

CITY OF FRISCO, TEXAS



LEBANON ROAD IMPROVEMENTS AND FORCE MAIN

CITY OF FRISCO

MAHER MASO, MAYOR

CITY COUNCIL

MAHER MASO, MAYOR

BOB ALLEN, PLACE 1

SHONA HUFFMAN, PLACE 2

SCOTT JOHNSON, PLACE 6

TIM NELSON, DEPUTY MAYOR PRO TEM, PLACE 5

WILL SOWELL, MAYOR PRO TEM, PLACE 3

BILL WOODARD, PLACE 4

GEORGE PUREFOY, CITY MANAGER

PAUL KNIPPEL, P.E., DIRECTOR OF ENGINEERING SERVICES

BID NO. 1704-071
MUNIS NO. 15608

MAY 2017



5805 Main Street, Suite B
Frisco, Texas 75034
Phone - (972) 624-9201
Fax - (972) 624-9202
Web - www.freese.com

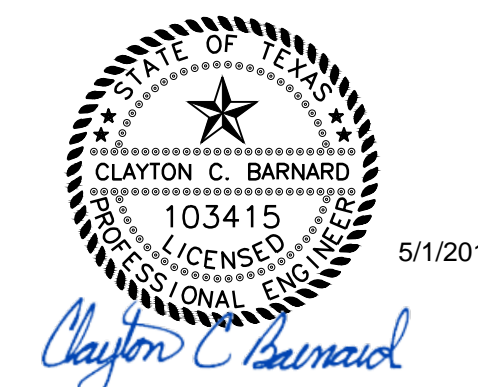
FRC15624

LANE CLOSURES CAN ONLY OCCUR BETWEEN 9 AM AND 3:30 PM (EXCEPT AS OTHERWISE NOTED) AND AFTER WRITTEN APPROVAL FROM THE CITY OF FRISCO.

THESE CONSTRUCTION PLANS HAVE BEEN REVIEWED BY THE CITY OF FRISCO. THE CITY HAS DETERMINED THAT THEY ARE IN GENERAL COMPLIANCE WITH THE CITY'S MASTER PLANS AND ENGINEERING DESIGN STANDARDS. THE CITY'S REVIEW AND RELEASE OF THESE PLANS DOES NOT REPRESENT THAT THE CITY HAS RE-ENGINEERED OR VERIFIED THE ENGINEERING OF THE PROPOSED IMPROVEMENTS. THE DESIGN ENGINEER IS RESPONSIBLE FOR ALL ENGINEERING AND RECOGNIZES THAT SPECIFIC SITE CIRCUMSTANCES OR CONDITIONS MAY REQUIRE IMPROVEMENTS CONSTRUCTED TO EXCEED MINIMUM STANDARDS CONTAINED IN THE CITY'S ENGINEERING DESIGN STANDARDS. THE DESIGN ENGINEER IS RESPONSIBLE FOR THE APPLICABILITY AND ACCURACY OF THE PLANS AND SPECIFICATIONS CONTAINED HEREIN. CLAYTON C. BARNARD, P.E., FIRM REGISTRATION #2144.

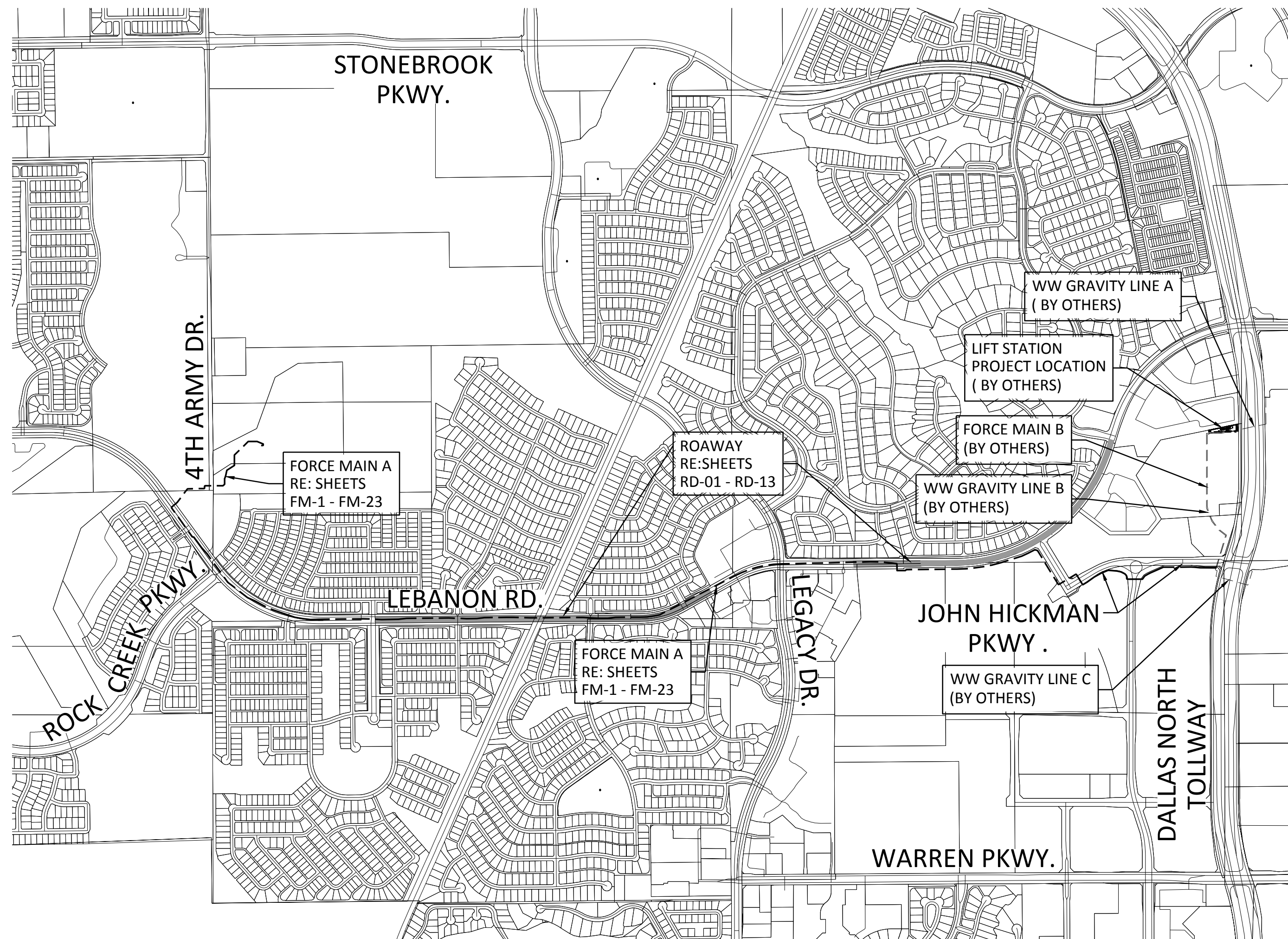
THE STANDARD CITY, TxDOT, NCTCOG, ETC. DETAILS SPECIFICALLY IDENTIFIED IN THIS SET OF CONSTRUCTION PLANS, OR SPECIFICALLY INCLUDED IN THESE BIDDING/CONTRACT DOCUMENTS HAVE BEEN SELECTED BY ME OR UNDER MY DIRECT RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT. CLAYTON C. BARNARD, P.E., FIRM REGISTRATION #2144.

Freese and Nichols, Inc. Texas Board of
Professional Engineers Reg. No. 2144





LOCATION MAP
NOT TO SCALE



VICINITY MAP
NOT TO SCALE



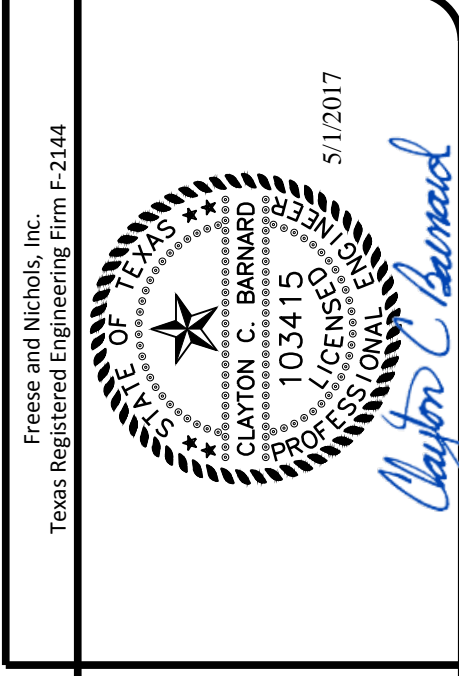
| | |
|--|--|
| | PROPOSED FORCE MAIN |
| | PAVEMENT REPLACEMENT (CONCRETE, ASPHALT, GRAVEL) |
| | EXISTING WATERLINE |
| | OVERHEAD ELECTRIC |
| | UNDERGROUND TELEPHONE LINE |
| | UNDERGROUND FIBER OPTIC LINE |
| | UNDERGROUND GAS LINE |
| | EXISTING SANITARY SEWER |
| | EXISTING REUSE WATER |
| | EXISTING CREEK |
| | BARBED WIRE FENCE |
| | GUARD RAIL |
| | IRON FENCE |
| | WOOD FENCE |
| | SILT FENCE |
| | ASPHALT PAVING |
| | BRUSH OR TREES |
| | SURVEY CONTROL POINT |

LEGEND OF SYMBOLS

| | | | |
|--|--------------------------------------|--|--------------------------|
| | EXISTING VALVE | | GUY WIRE AND ANCHOR |
| | PROPOSED PLUG VALVE | | TELEPHONE PEDESTAL |
| | QUALITY LEVEL A SUE TEST HOLE | | SIGN |
| | FIRE HYDRANT (EXISTING) | | TREE |
| | EXISTING SPRINKLER VALVE | | TREE TO BE REMOVED |
| | EXISTING SPRINKLER CONTROL VALVE BOX | | TREE TO BE REPLACED |
| | LIGHT STANDARD | | TREE TO BE PROTECTED |
| | POWER POLE | | WATER METER OR GAS METER |
| | PROPERTY LINE AND/OR R.O.W. | | |
| | EXISTING EASEMENT | | |
| | PROPOSED EASEMENT | | |

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FREES & NICHOLS
 5905 McIn Street, Suite B
 Frisco, Texas 75034
 Phone - (972) 624-9201
 Fax - (972) 624-9202
 Web - www.freese.com

CITY OF FRISCO, TEXAS
**LEBANON ROAD IMPROVEMENTS
 AND FORCE MAIN**
 GENERAL

| | | | | | | | |
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| NO. | ISSUE | DATE | BY | DESIGNED | REVIEWED | CHECKED | FILE NAME |
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| VERIFY SCALE: Bar is one inch on original drawing. If not one inch on this sheet, adjust scale. | | | | | | | |
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**CITY OF FRISCO
GENERAL NOTES FOR ALL CONSTRUCTION ACTIVITIES**

- ALL CONSTRUCTION, TESTING, AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CITY'S CURRENT STANDARDS, DETAILS, AND SPECIFICATIONS.
- TESTING AND INSPECTION OF MATERIALS SHALL BE PERFORMED BY A COMMERCIAL TESTING LABORATORY APPROVED BY THE CITY. CONTRACTOR SHALL FURNISH MATERIALS OR SPECIMENS FOR TESTING, AND SHALL FURNISH SUITABLE EVIDENCE THAT THE MATERIALS PROPOSED TO BE INCORPORATED INTO THE WORK ARE IN ACCORDANCE WITH THE SPECIFICATIONS.
- CONTRACTOR SHALL NOTIFY THE CITY AT LEAST 48 HOURS PRIOR TO BEGINNING ANY CONSTRUCTION.
- CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS PRIOR TO BEGINNING ANY CONSTRUCTION. CONTACT ROW INSPECTION DIVISION OF PUBLIC WORKS AT 972-292-5820 FOR A PERMIT TO WORK WITHIN CITY ROW.
- CONTRACTOR MUST KEEP AVAILABLE ON-SITE AT ALL TIMES APPROVED CONSTRUCTION PLANS AND COPIES OF ANY REQUIRED PERMITS ALONG WITH THE CURRENT VERSIONS OF THE FOLLOWING REFERENCES: CITY OF FRISCO ENGINEERING STANDARDS, NCTCOG SPECIFICATIONS, TXDOT SPECIFICATIONS, TXDOT STANDARD DRAWINGS.
- ALL SHOP DRAWINGS, WORKING DRAWINGS OR OTHER DOCUMENTS WHICH REQUIRE REVIEW BY THE CITY SHALL BE SUBMITTED BY THE CONTRACTOR SUFFICIENTLY IN ADVANCE OF SCHEDULED CONSTRUCTION TO ALLOW NO LESS THAN 14 CALENDAR DAYS FOR REVIEW AND RESPONSE BY THE CITY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REQUIRED CONSTRUCTION SURVEYING AND STAKING AND SHALL NOTIFY THE CITY OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH ANY WORK.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL SURVEY MARKERS INCLUDING IRON RODS, PROPERTY CORNERS, OR SURVEY MONUMENTS WITHIN THE LIMITS OF CONSTRUCTION AND OUTSIDE ROW DURING CONSTRUCTION. ANY SURVEY MARKERS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR AT NO COST TO THE CITY.
- CONTRACTOR SHALL PROVIDE A CONSTRUCTION SCHEDULE WITH WEEKLY PROGRESS REPORTS.
- CONTRACTOR IS RESPONSIBLE FOR KEEPING STREETS AND DRIVEWAYS ADJACENT TO THE PROJECT FREE OF MUD AND DEBRIS AT ALL TIMES. CONTRACTOR SHALL CLEAN UP AND REMOVE ALL LOOSE MATERIAL RESULTING FROM CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL TAKE ALL AVAILABLE PRECAUTIONS TO CONTROL DUST.
- THE EXISTENCE AND LOCATIONS OF THE PUBLIC AND FRANCHISE UTILITIES SHOWN ON THE DRAWINGS WERE OBTAINED FROM AVAILABLE RECORDS AND ARE APPROXIMATE. THE CONTRACTOR SHALL DETERMINE THE DEPTH AND LOCATION OF EXISTING UNDERGROUND UTILITIES PRIOR TO EXCAVATING, TRENCHING, OR DRILLING AND SHALL BE REQUIRED TO TAKE ANY PRECAUTIONARY MEASURES TO PROTECT ALL LINES SHOWN AND / OR ANY OTHER UNDERGROUND UTILITIES NOT OF RECORD OR NOT SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING ALL PUBLIC AGENCIES AND FRANCHISE UTILITIES 48 HOURS PRIOR TO CONSTRUCTION. (DIG-TESS 1-800-344-8377) THE CONTRACTOR MAY BE REQUIRED EXPOSE THESE FACILITIES AT NO COST TO THE CITY. THE CONTRACTOR WILL BE RESPONSIBLE FOR DAMAGES TO UTILITIES IF THE DAMAGE IS CAUSED BY NEGLIGENCE OR FAILURE TO HAVE LOCATES PERFORMED.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING FACILITIES OR ADJACENT PROPERTIES DURING CONSTRUCTION. ANY REMOVAL OR DAMAGE TO EXISTING FACILITIES SHALL BE REPLACED OR REPAIRED TO EQUAL OR BETTER CONDITION BY THE CONTRACTOR.
- CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND INSTALLING ALL TEMPORARY AND PERMANENT TRAFFIC CONTROL IN ACCORDANCE WITH THE MINIMUM REQUIREMENTS OF THE LATEST REVISION OF THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD) AND TXDOT BARRICADE AND CONSTRUCTION STANDARDS.
- CONTRACTOR SHALL NOT IMPEDE TRAFFIC ON EXISTING STREETS, DRIVEWAYS, ALLEYS, OR FIRE LANES OPEN TO THE PUBLIC. IN THE EVENT THE CONSTRUCTION WORK REQUIRES THE CLOSURE OF AN EXISTING STREET, ALLEY, OR FIRE LANE, THE CONTRACTOR SHALL REQUEST THE ROAD CLOSURE THROUGH THE CITY TRAFFIC DIVISION 972-292-5400 A MINIMUM OF 48 HOURS IN ADVANCE OF THE REQUESTED CLOSURE. CLOSURES WILL NOT BE ALLOWED PRIOR TO 9:00 A.M. OR AFTER 3:30 P.M., MONDAY THROUGH FRIDAY UNLESS OTHERWISE APPROVED BY THE CITY.
- CONTRACTOR SHALL NOT STORE MATERIALS, EQUIPMENT OR OTHER CONSTRUCTION ITEMS ON ADJACENT PROPERTIES OR RIGHT-OF-WAY WITHOUT THE PRIOR WRITTEN CONSENT OF THE PROPERTY OWNER AND THE CITY.
- TEMPORARY FENCING SHALL BE INSTALLED PRIOR TO THE REMOVAL OF EXISTING FENCING. TEMPORARY FENCING SHALL BE REMOVED AFTER PROPOSED FENCING IS APPROVED BY THE CITY. ALL TEMPORARY AND PROPOSED FENCING LOCATIONS SHALL BE SUBJECT TO FIELD REVISIONS AS DIRECTED BY THE CITY.
- UNUSABLE EXCAVATED MATERIAL, OR CONSTRUCTION DEBRIS SHALL BE REMOVED AND DISPOSED OF OFFSITE AT AN APPROVED DISPOSAL FACILITY BY THE CONTRACTOR AT HIS EXPENSE.
- CONTRACTOR SHALL AVOID DAMAGE TO EXISTING TREES. WHEN NECESSARY, TREES AND SHRUB TRIMMING FOR CONSTRUCTION SHALL BE PERFORMED BY CERTIFIED TREE WORKER OR UNDER THE DIRECTION OF A REGISTERED LANDSCAPE ARCHITECT OR CERTIFIED ARBORIST.
- EROSION CONTROL DEVICES SHALL BE INSTALLED ON ALL PROJECTS PRIOR TO BEGINNING CONSTRUCTION AND SHALL BE MAINTAINED THROUGHOUT THE PROJECT IN A CONDITION ACCEPTABLE TO THE CITY.
- CONTRACTOR SHALL LOCATE AND PROTECT ALL EXISTING LANDSCAPE IRRIGATION SYSTEMS. DAMAGE TO EXISTING IRRIGATION SYSTEMS AND LANDSCAPE MATERIALS SHALL BE RESTORED TO EQUAL OR BETTER CONDITION AT NO COST TO CITY.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN A NEAT AND ACCURATE RECORD OF CONSTRUCTION FOR THE CITY'S RECORDS.
- THE CONTRACTOR IS TO MAINTAIN A CLEAR SIGHT ZONE FROM EACH MEDIAN NOSE FOR A DISTANCE OF 150' WITH NO DIRT OR ROCK PILES OVER 24" FROM TOP OF CURB. PIPE CAN BE STORED IN THESE AREAS FOR NO MORE THAN 48 HOURS. EQUIPMENT MUST NOT BE PARKED IN THESE AREAS OVERNIGHT.

**CITY OF FRISCO
GENERAL NOTES FOR PAVING**

- ALL PAVING CONSTRUCTION, TESTING, AND MATERIALS, INCLUDING CONCRETE, REINFORCEMENT, JOINTING, AND SUBGRADE PREPARATION AND TREATMENT SHALL BE IN ACCORDANCE WITH THE CITY'S CURRENT STANDARDS, DETAILS, AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
- ABSOLUTELY NO EARTHWORK, LIME APPLICATION, OR OTHER PREPARATION OF THE SUBGRADE FOR PAVING OF STREETS, ALLEYS, OR FIRE LANES SHALL BE INITIATED WITHOUT AUTHORIZATION FROM THE CITY. THE CITY WILL AUTHORIZE THE SUBGRADE WORK IN PREPARATION FOR PAVING AFTER UTILITY TRENCH BACKFILL TESTING HAS BEEN COMPLETED AND VERIFIED TO MEET THE CITY REQUIREMENTS.
- CONTRACTOR IS RESPONSIBLE FOR ENSURING ALL PEDESTRIAN WORK MEETS OR EXCEEDS THE CURRENT AMERICAN WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES (ADAAG) AND THE TEXAS ACCESSIBILITY STANDARDS (TAS). THE CONTRACTOR SHALL REMOVE AND REPLACE ANY CONSTRUCTED OR INSTALLED ITEMS NOT MEETING THE CURRENT ADAAG AND TAS REQUIREMENTS AT NO ADDITIONAL COST TO THE CITY.

**CITY OF FRISCO
GENERAL NOTES FOR TRAFFIC SIGNALS AND STREET LIGHTING**

- ALL TRAFFIC SIGNAL AND STREET LIGHTING CONSTRUCTION, TESTING, AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CITY'S CURRENT STANDARDS, DETAILS, AND SPECIFICATIONS UNLESS OTHERWISE NOTED. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE MOST CURRENT NATIONAL ELECTRICAL CODE, CITY AND TXDOT SPECIFICATIONS AND STANDARDS.
- CONTRACTOR SHALL NOTIFY THE TRAFFIC DEPARTMENT (TRACY NICHOLS) AT LEAST 7 BUSINESS DAYS PRIOR TO ANY WORK, PROVIDE A CONSTRUCTION SCHEDULE WITH WEEKLY PROGRESS REPORTS, AND NOTIFY THE TRAFFIC DEPARTMENT AT LEAST 48 HOURS PRIOR TO SIGNAL TURN-ON.
- CONTRACTOR SHALL COORDINATE ELECTRICAL SERVICES WITH THE CITY AND EITHER ONCOR OR COSERV REPRESENTATIVES (ACCORDING TO THEIR RESPECTIVE AREA).
- CONTRACTOR SHALL COORDINATE WITH THE ELECTRIC COMPANY TO DE-ENERGIZE ANY OVERHEAD OR UNDERGROUND POWER LINES. ANY COST ASSOCIATED WITH DE-ENERGIZING THE POWER LINE AND/OR ANY OTHER PROTECTIVE MEASURES REQUIRED SHALL BE AT NO COST TO CITY.
- THE CONTRACTOR SHALL COORDINATE WITH THE APPROPRIATE UTILITY COMPANY AND TXDOT/NTTA (IF WITHIN TXDOT/NTTA ROW) PRIOR TO BEGINNING ERECTION OF POLES, LUMINARIES AND STRUCTURES LOCATED NEAR ANY OVERHEAD OR UNDERGROUND UTILITIES.
- PROPOSED CONCRETE FOUNDATION AND CONDUIT ALIGNMENT SHALL BE STAKED BY THE CONTRACTOR AND APPROVED BY THE CITY PRIOR TO INSTALLATION.
- CONTRACTOR SHALL CONTACT THE CITY (TRACY NICHOLS) FOR INSPECTION PRIOR TO POURING ANY CONCRETE FOUNDATION AND DIGGING FOR CONDUIT RUNS AT LEAST 48 HOURS IN ADVANCE (BETWEEN 8 AM - 5PM).
- CONTRACTOR SHALL HAVE A QUALIFIED IMSA LEVEL II OR A TRF453 CERTIFIED TECHNICIAN ON THE PROJECT SITE TO PLACE THE TRAFFIC SIGNALS IN OPERATION.
- ELECTRICAL WORK SHALL BE PERFORMED BY CERTIFIED PERSONS IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT AND MAY BE REJECTED AS UNSUITABLE FOR USE DUE TO POOR WORKMANSHIP. THE REQUIRED ELECTRICAL CERTIFICATION COURSE IS AVAILABLE AND IS SCHEDULED PERIODICALLY BY TEEEX. ALTERNATIVELY, THE CONTRACTOR MAY PURCHASE AN ENTIRE COURSE FOR THEIR PERSONNEL TO BE HELD AT A TIME AND LOCATION OF THEIR CHOICE AS NEGOTIATED THROUGH TEEEX. FOR MORE INFORMATION, CONTACT: TEXAS ENGINEERING EXTENSION SERVICE (TEEX), TXDOT ELECTRICAL SYSTEM COURSE, (979) 845-6563.
- THE CONTRACTOR SHALL NOT PLACE PEDESTRIAN CROSSWALK AND STOP BAR PAVEMENT MARKINGS UNTIL SIGNAL IS OPERATIONAL.
- ALL LIGHTING POLES, FIXTURES, AND ARMS WHICH ARE REMOVED SHALL BE DELIVERED TO THE CITY PUBLIC WORKS FACILITY (11300 RESEARCH ROAD, FRISCO, TEXAS 75034) BY THE CONTRACTOR AND WILL REMAIN THE PROPERTY OF THE CITY. CONTACT THE TRAFFIC DEPARTMENT AT LEAST 24 HOURS IN ADVANCE OF DELIVERY.
- DURING THE 30-DAY TRAFFIC SIGNAL TEST PERIOD, CONTRACTOR SHALL RESPOND TO AND DIAGNOSE ALL TROUBLE CALLS WITH QUALIFIED PERSONNEL WITHIN A REASONABLE TRAVEL TIME FROM A DALLAS ADDRESS, BUT NOT MORE THAN TWO (2) HOURS MAXIMUM. CONTRACTOR SHALL REPAIR ANY MALFUNCTIONS OF SIGNAL EQUIPMENT SUPPLIED BY CONTRACTOR ON THE PROJECT. A LOCAL TELEPHONE NUMBER (NOT SUBJECT TO FREQUENT CHANGES) WHERE TROUBLE CALLS ARE TO BE RECEIVED ON A 24-HOUR BASIS SHALL BE PROVIDED TO THE CITY BY THE CONTRACTOR. APPROPRIATE REPAIRS SHALL BE MADE WITHIN 24 HOURS. THE CONTRACTOR S KEEP A RECORD OF EACH TROUBLE CALL REPORTED IN THE LOGBOOK PROVIDED BY THE CITY AND SHALL NOTIFY THE CITY OF EACH TROUBLE CALL. THE ERROR LOG IN THE MALFUNCTION MANAGEMENT UNIT (MMU) SHALL NOT BE CLEARED DURING THE 30-DAY TEST PERIOD WITHOUT THE APPROVAL OF THE CITY.
- TEXAS STATE LAW, ARTICLE 1436C, MAKES IT UNLAWFUL TO OPERATE EQUIPMENT OR MACHINES WITHIN 10-FEET OF ANY OVERHEAD ELECTRICAL LINES UNLESS DANGER AGAINST CONTACT WITH HIGH VOLTAGE OVERHEAD LINES HAS BEEN EFFECTIVELY GUARDED AGAINST PURSUANT TO THE PROVISIONS OF THIS ARTICLE. WHEN CONSTRUCTION OPERATIONS REQUIRE WORKING NEAR AN OVERHEAD ELECTRICAL LINE, THE CONTRACTOR SHALL CONTACT THE OWNER/OPERATOR OF THE OVERHEAD ELECTRICAL LINE TO MAKE ADEQUATE ARRANGEMENTS AND TO TAKE NECESSARY SAFETY PRECAUTIONS TO ENSURE THAT ALL LAWS, ELECTRICAL LINE OWNER/OPERATOR REQUIREMENTS AND STANDARD SAFETY PRACTICES ARE MET.

**CITY OF FRISCO
GENERAL NOTES FOR STORM DRAIN**

- ALL STORM DRAIN CONSTRUCTION, TESTING, AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CITY'S CURRENT STANDARDS, DETAILS, AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL SUBMIT A TRENCH SAFETY PLAN PRIOR TO THE PRE-CONSTRUCTION MEETING.

**CITY OF FRISCO
GENERAL NOTES FOR WATER AND WASTE WATER**

- ALL WATER AND WASTEWATER CONSTRUCTION, TESTING, AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CITY'S CURRENT STANDARDS, DETAILS, AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL SUBMIT A TRENCH SAFETY PLAN PRIOR TO THE PRE-CONSTRUCTION MEETING.
- CONTRACTOR SHALL NOT OPERATE EXISTING VALVES. CONTACT THE CITY'S PUBLIC WORKS DEPARTMENT TO REQUEST VALVE CHANGES.

**CITY OF FRISCO
GENERAL NOTES FOR LANDSCAPING**

- ALL LANDSCAPING CONSTRUCTION, INSTALLATION, TESTING, AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CITY'S CURRENT STANDARDS, DETAILS, AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
- WHERE TRANSPLANTING OR TREE REMOVAL IS REQUIRED CONTRACTOR MUST APPLY FOR A TREE PERMIT PRIOR TO OBTAINING A GRADING PERMIT OR SCHEDULING THE PRE-CONSTRUCTION MEETING. CONTACT DEVELOPMENT SERVICES LANDSCAPE ARCHITECT FOR TREE PERMIT.
- PRIOR TO OBTAINING A GRADING PERMIT OR SCHEDULING THE PRE-CONSTRUCTION MEETING, ALL TREE MARKINGS AND PROTECTIVE FENCING MUST BE INSTALLED BY THE CONTRACTOR AND BE INSPECTED BY THE CITY'S LANDSCAPE ARCHITECT.
- ALL TREES WHICH ARE TO REMAIN ON SITE SHALL BE PROTECTED WITH A 4' TALL BRIGHTLY COLORED PLASTIC FENCE PLACED AT THE DRIP LINE OF THE TREES.
- TREES TO BE REMOVED MAY BE CHIPPED AND USED FOR MULCH ON SITE OR HAULED OFF-SITE. BURNING OF REMOVED TREES, STUMPS, OR FOLIAGE REQUIRES WRITTEN APPROVAL BY THE FIRE DEPARTMENT.
- PLANT MATERIALS SHALL NOT IMPEDE OR OBSTRUCT VISION OR ROUTE OF TRAVEL FOR VEHICULAR, PEDESTRIAN, OR BICYCLE TRAFFIC ALONG CITY RIGHT-OF-WAY, VISIBILITY EASEMENTS, SIDEWALKS OR OTHER EASEMENTS.
- NO SIGNS, WIRES, OR OTHER ATTACHMENTS OTHER THAN THOSE OF A PROTECTIVE NATURE SHALL BE ATTACHED TO ANY TREE TO REMAIN ON SITE.

**CITY OF FRISCO
GENERAL NOTES FOR IRRIGATION**

- ALL IRRIGATION CONSTRUCTION, INSTALLATION, TESTING, AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CITY'S CURRENT STANDARDS, DETAILS, AND SPECIFICATIONS UNLESS OTHERWISE NOTED.
- A PERMIT FROM THE BUILDING INSPECTION DEPARTMENT IS REQUIRED FOR EACH IRRIGATION SYSTEM.
- CONTRACTOR SHALL NOTIFY THE PARKS DEPARTMENT OF ANY MODIFICATIONS TO THE EXISTING SYSTEM.
- CONTRACTOR SHALL SCHEDULE A MEETING WITH THE PARKS DEPARTMENT TO COORDINATE WORK PRIOR TO ANY DEMOLITION OR REMOVAL OF EXISTING IRRIGATION AND PRIOR TO ANY INSTALLATION OF NEW IRRIGATION.
- CONTRACTOR SHALL LOCATE AND PROTECT ALL EXISTING LANDSCAPE IRRIGATION SYSTEMS. DAMAGE TO EXISTING IRRIGATION SYSTEMS AND LANDSCAPE MATERIALS SHALL BE RESTORED TO EQUAL OR BETTER CONDITION AT NO COST TO CITY.
- CONTRACTOR SHALL PROGRAM EACH CONTROLLER ZONE BASED ON SPRINKLER TYPE, PLANT VARIETY, SOIL CHARACTERISTIC, SLOPE AND SOLAR ORIENTATION AS DESIGNATED ON THE PLANS. THE CONTRACTOR SHALL COORDINATE WITH THE CITY PARKS DEPARTMENT FOR APPROVAL OF THE CONTROLLER SETTINGS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH FRANCHISE UTILITY PROVIDER TO PROVIDE POWER TO EACH IRRIGATION CONTROLLER. CONTRACTOR SHALL HAVE UNDERGROUND POWER LINES INSTALLED FROM POWER SOURCE UP TO THE CONTROLLER. CONTRACTOR SHALL MEET CONTROLLER SPECIFICATIONS FOR POWER REQUIREMENTS.
- CONTRACTOR SHALL SET A TEMPORARY CONTROLLER TO ESTABLISH LANDSCAPE. ONCE LANDSCAPE IS ESTABLISHED, CONTRACTOR SHALL CONTACT THE CITY'S PARKS AND RECREATION DEPARTMENT FOR ASSISTANCE ON INSTALLATION OF INTER SPEC CONTROLLER.

**CITY OF FRISCO
GENERAL NOTES FOR EROSION CONTROL AND STORMWATER**

- STEEL POSTS SHALL NOT BE USED TO INSTALL EROSION CONTROL MEASURES WITHIN CITY ROW.
- NO EQUIPMENT SHALL BE CLEANED ON-SITE, OR OTHER LIQUIDS DEPOSITED AND ALLOWED TO FLOW OVERLAND OR SUBTERRANEAN WITHIN THE LIMITS OF THE CRITICAL ROOT ZONE OF TREES THAT REMAIN ON SITE. THIS INCLUDES PAINT, OIL, SOLVENTS, ASPHALT, CONCRETE, CONCRETE EQUIPMENT WASH WATER, MORTAR OF SIMILAR MATERIALS.
- ASPHALT BAGS SHALL BE PLACED AT CONSTRUCTION ENTRANCES TO PREVENT CURB DAMAGE.
- GEOTEXTILE FABRIC SHALL BE PLACED ON SUBGRADE PRIOR TO STONE PLACEMENT FOR CONSTRUCTION ENTRANCES.

FNI GENERAL NOTES

- CONTRACTOR IS RESPONSIBLE FOR PROVIDING A VIDEO OF THE ENTIRE PROJECT SITE TO THE CITY PRIOR TO WORK BEGINNING.
- CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH SUPPORTING OR REMOVING AND RELOCATING POWER POLES AND GUY WIRES AS REQUIRED TO CONSTRUCT THE PROJECT. NO SEPARATE PAYMENT IS MADE FOR THIS WORK, AND IS CONSIDERED SUBSIDIARY TO THE PROJECT.
- WHERE STANDARD HORIZONTAL OR VERTICAL FITTINGS ARE NOT CALLED OUT, CONTRACTOR MAY DEFLECT JOINTS TO MAKE REQUIRED ALIGNMENT OR GRADE. JOINT DEFLECTION CAN NOT EXCEED 80% OF MANUFACTURER'S RECOMMENDATION.
- MINIMUM COVER FOR THE PIPELINE SHALL BE 5'.
- ALL DISTURBED AREAS ALONG THE MEDIAN OF LEBANON ROAD SHALL HAVE A 2' STRIP OF SOD INSTALLED ALONG THE MEDIAN CURB, WITH HYDRAULIC MULCH SEEDING COVERING ALL REMAINING AREAS. ALL SEED AND SOD SHALL BE PLANTED AND MAINTAINED PER SPECIFICATION 32.92.23, TURFGRASS PLANTING.
- CONTRACTOR SHALL REMOVE SURPLUS PIPELINE MATERIALS, TOOLS, RUBBISH, AND LEAVE THE CONSTRUCTION SITE CLEAN, TO THE SATISFACTION OF THE CITY. GRADE THE SURFACE AND RE-ESTABLISH DRAINAGE AND EROSION CONTROL. REMOVAL OF ROCK AND OTHER EXCESS EXCAVATED MATERIAL AND GENERAL LEVELING, AND GRADING OF THE MEDIAN SURFACE TO A PRESENTABLE APPEARANCE SHALL PROCEED SO AS TO NOT BE FURTHER THAN 1,500 FEET BEHIND THE BACKFILLING OPERATIONS.
- ANY EXISTING CURB OR GUTTER DAMAGED DURING CONSTRUCTION SHALL BE SAWCUT WITH GUTTER AND REPLACED TO THE NEAREST PAVEMENT JOINT WITH INTEGRAL CURB AND GUTTER DOWNEED INTO EXISTING PAVEMENT.
- BORE PITS ILLUSTRATED WITHIN THESE PLANS ARE FOR REFERENCE ONLY. CONTRACTOR SHALL DETERMINE EXACT DIMENSIONS NECESSARY FOR CONSTRUCTION.

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Texas Registered Engineering Firm F-2144

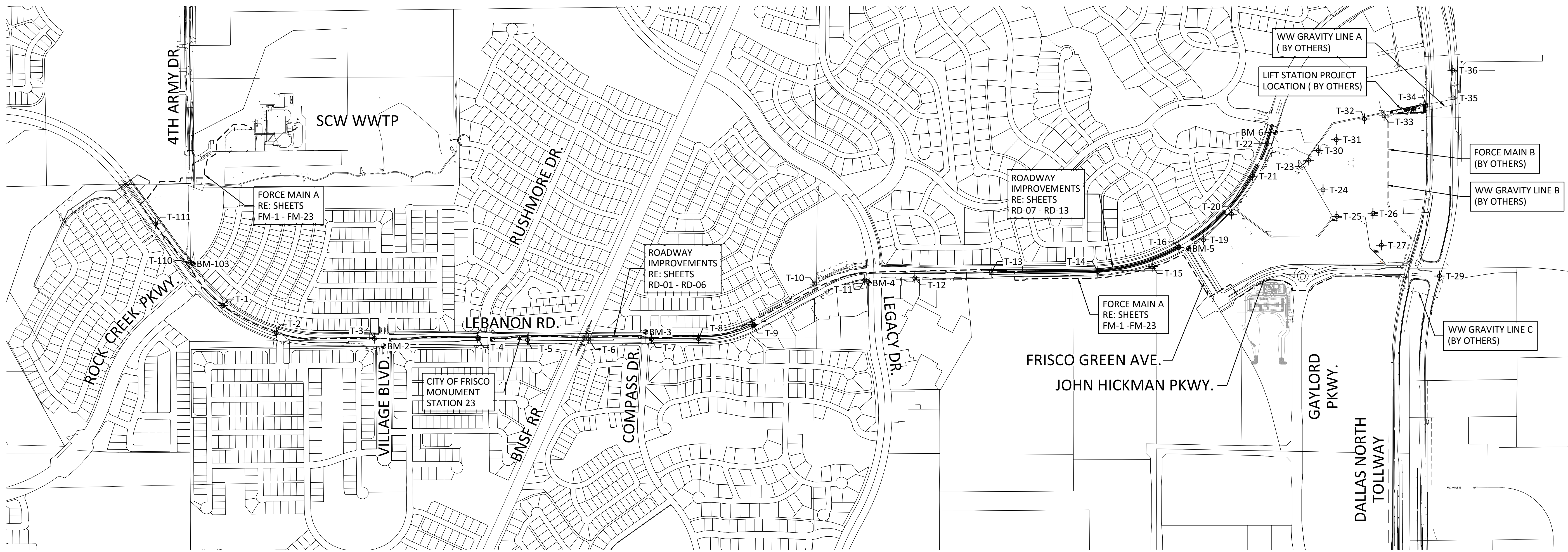


5905 McIvor Street, Suite B
Frisco, Texas 75034
Phone - (972) 624-9201
Fax - (972) 624-9202
Web - www.freese.com

CITY OF FRISCO, TEXAS
LEBANON ROAD IMPROVEMENTS
AND FORCE MAIN
GENERAL

GENERAL NOTES

| | | | | | | | | | | | | | | | | |
|---|-------|----|------|-------------|-----------|------|-----------|----------|-----|-------|-----|---------|---------|-----|-----------|---------------|
| NO. | ISSUE | BY | DATE | F&N JOB NO. | FRCL15624 | DATE | APR. 2017 | DESIGNED | REE | DRAWN | LMR | REVISED | CHECKED | CCB | FILE NAME | GN-ALL-NOTE01 |
| | | | | | | | | | | | | | | | | |
| VERIFY SCALE: 1 Bar is one inch on original drawing. If not one inch on this sheet, adjust scale. | | | | | | | | | | | | | | | | |
| SHEET | | | | | | | | | | | | | | | | |
| G-2 | | | | | | | | | | | | | | | | |
| SEQ. 2 | | | | | | | | | | | | | | | | |



NOTE:

- CONTRACTOR SHALL USE THE PROVIDED CONTROL INFORMATION TO ESTABLISH AND PLACE THEIR OWN CONTROL POINTS OF REFERENCE THAT WILL NOT BE DISTURBED BY CONSTRUCTION PROCESSES.

DATUM BASE NOTE:
 COORDINATES AND BEARINGS SHOWN HEREON
 ARE STATE PLANE (NAD 83) FOR THE TEXAS
 NORTH CENTRAL ZONE.
 ALL DISTANCES ARE SURFACE.
 HELD PT: "T-9"
 N=7092682.36
 E=2475665.22
 ELEV=625.12
 SURF SCALE FACTOR=1.000156676

PROJECT BENCHMARK

BM-103
 CHISELED BOX CUT PER 4TH ARMY PROJECT.
 ELEV=580.83
 N=7093248.25
 E=2470452.15

BM-2
 CHISELED BOX CUT ON TOP OF CURB AT THE
 NOSE OF A MEDIAN AT THE INTERSECTION OF
 VILLAGE BLVD. AND LEBANON. ALSO BEING
 APPROX. 60 FEET SOUTH OF THE CENTERLINE
 OF LEBANON.
 ELEV=587.47
 N=7092481.76
 E=2472226.59

BM-3
 CHISELED BOX CUT ON TOP OF CURB AT THE
 NOSE OF A MEDIAN AT THE INTERSECTION OF
 COMPASS AND LEBANON, ALSO BEING
 APPROX. 60 FEET NORTH OF THE CENTERLINE
 OF LEBANON.
 ELEV=611.23
 N=7092613.42
 E=2474667.01

BM-4
 CHISELED BOX CUT ON TOP OF CURB AT THE
 SOUTHWEST CORNER OF THE INTERSECTION OF
 LEGACY AND LEBANON. ALSO BEING LOCATED
 ON THE WEST CURB OF LEGACY, JUST SOUTH
 OF THE CURB RETURN.
 ELEV=670.67
 N=7093070.02
 E=2476748.72

BM-5
 CHISELED BOX CUT ON TOP OF CURB AT THE
 NOSE OF A MEDIAN AT THE INTERSECTION OF
 GAYLORD AND LEBANON. ALSO BEING
 APPROXIMATELY 60 FEET SOUTH OF THE
 CENTERLINE OF LEBANON.
 ELEV=717.82
 N=7093391.08
 E=2479725.90

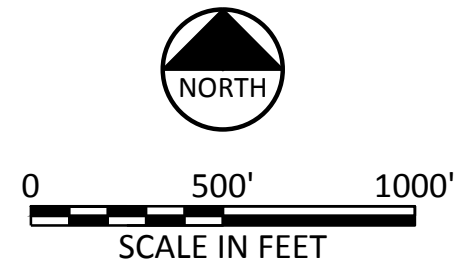
BM-6
 CHISELED BOX CUT ON TOP OF CONCRETE
 CURB, ALONG THE EAST CURB LINE OF
 LEBANON ROAD.
 ELEV=685.45
 N=7094443.66
 E=2480559.72

| POINT | NORTHING | EASTING | ELEVATION | DESCRIPTION |
|-------|------------|------------|-----------|------------------------------------|
| T-1 | 7092859.96 | 2470729.05 | 579.14 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-2 | 7092604.88 | 2471227.20 | 582.47 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-3 | 7092553.48 | 2472139.49 | 587.48 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-4 | 7092560.65 | 2473102.81 | 596.87 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-5 | 7092539.31 | 2473566.60 | 599.13 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-6 | 7092547.41 | 2474137.09 | 590.36 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-7 | 7092548.95 | 2474720.86 | 612.58 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-8 | 7092547.56 | 2475159.87 | 618.72 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-9 | 7092682.36 | 2475665.22 | 625.12 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-10 | 7093060.47 | 2476244.54 | 645.73 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-11 | 7093098.12 | 2476708.23 | 668.88 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-12 | 7093117.49 | 2477175.28 | 682.72 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-13 | 7093163.12 | 2477885.16 | 690.16 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-14 | 7093176.58 | 2478879.65 | 712.74 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-15 | 7093222.88 | 2479392.13 | 728.68 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-16 | 7093401.23 | 2479634.15 | 720.23 | CHISELED "X" CUT IN CONCRETE |
| T-19 | 7093471.98 | 2479864.78 | 719.03 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-20 | 7093710.58 | 2480125.01 | 712.29 | 1/2" IRON ROD WITH RED PLASTIC CAP |

| POINT | NORTHING | EASTING | ELEVATION | DESCRIPTION |
|-------|------------|------------|-----------|------------------------------------|
| T-21 | 7094065.16 | 2480319.63 | 696.92 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-22 | 7094366.41 | 2480456.04 | 687.39 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-23 | 7094213.32 | 2480844.15 | 697.28 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-24 | 7093937.21 | 2480977.59 | 704.79 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-25 | 7093690.98 | 2481106.02 | 704.94 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-26 | 7093715.53 | 2481442.23 | 704.51 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-27 | 7093421.66 | 2481521.27 | 703.88 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-29 | 7093134.35 | 2482061.63 | 720.77 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-30 | 7094302.88 | 2480932.48 | 687.23 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-31 | 7094404.98 | 2481101.07 | 694.40 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-32 | 7094597.42 | 2481363.98 | 701.92 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-33 | 7094626.84 | 2481546.30 | 700.64 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-34 | 7094718.44 | 2481934.41 | 712.90 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-35 | 7094793.88 | 2482188.69 | 686.82 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-36 | 7095051.76 | 2482185.95 | 686.62 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-110 | 7093262.76 | 2470422.53 | 579.49 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-111 | 7093621.28 | 2470103.32 | 575.76 | 1/2" IRON ROD WITH RED PLASTIC CAP |

CITY OF FRISCO MONUMENT NOTES:

- STATION NO. 23
 1. STANDARD CITY OF FRISCO MONUMENT LOCATED APPROXIMATELY 270' EAST OF THE INTERSECTION OF RUSHMORE DR. AND LEBANON PKWY. IN THE CENTER MEDIAN OF LEBANON PKWY. THE MONUMENT IS LOCATED 134' EAST OF A TRAFFIC SIGN, 23' NORTHWEST OF A TRAFFIC SIGN, AND 143' EAST OF AN OVERHANGING TRAFFIC SIGN.



