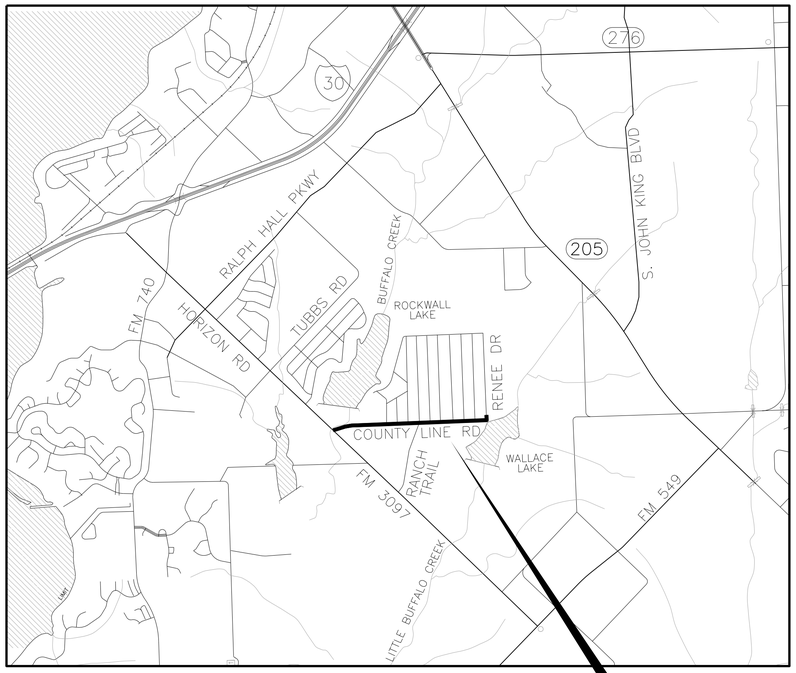
COUNTY LINE ROAD RECONSTRUCTION
FROM FM 3097 TO RENEE DR.

CITY OF ROCKWALL
"THE NEW HORIZON"

CIP 2015-009



VICINITY MAP
N.T.S.

JIM PRUITT * MAYOR

BENNIE DANIELS

JOHN HOHENSHELT

KEVIN FOWLER – MAYOR PRO TEM

TRACE JOHANNESEN

DANA MACALIK

PATRICK TROWBRIDGE

RICK CROWLEY
CITY MANAGER

DESIGN SPEED = 35mph

AUGUST 2018

ROK15508

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2201
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FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING
FIRM F-2144

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

STATE OF TEXAS
ALAN D. HENDRIX
69798
REGISTERED
PROFESSIONAL ENGINEER
8/27/18

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED
PROFESSIONAL ENGINEER
8/27/18

STATE OF TEXAS
AMANDA R. POWERS
110205
LICENSED
PROFESSIONAL ENGINEER
8/24/2018

STATE OF TEXAS
MISTY THOMISON
110346
LICENSED
PROFESSIONAL ENGINEER
08/24/2018

MicroStation V8 User: chm Office: Dallas
ROK15508 N:\F\Drawings\cv-trt-gn-cover.sht
Level: Default Color: 1 Weight: 0 Style: 0
Plot Scale: 800.0000 '/ in. Model: Default
Date: Aug. 24, 2018 - 08:48:01 AM Project: Freese and Nichols, Inc.

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TYP-02	7	TYPICAL SECTIONS AND LEGEND
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This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS · ALAN D. HENDRIX · 89798 · LICENSED PROFESSIONAL ENGINEER · 9/7/2018

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CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
SHEET INDEX

NO.	ISSUES	BY	DATE
1	ISSUED FOR CONSTRUCTION	ADH	9/24/18
2	ADDENDUM 2	ADH	9/7/18
1	ADDENDUM 1	BJH	8/31/18

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale. 0 1"

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-gn-INDEX01.sht

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

SHEET GN-1
SEQ. 2

GENERAL ITEMS:

1. All construction shall conform to the requirements of the "Standard Specifications for Public Works Construction" by the North Texas Central Council of Governments, 4th edition amended by the City of Rockwall, unless otherwise noted in the plans and specifications. The CONTRACTOR shall reference the latest City of Rockwall standard details provided in the Rockwall Public Works Department, Engineering Divisions "Standards of Design and Construction" manual for details not provided in these plans. The CONTRACTOR shall possess one set of the NCTCOG Standard Specifications and Details and the City of Rockwall's "Standards of Design and Construction" manual on the project site at all times

2. The CONTRACTOR shall protect existing property monumentation and primary control. Any such points which the CONTRACTOR believes will be destroyed shall have offset points established by the CONTRACTOR prior to construction. Any monumentation destroyed by the CONTRACTOR shall be re-established at CONTRACTOR's expense by a registered professional land surveyor.

3. Any item called out for on the plans that does not have a specific bid item shall be subsidiary to the project and no separate pay shall be given.

4. The CONTRACTOR is solely responsible for performing all construction layouts from the site layout control points, and from the dimensions and centerlines shown. The CONTRACTOR must notify the engineer of any discrepancies before proceeding with the work.

5. CONTRACTOR shall take all available precautions to control dust. CONTRACTOR shall control dust by sprinkling water (no separate pay), or as approved by the City and engineer.

6. CONTRACTOR shall video record and provide a copy to the construction inspector of the entire job site before construction starts. Video record of the site will be used to dispute discrepancies of any preexisting conditions of the project site before construction begins.

7. It is the CONTRACTOR's responsibility to maintain a neat and accurate redline record of construction for the City's records. The CONTRACTOR shall provide the City full size reproducible markups that record all construction deviating from the plans. These redline construction plan records shall be submitted to the City at the end of the job and sign by the CONTRACTOR. These records must be received or the City will not release final retainage or acceptance on the job

EROSION CONTROL & VEGETATION:

1. The CONTRACTOR or developer shall be responsible, as the entity exercising operational control, for all permitting as required by the Environmental Protection Agency (EPA) and the Texas Commission on Environmental Quality (TCEQ). This includes, but is not limited to, preparation of the Storm Water Pollution Prevention Plan (SWPPP), the Construction Site Notice (CSN), the Notice of Intent (NOI), the Notice of Termination (NOT) and any Notice of Change (NOC) and is required to pay all associated fees

2. Erosion control devices as shown on the erosion control plan for the project shall be installed prior to the start of land disturbing activities.

3. All erosion control devices are to be installed in accordance with the approved plans, specifications and Storm Water Pollution Prevention Plan (SWPPP) for the project. Erosion control devices shall be placed and in working order prior to start of construction. Changes are to be reviewed by the design engineer and the City of Rockwall prior to implementation.

4. If the Erosion Control Plans and Storm Water Pollution Prevention Plan (SWPPP) as approved cannot appropriately control erosion and off-site sedimentation from the project, the erosion control plan and/or the SWPPP is required to be revised and any changes reported to the Texas Commission on Environmental Quality (TCEQ), when applicable.

5. All erosion control devices shall be inspected weekly by the CONTRACTOR and after all major rain events, or more frequently as dictated in the project Storm Water Pollution Prevention Plan (SWPPP). CONTRACTOR shall provide copies of inspection$^{5}/_{32}$s reports to the engineering inspection after each inspection.

6. The CONTRACTOR shall not dispose of waste and any materials into streams, waterways or floodplains. The CONTRACTOR shall secure all excavation at the end of each day and dispose of all excess materials. Disposal site shall be documented and provided to the City.

7. CONTRACTOR shall grade ground and ditches disturbed by construction to prevent ponding of storm water runoff. Grading shall be subsidiary to the appropriate bid item for unclassified street and unclassified channel excavation. Topsoil shall be stockpiled and replaced to a minimum depth of 6-inches and disc harrowed to a minimum depth of 4-inches (no pay item). CONTRACTOR shall replace grass areas disturbed by construction activities with solid sod. Sodded areas shall be watered and maintained until established.

8. The CONTRACTOR shall provide 4 inches of top soil in all parkways that are to be sodded. Top soil shall be approved by the City in writing. Topsoil shall be subsidiary to placement of grass/sod.

9. All areas outside pavement disturbed by construction activities shall have grass sod established immediately. Sod shall match existing yard type. Payment shall be made under the appropriate bid schedule item. Areas disturbed outside the R.O.W. or limits of construction shall have grass sod established immediately at the CONTRACTOR's expense.

FRANCHISE UTILITY NOTES:

1. Reasonable effort has been made to show the location of all known underground franchise utilities and service lines. However, the owner assumes no responsibility for failure to show any or all existing subsurface franchise utilities or utility line, or to show them in their exact location. The CONTRACTOR shall be responsible for the protection of all existing utilities, service lines or the like, which are exposed by the construction operation.
2. Existing franchise utilities shown in these plans reflect approximate locations prior to relocations. Some relocations have occurred with utility pole, gas, phone and cable utilities. The CONTRACTOR shall contact Dig-Tess to locate existing and new utilities not shown in these plans.
3. CONTRACTOR shall support utilities where crossing with proposed storm sewer, water lines and sanitary sewers. Method of support shall be provided to the owner 24 hours prior to crossing.
4. The location off all Atmos gas lines, AT&T, Charter and TXU/Oncor electric underground phone lines in these plans are approximate. The CONTRACTOR shall contact Atmos, TXU/Oncor, AT&T and Charter to verify location and depth of all existing gas, electric and phone lines prior to construction.
5. CONTRACTOR shall have and pay for TXU/Oncor, AT&T and/or Charter support and protect all power, guy wires or cable and/or light poles in the work area.

Any damage incurred to existing franchise utilities, appurtenances, utility poles, light standards, etc. By construction related activities shall be the sole responsibility of the CONTRACTOR

TRAFFIC CONTROL:

1. A suggested traffic control sequence plan is provided in the plan set. At a minimum the CONTRACTOR will be required to use the suggested sequence plan. If the CONTRACTOR choses to change the traffic control sequencing, a traffic control sequencing plan and traffic control sheets of each phase will have to be provided for review and approval by the City. All shall be signed and sealed by a Registered Professional Engineer with the State of Texas.
2. Pedestrian and vehicular traffic flow, safety and access shall be maintained during all phases of construction. Barricading and traffic control during construction shall be the responsibility of the CONTRACTOR and shall conform to the "Texas Manual on Uniform Traffic Control Devices ", latest edition, Part IV in particular. Traffic flow and access shall be maintained during all phases of construction unless otherwise noted on the traffic control plan. The CONTRACTOR is responsible for providing traffic safety measures for work on the project. The CONTRACTOR shall assume full responsibility for public safety in the construction area during the duration of construction activities.
3. The CONTRACTOR shall furnish, install, maintain and remove all necessary traffic control devices in conformance with the Texas Manual on Uniform Traffic Control Devices (Part 6).The CONTRACTOR shall provide access to properties at all times during each phase of construction to all local residents, businesses, mail service, trash pick-up and emergency services.
4. No traffic signs shall be taken down without permission from the City. CONTRACTOR needing to move and replace traffic sign for construction purposes should be paid for under traffic control bid item.
5. CONTRACTOR will furnish and install all signage in accordance with TMUTCD guidelines. Prior to installation of signage, CONTRACTOR shall stake locations and receive approval from City on locations. All signage that is removed by the CONTRACTOR shall be saved and delivered to municipal service center, streets division. All replaced signs shall be new. See City requirements for sign materials
6. Traffic Control shall be paid per TxDOT Item 520 in addtion temp drainage structures, temp drive access, and temp pavement shall be considered subsidiary to traffic control bid item.

MAILBOXES, MAIL SERVICE, AND TRASH SERVICE NOTES:

1. Existing mailboxes in conflict with construction shall be taken out of service, removed and replace to the same or better condition and placed in a location approved by the city/property owner. Photographs of the mailbox shall be taken with the address shown, shall be provided to the city prior to being removed.
2. Temporary mailbox shall be provided and maintained throughout the project where existing mail boxes are being removed. Addresses shall be provided on all temporary mail boxes.
3. Payment for removal and replacement of existing mailbox will be paid for under the appropriate bid item. Brick mailbox shall match existing brick.
4. Trash service shall be maintained throughout the duration of construction. On collection days the contractor shall move trash and recycling receptacles to location along street to be collected and moved back to original location at the end of the day. (No Separate Pay)

FENCES, TREES, LANDSCAPING, AND IRRIGATION NOTES:

1. The removal, replacement or reconstruction of any fence for the convenience of construction shall be at the CONTRACTOR's expense (no separate pay). New materials shall match existing fences. All wood fences shall be replaced with new cedar with the post matching City requirements.
2. Temporary fencing shall be required where there is evidence of livestock and where damaged or removed fences are not to be replaced by the end of the same work day.
3. The removal and replacement of all shrubs, plants, trees, etc. For the convenience of construction shall be at the CONTRACTOR's expense (no separate pay). New shrubs, tree, etc. shall be equal to or better than existing ones.
4. All shrubs, plants, trees, etc. must be approved by the City before removal.
5. The CONTRACTOR shall locate and record existing irrigation systems prior to construction. If irrigations systems are damaged during construction the CONTRACTOR shall repair to same or better condition. An irrigator licensed in the state of Texas shall repair all damaged caused by construction. CONTRACTOR shall coordinate any irrigation work with the City of Rockwall and property owner's representatives.

FENCES, TREES, LANDSCAPING, AND IRRIGATION NOTES CONT:

6. CONTRACTOR shall replace any trees removed or destroyed that are not shown in these plans to be removed or shall pay fair market value to the owner as determined by the owner. (No Separate Pay).
7. All work to repair, replace, and/or modify existing irrigation system and landscaping is consider subsidiary to the project removal items.

UTILITY NOTES:

1. Reasonable effort has been made to show the location and type of all known City of Rockwall underground wet utilities and service lines. However, the City of Rockwall assumes no responsibility for failure to show any or all existing City of Rockwall underground wet utilities and service lines, or to show them in their exact location. The CONTRACTOR shall be responsible for the protection of all existing utilities, service lines or the like, which are exposed by the construction operation.
2. Bidders shall make any investigation of existing subsurface conditions as deemed necessary at no expense to the City of Rockwall. Neither the City of Rockwall nor the engineer will be responsible in any way for additional compensation for excavation work performed under this contract due to the CONTRACTOR$^{5}/_{32}$s assumptions.
3. CONTRACTOR shall adjust all City of Rockwall utilities to the final grades.
4. CONTRACTOR shall be responsible for the protection of all existing service lines crossed or exposed by construction operations. Where existing service lines are cut, broken or damaged, the CONTRACTOR shall immediately replace the service line with same type of original construction or better.
5. The CONTRACTOR shall excavate and field locate the horizontal and vertical location of existing utility crossing locations utilizing provided project control. The CONTRACTOR shall immediately notify the engineer of any discrepancies identified between the CONTRACTORs field verified existing utility location and proposed location of utilities for the project.
6. The CONTRACTOR shall abide by all applicable federal, state, and local laws governing excavation. The CONTRACTOR shall provide detailed plans and specifications for trench safety systems that comply with applicable laws governing excavation. These plans shall be sealed by an engineer experienced in the design of trench safety systems, registered in the state of Texas. The CONTRACTOR shall submit completed trench safety plan to the engineer and City prior to commencing work. The CONTRACTOR shall be solely responsible for all aspects of work related to excavations.

WATER LINE NOTES:

1. The CONTRACTOR shall maintain existing water service at all times during construction.
2. Proposed water lines shall be AWWA C-900 PVC, DR 14 PC 305 (blue in color) unless otherwise shown on water plan and profiles sheets. Proposed water lines shall be constructed with minimum cover of 4 feet. Proposed water line embedment shall be NCTCOG Class 'B-3' as amended by the City of Rockwall's public works standards of design and construction manual.
3. CONTRACTOR shall coordinate the shutting down of all water lines with the City of Rockwall, public works, water division. The City shall operate all water valves.
4. CONTRACTOR shall furnish and install gasket on water lines between all dissimilar metals and at valves (both existing and proposed).
5. All fire hydrants and valves removed and salvaged shall be returned to the City of Rockwall municipal service center.
6. Blue EMS pads shall be installed at every change in direction, valve and service tap on the proposed water line and every 250'.
7. CONTRACTOR to install new meter boxes and all fittings except for the meters per each service complete including connection to the main line.
8. Existing meter and meter boxes, and valve stem and covers not specifically called to be relocated shall be adjusted to match final grades (no pay item). Any meter in pavement shall have a traffic rated lid.

WASTEWATER LINE NOTES:

1. The CONTRACTOR shall maintain existing wastewater service at all times during construction.
2. Proposed wastewater line embedment shall be NCTCOG Class 'B-2' as amended by the City of Rockwall's public works standard design and construction manual.
3. Green EMS pads shall be installed at every manhole, clean out and service lateral on proposed wastewater lines.
4. All existing wastewater services shall be transferred from wastewater lines being abandoned to proposed wastewater lines. Transferring wastewater services shall include double clean outs at the property lines, caps, tees, wyes, plugs and connection. Payment for transferring wastewater services shall be paid per each, under the appropriate bid schedule item.
5. CONTRACTOR shall CCTV all existing wastewater lines that are to be abandoned to ensure that all laterals are accounted for and transferred to proposed wastewater lines. (no separate pay)
6. Existing manholes and cleanouts not specifically called to be relocated shall be adjusted to match final grades (no pay item).

DEMOLITION, REMOVAL, DISPOSAL, AND EXCAVATION NOTES:

1. CONTRACTOR shall remove and properly dispose of all existing concrete and HMAC pavement outside of the City limits as required for construction of the project. All cost shall be included in the appropriate item in the bid schedule.Payments for removal and replacement of street, driveway and sidewalk pavement shall be based on plan quantity and no adjustments will be made unless approved in writing by the City engineer.
2. All pavements to be removed and replaced shall be saw cut to full depth along neat lines shown in the plans. Proposed concrete pavement shall be constructed with longitudinal butt construction joints at all connections to existing concrete pavement.
3. The CONTRACTOR shall remove from the project area all surplus material. This work shall be incidental and not a separate pay item. Surplus materials from excavation include dirt, trash, rock measuring greater than 6" in the largest dimension, etc. Shall be properly disposed of at a site acceptable to the City of Rockwall if within the City limits. No excess excavated material shall be deposited in low areas or along natural drainage ways without written permission from the affected property owner and the City of Rockwall. If the CONTRACTOR places excess materials in these areas without written permission, he will be responsible for all damages resulting from such fill and he shall remove the material at his own cost.
4. All excavation on the project is unclassified. If soil borings were conducted they are provided in the bid/contract documents.

PAVING:

1. All paving roadway sections thickness, strength, reinforcement, joint type, joint spacing and subgrade treatment shall match the typical sections and details called out in the plans. If not called out on the plans all concrete paving shall conform to the minimum requirements of table 2.3 in the Standards of Design and Construction.
2. Reinforcing steel shall be tied (100%). Reinforcing steel shall be set on plastic chairs. Bar laps shall be minimum 30 diameters. Sawed transverse dummy joints shall be spaced every 15 feet or 1.25 time longitudinal butt joint spacing whichever is less. Sawing shall occur within 5 to 12 hours after the pour, including sealing. Otherwise, the section shall be removed and longitudinal butt joint constructed.
3. All proposed HMAC street pavement shall consist of 4 inches of Type B (Base) with 2 inches of Type D (Surface) on top of 6" flex base (if not specified in the plans)
4. No sand shall be allowed under any paving.
5. Concrete mix design shall be submitted to the City for review and approval prior to placement.
6. Fly ash may be used in concrete pavement locations provided that the maximum cement reduction does not exceed 20% by weight per C.Y. of concrete. The fly ash replacement shall be 1.25 lbs per 1.0 lb cement reduction.
7. All curb and gutter shall be integral (monolithic) with the pavement.
8. All fill shall be compacted by sheep's foot roller to a minimum 95% standard proctor. Maximum loose lift for compaction shall be 8 inches. All lifts shall be tested for density by an independent laboratory approved by the City.
9. All proposed sidewalks shall include barrier free ramps at intersecting streets, alleys, etc. Barrier free ramps shall meet current City and ADA requirements and be approved by the Texas Department of Licensing and Regulation (TDLR).
10. Sidewalks shall be doweled into pavement where it abuts curbs and driveways. Expansion joint material shall be used at these locations (no pay item).
11. All connection of proposed concrete pavement to existing concrete pavement shall include a longitudinal butt joint as the load transfer device. Concrete saw cuts for all driveways and sidewalks shall be subsidiary to the appropriate bid item for driveway and sidewalk replacement. All longitudinal butt joints shall be clean, straight and smooth (not jagged in appearance)
12. There shall be no separate payment for subgrade preparation under driveway and sidewalk areas and all cost shall be included in the appropriate items of the bid schedule.
13. Cracks formed in concrete pavement shall be repaired or removed by the CONTRACTOR at the City's discretion.
14. Street intersections as required by the Engineer will be kept open to traffic by paving one-half width at a time.
15. Sidewalk retaining wall shall be stone faced and stone capped. CONTRACTOR to submit stone samples of color and type for City review.

DRAINAGE/STORM SEWER NOTES:

1. The CONTRACTOR shall maintain drainage at all times during construction. Ponding of water in streets, drives, trenches, etc. will not be allowed. Existing drainage ways shall not be blocked or removed unless explicitly stated in the plans or written approval is given by the City.
2. All structural concrete shall be Class "C" (4200 psi compressive strength at 28 days minimum 7.0 sack), air entrained, unless noted otherwise.
3. Proposed storm sewer embedment shall be NCTCOG Class 'B' as amended by the City of Rockwall's Public Works, Engineering Division Standards of Design and Construction Manual.
4. All storm pipe shall be reinforced concrete pipe (RCP), Class III, unless otherwise noted.

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of

FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON:

3/17/2021

City of Rockwall
Public Works Department
Engineering Division

APPROVED FOR CONSTRUCTION
Capital Improvement Project

City Engineer: _____ P.E.

Date: 11/26/2018

TEXAS REGISTERED ENGINEERING FIRM F-2144

FREESE AND NICHOLS, INC.
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web : www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

GENERAL NOTES

NO.	ISSUES	BY	DATE

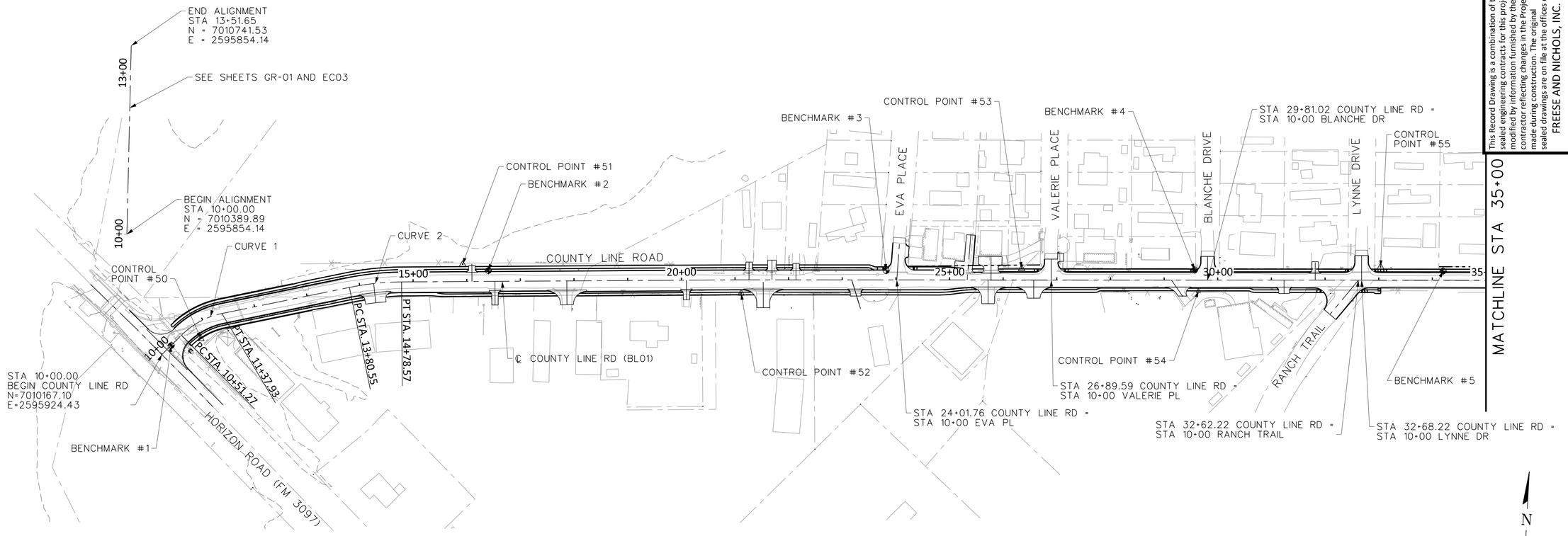
F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-gn-note01.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET GN-2
SEQ. 3

MicroStation V8 User: 02336Office: Dallas
ROK15508 - N:\IP\Drawings\cv-trt-gn-note01.sht
Plot Date: 27 AUG 2018 - 12:05:35 PM Model: Default
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Date: Aug. 27, 2018 - 12:05:35 PM

Office: Dallas ROK15508 Date: Aug. 27, 2018 - 12:05:35 PM User: 02336File: N:\IP\Drawings\cv-trt-gn-note01.sht



TEMPORARY BENCHMARKS			
NUMBER	NORTHING	EASTING	ELEVATION
1	7010184.49	2595941.56	490.62
2	7010337.74	2596529.22	499.21
3	7010354.94	2597270.61	532.17
4	7010369.14	2597845.49	555.23
5	7010377.85	2598308.68	548.55
6	7010390.19	2598859.75	546.10
7	7010406.85	2599467.39	527.19
8	7010414.60	2599923.45	514.10

CONTROL POINTS				
NUMBER	NORTHING	EASTING	ELEVATION	DESCRIPTION
50	7010198.52	2595996.47	488.82	5/8" CIRS
51	7010348.43	2596481.01	496.69	5/8" CIRS
52	7010306.12	2597001.22	517.07	5/8" CIRS
53	7010364.53	2597522.92	543.28	5/8" CIRS
54	7010330.15	2597853.25	554.61	5/8" CIRS
55	7010332.95	2598191.81	549.55	5/8" CIRS
56	7010350.13	2598704.83	543.56	5/8" CIRS
57	7010403.76	2599247.82	534.69	5/8" CIRS
58	7010390.40	2599890.42	514.37	5/8" CIRS

COORDINATES ARE REFERENCED TO THE STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM OF 1983 (NAD 83), NA2011 (EPOCH 2010.00), TEXAS NORTH CENTRAL ZONE (4202) AND ADJUSTED TO SURFACE VALUES USING THE TEXAS DEPARTMENT OF TRANSPORTATION SURFACE ADJUSTMENT FACTOR FOR ROCKWALL COUNTY (1.000146135).

CONTROL IS TIED TO THE CITY OF ROCKWALL CONTROL MONUMENT NETWORK. MONUMENTS #7 AND #18 WERE TIED USING THE TxDOT ROCKWALL COUNTY SCALE FACTOR. MONUMENT MAP IS AVAILABLE THROUGH THE CITY WEBSITE OR UPON REQUEST.

MONUMENT #7
N: 7,012,568.929
E: 2,590,513.630

MONUMENT #18
N: 7,005,448.214
E: 2,601,765.126

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

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Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

PROJECT LAYOUT HORIZONTAL CONTROL

NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
CHECKED BH
REVISED
FILE NAME cv-trt-pl-horz01.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET HZ-01
SEQ. 4

MicroStation V8 User: chm Office: Dallas
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Date/Plot: 26-2018 - 01:44:23 AM Project: Freese and Nichols, Inc.

1 DESCRIBE CHAIN BL01 (COUNTY LINE ROAD)

Chain BL01 contains:
BL1001 CUR BL01-1 CUR BL01-2 BL1002 BL1003 CUR BL01-3 BL1004

Beginning chain BL01 description

Point BL1001 N 7,010,167.1016 E 2,595,924.4341 Sta 10+00.00

Course from BL1001 to PC BL01-1 N 43° 58' 59.49" E Dist 51.2686

Curve Data

Curve BL01-1
P.I. Station = 10+95.85 N 7,010,236.0668 E 2,595,990.9940
Delta = 33° 06' 07.06" (RT)
Degree = 38° 11' 49.87"
Tangent = 44.5772
Length = 86.6607
Radius = 150.0000
External = 6.4836
Long Chord = 85.4605
Mid. Ord. = 6.2150
P.C. Station = 10+51.27 N 7,010,203.9916 E 2,595,960.0375
P.T. Station = 11+37.93 N 7,010,246.0300 E 2,596,034.4436
C.C. = N 7,010,099.8245 E 2,596,067.9690
Back = N 43° 58' 59.49" E
Ahead = N 77° 05' 06.54" E
Chord Bear = N 60° 32' 03.02" E

Course from PT BL01-1 to PC BL01-2 N 77° 05' 06.54" E Dist 242.6169

Curve Data

Curve BL01-2
P.I. Station = 14+29.72 N 7,010,311.2455 E 2,596,318.8509
Delta = 11° 13' 59.53" (RT)
Degree = 11° 27' 32.96"
Tangent = 49.1717
Length = 98.0282
Radius = 500.0000
External = 2.4120
Long Chord = 97.8713
Mid. Ord. = 2.4005
P.C. Station = 13+80.55 N 7,010,300.2555 E 2,596,270.9231
P.T. Station = 14+78.57 N 7,010,312.6885 E 2,596,368.0014
C.C. = N 7,009,812.9039 E 2,596,382.6744
Back = N 77° 05' 06.54" E
Ahead = N 88° 19' 06.08" E
Chord Bear = N 82° 42' 06.31" E

Course from PT BL01-2 to BL1002 N 88° 19' 06.08" E Dist 620.2556

Point BL1002 N 7,010,330.8906 E 2,596,987.9899 Sta 20+98.83

Course from BL1002 to BL1003 N 88° 42' 10.21" E Dist 1,168.6051

Point BL1003 N 7,010,357.3453 E 2,598,156.2955 Sta 32+67.44

Course from BL1003 to PC BL01-3 N 88° 42' 53.05" E Dist 1,592.0624

Curve Data

Curve BL01-3
P.I. Station = 50+08.63 N 7,010,396.4005 E 2,599,897.0485
Delta = 89° 39' 58.36" (LT)
Degree = 38° 11' 49.87"
Tangent = 149.1287
Length = 234.7456
Radius = 150.0000
External = 61.5168
Long Chord = 211.5132
Mid. Ord. = 43.6255
P.C. Station = 48+59.50 N 7,010,393.0556 E 2,599,747.9574
P.T. Station = 50+94.24 N 7,010,545.5087 E 2,599,894.5722
C.C. = N 7,010,543.0178 E 2,599,744.5928
Back = N 88° 42' 53.05" E
Ahead = N 0° 57' 05.31" W
Chord Bear = N 43° 52' 53.87" E

Course from PT BL01-3 to BL1004 N 0° 57' 05.31" W Dist 200.3209

Point BL1004 N 7,010,745.8019 E 2,599,891.2457 Sta 52+94.56

Ending chain BL01 description

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FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

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Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

ALIGNMENT DATA

FAN JOB NO.	ROK15508
DATE	08/2018
DESIGNED	AU
DRAWN	SI
REVISED	
CHECKED	BH
FILE NAME	cv-trt-pl-align01.sht

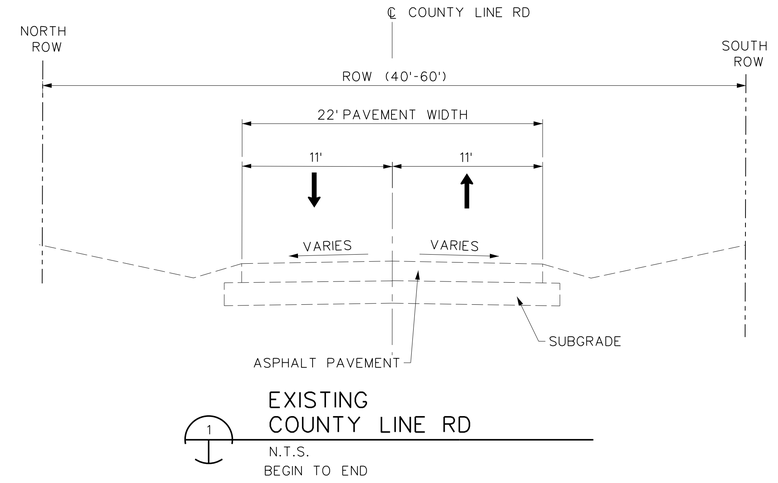
NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: PE, CFM
Date: 11/26/2018

SHEET AD-01
SEQ. 5

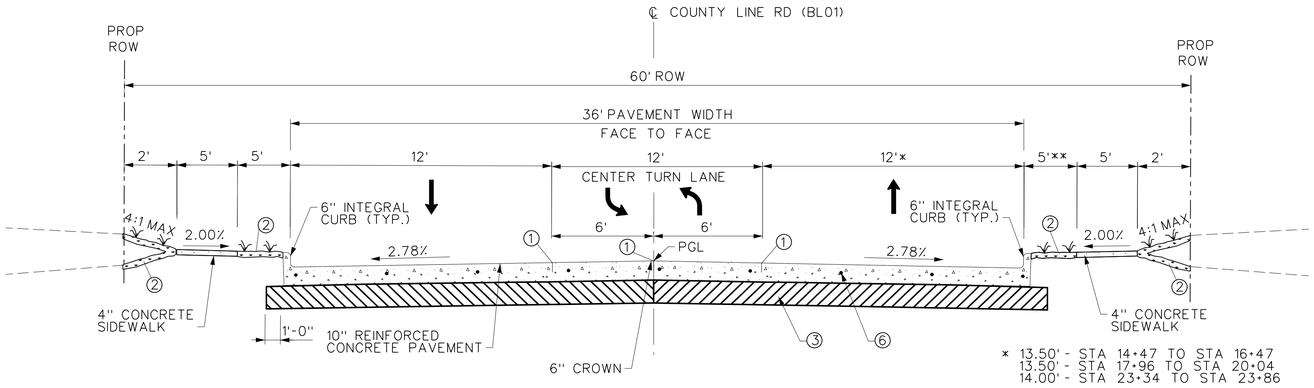
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Plot Date: Aug. 26, 2018 01:44:26 AM Model: Default
Plot Scale: 2.0000 '/ in. Project: Freese and Nichols, Inc.



1 EXISTING COUNTY LINE RD

N.T.S.

BEGIN TO END



* 13.50' - STA 14+47 TO STA 16+47
13.50' - STA 17+96 TO STA 20+04
14.00' - STA 23+34 TO STA 23+86

** 3.50' - STA 14+47 TO STA 16+47
3.50' - STA 17+96 TO STA 20+04
3.00' - STA 23+34 TO STA 23+86

2 36' F-F WITH CENTER TURN LANE

N.T.S.

STA 10+25 TO STA 10+63
STA 13+04 TO STA 24+77

① SAWED LONGITUDINAL CONTRACTION, OR CONSTRUCTION JOINT

② BLOCKSOD (MATCH EXIST TYPE ALL DISTURBED AREAS)

③ 8" THICKNESS OF LIME TREATED SUBGRADE, STABILIZED WITH A MINIMUM OF 8% OF LIME (BY DRY SOIL WEIGHT, 48#/SY)

④ PRIME COAT WITH APPLICATION RATE OF 0.2 GAL/SY

⑤ TACK COAT WITH APPLICATION RATE OF 0.1 GAL/SY

⑥ #4 BARS @ 18" O.C.E.W.

LEGEND:

	EXISTING	PROPOSED
PROPERTY LINE		
EASEMENT LINE		
BUILDING LINE		
FENCE		
EDGE OF PAVE		
TREE OR SHRUB		
SIGN	SIGN	
CONTROL POINT	CP#00	
ELECTRIC		
OVERHEAD	OHE	
OVERHEAD STREET LIGHT CONDUCTION	E	
UNDERGROUND	UE	
STREET LIGHT	LP	
POWER POLE	PP	
GUY WIRE	GUY	
GAS		
LINE	G	
METER	GM	
STORM DRAIN		
LINE		
INLET		
MANHOLE		
SANITARY SEWER		
LINE	SS	
MANHOLE		
CLEAN OUT		
TELEPHONE		
OVERHEAD	T	
UNDERGROUND	UT	
PEDESTAL	TEL	
MANHOLE	TMH	
WATER		
LINE	W	
FIRE HYDRANT	FH	
METER	WM	
VALVE	WV	
REDUCER		
SPRINKLER CONTROL BOX	SV	

NOTES:

1. ALL CONCRETE STREET PAVEMENT WILL BE PORTLAND CEMENT CONCRETE (PCC) AT 3,600 PSI(6.0 SACK MACHINE, 6.5 SACK HAND) WITH STEEL REINFORCEMENT TO BE NO. 4 BARS ON 18" CENTER EACH WAY.

2. ALL SIDEWALK CONCRETE WILL BE 4" THICK PORTLAND CEMENT CONCRETE (PCC) AT 3,000 PSI(5.5 SACK HAND) WITH STEEL REINFORCEMENT TO BE NO. 3 BARS ON 24" CENTER EACH WAY. WHERE SIDEWALK ADJACENT TO CURB, SIDEWALK TO BE LUGGED IN PER SHEET PD-01.

3. ALL DRIVEWAY CONCRETE WILL BE 6" THICK PORTLAND CEMENT CONCRETE (PCC) AT 3,600 PSI(6.5 SACK HAND) WITH STEEL REINFORCEMENT TO BE NO.3 BARS ON 24" CENTER EACH WAY.

4. CONTRACTOR TO CONSTRUCT CONCRETE RIPRAP FROM APPROXIMATELY STA 12+04 TO STA 12+43. ALL WORK SHALL BE OUTSIDE THE ORDINARY HIGH WATERMARK.

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUMFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

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Fax: (214) 217-2201
Web - www.freese.com

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
TYPICAL SECTIONS AND LEGEND

NO.	ISSUES	BY	DATE

FAN JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
CHECKED BH
REVISED
FILE NAME cv-trt-dt-typ01.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET TYP-01
SEQ. 6

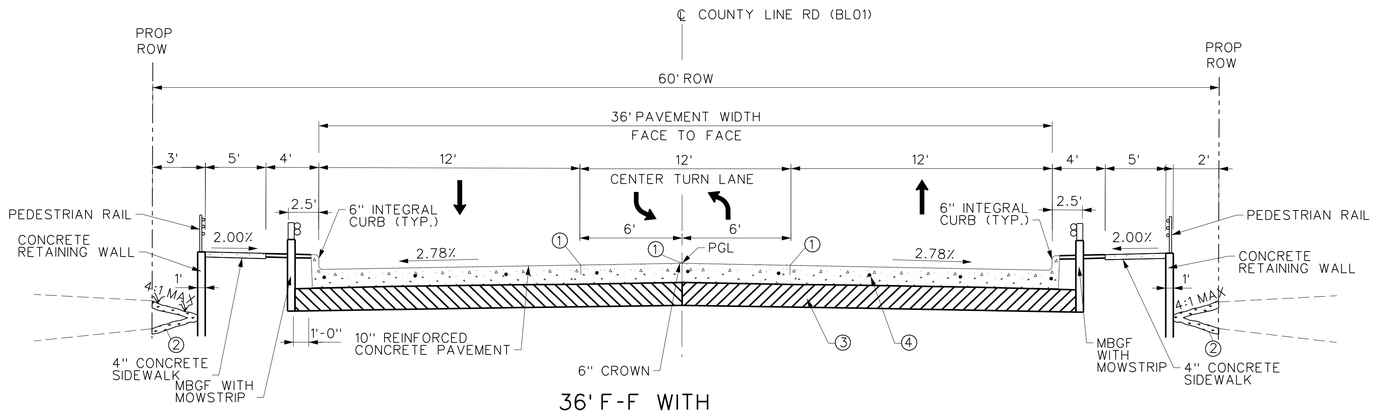
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Model: Default
Project: Freese and Nichols, Inc.

① SAWED LONGITUDINAL CONTRACTION, OR CONSTRUCTION JOINT

② BLOCKSOD (MATCH EXIST TYPE ALL DISTURBED AREAS)

③ 8" THICKNESS OF LIME TREATED SUBGRADE, STABILIZED WITH A MINIMUM OF 8% OF LIME (BY DRY SOIL WEIGHT, 48#/SY)

④ #4 BARS @ 18" O.C.E.W.



3 — 36' F-F WITH CENTER TURN LANE - 2 RETAINING WALLS

N.T.S.

STA 10+63 TO STA 12+45

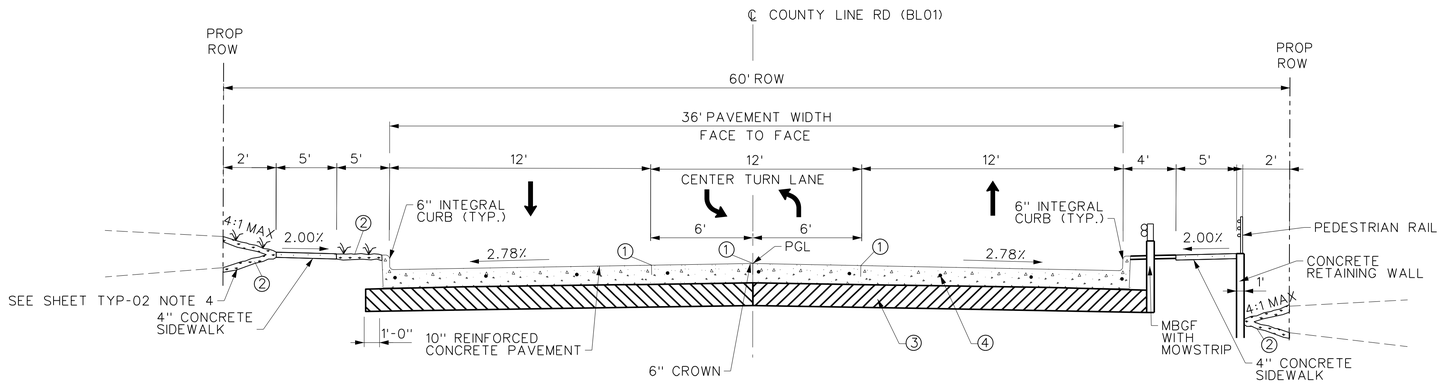
NOTES:

1. ALL CONCRETE STREET PAVEMENT WILL BE PORTLAND CEMENT CONCRETE (PCC) AT 3,600 PSI(6.0 SACK MACHINE, 6.5 SACK HAND) WITH STEEL REINFORCEMENT TO BE NO. 4 BARS ON 18" CENTER EACH WAY.

2. ALL SIDEWALK CONCRETE WILL BE 4" THICK PORTLAND CEMENT CONCRETE (PCC) AT 3,000 PSI(5.5 SACK HAND) WITH STEEL REINFORCEMENT TO BE NO. 3 BARS ON 24" CENTER EACH WAY. WHERE SIDEWALK ADJACENT TO CURB, SIDEWALK TO BE LUGGED IN PER SHEET PD-01.

3. ALL DRIVEWAY CONCRETE WILL BE 6" THICK PORTLAND CEMENT CONCRETE (PCC) AT 3,600 PSI(6.5 SACK HAND) WITH STEEL REINFORCEMENT TO BE NO.3 BARS ON 24" CENTER EACH WAY.

4. CONTRACTOR TO CONSTRUCT CONCRETE RIPRAP FROM APPROXIMATELY STA 12+04 TO STA 12+43. ALL WORK SHALL BE OUTSIDE THE ORDINARY HIGH WATERMARK.



4 — 36' F-F WITH CENTER TURN LANE & RETAINING WALL (SOUTH)

N.T.S.

STA 12+45 TO STA 13+04

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

BRANDON J. HUXFORD 117072 LICENSED PROFESSIONAL ENGINEER STATE OF TEXAS 8/27/18

FREESE NICHOLS
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Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

TYPICAL SECTIONS AND LEGEND

FAN JOB NO.	ROK15508
DATE	08/2018
DESIGNED	AU
DRAWN	SI
REVISED	
CHECKED	BH
FILE NAME	cv-trt-dt-typ02.sht

NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

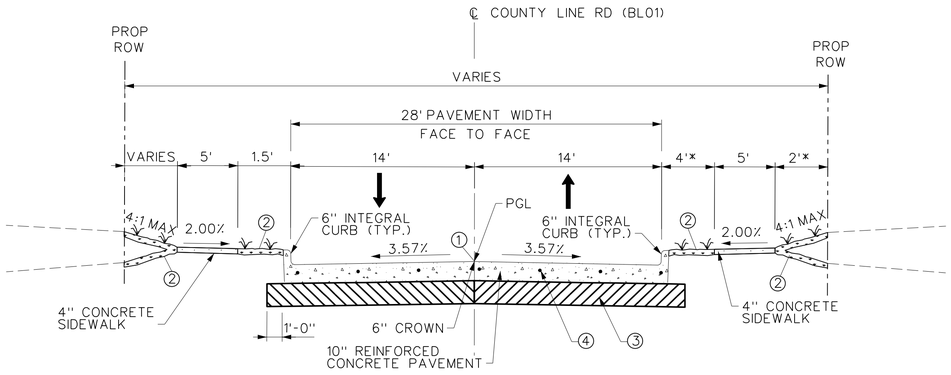
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City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

SHEET TYP-02

SEQ. 7

MicroStation V8 User: chm Office: Dallas
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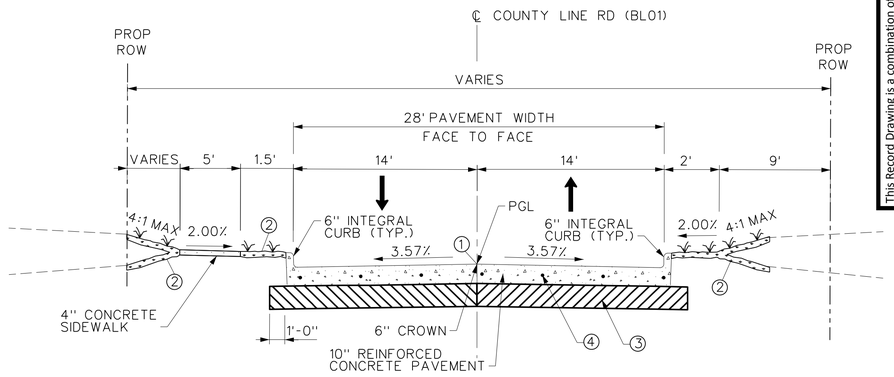


* 1' - STA 27+83 TO STA 30+56

5 **28' F-F WITH SIDEWALKS**

N.T.S.

STA 25+43 TO STA 33+04



6 **28' F-F WITH ONE SIDEWALK**

N.T.S.

STA 33+04 TO STA 45+00

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TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED
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8/27/18

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CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

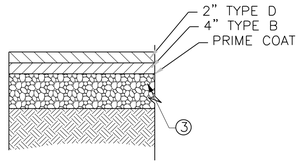
TYPICAL SECTIONS AND LEGEND

① SAWED LONGITUDINAL CONTRACTION, OR CONSTRUCTION JOINT

② BLOCKSOD (MATCH EXIST TYPE ALL DISTURBED AREAS)

③ 8" THICKNESS OF LIME TREATED SUBGRADE, STABILIZED WITH A MINIMUM OF 8% OF LIME (BY DRY SOIL WEIGHT, 48#/SY)

④ #4 BARS @ 18" O.C.E.W.



9 **ASPHALT PAVEMENT TRANSITION**

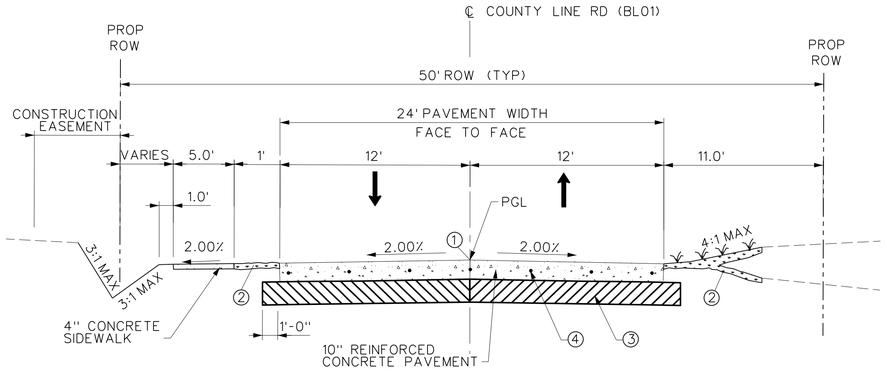
N.T.S.

NOTES:

1. ALL CONCRETE STREET PAVEMENT WILL BE PORTLAND CEMENT CONCRETE (PCC) AT 3,600 PSI(6.0 SACK MACHINE, 6.5 SACK HAND) WITH STEEL REINFORCEMENT TO BE NO. 4 BARS ON 18" CENTER EACH WAY.

2. ALL SIDEWALK CONCRETE WILL BE 4" THICK PORTLAND CEMENT CONCRETE (PCC) AT 3,000 PSI(5.5 SACK HAND) WITH STEEL REINFORCEMENT TO BE NO. 3 BARS ON 24" CENTER EACH WAY. WHERE SIDEWALK ADJACENT TO CURB, SIDEWALK TO BE LUGGED IN PER SHEET PP-01.

3. ALL DRIVEWAY CONCRETE WILL BE 6" THICK PORTLAND CEMENT CONCRETE (PCC) AT 3,600 PSI(6.5 SACK HAND) WITH STEEL REINFORCEMENT TO BE NO.3 BARS ON 24" CENTER EACH WAY.

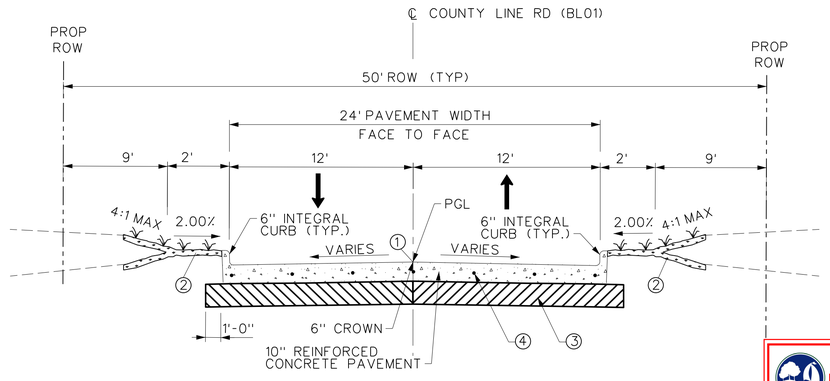


7 **24' F-F**

N.T.S.

STA 45+00 TO END*

*ASPHALT WILL BE INSTALLED STARTING AT STA 50+27



8 **24' F-F SIDESTREETS**

N.T.S.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], P.E., CFM
Date: 11/26/2018

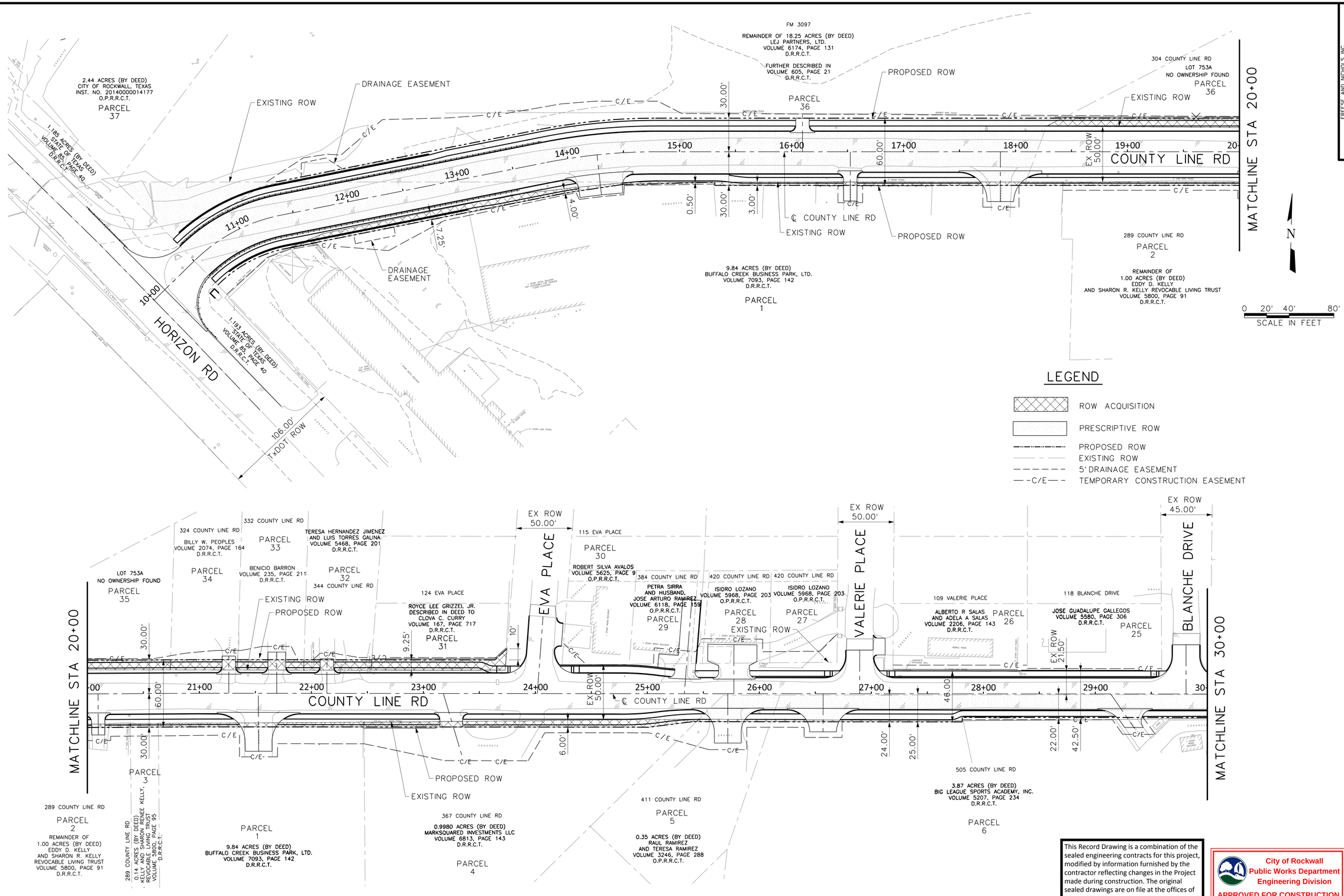
NO.	ISSUES	BY	DATE

F&N JOB NO ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-dt-typ03.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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SHEET TYP-03
SEQ. 8

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Plot Date: Aug. 26, 2018 - 01:44:30 AM



This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of

FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON:
3/17/2021

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED
PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
RIGHT OF WAY
BEGIN TO STA 30+00

NO.	ISSUES	BY	DATE

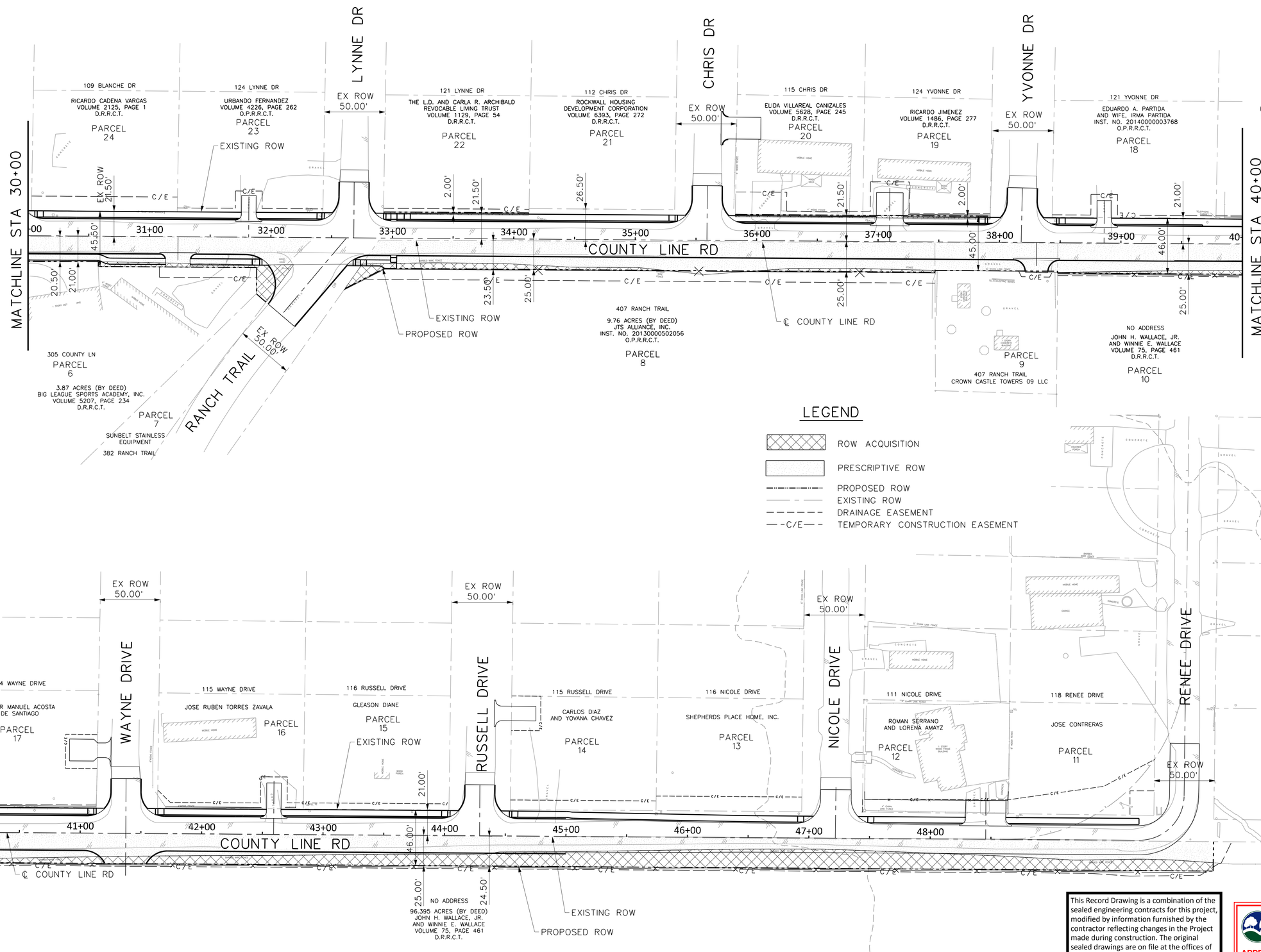
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

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DATE	08/2018
DESIGNED	AU
DRAWN	SI
REVISED	
CHECKED	BH
FILE NAME	cv-trt-pl-row01.sht

SHEET
ROW-01
SEQ.
9

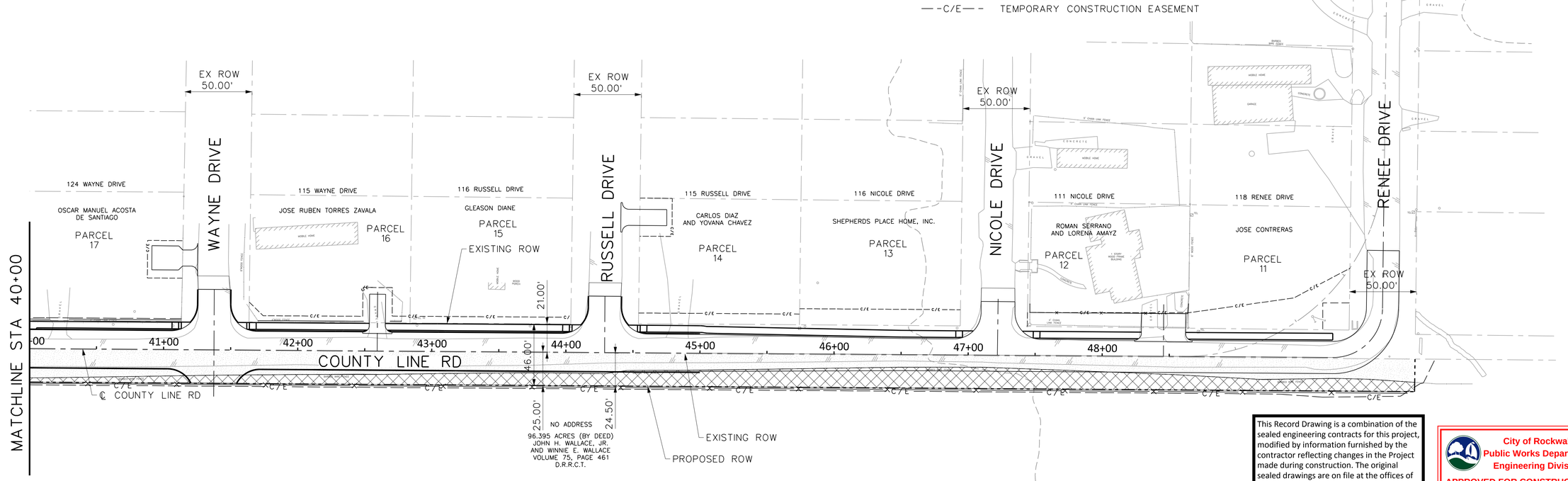
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Office: Dallas ROK15508 Date: Aug. 26, 2018 - 01:44:39 AM User: chm File: N:\IF\Drawings\cv-trt-pl-row01.sht



LEGEND

- ROW ACQUISITION
- PRESCRIPTIVE ROW
- PROPOSED ROW
- EXISTING ROW
- DRAINAGE EASEMENT
- C/E TEMPORARY CONSTRUCTION EASEMENT



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RECORD DRAWINGS PREPARED ON: 3/17/2021

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

TEXAS LICENSED PROFESSIONAL ENGINEER BRANDON J. HUXFORD 117072 8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

RIGHT OF WAY
STA 30+00 TO END

NO	ISSUES	BY	DATE	F&N JOB NO. ROK15508
				DATE 08/2018
				DESIGNED AU
				DRAWN SI
				REVISED
				CHECKED BH
				FILE NAME cv-trt-pl-row02.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET ROW-02
SEQ. 10

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Date: Aug. 26, 2018 - 01:44:43 AM

REMOVE AND REPLACE
580 LF BARBED WIRE FENCE

REMOVE 2720 SQ YD
ASPHALT PAVEMENT

FM 3097
REMAINDER OF 18.25 ACRES (BY DEED)
LEJ PARTNERS, LTD.
VOLUME 6174, PAGE 131
D.R.R.C.T.
FURTHER DESCRIBED IN
VOLUME 605, PAGE 21
D.R.R.C.T.

ADJUST WATER
VALVES TO GRADE

REMOVE AND REPLACE
157 LF BARBED WIRE FENCE

304 COUNTY LINE RD
LOT 753A
NO OWNERSHIP FOUND

2.44 ACRES (BY DEED)
CITY OF ROCKWALL, TEXAS
INST. NO. 20140000014177
O.P.R.R.C.T.

REMOVE 45 LF 24" RCP
2 HEADWALLS

REMOVE 385 LF MBGF

EXISTING ROW

℄ COUNTY LINE RD

PROPOSED ROW

EXISTING ROW

1.185 ACRES (BY DEED)
STATE OF TEXAS
VOLUME 85, PAGE 40
D.R.R.C.T.

HORIZON RD

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+

COUNTY LINE RD

MATCHLINE STA 20+00

REMOVE
FIRE
HYDRANT

REMOVE 45 LF
24" CMP

RELOCATE SIGN

REMOVE 15 SQ YD
CONCRETE PARKING LOT

EXISTING
ROW

ADJUST SANITARY SEWER
MANHOLE TO GRADE

REMOVE 43 LF
18" CMP

REMOVE 110 SQ YD
CONCRETE DRIVEWAY

9.84 ACRES (BY DEED)
BUFFALO CREEK BUSINESS PARK, LTD.
VOLUME 7093, PAGE 142
D.R.R.C.T.

PROPOSED ROW
REMOVE AND REPLACE
EX MAILBOX

REMOVE 25 LF
18" CMP

REMOVE 42 LF
18" CMP

REMOVE 48 SQ YD
CONCRETE DRIVEWAY

REMOVE AND REPLACE
110 LF WOOD FENCE

REMOVE
FIRE
HYDRANT

REMOVE 79 SQ YD
GRAVEL DRIVEWAY

ADJUST SANITARY
SEWER MANHOLE
TO GRADE

REMOVE AND REPLACE
157 LF HOG WIRE FENCE

REMOVE AND REPLACE
POWER POLE (BY OTHERS)

289 COUNTY LINE RD
REMAINDER OF
1.00 ACRES (BY DEED)
EDDY D. KELLY
AND SHARON R. KELLY REVOCABLE LIVING TRUST
VOLUME 5800, PAGE 91
D.R.R.C.T.

REMOVE EX RAILROAD TIES

REMOVE AND REPLACE
27 LF PIPE RAIL FENCE

REMOVE AND
RELOCATE SIGN

ADJUST MANHOLE TO GRADE

REMOVE AND REPLACE
AT&T CABINET (BY OTHERS)

REMOVE AND RELOCATE
SIGNAL COMPONENTS

REMOVE AND RELOCATE
TRAFFIC SIGNAL AND
SIGNAL COMPONENTS
(SEE TRAFFIC SIGNAL SHEETS
FOR MORE INFORMATION)

1.193 ACRES (BY DEED)
STATE OF TEXAS
VOLUME 85, PAGE 40
D.R.R.C.T.

0 20' 40' 80'
SCALE IN FEET

N

NOTES:

1. FRANCHISE UTILITIES TO BE RELOCATED BY OTHERS.

2. REMOVED FIRE HYDRANTS TO BE SALVAGED AND RETURNED TO CITY WATER DEPT AT:
1600 AIRPORT RD
ROCKWALL, TX 75087

3. REMOVAL OF ALL ITEMS REQUIRED TO CONSTRUCT THE PROJECT SHALL BE SUBSIDIARY TO THE PROJECT UNLESS OTHERWISE PAID FOR IN THE CONTRACT.

4. CONTRACTOR SHALL CONTACT PROPERTY OWNER LUIS TORRES AT 214-709-6551 REGARDING TREE REMOVAL ON PARCEL 32.

5. REMOVE AND REPLACE ALL EXISTING MAILBOZES EXCEPT FOR PARCEL 32. CONTRACTOR TO INSTALL TEMPORARY MAILBOX. OWNER WILL CONSTRUCT NEW/PERMANENT MAILBOX.

LEGEND

- REMOVE ASPH (PAV)
- REMOVE CONC (DRIVEWAY)
- REMOVE GRAVEL (DRIVEWAY)
- REMOVE TREE

EVA PLACE

REMOVE 126 SQ YD
CONCRETE DRIVEWAY

REMOVE AND REPLACE
POWER POLES (BY OTHERS)

REMOVE 108 SQ YD
CONCRETE DRIVEWAY

REMOVE 47 LF
15" PVC

REMOVE 37 LF
12" CMP

RELOCATE SIGN

REMOVE AND
REPLACE 130 LF
CHAIN LINK FENCE

118 BLANCHE DRIVE

JOSE GUADALUPE GALLEGOS
VOLUME 5580, PAGE 306
D.R.R.C.T.

REMOVE FIRE
HYDRANT AND ADJUST
WATER VALVE

BLANCHE DRIVE

MATCHLINE STA 30+00

TERESA HERNANDEZ JIMENEZ
AND LUIS TORRES GALINA
VOLUME 5468, PAGE 201
D.R.R.C.T.
344 COUNTY LINE RD

332 COUNTY LINE RD

JOYCE MAY WOODS
VOLUME 235, PAGE 211
D.R.R.C.T.

324 COUNTY LINE RD

REMOVE AND
REPLACE 135 LF
CHAIN LINK FENCE

304 COUNTY LINE RD
LOT 753A
NO OWNERSHIP FOUND

BILLY W. PEOPLES
VOLUME 2074, PAGE 164
D.R.R.C.T.

REMOVE AND
REPLACE 40 LF
BARBED WIRE FENCE

EXISTING ROW

REMOVE FIRE
HYDRANT

REMOVE 17 SQ YD
CONCRETE DRIVEWAY

REMOVE 40 LF
15" CMP

PROPOSED ROW

REMOVE 34 SQ YD
GRAVEL DRIVEWAY

REMOVE 20 LF
18" CMP

REMOVE 15 LF
18" CMP

REMOVE 46 SQ YD
GRAVEL DRIVEWAY

REMOVE
SIGN

SEE NOTE 4

SEE NOTE 5

124 EVA PLACE
ROYCE LEE GRIZZELL JR.
DESCRIBED IN DEED TO
CLOVA C. CURRY
VOLUME 167, PAGE 717
D.R.R.C.T.

RELOCATE SIGN

REMOVE 21 LF
18" CMP

JUAN CARLOS SILVA
115 EVA PLACE
VOLUME 5625, PAGE 9
O.P.R.R.C.T.

584 COUNTY LINE RD
PETRA SIRRA
AND HUSBAND,
JOSE ARTURO RAMIREZ
VOLUME 6118, PAGE 59
O.P.R.R.C.T.

420 COUNTY LINE RD
ISIDRO LOZANO
VOLUME 5968, PAGE 203
O.P.R.R.C.T.

420 COUNTY LINE RD
ISIDRO LOZANO
VOLUME 5968, PAGE 203
O.P.R.R.C.T.

REMOVE AND
REPLACE 45 LF
WOOD FENCE

RELOCATE
SIGN

109 VALERIE PLACE
ALBERTO R SALAS
AND ADELA A SALAS
VOLUME 2206, PAGE 143
D.R.R.C.T.

ADJUST WATER
VALVES TO GRADE

REMOVE FIRE
HYDRANT

℄ COUNTY LINE RD

00 21+00 22+00 23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+

COUNTY LINE RD

MATCHLINE STA 20+00

ADJUST SANITARY
SEWER MANHOLE
TO GRADE

REMOVE 55 LF
18" RCP

REMOVE 20 LF
18" CMP

REMOVE 105 SQ YD
CONCRETE DRIVEWAY

REMOVE 32 SQ YD
CONCRETE DRIVEWAY

289 COUNTY LINE RD
REMAINDER OF
1.00 ACRES (BY DEED)
EDDY D. KELLY
AND SHARON R. KELLY
REVOCABLE LIVING TRUST
VOLUME 5800, PAGE 91
D.R.R.C.T.

0.14 ACRES (BY DEED)
EDDY D. KELLY,
SHARON RENEE KELLY,
REVOCABLE LIVING TRUST
VOLUME 5800, PAGE 95
D.R.R.C.T.

REMOVE 32 SQ YD
GRAVEL DRIVEWAY

REMOVE 77 SQ YD
CONCRETE DRIVEWAY

9.84 ACRES (BY DEED)
BUFFALO CREEK BUSINESS PARK, LTD.
VOLUME 7093, PAGE 142
D.R.R.C.T.

REMOVE
STEEL
BOLLARD

REMOVE 25 LF
18" CMP

PROPOSED ROW

EXISTING ROW

REMOVE AND
REPLACE 70 LF
WOOD FENCE

367 COUNTY LINE RD
0.9980 ACRES (BY DEED)
MARKSQUARED INVESTMENTS LLC
VOLUME 6813, PAGE 143

REMOVE 20 LF
15" CMP

REMOVE 24 LF
18" CMP

REMOVE 236 SQ YD
CONCRETE DRIVEWAY

ADJUST SANITARY SEWER
MANHOLE TO GRADE

411 COUNTY LINE RD
0.35 ACRES (BY DEED)
RAUL RAMIREZ
AND TERESA RAMIREZ
VOLUME 3246, PAGE 288
O.P.R.R.C.T.

ADJUST MANHOLE
TO GRADE

REMOVE 40 LF
18" CMP

REMOVE 92 SQ YD
GRAVEL DRIVEWAY

RELOCATE SIGN

REMOVE AND REPLACE
POWER POLES
(BY OTHERS)

505 COUNTY LINE RD
3.87 ACRES (BY DEED)
BIG LEAGUE SPORTS ACADEMY, INC.
VOLUME 5207, PAGE 234
D.R.R.C.T.

REMOVE 3120 SQ YD
ASPHALT PAVEMENT

REMOVE AND
REPLACE 245 LF
WROUGHT FENCE

REMOVE 40 SQ YD
CONCRETE DRIVEWAY

ADJUST SANITARY
SEWER MANHOLE
TO GRADE

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FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON:
3/17/2021

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED
PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2299
Web - www.freese.com

CITY OF ROCKWALL
CIVIL
COUNTY LINE ROAD RECONSTRUCTION
REMOVAL PLAN
BEGIN TO STA 30+00

NO.	ISSUES	BY	DATE

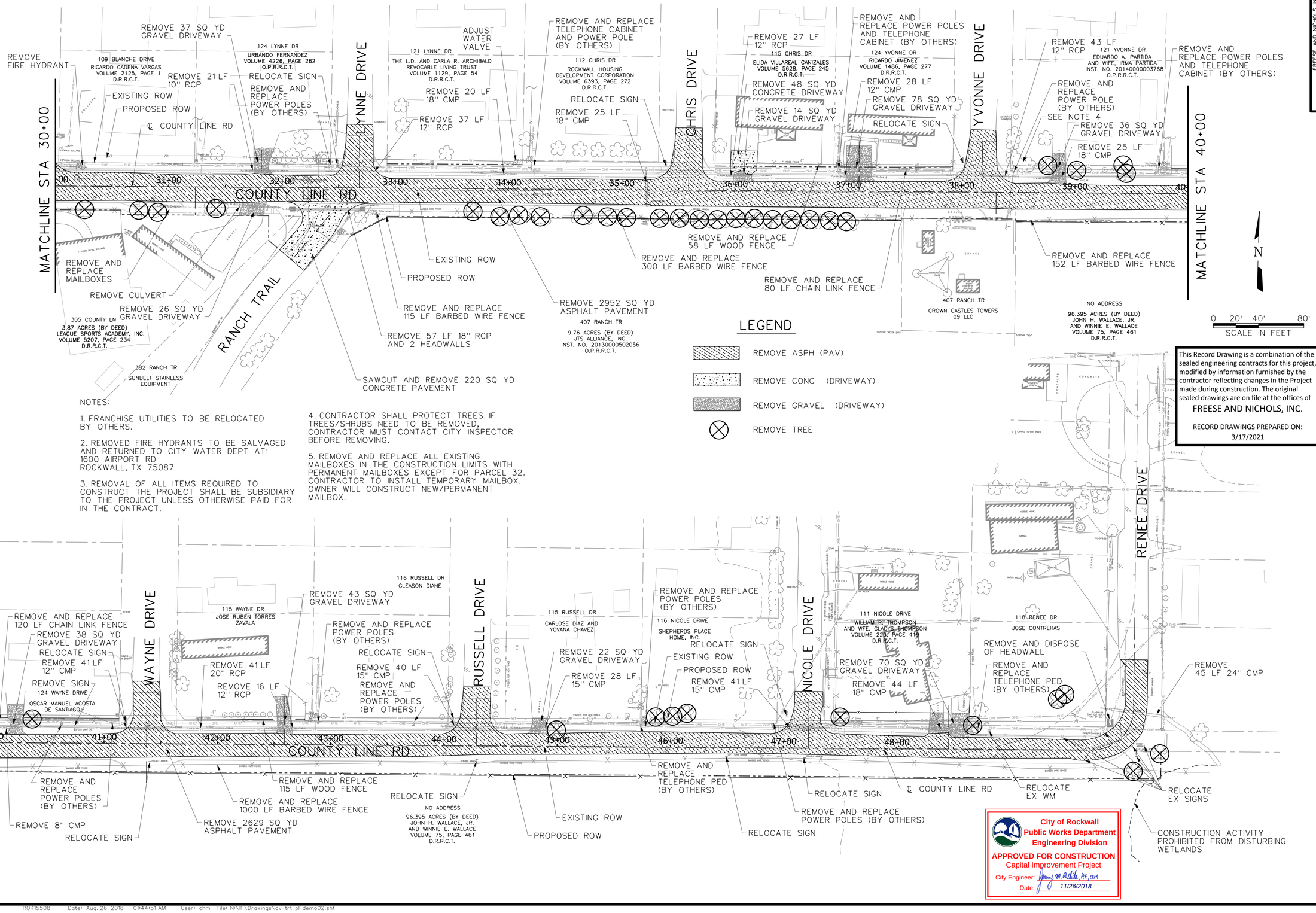
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

FNI JOB NO	ROK15508
DATE	08/2018
DESIGNED	AU
DRAWN	SI
REVISED	
CHECKED	BH
FILE NAME	cv-trt-pl-demo01.sht

SHEET
RP-01
SEQ.
11

MicroStation V8 User: chm Office: Dallas
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Office: Dallas ROK15508 Date: Aug. 26, 2018 - 01:44:48 AM User: chm File: N:\F\Drawings\cv-trt-pl-demo01.sht



LEGEND

- REMOVE ASPH (PAV)
- REMOVE CONC (DRIVEWAY)
- REMOVE GRAVEL (DRIVEWAY)
- REMOVE TREE

NOTES:

1. FRANCHISE UTILITIES TO BE RELOCATED BY OTHERS.
2. REMOVED FIRE HYDRANTS TO BE SALVAGED AND RETURNED TO CITY WATER DEPT AT:
   1600 AIRPORT RD
   ROCKWALL, TX 75087
3. REMOVAL OF ALL ITEMS REQUIRED TO CONSTRUCT THE PROJECT SHALL BE SUBSIDIARY TO THE PROJECT UNLESS OTHERWISE PAID FOR IN THE CONTRACT.
4. CONTRACTOR SHALL PROTECT TREES. IF TREES/SHRUBS NEED TO BE REMOVED, CONTRACTOR MUST CONTACT CITY INSPECTOR BEFORE REMOVING.
5. REMOVE AND REPLACE ALL EXISTING MAILBOXES IN THE CONSTRUCTION LIMITS WITH PERMANENT MAILBOXES EXCEPT FOR PARCEL 32. CONTRACTOR TO INSTALL TEMPORARY MAILBOX. OWNER WILL CONSTRUCT NEW/PERMANENT MAILBOX.

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RECORD DRAWINGS PREPARED ON: 3/17/2021

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____ P.E., CFM
Date: 11/26/2018

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED
PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
CIVIL
COUNTY LINE ROAD RECONSTRUCTION
REMOVAL PLAN
STA 30+00 TO END

NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pl-demo02.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET RP-02
SEQ. 12

MicroStation V8 User: chm Office: Dallas
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Plot Scale: 80.0000 '/ in. Project: Freese and Nichols Inc.
Plot Date: Aug. 26, 2018 - 01:44:51 AM

CONSTRUCTION SEQUENCING NARRATIVE

PHASE 1:

1. CONTRACTOR TO INSTALL TEMPORARY ASPHALT PAVEMENT AND TEMPORARY DRAINAGE STRUCTURES AS DEFINED IN PHASE 1 AND AS NEEDED.

2. CONTRACTOR TO SET UP CHANNELIZING DEVICES, SIGNS, AND BARRICADES PER PHASE 1 TRAFFIC CONTROL AND PHASE 1 DETOUR PLAN. SEE TCP (2-1)-12 FOR ADVANCED SIGN PLACEMENT AND FURTHER INFORMATION.

3. CONTRACTOR TO CONSTRUCT NORTH PORTION (24' WIDE) OF COUNTY LINE RD FROM STA 10+00 TO STA 32+00, INCLUDING SD-A FROM STA 12+50 TO END AS INDICATED. 1

4. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVES AND CROSS STREETS THROUGHOUT CONSTRUCTION. ALL CROSS STREETS SHALL BE CONSTRUCTED ONE HALF AT A TIME. CONTRACTOR SHALL COORDINATE WITH PROPERTY OWNERS WHEN RECONSTRUCTING DRIVEWAYS.

PHASE 2:

1. CONTRACTOR TO SET UP CHANNELIZING DEVICES, SIGNS, AND BARRICADES PER PHASE 2 TRAFFIC CONTROL AND PHASE 2 DETOUR PLAN. SEE TCP (2-1)-12 FOR ADVANCED SIGN PLACEMENT AND FURTHER INFORMATION.

2. CONTRACTOR TO CONSTRUCT SOUTH PORTION (12' WIDE) OF COUNTY LINE RD FROM STA 10+00 TO STA 32+00, INCLUDING CULVERT SD-C1, LATERALS CONNECTING TO SD-A AND SOUTH RETAINING WALL AS INDICATED. 1

3. CONTRACTOR TO REMOVE/RELOCATE EXISTING TRAFFIC SIGNAL EQUIPMENT ACCORDING TO TRAFFIC SIGNAL SHEETS.

4. CONTRACTOR TO REMOVE TEMPORARY ASPHALT PAVEMENT AND TEMPORARY DRAINAGE STRUCTURES AS DEFINED IN PHASE 1.

5. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVES AND CROSS STREETS THROUGHOUT CONSTRUCTION. ALL CROSS STREETS SHALL BE CONSTRUCTED ONE HALF AT A TIME. CONTRACTOR SHALL COORDINATE WITH PROPERTY OWNERS WHEN RECONSTRUCTING DRIVEWAYS.

PHASE 3:

1. CONTRACTOR TO INSTALL TEMPORARY ASPHALT PAVEMENT AND TEMPORARY DRAINAGE STRUCTURES AS DEFINED IN PHASE 3.

2. CONTRACTOR TO SET UP CHANNELIZING DEVICES, SIGNS, AND BARRICADES PER PHASE 3 TRAFFIC CONTROL AND PHASE 3 DETOUR PLAN. SEE TCP (2-1)-12 FOR ADVANCED SIGN PLACEMENT AND FURTHER INFORMATION.

3. CONTRACTOR TO CONSTRUCT SOUTH HALF (12' WIDE) OF COUNTY LINE RD FROM STA 32+00 TO END, INCLUDING SD-B.

4. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVES AND CROSS STREETS THROUGHOUT CONSTRUCTION. ALL CROSS STREETS SHALL BE CONSTRUCTED ONE HALF AT A TIME. CONTRACTOR SHALL COORDINATE WITH PROPERTY OWNERS WHEN RECONSTRUCTING DRIVEWAYS.

PHASE 4:

1. CONTRACTOR TO INSTALL TEMPORARY ASPHALT PAVEMENT AS DEFINED IN PHASE 4.

2. CONTRACTOR TO SET UP CHANNELIZING DEVICES, SIGNS, AND BARRICADES PER PHASE 4 TRAFFIC CONTROL AND PHASE 4 DETOUR PLAN. SEE TCP (2-1)-12 FOR ADVANCED SIGN PLACEMENT AND FURTHER INFORMATION.

3. CONTRACTOR TO CONSTRUCT NORTH HALF (12' WIDE) OF COUNTY LINE RD FROM STA 32+00 TO END, INCLUDING LATERALS CONNECTING TO SD-B.

4. CONTRACTOR TO REMOVE TEMPORARY ASPHALT PAVEMENT AND TEMPORARY DRAINAGE STRUCTURES AS DEFINED IN PHASE 3.

5. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVES AND CROSS STREETS THROUGHOUT CONSTRUCTION. ALL CROSS STREETS SHALL BE CONSTRUCTED ONE HALF AT A TIME. CONTRACTOR SHALL COORDINATE WITH PROPERTY OWNERS WHEN RECONSTRUCTING DRIVEWAYS.

NOTES:

1. TRAFFIC CONTROL SHALL BE PAID PER TXDOT ITEM 502. IN ADDITION TO TXDOT ITEM 502, TEMP DRAINAGE STRUCTURES, TEMP DRIVE ACCESS, AND TEMP PAVEMENT SHALL BE CONSTRUCTED SUBSIDIARY TO TRAFFIC CONTROL BID ITEM. 1

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS · ALAN D. HENDRIX · 89798 · REGISTERED PROFESSIONAL ENGINEER · 9/7/2018

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

TRAFFIC CONTROL PLAN NARRATIVE

NO.	ISSUES	BY	DATE
1	ADDENDUM 2	ADH	9/7/18

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

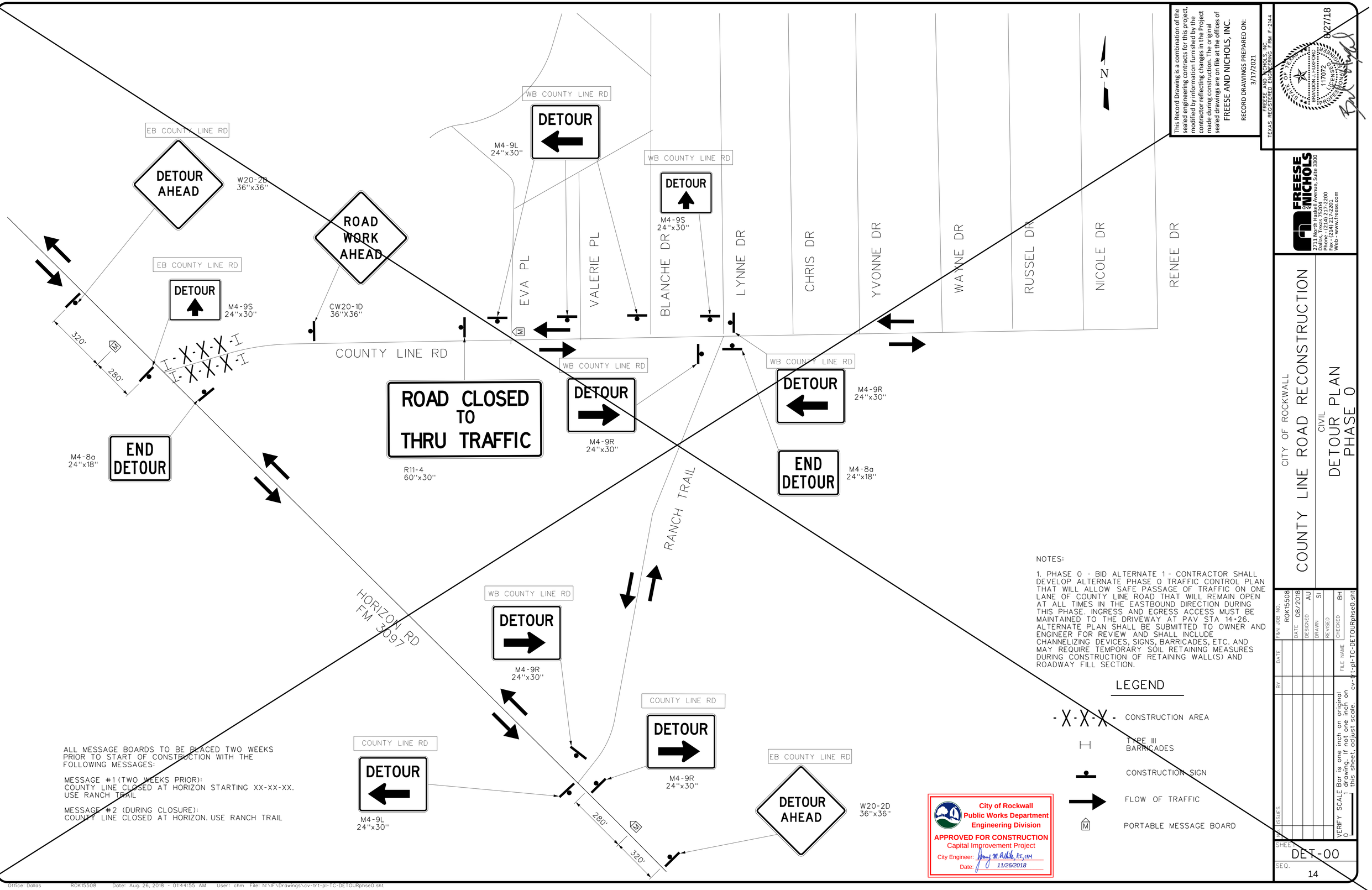
F&N JOB NO.	ROK15508
DATE	08/2018
DESIGNED	-
DRAWN	-
REVISED	-
CHECKED	-
FILE NAME	cv-trf-pl-TC-nar.sht

SHEET
TC-1A

SEQ.
13

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

MicroStation V8 User: chm Office: Dallas
ROK15508 - N:\F\Drawings\cv-trf-pl-TC-nar.sht
Figure: N:\F\Drawings\Figures\ROK15508-Half.plt
Plot Scale: 60.0000 '/ in. Model: Default
Date: Sep. 07, 2018 - 01:46:18 PM Project: Freese and Nichols, Inc.



ALL MESSAGE BOARDS TO BE PLACED TWO WEEKS PRIOR TO START OF CONSTRUCTION WITH THE FOLLOWING MESSAGES:

MESSAGE #1 (TWO WEEKS PRIOR):
COUNTY LINE CLOSED AT HORIZON STARTING XX-XX-XX.
USE RANCH TRAIL

MESSAGE #2 (DURING CLOSURE):
COUNTY LINE CLOSED AT HORIZON. USE RANCH TRAIL

NOTES:

1. PHASE 0 - BID ALTERNATE 1 - CONTRACTOR SHALL DEVELOP ALTERNATE PHASE 0 TRAFFIC CONTROL PLAN THAT WILL ALLOW SAFE PASSAGE OF TRAFFIC ON ONE LANE OF COUNTY LINE ROAD THAT WILL REMAIN OPEN AT ALL TIMES IN THE EASTBOUND DIRECTION DURING THIS PHASE. INGRESS AND EGRESS ACCESS MUST BE MAINTAINED TO THE DRIVEWAY AT PAV STA 14+26. ALTERNATE PLAN SHALL BE SUBMITTED TO OWNER AND ENGINEER FOR REVIEW AND SHALL INCLUDE CHANNELIZING DEVICES, SIGNS, BARRICADES, ETC. AND MAY REQUIRE TEMPORARY SOIL RETAINING MEASURES DURING CONSTRUCTION OF RETAINING WALL(S) AND ROADWAY FILL SECTION.

LEGEND

- -X-X-X- CONSTRUCTION AREA
- TYPE III BARRICADES
- CONSTRUCTION SIGN
- FLOW OF TRAFFIC
- M PORTABLE MESSAGE BOARD

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
DETOUR PLAN
PHASE 0

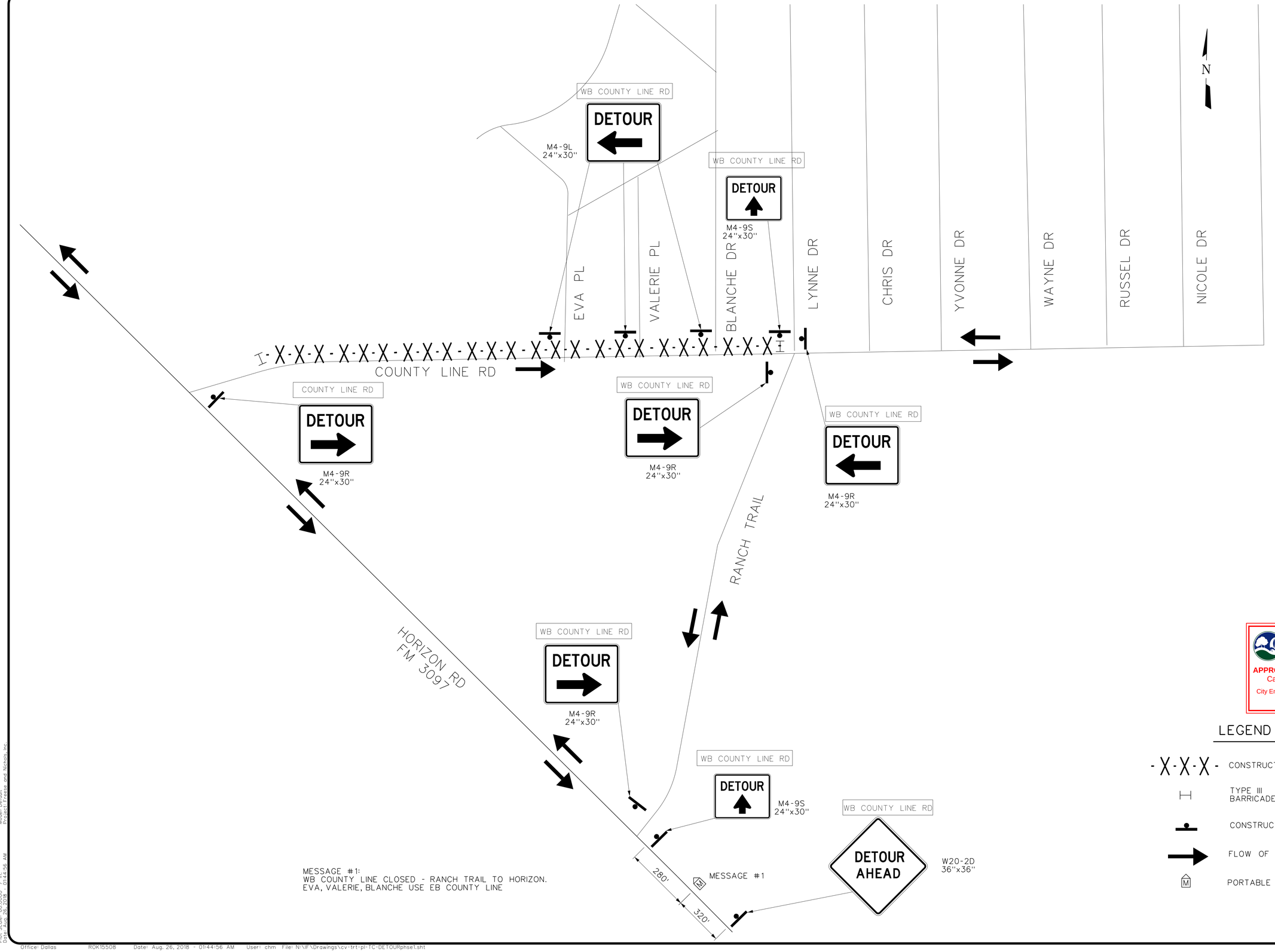
FAN JOB NO.	ROK15508
DATE	08/2018
DESIGNED	AU
DRAWN	SI
REVISED	
CHECKED	BH

BY	DATE	FILE NAME
		cv-trt-pl-TC-DETOURphse0.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET NO. DET-00
SEQ. 14

MicroStation V8 User: chm Office: Dallas
ROK15508 N:\NF\Drawings\cv-trt-pl-TC-DETOURphse0.sht
Plot Scale: 60.0000 ' / in. Plotted: Aug. 27, 2018 - 01:45:55 AM
Model: Detour
Project Freese and Nichols, Inc.



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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

DETOUR PLAN PHASE 1

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

LEGEND

- -X-X-X- CONSTRUCTION AREA
- TYPE III BARRICADES
- CONSTRUCTION SIGN
- FLOW OF TRAFFIC
- PORTABLE MESSAGE BOARD

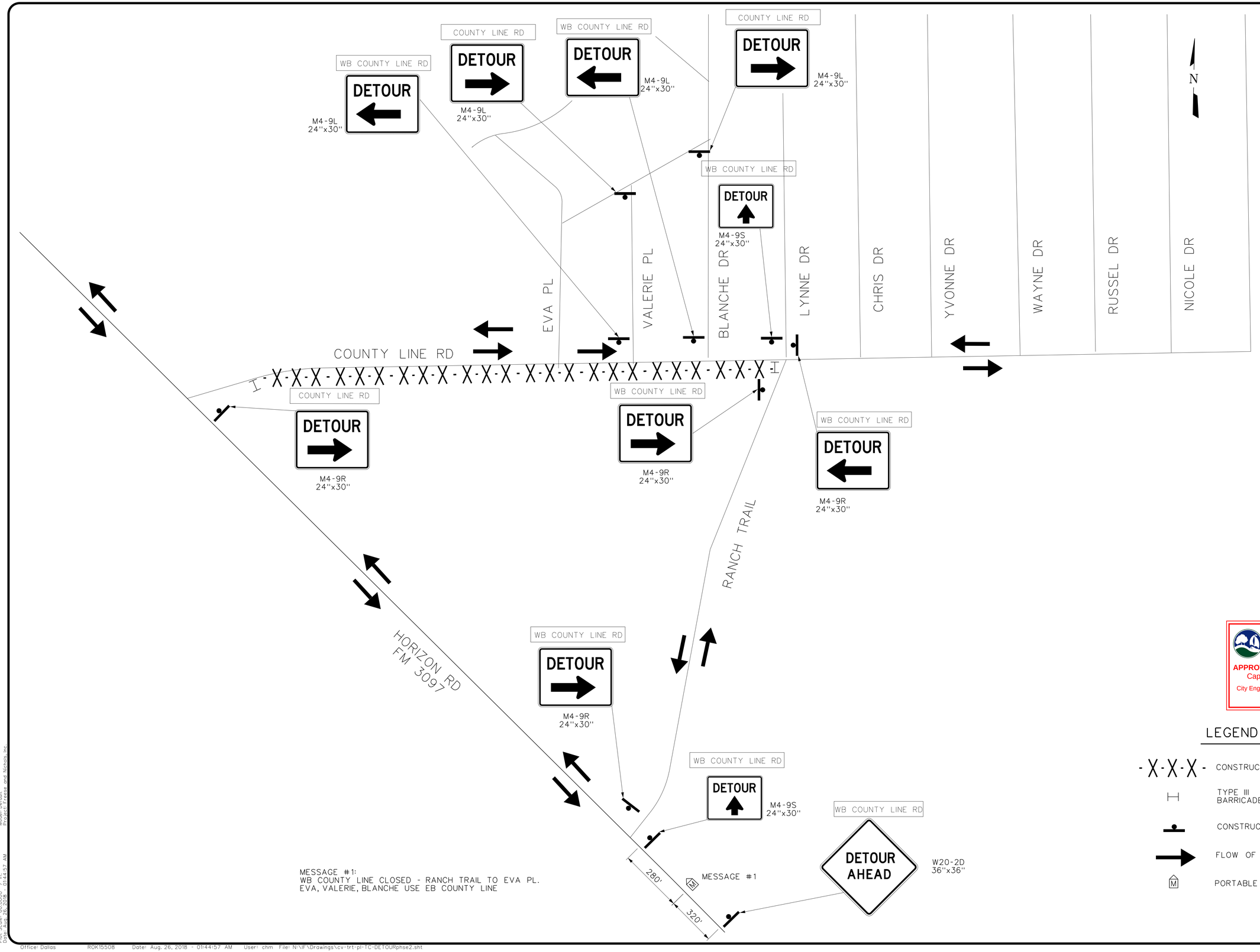
NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pl-TC-DETOURphse1.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale. 0 1"

SHEET DET-01
SEQ. 15

MicroStation V8 User: chm Office: Dallas
ROK15508 - N:\F\Drawings\cv-trt-pl-TC-DETOURphse1.sht
Xref: J:\ROK\04 Design\Roadway\Plan Sheets\Detour.dgn
Plot Scale= 60.0000 '/ in. Model: Detour
Date: Aug 26, 2018 - 01:44:56 AM Project: Freese and Nichols, Inc.



MESSAGE #1:
WB COUNTY LINE CLOSED - RANCH TRAIL TO EVA PL.
EVA, VALERIE, BLANCHE USE EB COUNTY LINE

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED
PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: Amy M. Pitchford, P.E., CFM
Date: 11/26/2018

LEGEND

- X-X-X - CONSTRUCTION AREA
- TYPE III BARRICADES
- CONSTRUCTION SIGN
- FLOW OF TRAFFIC
- PORTABLE MESSAGE BOARD

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

DETOUR PLAN PHASE 2

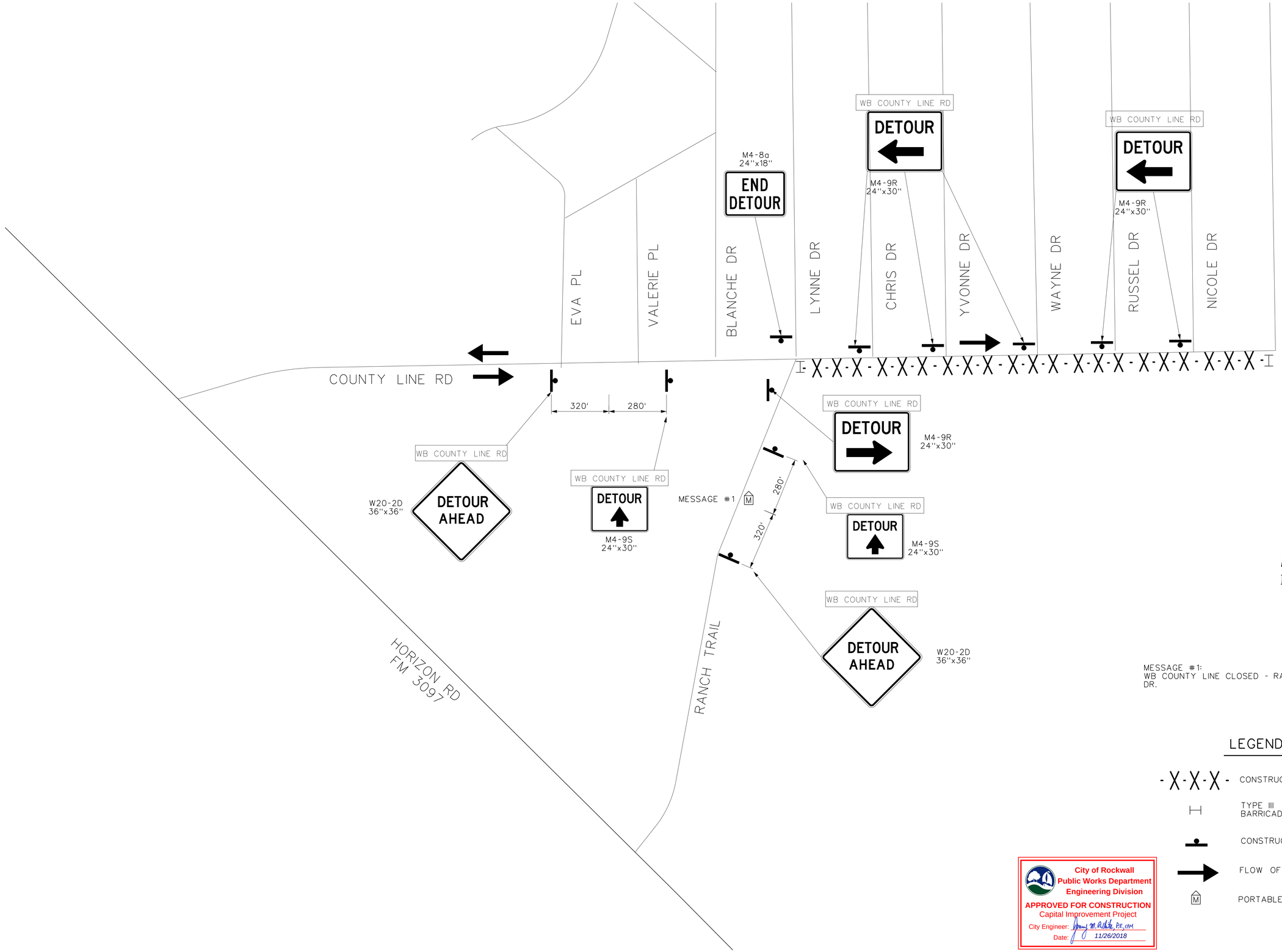
NO.	ISSUES	BY	DATE

FAN JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pl-TC-DETOURphse2.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET DET-02
SEQ. 16

MicroStation V8 User: chm Office: Dallas
ROK15508 N:\F\Drawings\cv-trt-pl-TC-DETOURphse2.sht
Plot Date: Aug. 26, 2018 - 01:44:57 AM Model: Default
Plot Scale: 60.0000 '/ in. Project: Freese and Nichols, Inc.
Date: Aug. 26, 2018 - 01:44:57 AM



MESSAGE #1:
WB COUNTY LINE CLOSED - RANCH TRAIL TO RENEE DR.

LEGEND

- -X-X-X- CONSTRUCTION AREA
- TYPE III BARRICADES
- CONSTRUCTION SIGN
- FLOW OF TRAFFIC
- PORTABLE MESSAGE BOARD

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____ P.E., CFM
Date: 11/26/2018

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.
RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
DETOUR PLAN
PHASE 3 AND 4

NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

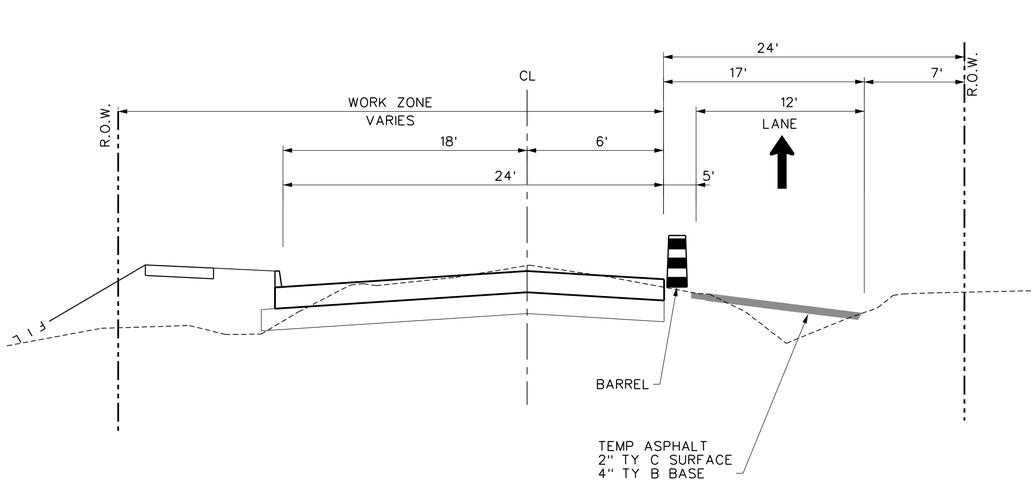
F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pl-TC-DETOURphse3.sht

SHEET DET-03
SEQ. 17

MicroStation V8 User: chm Office: Dallas
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Date: Aug. 26, 2018 - 01:44:59 AM

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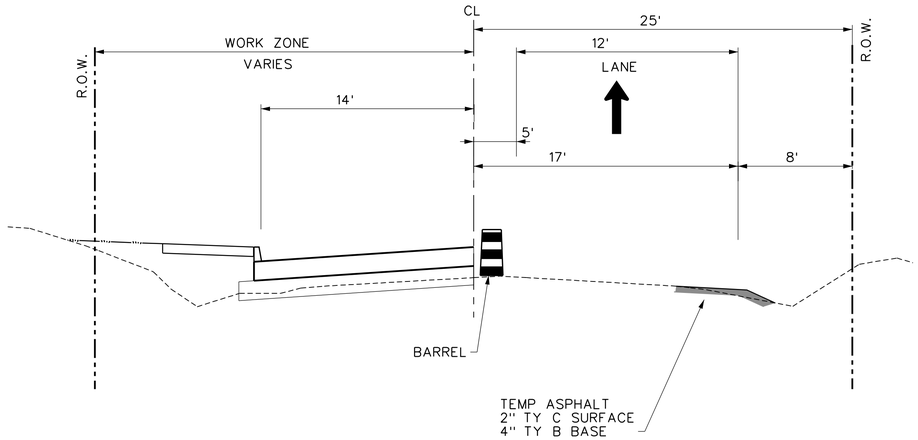




TCP TYPICAL SECTION -PHASE I

N.T.S.

STA 14+00 TO STA 24+62



TCP TYPICAL SECTION -PHASE I

N.T.S.

STA 24+62 TO STA 32+00

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
ALAN D. HENDRIX
69708
REGISTERED PROFESSIONAL ENGINEER
9/7/2018

FREESE NICHOLS

2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

TRAFFIC CONTROL PLAN
TYPICAL SECTIONS - PHASE 0 & I

NO.	ISSUES	BY	DATE
1	AMENDMENT 7	ADH	9/7/2018

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

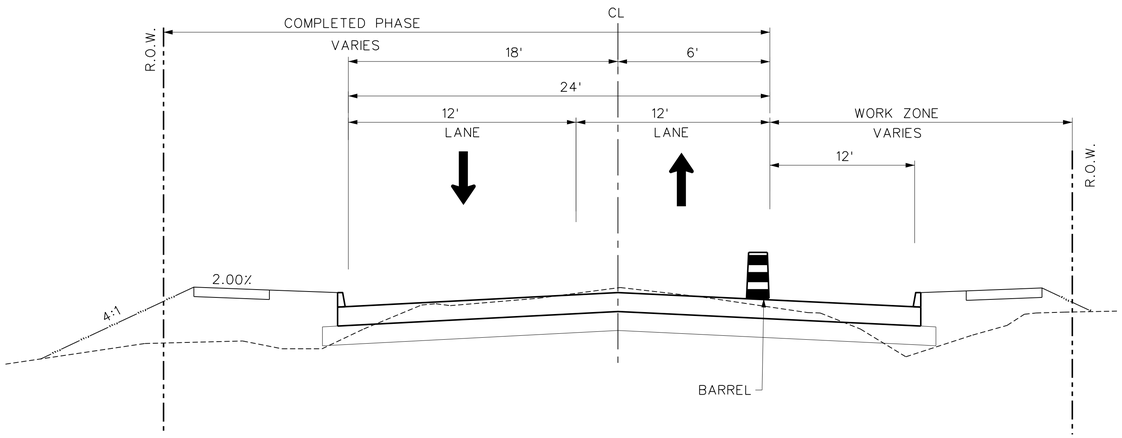
F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED
FILE NAME cv-trt-pl-TC-TYP01.sht

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

SHEET
TC-TYP01
SEQ.
18

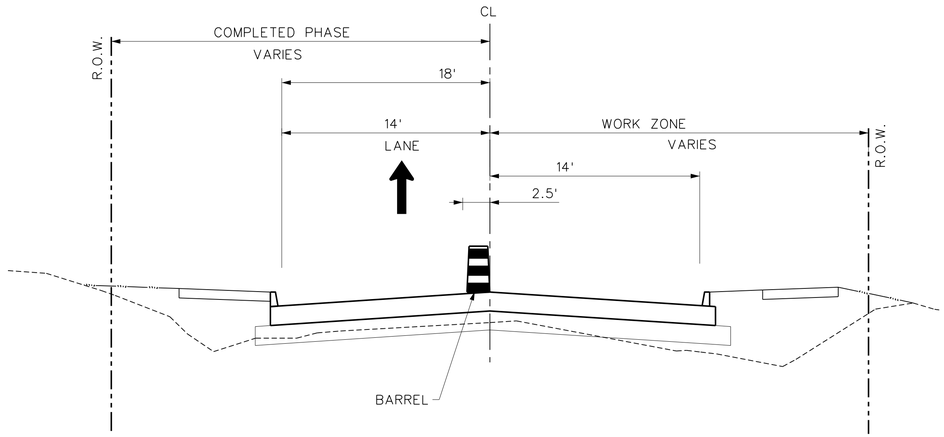
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Office: Dallas ROK15508 Date: Sep. 07, 2018 - 09:01:39 AM User: chm File: N:\IP\Drawings\cv-trt-pl-TC-TYP01.sht



TCP TYPICAL SECTION -PHASE 2

N.T.S.
STA 14+00 TO STA 24+62



TCP TYPICAL SECTION -PHASE 2

N.T.S.
STA 24+62 TO STA 32+00

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RECORD DRAWINGS PREPARED ON:
3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

TRAFFIC CONTROL PLAN
TYPICAL SECTIONS - PHASE 2

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED
FILE NAME cv-trt-pl-TC-TYP02.sht

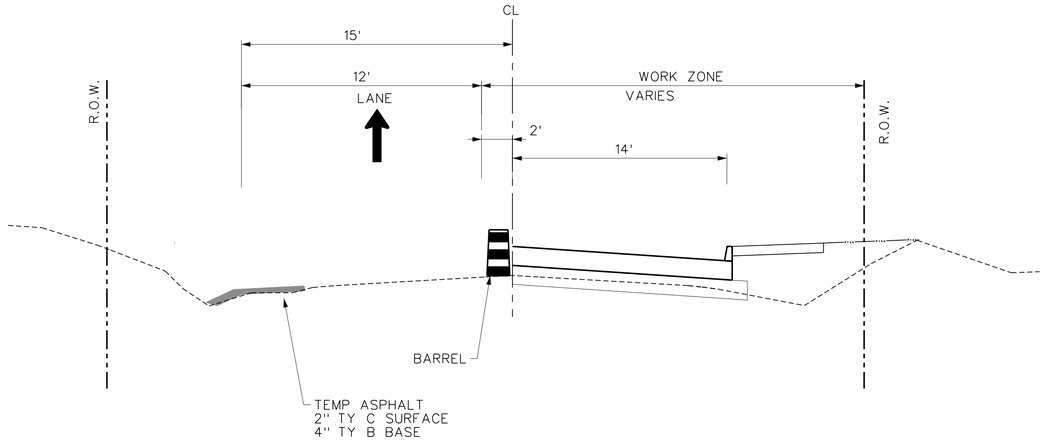
NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____ PE, CFM
Date: 11/26/2018

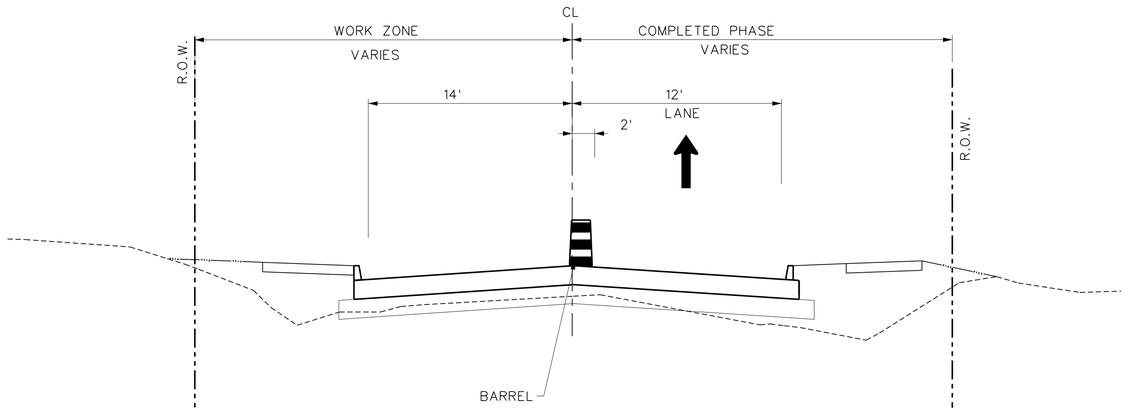
SHEET
TC-TYP02
SEQ.
19

MicroStation V8 User: chm Office: Dallas
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Plot Driver: Default Printer Model: Main Border
Plot Scale: 20.0000 '= 1 in. Project: Freese and Nichols, Inc.
Date: Aug. 26, 2018 - 01:45:01 AM



TCP TYPICAL SECTION -PHASE 3

N.T.S.
STA 32+00 TO END



TCP TYPICAL SECTION -PHASE 4

N.T.S.
STA 32+00 TO END

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
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Fax: (214) 217-2201
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CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

TRAFFIC CONTROL PLAN
TYPICAL SECTIONS - PHASE 3 & 4

NO.	ISSUES	BY	DATE

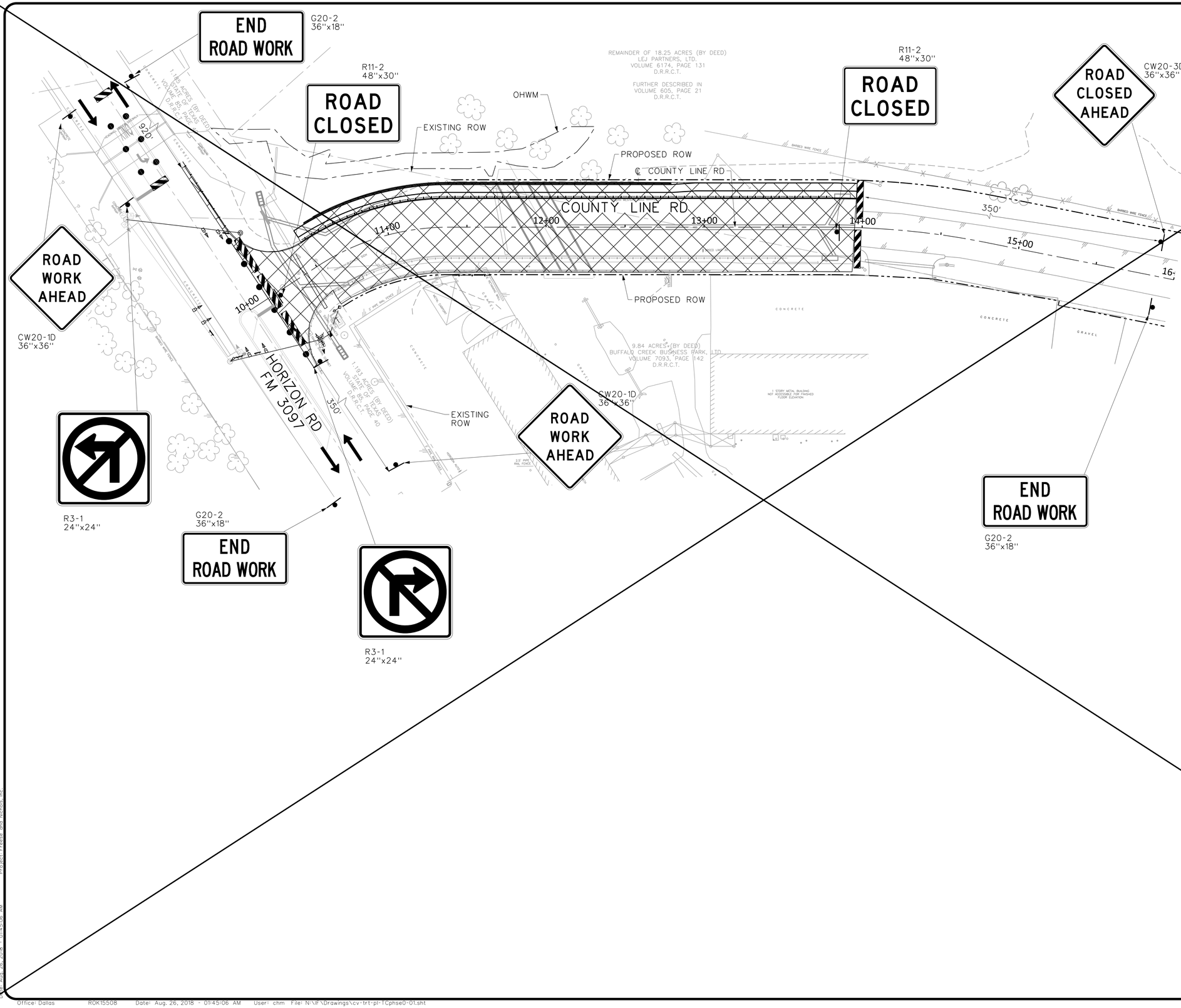
FAN JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED
FILE NAME cv-trt-pi-TC-TYP03.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____ PE, CFM
Date: 11/26/2018

SHEET TC-TYP03
SEQ. 20

MicroStation V8 User: chm Office: Dallas
ROK15508 N:\F\Drawings\cv-trt-pi-TC-TYP03.sht
Plot Driver: Default Plot Style: FNSTDF Model Mode
Plot Scale: 20.0000 '/ in. Model: Main Border
Date: Aug. 26, 2018 - 01:45:02 AM Project: Freese and Nichols, Inc.



LEGEND

- PHASE I CONSTRUCTION
- TEMP ASPHALT
- TRAFFIC FLOW ARROW
- TYPE III BARRICADE
- TRAFFIC BARRELS (SPACED @ 70')
- TRAFFIC SIGN

NOTES:

1. UTILITY TRENCHES IN PAVEMENT TO BE BACKFILLED AND STEEL PLATED AT THE END OF WORK DAY.

2. TEMP ASPHALT MUST BE COMPLETED PRIOR TO START OF ROADWAY PAVING.

3. CONTRACTOR SHALL CONSTRUCT ALL SIDE STREETS 1/2 AT A TIME TO MAINTAIN ACCESS.

4. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVES AND CROSS STREETS THROUGHOUT CONSTRUCTION.

5. SEE DETOUR PLAN FOR DETOUR SIGN PLACEMENT.

6. ALL LANES SHALL BE AT MIN 10 FT WIDE.

7. PHASE 0 - BID ALTERNATE 1 - CONTRACTOR SHALL DEVELOP ALTERNATE PHASE 0 TRAFFIC CONTROL PLAN THAT WILL ALLOW SAFE PASSAGE OF TRAFFIC ON ONE LANE OF COUNTY LINE ROAD THAT WILL REMAIN OPEN AT ALL TIMES IN THE EASTBOUND DIRECTION DURING THIS PHASE. INGRESS AND EGRESS ACCESS MUST BE MAINTAINED TO THE DRIVEWAY AT PAV STA 14+26. ALTERNATE PLAN SHALL BE SUBMITTED TO OWNER AND ENGINEER FOR REVIEW AND SHALL INCLUDE CHANNELIZING DEVICES, SIGNS, BARRICADES, ETC. AND MAY REQUIRE TEMPORARY SOIL RETAINING MEASURES DURING CONSTRUCTION OF RETAINING WALL(S) AND ROADWAY FILL SECTION.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUMFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2299
Web - www.freese.com

CITY OF ROCKWALL
CIVIL
COUNTY LINE ROAD RECONSTRUCTION
TRAFFIC CONTROL PHASE 0
BEGIN STA 10+00 TO STA 16+00

FAN JOB NO.	ROK15508
DATE	08/2018
DESIGNED	AU
DRAWN	SI
REVISED	
CHECKED	BH
FILE NAME	cv-trt-pl-TCphse0-01.sht

NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET NO. TC-00
SEQ. 21

MicroStation V8 User: chm Office: Dallas
ROK15508 N:\F\Drawings\cv-trt-pl-TCphse0-01.sht
Plotted: Aug. 26, 2018 - 01:45:06 AM Model:Default
Plot Scale: 60.0000 '/ in. Project Freese and Nichols Inc.
Plot Date: Aug. 26, 2018 - 01:45:06 AM

END ROAD WORK
G20-2
36"x18"

ROAD WORK AHEAD
CW20-1D
36"x36"

HORIZON RD
FM 3097

350'

EXISTING ROW

OHWM

PROPOSED ROW

℄ COUNTY LINE RD

COUNTY LINE RD

11+00 12+00 13+00 14+00 15+00 16+00

MATCHLINE STA 16+00

10+00

SHOP DRAWINGS PREPARED BY A LICENSED ENGINEER IN THE STATE OF TEXAS WILL BE REQUIRED. EARTHEN WALL SHALL BE CONSIDERED AS INCIDENTAL TO THE TRAFFIC CONTROL PLAN AND WILL NOT BE PAID FOR AS A SEPARATE ITEM.

1

44 LF TEMP DRAINAGE

ONE WAY
R6-1R
36"x12"

CW20-1D
36"x36"

ROAD WORK AHEAD

EXISTING ROW

G20-2
36"x18"

END ROAD WORK

REMAINDER OF 18.25 ACRES (BY DEED)
LEJ PARTNERS, LTD.
VOLUME 6174, PAGE 131
D.R.R.C.T.

FURTHER DESCRIBED IN
VOLUME 605, PAGE 21
D.R.R.C.T.

1.85 ACRES (BY DEED)
STATE OF TEXAS
VOLUME 0, PAGE 40
D.R.R.C.T.

9.84 ACRES (BY DEED)
BUFFALO CREEK BUSINESS PARK, LTD.
VOLUME 7093, PAGE 142
D.R.R.C.T.

1.93 ACRES (BY DEED)
STATE OF TEXAS
VOLUME 0, PAGE 40
D.R.R.C.T.

1 STORY METAL BUILDING
NOT ACCESSIBLE FOR FINISHED FLOOR ELEVATION

BILLY W. PEOPLES
VOLUME 2074, PAGE 164
D.R.R.C.T.

TERESA HERNANDEZ JIMENEZ
AND LUIS TORRES GALINA
VOLUME 5468, PAGE 201
D.R.R.C.T.

JOYCE MAY WOODS
VOLUME 235, PAGE 211
D.R.R.C.T.

ROYCE LEE GRIZZEL JR.
DESCRIBED IN DEED TO
CLOVA C. CURRY
VOLUME 167, PAGE 717
D.R.R.C.T.

WRONG WAY
R5-1g
36"x24"

R6-1R
36"x12"

ONE WAY

NO OWNERSHIP FOUND

EXISTING ROW

PROPOSED ROW

MATCHLINE STA 16+00

17+00 18+00 19+00 20+00 21+00 22+00 23

MATCHLINE STA 23+00

COUNTY LINE RD

℄ COUNTY LINE RD

PROPOSED ROW

EXISTING ROW

24.00'

17.00'

25 LF TEMP DRAINAGE

ONE WAY
R6-1R
36"x12"

48 LF TEMP DRAINAGE

ONE WAY
R6-1R
36"x12"

20 LF TEMP DRAINAGE

ONE WAY
R6-1L
36"x12"

30 LF TEMP DRAINAGE

ONE WAY
R6-1L
36"x12"

REMAINDER OF
1.00 ACRES (BY DEED)
EDDY D. KELLY
AND SHARON R. KELLY REVOCABLE LIVING TRUST
VOLUME 5800, PAGE 91
D.R.R.C.T.

9.84 ACRES (BY DEED)
BUFFALO CREEK BUSINESS PARK, LTD.
VOLUME 7093, PAGE 142
D.R.R.C.T.

0.9980 ACRES (BY DEED)
MARKSQUARED INVESTMENTS LLC
VOLUME 6813, PAGE 143
D.R.R.C.T.

0.114 ACRES (BY DEED)
ALEX ALANIZ AND ROYCE KELLY,
AS TRUSTEES OF THE EDDY D. KELLY AND SHARON RENEE KELLY
REVOCABLE LIVING TRUST
VOLUME 3900, PAGE 95
D.R.R.C.T.

N

0 10' 20' 30' 60'
SCALE IN FEET

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
ALAN D. HENDRIX
69798
LICENSED PROFESSIONAL ENGINEER
9/7/2018

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2299
Web: www.freese.com

LEGEND

- PHASE I CONSTRUCTION
- TEMP ASPHALT
- COMPLETED PHASE
- TRAFFIC FLOW ARROW
- TYPE III BARRICADE
- TRAFFIC BARRELS (SPACED @ 70')
- TRAFFIC SIGN

NOTES:

1. UTILITY TRENCHES IN PAVEMENT TO BE BACKFILLED AND STEEL PLATED AT THE END OF WORK DAY.

2. TEMP. ASPHALT MUST BE COMPLETED PRIOR TO START OF ROADWAY PAVING.

3. CONTRACTOR SHALL CONSTRUCT ALL SIDE STREETS 1/2 AT A TIME TO MAINTAIN ACCESS.

4. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVES AND CROSS STREETS THROUGHOUT CONSTRUCTION.

5. SEE DETOUR PLAN FOR DETOUR SIGN PLACEMENT.

6. ALL LANES SHALL BE AT MIN 10 FT WIDE

N

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

TRAFFIC CONTROL PHASE 1
BEGIN TO STA 23+00

NO.	ISSUES	BY	DATE
2	ADDENDUM 2	ADH	9/7/18

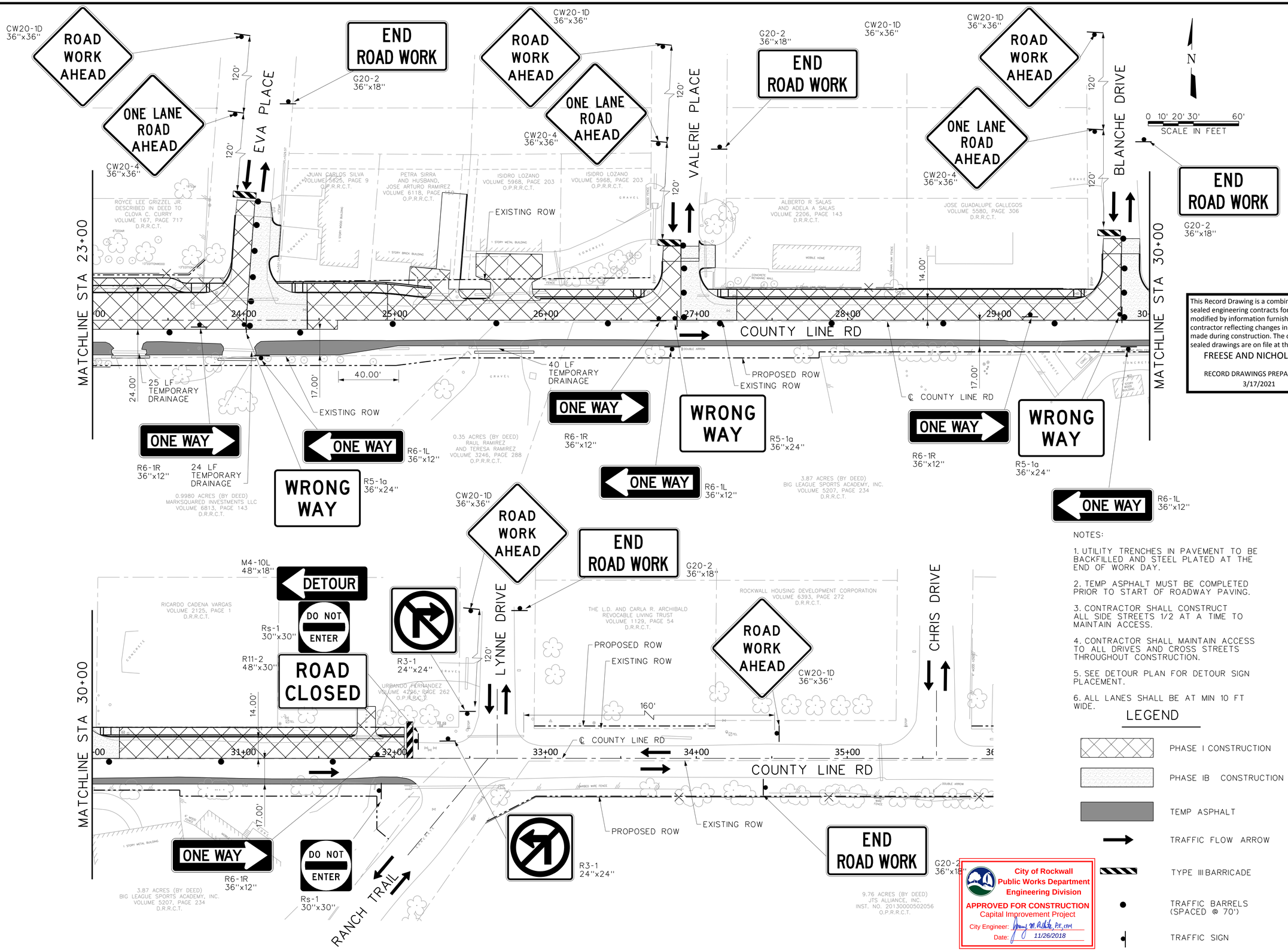
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

F&N JOB NO.	ROK15508
DATE	08/2018
DESIGNED	AU
DRAWN	SI
REVISED	
CHECKED	BH
FILE NAME	cv-trt-pl-TCphse1-01.sht

SHEET
TC-01
SEQ.
22

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Date: Sep. 07, 2018 - 01:50:31 PM Project: Freese and Nichols, Inc.

Office: Dallas ROK15508 Date: Sep. 07, 2018 - 01:50:31 PM User: chm File: N:\IF\Drawings\cv-trt-pl-TCphse1-01.sht



NOTES:

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LEGEND

- PHASE I CONSTRUCTION
- PHASE IB CONSTRUCTION
- TEMP ASPHALT
- TRAFFIC FLOW ARROW
- TYPE III BARRICADE
- TRAFFIC BARRELS (SPACED @ 70')
- TRAFFIC SIGN

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RECORD DRAWINGS PREPARED ON: 3/17/2021

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS BRANDON J. HUXFORD 117072 LICENSED PROFESSIONAL ENGINEER
8/27/18
FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2299
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

TRAFFIC CONTROL PHASE 1
STA 23+00 TO END

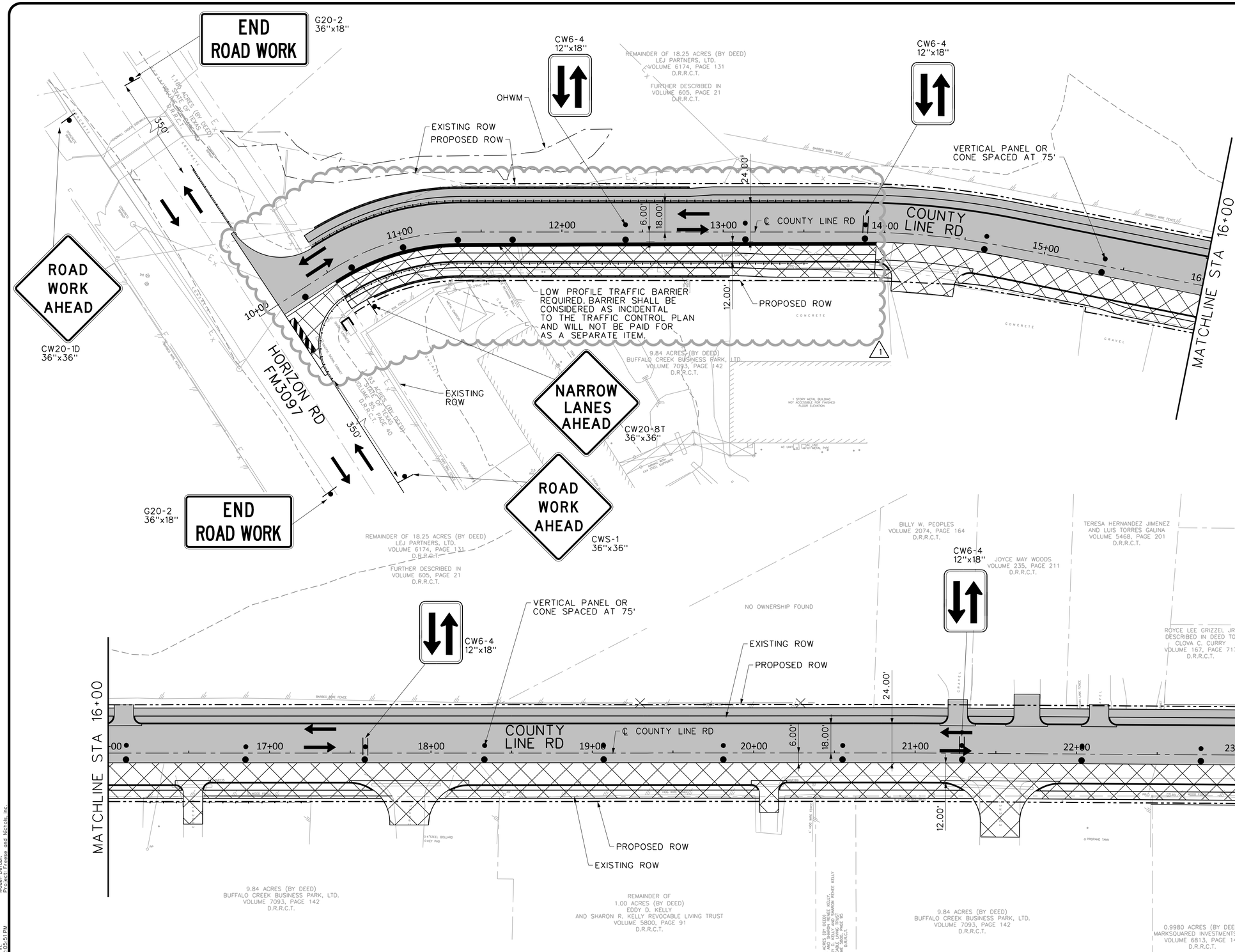
FAN JOB NO.	ROK15508
DATE	08/2018
DESIGNED	AU
DRAWN	SI
CHECKED	BH
REVISED	

NO. | ISSUES | BY | DATE | FILE NAME: cv-trt-pi-TCphse1-02.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET TC-02
SEQ. 23

MicroStation V8 User: chm Office: Dallas
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Date: Aug. 26, 2018 - 01:45:11 AM Project: Freese and Nichols, Inc.



N

0 10' 20' 30' 60'
SCALE IN FEET

LEGEND

- PHASE 2 CONSTRUCTION
- COMPLETED PHASE
- TRAFFIC FLOW ARROW
- TYPE III BARRICADE
- TRAFFIC BARRELS (SPACED @ 70')
- TRAFFIC SIGN
- LOW PROFILE CONCRETE TRAFFIC BARRIER

NOTES:

1. UTILITY TRENCHES IN PAVEMENT TO BE BACKFILLED AND STEEL PLATED AT THE END OF WORK DAY.
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3. CONTRACTOR SHALL CONSTRUCT ALL SIDE STREETS 1/2 AT A TIME TO MAINTAIN ACCESS.
4. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVES AND CROSS STREETS THROUGHOUT CONSTRUCTION.
5. SEE DETOUR PLAN FOR DETOUR SIGN PLACEMENT.
6. ALL LANES SHALL BE AT MIN 10 FT WIDE.

N

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____, P.E., CFM
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
ALAN D. HENDRIX
69798
REGISTERED PROFESSIONAL ENGINEER
9/7/2018

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web: www.freese.com

CITY OF ROCKWALL
CIVIL
COUNTY LINE ROAD RECONSTRUCTION
TRAFFIC CONTROL PHASE 2
BEGIN TO STA 23+00

NO.	ISSUES	BY	DATE
1	ADDENDUM 2	ADH	9/7/18

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
CHECKED BH
FILE NAME cv-trt-pl-TCphse2-01.sht

SHEET TC-03
SEQ. 24

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Date: Sep. 07, 2018 - 02:05:51 PM

CW20-1D 36"x36"
ROAD WORK AHEAD
CW20-1D 36"x36"
ROAD NARROWS
CW6-4 12"x18"
G20-2 36"x18"
END ROAD WORK
EVA PLACE
120'
R5-1 30"x30"
DO NOT ENTER
CW20-1D 36"x36"
ROAD WORK AHEAD
R3-1 24"x24"
G20-2 36"x18"
END ROAD WORK
VALERIE PLACE
120'
Rs-1 30"x30"
DO NOT ENTER
CW20-1D 36"x36"
ROAD WORK AHEAD
R3-1 24"x24"
BLANCHE DRIVE
120'
G20-2 36"x18"
END ROAD WORK

N

0 10' 20' 30' 60'
SCALE IN FEET

ROYCE LEE GRIZZEL JR.
DESCRIBED IN DEED TO
CLOVA C. CUNEY
VOLUME 167, PAGE 717
D.R.R.C.T.

JUAN CARLOS SILVA
VOLUME 5625, PAGE 9
O.P.R.R.C.T.

PETRA SIRRA
AND HUSBAND,
JOSE ARTURO RAMIREZ
VOLUME 6118, PAGE 250
O.P.R.R.C.T.

ISIDRO LOZANO
VOLUME 5968, PAGE 203
O.P.R.R.C.T.

ISIDRO LOZANO
VOLUME 5968, PAGE 203
O.P.R.R.C.T.

ALBERTO R SALAS
AND ADELA A SALAS
VOLUME 2206, PAGE 143
D.R.R.C.T.

JOSE GUADALUPE GALLEGOS
VOLUME 5580, PAGE 306
D.R.R.C.T.

EXISTING ROW

MATCHLINE STA 23+00

24.00'

6.00'

24.00'

COUNTY LINE RD

23+00 24+00 25+00 26+00 ℄ COUNTY LINE RD 27+00 28+00 29+00 30+00

MATCHLINE STA 30+00

14.00'

14.00'

14.00'

EXISTING ROW

R6-1L 36"x12"
ONE WAY

PROPOSED ROW

EXISTING ROW

R6-1L 36"x12"
ONE WAY

R6-1L 36"x12"
ONE WAY

0.9980 ACRES (BY DEED)
MARKSQUARED INVESTMENTS LLC
VOLUME 6813, PAGE 143
D.R.R.C.T.

0.35 ACRES (BY DEED)
RAUL RAMIREZ
AND TERESA RAMIREZ
VOLUME 3246, PAGE 288
O.P.R.R.C.T.

3.87 ACRES (BY DEED)
BIG LEAGUE SPORTS ACADEMY, INC.
VOLUME 5207, PAGE 234
D.R.R.C.T.

CW20-1D 36"x36"
ROAD WORK AHEAD
G20-2 36"x18"
END ROAD WORK
LYNNE DRIVE
120'
CW20-1D 36"x36"
ROAD WORK AHEAD
CHRIS DRIVE

RICARDO CADENA VARGAS
VOLUME 2125, PAGE 1
D.R.R.C.T.

ROCKWALL HOUSING DEVELOPMENT CORPORATION
VOLUME 6393, PAGE 272
D.R.R.C.T.

R6-1L 36"x12"
ONE WAY

R3-1 24"x24"

URBANDO FERNANDEZ
VOLUME 4226, PAGE 262
O.P.R.R.C.T.

THE L.D. AND
CARLA R. ARCHIBALD
REVOCABLE LIVING TRUST
VOLUME 1129, PAGE 54
D.R.R.C.T.

EXISTING ROW

PROPOSED ROW

MATCHLINE STA 30+00

31+00 32+00 33+00 34+00 ℄ COUNTY LINE RD 35+00 36

COUNTY LINE RD

14.00'

EXISTING ROW

PROPOSED ROW

3.87 ACRES (BY DEED)
BIG LEAGUE SPORTS ACADEMY, INC.
VOLUME 5207, PAGE 234
D.R.R.C.T.

DO NOT ENTER
Rs-1 30"x30"
DETOUR
M4-10L 48"x18"
RANCH TRAIL

END ROAD WORK
G20-2 36"x18"

ROAD WORK AHEAD
CW20-1D 36"x36"

9.76 ACRES (BY DEED)
JTS ALLIANCE, INC.
INST. NO. 20130000053...
O.P.R.R.C.T.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E.
Date: 11/26/2018

LEGEND

- PHASE 2 CONSTRUCTION
- TEMP ASPHALT
- COMPLETED PHASE
- TRAFFIC FLOW ARROW
- TYPE III BARRICADE
- TRAFFIC BARRELS (SPACED @ 70')
- TRAFFIC SIGN

NOTES:

1. UTILITY TRENCHES IN PAVEMENT TO BE BACKFILLED AND STEEL PLATED AT THE END OF WORK DAY.
2. TEMP ASPHALT MUST BE COMPLETED PRIOR TO START OF ROADWAY PAVING.
3. CONTRACTOR SHALL CONSTRUCT ALL SIDE STREETS 1/2 AT A TIME TO MAINTAIN ACCESS.
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6. ALL LANES SHALL BE AT MIN 10 FT WIDE.

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2299
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

TRAFFIC CONTROL PHASE 2
STA 23+00 TO END

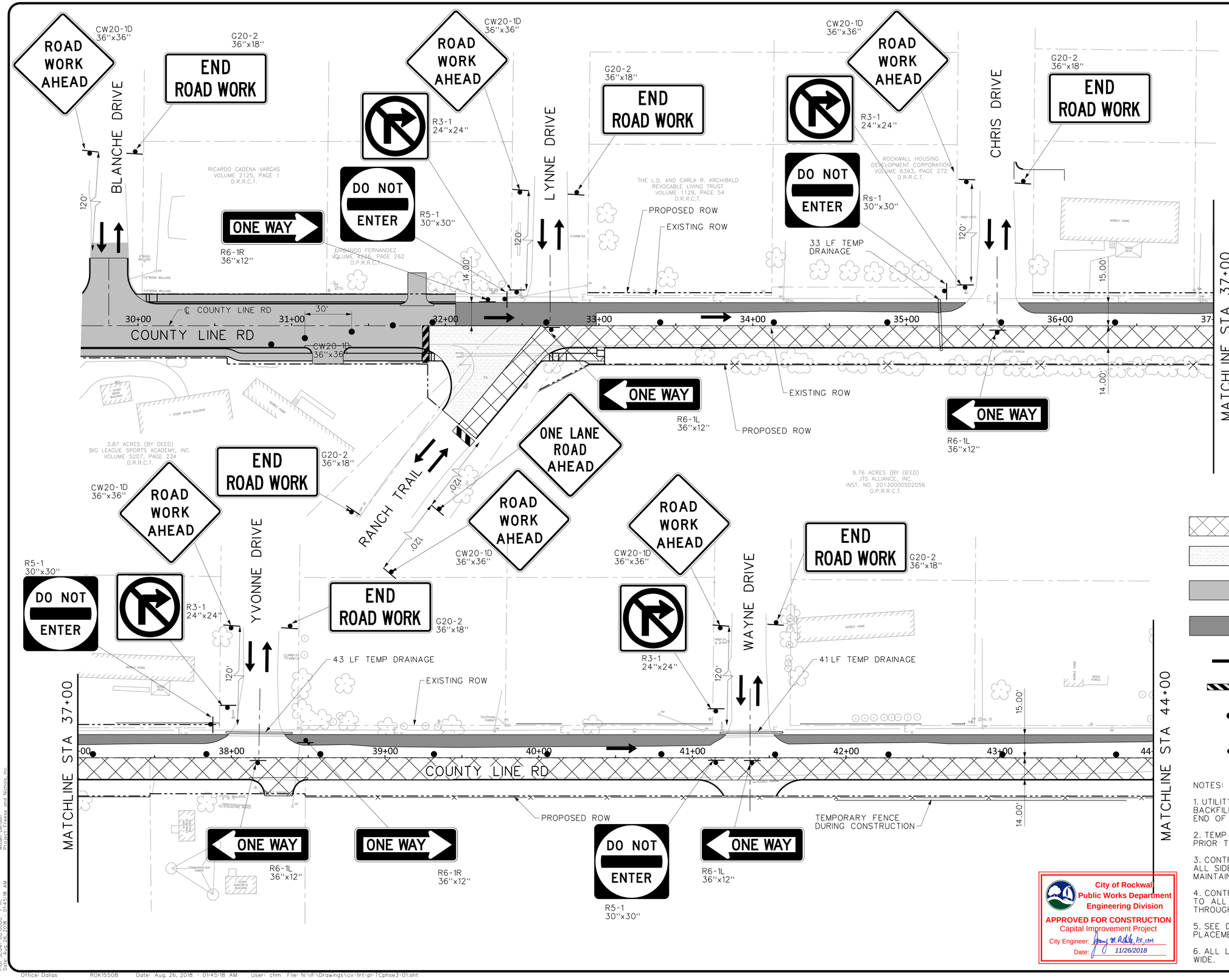
NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pl-TCphse2-02.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET TC-04
SEQ. 25

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Plot Scale: 60.0000 '/ In. Project:Freese and Nichols, Inc.
Date: Aug. 26, 2018 - 01:45:16 AM



LEGEND

- PHASE 3 CONSTRUCTION
- PHASE 3B CONSTRUCTION
- COMPLETED PHASE
- TEMP ASPHALT
- TRAFFIC FLOW ARROW
- TYPE III BARRICADE
- TRAFFIC BARRELS (SPACED @ 70')
- TRAFFIC SIGN

NOTES:

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City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: Amy M. Mills, PE, CFM
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
TRAFFIC CONTROL PHASE 3
STA 32+00 TO STA 44+00

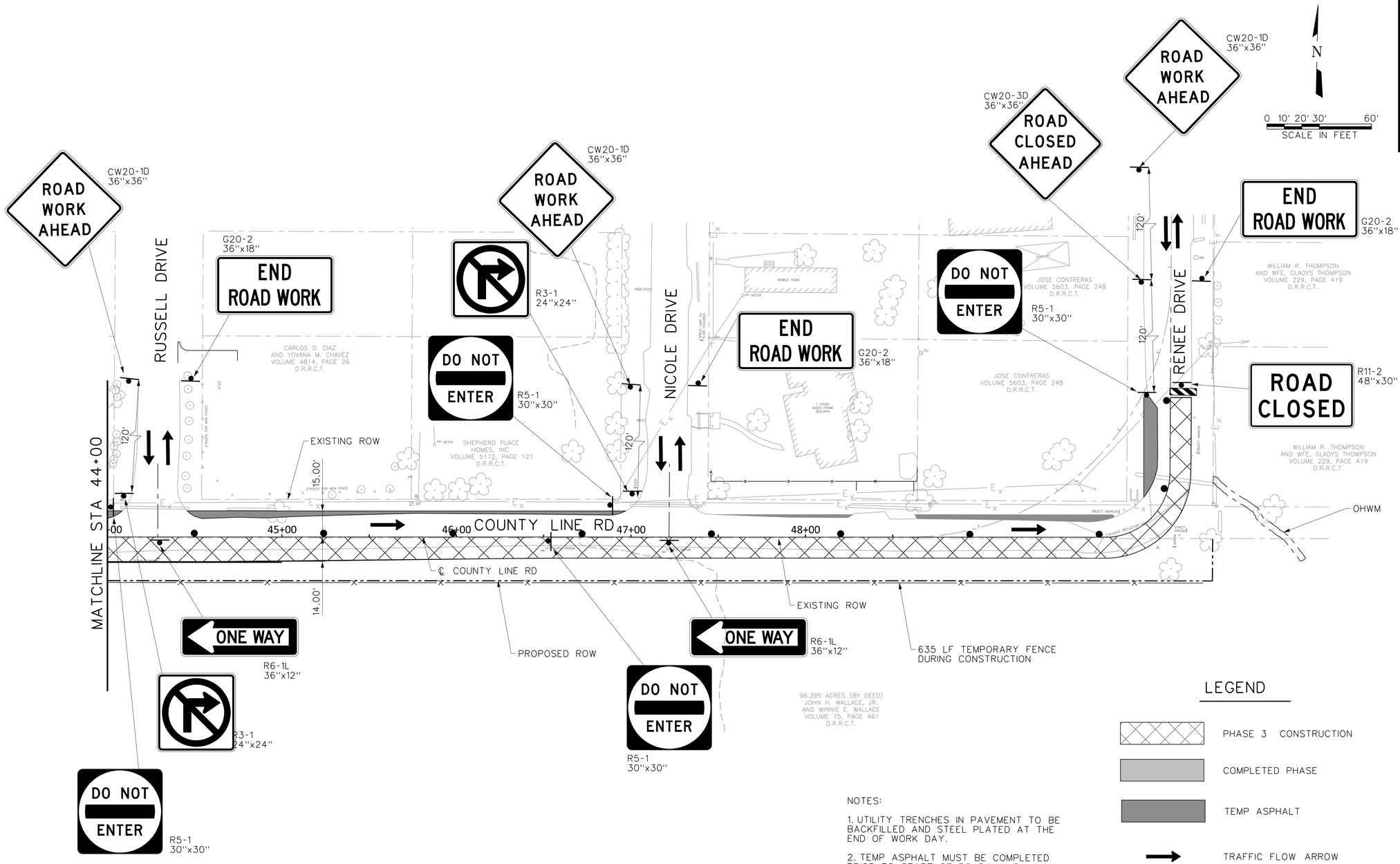
NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
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VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

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SEQ. 26

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Model: Default
Project: Freese and Nichols, Inc.



LEGEND

- PHASE 3 CONSTRUCTION
- COMPLETED PHASE
- TEMP ASPHALT
- TRAFFIC FLOW ARROW
- TYPE III BARRICADE
- TRAFFIC BARRELS (SPACED @ 70')
- TRAFFIC SIGN

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City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
TRAFFIC CONTROL PHASE 3
STA 44+00 TO END

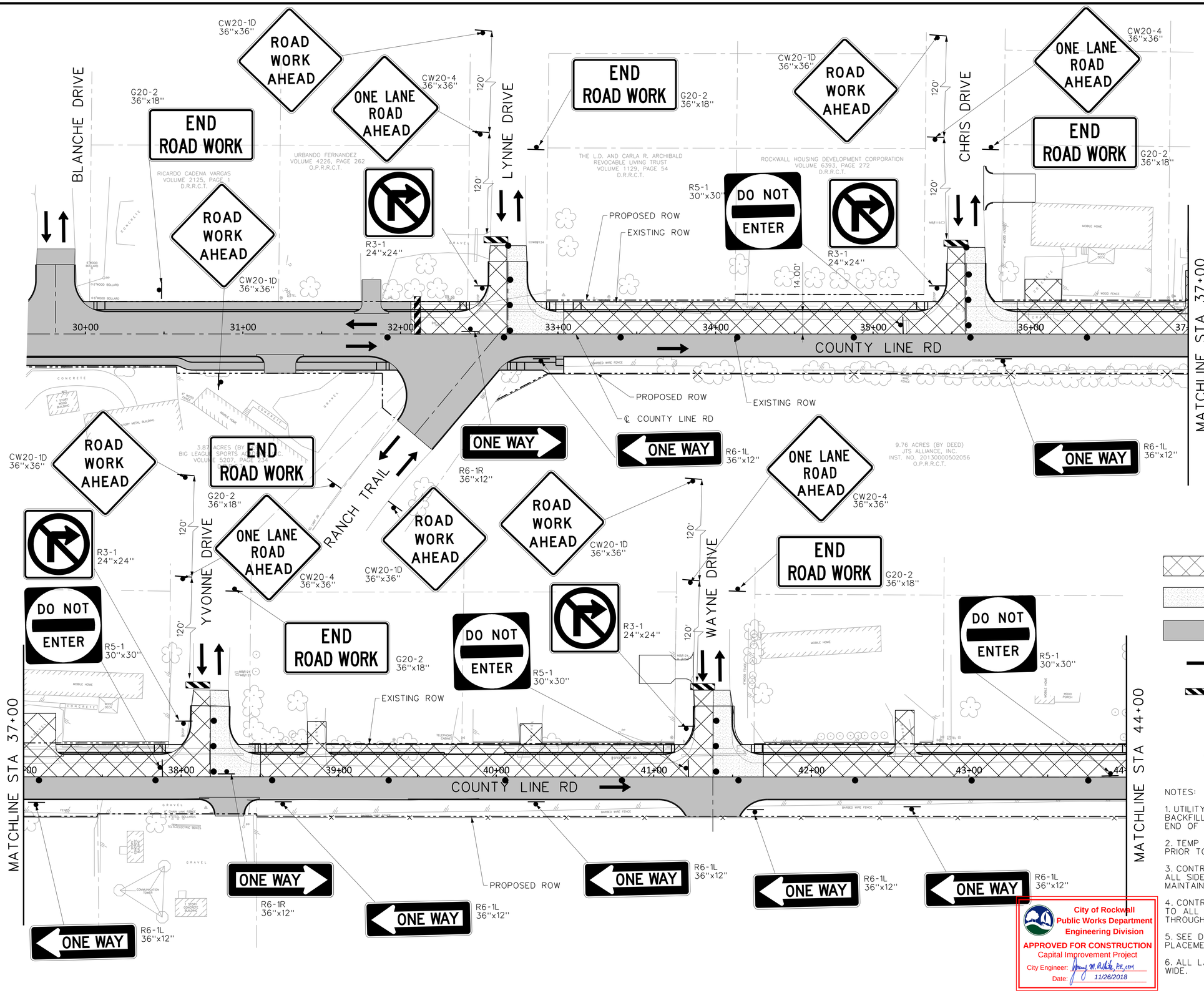
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DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pl-TCphse3-02.sht

NO. ISSUES BY DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET TC-06
SEQ. 27

MicroStation V8 User: chm Office: Dallas
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Plot Scale: 60.0000 '/ In. Project: Freese and Nichols, Inc.
Save Date: 26 AUG 2018 - 01:45:20 AM



N

0 10' 20' 30' 60'
SCALE IN FEET

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RECORD DRAWINGS PREPARED ON: 3/17/2021

LEGEND

- PHASE 4 CONSTRUCTION
- PHASE 4B CONSTRUCTION
- COMPLETED PHASE
- TRAFFIC FLOW ARROW
- TYPE III BARRICADE
- TRAFFIC BARRELS (SPACED @ 70')
- TRAFFIC SIGN

NOTES:

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City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____, P.E., CFM
Date: 11/26/2018

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
8/27/18

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Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
TRAFFIC CONTROL PHASE 4
STA 32+00 TO STA 44+00

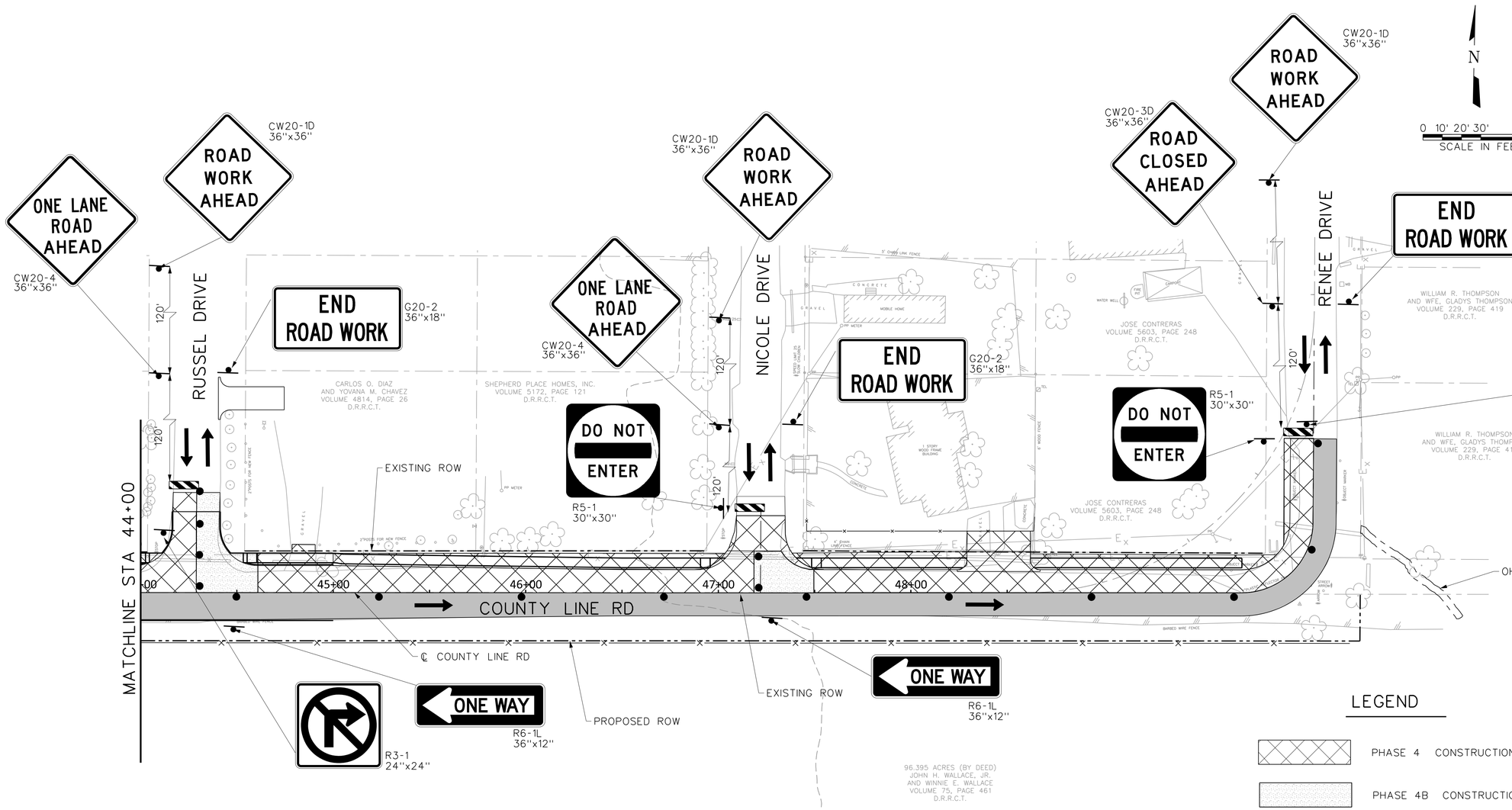
NO.	ISSUES	BY	DATE

FAN JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pl-TCphse4-01.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET TC-07
SEQ. 28

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Date: Aug. 26, 2018 - 01:45:22 AM



LEGEND

- PHASE 4 CONSTRUCTION
- PHASE 4B CONSTRUCTION
- COMPLETED PHASE
- TRAFFIC FLOW ARROW
- TYPE III BARRICADE
- TRAFFIC BARRELS (SPACED @ 70')

NOTES:

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City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____ P.E.
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2299
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
TRAFFIC CONTROL PHASE 4
STA 44+00 TO END

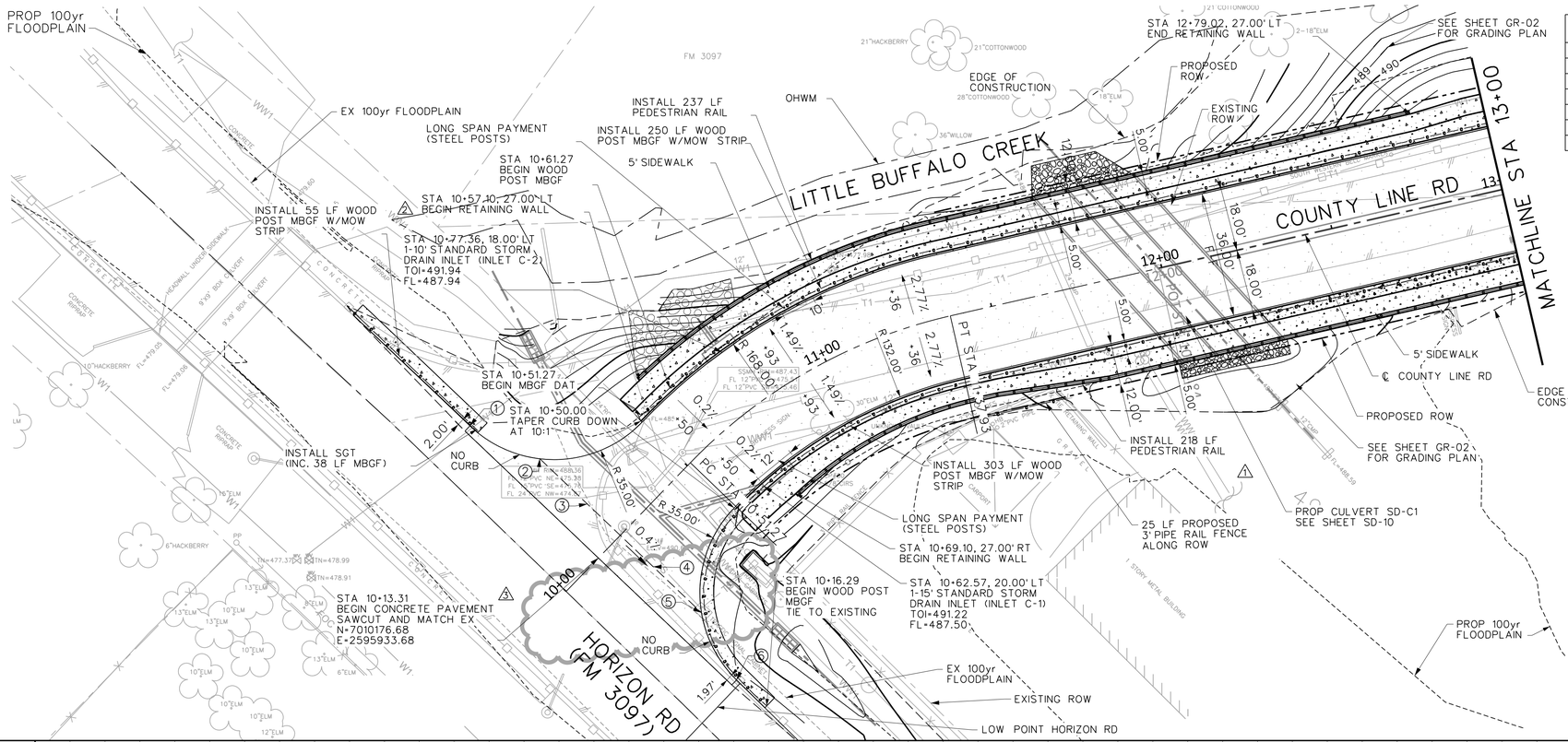
NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pi-TCphse4-02.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET TC-08
SEQ. 29

MicroStation V8 User: chm Office: Dallas
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ROK15508 Active Model: Default
Plot Scale: 60.0000 '/ In. Model: Default
Date: Aug. 26, 2018 - 01:45:24 AM Project: Freese and Nichols, Inc.



