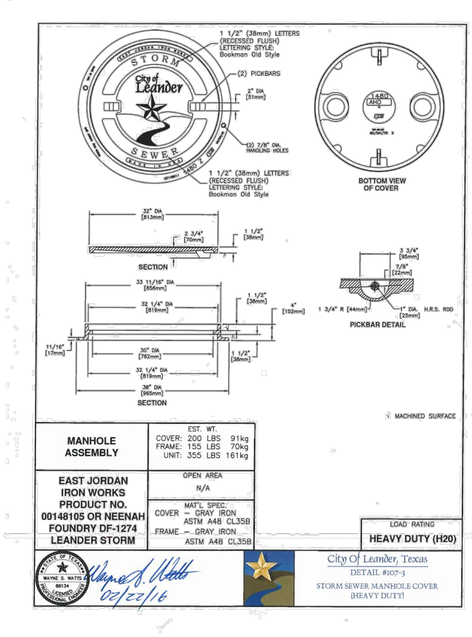
G11 TYPICAL BOX MANHOLE

N.T.S.



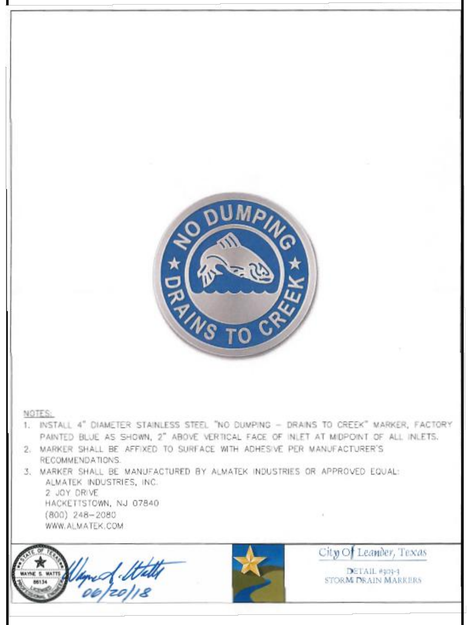
A1 STORM INLET COVER (LOCKING)

N.T.S.



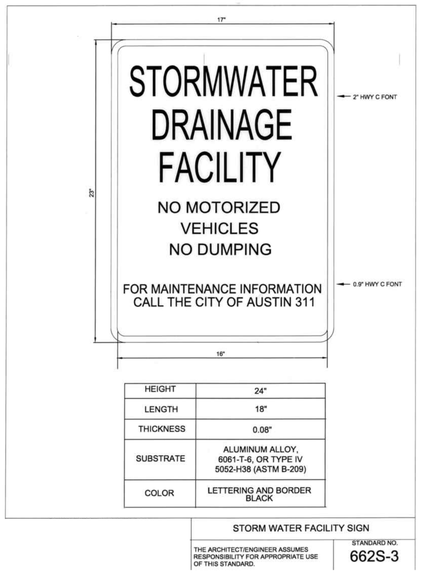
A5 STORM MANHOLE COVER (HEAVY DUTY)

N.T.S.



A9 STORM DRAIN MARKER

N.T.S.



A12 STORM WATER FACILITY SIGN

N.T.S.

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRAINAGE DETAILS

3/30/2023 DATE

David P. Smith
DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C321

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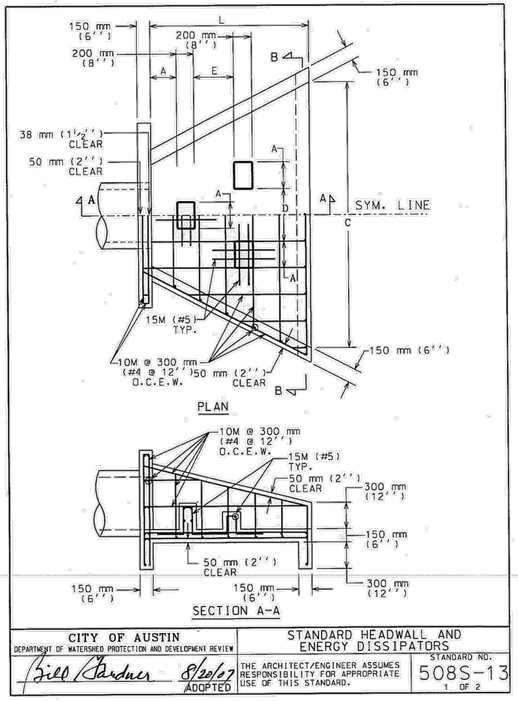
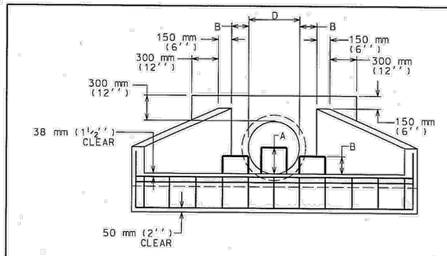




NOTES:

1. ALL CONCRETE SHALL BE TYPE "C" AS PER SPEC. 403S. CONCRETE FOR STURCTURES.
2. CHAMFER ALL EXTERNAL VISIBLE CORNERS.
3. DISSIPATOR BLOCKS REQUIRED ON DISCHARGE HEADWALLS ONLY.

D	457 mm (18'')	533 mm (21'')	610 mm (24'')	685 mm (27'')	765 mm (30'')	838 mm (33'')	914 mm (36'')	1.067 m (42'')	1.219 m (48'')	1.372 m (54'')	1.524 m (60'')
A	225 mm (9'')	250 mm (10'')	300 mm (12'')	350 mm (14'')	375 mm (15'')	400 mm (16'')	450 mm (18'')	525 mm (21'')	600 mm (24'')	675 mm (27'')	750 mm (30'')
B	150 mm (6'')	175 mm (7'')	200 mm (8'')	225 mm (9'')	250 mm (10'')	275 mm (11'')	300 mm (12'')	350 mm (14'')	400 mm (16'')	450 mm (18'')	500 mm (20'')
C	2.29 m (90'')	2.67 m (105'')	3.05 m (120'')	343 m (135'')	3.81 m (150'')	4.19 m (165'')	4.57 m (180'')	5.33 m (210'')	6.10 m (240'')	6.86 m (270'')	7.62 m (300'')
L	1.37 m (54'')	1.60 m (63'')	1.83 m (72'')	2.06 m (81'')	2.29 m (90'')	2.51 m (99'')	2.74 m (108'')	3.20 m (126'')	3.66 m (144'')	4.11 m (162'')	4.57 m (180'')
E	300 mm (12'')	350 mm (14'')	400 mm (16'')	450 mm (18'')	500 mm (20'')	550 mm (22'')	600 mm (24'')	700 mm (28'')	800m (32'')	900 mm (36'')	1000 mm (40'')

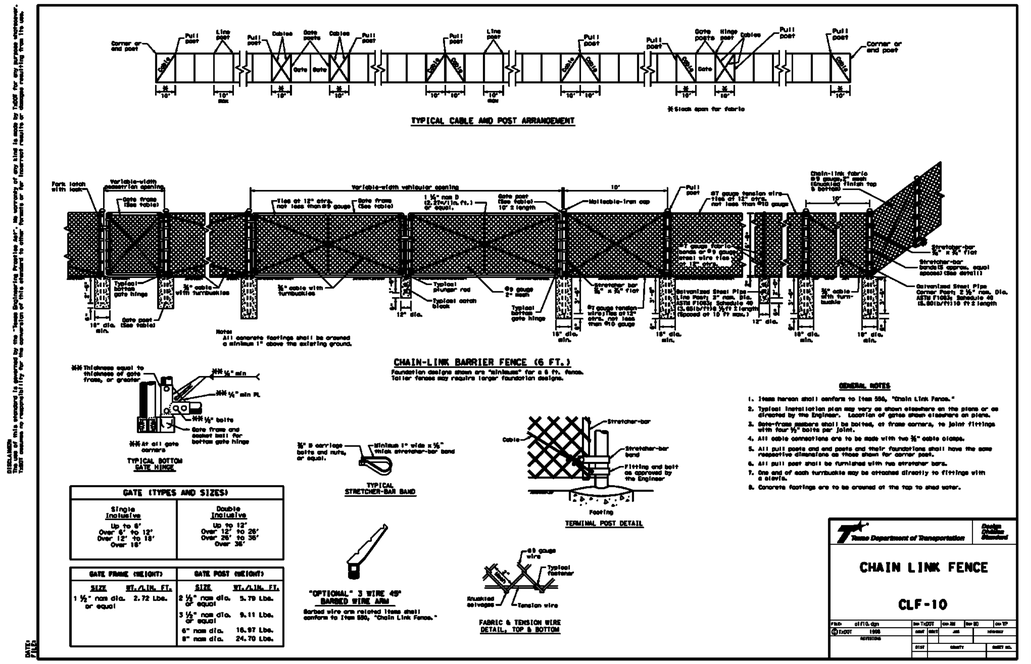
DIMENSIONS IN MILLIMETERS, METERS AND (INCHES).

DISCHARGE VELOCITIES GREATER THAN 3 METERS/SECOND (10 fps) REQUIRE ROCK OUTLET PROTECTION.

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	STANDARD HEADWALL AND ENERGY DISSIPATORS	
Bill Gardner 8/20/07 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-13 1 OF 2

CITY OF AUSTIN DEPARTMENT OF WATERSHED PROTECTION AND DEVELOPMENT REVIEW	STANDARD HEADWALL AND ENERGY DISSIPATORS	
Bill Gardner 8/20/07 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 508S-13 2 OF 2

G1 STANDARD HEADWALL WITH ENERGY DISSIPATORS — N.T.S.



GATE (TYPES AND SIZES)	
Single Inclusive Up to 6' Over 6' to 12' Over 12' to 18' Over 18'	Double Inclusive Up to 12' Over 12' to 24' Over 24' to 36' Over 36'

GATE FRAME (WEIGHT)		GATE POST (WEIGHT)	
SIZE	Wt./Lin. Ft.	SIZE	Wt./Lin. Ft.
1 ½" nom dia. or equal	2.72 Lbs.	2 ½" nom dia. or equal	5.79 Lbs.
		3 ½" nom dia. or equal	9.11 Lbs.
		6" nom dia.	18.97 Lbs.
		8" nom dia.	24.70 Lbs.

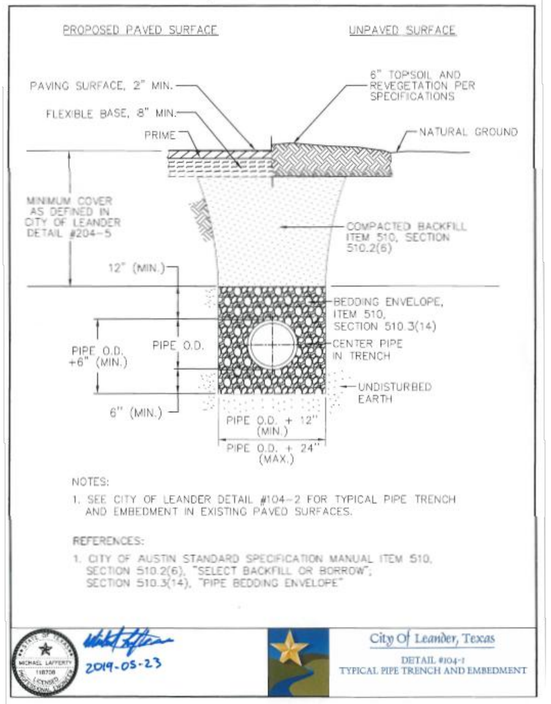
Texas Department of Transportation — Design Standard

CHAIN LINK FENCE

CLF-10

file	clf10.dgn	dn: TxDOT	ck:	dw:	ck:
©TxDOT	1995	CONT	SECT	JOB	HIGHWAY
REVISIONS		DIST	COUNTY		SHEET NO.

G8 TXDOT CHAIN LINK FENCE — N.T.S.



NOTES:

1. SEE CITY OF LEANDER DETAIL #104-2 FOR TYPICAL PIPE TRENCH AND EMBEDMENT IN EXISTING PAVED SURFACES.

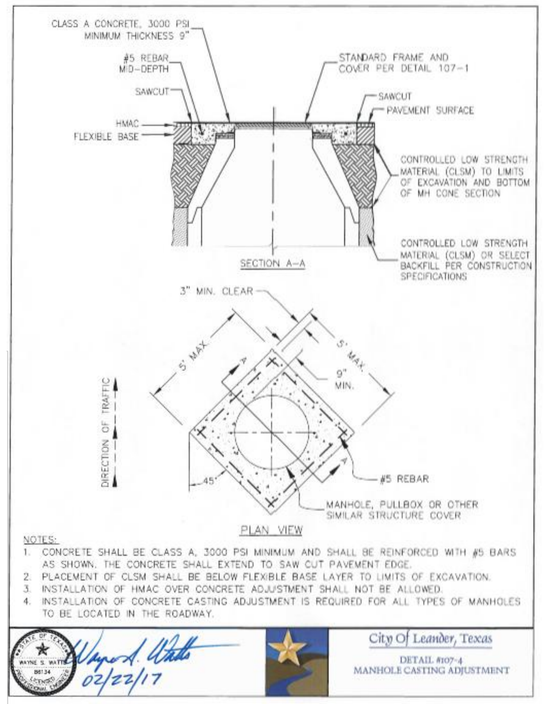
REFERENCES:

1. CITY OF AUSTIN STANDARD SPECIFICATION MANUAL ITEM 510, SECTION 510.2(6), "SELECT BACKFILL OR BORROW", SECTION 510.3(14), "PIPE BEDDING ENVELOPE"

MICHAEL LAFFERTY 118708 LICENSED PROFESSIONAL ENGINEER 2019-05-23

City Of Leander, Texas
DETAIL #104-1
TYPICAL PIPE TRENCH AND EMBEDMENT

A1 PIPE TRENCH & EMBEDMENT — N.T.S.



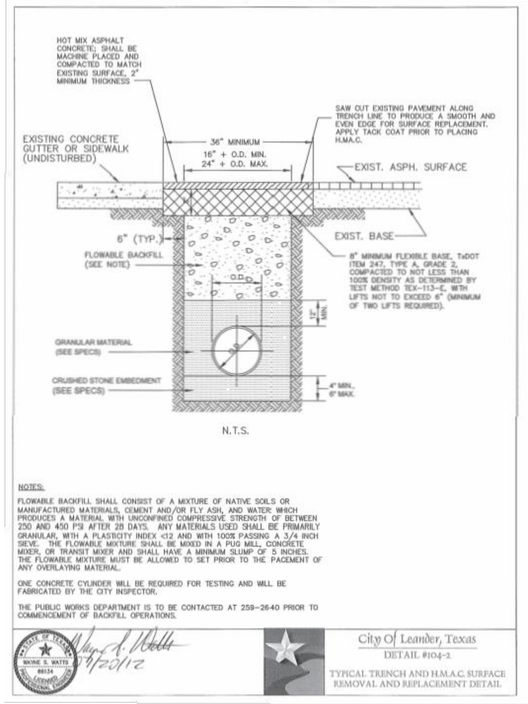
NOTES:

1. CONCRETE SHALL BE CLASS A, 3000 PSI MINIMUM AND SHALL BE REINFORCED WITH #5 BARS AS SHOWN. THE CONCRETE SHALL EXTEND TO SAW CUT PAVEMENT EDGE.
2. PLACEMENT OF CLSM SHALL BE BELOW FLEXIBLE BASE LAYER TO LIMITS OF EXCAVATION.
3. INSTALLATION OF HMAC OVER CONCRETE ADJUSTMENT SHALL NOT BE ALLOWED.
4. INSTALLATION OF CONCRETE CASTING ADJUSTMENT IS REQUIRED FOR ALL TYPES OF MANHOLES TO BE LOCATED IN THE ROADWAY.

WAYNE S. WATTS 88134 LICENSED PROFESSIONAL ENGINEER 02/22/17

City Of Leander, Texas
DETAIL #107-4
MANHOLE CASTING ADJUSTMENT

A8 MH CASTING ADJUSTMENT — N.T.S.



NOTES:

FLOWABLE BACKFILL SHALL CONSIST OF A MIXTURE OF NATIVE SOILS OR MANUFACTURED MATERIALS, CEMENT AND/OR FLY ASH, AND WATER WHICH PRODUCES A MATERIAL WITH UNCONFINED COMPRESSIVE STRENGTH OF BETWEEN 250 AND 450 PSI AFTER 28 DAYS. ANY MATERIALS USED SHALL BE PRIMARILY GRANULAR, WITH A PLASTICITY INDEX <12 AND WITH 100% PASSING A 3/4 INCH SIEVE. THE FLOWABLE MIXTURE SHALL BE MIXED IN A PUG MILL, CONCRETE MIXER, OR TRANSIT MIXER AND SHALL HAVE A MINIMUM SLUMP OF 5 INCHES. THE FLOWABLE MIXTURE MUST BE ALLOWED TO SET PRIOR TO THE PLACEMENT OF ANY OVERLAYING MATERIAL.

ONE CONCRETE CYLINDER WILL BE REQUIRED FOR TESTING AND WILL BE FABRICATED BY THE CITY INSPECTOR.

THE PUBLIC WORKS DEPARTMENT IS TO BE CONTACTED AT 259-2640 PRIOR TO COMMENCEMENT OF BACKFILL OPERATIONS.

WAYNE S. WATTS 88134 LICENSED PROFESSIONAL ENGINEER 4/20/12

City Of Leander, Texas
DETAIL #104-2
TYPICAL TRENCH AND H.M.A.C. SURFACE REMOVAL AND REPLACEMENT DETAIL

A8 TRENCH AND HMAC SURFACE REPLACEMENT — N.T.S.

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRAINAGE DETAILS

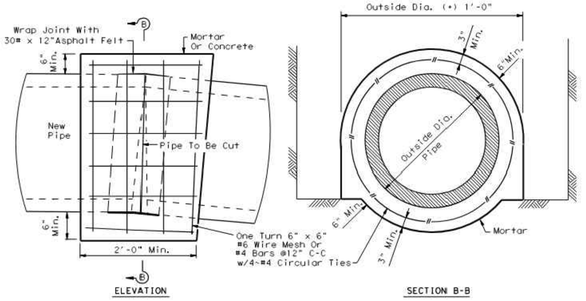
3/30/2023 — DATE

David P. Smith — DAVID P. SMITH

STATE OF TEXAS — DAVID P. SMITH — 56239 — REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C322

G:\PROJECTS\13-0058S\2 DESIGN\2.0 CAD\3-0058SDETAILS-DNG.DWG, C319 DRAINAGE DETAILS, 3/29/2023 4:29:03 PM, pthomas

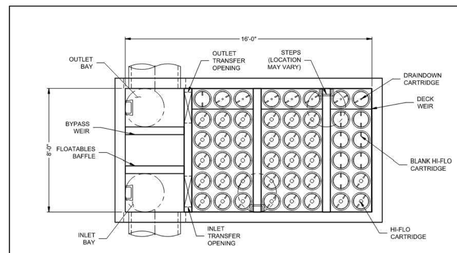


PIPE COLLAR DETAIL
For Horizontal Or Vertical Placement

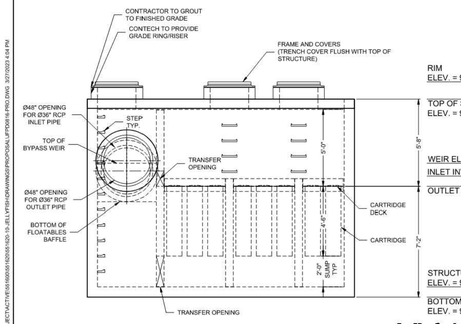
d = Diameter
R = Radius

G1
N.T.S.

PIPE COLLAR DETAIL (PER TxDOT DETAIL MSD)



PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)



ELEVATION VIEW

JELLYFISH DESIGN NOTES	
JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT AND/OR SHALLOW ORIENTATIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD	
CARTRIDGE SELECTION	
CARTRIDGE LENGTH	54"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-6"
FLOW RATE HI-FLO / DRAINDOWN (CFS) (PER CART)	0.178 / 0.089
MAX. TREATMENT (CFS)	7.84
DECK TO INSIDE TOP (MIN) (B)	5.00



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS					
STRUCTURE ID					BASIN A
WATER QUALITY FLOW RATE (cfs)					6.50
PEAK FLOW RATE (cfs)					*
RETURN PERIOD OF PEAK FLOW (yrs)					*
# OF CARTRIDGES REQUIRED (HF / DD)					33/7
CARTRIDGE LENGTH					54
PIPE DATA:	I.E.	MATL	DIA	SLOPE %	HGL
INLET #1	940.90	RCP	36"	*	*
INLET #2	*	*	*	*	*
OUTLET	940.40	RCP	36"	*	*
SEE GENERAL NOTES 6-7 FOR INLET AND OUTLET HYDRAULIC AND SIZING REQUIREMENTS.					
RIM ELEVATION					949.39'
ANTI-FLOTATION BALLAST		WIDTH		HEIGHT	
		*		*	
NOTES/SPECIAL REQUIREMENTS:					
* PER ENGINEER OF RECORD					

GENERAL NOTES:
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE. www.ContechES.com
3. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 0' - 10', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-857, ASTM C-918, AND AASHTO LOAD FACTOR DESIGN METHOD.
6. OUTLET PIPE INVERT IS EQUAL TO THE CARTRIDGE DECK ELEVATION.
7. THE OUTLET PIPE DIAMETER FOR NEW INSTALLATIONS IS RECOMMENDED TO BE ONE PIPE SIZE LARGER THAN THE INLET PIPE AT EQUAL OR GREATER SLOPE.
8. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE.
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT).
D. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION.

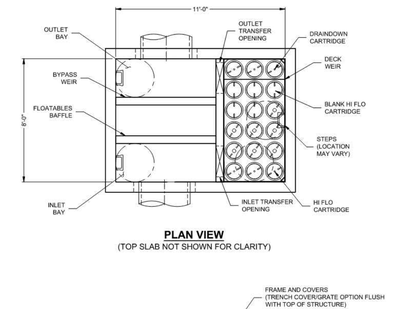
Jellyfish Filter
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING: U.S. PATENT NO. 8,287,726; 8,231,616; 9,095,795; 9,120,026; OTHER INTERNATIONAL PATENTS PENDING

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9100 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

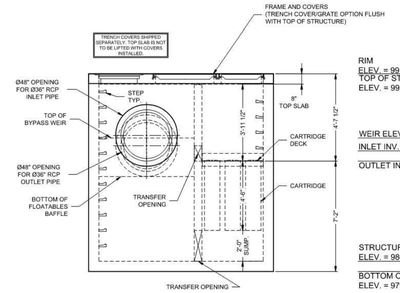
8' x 16' JELLYFISH - 551620 - 010
RAIDER WAY ROAD IMPROVEMENTS
LEANDER, TX
SITE DESIGNATION: BASIN A

G8
N.T.S.

CONTECH JELLYFISH FILTER JFPD0816



PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)

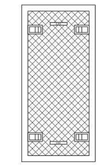


ELEVATION VIEW

JELLYFISH DESIGN NOTES				
JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT, CURB INLET OR SHALLOW PIPE INLET OPTIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD.				
CARTRIDGE SELECTION				
CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-6"	5'-4"	4'-3"	3'-3"
FLOW RATE HIGH-FLO / DRAINDOWN (CFS) (PER CART)	0.178 / 0.089	0.133 / 0.067	0.089 / 0.045	0.049 / 0.025
MAX. TREATMENT (CFS)	0.89	0.67	0.45	0.25
DECK TO INSIDE TOP (MIN) (B)	5'-0"	4'-0"	4'-0"	4'-0"

FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS					
STRUCTURE ID					BASIN C
WATER QUALITY FLOW RATE (cfs)					2.02
PEAK FLOW RATE (cfs)					*
RETURN PERIOD OF PEAK FLOW (yrs)					*
# OF CARTRIDGES REQUIRED (HF / DD)					10/3
CARTRIDGE LENGTH					54
PIPE DATA:	I.E.	MATL	DIA	SLOPE %	HGL
INLET #1	987.10	RCP	36"	*	*
INLET #2	*	*	*	*	*
OUTLET	986.60	RCP	36"	*	*
SEE GENERAL NOTES 6-7 FOR INLET AND OUTLET HYDRAULIC AND SIZING REQUIREMENTS.					
RIM ELEVATION					991.22
ANTI-FLOTATION BALLAST		WIDTH		HEIGHT	
		*		*	
NOTES/SPECIAL REQUIREMENTS: INLET/OUTLET BAY IS UPSIZED TO ACCOMMODATE 36" RCP. VAULT SIZE IS 8'X11'. * PER ENGINEER OF RECORD					



24" TRENCH COVER
(LENGTH VARIES)
N.T.S.

GENERAL NOTES:
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE. www.ContechES.com
3. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 0' - 10', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-857, ASTM C-918, AND AASHTO LOAD FACTOR DESIGN METHOD.
6. OUTLET PIPE INVERT IS EQUAL TO THE CARTRIDGE DECK ELEVATION.
7. THE OUTLET PIPE DIAMETER FOR NEW INSTALLATIONS IS RECOMMENDED TO BE ONE PIPE SIZE LARGER THAN THE INLET PIPE AT EQUAL OR GREATER SLOPE.
8. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES
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B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE.
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT).
D. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION.

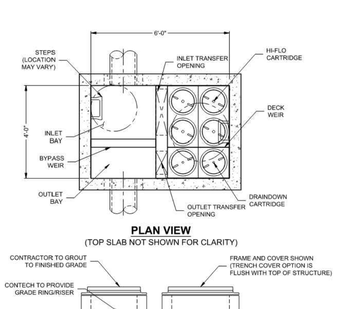
Jellyfish Filter
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING: U.S. PATENT NO. 8,287,726; 8,231,616; 9,095,795; 9,120,026; OTHER INTERNATIONAL PATENTS PENDING

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9100 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

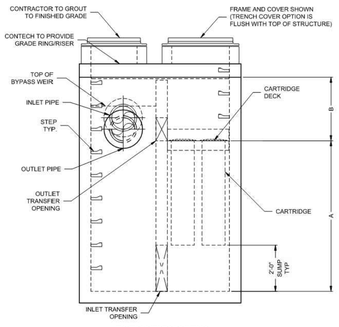
8' x 11' JELLYFISH - 551620 - 020
RAIDER WAY ROAD IMPROVEMENTS
LEANDER, TX
SITE DESIGNATION: BASIN C

A1
N.T.S.

CONTECH JELLYFISH FILTER PD0811



PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)



ELEVATION VIEW

JELLYFISH DESIGN NOTES				
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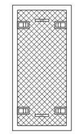
CARTRIDGE SELECTION				
CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-6"	5'-4"	4'-3"	3'-3"
FLOW RATE HIGH-FLO / DRAINDOWN (CFS) (PER CART)	0.178 / 0.089	0.133 / 0.067	0.089 / 0.045	0.049 / 0.025
MAX. TREATMENT (CFS)	0.89	0.67	0.45	0.25
DECK TO INSIDE TOP (MIN) (B)	5'-0"	4'-0"	4'-0"	4'-0"



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.



24" TRENCH COVER
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS					
STRUCTURE ID					BASIN D
WATER QUALITY FLOW RATE (cfs)					0.89
PEAK FLOW RATE (cfs)					*
RETURN PERIOD OF PEAK FLOW (yrs)					*
# OF CARTRIDGES REQUIRED (HF / DD)					4/2
CARTRIDGE LENGTH					54
PIPE DATA:	I.E.	MATL	DIA	SLOPE %	HGL
INLET #1	974.25	RCP	18"	*	*
INLET #2	*	*	*	*	*
OUTLET	973.75	RCP	18"	*	*
SEE GENERAL NOTES 6-7 FOR INLET AND OUTLET HYDRAULIC AND SIZING REQUIREMENTS.					
RIM ELEVATION					977.27
ANTI-FLOTATION BALLAST		WIDTH		HEIGHT	
		*		*	
NOTES/SPECIAL REQUIREMENTS: TOP OF WEIR ELEVATION = 975.53 * PER ENGINEER OF RECORD					

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8. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES
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D. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION.

Jellyfish Filter
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800-338-1122 513-645-7000 513-645-7993 FAX

JELLYFISH JFPD0406
STANDARD DETAIL
PEAK DIVERSION CONFIGURATION

A8
N.T.S.

CONTECH JELLYFISH FILTER JFPD0406

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRAINAGE DETAILS

3/30/2023
DATE

David P. Smith
DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C323

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-DNG.DWG, C320 DRAINAGE DETAILS, 3/29/2023 4:29:07 PM, pthomas
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C:\USERS\JOHN.WRIGHT\ONEDRIVE - THE GUARDIAN TS COMPANIES\DESIGN\SHEETS\DETAILS\JFPD0406-STD.DWG 11/15/2022 2:07 PM

CONTECH JELLYFISH FILTERS

The primary purpose of the Jellyfish® Filter is to capture and remove pollutants from stormwater runoff. As with any filtration system, these pollutants must be removed to maintain the filter's maximum treatment performance. Regular inspection and maintenance are required to insure proper functioning of the system.

Maintenance frequencies and requirements are site specific and vary depending on pollutant loading. Additional maintenance activities may be required in the event of non-storm event runoff, such as base-flow or seasonal flow, an upstream chemical spill or due to excessive sediment loading from site erosion or extreme runoff events. It is a good practice to inspect the system after major storm events.

Inspection activities are typically conducted from surface observations and include:

- Observe if standing water is present
- Observe if there is any physical damage to the deck or cartridge lids
- Observe the amount of debris in the Maintenance Access Wall (MAW)

Maintenance activities typically include:

- Removal of oil, floatable trash and debris
- Removal of collected sediments
- Rinsing and re-installing the filter cartridges
- Replace filter cartridge tentacles, as needed

Inspection:

Inspection Timing

Inspection of the Jellyfish Filter is key in determining the maintenance requirements for, and to develop a history of the site's pollutant loading characteristics. In general, inspections should be performed at the times indicated below; or per the approved project stormwater quality documents (if applicable), whichever is more frequent.

1. Post-construction inspection is required prior to putting the Jellyfish Filter into service. All construction debris or construction-related sediment within the device must be removed, and any damage to system components repaired, before installing the filter cartridges.
2. A minimum of two inspections during the first year of operation to assess the sediment and floatable pollutant accumulation, and to ensure proper functioning of the system.
3. Inspection frequency in subsequent years is based on the inspection and maintenance plan developed in the first year of operation. Minimum frequency should be once per year.
4. Inspection is recommended after each major storm event.
5. Inspection is required immediately after an upstream oil, fuel or other chemical spill.

Inspection Procedure

The following procedure is recommended when performing inspections:

1. Provide traffic control measures as necessary.
2. Inspect the MAW for floatable pollutants such as trash, debris, and oil sheen.
3. Measure oil and sediment depth in several locations, by lowering a sediment probe through the MAW opening until contact is made with the floor of the structure. Record sediment depth, and presences of any oil layers.
4. Inspect cartridge lids. Missing or damaged cartridge lids to be replaced.
5. Inspect the MAW, cartridge deck, and backwash pool weir, for cracks or broken components. If damaged, repair is required.

Dry Weather Inspections

- Inspect the cartridge deck for standing water, and/or sediment on the deck.
- No standing water under normal operating conditions.
- Standing water inside the backwash pool, but not outside the backwash pool indicates that the filter cartridges need to be rinsed.
- Standing water outside the backwash pool may indicate a backwater condition caused by high water elevation in the receiving water body, or possibly a blockage in downstream infrastructure.
- Any appreciable sediment (≥1/16") accumulated on the deck surface should be removed.

Wet Weather Inspections

- Observe the rate and movement of water in the unit. Note the depth of water above deck elevation within the MAW.
- Less than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges (i.e. cartridges located outside the backwash pool).
- Greater than 6 inches, flow should be exiting the cartridge lids of each of the draindown cartridges and each of the hi-flo cartridges (i.e. cartridges located inside the backwash pool), and water should be overflowing the backwash pool weir.
- 18 inches or greater and relatively little flow is exiting the cartridge lids and outlet pipe, this condition indicates that the filter cartridges are occluded with sediment and need to be rinsed.

Maintenance:

Maintenance Requirements

Required maintenance for the Jellyfish Filter is based upon results of the most recent inspection, historical maintenance records, or the site specific water quality management plan; whichever is more frequent. In general, maintenance requires some combination of the following:

1. Sediment removal for depths reaching 12 inches or greater, or within 3 years of the most recent sediment cleaning, whichever occurs sooner.
2. Floatable trash, debris, and oil removal.
3. Deck cleaned and free from sediment.
4. Filter cartridges rinsed and re-installed as required by the most recent inspection results, or within 12 months of the most recent filter rinsing, whichever occurs sooner.
5. Replace tentacles if rinsing does not restore adequate hydraulic capacity, remove accumulated sediment, or if damaged or missing. It is recommended that tentacles should remain in service no longer than 5 years before replacement.
6. Damaged or missing cartridge deck components must be repaired or replaced as indicated by results of the most recent inspection.
7. The unit must be cleaned out and filter cartridges inspected immediately after an upstream oil, fuel, or chemical spill. Filter cartridge tentacles should be replaced if damaged or compromised by the spill.

Maintenance Procedure

The following procedures are recommended when maintaining the Jellyfish Filter:

1. Provide traffic control measures as necessary.
2. Open all covers and hatches. Use ventilation equipment as required, according to confined space entry procedures.
3. Caution: Dropping objects onto the cartridge deck may cause damage.
4. Perform Inspection Procedure prior to maintenance activity.
5. To access the cartridge deck for filter cartridge service, descend the ladder and step directly onto the deck. Caution: Do not step onto the maintenance access wall (MAW) or backwash pool weir, as damage may result. Note that the cartridge deck may be slippery.
6. Maximum weight of maintenance crew and equipment on the cartridge deck not to exceed 450 lbs.

Filter Cartridge Removal

1. Remove a cartridge lid.
2. Remove cartridges from the deck using the lifting loops in the cartridge head plate. Rope or a lifting device (available from Contech) should be used. Caution: Should a snag occur, do not force the cartridge upward as damage to the tentacles may result. Wet cartridges typically weigh between 100 and 125 lbs.
3. Replace and secure the cartridge lid on the exposed empty receptacle as a safety precaution. Contech does not recommend exposing more than one empty cartridge receptacle at a time.

G1 N.T.S. CONTECH JELLYFISH INSPECTION, MAINTENANCE, REPAIR, AND RETROFIT PLAN PAGES 1 TO 5

Filter Cartridge Rinsing

1. Remove all 11 tentacles from the cartridge head plate. Take care not to damage or break the plastic threaded nut or connector.
2. Position tentacles in a container (or over the MAW), with the threaded connector (open end) facing down, so rinse water is flushed through the membrane and captured in the container.
3. Using the Jellyfish rinse tool (available from Contech) or a low-pressure garden hose sprayer, direct water spray onto the tentacle membrane, sweeping from top to bottom along the length of the tentacle. Rinse until all sediment is removed from the membrane. Caution: Do not use a high pressure sprayer or focused stream of water on the membrane. Excessive water pressure may damage the membrane.
4. Collected rinse water is typically removed by vacuum hose.
5. Reattach tentacles to cartridge head plate. Reuse O-rings and nuts, ensuring proper placement on each tentacle.

Cleaning Procedure

1. Perform vacuum cleaning of the Jellyfish Filter only after filter cartridges have been removed from the system. Access the lower chamber for vacuum cleaning only through the maintenance access wall (MAW) opening, being careful not to damage the flexible plastic separator skirt that is attached to the underside of the deck. The separator skirt surrounds the filter cartridge zone, and could be torn if contacted by the wand. Do not lower the vacuum wand through a cartridge receptacle, as damage to the receptacle will result.
2. Vacuum floatable trash, debris, and oil, from the MAW opening. Alternatively, floatable solids may be removed by a net or skimmer.
3. Pressure wash cartridge deck and receptacles to remove all sediment and debris. Sediment should be rinsed into the sump area. Take care not to flush rinse water into the outlet pipe.
4. Remove water from the sump area. Vacuum or pump equipment should only be introduced through the MAW.
5. Remove the sediment from the bottom of the unit through the MAW opening.
6. For larger diameter Jellyfish Filter manholes (≥8-ft) and vaults without an MAW opening, complete sediment removal may be facilitated by removing a cartridge lid from an empty receptacle and inserting a jetting wand (not a vacuum wand) through the receptacle. Use the sprayer to rinse loosened sediment toward the vacuum hose in the MAW opening, being careful not to damage the receptacle.
7. After the unit is clean, re-fill the lower chamber with water if required by the local jurisdiction, and re-install filter cartridges.
8. Dispose of sediment, floatable trash and debris, oil, spent tentacles, and water according to local regulatory requirements.

Chemical Spills

Caution: If a chemical spill has been captured, do not attempt maintenance. Immediately contact the local hazard response agency and contact Contech.

Related Maintenance Activities

Jellyfish units are often just one of many structures in a more comprehensive stormwater drainage and treatment system.

In order for maintenance of the Jellyfish filter to be successful, it is imperative that all other components be properly maintained. The maintenance and repair of upstream facilities should be carried out prior to Jellyfish maintenance activities.

In addition to considering upstream facilities, it is also important to correct any problems identified in the drainage area. Drainage area concerns may include: erosion problems, heavy oil loading, and discharges of inappropriate materials.

Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads. Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.

Repair:

Filter Cartridge Replacement

1. Cartridges should be installed after the deck has been cleaned. It is important that the receptacle surfaces be free from grit and debris.
2. If rinsing is ineffective in removing sediment from the tentacles, or if tentacles are damaged, provisions must be made to replace the spent or damaged tentacles with new tentacles. Contact Contech to order replacement tentacles.
3. Lower filter cartridge to the cartridge deck. Remove cartridge lid from deck and carefully lower the filter cartridge into the receptacle until head plate gasket is seated squarely in receptacle. Caution: Should a snag occur when lowering the cartridge into the receptacle, do not force the cartridge downward; damage may occur.
4. Replace the cartridge lid and check ft before completing rotation to a firm hand-tight attachment.

If necessary, Retrofit:

Not necessary.

Record Keeping Procedures:

Project superintendent shall have a log for entering site inspections. Results of inspections, including damage and any recommended remedial action, shall be noted along with inspection personnel data and date of completion of any action. An example of a Jellyfish Filter Inspection and Maintenance Log is attached. Each log shall be made available for review by TCEQ, if requested.

A1 N.T.S. CONTECH JELLYFISH INSPECTION, MAINTENANCE, REPAIR, AND RETROFIT PLAN PAGES 6 TO 9

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRAINAGE DETAILS

3/30/2023
DATE

David P. Smith
DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C324

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-DNG.DWG, C321 DRAINAGE DETAILS, 3/29/2023 4:29:16 PM, pthomas

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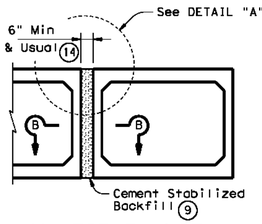
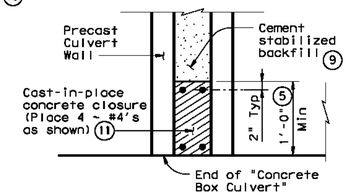
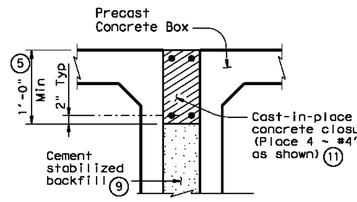
DATE:
FILE:



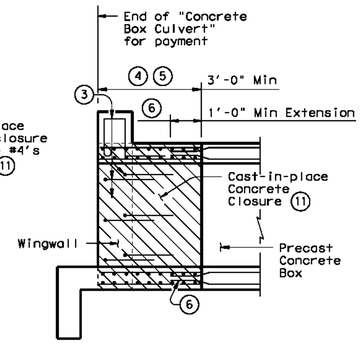
MULTIPLE UNIT PLACEMENT



SECTION B-B

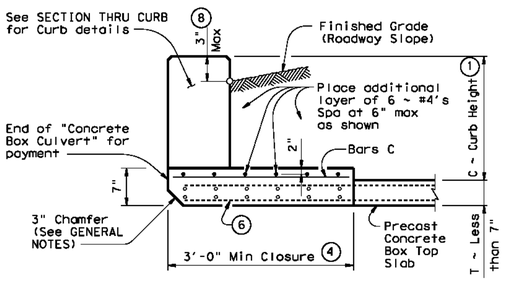


DETAIL "A" (13)

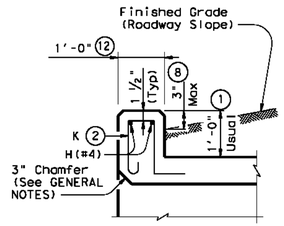


WINGWALL CONNECTION

(Also applies to Safety End Treatment)

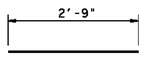


SECTION THRU TOP SLABS LESS THAN 7"

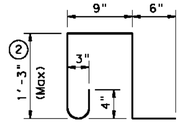


SECTION THRU CURB

(10) QUANTITIES PER FOOT OF CURB	
Reinforcing Steel	4.18 LB
Concrete	0.037 CY



BARS C ~ #4
(Spa = 1'-0" Max)



BARS K ~ #4
(Spa = 1'-0" Max)
(Length = 4'-3")

(1) 0" min to 5'-0" max. Estimated curb heights are shown elsewhere in the plans. For structures with pedestrian rail, bicycle rail or curbs taller than 1'-0", refer to ECD standard. For structures with T6 traffic rail, refer to T6-CM standard. For structures with traffic rail, other than T6, refer to RAC standard.

(2) For curbs less than 1'-0" high, tilt Bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, Bars K may be omitted.

(3) Curb, Wingwall or Safety End Treatment reinforcing shall extend into concrete closure. Any reinforcing that does not fit into the closure shall be bent or trimmed as necessary.

(4) Cast-in-place concrete closure shall be 3'-0" min. Boxes shall be cast short or broken back in the field. All reinforcing in the closure shall be the same size and spacing as in the precast box section. Except where shown otherwise, the cast-in-place closure shall be flush with the inside and outside faces of the precast box section.

(5) For multiple unit placements the length of the closure for the interior walls may be adjusted as necessary. The length of the top slab, bottom slab, and exterior wall closure shall not be less than 3'-0". See Section B-B detail when interior walls are cast full length.

(6) Precast box reinforcing shall extend a minimum of 1'-0" into concrete closure (Typ).

(7) Bands of reinforcing matching the inside and outside face reinforcing shall be placed in the gaps of the top and bottom slabs. A band matching the outside face reinforcing of the wall shall be placed in the gaps of the walls (placed in the outside face only). The bands shall be tack welded to the exposed reinforcing at each point of contact.

(8) For vehicle safety, the following requirements must be met:
- For structures without bridge rail, curbs shall project no more than 3" above finished grade.
- For structures with bridge rail, curbs shall be flush with finished grade.

Curb heights shall be reduced, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

(9) Cement Stabilized Backfill between boxes is considered part of the Box Culvert for payment.

(10) All curb concrete and reinforcing is considered part of the Box Culvert for payment.

(11) Any additional concrete and reinforcing required for the closures shall be considered as subsidiary to the Concrete Box Culvert.

(12) 1'-0" typical. 2'-0" when RAC standard is referred to elsewhere in the plans.

(13) For multiple unit placement with overlay, with 1 to 2 course surface treatment, or with the top slab as the final riding surface, provide wall closure as shown in DETAIL "A".

(14) This dimension may be increased with approval of the Engineer to allow the precast boxes to be tunneled or jacked in accordance with Item 476, "Jacking, Boring, or Tunneling Pipe or Box". No payment will be made for any additional material in the gap between adjacent boxes.

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.

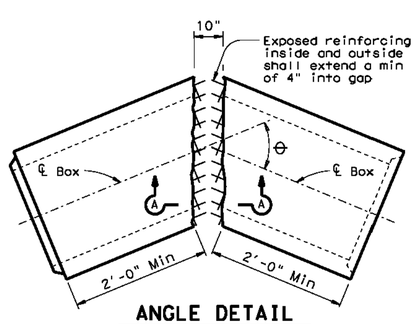
All closure concrete shall be Class "C" with a minimum compressive strength of 3600 psi and shall be placed according to the Item, "Concrete Substructures".

Any additional concrete required for the closures shall be considered as subsidiary to the Concrete Box Culvert.

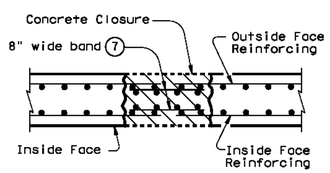
Refer to the Single Box Culverts Precast standard for details not shown.

The bottom edge of the top slab closure shall be chamfered 3 inches at the entrance.

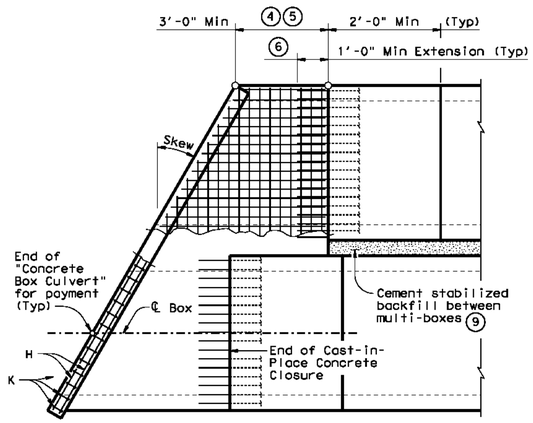
HL93 LOADING



ANGLE DETAIL



SECTION A-A



PLAN OF SKEWED ENDS

(Showing multi-box placement)

Texas Department of Transportation — Bridge Division Standard

BOX CULVERTS PRECAST MISCELLANEOUS DETAILS

SCP-MD

FILE: scpmdsts.dgn	DN: GAF	CK: LMW	DW: BWH/TxDOT	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - SCP-MD

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C325

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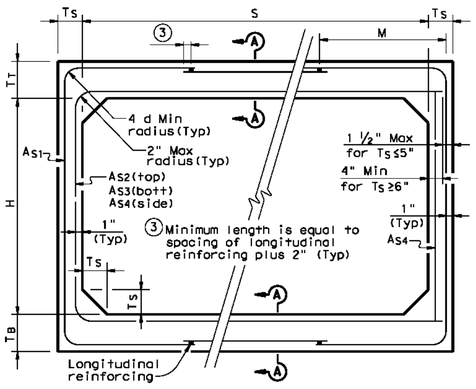
BOX DATA

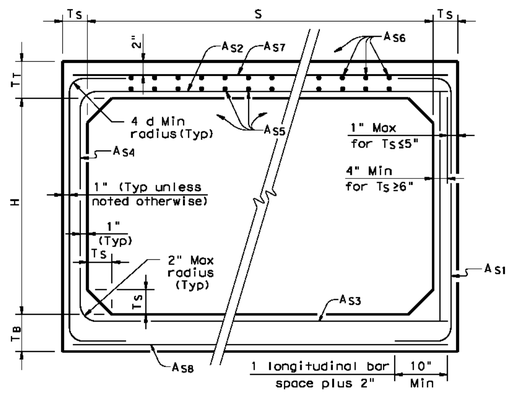
SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (in²/ft) ②								① Liff Weight (Tons)
S (ft)	H (ft)	T_T (in)	T_B (in)	T_S (in)	(ft)	(in)	A_{S1}	A_{S2}	A_{S3}	A_{S4}	A_{S5}	A_{S6}	A_{S7}	A_{S8}	
3	2	7	6	4	<2	-	0.17	0.25	0.16	0.10	0.17	0.17	0.17	0.14	3.3
3	2	4	4	4	2<3	31	0.13	0.19	0.18	0.10	-	-	-	-	2.4
3	2	4	4	4	3-5	31	0.10	0.11	0.12	0.10	-	-	-	-	2.4
3	2	4	4	4	10	31	0.10	0.10	0.10	0.10	-	-	-	-	2.4
3	2	4	4	4	15	31	0.10	0.13	0.13	0.10	-	-	-	-	2.4
3	2	4	4	4	20	31	0.11	0.17	0.17	0.10	-	-	-	-	2.4
3	2	4	4	4	25	31	0.14	0.21	0.21	0.10	-	-	-	-	2.4
3	2	4	4	4	30	31	0.17	0.25	0.25	0.10	-	-	-	-	2.4
3	2	4	4	4	35	31	0.20	0.29	0.30	0.10	-	-	-	-	2.4
3	3	7	6	4	<2	-	0.17	0.27	0.17	0.10	0.17	0.17	0.17	0.14	3.7
3	3	4	4	4	2<3	31	0.10	0.22	0.21	0.10	-	-	-	-	2.8
3	3	4	4	4	3-5	31	0.10	0.14	0.14	0.10	-	-	-	-	2.8
3	3	4	4	4	10	31	0.10	0.11	0.11	0.10	-	-	-	-	2.8
3	3	4	4	4	15	31	0.10	0.14	0.15	0.10	-	-	-	-	2.8
3	3	4	4	4	20	31	0.10	0.18	0.19	0.10	-	-	-	-	2.8
3	3	4	4	4	25	31	0.10	0.23	0.23	0.10	-	-	-	-	2.8
3	3	4	4	4	30	31	0.12	0.27	0.28	0.10	-	-	-	-	2.8
3	3	4	4	4	35	31	0.14	0.32	0.32	0.10	-	-	-	-	2.8

① For Box Length = 8'-0"

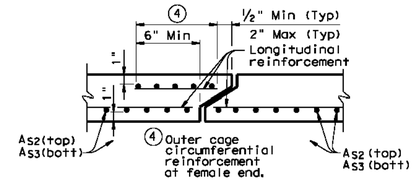
② A_{S1} thru A_{S4}, A_{S7} and A_{S8} are minimum required areas of reinforcement per linear foot of box length. A_{S6} and A_{S5} are minimum required areas of reinforcement per linear foot of box width.



FILL HEIGHT 2 FT AND GREATER



FILL HEIGHT LESS THAN 2 FT



SECTION A-A

(TOP AND BOTTOM SLAB JOINT REINFORCEMENT)

GENERAL NOTES:

Designs shown conform to ASTM C1577.
Refer to ASTM C1577 for information or details not shown.
All concrete shall be Class "H" Concrete with a minimum compressive strength of 5,000 psi.
See SCP-MD standard sheet for miscellaneous details and notes not shown.
In lieu of furnishing the designs shown on this sheet, the contractor may furnish an alternate design that is equal to or exceeds the box design for the design fill height in the table. Shop plans for alternate designs shall be submitted in accordance with Item "Precast Concrete Structural Members (Fabrication)".

HL93 LOADING

Texas Department of Transportation | Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

3'-0" SPAN

SCP-3

FILE: scp03sts.dgn	DN: GAF	CK: LNW	DW: BWH/TxDOT	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - SCP-3

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C326

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FILE:

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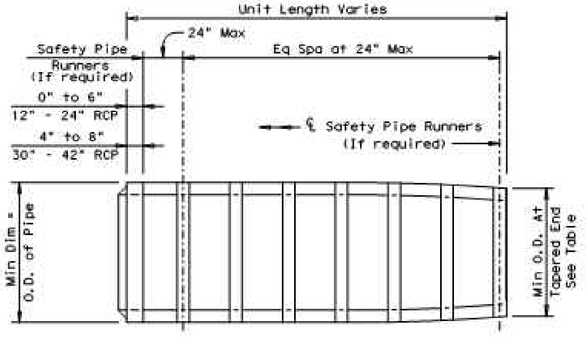
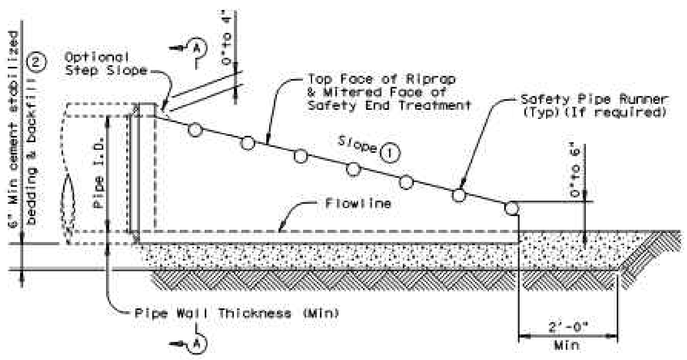


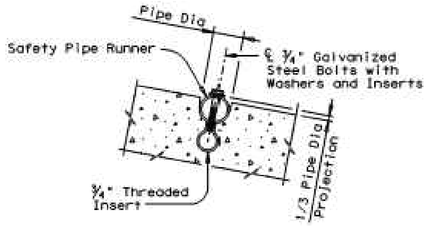
PLAN VIEW - 12" THRU 24"

1. Slope as shown elsewhere in the plans. Slope of 6:1 or flatter is required for vehicle safety.
2. Cement stabilized bedding and backfill shall be in accordance with the Item, "Excavation and Backfill for Structures". Bedding and backfill shall be considered subsidiary to the Item "Safety End Treatment". When concrete riprap is specified around the Safety End Treatment backfill shall be as directed by Engineer.
3. The top 4" of void between Precast End Treatments shall be filled with concrete Riprap and shall be considered subsidiary to Safety End Treatment.
4. Clear distance between pipes shall be adjusted to provide for the minimum distance between safety end treatments.

PIPE I.D.	MINIMUM WALL THICKNESS	MINIMUM O.D.	MIN O.D. AT TAPERED END	MIN REINF REQUIREMENTS (Sq in/ft of pipe)	MAXIMUM SLOPE	MINIMUM LENGTH OF UNIT	PIPE RUNNERS REQUIRED		REQUIRED PIPE RUNNER SIZES		
							SINGLE PIPE	MULTIPLE PIPE	NOMINAL DIA.	O.D.	I.D.
12"	2"	16"	16"	0.07 CIRC.	6:1	4'-0"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
15"	2 ¼"	19 ½"	19"	0.07 CIRC.	6:1	5'-8"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
18"	2 ½"	23"	21 ½"	0.07 CIRC.	6:1	7'-3"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
24"	3"	30"	27"	0.07 CIRC.	6:1	10'-6"	No	Yes, for >2 pipes	3" STD	3.500"	3.068"
30"	3 ½"	37"	31"	0.18 CIRC.	6:1	12'-1"	No	Yes	4" STD	4.500"	4.026"
36"	4"	44"	36"	0.19 ELIP.	6:1	15'-4"	Yes	Yes	4" STD	4.500"	4.026"
42"	4 ½"	51"	41 ½"	0.23 ELIP.	6:1	18'-7"	Yes	Yes	4" STD	4.500"	4.026"

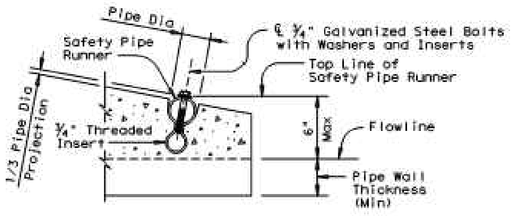


LONGITUDINAL ELEVATION - 12" THRU 24"

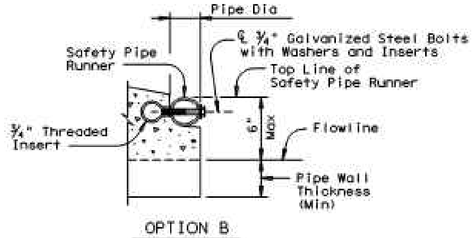


INSTALLATION DETAIL FOR SAFETY PIPE RUNNERS

(If required)



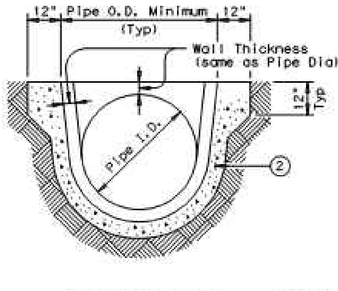
OPTION A



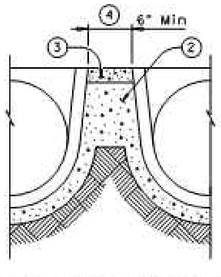
OPTION B

END DETAILS FOR INSTALLATION OF SAFETY PIPE RUNNERS

(If required)



SECTION A-A



MULTIPLE PIPE INSTALLATION

GENERAL NOTES:

Precast safety end treatment for reinforced concrete pipe may be used for TYPE II end treatment as specified in Item "Safety End Treatment".

When Precast Safety End Treatment is used as a Contractor's alternate to mitered RCP, Riprap will not be required unless noted otherwise on the plans.

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

All precast concrete end sections shall be manufactured in accordance with Item "Reinforced Concrete Pipe" and in accordance with ASTM Specification C-76, Class III, Wall B for circular pipe.

Precast concrete end sections shall be provided with a spigot or bell end for compatibility to upstream or downstream end conditions with sufficient annular space to allow for mortar, cold applied asphalt joint compound or pre-formed plastic gasket material.

Methods of lifting shall be provided by the manufacturer for ease of loading, unloading and installation.

Pipe Runners are designed for a traversing load of 10,000 Lbs at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Pipe Runners shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

All steel components except reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.

Texas Department of Transportation — Bridge Division Standard

PRECAST SAFETY END TREATMENT

TYPE II – PARALLEL DRAINAGE

PSET-RP

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - SET TYPE II (AUSTIN DISTRICT)

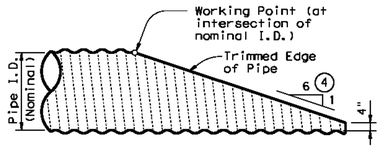
3/30/2023 DATE

David P. Smith
DAVID P. SMITH

STATE OF TEXAS
DAVID P. SMITH
56239
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	DPS
DRAFTED	LCS & MAC
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C327

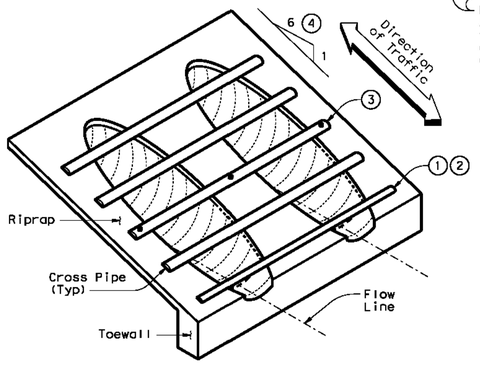
G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - SET TYPE II (AUSTIN DISTRICT), 3/29/2023 4:30:38 PM, pthomas



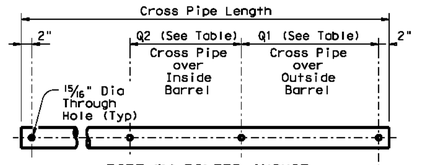
NOTE: All Cross Pipes, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

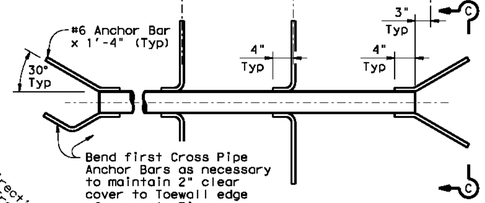
(Showing Corrugated Metal Pipe Culvert.)
(Details at Concrete Pipe Culvert are similar.)



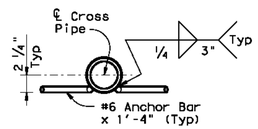
ISOMETRIC VIEW OF TYPICAL INSTALLATION



PIPE W/ BOLTED ANCHOR

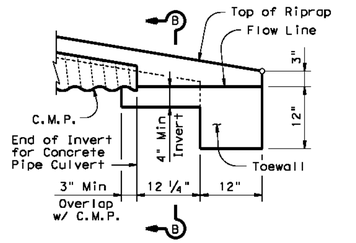


PIPE W/ ANCHOR BARS



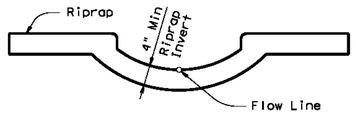
SECTION C-C

CROSS PIPE DETAILS



DETAIL "A"

(Showing Invert with Corrugated Metal Pipe Culvert. Concrete Pipe Culvert details are similar. Cross Pipes not shown for clarity.)



SECTION B-B

(Cross Pipes not shown for clarity.)

CROSS PIPE LENGTHS, REQUIRED PIPE SIZES, & RIPRAP QUANTITIES (2)							
Nominal Culvert I.D.	Conc Riprap (CY) (6)	Pipe Culvert Spa ~ G	Single Barrel ~ Q1	Multi-Barrel ~ Q1	Q2	Conditions for use of Cross Pipes	Cross Pipe Size
12"	0.6	9"	N/A	2'- 1"	1'- 9"	3 or more Pipe Culverts	3" Std (3.500" O.D.)
15"	0.7	11"	N/A	2'- 5"	2'- 2"		
18"	0.8	1'- 2"	N/A	2'-10"	2'- 8"		
21"	0.9	1'- 4"	N/A	3'- 2"	3'- 1"		
24"	0.9	1'- 7"	N/A	3'- 6"	3'- 7"		
27"	1.0	1'- 8"	N/A	3'-10"	3'-11"	3 or more Pipe Culverts	3 1/2" Std (4.000" O.D.)
30"	1.1	1'-10"	N/A	4'- 2"	4'- 4"	2 or more Pipe Culverts	
33"	1.2	1'-11"	4'- 2"	4'- 5"	4'- 8"	All Pipe Culverts	
36"	1.3	2'- 1"	4'- 5"	4'- 9"	5'- 1"	All Pipe Culverts	4" Std (4.500" O.D.)
42"	1.5	2'- 4"	4'-11"	5'- 5"	5'-10"		
48"	1.7	2'- 7"	5'- 5"	6'- 0"	6'- 7"	All Pipe Culverts	5" Std (5.563" O.D.)
54"	2.0	3'- 0"	5'-11"	6'- 9"	7'- 6"		
60"	2.2	3'- 3"	6'- 5"	7'- 4"	8'- 3"		
66"	2.4	3'- 3"	6'-11"	7'-10"	8'- 9"		
72"	2.7	3'- 4"	7'- 5"	8'- 5"	9'- 4"		

(1) The proper installation of the first Cross Pipe is critical for vehicle safety. The top of the first Cross Pipe must be placed at no more than 6" above the flow line.

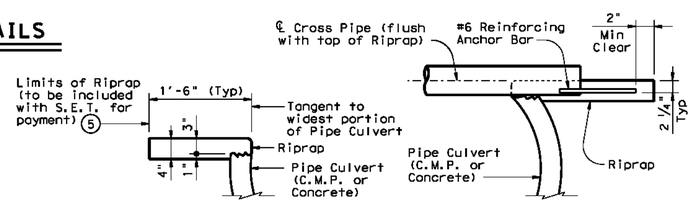
(2) Size of Cross Pipes, except the first bottom pipe, shall be as shown in the PIPE SIZE table. The first bottom pipe shall be 3 1/2" Standard Pipe (4" O.D.).

(3) The third Cross Pipe from the bottom of the Culvert shall always be installed using a bolted connection. Care shall be taken to ensure that Riprap concrete does not flow into the Cross Pipe so as to permit disassembly of the bolted connection to allow cleanout access. At the Contractor's option, all other Cross Pipes may also be installed using the bolted connection details.

(4) Match Cross Slope as shown elsewhere in the plans. Cross Slope of 6:1 or flatter is required for vehicle safety.

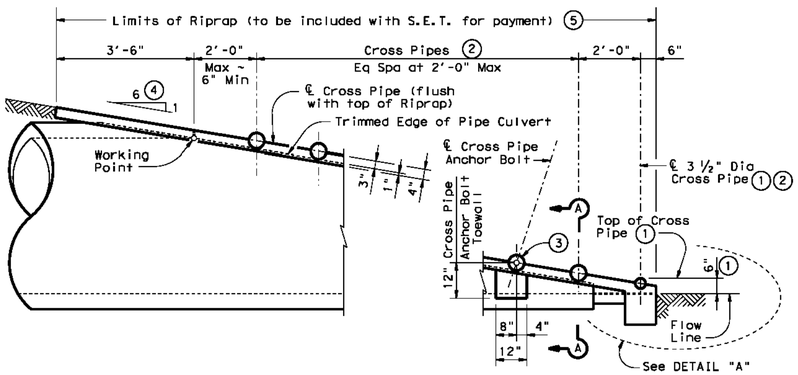
(5) Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".

(6) Quantities shown are for one end of one reinforced Concrete Pipe Culvert. For multiple pipe culverts or for Corrugated Metal Pipe Culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.



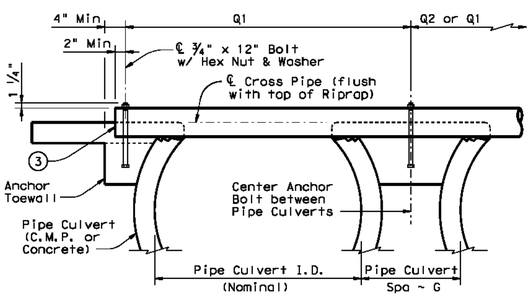
SHOWING TYPICAL PIPE CULVERT & RIPRAP

SHOWING CROSS PIPE WITH ANCHOR BAR



SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing Concrete Pipe Culvert.)
(Details at Corrugated Metal Pipe Culvert are similar.)



SHOWING CROSS PIPE WITH BOLTED ANCHOR

SECTION A-A

GENERAL NOTES:

Cross Pipes are designed for a traversing load of 10,000 pounds at yield as recommended by Research Report 280-2F, "Safety Treatment of Roadside Parallel-Drainage Structures", Texas Transportation Institute, March 1981.

Safety End Treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the Cross Pipes.

Riprap and all necessary inverts shall be Concrete Riprap conforming to the requirements of Item 432, "Riprap".

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.

Cross Pipes shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Bolts and nuts shall conform to ASTM A307.

All steel components, except concrete reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.

REV.	DESCRIPTION	DATE

Texas Department of Transportation — Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 72" DIA PIPE CULVERTS
TYPE II ~ PARALLEL DRAINAGE

SETP-PD

FILE: setppdse.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
11-10: Add note for synthetic fibers.	DIST	COUNTY		SHEET NO.

Walker Partners engineers | surveyors

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - SET P-PD

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C328

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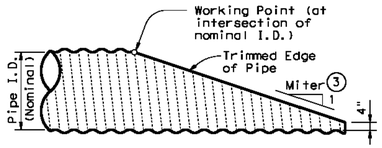
DATE:
FILE:

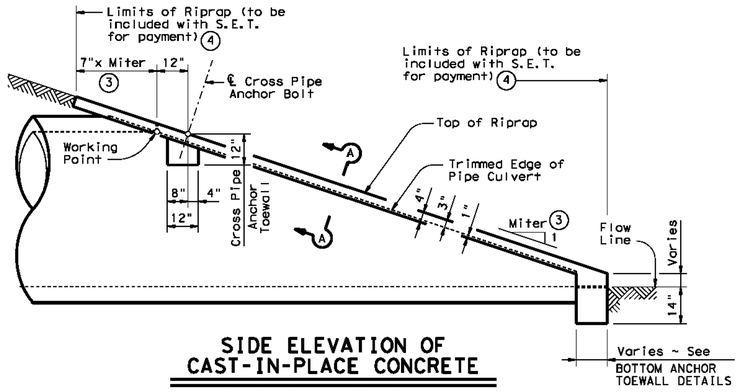
G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - SET P-PD, 3/29/2023 4:30:43 PM, pthomas



NOTE: All Pipe Runners, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

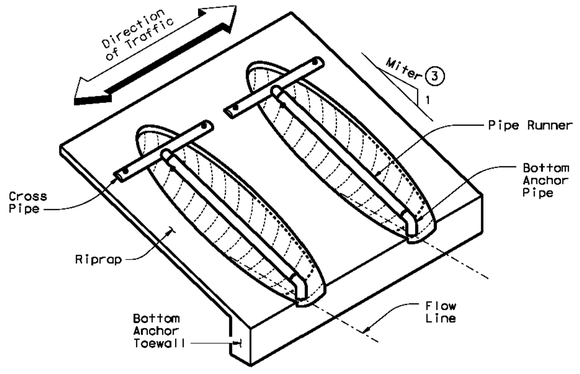
SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing Corrugated Metal Pipe Culvert. Details of Concrete Pipe Culvert are similar.)



SIDE ELEVATION OF CAST-IN-PLACE CONCRETE

(Showing Concrete Pipe Culvert. Details of Corrugated Metal Pipe Culvert are similar. Pipe Runners not shown for clarity)



ISOMETRIC VIEW OF TYPICAL INSTALLATION

(Showing installation with no skew.)

CROSS PIPE LENGTHS & PIPE RUNNER LENGTHS (1)(2)

Nominal Culvert I.D.	Pipe Culvert Spa ~ G	Cross Pipe Length	Pipe Runner Length											
			3:1 Side Slope				4:1 Side Slope				6:1 Side Slope			
			0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew
24"	1'- 7"	3'- 5"	N/A	N/A	N/A	5'-10"	N/A	N/A	N/A	8'- 1"	N/A	N/A	N/A	12'- 9"
27"	1'- 8"	3'- 8"	N/A	N/A	5'- 5"	6'-11"	N/A	N/A	7'- 7"	9'- 7"	N/A	N/A	11'-11"	14'-11"
30"	1'-10"	3'-11"	N/A	N/A	6'- 4"	8'- 0"	N/A	N/A	8'- 9"	11'- 0"	N/A	N/A	13'- 8"	17'- 0"
33"	1'-11"	4'- 2"	6'- 2"	6'- 5"	7'- 3"	9'- 1"	8'- 6"	8'-10"	10'- 0"	12'- 5"	13'- 3"	13'- 9"	15'- 5"	19'- 2"
36"	2'- 1"	4'- 5"	6'-11"	7'- 3"	8'- 2"	10'- 2"	9'- 6"	9'-11"	11'- 2"	13'-10"	14'- 9"	15'- 3"	17'- 2"	21'- 3"
42"	2'- 4"	4'-11"	8'- 6"	8'-10"	9'-11"	12'- 4"	11'- 7"	12'- 0"	13'- 6"	16'- 8"	17'- 9"	18'- 5"	20'- 8"	25'- 7"
48"	2'- 7"	5'- 5"	10'- 1"	10'- 5"	11'- 9"	N/A	13'- 7"	14'- 2"	15'-10"	N/A	20'- 9"	21'- 6"	24'- 2"	N/A
54"	3'- 0"	5'-11"	11'- 8"	12'- 1"	N/A	N/A	15'- 8"	16'- 3"	N/A	N/A	23'-10"	24'- 8"	N/A	N/A
60"	3'- 3"	6'- 5"	13'- 3"	N/A	N/A	N/A	17'- 9"	N/A	N/A	N/A	26'-10"	N/A	N/A	N/A

TYPICAL PIPE CULVERT MITERS (3)

Side Slope	0° Skew	15° Skew	30° Skew	45° Skew
3:1	3:1	3.106:1	3.464:1	4.243:1
4:1	4:1	4.141:1	4.619:1	5.657:1
6:1	6:1	6.212:1	6.928:1	8.485:1

CONDITIONS WHERE PIPE RUNNERS ARE NOT REQUIRED (2)

Nominal Culvert I.D.	Single Pipe Culvert	Multiple Pipe Culverts
12" thru 21"	Skews thru 45°	Skews thru 45°
24"	Skews thru 45°	Skews thru 30°
27"	Skews thru 30°	Skews thru 15°
30"	Skews thru 15°	Skews thru 15°
33"	Skews thru 15°	Always required
36"	Normal (No Skew)	Always required
42" to 60"	Always required	Always required

STANDARD PIPE SIZES & MAX PIPE RUNNER LENGTHS (1)

Pipe Size	Pipe O.D.	Pipe I.D.	Max Pipe Runner Length
2" STD	2.375"	2.067"	N/A
3" STD	3.500"	3.068"	10'- 0"
4" STD	4.500"	4.026"	19'- 8"
5" STD	5.563"	5.047"	34'- 2"

ESTIMATED CONCRETE RIPRAP QUANTITIES (CY) (5)

Nominal Culvert I.D.	3:1 Side Slope				4:1 Side Slope				6:1 Side Slope			
	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew	0° Skew	15° Skew	30° Skew	45° Skew
12"	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.7	0.8
15"	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9
18"	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	1.0
21"	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9	0.9	0.9	1.0	1.2
24"	0.6	0.7	0.7	0.8	0.8	0.8	0.8	1.0	1.0	1.0	1.1	1.3
27"	0.7	0.7	0.8	0.9	0.8	0.9	0.9	1.1	1.1	1.1	1.2	1.4
30"	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.2	1.2	1.2	1.3	1.6
33"	0.8	0.8	0.9	1.0	1.0	1.0	1.1	1.3	1.3	1.4	1.5	1.7
36"	0.9	0.9	0.9	1.1	1.1	1.1	1.2	1.4	1.4	1.5	1.6	1.8
42"	1.0	1.0	1.1	1.3	1.2	1.3	1.3	1.6	1.6	1.7	1.8	2.1
48"	1.1	1.1	1.2	N/A	1.4	1.4	1.5	N/A	1.9	1.9	2.1	N/A
54"	1.3	1.3	N/A	N/A	1.6	1.6	N/A	N/A	2.1	2.1	N/A	N/A
60"	1.4	N/A	N/A	N/A	1.7	N/A	N/A	N/A	2.3	N/A	N/A	N/A

(1) Size of Pipe Runner shall be as shown in the tables. Cross Pipe shall be the same size as the Pipe Runner. Cross Pipe Stub Out and Bottom Anchor Pipe shall be the next smaller size pipe as shown in the STANDARD PIPE SIZES table.

(2) This standard allows for the placement of only one pipe runner across each culvert pipe opening. In order to limit the clear opening to be traversed by an errant vehicle, the following conditions must be met:

For 60" culvert pipes, the skew must not exceed 0°.
For 54" culvert pipes, the skew must not exceed 15°.
For 48" culvert pipes, the skew must not exceed 30°.
For all culvert pipe sizes 42" and less, the skew must not exceed 45°.

If the above conditions cannot be met, the designer should consider using a safety end treatment with flared wings. For further information, refer to the TxDOT "Roadway Design Manual".

(3) Miter = Slope of Mitered Pipe Culvert End

(4) Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".

(5) Quantities shown are for one end of one reinforced Concrete Pipe Culvert. For multiple Pipe Culverts or for Corrugated Metal Pipe Culverts, quantities will need to be adjusted. Riprap quantities are for Contractor's information only.

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DATE:
FILE:

SHEET 1 OF 2

Texas Department of Transportation — Bridge Division Standard

SAFETY END TREATMENT
FOR 12" DIA TO 60" DIA PIPE CULVERTS TYPE II ~ CROSS DRAINAGE

SETP-CD

FILE: setpcdse.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
11-10: Add note for synthetic fibers.	DIST	COUNTY		SHEET NO.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - SET P-CD (1)

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C329

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - SET P-CD (1), 3/29/2023 4:30:48 PM, pthomas

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DATE:
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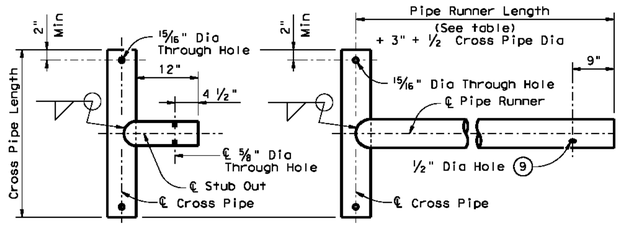
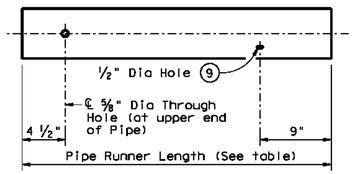


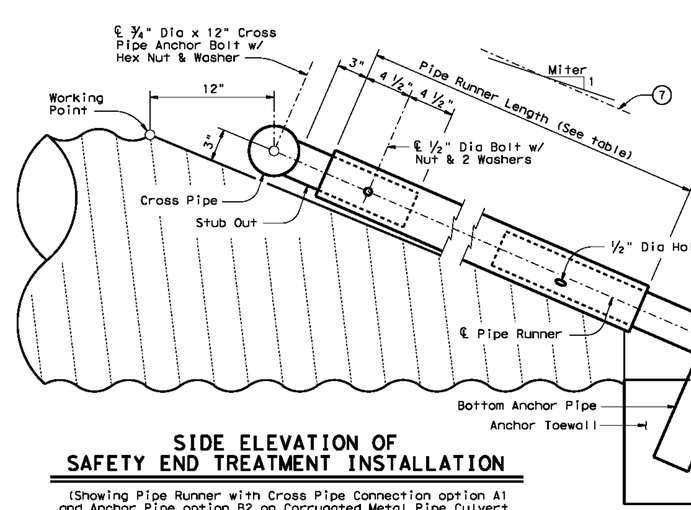
OPTION A1 OPTION A2

CROSS PIPE AND CONNECTIONS DETAILS



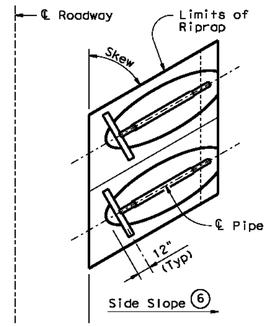
NOTE: The separate Pipe Runner shown is required when Cross Pipe Connection Option A1 is used.

PIPE RUNNER DETAILS

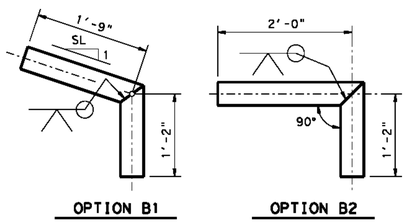


SIDE ELEVATION OF SAFETY END TREATMENT INSTALLATION

(Showing Pipe Runner with Cross Pipe Connection option A1 and Anchor Pipe option B2 on Corrugated Metal Pipe Culvert. Concrete Pipe Culvert details are similar. Riprap not shown for clarity)

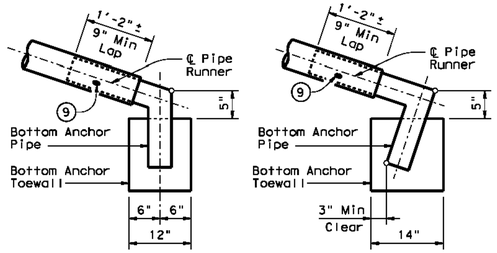


PLAN OF SKEWED INSTALLATION



OPTION B1 OPTION B2

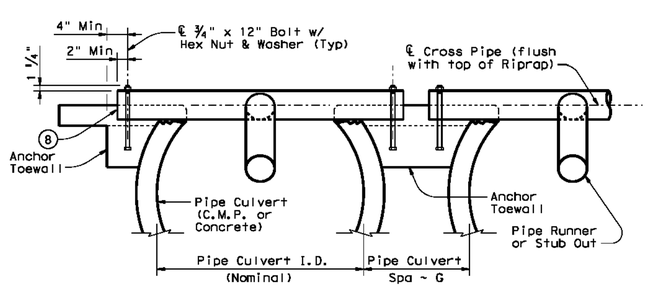
BOTTOM ANCHOR PIPE DETAILS (10)



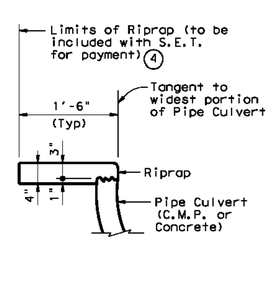
OPTION B1 OPTION B2

BOTTOM ANCHOR TOEWALL DETAILS

(Culvert & Riprap not shown for clarity)



SHOWING CROSS PIPE & ANCHOR TOEWALL



SHOWING TYPICAL PIPE CULVERT & RIPRAP

SECTION A-A

(4) Riprap placed beyond the limits shown will be paid as Concrete Riprap in accordance with Item 432, "Riprap".

(6) Recommended values of side slope are 3:1, 4:1, & 6:1. All quantities, calculations, and dimensions shown herein are based on these recommended values. Slope of 3:1 or flatter is required for vehicle safety.

(7) Note that actual slope of Pipe Runner may vary slightly from Side Slope of Riprap and trimmed Culvert Pipe edge.

(8) Care shall be taken to ensure that Riprap concrete does not flow into the Cross Pipe so as to permit disassembly of the bolted connection to allow cleanout access.

(9) After installation, the 1/2" hole shall be inspected to ensure that the lap of the Pipe Runner with the Bottom Anchor Pipe is adequate.

(10) At fabricator's option, a heat bend to a smooth 5" radius or a manufactured elbow (of the same material as the Runner) may be substituted for the mitered and welded joint in the Bottom Anchor Pipe.

GENERAL NOTES:

Pipe Runners are designed for a traversing load of 1,800 pounds at yield as recommended by Research Report 280-1, "Safety Treatment of Roadside Cross-Drainage Structures", Texas Transportation Institute, March 1981.

The Safety End Treatments shown herein are intended for use in those installations where out of control vehicles are likely to traverse the openings approximately perpendicular to the Pipe Runners.

Riprap and all necessary inverts shall be Concrete Riprap conforming to the requirements of Item 432, "Riprap".

Synthetic fibers listed on the "Fibers for Concrete" Material Producer List (MPL) may be used in lieu of steel reinforcing in riprap concrete unless noted otherwise.

Payment for riprap and toewall is included in the Price Bid for each Safety End Treatment.

Pipe Runners, Cross Pipes, and Anchor Pipes shall conform to the requirements of ASTM A53 (Type E or S, Grade B), ASTM A500 (Grade B), or API 5LX52.

Bolts and nuts shall conform to ASTM A307.

All steel components, except concrete reinforcing, shall be galvanized after fabrication. Galvanizing damaged during transport or construction shall be repaired in accordance with the specifications.

SHEET 2 OF 2

Texas Department of Transportation — Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 60" DIA PIPE CULVERTS
TYPE II ~ CROSS DRAINAGE

SETP-CD

FILE: setpcdse.dgn	DN: GAF	CK: CAT	DW: JRP	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
11-10: Add note for synthetic fibers.	DIST	COUNTY		SHEET NO.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

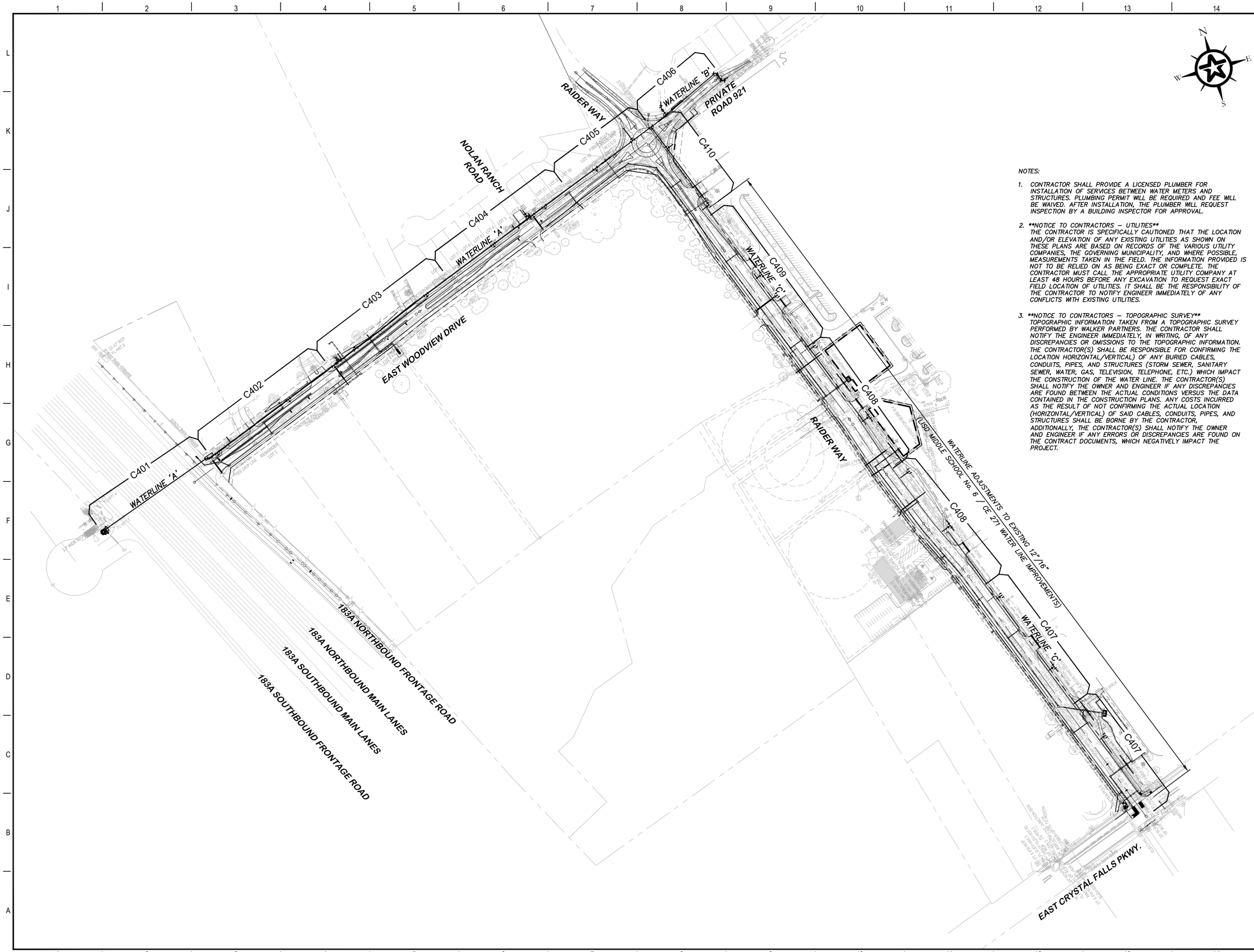
CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - SET P-CD (2)

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C330

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - SET P-CD (2), 3/29/2023 4:30:53 PM, pthomas



GENERAL NOTES

1. THESE NOTES APPLY TO ALL WATER LINE SHEETS.
2. CONTRACTOR TO PLACE A CUSTOMER SHUT-OFF VALVE AND A PRESSURE REDUCING VALVE (PRV) ON THE CUSTOMER'S SIDE OF ALL RECONNECTED AND NEW WATER METERS SUBSIDIARY TO ITEM 510. PRV'S SHALL BE SET AT 65 PSI PER THE UNIFORM PLUMBING CODE, CURRENT ADOPTED EDITION.
3. CONTRACTOR TO COORDINATE WITH ALL AFFECTED PROPERTY OWNERS FOR DISRUPTIONS OF SERVICE AND INSTALLATION OF CUSTOMER SHUT-OFF VALVES AND PRVs.
4. CONTRACTOR SHALL RESTORE TEMPORARY PAVEMENT AFTER EACH DAY'S WORK PER CITY OF LEANDER STANDARD DETAIL #104-2 (RE: A5/C414).
5. ALL PROPOSED VALVES SHALL INCLUDE CONCRETE PADS PER CITY OF AUSTIN STANDARD DETAIL (G1/C415), UNLESS POURED IN SIDEWALK.
6. ALL PROPOSED WATERLINES TO BE PVC AND CONFORM TO AWWA C900 DR-14, UNLESS OTHERWISE NOTED.
7. PROPOSED WATERLINE SHALL HAVE MINIMUM 4' COVER FROM FINISHED GRADE TO TOP OF PIPE.
8. ALL WATERLINES (EXCEPT SERVICE LINES 2" AND SMALLER) CROSSING WITHIN 2-FEET BENEATH STORM SEWER OR DRY UTILITY DUCT BANKS SHALL BE STEEL ENCASED. CENTER WATER PIPE AT CROSSING (G1/C413).
9. REMOVED/SALVAGED FIRE HYDRANTS SHALL REMAIN THE PROPERTY OF CITY OF LEANDER.
10. CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL UNDERGROUND AND ABOVEGROUND UTILITIES. ANY DAMAGE TO UNDERGROUND OR ABOVEGROUND UTILITIES WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
11. CONTRACTOR IS RESPONSIBLE FOR KEEPING ALL WATER SERVICES ACTIVE AND OPERATIONAL.
12. DRIVEWAYS SHALL REMAIN OPEN AND ACCESSIBLE AT ALL TIMES.
13. THRUST BLOCKING REQUIRED (RE: A9/C416)
14. CONTRACTOR SHALL SHORE EX. POWER POLES, EQUIPMENT, AND STRUCTURES WITHIN 5 FT OF TRENCH. NO SEPARATE PAY.

NOTES:

1. CONTRACTOR SHALL PROVIDE A LICENSED PLUMBER FOR INSTALLATION OF SERVICES BETWEEN WATER METERS AND STRUCTURES. PLUMBING PERMIT WILL BE REQUIRED AND FEE WILL BE WAIVED. AFTER INSTALLATION, THE PLUMBER WILL REQUEST INSPECTION BY A BUILDING INSPECTOR FOR APPROVAL.

2. **NOTICE TO CONTRACTORS – UTILITIES** THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF ANY EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, THE GOVERNING MUNICIPALITY, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION PROVIDED IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY ENGINEER IMMEDIATELY OF ANY CONFLICTS WITH EXISTING UTILITIES.

3. **NOTICE TO CONTRACTORS – TOPOGRAPHIC SURVEY** TOPOGRAPHIC INFORMATION TAKEN FROM A TOPOGRAPHIC SURVEY PERFORMED BY WALKER PARTNERS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY, IN WRITING, OF ANY DISCREPANCIES OR OMISSIONS TO THE TOPOGRAPHIC INFORMATION. THE CONTRACTOR(S) SHALL BE RESPONSIBLE FOR CONFIRMING THE LOCATION HORIZONTAL/VERTICAL) OF ANY BURIED CABLES, CONDUITS, PIPES, AND STRUCTURES (STORM SEWER, SANITARY SEWER, WATER, GAS, TELEVISION, TELEPHONE, ETC.) WHICH IMPACT THE CONSTRUCTION OF THE WATER LINE. THE CONTRACTOR(S) SHALL NOTIFY THE OWNER AND ENGINEER IF ANY DISCREPANCIES ARE FOUND BETWEEN THE ACTUAL CONDITIONS VERSUS THE DATA CONTAINED IN THE CONSTRUCTION PLANS. ANY COSTS INCURRED AS THE RESULT OF NOT CONFIRMING THE ACTUAL LOCATION (HORIZONTAL/VERTICAL) OF SAID CABLES, CONDUITS, PIPES, AND STRUCTURES SHALL BE BORNE BY THE CONTRACTOR, ADDITIONALLY, THE CONTRACTOR(S) SHALL NOTIFY THE OWNER AND ENGINEER IF ANY ERRORS OR DISCREPANCIES ARE FOUND ON THE CONTRACT DOCUMENTS, WHICH NEGATIVELY IMPACT THE PROJECT.

0 75 150 300
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 6053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

OVERALL WATER LINE MAP

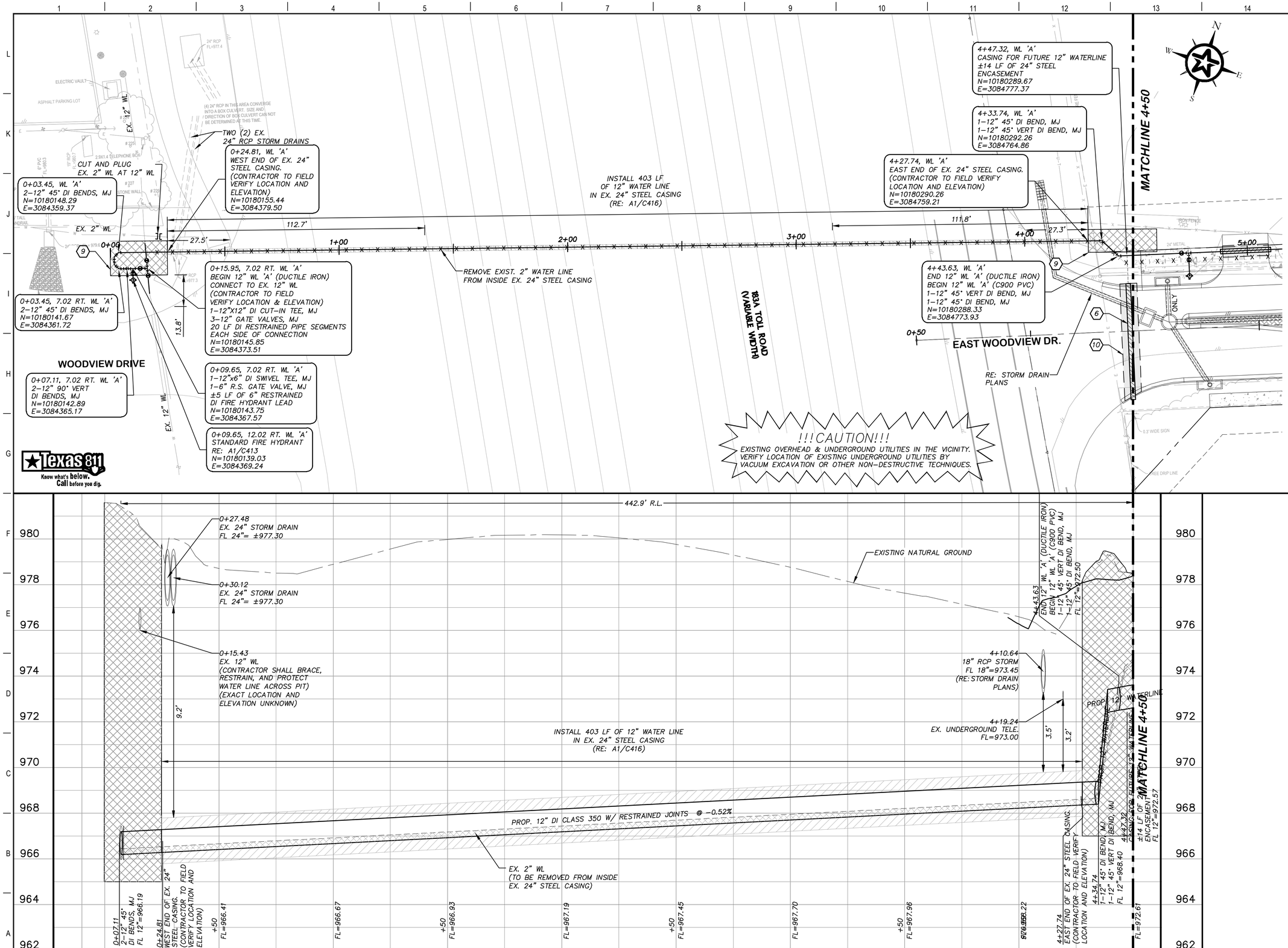
3/30/2023
DATE

S. JARED NIERMANN

STATE OF TEXAS
S. JARED NIERMANN
122045
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	SJN
DRAFTED	RCB
CHECKED	ELN
PROJECT NO.	3-00585
DRAWING NO.	C400
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585WATER.DWG, C400 OVERALL WATER LAYOUT, 3/30/2023 6:22:14 PM, jnliermann



Texas 811
Know what's below. Call before you dig.

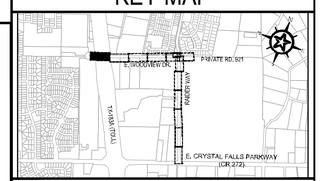
G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585WATER.DWG, C401 EAST WOODVIEW 183A BORE WL 'A' STA 0+00 TO 4+50, 3/30/2023 6:27:11 PM, jniermann

KEY NOTES

1. REPOSITION AND ADJUST WATER METER (RE: A1/C415)
2. 1" DIAMETER LONG WATER SERVICE RELAY
3. 1" DIAMETER SHORT WATER SERVICE RELAY
4. 2" DIAMETER LONG WATER SERVICE RELAY
5. 2" DIAMETER SHORT WATER SERVICE RELAY
6. STEEL ENCASEMENT (RE: A1/C416)
7. 4" SDR–35 PVC CASING (RE: A1/C415)
8. NOT USED
9. ACCESS SHAFT/BORE PIT
10. TRENCH REPAIR (TEMPORARY) (RE: A5/C414)
11. WATER SERVICE CURB STAMP
12. FIRE HYDRANT ASSEMBLY (RE: A1/C414)
13. WATER MAIN LOWERING DETAIL (RE: G1/C413) (RE: SHEETS C411 & C412 FOR PROFILES)
14. 2" AIR RELEASE VALVE (RE: G1/C416)
15. BOLTED & GASKETED FLG'D SPLIT STEEL ENCASEMENT (RE: A1/C416) (RE: SHEETS C411 & C412 FOR PROFILES)
16. TAPPING SLEEVE SHALL BE SMITH BLAIR 663 STAINLESS STEEL TS OR JCM 439 STAINLESS STEEL.

NOTE:
R.L. IS AN ABBREVIATION FOR RESTRAINED LENGTH. THE NOTATIONS INDICATE THE MINIMUM REQUIRED LENGTH OF RESTRAINED JOINT PIPE AT SPECIFIC LOCATIONS.

KEY MAP



0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

WATER IMPROVEMENTS
EAST WOODVIEW 183A BORE
WL 'A' STA 0+00 TO 4+50

3/30/2023
DATE

S. JARED NIERMANN

STATE OF TEXAS
S. JARED NIERMANN
122045
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	SJN
DRAFTED	RCB
CHECKED	ELN
PROJECT NO.	3-00585
DRAWING NO.	C401
SHEET	OF

4+88.28, WL 'A'
BEGIN 24"
STEEL ENCASEMENT
N=10180304.57
E=3084815.52 (6)

4+74.28, WL 'A'
1-12" R.S. GATE VALVE, MJ
1-12" DI SWIVEL TEE, MJ
1-6" R.S. GATE VALVE, MJ
±10 LF OF RESTRAINED DI
FIRE HYDRANT LEAD
N=10180299.48
E=3084802.48

5+10.28, WL 'A'
END 24"
STEEL ENCASEMENT
N=10180312.58
E=3084836.01 (6)

5+31.69, WL 'A'
RELOCATE EX. WATER METER TO ESMT LINE
INSTALL CUSTOMER SHUT-OFF VALVE AND PRV
N=10180342.24
E=3084847.41 (1)

6+08.68, WL 'A'
BEGIN 24"
STEEL ENCASEMENT
N=10180348.39
E=3084927.67 (6)

6+32.75, WL 'A'
END 24"
STEEL ENCASEMENT
N=10180357.15
E=3084950.08 (6)

7+74.07, WL 'A'
1-12"x6" DI SWIVEL TEE, MJ
1-6" R.S. GATE VALVE, MJ
±10 LF OF 6" RESTRAINED DI
FIRE HYDRANT LEAD
N=10180408.57
E=3085081.72

8+68.85, WL 'A'
BEGIN 24"
STEEL ENCASEMENT
N=10180443.06
E=3085169.99 (6)

9+34.50, WL 'A'
END 24"
STEEL ENCASEMENT
N=10180466.95
E=3085231.15 (6)

5+31.69, WL 'A'
1" SERVICE CONNECTION
±21 LF OF 1" SERVICE LINE
N=10180320.37
E=3084855.95

7+37.34, WL 'A'
BEGIN 24"
STEEL ENCASEMENT
N=10180395.21
E=3085047.51

7+48.01, WL 'A'
END 24"
STEEL ENCASEMENT
N=10180399.09
E=3085057.44

9+50.00, WL 'A'
AIR RELEASE VALVE
CONNECTION POINT
INSTALL BOX OFF SIDEWALK
<1° DEFLECTION
N=10180472.59
E=3085245.59

PROP. 12" WL 'A'

EX. 2" WL (TO BE REMOVED)

(RE: G5/C320 RETAINING WALL)

(RE: STORM DRAIN PLANS)

MATCHLINE 4+50

MATCHLINE 9+50

EAST WOODVIEW DR.

70' ROW

20' ESMT.

12' ESMT

2.0'

13.5'

!!!CAUTION!!!
EXISTING OVERHEAD & UNDERGROUND UTILITIES IN THE VICINITY. VERIFY LOCATION OF EXISTING UNDERGROUND UTILITIES BY VACUUM EXCAVATION OR OTHER NON-DESTRUCTIVE TECHNIQUES.

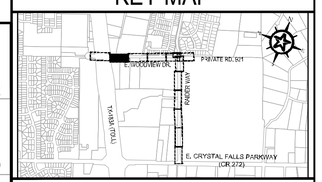
Texas 811 Know what's below. Call before you dig.

KEY NOTES

1. REPOSITION AND ADJUST WATER METER (RE: A1/C415)
2. 1" DIAMETER LONG WATER SERVICE RELAY
3. 1" DIAMETER SHORT WATER SERVICE RELAY
4. 2" DIAMETER LONG WATER SERVICE RELAY
5. 2" DIAMETER SHORT WATER SERVICE RELAY
6. STEEL ENCASEMENT (RE: A1/C416)
7. 4" SDR-35 PVC CASING (RE: A1/C415)
8. NOT USED
9. ACCESS SHAFT/BORE PIT
10. TRENCH REPAIR (TEMPORARY) (RE: A5/C414)
11. WATER SERVICE CURB STAMP
12. FIRE HYDRANT ASSEMBLY (RE: A1/C414)
13. WATER MAIN LOWERING DETAIL (RE: G1/C413) (RE: SHEETS C411 & C412 FOR PROFILES)
14. 2" AIR RELEASE VALVE (RE: G1/C416)
15. BOLTED & GASKETED FLG'D SPLIT STEEL ENCASEMENT (RE: A1/C416) (RE: SHEETS C411 & C412 FOR PROFILES)
16. TAPPING SLEEVE SHALL BE SMITH BLAIR 663 STAINLESS STEEL TS OR JCM 439 STAINLESS STEEL.