Freese and Nichols, Inc.
 Texas Registered Engineering Firm F-2144

 Clayton C. Barnard

FREES & NICHOLS
 5805 McIn Street, Suite B
 Frisco, Texas 75034
 Phone - (972) 624-9201
 Fax - (972) 624-9202
 Web - www.freese.com

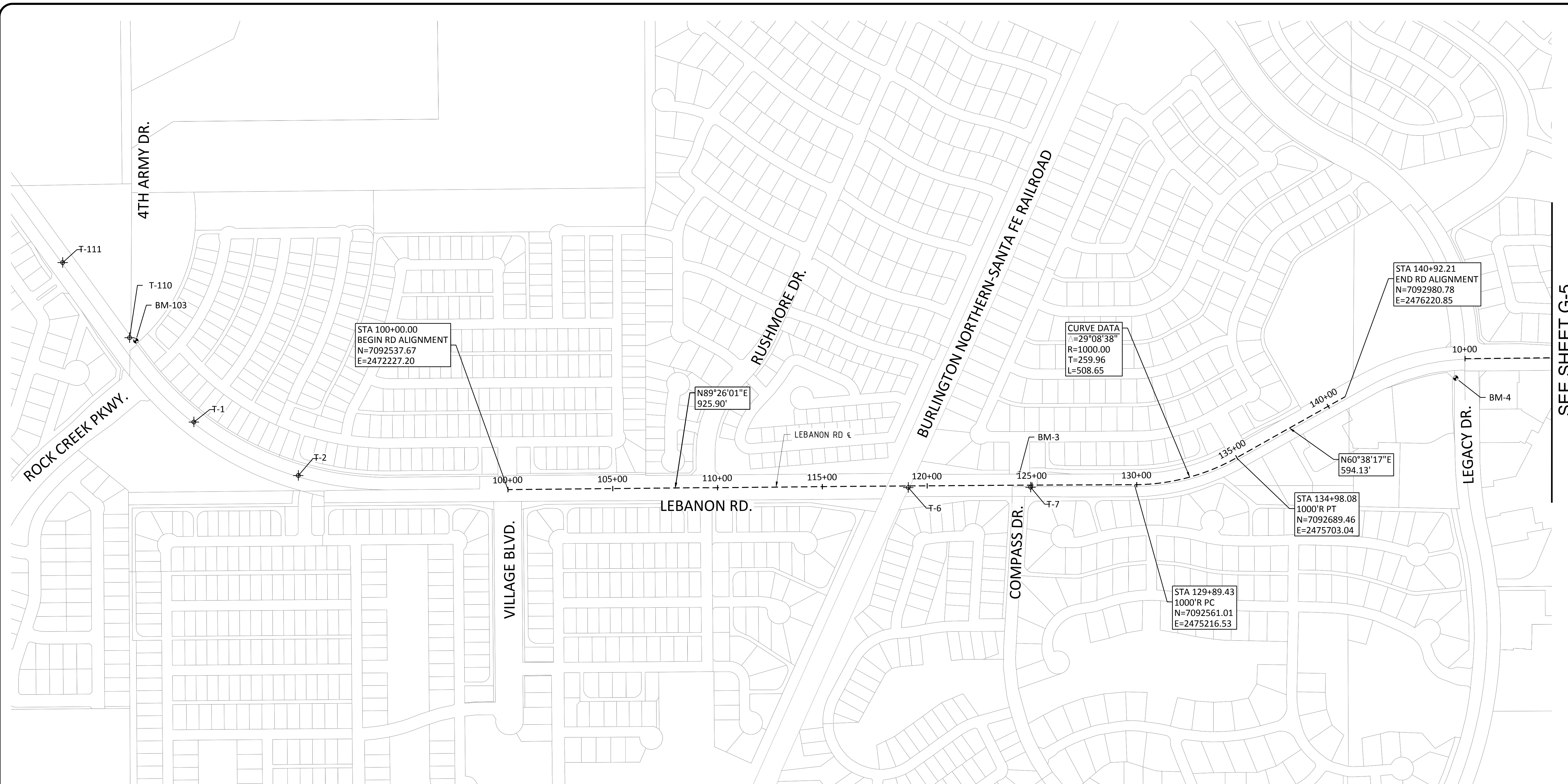
CITY OF FRISCO, TEXAS
**LEBANON ROAD IMPROVEMENTS
 AND FORCE MAIN**
 GENERAL
CONTROL AND KEY MAP

| | |
|-------------|-------------|
| FRN JOB NO. | FRCL5624 |
| DATE | APR. 2017 |
| DESIGNED | REE |
| DRAWN | LMR |
| REVISED | |
| CHECKED | CCB |
| FILE NAME | GN-ALL-KMAP |

VERIFY SCALE 1" = 100'
 Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

SHEET **G-3**
 SEQ. **3**

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 Last Saved: 3/31/2017 10:28 AM Saved By: sli



Freese and Nichols, Inc.
 Texas Registered Engineering Firm F-2144

05-01-2017

FREES & NICHOLS
 6136 Frisco Square Blvd, Suite 200
 Frisco, Texas 75034
 Phone - (972) 624-9201
 Fax - (972) 624-9202
 Web - www.frees.com

CITY OF FRISCO, TEXAS

LEBANON ROAD IMPROVEMENTS AND FORCE MAIN

GENERAL

ROADWAY ALIGNMENT DATA

| | | | | | | | | | | | |
|-----|-------|----|------|----------|--------|----------|----|----|---------|-----|-------------------|
| NO. | ISSUE | BY | DATE | FRCL5624 | DATE | DESIGNED | WH | SI | CHECKED | CCB | FILE NAME |
| | | | | | 4/2017 | DRAWN | WH | SI | | | cv-gn-all-cntrl01 |

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

SHEET **G-4**

SEQ. **4**

SEE SHEET G-5

NOTE:

- CONTRACTOR SHALL USE THE PROVIDED CONTROL INFORMATION TO ESTABLISH AND PLACE THEIR OWN CONTROL POINTS OF REFERENCE THAT WILL NOT BE DISTURBED BY CONSTRUCTION PROCESSES.

DATUM BASE NOTE:
 COORDINATES AND BEARINGS SHOWN HEREIN ARE STATE PLANE (NAD 83) FOR THE TEXAS NORTH CENTRAL ZONE.
 ALL DISTANCES ARE SURFACE.
 HELD PT: "T-9"
 N=7092682.36
 E=2475665.22
 ELEV=625.12
 SURF SCALE FACTOR=1.000156676

CITY OF FRISCO MONUMENT NOTES:

STATION NO. 23
 STANDARD CITY OF FRISCO MONUMENT LOCATED APPROXIMATELY 270' EAST OF THE INTERSECTION OF RUSHMORE DR. AND LEBANON RD. IN THE CENTER MEDIAN OF LEBANON RD. THE MONUMENT IS LOCATED 134' EAST OF A TRAFFIC SIGN, 23' NORTHWEST OF A TRAFFIC SIGN, AND 143' EAST OF AN OVERHANGING TRAFFIC SIGN.

PROJECT BENCHMARK

BM-103
 CHISELED BOX CUT PER 4TH ARMY PROJECT
 ELEV=580.83
 N=7093248.24
 E=2470452.15

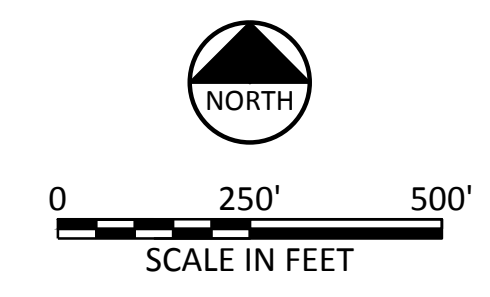
BM-3
 CHISELED BOX CUT ON TOP OF CURB AT THE NOSE OF A MEDIAN AT THE INTERSECTION OF COMPASS DR. AND LEBANON RD. AND LOCATED APPROXIMATELY 60 FEET NORTH OF THE CENTERLINE OF LEBANON RD.
 ELEV=611.23
 N=7092613.42
 E=2474667.01

BM-4
 CHISELED BOX CUT ON TOP OF CURB AT THE SOUTHWEST CORNER OF THE INTERSECTION OF LEGACY DR. AND LEBANON RD. ALSO BEING LOCATED ON THE WEST CURB OF LEGACY, JUST SOUTH OF THE CURB RETURN.
 ELEV=670.64
 N=7093070.02
 E=2476748.72

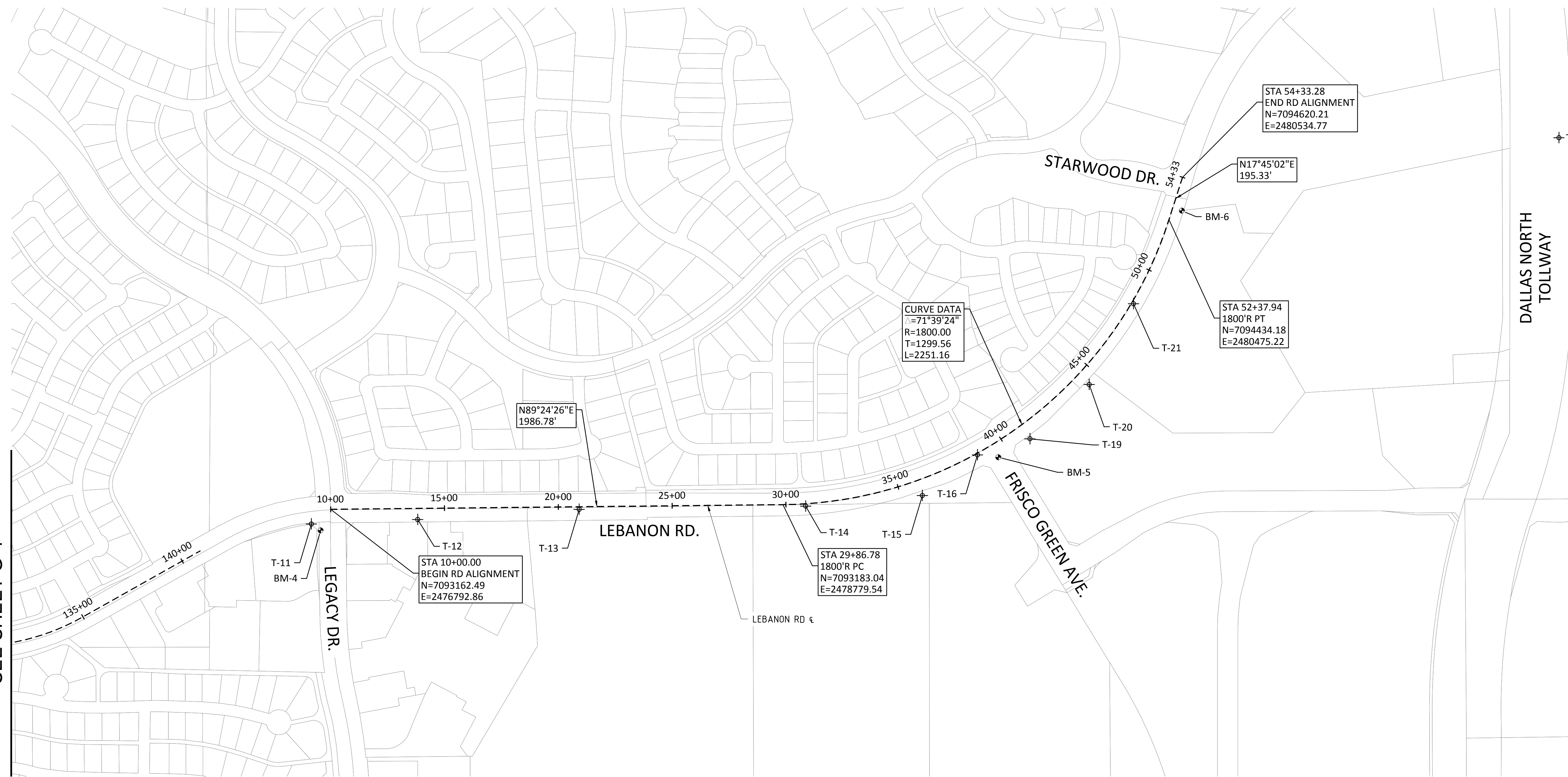
CURVE DATA
 $\Delta=29^{\circ}08'38''$
 R=1000.00
 T=259.96
 L=508.65

PROJECT CONTROL POINT TABLE

| CONTROL POINT | NORTHING | EASTING | ELEV. | DESCRIPTION |
|---------------|------------|------------|--------|------------------------------------|
| T-1 | 7092859.96 | 2470729.05 | 579.14 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-2 | 7092604.88 | 2471227.20 | 582.47 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-6 | 7092547.41 | 2474137.09 | 590.36 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-7 | 7092548.95 | 2474720.86 | 612.58 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-110 | 7093060.47 | 2476244.54 | 645.73 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-111 | 7093098.12 | 2476708.23 | 668.88 | 1/2" IRON ROD WITH RED PLASTIC CAP |



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|--------------|-------|------------|---|-------------------|
| NO. | ISSUE | DATE | BY | FILE NAME |
| | | | | cv-gn-all-cntrl02 |
| F&N JOB NO. | | FRCL15624 | | |
| DATE | | 4/2017 | | |
| DESIGNED | | JP | | |
| DRAWN | | LMR | | |
| REVISED | | | | |
| CHECKED | | CCB | | |
| VERIFY SCALE | | 1 | Bar is one inch on original drawing. If not one inch on this sheet, adjust scale. | |
| SHEET | | G-5 | | |
| SEQ. | | 5 | | |



NOTE:
1. CONTRACTOR SHALL USE THE PROVIDED CONTROL INFORMATION TO ESTABLISH AND PLACE THEIR OWN CONTROL POINTS OF REFERENCE THAT WILL NOT BE DISTURBED BY CONSTRUCTION PROCESSES.

DATUM BASE NOTE:
COORDINATES AND BEARINGS SHOWN HEREIN ARE STATE PLANE (NAD 83) FOR THE TEXAS NORTH CENTRAL ZONE.
ALL DISTANCES ARE SURFACE.
HELD PT: "T-9"
N=7092682.36
E=2475665.22
ELEV=625.12
SURF SCALE FACTOR=1.000156676

CITY OF FRISCO MONUMENT NOTES:

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PROJECT BENCHMARK

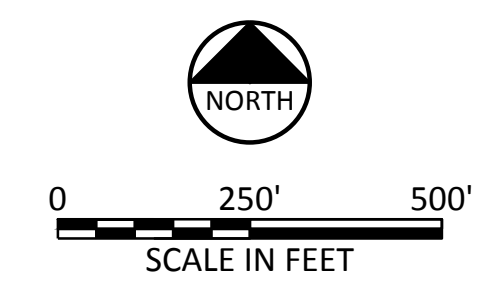
BM-4
CHISELED BOX CUT ON TOP OF CURB AT THE SOUTHWEST CORNER OF THE INTERSECTION OF LEGACY AND LEBANON. ALSO BEING LOCATED ON THE WEST CURB OF LEGACY, JUST SOUTH OF THE CURB RETURN.
ELEV=670.67
N=7093070.02
E=2476748.72

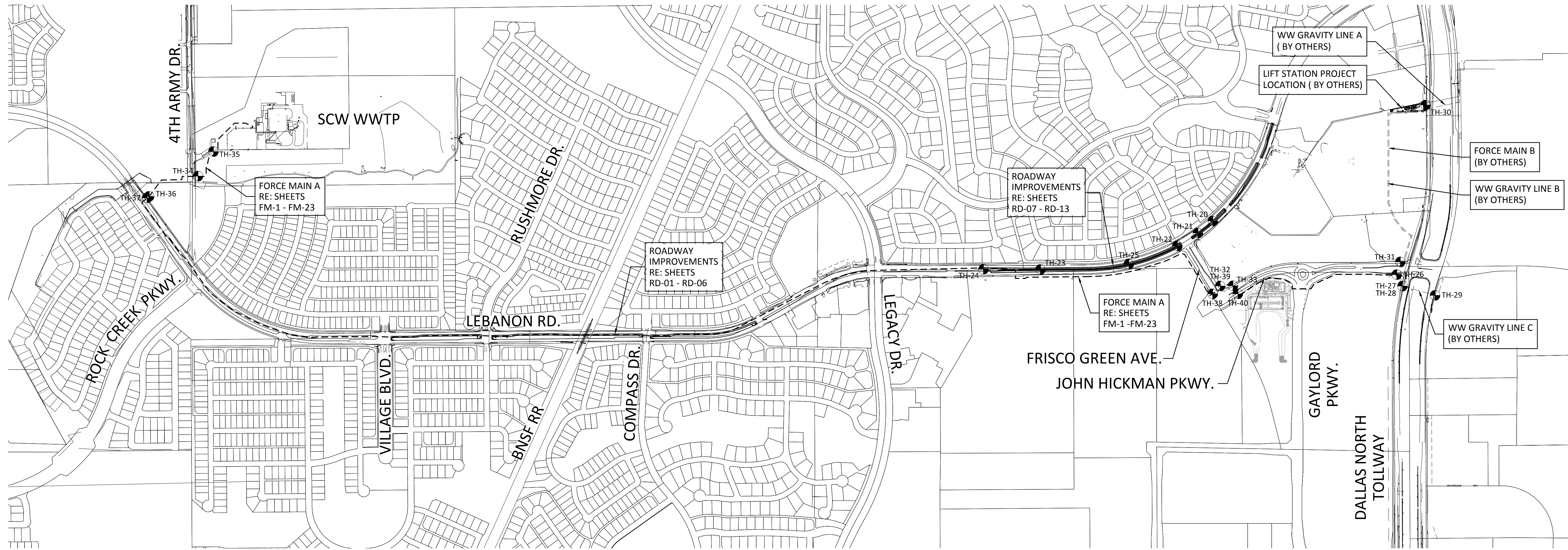
BM-5
CHISELED BOX CUT ON TOP OF CURB AT THE NOSE OF A MEDIAN AT THE INTERSECTION OF FRISCO GREEN AND LEBANON. ALSO BEING APPROXIMATELY 60 FEET SOUTH OF THE CENTERLINE OF LEBANON.
ELEV=717.82
N=7093391.08
E=2479725.90

BM-6
CHISELED BOX CUT ON TOP OF CONCRETE CURB, ALONG THE EAST CURB LINE OF LEBANON ROAD.
ELEV=685.45
N=7094443.66
E=2480559.72

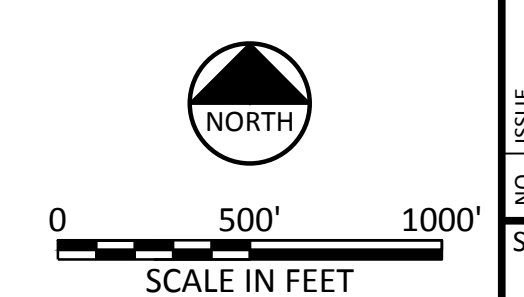
PROJECT CONTROL POINT TABLE

| CONTROL POINT | NORTHING | EASTING | ELEV. | DESCRIPTION |
|---------------|------------|------------|--------|------------------------------------|
| T-11 | 7093098.12 | 2476708.23 | 668.88 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-12 | 7093117.49 | 2477175.28 | 682.72 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-13 | 7093163.12 | 2477885.16 | 690.16 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-14 | 7093176.58 | 2478879.65 | 712.74 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-15 | 7093222.88 | 2479392.13 | 728.68 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-16 | 7093401.23 | 2479634.15 | 720.23 | "X" CUT IN CONCRETE |
| T-19 | 7093471.97 | 2479864.77 | 719.03 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-20 | 7093710.57 | 2480125.01 | 712.29 | 1/2" IRON ROD WITH RED PLASTIC CAP |
| T-21 | 7094065.16 | 2480319.62 | 696.92 | 1/2" IRON ROD WITH RED PLASTIC CAP |





| TEST HOLE SUMMARY TABLE | | | | | | | |
|-------------------------|------------|------------|-----------------|--------------|--------|--------------|---|
| TH# | NORTHING | EASTING | DESCRIPTION | GROUND ELEV. | TOP | DEPTH TO TOP | NOTES |
| 20 | 2479947.79 | 7093632.03 | 8" PE GAS | 712.01 | 707.94 | 4.07 | |
| 21 | 2479808.89 | 7093520.89 | 8" PE GAS | 714.77 | 711.01 | 3.76 | |
| 22 | 2479617.00 | 7093399.74 | 8" PE GAS | 720.75 | 717.24 | 3.51 | |
| 23 | 2478340.40 | 7093179.79 | 6" PE GAS | 699.56 | 695.06 | 4.50 | |
| 24 | 2477808.83 | 7093181.73 | 6" PE GAS | 689.94 | 686.24 | 3.70 | |
| 25 | 2479164.02 | 7093230.23 | 6" PE UNKNOWN | 721.08 | 716.78 | 4.30 | |
| 26 | 2481662.59 | 7093132.21 | UNKNOWN | 709.89 | N/A | N/A | DID NOT LOCATE DUE TO ROCK. |
| 27 | 2481710.96 | 7093026.58 | UNKNOWN | 710.58 | N/A | N/A | WAS NOT ABLE TO LOCATE DUE TO GROUND WATER. |
| 28 | 2481715.61 | 7093024.87 | UNKNOWN | 710.94 | N/A | N/A | WAS NOT ABLE TO LOCATE DUE TO GROUND WATER. |
| 29 | 2482019.63 | 7092938.50 | 12" PVC WATER | 715.54 | 710.94 | 4.60 | |
| 30 | 2481932.30 | 7094714.43 | 24" PVC WATER | 712.77 | 705.77 | 7.00 | |
| 31 | 2481696.01 | 7093250.72 | 12" PVC WATER | 710.27 | 704.69 | 5.58 | SIZE OF PIPE IS PER RECORDS. |
| 32 | 2480034.35 | 7093006.80 | 4" PVC ELEC | 729.29 | 726.69 | 2.60 | TWO ELECTRIC LINES IN HOLE. THE OD FOR ONE IS 4" AND THE OTHER IS 2". |
| 32A | 2480034.36 | 7093006.79 | UNKNOWN | 729.25 | N/A | N/A | DID NOT LOCATE DUE TO ROCK. TESTHOLE 32A & 32 ARE SAME HOLE COULD NOT FIND WATER LINE BUT FOUND TWO ELECTRIC LINES. |
| 33 | 2480134.91 | 7093028.53 | 12" PVC WATER | 728.62 | 724.22 | 4.40 | SIZE OF PIPE IS PER RECORDS. |
| 34 | 2470483.65 | 7094050.83 | 20" STEEL WATER | 569.72 | 565.47 | 4.25 | SIZE OF PIPE IS PER RECORDS. |
| 35 | 2470627.61 | 7094279.73 | 6" PE GAS | 568.96 | 564.41 | 4.55 | |
| 36 | 2470027.9 | 7093862.15 | 4" STEEL GAS | 569.06 | 562.98 | 6.08 | |
| 37 | 2470009.71 | 7093848.05 | UNKNOWN | 569.68 | N/A | N/A | DID NOT LOCATE DUE TO ROCK. PROBED FOR THE WATER LINE AT DEPTH SHOWN, COULD NOT LOCATE. |
| 38 | 2479947.19 | 7092953.62 | 12" PVC WATER | 729.82 | 725.59 | 4.23 | |
| 39 | 2480015.57 | 7093026.91 | UNKNOWN | 728.84 | N/A | N/A | DID NOT LOCATE DUE TO ROCK. |
| 40 | 2480180.82 | 7092953.09 | 12" PE GAS | 728.74 | 723.62 | 5.12 | SIZE OF PIPE IS PER RECORDS. |



Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

CLAYTON C. BARNARD
103415
PROFESSIONAL ENGINEER
5/1/2017

Clayton C. Barnard

FREES & NICHOLS

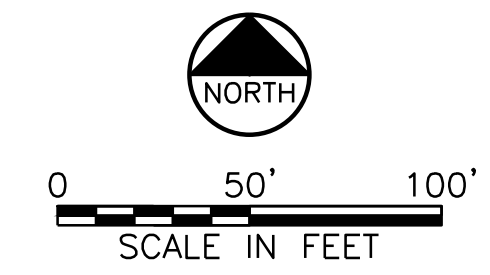
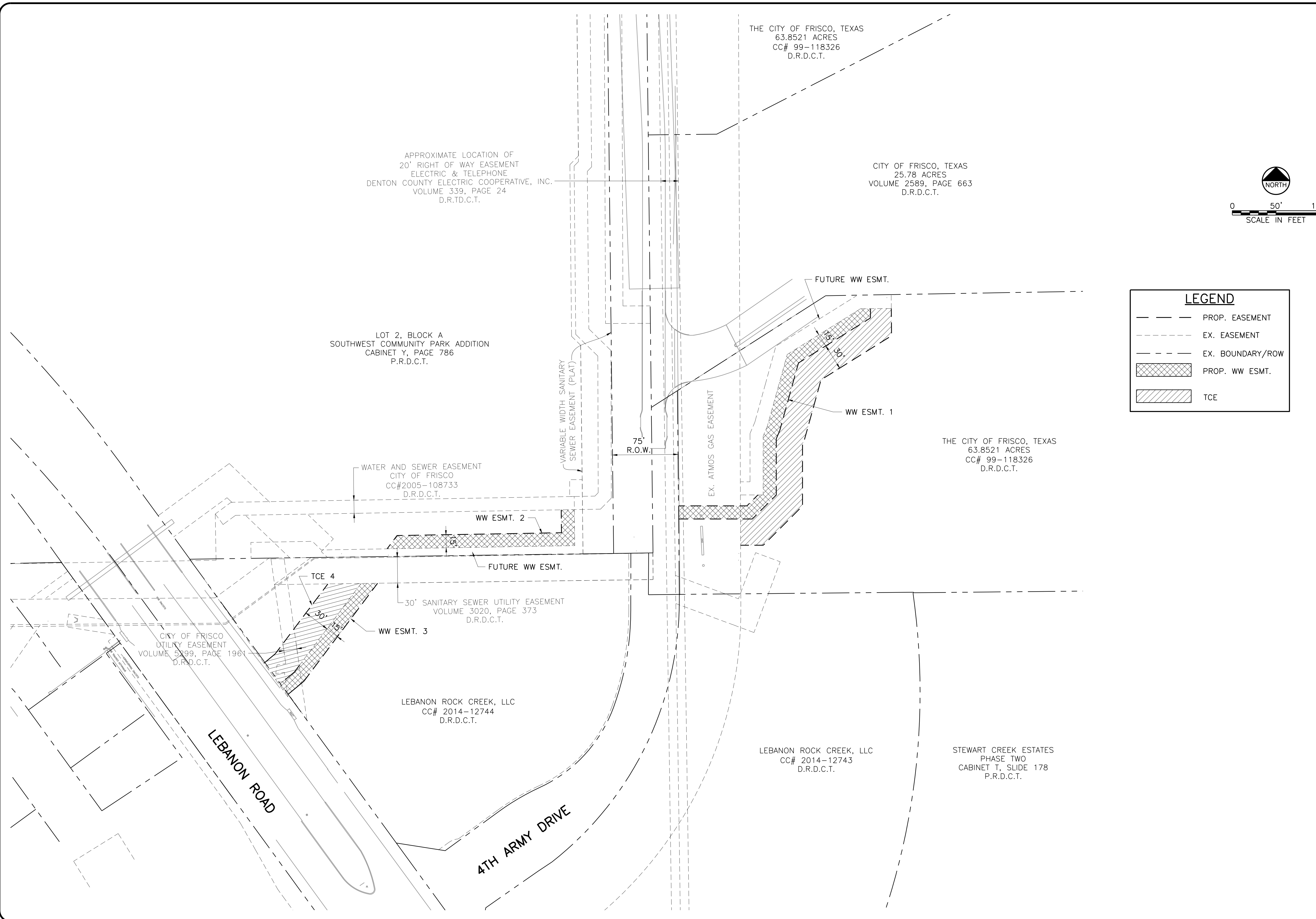
5905 McIn Street, Suite B
Frisco, Texas 75034
Phone - (972) 624-9201
Fax - (972) 624-9202
Web - www.freese.com

CITY OF FRISCO, TEXAS
LEBANON ROAD IMPROVEMENTS AND FORCE MAIN
GENERAL
TEST HOLE LOCATION MAP

| | | | | |
|-------|--------------|------|----|---|
| NO. | ISSUE | DATE | BY | FILE NAME |
| | | | | GN-ALL-BMAP |
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| SHEET | | G-6 | | |
| SEQ. | | 6 | | |

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LEGEND

- PROP. EASEMENT
- - - EX. EASEMENT
- - - EX. BOUNDARY/ROW
- [Cross-hatched] PROP. WW ESMT.
- [Diagonal lines] TCE

Freese and Nichols, Inc.
 Texas Registered Engineering Firm F-2144

Clayton C. Barnard

FREES & NICHOLS

5905 McIn Street, Suite B
 Frisco, Texas 75034
 Phone - (972) 624-9201
 Fax - (972) 624-9202
 Web - www.freese.com

CITY OF FRISCO, TEXAS
**LEBANON ROAD IMPROVEMENTS
 AND FORCE MAIN**
 GENERAL
EASEMENT MAP

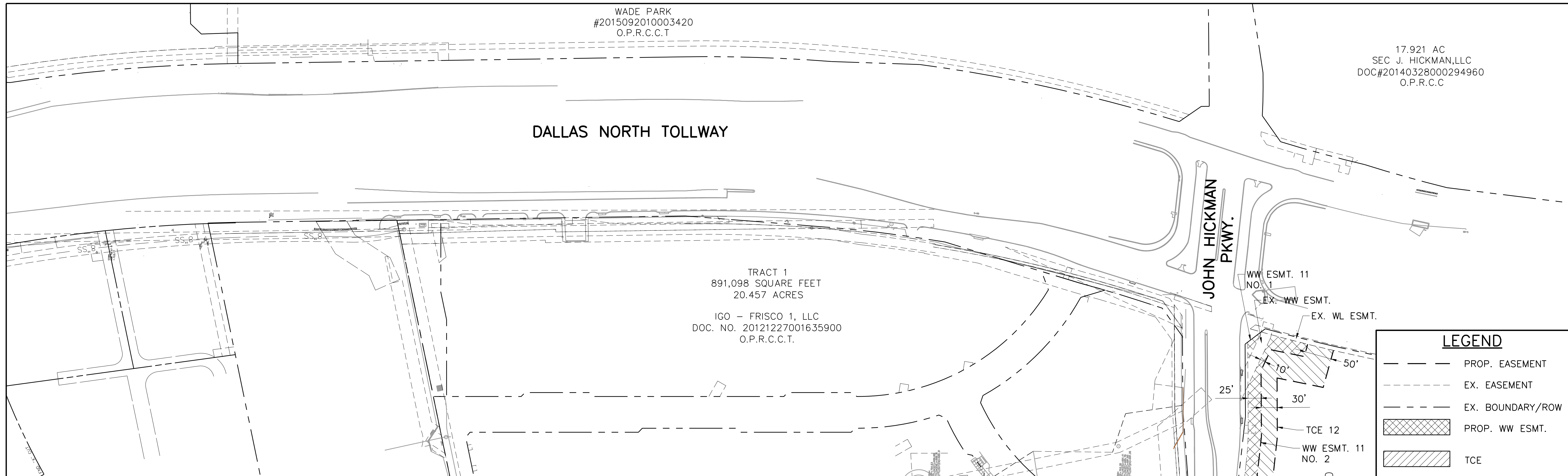
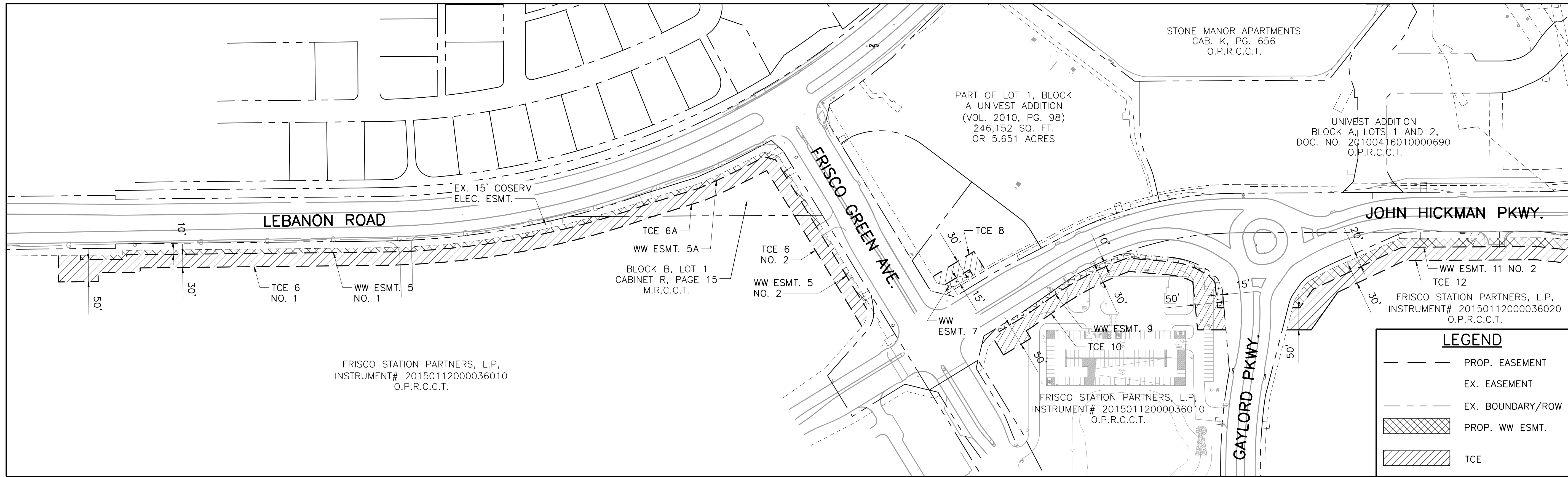
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VERIFY SCALE: 0 1

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SHEET **EM-1**

SEQ. **7**



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Texas Registered Engineering Firm F-2144

CLAYTON C. BARNARD
103415
PROFESSIONAL ENGINEER
5/1/2017

Clayton C. Barnard

FREES & NICHOLS

5805 Main Street, Suite B
Frisco, Texas 75034
Phone - (972) 624-9201
Fax - (972) 624-9202
Web - www.freese.com

CITY OF FRISCO, TEXAS

**LEBANON ROAD IMPROVEMENTS
AND FORCE MAIN**

GENERAL

EASEMENT MAP

| NO. | ISSUE | DATE | BY | DATE | FRJ JOB NO. | FILE NAME |
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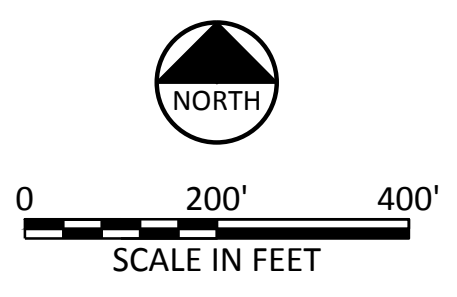
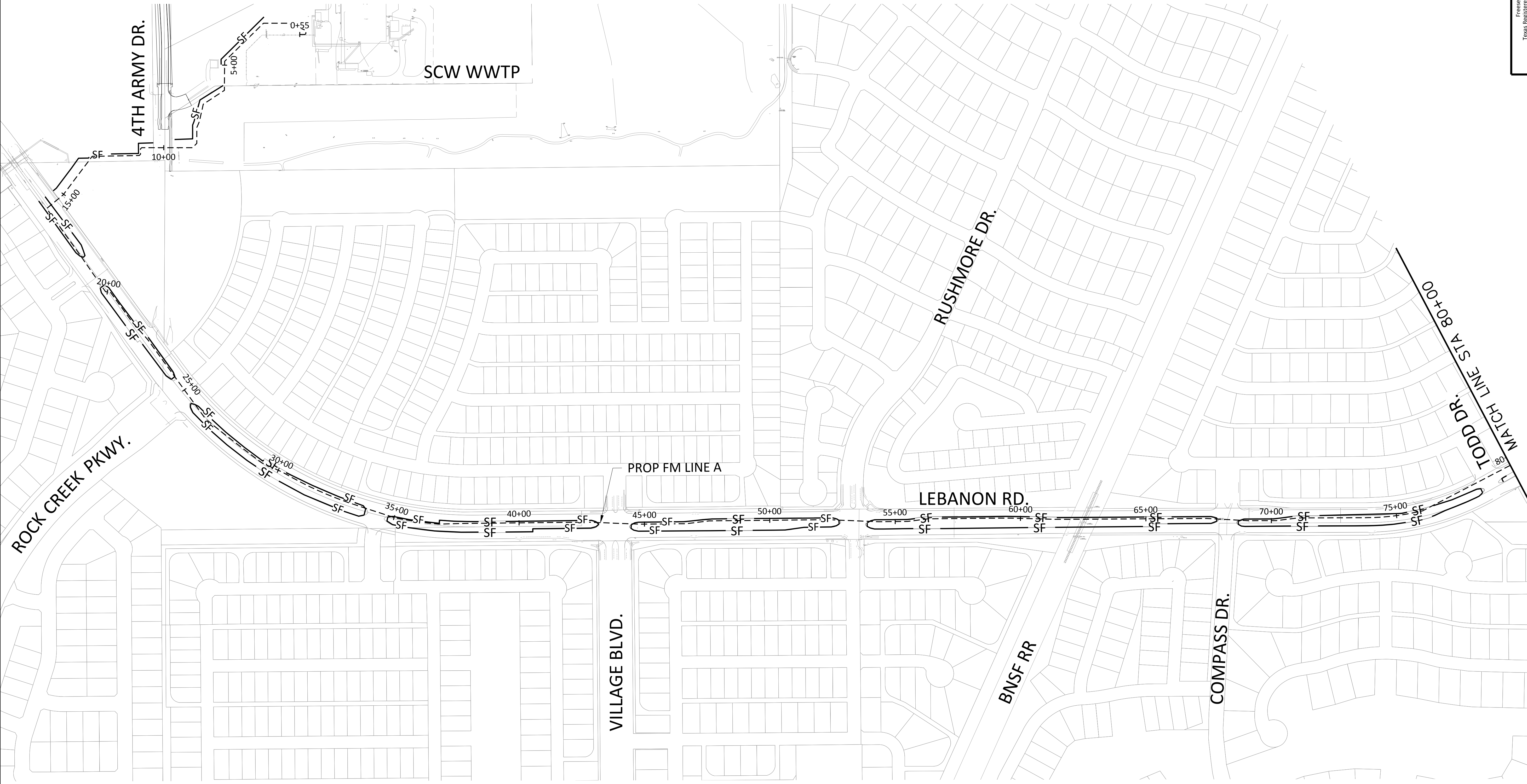
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SHEET **EM-2**

SEQ. **8**

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Freese and Nichols, Inc.
 Texas Registered Engineering Firm F-2144

Wayne P. Hart
 05-01-2017

FRESE & NICHOLS
 6136 Frisco Square Blvd., Suite 200
 Frisco, Texas 75034
 Phone - (972) 624-9201
 Fax - (972) 624-9202
 Web - www.freac.com

CITY OF FRISCO, TEXAS

LEBANON ROAD IMPROVEMENTS AND FORCE MAIN

CIVIL
**EROSION CONTROL
 BEGIN TO STA 80+00**

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| | DRAWN | | SI | |
| | REVISION | | | |
| | CHECKED | | | CCB |

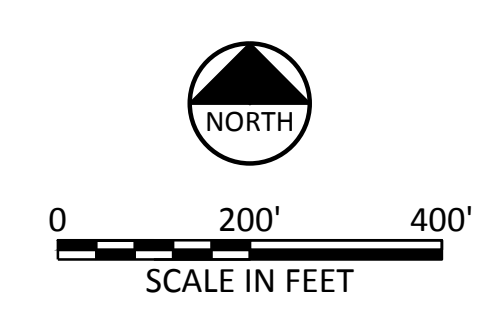
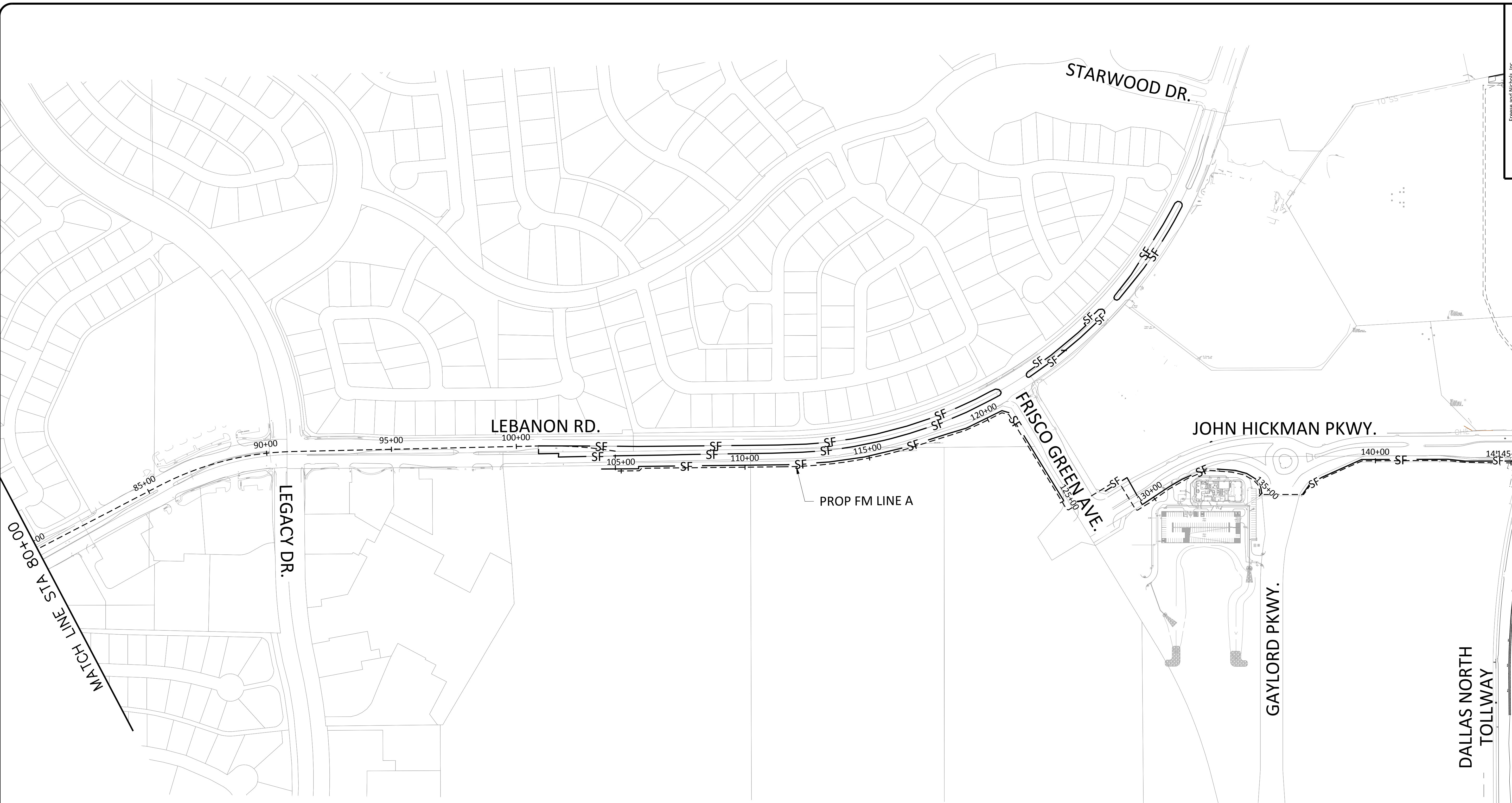
Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