POINT TABLE			
#	STA	OFF	TOP ELEV
1	10+15.31	52.74' LT	491.41
2	10+22.33	31.83' LT	491.56
3	10+22.33	13.00' LT	491.48
4	10+22.33	13.00' RT	491.38
5	10+22.33	32.14' RT	491.30
6	10+23.03	52.74' RT	491.46

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RECORD DRAWINGS PREPARED ON: 3/17/2021

THE SEAL THAT ORIGINALLY APPEARED ON THIS DOCUMENT WAS AUTHORIZED BY BRANDON J. HUXFORD TEXAS NO. 117072 ON 8/27/18 AFTER THIS DOCUMENT WAS ORIGINALLY ISSUED, IT SHALL NOT BE USED WITHOUT PROPER NOTIFICATION OF THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

THE SEAL THAT ORIGINALLY APPEARED ON THIS DOCUMENT WAS AUTHORIZED BY ALAN D. HENDRIX TEXAS NO. 69798 ON 5/16/19 AFTER THIS DOCUMENT WAS ORIGINALLY ISSUED, IT SHALL NOT BE USED WITHOUT PROPER NOTIFICATION OF THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

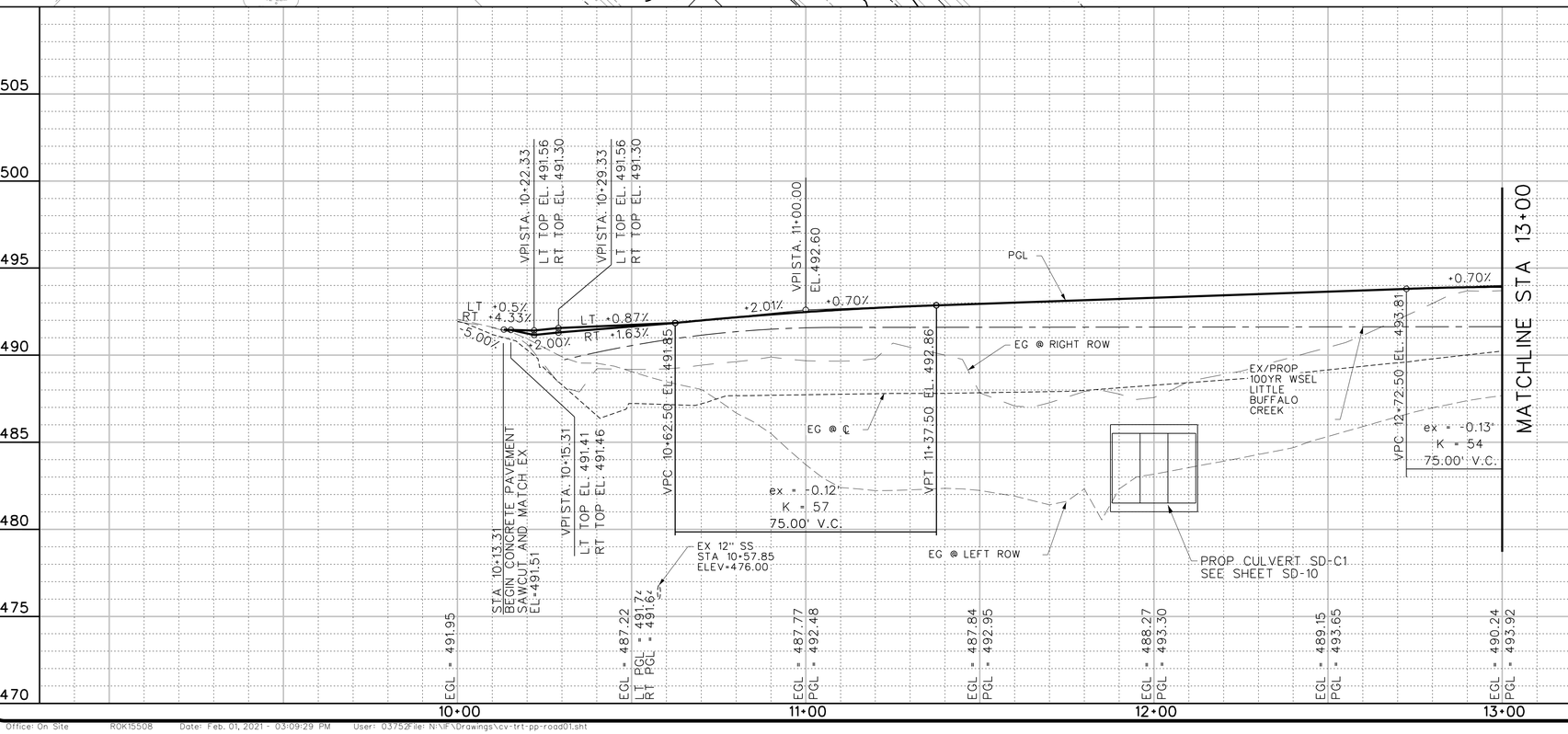
FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

LEGEND

- 6" CONCRETE DRIVEWAY 3,600 PSI W/NO. 4 BARS ON 18" CENTER EACH WAY
- 4" CONCRETE SIDEWALK 3,000 PSI W/NO.3 BARS ON 24" CENTER EACH WAY
- 10" CONCRETE PAVEMENT 3,600 PSI W/NO.4 BARS ON 18" CENTER EACH WAY
- FLOW ARROW

NOTES:

1. ALL SIDEWALKS ARE 5' WIDE (6' WIDE AND LUGGED IN WHEN AGAINST BOC).
2. ALL DRIVEWAYS ARE STATIONED TO CL OF DRIVEWAY.
3. ALL DIMENSIONS AND POINTS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
4. ALL FENCE RELOCATIONS TO BE PERFORMED DURING RIGHT-OF-WAY ACQUISITION.
5. ALL RETAINING WALLS LOCATED AT THE BACK OF SIDEWALK EXCEPT AT THE CULVERT SHOULD BE PER DETAIL ON SHEET PD-01.



PROFILE LEGEND

- EXISTING GRADE
- PROFILE GRADE LINE
- 100YR WSEL
- EX GRADE @ LT ROW
- EX GRADE @ RT ROW

N

0 10' 20' 40'
HORIZONTAL SCALE
0 2' 4' 8'
VERTICAL SCALE

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE RD RECONSTRUCTION

CIVIL

PAVING PLAN AND PROFILE BEGIN TO STA 13+00

NO	ISSUES	BY	DATE
1	RECORD DRAWINGS	AH	3/17/21
2	CO #4	AH	5/16/19
3	CO #3	AH	04/10/19

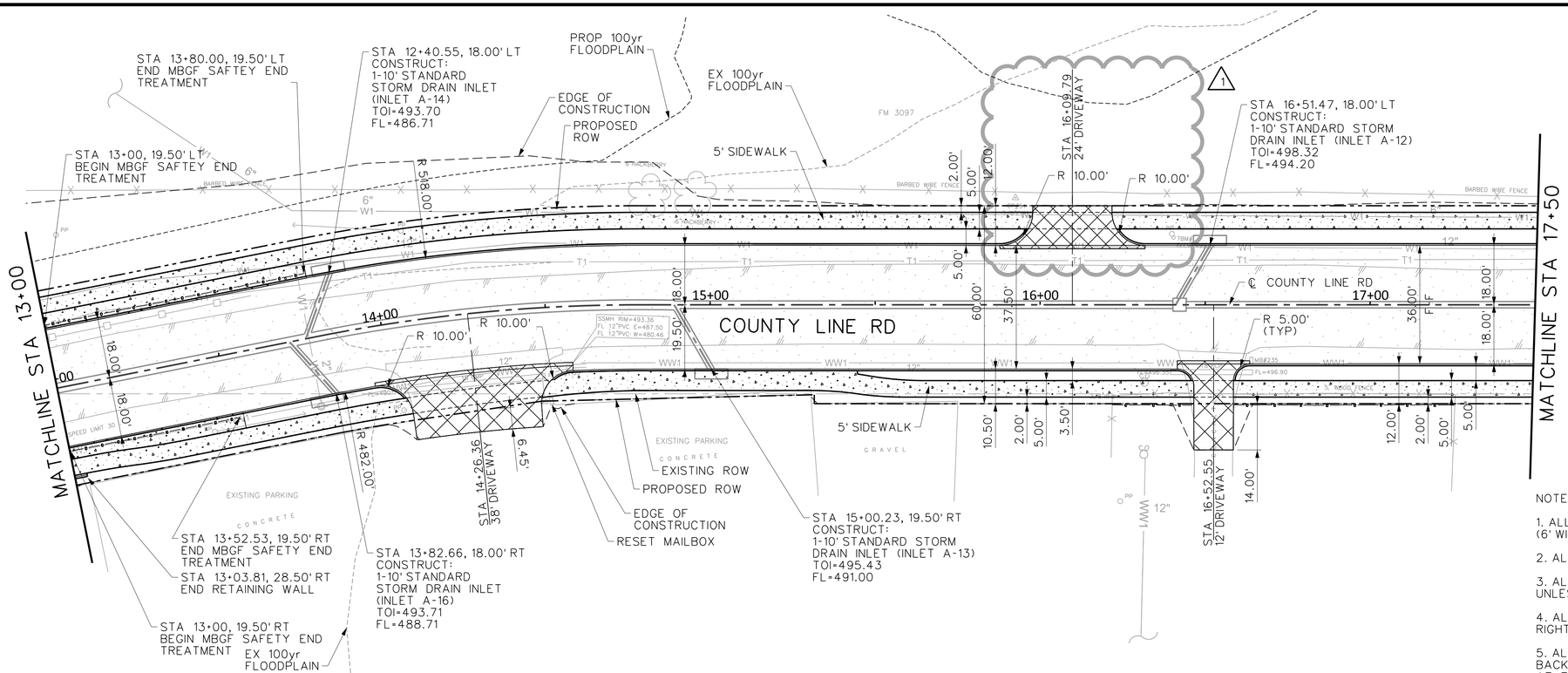
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

F&N JOB NO.	ROK15508
DATE	04/2019
DESIGNED	AU
DRAWN	SI
CHECKED	BH
FILE NAME	cv-trt-pp-road01.sht

SHEET PV-01
SEQ. 30

MicroStation V8 User: 03752Office: On Site
ROK15508 N:\IF\Drawings\cv-trt-pp-road01.sht
Plot Date: 2 Feb 2021 - 03:09:29 PM
Plot Scale: 40.0000 ' / in.
Plot Driver: Default
Project: Freese and Nichols Inc.
Model: Default

Office: On Site ROK15508 Date: Feb. 01, 2021 - 03:09:29 PM User: 03752File: N:\IF\Drawings\cv-trt-pp-road01.sht



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RECORD DRAWINGS PREPARED ON: 3/17/2021

THE SEAL THAT APPEARED ON THIS DOCUMENT WAS AUTHORIZED BY BRANDON J. HUXFORD TEXAS NO.: 117072 ON 8/27/18. IT IS A VIOLATION OF LAW TO USE WITHOUT PROPER NOTIFICATION OF THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS · ALAN D. HEMBREE · 89798 · REGISTERED PROFESSIONAL ENGINEER · 2/5/2019

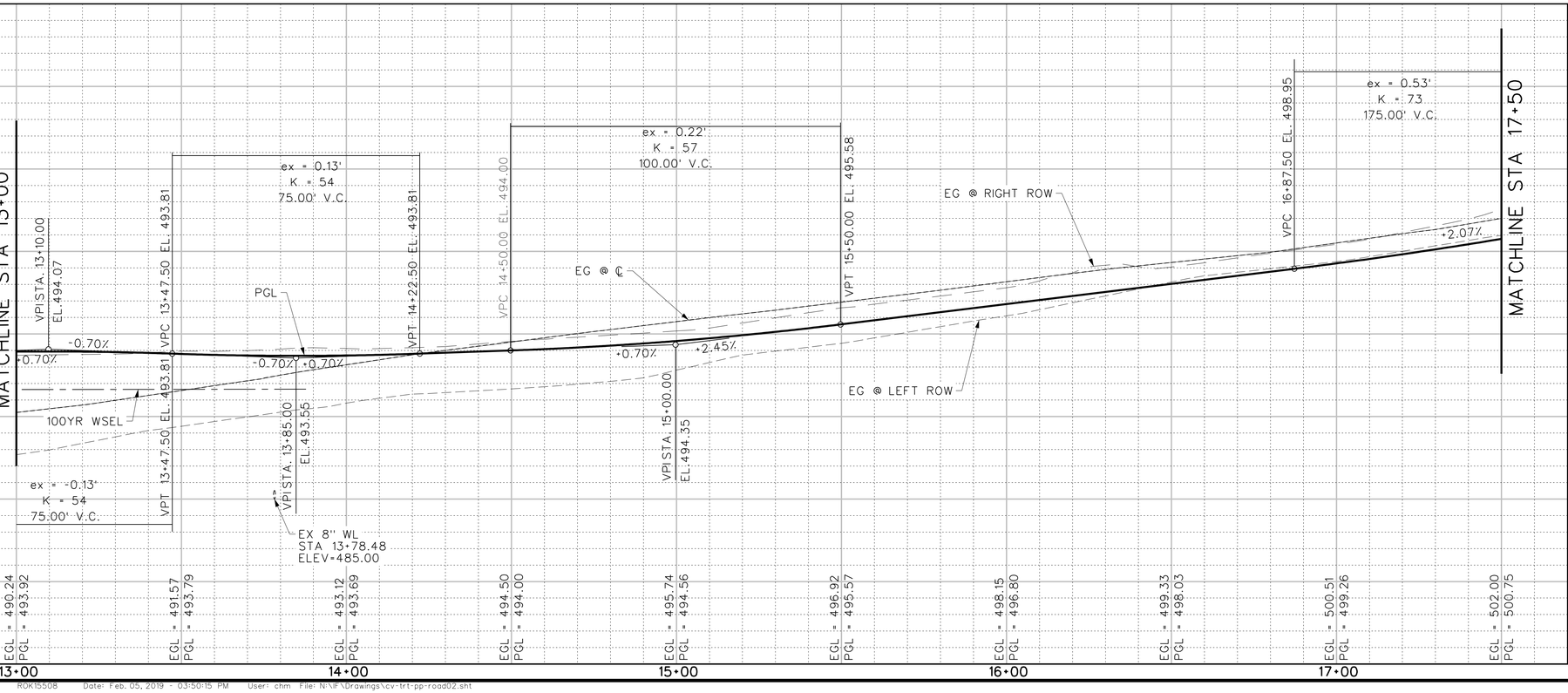
FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2299
Web - www.freese.com

LEGEND

- 6" CONCRETE DRIVEWAY 3,600 PSI W/NO. 4 BARS ON 18" CENTER EACH WAY
- 4" CONCRETE SIDEWALK 3,000 PSI W/NO.3 BARS ON 24" CENTER EACH WAY
- 10" CONCRETE PAVEMENT 3,600 PSI W/NO.4 BARS ON 18" CENTER EACH WAY

NOTES:

1. ALL SIDEWALKS ARE 5' WIDE (6' WIDE AND LUGGED IN WHEN AGAINST BOC).
2. ALL DRIVEWAYS ARE STATIONED TO CL OF DRIVEWAY.
3. ALL DIMENSIONS AND POINTS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
4. ALL FENCE RELOCATIONS TO BE PERFORMED DURING RIGHT-OF-WAY ACQUISITION.
5. ALL RETAINING WALLS LOCATED AT THE BACK OF SIDEWALK EXCEPT AT THE CULVERT SHOULD BE PER DETAIL ON SHEET PD-01.



PROFILE LEGEND

- EXISTING GRADE
- PROFILE GRADE LINE
- 100YR WSEL
- EX GRADE @ LT ROW
- EX GRADE @ RT ROW

REVISION
DATE: 02/15/2019
City of Rockwall
Public Works Department
Engineering Division

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____, P.E., CFM
Date: 02/15/2019

N

0 10' 20' 40'
HORIZONTAL SCALE
0 2' 4' 8'
VERTICAL SCALE

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

PAVING PLAN AND PROFILE STA 13+00 TO STA 17+50

NO.	ISSUES	BY	DATE
1	CO #1	ADH	2/5/2019

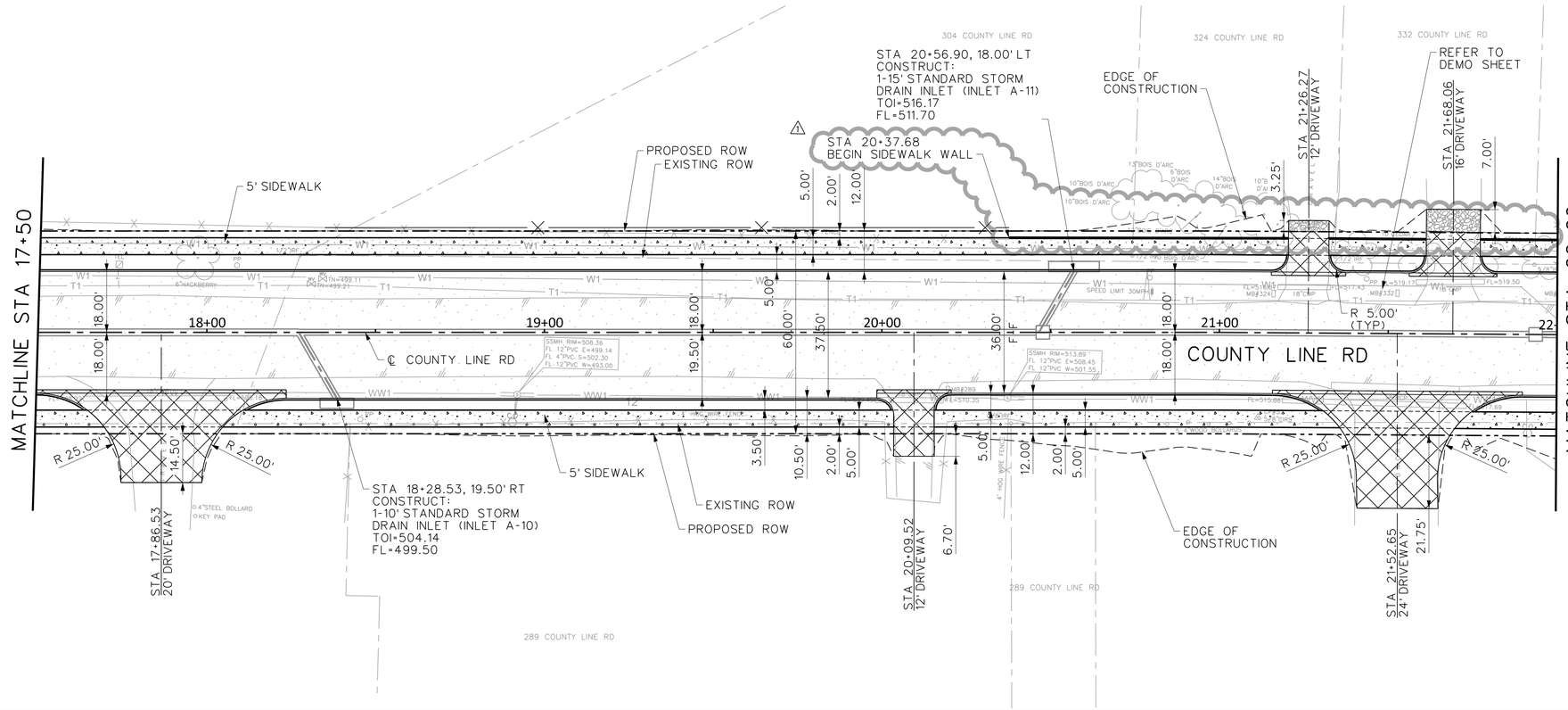
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
CHECKED BH
FILE NAME cv-trt-pp-road02.sht

SHEET PV-02
SEQ. 31

MicroStation V8 User: chm Office: Fort Worth
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Plot Date=05 Feb 2019 - 03:50:15 PM
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Project: Freese and Nichols, Inc.

Office: Fort Worth ROK15508 Date: Feb. 05, 2019 - 03:50:15 PM User: chm File: N:\NF\Drawings\cv-trt-pp-road02.sht

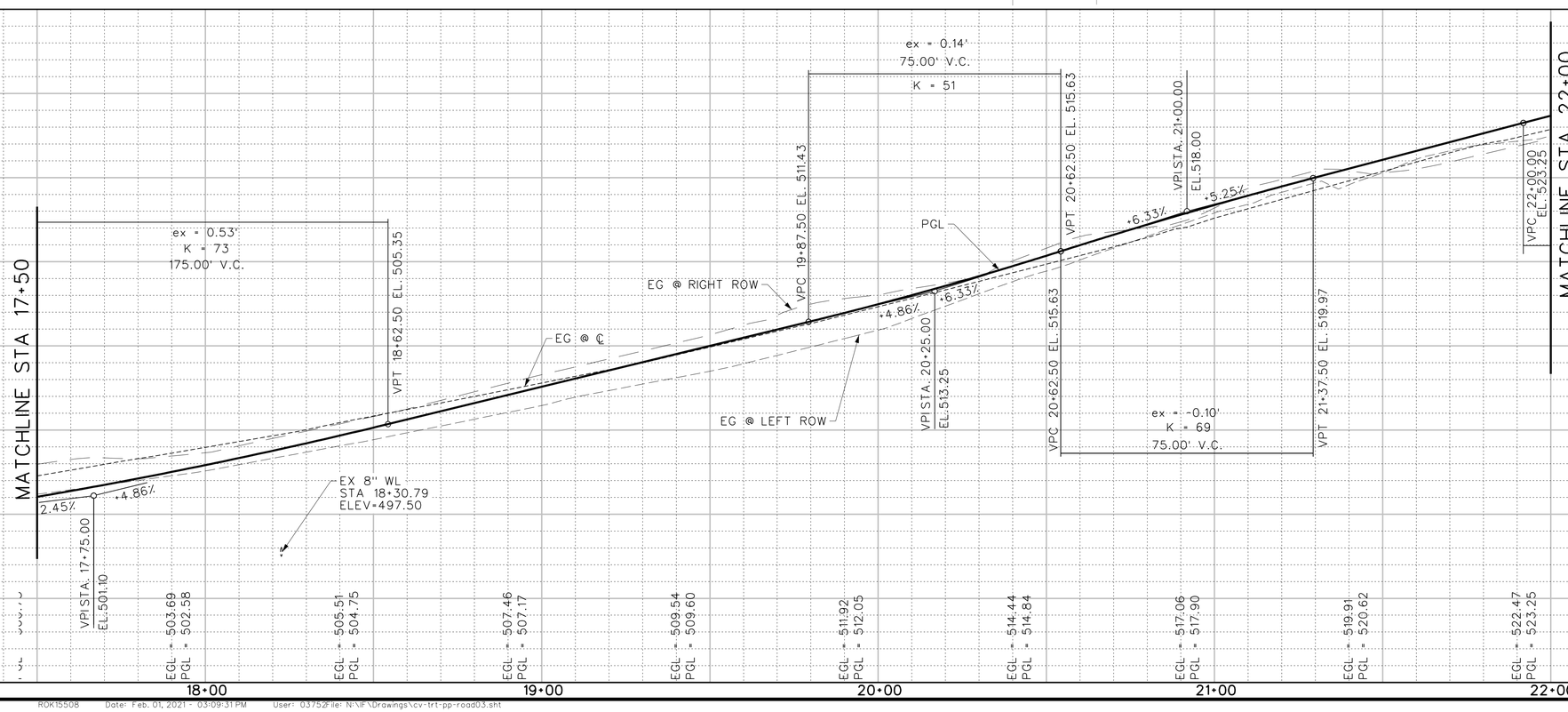


LEGEND

- 6" CONCRETE DRIVEWAY 3,600 PSI W/NO. 4 BARS ON 18" CENTER EACH WAY
- 4" CONCRETE SIDEWALK 3,000 PSI W/NO.3 BARS ON 24" CENTER EACH WAY
- GRAVEL DRIVEWAY
- 10" CONCRETE PAVEMENT 3,600 PSI W/NO.4 BARS ON 18" CENTER EACH WAY

NOTES:

1. ALL SIDEWALKS ARE 5' WIDE (6' WIDE AND LUGGED IN WHEN AGAINST BOC).
2. ALL DRIVEWAYS ARE STATIONED TO CL OF DRIVEWAY.
3. ALL DIMENSIONS AND POINTS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
4. ALL FENCE RELOCATIONS TO BE PERFORMED DURING RIGHT-OF-WAY ACQUISITION.
5. ALL RETAINING WALLS LOCATED AT THE BACK OF SIDEWALK EXCEPT AT THE CULVERT SHOULD BE PER DETAIL ON SHEET PD-01.



PROFILE LEGEND

- EXISTING GRADE
- PROFILE GRADE LINE
- 100YR WSEL
- EX GRADE @ LT ROW
- EX GRADE @ RT ROW

N

0 10' 20' 40'
HORIZONTAL SCALE

0 2' 4' 8'
VERTICAL SCALE

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

RELEASED FOR THE PURPOSES OF INTERIM REVIEW UNDER THE AUTHORITY OF BRANDON J. HUCKABEE, TEXAS NO. 117072 ON 8/27/2018. IT IS NOT TO BE USED FOR BIDDING, PERMIT OR CONSTRUCTION PURPOSES.

THIS SEAL THAT ORIGINALLY APPEARED ON THIS DOCUMENT WAS AUTHORIZED BY BRANDON J. HUCKABEE, TEXAS NO. 117072 ON 8/27/2018. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER AUTHORIZATION AND SUBSEQUENT DISTRIBUTION IS A PUNISHABLE OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

PAVING PLAN AND PROFILE STA 17+50 TO STA 22+00

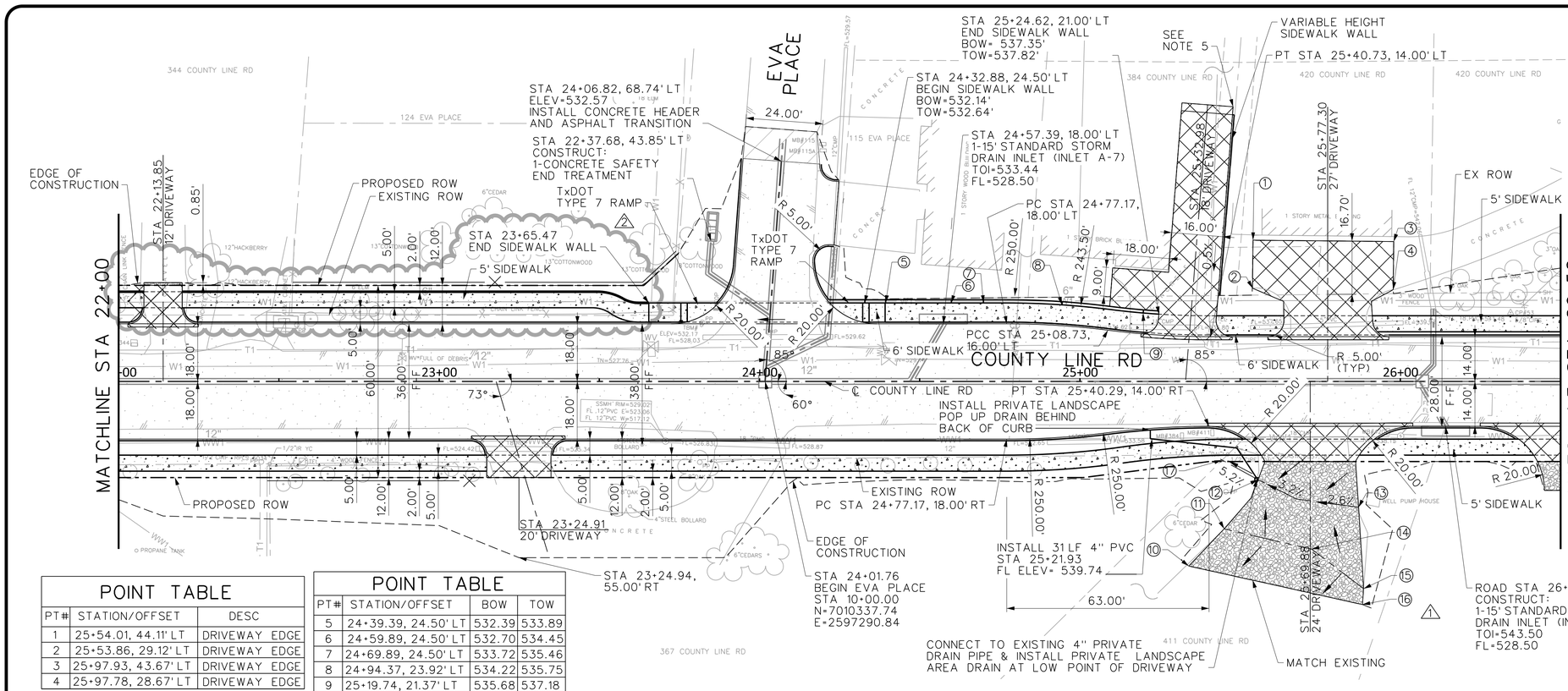
NO.	ISSUES	BY	DATE
1	RECORD DRAWINGS	AH	3/17/21

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

FAN JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
CHECKED BH
REVISED
FILE NAME cv-trt-pp-road03.sht

SHEET PV-03
SEQ. 32

MicroStation V8 User: 03752Office: On Site
ROK15508 N:\IF\Drawings\cv-trt-pp-road03.sht
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Plot: Feb. 01, 2021 - 03:09:31 PM
Model: Default
Project: Freese and Nichols Inc



NOTES:

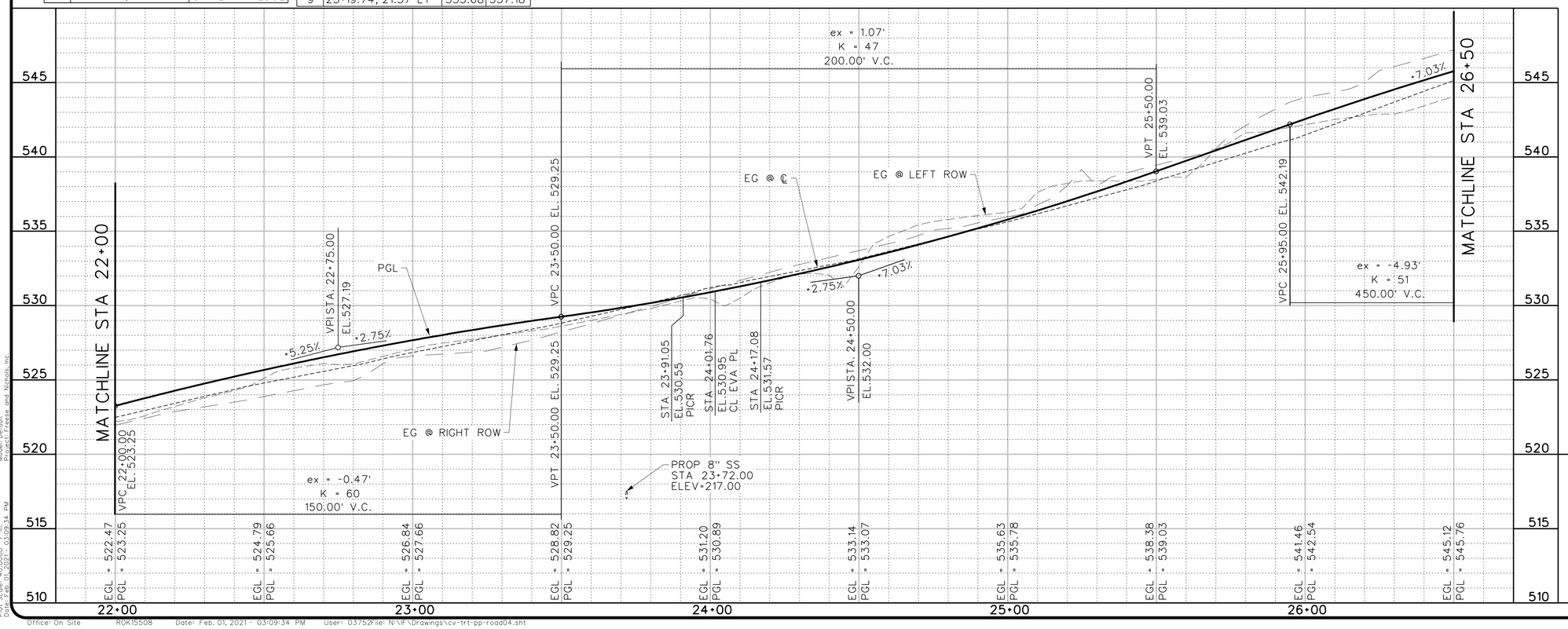
1. ALL SIDEWALKS ARE 5' WIDE (6' WIDE AND LUGGED IN WHEN AGAINST BOC).
2. ALL DRIVEWAYS ARE STATIONED TO CL OF DRIVEWAY.
3. ALL DIMENSIONS AND POINTS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
4. ALL FENCE RELOCATIONS TO BE PERFORMED DURING RIGHT-OF-WAY ACQUISITION.
5. DRIVEWAY AT 384 COUNTY LINE RD TO EXTEND TO EDGE OF EXISTING CONCRETE. CONTRACTOR TO VERIFY IN FIELD.
6. ALL RETAINING WALLS LOCATED AT THE BACK OF SIDEWALK EXCEPT AT THE CULVERT SHOULD BE PER DETAIL ON SHEET PD-01.

POINT TABLE		
PT#	STATION/OFFSET	DESC
1	25+54.01, 44.11' LT	DRIVEWAY EDGE
2	25+53.86, 29.12' LT	DRIVEWAY EDGE
3	25+97.93, 43.67' LT	DRIVEWAY EDGE
4	25+97.78, 28.67' LT	DRIVEWAY EDGE

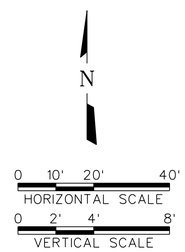
POINT TABLE			
PT#	STATION/OFFSET	BOW	TOW
5	24+39.39, 24.50' LT	532.39	533.89
6	24+59.89, 24.50' LT	532.70	534.45
7	24+69.89, 24.50' LT	533.72	535.46
8	24+94.37, 23.92' LT	534.22	535.75
9	25+19.74, 21.37' LT	535.68	537.18

POINT TABLE			
PT#	N	E	PROP. ELEV.
10	7010283.15	2597424.32	538.84
11	7010294.97	2597435.10	539.41
12	7010310.57	2597445.32	539.35
13	7010302.67	2597476.90	540.30
14	7010289.28	2597462.53	540.48
15	7010277.32	2597479.03	541.30
16	7010272.34	2597478.78	541.26
17	7010316.47	2597433.99	538.67

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FREESE AND NICHOLS, INC.
RECORD DRAWINGS PREPARED ON: 3/17/2021



PROFILE LEGEND
- EXISTING GRADE
- PROFILE GRADE LINE
- 100YR WSEL
- EX GRADE @ LT ROW
- EX GRADE @ RT ROW



I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM AUTHORIZED TO PRACTICE ENGINEERING IN THE STATE OF TEXAS.
FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
BRANDON J. HUMPHRIES
TEXAS NO. 117072 ON 8/27/2018
BE SEALED BY BRANDON J. HUMPHRIES
ALTERATION ON A SEALED DOCUMENT WITHOUT PROPER AUTHORITY IS PROHIBITED BY THE TEXAS ENGINEERING PRACTICE ACT. ANY ALTERATION IS A VIOLATION OF LAW AND IS SUBJECT TO PENALTIES FOR AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

FREESE NICHOLS
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Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
CIVIL
COUNTY LINE ROAD RECONSTRUCTION
PAVING PLAN AND PROFILE
STA 22+00 TO STA 26+50

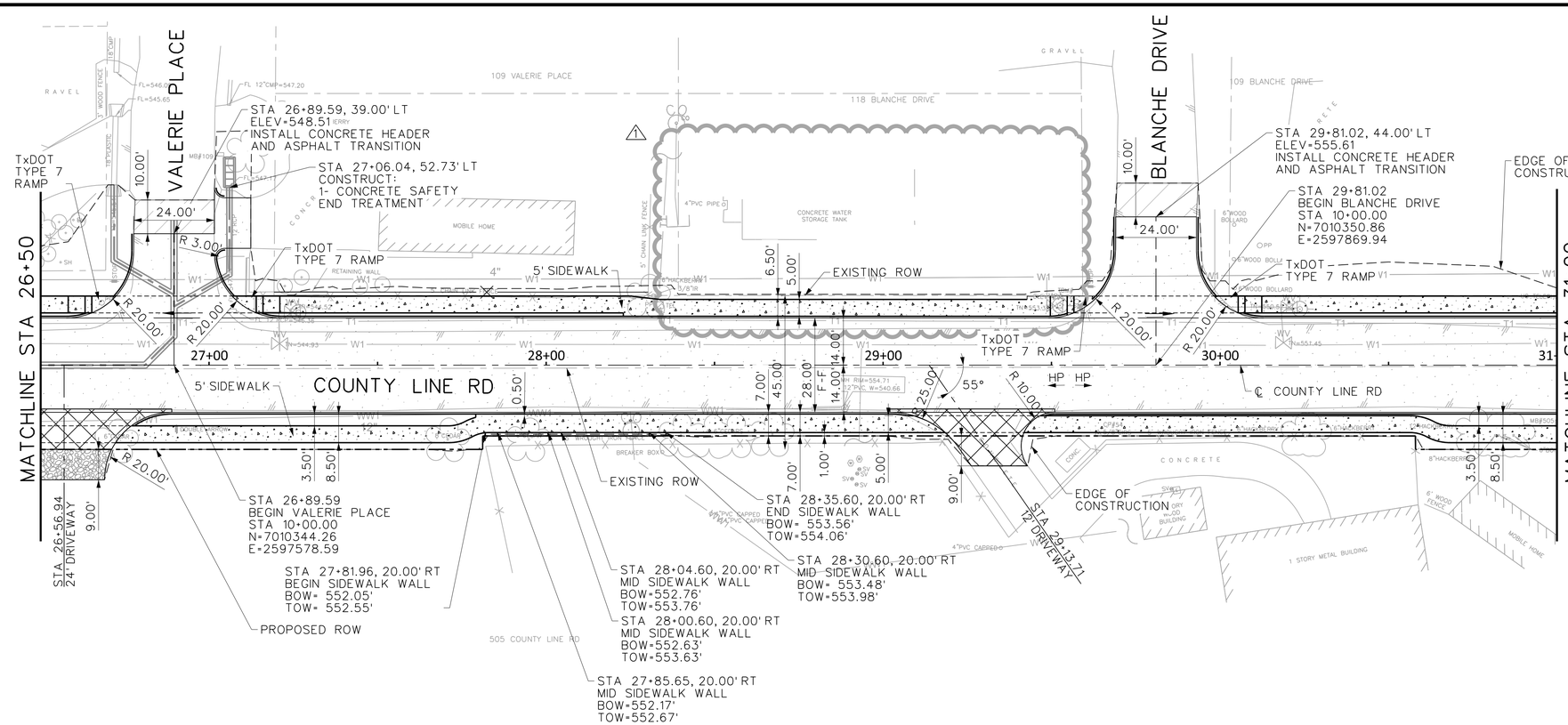
NO.	ISSUES	BY	DATE
1	RECORD DRAWINGS	AH	3/17/21
2	CO #6	SEC	2/12/2020

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

FAN JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pp-road04.sht

SHEET PV-04
SEQ. 33

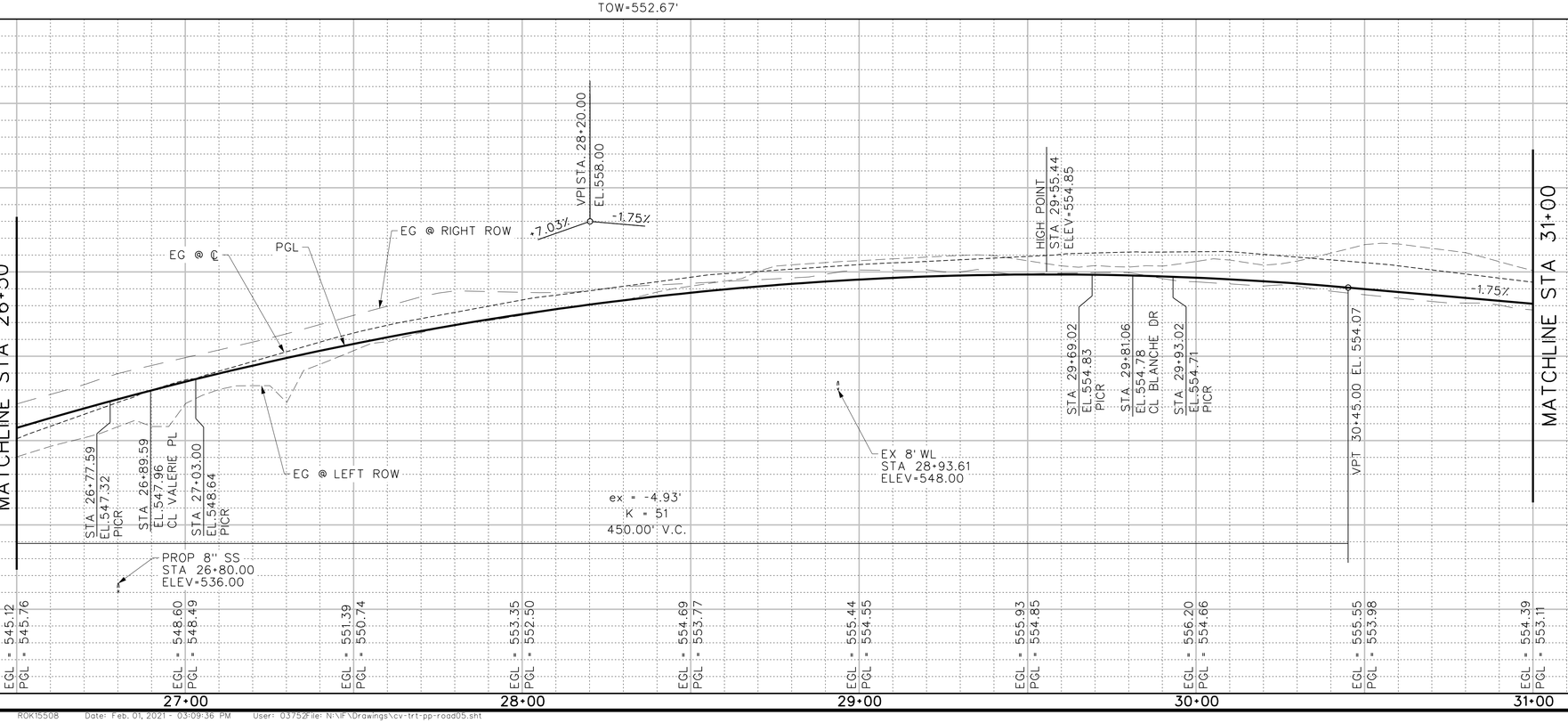
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Model: Default
Project: Freese and Nichols Inc.
Office: On Site ROK15508 Date: Feb. 01, 2021 - 03:09:34 PM User: 03752File: N:\F\Drawings\cv-trt-pp-road04.sht



LEGEND

NOTES:

1. ALL SIDEWALKS ARE 5' WIDE (6' WIDE AND LUGGED IN WHEN AGAINST BOC).
2. ALL DRIVEWAYS ARE STATIONED TO CL OF DRIVEWAY.
3. ALL DIMENSIONS AND POINTS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
4. ALL FENCE RELOCATIONS TO BE PERFORMED DURING RIGHT-OF-WAY ACQUISITION.
5. ALL RETAINING WALLS LOCATED AT THE BACK OF SIDEWALK EXCEPT AT THE CULVERT SHOULD BE PER DETAIL ON SHEET PD-01.



PROFILE LEGEND

- EXISTING GRADE
- PROFILE GRADE LINE
- 100YR WSEL
- EX GRADE @ LT ROW
- EX GRADE @ RT ROW

HORIZONTAL SCALE 0 10' 20' 40'
VERTICAL SCALE 0 2' 4' 8'

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

THE SEAL THAT OPPEARS HYPEARED ON THIS DOCUMENT WAS AUTHORIZED BY BRANDON J. HUDSPETH
TEXAS NO.: 117072 ON 8/27/2018
ALTERATION ON A SEALED DOCUMENT WITHOUT PROPER AUTHORITY FROM THE LICENSED ENGINEER IS A PUBLIC OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

FREESE NICHOLS
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Fax: (214) 217-2299
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

PAVING PLAN AND PROFILE STA 26+50 TO STA 31+00

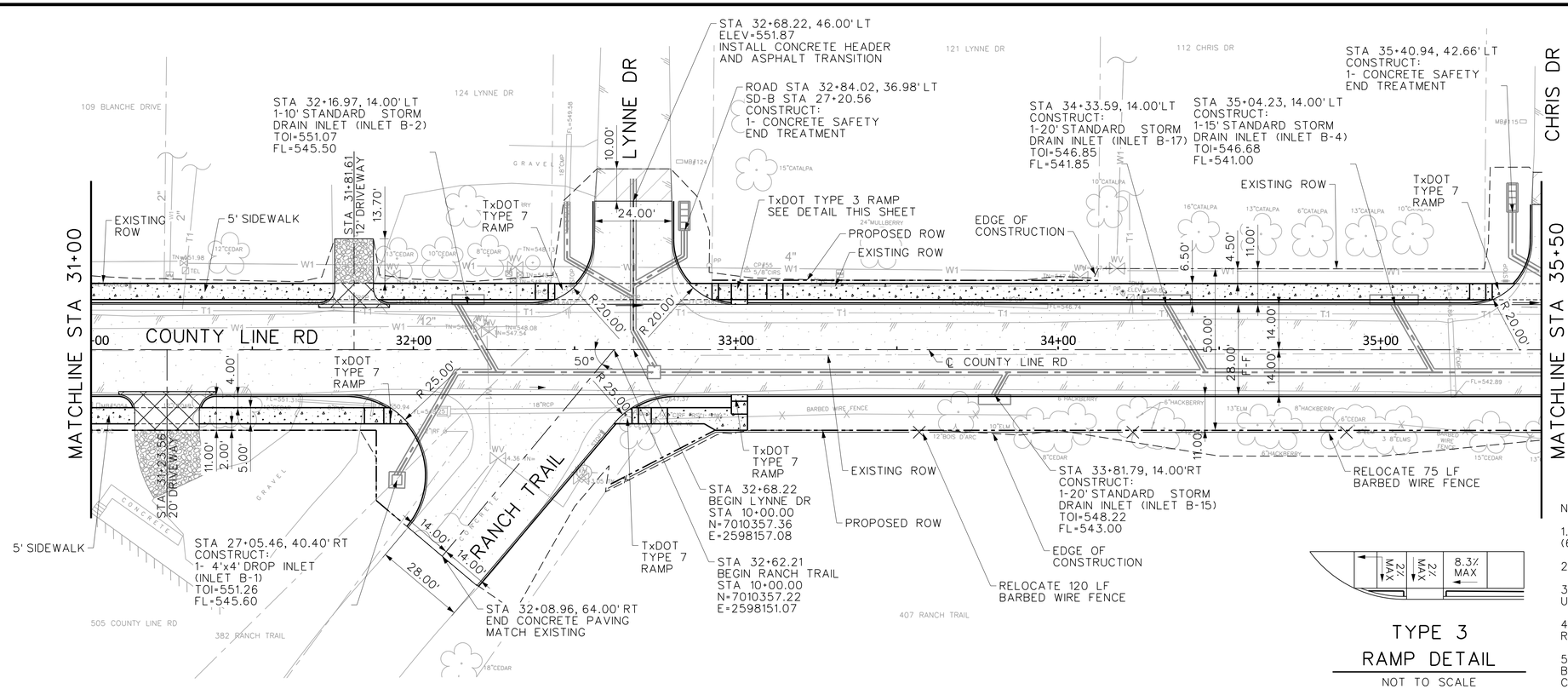
NO.	ISSUES	BY	DATE
1	RECORD DRAWINGS	AH	3/17/21

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
CHECKED BH
FILE NAME cv-trt-pp-road05.sht

SHEET PV-05
SEQ. 34

MicroStation V8 User: 03752Office: On Site
ROK15508 - N:\#Drawings\cv-trt-pp-road05.sht
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Office: On Site ROK15508 Date: Feb. 01, 2021 - 03:09:36 PM User: 03752File: N:\#\Drawings\cv-trt-pp-road05.sht



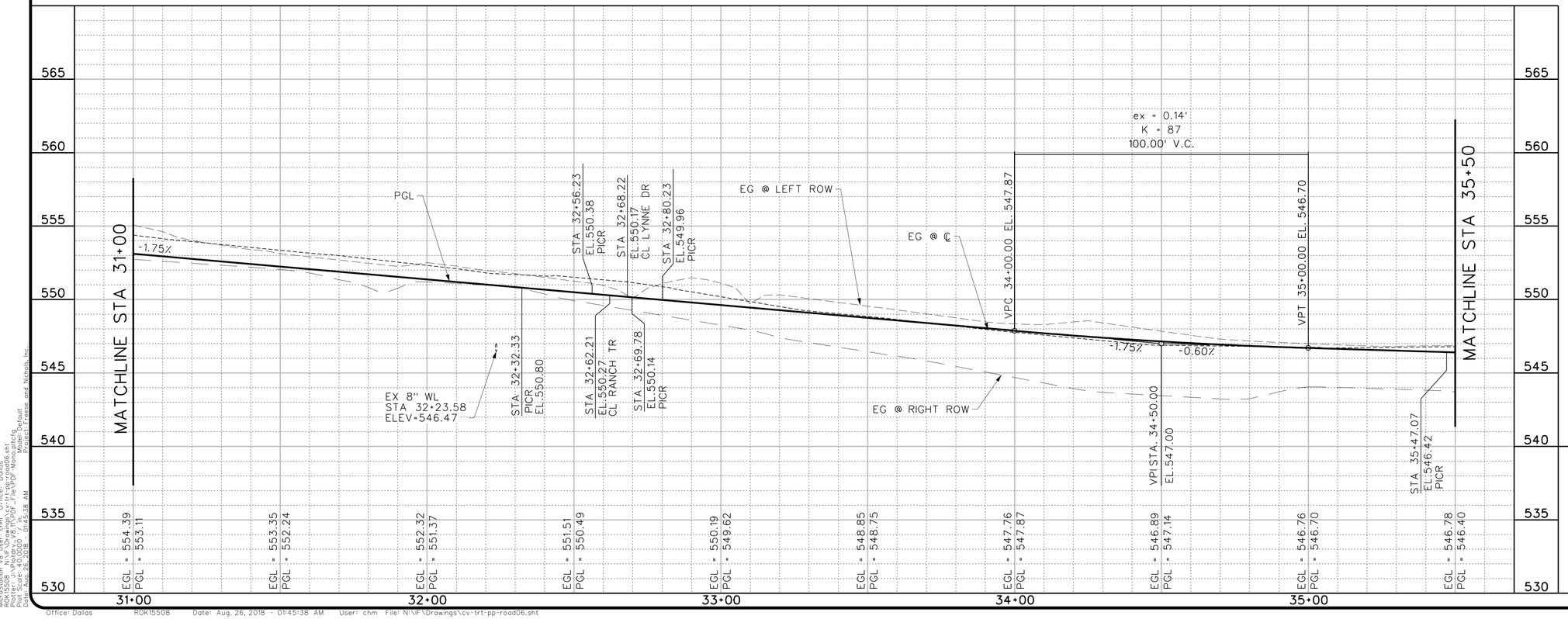
TYPE 3
RAMP DETAIL
NOT TO SCALE

LEGEND

- 6" CONCRETE DRIVEWAY 3,600 PSI W/NO. 4 BARS ON 18" CENTER EACH WAY
- 4" CONCRETE SIDEWALK 3,000 PSI W/NO.3 BARS ON 24" CENTER EACH WAY
- ASPHALT TRANSITION
- GRAVEL DRIVEWAY
- 10" CONCRETE PAVEMENT 3,600 PSI W/NO.4 BARS ON 18" CENTER EACH WAY
- FLOW ARROW

NOTES:

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5. ALL RETAINING WALLS LOCATED AT THE BACK OF SIDEWALK EXCEPT AT THE CULVERT SHOULD BE PER DETAIL ON SHEET PD-01.



PROFILE LEGEND

- EXISTING GRADE
- PROFILE GRADE LINE
- 100YR WSEL
- EX GRADE @ LT ROW
- EX GRADE @ RT ROW

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____, P.E., CFM
Date: 11/26/2018

N

0 10' 20' 40'
HORIZONTAL SCALE
0 2' 4' 8'
VERTICAL SCALE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUMFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
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Phone: (214) 217-2200
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Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
PAVING PLAN AND PROFILE
STA 31+00 TO STA 35+50

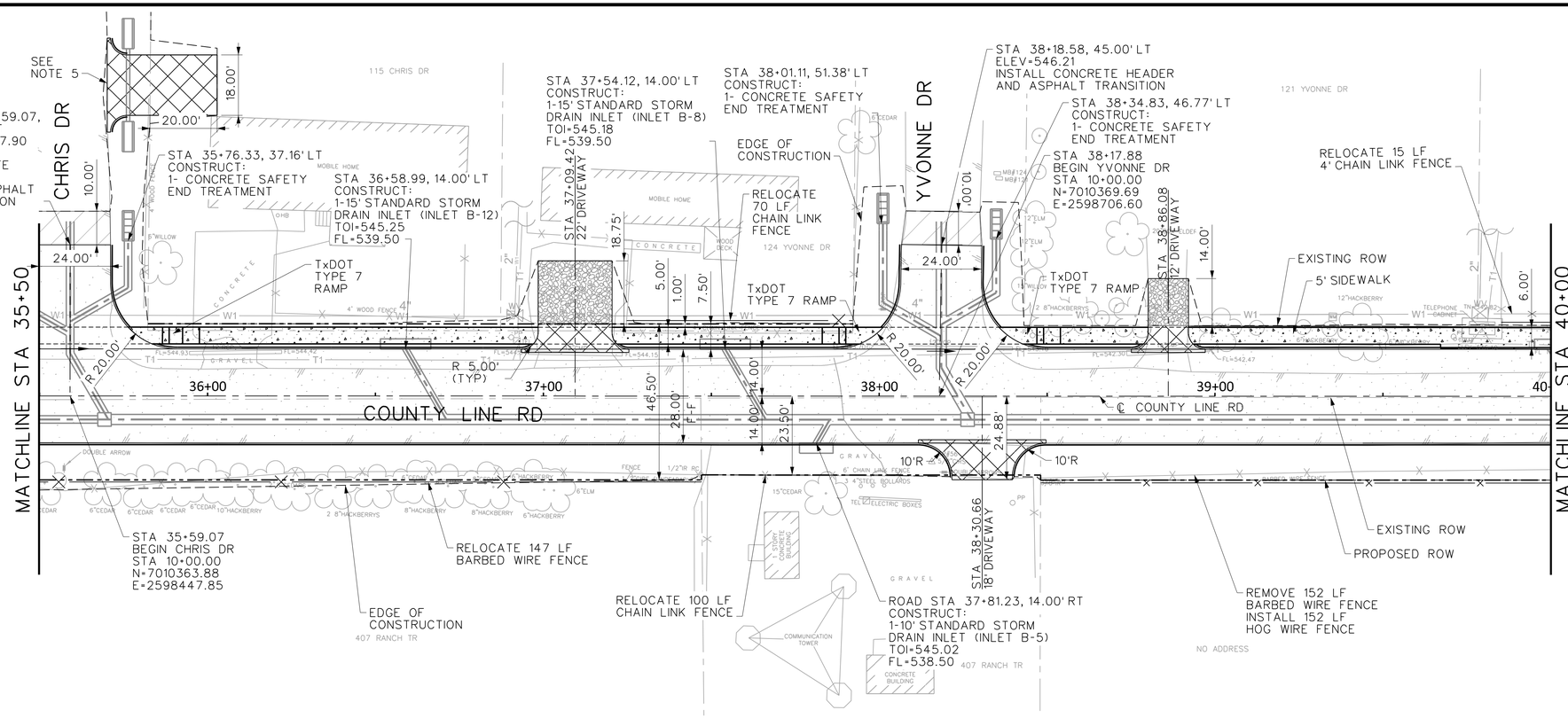
NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pp-road06.sht

SHEET PV-06
SEQ. 35

MicroStation V8 User: chm Office: Dallas
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Office: Dallas ROK15508 Date: Aug. 26, 2018 - 01:45:38 AM User: chm File: N:\F\Drawings\cv-trt-pp-road06.sht

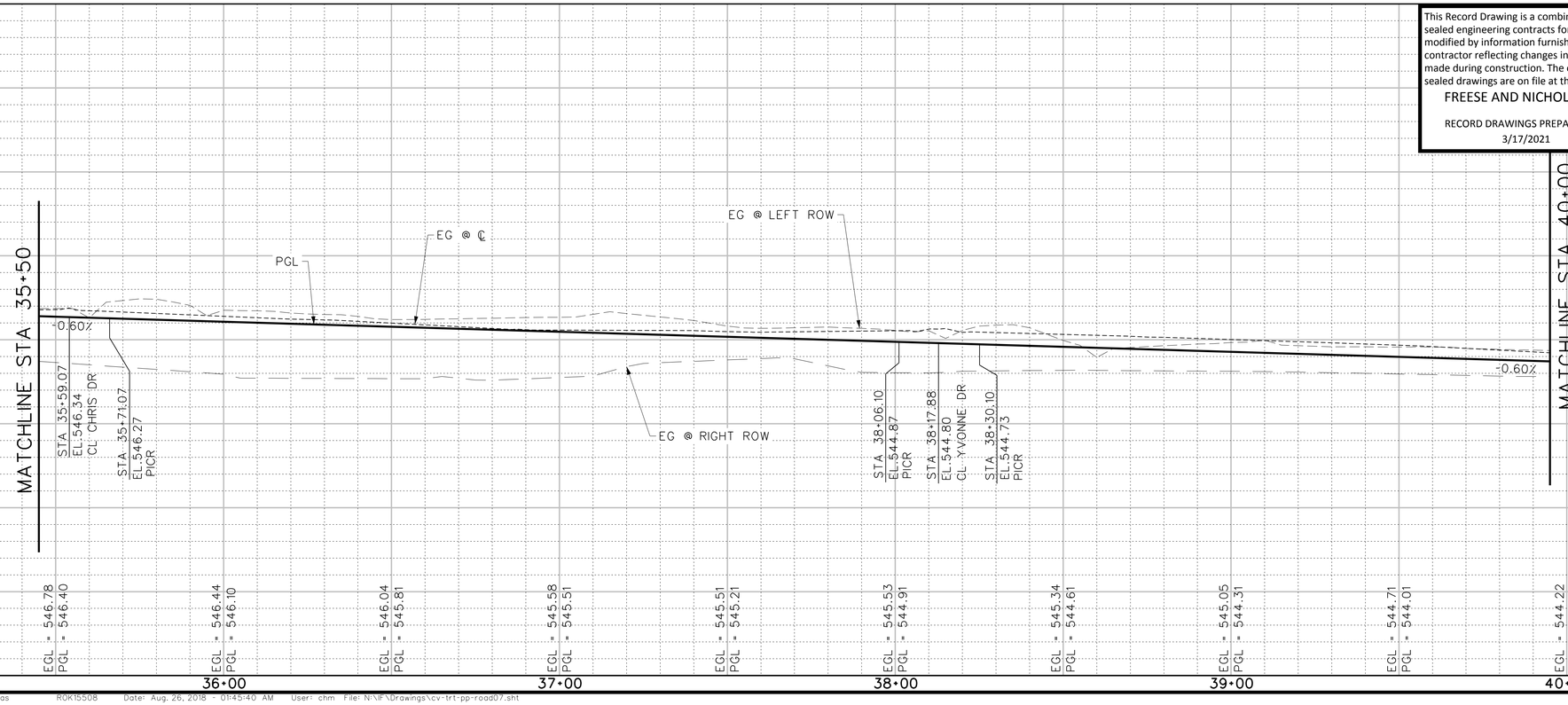


LEGEND

- 6" CONCRETE DRIVEWAY 3,600 PSI W/NO. 4 BARS ON 18" CENTER EACH WAY
- 4" CONCRETE SIDEWALK 3,000 PSI W/NO.3 BARS ON 24" CENTER EACH WAY
- ASPHALT TRANSITION
- GRAVEL DRIVEWAY
- 10" CONCRETE PAVEMENT 3,600 PSI W/NO.4 BARS ON 18" CENTER EACH WAY
- FLOW ARROW

NOTES:

1. ALL SIDEWALKS ARE 5' WIDE (6' WIDE AND LUGGED IN WHEN AGAINST BOC).
2. ALL DRIVEWAYS ARE STATIONED TO CL OF DRIVEWAY.
3. ALL DIMENSIONS AND POINTS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
4. ALL FENCE RELOCATIONS TO BE PERFORMED DURING RIGHT-OF-WAY ACQUISITION.
5. DRIVEWAY AT 115 CHRIS DR TO BE INSTALLED ALONG PROPERTY LINE. 12" RCP AND SAFETY-END-TREATMENTS TO BE INSTALLED ALONG EXISTING DITCH FLOW LINE. CONTRACTOR TO VERIFY LOCATION AND ELEVATIONS OF DRIVEWAY AND CULVERT FLOW LINE IN FIELD.
6. ALL RETAINING WALLS LOCATED AT THE BACK OF SIDEWALK ECEPT AT THE CULVERT SHOULD BE PER DETAIL ON SHEET PD-01.
7. HOG WIRE GATE AND FENCE FABRIC SHALL BE 2"X4" 4-GAUGE STEEL WIRE MESH W/ FRAME OF 16-GAUGE TUBING. GATE SHALL HAVE GALVANIZED COATING, POSTS SECURED IN CONCRETE, LOCKABLE FEATURE, AND 1 FT OPENING AT TOP. SHOP DRAWINGS WILL BE REQUIRED FOR APPROVAL BY OWNER.



This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: Jeremy M. Pilkie, P.E., CFM
Date: 11/26/2018

N

0 10' 20' 40'
HORIZONTAL SCALE
0 2' 4' 8'
VERTICAL SCALE

PROFILE LEGEND
- EXISTING GRADE
- PROFILE GRADE LINE
- 100YR WSEL
- EX GRADE @ LT ROW
- EX GRADE @ RT ROW

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2299
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
PAVING PLAN AND PROFILE
STA 35+50 TO STA 40+00

NO.	ISSUES	BY	DATE

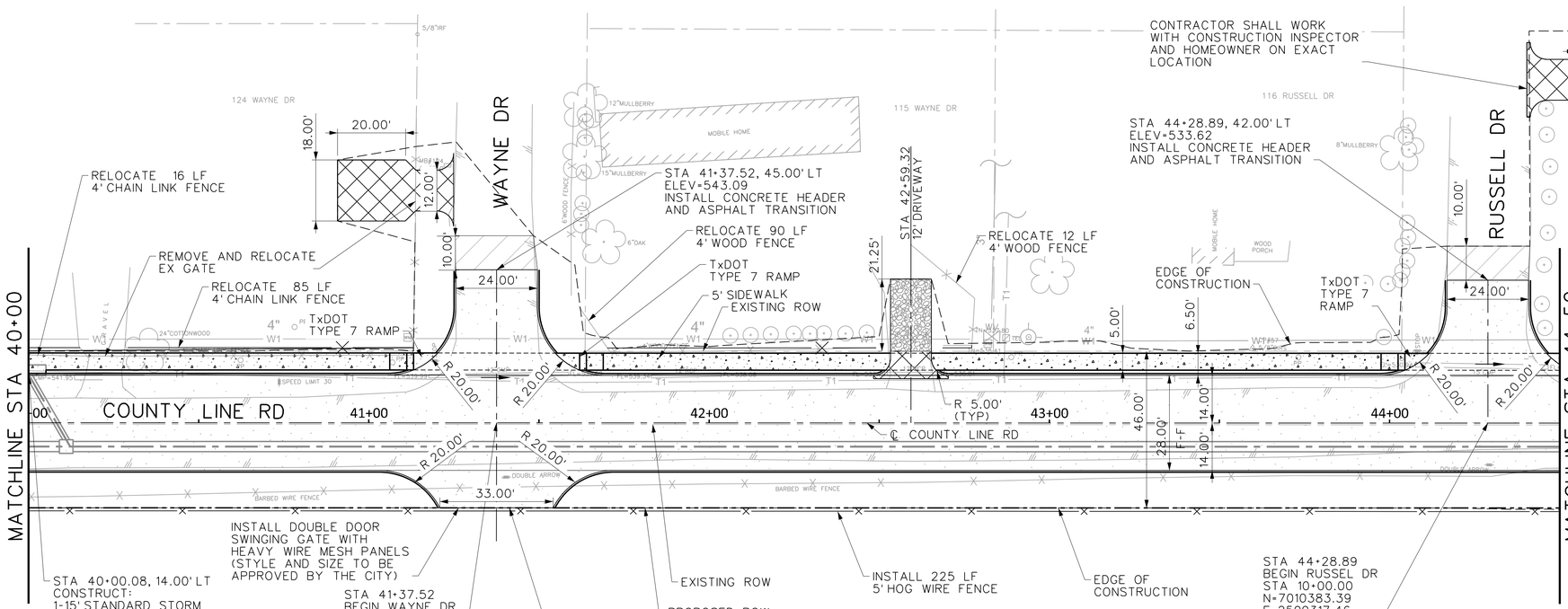
F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED SI
DRAWN BH
REVISED
CHECKED
FILE NAME cv-trt-pp-road07.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET PV-07
SEQ. 36

MicroStation V8 User: chm Office: Dallas
ROK15508 N:\lf\Drawings\cv-trt-pp-road07.sht
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Aug. 26, 2018 - 01:45:40 AM Project=Freese and Nichols, Inc.

Office: Dallas ROK15508 Date: Aug. 26, 2018 - 01:45:40 AM User: chm File: N:\lf\Drawings\cv-trt-pp-road07.sht

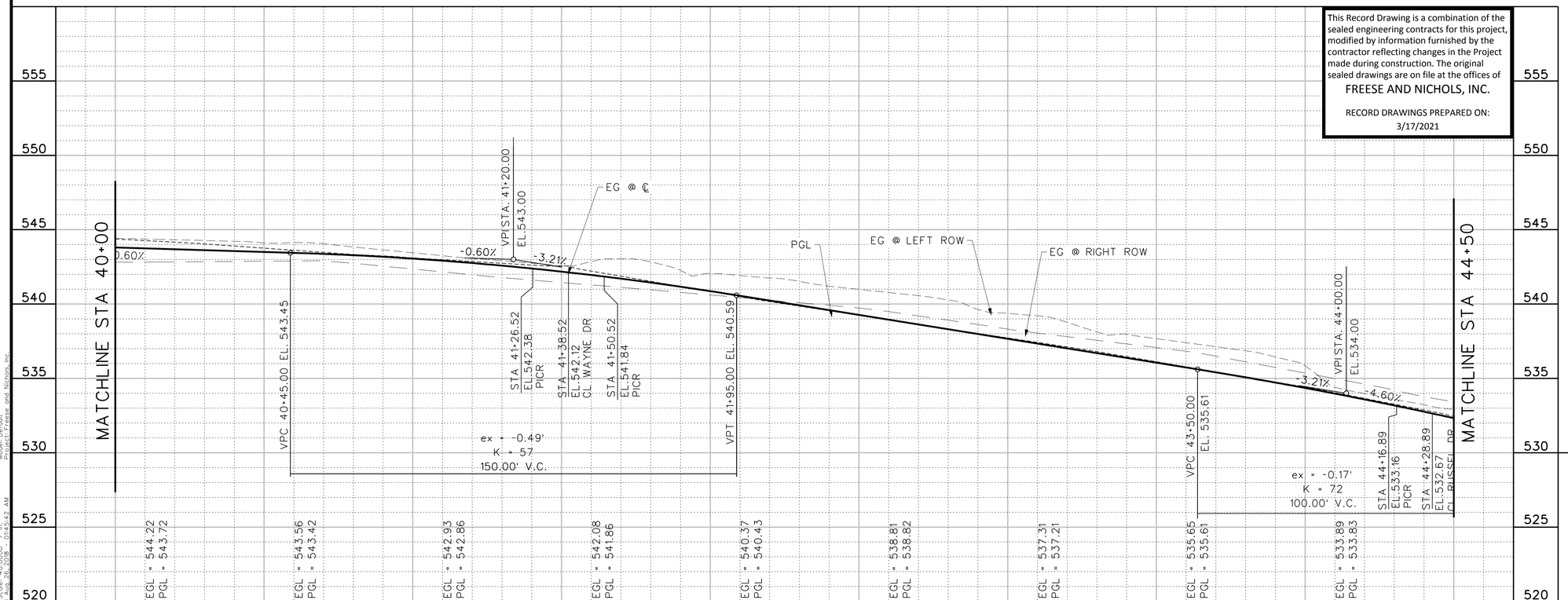


LEGEND

- 6" CONCRETE DRIVEWAY 3,600 PSI W/NO. 4 BARS ON 18" CENTER EACH WAY
- 4" CONCRETE SIDEWALK 3,000 PSI W/NO.3 BARS ON 24" CENTER EACH WAY
- ASPHALT TRANSITION
- GRAVEL DRIVEWAY
- 10" CONCRETE PAVEMENT 3,600 PSI W/NO.4 BARS ON 18" CENTER EACH WAY
- FLOW ARROW

NOTES:

1. ALL SIDEWALKS ARE 5' WIDE (6' WIDE AND LUGGED IN WHEN AGAINST BOC).
2. ALL DRIVEWAYS ARE STATIONED TO CL OF DRIVEWAY.
3. ALL DIMENSIONS AND POINTS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
4. ALL FENCE RELOCATIONS TO BE PERFORMED DURING RIGHT-OF-WAY ACQUISITION.
5. ALL RETAINING WALLS LOCATED AT THE BACK OF SIDEWALK EXCEPT AT THE CULVERT SHOULD BE PER DETAIL ON SHEET PD-01.
6. HOG WIRE GATE AND FENCE FABRIC SHALL BE 2"X4" 4-GAUGE STEEL WIRE MESH W/ FRAME OF 16-GAUGE TUBING. GATE SHALL HAVE GALVANIZED COATING, POSTS SECURED IN CONCRETE, LOCKABLE FEATURE, AND 1 FT OPENING AT TOP. SHOP DRAWINGS WILL BE REQUIRED FOR APPROVAL BY OWNER.



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RECORD DRAWINGS PREPARED ON: 3/17/2021

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

N

0 10' 20' 40'
HORIZONTAL SCALE
0 2' 4' 8'
VERTICAL SCALE

PROFILE LEGEND

- EXISTING GRADE
- PROFILE GRADE LINE
- 100YR WSEL
- EX GRADE @ LT ROW
- EX GRADE @ RT ROW

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS — BRANDON J. HUXFORD — 117072 — LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
PAVING PLAN AND PROFILE STA 40+00 TO STA 44+50

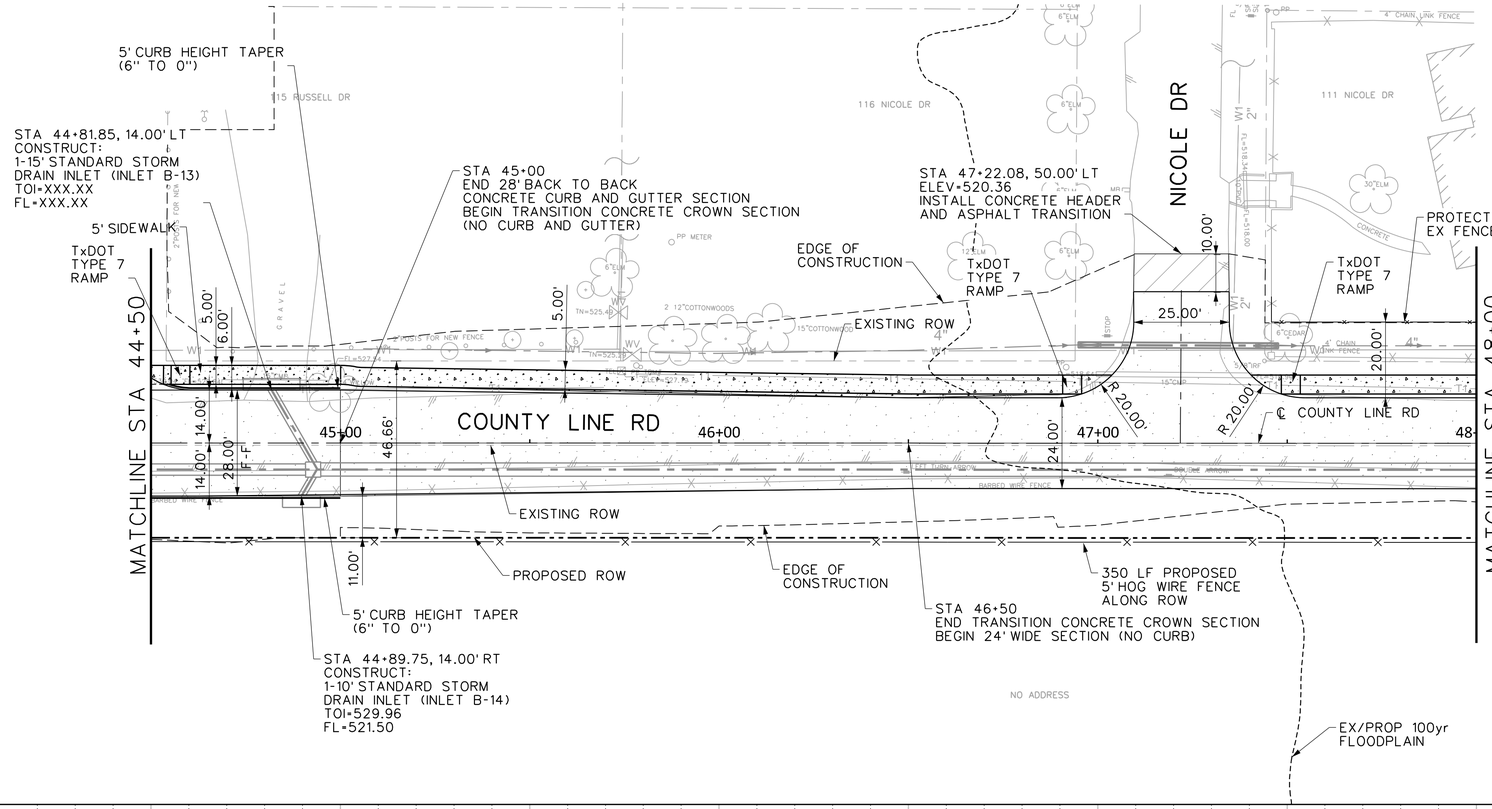
NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pp-road08.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET PV-08
SEQ. 37

MicroStation V8 User: chm Office: Dallas
ROK15508 - N:\R\Drawings\cv-trt-pp-road08.sht
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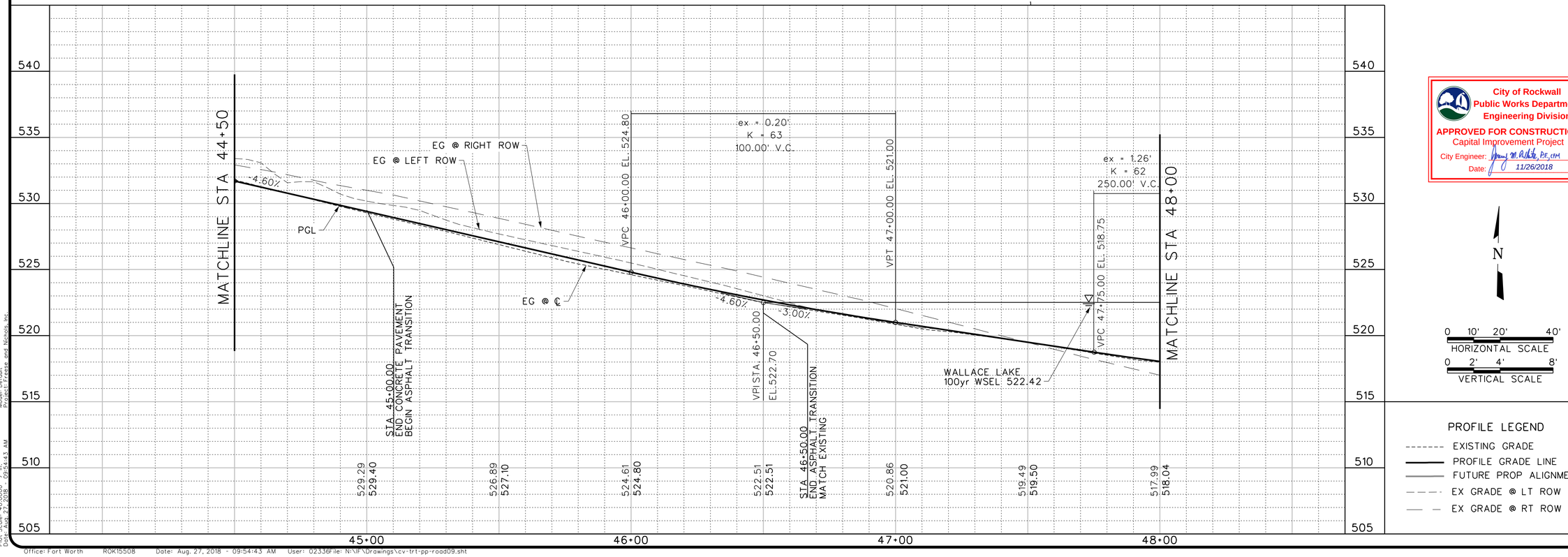


LEGEND

- 6" CONCRETE DRIVEWAY 3,600 PSI W/NO. 4 BARS ON 18" CENTER EACH WAY
- 4" CONCRETE SIDEWALK 3,000 PSI W/NO.3 BARS ON 24" CENTER EACH WAY
- ASPHALT TRANSITION
- GRAVEL DRIVEWAY
- 10" CONCRETE PAVEMENT 3,600 PSI W/NO.4 BARS ON 18" CENTER EACH WAY
- FLOW ARROW

NOTES:

1. ALL SIDEWALKS ARE 5' WIDE (6' WIDE AND LUGGED IN WHEN AGAINST BOC).
2. ALL DRIVEWAYS ARE STATIONED TO CL OF DRIVEWAY.
3. ALL DIMENSIONS AND POINTS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
4. ALL FENCE RELOCATIONS TO BE PERFORMED DURING RIGHT-OF-WAY ACQUISITION.
5. ALL RETAINING WALLS LOCATED AT THE BACK OF SIDEWALK EXCEPT AT THE CULVERT SHOULD BE PER DETAIL ON SHEET PD-01.
6. HOG WIRE GATE AND FENCE FABRIC SHALL BE 2"X4" 4-GAUGE STEEL WIRE MESH W/ FRAME OF 16-GAUGE TUBING. GATE SHALL HAVE GALVANIZED COATING, POSTS SECURED IN CONCRETE, LOCKABLE FEATURE, AND 1 FT OPENING AT TOP. SHOP DRAWINGS WILL BE REQUIRED FOR APPROVAL BY OWNER.
7. SEE CROSS SECTION SHEETS FOR DITCH GRADING.



PROFILE LEGEND

- EXISTING GRADE
- PROFILE GRADE LINE
- FUTURE PROP ALIGNMENT
- EX GRADE @ LT ROW
- EX GRADE @ RT ROW

0 10' 20' 40'
HORIZONTAL SCALE
0 2' 4' 8'
VERTICAL SCALE

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E.
Date: 11/26/2018

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.
RECORD DRAWINGS PREPARED ON: 3/17/2021

TEXAS REGISTERED ENGINEERING FIRM F-2144
FREESE AND NICHOLS, INC.
ALAN D. HENDRIX
69798
REGISTERED PROFESSIONAL ENGINEER
STATE OF TEXAS
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2299
Web: www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
PAVING PLAN AND PROFILE STA 44+50 TO 48+00

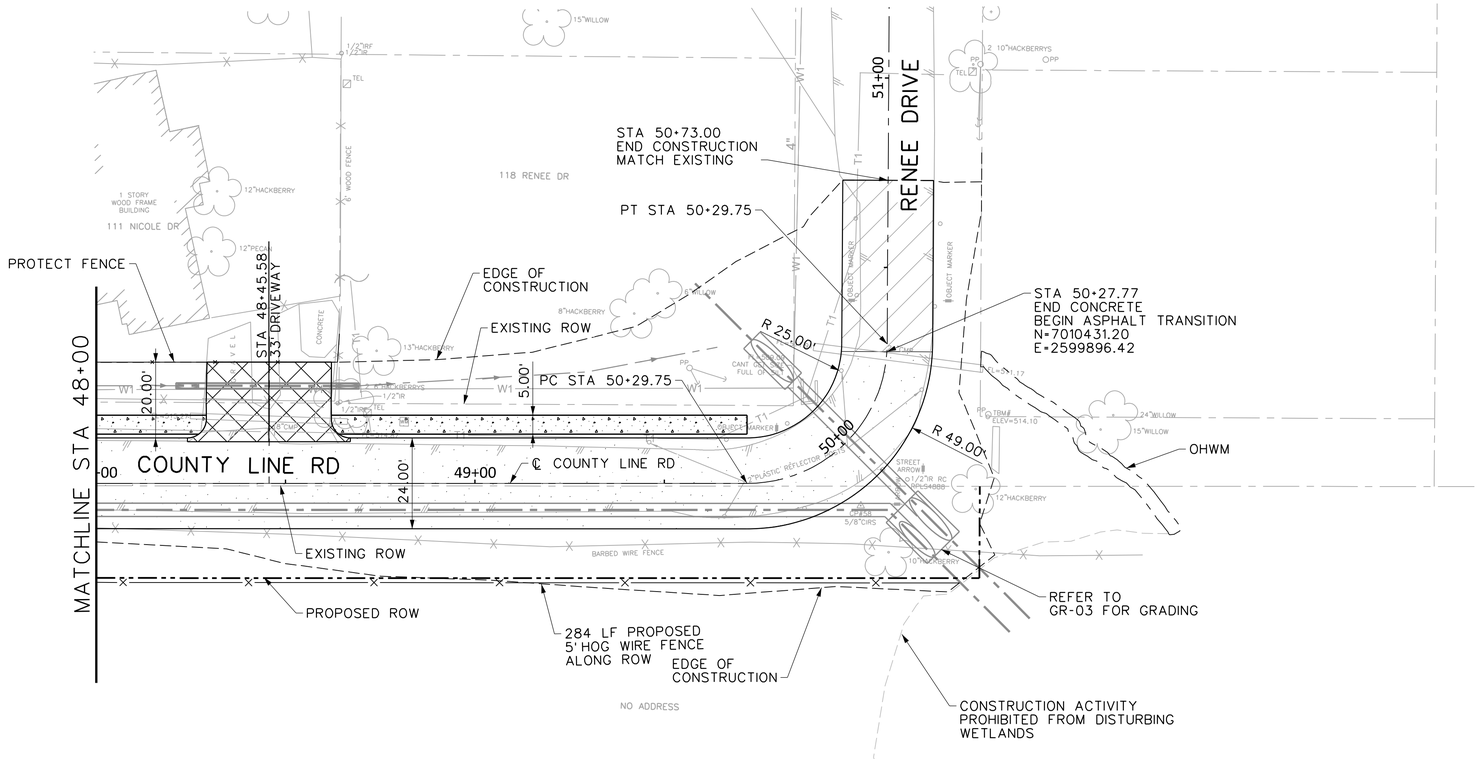
F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
CHECKED BH
FILE NAME cv-trt-pp-road09.sht

NO. ISSUES | BY | DATE | REVISED

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET PV-09
SEQ. 38

MicroStation V8 User: 02336Office: Fort Worth
ROK15508 - N:\nf\Drawings\cv-trt-pp-road09.sht
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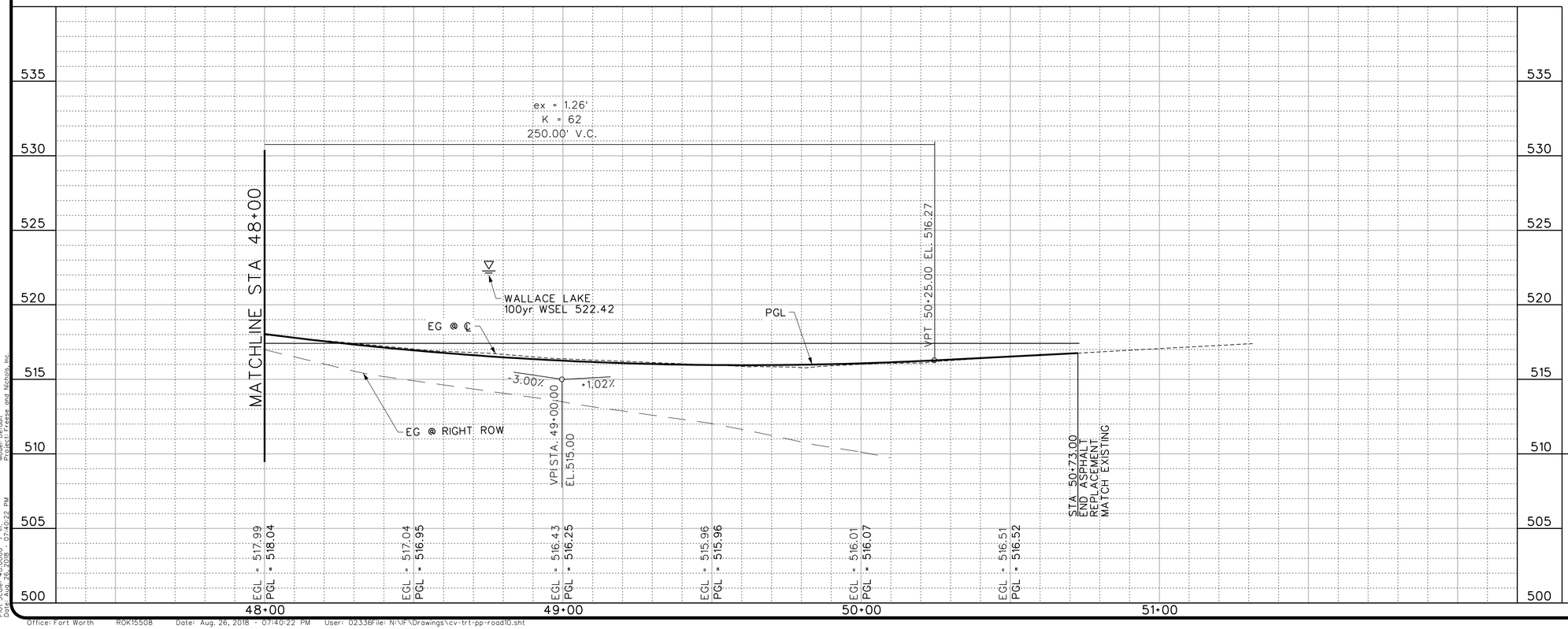


LEGEND

- 6" CONCRETE DRIVEWAY 3,600 PSI W/NO. 4 BARS ON 18" CENTER EACH WAY
- 4" CONCRETE SIDEWALK 3,000 PSI W/NO.3 BARS ON 24" CENTER EACH WAY
- ASPHALT TRANSITION
- GRAVEL DRIVEWAY
- 10" CONCRETE PAVEMENT 3,600 PSI W/NO.4 BARS ON 18" CENTER EACH WAY
- FLOW ARROW

NOTES:

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City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____ P.E.
Date: 11/26/2018

N

0 10' 20' 40'
HORIZONTAL SCALE
0 2' 4' 8'
VERTICAL SCALE

PROFILE LEGEND
- EXISTING GRADE
- PROFILE GRADE LINE
- FUTURE PROP ALIGNMENT
- EX GRADE @ LT ROW
- EX GRADE @ RT ROW

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS ALAN D. HENDRIX 89798 REGISTERED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
PAVING PLAN AND PROFILE STA 48+00 TO END

F&N JOB NO ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pp-road10.sht

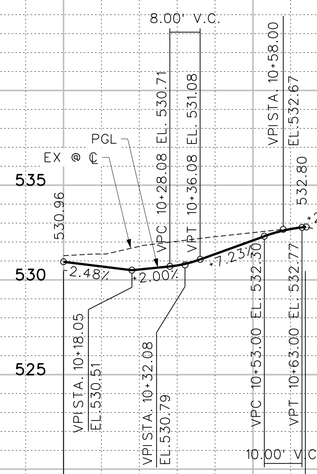
NO. ISSUES | BY | DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

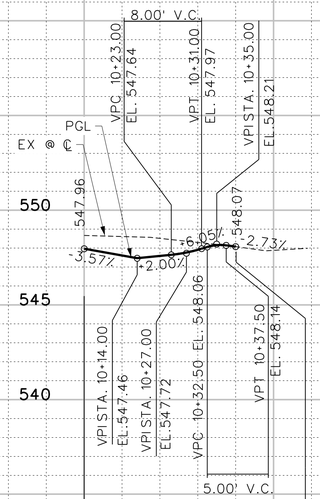
SHEET PV-10
SEQ. 39

MicroStation V8 User: 023368Office: Fort Worth
ROK15508 N:\Drawings\cv-trt-pp-road10.sht
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Plot Date: Aug. 26, 2018 - 07:40:22 PM
Model Default
Project Freese and Nichols Inc.

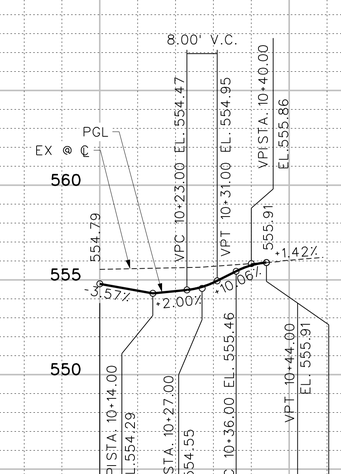
EVA PLACE



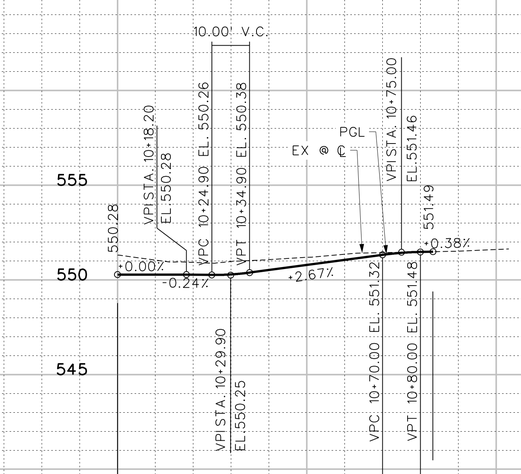
VALERIE PLACE



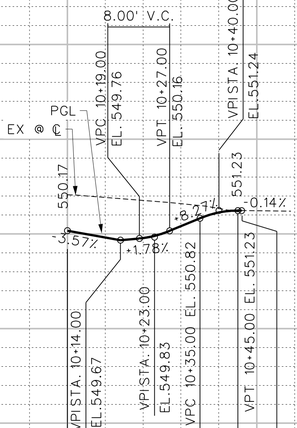
BLANCHE DRIVE



RANCH TRAIL

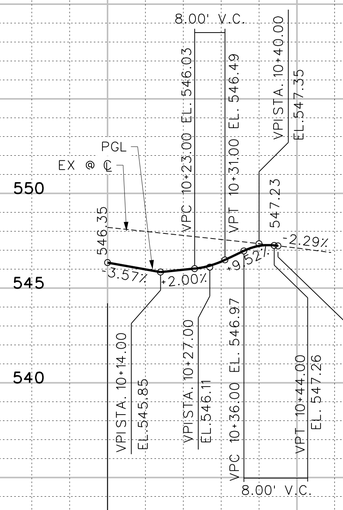


LYNNE DRIVE

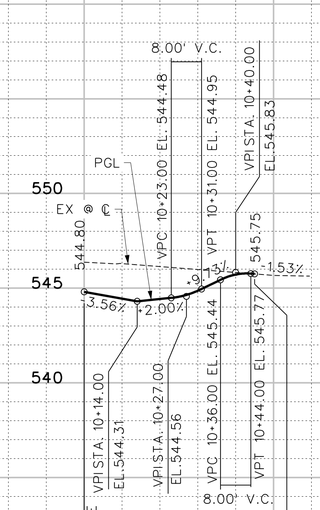


10+00

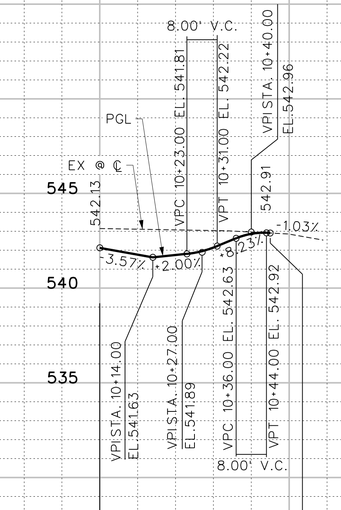
CHRIS DRIVE



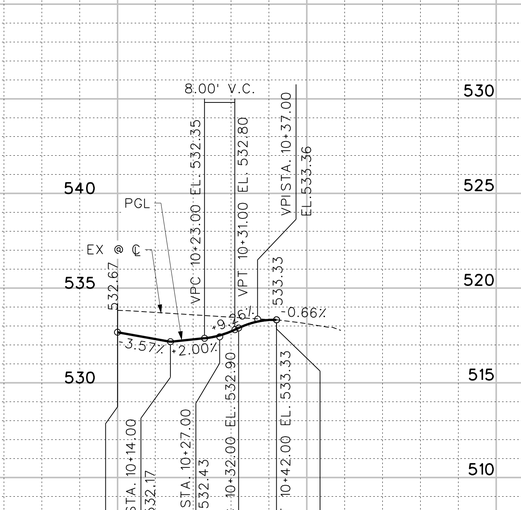
YVONNE DRIVE



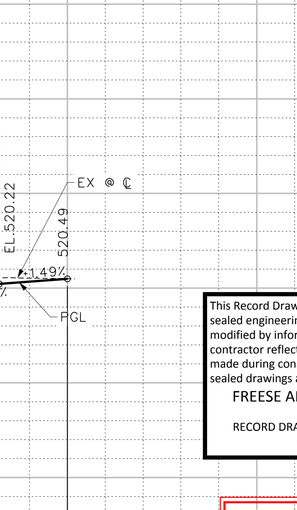
WAYNE DRIVE



RUSSEL DRIVE



NICOLE DRIVE



10+00

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RECORD DRAWINGS PREPARED ON: 3/17/2021

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
ALAN D. HENDRIX
68798
REGISTERED
PROFESSIONAL ENGINEER
STATE OF TEXAS
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
SIDE STREET PROFILES

NO.	ISSUES	BY	DATE

FAN JOB NO. R0K15508
DATE 08/2018
DESIGNED AU
DRAWN SI
CHECKED
REVISED
FILE NAME cv-trt-pp-rdSIDE01.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET PV-11
SEQ. 40

MicroStation V8 User: chm Office: Dallas
R0K15508 N:\F\Drawings\cv-trt-pp-rdSIDE01.sht
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Plot Scale: 40.0000 '/ in. Model: Default
Plot Date: Aug. 26, 2018 - 01:45:46 AM Project: Freese and Nichols, Inc.

Office: Dallas R0K15508 Date: Aug. 26, 2018 - 01:45:46 AM User: chm File: N:\F\Drawings\cv-trt-pp-rdSIDE01.sht

END ALIGNMENT
STA 13+51.65
N=7010741.53
E=2595854.14

STA 13+33.62
OFF 71.56 RT

STA 13+33.62
OFF 71.56 RT

EDGE OF CONSTRUCTION

STREAM FLOWLINE

STA 12+76.21
OFF 32.27 RT

STA 12+31.26
OFF 93.12 RT

STA 12+15.27
OFF 170.60 RT

STA 11+89.48
OFF 126.40 RT

STA 11+89.63
OFF 169.33 RT

STA 11+72.48
OFF 140.71 RT

STA 11+64.13
OFF 39.28 RT

STA 11+47.36
OFF 80.14 RT

STA 11+11.40
OFF 26.13 RT

STA 10+38.51
OFF 63.47 RT

PROTECT
MANHOLE

STA 10+18.88
OFF 12.87 LT

BEGIN ALIGNMENT
STA 10+00.00
N=7010389.89
E=2595854.14

SSMH RIM=493.12
FL 12" STEEL E=487.25
FL 12" STEEL SW=487.18
FL 12" STEEL W=487.23

SSMH RIM=489.08
FL 12" STEEL N=480.58
FL 10" STEEL N=480.08
FL 12" STEEL W=480.68

2.44 ACRES (BY DEED)
CITY OF ROCKWALL, TEXAS
INST. NO. 20140000014177
O.P.R.R.C.T.

1.186 ACRES (BY DEED)
STATE OF TEXAS
VOLUME 87, PAGE 201
D.R.R.C.T.

0 10' 20' 40'
HORIZONTAL SCALE

NOTES:

1. CONTRACTOR TO AVOID STREAM DURING CONSTRUCTION. ALL EARTHWORK SHALL BE OUTSIDE OF THE NORMAL STREAM BED AND ABOVE ORDINARY HIGH WATER MARK.
2. ALL DISTURBED AREAS SHALL BE STABILIZED AND VEGETATED/GRASSED AFTER GRADING.
3. REMOVAL OF ALL ITEMS REQUIRED TO CONSTRUCT THE PROJECT SHALL BE SUBSIDIARY TO THE PROJECT UNLESS OTHERWISE PAID FOR IN THE CONTRACT

LEGEND

491 EXISTING CONTOURS

490 PROPOSED CONTOURS

EDGE OF CONSTRUCTION

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____, P.E., CFM
Date: 11/26/2018

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED
PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

DRAINAGE AREA AND VALLEY STORAGE GRADING PLAN

FAN JOB NO	ROK15508
DATE	08/2018
DESIGNED	AU
DRAWN	SI
REVISED	
CHECKED	BH
FILE NAME	cv-trt-pp-GRADE01.sht

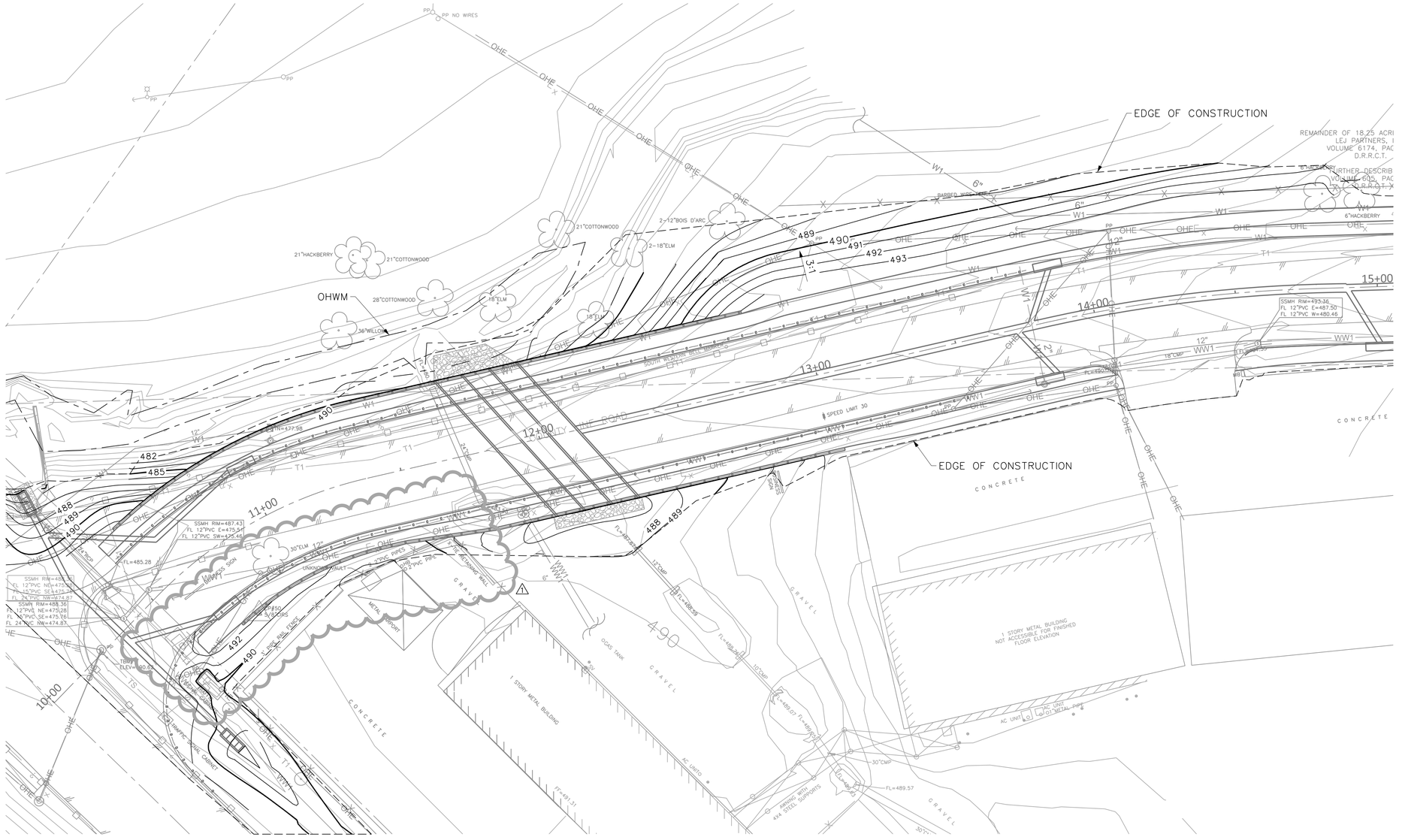
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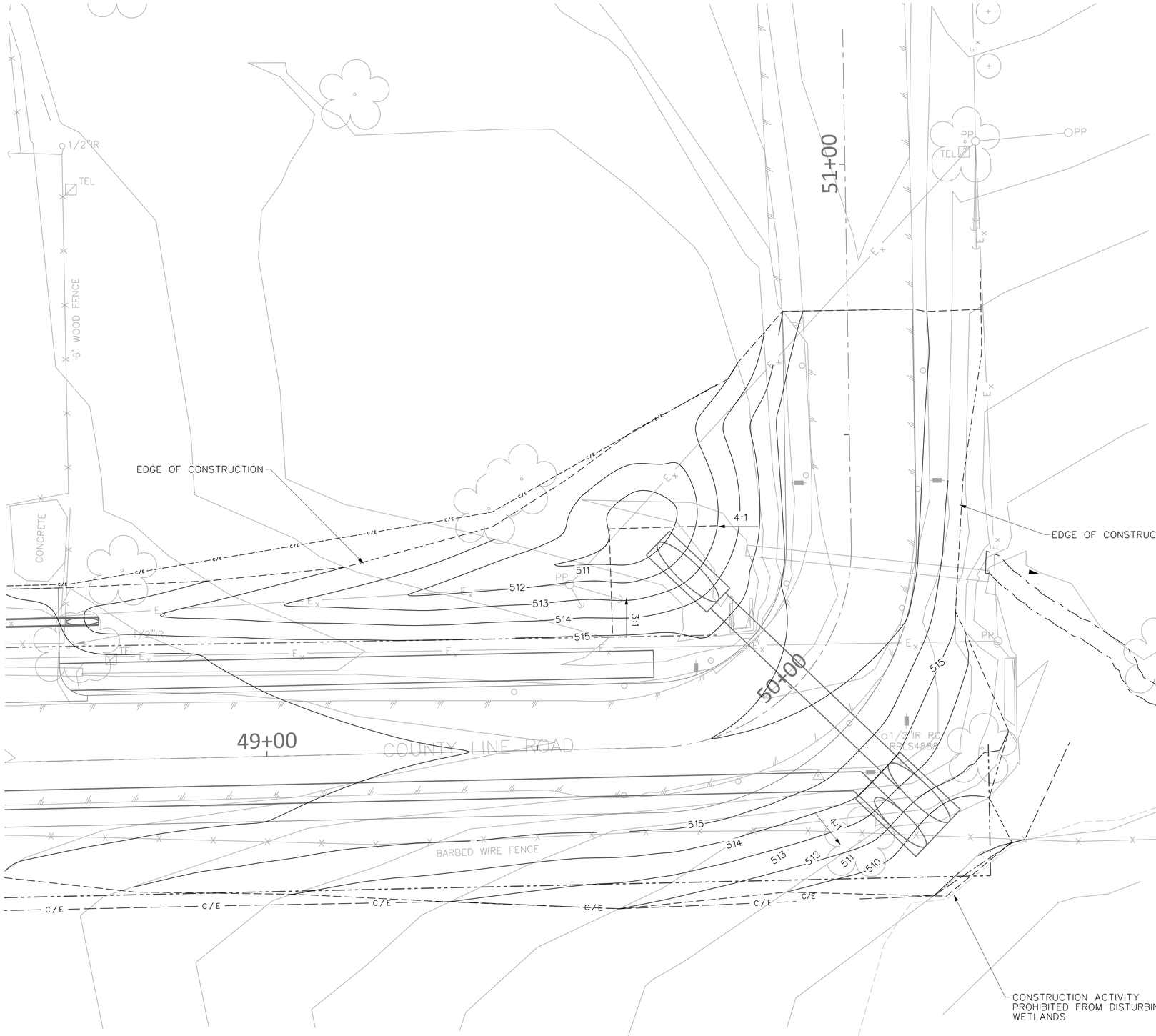
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET
GR-01

SEQ.
41

MicroStation V8 User: chm Office: Dallas
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ROK15508_Rockwall_Public Works.dgn
Plot Scale: 40.0000 '/ in. Model: Default
Plot Date: Aug. 26, 2018 - 01:45:49 AM Project: Freese and Nichols Inc.


EDGE OF CONSTRUCTION
EDGE OF CONSTRUCTION
REMAINDER OF 18.25 ACRE
LEJ PARTNERS, I
VOLUME 6174, PAG
D.R.R.C.T.
FURTHER DESCRIB
VOLUME 605, PAG
D.R.R.C.T.
OHWM
21"HACKBERRY
21"COTTONWOOD
28"COTTONWOOD
36"WILLOW
18"ELM
2-12"BOIS D'ARC
2-18"ELM
6"HACKBERRY
BARBED WIRE FENCE
SSMH RIM=493.36
FL 12"PVC E=487.52
FL 12"PVC W=480.46
SSMH RIM=477.58
SSMH RIM=487.43
FL 12"PVC E=475.54
FL 12"PVC SW=475.48
SSMH RIM=488.36
FL 12"PVC NE=475.28
FL 12"PVC SE=475.76
FL 24"PVC NW=474.87
SSMH RIM=488.36
FL 12"PVC NE=475.28
FL 12"PVC SE=475.76
FL 24"PVC NW=474.87
TBM
ELEV=490.65
FL=485.28
FL=485.59
FL=489.57
FL=489.57
FL=489.57
FL=491.31
11+00
12+00
13+00
14+00
15+00
10+00
SPEED LIMIT 30
CONCRETE
GRAVEL
METAL PORCH
OGAS TANK
1 STORY METAL BUILDING
1 STORY METAL BUILDING
NOT ACCESSIBLE FOR FINISHED
FLOOR ELEVATION
AC UNIT
AC UNIT
AC UNIT
AC UNIT
METAL PIPE
ARMING METAL
4X4 STEEL SUPPORTS
30"CMP
18"CMP
12"CMP
10"CMP
12"
18"
24"
6"
SOUTH BOUNDARY
SOUTH BOUNDARY
SOUTH BOUNDARY



NOTES:

1. CONTRACTOR TO AVOID STREAM DURING CONSTRUCTION. ALL EARTHWORK SHALL BE OUTSIDE OF THE NORMAL STREAM BED AND ABOVE ORDINARY HIGH WATER MARK.

2. CONTRACTOR TO USE SOLID SOD RE-ESTABLISHMENT IN ALL DISTURBED AREAS.

3. REMOVAL OF ALL ITEMS REQUIRED TO CONSTRUCT THE PROJECT SHALL BE SUBSIDIARY TO THE PROJECT UNLESS OTHERWISE PAID FOR IN THE CONTRACT

N

0 10' 20'
SCALE IN FEET

LEGEND

491 — EXISTING CONTOURS

490 — PROPOSED CONTOURS

– – – – – – EDGE OF CONSTRUCTION

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: Jeremy M. White, P.E., CFM
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
ALAN D. HENDRIX
69798
REGISTERED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

CULVERT A GRADING PLAN

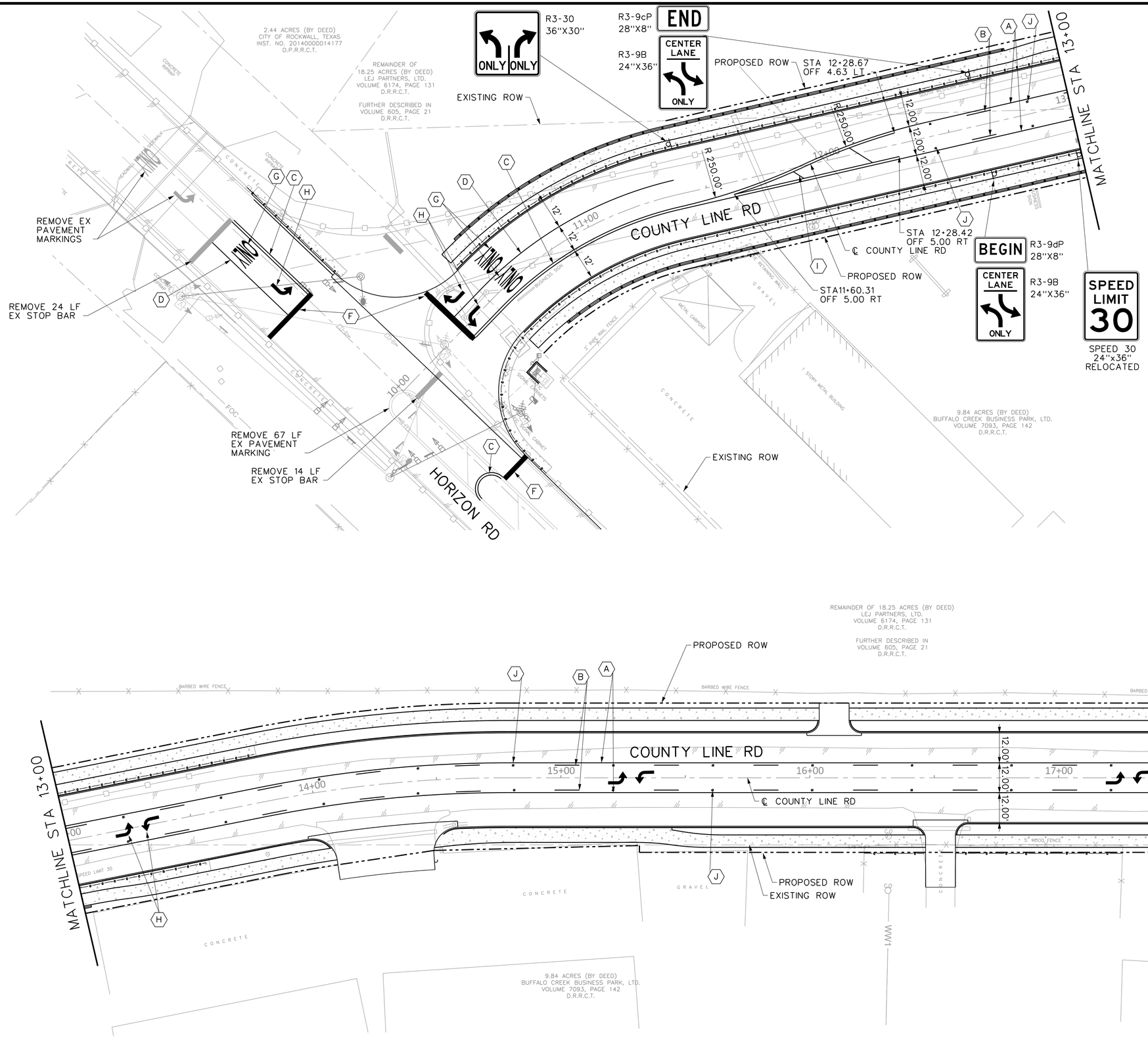
NO	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

FNI JOB NO.	ROK15508
DATE	08/2018
DESIGNED	CHM
DRAWN	CHM
REVISED	
CHECKED	ADH
FILE NAME	cv-trt-pp-GRADE03.sht

SHEET
GR-03
SEQ.
43

MicroStation V8 User: chm Office: Dallas
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Plotted: Aug. 26, 2018 - 01:45:53 AM Model: Default
Plot Scale: 20.0000 '/ in. Project Freese and Nichols, Inc.
Date: Aug. 26, 2018 - 01:45:53 AM



LEGEND

- (A) REFL PAV MRK (Y) 4" (SLD)
- (B) REFL PAV MRK (Y) 4" (BRK)
- (C) REFL PAV MRK (Y) 4" (SLD) (DBL)
- (D) REFL PAV MRK (W) 8" (SLD)
- (E) REFL PAV MRK (W) 12" (SLD)
- (F) REFL PAV MRK (W) 24" (SLD)
- (G) REFL PAV MRK (W) (WORD)
- (H) REFL PAV MRK (W) (ARROW)
- (I) REFL PAV MRK (Y) 8" (SLD)
- (J) TY II-AA RPM
- ⊲ SIGN

NOTES:

1. ALL STRIPING SHALL BE TYPE 1 REFLECTIVE THERMOPLASTIC, UNLESS OTHERWISE NOTED.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR LAYING OUT ALL PAVEMENT MARKINGS. CHECKING OVERALL DISTANCES ON GROUND AND MAKING ANY ADJUSTMENTS IF NECESSARY PRIOR TO PLACEMENT OF ALL FINAL MARKINGS, WITH APPROVAL OF PROJECT ENGINEER.

3. ALL STREET PAVEMENT MARKINGS INCLUDING DIRECTIONAL ARROWS, WORDS, CROSSWALKS, AND STOP BARS SHALL BE REFLECTORIZED THERMOPLASTIC MATERIAL, UNLESS OTHERWISE NOTED.

4. CONTRACTOR SHALL PRE-MARK STRIPING LAYOUT FOR APPROVAL OF CITY'S STREETS DEPARTMENT AND TxDOT PRIOR TO PLACEMENT OF ANY FINAL PAVEMENT MARKING AND SIGNS.

5. CONTRACTOR SHALL INSTALL PERMANENT TRAFFIC SIGNS AND MAINTAIN OR REINSTALL EXISTING TRAFFIC SIGNS TO EXISTING OR BETTER CONDITION AT THE BEGINNING OF THE PROJECT.

6. SEE DETAIL SHEETS PM(1-3)-12 FOR PAVEMENT MARKING DETAILS.

7. CONTRACTOR SHALL BE RESPONSIBLE FOR LAYING OUT ALL CROSSWALK PAVEMENT MARKINGS ACCORDING TO ADA REQUIREMENTS AND MAKING ANY ADJUSTMENTS IF NECESSARY PRIOR TO PLACEMENT OF ALL FINAL MARKINGS, WITH APPROVAL OF PROJECT ENGINEER.

8. ALL STREET NAME BLADES SIGNS SHALL CONFORM TO CITY OF ROCKWALL STANDARD DRAWING R-2300 AND SECTION 216 OF THE STANDARDS OF DESIGN AND CONSTRUCTION.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____ P.E.
Date: 11/26/2018

N

0 10' 20' 40'
SCALE IN FEET

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2299
Web: www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

SIGNAGE AND PAVEMENT MARKING BEGIN TO STA 17+50

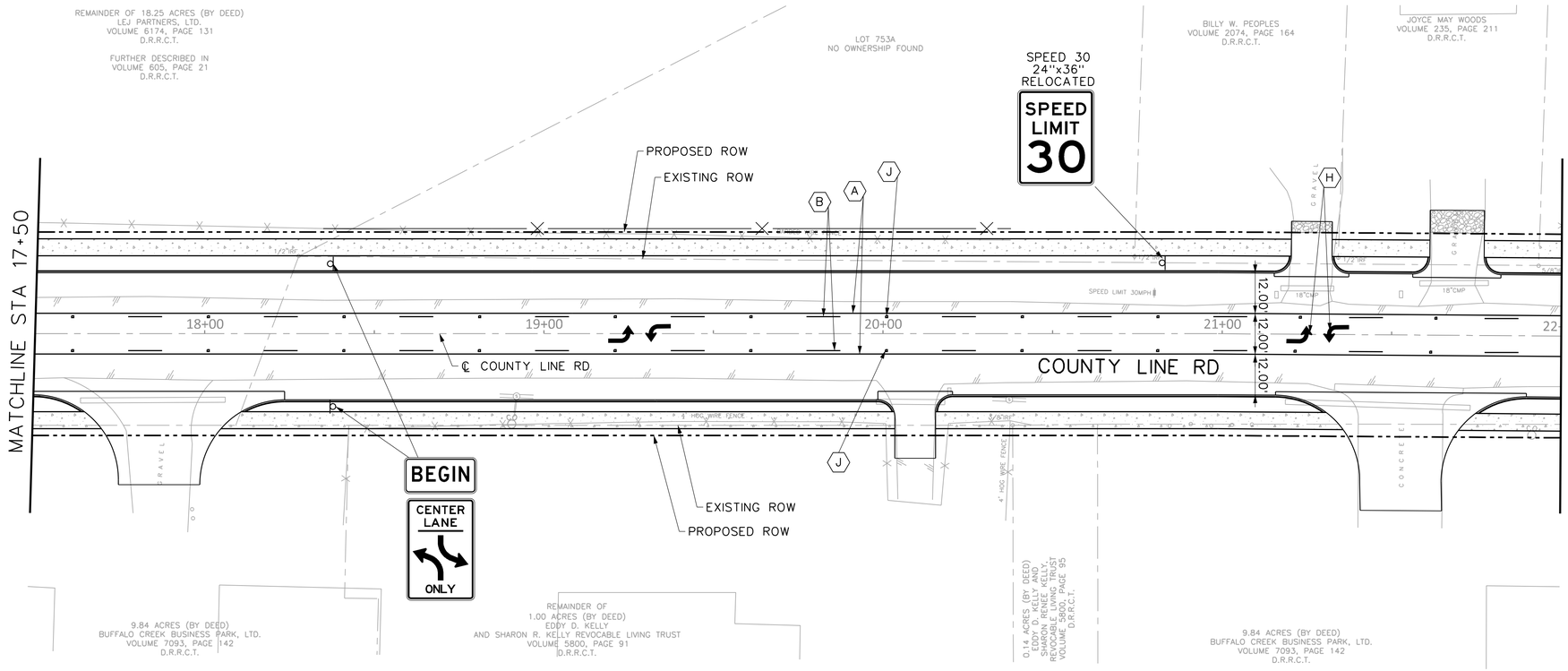
NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pp-pvmrk01.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET
PM-01
SEQ.
44

MicroStation V8 User: 02336Office: Fort Worth
ROK15508 - N:\nf\Drawings\cv-trt-pp-pvmrk01.sht
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Plot Scale: 40.0000 '/ in. Model: Default
Date: Aug. 26, 2018 - 07:45:13 PM Project: Freese and Nichols, Inc.



LEGEND

A	REFL PAV MRK (Y) 4" (SLD)
B	REFL PAV MRK (Y) 4" (BRK)
C	REFL PAV MRK (Y) 4" (SLD) (DBL)
D	REFL PAV MRK (W) 8" (SLD)
E	REFL PAV MRK (W) 12" (SLD)
F	REFL PAV MRK (W) 24" (SLD)
G	REFL PAV MRK (W) (WORD)
H	REFL PAV MRK (W) (ARROW)
I	REFL PAV MRK (Y) 8" (SLD)
J	TY II-AA RPM
	SIGN

NOTES:

1. ALL STRIPING SHALL BE TYPE 1 REFLECTIVE THERMOPLASTIC, UNLESS OTHERWISE NOTED.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR LAYING OUT ALL PAVEMENT MARKINGS. CHECKING OVERALL DISTANCES ON GROUND AND MAKING ANY ADJUSTMENTS IF NECESSARY PRIOR TO PLACEMENT OF ALL FINAL MARKINGS, WITH APPROVAL OF PROJECT ENGINEER.

3. ALL STREET PAVEMENT MARKINGS INCLUDING DIRECTIONAL ARROWS, WORDS, CROSSWALKS, AND STOP BARS SHALL BE REFLECTORIZED THERMOPLASTIC MATERIAL, UNLESS OTHERWISE NOTED.

4. CONTRACTOR SHALL PRE-MARK STRIPING LAYOUT FOR APPROVAL OF CITY'S STREETS DEPARTMENT AND TxDOT PRIOR TO PLACEMENT OF ANY FINAL PAVEMENT MARKING AND SIGNS.

5. CONTRACTOR SHALL INSTALL PERMANENT TRAFFIC SIGNS AND MAINTAIN OR REINSTALL EXISTING TRAFFIC SIGNS TO EXISTING OR BETTER CONDITION AT THE BEGINNING OF THE PROJECT.

6. SEE DETAIL SHEETS PM(1-3)-12 FOR PAVEMENT MARKING DETAILS.

7. CONTRACTOR SHALL BE RESPONSIBLE FOR LAYING OUT ALL CROSSWALK PAVEMENT MARKINGS ACCORDING TO ADA REQUIREMENTS AND MAKING ANY ADJUSTMENTS IF NECESSARY PRIOR TO PLACEMENT OF ALL FINAL MARKINGS, WITH APPROVAL OF PROJECT ENGINEER.

8. ALL STREET NAME BLADES SIGNS SHALL CONFORM TO CITY OF ROCKWALL STANDARD DRAWING R-2300 AND SECTION 216 OF THE STANDARDS OF DESIGN AND CONSTRUCTION.

N

0 10' 20' 40'
SCALE IN FEET

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE AND NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

SIGNAGE AND PAVEMENT MARKING STA 17+50 TO STA 26+50

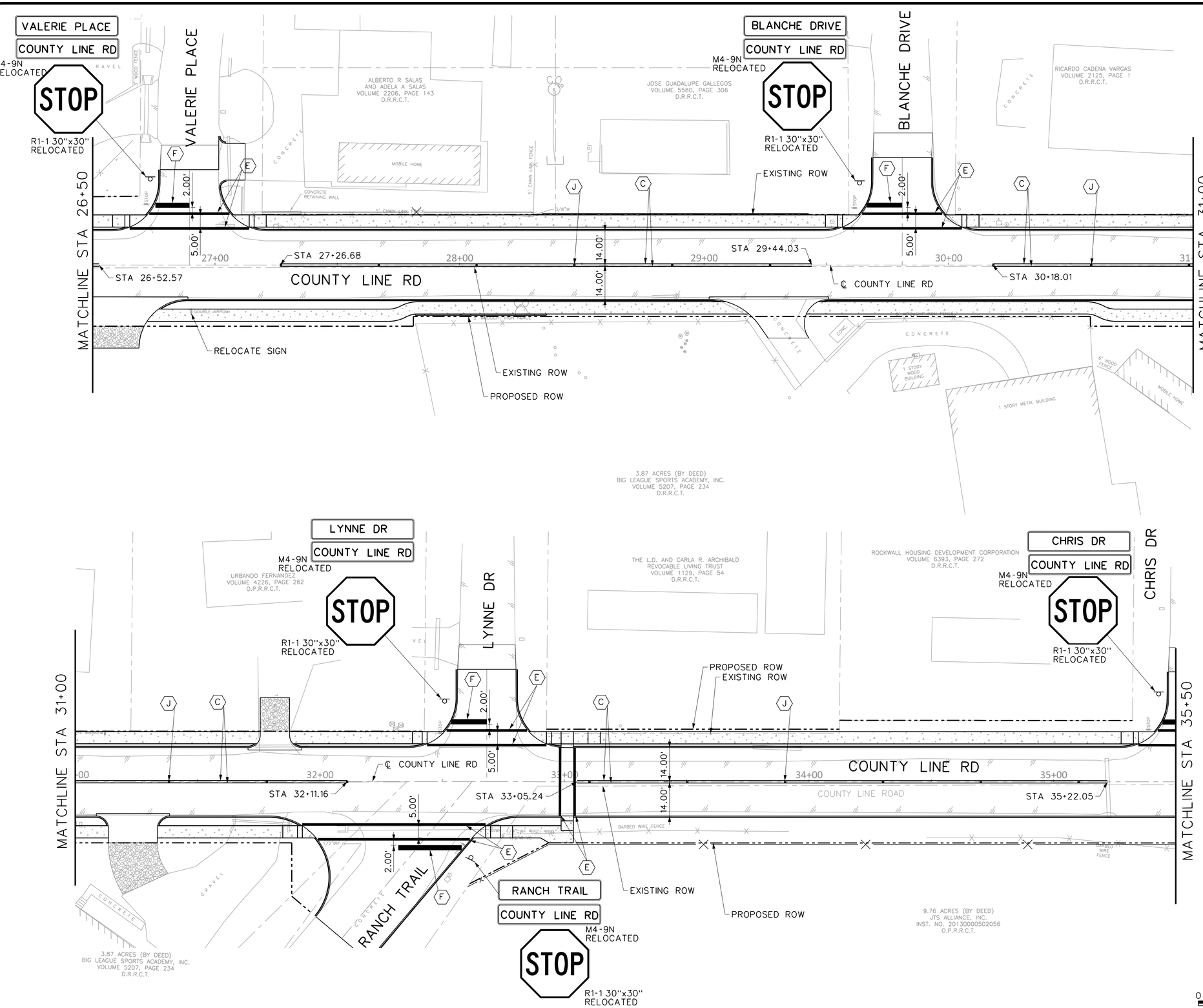
NO.	ISSUES	BY	DATE

FAN JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pp-pvmrk02.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET PM-02
SEQ. 45

MicroStation V8 User: 02336Office: Fort Worth
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Date: Aug 26, 2018 - 07:21:44 PM Project: Freese and Nichols Inc.



LEGEND

- (A) REFL PAV MRK (Y) 4" (SLD)
- (B) REFL PAV MRK (Y) 4" (BRK)
- (C) REFL PAV MRK (Y) 4" (SLD) (DBL)
- (D) REFL PAV MRK (W) 8" (SLD)
- (E) REFL PAV MRK (W) 12" (SLD)
- (F) REFL PAV MRK (W) 24" (SLD)
- (G) REFL PAV MRK (W) (WORD)
- (H) REFL PAV MRK (W) (ARROW)
- (I) REFL PAV MRK (Y) 8" (SLD)
- (J) TY II-AA RPM
- ⊲ SIGN

NOTES:

1. ALL STRIPING SHALL BE TYPE 1 REFLECTIVE THERMOPLASTIC, UNLESS OTHERWISE NOTED.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR LAYING OUT ALL PAVEMENT MARKINGS. CHECKING OVERALL DISTANCES ON GROUND AND MAKING ANY ADJUSTMENTS IF NECESSARY PRIOR TO PLACEMENT OF ALL FINAL MARKINGS, WITH APPROVAL OF PROJECT ENGINEER.

3. ALL STREET PAVEMENT MARKINGS INCLUDING DIRECTIONAL ARROWS, WORDS, CROSSWALKS, AND STOP BARS SHALL BE REFLECTORIZED THERMOPLASTIC MATERIAL, UNLESS OTHERWISE NOTED.

4. CONTRACTOR SHALL PRE-MARK STRIPING LAYOUT FOR APPROVAL OF CITY'S STREETS DEPARTMENT AND TxDOT PRIOR TO PLACEMENT OF ANY FINAL PAVEMENT MARKING AND SIGNS.

5. CONTRACTOR SHALL INSTALL PERMANENT TRAFFIC SIGNS AND MAINTAIN OR REINSTALL EXISTING TRAFFIC SIGNS TO EXISTING OR BETTER CONDITION AT THE BEGINNING OF THE PROJECT.

6. SEE DETAIL SHEETS PM(1-3)-12 FOR PAVEMENT MARKING DETAILS.

7. CONTRACTOR SHALL BE RESPONSIBLE FOR LAYING OUT ALL CROSSWALK PAVEMENT MARKINGS ACCORDING TO ADA REQUIREMENTS AND MAKING ANY ADJUSTMENTS IF NECESSARY PRIOR TO PLACEMENT OF ALL FINAL MARKINGS, WITH APPROVAL OF PROJECT ENGINEER.

8. ALL STREET NAME BLADES SIGNS SHALL CONFORM TO CITY OF ROCKWALL STANDARD DRAWING R-2300 AND SECTION 216 OF THE STANDARDS OF DESIGN AND CONSTRUCTION.

N

0 10' 20' 40'
SCALE IN FEET

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2299
Web: www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
SIGNAGE AND PAVEMENT MARKING
STA 26+50 TO STA 35+50

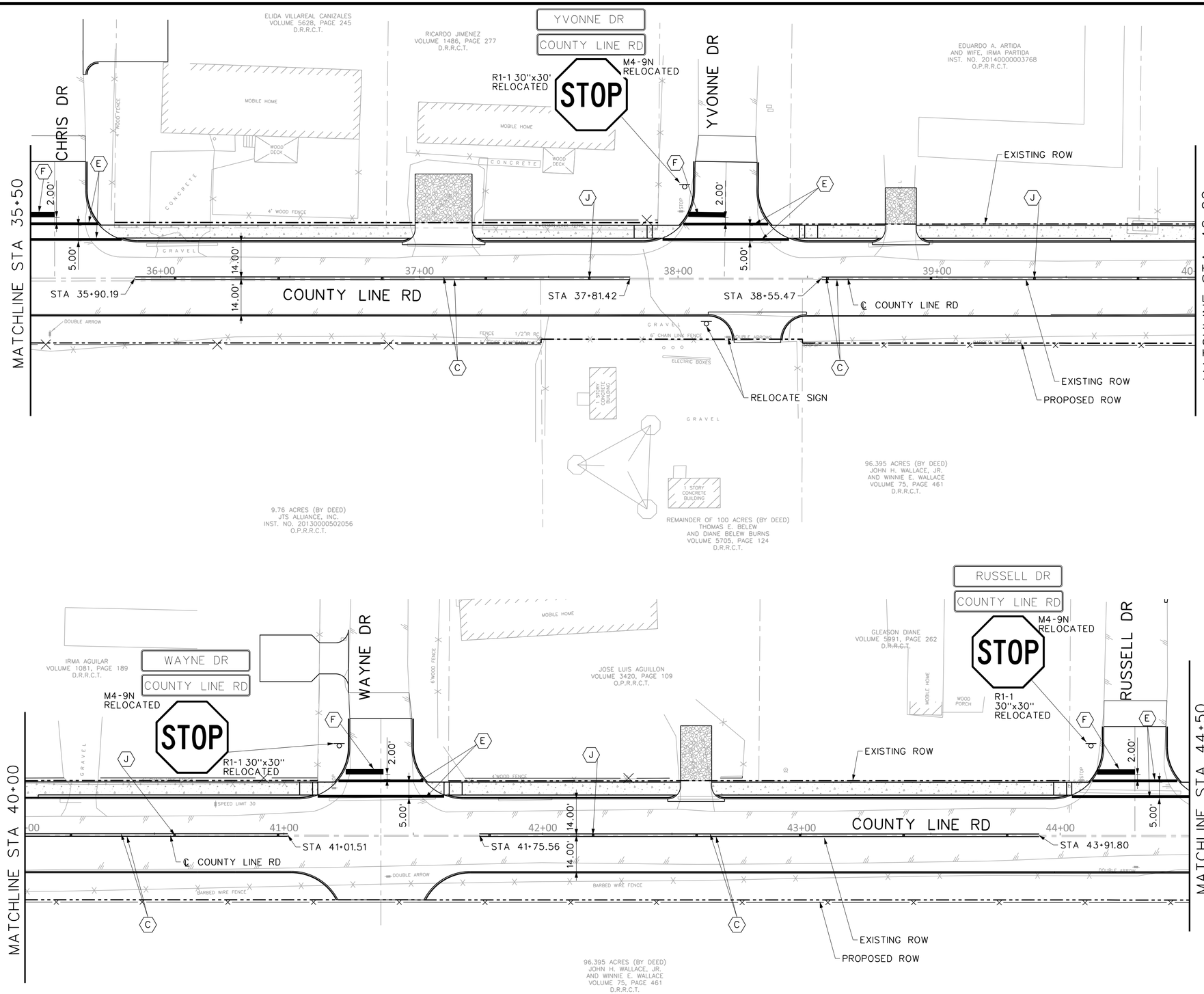
NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pp-pvmrk03.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET PM-03
SEQ. 46

MicroStation V8 User: 02336Office: Fort Worth
ROK15508 - N:\IF\Drawings\cv-trt-pp-pvmrk03.sht
Model: Default Model Name: Default Model Description:
Plot Scale: 40.0000 '/ in.
Date: Aug 26, 2018 - 07:27:43 PM
Model Default
Project Freese and Nichols, Inc.



LEGEND

A	REFL PAV MRK (Y) 4" (SLD)
B	REFL PAV MRK (Y) 4" (BRK)
C	REFL PAV MRK (Y) 4" (SLD) (DBL)
D	REFL PAV MRK (W) 8" (SLD)
E	REFL PAV MRK (W) 12" (SLD)
F	REFL PAV MRK (W) 24" (SLD)
G	REFL PAV MRK (W) (WORD)
H	REFL PAV MRK (W) (ARROW)
I	REFL PAV MRK (Y) 8" (SLD)
J	TY II-AA RPM
d	SIGN

NOTES:

1. ALL STRIPING SHALL BE TYPE 1 REFLECTIVE THERMOPLASTIC, UNLESS OTHERWISE NOTED.

2. CONTRACTOR SHALL BE RESPONSIBLE FOR LAYING OUT ALL PAVEMENT MARKINGS. CHECKING OVERALL DISTANCES ON GROUND AND MAKING ANY ADJUSTMENTS IF NECESSARY PRIOR TO PLACEMENT OF ALL FINAL MARKINGS, WITH APPROVAL OF PROJECT ENGINEER.

3. ALL STREET PAVEMENT MARKINGS INCLUDING DIRECTIONAL ARROWS, WORDS, CROSSWALKS, AND STOP BARS SHALL BE REFLECTORIZED THERMOPLASTIC MATERIAL, UNLESS OTHERWISE NOTED.

4. CONTRACTOR SHALL PRE-MARK STRIPING LAYOUT FOR APPROVAL OF CITY'S STREETS DEPARTMENT AND TxDOT PRIOR TO PLACEMENT OF ANY FINAL PAVEMENT MARKING AND SIGNS.

5. CONTRACTOR SHALL INSTALL PERMANENT TRAFFIC SIGNS AND MAINTAIN OR REINSTALL EXISTING TRAFFIC SIGNS TO EXISTING OR BETTER CONDITION AT THE BEGINNING OF THE PROJECT.

6. SEE DETAIL SHEETS PM(1-3)-12 FOR PAVEMENT MARKING DETAILS.

7. CONTRACTOR SHALL BE RESPONSIBLE FOR LAYING OUT ALL CROSSWALK PAVEMENT MARKINGS ACCORDING TO ADA REQUIREMENTS AND MAKING ANY ADJUSTMENTS IF NECESSARY PRIOR TO PLACEMENT OF ALL FINAL MARKINGS, WITH APPROVAL OF PROJECT ENGINEER.

8. ALL STREET NAME BLADES SIGNS SHALL CONFORM TO CITY OF ROCKWALL STANDARD DRAWING R-2300 AND SECTION 216 OF THE STANDARDS OF DESIGN AND CONSTRUCTION.

N

0 10' 20' 40'
SCALE IN FEET

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.
RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2299
Web: www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
SIGNAGE AND PAVEMENT MARKING
STA 35+50 TO STA 44+50

NO.	ISSUES	BY	DATE

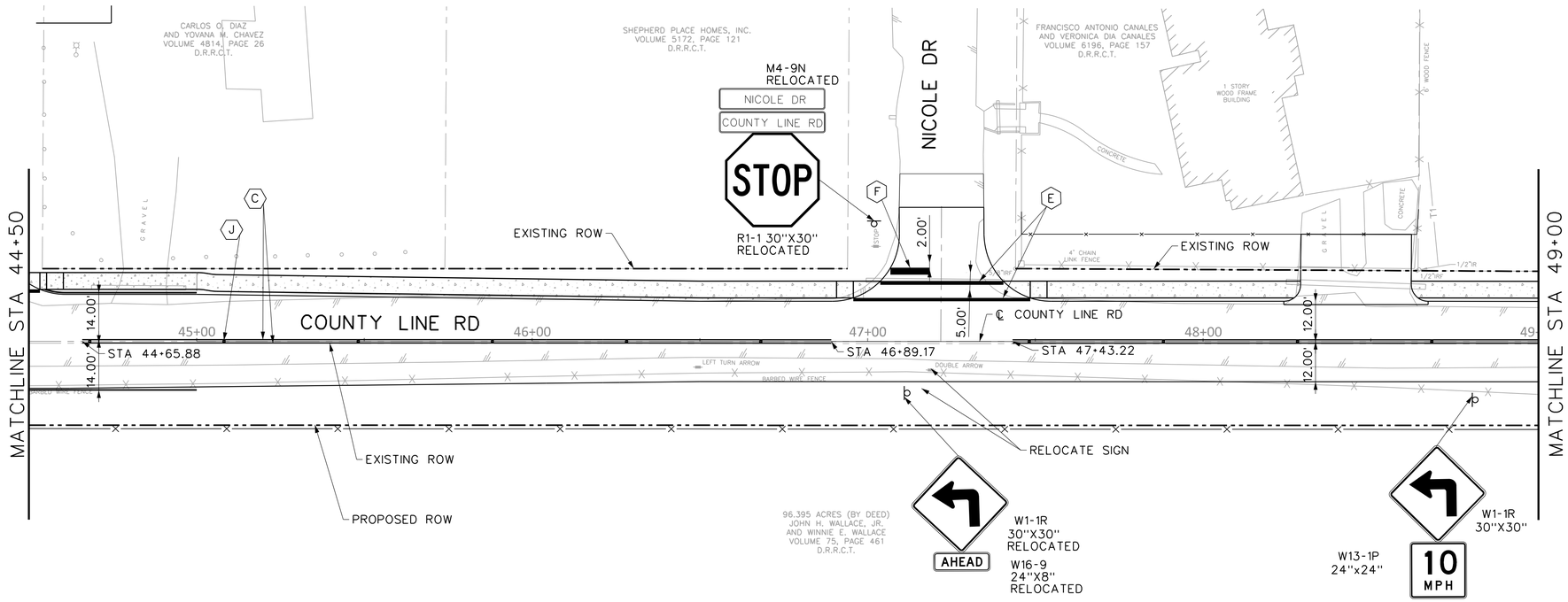
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DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pp-pvmrk04.sht

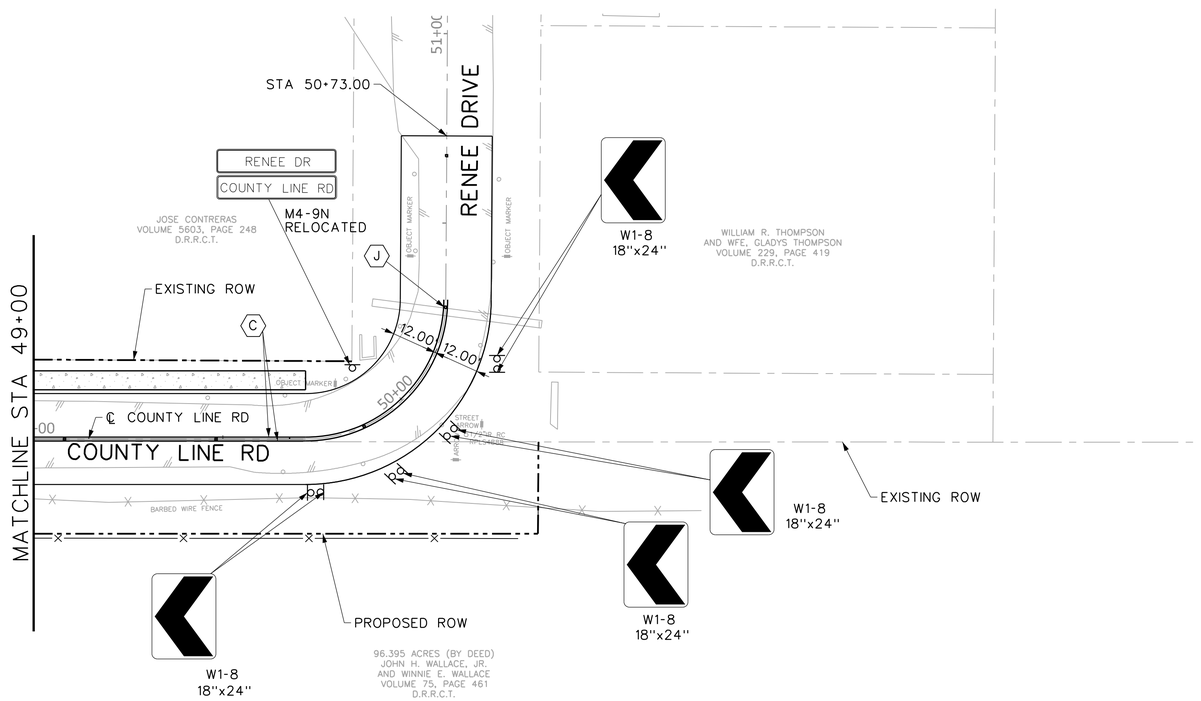
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET PM-04
SEQ. 47

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Plot Scale: 40.0000 '/ in. Model: Default
Date: Aug. 26, 2018 - 07:31:10 PM Project: Freese and Nichols, Inc.

Office: Fort Worth ROK15508 Date: Aug. 26, 2018 - 07:31:10 PM User: 02336File: N:\nf\Drawings\cv-trt-pp-pvmrk04.sht





LEGEND

- (A) REFL PAV MRK (Y) 4" (SLD)
- (B) REFL PAV MRK (Y) 4" (BRK)
- (C) REFL PAV MRK (Y) 4" (SLD) (DBL)
- (D) REFL PAV MRK (W) 8" (SLD)
- (E) REFL PAV MRK (W) 12" (SLD)
- (F) REFL PAV MRK (W) 24" (SLD)
- (G) REFL PAV MRK (W) (WORD)
- (H) REFL PAV MRK (W) (ARROW)
- (I) REFL PAV MRK (Y) 8" (SLD)
- (J) TY II-AA RPM
- ϕ SIGN

NOTES:

1. ALL STRIPING SHALL BE TYPE 1 REFLECTIVE THERMOPLASTIC, UNLESS OTHERWISE NOTED.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR LAYING OUT ALL PAVEMENT MARKINGS. CHECKING OVERALL DISTANCES ON GROUND AND MAKING ANY ADJUSTMENTS IF NECESSARY PRIOR TO PLACEMENT OF ALL FINAL MARKINGS, WITH APPROVAL OF PROJECT ENGINEER.
3. ALL STREET PAVEMENT MARKINGS INCLUDING DIRECTIONAL ARROWS, WORDS, CROSSWALKS, AND STOP BARS SHALL BE REFLECTORIZED THERMOPLASTIC MATERIAL, UNLESS OTHERWISE NOTED.
4. CONTRACTOR SHALL PRE-MARK STRIPING LAYOUT FOR APPROVAL OF CITY'S STREETS DEPARTMENT AND TxDOT PRIOR TO PLACEMENT OF ANY FINAL PAVEMENT MARKING AND SIGNS.
5. CONTRACTOR SHALL INSTALL PERMANENT TRAFFIC SIGNS AND MAINTAIN OR REINSTALL EXISTING TRAFFIC SIGNS TO EXISTING OR BETTER CONDITION AT THE BEGINNING OF THE PROJECT.
6. SEE DETAIL SHEETS PM(1-3)-12 FOR PAVEMENT MARKING DETAILS.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR LAYING OUT ALL CROSSWALK PAVEMENT MARKINGS ACCORDING TO ADA REQUIREMENTS AND MAKING ANY ADJUSTMENTS IF NECESSARY PRIOR TO PLACEMENT OF ALL FINAL MARKINGS, WITH APPROVAL OF PROJECT ENGINEER.
8. ALL STREET NAME BLADES SIGNS SHALL CONFORM TO CITY OF ROCKWALL STANDARD DRAWING R-2300 AND SECTION 216 OF THE STANDARDS OF DESIGN AND CONSTRUCTION.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

N

0 10' 20' 40'
SCALE IN FEET

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.
RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
ALAN D. HENDRIX
89708
REGISTERED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
SIGNAGE AND PAVEMENT MARKING STA 44+50 TO END

NO.	ISSUES	BY	DATE

FAN JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pp-pvmrk05.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET PM-05
SEQ. 48

MicroStation V8 User: 02336Office: Fort Worth
ROK15508 N:\IF\Drawings\cv-trt-pp-pvmrk05.sht
Plotted By: Stephen Wyatt - FTW-SDF-Mono-Default.plt
Plot Scale: 40.0000 '/ in. Model Default
Plot Date: Aug. 26, 2018 - 07:34:33 PM Project Freese and Nichols Inc.

EXISTING POLE CHART						
POLE/SPAN	P-1/P-2		P-2/P-3		P-3/P-1	
SPAN LENGTH	108'		111'		58'	
FOUNDATION TYPE	24-A		30-A		36-A	
LUMINAIRES	NO		NO		YES	
STRAIN WIRE SIGNS	STREET NAME		STREET NAME		R10-12, STREET NAME	
SIZE OF LENS	12"		12"		12"	
SIGNAL HEAD NO.	1	2	3	4	5	6
12" LED SIGNAL FACE INDICATIONS	R	R	R	R	R	R
	Y	Y	Y	Y	Y	Y
	G	G	G	G	G	←Y
						←G
						G

NOTE: SIGNAL HEADS 1,2,3,4,5,6 SHALL BE REMOVED AND RETURNED TO TXDOT. SEE NOTES 1 AND 3 BELOW.

H5LT H3 V3

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

BRANDON J. HUXFORD 117072 LICENSED PROFESSIONAL ENGINEER 8/27/18

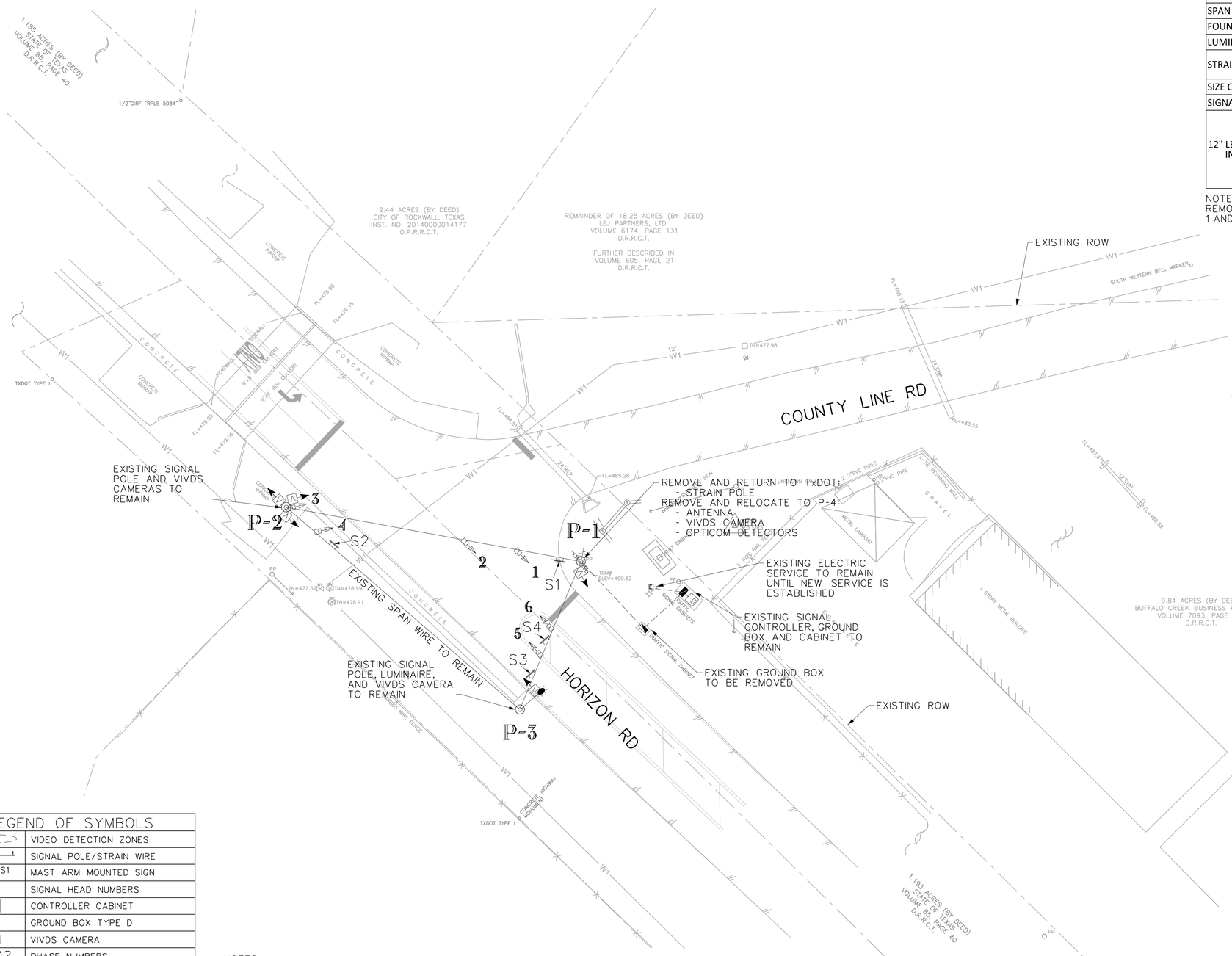
FREESE NICHOLS
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CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

EXISTING TRAFFIC SIGNAL LAYOUT



S1, S3 (EXISTING, RELOCATE)

COUNTY LINE RD

S2 (EXISTING, RELOCATE)

HORIZON RD

EXISTING (REMOVE) R10-12

LEFT TURN YIELD ON GREEN

S4

N

0 10' 20' 40'
SCALE IN FEET

LEGEND OF SYMBOLS	
	VIDEO DETECTION ZONES
	SIGNAL POLE/STRAIN WIRE
S1	MAST ARM MOUNTED SIGN
2	SIGNAL HEAD NUMBERS
	CONTROLLER CABINET
	GROUND BOX TYPE D
V	VIVDS CAMERA
Ø2	PHASE NUMBERS
P-2	POLE NUMBERS
(22)	CONDUIT RUN NUMBERS
	RIGHT OF WAY
	LUMINAIRE
	OPTICOM
E	ELECTRIC SERVICE
	VEHICLE SIGNAL HEAD
	PEDESTRIAN SIGNAL HEAD

NOTES:

1. ALL REMOVED EQUIPMENT TO BE RETURNED TO TXDOT.
2. SEE PROPOSED SIGNAL LAYOUT (TS-02) FOR LOCATION OF PROPOSED SIGNAL.
3. EXISTING SIGNAL TO REMAIN IN OPERATION UNTIL PROPOSED SIGNAL IS INSTALLED AND OPERATIONAL. EXISTING SIGNAL EQUIPMENT NOT NOTED TO BE RELOCATED SHALL BE REMOVED AND RETURNED TO TXDOT.
4. ALL POLE FOUNDATIONS TO BE REMOVED TO 2' BELOW FINISHED GRADE.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

FAN JOB NO.	ROK15508
DATE	08/2018
DESIGNED	AU
DRAWN	SI
REVISED	
CHECKED	BH
FILE NAME	cv-trt-pp-traffsig01.sht

NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET TS-01

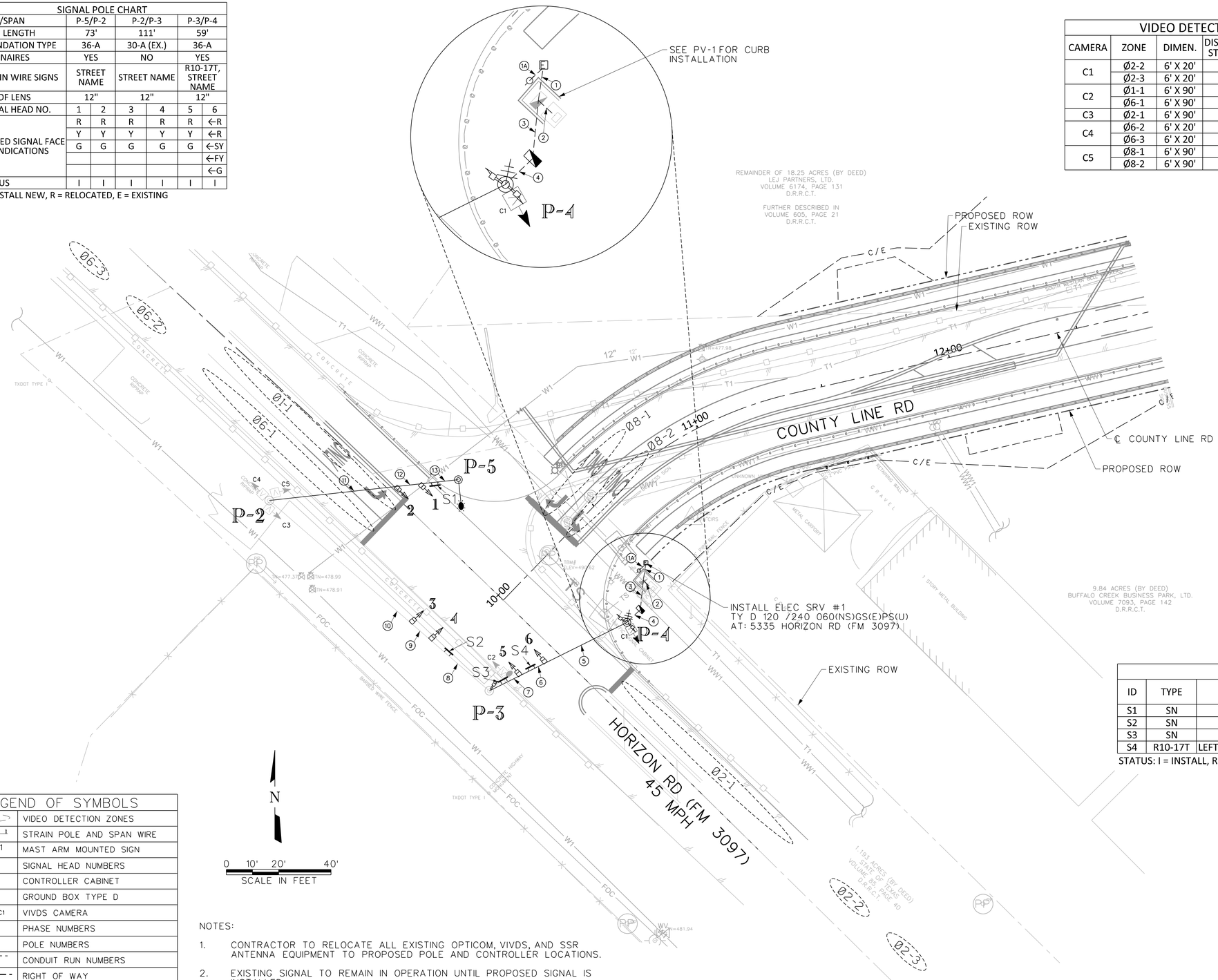
SEQ. 49

MicroStation V8 User: chm Office: Dallas
ROK15508 N:\E\Drawings\cv-trt-pp-traffsig01.sht
Plot Scale=40.0000 '/ in. Plot Driver=HP DesignJet 800 PS
Plot Date=Aug 26 2018 - 01:46:05 AM Model: Default
Project: Freese and Nichols, Inc.