NOTE:
R.L. IS AN ABBREVIATION FOR RESTRAINED LENGTH. THE NOTATIONS INDICATE THE MINIMUM REQUIRED LENGTH OF RESTRAINED JOINT PIPE AT SPECIFIC LOCATIONS.

KEY MAP



0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

WATER IMPROVEMENTS
EAST WOODVIEW
WL 'A' STA 4+50 TO 9+50

3/30/2023
DATE

S. JARED NIERMANN

STATE OF TEXAS
S. JARED NIERMANN
122045
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	SJN
DRAFTED	RCB
CHECKED	ELN
PROJECT NO.	3-00585
DRAWING NO.	C402
SHEET	OF

H: 1"=20'
V: 1"=2'

208' R.L.

92' R.L.

EXISTING NATURAL GROUND

PROPOSED FINISHED GRADE

8" PVC STORM
7+42.75
FL=987.54

PROP. 12" C900 PVC @ -1.75%

PROP. 12" C900 PVC @ -3.61%

PROP. 12" C900 PVC @ -0.19%

EX. 2" WL (TO BE REMOVED)

4+74.28
1-12" R.S. GATE VALVE, MJ
1-12" DI SWIVEL TEE, MJ
1-6" R.S. GATE VALVE, MJ
±10 LF OF RESTRAINED DI
FIRE HYDRANT LEAD
FL 12"=973.04

4+88.28
BEGIN 24" STEEL ENCASEMENT
FL 12"=973.54

5+10.28
END 24" STEEL ENCASEMENT
FL 12"=974.33

6+08.68
BEGIN 24" STEEL ENCASEMENT
FL 12"=977.88

6+32.75
END 24" STEEL ENCASEMENT
FL 12"=978.75

7+37.34
BEGIN 24"
STEEL ENCASEMENT
FL 12"=982.52

7+48.01
END 24"
STEEL ENCASEMENT
FL 12"=982.90

7+74.07
1-12"X6" DI SWIVEL TEE, MJ
1-6" R.S. GATE VALVE, MJ
±10 LF OF 6" RESTRAINED DI
FIRE HYDRANT LEAD
FL 12"=983.84

8+43.49
1° DEFLECTION
FL 12"=986.35

8+63.49
1° DEFLECTION
FL 12"=986.70

8+68.85
BEGIN 24" STEEL ENCASEMENT
FL 12"=986.71

9+34.50
END 24" STEEL ENCASEMENT
FL 12"=986.83

+50 FL=974.61

FL=973.96

+50 FL=975.77

FL=977.57

FL=981.17

+50 FL=979.37

MATCHLINE 4+50

MATCHLINE 9+50

STA: 6+58

STA: 7+27

STA: 7+58

STA: 8+58

31'

4+50 5+00 6+00 7+00 7+25 8+00 9+00 9+50

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585WATER.DWG, C402 EAST WOODVIEW WL 'A' STA 4+50 TO 9+50, 3/30/2023 6:31:06 PM, jniermann

9+88.82, WL 'A'
RECONNECT TO EX.
WATER METER VAULT (FIRE)
1-12"X8" DI TEE, MJ
±18 LF OF 8" DI FIRE LINE
(FIELD VERIFY LINE SIZE)
N=10180486.72
E=3085281.75

9+84.70, WL 'A'
RECONNECT EX. WATER
METER VAULT (DOMESTIC)
1-12"x8" DI TEE, MJ
±19 LF OF 8" DI
WATER SERVICE LINE
(FIELD VERIFY LINE SIZE)
N=10180485.22
E=3085277.90

9+99.06, WL 'A', 23.49' LT.
RELOCATE EX. WATER METER
TO ESMT LINE
INSTALL CUSTOMER
SHUT-OFF VALVE AND PRV
N=10180512.34
E=3085282.73 (1)

10+01.85, WL 'A'
BEGIN 24" STEEL ENCASEMENT
N=10180491.46
E=3085293.88 (6)

10+14.34, WL 'A'
END 24" STEEL ENCASEMENT
N=10180496.01
E=3085305.52 (6)

10+57.31, WL 'A'
1-12" R.S. GATE VALVE, MJ
1-12"X6" DI SWIVEL TEE, MJ
1-6" R.S. GATE VALVE, MJ
±5 LF OF 6" RESTRAINED DI
FIRE HYDRANT LEAD
N=10180511.64
E=3085345.53

(RE: G5/C320
RETAINING WALL)

12+71.72, WL 'A'
BEGIN 24"
STEEL ENCASEMENT
N=10180593.01
E=3085543.89 (6)

13+09.09, WL 'A'
END 24"
STEEL ENCASEMENT
N=10180607.37
E=3085578.38 (6)

13+56.46, WL 'A'
1-12"x6' DI SWIVEL TEE, MJ
1-6" R.S. GATE VALVE, MJ
±10 LF OF 6" RESTRAINED
DI FIRE HYDRANT LEAD
N=10180624.57
E=3085622.52

11+10.26, WL 'A'
BEGIN 24" STEEL ENCASEMENT
N=10180530.91
E=3085394.85 (6)

11+22.76, WL 'A'
END 24" STEEL ENCASEMENT
N=10180535.46
E=3085406.50 (6)

9+99.06, WL 'A'
2" SERVICE CONNECTION
±21 LF OF 2" SERVICE LINE
N=10180490.45
E=3085291.28

9+65.50, WL 'A'
=0+00.00 WL 'A' LAT1
1-12"X8" DI TEE, MJ
1-8" R.S. GATE VALVE, MJ
±81 LF OF 8" (C900 PVC) IN
±45 LF OF 16" STEEL ENCASEMENT
(RE: C412 FOR PROFILE)
N=10180478.23
E=3085260.02

9+65.53, WL 'A'
2" SERVICE CONNECTION
1-8" DI PLUGS W/ 2" TAP, MJ
N=10180411.45
E=3085286.14

9+65.71, 81.50 RT, WL 'A'
RELOCATE EX. WATER METER TO ESMT LINE
INSTALL CUSTOMER SHUT-OFF VALVE AND PRV
RECONNECT TO EXISTING SERVICE LINE
N=10180401.98
E=3085290.04 (7)

(RE: STORM DRAIN PLANS)

(RE: DRY UTILITY PLANS)

(RE: DRAINAGE OUTFALL)

EAST WOODVIEW DR.

PROP. 12" WL 'A'

EX. 2" WL TO BE REMOVED

EX. 8" WL (TO BE REMOVED)

MATCHLINE 9+50

MATCHLINE 14+50

!!!CAUTION!!!
EXISTING OVERHEAD & UNDERGROUND UTILITIES IN THE VICINITY.
VERIFY LOCATION OF EXISTING UNDERGROUND UTILITIES BY
VACUUM EXCAVATION OR OTHER NON-DESTRUCTIVE TECHNIQUES.

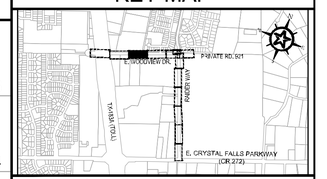
Texas 811
Know what's below. Call before you dig.

KEY NOTES

1. REPOSITION AND ADJUST WATER METER (RE: A1/C415)
2. 1" DIAMETER LONG WATER SERVICE RELAY
3. 1" DIAMETER SHORT WATER SERVICE RELAY
4. 2" DIAMETER LONG WATER SERVICE RELAY
5. 2" DIAMETER SHORT WATER SERVICE RELAY
6. STEEL ENCASEMENT (RE: A1/C416)
7. 4" SDR-35 PVC CASING (RE: A1/C415)
8. AUTOMATIC FLUSH VALVE (RE: A5/C415)
9. ACCESS SHAFT/BORE PIT
10. TRENCH REPAIR (TEMPORARY) (RE: A5/C414)
11. WATER SERVICE CURB STAMP
12. FIRE HYDRANT ASSEMBLY (RE: A1/C414)
13. WATER MAIN LOWERING DETAIL (RE: G1/C413) (RE: SHEETS C411 & C412 FOR PROFILES)
14. 2" AIR RELEASE VALVE (RE: G1/C416)
15. BOLTED & GASKETED FLG'D SPLIT STEEL ENCASEMENT (RE: A1/C416) (RE: SHEETS C411 & C412 FOR PROFILES)
16. TAPPING SLEEVE SHALL BE SMITH BLAIR 663 STAINLESS STEEL TS OR JCM 439 STAINLESS STEEL.

NOTE: R.L. IS AN ABBREVIATION FOR RESTRAINED LENGTH. THE NOTATIONS INDICATE THE MINIMUM REQUIRED LENGTH OF RESTRAINED JOINT PIPE AT SPECIFIC LOCATIONS.

KEY MAP



0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

WATER IMPROVEMENTS
EAST WOODVIEW
WL 'A' STA 9+50 TO 14+50

3/30/2023
DATE
S. JARED NIERMANN

STATE OF TEXAS
S. JARED NIERMANN
122045
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	SJN
DRAFTED	RCB
CHECKED	ELN
PROJECT NO.	3-00585
DRAWING NO.	C403
SHEET	OF

H: 1"=20'
V: 1"=2'

9+50 10+00 11+00 12+00 13+00 14+00 14+50

PROPOSED FINISHED GRADE

EXISTING NATURAL GROUND

EX. 2" WL (TO BE REMOVED)

PROP. 12" C900 PVC @ -0.00%

PROP. 12" C900 PVC @ -1.75%

10+08.09
24"x12" CONCRETE DUCT
(RE: DRY UTILITY PLANS)
FL 24"=987.95

11+16.51
18" RCP STORM PIPE
(RE: STORM DRAIN PLANS)
FL 24"=987.64

9+84.70
RECONNECT EX. WATER
METER VAULT (DOMESTIC)
1-12"X8" DI TEE, MJ
±19 LF OF 8" DI
WATER SERVICE LINE
(FIELD VERIFY LINE SIZE)
FL 12"=986.86

9+88.82
RECONNECT TO EX.
WATER METER VAULT (FIRE)
1-12"X8" DI TEE, MJ
±18 LF OF 8" DI FIRE LINE
(FIELD VERIFY LINE SIZE)
FL 12"=986.86

STA: 10+01.85,
BEGIN 24" STEEL ENCASEMENT
ELEV:

STA: 10+14.34,
END 24" STEEL ENCASEMENT
ELEV:

291' R.L.

STA: 12+41

59' R.L. (6)

9+50 FL=986.86
9+65.50
1-8" R.S. GATE VALVE, MJ
±81 LF OF 8" (C900 PVC) IN
±45 LF OF 16" STEEL ENCASEMENT
FL 12"=986.86

9+91.27
1-12" 45° VERT BEND
FL 12"=984.41

FL=984.41

9+99.06
2" SERVICE CONNECTION
±21 LF OF 2" SERVICE LINE
FL 12"=984.41

+50 FL=984.41
10+57.31
1-12"X6" DI SWIVEL TEE, MJ
1-6" R.S. GATE VALVE, MJ
±5 LF OF 6" RESTRAINED DI
FIRE HYDRANT LEAD
FL 12"=984.41

FL=984.41

11+10.26
BEGIN 24" STEEL ENCASEMENT
FL 12"=984.41

11+22.76
END 24" STEEL ENCASEMENT
FL 12"=984.41

8+24.37
1-12" 45° VERT BEND
FL 12"=984.41

+50 FL=984.79

FL=985.67

+50 FL=986.54

12+71.72
BEGIN 24" STEEL ENCASEMENT
FL 12"=986.92

FL=987.41

13+09.09
END 24" STEEL ENCASEMENT
FL 12"=987.57

+50 FL=988.29
13+56.46
1-12"X6" DI SWIVEL TEE, MJ
1-6" R.S. GATE VALVE, MJ
±10 LF OF 6" RESTRAINED
DI FIRE HYDRANT LEAD
FL 12"=988.40

FL=989.16

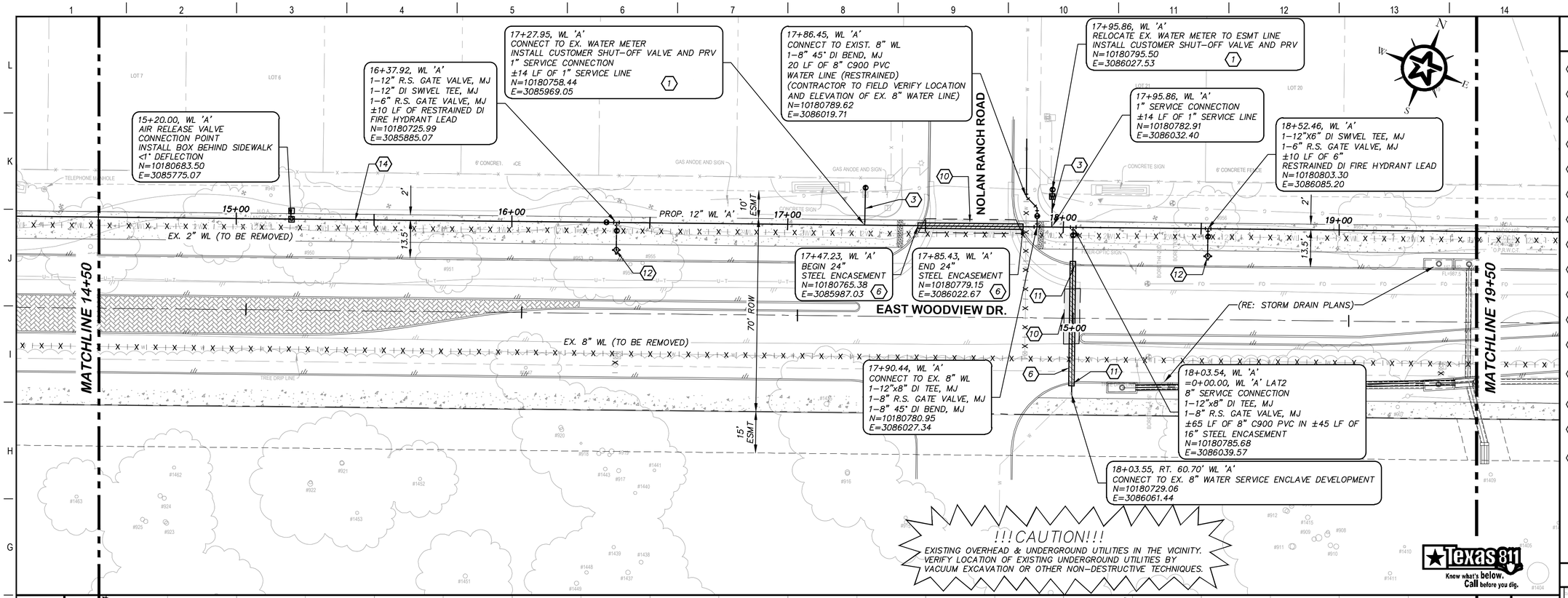
+50 FL=990.03

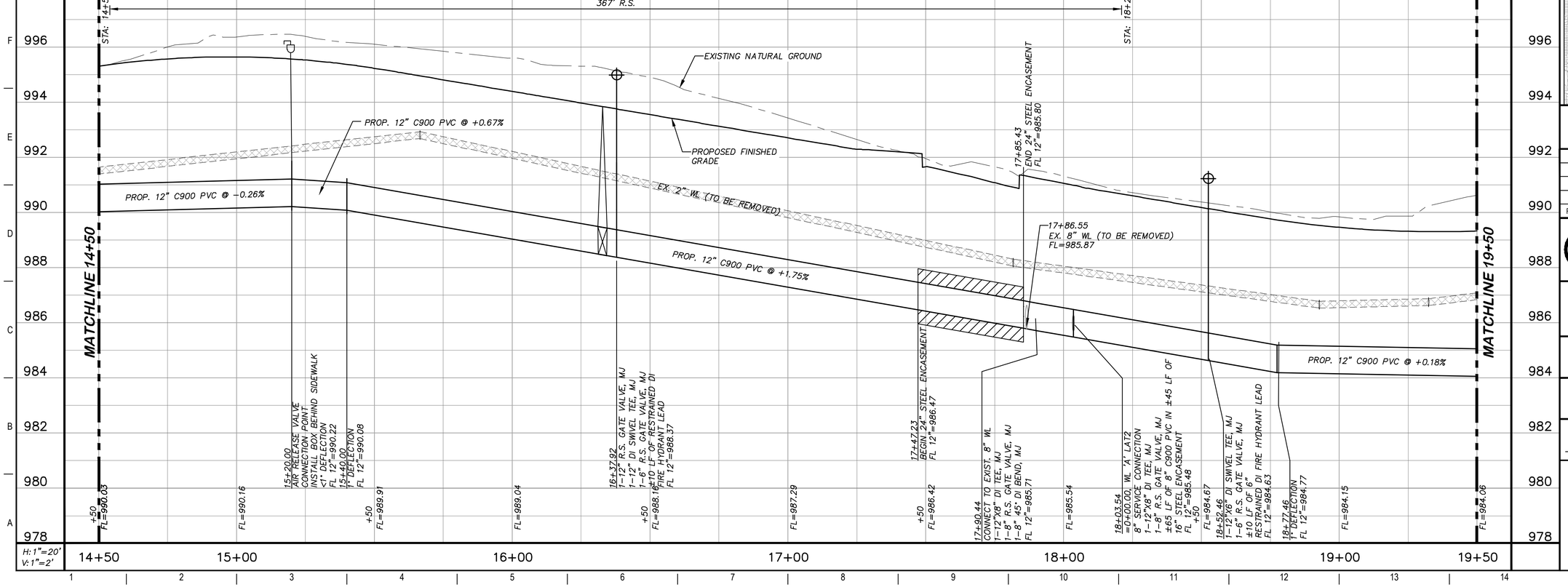
MATCHLINE 9+50

MATCHLINE 14+50

978 980 982 984 986 988 990 992 994 996

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585WATER.DWG, C403 EAST WOODVIEW WL 'A' STA 9+50 TO 14+50, 3/30/2023 6:35:20 PM, jniermann





KEY NOTES

1. REPOSITION AND ADJUST WATER METER (RE: A1/C415)
2. 1" DIAMETER LONG WATER SERVICE RELAY
3. 1" DIAMETER SHORT WATER SERVICE RELAY
4. 2" DIAMETER LONG WATER SERVICE RELAY
5. 2" DIAMETER SHORT WATER SERVICE RELAY
6. STEEL ENCASEMENT (RE: A1/C416)
7. 4" SDR-35 PVC CASING (RE: A1/C415)
8. AUTOMATIC FLUSH VALVE (RE: A5/C415)
9. ACCESS SHAFT/BORE PIT
10. TRENCH REPAIR (TEMPORARY) (RE: A5/C414)
11. WATER SERVICE CURB STAMP
12. FIRE HYDRANT ASSEMBLY (RE: A1/C414)
13. WATER MAIN LOWERING DETAIL (RE: G1/C413) (RE: SHEETS C411 & C412 FOR PROFILES)
14. 2" AIR RELEASE VALVE (RE: G1/C416)
15. BOLTED & GASKETED FLG'D SPLIT STEEL ENCASEMENT (RE: A1/C416) (RE: SHEETS C411 & C412 FOR PROFILES)
16. TAPPING SLEEVE SHALL BE SMITH BLAIR 663 STAINLESS STEEL TS OR JCM 439 STAINLESS STEEL.

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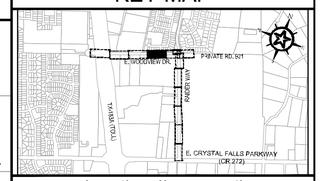

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

WATER IMPROVEMENTS
EAST WOODVIEW
WL 'A' STA 14+50 TO 19+50

3/30/2023 — DATE
S. JARED NIERMANN

STATE OF TEXAS
S. JARED NIERMANN
122045
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	SJN
DRAFTED	RCB
CHECKED	ELN
PROJECT NO.	3-00585
DRAWING NO.	C404
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585WATER.DWG, C404 EAST WOODVIEW WL 'A' STA 14+50 TO 19+50, 3/30/2023 6:39:34 PM, jniermann

!!!CAUTION!!!
EXISTING OVERHEAD & UNDERGROUND UTILITIES IN THE VICINITY. VERIFY LOCATION OF EXISTING UNDERGROUND UTILITIES BY VACUUM EXCAVATION OR OTHER NON-DESTRUCTIVE TECHNIQUES.

21+17.55, WL 'A'
END 24" STEEL ENCASEMENT
N=10180898.83
E=3086332.47

20+67.00, WL 'A'
1-12"x6" DI SWIVEL TEE, MJ
1-6" R.S. GATE VALVE, MJ
±13 LF OF 6" RESTRAINED DI FIRE HYDRANT LEAD
N=10180880.61
E=3086285.32

21+05.05, WL 'A'
BEGIN 24" STEEL ENCASEMENT
N=10180894.32
E=3086320.81

22+23.69, 48.71 LT., WL 'A'
1-12" R.S. GATE VALVE, MJ
N=10180982.51
E=3086413.93

22+24.10, WL 'A'
CONNECT TO EX. 12" WATERLINE
1-12"x12" DI TEE, MJ
(CONTRACTOR TO FIELD VERIFY LOCATION AND ELEVATION OF EX. 12" WATERLINE)
±49 LF OF 12" C900 PVC WATER LINE
N=10180937.22
E=3086431.87

22+24.16, 25.37 LT., WL 'A'
CONNECT TO EX. 8" WL
N=10180960.92
E=3086422.78

22+57.64, WL 'A'
1-AIR RELEASE VALVE
N=10180949.31
E=3086463.16 (14)

22+90.01, WL 'A'
1-12" R.S. GATE VALVE, MJ
N=10180960.97
E=3086493.35

=23+01.06, WL 'A'
=0+00.00 WL 'B'
=28+18.91 WL 'C'
END 12" WL 'A' (C900 PVC)
1-12"X12" DI TEE, MJ
1-12"X8" DI REDUCER, MJ
N=10180964.96
E=3086503.66

21+69.21, WL 'A'
1-12" R.S. GATE VALVE, MJ
N=10180917.45
E=3086380.67

NOTE AIR RELEASE VALVES:
1. AIR RELEASE VENT LINE SHALL BE TEMPORARILY ROUTED OUTSIDE THE EXISTING PAVEMENT. VENT LINE SHALL BE LOCATED IN ROUNDABOUT PRIOR TO BEGINNING OF PAVING.

KEY NOTES

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2. 1" DIAMETER LONG WATER SERVICE RELAY
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8. AUTOMATIC FLUSH VALVE (RE: A5/C415)
9. ACCESS SHAFT/BORE PIT
10. TRENCH REPAIR (TEMPORARY) (RE: A5/C414)
11. WATER SERVICE CURB STAMP
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13. WATER MAIN LOWERING DETAIL (RE: G1/C413) (RE: SHEETS C411 & C412 FOR PROFILES)
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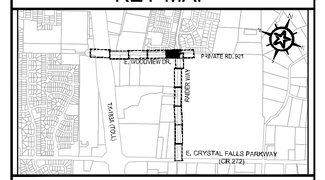

0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

WATER IMPROVEMENTS
EAST WOODVIEW
WL 'A' STA 19+50 TO END

3/30/2023 — DATE
S. JARED NIERMANN

STATE OF TEXAS
S. JARED NIERMANN
122045
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	SJN
DRAFTED	RCB
CHECKED	ELN
PROJECT NO.	3-00585
DRAWING NO.	C405
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585WATER.DWG, C405 EAST WOODVIEW WL 'A' STA 19+50 TO END, 3/30/2023 6:42:42 PM, jniermann

0+66.39, 24.0 LT, WL 'B'
1–8" 11.25° DI BEND, MJ
1–8" 22.5° DI BEND, MJ
±20 LF OF 8" (C900 PVC) WATERLINE
N=10181013.42
E=3086554.40

0+18.62, WL 'B'
DEFLECT FITTING AND PIPE JOINTS IN ACCORDANCE W/ MANUFACTURER'S RECOMMENDATION
N=10180971.67
E=3086521.03

RAIDER WAY

0+88.69, WL 'B'
BEGIN 8" SDR–35 CASING
N=10181000.98
E=3086584.67

1+36.69, WL 'B'
END 8" SDR–35 CASING
N=10181021.06
E=3086628.27

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2+81.46, WL 'B'
1–4" 45° DI BEND, MJ
N=10181081.62
E=3086759.77

2+84.35, WL 'B'
1–4" 45° DI BEND, MJ
N=10181080.62
E=3086762.48

2+86.56, WL 'B'
BEGIN 8" SDR–35 CASING
N=10181078.61
E=3086763.40

3+16.56, WL 'B'
END 8" SDR–35 CASING
N=10181051.36
E=3086775.95

PRIVATE ROAD 921

EX. 4" WL (TO BE REMOVED)

CUT AND REMOVE EX. 4" WL

50' ROW

15' ESMT

5.2'

3+00

0+00

1+00

2+00

3+50

4+00

0+00.00, WL 'B'
=0+00.00 WL 'B'
=28+18.91 WL 'C'
END 12" WL 'A' (C900 PVC)
1–12"X12" DI TEE, MJ
1–12"X8" DI REDUCER, MJ
N=10180964.96
E=3086503.66

(RE: DRY UTILITY PLAN)

0+65.13, WL 'B'
END 8" WL 'B' (C900 PVC)
BEGIN 4" WL 'B' (C900 PVC)
8" SERVICE CONNECTION
1–8"x8" DI TEE, MJ
1–8"X4" DI REDUCER, MJ
1–8" R.S. GATE VALVE, MJ
1–4" R.S. GATE VALVE, MJ
±29 LF OF 8" (C900 PVC)
N=10180991.13
E=3086563.28

3+20.21, WL 'B'
2–4" 45° DI BENDS, MJ
N=10181049.15
E=3086778.51

3+36.50, WL 'B'
END 4" WL 'B' (C900 PVC)
CONNECT TO EX. 4" WL
CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION & ELEVATION OF EX. 4" PVC
N=10181056.85
E=3086798.04

N
W
E
S

KEY NOTES

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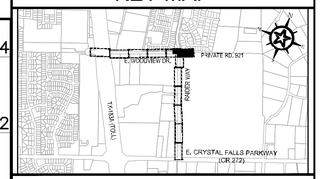


0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 6053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

WATER IMPROVEMENTS
PRIVATE ROAD 921
WL 'B' STA 0+00 TO END

3/30/2023
DATE
S. JARED NIERMANN

STATE OF TEXAS
S. JARED NIERMANN
122045
REGISTERED
PROFESSIONAL ENGINEER

DM	RAM
DESIGNED	SJN
DRAFTED	RCB
CHECKED	ELN
PROJECT NO.	3-00585
DRAWING NO.	C406
SHEET	OF

STA: 0+00 — 118' R.L. — STA: 1+18
STA: 2+70 — 62' R.L. — STA: 3+32

EXISTING NATURAL GROUND
PROPOSED FINISHED GRADE

23+01.06
=0+00.00 WL 'B'
=28+18.91 WL 'C'
END 12" WL 'A' (C900 PVC)
1–12"X12" DI TEE, MJ
1–12"X8" DI REDUCER, MJ (MH 44)
FL 12"=986.69

0+72.77
4" R.S. GATE VALVE, MJ
FL 4"=988.29

BEGIN 8" SDR–35 PVC
0+88.69
FL 4"=989.05

PROP. 8" C900 PVC @ –1.75%
PROP. 8" C900 PVC @ –0.47%
PROP. 4" C900 PVC @ –4.76%
PROP. 4" C900 PVC @ 1.74%

0+18.62
1° DEFLECTION
FL 8"=986.95

0+65.13, WL 'B'
CONNECT TO EX. 8" WATERLINE
1–8"x8" TEE
2–8" GATE VALVES
25.6 LF OF 8" WATERLINE
FL 8" (IN)=990.05
FL 8" (IN)=990.05
FL 8" (OUT)=990.05

1+36.69
END 8" SDR–35 PVC
FL 4"=991.33

2+81.46
1–4" 45° DI BEND, MJ
FL 4"=997.88

2+84.35
1–4" 45° DI BEND, MJ
FL 4"=997.93

2+86.56
BEGIN 8" SDR–35 PVC
FL 4"=997.97

2+70.33
1° DEFLECTION
FL 4"=997.68

3+16.56
END 8" SDR–35 PVC
FL 4"=998.49

3+18.23
2–4" 45° DI BENDS, MJ
FL 4"=998.52

3+20.21
1–4" 45° DI BEND, MJ
FL 4"=998.55

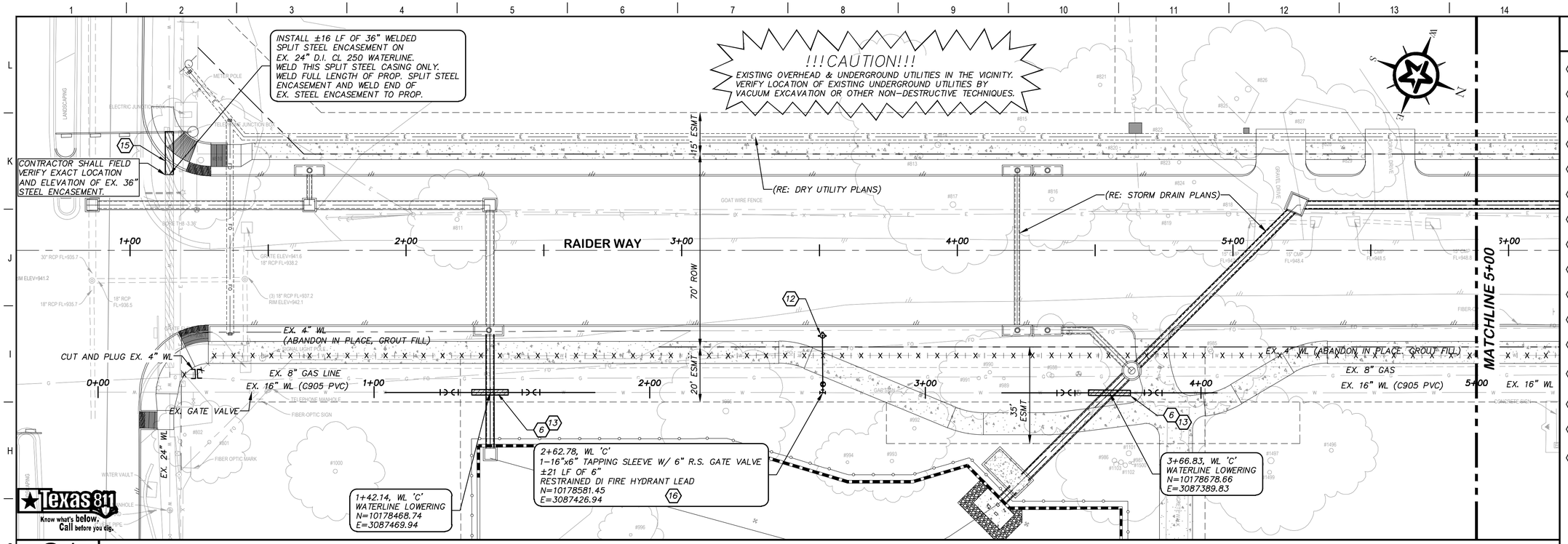
3+40.21
END 4" WL 'B'
CONNECT TO EX. 4" WL
CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION & ELEVATION OF EX. 4" PVC
FL 4"=998.90

1004 1002 1000 998 996 994 992 990 988 986 985

H: 1"=20'
V: 1"=2'

0+00 1+00 2+00 3+00 4+00 4+50

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585WATER.DWG, C406 PRIVATE ROAD 921 WL 'B' STA 0+00 TO END, 3/30/2023 6:46:29 PM, jniermann



KEY NOTES

1. REPOSITION AND ADJUST WATER METER (RE: A1/C415)
2. 1" DIAMETER LONG WATER SERVICE RELAY
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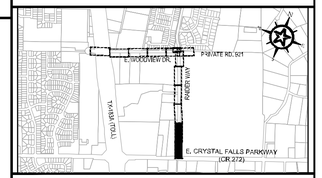

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Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

WATER IMPROVEMENTS
RAIDER WAY
WL 'C' STA 0+00 TO 9+00

3/30/2023
DATE

S. JARED NIERMANN

STATE OF TEXAS
S. JARED NIERMANN
122045
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
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DRAFTED	RCB
CHECKED	ELN
PROJECT NO.	3-00585
DRAWING NO.	C407
SHEET	OF

G:\PROJECTS\13-00585\2 DESIGN\2.0 CAD\3-00585WATER.DWG, C407 RAIDER WAY WL 'C' STA 0+00 TO 9+00, 3/30/2023 6:51:32 PM, jniermann

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(RE: DRY UTILITY PLANS)

(RE: STORM DRAIN PLANS)

PROP. R.O.W.

15' ESMT

70' ROW

77.4' ROW

MATCHLINE 9+00

MATCHLINE 14+00

RAIDER WAY

10+00 11+00 12+00 13+00 14+00 15+00

20' ESMT

EX. 8" GAS LINE

EX. 4" WL (ABANDON IN PLACE, GROUT FILL)

EX. 12" WL (C900 PVC)

ROW

49.2' ESMT

55.5' ESMT

12+71.38, LT, 115.7' WL 'C'
RELOCATE EX. WATER METER TO ESMT LINE
INSTALL CUSTOMER SHUT-OFF VALVE AND PRV
N=10179481.52
E=3086958.62 (1)

10+32.01, WL 'C'
BEGIN 24" SPLIT STEEL CASING
N=10179300.01
E=3087152.38

10+71.36, WL 'C'
END 24" SPLIT STEEL CASING
N=10179336.80
E=3087138.42

11+41.53, WL 'C'
1-12" R.S. GATE VALVE, MJ
1-12"X6" DI CUT-IN SWIVEL TEE, MJ
1-6" R.S. GATE VALVE, MJ
±33 LF OF 16" RESTRAINED DI FIRE HYDRANT LEAD
20 LF OF 12" (C900 PVC) WATERLINE EACH SIDE OF CONNECTION
N=10179402.40
E=3087113.51

12+81.68, WL 'C'
2" SERVICE CONNECTION
±116 LF OF 2" SERVICE LINE
±57 LF OF 4" SDR-35 PVC SLEEVE
N=10179533.03
E=3087062.72

13+70.46, WL 'C'
1-12" TAPPING SLEEVE W/ 6" R.S. GATE VALVE, MJ
±37 LF OF 6" RESTRAINED DI FIRE HYDRANT LEAD
N=10179615.71 (16)
E=3087030.37

Texas 811 Know what's below. Call before you dig.

G1 | RAIDER WAY WL 'C' ~ 9+00-14+00 | 1"=20'

!!!CAUTION!!!
EXISTING OVERHEAD & UNDERGROUND UTILITIES IN THE VICINITY. VERIFY LOCATION OF EXISTING UNDERGROUND UTILITIES BY VACUUM EXCAVATION OR OTHER NON-DESTRUCTIVE TECHNIQUES.

EX. WATER WELL SANITARY CONTROL EASEMENT

(RE: DRY UTILITY PLANS)

(RE: STORM DRAIN PLANS)

THE CITY OF LEANDER, TEXAS VS GC PARKWAY CROSSING LTD. 15' WIDE (0.017 ACRE) EASEMENT AND RIGHT-OF-WAY TRACT W.C.C.D. 2022078810, O.P.R.W.C.T.

THE CITY OF LEANDER, TEXAS VS GC PARKWAY CROSSING LTD. 0.002 ACRE RIGHT-OF-WAY TRACT W.C.C.D. 2022078810 O.P.R.W.C.T.

MATCHLINE 14+00

MATCHLINE 19+00

RAIDER WAY

15+00 16+00 17+00 18+00 19+00 20+00

15' ESMT

70' ROW

21.91' ESMT

20' ESMT

ROW

EX. 4" WL (ABANDON IN PLACE, GROUT FILL)

EX. 12" WL (C900 PVC)

19+52.60, LT, 104.75' WL 'C'
REINSTALL RELOCATED WATER METER
INSTALL CUSTOMER SHUT-OFF VALVE
N=10180037.85
E=3086754.48 (1)

19+52.62, LT, 95.45' WL 'C'
RELOCATE EX. WATER METER
N=10180040.86
E=3086762.26

14+73.87, WL 'C'
CASING FOR FUTURE SERVICE
±21 LF OF 4" SDR-35 PVC SLEEVE
N=10179712.00
E=3086992.68

14+27.59, WL 'C'
CASING FOR FUTURE SERVICE
±72 LF OF 4" SDR-35 PVC SLEEVE
N=10179668.91
E=3087009.56

14+51.61, WL 'C'
WATERLINE LOWERING
N=10179691.27
E=3087000.81

(RE: RETAINING WALL AND DETENTION POND PLANS)

15+98.67, WL 'C'
1-12" R.S. GATE VALVE, MJ
1-12"X6" DI CUT-IN SWIVEL TEE, MJ
1-6" R.S. GATE VALVE, MJ
±29 LF OF 6" RESTRAINED DI FIRE HYDRANT LEAD
± 20 LF OF 12" (C900 PVC) WATERLINE EACH SIDE OF CONNECTION
N=10179829.06
E=3086949.44

16+32.36, WL 'C'
BEGIN 24" SPLIT STEEL CASING
N=10179860.46
E=3086937.25

16+73.79, WL 'C'
END 24" SPLIT STEEL CASING
N=10179899.00
E=3086922.02

17+40.67, WL 'C'
WATERLINE LOWERING
N=10179961.19
E=3086897.43

18+63.59, WL 'C'
1" SERVICE CONNECTION
±105 LF OF 1" SERVICE LINE
±72 LF OF 4" SDR-35 PVC SLEEVE
N=10180075.50
E=3086852.23

18+99.37, WL 'C'
1-12" TAPPING SLEEVE W/ 6" R.S. GATE VALVE, MJ
±25 LF OF 6" RESTRAINED DI FIRE HYDRANT LEAD
N=10180108.77 (16)
E=3086839.08

(RE: RETAINING WALL AND DETENTION POND PLANS)

Texas 811 Know what's below. Call before you dig.

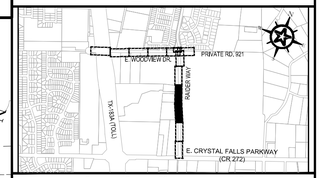
A1 | RAIDER WAY WL 'C' ~ 14+00-19+00 | 1"=20'

KEY NOTES

1. REPOSITION AND ADJUST WATER METER (RE: A1/C415)
2. 1" DIAMETER LONG WATER SERVICE RELAY
3. 1" DIAMETER SHORT WATER SERVICE RELAY
4. 2" DIAMETER LONG WATER SERVICE RELAY
5. 2" DIAMETER SHORT WATER SERVICE RELAY
6. STEEL ENCASEMENT (RE: A1/C416)
7. 4" SDR-35 PVC CASING (RE: A1/C415)
8. AUTOMATIC FLUSH VALVE (RE: A5/C415)
9. ACCESS SHAFT/BORE PIT
10. TRENCH REPAIR (TEMPORARY) (RE: A5/C414)
11. WATER SERVICE CURB STAMP
12. FIRE HYDRANT ASSEMBLY (RE: A1/C414)
13. WATER MAIN LOWERING DETAIL (RE: G1/C413) (RE: SHEETS C411 & C412 FOR PROFILES)
14. 2" AIR RELEASE VALVE (RE: G1/C416)
15. BOLTED & GASKETED FLG'D SPLIT STEEL ENCASEMENT (RE: A1/C416) (RE: SHEETS C411 & C412 FOR PROFILES)
16. TAPPING SLEEVE SHALL BE SMITH BLAIR 663 STAINLESS STEEL TS OR JCM 439 STAINLESS STEEL.

NOTE: R.L. IS AN ABBREVIATION FOR RESTRAINED LENGTH. THE NOTATIONS INDICATE THE MINIMUM REQUIRED LENGTH OF RESTRAINED JOINT PIPE AT SPECIFIC LOCATIONS.

KEY MAP



0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

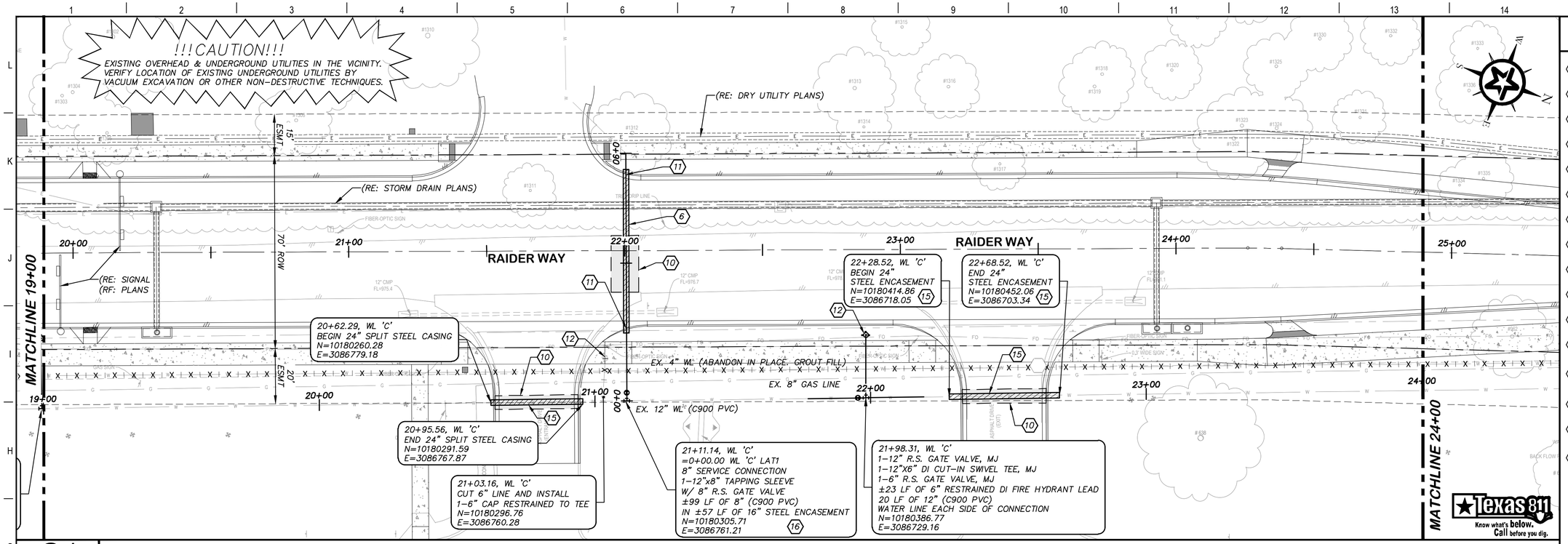
WATER IMPROVEMENTS
RAIDER WAY
WL 'C' STA 9+00 TO 19+00

3/30/2023 — DATE
S. JARED NIERMANN

STATE OF TEXAS
S. JARED NIERMANN
122045
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	SJN
DRAFTED	RCB
CHECKED	ELN
PROJECT NO.	3-00585
DRAWING NO.	C408
SHEET	OF

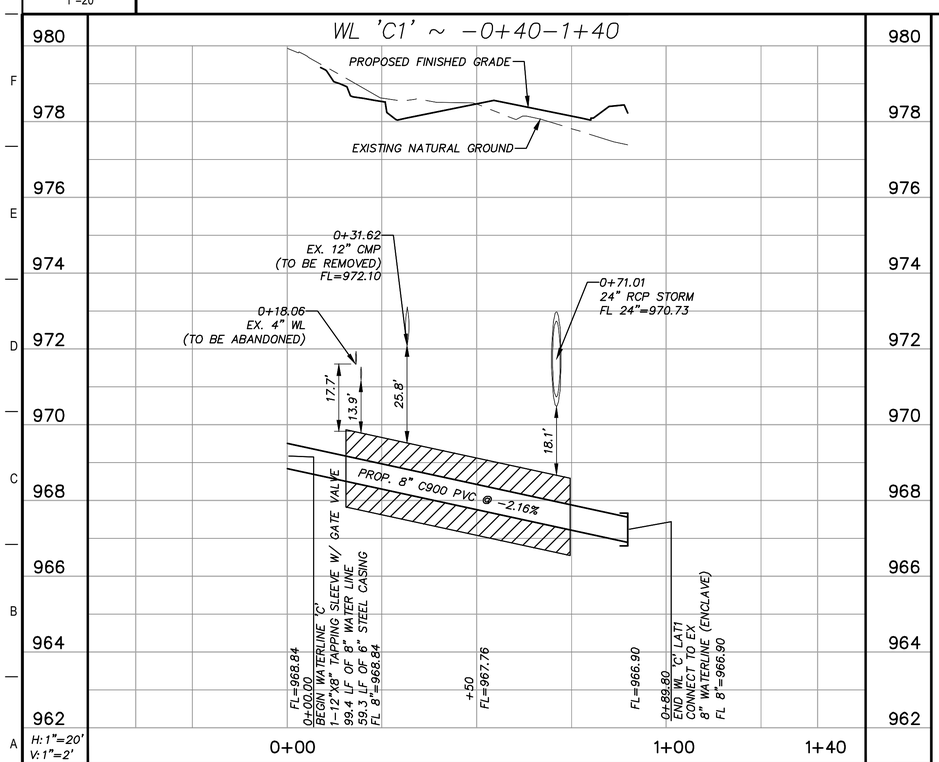
G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585WATER.DWG, C408 RAIDER WAY WL 'C' STA 9+00 TO 19+00, 3/30/2023 6:56:36 PM, jniermann



G1

RAIDER WAY WL 'C' ~ 19+00-24+00

1"=20'



A1

RAIDER WAY WL 'C1' ~ 0+40-1+40

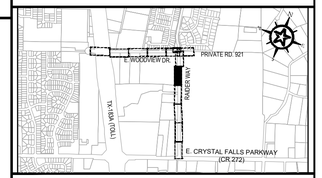
H: 1"=20'
V: 1"=2'

KEY NOTES

1. REPOSITION AND ADJUST WATER METER (RE: A1/C415)
2. 1" DIAMETER LONG WATER SERVICE RELAY
3. 1" DIAMETER SHORT WATER SERVICE RELAY
4. 2" DIAMETER LONG WATER SERVICE RELAY
5. 2" DIAMETER SHORT WATER SERVICE RELAY
6. STEEL ENCASEMENT (RE: A1/C416)
7. 4" SDR-35 PVC CASING (RE: A1/C415)
8. AUTOMATIC FLUSH VALVE (RE: A5/C415)
9. ACCESS SHAFT/BORE PIT
10. TRENCH REPAIR (TEMPORARY) (RE: A5/C414)
11. WATER SERVICE CURB STAMP
12. FIRE HYDRANT ASSEMBLY (RE: A1/C414)
13. WATER MAIN LOWERING DETAIL (RE: G1/C413) (RE: SHEETS C411 & C412 FOR PROFILES)
14. 2" AIR RELEASE VALVE (RE: G1/C416)
15. BOLTED & GASKETED FLG'D SPLIT STEEL ENCASEMENT (RE: A1/C416) (RE: SHEETS C411 & C412 FOR PROFILES)
16. TAPPING SLEEVE SHALL BE SMITH BLAIR 663 STAINLESS STEEL TS OR JCM 439 STAINLESS STEEL.

NOTE: R.L. IS AN ABBREVIATION FOR RESTRAINED LENGTH. THE NOTATIONS INDICATE THE MINIMUM REQUIRED LENGTH OF RESTRAINED JOINT PIPE AT SPECIFIC LOCATIONS.

KEY MAP



0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

WATER IMPROVEMENTS
RAIDER WAY WL 'C' STA
19+00 TO 24+00

3/30/2023
DATE

S. JARED NIERMANN

STATE OF TEXAS
S. JARED NIERMANN
122045
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	SJN
DRAFTED	RCB
CHECKED	ELN
PROJECT NO.	3-00585
DRAWING NO.	C409
SHEET	OF

G:\PROJECTS\13-00585\2 DESIGN\2.0 CAD\13-00585WATER.DWG, C409 RAIDER WAY WL 'C' STA 19+00 TO 24+00, 3/30/2023 7:46:50 PM, rbeamer

(RE: DRY UTILITY PLANS)

(RE: STORM DRAIN PLANS)

(RE: STORM DRAIN PLANS)

MATCHLINE 24+00

RAIDER WAY

15' ESMT

70' ROW

20' ESMT

EX. 8" GAS LINE

EX. 12" WL (C900 PVC)

EX. 8" WL (TO BE REMOVED)

EX. 4" WL (ABANDON IN PLACE. GROUT FILL)

EX. 4" WL (TO BE REMOVED)

EX. 12" WL (TO BE REMOVED)

EX. 8" WL (TO BE REMOVED)

EX. 8" WL (TO BE REMOVED)

(RE: DRY UTILITY PLANS)

24+00 25+00 26+00 27+00 28+00 29+00 22+00 23+00 23+01 28+19

24+91.98, WL 'C'
BEGIN 12" WL 'C' (C900 PVC)
CONNECT TO EX. 12" WL
1–12" R.S. GATE VALVE, MJ
1–12"X6" DI SWIVEL TEE, MJ
1–6" R.S. GATE VALVE, MJ
±28 LF OF 6" RESTRAINED
DI FIRE HYDRANT LEAD
N=10180659.87
E=3086621.18

25+16.71, WL 'C'
RECONNECT EX. WATER VAULT
1–12"X8" DI TEE, MJ
±6 LF OF 8" WATER SERVICE LINE
(FIELD VERIFY INE SIZE)
N=10180682.93
E=3086612.25

27+27.94, WL 'C'
1–12"X6" DI TEE, MJ
1–6" R.S. GATE VALVE, MJ
±24 LF OF 6"
RESTRAINED DI FIRE HYDRANT LEAD
N=10180880.05
E=3086536.35

28+01.80, WL 'C'
12" R.S. GATE VALVE, MJ
N=10180948.98
E=3086509.81

28+18.91, WL 'C'
=0+00.00, WL 'B'
=23+01.00, WL 'A'
END 12" WL 'C' (C900 PVC)
1–12"X12" DI TEE, MJ
1–12"X8" DI REDUCER, MJ
N=10180964.96
E=3086503.66

CUT & REMOVE EX. 4" WL TO NORTH.
PLUG EX. WL TO BE ABANDONED TO SOUTH

!!!CAUTION!!!
EXISTING OVERHEAD & UNDERGROUND UTILITIES IN THE VICINITY.
VERIFY LOCATION OF EXISTING UNDERGROUND UTILITIES BY
VACUUM EXCAVATION OR OTHER NON–DESTRUCTIVE TECHNIQUES.

Texas 811
Know what's below. Call before you dig.

MATCHLINE 24+00

327' R.L.

STA: 24+91.98
FL 12"=984.00
1–12" R.S. GATE VALVE, MJ
24+93.50

STA: 28+19

EXISTING NATURAL GROUND

PROPOSED FINISHED GRADE

27+93.45
EX. 4" WL (TO BE REMOVED)
FL=988.47

EX. 8" WL (TO BE REMOVED)

EX. 12" WL (TO REMAIN)

PROP. 12" C900 PVC @ +1.29%

PROP. 12" C900 PVC @ +0.65%

25+09.03
PROP. 12" DUCT BANK
FL=982.04

24+91.98
BEGIN 12" WL 'C' (C900 PVC)
CONNECT TO EX. 12" WL
1–12" R.S. GATE VALVE, MJ
1–12"X6" DI SWIVEL TEE, MJ
1–6" R.S. GATE VALVE, MJ
±28 LF OF 6" RESTRAINED
DI FIRE HYDRANT LEAD
FL 12"=983.97
FL=983.97

25+02.60
BEGIN 24" STEEL ENCASEMENT
FL 12"=984.04
FL=984.03

25+15.10
END 24" STEEL ENCASEMENT
FL 12"=984.13

25+26.83
BEGIN 24" STEEL ENCASEMENT
FL 12"=984.20

+50
FL=984.35

25+73.25
END 24" STEEL ENCASEMENT
FL 12"=984.51

FL=984.68

+50
FL=985.01

FL=985.34

27+27.94
1° DEFLECTION
FL 12"=985.52

+50
FL=985.80

24+98.22
12" R.S. GATE VALVE, MJ
FL 12"=986.47
FL=986.45

23+01.06
=0+00.00 WL 'B'
=28+18.91 WL 'C'
END 12" WL 'A' (C900 PVC)
1–12"X12" DI TEE, MJ
1–12"X8" DI REDUCER, MJ
FL 12"=986.69
FL=986.69

994 992 990 988 986 984 982 980 978 976

23+25 24+00 25+00 26+00 27+00 28+00 28+19

H: 1"=20'
V: 1"=2'

KEY NOTES

1. REPOSITION AND ADJUST WATER METER (RE: A1/C415)
2. 1" DIAMETER LONG WATER SERVICE RELAY
3. 1" DIAMETER SHORT WATER SERVICE RELAY
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6. STEEL ENCASEMENT (RE: A1/C416)
7. 4" SDR–35 PVC CASING (RE: A1/C415)
8. AUTOMATIC FLUSH VALVE (RE: A5/C415)
9. ACCESS SHAFT/BORE PIT
10. TRENCH REPAIR (TEMPORARY) (RE: A5/C414)
11. WATER SERVICE CURB STAMP
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13. WATER MAIN LOWERING DETAIL (RE: G1/C413) (RE: SHEETS C411 & C412 FOR PROFILES)
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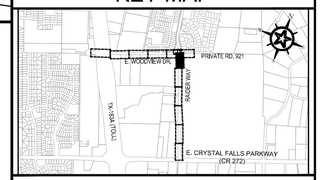
NOTE: R.L. IS AN ABBREVIATION FOR RESTRAINED LENGTH. THE NOTATIONS INDICATE THE MINIMUM REQUIRED LENGTH OF RESTRAINED JOINT PIPE AT SPECIFIC LOCATIONS.

KEY MAP



0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

WATER IMPROVEMENTS
RAIDER WAY
WL 'C' STA 24+00 TO END

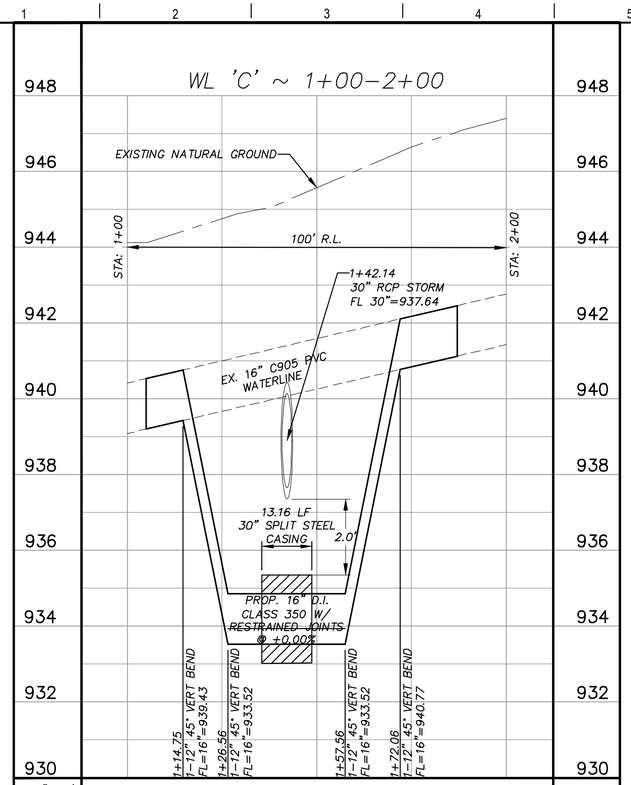
3/30/2023
DATE

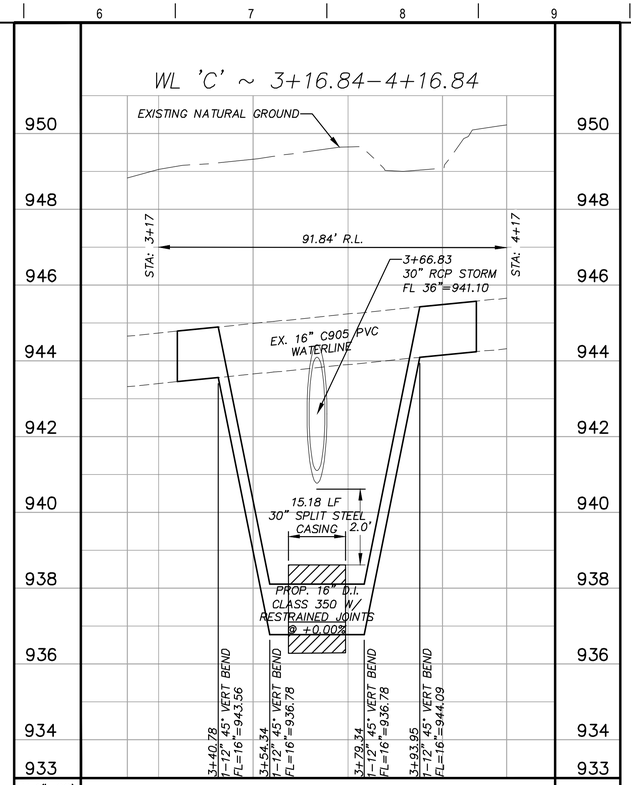
S. JARED NIERMANN

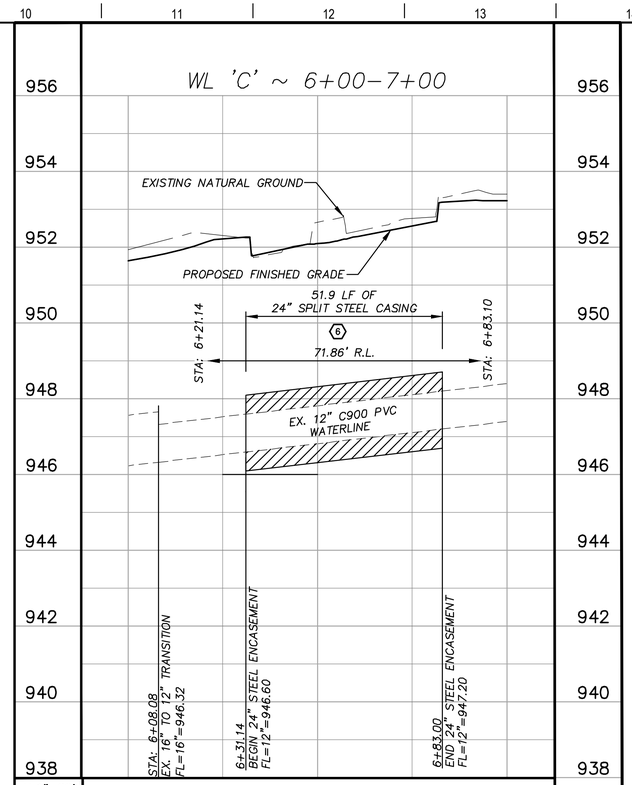
STATE OF TEXAS
S. JARED NIERMANN
122045
REGISTERED PROFESSIONAL ENGINEER

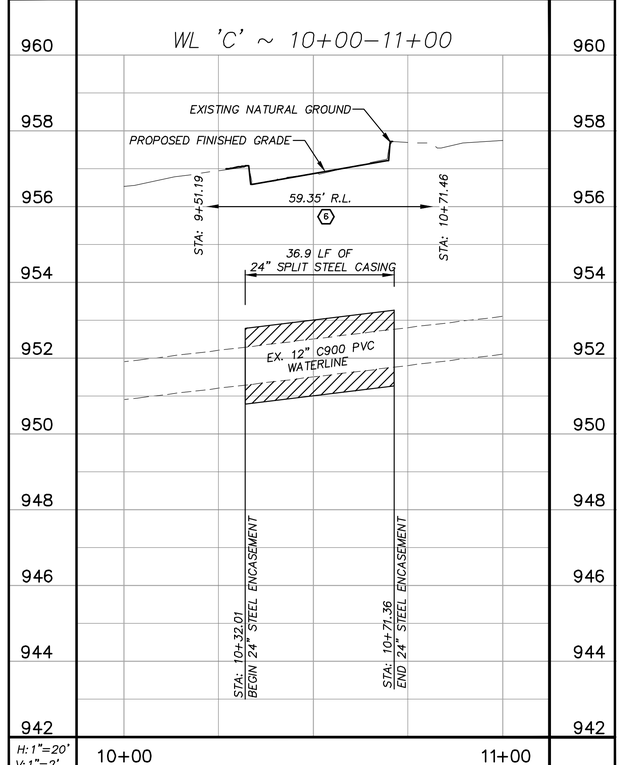
PM	RAM
DESIGNED	SJN
DRAFTED	RCB
CHECKED	ELN
PROJECT NO.	3-00585
DRAWING NO.	C410
SHEET	OF

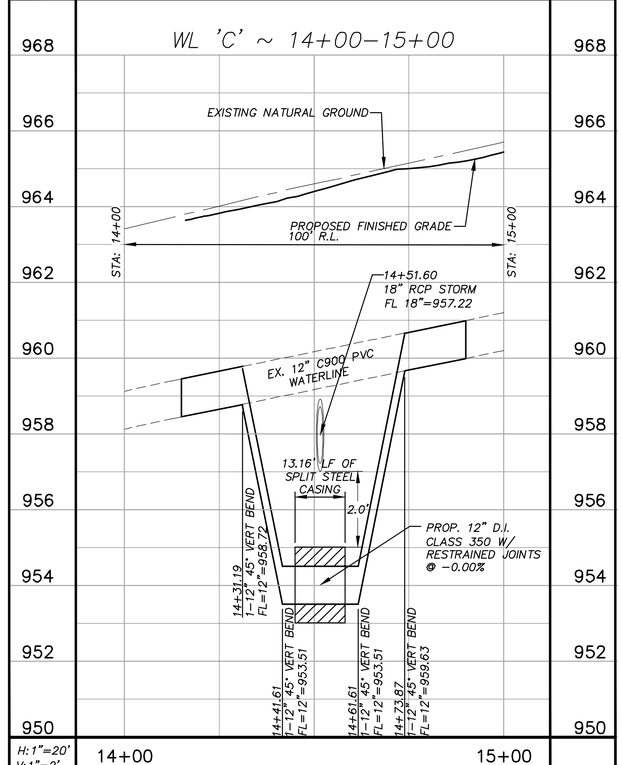
G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585WATER.DWG, C410 RAIDER WAY WL 'C' STA 24+00 TO END, 3/30/2023 7:03:24 PM, jniermann

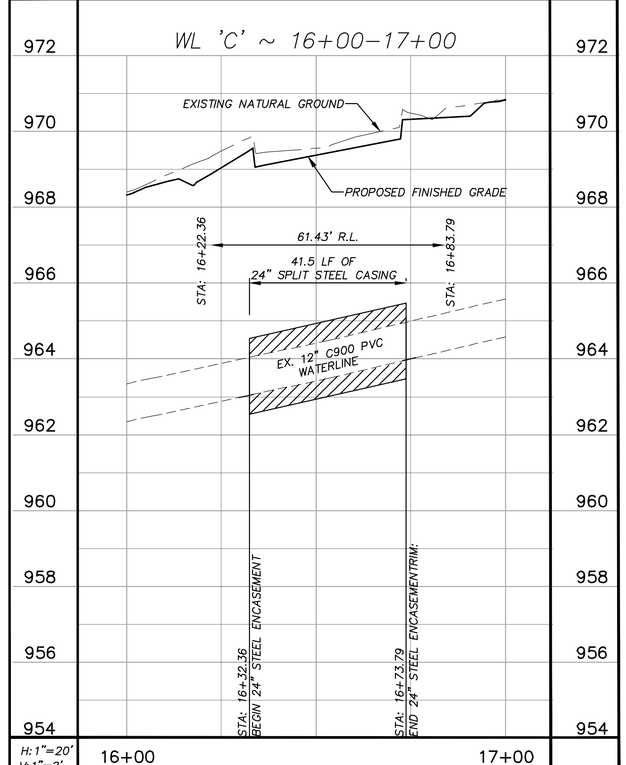












NOTE: R.L. IS AN ABBREVIATION FOR RESTRAINED LENGTH. THE NOTATIONS INDICATE THE MINIMUM REQUIRED LENGTH OF RESTRAINED JOINT PIPE AT SPECIFIC LOCATIONS.

GRAPHIC SCALE (FEET)
0 10 20 40

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

WATER IMPROVEMENTS
RAIDER WAY
WL 'C' PROFILES

3/30/2023
DATE

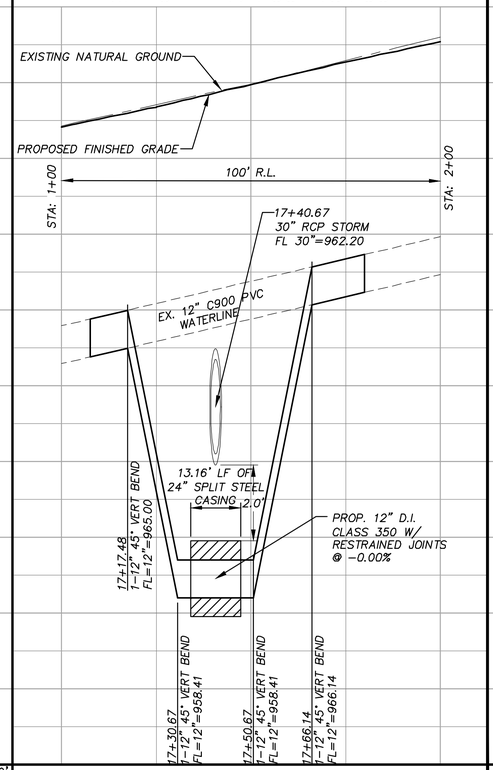
S. JARED NIERMANN

STATE OF TEXAS
S. JARED NIERMANN
122045
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	SJN
DRAFTED	RCB
CHECKED	ELN
PROJECT NO.	3-00585
DRAWING NO.	C411
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585WATER.DWG, C411 WL 'C' PROFILE CROSSINGS STA 1+00 TO END, 3/30/2023 7:48:26 PM, rbeamer

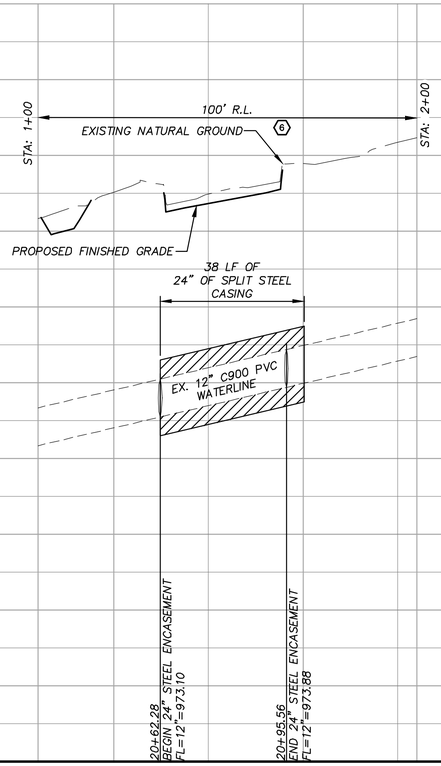
WL 'C' ~ 17+00–18+00



H: 1"=20'
V: 1"=2'

17+00 18+00

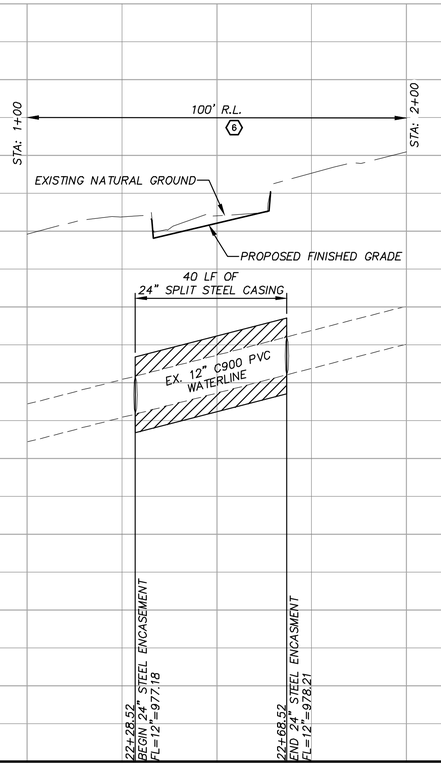
WL 'C' ~ 20+30–21+30



H: 1"=20'
V: 1"=2'

20+30 21+00 21+30

WL 'C' ~ 22+00–23+00

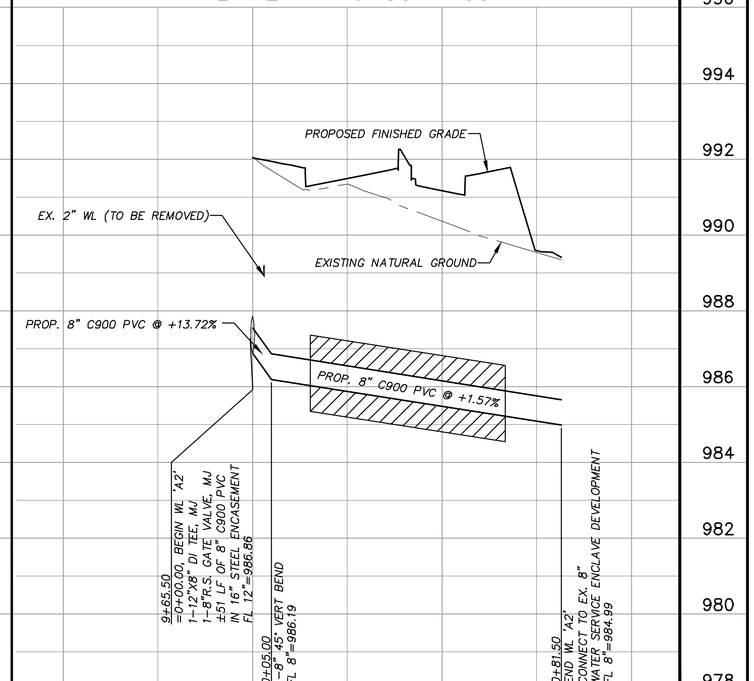


H: 1"=20'
V: 1"=2'

22+00 23+00

NOTE: R.L. IS AN ABBREVIATION FOR RESTRAINED LENGTH. THE NOTATIONS INDICATE THE MINIMUM REQUIRED LENGTH OF RESTRAINED JOINT PIPE AT SPECIFIC LOCATIONS.

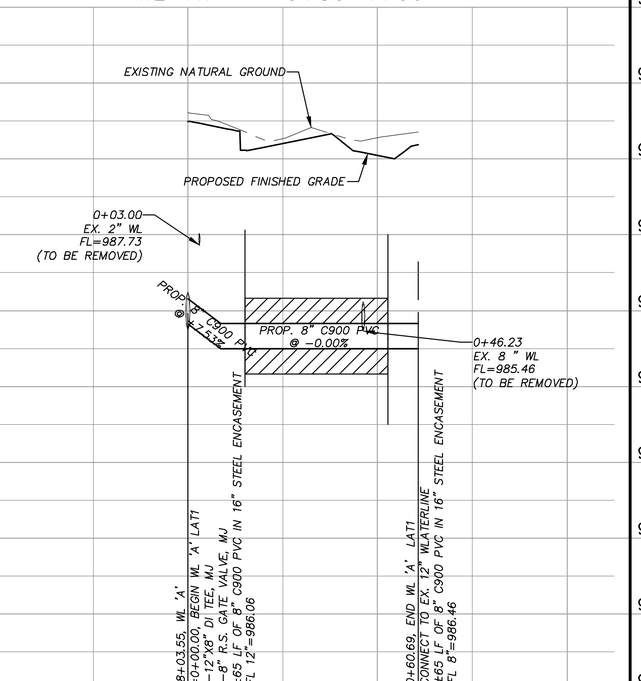
WL 'A2' ~ −0+50–1+00



H: 1"=20'
V: 1"=2'

0+00 0+81.50

WL 'A1' ~ −0+50–1+00



H: 1"=20'
V: 1"=2'

−0+50 0+00 1+00

GRAPHIC SCALE (FEET)

0 10 20 40

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

WATERLINE IMPROVEMENTS
WOODVIEW DR & RAIDER WAY
WL 'C' PROFILES
WL 'A1' & 'C1' LATERALS

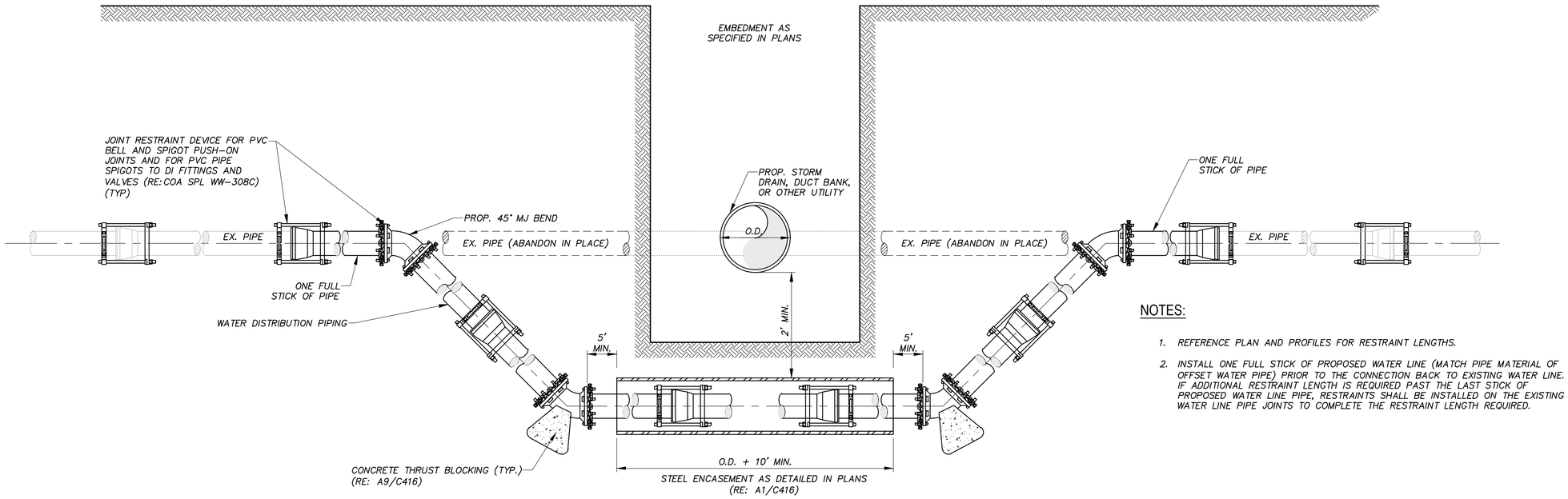
3/30/2023
DATE

S. JARED NIERMANN

STATE OF TEXAS
S. JARED NIERMANN
122045
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	SJN
DRAFTED	RCB
CHECKED	ELN
PROJECT NO.	3-00585
DRAWING NO.	C412
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585WATER.DWG, C412 RAIDER WAY WL 'C1' LAT1 STA 0+00 TO END, 3/30/2023 8:15:06 PM, rbeamer



NOTES:

1. REFERENCE PLAN AND PROFILES FOR RESTRAINT LENGTHS.
2. INSTALL ONE FULL STICK OF PROPOSED WATER LINE (MATCH PIPE MATERIAL OF OFFSET WATER PIPE) PRIOR TO THE CONNECTION BACK TO EXISTING WATER LINE. IF ADDITIONAL RESTRAINT LENGTH IS REQUIRED PAST THE LAST STICK OF PROPOSED WATER LINE PIPE, RESTRAINTS SHALL BE INSTALLED ON THE EXISTING WATER LINE PIPE JOINTS TO COMPLETE THE RESTRAINT LENGTH REQUIRED.

G1 WATER MAIN LOWERING DETAIL

N.T.S.

A1 NOT USED

N.T.S.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

WATER DETAILS 1

3/30/2023 DATE

S. JARED NIERMANN

STATE OF TEXAS
S. JARED NIERMANN
122045
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	SJN
DRAFTED	RCB
CHECKED	ELN
PROJECT NO.	3-00585
DRAWING NO.	C413
SHEET	OF

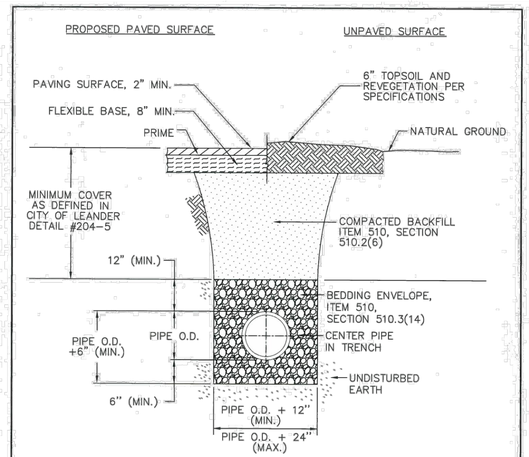
G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-WATER.DWG, C413 WATER DETAILS 1, 3/30/2023 4:20:26 PM, jniermann

G1 NOT USED

N.T.S.

G5 TYPICAL PIPE TRENCH AND EMBEDMENT

N.T.S. | CITY OF LEANDER STANDARD DETAILS 104-1



NOTES:

1. SEE CITY OF LEANDER DETAIL #104-2 FOR TYPICAL PIPE TRENCH AND EMBEDMENT IN EXISTING PAVED SURFACES.

REFERENCES:

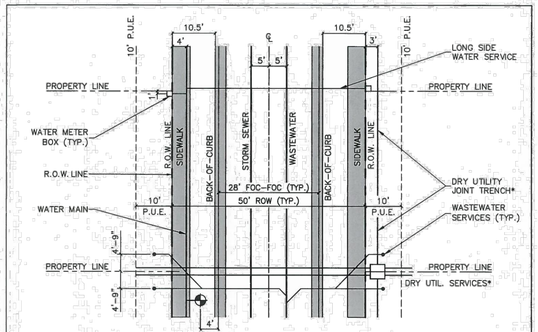
1. CITY OF AUSTIN STANDARD SPECIFICATION MANUAL ITEM 510, SECTION 510.2(6), "SELECT BACKFILL OR BORROW"; SECTION 510.3(14), "PIPE BEDDING ENVELOPE"

STATE OF TEXAS · MICHAEL LAFFERTY · 118708 · LICENSED PROFESSIONAL ENGINEER
2019-05-23

City Of Leander, Texas
DETAIL #104-1
TYPICAL PIPE TRENCH AND EMBEDMENT

G9 UTILITY ASSIGNMENTS WITHIN RESIDENTIAL DEVELOPMENT

N.T.S. | CITY OF LEANDER STANDARD DETAILS 204-5



MINIMUM COVER BELOW FINISH-GRADE

STORM SEWER	BELOW SUBGRADE
WASTEWATER	48"
WATER	36"
ELECTRIC PRIMARY*	30"
ELECTRIC SECONDARY*	24"
GAS*	24"
TELECOMMUNICATIONS*	24"

RESIDENTIAL STREET
NOT TO SCALE

*NOTE:
ALL GAS, ELECTRIC, AND TELECOMMUNICATION LINES SHALL BE INSTALLED PER THE UTILITY PROVIDER'S STANDARDS AND SPECIFICATIONS.

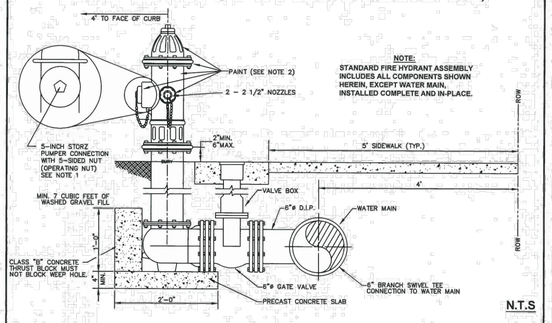
STATE OF TEXAS · WAYNE S. WATTS · 86134 · LICENSED PROFESSIONAL ENGINEER
10/09/18

City Of Leander, Texas
DETAIL #204-5
UTILITY ASSIGNMENTS WITHIN RESIDENTIAL DEVELOPMENT

A1 STANDARD FIRE HYDRANT ASSEMBLY

N.T.S. | CITY OF LEANDER STANDARD DETAILS 101-4

FIRE HYDRANTS LACKING INTEGRAL STORZ CONNECTOR SHALL BE REJECTED (NO STORZ ADAPTERS ALLOWED)



NOTES:

1. FIRE HYDRANT SHALL BE CLOW MEDALLION F2545, AMERICAN DARLING B-84-B-5, MUELLER SUPER CENTURION, EJ 5CD250 WATERMASTER, KENNEDY K81D GUARDIAN, AVK 2780, OR APPROVED EQUAL VIA SUBMITTAL PROCESS. THE PRIMARY FEATURES REQUIRED INCLUDE: FACTORY INSTALLED INTEGRAL 5-INCH STORZ PUMPER NOZZLE; 1.5-INCH PENT OPERATING NUT ON NOZZLE CAP; OPEN LEFT; FACTORY PAINTED.
2. HYDRANTS SHALL BE FACTORY PAINTED WITH FL-YNT ALUMINUM SILVER PAINT OR SHERWIN WILLIAMS SILVER B59S11. HYDRANTS WILL NOT BE ACCEPTED IF PAINTED AFTER DELIVERY OR IF PAINT IS FLAT IN APPEARANCE.
3. ALL DUCTILE OR CAST IRON FITTINGS AND/OR PIPE SHALL BE POLYWRAPPED.
4. ALL HYDRANTS SHALL BE EQUIPPED WITH A BREAKAWAY FLANGE. ALL FITTINGS SHALL BE EQUIPPED WITH JOINT RESTRAINT "MEGALUG" OR APPROVED EQUAL. ALL ANCHOR FITTING TO BE CONCRETE THRUST BLOCKED.
5. BLUE, BI-DIRECTIONAL REFLECTIVE PAVEMENT MARKER, ULTIMATE WET NIGHT VISIBILITY SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATION AT THE CORRESPONDING ROADWAY STATION OFFSET 6" (SIX INCHES) FROM CENTER OF STREET TO THE SIDE HYDRANT IS LOCATED. AT INTERSECTIONS, MARKERS SHALL BE PLACED ON BOTH ROADWAYS ADJACENT TO HYDRANT.

LOCATION:

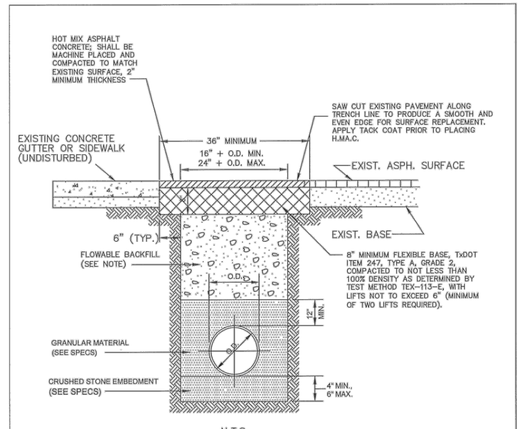
6. SET F.H. ON LOT LINE (EXTENDED WHEN POSSIBLE)
7. F.H. LOCATED AT STREET INTERSECTIONS SHALL BE PLACED A MINIMUM OF TEN FEET (10') FROM RADIUS TANGENT POINT
8. NO OBSTRUCTIONS SHALL BE PERMITTED WITHIN THREE FEET (3') IN ALL DIRECTIONS FROM F.H.
9. 5-INCH STORZ PUMPER NOZZLE SHALL FACE THE FIRE LANE OR TRAVEL WAY UNLESS OTHERWISE NOTED.

STATE OF TEXAS · WAYNE S. WATTS · 86134 · LICENSED PROFESSIONAL ENGINEER
02/05/19

City Of Leander, Texas
DETAIL #101-4
STANDARD FIRE HYDRANT ASSEMBLY

A5 TYPICAL TRENCH & HMAC SURFACE REMOVAL & REPLACEMENT DETAIL

N.T.S. | CITY OF LEANDER STANDARD DETAILS 104-2



N.T.S.

NOTES:

FLOWABLE BACKFILL SHALL CONSIST OF A MIXTURE OF NATIVE SOILS OR MANUFACTURED MATERIALS, CEMENT AND/OR FLY ASH, AND WATER WHICH PRODUCES A MATERIAL WITH UNCONFINED COMPRESSIVE STRENGTH OF BETWEEN 250 AND 450 PSI AFTER 28 DAYS. ANY MATERIALS USED SHALL BE PRIMARILY GRANULAR, WITH A PLASTICITY INDEX <12 AND WITH 100% PASSING A 3/4 INCH SIEVE. THE FLOWABLE MIXTURE SHALL BE MIXED IN A PUG MILL, CONCRETE MIXER, OR TRANSIT MIXER AND SHALL HAVE A MINIMUM SLUMP OF 5 INCHES. THE FLOWABLE MIXTURE MUST BE ALLOWED TO SET PRIOR TO THE PACEMENT OF ANY OVERLAYING MATERIAL.

ONE CONCRETE CYLINDER WILL BE REQUIRED FOR TESTING AND WILL BE FABRICATED BY THE CITY INSPECTOR.

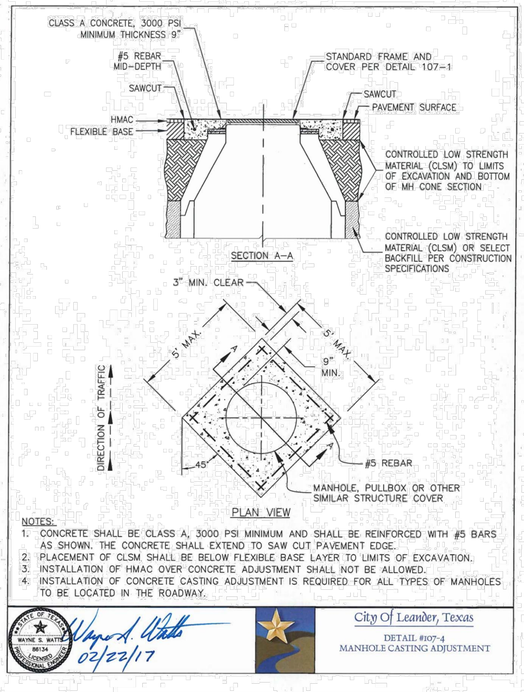
THE PUBLIC WORKS DEPARTMENT IS TO BE CONTACTED AT 259-2640 PRIOR TO COMMENCEMENT OF BACKFILL OPERATIONS.

STATE OF TEXAS · WAYNE S. WATTS · 86134 · LICENSED PROFESSIONAL ENGINEER
02/22/17

City Of Leander, Texas
DETAIL #104-2
TYPICAL TRENCH AND H.M.A.C. SURFACE REMOVAL AND REPLACEMENT DETAIL

A9 MANHOLE CASTING ADJUSTMENT

N.T.S. | CITY OF LEANDER STANDARD DETAILS 107-4



PLAN VIEW

NOTES:

1. CONCRETE SHALL BE CLASS A, 3000 PSI MINIMUM AND SHALL BE REINFORCED WITH #5 BARS AS SHOWN. THE CONCRETE SHALL EXTEND TO SAW CUT PAVEMENT EDGE.
2. PLACEMENT OF CLSM SHALL BE BELOW FLEXIBLE BASE LAYER TO LIMITS OF EXCAVATION.
3. INSTALLATION OF HMAC OVER CONCRETE ADJUSTMENT SHALL NOT BE ALLOWED.
4. INSTALLATION OF CONCRETE CASTING ADJUSTMENT IS REQUIRED FOR ALL TYPES OF MANHOLES TO BE LOCATED IN THE ROADWAY.

STATE OF TEXAS · WAYNE S. WATTS · 86134 · LICENSED PROFESSIONAL ENGINEER
02/22/17

City Of Leander, Texas
DETAIL #107-4
MANHOLE CASTING ADJUSTMENT

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

WATER DETAILS 2

PM	RAM
DESIGNED	SJN
DRAFTED	RCB
CHECKED	ELN
PROJECT NO.	3-00585
DRAWING NO.	C414
SHEET	OF

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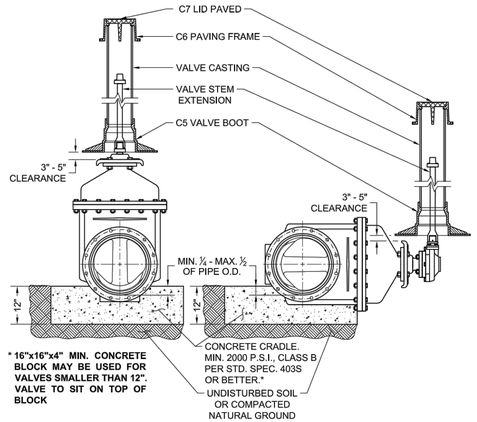


*** 16"x16"x4" MIN. CONCRETE BLOCK MAY BE USED FOR VALVES SMALLER THAN 12". VALVE TO SIT ON TOP OF BLOCK**

VERTICAL VALVE

HORIZONTAL VALVE

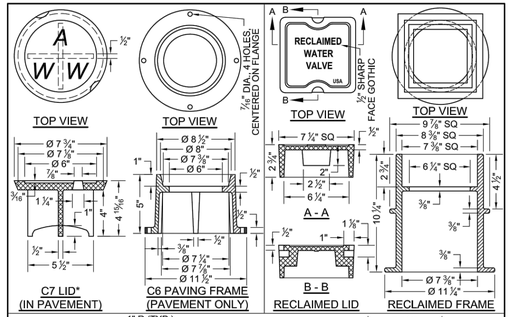
ONLY TO BE USED WHEN CALLED OUT ON THE DRAWINGS.

NOTES:

1. WELD SOCKET 2½" x 2" DEEP TO 1" SCH. 40 CARBON STEEL ROUND STEM EXTENSION, FITTED ON OPERATING NUT. [SCH. 80 FOR LENGTHS OVER 10'.]
2. VALVE CASTING SHALL BE 6" DI PIPE WITH BELL OR COLLAR CENTERED OVER VALVE BOOT.
3. NUT AT TOP OF VALVE EXTENSION ROD SHALL BE SQUARE 2" LONG WELDED TO TOP OF ROD.
4. VALVE STEM EXTENSIONS ARE REQUIRED ON ALL VALVES THAT EXCEED 3' DEEP FROM FINISHED GRADE. VALVE EXTENSIONS SHALL BE PLACED SUCH THAT THE EXTENSION NUT IS BETWEEN 12" AND 18" FROM FINISHED GRADE.

RECLAIMED WATER: ALL RECLAIMED PVC PIPE SHALL BE MANUFACTURED PURPLE PIPE. HDPE PIPE SHALL BE MANUFACTURED WITH PURPLE STRIPES. ALL OTHER PIPE AND APPURTENANCES SHALL BE MANUFACTURED PURPLE IF AVAILABLE. ALL PIPE AND FITTINGS THAT ARE NOT AVAILABLE FROM THE MANUFACTURER IN PURPLE SHALL BE PAINTED PURPLE PER SPL WW-3C. ALL BURIED DI AND CI PIPE AND FITTINGS SHALL ALSO BE WRAPPED IN PURPLE POLYETHYLENE PER SPL WW-27D. ALL COVERS SHALL HAVE **"RECLAIMED WATER"** CAST INTO THEM.

CITY OF AUSTIN AUSTIN WATER	TYPICAL GATE VALVE 4" - 16"	
RECORD COPY SIGNED BY KATHI L FLOWERS 05/18/2016 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 511-AW-01 1 OF 4



NOTES:

1. MATERIAL SHALL BE GRAY CAST IRON, ASTM A48, GRADE 30B.
2. THE MANUFACTURER'S IDENTIFICATION AND CASTING NUMBER, AND THE COUNTRY WHERE CAST, SHALL BE DISTINCTLY CAST ONTO EACH LID, FRAME, COLLAR AND BASE.
3. DRAFT AND SHRINKAGE ALLOWANCE SHALL BE IN ACCORDANCE WITH NORMAL FOUNDRY PRACTICE.
4. CASTING FINISH BY MANUFACTURER SHALL INCLUDE REMOVAL OF FINS AND FLASHING, AND PAINT WITH BLACK ASPHALT COATING.

WEIGHTS:

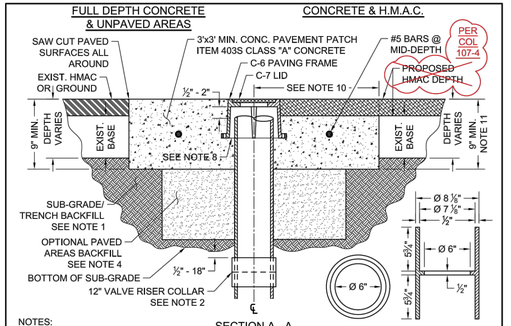
C7 LID: 13 LBS
RECLAIMED LID: 15 LBS
C6 FRAME: 23 LBS
RECLAIMED FRAME: 33 LBS
C5 BASE: 78 LBS

* LETTERING SHALL BE 1 ½" 2 PICK BAR SLOTS REQUIRED

CITY OF AUSTIN AUSTIN WATER	TYPICAL GATE VALVE 4" - 16"	
RECORD COPY SIGNED BY KATHI L FLOWERS 05/18/2016 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 511-AW-01 2 OF 4

FULL DEPTH CONCRETE & UNPAVED AREAS

CONCRETE & H.M.A.C.



SECTION A - A

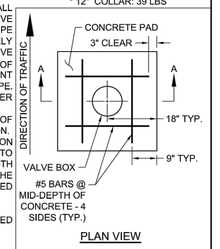
TOP VIEW COLLAR *

12" VALVE RISER COLLAR

* 12" COLLAR: 39 LBS

NOTES:

1. SUB-GRADE/TRENCH BACKFILL SHALL BE COMPACTED AS PER ITEM 201S, SUB-GRADE PREPARATION.
2. TO ADJUST VALVE CASTINGS TO FINAL GRADE, REMOVE RISER PIPE BELOW SUB-GRADE AND INSTALL APPROPRIATE LENGTH OF NEW RISER PIPE TO ACHIEVE FINAL GRADE. CONNECT THE TWO PIECES OF RISER PIPE WITH A 6" COLLAR MIN. 12" LENGTH APPROXIMATELY CENTERED ON THE JOINT WITH THE TOP OF SLEEVE LOCATED ½" - 18" BELOW SUB-GRADE. THE INSIDE "LIP" OF COLLAR TO BE PAINTED WITH FLUORESCENT WHITE PAINT OR COVERED WITH FLUORESCENT WHITE TAPE. ALTERNATE: FOR OPTIONAL SINGLE PIECE RISER INSTALLATION SEE SHEET 4 OF 4.
3. CLEAN VALVE BOX OF ALL DEBRIS DOWN TO THE NUT OF THE VALVE; NUT SHALL OPERATE WITH NO OBSTRUCTION.
4. WHERE CASTINGS TO BE REMOVED REQUIRE EXCAVATION GREATER THAN 20" DEEP, CONTRACTOR MAY ELECT TO FILL EXCAVATION WITH CONTROLLED LOW STRENGTH MATERIAL (SPEC. ITEM 402S) TO THE UNDERSIDE OF THE CONCRETE. PAVEMENT PATCH IN LIEU OF COMPACTED BACKFILL.
5. REINFORCING STEEL SHALL MEET SPEC. ITEM 406S.7.
6. NO MORE THAN 2 SECTIONS OF PIPE SHALL BE USED FROM VALVE TO FINAL GRADE.
7. BELL AND SPIGOT IS ACCEPTABLE FOR DEPTH OVER 18'.

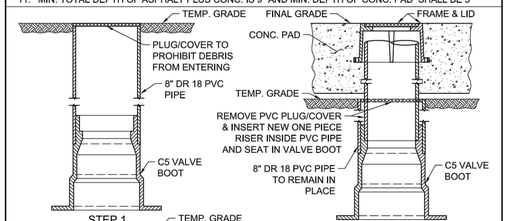


PLAN VIEW

CITY OF AUSTIN AUSTIN WATER	TYPICAL GATE VALVE 4" - 16"	
RECORD COPY SIGNED BY KATHI L FLOWERS 05/18/2016 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 511-AW-01 3 OF 4

NOTES (CON'T):

8. PAVING FRAME SHALL BE FLUSH WITH THE CONC. PAD AND PLACED ½" - 2" ABOVE RISER PIPE (FRAME SHALL NOT REST ON RISER.)
9. IN UNPAVED AREAS, INSTALL ONE DELINEATOR STAKE IMMEDIATELY ADJACENT TO THE EDGE OF THE CONCRETE PAD. DELINEATOR SHALL BE BLUE FOR POTABLE WATER AND PURPLE FOR RECLAIMED WATER AND SHALL EXTEND AT LEAST 60" ABOVE GROUND. DELINEATORS SHALL HAVE 2" WIDE, WHITE IN COLOR, TYPE I REFLECTIVE TAPE MOUNTED DIAGONALLY AT 12" SPACING ON BOTH SIDES.
10. VALVE SHALL TYPICALLY BE CENTERED IN CONCRETE DIAMOND BUT MAY BE OFFSET WITH A MIN. OF 12" FROM CENTER OF VALVE LID TO EDGE OF CONCRETE IN ALL DIRECTIONS.
11. MIN. TOTAL DEPTH OF ASPHALT PLUS CONC. IS 9" AND MIN. DEPTH OF CONC. PAD SHALL BE 5"



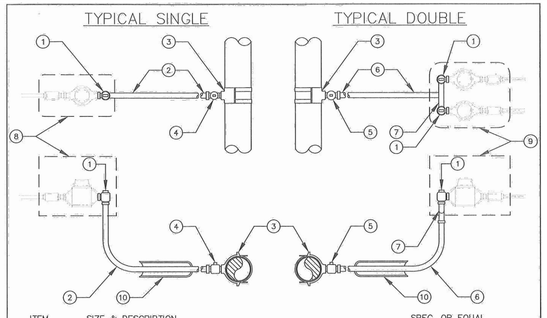
OPTIONAL ONE PIECE VALVE CASTING INSTALLATION

CITY OF AUSTIN AUSTIN WATER	TYPICAL GATE VALVE 4" - 16"	
RECORD COPY SIGNED BY KATHI L FLOWERS 05/18/2016 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 511-AW-01 4 OF 4

G1 TYPICAL GATE VALVE 4" - 16"

N.T.S. | CITY OF AUSTIN STANDARD DETAIL 511-AW-01

TYPICAL SINGLE TYPICAL DOUBLE



ITEM	SIZE & DESCRIPTION	SPEC. OR EQUAL
1	1" X 1" ANGLE METER STOP, LOCKING	AS APPROVED
2	1" SDR9 POLYETHYLENE TUBING	CLASS 250
3	EPOXY COATED DUCTILE IRON TAPPING SADDLE	AS APPROVED
4	1" CORPORATION STOP	AS APPROVED
5	1 1/2" CORPORATION STOP	AS APPROVED
6	1 1/2" SDR9 POLYETHYLENE TUBING	CLASS 250
7	BRASS U-BRANCH, 1 1/2" X 1"	FORD, OR EQUAL
8	METER BOX, SINGLE	DFW37F-12-1CA, OR EQUAL
9	METER BOX, DOUBLE	DFW39F-12-1CA, OR EQUAL
10	~~3" SCH. 40 PVC~~ **4" SDR 35 PVC** SLEEVE FOR LONG SIDE SERVICES (TYP.)	

NOTES:

1. SERVICE SADDLE SHALL BE WRAPPED COMPLETELY WITH 8 MIL POLYETHYLENE FILM.
2. PIPING AND TUBING IN STREET RIGHT-OF-WAY SHALL BE BEDDED IN GRANULAR MATERIALS.
3. BRANCH CONNECTION AND BOTH ANGLE METER STOPS SHALL BE INSTALLED PRIOR TO FIRST METER INSTALLATION.
4. SLEEVES FOR LONG-SIDE SERVICE TO BEGIN AND TERMINATE 6" BEHIND BACK OF CURB, SIDEWALK, OR BURIED UTILITY AS SHOWN ON THE DRAWINGS. PROVIDE 1' OF COVER FROM TOP OF SUBGRADE OF PROPOSED ROADWAY.
5. TOP OF METER BOXES SHOULD BE 1" ABOVE GROUND.
6. METER BOX SHALL BE BEHIND CURB AT ROW/PROPERTY LINE OR EASEMENT. METER BOX SHALL NOT BE INSTALLED IN SIDEWALK, DRIVEWAY OR VEHICULAR TRAVEL AREA.
7. 1" X 3/4" BRASS METER BUSHING REQUIRED FOR 5/8" AND 3/4" METERS.
8. AXIS OF METER ASSEMBLY (LINE THROUGH METER STOP, METER, CHECK VALVE, PIPING AND OWNER'S CUTOFF) SHALL BE 11" BELOW TOP OF BOX. METER BOXES ARE SIZED TO ACCOMMODATE METER STOP, WATER METER AND CHECK VALVE.

