PROJECT NOTES & SPECIFICATIONS

GENERAL NOTES

1. THE WORK SHOWN HEREIN IS FOR THE SHORING AND REPAIR OF AN EXISTING UNDERGROUND REINFORCED CONCRETE UTILITY TUNNEL AT MIDWESTERN STATE UNIVERSITY TEXAS LOCATED IN WICHITA FALLS, TEXAS. THE WORK IS BEING PERFORMED ON TUNNEL SECTION B TO THE EAST OF THE DANIEL BUILDING WHICH IS CURRENTLY UNDER CONSTRUCTION RENOVATION. AS NOTED ON THE PLANS, VARIOUS TUNNEL REPAIRS WILL BE PERFORMED FROM TUNNEL FOOTAGE MARK 1150 FT TO MARK 1460 FT.
2. ALL WORK IS TO BE COORDINATED THRU THE M.S.U. MAINTENANCE DEPARTMENT IN CONJUNCTION WITH THE ENGINEER. THE CONTRACTOR IS TO WORK CLOSELY WITH THE M.S.U. MAINTENANCE DEPARTMENT - CENTRAL PLANT PERSONNEL IN PERFORMING ALL WORK NOTED ON THESE PLANS.
3. THE CONTRACTOR IS TO PERFORM A THOROUGH REVIEW OF THE PROJECT DRAWINGS AND A SITE INSPECTION OF THE TUNNEL AND THE ADJACENT AREA FOR A COMPLETE UNDERSTANDING OF THE WORK INVOLVED. CONTRACTOR SHALL VERIFY ALL DETAILS AND CONDITIONS SHOWN IN THE PLANS AGAINST ACTUAL FIELD CONDITIONS. WHERE EXISTING INSTALLATION AND CONSTRUCTION DETAILS VARY FROM THOSE SHOWN ON THESE DRAWINGS, THE DISCREPANCY SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR FURTHER REVIEW, EVALUATION AND ADDITIONAL REPAIR RECOMMENDATIONS.
4. IN THE COURSE OF THIS WORK, THE CONTRACTOR MAY UNCOVER ADDITIONAL DISTRESS OR UNUSUAL CONDITIONS WHICH REQUIRE ADDITIONAL DIRECTION FROM THE ENGINEER TO PERFORM HIS WORK. SUCH ADDITIONAL DISTRESS AND UNUSUAL CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE M.S.U. MAINTENANCE DEPARTMENT AND THE ENGINEER FOR FURTHER REVIEW AND DIRECTION AS APPROPRIATE.
5. ANY MODIFICATIONS TO THE SCOPE OF WORK SHOWN HEREIN OR IN THE PROJECT MANUAL MUST BE APPROVED BY THE M.S.U. MAINTENANCE DEPARTMENT IN ASSOCIATION WITH THE ENGINEER.
6. WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE FOLLOWING CODES
   - INTERNATIONAL BUILDING CODE 2015
   - ACI BUILDING CODE - REQUIREMENT FOR REINFORCED CONCRETE (ACI 318-14
   - ACI MANUAL OF CONCRETE PRACTICE, PART 1
   - THE AMERICAN INSTITUTE FOR STEEL CONSTRUCTION "STEEL CONSTRUCTION MANUAL"
   - AMERICAN WELDING SOCIETY "D1.1 - STRUCTURAL WELDING CODE"
7. THE CONTRACTOR IS TO ABIDE BY ALL OSHA, FEDERAL, STATE AND MUNICIPAL CONSTRUCTION STANDARDS AND SAFETY PRACTICES. IN PARTICULAR, ALL SAFETY PRACTICES OF THE M.S.U. MAINTENANCE DEPARTMENT.

SPECIAL PROJECT REQUIREMENTS

1. THE REPAIRS TO THE UTILITY TUNNEL ROOF AS NOTED HEREIN WILL REQUIRE THE REMOVAL OF SECTIONS OF THE CONCRETE DRIVE, CURBING AND WALK AREA ABOVE THE UTILITY TUNNEL TO ALLOW FOR EARTH EXCAVATION TO EXPOSE THE TOP OF THE CONCRETE TUNNEL ROOF. EXTREME CAUTION IS TO BE EXERCISED BY THE CONTRACTOR IN PERFORMING THIS EXCAVATION WORK AND EXPOSURE OF THE TUNNEL ROOF.
2. ALL INTERNAL TEMPORARY TUNNEL SHORING IS TO BE INSTALLED IN ACCORDANCE WITH THESE PLANS PRIOR TO PERFORMING ANY EXCAVATION OR UNCOVERING OF THE DISTRESSED TUNNELS. THE ENGINEER IS TO BE CONTACTED FOR REVIEW AND APPROVAL OF THE TUNNEL SHORING INSTALLATION ONCE IT IS COMPLETE.
3. A BARRICADE LINE IS TO MARKED AT GROUND LEVEL 5 FEET OUT FROM THE EDGE OF THE TUNNEL ON EACH SIDE. ALL EXCAVATION EQUIPMENT AND CONSTRUCTION VEHICLES ARE TO BE RESTRICTED FROM OPERATING OVER THE TUNNELS AND SHALL NOT BE ALLOWED WITHIN THE 5 FOOT BARRICADE LINE OF THE TUNNELS.
4. THE CONTRACTOR IS TO PROVIDE A PLAN FOR HIS INTENDED PROCEDURE FOR EXCAVATING THE EARTH FROM OVER THE TUNNELS TO THE ENGINEER AND M.S.U. MAINTENANCE DEPARTMENT FOR THEIR REVIEW AND APPROVAL. THE SIZE AND TYPE OF CONSTRUCTION EQUIPMENT IS TO BE LIMITED TO ONLY THAT WHICH IS ADEQUATE FOR COMPLETION OF THIS SHALLOW EXCAVATION IN A SAFE AND RESPONSIBLE MANNER.
5. THE ENGINEER SHALL BE CONSULTED ON A DAILY BASIS AS WORK PROGRESSES AND NOTIFIED IMMEDIATELY AS UNCOVERED CONSTRUCTION CONDITIONS BECOME APPARENT, THE ENGINEER SHALL BE AFFORDED THE OPPORTUNITY FOR INSPECTION OF UNCOVERED CONDITIONS THAT MAY HAVE AN IMPACT ON THE REPAIRS BEING PERFORMED. ADDITIONAL RECOMMENDATIONS FOR REPAIR MAY BE REQUIRED AT THAT TIME.
6. ADDITIONAL INSPECTIONS AND CONSTRUCTION WORK WITHIN THE TUNNELS MAY YET UNCOVER CRACKING AND SPALLING TO THE UNDERSIDE SIDE OF THE TUNNEL ROOF DECK OR THE WALLS THAT IS IN NEED OF REPAIR. CONTRACTOR IS REQUESTED TO PROVIDE A SQUARE FOOTAGE QUOTATION FOR REPAIRING THE UNDERSIDE OF DISTRESSED TUNNEL ROOF DECK.
7. ALL WORK PERFORMED WITHIN THE TUNNELS SHALL BE COORDINATED CLOSELY WITH M.S.U. FACILITIES AND MAINTENANCE DEPARTMENTS. A LOG OF WORKMEN ACCESS IN AND OUT OF THE TUNNELS SHALL BE KEPT WITH M.S.U. MAINTENANCE PERSONNEL TO KEEP ALL PARTIES INFORMED OF WORKMEN LOCATIONS WITHIN THE TUNNELS.
8. IT IS THE CONTRACTORS RESPONSIBILITY TO ASSURE AN ABUNDANT FRESH AIR SUPPLY AND POSITIVE VENTILATION WITHIN THE TUNNELS FOR WORKMEN HEALTH AND SAFETY. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING CONSTRUCTION RELATED DUST WITHIN THE TUNNELS TO A MINIMUM. AN AUXILIARY SOURCE OF FRESH AIR SUPPLY MAY BE REQUIRED WITHIN THE TUNNELS.
9. NO DIESEL OR GASOLINE OPERATED MACHINERY SHALL BE PERMITTED WITHIN THE TUNNEL SYSTEM DUE TO EXHAUST EMISSIONS.
10. PATHWAYS WITHIN UTILITY TUNNELS SHALL BE KEPT CLEAR OF CONSTRUCTION MATERIALS AND DEBRIS AT ALL TIMES FOR READY ACCESS AND PASSAGE WITHIN THE TUNNEL SYSTEM.
11. ALL TEMPORARY TUNNEL SHORING IS TO REMAIN IN PLACE UNTIL CONSTRUCTION OF THE NEW WALKWAY ABOVE IS COMPLETE AND ALL ASSOCIATED CONSTRUCTION ACTIVITIES INVOLVING HEAVY EQUIPMENT OPERATING ABOVE THE TUNNEL HAVE CONCLUDED.
12. PRIOR TO ANY EXCAVATION OR DEMO OF EXISTING CONCRETE SURFACES, THE CONTRACTOR IS TO CONSULT WITH AND VERIFY THE EXISTENCE OF ALL BELOW GRADE UTILITIES IN THE IMMEDIATE AREA OF THE CONCRETE DRIVE EXCAVATIONS. ALL APPROPRIATE CONSTRUCTION PRECAUTIONS ARE TO BE EXERCISED BY THE CONTRACTOR AND MSU TEXAS MAINTENANCE DEPARTMENTS IN LOCATING AND IDENTIFYING THE PRESENCE OF BELOW GRADE UTILITIES IN THE WORK AREA.

BACKFILL & SUBGRADE PREPARATION NOTES

1. A 6 INCH SAND CUSHION WITH A PLASTICITY INDEX OF 8 OR LESS SHALL BE PLACED ON THE TOP OF THE NEW SLAB AND OVER THE WATERPROOFING MEMBRANES PRIOR TO GENERAL BACK FILL OPERATIONS. THE SAND CUSHION SHALL BE DAMP AND COMPACTED PRIOR TO PLACING ADDITIONAL BACKFILL.
2. ALL FILL MATERIAL USED FOR BACKFILLING OR LEVELING PURPOSES BELOW PROPOSED CONCRETE WALK SECTIONS OR ADJACENT TO OR BELOW EXISTING FOOTINGS OR FOUNDATIONS SHALL BE LOW P.I. FILL WITH A PLASTICITY INDEX BETWEEN 4 AND 12, AND SHALL BE PLACED IN 6 INCH MAXIMUM COMPACTED LIFTS.
3. FILL MATERIAL, ADJACENT TO OR BELOW EXISTING FOOTINGS OR FOUNDATIONS, SHALL BE PROCESSED TO NEAR (+/-) 2% OPTIMUM MOISTURE AND COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY PRIOR TO PLACING THE NEXT LIFT.
4. FOR BACKFILL AND SUBGRADE PREPARATION BELOW CONCRETE DRIVE AREAS TO BE REPLACED, PLEASE REFER TO THE NOTES AND SPECIFICATIONS ON SHEET NO. S7.

CONCRETE WORK

1. ALL CONCRETE WORK SHALL CONFORM TO THE LATEST EDITION OF ACI-318.
2. CONCRETE SHALL BE TYPE I PORTLAND CEMENT CONCRETE MIX WITH A DESIGN SLUMP OF 4 TO 5 INCHES AND A 28 DAY COMPRESSIVE STRENGTH OF:
   - TUNNEL CAP 4000 PSI
   - DRIVES, WALKS & CURBING 3000 PSI
3. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60.
4. LAP SPLICE AND HOOK LENGTHS FOR STEEL REINFORCEMENT SHALL BE IN ACCORDANCE WITH ACI-318.
5. ALL REINFORCING STEEL IS TO BE IN CONTINUOUS LENGTHS.
6. MINIMUM CONCRETE COVER FOR REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ACI-318.
7. PROVIDE SUPPORT CHAIRS OR PROPER SUPPORT MEANS FOR ALL REINFORCEMENT STEEL TO MAINTAIN PROPER PLACEMENT, ALIGNMENT AND CLEARANCES.
8. WATER TO CEMENT RATIO SHALL BE STRICTLY CONTROLLED TO MINIMIZE SHRINKAGE CRACKING IN CURED CONCRETE.
9. AN INDEPENDENT TESTING AGENCY SHALL PERFORM MATERIAL TESTING AND SAMPLING. FOUR CYLINDERS SHALL BE TAKEN FROM EACH POUR AND COMPRESSION TESTS MADE BY THE TESTING AGENCY TO VERIFY 7, 14 AND 28 DAY COMPRESSION STRENGTHS. THE FOURTH CYLINDER IS KEPT AS A SPARE FOR ADDITIONAL TESTING IN THE EVENT OF A SUBSTANDARD BREAK.
10. SLAB FINISH SHALL BE A LIGHT BROOM FINISH.
11. NO CONSTRUCTION LOADS ARE TO BE ALLOWED OVER THE REPAIRED TUNNELS UNTIL THE NEW CONCRETE ROOF DECK HAS ACHIEVED A 4000 PSI COMPRESSIVE STRENGTH. ADDITIONAL TEST CYLINDERS MAY BE TAKEN AND TESTED TO VERIFY THE REQUIRED 4000 PSI STRENGTH.
12. DURING HOT WEATHER CONDITIONS ABOVE 90°F, TO ASSURE HIGH QUALITY CONCRETE, PROVISIONS FOR HOT WEATHER CONCRETE WORK SHALL BE EMPLOYED AS FOUND IN ACI 305.1-06 "SPECIFICATIONS FOR HOT WEATHER CONCRETING".
13. ALL DRILLED DOWELS AND DRILLED ANCHOR BOLTS SHALL BE INSTALLED USING HILTI HIT RE 200 EPOXY ADHESIVE OR APPROVED EQUAL.