SIGNAL POLE CHART						
POLE/SPAN	P-5/P-2		P-2/P-3		P-3/P-4	
SPAN LENGTH	73'		111'		59'	
FOUNDATION TYPE	36-A		30-A (EX.)		36-A	
LUMINAIRES	YES		NO		YES	
STRAIN WIRE SIGNS	STREET NAME		STREET NAME		R10-17T, STREET NAME	
SIZE OF LENS	12"		12"		12"	
SIGNAL HEAD NO.	1	2	3	4	5	6
12" LED SIGNAL FACE INDICATIONS	R	R	R	R	R	←R
	Y	Y	Y	Y	Y	←R
	G	G	G	G	G	←SY
						←FY
						←G
STATUS	I	I	I	I	I	I

I = INSTALL NEW, R = RELOCATED, E = EXISTING

VIDEO DETECTION ZONE DETAILS					
CAMERA	ZONE	DIMEN.	DIST. FROM STOP BAR	SETTING	FUNCTION
C1	Ø2-2	6' X 20'	215'	PULSE	EXTEND Ø2
	Ø2-3	6' X 20'	350'	PULSE	EXTEND Ø2
C2	Ø1-1	6' X 90'	0	PRESENCE	NON-LOCKING Ø1
	Ø6-1	6' X 90'	0	PRESENCE	NON-LOCKING Ø6
C3	Ø2-1	6' X 90'	0	PRESENCE	NON-LOCKING Ø2
C4	Ø6-2	6' X 20'	215'	PULSE	EXTEND Ø6
	Ø6-3	6' X 20'	350'	PULSE	EXTEND Ø6
C5	Ø8-1	6' X 90'	0	PRESENCE	NON-LOCKING Ø8
	Ø8-2	6' X 90'	0	PRESENCE	NON-LOCKING Ø8



R R SY FY G
H5FYA

R Y G
H3

COUNTY LINE RD
S1,S3

HORIZON RD
S2

R10-17T
LEFT TURN YIELD ON FLASHING YELLOW ARROW
S4

TRAFFIC SIGNAL SIGN SUMMARY				
ID	TYPE	LEGEND	STATUS	LOCATION
S1	SN	STREET NAME	R	P-5/P-2
S2	SN	STREET NAME	R	P-2/P-3
S3	SN	STREET NAME	R	P-3/P-4
S4	R10-17T	LEFT TURN YIELD ON FLASHING YELLOW ARROW	I	P-3/P-4

STATUS: I = INSTALL, R = RELOCATE

LEGEND OF SYMBOLS	
	VIDEO DETECTION ZONES
	STRAIN POLE AND SPAN WIRE
S1	MAST ARM MOUNTED SIGN
2	SIGNAL HEAD NUMBERS
	CONTROLLER CABINET
	GROUND BOX TYPE D
C1	VIVDS CAMERA
Ø2	PHASE NUMBERS
P-2	POLE NUMBERS
22	CONDUIT RUN NUMBERS
	RIGHT OF WAY
	LUMINAIRE
	OPTICOM
	ELECTRIC SERVICE
	POWER SUPPLY POLE
	VEHICLE SIGNAL HEAD

NOTES:

1. CONTRACTOR TO RELOCATE ALL EXISTING OPTICOM, VIVDS, AND SSR ANTENNA EQUIPMENT TO PROPOSED POLE AND CONTROLLER LOCATIONS.
2. EXISTING SIGNAL TO REMAIN IN OPERATION UNTIL PROPOSED SIGNAL IS INSTALLED.
3. CONTRACTOR TO CONTACT CITY OF ROCKWALL ENGINEERING AND TxDOT AT LEAST 2 WEEKS PRIOR TO COMMENCING TRAFFIC SIGNAL WORK.
4. FOR ONCOR SERVICE DROP AND ELECTRIC SERVICE CONNECTION, CONTACT J.D. CAMPBELL-WALKER AT ONCOR (972-569-1287).
5. AIM SSR ANTENNA NORTH 30° WEST. MASTER RADIO IS LOCATED AT THE INTERSECTION OF IH 30 AND FM 740.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

BRANDON J. HUMFORD
117072
LICENSED
PROFESSIONAL ENGINEER
STATE OF TEXAS
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
PROPOSED
TRAFFIC SIGNAL LAYOUT

FAN JOB NO.	ROK15508
DATE	08/2018
DESIGNED	AU
DRAWN	SI
REVISED	
CHECKED	BH
FILE NAME	cv-trt-pp-traffsig02.sht

NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET TS-02
SEQ. 50

MicroStation V8 User: chm Office: Dallas
ROK15508 N:\Drawings\cv-trt-pp-traffsig02.sht
Plot Scale: 40.0000 '/ In. Model: Default
Plot Date: Aug 26, 2018 - 01:46:09 AM Project: Freese and Nichols, Inc.

CONDUIT RUNS AND IN-POLE SUMMARY

RUN NO.	RUN LENGTH (LF)	STATUS E=EXIST I=INSTALL	TRENCH (T) / SPAN (S)	ITEM 618		ITEM 620			ITEM 684		ITEM 690	ITEM 684	ITEM 680
				CONDUIT TYPE		ELECTRICAL CONDUCTORS			SIGNAL CABLE (TY-A, 14 AWG)		VIVDS	OPTICOM	SSR ANTENNA
				2" PVC TRENCH (LF)	3" PVC TRENCH (LF)	NO. 6 BARE (LF)	NO. 6 XHHW (LF)	NO. 8 XHHW (LF)	9 CNDR CABLE (LF)	12 CNDR CABLE (LF)	DETECTION CABLE (VIVDS) (LF)	3 CNDR NO. 16 (LF)	COAX CABLE (LF)
1A	4	I	T	1		BY ONCOR							
1	7	I	T	1		1	2	2					
2	5	E	T			1	2		2	1	5	3	1
3	12	I	T		1	1		2	2	1	5	3	1
4	7	I	T		1	1		2	2	1	5	3	1
5	35	I	S					2	2	1	4	1	
6	11	I	S					2	2	1	4	1	
7	13	I	S					2	2		4	1	
8	30	E	S					2	2		3		
9	10	E	S					2	2		3		
10	72	E	S					2	1		3		
11	49	I	S					2	1				
12	10	I	S					2	1				
13	15	I	S					2					
SUBTOTAL (LF)				11	19	31	24	377	70		692	131	24
	P-1												
	P-2										20		
	P-3							20			30		
	P-4							60	150	30	160	70	35
	P-5							10					
TOTAL (LF)				11	19	31	24	632	527	100	902	201	59

SIGNAL HEAD CHART

SIGNAL HEAD NO.	SIGNAL HEAD TYPE	STATUS	12" SIGNAL INDICATION BACKPLATE (EA)		VEH SIG SECTION (EA)
			3 SEC (EA)	5 SEC (EA)	
6	H5LT	I		1	5
1, 2, 3, 4, 5	H3	I	5		15
		TOTAL	5	1	20

STATUS: I=INSTALL; R=RELOCATE

ELECTRICAL SERVICE DETAILS

ELECTRIC SERVICE NO.	SHEET NO.	ELECTRICAL SERVICE DESCRIPTION SEE ED(5)&ED(6)-14	SERVICE CONDUIT SIZE (PVC) (SCH 80)	SERVICE CONDUCTORS NO./SIZE	SAFETY SWITCH AMPS	MAIN CIRCUIT BREAKER POLE/AMP	TWO-POLE CONTACTOR AMPS	PANEL BD./ LOADCENTER AMP RATING	CIRCUIT NO.	BRANCH CKT. BRK. POLE/AMPS	KVA LOAD
1	-	ELEC SERV TY D (120/240) 060 (NS) GS (E) PS (U)	2"	3/#6	N/A	2P/60	N/A	70	1 - TS	1P/50	5.5
									2 - LUM	2P/20	

CABLE TERMINATION CHART

CNDR. COLOR	CNDR. NO.	CABLE 1 9 CNDR. FROM SPAN P2-P5 TO CNTRL.	CABLE 2 9 CNDR. FROM SPAN P2-P3 TO CNTRL.	CABLE 3 12 CNDR. FROM SPAN P3-P4 TO CNTRL.
BLACK	1	SPARE	SPARE	SPARE
WHITE	2	SH COM	SH COM	SH COM
RED	3	SH 1,2 ø2 R	SH 3,4 ø8 R	SH 5 ø6 R
GREEN	4	SH 1,2 ø2 G	SH 3,4 ø8 G	SH 5 ø6 G
ORANGE	5	SH 1,2 ø2 Y	SH 3,4 ø8 Y	SH 5 ø6 Y
BLUE	6	SPARE	SPARE	SH 6 OL A ←R
WHITE/ BLACK	7	SPARE	SPARE	SH 6 OL A ←SY
RED/ BLACK	8	SPARE	SPARE	SH 6 OL A ←FY
GREEN/ BLACK	9	SPARE	SPARE	SH 6 ø1 ←G
ORANGE/ BLACK	10	- -	- -	SPARE
BLUE/ BLACK	11	- -	- -	SPARE
BLACK/ WHITE	12	- -	- -	SPARE

GROUND BOX QUANTITIES

ITEM 624	
TYPE D W/ APRON	1

TRAFFIC SIGNAL POLE ASSEMBLIES (STEEL)

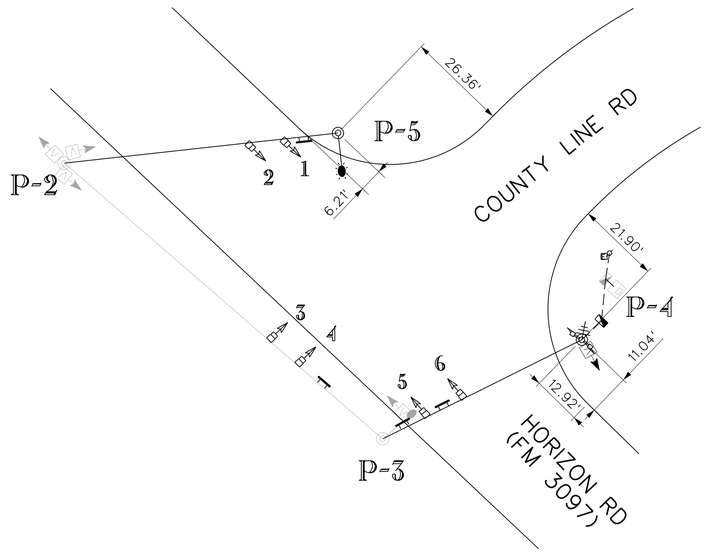
POLE	STATUS	LUM-A Y/N	ITEM 416 FDN. TYPE	ITEM 416 DR. SHAFT LENGTH	ITEM 686 POLE TYPE
P-2	E	N			
P-3	E	Y			
P-4	I	N	36-A	13	SP 30 B-80
P-5	I	Y	36-A	13	SPL 30 B-80

STATUS: I=INSTALL; REL=RELOCATE; E=EXISTING

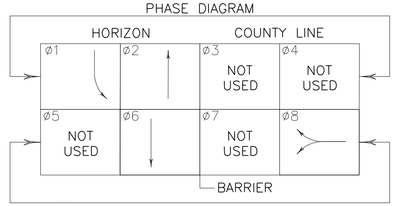
SPAN WIRE CABLE LENGTHS

	SPAN	SPAN LENGTH (LF)	3/16" CABLE (LF)	5/16" CABLE (LF)
	P-5/P-2	73	146	148
*	P-2/P-3	111	222	224
	P-3/P-4	59	118	119

*EXISTING SPAN



PHASE DIAGRAM



NOTE:
LEFT TURNS FOR ø1 ARE PROTECTED AND PERMISSIVE

OL A = ø1(RA, YA, FYA)

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

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FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

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CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
PROPOSED
TRAFFIC SIGNAL DETAILS

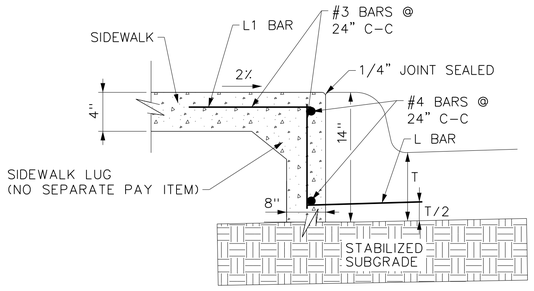
NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AJ
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pp-traffsig03.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

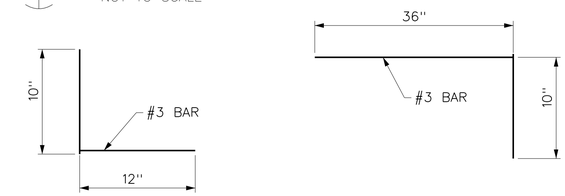
SHEET TS-03
SEQ. 51

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Plot Driver: Adobe PDF Printer Model: Default
Plot Scale: 40.0000 '/ in. Project: Freese and Nichols, Inc.
Date: Aug. 26, 2018 - 01:46:12 AM



1 SIDEWALK LUG DETAIL

NOT TO SCALE

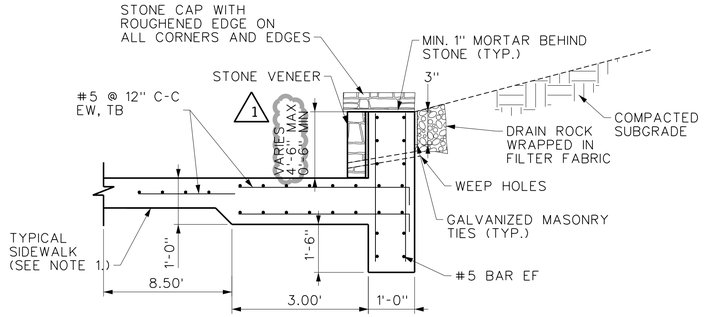


L BAR

NOT TO SCALE

L1 BAR

NOT TO SCALE



NOTES:

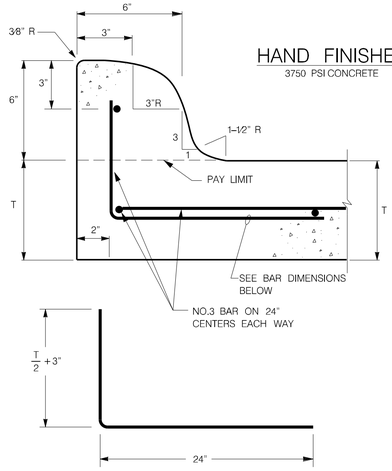
1. EXTEND TYPICAL SIDEWALK REINF. INTO THICKENED FOOTING AT WALL A MINIMUM OF 2'-0".
2. SIDEWALK RETAINING WALLS SHALL BE STONE FACED AND STONE CAPPED. CONTRACTOR TO SUBMIT STONE SAMPLES OF COLOR AND TYPE FOR CITY REVIEW.

2 SIDEWALK WALL DETAIL

NOT TO SCALE

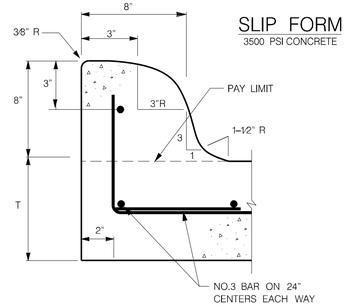
NOTES:

1. PROVIDE VERTICAL EXPANSION IN WALL AT 25' MAX. SPACING (USE EXPANSION JOINT, STANDARD DRAWING NO. 2050, AND MODIFY AS REQUIRED)
2. WALL DESIGN ASSUMES NO SURCHARGE. A SPECIAL ENGINEERING ANALYSIS IS REQUIRED FOR OTHER CONDITIONS.



HAND FINISHED

3750 PSI CONCRETE

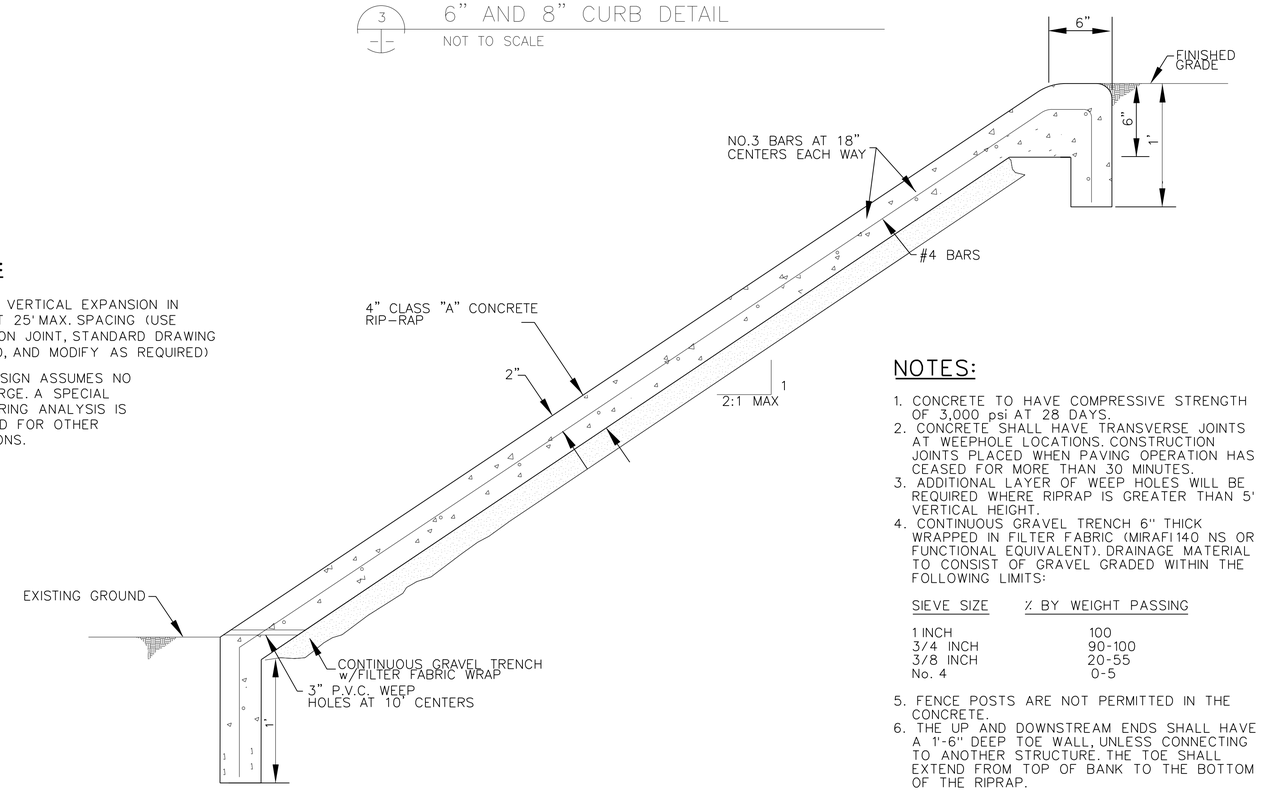


SLIP FORM

3500 PSI CONCRETE

3 6" AND 8" CURB DETAIL

NOT TO SCALE



NOTES:

1. CONCRETE TO HAVE COMPRESSIVE STRENGTH OF 3,000 psi AT 28 DAYS.
2. CONCRETE SHALL HAVE TRANSVERSE JOINTS AT WEEPHOLE LOCATIONS. CONSTRUCTION JOINTS PLACED WHEN PAVING OPERATION HAS CEASED FOR MORE THAN 30 MINUTES.
3. ADDITIONAL LAYER OF WEEP HOLES WILL BE REQUIRED WHERE RIPRAP IS GREATER THAN 5' VERTICAL HEIGHT.
4. CONTINUOUS GRAVEL TRENCH 6" THICK WRAPPED IN FILTER FABRIC (MIRAFI 140 NS OR FUNCTIONAL EQUIVALENT). DRAINAGE MATERIAL TO CONSIST OF GRAVEL GRADED WITHIN THE FOLLOWING LIMITS:

SIEVE SIZE	% BY WEIGHT PASSING
1 INCH	100
3/4 INCH	90-100
3/8 INCH	20-55
No. 4	0-5

5. FENCE POSTS ARE NOT PERMITTED IN THE CONCRETE.
6. THE UP AND DOWNSTREAM ENDS SHALL HAVE A 1'-6" DEEP TOE WALL, UNLESS CONNECTING TO ANOTHER STRUCTURE. THE TOE SHALL EXTEND FROM TOP OF BANK TO THE BOTTOM OF THE RIPRAP.

4 CONCRETE RIPRAP DETAIL

NOT TO SCALE

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RECORD DRAWINGS PREPARED ON: 3/17/2021

THE SEAL THAT ORIGINALLY APPEARED ON THIS DOCUMENT WAS AUTHORIZED BY BRANDON J. HUXFORD TEXAS 140 1002 ON 08/21/2019. ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION OF THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS — ALAN D. HENDRIX — 69798 — REGISTERED PROFESSIONAL ENGINEER — 11/20/2019

FREESE NICHOLS

2711 North Haskell Avenue, Suite 3300
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Phone: (214) 217-2200
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CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

PAVING DETAILS

NO.	ISSUES	BY	DATE	F&N JOB NO. ROK15508	
				DATE 08/2018	
				DESIGNED AU	
				DRAWN SI	
		ADH	11/20/19	REVISED	CHECKED BH
1	FIELD CHANGE #4			FILE NAME	cv-trt-dt-paveDT01.sht

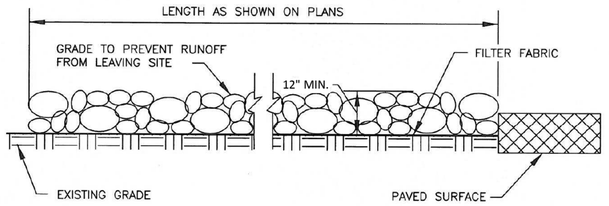
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

0 1"

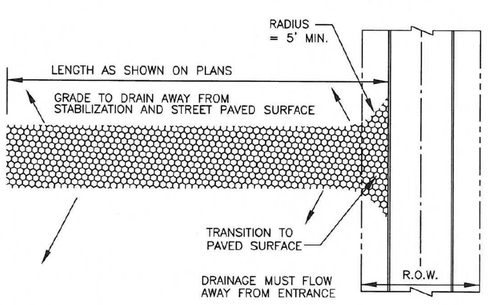
SHEET PD-01

SEQ. 52

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Plot Scale: 1.0000 '= 1.0000 ' Project: Freese and Nichols, Inc.
Date: Nov. 20, 2019 - 02:00:05 PM



PROFILE VIEW
N.T.S.



PLAN VIEW
N.T.S.

Note: No crushed concrete allowed.

STABILIZED CONSTRUCTION ENTRANCE	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 202.11 *	
		DATE Mar. 2018	STANDARD DRAWING NO. R-1070A

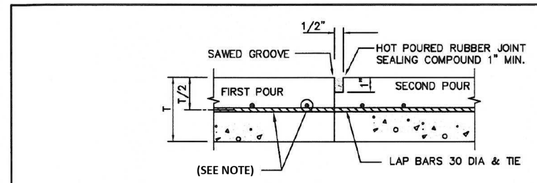
*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*

STABILIZED CONSTRUCTION ENTRANCE GENERAL NOTES:

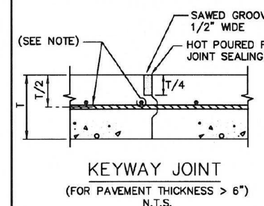
1. STONE SHALL BE 4 TO 6 INCH DIAMETER COARSE AGGREGATE.
2. MINIMUM LENGTH SHALL BE 50 FEET AND WIDITH SHALL BE 20 FEET.
3. THE THICKNESS SHALL NOT BE LESS THAN 12 INCHES.
4. THE WIDTH SHALL BE NO LESS THAN THE FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.
5. WHEN NECESSARY, VEHICLES SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO A PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WITH DRAINAGE FLOWING AWAY FROM BOTH THE STREET AND THE STABILIZED ENTRANCE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PAVED SURFACES. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PAVED SURFACES MUST BE REMOVED IMMEDIATELY.
7. THE ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.
8. PREVENT SHORTCUTTING OF THE FULL LENGTH OF THE CONSTRUCTION ENTRANCE BY INSTALLING BARRIERS AS NECESSARY.
9. INSPECTION SHALL BE AS SPECIFIED IN THE SWPPP.
10. NO CRUSHED CONCRETE ALLOWED.

STABILIZED CONSTRUCTION ENTRANCE	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 202.11 *	
		DATE Mar. 2018	STANDARD DRAWING NO. R-1070B

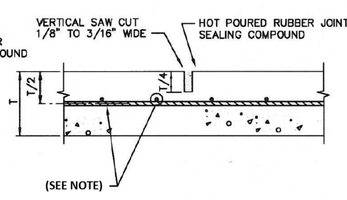
*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*



CONSTRUCTION JOINT
N.T.S.

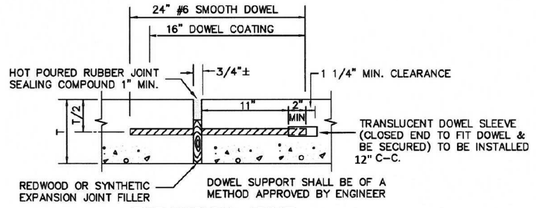


KEYWAY JOINT
(FOR PAVEMENT THICKNESS > 6")
N.T.S.



SAWED CONTRACTION JOINT
N.T.S.

NOTE:
REINFORCING SHALL BE - #3 BARS AT 24" FOR 6" THICK PAVEMENT AND LESS. #4 BARS AT 18" FOR 8" THICK PAVEMENT AND GREATER.



EXPANSION JOINT
(SPACED 600 FT. MAXIMUM; LOCATE AT STRUCTURES AND AT INTERSECTION P.C.'S & P.T.'S)
N.T.S.

REINFORCED CONCRETE PAVEMENT JOINTS	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 303.5.4.	
		DATE Mar. 2018	STANDARD DRAWING NO. R-2050

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: Jeremy M. White, P.E., CFM
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021
FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS — BRANDON J. HUXFORD — 117072 — LICENSED PROFESSIONAL ENGINEER — 8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
PAVING DETAILS

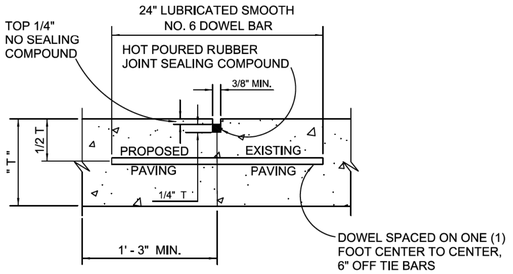
F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-dt-paveDT03.sht

NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET PD-02
SEQ. 53

MicroStation V8 User: 02336Office: Fort Worth
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Date: Aug. 26, 2018 - 07:50:18 PM

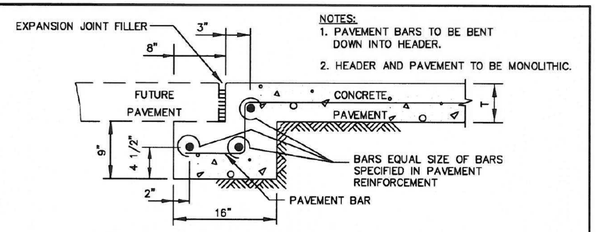


NOTES: T = PAVEMENT

1. LONGITUDINAL BUTT CONSTRUCTION MAY BE UTILIZED IN PLACE OF LONGITUDINAL HINGED (KEYWAY) JOINT AT CONTRACTORS OPTION.
2. DOWEL BARS SHALL BE DRILLED INTO PAVEMENT HORIZONTALLY BY USE OF A MECHANICAL RIG.
3. DRILLING BY HAND IS NOT ACCEPTABLE, PUSHING DOWEL BARS INTO GREEN CONCRETE NOT ACCEPTABLE.

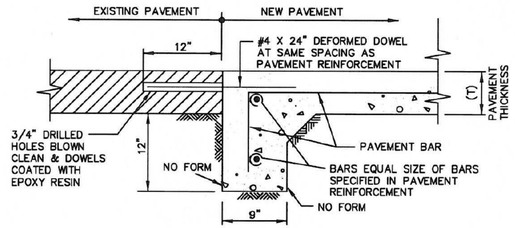
LONGITUDINAL BUTT JOINT
NOT TO SCALE

REINFORCED CONCRETE PAVEMENT	CITY OF ROCKWALL		
LONGITUDINAL BUTT JOINT		DATE OCT. '17	DRAWING NO. R-2051

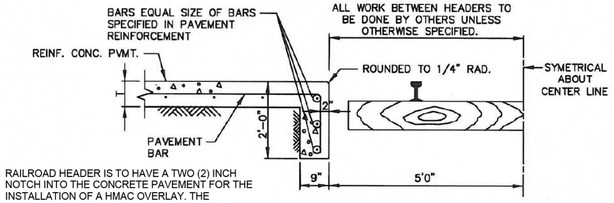


NOTES:
1. PAVEMENT BARS TO BE BENT DOWN INTO HEADER.
2. HEADER AND PAVEMENT TO BE MONOLITHIC.

STREET HEADER FOR FUTURE PAVEMENT
N.T.S.



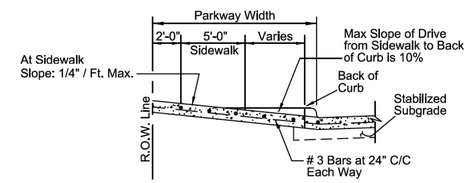
STREET HEADER AT EXISTING PAVEMENT
N.T.S.



RAILROAD HEADER IS TO HAVE A TWO (2) INCH NOTCH INTO THE CONCRETE PAVEMENT FOR THE INSTALLATION OF A HMAC OVERLAY. THE CONCRETE UNDER THE HMAC IS TO BE THE FULL STREET THICKNESS. THE NOTCH SHOULD START AT THE END OF THE PAVEMETN AND GO TWENTY (20) FEET UP THE ROAD AWAY FROM THE CROSSING.

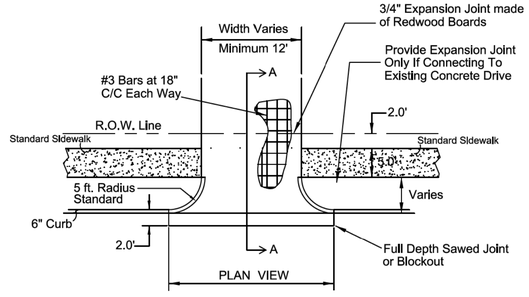
STREET HEADER AT RAILROAD
N.T.S.

REINFORCED CONCRETE PAVEMENT	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 305.4	
STREET HEADERS		DATE Mar. 2018	STANDARD DRAWING NO. R-2070



SECTION A-A

NOTE:
Sidewalk section thru driveway to be poured same thickness as driveway - 6" Thick 3,600 P.S.I. Reinf. Conc. Pvmt. w/ #3 Bars @ 18" O.C.E.W. (Grade 60 Steel)



DRIVEWAY DETAILS
(Not to Scale)

DRIVEWAY DETAIL	CITY OF ROCKWALL		
RESIDENTIAL DRIVEWAY		DATE OCT. '17	DRAWING NO. R-2150

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
PAVING DETAILS

FNI JOB NO	ROK15508				
DATE	DATE	08/2018	DESIGNED	AU	
			DRAWN	SI	
			REVISED		
BY			CHECKED	BH	
			FILE NAME	cv-trt-dt-paveDT04.sht	

NO. ISSUES

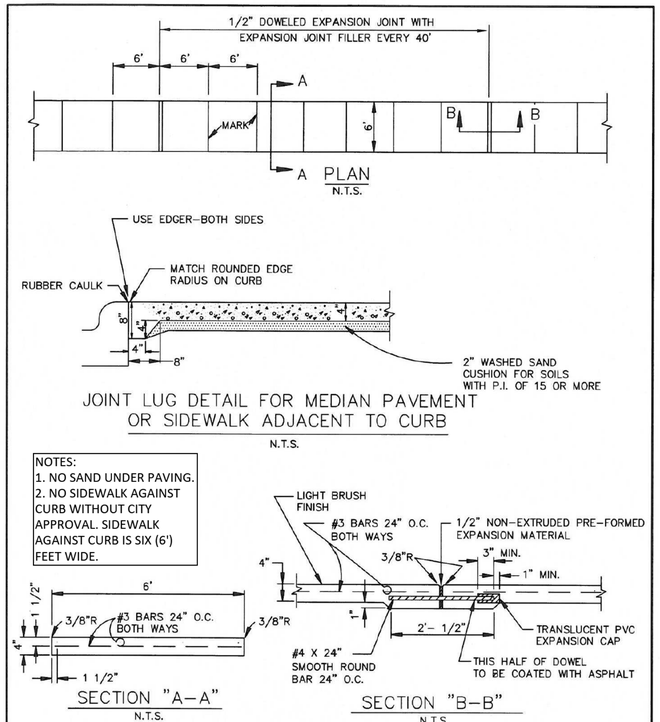
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET PD-03
SEQ. 54

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: Mary M. Miller, P.E., CFM
Date: 11/26/2018

MicroStation V8 User: 02336Office: Fort Worth
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Date: Aug. 26, 2018 - 07:52:08 PM Project:Freese and Nichols Inc.

Office: Fort Worth ROK15508 Date: Aug. 26, 2018 - 07:52:08 PM User: 02336File: N:\IP\Drawings\cv-trt-dt-paveDT04.sht



NOTE:

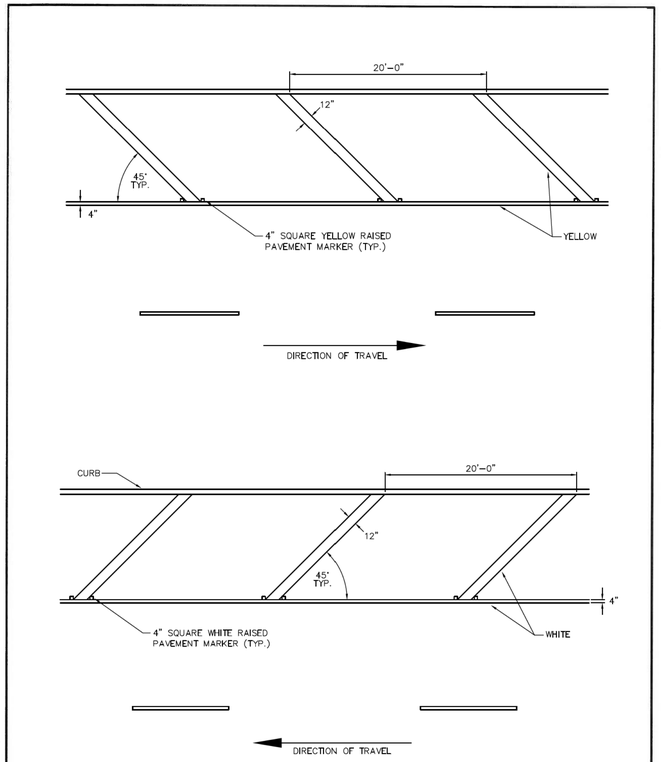
1. REFER TO STANDARD SPECIFICATION ITEM 305.2 FOR ALTERNATE REINFORCEMENT.
2. CROSS SLOPE OF SIDEWALK SHALL BE ± 1/4" PER FT. MIN. TO ± 3/8" PER FT. MAX.
3. OTHER THAM 6'–0" SIDEWALK WIDTH MAY BE SPECIFIED BY OWNER.
4. SIDEWALK SHALL BE CLASS "A" CONCRETE UNLESS OTHERWISE SPECIFIED BY OWNER.
5. ALL HONEYCOMB IN BACK OF CURB TO BE TROWEL–PLASTERED BEFORE POURING SIDEWALK.
6. LUG MAY BE FORMED BY SHAPING SUBGRADE TO APPROXIMATE DIMENSIONS SHOWN.

REINFORCED CONCRETE SIDEWALKS	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 305.2
JOINTS AND SPACING		DATE Mar. 2018 / STANDARD DRAWING NO. R-2170

GENERAL NOTES:

1. REINFORCED CONCRETE PAVEMENT:
   - A. ALL CURBS SHALL BE PLACED INTEGRAL WITH PAVEMENT UNLESS OTHERWISE APPROVED BY THE OWNER.
   - B. CURBS SHALL MEET THE SAME COMPRESSIVE STRENGTH AS SPECIFIED FOR THE PAVEMENT.
   - C. BAR LAPS SHALL BE 30 DIAMETERS.
   - D. REINFORCING BARS SHALL BE SUPPORTED BY CHAIRS OR OTHER DEVICES APPROVED BY THE OWNER.
2. SUBGRADE: (UNLESS OTHERWISE SPECIFIED BY OWNER)
   - A. SUBGRADE UNDER ALL PAVEMENTS SHALL BE STABILIZED TO A MINIMUM DEPTH OF SIX (6") INCHES WITH HYDRATEDLIME CEMENT. LABORATORY TESTS WILL BE PERFORMED TO DETERMINE THE AMOUNT OF LIME OR CEMENT TO USE.

PAVEMENT SYSTEMS	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 302,303
GENERAL NOTES		DATE Mar. 2018 / STANDARD DRAWING NO. R-2190



DIAGONAL CROSSHATCH STRIPING	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE DATE Mar. 2018 / STANDARD DRAWING NO. R-2400

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], P.E., CFM
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS · BRANDON J. HUXFORD · 117072 · LICENSED PROFESSIONAL ENGINEER · 8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
PAVING DETAILS

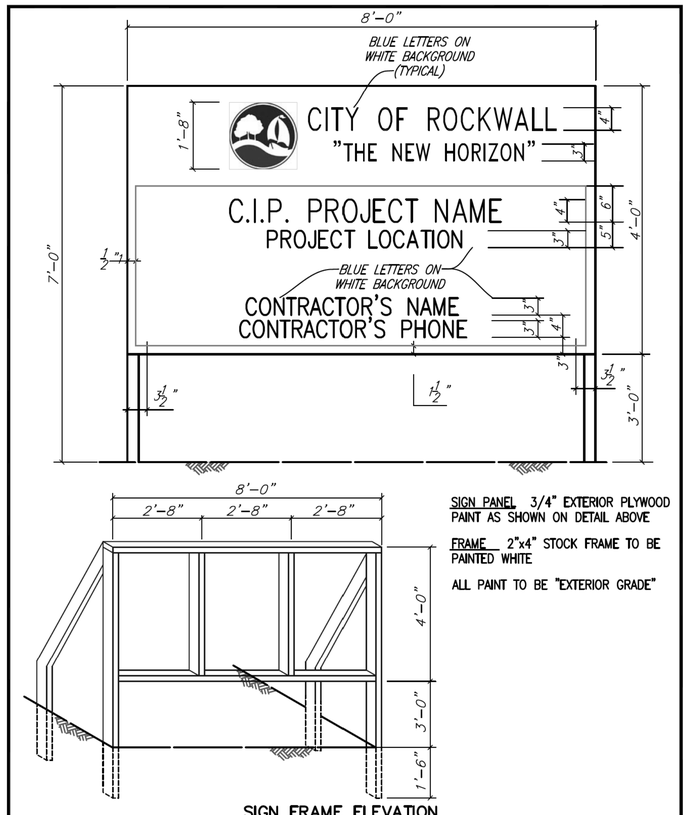
NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-dt-paveDT05.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET PD-04
SEQ. 55

MicroStation V8 User: 02336Office: Fort Worth
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Plot Scale: 10.0000 '/ in. Plot Date: Aug. 26, 2018 - 07:54:26 PM
Model: Default
Project: Freese and Nichols, Inc.



SIGN PANEL 3/4" EXTERIOR PLYWOOD PAINT AS SHOWN ON DETAIL ABOVE

FRAME 2"x4" STOCK FRAME TO BE PAINTED WHITE

ALL PAINT TO BE "EXTERIOR GRADE"

SIGN FRAME ELEVATION

MISCELLANEOUS DETAILS	CITY OF ROCKWALL	
CONSTRUCTION SIGN DETAIL		DATE: AUG. '15 / DRAWING NO.: R-7010

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
PAVING DETAILS

NO.	ISSUES	BY	DATE

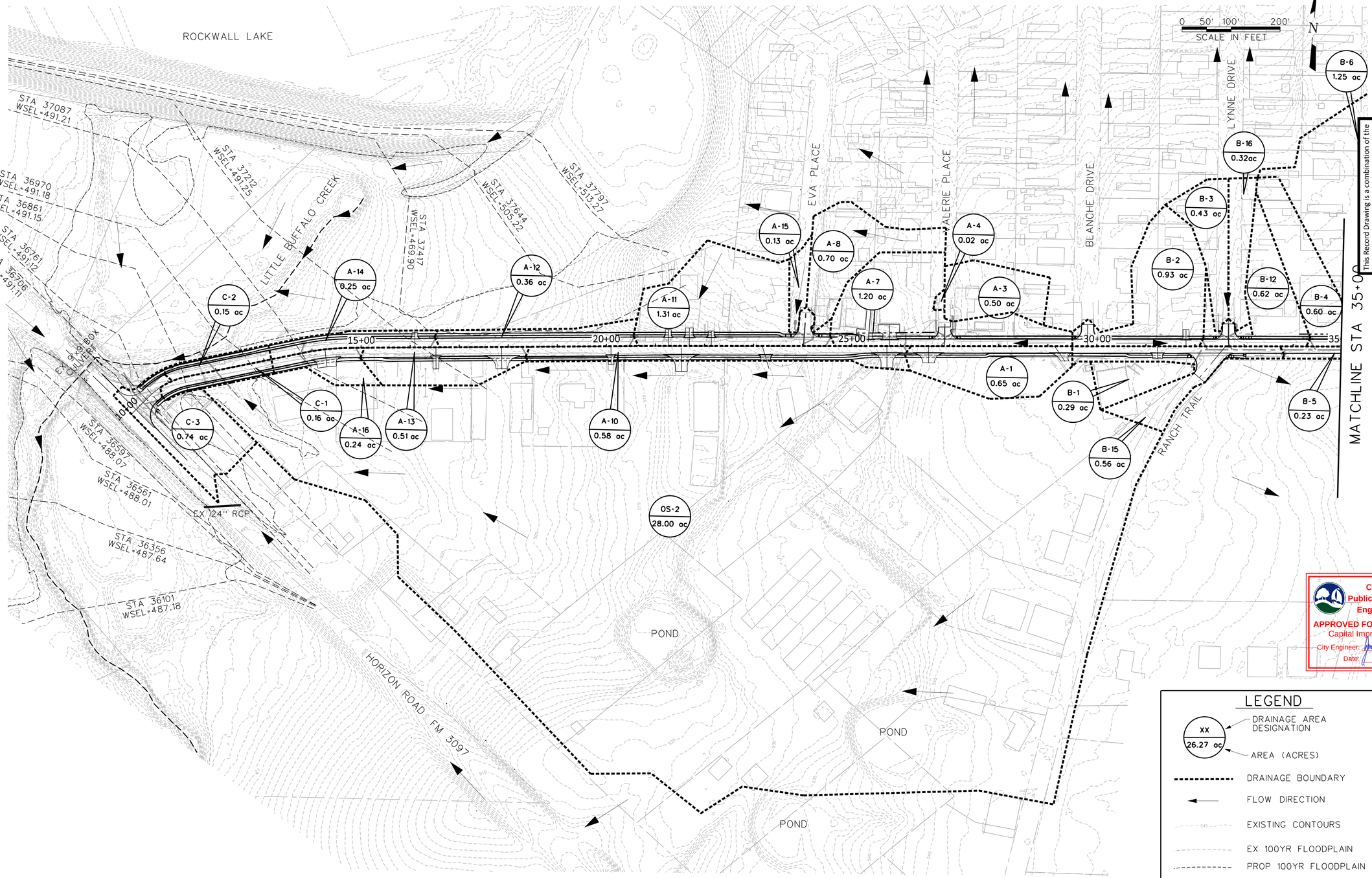
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DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-dt-paveDT06.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET PD-05
SEQ. 56

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], PE, CFM
Date: 11/26/2018

MicroStation V8 User: 02336Office: Fort Worth
ROK15508 - N:\IF\Drawings\cv-trt-dt-paveDT06.sht
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Date: Aug. 26, 2018 - 07:55:34 PM Project:Freese and Nichols Inc.



City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

LEGEND

- XX / 26.27 ac — DRAINAGE AREA DESIGNATION / AREA (ACRES)
- DRAINAGE BOUNDARY
- FLOW DIRECTION
- 545 — EXISTING CONTOURS
- EX 100YR FLOODPLAIN
- PROP 100YR FLOODPLAIN
- HEC-RAS CROSS SECTIONS

NOTE:

1. CONTRACTOR TO INSTALL CITY-FURNISHED "NO DUMPING" METAL TAGS ON ALL INLETS

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS — BRANDON J. HUXFORD — 117072 — LICENSED PROFESSIONAL ENGINEER — 8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2299
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
DRAINAGE AREA MAP OVERVIEW
BEGIN TO STA 35+00

NO.	ISSUES	BY	DATE

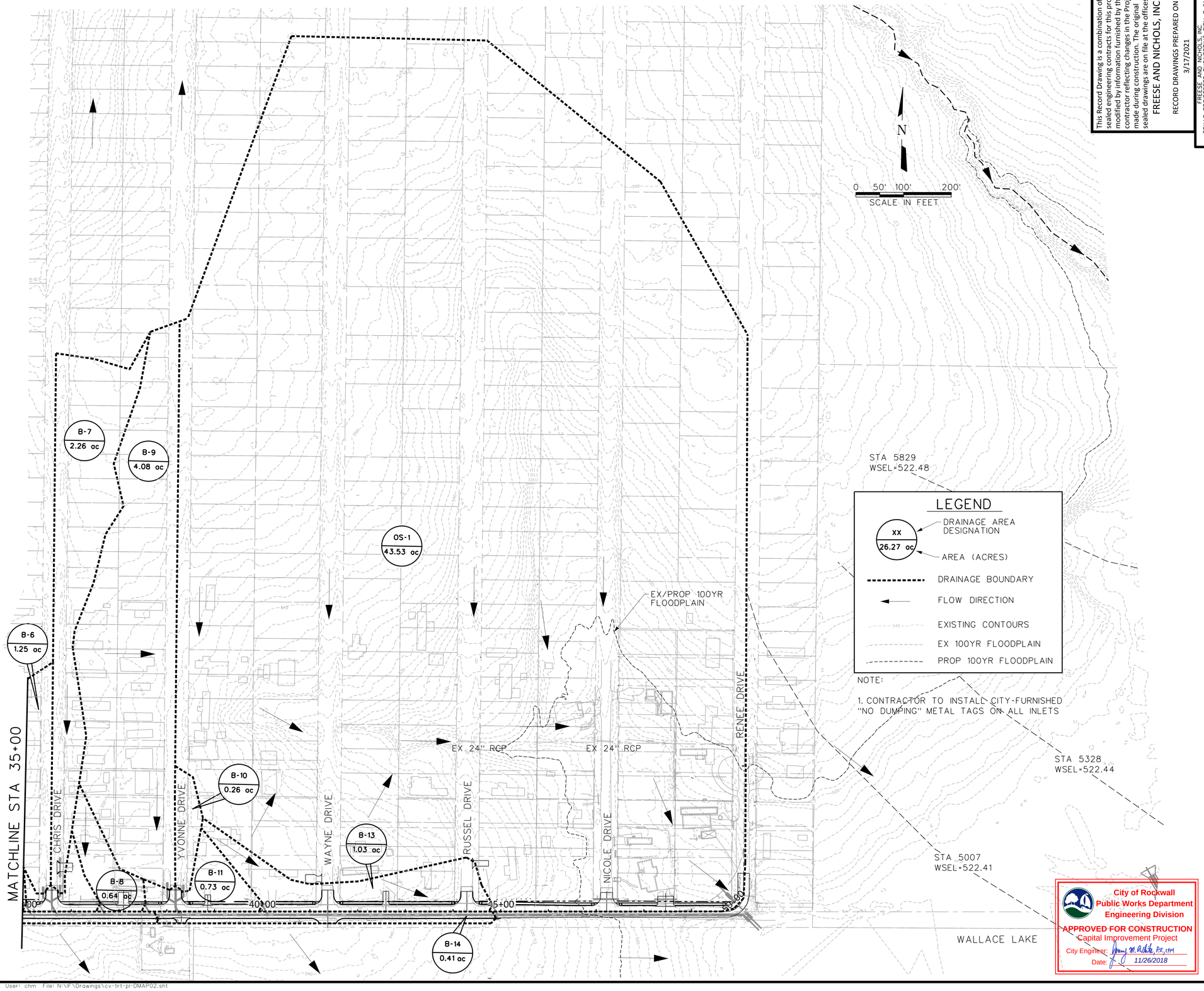
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DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED
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VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET DA-01
SEQ. 57

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Date & Time: Aug 26, 2018 - 01:46:50 AM Project: Freese and Nichols, Inc.

Office: Dallas ROK15508 Date: Aug. 26, 2018 - 01:46:50 AM User: chm File: N:\IF\Drawings\cv-trt-pl-DMAP01.sht



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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED
PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

DRAINAGE AREA MAP OVERVIEW STA 35+00 TO END

NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED
FILE NAME cv-trt-pl-DMAP02.sht

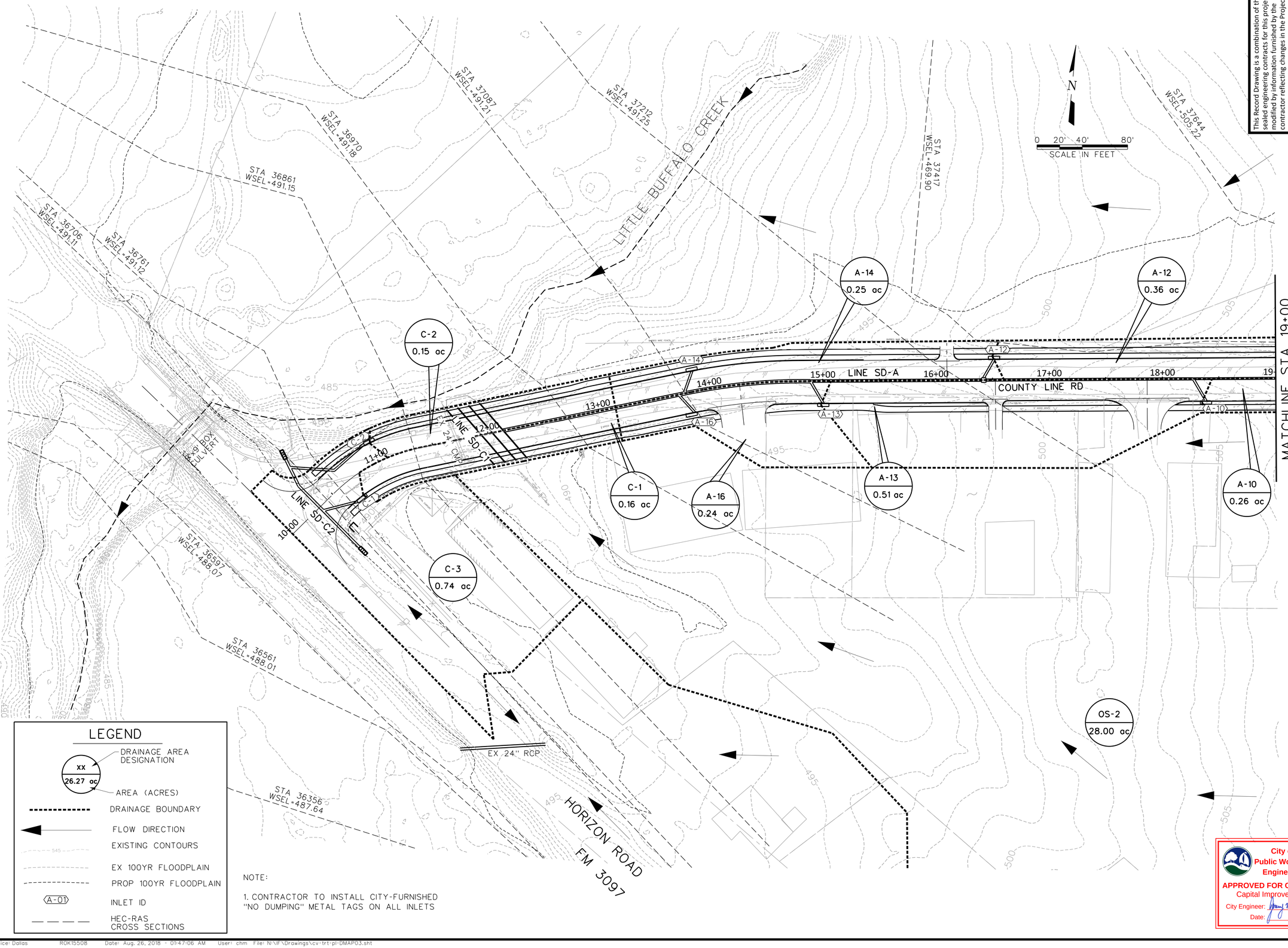
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

0 1"

SHEET DA-02
SEQ. 58

MicroStation V8 User: chm Office: Dallas
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Date: Aug. 26, 2018 - 01:47:01 AM Project: Freese and Nichols, Inc.

Office: Dallas ROK15508 Date: Aug. 26, 2018 - 01:47:01 AM User: chm File: N:\F\Drawings\cv-trt-pl-DMAP02.snt



LEGEND

- DRAINAGE AREA DESIGNATION (xx / 26.27 ac)
- AREA (ACRES)
- DRAINAGE BOUNDARY
- FLOW DIRECTION
- EXISTING CONTOURS (545)
- EX 100YR FLOODPLAIN
- PROP 100YR FLOODPLAIN
- INLET ID (A-01)
- HEC-RAS CROSS SECTIONS

NOTE:

1. CONTRACTOR TO INSTALL CITY-FURNISHED "NO DUMPING" METAL TAGS ON ALL INLETS

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS — BRANDON J. HUXFORD — 117072 — LICENSED PROFESSIONAL ENGINEER — 8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

DRAINAGE AREA MAP
BEGIN TO STA 19+00

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
CHECKED BH
FILE NAME cv-trt-pl-DMAP03.sht

NO.	ISSUES	BY	DATE

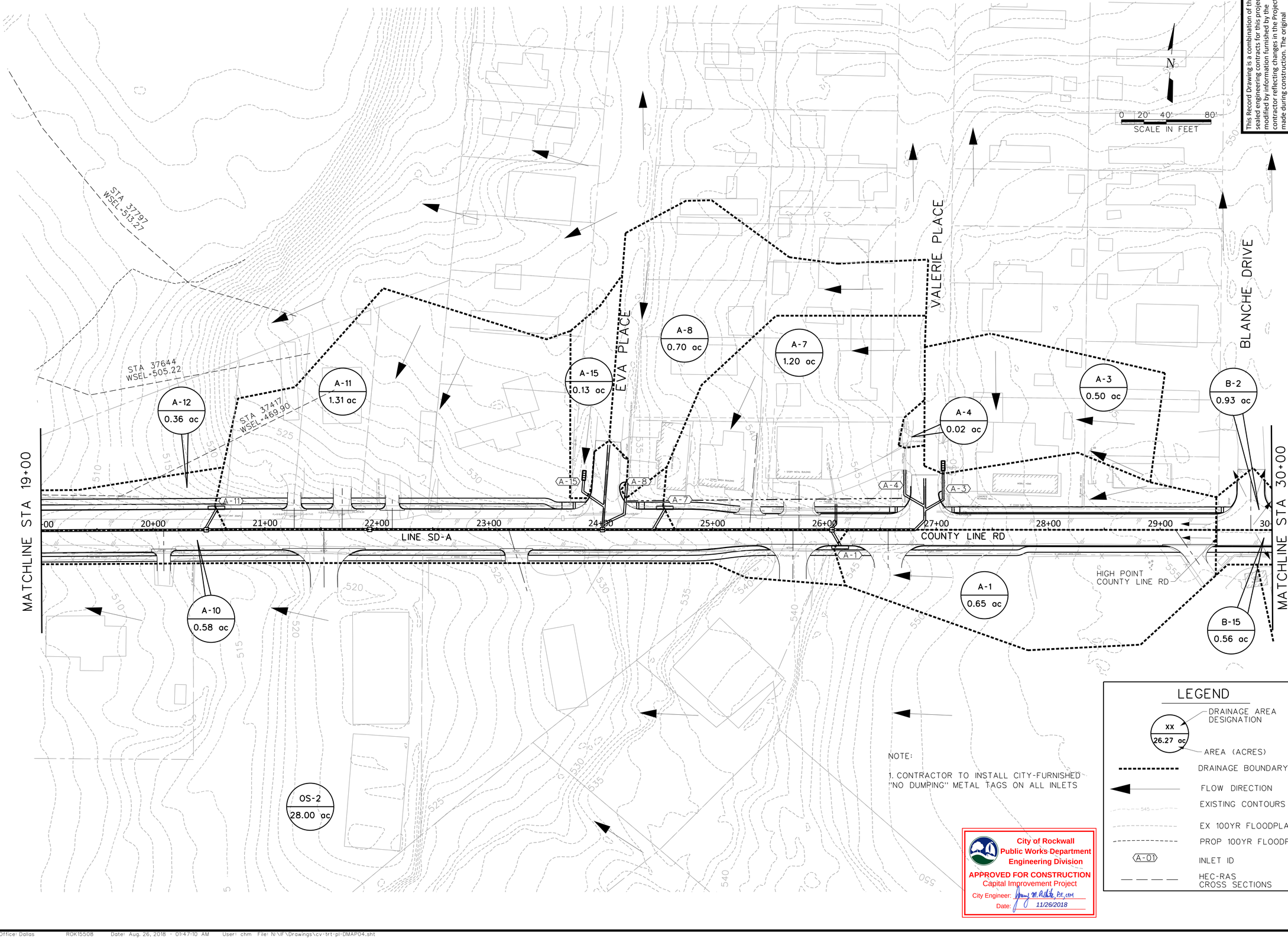
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____ PE, CFM
Date: 11/26/2018

SHEET DA-03
SEQ. 59

MicroStation V8 User: chm Office: Dallas
ROK15508 - N:\NF\Drawings\cv-trt-pl-DMAP03.sht
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Date: Aug 26, 2018 - 01:47:06 AM Project: Freese and Nichols, Inc.

Office: Dallas ROK15508 Date: Aug. 26, 2018 - 01:47:06 AM User: chm File: N:\NF\Drawings\cv-trt-pl-DMAP03.sht



NOTE:

1. CONTRACTOR TO INSTALL CITY-FURNISHED "NO DUMPING" METAL TAGS ON ALL INLETS

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____ P.E., CFM
Date: 11/26/2018

LEGEND

- XX / 26.27 ac — DRAINAGE AREA DESIGNATION; AREA (ACRES)
- DRAINAGE BOUNDARY
- FLOW DIRECTION
- EXISTING CONTOURS
- EX 100YR FLOODPLAIN
- PROP 100YR FLOODPLAIN
- A-01 — INLET ID
- HEC-RAS CROSS SECTIONS

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
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Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

DRAINAGE AREA MAP
STA 19+00 TO STA 30+00

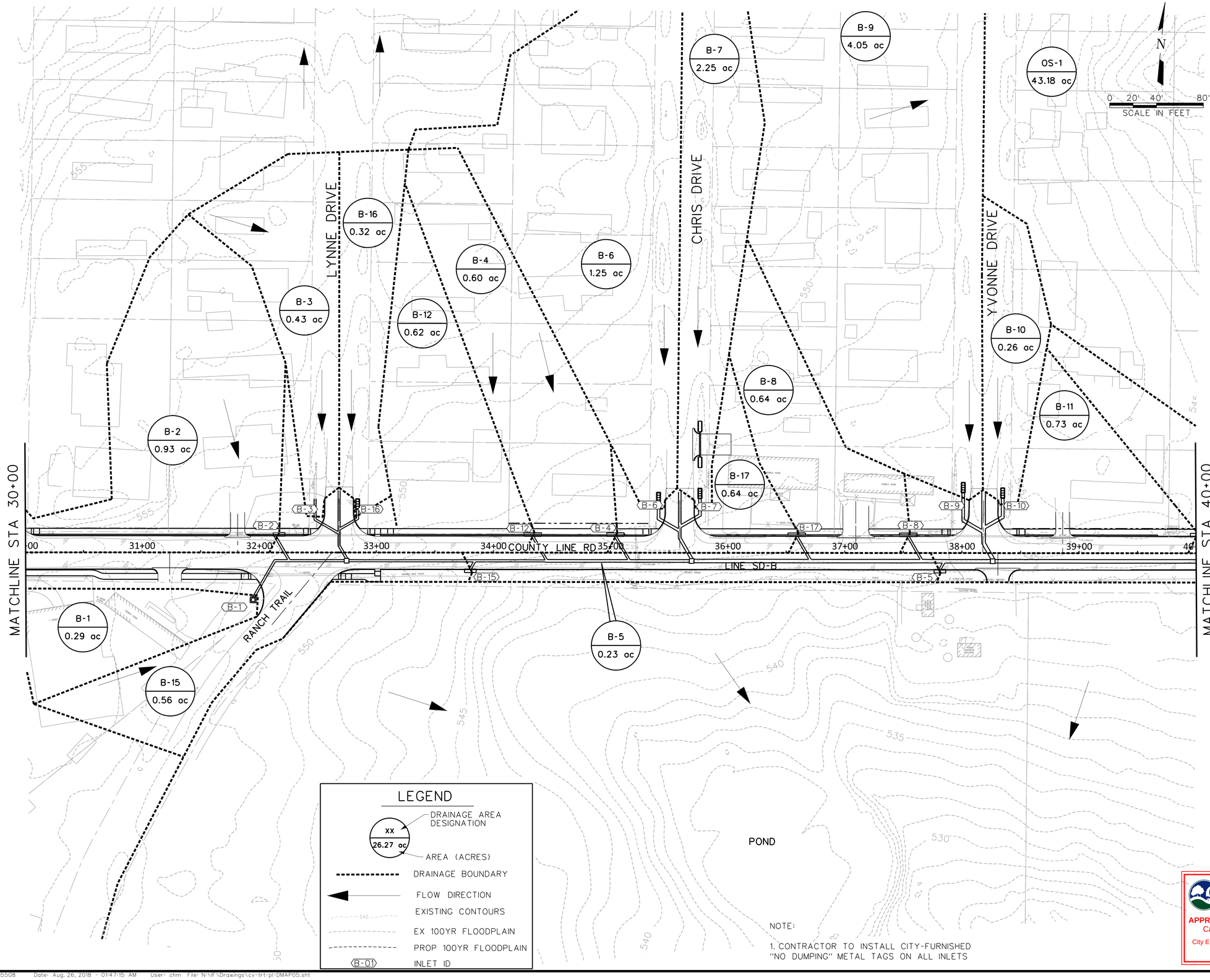
NO.	ISSUES	BY	DATE

FAN JOB NO: ROK15508
DATE: 08/2018
DESIGNED: AU
DRAWN: SI
REVISED:
CHECKED: BH
FILE NAME: cv-trt-pl-DMAP04.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET
DA-04
SEQ.
60

MicroStation V8 User: chm Office: Dallas
ROK15508 N:\F\Drawings\cv-trt-pl-DMAP04.sht
Plotted: Aug. 26, 2018 - 01:47:10 AM Model: Default
Plot Scale: 80.0000 ' / in. Project: Freese and Nichols, Inc.
Date: Aug. 26, 2018 - 01:47:10 AM



LEGEND

- DRAINAGE AREA DESIGNATION (xx / 26.27 ac)
- AREA (ACRES)
- DRAINAGE BOUNDARY
- FLOW DIRECTION
- EXISTING CONTOURS
- EX 100YR FLOODPLAIN
- PROP 100YR FLOODPLAIN
- (B-01) INLET ID

NOTE:

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS — BRANDON J. HUXFORD — 117072 — LICENSED PROFESSIONAL ENGINEER — 8/27/18

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Dallas, Texas 75204
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CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

DRAINAGE AREA MAP
STA 30+00 TO STA 40+00

NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

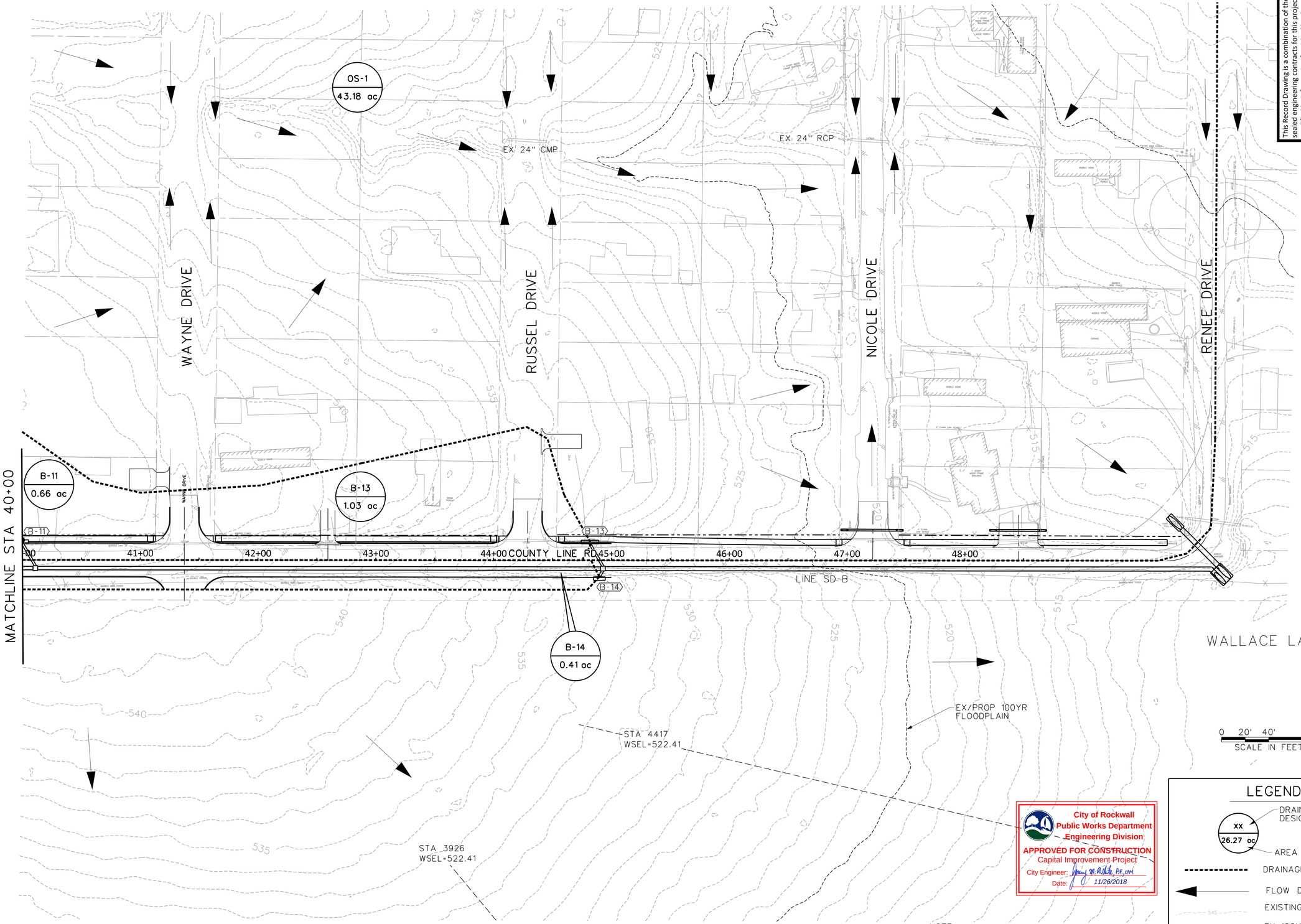
FAN JOB NO: ROK15508
DATE: 08/2018
DESIGNED: AU
DRAWN: SI
REVISED:
CHECKED: BH
FILE NAME: cv-trt-pl-DMAP05.sht

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

SHEET
DA-05
SEQ.
61

MicroStation V8 User: chm Office: Dallas
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Plot Date: Aug. 26, 2018 - 01:47:15 AM Project: Freese and Nichols, Inc.

Office: Dallas ROK15508 Date: Aug. 26, 2018 - 01:47:15 AM User: chm File: N:\F\Drawings\cv-trt-pl-DMAP05.sht



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FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

BRANDON J. HUXFORD 117072 LICENSED PROFESSIONAL ENGINEER 8/27/18

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Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

DRAINAGE AREA MAP
STA 40+00 TO END

LEGEND

- XX / 26.27 ac — DRAINAGE AREA DESIGNATION / AREA (ACRES)
- DRAINAGE BOUNDARY
- FLOW DIRECTION
- 545 — EXISTING CONTOURS
- EX 100YR FLOODPLAIN
- PROP 100YR FLOODPLAIN
- B-01 — INLET ID

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____ P.E.
Date: 11/26/2018

NOTE:

1. CONTRACTOR TO INSTALL CITY-FURNISHED "NO DUMPING" METAL TAGS ON ALL INLETS

NO	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

FAN JOB NO.	ROK15508
DATE	08/2018
DESIGNED	AU
DRAWN	SI
REVISED	
CHECKED	BH
FILE NAME	cv-trt-pl-DMAP06.sht

SHEET
DA-06
SEQ.
62

MicroStation V8 User: chm Office: Dallas
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Plotted: Aug. 26, 2018 - 01:47:21 AM Model: Default
Plot Scale: 80.0000 '/ in. Project: Freese and Nichols, Inc.
Date: Aug. 26, 2018 - 01:47:21 AM

Office: Dallas ROK15508 Date: Aug. 26, 2018 - 01:47:21 AM User: chm File: N:\IF\Drawings\cv-trt-pl-DMAP06.sht

Drainage Area Calculations

Area ID	Drainage Area (acres)	Runoff Coeff. C	C*A	Time of Concentration Tc	Design Storm Frequency (yrs)	Intensity I (in/hr)	Storm Runoff Q (cfs)	Drains To/Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
OS-1	43.53	0.50	21.77	29.66	100-yr	6.95	151.21	Culvert A1 (5 Yr Design)
OS-2	28.00	0.90	25.20	10.00	100-yr	9.80	246.96	SD-C1
A-1	0.65	0.90	0.59	10.00	100-yr	9.80	5.73	Inlet A-1
A-3	0.50	0.50	0.25	10.00	100-yr	9.80	2.45	Inlet A-3
A-4	0.02	0.50	0.01	10.00	100-yr	9.80	0.10	Inlet A-4
A-7	1.20	0.56	0.67	10.00	100-yr	9.80	6.59	Inlet A-7
A-8	0.70	0.50	0.35	10.00	100-yr	9.80	3.43	Inlet A-8
A-10	0.58	0.90	0.52	10.00	100-yr	9.80	5.12	Inlet A-10
A-11	1.31	0.58	0.76	10.00	100-yr	9.80	7.45	Inlet A-11
A-12	0.36	0.50	0.18	10.00	100-yr	9.80	1.76	Inlet A-12
A-13	0.51	0.90	0.46	10.00	100-yr	9.80	4.50	Inlet A-13
A-14	0.25	0.90	0.23	10.00	100-yr	9.80	2.21	Inlet A-14
A-15	0.13	0.90	0.12	10.00	100-yr	9.80	1.15	Inlet A-15
A-16	0.24	0.90	0.22	10.00	100-yr	9.80	2.12	Inlet A-16
B-1	0.29	0.90	0.26	10.00	100-yr	9.80	2.56	Inlet B-1
B-2	0.93	0.56	0.52	10.00	100-yr	9.80	5.10	Inlet B-2
B-3	0.43	0.50	0.22	10.00	100-yr	9.80	2.11	Inlet B-3
B-4	0.60	0.54	0.32	10.00	100-yr	9.80	3.18	Inlet B-4
B-5	0.23	0.90	0.21	10.00	100-yr	9.80	2.03	Inlet B-5
B-6	1.25	0.50	0.63	10.00	100-yr	9.80	6.13	Inlet B-6
B-7	2.26	0.50	1.13	10.00	100-yr	9.80	11.07	Inlet B-7
B-8	0.36	0.60	0.22	10.00	100-yr	9.80	2.12	Inlet B-8
B-9	4.08	0.50	2.04	10.00	100-yr	9.80	19.99	Inlet B-9
B-10	0.26	0.50	0.13	10.00	100-yr	9.80	1.27	Inlet B-10
B-11	0.43	0.60	0.26	10.00	100-yr	9.80	2.53	Inlet B-11
B-12	0.62	0.54	0.33	10.00	100-yr	9.80	3.28	Inlet B-12
B-13	1.01	0.65	0.66	10.00	100-yr	9.80	6.43	Inlet B-13
B-14	0.41	0.90	0.37	10.00	100-yr	9.80	3.62	Inlet B-14
B-15	0.56	0.90	0.50	10.00	100-yr	9.80	4.94	Inlet B-15
B-16	0.32	0.90	0.29	10.00	100-yr	9.80	2.82	Inlet B-16
B-17	0.23	0.60	0.14	10.00	100-yr	9.80	1.35	Inlet B-17
C-1	0.16	0.90	0.14	10.00	100-yr	9.80	1.41	Inlet C-1
C-2	0.15	0.90	0.14	10.00	100-yr	9.80	1.32	Inlet C-2
C-3	0.74	0.90	0.67	10.00	100-yr	9.80	6.53	SD-C2

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TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
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8/27/18

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Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

DRAINAGE CALCULATIONS

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
CHECKED BH
REVISED

NO.	ISSUES	BY	DATE

FILE NAME cv-trt-pp-SDcalc01.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E.
Date: 11/26/2018

SHEET HC-01
SEQ. 63

MicroStation V8 User: chm Office: Dallas
ROK15508 N:\E\Drawings\cv-trt-pp-SDcalc01.sht
Level: Levels; Plotter: HP 1055cm Color Laserjet
Plot Scale: 10.0000 '/ in. Model: Default
Plot Date: 26 Aug 2018 - 01:47:26 AM Project: Freese and Nichols, Inc.

Inlet Design Calculations

Inlet ID	Location			Design Freq.	Area Runoff						Upstream Bypass Q_b	Total Gutter Flow Qa	Gutter Flow											Max. Allowable Flow $Q_{allow\ gutter}$	Ratio of Depression Flow to Total Flow E_D	Equivalent Cross-Slope S_e	Inlet Length		Inlet Capacity Q_c	Flow Q_{bypass}	C*A	To Inlet ID
																		Depression		100yr Ponding Width/Spread		Depth of Gutter Flow							Required L_R	Actual L_A				
	Alignment	Station	Offset		C	Area ID	Time of Concentration T_c	Intensity I	Area A	Runoff Q			Thoroughfare Type	On-Grade /Sag	Manning's n	Long Slope S	Crown Type	Cross Slope S_x	Depth a	Width W	(allow) T_{allow}	(actual) T_{100}	(allow) y_{allow}	(actual) y_{actual}								
				(yr)			(min)	(in/hr)	(acres)	(cfs)	(cfs)	(cfs)				(ft/ft)		(ft/ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)		(ft/ft)	(ft)	(ft)				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)
A-1	BL01	26+10.72	14.00 RT	100-yr	0.90	A-1	10	9.8	0.65	5.73	0.00	5.73	Local	On-Grade	0.0175	0.067	Straight	0.036	0.50	2	14	6.99	0.50	0.25	11.24	0.59	0.184	17.37	15	5.57	0.16	0.02	A-10
A-3	BL01	27+05.46	30.06 LT	100-yr	0.50	A-3	10	9.8	0.50	2.45	0.00	2.45	Ditch 4:1	Sag									0.50	0.16	13.10			2.24	3x3	13.10			
A-4	BL01	26+71.26	31.47 LT	100-yr	0.50	A-4	10	9.8	0.02	0.10	0.00	0.10	Ditch 4:1	Sag									0.50	0.02	13.10			0.09	3x3	13.10			
A-7	BL01	24+57.39	18.00 LT	100-yr	0.56	A-7	10	9.8	1.20	6.59	0.00	6.59	37' B-B	On-Grade	0.0175	0.05	Straight	0.028	0.50	2	18	9.10	0.50	0.25	17.06	0.48	0.149	19.14	15	6.17	0.42	0.04	A-11
A-8	BL01	24+22.82	35.17 LT	100-yr	0.50	A-8	10	9.8	0.70	3.43	0.00	3.43	Ditch 4:1	Sag									0.50	0.20	13.10			3.14	3x3	13.10			
A-10	BL01	18+22.46	18.00 RT	100-yr	0.90	A-10	10	9.8	0.58	5.12	0.00	5.12	37' B-B	On-Grade	0.0175	0.047	Straight	0.028	0.50	2	18	8.37	0.50	0.23	16.54	0.52	0.157	16.36	10	4.18	0.93	0.10	A-13
A-11	BL01	20+56.90	18.00 LT	100-yr	0.58	A-11	10	9.8	1.31	7.45	0.00	7.45	37' B-B	On-Grade	0.0175	0.054	Straight	0.028	0.50	2	18	9.39	0.50	0.26	17.73	0.47	0.146	20.88	15	6.68	0.76	0.08	A-12
A-12	BL01	16+51.47	18.00 LT	100-yr	0.50	A-12	10	9.8	0.36	1.76	0.76	2.53	37' B-B	On-Grade	0.0175	0.021	Straight	0.028	0.50	2	18	7.47	0.50	0.21	11.05	0.56	0.169	9.15	10	2.53	0.00	0.00	A-14
A-13	BL01	14+99.50	18.00 RT	100-yr	0.90	A-13	10	9.8	0.51	4.50	0.93	5.43	37' B-B	On-Grade	0.0175	0.014	Straight	0.028	0.50	2	18	10.75	0.50	0.30	9.03	0.42	0.134	12.87	10	5.07	0.36	0.04	A-16
A-14	BL01	13+87.31	18.00 LT	100-yr	0.90	A-14	10	9.8	0.25	2.21	0.00	2.21	37' B-B	Sag	0.0175	0.007	Straight	0.028	0.50	2	18	8.73	0.50	0.24	13.10	0.50	0.153	6.60	10	2.21	0.00	0.00	C-2
A-15	BL01	23+84.08	33.89 LT	100-yr	0.90	A-15	10	9.8	0.13	1.15	0.00	1.15	Ditch 4:1	Sag									0.50	0.10	13.10			1.05	3x3	13.10			
A-16	BL01	13+79.67	18.00 RT	100-yr	0.90	A-16	10	9.8	0.24	2.12	0.36	2.48	37' B-B	Sag	0.0175	0.007	Straight	0.028	0.50	2	18	9.12	0.50	0.25	13.10	0.48	0.149	7.05	10	2.48	0.00	0.00	C-2
B-1	BL01	31+94.94	38.89 RT	100-yr	0.90	B-1	10	9.8	0.29	2.56	0.00	2.56	Ditch 4:1	Sag									0.50	0.17	13.10			2.34	3x3	13.10			
B-2	BL01	32+16.97	14.00 LT	100-yr	0.56	B-2	10	9.8	0.93	5.10	0.00	5.10	Local	On-Grade	0.0175	0.018	Straight	0.036	0.50	2	14	8.57	0.50	0.31	5.82	0.51	0.163	12.00	10	4.90	0.20	0.02	B-12
B-3	BL01	32+48.61	28.85 LT	100-yr	0.50	B-3	10	9.8	0.43	2.11	0.00	2.11	Ditch 4:1	Sag									0.50	0.15	13.10			1.93	3x3	13.10			
B-4	BL01	35+04.23	14.00 LT	100-yr	0.54	B-4	10	9.8	0.60	3.18	0.00	3.18	Local	On-Grade	0.0175	0.006	Straight	0.036	0.50	2	14	8.81	0.50	0.31	3.36	0.50	0.160	7.15	10	3.18	0.00	0.00	B-17
B-5	BL01	37+81.23	14.00 RT	100-yr	0.90	B-5	10	9.8	0.23	2.03	0.17	2.19	Local	On-Grade	0.0175	0.006	Straight	0.036	0.50	2	14	7.67	0.50	0.27	3.36	0.55	0.174	5.81	10	2.19	0.00	0.00	B-14
B-6	BL01	35+40.94	32.67 LT	100-yr	0.50	B-6	10	9.8	1.25	6.13	0.00	6.13	Ditch 4:1	Sag									0.50	0.30	13.10			5.61	3x3	13.10			
B-7	BL01	35+76.33	32.16 LT	100-yr	0.50	B-7	10	9.8	2.26	11.07	0.00	11.07	Ditch 4:1	Sag									0.50	0.45	13.10			10.15	3x3	13.10			
B-8	BL01	37+54.12	14.00 LT	100-yr	0.60	B-8	10	9.8	0.36	2.12	0.00	2.12	Local	On-Grade	0.0175	0.006	Straight	0.036	0.50	2	14	7.57	0.50	0.27	3.36	0.56	0.176	5.70	10	2.12	0.00	0.00	B-11
B-9	BL01	38+00.12	31.95 LT	100-yr	0.50	B-9	10	9.8	4.08	19.99	0.00	19.99	Ditch 4:1	Sag									0.50	0.47	13.10			18.32	5x5	21.83			
B-10	BL01	38+36.58	31.78 LT	100-yr	0.50	B-10	10	9.8	0.26	1.27	0.00	1.27	Ditch 4:1	Sag									0.50	0.11	13.10			1.17	3x3	13.10			
B-11	BL01	40+00.08	14.00 LT	100-yr	0.60	B-11	10	9.8	0.43	2.53	0.00	2.53	Local	On-Grade	0.0175	0.01	Straight	0.036	0.50	2	14	7.35	0.50	0.26	4.34	0.57	0.179	7.08	10	2.53	0.00	0.00	B-13
B-12	BL01	34+33.59	14.00 LT	100-yr	0.54	B-12	10	9.8	0.62	3.28	0.20	3.48	Local	On-Grade	0.0175	0.006	Straight	0.036	0.50	4	14	9.12	0.50	0.33	3.36	0.48	0.157	7.53	10	3.48	0.00	0.00	B-4
B-13	BL01	43+78.08	14.00 LT	100-yr	0.65	B-13	10	9.8	1.01	6.43	0.00	6.43	Local	On-Grade	0.0175	0.036	Straight	0.036	0.50	2	14	8.20	0.50	0.29	8.24	0.53	0.167	16.02	15	6.38	0.05	0.00	OS-1
B-14	BL01	44+89.75	14.00 RT	100-yr	0.90	B-14	10	9.8	0.41	3.62	0.00	3.62	Local	On-Grade	0.0175	0.045	Straight	0.036	0.50	2	14	6.34	0.50	0.23	9.21	0.64	0.195	12.27	10	3.44	0.17	0.02	OS-1
B-15	BL01	33+80.29	14.00 RT	100-yr	0.90	B-15	10	9.8	0.56	4.94	0.00	4.94	Local	On-Grade	0.0175	0.018	Straight	0.036	0.50	2	14	8.46	0.50	0.30	5.82	0.51	0.164	11.78	10	4.77	0.17	0.02	B-5
B-16	BL01	32+87.24	28.50 LT	100-yr	0.90	B-16	10	9.8	0.32	2.82	0.00	2.82	Ditch 4:1	Sag									0.50	0.18	13.10			2.59	3x3	13.10			
B-17	BL01	36+58.99	14.00 RT	100-yr	0.60	B-17	10	9.8	0.23	1.35	0.00	1.35	Local	On-Grade	0.0175	0.018	Straight	0.036	0.50	2	14	5.21	0.50	0.19	5.82	0.73	0.217	5.78	10	1.35	0.00	0.00	B-8
C-1	BL01	10+68.32	18.00 RT	100-yr	0.90	C-1	10	9.8	0.16	1.41	0.00	1.41	37' B-B	On-Grade	0.0175	0.02	Straight	0.002	0.50	2	18	6.06	0.50	0.17	0.13	0.66	0.192	6.54	10	1.41	0.00	0.00	C-3
C-2	BL01	11+00.13	18.00 LT	100-yr	0.90	C-2	10	9.8	0.15	1.32	0.00	1.32	37' B-B	On-Grade	0.0175	0.02	Straight	0.015	0.50	2	18	5.92	0.50	0.16	3.81	0.67	0.195	6.31	10	1.32	0.00	0.00	C-3

Culvert SD-C1 Summary Table - HY-8 Data

Source	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)
From SD-A	34.97	34.97	491.45	0.861	4.786	5-FFf	0.579	10.310	10.310	0.624
From OS-2	246.96	246.96	491.83	3.189	5.170	5-FFf	0.579	10.310	10.310	4.410
Total	281.93	281.93	491.95	3.504	5.289	5-FFf	0.579	10.310	10.310	5.034

Culvert A1 Summary Table (5-yr) - HY-8

Source	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)
From OS-1	89.8	89.8	515.89	5.03	5.03	5-S1f	2.87	4	4	7.15

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
INLET CALCULATIONS

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pp-SDcalc02.sht

NO. ISSUES | BY | DATE

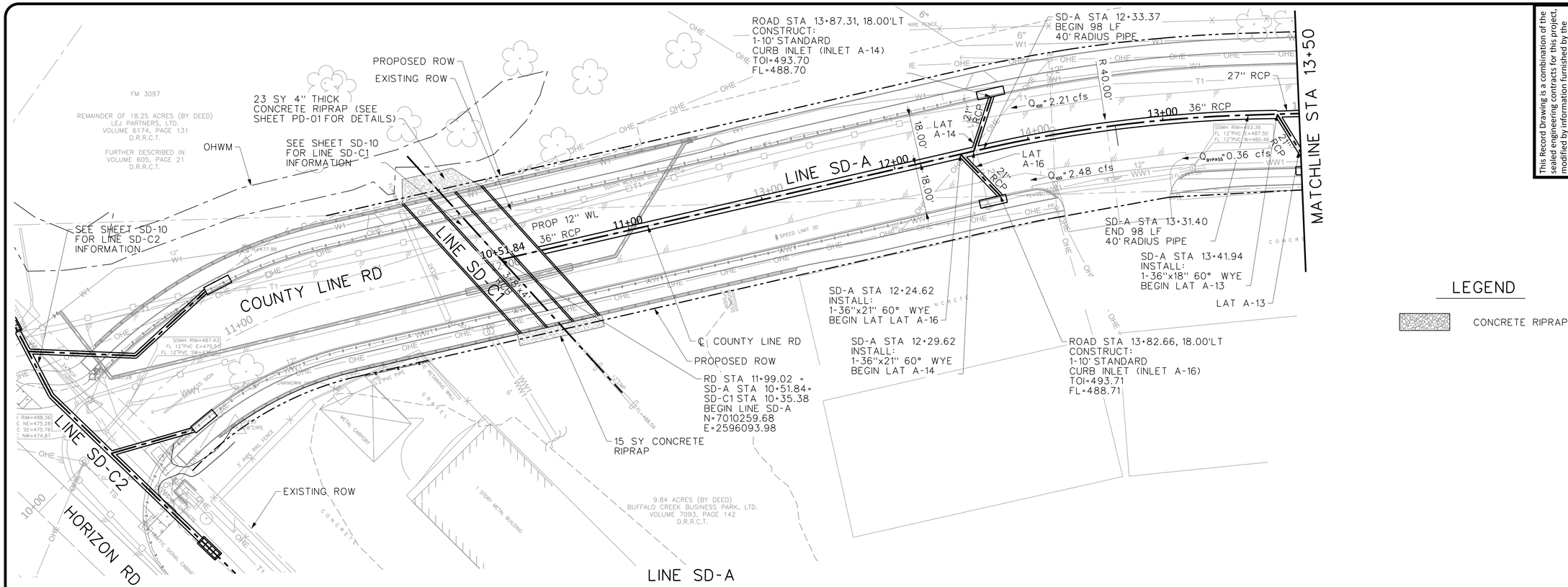
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET HC-02
SEQ. 64

MicroStation V8 User: chm Office: Dallas
ROK15508 N:\NF\Drawings\cv-trt-pp-SDcalc02.sht
Plot Driver: HP DesignJet 650C.pltcfg
Plot Scale: 10.0000 '/ in. Model: Default
Date: Aug 26, 2018 - 01:47:29 AM Project: Freese and Nichols, Inc.

Storm Sewer Calculations Table

System ID	Collection Point Station U/S	Collection Point Station D/S	Conduit Properties: Length	# of Barrels	Pipe Size	Box Span	Box Rise	Type	Area	Wetted Perimeter P_w	Hydraulic Radius	Manning's n	Flowline Elevation Up-stream	Flowline Elevation Down-stream	Slope	Incremental Drainage Area: Inlet ID	Area	Runoff Coeff, C	Incremental C*A	Accum-ulated C*A	Up-stream Tc	Design Storm Freq	Intensity i	Runoff Q	Conduit Capacity Q_c	Partial Flow	Velocity V	Time in Conduit	Friction Slope S_f	Friction Head-loss	HGL U/S	HGL D/S	Headloss Calculations: V_{1}/2g	V_{2}/2g	Jct. Type	Coeff. K_j	Head-loss H_L	Design HGL	Pave Elev.	Cover	Top of Curb Elev.	HGL Depth Below T/C	Remarks
			(ft)		(in)	(ft)	(ft)		(ft²)	(ft)	(ft)				(ft/ft)		(acres)				(min)	(yr)	(in/hr)	(cfs)	(cfs)	(Yes/No)	(ft/s)	(min)	(ft/ft)	(ft)			(ft)	(ft)			(ft)						(ft)	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)			(40)	(41)	(42)
Line A	25+83.37	25+58.27	25.10	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	539.49	538.99	0.020		0.00				10.00	100 yr	9.80		22.47	Yes	6.19	0.07	0.00000	0.00	539.49	539.78	0.59	0.59	Inlet at Beg. of Line	1.25	0.74	540.23	548.59	7.35	548.59	8.36	Partial Flow V from FlowMaster
Line A	25+58.27	25+54.85	3.42	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	538.99	538.92	0.020	A-4	0.02	0.50	0.01	0.01	10.00	100 yr	9.80	0.10	22.47	Yes	6.19	0.01	0.00000	0.00	539.39	539.71	0.59	0.59	60º Wye connection	0.35	0.39	539.78	547.57	6.83	547.57	7.79	Partial Flow V from FlowMaster
Line A	25+54.85	25+45.99	8.86	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	538.92	538.74	0.020	A-3	0.50	0.50	0.25	0.25	10.00	100 yr	9.80	2.45	22.47	Yes	6.19	0.02	0.00024	0.00	539.32	539.36	0.59	0.59	60º Wye connection	0.35	0.39	539.71	547.57	6.90	547.57	7.86	Partial Flow V from FlowMaster
Line A	25+45.99	25+33.81	12.18	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	538.74	538.50	0.020		0.00			0.25	10.00	100 yr	9.80	2.45	22.47	Yes	6.19	0.03	0.00024	0.00	539.14	539.12	0.59	0.59	Bends where radius = diam, 45º Bend	0.37	0.22	539.36	547.66	7.17	547.66	8.30	Partial Flow V from FlowMaster
Line A	25+33.81	24+58.84	74.97	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	538.50	537.00	0.020		0.00			0.25	10.00	100 yr	9.80	2.45	22.47	Yes	6.19	0.20	0.00024	0.02	538.90	537.49	0.59	0.59	Bends where radius = diam, 45º Bend	0.37	0.22	539.12	547.51	7.26	547.51	8.39	Partial Flow V from FlowMaster
Line A	24+58.84	22+99.83	159.01	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	535.00	528.00	0.044	A-1	0.65	0.90	0.59	0.84	10.00	100 yr	9.80	8.18	33.33	Yes	11.47	0.23	0.00267	0.42	535.60	529.58	0.59	2.04	MH on Trunk Line w/90º Branch Lat	0.25	1.89	537.49	542.95	6.20	542.95	5.46	Partial Flow V from FlowMaster
Line A	22+99.83	22+54.58	45.25	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	528.00	527.40	0.013	A-7	1.20	0.56	0.67	1.51	10.00	100 yr	9.80	14.77	18.29	Yes	8.37	0.09	0.00869	0.39	529.21	528.61	2.04	1.09	60º Wye connection	0.35	0.37	529.58	532.92	3.17	532.92	3.34	Partial Flow V from FlowMaster
Line A	22+54.58	20+45.67	208.91	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	525.08	519.00	0.029	A-8,A-15	0.83	0.50	0.42	1.92	10.00	100 yr	9.80	18.84	27.10	Yes	12.14	0.29	0.01413	2.95	526.16	520.08	1.09	2.29	MH on Trunk Line w/90º Branch Lat	0.25	2.02	528.61	530.96	4.13	530.96	2.35	Partial Flow V from FlowMaster
Line A	20+45.67	18+99.33	146.34	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	515.00	510.75	0.029		0.00			1.92	10.00	100 yr	9.80	18.84	27.08	Yes	12.14	0.20	0.01413	2.07	516.08	511.83	2.29	2.29	MH on Trunk Line w/60º Branch Lat	0.35	1.49	520.08	523.42	6.67	523.42	3.34	Partial Flow V from FlowMaster
Line A	18+99.33	16+80.08	219.25	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	504.90	498.05	0.031	A-11	1.31	0.58	0.76	2.68	10.00	100 yr	9.80	26.28	28.08	No	10.93	0.33	0.02751	6.03	507.66	501.66	2.29	1.85	MH on Trunk Line w/60º Branch Lat	0.35	1.05	511.83	514.64	7.99	514.64	2.81	
Line A	16+80.08	14+93.91	186.17	1	24	N/A	N/A	RCP	3.14	6.28	0.50	0.013	497.80	493.80	0.021	A-10	0.58	0.90	0.52	3.20	10.00	100 yr	9.80	31.40	33.25	No	11.83	0.26	0.01926	3.59	500.14	496.55	1.85	2.17	60º Wye connection	0.35	1.52	501.66	503.73	3.93	503.73	2.07	
Line A	14+93.91	13+41.94	151.97	1	27	N/A	N/A	RCP	3.98	7.07	0.56	0.013	492.40	489.56	0.019	A-12	0.36	0.50	0.18	3.38	10.00	100 yr	9.80	33.16	42.45	No	11.74	0.22	0.01147	1.74	495.17	493.43	2.17	2.14	MH on Trunk Line w/60º Branch Lat	0.35	1.38	496.55	497.81	3.16	497.81	1.26	
Line A	13+41.94	12+29.62	112.32	1	36	N/A	N/A	RCP	7.07	9.42	0.75	0.013	488.75	486.03	0.024	A-13	0.51	0.90	0.46	3.84	10.00	100 yr	9.80	37.66	104.04	No	5.33	0.35	0.00319	0.36	493.33	492.97	2.14	0.44	60º Wye connection	0.35	0.10	493.43	494.41	2.66	494.41	0.98	
Line A	12+29.62	12+26.07	3.55	1	36	N/A	N/A	RCP	7.07	9.42	0.75	0.013	486.03	485.95	0.024	A-14	0.25	0.90	0.23	4.07	10.00	100 yr	9.80	39.86	104.04	No	5.64	0.01	0.00357	0.01	492.63	492.62	0.44	0.49	60º Wye connection	0.35	0.34	492.97	493.73	4.70	493.73	0.76	
Line A	12+26.07	10+66.28	159.79	1	36	N/A	N/A	RCP	7.07	9.42	0.75	0.013	485.95	482.08	0.024	A-16	0.24	0.90	0.22	4.28	10.00	100 yr	9.80	41.98	104.04	No	5.94	0.45	0.00396	0.63	492.24	491.61	0.49	0.55	60º Wye connection	0.35	0.37	492.62	493.75	4.80	493.75	1.13	Starting HGL from 100yr WSEL
Line D	01+75.93	01+20.77	55.16	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	527.52	526.42	0.020		0.00			0.00	10.00	100 yr	9.80	0.00	22.47	Yes	0.00		0.00000	0.00	527.73	527.72	0.00	0.00	Inlet at Beg. of Line	1.25	0.10	527.83	532.63	3.36	532.63	4.80	Partial Flow V from FlowMaster
Line D	01+20.77	01+04.81	15.96	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	526.42	526.10	0.020	A-15	0.13	0.90	0.12	0.12	10.00	100 yr	9.80	1.15	22.47	Yes	4.89	0.05	0.00005	0.00	527.35	527.34	0.00	0.37	60º Wye connection	0.35	0.37	527.72	531.06	2.89	531.06	3.34	Partial Flow V from FlowMaster
Line D	01+04.81	01+00.00	4.81	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	526.10	526.00	0.020	A-8	0.70	0.50	0.35	0.47	10.00	100 yr	9.80	4.58	22.47	Yes	7.32	0.01	0.00083	0.00	526.64	526.16	0.37	0.83	60º Wye connection	0.35	0.70	527.34	530.76	2.91	531.01	3.67	Starting HGL from 100yr WSEL
Lat A-3	01+44.83	01+19.00	25.83	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	547.00	540.50	0.252	A-3	0.50	0.50	0.25	0.25	10.00	100 yr	9.80	2.45	79.70	Yes	15.67	0.03	0.00024	0.01	547.20	541.72	3.81	3.81	Inlet at Beg. of Line	0.70	2.67	548.20	548.00	-0.75	548.50	0.30	Partial Flow V from FlowMaster
Lat A-3	01+19.00	01+00.00	19.00	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	540.50	538.92	0.083	A-3	0.50	0.50	0.25	0.25	10.00	100 yr	9.80	2.45	45.81	Yes	10.06	0.03	0.00024	0.00	540.78	539.71	1.57	1.57	Bends where radius = diam, 60º Bend	0.60	0.94	541.72	547.00	4.75	547.50	5.78	Partial Flow V from FlowMaster
Lat A-4	01+42.90	01+20.54	22.36	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	545.54	539.50	0.270	A-4	0.02	0.50	0.01	0.01	10.00	100 yr	9.80	0.10	82.57	Yes	5.81	0.06	0.00000	0.00	545.59	539.89	0.52	0.52	Inlet at Beg. of Line	0.50	0.26	545.85	546.00	-1.29	546.50	0.65	Partial Flow V from FlowMaster
Lat A-4	01+20.54	01+00.00	20.54	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	539.50	538.99	0.025	A-4	0.02	0.50	0.01	0.01	10.00	100 yr	9.80	0.10	25.07	Yes	2.53	0.14	0.00000	0.00	539.79	539.78	0.10	0.10	Bends where radius = diam, 60º Bend	0.60	0.10	539.89	547.00	5.75	547.50	7.61	Partial Flow V from FlowMaster
Lat A-1	01+16.16	01+00.00	16.16	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	538.00	537.00	0.062	A-1	0.65	0.90	0.59	0.59	10.00	100 yr	9.80	5.73	39.52	Yes	11.69	0.02	0.00131	0.02	538.45	537.49	2.12	2.12	Inlet at Beg. of Line	1.25	2.65	541.10	543.00	3.25	543.50	2.40	Partial Flow V from FlowMaster
Lat A-7	01+20.78	01+00.00	20.78	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	528.50	528.00	0.024	A-7	1.20	0.56	0.67	0.67	10.00	100 yr	9.80	6.59	24.64	Yes	8.65	0.04	0.00173	0.04	529.58	529.58	1.16	1.16	Inlet at Beg. of Line	1.25	1.45	531.04	532.94	2.69	533.44	2.40	Partial Flow V from FlowMaster
Lat A-8	01+49.27	01+21.14	28.13	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	531.25	527.00	0.151	A-8	0.70	0.50	0.35	0.35	10.00	100 yr	9.80	3.43	61.75	Yes	13.77	0.03	0.00047	0.01	531.53	528.11	2.94	2.94	Inlet at Beg. of Line	0.50	1.47	532.53	532.50	-0.50	533.00	0.47	Partial Flow V from FlowMaster
Lat A-8	01+21.14	01+00.00	21.14	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	527.00	526.10	0.043	A-8	0.70	0.50	0.35	0.35	10.00	100 yr	9.80	3.43	32.85	Yes	8.85	0.04	0.00047	0.01	527.38	526.48	1.22	1.22	Bends where radius = diam, 60º Bend	0.60	0.73	528.11	531.00	2.25	531.50	3.39	Partial Flow V from FlowMaster
Lat A-15	01+32.28	01+23.29	8.99	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	529.50	527.15	0.261	A-15	0.13	0.90	0.12	0.12	10.00	100 yr	9.80	1.15	81.23	Yes	11.61	0.01	0.00005	0.00	529.65	528.03	2.09	2.09	Inlet at Beg. of Line	0.70	1.47	531.12	530.86	-0.39	531.36	0.24	Partial Flow V from FlowMaster
Lat A-15	01+23.29	01+00.00	23.29	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	527.15	526.42	0.032	A-15	0.13	0.90	0.12	0.12	10.00	100 yr	9.80	1.15	28.22	Yes	5.77	0.07	0.00005	0.00	527.72	527.72	0.52	0.52	Bends where radius = diam, 60º Bend	0.60	0.31	528.03	531.50	2.60	532.00	3.97	Partial Flow V from FlowMaster
Lat A-11	01+20.78	01+00.00	20.78	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	511.70	511.39	0.015	A-11	1.31	0.58	0.76	0.76	10.00	100 yr	9.80	7.45	19.41	Yes	7.53	0.05	0.00221	0.05	512.45	511.83	0.88	0.88	Inlet at Beg. of Line	1.25	1.10	513.55	515.67	2.22	516.17	2.62	Partial Flow V from FlowMaster
Lat A-10	01+22.52	01+00.00	22.52	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	499.50	498.05	0.064	A-10	0.58	0.90	0.52	0.52	10.00	100 yr	9.80	5.12	40.31	No	2.13	0.18	0.00104	0.02	501.68	501.66	0.07	0.07	Inlet at Beg. of Line	1.25	0.10	501.78	504.11	2.86	504.61	2.83	
Lat A-12	01+20.78	01+00.00	20.78	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	494.20	493.93	0.013	A-12	0.36	0.50	0.18	0.18	10.00	100 yr	9.80	1.76	18.11	No	4.77	0.07	0.00012	0.00	496.55	496.55	0.35	0.35	Inlet at Beg. of Line	1.25	0.44	496.99	498.04	2.09	498.54	1.55	
Lat A-13	01+22.52	01+00.00	22.52	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	491.00	489.81	0.053	A-13	0.51	0.90	0.46	0.46	10.00	100 yr	9.80	4.50	36.52	No	1.87	0.20	0.00081	0.02	493.45	493.43	0.05	0.05	Inlet at Beg. of Line	1.25	0.10	493.55	493.21	0.46	493.71	0.16	
Lat A-14	01+20.90	01+00.00	20.90	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	488.70	486.66	0.098	A-14	0.25	0.90	0.23	0.23	10.00	100 yr	9.80	2.21	49.66	No	0.92	0.38	0.00019	0.00	492.97	492.97	0.01	0.01	Inlet at Beg. of Line	1.25	0.10	493.07	493.21	2.76	493.71	0.64	
Lat A-16	01+20.90	01+00.00	20.90	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	488.71	486.57	0.102	A-16	0.24	0.90	0.22	0.22	10.00	100 yr	9.80	2.12	50.82	No	0.88	0.40	0.00018	0.00	492.62	492.62	0.01	0.01	Inlet at Beg. of Line	1.25	0.10	492.72	493.22	2.76	493.72	1.00	
Line B	28+25.75	27+93.53	32.22	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	544.60	544.19	0.013	B-1	0.29	0.90	0.26	0.26	10.00	100 yr	9.80	2.56	17.92	No	1.06	0.50	0.00026	0.01	546.46	546.45	0.02	0.02	Inlet at Beg. of Line	1.25	0.10	546.56	550.90	4.55	551.40	4.84	
Line B	27+93.53	27+76.45	17.08	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	544.19	544.04	0.009		0.00			0.26	10.00	100 yr	9.80	2.56	14.89	No	1.06	0.27	0.00026	0.00	546.35	546.35	0.02	0.02	Bends where radius = diam, 60º Bend	0.60	0.10	546.45	550.89	4.95	551.14	4.69	
Line B	27+76.45	27+28.83	47.62	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	544.04	543.50	0.011	B-2	0.93	0.56	0.52	0.78	10.00	100 yr	9.80	7.66	16.92	No	3.19	0.25	0.00234	0.11	546.19	546.08	0.02	0.16	60º Wye connection	0.35	0.15	546.35	550.61	4.82	550.86	4.51	
Line B	27+28.83	26+22.56	106.27	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	543.50	542.34	0.011	B-3,B-16	0.75	0.50	0.38	1.16	10.00	100 yr	9.80	11.34	16.60	No	4.71	0.38	0.00512	0.54	545.79	545.25	0.16	0.34	MH on Trunk Line w/60º Branch Lat	0.35	0.29	546.08	549.80	4.55	550.05	3.97	
Line B	26+22.56	25+56.56	66.00	1	21	N/A	N/A	RCP	2.41	5.50	0.44	0.013	542.34	541.69	0.010	B-15	0.56	0.90	0.50	1.66	10.00	100 yr	9.80	16.28	15.77	No	6.77	0.16	0.01055	0.70	544.66	543.96	0.34	0.71	60º Wye connection	0.35	0.59	545.25	547.90	3.81	548.15	2.90	
Line B	25+56.56	24+85.92	70.64	1	27	N/A	N/A	RCP	3.98	7.07	0.56	0.013	541.19	540.50	0.010	B-12	0.62	0.54	0.33	2.00	10.00	100 yr	9.80	19.56	30.69	No	4.92	0.24	0.00399	0.28	543.84	543.55	0.71	0.38	60º Wye connection	0.35	0.13	543.96	546.35	2.91	546.60	2.64	
Line B	24+85.92	24+31.85	54.07	1	27	N/A	N/A	RCP	3.98	7.07	0.56	0.013	540.50	540.00	0.009	B-4	0.60	0.54	0.32	2.32	10.00	100 yr	9.80	22.73	29.86	No	5.72	0.16	0.00539	0.29	543.18	542.89	0.38	0.51	60º Wye connection	0.35	0.38	543.55	546.35	3.60	546.60	3.05	
Line B	24+31.85	23+31.16	100.69	1	36	N/A	N/A	RCP	7.07	9.42	0.75	0.013	538.50	537.90	0.006	B-6,B-7	3.51	0.50	1.76	4.07	10.00	100 yr	9.80	39.93	51.63	No	5.65	0.30	0.00358	0.36	542.57	542.21	0.51	0.50	MH on Trunk Line w/60º Branch Lat	0.35	0.32	542.89	546.03	4.53	546.28	3.39	
Line B	23+31.16	22+36.03	95.13	1	36	N/A	N/A	RCP	7.07	9.42	0.75	0.013	537.90	537.34	0.006	B-17	0.23	0.60	0.14	4.21	10.00	100 yr	9.80	41.28	51.31	No	5.84	0.27	0.00383	0.36	541.85	541.49	0.50	0.53	60º Wye connection	0.35	0.36	542.21	544.86	3.96	545.11	2.90	
Line B	22+36.03	22+21.62	14.41	1	36	N/A	N/A	RCP	7.07	9.42	0.75	0.013	537.34	537.23	0.008	B-8	0.36	0.60	0.22	4.43	10.00	100 yr	9.80	43.40	58.43	No	6.14	0.04	0.00423	0.06	541.09	541.03	0.53	0.59	60º Wye connection	0.35	0.40	541.49	544.86	4.52	545.11	3.62	
Line B	22+21.62	21+74.82	46.80	1	36	N/A	N/A	RCP	7.07	9.42	0.75	0.013	537.23	537.00	0.005	B-5	0.23	0.90	0.21	4.64	10.00	100 yr	9.80	45.43	46.88	No	6.43	0.12	0.00464	0.22	540.59	540.37	0.59	0.64	60º Wye connection	0.35	0.44	541.03	544.75	4.52	545.00	3.97	
Line B	21+74.82	19+90.07	184.75	1	36	N/A	N/A	RCP	7.07	9.42	0.75	0.013	537.00	535.91	0.006	B-9,B-10	4.34	0.50	2.17	6.81	10.00	100 yr	9.80	66.69	51.37	No	9.44	0.33	0.01000	1.85	539.21	537.37	0.64	1.38	MH on Trunk Line w/60º Branch Lat	0.35	1.16	540.37	544.50	4.50	544.75	4.38	
Line B	19+90.07	16+14.38	375.69	1	36	N/A	N/A	RCP	7.07	9.42	0.75	0.013	533.25	528.00	0.014	B-11	0.43	0.60	0.26	7.06	10.00	100 yr	9.80	69.22	79.06	Yes	12.50	0.50	0.01077	4.05	535.43	529.04	1.38	2.43	MH on Trunk Line w/60º Branch Lat	0.35	1.94	537.37	542.88	6.63	543.13	5.76	Partial Flow V from FlowMaster
Line B	16+14.38	15+08.30	106.08	1	36	N/A	N/A	RCP	7.07	9.42	0.75	0.013	523.50	519.87	0.034		0.00			7.06	10.00	101 yr	9.80	69.22	123.71	No	9.79	0.18	0.01077	1.14	528.40	527.26	2.43	1.49	MH on Trunk Line w/60º Branch Lat	0.35	0.64	529.04	543.88	17.38	544.13	15.09	
Line B	15+08.30	12+50.00	258.30	1	42	N/A	N/A	RCP	9.62	11.00	0.88	0.013	517.00	512.19	0.019	B-13,B-14	1.42	0.72	1.03	8.09	10.00	100 yr	9.80	79.27	137.66	No	8.24	0.52	0.00621	1.60	526.72	525.12	1.49	1.05	MH on Trunk Line w/60º Branch Lat	0.35	0.53	527.26	529.53	9.03	529.78	2.52	
Line B	12+50.00	09+95.58	254.42	1	42	N/A	N/A	RCP	9.62	11.00	0.88	0.013	512.19	510.26	0.008		0.00			8.09	10.00	101 yr	9.80	79.27	87.86	No	8.24	0.51	0.00621	1.58	524.49	522.91	1.05	1.05	Bends where radius = diam, 60º Bend	0.60	0.63	525.12	519.15	3.46	519.40	-5.72	
Line B	09+95.58	09+78.19	17.39	1	42	N/A	N/A	RCP	9.62	11.00	0.88	0.013	510.26	510.12	0.008		0.00			8.09	10.00	100 yr	9.80	79.27	90.52	No	8.24	0.04	0.00621	0.11	522.52	522.41	1.05	1.05	Bends where radius = diam, 45º Bend	0.37	0.39	522.91	515.81	2.05	515.81	-7.10	Starting HGL from 100yr WSEL
Line E	01+55.97	01+30.73	25.24	1	27	N/A	N/A	RCP	3.98	7.07	0.56	0.013	538.21	537.71	0.020		0.00			0.00	10.00	100 yr	9.80	0.00	43.92	No	0.00		0.00000	0.00	540.92	540.92	0.00	0.00	Inlet at Beg. of Line	1.25	0.10	541.02	546.24	5.78	546.24	5.22	
Line E	01+30.73	01+28.74	1.99	1	27	N/A	N/A	RCP	3.98	7.07	0.56	0.013	537.71	537.67	0.020	B-10	0.26	0.50	0.13	0.13	10.00	100 yr	9.80	1.27	43.92	No	0.32	0.10	0.00002	0.00	540.82	540.82	0.00	0.00	60º Wye connection	0.35	0.10	540.92	544.77	4.81	544.77	3.85	
Line E	01+28.74	01+17.90	10.84	1	27	N/A	N/A	RCP	3.98	7.07	0.56	0.013	537.67	537.45	0.020	B-9	4.08	0.50	2.04	2.17	10.00	100 yr	9.80	21.27	43.92	No	5.35	0.03	0.00472	0.05	540.38	540.33	0.00	0.44	60º Wye connection	0.35	0.44	540.82	544.77	4.85	544.77	3.95	
Line E	01+17.90	00+95.38	22.52	1	27	N/A	N/A	RCP	3.98	7.07	0.56	0.013	537.45	537.00	0.020		0.00			2.17	10.00	100 yr	9.80	21.27	43.92	Yes	10.93	0.03	0.00472	0.11	539.21	539.21	0.44	1.86	Bends where radius = diam, 60º Bend	0.60	1.11	540.33	544.50	4.80	544.50	4.17	Starting HGL from 100yr WSEL
Line F	01+56.04	01+32.24	23.80	1	27	N/A	N/A	RCP	3.98	7.07	0.56	0.013	541.21	540.74	0.020		0.00			0.00	10.00	100 yr	9.80	0.00	43.92	No	0.00		0.00000	0.00	543.96	543.96	0.00	0.00	Inlet at Beg. of Line	1.25	0.10	544.06	547.93	4.47	547.93	3.87	
Line F	01+32.24	01+28.74	3.50	1	27	N/A	N/A	RCP	3.98	7.07	0.56	0.013	540.74	540.67	0.020	B-7	2.26	0.50	1.13	1.13	10.00	100 yr	9.80	11.07	43.92	No	2.79	0.02	0.00128	0.00	543.84	543.83	0.00	0.12	60º Wye connection	0.35	0.12	543.96	546.34	3.35	546.34	2.38	
Line F	01+28.74	01+22.70	6.04	1	27	N/A	N/A	RCP	3.98	7.07	0.56	0.013	540.67	540.55	0.020	B-6	1.25	0.50	0.63	1.76	10.00	100 yr	9.80	17.20	43.92	No	4.33	0.02	0.00308	0.02	543.59	543.57	0.12	0.29	60º Wye connection	0.35	0.25



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RECORD DRAWINGS PREPARED ON: 3/17/2021

TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS — BRANDON J. HUXFORD — 117072 — LICENSED PROFESSIONAL ENGINEER — 8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

STORM DRAIN LINE SD-A
BEGIN TO STA 13+50

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

N

0 10' 20' 40'
HORIZONTAL SCALE
0 2' 4' 8'
VERTICAL SCALE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

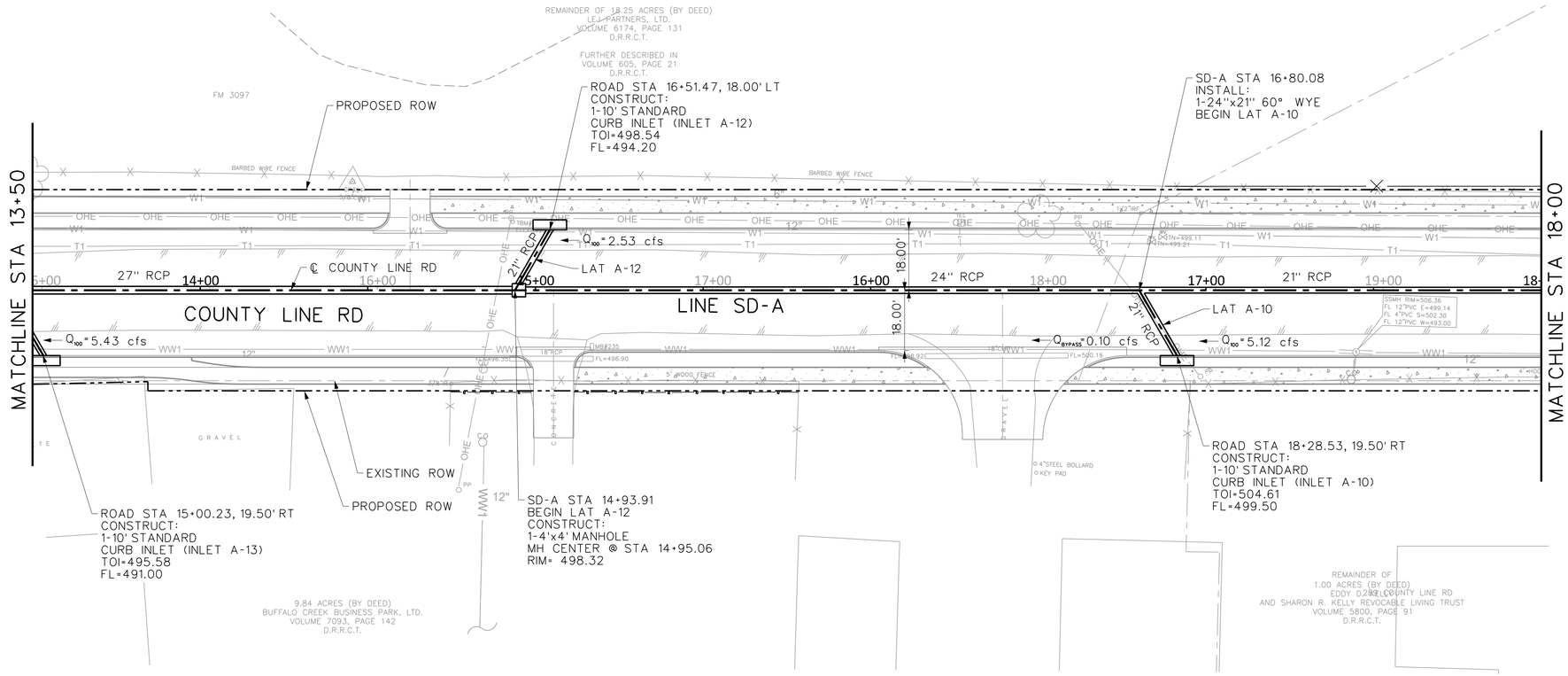
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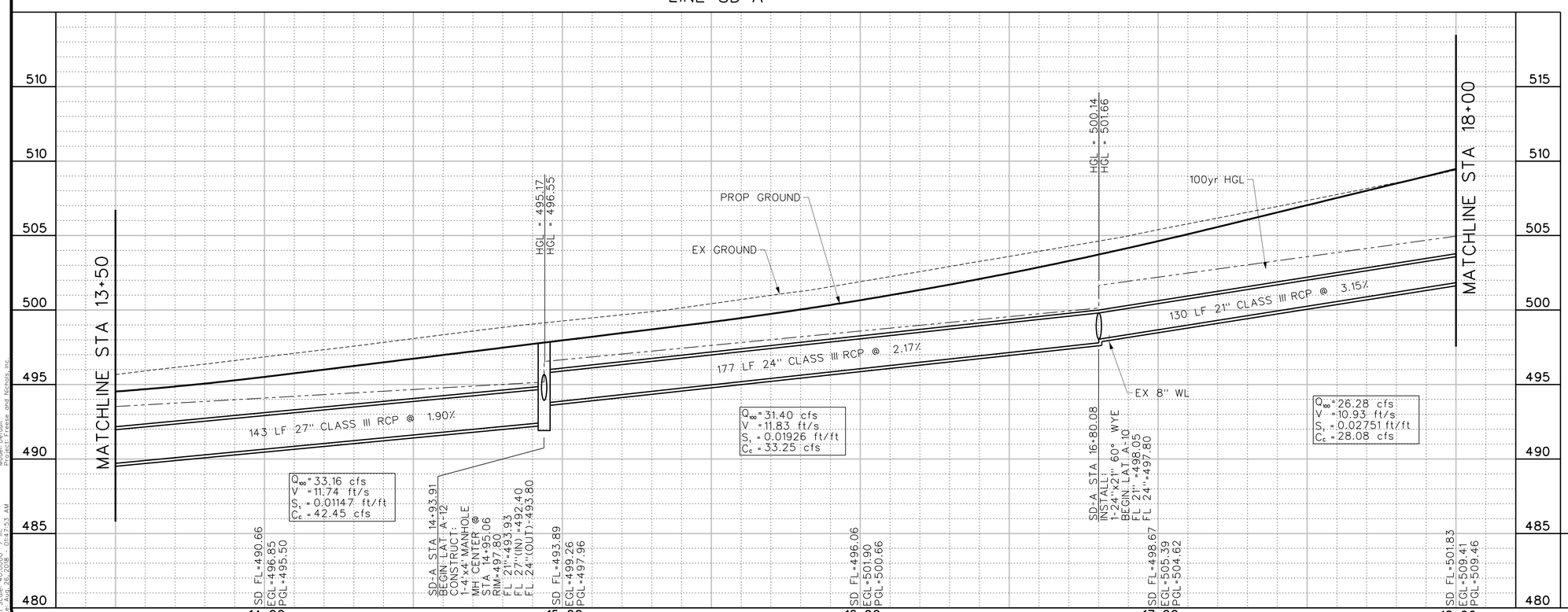
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DRAWN SI
DESIGNED AU
DATE 08/2018
F&N JOB NO. ROK15508

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SEQ. 66

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PROFILE LEGEND
- EXISTING GRADE
- PROFILE GRADE LINE
- 100yr HYDRAULIC GRADE LINE

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

N

0 10' 20' 40'
HORIZONTAL SCALE
0 2' 4' 8'
VERTICAL SCALE

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
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Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
STORM DRAIN LINE SD-A
STA 13+50 TO STA 18+00

NO.	ISSUES	BY	DATE

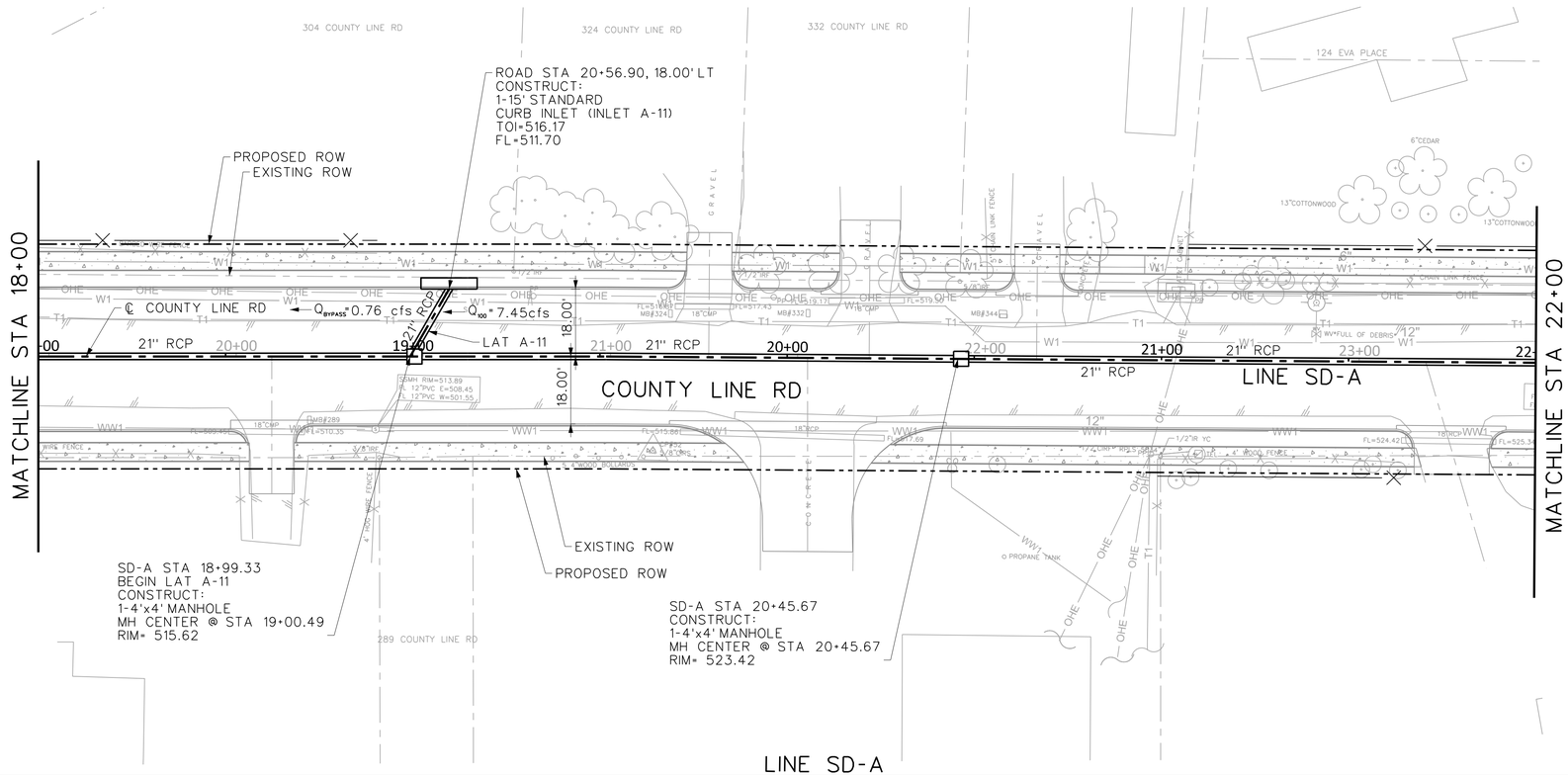
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REVISED
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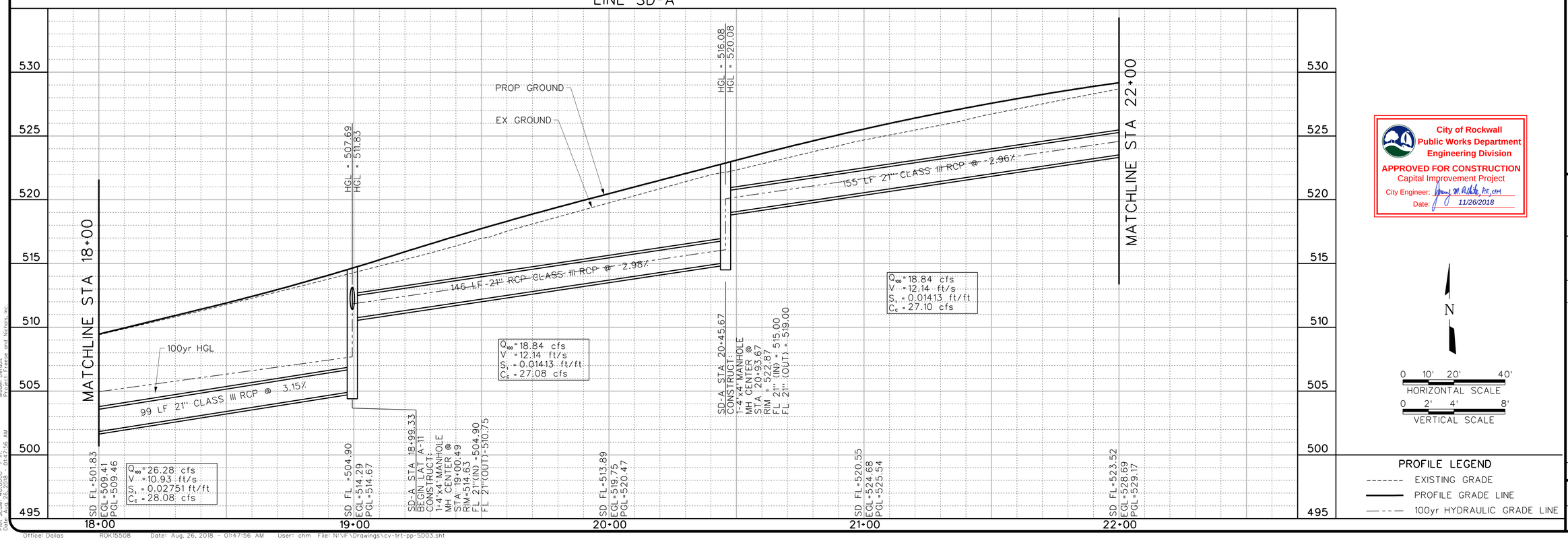
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PROFILE LEGEND

------- EXISTING GRADE

——— PROFILE GRADE LINE

——— — 100yr HYDRAULIC GRADE LINE

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], PE, CFM
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
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CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

STORM DRAIN LINE SD-A
STA 18+00 TO STA 22+00

F&N JOB NO.	ROK15508
DATE	08/2018
DESIGNED	AU
DRAWN	SI
CHECKED	BH
REVISED	

FILE NAME: cv-trt-pp-SD03.sht

NO. ISSUES | BY | DATE

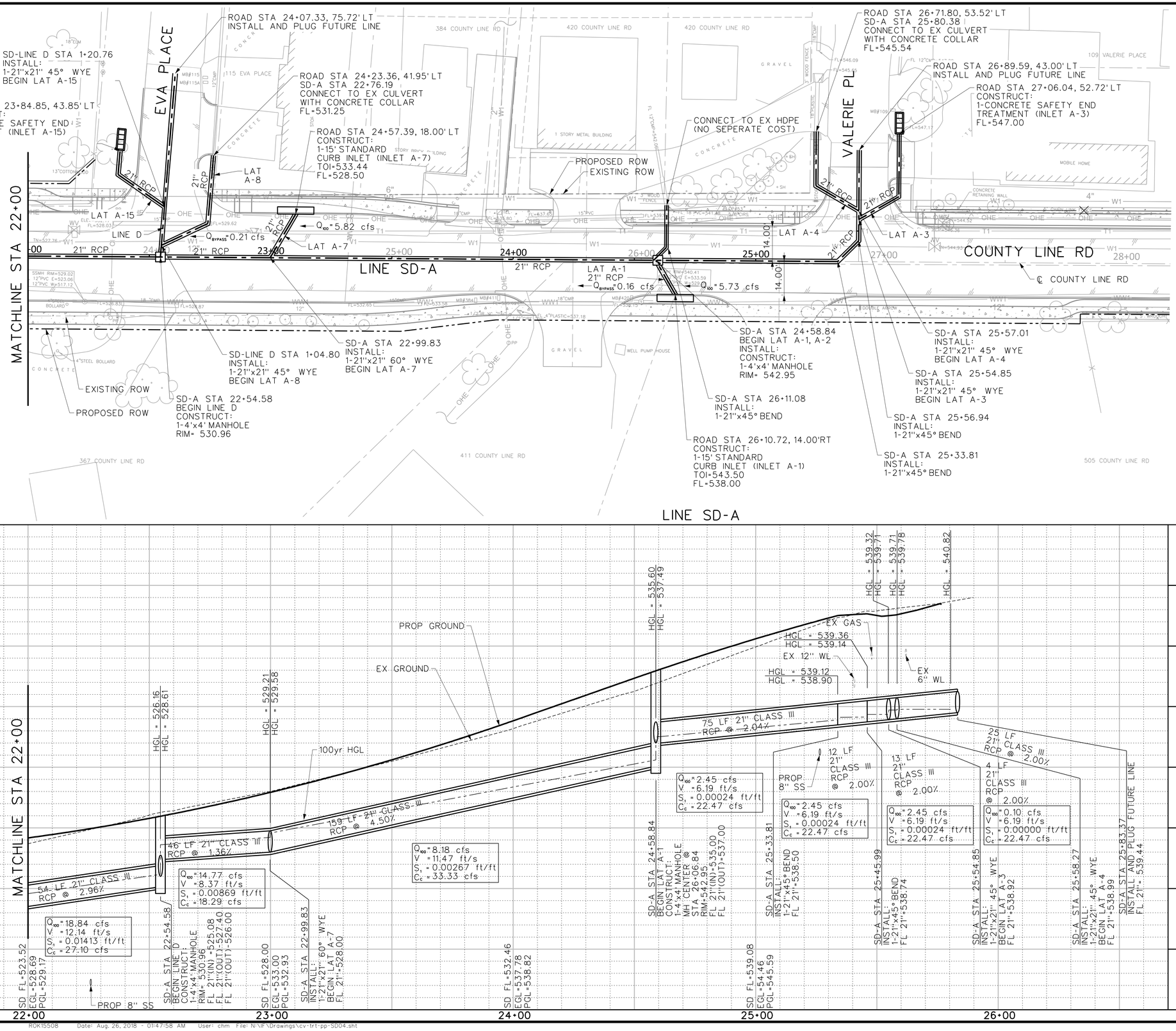
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SHEET SD-03

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PROFILE LEGEND

- EXISTING GRADE
- PROFILE GRADE LINE
- 100yr HYDRAULIC GRADE LINE

0 10' 20' 40'
HORIZONTAL SCALE
0 2' 4' 8'
VERTICAL SCALE

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0 1"

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____ PE, CFM
Date: 11/26/2018

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FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

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CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
STORM DRAIN LINE SD-A
STA 22+50 TO END

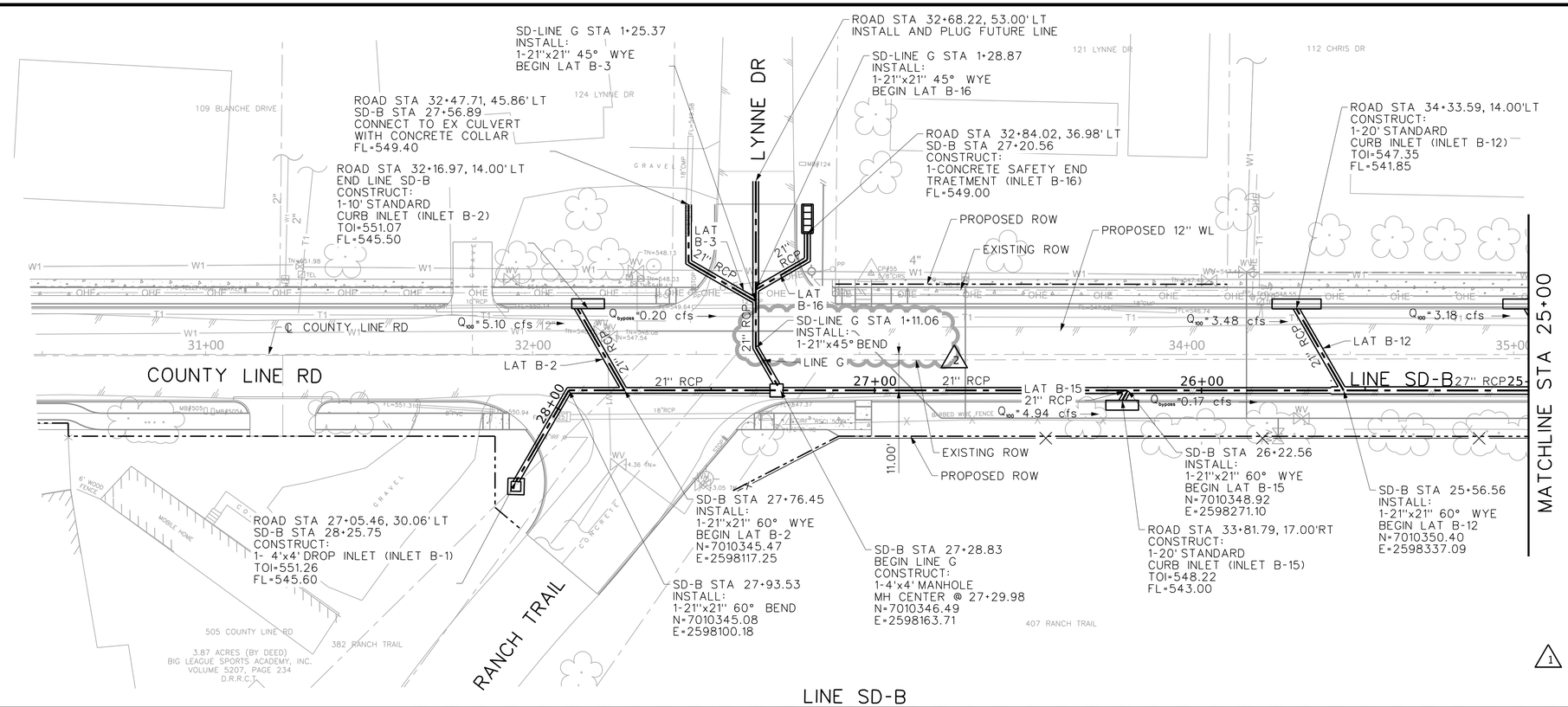
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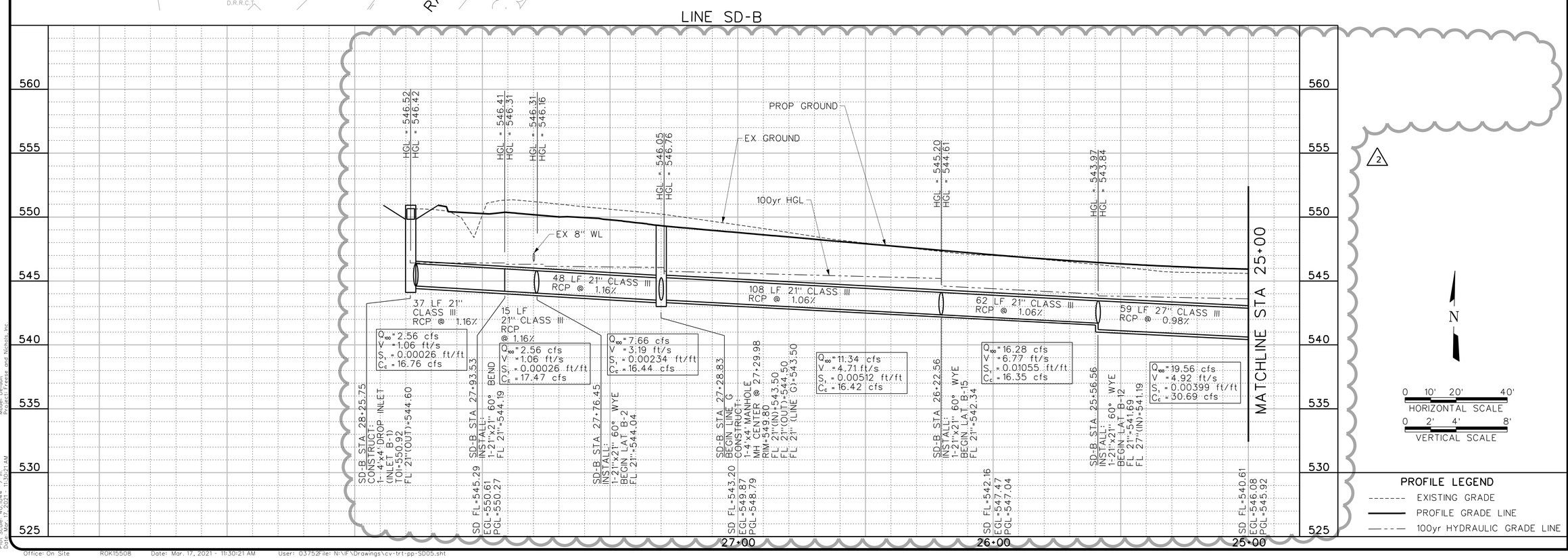
FAN JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pp-SD04.sht

SHEET SD-04
SEQ. 69

MicroStation V8 User: chm Office: Dallas
ROK15508 N:\F \Drawings\cv-trt-pp-SD04.sht
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Save: Aug. 26, 2018 - 01:47:58 AM

Office: Dallas ROK15508 Date: Aug. 26, 2018 - 01:47:58 AM User: chm File: N:\F \Drawings\cv-trt-pp-SD04.sht





This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of

FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON:
03/17/2021

THE SEAL THAT ORIGINALLY APPEARED ON THIS DOCUMENT WAS AUTHORIZED BY BRANDON J. HUKFORD TEXAS NO.: 117072 ON 8/27/18
IT IS NOT TO BE USED OR VIEWED OR RELEASED WITHOUT PROPER NOTIFICATION OF THE RESPONSIBLE ENGINEER'S AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

THE SEAL THAT ORIGINALLY APPEARED ON THIS DOCUMENT FOR REVISION 2 WAS AUTHORIZED BY ALAN D. HENDRIX TEXAS NO.: 69734 ON 3/17/2021
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FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

STORM DRAIN LINE SD-B
END TO STA 25+00

NO.	ISSUES	BY	DATE
1	RECORD DRAWINGS	ADH	3/17/21
2	CO #5	ADH	01/13/20

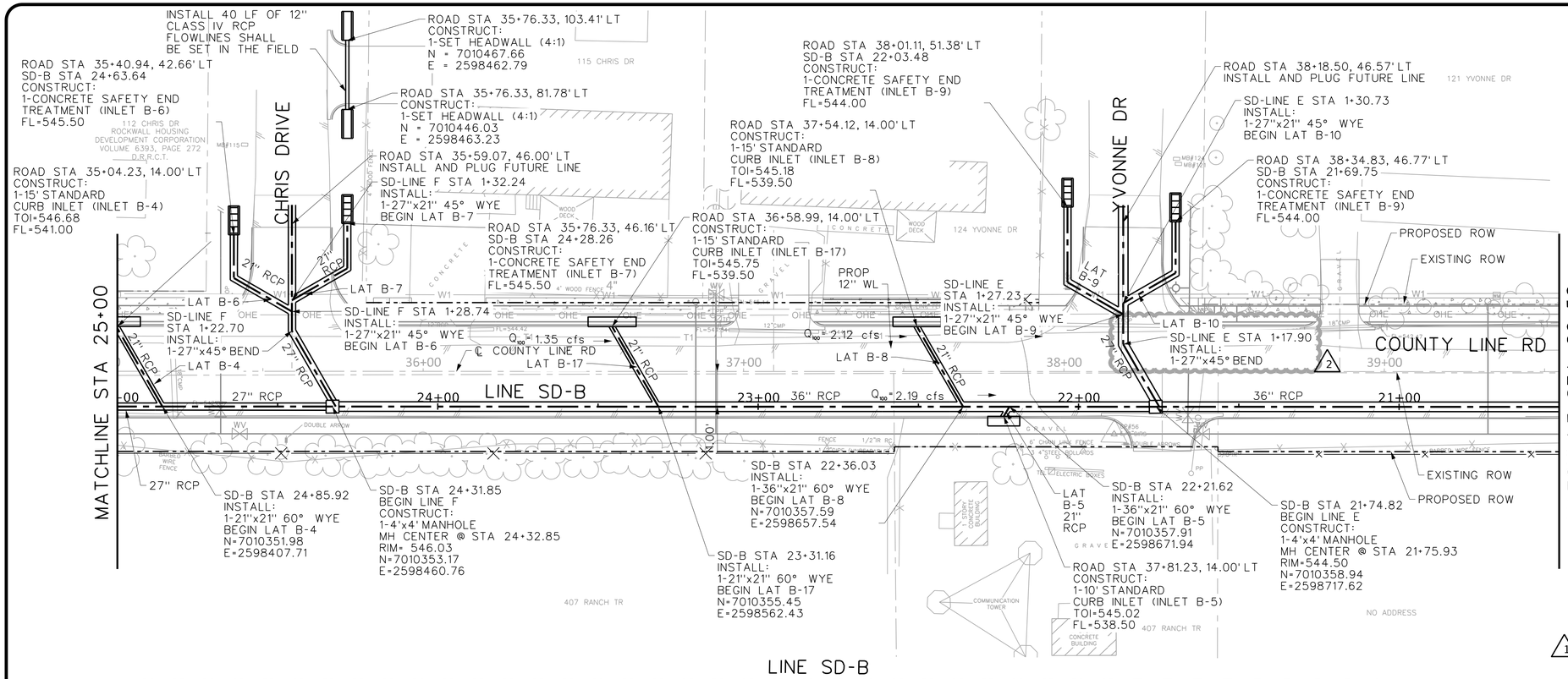
F&N JOB NO. 70K15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trf-pp-SD05.sht

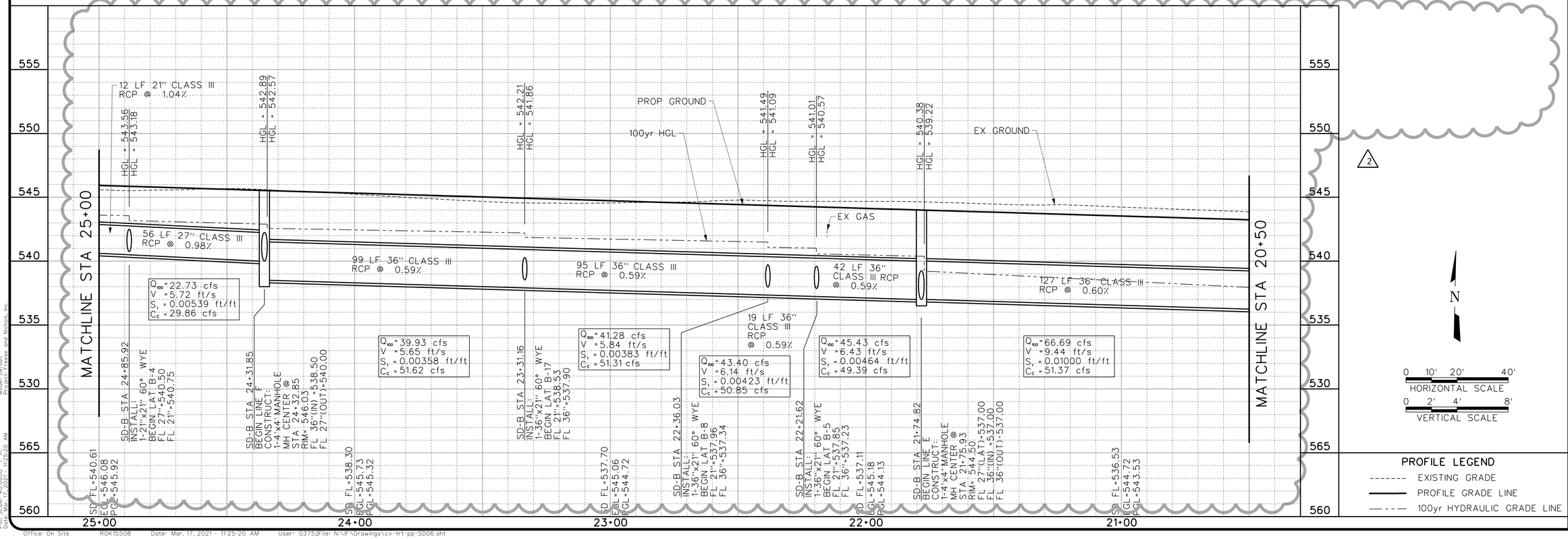
SHEET
SD-05
SEQ.
70

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

MicroStation V8 User: 03752Office: On Site
R0K15508 - N:\IF\Drawings\cv-trf-pp-SD05.sht
Plot Scale: 40.044 ' / in. Plot Date: Mar. 17, 2021 - 11:30:21 AM
Model: Default
Project: Freese and Nichols Inc.