STATE OF TEXAS · WAYNE S. WATTS · 86134 · LICENSED PROFESSIONAL ENGINEER

11/29/15

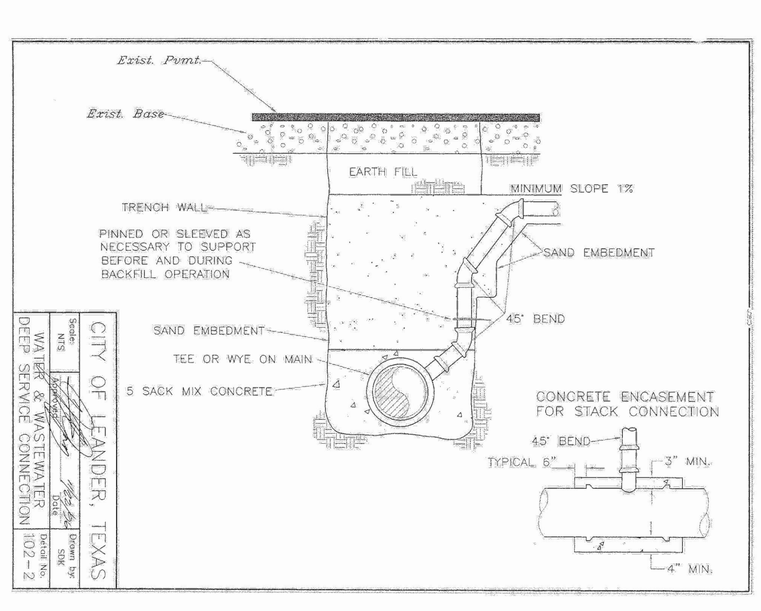
City Of Leander, Texas
DETAIL #101-1
WATER SERVICE CONNECTIONS

A1 WATER SERVICE CONNECTIONS (MODIFIED)

N.T.S. | CITY OF LEANDER STANDARD DETAIL #101-1

A5 NOT USED

N.T.S.



A9 WATER DEEP SERVICE CONNECTION

N.T.S. | CITY OF LEANDER STANDARD DETAILS 102-2

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 6053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

WATER DETAILS 3

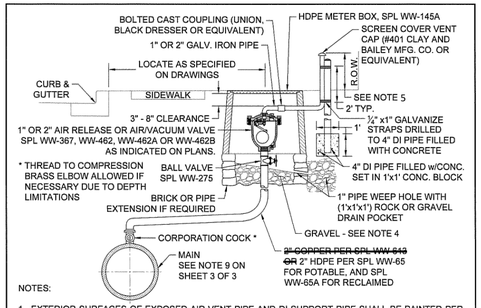
3/30/2023
DATE

S. JARED NIERMANN

STATE OF TEXAS · S. JARED NIERMANN · 122045 · REGISTERED PROFESSIONAL ENGINEER

DM	RAM
DESIGNED	SJN
DRAFTED	RCB
CHECKED	ELN
PROJECT NO.	3-00585
DRAWING NO.	C415
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-WATER.DWG, C415 WATER DETAILS 3, 3/30/2023 4:20:52 PM, jniermann



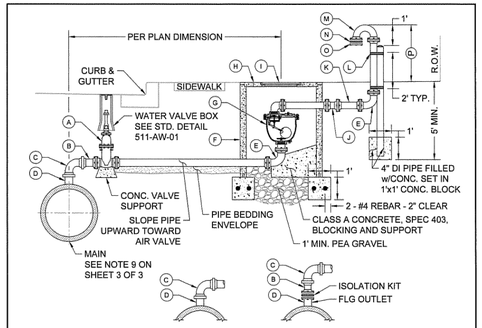
NOTES:

1. EXTERIOR SURFACES OF EXPOSED AIR VENT PIPE AND DI SUPPORT PIPE SHALL BE PAINTED PER SPL WW-3C. POTABLE WATER PIPE SHALL BE PAINTED SAFETY BLUE.
2. AIR VENT PIPE INSTALLATION SHALL BE AS NEAR AS PRACTICAL TO RIGHT-OF-WAY LINE WITH MINIMUM CLEARANCE OF 18" FROM ANY OBSTACLE.
3. HDPE METER BOX PENETRATION SHALL BE CORE BIT DRILLED. VOID SHALL BE FILLED WITH LINKSEAL LS 300 OR APPROVED EQUAL.
4. COMPACTED COARSE GRAVEL OR BROKEN STONE MIXED WITH SAND SLOPED TO DRAIN.
5. IN UNDEVELOPED AREAS, THE AIR VENT PIPE SHALL BE 4' MIN. IN HEIGHT SUPPORTED BY A 4" DIA. DI PIPE WHICH HAS BEEN FILLED WITH CONCRETE (SUPPORT PIPE SHALL BE 6' LONG, BURIED IN CLASS A CONCRETE OR CLSM 3' BELOW FINAL GRADE AND EXTENDING 3' ABOVE FINAL GRADE). INSTALL ONE DELINEATOR STAKE WITHIN 3' OF THE VAULT ON THE VEHICULAR ACCESS SIDE OF VAULT OR AS DIRECTED BY AUSTIN WATER. DELINEATOR SHALL BE BLUE FOR POTABLE WATER AND SHALL EXTEND AT LEAST 60" ABOVE GROUND. DELINEATORS SHALL HAVE 2" WIDE, WHITE IN COLOR, TYPE I REFLECTIVE TAPE MOUNTED DIAGONALLY AT 12" SPACING ON BOTH SIDES. IN DEVELOPED AREAS, THE AIR VENT PIPE SHALL BE 8' - 12" IN HEIGHT AND LOCATED NOT TO CONFLICT WITH SIDEWALK, DRIVEWAY, OR OTHER PEDESTRIAN TRAFFIC.
6. THE AIR VALVE AND ASSOCIATED PIPING SHALL BE INSTALLED ABOVE THE HIGHEST ELEVATION OF THE WATER MAIN. AIR VALVE PIPING, FROM THE WATER MAIN TO THE AIR VALVE, SHALL MAINTAIN A CONSTANT RISE, WITH NO DIPS, TO THE TOP OF THE GROUND.

1" - 2" AIR RELEASE OR AIR/VACUUM VALVE INSTALLATION - TYPE I

RECLAIMED WATER: ALL RECLAIMED PVC PIPE SHALL BE MANUFACTURED PURPLE PIPE. HDPE PIPE SHALL BE MANUFACTURED WITH PURPLE STRIPES. ALL OTHER PIPE AND APPURTENANCES SHALL BE MANUFACTURED PURPLE IF AVAILABLE. ALL PIPE AND FITTINGS THAT ARE NOT AVAILABLE FROM THE MANUFACTURER IN PURPLE SHALL BE PAINTED PURPLE PER SPL WW-3C. ALL BURIED DI AND CI PIPE AND FITTINGS SHALL ALSO BE WRAPPED IN PURPLE POLYETHYLENE PER SPL WW-27D. ALL COVERS SHALL HAVE "RECLAIMED WATER" CAST INTO THEM.

CITY OF AUSTIN AUSTIN WATER	AIR RELEASE AND AIR/VACUUM VALVE	
Kathi L. Flowers 05/18/2016 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 511-AW-04 1 OF 3



A. GATE VALVE (FLG x FLG). GATE VALVE SHALL NOT BE INSTALLED DIRECTLY ABOVE WATER MAIN.
B. PIPE FLG x FACTORY RESTRAINED JOINT SPIGOT END.
C. 90° BEND w/FACTORY RESTRAINED JOINT BELL ENDS, SPL WW-27F.
D. FOR DI MAIN: WELDED-ON OUTLET w/FACTORY RESTRAINED JOINT SPIGOT END.
FOR STEEL/CSC MAIN: WELDED-ON FLANGED OUTLET w/ISOLATION KIT AND FLG x FACTORY RESTRAINED SPIGOT END.
E. 90° BEND (FLG x FLG).
F. CLASS III RCP VAULT 60" MIN. I.D.
G. AIR RELEASE VALVE w/GOOSENECK PER AIR RELEASE VALVES FOR WATER SPL WW-367 OR AIR RELEASE/VACUUM RELIEF VALVES FOR POTABLE WATER SPL WW-462A OR AIR RELEASE/VACUUM RELIEF VALVES FOR RECLAIMED WATER SPL WW-462B OR AIR RELEASE/AIR VACUUM VALVE FOR WASTEWATER SPL WW-462B.
H. REINFORCED PRECAST CONCRETE LID (AASHTO H-20 LOADING).
I. COA FRAME AND 32" COVER WITH LETTERING MODIFIED FOR WATER.
J. BOLTED CAST COUPLING (SMITH-BLAIR 441 OMNI CAST COUPLING OR APPROVED EQUAL).
K. AIR VENT PIPE, 3" PIPE - GALVANIZED IRON, 4" AND LARGER PIPE - DI ONLY.
L. ¾" x1" GALVANIZE STRAPS DRILLED TO 4" DI PIPE FILLED w/CONCRETE (SEE NOTE 7).
M. RETURN BEND (FLG x FLG).
N. No. 16 MESH BRASS CLOTH
O. COMPANION FLANGE (SEE NOTE 5).
P. 4' MIN. - UNDEVELOPED AREAS.

3" OR LARGER AIR/VACUUM VALVE INSTALLATION - TYPE II

CITY OF AUSTIN AUSTIN WATER	AIR RELEASE AND AIR/VACUUM VALVE	
Kathi L. Flowers 05/18/2016 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 511-AW-04 2 OF 3

NOTES:

1. ON 10" AND LARGER TWO PIECE COMBINATION AIR VALVES, THE OUTLET PIPING OF THE SMALL VALVE SHALL BE VENTED WITHIN THE VAULT INTO THE LARGER VENT PIPE
2. AIR VENT PIPE 6" AND LARGER SHALL BE DI (CLASS 350 MIN.) PIPE FLANGE FITTINGS AND EXTERIOR SURFACES OF ALL EXPOSED PIPE SHALL BE PAINTED PER SPL WW-3C. POTABLE WATER PIPE SHALL BE PAINTED SAFETY BLUE. SURFACE PREPARATION SHALL BE PER PAINT MANUFACTURER'S REQUIREMENTS.
3. ENTIRE AIR VENT ASSEMBLY SHALL BE LOCATED WITHIN EASEMENT OR R.O.W.
4. CONCRETE PIPE PENETRATIONS SHALL BE CORE BIT DRILLED. VOID SHALL BE SEALED w/LINKSEAL LS 300 OR APPROVED EQUAL.
5. CROSS SECTIONAL AREA OF OPENING TO BE EQUAL TO OR GREATER THAN CROSS SECTIONAL AREA OF AIR VENT PIPE.
6. AIR/VACUUM VALVE SHALL BE INSTALLED IN A MANNER WHICH WILL ALLOW REMOVAL OF ASSEMBLY WITHOUT REMOVAL OF PRECAST CONCRETE LID.
7. IN UNDEVELOPED AREAS, THE AIR VENT PIPE SHALL BE 4' MIN. IN HEIGHT SUPPORTED BY A 4" DIA. DI PIPE WHICH HAS BEEN FILLED WITH CONCRETE (SUPPORT PIPE SHALL BE 6' LONG, BURIED IN CLASS A CONCRETE OR CLSM 3' BELOW FINAL GRADE AND EXTENDING 3' ABOVE FINAL GRADE). INSTALL ONE DELINEATOR STAKE WITHIN 3' OF THE VAULT ON THE VEHICULAR ACCESS SIDE OF VAULT OR AS DIRECTED BY AUSTIN WATER. DELINEATOR SHALL BE BLUE FOR POTABLE WATER AND SHALL EXTEND AT LEAST 60" ABOVE GROUND. DELINEATORS SHALL HAVE 2" WIDE, WHITE IN COLOR, TYPE I REFLECTIVE TAPE MOUNTED DIAGONALLY AT 12" SPACING ON BOTH SIDES. IN DEVELOPED AREAS, THE AIR VENT PIPE SHALL BE LOCATED NOT TO CONFLICT WITH SIDEWALK, DRIVEWAY, OR OTHER PEDESTRIAN TRAFFIC.
8. GATE VALVE, PIPE, AND FITTINGS FROM MAIN TO ARV SHALL BE OF EQUAL DIAMETER AS THE AIR VALVE EXCEPT 3" ARV SHALL HAVE 4" FITTINGS AND A 4"x3" REDUCER AT THE ARV, AND ALL PIPE AND FITTINGS ON THE OUTLET SIDE OF THE ARV SHALL BE EQUAL TO THE SIZE OF THE OUTLET OF THE ARV. VAULTS SHALL BE 5' DIAMETER FOR 3" VALVE; 6' DIAMETER FOR 4", 6", AND 8" VALVES; AND 7' DIAMETER FOR 10" AND 12" VALVES.
9. FOR 24" AND LARGER MAINS, AN 18" OUTLET WITH BLIND FLANGE SHALL BE INSTALLED AT CONNECTION OF ARV.

3" OR LARGER AIR/VACUUM VALVE INSTALLATION - TYPE II

RECLAIMED WATER: ALL RECLAIMED PVC PIPE SHALL BE MANUFACTURED PURPLE PIPE. HDPE PIPE SHALL BE MANUFACTURED WITH PURPLE STRIPES. ALL OTHER PIPE AND APPURTENANCES SHALL BE MANUFACTURED PURPLE IF AVAILABLE. ALL PIPE AND FITTINGS THAT ARE NOT AVAILABLE FROM THE MANUFACTURER IN PURPLE SHALL BE PAINTED PURPLE PER SPL WW-3C. ALL BURIED DI AND CI PIPE AND FITTINGS SHALL ALSO BE WRAPPED IN PURPLE POLYETHYLENE PER SPL WW-27D. ALL COVERS SHALL HAVE "RECLAIMED WATER" CAST INTO THEM.

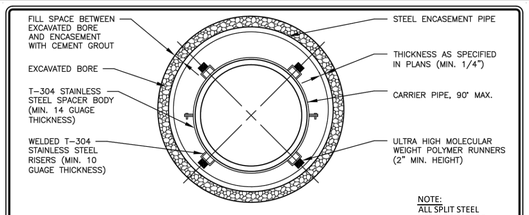
CITY OF AUSTIN AUSTIN WATER	AIR RELEASE AND AIR/VACUUM VALVE	
Kathi L. Flowers 05/18/2016 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 511-AW-04 3 OF 3

G1 — AIR RELEASE AND AIR/VACUUM VALVE

N.T.S. — CITY OF AUSTIN STANDARD DETAIL 511-AW-04

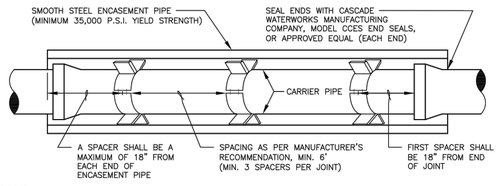
A1 — NOT USED

N.T.S.



PIPE SIZE-CARRIER (DIAMETER)	PIPE SIZE-CASING (DIAMETER) (MIN.)	MINIMUM PIPE THICKNESS (INCHES)	
6"	16"	1/4	0.2500
8"	18"	1/4	0.2500
10"	20"	5/16	0.3125
12" ~ 14"	24"	3/8	0.3750
16" ~ 18"	30"	7/16	0.4375
20"	36"	1/2	0.5000
24"	42"	1/2	0.5000
30"	48"	1/2	0.5000

NOTE:
ALL SPLIT STEEL CASING SHALL BE INSTALLED AROUND THE EXISTING WATER LINE TO AVOID DISTURBING THE EXISTING WATER LINE. THE CASING SHALL BE BOLTED AND GASKETED AND, ONCE INSTALLED, SHALL MEET H20 LOADING REQUIREMENTS. SPLIT STEEL CASING SHALL BE AS MANUFACTURED BY IRONHED, OR EQUAL.



NOTES:
1. CASING SPACER CONFIGURATION AND SPACING SHALL BE AS SHOWN ON MANUFACTURER'S DRAWINGS FOR SPECIFIC WORK; THESE MUST BE ACCEPTABLE TO THE CITY OF LEANDER. CASING SPACER SHALL BE AS MANUFACTURED BY CASCADE WATERWORKS MANUFACTURING COMPANY, MODEL CCS OR APPROVED EQUAL.
2. ALL CARRIER PIPE IN STEEL CASING, INCLUDING IN SPLIT STEEL CASING, SHALL BE RESTRAINED AT JOINTS THE FULL LENGTH OF PIPE ENCASEMENT PLUS 10-FT ON EACH SIDE.

RECORD SIGNED COPY ON FILE AT U&ES DEPARTMENT APPROVED 03-01-18 DATE THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)	CITY OF ROUND ROCK PIPE ENCASEMENT DETAIL	DRAWING NO: WT-16

A1 — PIPE ENCASEMENT DETAIL (MODIFIED)

N.T.S. — CITY OF ROUND ROCK STANDARD DETAIL DRAWING NO. WT-16

A5 — NOT USED

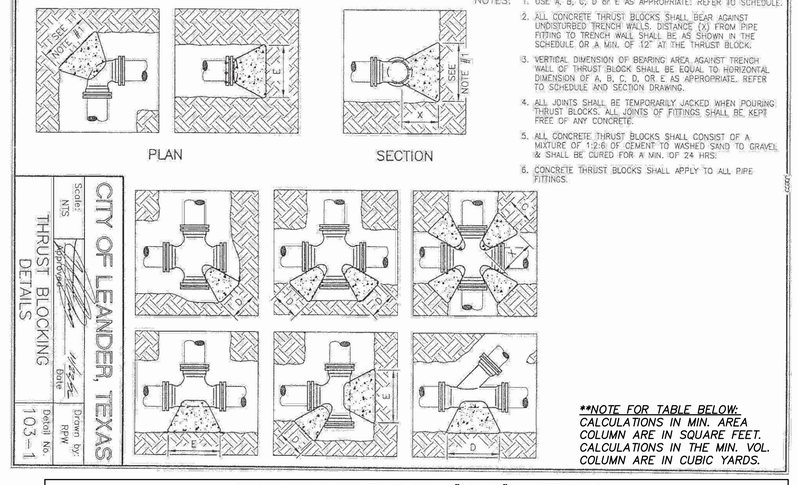
N.T.S.

THRUST BLOCKING SCHEDULE

ASSUMPTIONS: LINE PRESSURE = 100 psi, ALLOWABLE BEARING = 4000 psf, SAFETY FACTOR = 3

PIPE DIAMETER	PIPE AREA Sq. In.	X	11 1/4° BEND THRUST Lbs.	11 1/4° BEND AREA Sq. Ft.	A	22 1/2° BEND THRUST Lbs.	22 1/2° BEND AREA Sq. Ft.	B	45° BEND THRUST Lbs.	45° BEND AREA Sq. Ft.	C	90° BEND THRUST Lbs.	90° BEND AREA Sq. Ft.	D	TEE & PLUG THRUST Lbs.	TEE & PLUG AREA Sq. Ft.	E
4"-12"	120.8	1.5'	2387	1.2	1.1'	4,712	2.4	1.5'	9,243	4.6	2.2'	17,078	8.5	2.9'	12,076	6.0	2.5'

NOTES:
1. USE A, B, C, D or E AS APPROPRIATE: REFER TO SCHEDULE.
2. ALL CONCRETE THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED TRENCH WALLS. DISTANCE (X) FROM PIPE FITTING TO TRENCH WALL SHALL BE AS SHOWN IN THE SCHEDULE OR A MIN. OF 12" AT THE THRUST BLOCK.
3. VERTICAL DIMENSION OF BEARING AREA AGAINST TRENCH WALL OF THRUST BLOCK SHALL BE EQUAL TO HORIZONTAL DIMENSION OF A, B, C, D, OR E AS APPROPRIATE. REFER TO SCHEDULE AND SECTION DRAWING.
4. ALL JOINTS SHALL BE TEMPORARILY JACKED WHEN POURING THRUST BLOCKS. ALL JOINTS OF FITTINGS SHALL BE KEPT FREE OF ANY CONCRETE.
5. ALL CONCRETE THRUST BLOCKS SHALL CONSIST OF A MIXTURE OF 1:2:6 OF CEMENT TO WASHED SAND TO GRAVEL & SHALL BE CURED FOR A MIN. OF 24 HRS.
6. CONCRETE THRUST BLOCKS SHALL APPLY TO ALL PIPE FITTINGS.



**NOTE FOR TABLE BELOW:
CALCULATIONS IN MIN. AREA COLUMN ARE IN SQUARE FEET. CALCULATIONS IN THE MIN. VOL. COLUMN ARE IN CUBIC YARDS.

THRUST BLOCKING SCHEDULE FOR 16" TO 24" DIAMETER PIPE

PIPE DIA.	"X" DIM.	11 1/4° BENDS "A"	MIN. AREA	MIN. VOL.	22 1/2° BENDS "B"	MIN. AREA	MIN. VOL.	45° BENDS "C"	MIN. AREA	MIN. VOL.	90° BENDS "D"	MIN. AREA	MIN. VOL.	TEE & PLUG "E"	MIN. AREA	MIN. VOL.
16"	2'-0"	1'-2"	1.48	0.11	1'-8"	2.94	0.22	2'-3"	5.76	0.43	3'-0"	10.65	0.79	2'-7"	7.54	0.56
24"	2'-0"	1'-10"	2.22	0.17	2'-6"	4.42	0.33	3'-2"	8.65	0.65	4'-3"	16.00	1.20	3'-8"	11.33	0.84

A9 — THRUST BLOCKING DETAILS (MODIFIED)

N.T.S. — CITY OF LEANDER STANDARD DETAILS 103-1

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

WATER DETAILS 4

3/30/2023 — DATE

S. JARED NIERMANN

STATE OF TEXAS — S. JARED NIERMANN — 122045 — REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	SJN
DRAFTED	RCB
CHECKED	ELN
PROJECT NO.	3-00585
DRAWING NO.	C416
SHEET	OF

G:\PROJECTS\13-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-WATER.DWG, C416 WATER DETAILS 4, 3/30/2023 4:21:07 PM, jniermann

PROJECT NOTES

1. CONTACTOR SHALL MAINTAIN MINIMUM 24" CLEARANCE FROM ALL EXISTING UTILITIES.
2. FOR PUBLIC WATER & WASTEWATER LINE EMERGENCIES, CONTACT THE CITY OF LEANDER PUBLIC WORKS EMERGENCY 24-HOUR ON-CALL LINE AT 512-690-4760.
3. THE CONTRACTOR SHALL CONTACT THE TEXAS EXCAVATION SAFETY SYSTEM AT 1-800-344-8377 FOR EXISTING UTILITY LOCATIONS 48 HOURS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL UTILITIES THAT ARE TO BE EXTENDED, TIED TO, CROSSED, OR ALTERED; OR SUBJECT TO DAMAGE/INCONVENIENCE BY THE CONSTRUCTION OPERATIONS.
4. CONTACT THE CITY OF LEANDER PUBLIC WORKS DEPARTMENT FOR EXISTING WATER, WASTEWATER, STREET LIGHT ELECTRICAL WIRING, AND TRAFFIC SIGNAL WIRING LOCATIONS A MINIMUM OF 48 HOURS PRIOR TO START OF CONSTRUCTION.
   a. LOCATE REQUESTS MUST INCLUDE A COPY OF YOUR 811 TICKET.
   b. REFRESH ALL LOCATES BEFORE 14 DAYS – LOCATE REFRESH REQUESTS MUST INCLUDE A COPY OF YOUR 811 TICKET. TEXAS PIPELINE DAMAGE PREVENTION LAWS REQUIRE THAT A LOCATE REFRESH REQUEST BE SUBMITTED BEFORE 14 DAYS, OR IF LOCATION MARKERS ARE NO LONGER VISIBLE.
   c. REPORT ALL DAMAGE TO CITY INFRASTRUCTURE IMMEDIATELY – IF YOU WITNESS OR EXPERIENCE EXCAVATION DAMAGE, PLEASE CONTACT THE CITY OF LEANDER PUBLIC WORKS DEPARTMENT BY PHONE. IF DAMAGE IS WITNESSED OR EXPERIENCED AFTER HOURS, CALL THE CITY OF LEANDER UTILITIES ON-CALL LINE AT THE NUMBER LISTED ABOVE.
5. A PRECONSTRUCTION CONFERENCE SHALL BE HELD WITH THE CONTRACTOR, DESIGN ENGINEER/PERMIT APPLICANT & CITY OF LEANDER REPRESENTATIVES PRIOR TO INSTALLATION OF EROSION/SEDIMENTATION CONTROLS & TREE PROTECTION MEASURES AS WELL AS PRIOR TO BEGINNING CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE CITY OF LEANDER PLANNING DEPARTMENT AT 512-528-2750 AT LEAST THREE (3) DAYS PRIOR TO MEETING DATE.
6. CITY OF LEANDER NOISE ORDINANCE PROHIBITS CONSTRUCTION ACTIVITY BETWEEN THE HOURS OF 9 PM AND 7 AM. REQUESTS FOR EXCEPTIONS TO THE ORDINANCE MUST BE MADE TO LEANDER CITY COUNCIL.
7. CONTRACTOR SHALL BORE UNDER ALL DRIVEWAYS, STREET CROSSINGS AND OTHER PAVED AREAS. OPEN CUT CROSSING SHALL NOT BE ALLOWED.
8. CONTRACTOR SHALL REPLACE ALL DAMAGED PAVEMENT, CURB & GUTTER, SIDEWALK, CURB INLETS AND ALL OTHER INFRASTRUCTURE DAMAGED BY CONSTRUCTION PER CITY OF LEANDER STANDARDS & SPECIFICATIONS.
9. AL CLAWSON DISPOSAL, INC. SHALL BE THE SOLE PROVIDER OF WASTE HAULING FOR THIS SITE BOTH DURING AND AFTER CONSTRUCTION.
10. ALL UNDERGROUND UTILITY LINES SHALL CROSS UNDERNEATH WATERLINES.
11. THE MINIMUM DEPTH OF COVER FOR UTILITY LINES INSTALLED UNDER CITY OF LEANDER ROADWAYS SHALL BE 36" BENEATH FINISHED GRADE.

EROSION CONTROL & RESTORATION:

1. THE CITY OF LEANDER ENVIRONMENT INSPECTOR HAS THE AUTHORITY TO ADD OR MODIFY EROSION/SEDIMENTATION CONTROLS ON SITE THROUGHOUT THE DURATION OF THE PROJECT.
2. ALL AREAS DISTURBED OR EXPOSED DURING CONSTRUCTION SHALL BE RESTORED WITH A MINIMUM OF 6" TOPSOIL. THE 6" MINIMUM SOIL DEPTH SHALL CONSISTS OF 75% SOIL BLENDED WITH 25% COMPOST.
3. ALL DISTURBED AREAS SHALL BE RE-VEGETATED USING ONLY APPROVED GRASSES FROM THE GROW GREEN GUIDE.

GENERAL NOTES:

1. ALL EXISTING FACILITIES Currently IN SERVICE MUST REMAIN IN SERVICE, UNLESS OTHERWISE NOTED IN THE DRAWINGS.

2. CONDITION OF THE ROAD AND/OR RIGHT-OF-WAY, UPON COMPLETION OF JOB SHALL BE AS GOOD AS OR BETTER THAN PRIOR TO STARTING WORK

3. ALL EFFORTS HAVE BEEN MADE TO INDICATE ALL EXISTING UTILITIES ON PLANS, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND PROTECT ALL SAID UTILITIES AS WELL AS SERVICE CONNECTIONS (WHETHER OR NOT INDICATED ON PLANS). PRIOR TO CONSTRUCTION, CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANIES TO VERIFY LOCATION 01F EXISTING UTILITIES.

4. CALL UTILITY COORDINATING COMMITTEE 48 HRS. PRIOR TO CONSTRUCTION AT 1-800-344-8377 (1-800.DIG-TESS). CONTRACTOR SHALL. COMPLY WITH THE APPLICABLE UTILITY DAMAGE PREVENTION LAWS AJ.ID REGULATIONS, INCLUDING, BUT NOT LIMITED TO, GIVING NOTIFICATION TO UTILITY OWNER'S 'ONE-CALL CENTERS BEFORE EXCAVATION.

5. CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH GAS, OIL, ELECTRIC, TELEPHONE, FIBER OPTIC, CABLE TV, SEWER AND WATER UTILITIES OWNERS, ETC. FOR ANY RELOCATION AND/OR PROTECTION OF EXISTING LINES OR CABLES AS REQUIRED DUE TO CONSTRUCTION ACTIVITIES.

6. CONTRACTOR MUST COMPLY WITH OSHA SPECIFICATIONS, TXDOT STD. SPEC (DIVISION IV, STRUCTURES) AND ATT BSP 622-020-020 FOR TRENCHING, BACKFILLING, EXCAVATION AND SHORING REQUIREMENTS.

7. THE CONSTRUCTION CONTRACTOR SHALL ALSO BE SOLELY RESPONSIBLE FOR THE MEANS, METHODS, SEQUENCE. PROCEDURES, TECHNIQUES AND SCHEDULING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONSTRUCTION CONTRACTOR SHALL ALSO BE SOLELY RESPONSIBLE FOR THE SAFETY IN OR ABOUT THE JOB SITE IN ACCORDANCE WITH ANY HEALTH OR SAFETY PRECAUTIONS, REGULATIONS, STANDARDS OR CODES REQUIRED BY O.S.H.A OR ANY OTHER REGULATORY AGENCY.

8. ALL OPEN TRENCHES SHOULD BE BACKFILLED AND COMPACTED IN 8" LIFTS AT THE END OF EACH WORK PERIOD; NO TRENCH LEFT OPEN OVERNIGHT UNLESS COVERED BY METAL PLATES.

9. CONTRACTOR TO TAKE NECESSARY PRECAUTIONS TO PROTECT ROOT SYSTEMS OF SHRUBS, PLANTS AND TREES ALONG THE AREA OF EXCAVATION.

10. CONTRACTOR SHALL INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (LATEST EDITION) AND CITY OF LEANDER STANDARDS DURING CONSTRUCTION TO PROVIDE COMPLETE SAFETY TO THE GENERAL PUBLIC.

11. AN OFF-DUTY UNIFORMED POLICE OFFICER IS REQUIRED TO DIRECT TRAFFIC WHEN ANY TRAFFIC LANES ARE BLOCKED (AS SPECIFIED ON LANE CLOSURE PERMITS).

12. BORE PITS CLOSER THAN 30' FROM THE EDGE OF PAVEMENT MUST BE PROTECTED BY TYPE III BARRICADES. OPEN PITS MUST BE SEALED OFF BY ORANGE PLASTIC MESH FENCING AND CONE'S OR DRUMS.

13. CONSTRUCTION EQUIPMENT LEFT OVERNIGHT IN CITY RIGHT-OF-WAY SHALL BE SECTIONED OFF WITH ORANGE PLASTIC MESH FENCING AND BE PLACED AT LEAST 30' FROM THE EDGE OF PAVEMENT. EQUIPMENT LOCATED CLOSER THAN 30' MUST BE PROTECTED BY CONCRETE TRAFFIC BARRIERS (CTB'S).

14. CONTRACTOR IS REQUIRED TO PREPARE AND IMPLEMENT AN APPROVED STORM WATER POLLUTION PREVENTION (SWPP) PLAN IN ACCORDANCE WITH STATE AND LOCAL REQUIREMENTS AND CONTRACT DOCUMENTS. CONTRACTOR SHALL KEEP ALL DEBRIS & SPOIL OUT OF DRAINS, CULVERTS, AND DROP INLETS AND ENSURE THAT THEY DOT NOT BECOME CLOGGED AS A RESULT OF CONSTRUCTION ACTIVITIES.

15. ANY DISCREPANCIES FROM WHAT IS SHOWN ON THE PLANS SHALL BE BROUGHT TO THE ATTENTION 01F THE ENGINEER.

16. THE CONDUIT, FITTINGS, CONDUIT BODIES AND ACCESSORIES SHALL BE INSPECTED UPON DELIVERY AND DURING THE PROGRESS OF THE WORK ANY MATERIAL FOUND TO BE DEFECTIVE WILL BE REJECTED BY THE OWNER'S REPRESENTATIVE AND THE CONTRACTOR SHALL REMOVE SUCH DEFECTIVE MATERIAL FROM THE SITE OF THE WORK.

17. CONTRACTOR IS TO PLUG ALL INSTALLED DUCTS.

18. THE CONSTRUCTION CONTRACTOR SHALL PLACE UTILITY LOCATION TAPE OVER ALL EXPOSED CONDUIT.

19. CONTRACTOR SHALL CONSTRUCT HORIZONTAL DIRECTIONAL DRILL IN ACCORDANCE WITH ASTM F 1962 "STANDARD GUIDE FOR USE OF MAXI-HORIZONTAL DIRECTIONAL DRILLING FOR PLACEMENT OF POLYETHYLENE PIPE OR CONDUIT UNDER OBSTACLES INCLUDING RIVER CROSSINGS."

20. CONTRACTOR TO PROVIDE AND PLACE MULE TAPE IN EACH INSTALLED DUCT.

21. CONTRACTOR SHALL PLACE MARKER SIGNS AT EACH MANHOLE AND HANDHOLE INSTALLED.

22. CONTRACTOR TO ENCASE ALL 90° HORIZONTAL BENDS.

23. ALL PROPOSED FACILITIES SHOULD BE INSTALLED AT A MINIMUM OF 42 INCHES BELOW FINISHED GRADE ELEVATION AT ALL LOCATIONS, UNLESS OTHERWISE NOTED ON THE PLANS.

24. BARRICADES AND WARNING SIGNS, AND FLAGMEN WHEN NECESSARY, SHALL BE PROVIDED BY THE CONTRACTOR OR OWNER. ONE- HALF THE TRAVELED PORTION OF THE ROADWAY MUST BE OPEN TO TRAFFIC AT ALL TIMES. CONTRACTOR TO COMPLY WITH PROJECT BARRICADE AND CONSTRUCTION STANDARDS.

25. CONTRACTOR SHALL REFER TO AND ABIDE BY THE TXDOT UTILITY ACCOMMODATION RULES, AND CITY, STATE AND LOCAL SPECIFICATIONS WHEN PLACING UTILITIES.

AT&T CONSTRUCTION NOTES:

1. CONTRACTOR TO COMPLY WITH O.S.H.A NO. 1926.652 FOR SHORING EXCAVATING.

2. CONTRACTOR TO CONTACT OWNER OF ALL BURIED UTILITIES ALONG ROUTE PRIOR TO ANY CONSTRUCTION.

3. CONTRACTOR TO MAINTAIN A CLEAN AND SAFE WORK SITE AT ALL TIMES. ALL EXCESS MATERIAL TO BE HAULED AWAY. WORK AREA TO BE CLEANED UP AS SOON AS POSSIBLE AFTER CONSTRUCTION.

4. PROTECT AND SUPPORT ANY EXISTING DUCT WORK AND BURIED CABLE.

5. CONTRACTOR TO RESTORE ALL SURFACES CUT TO ORIGINAL CONDITIONS.

6. CONSTRUCTION CONTRACTOR HAS SOLE RESPONSIBILITY FOR CONSTRUCTING CONDUIT TO ELEVATIONS AS SHOWN.

7. CONTRACTOR TO PROVIDE 'AS BUILT' PRINTS UPON COMPLETION OF WORK AND PRIOR TO FINAL BILLING. 'AS BUILT' PRINT SHOULD SHOW SEA LEVEL ELEVATIONS EVERY 50', AT CRITICAL LOCATIONS, AND AT MANHOLES.

8. ALL INCIDENTAL CONDUIT ALIGNMENT WILL BE ADJUSTED BY CONTRACTOR TO CLEAR EXISTING PIPES.

9. CONTRACTOR TO HAVE EXISTING UTILITIES VERIFIED IN FIELD. DEPTHS SHOWN ARE APPROXIMATE FROM UTILITY COMPANIES.

10. ALL NECESSARY PERMITS WILL BE OBTAINED AND KEPT ON SITE DURING CONSTRUCTION PERIOD.

11. ALL PREMISES TO BE RESTORED IN ACCORDANCE TO CITY, COUNTY & STATE ORDINANCES AND PERMITS.

12. ADEQUATE BARRICADES AND LIGHTING WILL BE EMPLOYED FOR SAFETY OF JOB AND TRAFFIC CONTROL.

13. PLACE PULL IN WIRES IN DUCTS INDICATED. CONTRACTOR TO MANDREL ALL DUCTS.

*EXISTING UNDERGROUND PIPELINES/UTILITIES SHOWN ON THESE PLANS HAVE BEEN TAKEN FROM THE BEST AVAILABLE INFORMATION AND/OR RECORDS PROVIDED BY THE OWNERS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO AVOID DAMAGE TO ANY OTHER FACILITIES. ANY AND ALL CLAIMS RESULTING FROM DAMAGE BY HIS OPERATIONS SHALL BE BILLABLE TO THE CONTRACTOR."

AT&T CONTACTS:

SPLICING CONSTRUCTION COORDINATOR
RYAN MALONE
512-964-0893

SR. CONSTRUCTION SOURCING SPECIALIST
DUSTIN PILAT

DESIGN COORDINATOR
HUGO VASQUEZ
737-255-4822

PEDERNALES ELECTRIC COOPERATIVE CONTACTS:

ELECTRICAL DISTRIBUTION & PLANNING MANAGER
VANCE HOY
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EXT. 7037

GRANDE CONTACTS:

CONSTRUCTION COORDINATOR
LUIS MATA
512-220-3291

TIME WARNER CONTACTS:

CONSTRUCTION COORDINATOR
PETE NAVEJAS
512-748-1601

ATMOS CONTACTS:

CONSTRUCTION COORDINATOR
XXXXX XXXXXXXXX
XXX-XXX-XXXX

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

UTILITY DUCT BANK GENERAL NOTES

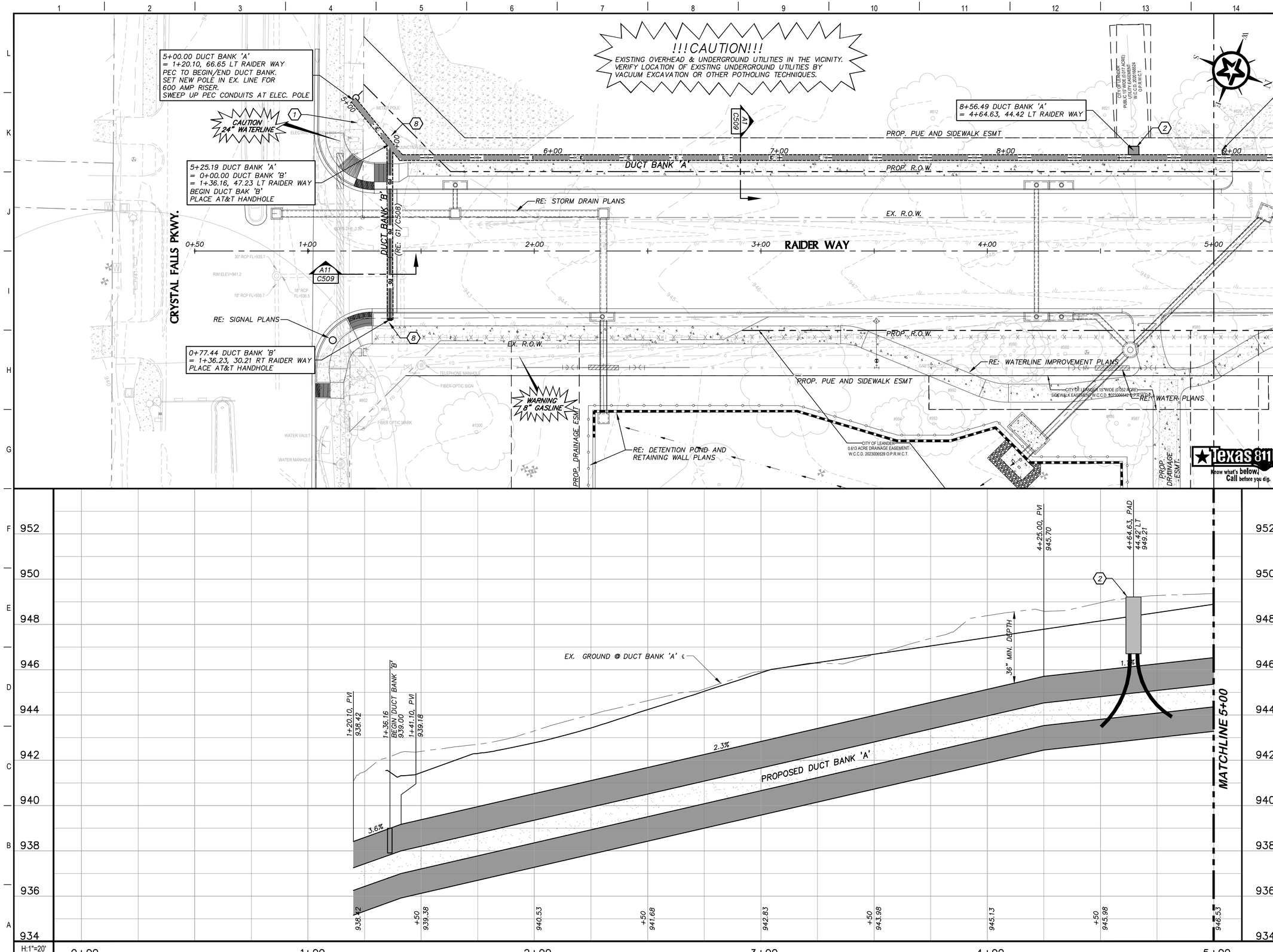
03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C500
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DRY UTILITY DETAILS.DWG, C500 UTILITY DUCT BANK GENERAL NOTES, 3/28/2023 8:46:39 AM, cpadron-martinez



KEY NOTES

1. USE EXISTING POLE FOR THREE PHASE 200 AMP RISER.
2. COMBINATION PAD, 56" ENCLOSURE, 25 kVA PADMOUNT. URD SERVICE TO EXISTING HOUSE (530-024-0911) (RE: C511)
8. PLACE AT&T HANDHOLE

GENERAL NOTES

1. UTILITY INFORMATION IS DERIVED FROM FURNISHED RECORDS, SURVEY DATA, AND TEST HOLE INFORMATION. WALKER PARTNERS EXPRESSLY DISCLAIMS RESPONSIBILITY FOR THE ACCURACY OF THE UTILITY INFORMATION DEPICTED IN OUR RECORDS. THERE MAY BE OTHER PIPELINES OR UNDERGROUND FACILITIES NOT SHOWN ON THESE PLANS. CONTRACTOR SHALL COMPLY WITH THE APPLICABLE UTILITY DAMAGE PREVENTION LAWS AND REGULATIONS INCLUDING, BUT NOT LIMITED TO, GIVING NOTIFICATION TO UTILITY OWNERS' ONE-CALL CENTERS BEFORE EXCAVATION.
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3. COORDINATE ALL TIE-IN POINTS, SWEEP UPS AND STUB OUTS WITH THE RESPECTIVE UTILITY COMPANY
4. CONTRACTOR SHALL RESTORE TEMPORARY PAVEMENT AFTER EACH DAYS WORK PER COA STANDARD DETAIL 1100 S-4 (RE: A1/C045)
5. CONTRACTOR TO COORDINATE / NOTIFY UTILITY PROVIDER AND ALL AFFECTED PROPERTY OWNERS FOR DISRUPTIONS OF SERVICE 48 HOURS IN ADVANCE OF ANTICIPATED INTERRUPTION OF SERVICE.

0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRY UTILITIES
RAIDER WAY
STA. 0+00-5+00

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C501
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DRY UTILITIES.DWG, C501 STA. 0+00-5+00, 3/28/2023 8:47:56 AM, cpadron-martinez

!!!CAUTION!!!
EXISTING OVERHEAD & UNDERGROUND UTILITIES IN THE VICINITY. VERIFY LOCATION OF EXISTING UNDERGROUND UTILITIES BY VACUUM EXCAVATION OR OTHER POTHOLING TECHNIQUES.

8+95.37 DUCT BANK 'A'
= 5+03.52, 44.42 LT RAIDER WAY
AT&T F, 1008 & LP 3 EX. POLE
SWEEP UP "A" AT&T TO EASEMENT

12+49.24 DUCT BANK 'A'
= 8+57.39, 48.25 LT RAIDER WAY

AND WIFE, RITA S. MELLUM
CALLED 6.14 ACRES
VOLUME 1131, PAGE 183
NAMED RECORDS OF WILLIAMSON
COUNTY, TEXAS

C509 A1

PROP. PUE AND SIDEWALK ESMT

PROP. R.O.W.

DUCT BANK 'A'

CITY OF LEANDER 0.333 ACRE
W.C.C.D. 2020166523 O.P.R.W.C.T.

CITY OF LEANDER 0.455 ACRE RIGHT-OF-WAY TRACT
W.C.C.D. 2020166523 O.P.R.W.C.T.

RE: STORM DRAIN PLANS

RAIDER WAY

MATCHLINE 5+00

RE: SIGNAL PLANS

CITY OF LEANDER 0.155 ACRE (TRACT 2) RIGHT-OF-WAY TRACT
W.C.C.D. 2021130838 O.P.R.W.C.T.

RE: WATERLINE IMPROVEMENT PLANS

WATER VAULT

BACK FLOW PREVENTER

ASPHALT DRIVE

GRAVEL DRIVE

8+00 9+00 10+00 11+00 12+00 13+00 14+00

5+00 6+00 7+00

PROP. FINISH GRADE

EX. GROUND @ DUCT BANK 'A' ℄

36" MIN. DEPTH

1.1%

PROPOSED DUCT BANK 'A'

8+57.39 SPECTRUM
48.25' LT
954.34
SPECTRUM CONDUIT RISERS CAPPED AT 2' ABOVE FINISH GRADE FOR FUTURE CONNECTION (BY OTHERS)

946.53 947.08 947.63 948.18 948.73 949.28 949.83 950.39 950.94 951.49 952.04

940 942 944 946 948 950 952 954 956 958

H:1"=20'
V:1"=2'

UTILITY NOTES

5 SPECTRUM CONDUIT RISERS CAPPED FOR FUTURE CONNECTION (BY OTHERS)

8 PLACE AT&T HANDHOLE

GENERAL NOTES

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5. CONTRACTOR TO COORDINATE / NOTIFY UTILITY PROVIDER AND ALL AFFECTED PROPERTY OWNERS FOR DISRUPTIONS OF SERVICE 48 HOURS IN ADVANCE OF ANTICIPATED INTERRUPTION OF SERVICE.

0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRY UTILITIES
RAIDER WAY
STA. 5+00-10+00

03/22/2023
DATE

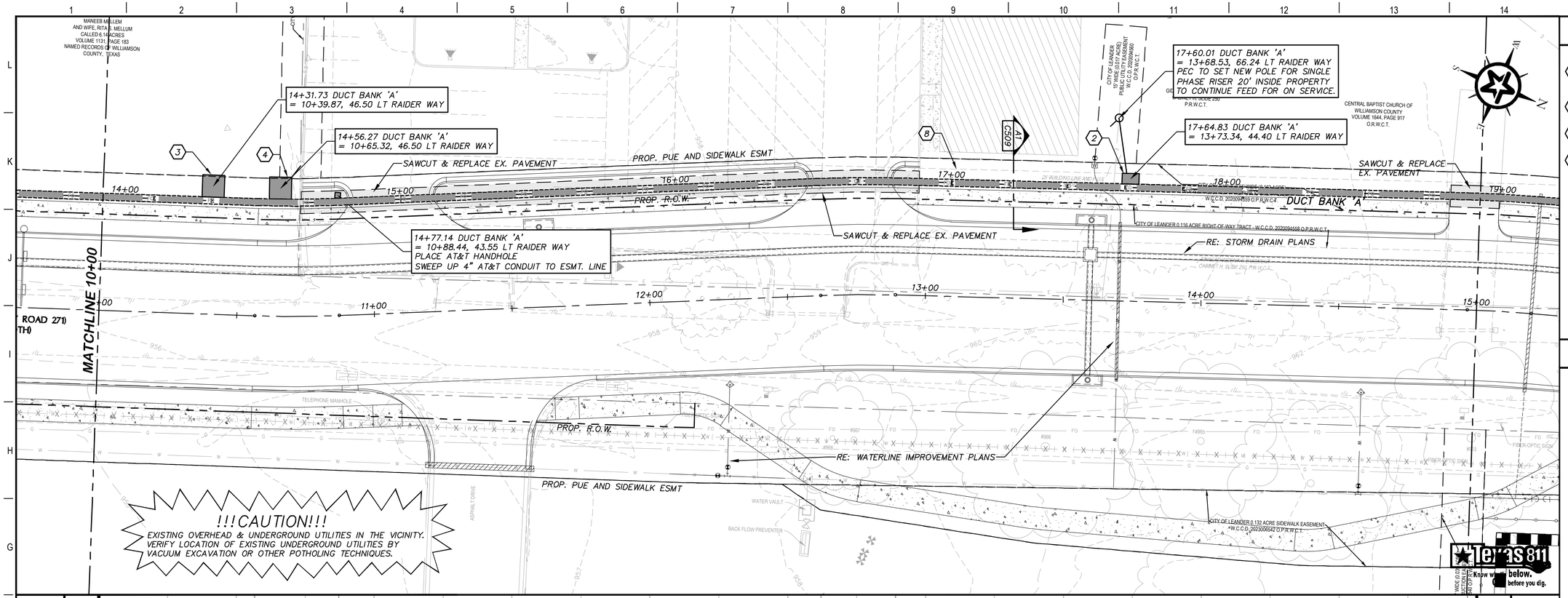
R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C502
SHEET	OF

Texas 811 Know what's below. Call before you dig.

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DRY UTILITIES.DWG, C502 STA. 5+00-10+00, 3/28/2023 8:49:06 AM, cpadron-martinez



UTILITY NOTES

2. COMBINATION PAD, 56" ENCLOSURE, 25 kVA PADMOUNT. URD SERVICE TO EXISTING HOUSE (530–024–0911) (RE: C511)
3. 600–AMP URD VAULT (530–090–0911) (RE: C511)
4. 74" ENCLOSURE URD THREE PHASE TO PROPOSED POLE TO CONTINUE OVERHEAD FEED (530–022–0911) (RE: C511)
8. PLACE AT&T HANDHOLE

GENERAL NOTES

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0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRY UTILITIES
RAIDER WAY
STA. 10+00-15+00

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C503
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DRY UTILITIES.DWG, C503 STA. 10+00-15+00, 3/28/2023 8:50:16 AM, cpadron-martinez

19+45.92 DUCT BANK 'A'
= 15+52.04, 68.92 LT RAIDER WAY
PEC TO SET NEW POLE FOR SINGLE PHASE RISER 20' INSIDE PROPERTY TO CONTINUE FEED FOR ON SERVICE.

19+93.89 DUCT BANK 'A'
= 16+00.00, 43.50 LT RAIDER WAY
PLACE AT&T HANDHOLE
SWEEP UP 4" AT&T CONDUIT TO ESMT. LINE

22+07.16 DUCT BANK 'A'
= 18+15.40, 44.42 LT RAIDER WAY

22+24.41 DUCT BANK 'A'
= 18+32.65, 48.25 LT RAIDER WAY

23+71.85 DUCT BANK 'A'
= 19+80.09, 45.59 LT RAIDER WAY

CENTRAL BAPTIST CHURCH OF WILLIAMSON COUNTY VOLUME 2696, PAGE 144 O.R.W.C.T.

KATHY L. HALL W.C.C.D. 9716433 O.R.W.C.T.

GIDDENS WESKIM ESTATES W.C.C.D. 2006070699 O.P.R.W.C.T.

CITY OF LEANDER 15' WIDE (0.017 ACRE) PUBLIC UTILITY EASEMENT W.C.C.D. 2020094554 O.P.R.W.C.T.

CITY OF LEANDER 15' WIDE (0.072 ACRE) PUBLIC UTILITY EASEMENT W.C.C.D. 2020094553 O.P.R.W.C.T.

CITY OF LEANDER 0.028 ACRE RIGHT-OF-WAY TRACT - W.C.C.D. 2020094552 O.P.R.W.C.T.

THE CITY OF LEANDER, TEXAS VS GC PARKWAY CROSSING LTD. 15' WIDE (0.017 ACRE) PUBLIC UTILITY EASEMENT W.C.C.D. 2020070615 O.P.R.W.C.T.

THE CITY OF LEANDER, TEXAS VS GC PARKWAY CROSSING LTD. 0.002 ACRE RIGHT-OF-WAY TRACT W.C.C.D. 2020070615 O.P.R.W.C.T.

CITY OF LEANDER 0.002 ACRE RIGHT-OF-WAY TRACT W.C.C.D. 2019103675 O.P.R.W.C.T.

CITY OF LEANDER 1.286 ACRE SIDEWALK EASEMENT AND PUBLIC UTILITY EASEMENT W.C.C.D. 2023006541 O.P.R.W.C.T.

CITY OF LEANDER 15' WIDE (0.009 ACRE) TEMPORARY CONSTRUCTION EASEMENT W.C.C.D. 2023006542 O.P.R.W.C.T.

CITY OF LEANDER 15' WIDE (0.017 ACRE) PUBLIC UTILITY EASEMENT TR3677, O.P.R.W.C.T.

CITY OF LEANDER 23' WIDE (0.072 ACRE) PUBLIC UTILITY EASEMENT W.C.C.D. 2019103676 O.P.R.W.C.T.

25' BUILDING LINE AND P.U.E. W.C.C.D. 2006070699, O.P.R.W.C.T.

25' BUILDING LINE AND P.U.E. CABINET H, SLIDE 250, P.R.W.C.T.

25' ROADWAY WIDENING EASEMENT W.C.C.D. 2006070699 O.P.R.W.C.T.

10' PUBLIC UTILITY LANDSCAPE AND PEDESTRIAN

TREE DRIP LINE

MATCHLINE 15+00

MATCHLINE 20+00

PROP. PUE AND SIDEWALK ESMT.

PROP. R.O.W.

DUCT BANK 'A'

RAIDER WAY

SAWCUT & REPLACE EX. PAVEMENT

RE: STORM DRAIN PLANS

RE: WATER PLANS

RE: DETENTION POND AND RETAINING WALL PLANS

!!!CAUTION!!!
EXISTING OVERHEAD & UNDERGROUND UTILITIES IN THE VICINITY. VERIFY LOCATION OF EXISTING UNDERGROUND UTILITIES BY VACUUM EXCAVATION OR OTHER POTHOLING TECHNIQUES.

STAKED PROPOSED LOCATION FOR BOX

BORE TH10-5.46'

BORE TH7-4.74'

WATER BIBB

ASPHALT DRIVE

FIBER OPTIC SIGN

EX. GROUND @ DUCT BANK 'A' ℄

PROP. FINISH GRADE

36" MIN. DEPTH

2.6%

1.7%

PROPOSED DUCT BANK 'A'

PROP. 1" W.L. SERVICE SEE WATER PLANS

36" MIN. (TYP.)

18+15.40, PAD
44.42' LT
970.49

18+25.00, PV
967.60

18+32.65, PAD
48.25' LT
970.96

19+80.09, PAD
45.59' LT
973.94

959.20 | +50 960.54 | 961.84 | +50 963.13 | 964.42 | +50 965.66 | 966.95 | +50 968.04 | 968.91 | +50 969.79 | 970.66

15+00 | 16+00 | 17+00 | 18+00 | 19+00 | 20+00

H:1"=20'
V:1"=2'

UTILITY NOTES

(2) COMBINATION PAD, 56" ENCLOSURE, 25 kVA PADMOUNT. URD SERVICE TO EXISTING HOUSE (530-024-0911) (RE: C511)

(5) SPECTRUM CONDUIT RISERS CAPPED FOR FUTURE CONNECTION (BY OTHERS)

(7) COMBINATION PAD, 74" ENCLOSURE, 25 kVA TRANSFORMER TRENCH SERVICE TO METER ON HOUSE THREE PHASE SPARE STUBOUT. (RE: C511)

(8) PLACE AT&T HANDHOLE

GENERAL NOTES

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Texas 811 Know what's below. Call before you dig.

GRAPHIC SCALE (FEET) 0 10 20 40

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

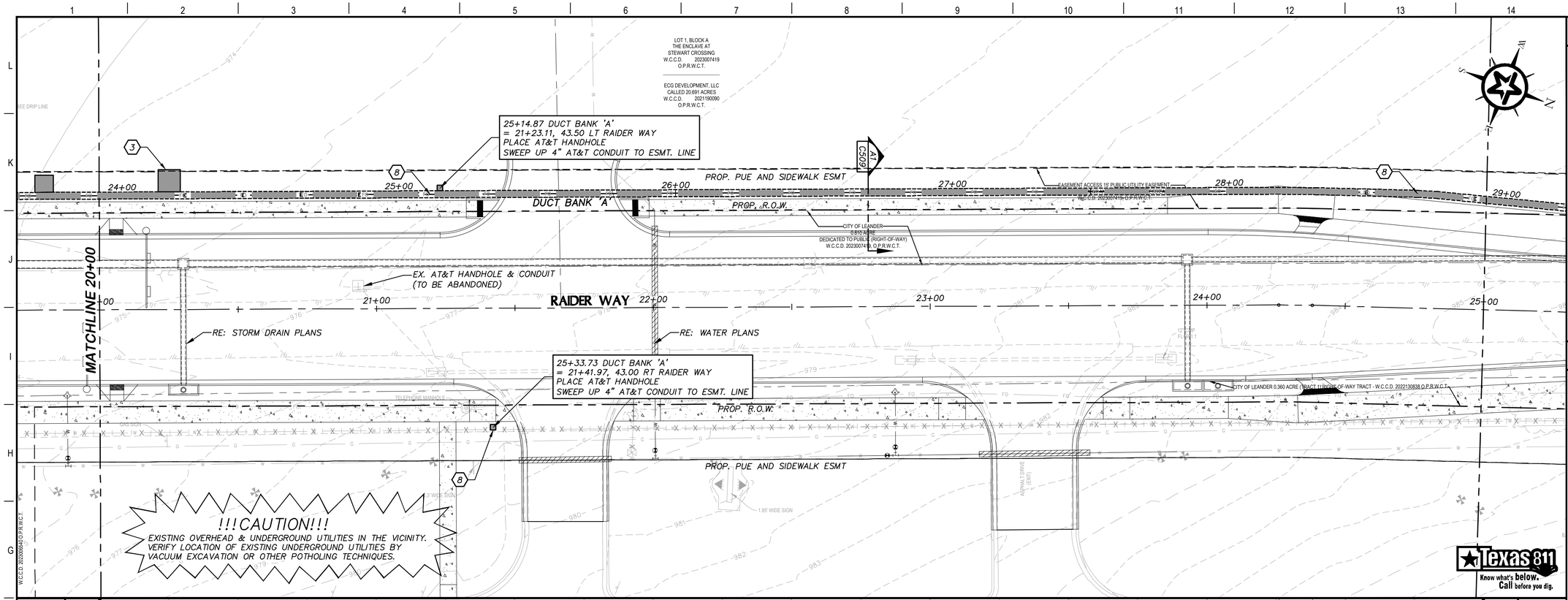
DRY UTILITIES
RAIDER WAY
STA. 15+00-20+00

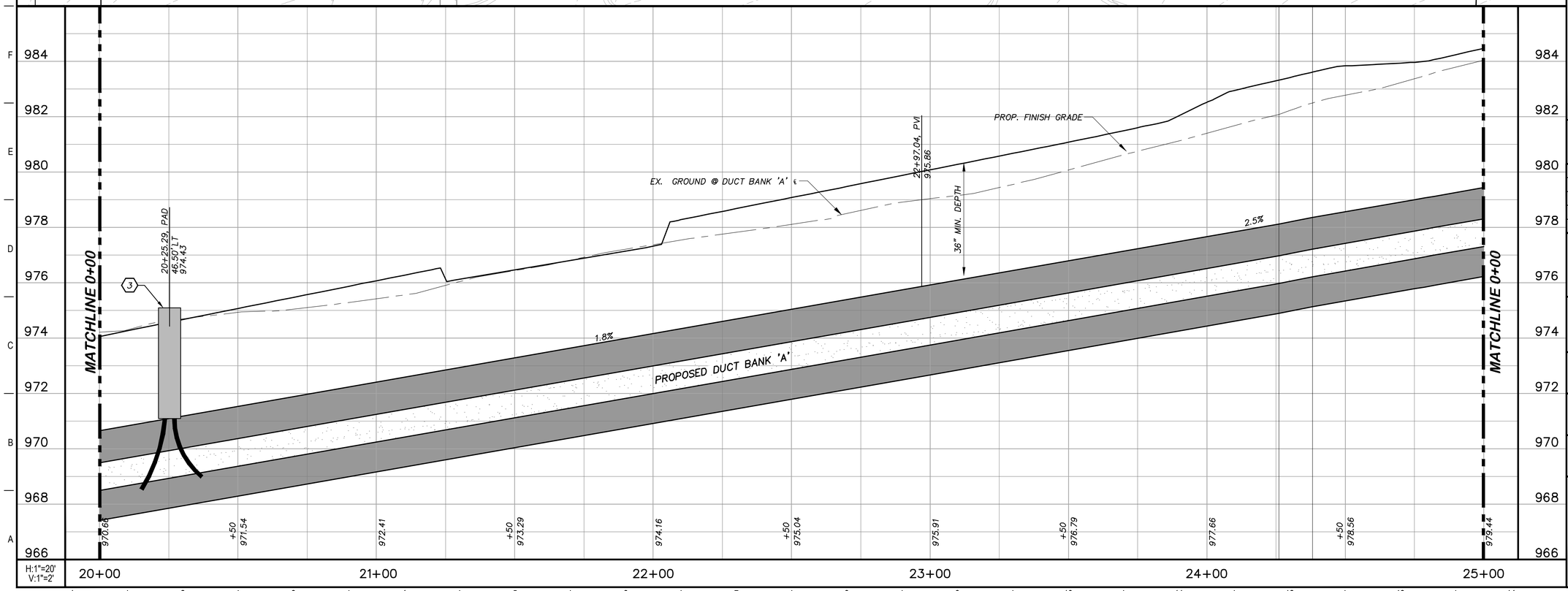
03/22/2023 DATE
R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C504
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DRY UTILITIES.DWG, C504 STA. 15+00-20+00, 3/28/2023 8:51:25 AM, cpadron-martinez





UTILITY NOTES

(3) 600-AMP URD VAULT (530-090-0911) (RE: C511)

(8) PLACE AT&T HANDHOLE

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Texas 811 Know what's below. Call before you dig.

0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRY UTILITIES
RAIDER WAY
STA. 20+00-25+00

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C505
SHEET	OF

H:1"=20'
V:1"=2'

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DRY UTILITIES.DWG, C505 STA. 20+00-25+00, 3/28/2023 8:52:32 AM, cpadron-martinez

!!!CAUTION!!!
EXISTING OVERHEAD & UNDERGROUND UTILITIES IN THE VICINITY. VERIFY LOCATION OF EXISTING UNDERGROUND UTILITIES BY VACUUM EXCAVATION OR OTHER POTHOLING TECHNIQUES.

32+98.07 DUCT BANK 'A'
= 28+34.33, 146.26 LT RAIDER WAY
= 18+07.46, 40.50 RT EAST WOODVIEW DR.

33+83.30 DUCT BANK 'A'
= 29+19.56, 146.36 LT RAIDER WAY
= 18+07.46, 44.74 LT EAST WOODVIEW DR.
CONNECT TO EX. SWITCHGEAR

31+89.76 DUCT BANK 'A'
= 27+92.64, 56.73 LT RAIDER WAY

29+92.53 DUCT BANK 'A'
= 0+00.00 DUCT BANK 'C'
= 25+99.33, 37.75 LT RAIDER WAY

0+77.80 DUCT BANK 'C'
= 0+00.00 DUCT BANK 'D'
= 25+99.33, 40.05 RT RAIDER WAY

0+88.09 DUCT BANK 'C'
= 25+99.33, 50.34 RT RAIDER WAY

3+57.48 DUCT BANK 'D'
= 29+46.33, 62.41 RT RAIDER WAY
= 0+75.93, 70.67 LT PRIVATE ROAD 921

EXISTING SWITCHGEAR
DUCT BANK 'A'
EAST WOODVIEW DR.
EXISTING 600 AMP URD (TIE INTO PROPOSED)
RE: STORM DRAIN PLANS
RAIDER WAY
MATCHLINE 25+00
DUCT BANK 'C'
EXISTING AT&T
DUCT BANK 'D'
RE: WATERLINE IMPROVEMENT PLANS
PRIVATE ROAD 921
WATER VAULT
BACK FLOW PREVENTER
TREE DRIP LINE
15' P.U.E. VOLUME 1999, PAGE 597 O.P.R.W.C.T.
CITY OF LEANDER RIGHT-OF-WAY TRACT W.C.C.D. #6 VOLUME 13339 O.P.R.W.C.T.
W.C.C.D. #6 LANDSCAPE LOT VOLUME 13339 O.P.R.W.C.T.
10' P.U.E. W.C.C.D. 20160208418 O.P.R.W.C.T.

Texas 811 Know what's below. Call before you dig.

UTILITY NOTES

1. USE EXISTING POLE FOR THREE PHASE 200 AMP RISER.
2. COMBINATION PAD, 56" ENCLOSURE, 25 kVA PADMOUNT. URD SERVICE TO EXISTING ADDRESS (530-024-0911) (RE: C511)
3. 600-AMP URD VAULT (530-090-0911) (RE: C511)
4. 74" ENCLOSURE URD THREE PHASE TO PROPOSED POLE TO CONTINUE OVERHEAD FEED (530-022-0911) (RE: C511)
5. SPECTRUM CONDUIT RISERS CAPPED FOR FUTURE CONNECTION (BY OTHERS)
6. GRANDE COMMUNICATIONS 11X17 PULL BOX (BY OTHERS)
8. PLACE AT&T HANDHOLE

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GRAPHIC SCALE (FEET): 0 10 20 40

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRY UTILITIES
RAIDER WAY
STA. 25+00-30+00

03/22/2023 DATE
R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS · R. ALAN MUNGER · 65341 · REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C506
SHEET	OF

EX. GROUND @ DUCT BANK 'A' ℄
STA. 27+92.64, 56.73'LT
ELEV. 991.40
SPECTRUM
PROP. FINISH GRADE
25+99.33, PAD
37.75'LT
986.32
25+20.47, PVI
979.79
MATCHLINE 0+00
36" MIN. DEPTH
PROP. 18" RCP
PROP. 12" WATERLINE 'A'
2.5%
0.0%
PROPOSED DUCT BANK 'A'
979.44
+50
979.79
H:1"=20'
V:1"=2'
25+00
26+00
27+00
28+00
29+00
30+00
992
990
988
986
984
982
980
978
976

G:\PROJECTS\3-005852 DESIGN\2.0 CAD\3-00585DRY UTILITIES.DWG, C506 STA. 25+00-30+00, 3/28/2023 8:54:00 AM, cpadron-martinez

!!!CAUTION!!!
EXISTING OVERHEAD & UNDERGROUND UTILITIES IN THE VICINITY. VERIFY LOCATION OF EXISTING UNDERGROUND UTILITIES BY VACUUM EXCAVATION OR OTHER POTHOLING TECHNIQUES.

1+57.10 DUCT BANK 'F'
= 6+91.59, 100.65 LT EAST WOODVIEW DR.
O.P.R.W.C.T.

A6
C509

CITY OF LEANDER 20' WIDE (0.314 ACRE) SIDEWALK AND PUBLIC UTILITY EASEMENT - W.C.C.D. 2020154712, O.P.R.W.C.T.

CITY OF LEANDER 0.183 ACRE RIGHT-OF-WAY TRACT W.C.C.D. 2020154711 O.P.R.W.C.T.

RE: WATER PLANS

MATCHLINE 3+50

EAST WOODVIEW DRIVE (COUNTY ROAD 271)
(VARIABLE WIDTH)
EAST WOODVIEW DR.

4+00 5+00 6+00 7+00 8+00

DUCT BANK 'F'

RE: STORM DRAIN PLANS

MATCHLINE 8+50

CITY OF LEANDER 0.135 ACRE RIGHT-OF-WAY TRACT W.C.C.D. 2019076868 O.P.R.W.C.T.

CITY OF LEANDER 12' WIDE (0.133 ACRE) SIDEWALK EASEMENT AND PUBLIC UTILITY EASEMENT - W.C.C.D. 2019076867 O.P.R.W.C.T.

1+11.60 DUCT BANK 'E'
= 7+17.45, 43.67 RT EAST WOODVIEW DR.

CITY OF LEANDER 0.071 ACRE RIGHT-OF-WAY TRACT W.C.C.D. 2019105293, O.P.R.W.C.T.

CITY OF LEANDER 10' WIDE PUBLIC UTILITY EASEMENT

0+00 DUCT BANK 'E'

DUCT BANK 'E'

0+00.00 DUCT BANK 'E'
= 6+05.85, 43.67 RT EAST WOODVIEW DR.

0+98.52 DUCT BANK 'E'
= 0+00.00 DUCT BANK 'F'
= 7+04.37, 43.67 RT EAST WOODVIEW DR.

LOT 3 LOT 4

BARBED WIRE FENCE

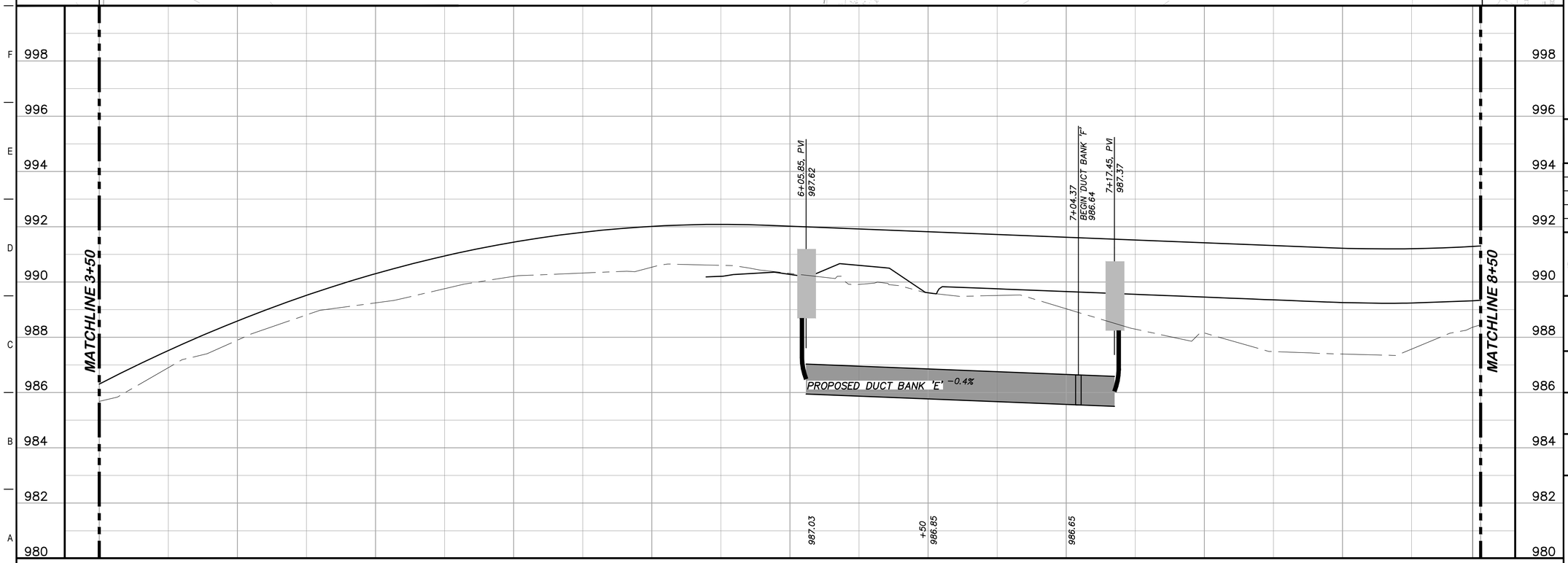
CONCRETE PAD

GATE KEY PAD

WATER VAULT

0.15' WIDE SIGN

Texas 811
Know what's below. Call before you dig.



UTILITY NOTES

1. USE EXISTING POLE FOR THREE PHASE 200 AMP RISER.
2. COMBINATION PAD, 56" ENCLOSURE, 25 kVA PADMOUNT. URD SERVICE TO EXISTING HOUSE (530-024-0911) (RE: C511)
3. 600-AMP URD VAULT (530-090-0911) (RE: C511)
4. 74" ENCLOSURE URD THREE PHASE TO PROPOSED POLE TO CONTINUE OVERHEAD FEED (530-022-0911) (RE: C511)

GENERAL NOTES

1. UTILITY INFORMATION IS DERIVED FROM FURNISHED RECORDS, SURVEY DATA, AND TEST HOLE INFORMATION. WALKER PARTNERS EXPRESSLY DISCLAIMS RESPONSIBILITY FOR THE ACCURACY OF THE UTILITY INFORMATION DEPICTED IN OUR RECORDS. THERE MAY BE OTHER PIPELINES OR UNDERGROUND FACILITIES NOT SHOWN ON THESE PLANS. CONTRACTOR SHALL COMPLY WITH THE APPLICABLE UTILITY DAMAGE PREVENTION LAWS AND REGULATIONS INCLUDING, BUT NOT LIMITED TO, GIVING NOTIFICATION TO UTILITY OWNERS' ONE-CALL CENTERS BEFORE EXCAVATION.
2. REFER TO PEDERNALES ELECTRIC COOPERATIVE UNDERGROUND DEVELOPERS SPECIFICATIONS FOR ALL ELECTRICAL UTILITY INSTALLATION.
3. COORDINATE ALL TIE-IN POINTS, SWEEP UPS AND STUB OUTS WITH THE RESPECTIVE UTILITY COMPANY
4. CONTRACTOR SHALL RESTORE TEMPORARY PAVEMENT AFTER EACH DAYS WORK PER COA STANDARD DETAIL 1100 S-4 (RE: A1/C045)
5. CONTRACTOR TO COORDINATE / NOTIFY UTILITY PROVIDER AND ALL AFFECTED PROPERTY OWNERS FOR DISRUPTIONS OF SERVICE 48 HOURS IN ADVANCE OF ANTICIPATED INTERRUPTION OF SERVICE.

0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRY UTILITIES
EAST WOODVIEW DR
STA. 3+50-8+50

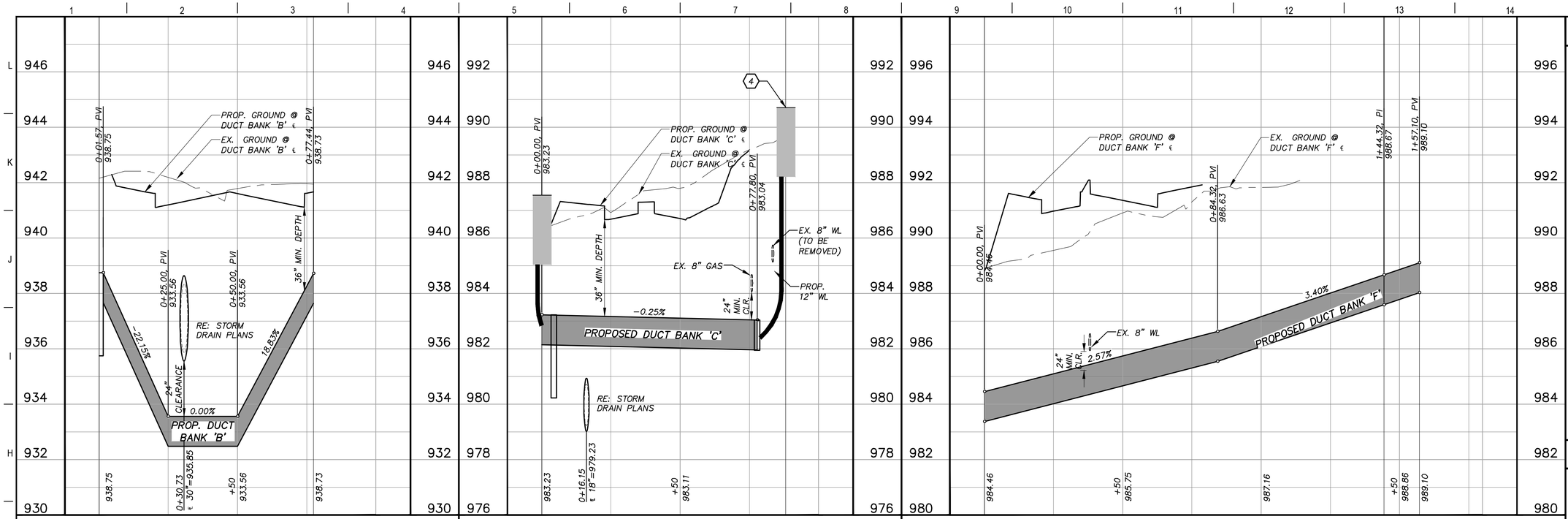
03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C507
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DRY UTILITIES.DWG, C507 STA. 3+50-8+50, 3/30/2023 9:02:32 AM, cschroeder



G1 DUCT BANK PROFILE 'B'

H:1"=20'
V:1"=2'

G5 DUCT BANK PROFILE 'C'

H:1"=20'
V:1"=2'

G8 DUCT BANK PROFILE 'F'

H:1"=20'
V:1"=2'

G1 DUCT BANK PROFILE 'D'

H:1"=20'
V:1"=2'

KEY NOTES

1. COMBO PAD 74" ENCLOSURE, 25 kVA TRANSFORMER. PROVIDE THREE PHASE STUBOUT. (530-022-0911) REF:F6/####
2. BEGIN/END DUCT BANK. CONNECT TO EXISTING 600 AMP URD
3. EXISTING SWITCHGEAR. CONNECT EXISTING 600 AMP URD
4. RESET TRANSFORMER
5. SPECTRUM CONDUIT RISERS CAPPED FOR FUTURE CONNECTION (BY OTHERS)

NOTES

1. UTILITY INFORMATION IS DERIVED FROM FURNISHED RECORDS, SURVEY DATA, AND TEST HOLE INFORMATION. WALKER PARTNERS EXPRESSLY DISCLAIMS RESPONSIBILITY FOR THE ACCURACY OF THE UTILITY INFORMATION DEPICTED IN OUR RECORDS. THERE MAY BE OTHER PIPELINES OR UNDERGROUND FACILITIES NOT SHOWN ON THESE PLANS. CONTRACTOR SHALL COMPLY WITH THE APPLICABLE UTILITY DAMAGE PREVENTION LAWS AND REGULATIONS INCLUDING, BUT NOT LIMITED TO, GIVING NOTIFICATION TO UTILITY OWNERS' ONE-CALL CENTERS BEFORE EXCAVATION.
2. REFER TO PEDERNALES ELECTRIC COOPERATIVE UNDERGROUND DEVELOPERS SPECIFICATIONS FOR ALL ELECTRICAL UTILITY INSTALLATION.
3. COORDINATE ALL TIE-IN POINTS, SWEEP UPS AND STUB OUTS WITH THE RESPECTIVE UTILITY COMPANY

0 20 40 80
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRY UTILITY DUCT BANK LATERALS

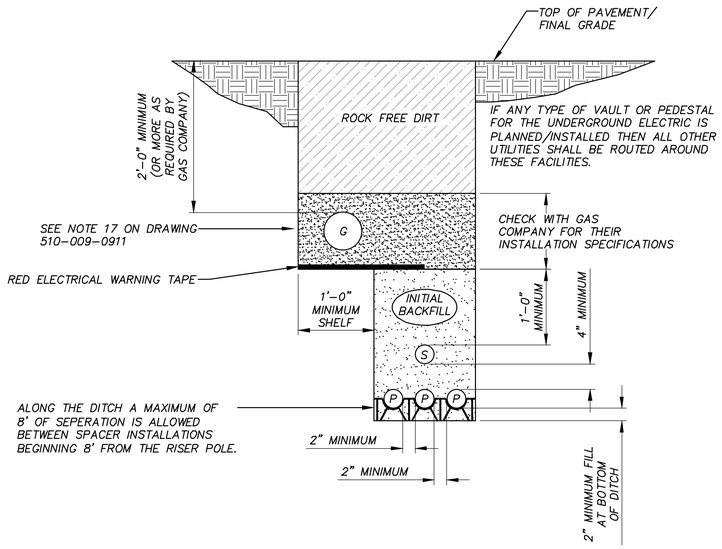
03/22/2023
DATE

R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

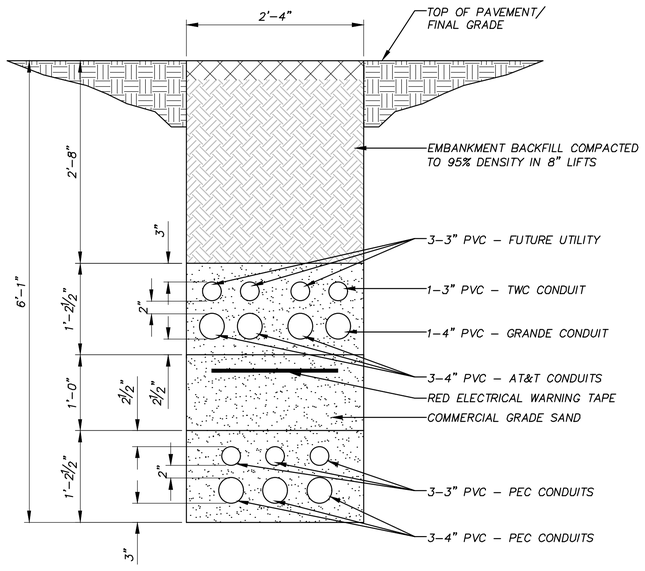
PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C508
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DRY UTILITIES.DWG, C508 DRY UTILITY DUCT BANK LATERALS, 3/28/2023 8:55:47 AM, cpadron-martinez



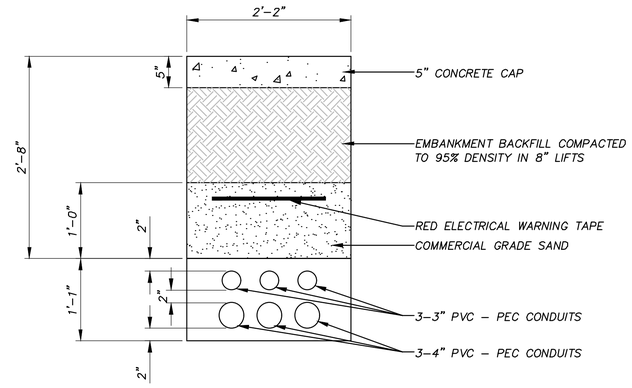
F1 DUCT BANK SECTION D-D PEC, AT&T, GRANDE, TWC

N.T.S.



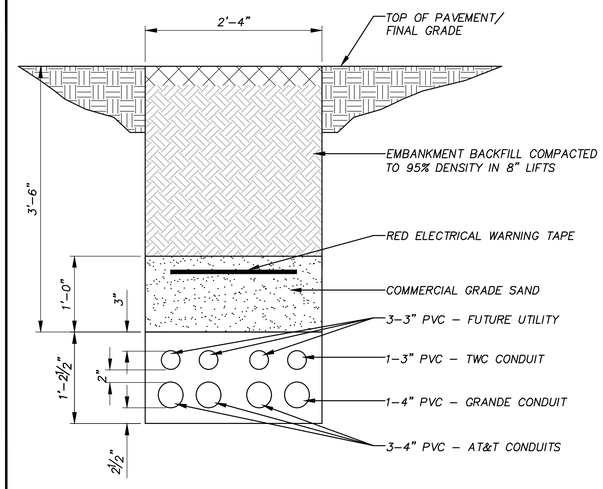
A1 DUCT BANK SECTION A-A PEC, AT&T, GRANDE, TWC

N.T.S.



A6 DUCT BANK SECTION B-B

N.T.S.



A11 DUCT BANK SECTION C-C AT&T, GRANDE, TWC

N.T.S.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

UTILITY DUCT BANK SECTIONS

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C509
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DRY UTILITY DETAILS.DWG, C509 UTILITY DUCT BANK SECTIONS, 3/28/2023 8:56:27 AM, cpadron-martinez

Trench Specifications

A. Installation of conduit

1. Minimum cover to be 30" from top of primary conduit to sub-grade. (See attached drawings.)
2. Bottom of trench shall be sanded to provide smooth, even support for conduits. (See attached drawings.)
3. Sand to be placed directly around conduits for initial backfill. (See attached drawings.)
4. There is to be a minimum of 12" separation between electrical conduits and all other conduits.
5. Warning tape to be a minimum of 12" above electrical conduits.
6. Concrete to be poured around all conduit crossings and 90 degree bends. (See attached drawings.)
7. Trench may be used jointly if adequate separation is provided. (See attached drawings.)
8. Conduit may be under pavement if a depth of 30" cover to sub-grade is maintained.
9. Trench may be on property if adequate depth is maintained. "Adequate depth" is defined as 30" below the lowest point between the edge of pavement and property line.

B. Inspection Schedule

1. After primary conduit installation
2. After initial backfill
3. After secondary conduit installation
4. After remainder of initial backfill and warning tape
5. After secondary backfill (rock free dirt)

Failure to receive inspection will require removal of the backfill to allow inspection.

Developer/Contractor contribution

1. Payment to PEC for materials per the Line Extension Policy.
2. Trench
3. Conduit:
   a. 2" conduit and accessories
   b. 3" conduit, schedule 40 conduit bends with 3", 36" min. radius and accessories
   c. 4" conduit, schedule 40 conduit bends with 4", 48" min. radius and accessories
   d. Conduits for service will be sized as needed

NOTE: Contractor may be required to pull a mandrel, of a diameter not less than 80% of the inside diameter of the conduit, through all conduits, under the supervision of a PEC representative.

4. Conduit spacers
5. Transformer pads
6. Meter pedestal pads
7. Underground secondary enclosures and extensions
8. Ground rods and clamps
9. Polyester pulling tape (unused 2500lb tensile strength) in all conduit. No knots to be tied in the mule tape. It must be a continuous run.
11. Sand for initial backfill
12. Rock free dirt over initial backfill
13. 1/2" to 3/4" gravel for the bottom of vaults and secondary enclosures
14. Concrete, where necessary
15. Install meter socket when metering on building
16. Furnish and install any gang type meter sockets
17. Primary enclosures and extensions (if applicable)
18. Meter Sockets (PEC will provide pedestal mounted sockets only.)
19. Switchgear (If applicable)
20. Bollards, if deemed necessary by PEC to protect electrical equipment. Design must be approved by PEC prior to installation.

PEDERNALES ELECTRIC COOPERATIVE, INC. URD DEVELOPER'S SPECIFICATIONS	Developer/Member/PEC Supplied Material Page 1 of 2			
	drawn:	approved	date:	drawing number:
	JBS	MJB	October 23, 2014	500-100-0911

1

Member's Responsibility

Meter Pedestals are approved by Pedernales Electric Cooperative, Inc. In situations where meter pedestals are used the following conditions will apply.

1. Purchase and install circuit breaker in box. Circuit breakers are the bolt-in type. The box will accommodate 150 and 200 amp breakers. The breaker must have an interrupting capacity of 10,000 amps rated at 240 volts. GE Cat. No. TQD22 (amp needed) WL and Westinghouse CA2200W or equal.
2. Install insulated jumpers from bottom of meter socket to top of breakers.
3. Install galvanized rigid conduit, schedule 40 PVC or an approved equal from pedestal pad to bottom of box.
4. Member will be responsible for the installation of underground cable from the meter pedestal to the house and the connections to the bottom of the circuit breakers. The underground cable used from the meter pedestal to the house shall be an approved type for underground installation (USE or UF type). Conductor size will be based upon Member load, location of meter, and National Electric Code for size of conduit.
5. Underground conductor from secondary enclosure/transformer to meter shall have 24" of cover. This depth may be reduced to 18" when a 2" supplemental protective covering of concrete is provided. If rigid conduit is used, the depth can be reduced by 6". Red electric warning tape is also required in the ditch.
6. Apply and receive all applicable inspections.
7. When all work is completed according to specifications, notify the Pedernales Electric Cooperative, Inc. in your area that you are ready for electric service. A serviceman will make the connect and set the meter on a routine connect order.
8. For Commercial and Residential applications the Member shall supply the CT enclosure (if needed) and all secondary cable in accordance with the National Electric Code.

Pedernales Electric Cooperative, Inc. contribution paid for by developer/member as indicated on the Line Extension Policy.

1. Primary conductors
2. Secondary conductors
3. Cable terminations
4. Transformers
5. Meter pedestals
6. Switchgear
7. Secondary Gelport Connectors
8. Meter socket combo

PEC Responsibility

1. Furnish and install meter pedestal.
2. Furnish and install combination meter socket and breaker box.
3. PEC serviceman will install jumper wires from top of meter socket to pedestal connector and set meter on connect order after all work has been completed.

PEDERNALES ELECTRIC COOPERATIVE, INC. URD DEVELOPER'S SPECIFICATIONS	Developer/Member/PEC Supplied Material Page 2 of 2			
	drawn:	approved	date:	drawing number:
	JBS	MJB	July 30, 2014	500-100-0911

2

Typical All Pads

1) Require 3" conduit (unless otherwise specified by PEC) with bell end fittings to extend 1 ½" to 2" above pad.
2) Pads must extend a minimum of 4" above final grade and 1½" below final grade. All pads must be placed on a slope less than or equal to 3:1. If greater than 3:1 contractor must bring slope to required grade.
3) All disturbed soil underneath pad must be replaced by concrete.
4) All ground rods shall be ¾" X 10' Copper clad with clamp and must extend 3" above top of pad.
5) Wood float finish leaving pad square and level with no dips or crown.

Typical For Single Phase Transformer, Combination, Sectionalizer, and Secondary Pads

6) Concrete to have minimum strength of 3000 PSI.
7) Steel reinforcing shall be 6" X 6" No. 10 wire mesh or ⅜" rebar on 12" center to stop 1" from the sides.

Typical For 3 Phase Transformer Pads

8) Concrete testing, 4000 PSI; 4%-6% entrained air, ¾" maximum size aggregate.
9) Steel reinforcement shall be ⅜" rebar on 12" center to stop 1" from sides.
10) Minimum concrete cover over reinforcing steel 2" unless noted.
11) Consult with PEC before pouring concrete.

Typical Trench Details

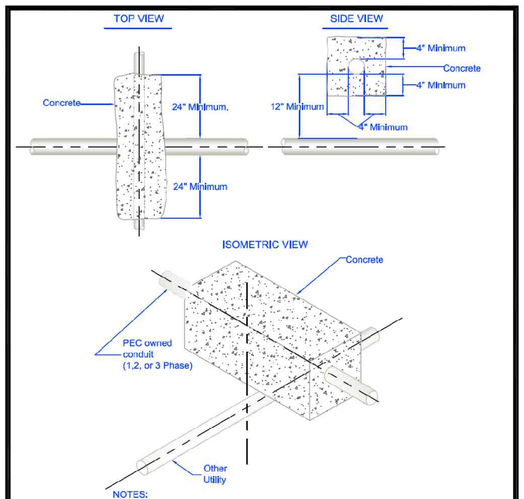
12) Schedule 40 electrical grade PVC conduit. Schedule 80 electrical grade conduit can be used in place of sand in secondary only trenches.
13) Initial backfill shall be manufactured or commercial sand. Minimum ⅜" pea gravel may be used for initial backfill in flood prone areas.
14) With PEC approval minimum cover requirements may be reduced by six inches with every two inches of 3000 PSI concrete poured directly onto conduit. ***CONTACT PEC BEFORE POURING CONCRETE***
15) If any type of vault or pedestal for the underground electric is planned then all other utilities should be routed around these facilities.
16) For 2" and **smaller** waterlines special permission must be granted by PEC. Water lines larger than 2" will not be allowed in PEC trench.
17) For Gas lines 6" or larger, special permission must be granted by PEC and reference drawing 510-023-0911 shall be used

Legend
Typical in all Drawings

- P — Primary Conduit
- S — Secondary Conduit
- AS — Alternate Secondary Conduit
- CW — Communications or water
- G — Gas Line

PEDERNALES ELECTRIC COOPERATIVE, INC. URD DEVELOPER'S SPECIFICATIONS	Typical Notes Reference Page			
	drawn:	approved	date:	drawing number:
	JBS	MJB	April 18, 2016	510-009-0911

3

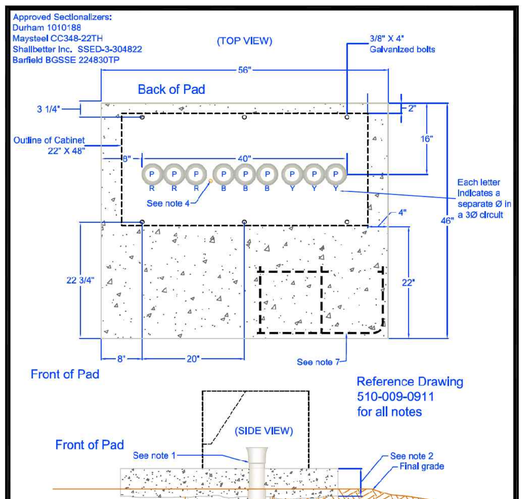


NOTES:

1) Refer to appropriate conduit arrangement drawing for correct embedment depth.
2) 3000 PSI concrete to be a minimum thickness of 4" around conduit.
3) This installation applies wherever the electrical conduit crosses above any other conduit.
4) If another utility crosses over a PEC conduit system the other utility must comply with the NESC rules 353B1 and 353B2. (NESC THE IEEE NATIONAL ELECTRIC SAFETY CODE)

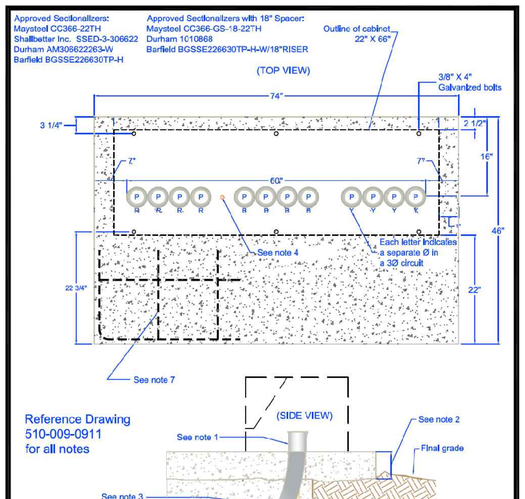
PEDERNALES ELECTRIC COOPERATIVE, INC. URD DEVELOPER'S SPECIFICATIONS	Conduit Crossing Detail For PEC above other Utilities			
	drawn:	approved	date:	drawing number:
	JBS	MJB	December 12, 2011	510-024-0911

18



PEDERNALES ELECTRIC COOPERATIVE, INC. URD DEVELOPER'S SPECIFICATIONS	Small Pad for 3Ø Sectionalizing Enclosure			
	drawn:	approved	date:	drawing number:
	JBS	MJB	March 3, 2014	530-020-0911

26



PEDERNALES ELECTRIC COOPERATIVE, INC. URD DEVELOPER'S SPECIFICATIONS	Large Pad for 3Ø Sectionalizing Enclosure			
	drawn:	approved	date:	drawing number:
	JBS	MJB	March 3, 2014	530-022-0911

27

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

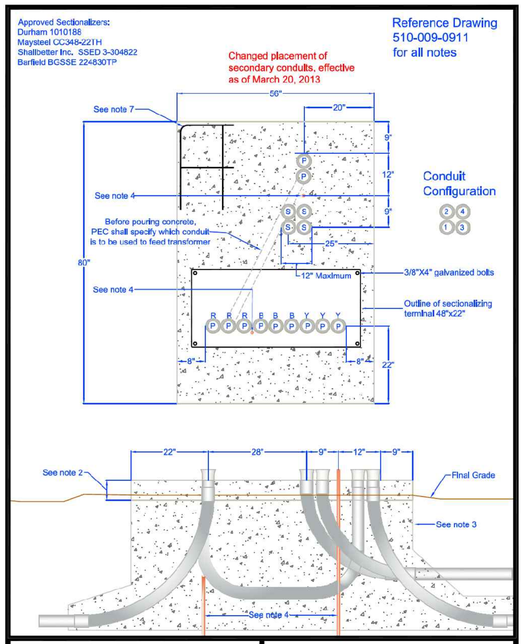
CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRY UTILITY DETAILS

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C510
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DRY UTILITY DETAILS.DWG, C510 DRY UTILITY DETAILS, 3/28/2023 8:56:33 AM, cpadron-martinez

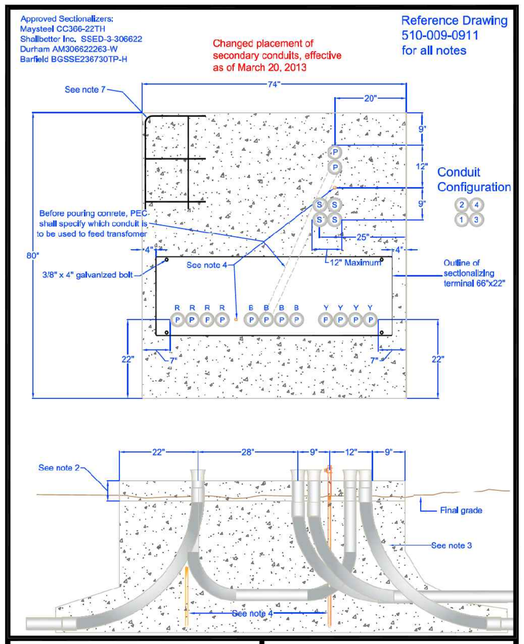


PEDERNALES ELECTRIC COOPERATIVE, INC.
URD DEVELOPER'S SPECIFICATIONS

Small Combination Sectionalizing Enclosure and Transformer Pad

drawn:	approved	date:	drawing number:
JBS	MJB	March 3, 2014	530-024-0911

29

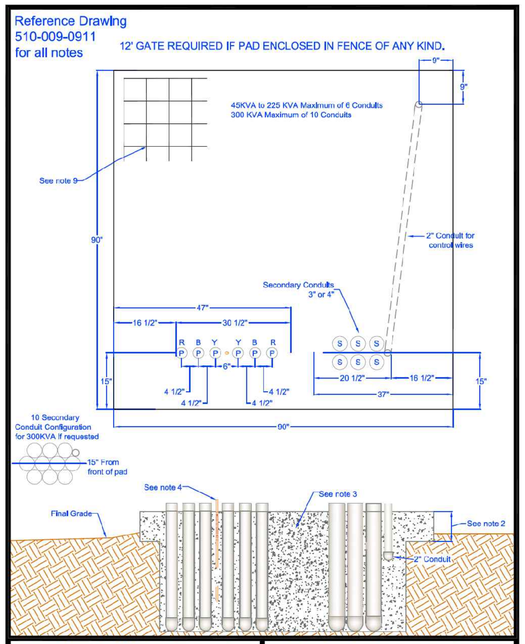


PEDERNALES ELECTRIC COOPERATIVE, INC.
URD DEVELOPER'S SPECIFICATIONS

Large Combination Sectionalizing Enclosure and Transformer Pad

drawn:	approved	date:	drawing number:
JBS	MJB	March 10, 2014	530-026-0911

30

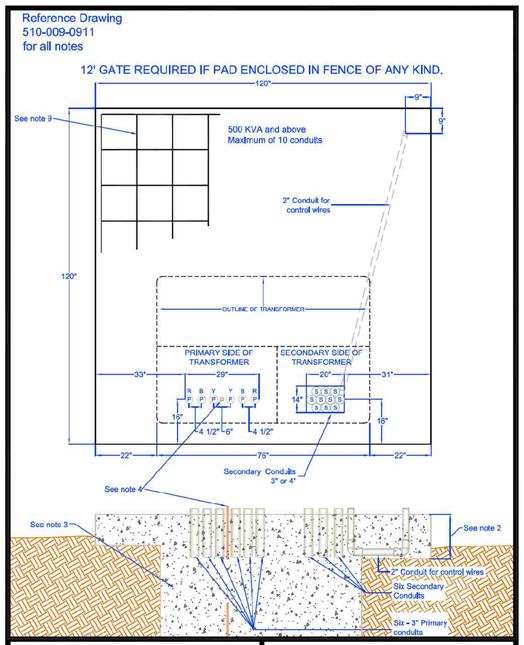


PEDERNALES ELECTRIC COOPERATIVE, INC.
URD DEVELOPER'S SPECIFICATIONS

3Ø Transformer Pad
45-300 KVA

drawn:	approved	date:	drawing number:
JBS	MJB	December 12, 2011	530-030-0911

31

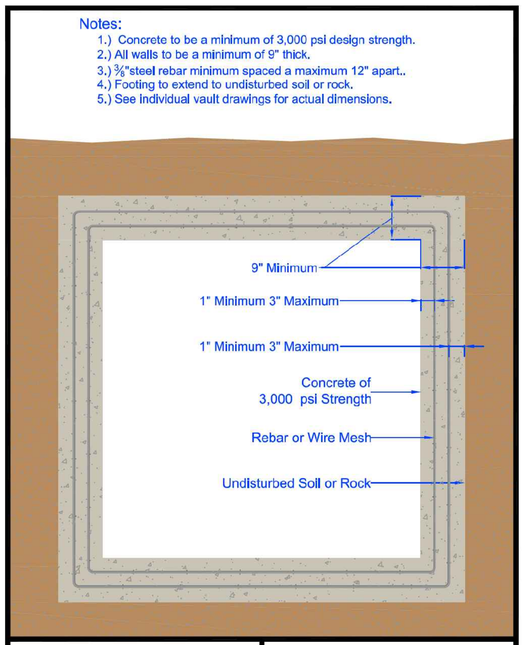


PEDERNALES ELECTRIC COOPERATIVE, INC.
URD DEVELOPER'S SPECIFICATIONS

3Ø Transformer Pad
500-1500 KVA

drawn:	approved	date:	drawing number:
JBS	MJB	December 12, 2011	530-032-0911

32

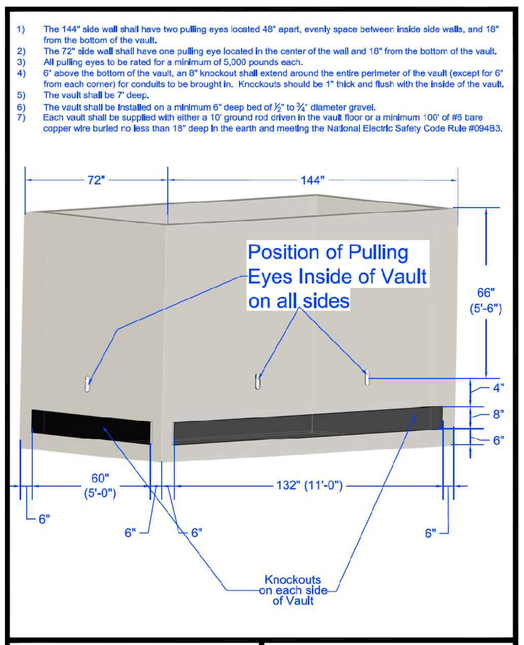


PEDERNALES ELECTRIC COOPERATIVE, INC.
URD DEVELOPER'S SPECIFICATIONS

General Specifications for Poured in Place Vaults

drawn:	approved	date:	drawing number:
JBS	MJB	December 12, 2011	530-040-0911

34



PEDERNALES ELECTRIC COOPERATIVE, INC.
URD DEVELOPER'S SPECIFICATIONS

Vault for Submersible Switchgear and Splicebox

drawn:	aporoved	date:	drawing number:
JBS	MJB	December 12, 2011	530-050-0911

35

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors

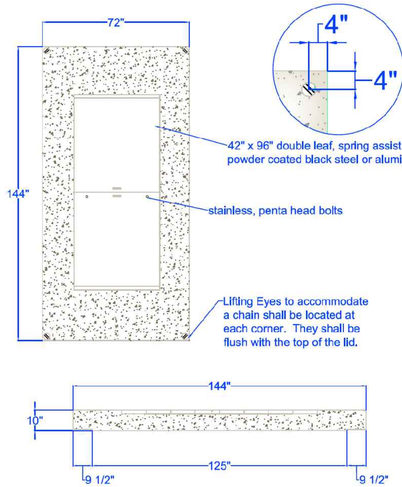
CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRY UTILITY DETAILS

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C511
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DRY UTILITY DETAILS.DWG, C511 DRY UTILITY DETAILS, 3/28/2023 8:56:37 AM, cpadron-martinez

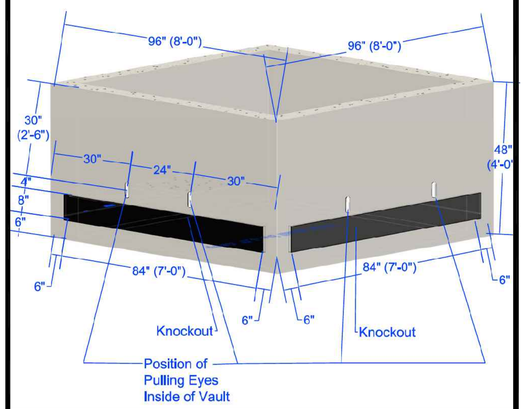


Specifications:
- Concrete has a 28 day strength of 5,000 psi
- Steel reinforcement is ASTM A615 grade 60
- Load design is H-20
- Access Lid shall be identified "ELECTRIC"

PEDERNALES ELECTRIC COOPERATIVE, INC. URD DEVELOPER'S SPECIFICATIONS	Lid for Submersible Switchgear and Splicebox (For use with Vault 530-050)			
	drawn:	approved	date:	drawing number:
	JBS	MJB	July 3, 2013	530-051-0911

36

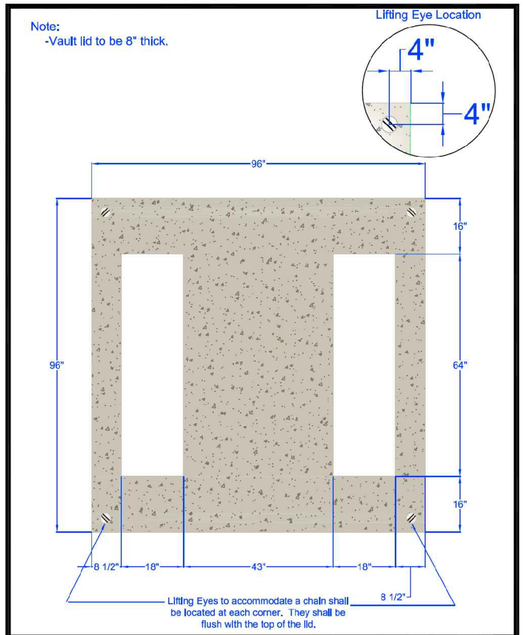
1) Each side wall shall have two pulling eyes located 24" apart, evenly space between inside walls, and 18" from the bottom of the vault.
2) All pulling eyes to be rated for a minimum of 5,000 pounds each.
3) 6" above the bottom of the vault, an 8" knockout shall extend around the entire perimeter of the vault (except for 6" from each corner) for conduit to be brought in. Knockouts should be1" thick and flush with the inside of the vault. The vault shall be 4' deep.
4) The vault shall be installed on a minimum 6" deep bed of ½" to ¾" diameter gravel.
5) Each vault shall be supplied with either a 10' ground rod driven in the vault floor or a minimum 100 feet of #6 bare copper wire buried no less than 18" deep in the earth and meeting the National Electric Safety Code Rule #094B3.