SPECIALTY CONCRETE PRODUCTS

1. CONCRETE PLANT IS TO PROVIDE A CONCRETE MIX DESIGN UTILIZING "MASTERLIFE 300D WATERPROOFING ADMIXTURE" (formerly MASTER BUILDERS RHEOMAC 300D" WITH A MIX RATE OF 11.0# PER CUBIC YARD. MASTERLIFE 300D (formerly REHOMAC 300D) BY BASF CORPORATION IS AN INTEGRAL CRYSTALLINE CAPILLARY WATERPROOFING ADMIXTURE FOR CONCRETE.
2. MASTIC DAMP-PROOFING MEMBRANE WHICH IS TO BE BRUSHED, SPRAYED OR ROLL APPLIED TO THE TOP SURFACE OF THE REPAIRED CONCRETE TUNNEL ROOF SLAB SHALL BE "TAMKO FIBERED ROOF & FOUNDATION COATING" AS MANUFACTURED BY TAMCO BUILDING PRODUCTS. "TAMKO FIBERED ROOF & FOUNDATION COATING" IS A SEMI-MASTIC MATERIAL CONSISTING OF SELECT ASPHALT MINERAL STABILIZERS, PETROLEUM SOLVENTS AND SPEICAL FIBERS. A TWO COAT APPLICATION IS TO BE USED ALLOWING THE FIRST COAT TO DRY 24 HOURS PRIOR TO THE SECOND COAT APPLICATION. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
3. PLASTIC SHEET VAPOR BARRIER TO BE PLACED ABOVE TUNNEL ROOF SLAB SHALL BE A 15 MIL THICK PLASTIC SHEETING MEMBRANE "PERMINATOR 15 MIL" AS MANUFACTURED BY W.R. MEADOWS, INC. VAPOR RETARDER MEMBRANE MUST MEET OR EXCEED ALL REQUIREMENTS OF ASTM E1745, CLASSES A, B, & C. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. MEMBRANE TO BE PROVIDED IN CONTINUOUS LENGTHS. WHERE SEAMS ARE REQUIRED OVERLAP JOINTS 6 INCHES AND SEAL WITH MANUFACTURER'S TAPE. PLASTIC SHEETING IS TO BE INSTALLED OVER THE MASTIC DAMP-PROOFING WHILE THE SECOND MASTIC COAT IS STILL MOIST/TACKY.
4. CONCRETE JOINT SEALANT - WHERE EXISTING CONCRETE CONSTRUCTION JOINTS, EXPANSION JOINTS AND CRACKS REQUIRE A WATERPROOFING JOINT SEALANT, "NP 1" BY "MASTERSEAL" A BASF COMPANY. "NP1" IS A ONE-COMPONENT, ELASTOMERIC POLYURETHANE JOINT SEALANT. JOINT SEALANT SHALL BE INSTALLED IN STRICT CONFORMANCE WITH MANUFACTURER PRODUCT STORAGE, MATERIAL AND SUBSTRATE SURFACE PREP, AND INSTALLATION INSTRUCTIONS. UTILIZE FOAM BACKER ROD IN CONCRETE JOINTS AS REQUIRED.

STEEL FABRICATION

1. ALL STRUCTURAL STEEL SHALL CONFORM TO AISC SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS, LATEST EDITION.
2. WIDE FLANGE SHAPES AND WT SHAPES SHALL CONFORM TO ASTM A992. ALL OTHER STRUCTURAL ROLLED SHAPES, BARS AND FLAT PLATES SHALL CONFORM TO ASTM A36.
3. ALL STRUCTURAL STEEL TUBING DESIGNATED AS HSS SHALL CONFORM TO ASTM SPECIFICATION A500 GRADE B, FY = 46 KSI.
4. CONNECTIONS ARE TO BE AS SHOWN ON THESE PLANS AND DETAILS. CONNECTIONS WHICH ARE NOT DETAILED, SHALL BE DESIGNED ACCORDING TO AISC "FRAMED BEAM CONNECTIONS", TABLES II AND III.
5. WHERE ADDITIONAL DETAILING IS NECESSARY THE CONTRACTOR IS TO CONSULT WITH THE STRUCTURAL ENGINEER.
6. ALL WELDING SHALL BE DONE ACCORDING TO AWS D1.1, "STRUCTURAL WELDING CODE - STEEL", LATEST EDITION. WELDING ELECTRODES SHALL CONFORM TO AWS 5.1 (E-70XX) SERIES ELECTRODES, UNLESS NOTED OTHERWISE.
7. STRENGTH WELDS WILL BE ¼" FILLET WELDS, UNLESS NOTED OTHERWISE. ALL WELDED JOINTS SHALL BE SEAL WELDED USING ⅛" FILLETS.
8. ALL WELDS ARE SUBJECT TO INSPECTION BY THE STRUCTURAL ENGINEER. WHERE WELDS ARE DEEMED SUSPECT, WELDS MAY BE REQUIRED TO HAVE ULTRASONIC INSPECTION (U.T.), MAGNETIC PARTICLE INSPECTION AND OTHER N.D.T. TESTING BY A CERTIFIED WELDING INSPECTOR.
9. ALL BOLTED CONNECTIONS TO BE TIGHTENED TO A SNUG TIGHT CONDITION.
10. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED PER ASTM A153 WITH THREADS CHASED AFTER GALVANIZING. HARDENED WASHERS SHALL BE USED UNDER BOLT HEAD AND NUT FOR SLOTTED OR OVERSIZED HOLES.
11. ALL STRUCTURAL STEEL AND STEEL FABRICATIONS SHALL RECEIVE A SHOP COAT OF "SHERWIN-WILLIAMS MACROPOXY 646" PER MANUFACTURERS SPECIFICATION. AFTER INSTALLATION ALL DAMAGED AND/OR ABRADED AREAS IS TO BE TOUCH-UP PAINTED WITH THIS COATING.

CONCRETE RESTORATION PRODUCTS

1. REPAIR MORTAR - FOR THE BUILD-BACK, COATING AND SEALING OF SPALLED CONCRETE ROOF AND WALL SURFACES THE ONE-COMPONENT GENERAL PURPOSE STRUCTURAL REPAIR MORTAR "MEADOW-CRETE GPS" AS MANUFACTURED BY W.R. MEADOWS, INC. IS TO BE USED. THIS POLYMER-MODIFIED REPAIR MORTAR IS A ONE-COMPONENT, TROWEL-APPLIED (WET PROCESS), CORROSION-INHIBITOR, CEMENTITIOUS REPAIR MORTAR.
2. CONCRETE BONDING AGENT - "ACRY-LOK" BY W.R. MEADOWS IS TO BE USED AS A BONDING AGENT FOR COATING EXISTING CONCRETE SURFACES WHERE NEW CONCRETE OR MORTAR PATCH IS TO BE INSTALLED.
3. CRACK SEALANT - FOR THE SEALING AND REPAIR OF SIGNIFICANT CONCRETE CRACKS EITHER WITHIN THE TUNNEL OR ON THE TUNNEL EXTERIOR, "RESI-WELD 1000" BY W.R. MEADOWS IS TO BE USED. "RESI-WELD 1000" IS A TWO-COMPONENT CONSTRUCTION- GRADE EPOXY ADHESIVE. "RESI-WELD 1000" MAY BE POURED OR INJECTED INTO CRACKS FOR BONDING AND SEALING CRACKS. THE PRODUCT MAY ALSO BE USED TO SECURE METAL ANCHORS, BOLTS, AND REBAR. MIXED WITH SAND OR OTHER AGGREGATES THE PRODUCT MAY USED TO PATCH MINOR SPALLS AND DEFECTS IN CONCRETE ROOF, FLOOR OR WALL SURFACES.
4. ADDITIONAL SPECIALTY CONCRETE REPAIR PRODUCTS MAY BE REQUIRED DEPENDING ON THE SEVERITY AND UNIQUENESS OF THE DISTRESS ENCOUNTERED. AS NECESSARY CONSULT WITH THE ENGINEER ON PRODUCTS TO BE USED FOR SPECIFIC APPLICATIONS AND LOCATIONS.
5. ALL CONCRETE RESTORATION PRODUCTS ARE TO BE MIXED AND APPLIED IN STRICT CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATIONS.
6. WELDED WIRE FABRIC - WHERE NOTED FOR USE IN THE REPAIR OF DELAMINATED CONCRETE ROOF OR WALL SURFACES THE STEEL REINFORCEMENT SHALL BE FLAT SHEETS OF HOT DIP GALVANIZED WWF 4x4-W2.0xW2.0. REINFORCEMENT WIRES ARE TO BE 0.165 INCH THICK ON A 4"x4" SPACING.