Office: On Site R0K15508 Date: Mar. 17, 2021 - 11:30:21 AM User: 03752File: N:\IF\Drawings\cv-trf-pp-SD05.sht





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RECORD DRAWINGS PREPARED ON: 03/17/2021

THE SEAL THAT ORIGINALLY APPEARED ON THIS DOCUMENT WAS AUTHORIZED BY BRANDON J. HUXFORD TEXAS NO.: 117072 ON: 8/27/18 IT IS UNLAWFUL TO ALTER THIS DOCUMENT WITHOUT PROPER NOTIFICATION OF THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

THE SEAL THAT ORIGINALLY APPEARED ON THIS DOCUMENT FOR REVISION 2 WAS AUTHORIZED BY ALAN D. HENDRIX ON: 3/17/2021
TEXAS NO.: 69798
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FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
STORM DRAIN LINE SD-B
STA 25+00 TO STA 20+50

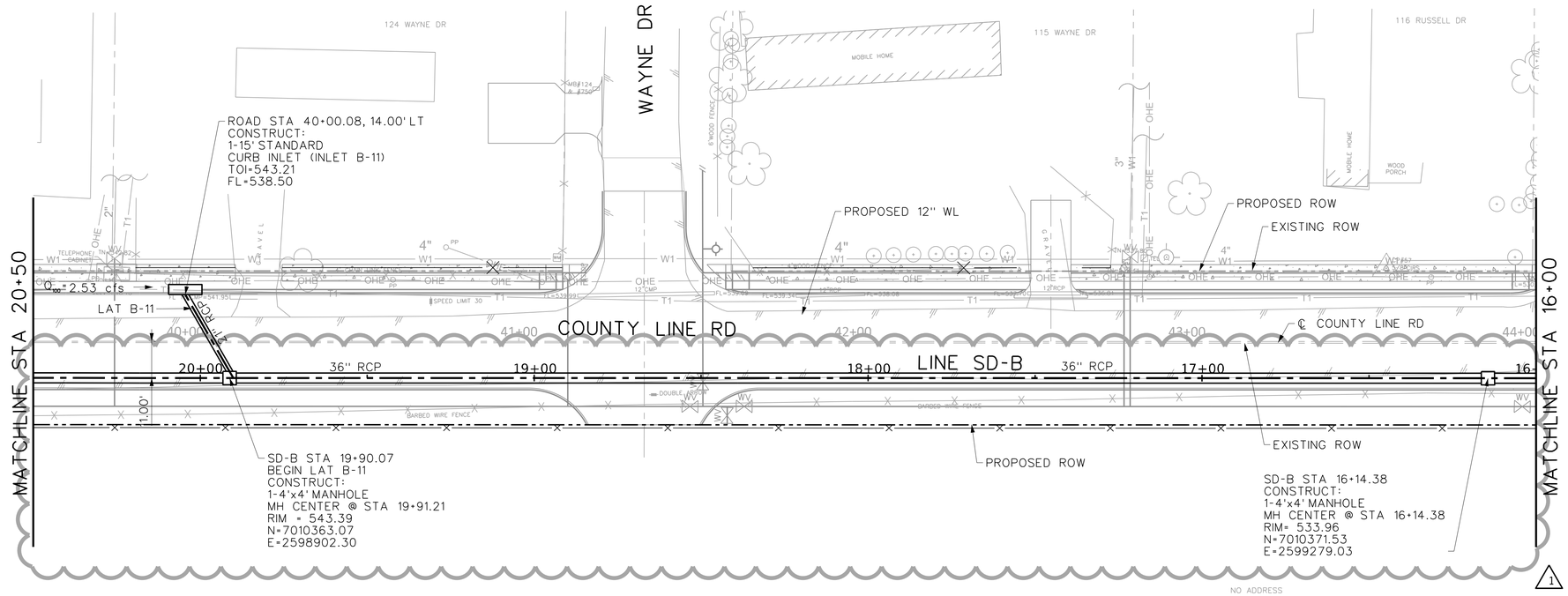
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	RECORD DRAWINGS	ADH	3/17/21
2	CO #5	ADH	01/13/20

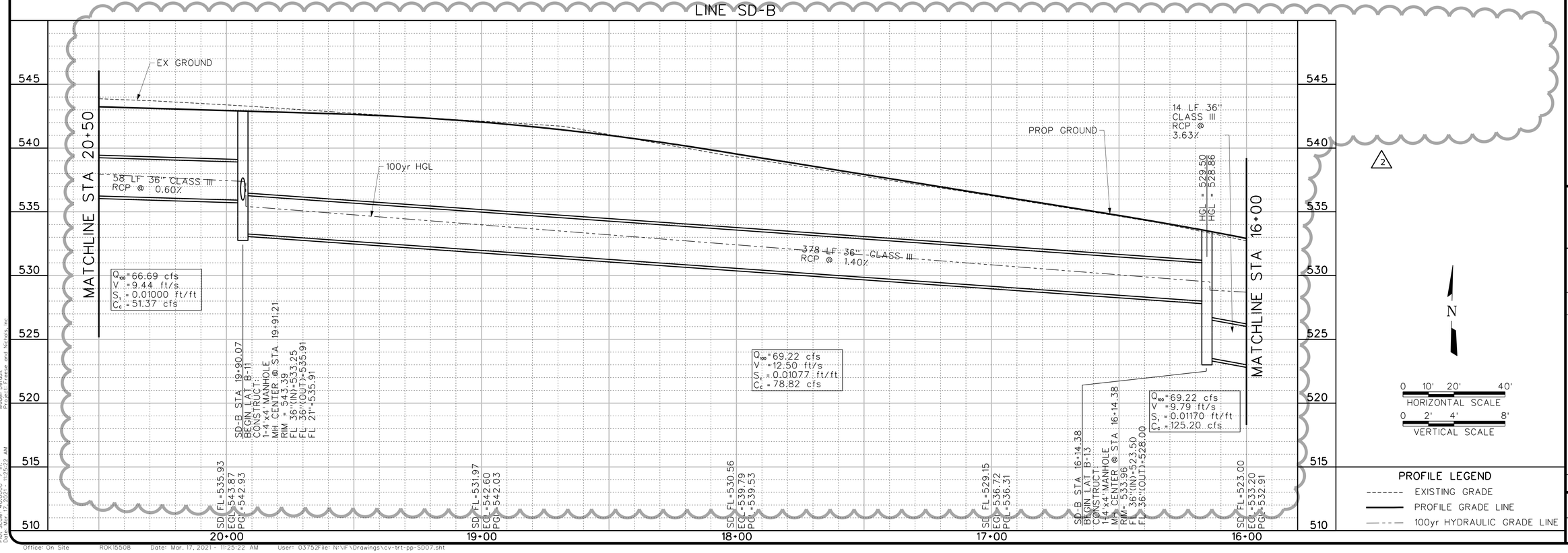
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

FAN JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pp-SD06.sht

SHEET SD-06
SEQ. 71

MicroStation V8 User: 03752Office: On Site
ROK15508 N:\IF\Drawings\cv-trt-pp-SD06.sht
Plot Scale: 40.0000 ' / in. Plot Date: 17 Mar 2021 - 11:25:20 AM
Office: On Site ROK15508 Date: Mar. 17, 2021 - 11:25:20 AM User: 03752File: N:\IF\Drawings\cv-trt-pp-SD06.sht





Q_{100} = 66.69 cfs
V = 9.44 ft/s
S_o = 0.01000 ft/ft
Q_c = 51.37 cfs

Q_{100} = 69.22 cfs
V = 12.50 ft/s
S_o = 0.01077 ft/ft
Q_c = 78.82 cfs

Q_{100} = 69.22 cfs
V = 9.79 ft/s
S_o = 0.01170 ft/ft
Q_c = 125.20 cfs

PROFILE LEGEND
- EXISTING GRADE
- PROFILE GRADE LINE
- 100yr HYDRAULIC GRADE LINE

HORIZONTAL SCALE 0 10' 20' 40'
VERTICAL SCALE 0 2' 4' 8'

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 03/17/2021

THE SEAL THAT ORIGINALLY APPEARED ON THIS DOCUMENT WAS AUTHORIZED BY ANDREW D. HUFFORD
TEXAS NO. 117072 ON 8/27/18
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THE SEAL THAT ORIGINALLY APPEARED ON THIS DOCUMENT WAS AUTHORIZED BY JOHN D. HENDRIX
TEXAS NO. 69736 ON 7/7/2021
ALTERATION ON A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION OF THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

THE SEAL THAT ORIGINALLY APPEARED ON THIS DOCUMENT FOR THE YEAR OF 2021 WAS AUTHORIZED BY JOHN D. HENDRIX
TEXAS NO. 69736 ON 7/7/2021
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2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

STORM DRAIN LINE SD-B
STA 20+50 TO STA 16+00

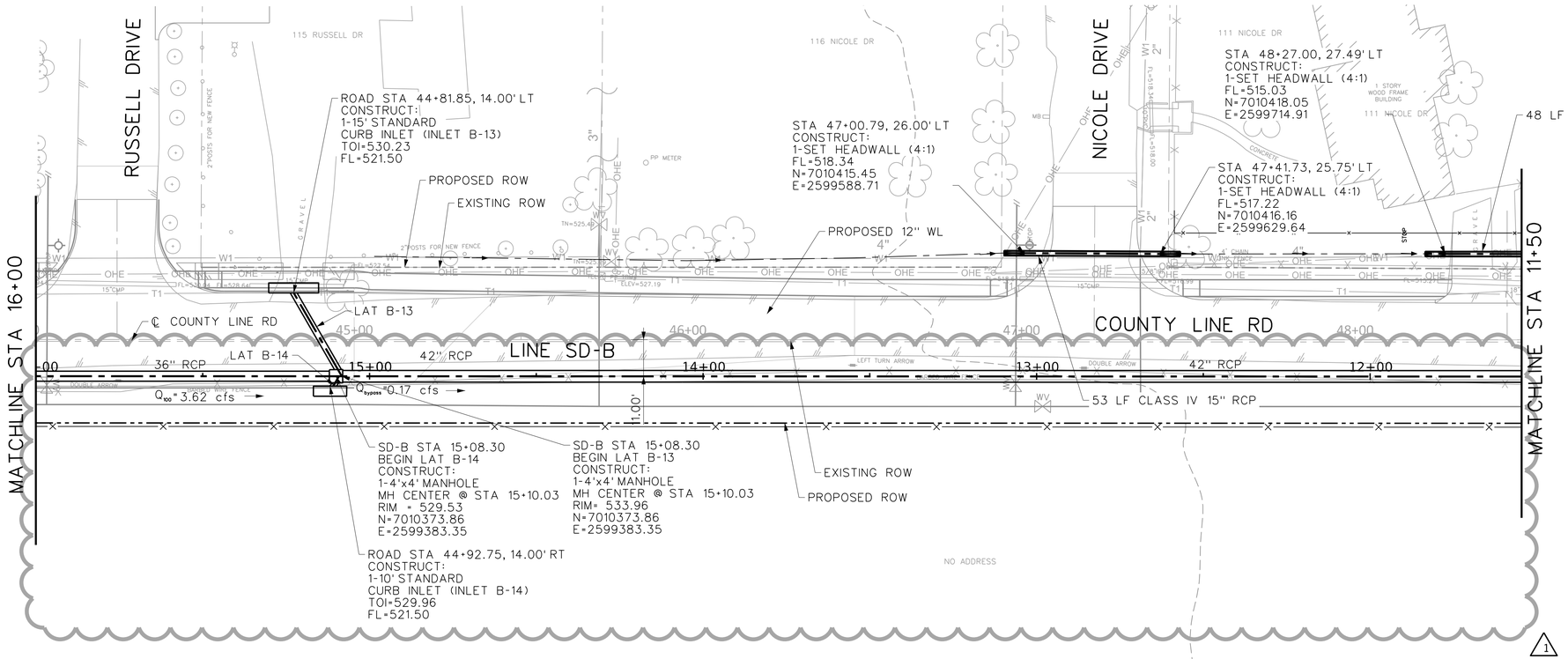
NO.	ISSUES	BY	DATE
1	RECORD DRAWINGS	ADH	03/17/21
1	CO #5	ADH	01/13/20

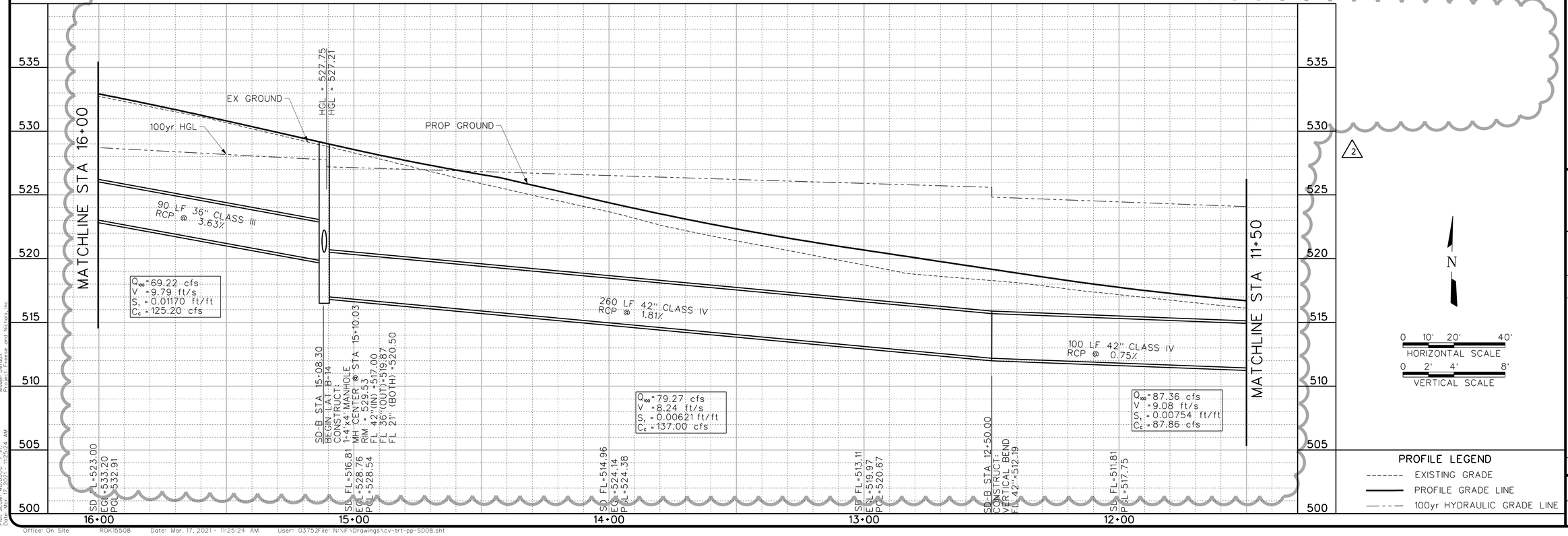
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pp-SD07.sht

SHEET SD-07
SEQ. 72

MicroStation V8 User: 03752Office: On Site
ROK15508 N:\IF\Drawings\cv-trt-pp-SD07.sht
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Plot Scale=40.0000 '/ in. Model: Default
Date: Mar 17, 2021 - 11:25:22 AM





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RECORD DRAWINGS PREPARED ON: 03/17/2021

THE SEAL THAT ORIGINALLY APPEARED ON THIS DOCUMENT WAS AUTHORIZED BY ALAN D. HENDRIX TEXAS NO. 117072 ON 8/27/18
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FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

THE SEAL THAT ORIGINALLY APPEARED ON THIS DOCUMENT FOR REVISION 2 WAS AUTHORIZED BY ALAN D. HENDRIX
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FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

STORM DRAIN LINE SD-B
STA 16+00 TO STA 11+50

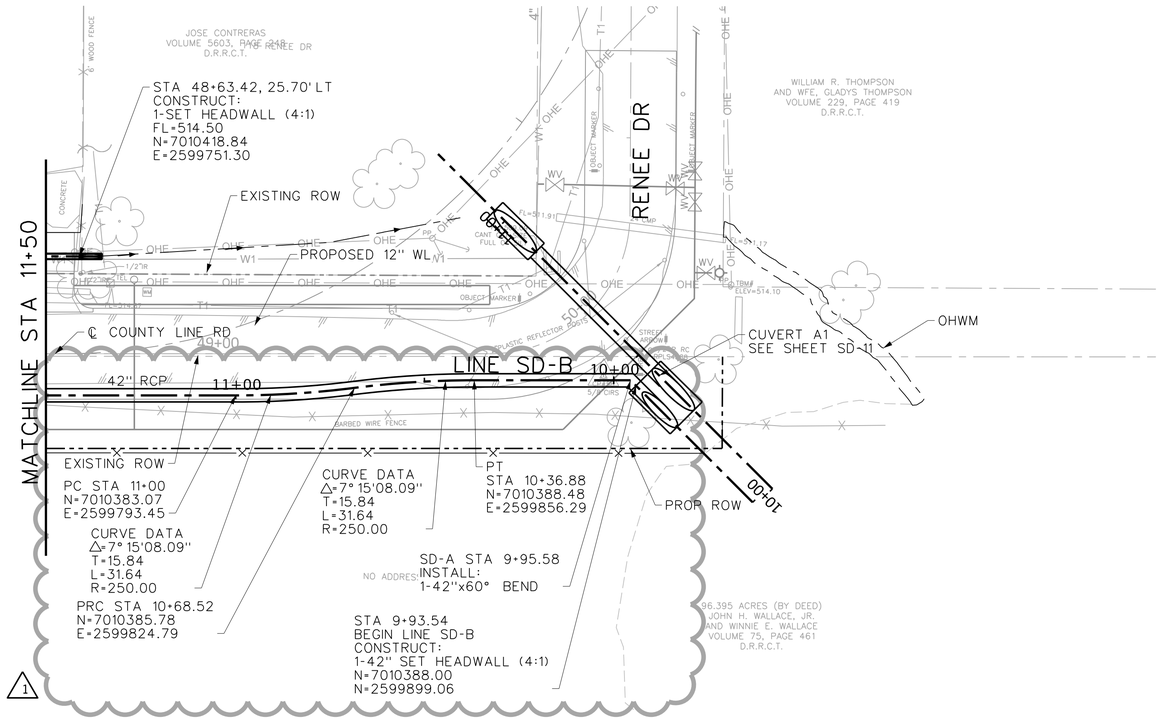
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2	CO #5	ADH	01/13/20

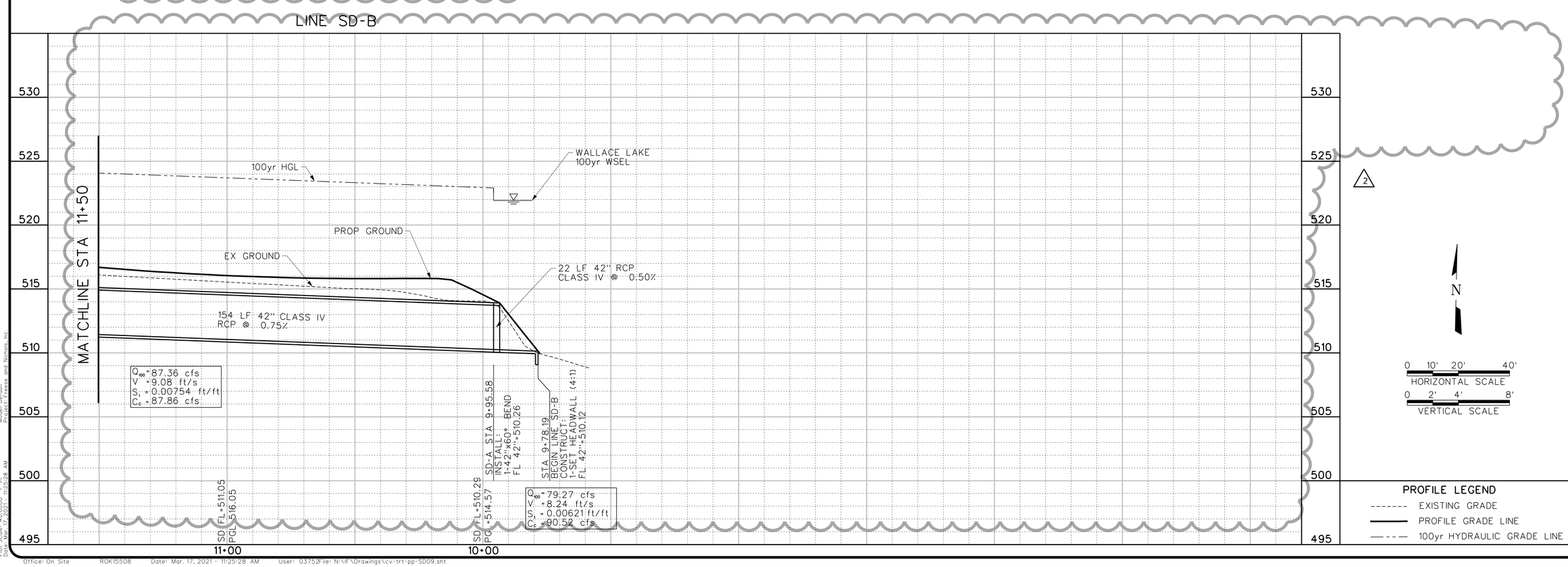
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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F&N JOB NO.	ROK15508
DATE	08/2018
DESIGNED	AU
DRAWN	SI
REVISED	
CHECKED	BH
FILE NAME	cv-trt-pp-SD08.sht

SHEET
SD-08
SEQ.
73

MicroStation V8 User: 03752Office: On Site
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Project: Freese and Nichols Inc.
Office: On Site ROK15508 Date: Mar. 17, 2021 - 11:25:24 AM User: 03752File: N:\IF\Drawings\cv-trt-pp-SD08.sht





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RECORD DRAWINGS PREPARED ON: 03/17/2021

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FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

THE SEAL THAT ORIGINALLY APPEARED ON THIS DOCUMENT WAS AUTHORIZED BY ALAN D. HENDRIX
TEXAS NO: 69798 ON: 3/17/2021
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FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

STORM DRAIN LINE SD-B
STA 11+50 TO BEGIN

FAN JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-pp-SD09.sht

NO.	ISSUES	BY	DATE
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1	CO #5	ADH	01/13/20

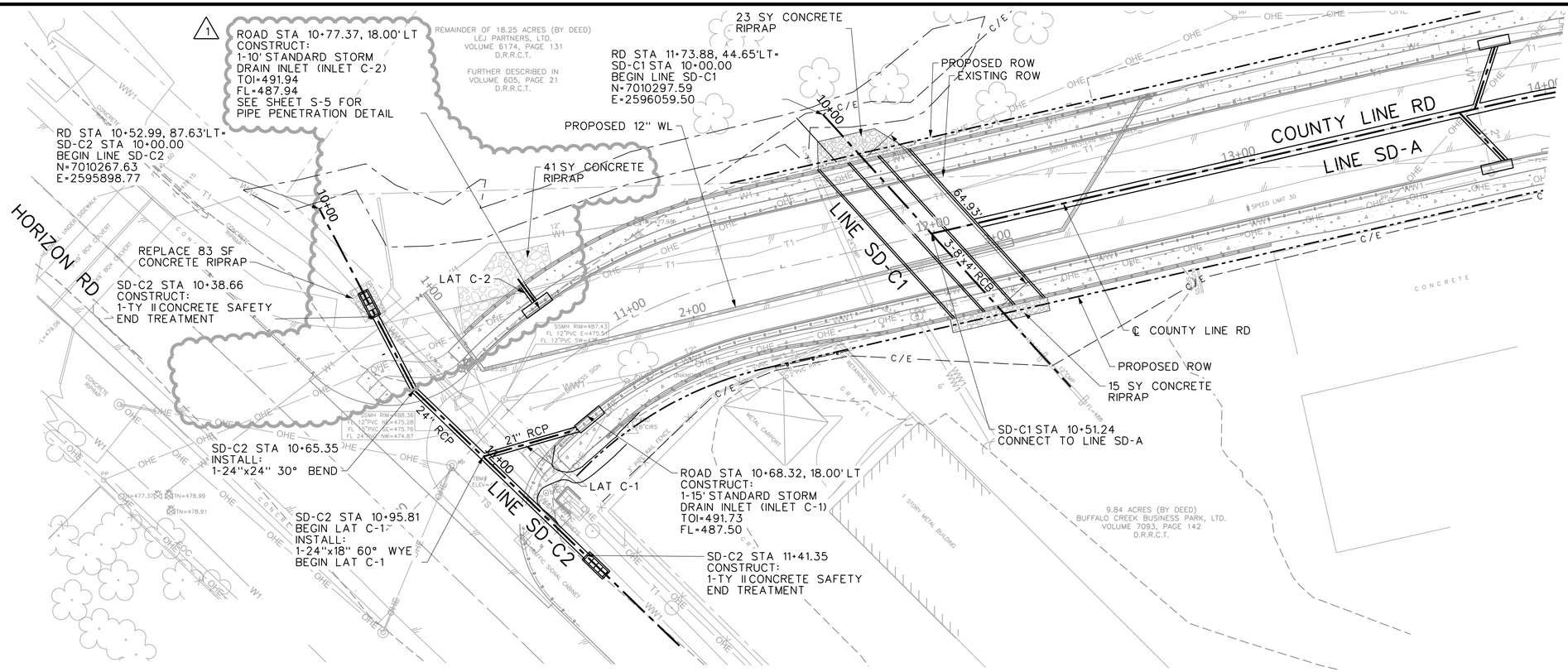
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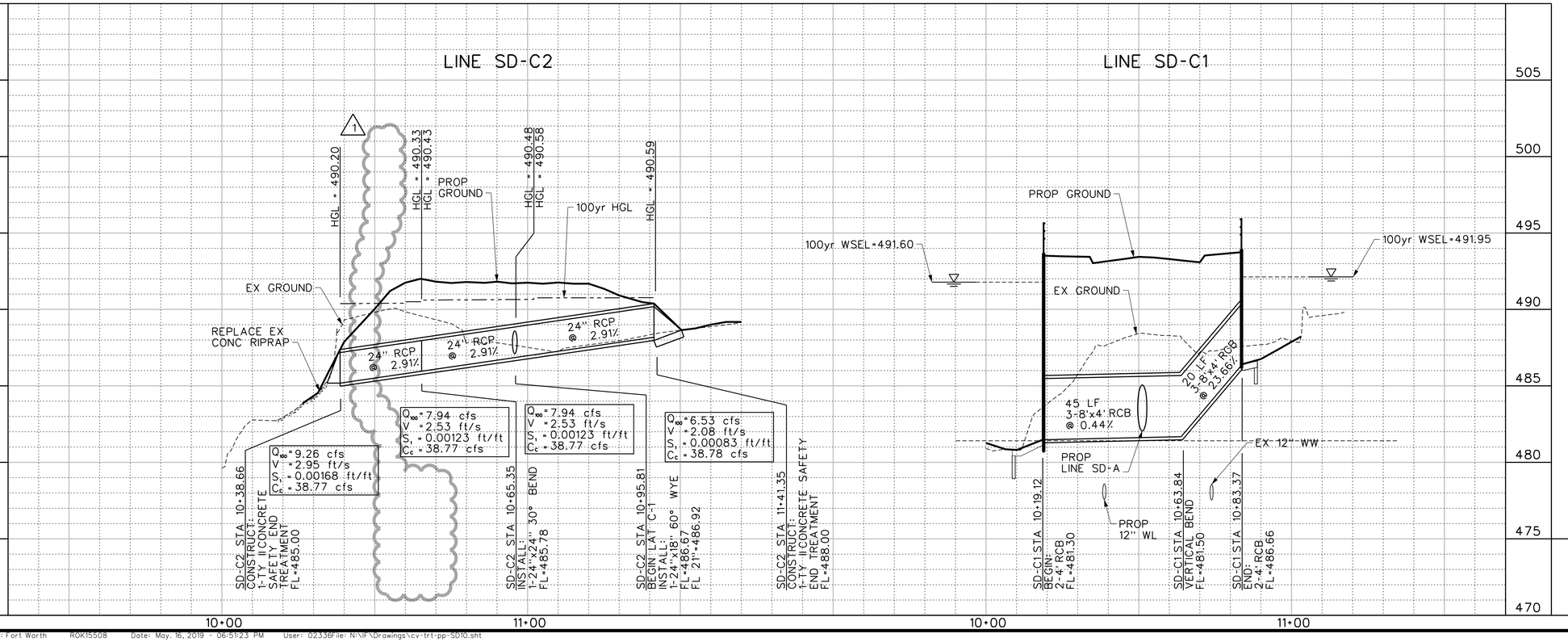
0 10' 20' 40'
HORIZONTAL SCALE
0 2' 4' 8'
VERTICAL SCALE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET SD-09
SEQ. 74

MicroStation V8 User: 03752Office: On Site
ROK15508 N:\IF\Drawings\cv-trt-pp-SD09.sht
Plot Date: 17 Mar 2021 11:25:28 AM
Plot Scale: 40.0000 ' / in.
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Project: ROK15508 N:\IF\Drawings\cv-trt-pp-SD09.dgn
Office: On Site ROK15508 Date: Mar. 17, 2021 - 11:25:28 AM User: 03752File: N:\IF\Drawings\cv-trt-pp-SD09.sht





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RECORD DRAWINGS PREPARED ON: 3/17/2021

THE SEAL THAT ORIGINALLY APPEARED ON THIS DOCUMENT WAS AUTHORIZED BY BRANDON J. HUXFORD TEXAS NO. 127324, ON 8/27/18 AND SHOULD NOT BE RELIED UPON WITHOUT PROPER NOTIFICATION OF THE RESPONSIBLE ENGINEER'S AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

ALAN D. HENDRIX
69798
LICENSED PROFESSIONAL ENGINEER
5/16/2019

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web: www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

STORM DRAIN LINE SD-C1 & SD-C2 BEGIN TO END

NO.	ISSUES	BY	DATE
1	CO #4	ADH	5/16/19

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
CHECKED BH
FILE NAME cv-trt-pp-SD10.sht

SHEET SD-10
SEQ. 75

REVISION
DATE: 05/20/2019
City of Rockwall
Public Works Department
Engineering Division

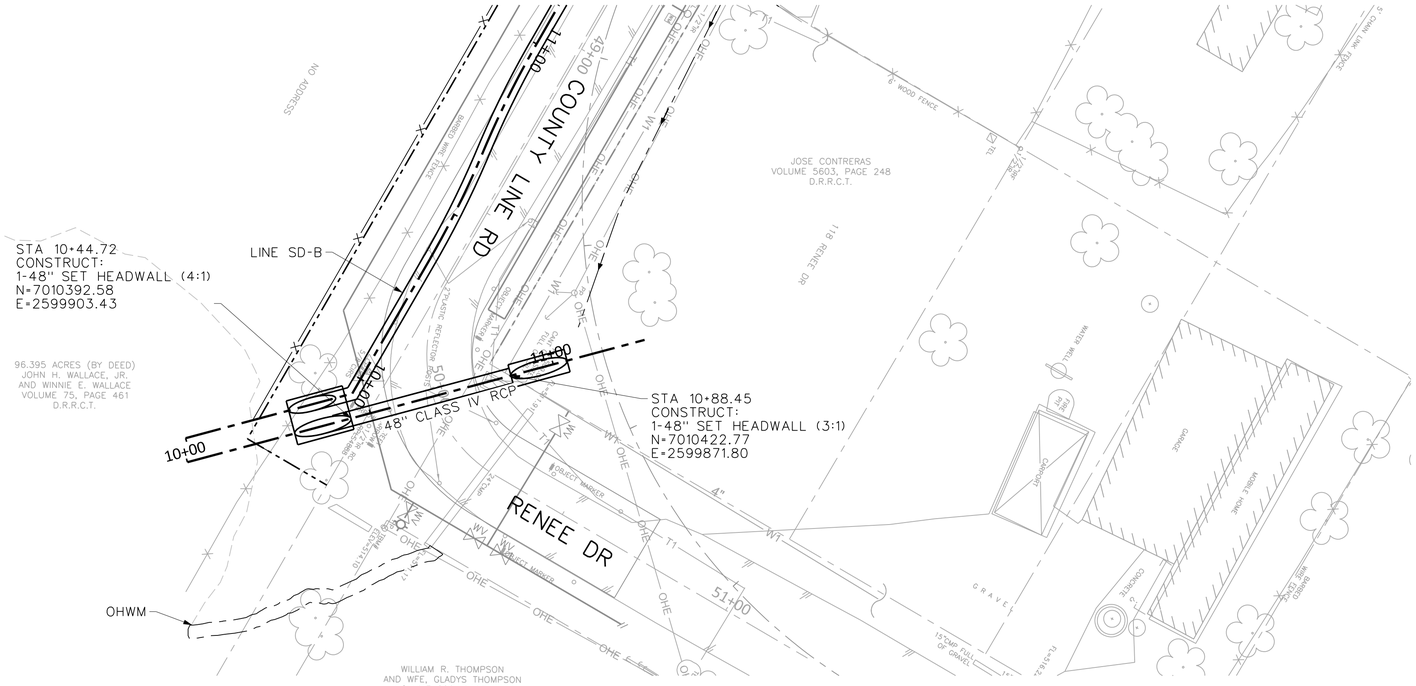
City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], P.E., CFM
Date: 05/20/2019

N

0 10' 20' 40'
HORIZONTAL SCALE
0 2' 4' 8'
VERTICAL SCALE

MicroStation V8 User: 02336Office: Fort Worth
ROK15508 - N:\F\Drawings\cv-trt-pp-SD10.sht
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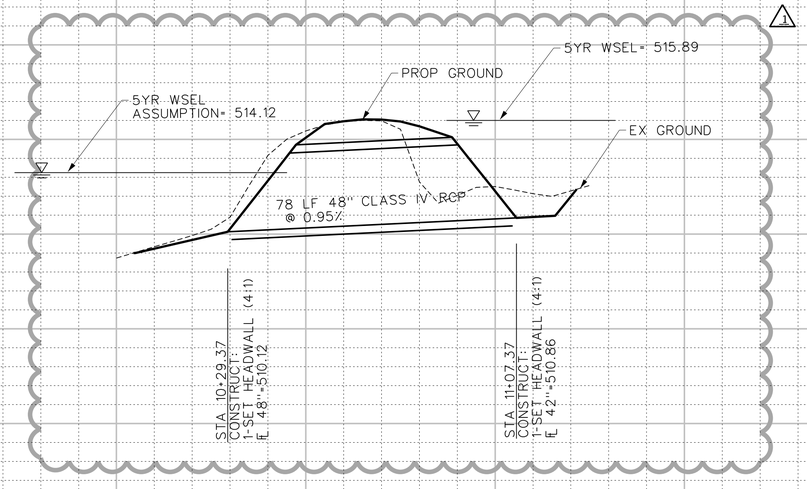
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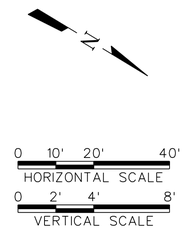


NOTES:

1. REFER TO DRAINAGE MEMO FROM 8/24/2018 BY HECTOR DAVID RIVERA RAMIREZ, P.E. FOR ASSUMPTIONS.

2. SEE GR-03 FOR GRADING PLAN.





PROFILE LEGEND

------- EXISTING GRADE

——— PROFILE GRADE LINE

——--—— 100yr HYDRAULIC GRADE LINE

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

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TEXAS NO. 69798 ON 8/27/18
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FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

STORM DRAIN CULVERT A

FAN JOB NO.	DATE	DESIGNED	DRAWN	CHECKED
ROK15508	08/2018	AU	SI	BH

NO.	ISSUES	BY	DATE	REVISED
1	RECORD DRAWINGS	ADH	3/17/2021	

FILE NAME cv-trt-pp-SD11.sht

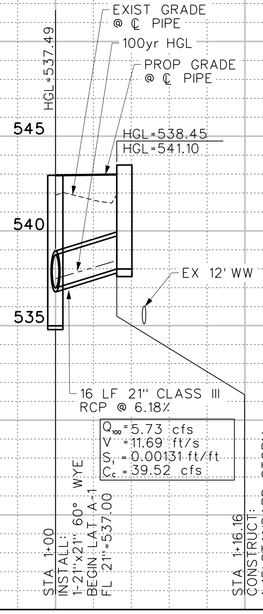
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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SHEET SD-11

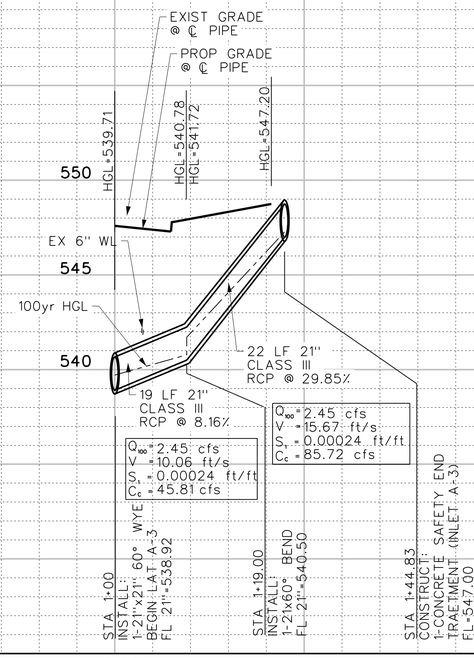
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MicroStation V8 User: 02336Office: On Site
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Date: Mar. 31, 2021 - 05:11:15 PM Project: Freese and Nichols, Inc.

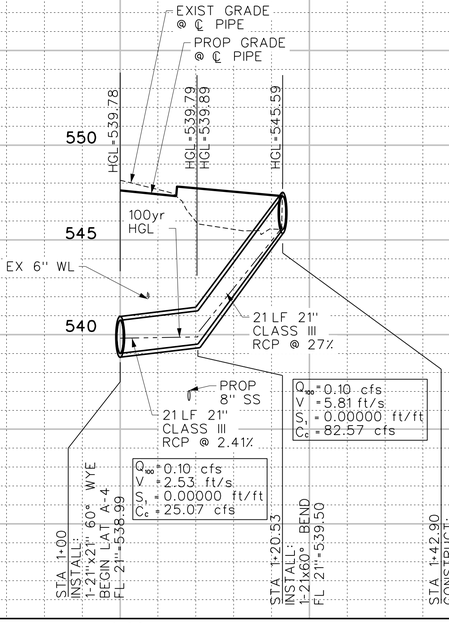
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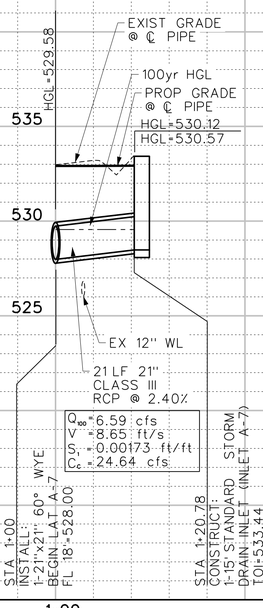
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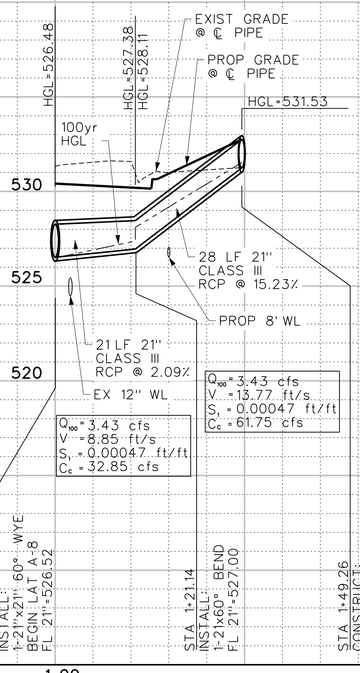
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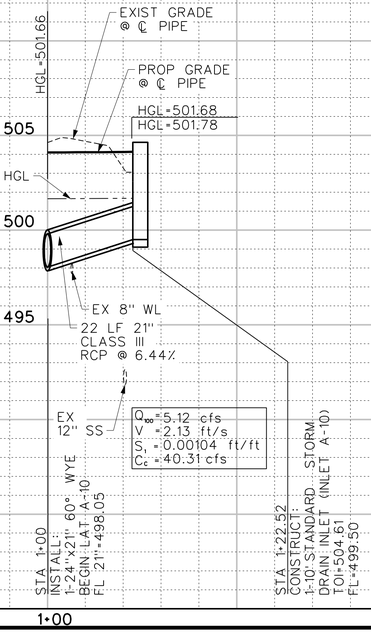
LAT A7



LAT A8



LAT A10



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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

STORM DRAIN LATERALS LATERAL LINES A1-A10

NO.	ISSUES	BY	DATE

FAN JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED
FILE NAME cv-trt-pr-LAT01.sht

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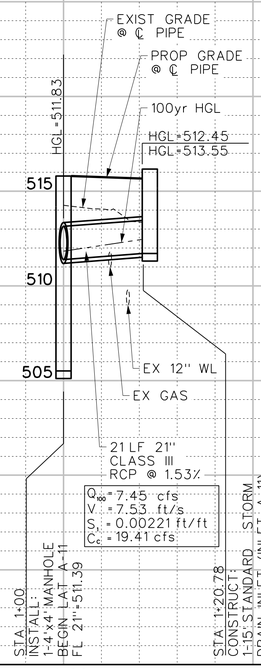
City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

SHEET
LAT-01
SEQ.
77

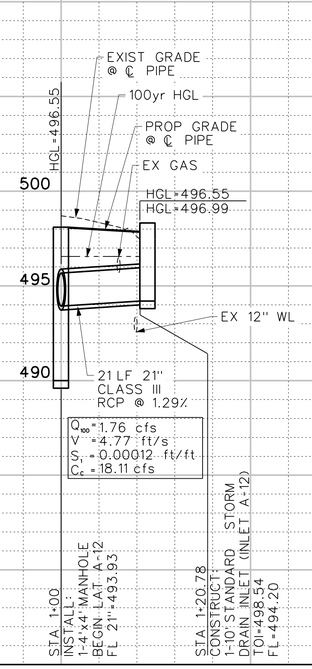
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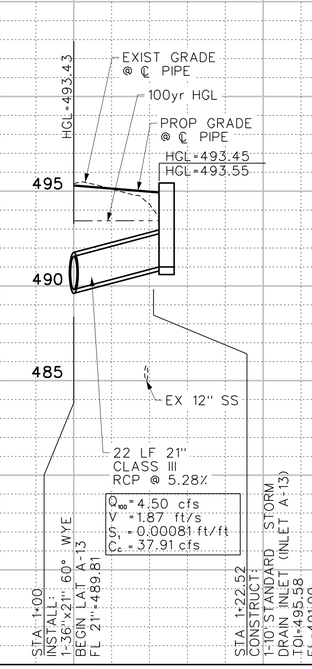
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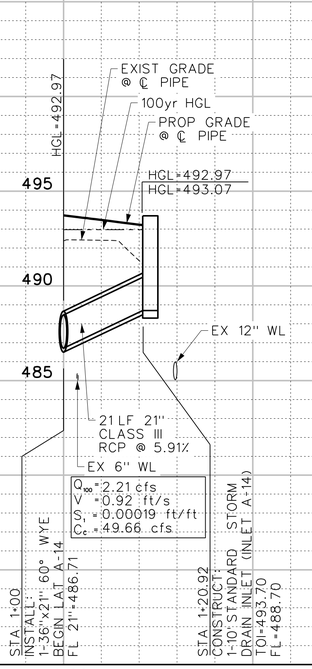
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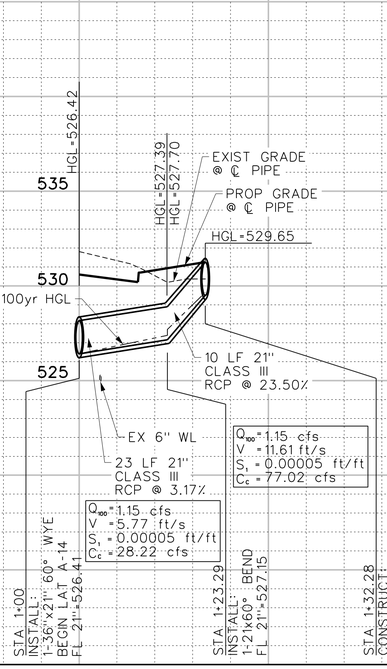
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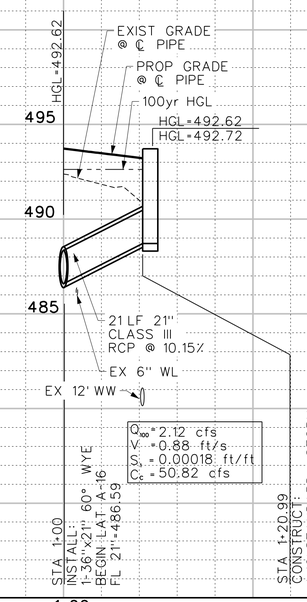
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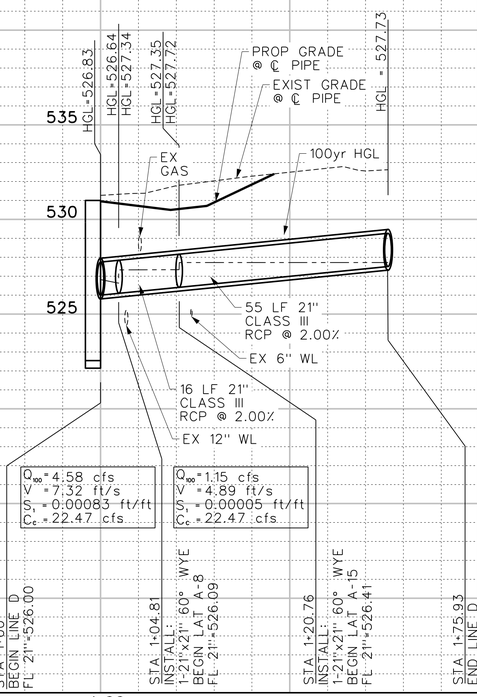
LAT A15



LAT A16



LINE D



City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____, P.E., CFM
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
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Fax: (214) 217-2299
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

STORM DRAIN LATERALS
LATERAL LINES A11-A15

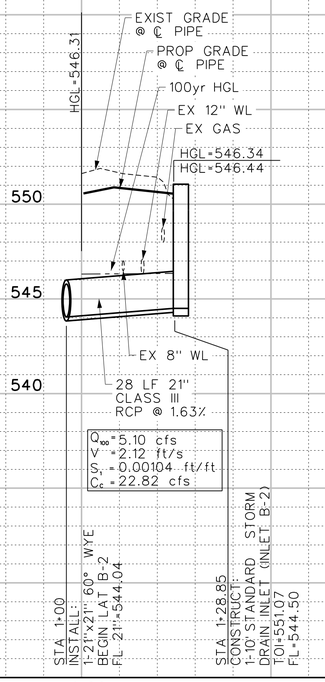
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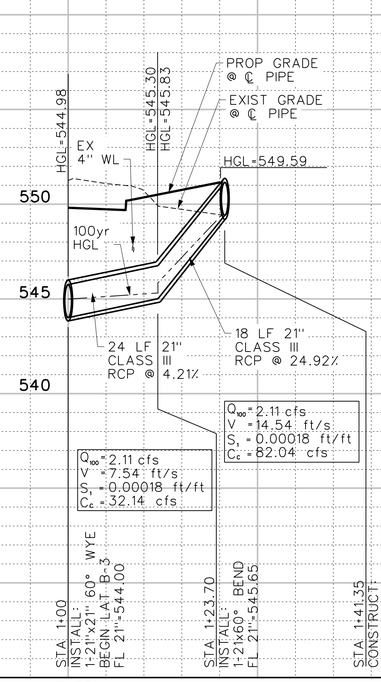
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DESIGNED AU
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REVISED
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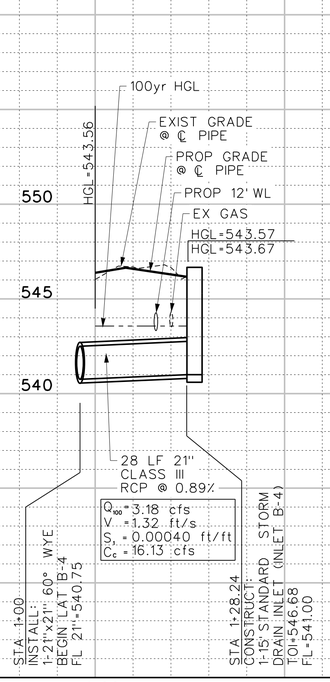
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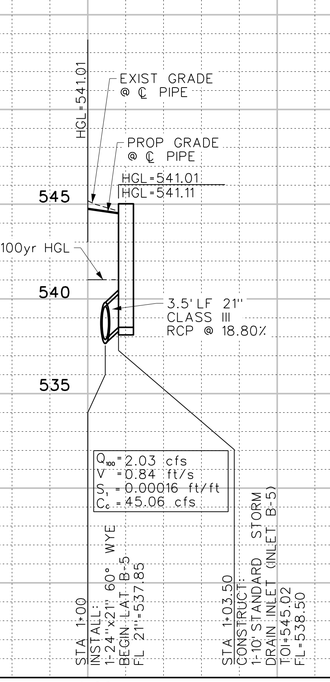
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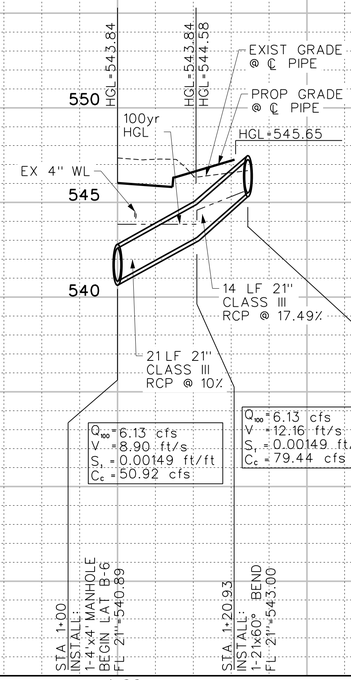
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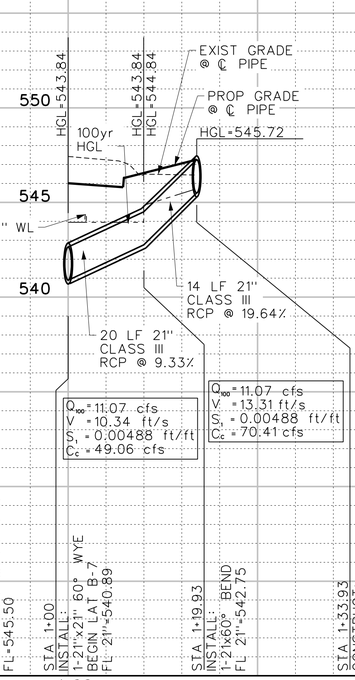


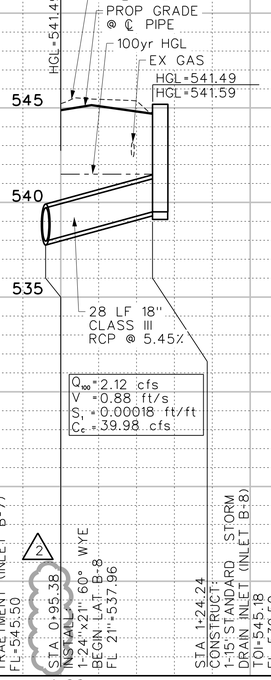


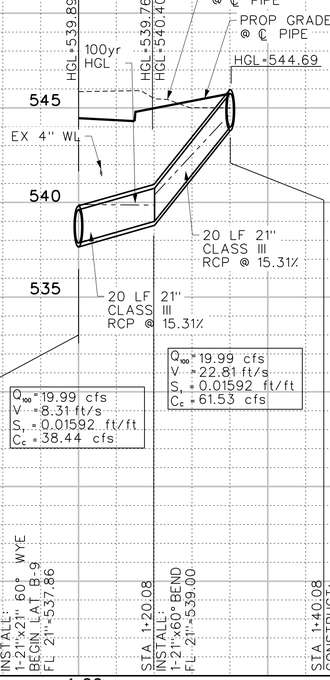


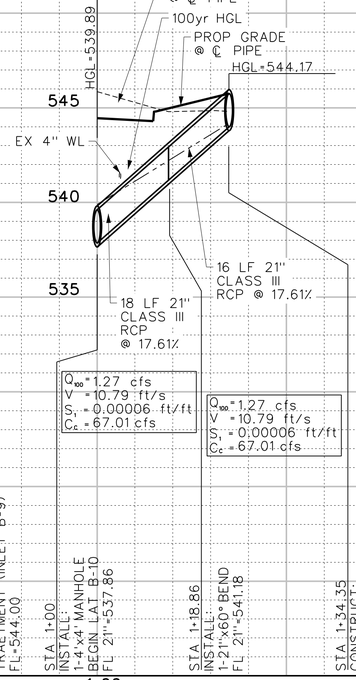


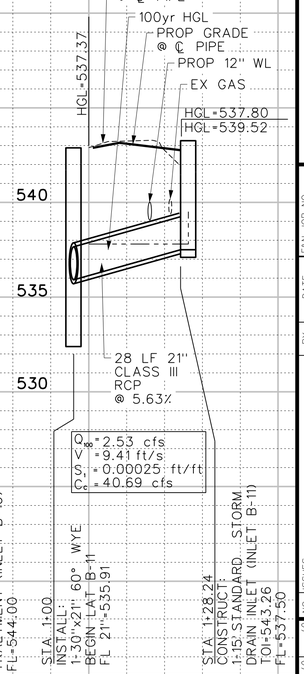












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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

RELEASED FOR THE PURPOSES OF REVIEW UNDER THE AUTHORITY OF BRENT DOPE, P.E. 110050 TEXAS NO. 117072 ON 8/27/18
ALTERATION ON A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION OF THE RESPONSIBLE ENGINEER IS A VIOLATION OF THE TEXAS ENGINEERING PRACTICE ACT.

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

STORM DRAIN LATERALS LATERAL LINES B2-B10

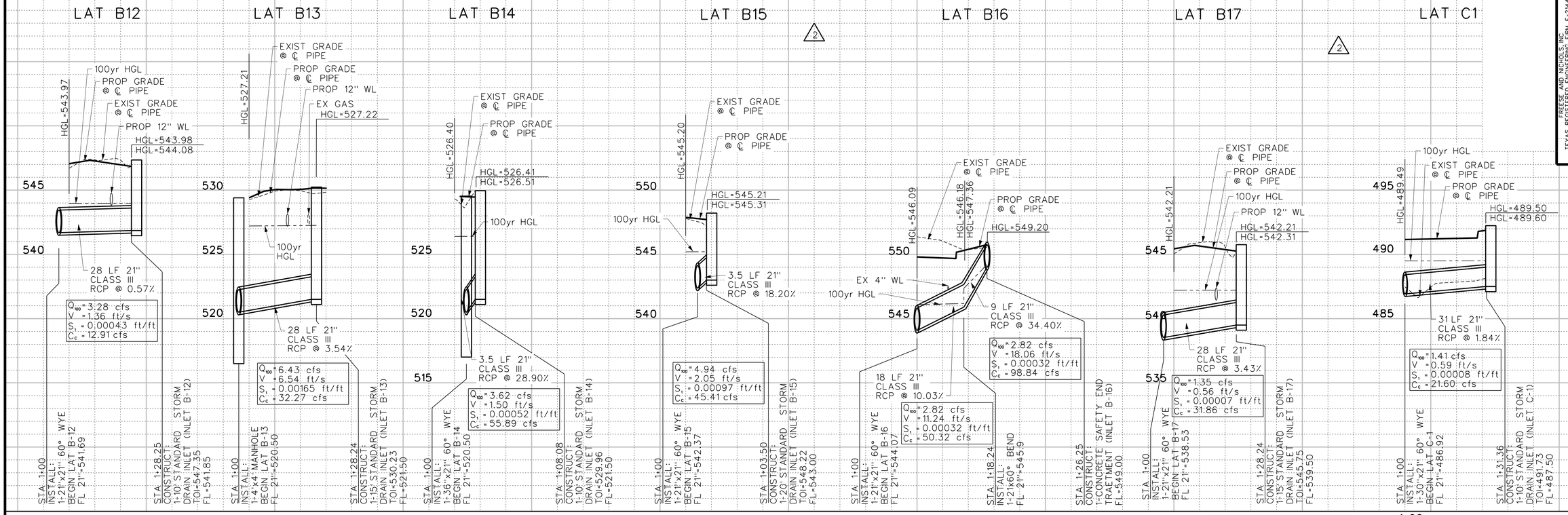
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FNI JOB NO.	ROK15508
DATE	08/2018
DESIGNED	AU
DRAWN	SI
REVISED	
CHECKED	
FILE NAME	cv-trt-pr-LAT03.sht

SHEET
LAT-03
SEQ.
79

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THE SEAL THAT ORIGINALLY APPEARED ON THIS DOCUMENT WAS AUTHORIZED BY: BRANDON J. HUXFORD
TEXAS LICENSE NO. 128158
ALTERATION ON A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION OF THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2299
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

STORM DRAIN LATERALS
LATERAL LINES B11-B16 & C1-C2

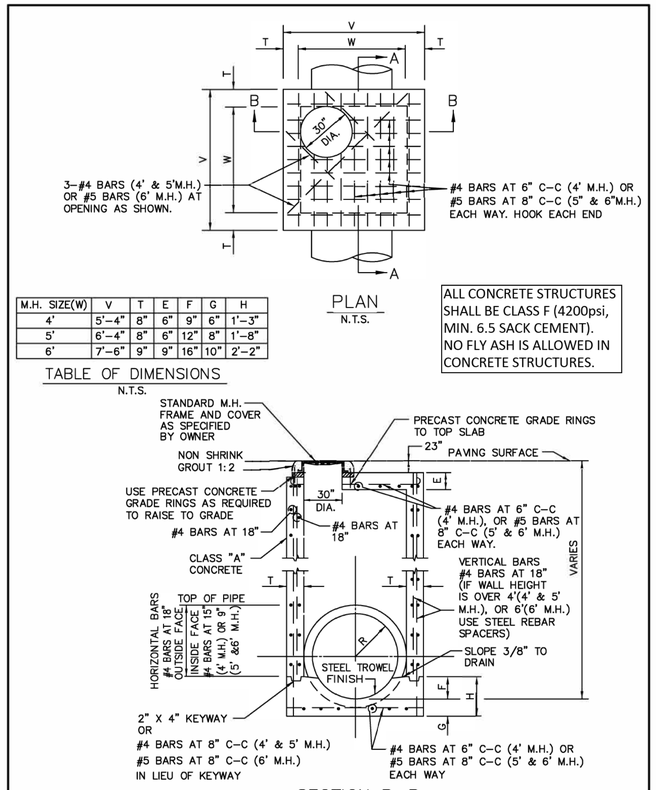
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3	CO #4	ADH	5/15/19

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
CHECKED
FILE NAME cv-trt-pr-LAT04.sht

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SEQ. 80

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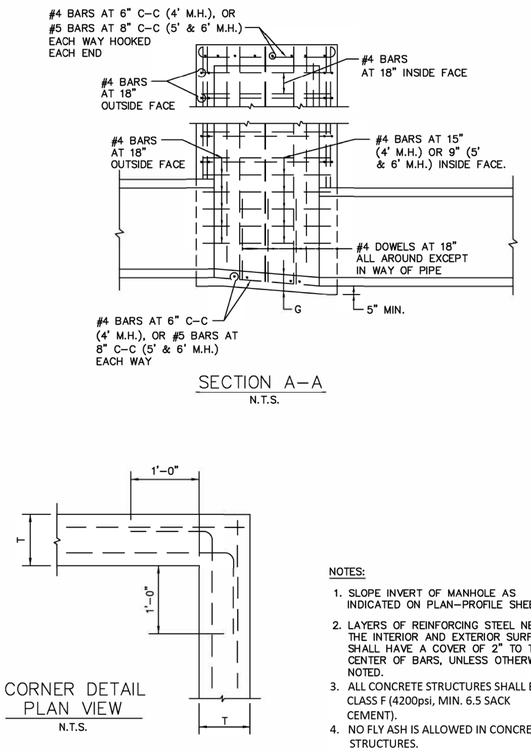
M.H. SIZE(W)	V	T	E	F	G	H
4'	5'-4"	8"	6"	9"	6"	1'-3"
5'	6'-4"	8"	6"	12"	8"	1'-8"
6'	7'-6"	9"	9"	16"	10"	2'-2"

TABLE OF DIMENSIONS
N.T.S.

ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 6.5 SACK CEMENT). NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES.

STORM WATER MANHOLE	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 502.1.4.1*	
4', 5', OR 6' SQUARE		DATE Mar. 2018	STANDARD DRAWING NO. R-6010A

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*

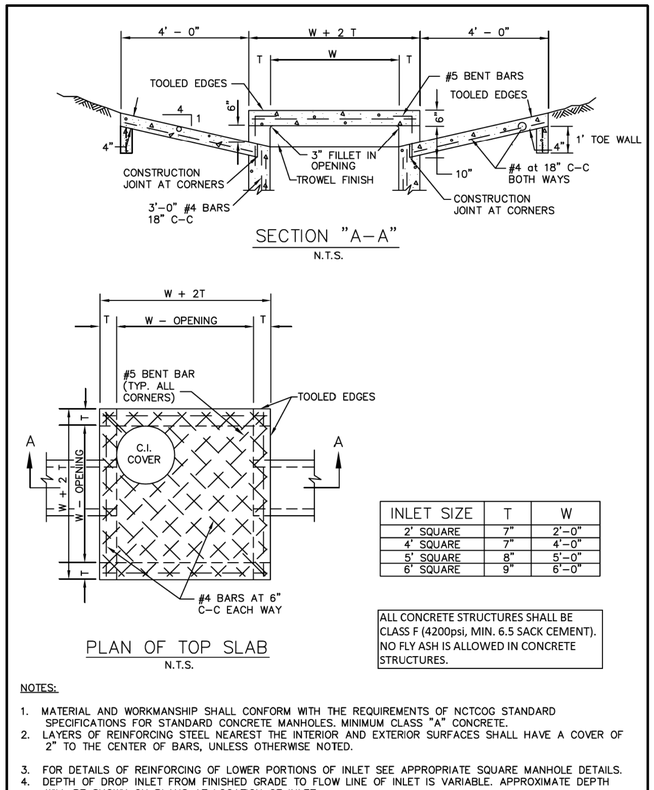


NOTES:

1. SLOPE INVERT OF MANHOLE AS INDICATED ON PLAN-PROFILE SHEET.
2. LAYERS OF REINFORCING STEEL NEAREST THE INTERIOR AND EXTERIOR SURFACE SHALL HAVE A COVER OF 2" TO THE CENTER OF BARS, UNLESS OTHERWISE NOTED.
3. ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 6.5 SACK CEMENT).
4. NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES.

STORM WATER MANHOLE	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 502.1.4.1*	
4', 5', OR 6' SQUARE		DATE Mar. 2018	STANDARD DRAWING NO. R-6010B

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*



INLET SIZE	T	W
2' SQUARE	7"	2'-0"
4' SQUARE	7"	4'-0"
5' SQUARE	8"	5'-0"
6' SQUARE	9"	6'-0"

ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 6.5 SACK CEMENT). NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES.

NOTES:

1. MATERIAL AND WORKMANSHIP SHALL CONFORM WITH THE REQUIREMENTS OF NCTCOG STANDARD SPECIFICATIONS FOR STANDARD CONCRETE MANHOLES. MINIMUM CLASS "A" CONCRETE.
2. LAYERS OF REINFORCING STEEL NEAREST THE INTERIOR AND EXTERIOR SURFACES SHALL HAVE A COVER OF 2" TO THE CENTER OF BARS, UNLESS OTHERWISE NOTED.
3. FOR DETAILS OF REINFORCING OF LOWER PORTIONS OF INLET SEE APPROPRIATE SQUARE MANHOLE DETAILS.
4. DEPTH OF DROP INLET FROM FINISHED GRADE TO FLOW LINE OF INLET IS VARIABLE. APPROXIMATE DEPTH WILL BE SHOWN ON PLANS AT LOCATION OF INLET.
5. ALL STANDARD DROP INLETS SHALL HAVE ONE OPENING ON EACH SIDE UNLESS OTHERWISE SHOWN ON PLANS.
6. DECK MAY BE REINFORCED SAME AS 4' SQUARE MANHOLE.

DROP INLET	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 702	
2', 4', 5' OR 6' SQUARE		DATE Mar. 2018	STANDARD DRAWING NO. R-6040

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: Amy M. Noble, PE, CFM
Date: 11/26/2018

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FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS BRANDON J. HUXFORD 117072 LICENSED PROFESSIONAL ENGINEER 8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
DRAINAGE DETAILS

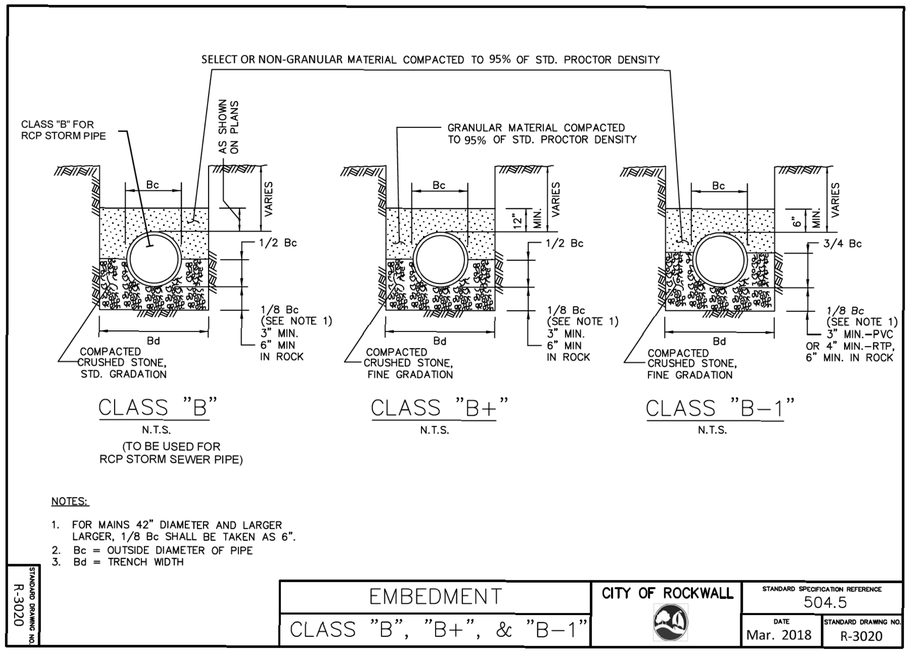
NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
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0 1"

SHEET STDN-01
SEQ. 81

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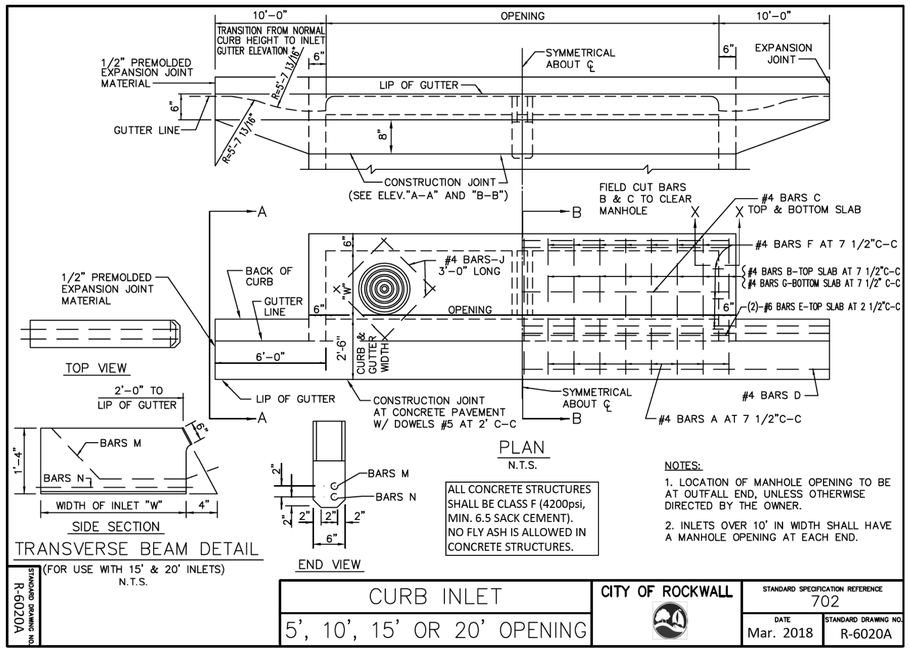


NOTES:

1. FOR MAINS 42" DIAMETER AND LARGER LARGER, 1/8 Bc SHALL BE TAKEN AS 6".
2. Bc = OUTSIDE DIAMETER OF PIPE
3. Bd = TRENCH WIDTH

STANDARD DRAWING NO. R-3020

EMBEDMENT	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 504.5
CLASS "B", "B+", & "B–1"		DATE Mar. 2018 / STANDARD DRAWING NO. R-3020



NOTES:

1. LOCATION OF MANHOLE OPENING TO BE AT OUTFALL END, UNLESS OTHERWISE DIRECTED BY THE OWNER.
2. INLETS OVER 10' IN WIDTH SHALL HAVE A MANHOLE OPENING AT EACH END.

STANDARD DRAWING NO. R-6020A

CURB INLET	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 702
5', 10', 15' OR 20' OPENING		DATE Mar. 2018 / STANDARD DRAWING NO. R-6020A

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____ P.E., CFM
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS — BRANDON J. HUXFORD — 117072 — LICENSED PROFESSIONAL ENGINEER — 8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
DRAINAGE DETAILS

NO.	ISSUES	BY	DATE

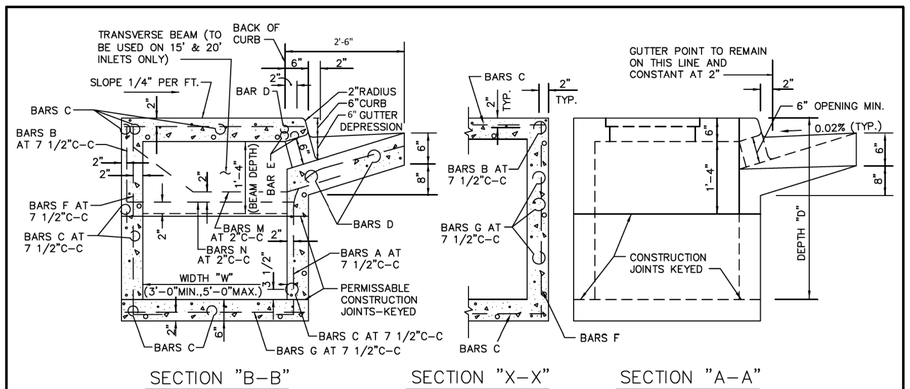
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DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-dt-stdn03.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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SHEET STDN-02
SEQ. 82

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Office: Fort Worth ROK15508 Date: Aug. 26, 2018 - 09:24:17 PM User: 02336File: N:\lf\Drawings\cv-trt-dt-stdn03.sht



SECTION "B-B" N.T.S. SECTION "X-X" N.T.S. SECTION "A-A" N.T.S.

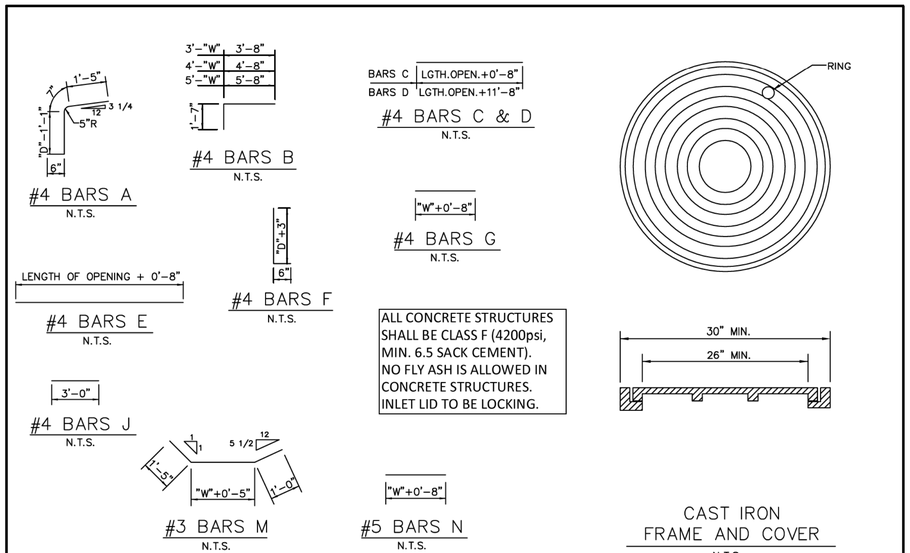
GENERAL NOTES:

1. ALL CONCRETE SHALL BE CLASS "A" CONCRETE.
2. REINFORCING BARS SHALL BE STANDARD GRADE STEEL, DEFORMED REINFORCING BARS OF A DIAMETER AND LENGTH AS SHOWN.
3. CHAMFER ALL EXPOSED CORNERS 3/4" EXCEPT WHERE OTHERWISE NOTED.
4. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTERS OF BARS.
5. FIELD CUT AND BEND BARS AS NECESSARY TO ACCOMODATE STORM SEWER PIPE.
6. RING AND COVER SHALL BE APPROVED BY THE OWNER AND INSTALLED BY THE CONTRACTOR.

ALL CONCRETE STRUCTURES SHALL BE CLASS F (4200psi, MIN. 6.5 SACK CEMENT). NO FLY ASH IS ALLOWED IN CONCRETE STRUCTURES.

STANDARD DRAWING NO. R-6020B

CURB INLET	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 702
CROSS SECTION & INLET THROAT		DATE Mar. 2018 / STANDARD DRAWING NO. R-6020B



STANDARD DRAWING NO. 6020C

CURB INLET	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 702
REBAR & M.H. FRAME & COVER		DATE Mar. 2018 / STANDARD DRAWING NO. R-6020C

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], PE, CFM
Date: 11/26/2018

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS BRANDON J. HUXFORD 117072 LICENSED PROFESSIONAL ENGINEER 8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
DRAINAGE DETAILS

NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED BH
FILE NAME cv-trt-dt-stdn04.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET STDN-03
SEQ. 83

MicroStation V8 User: 02336Office: Fort Worth
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Date: Aug. 26, 2018 - 09:27:28 PM

BILL OF REINFORCING STEEL

DEPTH "D"	ALL WIDTHS AND LENGTHS				OPENING LENGTH "L" = 5ft						OPENING LENGTH "L" = 10ft						OPENING LENGTH "L" = 15 ft								OPENING LENGTH "L" = 20 ft							
					Widths "W" 3ft	4ft	5ft				Widths "W" 3ft	4ft	5ft				Widths "W" 3ft	4ft	5ft						Widths "W" 3ft	4ft	5ft					
	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS	BARS
	C	D	E	J	F	F	F	A	B	G	F	F	F	A	B	G	F	F	F	A	B	G	M	N	F	F	F	A	B	G	M	N
3'–6"	17	3	2	4	20	24	28	10	10	20	28	32	36	18	18	28	36	40	44	26	26	36	2	2	44	48	52	34	34	44	2	2
3'–9"	18	"	"	"	"	"	"	"	"	20	"	"	"	"	"	28	"	"	"	"	"	36	"	"	"	"	"	"	"	"	"	44	"	"
4'–0"	19	"	"	"	"	"	"	"	"	24	"	"	"	"	"	32	"	"	"	"	"	40	"	"	"	"	"	"	"	"	"	48	"	"
4'–3"	19	"	"	"	"	"	"	"	"	24	"	"	"	"	"	32	"	"	"	"	"	40	"	"	"	"	"	"	"	"	"	48	"	"
4'–6"	21	"	"	"	"	"	"	"	"	26	"	"	"	"	"	34	"	"	"	"	"	42	"	"	"	"	"	"	"	"	"	50	"	"
4'–9"	21	"	"	"	"	"	"	"	"	26	"	"	"	"	"	34	"	"	"	"	"	42	"	"	"	"	"	"	"	"	"	50	"	"
5'–0"	21	"	"	"	"	"	"	"	"	26	"	"	"	"	"	34	"	"	"	"	"	42	"	"	"	"	"	"	"	"	"	50	"	"
5'–3"	23	"	"	"	"	"	"	"	"	28	"	"	"	"	"	36	"	"	"	"	"	44	"	"	"	"	"	"	"	"	"	52	"	"
5'–6"	23	"	"	"	"	"	"	"	"	28	"	"	"	"	"	36	"	"	"	"	"	44	"	"	"	"	"	"	"	"	"	52	"	"
5'–9"	25	"	"	"	"	"	"	"	"	30	"	"	"	"	"	38	"	"	"	"	"	46	"	"	"	"	"	"	"	"	"	54	"	"
6'–0"	25	"	"	"	"	"	"	"	"	30	"	"	"	"	"	38	"	"	"	"	"	46	"	"	"	"	"	"	"	"	"	54	"	"
6'–3"	26	"	"	"	"	"	"	"	"	30	"	"	"	"	"	38	"	"	"	"	"	46	"	"	"	"	"	"	"	"	"	54	"	"
6'–6"	27	"	"	"	"	"	"	"	"	32	"	"	"	"	"	40	"	"	"	"	"	48	"	"	"	"	"	"	"	"	"	56	"	"
6'–9"	27	"	"	"	"	"	"	"	"	32	"	"	"	"	"	40	"	"	"	"	"	48	"	"	"	"	"	"	"	"	"	56	"	"
7'–0"	29	"	"	"	"	"	"	"	"	34	"	"	"	"	"	42	"	"	"	"	"	50	"	"	"	"	"	"	"	"	"	58	"	"
7'–3"	29	"	"	"	"	"	"	"	"	34	"	"	"	"	"	42	"	"	"	"	"	50	"	"	"	"	"	"	"	"	"	58	"	"
7'–6"	30	"	"	"	"	"	"	"	"	34	"	"	"	"	"	42	"	"	"	"	"	50	"	"	"	"	"	"	"	"	"	58	"	"
7'–9"	31	"	"	"	"	"	"	"	"	36	"	"	"	"	"	44	"	"	"	"	"	52	"	"	"	"	"	"	"	"	"	60	"	"
8'–0"	31	"	"	"	"	"	"	"	"	36	"	"	"	"	"	44	"	"	"	"	"	52	"	"	"	"	"	"	"	"	"	60	"	"
8'–3"	32	"	"	"	"	"	"	"	"	36	"	"	"	"	"	44	"	"	"	"	"	52	"	"	"	"	"	"	"	"	"	60	"	"
8'–6"	33	"	"	"	"	"	"	"	"	38	"	"	"	"	"	46	"	"	"	"	"	54	"	"	"	"	"	"	"	"	"	62	"	"
8'–9"	34	"	"	"	"	"	"	"	"	38	"	"	"	"	"	46	"	"	"	"	"	54	"	"	"	"	"	"	"	"	"	62	"	"
9'–0"	35	"	"	"	"	"	"	"	"	40	"	"	"	"	"	48	"	"	"	"	"	56	"	"	"	"	"	"	"	"	"	64	"	"
9'–3"	36	"	"	"	"	"	"	"	"	40	"	"	"	"	"	48	"	"	"	"	"	56	"	"	"	"	"	"	"	"	"	64	"	"
9'–6"	37	"	"	"	"	"	"	"	"	42	"	"	"	"	"	50	"	"	"	"	"	58	"	"	"	"	"	"	"	"	"	66	"	"
10'–0"	38	"	"	"	"	"	"	"	"	42	"	"	"	"	"	50	"	"	"	"	"	58	"	"	"	"	"	"	"	"	"	66	"	"

NOTE:
FOR CONVENIENCE, DEPTHS OF INLETS SHOWN IN ABOVE TABLES ARE IN INCREMENTS OF 3 INCHES BUT ANY DEPTHS OTHER THAN THOSE SHOWN ABOVE MAY BE USED WHEREVER DEEMED NECESSARY. QUANTITIES FOR OTHER DEPTHS FALLING WITHIN THE LIMITS OF THE TABLE MAY BE FOUND BY INTERPOLATION.

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STANDARD DRAWING NO. R-6020D

CURB INLET
BILL OF REINFORCING STEEL

CITY OF ROCKWALL

STANDARD SPECIFICATION REFERENCE 702
DATE Mar. 2018
STANDARD DRAWING NO. R-6020D

SUMMARY OF QUANTITIES FOR CURB INLETS

DEPTH "D"	5'–0" OPENING						10'–0" OPENING						15'–0" OPENING						20'–0" OPENING					
	WIDTH 3'–0"		WIDTH 4'–0"		WIDTH 5'–0"		WIDTH 3'–0"		WIDTH 4'–0"		WIDTH 5'–0"		WIDTH 3'–0"		WIDTH 4'–0"		WIDTH 5'–0"		WIDTH 3'–0"		WIDTH 4'–0"		WIDTH 5'–0"	
	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.	CONC C.Y.	STEEL LBS.
3'–6"	2.62	306	2.95	332	3.28	373	4.12	479	4.64	521	5.20	564	5.69	667	6.40	721	7.10	775	7.20	846	8.11	909	9.03	976
3'–9"	2.70	309	3.04	341	3.39	373	4.25	494	4.78	536	5.34	579	5.87	687	6.58	741	7.30	796	7.42	874	8.34	937	9.27	1010
4'–0"	2.78	328	3.14	364	3.49	399	4.38	518	4.92	565	5.49	610	6.05	718	6.77	776	7.49	835	7.64	909	8.58	976	9.51	1046
4'–3"	2.87	334	3.23	370	3.59	406	4.51	526	5.06	573	5.64	619	6.22	729	6.95	787	7.69	847	7.87	922	8.81	990	9.75	1061
4'–6"	2.95	356	3.32	394	3.69	431	4.64	558	5.20	607	5.79	656	6.40	770	7.14	830	7.88	891	8.09	973	9.04	1043	9.99	1115
4'–9"	3.03	361	3.41	410	3.79	438	4.77	566	5.34	616	5.94	665	6.57	780	7.32	841	8.07	903	8.31	986	9.27	1056	10.23	1129
5'–0"	3.12	367	3.51	416	3.90	445	4.90	574	5.47	624	6.09	674	6.75	791	7.51	853	8.27	915	8.53	999	9.50	1070	10.47	1144
5'–3"	3.20	383	3.60	424	4.00	465	5.03	600	5.61	652	6.23	704	6.93	827	7.69	890	8.46	955	8.76	1044	9.73	1118	10.71	1194
5'–6"	3.28	389	3.69	430	4.10	472	5.16	608	5.75	661	6.38	713	7.11	837	7.88	901	8.66	967	8.98	1057	9.97	1131	10.95	1208
5'–9"	3.37	405	3.78	451	4.20	495	5.29	635	5.89	690	6.53	744	7.28	874	8.07	940	8.85	1007	9.20	1102	10.20	1178	11.19	1258
6'–0"	3.45	415	3.88	460	4.30	504	5.42	646	6.03	702	6.68	757	7.45	888	8.25	954	9.05	1022	9.42	1119	10.43	1196	11.43	1276
6'–3"	3.53	425	3.97	470	4.41	515	5.55	661	6.17	718	6.83	773	7.63	908	8.44	975	9.24	1044	9.64	1147	10.66	1223	11.67	1305
6'–6"	3.62	437	4.06	486	4.51	532	5.68	681	6.31	739	6.97	797	7.81	935	8.62	1005	9.43	1057	9.87	1178	10.89	1258	11.92	1340
6'–9"	3.70	441	4.15	490	4.61	537	5.81	688	6.45	747	7.12	806	7.98	945	8.81	1015	9.63	1066	10.09	1191	11.12	1272	12.15	1355
7'–0"	3.78	460	4.25	510	4.71	560	5.94	716	6.59	777	7.27	837	8.16	981	8.99	1053	9.82	1126	10.31	1237	11.35	1319	12.40	1404
7'–3"	3.86	465	4.34	516	4.81	567	6.07	724	6.72	785	7.42	846	8.33	992	9.18	1065	10.02	1138	10.53	1249	11.59	1333	12.64	1418
7'–6"	3.95	477	4.43	529	4.91	570	6.20	742	6.86	804	7.57	866	8.51	1016	9.36	1089	10.21	1163	10.75	1290	11.82	1365	12.88	1451
7'–9"	4.03	491	4.53	544	5.02	597	6.33	762	7.00	826	7.71	890	8.67	1040	9.55	1116	10.41	1193	10.98	1313	12.05	1399	13.12	1498
8'–0"	4.12	496	4.62	550	5.12	604	6.46	770	7.14	834	7.86	899	8.86	1051	9.73	1129	10.60	1205	11.20	1325	12.28	1412	13.36	1510
8'–3"	4.20	504	4.71	559	5.22	613	6.59	784	7.28	849	8.01	915	9.04	1069	9.92	1149	10.80	1228	11.42	1353	12.51	1440	13.60	1529
8'–6"	4.28	519	4.80	576	5.32	632	6.71	804	7.42	871	8.16	938	9.21	1107	10.10	1176	10.99	1257	11.64	1385	12.74	1474	13.84	1565
8'–9"	4.37	528	4.90	586	5.42	643	6.84	819	7.56	886	8.31	954	9.39	1119	10.29	1199	11.18	1280	11.87	1410	12.97	1500	14.08	1592
9'–0"	4.45	545	4.99	605	5.53	664	6.97	842	7.70	912	8.46	982	9.56	1148	10.47	1231	11.38	1313	12.09	1447	13.21	1539	14.32	1631
9'–3"	4.53	554	5.08	614	5.63	674	7.10	858	7.84	929	8.60	999	9.74	1169	10.66	1252	11.57	1335	12.31	1474	13.44	1563	14.56	1660
9'–6"	4.62	568	5.17	630	5.73	692	7.23	878	7.97	950	8.75	1022	9.92	1195	10.84	1280	11.77	1365	12.53	1505	13.67	1600	14.80	1696
10'–0"	4.78	582	5.36	645	5.93	708	7.49	900	8.11	974	9.05	1048	10.27	1227	11.21	1312	12.16	1399	12.98	1546	14.13	1642	15.29	1739

NOTE:
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STANDARD DRAWING NO. R-6020E

CURB INLET
SUMMARY OF QUANTITIES

CITY OF ROCKWALL

STANDARD SPECIFICATION REFERENCE 702
DATE Mar. 2018
STANDARD DRAWING NO. R-6020E

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

DRAINAGE DETAILS

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], PE, CFM
Date: 11/26/2018

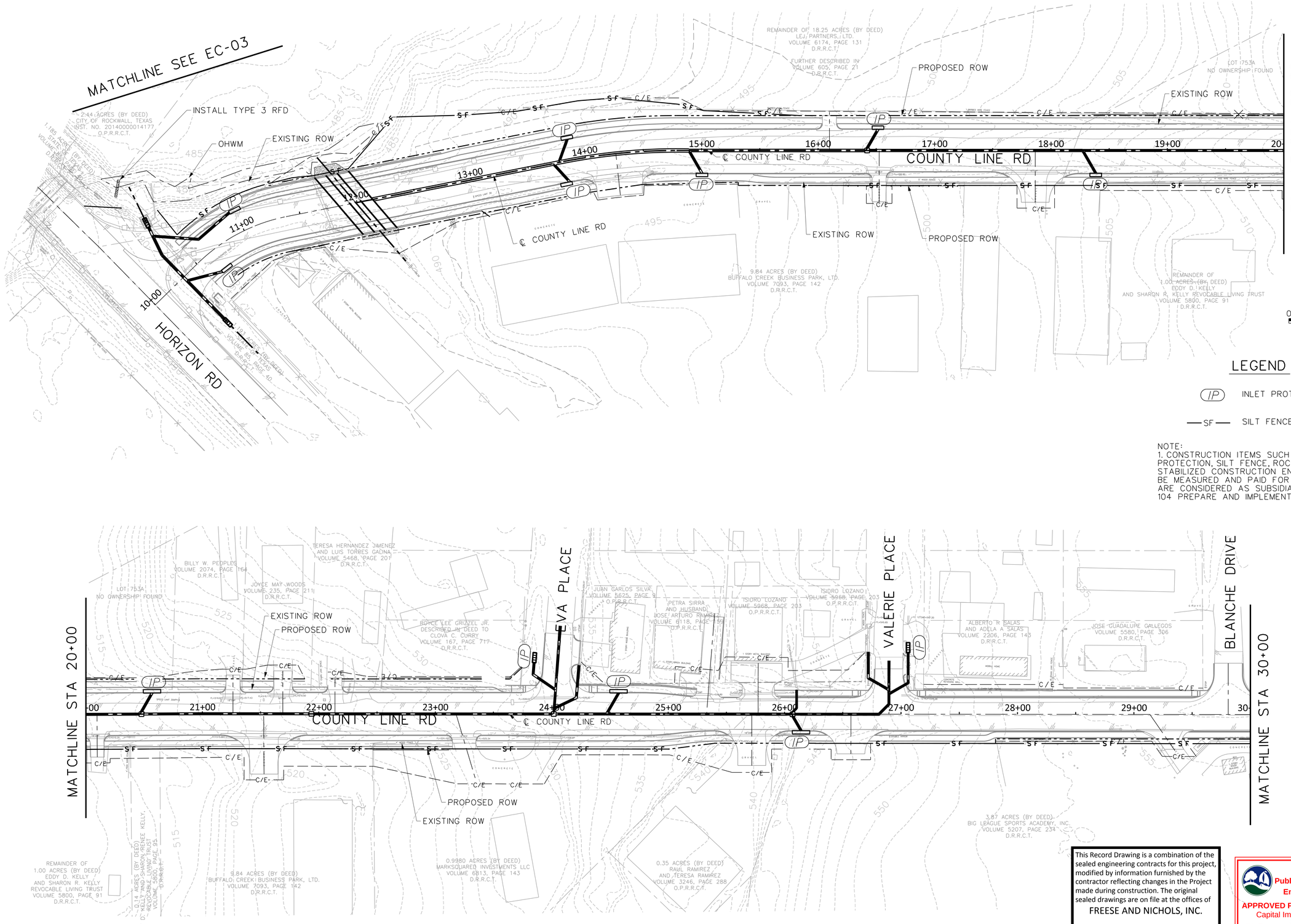
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DATE 08/2018
DESIGNED AU
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REVISED
CHECKED BH
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NO. | BY | DATE | ISSUES

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Date: Aug. 26, 2018 - 09:28:46 PM



LEGEND

IP INLET PROTECTION

—SF— SILT FENCE

NOTE:
1. CONSTRUCTION ITEMS SUCH AS INLET PROTECTION, SILT FENCE, ROCK FILTER DAMS, STABILIZED CONSTRUCTION ENTRACE, ETC. WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT ARE CONSIDERED AS SUBSIDIARY TO GENERAL ITEM 104 PREPARE AND IMPLEMENT SWPPP.

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RECORD DRAWINGS PREPARED ON:
3/17/2021

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____ P.E., CFM
Date: 11/26/2018

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
STATE OF TEXAS
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2299
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
EROSION CONTROL
BEGIN TO STA 30+00

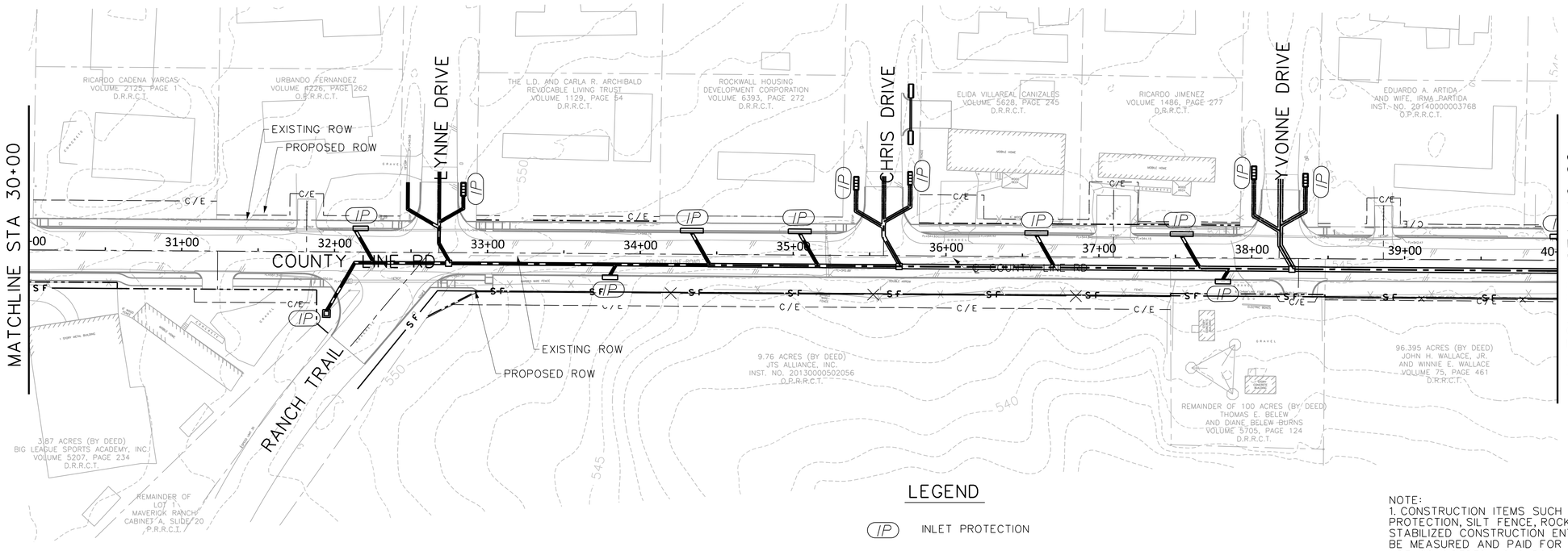
NO.	ISSUES	BY	DATE

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DRAWN	XXX
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CHECKED	XXX
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85

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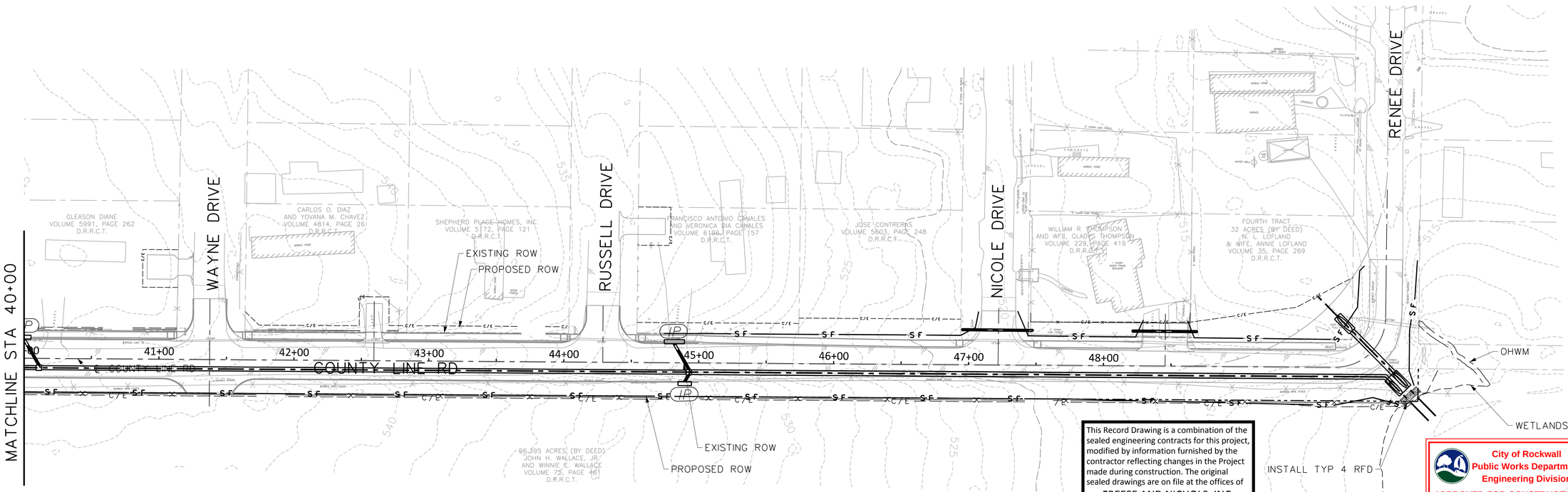


LEGEND

IP — INLET PROTECTION

—SF— SILT FENCE

NOTE:
1. CONSTRUCTION ITEMS SUCH AS INLET PROTECTION, SILT FENCE, ROCK FILTER DAMS, STABILIZED CONSTRUCTION ENTRACE, ETC. WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT ARE CONSIDERED AS SUBSIDIARY TO GENERAL ITEM 104 PREPARE AND IMPLEMENT SWPPP.



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FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON:
3/17/2021

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____, P.E., CFM
Date: 11/26/2018

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
ALAN D. HENDRIX
68798
REGISTERED
PROFESSIONAL
ENGINEER
STATE OF TEXAS
8/27/18

FREESE NICHOLS
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CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
EROSION CONTROL
STA 30+00 TO END

NO.	ISSUES	BY	DATE

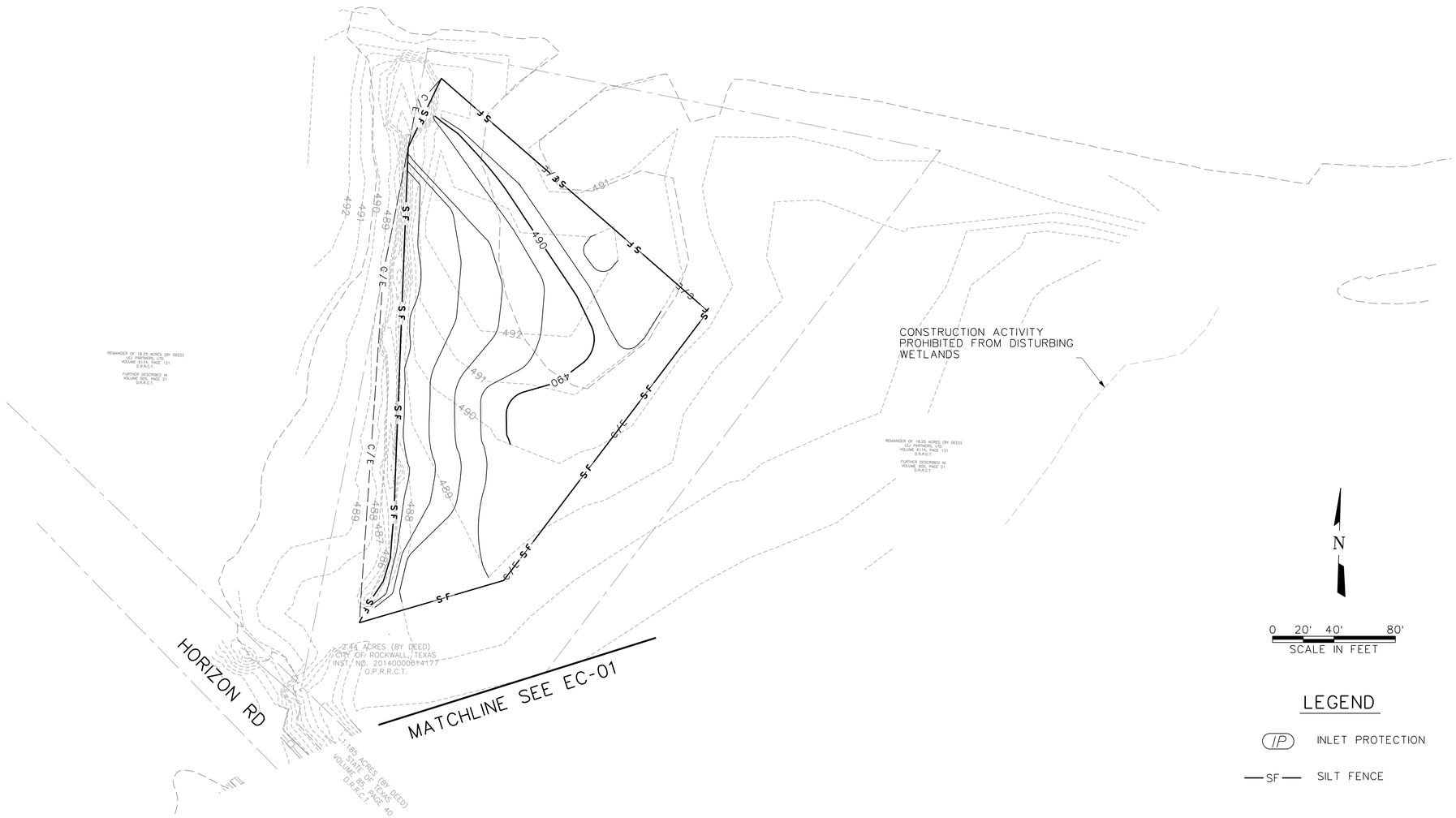
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DATE 08/2018
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REVISED
CHECKED ADH
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VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET
EC-02
SEQ.
86

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ROK15508 - N:\F\Drawings\cv-trt-pl-eros02.sht
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Date: Aug. 26, 2018 - 01:49:01 AM Project: Freese and Nichols, Inc.

Office: Dallas ROK15508 Date: Aug. 26, 2018 - 01:49:01 AM User: chm File: N:\F\Drawings\cv-trt-pl-eros02.sht



LEGEND

IP — INLET PROTECTION

SF — SILT FENCE

NOTE:
1. CONSTRUCTION ITEMS SUCH AS INLET PROTECTION, SILT FENCE, ROCK FILTER DAMS, STABILIZED CONSTRUCTION ENTRACE, ETC. WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT ARE CONSIDERED AS SUBSIDIARY TO GENERAL ITEM 104 PREPARE AND IMPLEMENT SWPPP.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____ P.E.,CFM
Date: 11/26/2018

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON:
3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED
PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
EROSION CONTROL OFFSITE AREA

NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED XXX
DRAWN XXX
REVISED XXX
CHECKED XXX
FILE NAME cv-trt-pl-eros03.sht

SHEET EC-03
SEQ. 87

MicroStation V8 User: chm Office: Dallas
ROK15508 N:\F\Drawings\cv-trt-pl-eros03.sht
Project Sheets: ROK15508 Engineer: chm
Plot Scale: 80.0000 '/ in. Model: Default
Date: Aug. 26, 2018 - 01:49:06 AM Project Files: Freese and Nichols, Inc.

GENERAL NOTES

1. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE 2012 INTERNATIONAL BUILDING CODE, INCLUDING LOCAL SUPPLEMENTS, EXCEPT WHERE APPLICABLE CODES OR THE CONTRACT DOCUMENTS ARE MORE RESTRICTIVE.

2. REMOVE ALL ABANDONED FOUNDATIONS, UTILITIES, PIPELINES, ETC. THAT INTERFERE WITH NEW CONSTRUCTION.

3. FIELD VERIFY ALL EXISTING CONDITIONS, INCLUDING LOCATION AND DIMENSIONS OF ALL EXISTING CONSTRUCTION AND UTILITIES. NOTIFY ENGINEER IF THERE IS A CONFLICT BETWEEN THE CONTRACT DOCUMENTS AND EXISTING CONDITIONS BEFORE PROCEEDING WITH WORK. PROVIDE EXCAVATION SHORING TO PROTECT AND SUPPORT FOUNDATION SOILS UNDER EXISTING STRUCTURES.

4. THE STRUCTURE IS DESIGNED FOR STABILITY IN THE FINAL CONDITION ONLY. PROVIDE TEMPORARY BRACING AND SHORING AS REQUIRED FOR STABILITY DURING CONSTRUCTION.

5. PLANS, SECTIONS, AND DETAILS ARE NOT TO BE SCALED FOR DETERMINATION OF QUANTITIES, LENGTHS, OR FIT OF MATERIALS.

6. SEE OTHER DISCIPLINE DRAWINGS FOR SIZE AND LOCATION OF ALL OPENINGS, DEPRESSIONS, OFFSETS, SLEEVES, CURBS, PADS, INSERTS, ETC. NOT SHOWN ON STRUCTURAL DRAWINGS.

CONCRETE

1. CONCRETE CONSTRUCTION SHALL CONFORM TO THE LATEST EDITIONS OF ACI 301 AND ACI 318.

2. ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS, UNLESS NOTED OTHERWISE, SHALL BE IN ACCORDANCE WITH THE MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES (ACI 315), LATEST EDITION.

3. CONCRETE SHALL BE TYPE S CONCRETE PER TXDOT ITEM 421 "HYDRAULIC CEMENT CONCRETE" AND HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,000 PSI. IF STANDARD SHEETS CALL OUT FOR CLASS C, SUBSTITUTE WITH CLASS S.

4. ALL REINFORCING SHALL BE IN ACCORDANCE WITH ASTM A615, GRADE 60, DEFORMED.

5. CONCRETE CLEAR COVER OVER REINFORCING SHALL BE AS LISTED BELOW, UNLESS OTHERWISE NOTED.
   A. CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3"
   B. ALL OTHER: 2"
   C. SEE DRAWINGS FOR EXCEPTIONS

6. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" INSIDE FORMS OR TOOLED TO 3/4" RADIUS ON SLABS UNLESS OTHERWISE NOTED.

7. IN CASES WHERE REINFORCING BARS CANNOT BE EXTENDED AS FAR AS REQUIRED DUE TO THE LIMITED EXTENT OF THE ADJACENT CONCRETE STRUCTURE, THE BARS SHALL EXTEND AS FAR AS POSSIBLE AND END IN STANDARD HOOKS.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF ALL FORMING, TEMPORARY BRACING AND SHORING.

9. UNLESS NOTED OTHERWISE, HOOKS SHOWN ON DRAWINGS SHALL BE ASSUMED TO BE STANDARD HOOKS PER ACI 318.

10. UNLESS INDICATED OTHERWISE, LAP SPLICES IN BEAMS AND WALLS SHALL BE STAGGERED.

11. ALL REINFORCING SHALL BE CONTINUOUS. CONTINUOUS BARS SHALL LAP 48 BAR DIAMETERS OF SMALLER BAR LAPPED, UNLESS NOTED OTHERWISE. ALL REBAR EMBEDMENT LENGTHS SHALL BE 36 BAR DIAMETERS, UNLESS NOTED OTHERWISE.

FOUNDATION

1. FOUNDATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT "GEOTECHNICAL INVESTIGATION REPORT: COUNTY LINE ROAD RECONSTUCTION, CITY OF ROCKWALL, ROCKWALL, TEXAS", DATED FEBRUARY 2016, PREPARED BY FREESE AND NICHOLS, INC. (REPORT NO. ROK15508). A COPY OF THIS REPORT IS AVAILABLE FOR INSPECTION AT THE ENGINEER'S OFFICE.

2. EXCAVATION AND SUBGRADE PREPARATION
   A. REMOVE THE SURFICIAL VEGETATION, WASTE AND LOOSE SOILS TO A MINIMUM DEPTH OF 12 INCHES.
   B. EXCAVATE THE SITE TO THE PROPOSED FINISHED SUBGRADE.
   C. PROOF ROLL THE EXPOSED SUBGRADE IN ACCORDANCE WITH TXDOT ITEM 216. SOFT OR PUMPING SUBGRADE AREAS SHALL BE EXCAVATED IN BOTH HORIZONTAL AND VERTICAL DIRECTIONS EXPOSING COMPETENT SUBGRADE. GRADE SHALL BE RESTORED WITH COMPACTED EXCAVATED ON SITE SOIL.
   D. SCARIFY THE EXPOSED SUBGRADE TO A DEPTH OF 6 INCHES, ADJUST THE MOISTURE CONTENT AS NECESSARY AND MAINTAIN IT TO WITHIN -1 TO +4 PERCENT OF OPTIMUM AND RECOMPACT THE SOIL TO A MINIMUM OF 98 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698 (STANDARD PROCTOR).
   E. ALL BACKFILL MATERIAL SHALL CONSIST OF MATERIALS WHICH HAVE A LIQUID LIMIT LESS THAN OR EQUAL TO 35, A PLASTICITY INDEX OF A MINIMUM OF 7 AND A MAXIMUM OF 15, AND A PERCENT PASSING THE NO. 200 SIEVE OF A MINIMUM OF 25% AND A MAXIMUM OF 70%, WHICH ARE FREE OF ORGANIC MATERIALS.
   F. BACKFILL SHALL BE PLACED IN MAXIMUM 8" LOOSE LIFTS FOR HEAVY EQUIPMENT AND 4" LOOSE LIFTS FOR HAND-DIRECTED EQUIPMENT. WITHIN 5 FEET OF THE WALLS, ONLY HAND OPERATED COMPACTION EQUIPMENT MAY BE USED. COMPACT TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698 (STANDARD PROCTOR), AND AT A MOISTURE CONTENT WITHIN -1 TO +3 PERCENT OF THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY ASTM D698. IN-PLACE FILED DENSITY TESTS SHALL BE CONDUCTED AT A RATE OF THREE TESTS FOR EVERY LIFT.
   G. THE SUBGRADE MOISTURE CONTENT AND DENSITY SHALL BE MAINTAINED DURING CONSTRUCTION.

3. ALL BELOW GRADE FOUNDATION ELEMENTS ARE DESIGNED WITH FORMED SIDES UNLESS NOTED OTHERWISE. IF THE CONTRACTOR ELECTS TO USE EARTH FORMED SIDES, THE EXPOSED SURFACE AND 6 INCHES BELOW GRADE SHALL BE FORMED TO THE DESIGN DIMENSION. ALL CONCRETE EXPOSED TO VIEW IN THE FINAL CONDITION SHALL BE FORMED.

4. DESIGN BEARING PRESSURE (NET) IS 2,000 PSF FOR FOUNDATIONS BEARING ON UNDISTURBED FIRM SOIL OR APPROVED ENGINEERED FILL MATERIAL. SUITABLE BEARING MATERIALS SHALL BE VERIFIED BY A LICENSED PROFESSIONAL GEOTECHNICAL ENGINEER.

5. MOISTURE CONTENT IN FOOTING EXCAVATIONS SHALL BE MAINTAINED UNTIL FOOTING IS PLACED. FOOTINGS SHALL BE PLACED AS SOON AS PRACTICAL AFTER EXCAVATIONS ARE COMPLETED.

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
MISTY THOMSON
110346
LICENSED
PROFESSIONAL ENGINEER
08/31/2018

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

STRUCTURAL

STRUCTURAL GENERAL NOTES

NO.	ISSUES	BY	DATE
1	ADDENDUM 1	MT	8/31/18

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

F&N JOB NO. ROK15508

	DATE	DESIGNED	DRAWN	CHECKED
	08/2018	MMT	JLM	PAB

REVISED

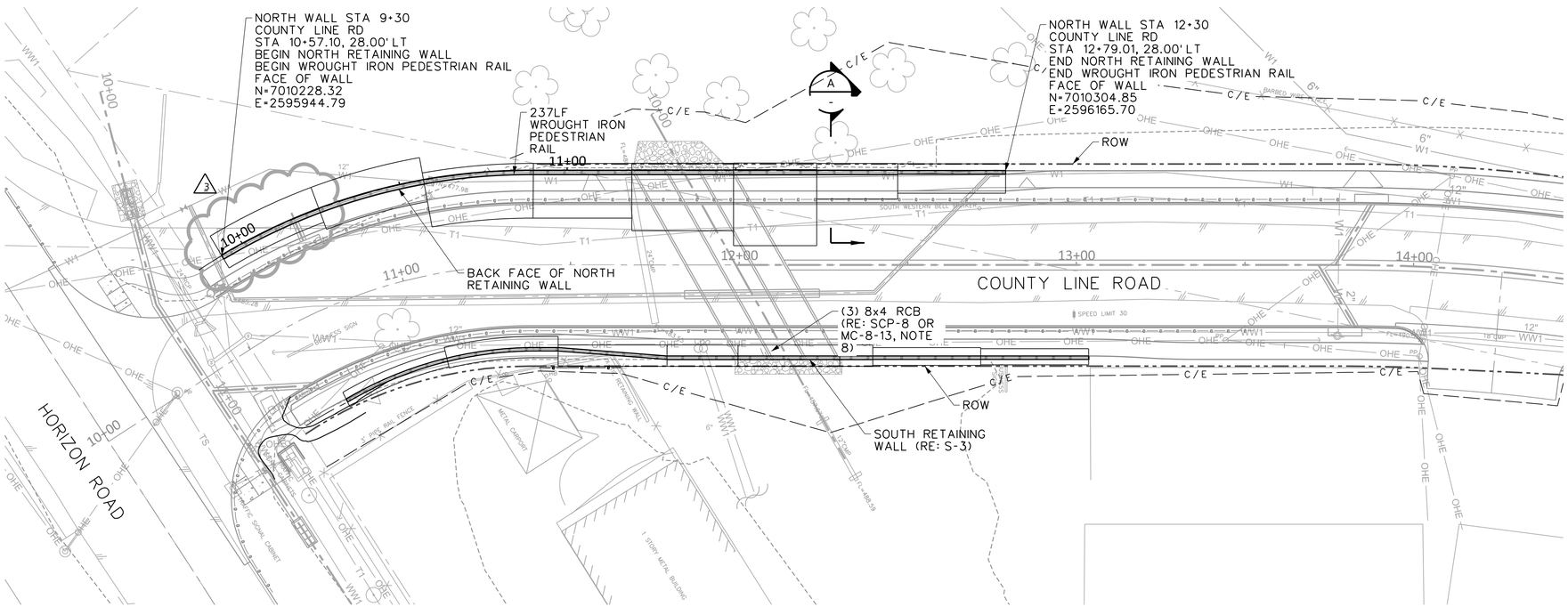
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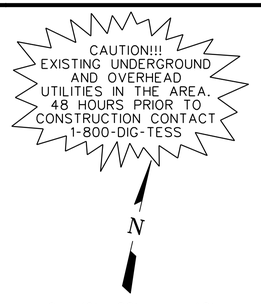
SHEET S-1

SEQ. 88

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E.
Date: 11/26/2018

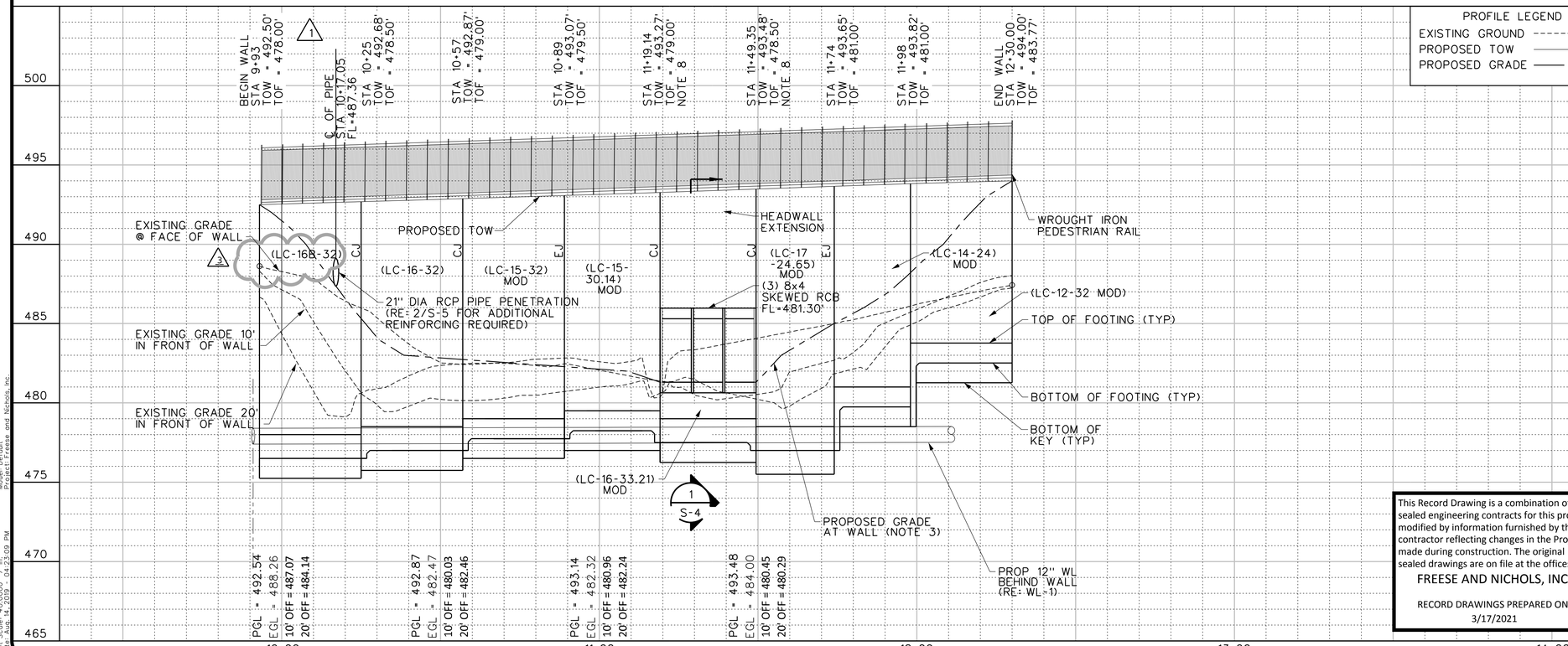
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Project: Freese and Nichols, Inc.

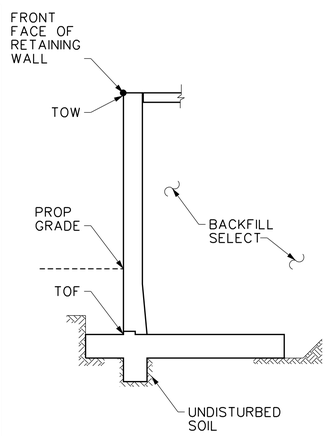




NOTES:

1. "EJ" INDICATES EXPANSION JOINT, "CJ" INDICATES CONSTRUCTION JOINT. REFER TO RW-2 "RETAINING WALL MISCELLANEOUS DETAILS" FOR WALL JOINT DETAILS.
2. UNLESS NOTED OTHERWISE, WALLS SHALL BE PER RW 1(L)C OR RW 1(L)C (MOD) AS INDICATED. "H" SHALL BE AS INDICATED.
3. REFER TO GR-02 FOR GRADING AROUND CULVERT.
4. PROVIDE FORMLINER ON FACE OF WALL, INCREASE THICKNESS OF WALL BY FORMLINER THICKNESS. FORM LINER SHALL BE ASHLAR STONE RANDOM PATTERN. CONTRACTOR SHALL SUBMIT FORM LINER SAMPLE TO CITY FOR APPROVAL.
5. BASELINE STATION FOR WALL IS OFF FACE OF WALL.
6. BACKFILL WITH FLOWABLE FILL TO TOP OF FOOTING ELEVATION (MINIMUM) AT EXCAVATION FOR PROPOSED 12" WL WHERE THE WL EXCAVATION IS IN FRONT OF OR BELOW RETAINING WALL FOOTING, WHERE EXISTING 12" WL TO BE ABANDONED INTERFERES WITH RETAINING WALL (REFER TO WL-1).
7. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO THE BEGINNING OF CONSTRUCTION.
8. AT CONTRACTORS OPTION, CAST-IN-PLACE RCB MAY BE USED. STATIONING AND ELEVATIONS SHOWN ARE FOR PRECAST OPTION. IF CAST-IN-PLACE OPTIONS IS CHOSEN, ADJUST AS NEEDED.





PAYMENT LIMITS FOR THE RETAINING WALL SHALL BE MEASURED FROM TOW TO TOF

TYPICAL SECTION
NOT TO SCALE

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RECORD DRAWINGS PREPARED ON: 3/17/2021

REVISION
DATE: 08/15/2019
City of Rockwall
Public Works Department
Engineering Division

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 08/15/2019

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
JOHN M. MAHLE
110346
LICENSED
PROFESSIONAL ENGINEER
08/14/2019

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web: www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
STRUCTURAL
NORTH RETAINING WALL
PLAN AND PROFILE

NO	ISSUES	BY	DATE
3	FIELD ORDER 3	MT	08/14/19
2	CO #4	MT	5/16/19
1	ADDENDUM 1	MT	8/31/18

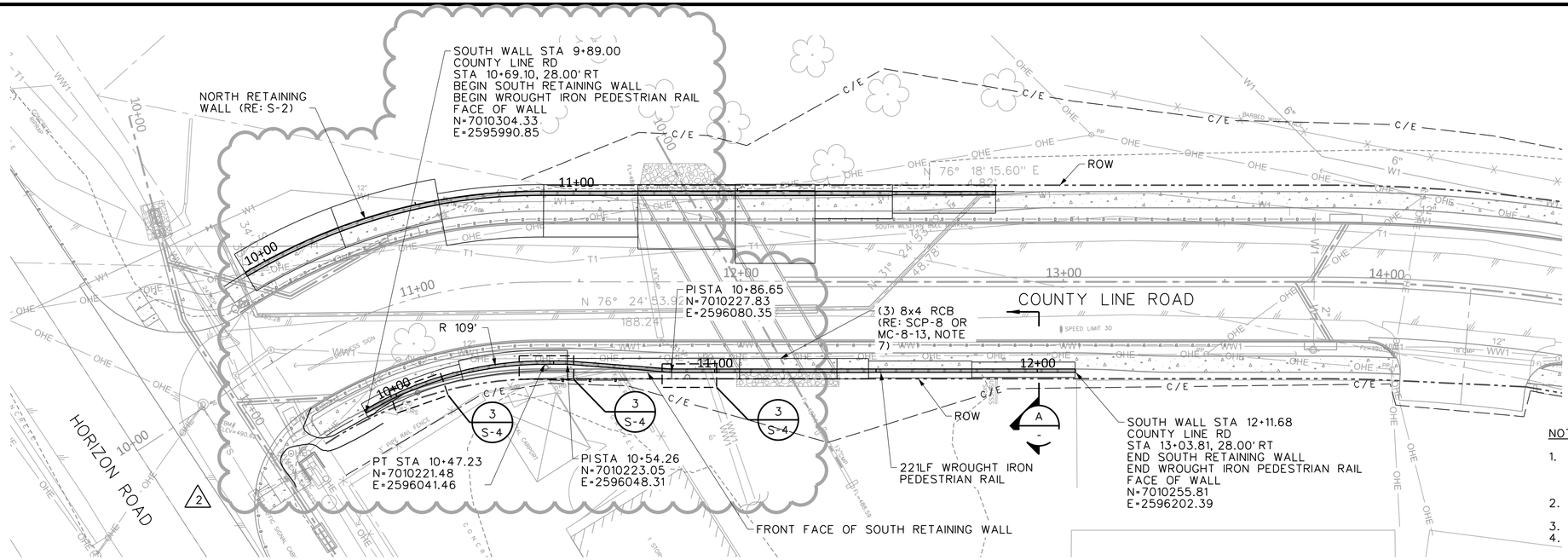
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DATE 08/2018
DESIGNED MMT
DRAWN PY
REVISED XXX
CHECKED PAB
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VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET S-2
SEQ. 89

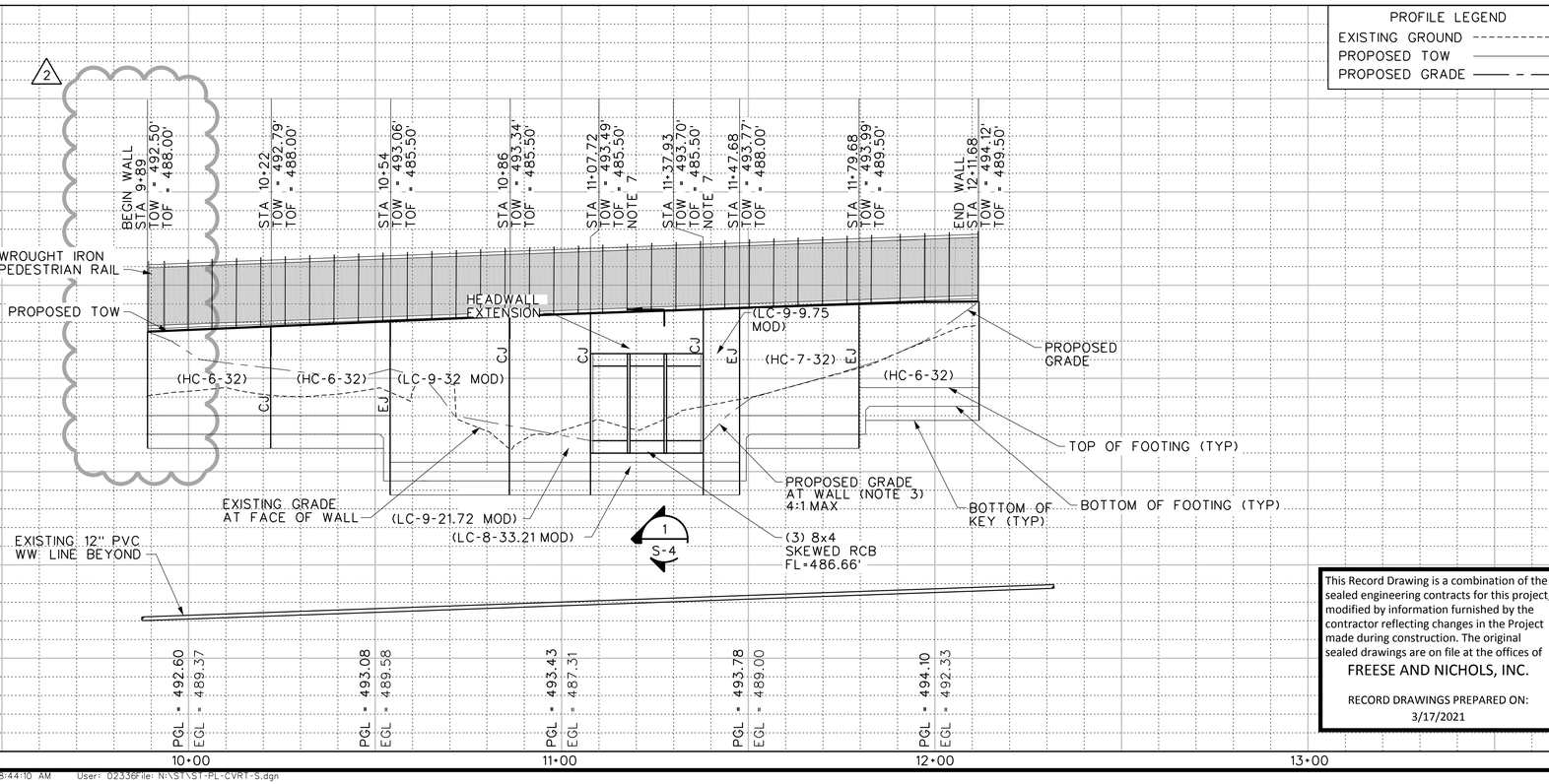
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Project: Freese and Nichols, Inc.
Model: Default
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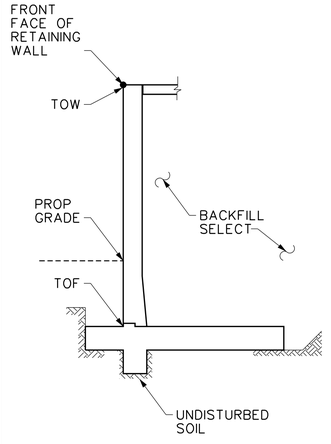
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NOTES:

1. "EJ" INDICATES EXPANSION JOINT, "CJ" INDICATES CONSTRUCTION JOINT. REFER TO RW-2 "RETAINING WALL MISCELLANEOUS DETAILS" FOR WALL JOINT DETAILS.
2. UNLESS NOTED OTHERWISE, WALLS SHALL BE PER RW 1(H)C. "H" SHALL BE AS INDICATED.
3. REFER TO GR-02 FOR GRADING AROUND CULVERT.
4. PROVIDE FORMLINER ON FACE OF WALL, INCREASE THICKNESS OF WALL BY FORMLINER THICKNESS. FORM LINER SHALL BE ASHLAR STONE RANDOM PATTERN. CONTRACTOR SHALL SUBMIT FORM LINER SAMPLE TO CITY FOR APPROVAL.
5. BASELINE STATION FOR WALL IS OFF FACE OF WALL.
6. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO THE BEGINNING OF CONSTRUCTION.
7. AT CONTRACTORS OPTION, CAST-IN-PLACE RCB MAY BE USED. STATIONING AND ELEVATIONS SHOWN ARE FOR PRECAST OPTION. IF CAST-IN-PLACE OPTIONS IS CHOSEN, ADJUST AS NEEDED.





PAYMENT LIMITS FOR THE RETAINING WALL SHALL BE MEASURED FROM TOW TO TOF

TYPICAL SECTION

NOT TO SCALE

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FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

REVISION
DATE: 04/11/2019
City of Rockwall
Public Works Department
Engineering Division

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 04/11/2019

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
MARY T. MUNSON
110346
LICENSED
PROFESSIONAL ENGINEER
04/11/2019

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web: www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

STRUCTURAL

SOUTH RETAINING WALL
PLAN AND PROFILE

NO.	ISSUES	BY	DATE
1	ADDENDUM 1	MT	8/31/18
2	CO#3	MT	4/11/19

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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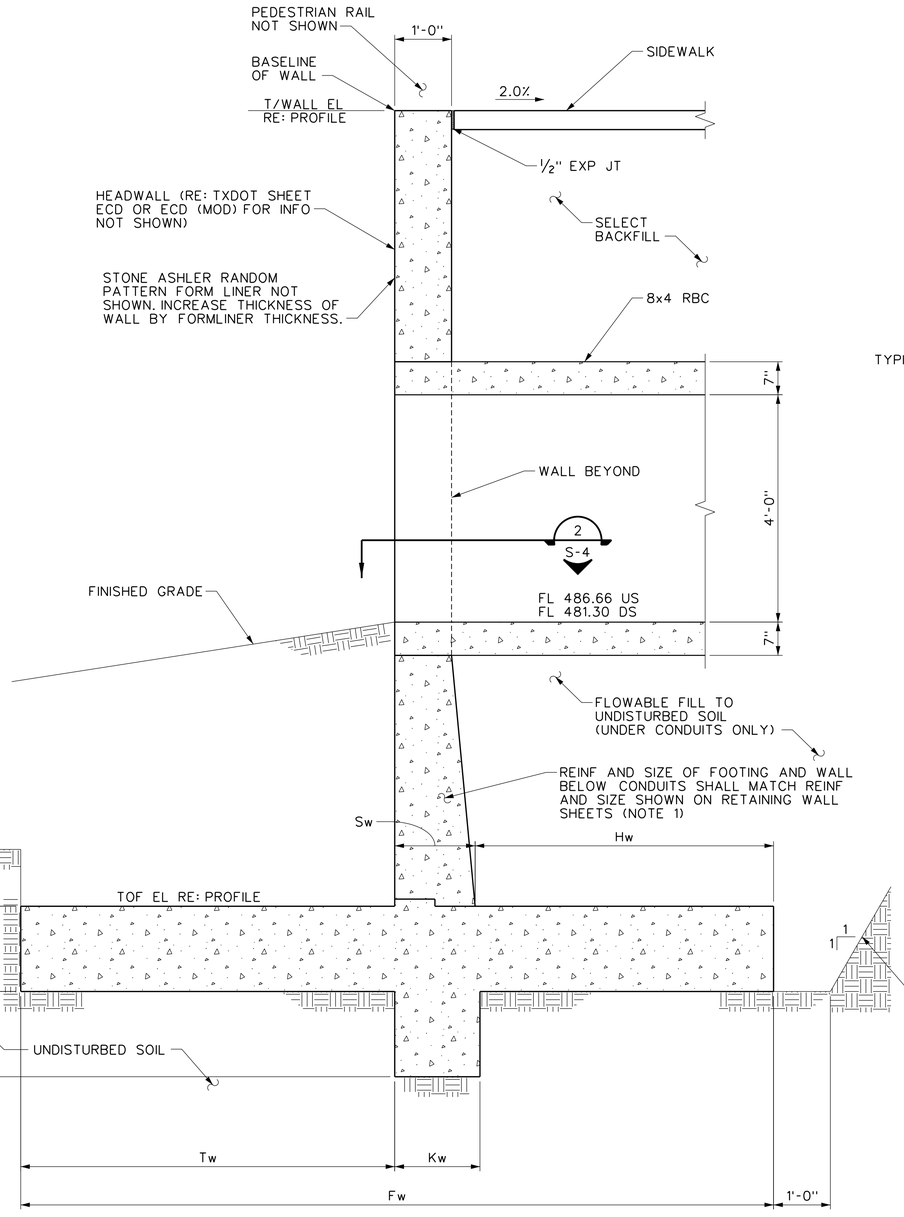
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ROK15508	08/2018	MMT	PY		PAB

FILE NAME ST-PL-CVRT-S.dgn

SHEET S-3

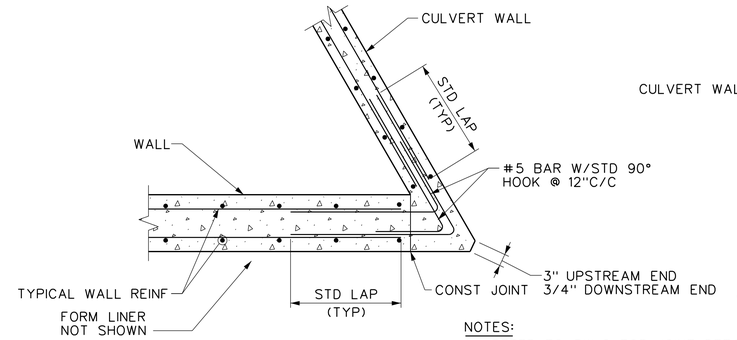
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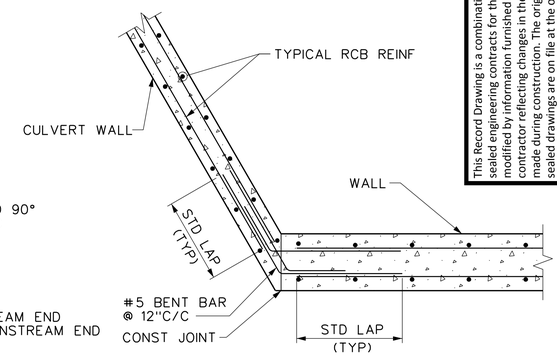
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ROK15508 N:\ST\ST-PL-CVRT-S.dgn
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Project Freese and Nichols Inc. Model: Default
Office: Fort Worth ROK15508 Date: Apr. 11, 2019 - 08:44:10 AM User: 02336File: N:\ST\ST-PL-CVRT-S.dgn



NOTES:
1. REFER TO PLAN AND PROFILE FOR RETAINING WALL CALLOUT AND CORRESPONDING TXDOT SHEET RW 1 AND RW 2 FOR INFO NOT SHOWN.

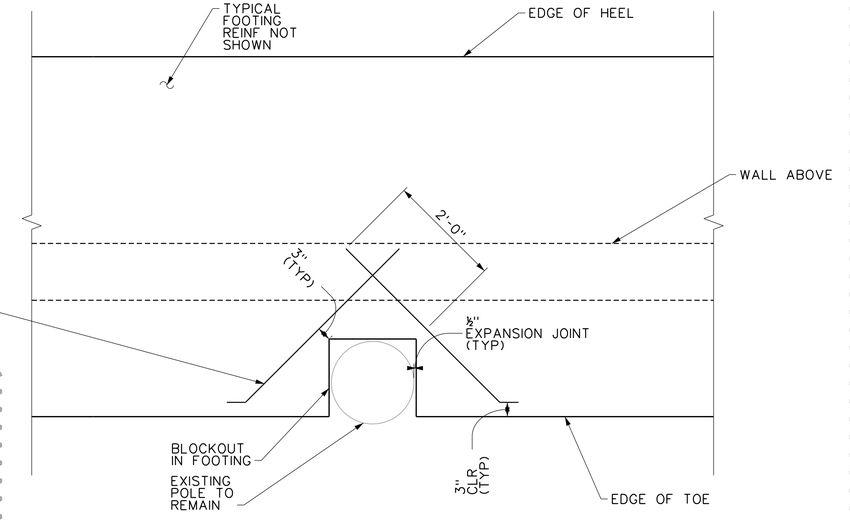
1 DOWNSTREAM HEADWALL AT CULVERT
3/4"=1'-0"





NOTES:
1. REFER TO RW-2 FOR JOINT DETAILS.

2 PLAN SECTION
3/4"=1'-0"



△2 CORNER REINF AT BLOCKOUT, 4'-0" LONG, BEND AS REQ'D TO FIT, MATCH SIZE OF TYPICAL FOOTING REINF T&B.

NOTES:
1. TRIM TYPICAL FOOTING REINF AT BLOCKOUT TO PROVIDE 3" CLR.

3 BLOCKOUT AT POLE
3/4"=1'-0"

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 04/11/2019

REVISION
DATE: 04/11/2019
City of Rockwall
Public Works Department
Engineering Division

1' 0 1' 2' 3'
3/4"=1'-0"

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
MARY T. MARTIN
110346
LICENSED
PROFESSIONAL ENGINEER
04/11/2019

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
STRUCTURAL DETAILS

NO.	ISSUES	BY	DATE
3	CO#3	MT	4/11/19
2	ADDENDUM 1	MT	8/31/18

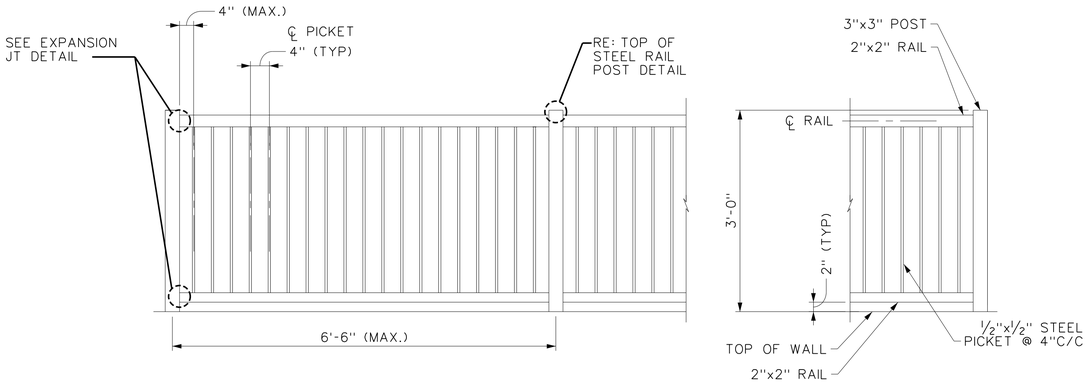
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED MMT
DRAWN JLM
REVISED
CHECKED PAB
FILE NAME st-hdw-sc-conc01.dgn

SHEET S-4
SEQ. 91

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Date: Apr 11, 2019 - 08:46:45 AM Project: Freese and Nichols, Inc.

Office: Fort Worth ROK15508 Date: Apr. 11, 2019 - 08:46:45 AM User: 02336File: N:\ST\st-hdw-sc-conc01.dgn



ELEVATION
NOT TO SCALE

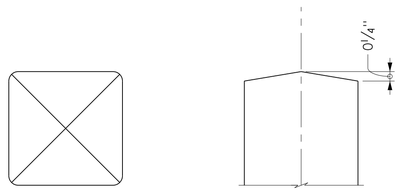
NOTE:
1. CAST POST INTO WALL BY CORE AND GROUT. POST SHALL BE CENTERED IN WALL.
2. RAIL EXPANSION JOINTS SHALL BE PLACED AT EVERY POST.
3. EVERY POST MUST BE ADJUSTED FOR THE VERTICAL SLOPE OF THE RETAINING WALL TO ENSURE PLUMBNESS OF THE POST.
4. REFER TO TXDOT ITEM 450 FOR DETAILS. THE PEDESTRIAN RAIL WILL BE GALVANIZED PER TXDOT ITEM 445 AND PAINTED BY THE RAIL FABRICATOR. ALL PREPARATION NECESSARY FOR THE RAIL TO RECEIVE THE GALVANIZATION AND PAINT WILL BE BY THE RAIL FABRICATOR. IT NEEDS TO BE ONE COAT OF PRIMER, AND TWO COATS OF EXTERIOR GRADE BLACK ENAMEL.
5. ALL DECORATIVE RAILING POSTS AND PICKETS SHALL BE PLUMB.
6. METAL RAIL PANEL SEGMENTS BETWEEN POSTS SHALL BE STRAIGHT (NOT CURVED) IN PLAN VIEW.
7. SUBMIT SHOP DRAWINGS OF ALL METAL RAIL COMPONENTS FOR APPROVAL.
8. ALL METAL RAILINGS, POSTS, BRACKETS, FASTENERS, DECORATIVE PANELS, AND RELATED METAL APPURTENANCES SHALL BE BLACK COLOR. SUBMIT COLOR AND FINISH SAMPLES FOR APPROVAL.

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

REVISION
DATE: 05/20/2019
City of Rockwall
Public Works Department
Engineering Division

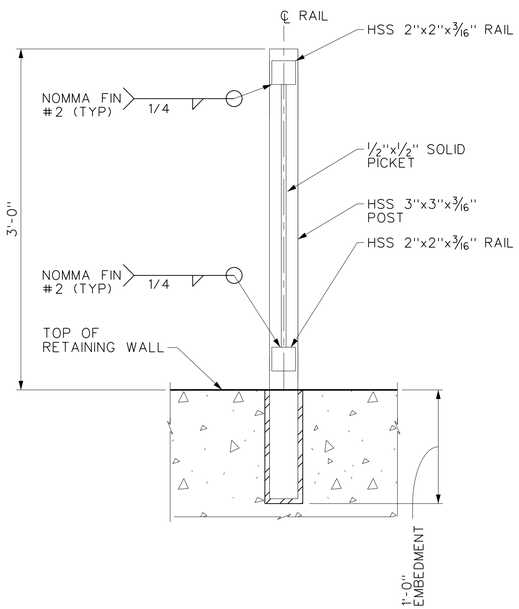
City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: Amy M. Mitchell, PE, CFM
Date: 05/20/2019



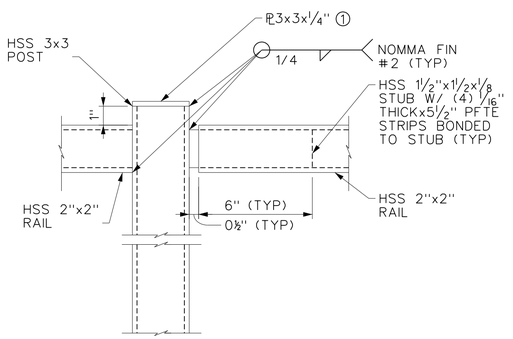
PLAN
NOT TO SCALE

ELEVATION
NOT TO SCALE

TOP OF STEEL RAIL POST DETAIL

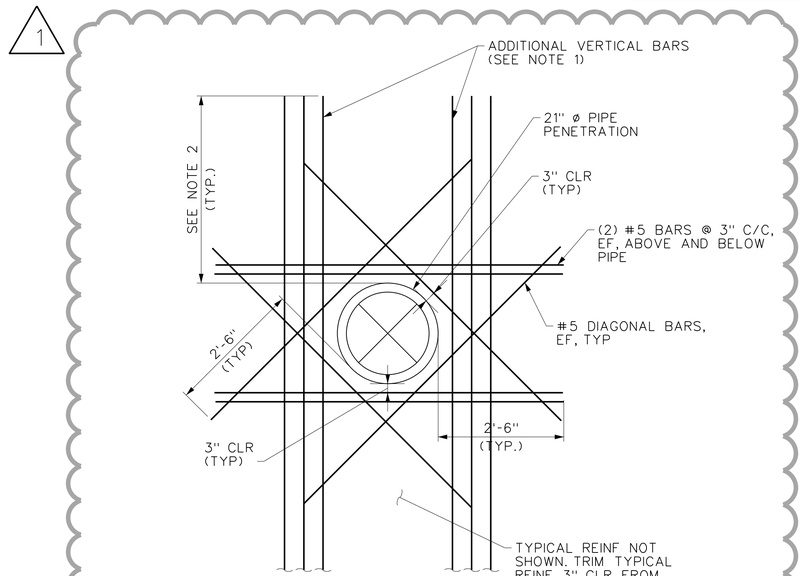


TYPICAL HANDRAIL SECTION
NOT TO SCALE



① PLATE SIZE TO MATCH TUBE CROSS SECTION.

RAIL EXPANSION JOINT DETAIL
NOT TO SCALE



NOTES:
1. PROVIDE (3) #8 ADDITIONAL VERTICAL BARS ON EACH SIDE OF PIPE PENETRATION AT BACK FACE. SPACE BARS AT 5" C/C, LOCATED BETWEEN TYPICAL VERTICAL REINFORCEMENT AT 2-1/2" OFFSET. AT FRONT FACE PROVIDE (2) #5 ADDITIONAL BARS @ 3" C/C.
2. ABOVE PIPE PENETRATION, VERTICAL BARS SHALL EXTEND A MINIMU OF 4'-0" FOR #8 BARS, 2'-6" FOR #5 BARS. BELOW PIPE PENETRATION, VERTICAL BARS SHALL EXTEND INTO FOOTING AND HOOK. HOOK LENGTH SHALL MATCH BARS A4 AT BACK FACE AND BARS B AT FRONT FACE.
3. BEHIND THE WALL, BACKFILL BELOW PIPE WITH FLOWABLE FILL. FLOWABLE FILL SHALL EXTEND TO LIMITS OF THE EXCAVATION, BUT NOT LESS THAN THE PIPE DIAMETER. THE WIDTH OF THE FILL BELOW THE PIPE SHALL NOT BE LESS THAN 2'-0" PLUS THE WIDTH OF THE PIPE OUTSIDE DIAMETER.

2 ~ WALL ELEVATION AT PIPE PENETRATION
NOT TO SCALE

FREESE AND NICHOLS, INC
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS · MATTHEW T. · 110346 · LICENSED · PROFESSIONAL ENGINEER · 05/16/2019

FREESE and NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
STRUCTURAL
PEDESTRIAN RAIL DETAILS AND PIPE PENETRATION DETAIL

NO.	ISSUES	BY	DATE
1	CO #4	MT	5/16/19

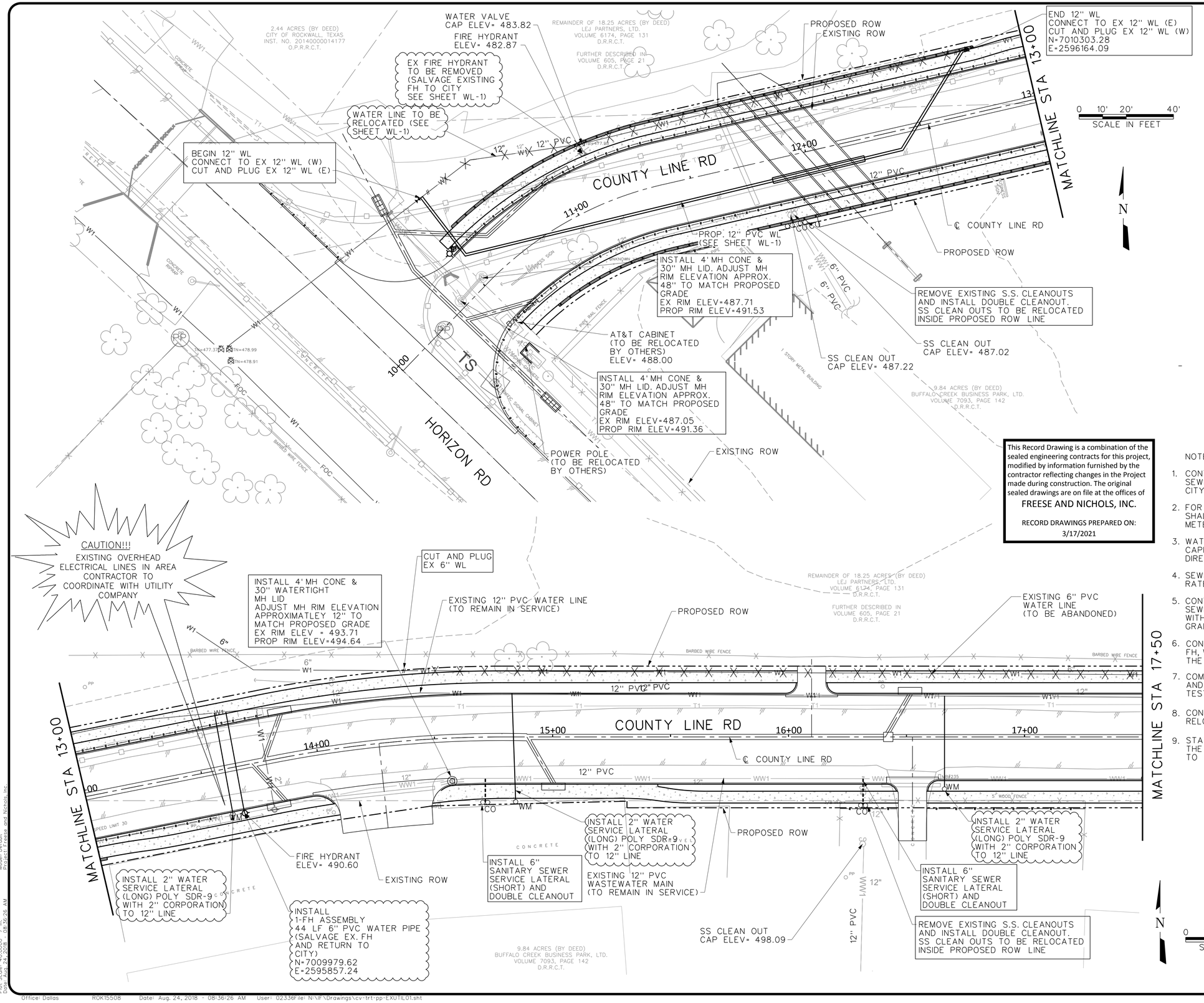
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F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED MMT
DRAWN JLM
CHECKED PAB
FILE NAME ST-FRC-DT-BPRD01.dgn

SHEET S-5
SEQ. 92

MicroStation V8 User: chm Office: Fort Worth
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Date: May. 16, 2019 - 01:15:08 PM Project: Freese and Nichols, Inc.

Office: Fort Worth ROK15508 Date: May. 16, 2019 - 01:15:08 PM User: chm File: N:\ST\ST-FRC-DT-BPRD01.dgn



LEGEND

- W1 — CITY OF ROCKWALL EXISTING WATER
- WW1 — CITY OF ROCKWALL EXISTING SEWERS/DRAINS
- T1 — AT&T COMMUNICATIONS
- E — OVERHEAD ELECTRIC
- FOC — FIBER OPTIC CABLE
- TS — TRAFFIC SIGNAL CABLE
- 2" OR 1" — PROP WATER SERVICE (2"-COMMERCIAL) (1"-RESIDENTIAL)
- 4", 6", 8" — PROP SEWER SERVICE
- WM — PROP WATER METER
- CO — PROP CLEAN OUT
- ABANDON EXISTING LINE
- FIRE HYDRANT ASSEMBLY

CAUTION!!!
EXISTING OVERHEAD ELECTRICAL LINES IN AREA CONTRACTOR TO COORDINATE WITH UTILITY COMPANY

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

NOTES:

1. CONTRACTOR SHALL COORDINATE WATER & SANITARY SEWER SERVICES AND FIRE HYDRANT LOCATIONS WITH CITY AND INSPECTORS PRIOR TO INSTALLATION.
2. FOR PROPERTIES WITHOUT EXISTING METERS, SERVICE SHALL BE INSTALLED AND PLUGGED AT METER CAN. METER SHALL NOT BE PROVIDED.
3. WATER AND SEWER SERVICE CONNECTIONS SHALL BE CAPPED AT EXISTING ROW LINE UNLESS OTHERWISE DIRECTED BY CITY INSPECTOR.
4. SEWER SERVICE CONNECTIONS SHALL BE PRESSURE RATED WITH ASTMD2241 SDR 26
5. CONTRACTOR SHALL ADJUST ALL EXISTING SANITARY SEWER CLEANOUTS AND WATER VALVES LOCATED WITHIN CONSTRUCTION BOUNDS TO MATCH PROPOSED GRADE.
6. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF FH, WM, VALVES, CONNECTIONS, AND CLEANOUTS WITH THE CITY INSPECTOR.
7. COMPLETE 6" ADANDONMENT AFTER PROPOSED 12" WL AND ALL CONNECTIONS HAVE INSTALLED, DISINFECTED, TESTED, AND APPROVED.
8. CONTRACTOR SHALL INSTALL NEW SERVICE TO ANY RELOCATED WATER METER TYP.
9. STATION CALL-OUTS INCLUDED ARE BASED OFF OF THE ROADWAY STATIONING. EXACT LOCATIONS TO BE COORDINATED WITH CITY INSPECTOR.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: Amy M. Ahlbe, P.E., CFM
Date: 11/26/2018

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
AMANDA R. POWERS
110205
LICENSED PROFESSIONAL ENGINEER
8/24/2018
FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2299
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

EXISTING UTILITIES AND ADJUSTMENTS BEGIN TO STA 17+50

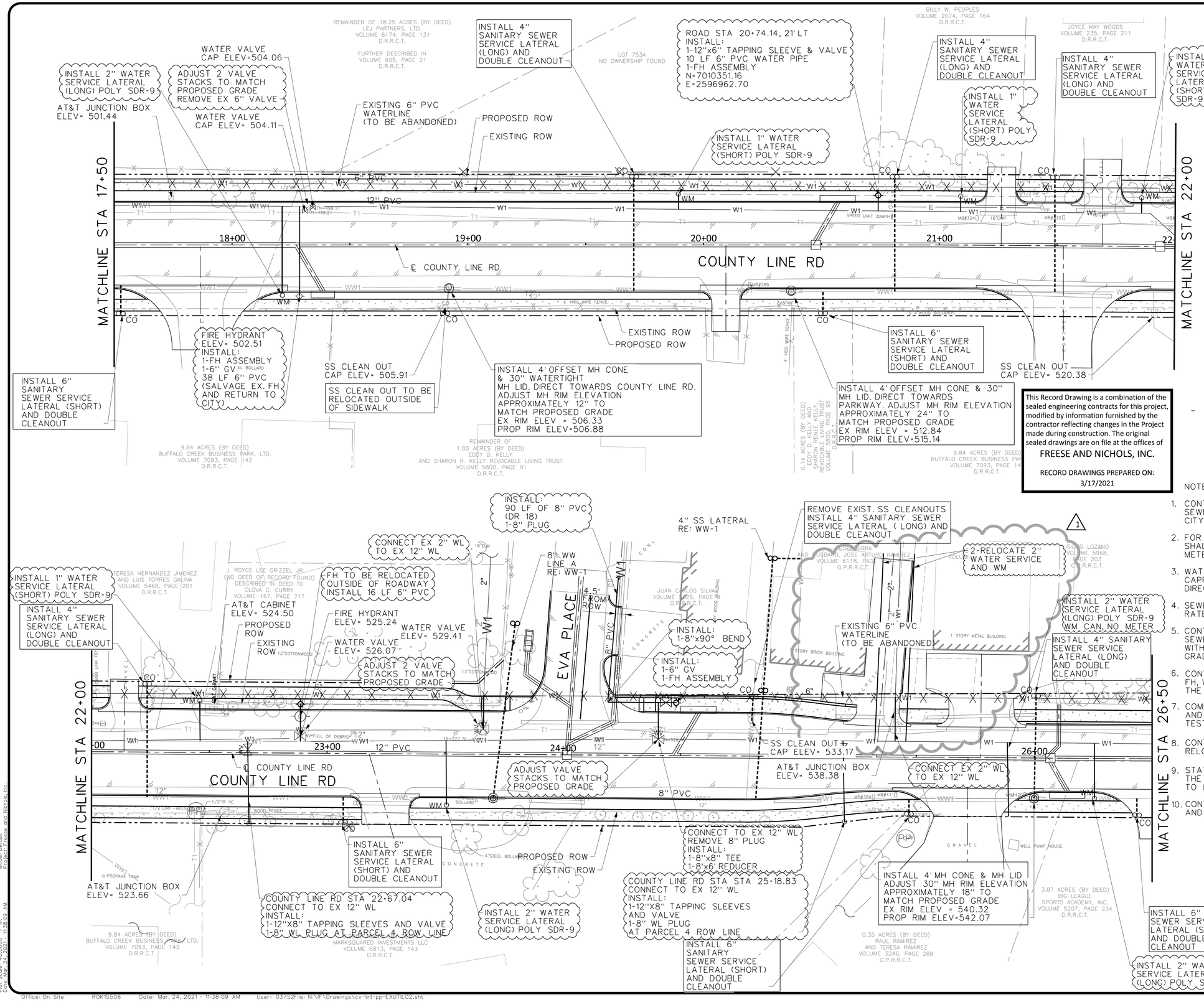
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DATE	08/2018
DESIGNED	CL
DRAWN	SI
REVISED	
CHECKED	AP
FILE NAME	cv-trt-pp-EXUTIL01.sht

NO. | ISSUES | BY | DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET
EU-01
SEQ.
93

MicroStation V8 User: 02336Office: Dallas
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LEGEND

W1	CITY OF ROCKWALL WATER
WW1	CITY OF ROCKWALL SEWERS/DRAINS
T1	AT&T COMMUNICATIONS
E	OVERHEAD ELECTRIC
FOC	FIBER OPTIC CABLE
TS	TRAFFIC SIGNAL CABLE
2" OR 1"	PROP WATER SERVICE (2"-COMMERCIAL) (1"-RESIDENTIAL)
4", 6", 8"	PROP SEWER SERVICE
WM	PROP WATER METER
CO	PROP CLEAN OUT
	ABANDON EXISTING LINE
	FIRE HYDRANT ASSEMBLY

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

NOTES:

1. CONTRACTOR SHALL COORDINATE WATER & SANITARY SEWER SERVICES AND FIRE HYDRANT LOCATIONS WITH CITY AND INSPECTORS PRIOR TO INSTALLATION.
2. FOR PROPERTIES WITHOUT EXISTING METERS, SERVICE SHALL BE INSTALLED AND PLUGGED AT METER CAN. METER SHALL NOT BE PROVIDED.
3. WATER AND SEWER SERVICE CONNECTIONS SHALL BE CAPPED AT EXISTING ROW LINE UNLESS OTHERWISE DIRECTED BY CITY INSPECTOR.
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5. CONTRACTOR SHALL ADJUST ALL EXISTING SANITARY SEWER CLEANOUTS AND WATER VALVES LOCATED WITHIN CONSTRUCTION BOUNDS TO MATCH PROPOSED GRADE.
6. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF FH, WM, VALVES, CONNECTIONS, AND CLEANOUTS WITH THE CITY INSPECTOR.
7. COMPLETE 6" ADANDONMENT AFTER PROPOSED 12" WL AND ALL CONNECTIONS HAVE INSTALLED, DISINFECTED, TESTED, AND APPROVED.
8. CONTRACTOR SHALL INSTALL NEW SERVICE TO ANY RELOCATED WATER METER TYP.
9. STATION CALL-OUTS INCLUDED ARE BASED OFF OF THE ROADWAY STATIONING. EXACT LOCATIONS TO BE COORDINATED WITH CITY INSPECTOR.
10. CONTRACTOR TO VERIFY ELEVATIONS OF EXISTING AND PROPOSED UTILITY CROSSINGS.

RELEASED FOR THE PURPOSES OF REVIEW UNDER THE AUTHORITY OF AMANDA R. POWERS TEXAS NO. 110205 ON 8/24/2018
IT IS NOT TO BE USED FOR BIDDING, PERMIT OR CONSTRUCTION.
ALTERATION ON A SEALED DOCUMENT WITHOUT PROPER AUTHORITY IS A VIOLATION OF THE TEXAS ENGINEERING PRACTICE ACT. ANY PERSON WHO ALTERS THIS DOCUMENT IS SUBJECT TO PROSECUTION FOR OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

EXISTING UTILITIES AND ADJUSTMENTS STA 17+50 TO STA 26+50

NO.	ISSUES	BY	DATE
1	RECORD DRAWINGS	ADH	03/17/21

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale. 0 1"

F&N JOB NO. ROK15508

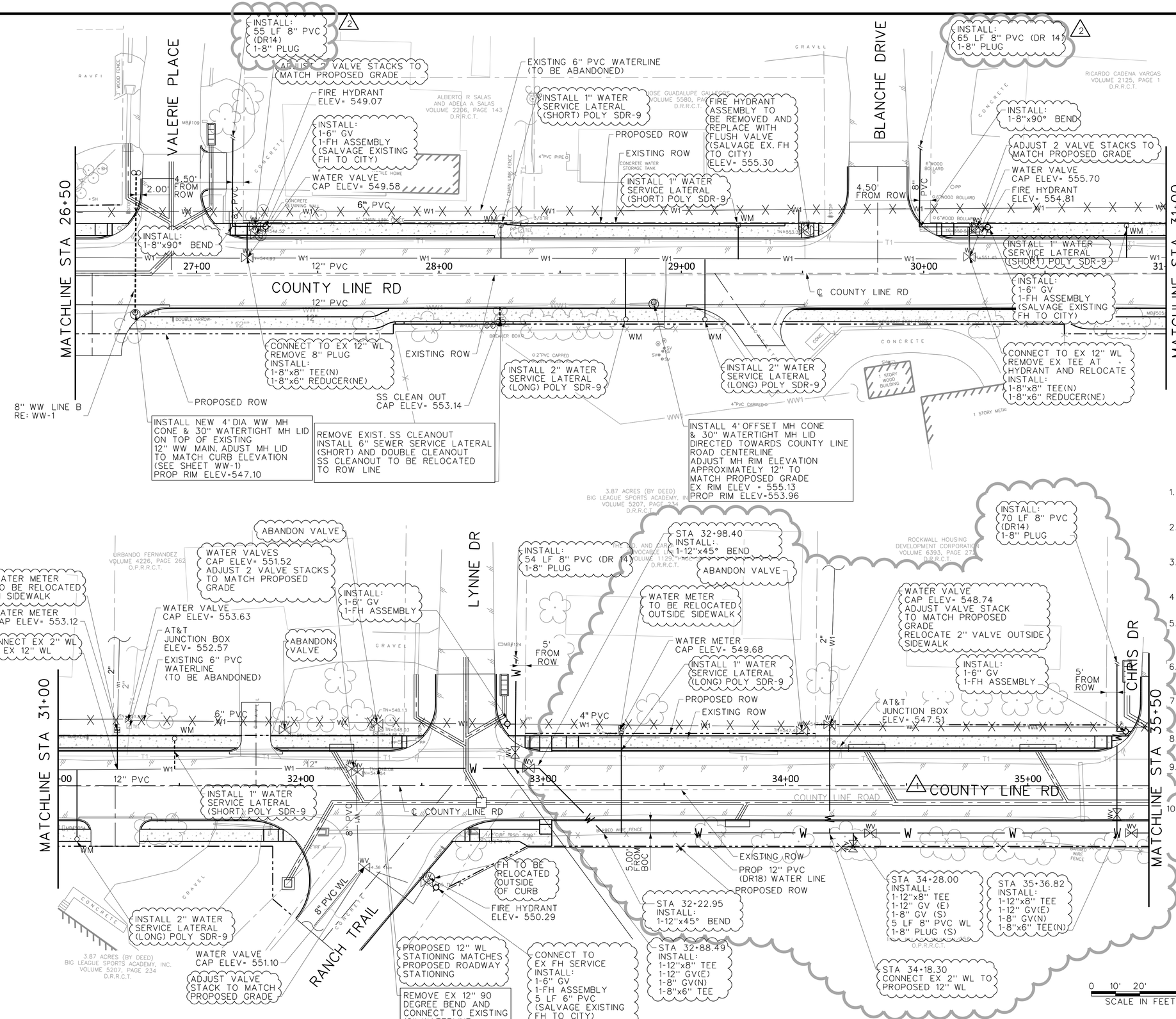
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	08/2018	CL	SI	AP

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SEQ. 94

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Project: Freese and Nichols, Inc.



LEGEND

W1	CITY OF ROCKWALL WATER
WW1	CITY OF ROCKWALL SEWERS/DRAINS
T1	AT&T COMMUNICATIONS
E	OVERHEAD ELECTRIC
FOC	FIBER OPTIC CABLE
TS	TRAFFIC SIGNAL CABLE
2" OR 1"	PROP WATER SERVICE (2"-COMMERCIAL) (1"-RESIDENTIAL)
4", 6", 8"	PROP SEWER SERVICE
WM	PROP WATER METER
CO	PROP CLEAN OUT
W	ABANDON EXISTING LINE
	FIRE HYDRANT ASSEMBLY

NOTES:

1. CONTRACTOR SHALL COORDINATE WATER & SANITARY SEWER SERVICES AND FIRE HYDRANT LOCATIONS WITH CITY AND INSPECTORS PRIOR TO INSTALLATION.
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10. WATERLINE SHALL BE INSTALLED AT A DEPTH TO 4-FOOT MINIMUM CLEARANCE BETWEEN TOP OF PIPE AND FUTURE SIDEWALK. CONTRACTOR SHALL COORDINATE EXACT DEPTH WITH INSPECTOR.

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FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON:

3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS — AMANDA R. POWERS — 110205 — LICENSED PROFESSIONAL ENGINEER — 7/9/2020
FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2299
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

EXISTING UTILITIES AND ADJUSTMENTS STA 26+50 TO STA 35+50

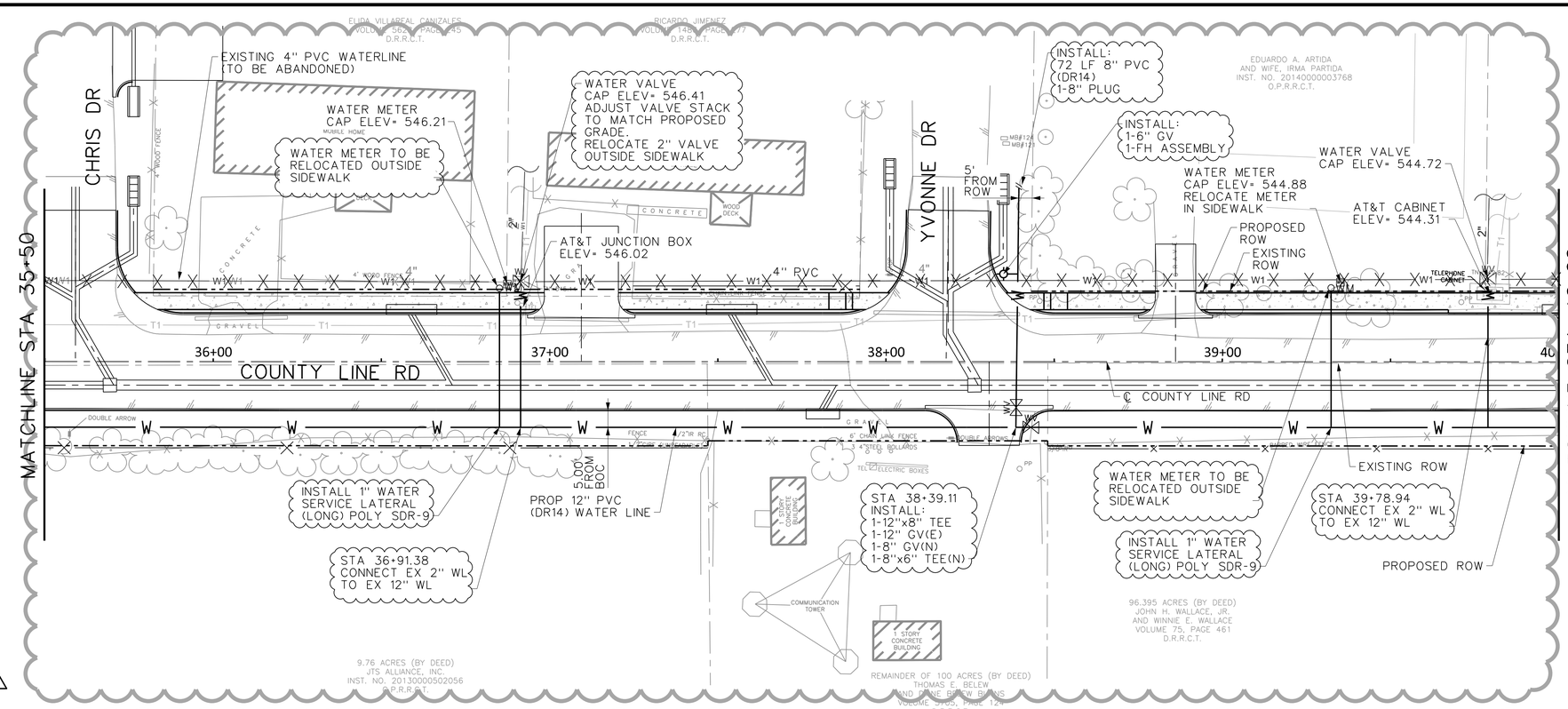
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2	CO #1	ARP	1/31/19

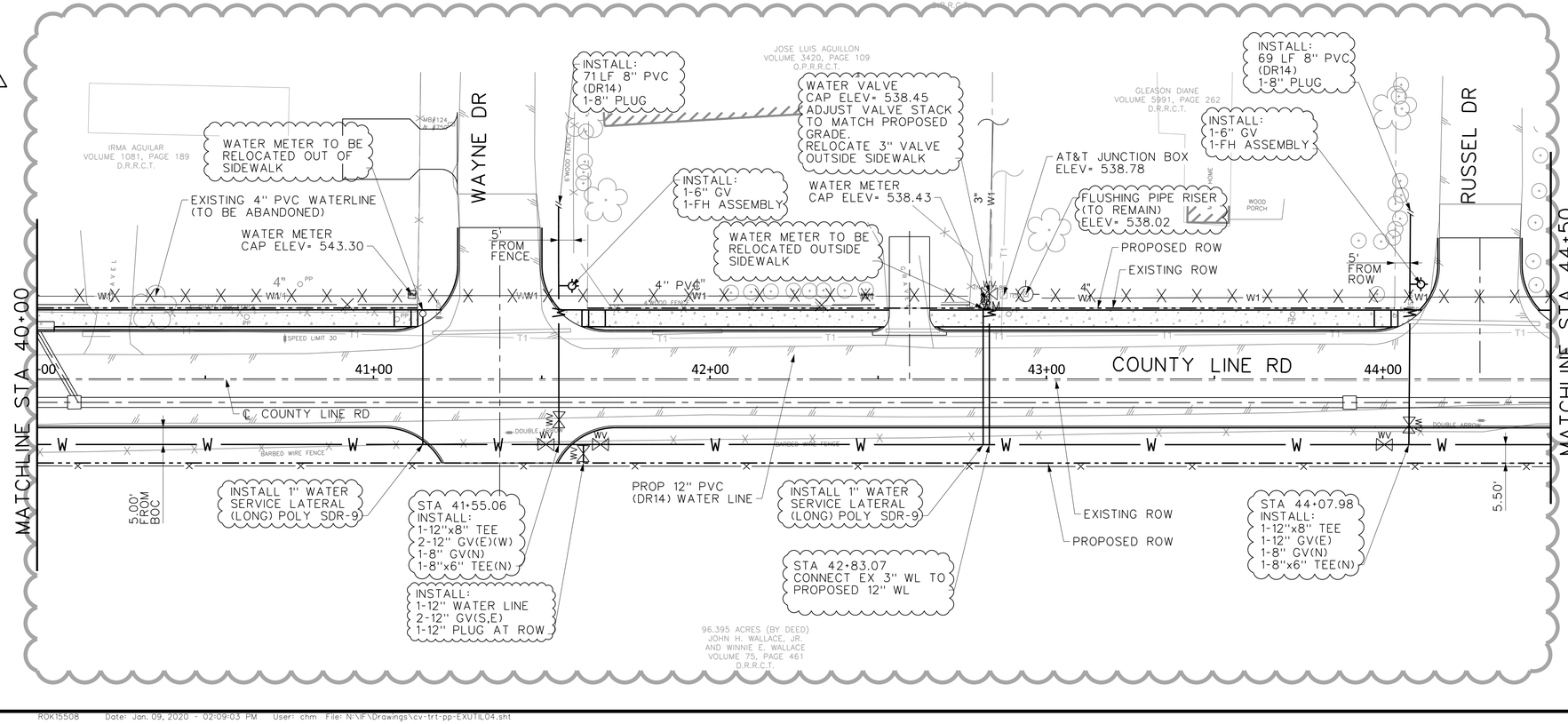
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DATE 08/2018
DESIGNED CL
DRAWN SI
REVISED
CHECKED AP
FILE NAME cv-trt-pp-EXUTIL03.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET EU-03
SEQ. 95

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Plot Scale: 40.0000 '/ in. Model: Default
Date: Jan 09, 2020 - 02:48:24 PM Project: Freese and Nichols, Inc.