SCALE: 1" = 40'

SHEET **EC-01**

SEQ. **9**

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Freese and Nichols, Inc.
 Texas Registered Engineering Firm F-2144
 118231
 WAYNE P. HART
 PROFESSIONAL ENGINEER
 06-01-2017

FREES & NICHOLS
 6136 Frisco Square Blvd, Suite 200
 Frisco, Texas 75034
 Phone - (972) 624-9201
 Fax - (972) 624-9202
 Web - www.freese.com

CITY OF FRISCO, TEXAS
LEBANON ROAD IMPROVEMENTS AND FORCE MAIN

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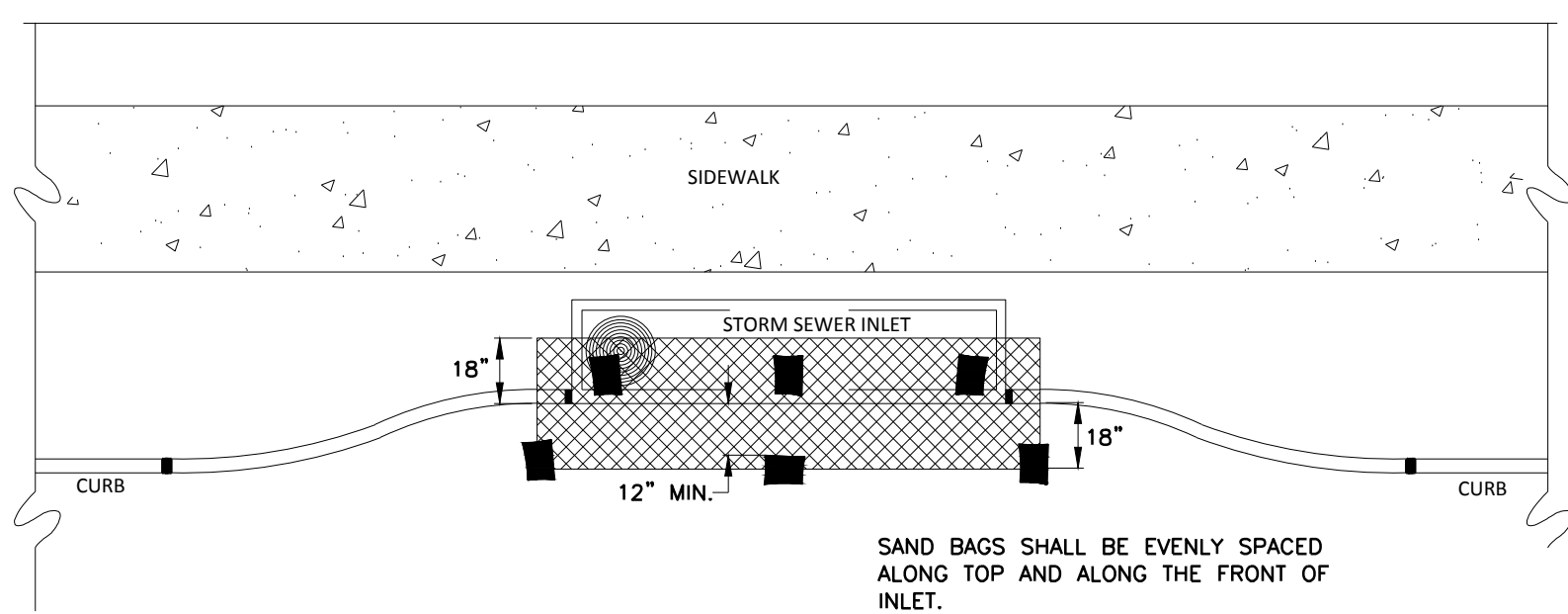
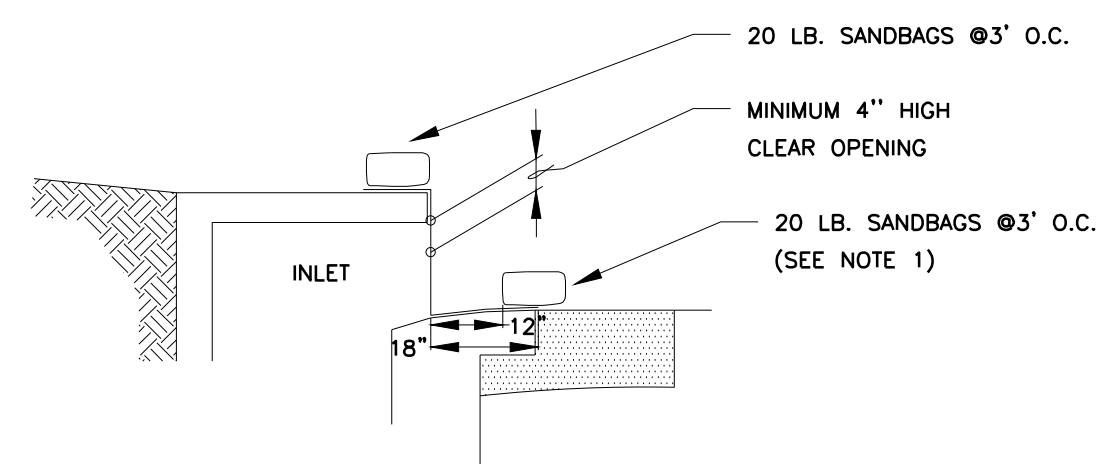
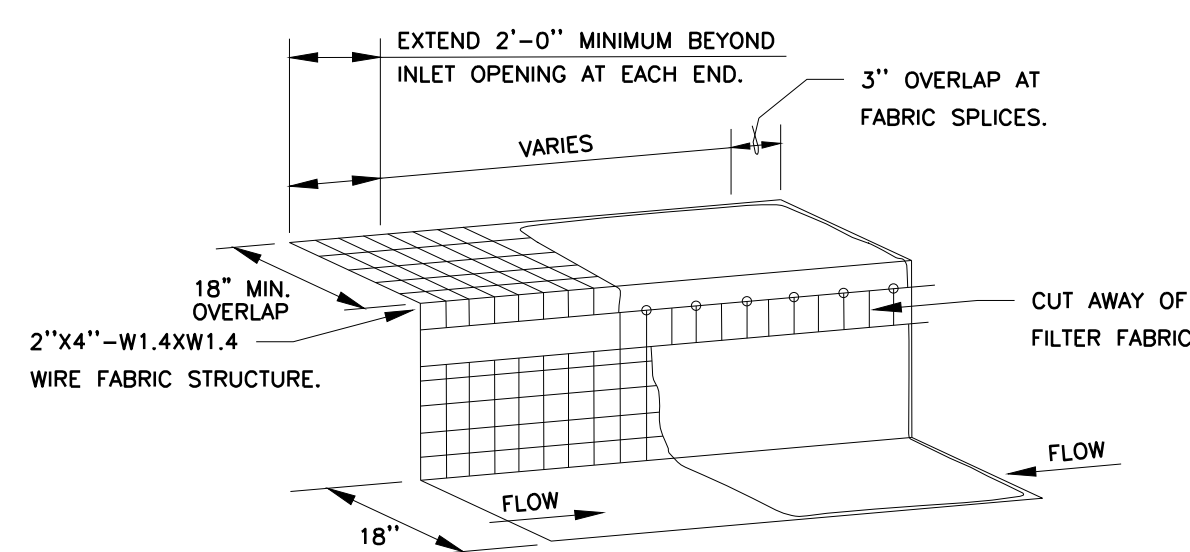
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SHEET **EC-02**
 SEQ. **10**

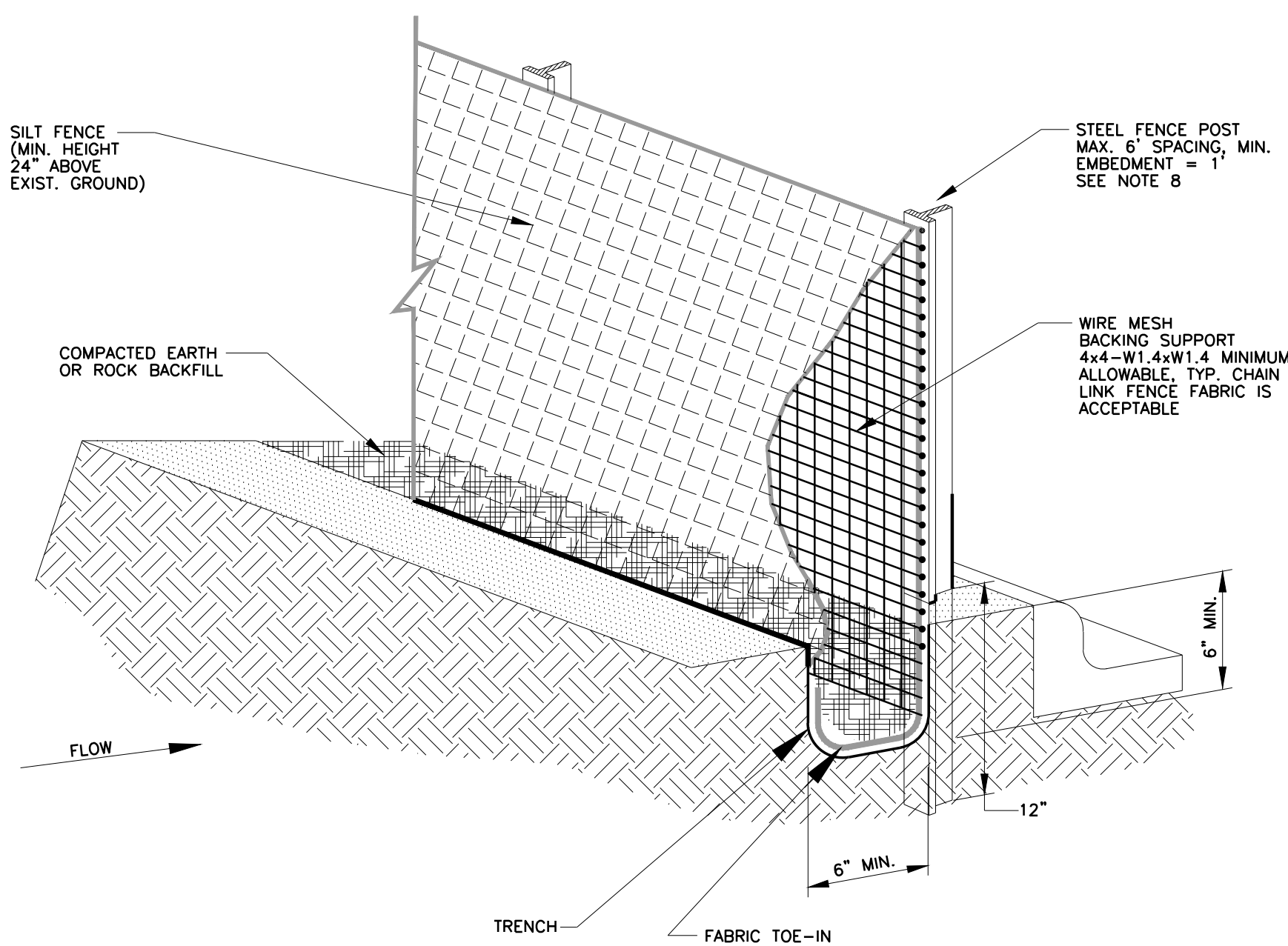


CURB INLET PROTECTION DETAIL
N.T.S.

NOTES:

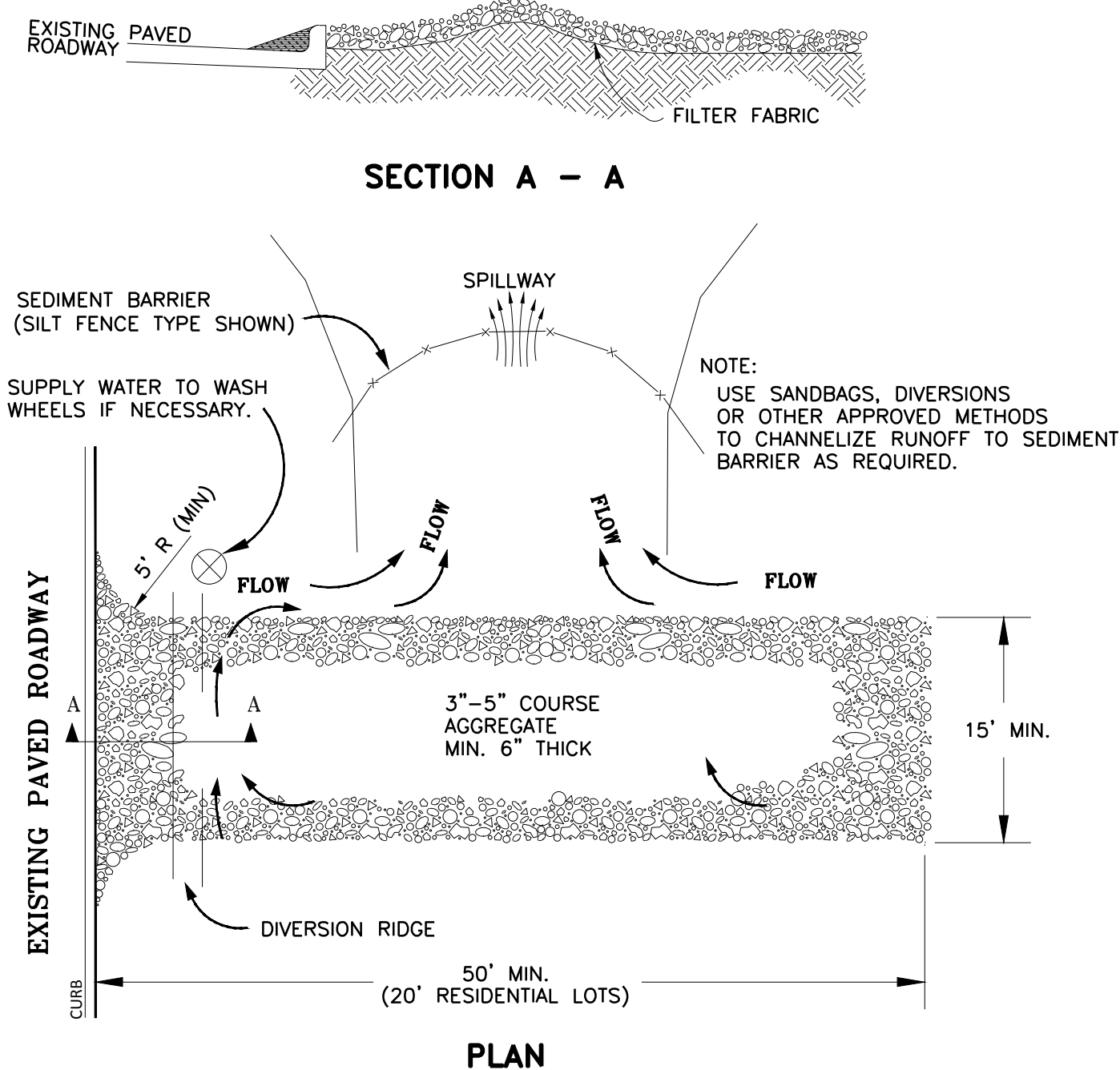
1. A SECTION OF FILTER FABRIC SHALL BE REMOVED AS SHOWN ON THIS DETAIL TO PROVIDE A 4" MINIMUM CLEAR OPENING. FABRIC MUST BE SECURED TO WIRE BACKING WITH CLIPS OR HOG RINGS AT THIS LOCATION.
2. INSPECTION SHALL BE MADE BY THE CONTRACTOR AND SILT ACCUMULATION MUST BE REMOVED WHEN DEPTH REACHES 2".
3. CONTRACTOR SHALL MONITOR THE PERFORMANCE OF INLET PROTECTION DURING EACH RAINFALL EVENT AND IMMEDIATELY REMOVE THE INLET PROTECTIONS IF THE STORM-WATER BEGINS TO OVERTOP THE CURB.
4. INLET PROTECTIONS SHALL BE REMOVED AS SOON AS THE SOURCE OF SEDIMENT IS STABILIZED.

| INLET OPENING | MINIMUM NUMBER OF SAND BAGS | |
|---------------|-----------------------------|-------|
| | TOP | FRONT |
| 5' | 2 | 3 |
| 10' | 3 | 3 |
| 15' | 3 | 4 |
| 20' | 4 | 4 |

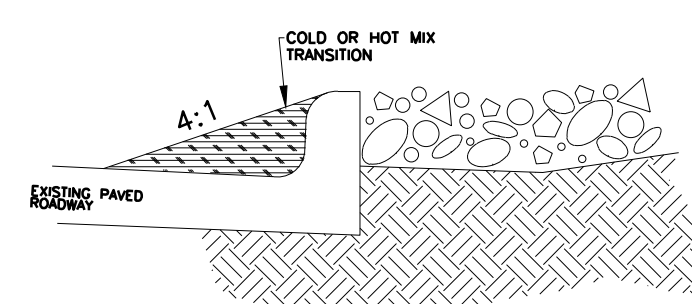


ISOMETRIC PLAN VIEW
N.T.S.

DIVERSION RIDGE REQUIRED WHERE GRADE EXCEEDS 2%



WHEN SEDIMENT HAS SUBSTANTIALLY CLOGGED THE VOID AREA BETWEEN THE ROCKS, THE AGGREGATE MAT MUST BE WASHED DOWN OR REPLACED. PERIODIC RE-GRADING AND TOP DRESSING WITH ADDITIONAL STONE MUST BE DONE TO KEEP THE EFFICIENCY OF THE ENTRANCE FROM DIMINISHING.



TRANSITION

TEMPORARY STONE CONSTRUCTION
ENTRANCE/EXIT
N.T.S.

SILT FENCE GENERAL NOTES

1. STEEL POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF ONE FOOT.
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (e.g. PAVEMENT), WEIGHT FABRIC FLOW WITH ROCK ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.
3. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH STEEL SUPPORT POST OR TO WOVEN WIRE, WHICH IN TURN IS ATTACHED TO THE STEEL FENCE POST. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.
5. INSPECTION SHALL BE MADE EVERY TWO WEEKS AND AFTER EACH 1/2" RAINFALL. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF HALF THE HEIGHT OF THE FENCE. THE SILT SHALL BE DISPOSED OF AT AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.
8. WOODEN STAKES MUST BE USED IN R.O.W.

ESTABLISHMENT OF GROUND COVER

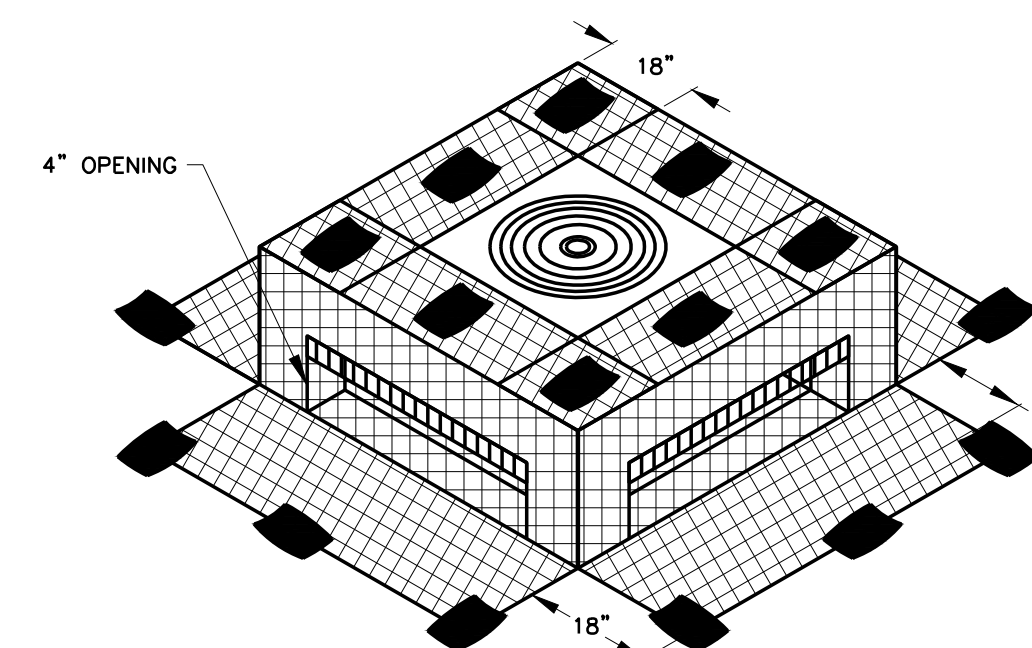
1. Ninety percent (90%) of each square foot of ground grassed is covered with live, healthy grass. Limits of hydromulch seeding shall be the disturbed areas within the limits of city R.O.W., work areas shown on the plans, and where directed by the Owner prior to final acceptance by the City Engineer. Any disturbed areas outside these limits shall be hydromulch seeded at the Contractor's Expense.
2. Ground cover shall be established as per North Central Texas Council of Governments (N.C.T.C.O.G.) "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" 202.6 Seeding Turfgrass. Copies may be obtained from the "NORTH CENTRAL COUNCIL OF GOVERNMENTS", PO Drawer 5888, Arlington, Texas, 76005-5888, Phone (817) 640-3300, also available at www.publicworks.dfwinfo.com. A copy of the contract documents, plans and specifications shall be available on-site at all times by the Contractor.
3. Prior to planting, contractor shall provide the City Engineer, or his designee, with the State of Texas Certificate stating analysis of purity and germination of seed.
4. Planting season and application rates. All planting shall be done between the dates specified in Table 1, for each grass type except when specifically authorized in writing. The seeds planted per acre shall be of a type specified with the mixture, rate and planting dates as shown in the Table 1, or as specified by the Engineer.

Table 1. Seeding Turfgrass

| TYPE | PLANTING SEASON | SEED AND RATE |
|---------|--------------------------|---|
| TYPE I | MARCH THROUGH SEPTEMBER | BERMUDA GRASS, HULLED 50-LB (22.7-KG) PLS PER ACRE |
| TYPE II | OCTOBER THROUGH FEBRUARY | RYE GRASS, 100-LB (45.4-KG) PLS PER ACRE COMBINED WITH BERMUDA GRASS, HULLED 20-LB (9.1-KG) PLS PER ACRE. |
| OTHER | AS SPECIFIED ON PLANS | AS SPECIFIED ON PLANS |

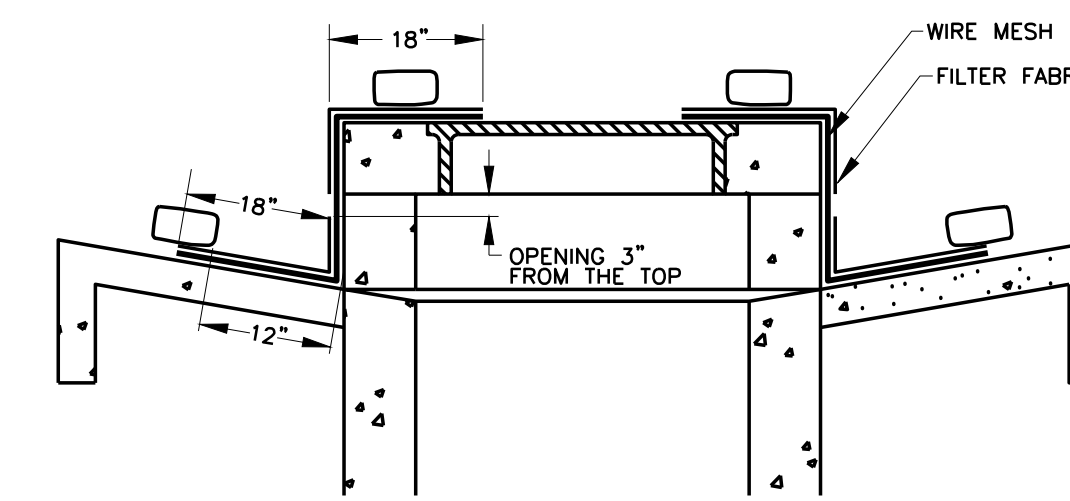
¹PLS - Pure Live Seed is determined by multiplying the gross weight times purity times the germination [For example, a 100-lb bag with 85% purity and 80% germination. (PLS=pounds in bag x Purity x germination) 100 x 0.85 x 0.8 = 68.0 -lbs of pure live seed.]

5. Seeded areas shall be maintained, including watering and mowing, at such time and in a manner and quality to establish a minimum 90% of each square foot of ground grassed is covered with live, healthy grass, until completion and final acceptance of the project by the City Engineer.

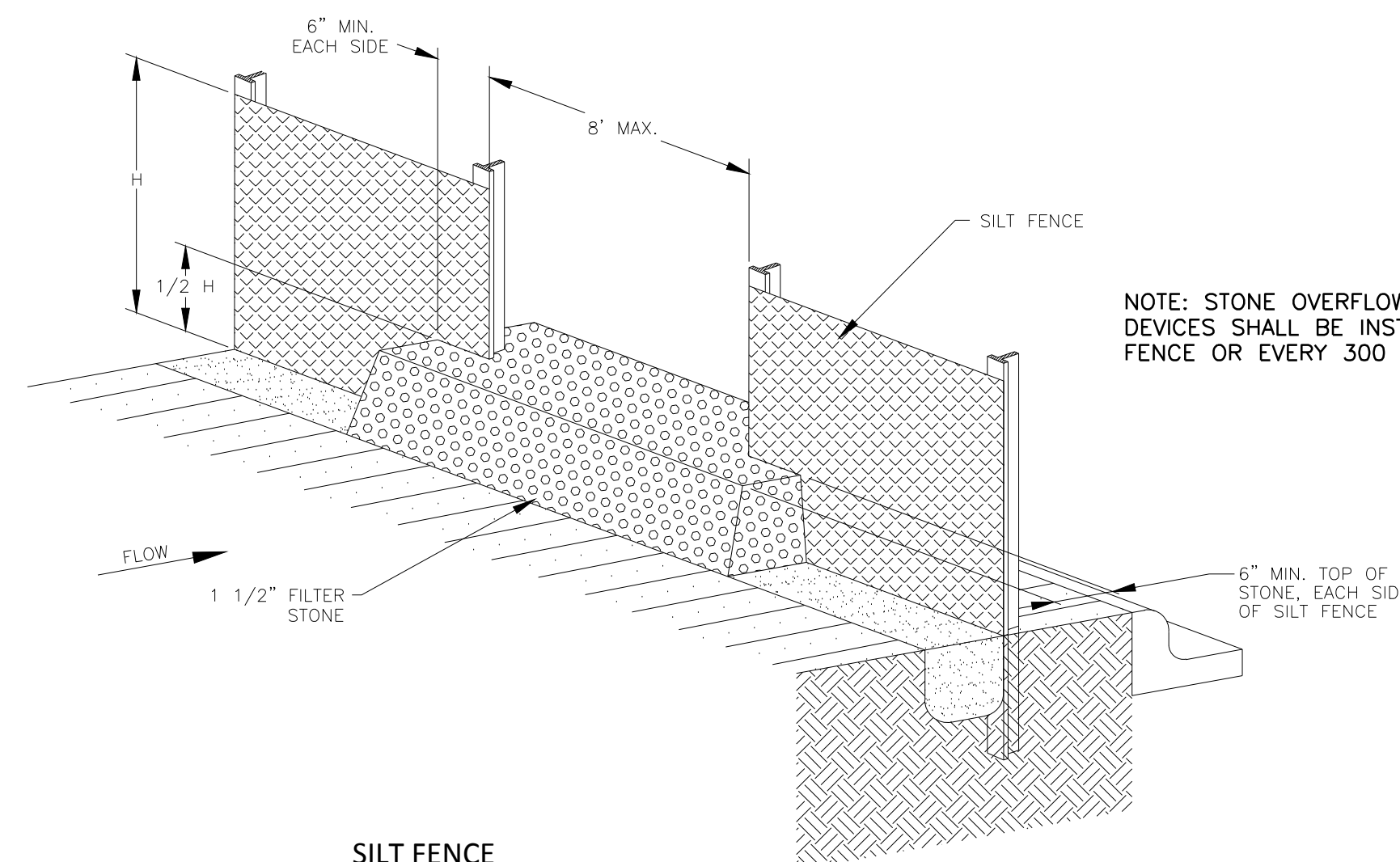


ISOMETRIC VIEW

FILTER FABRIC WYE INLET PROTECTION
N.T.S.



SECTION



SILT FENCE
STONE OVERFLOW STRUCTURE
N.T.S.

NOTE: STONE OVERFLOW STRUCTURES OF OTHER OUTLET CONTROL DEVICES SHALL BE INSTALLED AT ALL LOW POINTS ALONG THE FENCE OR EVERY 300 FEET IF THERE IS NO APPARENT LOW POINT

EROSION CONTROL DETAILS
NOT TO SCALE

Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

05-01-2017

FREES & NICHOLS
5905 McIn Street, Suite B
Frisco, Texas 75034
Phone - (972) 624-9201
Fax - (972) 624-9202
Web - www.freese.com

CITY OF FRISCO, TEXAS
LEBANON ROAD IMPROVEMENTS AND FORCE MAIN

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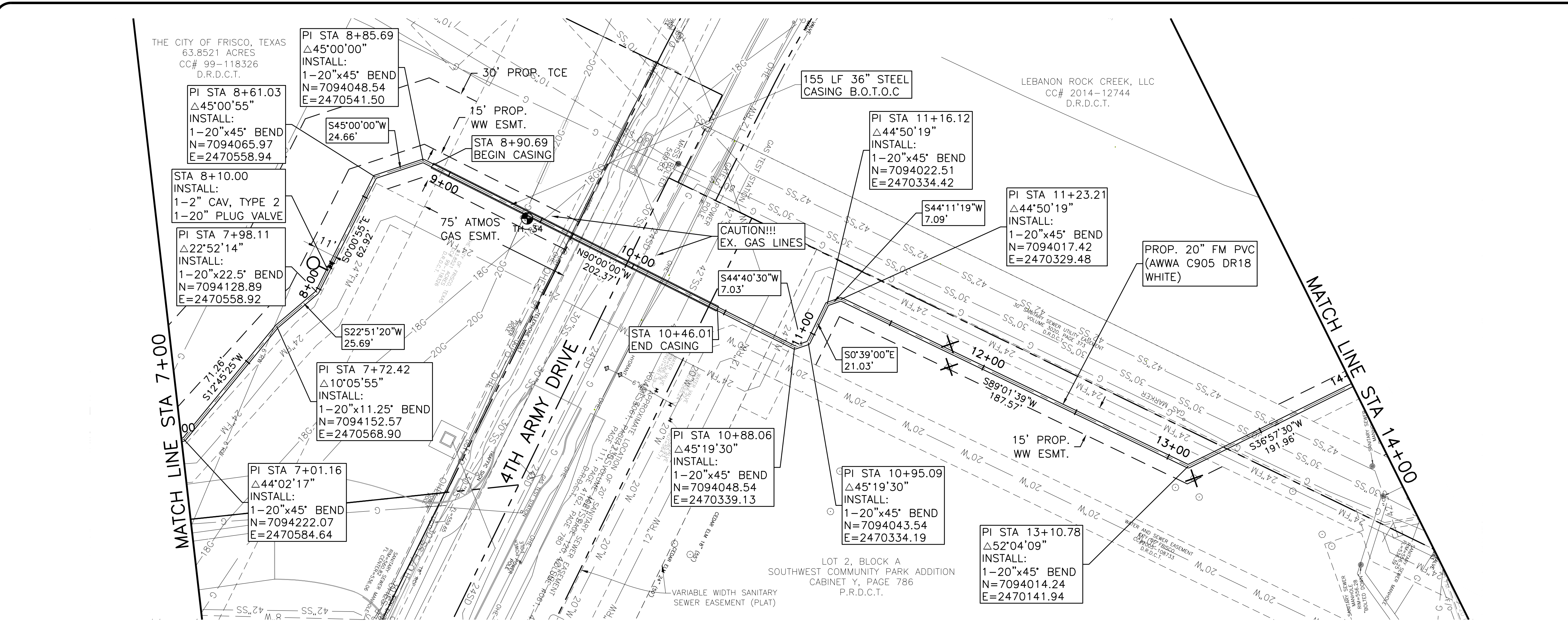
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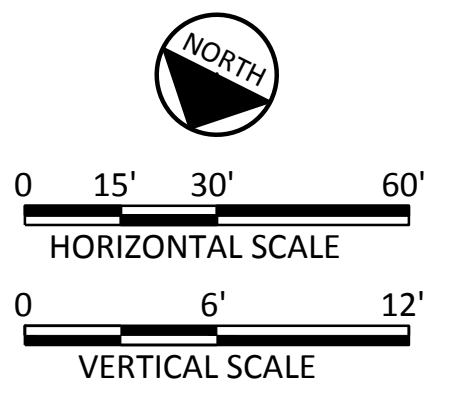
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SHEET
EC-03

SEQ. 11

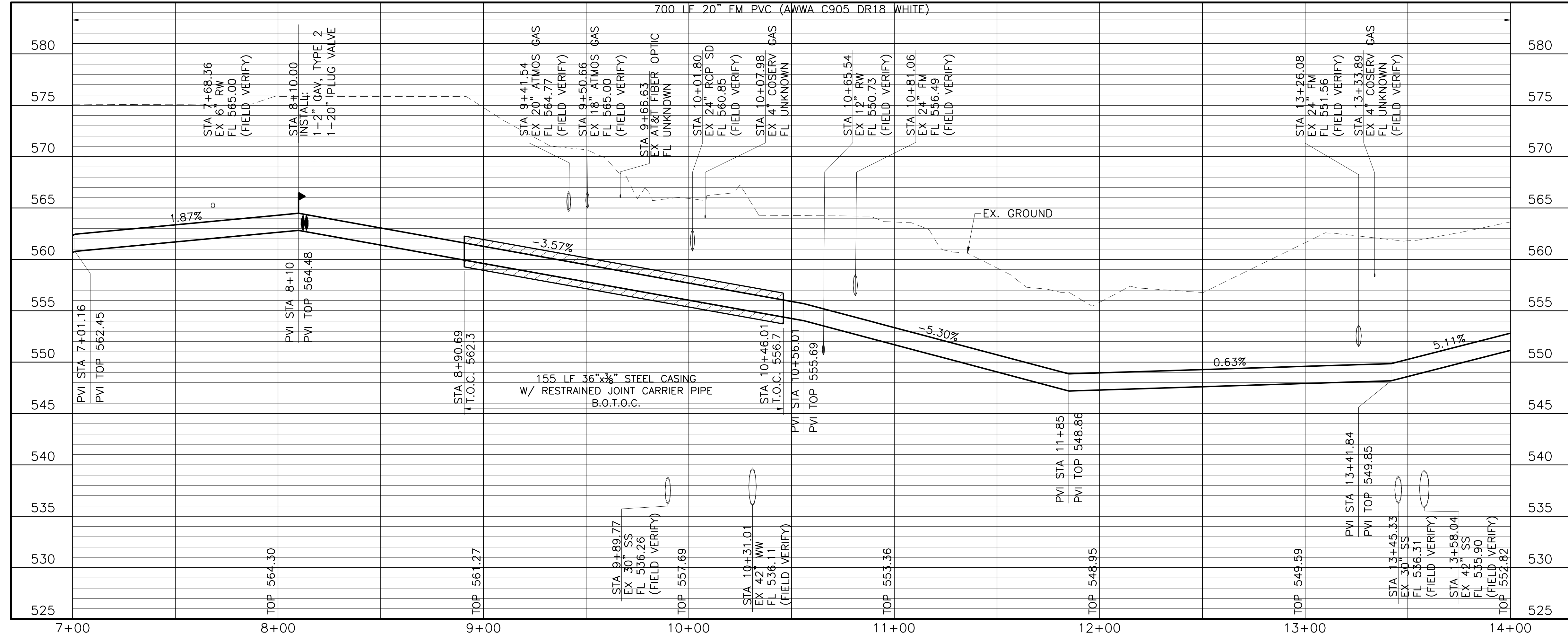


TREE REMOVAL LEGEND
 TREE TO BE REMOVED



CAUTION!!!
 EXISTING UNDERGROUND AND OVERHEAD UTILITIES IN THE AREA. 48 HOURS PRIOR TO CONSTRUCTION CONTACT 1-800-DIG-TESS

- NOTES:**
- CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.
 - THE CONTRACTOR SHALL NOTIFY ATMOS OPERATIONS (JIMMY PRATT AT (214) 346-4535) AT LEAST 48 HOURS PRIOR TO CROSSING ATMOS FACILITIES. ALL ATMOS GAS LINES MUST BE POTHOLED BY THE CONTRACTOR TO VERIFY THE EXACT DEPTH PRIOR TO CROSSING THEM.
 - CONTRACTOR SHALL REPAIR ALL IRRIGATION LINES DISRUPTED DURING THE PIPE INSTALLATION TO THE PRE-CONSTRUCTION CONDITIONS. THIS SHALL BE SUBSIDIARY TO THE PIPE PRICE.
 - NO UNPROTECTED TRENCHES OR PITS ARE ALLOWED OVERNIGHT. AT THE CONCLUSION OF EACH WORK DAY, CONTRACTOR SHALL PLACE PROTECTIVE STEEL PLATES OVER BORE PITS UNTIL THE PIPELINE CREW REACHES THE BORE PIT LOCATION FOR THE PIPE INSTALLATION.