UTILITY RACK REPAIR MATERIALS

1. ALL REPLACEMENT FRAMING MATERIALS COMMONLY REFERRED TO AS "UNISTRUT" UTILIZED FOR REPAIR OR REPLACEMENT ON UTILITY RACKS ARE TO BE EITHER "UNISTRUT P1000 SERIES" OR "POWER-STRUT P.S.200 SERIES" HOT-DIP GALVANIZED, PREFORMED SECTIONS. SEE ADDITIONAL UTILITY RACK FRAMING NOTES AS FOUND ON SHEET S7.
2. PREPARATION OF RUSTING "UNISTRUT" - AS NOTED ON THE PLANS OR UNCOVERED IN THE PROCESS OF TUNNEL WORK, SURFACE RUSTING OF UTILITY SUPPORT FRAMES CONSTRUCTED OF GALVANIZED STEEL "UNISTRUT" FRAMING IS TO HAVE SURFACE RUST AND SCALE REMOVED AND PREPPED AS NECESSARY WITH WIRE BRUSH, ROTARY WIRE WHEEL OR OTHER HAND-TOOLS, AND HAVE RUST-INHIBITIVE PROTECTIVE COATINGS APPLIED TO PROTECT FROM FURTHER DETERIORATION.
3. COLD GALVANIZING COMPOUND - FOR RUSTING UTILITY RACKS UTILIZE "RUST-OLEUM" HIGH PERFORMANCE 7000 COLD GALVANIZING, COMPOUND FORMULATION # 206193. THE COLD GALVANIZING IS TO BE A ZINC RICH COMPOUND OF 95% PURE METALLIC ZINC TO PROVIDE SUPERIOR PROTECTION FROM RUST. THE COLOR OF THE COMPOUND IS GRAY AND IT IS A RINSE TYPE ALKYD ENAMEL ITEM. PRODUCT MAY BE APPLIED BY BRUSH, ROLLER OR SPRAY. PRODUCT DRIES IN 1-2 HOURS AND MAY BE RECOATED AFTER 12 HOURS. ANY APPLICATION METHOD BRUSH, ROLLER, OR SPRAY CAN BE TO APPLY TO PAINT ON THE SURFACE. COLD-GALVANIZING IS ALSO TO BE UTILIZED FOR TOUCH-UP PAINTING OF ABRASIONS AND WELD SCARS ON OTHER SURFACE DAMAGE TO HOT-DIP GALVANIZED SURFACES.
4. SIGNIFICANT SUPPORT FRAME DAMAGE - WHERE SIGNIFICANT DETERIORATION OF UTILITY SUPPORT FRAMES IS UNCOVERED IN THE COURSE OF REPAIR WORK (WHICH IS OF THE EXTENT TO COMPROMISE THE STRUCTURAL INTEGRITY OF THE SUPPORT FRAME), THIS STRUCTURAL DISTRESS SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER FOR ADDITIONAL REVIEW AND REPAIR DIRECTION.
5. PEDESTAL REPAIRS/REPLACMENT - ALL DETERIORATING AND/OR DAMAGED CONCRETE SUPPORT PEDESTALS BELOW EXISTING UTILITY RACK SUPPORT FRAMES ARE TO BE EITHER REPAIRED OR REPLACED AS REPAIRED TO PROVIDE A STRUCTURALLY TIGHT AND SECURE PEDESTAL FOR SUPPORT AND PROTECTION OF THE BASE OF THE SUPPORT FRAMES.
6. SUPPORT PEDESTAL GROUT - UTILIZE W.R. MEADOWS "1428 HIGH PERFORMANCE CONSTRUCTION GROUT" TO FORM NEW PEDESTALS BELOW SUPPORT RACKS. THIS IS A HYDRAULIC-CEMENT-BASED, NON-SHRINK, LOAD-BEARING GROUT, HAVING AN EXTENDED WORKING TIME UP TO 30 MINUTES UNDER FLUID CONDITION. MAY BE MIXED TO PLASTIC, FLOWABLE, AND FLUID CONSISTENCIES FOR PLACEMENT BY POURING OR PUMPING. AS AN ALTERNATIVE; THE GENERAL PURPOSE STRUCTURAL REPAIR MORTAR "MEADOW-CRETE GPS" AS MANUFACTURED BY W.R. MEADOWS MAY BE UTILIZED IN PEDESTAL REPAIRS AND CONSTRUCTION.
7. FORMING OF CONCRETE PEDESTALS - CONCRETE PEDESTALS BELOW UTILITY SUPPORT RACKS SHALL BE FORMED WITH PVC PIPE SLEEVES. PVC PIPE SLEEVES SHALL BE LEFT IN PLACE. MATCH EXISTING REPAIR PEDESTALS ALREADY IN PLACE. SEE PLAN DETAILS.
8. COATING BASE OF SUPPORT POST - ANY CORROSION TO THE BASE OF "UNISTRUT" SUPPORT POSTS IS TO BE PROPERLY CLEANED AND COATED WITH NEW RUST-INHIBITIVE PRIMER AND COATINGS AS NOTED.
9. SUPPORT BASE DETERIORATION - WHERE THE STEEL BASE OF THE SUPPORT POSTS IS DETERIORATED TO THE EXTENT TO REQUIRE STRUCTURAL REPAIR, PROVIDE A NEW SUPPORT PLATE AND ANCHOR BOLT PER THE PLANS. ALL NEW SUPPORT PLATES ARE TO FULLY PRIMED AND COATED WITH A RUST-INHIBITIVE COATING.

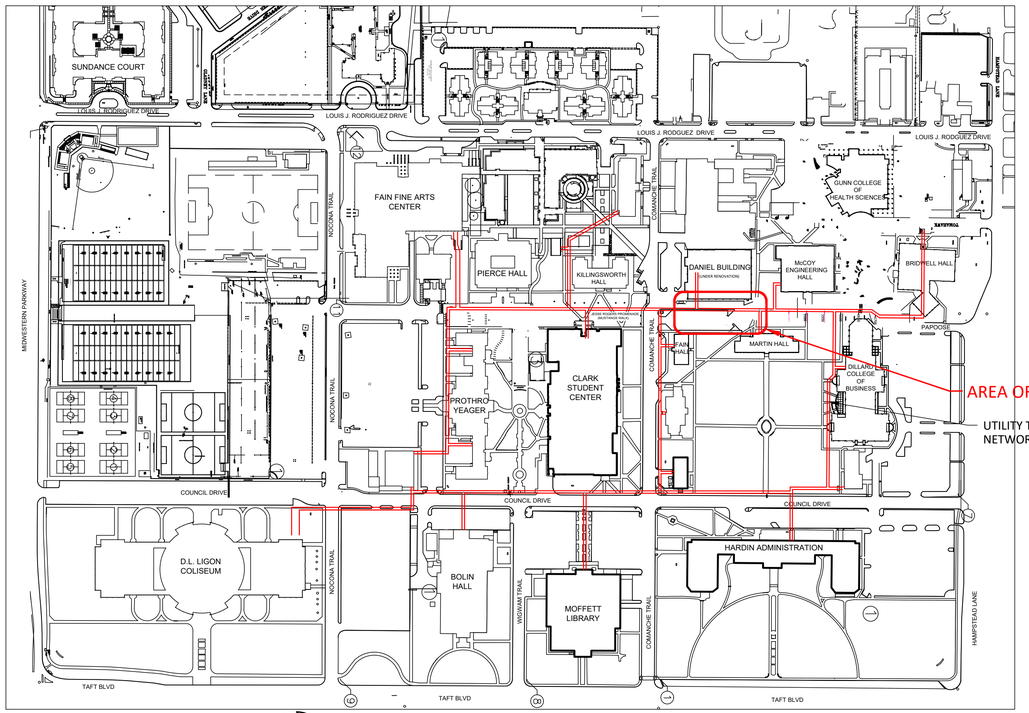
MIDWESTERN STATE UNIVERSITY

UTILITY TUNNEL REPAIRS
TUNNEL B - EAST OF DANIEL BUILDING

LIST OF TUNNEL REPAIRS

1. EXCAVATE AND INSTALL CONCRETE CAP ON DETERIORATED TUNNEL ROOF
2. INSTALL WATERPROOFING MEMBRANE ON TOP OF TUNNEL ROOF
3. INSTALL STRUCTURAL STEEL WALL REINFORCEMENTS WITHIN TUNNEL
4. REPAIR AND PATCH INTERIOR TUNNEL WALL AND CEILING SURFACES
5. REPAIR SIGNIFICANT DAMAGE TO "UNISTRUT" FRAMED UTILITY RACKS
6. REPLACE DETERIORATED CONCRETE BASE PEDESTALS OF UTILITY RACK SUPPORT POSTS
7. PROVIDE PROTECTIVE COATINGS TO ALL SIGNIFICANT RUSTING STEEL FRAMED UTILITY RACKS
8. REMOVE AND REPLACE SECTION OF CONCRETE DRIVE FOR TUNNEL ROOF REPAIR ACCESS
9. REPLACE SECTIONS OF SIDEWALKS AND CURBS DAMAGED FOR TUNNEL REPAIRS
10. INSTALL WATERPROOF SEALANTS AT ALL JOINTS IN CONCRETE DRIVES, CURBS AND WALKS ABOVE TUNNEL AREA FROM MK 1100 FT TO MK 1362 FT.

INDEX OF DRAWINGS



KEY PLAN

NORTH

The seal appearing on this document was authorized by Gary T. Oatman, P.E. - Registration 52717 on Dec. 7, 2021. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

This authorization is for Revision 0 only.

STATE OF TEXAS — GARY T. OATMAN — 52717 — LICENSED PROFESSIONAL ENGINEER

12/7/21

GTO ENGINEERING SERVICES FIRM REGISTRATION NO. F-4316

LETTER	DATE	DESCRIPTION	REV.BY	CHK.BY
SUPERSEDES				

GTO ENGINEERING SERVICES
2406 KELL BLVD. * WICHITA FALLS * TEXAS

MIDWESTERN STATE UNIVERSITY
TAFT BLVD., WICHITA FALLS, TEXAS

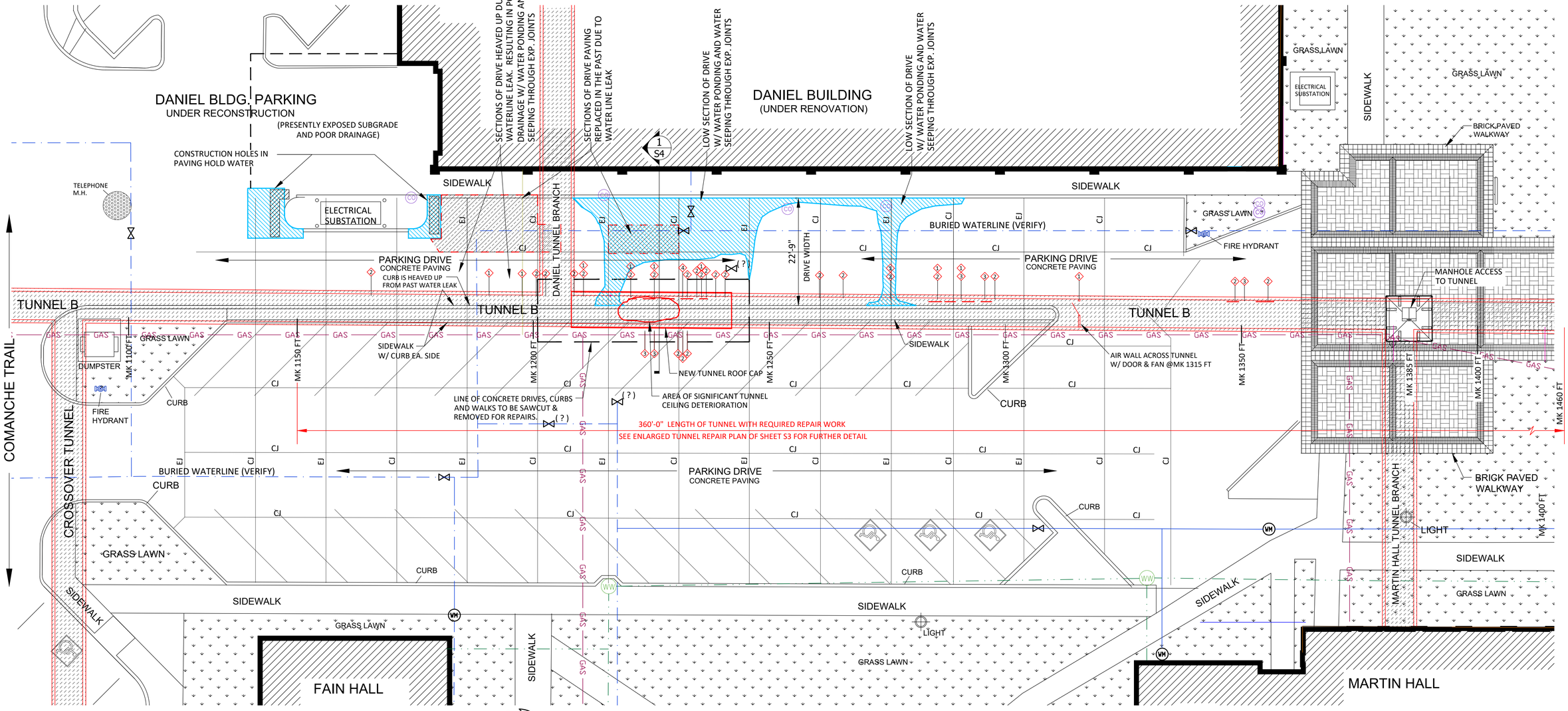
UTILITY TUNNEL REPAIRS
TUNNEL B - EAST OF DANIEL BUILDING

KEY PLAN & PROJECT NOTES

DRAWN BY	DATE	DRAWING NUMBER	REVISION	SHEET NO.
GTO	12/7/21	219027	0	S1
CHECKED BY	SCALE			
GTO	NOTED			

PROJECT NOTES:

1. FOR GENERAL PROJECT NOTES PLEASE REFER TO SHEET NO. S1



SITE PLAN OF TUNNEL REPAIRS

SCALE: 3/32" = 1'-0"

1
S2

THE PRESENCE AND EXACT LOCATION OF ALL BELOW GRADE UTILITIES IS TO BE VERIFIED WITH "MSU TEXAS" FACILITIES MAINTENANCE DEPARTMENT.

ABBREVIATION LEGEND:

MK 1250 FT	TUNNEL MARK LOCATION
EJ	EXPANSION JOINT IN CONCRETE PAVING
CJ	CONTROL JOINT IN CONCRETE PAVING
GAS	GAS LINE
	DOMESTIC WATER LINE
	WASTE WATER LINE
	WATER LINE VALVE
VM	WATER METER
WW	WASTE WATER MANHOLE
CO	SANITARY CLEAN OUT
	FIRE HYDRANT

TUNNEL DISTRESS LEGEND:

1. DETERIORATING & CRACKING CONCRETE IN CEILING OF TUNNEL
2. SPALLING CONCRETE W/ RUSTING REINF. STEEL IN TUNNEL WALL
3. HORIZONTAL CRACKING IN WALL OF TUNNEL

The seal appearing on this document was authorized by Gary T. Oatman, P.E. - Registration 52717 on Dec. 7, 2021. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

This authorization is for Revision 0 only.