PEDERNALES ELECTRIC COOPERATIVE, INC. URD DEVELOPER'S SPECIFICATIONS	Vault for Deadfront, above ground Switchgear			
	drawn:	approved	date:	drawing number:
	JBS	MJB	December 12, 2011	530-090-0911

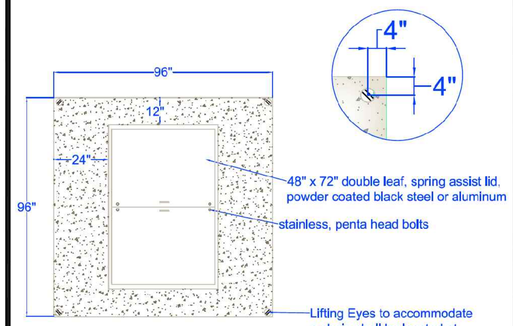
37

Note:
-Vault lid to be 8" thick.



PEDERNALES ELECTRIC COOPERATIVE, INC. URD DEVELOPER'S SPECIFICATIONS	Lid for Deadfront and above ground Switchgear (For use on Vault 530-090)			
	drawn:	approved	date:	drawing number:
	JBS	MJB	December 12, 2011	530-091-0911

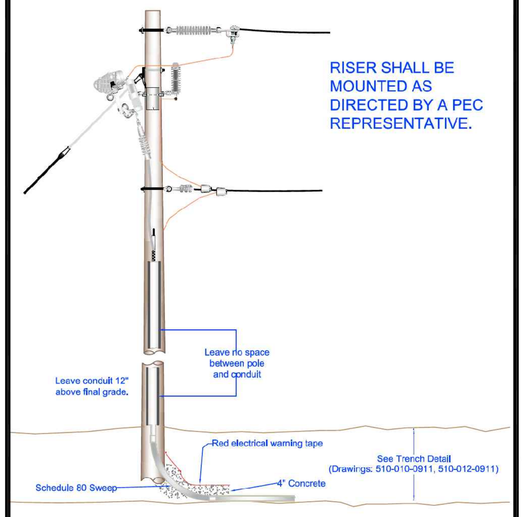
38



Specifications:
- Concrete has a 28 day strength of 5,000 psi
- Steel reinforcement is ASTM A615 grade 60
- Load design is H-20
-Access lid shall be identified "ELECTRIC"

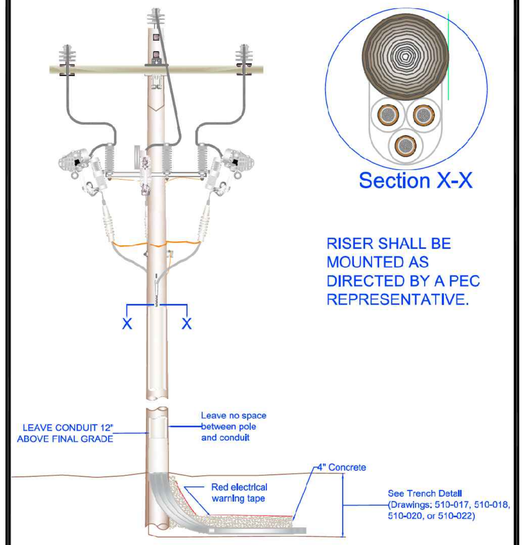
PEDERNALES ELECTRIC COOPERATIVE, INC. URD DEVELOPER'S SPECIFICATIONS	Lid for Submersible Switchgear and Splicebox (For use with Vault 530-090)			
	drawn:	approved	date:	drawing number:
	JBS	MJB	July 3, 2013	530-092-0512

39



PEDERNALES ELECTRIC COOPERATIVE, INC. URD DEVELOPER'S SPECIFICATIONS	1Ø Riser Pole			
	drawn:	approved	date:	drawing number:
	JBS	MJB	December 12, 2011	560-010-0911

45



PEDERNALES ELECTRIC COOPERATIVE, INC. URD DEVELOPER'S SPECIFICATIONS	3Ø Riser Pole			
	drawn:	approved	date:	drawing number:
	JBS	MJB	September 12, 2011	560-020-0911

47

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

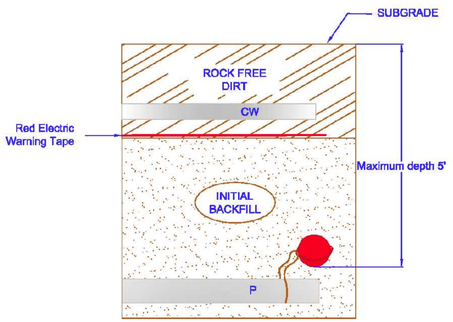
CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRY UTILITY DETAILS

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C512
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DRY UTILITY DETAILS.DWG, C512 DRY UTILITY DETAILS, 3/28/2023 8:56:39 AM, cpadron-martinez



Model Number # 1402-XR

Stock # 80611161144

NOTES:

1) 3M Electronic Marking System Extended Range Ball Marker's are required at locations deemed necessary by PEC.
2) PEC inspector will deliver marker balls to developer's contractor for installation.
3) Ball markers must be tied to the conduit ends using the tie down tabs provided.
4) The XR Ball Marker cannot reliably re-radiate the locator's signal at a depth greater than 5 feet, this is the maximum allowable distance between ball marker and subgrade.
5) Hand fill at least 6 inches of soil over the marker to prevent movement or damage during backfill.

PEDERNALES ELECTRIC COOPERATIVE, INC.
URD DEVELOPER'S SPECIFICATIONS

3M Electronic Marking System Extended Range Ball Marker

drawn:	approved	date:	drawing number:
DBS	MJB	July 16, 2016	580-010-0911

53

DEVELOPER/APPLICANT APPROVED MANUFACTURER LIST

TYPE OF MATERIAL	MANUFACTURERS	TELEPHONE NUMBERS	ADDRESS	EMAIL
CONDUIT SPACERS	CANTEX	(817) 215-7000 (817) 215-7001 FAX	301 COMMERCE STREET SUITE 200 FORT WORTH, TEXAS 76102	
GROUND ROD CLAMPS	PENN UNION	(814) 734-1631 (814) 734-4946 FAX	229 WATERFORD STREET EDENBORO, PENSYLVANIA 16412-2398	
MANHOLES	FORTERRA	(469) 458-7973	511 E. JOHN CARPENTER FREEWAY, IRVING, TEXAS 75062	info@forterrabp.com
SECONDARY ENCLOSURES	NORDIC FIBERGLASS, INC.	(218) 745-5095 (218) 745-4990 FAX	21415 HIGHWAY 75 NW WARREN, MINNESOTA 56762	
SECONDARY ENCLOSURES	PENCELL	(800) 257-9448 (252) 467-2210 (252) 467-2212 FAX	546 ENGLISH ROAD ROCKY MOUNT, NORTH CAROLINA 27804	info@pencell.com
SECONDARY ENCLOSURES	CHANNELL COMMERCIAL	(214) 277-9663 (210) 865-7748	WESCO SAN ANTONIO	info@channell.com cpedrosa@channell.com
SECONDARY ENCLOSURES	DURHAM	(417) 532-7121 (417) 532-2366 FAX	P.O. BOX 906 LEBANON, MISSOURI 65536	STREET ADDRESS: 722 DURHAM RD. LEBANON, MISSOURI 65536
SECTIONALIZING TERMINALS	MALTON EQUIPMENT CO.	(218) 714-8252	1505 WEST CHESTNUT STREET VIRGINIA, MINNESOTA 55792	
SECTIONALIZING TERMINALS	MAYSTEEL	(262) 599-6494 (262) 629-1612 FAX	6199 HIGHWAY W P.O. BOX 902 ALLENTON, WISCONSIN 53002	
SECTIONALIZING TERMINALS	SHALLBETTER INC.	(920) 232-8888 (920) 232-8977 FAX	3100 PROGRESS DR. OSKOSH, WISCONSIN 54901	
VAULTS AND LIDS	CDR SYSTEMS CORP.	(386) 615-9510 (386) 615-9606 FAX	146 SOUTH ATLANTIC AVENUE ORMOND BEACH, FLORIDA 32176	
VAULTS AND LIDS	CAPITAL PRECAST INC.	(830) 606-6200	6905 S. OLD BASTROP HWY. SAN MARCOS, TEXAS 78666	
VAULTS AND LIDS	HALLIDAY PRODUCTS	(800) 298-1027	6401 EDGEWATER DRIVE ORLANDO, FLORIDA 32810	sales@HallidayProducts.com
VAULTS AND LIDS	OLDCASTLE PRECAST, INC	(888) 965-3227	1501 NORTH UNIVERSITY, STE. 208 LITTLE ROCK, ARKANSAS 72207	contact@oldcastleprecast.com
VAULTS AND MANHOLES	THE TURNER COMPANY	(210) 560-7577	11049 S. HIGHWAY 287 RHOME, TEXAS 76078	sharon@theturnerco.com www.theturnerco.com

REV	A	DATE	09/04/2018	REVISION	ISSUE FOR CONSTRUCTION	BY	RWC	CHK		APR	

UNDERGROUND SPECIFICATIONS

APPROVED MANUFACTURERS

drawn:	approved:	date:	500-103-0918
RWC	MMG	04/18/2016	56 OF 56

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

DRY UTILITY DETAILS

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C513
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DRY UTILITY DETAILS.DWG, C513 DRY UTILITY DETAILS, 3/28/2023 8:56:41 AM, cpadron-martinez

NO	TXDOT/COL ITEM NO	DESCRIPTION	UNITS	RAIDER WAY RD @ E CRYSTAL FALLS PKWY	
				QUANTITY	
				ESTIMATE	FINAL
1	416	DRILL SHAFT (TRF SIG POLE) (24IN)	LF	6	
2	416	DRILL SHAFT (TRF SIG POLE) (36IN)	LF	28.4	
3	416	DRILL SHAFT (TRF SIG POLE) (48IN)	LF	21.9	
4	502	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	1	
5	618	CONDT (PVC) (SCHD 80) (2")	LF	10	
6	618	CONDT (PVC) (SCHD 80) (3")	LF	145	
7	618	CONDT (PVC) (SCHD 80) (3") (BORE)	LF	225	
8	620	ELEC CONDR (NO. 8) BARE	LF	380	
9	620	ELEC CONDR (NO. 8) INSULATED(LUM)	LF	155	
10	624	GROUND BOX TY C (162911) W / APRON	EA	4	
11	628	EXISTING ELCTRICAL SERVICE TO REMAIN	EA	1	
12	636	ALUMINUM SIGNS (TY A)	SF	42	
13	**	"LEFT TURN YIELD ON GREEN BALL" (30"X36")	EA	1	
14	**	"PEDESTRIAN" (9"X15")(R10-3E(R)	EA	1	
15	**	"PEDESTRIAN" (9"X15")(R10-3E(L)	EA	3	
16	**	"Raider Way Rd" (18" X 78")	EA	2	
17	**	"Crystal Falls Pkwy" (18" X 102")	EA	2	
18	****680	INSTALL HWY TRAF SIG (SYSTEM)	EA	1	
19	**	EXISTING CONTROLLER TO REMAIN. UPGRADE ONLY WITH CITY ENGINEER APPROVAL	EA	***	
20	**	LUMINAIRE ARM (8') AND LED LUMINAIRE HEAD-EQUIVELANT TO 250W	EA	1	
21	**	UD-TP21-REMOTE COMMUNICATION RADIO (AS DIRECTED BY COL)	EA	1	
22	****682	BACK PLATE (12 IN) (3 SEC)	EA	6	
23	****682	BACK PLATE (12 IN) (5 SEC)	EA	1	
24	****682	PED SIG SEC (12 IN) LED (2 INDICATIONS)(COUNTDOWN)	EA	4	
25	****682	VEH SIG SEC (12 IN) LED (GRN ARW)	EA	1	
26	****682	VEH SIG SEC (12 IN) LED (YEL ARW)	EA	1	
27	****682	VEH SIG SEC (12 IN) LED (GRN)	EA	7	
28	****682	VEH SIG SEC (12 IN) LED (YEL)	EA	7	
29	****682	VEH SIG SEC (12 IN) LED (RED)	EA	7	
30	****684	TRAF SIG CBL (TY C)(2 CONDR)(14 AWG)	LF	545	
31	****684	TRAF SIG CBL (TY A)(5 CONDR)(14 AWG)	LF	560	
32	****684	TRAF SIG CBL (TY A)(7 CONDR)(14 AWG)	LF	540	
33	****686	INS & HANDLE TRAF SIG PL AM(S) 1 ARM (20')	EA	1	
34	****686	INS & HANDLE TRAF SIG PL AM(S) 1 ARM (40')	EA	1	
35	****686	INS & HANDLE TRAF SIG PL AM(S) 1 ARM (50') LUM	EA	1	
36	687	PED POLE ASSEMBLY	EA	1	
37	****688	PED DETECT PUSH BUTTON (APS)	EA	4	
38	****688	PED DETECTOR CONTROLLER UNIT	EA	1	
39	***	VIVDS PROCESSOR SYSTEM (USE EXISTING SYSTEM)	EA	-	
40	***	VIVDS CAMERA ASSEMBLY (CAMERA SYSTEM)(INCLUDE ARM)(EXSITING)	EA	-	
41	***	VIVDS SET-UP SYSTEM (EXISTING)	EA	-	
42	****6266	VIVDS COMM COAX CABLE(OR APPROVED EQUAL)	LF	285	

FOR CONTRACTOR INFORMATION ONLY.

CITY OF LEANDER (COL) SPECS:

** SUB TO ITEM

*** EXISTING TO REMAIN

**** ITEM NUMBERS: 680,682,684,686,688,6266

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
14531 FM 529, SUITE 160
Houston, TX. 77095

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RAIDER WAY RD @ E. CRYSTAL FALLS PKWY
BASES OF ESTIMATE

STATE OF TEXAS
CHARLES R. STEVENS, JR
101286
PROFESSIONAL LICENSED ENGINEER

CHARLES R. STEVENS, JR., P.E.

3/30/2023
DATE

DESIGNED	CRS
DRAFTED	MMB
CHECKED	MMB
PROJECT NO.	CRS
	3-00585

DRAWING NO. C 600

SHEET OF

UTILITY LINEWORK LEGEND (EXISTING)

- = FIRE HYDRANT
- = WATER VALVE
- [W] = WATER METER
- = WATER IRRIGATION CONTROL VALVE
- —W— = WATER LINE
- [T] = TELEPHONE RISER
- —U—T— = UNDERGROUND TELEPHONE
- = UTILITY POLE
- = GUY WIRE
- [E] = ELECTRIC METER
- [J] = ELECTRIC JUNCTION BOX
- = LIGHT POLE
- —E— = OVERHEAD ELECTRIC LINE
- —X— = FENCE
- = TRAFFIC SIGN
- = TREE
- = ASPHALT EDGE
- = CONCRETE
- = GRAVEL
- = MAILBOX
- = SURVEY CONTROL POINT
- [G] = GAS METER
- = GAS REGULATOR VALVE
- —G— = GAS LINE
- P.R.W.C.T. = PUBLIC RECORDS WILLIAMSON COUNTY, TEXAS
- W.C.C.D. = WILLIAMSON COUNTY CLERK'S DOCUMENT
- O.P.R.W.C.T. = OFFICIAL PUBLIC RECORDS WILLIAMSON COUNTY, TEXAS

NOTE:

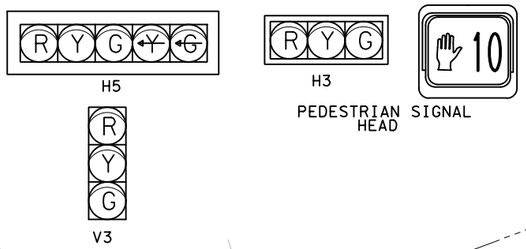
1) THE EXISTENCE AND LOCATION OF UTILITIES, EITHER UNDERGROUND AND OVERHEAD, INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORD AVAILABLE AND ARE APPROXIMATE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES (PRIVATE AND PUBLIC) PRIOR TO COMMENCING WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO LOCATE, PRESERVE AND PROTECT THES UTILITIES.

2) DURING CONSTRUCTION NOTIFY CITY OF LEANDER (WAYNE WATTS) AT (512) 528-2700 WITH 48 HOURS NOTICE PRIOR TRAFFIC SIGNAL MODIFICATION.

3) REMOVE EXISTING SIGNAL ONCE NEW SIGNALS READY TO BE TURNED ON. SALVAGE SIGNAL EQUIPMENT AND DELIVER TO CITY OF LEANDER. CONTACT WAYNE WATTSAT (512) 528-2700 WIH 48 HOURS NOTICE. DISPOSE THE REMAINDER OF THE SIGNAL EQUIPMENT AS PER TXDOT SPECIFICATIONS. REMOVE EXISTING FOUNDATION 24" BELOW GRADE AND FINISH TO MATCH ADJACNT SURFACE CONDITIONS.

4) REMOVE EXISTING GROUND BOXES AND DISPOSE PER TXDOT SPECIFICATIONS AFTER NEW SIGNAL IS ACTIVATED. BACKFILL, COMPACT, AND MATCH TO ADJACENT SURFACE CONDITIONS.

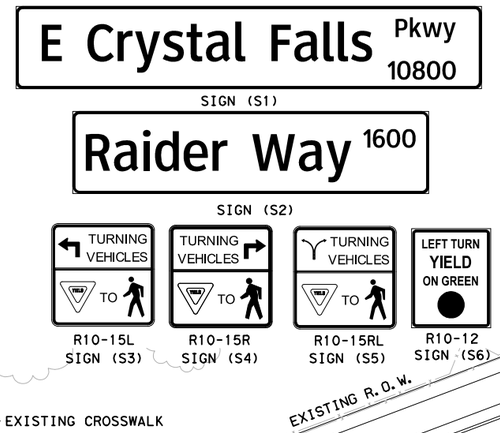
EXISTING SIGNAL & PED HEAD LEGEND



LEGEND (EXISTING)

- CONTROLLER CABINET
- SIGNAL HEAD (HORIZANTAL)
- SIGNAL HEAD (VERTICAL)
- TRAFFIC SIGNAL POLE
- TRAFFIC SIGNAL MAST ARM
- LUMINAIRE
- METER LOOP SERVICE & DISCONNECT
- MAST ARM MOUNT SIGN
- VIVDS DETECTION CAMERA
- VIVDS DETECTION ZONE
- DIRECTION OF TRAFFIC

EXISTING SIGNS ON MAST ARMS LEGEND



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GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
14531 FM 529, SUITE 160
Houston, TX. 77095

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RAIDER WAY RD @ E. CRYSTAL FALLS PKWY
EXISTING SIGNAL LAYOUT

STATE OF TEXAS
CHARLES R. STEVENS, JR.
101286
PROFESSIONAL LICENSED ENGINEER

3/30/2023
DATE

DESIGNED	CRS
DRAFTED	MMB
CHECKED	CRS
PROJECT NO.	3-00585

DRAWING NO. C 601

CHARLES R. STEVENS, JR., P.E.

SHEET OF

NOTE:

1) THE EXISTENCE AND LOCATION OF UTILITIES, EITHER UNDERGROUND AND OVERHEAD, INDICATED ON THE PLANS ARE TAKEN FROM THE BEST RECORD AVAILABE AND ARE APROXIMATE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ALL UTILITIES (PRIVATE AND PUBLIC) PRIOR TO COMMENCING WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY DAMAGES CAUSED BY HIS FAILURE TO LOCATE, PRESERVE AND PROTECT THES UTILITIES.

2) MAINTAIN MINIMUM CLEARANCE OF 6' RADIUS FROM NEUTRAL AND 10' FROM PRIMARY AT ALL TIMES BETWEEN PROPOSED TRAFFIC SIGNAL EQUIPMENT AND ELECTRICAL LINES.

3) NOTIFY CITY OF LEANDER (WAYNE WATTS) AT (512) 528-2700 ONE WEEK BEFORE BEGINING ANY WORK INVOLVING TRAFFIC SIGNALS.

4) ALL CONSTRUCTION SIGNS AND BARRICADES MUST CONFORM TO THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVISES AND CONSISTENT WITH TXDOT BARRICADE, CONSTRUCTION AND TRAFFIC CONTROL PLAN STANDARDS.

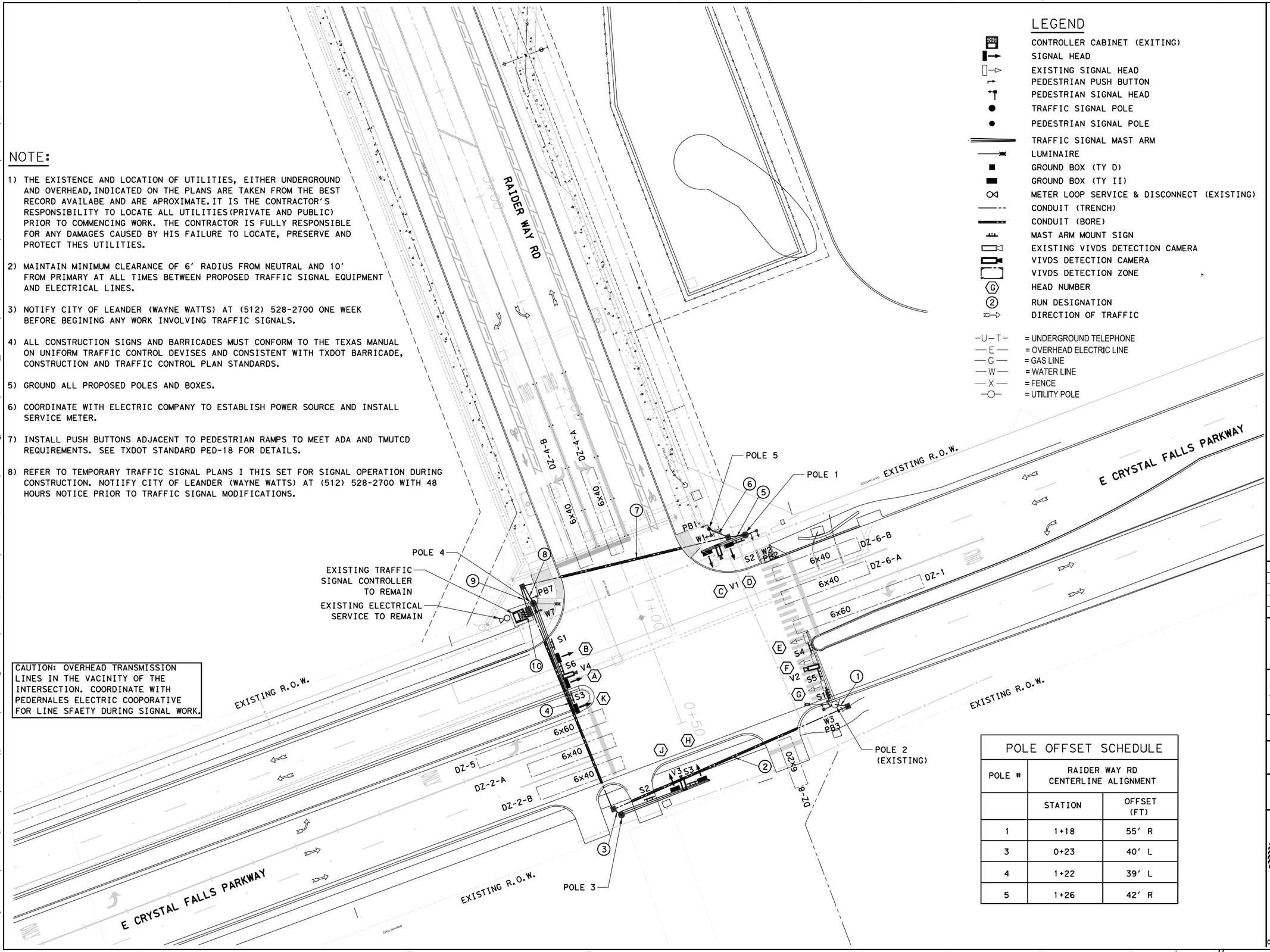
5) GROUND ALL PROPOSED POLES AND BOXES.

6) COORDINATE WITH ELECTRIC COMPANY TO ESTABLISH POWER SOURCE AND INSTALL SERVICE METER.

7) INSTALL PUSH BUTTONS ADJACENT TO PEDESTRIAN RAMPS TO MEET ADA AND TMUTCD REQUIREMENTS. SEE TXDOT STANDARD PED-18 FOR DETAILS.

8) REFER TO TEMPORARY TRAFFIC SIGNAL PLANS I THIS SET FOR SIGNAL OPERATION DURING CONSTRUCTION. NOTIIFY CITY OF LEANDER (WAYNE WATTS) AT (512) 528-2700 WITH 48 HOURS NOTICE PRIOR TO TRAFFIC SIGNAL MODIFICATIONS.

CAUTION: OVERHEAD TRANSMISSION LINES IN THE VACINITY OF THE INTERSECTION. COORDINATE WITH PEDERNALES ELECTRIC COOPORATIVE FOR LINE SFAETY DURING SIGNAL WORK.



LEGEND

- CONTROLLER CABINET (EXITING)
- SIGNAL HEAD
- EXISTING SIGNAL HEAD
- PEDESTRIAN PUSH BUTTON
- PEDESTRIAN SIGNAL HEAD
- TRAFFIC SIGNAL POLE
- PEDESTRIAN SIGNAL POLE
- TRAFFIC SIGNAL MAST ARM
- LUMINAIRE
- GROUND BOX (TY D)
- GROUND BOX (TY II)
- METER LOOP SERVICE & DISCONNECT (EXISTING)
- CONDUIT (TRENCH)
- CONDUIT (BORE)
- MAST ARM MOUNT SIGN
- EXISTING VIVDS DETECTION CAMERA
- VIVDS DETECTION CAMERA
- VIVDS DETECTION ZONE
- HEAD NUMBER
- RUN DESIGNATION
- DIRECTION OF TRAFFIC

-U-T- = UNDERGROUND TELEPHONE
—E— = OVERHEAD ELECTRIC LINE
—G— = GAS LINE
—W— = WATER LINE
—X— = FENCE
—O— = UTILITY POLE

N W E S

0 20 40
GRAPHIC SCALE (FEET)

POLE OFFSET SCHEDULE

POLE #	RAIDER WAY RD CENTERLINE ALIGNMENT	
	STATION	OFFSET (FT)
1	1+18	55' R
3	0+23	40' L
4	1+22	39' L
5	1+26	42' R

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
14531 FM 529, SUITE 160
Houston, TX. 77095

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RAIDER WAY RD @ E. CRYSTAL FALLS PKWY
PROPOSED SIGNAL LAYOUT

STATE OF TEXAS
CHARLES R. STEVENS, JR
101286
LICENSED PROFESSIONAL ENGINEER

CHARLES R. STEVENS, JR., P.E.

3/30/2023
DATE

DESIGNED	CRS
DRAFTED	MMB
CHECKED	CRS
PROJECT NO.	3-00585

DRAWING NO. C 602

SHEET OF

ELECTRICAL AND CONDUIT SCHEDULE

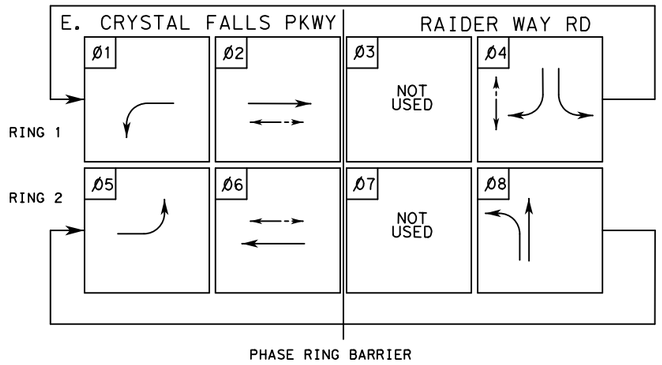
RUN NO.	CONDUIT (EA)				LENGTH	ELECTRICAL CONDUCTORS (ITEM 620)				SIGNAL CABLES (ITEM 684)			
	TRENCH		BORE			XHHW #4	BARE #4	BARE #8	2-#8 XHHW (LUM)	5CNDR 14AWG (TYA)	7CNDR 14AWG (TYA)	2CNDR 14AWG (TYC)	VIVDS CABLE
	2"	3"	2"	3"	(FT)								
1		1			5			1		1		1	
2				1	110			1		1		1	
3		1			5			1			1		1
4		1			105			1		1	1	1	1
5		1			10			1		1	1	1	1
6	1				10			1		1		1	
7				1	100			1		2	1	2	1
8		1			5			1	1	1	2	1	1
9				1	15			1		4	4	4	3
10		3			5			1		4	4	4	3
TOTAL	10	145		225				380	(*)5	530	310	525	285

(*) INSTALL NEW CABLE TO LUMINARE ON POLE #4 (APPROX 80')
FROM EXISTING SERVICE INSIDE EXISTING CONDUIT, AFTER
REMOVING EXISTING CABLE.

GROUND BOX SUMMARY ITEM 624

TYPE	DESCRIPION	UNIT	QTY
C	NO. 162911 (W/APRON)	EA	4

PHASING & PHASE RING DIAGRAM



VIVDS DETECTOR CHART

CAMERA	ZONE	SIZE	SETTING	FUNCTION
V1	DZ-8	6' x 20'	PRESENCE	CALL & EXTEND 08
V2	DZ-2-A	6' x 40'	PRESENCE	CALL & EXTEND 02
	DZ-2-B	6' x 40'	PRESENCE	CALL & EXTEND 02
	DZ-5	6' x 60'	PRESENCE	CALL & EXTEND 05
V3	DZ-4-A	6' x 40'	PRESENCE	CALL & EXTEND 04
	DZ-4-B	6' x 40'	PRESENCE	CALL & EXTEND 04
V4	DZ-6-A	6' x 40'	PRESENCE	CALL & EXTEND 06
	DZ-6-B	6' x 40'	PRESENCE	CALL & EXTEND 06
	DZ-1	6' x 60'	PRESENCE	CALL & EXTEND 01

PROPOSED SIGNAL & PED HEAD SCHEDULE



1-WAY, 5 SECTION, LED, 12" HORIZONTAL W/ BACKPLATE

K



1-WAY, 3 SECTION, LED, 12" HORIZONTAL W/ BACKPLATE

A, B, C, D, H, J

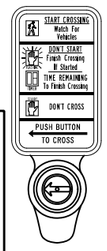


LED PEDESTRIAN COUNTDOWN SIGNAL

W1, W2
W3, W7

PROPOSED ACCESSIBLE PEDESTRIAN SIGNAL (APS) HEAD PUSH BUTTON WITH SIGN SCHEDULE:

R10-3eL
9"x15"



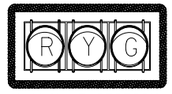
PB2, PB3, PB7

R10-3eR
9"x15"



PB1

EXISTING SIGNAL HEADS TO REMAIN



1-WAY, 3 SECTION, 12" HORIZONTAL W/ BACKPLATE

ON MAST ARM POLE #2

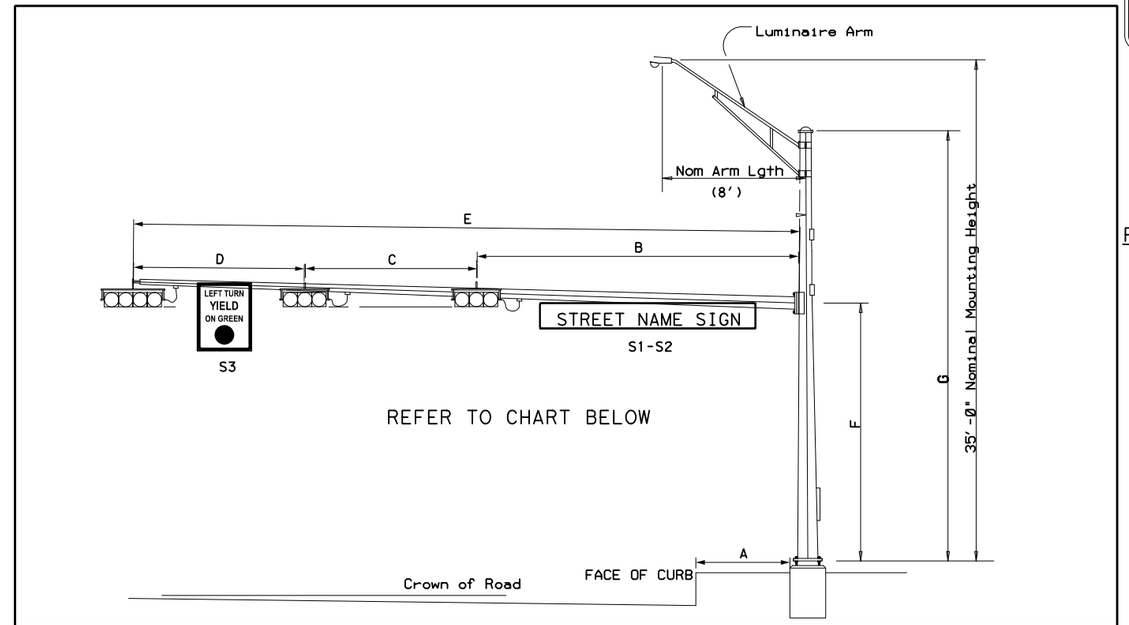
F, G



1-WAY, 5 SECTION, 12" HORIZONTAL W/ BACKPLATE

ON MAST ARM POLE #2

E



POLE/ SIGNAL HEAD DEATILS & WIRING INSIDE POLES AND ARMS

CABLE INSIDE POLES/MAST ARM

POLE NO.	FND TYPE 100 MPH	DRILL SHAFT ITEM(416)				SIGNAL CABLES (ITEM 684)			ITEM 620 LUMINAIRE CABLE	ITEM 688 APS PUSH BUTTON	NO. OF SIGNAL HEADS (LED)	NO. OF PED HEADS (LED)	LUM-A	DIMINSION (LF)						
		24"DIA TY A (LF)	36"DIA TY A (LF)	36"DIA TY B (LF)	48"DIA TY A (LF)	7CNDR 14AWG (TYA)	5CNDR 14AWG (TYA)	2CNDR 14AWG (TYC)	2-#8 INSULATED (LUM)					A	B	C	D	E	F	G
POLE 1	36A	-	13.2			40	-	-	-	-	2	-	-	27	7	10	-	20	18	-
POLE 3	36B	-	-	15.2		60	-	-	-	-	3	-	-	5	18	10	10	40	18	-
POLE 4	48A	-	-	-	21.9	130	15	10	70	1	2	1	1	17	25	12	12	50	18	30
POLE 5	24A	6	-	-		-	15	10	-	1	-	1	-	15	-	-	-	-	-	-
TOTAL		6	13.2	15.2	21.9	230	30	20	70	2	7	2	1							

PROPOSED SIGNS ON MAST ARM



ON MAST ARM POLE #3 & 4
R10-12
30"X36"
SIGN (S3)

EXISTING SIGNS ON MAST ARMS TO REMAIN



ON MAST ARM POLE #2
R10-12
SIGN (S4)



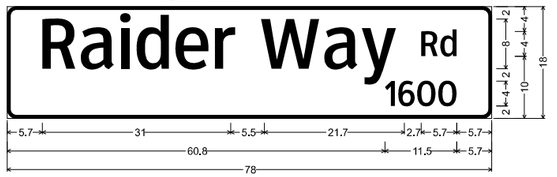
ON MAST ARM POLE #2

SIGN (S5)



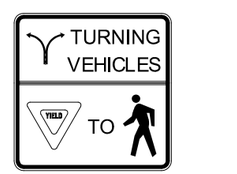
ON MAST ARM POLE #4

SIGN (S6)



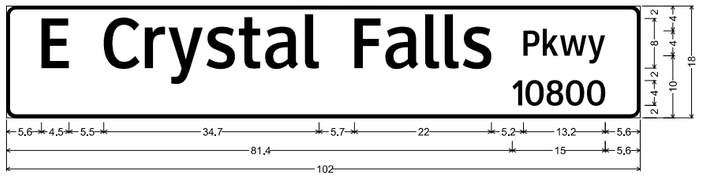
1.5" Radius, 0.5" Border, White on Green;
"Raider Way Rd", ClearviewHwy-3-W 50% spacing; "1600", ClearviewHwy-3-W 50% spacing;

SIGN (S1)



ON MAST ARM POLE #3

SIGN (S7)



1.5" Radius, 0.5" Border, White on Green;
"E Crystal Falls Pkwy", ClearviewHwy-3-W 50% spacing; "10800", ClearviewHwy-3-W 50% spacing;

SIGN (S2)

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
14531 FM 529, SUITE 160
Houston, TX. 77095

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RAIDER WAY RD @ E. CRYSTAL FALLS PKWY
PROPOSED DETAIL SUMMARY

STATE OF TEXAS
CHARLES R. STEVENS, JR.
101286
LICENSED PROFESSIONAL ENGINEER

3/30/2023
DATE

DESIGNED	CRS
DRAFTED	MMB
CHECKED	CRS
PROJECT NO.	3-00585

DRAWING NO. C 603

CHARLES R. STEVENS, JR., P.E.

SHEET OF

8150

RICHO

NOTE:

* PAVEMENT MARKINGS AND WHEELCHAIR RAMPS ARE DONE BY OTHERS.

LEGEND

- (A) REFL PAV MRK TY I (W) (4") (SLD)
- (B) REFL PAV MRK TY I (W) (4") (BRK)
- (C) REFL PAV MRK TY I (W) (8") (SLD)
- (D) REFL PAV MRK TY I (W) (12") (SLD) (CROSSWALK)
- (E) REFL PAV MRK TY I (W) (24") (SLD)
- (F) PREFAB PAV MRK TY C (W) (ARROW)
- (G) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (H) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (J) PREFAB PAV MRK TY C (W) (WORD)
- (K) RAISED PAV MRKR (REFL) TY I-C
- (L) REFL PAV MRK TY II (Y) (MED NOSE)
- (M) RAISED PAV MRKR (REFL) TY A-A
- (N) REFL PAV MRK TY I (Y) (4") (SLD)
- (P) RAISED PAV MRKR (REFL) TY C-R

N

W E

S

0 20 40

GRAPHIC SCALE (FEET)

RAIDER WAY RD

PROPOSED R.O.W.

EXISTING R.O.W.

POLE 1

POLE 2

POLE 3

POLE 4

POLE 5

1+00

0+50

E CRYSTAL FALLS PARKWAY

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
14531 FM 529, SUITE 160
Houston, TX. 77095

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RAIDER WAY RD @ E. CRYSTAL FALLS PKWY
PROPOSED PAVEMENT MARKINGS

DESIGNED	CRS
DRAFTED	MMB
CHECKED	MMB
PROJECT NO.	CRS
	3-00585

DRAWING NO. C 604

SHEET OF

NO	TXDOT/COL ITEM NO	DESCRIPTION	UNITS	QUANTITY	
				RAIDER WAY RD @ MID-BLOCK CRSSING-1	
				ESTIMATE	FINAL
1	416	DRILL SHAFT (TRF SIG POLE) (36IN)	LF	26.4	
2	502	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	1	
3	618	CONDT (PVC) (SCHD 80) (2")	LF	32	
4	618	CONDT (PVC) (SCHD 80) (2") (BORE)	LF	70	
5	618	CONDT (PVC) (SCHD 80) (3")	LF	41	
6	618	CONDT (PVC) (SCHD 80) (3") (BORE)	LF	70	
7	620	ELEC CONDR (NO. 4) BARE	LF	20	
8	620	ELEC CONDR (NO. 4) INSULATED	LF	40	
9	620	ELEC CONDR (NO. 8) BARE	LF	231	
10	620	ELEC CONDR (NO. 8) INSULATED(LUM)	LF	648	
11	624	GROUND BOX TY C (162911) W / APRON	EA	2	
12	628	ELC SER TY D(120/240)060(NS)SS(E)SP(O)	EA	1	
13	636	ALUMINUM SIGNS (TY A)	SF	2	
14	**	"PEDESTRIAN" (9"X15")(R10-3E(R)	EA	1	
15	**	"PEDESTRIAN" (9"X15")(R10-3E(L)	EA	1	
16	****680	INSTALL HWY TRAF SIG (HAWK SYSTEM)	EA	1	
17	**	POLE MOUNTED CONTROLLER ON SIGNAL POLE	EA	1	
18	**	LUMINAIRE ARM (8') AND LED LUMINAIRE HEAD-EQUIVELANT TO 250W	EA	2	
19	**	UD-TP21-REMOTE COMMUNICATION RADIO (AS DIRECTED BY COL)	EA	1	
20	****682	HAWK BACK PLATE (12 IN) (3 SEC)	EA	4	
21	****682	PED SIG SEC (12 IN) LED (2 INDICATIONS)(COUNTDOWN)	EA	2	
22	****682	VEH SIG SEC (12 IN) LED (YEL)	EA	4	
23	****682	VEH SIG SEC (12 IN) LED (RED)	EA	8	
24	****684	TRAF SIG CBL (TY C)(2 CONDR)(14 AWG)	LF	131	
25	****684	TRAF SIG CBL (TY A)(5 CONDR)(14 AWG)	LF	141	
26	****684	TRAF SIG CBL (TY A)(7 CONDR)(14 AWG)	LF	221	
27	****686	INS & HANDLE TRAF SIG PL AM(S) 1 ARM (28')(LUM)	EA	2	
28	****688	PED DETECT PUSH BUTTON (APS)	EA	2	
	****688	PED DETECTOR CONTROLLER UNIT	EA	1	

FOR CONTRACTOR INFORMATION ONLY.

CITY OF LEANDER (COL) SPECS:

**** ITEM NUMBERS: 680,682,684,686,688

** SUB TO ITEM

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
14531 FM 529, SUITE 160
Houston, TX. 77095

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RAIDER WAY RD @ MID-BLOCK CRSSING-1
BASES OF ESTIMATE

STATE OF TEXAS
CHARLES R. STEVENS, JR
101286
LICENSED PROFESSIONAL ENGINEER

CHARLES R. STEVENS, JR., P.E.

3/30/2023
DATE

DESIGNED	CRS
DRAFTED	MMB
CHECKED	MMB
PROJECT NO.	CRS
	3-00585

DRAWING NO. C 605

SHEET OF

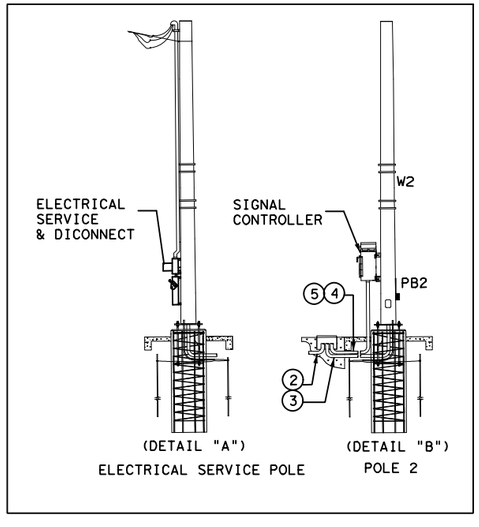
SEQUENCE FOR THE HAWK/PEDESTRIAN HYBRID BEACON

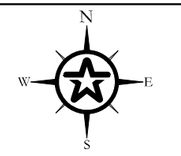


(1) Dark Untill Activated
(2) Flashing Yellow Upon Activated
(3) Steady Yellow
(4) Steady RED During Pedestrian Walk Interval
(5) Alternating Flashing RED During Pedestrian Change Interval
(6) Dark Again Untill Activated

FY Flashing Yellow **SY** Steady Yellow **SR** Steady RED **FR** Flashing RED

POLE OFFSET SCHEDULE		
POLE #	RAIDER WAY RD CENTERLINE ALIGNMENT	
	STATION	OFFSET (FT)
1	9+64	32' R
2	9+55	32' L





GRAPHIC SCALE (FEET)

LEGEND

- CONTROLLER CABINET
- SIGNAL HEAD
- PEDESTRIAN PUSH BUTTON
- PEDESTRIAN SIGNAL HEAD
- TRAFFIC SIGNAL POLE
- TRAFFIC SIGNAL MAST ARM
- LUMINAIRE
- GROUND BOX (TY D)
- GROUND BOX (TY II)
- METER LOOP SERVICE & DISCONNECT
- CONDUIT (TRENCH)
- CONDUIT (BORE)
- MAST ARM MOUNT SIGN
- DIRECTION OF TRAFFIC
- RUN DESIGNATION
- HEAD NUMBER
- -U-T- = UNDERGROUND TELEPHONE
- —E— = OVERHEAD ELECTRIC LINE
- —G— = GAS LINE
- —W— = WATER LINE
- —X— = FENCE
- —O— = UTILITY POLE

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
14531 FM 529, SUITE 160
Houston, TX. 77095

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RAIDER WAY RD @ MID-BLOCK CROSSING-1
PROPOSED TRAFFIC SIGNAL

STATE OF TEXAS
CHARLES R. STEVENS, JR.
101286
LICENSED PROFESSIONAL ENGINEER

CHARLES R. STEVENS, JR., P.E.

3/30/2023
DATE

DESIGNED	CRS
DRAFTED	MMB
CHECKED	MMB
PROJECT NO.	CRS
	3-00585

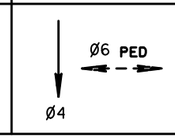
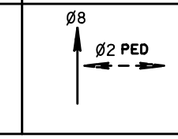
DRAWING NO. C 606

SHEET OF

ELECTRICAL AND CONDUIT SCHEDULE

RUN NO.	CONDUIT (EA)				LENGTH (FT)	ELECTRICAL CONDUCTORS (ITEM 620)				SIGNAL CABLES (ITEM 684)			
	TRENCH		BORE			XHHW #4	BARE #4	BARE #8	2-#8 XHHW (LUM)	5CNDR 14AWG (TYA)	7CNDR 14AWG (TYA)	2CNDR 14AWG (TYC)	VIVDS CABLE
	2"	3"	2"	3"									
1	1	1			18			2	2	1	1	1	
2			1	1	70			2	2	1	1	1	
3	1	1			9			2	2	1	1	1	
4		2			7			1		2	2	2	
5	1				20	2	1						
6	1				15			2	4				
TOTAL	32	41	70	70		40	20	231	508	111	111	111	-

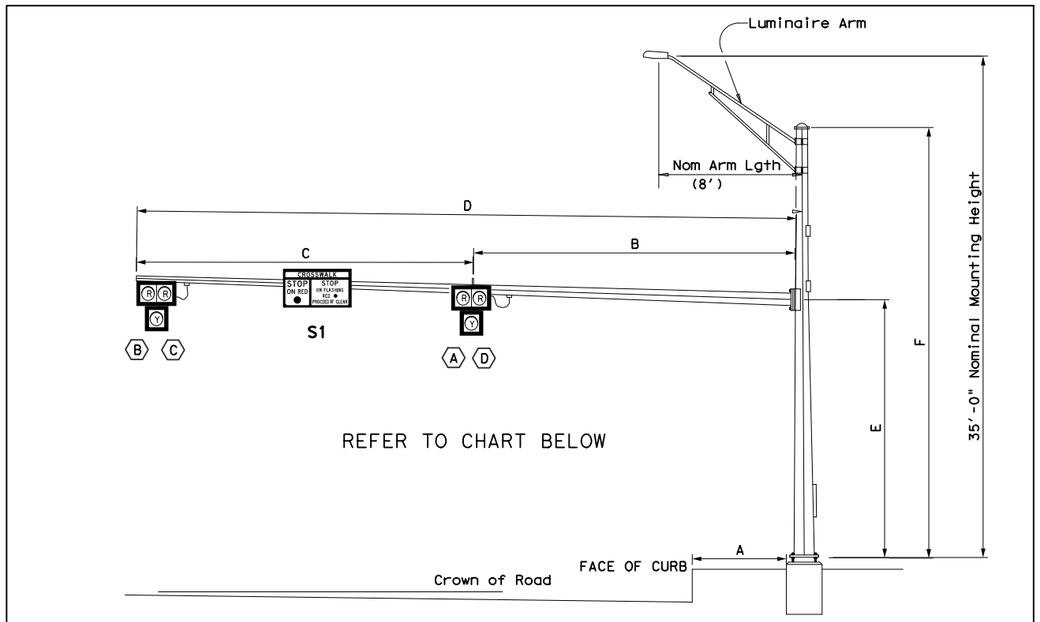
PROPOSED HAWK TRAFFIC SIGNAL PHASING

Ø4 & Ø8 PED	Ø4 & Ø6 PED	Ø2 & Ø8 PED
		

RAIDER WAY ROAD

GROUND BOX SUMMARY ITEM 624

TYPE	DESCRIPION	UNIT	QTY
C	NO. 162911 (W/APRON)	EA	2



POLE/ SIGNAL HEAD DEATILS & WIRING INSIDE POLES AND ARMS

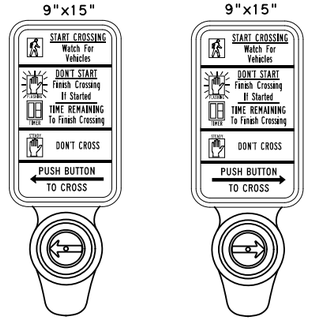
CABLE INSIDE POLES/MAST ARM

POLE NO.	FND TYPE 100 MPH	DRILL SHAFT ITEM(416)			SIGNAL CABLES (ITEM 684)			ITEM 620 LUMINAIRE CABLE	ITEM 688 APS PUSH BUTTON	NO. OF SIGNAL HEADS (LED)	NO. OF PED HEADS (LED)	LUM-A (LED)	DIMINSION (LF)					
		24"DIA TY A (LF)	30"DIA TY A (LF)	36"DIA TY A (LF)	7CNDR 14AWG (TYA)	5CNDR 14AWG (TYA)	2CNDR 14AWG (TYC)	2-#8 INSULATED (LUM)					A	B	C	D	E	F
POLE 1	36A	-	-	13.2	55	15	10	70	1	2	1	1	6	15	13	28	18	30
POLE 2	36A	-	-	13.2	55	15	10	70	1	2	1	1	6	16	12	28	18	30
TOTAL		-	-	26.4	110	30	20	140	2	4	2	2						

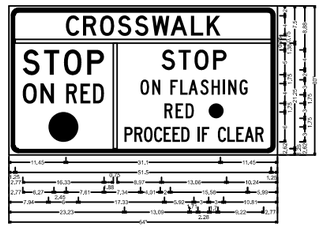
PROPOSED ACCESSIBLE PEDESTRIAN SIGNAL (APS) HEAD PUSH BUTTON WITH SIGN SCHEDULE:

R10-3eL
9"x15"

R10-3eR
9"x15"



PB2 PB1



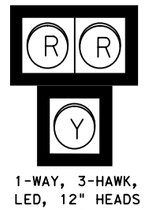
RS10-23a Pedestrian Activated Signal Overhead Sign:
1.88" Radius, 0.75" Border, 0.50" Indent, Black on, White
"CROSSWALK", D; "STOP", D; "ON" D " RED", C specified length; "STOP", D;
"ON FLASHING", C; "RED", D; "PROCEED IF CLEAR", C specified length;

PEDESTRIAN HAWK/HYBRID BEACON
RS 10-23a
54" X 30"
S1

PROPOSED SIGNAL HEAD SCHEDULE



LED PEDESTRIAN COUNTDOWN SIGNAL
W1, W2



1-WAY, 3-HAWK, LED, 12" HEADS W/ BACKPLATES
A, B, C, D

ELECTRICAL SERVICE DATA

ELECTRICAL SERVICE DESCRIPTION (SEE ED (5))	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN DISCONNECT CKT. BRK. POLE/AMP	TWO-POLE CONTACT OR AMPS ***	PANEL BD./ LOAD CENTER AMP RATING (MIN)	CIRCUIT NO.	BRANCH CKT. BRK. POLE/AMPS	KVA LOAD
TY D (120/240)060(NS)SS(E)SP(O)	1 1/2	3/#6	N/A	2P/60	30	70	T.S. LIGHT	1P/50 2P/20	<6.0

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
14531 FM 529, SUITE 160
Houston, TX. 77095

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RAIDER WAY RD @ MID-BLOCK CROSSING-1
PROPOSED DETAIL SUMMARY

STATE OF TEXAS
CHARLES R. STEVENS, JR.
101286
LICENSED PROFESSIONAL ENGINEER

3/30/2023
DATE

DESIGNED	CRS
DRAFTED	MMB
CHECKED	CRS
PROJECT NO.	3-00585

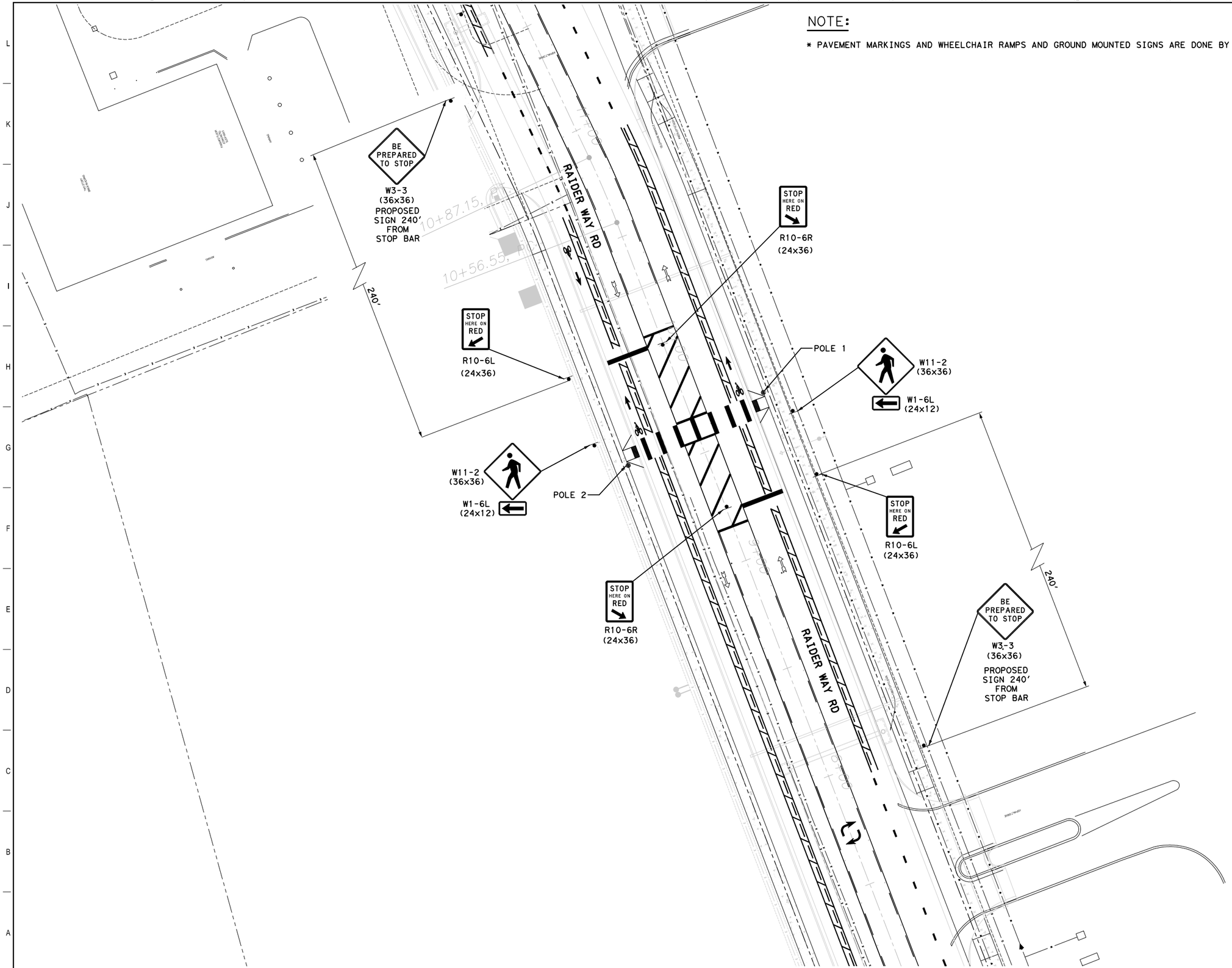
DRAWING NO. C 607

CHARLES R. STEVENS, JR., P.E. SHEET OF

8150
RICHO

NOTE:

* PAVEMENT MARKINGS AND WHEELCHAIR RAMPS AND GROUND MOUNTED SIGNS ARE DONE BY OTHERS.



N
W E
S

0 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 6053

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
14531 FM 529, SUITE 160
Houston, TX. 77095

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RAIDER WAY RD @ MID-BLOCK CROSSING-1
PROPOSED PAVEMENT MARKINGS

STATE OF TEXAS
CHARLES R. STEVENS, JR.
101286
LICENSED PROFESSIONAL ENGINEER

CHARLES R. STEVENS, JR., P.E.

3/30/2023
DATE

DESIGNED	CRS
DRAFTED	MMB
CHECKED	CRS
PROJECT NO.	3-00585

DRAWING NO. C 608

SHEET OF

NO	TXDOT/COL ITEM NO	DESCRIPTION	UNITS	QUANTITY	
				RAIDER WAY RD @ MID-BLOCK CRSSING-2	
				ESTIMATE	FINAL
1	416	DRILL SHAFT (TRF SIG POLE) (36IN)	LF	26.4	
2	502	BARRICADES, SIGNS AND TRAFFIC HANDLING	MO	1	
3	618	CONDT (PVC) (SCHD 80) (2")	LF	32	
4	618	CONDT (PVC) (SCHD 80) (2") (BORE)	LF	70	
5	618	CONDT (PVC) (SCHD 80) (3")	LF	41	
6	618	CONDT (PVC) (SCHD 80) (3") (BORE)	LF	70	
7	620	ELEC CONDR (NO. 4) BARE	LF	20	
8	620	ELEC CONDR (NO. 4) INSULATED	LF	40	
9	620	ELEC CONDR (NO. 8) BARE	LF	231	
10	620	ELEC CONDR (NO. 8) INSULATED(LUM)	LF	648	
11	624	GROUND BOX TY C (162911) W / APRON	EA	2	
12	628	ELC SER TY D(120/240)060(NS)SS(E)SP(O)	EA	1	
13	636	ALUMINUM SIGNS (TY A)	SF	2	
14	**	"PEDESTRIAN" (9"X15")(R10-3E(R)	EA	1	
15	**	"PEDESTRIAN" (9"X15")(R10-3E(L)	EA	1	
16	****680	INSTALL HWY TRAF SIG (HAWK SYSTEM)	EA	1	
17	**	POLE MOUNTED CONTROLLER ON SIGNAL POLE	EA	1	
18	**	LUMINAIRE ARM (8') AND LED LUMINAIRE HEAD-EQUIVELANT TO 250W	EA	2	
19	**	UD-TP21-REMOTE COMMUNICATION RADIO (AS DIRECTED BY COL)	EA	1	
20	****682	HAWK BACK PLATE (12 IN) (3 SEC)	EA	4	
21	****682	PED SIG SEC (12 IN) LED (2 INDICATIONS)(COUNTDOWN)	EA	2	
22	****682	VEH SIG SEC (12 IN) LED (YEL)	EA	4	
23	****682	VEH SIG SEC (12 IN) LED (RED)	EA	8	
24	****684	TRAF SIG CBL (TY C)(2 CONDR)(14 AWG)	LF	131	
25	****684	TRAF SIG CBL (TY A)(5 CONDR)(14 AWG)	LF	141	
26	****684	TRAF SIG CBL (TY A)(7 CONDR)(14 AWG)	LF	221	
27	****686	INS & HANDLE TRAF SIG PL AM(S) 1 ARM (28')(LUM)	EA	2	
28	****688	PED DETECT PUSH BUTTON (APS)	EA	2	
	****688	PED DETECTOR CONTROLLER UNIT	EA	1	

FOR CONTRACTOR INFORMATION ONLY.

CITY OF LEANDER (COL) SPECS:

**** ITEM NUMBERS: 680, 682, 684, 686, 688

** SUB TO ITEM

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
14531 FM 529, SUITE 160
Houston, TX. 77095

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RAIDER WAY RD @ MID-BLOCK CRSSING-2
BASES OF ESTIMATE

STATE OF TEXAS
CHARLES R. STEVENS, JR.
101286
LICENSED PROFESSIONAL ENGINEER

CHARLES R. STEVENS, JR., P.E.

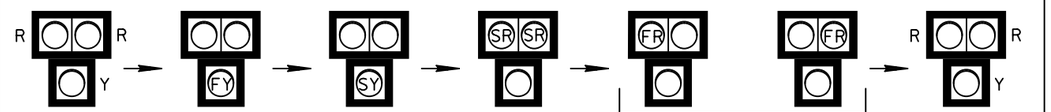
3/30/2023
DATE

DESIGNED	CRS
DRAFTED	MMB
CHECKED	CRS
PROJECT NO.	3-00585

DRAWING NO. C 609

SHEET OF

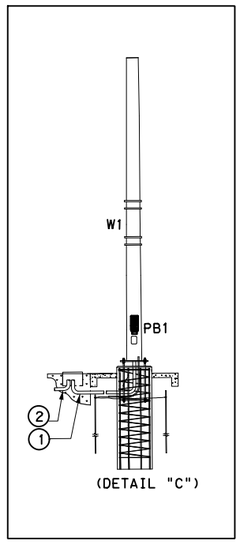
SEQUENCE FOR THE HAWK/PEDESTRIAN HYBRID BEACON



(1) Dark Until Activated
(2) Flashing Yellow Upon Activated
(3) Steady Yellow
(4) Steady RED During Pedestrian Walk Interval
(5) Alternating Flashing RED During Pedestrian Change Interval
(6) Dark Again Until Activated

FY Flashing Yellow SY Steady Yellow SR Steady RED FR Flashing RED

POLE OFFSET SCHEDULE		
POLE #	RAIDER WAY RD CENTERLINE ALIGNMENT	
	STATION	OFFSET (FT)
1	9+64	32' R
2	9+55	32' L



(DETAIL "C")

(DETAIL "A") ELECTRICAL SERVICE POLE

(DETAIL "B") POLE 2

N
W
E
S

0 20 40
GRAPHIC SCALE (FEET)

LEGEND

- CONTROLLER CABINET
- SIGNAL HEAD
- PEDESTRIAN PUSH BUTTON
- PEDESTRIAN SIGNAL HEAD
- TRAFFIC SIGNAL POLE
- TRAFFIC SIGNAL MAST ARM
- LUMINAIRE
- GROUND BOX (TY D)
- GROUND BOX (TY II)
- METER LOOP SERVICE & DISCONNECT
- CONDUIT (TRENCH)
- CONDUIT (BORE)
- MAST ARM MOUNT SIGN
- DIRECTION OF TRAFFIC
- RUN DESIGNATION
- HEAD NUMBER

-U-T- = UNDERGROUND TELEPHONE
-E- = OVERHEAD ELECTRIC LINE
-G- = GAS LINE
-W- = WATER LINE
-X- = FENCE
-O- = UTILITY POLE

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
14531 FM 529, SUITE 160
Houston, TX. 77095

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RAIDER WAY RD @ MID-BLOCK CROSSING-2
~~PROPOSED~~ TRAFFIC SIGNAL

STATE OF TEXAS
CHARLES R. STEVENS, JR.
101286
LICENSED PROFESSIONAL ENGINEER

CHARLES R. STEVENS, JR., P.E.

3/30/2023
DATE

DESIGNED	CRS
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CHECKED	MMB
PROJECT NO.	CRS
	3-00585

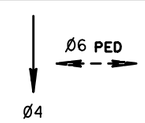
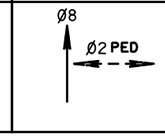
DRAWING NO. C 610

SHEET OF

ELECTRICAL AND CONDUIT SCHEDULE

RUN NO.	CONDUIT (EA)				LENGTH	ELECTRICAL CONDUCTORS (ITEM 620)				SIGNAL CABLES (ITEM 684)			
	TRENCH		BORE			XHHW #4	BARE #4	BARE #8	2#8 XHHW (LUM)	5CNDR 14AWG (TYA)	7CNDR 14AWG (TYA)	2CNDR 14AWG (TYC)	VIVDS CABLE
	2"	3"	2"	3"	(FT)								
1	1	1			18			2	2	1	1	1	
2			1	1	70			2	2	1	1	1	
3	1	1			9			2	2	1	1	1	
4		2			7			1		2	2	2	
5	1				20	2	1						
6	1				15			2	4				
TOTAL	32	41	70	70		40	20	231	508	111	111	111	-

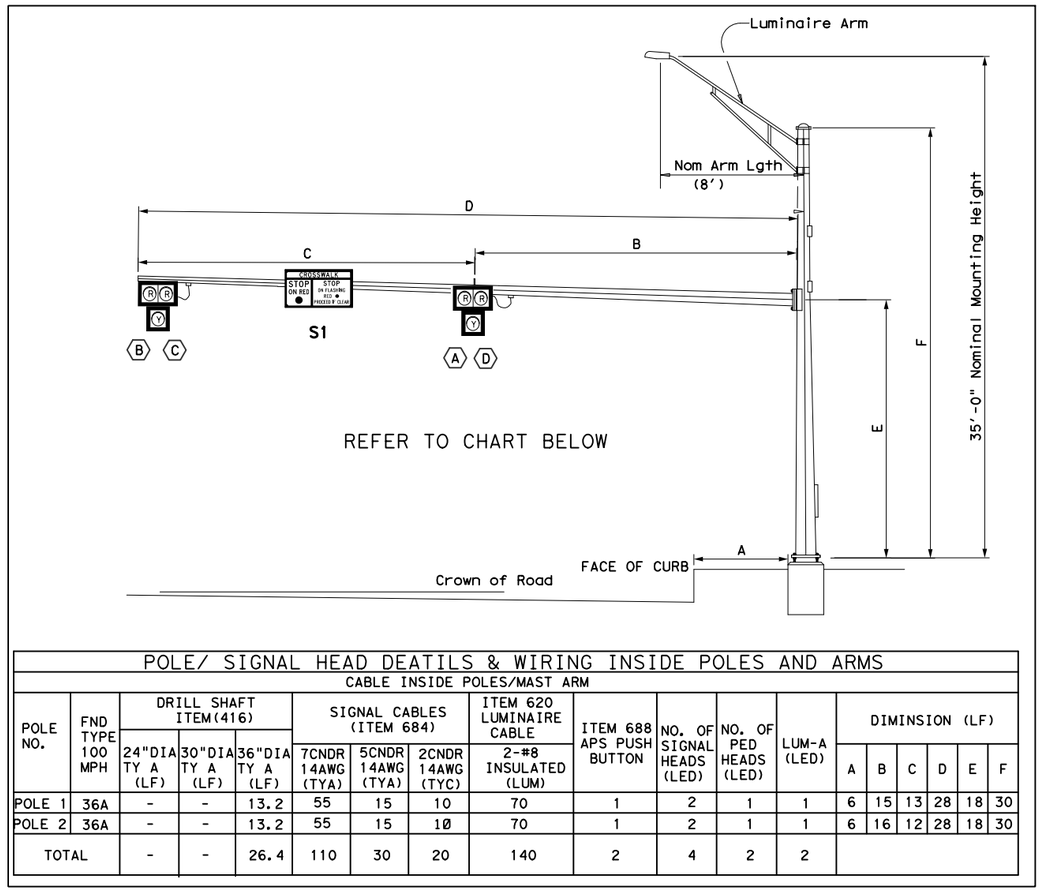
PROPOSED HAWK TRAFFIC SIGNAL PHASING

Ø4 & Ø8 PED	Ø4 & Ø6 PED	Ø2 & Ø8 PED
		

RAIDER WAY ROAD

GROUND BOX SUMMARY ITEM 624

TYPE	DESCRIPION	UNIT	QTY
C	NO. 162911 (W/APRON)	EA	2



POLE/ SIGNAL HEAD DEATILS & WIRING INSIDE POLES AND ARMS

CABLE INSIDE POLES/MAST ARM

POLE NO.	FND TYPE 100 MPH	DRILL SHAFT ITEM(416)			SIGNAL CABLES (ITEM 684)			ITEM 620 LUMINAIRE CABLE	ITEM 688 APS PUSH BUTTON	NO. OF SIGNAL HEADS (LED)	NO. OF PED HEADS (LED)	LUM-A (LED)	DIMINSION (LF)					
		24"DIA TY A (LF)	30"DIA TY A (LF)	36"DIA TY A (LF)	7CNDR 14AWG (TYA)	5CNDR 14AWG (TYA)	2CNDR 14AWG (TYC)	2-#8 INSULATED (LUM)					A	B	C	D	E	F
POLE 1	36A	-	-	13.2	55	15	10	70	1	2	1	1	6	15	13	28	18	30
POLE 2	36A	-	-	13.2	55	15	10	70	1	2	1	1	6	16	12	28	18	30
TOTAL		-	-	26.4	110	30	20	140	2	4	2	2						

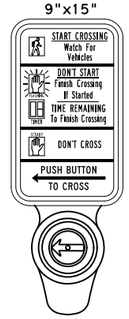
ELECTRICAL SERVICE DATA

ELECTRICAL SERVICE DESCRIPTION (SEE ED (5))	SERVICE CONDUIT SIZE	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN DISCONNECT CKT. BRK. POLE/AMP	TWO-POLE CONTACT OR AMPS ***	PANEL BD./ LOAD CENTER AMP RATING (MIN)	CIRCUIT NO.	BRANCH CKT. BRK. POLE/AMPS	KVA LOAD
TY D (120/240)060(NS)SS(E)SP(O)	1 1/4	3/#6	N/A	2P/60	30	70	T.S. LIGHT	1P/50 2P/20	<6.0

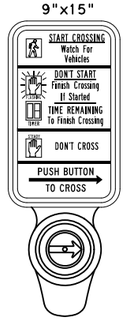
PROPOSED ACCESSIBLE PEDESTRIAN SIGNAL (APS) HEAD PUSH BUTTON WITH SIGN SCHEDULE:

R10-3eL 9"x15"

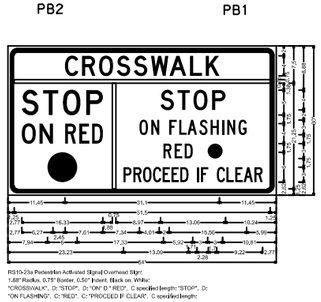
R10-3eR 9"x15"



PB2



PB1



RS10-23a Pedestrian Actuated Signal Overhead Sign: 1.88" Radius, 0.75" Border, 0.50" Inset, Black on, White; "CROSSWALK", D; "STOP", D- "ON" D " RED", C specified length; "STOP", D; "ON FLASHING", D; "RED", C- "PROCEED IF CLEAR", C specified length;

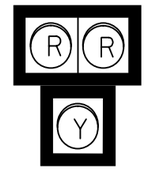
PEDESTRIAN
HAWK/HYBRID
BEACON
RS 10-23a
54" x 30"
S1

PROPOSED SIGNAL HEAD SCHEDULE



LED PEDESTRIAN COUNTDOWN SIGNAL

W1, W2



1-WAY, 3-HAWK, LED, 12" HEADS W/ BACKPLATES

A, B, C, D

REV.	DESCRIPTION	DATE

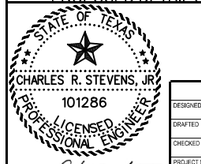
Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
14531 FM 529, SUITE 160
Houston, TX. 77095

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RAIDER WAY RD @ MID-BLOCK CROSSING-2
PROPOSED DETAIL SUMMARY



3/30/2023
DATE

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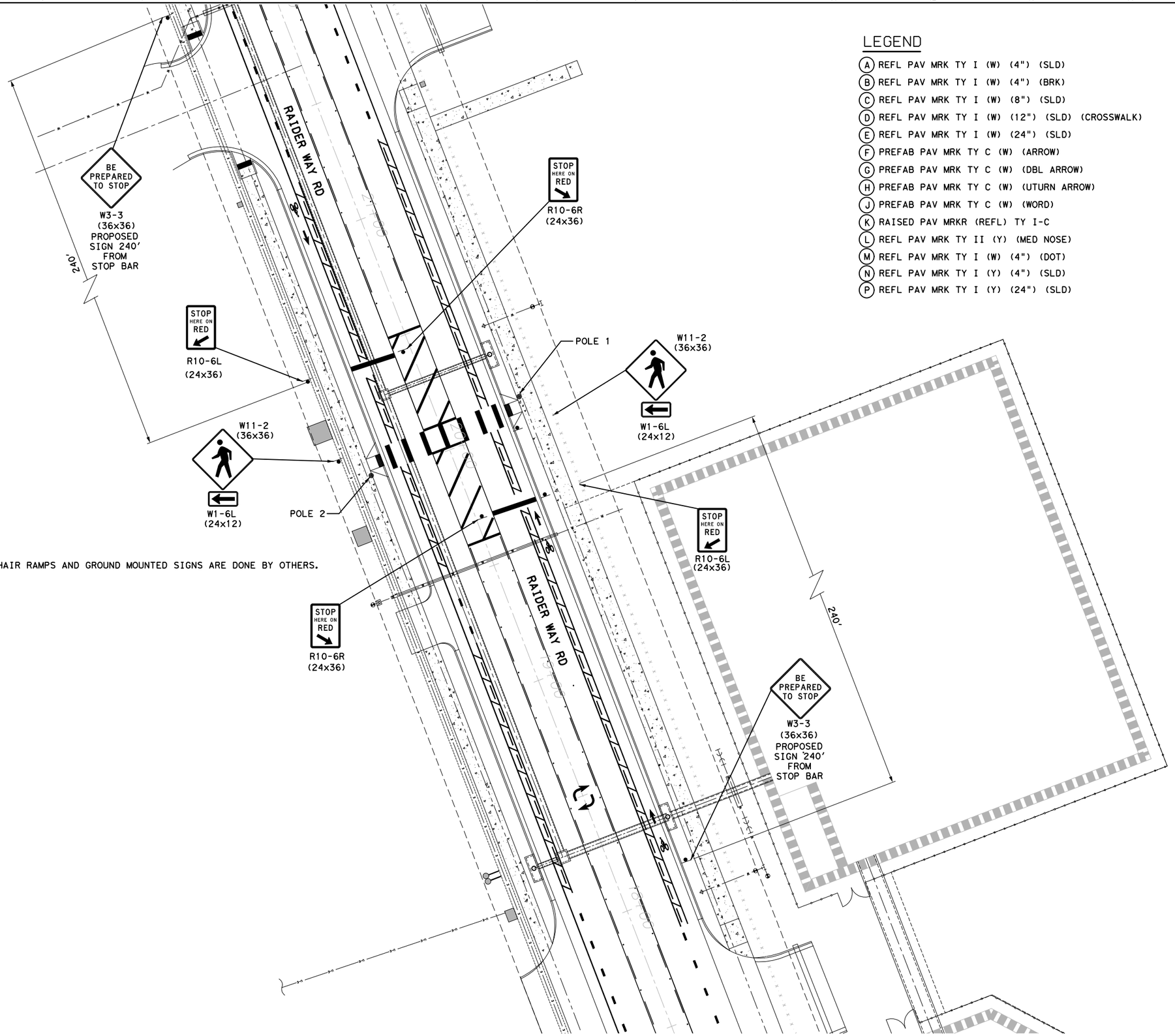
PROJECT NO.	3-00585

DRAWING NO. C 611

CHARLES R. STEVENS, JR., P.E. SHEET OF



LEGEND

- (A) REFL PAV MRK TY I (W) (4") (SLD)
- (B) REFL PAV MRK TY I (W) (4") (BRK)
- (C) REFL PAV MRK TY I (W) (8") (SLD)
- (D) REFL PAV MRK TY I (W) (12") (SLD) (CROSSWALK)
- (E) REFL PAV MRK TY I (W) (24") (SLD)
- (F) PREFAB PAV MRK TY C (W) (ARROW)
- (G) PREFAB PAV MRK TY C (W) (DBL ARROW)
- (H) PREFAB PAV MRK TY C (W) (UTURN ARROW)
- (J) PREFAB PAV MRK TY C (W) (WORD)
- (K) RAISED PAV MRKR (REFL) TY I-C
- (L) REFL PAV MRK TY II (Y) (MED NOSE)
- (M) REFL PAV MRK TY I (W) (4") (DOT)
- (N) REFL PAV MRK TY I (Y) (4") (SLD)
- (P) REFL PAV MRK TY I (Y) (24") (SLD)

NOTE:

* PAVEMENT MARKINGS AND WHEELCHAIR RAMPS AND GROUND MOUNTED SIGNS ARE DONE BY OTHERS.

N
W E
S

0 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

STEVENS TECHNICAL
TEXAS REGISTERED ENGINEERING FIRM F-13097
14531 FM 529, SUITE 160
Houston, TX. 77095

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

RAIDER WAY RD @ MID-BLOCK CROSSING-2
PROPOSED PAVEMENT MARKINGS

STATE OF TEXAS
CHARLES R. STEVENS, JR
101286
LICENSED PROFESSIONAL ENGINEER

3/30/2023
DATE

CHARLES R. STEVENS, JR., P.E.

DESIGNED	CRS
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PROJECT NO.	CRS
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DRAWING NO. C 612

SHEET OF

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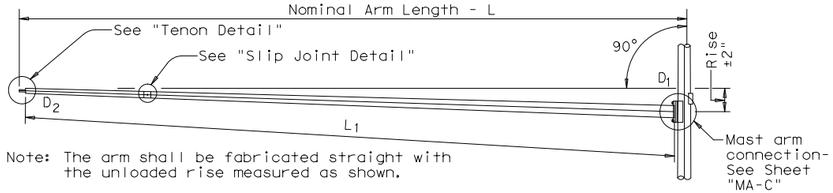
Arm Length	ROUND POLES					POLYGONAL POLES					Foundation Type
	D_B	D_{19}	D_{24}	D_{30}	① thk	D_B	D_{19}	D_{24}	D_{30}	① thk	
ft.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	
20	12.0	9.3	8.6	7.8	.239	12.5	9.5	8.7	7.8	.239	36-A
24	12.0	9.3	8.6	7.8	.239	13.0	10.0	9.2	8.3	.239	36-A
28	12.0	9.3	8.6	7.8	.239	13.5	10.5	9.7	8.8	.239	36-A
32	13.0	10.3	9.6	8.8	.239	14.0	11.0	10.2	9.3	.239	36-A
36	13.5	10.8	10.1	9.3	.239	15.0	12.0	11.2	10.3	.239	36-A
40	14.0	11.3	10.6	9.8	.239	16.0	13.0	12.2	11.3	.239	36-B
44	14.5	11.8	11.1	10.3	.239	16.5	13.5	12.7	11.8	.239	36-B

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	8.0	5.3	.179	1′-8"	19.1	8.0	3.5	.179	1′-7"
24	23.1	9.0	5.8	.179	1′-9"	23.1	9.0	3.5	.179	1′-8"
28	27.1	9.5	5.7	.179	1′-10"	27.1	10.0	3.5	.179	1′-9"
32	31.0	9.5	5.2	.239	1′-11"	31.0	9.5	3.5	.239	1′-10"
36	35.0	10.0	5.1	.239	2′-0"	35.0	10.0	3.5	.239	1′-11"
40	39.0	10.5	5.1	.239	2′-3"	39.0	11.0	3.5	.239	2′-1"
44	43.0	11.0	5.1	.239	2′-8"	43.0	11.5	4.0	.239	2′-3"

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)

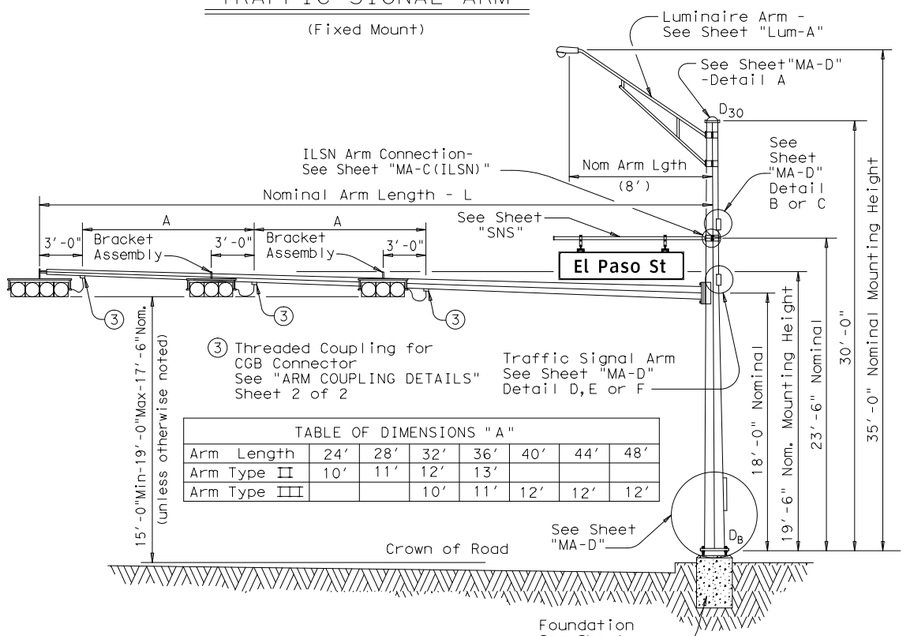


TABLE OF DIMENSIONS "A"

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-100		20S-100		20-100	1
24	24L-100		24S-100		24-100	
28	28L-100	4	28S-100		28-100	
32	32L-100		32S-100		32-100	
36	36L-100		36S-100		36-100	
40	40L-100		40S-100		40-100	1
44	44L-100		44S-100		44-100	

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-100		20II-100	1		
24	24I-100		24II-100			
28	28I-100		28II-100	4		
32			32II-100		32III-100	
36			36II-100		36III-100	
40					40III-100	1
44					44III-100	

Luminaire Arms (1 per 30′ pole)

Nominal Arm Length	Quantity
8′ Arm	4

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"	5
2"	4′-3"	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.

SHEET 1 OF 2

STATE OF TEXAS
CHARLES R. STEVENS, JR.
101286
PROFESSIONAL ENGINEER

CHARLES R. STEVENS, JR., P.E. 3/30/2023 DATE

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES

SINGLE MAST ARM ASSEMBLY

(100 MPH WIND ZONE)

SMA-100(1)-12

© TxDOT August 1995

DN: MS	CK: JSY	DW: MMF	CK: JSY

REVISIONS
5-96
11-99
1-12

CONT	SECT	JOB	HIGHWAY

DIST	COUNTY	SHEET NO.
		C 613

123A

SHEET OF

DATE:
FILE:

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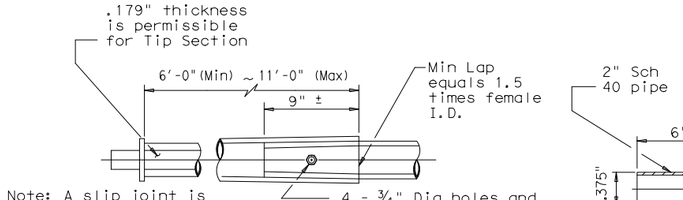
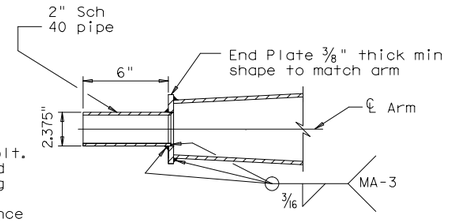


SLIP JOINT DETAIL



TENON DETAIL

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.

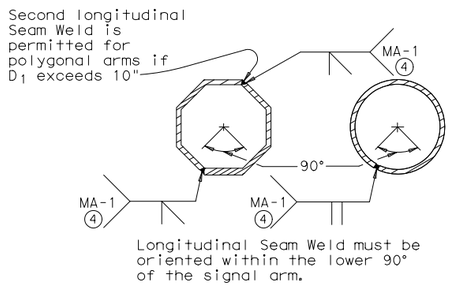
If backplates are not required for improved visibility they should not be applied to the signal heads or, if they must be applied, they should be vented as a first and inexpensive measure to mitigate vibrations.

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.

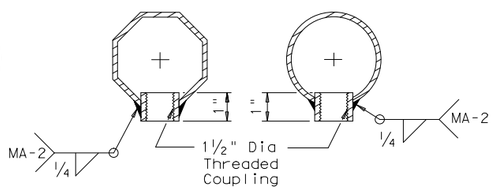
This visual inspection shall be repeated after each modification of the structure that could affect its aeroelastic response. Excessive vibrations shall not be allowed to continue for more than two days.

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



ARM COUPLING DETAILS

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

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 100 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

(100 MPH WIND ZONE)

SMA-100(2)-12

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DN: MS	CK: JSY	DW: MWF	CK: JSY

REVISIONS
5-96
1-12

CONT	SECT	JOB	HIGHWAY
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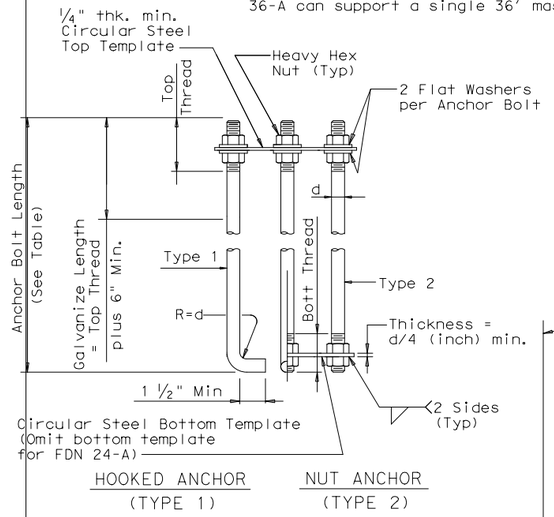
FOUNDATION DESIGN TABLE

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)

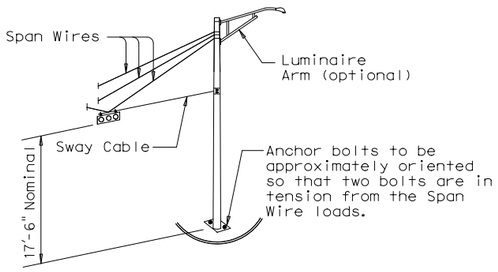
FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)

		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′ ×24′	40′ X 36′
					44′ x 36′

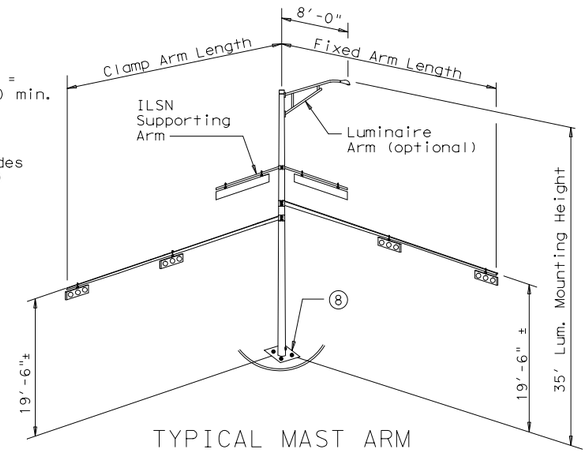
EXAMPLE:
1. For 80mph design wind speed, foundation 30-A can support up to a 32′ arm with another arm up to 28′
2. For 100mph design wind speed, foundation 36-A can support a single 36′ mast arm.



ANCHOR BOLT ASSEMBLY

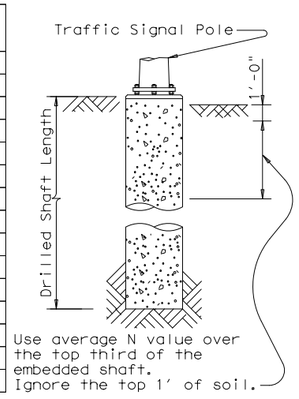


TYPICAL STRAIN POLE ASSEMBLY



TYPICAL MAST ARM ASSEMBLY

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



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.

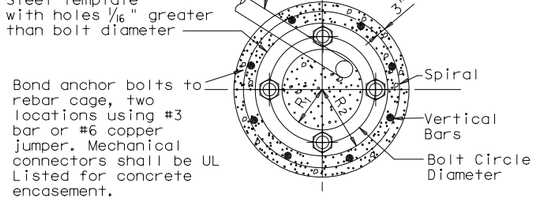
⑤ If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.

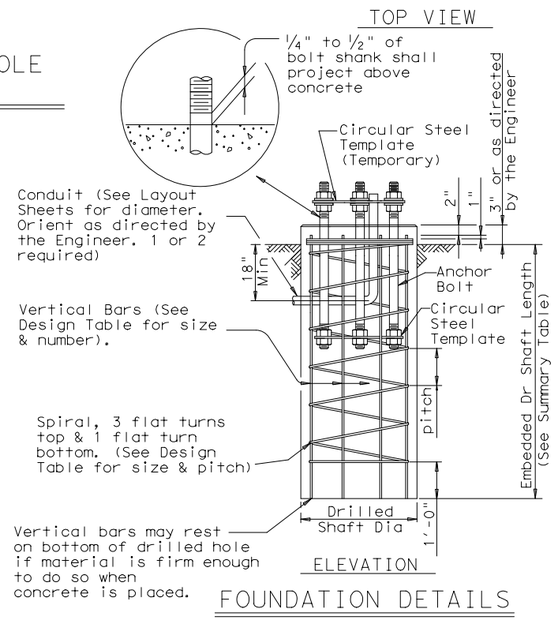
⑥ Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

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.





FOUNDATION DETAILS

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
RAIDER WAY RD@ E. CRYSTAL FALL PKWY								
POLE 1	10	36-A	1			13.2		
POLE 3	10	36-B	1				15.2	
POLE 5	10	24-A	1	6				
RAIDERS WAY RD @ MID-BLOCK CROSSING-1								
POLE 1	10	36-A	1			13.2		
POLE 2	10	36-A	1			13.2		
RAIDERS WAY RD @ MID-BLOCK CROSSING-2								
POLE 1	10	36-A	1			13.2		
POLE 2	10	36-A	1			13.2		
TOTAL DRILLED SHAFT LENGTHS				6		66	15.2	

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".

RAIDER WAY RD @ E. CRYSTAL FALL PKWY
RAIDER WAY RD @ MIDBLOCK CROSSING 1 & 2

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LICENSED PROFESSIONAL ENGINEER

CHARLES R. STEVENS, JR., P.E. — 3/30/2023 DATE

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL POLE FOUNDATION

TS-FD-12

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

REVISIONS: 5-96, 11-98, 1-12

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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 See note above plus: one (or two if ILSN attached) small hand hole, clamp-on simplex		24' Poles with ILSN See note above plus one small hand hole		19.50' (Single Mast Arm) 20.25' (Dual Mast Arm) Poles with no Luminaire and no ILSN See note above
Single Mast Arm					
Lf ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
50	50L	1	50S		50	
55	55L		55S		55	
60	60L		60S		60	
65	65L		65S		65	
Dual Mast Arm						
Lf ft. / Lc ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
50 / 20	5020L		5020S		5020	
24	5024L		5024S		5024	
28	5028L		5028S		5028	
32	5032L		5032S		5032	
36	5036L		5036S		5036	
40	5040L		5040S		5040	
44	5044L		5044S		5044	
55 / 20	5520L		5520S		5520	
24	5524L		5524S		5524	
28	5528L		5528S		5528	
32	5532L		5532S		5532	
36	5536L		5536S		5536	
40	5540L		5540S		5540	
44	5544L		5544S		5544	
60 / 20	6020L		6020S		6020	
24	6024L		6024S		6024	
28	6028L		6028S		6028	
32	6032L		6032S		6032	
36	6036L		6036S		6036	
40	6040L		6040S		6040	
44	6044L		6044S		6044	
65 / 20	6520L		6520S		6520	
24	6524L		6524S		6524	
28	6528L		6528S		6528	
32	6532L		6532S		6532	
36	6536L		6536S		6536	
40	6540L		6540S		6540	
44	6544L		6544S		6544	

Shipping Parts List

Traffic Signal Arms (Fixed Mount) (1 per pole)
Ship each arm with listed equipment attached

Nominal Arm Length	Type IV Arm (4 Signals) 3 Bracket Assembly and 4 CGB Connectors	
ft.	Designation	Quantity
50	50IV	1
55	55IV	
60	60IV	
65	65IV	

Luminaire Arms (1 per 30' pole)

Nominal Arm Length	Quantity
8' Arm	1

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

Nominal Arm Length	Quantity
7' Arm	
9' Arm	

Traffic Signal Arms (80 MPH Clamp-On Mount) (1 per pole) Ship each arm with listed equipment attached

Nominal Arm Length	Type I Arm (1 Signal) 2 CGB connector and 1 clamp w/bolts and washers		Type II Arm (2 Signals) 1 Bracket Assembly and 3 CGB connectors, and 1 clamp w/bolts and washers		Type III Arm (3 Signals) 2 Bracket Assembly and 4 CGB connectors, and 1 clamp w/bolts and washers	
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	
44					44III-80	

Traffic Signal Arms (100 MPH Clamp-On Mount) (1 per pole) Ship each arm with listed equipment attached

Nominal Arm	Type I Arm (1 Signal) 2 CGB connector and 1 clamp w/bolts and washers		Type II Arm (2 Signals) 1 Bracket Assembly and 3 CGB connectors, and 1 clamp		Type III Arm (3 Signals) 2 Bracket Assembly and 4 CGB connectors, and 1 clamp	
ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20I-100					
24	24I-100		24II-100			
28	28I-100		28II-100			
32			32II-100		32III-100	
36			36II-100		36III-100	
40					40III-100	
44					44III-100	

Anchor Bolt Assemblies (1 per pole)

Anchor Bolt Diameter	Anchor Bolt Length	Quantity
2 1/2 "	5' - 3"	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.

Foundation Summary Table **

Location Ident.	Avg. N Blow/ft.	No. Each	Drill Shaft *** Length (feet) 48-A
E CRYSTAL FALLS @ RAIDERS WAY			
POLE #4	10	1	21.9
Total Drill Shaft Length			21.9

Notes

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

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

Abbreviations
Lf= Fixed Arm Length
Lc= Clamp-on Arm Length (44' Max.)