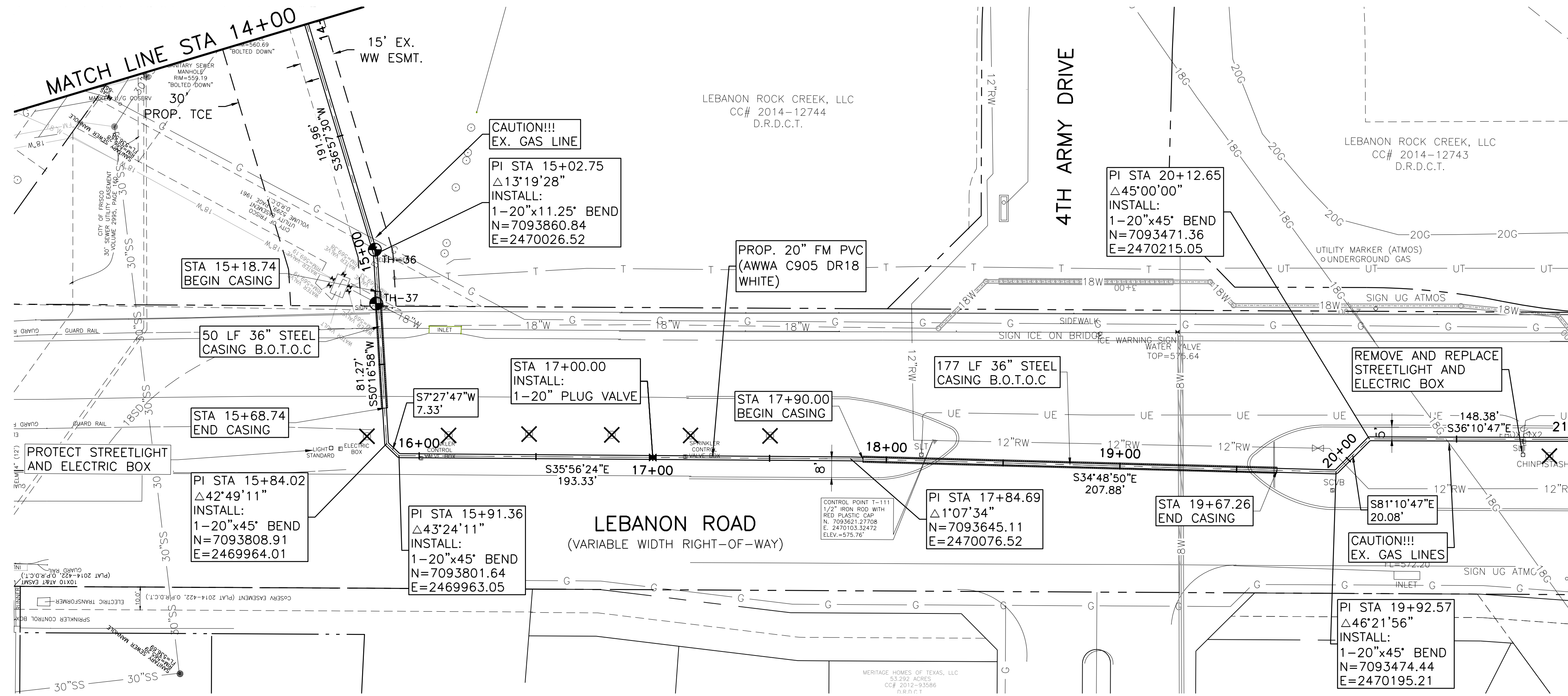
Freese and Nichols, Inc.
 Texas Registered Engineering Firm F-2142

 ROBIN E. ERNSTROM
 PROFESSIONAL ENGINEER
 No. 11683
 State of Texas
 Expires 5/1/2017

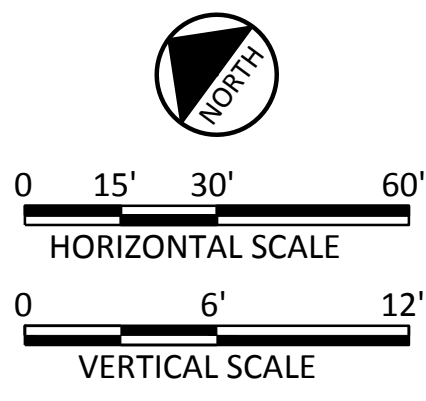
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 5905 Main Street, Suite B
 Frisco, Texas 75034
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CITY OF FRISCO, TEXAS
LEBANON ROAD IMPROVEMENTS AND FORCE MAIN
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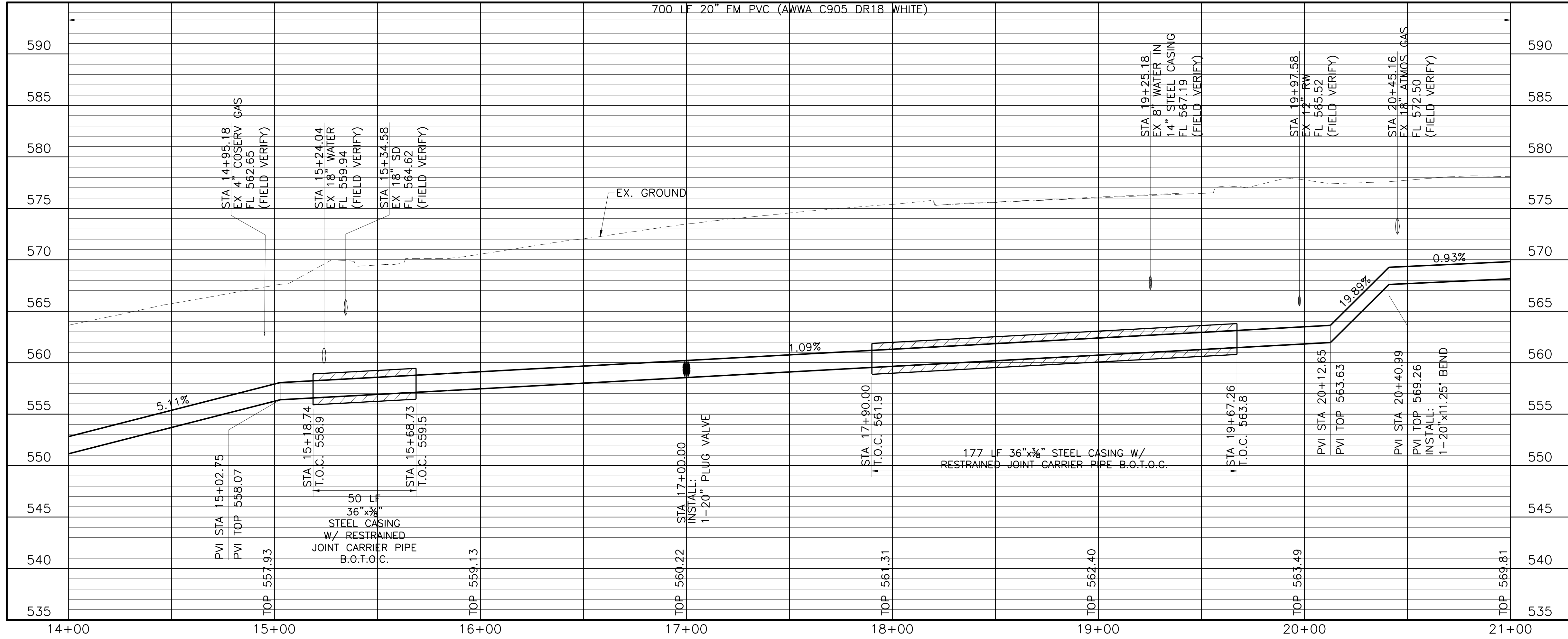
TREE REMOVAL LEGEND
 TREE TO BE REMOVED



CAUTION!!!
 EXISTING UNDERGROUND AND OVERHEAD UTILITIES IN THE AREA. 48 HOURS PRIOR TO CONSTRUCTION CONTACT 1-800-DIG-TESS

NOTES:

- CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.
- THE CONTRACTOR SHALL NOTIFY ATMOS OPERATIONS (JIMMY PRATT AT (214) 346-4535) AT LEAST 48 HOURS PRIOR TO CROSSING ATMOS FACILITIES. ALL ATMOS GAS LINES MUST BE POTHOLED BY THE CONTRACTOR TO VERIFY THE EXACT DEPTH PRIOR TO CROSSING THEM.
- CONTRACTOR SHALL REPAIR ALL IRRIGATION LINES DISRUPTED DURING THE PIPE INSTALLATION TO THE PRE-CONSTRUCTION CONDITIONS. THIS SHALL BE SUBSIDIARY TO THE PIPE PRICE.
- NO UNPROTECTED TRENCHES OR PITS ARE ALLOWED OVERNIGHT. AT THE CONCLUSION OF EACH WORK DAY, CONTRACTOR SHALL PLACE PROTECTIVE STEEL PLATES OVER BORE PITS UNTIL THE PIPELINE CREW REACHES THE BORE PIT LOCATION FOR THE PIPE INSTALLATION.
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Freese and Nichols, Inc.
 Texas Registered Engineering Firm F-2144


 ROBB E. ERNSTROM
 PROFESSIONAL ENGINEER
 No. 116833
 State of Texas
 Expires 9/1/2017

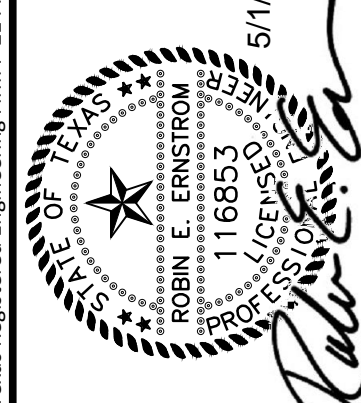
FREES & NICHOLS
 5905 McIn Street, Suite B
 Frisco, Texas 75034
 Phone - (972) 624-9201
 Fax - (972) 624-9202
 Web - www.freese.com

CITY OF FRISCO, TEXAS
LEBANON ROAD IMPROVEMENTS AND FORCE MAIN
 CIVIL
FORCE MAIN LINE A PLAN AND PROFILE
STA 14+00 TO STA 21+00

| NO. | ISSUE | DATE | BY | FR/JOB NO. | DATE | DESIGNED | REVIEWED | DRAWN | LM/R | CHECKED | CCB | FILE NAME |
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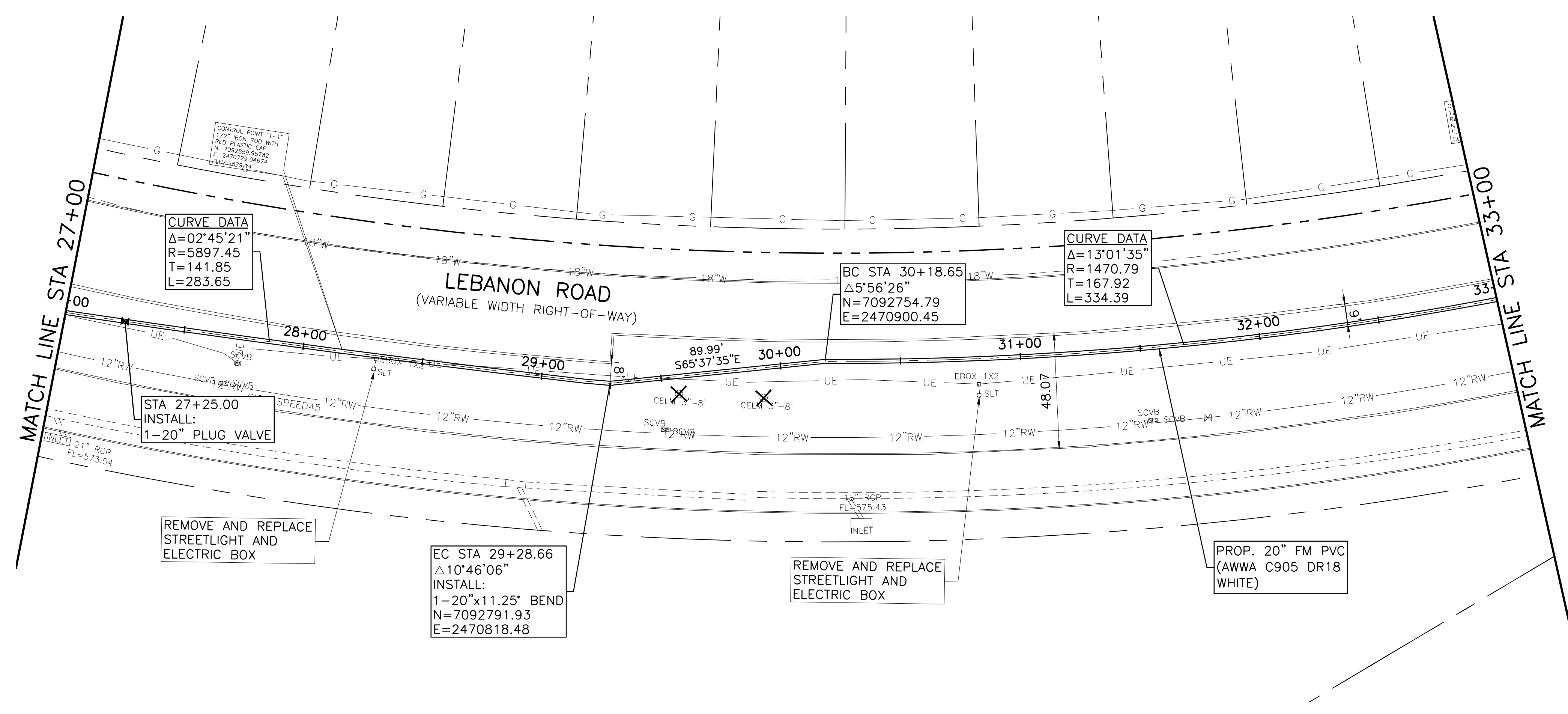
Bar: is one inch on original drawing, if not one inch on this sheet, adjust scale.

TREE REMOVAL LEGEND
 TREE TO BE REMOVED

Freese and Nichols, Inc.
 Texas Registered Engineering Firm F-2144


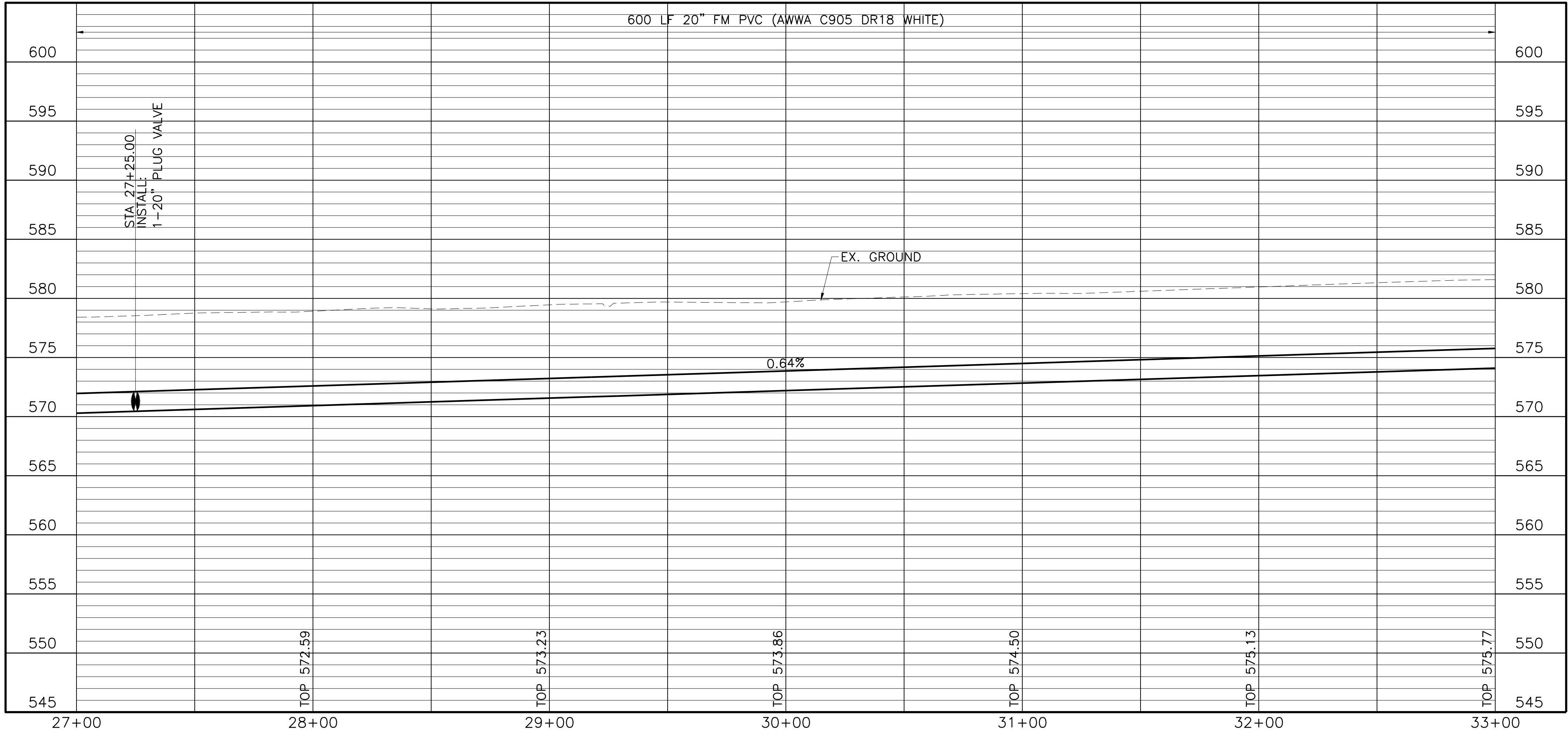
FREES & NICHOLS
 5905 Main Street, Suite B
 Frisco, Texas 75034
 Phone - (972) 624-9201
 Fax - (972) 624-9202
 Web - www.freese.com

CITY OF FRISCO, TEXAS
**LEBANON ROAD IMPROVEMENTS
 AND FORCE MAIN**
 CIVIL
**FORCE MAIN LINE A PLAN AND PROFILE
 STA 27+00 TO STA 33+00**



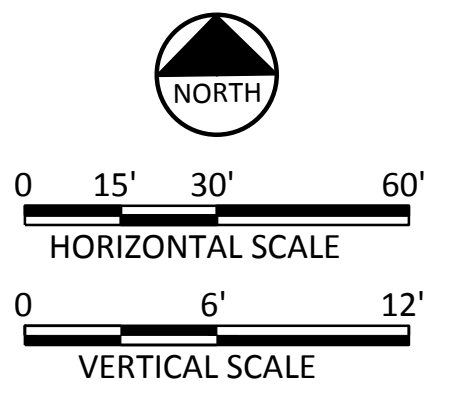
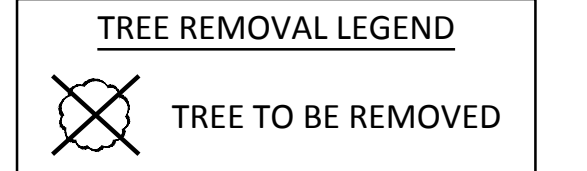
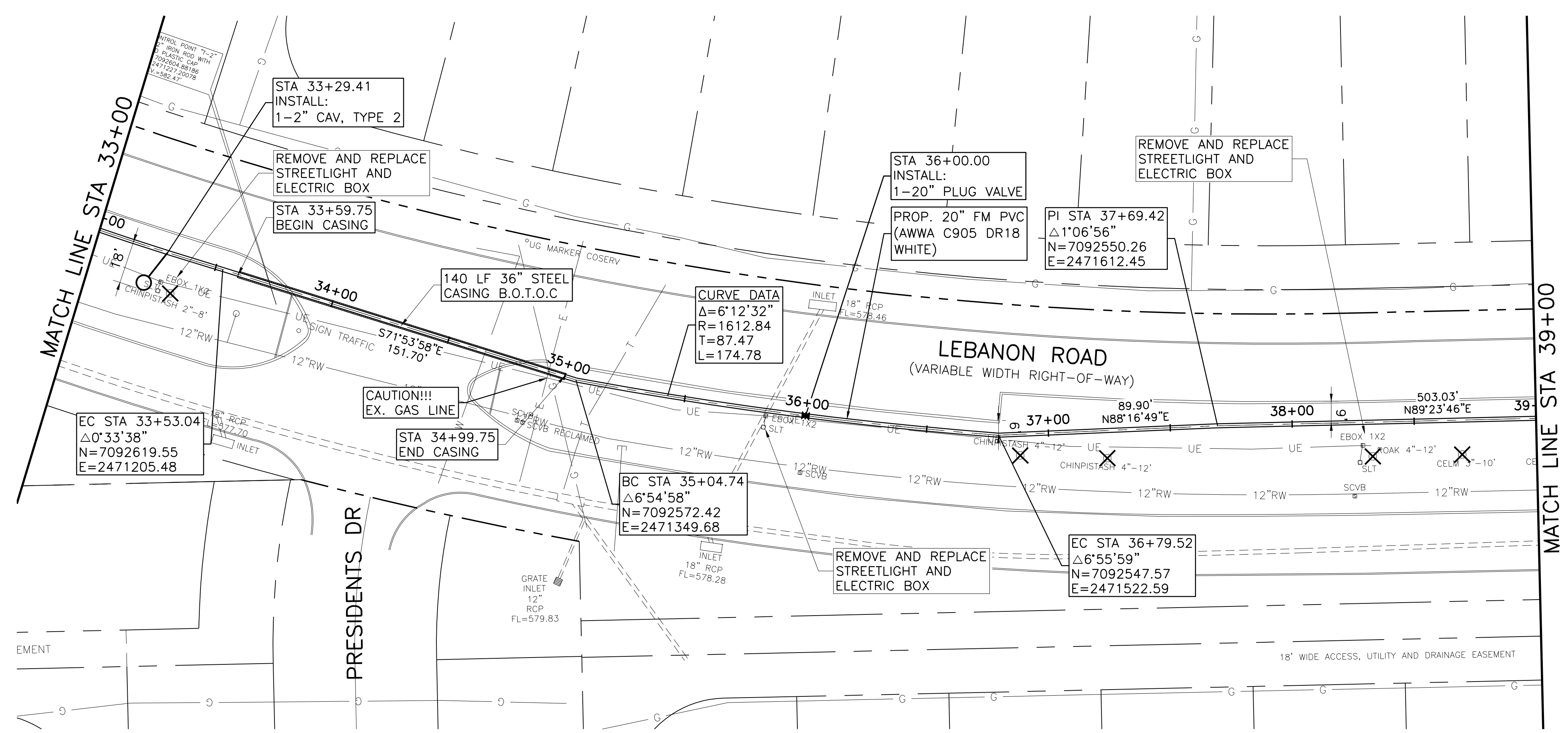
CAUTION!!!
 EXISTING UNDERGROUND AND OVERHEAD UTILITIES IN THE AREA.
 48 HOURS PRIOR TO CONSTRUCTION CONTACT 1-800-DIG-TESS

- NOTES:**
- CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.
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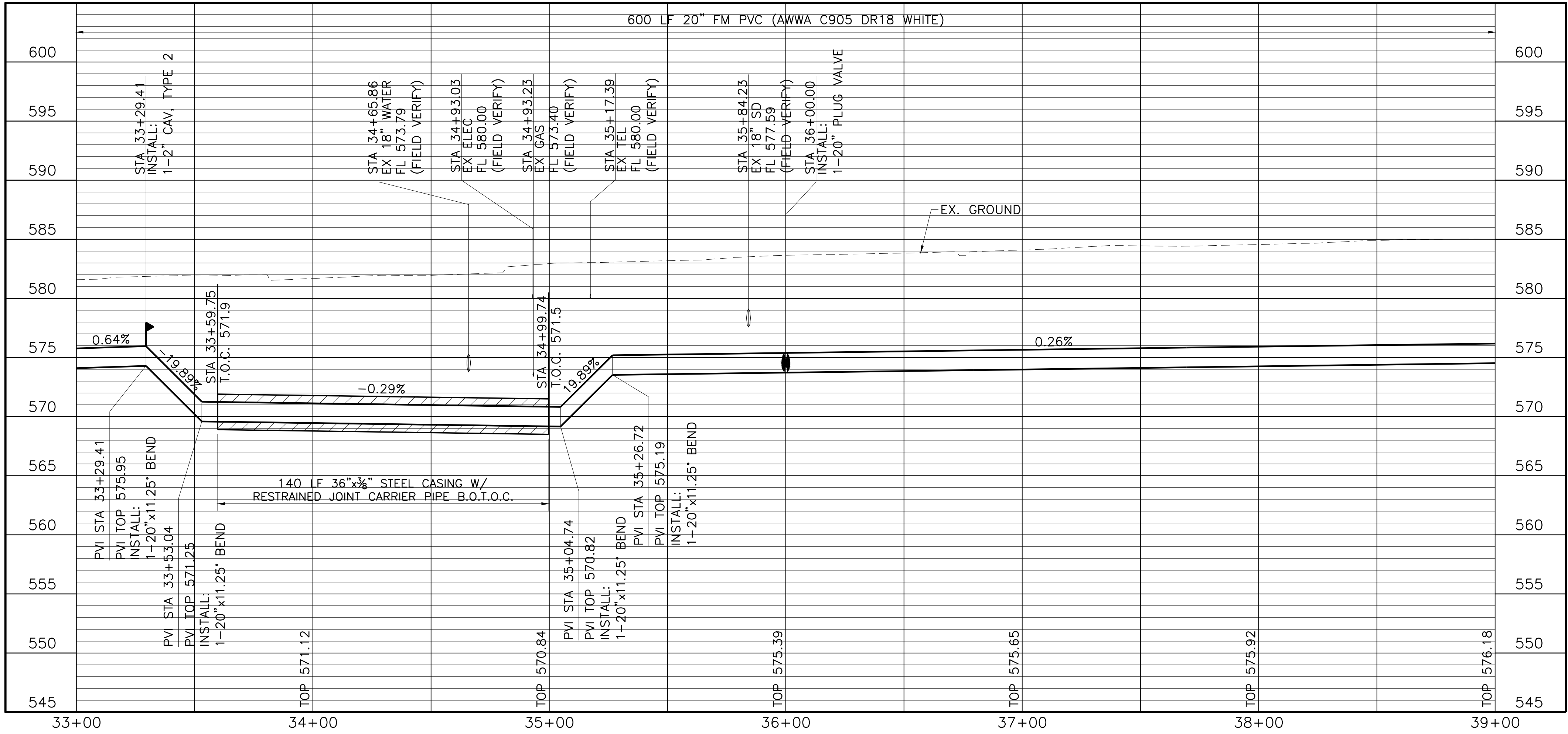
| NO. | ISSUE | DATE | BY | DATE | DESIGNED | DRAWN | REVISION | CHECKED | FILE NAME |
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NOTES:

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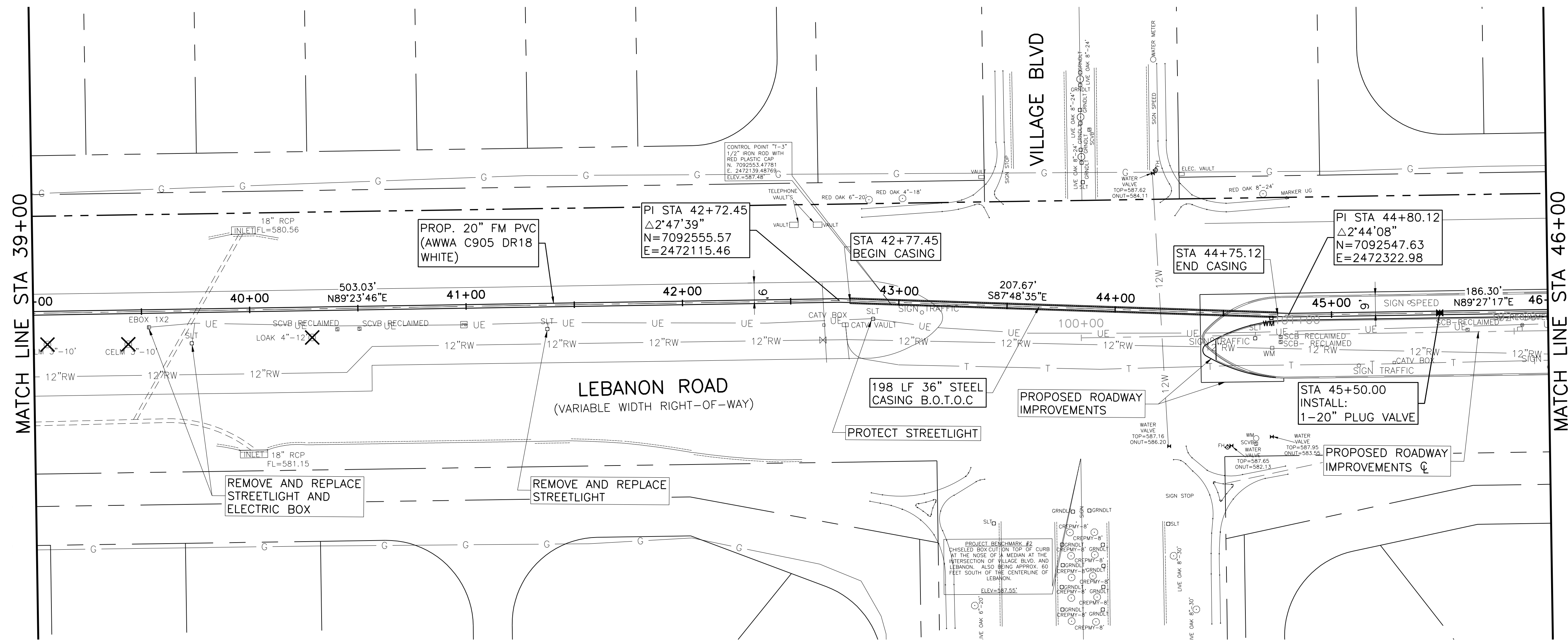
Freese and Nichols, Inc.
 Texas Registered Engineering Firm F-2144

FREES & NICHOLS
 5905 McIn Street, Suite B
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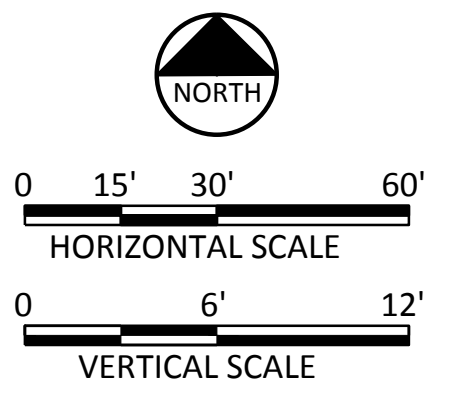
CITY OF FRISCO, TEXAS
**LEBANON ROAD IMPROVEMENTS
 AND FORCE MAIN**
 CIVIL
**FORCE MAIN LINE A PLAN AND PROFILE
 STA 33+00 TO STA 39+00**

| | | | | | |
|---|-------|----|------|-------------|-----------------|
| NO. | ISSUE | BY | DATE | FRJ JOB NO. | FRCL5624 |
| | | | | DATE | APR. 2017 |
| | | | | DESIGNED | REE |
| | | | | DRAWN | LMR |
| | | | | REVISION | |
| | | | | CHECKED | CCB |
| | | | | FILE NAME | CV-PPL-PP-FM-10 |
| VERIFY SCALE: 1" = 10' (Horizontal), 1" = 12' (Vertical) Bar is one inch on original drawing. If not one inch on this sheet, adjust scale. | | | | | |
| SHEET FM-6 | | | | | |
| SEQ. 17 | | | | | |

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TREE REMOVAL LEGEND
 TREE TO BE REMOVED



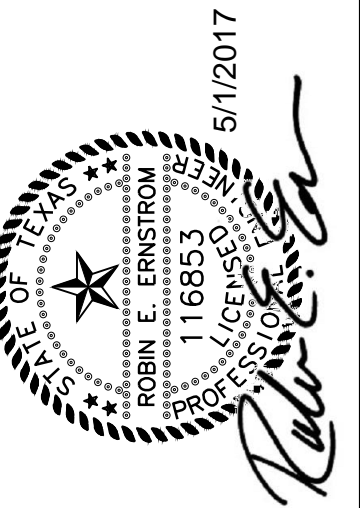
CAUTION!!!
 EXISTING UNDERGROUND AND OVERHEAD UTILITIES IN THE AREA. 48 HOURS PRIOR TO CONSTRUCTION CONTACT 1-800-DIG-TESS

NOTES:

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| Station | Profile Description | Profile Data |
|---------|--|--------------|
| 39+00 | 700 LF 20" FM PVC (AWWA C905 DR18 WHITE) | TOP 576.45 |
| 40+00 | | TOP 576.71 |
| 41+00 | | TOP 576.97 |
| 42+00 | | TOP 577.24 |
| 43+00 | | TOP 577.50 |
| 44+00 | | TOP 581.67 |
| 45+00 | | TOP 582.32 |
| 46+00 | | TOP 582.32 |

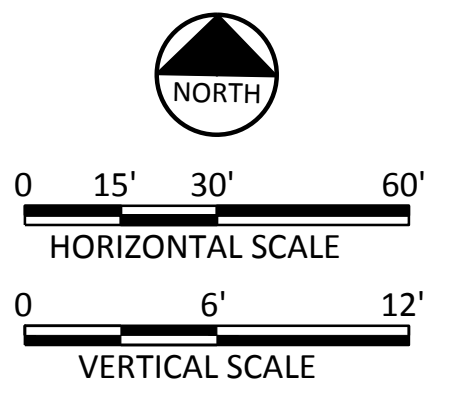
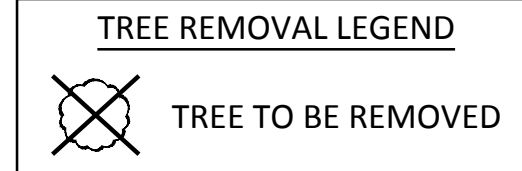
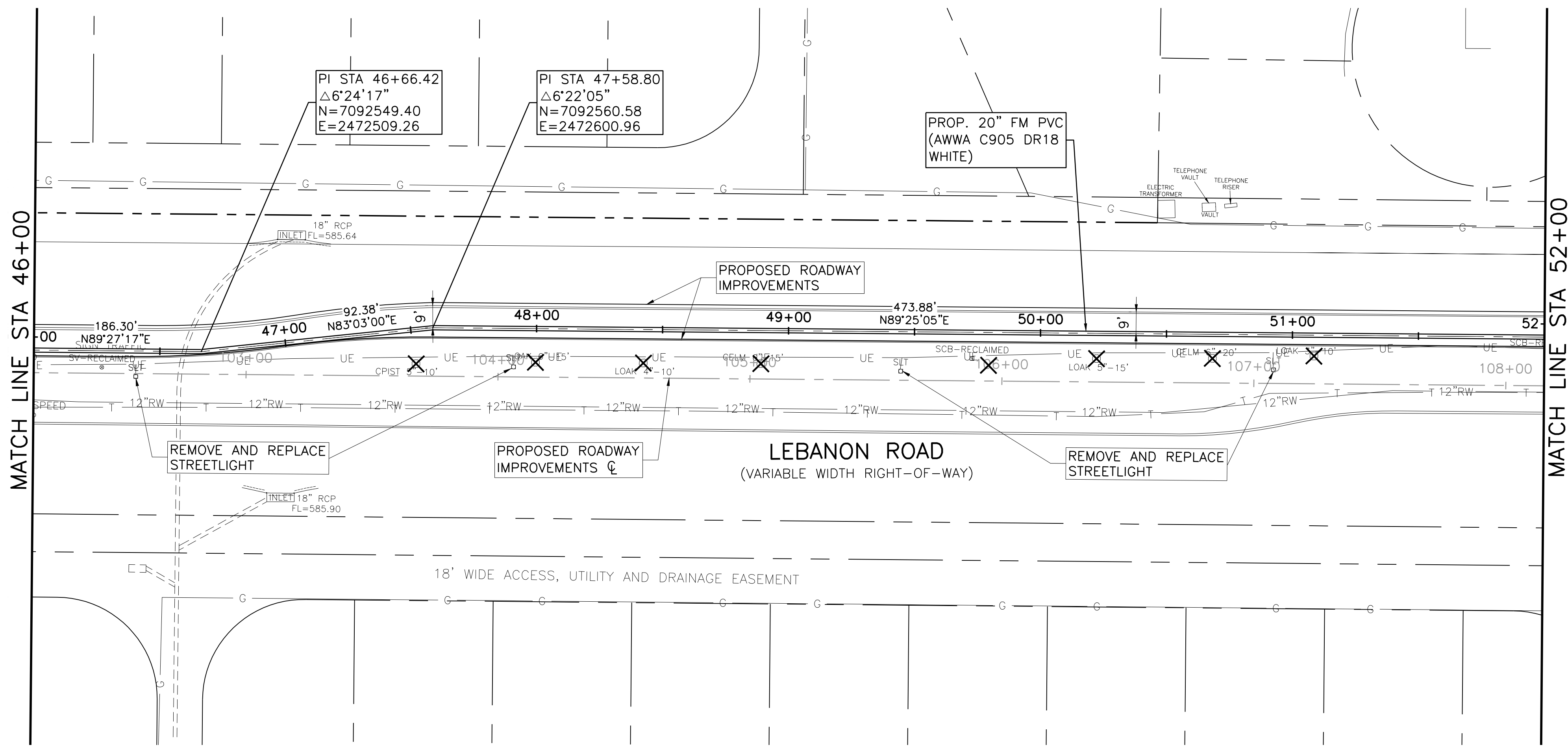
Freese and Nichols, Inc.
 Texas Registered Engineering Firm F-2144



FREES & NICHOLS
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 Frisco, Texas 75034
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CITY OF FRISCO, TEXAS
LEBANON ROAD IMPROVEMENTS AND FORCE MAIN
 CIVIL
FORCE MAIN LINE A PLAN AND PROFILE
STA 39+00 TO STA 46+00

| NO. | ISSUE | BY | DATE | FRJ JOB NO. | DATE | DESIGNED | REVIEWED | DRAWN | REVISION | CHECKED | FILE NAME |
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| 0 | VERIFY SCALE | | | FRCL15624 | APR. 2017 | | | | | | CV-PPL-PP-FM-11 |



CAUTION!!!
 EXISTING UNDERGROUND AND OVERHEAD UTILITIES IN THE AREA. 48 HOURS PRIOR TO CONSTRUCTION CONTACT 1-800-DIG-TESS

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| STATION | TOP | VERTICAL CURVE DATA | PIPE DATA | EX. GROUND |
|---------|-----|---------------------|--|------------|
| 46+00 | 555 | | | |
| 47+00 | 560 | TOP 582.63 | | |
| 48+00 | 565 | TOP 582.94 | | |
| 49+00 | 570 | TOP 583.26 | 600 LF 20" FM PVC (AWWA C905 DR18 WHITE) | |
| 50+00 | 575 | TOP 583.57 | | |
| 51+00 | 580 | TOP 583.89 | | |
| 52+00 | 585 | TOP 584.20 | | |
| 610 | 590 | | | |
| 605 | 595 | | | |
| 600 | 599 | | | |
| 595 | 600 | | | |
| 590 | 605 | | | |
| 585 | 610 | | | |

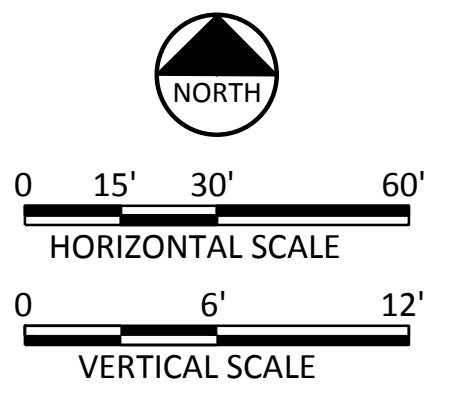
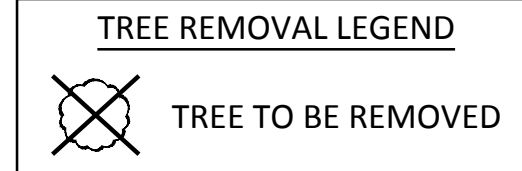
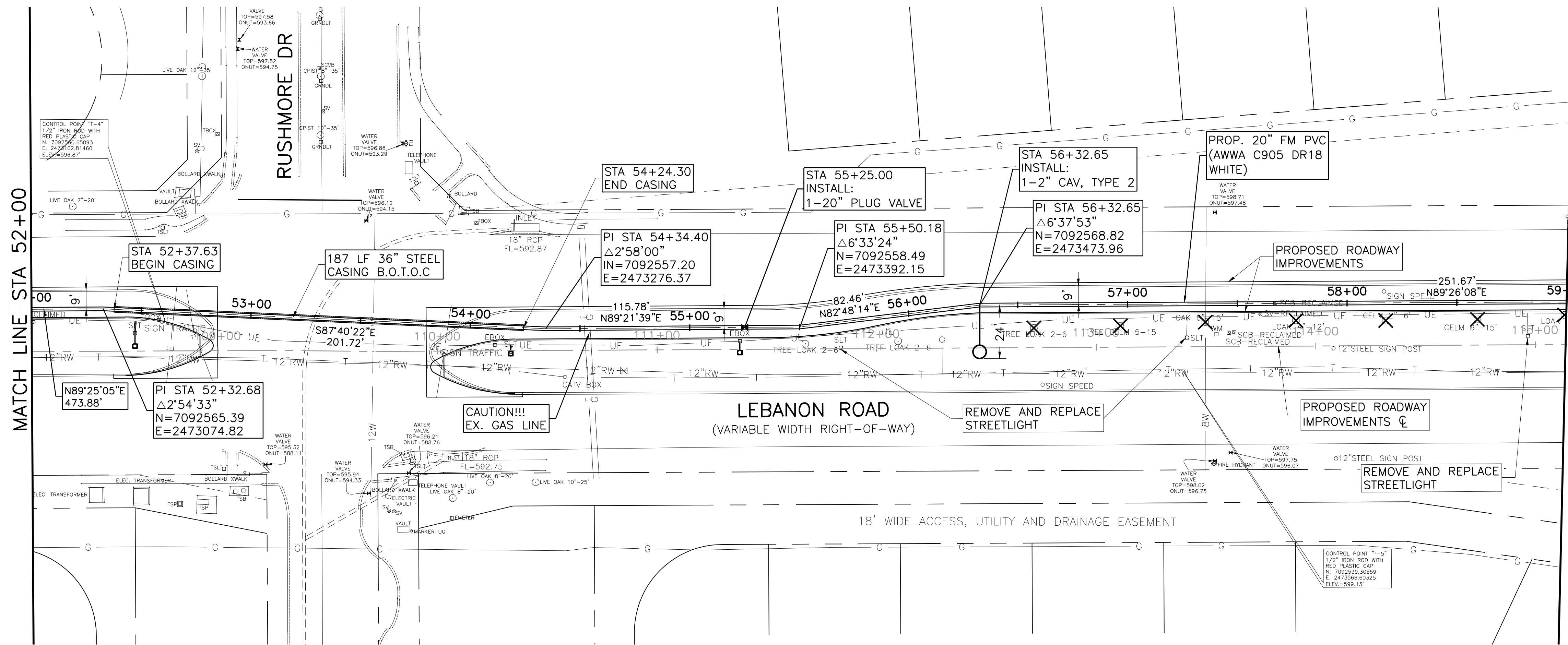
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 5905 McIn Street, Suite B
 Frisco, Texas 75034
 Phone - (972) 624-9201
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CITY OF FRISCO, TEXAS
**LEBANON ROAD IMPROVEMENTS
 AND FORCE MAIN**
 CIVIL
**FORCE MAIN LINE A PLAN AND PROFILE
 STA 46+00 TO STA 52+00**

| | | | | |
|-----|---|------|----|-----------------|
| NO. | ISSUE | DATE | BY | FILE NAME |
| 0 | VERIFY SCALE | | | CV-PPL-PP-FM-12 |
| 1 | Bar is one inch on original drawing. If not one inch on this sheet, adjust scale. | | | |



CAUTION!!!
EXISTING UNDERGROUND AND OVERHEAD UTILITIES IN THE AREA. 48 HOURS PRIOR TO CONSTRUCTION CONTACT 1-800-DIG-TESS

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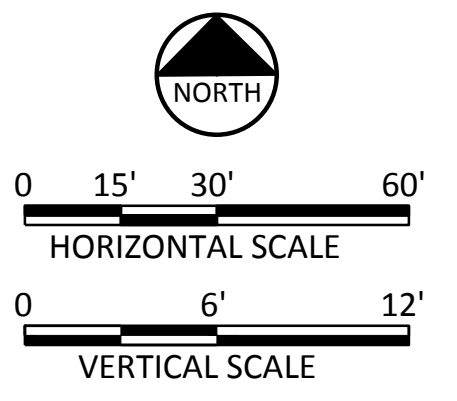
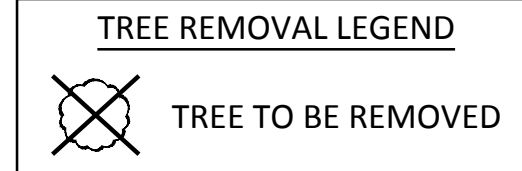
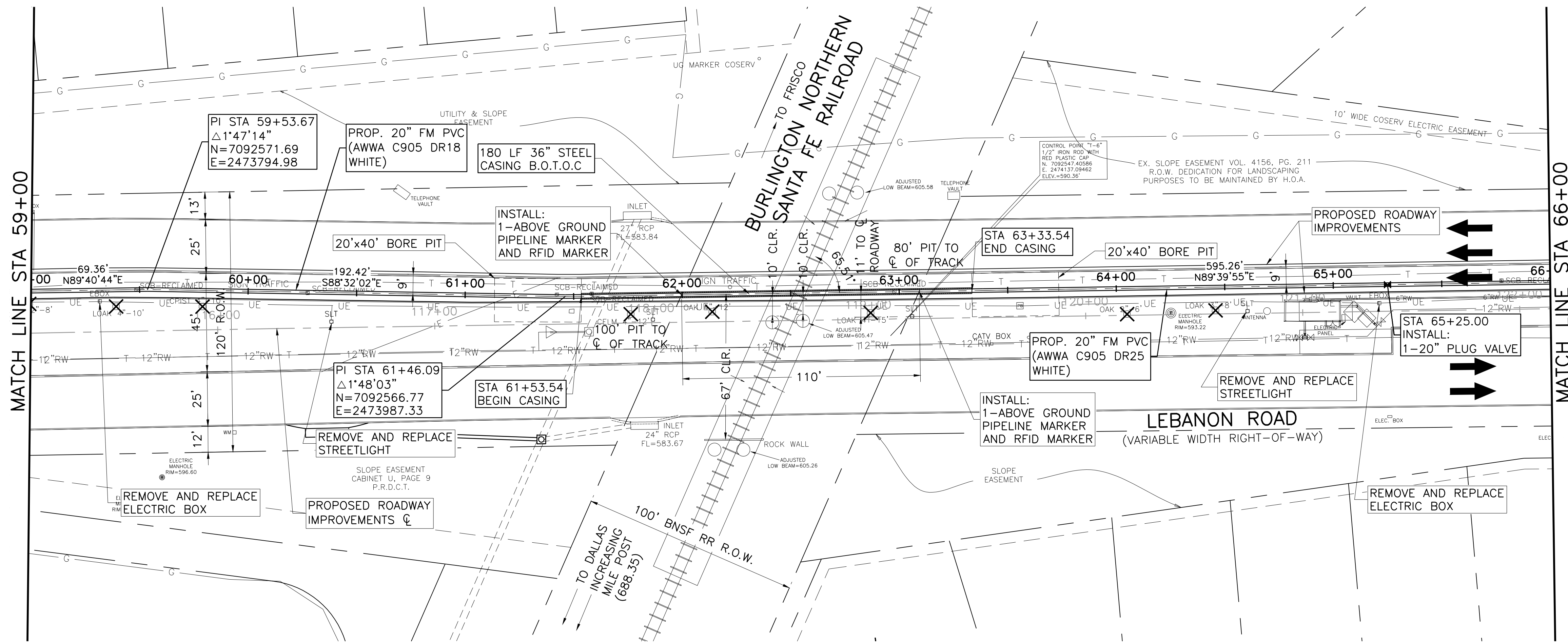
| Station | Profile Description | Profile Data |
|---------|---|--|
| 52+00 | 187 LF 36"x36" STEEL CASING W/ RESTRAINED JOINT CARRIER PIPE B.O.T.O.C. | STA 52+37.63 T.O.C. 585.0 |
| 53+00 | | STA 53+29.43 EX 18" SD FL 592.15 (FIELD VERIFY) |
| 54+00 | | STA 54+24.30 T.O.C. 585.6 |
| 55+00 | | PI STA 55+25.00 INSTALL: 1-20" PLUG VALVE |
| 56+00 | | PI STA 56+32.65 INSTALL: 1-2" CAV, TYPE 2 |
| 57+00 | | PI STA 57+35.62 EX 8" WATER FL 591.00 (FIELD VERIFY) |
| 58+00 | | PI STA 58+84.31 PVI TOP 588.76 |
| 59+00 | | PI STA 59+11.25 BEND |