STATE OF TEXAS
GARY T. OATMAN
52717
LICENSED
PROFESSIONAL ENGINEER
12/7/21
GTO ENGINEERING SERVICES
FIRM REGISTRATION NO. F-4316

LETTER	DATE	DESCRIPTION	REV.BY	CHK.BY
SUPERSEDES				

GTO ENGINEERING SERVICES
2406 KELL BLVD. * WICHITA FALLS * TEXAS

MIDWESTERN STATE UNIVERSITY
TAFT BLVD., WICHITA FALLS, TEXAS

UTILITY TUNNEL REPAIRS
TUNNEL B - EAST OF DANIEL BUILDING

SITE PLAN OF TUNNEL REPAIRS

DRAWN BY	DATE	DRAWING NUMBER	REVISION	SHEET NO.
GTO	12/7/21	219027	0	S2
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GTO	NOTED			

PROJECT NOTES:

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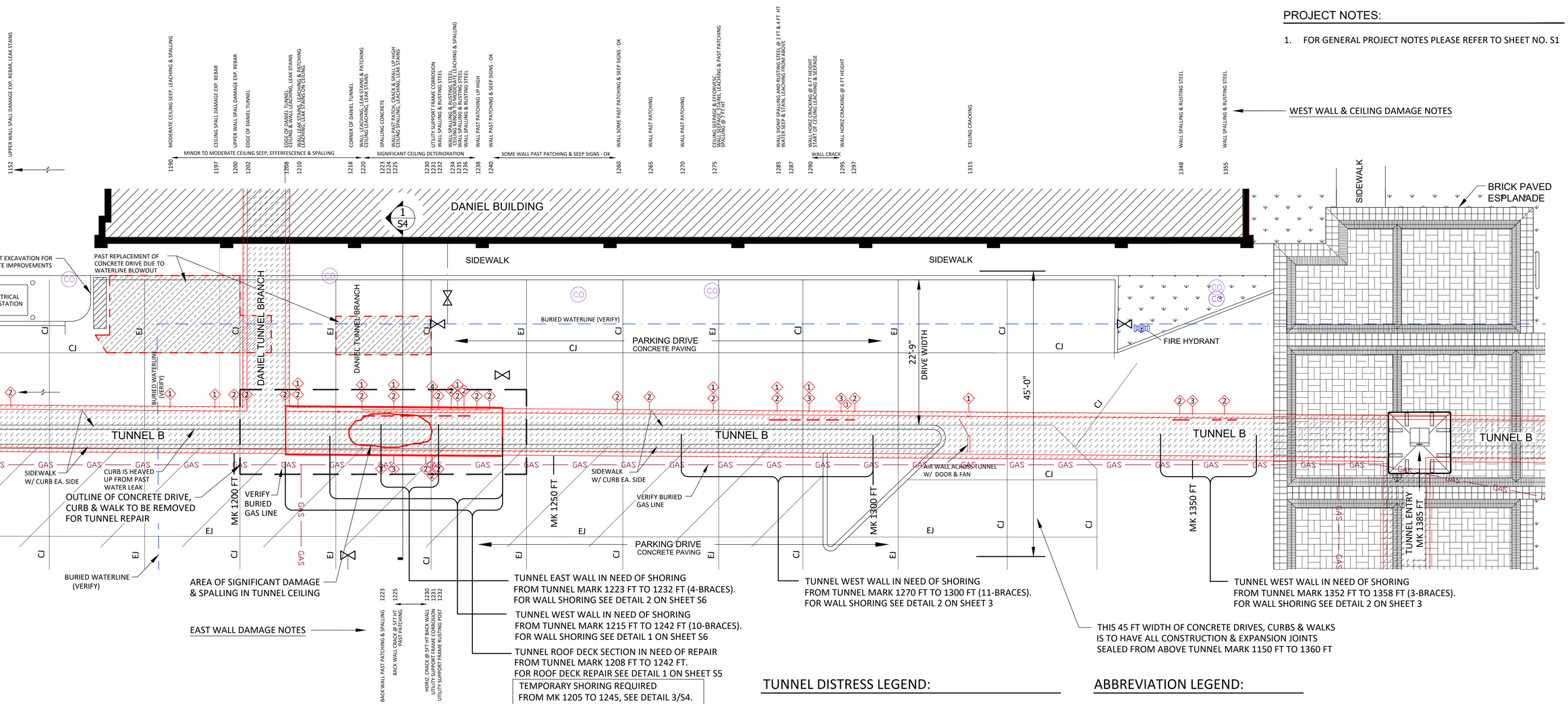

ENLARGED PLAN OF UTILITY TUNNEL REPAIRS

SCALE: 1/8" = 1'-0"

1 / S3

TUNNEL REPAIR SEQUENCE

1. PROVIDE REVIEW OF TEMPORARY TUNNEL SHORING REQUIREMENTS
2. INSTALL TEMPORARY SHORING AS NOTED ON DRAWINGS
3. INSTALL PERMANENT WALL REPAIR SHORING AS NOTED
4. REMOVE SECTIONS OF CONCRETE DRIVE AND WALKS ABOVE TUNNEL
5. EXCAVATE ABOVE UTILITY TUNNEL TO EXPOSE ROOF DECK
6. INSTALL EPOXY DOWEL BARS INTO EXISTING TUNNEL ROOF
7. FORM AND PLACE 8" CONCRETE TUNNEL ROOF REPAIR SLAB
8. INSTALL WATERPROOFING MEMBRANE OVER EXPOSED TUNNEL ROOF
9. BACKFILL & COMPACT SUBGRADE ABOVE TUNNEL
10. REPLACE REMOVED SECTIONS OF CONCRETE DRIVE
11. REPAIR/REPLACE DAMAGED SIDEWALKS AS NECESSARY
12. REMOVE ROOF SHORING AFTER 28 DAYS AND COMPLETION OF CONSTRUCTION WORK ABOVE
13. REPAIR/PATCH DAMAGE TO TUNNEL CONCRETE CEILING & WALLS
14. PROVIDE FOR REPAIRS AND REPLACEMENT TO DETERIORATING UTILITY RACK FRAMING.
14. PROVIDE PROTECTIVE COATINGS TO RUSTING AND DETERIORATING STEEL FRAMED UTILITY RACKS
15. REPLACE DETERIORATED CONCRETE BASE PEDESTALS OF UTILITY RACK SUPPORT POSTS
16. INSTALL MP1 URETHANE SEALANT AT CONCRETE DRIVE EXPANSION JOINTS ABOVE TUNNEL AREA FROM 1150 FT MARK TO 1350 FT MARK
17. PROVIDE STRIPPING REPAIRS TO PARKING AREAS AND DRIVE

TUNNEL DISTRESS LEGEND:

1. DETERIORATING & CRACKING CONCRETE IN CEILING OF TUNNEL
2. SPALLING CONCRETE W/ RUSTING REINF. STEEL IN TUNNEL WALL
3. HORIZONTAL CRACKING IN WALL OF TUNNEL

ABBREVIATION LEGEND:

- MK 1250 FT — TUNNEL MARK LOCATION
- EJ — EXPANSION JOINT IN CONCRETE PAVING
- CJ — CONTROL JOINT IN CONCRETE PAVING
- GAS — GAS LINE
- DOMESTIC WATER LINE
- WASTE WATER LINE
- WATER LINE VALVE
- WM — WATER METER
- WW — WASTE WATER MANHOLE
- CO — SANITARY CLEAN OUT
- FIRE HYDRANT
- GRASS LAWN

THE PRESENCE AND EXACT LOCATION OF ALL BELOW GRADE UTILITIES IS TO BE VERIFIED WITH "MSU TEXAS" FACILITIES MAINTENANCE DEPARTMENT.

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STATE OF TEXAS — GARY T. OATMAN — 52717 — LICENSED PROFESSIONAL ENGINEER

12/7/21

GTO ENGINEERING SERVICES FIRM REGISTRATION NO. F-4316

LETTER	DATE	DESCRIPTION	REV.BY	CHK.BY
SUPERSEDES				

GTO ENGINEERING SERVICES
2406 KELL BLVD. * WICHITA FALLS * TEXAS

MIDWESTERN STATE UNIVERSITY
TAFT BLVD., WICHITA FALLS, TEXAS

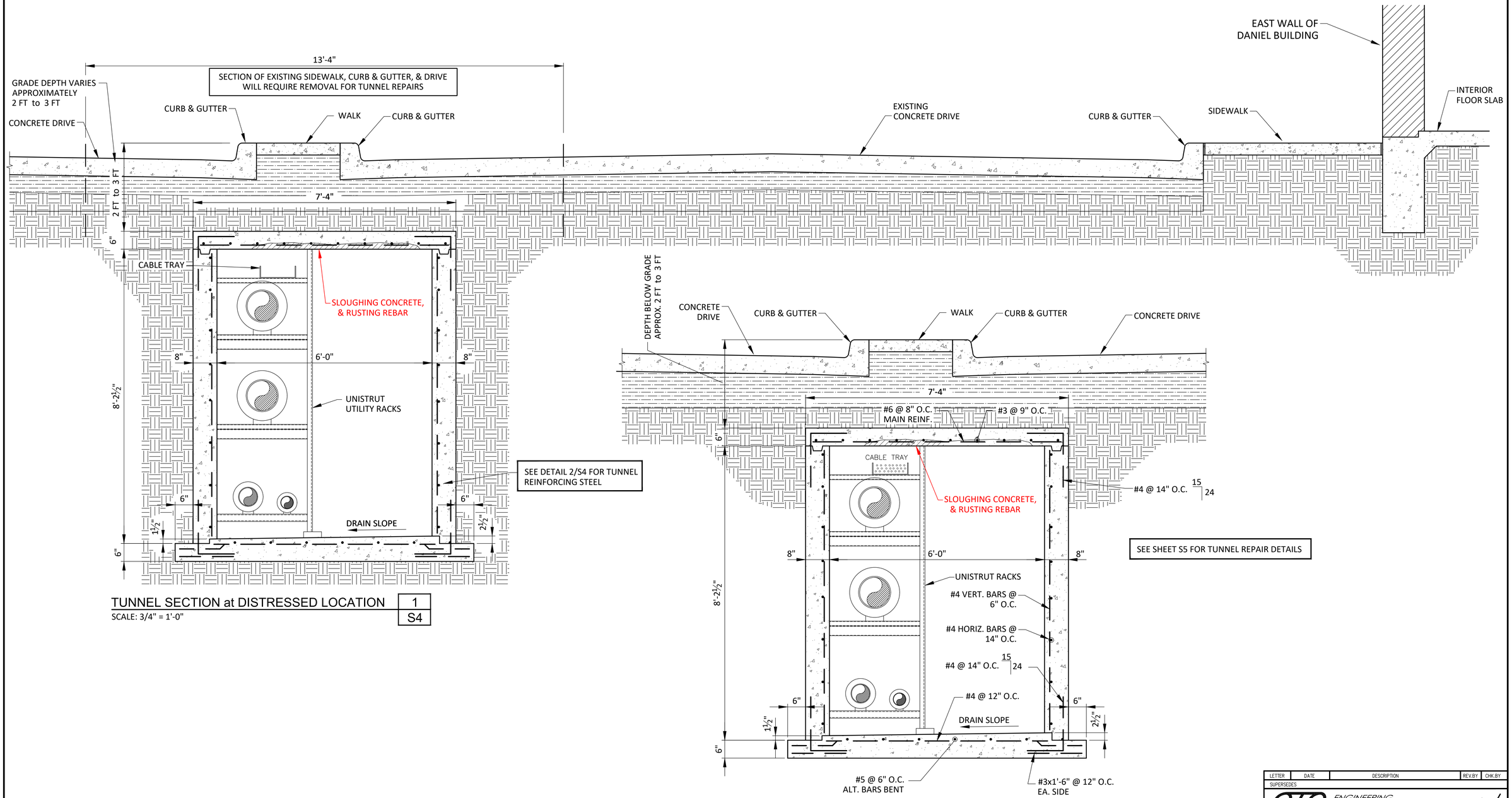
UTILITY TUNNEL REPAIRS
TUNNEL B - EAST OF DANIEL BUILDING

ENLARGED PLAN OF TUNNEL REPAIRS

DRAWN BY	DATE	DRAWING NUMBER	REVISION	SHEET NO.
GTO	12/7/21	219027	0	S3
CHECKED BY	SCALE			
GTO	NOTED			

PROJECT NOTES:

1. FOR GENERAL PROJECT NOTES PLEASE REFER TO SHEET NO. S1



TUNNEL SECTION at DISTRESSED LOCATION — 1 / S4
SCALE: 3/4" = 1'-0"

TUNNEL SECTION at DISTRESSED LOCATION — 2 / S4
SCALE: 3/4" = 1'-0"

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GARY T. OATMAN
52717
LICENSED
PROFESSIONAL ENGINEER
12/7/21
GTO ENGINEERING SERVICES
FIRM REGISTRATION NO. F-4316

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MIDWESTERN STATE UNIVERSITY
TAFT BLVD., WICHITA FALLS, TEXAS

UTILITY TUNNEL REPAIRS
TUNNEL B - EAST OF DANIEL BUILDING

EXISTING TUNNEL SECTIONS

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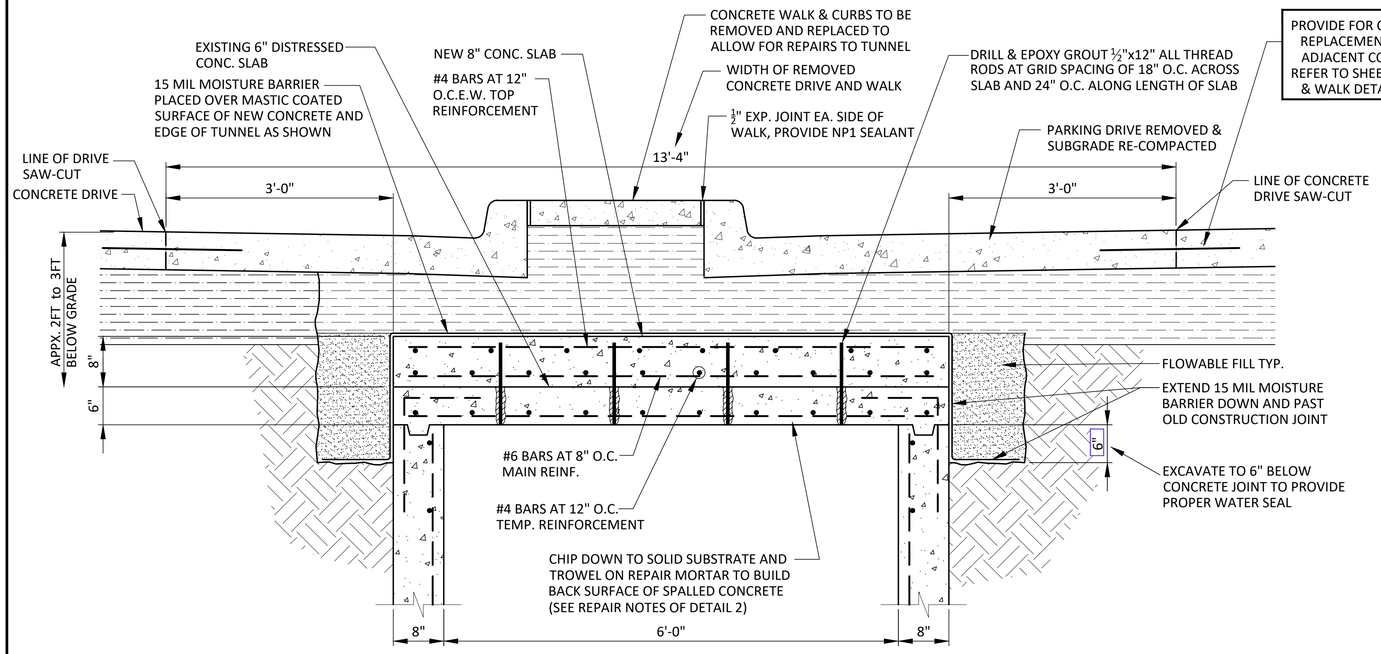
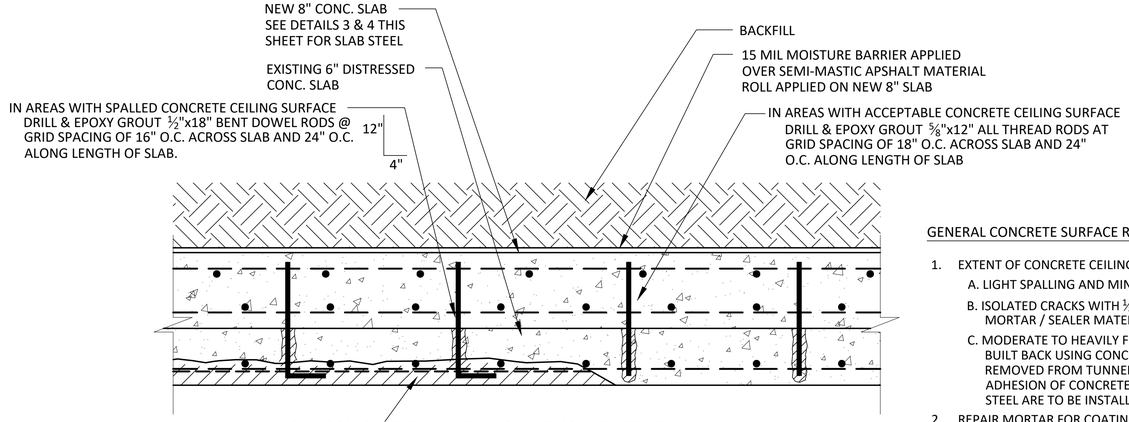
GTO	NOTED			



DISTRESSED TUNNEL ROOF REPAIR DETAIL W/ SPALLING CONCRETE CEILING

1 / S5

SCALE: 1" = 1'-0"



1. REMOVE LOOSE CONCRETE AND CHIP DOWN TO SOLID SUBSTRATE.
2. WHERE RUSTING REBAR IS ENCOUNTERED, CLEAN RUST & SCALE FROM REBAR WIRE BRUSH AND APPLY "MEADOW-CRETE GPS" OVER REBAR.
3. WHERE REBAR HAS EXCESSIVE CORROSION, PROVIDE MAT OF WELDED WIRE FABRIC WIRED TO NEW EMBED DOWELS. USE GALVANIZED WWF 4x4- W2.0xW2.0
4. TROWEL ON REPAIR MORTAR TO BUILD BACK SPALLED CONCRETE. REPAIR MORTAR TO BE "MEADOW-CRETE GPS" BY W.R. MEADOWS.

IN AREAS OF SIGNIFICANTLY SPALLED CEILING CONCRETE

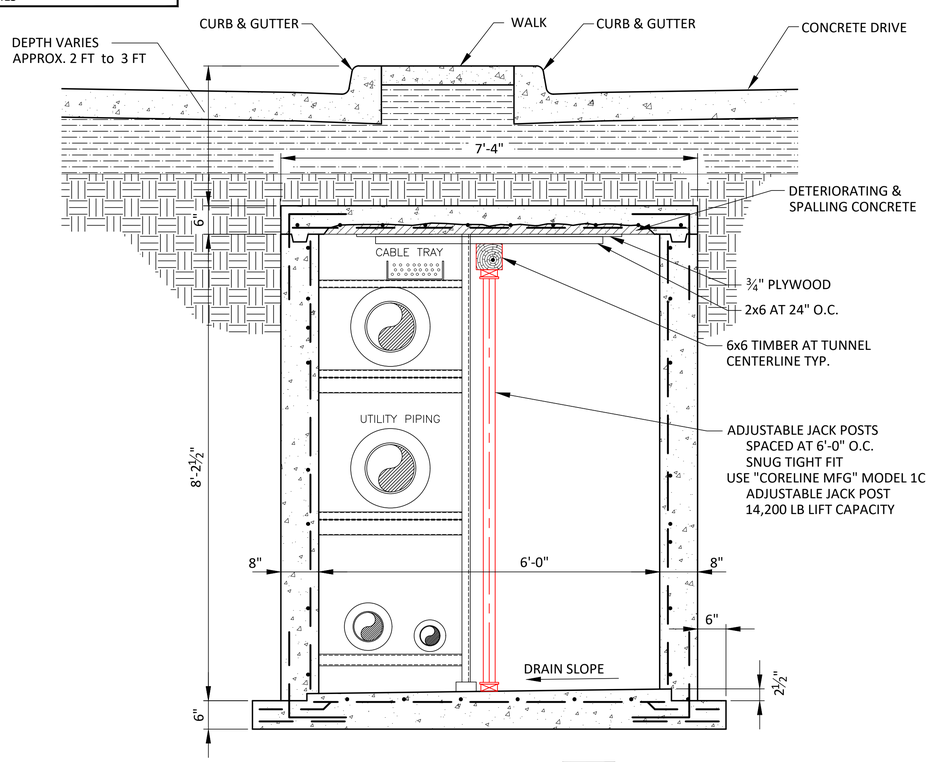
TYPICAL TUNNEL CEILING REPAIR DETAIL

2 / S5

SCALE: 1½" = 1'-0"

PROJECT NOTES:

1. FOR GENERAL PROJECT NOTES PLEASE REFER TO SHEET NO. S1



TEMPORARY TUNNEL SHORING DETAIL

3 / S5

SCALE: 3/4" = 1'-0"

PROTECTIVE SHORING NOTES:

1. A MINIMUM OF 40 FEET LENGTH OF SHORING IS TO BE PLACED AT THE WORST AREA OF CEILING DAMAGE FROM TUNNEL MARK 1205 TO MARK 1245, AS NOTED ON THE PLAN OF TUNNEL REPAIRS OF SHEET S3.
2. ALL SHORING IS TO BE PLACED AND INSPECTED BY THE ENGINEER PRIOR TO ANY EXCAVATION OR CONSTRUCTION ACTIVITY BEING PERFORMED.
3. SHORING TO REMAIN IN PLACE UNTIL ALL BACKFILL OPERATIONS HAVE BEEN PERFORMED AND NEW CONCRETE DECK HAS ACHIEVED 4000 PSI 28 DAY COMPRESSIVE STRENGTH.
4. FOR ADDITIONAL SHORING & CONSTRUCTION NOTES REFER TO THE STRUCTURAL NOTES FOUND ON SHEET S1.

GENERAL CONCRETE SURFACE REPAIR NOTES:

1. EXTENT OF CONCRETE CEILING REPAIRS:
   - A. LIGHT SPALLING AND MINIMAL CRACKING IN CONCRETE CEILING IS RECOMMENDED TO BE LEFT ALONE.
   - B. ISOLATED CRACKS WITH ⅛" SEPARATION OR LARGER ARE RECOMMENDED TO BE FILLED WITH CONCRETE REPAIR MORTAR / SEALER MATERIAL OR HAVE "RESI-WELD 1000" POURED OR INJECTED INTO JOINTS.
   - C. MODERATE TO HEAVILY FRACTURED CONCRETE CEILING IS RECOMMENDED TO BE REMOVED FROM THE CEILING AND BUILT BACK USING CONCRETE REPAIR PRODUCTS. ALL LOOSE, DETERIORATED AND SPALLING CONCRETE SHALL BE REMOVED FROM TUNNEL CEILINGS TO EXPOSE SOUND CONCRETE SUBSTRATE FOR THE APPLICATION AND ADHESION OF CONCRETE PATCH MATERIALS. ADDITIONAL CONCRETE STEEL DOWELS, ANCHORS, AND REINFORCING STEEL ARE TO BE INSTALLED PER THE DETAILS OF THESE PLANS.
2. REPAIR MORTAR FOR COATING AND SEALING THE SPALLED CONCRETE SURFACE IS TO BE A ONE-COMPONENT GENERAL PURPOSE STRUCTURAL REPAIR MORTAR "MEADOW-CRETE GPS" AS MANUFACTURED BY W.R. MEADOWS, INC. THIS POLYMER-MODIFIED REPAIR MORTAR IS A ONE-COMPONENT, TROWEL-APPLIED (WET PROCESS), CORROSION-INHIBITOR, CEMENTITIOUS REPAIR MORTAR.
3. FOR PROPER BONDING, APPLY A COATING "ACRY-LOK" BONDING AGENT TO CLEANED AND EXPOSED SOLID CONCRETE SUBSTRATE PRIOR TO APPLICATION OF REPAIR MORTAR.
4. APPLICATION OF THE REPAIR MORTAR SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
5. WHERE EXPOSED AND RUSTING REBAR IS ENCOUNTERED, THE REBAR IS TO BE WIRE-BRUSHED CLEAN OF SCALE AND RUST AND THE REPAIR MORTAR "MEADOW-CRETE GPS" APPLIED OVER THE CLEANED REBAR FOR SEALING, BONDING AND PROPER COVERAGE PROTECTION. A MINIMUM OF 1" COVERAGE OF REBAR IS TO BE PROVIDED.
5. WHERE EXCESSIVE CORROSION OF EXISTING REINFORCEMENT STEEL IS ENCOUNTERED (A LOSS IN EXCESS OF 20% CROSS-SECTION), WELDED WIRE FABRIC (WWF) IS TO BE INSTALLED TO COMPENSATE FOR THE LOST REINFORCEMENT STEEL. WWF REINFORCING STEEL IS TO BE FLAT SHEETS OF HOT DIP GALVANIZED 4x4-W2.0xW2.0. CUT SHEETS TO SIZE OF DISTRESSED AREA AND WIRE ANCHOR TO NEW EMBED ANCHORS.