LEGEND

W1	CITY OF ROCKWALL WATER
WW1	CITY OF ROCKWALL SEWERS/DRAINS
T1	AT&T COMMUNICATIONS
E	OVERHEAD ELECTRIC
FOC	FIBER OPTIC CABLE
2" OR 1"	PROP WATER SERVICE (2"-COMMERCIAL) (1"-RESIDENTIAL)
	PROP SEWER SERVICE
WM	PROP WATER METER
CO	PROP CLEAN OUT
W	ABANDON EXISTING LINE
	FIRE HYDRANT ASSEMBLY

NOTES:

1. CONTRACTOR SHALL COORDINATE WATER & SANITARY SEWER SERVICES AND FIRE HYDRANT LOCATIONS WITH CITY AND INSPECTORS PRIOR TO INSTALLATION.
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3. WATER AND SEWER SERVICE CONNECTIONS SHALL BE CAPPED AT EXISTING ROW LINE UNLESS OTHERWISE DIRECTED BY CITY INSPECTOR.
4. SEWER SERVICE CONNECTIONS SHALL BE PRESSURE RATED WITH ASTMD2241 SDR 26
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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
AMANDA R. POWERS
111205
LICENSED PROFESSIONAL ENGINEER
7/9/2020
FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2299
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
EXISTING UTILITIES AND ADJUSTMENTS
STA 35+50 TO STA 44+50

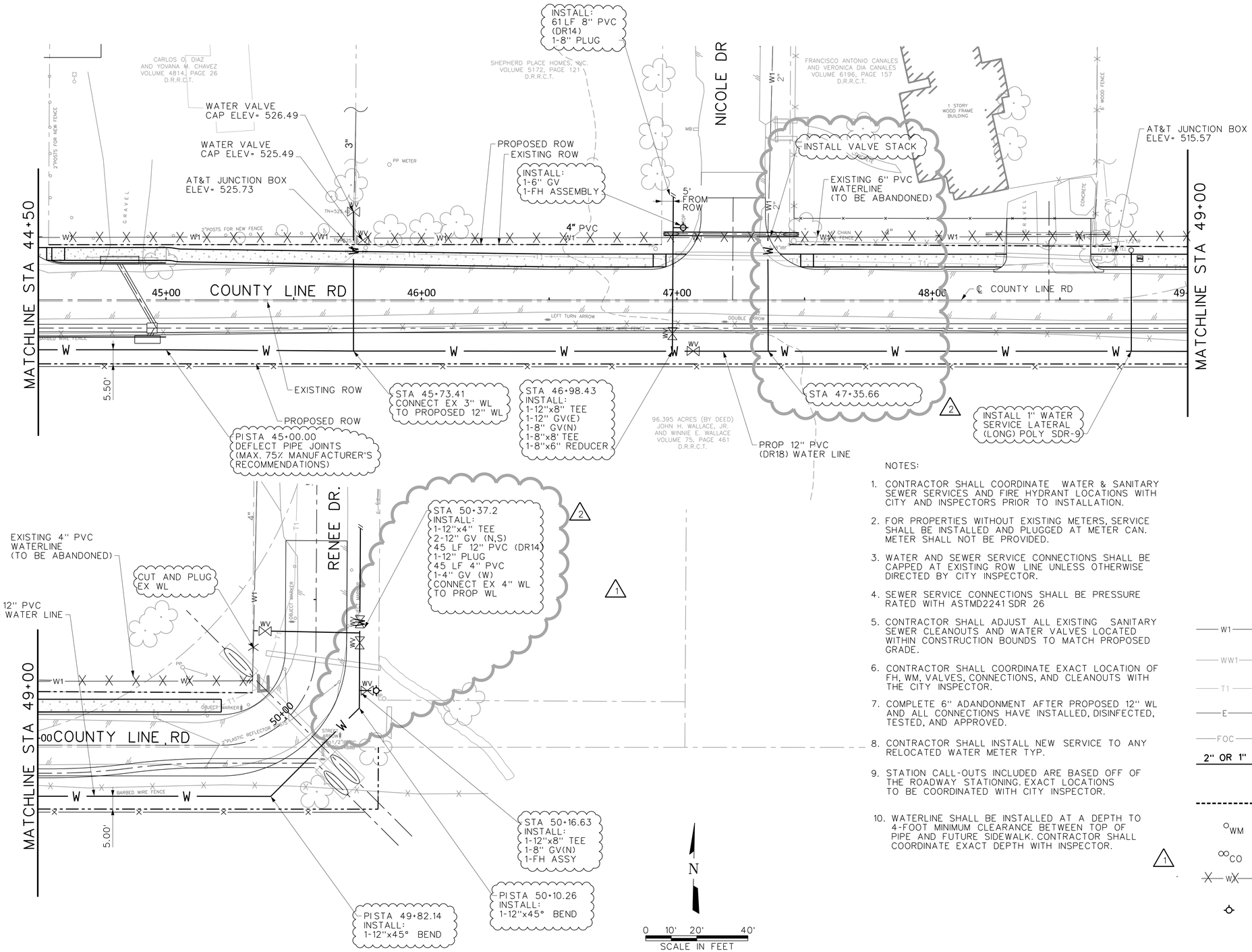
NO.	ISSUES	BY	DATE
1	CO #5	ARP	1/07/20

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED CL
DRAWN SI
REVISED
CHECKED AP
FILE NAME cv-trt-pp-EXUTIL04.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET EU-04
SEQ. 96

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Date: Jan 09, 2020 - 02:09:03 PM
Model: Default
Project: Freese and Nichols, Inc.



NOTES:

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LEGEND

W1	CITY OF ROCKWALL WATER
WW1	CITY OF ROCKWALL SEWERS/DRAINS
T1	AT&T COMMUNICATIONS
E	OVERHEAD ELECTRIC
FOC	FIBER OPTIC CABLE
2" OR 1"	PROP WATER SERVICE (2"-COMMERCIAL) (1"-RESIDENTIAL)
	PROP SEWER SERVICE
WM	PROP WATER METER
CO	PROP CLEAN OUT
W	ABANDON EXISTING LINE
	FIRE HYDRANT ASSEMBLY

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

THIS SEAL THAT ORIGINALLY APPEARED ON THIS DOCUMENT WAS AUTHORIZED BY AMANDA R. POWERS
TEXAS NO.: 110205 ON: 8/24/2018
IT IS A VIOLATION OF LAW FOR ANYONE TO ALTER THIS DOCUMENT WITHOUT PROPER NOTIFICATION OF THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

EXISTING UTILITIES AND ADJUSTMENTS STA 44+50 TO END

NO.	ISSUES	BY	DATE
1	RECORD DRAWINGS	ADH	03/17/21
2	CO #5	ARP	1/07/20

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

FAN JOB NO	ROK15508
DATE	08/2018
DESIGNED	CL
DRAWN	SI
REVISED	
CHECKED	AP
FILE NAME	cv-trt-pp-EXUTIL05.sht

SHEET EU-05

SEQ. 97

MicroStation V8 User: 03752Office: On Site
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Plot Scale: 40.0000 '/ in. Model: Default
Plot Date: Mar. 24, 2021 - 11:38:12 AM Project: Freese and Nichols Inc.

ROAD STA 23+80.12, 52.60' LT=
WW LINE A STA 1+71.74
INSTALL:
SINGLE CLEANOUT
N=7010389.84
E=2597268.02

INSTALL:
DOUBLE CLEANOUT
(FIELD VERIFY)
N=7010423.69
E=2597375.59

PROP. INLET A-15

INSTALL:
DOUBLE CLEANOUT
(FIELD VERIFY)
N=7010367.50
E=2597373.32

ROAD STA 26+75.27, 43.99' LT=
WW LINE B STA 1+60.33
INSTALL:
SINGLE CLEANOUT
N=7010387.89
E=2597563.28

EVA PLACE

VALERIE PLACE

REMOVE EX. TREE

PROP. ROW

PROP.
21" RCP
LAT
A-15

PROP
21" RCP
LAT A-4

2.00'

EX. 12" WL

8" WW LINE A

8" WW LINE B

24+00

25+00

26+00

27+00

COUNTY LINE ROAD

℄ COUNTY LINE RD.

PROP. 21" RCP
LINE SD-A

PROP. 21" RCP
LINE SD-A

PROP. ROW

ROAD STA 23+70.53, 19.19' RT=
WW LINE A STA 1+00.00
CONNECT TO EX. 4' DIA WWMH
WITH OFFSET MH CONE
INSTALL:
1-30" WATERTIGHT MH LID
N=7010318.47
E=2597260.17

INSTALL 4" SANITARY SEWER
SERVICE LATERAL (LONG)
N=7010321.58
E=2597371.41

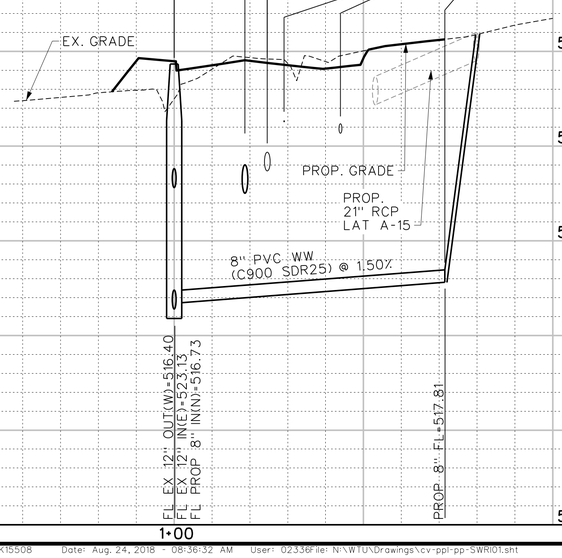
ROAD STA 26+74.87, 16.34' RT=
WW LINE B STA 1+00.00
INSTALL:
1-4' DIA WWMH
ON TOP OF EX 12" WW LINE
CONNECT TO EX. 12" WW
N=7010327.61
E=2597564.25

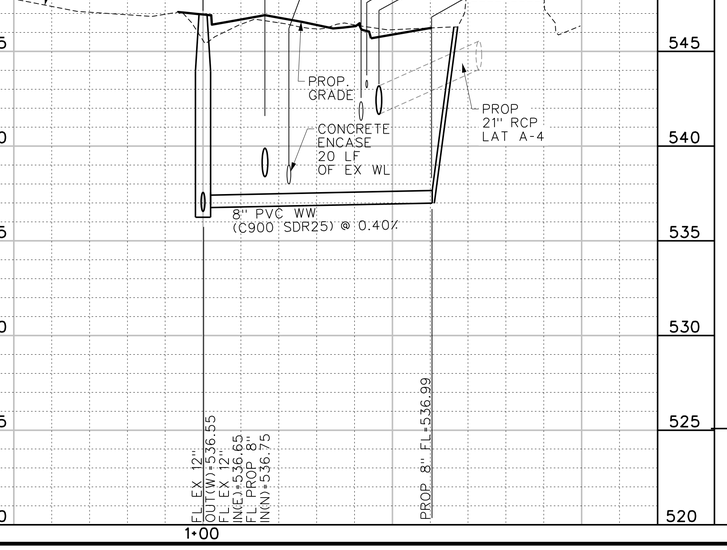
CAUTION!!!

EX. BURIED ELEC. & TELE.
LINES IN THIS AREA
CONTACT UTILS 48 HOURS
PRIOR TO CONSTRUCTION @
1(800)344-8377

NOTES:

1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.
2. CONTRACTOR SHALL NOT DAMAGE ANY APPURTENANCES ON PROPERTY.
3. THE CONTRACTOR SHALL INSTALL TEMPORARY PAVEMENT REPAIRS OVER UTIL. CUTS IN EXISTING ROADWAY PER DETAIL 6/DT-2.
4. CONTRACTOR TO SHALL ADJUST ALL EXISTING SANITARY SEWER CLEANOUTS LOCATED WITHIN CONSTRUCTION BOUNDS TO MATCH PROPOSED GRADE.
5. WHERE NEW WASTE WATER LINE CROSSES BELOW EXISTING WATER LINE, THE SEGMENT OF WASTE WATER PIPE SHALL BE CENTERED OVER AND MUST BE PERPENDICULAR TO THE WASTE WATER MAIN SUCH THAT THE JOINTS OR THE WASTE WATER LINE ARE EQUIDISTANT AND AT LEAST 9' HORIZONTALLY FROM CENTERLINE OF THE WATER MAIN.





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FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON:
3/17/2021

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____, PE, CFM
Date: 11/26/2018

N

0 10' 20' 40'
HORIZONTAL SCALE
0 2' 4' 8'
VERTICAL SCALE

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS
AMANDA R. POWERS
110205
LICENSED
PROFESSIONAL
ENGINEER
3/24/2018
Amanda Powers

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2299
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
UTILITIES
WASTEWATER IMPROVEMENTS
ROAD STA 24+00 AND STA 27+00

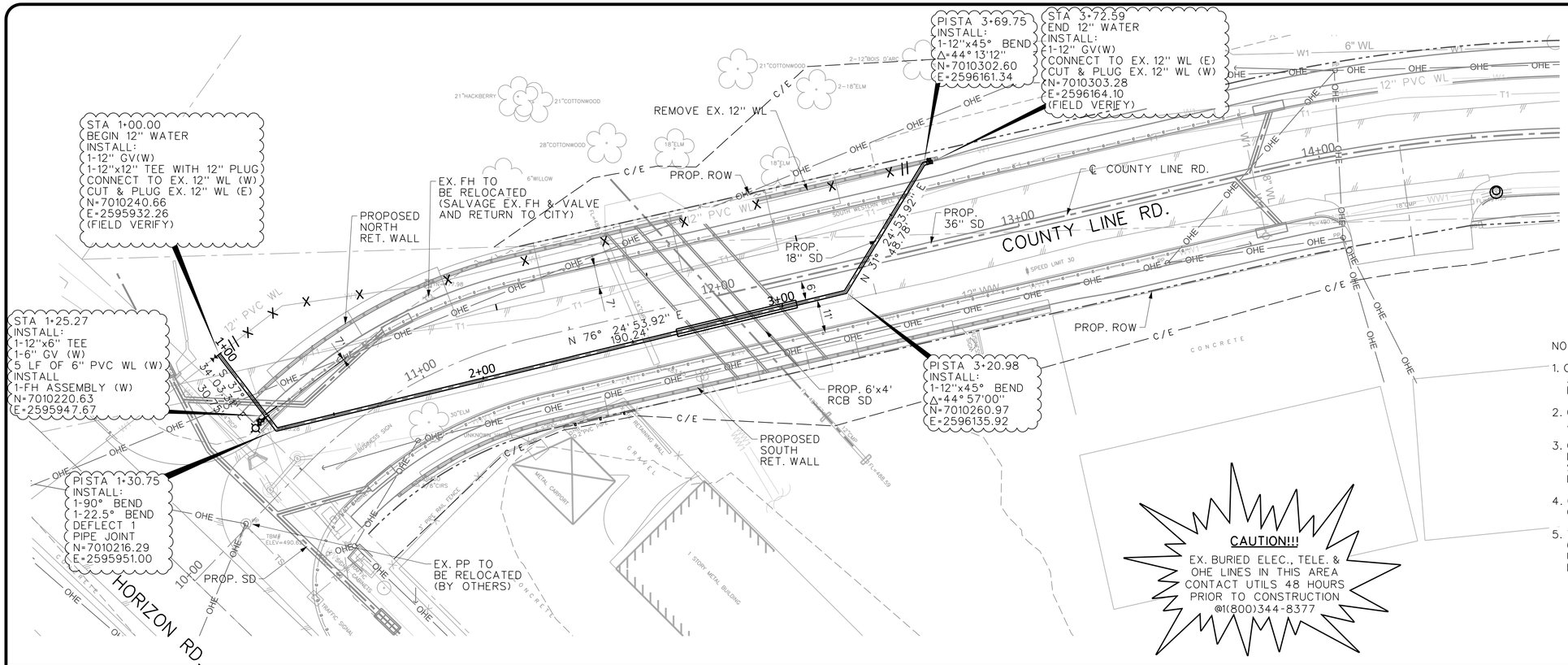
NO.	ISSUES	BY	DATE

FAN JOB NO. ROK15508
DATE 08/2018
DESIGNED CL
DRAWN SI
REVISED -
CHECKED ARP
FILE NAME cv-ppl-pp-SWR101.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

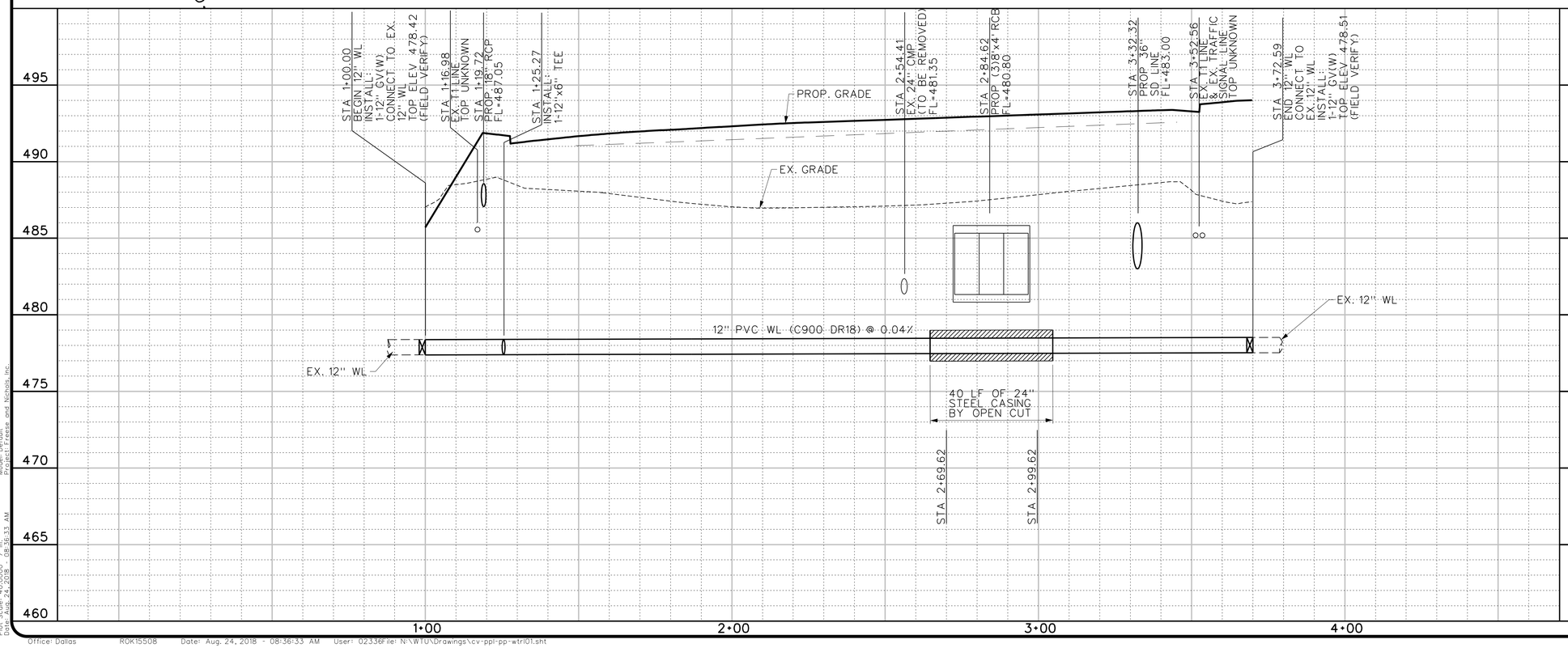
SHEET
WW-1
SEQ.
98

MicroStation V8 User: 02336Office: Dallas
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Office: Dallas ROK15508 Date: Aug. 24, 2018 - 08:36:32 AM User: 02336File: N:\WTU\Drawings\cv-ppl-pp-SWR101.sht



NOTES:

1. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.
2. CONTRACTOR SHALL NOT DAMAGE ANY APPURTENANCES ON PROPERTY.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE TEMPORARY SUPPORT FOR UTILITY CROSSINGS DURING INSTALLATION OF NEW WATER LINE.
4. CONTRACTOR TO COORDINATE PLACEMENT OF FH WITH CITY OF ROCKWALL.
5. THE CONTRACTOR SHALL INSTALL 123 SY OF OF TEMPORARY PAVEMENT REPAIRS OVER UTILITY CUTS IN EXISTING ROADWAY PER DETAIL 6/DT-2.



PROFILE LEGEND

------- EXISTING GRADE

——— PROFILE GRADE LINE

N

0 10' 20' 40'
HORIZONTAL SCALE

0 2' 4' 8'
VERTICAL SCALE

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021

TEXAS REGISTERED ENGINEERING FIRM F-2144
FREESE AND NICHOLS, INC.
STATE OF TEXAS
AMANDA R. POWERS
110205
LICENSED PROFESSIONAL ENGINEER
8/24/2018

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
UTILITIES
PROPOSED 12" WATER LINE
STA 1+00 TO END

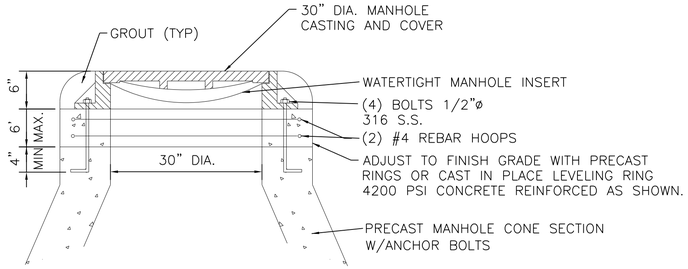
NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED CL
DRAWN JTP
REVISED -
CHECKED ARP
FILE NAME cv-ppl-pp-wtr101.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET WL-1
SEQ. 99

MicroStation V8 User: 02336Office: Dallas
ROK15508 - N:\WTU\Drawings\cv-ppl-pp-wtr101.sht
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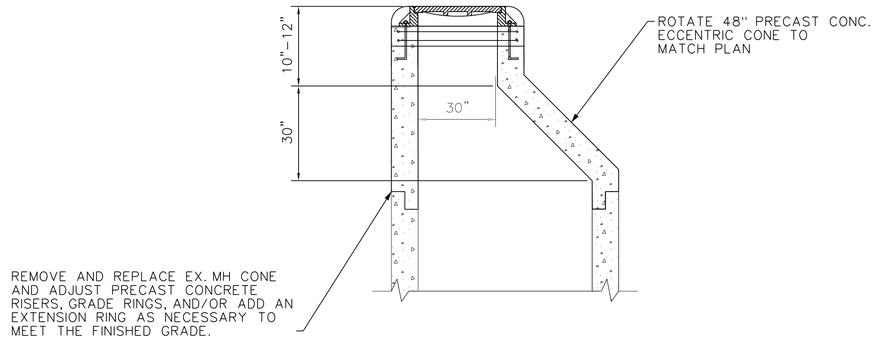
NOTE:
1. IF PRECAST ANCHOR BOLTS ARE UNAVAILABLE, 316 S.S. HILTI EPOXY TYPE ANCHOR BOLTS OF SIMILAR SIZE AND STRENGTH WILL BE ALLOWED.
2. INSTALL WATER TIGHT MH INSERTS (STD. "RAINGUARD" OR APPROVED EQUAL.
3. MANHOLES LOCATED IN FLOODPLAINS AND DESIGNATED WATER TIGHT IN TABLE 1 SHALL HAVE BOLTED COVERS WITH RUBBER GASKETS AND S.S. BOLTS (5).

TABLE 1

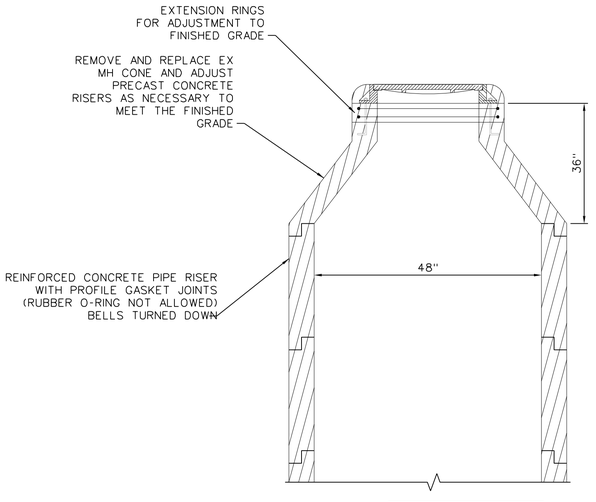
APPROX MH STATION	MH COVER	LID DIA.	TYPE OF MANHOLE COVER
10+40	NON WT	30"	TRAFFIC RATED
10+50	NON WT	30"	TRAFFIC RATED
14+50	WT	30"	TRAFFIC RATED
18+92	WT	30"	TRAFFIC RATED
20+38	NON WT	30"	NON-TRAFFIC RATED
23+71	WT	30"	TRAFFIC RATED
26+00	NON WT	30"	NON-TRAFFIC RATED
26+75	WT	30"	TRAFFIC RATED
28+87	WT	30"	TRAFFIC RATED

NOTE: "WT" = "WATER TIGHT"

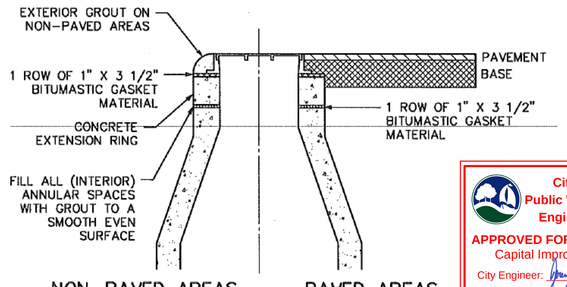
1 ~ TYPICAL MANHOLE RING & COVER
NOT TO SCALE



3 ~ ECCENTRIC MANHOLE CONE
NOT TO SCALE



2 ~ PRECAST CONCRETE RISER MANHOLE ADJUSTMENT
NOT TO SCALE



NON-PAVED AREAS PAVED AREAS

NOTES:
1. NO GAPS WILL BE ALLOWED IN BITUMASTIC GASKET.
2. THERE SHALL BE SMOOTH TRANSITION BETWEEN THE FRAME AND CONE OR GRADE RING, OR THE GRADE RING AND THE CONE.
3. CONCRETE EXTENSION RINGS MAY BE PRECAST OR CAST-IN-PLACE. BRICK EXTENSION RINGS WILL NOT BE ALLOWED.
4. STANDARD EXTENSIONS SHALL BE 2", 3", 4", 6", AND 12". EXTENSIONS SHALL BE SIZED TO MINIMIZE THE NUMBER REQUIRED TO RAISE THE MANHOLE. NO MORE THAN 1-2" EXTENSION WILL BE ALLOWED ON ANY MANHOLE. A NEW RISER WILL BE REQUIRED WHEN EXTENSION LENGTH IS 4' OR GREATER.

EXTENSION RING INSTALLATION
NOT TO SCALE

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
AMANDA R. POWERS
111205
LICENSED
PROFESSIONAL ENGINEER
8/24/2018

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
UTILITIES
GENERAL NOTES & SEWER DETAILS

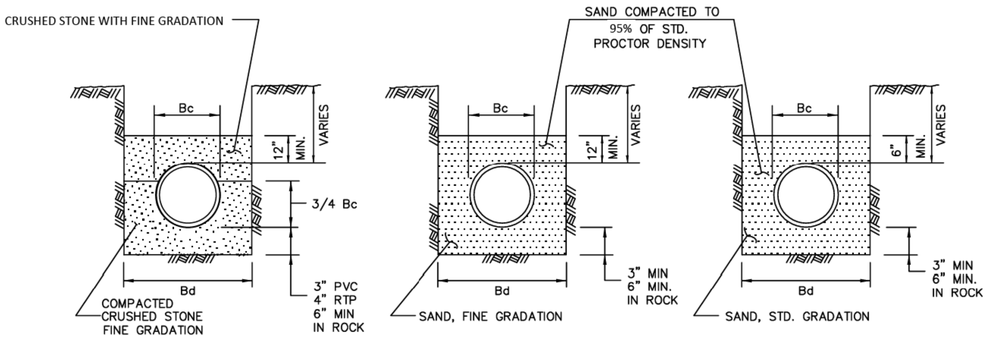
NO.	ISSUES	BY	DATE

FAN JOB NO. ROK15508
DATE 08/2018
DESIGNED ARP
DRAWN JTP
REVISED -
CHECKED ARP
FILE NAME cv-wtu-dt-typ01.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET DT-01
SEQ. 100

MicroStation V8 User: 02336Office: Dallas
ROK15508 N:\WTU\Drawings\cv-wtu-dt-typ01.sht
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Plot Scale: 2.0000 '/ in. Project:Freese and Nichols Inc.



CLASS "B-2"
N.T.S.

(TO BE USED FOR PVC WASTEWATER PIPE)

CLASS "B-3"
N.T.S.

(TO BE USED FOR PVC WATER PIPE AND PVC WASTE WATER FORCE MAIN PIPE)

CLASS "B-4"
N.T.S.

NOTES:

1. Bc = OUTSIDE DIAMETER OF PIPE
2. Bd = TRENCH WIDTH
3. NO GRANULAR MATERIAL ABOVE ROCK OR STONE EMBEDMENT

STANDARD DRAWING NO. R-3030

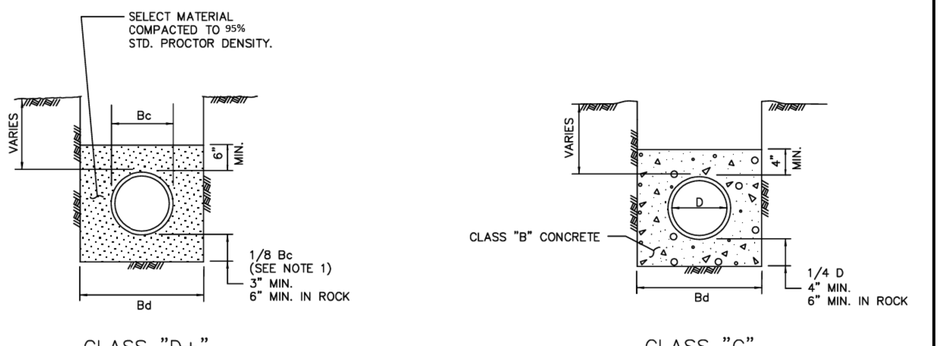
EMBEDMENT
CLASS "B-2","B-3", & "B-4"

CITY OF ROCKWALL

STANDARD SPECIFICATION REFERENCE 504.5

DATE Mar. 2018

STANDARD DRAWING NO. R-3030



CLASS "D+"
N.T.S.

CLASS "G"
N.T.S.

NOTES:

1. FOR MAINS 42" DIAMETER AND LARGER, 1/8 Bc SHALL BE TAKEN AS 6".
2. Bc = OUTSIDE DIAMETER OF PIPE
3. Bd = TRENCH WIDTH
4. D = INSIDE DIAMETER OF PIPE

STANDARD DRAWING NO. R-3050

EMBEDMENT
CLASS "D+" & "G"

CITY OF ROCKWALL

STANDARD SPECIFICATION REFERENCE 504.5

DATE Mar. 2018

STANDARD DRAWING NO. R-3050

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
AMANDA R. POWERS
110205
LICENSED PROFESSIONAL ENGINEER
8/24/2018

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

UTILITIES

WATER DETAILS

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED ARP
DRAWN JTP
REVISED -
CHECKED ARP
FILE NAME cv-wtu-dt-typ02.sht

NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

SHEET DT-02

SEQ. 101

MicroStation V8 User: chm Office: Dallas
ROK15508 N:\WTU\Drawings\cv-wtu-dt-typ02.ant
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This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

TEXAS REGISTERED ENGINEERING FIRM F-2144
FREESE AND NICHOLS, INC.

STATE OF TEXAS
AMANDA R. POWERS
110205
LICENSED PROFESSIONAL ENGINEER
8/24/2018

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL

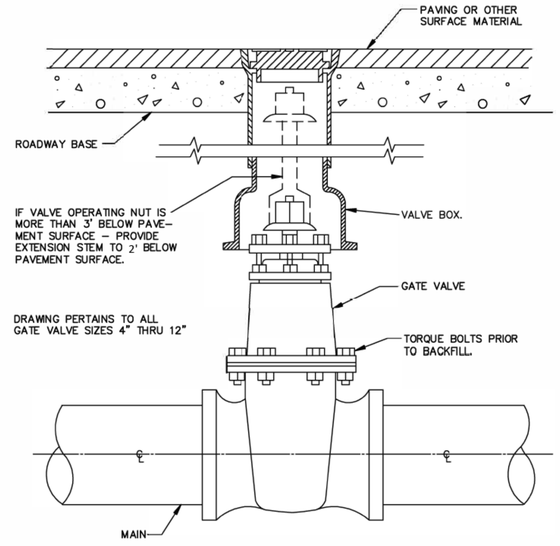
COUNTY LINE ROAD RECONSTRUCTION

CIVIL

UTILITY DETAILS

NOTE:

IN UNPAVED AREAS, INSTALL 2' x 2' x 6" CONCRETE VALVE PAD FLUSH WITH THE TOP OF VALVE BOX. REINFORCE WITH #3 BARS ON 6" CENTERS BOTH WAYS.

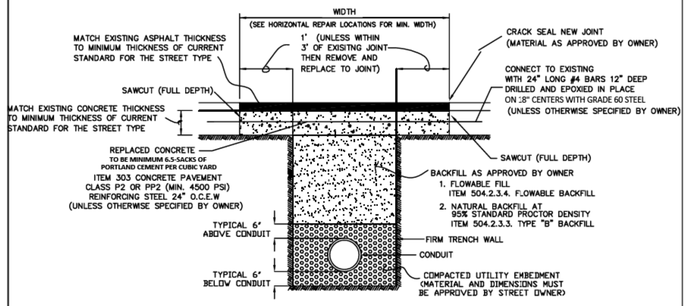


GATE VALVE BOX AND EXTENSION STEM
N.T.S.

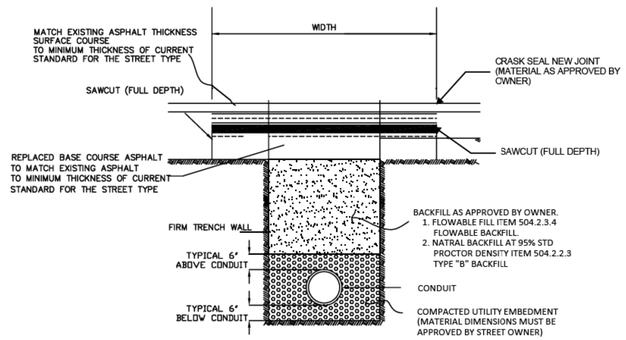
GATE VALVE 4" TO 12" BOX & EXTENSION STEM	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 502.6.6*	
		DATE Mar. 2018	STANDARD DRAWING NO. R-4050

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*

GENERAL NOTE: CHECK WITH STREET OWNER FOR SPECIFIC REQUIREMENTS NOT CONTAINED HEREIN

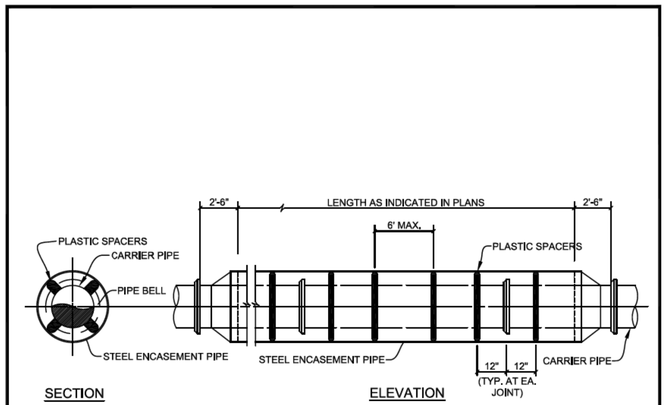


CONCRETE PAVEMENT WITH ASPHALT OVERLAY
N.T.S.



FULL DEPTH ASPHALT PAVEMENT
N.T.S.

PAVEMENT CUT AND REPAIR ASPHALT	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 402	
		DATE Mar. 2018	STANDARD DRAWING NO. R-3070B



ENCASED ROAD BORE
NO SCALE

NOTES:
1) ALL BORES BY CONTRACTOR SHALL BE DRY BORES.
2) PREFABRICATED PLASTIC SPACERS SHALL BE RACI NORTH AMERICA OR APPROVED EQUAL. FOR THE SPECIFIC APPLICATION AS RECOMMENDED BY THE MANUFACTURER.
3) CONTRACTOR SHALL PROVIDE SUPPORT UNDER CARRIER PIPE TO HAVE A MIN. 1" CLEARANCE BETWEEN PIPE BELL AND ENCASEMENT PIPE.
4) ENDS OF ENCASEMENT PIPE SHALL HAVE END SEALS INSTALLED PER MANUFACTURER'S REQUIREMENTS. END SEALS SHALL BE CCI MODEL ESW WRAP-AROUND BY CCI PIPELINE SYSTEMS OR APPROVED EQUAL.
5) THE DESIGN ENGINEER SHALL DESIGN THE MINIMUM THICKNESS OF THE ENCASEMENT PIPE. DESIGN WILL NEED TO INCLUDE DEAD LOADING BASED ON THE HEIGHT OF COVER AND HS-20 LOADINGS FOR ROADWAY CROSSINGS AND E-80 LOADINGS FOR RAILROAD CROSSINGS.
6) STEEL ENCASEMENT PIPE SHALL CONFORM TO AWWA C-200. PIPE SHALL BE FABRICATED IN ACCORDANCE WITH ASTM A-570 FROM STEEL PLATES HAVING MINIMUM YIELD STRENGTH 36,000 PSI.
7) STEEL ENCASEMENT PIPE SHALL BE PAINTED INSIDE AND OUTSIDE WITH TWO COATS OF TNEMEC, HB TNEMECOL, SERIES 46-465 COAL TAR, OR CITY APPROVED EQUIVALENT PRIOR TO DELIVERY TO THE JOB SITE. MINIMUM COATING INSIDE AND OUTSIDE SHALL BE 12+MILS DRY FILM THICKNESS (DFT) PER EACH COAT.
8) ENCASEMENT PIPE SHALL BE FEILD WELDED IN ACCORDANCE WITH AWWA C-206. WELDED JOINTS SHALL BE WIRE BRUSHED AND PAINTED WITH ONE COAT OF TNEMEC, OMNITHANE SERIES 530, 2.5-MILS DRY FILM THICKNESS 9DFT) OR CITY APPROVED EQUIVALENT.

UNDERGROUND CONDUIT STEEL ENCASED BORE	CITY OF ROCKWALL		
		DATE OCT. '17	DRAWING NO. R-3090

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

NO.	ISSUES	BY	DATE

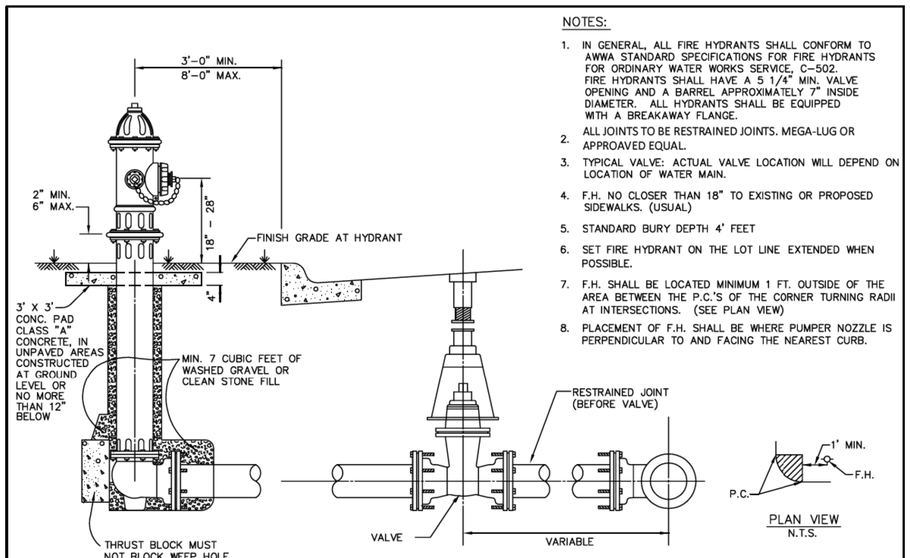
F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED AP
FILE NAME cv-trt-dt-utilDT01.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET DT-03
SEQ. 102

MicroStation V8 User: 02336Office: Dallas
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Date: Aug. 24, 2018 - 08:36:40 AM

Office: Dallas ROK15508 Date: Aug. 24, 2018 - 08:36:40 AM User: 02336File: N:\WTU\Drawings\cv-trt-dt-utilDT01.sht

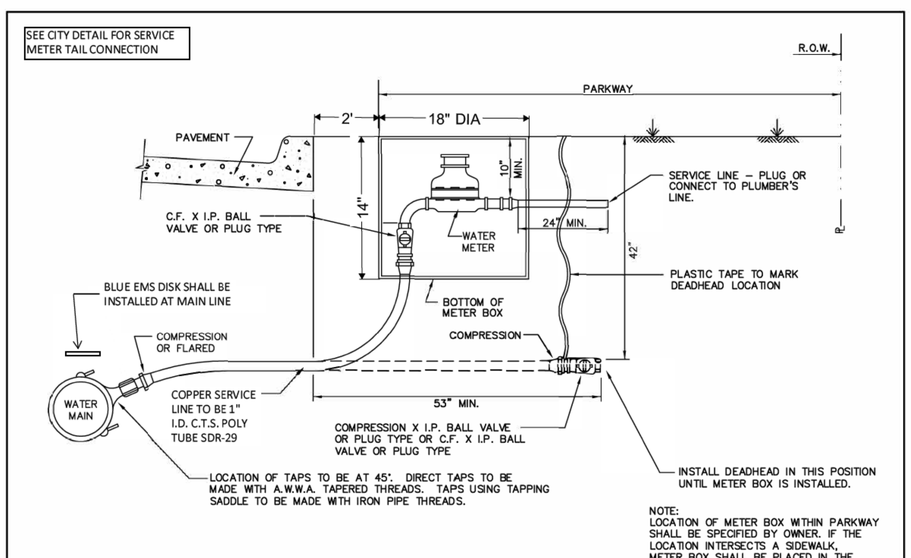


NOTES:

1. IN GENERAL, ALL FIRE HYDRANTS SHALL CONFORM TO AWWA STANDARD SPECIFICATIONS FOR FIRE HYDRANTS FOR ORDINARY WATER WORKS SERVICE, C-502. FIRE HYDRANTS SHALL HAVE A 5 1/4" MIN. VALVE OPENING AND A BARREL APPROXIMATELY 7" INSIDE DIAMETER. ALL HYDRANTS SHALL BE EQUIPPED WITH A BREAKAWAY FLANGE.
2. ALL JOINTS TO BE RESTRAINED JOINTS. MEGA-LUG OR APPROAVED EQUAL.
3. TYPICAL VALVE: ACTUAL VALVE LOCATION WILL DEPEND ON LOCATION OF WATER MAIN.
4. F.H. NO CLOSER THAN 18" TO EXISTING OR PROPOSED SIDEWALKS. (USUAL)
5. STANDARD BURY DEPTH 4' FEET
6. SET FIRE HYDRANT ON THE LOT LINE EXTENDED WHEN POSSIBLE.
7. F.H. SHALL BE LOCATED MINIMUM 1 FT. OUTSIDE OF THE AREA BETWEEN THE P.C.'S OF THE CORNER TURNING RADII AT INTERSECTIONS. (SEE PLAN VIEW)
8. PLACEMENT OF F.H. SHALL BE WHERE PUMPER NOZZLE IS PERPENDICULAR TO AND FACING THE NEAREST CURB.

STANDARD DRAWING NO. R-4120

FIRE HYDRANT INSTALLATION	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 502.3
		DATE Mar. 2018 / STANDARD DRAWING NO. R-4120



NOTE:
LOCATION OF METER BOX WITHIN PARKWAY SHALL BE SPECIFIED BY OWNER. IF THE LOCATION INTERSECTS A SIDEWALK, METER BOX SHALL BE PLACED IN THE CENTER OF SIDEWALK.

STANDARD DRAWING NO. R-4130

WATER SERVICE INSTALLATION 3/4" OR 1" LINE	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 502.10.3*
		DATE Mar. 2018 / STANDARD DRAWING NO. R-4130

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition*.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____
Date: 11/26/2018

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.
RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
AMANDA R. POWERS
110205
LICENSED PROFESSIONAL ENGINEER
8/24/2018

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
WATER DETAILS

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED AP
FILE NAME cv-trt-dt-utilDT02.sht

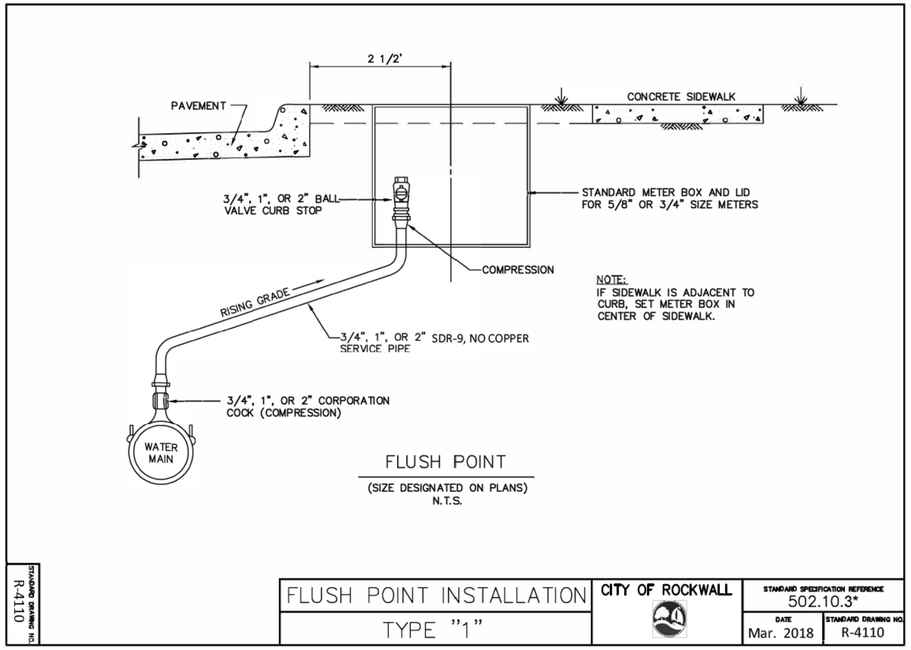
NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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SHEET DT-04
SEQ. 103

MicroStation V8 User: 02336Office: Dallas
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Date: Aug. 24, 2018 - 08:36:44 AM

Office: Dallas ROK15508 Date: Aug. 24, 2018 - 08:36:44 AM User: 02336File: N:\WTU\Drawings\cv-trt-dt-utilDT02.sht



FLUSH POINT

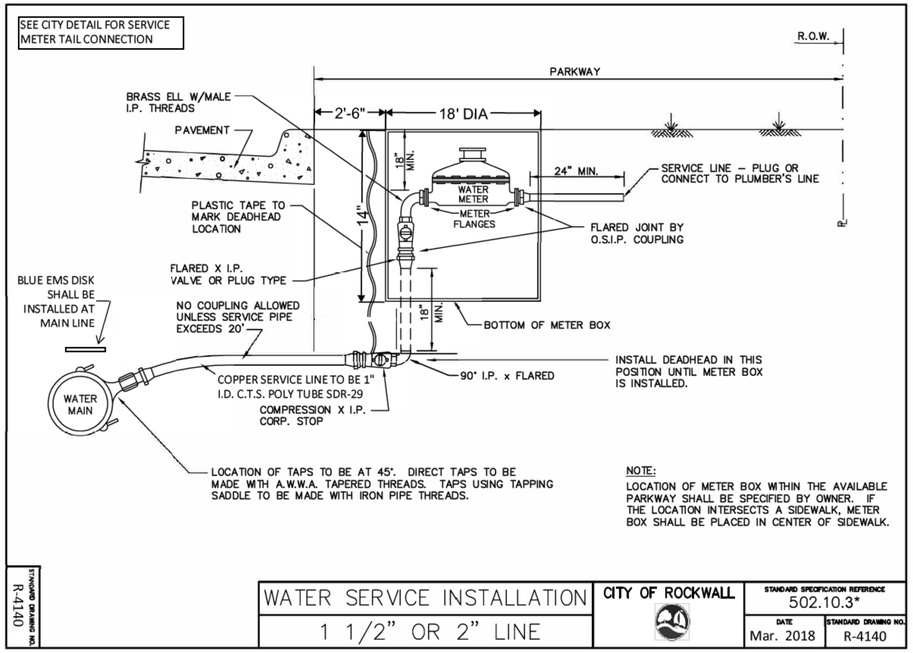
(SIZE DESIGNATED ON PLANS)

N.T.S.

STANDARD DRAWING NO. R-4110

FLUSH POINT INSTALLATION TYPE "1"	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 502.10.3*	
		DATE Mar. 2018	STANDARD DRAWING NO. R-4110

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*



STANDARD DRAWING NO. R-4140

WATER SERVICE INSTALLATION 1 1/2" OR 2" LINE	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 502.10.3*	
		DATE Mar. 2018	STANDARD DRAWING NO. R-4140

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021

TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS — AMANDA R. POWERS — 110205 — LICENSED PROFESSIONAL ENGINEER — 8/24/2018

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
WATER DETAILS

NO.	ISSUES	BY	DATE

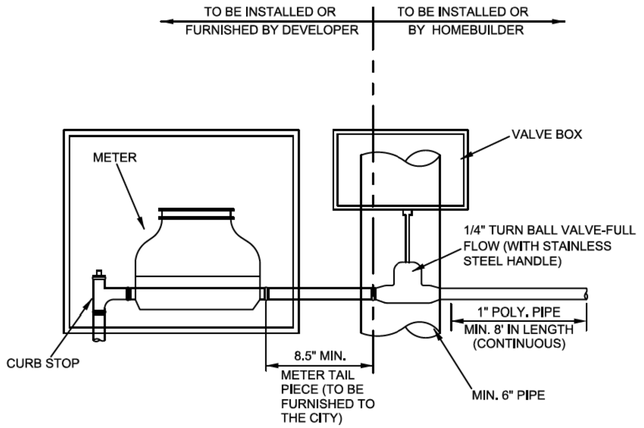
F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED AP
FILE NAME cv-trt-dt-utilDT02a.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

SHEET DT-05
SEQ. 104

MicroStation V8 User: chm Office: Dallas
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Date: Aug. 24, 2018 - 08:59:39 AM Project: Freese and Nichols, Inc.

Office: Dallas ROK15508 Date: Aug. 24, 2018 - 08:59:39 AM User: chm File: N:\WTU\Drawings\cv-trt-dt-utilDT02a.sht

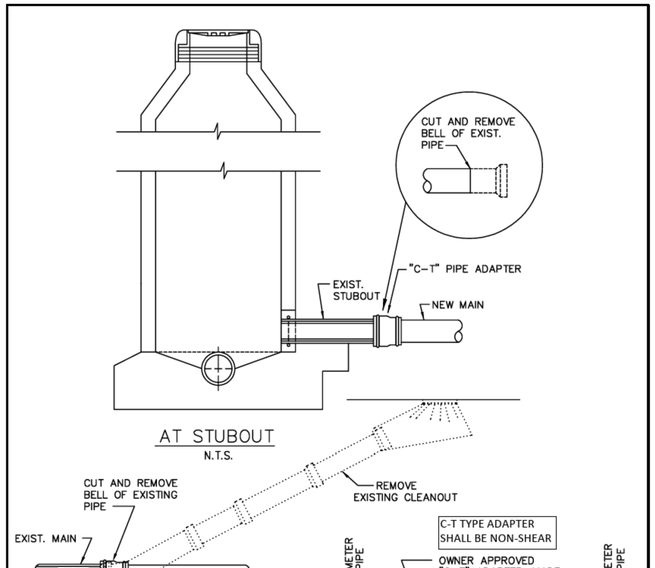


NOTE:

VALVE BOX TO BE TRAFFIC RATED IF UNDER PAVING.

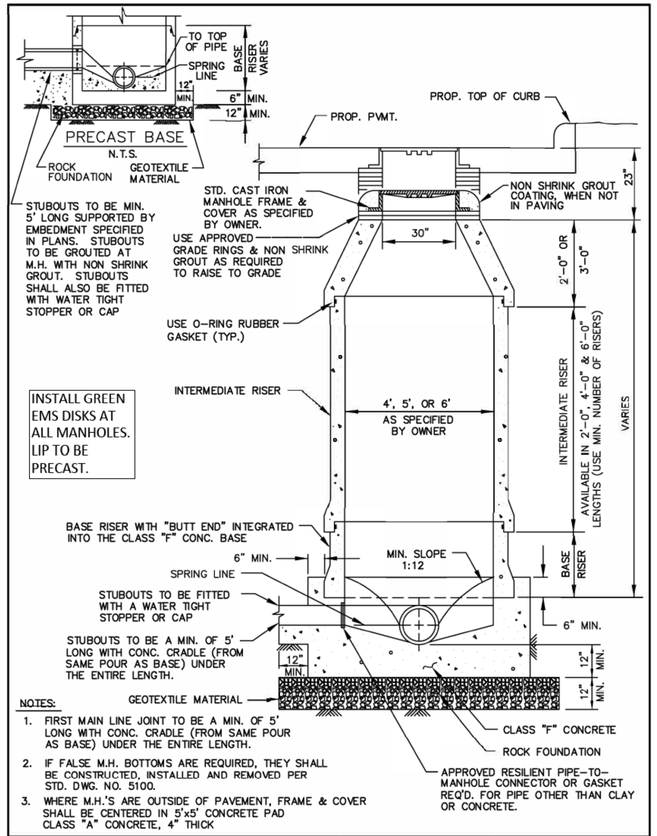
SINGLE SERVICE METER TAIL CONNECTION
NOT TO SCALE

WATER METER DETAIL	CITY OF ROCKWALL	
SINGLE SERVICE		DATE: AUG. '15 / DRAWING NO.: R-4145



NOTE:
THIS DETAIL FOR USE ONLY WHEN NEW MAIN WILL NOT MATE WITH EXISTING MAIN JOINT DUE TO DIFFERENT DIMENSIONS OR MATERIALS AND A MANHOLE IS NOT REQUIRED.

WASTEWATER MAIN TIE-IN AT CLEANOUT OR M.H. STUBOUT	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE: 502.10	DATE: Mar. 2018 / STANDARD DRAWING NO.: R-5010



NOTES:
1. FIRST MAIN LINE JOINT TO BE A MIN. OF 5' LONG WITH CONC. CRADLE (FROM SAME POUR AS BASE) UNDER THE ENTIRE LENGTH.
2. IF FALSE M.H. BOTTOMS ARE REQUIRED, THEY SHALL BE CONSTRUCTED, INSTALLED AND REMOVED PER STD. DWG. NO. 5100.
3. WHERE M.H.'S ARE OUTSIDE OF PAVEMENT, FRAME & COVER SHALL BE CENTERED IN 5'x5' CONCRETE PAD CLASS "A" CONCRETE, 4" THICK

WASTEWATER MANHOLE PRECAST	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE: 502.1.4.12*	DATE: Mar. 2018 / STANDARD DRAWING NO.: R-5020

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
AMANDA R. POWERS
110205
LICENSED PROFESSIONAL ENGINEER
8/24/2018

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
WATER & WASTEWATER DETAILS

F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
DRAWN SI
REVISED
CHECKED AP
FILE NAME cv-trt-dt-utlDT03.sht

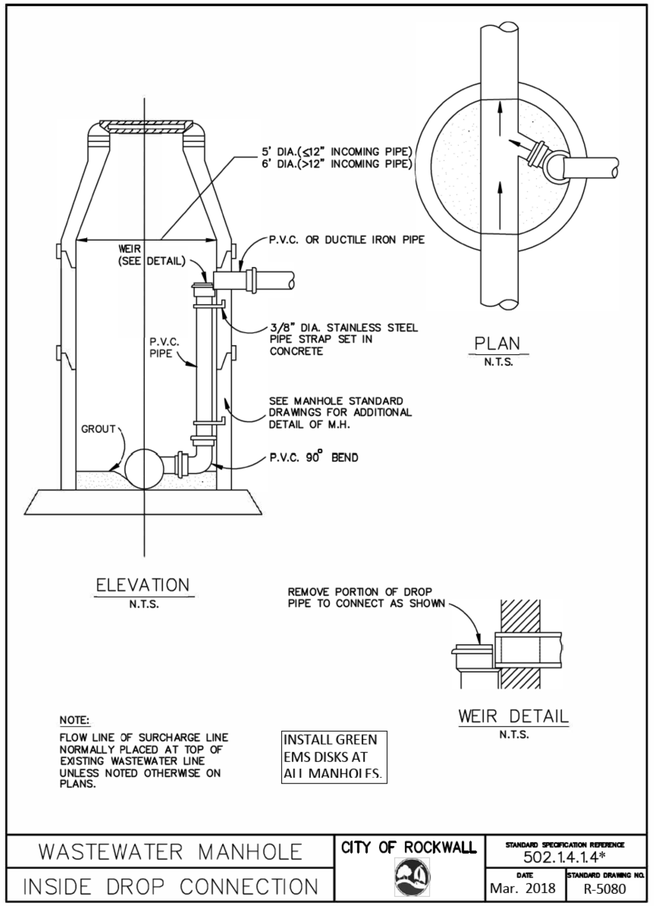
NO. ISSUES | BY | DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET DT-06
SEQ. 105

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

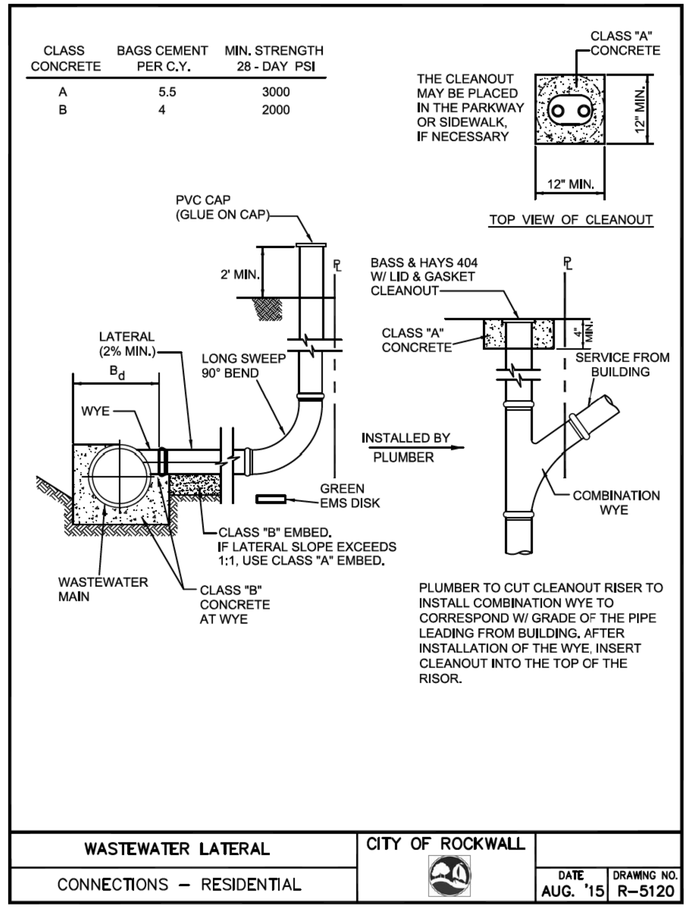
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Date & Time: 8/24/2018 09:01:11 AM



WASTEWATER MANHOLE	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 502.1.4.1.4*
INSIDE DROP CONNECTION		DATE Mar. 2018 / STANDARD DRAWING NO. R-5080

*Section II Standard Drawings as of October 2004. Reference number only has been updated for Fifth Edition Specifications. *Public Works Construction Standards North Central Texas, Fifth Edition.*

CLASS CONCRETE	BAGS CEMENT PER C.Y.	MIN. STRENGTH 28 - DAY PSI
A	5.5	3000
B	4	2000



WASTEWATER LATERAL	CITY OF ROCKWALL	
CONNECTIONS – RESIDENTIAL		DATE AUG. '15 / DRAWING NO. R-5120

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RECORD DRAWINGS PREPARED ON: 3/17/2021
TEXAS REGISTERED ENGINEERING FIRM F-2144
STATE OF TEXAS AMANDA R. POWERS 110205 LICENSED PROFESSIONAL ENGINEER 8/24/2018
FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
WASTEWATER DETAILS

F&N JOB NO.	ROK15508
DATE	08/2018
DESIGNED	AU
DRAWN	SI
CHECKED	AP
FILE NAME	cv-trt-dt-utilDT04.sht

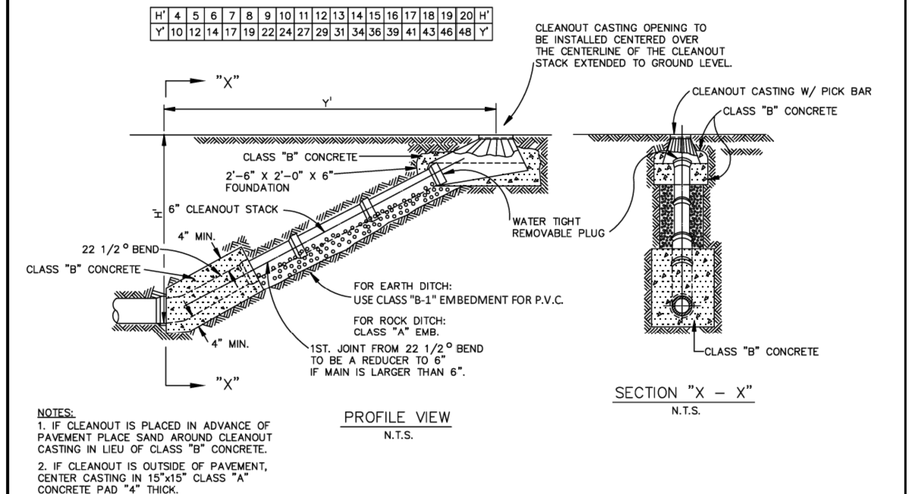
NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

SHEET DT-07
SEQ. 106

MicroStation V8 User: chm Office: Dallas
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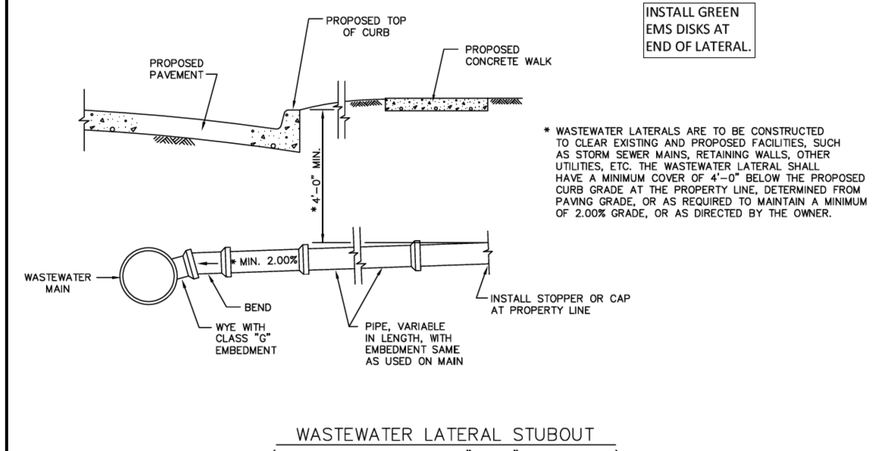
PROFILE VIEW
N.T.S.

SECTION "X – X"
N.T.S.

NOTES:
1. IF CLEANOUT IS PLACED IN ADVANCE OF PAVEMENT PLACE SAND AROUND CLEANOUT CASTING IN LIEU OF CLASS "B" CONCRETE.
2. IF CLEANOUT IS OUTSIDE OF PAVEMENT, CENTER CASTING IN 15"x15" CLASS "A" CONCRETE PAD "4" THICK.

STANDARD DRAWING NO. R-5110

WASTEWATER MAIN CLEANOUT	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 502.2
		DATE Mar. 2018 / STANDARD DRAWING NO. R-5110



* WASTEWATER LATERALS ARE TO BE CONSTRUCTED TO CLEAR EXISTING AND PROPOSED FACILITIES, SUCH AS STORM SEWER MAINS, RETAINING WALLS, OTHER UTILITIES, ETC. THE WASTEWATER LATERAL SHALL HAVE A MINIMUM COVER OF 4'-0" BELOW THE PROPOSED CURB GRADE AT THE PROPERTY LINE, DETERMINED FROM PAVING GRADE, OR AS REQUIRED TO MAINTAIN A MINIMUM OF 2.00% GRADE, OR AS DIRECTED BY THE OWNER.

WASTEWATER LATERAL STUBOUT
(FOR FUTURE CONNECTION, 4" OR 6" AS SPECIFIED)
N.T.S.

STANDARD DRAWING NO. R-5150

WASTEWATER LATERAL STUBOUT IN ADVANCE OF PAVING	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 502.10
		DATE Mar. 2018 / STANDARD DRAWING NO. R-5150

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: Amy M. Ahlbe, P.E., CFM
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
AMANDA R. POWERS
110205
LICENSED PROFESSIONAL ENGINEER
8/24/2018

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL
COUNTY LINE ROAD RECONSTRUCTION
CIVIL
WASTEWATER DETAILS

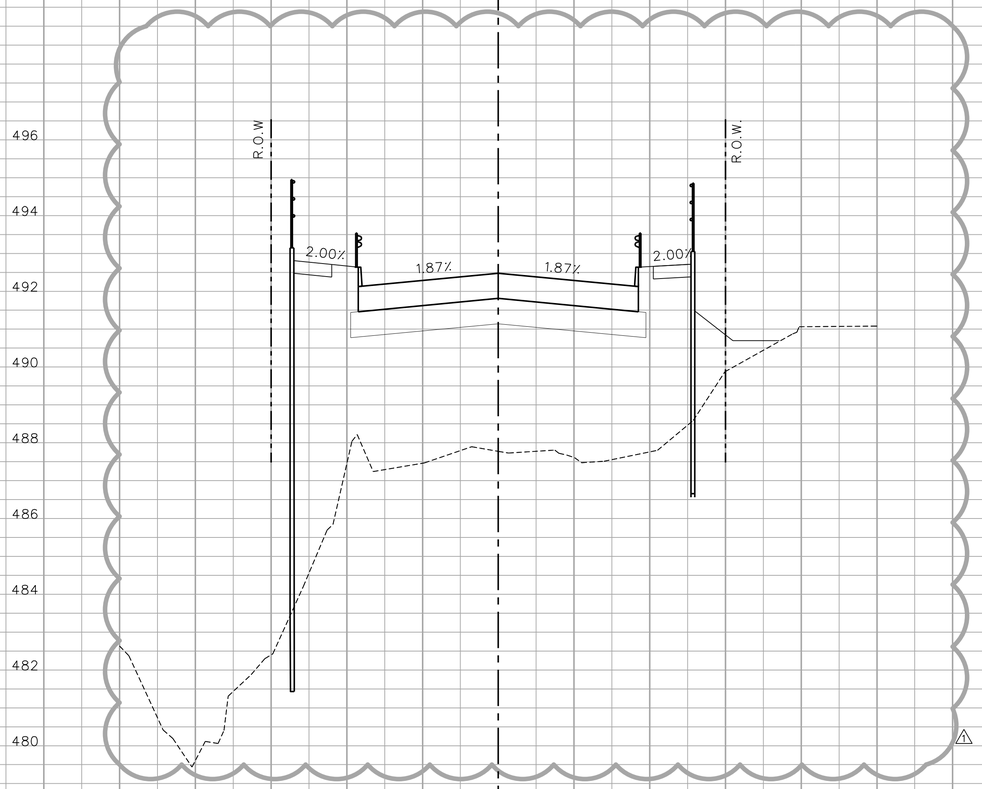
F&N JOB NO. ROK15508
DATE 08/2018
DESIGNED AU
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REVISED
CHECKED AP
FILE NAME cv-trt-dt-utilDT05.sht

NO. ISSUES / BY / DATE

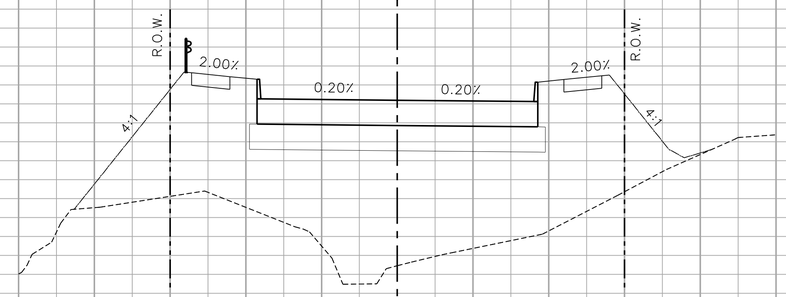
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SHEET DT-08
SEQ. 107

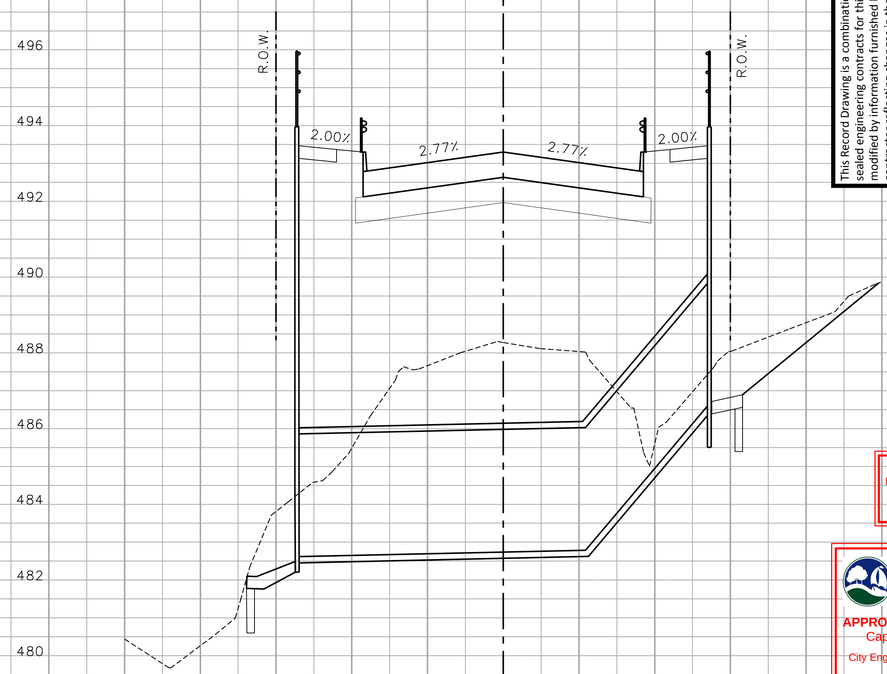
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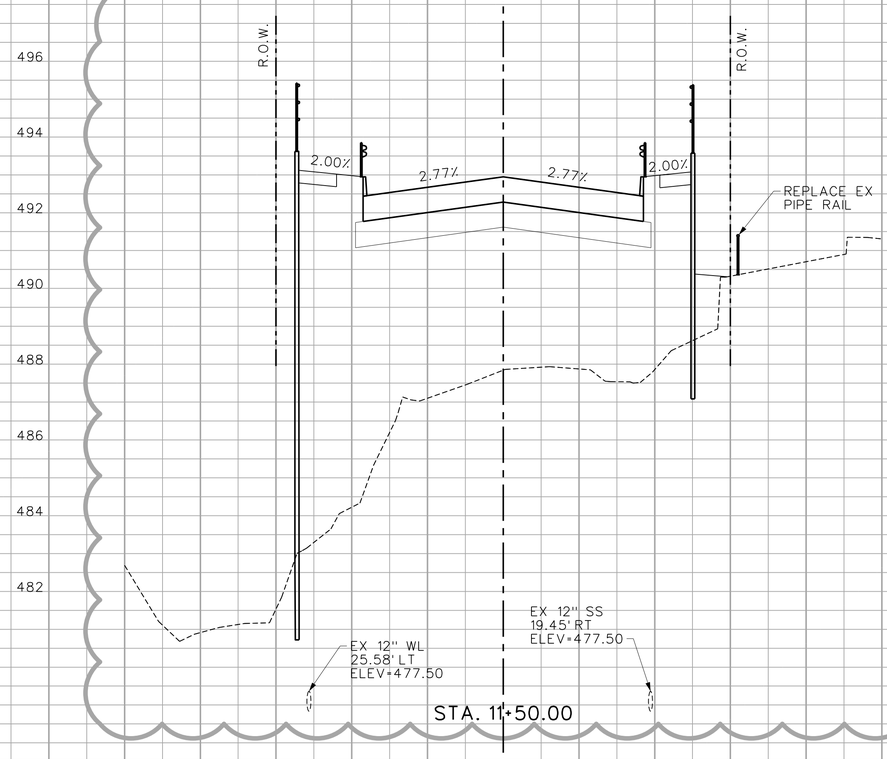
STA. 11+00.00



STA. 10+50.00



STA. 12+00.00



STA. 11+50.00

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RECORD DRAWINGS PREPARED ON: 3/17/2021

THE SEAL THAT ORIGINALLY APPEARED ON THIS DOCUMENT WAS AUTHORIZED BY BRANDON J. HUXFORD TEXAS NO. 137072 ON 9/27/18 ALTERATION OF A SEALED DOCUMENT WITHOUT PROPER NOTIFICATION OF THE RESPONSIBLE ENGINEER IS AN OFFENSE UNDER THE TEXAS ENGINEERING PRACTICE ACT.

REVISION
DATE: 04/11/2019
City of Rockwall
Public Works Department
Engineering Division

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 04/11/2019

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
ALAN D. HENDRIX
69798
REGISTERED
PROFESSIONAL ENGINEER
4/10/2019

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

CROSS SECTIONS
BEGIN TO STA 12+00

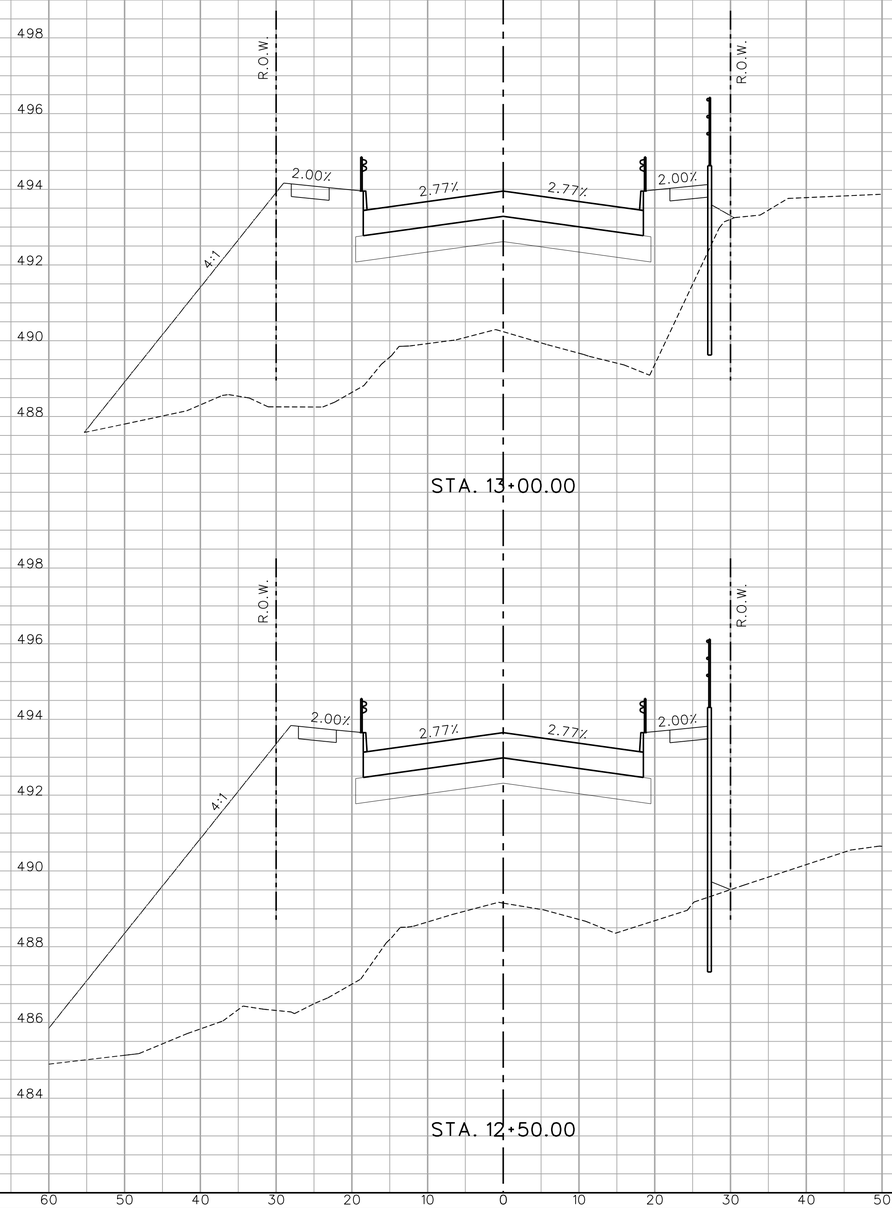
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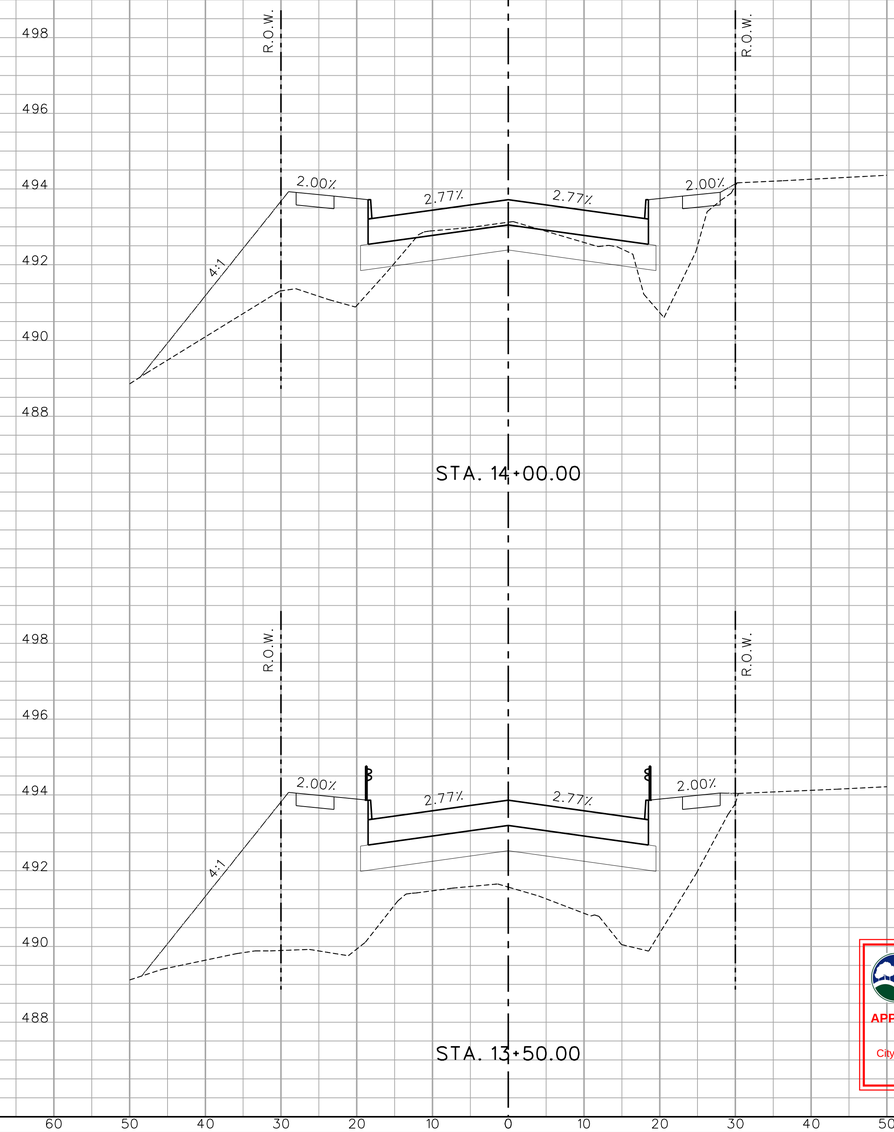
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F&N JOB NO. ROK15508
DATE 04/2019
DESIGNED AL
DRAWN SI
REVISED
CHECKED
FILE NAME cv-trt-pr-XS01.sht

SHEET XS-01
SEQ. 108

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Plot: Apr. 10, 2019 - 11:19:52 AM





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RECORD DRAWINGS PREPARED ON:
3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED
PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

CROSS SECTIONS
STA 12+50 TO STA 14+00

F&N JOB NO.	ROK15508
DATE	06/2018
DESIGNED	AL
DRAWN	SI
REVISED	
CHECKED	
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NO.	ISSUES	BY	DATE

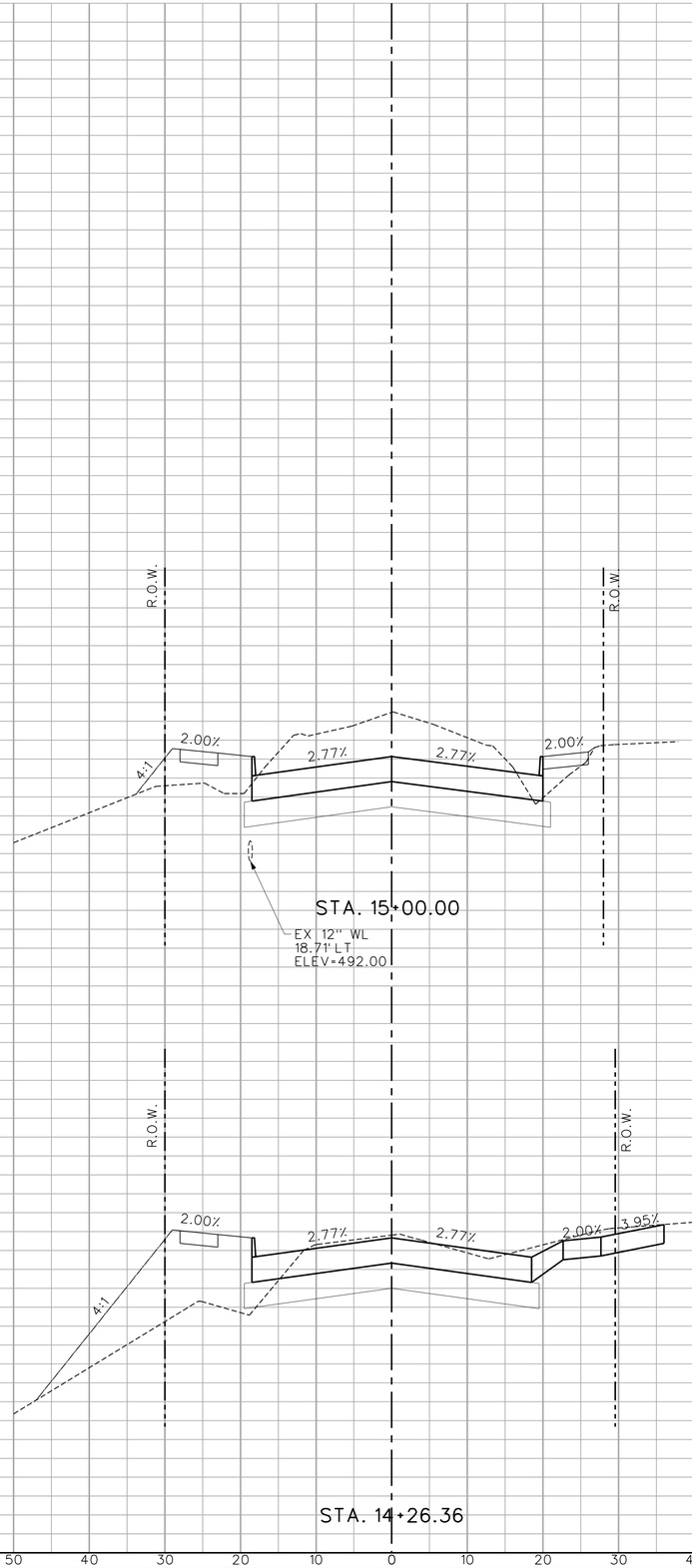
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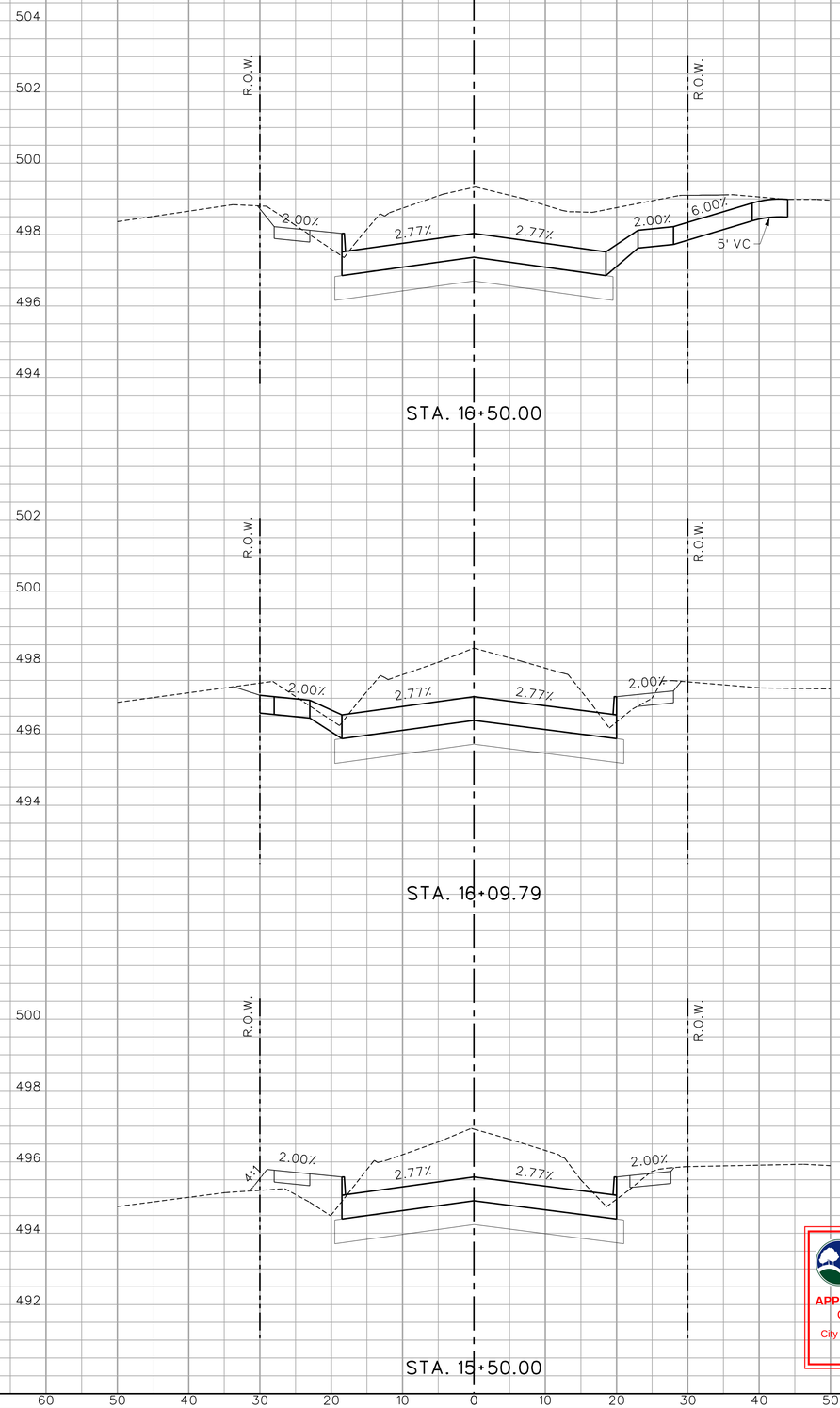
City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], PE, CFM
Date: 11/26/2018

SHEET
XS-02

SEQ.
109

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Project: Freese and Nichols, Inc.
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Plot Date: 26 Aug 2018 - 01:50:13 AM





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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED
PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

CROSS SECTIONS
STA 14+26.36 TO STA 16+50

NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 06/2018
DESIGNED AL
DRAWN SI
REVISED
CHECKED
FILE NAME cv-trt-pr-XS01.sht

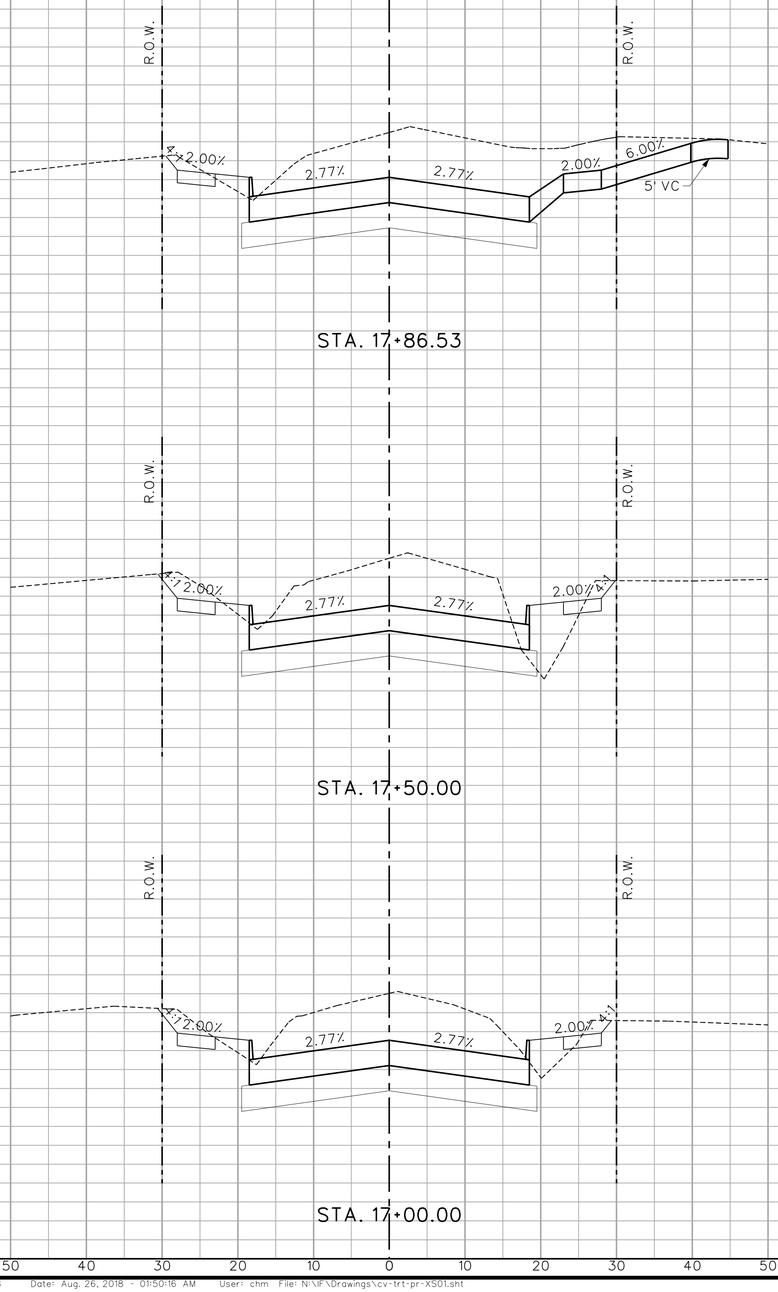
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0 1"

SHEET XS-03
SEQ. 110

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], PE, CFM
Date: 11/26/2018

MicroStation V8 User: chm Office: Dallas
ROK15508 N:\IF\Drawings\cv-trt-pr-XS01.sht
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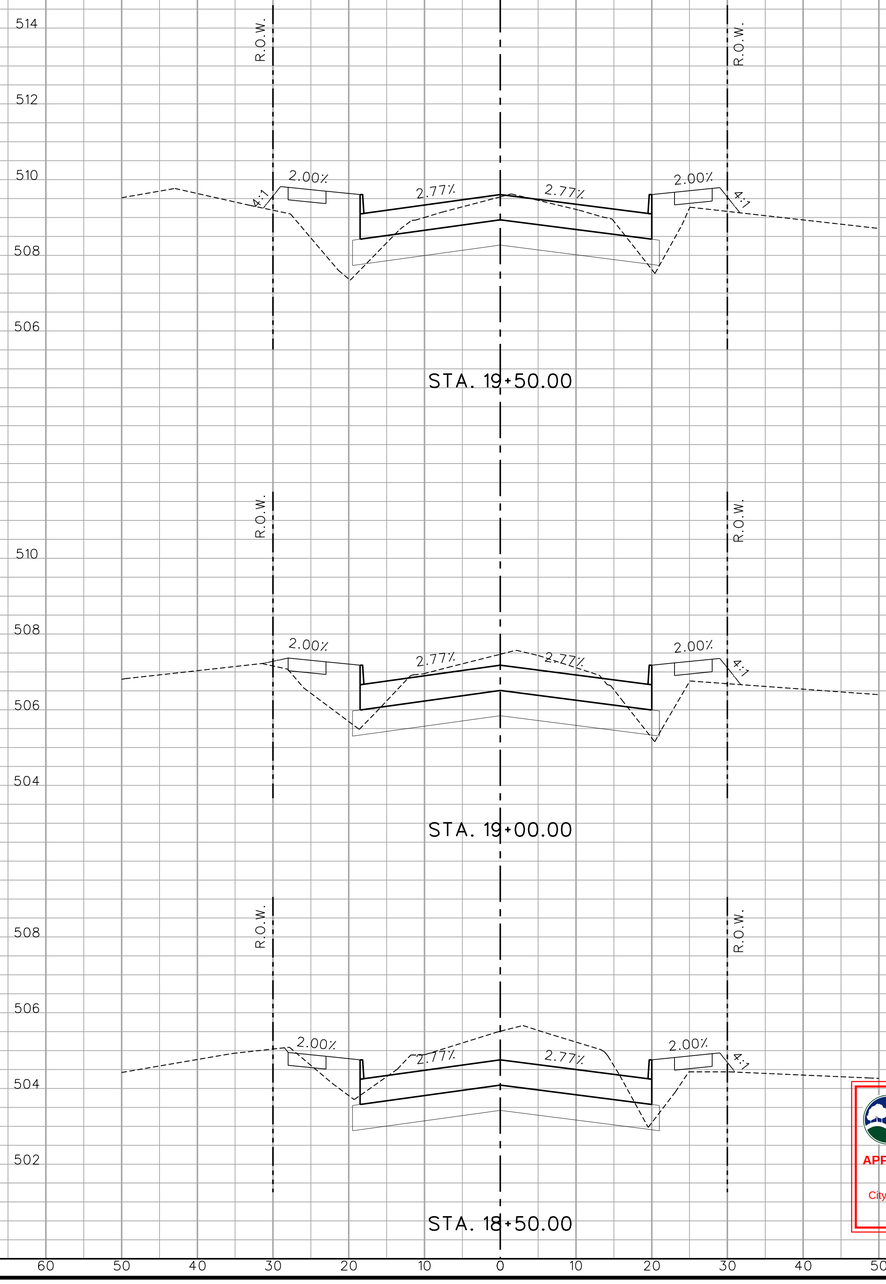
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STA. 17+86.53

STA. 17+50.00

STA. 17+00.00



STA. 19+50.00

STA. 19+00.00

STA. 18+50.00

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

CROSS SECTIONS
STA 17+00 TO STA 19+50

F&N JOB NO.	R0K15508
DATE	06/2018
DESIGNED	AL
DRAWN	SI
REVISED	
CHECKED	
FILE NAME	cv-trt-pr-XS01.sht

NO.	BY	DATE	ISSUES

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

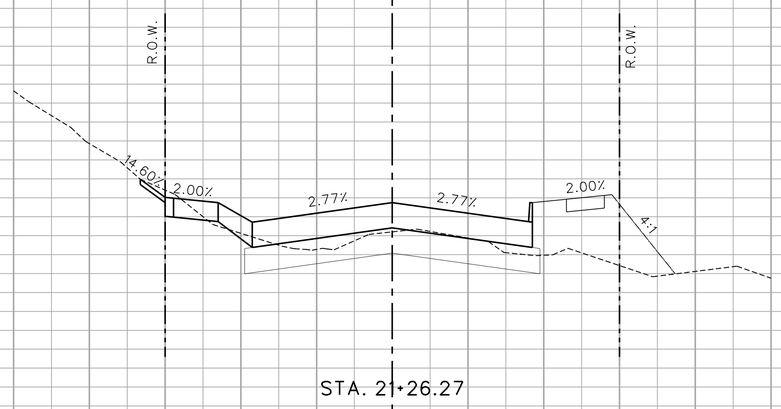
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City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

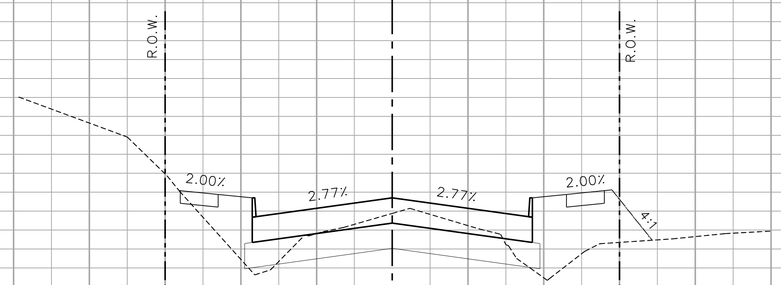
SHEET
XS-04

SEQ.
111

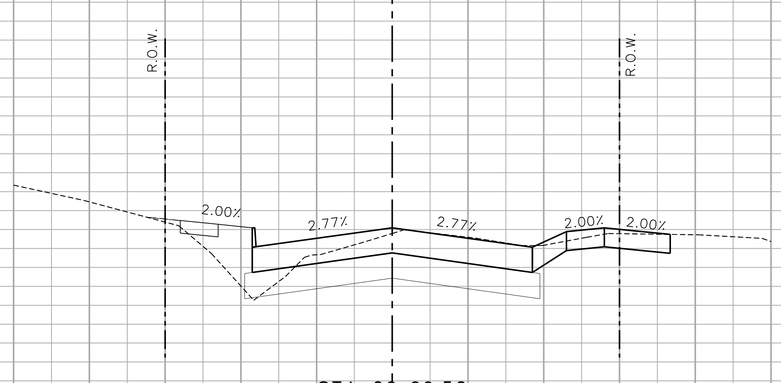
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Plot Scale: 20.0000 '/ in. Model: Main Border
Date: Aug. 26, 2018 - 01:50:16 AM Project: Freese and Nichols, Inc.



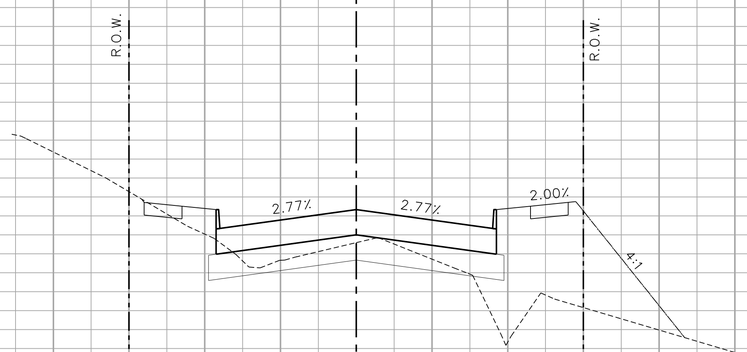
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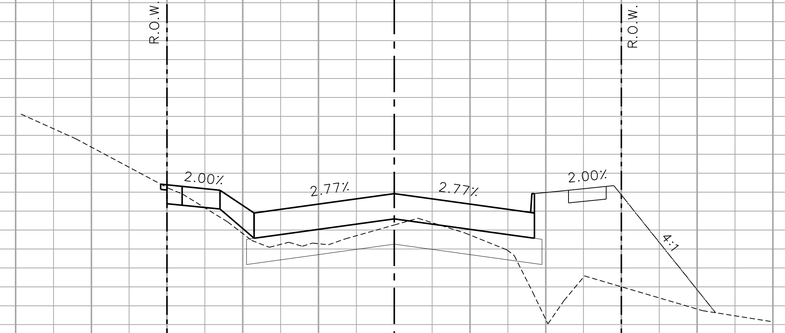
STA. 20+50.00



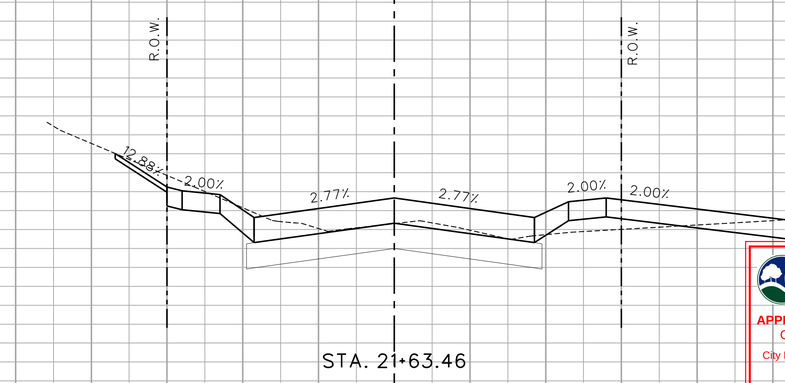
STA. 20+09.52



STA. 22+50.00



STA. 22+13.85



STA. 21+63.46

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED
PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

CROSS SECTIONS
STA 20+09.52 TO STA 22+36.56

NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

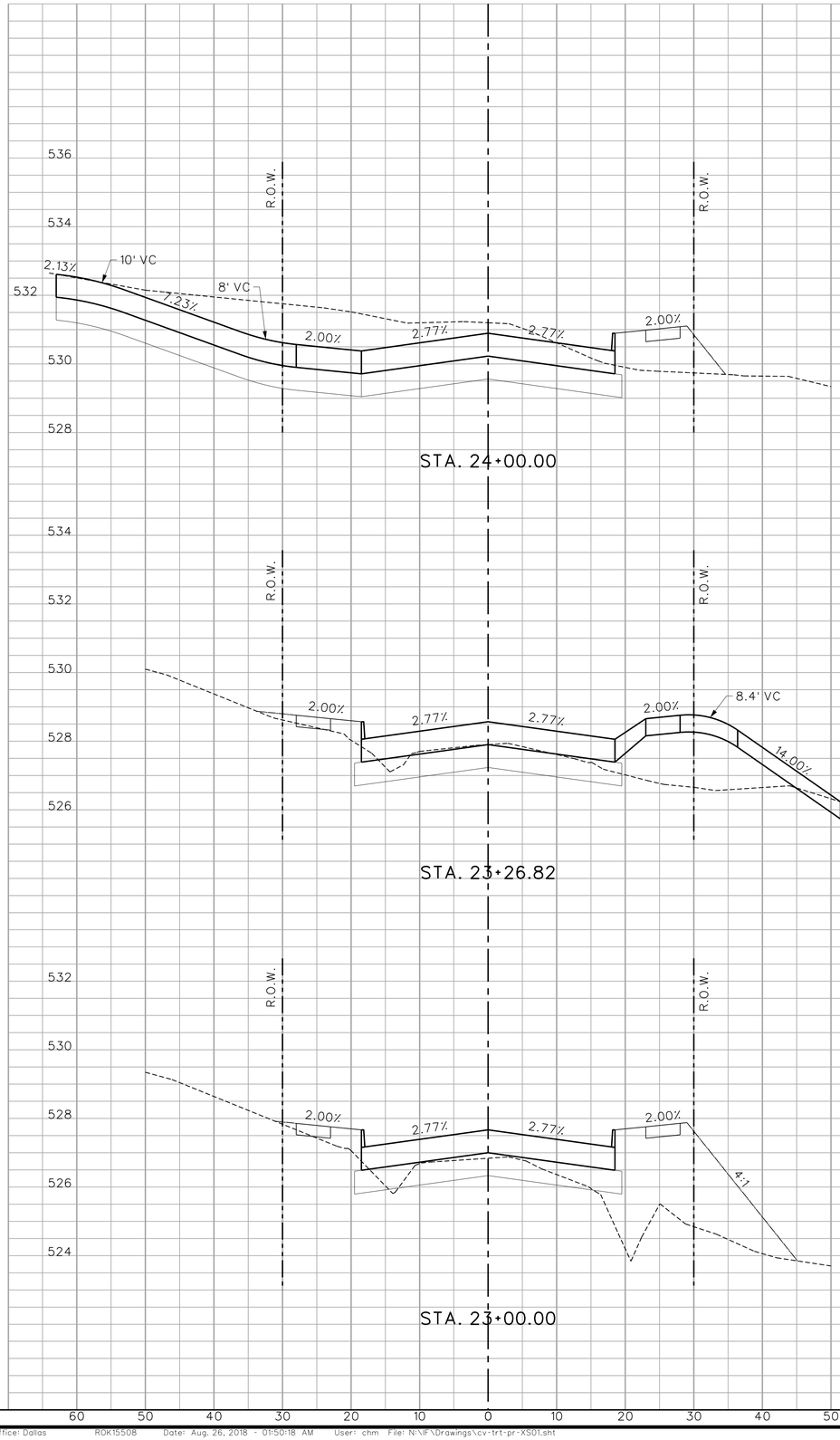
F&N JOB NO. ROK15508
DATE 06/2018
DESIGNED AL
DRAWN SI
REVISED
CHECKED
FILE NAME cv-trt-pr-XS01.sht

SHEET XS-05
SEQ. 112

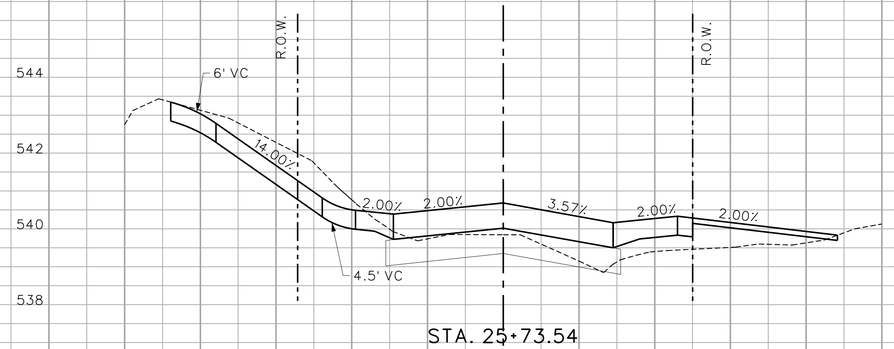
City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: Amy M. Mitchell, PE, CFM
Date: 11/26/2018

MicroStation V8 User: chm Office: Dallas
ROK15508 K:\Dallas\ROK15508\Drawings\cv-trt-pr-XS01.sht
Model: Main Border Project: Freese and Nichols, Inc.
Plot Scale: 20.0000 '/ in. Plot Date: 26-FEB-2018 - 08:50:17 AM

Office: Dallas ROK15508 Date: Aug. 26, 2018 - 01:50:17 AM User: chm File: N:\IF\Drawings\cv-trt-pr-XS01.sht

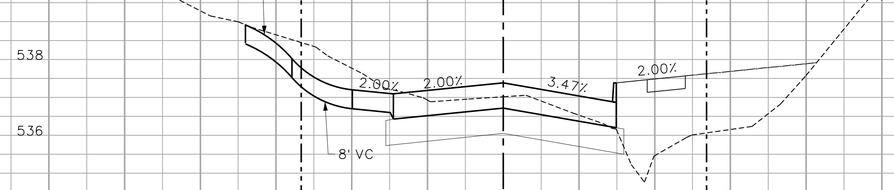


STA. 24+00.00



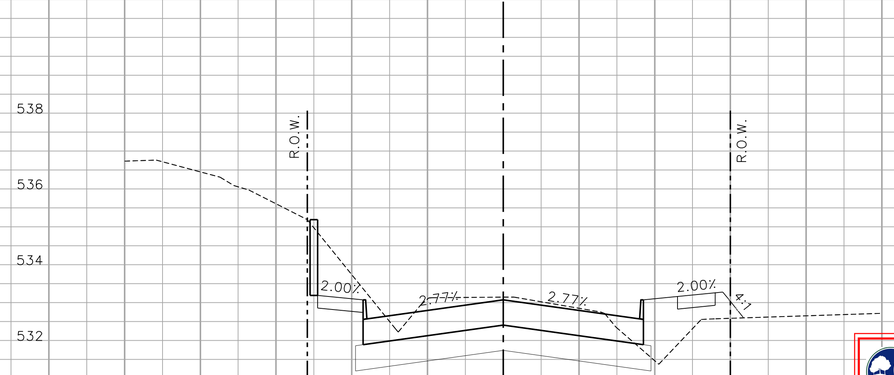
STA. 25+73.54

STA. 23+26.82



STA. 25+25.73

STA. 23+00.00



STA. 24+50.00

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

CROSS SECTIONS
STA 23+00 TO STA 25+73.54

NO.	ISSUES	BY	DATE

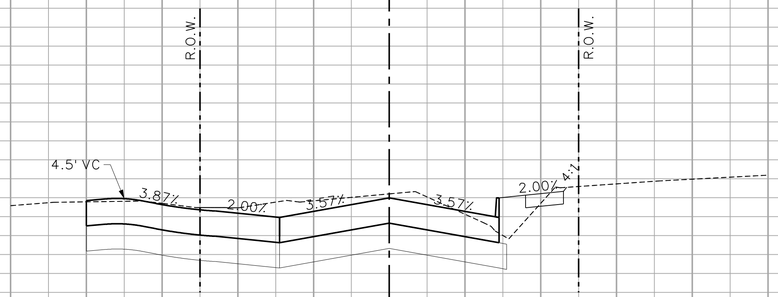
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

F&N JOB NO. R0K15508
DATE 06/2018
DESIGNED AL
DRAWN SI
REVISED
CHECKED
FILE NAME cv-trt-pr-XS01.sht

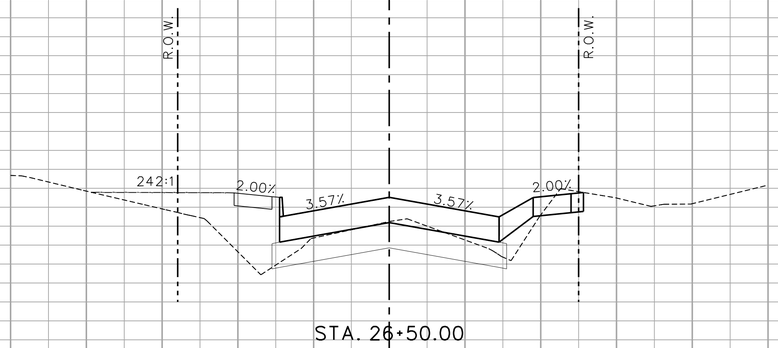
SHEET XS-06
SEQ. 113

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], PE, CFM
Date: 11/26/2018

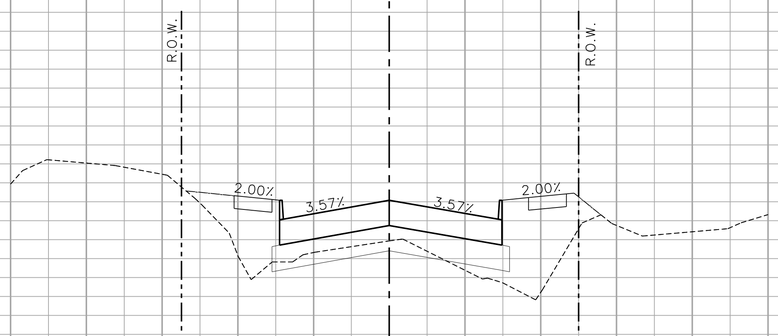
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Model: Main Border
Project Freese and Nichols, Inc.



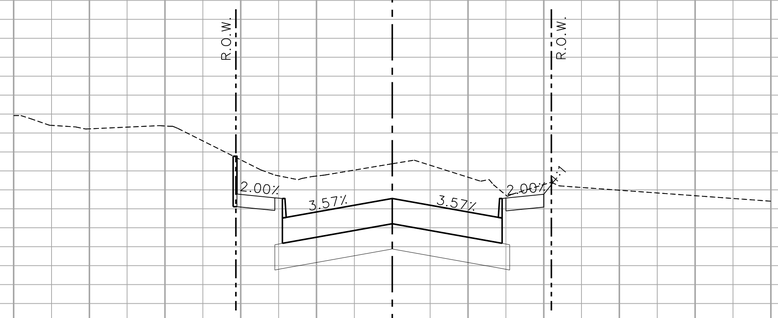
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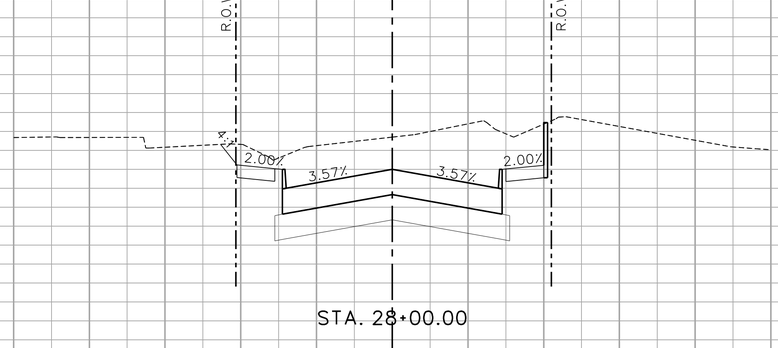
STA. 26+50.00



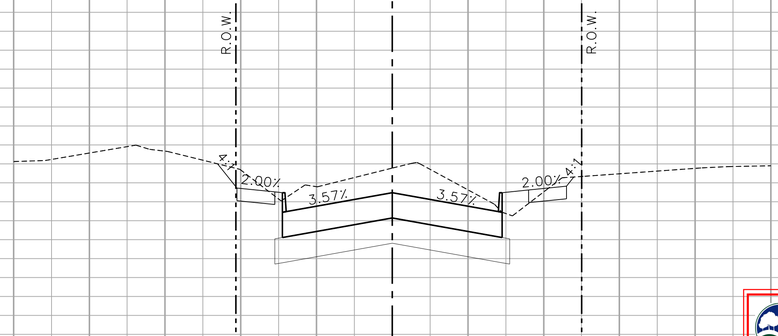
STA. 26+00.00



STA. 28+50.00



STA. 28+00.00



STA. 27+50.00

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

CROSS SECTIONS
STA 26+00 TO STA 28+50

F&N JOB NO. ROK15508

NO.	ISSUES	BY	DATE

	DATE	FILE NAME
DESIGNED	06/2018	cv-trt-pr-XS01.sht
DRAWN	AL	
REVISED	S	
CHECKED		

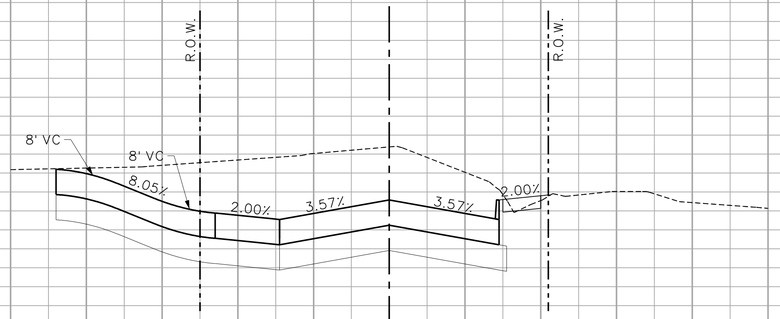
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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SHEET XS-07

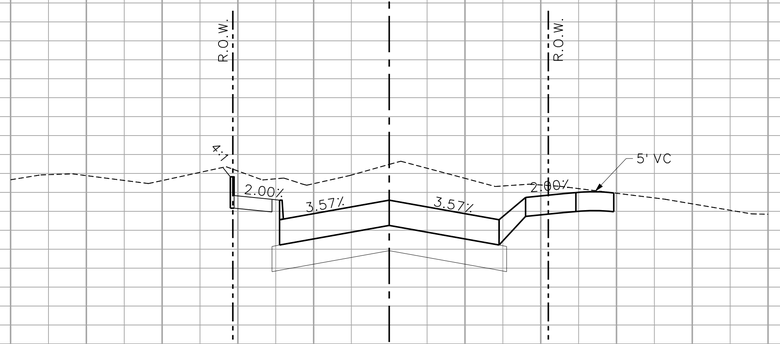
SEQ. 114

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

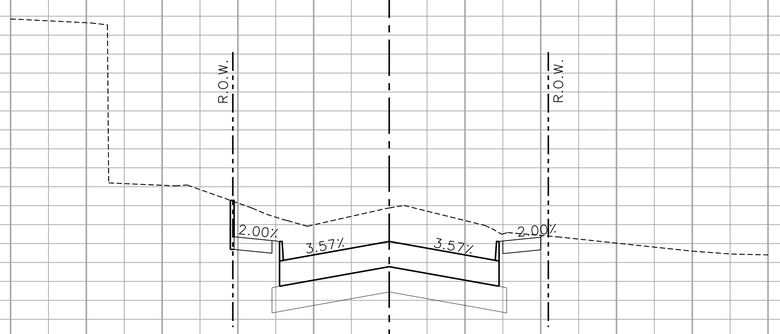
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Plot Date: Aug. 26, 2018 - 01:50:19 AM Project: Freese and Nichols, Inc.



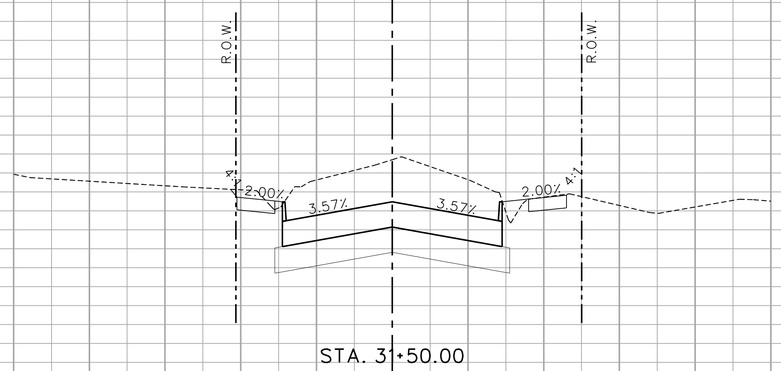
STA. 29+81.02



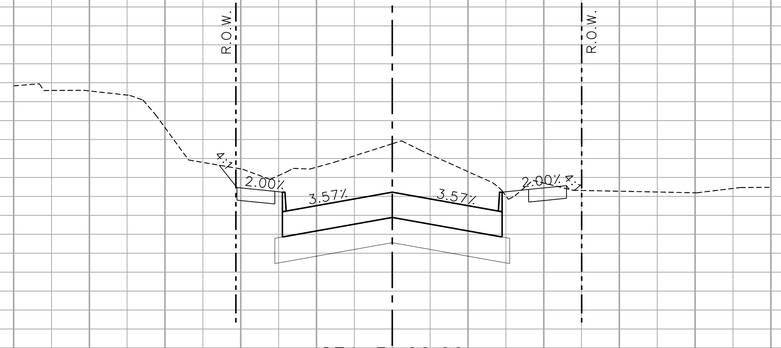
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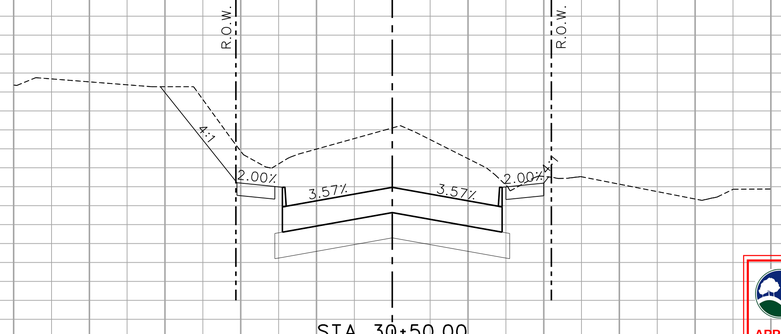
STA. 29+00.00



STA. 31+50.00



STA. 31+00.00



STA. 30+50.00

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED
PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2211
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

CROSS SECTIONS
STA 29+00 TO STA 31+50

F&N JOB NO. ROK15508
DATE 06/2018
DESIGNED AL
DRAWN S
CHECKED
FILE NAME cv-trt-pr-XS01.sht

NO.	ISSUES	BY	DATE

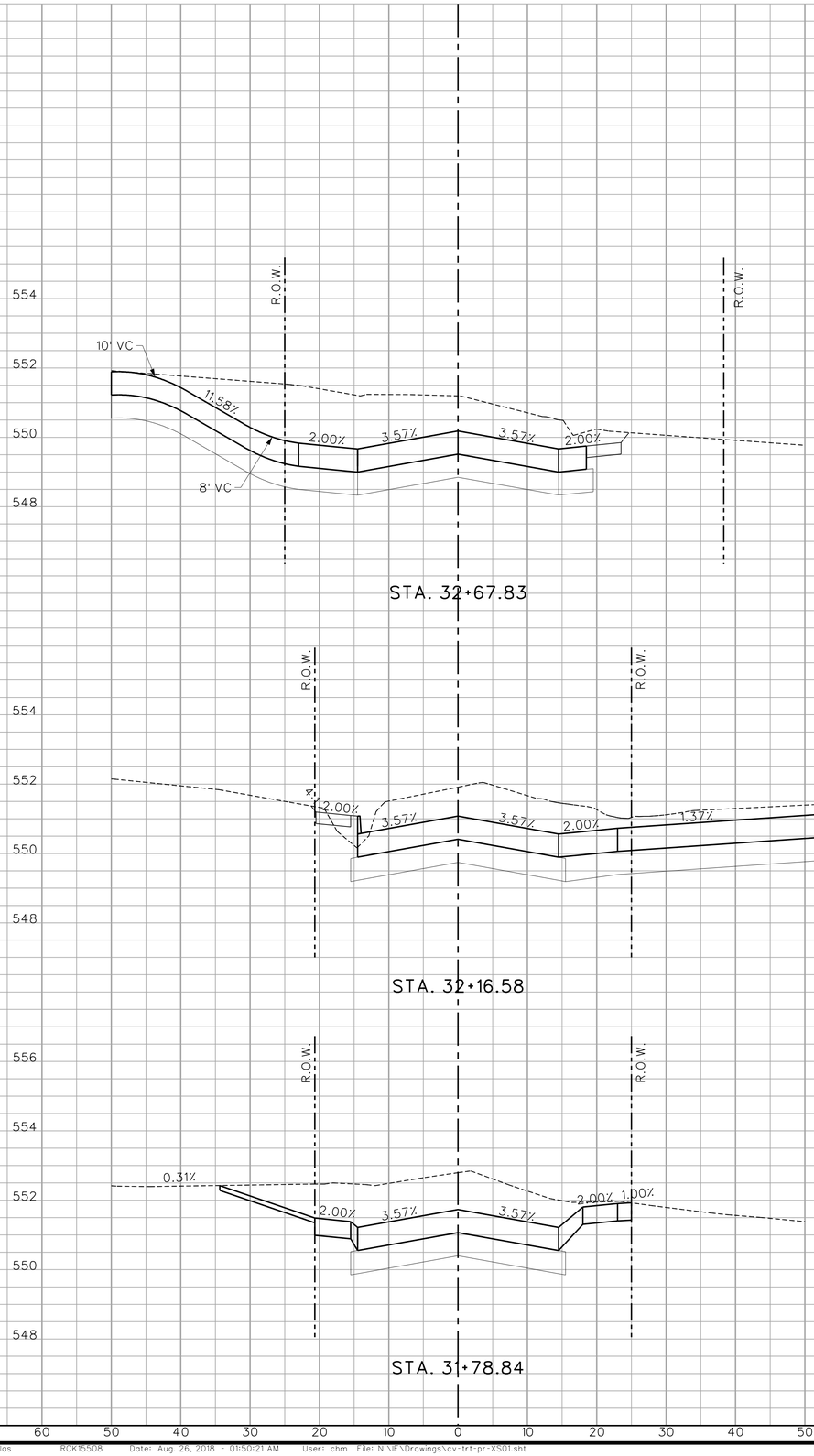
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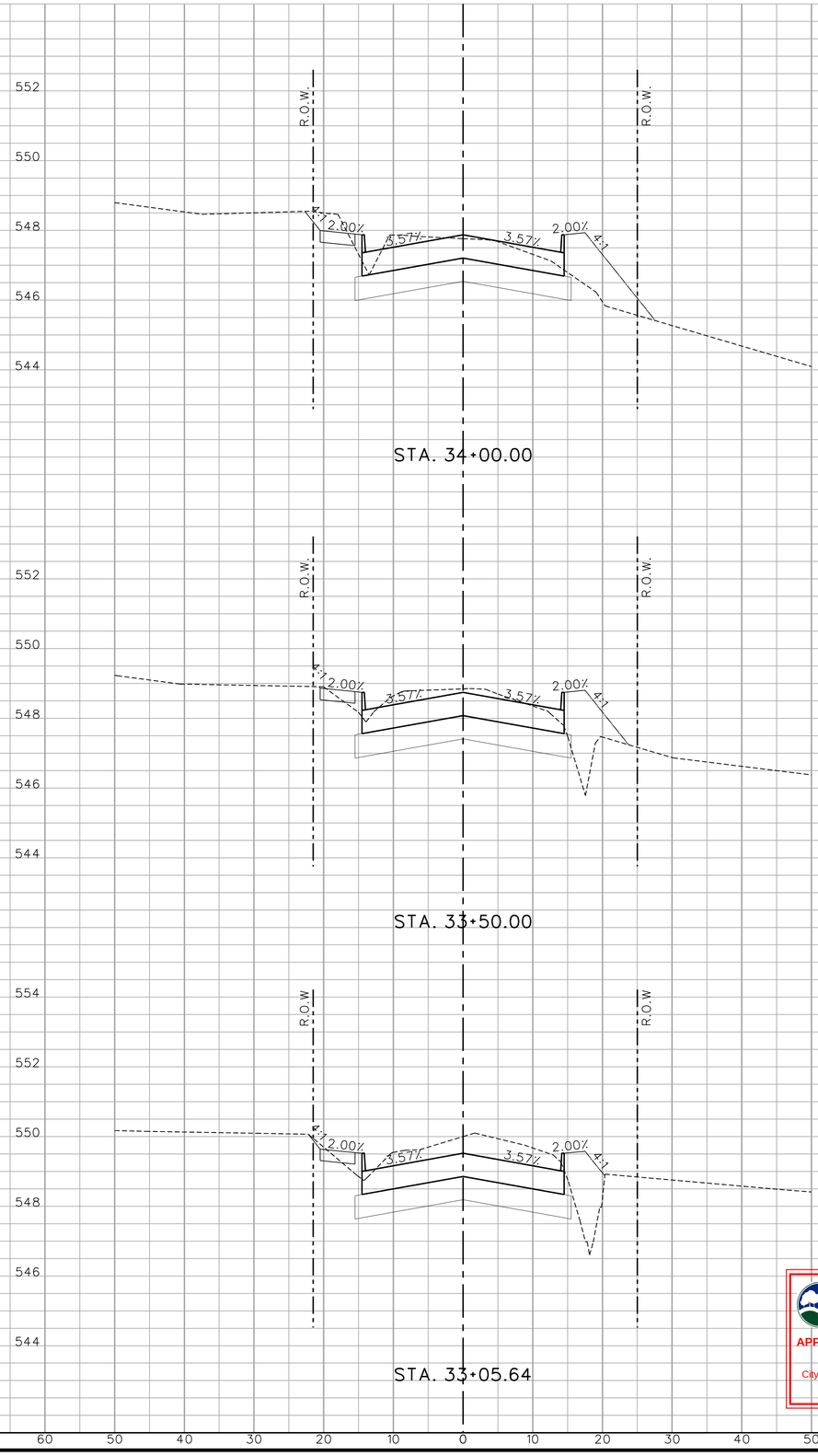
City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

SHEET XS-08
SEQ. 115

MicroStation V8 User: chm Office: Dallas
ROK15508 N:\F\Drawings\cv-trt-pr-XS01.sht
Plot Driver: HP Latex 370 for WDF Models.pltcfg
Plot Scale: 20.0000 '/ in. Model: Main Border
Plot Date: Aug. 26, 2018 - 01:50:20 AM Project: Freese and Nichols, Inc.

Office: Dallas ROK15508 Date: Aug. 26, 2018 - 01:50:20 AM User: chm File: N:\F\Drawings\cv-trt-pr-XS01.sht





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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

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Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

CROSS SECTIONS
STA 31+78.84 TO STA 34+00

NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 06/2018
DESIGNED AL
DRAWN SI
REVISED
CHECKED
FILE NAME cv-trt-pr-XS01.sht

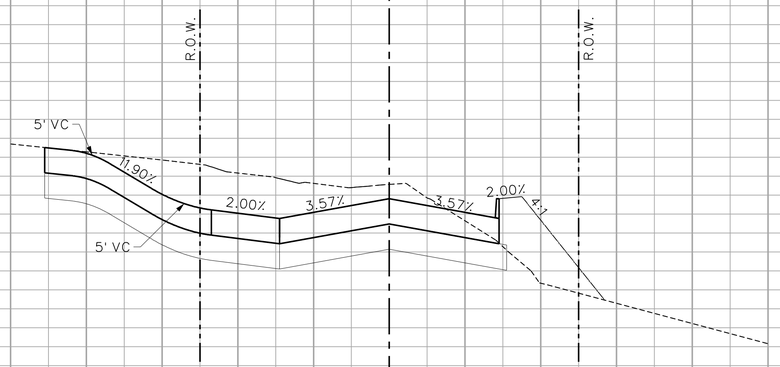
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____, PE, CFM
Date: 11/26/2018

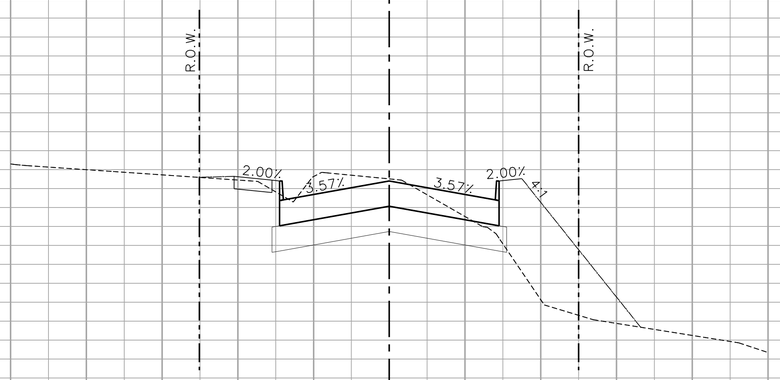
SHEET XS-09

SEQ. 116

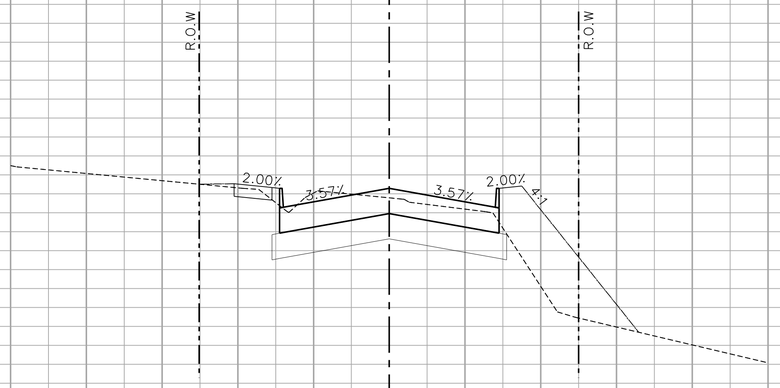
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Plotted: 26-AUG-2018 - 01:50:21 AM Model: Main Border
Project Freese and Nichols, Inc.



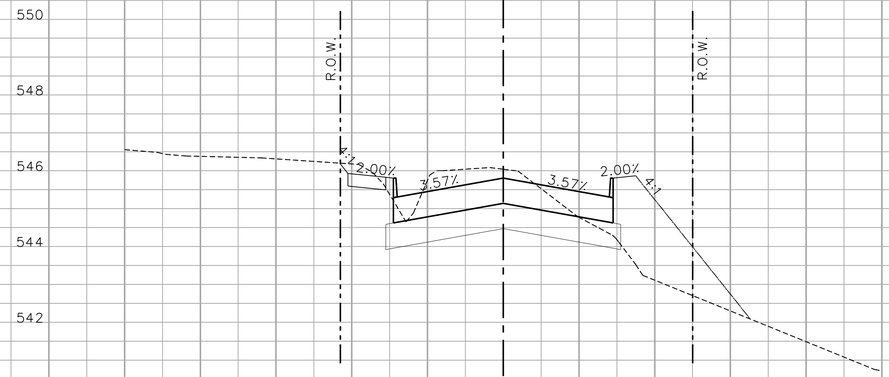
STA. 35+50.00



STA. 35+00.00



STA. 34+50.00



STA. 36+50.00



STA. 36+00.00

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: _____ PE, CFM
Date: 11/26/2018

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED
PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

CROSS SECTIONS
STA 34+50 TO STA 36+50

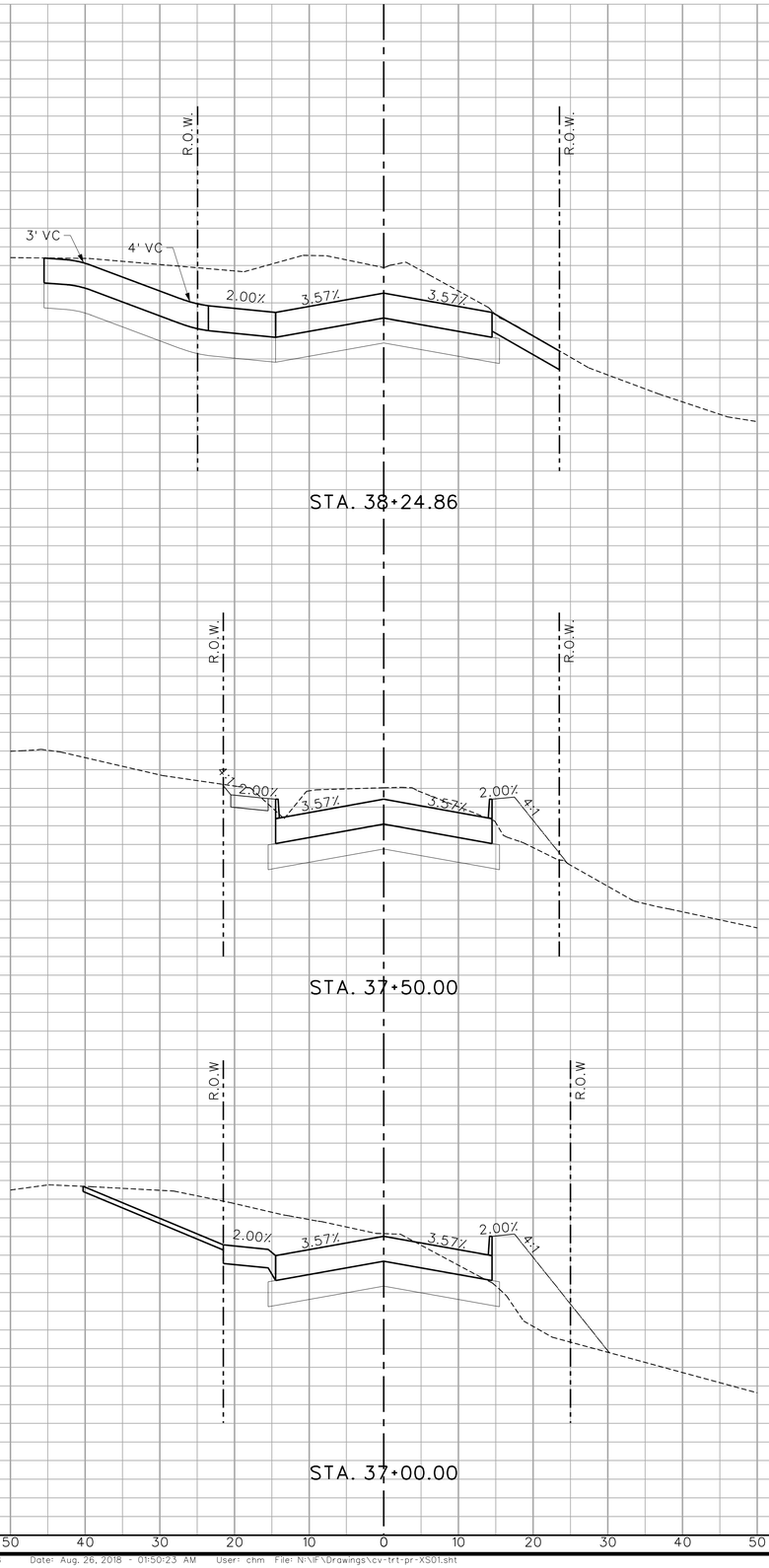
NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 06/2018
DESIGNED AL
DRAWN SI
REVISED
CHECKED
FILE NAME cv-trt-pr-XS01.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET XS-10
SEQ. 117

MicroStation V8 User: chm Office: Dallas
ROK15508 N:\IF\Drawings\cv-trt-pr-XS01.sht
Model: Main Border Project: Freese and Nichols, Inc.
Plot Scale: 20.0000 '/ in. Plot Date: 26 Aug 2018 - 01:50:22 AM



This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED
PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

CROSS SECTIONS
STA 37+00 TO STA 39+50

NO.	ISSUES	BY	DATE

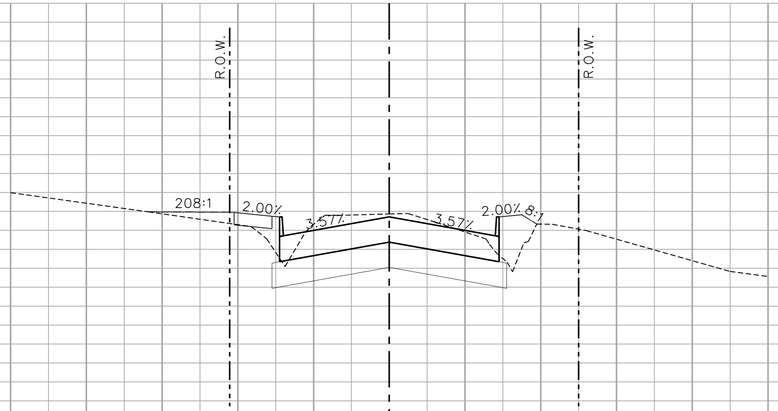
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
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F&N JOB NO. ROK15508
DATE 06/2018
DESIGNED AL
DRAWN SI
REVISED
CHECKED
FILE NAME cv-trt-pr-XS01.sht

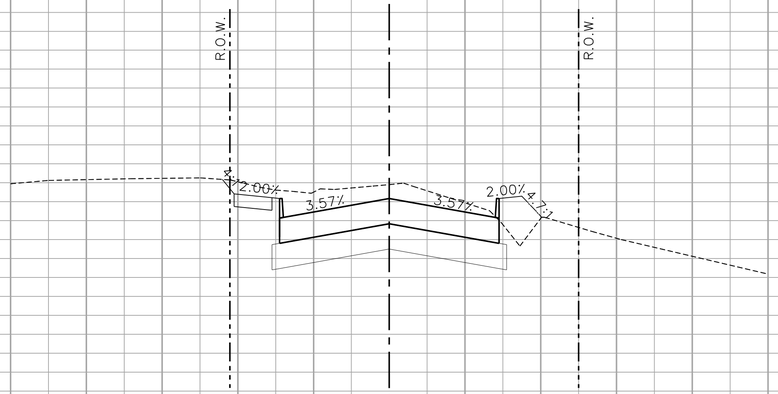
SHEET XS-11
SEQ. 118

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

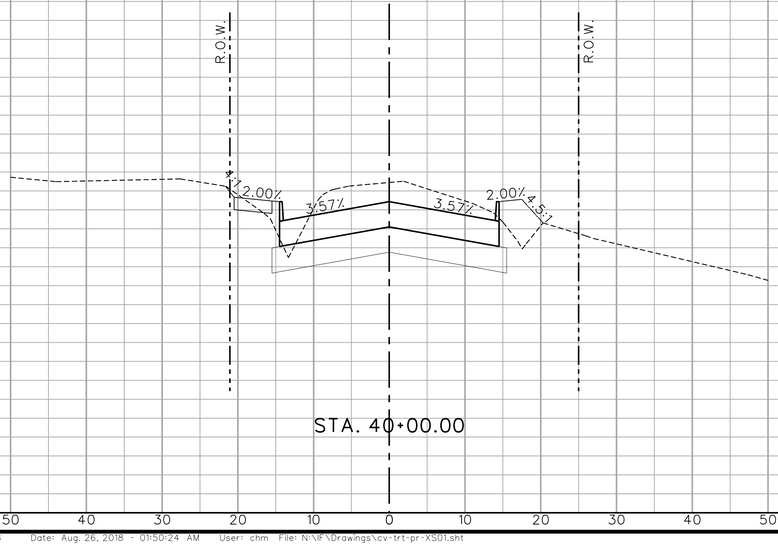
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Plot Scale: 20.0000 '/ in. Plot Date: 26-2018 - 01:50:23 AM
Plotter: Plotter 45 (HP DesignJet 4000ps.pltcfg



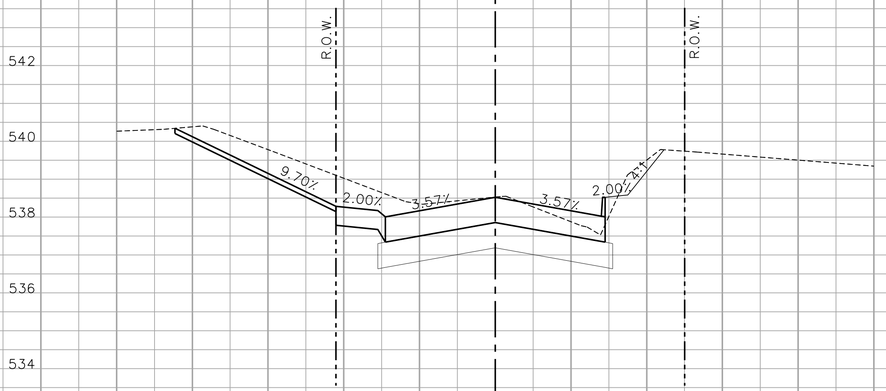
STA. 41+00.00



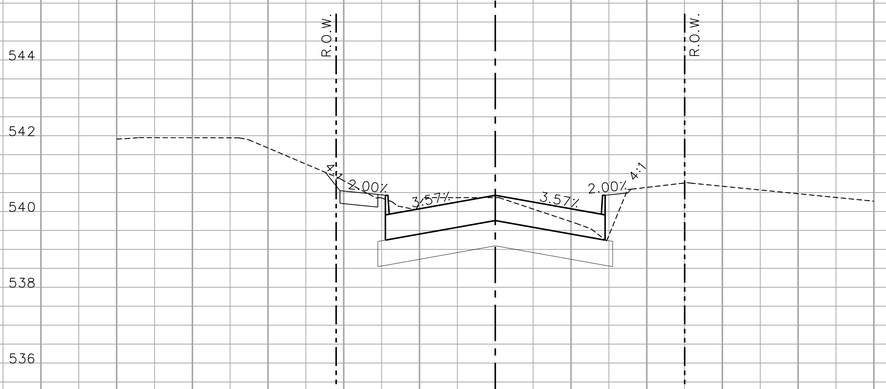
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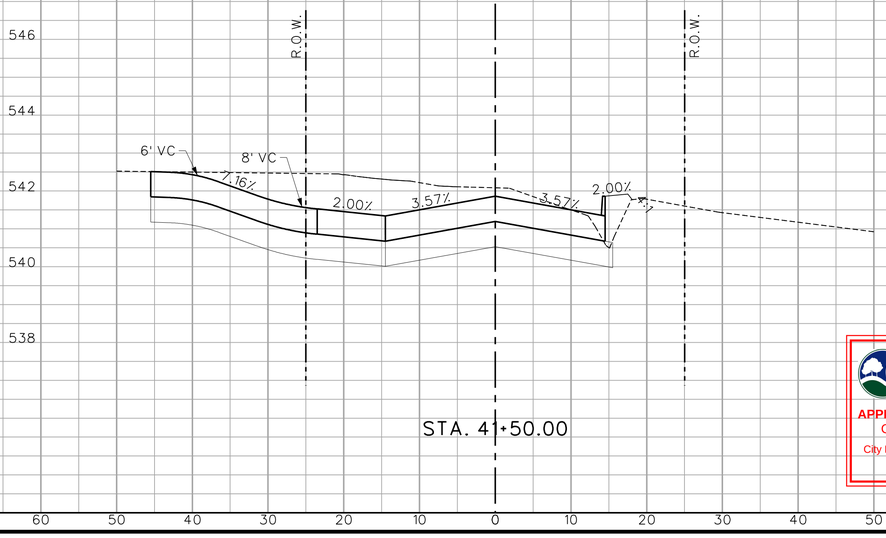
STA. 40+00.00



STA. 42+59.32



STA. 42+00.00



STA. 41+50.00

60 50 40 30 20 10 0 10 20 30 40 50 60

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED
PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

CROSS SECTIONS
STA 40+00 TO STA 42+59.32

NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 06/2018
DESIGNED AL
DRAWN SI
REVISED
CHECKED
FILE NAME cv-trt-pr-XS01.sht

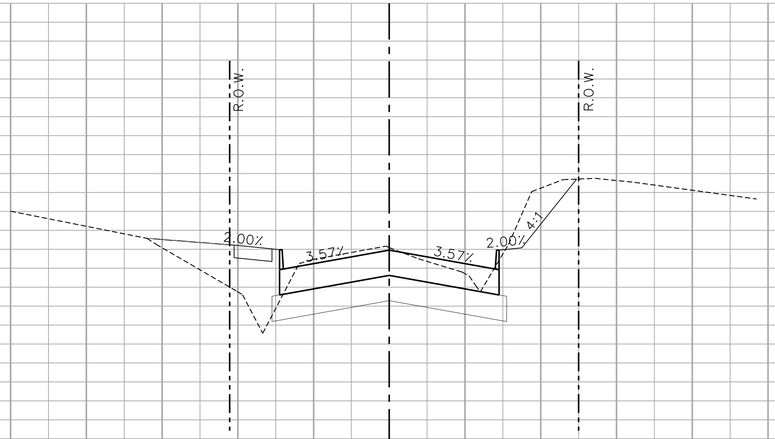
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

SHEET XS-12
SEQ. 119

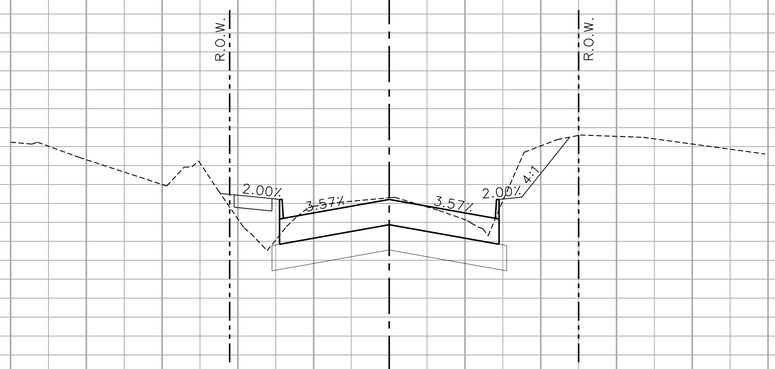
City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], PE, CFM
Date: 11/26/2018

MicroStation V8 User: chm Office: Dallas
ROK15508 N:\IF\Drawings\cv-trt-pr-XS01.sht
Model: Main Border Project: Freese and Nichols, Inc.
Plot Scale: 20.0000 '/ in. Plot Style: Fnk_Rough Mono.pltcfg
Plotted: Aug 26, 2018 - 01:50:24 AM

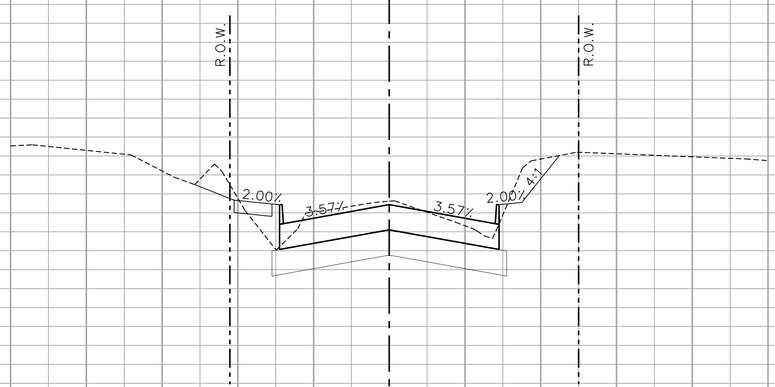
Office: Dallas ROK15508 Date: Aug. 26, 2018 - 01:50:24 AM User: chm File: N:\IF\Drawings\cv-trt-pr-XS01.sht



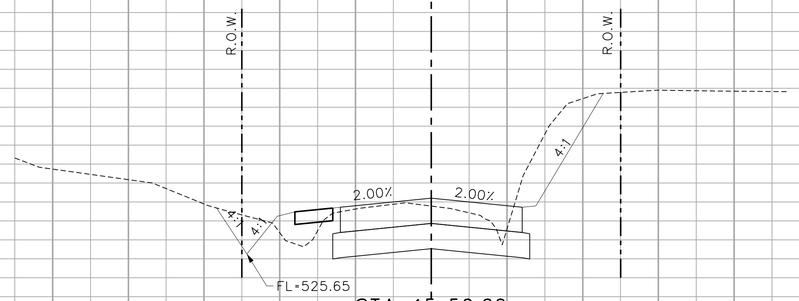
STA. 43+96.05



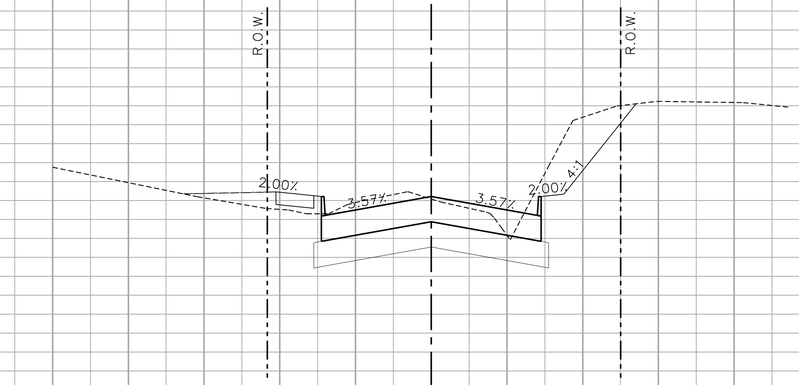
STA. 43+50.00



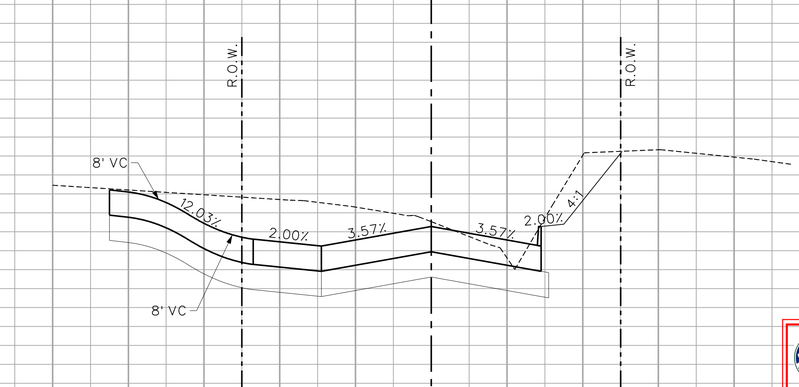
STA. 43+00.00



STA. 45+50.00



STA. 44+84.67



STA. 44+28.89

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
ALAN D. HENDRIX
69798
REGISTERED
PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone - (214) 217-2200
Fax - (214) 217-2250
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

CROSS SECTIONS
STA 43+00 TO STA 45+50

NO.	ISSUES	BY	DATE

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

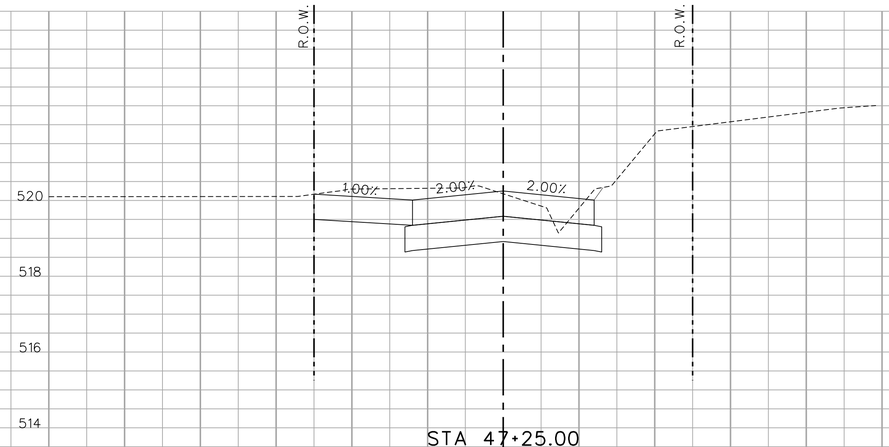
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F&N JOB NO. ROK15508
DATE 06/2018
DESIGNED AL
DRAWN SI
REVISED
CHECKED
FILE NAME cv-trt-pr-XS01.sht

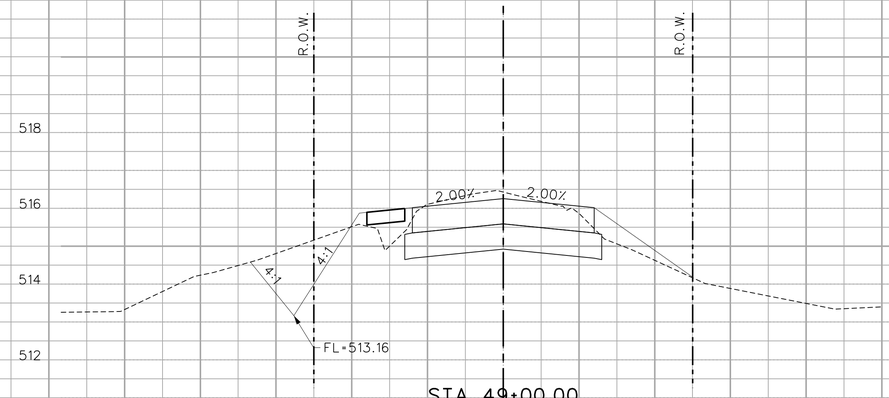
SHEET XS-13
SEQ. 120

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

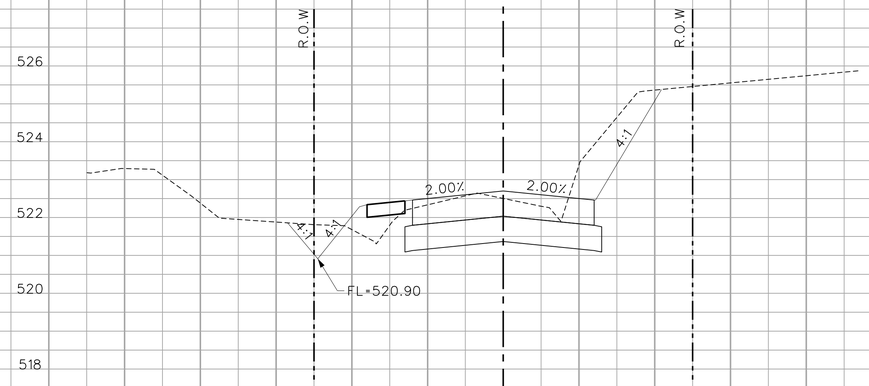
MicroStation V8 User: chm Office: Dallas
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ROK15508 \\Plotter\K\ Plotter: HP Designjet 4000ps.pltcfg
Plot Scale: 20.0000 '/ in. Model: Main Border
Plotted: 26-2018 - 01:50:25 AM Project: Freese and Nichols, Inc.



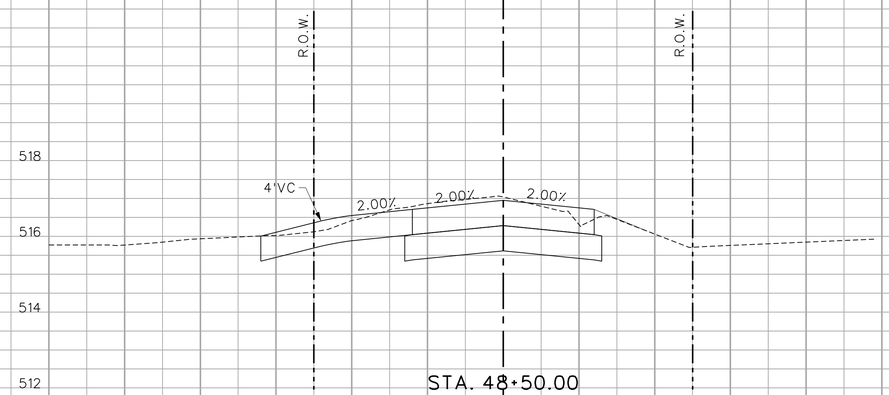
STA 47+25.00



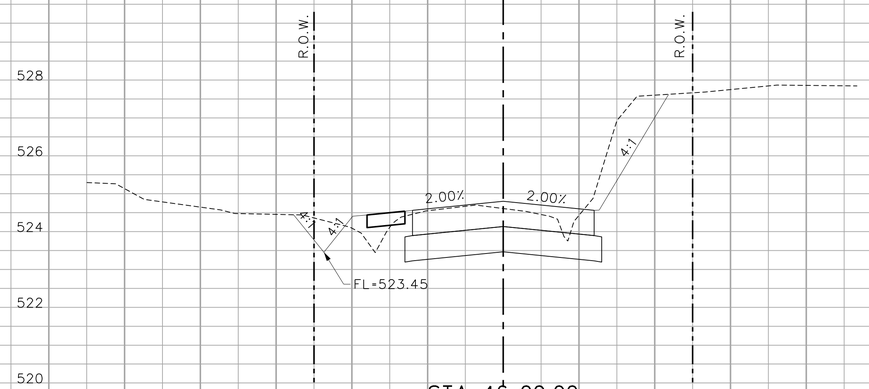
STA. 49+00.00



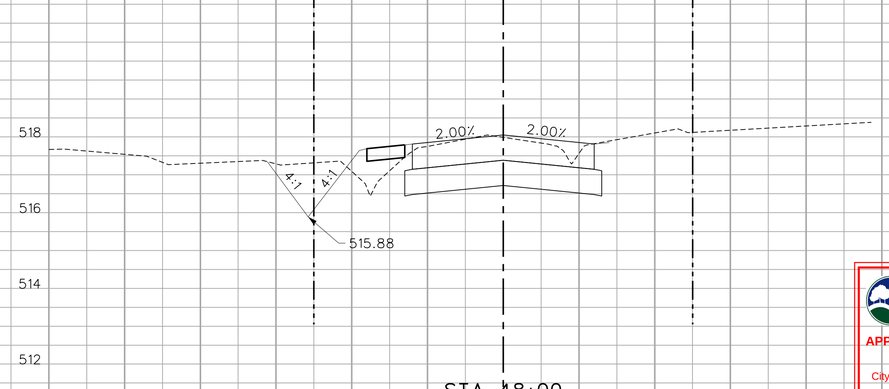
STA. 46+50.00



STA. 48+50.00



STA. 46+00.00



STA. 48+00

60 50 40 30 20 10 0 10 20 30 40 50 60

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RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
ALAN D. HENDRIX
69798
REGISTERED
PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

CROSS SECTIONS STA 46+00 TO STA 49+00

NO.	ISSUES	BY	DATE

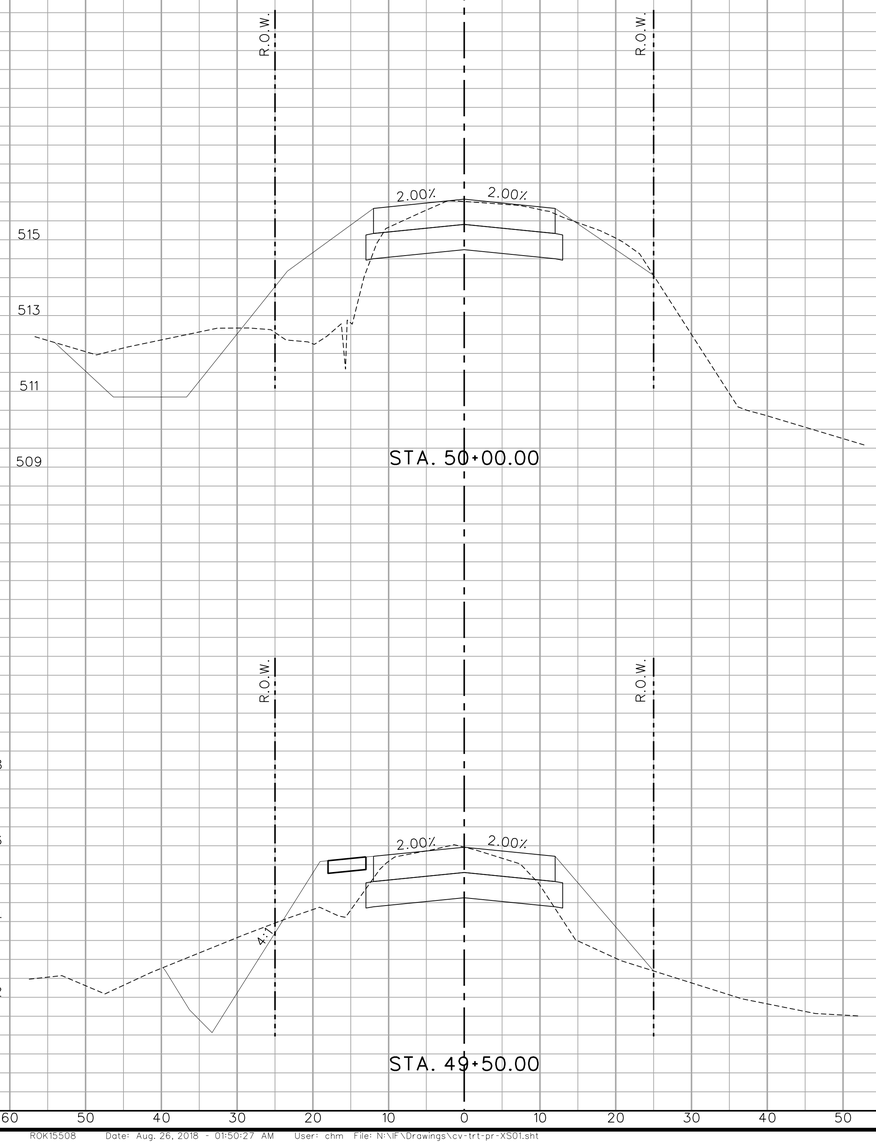
VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

F&N JOB NO. ROK15508
DATE 06/2018
DESIGNED AL
DRAWN SI
REVISED
CHECKED
FILE NAME cv-trt-pr-XS01.sht

SHEET XS-14
SEQ. 121

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

MicroStation V8 User: chm Office: Dallas
R:\ROK15508 - N:\R\Drawings\cv-trt-pr-XS01.sht
Plotter: HP Officejet Pro X476dw MFP PCL 6 Driver.pltcfg
Plot Scale: 20.0000 '/ in. Model: Main Border
Date: Aug 26, 2018 - 01:50:26 AM Project: Freese and Nichols, Inc.