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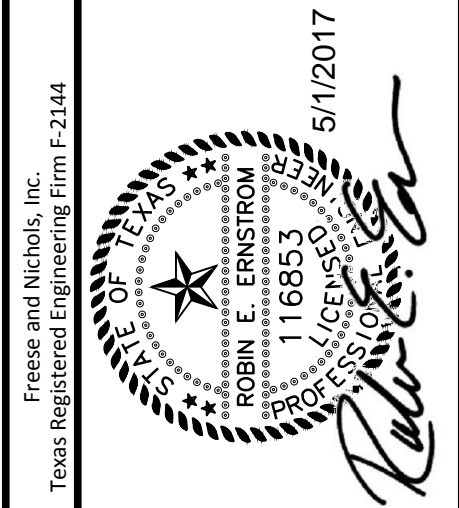
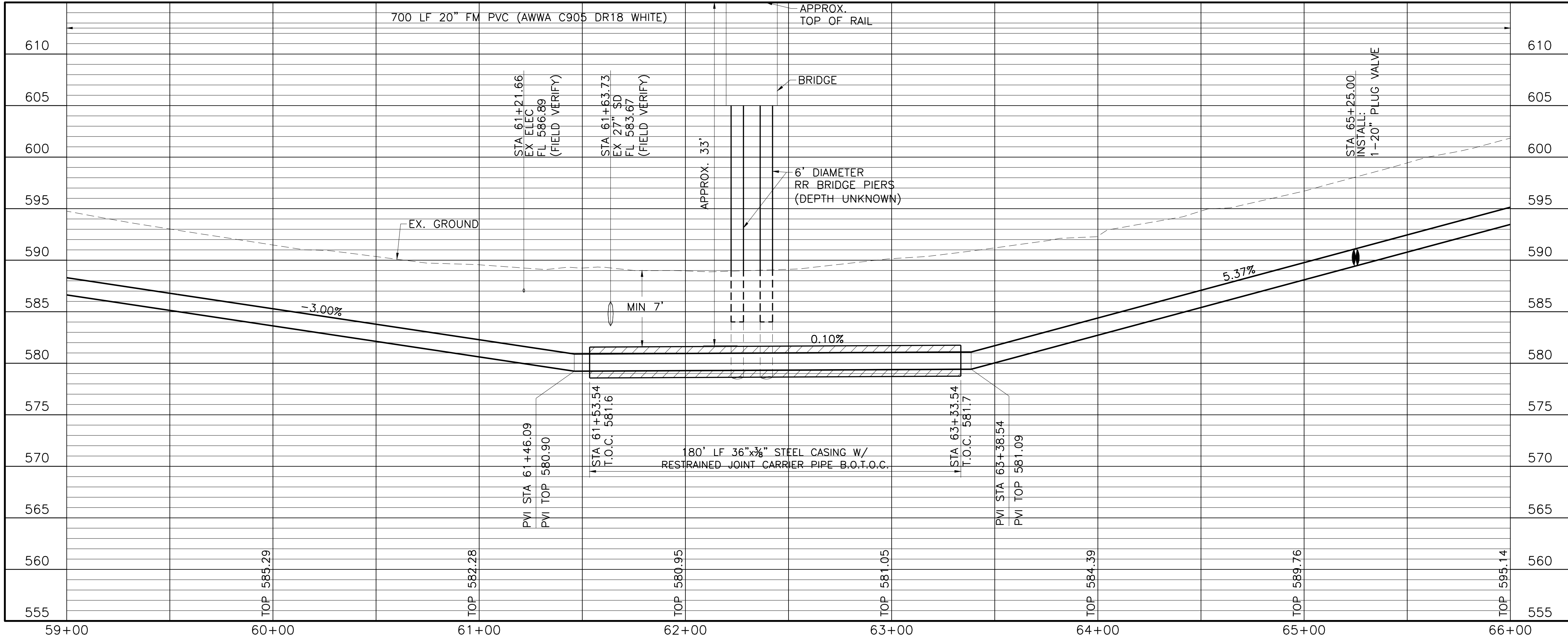
CITY OF FRISCO, TEXAS
LEBANON ROAD IMPROVEMENTS AND FORCE MAIN
CIVIL
FORCE MAIN LINE A PLAN AND PROFILE
STA 52+00 TO STA 59+00

| NO. | ISSUE | DATE | BY | FR/JOB NO. | DATE | DESIGNED | REVISION | DRAWN | REVISION | CHECKED | FILE NAME |
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| 0 | VERIFY SCALE | | | FRCL15624 | APR. 2017 | | | | | | CV-PPL-PP-FM-13 |



CAUTION!!!
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 - PRIOR TO COMMENCING ANY WORK WITH IN THE BNSF RR R.O.W., THE CONTRACTOR SHALL COMPLETE THE REQUIRED SAFETY TRAINING PROGRAM AT [HTTP://WWW.CONTRACTORORIENTATION.COM](http://www.contractororientation.com), NO MORE THAN ONE YEAR IN ADVANCE OF THE CONTRACTOR'S ENTRY ON THE BNSF RR R.O.W.
 - THE CONTRACTOR SHALL CALL 1-800-533-2891 TO ARRANGE FOR A BNSF UNDERGROUND CABLE LOCATOR. BNSF FORM "UNDERGROUND CABLE LOCATION & ACKNOWLEDGEMENT" WILL BE COMPLETED BY A BNSF REPRESENTATIVE AND COPY PROVIDED TO THE CONTRACTOR. THE CONTRACTOR MUST HAVE THIS COMPLETED FORM IN POSSESSION AT THE JOBSITE AT ALL TIMES.
 - CONTRACTOR SHALL COMPLY WITH ALL BNSF PERMIT REQUIREMENTS (APPENDIX B OF THE PROJECT MANUAL).
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CITY OF FRISCO, TEXAS
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CIVIL
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STA 59+00 TO STA 66+00

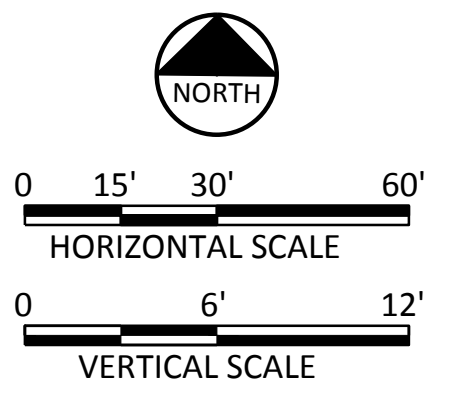
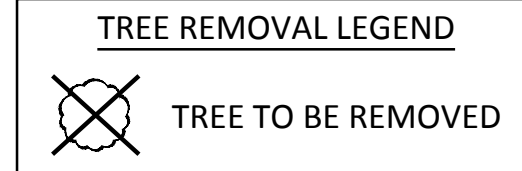
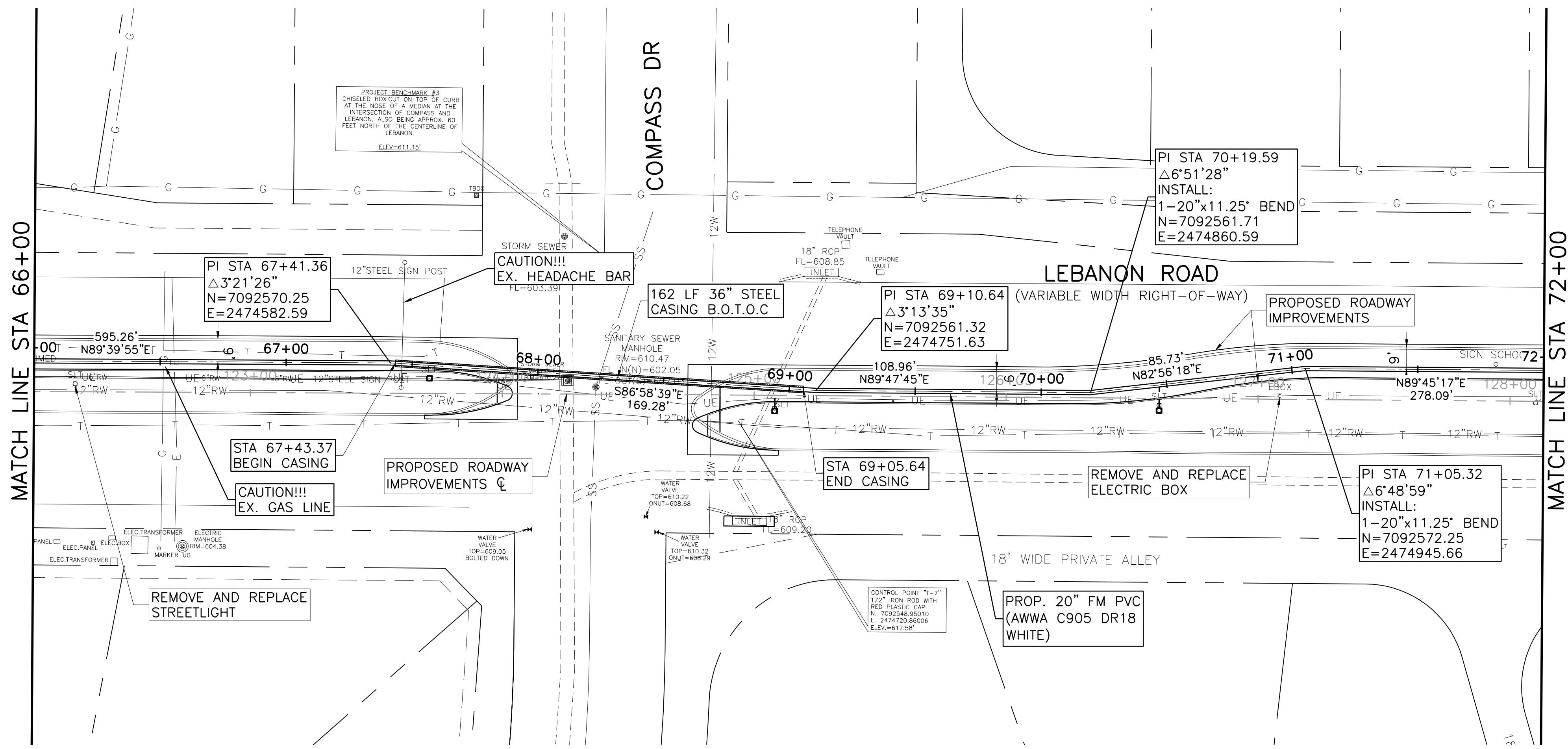
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| 0 | VERIFY SCALE | | | FRCL15624 | APR. 2017 | | | | | | | CV-PPL-PP-FM-14 |

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

SHEET **FM-10**
SEQ. **21**

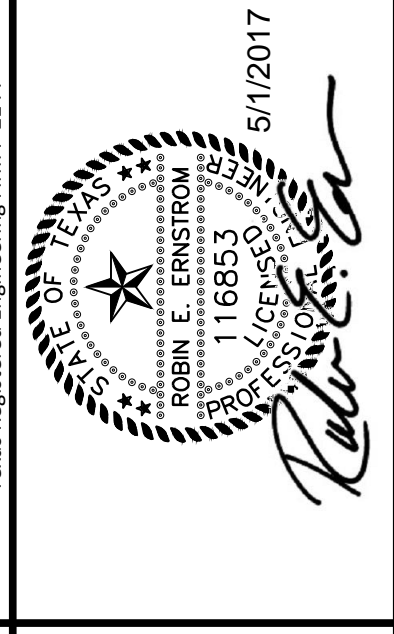
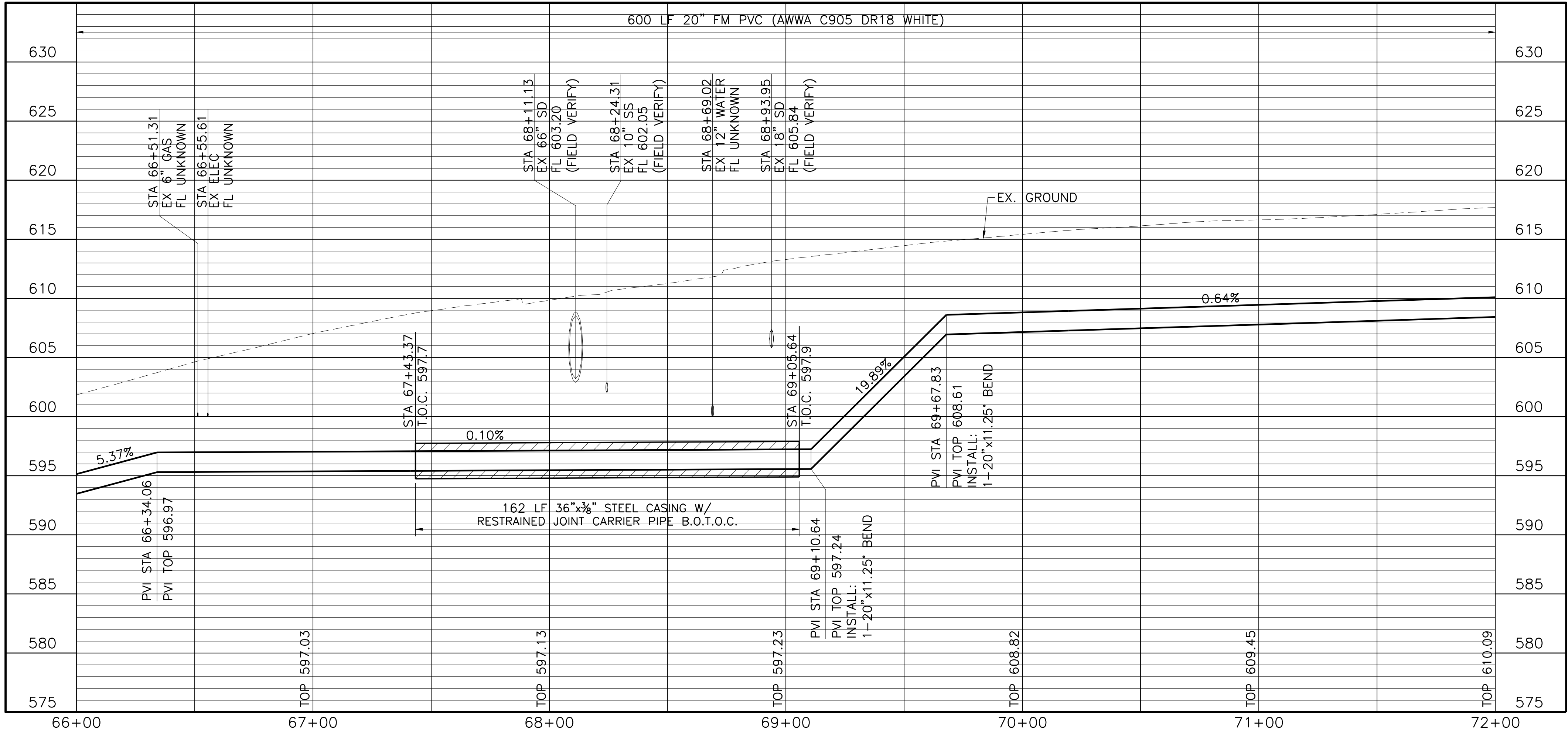
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CAUTION!!!
 EXISTING UNDERGROUND AND
 OVERHEAD UTILITIES IN THE AREA.
 48 HOURS PRIOR TO
 CONSTRUCTION CONTACT
 1-800-DIG-TESS

- NOTES:
- CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.
 - THE CONTRACTOR SHALL NOTIFY ATMOS OPERATIONS (JIMMY PRATT AT (214) 346-4535) AT LEAST 48 HOURS PRIOR TO CROSSING ATMOS FACILITIES. ALL ATMOS GAS LINES MUST BE POTHOLED BY THE CONTRACTOR TO VERIFY THE EXACT DEPTH PRIOR TO CROSSING THEM.
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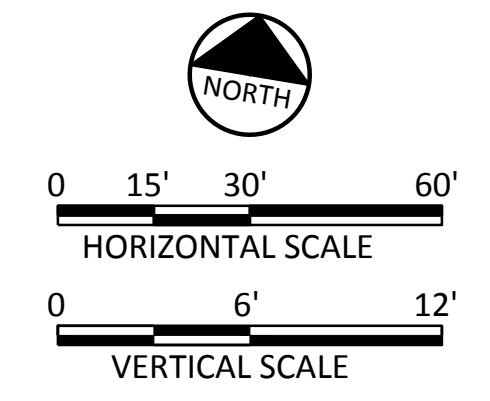
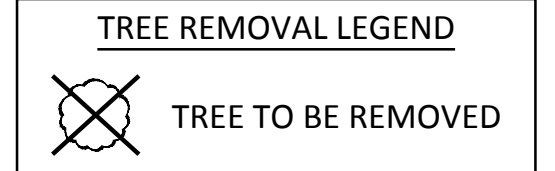
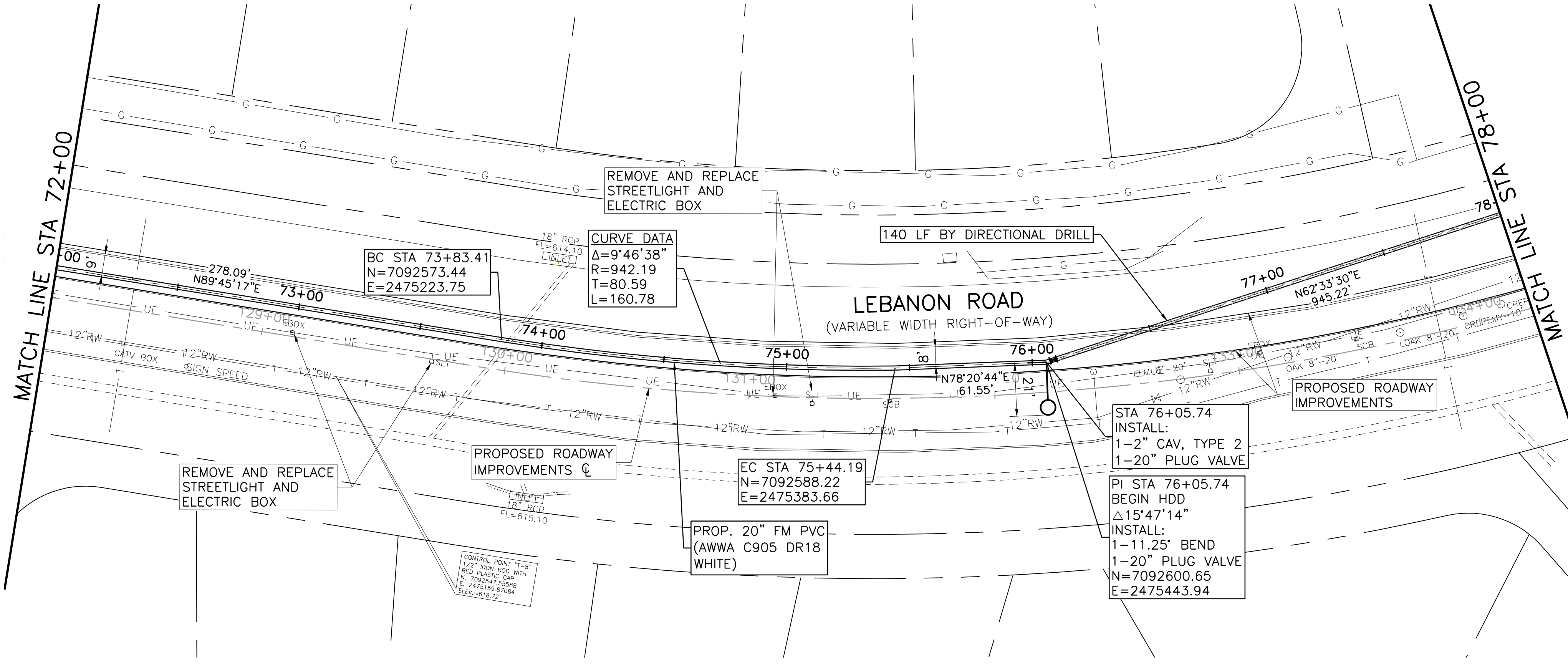
FREES & NICHOLS
 5905 Main Street, Suite B
 Frisco, Texas 75034
 Phone - (972) 624-9201
 Fax - (972) 624-9202
 Web - www.frees.com

CITY OF FRISCO, TEXAS
**LEBANON ROAD IMPROVEMENTS
 AND FORCE MAIN**
 CIVIL
**FORCE MAIN LINE A PLAN AND PROFILE
 STA 66+00 TO STA 72+00**

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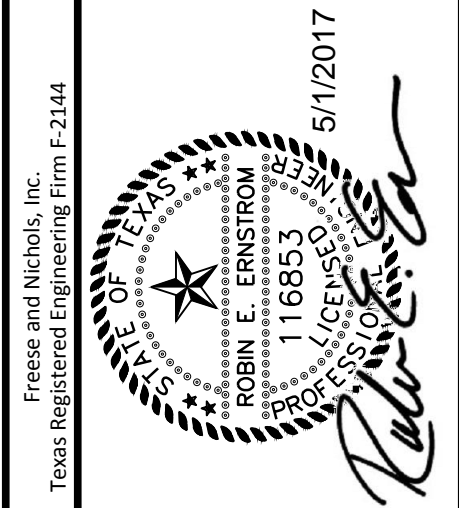
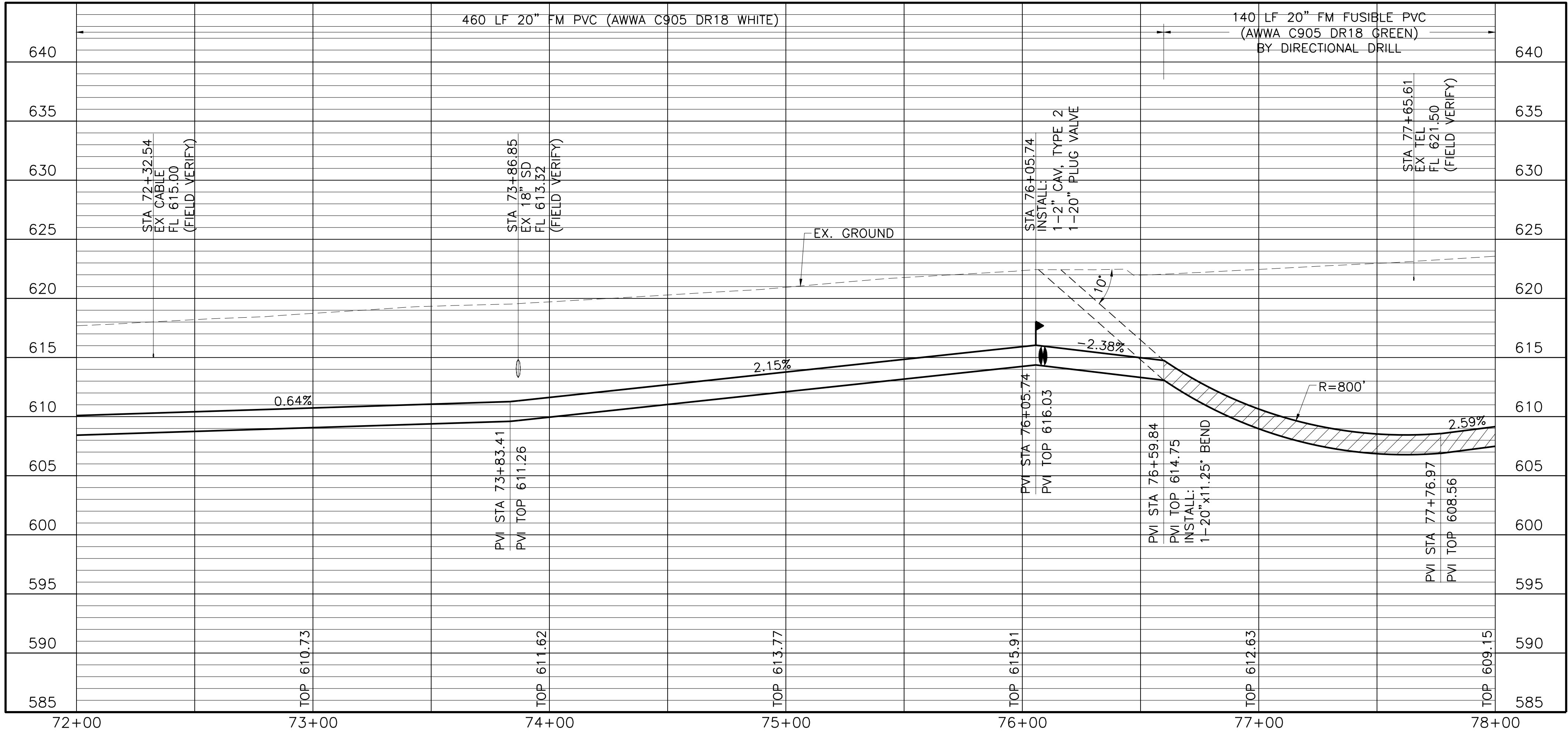
FRCL5624
 APR. 2017
 SHEET **FM-11**
 SEQ. **22**

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CAUTION!!!
 EXISTING UNDERGROUND AND OVERHEAD UTILITIES IN THE AREA. 48 HOURS PRIOR TO CONSTRUCTION CONTACT 1-800-DIG-TESS

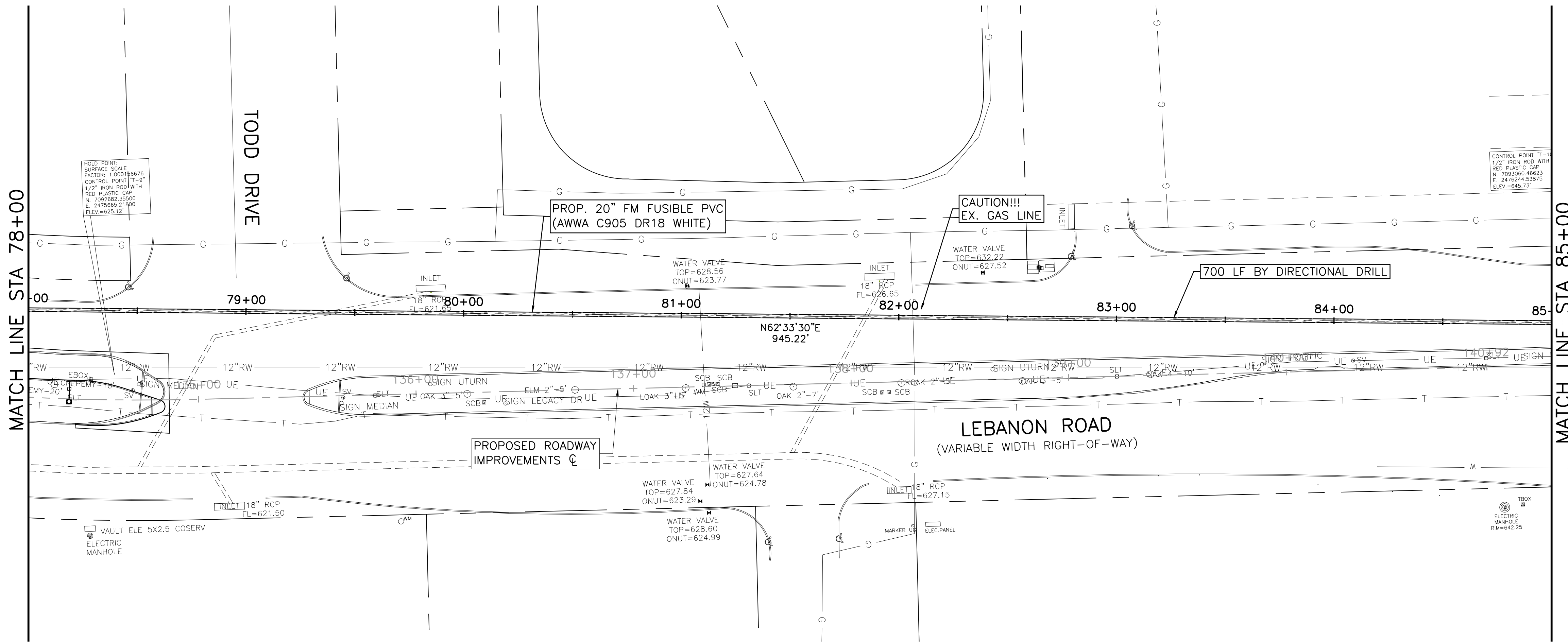
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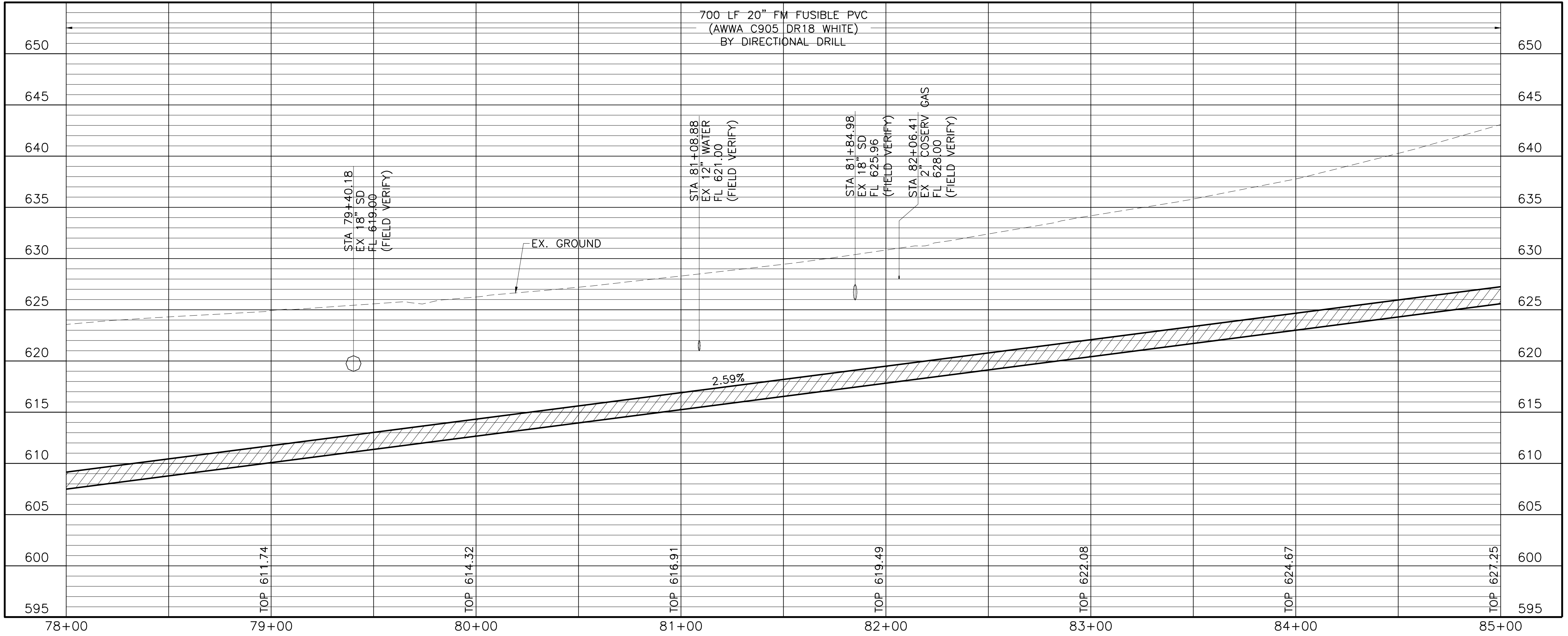
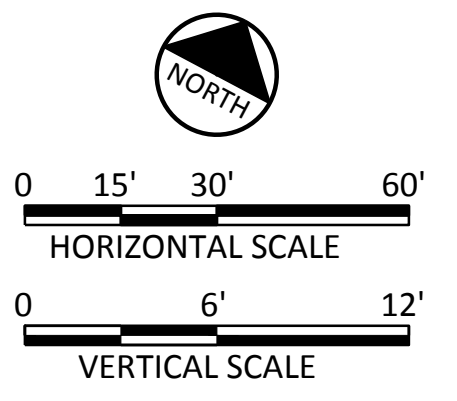
FRESE & NICHOLS
 5905 Main Street, Suite B
 Frisco, Texas 75034
 Phone - (972) 624-9201
 Fax - (972) 624-9202
 Web - www.frese.com

CITY OF FRISCO, TEXAS
LEBANON ROAD IMPROVEMENTS AND FORCE MAIN
 CIVIL
FORCE MAIN LINE A PLAN AND PROFILE
STA 72+00 TO STA 78+00

| NO. | ISSUE | DATE | BY | DATE | DESIGNED | DRAWN | REVISION | CHECKED | FILE NAME |
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TREE REMOVAL LEGEND
 [Symbol] TREE TO BE REMOVED



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 Texas Registered Engineering Firm F-2144

ROBIN E. ERNSTROM
 PROFESSIONAL ENGINEER
 116853
 5/12/2017

FREES & NICHOLS

5905 McJannet Street, Suite B
 Frisco, Texas 75034
 Phone - (972) 624-9201
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 Web - www.freese.com

LEBANON ROAD IMPROVEMENTS AND FORCE MAIN

CIVIL

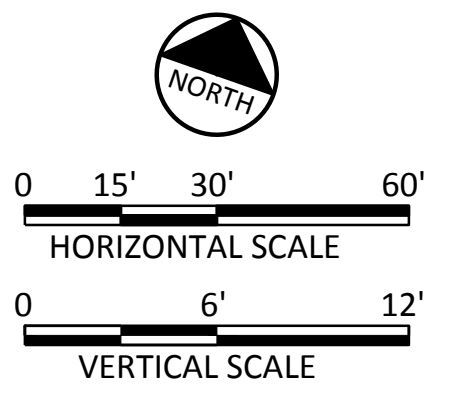
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STA 78+00 TO STA 85+00

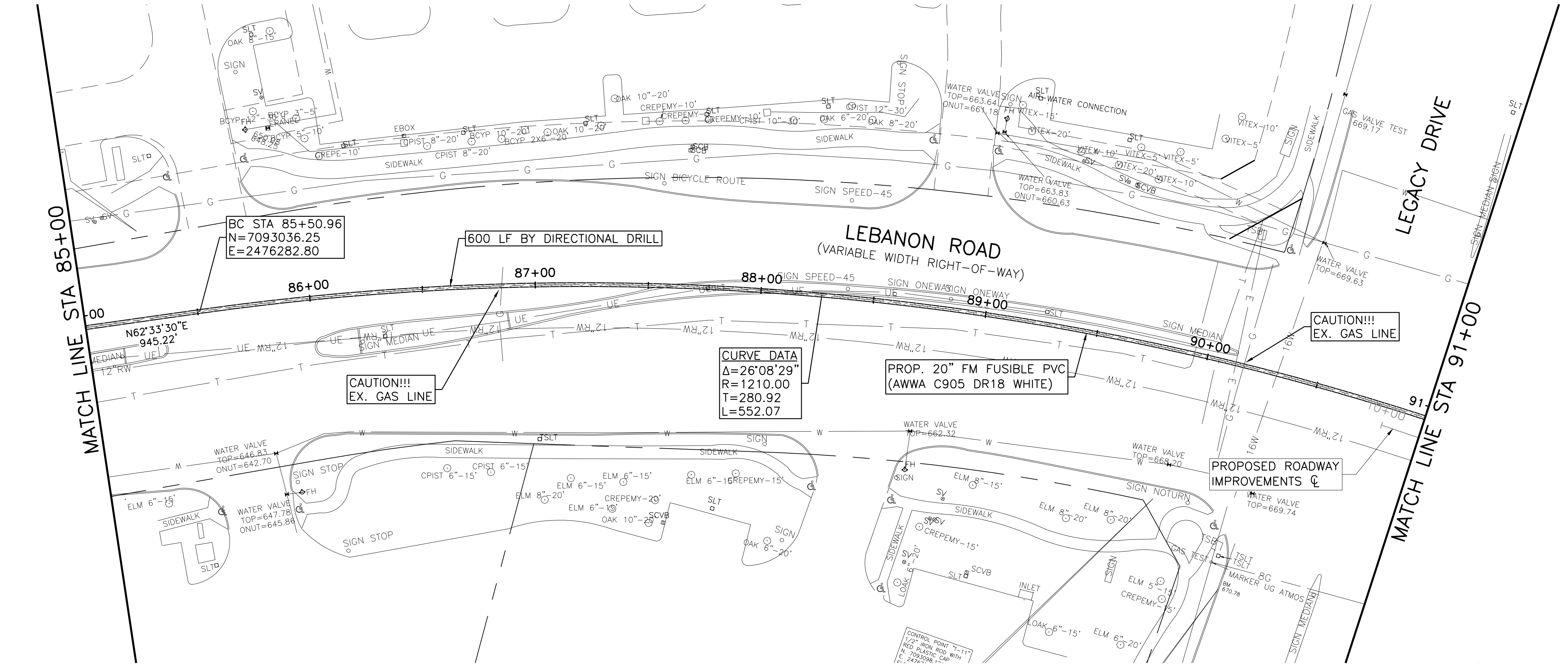
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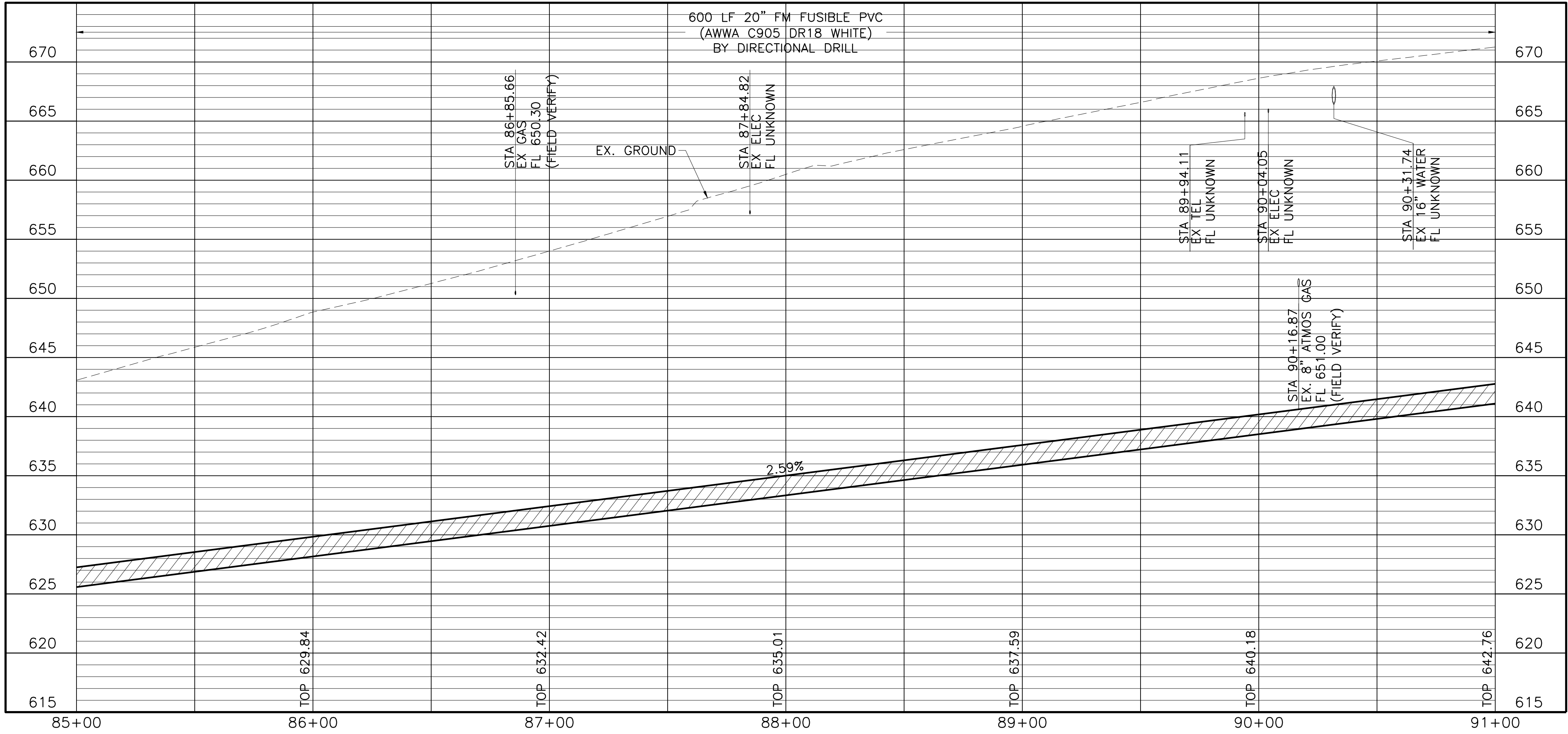
TREE REMOVAL LEGEND
 TREE TO BE REMOVED



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CURVE DATA
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 $T=280.92$
 $L=552.07$



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 Texas Registered Engineering Firm F-2144

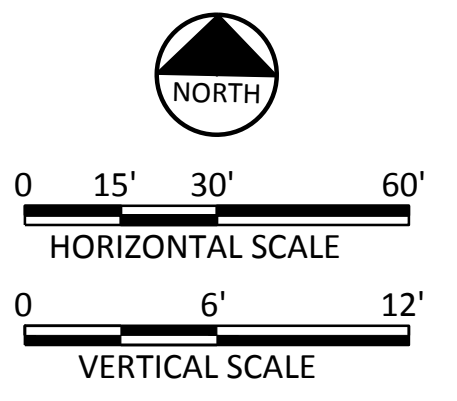
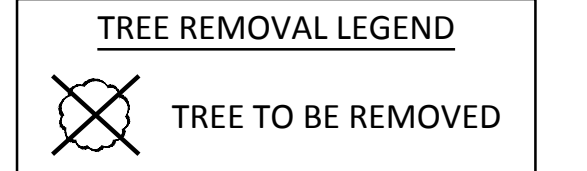
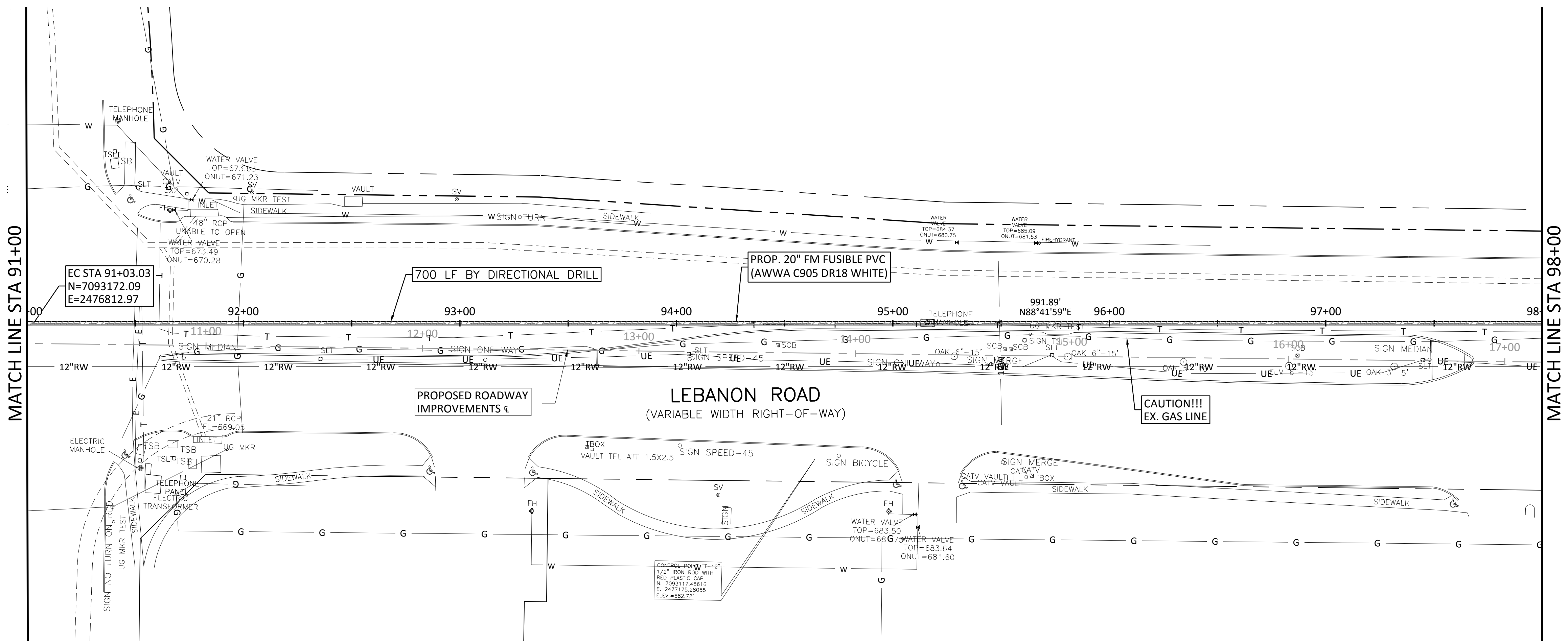
 ROBYN E. ERNSTROM
 PROFESSIONAL ENGINEER
 No. 11683
 State of Texas
 Expires 9/1/2017

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 5905 McInnis Street, Suite B
 Frisco, Texas 75034
 Phone - (972) 624-9201
 Fax - (972) 624-9202
 Web - www.freese.com

CITY OF FRISCO, TEXAS
LEBANON ROAD IMPROVEMENTS AND FORCE MAIN
 CIVIL
FORCE MAIN LINE A PLAN AND PROFILE
STA 85+00 TO STA 91+00