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CHARLES R. STEVENS, JR., P.E. 3/30/2023 DATE

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LONG MAST ARM ASSEMBLY PARTS LIST

LMA(5)-12

Sheet 5 of 5

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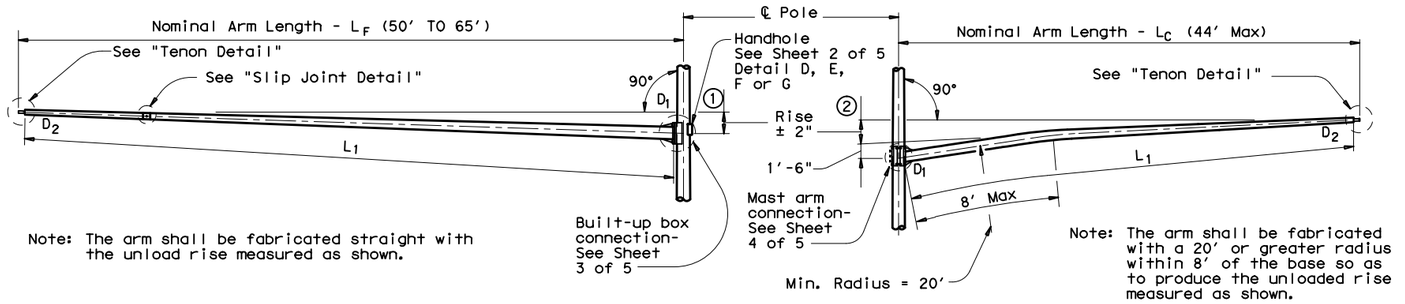


Note: The arm shall be fabricated straight with the unload rise measured as shown.

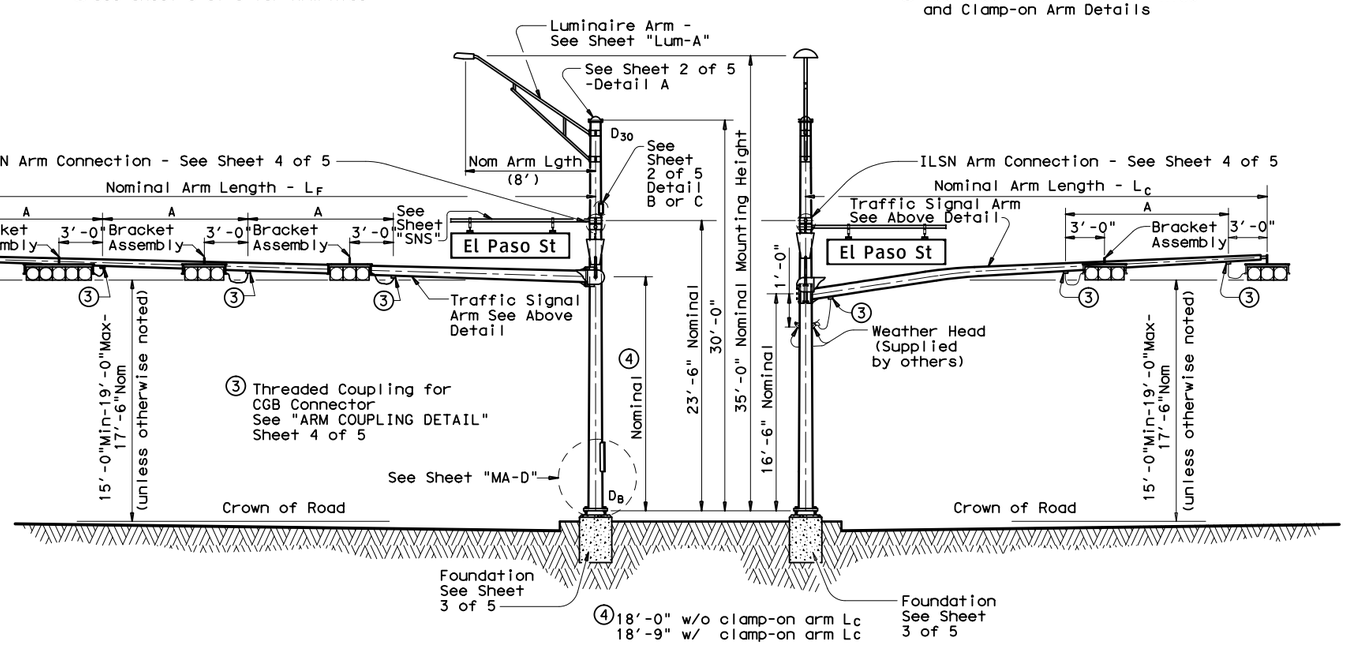
Note: The arm shall be fabricated with a 20' or greater radius within 8' of the base so as to produce the unloaded rise measured as shown.

FIXED MOUNT TRAFFIC SIGNAL ARM

① See Sheet 3 of 5 for Arm Rise

CLAMP-ON TRAFFIC SIGNAL ARM (IF REQUIRED)

② See Sheet 4 of 5 for Arm Rise and Clamp-on Arm Details

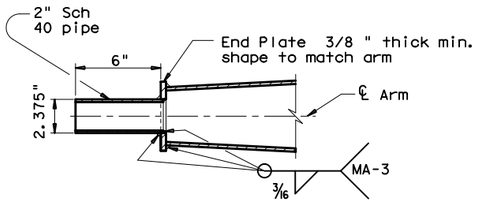


ELEVATION
(Showing fixed mount arm)

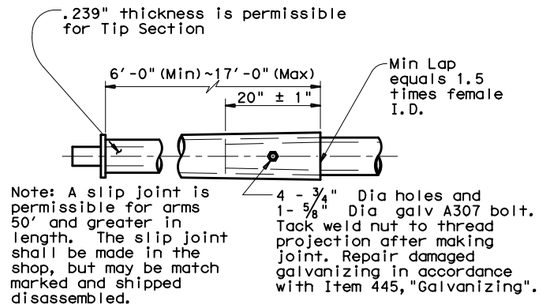
STRUCTURE ASSEMBLY

ELEVATION
(Showing clamp-on arm)

TABLE OF DIMENSIONS "A"										
Arm Length	24'	28'	32'	36'	40'	44'	50'	55'	60'	65'
Arm Type II	10'	11'	12'	13'						
Arm Type III			10'	11'	12'	12'				
Arm Type IV							12'	12'	12'	12'



TENON DETAIL



Note: A slip joint is permissible for arms 50' and greater in length. The slip joint shall be made in the shop, but may be match marked and shipped disassembled.

SLIP JOINT DETAIL (FIXED MOUNT ARM)

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 can be either 100 mph or 80 mph plus a 1.3 gust factor. If clamp-on traffic signal is required, designs are based on an arm included angle of 90 degrees or more. Angles of less than approximately 75 degrees will require a special design.

Poles are designed to support one 8'-0" luminaire arm, two 9'-0" internally lighted street name (ILSN) signs and two traffic signal arms with limited length combinations.

Each arm with its related attachment is shown below

Arm	Equivalent DL ⑤	WL EPA ⑤⑥
8' Luminaire Arm	Luminaire 60 lbs	1.6 sq ft
9' ILSN Arm	Sign 85 lbs	11.5 sq ft
50' to 65' Fixed Mount Arm	Signal Loads 310 lbs	52 sq ft
Up to 44' Clamp-on Arm	Signal Loads 180 lbs	32.4 sq ft

⑤ Equivalent dead load plus horizontal wind load applied at the end of arm except ILSN arm, which applied 4.5' from the centerline of the pole.

⑥ Effective projected area (actual area times drag coefficient) for the application of horizontal wind load.

Except as noted in Sheet 1 thru 5 of 5, other details not covered shall refer to Standard Sheet "MA-D" for pole 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.

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. Material, fabrication tolerances, and shipping practices shall also 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.

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

Installation of damping plate for the long mast arm is not recommended.

Provision of the bracket assembly used to support the traffic signal heads shall be under the direction of the Engineer for approval.

Design also conforms to NCHRP Report 412 for fatigue resistance except that there are no stiffeners at the base plate. TxDOT is conducting tests to determine if stiffeners at the base plate will or will not result in optimal performance; depending upon the results of the tests, poles may need a retrofit to ensure optimal fatigue performance.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES
LONG MAST ARM ASSEMBLY (50 TO 65 FT) (80 AND 100 MPH WIND ZONE)
LMA(1)-12

Sheet 1 of 5

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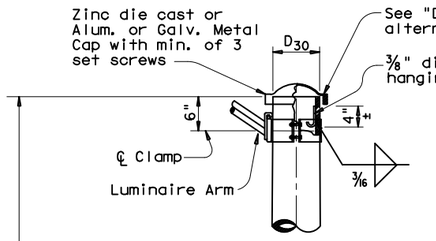
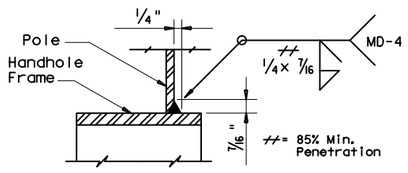
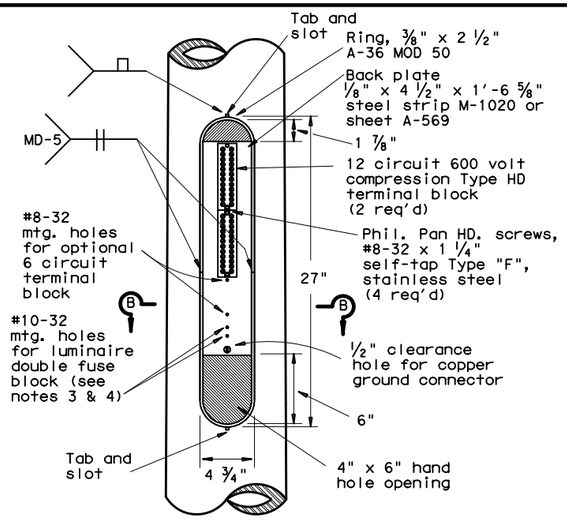


DETAIL A

(for pole with luminaire)



DETAIL H

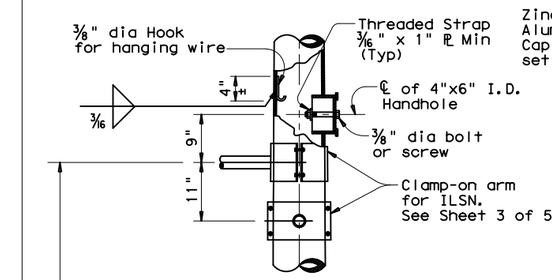


ACCESS COMPARTMENT

MATERIALS	
Round Shafts or Polygonal Shafts (7)	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 (8)
Plates (7)	ASTM A36, A588, or A572 Gr.50
Connection Bolts	ASTM A325, or A449 except where noted
Pin Bolts	ASTM A325
Pipe (7)	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

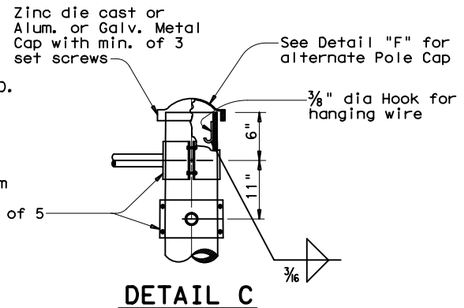
(7) ASTM A572, A1008 HSLAS, A1011 HSLAS, A1008 HSLAS-F, A1011 HSLAS-F, or A1011 SS may have higher yield strengths but shall not have less elongation than the grade indicated.

(8) ASTM A1011 SS Gr.50 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.

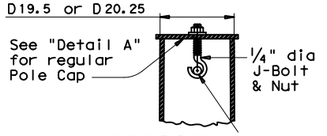


DETAIL B

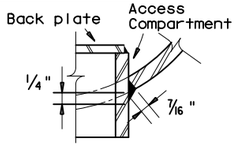
(If ILSN applied)



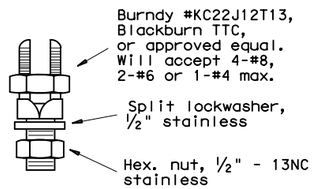
DETAIL C



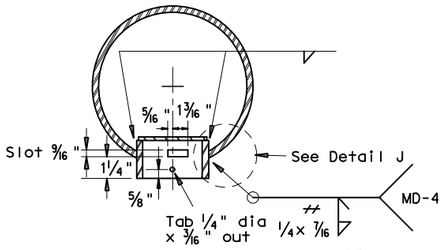
SECTION Y-Y



DETAIL J



COPPER GROUND CONNECTOR

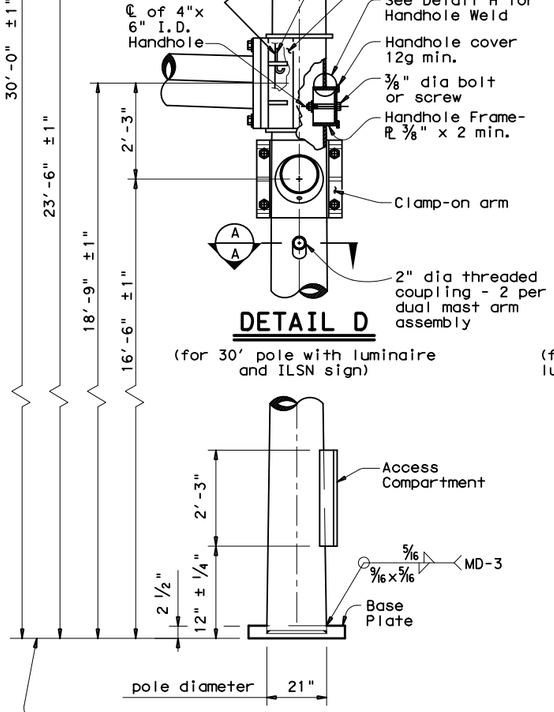


SECTION B-B

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

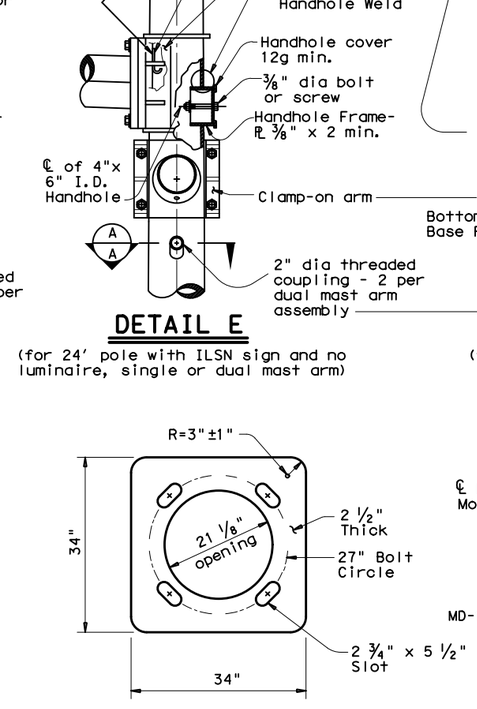
ACCESS COMPARTMENT NOTES:

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.



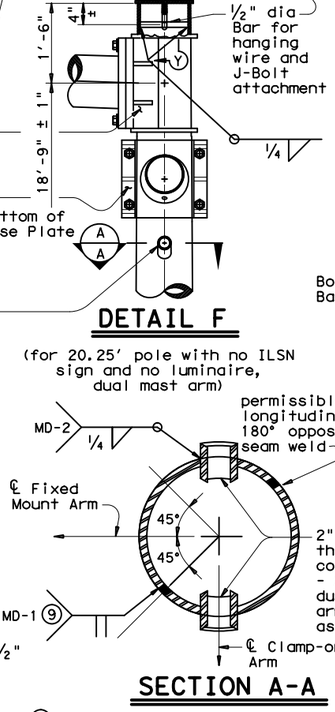
DETAIL D

(for 30' pole with luminaire and ILSN sign)



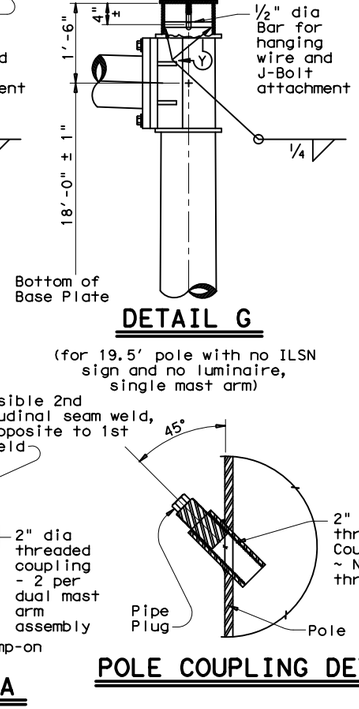
DETAIL E

(for 24' pole with ILSN sign and no luminaire, single or dual mast arm)



DETAIL F

(for 20.25' pole with no ILSN sign and no luminaire, dual mast arm)

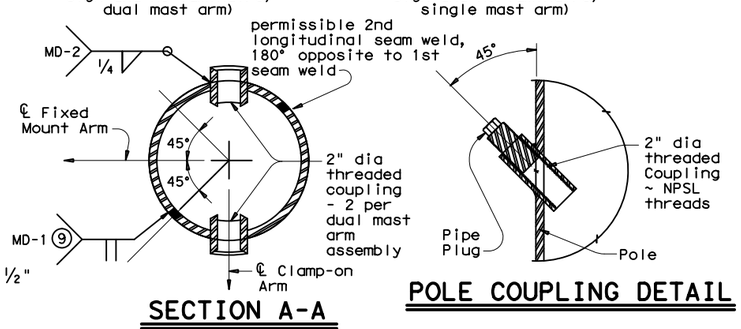


DETAIL G

(for 19.5' pole with no ILSN sign and no luminaire, single mast arm)

POLE ELEVATION

BASE PLATE



SECTION A-A

POLE COUPLING DETAIL

(9) Longitudinal seam weld must be oriented within 90° (45° rotation each side) along the fixed mount arm. 60% min penetration required, 100% penetration within 6" of circumferential base weld.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES
LONG MAST ARM ASSEMBLY (50 TO 65 FT) (80 AND 100 MPH WIND ZONE)

Sheet 2 of 5

LMA(2)-12

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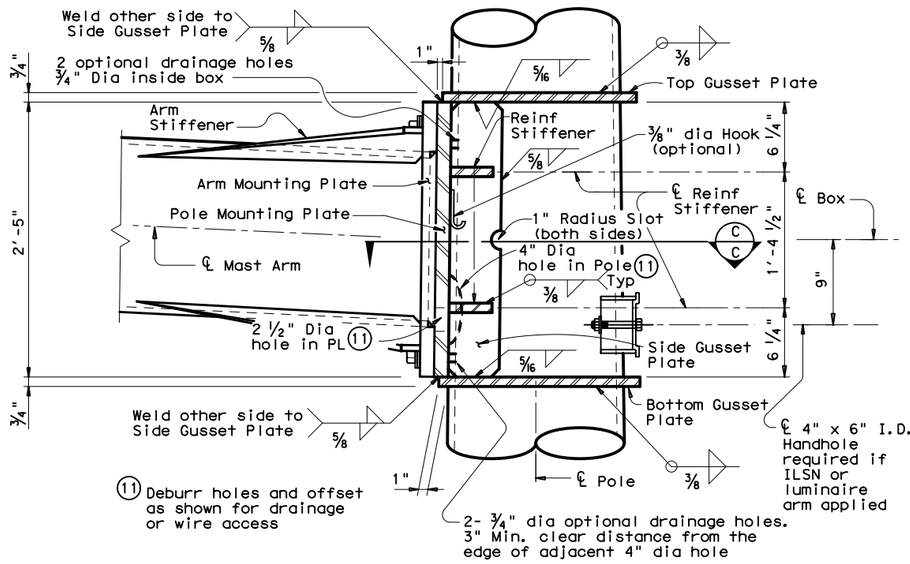
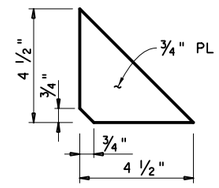
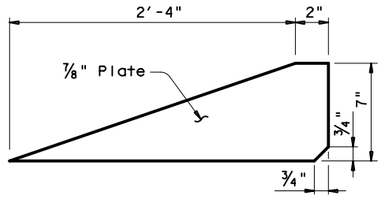


BUILT-UP BOX CONNECTION

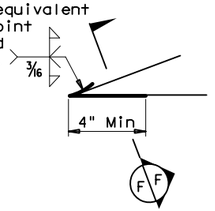


REINFORCING STIFFENER



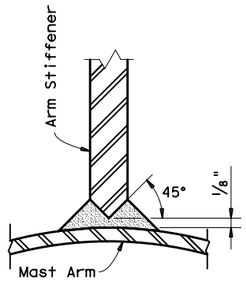
ARM STIFFENER
(Cut to match arm inclination and taper)

Provide Detail shown in SECTION F-F or equivalent 100% complete joint penetration weld from both sides.



Only 4" length at tip of Arm Stiffener requires a complete joint penetration weld. Smooth weld radius to connect Stiffener. Only a fillet weld is required for the remaining weld length.

DETAIL "K"



SECTION F-F

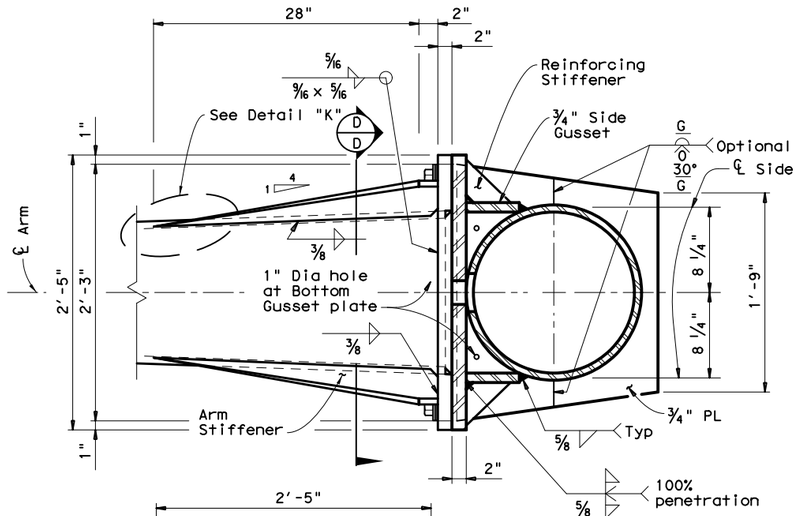
Fixed Mount Arm L_F	ROUND POLES (13)					Foundation Type
	D_B	$D_{19.5}$ or $D_{20.25}$	D_{24}	D_{30}	(12) thk	
ft.	in.	in.	in.	in.	in.	
50', 55' 60', 65'	21.0	18.2	17.6	16.8	.3125	48-A

Fixed Mount Arm L_F	ROUND ARMS (13)				
	L_1	D_1	D_2	(12) thk	Rise
ft.	ft.	in.	in.	in.	
50	49	18.5	11.7	.3125	3'- 3"
55	54	18.5	11.0	.3125	3'- 7"
60	59	18.5	10.3	.3125	3'-11"
65	64	18.5	9.6	.3125	4'- 4"

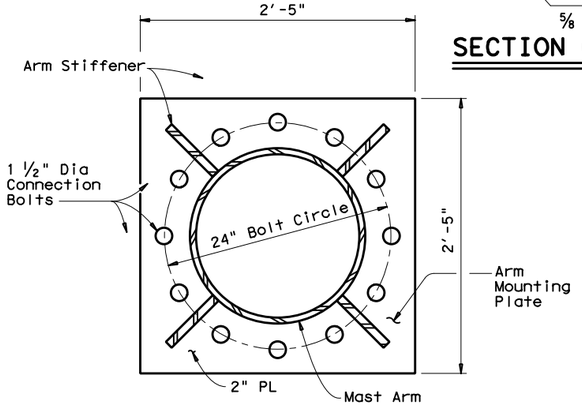
D_B = Pole Base O.D.
$D_{19.5}$ = Pole Top O.D. with no Luminaire and no ILSN (single mast arm)
$D_{20.25}$ = Pole Top O.D. with no Luminaire and no ILSN (dual mast arm)
D_{24} = Pole Top O.D. with ILSN w/out Luminaire
D_{30} = Pole Top O.D. with Luminaire
D_1 = Arm Base O.D.
D_2 = Arm End O.D.
L_1 = Shaft Length
L_F = Fixed Arm Length

(12) Thickness shown is minimum, thicker materials may be used.

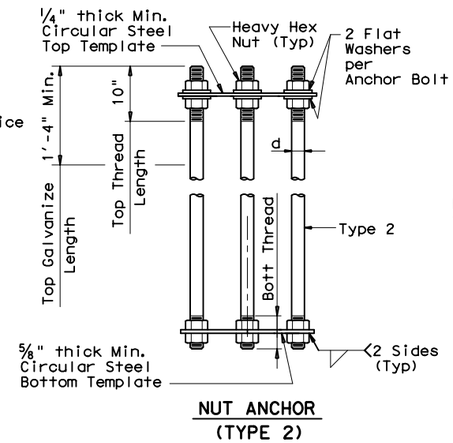
(13) Shaft profile 16-sided or 18-sided is considered to be equivalent to round section.



SECTION C-C

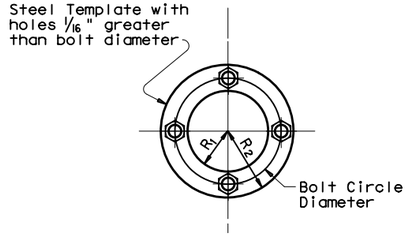


SECTION D-D



NUT ANCHOR
(TYPE 2)

ANCHOR BOLT ASSEMBLY



TEMPLATE DETAIL

FOUNDATION DESIGN TABLE													
FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		DRILLED SHAFT LENGTH-ft (16), (17), (18)			ANCHOR BOLT DESIGN (14)				FOUNDATION DESIGN LOAD (15)		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							
48-A	48"	20 #9	#4 at 6"	21.9	19.5	14.7	2 1/2"	55	27"	2	490	10	50' to 65' Mast arm assembly.

SEE SHEET "TS-FD" FOR ADDITIONAL DETAILS.

(14) Anchor bolt design develops the foundation capacity given under Foundation Design Laods.

(15) Foundation Design Loads are the allowable moments and shears at the base of the structure.

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

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

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

GENERAL NOTES:

Built-up Box Connection: For the welded arm-to-pole connection as a build-up box configuration illustrated here is an example only, fabricators are required to submit a shop drawing of box connection for approval. The drawing shall specify the details of each box element, welds of arm-to-pole connection, arm-to-plate socket connection, and arm rise creation. Specify the proper location of drain holes along the pole. 2 1/2" dia hole in the pole mounting plate and 4" dia hole in the pole need to be aligned for wiring access or drainage. Arm stiffeners cut to match arm inclination and taper shall also be included.

The deviation from flat for either arm or pole mounting plate shall not exceed 1/32 in., which is measured along the center of mounting plate to a radial distance of 13.5 in. The deformed-from-flat connection between arm and pole mounting plates shall not be allowed if the center of both mounting plates cannot contact directly.

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

ANCHOR BOLT & TEMPLATE SIZE						
Bolt Dia in.	Length ‡	Top Thread	Bottom Thread	Bolt Circle	R_2	R_1
2 1/2"	5'-2"	10"	6 1/2"	27"	16"	11"

‡ Min dimension given, longer bolts are acceptable.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES
LONG MAST ARM ASSEMBLY (50 TO 65 FT) (80 AND 100 MPH WIND ZONE)

Sheet 3 of 5 LMA(3)-12

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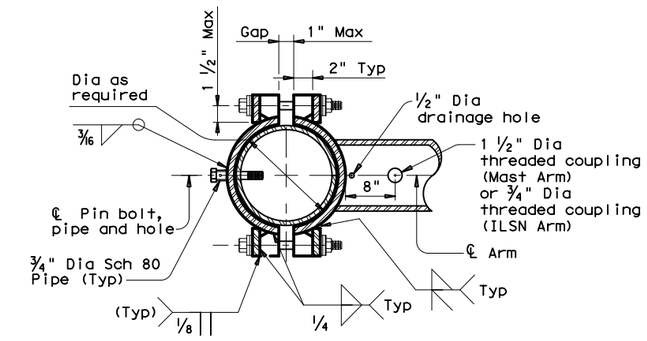
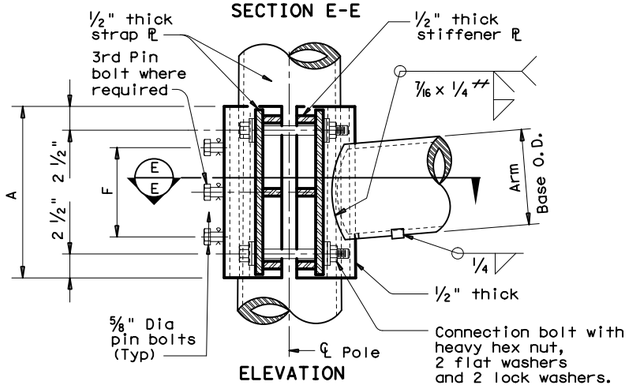


SECTION E-E



ELEVATION
(Mast Arm or ILSN Arm to pole)

= 85% Min. Penetration

CLAMP-ON CONNECTION

80 MPH WIND

Clamp-on Arm Lc	ROUND ARMS					POLYGONAL ARMS				
	L_1	D_1	D_2	thk (12)	Rise	L_1	D_1	D_2	thk (12)	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"

100 MPH WIND

Clamp-on Arm Lc	ROUND ARMS					POLYGONAL ARMS				
	L_1	D_1	D_2	thk (12)	Rise	L_1	D_1	D_2	thk (12)	Rise
ft.	ft.	in.	in.	in.		ft.	in.	in.	in.	
20	19.1	8.0	5.3	.179	1'-8"	19.1	8.0	3.5	.179	1'-7"
24	23.1	9.0	5.8	.179	1'-9"	23.1	9.0	3.5	.179	1'-8"
28	27.1	9.5	5.7	.179	1'-10"	27.1	10.0	3.5	.179	1'-9"
32	31.0	9.5	5.2	.239	1'-11"	31.0	9.5	3.5	.239	1'-10"
36	35.0	10.0	5.1	.239	2'-0"	35.0	10.0	3.5	.239	1'-11"
40	39.0	10.5	5.1	.239	2'-3"	39.0	11.0	3.5	.239	2'-1"
44	43.0	11.0	5.1	.239	2'-8"	43.0	11.5	4.0	.239	2'-3"

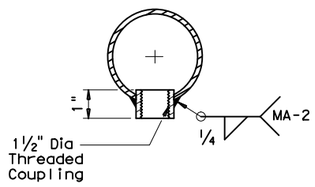
D1 = Arm Base O.D.
D2 = Arm End O.D.
L1 = Shaft Length
Lc = Clamp-on Arm Length

(12) Thickness shown is minimum, thicker materials may be used.

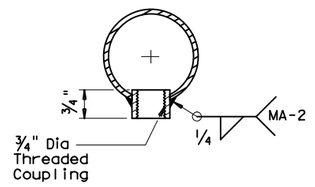
CLAMP-ON ARM CONNECTION

ILSN Arm Size		A	F	4 Conn. Bolts	5/8" Dia. Pin Bolts
Sch 40 pipe Dia	Thick			Dia	No.
in.	in.	in.	in.	in.	ea
3	.216	10	4	¾	2

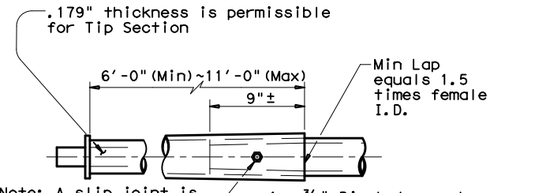
Mast Arm Size		A	F	4 Conn. Bolts	5/8" Dia. Pin Bolts
Base Dia	Thick			Dia	No.
in.	in.	in.	in.	in.	ea
6.5	.179	12	6	1	2
7.5	.179	14	8	1	2
8.0	.179	14	8	1	2
9.0	.179	16	10	1	2
9.5	.179	18	12	1 ¼	3
9.5	.239	18	12	1 ¼	3
10.0	.239	18	12	1 ¼	3
10.5	.239	18	12	1 ¼	3
11.0	.239	18	12	1 ¼	3
11.5	.239	18	12	1 ¼	3



ARM COUPLING DETAIL



ILSN ARM COUPLING DETAIL

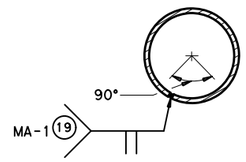


Note: A slip joint is permissible for arms 40' and greater in length. The slip joint shall be made in the shop, but may be match marked and shipped disassembled.

SLIP JOINT DETAIL (CLAMP-ON ARM)

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

(19) Longitudinal Seam Weld must be oriented within the lower 90° of the signal arm.
60% Min penetration
100% penetration within 6" of circumferential base welds.

GENERAL NOTES:

Clamp-on details are used for the second arm on dual mast arm assemblies or ILSN arm support. For a clamp-on mast arm, a maximum 1 ½" wide vertical slotted hole may 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". For an ILSN arm, a 1 ½" diameter hole shall be cut in the front clamp plate for wire access. A matched hole shall be field drilled through the pole to provide wire access after arm is oriented. Deburr both holes.

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

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES
LONG MAST ARM ASSEMBLY (50 TO 65 FT) (80 AND 100 MPH WIND ZONE)

Sheet 4 of 5 — LMA(4)-12

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COMBINED ELECTRICAL AND SITE UTILITY PLAN SYMBOLS

- 1/2" REBAR FOUND (OR AS NOTED)
- LAI 1/2" REBAR WITH "LAI" CAP FOUND
- RJ 1/2" REBAR WITH "RJ SURVEY" CAP FOUND
- HC 1/2" REBAR WITH "HOLT CARSON" CAP FOUND
- 1/2" IRON PIPE FOUND
- A 1/2" REBAR WITH "AUSTIN SURVEY" CAP FOUND
- CONTROL POINT/BENCHMARK LOCATION
- W WATER METER
- WATER VALVE
- FIRE HYDRANT
- WMH WATER MANHOLE
- S SPRINKLER CONTROL VALVE
- PVC PIPE
- UTILITY POLE
- GUY WIRE
- OVERHEAD UTILITIES
- E ELECTRIC UTILITY
- E ELECTRIC MANHOLE
- EB ELECTRIC PULL BOX
- LIGHT POLE
- T TELEPHONE UTILITY
- UNDERGROUND TELEPHONE MARKER
- T TELEPHONE MANHOLE
- G GAS UTILITY
- G GAS VALVE
- UNDERGROUND GAS MARKER
- AC AC PAD
- CO CLEANOUT
- WWMH WASTEWATER MANHOLE
- SSMH STORMSEWER MANHOLE
- SIGN
- A ANTENNA
- SEPTIC LID
- BOLLARD
- V VENT PIPE
- UNDERGROUND CABLE MARKER
- M MAILBOX
- C CABLE TV RISER
- EDGE OF PAVEMENT
- —X— BARB WIRE FENCE
- —o— CHAIN LINK FENCE
- —//— WOOD FENCE
- R.O.W. RIGHT-OF-WAY
- ( ) RECORD INFORMATION

PLAN SYMBOLS

- CONDUIT ROUTED UNDERGROUND OR IN FLOOR SLAB.
- EXPOSED OR CONCEALED CONDUIT CONDUIT ABOVE FLOOR
- 3#10(P), 1#10(G), 3/4"C. CONDUIT & WIRE DESIGNATION, E.G., 3 #10 POWER, 1 #10 (G) IN ¾" CONDUIT; (P)=POWER; (C) = CONTROL; (G) = GROUND; (A) =ALARM; (HS) =HAND SWTICH; (SH) = SPACE HEATER; (I) = INSTRUMENTATION CKT; (SP) = SPARE WIRES; T/S =TWISTED SHIELDED; AND PR = PAIR
- CONDUIT TURNING DOWN
- CONDUIT TURNING UP
- CONDUIT WITH TWISTED PR SHIELDED CABLE. SHOWN ABOVE FINISH FLOOR OR GRADE AND SHOWN BELOW.
- WIRING IN CONDUIT. SHORT LINES INDICATE HOT WIRES; LONG LINE INDICATES NEUTRAL; SEE SYMBOL BELOW FOR GROUND WIRE, #12 AWG TYPE THWN UON
- GROUND WIRE. IN CONDUIT.
- SWITCH WIRE. IN CONDUIT.
- HOT, NEUTRAL & GROUND, DENOTES THE LIMITS OF SWITCHING WHEN SHOWN BETWEEN ROOMS ON LIGHTING PLANS
- GROUND WIRE. BARE COPPER. UNDERGROUND.
- RTU — RTU HOMERUN TO RTU, BELOW FLOOR/GRADE AND ABOVE.
- MCC — MCC HOMERUN TO MCC, BELOW FLOOR/GRADE AND ABOVE.
- B1-P CONDUIT AND WIRE DESIGNATION.
- Z KEYNOTE REFERENCE
- 75 MOTOR CONNECTION. HP INDICATED. AS SHOWN ON PLAN DWG.
- FLEXIBLE CONDUIT OR PORTABLE CABLE
- ENCLOSURE
- MOTOR CONTROL CENTER. NO. OF SECTIONS INDICATED.
- DISCONNECT SWITCH.
- J JB JUNCTION BOX
- GROUND ROD. 3/4" X 10'-0"
- LOW VOLTAGE – 120/240V (STREET LIGHTING PANEL)
- USER HIGH VOLTAGE – 277/480V
- TRANSFORMER – SEE ONE LINE FOR SIZE
- SS SELECTOR SWITCH:
  HOA = HAND-OFF AUTO
  OOT = ON-OFF-TEST
  LOR = LOCAL-OFF-REMOTE
- TB1 TERMINAL BOX WITH DESIGNATION, NEMA TYPE AS NOTED
- KP INTRUSION DETECTION KEY PAD
- PB PB = ELECTRICAL POWER PULL BOX OR MANHOLE
- PH PH = ELECTRICAL POWER HAND HOLE
- LV-1 / A LED STREET POLE LIGHT FIXTURE TYPE 'A' WITH CKT #ADJACENT
- HH HH = ELECTRICAL LOW VOLTAGE STREET LIGHTING IN GROUND CONCRETE HAND HOLE
- MTR PEC METER SOCKET
- 30A/2P CIRCUIT BREAKER WITH AMP RATING AND NUMBER OF POLES

GENERAL NOTES

1. ALL ELECTRICAL WORK SHALL COMPLY WITH LATEST EDITION OF THE NATIONAL ELECTRICAL CODE AND THE LOCAL AUTHORITY HAVING JURISDICTION.
2. COMPLY FULLY WITH ALL LAWS AND CODES COVERING THE WORK AND PROVIDE COMPLETE INSTALLATIONS AS REQUIRED BY SAID LAWS AND CODES. ALL MATERIALS FURNISHED, LABOR PERFORMED, ARRANGEMENTS OF SYSTEM, SIZES OF COMPONENTS, AND ALL OTHER FEATURES OF ALL ELECTRICAL WORK SHALL BE IN STRICT ACCORDANCE WITH MUNICIPAL AND STATE CODES, LAWS AND REGULATIONS, RULES OF NEC, OSHA AND/OR OTHER AUTHORITIES THAT MAY HAVE JURISDICTION PERTAINING TO THE WORK.
3. ALL NECESSARY PERMITS, LICENSES, CERTIFICATES, TESTS, ETC. SHALL BE PROCURED AND PAID FOR BY THE CONTRACTOR.
4. IN ALL CASES OF DIFFERENCE BETWEEN MINIMUM REQUIREMENTS OF THE VARIOUS LAWS, CODES, AND AUTHORITIES, IT IS THE INTENT THAT THE WORK SHALL EXCEED THE LESSER REQUIREMENTS WHILE MEETING THE GREATER OR MORE STRINGENT REQUIREMENTS.
5. INSPECT PROJECT SITE IN ORDER TO DETERMINE THE SCOPE AND CHARACTER OF THE ELECTRICAL WORK REQUIRED UNDER THE CONTRACT INCLUDING THE EXTENT AND EFFECT OF EXISTING SYSTEMS.
6. ALL WIRING SHALL BE COPPER CONDUCTOR, MINIMUM #12 AWG, FOR POWER AND LIGHTING WITH TYPE THW, XHHW, THWN OR THHN INSULATION. ALL WIRING SHALL BE COLOR CODED PER THE SPECIFICATION REQUIREMENTS. THE WIRING FOR EQUIPMENT GROUND WIRES SHALL HAVE GREEN COLOR INSULATION.
7. CONTRACTOR IS RESPONSIBLE FOR CHECKING ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS FOR ACCURACY AND TO CONFIRM THAT THE WORK IS BUILDABLE AS SHOWN AND MEETS ALL APPLICABLE CODES BEFORE PROCEEDING WITH CONSTRUCTION. IF THERE ARE ANY QUESTIONS REGARDING THESE OR OTHER COORDINATION ISSUES, THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE ENGINEER BEFORE PROCEEDING WITH THE WORK IN QUESTION OR WITH RELATED WORK.
8. ALL MATERIALS FURNISHED UNDER THIS CONTRACT SHALL BE NEW UNLESS OTHERWISE NOTED. ALL WORK SHALL BE GUARANTEED AGAINST DEFECTIVE MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF SUBSTANTIAL COMPLETION OR ACCEPTANCE OF THE WORK. THE CONTRACTOR SHALL REPAIR OR REPLACE, AT HIS OWN EXPENSE, WHEN ORDERED TO DO SO, ALL WORK THAT MAY DEVELOP DEFECTS IN MATERIAL OR WORKMANSHIP WITHIN SAID PERIOD OF TIME.
9. ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED RECOMMENDATIONS FOR SERVICE INTENDED, AS INTERPRETED BY THE ENGINEER. THE INSTALLATION OF ALL EQUIPMENT SHALL BE MADE BY EXPERIENCED CRAFTSMAN IN A NEAT, WORKMANLIKE MANNER. ALL MATERIALS, TOOLS, COSTS AND SERVICES NECESSARY TO COMPLETELY INSTALL ALL ELECTRICAL WORK SHALL BE PROVIDED BY THE CONTRACTOR.
10. IT IS THE INTENT AND MEANING OF THE CONTRACT DOCUMENTS THAT THE CONTRACTOR SHALL PROVIDE ELECTRICAL INSTALLATION THAT IS COMPLETE. ALL ITEMS AND APPURTENANCES NECESSARY, REASONABLY INCIDENTAL, OR CUSTOMARILY INCLUDED, EVEN THOUGH EACH AND EVERY ITEM IS NOT SPECIFICALLY CALLED OUT OR SHOWN IN THE CONSTRUCTION DOCUMENTS SHALL BE PROVIDED.
11. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATELY BRACING AND PROTECTING ALL WORK DURING CONSTRUCTION AGAINST DAMAGE, BREAKAGE, COLLAPSE AND MISALIGNMENT ACCORDING TO APPLICABLE CODES, STANDARDS, AND GOOD CONSTRUCTION PRACTICES. CONTRACTOR SHALL TAKE PROPER PRECAUTIONS TO PROTECT ALL EXISTING OPERATIONS AND PROPERTY ADJACENT, WITH WHICH WORK COMES IN CONTACT, OR OVER OR UNDER WHICH HE MAY TRANSPORT, HOIST, OR MOVE MATERIALS, EQUIPMENT, DEBRIS, ETC., AND SHALL REPAIR SATISFACTORILY ALL DAMAGED CAUSED BY HIM DURING CONSTRUCTION.
13. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH OWNER-PROVIDED EQUIPMENT FOR ELECTRICAL POWER REQUIREMENTS AND COMMUNICATIONS REQUIREMENTS FOR ALL EQUIPMENT INSTALLED IN THIS PROJECT.
14. IT IS THE CONTRACTOR'S RESPONSIBILITY TO STUDY ALL DOCUMENTS AND PROVIDE ALL LABOR AND MATERIALS FOR COMPLETE AND OPERABLE SYSTEMS AS DESIGNED, DESCRIBED, IMPLIED AND SHOWN ON THESE DOCUMENTS. HE SHALL NOT BASE HIS BID SOLEY ON EQUIPMENT COUNTS SHOWN ON DRAWINGS, BUT THE DRAWINGS, SPECIFICATIONS AND THE INTENDED OR SPECIFIED PERFORMACE AS A WHOLE PACKAGE. HE IS RESPONSIBLE FOR PROVIDING HIS EQUIPMENT SUPPLIERS WITH HIS OWN TAKE-OFF OF REQUIRED EQUIPMENT FOR THE PROJECT.

ABBREVIATIONS

A; (A)	AMPERES; OR (ALARM CKT)	BKR	BREAKER	EF	EXHAUST FAN	HS; (HS)	HAND SWITCH; OR (HAND SWITCH CKT)	.	.	OL	OVERLOAD	RGS	RIGID GALVANIZED STEEL	UG	UNDERGROUND
AC	ALTERNATING CURRENT	C; (C)	CONDUIT; OR (CONTROL CKT)	ETM	ELAPSED TIME METER	HT	HEIGHT – ABOVE FINISH FLOOR OR GRADE	LV	LOW VOLTAGE	PB	PULLBOX OR PUSHBUTTON	SDO	SIMPLEX DEDICATED OUTLET	UON	UNLESS OTHERWISE NOTED
AF	AMPS FRAME – CIRCUIT BREAKER FRAME SIZE	COA	CITY OF AUSTIN	EXIST	EXISTING	HMCP	MOTOR CIRCUIT PROTECTOR	MC	MAIN CONTACTOR	PEC	PEDERNALES ELECTRIC COMPANY	SP	SPARE	VM	VOLTMETER
AF	AMPS FUSE – FUSEED SWITCH	CB	CIRCUIT BREAKER	F	FUSE	HZ	FREQUENCY IN HERTZ – CYCLES PER SEC.	MCC	MOTOR CONTROL CENTER	PR	PAIR	SS	STAINLESS STEEL	VFC	VARIABLE FREQUENCY CONTROLLER
AE	AUSTIN ENERGY	CKT	CIRCUIT	FDR	FEEDER	INC	INCANDESCENT	MCP	MOTOR CIRCUIT PROTECTOR	PL	PILOT LIGHT	SSMU	SOLID STATE METERING UNIT	VFD	VARIABLE FREQUENCY DRIVE
AFG	MOUNTING HEIGHT ABOVE FINISHED GRADE	CP	CONTROL PANEL	FIXT	FIXTURE	INST; (I)	INSTRUMENT; OR (INSTRUMENT CKT)	MCB	MAIN CIRCUIT BREAKER	PNL	PANEL	SST	SOLID STATE TRIP UNIT	WP	WEATHERPROOF
AG	ABOVE GRADE	CPT	CONTROL POWER TRANSFORMER	GEN	GENERATOR	JB	JUNCTION BOX	MSB	MAIN SWITCHBOARD	PP	POWER POLE	ST	SINGLE THROW	WW	WATER AND WASTEWATER UTILITY
AIC	FAULT CURRENT INTERRUPTING CAPACITY	CR	CONTROL RELAY	GFCI	GROUND FAULT CIRCUIT INTERRUPTER	KWH	KILOWATT HOURS	NATS	NON-AUTOMATIC TRANSFER SWITCH	PS	PRESSURE SWITCH	TDR	TIME DELAY RELAY	XFER	TRANSFER
AT	AMPS TRIP – CIRCUIT BREAKER TRIP SETTING/RATING	CT	CURRENT TRANSFORMER	GND	GROUND	LC	LEVEL CONTROLLER	NC	NORMALLY CLOSED CONTACT	PT	POTENTIAL TRANSFORMER	TR	TIMING RELAY	XFMR	TRANSFORMER
ATS	AUTOMATIC TRANSFER SWITCH	CL2	CHLORINE	GWP	WEATHERPROOF GFCI			NF	NON-FUSED	PVC	POLYVINYL CHLORIDE CONDUIT OR COATING	T/S	TWISTED/SHIELDED	XMTR	TRANSMITTER
AWG	AMERICAN WIRE GAUGE	EC	ELECTRICAL CONTRACTOR	HP	HORSEPOWER			NO	NORMALLY OPEN CONTACT	PW	PULLWIRE	TU	TEXAS ELECTRIC UTILITIES	3PDT	THREE POLE DOUBLE-THROW

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REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

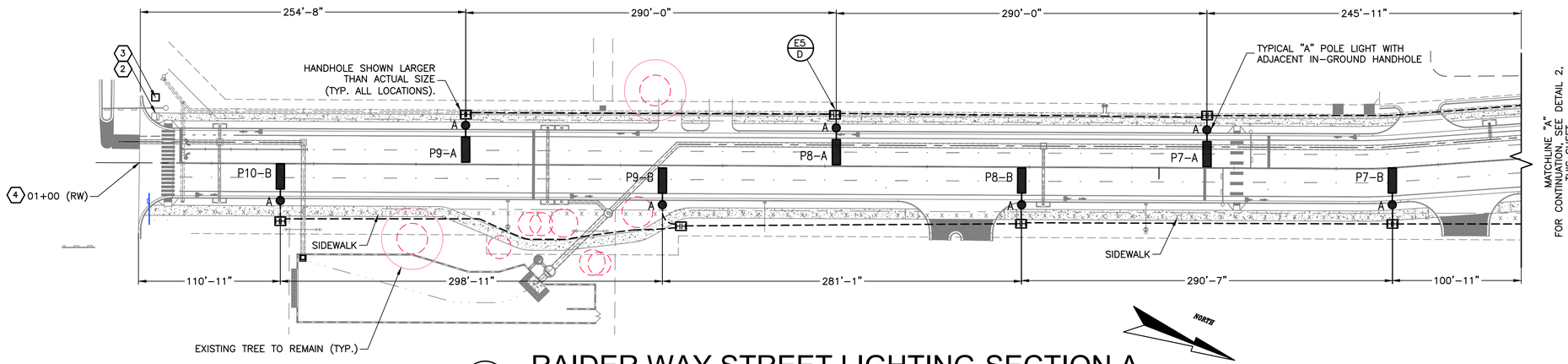
ELECTRICAL LEGEND

11/30/18
STATE OF TEXAS
ELIZABETH SEGNER-ZARATE
108870
LICENSED
PROFESSIONAL ENGINEER

PM	ESZ
DESIGNED	ESZ
DRAFTED	SAM
CHECKED	ESZ
PROJECT NO.	3-00585

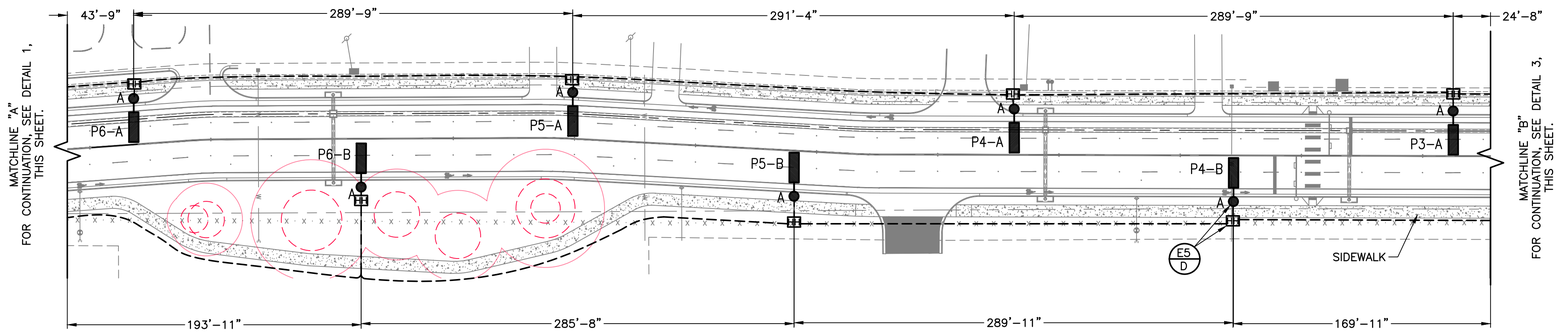
DRAWING NO. C700

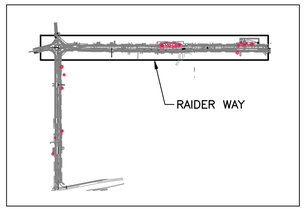
\\MYCLOUDEX2ULTRA\PUBLIC\PROJECTS\RAIDER WAY STREET LIGHTING\E1_LEGEND.DWG, C701, 11/30/2018 2:21:21 PM, LIZ2



1 RAIDER WAY STREET LIGHTING-SECTION A

SCALE: 1" = 50'–0"





A OVERALL SITE- MAP KEY

SCALE: N.T.S.

ROADWAY ILLUMINATION ASSEMBLY SUMMARY				
POLE	STATION	STREET	OFFSET	NOTES
P1-A	26+74.42	RW	19.16 W	
P2-A	23+85	RW	30 W	
P3-A	20+94.83	RW	30 W	
P4-A	18+05.08	RW	30 W	
P5-A	15+13.75	RW	30.75 W	
P6-A	12+24	RW	30.33 W	
P7-A	9+34.67	RW	29.75 W	
P8-A	6+44.67	RW	29.75 W	
P9-A	3+54.67	RW	30.16 W	
P1-B	25+32.34	RW	22.25 E	
P2-B	20+48.5	WV	25.75 S	
P3-B	22+41.84	RW	30 E	
P4-B	19+51.84	RW	30.42 E	
P5-B	16+61.92	RW	30 E	
P6-B	13+76.25	RW	32.16 E	
P7-B	10+81.5	RW	32.41 E	
P8-B	7+90.92	RW	32.41 E	
P9-B	5+10.17	RW	32.41 E	
P10-B	2+10.92	RW	29.16 E	

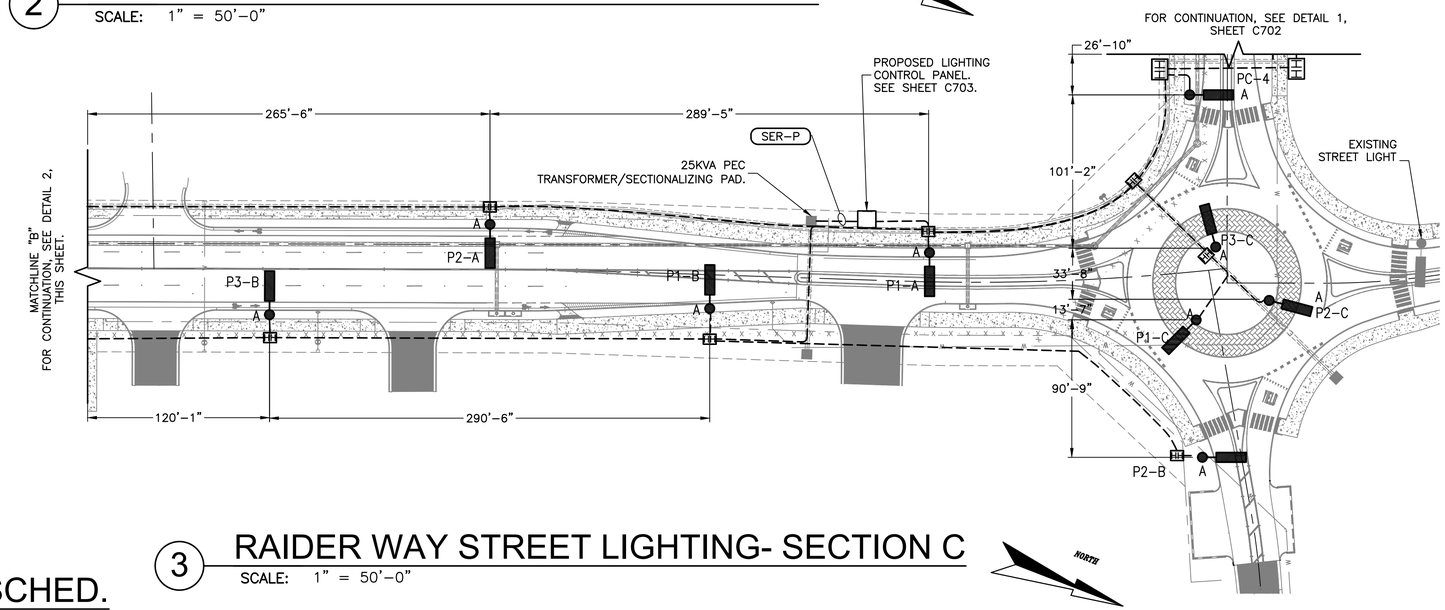
ROADWAY ILLUMINATION ASSEMBLY SUMMARY				
POLE	STATION	STREET	OFFSET	NOTES
P1-C	19+57.75	WV	20.33 S	
P2-C	19+44.17	WV	27.75 N	
P3-C	19+10.5	WV	6.5 S	
P4-C	18+09.34	WV	24.75 S	
P5-C	15+83.92	WV	29.75 S	
P6-C	12+83.92	WV	29.75 S	
P7-C	9+83.92	WV	30 S	
P8-C	6+84	WV	29.58 S	
P9-C	3+83.58	WV	21.58 S	
P1-D	17+33	WV	24.75 N	
P2-D	14+22.42	WV	28.75 N	
P3-D	11+33.92	WV	30 N	
P4-D	8+33.92	WV	28.5 N	
P5-D	5+33.92	WV	29.5 N	
P6-D	2+33.92	WV	29.5 N	

B ILLUMINATION ASSEMBLY SCHED.

SCALE: N.T.S.

2 RAIDER WAY STREET LIGHTING- SECTION B

SCALE: 1" = 50'–0"



3 RAIDER WAY STREET LIGHTING- SECTION C

SCALE: 1" = 50'–0"

GENERAL NOTES:

1. LIGHT FIXTURE, LIGHTING CONDUIT, AND HANDHOLES SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF LEANDER STANDARDS.
2. CONTRACTOR IS RESPONSIBLE FOR COORDINATING LIGHT FIXTURE, HANDHOLE, AND CONDUIT INSTALLATIONS WTIH OTHER DISCIPLINES AND UTILITY LOCATIONS.
3. ALL CONDUIT SHALL INSTALLED IN A TRENCH, PER DETAILS SHEET C703, UNLESS OTHERWISE NOTED.
4. CONDUIT AND CABLE QUANTITIES ARE NOTED ON DETAIL 3, SHEET C702.

KEYNOTES:

1. PROPOSED PEC RISER POLE. VERIFY LOCATION.
2. EXISTING TRAFFIC SIGNAL SHALL BE RELOCATED. VERIFY EXACT LOCATION.
3. INSTALL NEW TRAFFIC POLE. EXTEND CONDUIT AND WIRE FROM EXISTING POLE LOCATION, IF REQUIRED, AND RECONNECT SIGNAL LIGHTS.
4. REFER TO DETAIL B, THIS SHEET FOR ROADWAY ILLUMINATION LOCATION SCHEDULE.

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Consulting Electrical Engineers, TBPE #F-3997
6101 West Courtyard Drive, Bldg. 1, Suite 200
Austin, Texas 78730
(512) 452-8789

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

ELECTRICAL LIGHTING PLAN- RAIDER WAY

11/30/18
STATE OF TEXAS
ELIZABETH SEGNER-ZARATE
108870
LICENSED
PROFESSIONAL ENGINEER

PM	ESZ
DESIGNED	ESZ
DRAFTED	SAM
CHECKED	ESZ
PROJECT NO.	3-00585

DRAWING NO. C701

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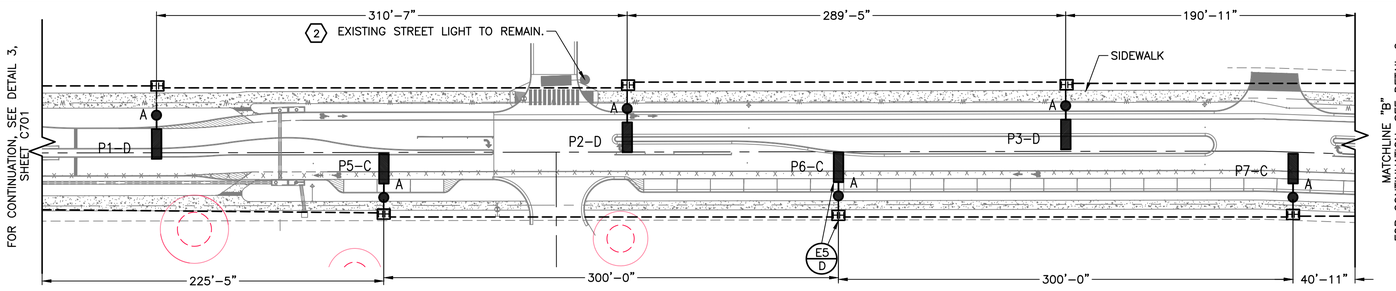
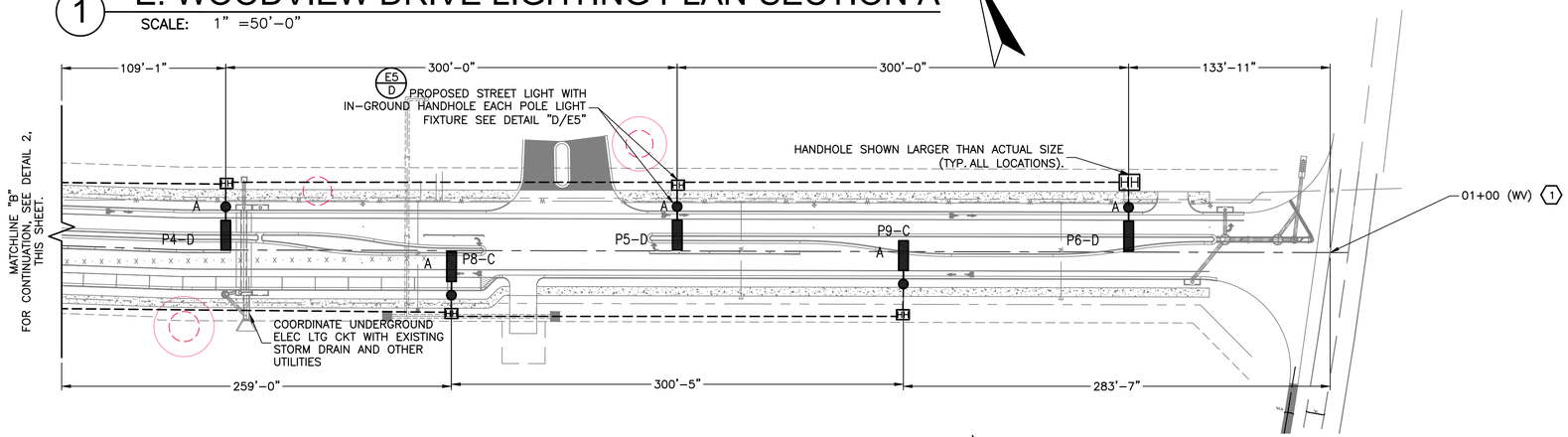
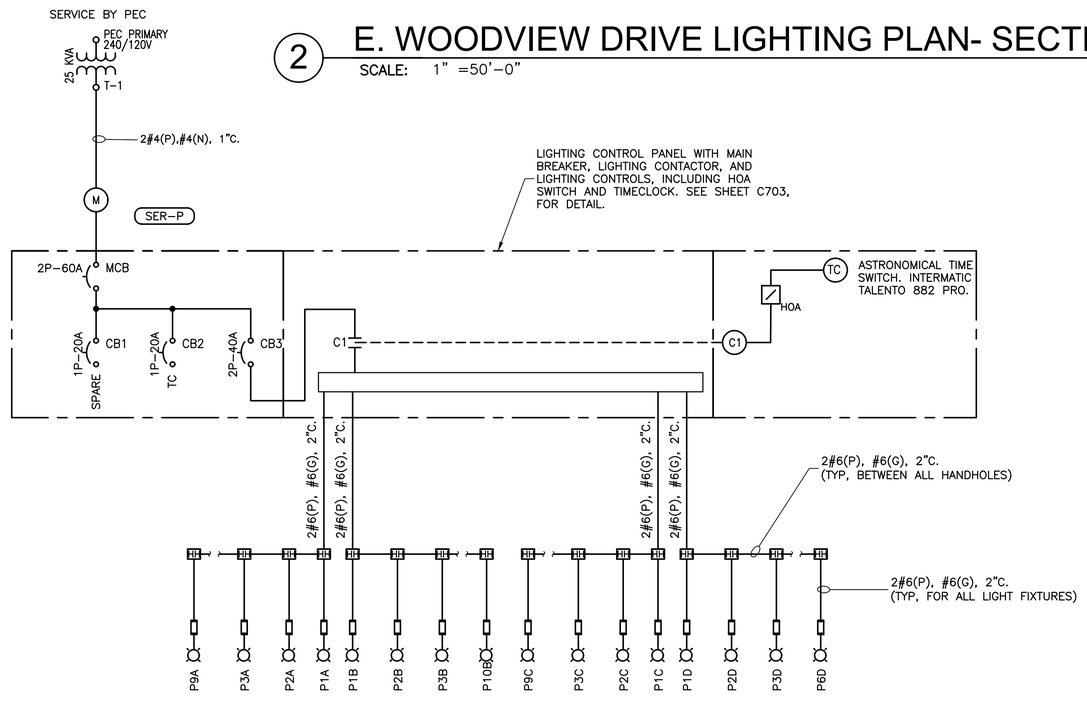


1 E. WOODVIEW DRIVE LIGHTING PLAN-SECTION A

SCALE: 1" =50'-0"



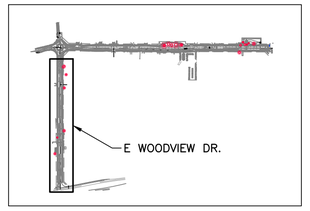


2 E. WOODVIEW DRIVE LIGHTING PLAN- SECTION B

SCALE: 1" =50'-0"

3 RAIDER WAY ONE LINE DIAGRAM

SCALE: NTS



A OVERALL SITE- MAP KEY

SCALE: N.T.S.

ROADWAY ILLUMINATION ASSEMBLY SUMMARY				
POLE	STATION	STREET	OFFSET	NOTES
P1-A	26+74.42	RW	19.16 W	
P2-A	23+85	RW	30 W	
P3-A	20+94.83	RW	30 W	
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ROADWAY ILLUMINATION ASSEMBLY SUMMARY				
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P3-D	11+33.92	WV	30 N	
P4-D	8+33.92	WV	28.5 N	
P5-D	5+33.92	WV	29.5 N	
P6-D	2+33.92	WV	29.5 N	

B ILLUMINATION ASSEMBLY SCHED.

SCALE: N.T.S.

GENERAL NOTES:

1. LIGHT FIXTURE, LIGHTING CONDUIT, AND HANDHOLES SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF LEANDER STANDARDS.
2. CONTRACTOR IS RESPONSIBLE FOR COORDINATING LIGHT FIXTURE, HANDHOLE, AND CONDUIT INSTALLATIONS WTIH OTHER DISCIPLINES AND UTILITY LOCATIONS.
3. ALL CONDUIT SHALL INSTALLED IN A TRENCH, PER DETAILS SHEET C703, UNLESS OTHERWISE NOTED.
4. CONDUIT AND CABLE QUANTITIES ARE NOTED ON DETAIL 3, SHEET C702.

KEYNOTES:

1. REFER TO DETAIL B, THIS SHEET FOR ROADWAY ILLUMINATION LOCATION SCHEDULE.
2. EXISTING TRAFFIC SIGNAL SHALL BE RELOCATED. VERIFY EXACT LOCATION.

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REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

ELECTRICAL LIGHTING PLAN- E. WOODVIEW DR.

11/30/18
STATE OF TEXAS
ELIZABETH SCOVIL-ZAMATE
108875
LICENSED
PROFESSIONAL ENGINEER

PM	ESZ
DESIGNED	ESZ
DRAFTED	SAM
CHECKED	ESZ
PROJECT NO.	3-00585

DRAWING NO. C702

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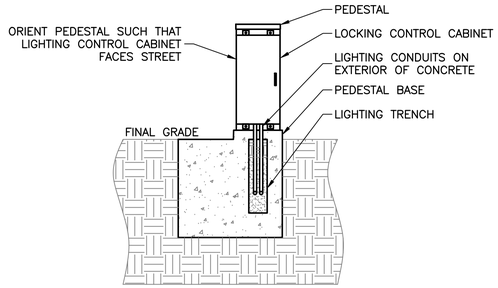
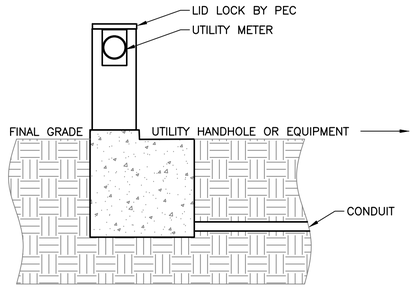


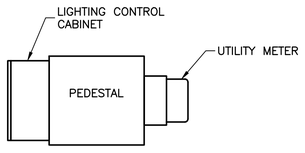
A CONTROL PANEL PEDESTAL - FACING ROADWAY

NO SCALE



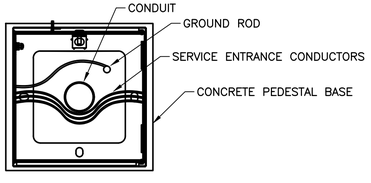
B CONTROL PANEL PEDESTAL - FACING RIGHT OF WAY

NO SCALE



C CONTROL PANEL PEDESTAL - EXTERIOR TOP

NO SCALE

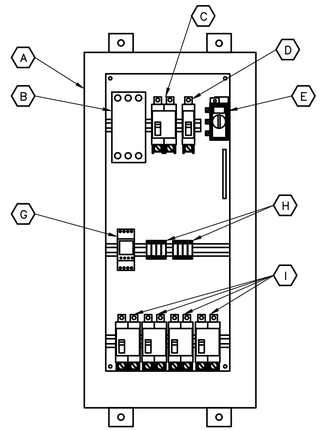


D CONTROL PANEL PEDESTAL - INTERIOR BOTTOM

NO SCALE

KEYNOTES:

- A ENCLOSURE: AMERITEX WS3R–291408
- B CONTRACTOR: SIEMENS CATALOG #LEN00D003120B
- C MAIN BREAKER: SIEMENS CATALOG #BQ2B040QLD–TC1Q1
- D CONTROL BREAKER: SIEMENS CATALOG #BQ1B010QLD–TC1Q1
- E HOA SWITCH: SIEMENS CATALOG #49SBSB1
- F NEUTRAL BUS: SIEMENS CATALOG #ECGB14
- G TIME SWITCH: INTERMATIC TALENTO882 PRO
- H POWER DISTRIBUTION: SIEMENS CATALOG #BQ2B020QLD–TC1Q1



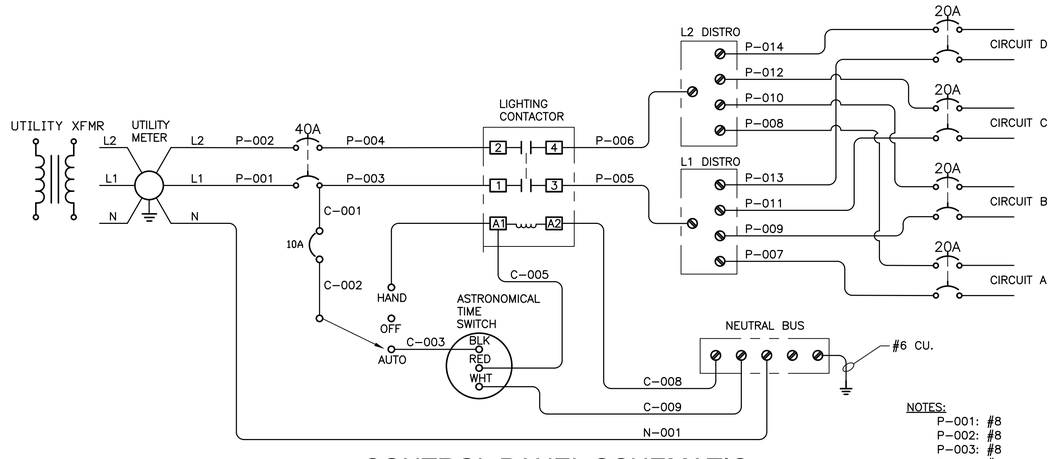
PEDESTAL:
1. MILBANK CATALOG #S9650–0

UTILITY METER SOCKET:
1. SIEMENS CATALOG #SUAT111–OPQG

E CONTROL PANEL COMPONENT LAYOUT

NO SCALE

NOTES:
1. EACH LIGHTING CONTROL PEDESTAL SHALL HAVE THE MAJOR COMPONENTS LISTED BELOW.
2. MINOR ASSEMBLY ITEMS SUCH AS DIN. RAILS, MOUNTS, FASTENERS, TIE BASES, ETC. ARE NOT SPECIFICALLY ENUMERATED AND MUST BE PROVIDED BY THE DEVELOPER IN ORDER TO ENSURE A COMPLETE AND FUNCTIONAL CONTROL CABINET.
3. EXCEPTING THE PEDESTAL, ENCLOSURE, AND TIME SWITCH, SIEMENS, EATON, AND SQUARE D ARE ACCEPTABLE MANUFACTURES OF MAJOR COMPONENTS. SIEMENS PART NUMBERS ARE LISTED BELOW AS STANDARD OF QUALITY.
4. MIXED MANUFACTURERS OF MAJOR COMPONENTS ARE NOT ALLOWED IN A CONTROL PANEL.
5. ALL CONTROL PANELS IN A NEIGHBORHOOD MUST HAVE THE SAME COMPONENTS FROM THE SAME MANUFACTURER.
6. ALL PEDESTAL ENCLOSURE SHALL HAVE PROVISIONS FOR LOCKING, AND SHALL BE COMPATIBLE WITH STANDARD PADLOCK SHANKS.



F CONTROL PANEL SCHEMATIC

NO SCALE

NOTES:
P–001: #8
P–002: #8
P–003: #8
P–004: #8
P–005: #8
P–006: #8
P–007: #10
P–008: #10
P–009: #10
P–010: #10
P–011: #10
P–012: #10
P–013: #10
P–014: #10
N–001: #8
ALL OTHER LABELED CONDUCTORS: #12

REFER TO SHEETS 402–6,7, &8 FOR CITY OF LEANDER CONTROL PANEL CONSTRUCTION STANDARDS.

JRSA
ENGINEERING, INC.
Consulting Electrical Engineers, TBPE #F–3997
6101 West Courtyard Drive, Bldg. 1, Suite 200
Austin, Texas 78730
(512) 452–8789

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

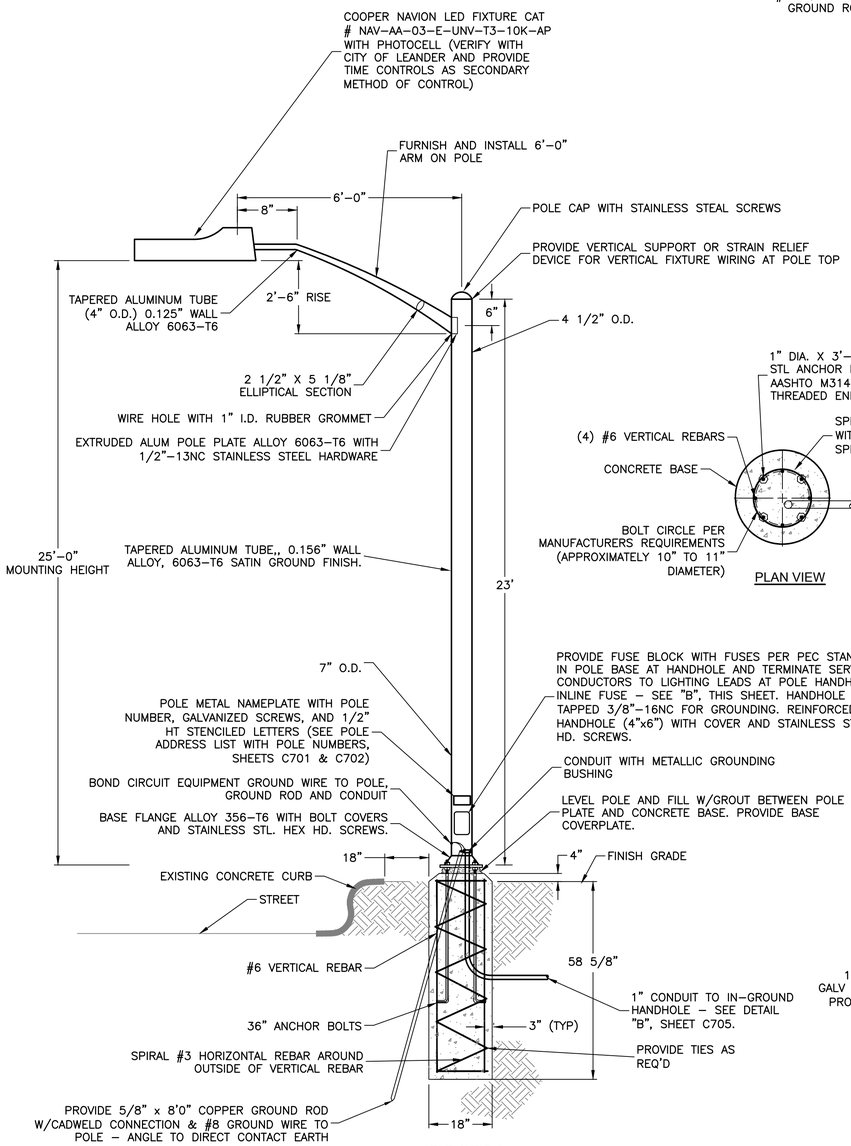
CONTROL PANEL DETAILS

11/30/18
STATE OF TEXAS
ELIZABETH SEGNER–ZARATE
108870
LICENSED
PROFESSIONAL ENGINEER

PM	ESZ
DESIGNED	ESZ
DRAFTED	SAM
CHECKED	ESZ
PROJECT NO.	3-00585

DRAWING NO.
C703

\\MYCLOUDEX2ULTRA\PUBLIC\PROJECTS\RAIDER WAY STREET LIGHTING\C703-C706 DETAILS.DWG, C703, 11/30/2018 2:21:35 PM, LIZ2



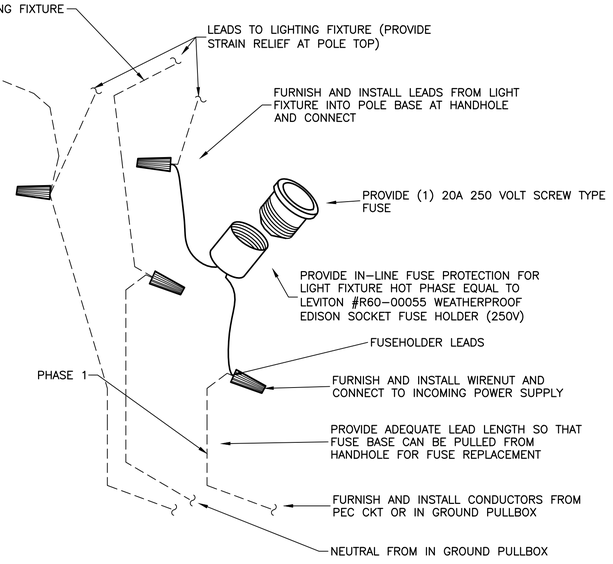
A TYPICAL STREET LIGHT POLE & POLE BASE STRUCTURAL DETAIL

NO SCALE

NOTES:

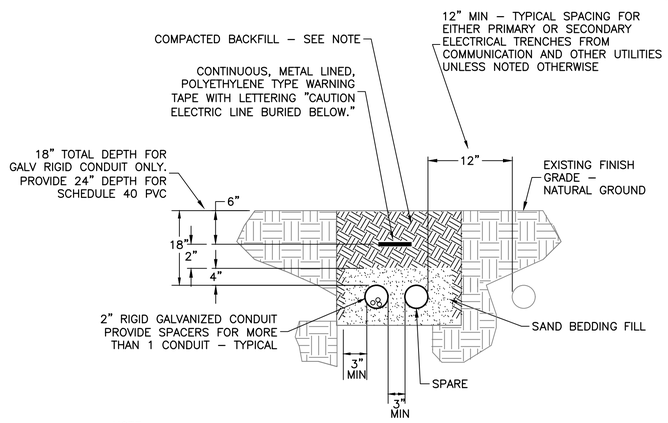
1. LED FIXTURES SHALL BE SUPPLIED AND INSTALLED BY THE ELECTRICAL CONTRACTOR WITH THE LIGHT POLE INSTALLATION.
2. ALL ROADWAY LIGHTS SHALL BE ON A METERED CIRCUIT.
3. THE CITY OF LEANDER WILL ESTABLISH AN ACCOUNT WITH ELECTRICITY PROVIDER.
4. SEE SHEET E2 & E3, FOR POLE LOCATIONS AND ROUTING OF POLE LIGHTING POWER.
5. THE MAXIMUM SPACING SHALL NOT EXCEED 150'-0". MOST POLES ARE SHOWN SPACED AT APPROXIMATELY 145' FEET ON THE SITE PLAN SO NOT TO EXCEED THE 150' MAXIMUM SPACING.
6. CONTRACTOR MAY ADJUST POLES NO MORE THAN 5'-0" TO TO COORDINATE WITH EXISTING DRIVEWAYS, TREES, AND OTHER EXISTING STRUCTURES FROM THAT SPACING NOTED OR SHOWN.
7. PRIOR TO INSTALLATION OF ANY POLES CONTRACTOR SHALL MARK PROPOSED LOCATION FOR ENGINEER'S SITE INSPECTION AND REVIEW.
8. THE ILLUMINATION PLAN SHALL SHOW THE LIGHT POLE SPACING. LIGHT POLES SHALL BE INSTALLED AS APPROPRIATE TO PROVIDE CONTINUOUS ILLUMINATION OF THE ROADWAY. THE MAXIMUM SPACING ON COLLECTORS AND ARTERIALS WILL DEPEND ON THE ILLUMINATION DESIGN.

REFER TO SHEETS 402-1 AND 402-2 FOR CITY OF LEANDER ROADWAY LIGHTING CONSTRUCTION STANDARDS



B TYPICAL POLE HANDHOLE FUSEBLOCK

NO SCALE



NOTE:
BACKFILL FOR TRENCHING BEHIND THE CURB OR EDGE OF SHOULDER WHERE NO CURB EXISTS SHALL BE COMPACTED TO THE DENSITY OF THE SURROUNDING SOIL. BACKFILL FOR OPEN CUT TRENCHING IN STREETS DRIVEWAYS, SIDEWALKS OR MEDIANS SHALL CONFORM TO ALL REQUIREMENTS CONTAINED IN THE CITY OF AUSTIN'S UTILITY CRITERIA MANUAL, SECTION 5.

C TYPICAL CONDUIT TRENCH DETAIL

NO SCALE

REFER TO SHEETS 402-10 FOR CITY OF LEANDER LIGHTING CONDUIT TRENCH CONSTRUCTION STANDARDS

D ASPHALT PAVEMENT CROSSING

NO SCALE

JRSA
ENGINEERING, INC.
Consulting Electrical Engineers, TBPE #F-3997
6101 West Courtyard Drive, Bldg. 1, Suite 200
Austin, Texas 78730
(512) 452-8789

REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

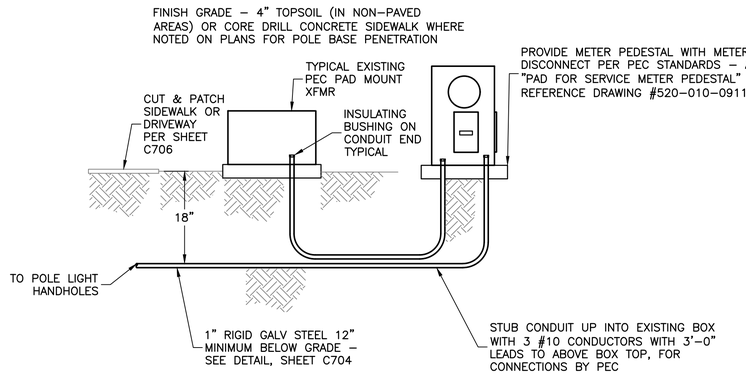
ELECTRICAL DETAILS-
SHEET 1

11/30/18
STATE OF TEXAS
ELIZABETH SEGNER-ZARATE
108870
LICENSED
PROFESSIONAL ENGINEER

PM	ESZ
DESIGNED	ESZ
DRAFTED	SAM
CHECKED	ESZ
PROJECT NO.	3-00585

DRAWING NO.
C704

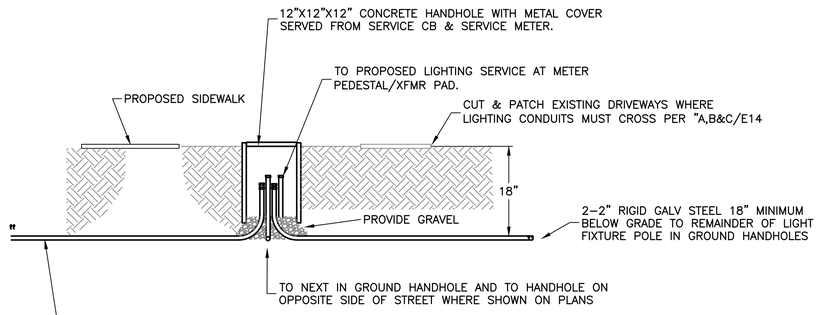
\\WYCLOUDEX2ULTRA\PUBLIC\PROJECTS\RAIDER WAY STREET LIGHTING\C703-C706 DETAILS.DWG, C704, 11/30/2018 2:21:38 PM, LIZ2



NOTES:
1. CONTRACTOR SHALL CUT AND PATCH SIDEWALK OR DRIVE WHERE NECESSARY PER COA STANDARDS AND AS SHOWN DETAILS, SHEET C706.
2. FIELD VERIFY ALL REQUIREMENTS PRIOR TO SUBMITTING BID FOR WORK.
3. WIDEN SIDEWALK WHERE LIGHT POLE IS TO BE MOUNTED IN SIDEWALK – SEE DETAIL "C", THIS SHEET.
4. COORDINATE CONDUIT STUB INTO EXISTING 1'X2' PULLBOX WITH PEC.
5. COORDINATE CONDUCTOR LEADS INTO EXISTING 1'X2' PULLBOX WITH PEC.

A STREET LIGHTING TRANSFORMER & METER PEDESTALL DETAIL

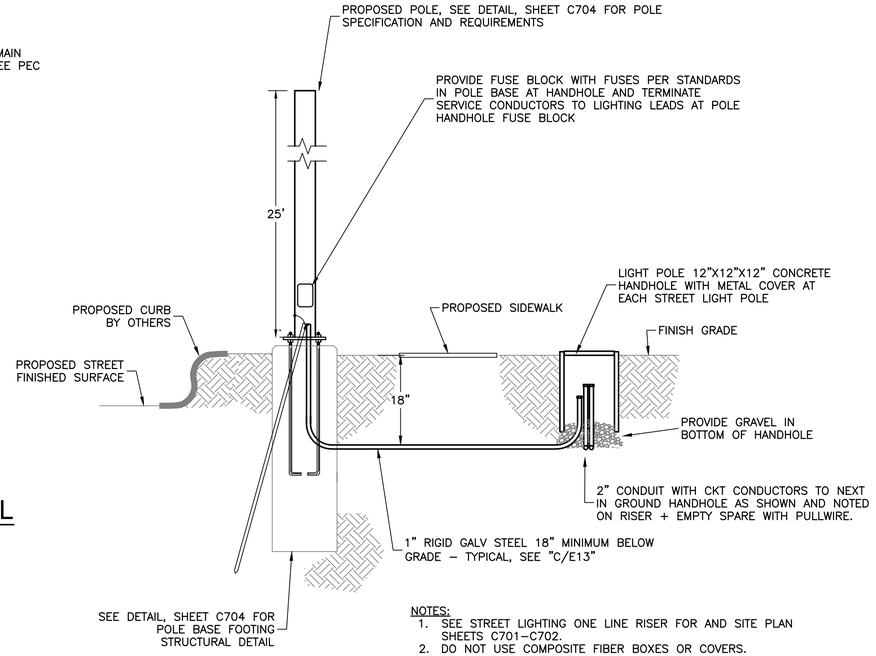
NO SCALE



NOTES:
1. THIS DETAIL IS TYPICAL FOR TWO DISTRIBUTION HANDHOLES, ONE ON OPP. SIDE OF STREET AND THE OTHER ON THE SOPP. SIDE OF STREET. SEE STREET LIGHTING ONE LINE RISER FOR AND SITE PLAN SHEETS E2. DO NOT USE COMPOSITE FIBER BOXES OR COVERS.

B TYPICAL DISTRIBUTION HANDHOLE

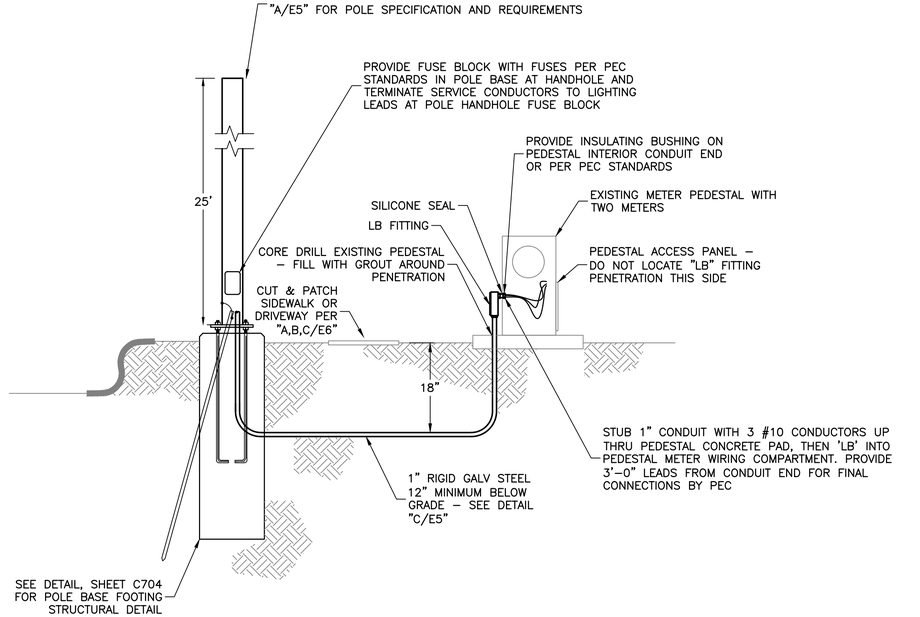
NO SCALE



NOTES:
1. SEE STREET LIGHTING ONE LINE RISER FOR AND SITE PLAN SHEETS C701–C702.
2. DO NOT USE COMPOSITE FIBER BOXES OR COVERS.

C TYPICAL STREET LIGHT WITH HANDHOLE

NO SCALE



D TYPICAL STREET LIGHT ELECTRICAL SERVICE AT METER PEDESTAL

NO SCALE

JRSA
ENGINEERING, INC.
Consulting Electrical Engineers, TBPE #F–3997
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Austin, Texas 78730
(512) 452–8789

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

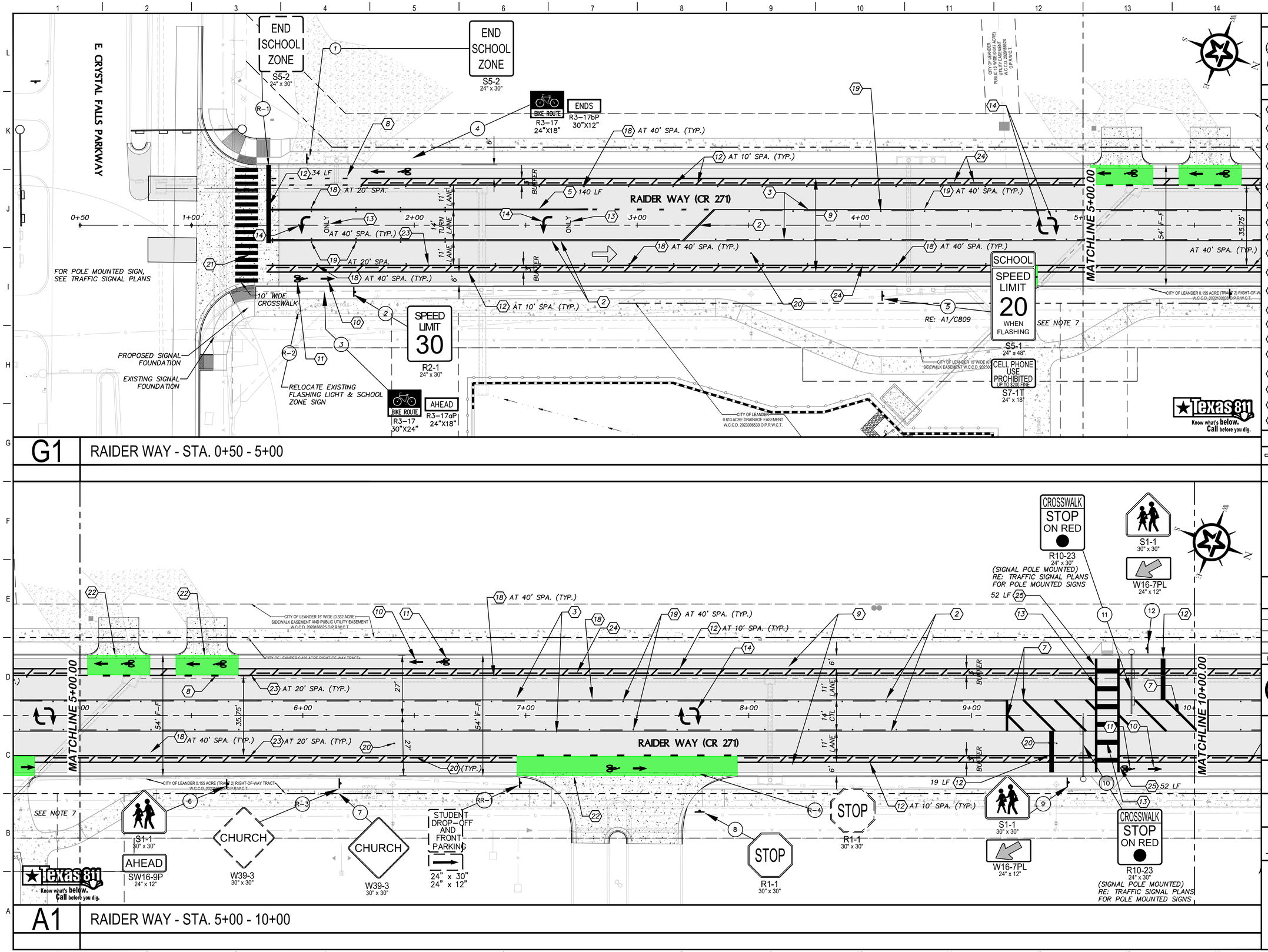
ELECTRICAL DETAILS-
SHEET 2

11/30/18
STATE OF TEXAS
ELIZABETH SEGNER–ZARATE
108870
LICENSED
PROFESSIONAL ENGINEER
Elizabeth Segner-Zarate

PM	ESZ
DESIGNED	ESZ
DRAFTED	SAM
CHECKED	ESZ
PROJECT NO.	3-00585

DRAWING NO.
C705

\\MYCLOUDEX2ULTRA\PUBLIC\PROJECTS\RAIDER WAY STREET LIGHTING\C703-C706 DETAILS.DWG, C705, 11/30/2018 2:21:43 PM, LIZ2



SIGN LEGEND

- (1) PROPOSED SMALL SIGN AND NUMBER
- (RR-1) SIGN TO REMOVE AND RELOCATE
- (R-1) EXISTING SIGN TO BE REMOVED AND NUMBERED
- (OM) OBJECT MARKER – (OM-ZY)

KEY NOTES

- (2) REFL. TY. I THERMO PVMT MARKINGS 4" IN WIDTH, 100 MILS IN THICKNESS, SOLID YELLOW IN COLOR. ITEM 871S–A–4Y
- (3) REFL. TY. I THERMO PVMT MARKINGS 4" IN WIDTH, 100 MILS IN THICKNESS, BROKEN, YELLOW IN COLOR. ITEM 871S–A–4BW
- (5) REFL. TY. I THERMO PVMT MARKINGS 8" IN WIDTH, 100 MILS IN THICKNESS, SOLID, WHITE IN COLOR. ITEM 871S–A–8SW
- (7) REFL. TY. I THERMO PVMT MARKINGS 24" IN WIDTH, 100 MILS IN THICKNESS, SOLID, YELLOW IN COLOR. ITEM 871S–A–24Y
- (8) TYPE I BICYCLE LANE MARKINGS, 6" WIDTH, BROKEN, WHITE IN COLOR. ITEM 829S–A6B
- (9) TYPE I BICYCLE LANE MARKINGS, 6" WIDTH, SOLID, WHITE IN COLOR. ITEM 829S–A6S
- (10) TYPE I BICYCLE LANE PREFERENTIAL (DIRECTIONAL ARROW) SYMBOLS, WHITE IN COLOR. ITEM 829S–B
- (11) TYPE I BICYCLE LANE (BIKE RIDER) SYMBOLS, WHITE IN COLOR. ITEM 829S–C
- (12) REFL. TY. I THERMO PVMT MARKINGS, 24" IN WIDTH, 100 MILS IN THICKNESS, SOLID, WHITE IN COLOR. ITEM 871S–A–24SW
- (13) REFL. TY. I THERMO PVMT MARKINGS, WORD "ONLY", 8" TO 10" IN WIDTH, 100 MILS THICKNESS, SOLID, WHITE IN COLOR. ITEM 871S–B
- (14) REFL. TY. I THERMO PVMT MARKINGS, TURN LANE SYMBOLS, 6" TO 10" IN WIDTH, 100 MILS THICKNESS, WHITE IN COLOR. ITEM 871S–DTL
- (18) CLASS E, RAISED PAVEMENT MARKERS, II–W TYPE (WHITE). ITEM 873S–EW
- (19) CLASS E, RAISED PAVEMENT MARKERS, II–S TYPE (AMBER). ITEM 873S–EA
- (20) CLASS E, RAISED PAVEMENT MARKERS, II–B TYPE (BLUE). ITEM 873S–EB
- (21) CROSSWALK (RE: TXDOT PM(4)–22 WITH REFL. TY I THERMO PVMT. MARKINGS, 24–INCH WIDTH, 100 ML THICKNESS, WHITE IN COLOR, ITEM 871S
- (22) BIKE BOX (SMALL) WITH BIKE ARROW & BIKE SYMBOL – TY I (RE: A8/C809)
- (23) REBOUNDABLE WHITE REFLECTIVE DELINEATOR POSTS (36")(PAVEMENT MOUNT)
- (24) PRECAST CONCRETE WHEEL STOPS (6' LENGTH) @ 10' SPACING
- (25) REFL. TY I THERMO PVMT MARKING, 12" IN WIDTH, 100 MILS IN THICKNESS, SOLID, WHITE IN COLOR, ITEM 871S–A–12SW

LEGEND

- TRAFFIC DIRECTION (NOT TO BE STRIPED)
- ROADWAY SIGN ASSEMBLY

GENERAL NOTES

1. REFLECTORIZED PAVEMENT MARKINGS SHALL BE TYPE I (100 MIL) IN ACCORDANCE WITH THE CITY OF AUSTIN..
2. RAISED PAVEMENT MARKERS (RPM'S) SHALL BE IN ACCORDANCE WITH THE CITY OF AUSTIN.
3. ROADWAY SIGNAGE SHALL BE IN ACCORDANCE WITH THE CITY OF AUSTIN AND TMUTCD.
4. SIGN DESIGNS SHALL BE APPROVED BY OWNER PRIOR TO FABRICATION.
5. RE: CITY OF LEANDER DETAILS RE: C809 FOR SIGN POST DETAILS.
6. RE: CITY OF LEANDER DETAILS RE: C809 FOR STREET SIGN DETAILS.
7. CITY OF LEANDER TO PROVIDE RETROREFLECTIVE SHEETING TO CONTRACTOR TO POST SCHOOL ZONE TIMES ON S5–1 SIGNS.