This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
ALAN D. HENDRIX
69798
PROFESSIONAL ENGINEER
8/27/18

FREESE NICHOLS
2711 North Haskell Avenue, Suite 3300
Dallas, Texas 75204
Phone: (214) 217-2200
Fax: (214) 217-2201
Web - www.freese.com

CITY OF ROCKWALL

COUNTY LINE ROAD RECONSTRUCTION

CIVIL

CROSS SECTIONS
STA 49+50 TO STA 50+00

NO.	ISSUES	BY	DATE

F&N JOB NO. ROK15508
DATE 06/2018
DESIGNED AL
DRAWN SI
REVISED
CHECKED
FILE NAME cv-trt-pr-XS01.sht

VERIFY SCALE Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.
0 1"

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: PE, CFM
Date: 11/26/2018

SHEET XS-15
SEQ. 122

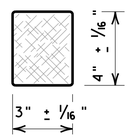
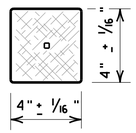
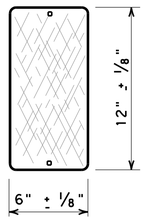
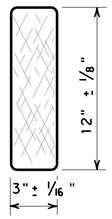
MicroStation V8 User: chm Office: Dallas
ROK15508 - N:\F\Drawings\cv-trt-pr-XS01.sht
Project: ROK15508 - COUNTY LINE ROAD RECONSTRUCTION
Plot Scale: 20.0000 '/ in. Model: Main Border
Date: Aug. 26, 2018 - 01:50:27 AM Project Fields and Nichols, Inc.

Office: Dallas ROK15508 Date: Aug. 26, 2018 - 01:50:27 AM User: chm File: N:\F\Drawings\cv-trt-pr-XS01.sht

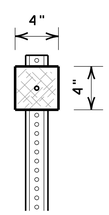
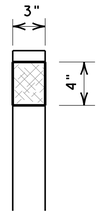
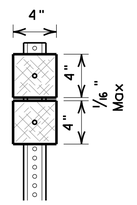
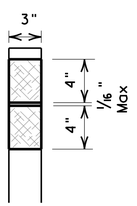
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DATE:
FILE:

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 (flx). 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	FLX	WC	FLX
MOUNT TYPE	GND	GND, SRF	GND	GND, SRF

D & OM DESCRIPTIVE CODES

INSTL DEL ASSM (D-XX)SZ X (XXX)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
FLX = 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) (XXX)XXX(XX)

TYPE OF OBJECT MARKER
1, 2, 3, or 4

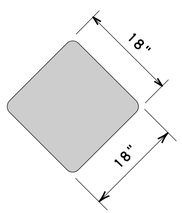
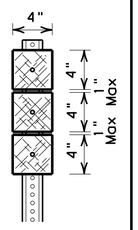
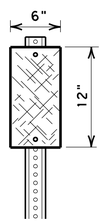
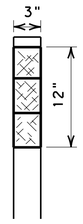
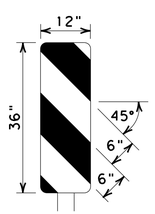
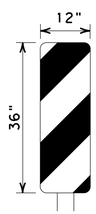
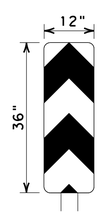
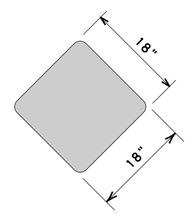
NUMBER OF REFLECTORS OR DIRECTION
X = 3-Size 2 reflector units (Type 2 only)
Y = 1-Size 3 reflector unit (Type 2 only)
Z = 3-Size 1 or 1-Size 4 reflector unit(s) (Type 2 only)
L = Left Side (Type 3 Object Marker only)
R = Right Side (Type 3 Object Marker only)
C = Center (Type 3 Object Marker only)

TYPE OF POST
WC = Wing Channel Post
FLX = 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

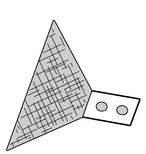
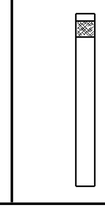
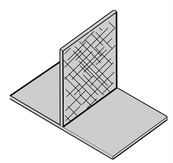
OBJECT MARKERS

	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	FLX	TWT			TWT
MOUNT TYPE	WAS, WAP	GND	GND	GND, SRF	WAS, WAP			WAS, WAP

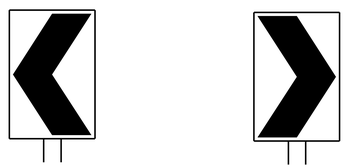
DEPARTMENTAL MATERIAL SPECIFICATIONS

FLEXIBLE DELINEATOR & OBJECT MARKER POSTS (EMBEDDED & SURFACE MOUNT TYPES)	DMS-4400
SIGN FACE MATERIALS	DMS-8300
DELINEATORS, OBJECT MARKERS AND BARRIER REFLECTORS	DMS-8600

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. Minimum 9 square inches of reflective sheeting surface area.		

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. The Texas version of the ONE DIRECTION LARGE ARROW sign (W1-9T) may be used instead of the ONE DIRECTIONAL LARGE ARROW (W1-6).

ONE DIRECTION LARGE ARROW

DEVICE 

W1-6

SIZE (W x L)	48" x 24" (Conventional)	60" x (Expressway & Freeway)
MOUNTING HEIGHT	7'-0"	

NOTE:
Delineator and object marker backplates and sign substrates shall be 0.080" Aluminum sign blank to conform to ASTM B-209 Alloy 6061-T6 or approved alternative.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 1/26/2018

Texas Department of Transportation

Traffic Operations Division Standard

DELINEATOR & OBJECT MARKER MATERIAL DESCRIPTION

D & OM(1)-15

FILE: dom1-15.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS				
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10				123

20A

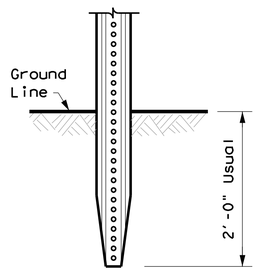
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DATE:
FILE:

POST TYPE AND SUPPORT FOUNDATION DETAILS

WING CHANNEL (WC)

GND

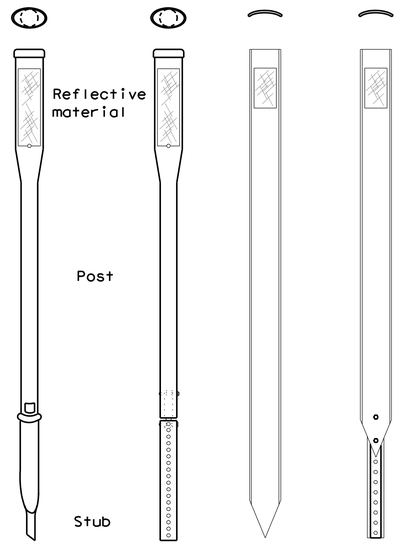


NOTES

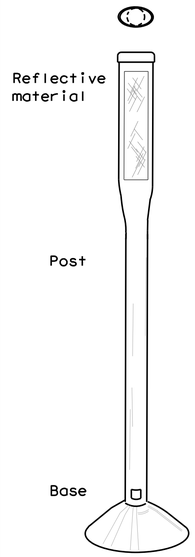
1. Embedded Wing Channel (WC) post option may be used for Type 2 Object Markers and Delineators only.
2. 1.12 lbs/ft steel per ASTM A 1011 SS Gr. 50, or ASTM A499.

FLEXIBLE POSTS (FLX)

GND



SRF



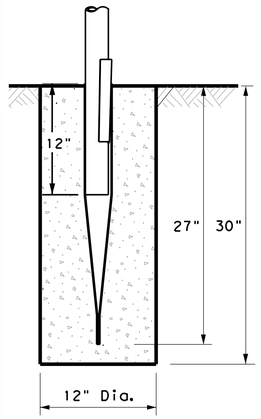
EMBEDDED | SURFACE MOUNT

NOTES

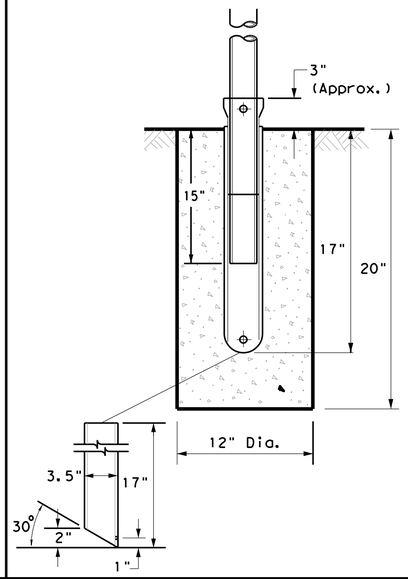
1. See "Flexible Delineator and Object Marker Posts" Material Producer List for approved devices.
2. Install per manufacturer's recommendations.
3. Post length may vary to meet field conditions.

WEDGE ANCHOR SYSTEMS

WAS



WAP



STEEL | PLASTIC

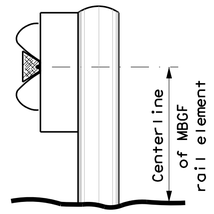
NOTE

1. Install per manufacturer's recommendations.

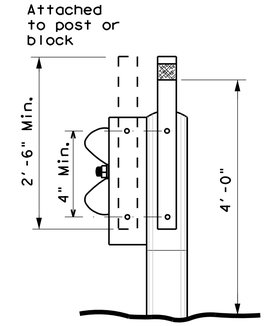
TYPE OF BARRIER MOUNTS

GUARD FENCE ATTACHMENT

GF1

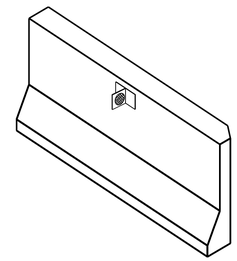


GF2



CONCRETE BARRIER / BRIDGE RAIL

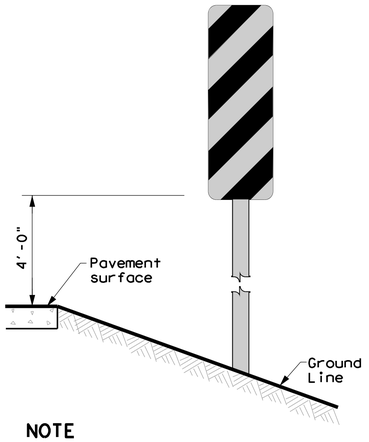
CTB



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.

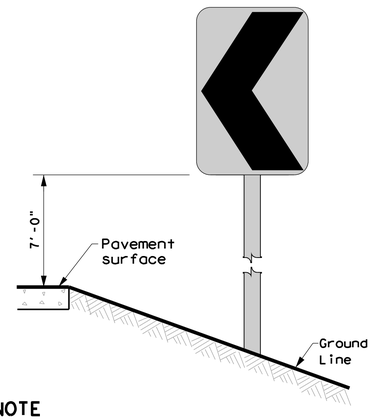
TYPES 1, 3, AND 4 OBJECT MARKERS AND CHEVRONS



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)

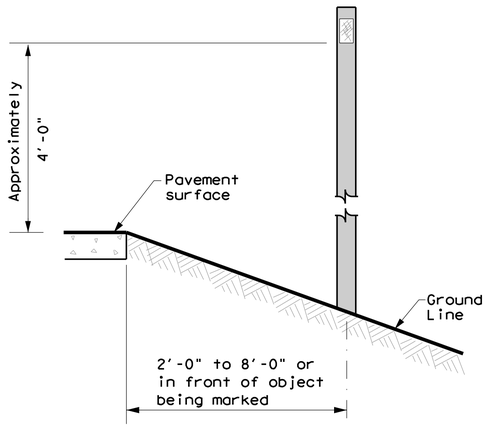
CHEVRONS AND ONE DIRECTION LARGE ARROW SIGN



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 DIRECTIONAL 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.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

Texas Department of Transportation

Traffic Operations Division Standard

DELINEATOR & OBJECT MARKER INSTALLATION

D & OM(2)-15

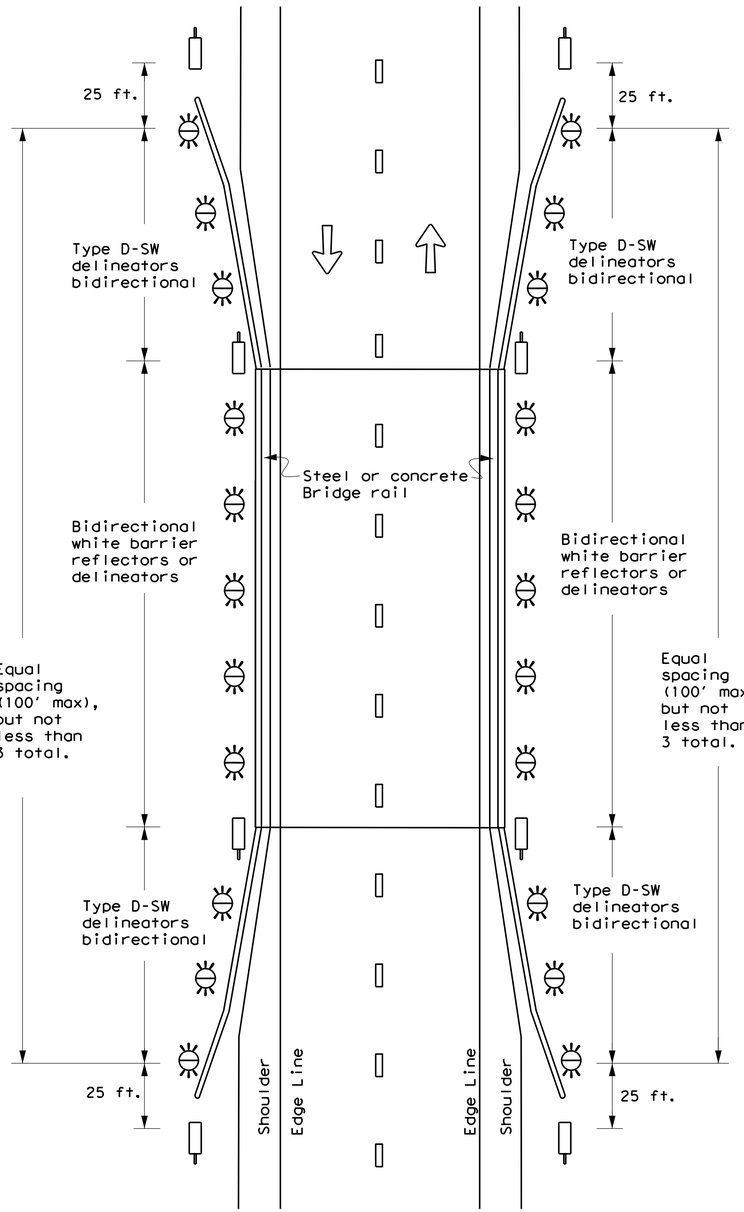
FILE: dom2-15.dgn	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
©TxDOT August 2004	CONT	SECT	JOB	HIGHWAY
REVISIONS				
10-09 3-15	DIST	COUNTY		SHEET NO.
4-10				124

20B

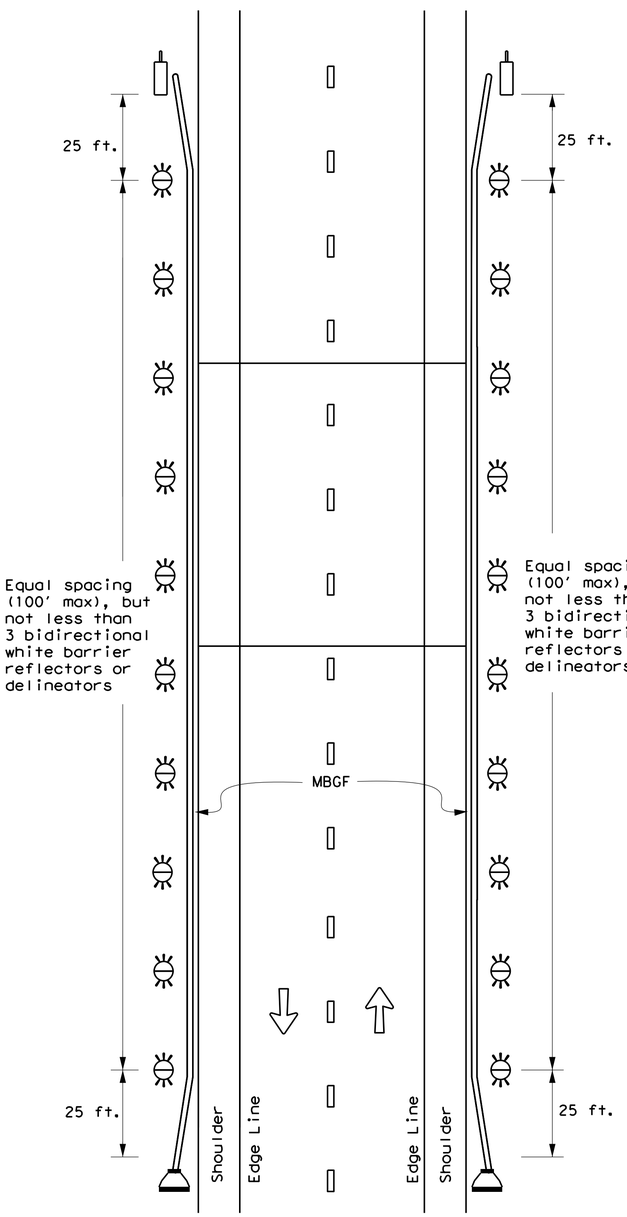
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DATE:
FILE:

TWO-WAY, TWO LANE ROADWAY WITH REDUCED WIDTH APPROACH RAIL



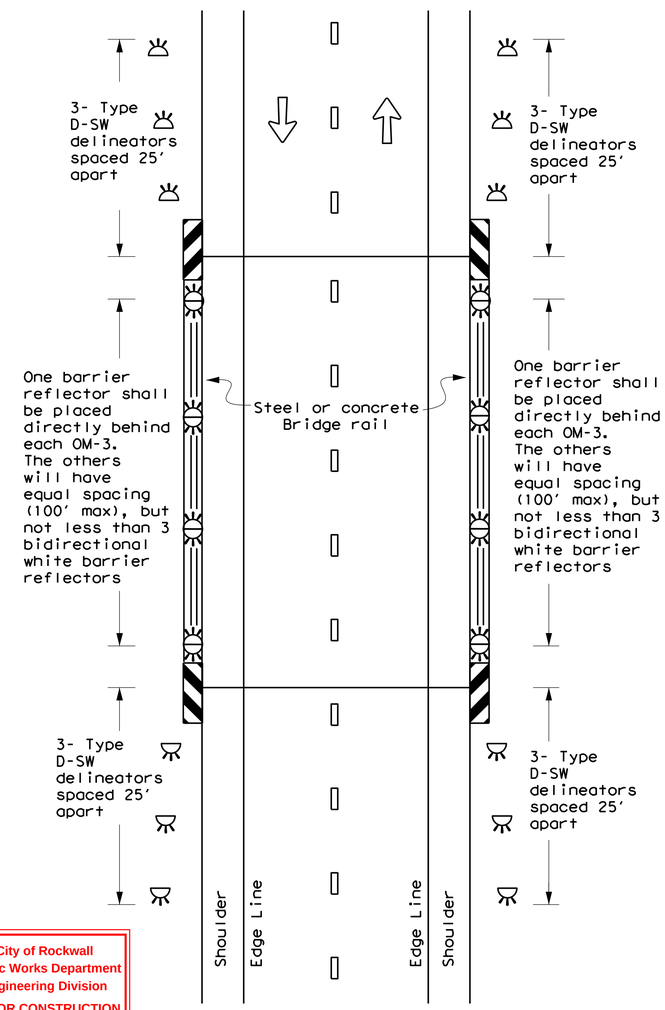
TWO-WAY, TWO LANE ROADWAY WITH METAL BEAM GUARD FENCE (MBGF)



NOTE:

If terminal ends include an object marker, there is no need to install an OM-2 in front of terminal.

TWO-WAY, TWO LANE ROADWAY BRIDGE WITH NO APPROACH RAIL



City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

LEGEND

	Bidirectional Delineator
	Delineator
	OM-3
	OM-2
	Terminal End
	TRAFFIC FLOW

Texas Department of Transportation

Traffic Operations Division Standard

DELINEATOR & OBJECT MARKER PLACEMENT DETAILS

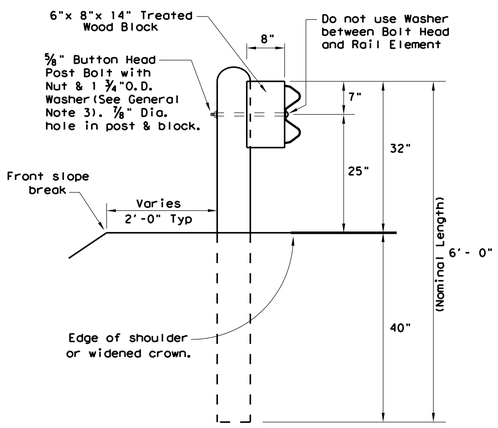
D & OM(5)-15

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© TxDOT August 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				125

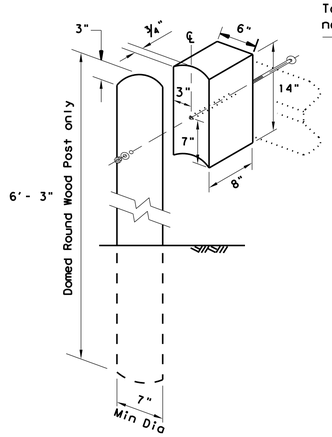
20E

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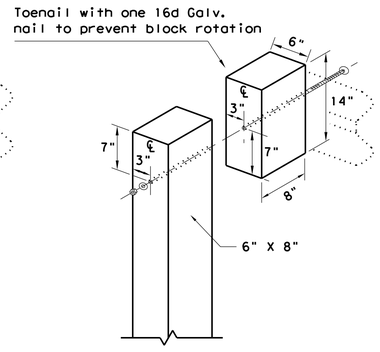
DATE:
FILE:



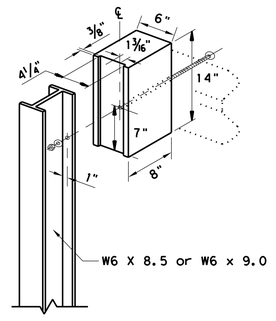
TYPICAL POST



WOOD BLOCK TO ROUND WOOD POST



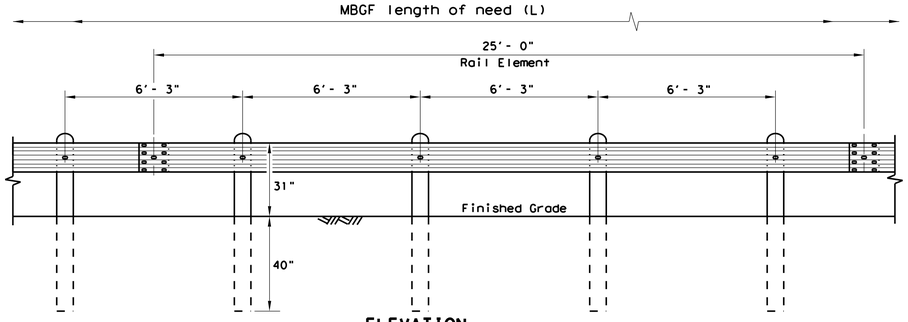
WOOD BLOCK TO RECTANGULAR WOOD POST



WOOD BLOCK TO STEEL POST

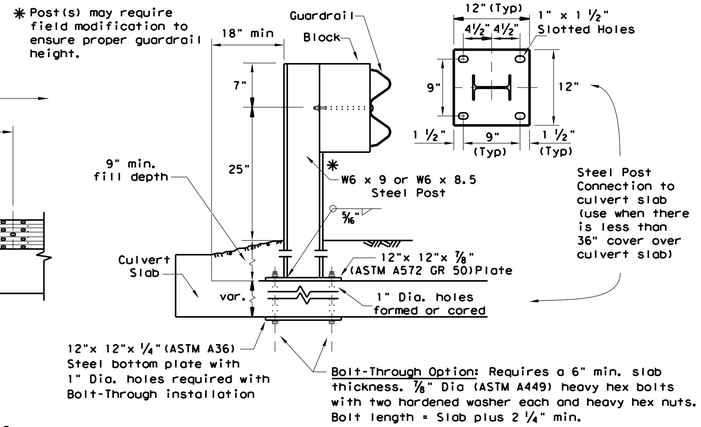
GENERAL NOTES

1. The type of post (round wood post, rectangular wood post, or steel post) will be as shown in the plans. The exact position of MBGF shall be shown in the plans or as directed by the Engineer. Steel posts to be galvanized in accordance with Item 445, "Galvanizing."
2. Rail element shall meet the requirements of Item 540, "Metal Beam Guard Fence" except as modified in the plans. The Contractor may furnish rail elements of 25'- 0", or 12'- 6" (nom.) lengths. Rail elements may have slotted holes at 3'-1½" C-C or 6'-3" C-C. A special length of rail may be manufactured to accommodate the downstream anchor terminal (DAT) and the transition sections of guardrail.
3. Button head "post" bolts (ASTM A307) shall be of sufficient length to extend through the full thickness of the nut (ASTM A563) and Type A (1 ¾" O.D.)washer and not more than 1" beyond it. Button head "splice" bolts (ASTM A307) are ⅝" x 1 ¼" (or 2" long at triple rail splices) with a ⅝" double recessed nut (ASTM A563). Thrie beam "connection" ⅞" dia. (ASTM A325) hex bolts shall be of sufficient length to extend through the full thickness of the rail, washers, and nuts.
4. Fittings (bolts, nuts, and washers) shall be galvanized in accordance with Item 445, "Galvanizing." Fittings shall be subsidiary to the bid item.
5. Crown shall be widened to accommodate the Metal Beam Guard Fence.
6. The lateral approach to the guard fence, shall have a maximum slope of 1V:10H.
7. If shown elsewhere in the plans or as directed by the Engineer, the guard fence may be flared at a rate of 25:1 or flatter.
8. Unless otherwise shown in the plans, guard fence placed in the vicinity of curbs shall be positioned so that the face of curb is located directly below or behind the face of the rail. Rail placed over curbs shall be installed so that the post bolt is located approximately 25 inches above the gutter pan or edge of shoulder.
9. If solid rock is encountered within 0 to 18" of the finished grade, drill a 22" dia. hole, or drill two 12" dia. front to back overlapping holes, 24" into the rock. If solid rock is encountered below 18", drill a 12" dia. hole, 12" into the rock or to the standard embedment depth, whichever maybe less. Any excess post length, after meeting these depths, may be field cut to ensure proper guardrail mounting height. Backfill with a cohesionless material.
10. Posts shall not be set in concrete, of any depth.
11. Special fabrication will be required at installations having a curvature of less than 150 ft. radius.
12. Unless otherwise shown in the plans, a composite material post and/or block that meets the requirements of DMS-7210, "Composite Material Posts and Blocks for Metal Beam Guard Fence" may be substituted for posts and/or blocks of similar dimensions. The Construction Division, TxDOT maintains a Material Producer List (MPL) for producers of materials conforming to DMS-7210. Only producers on the MPL may furnish composite material posts and/or blocks.
13. For posts located partially or wholly between precast box culvert units, the use of a cast-in-place concrete closure between boxes is required. See Detail "A" on Bridge Standard SCP-MD.



ELEVATION MID-SPAN RAIL SPLICE

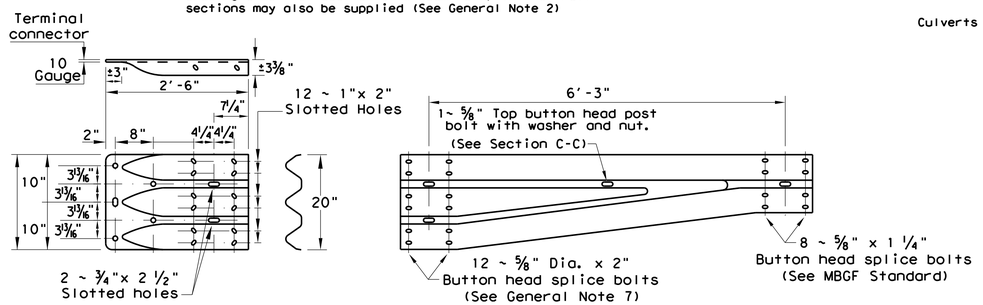
Showing a 25'- 0" section of W-Beam rail, 12'- 6" rail sections may also be supplied (See General Note 2)



LOW FILL CULVERT POST

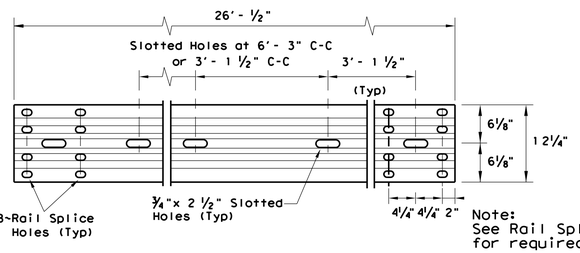
Culverts of 25 ft. or less, see GF(31)LS standard for "Long Span" option.

Epoxy Note:
Epoxy Anchor Option: This option may only be used if the culvert slab is 8" min. thick. Threaded anchor rods must be ⅞" Dia. ASTM A449 or A193 Grade B7 with heavy hex nut, and one hardened washer each. Embed anchor rods 6" with Hilti HIT RE 500 epoxy adhesive. Other Type III Class C epoxy adhesives meeting the requirements of DMS-6100, "Epoxies and Adhesives", may be used if it can be demonstrated that they meet or exceed the strength of Hilti HIT RE 500 with the same embedment depth and threaded rod dia. Follow the manufacturer's requirements for installing epoxied threaded rods. Extend rods ¼" min. beyond nut.

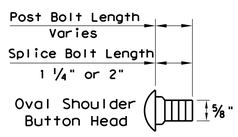


THRIE-BEAM TERMINAL CONNECTION
(SEE GENERAL NOTES 6 & 7 FOR REQUIRED HARDWARE)

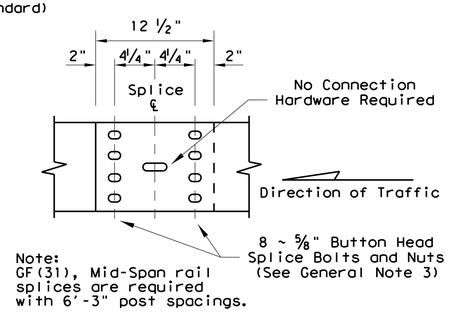
NON-SYMMETRICAL TRANSITION TO W-BEAM (10 Gauge)



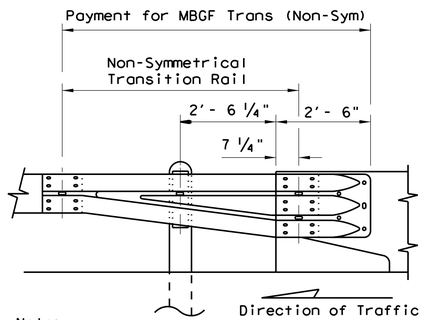
ELEVATION 25'- 0" (NOM.) W-BEAM SECTION
12'- 6" RAIL SECTIONS MAY ALSO BE SUPPLIED (SEE GENERAL NOTE 2)



BUTTON HEAD BOLT
Post and Splice Bolts (See General Note 3)



MID-SPAN RAIL SPLICE DETAIL



DOWNSTREAM RAIL ATTACHMENT

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E.,CFM
Date: 11/26/2018

Texas Department of Transportation

Design Division Standard

METAL BEAM GUARD FENCE

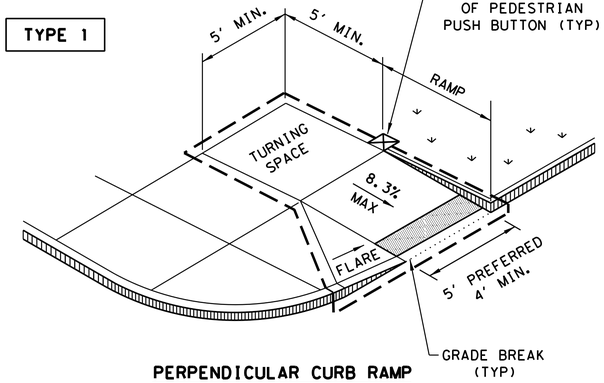
GF(31)-14

FILE: gf3114.dgn	DN: TxDOT	CK: AM	DW: VP	CK: CGL
©TxDOT: December 2011	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				126

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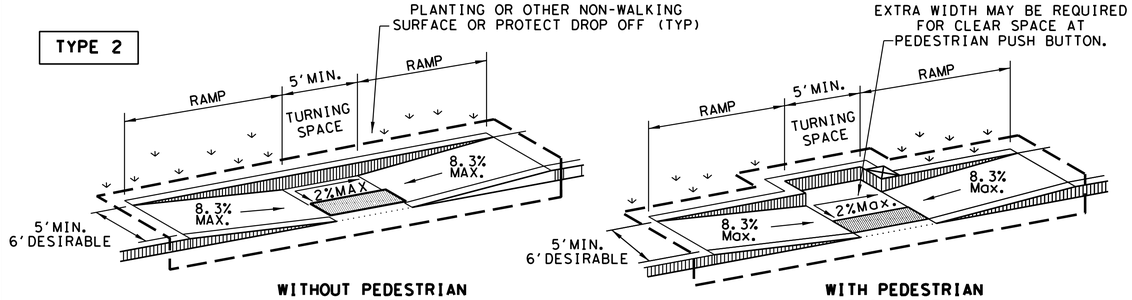
DATE:
FILE:

TYPE 1



PERPENDICULAR CURB RAMP

TYPE 2

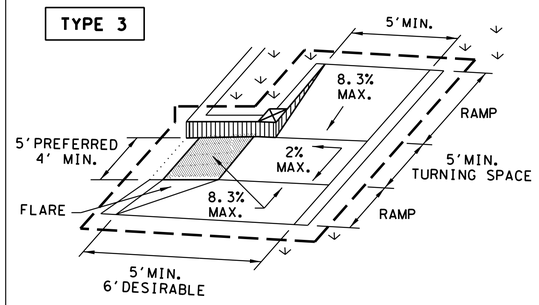


WITHOUT PEDESTRIAN PUSH BUTTON

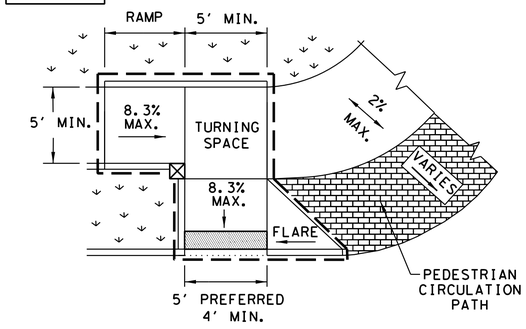
WITH PEDESTRIAN PUSH BUTTON

PARALLEL CURB RAMP

TYPE 3

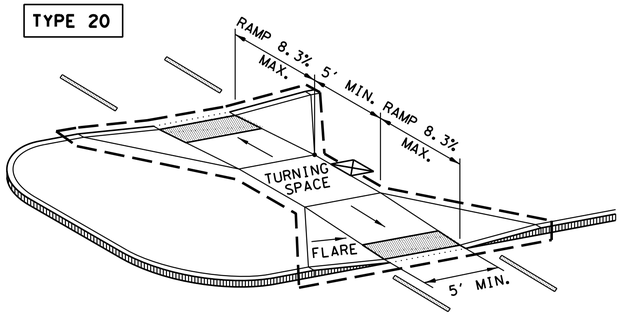


TYPE 6



COMBINATION CURB RAMPS

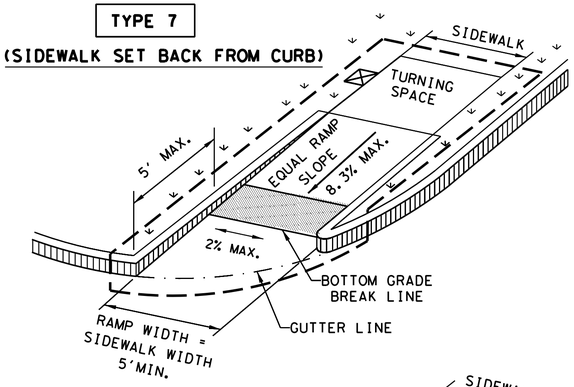
TYPE 20



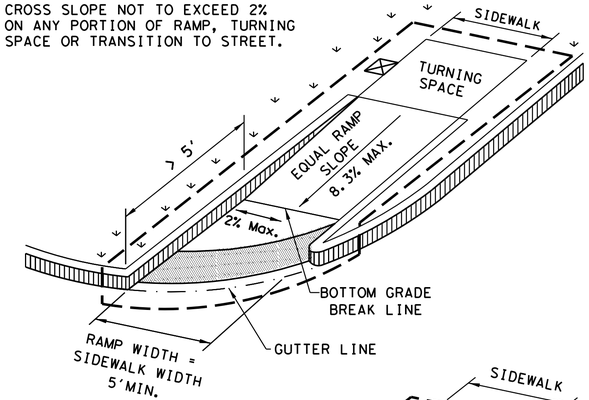
CURB RAMPS AT MEDIAN ISLANDS

TYPE 7

(SIDEWALK SET BACK FROM CURB)

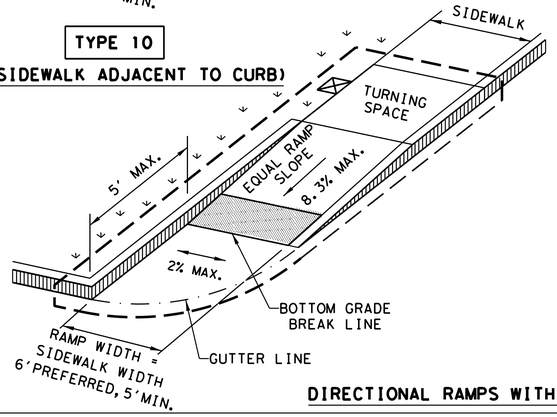


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.

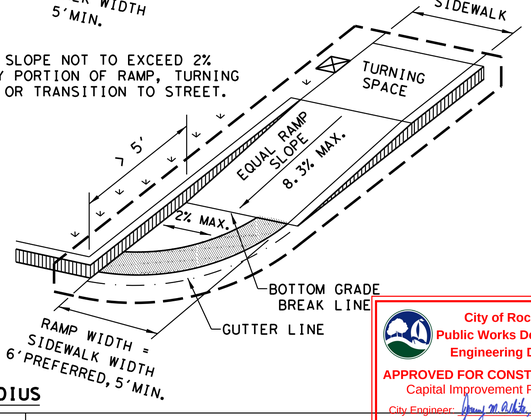


TYPE 10

(SIDEWALK ADJACENT TO CURB)

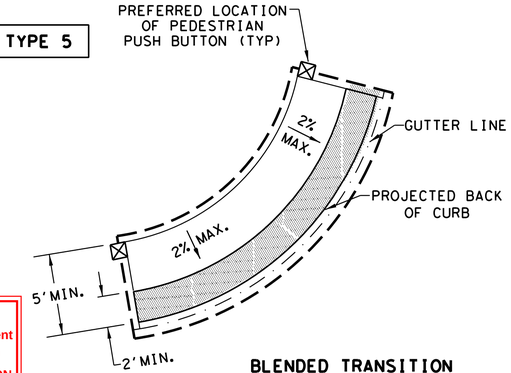


CROSS SLOPE NOT TO EXCEED 2% ON ANY PORTION OF RAMP, TURNING SPACE OR TRANSITION TO STREET.



DIRECTIONAL RAMPS WITHIN RADIUS

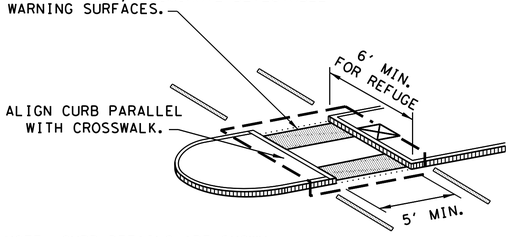
TYPE 5



BLENDED TRANSITION
(FLUSH LANDING)

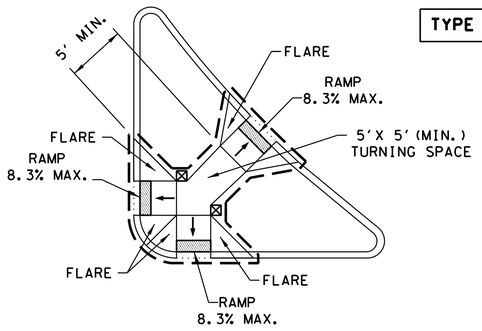
TYPE 21

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



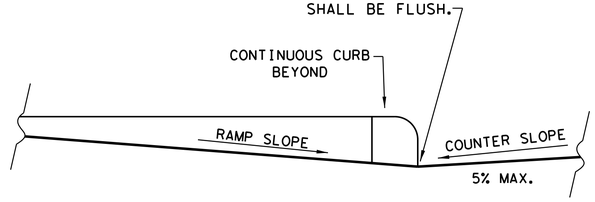
NOTE: CURB DETAILS ARE SHOWN ELSEWHERE IN THE PLANS.

TYPE 22



COMBINATION ISLAND RAMPS

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



TYPICAL SECTION OF PERPENDICULAR CURB RAMP AT CONNECTION TO ROADWAY

NOTES / LEGEND:

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

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

DETECTABLE WARNING SURFACE

DENOTES PREFERRED LOCATION OF PEDESTRIAN PUSH BUTTON IF APPLICABLE.

GUTTER LINE

GRADE BREAK

RAMP LIMITS OF PAYMENT

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

SHEET 1 OF 4

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
REVISED 08, 2005				
REVISED 06, 2012	DIST	COUNTY		SHEET NO.
REVISED 01, 2018				127

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DATE:
FILE:

GENERAL NOTES

CURB RAMPS

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

DETECTABLE WARNING MATERIAL

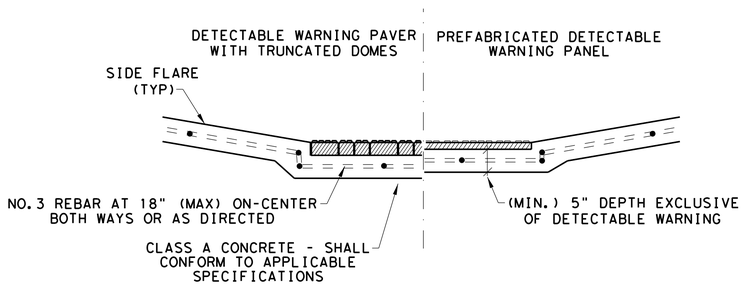
19. Curb ramps must contain a detectable warning surface that consists of raised truncated domes complying with PROWAG. The surface must contrast visually with adjoining surfaces, including side flares. Furnish and install an approved cast-in-place dark brown or dark red detectable warning surface material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

DETECTABLE WARNING PAVERS (IF USED)

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

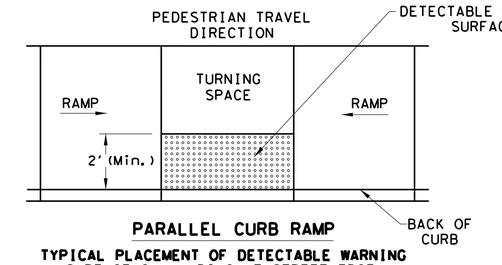
SIDEWALKS

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

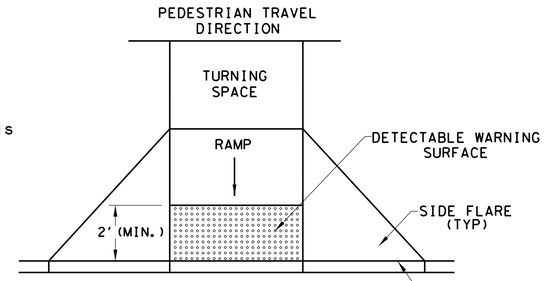


SECTION VIEW DETAIL
CURB RAMP AT DETECTIBLE WARNINGS

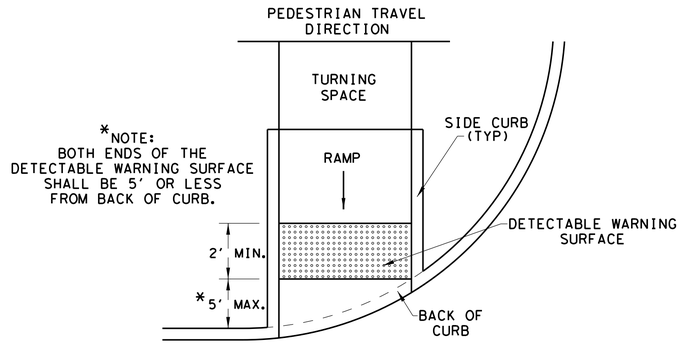
DETECTABLE WARNING SURFACE DETAILS



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



PERPENDICULAR CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.



DIRECTIONAL CURB RAMP
TYPICAL PLACEMENT OF DETECTABLE WARNING SURFACE ON SLOPING RAMP RUN.

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

PED-18

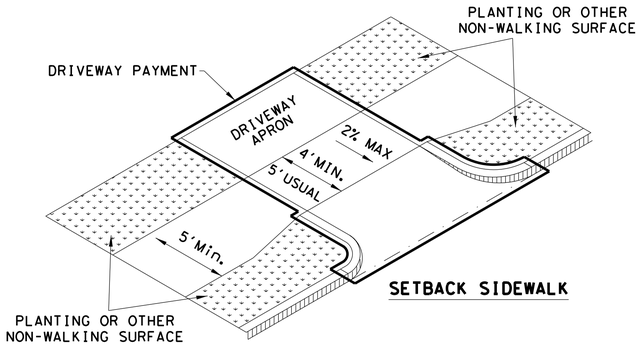
City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], P.E., CFM
Date: 11/26/2018

FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS				
REVISED 08,2005	DIST	COUNTY		SHEET NO.
REVISED 06,2012				128
REVISED 01,2018				

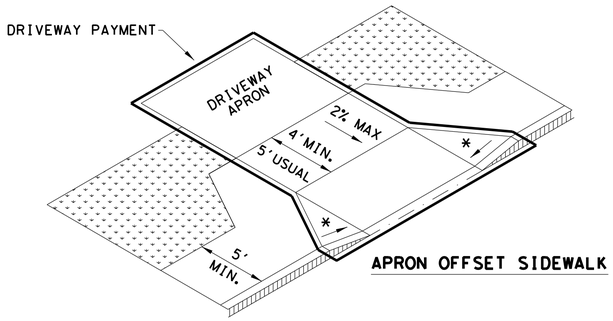
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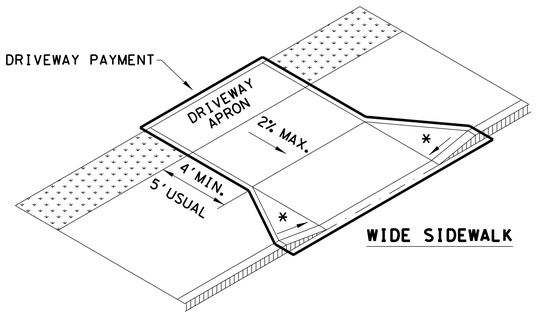
SIDEWALK TREATMENT AT DRIVEWAYS



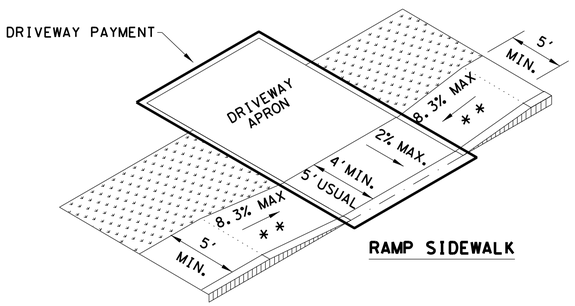
SETBACK SIDEWALK



APRON OFFSET SIDEWALK



WIDE SIDEWALK

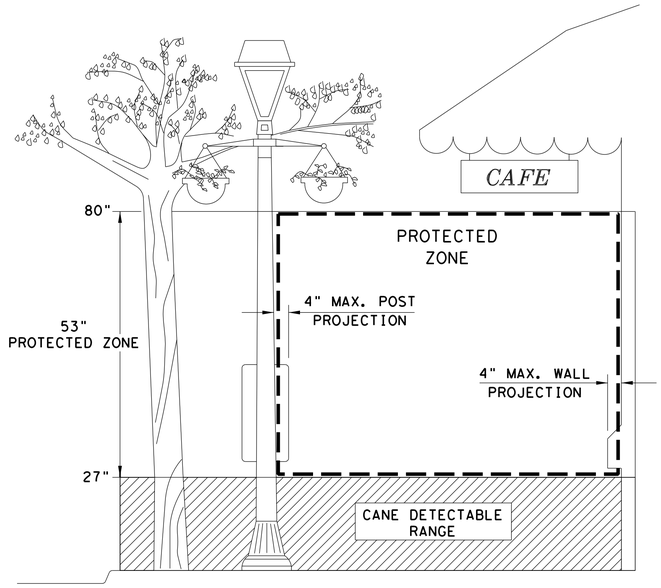


RAMP SIDEWALK

NOTES:

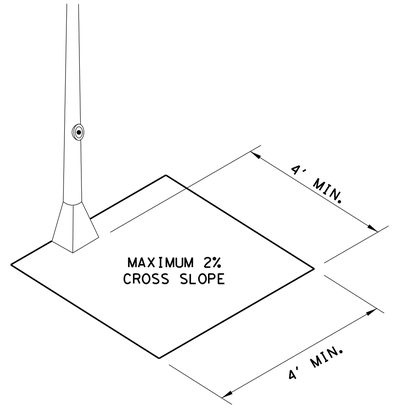
* WHERE DRIVEWAYS CROSS THE PEDESTRIAN ROUTE, SIDES SHALL BE FLARED AT 10% MAX SLOPE.

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

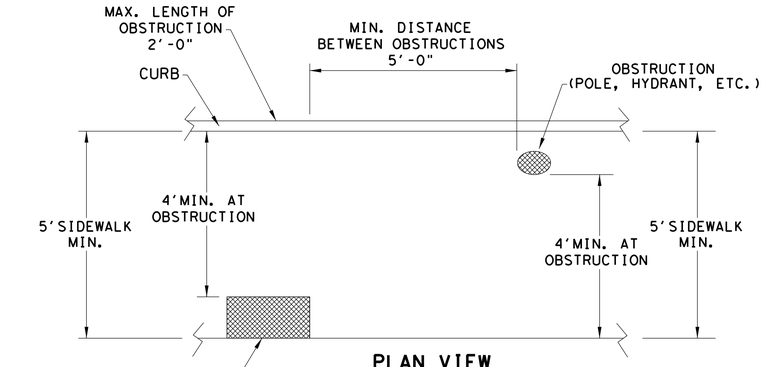


PROTECTED ZONE

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



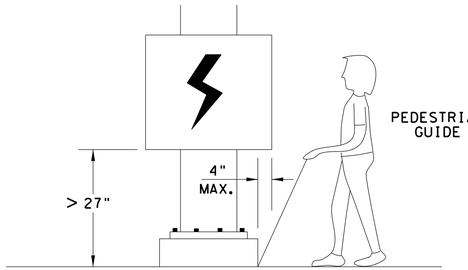
CLEAR SPACE ADJACENT TO PEDESTRIAN PUSH BUTTON



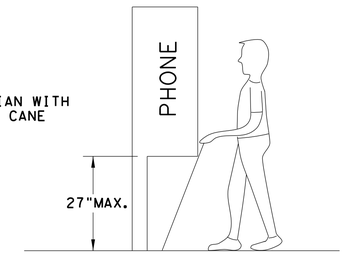
PLAN VIEW

PLACEMENT OF STREET FIXTURES

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



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



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

DETECTION BARRIER FOR VERTICAL CLEARANCE < 80"

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: Amy M. White, P.E., CFM
Date: 11/26/2018

Texas Department of Transportation

Design Division Standard

PEDESTRIAN FACILITIES CURB RAMPS

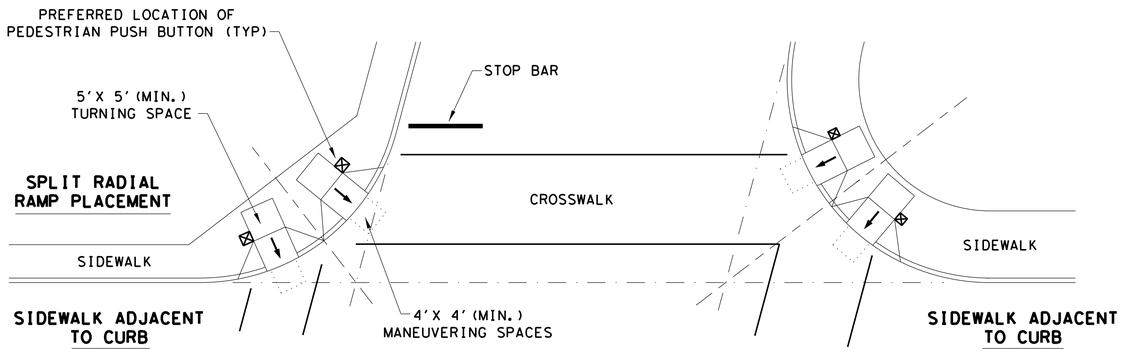
PED-18

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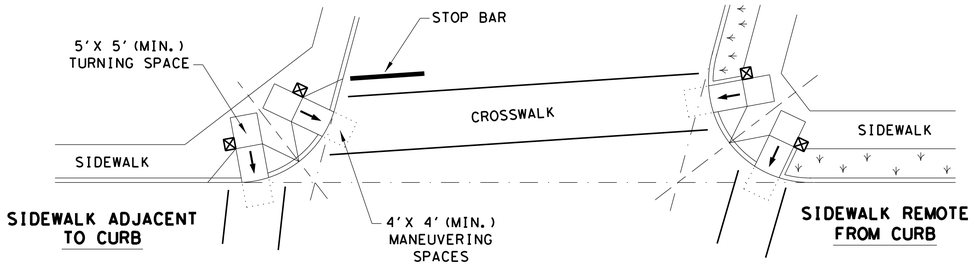
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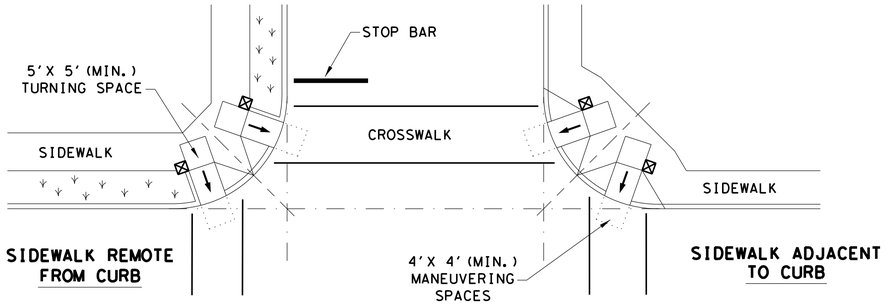
TYPICAL CROSSING LAYOUTS
SEE SHEET 1 OF 4 FOR DETAILS AND DIMENSIONS



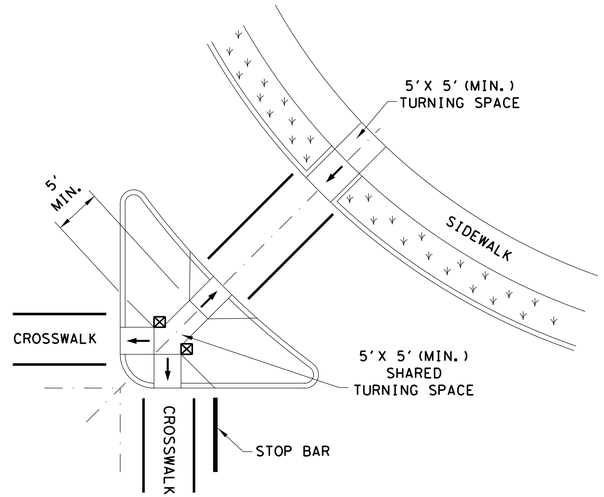
SKEWED INTERSECTION WITH "LARGE" RADIUS



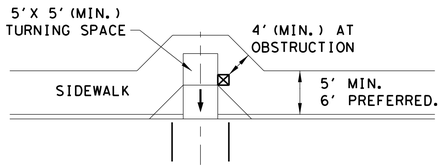
SKEWED INTERSECTION WITH "SMALL" RADIUS

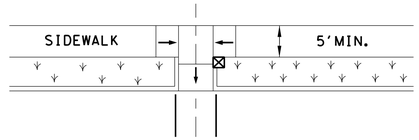


NORMAL INTERSECTION WITH "SMALL" RADIUS



AT INTERSECTION
W/FREE RIGHT TURN & ISLAND





MID-BLOCK PLACEMENT
PERPENDICULAR RAMPS

LEGEND:

SHOWS DOWNWARD SLOPE. →

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

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

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

SHEET 4 OF 4

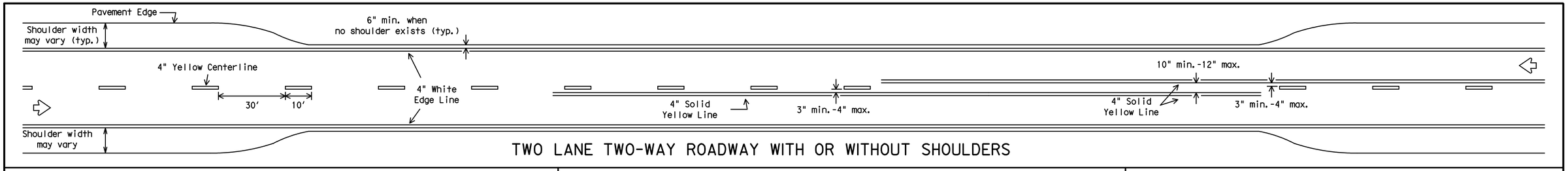
Texas Department of Transportation | Design Division Standard

PEDESTRIAN FACILITIES
CURB RAMPS
PED-18

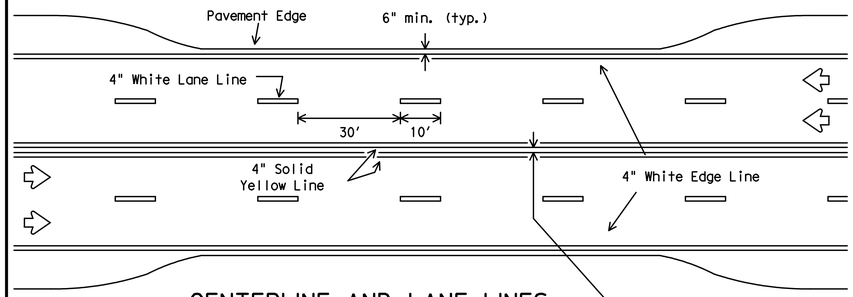
FILE: ped18	DN: TxDOT	DW: VP	CK: KM	CK: PK & JG	
© TxDOT: MARCH, 2002	CONT	SECT	JOB	HIGHWAY	
REVISIONS					
REVISED 08,2005 REVISED 06,2012 REVISED 01,2018	DIST	COUNTY		SHEET NO.	
				130	

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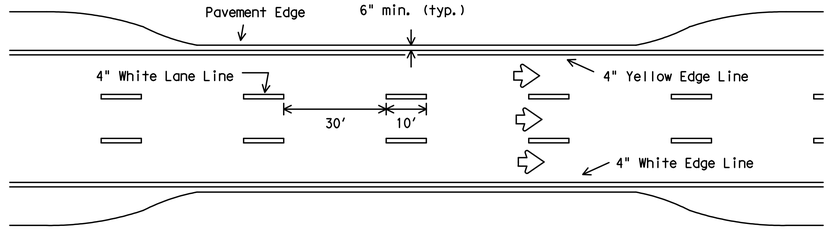
DATE:
FILE:



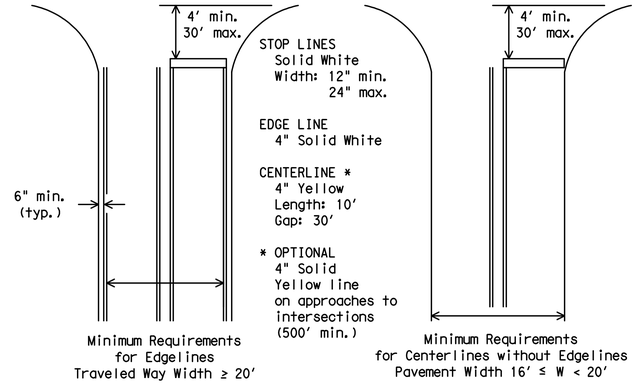
TWO LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS



CENTERLINE AND LANE LINES FOUR LANE TWO-WAY ROADWAY WITH OR WITHOUT SHOULDERS

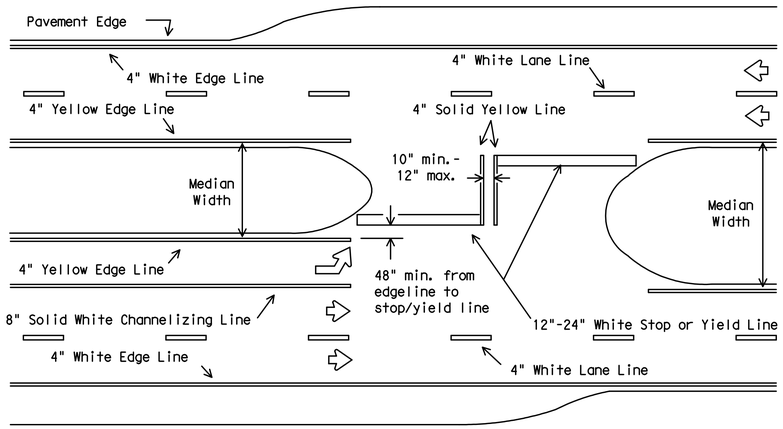


EDGE LINE AND LANE LINES ONE-WAY ROADWAY WITH OR WITHOUT SHOULDERS



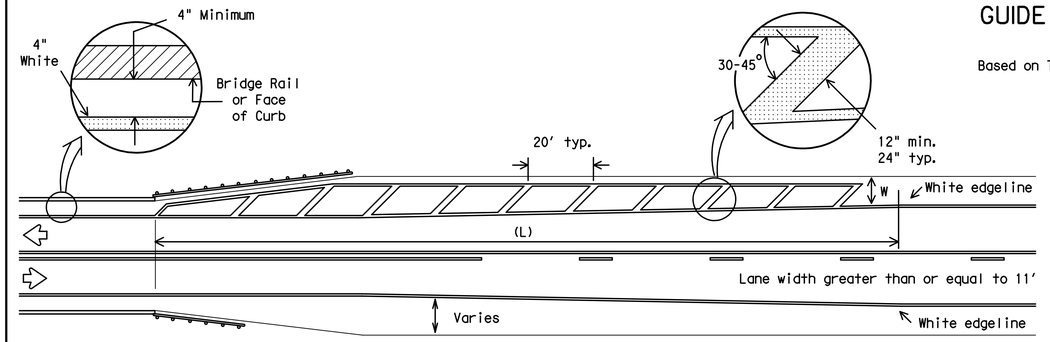
GUIDE FOR PLACEMENT OF STOP LINES, EDGE LINE & CENTERLINE

Based on Traveled Way and Pavement Widths for Undivided Highways



All medians shall be field measured to determine the location of necessary striping. Stop/Yield bars and centerlines shall be placed when the median width is greater than 30 ft. The median width is defined as the area between two roadways of a divided highway measured from edge of traveled way to edge of traveled way. The median excludes turn lanes. The median width might be different between intersections, interchanges and of opposite approaches of the same intersection. The narrow median width will be the controlling width to determine if markings are required.

FOUR LANE DIVIDED ROADWAY INTERSECTIONS



NOTES:

1. No-passing zone on bridge approach is optional but if used, it shall be a minimum 500 feet long.
2. For crosshatching length (L) see Table 1.
3. The width of the offset (W) and the required crosshatching width is the full shoulder width in advance of the bridge.
4. The crosshatching is not required if delineators or barrier reflectors are used along the structure.
5. For guard fence details, refer elsewhere in the plans.

ROADWAYS WITH REDUCED SHOULDER WIDTHS ACROSS BRIDGE OR CULVERT

TABLE 1 - TYPICAL LENGTH (L)

Posted Speed *	Formula
≤ 40	$L = \frac{WS^2}{60}$
≥ 45	L=WS

* 85th Percentile Speed may be used on roads where traffic speeds normally exceed the posted speed limit. Crosshatching length should be rounded up to nearest 5 foot increment.

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

EXAMPLES:

An 8 foot shoulder in advance of a bridge reduces to 4 feet on a 70 MPH roadway. The length of the cross-hatching should be:

L = 8 x 70 = 560 ft.

A 4 foot shoulder in advance of a bridge reduces to 2 feet on a 40 MPH roadway. The length of the cross-hatching should be:

$L = 4(40)^2 / 60 = 106.67$ ft. rounded to 110 ft.

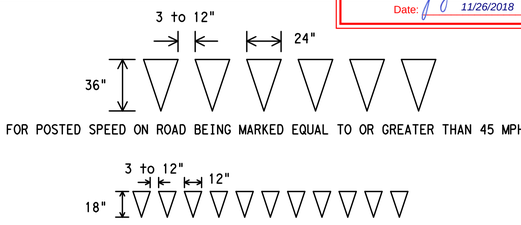
City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

GENERAL NOTES

1. Edgeline striping shall be as shown in the plans or as directed by the Engineer. The edgeline should typically be placed a minimum of 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 and not the parking lanes, sidewalks, berms and shoulders. The traveled ways shall be measured from the inside of edgeline to inside of edgeline of a two lane roadway.

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.



YIELD LINES

Texas Department of Transportation
Traffic Operations Division

TYPICAL STANDARD PAVEMENT MARKINGS

PM(1)-12

© TxDOT November 1978

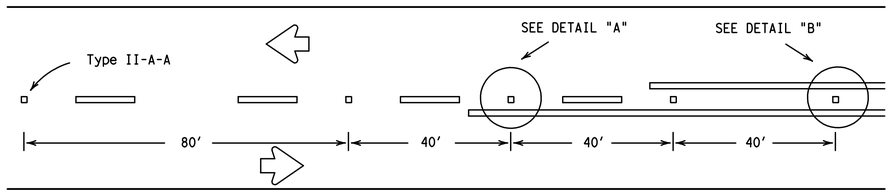
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REVISIONS	CONT	SECT	JOB	HIGHWAY
8-95 2-12				
5-00				
8-00	DIST	COUNTY		SHEET NO.
3-03				131

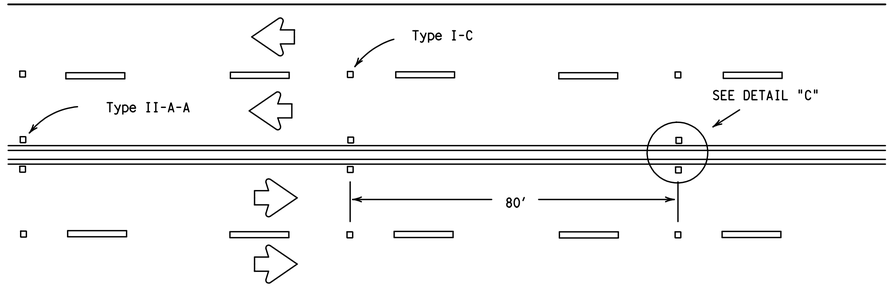
22A

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REFLECTIVE RAISED PAVEMENT MARKERS FOR VEHICLE POSITIONING GUIDANCE

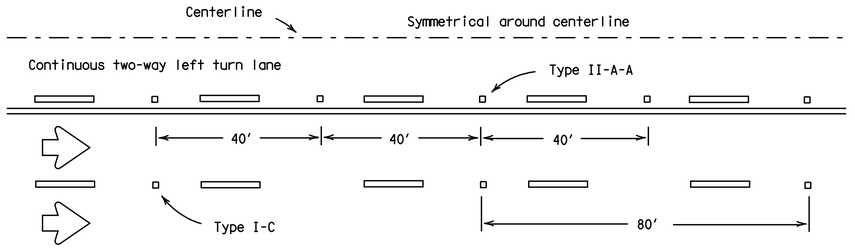


CENTERLINE FOR ALL TWO LANE ROADWAYS

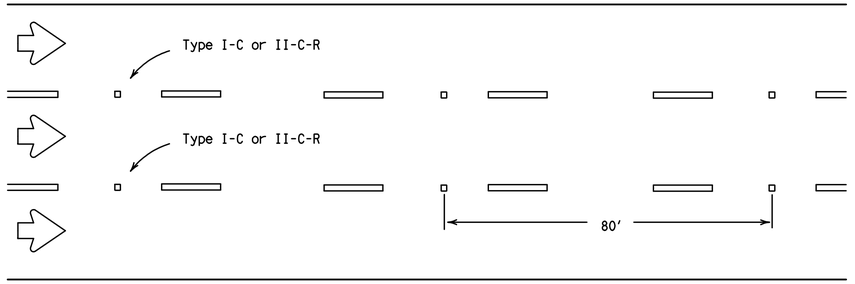


CENTERLINE & LANE LINES FOR FOUR LANE TWO-WAY HIGHWAYS

Raised pavement marker Type I-C, clear face toward normal traffic, shall be placed on 80-foot centers.

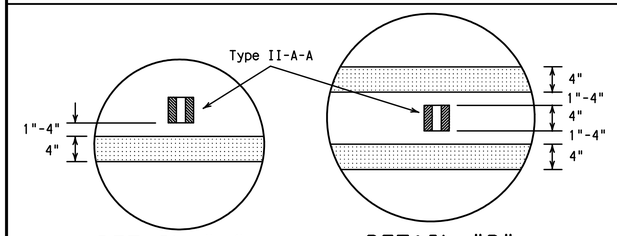


CENTERLINE AND LANE LINES FOR TWO-WAY LEFT TURN LANE



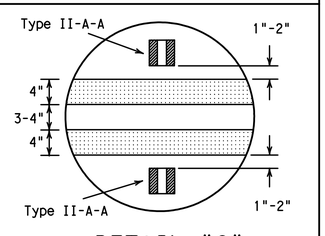
LANE LINES FOR ONE-WAY ROADWAY (NON-FREEWAY FACILITIES)

Raised pavement markers Type II-C-R shall have clear face toward normal traffic and red face toward wrong-way traffic.

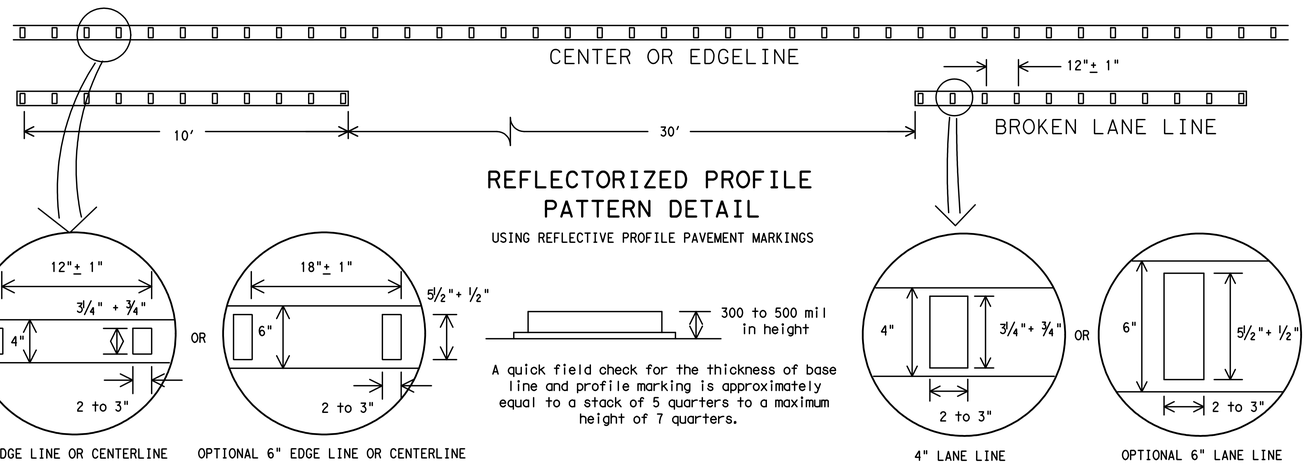


DETAIL "A"

DETAIL "B"



DETAIL "C"



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.

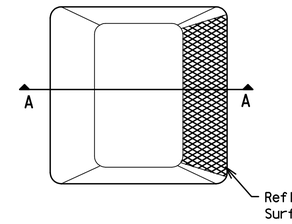
NOTE:
Profile markings shall not be placed on roadways with a posted speed limit of 45 MPH or less.

GENERAL NOTES

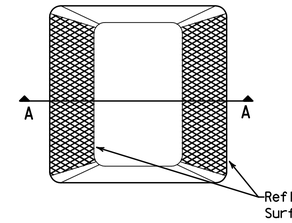
1. All raised pavement markers placed in broken lines shall be placed in line with and midway between the stripes.
2. On concrete pavements the raised pavement markers should be placed to one side of the longitudinal joints.

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

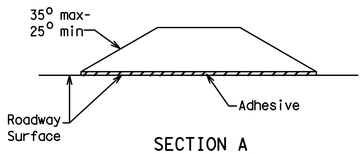
All pavement marking materials shall meet the required Departmental Material Specifications as specified by the plans.



Type I (Top View)



Type II (Top View)



SECTION A

RAISED PAVEMENT MARKERS

Texas Department of Transportation
Traffic Operations Division

POSITION GUIDANCE USING RAISED MARKERS
REFLECTORIZED PROFILE MARKINGS
PM(2)-12

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: Jeremy M. White, P.E., CFM
Date: 11/26/2018

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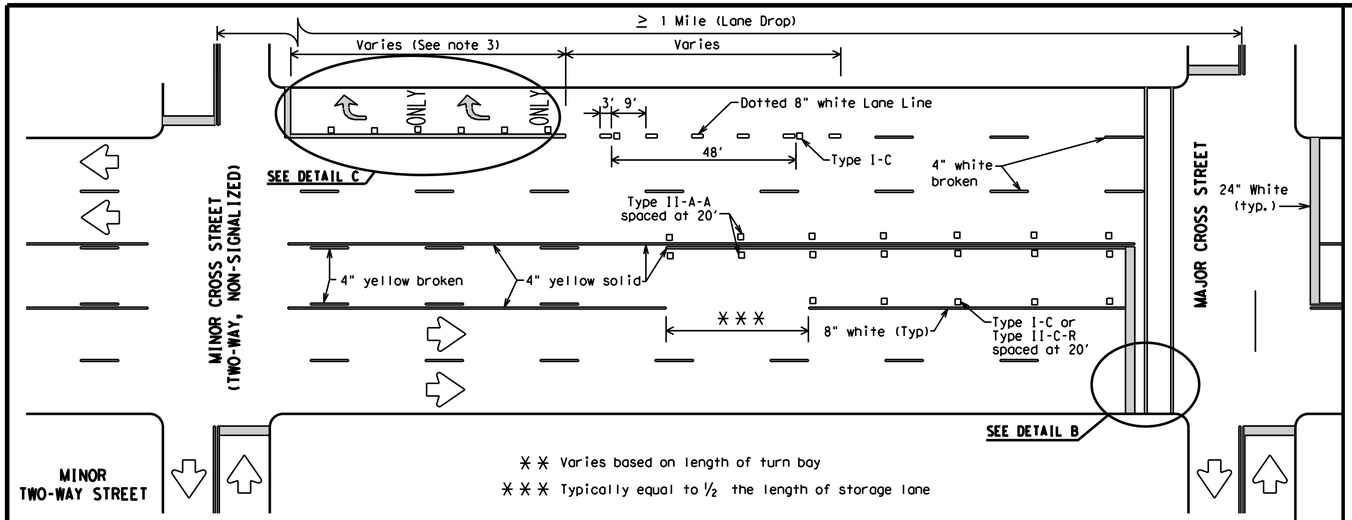
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CONT	SECT	JOB	HIGHWAY
DIST	COUNTY		SHEET NO.
			132

REVISIONS
4-92 2-10
5-00 2-12
8-00
2-08

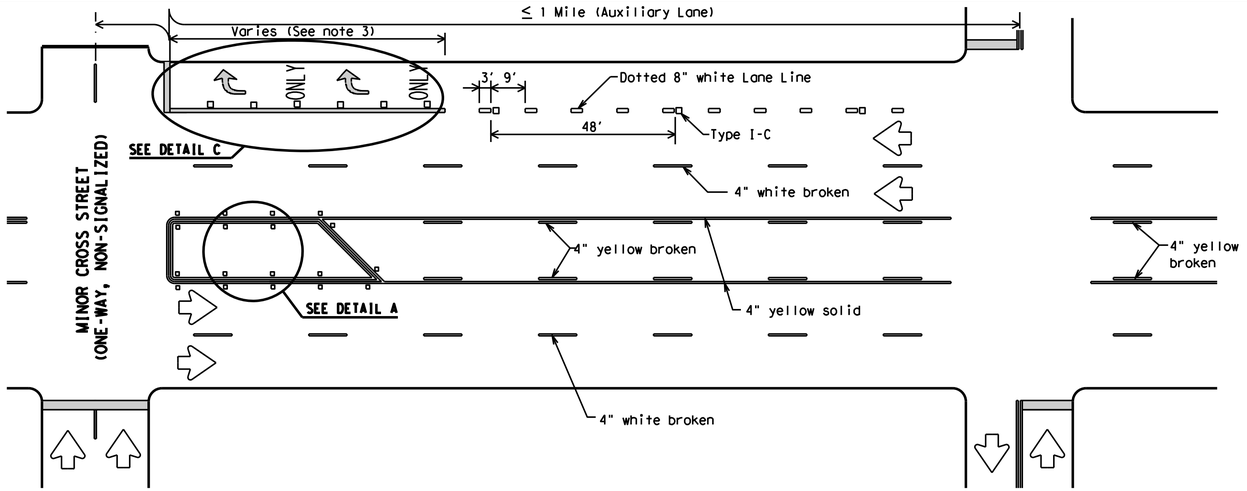
DATE:
FILE:

22B

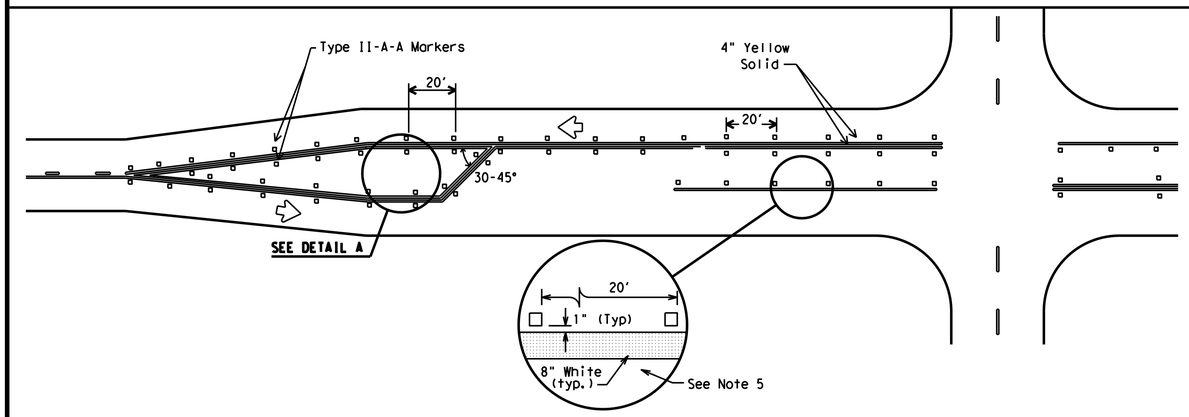
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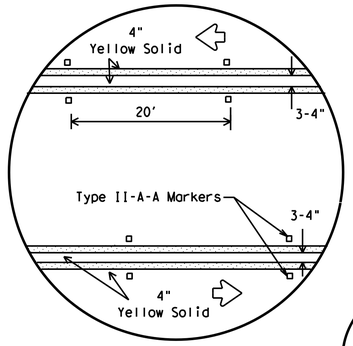
TYPICAL TWLTL AT TWO-WAY CROSS STREET AND RIGHT TURN LANE DROP



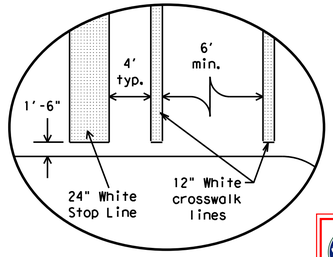
TYPICAL TWLTL AT ONE-WAY STREET AND RIGHT TURN AUXILIARY LANE



TYPICAL TWO-LANE HIGHWAY INTERSECTION WITH LEFT TURN BAYS

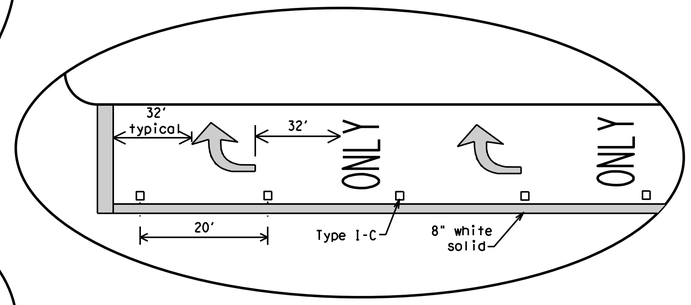


DETAIL A



Final placement of Stop Bar and Crosswalk shall be approved by the Engineer in the field.

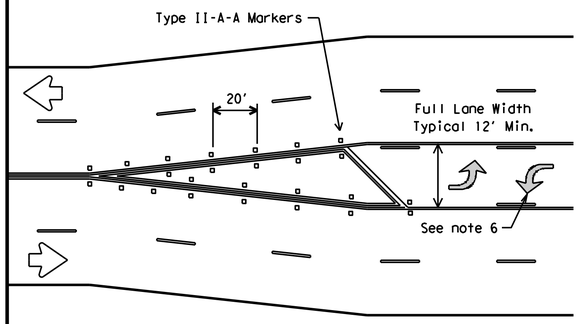
DETAIL B



DETAIL C

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 TRANSITION FOR TWLTL AND DIVIDED HIGHWAY

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], P.E., CFM
Date: 11/26/2018

GENERAL NOTES

1. Refer elsewhere in plans for additional RPM placement and details.
2. 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 as shown in the Standard Highway Sign Designs for Texas.
3. When lane used word 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.
4. Other crosswalk patterns as shown in the "Texas Manual on Uniform Traffic Control Devices" may be used.
5. Raised pavement marker Type I-C with undivided highways, flush medians and two way left turn lanes. Raised pavement marker Type II-C-R with divided highways and raised medians.
6. 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.

Texas Department of Transportation
Traffic Operations Division

PAVEMENT MARKINGS FOR TWO-WAY LEFT TURN LANES DIVIDED HIGHWAYS AND RURAL LEFT TURN BAYS

PM(3)-12

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DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS	CONT	SECT	JOB	HIGHWAY
5-00 2-12				
8-00				
3-03	DIST	COUNTY		SHEET NO.
2-10				133

22C

DATE:
FILE:

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DATE:
FILE:

SIGN SUPPORT DESCRIPTIVE CODES

(Descriptive Codes correspond to project estimate and quantities sheets)

SM RD SGN ASSM TY XXXXX(X)XX(X-XXXX)

Post Type

FRP = Fiberglass Reinforced Plastic Pipe (see SMD(FRP))
TWT = Thin-Walled Tubing (see SMD(TWT))
10BWG = 10 BWG Tubing (see SMD(SLIP-1) to (SLIP-3))
S80 = Schedule 80 Pipe (see SMD(SLIP-1) to (SLIP-3))

Number of Posts (1 or 2)

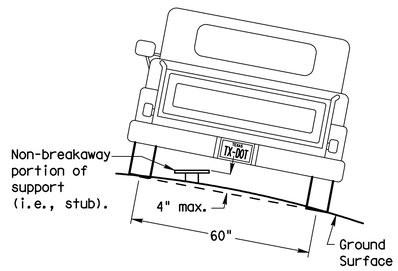
Anchor Type

UA = Universal Anchor - Concreted (see SMD(FRP) and (TWT))
UB = Universal Anchor - Bolted down (see SMD(FRP) and (TWT))
WS = Wedge Anchor Steel - (see SMD(TWT))
WP = Wedge Anchor Plastic (see SMD(TWT))
SA = Slipbase - Concreted (see SMD(SLIP-1) to (SLIP-3))
SB = Slipbase - Bolted Down (see SMD(SLIP-1) to (SLIP-3))

Sign Mounting Designation

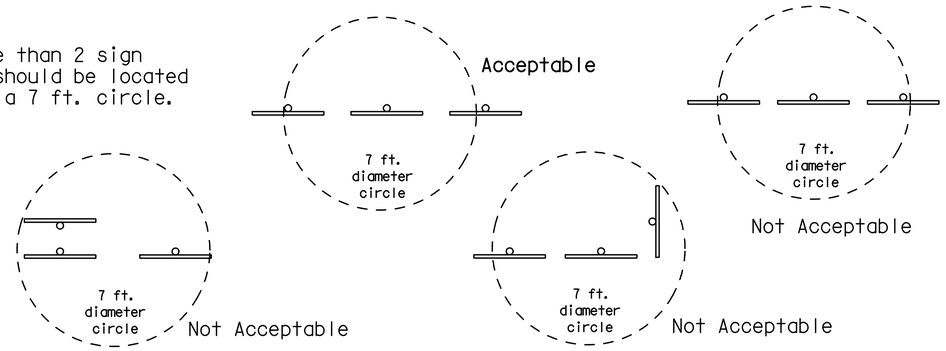
P = Prefab. "Plain" (see SMD(SLIP-1) to (SLIP-3), (TWT), (FRP))
T = Prefab. "T" (see SMD(SLIP-1) to (SLIP-3), (TWT))
U = Prefab. "U" (see SMD(SLIP-1) to (SLIP-3))
IF REQUIRED
1EXT or 2EXT = Number of Extensions (see SMD(SLIP-1) to (SLIP-3), (TWT))
BM = Extruded Wind Beam (see SMD(SLIP-1) to (SLIP-3))
WC = 1.12 #/ft Wing Channel (see SMD(SLIP-1) to (SLIP-3))
EXAL = Extruded Aluminum Sign Panels (see SMD(SLIP-1))

REQUIRED CLEARANCE FOR BREAKAWAY SUPPORT



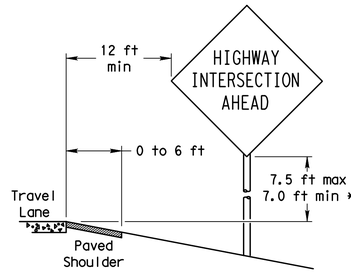
To avoid vehicle undercarriage snagging, any substantial remains of a breakaway support, when it is broken away, should not project more than 4 inches above a 60-inch chord (i.e., typical space between wheel paths).

No more than 2 sign posts should be located within a 7 ft. circle.



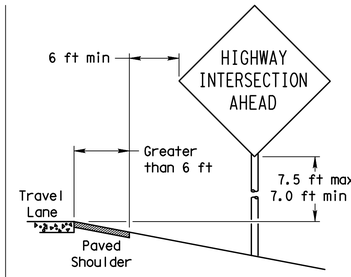
SIGN LOCATION

PAVED SHOULDERS



LESS THAN 6 FT. WIDE

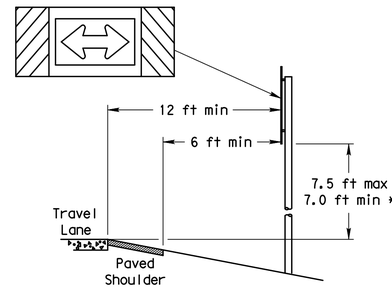
When the shoulder is 6 ft. or less in width, the sign must be placed at least 12 ft. from the edge of the travel lane.



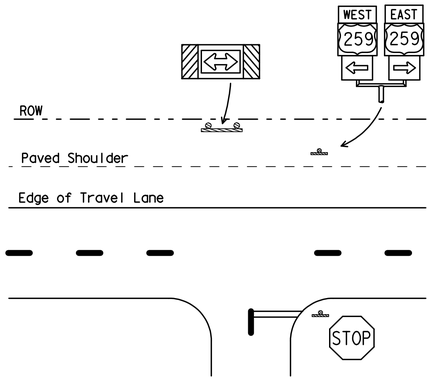
GREATER THAN 6 FT. WIDE

When the shoulder is greater than 6 ft in width, the sign must be placed at least 6 ft. from the edge of the shoulder.

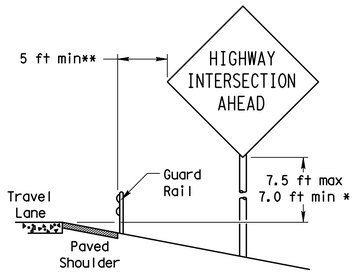
T-INTERSECTION



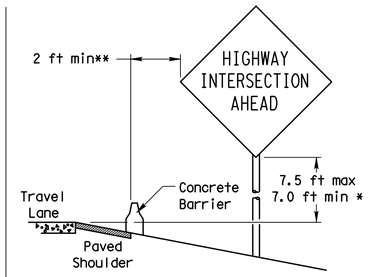
When this sign is needed at the end of a two-lane, two way roadway, the right edge of the sign should be in line with the centerline of the roadway. Place as close to ROW as practical.



BEHIND BARRIER



BEHIND GUARDRAIL



BEHIND CONCRETE BARRIER

**Sign clearance based on distance required for proper guard rail or concrete barrier performance.

* Signs shall be mounted using the following condition that results in the greatest sign elevation:

(1) a minimum of 7 to a maximum of 7.5 feet above the edge of the travel lane or

(2) a minimum of 7 to a maximum of 7.5 feet above the grade at the base of the support when sign is installed on the backslope.

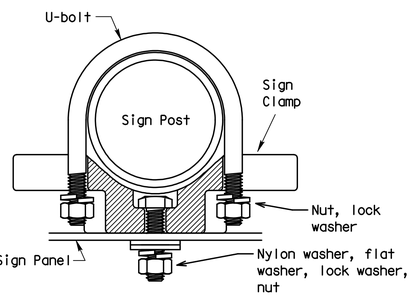
The maximum values may be increased when directed by the Engineer.

See the Traffic Operations Division website for detailed drawings of sign clamps, Triangular Slipbase System components and Wedge Anchor System components.

The website address is:
http://www.txdot.gov/publications/traffic.htm

TYPICAL SIGN ATTACHMENT DETAIL

Single Signs

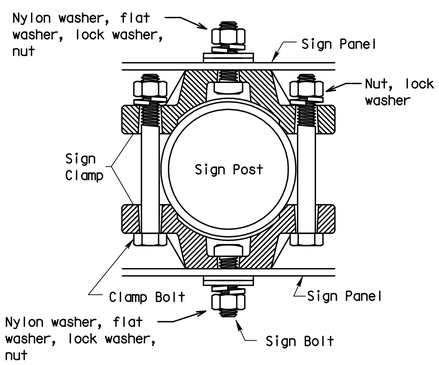


Bolts used to mount sign panels to the clamp are 5/16-18 UNC galvanized square head with nut, nylon washer, flat washer and lock washer. The bolt length is 1 inch for aluminum.

When two sign clamps are used to mount signs back-to-back, use a 5/16-18 UNC galvanized hex head per ASTM A307 with nut and helical-spring lock washer. The approximate bolt lengths for various post sizes and sign clamp types are given in the table at right. The bolt length may need to be adjusted depending upon field conditions.

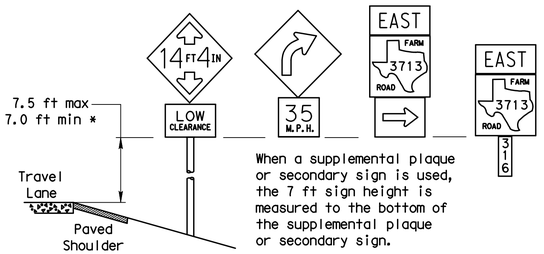
Sign clamps may be either the specific size clamp or the universal clamp.

Back-to-Back Signs



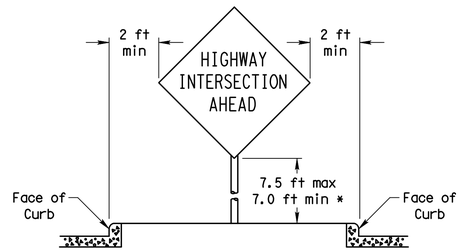
Pipe Diameter	Approximate Bolt Length	
	Specific Clamp	Universal Clamp
2" nominal	3"	3 or 3 1/2"
2 1/2" nominal	3 or 3 1/2"	3 1/2 or 4"
3" nominal	3 1/2 or 4"	4 1/2"

SIGNS WITH PLAQUES



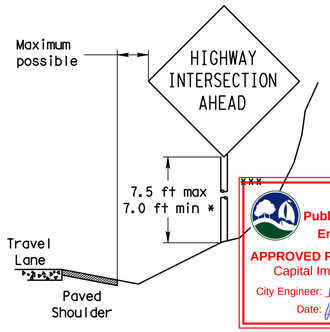
When a supplemental plaque or secondary sign is used, the 7 ft sign height is measured to the bottom of the supplemental plaque or secondary sign.

CURB & GUTTER OR RAISED ISLAND



RESTRICTED RIGHT-OF-WAY

(When 6 ft min. is not possible.)



Right-of-way restrictions may be created by rocks, water, vegetation, forest, buildings, a narrow island, or other factors.

In situations where a lateral restriction prevents the minimum horizontal clearance from the edge of the travel lane, signs should be placed as far from the travel lane as practical.

*** Post may be shorter if protected by guardrail or if Engineer determines the post could not be hit due to extreme slope.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], PE, CFM
Date: 11/26/2018

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS GENERAL NOTES & DETAILS

SMD(GEN)-08

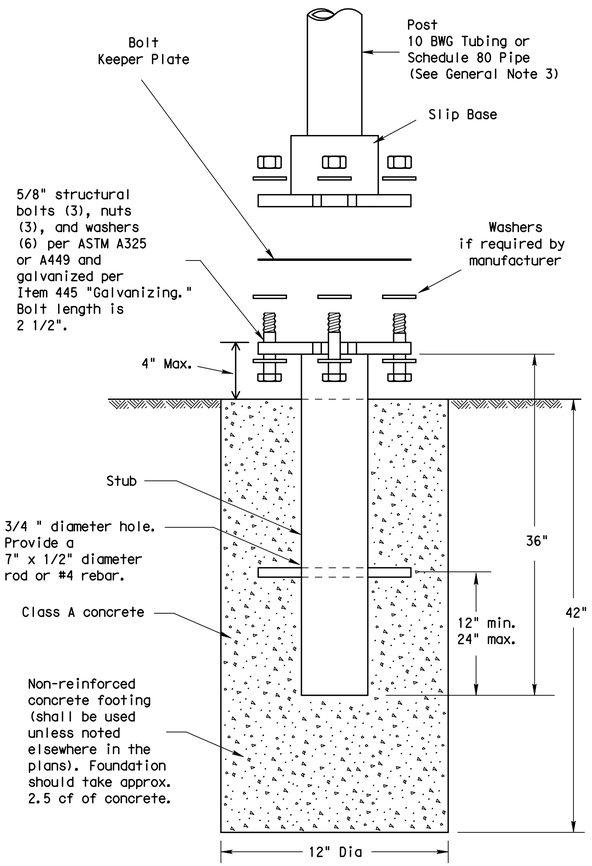
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REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
9-08	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.
				134

26A

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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.

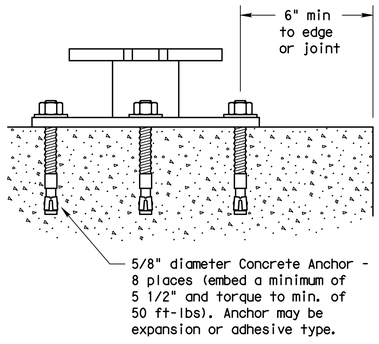
   Schedule 80 Pipe (2.875" outside diameter)
   - 0.276" nominal wall thickness
   - Steel tubing per ASTM A500 Gr C
   - Other seamless or electric-resistance welded steel tubing or pipe with equivalent outside diameter and wall thickness may be used if they meet the following:
     - 46,000 PSI minimum 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: http://www.txdot.gov/publications/traffic.htm
4. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.

ASSEMBLY PROCEDURE

Foundation
1. Prepare 12-inch diameter by 42-inch deep hole. If solid rock is encountered, the depth of the foundation may be reduced such that it is embedded a minimum of 18 inches into the solid rock.
2. The Engineer may permit batches of concrete less than 2 cubic yards to be mixed with a portable, motor-driven concrete mixer. For small placements less than 0.5 cubic yards, hand mixing in a suitable container may be allowed by Engineer. Concrete shall be Class A.
3. Push the pipe end of the slip base stub into the center of the concrete. Rotate the stub back and forth while pushing it down into the concrete to assure good contact between the concrete and stub. Continue to work the stub into the concrete until it is between 2 to 4 inches above the ground.
4. Plumb the stub. Allow a minimum of 4 days to set, unless otherwise directed by the Engineer.
5. The triangular slipbase system is multidirectional and is designed to release when struck from any direction.

Support
1. Cut support so that the bottom of the sign will be 7 to 7.5 feet above the edge of the travelway (i.e., edge of the closest lane) when slip plate is below the edge of pavement or 7 to 7.5 feet above slip plate when the slip plate is above the edge of the travelway. The cut shall be plumb and straight.
2. Attach sign to support using connections shown. When multiple signs are installed on the same support, ensure the minimum clearance between each sign is maintained. See SMD(SLIP-2) for clearances based on sign types.

CONCRETE ANCHOR



SM RD SGN ASSM TY XXXXX(X)SB(X-XXXX)

Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. Heavy hex nut per ASTM A563, and hardened washer per ASTM F436. The stud bolt shall have a minimum yield and ultimate tensile strength of 50 and 75 KSI, respectively. Nuts, bolts and washers shall be galvanized per Item 445, "Galvanizing." Adhesive type anchors shall have stud bolts installed with Type III epoxy per DMS-6100, "Epoxies and Adhesives." Adhesive anchors may be loaded after adequate epoxy cure time per the manufacturer's recommendations. Top of bolt shall extend at least flush with top of the nut when installed. The anchor, when installed in 4000 psi normal-weight concrete with a 5 1/2" minimum embedment, shall have a minimum allowable tension and shear of 3900 and 3100 psi, respectively.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-1)-08

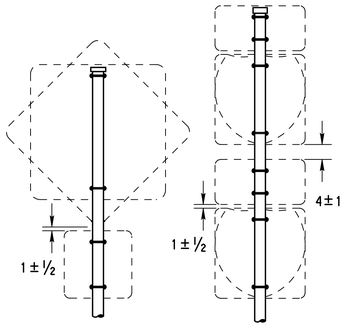
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COUNT	SECT	JOB	HIGHWAY
DIST	COUNTY		SHEET NO.
			135

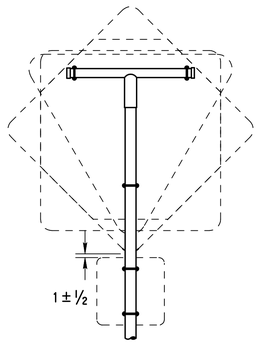
9-08 REVISIONS

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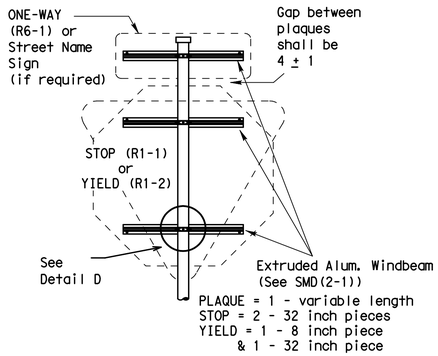
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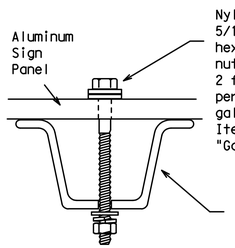
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SM RD SGN ASSM TY XXXXX(1)XX(T)

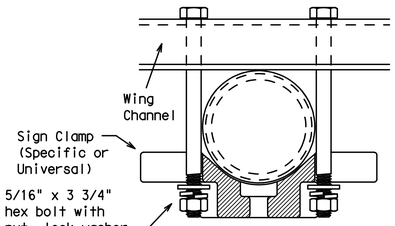


SM RD SGN ASSM TY XXXXX(1)XX(P-BM)



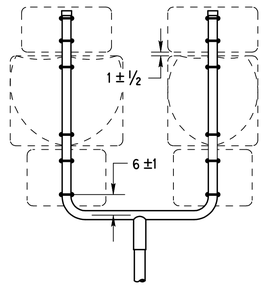
Top View

Detail A

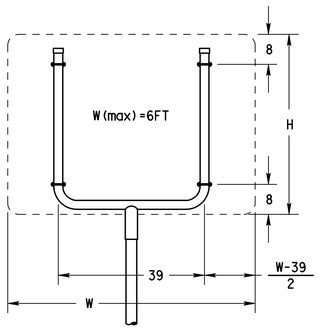


Top View

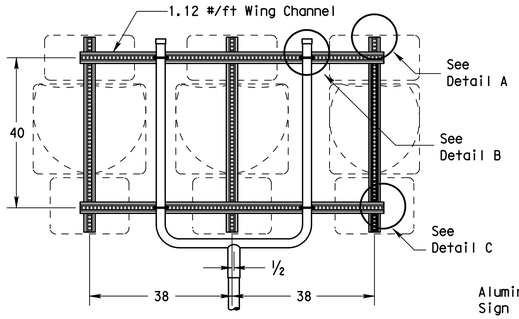
Detail B



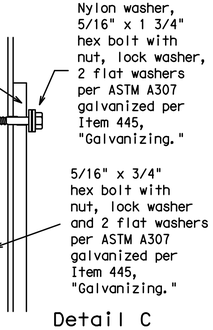
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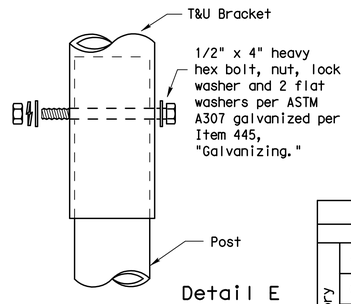
SM RD SGN ASSM TY XXXXX(1)XX(U)



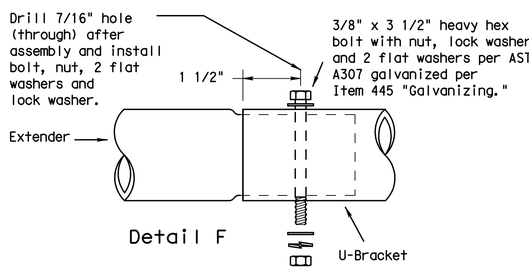
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(See Note 11)



Detail C

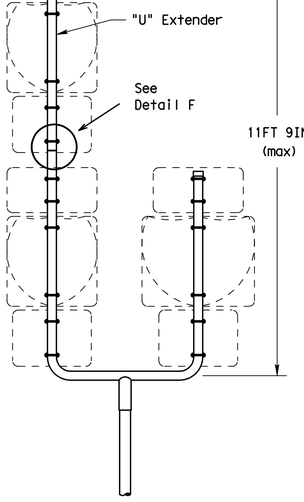


Detail E

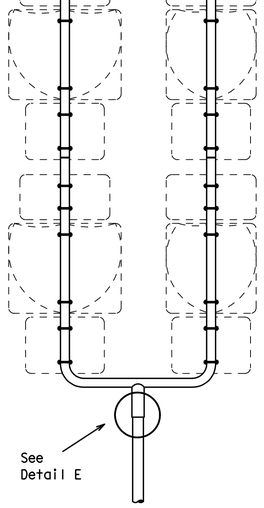


Detail F

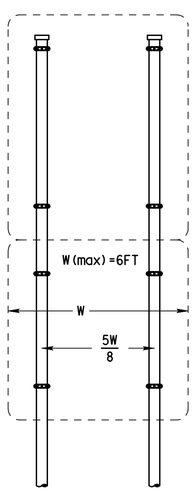
Splices shall only be allowed behind the sign substrate.



SM RD SGN ASSM TY S80(1)XX(U-1EXT)

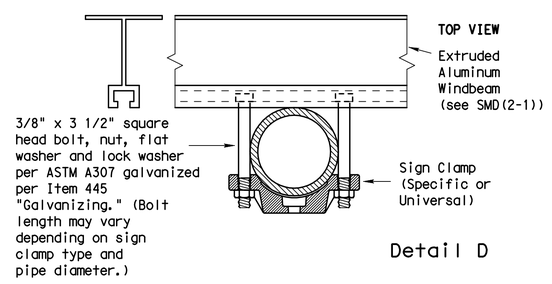


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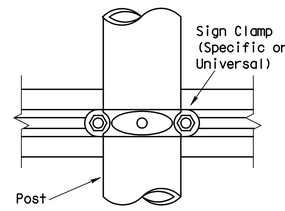


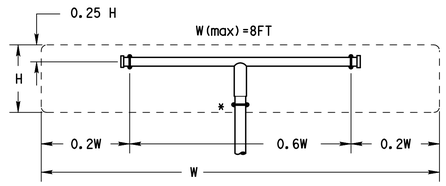
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SIDE VIEW



Detail D

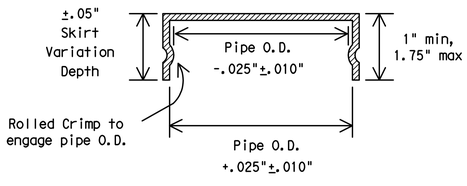




SM RD SGN ASSM TY XXXXX(1)XX(T)
(* - See Note 12)

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.

GENERAL NOTES:

1.

SIGN SUPPORT	# OF POSTS	MAX. SIGN AREA
10 BWG	1	16 SF
10 BWG	2	32 SF
Sch 80	1	32 SF
Sch 80	2	64 SF

2. The Engineer may require that a Schedule 80 post be used in place of a 10 BWG where a sign height is abnormally high due to a fill slope.
3. Sign supports shall not be spliced except where shown. Sign support posts shall not be spliced.
4. Aluminum sign blanks shall conform to Departmental Material Specifications DMS-7110 and shall have the following minimum thicknesses: 0.080 for signs less than 7.5 sq. ft., 0.100 for signs 7.5 to 15 sq. ft., and 0.125 for signs greater than 15 sq. ft.
5. Signs that require specific supports due to reasons in addition to windloading are indicated on the "REQUIRED SUPPORT" table on this sheet.
6. For horizontal rectangular signs fabricated from flat aluminum, T-brackets are used for signs 24 inches or less in height. U-brackets are used for signs of greater height.
7. When two triangular slipbase supports are used to support a single sign, they shall not be "rigidly" connected to each other except through the sign panel. This will allow each support to act independently when impacted by an errant vehicle.
8. Wing channel shall meet ASTM A 1011 SS Gr 50 and be galvanized per ASTM A 123.
9. Excess pipe, wing channel, or windbeam shall be cut off so that it does not extend beyond the sign panel (i.e., excess support shall not be visible when the sign is viewed from the front.) Repair galvanized coating at cut support ends per Item 445, "Galvanizing."
10. Additional route markers may be added vertically, provided the total sign area does not exceed the maximum allowable amount per Note 1.
11. Additional sign clamp required on the "T-bracket" post for 24 inch height signs. Place the clamp 3 inches above bottom of sign when possible.
12. Post open ends shall be fitted with Friction Caps.
13. Sign blanks shall be the sizes and shapes shown on the plans.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

REQUIRED SUPPORT

	SIGN DESCRIPTION	SUPPORT
Regulatory	48-inch STOP sign (R1-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	60-inch YIELD sign (R1-2)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	48x16-inch ONE-WAY sign (R6-1)	TY 10BWG(1)XX(T) TY 10BWG(1)XX(P-BM)
	36x48, 48x36, and 48x48-inch signs	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
Warning	48x48-inch signs (diamond or square)	TY 10BWG(1)XX(T)
	48x60-inch signs	TY S80(1)XX(T)
	48-inch Advance School X-ing sign (S1-1)	TY 10BWG(1)XX(T)
	48-inch School X-ing sign (S2-1)	TY 10BWG(1)XX(T)
	Large Arrow sign (W1-6 & W1-7)	TY 10BWG(1)XX(T)

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-2)-08

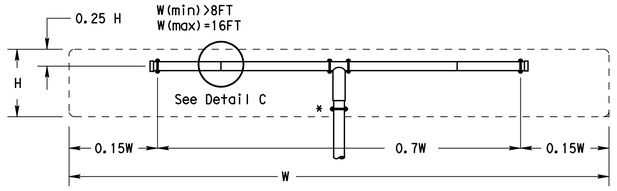
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9-08 REVISIONS	DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT
	CONT	SECT	JOB	HIGHWAY
	DIST	COUNTY		SHEET NO.
				136

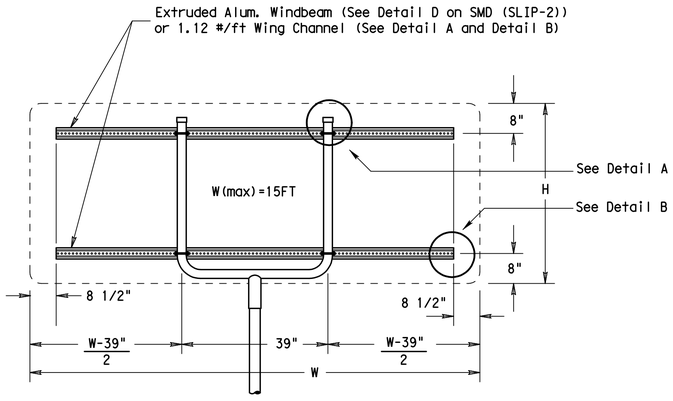
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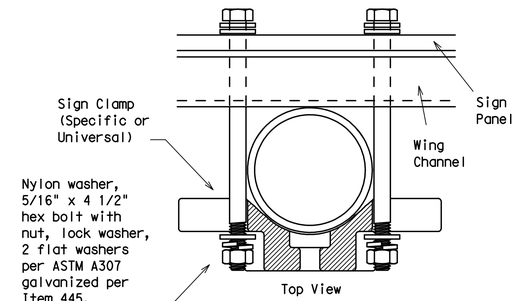
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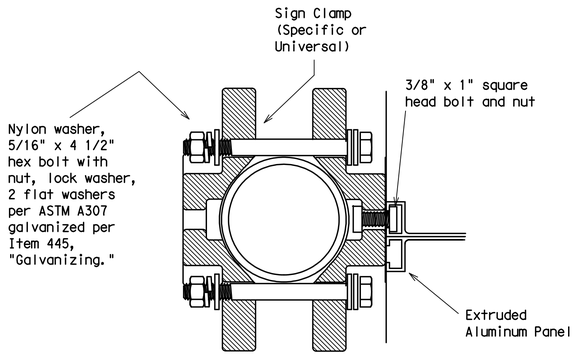
SM RD SGN ASSM TY XXXXX(1)XX(T-2EXT)
(* - See Note 12)



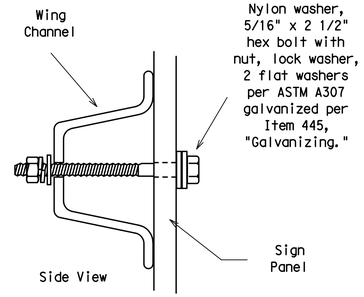
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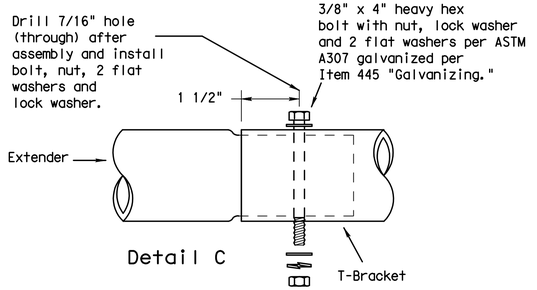
Detail A



Detail D
EXTRUDED ALUMINUM SIGN WITH T BRACKET

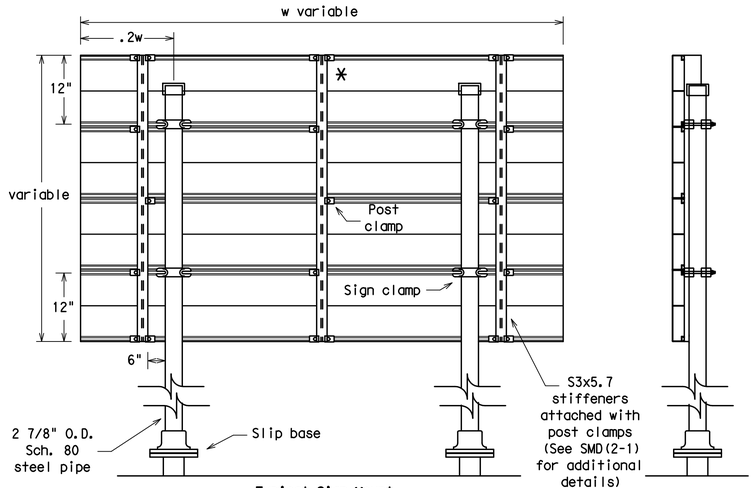


Detail B



Detail C

Splices shall only be allowed behind the sign substrate.

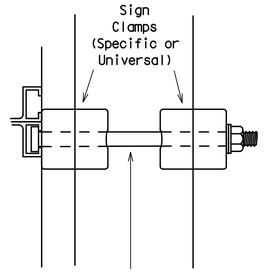


Typical Sign Mount

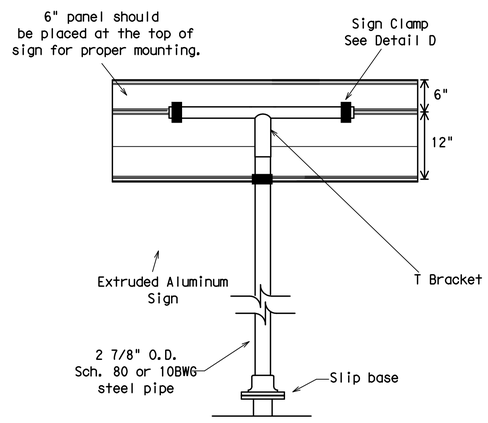
SM RD SGN ASSM TY S80(2)XX(P-EXAL)

* Additional stiffener placed at approximate center of signs when sign width is greater than 10'.

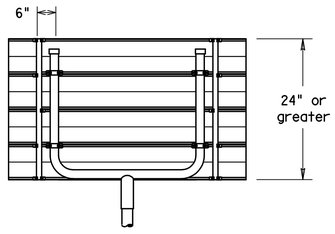
See Detail E
for clamp installation



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)

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

Texas Department of Transportation
Traffic Operations Division

SIGN MOUNTING DETAILS
SMALL ROADSIDE SIGNS
TRIANGULAR SLIPBASE SYSTEM

SMD(SLIP-3)-08

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REVISIONS

9-08

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DIST	COUNTY		SHEET NO.
			137

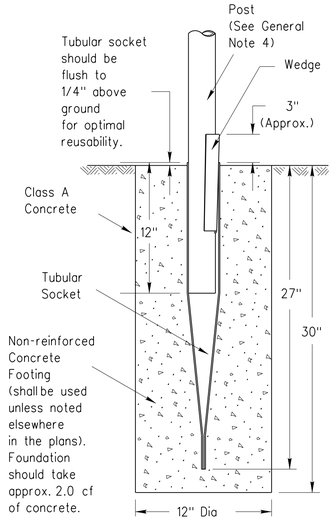
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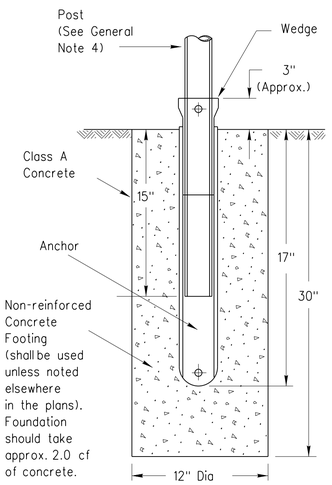
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Wedge Anchor Steel System



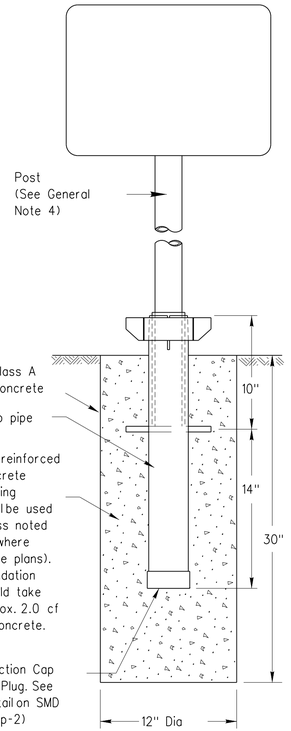
SM RD SGN ASSM TY TWT(X)WS(X)

Wedge Anchor High Density Polyethylene (HDPE) System

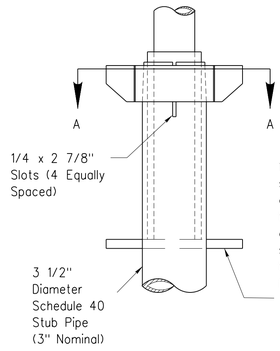


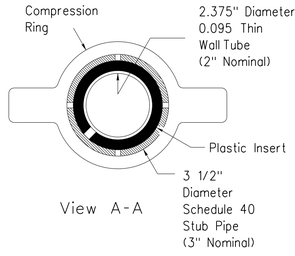
SMD RD SGN ASSM TY TWT(X)WP(X)

Universal Anchor System with Thin-Walled Tubing Post



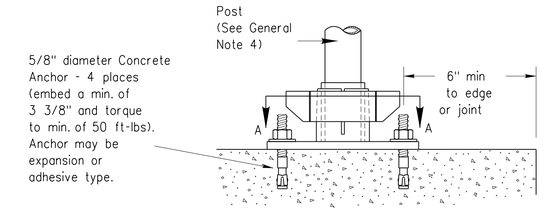
SM RD SGN ASSM TY TWT(X)UA(P)



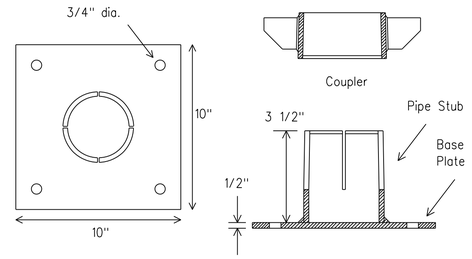


View A-A

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.



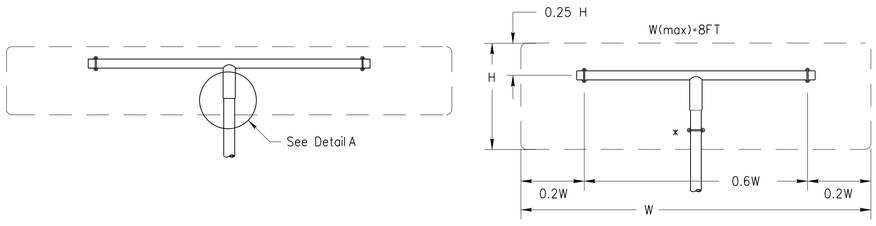
Concrete anchor consists of 5/8" diameter stud bolt with UNC series bolt threads on the upper end. A heavy hex nut per ASTM A563 and hardened washer per ASTM F436. The stud bolt shall have minimum yield and ultimate tensile strengths of 50 and 75 ksi, respectively. Nuts, bolts and washers shall be galvanized 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)

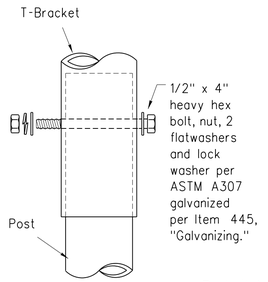
SM RD SGN ASSM TY TWT(X)UB(P)

Sign Installation Using a Prefabricated T-Bracket for Thin-Wall Tubing Post



SM RD SGN ASSM TY TWT(X)XX(T)

(x - 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 approximaely 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.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

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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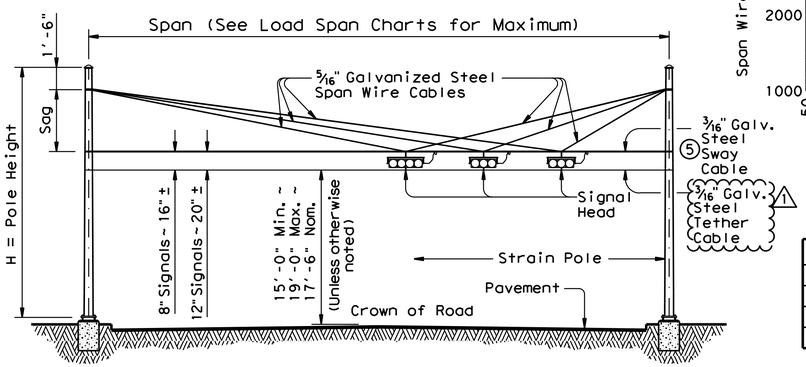
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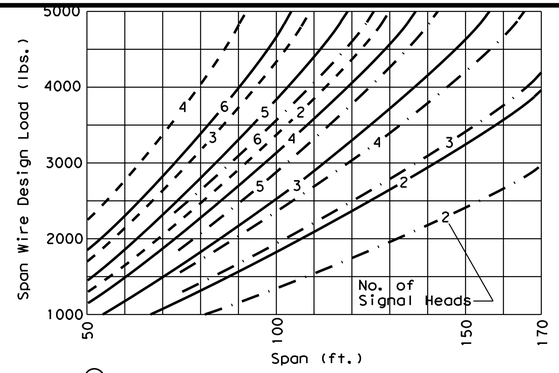
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STRAIN POLE DESCRIPTION	Pole Type	Found-ation Type	Maximum Permissible Span Wire Load (lbs.)
26′ Pole	A	36-A	5200
30′ Pole	B	36-A	4600
30′ Pole with Lum.	B	36-A	4400
30′ Pole with 20′ Mast Arm	C	36-B	5600
30′ Pole with 24′ Mast Arm	C	36-B	5500
30′ Pole with 28′ Mast Arm	C	36-B	5300
30′ Pole with 32′ Mast Arm	C	36-B	5100
30′ Pole with 36′ Mast Arm	C	36-B	4900
30′ Pole with 20′ Mast Arm & Lum.	C	36-B	5300
30′ Pole with 24′ Mast Arm & Lum.	C	36-B	5200
30′ Pole with 28′ Mast Arm & Lum.	C	36-B	5000
30′ Pole with 32′ Mast Arm & Lum.	C	36-B	4800
30′ Pole with 36′ Mast Arm & Lum.	C	36-B	4500
34′ Pole	D	36-B	5600
34′ Pole with Lum.	D	36-B	5400

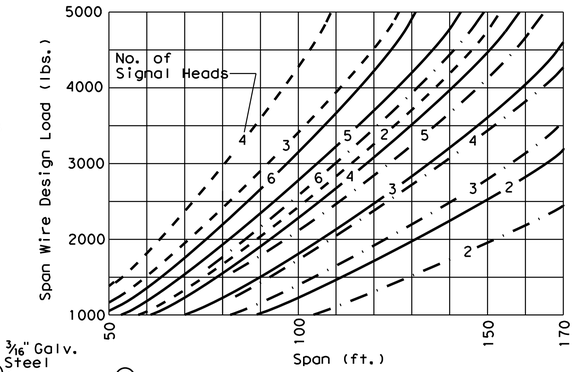
② Numbers on Load Span Charts indicate the number of signal heads on the span. The total span wire design load is based on one 5-section head and one or more additional 3-section head(s). Design wind pressures on cables are assumed as 1.0 lb/ft. Weight of span wire cables (one per signal head) is assumed as 0.65 lb/ft which includes an allowance for conductor cables and miscellaneous hardware. The effect of the sway cable on load distribution is ignored as it is assumed to break at design wind conditions. When a pole supports 2 spans, the span wire design loads for both spans should be added vectorially to determine the design load for that pole.



STRAIN POLE ELEVATIONS HORIZONTAL SIGNALS



② SIGNALS WITH 12-INCH LENS

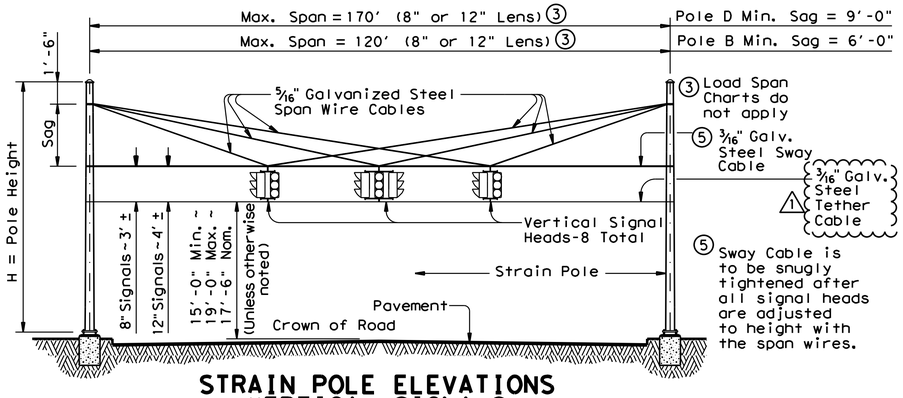


② SIGNALS WITH 8-INCH LENS

Signal Head Type	Wt. Per Head	Wind Area ◆
5-Section, 12" Lens	125 lbs	9.6 sq. ft.
5-Section, 8" Lens	70 lbs	4.8 sq. ft.
3-Section, 12" Lens	75 lbs	5.64 sq. ft.
3-Section, 8" Lens	45 lbs	3.0 sq. ft.

◆ Effective projected design wind area (actual area times drag coefficient)

– – – – – – Sag = 4′-6" (26′ or 30′ Pole)
——— Sag = 8′-0" (30′ or 34′ Pole)
— · — · — Sag = 11′-6" (34′ Pole)



STRAIN POLE ELEVATIONS VERTICAL SIGNALS

(Mast arms are not used with vertical signals)

Pole Type	ROUND POLES D_B in.	D_T in.	(4)thk in.	H ft.	POLYGONAL POLES D_B in.	D_T in.	(4)thk in.	H ft.
A	12.5	8.9	.239	26	13.0	9.0	.239	26
B	13.5	9.3	.239	30	14.0	9.0	.239	30
C	15.5	11.3	.239	30	16.0	11.0	.239	30
D	15.5	10.7	.239	34	16.0	11.0	.239	34

D_B = Pole Base O.D. D_T = Pole Top O.D. H = Pole Height

MODIFICATIONS:

⚠1 ADDED BOTTOM STEEL TETHER CABLE. (2/12)

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

SHIPPING PARTS LIST

Poles (Without Traffic Signal Arm)

Pole Type	Strain poles with Luminaire: Ship each pole with the following hardware attached: handhole at base, pole cap, 2 clamp-on simplex and 1 pipe plug.			Strain poles without Luminaire: Ship each pole with the following hardware attached: handhole at base, pole cap and 1 pipe plug.		
	Description	Designation	Quantity	Description	Designation	Quantity
A				26′ Strain Pole	SP 26 A-80	
B	30′ Strain Pole	SPL 30 B-80	1	30′ Strain Pole	SP 30 B-80	1
D	34′ Strain Pole	SPL 34 D-80		34′ Strain Pole	SP 34 D-80	

Poles (With Traffic Signal Arm)

Pole Type	Strain poles with Luminaire: Ship each pole with the following hardware attached: handhole at base, pole cap, clamp-on simplex and 3 pipe plugs.			Strain poles without Luminaire: Ship each pole with the following hardware attached: handhole at base, pole cap and 3 pipe plugs.		
	Description	Designation	Quantity	Description	Designation	Quantity
C	30′ SPw/TS Arm	SPL 30 C-80		30′ SPw/TS Arm	SP 30 C-80	

Traffic Signal Arms (For Type C poles)

Nominal Arm Length	Type I Arm (1 Signal): Ship each Type I Arm with the following hardware attached: 2 CGB Connectors, 1 clamp with bolts and washers		Type II Arm (2 Signals): Ship each Type II Arm with the following hardware attached: 1 Bracket Assembly ①, 3 CGB Connectors and 1 clamp with bolts and washers		Type III Arm (3 Signals): Ship each Type III Arm with the following hardware attached: 2 Bracket Assemblies ①, 4 CGB Connectors and 1 clamp with bolts and washers	
ft.	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20I-80					
24	24I-80		24 II -80			
28	28I-80		28 II -80			
32			32 II -80		32 III -80	
36			36 II -80		36 III -80	

Anchor Bolt Assemblies (1 per pole)

Anchor Bolt Diameter	Anchor Bolt Length	Templates may be removed for shipment. Quantity
1 ¾"	3′-10"	2
2"	4′-3"	

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".

Luminaire Arms

Nominal Arm Length	Quantity
8′ Arm	1

① See Sheet "DMA-80"

④ Thickness shown are minimum, thicker materials may be used.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: Jeremy M. Pilkilton, P.E., CFM
Date: 11/26/2018

ISSUED FOR CONSTRUCTION ON 10/01/2018

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

SHEET 1 OF 2

Texas Department of Transportation

TRAFFIC SIGNAL SUPPORT STRUCTURES STRAIN POLE ASSEMBLIES

(80 MPH WIND ZONE)

SP-80(1)-12(DAL)

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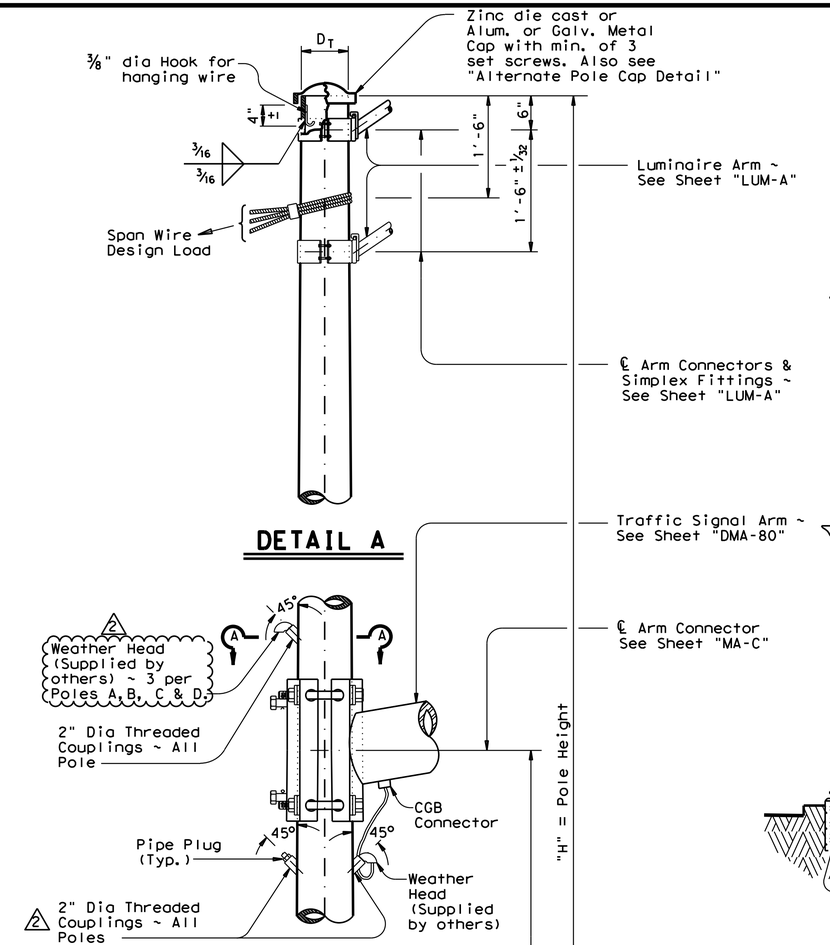
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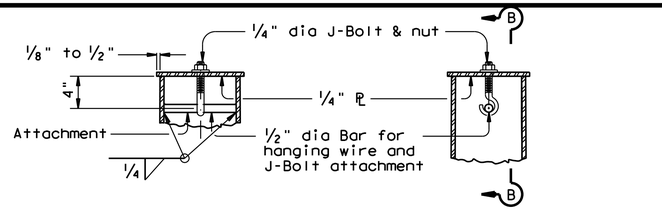
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120A

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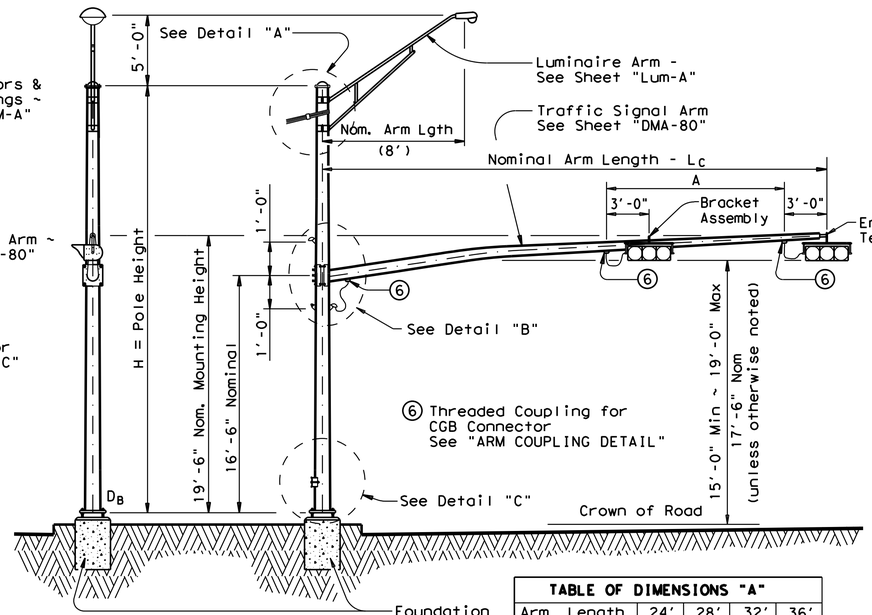
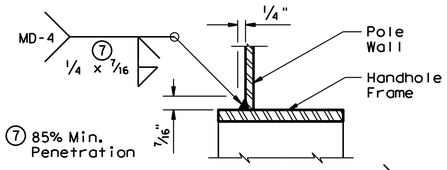
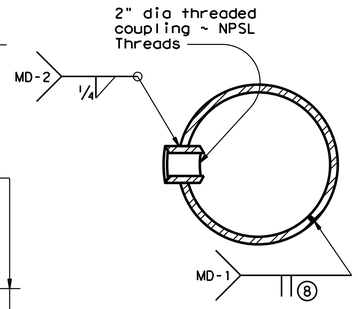
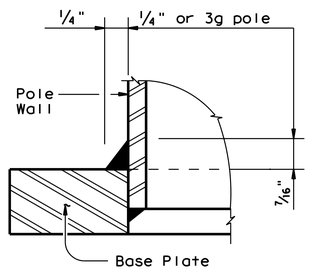


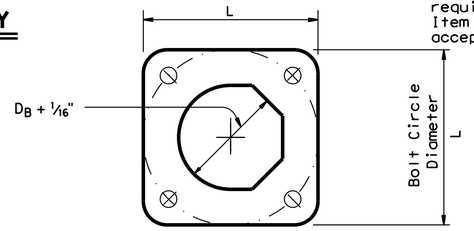
TABLE OF DIMENSIONS "A"				
Arm Length	24'	28'	32'	36'
Arm Type II	10'	11'	12'	13'
Arm Type III			10'	11'

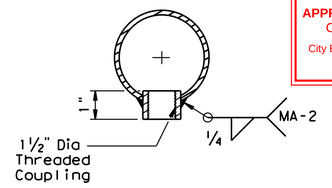






8 60% Min. penetration, except 100% penetration within 6" of circumferential base welds.





2 CHANGED TO 3 WEATHERHEAD ACCESS POINTS FOR POLES A, B, C AND D(3/12).

MATERIALS	
Round Shafts or Polygonal Shafts 9	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 10
Plates 9	ASTM A36, A588, or A572 Gr.50
Connection Bolts	ASTM A325 except where noted
Pin Bolts	ASTM A325
Pipe 9	ASTM A53 Gr.B, A501, A1008 HSLAS-F Gr.50, A1011 HSLAS-F Gr.50
Steel Cable	ASTM A475, 7 Wire Utilities Grade
Misc. Hardware	Galvanized steel or stainless steel or as noted

9 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.

10 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.

GENERAL NOTES

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto. Design Wind Speed equals 80 mph plus a 1.3 gust factor. The maximum permissible span wire design loads tabulated are calculated at a stress load of 1.4 times the basic allowable stress. A simultaneous wind on the pole, mast arm, and luminaire is also included.

See standard sheet "DMA-80" for details of clamp-on traffic signal arms, sheet "MA-C" for traffic signal arm connection details, sheet "LUM-A" for luminaire arm and connection details, and sheet "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. 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.

Foundation Type	Anchor Bolt Diameter	Bolt Hole Diameter	Bolt Circle Diameter	Base PL Dim. L x T
36-A	1 3/4"	2"	19"	19" x 1 3/4"
36-B	2"	2 1/4"	21"	21" x 2"

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], P.E., CFM
Date: 11/26/2018

Texas Department of Transportation

TRAFFIC SIGNAL SUPPORT STRUCTURES STRAIN POLE ASSEMBLIES

(80 MPH WIND ZONE)

SP-80(2)-12(DAL)

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DN: MS	CK: JSY	DW: BR	CK: JSY
REVISIONS	CONT	SECT	JOB	HIGHWAY
6-96 1-12	#CONT	#SECT	#JOB	#HWY
	DIST	COUNTY		SHEET NO.
	18	#CNTY		140

120B

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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)

NOTES:

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

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

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

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

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

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

FOUNDATION SUMMARY TABLE ③

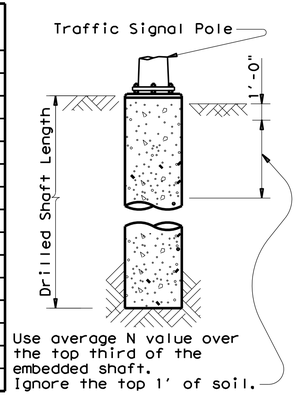
LOCATION IDENTIFICATION	AVG. N BLOW /ft.	FDN TYPE	NO. EA	DRILLED SHAFT LENGTH ⑥ (FEET)				
				24-A	30-A	36-A	36-B	42-A
P-4	10	36-A	1			13		
P-5	10	36-A	1			13		
TOTAL DRILLED SHAFT LENGTHS						26		

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON: 3/17/2021

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

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



Use average N value over the top third of the embedded shaft. Ignore the top 1' of soil.

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.

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".

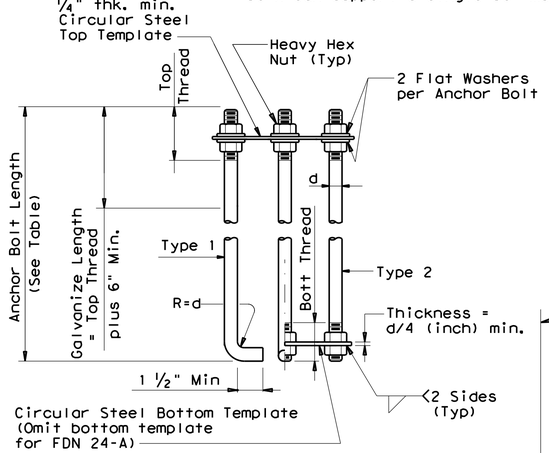
⚠1 Ground rod shall protrude a minimum of 1"and a maximum of 2" above the finish grade of the foundation. Make connections to ground rods according to NEC. Ground rod clamps shall be listed for their intended purpose.