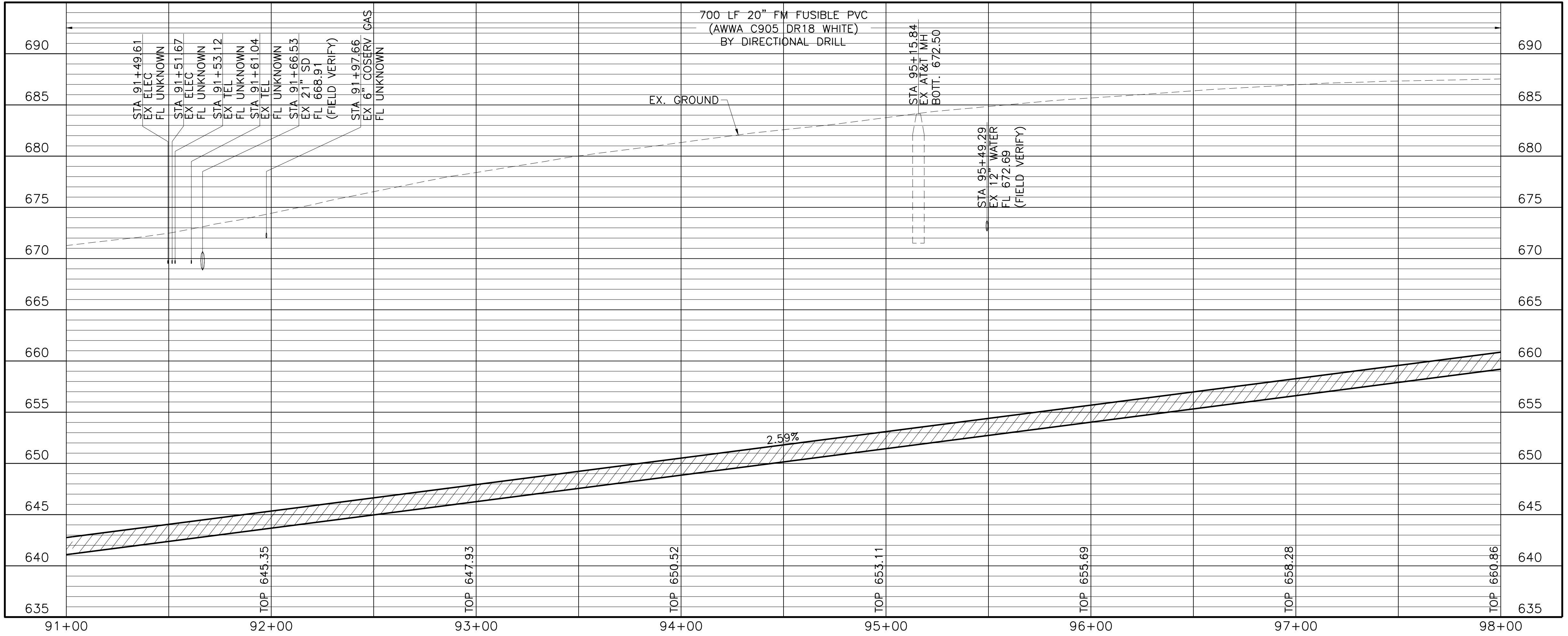
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CAUTION!!!
 EXISTING UNDERGROUND AND OVERHEAD UTILITIES IN THE AREA. 48 HOURS PRIOR TO CONSTRUCTION CONTACT 1-800-DIG-TESS

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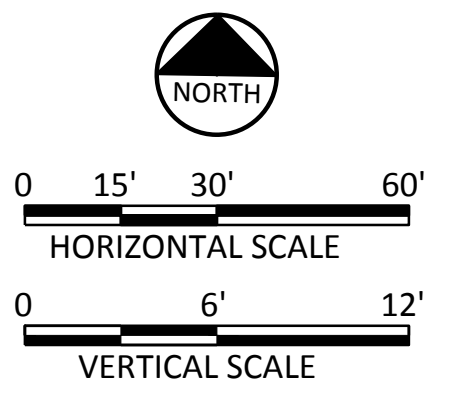
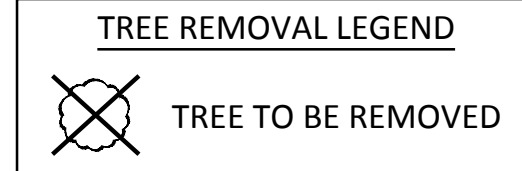
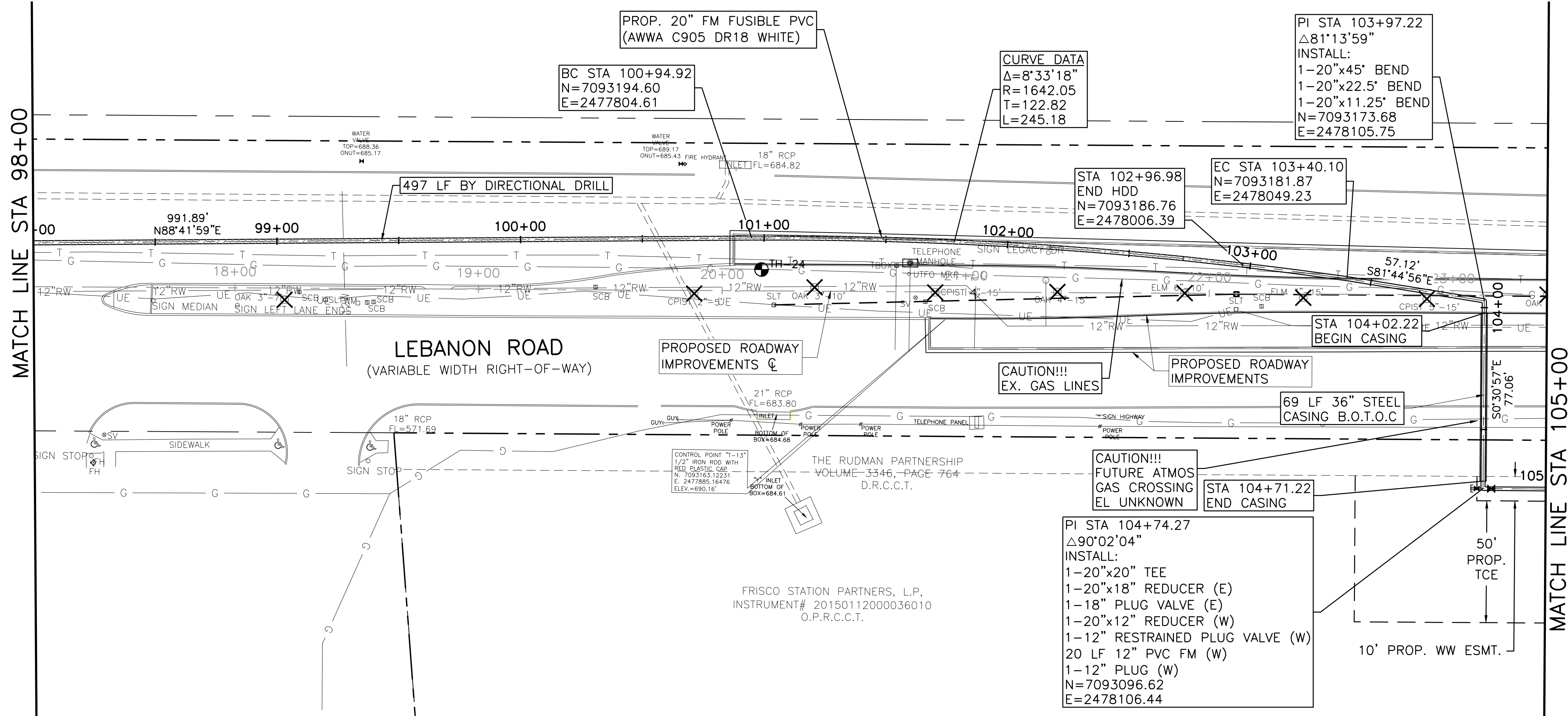
CITY OF FRISCO, TEXAS
LEBANON ROAD IMPROVEMENTS AND FORCE MAIN
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FORCE MAIN LINE A PLAN AND PROFILE
STA 91+00 TO STA 98+00

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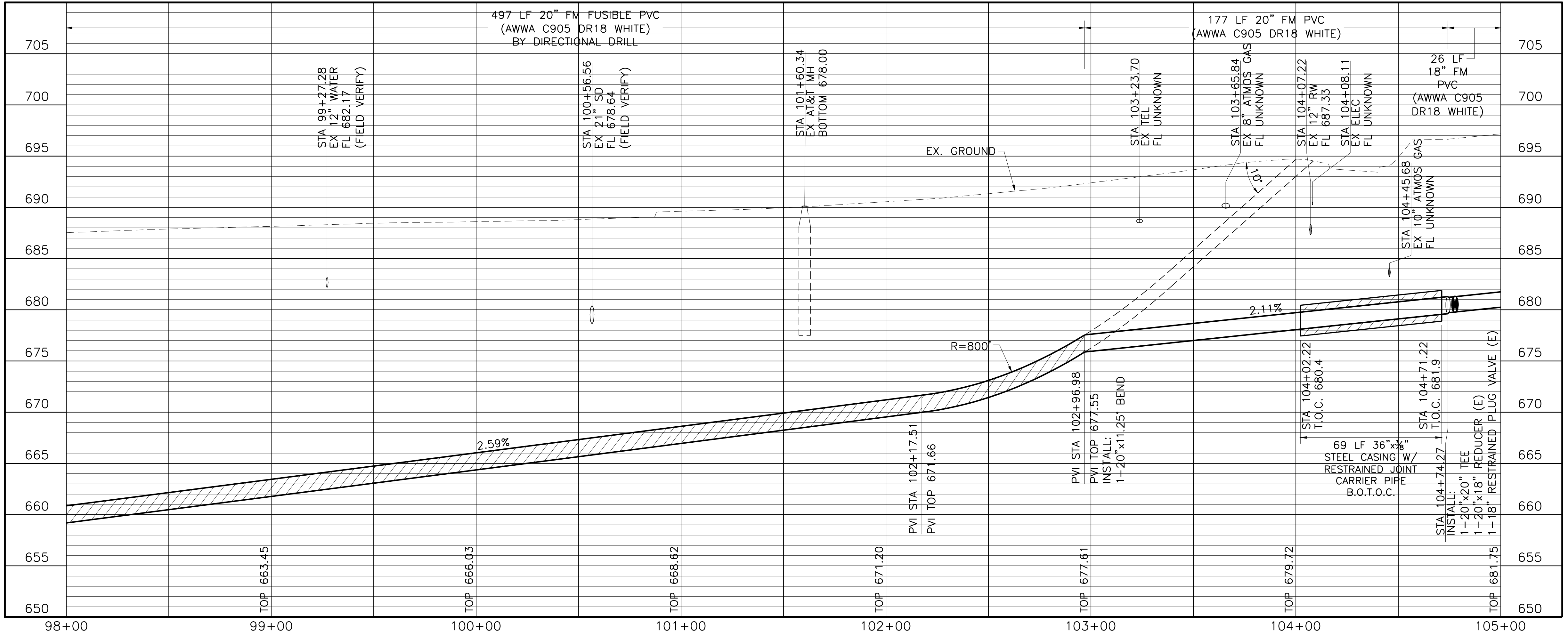
Bar: is one inch on original drawing. If not one inch on this sheet, adjust scale.

MATCH LINE STA 98+00

MATCH LINE STA 105+00



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Freese and Nichols, Inc.
Texas Registered Engineering Firm F-2144

ROBIN E. ERNSTROM
PROFESSIONAL ENGINEER
11683
5/12/2017

FREESE & NICHOLS

5905 McIn Street, Suite B
Frisco, Texas 75034
Phone - (972) 624-9201
Fax - (972) 624-9202
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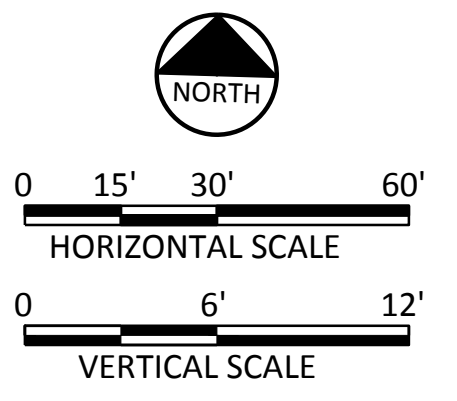
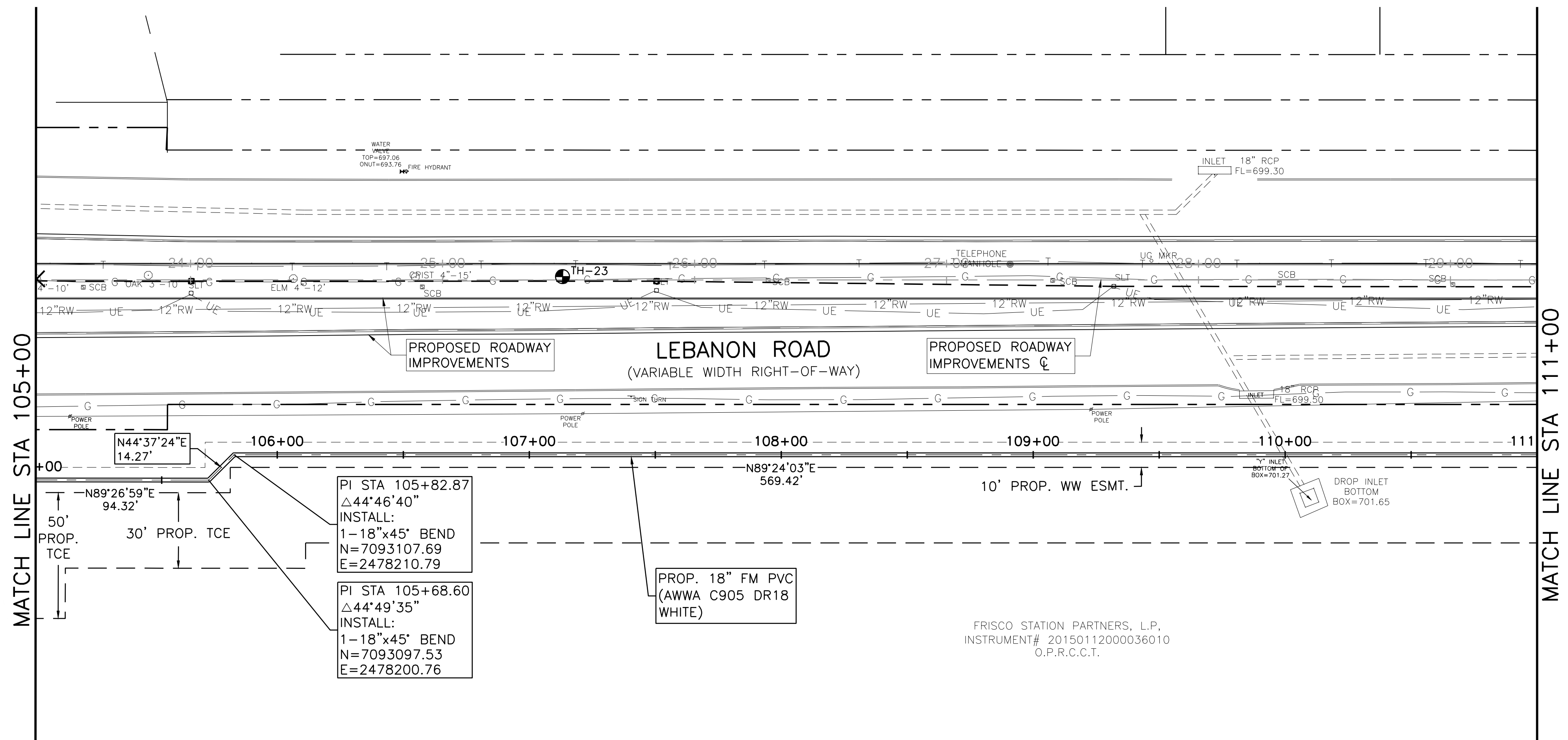
CITY OF FRISCO, TEXAS
LEBANON ROAD IMPROVEMENTS AND FORCE MAIN
CIVIL
FORCE MAIN LINE A PLAN AND PROFILE
STA 98+00 TO STA 105+00

| NO. | ISSUE | DATE | BY | FRCL5624 | DATE | DESIGNED | REVISION | DRAWN | REVISION | CHECKED | FILE NAME |
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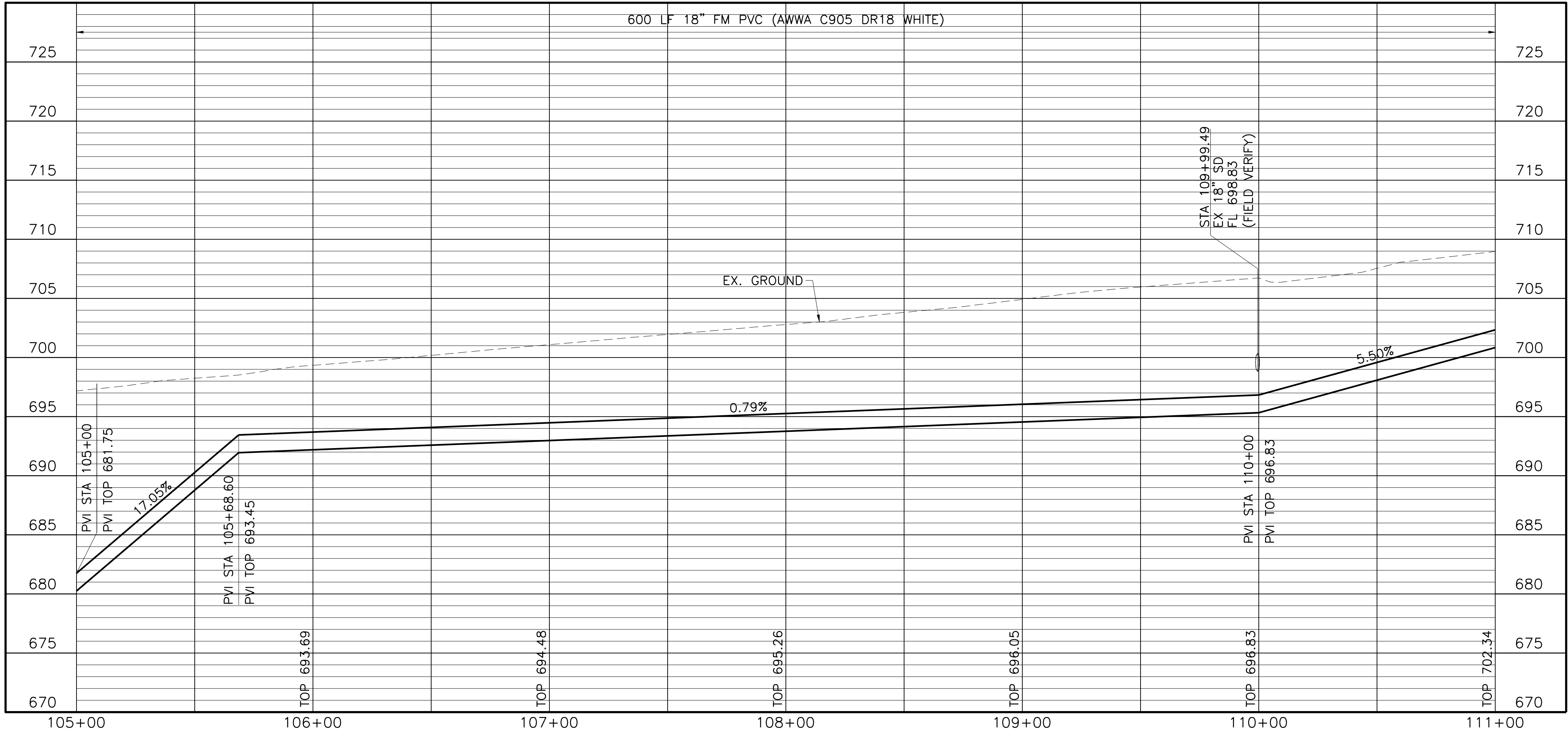
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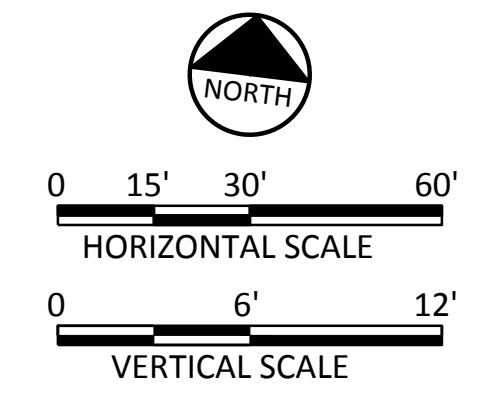
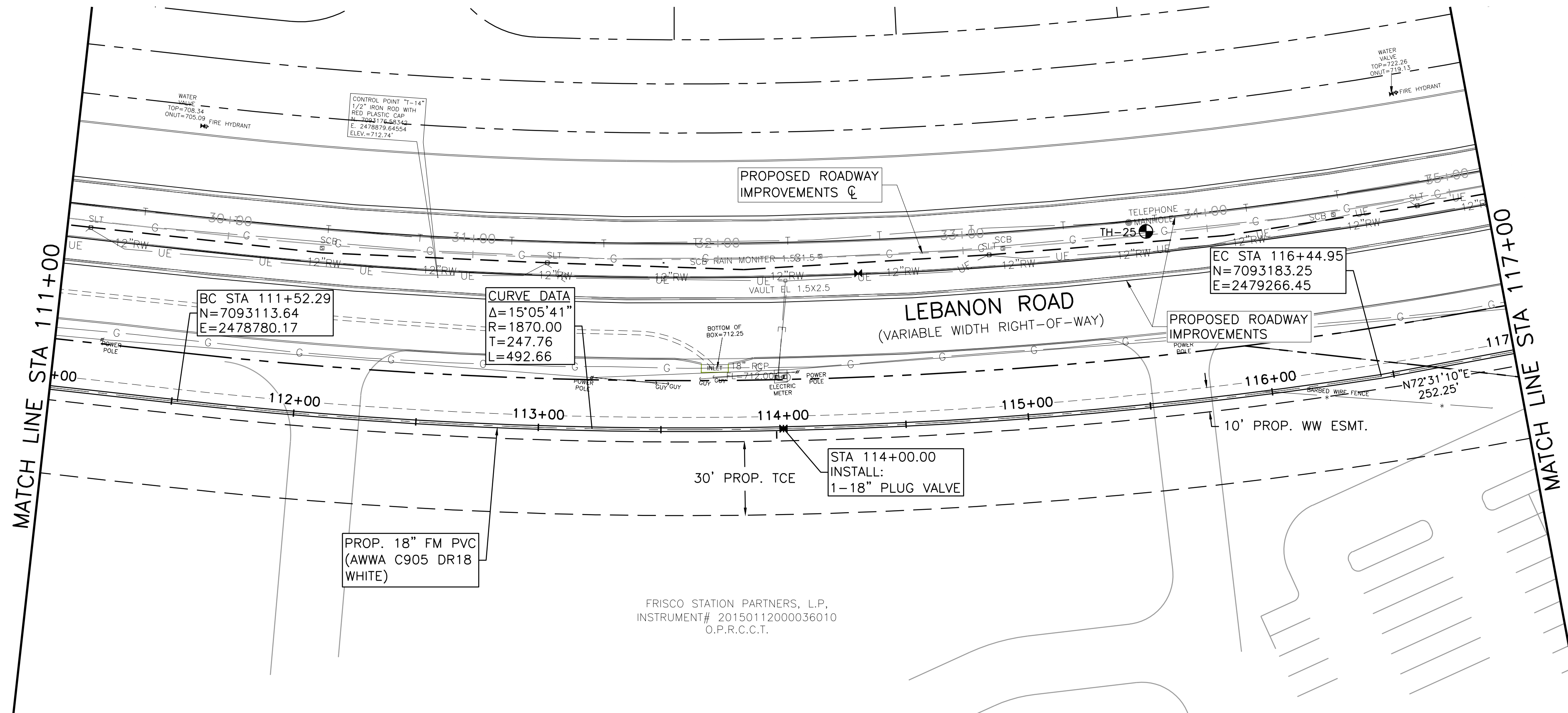
ROBIN E. ERNSTROM
 PROFESSIONAL ENGINEER
 STATE OF TEXAS
 NO. 116853
 EXPIRES 9/1/2017

FRESE & NICHOLS

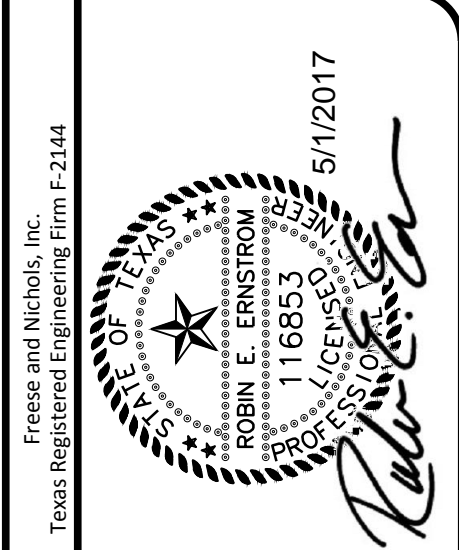
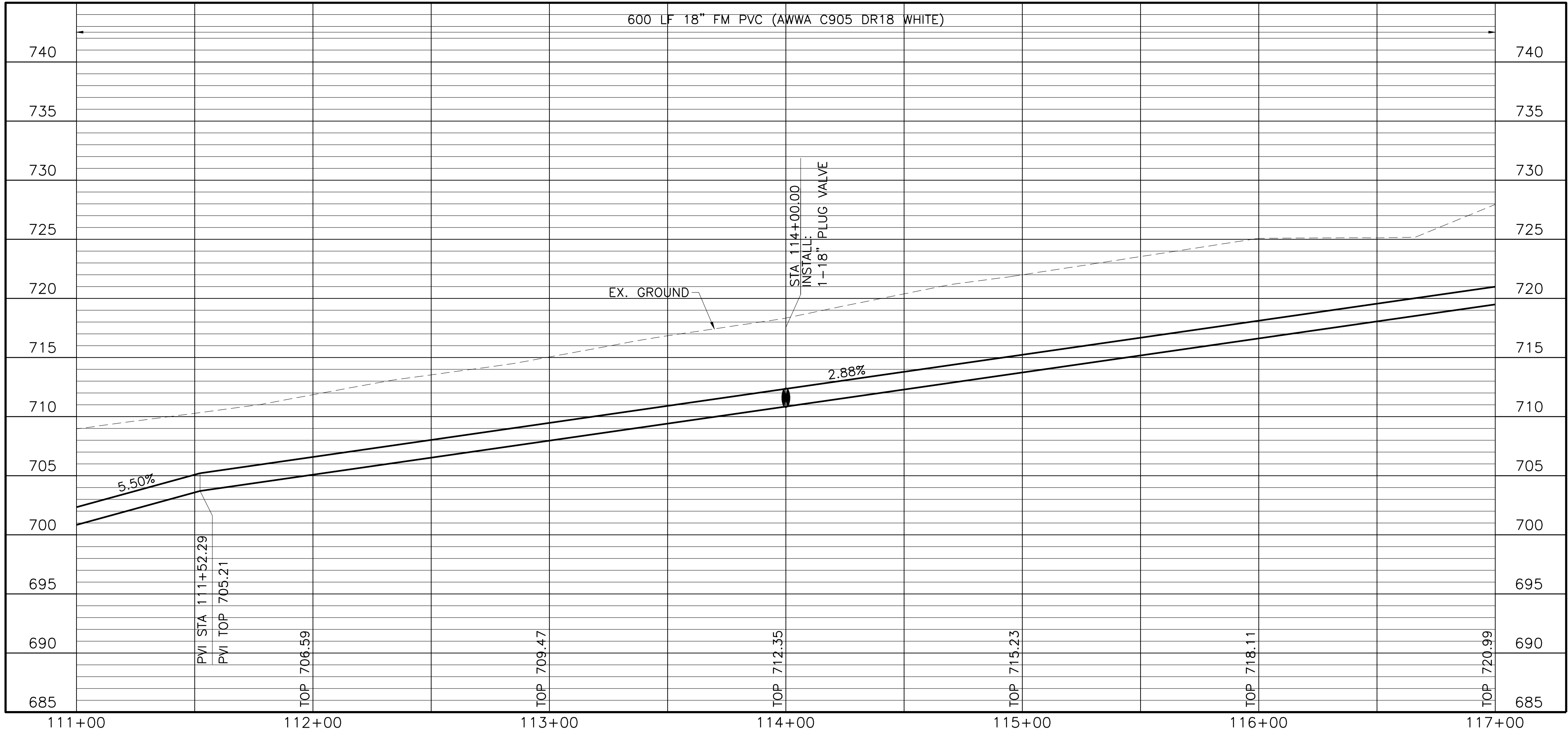
5905 McIn Street, Suite B
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 STA 105+00 TO STA 111+00

| | | | | | |
|-----|---|----|------|--------------|-----------------|
| NO. | ISSUE | BY | DATE | FR&N JOB NO. | FRCL5624 |
| 0 | VERIFY SCALE | | | DATE | APR. 2017 |
| 1 | Bar is one inch on original drawing. If not one inch on this sheet, adjust scale. | | | DESIGNED | REE |
| | | | | DRAWN | LMR |
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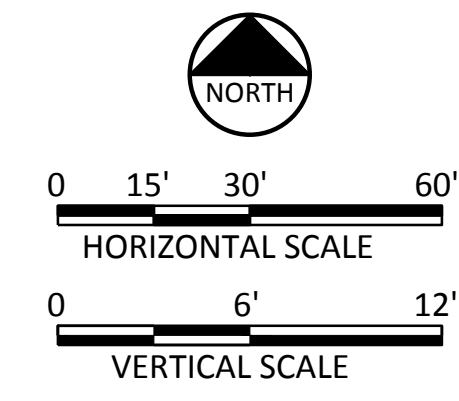
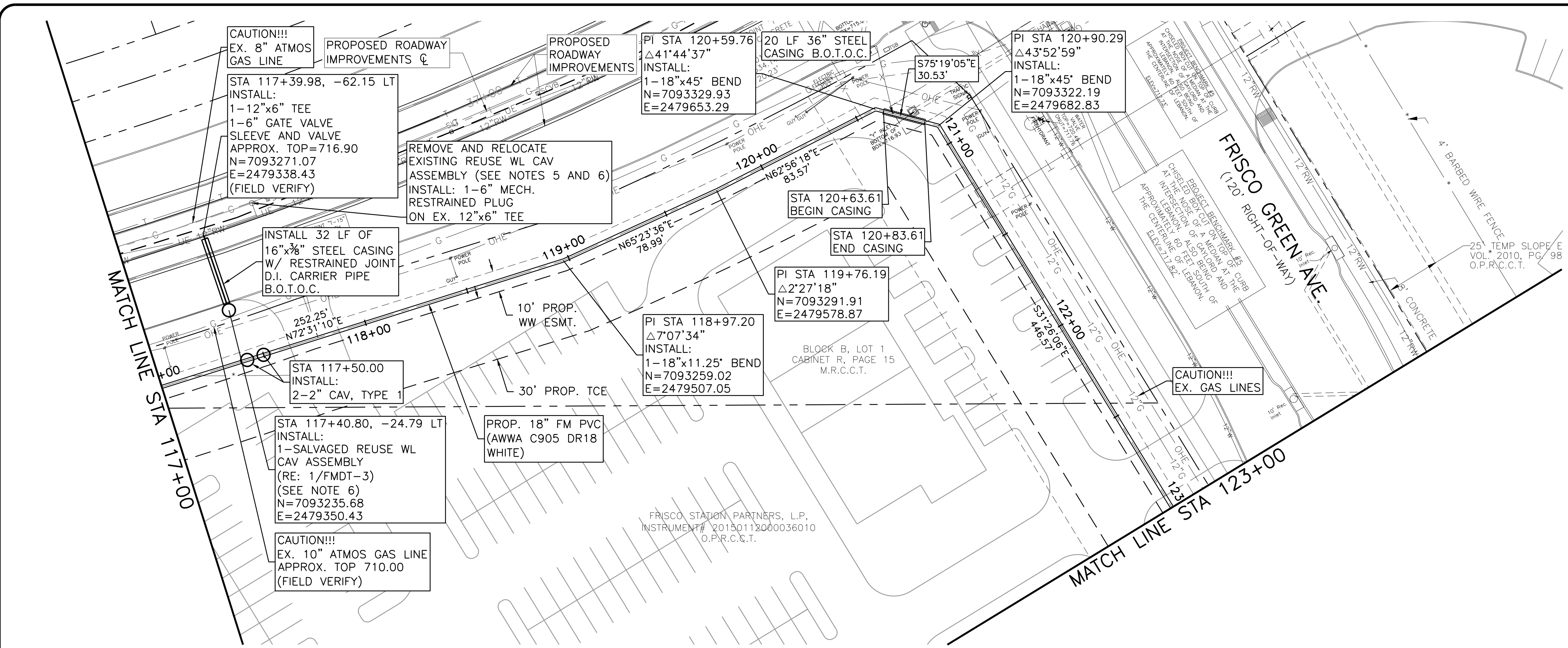


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**LEBANON ROAD IMPROVEMENTS
AND FORCE MAIN**
CIVIL
**FORCE MAIN LINE A PLAN AND PROFILE
STA 111+00 TO STA 117+00**

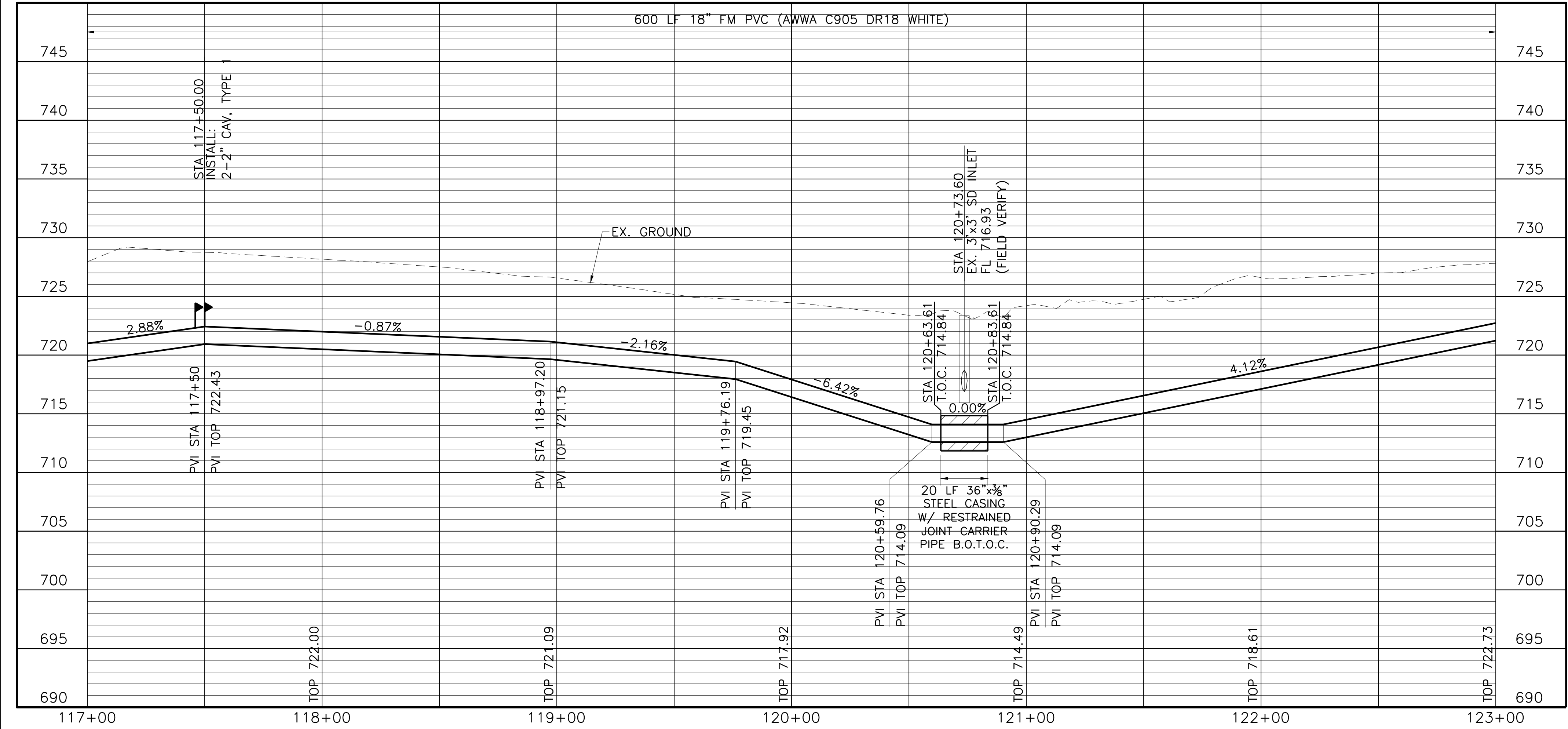
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| 0 | VERIFY SCALE | | | FRCL5624 | APR. 2017 | REE | LMR | | CCB | CV-PPL-PP-FM-22 |

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



CAUTION!!!
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 - CONTRACTOR SHALL CONTACT LANCE JONES (CITY OF FRISCO) AT (972) 292-5823 TO COORDINATE CONNECTION TO THE REUSE WL. DECHLORINATION OF REUSE WL IS NOT REQUIRED.
 - REUSE ARV MANHOLE RIM SHALL BE INSTALLED AT GRADE OF EXISTING GROUND.



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Texas Registered Engineering Firm F-2144

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Web - www.freese.com

CITY OF FRISCO, TEXAS
**LEBANON ROAD IMPROVEMENTS
AND FORCE MAIN**
CIVIL
**FORCE MAIN LINE A PLAN AND PROFILE
STA 117+00 TO STA 123+00**

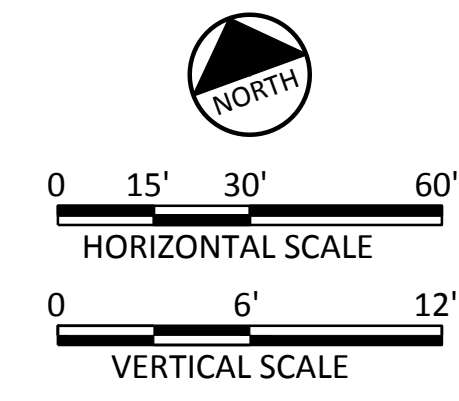
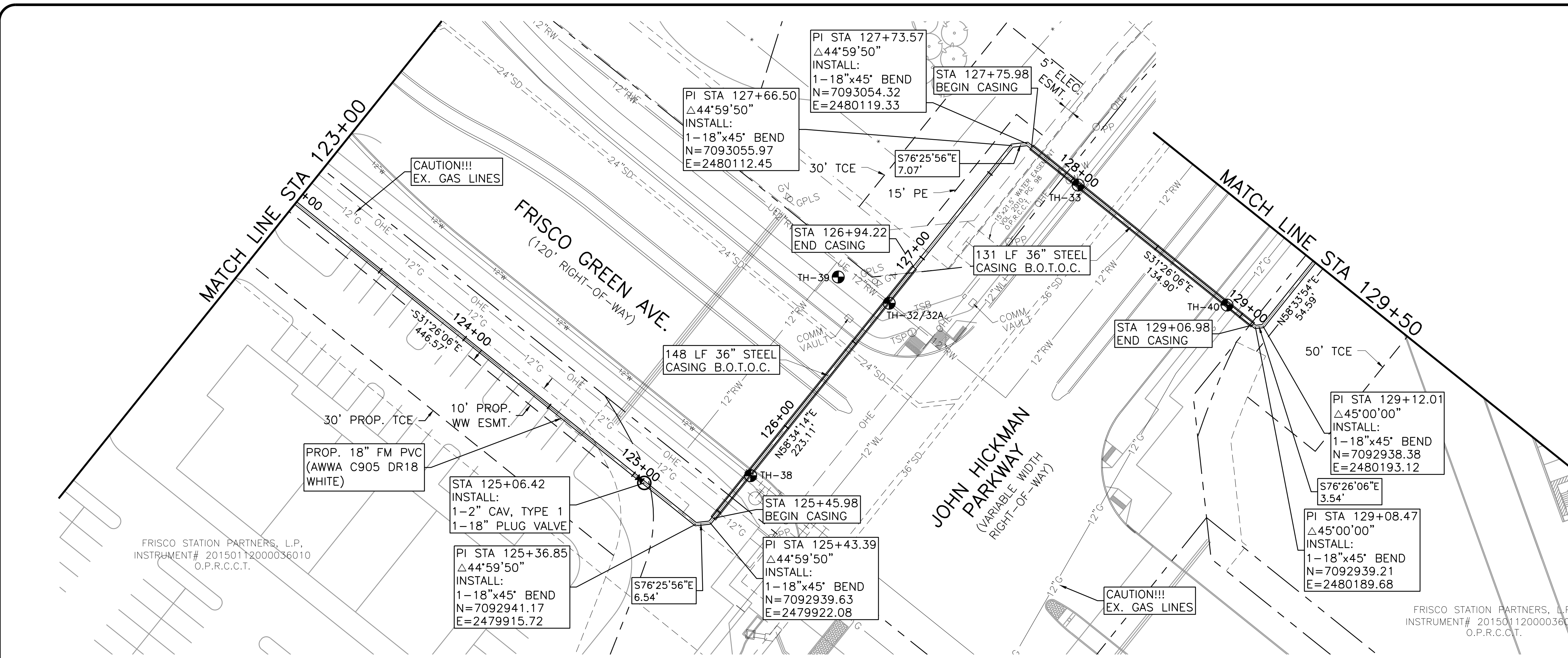
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| 1 | Bar is one inch on original drawing. If not one inch on this sheet, adjust scale. | | | |

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| FRJ JOB NO. | FRCL5624 |
| DATE | APR. 2017 |
| DESIGNED | REE |
| DRAWN | LMR |
| REVIEWED | |
| CHECKED | CCB |

SHEET **FM-19**
SEQ. **30**

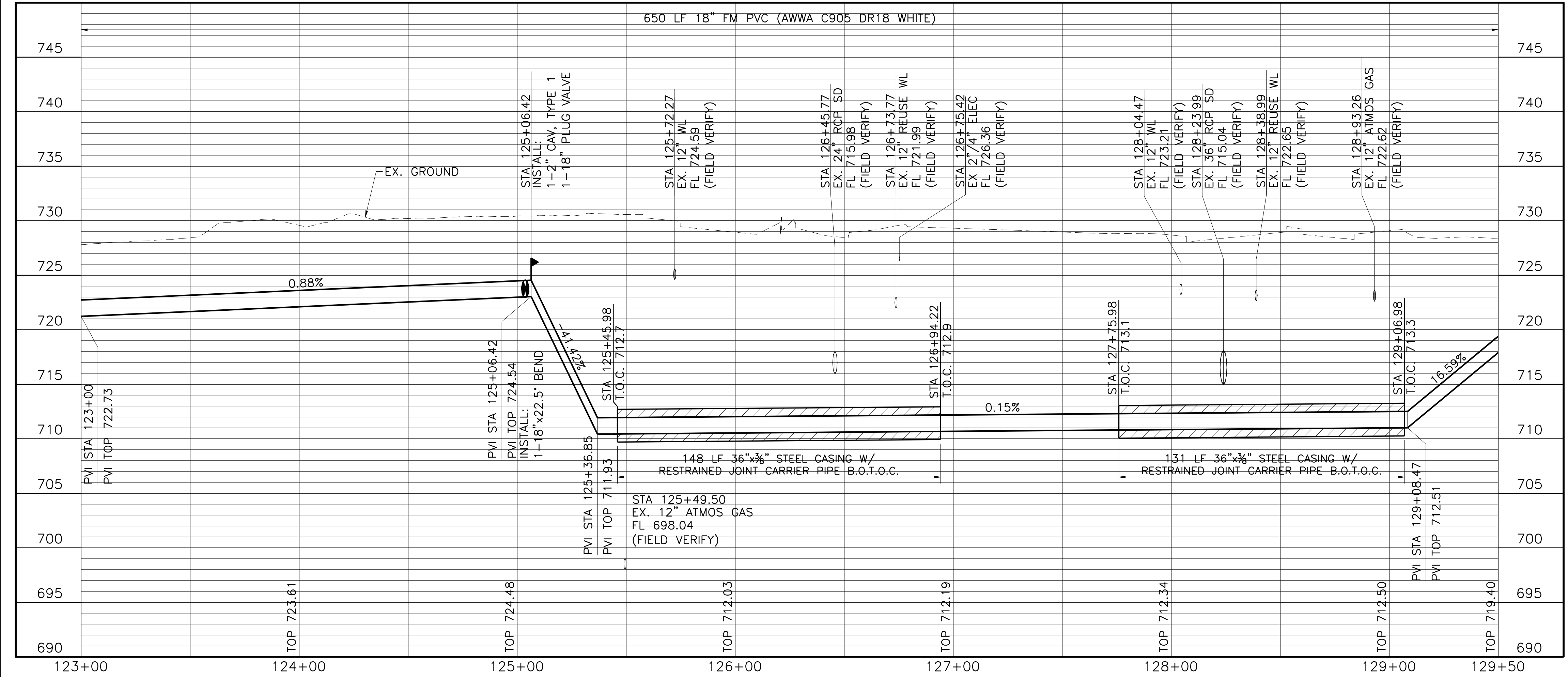
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ACAD Ref: 20.06 (LMS Tech)
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CAUTION!!!
 EXISTING UNDERGROUND AND OVERHEAD UTILITIES IN THE AREA. 48 HOURS PRIOR TO CONSTRUCTION CONTACT 1-800-DIG-TESS

- NOTES:**
- CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.
 - THE CONTRACTOR SHALL NOTIFY ATMOS OPERATIONS (JIMMY PRATT AT (214) 346-4535) AT LEAST 48 HOURS PRIOR TO CROSSING ATMOS FACILITIES. ALL ATMOS GAS LINES MUST BE POTHOLED BY THE CONTRACTOR TO VERIFY THE EXACT DEPTH PRIOR TO CROSSING THEM.
 - CONTRACTOR SHALL REPAIR ALL IRRIGATION LINES DISRUPTED DURING THE PIPE INSTALLATION TO THE PRE-CONSTRUCTION CONDITIONS. THIS SHALL BE SUBSIDIARY TO THE PIPE PRICE.
 - NO UNPROTECTED TRENCHES OR PITS ARE ALLOWED OVERNIGHT. AT THE CONCLUSION OF EACH WORK DAY, CONTRACTOR SHALL PLACE PROTECTIVE STEEL PLATES OVER BORE PITS UNTIL THE PIPELINE CREW REACHES THE BORE PIT LOCATION FOR THE PIPE INSTALLATION.