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FIRM REGISTRATION NO. F-4316

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2406 KELL BLVD. * WICHITA FALLS * TEXAS

MIDWESTERN STATE UNIVERSITY
TAFT BLVD., WICHITA FALLS, TEXAS

UTILITY TUNNEL REPAIRS
TUNNEL B - EAST OF DANIEL BUILDING

TUNNEL REPAIR SECTIONS & DETAILS

DRAWN BY	DATE	DRAWING NUMBER	REVISION	SHEET NO.
GTO	12/7/21	219027	0	S5
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GTO	NOTED			

PROJECT NOTES:

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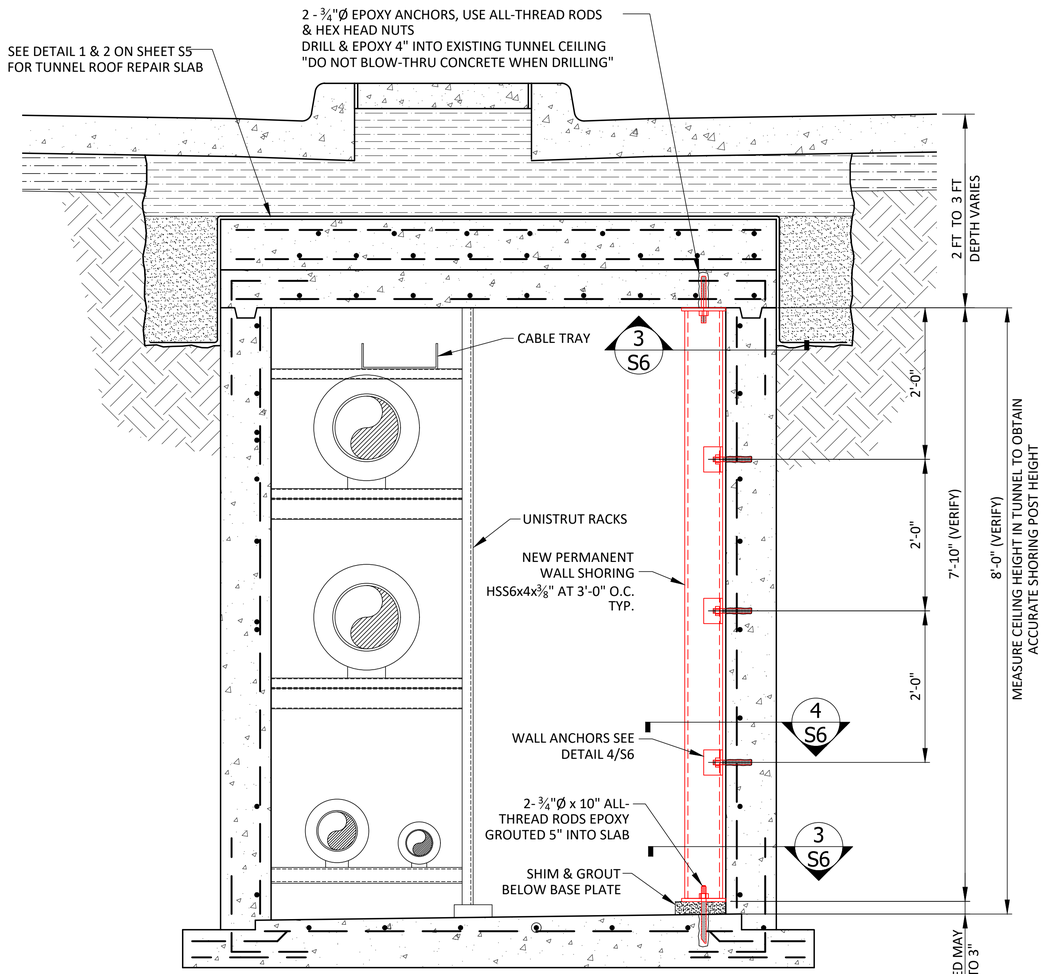
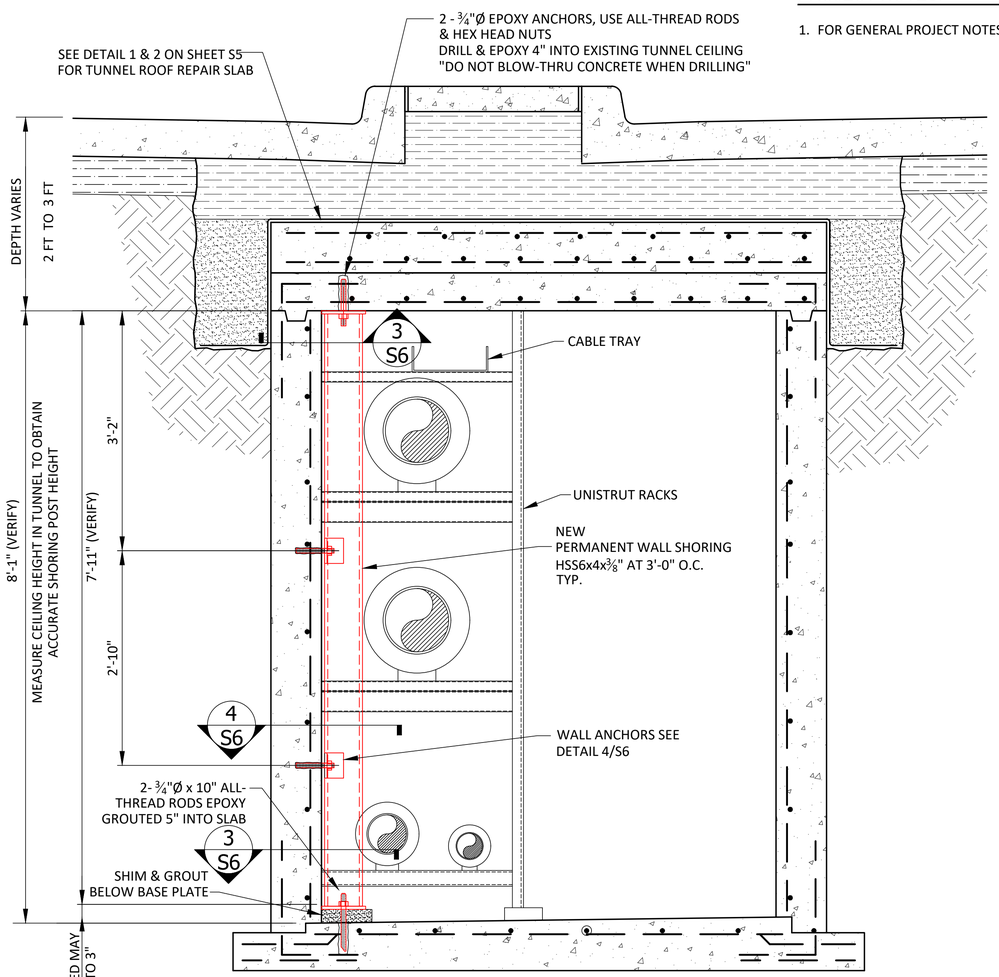


INSTALL AT LOCATIONS NOTED ON SHEET S3

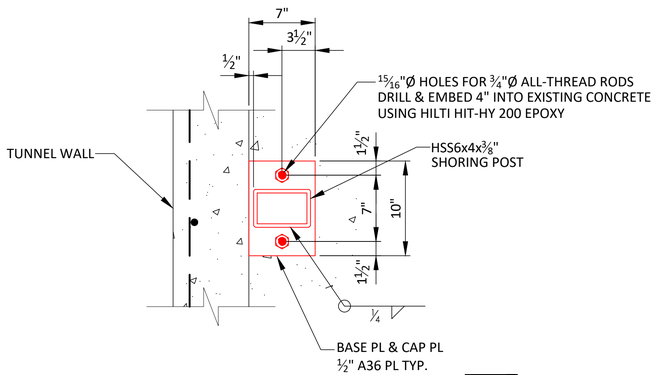
WEST TUNNEL WALL
TYPICAL PERMANENT WALL SHORING DETAIL | 1 | S6
SCALE: 1" = 1'-0"



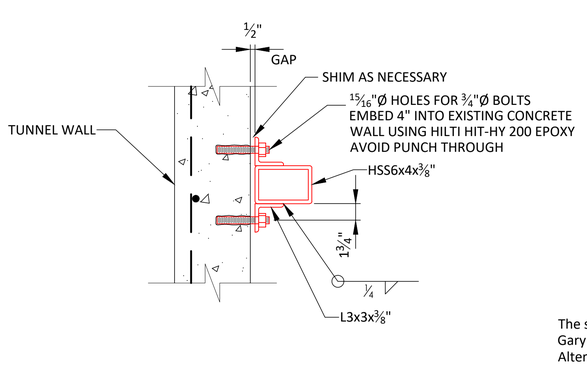
INSTALL AT LOCATIONS NOTED ON SHEET S3

EAST TUNNEL WALL
TYPICAL PERMANENT WALL SHORING DETAIL | 2 | S6
SCALE: 1" = 1'-0"

IT IS RECOGNIZED THAT INSTALLATION OF THESE WALL BRACES BEHIND THE EXISTING UTILITY LINES AND RACKS WILL BE DIFFICULT. CONSULT WITH THE ENGINEER FOR APPROVAL OF ANY MODIFICATIONS TO THE DETAIL AS SHOWN.



BASE & CAP PLATE SHORING DETAIL | 3 | S6
SCALE: 1½" = 1'-0"



TYP. WALL SHORING ATTACHMENT SECTION | 4 | S6
SCALE: 1½" = 1'-0"

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TAFT BLVD., WICHITA FALLS, TEXAS