MODIFICATIONS:

⚠1 ADDED GROUND ROD TO FOUNDATION DETAILS (9/15)

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

TYPICAL STRAIN POLE ASSEMBLY



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

ANCHOR BOLT ASSEMBLY

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

TYPICAL MAST ARM ASSEMBLY

TOP VIEW

ELEVATION

FOUNDATION DETAILS

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], PE, CFM
Date: 11/26/2018

FREESE AND NICHOLS, INC.
TEXAS REGISTERED ENGINEERING FIRM F-2144

STATE OF TEXAS
BRANDON J. HUXFORD
117072
LICENSED PROFESSIONAL ENGINEER
8/27/18

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL POLE FOUNDATION

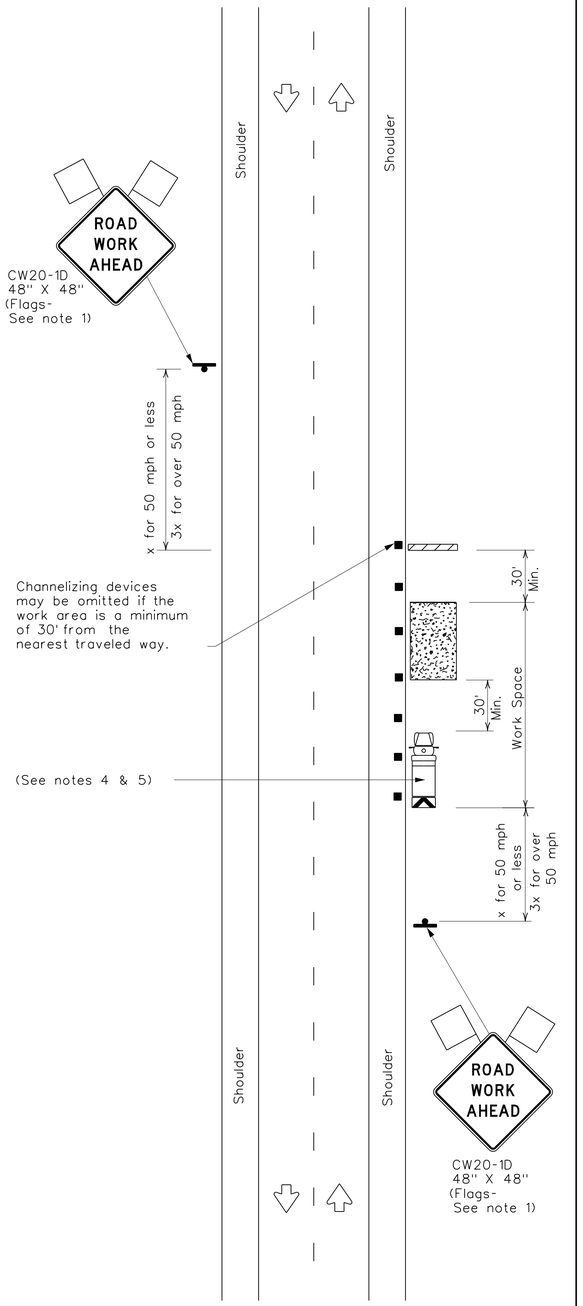
TS-FD-12 (DAL)

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5-96 11-99 1-12				
	DIST	COUNTY		SHEET NO.
				141

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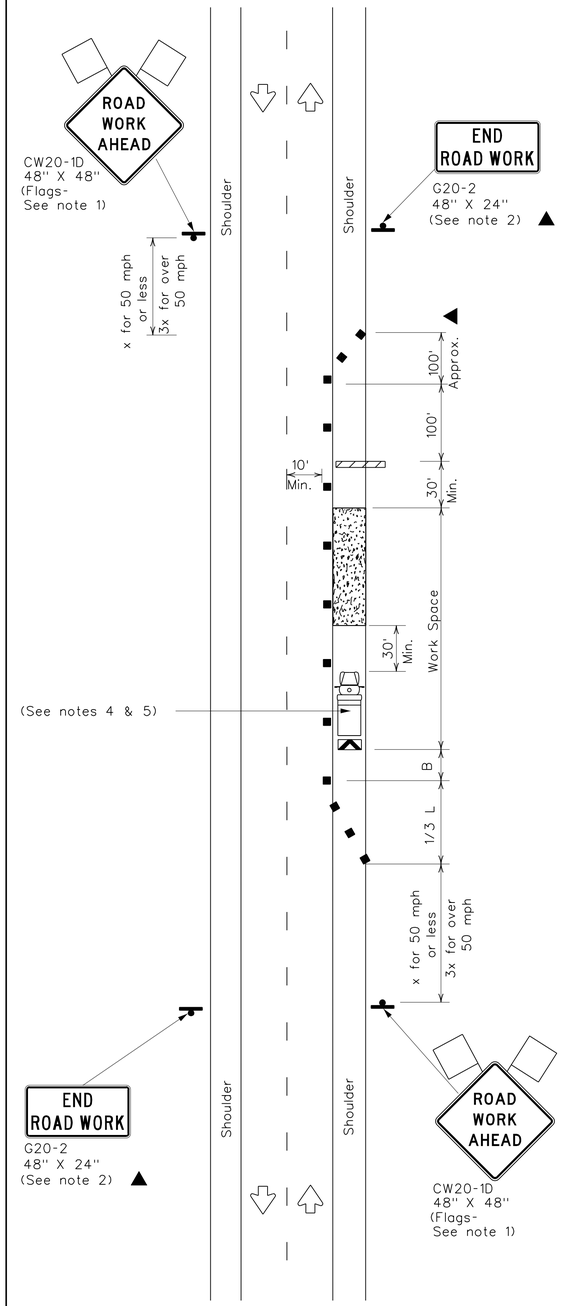
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TCP (2-1a)

WORK SPACE NEAR SHOULDER

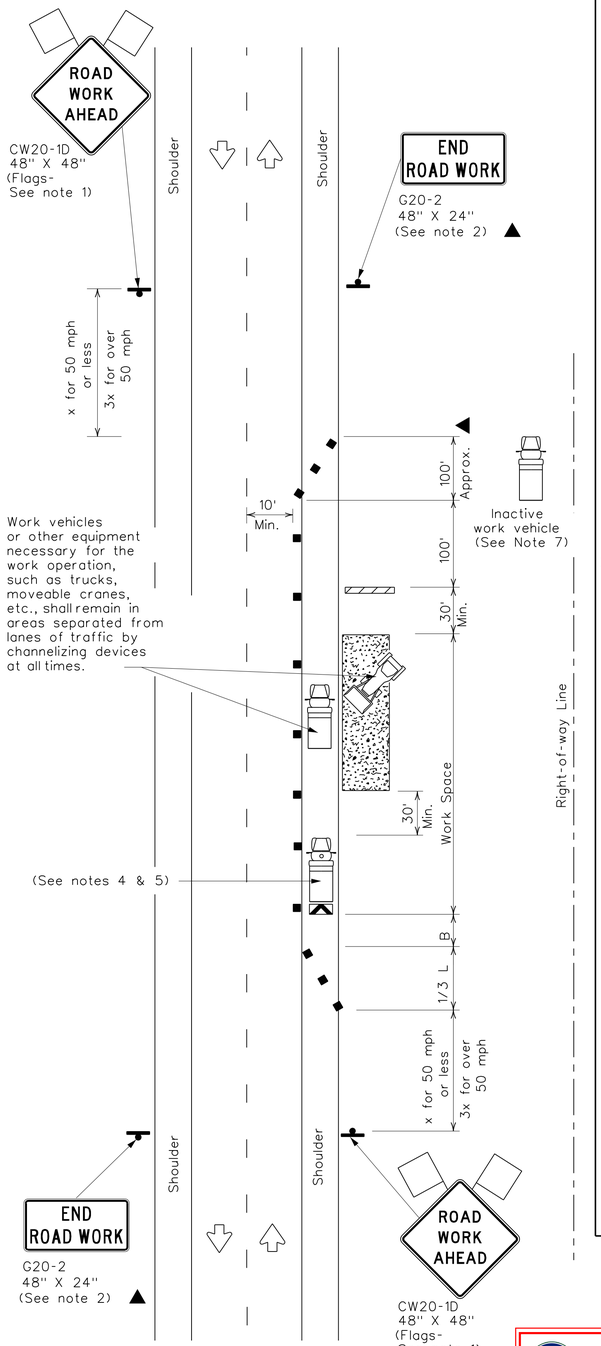
Conventional Roads



TCP (2-1b)

WORK SPACE ON SHOULDER

Conventional Roads



TCP (2-1c)

WORK VEHICLES ON SHOULDER

Conventional Roads

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.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

Texas Department of Transportation

Traffic Operations Division Standard

TRAFFIC CONTROL PLAN CONVENTIONAL ROAD SHOULDER WORK

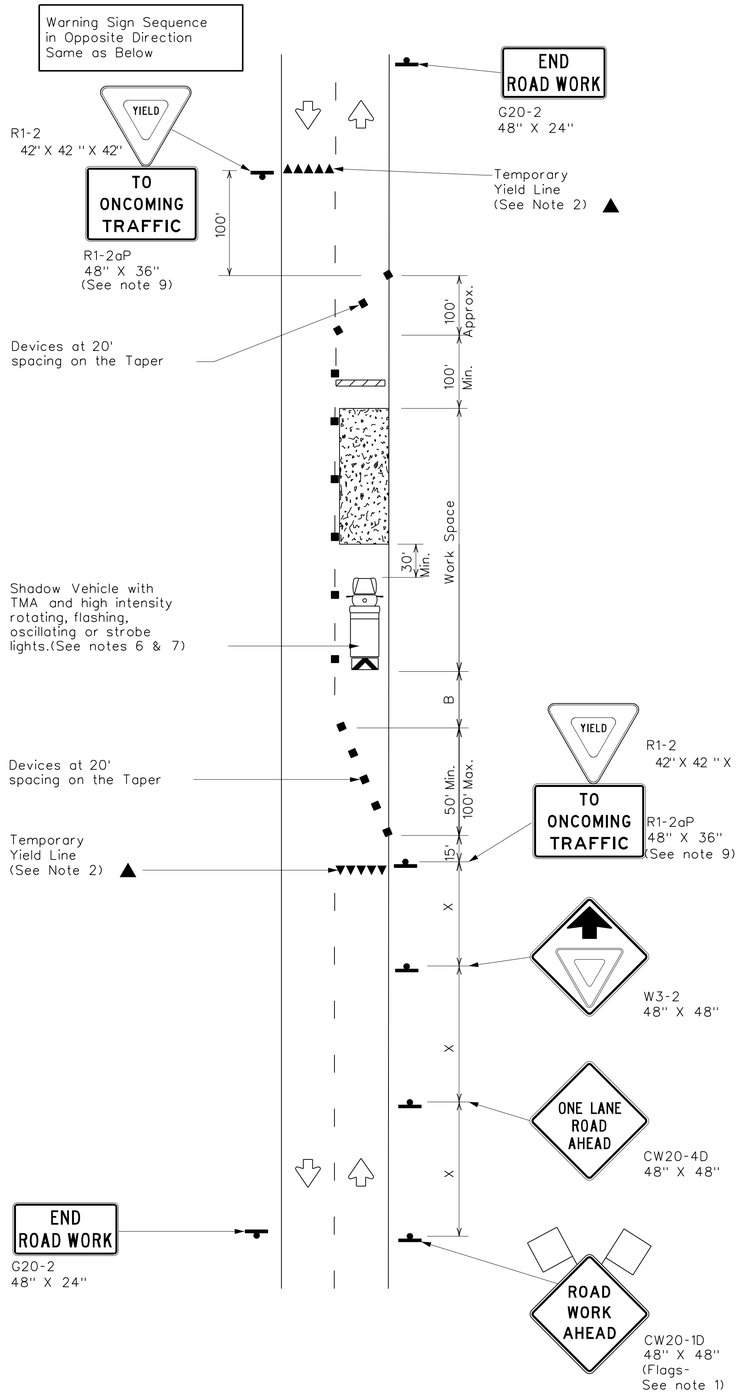
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1-97 2-18				

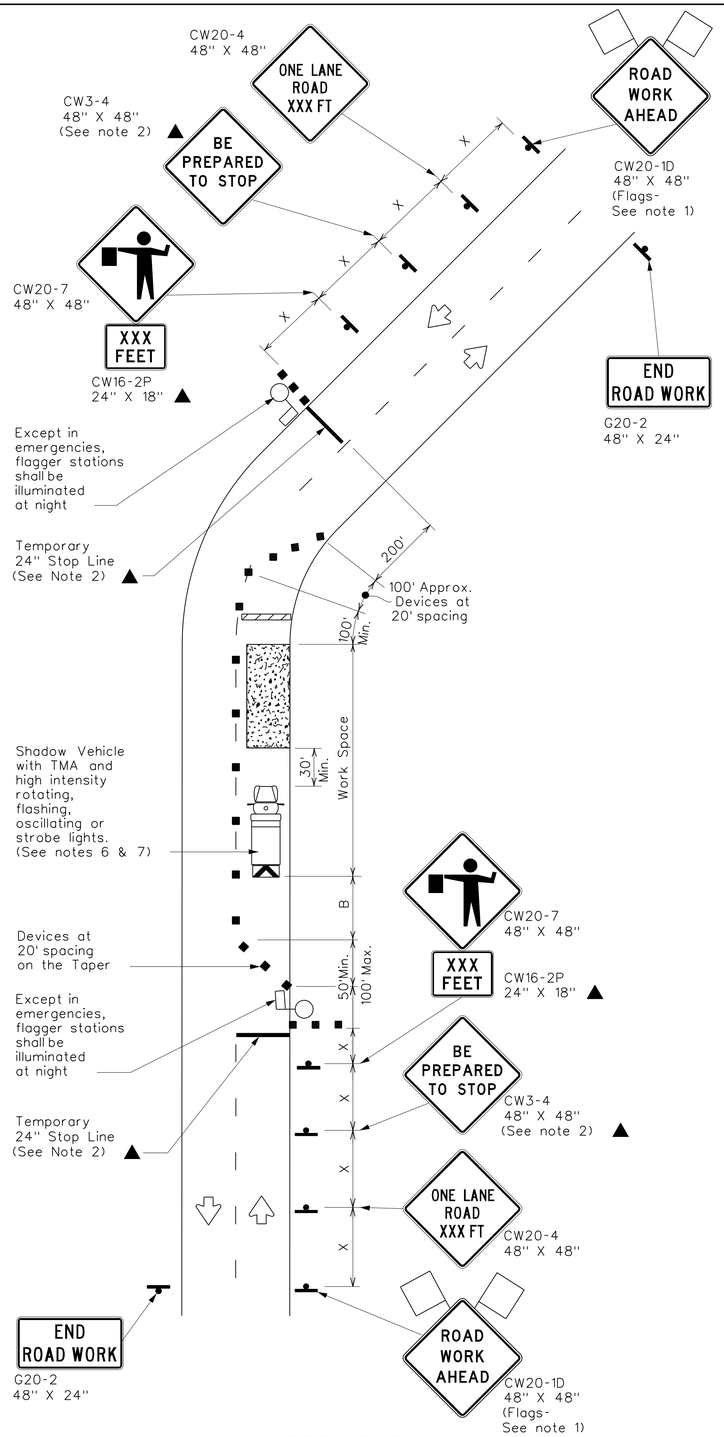
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TCP (2-2a)
2-LANE ROADWAY WITHOUT PAVED SHOULDERS
ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See Note 9)



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

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

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

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

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

GENERAL NOTES

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

TCP (2-2a)

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

TCP (2-2b)

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

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

Texas Department of Transportation
Traffic Operations Division Standard

TRAFFIC CONTROL PLAN
ONE-LANE TWO-WAY TRAFFIC CONTROL

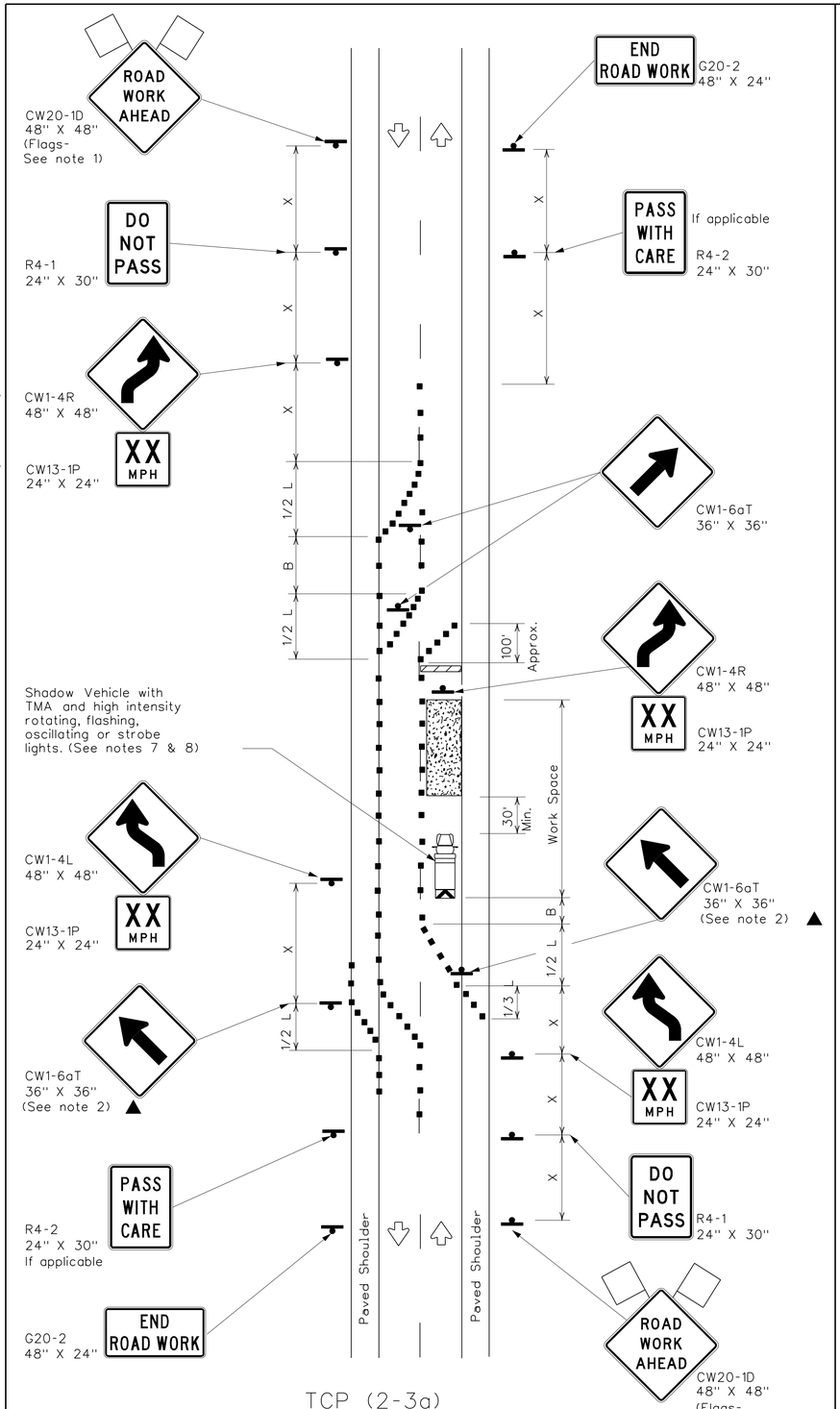
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© TxDOT December 1985	CONT	SECT	JOB	HIGHWAY
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1-97 2-12				143
4-98 2-18				

16.2

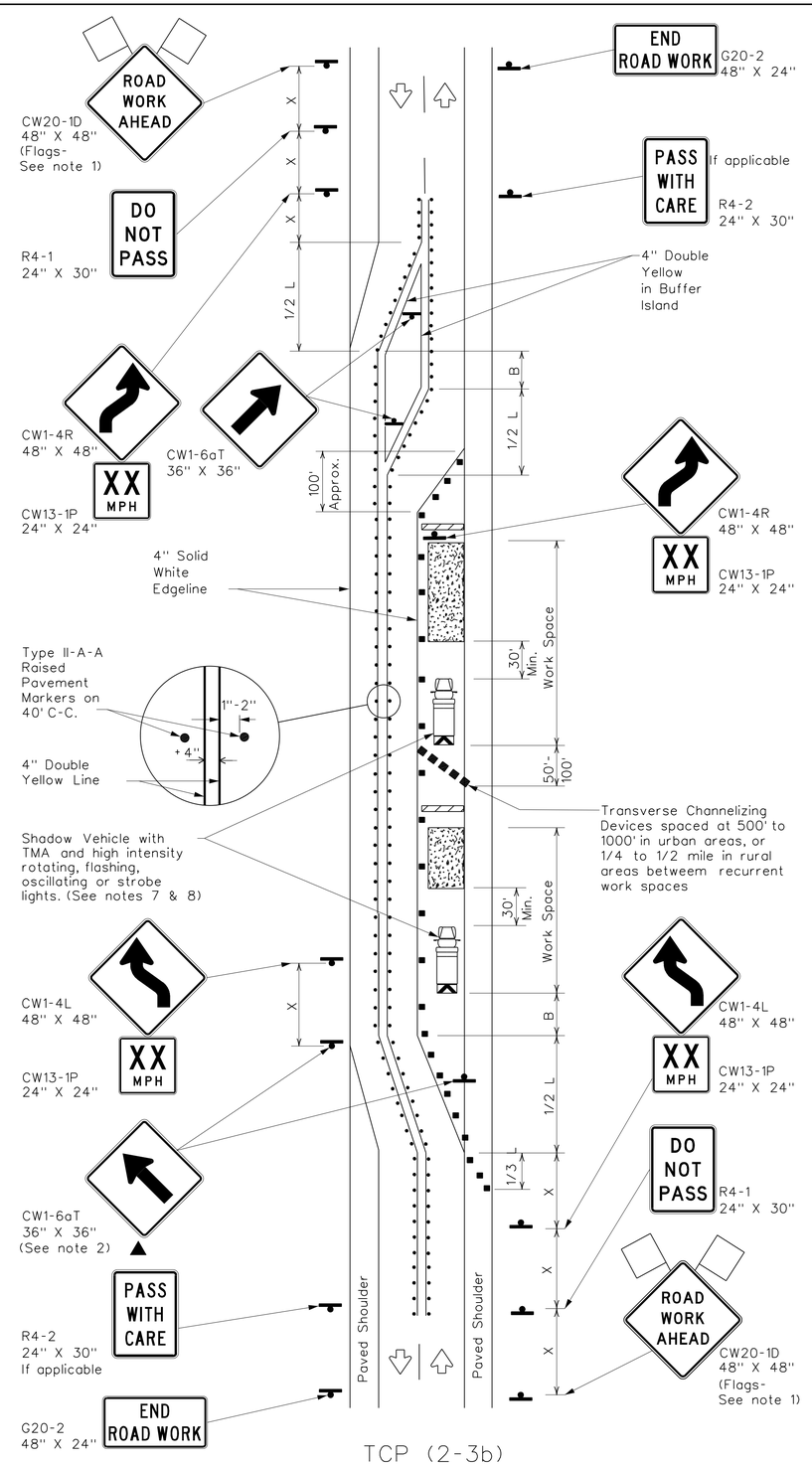
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DATE:
FILE:



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

ONE LANE CLOSED
ADEQUATE FIELD OF VIEW



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

ONE LANE CLOSED
INADEQUATE FIELD OF VIEW

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

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

✳ Conventional Roads Only

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

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

GENERAL NOTES

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

TCP (2-3a)

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

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

Texas Department of Transportation

Traffic Operations Division Standard

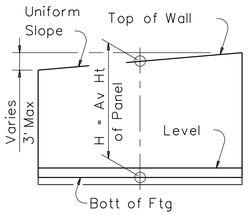
TRAFFIC CONTROL PLAN TRAFFIC SHIFTS ON TWO-LANE ROADS

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				
1-97 2-12	DIST	COUNTY		SHEET NO.
4-98 2-18				144

163

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



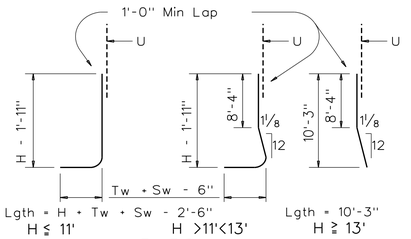
H DEFINITION

Wall Height "H"	PROPERTIES						Max Soil Press
	WALL DIMENSIONS						
(Ft)	Fw	Tw	Sw	Hw	Ft	Kw	T/SF
2	3'-6"	1'-9"	1'-0"	9"	1'-0"	9"	0.14
3	4'-3"	2'-2"	1'-0"	1'-1"	1'-0"	9"	0.17
4	5'-0"	2'-6"	1'-0"	1'-6"	1'-0"	9"	0.20
5	5'-8"	2'-10"	1'-0"	1'-10"	1'-0"	9"	0.24
6	6'-4"	3'-2"	1'-0"	2'-2"	1'-0"	9"	0.28
7	7'-0"	3'-6"	1'-0"	2'-6"	1'-0"	9"	0.32
8	7'-9"	3'-10"	1'-0"	2'-11"	1'-0"	9"	0.35
9	8'-6"	4'-3"	1'-0"	3'-3"	1'-0"	9"	0.37
10	9'-2"	4'-7"	1'-0"	3'-7"	1'-0"	9"	0.41
11	9'-10"	4'-11"	1'-0"	3'-11"	1'-0"	1'-0"	0.44
12	10'-6"	5'-3"	1'-1 1/8"	4'-1 7/8"	1'-0"	1'-0"	0.45
13	11'-2"	5'-7"	1'-2"	4'-5"	1'-3"	1'-3"	0.54
14	11' -10"	5'-11"	1'-3 1/8"	4'-7 1/8"	1'-3"	1'-3"	0.57
15	12'-6"	6'-3"	1'-4"	4'-11"	1'-6"	1'-3"	0.63
16	13'-3"	6'-7"	1'-5"	5'-3"	1'-6"	1'-6"	0.66
17	13' -10"	6' -11"	1'-6 1/4"	5'-4 3/4"	1'-6"	1'-6"	0.70
18	14'-6"	7'-3"	1'-7"	5'-8"	1'-9"	1'-6"	0.76
19	15'-2"	7'-7"	1'-8 1/8"	5'-10 7/8"	1'-9"	1'-6"	0.79
20	16'-0"	8'-0"	1'-9 1/4"	6'-2 3/4"	1'-9"	1'-6"	0.80
21	16'-6"	8'-3"	1'-10 1/8"	6'-4 7/8"	2'-0"	1'-6"	0.88
22	17'-3"	8'-7"	1'-11 1/4"	6'-8 3/4"	2'-0"	1'-6"	0.91
23	18'-0"	9'-0"	2'-0 1/8"	6'-11 7/8"	2'-3"	1'-6"	0.95
24	18'-6"	9'-4"	2'-1 1/4"	7'-0 3/4"	2'-3"	1'-6"	0.99
25	19'-3"	9'-7"	2'-2 3/8"	7'-5 5/8"	2'-3"	1'-9"	1.03
26	20'-0"	10'-0"	2'-3 1/2"	7'-8 1/2"	2'-3"	1'-9"	1.05
27	20'-6"	10'-4"	2'-4 5/8"	7'-9 3/8"	2'-3"	1'-9"	1.09
28	21'-3"	10'-7"	2'-5 3/4"	8'-2 1/4"	2'-3"	1'-9"	1.13
29	22'-0"	11'-0"	2'-6 1/2"	8'-5 1/2"	2'-6"	1'-9"	1.17

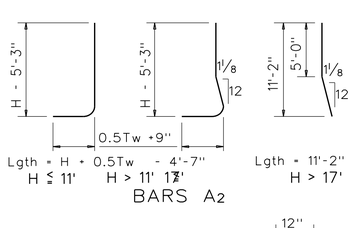
Wall Height "H"	REINFORCING STEEL FOR ONE 32' PANEL (DESIGN C)																																		Wall Height "H"
	A_1 ~ 26 #5 at 15" c-c		A_2 ~ 25 #6 at 15" c-c		A_3 ~ 25 #7 at 15" c-c		A_4 ~ 26 #8 at 15" c-c		A_5 ~ 25 #9 at 15" c-c		A_6 ~ 25 #11 at 15" c-c		A_7 ~ 26 #11 at 15" c-c		B ~ 26 #5 at 15" c-c		C					D (#5) at 12" c-c		Dowel F at 12" c-c		H (#5) at 12" c-c		T (#5) at 12" c-c		U ~ 26 #5 at 15" c-c			
	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Size	No	Spa	Lgth	Wt	No	Wt	No	Wt	No	Wt	No	Wt	Lgth	Wt		
2																	#4	26	15"	2'-3"	39	4	131	4	32	2	66	3	99	3'-4"	90	6.0	458	2
3																	#4	26	15"	2'-8"	46	6	197	5	40	3	99	3	99	5'-4"	145	8.1	626	3
4	5'-0"	136													3'-6"	95	#4	26	15"	3'-0"	52	8	263	6	48	3	99	3	99	7'-4"	199	10.1	991	4
5	5'-8"	172													4'-6"	122	#4	26	15"	3'-4"	58	10	329	7	56	3	99	4	131	8'-4"	226	12.1	1193	5
6	6'-4"	208													5'-6"	149	#4	26	15"	3'-8"	64	12	394	8	64	3	99	4	131	8'-4"	226	14.1	1336	6
7	7'-0"	244	4'-2"	156											6'-6"	176	#4	38	10"	4'-0"	102	14	460	9	72	4	131	4	131	8'-4"	226	16.1	1698	7
8	7'-9"	280	5'-4"	200											7'-6"	203	#6	38	10"	4'-4"	247	16	526	10	80	4	131	5	164	8'-4"	226	18.1	2056	8
9	8'-6"	319	6'-7"	247											8'-6"	231	#6	38	10"	4'-9"	271	18	591	11	88	4	131	5	164	8'-4"	226	20.2	2268	9
10	13'-1"	355	7'-8"	288	6'-9"	345									9'-6"	258	#7	38	10"	5'-1"	395	20	657	12	96	5	164	6	197	8'-4"	226	22.2	2981	10
11	14'-5"	391	8'-11"	335	8'-1"	413									10'-6"	285	#8	38	10"	5'-5"	550	22	723	13	104	5	164	6	197	8'-4"	226	24.7	3382	11
12	15'-10"	429	10'-1"	379	9'-6"	485									11'-6"	312	#9	38	10"	5'-9"	743	24	789	14	112	6	197	6	197	8'-4"	226	26.7	3868	12
13	10'-3"	278	11'-2"	419	10'-11"	558	8'-5"	584							12'-6"	339	#9	38	10"	6'-1"	786	26	854	15	120	6	197	7	230	8'-4"	226	32.5	4591	13
14	10'-3"	278	12'-5"	466	12'-4"	630	9'-10"	683							13'-6"	366	#9	38	10"	6'-5"	829	28	920	16	128	7	230	7	230	8'-4"	226	34.9	4986	14
15	10'-3"	278	13'-7"	510	13'-9"	703	11'-2"	775							14'-6"	393	#9	38	10"	6'-9"	872	28	920	16	128	7	230	8	263	8'-4"	226	40.8	5298	15
16	10'-3"	278	14'-9"	554	15'-2"	775	12'-8"	879							15'-6"	420	#9	38	10"	7'-2"	926	30	986	17	136	7	230	8	263	8'-4"	226	44.5	5672	16
17	10'-3"	278	15'-11"	598	16'-7"	847	14'-1	978							16'-6"	447	#10	38	10"	7'-5"	1213	32	1051	18	144	8	263	8	263	8'-4"	226	47.3	6308	17
18	10'-3"	278	11'-2"	419	18'-0"	920	15'-5"	1070	9'-7"	815					17'-6"	475	#10	38	10"	7'-9"	1267	34	1117	19	152	8	263	9	296	8'-4"	226	54.2	7298	18
19	10'-3"	278	11'-2"	419	19'-5"	992	16'-11"	1174	10'-11"	928					18'-6"	502	#10	38	10"	8'-1"	1322	36	1183	20	160	8	263	9	296	8'-4"	226	57.5	7743	19
20	10'-3"	278	11'-2"	419	20'-11"	1069	18'-5"	1278	12'-4"	1048					19'-6"	529	#8	76	5"	8'-6"	1725	38	1248	21	168	9	296	10	329	8'-4"	226	61.3	8613	20
21	10'-3"	278	11'-2"	419	22'-3"	1137	19'-9"	1371	13'-7"	1155					20'-6"	556	#8	76	5"	8'-9"	1776	40	1314	22	176	9	296	10	329	8'-4"	226	68.8	9033	21
22	10'-3"	278	11'-2"	419	12'-2"	622	21'-2"	1469	15'-0"	1275	6'-1"	808			21'-6"	583	#8	76	5"	9'-2"	1860	42	1380	23	184	9	296	10	329	8'-4"	226	72.8	9729	22
23	10'-3"	278	11'-2"	419	12'-2"	622	22'-8"	1574	16'-4"	1388	7'-1"	941			22'-6"	610	#8	76	5"	9'-6"	1928	44	1446	24	192	10	329	11	361	8'-4"	226	81.7	10314	23
24	10'-3"	278	11'-2"	419	12'-2"	622	24'-1"	1672	17'-8"	1502	8'-1"	1074			23'-6"	637	#9	76	5"	9'-10"	2541	46	1511	25	200	10	329	11	361	8'-4"	226	85.4	11372	24
25	10'-3"	278	11'-2"	419	12'-2"	622	25'-5"	1764	19'-0"	1615	9'-1"	1206			24'-6"	664	#9	76	5"	10'-1"	2606	48	1577	26	208	10	329	12	394	8'-4"	226	91.0	11909	25
26	10'-3"	278	11'-2"	419	12'-2"	622	27'-0"	1874	20'-5"	1735	10'-1"	1339			25'-6"	692	#9	76	5"	10'-5"	2692	50	1643	27	217	11	361	12	394	8'-4"	226	95.6	12491	26
27	10'-3"	278	11'-2"	419	12'-2"	622	14'-4"	995	21'-9"	1849	11'-1"	1472	17'-0"	2348	26'-6"	719	#10	76	5"	10'-9"	3516	52	1708	28	225	11	361	12	394	8'-4"	226	99.7	15132	27
28	10'-3"	278	11'-2"	419	12'-2"	622	14'-4"	995	23'-0"	1955	12'-1"	1605	18'-4"	2533	27'-6"	746	#10	76	5"	11'-2"	3652	54	1774	29	233	11	361	13	427	8'-4"	226	104.6	15825	28
29	10'-3"	278	11'-2"	419	12'-2"	622	14'-4"	995	24'-5"	2075	13'-1"	1738	19'-10"	2740	28'-6"	773	#10	76	5"	11'-6"	3761	54	1774	29	233	12	394	13	427	8'-4"	226	115.3	16454	29

QUANTITY FOR ONE 32' PANEL

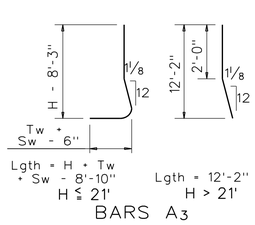
CONC (CY)	REINF (LB)
6.0	458
8.1	626
10.1	991
12.1	1193
14.1	1336
16.1	1698
18.1	2056
20.2	2268
22.2	2981
24.7	3382
26.7	3868
32.5	4591
34.9	4986
40.8	5298
44.5	5672
47.3	6308
54.2	7298
57.5	7743
61.3	8613
68.8	9033
72.8	9729
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115.3	16454



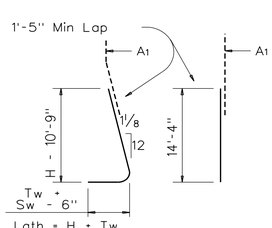
BARS A_1



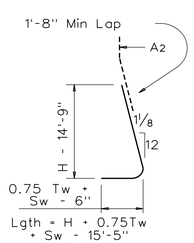
BARS A_2



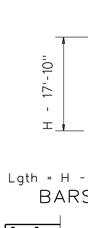
BARS A_3



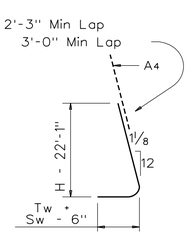
BARS A_4



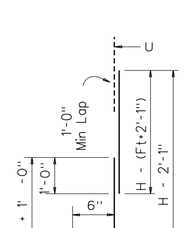
BARS A_5



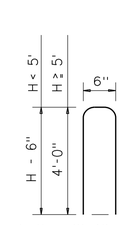
BARS A_6



BARS A_7

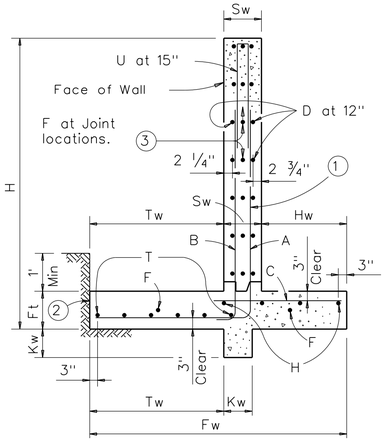


BARS B

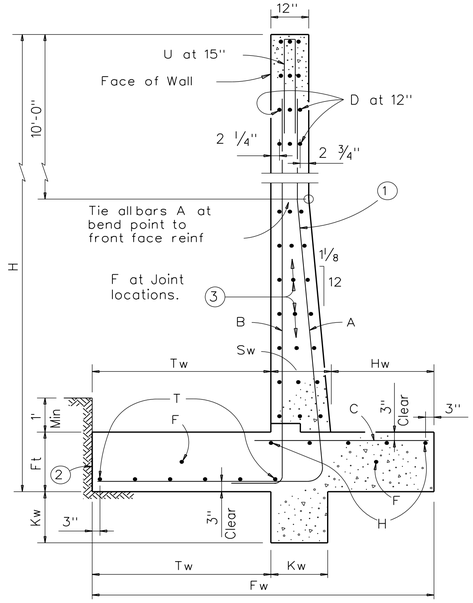


BARS U

1. Place vertical bars inside of horizontal bars (Typ both faces).
2. Place footing toe against undisturbed soil.
3. See standard RW 2 for size.



H ≤ 11'



H > 11'

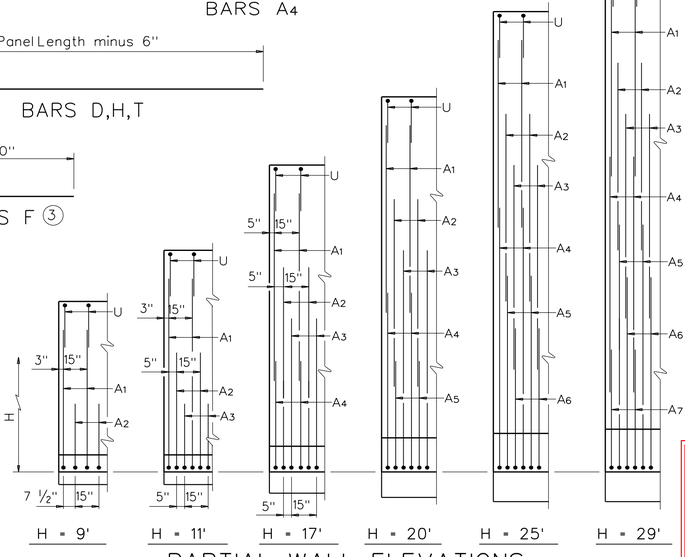
SECTIONS

Panel Length minus 6"

BARS D,H,T

3'-0"

BARS F ③



PARTIAL WALL ELEVATIONS

(Showing vertical reinforcing pattern in back face)

GENERAL NOTES:

All concrete to be Class "C".
All reinforcing steel to be Grade 60.
For notes and details not shown on this sheet see sheet RW2.
Quantities are based on "H" being average height of panel.
Retaining Walls are designed to be coded as follows on Retaining Wall Layout Sheets.

HC - 21 - 28
LA - 28 - 32
- Panel Length ~ 32' is standard; 28' requires special quantities
- Average Height "H" of panel
- Design - A = no surcharge or slope above wall; B = slopes up to 4:1; C = traffic surcharge and/or slopes up to 2.5:1
- Footing pressure design ~ L = low, H = high

Texas Department of Transportation

Bridge Division Standard

RETAINING WALLS

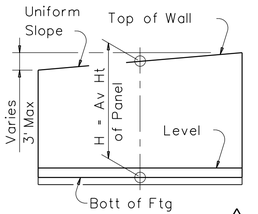
City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], PE, CFM
Date: 11/26/2018

RW 1(L)C

FILE: rwstde07.dgn	DN: TxDOT	CK: TxDOT	DW: GHO	CK: MPM
©TxDOT March 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				145

REV 1 SHEET ADDED PER ADDENDUM 1 MT 8/31/18

MicroStation V8 User: 02336Office: Dallas
ROK15508 - N:\ST\TXDOT\rwstde07.dgn
Model: Default - N:\ST\TXDOT\rwstde_Fa.PDF - Mono-Half.plt
Plot Scale: 2.0000 ' / in. Model: Default
Date: Aug. 31, 2018 - 05:33:11 PM Project: Freese and Nichols, Inc.



H DEFINITION (1)

PROPERTIES

WALL DIMENSIONS

Wall Height "H"	Fw	Tw	Sw	Hw	Ft	Kw	Max Soil Press T/SF
(Ft)							
9	6'-4"	2'-0"	1'-0"	3'-4"	1'-0"	9"	0.73
12	8'-9"	2'-0"	1'-1 1/8"	5'-7 7/8"	1'-0"	1'-0"	0.99
13	9'-9"	2'-0"	1'-2"	6'-7"	1'-3"	1'-3"	0.99
14	10'-6"	2'-0"	1'-3 1/8"	7'-2 7/8"	1'-3"	1'-3"	1.00
15	16'-3"	2'-0"	1'-4"	12'-11"	1'-6"	1'-3"	1.00
16	20'-0"	2'-0"	1'-5"	16'-7"	1'-6"	1'-6"	1.00
17	24'-6"	2'-0"	1'-6 1/4"	20'-11 3/4"	1'-6"	1'-6"	1.08
16B	11'-0"	6'-7"	1'-5"	3'-0"	1'-6"	2'-0"	0.73

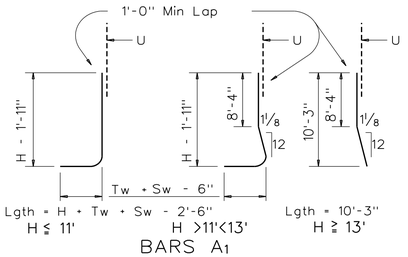
REINFORCING STEEL FOR ONE 32' PANEL (DESIGN C)

Wall Height "H"	A_1 ~ 26 #5 at 15" c-c		A_2 ~ 25 #6 at 15" c-c		A_3 ~ 25 #7 at 15" c-c		A_4 ~ 26 #8 at 15" c-c		A_5 ~ 25 #9 at 15" c-c		A_6 ~ 25 #11 at 15" c-c		A_7 ~ 26 #11 at 15" c-c		B ~ 26 #5 at 15" c-c		C					D (#5) at 12" c-c		Dowel F at 12" c-c		H (#5) at 12" c-c		T (#5) at 12" c-c		U ~ 26 #5 at 15" c-c		Wall Height "H"
	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Size	No	Spa	Lgth	Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	Wt	Lgth	Wt	
(Ft)																																	(Ft)
9	9'-6"	248	5'-5"	203											8'-6"	231	#9	38	10"	5'-10"	734	18	591	11	88	6	197	3	99	8'-4"	226			9
12	12'-7"	328	8'-5"	316	6'-3"	319									11'-6"	312	#9	38	10"	8'-3"	1066	24	789	14	112	8	263	3	99	8'-4"	226	24.7	3830	12
13	10'-3"	278	9'-5"	354	7'-4"	375	4'-10"	323							12'-6"	339	#9	38	10"	9'-3"	1195	26	854	15	120	8	263	3	99	8'-4"	226	30.4	4426	13
14	10'-3"	278	10'-5"	391	8'-5"	430	5'-11"	395							13'-6"	366	#9	38	10"	10'-0"	1292	28	920	16	128	9	296	3	99	8'-4"	226	32.9	4821	14
15	10'-3"	278	11'-5"	429	9'-6"	485	7'-0"	467							14'-6"	393	#9	38	10"	15'-9"	2035	28	920	16	128	15	493	3	99	8'-4"	226	47.5	5953	15
16	10'-3"	278	12'-5"	466	10'-7"	541	8'-1"	540							15'-6"	420	#9	38	10"	19'-6"	2519	30	986	17	136	18	592	3	99	8'-4"	226	56.5	6830	16
17	10'-3"	278	13'-5"	504	11'-8"	596	9'-2"	612							16'-6"	448	#9	38	10"	24'-0"	3101	32	1051	18	144	23	757	3	99	8'-4"	226	66.3	7856	17
16B	10'-3"	278	12'-5"	466	10'-7"	541	8'-1"	540							15'-6"	420	#9	38	10"	11'-6"	1486	30	986	17	136	4	131	8	263	8'-4"	226	42.6	5473	16B

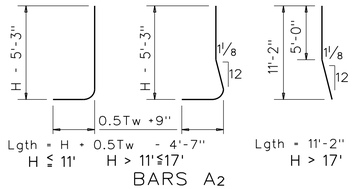
QUANTITY FOR ONE 32' PANEL

CONC (CY)	REINF (LB)
17.7	2617
24.7	3830
30.4	4426
32.9	4821
47.5	5953
56.5	6830
66.3	7856
42.6	5473

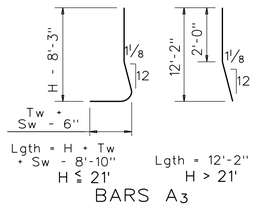
This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of
FREESE AND NICHOLS, INC.
RECORD DRAWINGS PREPARED ON: 3/17/2021



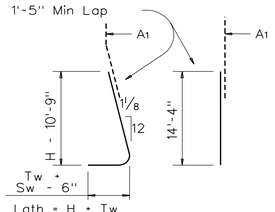
BARS A_1



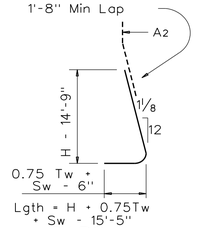
BARS A_2



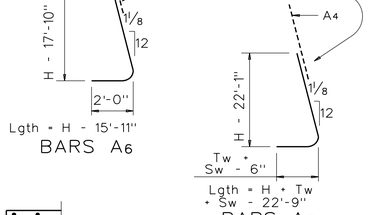
BARS A_3



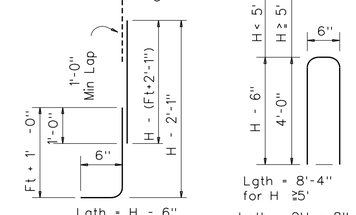
BARS A_4



BARS A_5

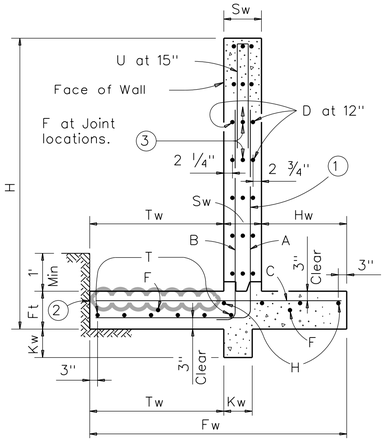


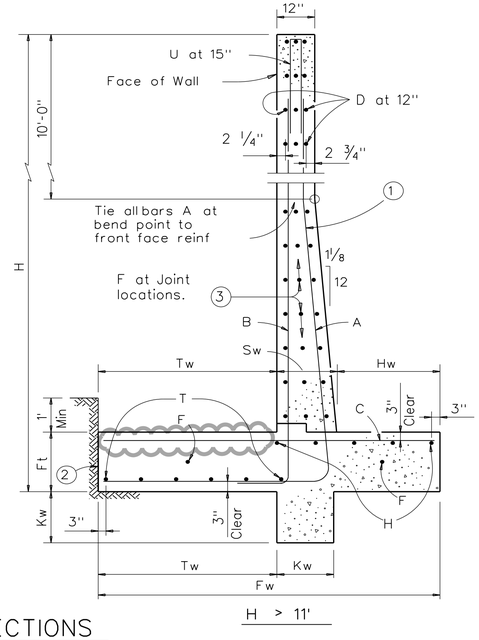
BARS A_6 / A_7



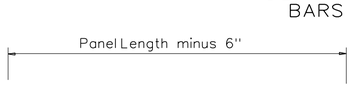
BARS B / BARS U

1. Place vertical bars inside of horizontal bars (Typ both faces).
2. Place footing toe against undisturbed soil.
3. See standard RW 2 for size.

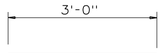




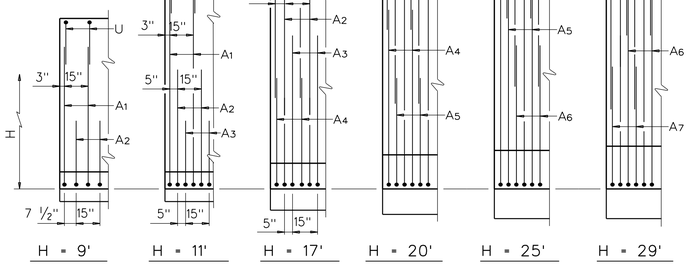
SECTIONS



BARS D,H,T



BARS F (3)



PARTIAL WALL ELEVATIONS
(Showing vertical reinforcing pattern in back face)

GENERAL NOTES:
- All concrete to be Class "S".
- All reinforcing steel to be Grade 60.
- For notes and details not shown on this sheet see sheet RW2.
- Quantities are based on "H" being average height of panel.
- Retaining Walls are designed to be coded as follows on Retaining Wall Layout Sheets.

HC - 21 - 28
LA - 28 - 32 - MOD
- MOD = MODIFIED FOOTING DESIGN
- Panel Length ~ 32' is standard; 28' requires special quantities
- Average Height "H" of panel
- Design - A = no surcharge or slope above wall; B = slopes up to 4:1; C = traffic surcharge
- Footing pressure design ~ L = low, H = high



Texas Department of Transportation — Bridge Division Standard

RETAINING WALLS

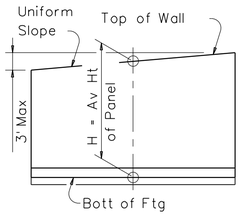
RW 1(L)C (MOD)

FILE:	rwstde07.dgn	DN: TxDOT	CK: TxDOT	DW: GHO	CK: MPM
©TxDOT	March 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS		DIST	COUNTY		SHEET NO.
					146

REV			
1	ADDENDUM 1	MT	8/31/18
2	FIELD ORDER 3	MT	8/14/19

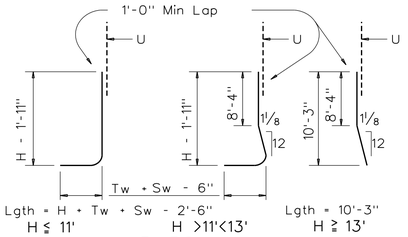
DISCLAIMER:
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.

MicroStation V8 User: 03641Office: Fort Worth
ROK15508 - N:\ST\TXDOT\rwstde07_MOD.dgn
Model: Default - Project: Freese and Nichols, Inc.
Plot Scale: 2.0000 '' / in. - Plot Date: Aug. 14, 2019 - 04:22:28 PM
Office: Fort Worth ROK15508 Date: Aug. 14, 2019 - 04:22:28 PM User: 03641File: N:\ST\TXDOT\rwstde07_MOD.dgn



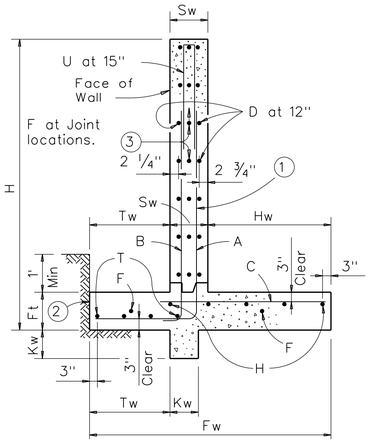
H DEFINITION

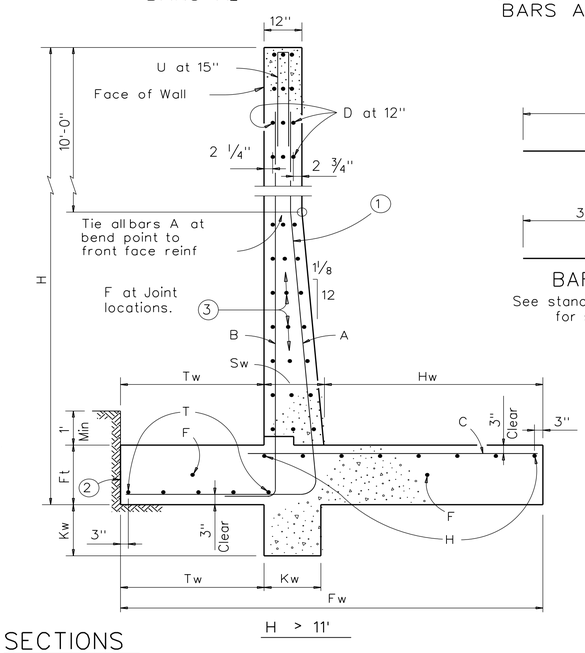
Wall Height "H"	PROPERTIES							REINFORCING STEEL FOR ONE 32' PANEL (DESIGN C)																										QUANTITY FOR ONE 32' PANEL		Wall Height "H"
	WALL DIMENSIONS						Max Soil Press	A_1 ~ 26 #5 at 15" c-c		A_2 ~ 25 #6 at 15" c-c		A_3 ~ 25 #7 at 15" c-c		A_4 ~ 26 #8 at 15" c-c		A_5 ~ 25 #9 at 15" c-c		A_6 ~ 25 #11 at 15" c-c		A_7 ~ 26 #11 at 15" c-c		B ~ 26 #5 at 15" c-c		C					D (#5) at 12" c-c		Dowel F at 12" c-c		H (#5) at 12" c-c		T (#5) at 12" c-c		U ~ 26 #5 at 15" c-c		CONC (CY)	REINF (LB)	
(Ft)	Fw	Tw	Sw	Hw	Ft	Kw	T/SF	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Lgth	Wt	Size	No	Spa	Lgth	Wt	No	Wt	No	Wt	No	Wt	No	Wt	Lgth	Wt			(Ft)
2	2'-7"	11"	1'-0"	8"	1'-0"	9"	0.22																	#4	26	15"	2'-3"	39	4	131	4	32	2	66	2	66	3'-4"	90	4.9	425	2
3	3'-2"	1'-1"	1'-0"	1'-1"	1'-0"	9"	0.31																	#4	26	15"	2'-8"	46	6	197	5	40	3	99	2	66	5'-4"	145	6.8	593	3
4	3'-9"	1'-3"	1'-0"	1'-6"	1'-0"	9"	0.40	3'-9"	102													3'-6"	95	#4	26	15"	3'-0"	52	8	263	6	48	3	99	2	66	7'-4"	199	8.7	924	4
5	4'-3"	1'-6"	1'-0"	1'-9"	1'-0"	9"	0.50	5'-0"	136													4'-6"	122	#4	26	15"	3'-4"	58	10	329	7	56	3	99	3	99	8'-4"	226	10.4	1125	5
6	4'-9"	1'-7"	1'-0"	2'-2"	1'-0"	9"	0.59	6'-1"	165													5'-6"	149	#4	26	15"	3'-8"	64	12	394	8	64	3	99	3	99	8'-4"	226	12.2	1261	6
7	5'-3"	1'-9"	1'-0"	2'-6"	1'-0"	9"	0.68	7'-3"	197	3'-4"	125											6'-6"	176	#4	38	10"	4'-0"	102	14	460	9	72	4	131	3	99	8'-4"	226	14.0	1588	7
8	5'-10"	2'-0"	1'-0"	2'-10"	1'-0"	9"	0.74	8'-6"	231	4'-5"	166											7'-6"	203	#6	38	10"	4'-4"	247	16	526	10	80	4	131	3	99	8'-4"	226	15.9	1908	8
9	6'-4"	2'-2"	1'-0"	3'-2"	1'-0"	9"	0.83	9'-8"	262	5'-6"	207											8'-6"	231	#6	38	10"	4'-9"	271	18	591	11	88	4	131	4	131	8'-4"	226	17.7	2138	9
10	6'-10"	2'-4"	1'-0"	3'-6"	1'-0"	9"	0.92	10'-10"	294	6'-7"	247	4'-6"	230									9'-6"	258	#7	38	10"	5'-1"	395	20	657	12	96	5	164	4	131	8'-4"	226	19.4	2698	10
11	7'-4"	2'-6"	1'-0"	3'-10"	1'-0"	1'-0"	1.01	12'-0"	325	7'-8"	288	5'-8"	290									10'-6"	285	#8	38	10"	5'-5"	550	22	723	13	104	5	164	4	131	8'-4"	226	21.7	3080	11
12	7'-10"	2'-7"	1'-1 1/8"	4'-1 1/8"	1'-0"	1'-0"	1.09	13'-2"	357	8'-9"	329	6'-10"	349									11'-6"	312	#9	38	10"	5'-9"	743	24	789	14	112	6	197	4	131	8'-4"	226	23.6	3544	12
13	8'-4"	2'-9"	1'-2"	4'-5"	1'-3"	1'-3"	1.23	10'-3"	278	9'-10"	369	8'-1"	413	5'-7"	388							12'-6"	339	#9	38	10"	6'-1"	786	26	854	15	120	6	197	4	131	8'-4"	226	28.3	4101	13
14	8'-10"	3'-0"	1'-3 1/8"	4'-6 1/8"	1'-3"	1'-3"	1.31	10'-3"	278	10'-11"	410	9'-5"	481	6'-11"	480							13'-6"	366	#9	38	10"	6'-5"	829	28	920	16	128	7	230	5	164	8'-4"	226	30.5	4512	14
15	9'-4"	3'-2"	1'-4"	4'-10"	1'-6"	1'-3"	1.41	10'-3"	278	12'-0"	451	10'-8"	545	8'-2"	567							14'-6"	393	#9	38	10"	6'-9"	872	28	920	16	128	7	230	5	164	8'-4"	226	35.1	4774	15
16	10'-0"	3'-4"	1'-5"	5'-3"	1'-6"	1'-6"	1.47	10'-3"	278	13'-1"	491	11'-11"	609	9'-5"	654							15'-6"	420	#9	38	10"	7'-2"	926	30	986	17	136	7	230	5	164	8'-4"	226	38.8	5119	16
17	10'-4"	3'-6"	1'-6 1/4"	5'-3 3/4"	1'-6"	1'-6"	1.59	10'-3"	278	14'-2"	532	13'-2"	673	10'-8"	740							16'-6"	447	#10	38	10"	7'-5"	1213	32	1051	18	144	8	263	5	164	8'-4"	226	41.1	5731	17
18	10'-11"	3'-8"	1'-7"	5'-8"	1'-9"	1'-6"	1.68	10'-3"	278	11'-2"	419	14'-5"	737	11'-11"	827	6'-11"	588					17'-6"	475	#10	38	10"	7'-9"	1267	34	1117	19	152	8	263	5	164	8'-4"	226	46.7	6513	18
19	11'-4"	3'-10"	1'-8 1/8"	5'-9 7/8"	1'-9"	1'-6"	1.78	10'-3"	278	11'-2"	419	15'-8"	801	13'-2"	914	8'-2"	694					18'-6"	502	#10	38	10"	8'-1"	1322	36	1183	20	160	8	263	5	164	8'-4"	226	49.5	6926	19
20	12'-0"	4'-0"	1'-9 1/4"	6'-2 3/4"	1'-9"	1'-6"	1.83	10'-3"	278	11'-2"	419	16'-11"	864	14'-5"	1001	9'-4"	793					19'-6"	529	#8	76	5"	8'-6"	1725	38	1248	21	168	9	296	6	197	8'-4"	226	53.0	7744	20
21	12'-4"	4'-2"	1'-10 1/8"	6'-3 7/8"	2'-0"	1'-6"	1.97	10'-3"	278	11'-2"	419	18'-2"	928	15'-8"	1088	10'-7"	890					20'-6"	556	#8	76	5"	8'-9"	1776	40	1314	22	176	9	296	6	197	8'-4"	226	58.9	8144	21
22	13'-0"	4'-4"	1'-11 1/4"	6'-8 3/4"	2'-0"	1'-6"	2.02	10'-3"	278	11'-2"	419	12'-2"	622	16'-11"	1174	11'-9"	999	6'-1"	808			21'-6"	583	#8	76	5"	9'-2"	1860	42	1380	23	184	9	296	6	197	8'-4"	226	62.7	9026	22
23	13'-6"	4'-6"	2'-0 1/8"	6'-11 7/8"	2'-3"	1'-6"	2.12	10'-3"	278	11'-2"	419	12'-2"	622	18'-2"	1261	13'-0"	1105	7'-1"	941			22'-6"	610	#8	76	5"	9'-6"	1928	44	1446	24	192	10	329	6	197	8'-4"	226	69.7	9554	23
24	14'-0"	4'-8"	2'-1 1/4"	7'-2 3/4"	2'-3"	1'-6"	2.21	10'-3"	278	11'-2"	419	12'-2"	622	19'-5"	1348	14'-2"	1204	8'-1"	1074			23'-6"	637	#9	76	5"	9'-10"	2541	46	1511	25	200	10	329	6	197	8'-4"	226	73.4	10586	24
25	14'-6"	4'-10"	2'-2 3/8"	7'-5 5/8"	2'-3"	1'-9"	2.30	10'-3"	278	11'-2"	419	12'-2"	622	20'-8"	1435	15'-4"	1303	9'-1"	1206			24'-6"	664	#9	76	5"	10'-1"	2606	48	1577	26	208	10	329	7	230	8'-4"	226	78.3	11104	25
26	15'-0"	5'-0"	2'-3 1/2"	7'-8 1/2"	2'-3"	1'-9"	2.39	10'-3"	278	11'-2"	419	12'-2"	622	22'-0"	1527	16'-8"	1793	10'-1"	1339			25'-6"	692	#9	76	5"	10'-5"	2692	50	1643	27	217	11	361	7	230	8'-4"	226	82.3	12038	26
27	15'-6"	5'-2"	2'-4 5/8"	7'-11 3/8"	2'-3"	1'-9"	2.47	10'-3"	278	11'-2"	419	12'-2"	622	14'-4"	995	17'-10"	1516	11'-1"	1472	11'-10"	1635	26'-6"	719	#10	76	5"	10'-9"	3516	52	1708	28	225	11	361	7	230	8'-4"	226	86.4	13922	27
28	16'-0"	5'-4"	2'-5 3/4"	8'-2 1/4"	2'-3"	1'-9"	2.56	10'-3"	278	11'-2"	419	12'-2"	622	14'-4"	995	19'-1"	1622	12'-1"	1605	13'-1"	1807	27'-6"	746	#10	76	5"	11'-2"	3652	54	1774	29	233	11	361	8	263	8'-4"	226	90.6	14602	28
29	16'-6"	5'-6"	2'-6 1/2"	8'-5 1/2"	2'-6"	1'-9"	2.66	10'-3"	278	11'-2"	419	12'-2"	622	14'-4"	995	20'-3"	2690	13'-1"	1738	14'-4"	1980	28'-6"	773	#10	76	5"	11'-6"	3761	54	1774	29	233	12	394	8	263	8'-4"	226	99.1	16145	29



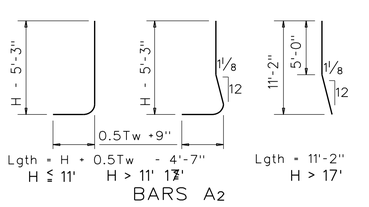
BARS A_1

1. Place vertical bars inside of horizontal bars (Typ both faces).
2. Place footing toe against undisturbed soil.
3. See standard RW 2 for size.

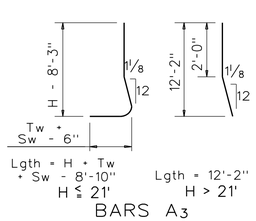




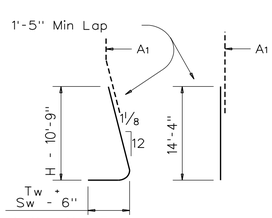
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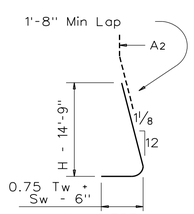
BARS A_2



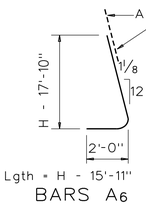
BARS A_3



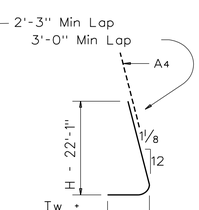
BARS A_4



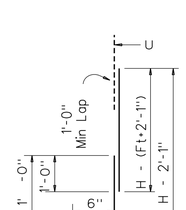
BARS A_5



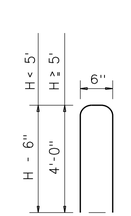
BARS A_6



BARS A_7



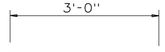
BARS B



BARS U

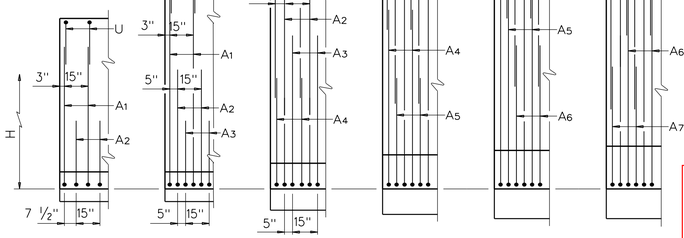


BARS D,H,T



BARS F

See standard RW 2 for size



PARTIAL WALL ELEVATIONS

(Showing vertical reinforcing pattern in back face)

GENERAL NOTES:

All concrete to be Class "C".
All reinforcing steel to be Grade 60.
For notes and details not shown on this sheet see sheet RW2.
Quantities are based on "H" being average height of panel.
Retaining Walls are designed to be coded as follows on Retaining Wall Layout Sheets.

HC - 21 - 28
LA - 28 - 32
- Panel Length ~ 32' is standard; 28' requires special quantities
- Average Height "H" of panel
- Design - A = no surcharge or slope above wall; B = slopes up to 4:1; C = traffic surcharge and/or slopes up to 2.5:1
- Footing pressure design ~ L = low, H = high

Texas Department of Transportation

Bridge Division Standard

RETAINING WALLS

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], P.E., CFM
Date: 11/26/2018

RW 1(H)C

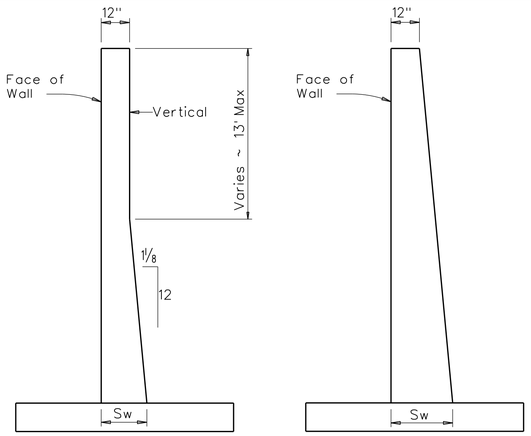
FILE: rwstde10.dgn	DN: TxDOT	CK: TxDOT	DW: GHO	CK: MPM
©TxDOT March 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS	DIST	COUNTY		SHEET NO.
				147

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REV 1 SHEET ADDED PER ADDENDUM 1 MT 8/31/18

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ROK15508 N:\ST\TXDOT\rwstde10.dgn
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Date: Aug. 31, 2018 - 05:32:07 PM Project: Freese and Nichols, Inc.
Office: Dallas ROK15508 Date: Aug. 31, 2018 - 05:32:07 PM User: 02336File: N:\ST\TXDOT\rwstde10.dgn

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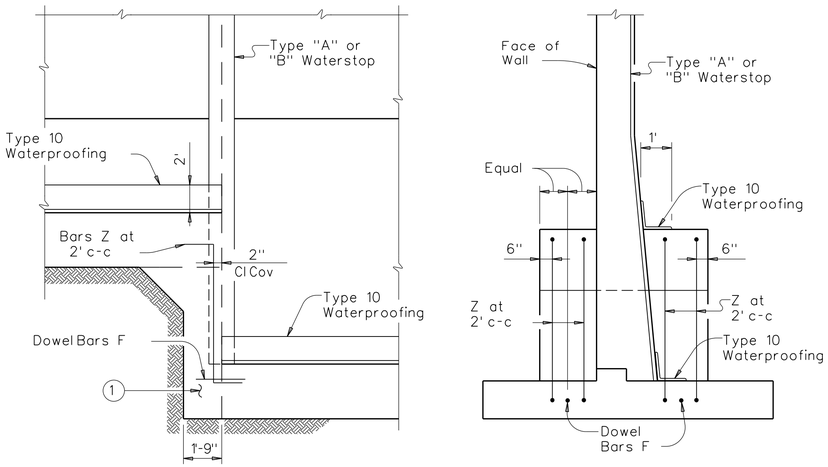


AS DETAILED ALL HEIGHTS
(Basis for payment)

FRONT FACE VERTICAL BACK FACE SLOPED

ALTERNATE STEM SLOPE DETAILS

Walls with slopes other than those shown may be used after approval by the Engineer. Sw shall not be less than shown in Table on Sheet 1. No payment will be made for excess concrete due to changing of slope of wall stem.

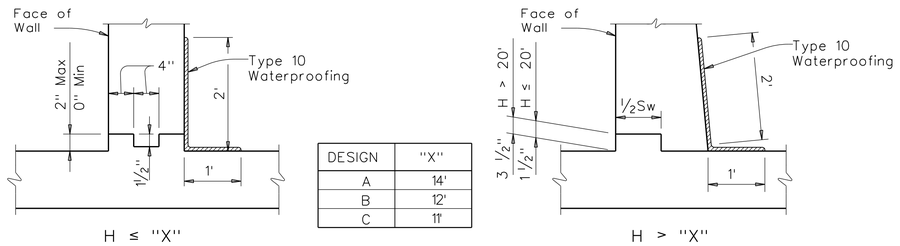


PARTIAL ELEVATION

PARTIAL SECTION

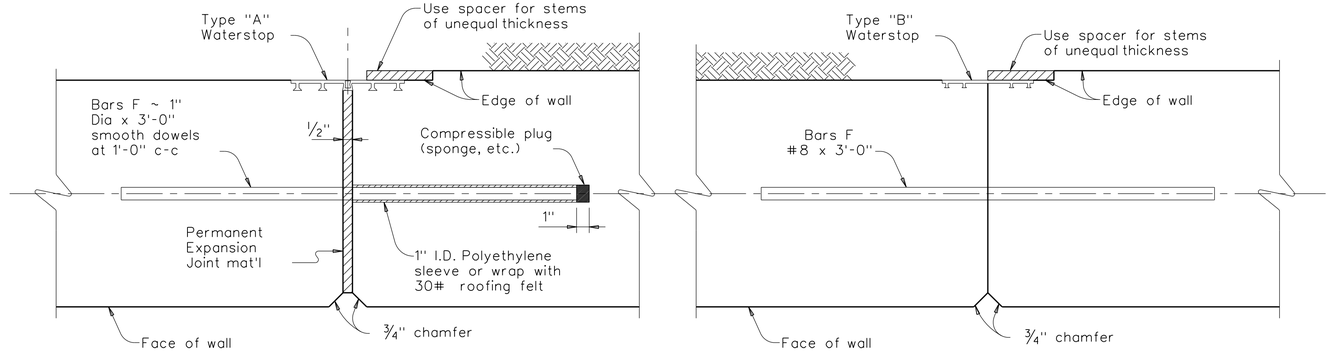
SHOWING WATERSTOP AT FOOTING JOINT

(1) Unreinforced Class "C" Concrete when difference in top of footing elevations is less than 6'. Omit when Dowel Bars F can be placed between adjacent footings with 4" cover top and bottom.



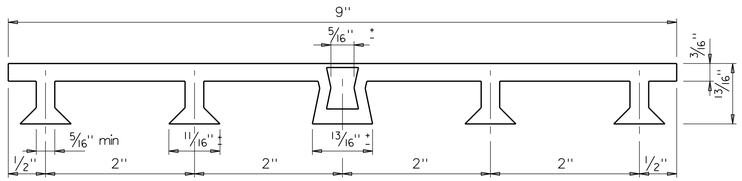
DESIGN	"X"
A	14'
B	12'
C	11'

JOINT AND WATERSTOP DETAILS

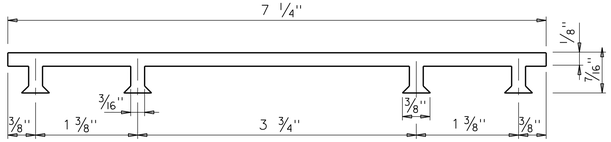


EXPANSION JOINT

CONSTRUCTION JOINT

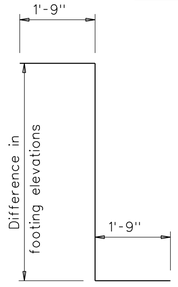


PVC WATERSTOP TYPE "A"



PVC WATERSTOP TYPE "B"

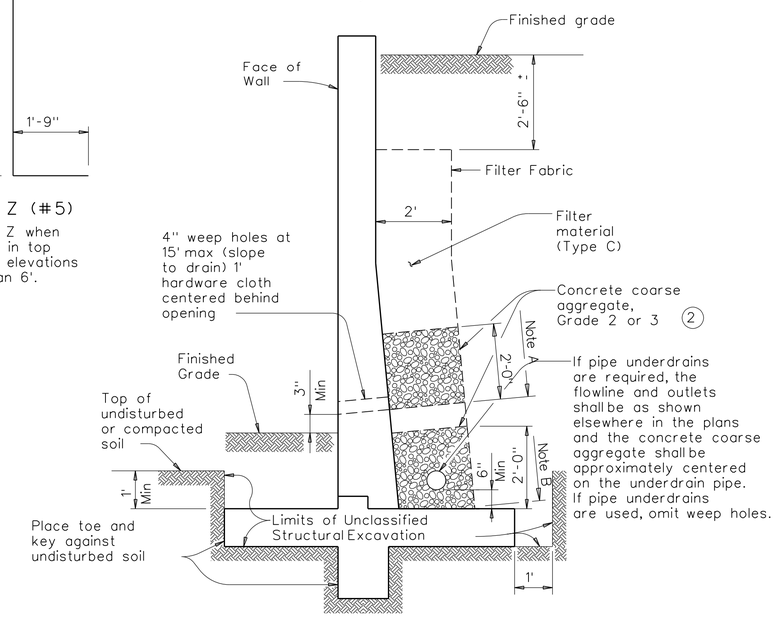
Note: Dimensions and shapes may vary slightly depending on manufacturer.



BARS Z (#5)

Omit Bars Z when difference in top of footing elevations is less than 6'.

(2) Crushed blast furnace slag, recycled crushed hydraulic cement concrete or combination there of may not be used.



DRAINAGE DETAILS AND EXCAVATION DIAGRAM

Note A: Stop coarse aggregate at this level when weep holes are used.

Note B: Use coarse aggregate to here with filter material above when underdrains are used.

GENERAL NOTES:

Walls are designed assuming unit weight of soil = 120 pcf, and coefficient of horizontal earth pressure = 0.33.

Walls are designed to provide a minimum factor of safety against sliding of 1.5. The undisturbed or compacted soil depth in front of walls, from bottom of Key up, shall not be less than Kw + Ft + 1'.

Retaining walls are detailed to be placed on grades up thru 10% with footing level, with no changes in reinforcing steel. Steeper grades can be accommodated by shortening Bars A and B and increasing length of legs of Bars U by the same amount. No change in Quantities will be involved

Retaining walls may be placed on Horizontal Curves by adjusting lengths of footing Bars T and H. Minor revisions of Concrete Quantities may be required.

Designed in accordance with current AASHTO Standard and Interim Specifications.

All concrete to be Class "C".

All reinforcing steel to be Grade 60.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

Texas Department of Transportation

Bridge Division Standard

RETAINING WALL MISCELLANEOUS DETAILS

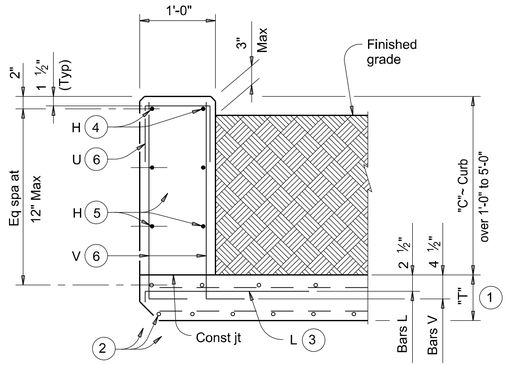
RW 2

FILE:	rwstde11.dgn	DN: TxDOT	CK: TxDOT	DW: JGD	CK: MJG
©TxDOT	March 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS					
04-11: Added Note 2.		DIST	COUNTY		SHEET NO.
					148

REV 1 SHEET ADDED PER ADDENDUM 1 MT 8/31/18

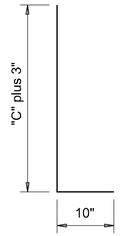
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ROK15508 N:\ST\TXDOT\rwstde11.dgn
Plot Driver: PDF - Mono-Half.plt Model: Default
Plot Scale: 2.0000 '/ in. Project: Freese and Nichols, Inc.
Date: Aug. 31, 2018 - 05:27:05 PM

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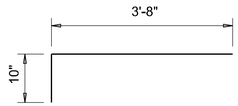


TYPICAL SECTION

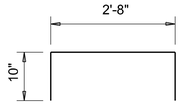
Used for curbs over 1'-0" to 5'-0"



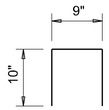
BARS V (#5) 6
Spaced at 12" Max



BARS L (#5) 3
Spaced at 12" Max



OPTIONAL BARS L (#5) 3 7
Spaced at 12" Max



BARS U (#4) 6
Spaced at 12" Max

1. "T" is equal to the culvert top slab thickness. For precast boxes with slabs less than 7" thick, see SCP-MD standard for additional details.
2. Adjust normal culvert slab bars as necessary to clear obstructions.
3. Place bars L as shown. Tilt hook as necessary to maintain cover.
4. Place normal culvert curb bars H(#4) as shown. Adjust as necessary to clear obstructions.
5. Additional bars H(#4) as required to maintain 12" Max spacing.
6. Replace normal culvert curb bars K with one bar U and two bars V as shown spaced at 12" Max. Adjust length of bars V as necessary to maintain clear cover.
7. Optional bars L are to be used only for precast box culverts with 3'-0" closure pour.
8. Quantities shown are for Contractor's information only. Quantities are per linear foot of curb length. The value in table can be interpolated for intermediate values of curb height, "C". Quantity includes bars K (when applicable).

TABLE OF ESTIMATED CURB QUANTITIES (8)

Curb Height "C"	Conc (CY/LF)	Reinf Steel (Lb/LF)
1'-0"	0.037	8.9
1'-6"	0.056	14.3
2'-0"	0.074	15.4
2'-6"	0.093	17.7
3'-0"	0.111	18.8
3'-6"	0.130	21.2
4'-0"	0.148	22.2
4'-6"	0.167	24.6
5'-0"	0.185	25.6

CONSTRUCTION NOTES:

Adjust reinforcing steel as necessary to provide 1 ¼" cover.

For vehicle safety, top of the curb must not project more than 3" above the finished grade.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.

Provide Class "C" concrete (f'_c = 3,600 psi) minimum for curbs.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

These extended curb details have sufficient strength to allow for future retrofit of Type T631 or T631LS railing. These details are suitable for use with PR1, PR2 and PR3 type rails. These details are not suitable for the mounting of other rail types. For new construction using T631 or T631LS railing, use the T631-CM standard.

This Curb is considered as part of the Box Culvert for payment.

Cover dimensions are clear dimensions, unless noted otherwise.

Reinforcing bar dimensions shown are out-to-out of bar.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

Texas Department of Transportation

Bridge Division Standard

EXTENDED CURB DETAILS

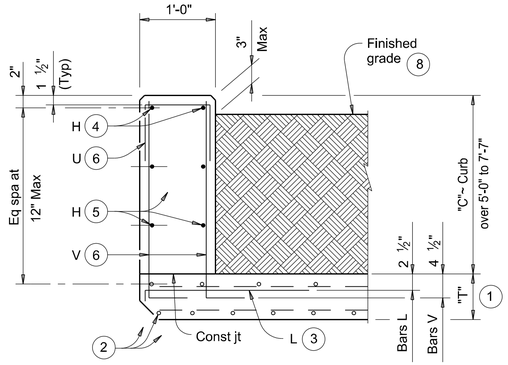
FOR BOX CULVERTS WITH CURBS OVER 1'-0" TO 5'-0" TALL

ECD

FILE: ecdstde1.dgn	DN: GAF	CK: TxDOT	DW: TxDOT	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
03-16: General Notes added T631-CM.	DIST	COUNTY		SHEET NO.
				149

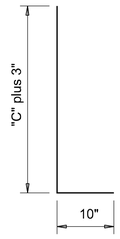
REV 1 SHEET ADDED PER ADDENDUM 1 MT 8/31/18

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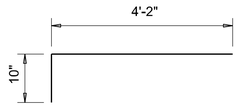


TYPICAL SECTION

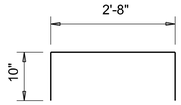
Used for curbs over 5'-0" to 7'-7"



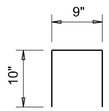
BARS V (#5) 6
Spaced at 6" Max



BARS L (#5) 3
Spaced at 6" Max



OPTIONAL BARS L (#5) 3 7
Spaced at 6" Max



BARS U (#4) 6
Spaced at 12" Max

1. "T" is equal to the culvert top slab thickness. For precast boxes with slabs less than 7" thick, see SCP-MD standard for additional details.
2. Adjust normal culvert slab bars as necessary to clear obstructions.
3. Place bars L as shown. Tilt hook as necessary to maintain cover.
4. Place normal culvert curb bars H(#4) as shown. Adjust as necessary to clear obstructions.
5. Additional bars H(#4) as required to maintain 12" Max spacing.
6. Replace normal culvert curb bars K with one bar U and two bars V as shown spaced at 6" Max. Adjust length of bars V as necessary to maintain clear cover.
7. Optional bars L are to be used only for precast box culverts with 3'-0" closure pour.
8. Provide drainage system behind wall similar to shown on RW2

CONSTRUCTION NOTES:

Adjust reinforcing steel as necessary to provide 1¼" cover.

For vehicle safety, top of the curb must not project more than 3" above the finished grade.

MATERIAL NOTES:

Provide Grade 60 reinforcing steel.

Provide Class "C" concrete (f'c = 3,600 psi) minimum for curbs.

GENERAL NOTES:

Designed according to AASHTO LRFD Bridge Design Specifications.

These extended curb details have sufficient strength to allow for future retrofit of Type T631 or T631LS railing. These details are suitable for use with PR1, PR2 and PR3 type rails. These details are not suitable for the mounting of other rail types. For new construction using T631 or T631LS railing, use the T631-CM standard.

This Curb is considered as part of the Box Culvert for payment.

Cover dimensions are clear dimensions, unless noted otherwise.

Reinforcing bar dimensions shown are out-to-out of bar.

This Record Drawing is a combination of the sealed engineering contracts for this project, modified by information furnished by the contractor reflecting changes in the Project made during construction. The original sealed drawings are on file at the offices of

FREESE AND NICHOLS, INC.

RECORD DRAWINGS PREPARED ON:
3/17/2021

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

STATE OF TEXAS
MISTY THOMISON
110346
LICENSED
PROFESSIONAL ENGINEER
08/31/2018

Texas Department of Transportation

Bridge Division Standard

EXTENDED CURB DETAILS

FOR BOX CULVERTS WITH CURBS OVER 5'-0" TO 7'-7" TALL

ECD (MOD)

FILE: ecdstde1.dgn	DN: GAF	CK: TxDOT	DW: TxDOT	CK: GAF
©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
03-16: General Notes added T631-CM.	DIST	COUNTY		SHEET NO.
				150

REV	1	ADDENDUM 1	MT	8/31/18

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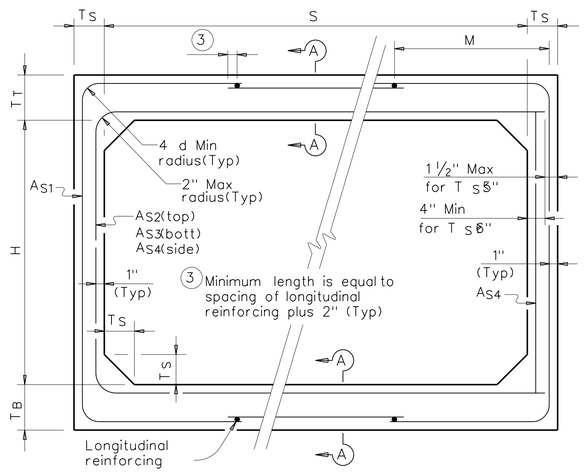
DATE:
FILE:

BOX DATA

SECTION DIMENSIONS					Fill Height	M (Min)	REINFORCING (in ^{2}/ft) ②								Lift Weight (Tons) ①
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}	
8	4	8	8	8	*2	–	0.27	0.38	0.29	0.19	0.19	0.19	0.19	0.19	11.2
8	4	8	8	8	2*3	50	0.31	0.34	0.32	0.19	–	–	–	–	11.2
8	4	8	8	8	3-5	50	0.25	0.27	0.27	0.19	–	–	–	–	11.2
8	4	8	8	8	10	45	0.26	0.28	0.29	0.19	–	–	–	–	11.2
8	4	8	8	8	15	41	0.34	0.37	0.38	0.19	–	–	–	–	11.2
8	4	8	8	8	20	41	0.44	0.48	0.49	0.19	–	–	–	–	11.2
8	5	8	8	8	*2	–	0.24	0.40	0.32	0.19	0.19	0.19	0.19	0.19	12.0
8	5	8	8	8	2*3	50	0.28	0.37	0.35	0.19	–	–	–	–	12.0
8	5	8	8	8	3-5	45	0.23	0.29	0.30	0.19	–	–	–	–	12.0
8	5	8	8	8	10	45	0.23	0.31	0.32	0.19	–	–	–	–	12.0
8	5	8	8	8	15	41	0.30	0.41	0.42	0.19	–	–	–	–	12.0
8	5	8	8	8	20	41	0.39	0.52	0.54	0.19	–	–	–	–	12.0
8	6	8	8	8	*2	–	0.22	0.42	0.35	0.19	0.19	0.19	0.19	0.19	12.8
8	6	8	8	8	2*3	50	0.25	0.40	0.38	0.19	–	–	–	–	12.8
8	6	8	8	8	3-5	50	0.21	0.32	0.33	0.19	–	–	–	–	12.8
8	6	8	8	8	10	45	0.22	0.33	0.34	0.19	–	–	–	–	12.8
8	6	8	8	8	15	41	0.28	0.43	0.45	0.19	–	–	–	–	12.8
8	6	8	8	8	20	41	0.36	0.55	0.57	0.19	–	–	–	–	12.8
8	7	8	8	8	*2	–	0.20	0.44	0.37	0.19	0.19	0.19	0.19	0.19	13.6
8	7	8	8	8	2*3	55	0.23	0.43	0.41	0.19	–	–	–	–	13.6
8	7	8	8	8	3-5	55	0.19	0.34	0.35	0.19	–	–	–	–	13.6
8	7	8	8	8	10	50	0.20	0.34	0.36	0.19	–	–	–	–	13.6
8	7	8	8	8	15	41	0.26	0.45	0.47	0.19	–	–	–	–	13.6
8	7	8	8	8	20	41	0.33	0.57	0.60	0.19	–	–	–	–	13.6
8	8	8	8	8	*2	–	0.20	0.45	0.40	0.19	0.19	0.19	0.19	0.19	14.4
8	8	8	8	8	2*3	65	0.21	0.45	0.44	0.19	–	–	–	–	14.4
8	8	8	8	8	3-5	65	0.19	0.36	0.38	0.19	–	–	–	–	14.4
8	8	8	8	8	10	55	0.19	0.35	0.38	0.19	–	–	–	–	14.4
8	8	8	8	8	15	45	0.24	0.46	0.49	0.19	–	–	–	–	14.4
8	8	8	8	8	20	45	0.31	0.59	0.62	0.19	–	–	–	–	14.4

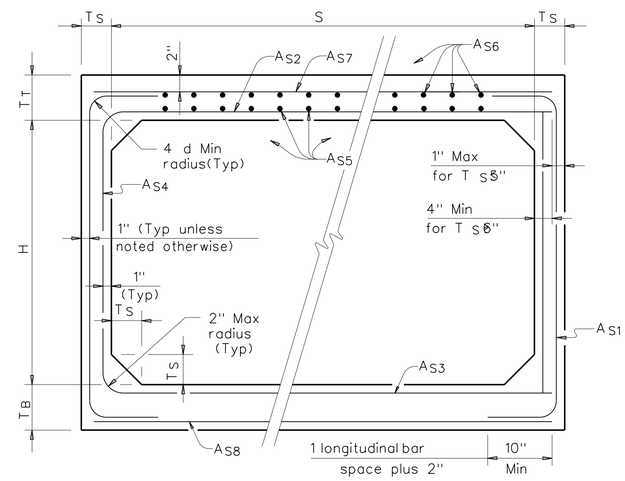
① For Box Length = 8'-0"

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.



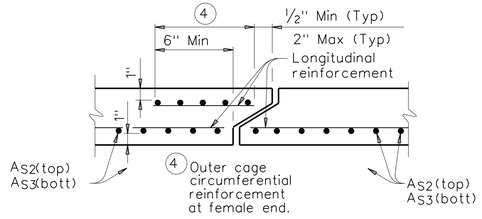
CORNER OPTION "A" CORNER OPTION "B"

FILL HEIGHT 2 FT AND GREATER



CORNER OPTION "A" CORNER OPTION "B"

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

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

Texas Department of Transportation

Bridge Division Standard

SINGLE BOX CULVERTS PRECAST

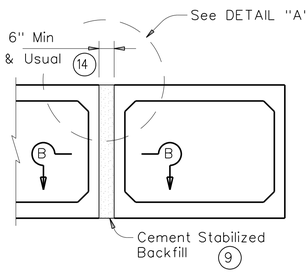
8'-0" SPAN

SCP-8

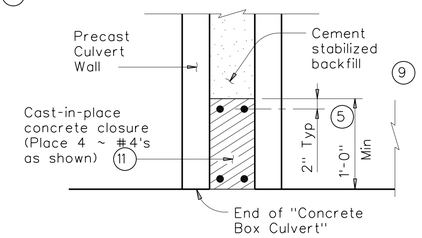
FILE: scp08sts.dgn	DN: GAF	CK: LMW	DW: BWH/TxDOT	CK: GAF
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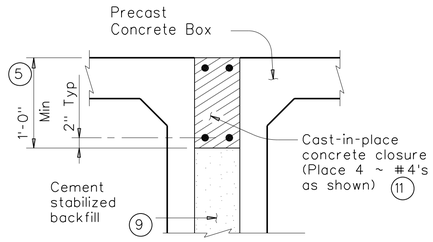
DATE:
FILE:



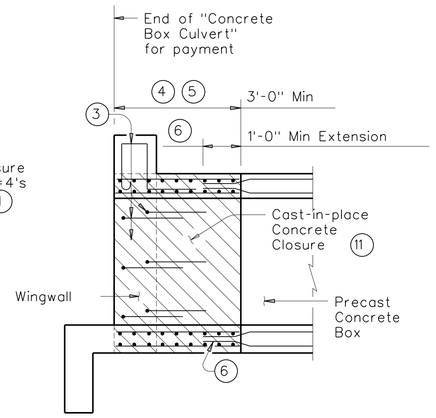
MULTIPLE UNIT PLACEMENT



SECTION B-B

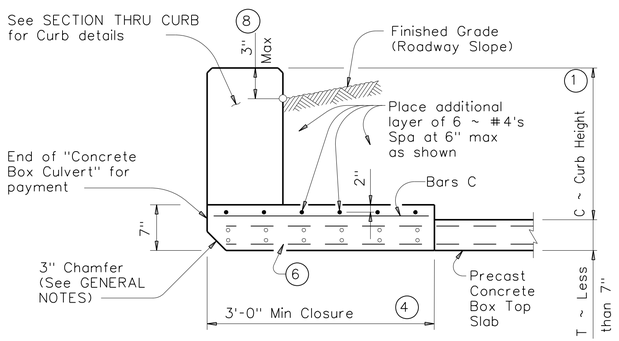


DETAIL "A" (13)

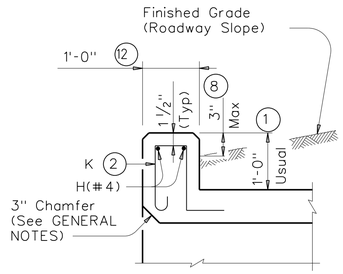


WINGWALL CONNECTION

(Also applies to Safety End Treatment)

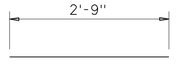


SECTION THRU TOP SLABS LESS THAN 7"

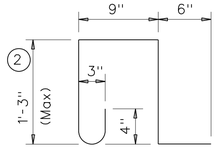


SECTION THRU CURB

(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:

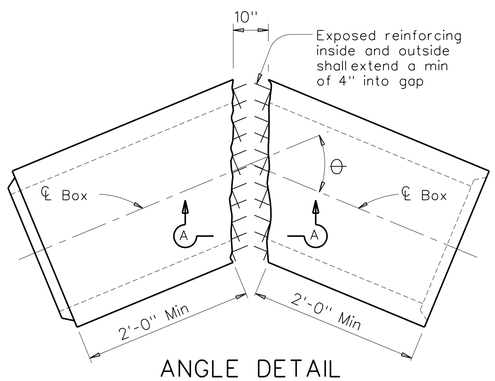
Designed according to AASHTO LRFD Specifications.

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".

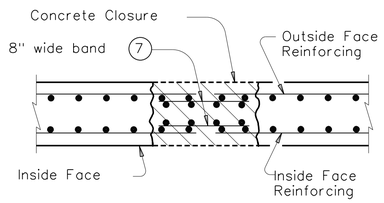
Any additional concrete required for the closures shall be considered as subsidiary to the Concrete Box Culvert.

Refer to the Single Box Culverts Precast standard for details not shown.

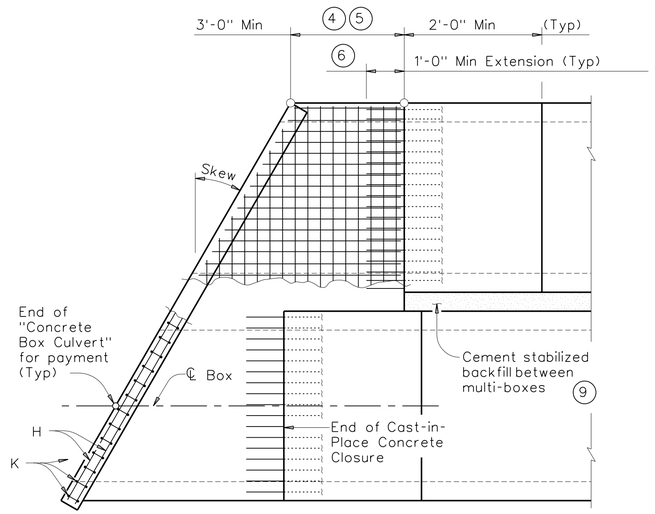
The bottom edge of the top slab closure shall be chamfered 3 inches at the entrance.



ANGLE DETAIL



SECTION A-A



PLAN OF SKEWED ENDS

(Showing multi-box placement)

HL93 LOADING

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

Texas Department of Transportation

Bridge Division Standard

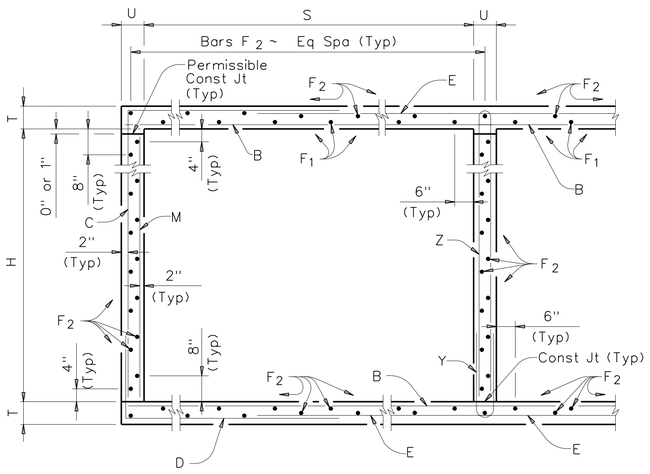
BOX CULVERTS PRECAST MISCELLANEOUS DETAILS

SCP-MD

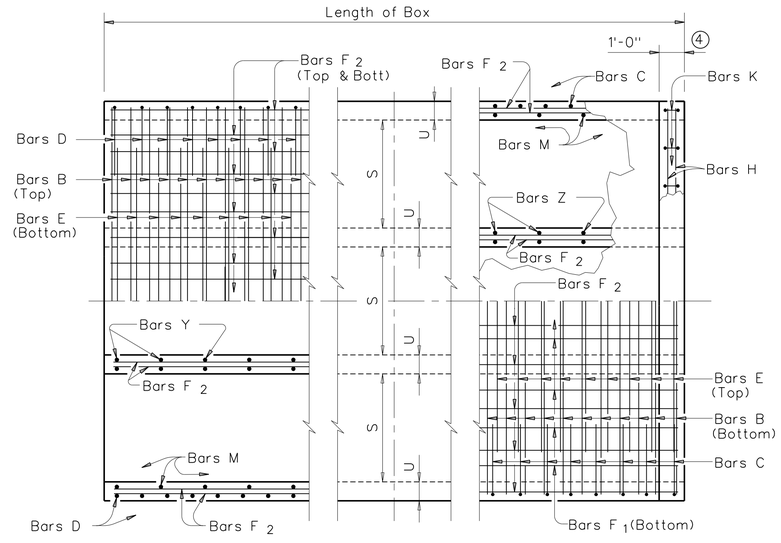
FILE: scpmdsts.dgn	DN: GAF	CK: LMW	DW: BWH/TxDOT	CK: GAF
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	DIST	COUNTY		SHEET NO.
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TYPICAL SECTION



PART PLANS

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 bridge rail, refer to T6-CM standard. For structures with traffic rail, other than T6, refer to RAC standard.

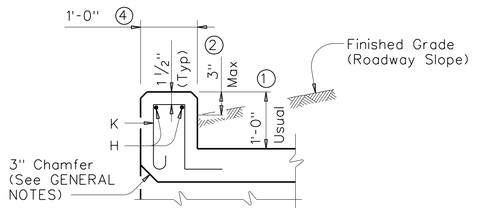
2 For vehicle safety, the following requirements must be met:
- For structures without bridge rail, curbs shall project no more than 3" above finished grade.
- For structures with bridge rail, curbs shall be flush with finished grade.
Curb heights shall be reduced, if necessary, to meet the above requirements. No changes will be made in quantities and no additional compensation will be allowed for this work.

3 For curbs less than 1'-0" high, tilt bars K or reduce bar height as necessary to maintain cover. For curbs less than 3" high, bars K may be omitted.

4 1'-0" typical. 2'-0" when RAC standard is referred to elsewhere in the plans.

Deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064 may be used to replace conventional reinforcement shown at the Contractor's option. The area of required reinforcement may be reduced by the ratio of 60 ksi / 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes.

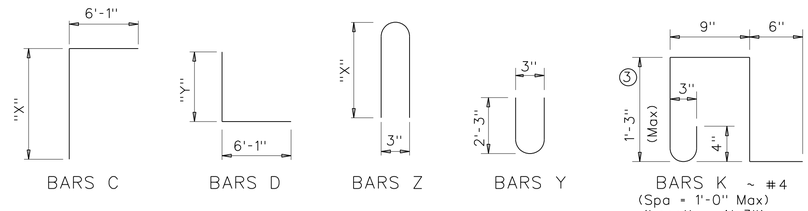
Example Conversion: Replacement of No. 6 Gr 60 at 6" Spacing with WWR.
WWR required = (0.44 sq in/ 0.5') x (60 ksi/70 ksi) = 0.754 sq in/ft.
If D30.6 wire is used to meet the 0.754 sq in/ft requirement in this example, the required spacing = (0.306 sq in/ 0.754 sq in/ft) x 12 in/ft = 4.87" Max spacing.
Required lap length for the provided D30.6 wire is 2'-2" (Lap required for uncoated No. 5 bars, as shown in Item 440).



SECTION THRU CURB

H	Bar Dimensions	
	"X"	"Y"
4'-0"	4'-6"	2'-3"
5'-0"	5'-6"	2'-3"
6'-0"	6'-6"	2'-3"
7'-0"	7'-6"	2'-3"
8'-0"	8'-6"	2'-8"

GENERAL NOTES:
Designed according to AASHTO LRFD Specifications.
Designed to the maximum fill height shown.
All reinforcing steel shall be Grade 60.
All concrete shall be Class "C" with these exceptions: use Class "S" for top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface.
Class "C" concrete shall have a minimum compressive strength of 3,600 psi. Class "S" concrete shall have a minimum compressive strength of 4,000 psi.
The use of permanent forms is not allowed.
The bottom edge of the top slab shall be chamfered 3" at the entrance.
Reinforcing bars shall be adjusted to provide a minimum of 1 1/4" clear cover.
Construction joints shown at the flow line may be raised a maximum of 6" at the Contractor's option. If this option is used, Bars M may be cut off or raised, Bars C and D may be reversed, and Bars Y and Z may be reversed.
See standard MC-MD for skewed ends, angle sections and lengthening details.



City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

HL93 LOADING

SHEET 1 OF 2

Texas Department of Transportation

Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE
8'-0" SPAN
0' TO 13' FILL

MC-8-13

FILE: mc813ste.dgn	DN: GAF	CK: LMW	DW: BWH/TxDOT	CK: GAF
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BILLS OF REINFORCING STEEL (For Box Length = 40 feet)

NUMBER OF SPANS	SECTION DIMENSIONS				Bars B					Bars C & D						Bars E					Bars F 1~#4				Bars F 2~#4 at 1'-6" Max			Bars M~#4 at 1'-6" Max			Bars Y & Z~#4 at 10" Max					Bars H 4~#4		Bars K	
	S	H	T	U	No.	Size	Spa	Length	Wt	No.	Size	Spa	Bar C Length	Bar C Wt	Bar D Length	Bar D Wt	No.	Size	Spa	Length	Wt	No.	Spa	Length	Wt	No.	Length	Wt	No.	Length	Wt	No.	Bar Y Length	Bar Y Wt	Bar Z Length	Bar Z Wt	Length	Weight	No.	Weight
2	8'-0"	4'-0"	8"	7"	162	#5	6"	17'- 6"	2,957	194	#4	5"	10'- 7"	1,372	8'- 4"	1,080	194	#6	5"	8'-10"	2,574	22	9"	39'-9"	584	56	39'-9"	1,487	56	4'- 0"	150	49	4'- 8"	153	9'- 2"	300	17'- 6"	47	38	108	1.136	266.4	1.3	155		
3	8'-0"	4'-0"	8"	7"	162	#5	6"	26'- 1"	4,407	194	#4	5"	10'- 7"	1,372	8'- 4"	1,080	194	#6	5"	17'- 5"	5,075	36	8"	39'-9"	956	80	39'-9"	2,124	56	4'- 0"	150	98	4'- 8"	305	9'- 2"	600	26'- 1"	70	54	153	1.646	401.7	2.0	223		
4	8'-0"	4'-0"	8"	7"	162	#5	6"	34'- 8"	5,857	194	#4	5"	10'- 7"	1,372	8'- 4"	1,080	194	#6	5"	26'- 0"	7,576	48	8"	39'-9"	1,275	104	39'-9"	2,762	56	4'- 0"	150	147	4'- 8"	458	9'- 2"	900	34'- 8"	93	72	204	2.156	535.8	2.6	297		
5	8'-0"	4'-0"	8"	7"	162	#5	6"	43'- 3"	7,308	194	#4	5"	10'- 7"	1,372	8'- 4"	1,080	194	#6	5"	34'- 7"	10,077	60	8"	39'-9"	1,593	128	39'-9"	3,399	56	4'- 0"	150	196	4'- 8"	611	9'- 2"	1,200	43'- 3"	116	90	256	2.667	659.8	3.2	372		
6	8'-0"	4'-0"	8"	7"	162	#5	6"	51'-10"	8,758	194	#4	5"	10'- 7"	1,372	8'- 4"	1,080	194	#6	5"	43'- 2"	12,578	72	8"	39'-9"	1,912	152	39'-9"	4,036	56	4'- 0"	150	245	4'- 8"	764	9'- 2"	1,500	51'-10"	138	106	301	3.177	803.8	3.9	439		
2	8'-0"	5'-0"	8"	7"	194	#5	5"	17'- 6"	3,541	194	#4	5"	11'- 7"	1,501	8'- 4"	1,080	194	#6	5"	8'-10"	2,574	22	9"	39'-9"	584	62	39'-9"	1,646	56	5'- 0"	187	49	4'- 8"	153	11'- 2"	366	17'- 6"	47	38	108	1.201	290.8	1.3	155		
3	8'-0"	5'-0"	8"	7"	194	#5	5"	26'- 1"	5,278	194	#4	5"	11'- 7"	1,501	8'- 4"	1,080	194	#6	5"	17'- 5"	5,075	36	8"	39'-9"	956	88	39'-9"	2,337	56	5'- 0"	187	98	4'- 8"	305	11'- 2"	731	26'- 1"	70	54	153	1.733	436.3	2.0	223		
4	8'-0"	5'-0"	8"	7"	194	#5	5"	34'- 8"	7,015	194	#4	5"	11'- 7"	1,501	8'- 4"	1,080	194	#6	5"	26'- 0"	7,576	48	8"	39'-9"	1,275	114	39'-9"	3,027	56	5'- 0"	187	147	4'- 8"	458	11'- 2"	1,097	34'- 8"	93	72	204	2.264	580.4	2.6	297		
5	8'-0"	5'-0"	8"	7"	194	#5	5"	43'- 3"	8,751	194	#4	5"	11'- 7"	1,501	8'- 4"	1,080	194	#6	5"	34'- 7"	10,077	60	8"	39'-9"	1,593	140	39'-9"	3,717	56	5'- 0"	187	195	4'- 8"	611	11'- 2"	1,462	43'- 3"	116	90	256	2.796	724.5	3.2	372		
6	8'-0"	5'-0"	8"	7"	194	#5	5"	51'-10"	10,488	194	#4	5"	11'- 7"	1,501	8'- 4"	1,080	194	#6	5"	43'- 2"	12,578	72	8"	39'-9"	1,912	166	39'-9"	4,408	56	5'- 0"	187	245	4'- 8"	764	11'- 2"	1,828	51'-10"	138	106	301	3.328	868.7	3.9	439		
2	8'-0"	6'-0"	8"	7"	194	#5	5"	17'- 6"	3,541	194	#4	5"	12'- 7"	1,631	8'- 4"	1,080	194	#6	5"	8'-10"	2,574	22	9"	39'-9"	584	68	39'-9"	1,806	56	6'- 0"	224	49	4'- 8"	153	13'- 2"	431	17'- 6"	47	38	108	1.265	300.6	1.3	155		
3	8'-0"	6'-0"	8"	7"	194	#5	5"	26'- 1"	5,278	194	#4	5"	12'- 7"	1,631	8'- 4"	1,080	194	#6	5"	17'- 5"	5,075	36	8"	39'-9"	956	96	39'-9"	2,549	56	6'- 0"	224	98	4'- 8"	305	13'- 2"	862	26'- 1"	70	54	153	1.819	449.0	2.0	223		
4	8'-0"	6'-0"	8"	7"	194	#5	5"	34'- 8"	7,015	194	#4	5"	12'- 7"	1,631	8'- 4"	1,080	194	#6	5"	26'- 0"	7,576	48	8"	39'-9"	1,275	124	39'-9"	3,293	56	6'- 0"	224	147	4'- 8"	458	13'- 2"	1,293	34'- 8"	93	72	204	2.372	596.1	2.6	297		
5	8'-0"	6'-0"	8"	7"	194	#5	5"	43'- 3"	8,751	194	#4	5"	12'- 7"	1,631	8'- 4"	1,080	194	#6	5"	34'- 7"	10,077	60	8"	39'-9"	1,593	152	39'-9"	4,036	56	6'- 0"	224	196	4'- 8"	611	13'- 2"	1,724	43'- 3"	116	90	256	2.926	743.2	3.2	372		
6	8'-0"	6'-0"	8"	7"	194	#5	5"	51'-10"	10,488	194	#4	5"	12'- 7"	1,631	8'- 4"	1,080	194	#6	5"	43'- 2"	12,578	72	8"	39'-9"	1,912	180	39'-9"	4,780	56	6'- 0"	224	245	4'- 8"	764	13'- 2"	2,155	51'-10"	138	106	301	3.479	890.3	3.9	439		
2	8'-0"	7'-0"	8"	7"	194	#5	5"	17'- 6"	3,541	194	#4	5"	13'- 7"	1,760	8'- 4"	1,080	194	#6	5"	8'-10"	2,574	22	9"	39'-9"	584	68	39'-9"	1,806	56	7'- 0"	262	49	4'- 8"	153	15'- 2"	496	17'- 6"	47	38	108	1.330	306.4	1.3	155		
3	8'-0"	7'-0"	8"	7"	194	#5	5"	26'- 1"	5,278	194	#4	5"	13'- 7"	1,760	8'- 4"	1,080	194	#6	5"	17'- 5"	5,075	36	8"	39'-9"	956	96	39'-9"	2,549	56	7'- 0"	262	98	4'- 8"	305	15'- 2"	993	26'- 1"	70	54	153	1.905	456.5	2.0	223		
4	8'-0"	7'-0"	8"	7"	194	#5	5"	34'- 8"	7,015	194	#4	5"	13'- 7"	1,760	8'- 4"	1,080	194	#6	5"	26'- 0"	7,576	48	8"	39'-9"	1,275	124	39'-9"	3,293	56	7'- 0"	262	147	4'- 8"	458	15'- 2"	1,489	34'- 8"	93	72	204	2.480	605.2	2.6	297		
5	8'-0"	7'-0"	8"	7"	194	#5	5"	43'- 3"	8,751	194	#4	5"	13'- 7"	1,760	8'- 4"	1,080	194	#6	5"	34'- 7"	10,077	60	8"	39'-9"	1,593	152	39'-9"	4,036	56	7'- 0"	262	196	4'- 8"	611	15'- 2"	1,986	43'- 3"	116	90	256	3.056	753.9	3.2	372		
6	8'-0"	7'-0"	8"	7"	194	#5	5"	51'-10"	10,488	194	#4	5"	13'- 7"	1,760	8'- 4"	1,080	194	#6	5"	43'- 2"	12,578	72	8"	39'-9"	1,912	180	39'-9"	4,780	56	7'- 0"	262	245	4'- 8"	764	15'- 2"	2,482	51'-10"	138	106	301	3.631	902.7	3.9	439		
2	8'-0"	8'-0"	8"	7"	194	#5	5"	17'- 6"	3,541	162	#5	6"	14'- 7"	2,464	8'- 9"	1,478	194	#6	5"	8'-10"	2,574	22	9"	39'-9"	584	74	39'-9"	1,965	56	8'- 0"	299	49	4'- 8"	153	17'- 2"	562	17'- 6"	47	38	108	1.395	340.5	1.3	155		
3	8'-0"	8'-0"	8"	7"	194	#5	5"	26'- 1"	5,278	162	#5	6"	14'- 7"	2,464	8'- 9"	1,478	194	#6	5"	17'- 5"	5,075	36	8"	39'-9"	956	104	39'-9"	2,762	56	8'- 0"	299	98	4'- 8"	305	17'- 2"	1,124	26'- 1"	70	54	153	1.992	493.5	2.0	223		
4	8'-0"	8'-0"	8"	7"	194	#5	5"	34'- 8"	7,015	162	#5	6"	14'- 7"	2,464	8'- 9"	1,478	194	#6	5"	26'- 0"	7,576	48	8"	39'-9"	1,275	134	39'-9"	3,558	56	8'- 0"	299	147	4'- 8"	458	17'- 2"	1,686	34'- 8"	93	72	204	2.588	645.2	2.6	297		
5	8'-0"	8'-0"	8"	7"	194	#5	5"	43'- 3"	8,751	162	#5	6"	14'- 7"	2,464	8'- 9"	1,478	194	#6	5"	34'- 7"	10,077	60	8"	39'-9"	1,593	164	39'-9"	4,355	56	8'- 0"	299	196	4'- 8"	611	17'- 2"	2,248	43'- 3"	116	90	256	3.185	796.9	3.2	372		
6	8'-0"	8'-0"	8"	7"	194	#5	5"	51'-10"	10,488	162	#5	6"	14'- 7"	2,464	8'- 9"	1,478	194	#6	5"	43'- 2"	12,578	72	8"	39'-9"	1,912	194	39'-9"	5,151	56	8'- 0"	299	245	4'- 8"	764	17'- 2"	2,809	51'-10"	138	106	301	3.782	948.6	3.9	439		

QUANTITIES

NUMBER OF SPANS	Per foot of Barrel		Curb		Total	
	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)	Conc (CY)	Reinf (Lb)
2					46.7	10,812
3					67.8	16,292
4					88.8	21,727
5					109.9	27,162
6					131.0	32,589
2					49.3	11,787
3					71.3	17,673
4					93.2	23,513
5					115.0	29,351
6					137.0	35,185
2					51.9	12,179
3					74.8	18,183
4					97.5	24,142
5					120.2	30,099
6					143.1	36,051
2					54.5	12,411
3					78.2	18,481
4					101.8	24,505
5					125.4	30,528
6					149.1	36,545
2					57.1	13,775
3					81.7	19,964
4					106.1	26,106
5					130.6	32,248
6					155.2	38,382

Deformed welded wire reinforcement (WWR) meeting the requirements of ASTM A1064 may be used to replace conventional reinforcement shown at the Contractor's option. The area of required reinforcement may be reduced by the ratio of 60 ksi/ 70 ksi. Spacing of WWR is limited to 4" Min and 18" Max. When required, provide lap splices in the WWR of the same length required for the equivalent bar size, rounded up for wire sizes between conventional bar sizes.

Example Conversion: Replacement of No. 6 Gr 60 at 6" Spacing with WWR.
WWR required = (0.44 sq in/ 0.5') x (60 ksi/70 ksi) = 0.754 sq in/ft.
If D30.6 wire is used to meet the 0.754 sq in/ft requirement in this example, the required spacing = (0.306 sq in/ 0.754 sq in/ft) x 12 in/ft = 4.87" Max spacing.
Required lap length for the provided D30.6 wire is 2'-2" (Lap required for uncoated No. 5 bars, as shown in Item 440).

HL93 LOADING

SHEET 2 OF 2

Texas Department of Transportation

Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE
8'-0" SPAN
0' TO 13' FILL

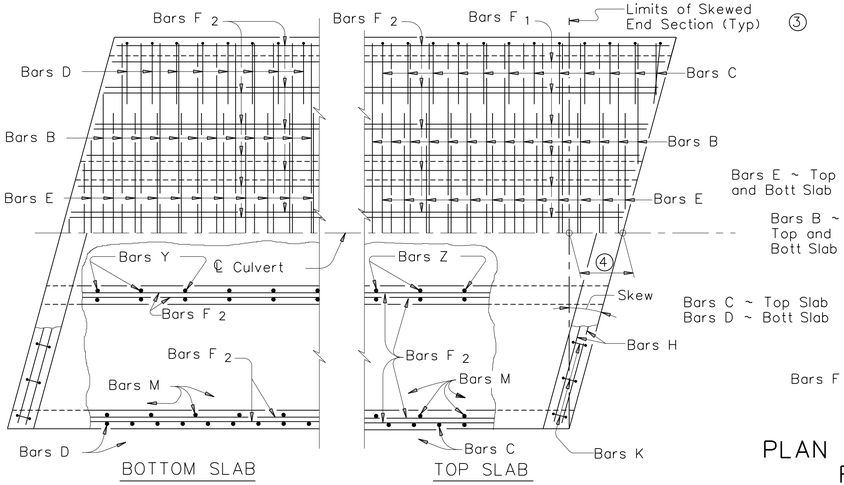
MC-8-13

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], PE, CFM
Date: 11/26/2018

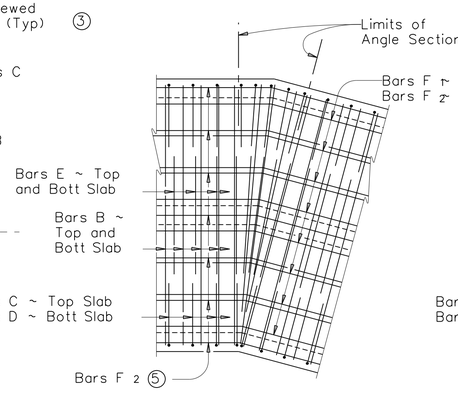
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©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
10-12: Added WWR	DIST	COUNTY		SHEET NO.
				154

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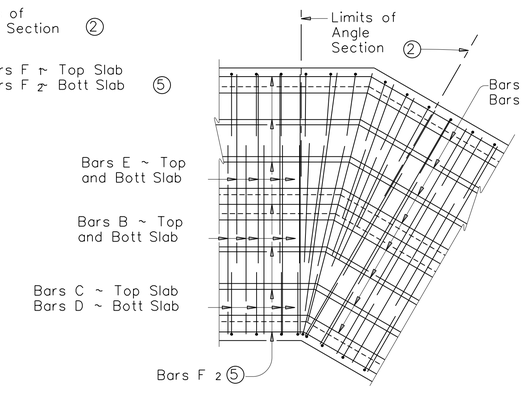
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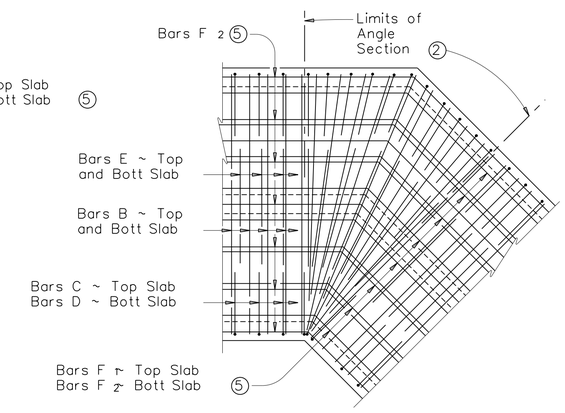
PLAN OF SKEWED ENDS ~ FROM 0° TO 15° ⑦



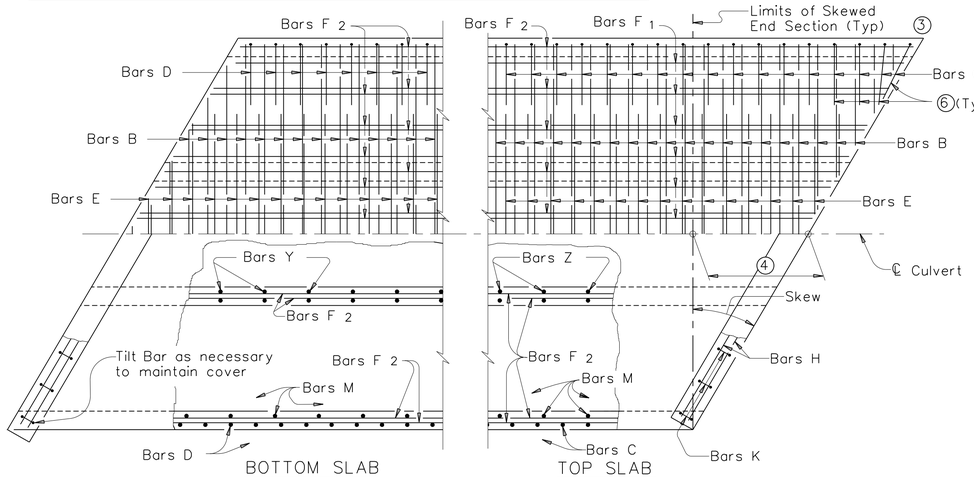
PLAN OF ANGLE SECTION ~ FROM 0° TO 15°



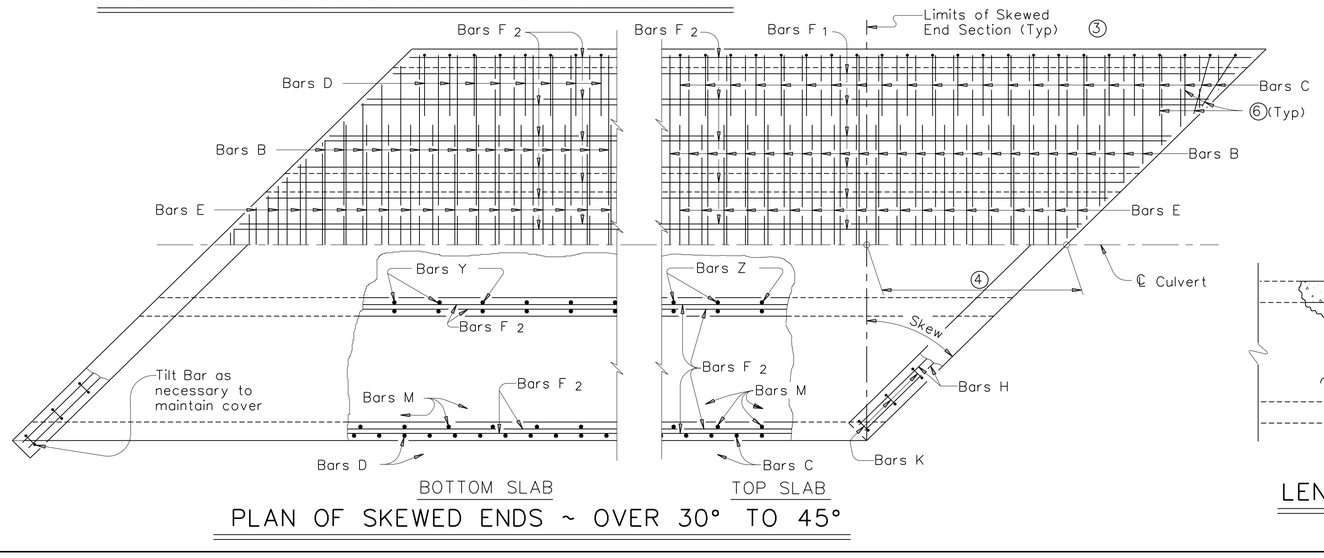
PLAN OF ANGLE SECTION ~ OVER 15° TO 30°



PLAN OF ANGLE SECTION ~ OVER 30° TO 45°



PLAN OF SKEWED ENDS ~ OVER 15° TO 30°



PLAN OF SKEWED ENDS ~ OVER 30° TO 45°

GENERAL NOTES:

Designed according to AASHTO LRFD Specifications.

All reinforcing steel shall be Grade 60.

All concrete shall be Class "C" with these exceptions: use Class "S" for top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface.

Class "C" concrete shall have a minimum compressive strength of 3,600 psi. Class "S" concrete shall have a minimum compressive strength of 4,000 psi.

Refer to Multiple Box Culverts Cast-in-Place standard for details of straight sections of culvert. For skewed sections and angle sections refer to Multiple Box Culverts Cast-in-Place standard for slab and wall dimensions, bar sizes, maximum bar spacing, and any other details not shown. For Skewed ends with curbs, adjust length of Bars H, number of Bars K, curb concrete volume and reinforcing steel weight by dividing the values shown on the culvert standards by the cosine of the skew angle.

The use of permanent forms is not allowed.

Laps for Bars H, when required, shall be 1'-9" for uncoated bars and 2'-7" for epoxy coated.

① For box culverts with less than 2'-0" of fill, the top slab shall be broken back to provide a minimum 1'-10" lap of the existing longitudinal bars with the longitudinal bars in the extension. If the depth of fill is 2'-0" or greater, the top slab shall be broken back to provide a 1'-0" minimum embedment of existing longitudinal reinforcing into the extension. Alternatively, if the fill height is greater than 2'-0", the existing curb may be left in place and 2'-0" long #6 bars shall be drilled and grouted 1'-0" into the existing top slab at 1'-6" center to center spacing. Wings and apron shall be broken back as necessary to install the extension. Exposed wingwall and apron reinforcing may be removed or cleaned and included in the extension. When lengthening existing box culverts with dimensions different than current standard dimensions, horizontal and vertical transitions shall be formed as directed by the Engineer. Bottom slabs shall match to maintain an uninterrupted flow line. Existing and new reinforcing shall be field bent into transition maintaining specified cover requirements. For top slabs of culverts with overlay, with 1-to-2 course surface treatment, or with the top slab as the final riding surface, the "H" dimension may be adjusted to provide a smooth riding surface.

② When the spacing between Bars B or Bars E becomes less than half of the normal spacing, bars shall be cut to avoid fouling

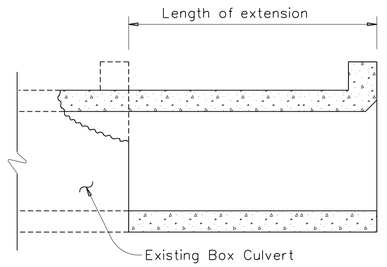
③ The length of Bars B and E will vary in the skewed end sections

④ [One half of overall width] x [Tan of the skew angle]

⑤ Bars F 1 and F 2 shall be continuous through the angle section. They shall be bent to remain parallel to the walls of the Box Culvert.

⑥ When necessary to avoid fouling in acute corners, the slab extension leg of Bars C and Bars D may be shortened to a minimum of 1'-6" for skews of 30° and 45°.

⑦ For skews of 15° or less, the contractor has the option of placing Bars B, C, D and E parallel to the skewed end while maintaining spacing along centerline box. Lengths of Bars B and E shown on the standards shall be increased to accommodate the skew.



LENGTHENING DETAIL ①

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Texas Department of Transportation

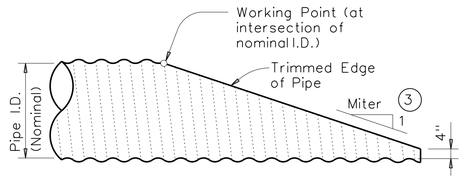
Bridge Division Standard

MULTIPLE BOX CULVERTS CAST-IN-PLACE MISCELLANEOUS DETAILS

MC-MD

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

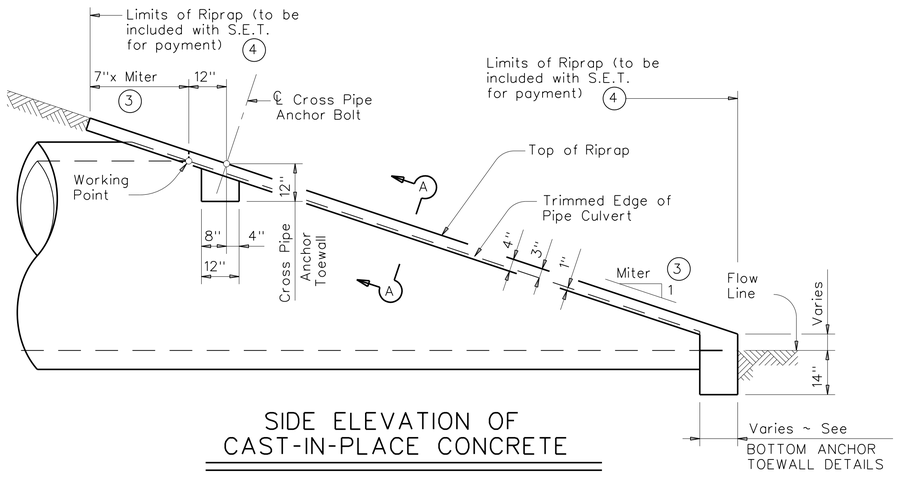
FILE:	mc-mdste.dgn	DN: GAF	CK: LMW	DW: BWH/TxDOT	CK: GAF
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REVISIONS					
		DIST	COUNTY		SHEET NO.
					155



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.

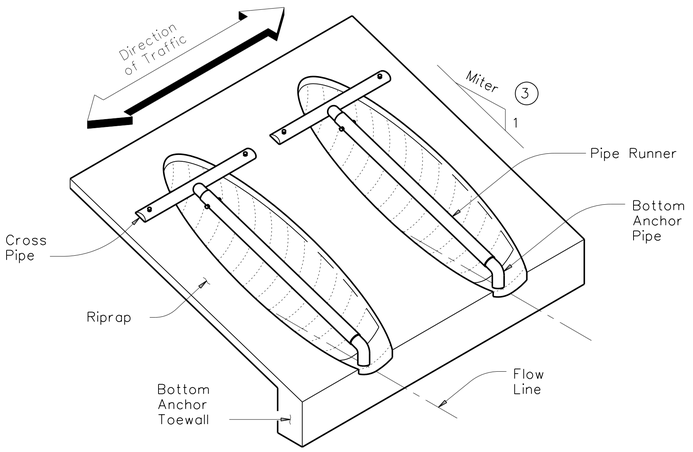
SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(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.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: Henry M. Walker, PE, CFM
Date: 11/26/2018

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

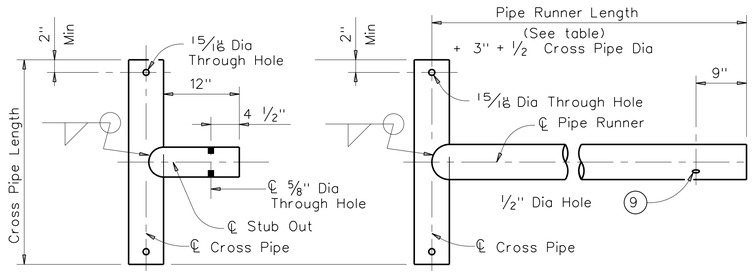
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©TxDOT February 2010	CONT	SECT	JOB	HIGHWAY
REVISIONS				
11-10: Add note for synthetic fibers.	DIST	COUNTY		SHEET NO.
				156

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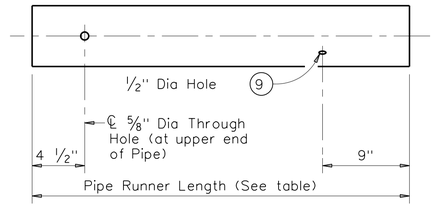
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FILE:



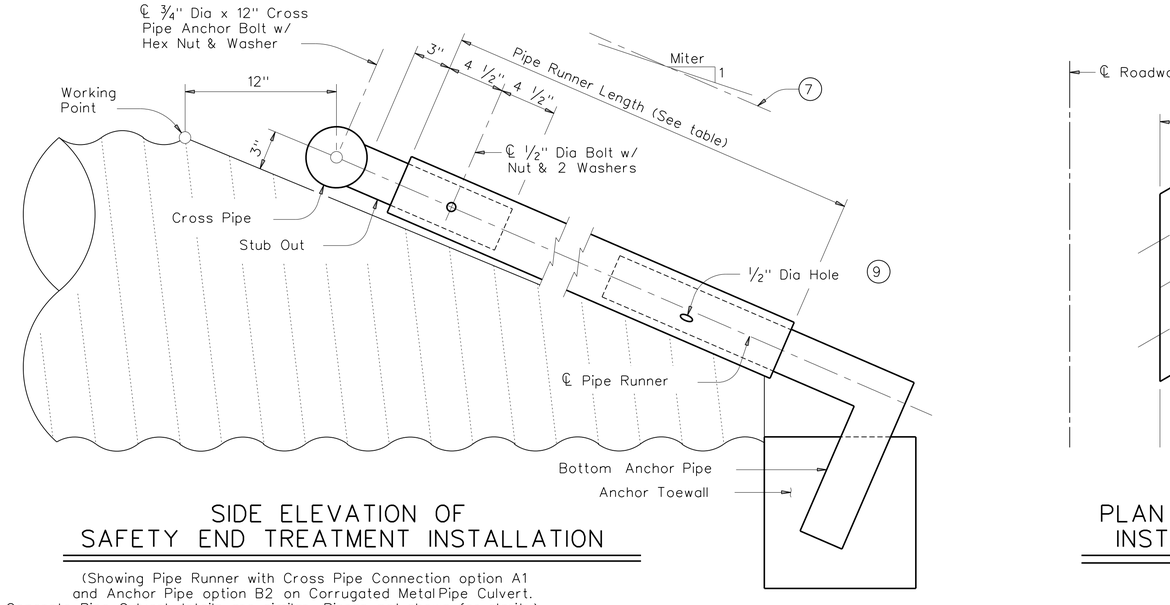
OPTION A1 OPTION A2

CROSS PIPE AND CONNECTIONS DETAILS



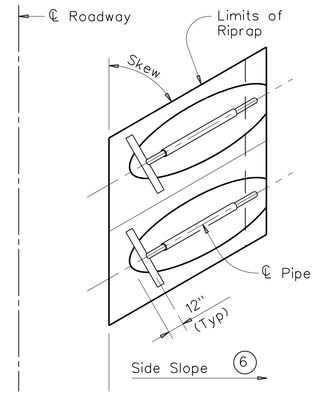
NOTE: The separate Pipe Runner shown is required when Cross Pipe Connection Option A1 is used.

PIPE RUNNER DETAILS

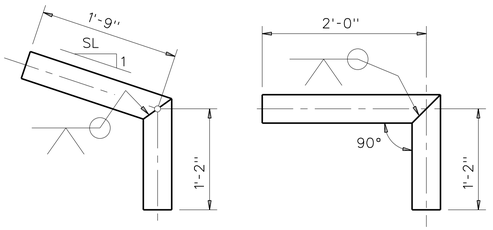


SIDE ELEVATION OF SAFETY END TREATMENT INSTALLATION

(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)

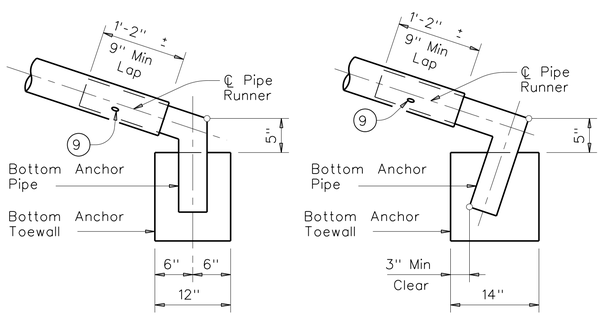


PLAN OF SKEWED INSTALLATION



OPTION B1 OPTION B2

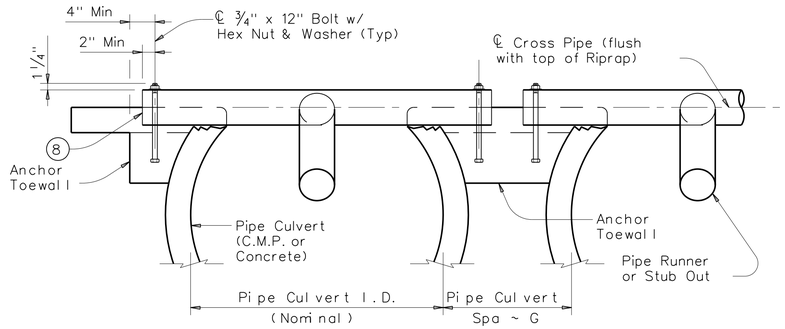
BOTTOM ANCHOR PIPE DETAILS (10)



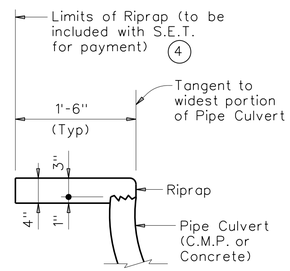
OPTION B1 OPTION B2

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.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], PE, CFM
Date: 11/26/2018

SHEET 2 OF 2

Texas Department of Transportation

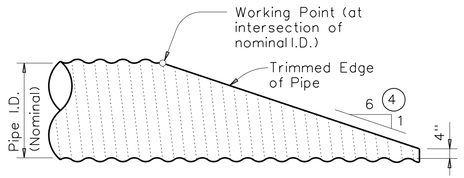
Bridge Division Standard

SAFETY END TREATMENT

FOR 12" DIA TO 60" DIA
PIPE CULVERTS
TYPE II ~ CROSS DRAINAGE

SETP-CD

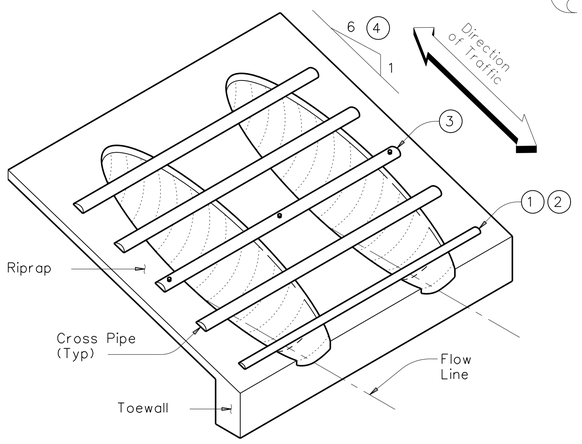
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REVISIONS				
11-10: Add note for synthetic fibers.	DIST	COUNTY		SHEET NO.
				157



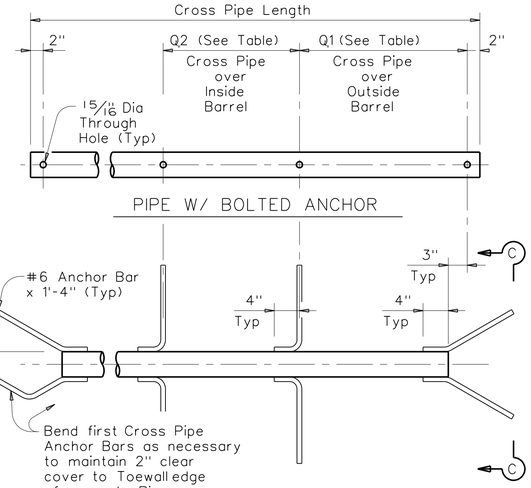
NOTE: All Cross Pipes, calculations, and dimensions are based on the pipe culverts mitered as shown in this detail. Alternate styles of mitered ends will require that appropriate adjustments be made to the values presented on this standard.

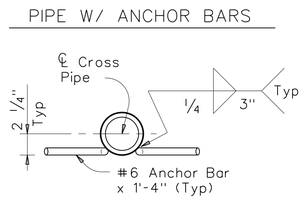
SIDE ELEVATION OF TYPICAL PIPE CULVERT MITER

(Showing Corrugated Metal Pipe Culvert.)
(Details at Concrete Pipe Culvert are similar.)



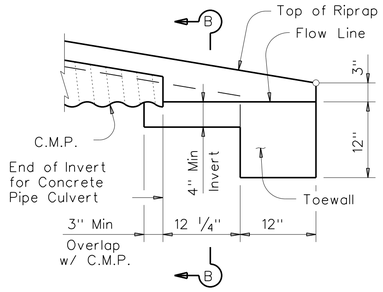
ISOMETRIC VIEW OF TYPICAL INSTALLATION





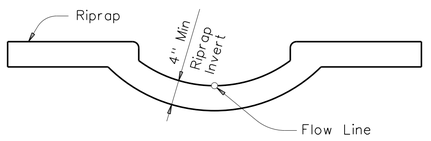
SECTION C-C

CROSS PIPE DETAILS



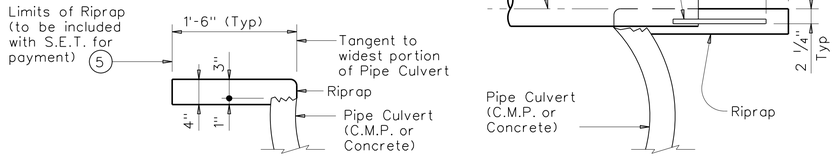
DETAIL "A"

(Showing Invert with Corrugated Metal Pipe Culvert. Concrete Pipe Culvert details are similar. Cross Pipes not shown for clarity.)



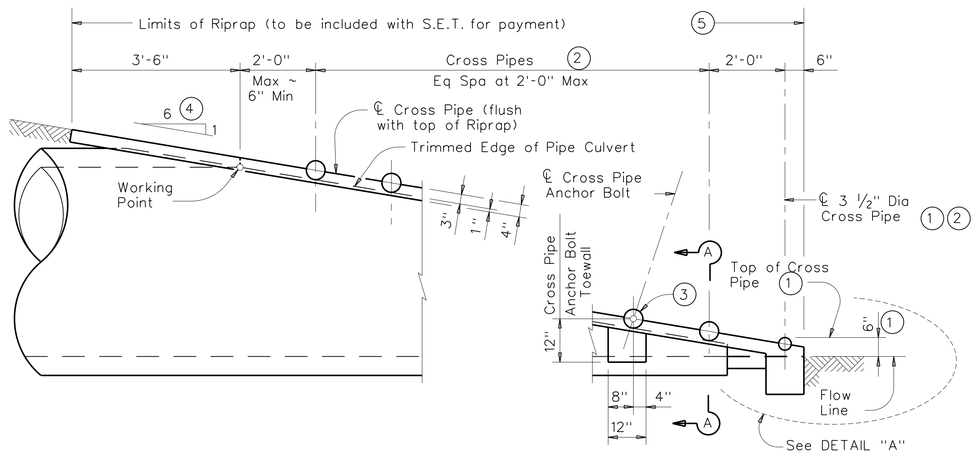
SECTION B-B

(Cross Pipes not shown for clarity.)



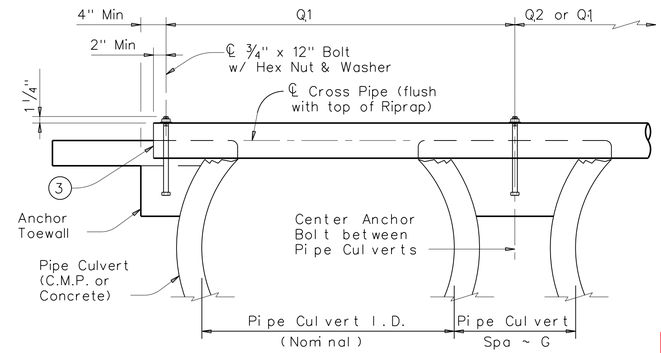
SHOWING TYPICAL PIPE CULVERT & RIPRAP

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

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.

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.

DISCLAIMER:
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DATE:
FILE:

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

Texas Department of Transportation

Bridge Division Standard

SAFETY END TREATMENT

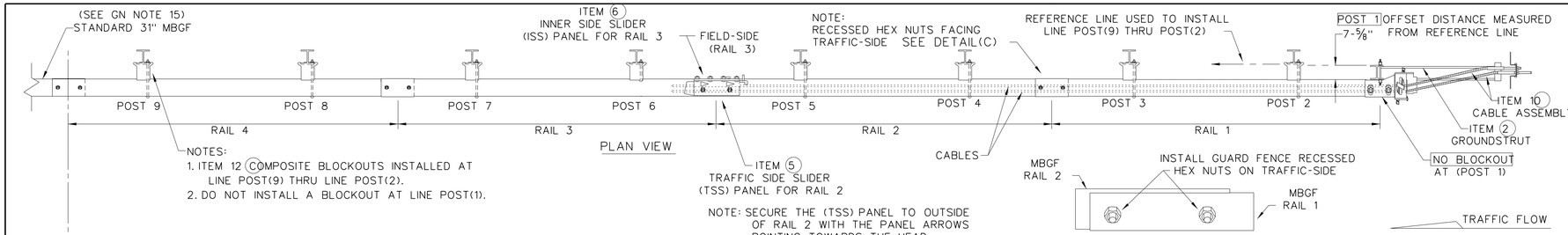
FOR 12" DIA TO 72" DIA
PIPE CULVERTS
TYPE II ~ PARALLEL DRAINAGE

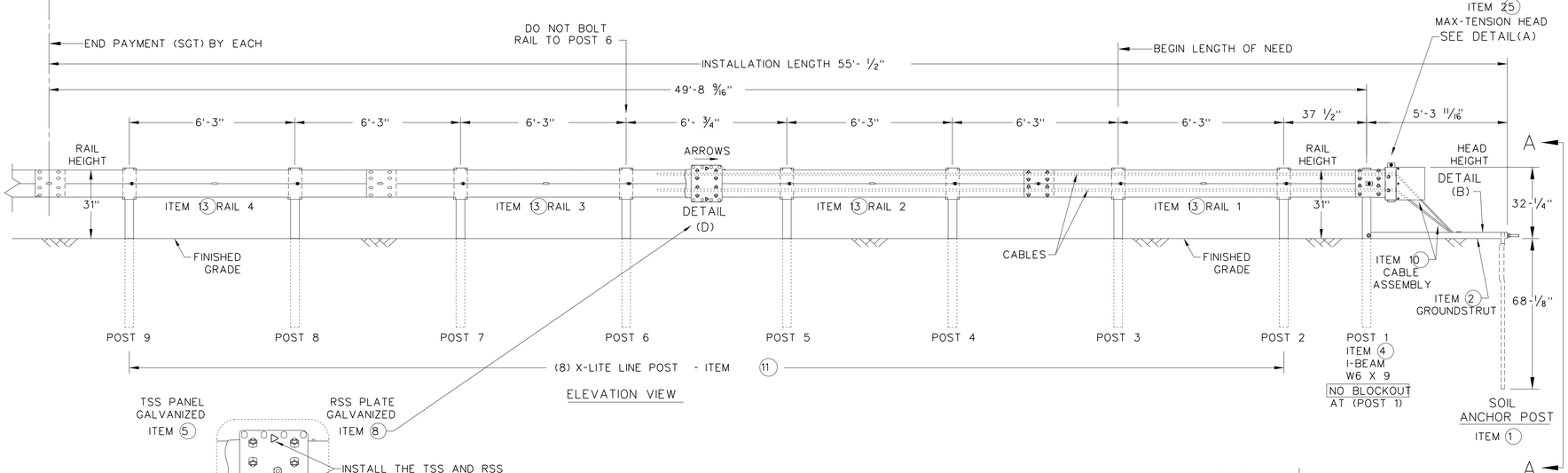
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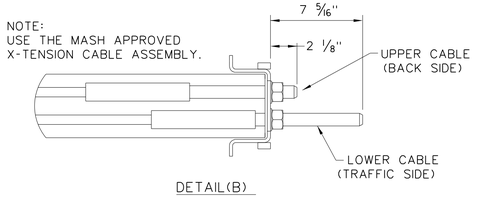
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REVISIONS				
11-10: Add note for synthetic fibers.	DIST	COUNTY		SHEET NO.
				158

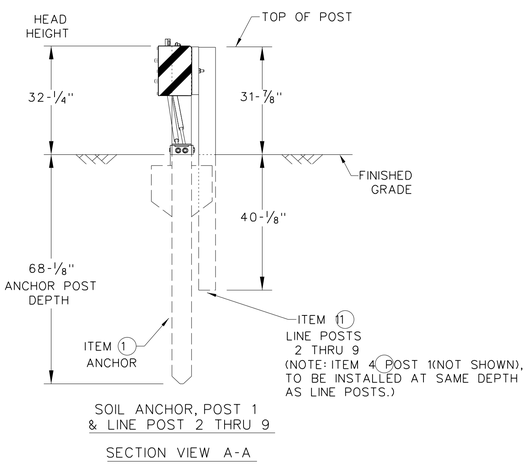
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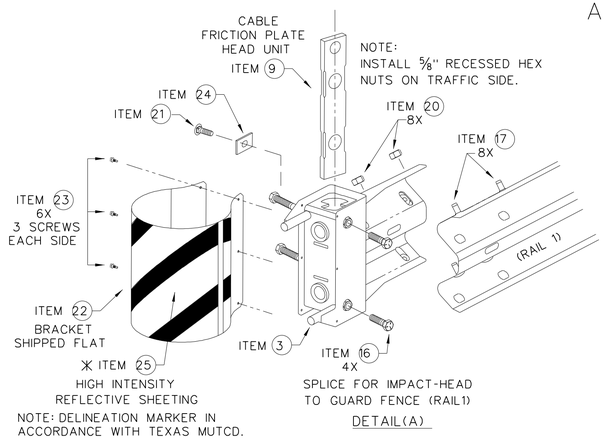
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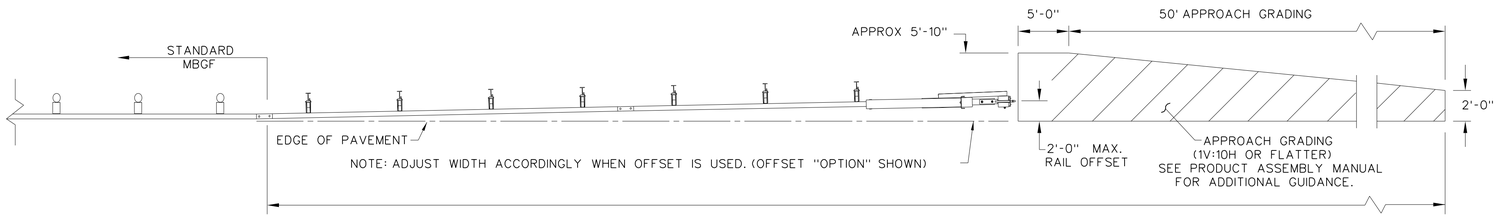












GENERAL NOTES

1. FOR SPECIFIC INFORMATION REGARDING INSTALLATION AND TECHNICAL GUIDANCE OF THE SYSTEM, CONTACT: LINDSAY TRANSPORTATION SOLUTIONS (LTS) - BARRIER SYSTEMS, INC. AT (707) 374-6800
2. FOR INSTALLATION, REPAIR, & MAINTENANCE REFER TO THE: MAX-TENSION INSTALLATION INSTRUCTION MANUAL. P/N MANMAX REV D (ECN 3516).
3. APPLY HIGH INTENSITY REFLECTIVE SHEETING, "OBJECT MARKER" ON THE FRONT FACE OF THE DEVICE PER MANUFACTURE'S RECOMMENDATIONS. OBJECT MARKER SHALL CONFORM TO THE STANDARDS REQUIRED IN TEXAS MUTCD.
4. FOR POST (LEAVE-OUT) INSTALLATION AND GUIDANCE SEE TXDOT'S LATEST ROADWAY MOW STRIP STANDARD.
5. ALL STEEL COMPONENTS ARE GALVANIZED PER ASTM A123 OR EQUIVALENT UNLESS OTHERWISE STATED.
6. SYSTEM SHOWN USING STEEL WIDE FLANGE POST WITH COMPOSITE BLOCKOUTS.
7. COMPOSITE MATERIAL BLOCKOUT THAT MEETS THE REQUIREMENTS OF DMS-7210, MAY BE SUBSTITUTED FOR BLOCKOUTS SIMILAR DIMENSIONS. SEE CONSTRUCTION DIVISION MATERIAL PRODUCER LIST(MPL)FOR CERTIFIED PRODUCERS.
8. REFER TO INSTALLATION MANUAL FOR SPECIFIC PANEL LAPPING GUIDANCE.
9. IF SOLID ROCK IS ENCOUNTERED SEE THE MANUFACTURER'S INSTALLATION MANUAL FOR INSTALLATION GUIDANCE.
10. POSTS SHALL NOT BE SET IN CONCRETE.
11. A DRIVING CAP WITH A TIMBER OR PLASTIC INSERT SHALL BE USED WHEN DRIVING POST TO PREVENT DAMAGE TO THE GALVANIZING ON TOP OF THE POST.
12. MAX-TENSION SYSTEM SHALL NEVER BE INSTALLED WITHIN A CURVED SECTION OF GUARDRAIL.
13. IF A DELINEATION MARKER IS REQUIRED, MARKER SHALL BE IN ACCORDANCE WITH TEXAS MUTCD.
14. THE SYSTEM IS SHOWN WITH 12'-6" MBGF PANELS, 25'-0" MBGF PANELS ARE ALSO ALLOWED.
15. A MINIMUM OF 12'-6" OF 12GA. MBGF IS REQUIRED IMMEDIATELY DOWNSTREAM OF THE MAX-TENSION SYSTEM.

ITEM #	PART NUMBER	DESCRIPTION	QTY
1	BSI-1610060-00	SOIL ANCHOR - GALVANIZED	1
2	BSI-1610061-00	GROUND STRUT - GALVANIZED	1
3	BSI-1610062-00	MAX-TENSION IMPACT HEAD	1
4	BSI-1610063-00	W6x9 I-BEAM POST 6FT.-GALVANIZED	1
5	BSI-1610064-00	TSS PANEL - TRAFFIC SIDE SLIDER	1
6	BSI-1610065-00	ISS PANEL - INNER SIDE SLIDER	1
7	BSI-1610066-00	TOOTH - GEOMET	1
8	BSI-1610067-00	RSS PLATE - REAR SIDE SLIDER	1
9	B061058	CABLE FRICTION PLATE - HEAD UNIT	1
10	BSI-1610069-00	CABLE ASSEMBLY - MASH X-TENSION	2
11	BSI-1012078-00	X-LITE LINE POST-GALVANIZED	8
12	B090534	8" W-BEAM COMPOSITE-BLOCKOUT XT110	8
13	BSI-4004386	12'-6" W-BEAM GUARD FENCE PANELS 12GA.	4
14	BSI-1102027-00	X-LITE SQUARE WASHER	1
15	BSI-2001886	5/8" X 7" THREAD BOLT HH (GR.5)GEOMET	1
16	BSI-2001885	3/4" X 3" ALL-THREAD BOLT HH (GR.5)GEOMET	4
17	4001115	5/8" X 1 1/4" GUARD FENCE BOLTS (GR.2)MGAL	48
18	2001840	5/8" X 10" GUARD FENCE BOLTS MGAL	8
19	2001636	5/8" WASHER F436 STRUCTURAL MGAL	2
20	4001116	5/8" RECESSED GUARD FENCE NUT (GR.2)MGAL	59
21	BSI-2001888	5/8" X 2" ALL THREAD BOLT (GR.5)GEOMET	1
22	BSI-1701063-00	DELINEATION MOUNTING (BRACKET)	1
23	BSI-2001887	1/4" X 3/4" SCREW SD HH 410SS	7
24	4002051	GUARDRAIL WASHER RECT AASHTO FWR03	1
25	SEE NOTE BELOW	HIGH INTENSITY REFLECTIVE SHEETING	1
26	4002337	8" W-BEAM TIMBER-BLOCKOUT, PDB01B	8
27	BSI-4004431	25' W-BEAM GUARDRAIL PANEL,8-SPACE,12GA.	2
28	MANMAX Rev-(D)	MAX-TENSION INSTALLATION INSTRUCTIONS	1

* TO BE PROVIDED BY DISTRIBUTOR OR CONTRACTOR.

** ALTERNATIVE ITEMS NOT SHOWN.
ITEM(26) 8" WOOD-BLOCKOUTS
ITEM(27) 25'GUARD FENCE PANELS

NOTE:
THIS STANDARD IS A BASIC REPRESENTATION OF THE MAX-TENSION END TERMINAL, IT IS NOT INTENDED TO REPLACE THE PRODUCT DESCRIPTION ASSEMBLY MANUAL.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E.
Date: 11/26/2018

Texas Department of Transportation

Design Division Standard

MAX-TENSION END TERMINAL
MASH - TL-3
SGT(11S)31-18

FILE: sgt11s3118.dgn	DN: TxDOT	CK: KM	DW: TxDOT	CK: CL
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	DIST	COUNTY		SHEET NO.
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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. As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign, STAY ALERT TALK OR TEXT LATER (see Sign Detail G20-10T) and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. However, the TRAFFIC FINES DOUBLE sign will not be required on projects consisting solely of mobile operation work, such as striping or milling edgeline rumble strips. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.

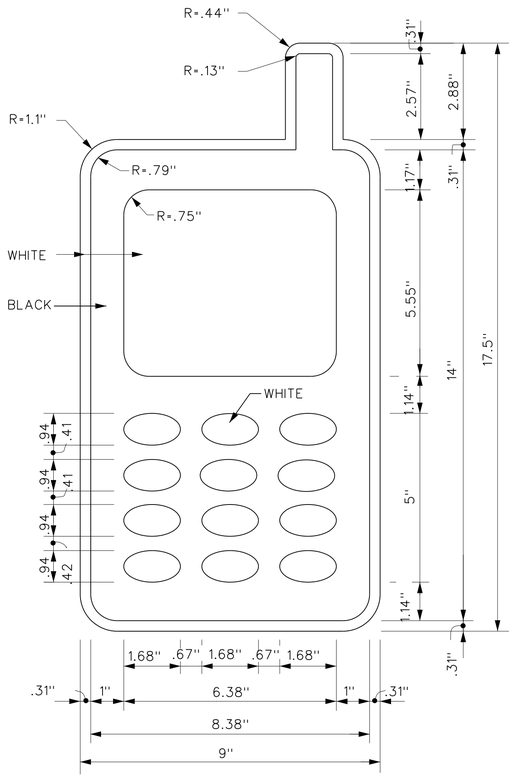
11. Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.

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 APPAREL 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.



SIGN DETAIL (G20-10T)



3.0" Radius, 1.25" Border, 0.75" Indent, Black on Yellow; [STAY ALERT] Font: D
3.0" Radius, 1.25" Border, 0.75" Indent, Black on Orange; [TALK OR TEXT LATER] Font: C specified length;

Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found on-line at the web address given below or by contacting:

Texas Department of Transportation
Traffic Operations Division - TE
Phone (512) 416-3118

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

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], P.E., CFM
Date: 11/26/2018

Texas Department of Transportation
Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

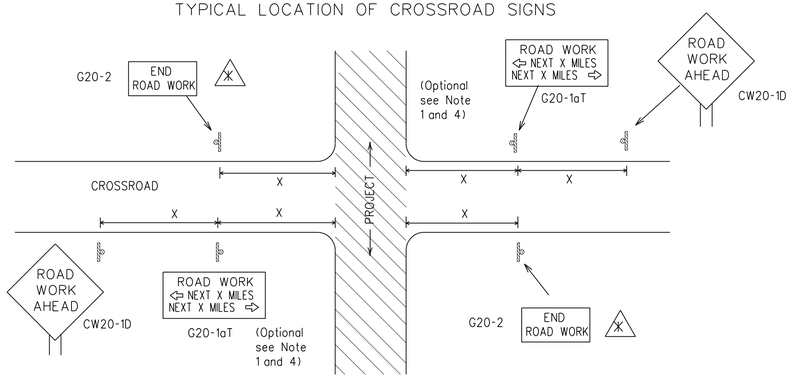
BC(1)-14

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REVISIONS 4-03 5-10 8-14 9-07 7-13	DIST	COUNTY		SHEET NO. 160

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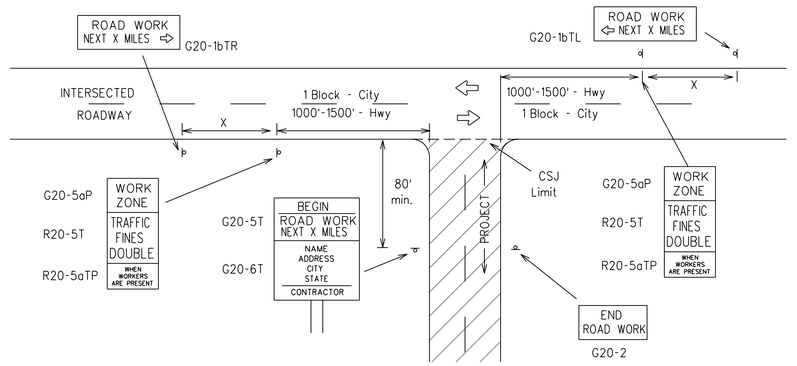
TYPICAL LOCATION OF CROSSROAD SIGNS



⁂ May be mounted on back of "ROAD WORK AHEAD"(CW20-1D) sign with approval of Engineer. (See note 2 below)

1. The typical minimum signing on a crossroad approach should be a "ROAD WORK AHEAD" (CW20-1D)sign and a (G20-2) "END ROAD WORK" sign, unless noted otherwise in plans.
2. The Engineer may use the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 36" x 18" "END ROAD WORK"(G20-2) sign on low volume crossroads (see Note 4 under "Typical Construction Warning Sign Size and Spacing"). See the "Standard Highway Sign Designs for Texas" manual for sign details. The Engineer may omit the advance warning signs on low volume crossroads. The Engineer will determine whether a road is low volume. This information shall be shown in the plans.
3. Based on existing field conditions, the Engineer/Inspector may require additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs. When additional signs are required, these signs will be considered part of the minimum requirements. The Engineer/Inspector will determine the proper location and spacing of any sign not shown on the BC sheets, Traffic Control Plan sheets or the Work Zone Standard Sheets.
4. The "ROAD WORK NEXT X MILES"(G20-1aT)sign shall be required at high volume crossroads to advise motorists of the length of construction in either direction from the intersection. The Engineer will determine whether a roadway is considered high volume.
5. Additional traffic control devices may be shown elsewhere in the plans for higher volume crossroads.
6. When work occurs in the intersection area, appropriate traffic control devices, as shown elsewhere in the plans or as determined by the Engineer/Inspector, shall be in place.

T-INTERSECTION



CSJ LIMITS AT T-INTERSECTION

1. The Engineer will determine the types and location of any additional traffic control devices, such as a flagger and accompanying signs, or other signs, that should be used when work is being performed at or near an intersection.
2. If construction closes the road at a T-intersection the Contractor shall place the "CONTRACTOR NAME"(G20-6T) sign behind the Type 3 Barricades for the road closure (see BC(10) also). The "ROAD WORK NEXT X MILES" left arrow(G20-1bTL) and "ROAD WORK NEXT X MILES" right arrow (G20-1bTR)" signs shall be replaced by the detour signing called for in the plans.

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

SIZE

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

SPACING

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

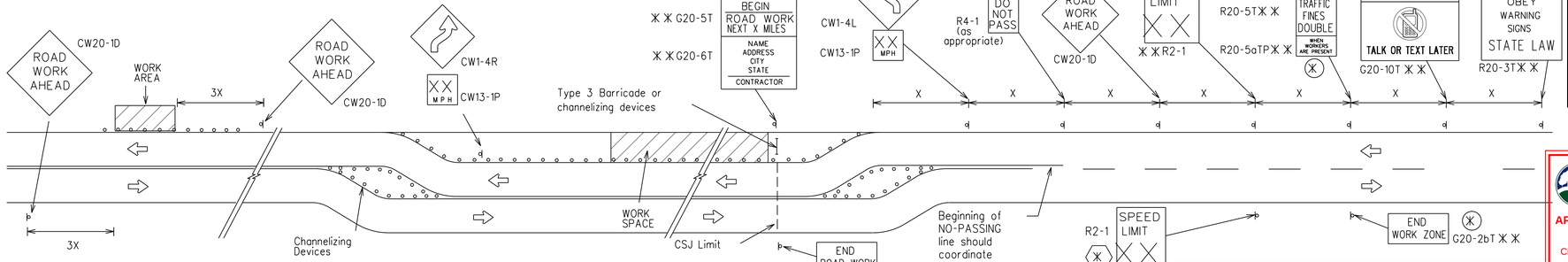
⁂ For typical sign spacings on divided highways, expressways and freeways, see Part 6 of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) typical application diagrams or TCP Standard Sheets.

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

GENERAL NOTES

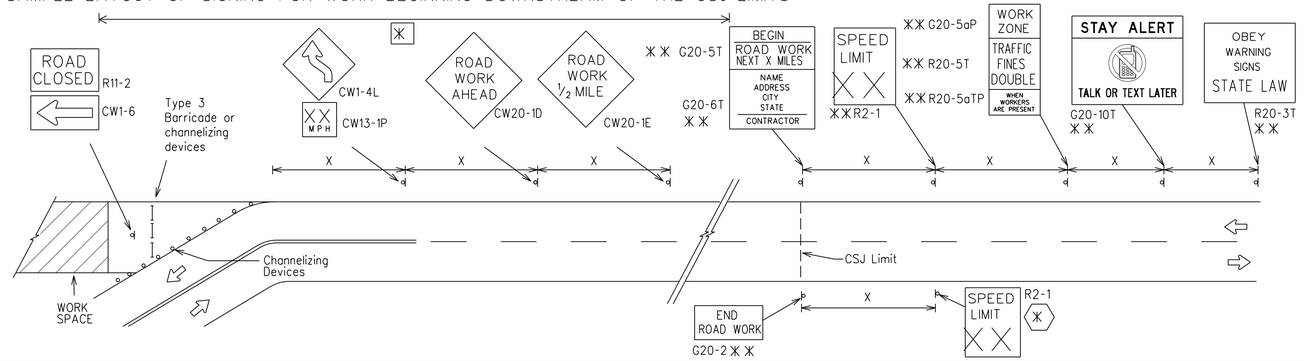
1. Special or larger size signs may be used as necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. 36" x 36" "ROAD WORK AHEAD" (CW20-1D)signs may be used on low volume crossroads at the discretion of the Engineer. 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 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.

(X) 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.

XX Required CSJ Limit signing. See Note 10 on BC(1). TRAFFIC FINES DOUBLE signs will not be required on projects consisting solely of mobile operations work.

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

<X> Contractor will install a regulatory speed limit sign at the end of the work zone.

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Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], PE, CFM
Date: 11/26/2018

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

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PROJECT LIMIT

BC(2)-14

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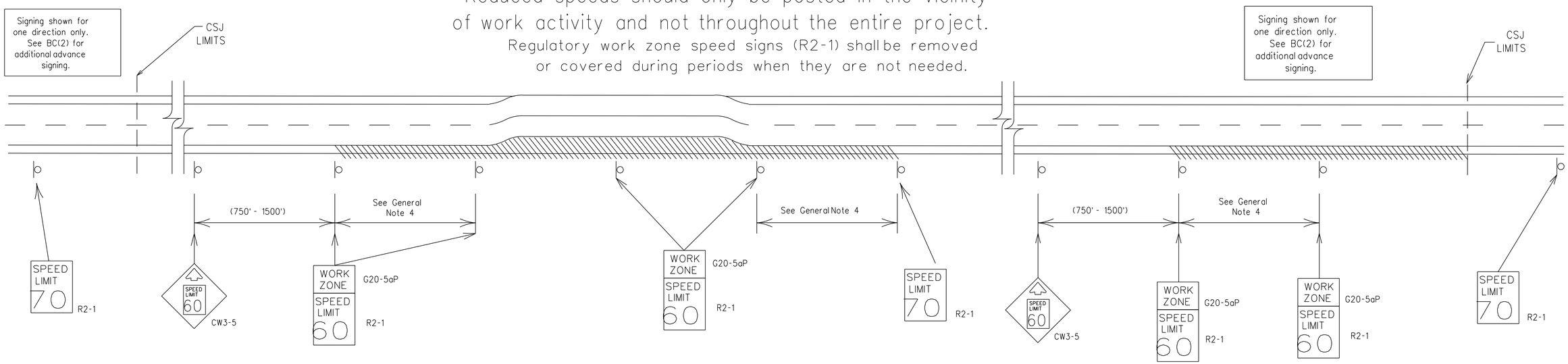
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TYPICAL APPLICATION OF WORK ZONE SPEED LIMIT SIGNS

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 travelled 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.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], PE, CFM
Date: 11/26/2018

Texas Department of Transportation
Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION WORK ZONE SPEED LIMIT

BC(3)-14

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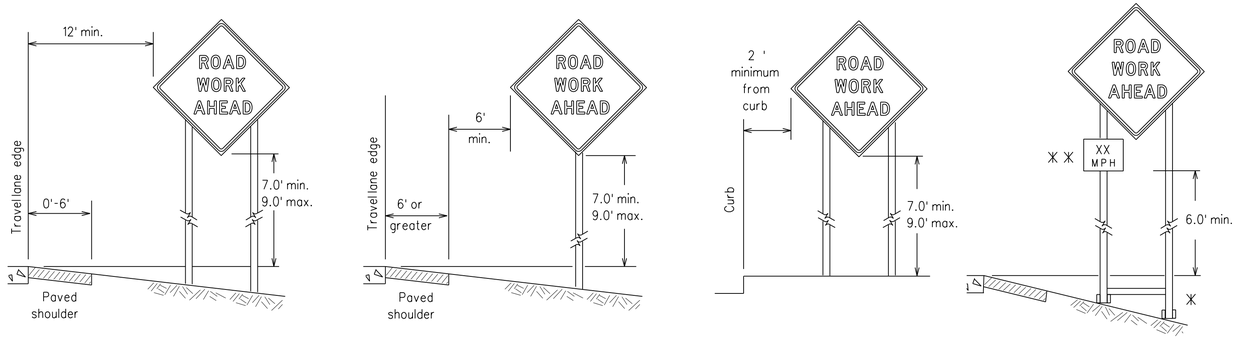
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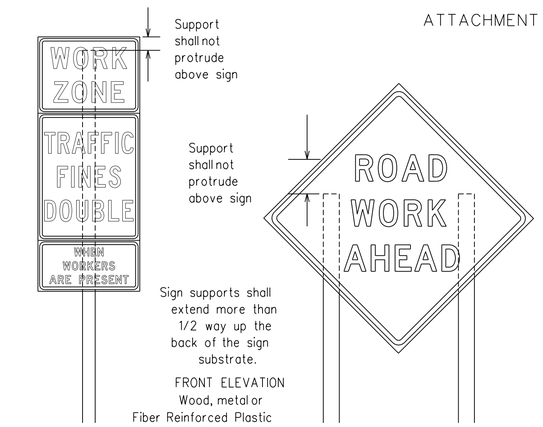
TYPICAL MINIMUM CLEARANCES FOR LONG TERM AND INTERMEDIATE TERM SIGNS



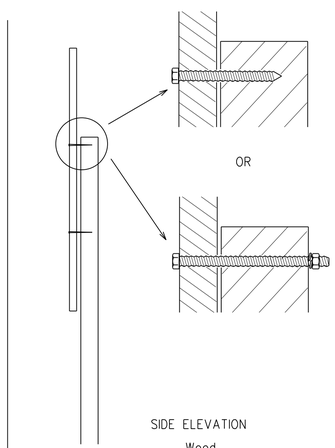
✳ When placing skid supports on unlevel ground, the leg post lengths must be adjusted so the sign appears straight and plumb. Objects shall NOT be placed under skids as a means of leveling.

✳✳ 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



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.

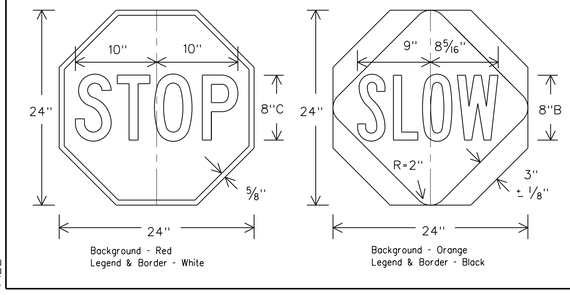


Attachment to wooden supports will be by bolts and nuts or screws. Use TxDOT's or manufacturer's recommended procedures for attaching sign substrates to other types of sign supports

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.

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" as detailed below.
2. When used at night, the STOP/SLOW paddle shall be retroreflectorized.
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.



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, 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.
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 sheets or the CWZTCD. The signs shall meet the required mounting heights shown on the BC Sheets or the SMD Standards 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). 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 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.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E.
Date: 11/26/2018

Texas Department of Transportation

Traffic Operations Division Standard

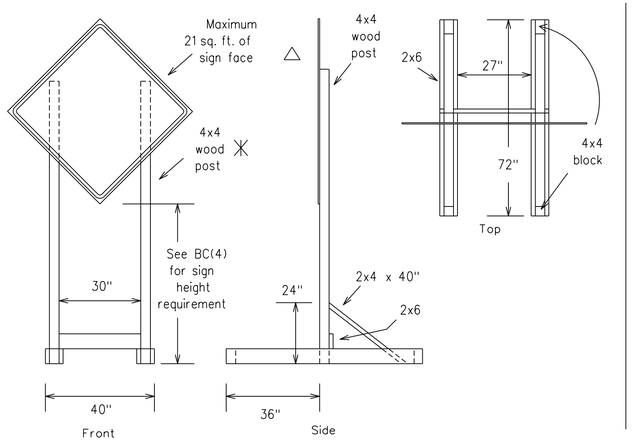
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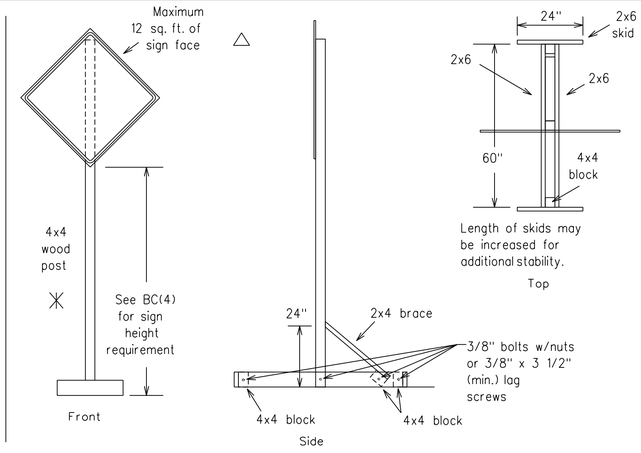
BC(4)-14

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© TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
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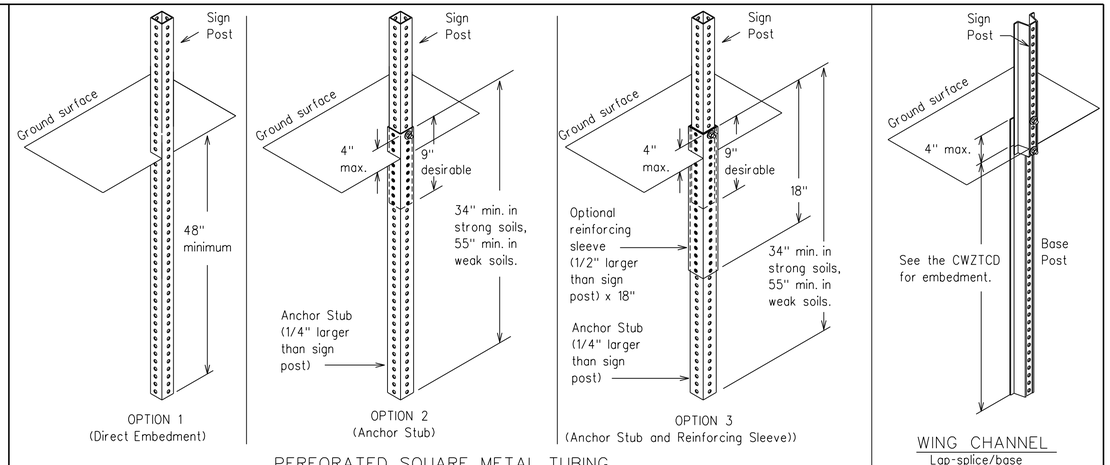
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SKID MOUNTED WOOD SIGN SUPPORTS

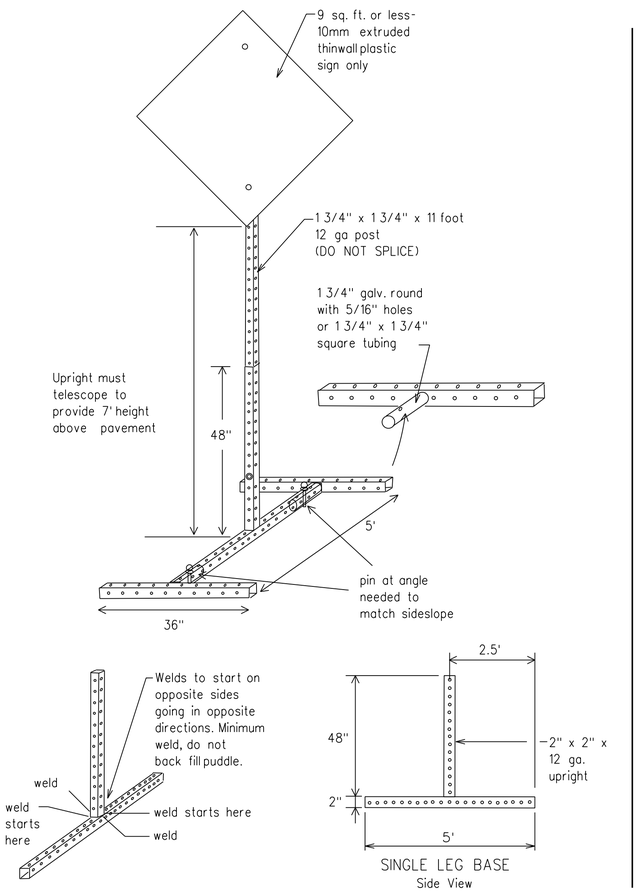
LONG/INTERMEDIATE TERM STATIONARY - PORTABLE SKID MOUNTED SIGN SUPPORTS □

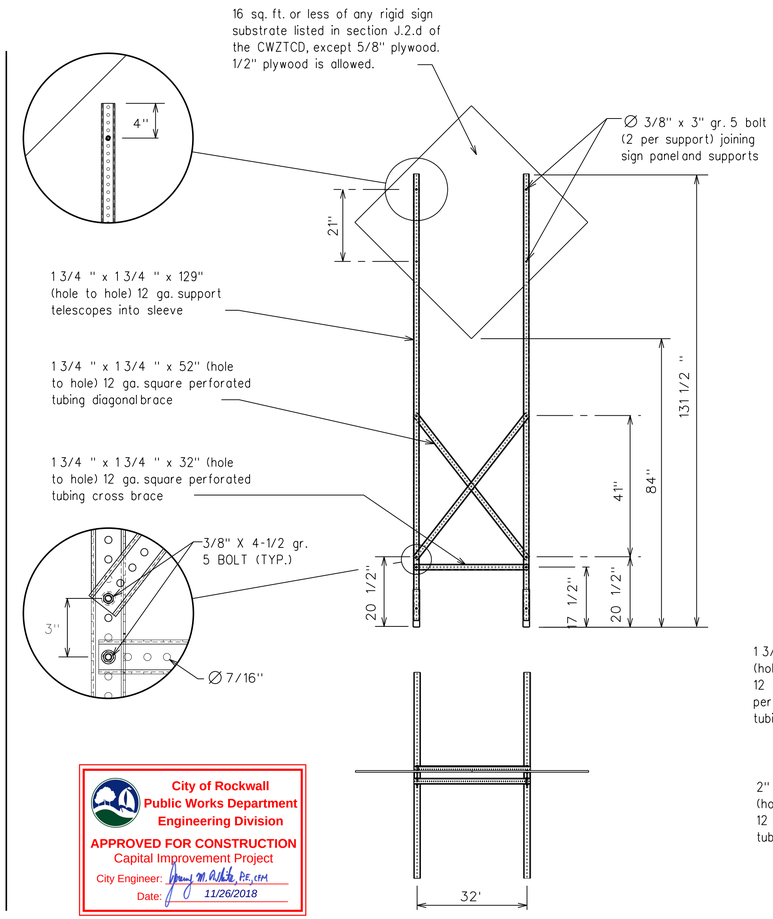


PERFORATED SQUARE METAL TUBING

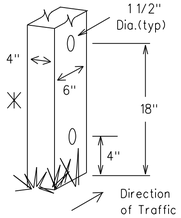
GROUND MOUNTED SIGN SUPPORTS

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.