Freese and Nichols, Inc.
 Texas Registered Engineering Firm F-2144

ROBYN E. EARNSTROM
 116853
 PROFESSIONAL ENGINEER
 CIVIL ENGINEERING
 5/12/2017

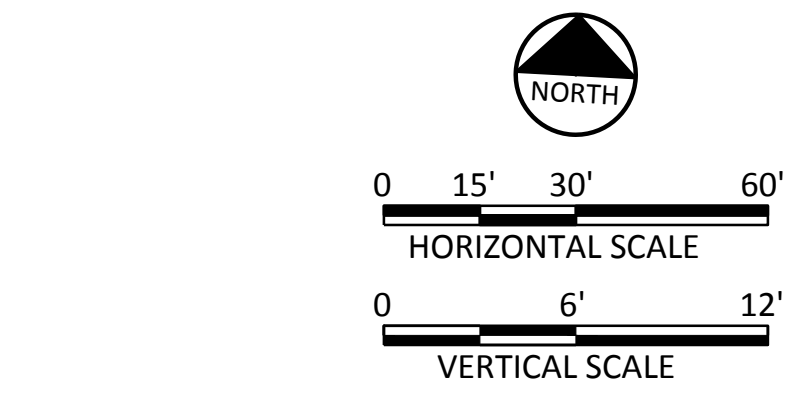
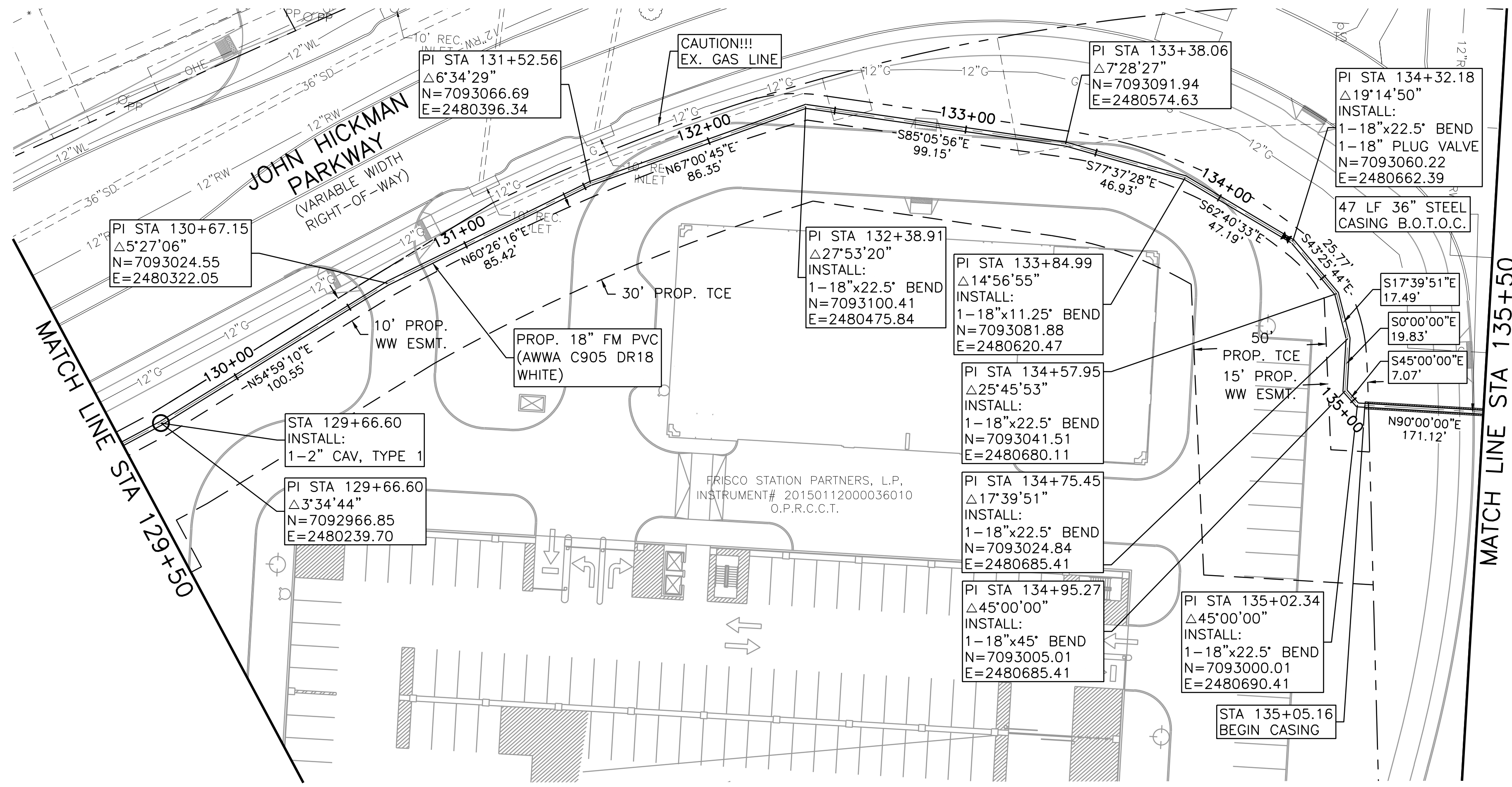
FREES & NICHOLS

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 Frisco, Texas 75034
 Phone - (972) 624-9201
 Fax - (972) 624-9202
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CITY OF FRISCO, TEXAS
LEBANON ROAD IMPROVEMENTS AND FORCE MAIN
 CIVIL
FORCE MAIN LINE A PLAN AND PROFILE
STA 123+00 TO STA 129+50

| | | | | | |
|-----|--------------|----|------|--------------|-----------------|
| NO. | ISSUE | BY | DATE | FR&N JOB NO. | FRCL5624 |
| 0 | VERIFY SCALE | | | DATE | APR. 2017 |
| | | | | DESIGNED | REE |
| | | | | DRAWN | LMR |
| | | | | REVISION | |
| | | | | CHECKED | CCB |
| | | | | FILE NAME | CV-PPL-PP-FM-24 |

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CAUTION!!!
 EXISTING UNDERGROUND AND
 OVERHEAD UTILITIES IN THE AREA.
 48 HOURS PRIOR TO
 CONSTRUCTION CONTACT
 1-800-DIG-TESS

- NOTES:
- CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.
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| Station | Profile Description | Profile Data |
|---------|--|--------------|
| 129+50 | 600 LF 18" FM PVC (AWWA C905 DR18 WHITE) | 750 |
| 130+00 | | 745 |
| 131+00 | | 740 |
| 132+00 | | 735 |
| 133+00 | | 730 |
| 134+00 | | 725 |
| 135+00 | | 720 |
| 135+50 | | 715 |
| 135+50 | | 710 |
| 135+50 | | 705 |
| 135+50 | | 700 |
| 135+50 | | 695 |

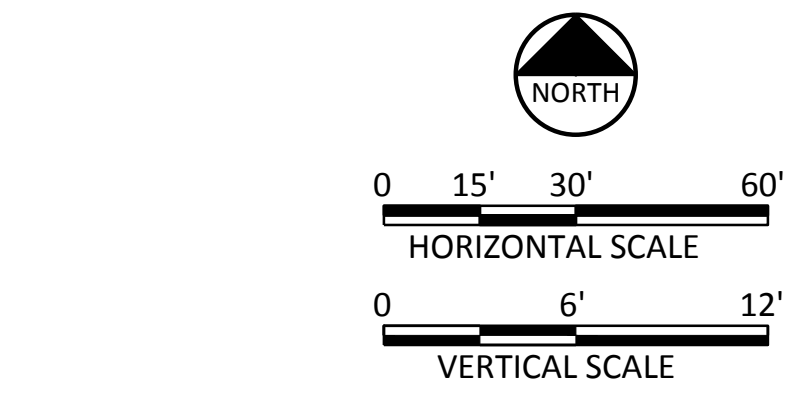
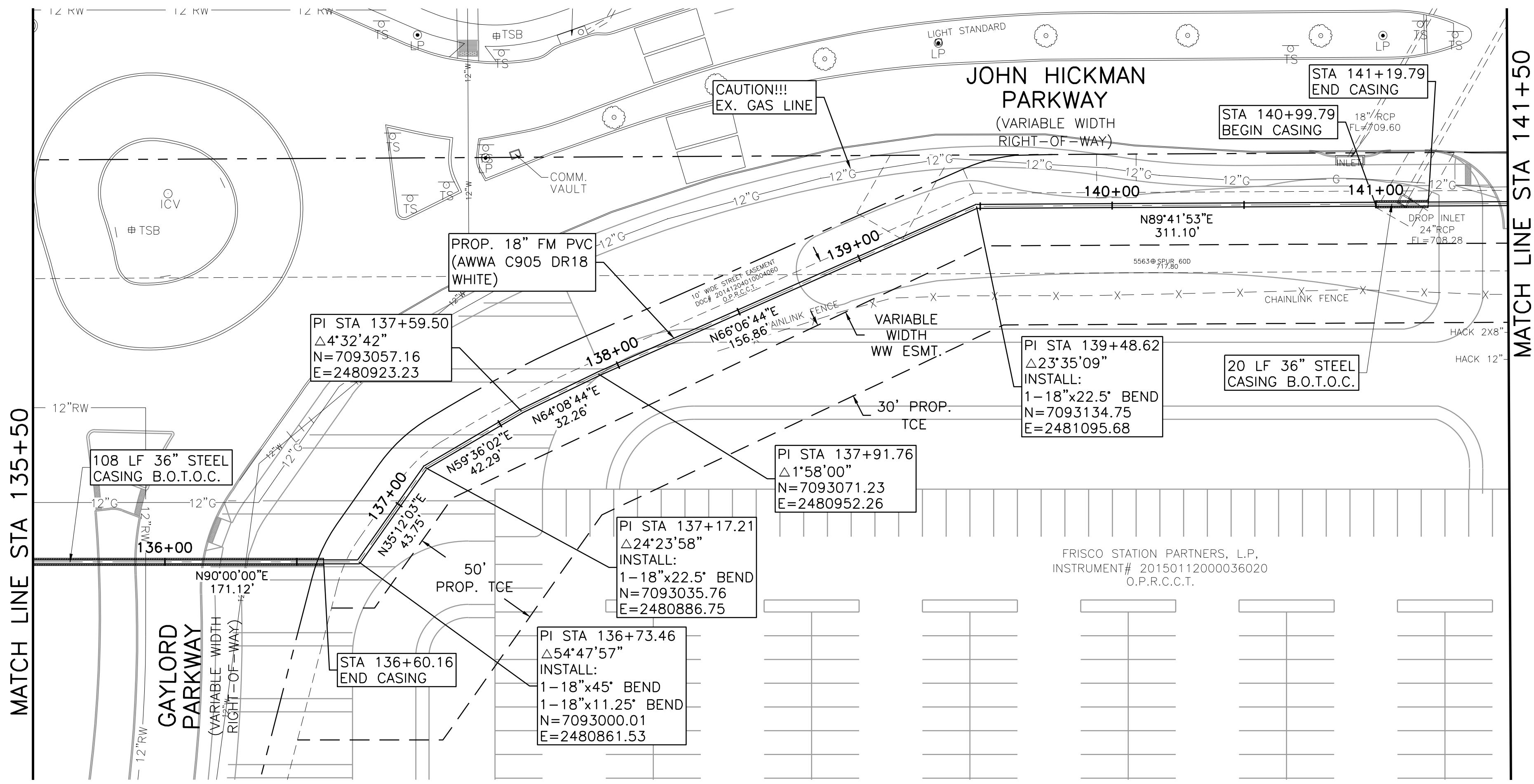
Freese and Nichols, Inc.
 Texas Registered Engineering Firm F-2142

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CITY OF FRISCO, TEXAS
**LEBANON ROAD IMPROVEMENTS
 AND FORCE MAIN**
 CIVIL
**FORCE MAIN LINE A PLAN AND PROFILE
 STA 129+50 TO STA 135+50**

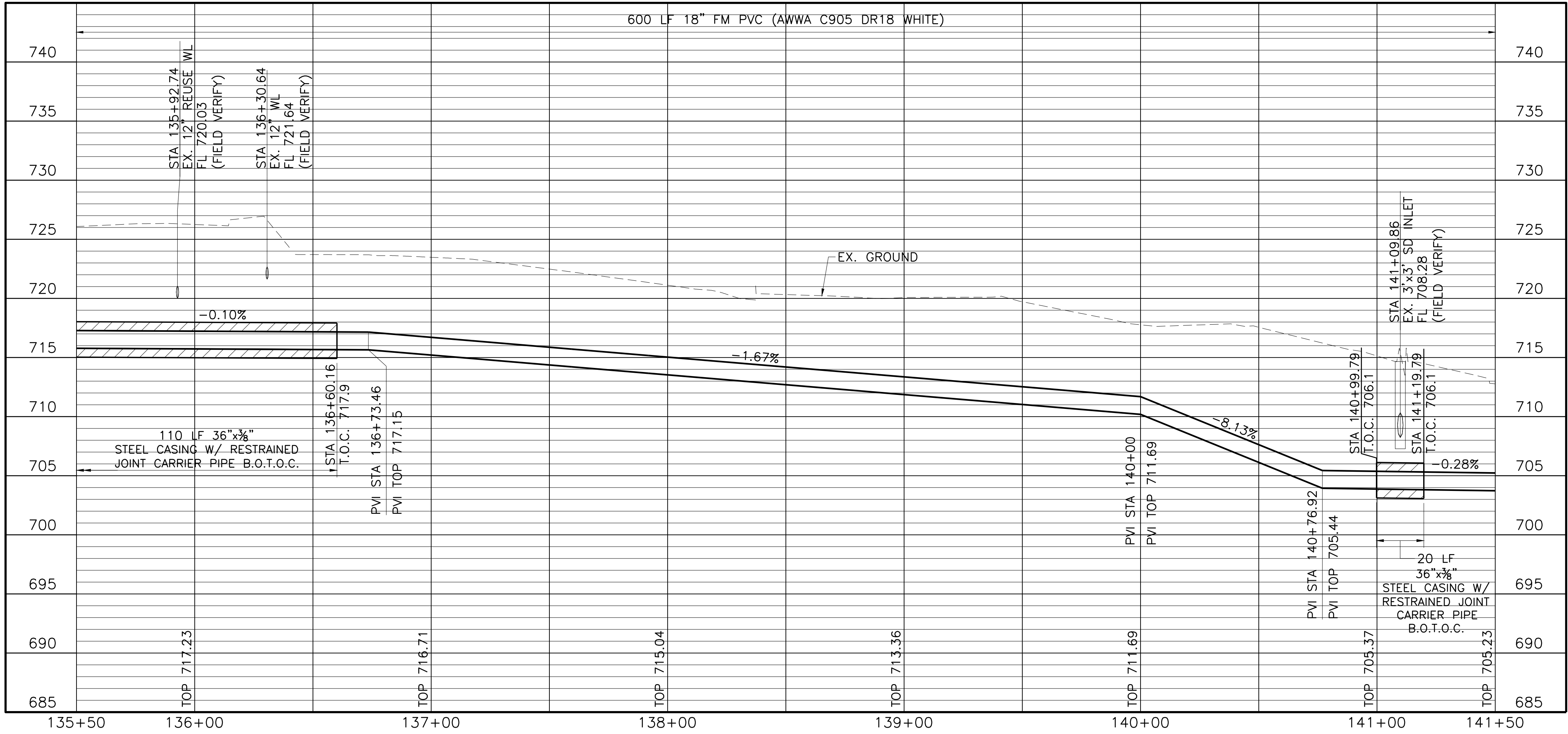
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| 0 | VERIFY SCALE | | | FRCL15624 | APR. 2017 | | | | | | CV-PPL-PP-FM-25 |

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CAUTION!!!
 EXISTING UNDERGROUND AND
 OVERHEAD UTILITIES IN THE AREA.
 48 HOURS PRIOR TO
 CONSTRUCTION CONTACT
 1-800-DIG-TESS

- NOTES:
- CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.
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Freese and Nichols, Inc.
 Texas Registered Engineering Firm F-2144

ROBIN E. ERNSTROM
 116853
 CIVIL ENGINEER
 5/12/2017

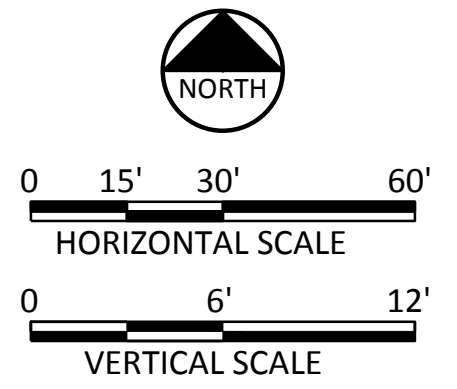
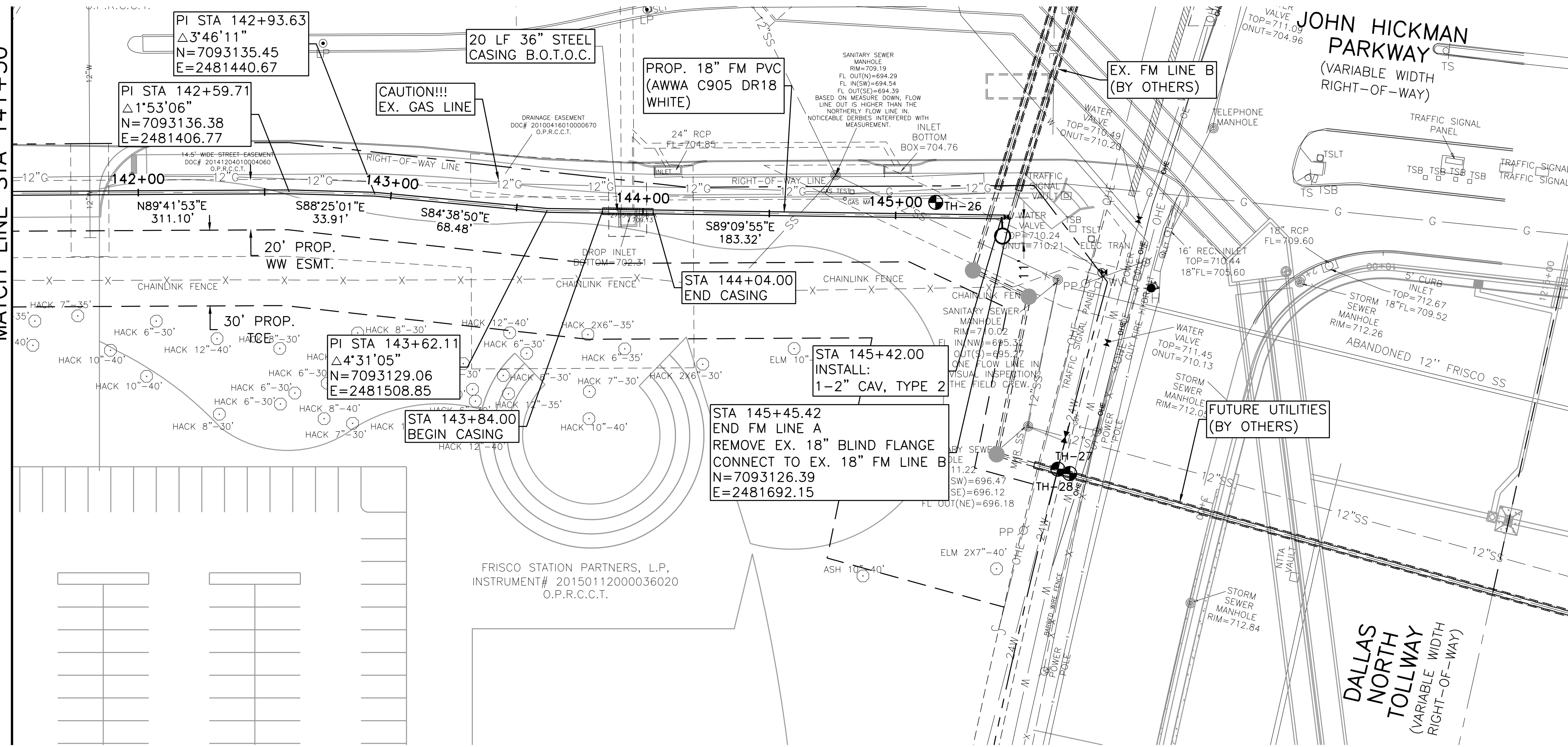
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CITY OF FRISCO, TEXAS
**LEBANON ROAD IMPROVEMENTS
 AND FORCE MAIN**
 CIVIL
**FORCE MAIN LINE A PLAN AND PROFILE
 STA 135+50 TO STA 141+50**

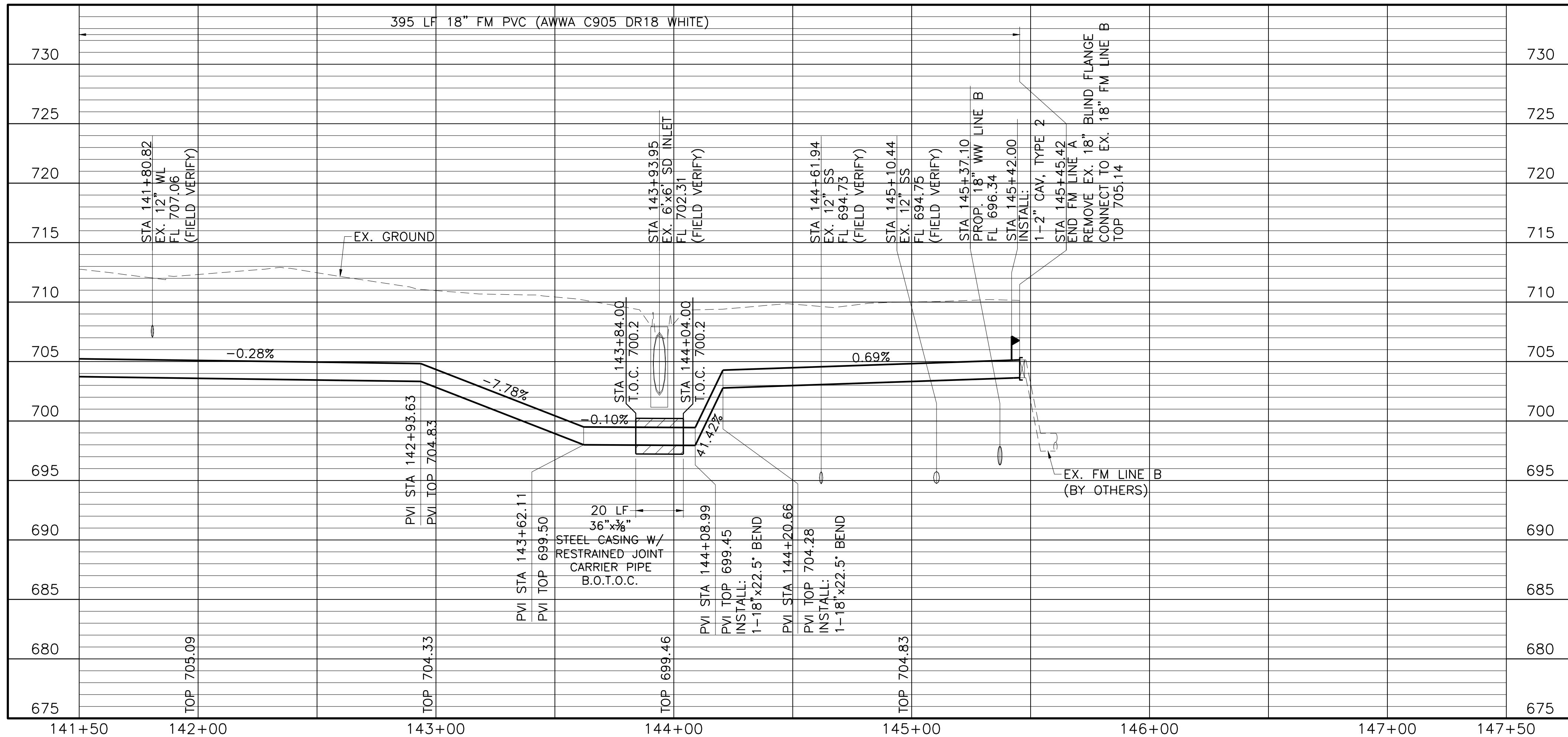
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| 0 | VERIFY SCALE | | | FRCL5624 | APR. 2017 | | | | | | CV-PPL-PP-FM-26 |

MATCH LINE STA 141+50



NOTES:

- CONTRACTOR SHALL VERIFY LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO BEGINNING OF CONSTRUCTION.
- THE CONTRACTOR SHALL NOTIFY ATMOS OPERATIONS (JIMMY PRATT AT (214) 346-4535) AT LEAST 48 HOURS PRIOR TO CROSSING ATMOS FACILITIES. ALL ATMOS GAS LINES MUST BE POTHOLED BY THE CONTRACTOR TO VERIFY THE EXACT DEPTH PRIOR TO CROSSING THEM.
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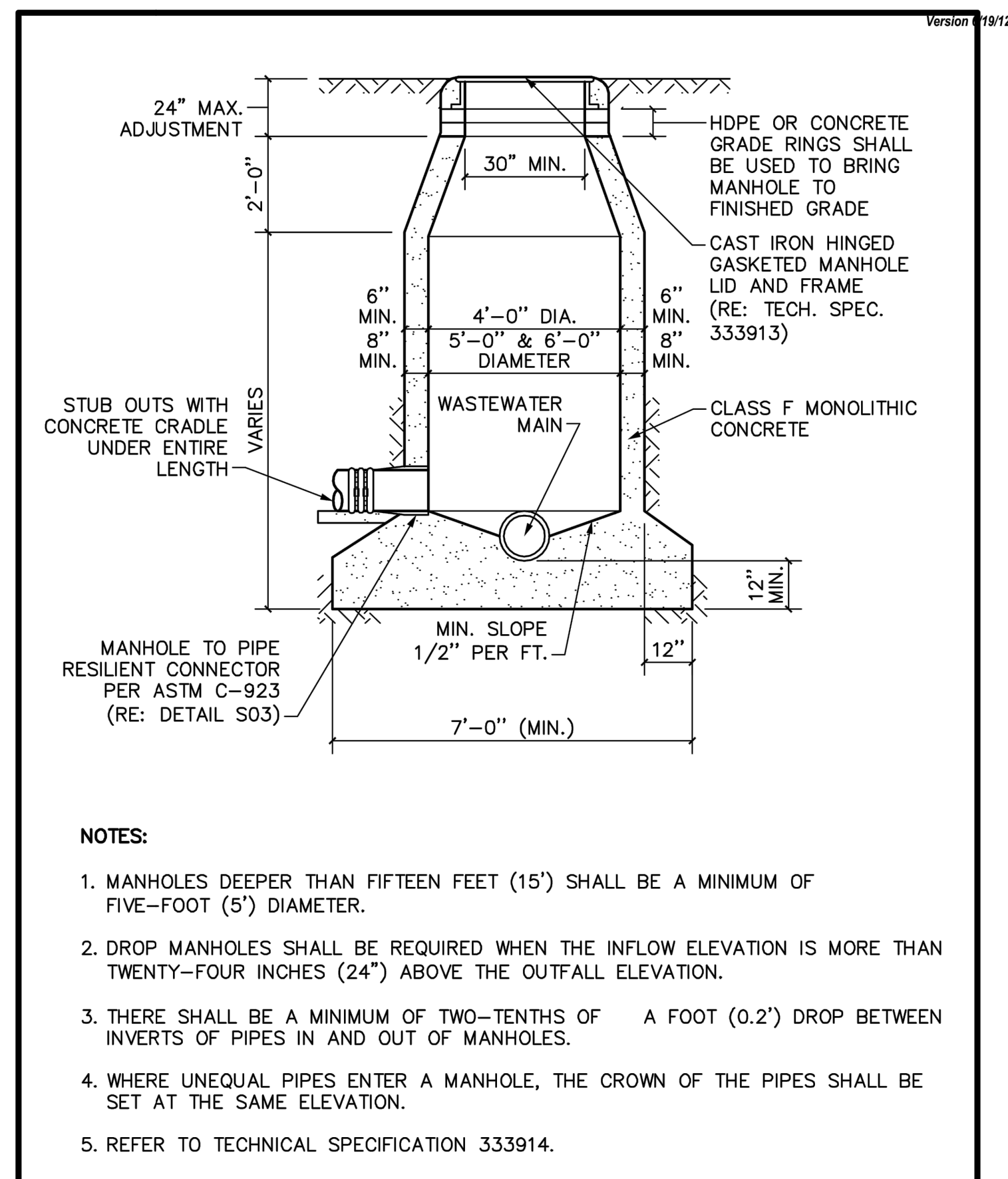


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CITY OF FRISCO, TEXAS
**LEBANON ROAD IMPROVEMENTS
 AND FORCE MAIN**
 CIVIL
**FORCE MAIN LINE A PLAN AND PROFILE
 STA 141+50 TO END**

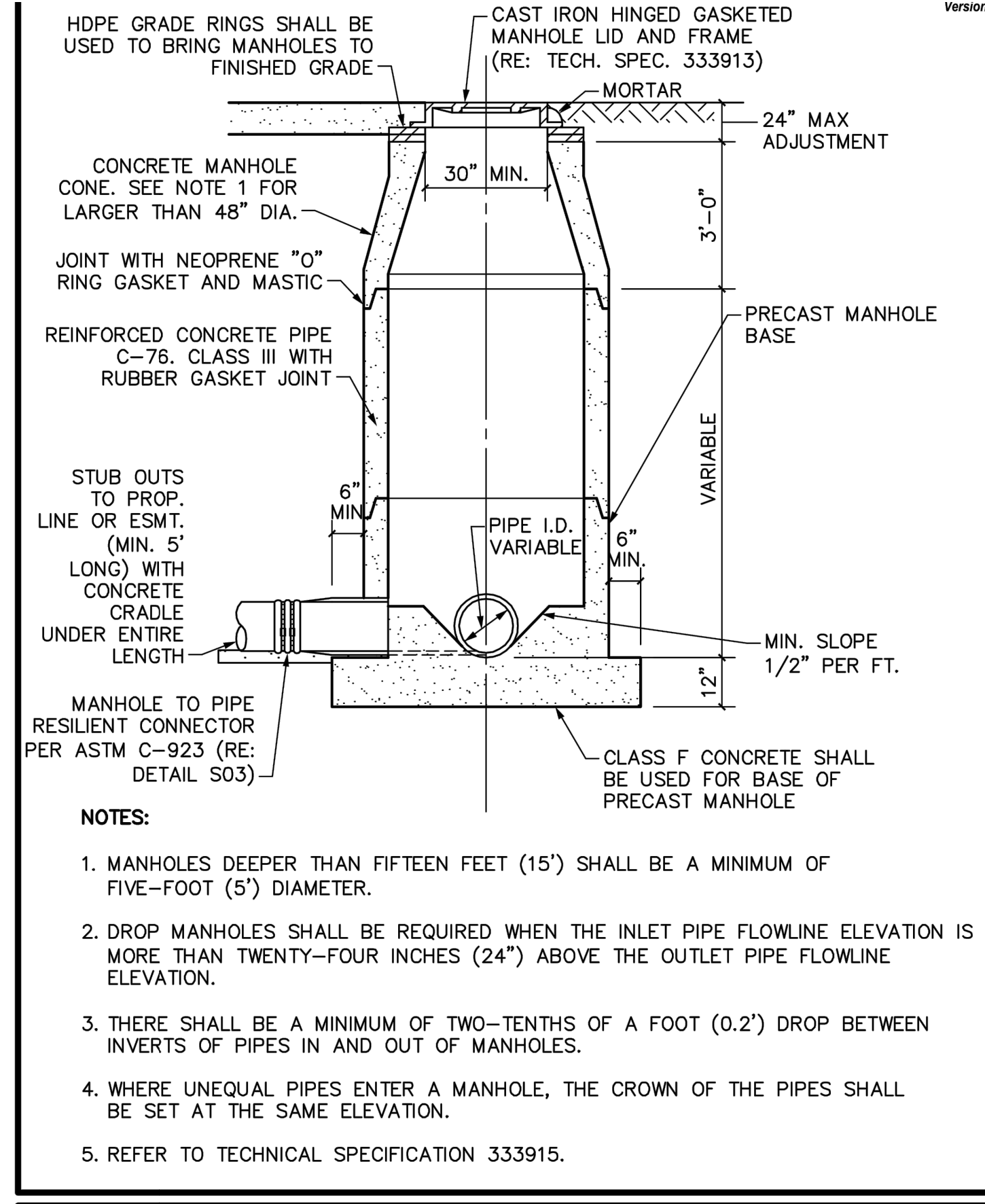
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| NO. | ISSUE | BY | DATE | FRCL5624 |
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| 1 | Bar is one inch on original drawing. If not one inch on this sheet, adjust scale. | | | REVIEWED |
| | | | | CHECKED |
| | | | | CCB |

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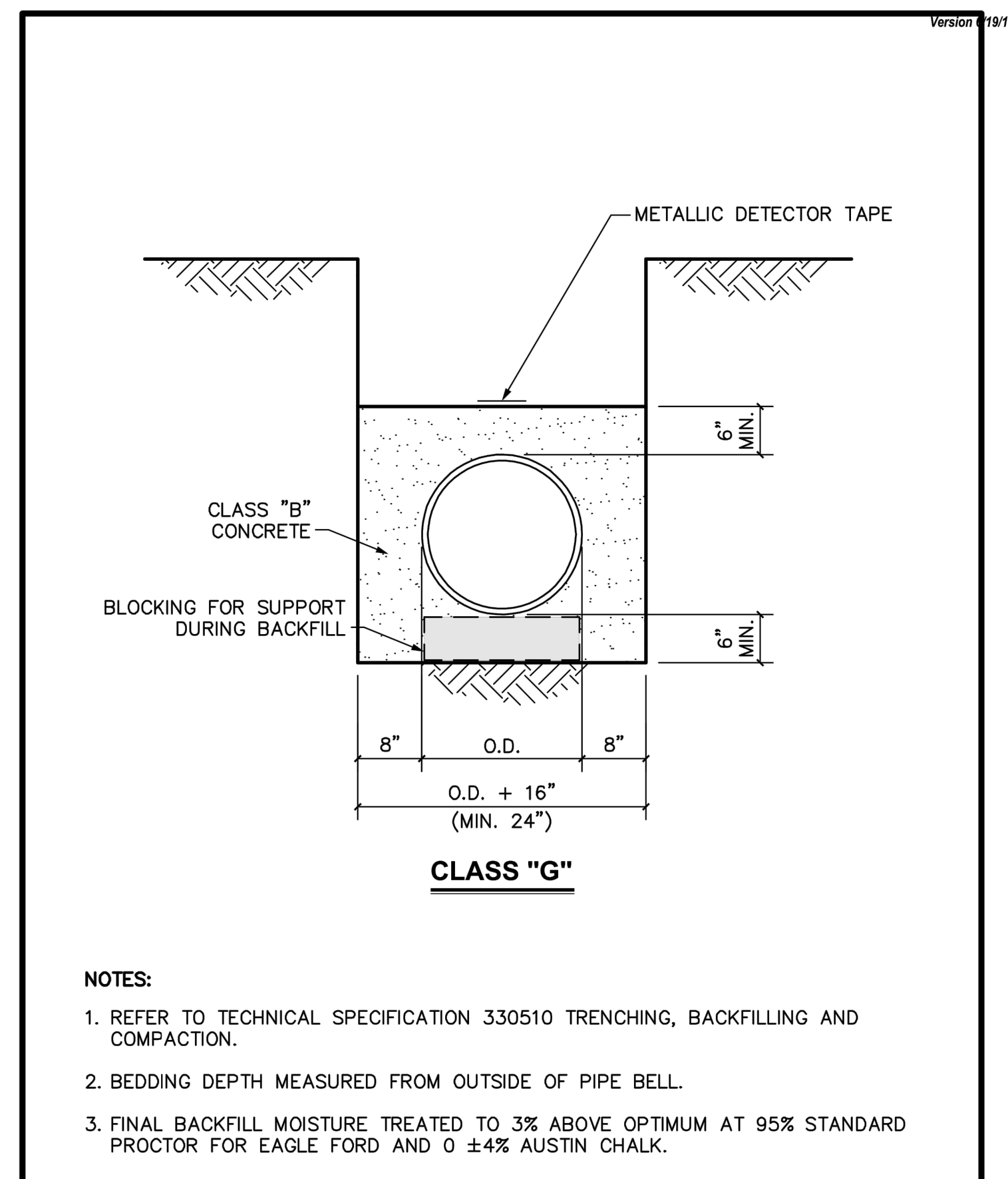
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STANDARD CAST-IN-PLACE MANHOLE

SCALE: 3/8"=1'-0"
REVISED: MAR 2012
S01



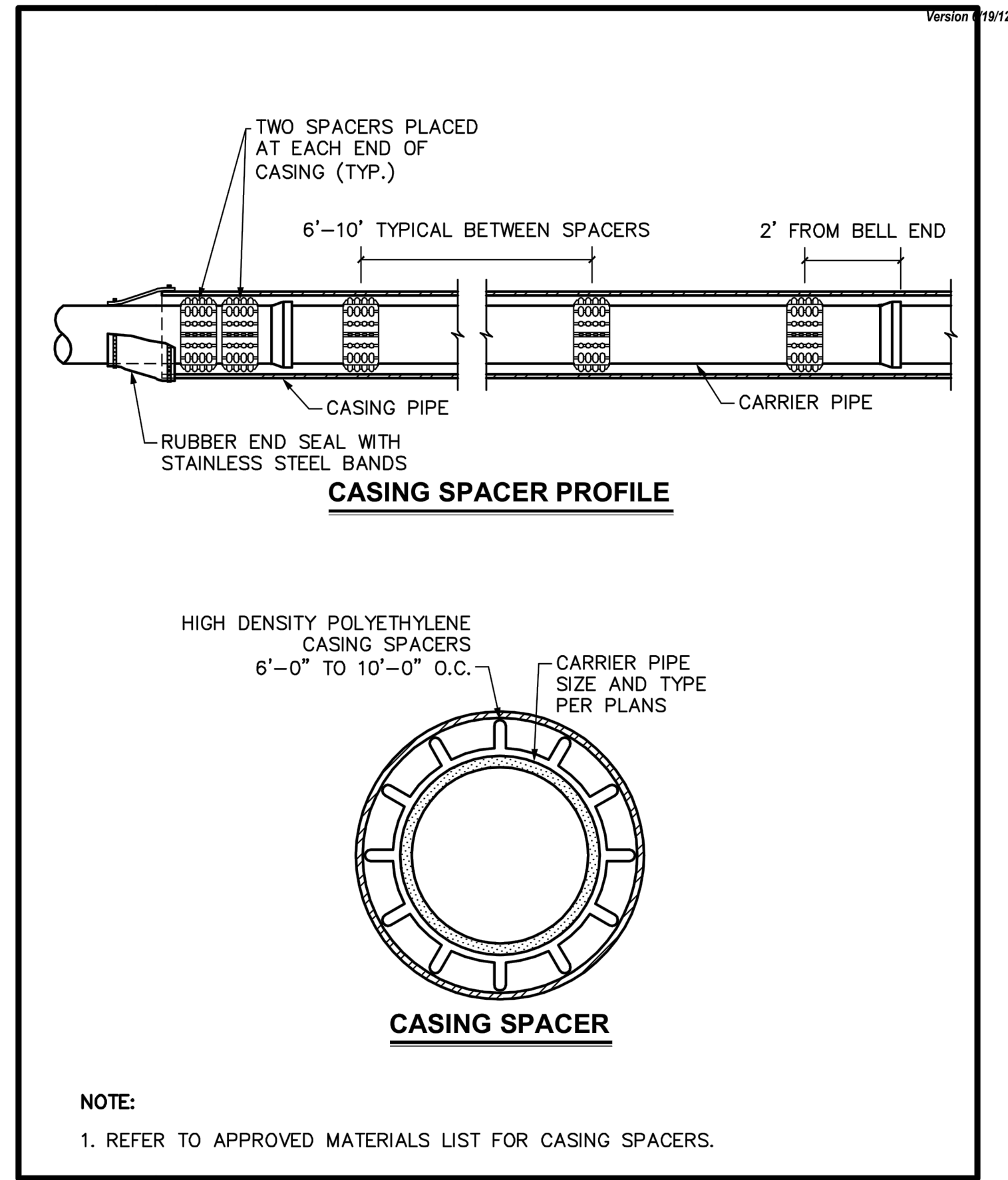
FRISCO STANDARD CONSTRUCTION DETAIL
PRECAST CONCRETE MANHOLE

SCALE: 3/8"=1'-0"
REVISED: MAR 2012
S02



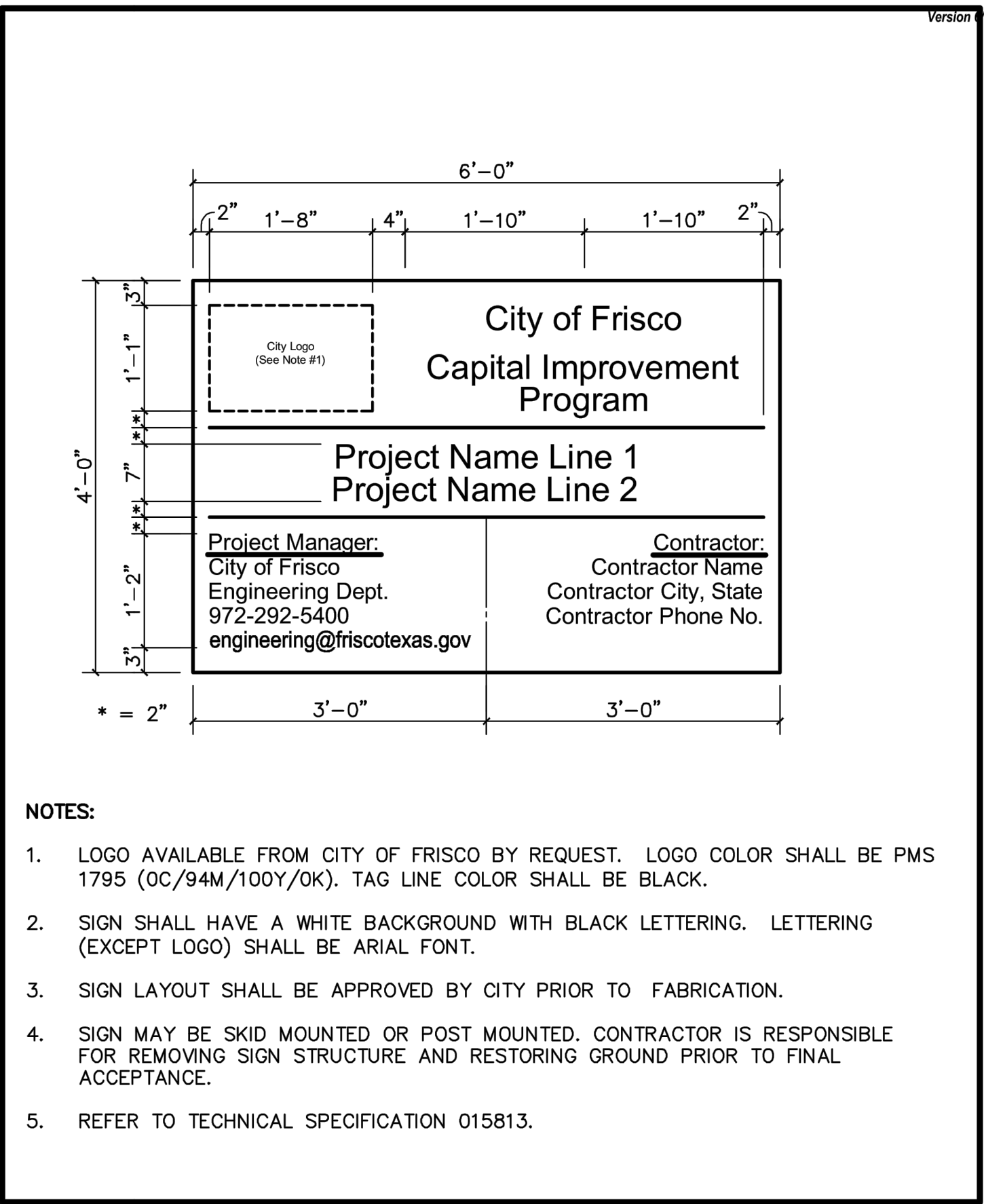
FRISCO STANDARD CONSTRUCTION DETAIL
EMBEDMENT "G"