0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

SIGNAGE & STRIPING PLAN
RAIDER WAY (STA 1+00 - 10+00)

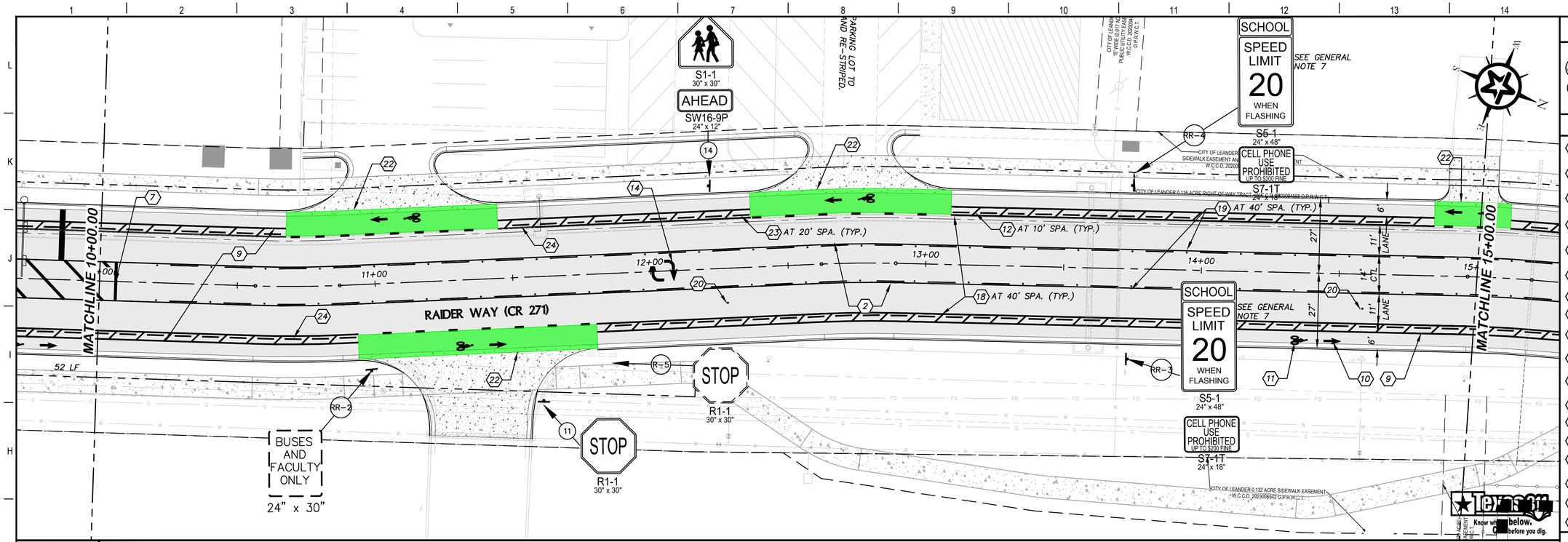
03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

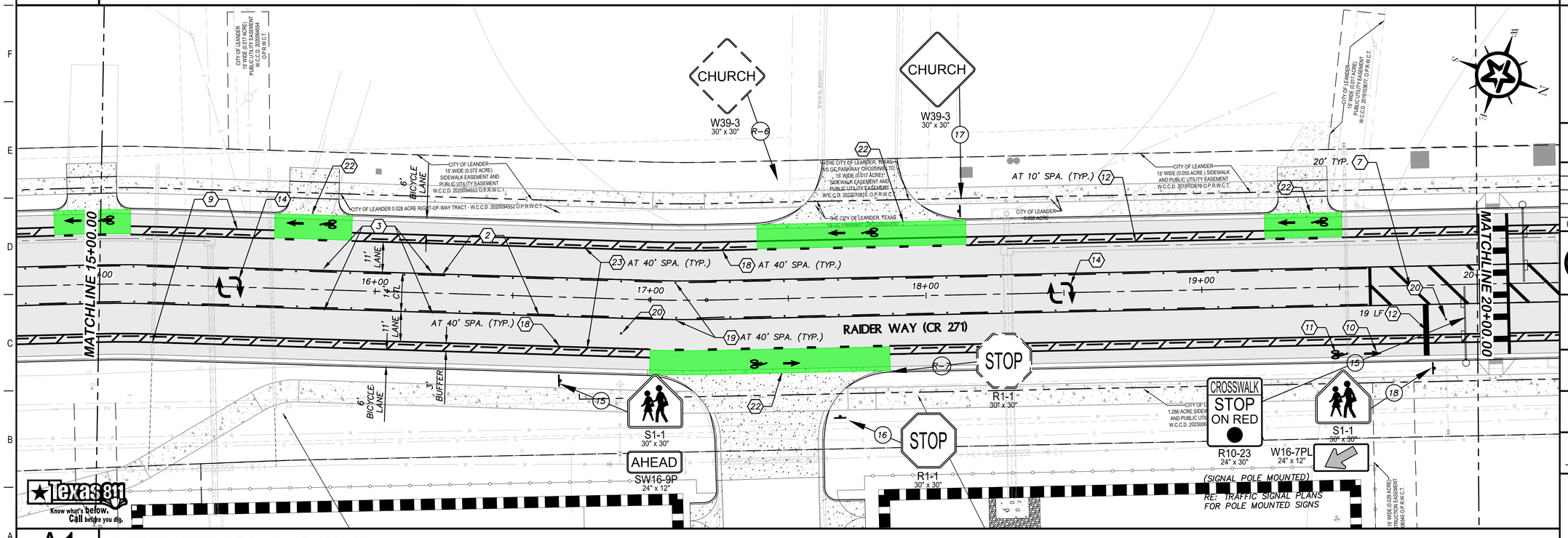
STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C800
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585SIGNAGE PLAN.DWG, C800 SIGNAGE & STRIPING PLAN RAIDER WAY (STA 1+00 - 10+00), 3/29/2023 9:57:03 PM, cschroeder



G1 RAIDER WAY - STA. 10+00 - 15+00



A1 RAIDER WAY - STA. 15+00 - 20+00

SIGN LEGEND

- (1) PROPOSED SMALL SIGN AND NUMBER
- (RR–1) SIGN TO REMOVE AND RELOCATE
- (R–1) EXISTING SIGN TO BE REMOVED AND NUMBERED
- (OM) OBJECT MARKER – (OM–ZY)

KEY NOTES

2. REFL. TY. I THERMO PVMT MARKINGS 4" IN WIDTH, 100 MILS IN THICKNESS, SOLID YELLOW IN COLOR. ITEM 8715–A–4Y
3. REFL. TY. I THERMO PVMT MARKINGS 4" IN WIDTH, 100 MILS IN THICKNESS, BROKEN, YELLOW IN COLOR. ITEM 8715–A–4BW
5. REFL. TY. I THERMO PVMT MARKINGS 8" IN WIDTH, 100 MILS IN THICKNESS, SOLID, WHITE IN COLOR. ITEM 8715–A–8SW
7. REFL. TY. I THERMO PVMT MARKINGS 24" IN WIDTH, 100 MILS IN THICKNESS, SOLID, YELLOW IN COLOR. ITEM 8715–A–24Y
8. TYPE I BICYCLE LANE MARKINGS, 6" WIDTH, BROKEN, WHITE IN COLOR. ITEM 8295–A6B
9. TYPE I BICYCLE LANE MARKINGS, 6" WIDTH, SOLID, WHITE IN COLOR. ITEM 8295–A6S
10. TYPE I BICYCLE LANE PREFERENTIAL (DIRECTIONAL ARROW) SYMBOLS, WHITE IN COLOR. ITEM 8295–B
11. TYPE I BICYCLE LANE (BIKE RIDER) SYMBOLS, WHITE IN COLOR. ITEM 8295–C
12. REFL. TY. I THERMO PVMT MARKINGS, 24" IN WIDTH, 100 MILS IN THICKNESS, SOLID, WHITE IN COLOR. ITEM 8715–A–24SW
13. REFL. TY. I THERMO PVMT MARKINGS, WORD "ONLY", 8" TO 10" IN WIDTH, 100 MILS THICKNESS, SOLID, WHITE IN COLOR. ITEM 8715–B
14. REFL. TY. I THERMO PVMT MARKINGS, TURN LANE SYMBOLS, 6" TO 10" IN WIDTH, 100 MILS THICKNESS, WHITE IN COLOR. ITEM 8715–DTL
18. CLASS E, RAISED PAVEMENT MARKERS, II–W TYPE (WHITE). ITEM 873S–EW
19. CLASS E, RAISED PAVEMENT MARKERS, II–S TYPE (AMBER). ITEM 873S–EA
20. CLASS E, RAISED PAVEMENT MARKERS, II–B TYPE (BLUE). ITEM 873S–EB
21. CROSSWALK (RE: TXDOT PM(4)–22 WITH REFL. TY I THERMO PVMT. MARKINGS, 24–INCH WIDTH, 100 ML THICKNESS, WHITE IN COLOR, ITEM 8715
22. BIKE BOX (SMALL) WITH BIKE ARROW & BIKE SYMBOL – TY I (RE: A8/C809)
23. REBOUNDABLE WHITE REFLECTIVE DELINEATOR POSTS (36")(PAVEMENT MOUNT)
24. PRECAST CONCRETE WHEEL STOPS (6' LENGTH) @ 10' SPACING

LEGEND

- TRAFFIC DIRECTION (NOT TO BE STRIPED)
- ROADWAY SIGN ASSEMBLY

GENERAL NOTES

1. REFLECTORIZED PAVEMENT MARKINGS SHALL BE TYPE I (100 MIL) IN ACCORDANCE WITH THE CITY OF AUSTIN..
2. RAISED PAVEMENT MARKERS (RPM'S) SHALL BE IN ACCORDANCE WITH THE CITY OF AUSTIN.
3. ROADWAY SIGNAGE SHALL BE IN ACCORDANCE WITH THE CITY OF AUSTIN AND TMUTCD.
4. SIGN DESIGNS SHALL BE APPROVED BY OWNER PRIOR TO FABRICATION.
5. RE: CITY OF LEANDER DETAILS RE: C809 FOR SIGN POST DETAILS.
6. RE: CITY OF LEANDER DETAILS RE: C809 FOR STREET SIGN DETAILS.
7. CITY OF LEANDER TO PROVIDE RETROREFLECTIVE SHEETING TO CONTRACTOR TO POST SCHOOL ZONE TIMES ON S5–1 SIGNS.

0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

SIGNAGE & STRIPING PLAN
RAIDER WAY (STA 10+00 - 20+00)

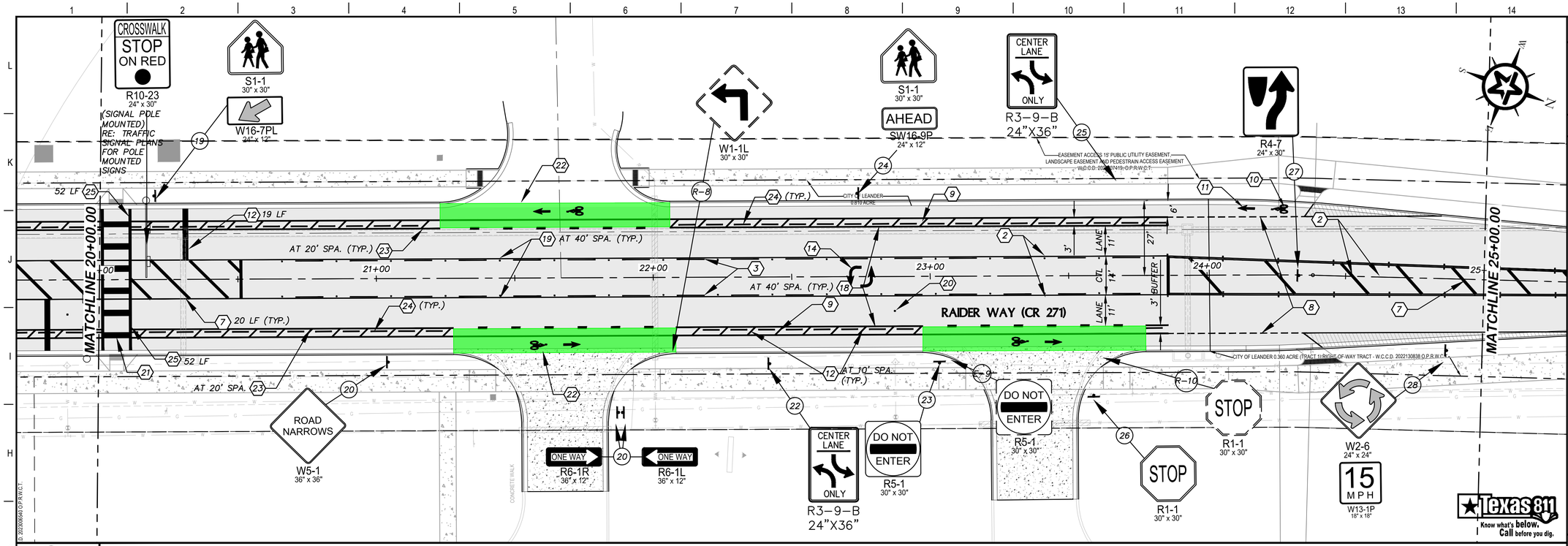
03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

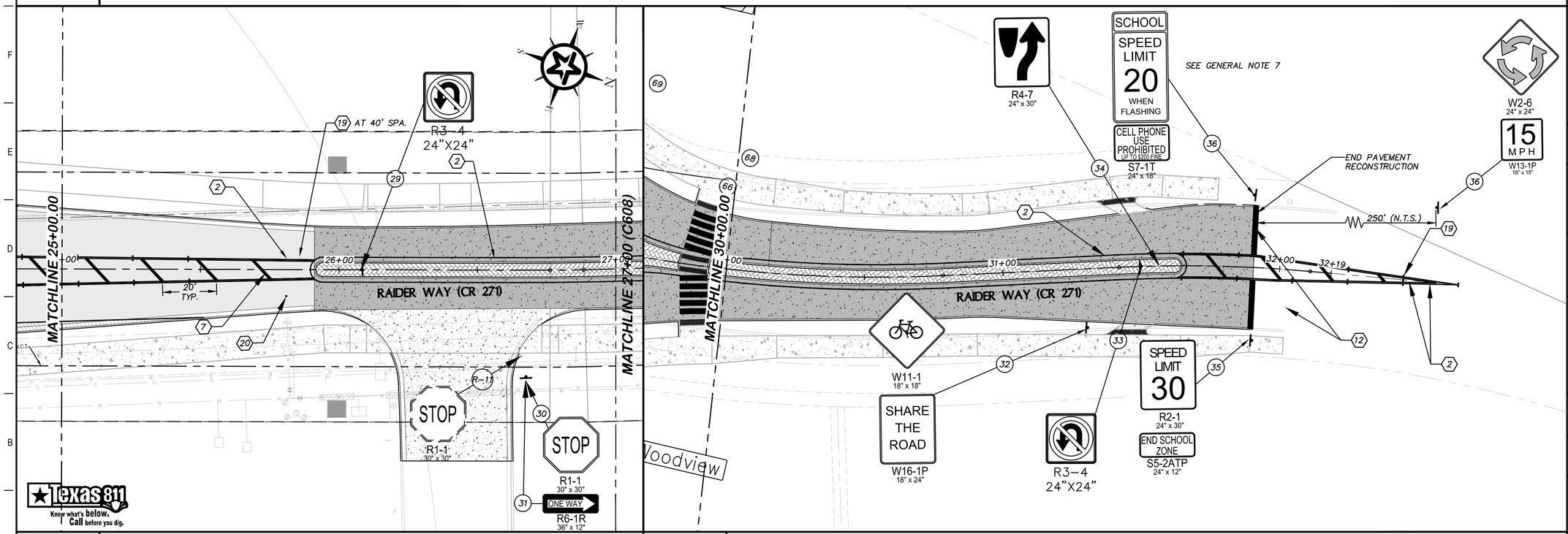
STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C801
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585SIGNAGE PLAN.DWG, C801 SIGNAGE & STRIPING PLAN RAIDER WAY (STA 10+00 - 20+00), 3/29/2023 9:59:49 PM, cschroeder



G1 RAIDER WAY - STA. 20+00 - 25+00



A1 RAIDER WAY - STA. 25+00 - 27+00

A6 RAIDER WAY - STA. 30+00 - END

SIGN LEGEND

- (1) PROPOSED SMALL SIGN AND NUMBER
- (RR-1) SIGN TO REMOVE AND RELOCATE
- (R-1) EXISTING SIGN TO BE REMOVED AND NUMBERED
- (OM) OBJECT MARKER – (OM-ZY)

KEY NOTES

2. REFL. TY. I THERMO PVMT MARKINGS 4" IN WIDTH, 100 MILS IN THICKNESS, SOLID YELLOW IN COLOR. ITEM 8715-A-4Y
3. REFL. TY. I THERMO PVMT MARKINGS 4" IN WIDTH, 100 MILS IN THICKNESS, BROKEN, YELLOW IN COLOR. ITEM 8715-A-4BW
5. REFL. TY. I THERMO PVMT MARKINGS 8" IN WIDTH, 100 MILS IN THICKNESS, SOLID, WHITE IN COLOR. ITEM 8715-A-8SW
7. REFL. TY. I THERMO PVMT MARKINGS 24" IN WIDTH, 100 MILS IN THICKNESS, SOLID, YELLOW IN COLOR. ITEM 8715-A-24Y
8. TYPE I BICYCLE LANE MARKINGS, 6" WIDTH, BROKEN, WHITE IN COLOR. ITEM 8285-A6B
9. TYPE I BICYCLE LANE MARKINGS, 6" WIDTH, SOLID, WHITE IN COLOR. ITEM 8285-A6S
10. TYPE I BICYCLE LANE PREFERENTIAL (DIRECTIONAL ARROW) SYMBOLS, WHITE IN COLOR. ITEM 8285-B
11. TYPE I BICYCLE LANE (BIKE RIDER) SYMBOLS, WHITE IN COLOR. ITEM 8285-C
12. REFL. TY. I THERMO PVMT MARKINGS, 24" IN WIDTH, 100 MILS IN THICKNESS, SOLID, WHITE IN COLOR. ITEM 8715-24SW
14. REFL. TY. I THERMO PVMT MARKINGS, TURN LANE SYMBOLS, 6" TO 10" IN WIDTH, 100 MILS THICKKNESS, WHITE IN COLOR. ITEM 8715-DTL
18. CLASS E, RAISED PAVEMENT MARKERS, II-W TYPE (WHITE). ITEM 8735-EW
19. CLASS E, RAISED PAVEMENT MARKERS, II-S TYPE (AMBER). ITEM 8735-EA
20. CLASS E, RAISED PAVEMENT MARKERS, II-B TYPE (BLUE). ITEM 8735-EB
21. CROSSWALK (RE: TXDOT PM(4)-22 WITH REFL. TY I THERMO PVMT. MARKINGS, 24-INCH WIDTH, 100 ML THICKNESS, WHITE IN COLOR, ITEM 8715
22. BIKE BOX (SMALL) WITH BIKE ARROW & BIKE SYMBOL – TY I (RE: A8/C809)
23. REBOUNDABLE WHITE REFLECTIVE DELINEATOR POSTS (36")(PAVEMENT MOUNT)
24. PRECAST CONCRETE WHEEL STOPS (6' LENGTH) @ 10' SPACING
25. REFL. TY I THERMO PVMT MARKING, 12" IN WIDTH, 100 MILS IN THICKNESS, SOLID, WHITE IN COLOR, ITEM 8715-A-12SW

LEGEND

- TRAFFIC DIRECTION (NOT TO BE STRIPED)
- ROADWAY SIGN ASSEMBLY

GENERAL NOTES

1. REFLECTORIZED PAVEMENT MARKINGS SHALL BE TYPE I (100 MIL) IN ACCORDANCE WITH THE CITY OF AUSTIN..
2. RAISED PAVEMENT MARKERS (RPM'S) SHALL BE IN ACCORDANCE WITH THE CITY OF AUSTIN.
3. ROADWAY SIGNAGE SHALL BE IN ACCORDANCE WITH THE CITY OF AUSTIN AND TMUTCD.
4. SIGN DESIGNS SHALL BE APPROVED BY OWNER PRIOR TO FABRICATION.
5. RE: CITY OF LEANDER DETAILS RE: C809 FOR SIGN POST DETAILS.
6. RE: CITY OF LEANDER DETAILS RE: C809 FOR STREET SIGN DETAILS.
7. CITY OF LEANDER TO PROVIDE RETROREFLECTIVE SHEETING TO CONTRACTOR TO POST SCHOOL ZONE TIMES ON S5-1 SIGNS.

0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

SIGNAGE & STRPING PLAN
RAIDER WAY (STA 20+00 - END)

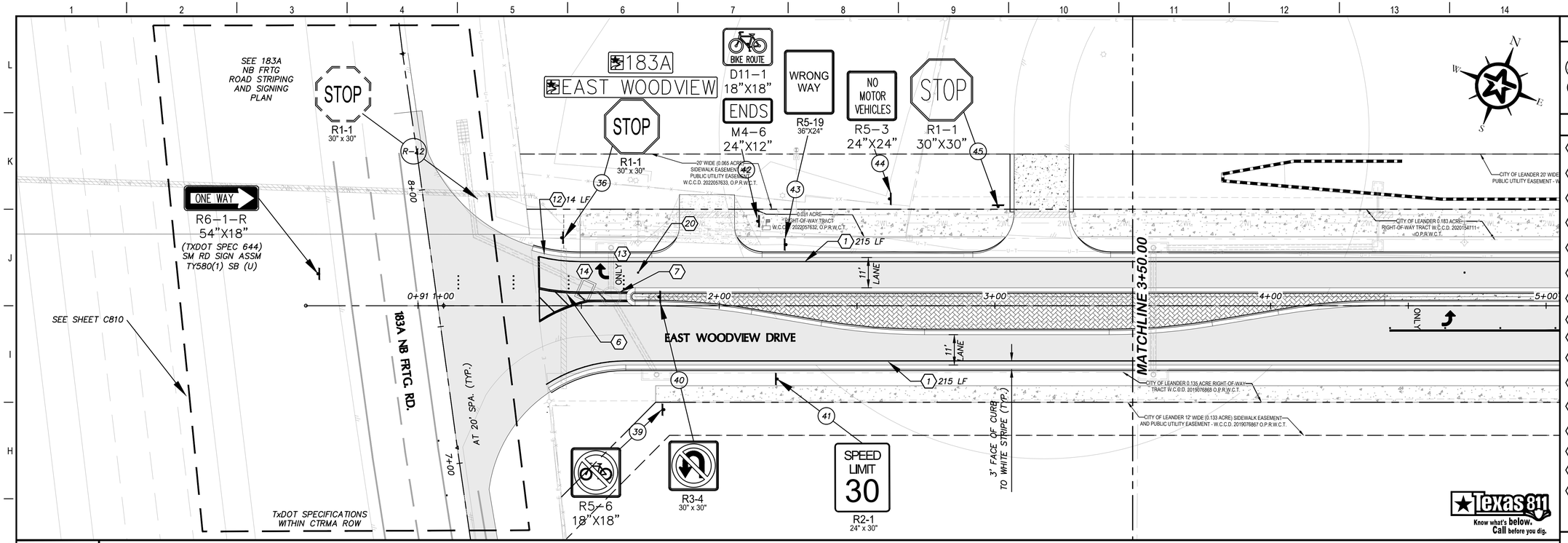
03/22/2023
DATE

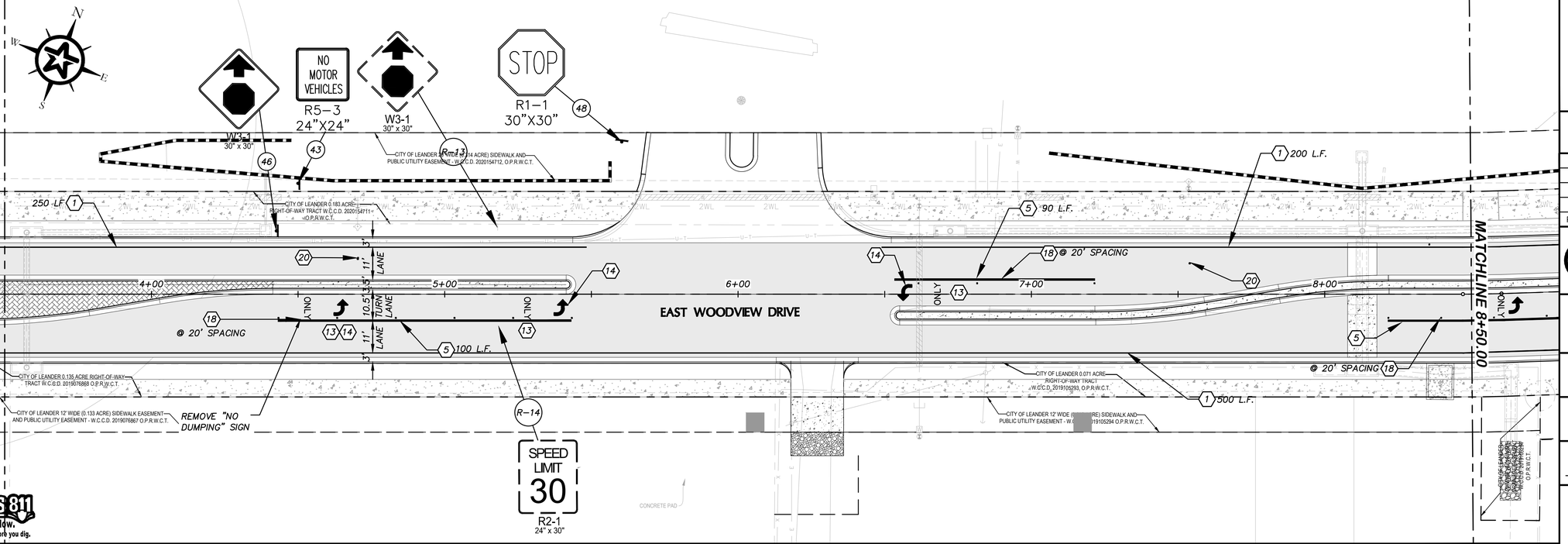
R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C802
SHEET	OF

G:\PROJECTS\13-00585\2 DESIGN\2.0 CAD\3-00585SIGNAGE PLAN.DWG, C802 SIGNAGE & STRPING PLAN RAIDER WAY (STA 20+00 - END), 3/29/2023 10:02:39 PM, cschroeder





SIGN LEGEND

1	PROPOSED SMALL SIGN AND NUMBER
RR-1	SIGN TO REMOVE AND RELOCATE
R-1	EXISTING SIGN TO BE REMOVED AND NUMBERED
OM	OBJECT MARKER – (OM-ZY)

KEY NOTES

2	REFL. TY. I THERMO PVMT MARKINGS 4" IN WIDTH, 100 MILS IN THICKNESS, SOLID YELLOW IN COLOR. ITEM 871S–A–4Y
3	REFL. TY. I THERMO PVMT MARKINGS 4" IN WIDTH, 100 MILS IN THICKNESS, BROKEN, YELLOW IN COLOR. ITEM 871S–A–4BW
5	REFL. TY. I THERMO PVMT MARKINGS 8" IN WIDTH, 100 MILS IN THICKNESS, SOLID, WHITE IN COLOR. ITEM 871S–A–8SW
6	REFL. TY. I THERMO PVMT MARKINGS, 8" IN WIDTH, 100 MILS IN THICKNESS, SOLID, YELLOW IN COLOR. ITEM 871S–A–8SY
7	REFL. TY. I THERMO PVMT MARKINGS 24" IN WIDTH, 100 MILS IN THICKNESS, SOLID, YELLOW IN COLOR. ITEM 871S–A–24Y
8	TYPE I BICYCLE LANE MARKINGS, 6" WIDTH, BROKEN, WHITE IN COLOR. ITEM 829S–A6B
9	TYPE I BICYCLE LANE MARKINGS, 6" WIDTH, SOLID, WHITE IN COLOR. ITEM 829S–A6S
10	TYPE I BICYCLE LANE PREFERENTIAL (DIRECTIONAL ARROW) SYMBOLS, WHITE IN COLOR. ITEM 829S–B
11	TYPE I BICYCLE LANE (BIKE RIDER) SYMBOLS, WHITE IN COLOR. ITEM 829S–C
12	REFL. TY. I THERMO PVMT MARKINGS, 24" IN WIDTH, 100 MILS IN THICKNESS, SOLID, WHITE IN COLOR. ITEM 871S–A–24SW
13	REFL. TY. I THERMO PVMT MARKINGS, WORD "ONLY", 8" TO 10" IN WIDTH, 100 MILS THICKNESS, SOLID, WHITE IN COLOR. ITEM 871S–B
14	REFL. TY. I THERMO PVMT MARKINGS, TURN LANE SYMBOLS, 6" TO 10" IN WIDTH, 100 MILS THICKKNESS, WHITE IN COLOR. ITEM 871S–DTL
18	CLASS E, RAISED PAVEMENT MARKERS, II–W TYPE (WHITE). ITEM 873S–EW
19	CLASS E, RAISED PAVEMENT MARKERS, II–S TYPE (AMBER). ITEM 873S–EA
20	CLASS E, RAISED PAVEMENT MARKERS, II–B TYPE (BLUE). ITEM 873S–EB
21	CROSSWALK (RE: TXDOT PM(4)–22 WITH REFL. TY I THERMO PVMT. MARKINGS, 24–INCH WIDTH, 100 ML THICKNESS, WHITE IN COLOR, ITEM 871S

LEGEND

TRAFFIC DIRECTION (NOT TO BE STRIPED)

ROADWAY SIGN ASSEMBLY

GENERAL NOTES

1. REFLECTORIZED PAVEMENT MARKINGS SHALL BE TYPE I (100 MIL) IN ACCORDANCE WITH THE CITY OF AUSTIN..
2. RAISED PAVEMENT MARKERS (RPM'S) SHALL BE IN ACCORDANCE WITH THE CITY OF AUSTIN.
3. ROADWAY SIGNAGE SHALL BE IN ACCORDANCE WITH THE CITY OF AUSTIN AND TMUTCD.
4. SIGN DESIGNS SHALL BE APPROVED BY OWNER PRIOR TO FABRICATION.
5. RE: CITY OF LEANDER DETAILS RE: C809 FOR SIGN POST DETAILS.
6. RE: CITY OF LEANDER DETAILS RE: C809 FOR STREET SIGN DETAILS.
7. CITY OF LEANDER TO PROVIDE RETROREFLECTIVE SHEETING TO CONTRACTOR TO POST SCHOOL ZONE TIMES ON S5–1 SIGNS.

0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 6053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

SIGNAGE & STRIPING PLAN
WOODVIEW DRIVE (1+00-8+50)

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

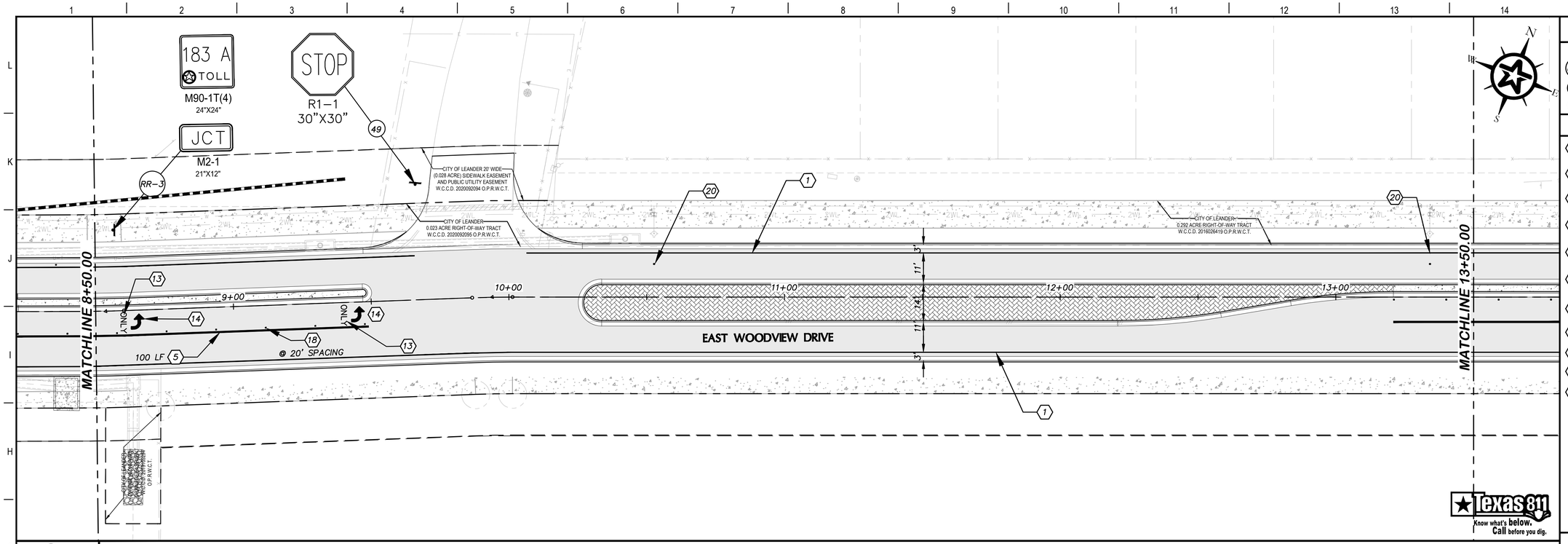
PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C803
SHEET	OF

Texas 811 Know what's below. Call before you dig.

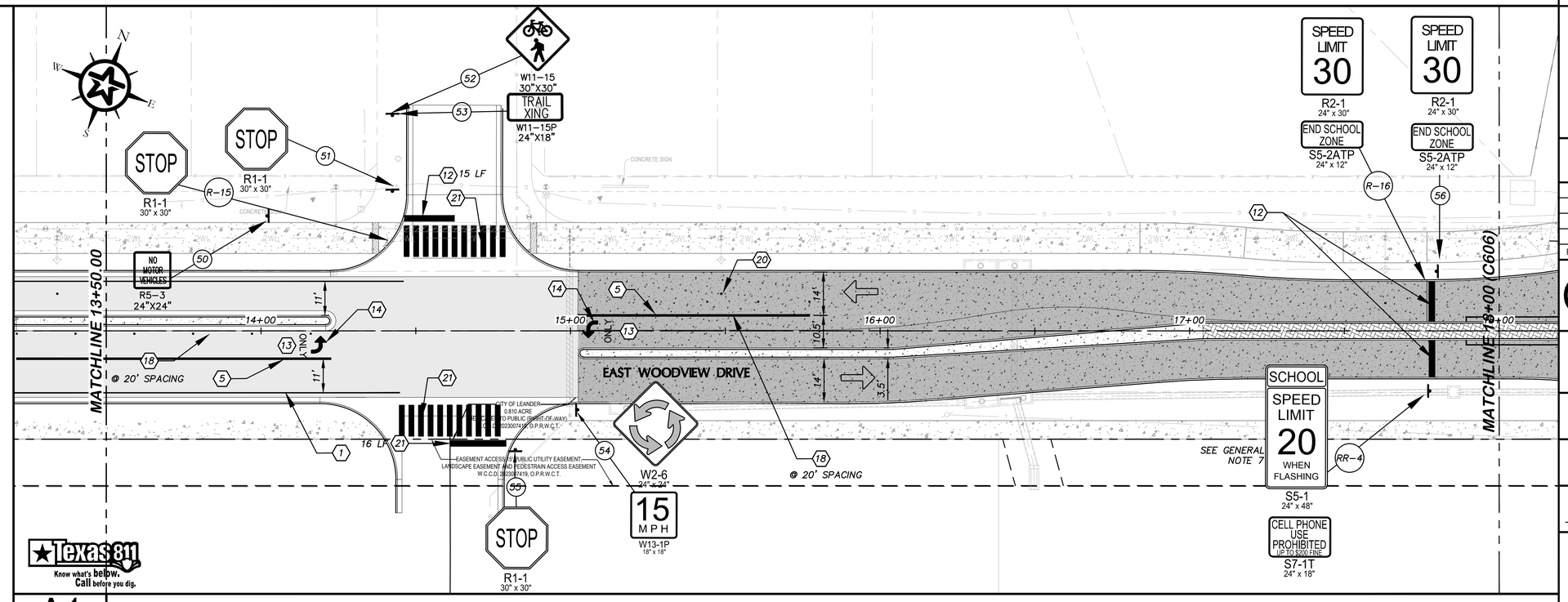
G1 WOODVIEW DRIVE - STA. 1+00 - 3+50

A1 WOODVIEW DRIVE - STA. 3+50 - 8+50

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585SIGNAGE PLAN.DWG, SIGNAGE & STRIPING PLAN WOODVIEW DRIVE (1+00-8+50), 3/30/2023 5:52:07 PM, cschroeder



G1 WOODVIEW DRIVE - STA. 8+50 - 13+50



A1 WOODVIEW DRIVE - STA. 13+50 - 18+50

SIGN LEGEND

- (1) PROPOSED SMALL SIGN AND NUMBER
- (RR-1) SIGN TO REMOVE AND RELOCATE
- (R-1) EXISTING SIGN TO BE REMOVED AND NUMBERED
- (OM) OBJECT MARKER – (OM-ZY)

KEY NOTES

- (2) REFL. TY. I THERMO PVMT MARKINGS 4" IN WIDTH, 100 MILS IN THICKNESS, SOLID YELLOW IN COLOR. ITEM 8715-A-4Y
- (3) REFL. TY. I THERMO PVMT MARKINGS 4" IN WIDTH, 100 MILS IN THICKNESS, BROKEN, YELLOW IN COLOR. ITEM 8715-A-4BW
- (5) REFL. TY. I THERMO PVMT MARKINGS 8" IN WIDTH, 100 MILS IN THICKNESS, SOLID, WHITE IN COLOR. ITEM 8715-A-8SW
- (7) REFL. TY. I THERMO PVMT MARKINGS 24" IN WIDTH, 100 MILS IN THICKNESS, SOLID, YELLOW IN COLOR. ITEM 8715-A-24Y
- (12) REFL. TY. I THERMO PVMT MARKINGS, 24" IN WIDTH, 100 MILS IN THICKNESS, SOLID, WHITE IN COLOR. ITEM 8715-A-24SW
- (13) REFL. TY. I THERMO PVMT MARKINGS, WORD "ONLY", 8" TO 10" IN WIDTH, 100 MILS THICKNESS, SOLID, WHITE IN COLOR. ITEM 8715-B
- (14) REFL. TY. I THERMO PVMT MARKINGS, TURN LANE SYMBOLS, 6' TO 10' IN WIDTH, 100 MILS THICKNESS, WHITE IN COLOR. ITEM 8715-DTL
- (18) CLASS E, RAISED PAVEMENT MARKERS, II-W TYPE (WHITE). ITEM 8735-EW
- (19) CLASS E, RAISED PAVEMENT MARKERS, II-S TYPE (AMBER). ITEM 8735-EA
- (20) CLASS E, RAISED PAVEMENT MARKERS, II-B TYPE (BLUE). ITEM 8735-EB
- (21) CROSSWALK (RE: TXDOT PM(4)-22 WITH REFL. TY I THERMO PVMT. MARKINGS, 24-INCH WIDTH, 100 ML THICKNESS, WHITE IN COLOR, ITEM 8715

LEGEND

- TRAFFIC DIRECTION (NOT TO BE STRIPED)
- ROADWAY SIGN ASSEMBLY

GENERAL NOTES

1. REFLECTORIZED PAVEMENT MARKINGS SHALL BE TYPE I (100 MIL) IN ACCORDANCE WITH THE CITY OF AUSTIN..
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4. SIGN DESIGNS SHALL BE APPROVED BY OWNER PRIOR TO FABRICATION.
5. RE: CITY OF LEANDER DETAILS RE: C809 FOR SIGN POST DETAILS.
6. RE: CITY OF LEANDER DETAILS RE: C809 FOR STREET SIGN DETAILS.
7. CITY OF LEANDER TO PROVIDE RETROREFLECTIVE SHEETING TO CONTRACTOR TO POST SCHOOL ZONE TIMES ON S5-1 SIGNS.

0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Texas 811 Know what's below. Call before you dig.

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

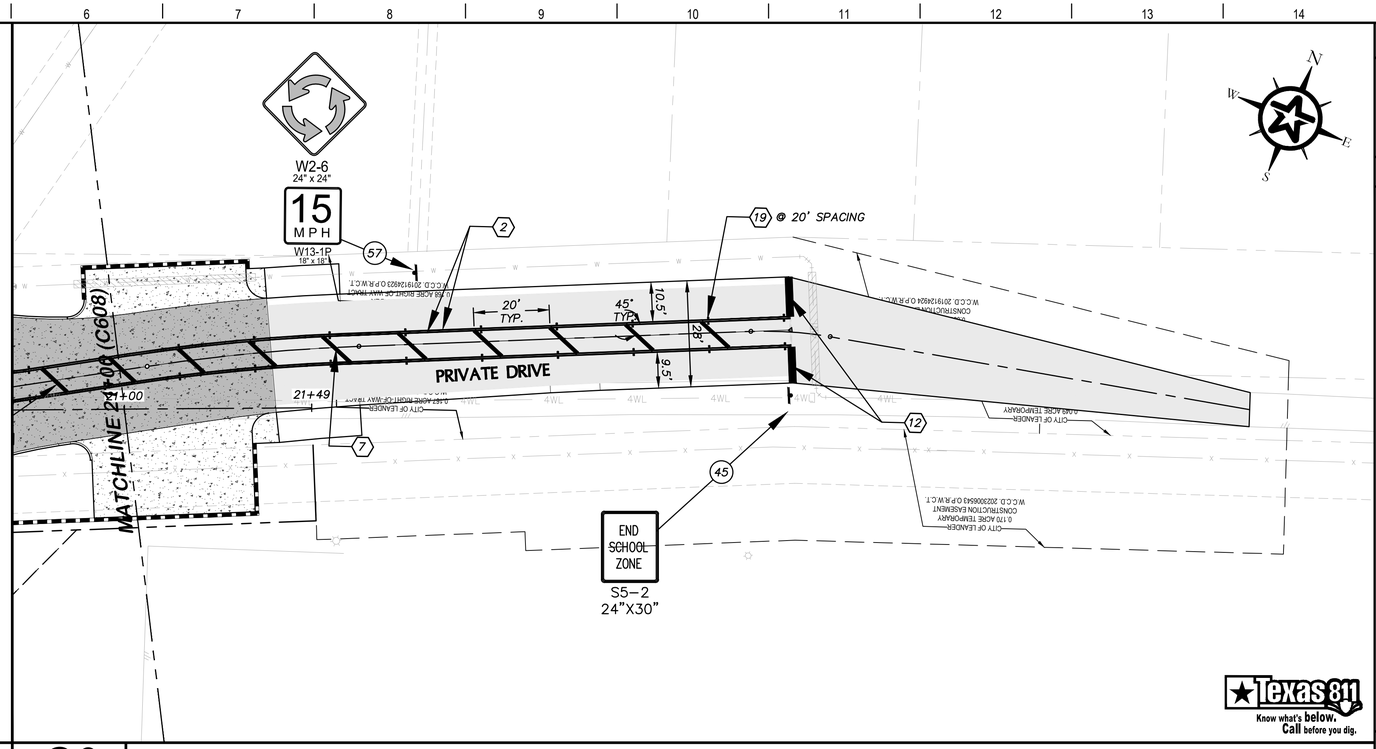
SIGNAGE & STRIPING PLAN
WOODVIEW DRIVE (8+50-18+00)

03/22/2023 DATE
R. ALAN MUNGER, PE

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C804
SHEET	OF

G:\PROJECTS\13-00585\2 DESIGN\2.0 CAD\3-00585SIGNAGE PLAN.DWG, SIGNAGE & STRIPING PLAN WOODVIEW DRIVE (8+50-18+00), 3/29/2023 10:07:49 PM, cschroeder



SIGN LEGEND

- (1) PROPOSED SMALL SIGN AND NUMBER
- (RR-1) SIGN TO REMOVE AND RELOCATE
- (R-1) EXISTING SIGN TO BE REMOVED AND NUMBERED
- (OM) OBJECT MARKER – (OM-ZY)

KEY NOTES

- (2) REFL. TY. I THERMO PVMT MARKINGS 4" IN WIDTH, 100 MILS IN THICKNESS, SOLID YELLOW IN COLOR. ITEM 871S-A-4Y
- (3) REFL. TY. I THERMO PVMT MARKINGS 4" IN WIDTH, 100 MILS IN THICKNESS, BROKEN, YELLOW IN COLOR. ITEM 871S-A-4BW
- (5) REFL. TY. I THERMO PVMT MARKINGS 8" IN WIDTH, 100 MILS IN THICKNESS, SOLID, WHITE IN COLOR. ITEM 871S-A-8SW
- (7) REFL. TY. I THERMO PVMT MARKINGS 24" IN WIDTH, 100 MILS IN THICKNESS, SOLID, YELLOW IN COLOR. ITEM 871S-A-24Y
- (12) REFL. TY. I THERMO PVMT MARKINGS, 24" IN WIDTH, 100 MILS IN THICKNESS, SOLID, WHITE IN COLOR. ITEM 871S-A-24SW
- (14) REFL. TY. I THERMO PVMT MARKINGS, TURN LANE SYMBOLS, 6' TO 10' IN WIDTH, 100 MILS THICKNESS, WHITE IN COLOR. ITEM 871S-DTL
- (18) CLASS E, RAISED PAVEMENT MARKERS, II-W TYPE (WHITE). ITEM 873S-EW
- (19) CLASS E, RAISED PAVEMENT MARKERS, II-S TYPE (AMBER). ITEM 873S-EA
- (20) CLASS E, RAISED PAVEMENT MARKERS, II-B TYPE (BLUE). ITEM 873S-EB
- (21) CROSSWALK (RE: TXDOT PM(4)-22 WITH REFL. TY I THERMO PVMT. MARKINGS, 24-INCH WIDTH, 100 ML THICKNESS, WHITE IN COLOR, ITEM 871S

LEGEND

TRAFFIC DIRECTION (NOT TO BE STRIPED) — ROADWAY SIGN ASSEMBLY

GENERAL NOTES

1. REFLECTORIZED PAVEMENT MARKINGS SHALL BE TYPE I (100 MIL) IN ACCORDANCE WITH THE CITY OF AUSTIN..
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6. RE: CITY OF LEANDER DETAILS RE: C809 FOR STREET SIGN DETAILS.
7. CITY OF LEANDER TO PROVIDE RETROREFLECTIVE SHEETING TO CONTRACTOR TO POST SCHOOL ZONE TIMES ON S5-1 SIGNS.

0 10 20 40
GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Texas 811 Know what's below. Call before you dig.

G1 NOT USED

G6 WOODVIEW DRIVE - STA. 21+00 - END

A1 NOT USED

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

SIGNAGE & STRIPING PLAN
WOODVIEW DRIVE (21+00-END)

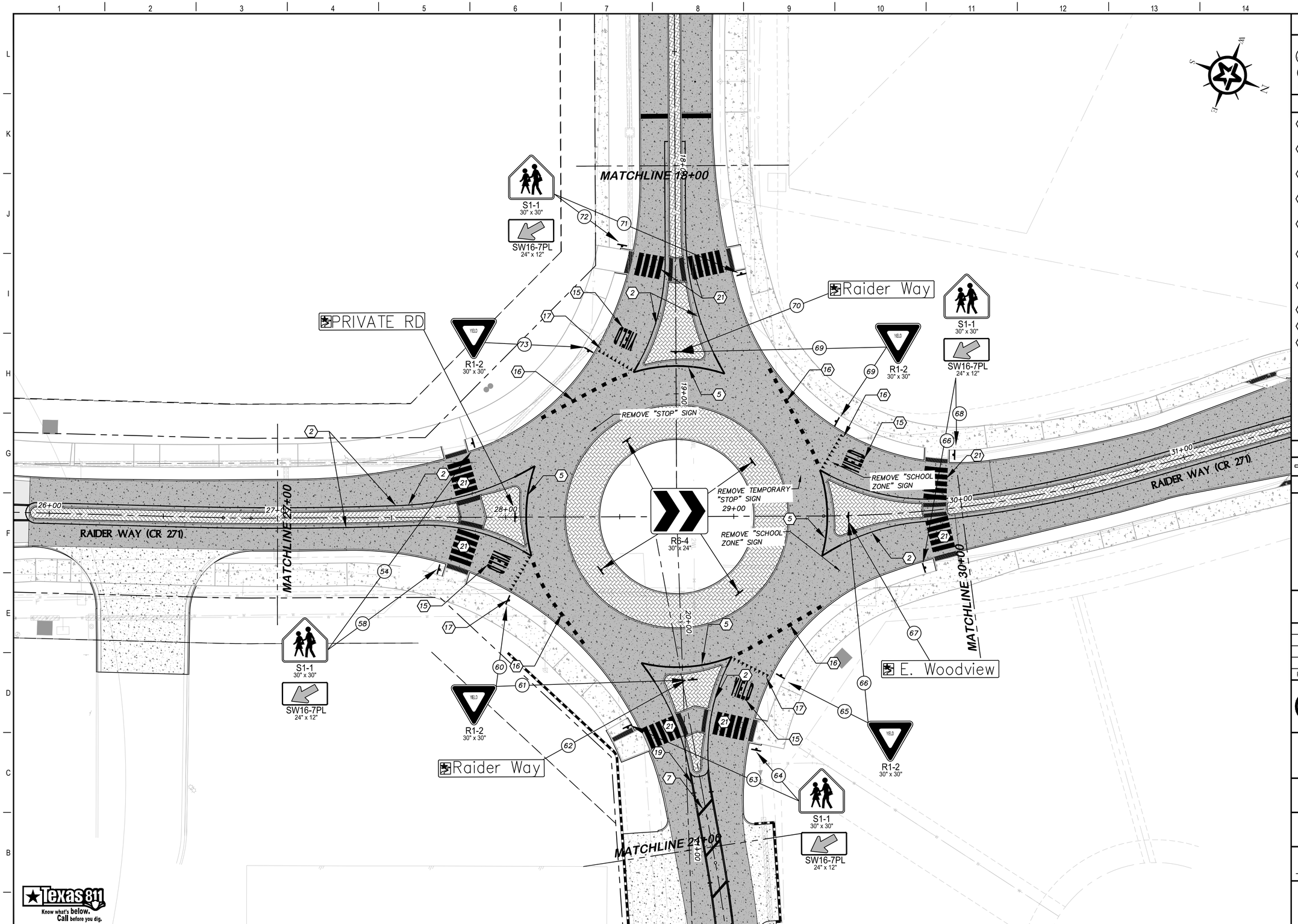
03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C805
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585SIGNAGE PLAN.DWG, SIGNAGE & STRIPING PLAN WOODVIEW DRIVE (21+00-END), 3/29/2023 10:09:31 PM, cschroeder



SIGN LEGEND

- (1) PROPOSED SMALL SIGN AND NUMBER
- (RR–1) SIGN TO REMOVE AND RELOCATE
- (R–1) EXISTING SIGN TO BE REMOVED AND NUMBERED
- (OM) OBJECT MARKER – (OM–ZY)

KEY NOTES

2. REFL. TY. I THERMO PVMT MARKINGS 4" IN WIDTH, 100 MILS IN THICKNESS, SOLID YELLOW IN COLOR. ITEM 8715–A–4Y
3. REFL. TY. I THERMO PVMT MARKINGS 4" IN WIDTH, 100 MILS IN THICKNESS, BROKEN, WHITE IN COLOR. ITEM 8715–A–4BW
5. REFL. TY. I THERMO PVMT MARKINGS, 8" IN WIDTH, 100 MILS IN THICKNESS, SOLID, WHITE IN COLOR. ITEM 8715–A–8SW
7. REFL. TY. I THERMO PVMT MARKINGS, 12" IN WIDTH, 100 MILS IN THICKNESS, SOLID, YELLOW IN COLOR. ITEM 8715–A–12SY
12. REFL. TY. I THERMO PVMT MARKINGS, 24" IN WIDTH, 100 MILS IN THICKNESS, SOLID, WHITE IN COLOR. ITEM 8715–A–24SW
15. REFL. TY. I THERMO PVMT MARKINGS, WORD "YIELD", 8" TO 10" IN WIDTH, 100 MILS THICKNESS, SOLID, WHITE IN COLOR. ITEM 871S–B
16. REFL. TY. I THERMO PVMT MARKINGS 18" IN WIDTH, 100 MILS IN THICKNESS, BROKEN, WHITE IN COLOR. ITEM 8715–A–48W
18. TYPE ___ RAISED PAVEMENT MARKERS, WHITE. ITEM ####–####–####
19. TYPE ___ RAISED PAVEMENT MARKERS, YELLOW. ITEM ####–####–####
20. TYPE ___ RAISED PAVEMENT MARKERS, BLUE. ITEM ####–####–####

LEGEND

- TRAFFIC DIRECTION (NOT TO BE STRIPED)
- ROADWAY SIGN ASSEMBLY

GENERAL NOTES

1. REFLECTORIZED PAVEMENT MARKINGS SHALL BE TYPE I (100 MIL) IN ACCORDANCE WITH THE CITY OF AUSTIN..
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5. RE: CITY OF LEANDER DETAILS RE: C809 FOR SIGN POST DETAILS.
6. RE: CITY OF LEANDER DETAILS RE: C809 FOR STREET SIGN DETAILS.
7. CITY OF LEANDER TO PROVIDE RETROREFLECTIVE SHEETING TO CONTRACTOR TO POST SCHOOL ZONE TIMES ON S5–1 SIGNS.

0 10 20 40

GRAPHIC SCALE (FEET)

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

SIGNAGE & STRPING PLAN ROUNDABOUT

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

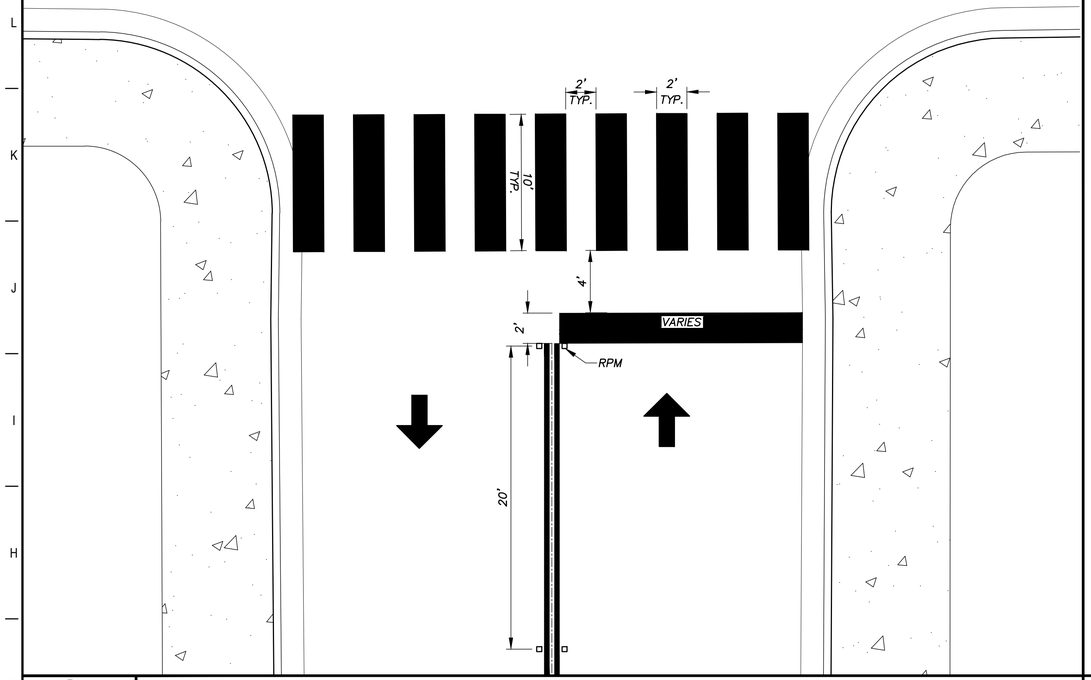
STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C806
SHEET	OF

Texas 811 Know what's below. Call before you dig.

A1 ROUNDABOUT

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585SIGNAGE PLAN.DWG, C806 SIGNAGE & STRPING PLAN ROUNDABOUT, 3/29/2023 10:11:11 PM, cschroeder



G1 — CROSS WALK / STOP BAR DETAIL AT MINOR STREETS

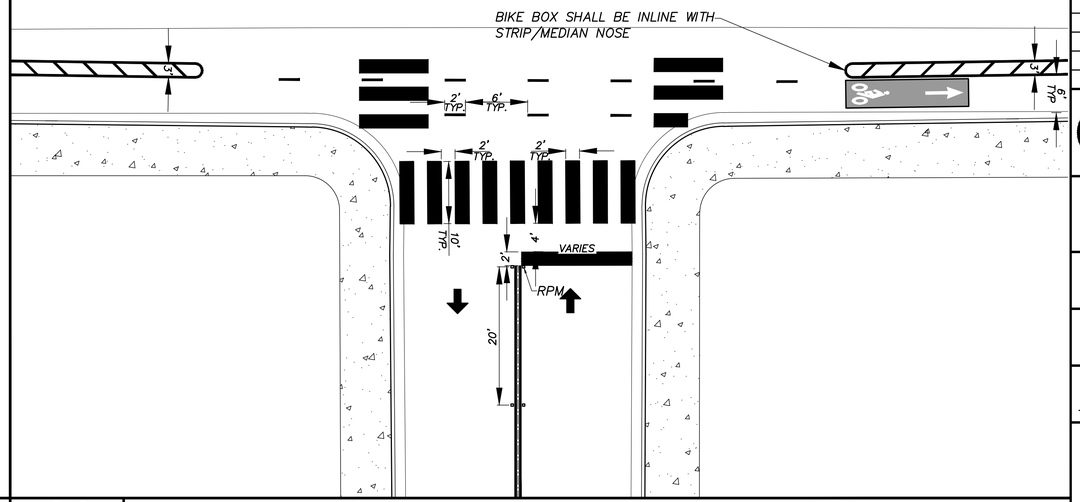
N.T.S.

G8 — NOT USED

N.T.S.

A1 — NOT USED

N.T.S.



A8 — BIKE BOX (SMALL) LOCATION DETAIL

N.T.S.

REV.	DESCRIPTION	DATE

Walker Partners
engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

STRIPING DETAILS

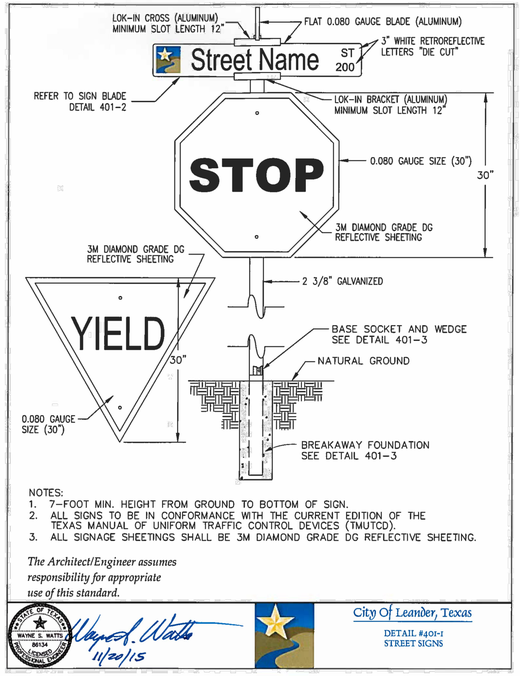
03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED
PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C807
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-ROAD.DWG, C807 STRIPING DETAILS, 3/29/2023 10:11:41 PM, cschroeder



NOTES:
1. 7'-FOOT MIN. HEIGHT FROM GROUND TO BOTTOM OF SIGN.
2. ALL SIGNS TO BE IN CONFORMANCE WITH THE CURRENT EDITION OF THE TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD).
3. ALL SIGNAGE SHEETINGS SHALL BE 3M DIAMOND GRADE DG REFLECTIVE SHEETING.

The Architect/Engineer assumes responsibility for appropriate use of this standard.

STATE OF TEXAS · WAYNE S. WATTS · 86534 · LICENSED PROFESSIONAL ENGINEER
11/20/15

City Of Leander, Texas
DETAIL #401-1
STREET SIGNS

G1 STREET SIGNS — N.T.S.

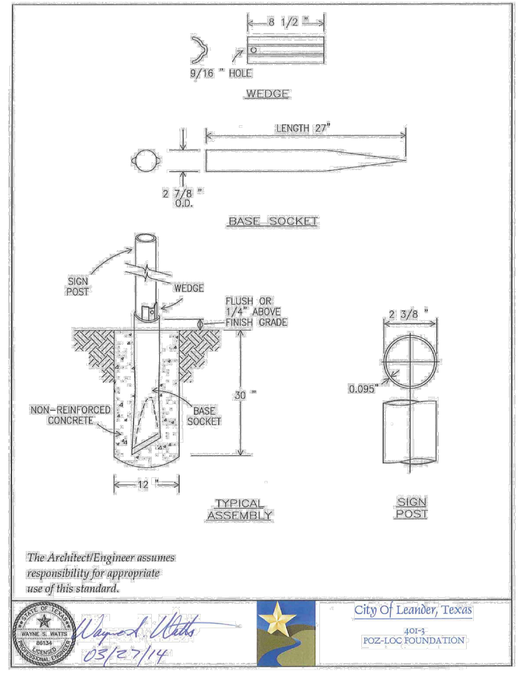


STREET NAME SIGNS:
1) HEIGHT SHALL BE EITHER:
   a) 9 INCHES WITH 5-INCH UPPER CASE AND 3.75-INCH LOWER CASE LETTERING ON STREETS WITH SPEED LIMITS 40 MPH OR LESS OR ON STREETS WITH ANY SPEED LIMIT THAT HAVE NO MORE THAN TWO LANES;
   b) 12 INCHES WITH 8-INCH UPPER CASE AND 6-INCH LOWER CASE LETTERING ON STREETS WITH SPEED LIMITS GREATER THAN 40 MPH AND MORE THAN TWO LANES.
2) 0.080 INCH THICK ALUMINUM BLANK. LENGTH DEPENDENT ON STREET NAME WITH A MINIMUM OF 24 INCHES. COVERED ON BOTH SIDES WITH 3M DIAMOND GRADE, WHITE, REFLECTIVE SHEETING (3M NUMBER 4090). STREET NAME WILL BE CUT OUT OF GREEN, 3M ELECTRO CUT FILM (3M NUMBER 1177C).
3) SIGN BLADES SHALL BE A MINIMUM OF TWENTY-FOUR INCHES (24") IN LENGTH AND A MAXIMUM OF FIFTY-FOUR INCHES (54") IN LENGTH.
4) STREET DESIGNATION (DR, ST, TRL, RD,, ETC.) IN UPPER RIGHT HAND CORNER, BEGINNING BLOCK NUMBER UNDERNEATH
5) CITY LOGO WILL BE PLACED ON THE LEFT-HAND SIDE OF THE SIGN AS SHOWN IN THE ABOVE ILLUSTRATION. LOGO SHALL BE CUT OUT OF GREEN ELECTRO CUT FILM AND SHALL BE THE SAME HEIGHT AS THE UPPER-CASE LETTERING.
6) ALL FONTS SHALL BE TRAFFIC CAD SERIES D OR FHWA SERIES D. SERIES C OR B LETTERING MAY BE USED TO WHERE USE OF SERIES D LETTERING WILL RESULT IN SIGN BLADES LENGTHS GREATER THAN FIFTY FOUR INCHES (54").
7) NO WATER-BASED ADHESIVES ARE PERMISSIBLE FOR USE IN ANY PART OF SIGN.
8) BLOCK NUMBER WILL BE PLACED ON BOTTOM RIGHT CORNER AS SHOWN IN THE ABOVE ILLUSTRATION. BLOCK NUMBER SHALL BE CUT OUT OF GREEN ELECTRO CUT FILM AND SHALL NOT BE A STICKER.

STATE OF TEXAS · ROSSE L. LOCKHARTT · 91442 · LICENSED PROFESSIONAL ENGINEER
27 Sep 2021

City Of Leander, Texas
DETAIL #401-2
STREET NAME SIGN BLADES

G6 STREET NAME SIGN BLADES — N.T.S.

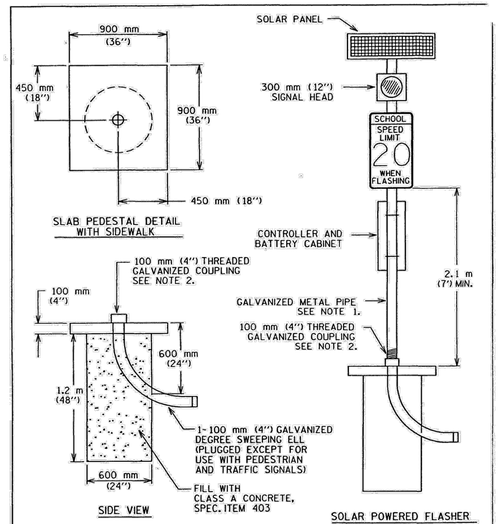


The Architect/Engineer assumes responsibility for appropriate use of this standard.

STATE OF TEXAS · WAYNE S. WATTS · 86534 · LICENSED PROFESSIONAL ENGINEER
03/27/14

City Of Leander, Texas
401-3
POZ-LOC FOUNDATION

G10 POZ-LOC FOUNDATION — N.T.S.



NOTES:
1. 4.5 m X 100 mm (15' X 4") RIGID INTERMEDIATE GALVANIZED METAL PIPE 106 mm (4 1/4") NOMINAL I.D. WITH 3 mm (1/8") WALL THICKNESS, 13 KG (6 LBS) PER FOOT.
2. ENSURE COUPLING IS LEVEL AND PLUMB AND EXTENDS ABOVE THE SURFACE.

CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS	SOLAR POWERED FLASHER ASSEMBLY	STANDARD NO.
Dan Burke, P.E. 9/17/01 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	831S-2

A1 SOLAR POWERED FLASHER ASSEMBLY — N.T.S.

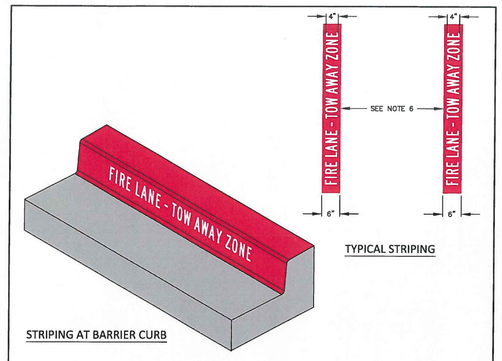


STREET NAME SIGNS:
1) HEIGHT SHALL BE EITHER:
   a) 9 INCHES WITH 5-INCH UPPER CASE AND 3.75-INCH LOWER CASE LETTERING ON STREETS WITH SPEED LIMITS 40 MPH OR LESS OR ON STREETS WITH ANY SPEED LIMIT THAT HAVE NO MORE THAN TWO LANES;
   b) 12 INCHES WITH 8-INCH UPPER CASE AND 6-INCH LOWER CASE LETTERING ON STREETS WITH SPEED LIMITS GREATER THAN 40 MPH AND MORE THAN TWO LANES.
2) 0.080 INCH THICK ALUMINUM BLANK. LENGTH DEPENDENT ON STREET NAME WITH A MINIMUM OF 24 INCHES. COVERED ON BOTH SIDES WITH 3M DIAMOND GRADE, WHITE, REFLECTIVE SHEETING (3M NUMBER 4090). STREET NAME WILL BE CUT OUT OF GREEN, 3M ELECTRO CUT FILM (3M NUMBER 1177C).
3) STREET DESIGNATION (DR, ST, TRL, RD, ETC.) IN UPPER RIGHT-HAND CORNER, BEGINNING BLOCK NUMBER UNDERNEATH.
   A. ALL FONTS SHALL BE TRAFFIC CAD SERIES B OR FHWA SERIES B.
   B. NO WATER-BASED ADHESIVES ARE PERMISSIBLE FOR USE IN ANY PART OF SIGN.
4) PRIVATE STREET ABBREVIATION SHALL BE IN UPPER LEFT-HAND CORNER AS SHOWN WITH THREE-INCH (3") UPPER-CASE LETTERING AND 2-1/4 INCH (2.25") LOWER-CASE LETTERING.

STATE OF TEXAS · WAYNE S. WATTS · 86534 · LICENSED PROFESSIONAL ENGINEER
05/10/18

City Of Leander, Texas
DETAIL #401-4
PRIVATE STREET NAME SIGN BLADES

A6 PRIVATE STREET NAME BLADES — N.T.S.



NOTES:
1. ALL FIRE LANE STRIPING SHALL COMPLY WITH THE CURRENT INTERNATIONAL FIRE CODE, AS ADOPTED BY THE CITY OF LEANDER, AND CITY OF LEANDER CODE OF ORDINANCES.
2. FIRE LANES SHALL BE CONTINUOUSLY MARKED BY RED TRAFFIC PAINT THAT IS MINIMUM SIX INCHES (6") IN WIDTH TO SHOW THE BOUNDARIES OF THE LANE.
3. "FIRE LANE - TOW AWAY ZONE" SHALL APPEAR IN FOUR INCH (4") TYPE D WHITE BLOCK LETTERS AT TWENTY-FIVE FOOT (25') INTERVALS, OR LESS, ON THE RED BORDER MARKINGS ALONG BOTH SIDES OF THE FIRE LANE.
4. WHERE A 6" BARRIER CURB EXISTS, THE FIRE LANE STRIPING SHALL BE ON BOTH THE VERTICAL FACE OF THE CURB AND TOP OF CURB. "FIRE LANE - TOW AWAY ZONE" SHALL BE MARKED IN 4" WHITE BLOCK LETTERS ON FACE OF CURB ONLY.
5. WHERE A FIRE LANE IS ADJACENT TO PARKING SPACES THE FIRE LANE STRIPING SHALL BE AN 8" RED STRIPE PAINTED ON THE DRIVE SURFACE WITH 4" WHITE LETTERS STATING "FIRE LANE NO PARKING TOW-AWAY ZONE." FIRE LANE STRIPING SHALL EXTEND BEHIND ALL PARKING SPACES.
6. WHERE A FIRE HYDRANT, FIRE DEPARTMENT CONNECTION, OR OTHER FIRE PROTECTION EQUIPMENT IS LOCATED ON A FIRE LANE, THE FIRE LANE SHALL BE A MINIMUM OF TWENTY-SIX FEET (26') IN WIDTH, EXCLUSIVE OF SHOULDERS.

*THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. DRAWING NOT TO SCALE.

STATE OF TEXAS · MICHAEL LAFFERTY · 118708 · LICENSED PROFESSIONAL ENGINEER
2017-04-28
FIRE MARSHAL

City Of Leander, Texas
DETAIL #901-2
FIRE LANE STRIPING

A9 FIRE LANE STRIPING — N.T.S.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

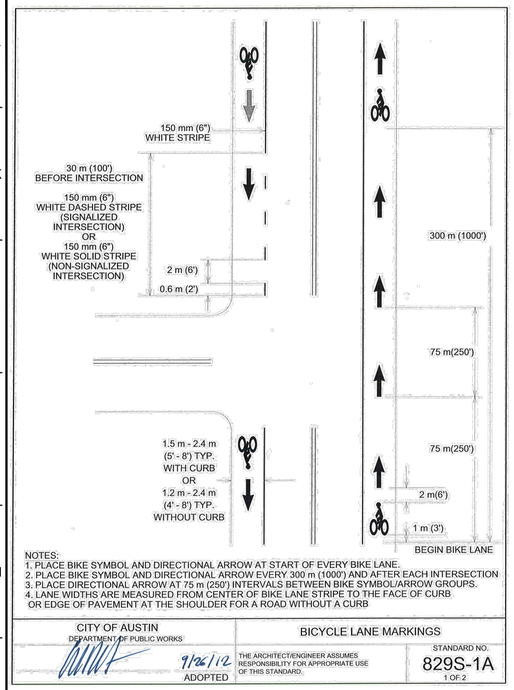
CITY OF LEANDER
SIGNING DETAILS

03/22/2023 — DATE
R. Alan Munger, PE — R. ALAN MUNGER

STATE OF TEXAS · R. ALAN MUNGER · 65341 · REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C808
SHEET	OF

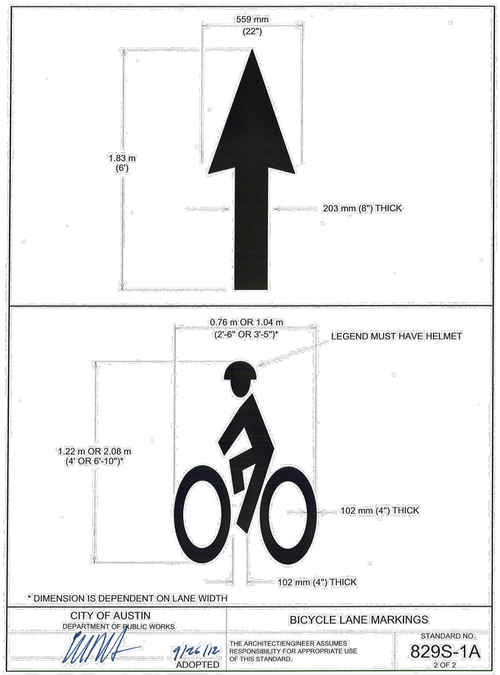
G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-ROAD.DWG, C808 CITY OF LEANDER SIGNING DETAILS, 3/29/2023 10:11:53 PM, cschroeder



NOTES:
1. PLACE BIKE SYMBOL AND DIRECTIONAL ARROW AT START OF EVERY BIKE LANE.
2. PLACE BIKE SYMBOL AND DIRECTIONAL ARROW EVERY 300 m (1000') AND AFTER EACH INTERSECTION
3. PLACE DIRECTIONAL ARROW AT 75 m (250') INTERVALS BETWEEN BIKE SYMBOL/ARROW GROUPS.
4. LANE WIDTHS ARE MEASURED FROM CENTER OF BIKE LANE STRIPE TO THE FACE OF CURB OR EDGE OF PAVEMENT AT THE SHOULDER FOR A ROAD WITHOUT A CURB

CITY OF AUSTIN, DEPARTMENT OF PUBLIC WORKS	BICYCLE LANE MARKINGS	
9/26/12 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 829S-1A 1 OF 2

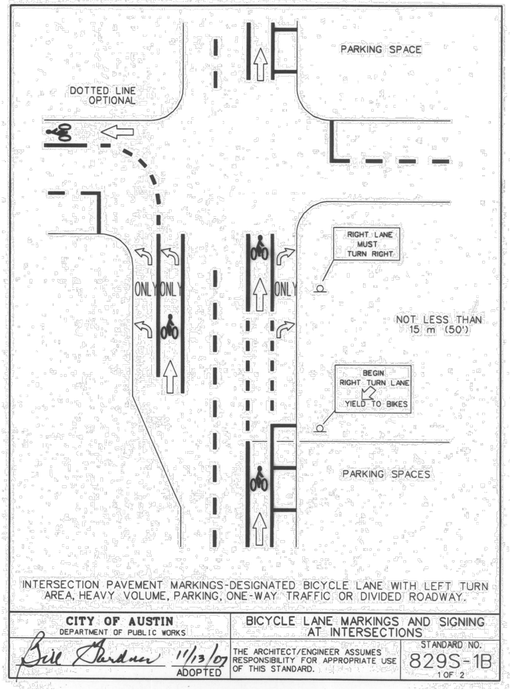
G1 BICYCLE LANE MARKINGS — N.T.S.



* DIMENSION IS DEPENDENT ON LANE WIDTH

CITY OF AUSTIN, DEPARTMENT OF PUBLIC WORKS	BICYCLE LANE MARKINGS	
9/26/12 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 829S-1A 2 OF 2

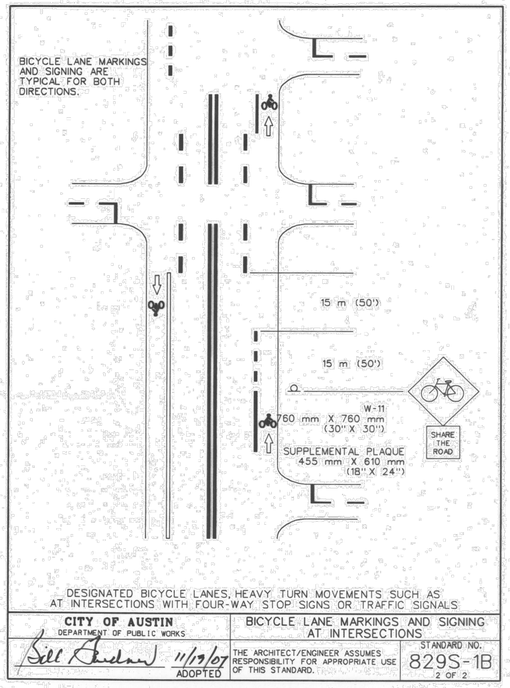
G5 BICYCLE LANE MARKINGS — N.T.S.



INTERSECTION PAVEMENT MARKINGS-DESIGNATED BICYCLE LANE WITH LEFT TURN AREA, HEAVY VOLUME, PARKING, ONE-WAY TRAFFIC OR DIVIDED ROADWAY.

CITY OF AUSTIN, DEPARTMENT OF PUBLIC WORKS	BICYCLE LANE MARKINGS AND SIGNING AT INTERSECTIONS	
11/13/07 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 829S-1B 1 OF 2

G9 BICYCLE LANE MARKINGS AND SIGNING AT INTERSECTIONS — N.T.S.



DESIGNATED BICYCLE LANES, HEAVY TURN MOVEMENTS SUCH AS AT INTERSECTIONS WITH FOUR-WAY STOP SIGNS OR TRAFFIC SIGNALS

CITY OF AUSTIN, DEPARTMENT OF PUBLIC WORKS	BICYCLE LANE MARKINGS AND SIGNING AT INTERSECTIONS	
11/13/07 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 829S-1B 2 OF 2

A1 BICYCLE LANE MARKINGS AND SIGNING AT INTERSECTIONS — N.T.S.

A6 NOT USED — N.T.S.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

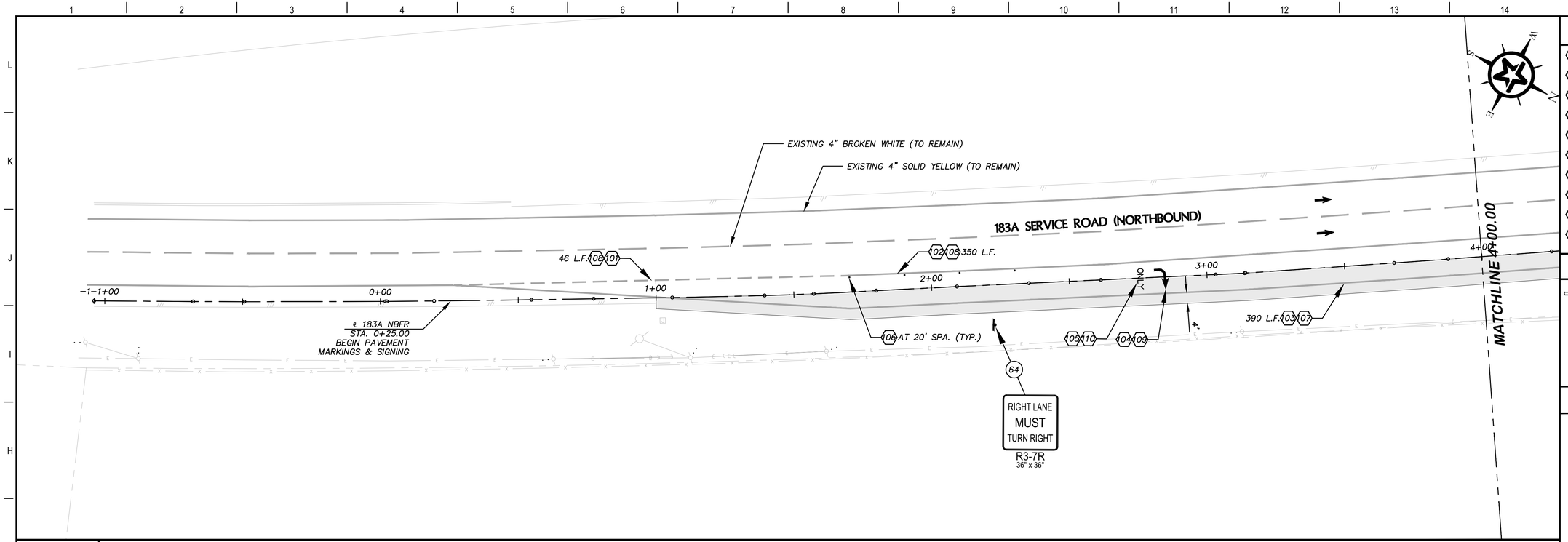
CITY OF AUSTIN MARKING & SIGNING DETAILS

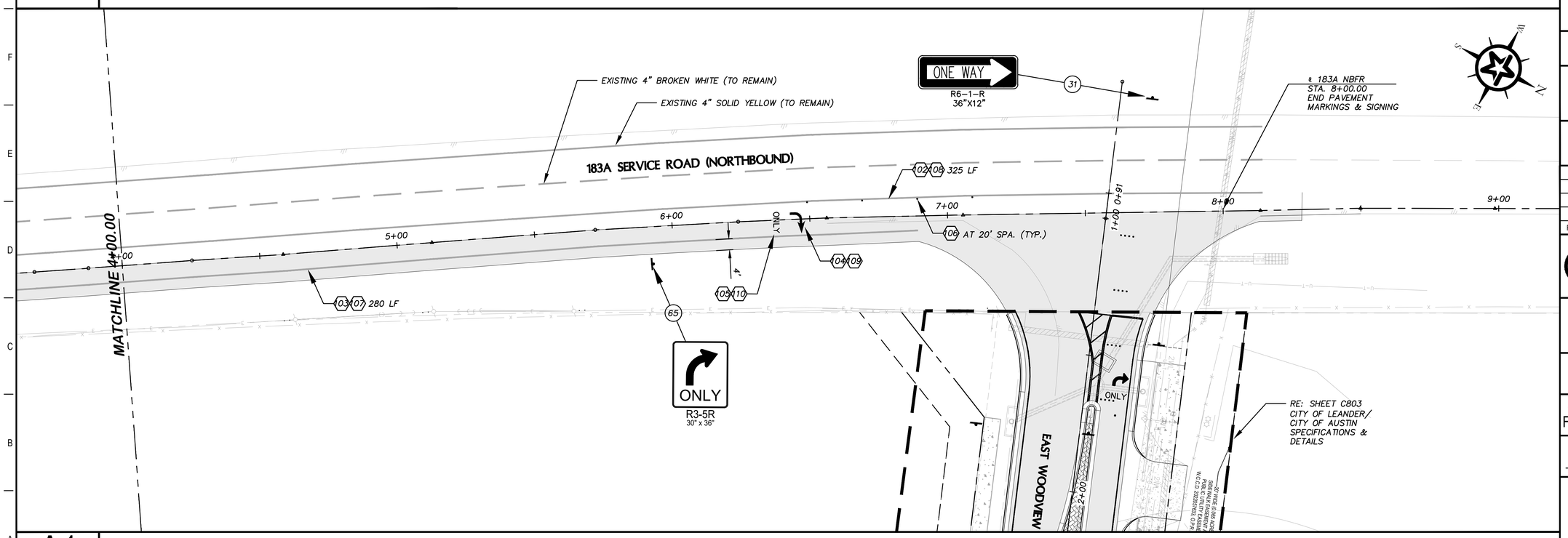
03/22/2023 DATE — R. ALAN MUNGER, PE

STATE OF TEXAS — R. ALAN MUNGER — 65341 — REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C809
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-ROAD.DWG, CITY OF AUSTIN MARKING & SIGNING DETAILS, 3/29/2023 10:12:00 PM, cschroeder





G1 US-183A SERVICE ROAD - STA. 0+00 - 4+00

A1 US-183A SERVICE ROAD - STA. 4+00 - 9+00

KEY NOTES

101 REFL. PAV MRK TY. II (W) 8" (DOT) (100 MIL) (TXDOT ITEM 666)
102 REFL. PAV MRK TY. II (W) 8" (SLD) (100 MIL) (TXDOT ITEM 666)
103 REFL. PAV MRK TY. II (W) 4" (SLD) (100 MIL) (TXDOT ITEM 666)
104 PREFAB PAV MRK TY. C (W) (ARROW) (TXDOT ITEM 668)
105 PREFAB PAV MRK TY. C (W) (WORD) (TXDOT ITEM 668)
106 REFL-PAV MRKR TY. II C-R (TXDOT ITEM 672)
107 PAV SURF PREP FOR MRK (4")
108 PAV SURF PREP FOR MRK (8")
109 PAV SURF PREP FOR MRK (ARROW)
110 PAV SURF PREP FOR MRK (WORD)

LEGEND

TRAFFIC DIRECTION (NOT TO BE STRIPED)
ROADWAY SIGN ASSEMBLY
MILL & OVERLAY
SUBGRADE WIDENING

GENERAL NOTES

1. PAVEMENT MARKINGS (WHERE INDICATED) SHALL BE REMOVED BY WATERBLASTING OR OTHER APPROVED MEANS THAT ARE NON-DESTRUCTIVE TO THE PAVEMENT AND TO MINIMIZE "GHOSTING" EFFECTS.

KEY MAP

GRAPHIC SCALE (FEET)
0 10 20 40

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

SIGNAGE & STRIPING PLAN 183A FRONTAGE ROAD (STA. 0+00-9+00)

03/22/2023
DATE

R. Alan Munger, PE
R. ALAN MUNGER

STATE OF TEXAS
R. ALAN MUNGER
65341
REGISTERED PROFESSIONAL ENGINEER

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C810
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585SIGNAGE PLAN.DWG, SIGNAGE & STRIPING PLAN 183A FRONTAGE ROAD (STA. 0+00-9+00), 3/30/2023 5:44:31 PM, cschroeder

DISCLAIMER:
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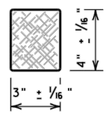
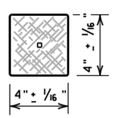
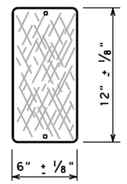
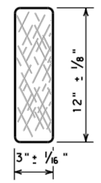
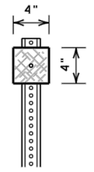
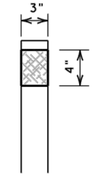
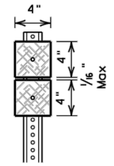
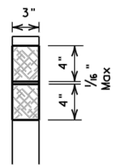
DATE:
FILE:

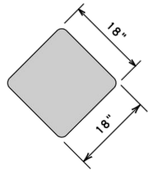
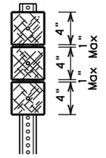
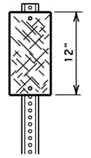
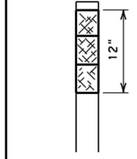
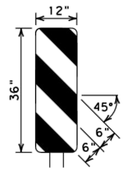
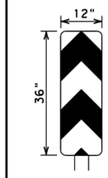
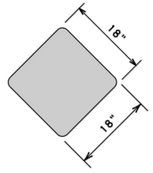
REFLECTOR UNIT SIZES FOR DELINEATORS AND OBJECT MARKERS

	SIZE 1	SIZE 2	SIZE 3	SIZE 4
DEVICE				
SHEETING	Yellow, White or Red Type B or C reflective sheeting			
NOTE	1. Size 1 and 4 - Direct applied reflective sheeting for use on flexible post (fix). 2. Size 2 and 3 - For use on wing channel (wc) post only. Use approved metal, plastic or fiberglass backplate with 17/64" mounting holes.			

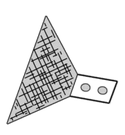
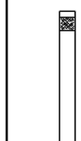
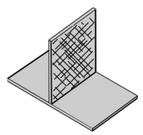
DELINEATORS

	SINGLE		DOUBLE	
DEVICE	 1-Size 2 reflector unit	 1-Size 1 reflector unit	 2-Size 2 reflector units	 2-Size 1 reflector units
SHEETING	Yellow, White or Red Type B or C Reflective Sheeting			
POST TYPE	WC	YFLX, WFLX	WC	YFLX, WFLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

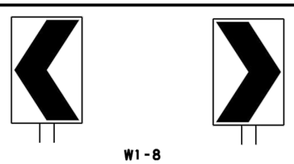
OBJECT MARKERS

	Type 1 (OM-1)	Type 2 (OM-2)			Type 3 (OM-3)			Type 4 (OM-4)
	OM-1	OM-2X	OM-2Y	OM-2Z	OM-3L	OM-3R	OM-3C	OM-4
DEVICE		 3-Size 2 reflector units	 1-Size 3 reflector unit	 3-Size 1 reflector units or 1-Size 4 reflector unit				
SHEETING	Yellow-Type B_{FL} or C_{FL} Sheeting	Yellow - Type B or C Sheeting			Alternating acrylic black and retroflective yellow - Type B_{FL} or C_{FL} Sheeting			Red -Type B_{FL} or C_{FL} Sheeting
POST TYPE	TWT	WC	WC	WFLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

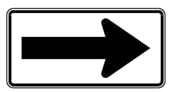
BARRIER REFLECTORS (BRF)

	GF1	GF2	CTB
DEVICE			
	1. Barrier reflectors shall meet the requirements of DMS 8600. 2. Approved Barrier Reflectors are listed on the "Barrier Reflectors" Material Producer List at: www.txdot.gov.		
SHEETING	Yellow, White, Red		
NOTE	1. Reflective sheeting shall have a minimum dimension of 3 inches and minimum surface area of 9 square inches.		

CHEVRONS

DEVICE	 W1-8			
SIZE (W x L)	18"x 24" (Conventional)	24"x 30" (Conventional Oversize)	30"x 36" (Expressway)	36" x 48" (Freeway)
MOUNTING HEIGHT	4'-0" or 7'-0"		7'-0" Only	
NOTE	1. CHEVRON (W1-8) signs and ONE DIRECTION LARGE ARROW (W1-6) Signs shall be installed per Sign Mounting Details (SMD) Standard Sheets and paid under Item 644 (Small Roadside Sign Assemblies). 2. When there is a need to increase conspicuity, the Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTION LARGE ARROW (W1-6).			

ONE DIRECTION LARGE ARROW

DEVICE	 W1-6	
SIZE (W x L)	48" x 24" (Conventional)	60" x 30" (Expressway & Freeway)
MOUNTING HEIGHT	7'-0"	

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXXX)XXX(XX)

NUMBER OF REFLECTORS
S = Single
D = Double

COLOR OF REFLECTORS
W = White
Y = Yellow
R = Red

REFLECTOR UNIT SIZE
1 or 2

TYPE OF POST OR DELINEATOR
WC = Wing Channel Post
YFLX = Yellow Flexible Post
WFLX = White Flexible Post
BRF = Barrier Reflector

TYPE OF MOUNT
GND = Embedded (drivable or set in concrete)
CTB = Concrete Barrier Mount
GF1 or GF2 = Guard Fence Attachment
SRF = Surface Mount

DIRECTION
If Required
BI = Bi-Directional
BR = Bi-Directional with red on back

INSTL OM ASSM (OM-XX) (XXXX)XXX(XX)

TYPE OF OBJECT MARKER
1, 2, 3, or 4

NUMBER OF REFLECTORS OR DIRECTION
X = 3-Size 2 reflector units (Type 2 only)
Y = 1-Size 3 reflector unit (Type 2 only)
Z = 3-Size 1 or 1-Size 4 reflector unit(s) (Type 2 only)
L = Left Side (Type 3 Object Marker only)
R = Right Side (Type 3 Object Marker only)
C = Center (Type 3 Object Marker only)

TYPE OF POST
WC = Wing Channel Post
WFLX = White Flexible Post
TWT = Thin Walled Tubing

TYPE OF MOUNT
GND = Embedded (drivable)
SRF = Surface Mount
WAS = Wedge Anchor Steel
WAP = Wedge Anchor Plastic

DIRECTION
If Required
BI = Bi-Directional

DEPARTMENTAL MATERIAL SPECIFICATIONS

FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

NOTE:
Delineator and object marker substrates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

Texas Department of Transportation — Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION
D & OM(1)-20

FILE: dom1-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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20A

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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - DOM(1)-20

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DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C811
SHEET	OF

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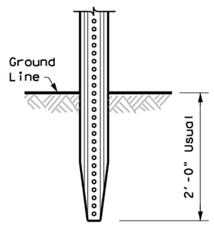
POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

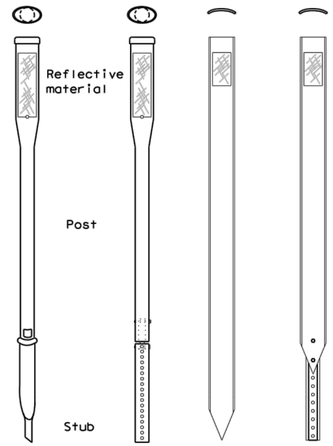


NOTES

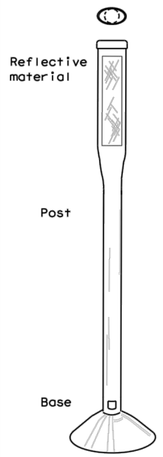
1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only.
2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.

FLEXIBLE POSTS (YFLX, WFLX)

GND



SRF



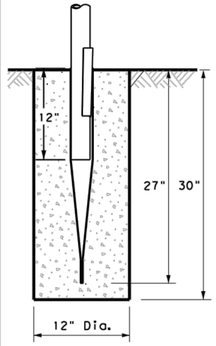
EMBEDDED | SURFACE MOUNT

NOTES

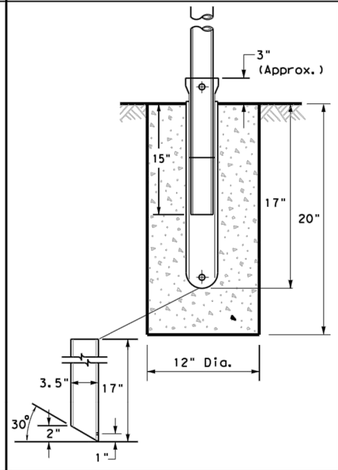
1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices.
2. Install per manufacturer's recommendations.
3. Post length may vary to meet field conditions.
4. When using yellow delineators with flexible posts to separate opposing direction of travel, such as centerline or median use, the flexible posts shall be yellow.

WEDGE ANCHOR SYSTEMS

WAS



WAP



STEEL | PLASTIC

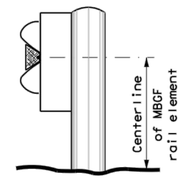
NOTE

1. Install per manufacturer's recommendations.

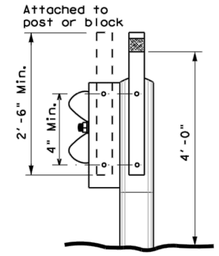
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

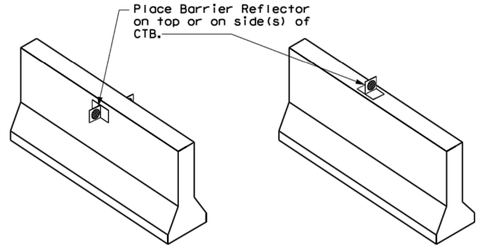
GF1



GF2



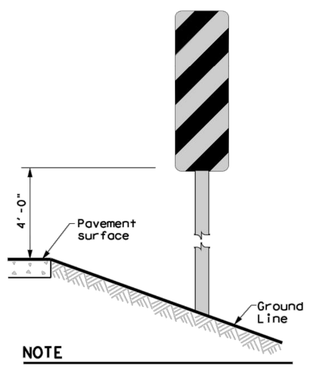
CONCRETE TRAFFIC BARRIER (CTB)



GENERAL NOTES

1. Place delineators on a section of roadway at a consistent distance from the edge of pavement.
2. Where a restriction prevents consistent placement from the pavement edge, place the affected object markers in line with the innermost edge of the obstruction.
3. When Type 2 object markers and delineators are more than 8'-0" from the edge of the pavement, it may not be possible to maintain a height of approximately 4'-0". If this is the case, place the object marker or delineator as close to the desired height as possible.
4. Install all delineators, object markers and barrier reflectors in accordance with the manufacturer's recommendation.
5. Barrier reflectors should be installed a minimum of 18 inches above the edge of the pavement surface.
6. Diagonal stripes on Type 3 object markers shall slope down toward the intended travel lane.

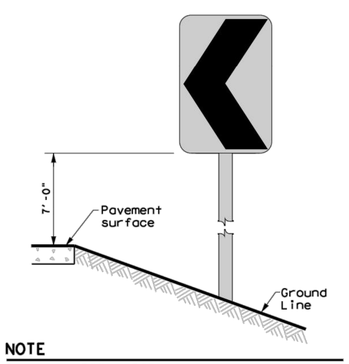
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



NOTE

Mounting at 4 feet to the bottom of the chevron is permitted for chevrons that will not exceed a height of 6'-6" to the top of the chevron (sizes 24" x 30" and smaller)

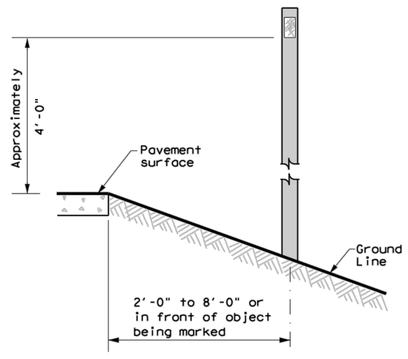
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



NOTE

Chevrons 30" x 36" and larger shall be mounted at a height of 7' to the bottom of the chevron. Chevron sign and ONE DIRECTION LARGE ARROW sign (W1-9T) shall be installed per SMD standard sheets and paid under item 644.

DELINEATORS AND TYPE 2 OBJECT MARKERS



See general notes 1, 2 and 3.

Texas Department of Transportation — Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-20

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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - DOM(2)-20

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C812
SHEET	OF

DATE:
FILE:

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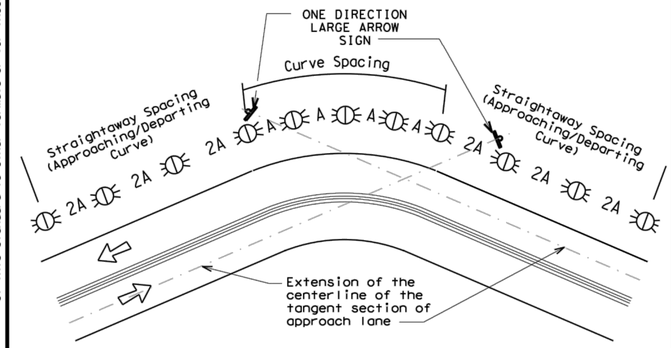
MINIMUM WARNING DEVICES AT CURVES WITH ADVISORY SPEEDS

Amount by which Advisory Speed is less than Posted Speed	Curve Advisory Speed	
	Turn (30 MPH or less)	Curve (35 MPH or more)
5 MPH & 10 MPH	• RPMs	• RPMs
15 MPH & 20 MPH	• RPMs and One Direction Large Arrow sign	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons.
25 MPH & more	• RPMs and Chevrons; or • RPMs and One Direction Large Arrow sign where geometric conditions or roadside obstacles prevent the installation of chevrons	• RPMs and Chevrons

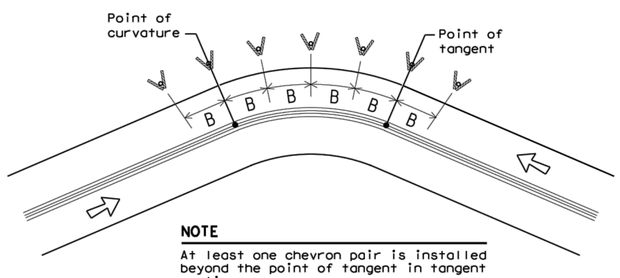
SUGGESTED SPACING FOR DELINEATORS ON HORIZONTAL CURVES



NOTE

ONE DIRECTION LARGE ARROW (W1-6) sign should be located at approximately and perpendicular to the extension of the centerline of the tangent section of approach lane.

SUGGESTED SPACING FOR CHEVRONS ON HORIZONTAL CURVES



NOTE

At least one chevron pair is installed beyond the point of tangent in tangent section.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS KNOWN

Degree of Curve	Radius of Curve (FEET)	Spacing in Curve (FEET)	Spacing in Straightaway (FEET)	Chevron Spacing in Curve (FEET)
		A	2A	B
1	5730	225	450	—
2	2865	160	320	—
3	1910	130	260	200
4	1433	110	220	160
5	1146	100	200	160
6	955	90	180	160
7	819	85	170	160
8	716	75	150	160
9	637	75	150	120
10	573	70	140	120
11	521	65	130	120
12	478	60	120	120
13	441	60	120	120
14	409	55	110	80
15	382	55	110	80
16	358	55	110	80
19	302	50	100	80
23	249	40	80	80
29	198	35	70	40
38	151	30	60	40
57	101	20	40	40

Curve delineator approach and departure spacing should include 3 delineators spaced at 2A. This spacing should be used during design preparation or when the degree of curve is known.

DELINEATOR AND CHEVRON SPACING

WHEN DEGREE OF CURVE OR RADIUS IS NOT KNOWN

Advisory Speed (MPH)	Spacing in Curve	Spacing in Straightaway	Chevron Spacing in Curve
	A	2xA	B
65	130	260	200
60	110	220	160
55	100	200	160
50	85	170	160
45	75	150	120
40	70	140	120
35	60	120	120
30	55	110	80
25	50	100	80
20	40	80	80
15	35	70	40

If the degree of curve is not known, delineator spacing may be determined based on the Advisory Speed of the curve. Use the delineator curve spacing for each Advisory Speed (MPH).