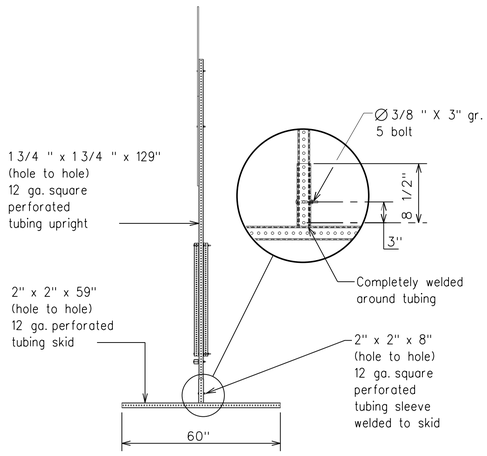


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City Engineer: [signature], P.E., CFM
Date: 11/26/2018



Nominal Post Size	Number of Posts	Maximum Sq. feet of Sign Face	Minimum Soil Embedment	Drilled Hole(s) Required
4 x 4	1	12	36"	NO
4 x 4	2	21	36"	NO
4 x 6	1	21	36"	YES
4 x 6	2	36	36"	YES

WOOD POST SYSTEM FOR GROUND MOUNTED SIGN SUPPORTS



WEDGE ANCHORS

Both steel and plastic Wedge Anchor Systems as shown on the SMD Standard Sheets may be used as temporary sign supports for signs up to 10 square feet of sign face. They may be set in concrete or in sturdy soils if approved by the Engineer. (See web address for "Traffic Engineering Standard Sheets" on BC(1)).

OTHER DESIGNS

MORE DETAILS OF APPROVED LONG/INTERMEDIATE AND SHORT TERM SUPPORTS CAN BE FOUND ON THE CWZTCD LIST. SEE BC(1) FOR WEBSITE LOCATION.

GENERAL NOTES

1. Nails may be used in the assembly of wooden sign supports, but 3/8" bolts with nuts or 3/8" x 3 1/2" lag screws must be used on every joint for final connection.
2. No more than 2 sign posts shall be placed within a 7 ft. circle, except for specific materials noted on the CWZTCD List.
3. When project is completed, all sign supports and foundations shall be removed from the project site. This will be considered subsidiary to Item 502.

□ See BC(4) for definition of "Work Duration."

✳ Wood sign posts MUST be one piece. Splicing will NOT be allowed. Posts shall be painted white.

△ See the CWZTCD for the type of sign substrate that can be used for each approved sign support.

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION TYPICAL SIGN SUPPORT

BC(5)-14

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SKID MOUNTED PERFORATED SQUARE STEEL TUBING SIGN SUPPORTS

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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

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

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

RECOMMENDED PHASES AND FORMATS FOR PCMS MESSAGES DURING ROADWORK ACTIVITIES

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

Phase 1: Condition Lists

Road/Lane/Ramp Closure List

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

Other Condition List

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

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

Phase 2: Possible Component Lists

Action to Take/Effect on Travel List

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

Location List

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

Warning List

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

** Advance Notice List

TUE-FRI XX AM- X PM
APR XX-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.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

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

FULL MATRIX PCMS SIGNS

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

Texas Department of Transportation | Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PORTABLE CHANGEABLE MESSAGE SIGN (PCMS)

BC(6)-14

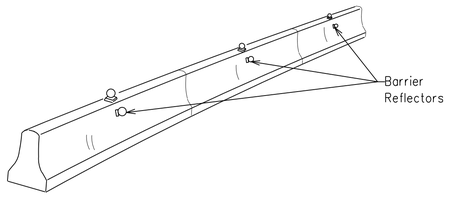
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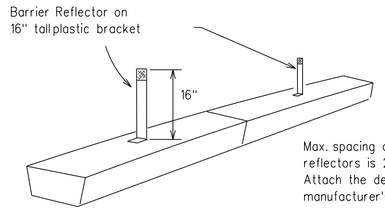
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1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors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

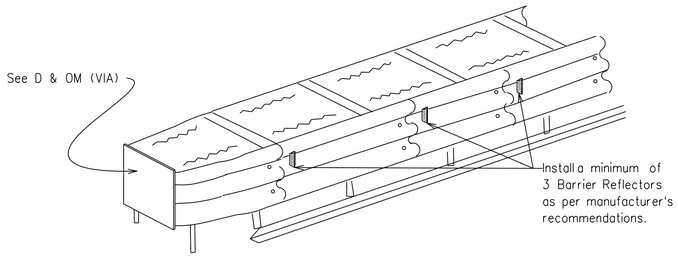


CONCRETE TRAFFIC BARRIER (CTB)

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)

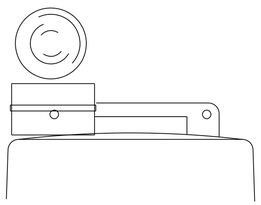


DELINEATION OF END TREATMENTS

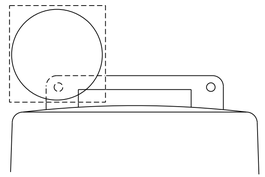
END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet crashworthy standards as defined in the National Cooperative Highway Research Report 350. 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 or C $_{FL}$Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
4. Type-C and Type D 360 degree Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
5. The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
6. When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.
7. When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.
8. The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

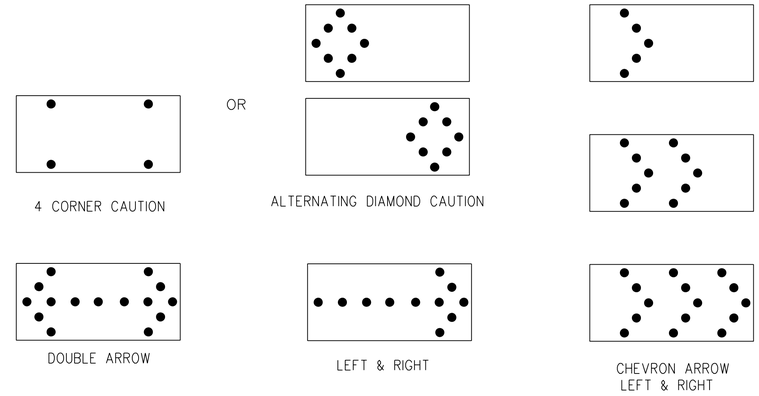
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing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

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

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

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

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



4 CORNER CAUTION

ALTERNATING DIAMOND CAUTION

DOUBLE ARROW

LEFT & RIGHT

CHEVRON ARROW
LEFT & RIGHT

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

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: Jenny M. White, PE, CFM
Date: 11/26/2018

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the National Cooperative Highway Research Report No. 350 (NCHRP 350) or 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 Operations Division Standard

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

BC(7)-14

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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:

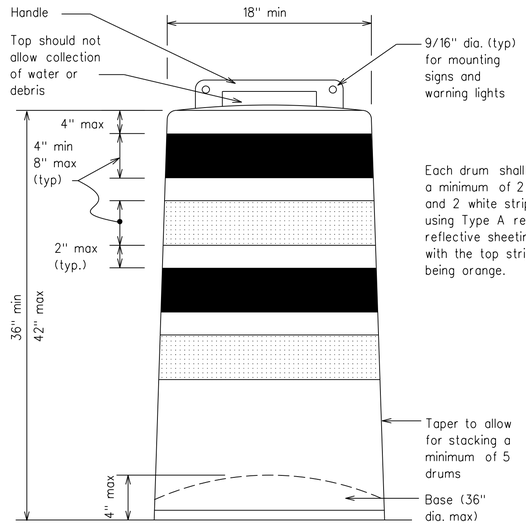
1. Plastic drums shall be a two-piece design: the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents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

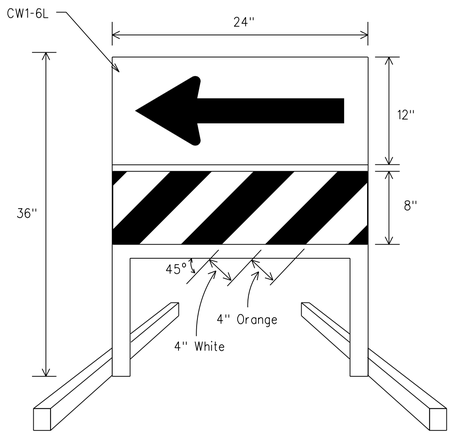
RETROREFLECTIVE SHEETING

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 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

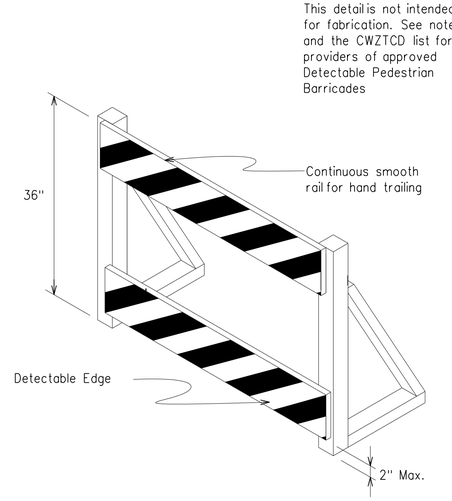
1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other 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.





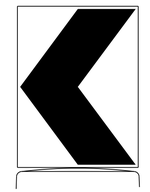
DIRECTION INDICATOR BARRICADE

1. The Direction Indicator Barricade may be used in tapers, transitions, and other areas where specific directional guidance to drivers is necessary.
2. If used, the Direction Indicator Barricade should be used in series to direct the driver through the transition and into the intended travel lane.
3. The Direction Indicator Barricade shall consist of One-Direction Large Arrow (CW1-6) sign in the size shown with a black arrow on a background of Type B or Type C Orange retroreflective sheeting above a rail with Type A retroreflective sheeting in alternating 4" white and orange stripes sloping downward at an angle of 45 degrees in the direction road users are to pass. Sheeting types shall be as per DMS 8300.
4. Double arrows on the Direction Indicator Barricade will not be allowed.
5. Approved manufacturers are shown on the CWZTCD List. Ballast shall be as approved by the manufacturers instructions.

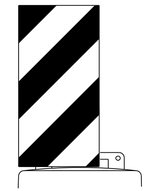


DETECTABLE PEDESTRIAN BARRICADES

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.
2. Where pedestrians with visual disabilities normally use the closed sidewalk, a device that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk.
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 for Buildings and Facilities (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 may 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 or Type C 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 Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
4. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R9 series signs discussed in note 8 below.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
7. Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
8. R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

Texas Department of Transportation

Traffic Operations Division Standard

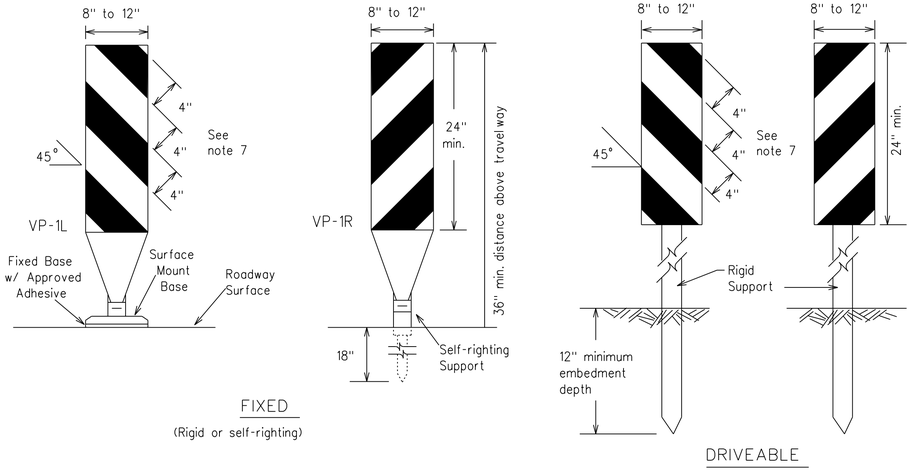
BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-14

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City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature]
Date: 11/26/2018

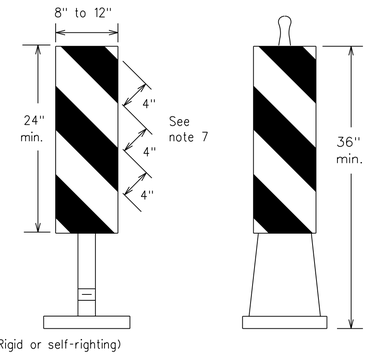
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FIXED

(Rigid or self-righting)

DRIVEABLE

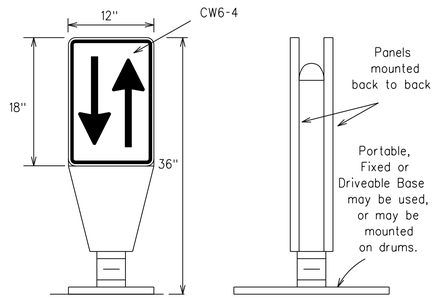


(Rigid or self-righting)

PORTABLE

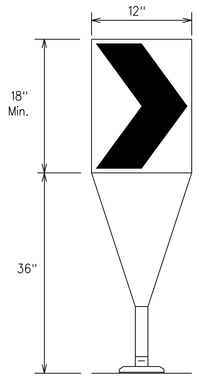
1. Vertical Panels (VP's) are normally used to channelize traffic or divide opposing lanes of traffic.
2. VP's may be used in daytime or nighttime situations. They may be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation is required. The Engineer/Inspector shall refer to the Roadway Design Manual Appendix B "Treatment of Pavement Drop-offs in Work Zones" for additional guidelines on the use of 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 conforming to Departmental Material Specification DMS-8300, unless noted otherwise.
7. Where the height of reflective material on the vertical panel is 36 inches or greater, a panel stripe of 6 inches shall be used.

VERTICAL PANELS (VPs)



1. Opposing Traffic Lane Dividers (OTLD) are delineation devices designed to convert a normal one-way roadway section to two-way operation. OTLD's are used on temporary centerlines. The upward and downward arrows on the sign's face indicate the direction of traffic on either side of the divider. The base is secured to the pavement with an adhesive or rubber weight to minimize movement caused by a vehicle impact or wind gust.
2. The OTLD may be used in combination with 42" cones or VPs.
3. Spacing between the OTLD shall not exceed 500 feet. 42" cones or VPs placed between the OTLD's should not exceed 100 foot spacing.
4. The OTLD shall be orange with a black non-reflective legend. Sheeting for the OTLD shall be retroreflective Type B or Type C conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.

OPPOSING TRAFFIC LANE DIVIDERS (OTLD)



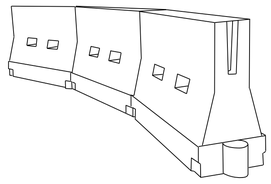
Fixed Base w/ Approved Adhesive (Driveable Base, or Flexible Support can be used)

1. The chevron shall be a vertical rectangle with a minimum size of 12 by 18 inches.
2. Chevrons are intended to give notice of a sharp change of alignment with the direction of travel and provide additional emphasis and guidance for vehicle operators with regard to changes in horizontal alignment of the roadway.
3. Chevrons, when used, shall be erected on the outside of a sharp curve or turn, or on the far side of an intersection. They shall be in line with and at right angles to approaching traffic. Spacing should be such that the motorist always has three in view, until the change in alignment eliminates its need.
4. To be effective, the chevron should be visible for at least 500 feet.
5. Chevrons shall be orange with a black nonreflective legend. Sheeting for the chevron shall be retroreflective Type B or Type C conforming to Departmental Material Specification DMS-8300, unless noted otherwise. The legend shall meet the requirements of DMS-8300.
6. For Long Term Stationary use on tapers or transitions on freeways and divided highways self-righting chevrons may be used to supplement plastic drums but not to replace plastic drums.

CHEVRONS

GENERAL NOTES

1. Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. The Engineer/Inspector shall ensure that spacing and placement is uniform and in accordance with the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).
2. Channelizing devices shown on this sheet may have a driveable, fixed or portable base. The requirement for self-righting channelizing devices must be specified in the General Notes or other plan sheets.
3. Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles or vehicle related wind gusts making alignment of the channelizing devices difficult to maintain. Locations of these devices shall be detailed elsewhere in the plans. These devices shall conform to the TMUTCD and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
4. The Contractor shall maintain devices in a clean condition and replace damaged, nonreflective, faded, or broken devices and bases as required by the Engineer/Inspector. The Contractor shall be required to maintain proper device spacing and alignment.
5. Portable bases shall be fabricated from virgin and/or recycled rubber. The portable bases shall weigh a minimum of 30 lbs.
6. Pavement surfaces shall be prepared in a manner that ensures proper bonding between the adhesives, the fixed mount bases and the pavement surface. Adhesives shall be prepared and applied according to the manufacturer's recommendations.
7. The installation and removal of channelizing devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface integrity. Driveable bases shall not be permitted on final pavement surfaces. The Engineer/Inspector shall approve all application and removal procedures of fixed bases.



LONGITUDINAL CHANNELIZING DEVICES (LCD)

1. LCDs are crashworthy, lightweight, deformable devices that are highly visible, have good target value and can be connected together. They are not designed to contain or redirect a vehicle on impact.
2. LCDs may be used instead of a line of cones or drums.
3. LCDs shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. LCDs should not be used to provide positive protection for obstacles, pedestrians or workers.
5. LCDs shall be supplemented with retroreflective delineation as required for temporary barriers on BC(7) when placed roughly parallel to the travel lanes.
6. LCDs used as barricades placed perpendicular to traffic should have at least one row of reflective sheeting meeting the requirements for barricade rails as shown on BC(10) placed 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 NCHRP 350 crashworthiness requirements based on roadway speed and barrier application.
2. Water ballasted systems used to channelize vehicular traffic shall be supplemented with retroreflective delineation or channelizing devices to improve daytime/nighttime visibility. They may also be supplemented with pavement markings.
3. Water ballasted systems used as barriers shall be placed in accordance to application and installation requirements specific to the device, and used only when shown on the CWZTCD list.
4. Water ballasted systems used as barriers should not be used for a merging taper except in low speed (less than 45 MPH) urban areas. When used on a taper in a low speed urban area, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.
5. When water ballasted systems used as barriers have blunt ends exposed to traffic, they should be attenuated as per manufacturer recommendations or flared to a point outside the clear zone.

If used to channelize pedestrians, longitudinal channelizing devices or water ballasted systems must have a continuous detectable bottom for users of long canes and the top of the unit shall not be less than 32 inches in height.

HOLLOW OR WATER BALLASTED SYSTEMS USED AS LONGITUDINAL CHANNELIZING DEVICES OR BARRIERS

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

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

SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES AND MINIMUM DESIRABLE TAPER LENGTHS

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], P.E., CFM
Date: 11/26/2018

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(9)-14

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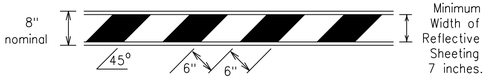
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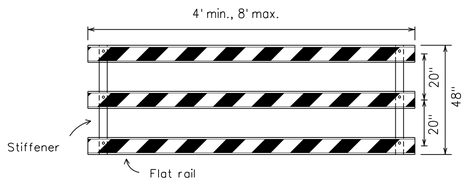
TYPE 3 BARRICADES

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

Barricades shall NOT be used as a sign support.



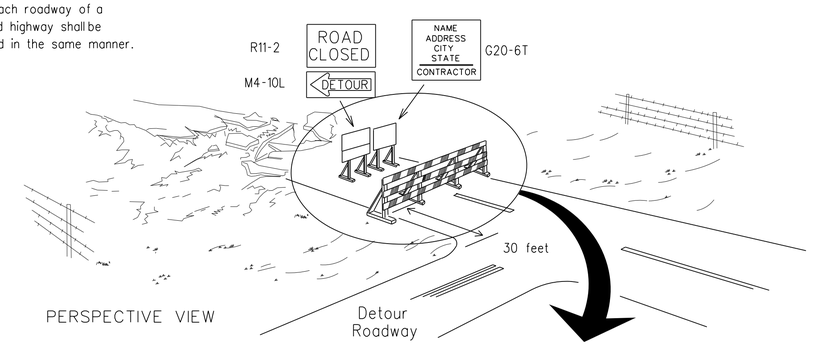
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



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

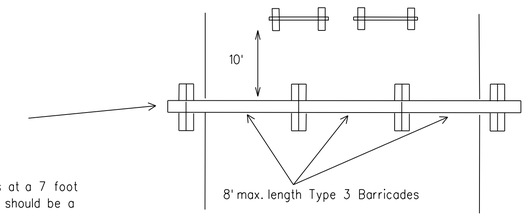
Each roadway of a divided highway shall be barricaded in the same manner.



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.

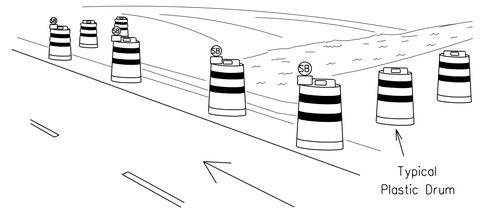
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

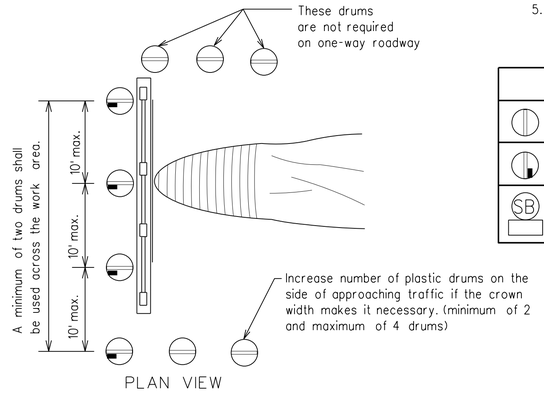
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

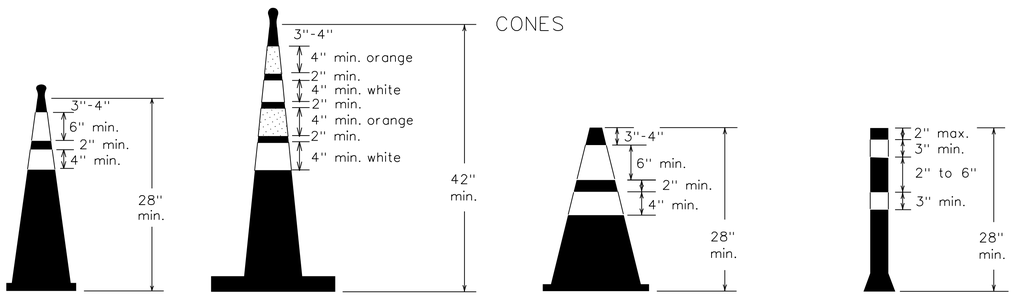
1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder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

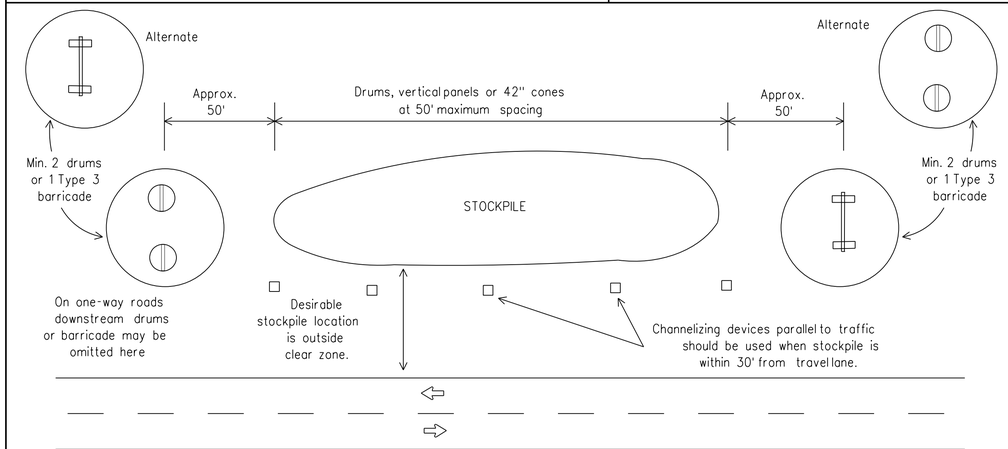
CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS



28" Cones shall have a minimum weight of 9 1/2 lbs.

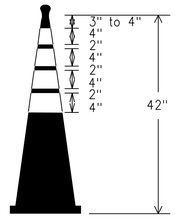
42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

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 used at night 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.
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

THIS DEVICE SHALL NOT BE USED ON PROJECTS LET AFTER MARCH 2014.



1. This device is intended only for use in place of a vertical panel to channelize traffic by indicating the edge of the travel lane. It is not intended to be used in transitions or tapers.
2. This device shall not be used to separate lanes of traffic (opposing or otherwise) or warn of objects.
3. This device is based on a 42 inch, two-piece cone with an alternate striping pattern: four 4 inch retroreflective bands, with an approximate 2 inch gap between bands. The color of the band should correspond to the color of the edgeline (yellow for left edgeline, white for right edgeline) for which the device is substituted or for which it supplements. The reflectorized bands shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
4. The base must weigh a minimum of 30 lbs.

SHEET 10 OF 12

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-14

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City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], P.E., CFM
Date: 11/26/2018

DATE:
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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.

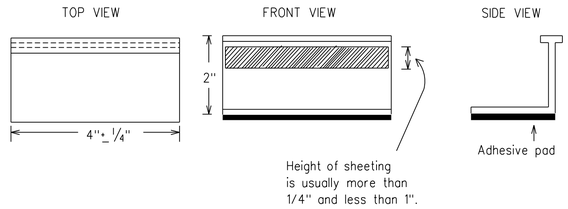
MAINTAINING WORK ZONE PAVEMENT MARKINGS

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).

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

Texas Department of Transportation

Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKINGS

BC(11)-14

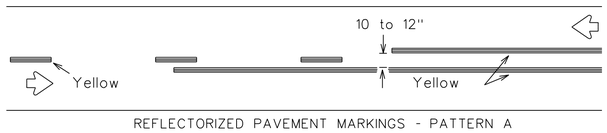
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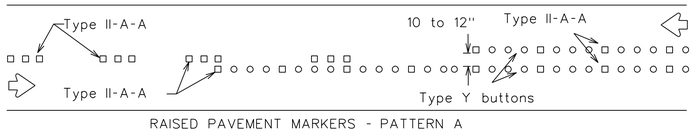
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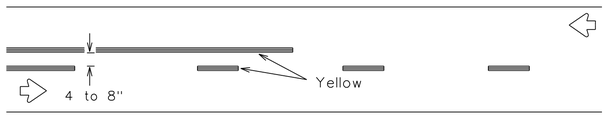
PAVEMENT MARKING PATTERNS



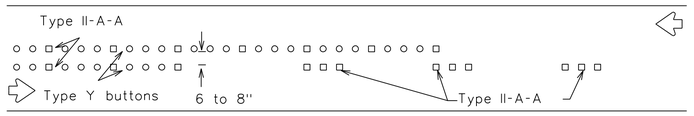
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED PAVEMENT MARKERS - PATTERN A



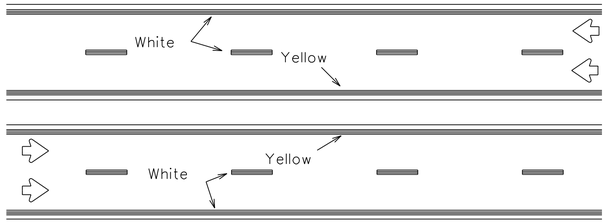
REFLECTORIZED PAVEMENT MARKINGS - PATTERN B



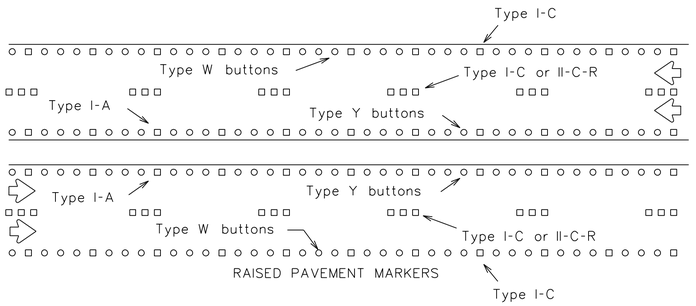
RAISED PAVEMENT MARKERS - PATTERN B

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



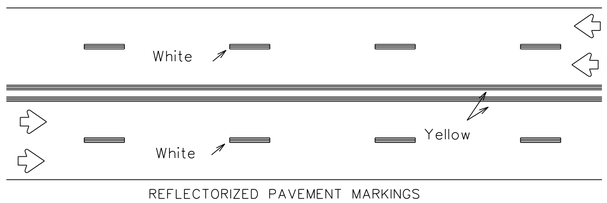
REFLECTORIZED PAVEMENT MARKINGS



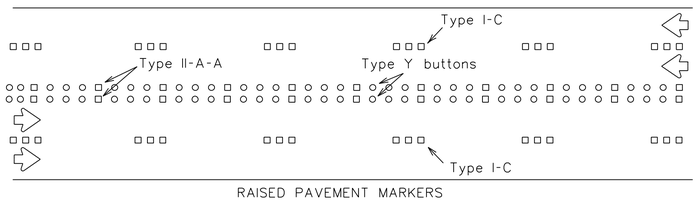
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

EDGE & LANE LINES FOR DIVIDED HIGHWAY



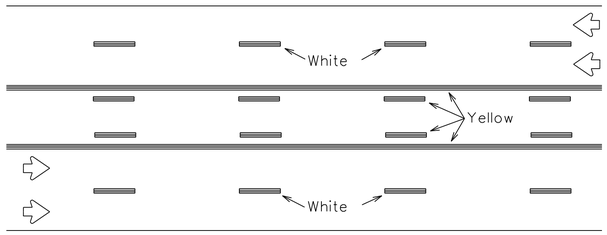
REFLECTORIZED PAVEMENT MARKINGS



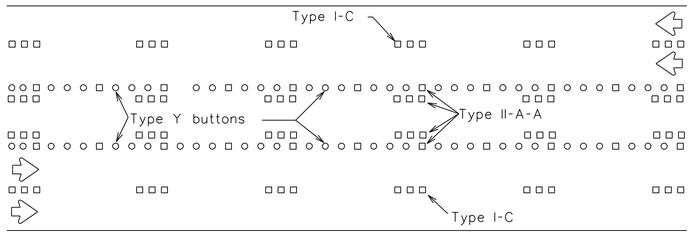
RAISED PAVEMENT MARKERS

Prefabricated markings may be substituted for reflectorized pavement markings.

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS



REFLECTORIZED PAVEMENT MARKINGS



RAISED PAVEMENT MARKERS

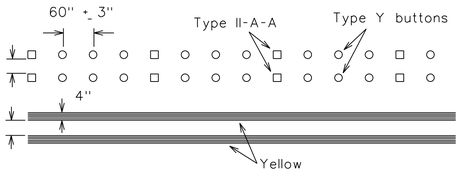
Prefabricated markings may be substituted for reflectorized pavement markings.

TWO-WAY LEFT TURN LANE

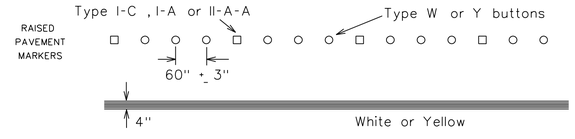
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

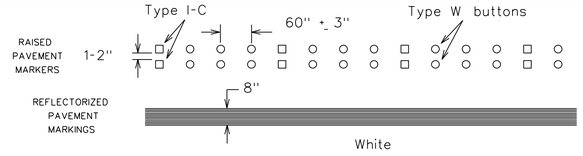


EDGE LINE OR SINGLE NO-PASSING LINE



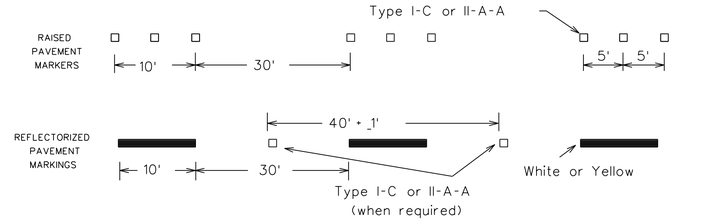
WIDE LINE

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

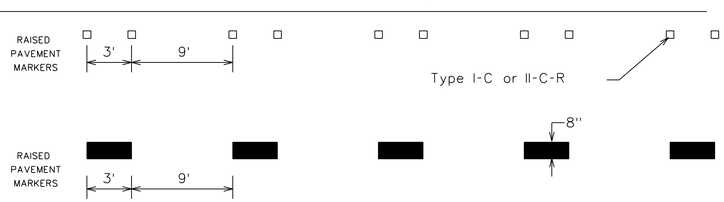


BROKEN LINES

CENTER LINE OR LANE LINE

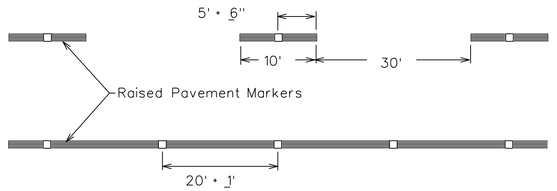


AUXILIARY OR LANEDROP LINE



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

If raised pavement markers are used to supplement REMOVABLE markings, the markers shall be applied to the top of the tape at the approximate mid length of tape used for broken lines or at 20 foot spacing for solid lines. This allows an easier removal of raised pavement markers and tape.



Centerline only - not to be used on edge lines

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

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 Operations Division Standard

BARRICADE AND CONSTRUCTION PAVEMENT MARKING PATTERNS

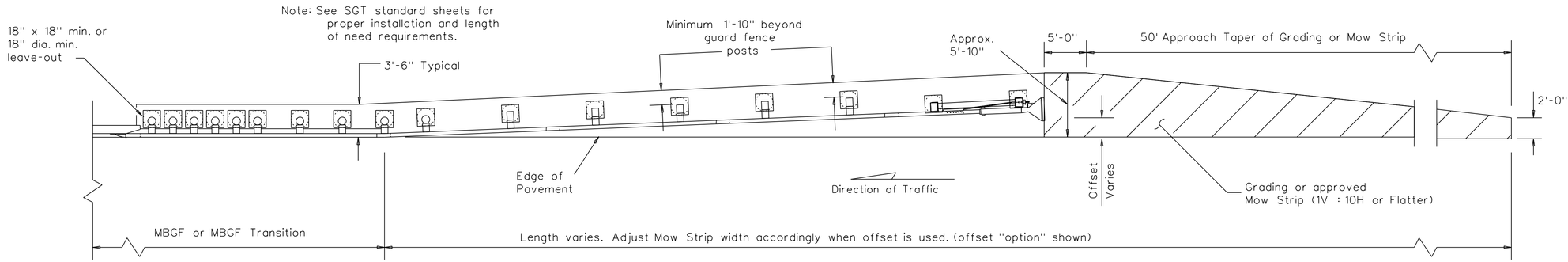
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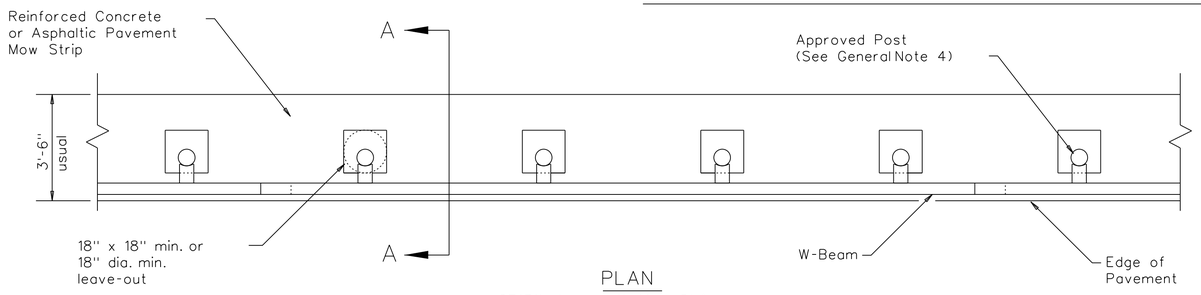
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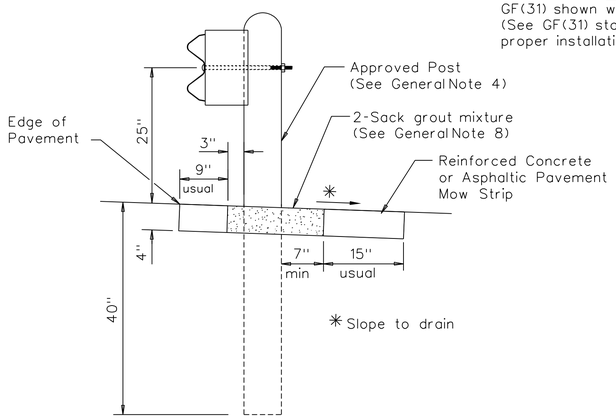


GRADING AND MOW STRIP AT GUARDRAIL END TREATMENTS



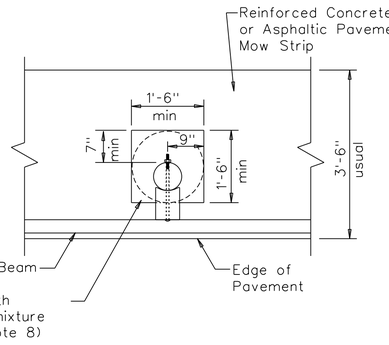
PLAN

GF(31) shown with Mow Strip
(See GF(31) standard sheet for proper installation)



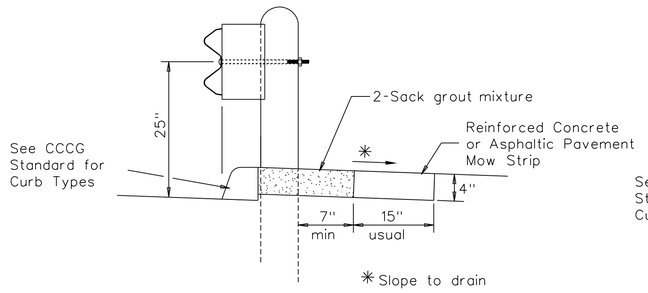
SECTION A-A

Typical



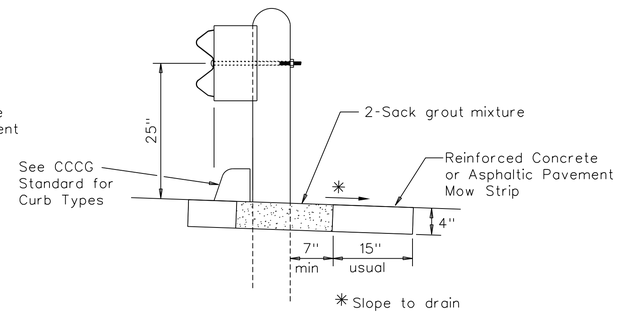
MOW STRIP DETAIL

Reinforced Concrete or Asphaltic Pavement Mow Strip with 18" x 18" or 18" dia. minimum leave-out.



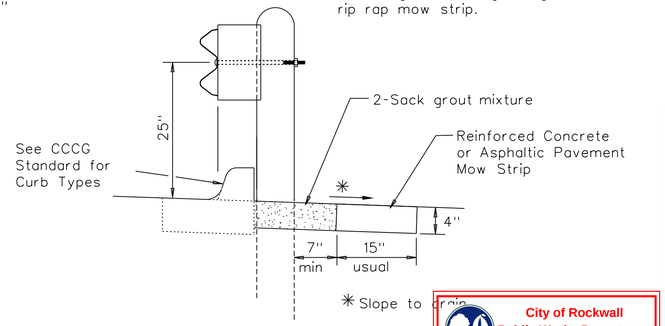
CURB OPTION (1)

This option will increase the post embedment through out the system.



CURB OPTION (2)

Curb shown on top of mow strip



CURB OPTION (3)

Note: Site Condition(s)

Site conditions may exist where grading is required for the proper installation of metal guard fence and end treatments.

Approach grading or mow strip may be decreased or eliminated, as directed by the Engineer.

GENERAL NOTES

1. This mow strip design is for use with metal beam guard fence, guard fence transitions, and guard fence end treatments (See SGT standards for proper SGT installation).
2. Mow strips shall be asphaltic pavement or reinforced concrete (wire mesh or synthetic fiber), as shown on the plans and will be paid for under the pertinent bid item. Asphaltic pavement shall meet the requirements of the item, and be placed in accordance with the pertinent bid item as shown in the plans. Reinforced concrete shall be placed in accordance with Item 432, "Riprap." The use of the synthetic fiber in lieu of steel reinforcing is acceptable, provided the fiber producer is on the Department Material Producer List (MPL), maintained by TxDOT, Construction Division.
3. The leave-out behind the post shall be a minimum of 7".
4. The type of approved post will be as shown in the plans. See the applicable standard sheets for additional details and information.
5. Other curb placement options may be used. Curbs are not considered part of the mow strip and will be paid for under other pertinent bid item.
6. Thickness of the mow strip will be 4".
7. The limits of payment for asphaltic pavement or reinforced concrete will include leave-outs for the posts.
8. The leave-outs shall be filled with no more than a 2-sack grout mixture (1 part cement, 5 parts water, and 14 parts sand by volume) with a 28-day compressive strength of approximately 120 psi or less. Provide grout of a consistency that will flow into and completly fill all voids. Due to auger size, larger leave-out dimensions are acceptable from both an impact performance and maintenance repair standpoint (Suggested Maximum leave-out of 20"). Payment for furnishing and placing the grout mixture will be subsidiary to the pay item of rip rap mow strip.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

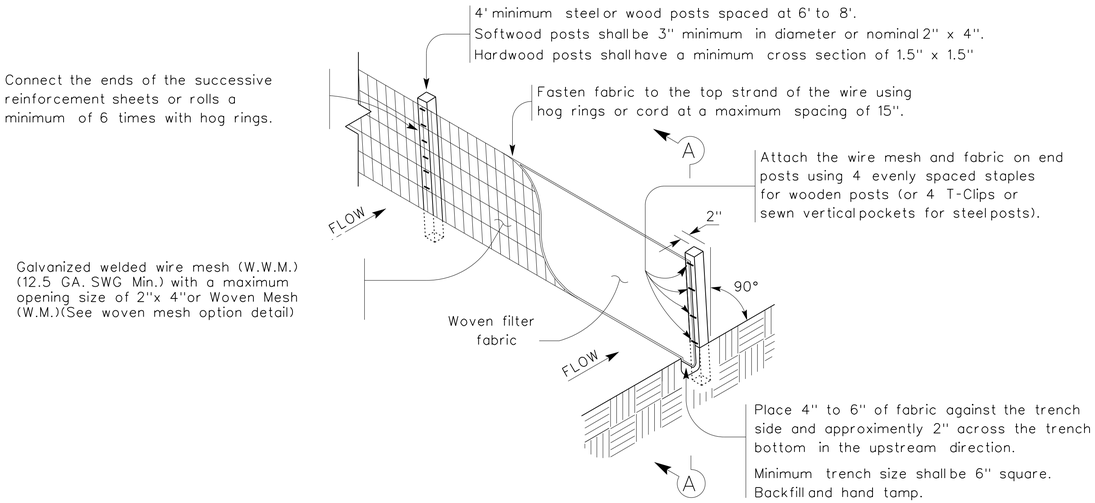
Texas Department of Transportation

Design Division Standard

METAL BEAM GUARD FENCE
(MOW STRIP)
GF(31)MS-17

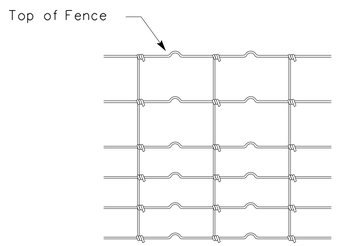
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© TxDOT December 2011	CONT	SECT	JOB	HIGHWAY
REVISIONS				
Revised 12, 2017 KM	DIST	COUNTY		SHEET NO.
				172

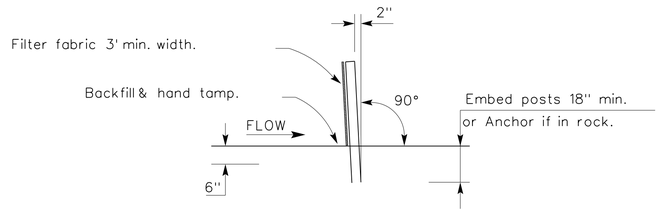
DISCLAIMER:
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TEMPORARY SEDIMENT CONTROL FENCE

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.

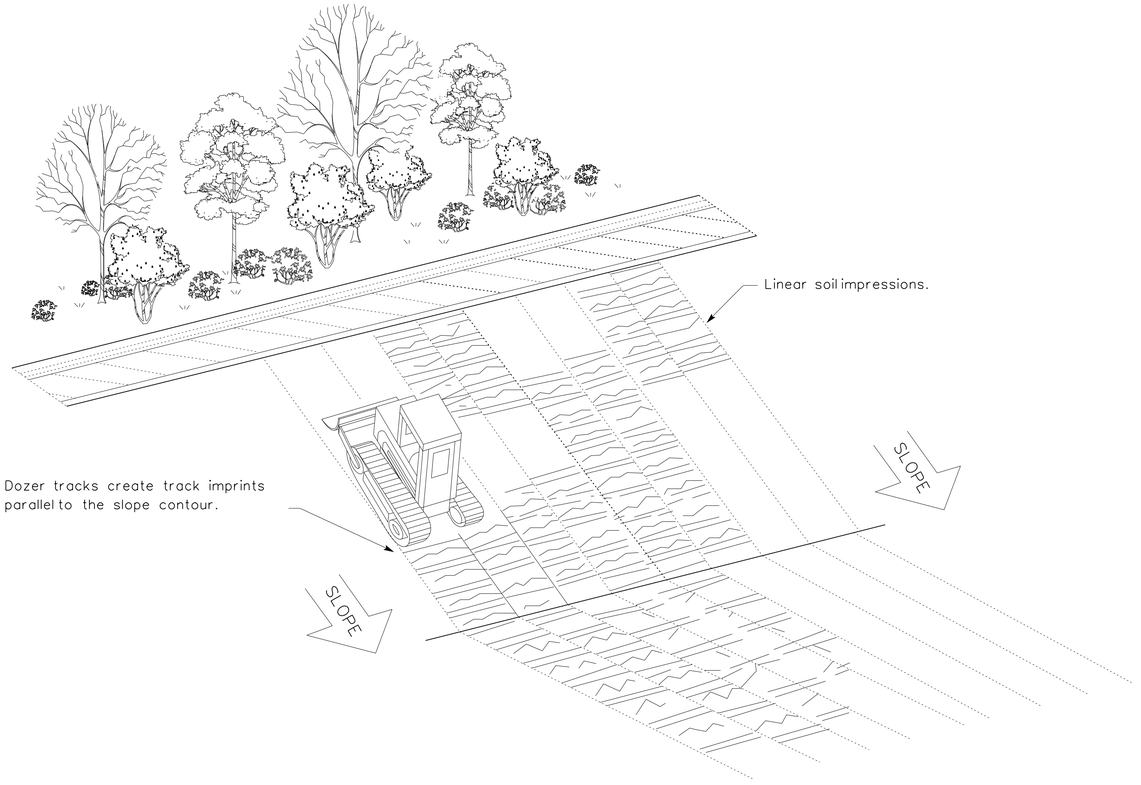
LEGEND

Sediment Control Fence

SCF

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

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

Texas Department of Transportation

Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & VERTICAL TRACKING

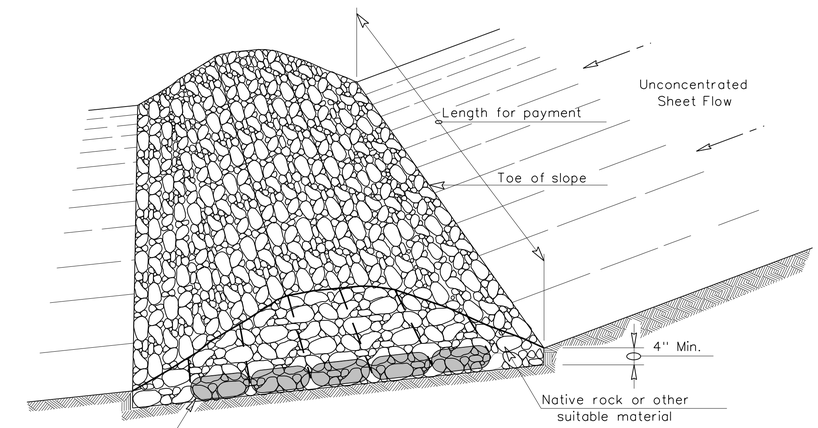
EC(1)-16

FILE: ec116	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.
				173

DATE
FILE

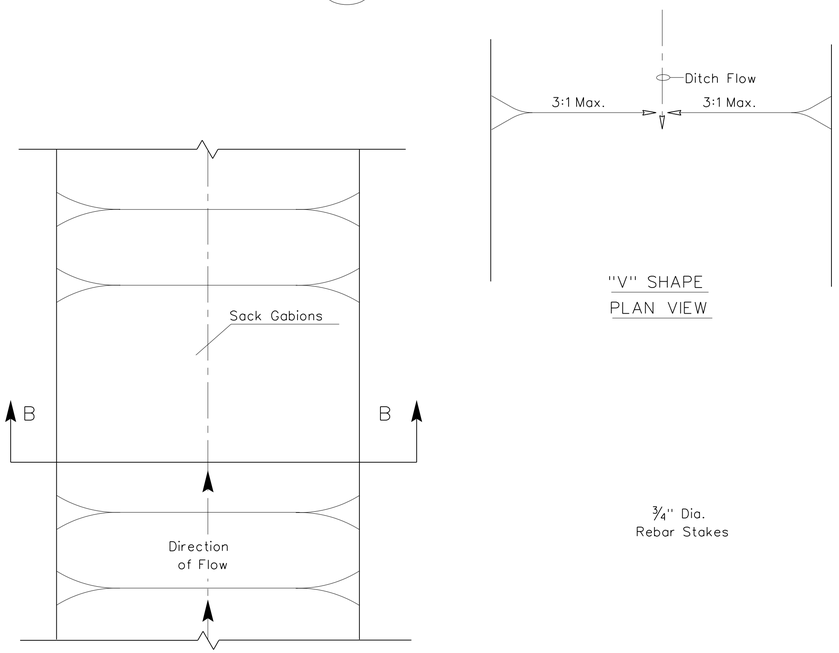
DISCLAIMER:
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DATE:
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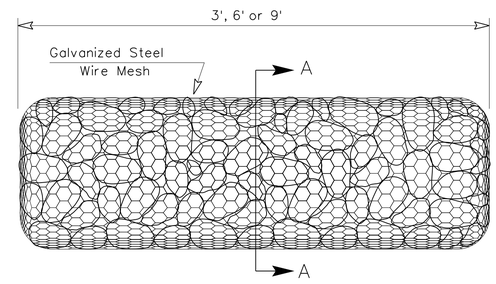


FILTER DAM AT TOE OF SLOPE

RFD1



PLAN VIEW



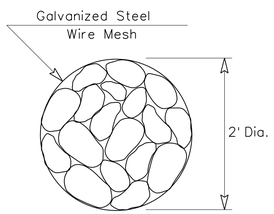
TYPE 4 (SACK GABIONS)

RFD4

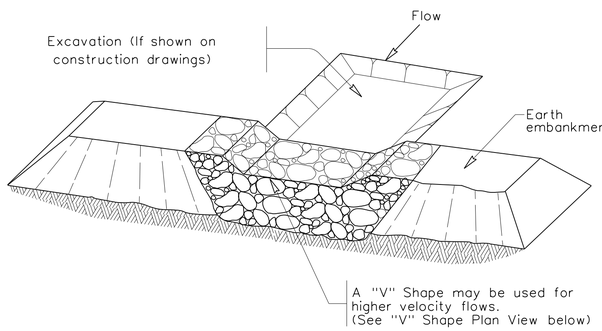
"V" SHAPE
PLAN VIEW

¾" Dia.
Rebar Stakes

SECTION B-B

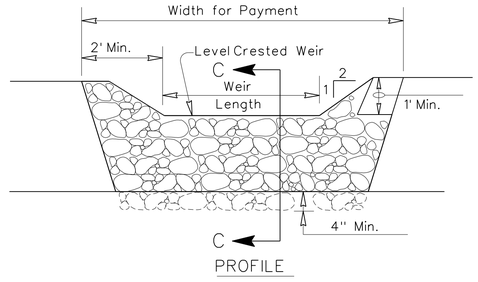


SECTION A-A

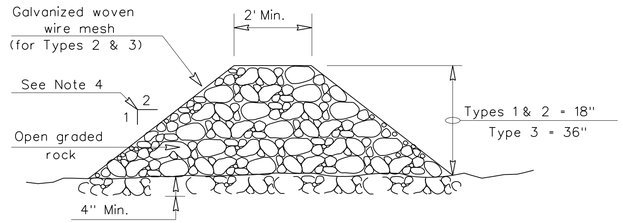


FILTER DAM AT SEDIMENT TRAP

RFD1 OR RFD2



PROFILE



SECTION C-C

ROCK FILTER DAM USAGE GUIDELINES

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

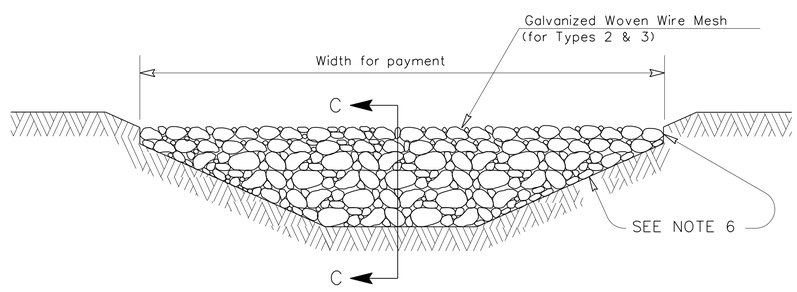
Type 1 (18" high with no wire mesh) (3" to 6" aggregate): Type 1 may be used at the toe of slopes, around inlets, in small ditches, and at dike or swale outlets. This type of dam is recommended to control erosion from a drainage area of 5 acres or less. Type 1 may not be used in concentrated high velocity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

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

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

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

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



FILTER DAM AT CHANNEL SECTIONS

RFD1 OR RFD2 OR RFD3

GENERAL NOTES

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

PLAN SHEET LEGEND

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

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

Texas Department of Transportation

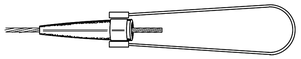
Design Division Standard

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

ROCK FILTER DAMS

EC(2)-16

FILE: ec216	DN: TxDOT	CK: KM	DW: VP	DN/CK: LS	
© TxDOT: JULY 2016	CONT	SECT	JOB	HIGHWAY	
REVISIONS					
	DIST	COUNTY		SHEET NO.	
				174	



COMPRESSION FITTING

SOURCES:
RELIABLE ELECTRIC NO.5264
FARGO NO. OR EQUAL

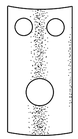
LUMINAIRE ARM

SOURCES:
CROUSE HINDS NO. 106-R82
MACLEAN POWER SYSTEMS NO. S-2-8G
OR EQUAL



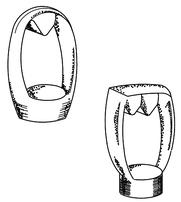
THIMBLEYE BOLT (Angle Type)

SOURCES:
HUBBELL POWER SYS. NO. 5016
MCLEAN POWER SYS. NO. J8154
OR EQUAL



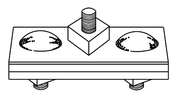
LIFT PLATE

SOURCES:
HUBBELL POWER SYS. NO. 7898
MCLEAN POWER SYS. NO. J7890
OR EQUAL



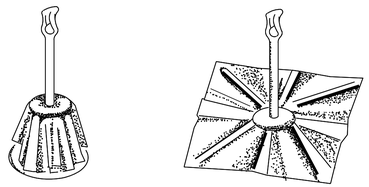
EYE NUTS (Twineye & tripleye)

SOURCES:
HUBBELL POWER SYS. NO. 6560 (TWIN), 6510 (SINGLE)
MCLEAN POWER SYS. NO. J6515 (TWIN), J6510 (SINGLE)
OR EQUAL



GUY CLAMP (3-Bolt)

6" HEAVY GUY CLAMP WITH 3-5/8" BOLTS OR RELIABLE ELECTRIC STRANDVISE WITH FLEXIBLE BAIL (NO. 5264), FARGO STRANDVISE, HUBBELL POWER SYS. NO. 6460, OR EQUAL



8-WAY ANCHOR

SOURCES:
HUBBELL POWER SYS. NO. 1283
MCLEAN POWER SYS. NO. J0283
OR EQUAL

EACH THIMBLEYE BOLT SHALL NOT BE USED TO SUPPORT MORE THAN 3 SAG SPANS. ADDITIONAL THIMBLEYE BOLTS SHALL BE ADDED AS REQUIRED.

SQUARE WASHER
EYE NUT
COMPRESSION FITTING
8" MIN.
THIMBLEYE BOLT
LIFT PLATE
COMPRESSION FITTING
RM CONDUIT FOR SSR OR VIVDS CABLE (IF REQUIRED) (SEE LAYOUT SHEETS)
RM CONDUIT FOR LUMINAIRES (IF REQUIRED) (SEE LAYOUT SHEETS)
3/8" STRANDED STEEL CABLE
SQUARE WASHER
EYE NUT
SPLIT BOLT CONNECTOR
COMPRESSION FITTING
THIMBLEYE BOLT
LIFT PLATE
COMPRESSION FITTING
MULTICONDUCTOR SIGNAL CABLE
NO. 6 BARE
RAIN LOOP REQUIRED. AT EACH CABLE ENTRY POINT
SQUARE WASHER
EYE NUT
1/4" STRANDED STEEL CABLE
COMPRESSION FITTING
1/2" BLACK PLASTIC CABLE STRAPS OR MESSENGER RINGS AT 12" CTRS.
THIMBLEYE BOLT
CONDUIT (SEE LAYOUT SHEETS FOR SIZE (PAY ITEM)
SQUARE WASHER AND NUT
3/8" STRANDED STEEL CABLE
GROUND
PVC MOULDING
CLASS A OR C CONCRETE BACKFILL
GROUND BOX
GUY CLAMP OR COMPRESSION FITTING
3/8"X 8' DOUBLE EYE ANCHOR ROD
CLASS A OR C CONCRETE BACKFILL
12" MAX.
PENTACHLOROPHENOL TREATED 40' SOUTHERN YELLOW PINE POLE (CLASS 2)
6'(40' POLE) 7'(50' POLE)
HOLE DIA = POLE DIA AT BOTTOM + 18"
SAG= 5% OF LENGTH OF SPAN
RAIN LOOP 6" MIN.
CONDUIT (SEE LAYOUT SHEETS FOR SIZE (PAY ITEM)
GUY SPREADER
15" MIN.-48" MAX.
DONT WALK/WALK SIGNAL
1/2" LIQUID TIGHT FLEXIBLE METAL CONDUIT (SUB 688)
1 1/2" LTFM (SUB 682)
ENCLOSED 10" X 10" X 6" NEMA 3R WITH TERMINAL STRIP KULKA
PED. PUSH BUTTON SIGN
PED. PUSH BUTTON
7' MIN-10' MAX.
3.5'
8-WAY ANCHOR

CONNECTING LINK
STEEL STRAIN POLE
CONNECTION LINK
GUY ATTACHMENT FOR 2 WIRES
RELIABLE ELECTRIC STRANDVISE (NO. 5202) OR FARGO OR EQUAL
GUY ATTACHMENT FOR 1 WIRE
CONNECTION LINK
3 WAY BAND

for 2 guy wires
for 1 guy wire
GUY ATTACHMENT

2 3/4"
45°
45°
135°
3-WAY BAND

SPAN CABLE ATTACHMENT DETAILS FOR STEEL STRAIN POLES

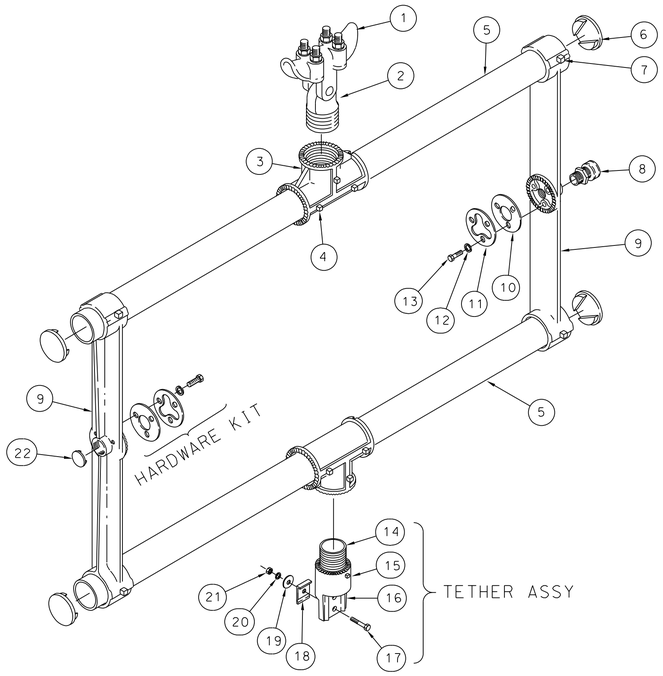
* ANCHORS SHOULD BE LOCATED SO THAT THE DISTANCE BETWEEN THE ANCHOR AND THE POLE BUTT IS EQUAL TO THE DISTANCE FROM THE GROUND TO THE POINT OF GUY ATTACHMENT. IN NO CASE SHOULD THE DISTANCE FROM THE ANCHOR TO THE POLE BUTT BE LESS THAN 1/3 OF THE DISTANCE FROM THE GROUND TO THE POINT OF GUY ATTACHMENT.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], P.E., CFM
Date: 11/26/2018

CONSTRUCTION DETAILS FOR SPAN WIRE MOUNTED TRAFFIC SIGNALS

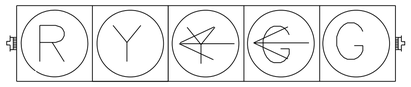
1 OF 3
DALLAS DISTRICT STANDARD

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6			59
STATE	STATE DIST.NO.	COUNTY	
TEXAS	DAL	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
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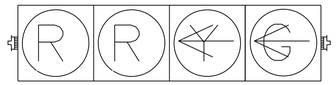
BOTTOM TETHERED,SPAN WIRE SIGNAL HEAD HARDWARE ASSEMBLY (BACKPLATE NOT SHOWN)

ITEM	DESCRIPTION	QTY
1	SPAN WIRE CLAMP, IRON, W/ U-BOLTS	1
2	SPAN WIRE ADAPTER, ALUM W/ STAINLESS BUSHING	1
3	TEE HORIZONTAL SLIP, DIE CAST ALUM	2
4	SCREW, SET SQ HD, 1/4"-20 X 1/2", STAINLESS	6
5	TUBE, 1 1/2" X LENGTH, ALUM	2
6	TUBE CAP, 1 1/2", PLASTIC	4
7	SCREW, SET SQ HD, 5/16"-18 X 5/8", STAINLESS	8
8	CGB,3/4" .55-.65, ZINC 1	1
9	CAST ARM, FOR HORIZONTAL MOUNTED SIGNAL, ALUM	2
10	GASKET, TRI-BOLT, 1/16" X 70 DURO NEOPRENE	2
11	WASHER, SLOTTED, ZINC 2	2
12	WASHER, LOCK SPLIT, 1/4", STAINLESS	6
13	BOLT, HEX HD,1/4"-20 X 1 1/2", GRADE 5, STAINLESS	6
14	NIPPLE, ALLTHREAD, 1 1/2" NPS X 2.13", ALUM	1
15	SCREW, SET SQ HD, 1/4"-20 X 5/8", STAINLESS	1
16	BODY, 1 1/2", HANGER, ALUM	1
17	BOLT, HEX HD,5/16"-18 X 1 1/2", STAINLESS	1
18	PLATE, TETHER, 1-HOLE, ALUM	1
19	WASHER, FENDER, 5/16", STAINLESS	1
20	WASHER, SPLIT LOCK, 5/16", STAINLESS	1
21	NUT, HEX HD, 5/16"-18, STAINLESS	1
22	CAP, EN-3/4, BLUE (FOR CGB)	1



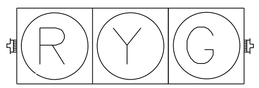
SH H5LT

TYPICAL SPAN WIRE
HORIZONTAL MOUNT
INSTALLATION



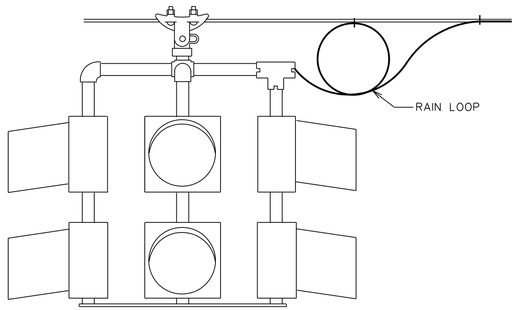
SH H4LT

TYPICAL SPAN WIRE
HORIZONTAL MOUNT
INSTALLATION

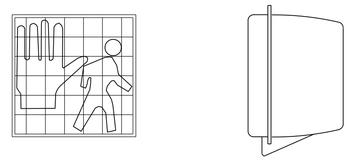


SH H3

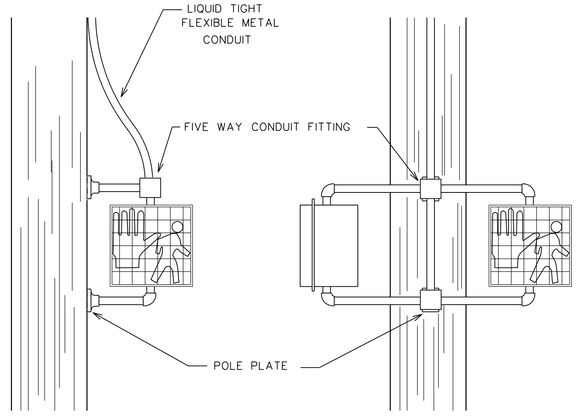
TYPICAL SPAN WIRE
HORIZONTAL MOUNT
INSTALLATION



TYPICAL
FLASHING BEACON
INSTALLATION

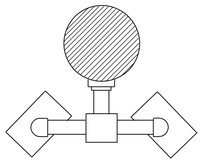


"EGGCRATE" VISOR PEDESTRIAN SIGNAL
WITH ONE-PIECE REFLECTOR



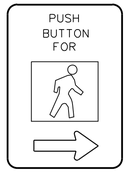
SH 152A
ONE-WAY
ADJUSTABLE FACE SIGNAL FOR
WOOD POLE MOUNTING

SH 143C
TWO-WAY
ADJUSTABLE FACE SIGNAL FOR
WOOD POLE MOUNTING

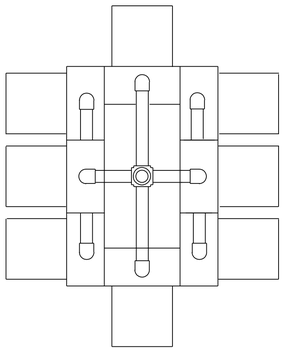


SH 143C
PLAN VIEW

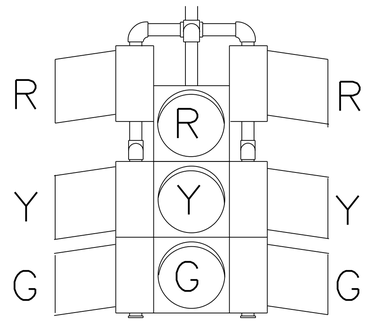
SIGN R10-4bR
SIGN R10-4bL
9"X12"



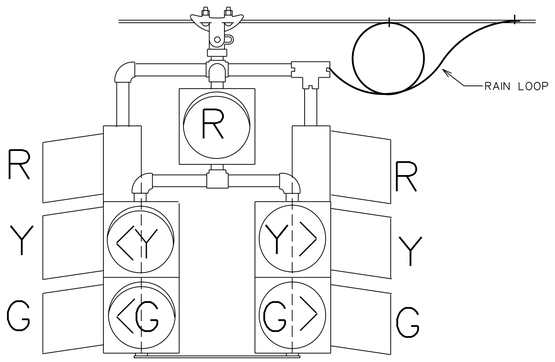
PEDESTRIAN PUSHBUTTON
SIGN DETAILS



TOP



SIDES



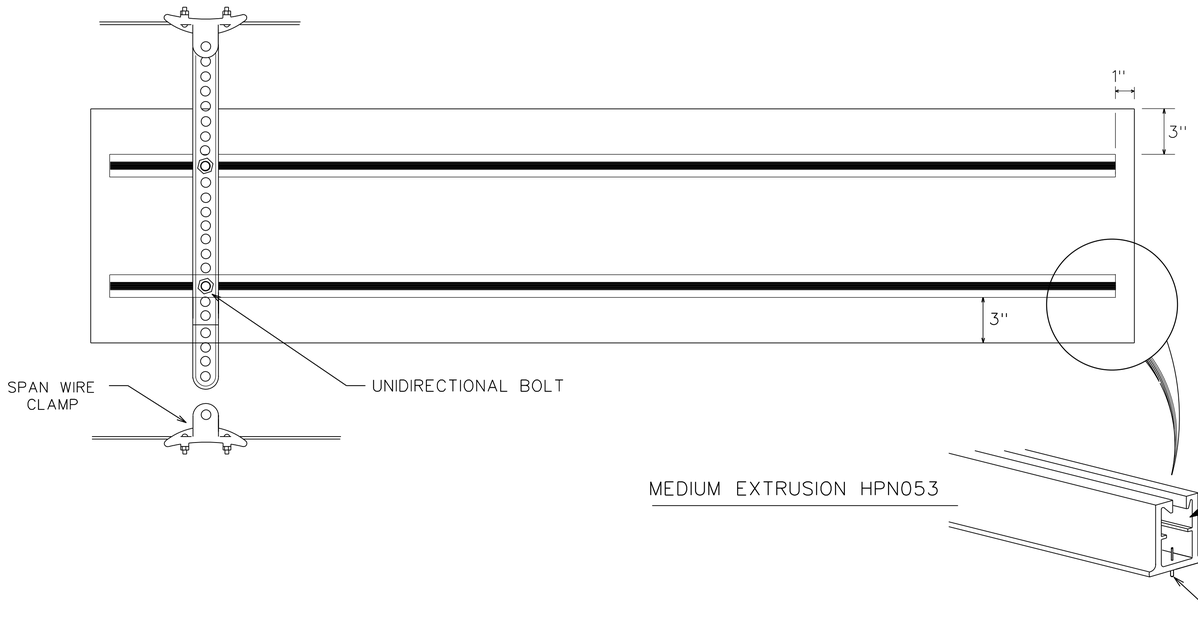
FRONT AND BACK

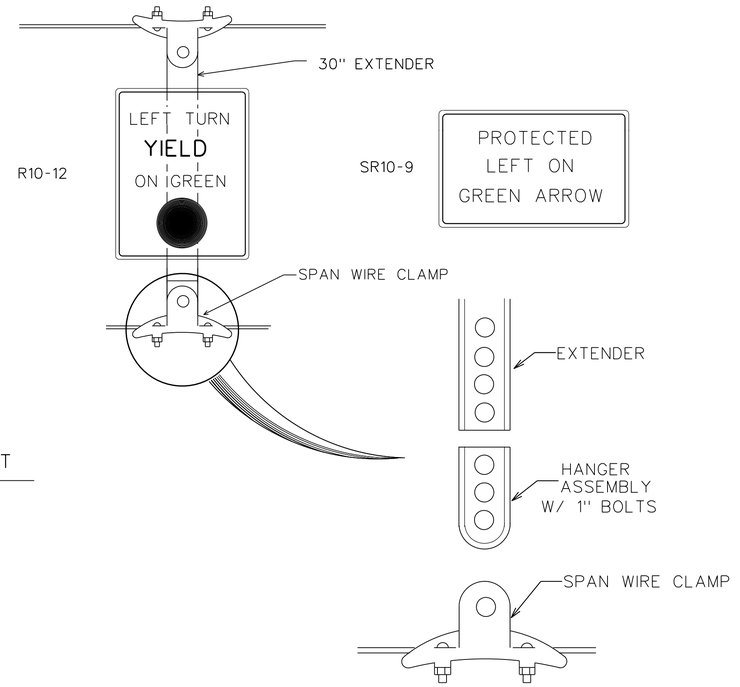
City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E.,CFM
Date: 11/26/2018

CONSTRUCTION DETAILS FOR SPAN WIRE MOUNTED TRAFFIC SIGNALS

2 OF 3
DALLAS DISTRICT STANDARD

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6			60
STATE	STATE DIST.NO.	COUNTY	
TEXAS	DAL	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
			176

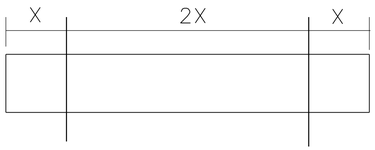




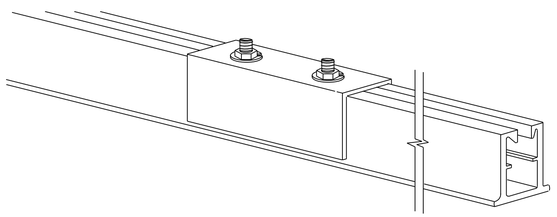
HANGER ASSEMBLY DETAILS

NOTES: 1. FOR SIGNS LESS THAN 5'-0" ONE VERTICAL SUPPORT IS REQUIRED PER SIGN. TWO VERTICAL SUPPORTS SHALL BE USED FOR SIGNS LONGER THAN 5'-0"

2. FOR STREET NAME SIGNS, EXTRUDED ALUMINUM SHALL BE MOUNTED FOR HORIZONTAL SUPPORT AS SHOWN.

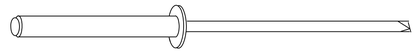


SIGN LENGTH	X
5'-6"-6'-0"	1'-6"
6'-6"-7'-0"	1'-9"
7'-6"-8'-0"	2'-0"
8'-6"-9'-0"	2'-3"
9'-6"-10'-0"	2'-6"
10'-6"-11'-0"	2'-9"
11'-6"-12'-0"	3'-0"
12'-6"-13'-0"	3'-3"



5" ALUMINUM COUPLING

6061-T6



ALUMINUM RIVET

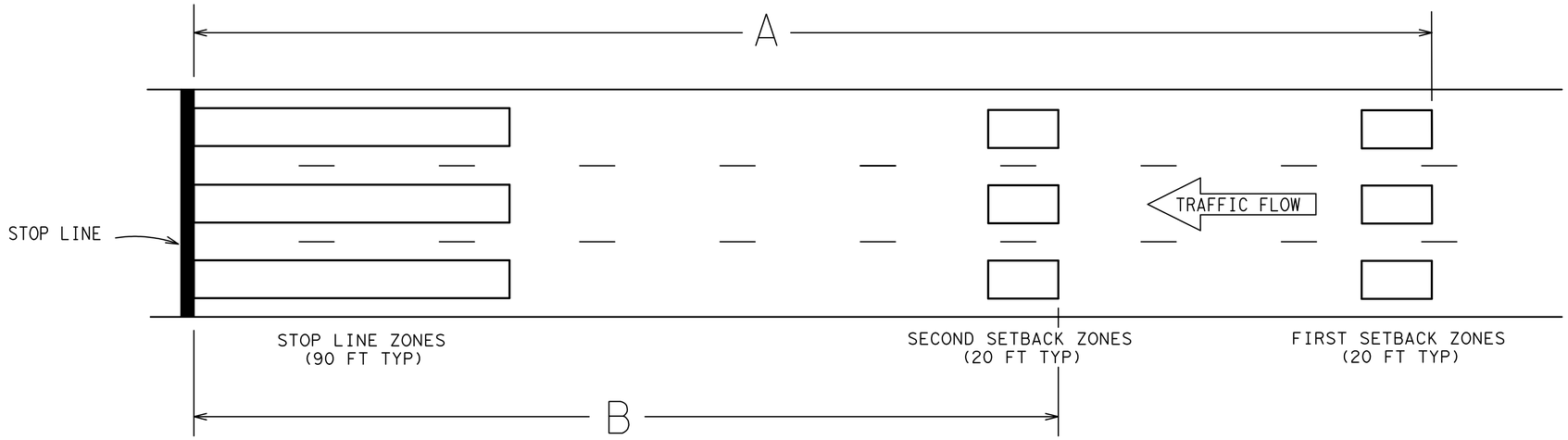
NOTE: ALUMINUM RIVETS SHALL BE USED TO ATTACH THE SIGN TO THE EXTRUDED ALUMINUM. SPACINGS OF RIVETS SHALL BE 6" O.C.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E.
Date: 11/26/2018

3 OF 3
DALLAS DISTRICT STANDARD

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6			61
STATE	STATE DIST.NO.	COUNTY	
TEXAS	DAL	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
			177

CONSTRUCTION DETAILS FOR SPAN WIRE MOUNTED TRAFFIC SIGNALS



APPROACH SPEED LIMIT (MPH)	DISTANCE [2] BETWEEN CAMERA AND STOP LINE (FT)	DISTANCE [1] A (FT)	CAMERA HEIGHT (FT)									
			24	28	32	36	40	24	28	32	36	40
			DISTANCE B (FT)					EXTENSION ON 2ND DET. ZONE (SEC.)				
60	80	470	280	295	305	310	315	0.0	0.0	0.0	0.5	0.5
	150	470	270	285	295	300	310	0.0	0.0	0.0	0.0	0.5
55	80	430	255	265	275	280	285	0.0	0.0	0.0	0.5	0.5
	150	430	245	255	265	275	280	0.0	0.0	0.0	0.0	0.5
50	80	390	235	245	250	255	260	0.0	0.0	0.5	0.5	0.5
	150	390	220	230	240	245	250	0.0	0.0	0.0	0.0	0.5
45	80	350	210	215	220	225	230	0.0	0.0	0.5	0.5	0.5
	150	350	190	200	210	215	220	0.0	0.0	0.0	0.0	0.5

1. Distances shown are based on a 20' detection zone and a 1.0 second passage time setting.
2. Distance between the camera and the stop line, as measured parallel to the direction of travel.

DALLAS DISTRICT STANDARD

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Dallas District

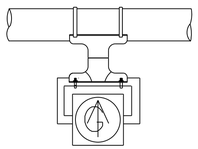
VIDEO DETECTION ZONE PLACEMENT

VDZ-04 (DAL)

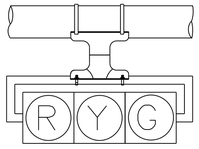
©TxDOT September 2004 DN: - CK: - DW: - CK: -

REVISIONS	FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
	STATE	DISTRICT	COUNTY	SHEET NO.
	TEXAS	DALLAS		
	CONTROL	SECTION	JOB	

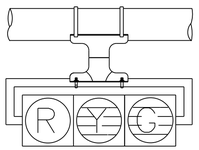
City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], PE, CFM
Date: 11/26/2018



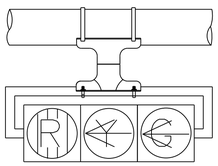
H1TA



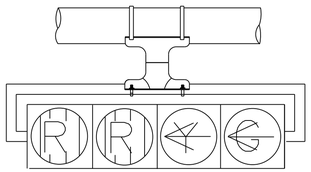
H3



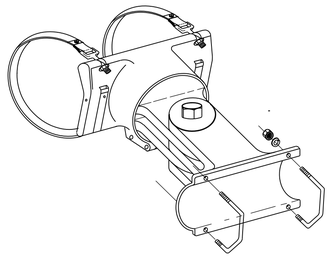
H3L



H3LLT

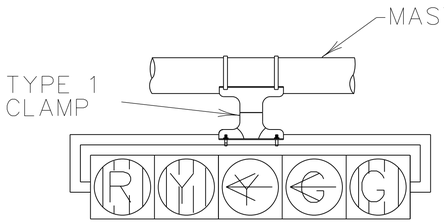


H4LLT

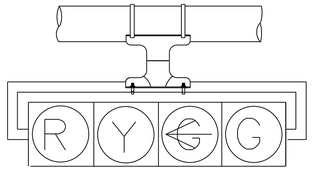


TYPE 2 CLAMP KIT

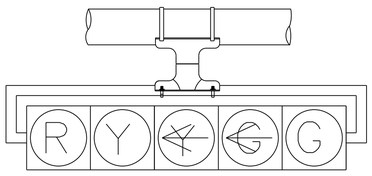
SHALL BE INSTALLED WHEN ROTATION ABOUT THE HORIZONTAL AND VERTICAL AXES ARE NEEDED.



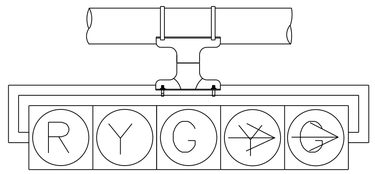
H5LLT



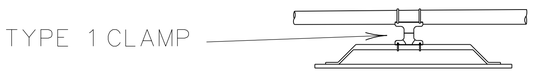
H4LT



H5LT

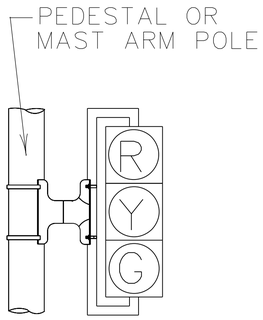


H5RT

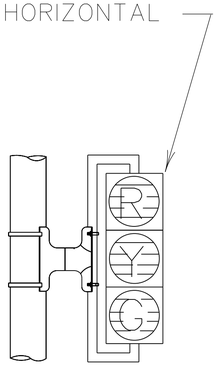


ONE (1) CLAMP SHALL BE USED ON SIGNS LESS THAN OR EQUAL TO 10'-0" IN LENGTH.

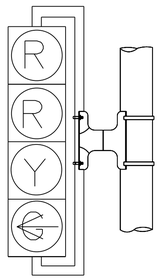
TWO (2) CLAMPS SHALL BE USED ON SIGNS GREATER THAN 10'-0" IN LENGTH.



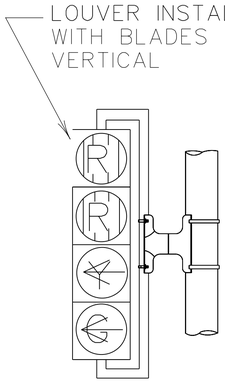
V3



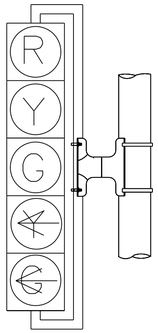
V3L



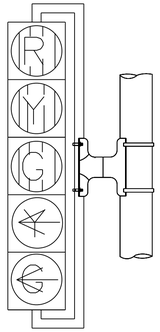
V4LT



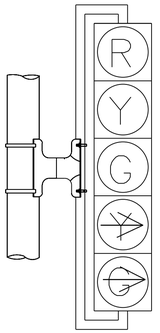
V4LLT



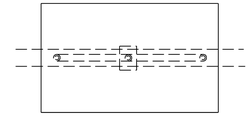
V5LT



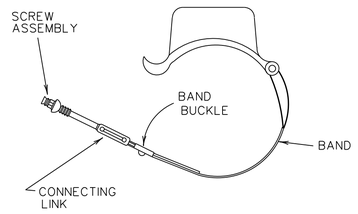
V5LLT



V5RT



SIGN OR DAMPENING DEVICE ATTACHMENT FOR MAST ARMS



TYPE 1 AND 2 CLAMPS

NOTES:

1. VEHICLE SIGNAL HEADS SHALL BE MOUNTED WITH TYPE 1 CLAMP AND APPROPRIATE TUBING.
2. ALL POLE MOUNTED VEHICLE HEADS SHALL BE INSTALLED ON THE AWAY-FROM-TRAFFIC SIDE OF THE PEDESTAL OR MAST ARM POLE.
3. ALL DAMPING DEVICES SHALL BE 18" TO 2' WIDE BY 4' IN LENGTH.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

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DALLAS DISTRICT STANDARD

TRAFFIC SIGNAL HEAD IDENTIFICATION

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6			
STATE	STATE DIST.	COUNTY	
TEXAS	18	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
			179

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DATE:
FILE:

GENERAL NOTES FOR ALL ELECTRICAL WORK

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

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

3. Miscellaneous nuts, bolts and hardware, except for high strength bolts, may be stainless steel when plans specify galvanized, provided the bolt size is ½ in. or less in diameter.

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

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

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

CONDUIT

A. MATERIALS

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

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

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

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

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

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

6. Do not use intermediate metal conduit (IMC) or electrical metallic tubing (EMT) unless specifically required by the plan sheets. When EMT is called for, provide junction boxes made from galvanized steel sheeting, listed and approved for outdoor use, unless otherwise noted on the plans. Size all galvanized steel junction boxes in accordance with the NEC. Provide junction boxes for IMC conduit systems that meet the same requirements for junction boxes used with RMC systems.

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

8. Provide PVC elbows in PVC conduit systems, unless otherwise shown on the plans. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the PVC conduit system. When galvanized steel RMC elbows are specifically called for in the plans and any portion of the RMC elbow is buried less than 18 in., ground the RMC elbow by means of a grounding bushing on a rigid metal extension. Grounding of the rigid metal elbow is not required if the entire RMC elbow is encased in a minimum of 2 in. of concrete. PVC extensions are allowed on these concrete encased rigid metal elbows. RMC or PVC elbows are subsidiary to various bid items.

9. When required, provide High-Density Polyethylene (HDPE) conduit with factory installed internal conductors according to Item 622 "Duct Cable." At the Contractor's request and with approval by the Engineer, substitute HDPE conduit with no conductors for bored schedule 40 or schedule 80 PVC conduit bid under Item 618. Ensure bored HDPE substituted for PVC is schedule 40 and of the same size PVC called for in the plans. Ensure the substituted HDPE meets the requirements of Item 622, except that the conduit is supplied without factory-installed conductors. Make the transition of the HDPE conduit to PVC (or RMC elbow when required) at the bore pit. Provide conduit of the size and schedule as shown on the plans. Do not extend substituted conduit into ground boxes or foundations. Provide PVC or galvanized steel RMC elbows as called for at all ground boxes and foundations.

10. Use two-hole straps when supporting 2 in. and larger conduits. On electrical service poles, properly sized stainless steel or hot dipped galvanized one-hole standoff straps are allowed on the service riser conduit.

B. CONSTRUCTION METHODS

1. Provide and install expansion joint conduit fittings on all structure-mounted conduits at the structure's expansion joints to allow for movement of the conduit. In addition, provide and install expansion joint fittings on all continuous runs of galvanized steel RMC conduit externally exposed on structures such as bridges at maximum intervals of 150 ft. When requested by the project Engineer, supply manufacturer's specification sheet for expansion joint conduit fittings. Repair or replace expansion joint fittings that do not allow for movement at no additional cost to the Department. Provide the method of determining the amount of expansion to the Engineer upon request. Do not use LFMC or LFNC as a substitute for the required expansion conduit fittings.

2. Space all conduit supports at maximum intervals of 5 ft. Install conduit spacers when attaching metal conduit to surface of concrete structures. See "Conduit Mounting Options" on ED(2). Install conduit support within 3 ft. of all enclosures and conduit terminations.

3. Do not attach conduit supports directly to pre-stressed concrete beams except as shown specifically in the plans or as approved by the Engineer.

4. Unless otherwise shown on the plans, jack or bore conduit placed beneath existing roadways, driveways, sidewalks, or after the base or surfacing operation has begun. Backfill and compact the bore pits below the conduit per Item 476 "Jacking, Boring, or Tunneling Pipe or Box" prior to installing conduit or duct cable to prevent bending of the connections.

5. When placing conduit in the sub-grade of new roadways, backfill all trenches with excavated material unless otherwise noted on the plans. When placing conduit in the sub-base of new roadways, backfill all trenches with cement-stabilized base as per requirements of Items 110 "Excavation", 400 "Excavation and Backfill for Structures", 401 "Flowable Backfill", 402 "Trench Excavation Protection", and 403 "Temporary Special Shoring."

6. Provide and place warning tape approximately 10 in. above all trenched conduit as per Item 618.

7. During construction, temporarily cap or plug open ends of all conduit and raceways immediately after installation to prevent entry of dirt, debris and animals. Temporary caps constructed of durable duct tape are allowed. Tightly fix the tape to the conduit opening. Clean out the conduit and prove it clear in accordance with Item 618 prior to installing any conductors.

8. Ensure conduit entry into the top of any enclosure is waterproof by installing conduit sealing hubs or using boxes with threaded bosses. This includes surface mounted safety switches, meter cans, service enclosures, auxiliary enclosures and junction boxes. Grounding bushings on water tight sealing hubs are not required.

9. Fit the ends of all PVC conduit terminations with bushings or bell end fittings. Provide and install a grounding type bushing on all metal conduit terminations.

10. Install a bonding jumper from each grounding bushing to the nearest ground rod, grounding lug, or equipment grounding conductor. Ensure all bonding jumpers are the same size as the equipment grounding conductor. Bonding of conduit used as a casing under roadways for duct cable is not required, if the duct extends the full length through the casing.

11. At all electrical services, install a 6 AWG solid copper grounding electrode conductor.

12. Place conduits entering ground boxes so that the conduit openings are between 3 in. and 6 in. from the bottom of the box. See the ground box detail on sheet ED(4).

13. Seal ends of all conduits with duct seal, expandable foam, or by other methods approved by the Engineer. Seal conduit immediately after completion of conductor installation and pull tests. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a conduit sealant.

14. File smooth the cut ends of all mounting strut and conduit. Before installing, paint the field cut ends of all mounting strut and RMC (threaded or non-threaded) with zinc rich paint (94% or more zinc content) to alleviate overspray. Use zinc rich paint to touch up galvanized material as allowed under Item 445 "Galvanizing." Do not paint non-galvanized material with a zinc rich paint as an alternative for materials required to be galvanized.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS CONDUITS & NOTES

ED(1)-14

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ELECTRICAL CONDUCTORS

A. MATERIAL INFORMATION

1. Provide Type XHHW insulated conductors in accordance with Departmental Material Specification (DMS)11040 "Conductors" and Item 620 "Electrical Conductors." Provide conductors as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies" Item 620. Color code insulated conductors in conformance with the NEC. Identify grounded (neutral) conductors with white insulation. Identify grounding conductors (ground wires) with green insulation or bare conductors. Identify ungrounded (hot) conductors with any color insulation except green, white, or gray. Keep color scheme consistent throughout the wiring system. Identify conductors 6 American Wire Gauge (AWG) and smaller by continuous color jacket. Identify electrical conductors 4 AWG and larger by continuous color jacket or by colored tape. When identifying conductors with colored tape, mark at least 6 in. of the conductor's insulation with half laps of tape.

2. Provide a solid copper 6 AWG grounding electrode conductor to bond the electrical service equipment to the concrete encased grounding electrode or the ground rod at the service location. Connect the grounding electrode conductor to the ground rod with a UL listed connector in accordance with DMS 11040. Connect the grounding electrode conductor to the concrete encased grounding electrode as shown in the plans.

3. Where two or more circuits are present in one conduit or enclosure, permanently identify the conductors of each branch circuit by attaching a non-metallic tag around both circuit conductors at each accessible location. Provide tags with two straps, large enough to indicate circuit number, letter, or other identification as shown in the plans. Print circuit identification on the tag with a permanent marker.

4. Use listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors for splicing as specified in DMS 11040. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Provide UL listed gel-filled insulating splice covers. Splicing materials, insulating materials, breakaway disconnects, splice covers, and fuse holders are subsidiary to various bid items.

B. CONSTRUCTION METHODS

1. Use only a flat, high tensile strength polyester fiber pull tape for pulling conductors through the conduit system. After installing conductors in conduit, perform conductor pull test. If a conductor cannot be freely pulled, make any needed alterations or repairs at no additional cost to the department. Perform insulation resistance tests in accordance with Item 620. Coordinate with the Engineer to witness the tests.

2. Leave 2 ft. minimum, 3 ft. maximum length for each conductor up to the splice in ground boxes. Leave 3 ft. minimum, 4 ft. maximum length of conductor in ground boxes when pulled through with no splice. Leave 1 ft. minimum, 1.5 ft. maximum length of conductor at enclosures, weatherheads and pole bases.

3. Make splices only in junction boxes, ground boxes, pole bases, or electrical enclosures and use only listed compression or screw type pressure connectors, terminal blocks, or split bolt connectors. Insulate splices with heavy wall heat shrink tubing or gel-filled insulating splice covers to provide a watertight splice. Overlap conductor insulation with heat shrink tubing a minimum of 2 in. past both sides of the splice. Where heat shrink tubing may not shrink sufficiently to provide a watertight seal around the individual conductors, prior to heating the tubing, increase the diameter of the conductor insulation using hot melt adhesive tape to provide a watertight seal between the individual conductors and the heat shrink tubing. Ensure the tape extends past the heat shrink tubing. Use hot melt adhesive tape to fill the gap and seal the ends of heat shrink tubing. Heat shrink tubing that appears to have been burned, or overheated, is considered defective and must be replaced.

4. Size and install gel-filled insulating splice covers according to manufacturer's specifications when used in place of heat shrink tubing.

5. Wire nuts with factory applied waterproof sealant may be used for 8 AWG or smaller conductors in above ground junction boxes, but not in pole bases or ground boxes. Install wire nuts in an upright position to prevent the accumulation of water.

6. Support conductors in illumination poles with a J-hook at the top of the pole.

7. When terminating conductors, remove the insulation and jacketing material without nicking the individual strands of the conductor. Conductors with nicked individual conductor strands or removed strands will be considered damaged.

8. Replace conductors and cables that are damaged beyond repair or that fail an insulation resistance test at no additional cost to the department.

9. Do not repair damaged conductors with duct tape, electrical tape, or wire nuts. Use only approved splicing methods.

10. Do not terminate more than one conductor under a single connector, unless the connector is rated for multiple conductors. Do not exceed the pressure connector's listing for maximum number and size of conductors allowed.

11. Install breakaway connectors on conductors bid under Item 620 whenever those conductors pass through a breakaway support device. Follow manufacturer's instructions when terminating conductors to breakaway connectors. Properly torque threaded connections. Proper terminations are critical to the safe operation of breakaway devices. Trim waterproofing boots on breakaway connectors to fit snugly around the conductor to ensure waterproof connection. Only one conductor may enter a single opening in a boot. Provide waterproof boots with the correct number of openings. Leave unused openings factory sealed. Use prequalified breakaway connectors as shown on the MPL.

12. Provide and install a separate stranded equipment grounding conductor (EGC) in all conduits that contain circuit wiring of 50 volts or more. Unless shown elsewhere, size the EGC to be the same size as the largest current carrying conductor contained in the conduit. Ensure all EGCs are bonded together at every accessible location. For traffic signal installations, provide a minimum size 8 AWG EGC. The EGC is paid for under Item 620.

C. TEMPORARY WIRING

1. Install temporary conductors and electrical equipment in accordance with the NEC article "Temporary Installations" and Department standard sheets.

2. Provide a ground fault circuit interrupter (GFCI) for power outlets for portable electrical equipment, power tools, ice machines, ice storage bins and refrigerators located outdoors at grade. GFCI may be any one of the following: molded cord and plug set, receptacle, or circuit breaker type.

3. Use listed wire nuts with factory applied sealant for temporary wiring where approved.

4. Enclose conductor splices within a listed enclosure or ground box, or ensure the splices are more than 10 ft. above grade vertically and more than 5 ft. horizontally from any metal structure. Where installing temporary conductors in areas subject to vehicle traffic or mobile construction equipment, ensure the vertical clearance to ground is at least 18 ft. when measured at the lowest point. Ground messenger wires that support power conductors in conformance with the NEC.

5. Protect and when necessary repair any existing electrical conduits uncovered during the construction process in a timely manner and in conformance with the NEC.

GROUND RODS & GROUNDING ELECTRODES

A. MATERIAL INFORMATION

1. Provide and install a grounding electrode at electrical services. Provide ground rods according to DMS 11040 and the plans. Larger diameter or longer length rods may be called for in some specific locations, see the individual plans sheets. Concrete encased grounding electrodes may be called for in specific locations including electrical service, see individual plan sheets.

B. CONSTRUCTION METHODS

1. Furnish auxiliary ground rods for lightning protection and install in soil, concrete, or both, as called for in the plans. For ground rods installed in concrete, ensure the connection of the conductor to the ground rod is readily accessible for inspection or repairs. For ground rods installed in soil, ensure that the upper end is between 2 to 4 in. below finished grade.

2. Do not place ground rods in the same drilled hole as a timber pole.

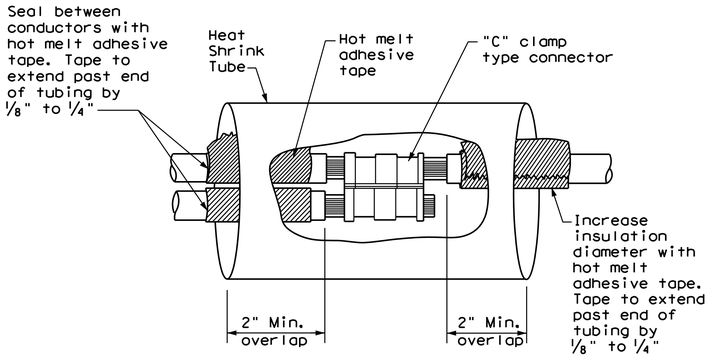
3. Install ground rods so the imprinted part number is at the upper end of the rod.

4. Remove all non-conductive coatings such as concrete splatter from the rod at the clamp location.

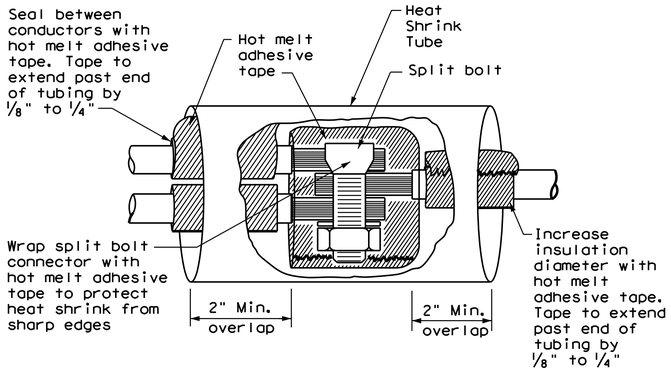
5. Route all conductors as short and straight as possible for connection to lightning protection ground rods. When a bend is required, ensure a minimum radius bend of four inches for these conductors.

6. Unless otherwise called for in the plans, protect grounding electrode conductors with non-metallic conduit. When protecting grounding electrode conductors with metal conduit, provide and install a grounding type bushing and properly sized bonding jumper on each end of the metal conduit.

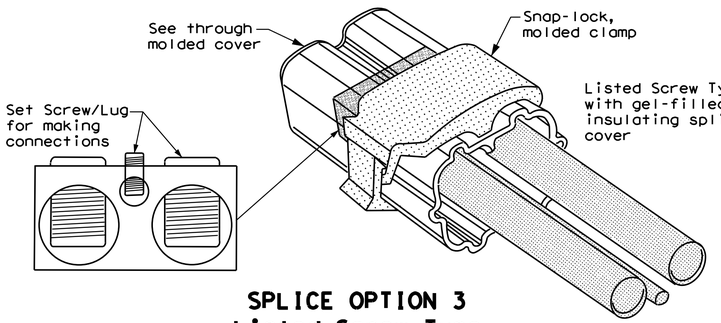
7. Written authorization is required before installing a ground rod in a horizontal trench for rocky soil or a solid rock bottom.



SPLICE OPTION 1
Compression Type



SPLICE OPTION 2
Split Bolt Type



SPLICE OPTION 3
Listed Screw Type

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer:
Date: 11/26/2018

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
CONDUCTORS

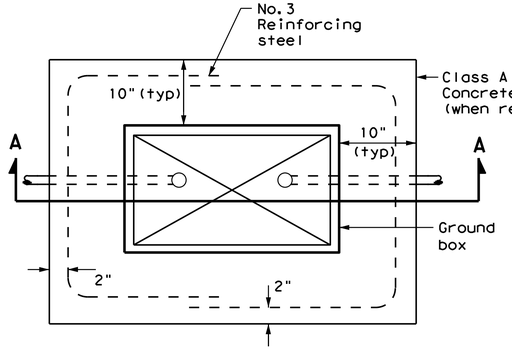
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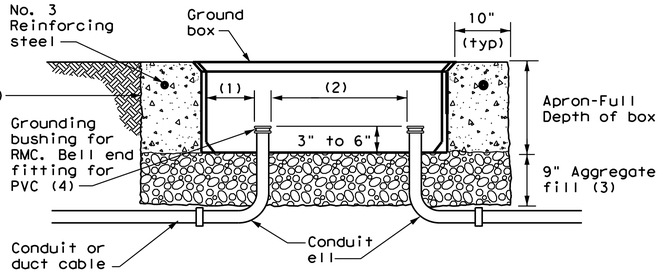
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PLAN VIEW



SECTION A - A

APRON FOR GROUND BOX

(1) Uniformly space ends of conduits within the ground box. Position ends of conduits so that ground box walls do not interfere with the installation of grounding bushings or bell end fittings.

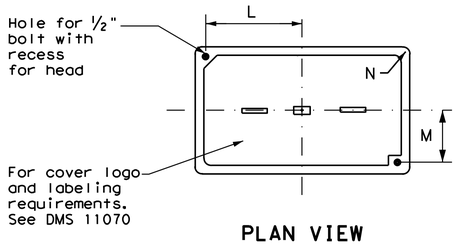
(2) Maintain sufficient space between conduits to allow for proper installation of bushing.

(3) Place aggregate under the box, not in the box. Aggregate should not encroach on the interior volume of the box.

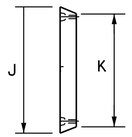
(4) Install a grounding bushing on the upper end of all RMC terminating in a ground box. Ground RMC elbows when any part of the elbow is less than 18 in. below the bottom of the ground box. Install a PVC bushing or bell end fitting on the upper end of all PVC conduits terminating in a ground box.

GROUND BOX DIMENSIONS	
TYPE	OUTSIDE DIMENSIONS (INCHES) (Width x Length X Depth)
A	12 X 23 X 11
B	12 X 23 X 22
C	16 X 29 X 11
D	16 X 29 X 22
E	12 X 23 X 17

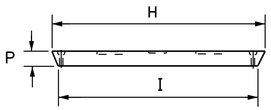
GROUND BOX COVER DIMENSIONS								
TYPE	DIMENSIONS (INCHES)							
	H	I	J	K	L	M	N	P
A, B & E	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
C & D	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2



PLAN VIEW



END



SIDE

GROUND BOX COVER

GROUND BOXES

A. MATERIALS

1. Provide polymer concrete ground boxes measuring 16x30x24 in. (WxLxD) or smaller in accordance with Departmental Material Specification (DMS) 11070 "Ground Boxes" and Item 624 "Ground Boxes."

2. Provide Type A, B, C, D, and E ground boxes as shown in the plans, and as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 624.

3. Ensure ground box cover is correctly labeled in accordance with DMS 11070.

4. Provide larger ground boxes in accordance with Item 624 and as shown in the plans.

B. CONSTRUCTION METHODS

1. Remove all gravel and dirt from conduit. Cap all conduits prior to placing aggregate and setting ground box. Provide Grade 3 or 4 coarse aggregate as shown on Table 2 of Item 302 "Aggregates for Surface Treatments." Ensure aggregate bed is in place and at least 9 inches deep, prior to setting the ground box. Install ground box on top of aggregate.

2. Cast ground box aprons in place. Reinforcing steel may be field bent. Ensure the depth of concrete for the apron extends from finished grade to the top of the aggregate bed under the box. Ground box aprons, including concrete and reinforcing steel, are subsidiary to ground boxes when called for by descriptive code.

3. Keep bolt holes in the box clear of dirt. Bolt covers down when not working in ground boxes.

4. Install all conduits and ells in a neat and workmanlike manner. Uniformly space conduits so grounding bushings and bell end fittings can easily be installed.

5. Temporarily seal all conduits in the ground box until conductors are installed.

6. Permanently seal conduits immediately after the completion of conductor installation and pull tests. Permanently seal the ends of all conduits with duct seal, expandable foam, or other method as approved. Do not use duct tape as a permanent conduit sealant. Do not use silicone caulk as a sealant.

7. When a ground rod is present in a ground box, bond all equipment grounding conductors together and to the ground rod with listed connectors.

8. When a type B or D ground box is stacked to meet volume requirements, it is allowable to cut an appropriately sized hole for conduit entry in the side wall at least 18 inches below grade.

9. If an existing ground box in the contract has a metal cover, bond the cover to the equipment grounding conductor with a 3 ft. long stranded bonding jumper the same size as the grounding conductor. The bonding jumper is subsidiary to various bid items. Verify existing ground boxes with metal covers are shown on the plans, with notes fully describing the work required.

10. If other ground boxes with metal covers are within the project limits but are not part of the contract, the Engineer may direct the Contractor to bond the metal covers, identifying the specific boxes in writing. This work will be paid for separately.

11. Bond metal ground box covers to the grounding conductor with a tank ground type lug.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], P.E., CFM
Date: 11/26/2018

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS
GROUND BOXES

ED(4)-14

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ELECTRICAL SERVICES NOTES

1. Provide new materials. Ensure installation and materials comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards. Ensure material is Underwriters Laboratories (UL) listed. Provide and install electrical service conduits, conductors, disconnects, contactors, circuit breaker panels, and branch circuit breakers as shown on the Electrical Service Data chart in the plans. Faulty fabrication or poor workmanship in material, equipment, or installation is justification for rejection. Where manufacturers provide warranties and guarantees as a customary trade practice, furnish these to the State.

2. Provide electrical services in accordance with Electrical Details standard sheets, Departmental Material Specification (DMS) 11080 "Electrical Services,"DMS 11081 "Electrical Services-Type A," DMS 11082 "Electrical Services-Type C," DMS 11083 "Electrical Services-Type D," DMS 11084 "Electrical Services-Type T," DMS 11085 "Electrical Services-Pedestal (PS)", and Item 628 "Electrical Services" of the Standard Specifications. Provide electrical service types A, C, and D, as listed on the Material Producers List (MPL) on the Department web site under "Roadway Illumination and Electrical Supplies," Item 628. Provide other service types as detailed on the plans.

3. Provide all work, materials, services, and any incidentals needed to install a complete electrical service as specified in the plans.

4. Coordinate with the Engineer and the utility provider for metering and compliance with utility requirements. Primary line extensions, connection charges, meter charges, and other charges by the utility company to provide power to the location are paid for in accordance with Item 628. Get approval for the costs associated with these charges prior to engaging the utility company to do the work. Consult with the utility provider to determine costs and requirements, and coordinate the work as approved.

5. The enclosure manufacturer will provide Master Lock Type 2 with brass tumblers keyed #2195 for all custom electrical enclosures. Installing Contractor is to provide Master Lock #2195 Type 2 with brass tumblers for "off the shelf" enclosures. Master Lock #2195 keys and locks become property of the State. Unless otherwise approved, do not energize electrical service equipment until locks are installed.

6. Enclosures with external disconnects that de-energize all equipment inside the enclosure do not need a dead front trim. Protect incoming line terminations from incidental contact as required by the NEC.

7. When galvanized is specified for nuts, screws, bolts or miscellaneous hardware, stainless steel may be used.

8. Provide wiring and electrical components rated for 75°C. Provide red, black, and white colored XHHW service entrance conductors of minimum size 6 American Wire Gauge (AWG). Identify size 6 AWG conductors by continuous color jacket. Identify electrical conductors sized 4 AWG and larger by continuous color jacket or by colored tape. Mark at least 6 inches of the conductor's insulation with half laps of colored tape, when identifying conductors. Ensure each service entrance conductor exits through a separately bushed non-metallic opening in the weatherhead. The lengths of the conductors outside the weatherhead are to be 12 inches minimum, 18 inches maximum, or as required by utility.

9. All electrical service conduit and conductors attached to the electrical service including the riser or the elbow below ground are subsidiary to the electrical service. For an underground utility feed, all service conduit and conductors after the elbow, including service conduit and conductors for the utility pole riser when furnished by the Contractor, will be paid for separately.

10. Provide rigid metal conduit (RMC) for all conduits on service, except for the ½ in. PVC conduit containing the electrical service grounding electrode conductor. Size the service entrance conduit as shown in the plans. Ensure conduit for branch circuit entry to enclosure is the same size as that shown on the layout sheets for branch circuit conduit. Extend all rigid metal conduits a minimum of 6 inches underground and then couple to the type and schedule of the conduit shown on the layout for that particular branch circuit. Install a grounding bushing on the RMC where it terminates in the service enclosure.

11. Use of liquidtight flexible metal conduit (LFMC) is allowed between the meter and service enclosure when they are mounted 90 to 180 degrees to each other. Size the LFMC the same size as service entrance conduit. LFMC must not exceed 3 feet in length. Strap LFMC within 1 foot of each end. LFMC less than 12 inches in length need not be strapped. Each end of LFMC must have a grounding bushing or be terminated with a grounding fitting. The LFMC must contain a grounded (neutral) conductor. Ensure any bend in LFMC never exceeds 180 degrees. A pull test is required on all installed conductors, with at least six inches of free conductor movement demonstrated to the satisfaction of the Engineer.

12. Ensure all mounting hardware and installation details of services conform to utility company specifications.

13. For all electrical service enclosures listed under Item 628 on the MPL, the UL 508 enclosure manufacturers will prepare and submit a schematic drawing unique to each service. Before shipment to the job site, place the applicable laminated schematic drawings and the laminated plan sheet showing the electrical service data chart used to build the enclosure in the enclosure's data pocket. The installing contractor will copy and laminate the actual project plan sheets detailing all equipment and branch circuits supplied by that service. The laminated plan sheets are to be placed in the service enclosure's document pocket. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in. before laminating. If the installation differs from the plan sheets, the installing contractor is to redline plan sheets before laminating.

14. When providing an "Off The Shelf" Type D or Type T service, provide laminated plan sheets detailing equipment and branch circuits supplied by that service. Reduce 11 in. x 17 in. plan sheets to 8 ½ in. x 11 in before laminating. Deliver these drawings before completion of the work to the Engineer, instead of placing in enclosure that has no door pocket.

15. Do not install conduit in the back wall of a service enclosure where it would penetrate the equipment mounting panel inside the enclosure. Provide grounding bushings on all metal conduits, and terminate bonding jumpers to grounding bus. Grounding bushings are not required when the end of the metal conduit is fitted with a conduit sealing hub or threaded boss, such as a meter base hub.

SERVICE ASSEMBLY ENCLOSURE

1. Provide threaded hub for all conduit entries into the top of enclosure.

2. Type galvanized steel (GS) enclosures may be used for Type C panelboards and for Type D and T services that do not use an enclosure mounted photocell or lighting contactor. Provide GS enclosures in accordance with DMS 11080, 11082, 11083, and 11084.

3. Provide aluminum (AL) and stainless steel (SS) enclosures for Types A, C, and D in accordance with DMS 11080, 11081, 11082, 11083, and 11084. Do not paint stainless steel.

4. Provide pedestal service (PS) enclosures in accordance with ED(9) and DMS 11080 and 11085. Do not provide GS pedestal services. If GS is shown in the PS descriptive code, provide an AL enclosure.

MAIN DISCONNECT & BRANCH CIRCUIT BREAKERS

1. Field drill flange-mounted remote operator handle if needed, to ensure handle is lockable in both the "On" and "Off" positions.

2. When the utility company provides a transformer larger than 50 KVA, verify that the available fault current is less than the circuit breaker's ampere interrupting capacity (AIC) rating and provide documentation from the electric utility provider to the Engineer.

PHOTOELECTRIC CONTROL

1. Provide photocell as listed on the MPL. Move, adjust, or shield the photocell from stray or ambient night time light to ensure proper operation. Mount photocell facing north when practical. Mount top of pole photocells as shown on Top Mounted Photocell Detail.

*ELECTRICAL SERVICE DATA

Elec. Service ID	Plan Sheet Number	Electrical Service Description	Service Conduit **Size	Service Conductors No./Size	Safety Switch Amps	Main Ckt. Bkr. Pole/Amps	Two-Pole Contractor Amps	Panelbd/ Loadcenter Amp Rating	Branch Circuit ID	Branch Ckt. Bkr. Pole/Amps	Branch Circuit Amps	KVA Load
SB 183	289	ELC SRV TY A 240/480 100(SS)AL(E)SF(U)	2"	3/#2	100	2P/100	100	N/A	Lighting NB	2P/40	26	28.1
									Lighting SB	2P/40	25	
									Underpass	1P/20	15	
NB Access	30	ELC SRV TY D 120/240 060(NS)SS(E)TS(O)	1 ¼"	3/#6	N/A	2P/60		100	Sig. Controller	1P/30	23	5.3
							30		Luminaires	2P/20	9	
									CCTV	1P/20	3	
2nd & Main	58	ELC SRV TY T 120/240 000(NS)GS(N)SP(O)	1 ¼"	3/#6	N/A	N/A	N/A	70	Flashing Beacon 1	1P/20	4	1.0
									Flashing Beacon 2	1P/20	4	

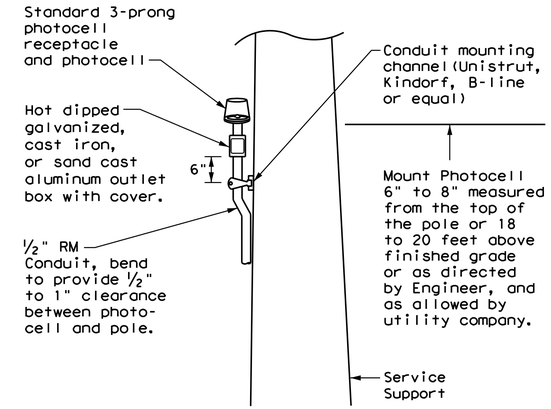
* Example only, not for construction. All new electrical services must have electrical service data chart specific to that service as shown in the plans.

** Verify service conduit size with utility. Size may change due to utility meter requirements. Ensure conduit size meets the National ELectrical Code.

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE

ELEC SERV TY X XXX/XXX XXX (XX) XX (X) XX (X)

- Schematic Type
- Service Voltage V / V
- Disconnect Amp Rating
  000 indicates main lug only/
  Typically Type T
- (SS)= Safety Switch Ahead of Meter-Check with Utility
  (NS)= No safety Switch Ahead of Meter-Check with Utility
- Enclosure Type
  GS= Galvanized steel("off the shelf")
  SS= Stainless steel(Custom Enclosure)See MPL
  AL= Aluminum (Custom Enclosure)See MPL
- Photocell Mounting Location
  (E)= Inside Service/Enclosure Mounted
  (T)= Top of pole
  (L)= Luminaire mounted
  (N)= None/No Photocell or Lighting Contactor Required
- Service Support Type
  GC= Granite concrete
  OC= Other concrete
  TP= Timber pole
  SP= Steel pole
  SF= Steel frame
  OT= Pole by others or paid for separately
  EX= Existing pole
  TS= Service on traffic signal pole
  PS= Pedestal Service
- O= Overhead Service Feed from Utility
  U= Underground Service Feed from Utility



TOP MOUNTED PHOTOCELL

Install conduit strap maximum 3 feet from box. 5 foot maximum spacing between straps supporting conduit.

City of Rockwall
Public Works Department
Engineering Division
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Capital Improvement Project
City Engineer: [signature], PE, CFM
Date: 11/26/2018

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Traffic Operations Division Standard

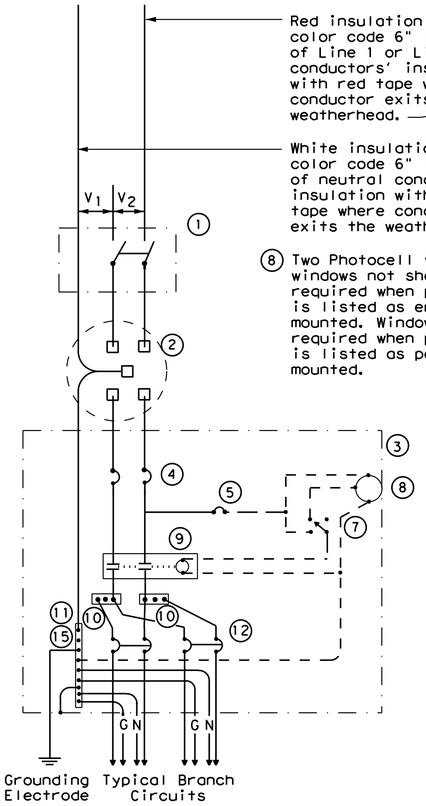
ELECTRICAL DETAILS SERVICE NOTES & DATA

ED(5)-14

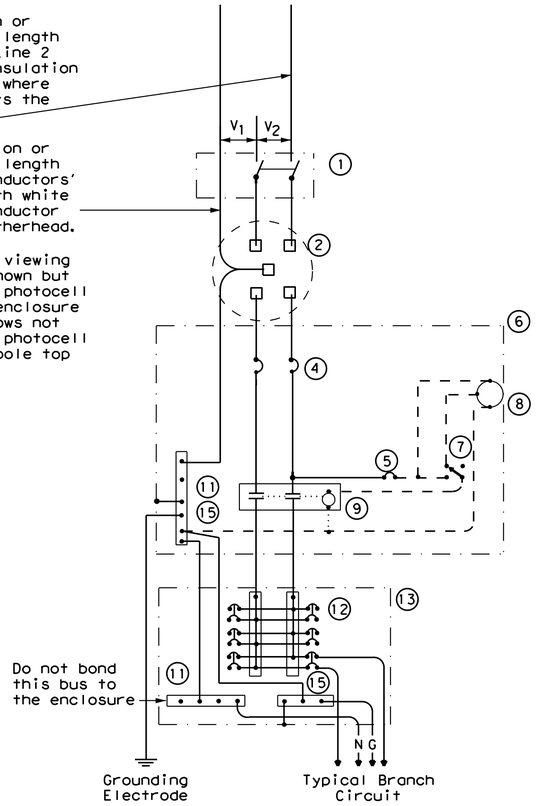
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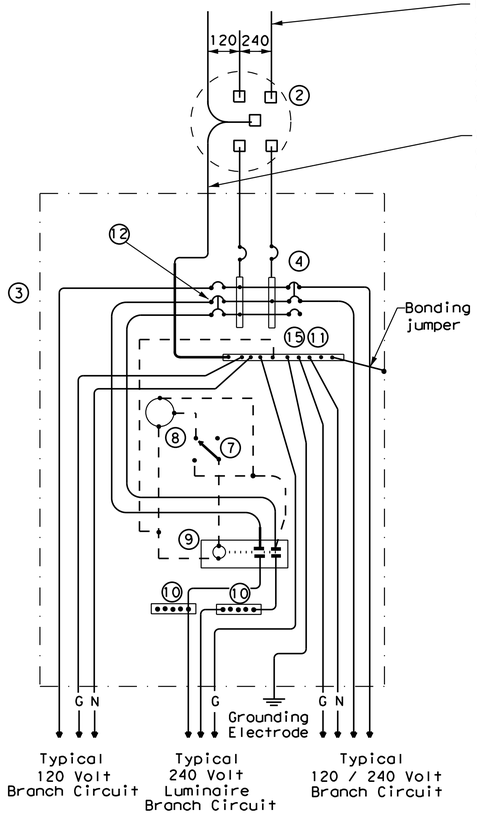
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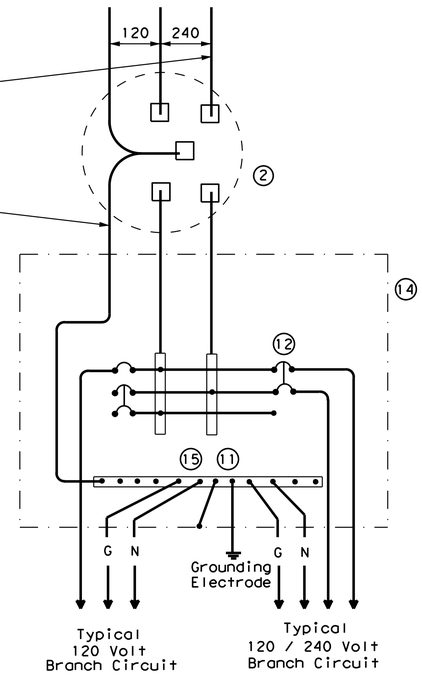
SCHEMATIC TYPE A
THREE WIRE



SCHEMATIC TYPE C
THREE WIRE



SCHEMATIC TYPE D - CUSTOM
120/240 VOLTS - THREE WIRE



SCHEMATIC TYPE T
120/240 VOLTS - THREE WIRE

Galvanized steel-"Buy Off The Shelf" only. When required install photocell top of the pole or on luminaire only, no lighting contractor will be installed.

WIRING LEGEND	
———	Power Wiring
- - - -	Control Wiring
—N—	Neutral Conductor
—G—	Equipment grounding conductor-always required

SCHEMATIC LEGEND	
1	Safety Switch (when required)
2	Meter (when required-verify with electric utility provider)
3	Service Assembly Enclosure
4	Main Disconnect Breaker (See Electrical Service Data)
5	Circuit Breaker, 15 Amp (Control Circuit)
6	Auxiliary Enclosure
7	Control Station ("H-O-A" Switch)
8	Photo Electric Control (enclosure-mounted shown)
9	Lighting Contactor
10	Power Distribution Terminal Blocks
11	Neutral Bus
12	Branch Circuit Breaker (See Electrical Service Data)
13	Separate Circuit Breaker Panelboard
14	Load Center
15	Ground Bus

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Traffic Operations Division Standard

ELECTRICAL DETAILS SERVICE ENCLOSURE AND NOTES

ED(6)-14

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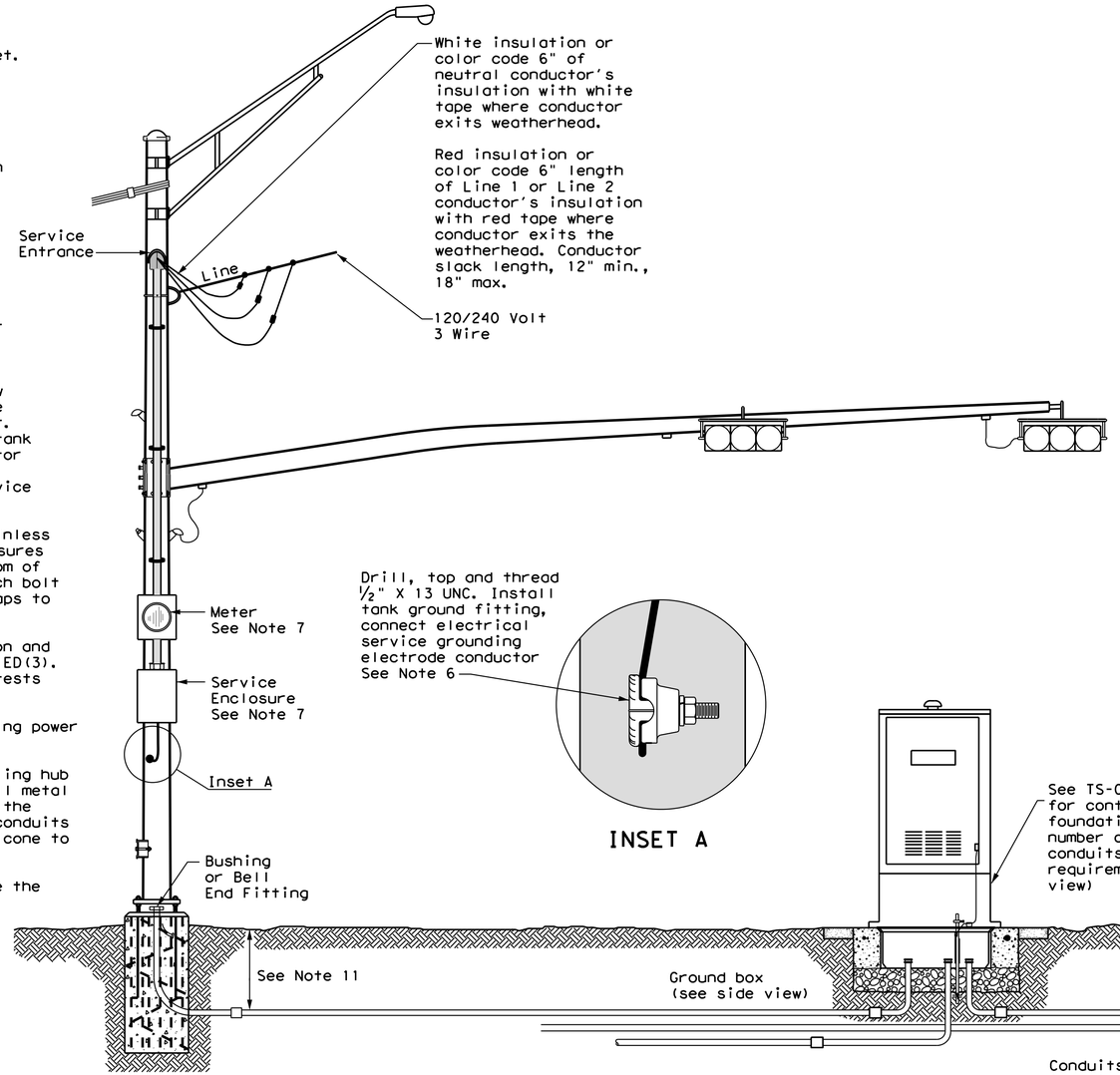
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TRAFFIC SIGNAL NOTES

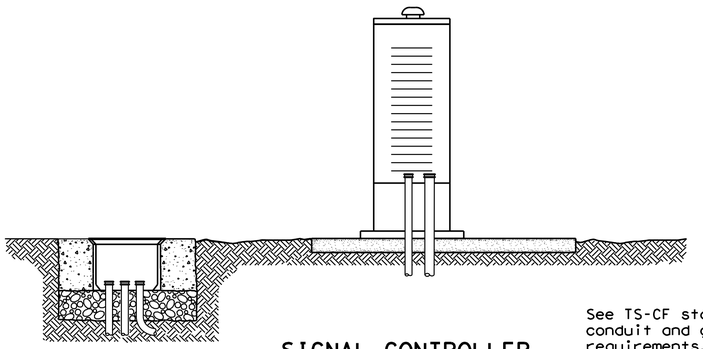
1. Do not pass luminaire conductors through the signal controller cabinet.
2. Include an equipment grounding conductor in all conduits throughout the electrical system. Bond all exposed metal parts to the grounding conductor.
3. Provide roadway luminaires, when required, in accordance with the material and construction sections of Item 610, "Roadway Illumination Assemblies," except for performance testing of luminaires. Test installed roadway luminaires for proper operation as a part of the associated traffic signal system test.
4. If internally illuminated street name signs are approved for use, ground the fixture to the pole with a 12 AWG green XHHW conductor.
5. Bond anchor bolts to rebar cage in two locations using #3 bars or 6 AWG stranded copper conductors. Use listed mechanical connectors rated for embedment in concrete. See TXDOT standard TS-FD for further details.
6. Drill and tap signal poles for ½ in. X 13 UNC tank ground fitting. Provide and install tank ground fitting 4 in. to 6 in. directly below electrical service enclosure. Provide properly sized hole through the bottom of the enclosure for the service grounding electrode conductor. Connect the electrical service grounding electrode conductor to the tank ground fitting. Ensure electrical service grounding electrode conductor is as short and straight as possible from the enclosure to the tank ground fitting. See Inset A detail for further information. Size service entrance conduit and branch circuit conduit as shown in the plans.
7. Mount electrical service enclosure and meter to signal pole with stainless steel bands. Ensure bands are a minimum width of ¾ in. Secure enclosures to bands using two-bolt brackets. Install brackets near top and bottom of each enclosure. Install properly sized stainless steel washers on each bolt in the enclosure. Band or drill and tap properly sized stand-off straps to signal pole for attaching conduit.
8. Conduct pull tests and insulation resistance tests on all illumination and power conductors as required in Item 620 "Electrical Conductors" and ED(3). To prevent electronics damage, do not conduct insulation resistance tests on traffic signal cables after termination.
9. Lock all enclosures and bolt down all ground box covers before applying power to the signal installation.
10. Terminate conduits entering the top of enclosures with a conduit-sealing hub or threaded boss such as meter hub. Install a grounding bushing on all metal conduits not connected to conduit-sealing hub or threaded boss. Bond the grounding bushing to the ground bus with a bonding jumper. Seal all conduits entering enclosures with duct seal or expanding foam. Do not use silicone to seal conduit ends.
11. For all conduits, ensure the burial depth is a minimum of 18". Ensure the minimum burial depth for conduit placed under a roadway is 24".



SIGNAL POLE WITH SERVICE

Type T electrical service mounted on signal pole shown as an example. See electrical details, layout sheets, and electrical service data chart for additional details.

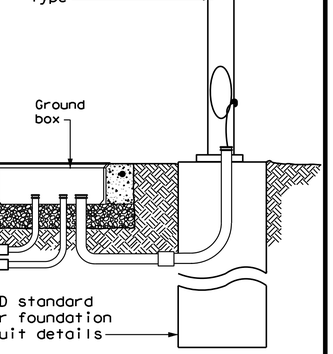
INSET A



SIGNAL CONTROLLER SIDE VIEW

See TS-CF standard for conduit and grounding requirements. See layout sheets for ground box locations and any additional conduits that are required.

SIGNAL CONTROLLER FRONT VIEW



SIGNAL POLE

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: Henry M. Walker, PE, CFM
Date: 11/26/2018

Texas Department of Transportation

Traffic Operations Division Standard

ELECTRICAL DETAILS TYPICAL TRAFFIC SIGNAL SYSTEM DETAILS

ED(8)-14

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PEDESTAL SERVICE NOTES

1. Manufacture pedestal electrical services in accordance with Departmental Material Specifications (DMS)11080 "Electrical Services", 11085 "Electrical Services-Pedestal (PS)" and Item 628 "Electrical Services. "Provide pedestal electrical services as listed on the Material Producers list (MPL) on the Department's web site under "Roadway Illumination and Electrical Supplies," Item 628. Ensure all mounting hardware and installation details of services meet utility company specifications. Contact the local utility company for approval of pedestal details prior to installing the electrical pedestal service. Submit any changes required by the utility company prior to manufacturing the pedestal enclosure.

2. When a meter socket is required, provide a socket with a minimum 100 amp rating that complies with local utility requirements.

3. Provide Class A or C concrete for pedestal service foundations in accordance with Item 420, "Concrete Substructures," except that concrete will not be paid for directly but is considered subsidiary to Item 628.

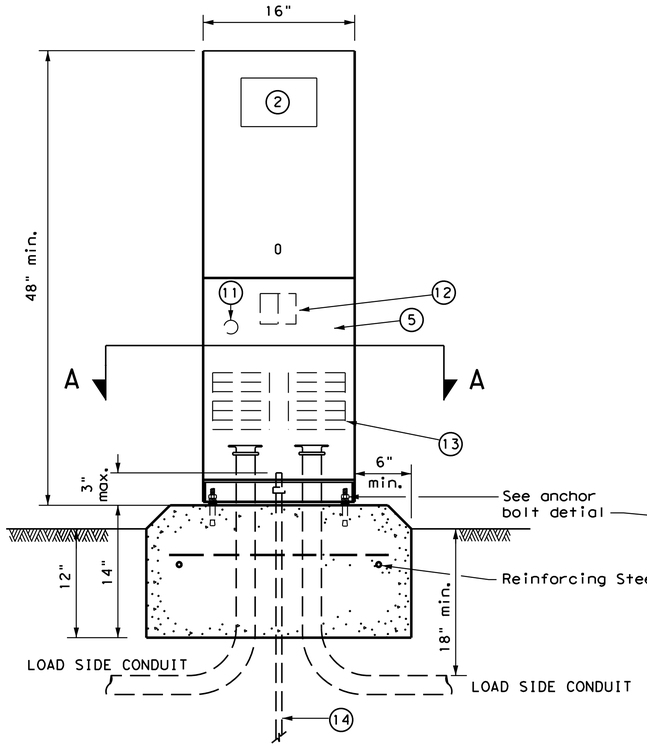
4. Provide #4 reinforcing steel for foundations in accordance with Item 440, "Reinforcement for Concrete."

5. Install ½ in. X 2 ⅛ in. minimum length concrete single expansion type anchors for mounting pedestal enclosure to foundation. Anchor location to match mounting holes in each corner of enclosure. Secure each of the four corners of the pedestal enclosure to the anchors in the foundation with a ½ in. galvanized or stainless steel machine thread bolt, a properly sized locknut and a flat washer.

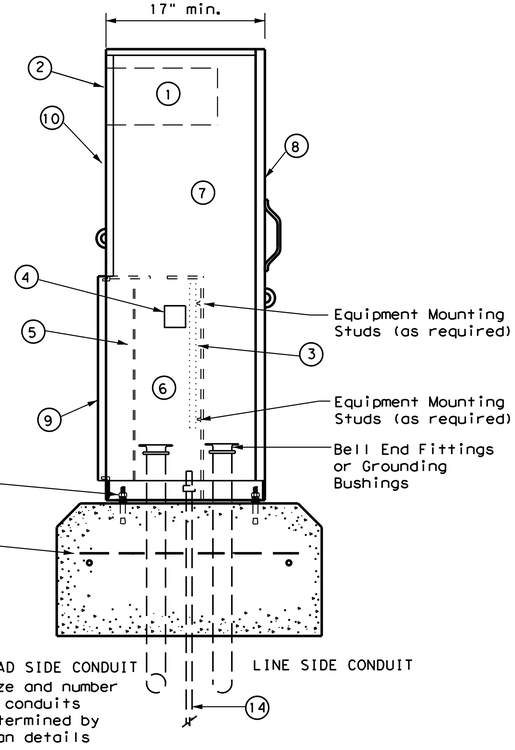
6. Finish top of concrete foundation in a neat and workmanlike manner. If leveling washers are used, ensure no more than ⅛ in. gap at any corner. Do not exceed a maximum dip or rise in the foundation of ⅛ in. per foot. When properly installed, ensure the top of the service enclosure is level front to back and side to side within ¼ in. Repair rocking or movement of the service enclosure at no additional cost to the department.

7. Do not use liquidtight flexible metal conduit (LFMC) on pedestal type services.

8. Ensure all elbows in the foundation are sized as per utility provider's conduit requirements for underground conduit and feeders. PVC extensions may be installed provided the ends of the rigid metal conduits are more than 2 in. below the top of the concrete foundation. Where extension conduits are metal, grounding bushings must be installed with a bonding jumper properly terminated.

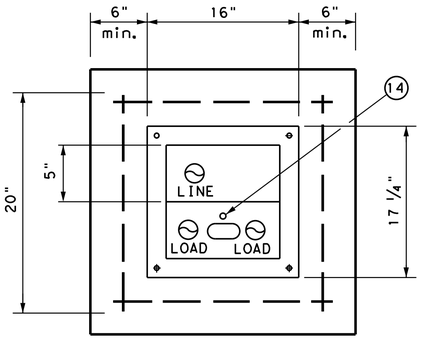


FRONT VIEW

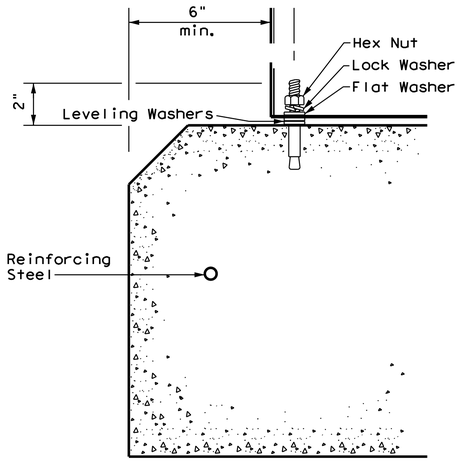


SIDE VIEW

TYPE C shown, TYPE A similar except that TYPE A shall have individual circuit breakers (CB) mounted on an equipment mounting panel. CB Handles shall protrude through hinged deadfront trim.



SECTION A-A



ANCHOR BOLT DETAIL

LEGEND	
1	Meter Socket, (when required)
2	Meter Socket Window, (when required)
3	Equipment Mounting Panel
4	Photo Electric Control Window, (When required)
5	Hinged Deadfront Trim
6	Load Side Conduit Trim
7	Line Side Conduit Area
8	Utility Access Door, with handle
9	Pedestal Door
10	Hinged Meter Access
11	Control Station (H-O-A Switch)
12	Main Disconnect
13	Branch Circuit Breakers
14	Copper Clad Ground Rod - 5/8" X 10'

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] P.E., CFM
Date: 11/26/2018

Texas Department of Transportation

Traffic Operations Division Standard

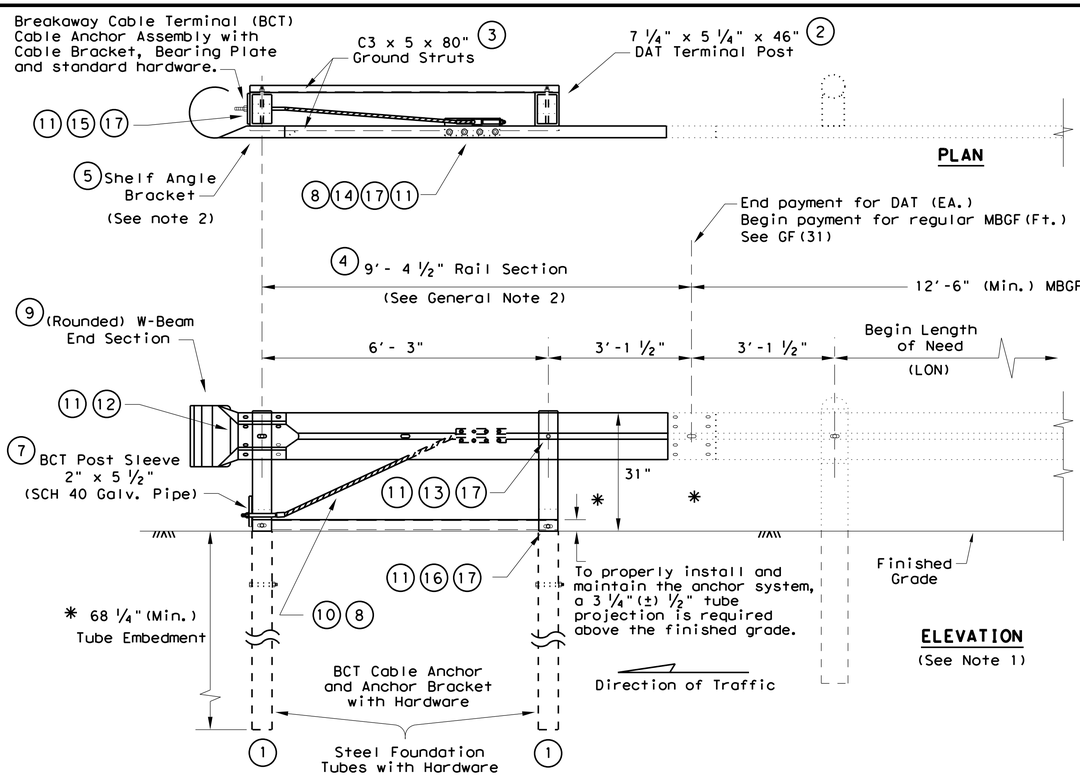
ELECTRICAL DETAILS
ELECTRICAL SERVICE SUPPORT
PEDESTAL SERVICE TYPE PS
ED(9)-14

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DOWNSTREAM ANCHOR TERMINAL (DAT)

Only for downstream use, when located outside the horizontal clearance area of opposing traffic.

GENERAL NOTES

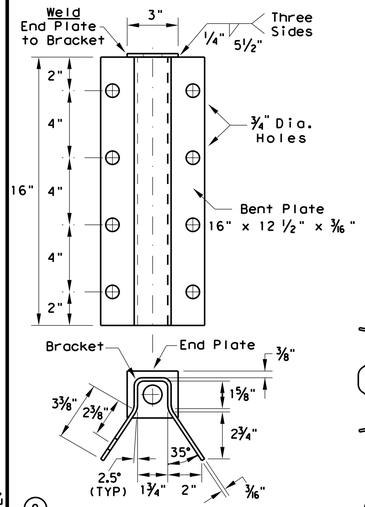
1. The detail shown is the minimum Length of Need (LON) for a DAT connected to a concrete rail.
2. The rail section at the end post is supported by the Shelf Angle Bracket. The rail element is not attached to the end post.
3. The foundation tubes shall not project more than 3 3/4" above the finished grade.
4. All hardware for DAT shall be ASTM A307 unless otherwise shown.
5. Refer to GF(31) sheet for terminal connection details.

MOW STRIP INSTALLATION

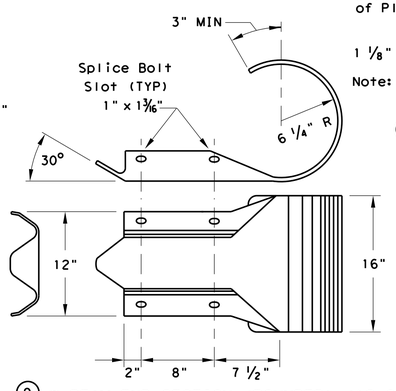
If a mow strip is required with the DAT installation the leave-out area around the steel foundation tubes and the two channel struts may be omitted. This will require a full pour at the foundation tubes.

#	(DAT) PARTS LIST	QTY
(1)	Steel Foundation Tube	2
(2)	DAT Terminal Post	2
(3)	Channel Strut	2
(4)	Terminal Rail Element	1
(5)	Shelf Angle Bracket	1
(6)	BCT Bearing Plate	1
(7)	BCT Post Sleeve	1
(8)	Guardrail Anchor Bracket	1
(9)	(Rounded)W-Beam End Section	1
(10)	BCT Cable Anchor	1
(11)	Recessed Nut, Guardrail	20
(12)	1 1/4" Button Head Bolt	4
(13)	10" Button Head Bolt	2
(14)	5/8" x 2" Hex Head Bolt	8
(15)	5/8" x 8" Hex Head Bolt	4
(16)	5/8" x 10" Hex Head Bolt	2
(17)	5/8" Flat Washer	18

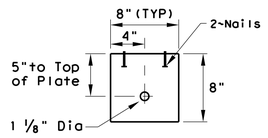
(4) TERMINAL RAIL ELEMENT FOR DAT



(8) GUARDRAIL ANCHOR BRACKET

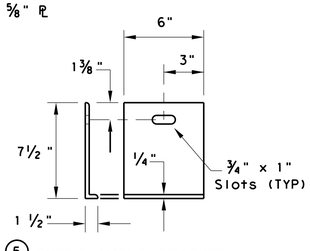


(9) W-BEAM END SECTION (ROUNDED) (12 GA.)

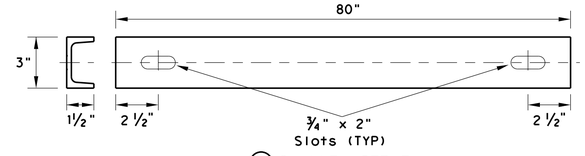


Note: Drive nails and bend over to prevent plate rotation

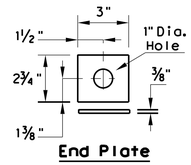
(6) BEARING PLATE
8"x 8"x 5/8" PL



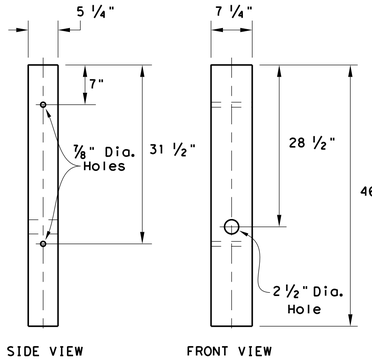
(5) SHELF ANGLE BRACKET



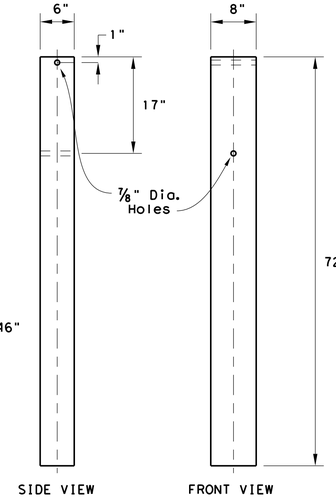
(3) CHANNEL STRUT
C3 x 5 x 80", Grade A36



End Plate



(2) TERMINAL POST
7 1/4"x 5 1/4"x 46" Wood Post



(1) STEEL FOUNDATION TUBE
6"x 8"x 1/8" x 72" Steel Tube

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Public Works Department
Engineering Division
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Capital Improvement Project
City Engineer:
Date: 11/26/2018

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Design Division Standard

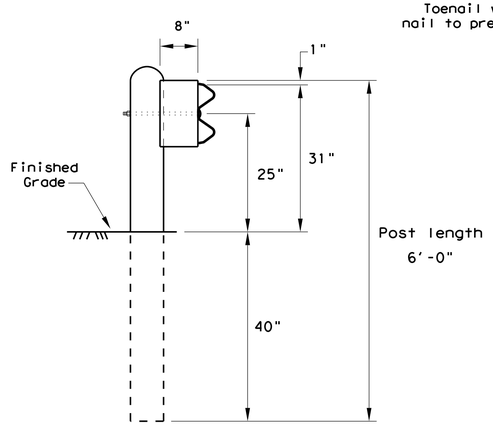
METAL BEAM GUARD FENCE
(Downstream Anchor Terminal)

GF(31)DAT-14

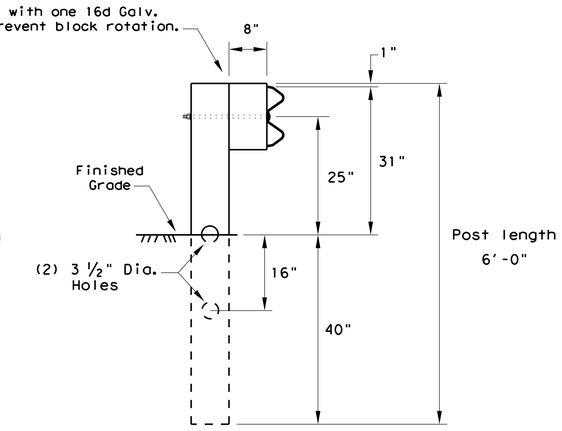
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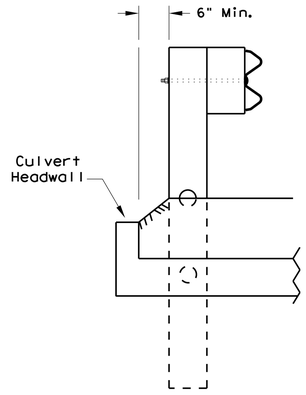


Standard Line Post Installation



Rectangular CRT Post (6"x 8" x 6' Long)

(6) CRT required.
See Elevation Detail for locations.

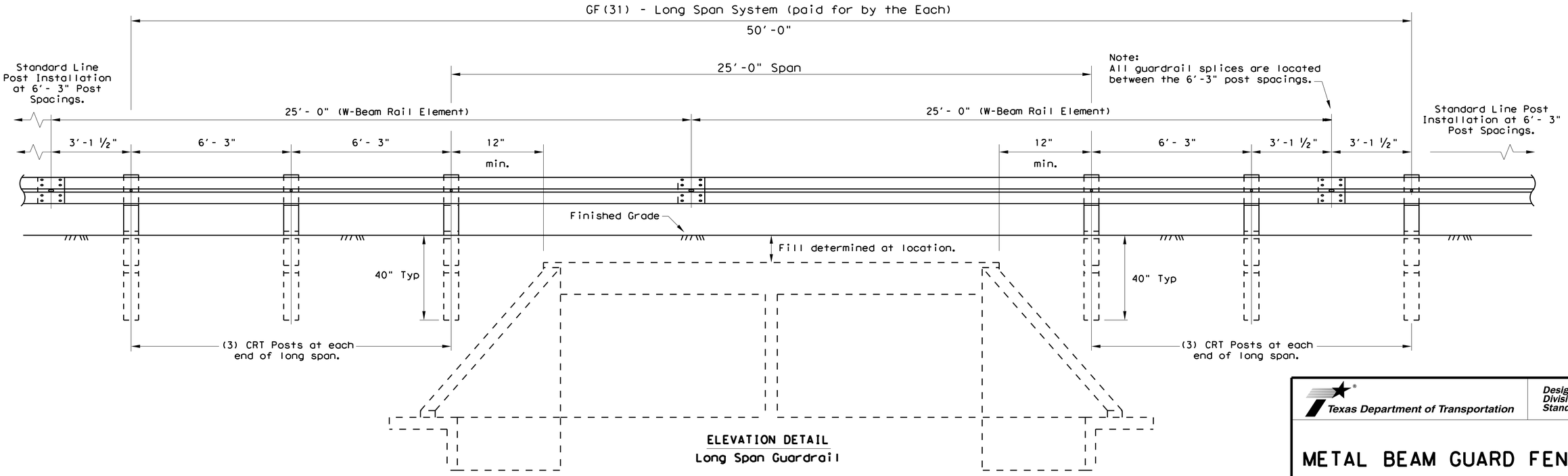


Lateral Offset Between the Guardrail and the Culvert Headwall

GENERAL NOTES

1. The type of line post (round wood post, rectangular wood post, or steel post) will be as shown in the plans. The exact position of the transitions shall be as shown in the plans or as directed by the Engineer. Steel posts to be galvanized in accordance with Item 445, "Galvanizing."
2. Rail element shall meet all requirements of Item 540, "Metal Beam Guard Fence" except as modified on the plans. The Contractor may furnish rail elements of 12 ½ or 25 foot nominal lengths.
3. Rail post holes are offset 3'- 1 ½" from standard guardrail to accommodate the midspan splicing.
4. Button head post bolts (ASTM A307) shall be of sufficient length to extend through the full thickness of the nut (ASTM A563) and no more than ¾" beyond it. Button head splice bolts (ASTM A307) are ⅝" x 1 ¼" with a ⅝" double recessed nut (ASTM A563). Galvanized fittings (bolts, nuts, and washers) shall be in accordance with Item, "Metal For Structures". Fittings shall be subsidiary to the bid item requiring construction of transition.
5. Where solid rock is encountered or where shown on the plans, the diameter of the holes shall be approximately 12 inches, the backfilling shall be with a cohesionless material, and embedment depth shall be 1' - 6" or more as directed by the Engineer.
6. Posts shall not be set in concrete, of any depth.
7. Refer to GF(31) Standard Sheet for additional details.

NOTE: Field drilled holes shall be repaired in accordance with Item 445, "Galvanizing". Flame cutting of holes in guardrail shall not be permitted.



ELEVATION DETAIL
Long Span Guardrail

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature], PE, CFM
Date: 11/26/2018

Texas Department of Transportation

Design Division Standard

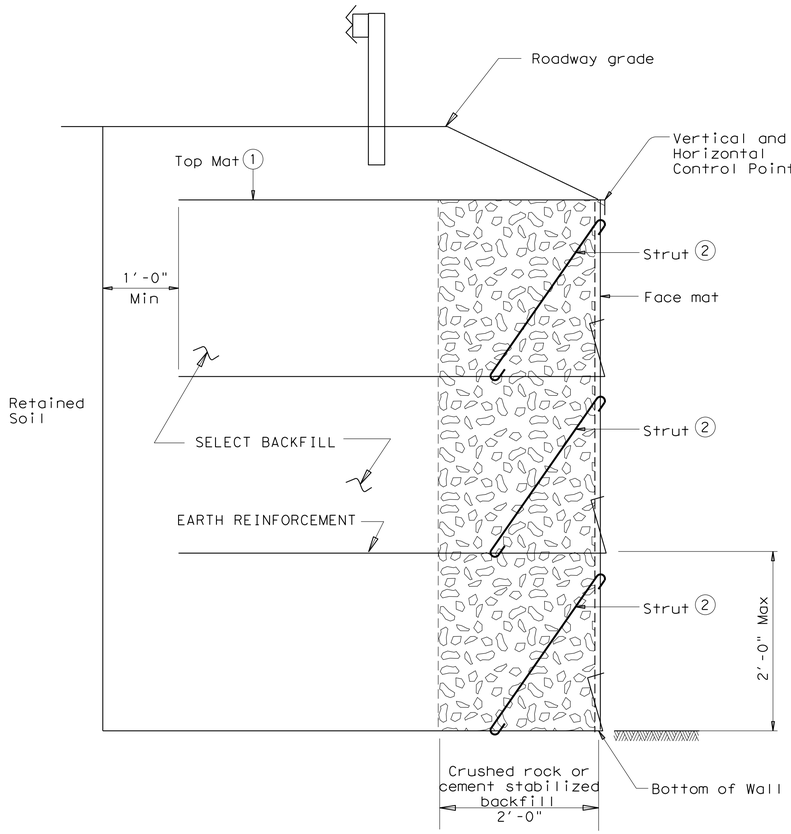
METAL BEAM GUARD FENCE
(LONG SPAN)

GF(31)LS-17

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REVISIONS Revised 12, 2017 CL	DIST	COUNTY		SHEET NO.

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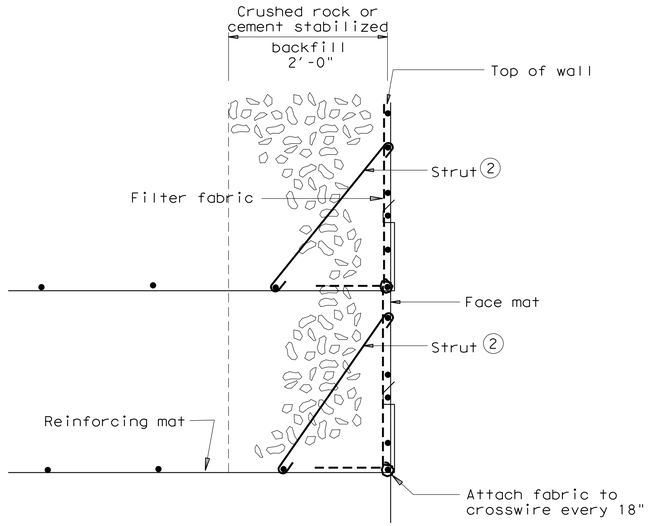


(1) Provide top mat to stabilize top of wall. Contractor may propose alternate method to stabilize top of wall.

(2) Provide intermediate stuts as required to stabilize face.

TYPICAL SECTION

(SHOWING TOP MAT OPTION)



DETAIL OF WALL FACE

(SHOWING STRUT OPTION)

EARTH REINFORCEMENTS:

The maximum vertical spacing of earth reinforcements shall be 24 inches.

The minimum length of earth reinforcements shall be 6 feet for walls 6 feet and shorter, and 8 feet for walls over 6 feet tall.

Minimum wire size for welded wire earth reinforcements shall be W4.5. Longitudinal wire spacing shall not exceed 12 inches. Transverse wire spacing shall not exceed 24 inches.

Earth reinforcement allowable stresses and pullout shall be calculated with current AASHTO Standard and Interim Specifications.

Factor of safety in pullout of the earth reinforcements shall be greater than 1.5 at each reinforcement level.

Temporary Earth Wall reinforcements that will be placed in the reinforced volume of a permanent MSE wall shall either be non-metallic or galvanized.

WALL FACE:

Minimum wire size for welded wire material used for all facing shall be W4.5. Spacing of the wire shall not exceed 6 inches in either the horizontal or vertical direction. The facing shall be designed to maintain a vertical position during wall backfilling. This may be accomplished with wire struts, external bracing, or other means which provide acceptable performance. If the face does not remain vertical during wall backfilling, work shall be stopped until the system is modified to meet this requirement.

Angled struts or a top mat shall be provided to stabilize the top basket face. Strut spacing shall not exceed 24 inches.

STABILITY CRITERIA:

Factor of safety in sliding along the base of the structure shall be greater than or equal to 1.5.

Factor of safety in overturning shall be greater than or equal to 2.0.

The base pressure resultant shall fall within the middle third of the retaining wall.

DESIGN PARAMETERS:

Structure shall be based on the following design parameters:

Random Backfill: Unit weight = 120 pcf.
(Embankment or Existing Soils) ø = 30° c = 0 psf
Select Backfill: Unit weight = 120 pcf
ø = 30° c = 0 psf

GENERAL NOTES:

Sections shown are for informational purposes only. Specific geometry is to be determined based on wall layouts and other plan information.

The select backfill specified for use within the Temporary Earth Wall Select Volume shall extend horizontally from the back of the 2' backfill zone to a minimum of 1' beyond the end of the earth reinforcements.

SPECIAL NOTE - FACE CONSTRUCTION

When constructing wire faced walls, it is critical that the area immediately behind the face mat be completely filled. Failure to fill and compact this area will result in bulging of the face mats and settlement of the top of wall. The filter fabric shall closely follow the contours of the face unit, with particular attention paid to the lower corner of the basket. The fabric shall be pulled into the corner and attached to the basket with hog rings or tie wire. The coarse rock or cement stabilized backfill in the two foot zone behind the face shall extend completely to the top of the face mat. Particular care shall be taken not to leave a gap or void below the next layer of earth reinforcement.

City of Rockwall
Public Works Department
Engineering Division
APPROVED FOR CONSTRUCTION
Capital Improvement Project
City Engineer: [signature] PE, CFM
Date: 11/26/2018

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Bridge Division Standard

TEMPORARY EARTH RETAINING WALL

RW(TEW)

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01-13: Added Struts.	DIST	COUNTY		SHEET NO.
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