UTILITY TUNNEL REPAIRS
TUNNEL B - EAST OF DANIEL BUILDING

PERMANENT WALL SHORING DETAILS

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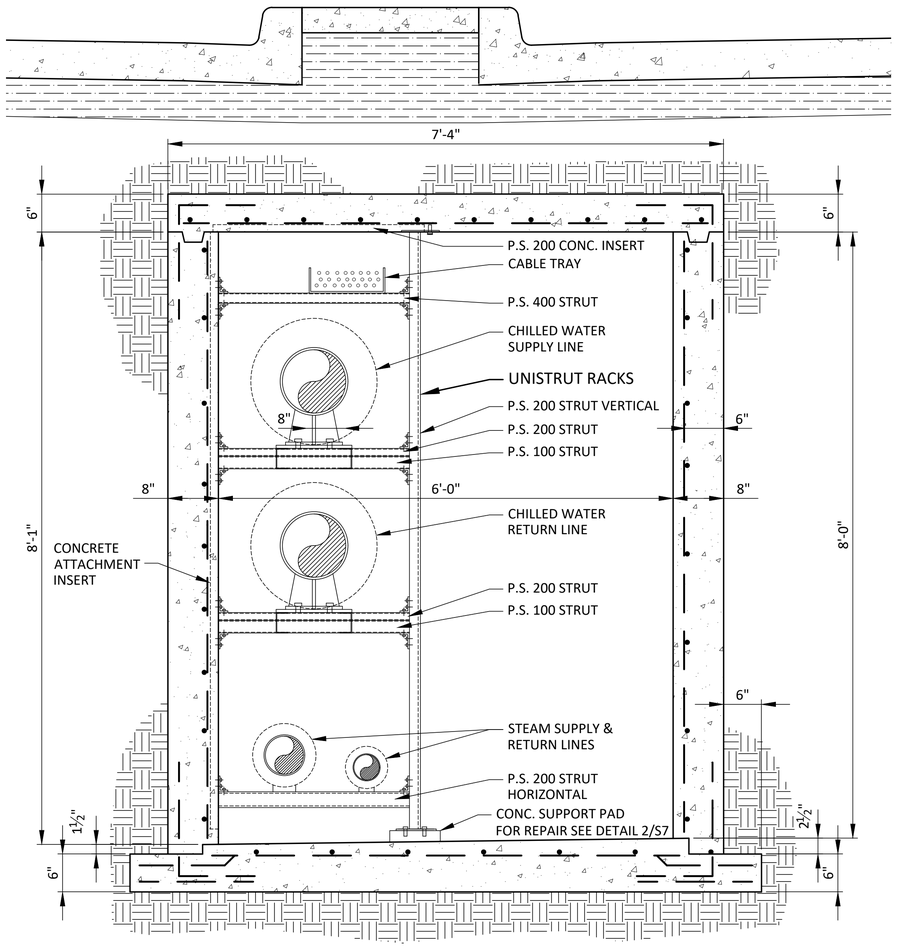
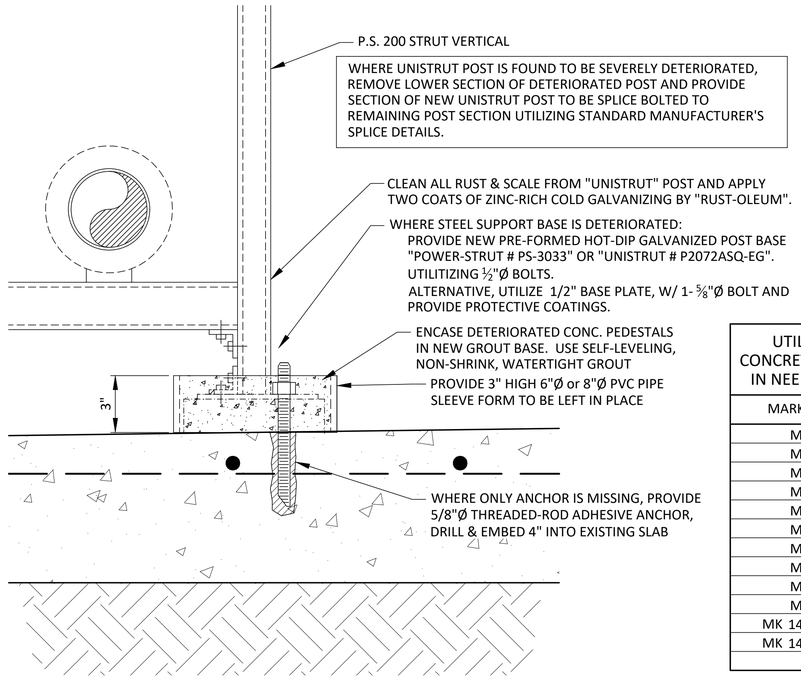


ENLARGED TUNNEL SECTION
W/ SUPPORT RACK DETAIL — 1 / S7

SCALE: 3/4" = 1'-0"



UTILITY RACK CONCRETE PEDESTAL
PEDESTAL REPAIR / REPLACEMENT — 2 / S7

SCALE: 3" = 1'-0"

UTILITY RACK CONCRETE PEDESTALS IN NEED OF REPAIR
MARKER LOCATION
MK 1132
MK 1166
MK 1208
MK 1212
MK 1218
MK 1287
MK 1315
MK 1318
MK 1330
MK 1350
MK 1400 to MK 1418
MK 1455 to MK 1460

UTILITY RACK "UNISTRUT" FRAMING NOTES

1. ALL REPLACEMENT STRUCTURAL STRUT SHAPES USED IN REBUILDING OF UTILITY RACKS ARE TO BE PREFORMED HOT-DIP GALVANIZED STEEL SECTIONS AS MANUFACTURED BY EITHER "POWER-STRUT" OR "UNISTRUT" COMPANIES.
2. STRUT SECTIONS ARE TO BE EITHER "POWER-STRUT" P.S. 200 SERIES OR "UNISTRUT" P1000 SERIES. ALL MEMBERS ARE TO BE A MINIMUM OF 1⅝" x 1⅝" x 12 GAUGE CROSS-SECTION MEMBERS.
3. BOLTED BASE PLATE ATTACHMENTS TO BE NEW PRE-FORMED HOT-DIP GALVANIZED POST BASE "POWER-STRUT # PS-3033" OR "UNISTRUT # P2072ASQ-EG", WITH 6"x6"x ¼" BASE PLATE AND ½"Ø ANCHOR BOLTS.
4. WHERE SPLICING OF OF NEW TO EXISTING POST SECTIONS IS REQUIRED TO REPLACE A SECTION OF DETERIORATED POST, A BOLT SPLICE CONNECTION MAY BE UTILIZED IN CONFORMANCE WITH "UNISTRUT" STANDARD PRACTICES.
5. ANY SURFACE DAMAGED SECTIONS, WELD SCARS OR ABRASIONS TO THE GALVANIZED "UNISTRUT" SECTIONS IS TO BE TOUCH-UP COATED WITH TWO COATS OF ZINC-RICH COLD GALVANIZING BY RUST-OLEUM.
6. FOR ADDITIONAL STRUCTURAL FRAMING NOTES DEALING WITH UNISTRUT STYLE CONSTRUCTED UTILITY RACKS, PLEASE REFER TO THE GENERAL NOTES OF SHEET S1.

UTILITY RACK SECTIONS IN NEED OF ATTENTION	
MARKER LOCATION	DESCRIPTION OF REQUIRED REPAIR
MK 1225	RUSTING UNISTRUT POST & FRAMING IN NEED OF REPAIR AND RE-COATING W/ "COLD GALVANIZING"
MK 1232	RUSTING UNISTRUT POST & FRAMING IN NEED OF REPAIR AND RE-COATING W/ "COLD GALVANIZING"
MK 1215 to 1235	RUSTING CABLE TRAY IN NEED OF CLEANUP & COATING W/ "COLD GALVANIZING"
MK 1400 TO 1425	THREE INFERIOR UTILITY RACKS ARE IN NEED OF FULL REPLACEMENT. THESE RACKS HAVE BEEN INADEQUATELY MODIFIED IN THE PAST WITH PERFORATED LIGHT GAUGE GALVANIZED ANGLE. RACKS TO BE REPLACED PER DETAIL 1/S7 & 2/S7. SEE DETAIL 3/S7.

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UTILITY TUNNEL REPAIRS
TUNNEL B - EAST OF DANIEL BUILDING

UTILITY RACK REPAIR DETAILS

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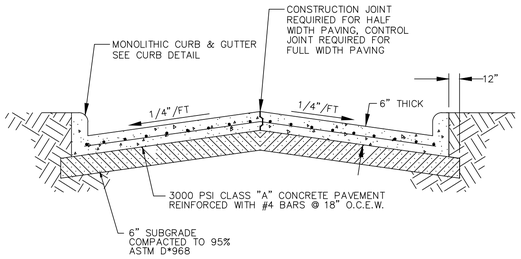


GENERAL NOTES:

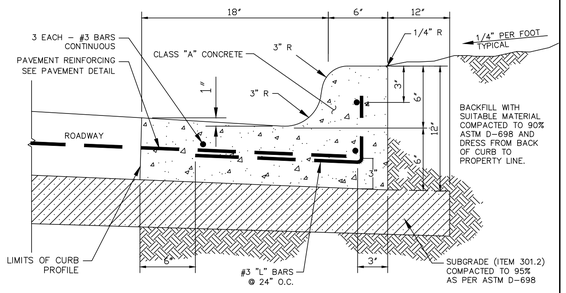
1. CONSTRUCT SAWED CONTRACTION JOINTS AT 10' INTERVALS.
2. CONSTRUCT TRANSVERSE EXPANSION JOINTS AT EACH END OF CONCRETE PAVEMENT. SEE DETAIL.
3. ALL CONCRETE SHALL BE CLASS"A" DEVELOPING 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI MINIMUM. PROVIDE LIGHT BROOM FINISH.
4. BACKFILL COMPACTED TO 90% OF ASTM D698.
5. SUB GRADE PREPARATION MAY CONSIST OF FLY ASH STABILIZATION, LIME STABILIZATION, CEMENT STABILIZATION, OR SCARIFICATION AND RECOMPACTION.

EXISTING WALK 1/4" PER FOOT

CONCRETE PAVEMENT SECTION

SCALE: NTS

1
8



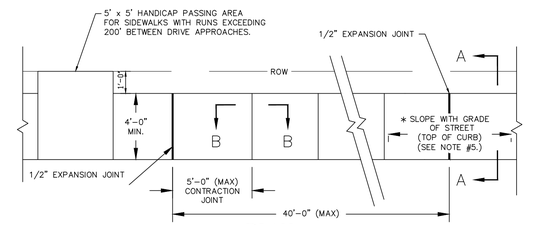
GENERAL NOTES:

1. CURB TO BE CONSTRUCTED MONOLITHIC WITH PAVING.
2. CONSTRUCT 1/2" EXPANSION JOINTS AT 60' ON CENTER AND CONTRACTION JOINTS AT 15' ON CENTER.
3. SEE ITEM 305.1 OF THE STANDARD SPECIFICATIONS (CITY OF WF).
4. ALL CONCRETE SHALL BE CLASS A, 5 SACK.
5. SAND SHALL NOT BE ACCEPTED AS COMPACTED SUBGRADE. SAND WILL BE ALLOWED FOR LEVEL-UP ONLY. (2" MAX.).

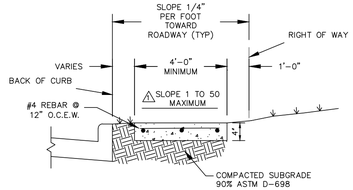
CURB AND GUTTER DETAIL

SCALE: NTS

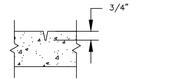
2
8



PLAN
NOT TO SCALE



SECTION A–A
NOT TO SCALE



SECTION B–B
CONTRACTION JOINT
NOT TO SCALE

GENERAL NOTES:

1. SIDEWALK REINFORCING (EXCLUDING DRIVE APPROACHES) SHALL BE #3 BARS @ 12" O.C.E.W.
2. ALL CONCRETE SHALL BE CLASS A, 5 SACK.
3. SAND SHALL NOT BE ACCEPTED AS COMPACTED SUBGRADE. SAND WILL BE ALLOWED FOR LEVEL-UP ONLY.
4. ANY UTILITY BOXES OR MANHOLES WITHIN THE SIDEWALK OR APPROACH MUST BE ADJUSTED BY THE CITY UTILITY DEPARTMENT TO THE GRADE SHOWN. ALL ADJUSTMENT COST WILL BE THE RESPONSIBILITY OF THE CONTRACTOR, OR AS DIRECTED BY THE ENGINEER.
5. SLOPE AT DRIVE APPROACHES AND APPROACHING RAMPS MUST COMPLY WITH ADA REQUIREMENTS. (1 INCH PER FOOT MAXIMUM)
6. AT REPLACED WALKS, MATCH EXISTING WALK WIDTHS WHICH ARE A NOMINAL 6'–0" WIDTH IN THIS AREA.