DELINEATOR AND OBJECT MARKER APPLICATION AND SPACING

CONDITION	REQUIRED TREATMENT	MINIMUM SPACING
Frwy./Exp. Tangent	RPMs	See PM-series and FPM-series standard sheets
Frwy./Exp. Curve	Single delineators on right side	See delineator spacing table
Frwy/Exp.Ramp	Single delineators on at least one side of ramp (should be on outside of curves) (see Detail 3 on D&OM(4))	100 feet on ramp tangents Use delineator spacing table for ramp curves ("straightway spacing" does not apply to ramp curves)
Acceleration/Deceleration Lane	Double delineators (see Detail 3 on D&OM(4))	100 feet (See Detail 3 on D & OM (4))
Truck Escape Ramp	Single red delineators on both sides	50 feet
Bridge Rail (steel or concrete)and Metal Beam Guard Fence	Bi-Directional Delineators when undivided with one lane each direction Single Delineators when multiple lanes each direction	Equal spacing (100'max) but not less than 3 delineators
Concrete Traffic Barrier (CTB) or Steel Traffic Barrier	Barrier reflectors matching the color of the edge line	Equal spacing 100' max
Cable Barrier	Reflectors matching the color of the edge line	Every 5th cable barrier post (up to 100'max)
Guard Rail Terminus/Impact Head	Divided highway - Object marker on approach end Undivided 2-lane highways - Object marker on approach and departure end	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5) and D & OM (6)
Bridges with no Approach Rail	Type 3 Object Marker (OM-3) at end of rail and 3 single delineators approaching rail	See D & OM(5)
Reduced Width Approaches to Bridge Rail	Type 2 and Type 3 Object Markers (OM-3) and 3 single delineators approaching bridge	Requires reflective sheeting provided by manufacturer per D & OM (VIA) or a Type 3 Object Marker (OM-3) in front of the terminal end See D & OM (5)
Culverts without MBGF	Type 2 Object Markers	See Detail 2 on D & OM(4)
Crossovers	Double yellow delineators and RPMs	See Detail 1 on D & OM (4)
Pavement Narrowing (lane merge) on Freeways/Expressway	Single delineators adjacent to affected lane for full length of transition	100 feet

NOTES

1. Unless indicated otherwise, the delineator or barrier reflector color shall conform to the color of the pavement edge line on the side of the road where the delineators or barrier reflectors are placed.
2. Barrier reflectors may be used to replace required delineators.
3. Single red delineators may be mounted on the back side of delineator posts for wrong way driver applications

LEGEND

	Bi-directional Delineator
	Delineator
	Sign

Texas Department of Transportation — Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(3)-20

FILE: dom3-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - DOM(3)-20

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DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C813
SHEET	OF

DATE:
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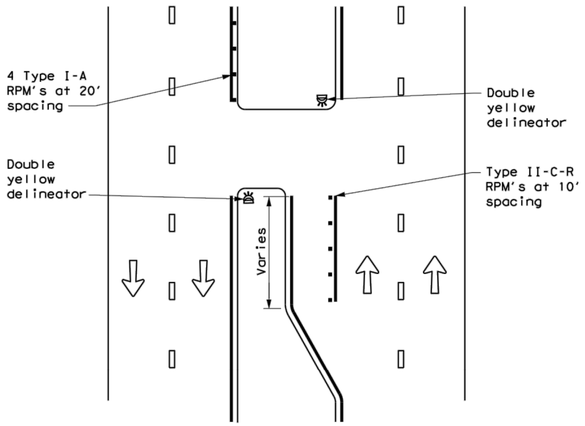
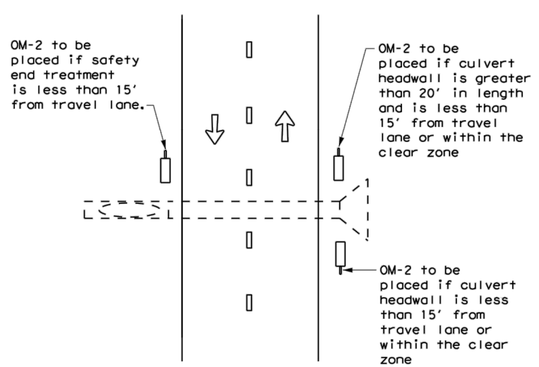
CROSSOVERS



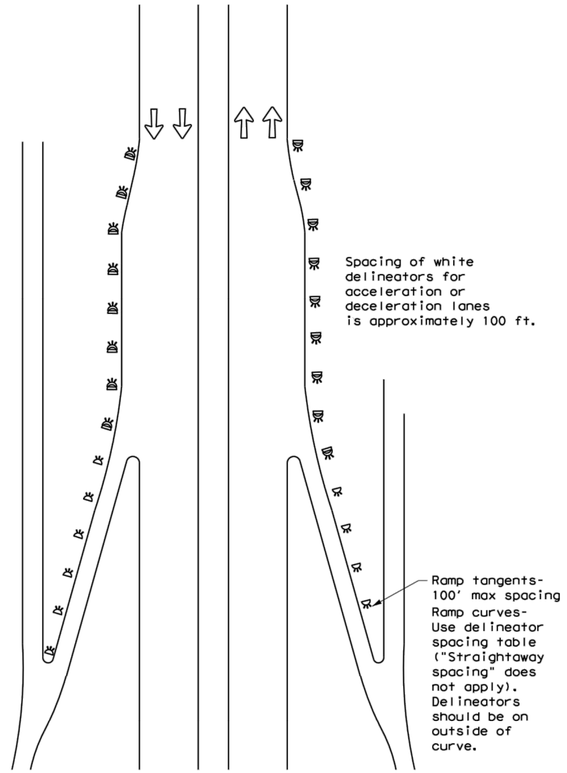
DETAIL 1

FOR CULVERTS WITHOUT MBGF



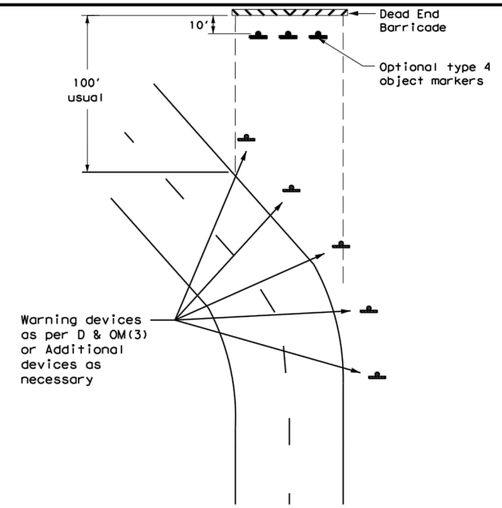
DETAIL 2

FREEWAY DELINEATION FOR RAMPS AND ACCELERATION/DECELERATION LANES



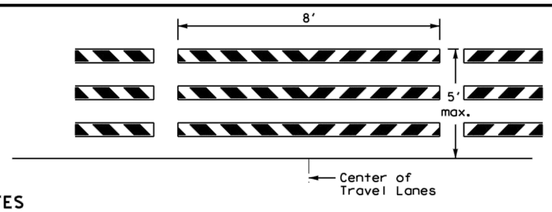
DETAIL 3

TYPICAL APPLICATION OF DEAD END BARRICADE



DETAIL 4

TYPICAL DEAD END BARRICADE INSTALLATION



NOTES

1. Barricade striping shall be red and white reflective sheeting for all permanent road closures.
2. Barricade striping is red and white sloping toward the center of the roadway.
3. Type 3 Barricade Supports should be anchored to soil or pavement as described in compliant Work Zone Traffic Control Devices List, section D.2.f and D.2.g.

DETAIL 5

LEGEND	
	Bidirectional Delineator
	Delineator
	OM-3
	Barricade
	Sign
	OM-2
	Double Delineator

Texas Department of Transportation — Traffic Safety Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

D & OM(4)-20

FILE: dom4-20.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
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PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C814
SHEET	OF

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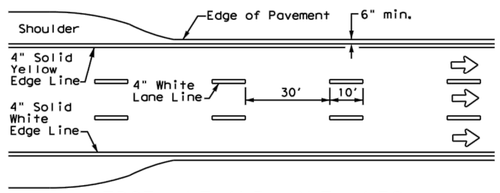
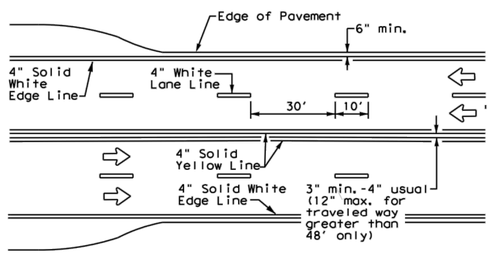
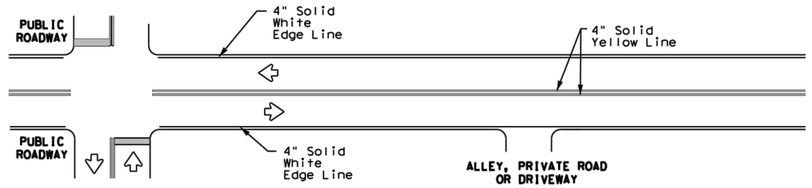


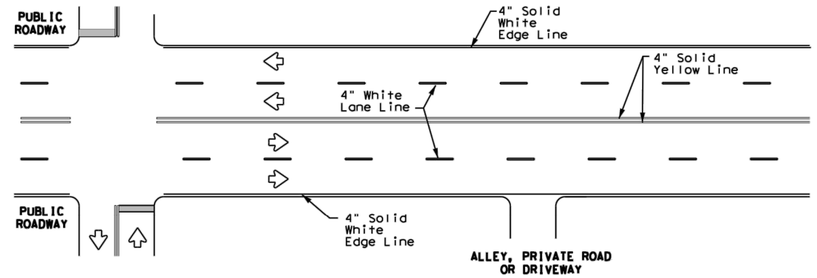
EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



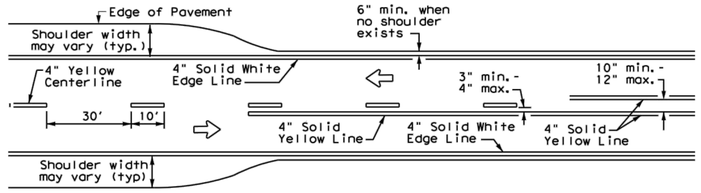
CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



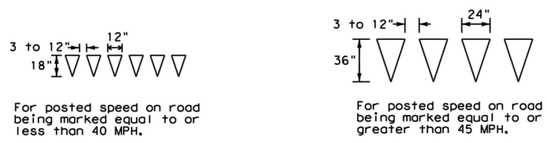
TYPICAL TWO-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



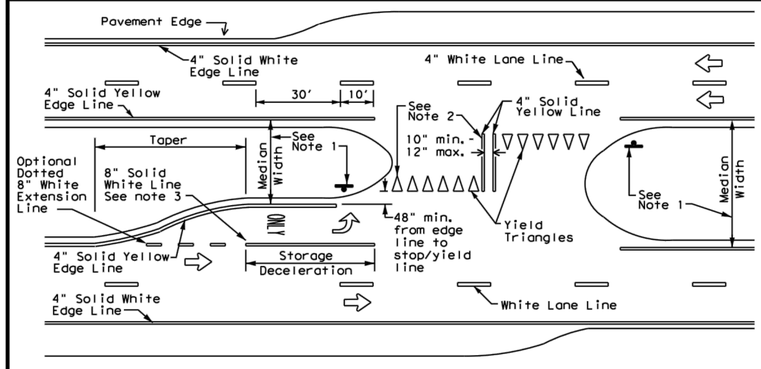
TYPICAL MULTI-LANE, TWO-WAY PAVEMENT MARKINGS THROUGH INTERSECTIONS



TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



YIELD LINES



FOUR LANE DIVIDED ROADWAY CROSSOVERS

NOTES

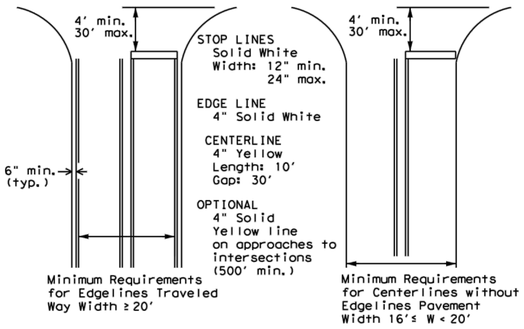
1. Where divided highways are separated by median widths at the median opening itself of 30 feet or more, median openings shall be signed as two separate intersections. Each median opening has two width measurements, with one measurement for each approach. The narrow median width will be the controlling width to determine if signs are required. Yield signs are the typical intersection control. Stop signs are optional as determined by the Engineer.
2. Install median striping (double yellow centerlines and stop bars/yield triangles) when a 50' or greater median centerline can be placed. Stop bars shall only be used with stop signs. Yield traingles shall only be used with yield signs.
3. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

GENERAL NOTES

1. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should not be placed less less than 6 inches from the edge of pavement. This distance may vary due to pavement raveling or other conditions. Edgelines are not required in curb and gutter sections of roadways.
2. The traveled way includes only that portion of the roadway used for vehicular travel. It does not include the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the inside of edgeline to the inside of edgeline of a two lane roadway.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Highways

Texas Department of Transportation — Traffic Safety Division Standard

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-20

FILE: pm1-20.dgn	DN:	CK:	DW:	CK:
©TxDOT November 1978	CONT	SECT	JOB	HIGHWAY
REVISIONS 8-95 3-03				
5-00 2-12	DIST	COUNTY		SHEET NO.
8-00 6-20				

22A

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

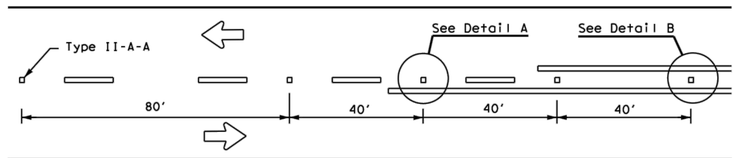
TXDOT DETAILS - PM(1)-20

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C815
SHEET	OF

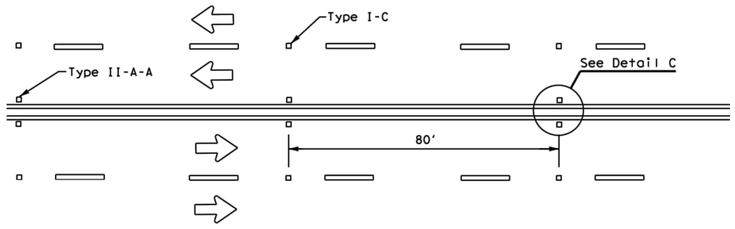
DATE:
FILE:

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - PM(1)-20, 3/29/2023 10:13:35 PM, cschroeder

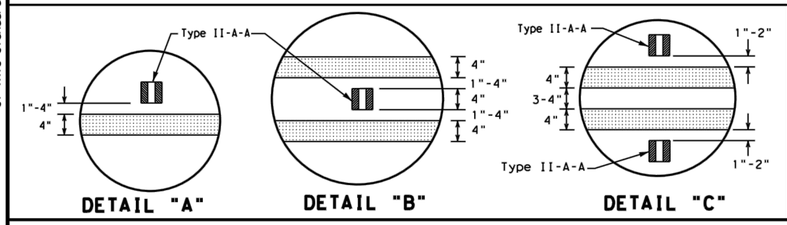
REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

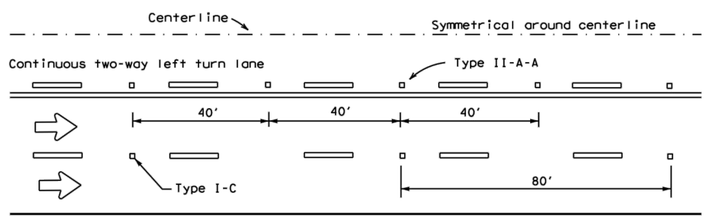


CENTERLINE FOR ALL TWO LANE ROADWAYS

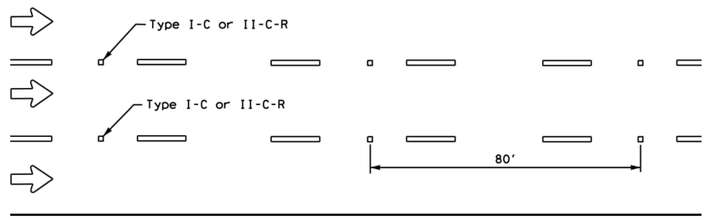


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY HIGHWAYS



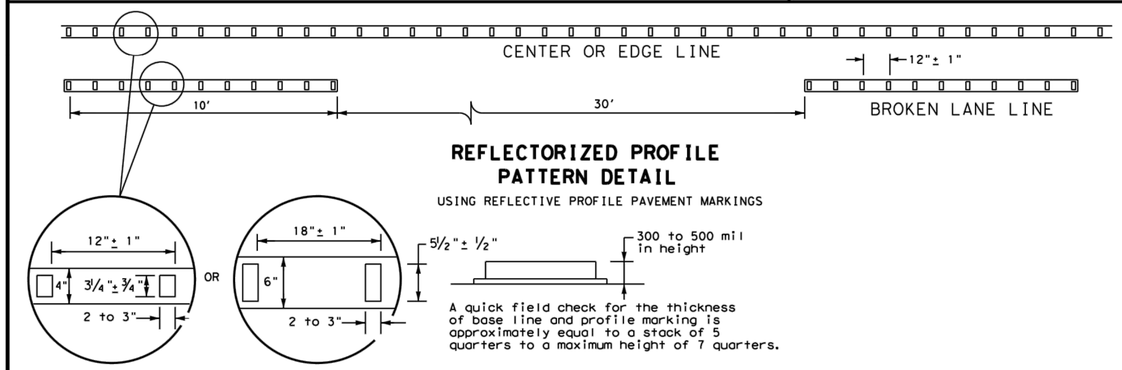


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.



REFLECTORIZED PROFILE PATTERN DETAIL

USING REFLECTIVE PROFILE PAVEMENT MARKINGS

A quick field check for the thickness of base line and profile marking is approximately equal to a stack of 5 quarters to a maximum height of 7 quarters.

4" EDGE LINE, CENTER LINE OR LANE LINE

OPTIONAL 6" EDGE LINE, CENTER LINE OR LANE LINE

NOTE

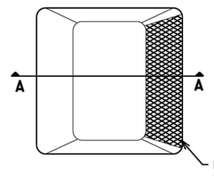
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

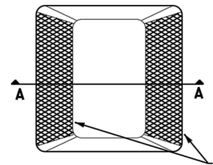
1. All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

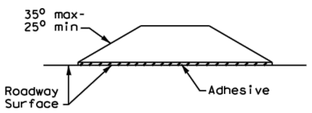
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation — Traffic Safety Division Standard

POSITION GUIDANCE USING RAISED MARKERS RELECTORIZED PROFILE MARKINGS PM(2)-20

FILE: pm2-20.dgn	DN:	CK:	DW:	CK:
© TxDOT April 1977	CONT	SECT	JOB	HIGHWAY
REVISIONS 4-92 2-10				
5-00 2-12	DIST	COUNTY		SHEET NO.
8-00 6-20				

228

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - PM(2)-20

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C816
SHEET	OF

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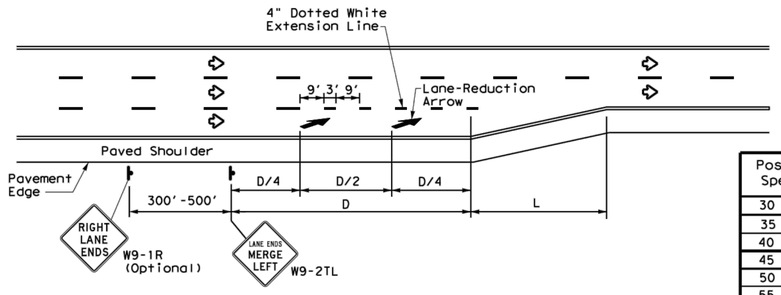
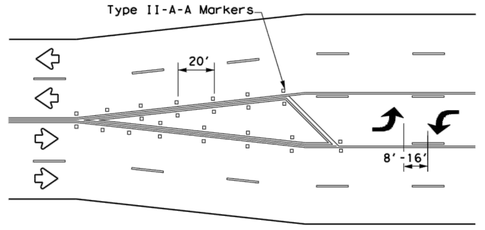


LANE REDUCTION

Posted Speed	D (ft)	L (ft)
30 MPH	460	$L=\frac{WS^2}{60}$
35 MPH	565	
40 MPH	670	
45 MPH	775	L=WS
50 MPH	885	
55 MPH	990	
60 MPH	1,100	
65 MPH	1,200	
70 MPH	1,250	
75 MPH	1,350	

NOTES

1. Lane reduction pavement markings are used where the number of through lanes is reduced because of narrowing of the roadway or because of a section of on-street parking in what would otherwise be a through lane. For Texas Super 2 Passing Lanes, see TS2(PL) standard sheets.
2. On divided highways, an additional W9-1R "RIGHT LANE ENDS" sign may be installed in the median aligned with the W9-1R sign on the right side of the highway.
3. Lane reduction arrows are required for speeds of 45 mph or greater. An optional third lane reduction arrow may be added based on engineering judgement. If used, the optional third lane reduction arrow should be centered between the first and last lane reduction arrows.
4. For lane reductions on Freeways and Expressways, signing shall conform to the TxDOT Freeway Signing Handbook.



A two-way left-turn (TWLT) lane-use arrow pavement marking should be used at or just downstream from the beginning of a two-way left-turn lane within a corridor. Repeating the marking after each intersection or dedicated turn bay is not required unless stated elsewhere in the plans.

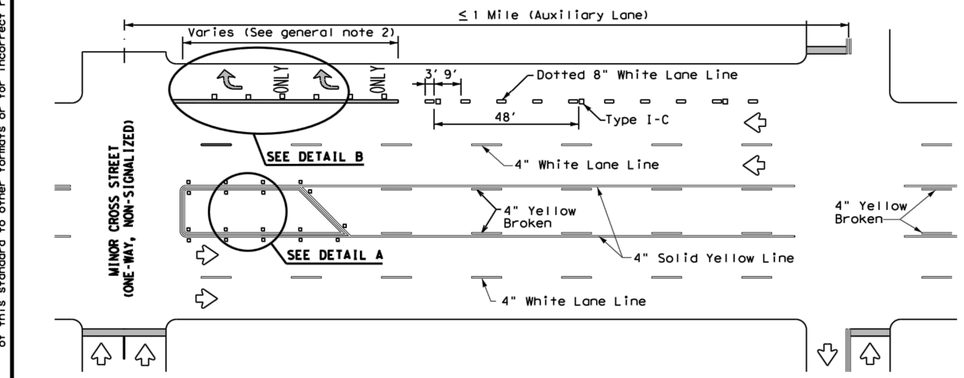
TYPICAL TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

GENERAL NOTES

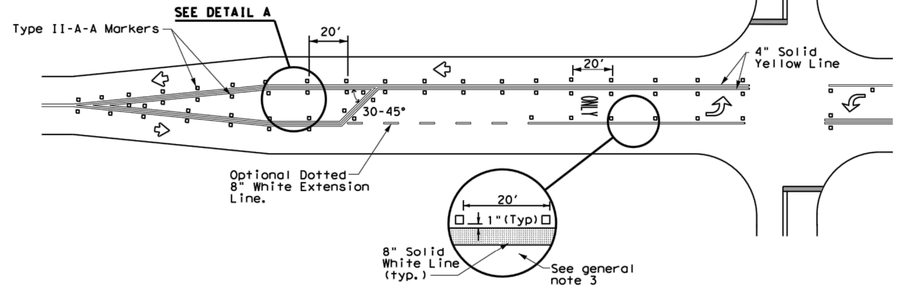
1. Lane use word and arrow markings shall be used where through lanes approaching an intersection become mandatory turn lanes. Lane use word and arrow markings should be used in auxiliary lanes of substantial length. Lane use arrow markings or word and arrow markings may be used in other lanes and turn bays for emphasis. Details for words and arrows are as shown in the Standard Highway Sign Designs for Texas.
2. When lane-use words and arrow markings are used, two sets of arrows should be used if the length of the bay is greater than 180 feet. When a single lane use arrow or word and arrow marking is used for a short turn lane, it should be located at or near the upstream end of the full-width turn lane.
3. Use raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Use raised pavement marker Type II-C-R with divided highways and raised medians.
4. Length of turn bays, including taper, deceleration, and storage lengths shall be as shown on the plans or as directed by the Engineer.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

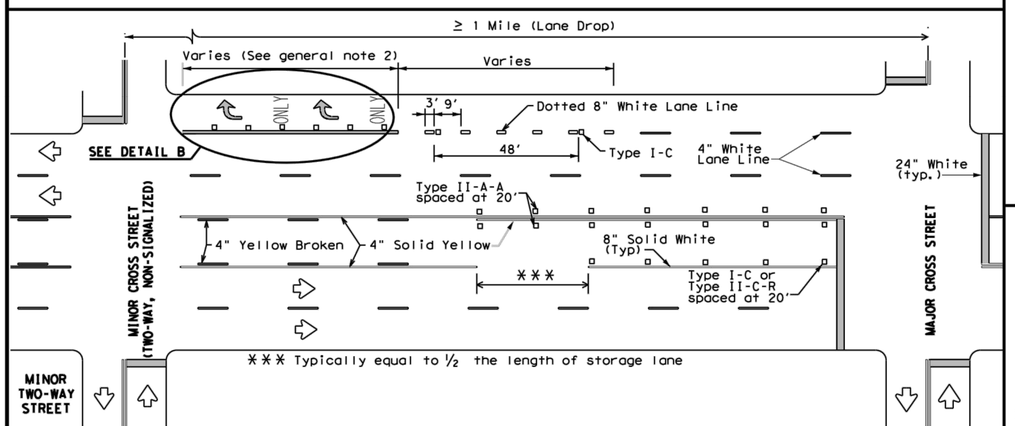
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



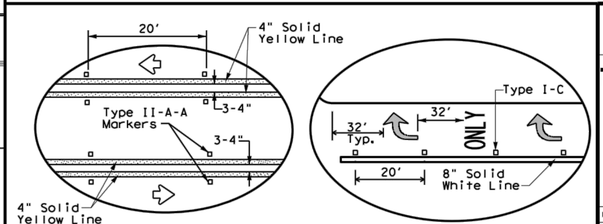
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



TYPICAL TWO-LANE HIGHWAY INTERSECTION WITH LEFT TURN BAYS



TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



DETAIL A

DETAIL B

Texas Department of Transportation — Traffic Safety Division Standard

TWO-WAY LEFT TURN LANES, RURAL LEFT TURN BAYS, AND LANE REDUCTION PAVEMENT MARKINGS
PM(3)-20

FILE: pm3-20.dgn	DN:	CK:	DW:	CK:
©TxDOT April 1998	CONT	SECT	JOB	HIGHWAY
REVISIONS				
5-00 2-10	DIST	COUNTY		SHEET NO.
8-00 2-12				
3-03 6-20				

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REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - PM(3)-20

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C817
SHEET	OF

DATE:
FILE:

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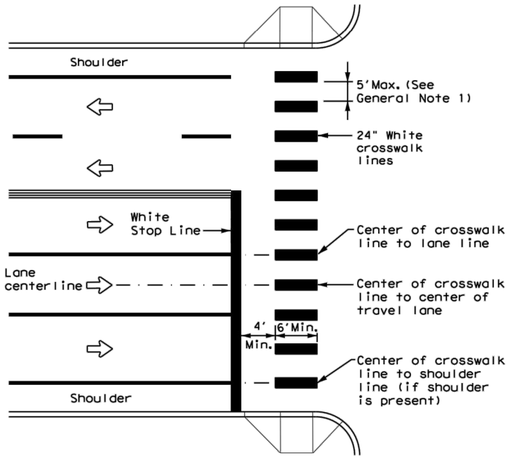


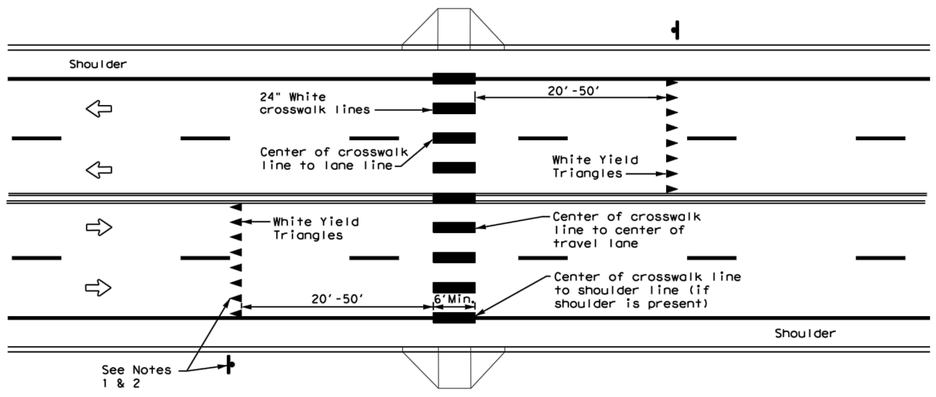
HIGH-VISIBILITY LONGITUDINAL CROSSWALK AT CONTROLLED APPROACH

GENERAL NOTES

1. Longitudinal crosswalk lines should not be placed in the wheel path of vehicles. Center the crosswalk lines on travel lanes, lane lines, and shoulder lines (if present).
2. A minimum 6" clear distance shall be provided to the curb face. If the last crosswalk line falls into this distance it must be omitted.
3. For divided roadways, adjustments in spacing of the crosswalk lines should be made in the median so that the crosswalk lines are maintained in their proper location across the travel portion of the roadway.
4. At skewed crosswalks, the crosswalk lines are to remain parallel to the lane lines.
5. Each crosswalk shall be a minimum of 6' wide.
6. The High-Visibility Longitudinal Crosswalk is the preferred crosswalk pattern on State Highways. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used. All crosswalk designs and dimension shall comply with the "Texas Manual on Uniform Traffic Control Devices."
7. Final placement of Stop Bar/Yield Triangles and Crosswalk shall be approved by the Engineer in the field.

MATERIAL SPECIFICATIONS	
PAVEMENT MARKERS (REFLECTORIZED)	DMS-4200
EPOXY AND ADHESIVES	DMS-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	DMS-6130
TRAFFIC PAINT	DMS-8200
HOT APPLIED THERMOPLASTIC	DMS-8220
PERMANENT PREFABRICATED PAVEMENT MARKINGS	DMS-8240

All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



UNSIGNALIZED MID BLOCK HIGH-VISIBILITY LONGITUDINAL CROSSWALK

NOTES

1. Use yield triangles with "Yield Here to Pedestrians" signs at unsignalized mid block crosswalks.
2. Use stop bars with "Stop Here on Red" signs at mid block crosswalks controlled by traffic signals or pedestrian hybrid beacons.

DATE:
FILE:

Texas Department of Transportation | Traffic Safety Division Standard

CROSSWALK PAVEMENT MARKINGS

PM(4)-20

FILE: pm4-20.dgn	DN:	CK:	DW:	CK:
© TxDOT June 2020	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

220

REV.	DESCRIPTION	DATE

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RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - PM(4)-20

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C818
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - PM(4)-20, 3/29/2023 10:13:45 PM, cschroeder

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SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

Post Type

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

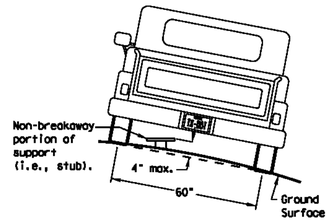
Anchor Type

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
WS = Wedge Anchor Steel - (see SMD(TWT))
WP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation

P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-3))

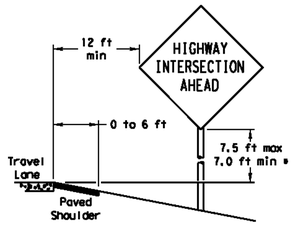
REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

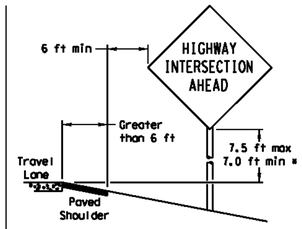
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

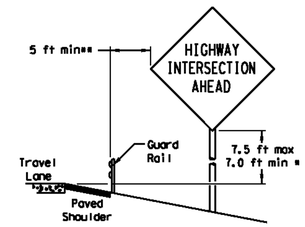
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



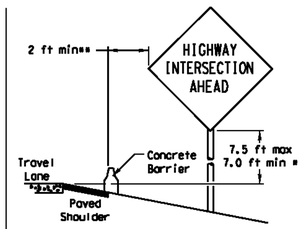
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

BEHIND BARRIER



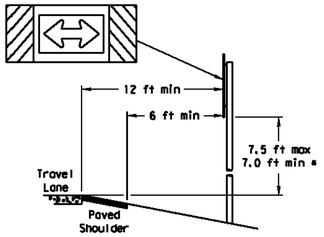
BEHIND GUARDRAIL



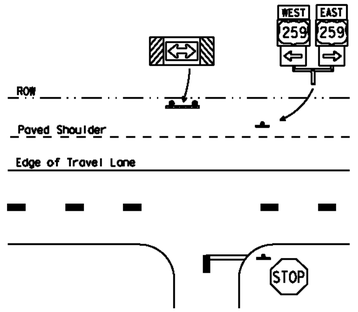
BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

T-INTERSECTION



When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



* Signs shall be mounted using the following condition that results in the greatest sign elevation:

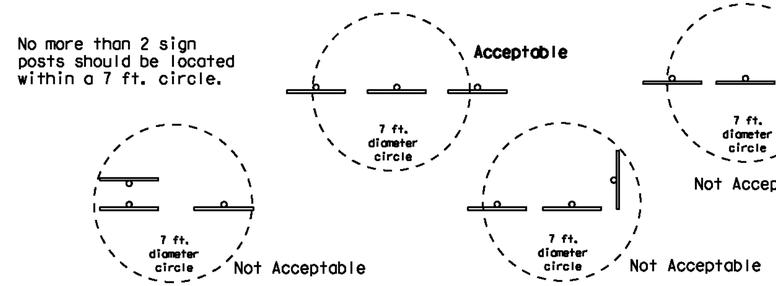
(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

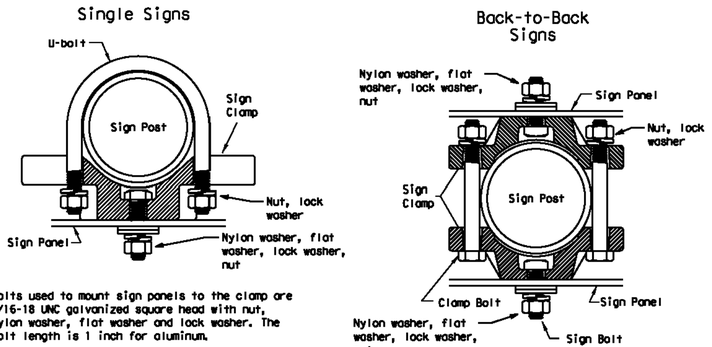
The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is:
http://www.txdot.gov/publications/traffic.htm



TYPICAL SIGN ATTACHMENT DETAIL



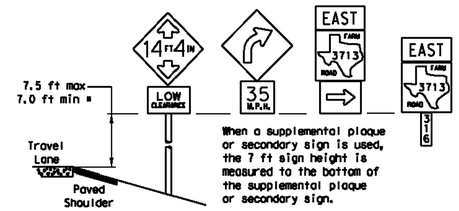
Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

Sign clamps may be either the specific size clamp or the universal clamp.

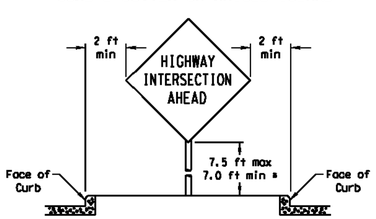
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



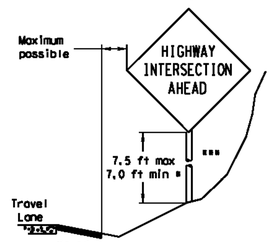
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

REV.	DESCRIPTION	DATE

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RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - SMD(GEN)-08

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

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9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C819
SHEET	OF

DATE:
FILE:

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - SMD(GEN)-08, 3/29/2023 10:13:47 PM, cschroeder

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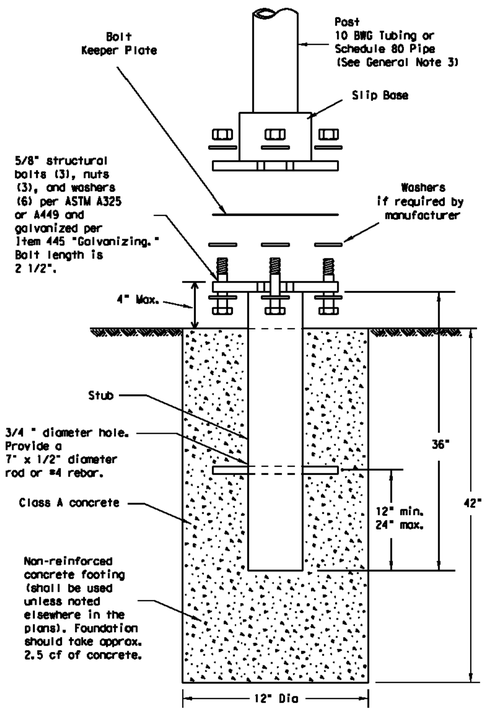
TRIANGULAR SLIPBASE INSTALLATION GENERAL REQUIREMENTS



SM RD SGN ASSM TY XXXXX(X)SA(X-XXXX)

NOTE

There are various devices approved for the Triangular Slipbase System. Please reference the Material Producer List for approved slip base systems. http://www.txdot.gov/business/producer_list.htm The devices shall be installed per manufacturers' recommendations. Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

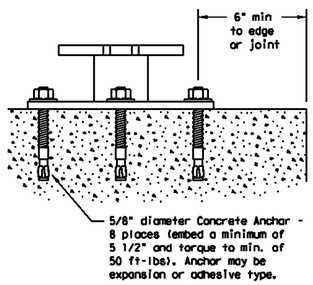
1. Slip base shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to approval of the TxDOT Traffic Standards Engineer.
2. Material used as post with this system shall conform to the following specifications:
   10 BWG Tubing (2.875" outside diameter)
   0.134" nominal wall thickness
   Seamless or electric-resistance welded steel tubing or pipe
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   20% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of 0.122" to 0.138"
   Outside diameter (uncoated) shall be within the range of 2.867" to 2.883"
   Galvanization per ASTM A123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
   Schedule 80 Pipe (2.875" outside diameter)
   0.276" nominal wall thickness
   Steel tubing per ASTM A500 Gr C
   Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
   46,000 PSI minimum yield strength
   62,000 PSI minimum tensile strength
   21% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of 0.248" to 0.304"
   Outside diameter (uncoated) shall be within the range of 2.855" to 2.895"
   Galvanization per ASTM A123
3. See the Traffic Operations Division website for detailed drawings of sign clamps and Texas Universal Triangular Slipbase System components. The website address is:
   https://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

DATE:
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REV.	DESCRIPTION	DATE

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SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

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9-08					
	DIST	COUNTY		SHEET NO.	

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TXDOT DETAILS - SMD(SLIP-1)-08

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DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C820
SHEET	OF

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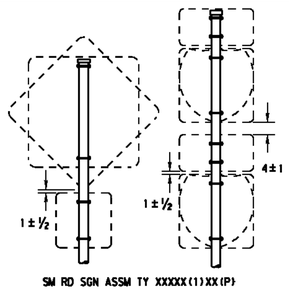
DATE:
FILE:



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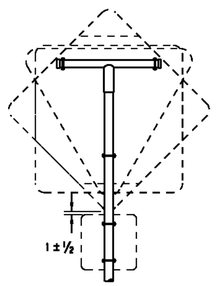

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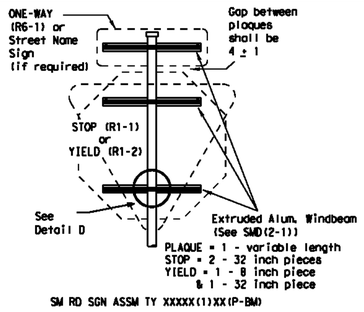
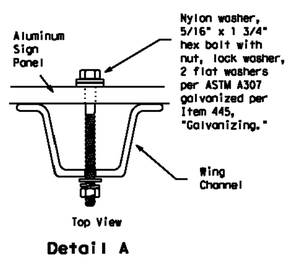
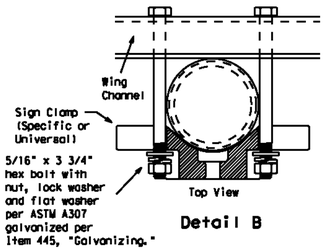


SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



Detail A

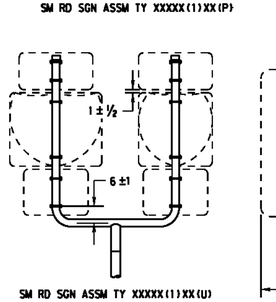


Detail B

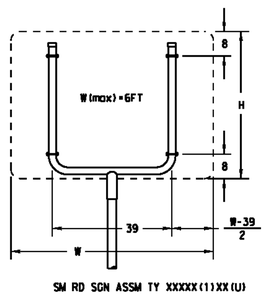
GENERAL NOTES:

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

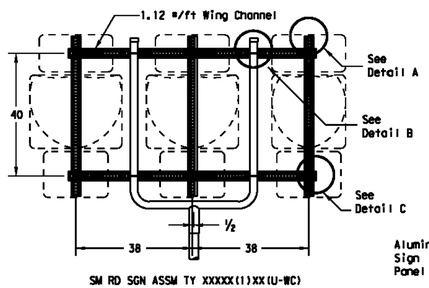
1. See table above.
2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.



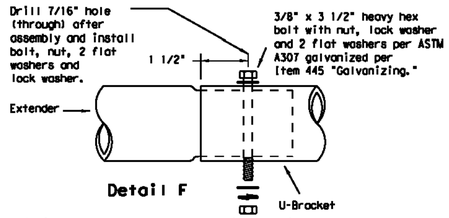
SM RD SGN ASSM TY XXXXX(1)XX(U)



SM RD SGN ASSM TY XXXXX(1)XX(U)

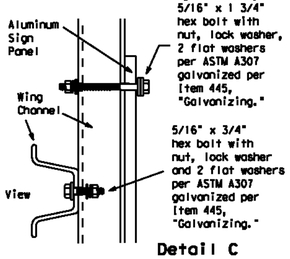


SM RD SGN ASSM TY XXXXX(1)XX(U-WC)
(See Note 11)



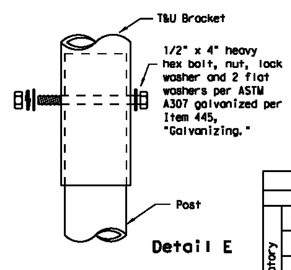
Detail F

Splices shall only be allowed behind the sign substrate.

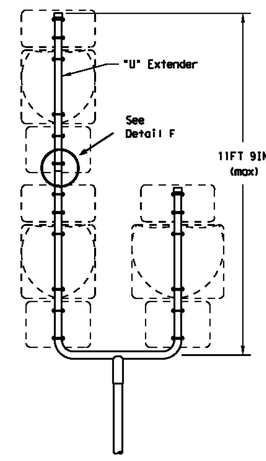


SIDE VIEW

Detail C



Detail E



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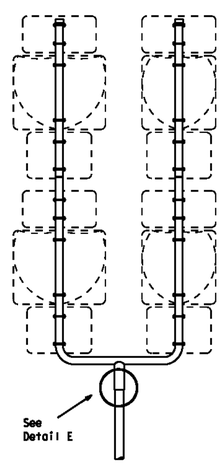

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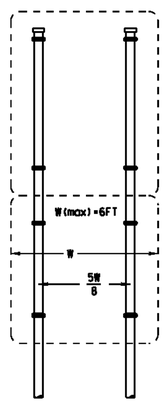
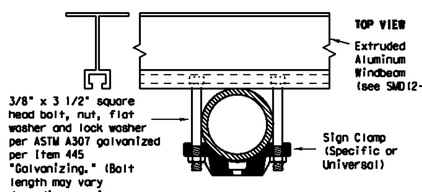
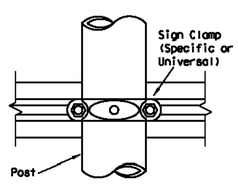


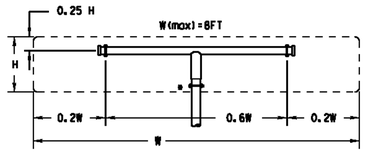
SM RD SGN ASSYM TY XXXXX(2)XX(P)



Detail D



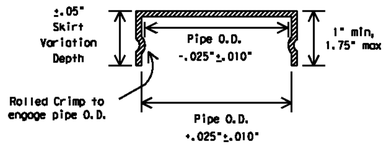
REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)



SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

All dimensions are in english unless detailed otherwise.

FRICTION CAP DETAIL



Friction caps may be manufactured from hot rolled or cold rolled steel sheets. The minimum sheet metal thickness shall be 24 gauge for all cap sizes.

The rim edges shall be reasonably straight and smooth. Caps shall be sized and formed in such a manner as to produce a drive-on friction fit and have no tendency to rock when seated on the pipe. The depth shall be sufficient to give positive protection against entrance of rainwater. They shall be free of sharp creases or indentations and show no evidence of metal fracture.

Caps shall have an electrodeposited coating of zinc in accordance with the requirements of ASTM B633 Class FE/ZN 8.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

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	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.

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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - SMD(SLIP-2)-08

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C821
SHEET	OF

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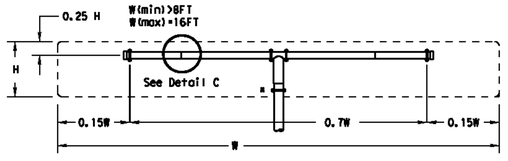

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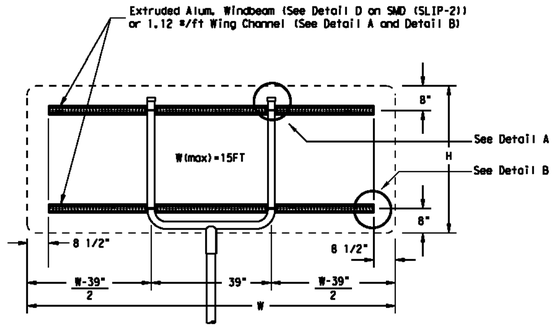
(* - See Note 12)



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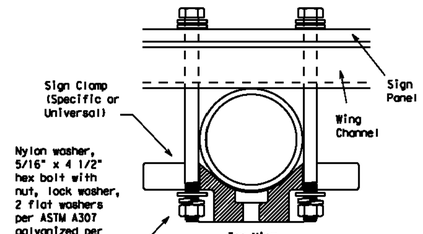
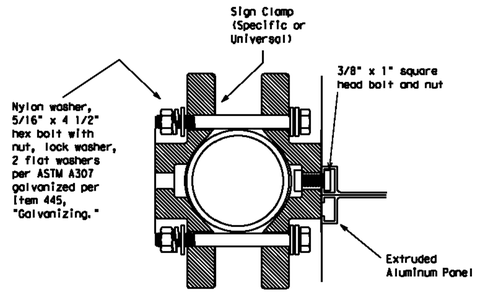
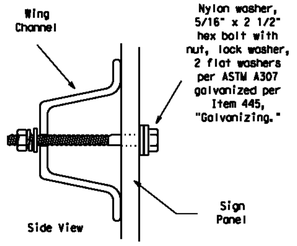


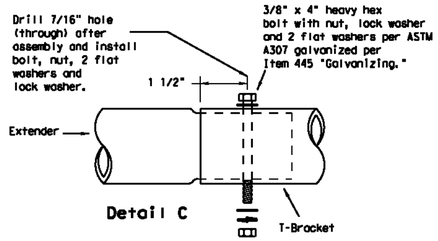
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET

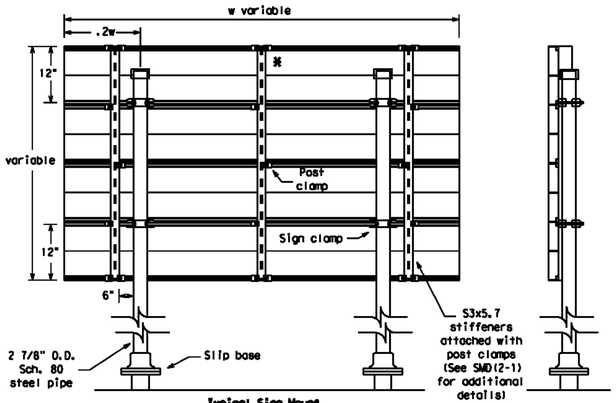


Detail B

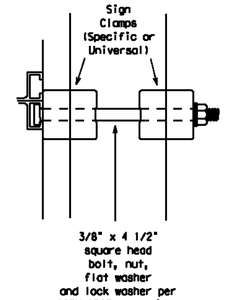


Detail C

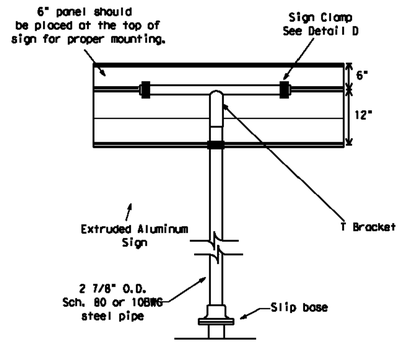
Splices shall only be allowed behind the sign substrate.



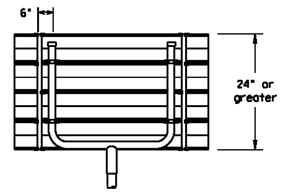
Typical Sign Mount
SM RD SGN ASSM TY S80(2)XX(P-EXAL)
* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.



Detail E



Extruded Aluminum Sign
With T Bracket



Use Extruded Alum. Windbeam as stiffeners
See SMD (2-1) for additional details
See Detail E
for clamp installation

GENERAL NOTES:

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

1. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
2. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
3. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
4. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
5. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
6. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
7. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
8. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
9. Sign blanks shall be the sizes and shapes shown on the plans.
10. Additional sign clamp required on the "T-bracket" post for 24 inch high signs. Place the clamp 3 inches above bottom of sign when possible.
11. Post open ends shall be fitted with Friction Caps.

REQUIRED SUPPORT		
	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

DATE:
FILE:

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

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

9-08 REVISIONS

26D 1

REV.	DESCRIPTION	DATE

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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - SMD(SLIP-3)-08

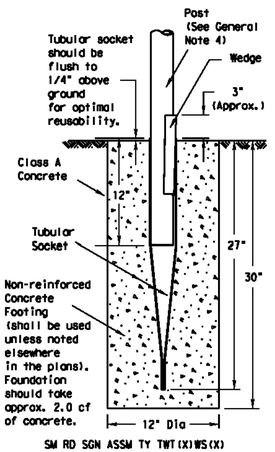
PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C822
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - SMD(SLIP-3)-08, 3/29/2023 10:13:54 PM, cschroeder

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

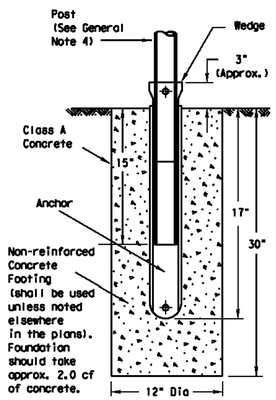
DATE:
FILE:

Wedge Anchor Steel System



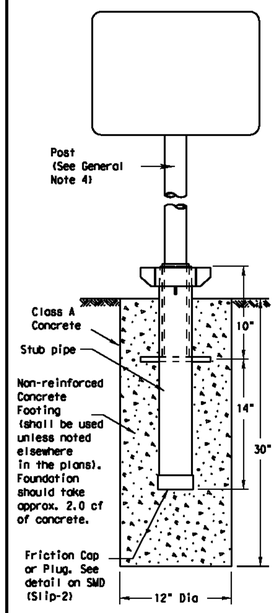
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

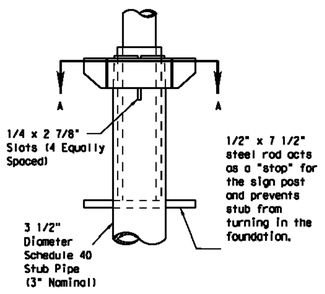


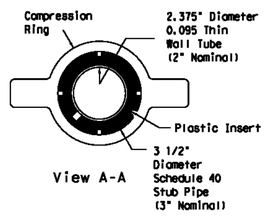
SMD RD SGN ASSM TY TWT(X)WP(X)

Universal Anchor System with Thin-Walled Tubing Post



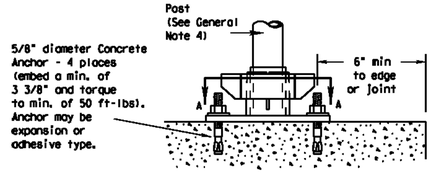
SM RD SGN ASSM TY TWT(X)UA(P)



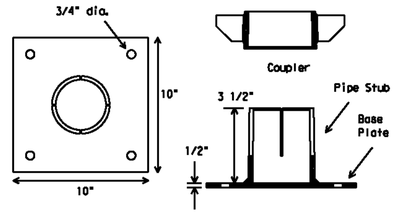


View A-A

Plastic Insert must be used when using the TWT with either the Universal Anchor System or the Bolt Down Universal Anchor System. The insert should be approx. 10" long and cover the tubing from just above the top of the stub pipe to the bottom of the sign post when using the Universal Anchor System. The insert should be cut to approx. 4 1/2" when used with the Bolt Down Universal Anchor System.

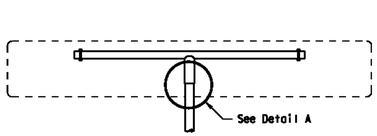


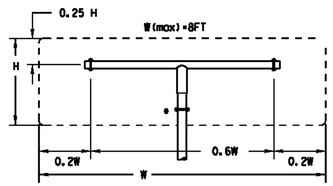
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.



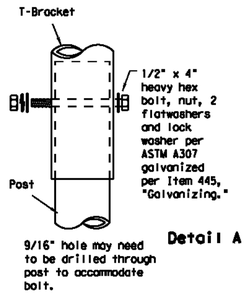
SM RD SGN ASSM TY TWT(X)UB(P)

Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post





SM RD SGN ASSM TY TWT(X)XX(T)
(* - See General Note 6)



Detail A

9/16" hole may need to be drilled through post to accommodate bolt.

NOTE

The devices shall be installed per manufacturer's recommendations.
Installation procedures shall be provided to the Engineer by Contractor.

GENERAL NOTES:

1. The Wedge Anchor System and the Universal Anchor System with thin wall tubing post may be used to support up to 10 square feet of sign area.
2. The tubular socket, wedge and prefabricated T-bracket shall be permanently marked to indicate manufacturer. Method, design, and location of marking are subject to the approval of the TxDOT Traffic Standards Engineer.
3. Except for posts (13 BWG Tubing), clamps, nuts and bolts, all components shall be prequalified. A list of prequalified vendors may be obtained from the Material Producer List web page. The website address is:
   http://www.txdot.gov/business/producer_list.htm
4. Material used as post with this system shall conform to the following specifications:
   13 BWG Tubing (2.375" outside diameter) (TWT)
   0.095" nominal wall thickness
   Seamless or electric-resistance welded steel tubing
   Steel shall be HSLAS Gr 55 per ASTM A1011 or ASTM A1008
   Other steels may be used if they meet the following:
   55,000 PSI minimum yield strength
   70,000 PSI minimum tensile strength
   18% minimum elongation in 2"
   Wall thickness (uncoated) shall be within the range of .083" to .099"
   Outside diameter (uncoated) shall be within the range of 2.369" to 2.381"
   Galvanization per ASTM 123 or ASTM A653 G210. For precoated steel tubing (ASTM A653), recoat tube outside diameter weld seam by metallizing with zinc wire per ASTM B833.
5. Sign blanks shall be the sizes and shapes shown on the plans.
6. Additional sign clamp required on the "T-bracket" post for 24" high signs. Place clamp at least 3" above bottom of sign when possible.
7. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
8. See the Traffic Operations Division website for detailed drawings of sign clamps and Wedge Anchor System components. The website address is:
   http://www.txdot.gov/publications/traffic.htm

WEDGE ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Place concrete into hole until it is approximately flush with the ground. Concrete shall be Class A.
3. Insert tubular socket into concrete until top of socket is approximately 1/4 " above the concrete footing.
4. Plumb the socket. Allow a minimum 4 days for concrete to set, unless otherwise directed by Engineer..
5. Attach the sign to the sign post.
6. Insert the sign post into socket and align sign face with roadway.
7. Drive the wedge into the socket to secure post. This will leave approximately 3 inches of the wedge exposed.

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURE

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. Insert base post in hole to depths shown and backfill hole with concrete.
3. Level and plumb the base post using a torpedo level and allow concrete adequate time to set. The bottom of the slots provided in the stub pipe shall remain above the top of the concrete foundation.
4. Attach the sign to the sign post.
5. Install plastic insert around bottom of post.
6. Insert sign post into base post. Lower until the post comes to rest on steel rod.
7. Seat compression ring using a hammer. Typically, the top of compression ring will be approximately level with top of stub post when optimally installed.
8. Check sign post by hand to ensure it is unable to turn. If loose, increase the tightening of the compression ring.

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS WEDGE & UNIVERSAL ANCHOR WITH THIN WALL TUBING POST SMD(TWT)-08

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9-08 REVISIONS	CONT	SECT	JOB	HIGHWAY	
	DIST	COUNTY		SHEET NO.	

265

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - SMD(TWT)-08

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C823
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - SMD(TWT)-08, 3/29/2023 10:13:55 PM, cschroeder

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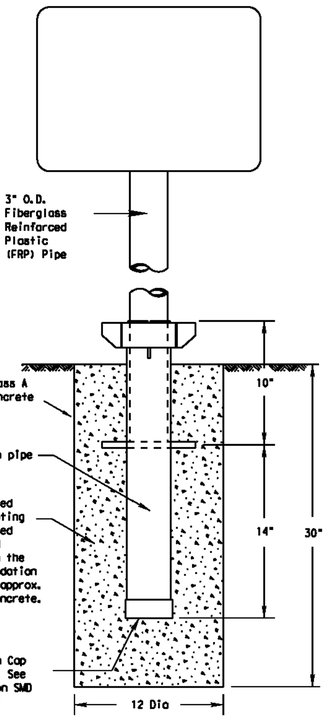
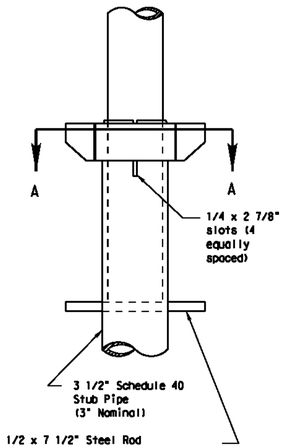
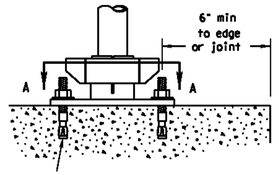
Universal Anchor System with Fiberglass Reinforced Plastic (FRP) Post





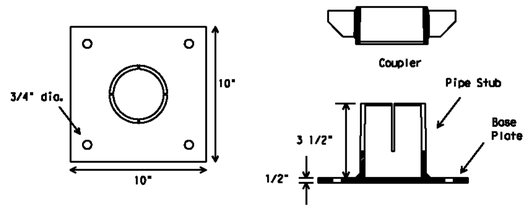
SM RD SGN ASSM TY FRP(X)UA(P)



5/8" diameter Concrete Anchor - 4 places (embed a min. of 3 3/8" and torque to min. of 50 ft-lbs). Anchor may be expansion or adhesive type.

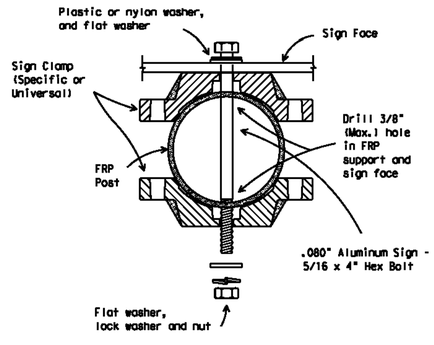
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Top of bolt shall extend at least flush with top of nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 3 3/8" minimum embedment, shall have a minimum allowable tension and shear of 2450 and 1525 psi, respectively. Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations.

BOLT-DOWN DETAILS

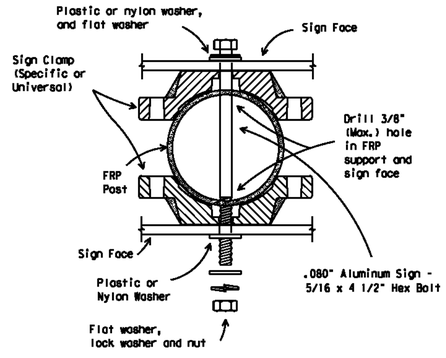


SM RD SGN ASSM TY FRP(X)UB(P)

Typical Sign Mounting Detail for FRP Support with Single Sign



Typical Sign Mounting Detail for FRP Support with Back-to-Back Signs



DATE:
FILE:

GENERAL NOTES:

1. FRP sign supports for a single type sign support may be used for signs up to and including 16 square feet. Dual post installation may be used for signs up to and including 32 square feet.
2. All nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing."
3. See the Traffic Operations Division website for detailed drawings of sign clamps. The website address is: http://www.txdot.gov/publications/traffic.htm

FRP POST REQUIREMENTS

1. Materials shall conform to the requirements of Departmental Material Specification DMS-4410 and will be furnished in a yellow or gray color as specified elsewhere in the plans.
2. Thickness of FRP sign support is 0.125" + 0.031", - 0.0".
3. FRP sign supports are prequalified by the Traffic Operations Division. Prequalification procedures are obtained by writing:
   Texas Department of Transportation
   Traffic Operations Division
   125 East 11th Street
   Austin, Texas 78701-2483

UNIVERSAL ANCHOR SYSTEM INSTALLATION PROCEDURES

1. Dig foundation hole. Where solid rock is encountered at ground level, the foundation shall be a minimum depth of 18". When solid rock is encountered below ground level, the foundation shall extend in the solid rock a minimum depth of 18" or provide a minimum foundation depth of 30". If solid rock is encountered, the socket/stub may be reduced in length as required to a minimum length of 18". Any material removed from the socket/stub shall be from the bottom and the clearance requirements given on SMD(GEN) must be followed. The inner surfaces of the socket/stub must remain free of concrete or other debris.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Insert base post in foundation hole to depths shown and fill hole with concrete. Cut base post from bottom and ensure a minimum of 18" embedment if installed in solid rock.
4. Level and plumb the base post with coupler using a torpedo level and let concrete set a minimum of 4 days, unless otherwise directed by Engineer. Bottom of base post slots shall be above the concrete footing.
5. Attach sign to FRP post.
6. Insert sign post into base post. Lower until the post comes to rest on the steel rod.
7. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
8. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

BOLT DOWN SIGN SUPPORT

1. Position base plate with coupler on existing concrete.
2. Drill holes into concrete and insert the 5/8" diameter bolts with wedge anchors, and tighten nuts.
3. Attach sign to FRP post.
4. Insert bottom of sign post into pipe stub.
5. Use hammer to ensure the coupler is firmly seated. Top of coupler should be level with top of base post in most instances.
6. Check sign to ensure there is no twist. If loose, increase the tightening of coupler.

REV.	DESCRIPTION	DATE

Walker Partners engineers | surveyors

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - SMD(FRP)-08

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS UNIVERSAL ANCHOR SYSTEM WITH FRP POST

SMD(FRP)-08

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REVISIONS 9-08

CONT	SECT	JOB	HIGHWAY

DIST	COUNTY	SHEET NO.

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C824
SHEET	OF

G:\PROJECTS\3-005852 DESIGN\2.0 CAD\3-005852DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - SMD(FRP)-08, 3/29/2023 10:13:57 PM, cschroeder

GENERAL NOTES:

1. Details show a typical warning sign with two flashing beacon heads, other arrangements are possible. When only one beacon is required, install the upper beacon.
2. See Item 685, "Roadside Flashing Beacon Assemblies" for further requirements.
3. See SMD standard sheets for lateral and vertical clearances and sign mounting details. Install signs as shown on the sign layout sheets.
4. Use either a Screw-In Type Anchor Foundation or a Drilled Shaft Foundation as shown elsewhere in the plans. When plans require a Drilled Shaft Foundation, see standard sheet TS-FD. Install the Screw-In Type Anchor Foundation as per manufacturer's recommendations. On a slope, install one edge at ground level. Screw-In/Drilled Shaft Foundation is subsidiary to Item 685. Installation of a ground rod is not required for solar powered flashing beacon assemblies.
5. When used, provide Screw-In Type Anchor Foundations as shown on TxDOT's Material Producer List (MPL) in the file "Highway Traffic Signals".
6. Use materials specifically designed for attaching cabinets, beacon heads, solar panels, etc., to poles.
7. Install beacon heads as shown here, as shown elsewhere on the plans, or as directed. Use hardware specifically designed for mounting beacon heads on poles.
8. Conduit in foundation and within 6 in. of foundation is subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies."
9. Per manufacturer's recommendations, engage all threads on the pedestal pole base and pipe unless the pipe is fully seated into base. In high winds, use a pole and base collar assembly to add strength and prevent loosening on connection.
10. Provide single pole non-fused watertight breakaway electrical connectors for frangible pedestal pole bases, as shown on TxDOT's MPL in the file "Roadway Illumination and Electrical Supplies." Approved models are listed under Item 685. For ungrounded (hot) conductors, install a breakaway connector with a dummy fuse slug). For grounded (neutral) conductors, install a breakaway connector with a white colored marking and a permanently installed dummy fuse (slug).
11. Install the batteries in a battery box. Place the batteries on a 3/16" thick plastic sheet and connect together. Place a plastic cover (battery bell jar) over the top of each battery and secure the battery bell jar to the battery with a strap. The batteries, bell jars, straps and 3/16" plastic sheet are subsidiary to the Item 685, "Roadside Flashing Beacon Assemblies." When required, install batteries in the flasher cabinet. Wire batteries according to manufacturers recommendations. Provide the number of batteries as required by the manufacturer.
12. See standard sheet Electrical Details (ED) for additional requirements regarding the installation of ground boxes/battery boxes, conduit, and cabinets.
13. Provide clearance as shown above the sidewalk or pavement grade at the edge of the road. When a bottom beacon is not used, mount the bottom of the sign at least 7 ft. above the sidewalk or pavement grade at the edge of the road.
14. Unless otherwise shown on the plans, pole shaft shall be one piece, Schedule 40 Aluminum pipe, ASTM B429 or B221 (Alloy 6061-T6 only). Aluminum conduit will not develop the necessary strength and will not be allowed.
15. Orient solar panel for optimum exposure to sunlight (face to the south). Prior to installation, check the location to ensure there is no overhead obstruction that would block the solar panel from receiving full sunlight. Unless specified elsewhere, mount a minimum of 14' above grade.
16. Ensure height of conduit is below top of anchor bolts.

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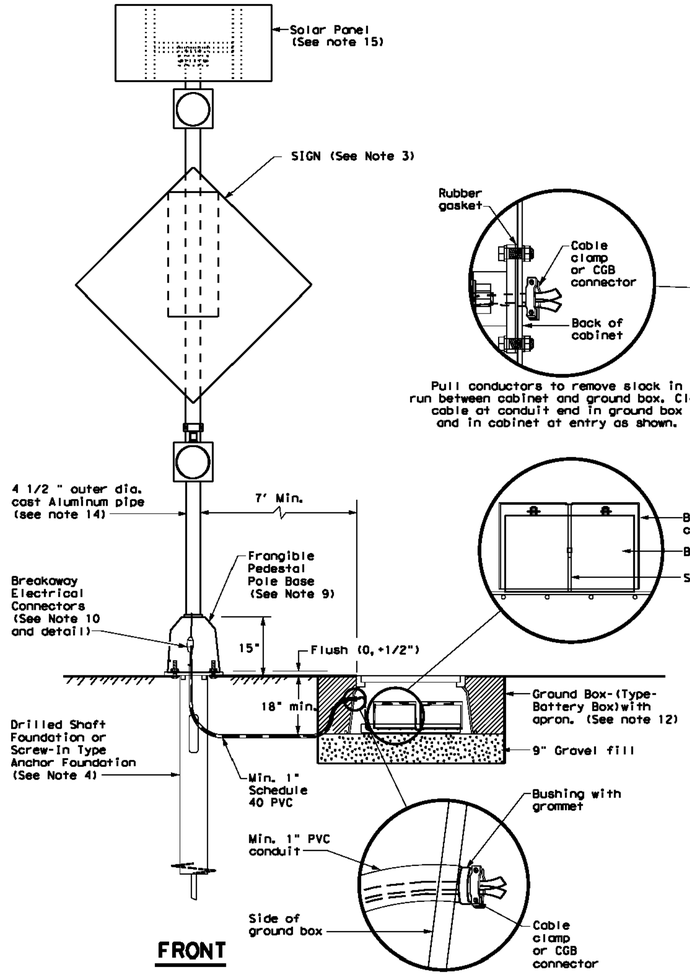
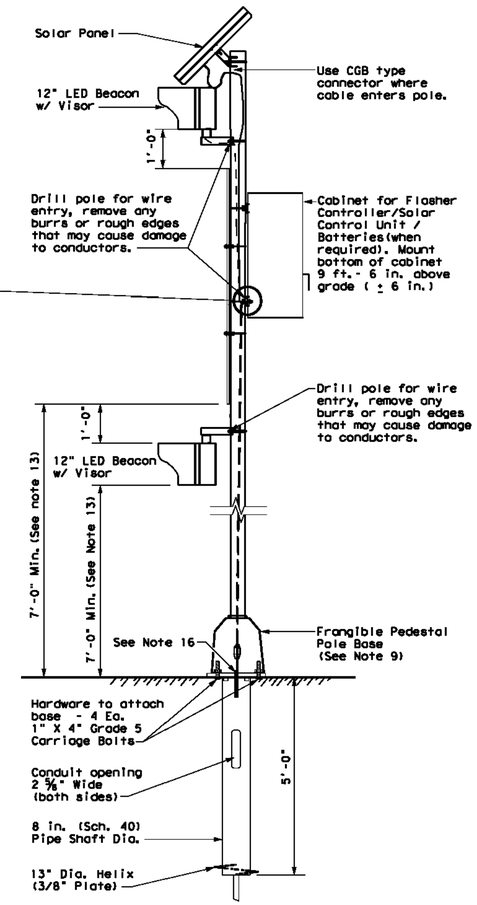
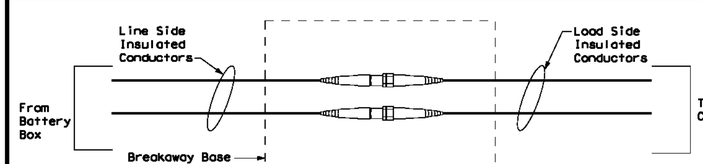
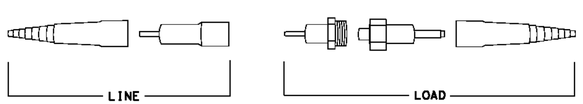
DATE:
FILE:







NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS



NON-FUSED BREAKAWAY ELECTRICAL CONNECTORS
EXPLODED VIEW

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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - SPRFBA(1)-13

Texas Department of Transportation — Traffic Operations Division Standard

SOLAR POWERED ROADSIDE FLASHING BEACON ASSEMBLY DETAILS

SPRFBA(1)-13

FILE: spb1-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT May 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS 12-04 3-13	DIST	COUNTY		SHEET NO.

75A

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C825
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - SPRFBA(1)-13, 3/29/2023 10:14:00 PM, cschroeder

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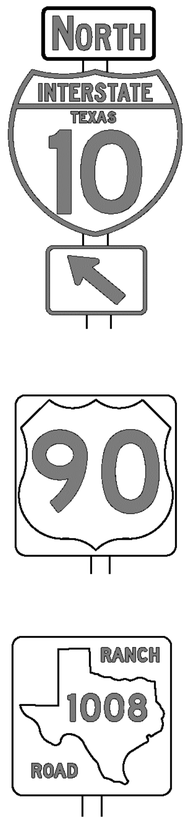
FILE:

REQUIREMENTS FOR INDEPENDENT MOUNTED ROUTE SIGNS

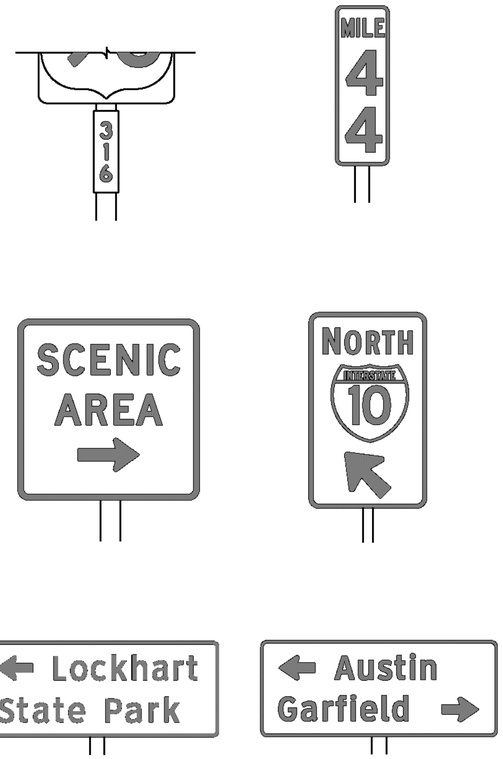
SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE A SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & BORDERS	ALL OTHERS	TYPE B or C SHEETING



TYPICAL EXAMPLES

REQUIREMENTS FOR BLUE, BROWN & GREEN D AND I SERIES GUIDE SIGNS

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	ALL	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE D SHEETING
LEGEND, SYMBOLS & BORDERS	ALL OTHERS	TYPE B OR C SHEETING



TYPICAL EXAMPLES

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. White legend shall use the Clearview Alphabet. The following Clearview fonts shall be used to replace the existing white Federal Highway Administration (FHWA) Standard Highway Alphabets, when not specified in the SHSD, or in the plans.

B	CV-1W
C	CV-2W
D	CV-3W
E	CV-4W
Emod	CV-5WR
F	CV-6W

3. Route sign legend (ie. IH, US, SH and FM shields) shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets B, C, D, E, Emod or F).
4. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
5. Independent mounted route sign with white or colored legend and borders shall be applied by screening process with transparent color ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof. White legend, symbols and borders on all other signs shall be cut-out white sheeting applied to colored background sheeting.
6. Information regarding borders and radii for signs is found in the "Standard Highway Sign Designs for Texas". Dimensions shown and described for borders and corner radii on parent sign are nominal. Borders may vary in width as much as 1/2 inch. Corner radii above 3 inches may vary in width as much as 1 inch. Borders and corner radii within a parent sign must be of matching widths. The sign area outside the corner radius should be trimmed or rounded.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details of roadside signs are shown in the "SMD series" Standard Plan Sheets.

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

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

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

http://www.txdot.gov/

Texas Department of Transportation | Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(3)-13

FILE: tsr3-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT October 2003	CONT	SECT	JOB	HIGHWAY
REVISIONS				
12-03 7-13	DIST	COUNTY		SHEET NO.
9-08				

3

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CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - TSR(3)-13

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C826
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - TSR(3)-13, 3/29/2023 10:14:02 PM, cschroeder

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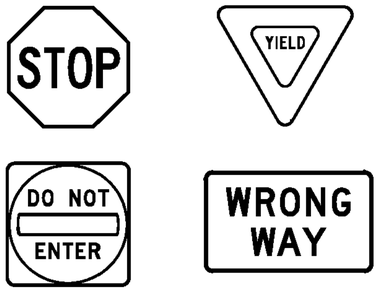
FILE:

REQUIREMENTS FOR RED BACKGROUND REGULATORY SIGNS
(STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



REQUIREMENTS FOR FOUR SPECIFIC SIGNS ONLY

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	RED	TYPE B OR C SHEETING
BACKGROUND	WHITE	TYPE B OR C SHEETING
LEGEND & BORDERS	WHITE	TYPE B OR C SHEETING
LEGEND	RED	TYPE B OR C SHEETING

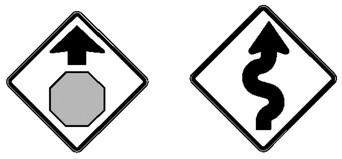
REQUIREMENTS FOR WHITE BACKGROUND REGULATORY SIGNS
(EXCLUDING STOP, YIELD, DO NOT ENTER AND WRONG WAY SIGNS)



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	ALL OTHERS	TYPE B OR C SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND, BORDERS AND SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR WARNING SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	FLOURESCENT YELLOW	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND & BORDERS	BLACK	ACRYLIC NON-REFLECTIVE FILM
LEGEND & SYMBOLS	ALL OTHER	TYPE B OR C SHEETING

REQUIREMENTS FOR SCHOOL SIGNS



TYPICAL EXAMPLES

SHEETING REQUIREMENTS		
USAGE	COLOR	SIGN FACE MATERIAL
BACKGROUND	WHITE	TYPE A SHEETING
BACKGROUND	FLOURESCENT YELLOW GREEN	TYPE B_{FL} OR C_{FL} SHEETING
LEGEND, BORDERS AND SYMBOLS	BLACK	ACRYLIC NON-REFLECTIVE FILM
SYMBOLS	RED	TYPE B OR C SHEETING

GENERAL NOTES

1. Signs to be furnished shall be as detailed elsewhere in the plans and/or as shown on sign tabulation sheet. Standard sign designs and arrow dimensions can be found in the "Standard Highway Sign Designs for Texas" (SHSD).
2. Sign legend shall use the Federal Highway Administration (FHWA) Standard Highway Alphabets (B, C, D, E, Emod or F).
3. Lateral spacing between letters and numerals shall conform with the SHSD, and any approved changes thereto. Lateral spacing of legend shall provide a balanced appearance when spacing is not shown.
4. Black legend and borders shall be applied by screening process or cut-out acrylic non-reflective black film to background sheeting, or combination thereof.
5. White legend and borders shall be applied by screening process with transparent colored ink, transparent colored overlay film to white background sheeting or cut-out white sheeting to colored background sheeting, or combination thereof.
6. Colored legend shall be applied by screening process with transparent colored ink, transparent colored overlay film or colored sheeting to background sheeting, or combination thereof.
7. Sign substrate shall be any material that meets the Departmental Material Specification requirements of DMS-7110 or approved alternative.
8. Mounting details for roadside mounted signs are shown in the "SMD series" Standard Plan Sheets.

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

DEPARTMENTAL MATERIAL SPECIFICATIONS	
ALUMINUM SIGN BLANKS	DMS-7110
SIGN FACE MATERIALS	DMS-8300

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

http://www.txdot.gov/

Texas Department of Transportation — Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(4)-13

FILE: tsr4-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS				
12-03 7-13	DIST	COUNTY		SHEET NO.
9-06				

4

REV.	DESCRIPTION	DATE

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RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - TSR(4)-13

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C827
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - TSR(4)-13, 3/29/2023 10:14:04 PM, cschroeder

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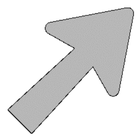
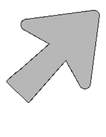
FILE:

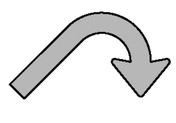
ARROW DETAILS
for Large Ground-Mounted and Overhead Guide Signs



Type A



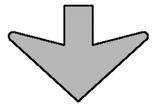
Type B



E-3



E-4



Down Arrow

TYPE	LETTER SIZE	USE
A-1	10.67" U/L and 10" Caps	Single Lane Exits
A-2	13.33" U/L and 12" Caps	
A-3	16" & 20" U/L	
B-1	10.67" U/L and 10" Caps	Multiple Lane Exits
B-2	13.33" U/L and 12" Caps	
B-3	16" & 20" U/L	

CODE	USED ON SIGN NO.
E-3	E5-1aT
E-4	E5-1bT

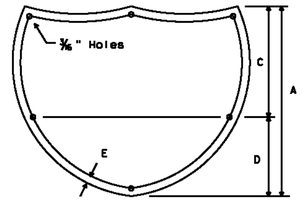
NOTE

Arrow dimensions are shown in the "Standard Highway Sign Designs for Texas" manual.

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

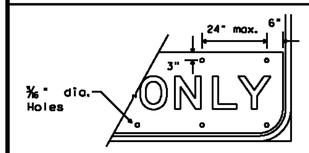
http://www.txdot.gov/

SIGN BLANK PUNCHING DETAILS FOR ATTACHMENTS WHEN SPECIFIED TO BE TYPE A ALUMINUM SIGNS (FOR MOUNTING TO GUIDE SIGN FACE)

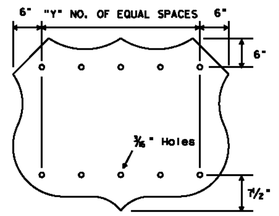


INTERSTATE ROUTE MARKERS

A	C	D	E
36	21	15	1½
48	28	20	1¾

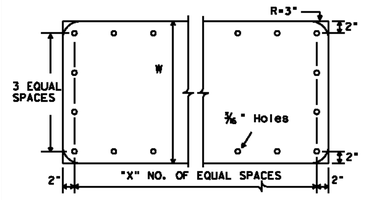


EXIT ONLY PANEL



U.S. ROUTE MARKERS

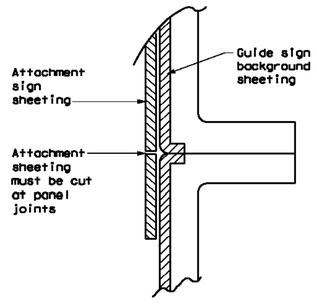
Sign Size	"Y"
24x24	2
30x24	3
36x36	3
45x36	4
48x48	4
60x48	5



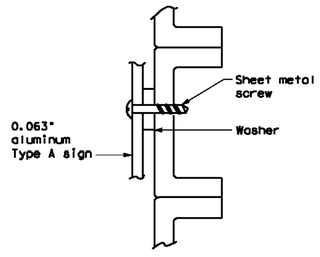
STATE ROUTE MARKERS

No. of Digits	W	X
4	24	4
4	36	5
4	48	6
3	24	3
3	36	4
3	48	5

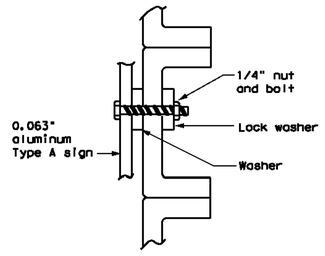
MOUNTING DETAILS OF ATTACHMENTS TO GUIDE SIGN FACE ("EXIT ONLY" AND "LEFT EXIT" PANELS, ROUTE MARKERS AND OTHER ATTACHMENTS)



DIRECT APPLIED ATTACHMENT



SCREW ATTACHMENT



NUT/BOLT ATTACHMENT

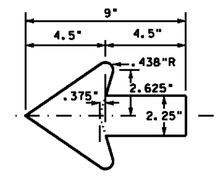
NOTE:

1. Sheeting for legend, symbols, and borders must be cut at panel joints.
2. Direct applied attachment signs will be subsidiary to "Aluminum Signs" or "Fiberglass Signs".

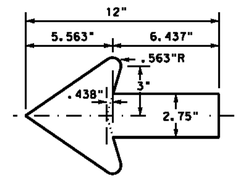
NOTE:

Furnish Type A aluminum sign attachments only when specified in the plans. These signs will be paid for under "Aluminum Signs".

ARROW DETAILS
for Destination Signs (Type D)



Standard arrow to be used with 6 inch letters.



Standard arrow to be used with 8 inch letters.

Texas Department of Transportation — Traffic Operations Division Standard

TYPICAL SIGN REQUIREMENTS

TSR(5)-13

FILE:	tsr5-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS					
12-03 7-13		DIST	COUNTY		SHEET NO.
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5

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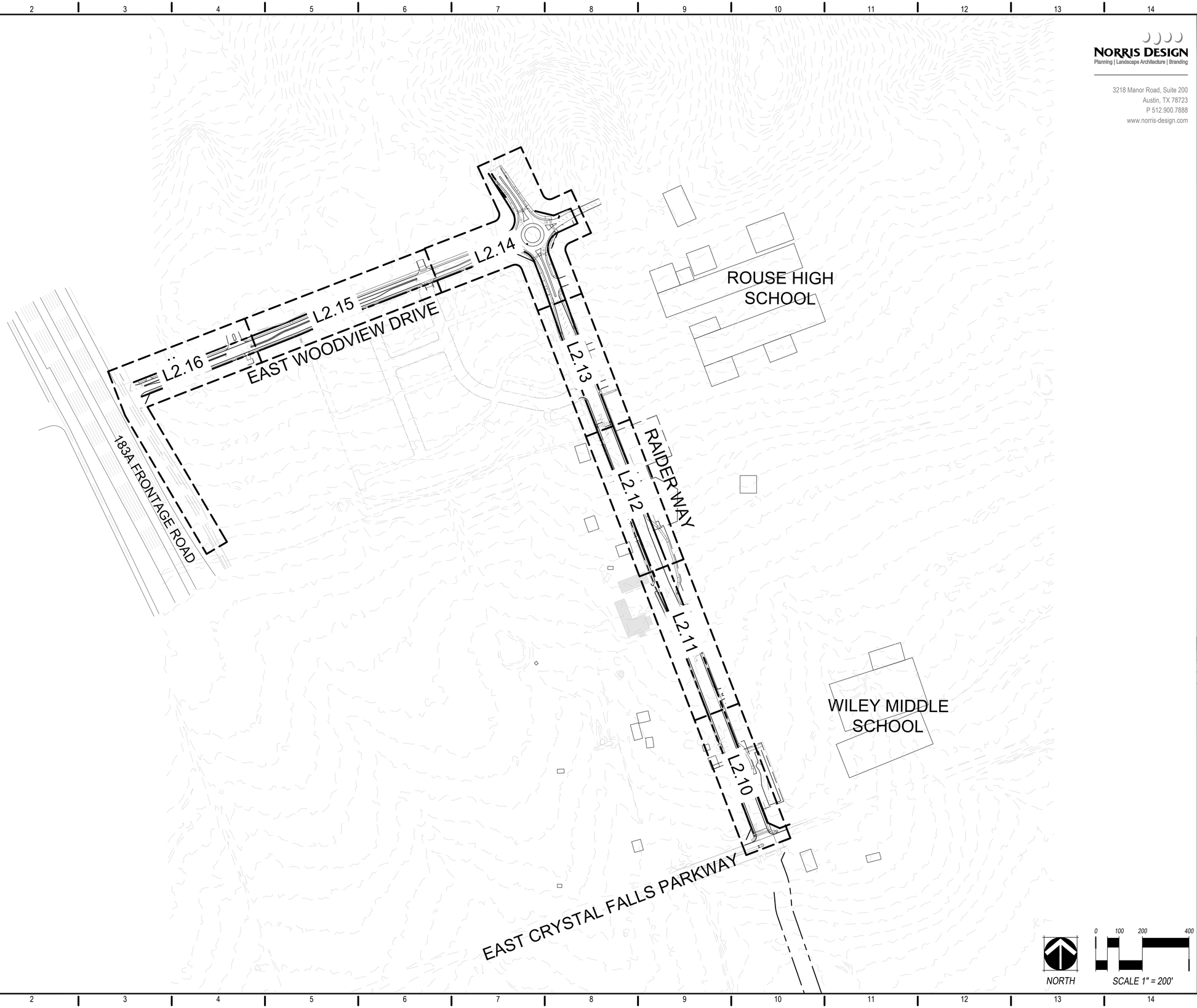
CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

TXDOT DETAILS - TSR(5)-13

PM	RAM
DESIGNED	RAM
DRAFTED	MAC & LCS
CHECKED	RAM
PROJECT NO.	3-00585
DRAWING NO.	C828
SHEET	OF

G:\PROJECTS\3-00585\2 DESIGN\2.0 CAD\3-00585DETAILS-TXDOT_PART 2 OF 2.DWG, TXDOT DETAILS - TSR(5)-13, 3/29/2023 10:14:09 PM, cschroeder



NORRIS DESIGN
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3218 Manor Road, Suite 200
Austin, TX 78723
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REV.	DESCRIPTION	DATE

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T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

OVERALL LAYOUT

FINAL
FOR REVIEW ONLY

REGISTERED LANDSCAPE ARCHITECT
MATTHEW FRANKLIN TAYLOR
STATE OF TEXAS
March 31, 2023

PM	MT
DESIGNED	JW
DRAFTED	JW
CHECKED	MT
PROJECT NO.	3-00585
DRAWING NO.	L0.01
SHEET	OF

P:\RAIDER WAY IMPROVEMENTS - 0091-04-0001\CITY SUBMITTALS\L0.01.DWG, L0.01, 3/31/2023 10:20:31 AM, jwilliams

GENERAL LANDSCAPE NOTES

SECTION 02910 - LANDSCAPING

PART 1 - GENERAL

1.1 SCOPE:

PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT FOR COMPLETE INSTALLATION OF LANDSCAPING, AS INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN.

1.2 RELATED WORK SPECIFIED ELSEWHERE:

A. LAWNS - SECTION 02930

1.3 QUALITY ASSURANCE

A. PROVIDE PLANT MATERIALS IN COMPLIANCE WITH APPLICABLE STATE AND FEDERAL LAWS RELATING TO INSPECTION FOR DISEASES AND INSECT INFESTATION AT GROWING RATE.

B. PLANTS ARE SUBJECT TO INSPECTION AND APPROVAL BY THE LANDSCAPE ARCHITECT. PLANTS REQUIRED FOR THE WORK MAY BE INSPECTED AND TAGGED AT THE GROWING SITE BEFORE BEING DUG.

C. OBSERVATION AT GROWING SITE DOES NOT PRECLUDE RIGHT OF REJECTION AT JOB SITE. PLANTS DAMAGED IN TRANSIT OR AT JOB SITE MAY BE REJECTED.

D. EMPLOY ONLY QUALIFIED PERSONNEL FAMILIAR WITH REQUIRED WORK.

E. OFF-SITE TOPSOIL AND TOPSOIL ON-SITE TESTING (PAID BY LANDSCAPE CONTRACTOR):

1. PROVIDE SOURCE OF OFF-SITE SOIL TO THE LANDSCAPE ARCHITECT FOR PURPOSES OF SOIL INVESTIGATION.
2. TAKE RANDOM REPRESENTATIVE SOIL SAMPLES FROM AREAS TO BE PLANTED.
3. TEST SOIL SAMPLES FROM BOTH SOURCES FOR PH, ALKALINITY, TOTAL SOLUBLE SALTS, POROSITY, SODIUM CONTENT AND ORGANIC MATTER AND PROVIDE RESULTS TO LANDSCAPE ARCHITECT FOR APPROVAL.

1.4 REFERENCED STANDARDS

A. AMERICAN STANDARD FOR NURSERY STOCK, APPROVED 1986 BY AMERICAN NATIONAL STANDARDS INSTITUTE, INC. - PLANT MATERIALS.

B. HORTUS THIRD, 1976 - CORNELL UNIVERSITY - PLANT NOMENCLATURE.

C. ASTM - AMERICAN STANDARD TESTING MATERIAL - SHARP SAND.

1.5 SUBMITTALS:

A. SUBMIT 1 QUART SAMPLES OF THE FOLLOWING MATERIALS:

1. SANDY LOAM TOPSOIL
2. ORGANIC AMENDMENT
3. MULCH
4. POTTING SOIL

B. SUBMIT LAB SOIL TEST ANALYSIS RESULTS FOR ON-SITE TOPSOIL AND IMPORT SANDY LOAM TOPSOIL.

C. SUBMIT MANUFACTURER'S DATA FOR THE FOLLOWING

1. FERTILIZER
2. POTTING SOIL
3. STEEL EDGING

D. SUBMIT DIGITAL PHOTOGRAPHS OF ALL PLANT MATERIALS FOR LANDSCAPE ARCHITECT APPROVAL PRIOR TO DELIVERY TO THE SITE.

E. FILE CERTIFICATE OF INSPECTION OF PLANT MATERIAL BY STATE AND FEDERAL AUTHORITIES WITH LANDSCAPE ARCHITECT, IF REQUIRED BY STATE.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING:

A. PREPARATION FOR DELIVERY:

1. BALLED AND BURLAPPED (B&B) PLANTS: DIG AND PREPARE SHIPMENT IN A MANNER THAT WILL NOT DAMAGE ROOTS, BRANCHES, SHAPE, AND FUTURE DEVELOPMENT.

2. CONTAINER GROWN PLANTS: DELIVER PLANTS IN CONTAINERS SUFFICIENTLY RIGID TO HOLD BALL SHAPE AND PROTECT ROOT MASS DURING SHIPPING.

B. DELIVERY:

1. DELIVER PACKAGED MATERIALS IN SEALED CONTAINERS SHOWING WEIGHT, ANALYSIS AND NAME OF MANUFACTURER. PROTECT MATERIALS FROM DETERIORATION DURING DELIVERY AND WHILE STORED AT SITE.

2. DO NOT DELIVER MORE PLANT MATERIALS THAN CAN BE PLANTED IN ONE DAY UNLESS ADEQUATE STORAGE AND WATERING FACILITIES ARE AVAILABLE ON JOB SITE. STORAGE OF MATERIALS AND EQUIPMENT AT THE JOB SITE WILL BE AT THE RISK OF THE LANDSCAPE CONTRACTOR. THE OWNER WILL NOT BE HELD RESPONSIBLE FOR THEFT OR DAMAGE.

3. IF BALLED PLANTS CANNOT BE PLANTED WITHIN 24 HOURS AFTER DELIVERY TO SITE, PROTECT ROOT BALLS BY HEELING IN WITH SAW DUST OR OTHER APPROVED MATERIAL.

4. PROTECT DURING DELIVERY TO PREVENT DAMAGE TO ROOT BALL OR DESICCATION OF LEAVES.

5. NOTIFY LANDSCAPE ARCHITECT OF DELIVERY SCHEDULE 48 HOURS IN ADVANCE SO PLANT MATERIAL MAY BE OBSERVED UPON ARRIVAL AT JOB SITE.

6. REMOVE REJECTED PLANT MATERIAL IMMEDIATELY FROM SITE.

1.7 JOB CONDITIONS:

A. PLANTING RESTRICTIONS: PERFORM ACTUAL PLANTING ONLY WHEN WEATHER AND SOIL CONDITIONS ARE SUITABLE IN ACCORDANCE WITH LOCALLY ACCEPTED PRACTICE.

B. PROTECTIONS:

1. DO NOT MOVE EQUIPMENT OVER EXISTING OR NEWLY PLACED STRUCTURES WITHOUT APPROVAL OF LANDSCAPE ARCHITECT AND GENERAL CONTRACTOR.

2. PROVIDE BOARD-ROADING AND SHEETING AS REQUIRED TO PROTECT PAVING AND OTHER IMPROVEMENTS FROM DAMAGE.

3. IN NO WAY SHALL ANY TREES, PLANTS, GROUND COVER OR SEASONAL COLOR OBSTRUCT DRAINAGE OR BLOCK A 2% MINIMUM POSITIVE SLOPE AWAY FROM BUILDINGS.

C. UTILITIES:

1. DETERMINE LOCATIONS OF UNDERGROUND UTILITIES AND PERFORM WORK IN A MANNER WHICH WILL AVOID POSSIBLE DAMAGE. HAND EXCAVATE, IF REQUIRED, TO MINIMIZE POSSIBILITY OF DAMAGE TO UNDERGROUND UTILITIES.

2. MAINTAIN GRADE STAKES SET BY OTHERS UNTIL REMOVAL IS MUTUALLY AGREED UPON BY PARTIES CONCERNED.

3. COORDINATE WORK WITH IRRIGATION CONTRACTOR TO PREVENT DAMAGE TO UNDERGROUND SPRINKLER SYSTEM.

1.8 WARRANTY:

A. WARRANT PLANTS AND TREES FOR ONE YEAR AFTER FINAL ACCEPTANCE. REPLACE DEAD MATERIALS AND MATERIALS NOT IN VIGOROUS, THRIVING CONDITION AS SOON AS WEATHER PERMITS AND ON NOTIFICATION BY LANDSCAPE ARCHITECT. REPLACE PLANTS, INCLUDING TREES, WHICH IN THE OPINION OF LANDSCAPE ARCHITECT HAVE PARTIALLY DIED THEREBY DAMAGING SHAPE, SIZE, OR SYMMETRY.

B. REPLACE PLANTS AND TREES WITH SAME KIND AND SIZE AS ORIGINALLY PLANTED, AT NO COST TO OWNER. PROVIDE ONE-YEAR WARRANTY ON REPLACEMENT PLANTS. THESE SHOULD BE REPLACED AT START OF NEXT PLANTING OR DIGGING SEASON. IN SUCH CASES, REMOVE DEAD TREES IMMEDIATELY. PROTECT IRRIGATION SYSTEM AND OTHER PIPING CONDUIT OR OTHER WORK DURING REPLACEMENT. REPAIR ANY DAMAGE IMMEDIATELY.

C. WARRANTY EXCLUDES REPLACEMENT OF PLANTS AFTER FINAL ACCEPTANCE BECAUSE OF INJURY BY STORM, DROUGHT, DROWNING, HAIL, FREEZE, INSECTS OR DISEASES.

D. AT THE END OF THE WARRANTY PERIOD, STAKING AND GUYING MATERIALS SHALL BE REMOVED FROM THE SITE.

1.9 MAINTENANCE

A. WATER: WILL BE AVAILABLE ON SITE. PROVIDE NECESSARY HOSES AND OTHER WATERING EQUIPMENT REQUIRED TO COMPLETE WORK.

B. UNTIL FINAL ACCEPTANCE, MAINTAIN PLANTINGS AND TREES BY WATERING, CULTIVATING, MOWING, WEEDING, SPRAYING, CLEANING AND REPLACING AS NECESSARY TO KEEP LANDSCAPE IN A VIGOROUS, HEALTHY CONDITION AND RAKE BED AREAS AS REQUIRED.

C. A WRITTEN NOTICE REQUESTING FINAL INSPECTION AND ACCEPTANCE SHOULD BE SUBMITTED TO LANDSCAPE ARCHITECT SEVEN (7) DAYS PRIOR TO COMPLETION. AT THAT TIME OWNER AND LANDSCAPE ARCHITECT WILL PREPARE A FINAL PUNCH LIST TO BE REVIEWED WITH LANDSCAPE CONTRACTOR. WHEN SUCH PROJECT IS DEEMED COMPLETE BY LANDSCAPE ARCHITECT, AN ON-SITE INSPECTION BY OWNER, LANDSCAPE CONTRACTOR AND LANDSCAPE ARCHITECT WILL BE COMPLETED PRIOR TO WRITTEN ACCEPTANCE.

D. FOLLOWING FINAL ACCEPTANCE, MAINTENANCE OF PLANT MATERIAL WILL BECOME THE OWNER'S RESPONSIBILITY. THE CONTRACTOR SHALL PROVIDE OWNER WITH A RECOMMENDED MAINTENANCE PROGRAM.

PART 2 - PRODUCTS

2.1 PLANTS:

A. QUANTITIES: THE DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY: ANYTHING CALLED FOR ON ONE AND NOT THE OTHER IS AS BINDING AS IF SHOWN AND CALLED FOR ON BOTH. THE PLANT SCHEDULE IS AN AID TO BIDDERS ONLY. CONFIRM ALL QUANTITIES ON PLAN.

B. PLANTS SHALL BE EQUAL TO WELL FORMED NO. 1 GRADE OR BETTER, SYMMETRICAL, HEAVILY BRANCHED WITH AN EVEN BRANCH DISTRIBUTION, DENSELY FOLIATED AND/OR BUDDED, AND A STRONG, STRAIGHT, DISTINCT LEADER WHERE THIS IS CHARACTERISTIC OF THE SPECIES. PLANTS SHALL POSSESS A NORMAL BALANCE BETWEEN HEIGHT AND SPREAD. THE LANDSCAPE ARCHITECT WILL BE THE FINAL ARBITER OF ACCEPTABILITY OF PLANT FORM. PLANTS DEEMED UNACCEPTABLE BY LANDSCAPE ARCHITECT EITHER BEFORE OR AFTER PLANTING SHALL BE REMOVED AT THE EXPENSE OF THE LANDSCAPE CONTRACTOR AND REPLACED WITH ACCEPTABLE PLANTS AS SPECIFIED.

C. PLANTS SHALL BE HEALTHY AND VIGOROUS, FREE OF DISEASE, INSECT PESTS AND THEIR EGGS, AND LARVAE.

D. PLANTS SHALL HAVE A WELL-DEVELOPED FIBROUS ROOT SYSTEM.

E. PLANTS SHALL BE FREE OF PHYSICAL DAMAGE SUCH AS SCRAPES, BROKEN OR SPLIT BRANCHES, SCARS, BARK ABRASIONS, SUN SCALDS, FRESH LIMB CUTS, DISFIGURING KNOTS, OR OTHER DEFECTS.