SIDEWALK STANDARD DETAIL

SCALE: NTS

3
8

STRUCTURAL NOTES:

1. FOR GENERAL STRUCTURAL NOTES PLEASE REFER TO SHEET NO. S1

SITE PAVING NOTES:

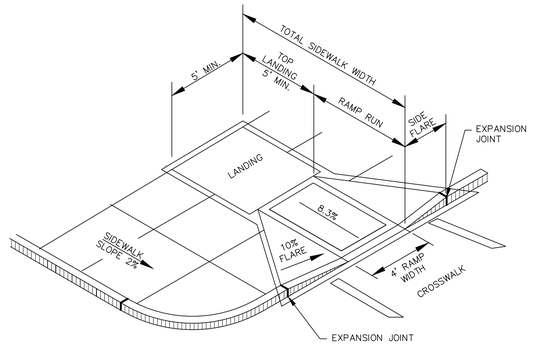
1. REFER TO FOUNDATION PLAN FOR THE BUILDING FOUNDATION AND SLAB DETAILS.
2. ALL PAVING AND STRUCTURES SHALL BE PLACED ON PREPARED SUBGRADE OR SELECT FILL (NOT SAND).
3. ALL CONCRETE (UNLESS OTHERWISE NOTED ON DETAILS) SHALL BE CLASS "A", DEVELOPING A 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI MINIMUM. USE "BULL-NOSED" EDGE OR ¾ CHAMFER ON ALL EXPOSED EDGES. PROVIDE LIGHT BROOM FINISH.
4. ALL REBAR SHALL BE GRADE 60, FREE OF EXCESSIVE RUST & MILL SCALE, AND SHALL BE INSTALLED IN ACCORDANCE WITH ACI 318, LATEST EDITION.
5. ALL CURBING SHALL BE MONOLITHIC CURB AND GUTTER. DOWEL-ON CURBING SHALL NOT BE ALLOWED.
6. EXPANSION JOINTS SHALL NOT BE PLACED TO RUN WITH FLOW LINES.
7. 1/4" CONTROL JOINTS SHALL BE SAW CUT TO 1/4" THE PAVEMENT THICKNESS WITHIN 24 HOURS OF CONCRETE REACHING ITS INITIAL SET AT A MAXIMUM OF 16' ON CENTER EACH WAY. CONTROL JOINTS TO MATCH EXISTING JOINT PATTERN. AFTER ALL PAVING IS IN PLACE, ALL JOINTS SHALL BE BLOWN CLEAN WITH COMPRESSED AIR AND SEALED WITH SELF LEVELING SEALER BY W.R. MEADOWS.
8. CONSTRUCTION JOINTS SHALL BE DOWELED TOGETHER PER DETAILS. DOWELS MAY BE ELIMINATED IF TRANSVERSE STEEL IS CONTINUOUS ACROSS THE JOINT.
9. ALL SIDEWALKS AND HANDICAP ACCESSIBLE ROUTES SHALL HAVE A CROSS SLOPE OF 2% OR LESS. HANDICAP RAMPS SHALL NOT EXCEED A 1:12 SLOPE, REFER TO RAMP DETAILS.
10. IN REPAIR OF CONCRETE DRIVES AND PARKING AREAS, PROVIDE FOR A UNIFORMLY SLOPED/LEVEL CONCRETE SURFACES THAT MATCH THE ELEVATIONS OF ADJACENT/INTERSECTING DRIVE AND CURB SURFACES, AND PROVIDES FOR POSITIVE WATER RUNOFF AND "NO" PONDING OF WATER.
11. TRAFFIC SHALL NOT BE ALLOWED UPON THE NEW PAVEMENT FOR A MINIMUM OF 14 DAYS OR UNTIL COMPRESSIVE TESTS INDICATE THAT DESIGN STRENGTH HAS BEEN ACHIEVED.
12. AFTER ALL CONCRETE PLACEMENT AND AFTER JOINT SEALANT HAS CURED, THE PARKING SPACES, DRIVE LANES, AND DIRECTIONAL ARROWS SHALL BE STRIPED AS SHOWN USING SHERWIN-WILLIAMS OR PPG TRAFFIC MARKING PAINT APPLIED FULL STRENGTH IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ALL STRIPES SHALL BE A MINIMUM OF 4" WIDE EXCEPT THE STOP LINES WHICH SHALL BE 12" WIDE X 15' LONG. HANDICAP STRIPING SHALL BE BLUE, ALL OTHERS WHITE. PAINTED AREAS SHALL BE PROTECTED FROM TRAFFIC UNTIL THOROUGHLY DRY.
13. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SAFETY OF EMPLOYEES AND THE PUBLIC AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO REDUCE RISK ON THE JOBSITE. TRAFFIC SAFETY MEASURES MEETING THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION, SHALL BE USED WITHIN THE STREET RICHT-OF-WAY TO PROTECT THE TRAVELING THE PUBLIC.

STRIPING NOTES:

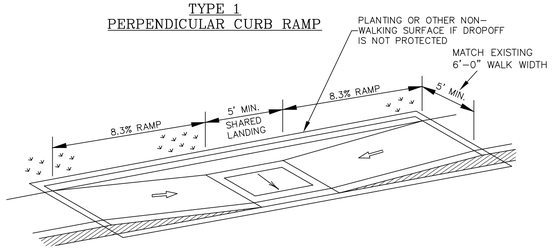
1. THE SURFACE OF THE CONCRETE TO BE STRIPED SHALL BE BROOMED CLEAN (OR POWER WASHED) TO REMOVE DIRT AND MUD PRIOR TO PAINTING.
2. THE SURFACES TO BE PAIN TED SHALL BE THOROUGHLY DRY AND JOINT SEALANT SHALL BE FULL CURED AND PAINTABLE. PPG OR SHERWIN -WILLIAMS TRAFFIC MARKING PAINT SHALL BE APPLIED FULL STRENGTH IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
3. STRIPES FOR PARKING SPACES SHALL BE A MINIMUM OF 4 INCHES WIDE AND SHALL BE WHITE EXCEPT HANDICAP SPACES (INCLUDING STRIPING, CURB FACE AND SYMBOLS) WHICH SHALL BE SAFETY BLUE.
4. PAINTED AREAS SHALL BE PROTECTED FROM TRAFFIC UNTIL THOROUGHLY DRY.
5. ALL REQUIRED FIRE LANES SHALL BE PROVIDED AND MAINTAINED WITH FIRE LANE STRIPING THAT CONSISTS OF A SIX INCH (6") WIDE RED BACKGROUND STRIPE WITH FOUR INCH (4") HIGH WHITE LETTERS STATING "NO PARKING", FIRE LANE" TO BE PAINTED UPON THE RED STRIPE EVERY FIFTEEN FEET (15') ALONG THE ENTIRE LENGTH OF THE FIRE LANE SHOWING THE EXACT BOUNDARY OF THE FIRE LANE. FIRE LANE MARKINGS SHALL BE UPON THE VERTICAL SURFACE OF THE CURB, UNLESS OTHERWISE APPROVED BY THE CHIEF OR AUTHORIZED REPRESENTATIVE.

SIDEWALK, RAMP AND CURB GENERAL NOTES:

1. ALL SLOPES ARE MAXIMUM ALLOWABLE. THE LEAST POSSIBLE SLOPE THAT WILL STILL DRAIN PROPERLY SHOULD BE USED. RAMP LENGTH OR GRADE OF APPROACH SIDEWALKS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER.
2. EXCEPT AS NOTED ON THE PLANS, THE MINIMUM SIDEWALK WIDTH IS 4'. WHERE A 4' SIDEWALK CAN NOT BE PROVIDED DUE TO SITE CONSTRAINTS, A MINIMUM 3' SIDEWALK WITH 5'X 5' PASSING AREAS AT INTERVALS NOT TO EXCEED 200 FT IS REQUIRED.
3. LANDINGS SHALL BE 5'X 5' MINIMUM WITH A MAXIMUM 2% SLOPE IN ANY DIRECTION.
4. MANEUVERING SPACE AT THE BOTTOM OF CURB RAMPS SHALL BE A MINIMUM OF 4'X 4' WHOLLY CONTAINED WITHIN THE CROSSWALK AND WHOLLY OUTSIDE THE PARALLEL VEHICULAR TRAVEL PATH.
5. MAXIMUM ALLOWABLE CROSS SLOPE ON SIDEWALK AND RAMP SURFACES IS 2%.
6. CURB RAMPS WITH RETURNED CURBS MAY BE USED ONLY WHERE PEDESTRIANS WOULD NOT NORMALLY WALK ACROSS THE RAMP. OTHERWISE, FLARED SIDES SHALL BE PROVIDED.
7. ALL CONCRETE SURFACES SHALL RECEIVE A LIGHT BROOM FINISH UNLESS NOTED OTHERWISE IN THE PLANS.
8. RAMP TEXTURES MUST CONSIST OF TRUNCATED DOMED SURFACES. TEXTURES ARE REQUIRED TO BE DETECTABLE UNDERFOOT. SURFACES THAT WOULD ALLOW WATER TO ACCUMULATE ARE PROHIBITED.
9. ADDITIONAL INFORMATION ON CURB RAMP LOCATION, DESIGN, LIGHT REFLECTIVE VALUE AND TEXTURE MAY BE FOUND IN THE CURRENT EDITION OF THE TEXAS ACCESSIBILITY STANDARDS (TAS) PREPARED AND ADMINISTERED BY THE TEXAS DEPARTMENT OF LICENSING AND REGULATION (TDLR).
10. CROSSWALK DIMENSIONS, CROSSWALK MARKINGS AND STOP BAR LOCATIONS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS. AT INTERSECTIONS WHERE CROSSWALK MARKINGS ARE NOT REQUIRED, RAMPS SHALL BE ALIGNED WITH THEORETICAL CROSSWALKS, OR AS DIRECTED BY THE ENGINEER.
11. EXISTING FEATURES THAT COMPLY WITH TAS MAY REMAIN IN PLACE UNLESS OTHERWISE SHOWN ON THE PLANS.
12. HANDRAILS ARE NOT REQUIRED ON CURB RAMPS. CURB RAMPS SHALL BE PROVIDED WHEREVER ON ACCESSIBLE ROUTE CROSSES (PENETRATES) A CURB.
13. SHADED AREAS INDICATE LOCATIONS OF DETECTABLE WARNINGS. (COLOR / LIGHT REFLECTIVE VALUE AND TEXTURE CONTRAST).



TYPE 1
PERPENDICULAR CURB RAMP



TYPE 2
PERPENDICULAR CURB RAMP

NOTE:
AT EXISTING RAMP REPLACEMENTS, MATCH EXISTING CONCRETE TEXTURES AND COLORS.

TYP. SIDEWALK RAMP DETAILS

SCALE: NTS

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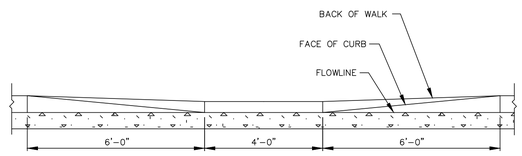
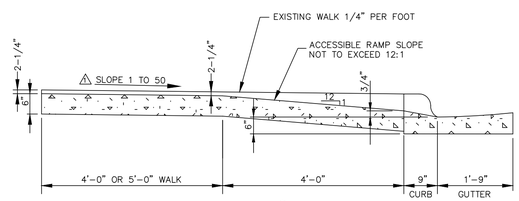


ELEVATION
NTS

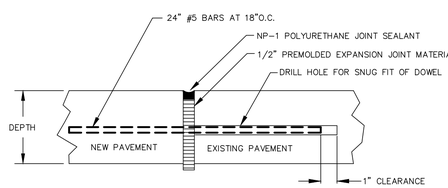


TYPICAL RAMP ℄ SECTION
NTS

RAMP @ CURB ELEV. & SECTION

SCALE: NTS

5
8



PVAING TIE-IN JOINT

SCALE: NTS

6
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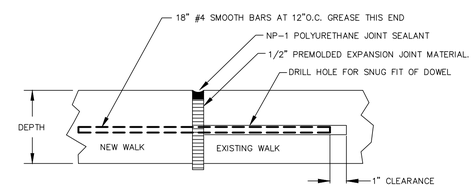

SIDEWALK TIE-IN JOINT

SCALE: NTS

7
8

The seal appearing on this document was authorized by Gary T. Oatman, P.E. - Registration 52717 on Dec.7, 2021. Alteration of a sealed document without proper notification to the responsible engineer is an offense under the Texas Engineering Practice Act.

This authorization is for Revision 0 only.

STATE OF TEXAS
GARY T. OATMAN
52717
LICENSED
PROFESSIONAL ENGINEER
12/7/21

GTO ENGINEERING SERVICES
FIRM REGISTRATION NO. F–4316

LETTER	DATE	DESCRIPTION	REV.BY	CHK.BY
SUPERSEDES				

GTO ENGINEERING SERVICES
2406 KELL BLVD. * WICHITA FALLS * TEXAS

MIDWESTERN STATE UNIVERSITY
TAFT BLVD., WICHITA FALLS, TEXAS

UTILITY TUNNEL REPAIRS
TUNNEL B - EAST OF DANIEL BUILDING

PAVING, CURB & SIDEWALK DETAILS

DRAWN BY	DATE	DRAWING NUMBER	REVISION	SHEET NO.
GTO	12/7/21	219027	0	S8
CHECKED BY	SCALE			
GTO	NOTED			