F. PRUNING OF ALL TREES AND SHRUBS, AS DIRECTED BY LANDSCAPE ARCHITECT, SHALL BE EXECUTED BY LANDSCAPE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.

G. PLANTS SHALL MEET THE SIZES INDICATED ON THE PLANT LIST. WHERE A SIZE OR CALIPER RANGE IS STATED, AT LEAST 50% OF THE MATERIAL SHALL BE CLOSER IN SIZE TO THE TOP OF THE RANGE STATED.

H. PLANTS INDICATED "B&B" SHALL BE BALLED AND BURLAPPED. PLANTS SHALL BE NURSERY GROWN UNLESS OTHERWISE SPECIFIED IN PLANT LIST. BALLS SHALL BE FIRM, NEAT, SLIGHTLY TAPERED AND WELL BURLAPPED. NON-BIODEGRADABLE BALL WRAPPING MATERIAL WILL NOT BE ACCEPTED. ANY TREE LOOSE IN THE BALL OR WITH BROKEN BALL AT TIME OF PLANTING WILL BE REJECTED. BALLS SHALL BE TEN (10") INCHES IN DIAMETER FOR EACH ONE (1") INCH OF TRUNK DIAMETER, MEASURED SIX (6") INCHES ABOVE BALL.

I. CONTAINER GROWN PLANTS SHALL BE WELL ROOTED AND ESTABLISHED IN THE CONTAINER IN WHICH THEY ARE GROWING. THEY SHALL HAVE GROWN IN THE CONTAINER FOR A SUFFICIENT LENGTH OF TIME FOR THE ROOT SYSTEM TO HOLD THE PLANTING MEDIUM WHEN TAKEN FROM THE CONTAINER, BUT NOT LONG ENOUGH TO BECOME ROOT BOUND.

2.2 SOIL PREPARATION MATERIALS:

A. ORGANIC AMMENDMENT: WELL DECOMPOSED, STABLE, WEED FREE ORGANIC COMPOST SUCH AS COMPOST MANUFACTURED BY LIVING EARTH TECHNOLOGY, BACK-TO-EARTH RESOURCES, GARDENVILLE, ORGANICS BY GOSH, OR APPROVED EQUAL. THE PRODUCT SHALL CONTAIN NO SUBSTANCES TOXIC TO PLANTS AND SHALL BE REASONABLY FREE (<1% DRY WEIGHT) OF MAN-MADE FOREIGN MATTER. THE COMPOST WILL POSSES NO OBJECTIONABLE ODORS AND SHALL NOT RESEMBLE THE RAW MATERIAL FROM WHICH IT IS DERIVED. THE PRODUCT SHALL HAVE A pH OF BETWEEN 6.0 AND 8.0, A SOLUBLE SALT CONCENTRATION OF LESS THAN 10 dS/m, AND AN ORGANIC MATTER CONTENT OF 30-65% DRY WEIGHT, WITH 98% PASSING THROUGH A $\frac{3}{4}$" SCREEN.

B. PRE MIXED SOILS WILL BE CONSIDERED AS "APPROVED EQUALS" WHEN SAMPLES ARE SUBMITTED WITH MANUFACTURER'S DATA AND LABORATORY TEST REPORTS. APPROVED SUPPLIERS INCLUDE VITAL EARTH RESOURCES, GLADEWATER, TEXAS, SOIL BUILDING SYSTEMS, INC., DALLAS, TEXAS, ORGANICS BY GOSH, AUSTIN, TEXAS, THE NATURAL GARDENER, AUSTIN, TEXAS, GARDENVILLE, SAN ANTONIO, TEXAS, AND LIVING EARTH TECHNOLOGY, HOUSTON, TEXAS.

C. SANDY LOAM TOPSOIL:

1. FRIABLE, FERTILE, DARK, LOAMY SOIL, FREE OF CLAY LUMPS, SUBSOIL, STONES, AND OTHER EXTRANEOUS MATERIAL AND REASONABLY FREE OF WEEDS AND FOREIGN GRASSES. SOIL CONTAINING DALLISGRASS OR NUTGRASS SHALL BE REJECTED.

2. PHYSICAL PROPERTIES AS FOLLOWS: CLAY - BETWEEN 7-27 PERCENT SILT - BETWEEN 28-50 PERCENT SAND - LESS THAN 52 PERCENT

D. SHARP SAND: CLEAN, WASHED SAND, (FINE AGGREGATE) ASTM C-33.

E. DECOMPOSED GRANITE: MIXTURE OF UNWASHED AGGREGATE AND FINES WITH 20-35% PASSING A #10 SIEVE AND 0% RETAINED ON A $\frac{5}{8}$" SEIVE.

2.3 COMMERCIAL FERTILIZER:

A. ORGANIC FERTILIZER: SHALL BE DELIVERED IN MANUFACTURER'S STANDARD CONTAINER PRINTED WITH MANUFACTURER'S NAME, MATERIAL WEIGHT, AND GUARANTEED ANALYSIS. FERTILIZERS WITH N-P-K ANALYSIS OTHER THAN THAT SPECIFIED MAY BE USED PROVIDED THAT THE APPLICATION RATE PER SQUARE FOOT OF NITROGEN, PHOSPHORUS, AND POTASSIUM IS EQUAL TO THAT SPECIFIED.

B. ORGANIC FERTILIZER FOR PLANTING BEDS: COMPLETE FERTILIZER 5-10-5 ELEMENT RATIO WITH MAXIMUM 8% SULFUR AND 4% IRON PLUS MICRO-NUTRIENTS. ADJUST RATIOS AS RECOMMENDED BY SOIL TEST ANALYSIS.

C. CONTROLLED-RELEASE FERTILIZER PLANTING TABLETS FOR TREE PLANTING PITS, SHALL BE EQUAL TO AGSAFE 20-10-5 PLANTING TABLETS WITH HUMATES AND MYCORRHIZAE AS MANUFACTURED BY AGRITAB CORP.

D. SOIL ACTIVATOR: SUPERTHRIVE 50-IN-1 SOIL ACTIVATOR

2.4 MULCH: BARK MULCH SHALL BE SHREDDED HARDWOOD MULCH, MEDIUM FINE TEXTURE.

2.5 WATER: WATER SHALL BE SUITABLE FOR IRRIGATION AND SHALL BE FREE FROM INGREDIENTS HARMFUL TO PLANT LIFE.

2.6 MISCELLANEOUS MATERIALS (IF APPLICABLE):

A. STEEL EDGING: 1/8" X 4" RYERSON ESTATE OR EQUAL.

B. JUTE MESH: LUDLOW SMOLDER RESISTANT.

C. FILTER FABRIC: MIRAFI 140 N NON WOVEN FABRIC (MIRAFI, INC., CHARLOTTE, NC 28224), OR EQUAL.

D. TREE WRAPPING PAPER: WATERPROOF 6" WIDE CREPE.

E. STAKING AND GUYING MATERIALS:

1. WOOD STAKES: 2" X 4" X 30" DENSE PINE, UNTREATED.
2. TURN BUCKLES: GALVANIZED STEEL, 3/8-INCH EYE, 6-INCH OPENING.
3. TIE WIRE: 12 GAUGE GALVANIZED WIRE.
4. BLACK HOSE: 2 PLY, FIBER REINFORCED HOSE, MINIMUM 1/2-INCH INSIDE DIAMETER.

F. TREE PAINT: ASPHALTIC BASE PAINT WITH ANTISEPTIC PROPERTIES, MANUFACTURED FOR USE ON TREE WOUNDS.

G. PEA GRAVEL: WASHED 3/8-INCH DIAMETER NATIVE PEA GRAVEL.

H. CRUSHED STONE: 1" DIAMETER CRUSHED LIMESTONE.

I. ANTIDESICANT: WILTPRUF (NURSERY SPECIALTY PRODUCTS, INC., STUBBINS ROAD, GROTTON FALLS, N.Y.) OR EQUAL.

J. FUNGICIDE: ZINC ETHYLENE BISDITHIOCARBONATE (ZINEB) OR EQUAL.

K. PLASTIC SHEET: 4 MIL BLACK POLYETHYLENE, PERFORATED AT TWENTY FOUR INCHES ON CENTER.

PART 3 - EXECUTION

3.1 CONDITION OF SURFACES:

A. CONTRACTOR WILL BE RESPONSIBLE FOR ANY REQUIRED EXCAVATION AND FOR RAKING AND SMOOTHING OF GRADE. IT IS RECOMMENDED THAT LANDSCAPE CONTRACTOR COORDINATE WITH GRADING CONTRACTOR TO ESTABLISH SUBGRADES FOR PLANTING AREAS AS REQUIRED BELOW.

B. EXAMINE SUBGRADE UPON WHICH WORK IS TO BE PERFORMED. NOTIFY THE LANDSCAPE ARCHITECT OF UNSATISFACTORY CONDITIONS.

3.2 MIXING SOILS:

A. PLANTING MIX: SHALL CONSIST OF 50% SANDY LOAM TOPSOIL, 30% ORGANIC AMENDMENT, 10% SHARP WASHED SAND, AND 10% DECOMPOSED GRANITE. SAND COMPONENT MAY BE INCREASED OR DECREASED BASED ON SAND CONTENT OF TOPSOIL SUBMITTED TO LANDSCAPE ARCHITECT.

B. PRE MIXED SOILS MAY BE ACCEPTED IN LIEU OF ABOVE MIX AS NOTED IN PARAGRAPH 2.2.B.

3.3 BED PREPARATION

A. ALL BED AREAS ON PLANS WHERE SHRUBS AND/OR GROUNDCOVERS ARE CONTINUOUSLY PLANTED SHALL RECEIVE A MINIMUM OF 4"" DEPTH OF CONTINUOUS PLANTING MIX.

B. LAY OUT BED AREAS FOR LANDSCAPE ARCHITECT APPROVAL PRIOR TO DIGGING

C. EXCAVATE EXISTING MATERIAL AS NEEDED TO ALLOW PLACEMENT OF 4" OF PLANTING MIX AND 3" OF MULCH.

D. SCARIFY BED AREA SUBGRADE WHERE EXCESSIVE COMPACTION IS GREATER THAN 85% STANDARD PROCTOR TO A DEPTH OF 4-INCHES BY DISCING OR ROTOTILLING. REPEAT CULTIVATION AS REQUIRED TO THOROUGHLY LOOSEN SOIL.

E. EVENLY SPREAD 4" OF CONTINUOUS PLANTING MIX THROUGHOUT THE PLANTING AREA. DO NOT INCORPORATE INTO NATIVE SOILS BELOW.

F. WHENEVER A PLANTING BED FALLS WITHIN THE DRIPLINE OF EXISTING TREES TO REMAIN, DO NOT EXCAVATE AS NOTED BELOW. UTILIZE THE FOLLOWING BED PREPARATION:

1. EVENLY SPREAD THE FOLLOWING AMENDMENTS OVER THE ENTIRE BED AREA AND LIGHTLY INCORPORATE INTO THE TOP 1" OF SOIL WITH RAKE OR OTHER HAND IMPLEMENT. AMENDMENTS PER 1000 SF SHALL BE:
a) 3 CY ORGANIC AMENDMENT
b) 30 LB ORGANIC FERTILIZER
c) 40 POUNDS GYPSUM
d) 2 POUNDS SULFUR

G. RAKE AMENDED AREAS CLEAN AND REMOVE ALL ROCKS, ROOTS, AND DEBRIS. DIRT CLODS AND CLAY LUMPS GREATER THAN 1" IN DIAMETER SHALL BE BROKEN APART OR REMOVED.

3.2 TREE PLANTING:

A. STAKE TREE LOCATIONS FOR LANDSCAPE ARCHITECT'S APPROVAL PRIOR TO DIGGING.

NORRIS DESIGN
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3218 Manor Road, Suite 200
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REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

SOFTSCAPE NOTES

FINAL
FOR REVIEW ONLY

REGISTERED LANDSCAPE ARCHITECT
MATTHEW FRANKLIN TAYLOR
STATE OF TEXAS
03.31.2023
March 31, 2023

PM	MT
DESIGNED	JW
DRAFTED	JW
CHECKED	MT
PROJECT NO.	3-00585
DRAWING NO.	L2.00
SHEET	OF

P:\RAIDER WAY IMPROVEMENTS - 0091-04-0001\CITY SUBMITTALS\L0.01.DWG, L2.00, 3/31/2023 10:20:32 AM, jwilliams

3.2 TREE PLANTING CONTINUED:

B. PLANT TREES IN PITS 2 TIMES THE DIAMETER OF THE ROOT BALL AND EQUAL TO DEPTH OF ROOT BALL.

C. AFTER EXCAVATION OF TREE PITS, REVIEW WATER PERCOLATION WITH LANDSCAPE ARCHITECT. IF TREE PIT DOES NOT DRAIN ADEQUATELY PREPARE HOLE FOR USE WITH A TREE SUMP. PAINT PVC STAND PIPE AND COVER DARK GREEN. AFTER TREE IS INSTALLED, PUMP WATER OUT ON A DAILY BASIS.

D. IN THE EVENT ROCK OR UNDERGROUND CONSTRUCTION WORK OR OBSTRUCTIONS ARE ENCOUNTERED IN ANY PLANT PIT EXCAVATION WORK TO BE DONE UNDER THIS SECTION, ALTERNATE LOCATIONS MAY BE SELECTED BY THE LANDSCAPE ARCHITECT. WHERE LOCATIONS CANNOT BE CHANGED THE OBSTRUCTIONS SHALL BE REMOVED TO A DEPTH OF NOT LESS THAN SIX (6") INCHES BELOW BOTTOM OF BALL WHEN PLANT IS PROPERLY SET AT THE REQUIRED GRADE. THE WORK OF THIS SECTION SHALL INCLUDE THE REMOVAL OF THE SITE OF SUCH ROCK OR UNDERGROUND OBSTRUCTIONS ENCOUNTERED AT THE COST OF THE LANDSCAPE CONTRACTOR.

E. BACKFILL TREE PITS WITH A MIXTURE OF 1/2 PLANTING MIX AND 1/2 EXISTING SITE SOIL. LIGHTLY TAMP EVERY 6-INCHES TO FILL ALL VOIDS AND POCKETS. WHEN PIT IS 2/3 FULL, WATER THOROUGHLY AND LEAVE WATER TO SOAK IN. PLACE FERTILIZER PLANTING TABLETS PER MANUFACTURERS RECOMMENDATIONS. APPLY SUPERTHRIVE PER MANUFACTURER'S RECOMMENDATIONS COMPLETE BACKFILLING AND FORM A SAUCER AROUND THE TREE. FILL SAUCER WITH WATER AND LEAVE TO SOAK IN. FILL SAUCER WITH WATER AGAIN.

G. COMPLETELY FILL EACH TREE SAUCER WITH MULCH TO A DEPTH OF THREE INCHES.

H. CONTRACTOR SHALL KEEP TREES PLUMB UNTIL ESTABLISHED. GUYING AND/OR STAKING TO MAINTAIN THAT PLUMB CONDITION SHALL BE AT THE CONTRACTOR'S DISCRETION. HOWEVER, IF TREES ARE NOT PLUMB, THE CONTRACTOR WILL BE REQUIRED TO GUY AND/OR STAKE THOSE TREES IN A METHOD ACCEPTABLE TO THE LANDSCAPE ARCHITECT AT NO ADDITIONAL COST TO THE OWNER.

I. PRUNING: PRUNE TREES TO PRESERVE THE NATURAL CHARACTER OF THE PLANT IN A MANNER APPROPRIATE TO ITS PARTICULAR REQUIREMENTS IN THE LANDSCAPE DESIGN AS DIRECTED BY THE LANDSCAPE ARCHITECT. IN GENERAL, REMOVE AT LEAST ONE-THIRD OF WOOD BY THINNING AND PRUNING. DO NOT CUT BACK TERMINAL BRANCHES. THIN NATIVE GROWN PLANTS HEAVIER THAN NURSERY GROWN PLANTS. REMOVE SUCKER GROWTH AND BROKEN OR BADLY BRUISED BRANCHES.

3.3 SHRUB PLANTING

A. PLACE PLANTS IN POSITION ON BED AREAS BEFORE CANS HAVE BEEN REMOVED. OBTAIN APPROVAL FROM LANDSCAPE ARCHITECT. DO NOT REMOVE BURLAP FROM BB PLANTS. LANDSCAPE ARCHITECT RESERVES RIGHT TO INTERCHANGE OR SHIFT PLANTS PRIOR TO PLANTING.

B. ALL SHRUBS OUTSIDE PREPARED BED AREAS OR WITH ROOT BALLS DEEPER THAN DEPTH OF BED PREPARATION SHALL BE POCKET PLANTED. EXCAVATE PLANTING HOLE 2 TIMES THE WIDTH AND HEIGHT OF THE ROOT BALL. BACKFILL WITH PLANTING MIX.

C. PLANT WHERE LOCATED, SETTING PLANTS WITH TOPS OF BALLS EVEN WITH TOPS OF BEDS, AND COMPACT SOIL CAREFULLY AROUND EACH PLANT BALL.

D. WATER EACH PLANT THOROUGHLY WITH HOSES TO ELIMINATE AIR POCKETS.

E. CAREFULLY PRUNE PLANTS TO REMOVE DEAD OR BROKEN BRANCHES AND HAND RAKE BED AREAS TO SMOOTH EVEN SURFACES.

F. AFTER PLANTING HAS BEEN COMPLETED AND APPROVED BY LANDSCAPE ARCHITECT, MULCH BED AREAS THREE INCHES DEEP.

3.4 GROUNDCOVER AND SEASONAL COLOR PLANTING

A. ALL GROUNDCOVER AND SEASONAL COLOR PLANTING SHALL OCCUR IN PREPARED BED AREAS PER SPECS WITH AT LEAST 4 INCH DEPTH OF PLANTING MIX.

B. PLACE PLANTS IN POSITION ON BED AREAS BEFORE CANS HAVE BEEN REMOVED. OBTAIN APPROVAL FROM LANDSCAPE ARCHITECT. LANDSCAPE ARCHITECT RESERVES RIGHT TO INTERCHANGE OR SHIFT PLANTS PRIOR TO PLANTING.

C. PLANT WHERE LOCATED, SETTING PLANTS WITH TOPS OF BALLS EVEN WITH TOPS OF BEDS, AND COMPACT SOIL CAREFULLY AROUND EACH PLANT BALL.

D. WATER EACH PLANT THOROUGHLY WITH HOSES TO ELIMINATE AIR POCKETS.

F. CAREFULLY PRUNE PLANTS TO REMOVE DEAD OR BROKEN BRANCHES AND HAND-RAKE BED AREAS TO SMOOTH EVEN SURFACES.

G. AFTER PLANTING HAS BEEN COMPLETED AND APPROVED BY LANDSCAPE ARCHITECT, MULCH BED AREAS THREE INCHES DEEP.

3.6 CLEANUP: DURING WORK, KEEP PREMISES NEAT AND ORDERLY INCLUDING ORGANIZATION OF STORAGE AREA. REMOVE TRASH, INCLUDING DEBRIS RESULTING FROM REMOVING WEEDS AND ROCKS FROM PLANTING AREAS, PREPARING BEDS, OR PLANTING PLANTS FROM SITE DAILY AS WORK PROGRESSES. KEEP WALK AND DRIVEWAY AREA CLEAN BY SWEEPING OR HOSING.

END OF SECTION 02910

SECTION 02970 LANDSCAPE GROUNDS MAINTENANCE

THE CONTRACTOR IS TO RENDER THE FOLLOWING LANDSCAPE MAINTENANCE SERVICES DURING THE TERM OF THE INITIAL CONSTRUCTION CONTRACT. IN ADDITION, THE CONTRACTOR IS TO INDICATE A PRICE FOR A ONE YEAR EXTENDED MAINTENANCE CONTRACT TO BEGIN AFTER THE CONSTRUCTION PROJECT IS COMPLETE AND ACCEPTED. THIS PRICE IS TO BE SUBMITTED ON A SEPARATE LINE ITEM.

PART 1 - GENERAL 1.1 SCOPE:

A. WORK INCLUDED IN BASE BID: PERFORM ALL WORK NECESSARY UTILIZING ACCEPTABLE HORTICULTURAL PRACTICES FOR THE EXTERIOR LANDSCAPE MAINTENANCE OF THE PROJECT AS REQUIRED HEREIN. SUCH WORK INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:

1. MONITORING ADJUSTMENT AND MINOR REPAIR OF THE LANDSCAPE IRRIGATION SYSTEM.
2. PROTECTION OF VACUUM BREAKERS AGAINST FREEZE DAMAGE.
3. MOWING, EDGING AND TRIMMING OF TREES AND SHRUBS.
4. PRUNING AND TRIMMING OF TREES AND SHRUBS.
5. RESTAKING AND ADJUSTMENT OF STAKES AND GUYING IF REQUIRED.
6. APPROVAL, BY OWNER, OF MATERIAL SUBSTITUTIONS PRIOR TO USE.
7. APPLICATION OF FERTILIZERS, INSECTICIDES AND HERBICIDES.
8. REPLACEMENT OF PLANT MATERIAL (EXTRA SERVICE).
9. GENERAL SITE CLEAN UP & REMOVAL OF TRASH, AND PRODUCTS OF MAINTENANCE.

B. EXTRA SERVICES: THE INTENT OF THE CONTRACT IS TO PROVIDE A COMPREHENSIVE MAINTENANCE PROGRAM TO INCLUDE ALL REQUIRED SERVICES, EXCEPT THOSE SERVICES SPECIFICALLY EXCLUDED, TO PERFORM THE WORK FOR THE STATE TIME PERIOD.

1. ALL SERVICES NOT INCLUDED IN THE BASE BID SHALL BE CONSIDERED "EXTRA SERVICES" AND WILL BE CHARGED FOR SEPARATELY ACCORDING TO THE NATURE OF THE ITEM OF WORK. THE WRITTEN CONSENT AND AUTHORIZATION OF THE OWNER OF THEIR AUTHORIZED REPRESENTATIVE MUST BE OBTAINED PRIOR TO THE PERFORMANCE OR INSTALLATION OF SUCH "EXTRA SERVICES" ITEMS AND PRIOR TO PURCHASE OF ANY CHARGEABLE MATERIALS.
2. SUCH WORK MAY INCLUDE REPLACEMENT OF DEAD PLANT MATERIALS OR MAJOR REPAIRS OF IRRIGATION SYSTEM CREATED BY ACTS OF VANDALISM OR OTHER CONTRACTS OR OTHER SITE RELATED WORK.
3. AUTHORIZED EXTRA SERVICES WORK MUST BE SUMMARIZED WEEKLY AND SUBMITTED WITH RECEIPTS TO THE OWNER.
4. THE OWNER IS NOT BOUND BY THE SPECIFICATIONS OR CONTRACT TO UTILIZE THE LANDSCAPE MAINTENANCE CONTRACTOR IN THE PERFORMANCE OF "EXTRA SERVICE WORK".
5. THE LANDSCAPE MAINTENANCE CONTRACTOR SHALL COORDINATE HIS ACTIVITIES WITH OTHER CONTRACTORS ON THE SITE SO AS TO NOT HINDER THE PERFORMANCE OF ANY WORK.
6. AUTHORIZED CHARGES FOR EXTRA WORK WILL BE PAID MONTHLY.

1.2 SUBSTITUTIONS:

A. SPECIFIC REFERENCE TO MANUFACTURER'S NAMES AND PRODUCTS SPECIFIED IN THIS SECTION ARE USED AS STANDARDS, BUT THIS IMPLIES THE RIGHT TO SUBSTITUTE OTHER MATERIAL OR METHODS WITHOUT WRITTEN APPROVAL OF THE OWNER. SUCH PERMISSION MUST BE SECURED WITHOUT ADDITIONAL COST TO OWNER.

B. INSTALLATION OF ANY APPROVED SUBSTITUTIONS CONTRACTOR'S RESPONSIBILITY. ANY CHANGES REQUIRED FOR INSTALLATION OF ANY APPROVED SUBSTITUTION MUST BE MADE TO THE SATISFACTION OF ANY WITHOUT ADDITIONAL COST TO OWNER.

1.3 SCHEDULE

ALL WORK UNDER THIS CONTRACTOR SHALL BE PERFORMED IN ACCORDANCE WITH THE SCHEDULE INCLUDED.

1.4 CONTRACTOR'S PERFORMANCE

A. THE CONTRACTOR'S WORKMEN SHALL BE NEAT IN APPEARANCE, PERFORM THEIR WORK IN A PROFESSIONAL MANNER, KEEP NOISE TO A MINIMUM AND STAGE THEIR WORK FROM A LOCATION ON THE SITE OUT OF THE WAY OF THE MAINSTREAM OF THE USES. IN GENERAL, THE CONTRACTOR'S PRESENCE ON THE SITE SHALL BE AS INCONSPICUOUS AS POSSIBLE.

B. THE INTENT AND SPIRIT OF THIS PROJECT MANUAL IS TO PROVIDE A GUIDELINE FOR THE CONTRACTOR TO FOLLOW IN ORDER TO PROVIDE OWNER WITH LANDSCAPE MAINTENANCE SERVICES OF THE HIGHEST QUALITY. WHERE THE MANUAL REFERS TO "AS-NEEDED" OR "AS-REQUIRED" THE INTENT IS FOR THE CONTRACTOR TO PERFORM THE SERVICES NECESSARY TO MAINTAIN THE PROPERTY AT THE HIGHEST POSSIBLE QUALITY LEVEL. NOTHING CONTAINED WITHIN THIS PROJECT MANUAL SHALL BE INTERPRETED AS RELIEVING THE CONTRACTOR OR HIS RESPONSIBILITY TO PERFORM THE WORK IN A PROFESSIONAL MANNER AND TO THE COMPLETE SATISFACTION OF THE OWNER.

C. IF DISPUTES ARISE AS TO THE QUALITY OF THE SERVICES PERFORMED THE OWNER OR OWNERS DESIGNATED REPRESENTATIVE SHALL MAKE THE FINAL DETERMINATION OF RESPONSIBILITIES.

1.5 NEGLECT AND VANDALISM:

A. TURF, TREES OR PLANTS THAT ARE DAMAGED OR KILLED DUE TO CONTRACTOR'S OPERATIONS, NEGLIGENCE OR CHEMICALS SHALL BE REPLACED AT NO EXPENSE TO THE OWNER. IF PLANT DAMAGE OR DEATH IS CAUSED BY CONDITIONS BEYOND THE CONTRACTOR'S CONTROL, REPLACEMEN SHALL BE AT THE OWNER'S EXPENSE.

B. SPRINKLERS OR STRUCTURES THAT ARE DAMAGED DUE TO THE CONTRACTOR'S OPERATIONS MUST BE REPLACED BY THE CONTRACTOR PROMPTLY. LIKEWISE, DAMAGE TO THE IRRIGATION SYSTEM BY OTHERS SHALL BE CORRECTED IMMEDIATELY BY THE CONTRACTOR, AT THE OWNER'S EXPENSE.

C. ALL WATER DAMAGE, EITHER NATURAL OR MAN-MADE, RESULTING FROM CONTRACTOR'S NEGLECT SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.

D. ALL DAMAGE TO OR THEFTS OF LANDSCAPING AND IRRIGATION INSTALLATIONS NOT CAUSED OR ALLOWED BY THE CONTRACTOR SHALL BE CORRECTED BY THE CONTRACTOR AT THE OWNER'S EXPENSE UPON RECEIPT OF WRITTEN AUTHORIZATION TO PROCEED.

1.6 JOB CONDITIONS:

A. CONTRACTOR SHALL ACQUAINT HIMSELF WITH ALL SITE CONDITIONS. SHOULD EXCAVATION BE REQUIRED THE CONTRACTOR SHALL PROMPTLY NOTIFY THE UTILITY COORDINATION COMMITTEE FOR UTILITY LOCATIONS. FAILURE TO DO SO WILL MAKE CONTRACTOR LIABLE FOR ANY AND ALL DAMAGE THERE TO ARISING FROM HIS OPERATIONS.

B. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT SITE CONDITIONS, IRRIGATION AND PLANTS. SHOULD DAMAGE BE INCURRED, THIS CONTRACTOR SHALL REPAIR DAMAGE TO ITS ORIGINAL CONDITION OR FURNISH AND INSTALL EQUAL REPLACEMENT AT THIS EXPENSE.

1.7 EMERGENCIES:

A. THE CONTRACTOR SHALL ANSWER EMERGENCY OR COMPLAINT CALLS WITHIN TWELVE (12) HOURS AND CORRECTIVE ACTION SHALL BE COMPLETE WITHIN 24 HOURS.

B. THE CONTRACTOR SHALL ANSWER EMERGENCY CALLS REGARDING THE LANDSCAPE IRRIGATION SYSTEM FAILURE OR NEED OF REPAIR, AND TAKE CORRECTIVE ACTION WITHIN EIGHT (8) HOURS. SUCH WORK, UNLESS CAUSED DUE TO NEGLECT ON THE PART OF THE LANDSCAPE MAINTENANCE CONTRACTOR, SHALL BE CONSIDERED "EXTRA SERVICES".

1.8 RESTRICTION:

A. DO NOT USE GROWTH REGULATORS OR GROWTH RETARDANTS ON THIS WORK.

PART 2.0 - MATERIALS AND MACHINERY

2.1 IRRIGATION SYSTEM MATERIALS: REPLACEMENT MATERIALS THROUGH THE SYSTEM SHALL BE AS SPECIFIED AND/OR NOTED ON THE "CONTRACT DOCUMENTS", NEW AND IN PERFECT CONDITION.

2.2 MATERIALS: MATERIALS LISTED UNDER THIS SECTION ARE EXPRESSLY SPECIFIED FOR USE BUT DOES NOT PROHIBIT OR RESTRICT THE CONTRACTOR FROM PROVIDING OTHER APPROVED MATERIALS NOT LISTED IN ORDER TO COMPLETE THE WORK REQUIRED HEREIN. ALL MATERIALS SHALL BE NEW AND IN PERFECT CONDITION.

A. PRE-EMERGENCE WEED CONTROL: CONTRACTOR OPTION (GRANULAR)

B. POST-EMERGENCE WEED CONTROL: CONTRACTOR OPTION

C. HERBICIDE: CONTRACTOR OPTION.

D. INSECTICIDE: CONTRACTOR OPTION.

E. FUNGICIDE: CONTRACTOR OPTION.

F. FIRE ANT CONTROL: SHALL BE SLOW RELEASE APPLIED AT SIX (6) WEEK INTERVALS. SPOT TREAT WEEKLY WITH A CONTACT PRODUCT WHERE MOUNDS APPEAR. ALTERNATE PRODUCTS FOR EFFECTIVE CONTROL.

G. SHRUB BED FERTILIZER: APPLY AT MANUFACTURER'S RECOMMENDED RATES FOR EACH PLANT USED. SHALL BE OSMACOTE SLOW RELEASE.

H. LAWN FERTILIZER: 15-5-10 WITH 50% SULPHUR COATED UREA AND 4% IRON.

I. TREE FERTILIZER: DAVEY ARBORGREEN: APPLY USING THE MAXIMUM MANUFACTURER'S RECOMMENDED RATE AND PROCEDURES.

J. MULCH: SHREDDED CYPRESS MULCH.

K. TREE STAKES AND GUYS: SHALL MATCH THOSE IN USE AT THE SITE.

2.3 MACHINERY: MACHINERY REQUIREMENTS LISTED UNDER THIS SECTION ARE NOT INTENDED TO BE RESTRICTIONS OF SPECIFIC MANUFACTURERS OR MODELS UNLESS SO STATED. SPECIFIC MENTION OF MANUFACTURERS IS INTENDED AS A GUIDE TO ILLUSTRATE THE FINAL PRODUCT OF MAINTENANCE OPERATIONS DESIRED.

2.4 MOWERS:

A. SHALL BE COMMERCIAL GRADE ROTARY TYPE IN GOOD WORKING ORDER, FINELY TUNED TO PROTECT THE LAWN FROM EXCESSIVE EXHAUST UMES. BLADES SHALL BE SHARP TO REDUCE SHREDDING OF THE CUT GRASS BLADES. GRASS CATCHERS NOT REQUIRED.

B. LAWN EDGERS: SHALL BE OF A RIGID BLADE TYPE THAT WILL PRODUCE A FINE CLEAN EDGE WHERE LAWNS MEET WALKWAYS, PAVEMENTS OR CURBS.

C. PRUNING TOOLS: SHALL BE MAINTAINED IN GOOD WORKING ORDER, CUTTING EDGES SHALL BE SHARP. DISINFECT ALL TOOLS WHEN USED FOR THE REMOVAL OF DISEASED LIMBS WITH A TWENTY (20%) PERCENT SOLUTION OF CHLOROX AND WATER.

PART 3.0 - EXECUTION 3.1

LANDSCAPE IRRIGATION SYSTEM: THE CONTRACTOR SHALL, A TOTAL OF 18 TIMES A YEAR, MONITOR AND PROGRAM THE AUTOMATIC CONTROLLING DEVICES TO PROVIDE OPTIMUM MOISTURE LEVELS IN ALL PLANTED AREAS.

A. IRRIGATION CYCLES SHALL BE SET TO TAKE PLACE PRIOR TO SUNRISE (USUALLY 4:00 - 5:00 AM) UNLESS OTHERWISE INSTRUCTED BY THE OWNER, EXCEPT DURING VISITS OF GROUNDS MAINTENANCE PERSONNEL DURING SUCH VISITS THE IRRIGATION SYSTEM MAY BE OPERATED AS DESIRED BY THOSE PERSONNEL.

B. DO NOT PROGRAM CONTROLLERS OPERATING ON THE SAME WATER METER TO WATER DURING THE SAME TIME PERIOD SO AS TO PREVENT OVER-DRAFT OF WATER METERS. DO NOT SWITCH CONTROLLER TO "OFF" AT ANY TIME, EXCEPT AS REQUIRED FOR TESTING AND FOR MAINTENANCE OPERATIONS.

C. COMPLETE SPRINKLER SYSTEM SERVICING SHALL BE PERFORMED AS REQUIRED TO MAINTAIN SPRINKLERS IN CORRECT OPERATING CONDITION, INCLUDING ALL REQUIRED LABOR. APRIL THROUGH SEPTEMBER THE OPERATION OF SPRINKLERS SHALL BE INSPECTED AND MONITORED ON A TWICE-PER-MONTH BASIS TO ASSURE PROPER COVER AND OPERATION. OCTOBER THROUGH MARCH MONITOR AND INSPECT SPRINKLERS ONCE PER MONTH OR UPON THE REQUEST OF THE OWNER. THIS CHECK SHALL INCLUDE VISUAL "INSPECTION" OF ALL ACCESSIBLE COMPONENTS OF THE IRRIGATION SYSTEM INCLUDING BUT NOT LIMITED TO CONTROLLERS, REMOTE CONTROL VALVES, QUICK COUPLERS AND HEADS.

D. ADJUST SPRINKLERS TO AVOID DAMAGE TO WINDOWS, BUILDINGS AND SIGN WALLS, ALSO ADJUST HEADS TO KEEP WATER OFF THE STREET. MAKE REPAIRS AND ALTERATIONS TO THE SPRINKLING SYSTEM AND WATER LINES. ALL SPRINKLER REPAIRS SUCH AS CLEANING OF HEAD OR BREAKS CAUSED BY THE CONTRACTOR SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

3.2 TREE MAINTENANCE:

A. TREES THAT MAY REQUIRE GUYS, STAKES OR SPECIAL CARE DURING THE WINTER WINDS AND RAINS SHALL RECEIVE THE REQUIRED CARE PRIOR TO THE TIME OF RAINS AND HIGH WINDS TO INSURE THAT NO DAMAGE RESULTS TO THE PLANT MATERIAL.

B. CONTRACTOR SHALL MAINTAIN STAKING AND GUYING OF TREES AT ALL TIMES AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO TREES OR PLAT MATERIALS CAUSED BY CHAFING OR BREAKAGE OR FOLIAGE OR LIMBS COMING IN CONTACT WITH STAKES OR GUYS. REPLACE BROKEN PLANT STAKES AND TIES AS NEEDED. IF TIES ARE TOO TIGHT, THEY MUST BE REPLACED OR ADJUSTED.

C. ALL SUCKERS SHALL BE CONTINUALLY REMOVED FROM TREES. GRASS SHALL BE TRIMMED AT THE BASE OF TREES IN A MANNER THAT SHALL PROTECT TREE TRUNKS FROM CUTTING OF BARK AND CAMBIUM LAYER. DO NOT USE "POWER TRIMMERS". A 4" DIAMETER MULCH RING BAND AROUND TREE TRUNK MAY BE USED AS A WEED AND GRASS DETERRENT.

D. ANNUAL TREE PRUNING AND/OR SHAPING AS NEEDED. ALWAYS PRUNE OUT DEAD WOOD. REFER TO SCHEDULE. CONTACT OWNER PRIOR TO COMMENCING ANY PRUNING OR SHAPING WORK.

E. MULCH TREES ONLY WHEN SO DIRECTED BY THE OWNER.

F. SPRAY ALL TREES FOUR TIMES PER YEAR TO CONTROL FOLIAR FEEDING INSECTS. THE SPRAY SHALL CONSIST OF ALTERNATELY SPRAYING 2 TIMES WITH AN INSECTICIDE SPRAY AND 2 TIMES WITH A FUNGICIDE BEGINNING IN MARCH, WITH THE LAST SPRAY IN SEPTEMBER.

C. CONTINUALLY REMOVE SUCKERS.

D. MONITOR FOR APHIDS, POWDERY MILDEW AND OTHER COMMON AILMENTS AND TREAT IMMEDIATELY TO ELIMINATE THESE PROBLEMS.

3.3 GUIDELINES FOR CRAPE MYRTLE TREES:

A. PRUNE CREPE MYRTLES IN FEBRUARY TO REMOVE DEAD BRANCHES AND TO SHAPE HEAD FOR SPRING/SUMMER GROWTH.

B. FERTILIZE IN FEBRUARY EACH YEAR WITH SUPER PHOSPHATE APPLIED PER MANUFACTURER'S RECOMMENDATIONS FOR FLOWERING TREES.

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Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

SOFTSCAPE NOTES

FINAL
FOR REVIEW ONLY

REGISTERED LANDSCAPE ARCHITECT
MATTHEW FRANKLIN TAYLOR
STATE OF TEXAS
March 31, 2023

PM	MT
DESIGNED	JW
DRAFTED	JW
CHECKED	MT
PROJECT NO.	3-00585
DRAWING NO.	L2.01
SHEET	OF

P:\RAIDER WAY IMPROVEMENTS - 0091-04-0001\CITY SUBMITTALS\L0.01.DWG, L2.01, 3/31/2023 10:20:32 AM, jwilliams

3.4 TURF MAINTENANCE:

A. MOWING: ALL COMMON BERMUDA AND/OR ST. AGUSTINE GRASS SHALL BE MOWED APPROXIMATELY EVERY SEVEN DAYS MARCH - OCTOBER. DURING PERIODS OF MILD WEATHER THE CUT SHOULD NOT BE LOWER THAN TWO (2") INCHES FROM THE SOIL. NEVER SCALP THE LAWN OR CUT MORE THAN ON-HALF (1/2) THE EXISTING TOP GROWTH IN ONE MOWING. ON IRRIGATED AREAS, REMOVE THE CLIPPINGS, NEVER ALLOWING VISIBLE CLIPPINGS TO REMAIN ON LAWN SURFACE MORE THAN FOUR (4) HOURS. ALL SIDEWALKS AND CURBS SHALL BE EDGED AS WELL AS OTHER OBJECTS (NON LIVING) IN THE GRASS ZONE.ALLOW GRASS TO GROW UP TO BUT NOT OVER SPRINKLER HEADS. TRIM GRASS AROUND HEADS WITH A CIRCULAR SPRINKLER HEAD TRIMMER. DO NOT USE "WEED-EATERS" TO TRIM AROUND SPRINKLER HEADS.

B. WATERING: PROVIDE A REGULAR, DEEP WATERING PROGRAM. THE ESTABLISHED TURF SHOULD NOT BE KEPT WET BUT SHOULD DRY OUT SOMEWHAT BETWEEN WATERINGS. A TWICE WEEKLY WATERING IS GOOD UNDER REGULAR CONDITIONS, BUT IF IT IS HOT OR WINDY, WATER MORE OFTEN. IN VERY HOT WEATHER, A FAST WATERING WITH FINE SPRAY WILL COOL THE TURF ZONE

AND CAN SUPPLEMENT THE REGULAR, DEEPER WATERING PROGRAM. IN SHADED AREAS CAUSED BY TREES, WATER MORE FREQUENTLY BECAUSE OF THE COMPETITION FOR SOIL MOISTURE. IF LAWN WILTS (SHOWS GREY-BROWN) WATER MORE FREQUENTLY.

C. LAWN FERTILIZER: APRIL 1 - 22-0-6 ANALYSIS AT THE RATE OF 10 POUNDS FERTILIZER PER 1,000 SQUARE FEET, NITROGEN CONTENT SHALL CONSIST OF 50% SULPHUR COATED UREA. ANALYSIS SHALL INCLUDE 4% IRON. MAY 15 - 24-6-12 ANALYSIS AT THE RATE OF 10 POUNDS FERTILIZER PER 1,000 SQUARE FEET, NITROGEN CONTENT SHALL CONSIST OF 50% SULPHUR COATED UREA. ANALYSIS SHALL INCLUDE 4% IRON. JULY 1 - 15-5-10 ANALYSIS AT THE RATE OF 10 POUNDS FERTILIZER PER 1,000 SQUARE FEET, NITROGEN CONTENT SHALL CONSIST OF 50% SULPHUR COATED UREA. ANALYSIS SHALL INCLUDE 4% IRON. AUGUST 15 - 15-5-10 ANALYSIS AT THE RATE OF 10 POUNDS FERTILIZER PER 1,000 SQUARE FEET, NITROGEN CONTENT SHALL CONSIST OF 50% SULPHUR COATED UREA. ANALYSIS SHALL INCLUDE 4% IRON. OCTOBER 1 - 22-0-06 ANALYSIS APPLIED AT THE RATE OF 10# PER 1,000 SQUARE FEET. NO SULPHUR COATED UREA, NO IRON.

D. FERTILIZER: TRACE ELEMENTS IN FERTILIZER SHALL BE BASED ON THE RECOMMENDATIONS OF THE SOIL LABORATORY. THE FERTILIZATION PROGRAM WILL BE CLOSELY MONITORED BY THE OWNER. THE CONTRACTOR SHALL PREPARE SUBMITTALS PRIOR TO EACH APPLICATION SHOWING THE AREA TO BE COVERED. THE QUANTITY OF FERTILIZER TO BE APPLIED AND THE RATES OF APPLICATIONS. THE OWNER WILL MONITOR THE APPLICATION TO INSURE THAT MATERIALS AND PROCEDURES ARE AS SPECIFIED.

E. WEED CONTROL AND UNDESIRABLE GRASS - GENERAL:

1. CONTRACTOR SHALL USE EXTREME CARE IN THE USE OF CHEMICALS FOR WEED CONTROL. BEFORE SUCH APPLICATIONS ARE MADE, THE TURF SHOULD BE WELL ESTABLISHED AND IN A VIGOROUS CONDITION.

2. ALL CHEMICAL APPLICATIONS SHALL BE PROPERLY LICENSED WITH THE PROPER GOVERNING AUTHORITIES.

3. THE CONTRACTOR SHALL CARRY THE INSURANCE REQUIRED BY THE GOVERNING AUTHORITY.

4. APPLY CHEMICALS AT THE MANUFACTURER'S RECOMMENDED RATE TO ACHIEVE COMPLETE CONTROL OF WEEDS AND UNDESIRABLE GRASSES.

5. ALL PRODUCTS UTILIZED ON THIS PROJECT MUST BE LABELED FOR TURF USE.

6. SPOT TREATMENT OF WEEDS AND UNDESIRABLE GRASSES SHALL BE ACHIEVED WITHOUT DAMAGING THE SURROUNDING TURF.

F. WEED AND UNDESIRABLE GRASS CONTROL SCHEDULE: ALL BERMUDA GRASS TURF SHALL BE SPRAYED 2 TIMES IN EARLY SPRING FOR POST-EMERGENT CONTROL OF WINTER WEEDS, AND 2 TIMES IN JUNE - AUGUST FOR POST-EMERGENT CONTROL OF CRABGRASS, DALLISGRASS, AND OTHER BROADLEAF GRASSES, FOR A TOTAL OF 4 CYCLES. NOTE: IF PERMANENT TURF ESTABLISHMENT IS NOT COMPLETE, DO NOT APPLY PRE-EMERGENT HERBICIDE. SUMMER/FALL SPOT TREAT TURF AREAS TO ACHIEVE A MINIMUM 98% PURE STAND OF TURF.

G. INSECTS: CONTROL INSECTS WITH REGULAR APPLICATIONS OF COMMERCIAL INSECTICIDES AT THE MANUFACTURER'S RECOMMENDED RATE.

H. DISEASES: SPRAY FOR DISEASES WHEN THEY FIRST BECOME APPARENT WITH AN APPROVED COMMERCIAL FUNGICIDE STRICTLY ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

I. MAINTAIN MULCHED SAUCERS AROUND ALL TREES FOR ONE YEAR AFTER PLANTING. TRIM GRASS AS REQUIRED TO PREVENT GRASS FROM ENCROACHING INTO THE SAUCER AREA. NO "WEED-EATERS" SHALL BE USED AROUND THE TRUNK OF ANY TREE AT ANY TIME.

J. IF INITIAL INSTALLATION (ANY OR ALL) OF THE PROJECT SITE IS IN WINTER RYE, THE CONTRACTOR WILL AT THAT TIME CHANGE THE MOWING AND TRIMMING RATE TO 45 TIMES A YEAR. CONTRACTOR SHALL ALSO DURING THE 1 YEAR MAINTENANCE PERIOD AND AT THE APPROPRIATE SEASON, CHEMICALLY KILL OUT WINTER RYE AND HYDROMULCH BERMUDA.

K. ONE APPLICATION OF HERBICIDE WILL BE APPLIED TO OVERSEEDED TURF TO AID IN THE ERADICATION OF RYE GRASS.

3.5 SHRUB AND GROUNDCOVER BED MAINTENANCE:

A. WEEDING OF ALL SHRUB, GROUNDCOVER BEDS AND SEASONAL COLOR BEDS SHALL BE PERFORMED TWICE MONTHLY (TOTAL 24 TIMES).

B. ALL SHRUB AND GROUNDCOVER BEDS SHALL BE PRUNED 8 TIMES A YEAR MARCH - OCTOBER IN AN ATTEMPT TO DEVELOP THE NATURAL FORM OF THE PLANT.

C. PRE-EMERGENT WEED CONTROL SHALL BE APPLIED 1 TIME IN EARLY SPRING AND 1 TIME IN LATE FALL IN PLANTER BEDS ONLY AFTER CAREFUL THOUGHT OF WHAT IS TO OCCUR IN PLANTERS DURING THE GROWING SEASON.

D. ALL SHRUB, GROUNDCOVER BEDS AND SEASONAL COLOR AREAS SHALL BE FERTILIZED 3 TIMES PER YEAR AT A RATE OF 2 POUNDS OF FERTILIZER PER 1,000 SQUARE FEET. APRIL 1 -22-0-6, JULY 1 -15-5-10, OCTOBER 1 - 22-0-6

3.6 USE OF HERBICIDES, INSECTICIDES, STERILANTS, POISON, AND ANIMAL TRAPS:

A. THE CONTRACTOR IS HEREBY GRANTED PERMISSION TO USE SUCH HERBICIDES, INSECTICIDES, POISON, AND ANIMAL TRAPS AS IT MAY FIND NECESSARY AND 3.6 CONTINUED

D. APPLY INSECTICIDES AS NEEDED TO PROTECT ALL PLANT MATERIALS FROM DAMAGE. THE INSECT CONTROL PROGRAM SHALL INCLUDE SLUGS AND SNAILS AND ADVANCE PREVENTIVE SPRAYING FOR TWIG BORERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CHOOSING THE CHEMICALS AND INSECTICIDES HE USES AND SHALL BE ACCOUNTABLE FOR ANY MISUSE OF SAME.

E. APPLY THE PROPER FUNGICIDE, HERBICIDE AND PESTICIDES FOR THE CONTROL OF PESTS, WEEDS AND PLANT DISEASES OR TREAT CUTS ON TURF, PLANTS AND TREES.

3.7 GENERAL CLEAN UP:

A. THE CONTRACTOR SHALL DISPOSE OF ALL WASTE MATERIALS OR REFUSE FROM HIS OPERATIONS OFF THE PROPERTY.

B. ALL PLANT GROWTH SHALL BE PREVENTED IN ANY CRACKS IN WALKS OR WITHIN PAVED AREAS.

C. LEAVES, PAPERS, GRASS CLIPPINGS OR OTHER DEBRIS SHALL BE REMOVED AT LEAST WEEKLY OR AT EACH VISIT FROM ALL AREAS.

D. SWEEP ROADS AND WALKS OF REFUSE, DIRT AND OTHER MATERIALS WHICH MAY BE DEPOSITED AS A RESULT OF THE MAINTENANCE OPERATION.

E. CONTRACTOR WILL EVALUATE BARK MULCH 4 TIMES A YEAR DURING THE 1 YEAR MAINTENANCE PERIOD AND REPLACE BARE SPOTS AS NEEDED.

PART 4.0 - SCHEDULE

4.1 SCHEDULE:
THE SCHEDULE AS INCLUDED HEREIN SHALL GOVERN THE WORK. SHOULD THE CONTRACTOR REQUIRE AN ALTERATION OF THE SCHEDULE, CONTACT THE OWNER.

PART 5.0 - MAINTENANCE SCHEDULE

5.1 MOWING, EDGING, TRIMMING, LITTER CLEAN UP, AND IRRIGATION MONITORING AND OTHER RELATED MAINTENANCE FEATURES:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MOW			2	4	4	5	5	5	5	4	2		36
EDGE/TRIM			2	4	4	5	5	5	5	4	2		36
CLEAN/TRASH WEED (BEDS)	2	2	2	2	2	2	2	2	2	2	2	2	24
SPRINKLER	1	1	1	2	2	2	2	2	2	1	1	1	18
FERTILIZE (LAWN)				1	1		1	1		1			5
POST-EMERGENT (LAWN)			1	1		1		1					4
		POST-EMERGENT OF WINTER WEEDS								POST-EMERGENT OF CRABGRASS AND OTHER BROADLEAF GRASSES			
FERTILIZE (BEDS, INCL. GROUND COVER)			1		1		1						3
PRE-EMERGENT (BEDS)				1						1			2
CULTIVATE BEDS			1			1	1	1	1				5
PRUNE (SHRUBS)			1	1	1	1	1	1	1	1			8
PRUNE (GR. COVER)			1	1	1	1	1	1	1	1			8
PRUNE (TREES)			1	(CRAPEMYRTLES TO REMOVE SEED HEADS)									1
INSECT/DISEASE CONTROL (LAWN & BEDS)					AS NEEDED								
TREES (INSECTICIDE)			1			1							2
TREES (FUNGICIDE)				1					1				2

END OF SECTION 02970

SECTION 02930 - LAWNS

PART 1 - GENERAL

1.1 SCOPE: FURNISH ALL LABOR, TOOLS, TRANSPORTATION, MATERIALS, EQUIPMENT, SUPERVISION, ETC., REQUIRED TO ADEQUATELY ESTABLISH A DENSE LAWN OF PERMANENT GRASSES, FREE FROM LUMPS AND DEPRESSIONS AS INDICATED BY PLANS AND SPECIFICATIONS. REPLACE ANY PART OF THE AREA FAILING TO SHOW UNIFORM COVER UNTIL A DENSE LAWN IS ESTABLISHED. THE COST OF MISCELLANEOUS LABOR AND MATERIALS FOR TOPSOIL, WEEDING, TILLING, PEST CONTROL, FERTILIZING, ETC., ARE NOT SEPARATE PAY ITEMS AND SHALL BE INCLUDED IN THE BID PRICE FOR GRASSING.

1.2 RELATED WORK SPECIFIED ELSEWHERE:

A. LANDSCAPING - SECTION 02910

1.3 PAYMENT:

A. PAYMENT FOR GRASS PLANTING OR HYDROMULCHING FOR GENERAL TURF AREAS WILL BE MADE AFTER FINAL ACCEPTANCE BASED ON THE METHOD OF PAYMENT STATED IN THE BID PROPOSAL. IF BASED ON AREA UNITS, SUCH AS SQUARE FEET OR SQUARE YARDS, PAYMENT WILL BE BASED ON ACTUAL FIELD MEASUREMENTS. THE CONTRACTOR SHALL SEED, FERTILIZE, MAINTAIN AND ESTABLISH A HEALTHY STAND OF GRASS BEFORE ACCEPTANCE OR PAYMENT FOR GRASS WILL BE CONSIDERED BY THE OWNER.

B. BIDDERS SHALL BE AWARE THAT ESTIMATES OF WORK UNDER THE SPECIFICATIONS FOR MONTHLY PAYMENTS ARE MADE ON NON-PERISHABLE MATERIALS ONLY. PAYMENTS FOR PERISHABLES WILL BE MADE AFTER FINAL ACCEPTANCE OF THE PROJECT. ALL GRASS PLANTING, TILLING,FERTILIZER, ETC. SHALL BE CONSIDERED PERISHABLE, THEREFORE, NO PARTIAL PAYMENTS WILL BE PAID FOR GRASS PLANTING AND ASSOCIATED WORK.

1.4 MAINTENANCE OF GRASS: THE CONTRACTOR SHALL MAINTAIN THE GRASS UNTIL FINAL ACCEPTANCE. SUCH MAINTENANCE SHALL INCLUDE SPRAYING, WEEDING, CULTIVATION, FERTILIZING, WATERING, DISEASE AND INSECT CONTROL, TOP DRESSING LOW SPOTS, PLUS ANY PROCEDURES CONSISTENT WITH HORTICULTURAL PRACTICE NECESSARY TO INSURE NORMAL, VIGOROUS, AND HEALTHY GRASS.

1.5 JOB CONDITIONS:

A. WATER: WILL BE AVAILABLE ON SITE. PROVIDE NECESSARY HOSES AND OTHER WATERING EQUIPMENT REQUIRED TO COMPLETE WORK.

B. LAWN AREAS WILL BE LEFT WITHIN 0.1 FOOT OF FINISH GRADE BY OTHER TRADES. FINE GRADING, RAKING AND SMOOTHING WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.

1.6 SCHEDULE

A. SEEDING/HYDROMULCHING - BERMUDAGRASS:
NORTH TEXAS: COMPLETE ONLY BETWEEN MAY 1 TO AUGUST 31 UNDER FAVORABLE CONDITIONS. (WARM SEASON) CENTRAL TEXAS: COMPLETE ONLY BETWEEN MAY 1 TO SEPTEMBER 15 UNDER FAVORABLE CONDITIONS. (WARM SEASON)

B. SEEDING/HYDROMULCHING - PERENNIAL RYEGRASS: COMPLETE ONLY BETWEEN SEPTEMBER 1 TO APRIL 30, EXCEPT AT FRONT OF PROJECT, AS DETERMINED BY OWNER, UNDER FAVORABLE CLIMATIC CONDITIONS.

C. SODDING: BERMUDA SOD:
NORTH TEXAS: MAY 1 TO AUGUST 31 (WARM SEASON) AND SEPTEMBER 1 TO APRIL 30 (COOL SEASON) WITH OVERSEED OF PERENNIAL RYE.
CENTRAL TEXAS: MAY 1 TO SEPTEMBER 15 (WARM SEASON) AND SEPTEMBER 16 TO APRIL 30 (COOL SEASON) WITH OVERSEED OF PERENNIAL RYE.(USE NURSERY OVERSEEDED SOD, IN LIEU OF SEEDING AFTER INSTALLATION, IF AVAILABLE.)

D. QUALIFICATIONS: DUE TO UNSEASONABLE WEATHER, THE ABOVE DATES MAY VARY; HOWEVER, DO NOT PROCEED WITH GRASSING OPERATIONS BEYOND THESE DATES WITHOUT ASSUMING FULL RESPONSIBILITY FOR A STAND OF GRASS.

1.7 ACCEPTANCE: THE WORK WILL BE ACCEPTED WHEN A COMPLETED, UNDAMAGED STAND OF GRASS IS ACHIEVED, AS APPROVED BY THE OWNER AND THE LANDSCAPE ARCHITECT.

PART 2 - MATERIALS

2.1 TOPSOIL:

A. FRIABLE, FERTILE, DARK, LOAMY SOIL, FREE OF CLAY LUMPS, SUBSOIL, STONES AND OTHER EXTRANEOUS MATERIAL AND REASONABLE FREE OF WEEDS AND FOREIGN GRASSES. TOPSOIL CONTAINING DALLISGRASS OR NUTGRASS SHALL BE REJECTED.

B. PHYSICAL PROPERTIES AS FOLLOWS:
CLAY - BETWEEN 7-27 PERCENT
SILT - BETWEEN 28-50 PERCENT
SAND - LESS THAN 52 PERCENT

2.2 GRASS:

A. GRASS SEED: EXTRA FANCY, HULLED AND TREATED, LAWN TYPE SEED,DELIVERED TO SITE IN ORIGINAL, UNOPENED CONTAINERS MEETING REQUIREMENTS OF TEXAS STATE SEED LAW. MINIMUM PURITY GERMINATION 90 PERCENT.

B. SOD: SOLID SOD, LIVE, RICH, DARK GREEN IN COLOR, FREE OF FOREIGN GRASSES, WEEDS, NUTGRASS, CUT WITH A FULL 3/4 INCH OF HEAVY CLAY COVERING ROOTS. DELIVER TO SITE IN 12 INCH SQUARES OR 12 INCH WIDE ROLLS. DO NOT STACK FOR MORE THAN 24 HOURS BETWEEN TIME OF CUTTING AND TIME OF DELIVERY.

2.3 FERTILIZER: FERTILIZER SHALL BE ORGANIC BASE, UNIFORM IN COMPOSITION, DRY AND FREE FLOWING. DELIVER FERTILIZER TO SITE IN ORIGINAL, UNOPENED CONTAINERS, EACH BEARING MANUFACTURER'S GUARANTEED STATEMENT OF ANALYSIS.

A. FIRST APPLICATION: 12-12-12 ELEMENT PERCENTAGE WITH MINIMUM 8% SULFUR AND 4% IRON, PLUS MICRO NUTRIENTS.

B. SECOND APPLICATION: 3:1:2 ELEMENT RATIO. NITROGEN SOURCE TO BE A MINIMUM 50% SLOW RELEASE ORGANIC NITROGEN (SCU OR UF) PLUS MINIMUM 8% SULFUR AND 4% IRON PLUS MICRO NUTRIENTS.

2.4 MULCH FIBER: WOOD CELLULOSE FIBER FOR HYDROMULCH: WEYERHAUSER OR EQUAL WITH GREEN COLOR ADDITIVE.

2.5 TACKIFIER:
NATURAL, NON-ASPHALTIC VEGETABLE GUM WITH GELLING AND HARDENING AGENTS.

2.6 SHARP SAND:
CLEAR, WASHED SAND (FINE AGGREGATE) - ASTM C-33.

2.7 HERBICIDE:
ROUND-UP OR EQUAL.

PART 3 - EXECUTION

3.1 PREPARATION:

A. SCARIFY LAWN AREAS WHERE EXCESSIVE COMPACTION IS GREATER THAN 85% STANDARD PROCTOR TO A DEPTH OF 4-INCHES BY DISCING OR ROTOTILLING. REPEAT CULTIVATION AS REQUIRED TO THOROUGHLY LOOSEN SOIL.

B. LEAVE AREAS FREE OF WEEDS AND READY FOR FINAL GRADING.

C. PROVIDE BARRICADES AROUND SCARIFIED AREAS TO PREVENT COMPACTION BY CONSTRUCTION VEHICLES.

3.2 SPREADING TOPSOIL

A. NO TOPSOIL SHALL BE PLACED UNTIL SUBGRADE IS APPROVED BY LANDSCAPE ARCHITECT.

B. CONTRACTOR TO FURNISH AND SPREAD TOPSOIL ON LAWN AREAS TO A DEPTH OF SIX INCHES.

C. WORK TOPSOIL TO A SMOOTH UNIFORM SURFACE AND COMPACT FIRMLY.

D. FEATHER TOPSOIL INTO UNDISTURBED AREAS CREATING A SMOOTH, EVEN TRANSITION. SPREAD ADDITIONAL TOPSOIL IN UNDISTURBED AREAS TO ELIMINATE WATER PONDING.

3.3 FINAL GRADING:

A. REMOVE FROM SITE AND LEGALLY DISPOSE OF STONES 1-INCH AND LARGER, STICKS AND OTHER DEBRIS EXPOSED DURING THIS OPERATION.

B. PROVIDE FINISH GRADING LEAVING SURFACE UNIFORM WITHOUT DEPRESSIONS AND UNDULATIONS, GRADED APPROXIMATELY 1-INCH BELOW PAVING.

C. SECURE APPROVAL FROM THE LANDSCAPE ARCHITECT PRIOR TO PROCEEDING WITH GRASSING OPERATION.

3.4 HERBICIDE:
APPLY HERBICIDE TO REMOVE ANY REMAINING WEEDS. THIS WORK IS TO BE PERFORMED BY A LICENSED PESTICIDE APPLICATOR FOLLOWING THE MANUFACTURER'S RECOMMENDATIONS.

3.5 FERTILIZER:

A. PLACE FIRST APPLICATION WITH HYDROMULCH AT RATE OF 12 POUNDS PER 1,000 SQUARE FEET.

B. UNIFORMLY DISTRIBUTE SECOND APPLICATION USING A ROTARY TYPE FERTILIZER SPREADER 3-4 WEEKS AFTER FIRST APPLICATION AT 12 POUNDS PER 1,000 SQUARE FEET.

3.6 HYDROMULCH/SEEDING:

A. AT THE TIME OF HYDROMULCH/SEEDING, SOIL SHALL BE MOIST BUT NOT MUDDY, AND WIND VELOCITY SHALL NOT EXCEED TEN (10) MILES PER HOUR. ADD WATER IF REQUIRED TO MOISTEN SOIL.

B. HYDROMULCH SEED UNIFORMLY AT THE RATE OF 2 POUNDS OF BERMUDA GRASS SEED PER 1,000 SQUARE FEET OR OTHER RATE AS SPECIFIED ON PLANS.

C. ADD TACKIFIER TO HYDROMULCH MIX FOR SLOPES 5:1 OR GREATER AT THE RATE OF 1 LB. PER BAG OF MULCH.

D. USE A 4' X 8' BATTER BOARD AGAINST BED AREAS.

3.7 MECHANICAL SEEDING:

SEED UNIFORMLY AT A RATE 125 POUNDS OF BERMUDA GRASS SEED PER ACRE OR 350 POUNDS OF RYE GRASS PER ACRE. USE GRASS DRILL, BRILLION SEEDER, OR VIKING ROLLER.

NORRIS DESIGN
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REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

SOFTSCAPE NOTES

FINAL
FOR REVIEW ONLY

REGISTERED LANDSCAPE ARCHITECT
MATTHEW FRANKLIN TAYLOR
STATE OF TEXAS
03.31.2023
March 31, 2023

PM	MT
DESIGNED	JW
DRAFTED	JW
CHECKED	MT
PROJECT NO.	3-00585

DRAWING NO. L2.02
SHEET OF

3.8 SOLID SOD:

A. SOLID SOD: PLANT GRASS BY HAND, EDGE TO EDGE WITH STAGGERED JOINTS. TOP DRESS WITH SHARP SAND RAKED IN CAREFULLY TO FILL JOINTS. ROLL TO ELIMINATE UNDULATIONS AND PROVIDE COMPLETE SOIL CONTACT. ALL BERMUDA GRASS INSTALLED DURING THE WINTER MONTHS (SEPTEMBER-APRIL) SHALL BE OVERSEEDED WITH RYE GRASS BEFORE INSTALLATION. (NOT OVERSEEDED AT SITE.) THE INFORMATION CENTER, ALL STREET FRONTAGE, POOLS AND ANY BUILDING HOUSING MODEL UNITS ARE TO RECEIVE SOLID SOD AS SPECIFIED. NO HYDROMULCH IN THE ABOVE AREAS WILL BE ALLOWED - ONLY SOLID SOD.

B. FERTILIZING: FERTILIZE IMMEDIATELY AFTER GRASS IS PLANTED AT RATE OF 4 LBS. PER 1,000 SQUARE FEET. REPEAT FERTILIZING AT THE SAME RATE 3-4 WEEKS LATER. MODIFY APPLICATION RATE IF RECOMMENDED BY SOIL TESTING LAB.

3.9 ESTABLISHMENT AND MAINTENANCE OF LAWN AREAS:

A. WATERING:

1. WATER LAWN AREAS IMMEDIATELY AFTER GRASSING OPERATION.
2. CONTINUE WATERING AS REQUIRED TO KEEP SOIL UNIFORMLY MOIST TO A MINIMUM DEPTH OF 4-INCHES.
3. BE ALERT TO OVER-WATERING NEWLY PLANTED GRASS, PARTICULARLY IN HEAVY CLAY SOILS.

B. REPLANTING/EROSION CONTROL:

1. CORRECT ANY EROSION THAT MAY OCCUR DURING THE ESTABLISHMENT OF GRASS.
2. RESEED (SOD) ANY AREAS NOT SHOWING SUFFICIENT GROWTH WITHIN 3 WEEKS AFTER INITIAL GRASSING. CONTINUE SEEDING (SODDING) UNTIL A STAND OF GRASS IS ACHIEVED.
3. A STAND OF GRASS WILL BE DEFINED AS A UNIFORM COVER OF ACTIVELY GROWING TURF.

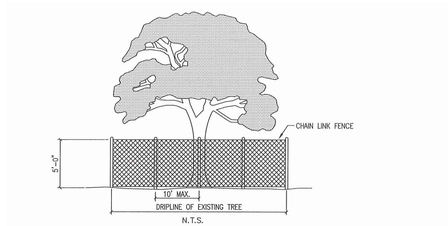
C. MOWING/WEED CONTROL:

1. MOW LAWN AREAS WEEKLY UNTIL A STAND OF GRASS IS ACHIEVED. BEGIN MOWING WHEN THE LAWN REACHES A HEIGHT OF 3-INCHES SET MOWER TO CUT AT 2-INCHES. A MINIMUM OF TWO MOWINGS IS REQUIRED.
2. WEED LAWN AREAS UNTIL ACCEPTANCE, REMOVING ALL FOREIGN VEGETATION, EITHER BY HOEING OR PULLING. IF APPROVED, HERBICIDE SPOT TREATMENTS MAY BE USED.

3.10 CLEANUP

DURING WORK, KEEP PREMISES NEAT AND ORDERLY, INCLUDING ORGANIZATION OF STORAGE AREAS. REMOVE TRASH, INCLUDING DEBRIS RESULTING FROM REMOVING WEEDS AND ROCKS FROM SITE DAILY AS WORK PROGRESSES. KEEP PAVED AREAS CLEAN BY SWEEPING OR HOSING.

END OF SECTION 02930



1. TREE PROTECTION FENCES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY SITE PREPARATION WORK (CLEARING, GRUBBING OR GRADING).
2. FENCES SHALL COMPLETELY SURROUND THE TREE, OR CLUSTERS OF TREES; SHALL BE LOCATED AT THE OUTERMOST LIMIT OF THE TREE BRANCHES (DRIPLINE), AND SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROJECT IN ORDER TO PREVENT THE FOLLOWING:
   A. SOIL COMPACTION IN THE ROOT ZONE AREA RESULTING FROM VEHICULAR TRAFFIC, OR STORAGE OF EQUIPMENT OR MATERIALS.
   B. ROOT ZONE DISTURBANCES DUE TO GRADE CHANGES (GREATER THAN SIX INCHES (6")) CUT OR FILL, OR TRENCHING NOT REVIEWED AND AUTHORIZED BY THE CITY.
   C. WOUNDS TO EXPOSED ROOTS, TRUNKS OR LIMBS BY MECHANICAL EQUIPMENT.
   D. OTHER ACTIVITIES DETRIMENTAL TO TREES, SUCH AS CHEMICAL STORAGE, CEMENT TRUCK CLEANING AND FIRE.
3. EXCEPTIONS TO INSTALLING FENCES AT TREE DRIPLINES MAY BE PERMITTED IN THE FOLLOWING CASES:
   A. WHERE PERMEABLE PAVING IS TO BE INSTALLED, ERECT THE FENCE AT THE OUTER LIMITS OF THE PERMEABLE PAVING AREA.
   B. WHERE TREES ARE CLOSE TO PROPOSED BUILDINGS, ERECT THE FENCE NO CLOSER THAN SIX FEET (6'-0") TO BUILDING.
4. CRITICAL ROOT ZONE REQUIREMENTS
   A. NO CONSTRUCTION OR DISTURBANCE SHALL OCCUR WITHIN AN AREA THAT CONSTITUTES MORE THAN FIFTY (50%) OF THE TOTAL CRITICAL ROOT ZONE AND ONE HALF THE RADIAL DISTANCE OF THE CRITICAL ROOT ZONE FOR EACH TREE BEING PRESERVED INCLUDING SIGNIFICANT TREES, HERITAGE TREES, AND ANY OTHER TREES FOR WHICH PRESERVATION IS TO BE CREDITED. THE REMAINING CRITICAL ROOT ZONE SHALL CONSIST OF AT LEAST ONE HUNDRED (100) SQUARE FEET.
   B. THIS DEFINED AREA SHALL BE FLAGGED AND ENCIRCLED WITH PROTECTIVE FENCING DURING CONSTRUCTION. THE PLANNING DIRECTOR MAY APPROVE CONSTRUCTION CLOSER TO THE TRUNK THAN ONE HALF (½) THE RADIAL DISTANCE, DEPENDING ON THE SIZE, SPACING, OR SPECIES OF THE TREE, THE TYPE OF DISTURBANCE PROPOSED, AND UNIQUENESS OF THE SITUATION.
   C. CUT OR FILL THAT IS GREATER THAN FOUR (4) INCHES IN DEPTH AND THE SEVERING OF MAJOR ROOTS SHALL BE CONSIDERED DISTURBANCE FOR THE PURPOSES OF THIS ORDINANCE.
   D. WITHIN THE PROTECTED CRITICAL ROOT ZONE, ONLY FLATWORK, DECKING, OR SIMILAR CONSTRUCTION, MAY BE APPROVED AND SHALL NOT AFFECT THE BRANCHING OF THE TREE.
   E. IF PROPOSED OR ACTUAL PROTECTION OF THE CRITICAL ROOT ZONE OF A TREE DOES NOT MEET THE REQUIREMENTS OF THIS SECTION, THEN THE TREE SHALL BE CONSIDERED REMOVED AND SHALL REQUIRE MITIGATION IN ACCORDANCE WITH THIS ORDINANCE.

1 CITY OF LEANDER TREE PROTECTION 303-2

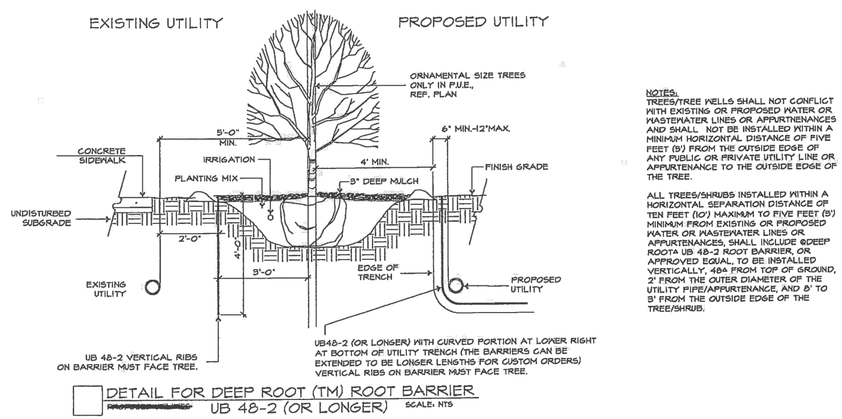
NTS

SOFTSCAPE SCHEDULE

TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	ROOT	SIZE	W
	QUE V	172	QUERCUS VIRGINIANA	SOUTHERN LIVE OAK	CONT.	4"CAL	1
ORNAMENTAL	**CODE**	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**ROOT**	**SIZE**	**W**
	CER M	5	CERCIS CANADENSIS MEXICANA	MEXICAN REDBUD	CONT.	2"CAL	8
SHRUBS	**CODE**	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**ROOT**	**SIZE**	**W**
	LAN H	95	LANTANA X `NEW GOLD`	NEW GOLD LANTANA	1 GAL	9" H X 12" W	
GRASSES	**CODE**	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**ROOT**	**SIZE**	**W**
	MUH G	88	MUHLENBERGIA CAPILLARIS `GULF COAST`	GULF COAST MUHLY	3 GAL	18" H X 18" W	
SOD/SEED	**CODE**	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**WATER USE**	**N**
	CYN 2	10,200 SF	CYNODON DACTYLON	BERMUDA HYRDOSEED	SEED		
	CYN D	127,106 SF	CYNODON DACTYLON	BERMUDA GRASS	SOD		

MATERIALS SCHEDULE

PLANTING DESCRIPTION	QTY
STEEL BED EDGE	447 LF
DG GRAVEL	522 S.F.
RIVER ROCK GRAVEL	1,099 S.F.
2" MULCH	11,703 S.F.
6" TOP SOIL (BEDS)	14,740 S.F.
6" TOP SOIL (SOD/SEED)	86,553 S.F.
SMALL BOULDER	2
MEDIUM BOULDER	5
LARGE BOULDER	7



DETAIL FOR DEEP ROOT (TM) ROOT BARRIER
UB 48-2 (OR LONGER) SCALE: NTS

NOTES,
TREES/TREE WELLS SHALL NOT CONFLICT WITH EXISTING OR PROPOSED WATER OR WASTEWATER LINES OR APPURTENANCES AND SHALL NOT BE INSTALLED WITHIN A MINIMUM HORIZONTAL DISTANCE OF FIVE FEET (5') FROM THE OUTSIDE EDGE OF ANY PUBLIC OR PRIVATE UTILITY LINE OR APPURTENANCE TO THE OUTSIDE EDGE OF THE TREE.

ALL TREES/SHRUBS INSTALLED WITHIN A HORIZONTAL SEPARATION DISTANCE OF TEN FEET (10') MAXIMUM TO FIVE FEET (5') MINIMUM FROM EXISTING OR PROPOSED WATER OR WASTEWATER LINES OR APPURTENANCES, SHALL INCLUDE 60DEEP ROOT® UB 48-2 ROOT BARRIER, OR APPROVED EQUAL, TO BE INSTALLED VERTICALLY, 18Ø FROM TOP OF GROUND, 2' FROM THE OUTER DIAMETER OF THE UTILITY PIPE/APPURTENANCE, AND 8' TO 8' FROM THE OUTSIDE EDGE OF THE TREE/SHRUB.

2 DEEP ROOT PLASTIC ROOT BARRIER

NTS

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REV.	DESCRIPTION	DATE

Walker Partners engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

SOFTSCAPE NOTES

FINAL
FOR REVIEW ONLY

REGISTERED LANDSCAPE ARCHITECT
MATTHEW TRAVIS TAYLOR
STATE OF TEXAS
March 31, 2023

PM	MT
DESIGNED	JW
DRAFTED	JW
CHECKED	MT
PROJECT NO.	3-00585

DRAWING NO. L2.03

SHEET OF

P:\RAIDER WAY IMPROVEMENTS - 0091-04-0001\CITY SUBMITTALS\L0.01.DWG, L2.03, 3/31/2023 10:21:39 AM, jwilliams

TREE INDEX - WITHIN ROW OR IMPACTED FROM IMPROVEMENT

	TREE ID	DBH	SPECIES	SAVED CREDIT = 2" PER 1" HERITAGE TREE + 26" SAVED	SAVED CREDIT = 2" PER 1" HERITAGE TREE + 26" REMOVED	SAVED CREDIT = 2" PER 1" SIGNIFICANT TREE 18" - 26" SAVED	SAVED CREDIT = 2" PER 1" SIGNIFICANT TREE 18" - 26" REMOVED	SAVED CREDIT = 1" PER 1" SIGNIFICANT TREE 8" - 18" SAVED	SAVED CREDIT = 1" PER 1" SIGNIFICANT TREE 8" - 18" REMOVED
	15801	11	ELM					11	
	15802	9	ELM					9	
	15810	20	LIVE OAK				20		
	15811	12	LIVE OAK						12
	15813	24	LIVE OAK				24		
	15814	18	LIVE OAK						18
	15815	20	ELM				20		
	15816	10	ELM						10
	15817	18	LIVE OAK						18
	25818	13	ELM						13
	25819	8	LIVE OAK						8
	15820	15	ELM						15
	25822	9	LIVE OAK						9
	25823	12	ELM						12
	25824	9	ELM						9
	25828	21	LIVE OAK				21		
	25829	11	ELM						11
M	15904	15, 15	LIVE OAK				22.5		
	15906	12	LIVE OAK						12
	15907	10	ELM						10
	15928	10	ELM						10
	15934	10	LIVE OAK						10
	15936	8	ELM						8
	15937	8	HACKBERRY						8
	15938	9	ELM					9	
	15940	18	LIVE OAK						18
	15941	10	LIVE OAK						10
	15943	15	LIVE OAK						15
	15944	10	LIVE OAK						10
	15945	12	LIVE OAK						12
	15946	12	LIVE OAK						12
	15947	15	LIVE OAK						15
	15948	13	LIVE OAK						13
	15949	9	LIVE OAK						9
	15950	15	LIVE OAK						15
	15951	9	ELM						9
	15952	12	ELM						12
	15953	12	LIVE OAK						12
	15954	12	LIVE OAK						12
	15955	8	LIVE OAK						8
	15956	9	LIVE OAK						9
	15957	12	ELM						12
	15958	10	LIVE OAK						10
	15959	10	LIVE OAK						10
	15960	8	LIVE OAK					8	
	15961	8	LIVE OAK					8	
	15962	8	LIVE OAK						8
H	15963	38	LIVE OAK	38					
	15972	14	ELM						14
	15973	18	ELM						18
	15974	11	ELM						11
	15975	12	HACKBERRY						12
	15976	9	ELM						9
	15977	12	ELM						12
	15978	9	ELM						9
	15979	9	ELM						9
	15980	9	ELM						9
	15981	13	ELM						13
	15982	11	ELM						11
	15983	9	ELM						9
	15984	12	ELM						12
TOTAL INCHES				**38**	**0**	**0**	**107.5**	**45**	**572**
PERCENTAGE OF COMBINED TOTAL				**100%**	**0%**	**50%**	**50%**	**49%**	**51%**
COMBINED TOTAL				**38**		**107.5**		**617**	

TREE INDEX - OUTSIDE ROW

	TREE ID	DBH	SPECIES	SAVED CREDIT = 2" PER 1" HERITAGE TREE + 26" SAVED	SAVED CREDIT = 2" PER 1" HERITAGE TREE + 26" REMOVED	SAVED CREDIT = 2" PER 1" SIGNIFICANT TREE 18" - 26" SAVED	SAVED CREDIT = 2" PER 1" SIGNIFICANT TREE 18" - 26" REMOVED	SAVED CREDIT = 1" PER 1" SIGNIFICANT TREE 8" - 18" SAVED	SAVED CREDIT = 1" PER 1" SIGNIFICANT TREE 8" - 18" REMOVED
	803	8	LIVE OAK					8	
	804	13	LIVE OAK					13	
	805	10	LIVE OAK					10	
	806	20	LIVE OAK			20			
	807	8	LIVE OAK					8	
	808	12	LIVE OAK					12	
	809	12	LIVE OAK					12	
	812	12	ELM					12	
	821	8	LIVE OAK					8	
	825	12	LIVE OAK					12	
	826	24	LIVE OAK			24			
	827	10	ELEM					10	
	901	15	LIVE OAK					15	
	902	15	LIVE OAK					15	
M	903	15, 15	LIVE OAK			22.5			
	908	10	LIVE OAK					10	
	909	15	LIVE OAK					15	
M	910	12 , 6	LIVE OAK					18	
	911	15	LIVE OAK					15	
	912	10	LIVE OAK					10	
	913	10	LIVE OAK					10	
	914	8	LIVE OAK					8	
	915	10	LIVE OAK					10	
	916	18	LIVE OAK					18	
	917	15	LIVE OAK					15	
	918	15	LIVE OAK					15	
	919	10	LIVE OAK					10	
	920	12	LIVE OAK					12	
	921	15	LIVE OAK					15	
	922	10	LIVE OAK					10	
	923	10	LIVE OAK					10	
	924	12	LIVE OAK					12	
	925	10	LIVE OAK					10	
	926	10	LIVE OAK					10	
	927	8	LIVE OAK					8	
	929	10	LIVE OAK					10	
	930	12	LIVE OAK					12	
	931	12	LIVE OAK					12	
	932	8	LIVE OAK					8	
	933	10	LIVE OAK					10	
	935	18	LIVE OAK					18	
	939	19	LIVE OAK			19			
	942	15	LIVE OAK					15	
H	964	30	LIVE JOAK	30					
H	965	30	LIVE OAK	30					
H	966	40	LIVE OAK	40					
	967	24	LIVE OAK	24					
	968	18	LIVE OAK	18					
	969	14	ELM					14	
	970	9	ELM					9	
	971	12	ELM					12	
	985	12	ELM					12	
	986	10	LIVE OAK					10	
	987	9	ELM					9	
	988	11	LIVE OAK					11	
	989	9	LIVE OAK					9	
	990	10	LIVE OAK					10	
	991	9	LIVE OAK					9	
	992	9	LIVE OAK					9	
	993	8	LIVE OAK					8	
	994	8	ELM					8	
	995	24	ELM			24			
	996	8	ELM					8	
	997	8	ELM					8	
	998	10	ELM					10	
	999	8	ELM					8	
	11000	11	ELM					11	
	16100	11	ELM					11	
TOTAL INCHES				**142**	**0**	**109.5**	**0**	**647**	**0**
PERCENTAGE OF COMBINED TOTAL				**100%**	**0%**	**100%**	**0%**	**100%**	**0%**
COMBINED TOTAL				**142**		**109.5**		**1,253**	

TREE MITIGATION CALCULATIONS

HERITAGE TREES (24"+):

TOTAL HERITAGE TREES SURVEYED	38"	
TOTAL INCHES PRESERVED	38"	
TOTAL INCHES REMOVED	0"	
TOTAL INCHES REQUIRED TO PRESERVE:	38"	(100% OF SURVEYED HERITAGE TREES)
TOTAL INCHES MITIGATION REQUIRED:	0"	

SIGNIFICANT TREES (18"-26"):

TOTAL SIGNIFICANT TREES SURVEYED	107.5"	
TOTAL INCHES PRESERVED	0"	(0% OF SURVEYED SIGNIFICANT TREES)
TOTAL INCHES REMOVED	107.5"	(100 % OF SURVEYED SIGNIFICANT TREES)
TOTAL INCHES MITIGATION REQUIRED:	107.5"	

SIGNIFICANT TREES (8"-18"):

TOTAL SIGNIFICANT TREES SURVEYED	617"	
TOTAL INCHES PRESERVED	45"	(0% OF SURVEYED SIGNIFICANT TREES)
TOTAL INCHES REMOVED	572"	(100 % OF SURVEYED SIGNIFICANT TREES)
TOTAL INCHES WITHOUT MITIGATION :	308.5"	(50% OF SURVEYED SIGNIFICANT TREES)
TOTAL INCHES MITIGATION REQUIRED:	263.5"	

MITIGATION:

HERITAGE (26"+):	**0"**	**3:1**	**0"**
SIGNIFICANT (18"-26")	**107.5"**	**2:1**	**215"**
SIGNIFICANT (8"-18")	**263.5"**	**2:1**	**263.5"**
TOTAL MITIGATION:			**478.5"**

TREE MITIGATION CALCULATIONS

TOTAL INCHES REQUIRED TO MITIGATE = 478.5"

TOTAL INCHES PROVIDED = 382"

(181) 4" SPLIT CREDIT STREET TREE = 2" x 181 = 362"
(5) 2" ORNAMENTAL = 2" x 10" = 20"

TOTAL INCHES NEEDED TO PUT TOWARDS TREE FUND: 96.5"
TOTAL MITIGATION @ $150/INCH: $14,475

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engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

FINAL
FOR REVIEW ONLY

REGISTERED LANDSCAPE ARCHITECT — MATTHEW TAYLOR NORRIS — STATE OF TEXAS — 5281
March 31, 2023

PM	MT
DESIGNED	JW
DRAFTED	JW
CHECKED	MT
PROJECT NO.	3-00585
DRAWING NO.	L2.04
SHEET	OF

P:\RAIDER WAY IMPROVEMENTS - 0091-04-0001\CITY SUBMITTALS\L0.01.DWG, L2.04, 3/31/2023 10:21:40 AM, jwilliams

MATCHLINE L2.11

STREET TREE, TYP.

SOD, TYP.

SOD, TYP.

40' x 40'
VISIBILITY TRIANGLE

SOD, TYP.

SOD, TYP.
MULCH AROUND
EXISTING TREE, TYP.

40' x 40'
VISIBILITY TRIANGLE

WILEY MIDDLE SCHOOL

SOD, TYP.

EVENLY SPACED AT
30'-0" O.C., TYP.

45' x 45'
VISIBILITY TRIANGLE

45' x 45'
VISIBILITY TRIANGLE

ONLY

SHEET KEY, N.T.S.

6 5 4 3 2 1 0

NORTH

0 15 30 60

SCALE 1" = 30'

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3218 Manor Road, Suite 200
Austin, TX 78723
P 512.900.7888
www.norris-design.com

REV.	DESCRIPTION	DATE

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engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

SOFTSCAPE NOTES

FINAL
FOR REVIEW ONLY

REGISTERED LANDSCAPE ARCHITECT
MATTHEW TRAVIS TAYLOR
STATE OF TEXAS
March 31, 2023

PM	MT
DESIGNED	JW
DRAFTED	JW
CHECKED	MT
PROJECT NO.	3-00585
DRAWING NO.	L2.10
SHEET	OF

P:\RAIDER WAY IMPROVEMENTS - 0091-04-0001\CITY SUBMITTALS\L0.01.DWG, L2.10, 3/31/2023 10:22:00 AM, jwilliams



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SHEET KEY, N.T.S.

NORTH

0 15 30 60

SCALE 1" = 30'

REV.	DESCRIPTION	DATE

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T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

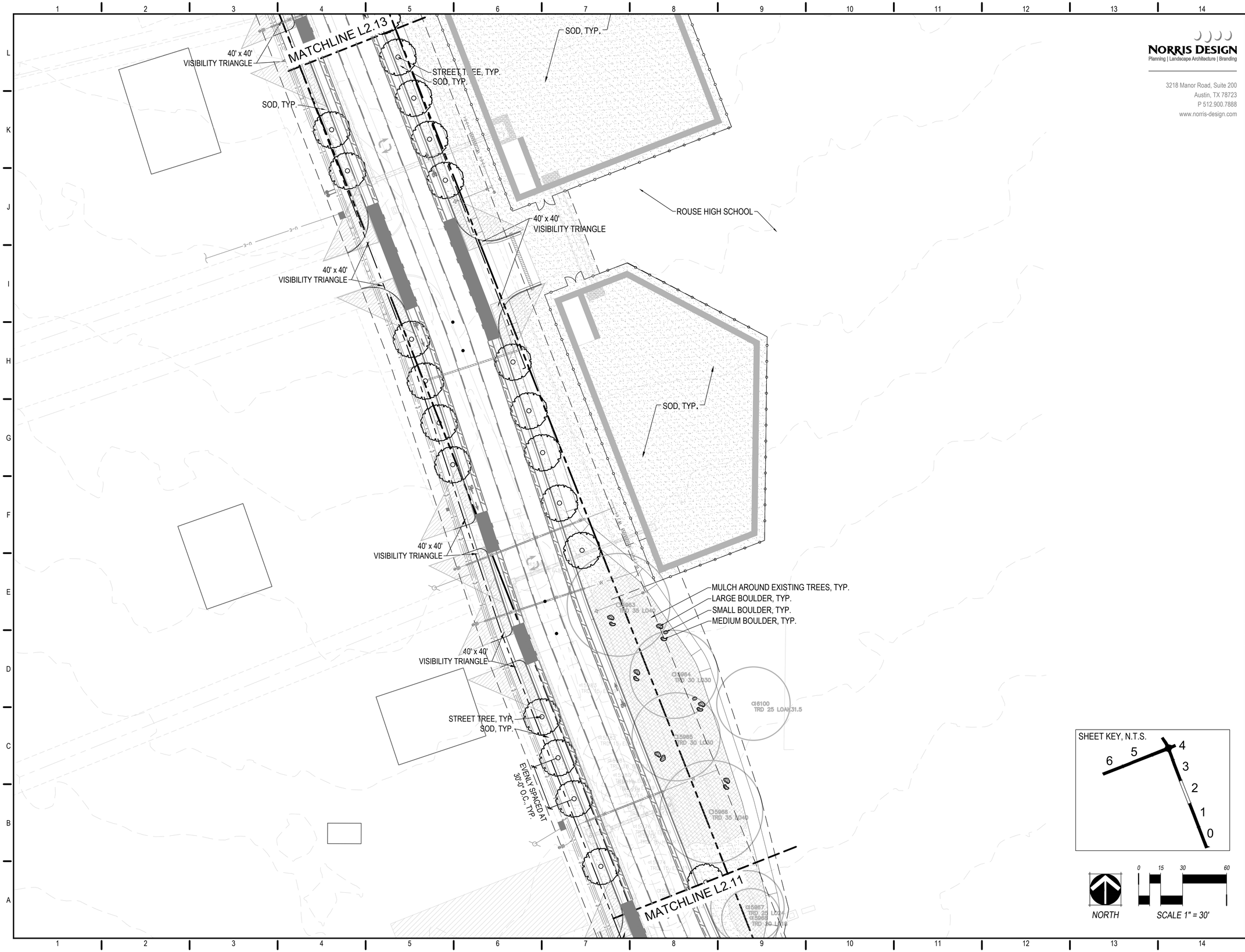
SOFTSCAPE NOTES

FINAL
FOR REVIEW ONLY

REGISTERED LANDSCAPE ARCHITECT
MATTHEW TRAVIS TAYLOR
STATE OF TEXAS
March 31, 2023

PM	MT
DESIGNED	JW
DRAFTED	JW
CHECKED	MT
PROJECT NO.	3-00585
DRAWING NO.	L2.11
SHEET	OF

P:\RAIDER WAY IMPROVEMENTS - 0091-04-0001\CITY SUBMITTALS\L0.01.DWG, L2.11, 3/31/2023 10:22:18 AM, jwilliams



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SHEET KEY, N.T.S.

NORTH

0 15 30 60

SCALE 1" = 30'

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

SOFTSCAPE NOTES

FINAL
FOR REVIEW ONLY

REGISTERED LANDSCAPE ARCHITECT
MATTHEW FRANKLIN TAYLOR
STATE OF TEXAS
March 31, 2023

PM	MT
DESIGNED	JW
DRAFTED	JW
CHECKED	MT
PROJECT NO.	3-00585
DRAWING NO.	L2.12
SHEET	OF

P:\RAIDER WAY IMPROVEMENTS - 0091-04-0001\CITY SUBMITTALS\L0.01.DWG, L2.12, 3/31/2023 10:22:37 AM, jwilliams

MATCHLINE L2.14

STREET TREE, TYP.

SOD, TYP.

SOD, TYP.

ROUSE HIGH SCHOOL

40' x 40'
VISIBILITY TRIANGLE

40' x 40'
VISIBILITY TRIANGLE

40' x 40'
VISIBILITY TRIANGLE

EVENLY SPACED AT
30'-0" O.C., TYP.

40' x 40'
VISIBILITY TRIANGLE

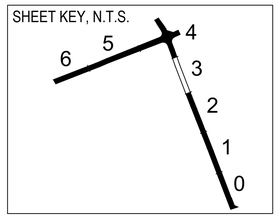
MATCHLINE L2.12

STREET TREE, TYP.

SOD, TYP.

SOD, TYP.

SHEET KEY, N.T.S.



NORTH

0 15 30 60

SCALE 1" = 30'

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REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

SOFTSCAPE NOTES

FINAL
FOR REVIEW ONLY

REGISTERED LANDSCAPE ARCHITECT
MATTHEW TRAVIS TAYLOR
STATE OF TEXAS
March 31, 2023

PM	MT
DESIGNED	JW
DRAFTED	JW
CHECKED	MT
PROJECT NO.	3-00585

DRAWING NO.
L2.13

SHEET OF

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PAVERS, TYP.
RE: CIVIL
SOD, TYP.
MULCH UNDER
EXISTING TREES , TYP.
(23) LAN H
(24) MUH G
32 L.F. STEEL EDGE
SOD, TYP.
(5) CER M
RIVER ROCK GRAVEL, TYP.
32 L.F. STEEL EDGE
(22) MUH G
(25) LAN H

SOD, TYP.
STREET TREE, TYP.
SOD, TYP.

PAVERS, TYP.
RE: CIVIL
SOD, TYP.

PAVERS, TYP.
RE: CIVIL
STREET TREE, TYP

PAVERS, TYP.
RE: CIVIL
(24) LAN H
(22) MUH G
32 L.F. OF STEEL EDGE
154 L.F. OF STEEL EDGE
(22) MUH G
(23) LAN H
PAVERS, TYP.
RE: CIVIL

STREET TREE, TYP.
SOD, TYP.

SOD, TYP.
32 L.F. STEEL EDGE

STREET TREE, TYP.
EXISTING UNDERGROUND
UTILITIES, TYP.

EVENLY SPACED AT
30'-0" O.C., TYP.

EVENLY SPACED AT
30'-0" O.C., TYP.

ROUSE HIGH SCHOOL

MATCHLINE L2.15

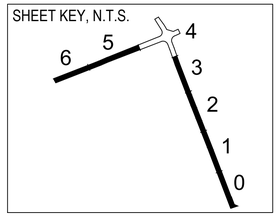
40' x 40'
VISIBILITY TRIANGLE

40' x 40'
VISIBILITY TRIANGLE

POSSIBLE FUTURE
DRIVE TO BE LOCATED HERE
PAVERS, TYP.
RE: CIVIL

MATCHLINE L2.13

SHEET KEY, N.T.S.



NORTH

0 15 30 60
SCALE 1" = 30'

REV.	DESCRIPTION	DATE

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engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

SOFTSCAPE NOTES

FINAL
FOR REVIEW ONLY

REGISTERED LANDSCAPE ARCHITECT
MATTHEW TAYLOR
STATE OF TEXAS
March 31, 2023

PM	MT
DESIGNED	JW
DRAFTED	JW
CHECKED	MT
PROJECT NO.	3-00585

DRAWING NO.
L2.14
SHEET OF

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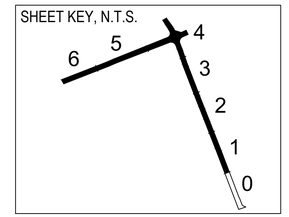
STREET TREE, TYP.
SOD, TYP.
40' x 40'
VISIBILITY TRIANGLE
MATCHLINE L2.15
SOD, TYP.
STREET TREE, TYP.
40' x 40'
VISIBILITY
40' x 40'
VISIBILITY TRIANGLE
EVENLY SPACED AT
30'-0" O.C., TYP.
MATCHLINE L2.17
EVENLY SPACED AT
30'-0" O.C., TYP.
STREET TREE, TYP.
SOD, TYP.
EXISTING
UNDERGROUND
UTILITIES, TYP.
40' x 40'
VISIBILITY TRIANGLE

SHEET KEY, N.T.S.



NORTH

SCALE 1" = 30'

REV.	DESCRIPTION	DATE

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engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

SOFTSCAPE NOTES

FINAL
FOR REVIEW ONLY

REGISTERED LANDSCAPE ARCHITECT
MATTHEW TRAVIS THOMAS
STATE OF TEXAS
March 31, 2023

PM	MT
DESIGNED	JW
DRAFTED	JW
CHECKED	MT
PROJECT NO.	3-00585

DRAWING NO.
L2.15

SHEET OF

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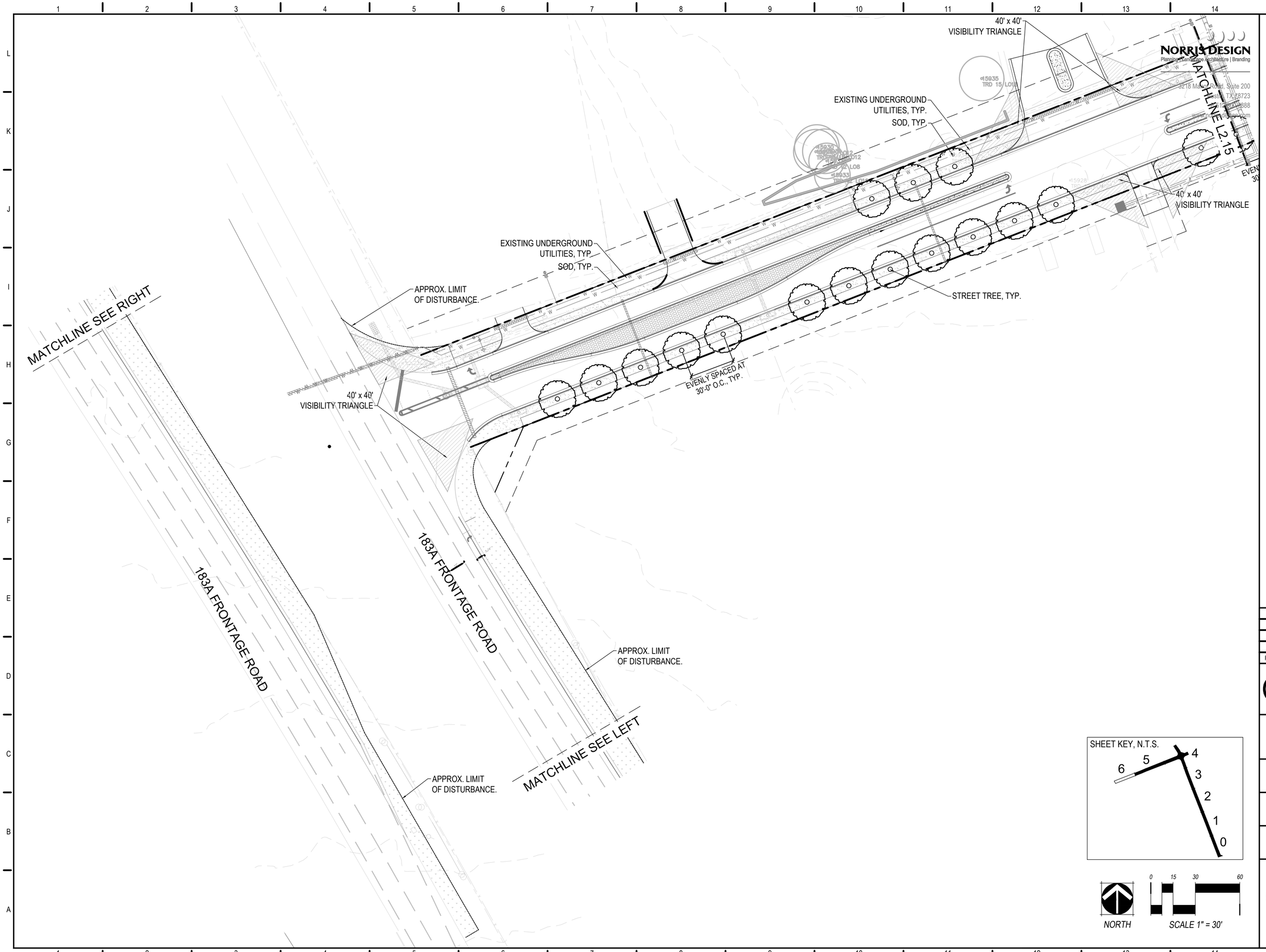

REV.	DESCRIPTION	DATE

Walker Partners
engineers ★ surveyors
T.B.P.E. Registration No. 8053

CITY OF LEANDER

RAIDER WAY ROAD IMPROVEMENTS

SOFTSCAPE PLAN

FINAL
FOR REVIEW ONLY

REGISTERED LANDSCAPE ARCHITECT
MATTHEW FRANKLIN TAYLOR
STATE OF TEXAS
March 31, 2023

PM	MT
DESIGNED	JW
DRAFTED	JW
CHECKED	MT
PROJECT NO.	3-00585
DRAWING NO.	L2.16
SHEET	OF

P:\RAIDER WAY IMPROVEMENTS - 0091-04-0001\CITY SUBMITTALS\L0.01.DWG, L2.16, 3/31/2023 10:24:10 AM, jwilliams