SCALE: 3/4"=1'-0"
REVISED: MAR 2012
U06



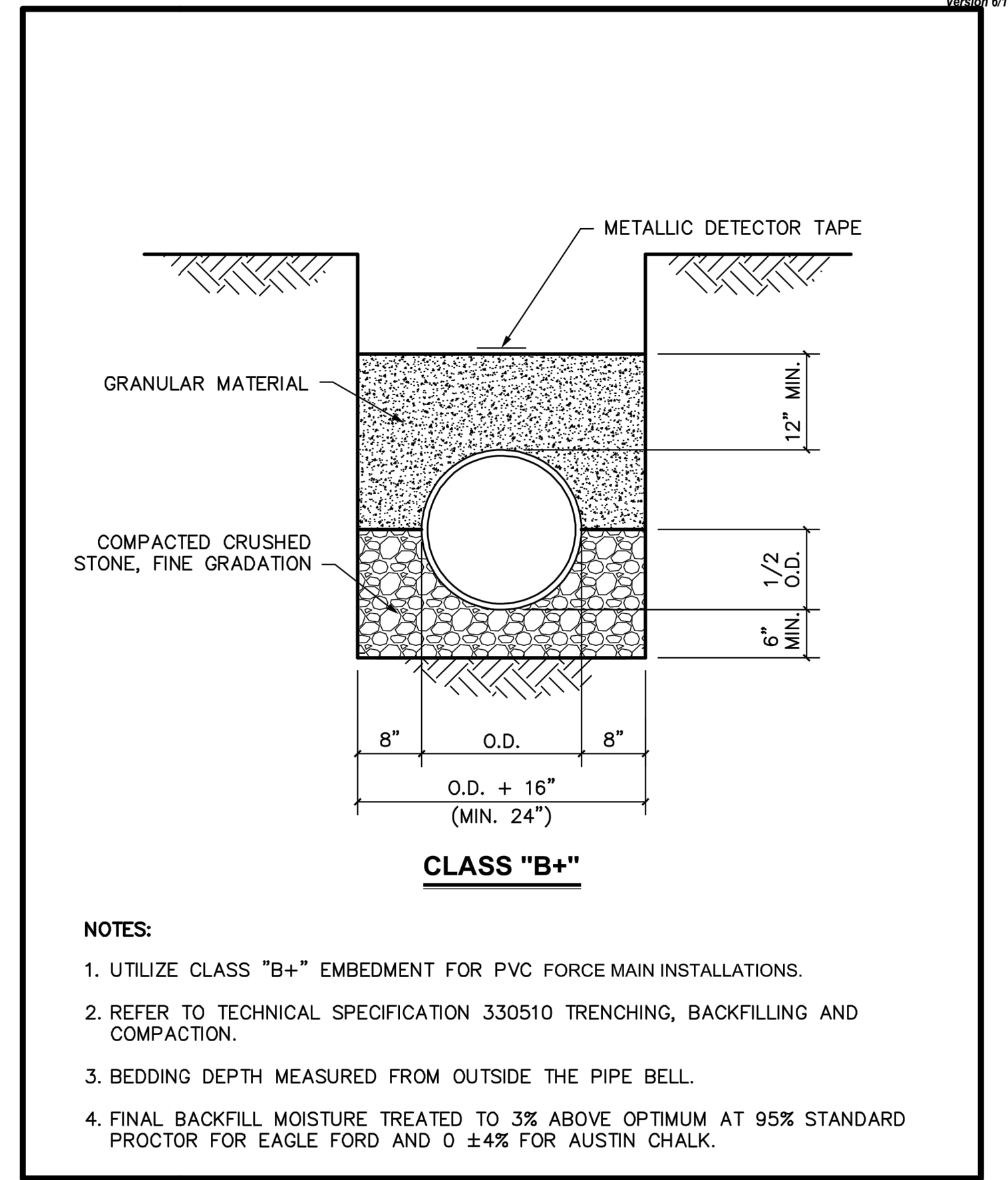
FRISCO STANDARD CONSTRUCTION DETAIL
CASING SPACERS

SCALE: 3/8"=1'-0"
REVISED: MAR 2012
U09



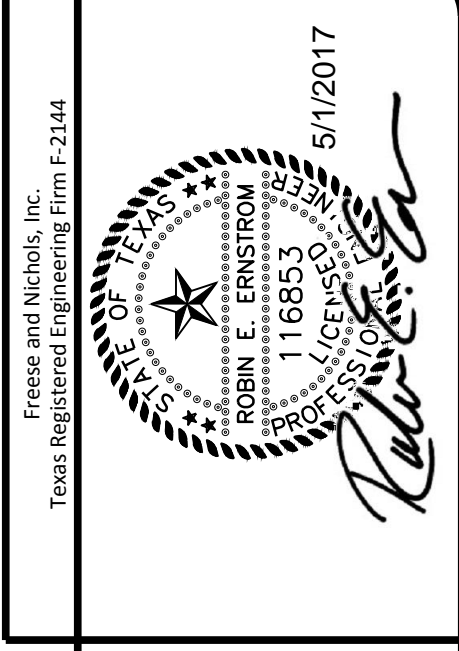
FRISCO STANDARD CONSTRUCTION DETAIL
PROJECT SIGN

SCALE: 3/4"=1'-0"
REVISED: MAR 2012
G01



FRISCO STANDARD CONSTRUCTION DETAIL
EMBEDMENT "B+" (FORCE MAIN)

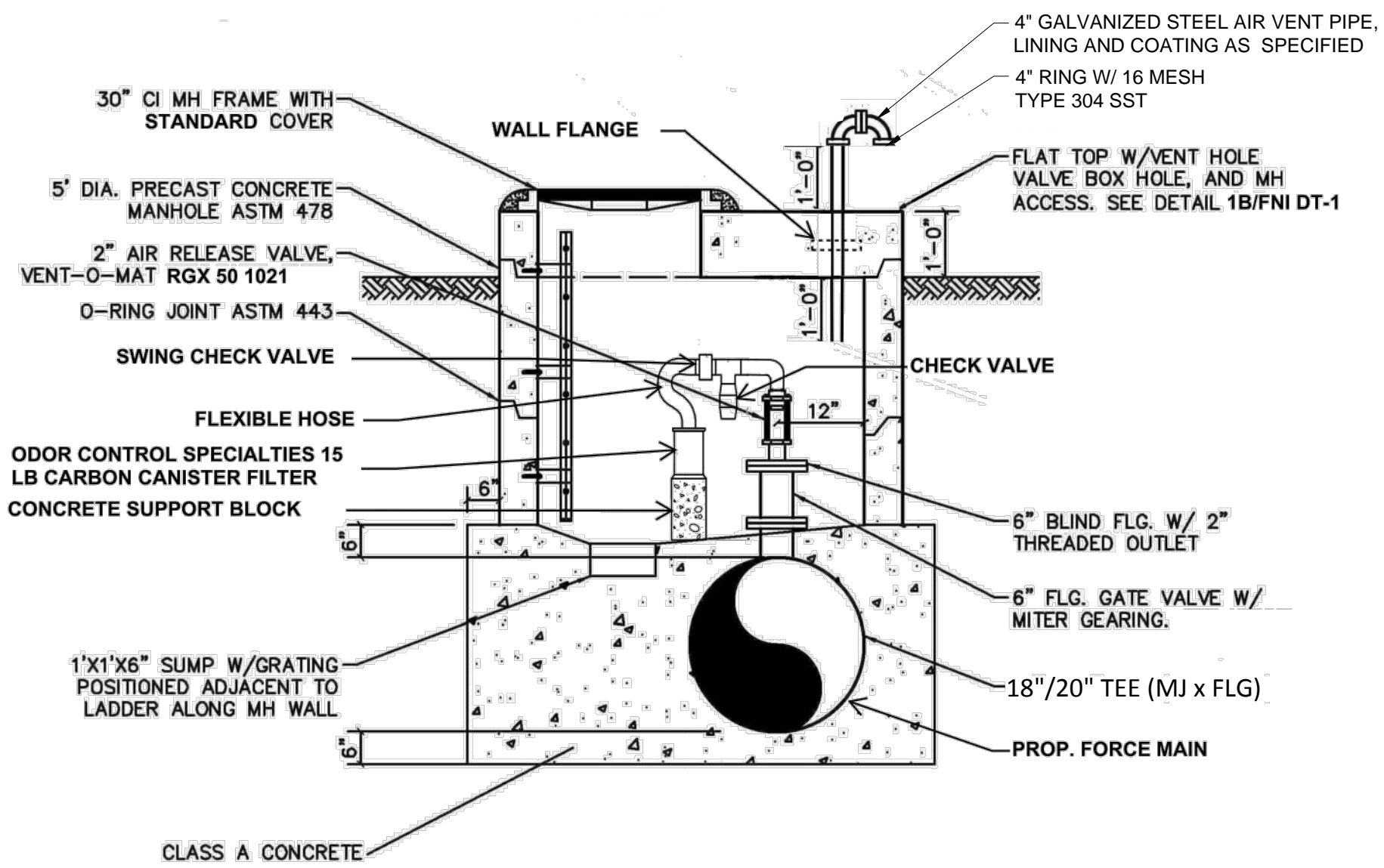
SCALE: 3/4"=1'-0"
REVISED: APRIL 2012
U03



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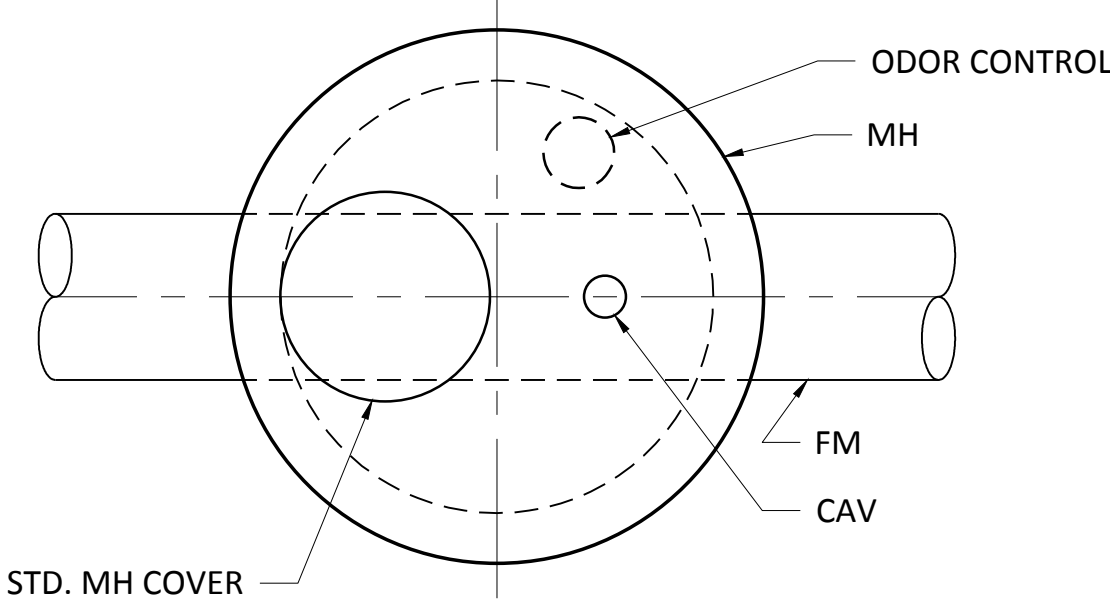
CITY OF FRISCO, TEXAS
LEBANON ROAD IMPROVEMENTS
AND FORCE MAIN
CIVIL
UTILITY DETAILS

| | | | | |
|---|-----------|----------|----------|-------------|
| NO. | ISSUE | DATE | BY | FILE NAME |
| | | | | CV-ALL-DT-1 |
| FRJ JOB NO. | DATE | DESIGNED | REVIEWED | CHECKED |
| FRCL5624 | APR. 2017 | REE | LMR | CCB |
| VERIFY SCALE 1 Bar is one inch on original drawing. If not one inch on this sheet, adjust scale. | | | | |
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| SEQ. 35 | | | | |

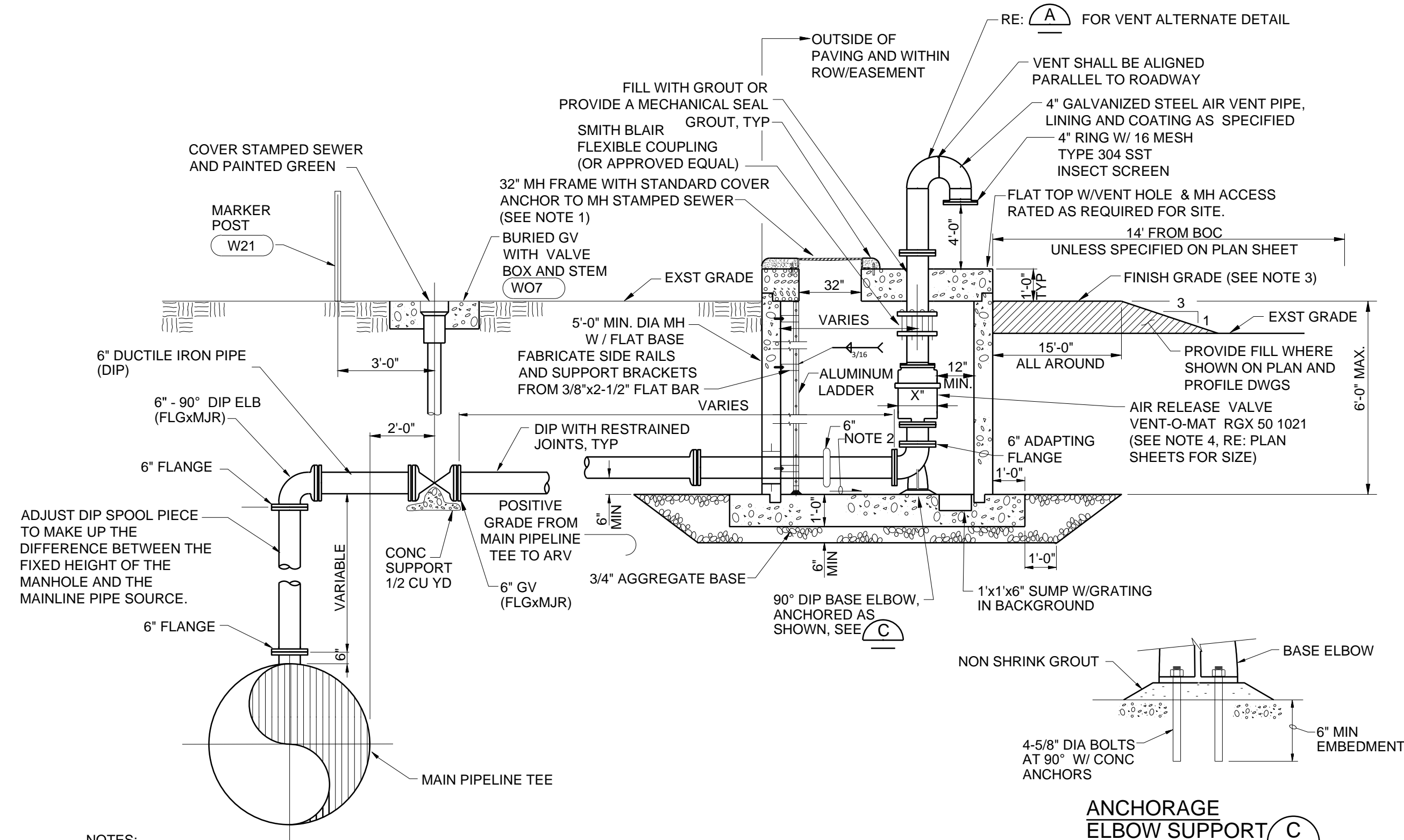


1A AIR RELEASE VAC VALVE
NOT TO SCALE

1 AIR RELEASE VAC ASSEMBLY DETAIL - TYPE 1
NOT TO SCALE

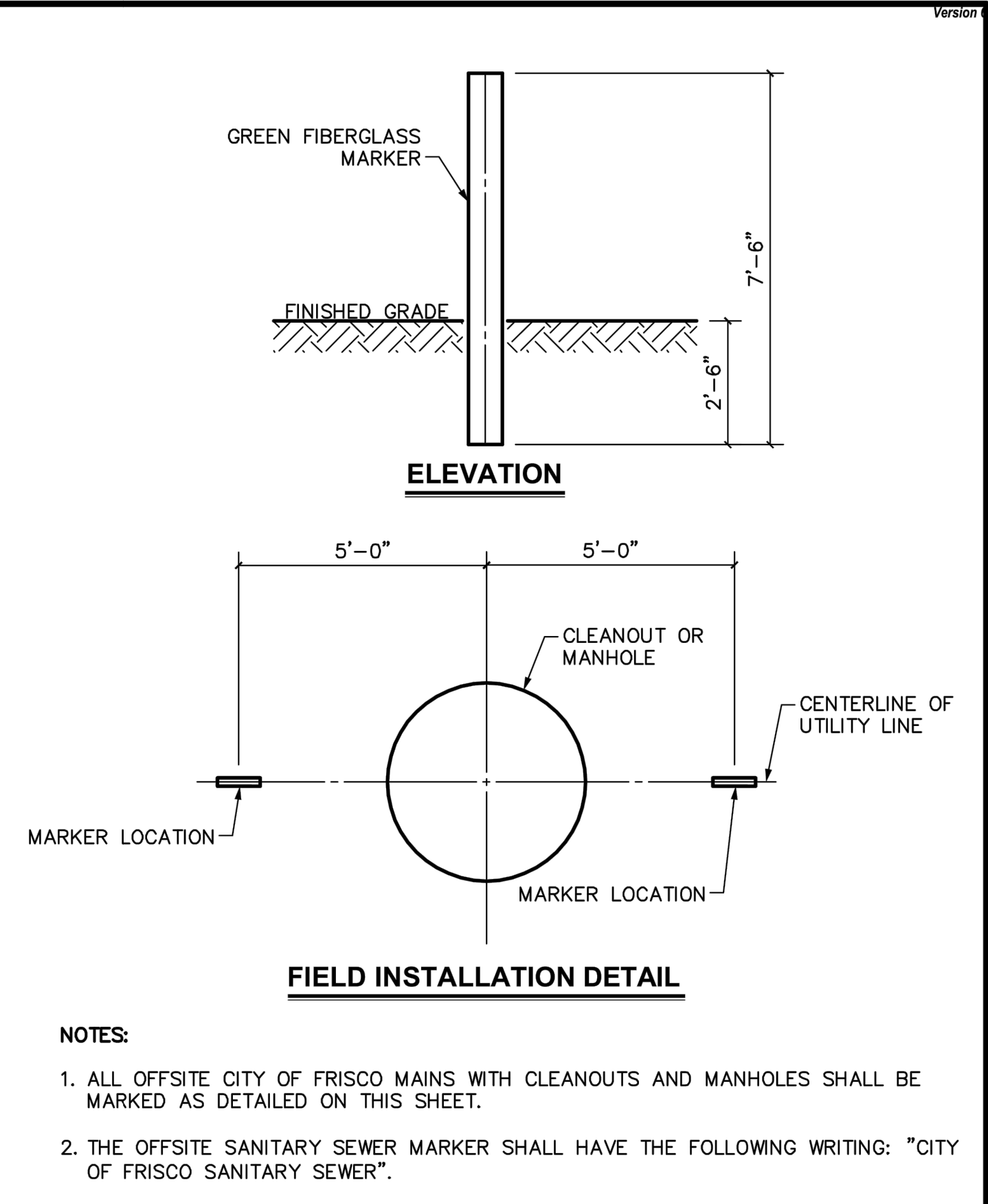


1B AIR RELEASE VALVE MANHOLE
NOT TO SCALE

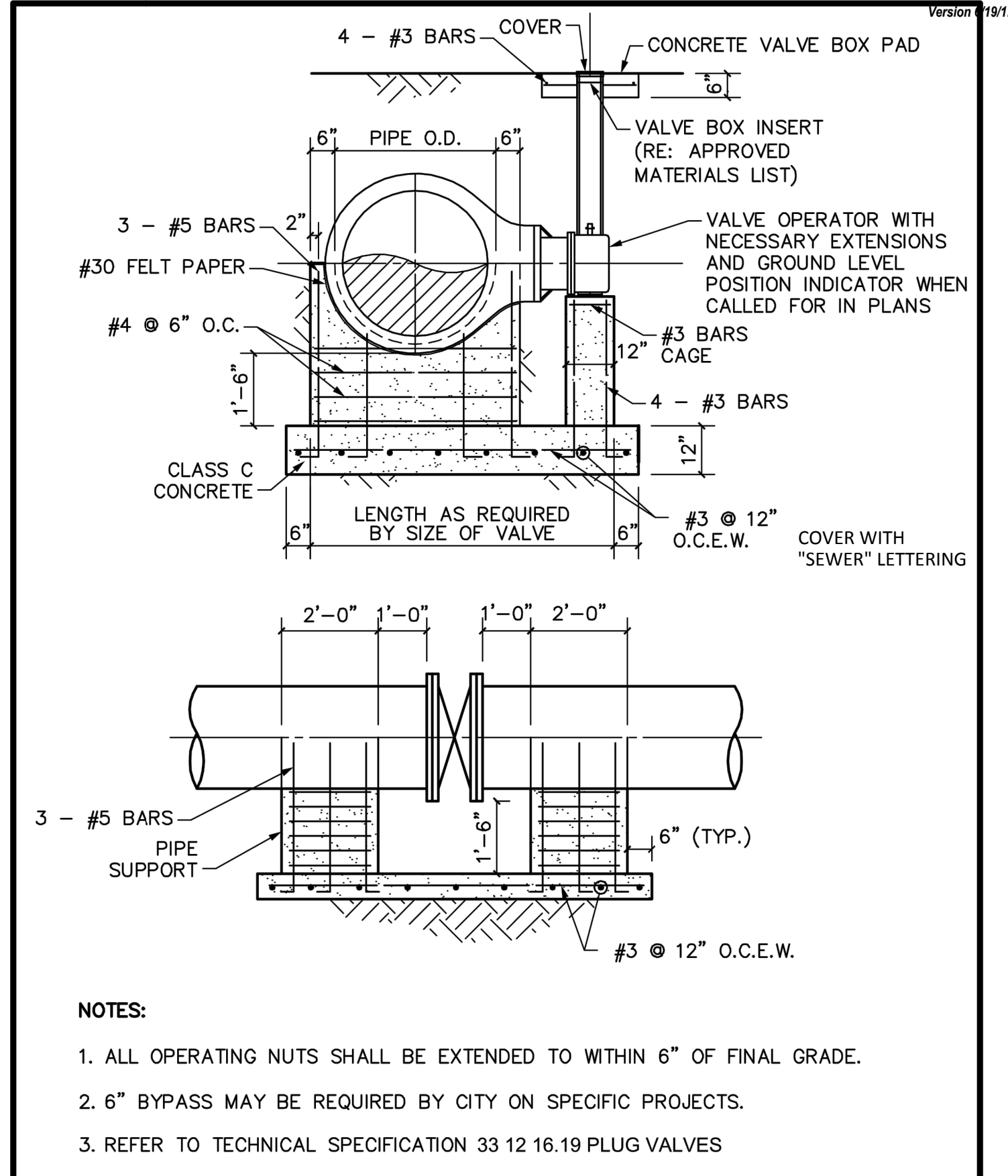


- NOTES:
1. SEE APPROVED MATERIALS LIST FOR MH LID MODEL NUMBER.
 2. PROVIDE 2% MIN SLOPE TOWARDS SUMP.
 3. CONTRACTOR SHALL COORDINATE FINAL GRADING AND TOP OF MANHOLE ELEVATIONS WITH THE CITY OF FRISCO, BASED UPON ACTUAL FIELD CONDITIONS.
 4. REFER TO TECHNICAL SPECIFICATION 331216 "AIR VALVES FOR POTABLE WATER SYSTEMS AND WASTEWATER FORCE MAINS."

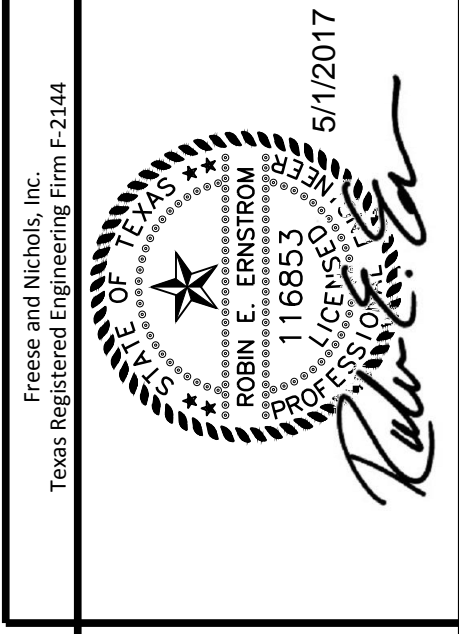
2 TYPICAL CITY OF FRISCO AIR RELEASE VAC ASSEMBLY DETAIL - TYPE 2
NOT TO SCALE



FRISCO STANDARD CONSTRUCTION DETAIL OFFSITE WASTEWATER MARKER
SCALE: 3/8"=1'
REVISED: MAR 2012
S12



FRISCO STANDARD CONSTRUCTION DETAIL PLUG VALVE
SCALE: 3/8"=1'-0"
REVISED: MAR 2012
W08

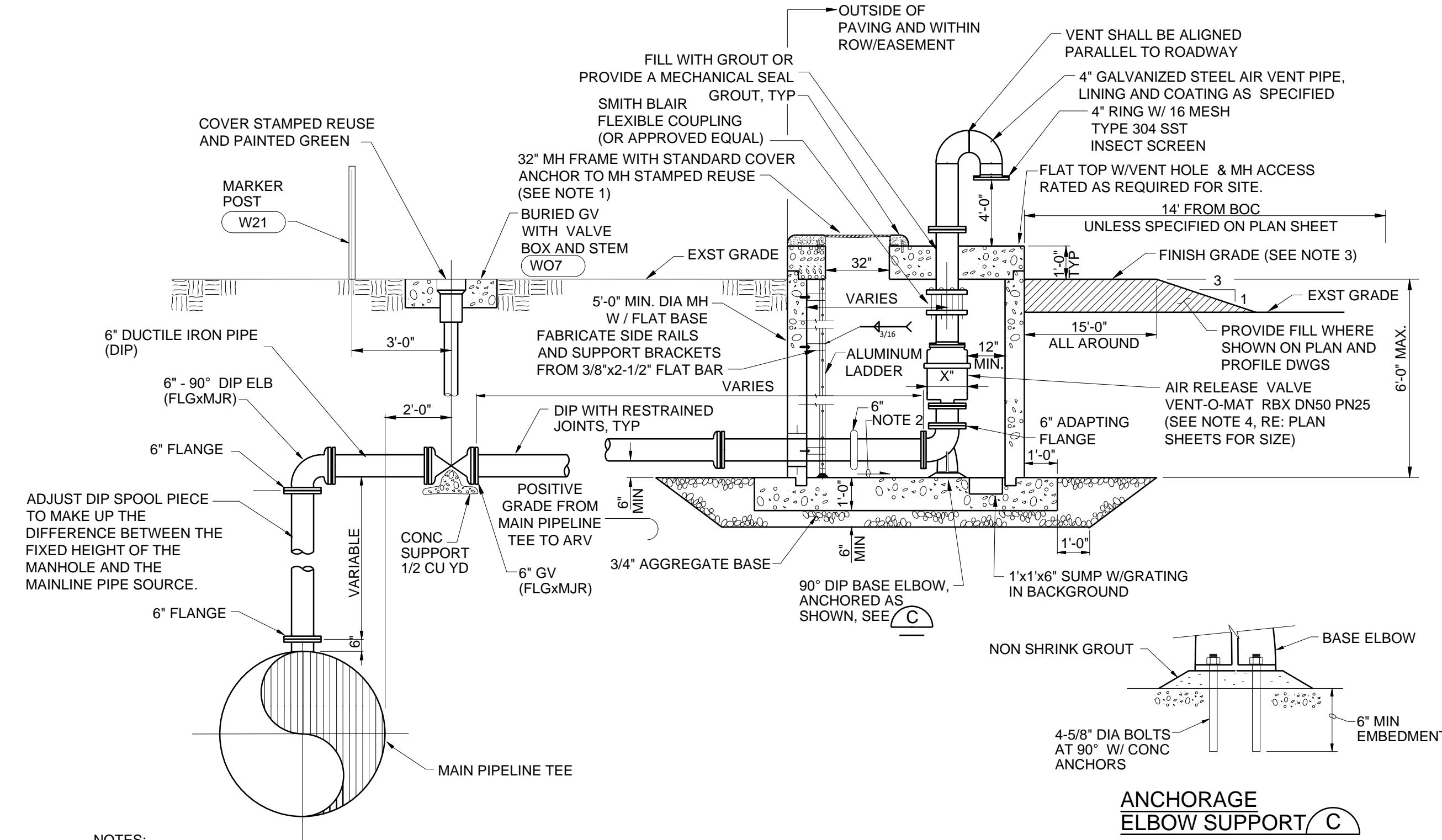


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Web: www.frees.com

CITY OF FRISCO, TEXAS
LEBANON ROAD IMPROVEMENTS AND FORCE MAIN
CIVIL
UTILITY DETAILS

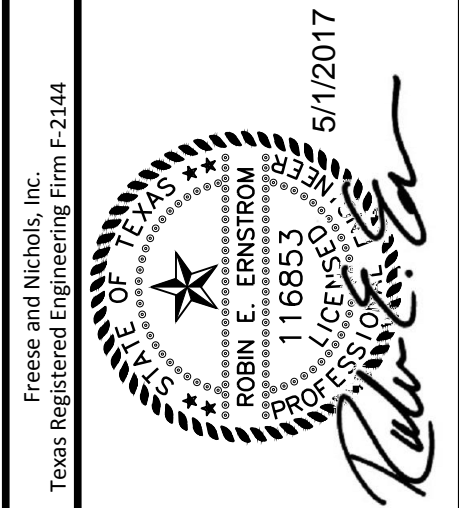
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Filename: N:\WU\Drawings\PHASE I\DETAILS\CV-ALL-DT-4.dwg
Last Saved: 4/20/2017 9:39 AM Saved By: 02481



- NOTES:**
1. SEE APPROVED MATERIALS LIST FOR MH LID MODEL NUMBER.
 2. PROVIDE 2% MIN SLOPE TOWARDS SUMP.
 3. CONTRACTOR SHALL COORDINATE FINAL GRADING AND TOP OF MANHOLE ELEVATIONS WITH THE CITY OF FRISCO, BASED UPON ACTUAL FIELD CONDITIONS.

1
 -
 TYPICAL CITY OF FRISCO AIR RELEASE
 VAC ASSEMBLY DETAIL (REUSE WATER ONLY)
 NOT TO SCALE



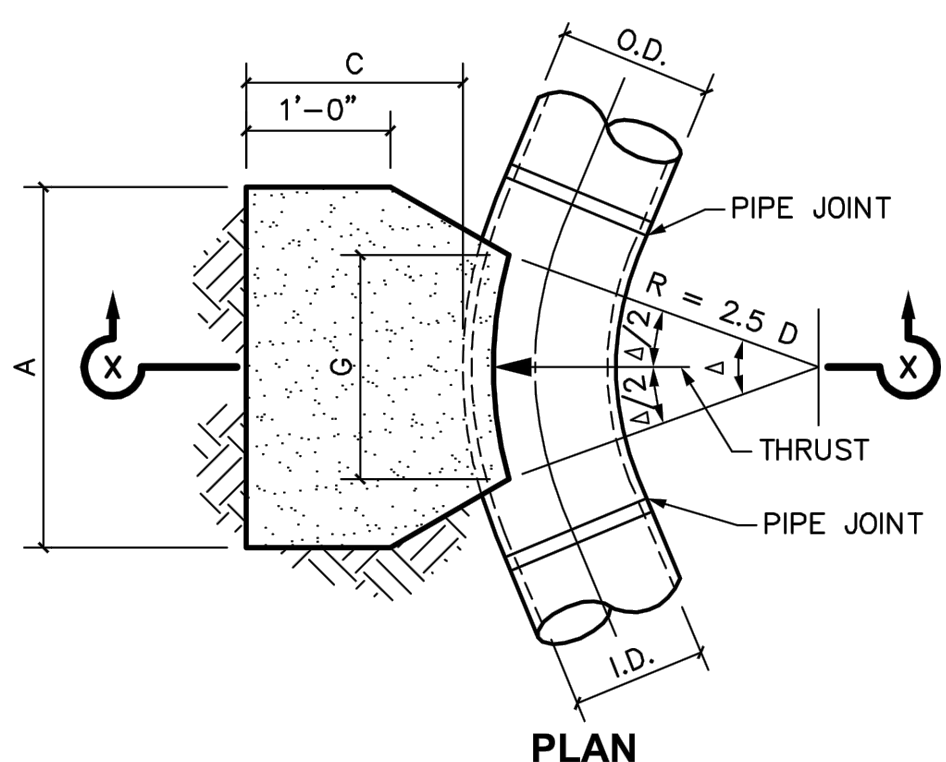
CITY OF FRISCO, TEXAS
**LEBANON ROAD IMPROVEMENTS
 AND FORCE MAIN**
 CIVIL
UTILITY DETAILS

| NO. | ISSUE | DATE | BY | DATE | DESIGNED | DRAWN | REVISION | CHECKED | FILE NAME |
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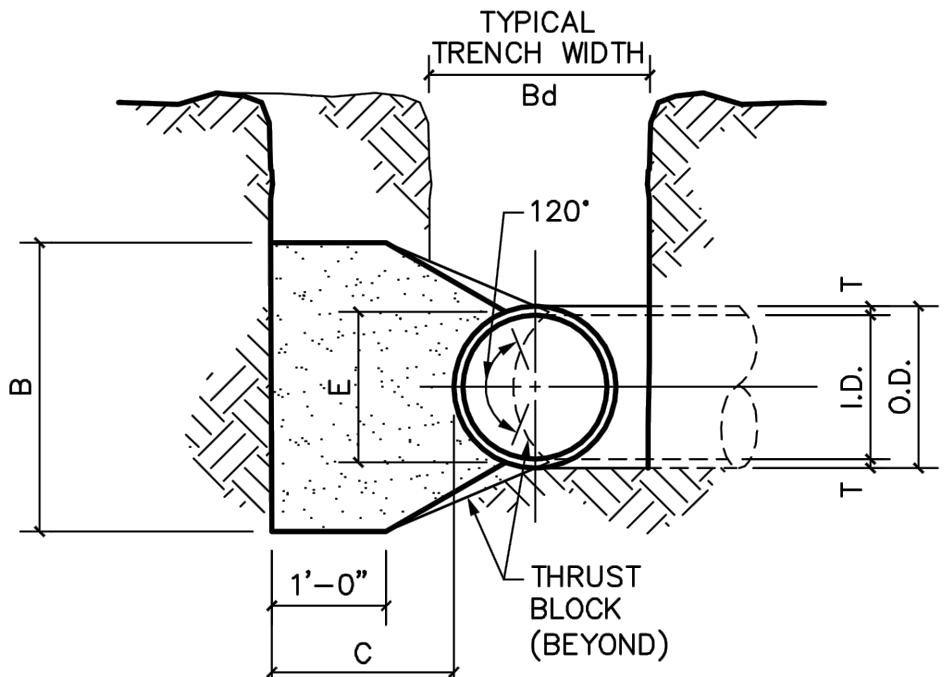
VERIFY SCALE: Bar is one inch on original drawing. If not one inch on this sheet, adjust scale.

SHEET: **FMDT-3**

SEQ: **37**



PLAN



SECTION X-X

- NOTES:
- REFER TO STANDARD DETAIL W02 AND W03 FOR TABLES OF DIMENSIONS AND QUANTITIES.
 - REFER TO STANDARD DETAIL W05 FOR GENERAL NOTES.

FRISCO STANDARD CONSTRUCTION DETAIL
HORIZONTAL THRUST BLOCK AT PIPE BEND
 SHEET 1 OF 3
 SCALE: 3/4"=1'-0"
 REVISED: MAR 2012
 W01

| I.D. (IN.) | T (TONS) | Δ = 11.25° G (VOL. (C.Y.)) | Δ = 22.50° G (VOL. (C.Y.)) | E (VOL. (C.Y.)) |
|------------|----------|----------------------------|----------------------------|-----------------|
| 4.6,8 | 0.4 | 1.5 | 1.5 | 0.9 |
| 10,12 | 0.5 | 1.5 | 1.5 | 1.2 |
| 16,18 | 0.6 | 1.5 | 1.5 | 1.6 |
| 20 | 0.7 | 1.5 | 1.5 | 1.8 |
| 24 | 0.9 | 1.5 | 1.5 | 2.1 |
| 30 | 2.9 | 1.5 | 1.9 | 2.6 |
| 36 | 4.5 | 1.5 | 2.3 | 3.3 |
| 42 | 5.0 | 1.8 | 2.6 | 3.8 |
| 48 | 5.5 | 2.0 | 3.0 | 4.3 |
| 54 | 6.0 | 2.3 | 3.4 | 4.8 |
| 60 | 6.5 | 2.5 | 3.8 | 5.3 |
| 66 | 6.8 | 2.8 | 4.1 | 5.7 |
| 72 | 7.5 | 3.0 | 4.5 | 6.3 |
| 78 | 7.5 | 3.3 | 4.9 | 6.7 |
| 84 | 8.0 | 3.5 | 5.3 | 7.2 |
| 90 | 8.5 | 3.8 | 5.6 | 7.7 |
| 96 | 9.0 | 4.0 | 6.0 | 8.2 |

| I.D. (IN.) | G (VOL. (C.Y.)) | THRUST (TONS) | A (FT.) | B (FT.) | THRUST (TONS) | A (FT.) | B (FT.) | THRUST (TONS) | A (FT.) | B (FT.) | THRUST (TONS) | A (FT.) | B (FT.) |
|------------|-----------------|---------------|---------|---------|---------------|---------|---------|---------------|---------|---------|---------------|---------|---------|
| 4.6,8 | 0.4 | 1.0 | 1.0 | 1.5 | 0.1 | 1.0 | 1.0 | 0.1 | 1.0 | 1.0 | 0.1 | 1.0 | 1.0 |
| 10,12 | 0.6 | 2.2 | 1.5 | 1.5 | 0.1 | 1.0 | 1.5 | 0.1 | 1.0 | 1.5 | 0.1 | 1.0 | 1.5 |
| 16,18 | 0.8 | 5.0 | 2.0 | 2.5 | 0.3 | 1.5 | 2.0 | 0.2 | 2.0 | 2.5 | 0.3 | 1.5 | 2.0 |
| 20 | 0.9 | 6.2 | 2.0 | 3.5 | 0.4 | 1.5 | 3.0 | 0.3 | 2.0 | 3.0 | 0.3 | 2.0 | 3.0 |
| 24 | 1.1 | 8.9 | 3.0 | 3.5 | 0.5 | 1.5 | 3.0 | 0.3 | 2.4 | 2.7 | 0.4 | 1.5 | 3.0 |
| 30 | 1.4 | 10.4 | 3.0 | 3.5 | 0.6 | 2.0 | 3.5 | 0.4 | 3.0 | 4.0 | 0.8 | 2.4 | 3.0 |
| 36 | 1.7 | 15.0 | 3.5 | 4.5 | 0.9 | 2.0 | 4.0 | 0.5 | 3.6 | 3.3 | 0.9 | 2.0 | 4.0 |
| 42 | 1.9 | 20.4 | 4.5 | 5.0 | 1.5 | 2.5 | 5.0 | 0.8 | 4.2 | 3.8 | 1.0 | 2.5 | 4.0 |
| 48 | 2.2 | 26.8 | 4.5 | 6.0 | 2.0 | 2.5 | 6.0 | 1.1 | 4.8 | 4.4 | 1.2 | 3.0 | 4.0 |
| 54 | 2.5 | 33.7 | 6.0 | 6.0 | 3.0 | 3.0 | 6.0 | 1.4 | 5.4 | 4.9 | 1.4 | 3.0 | 4.0 |
| 60 | 2.7 | 41.6 | 6.0 | 7.0 | 3.8 | 3.0 | 7.0 | 1.8 | 6.0 | 5.5 | 1.6 | 3.0 | 4.0 |
| 66 | 3.0 | 50.3 | 6.5 | 8.0 | 5.1 | 3.5 | 8.0 | 2.7 | 6.6 | 6.0 | 1.8 | 3.0 | 4.0 |
| 72 | 3.3 | 59.9 | 7.5 | 8.0 | 6.3 | 4.0 | 8.0 | 3.3 | 7.2 | 6.6 | 1.9 | 3.0 | 4.0 |
| 78 | 3.6 | 70.2 | 8.0 | 9.0 | 8.1 | 4.0 | 9.0 | 3.9 | 7.8 | 7.1 | 2.0 | 3.0 | 4.0 |
| 84 | 3.8 | 81.5 | 8.5 | 10.0 | 10.3 | 4.5 | 10.0 | 5.3 | 8.4 | 7.5 | 2.1 | 3.0 | 4.0 |
| 90 | 4.1 | 93.5 | 9.5 | 10.0 | 12.2 | 5.0 | 10.0 | 6.3 | 9.0 | 8.2 | 2.2 | 3.0 | 4.0 |
| 96 | 4.4 | 106.4 | 10.0 | 11.0 | 15.0 | 5.0 | 11.0 | 7.4 | 9.6 | 8.7 | 2.3 | 3.0 | 4.0 |

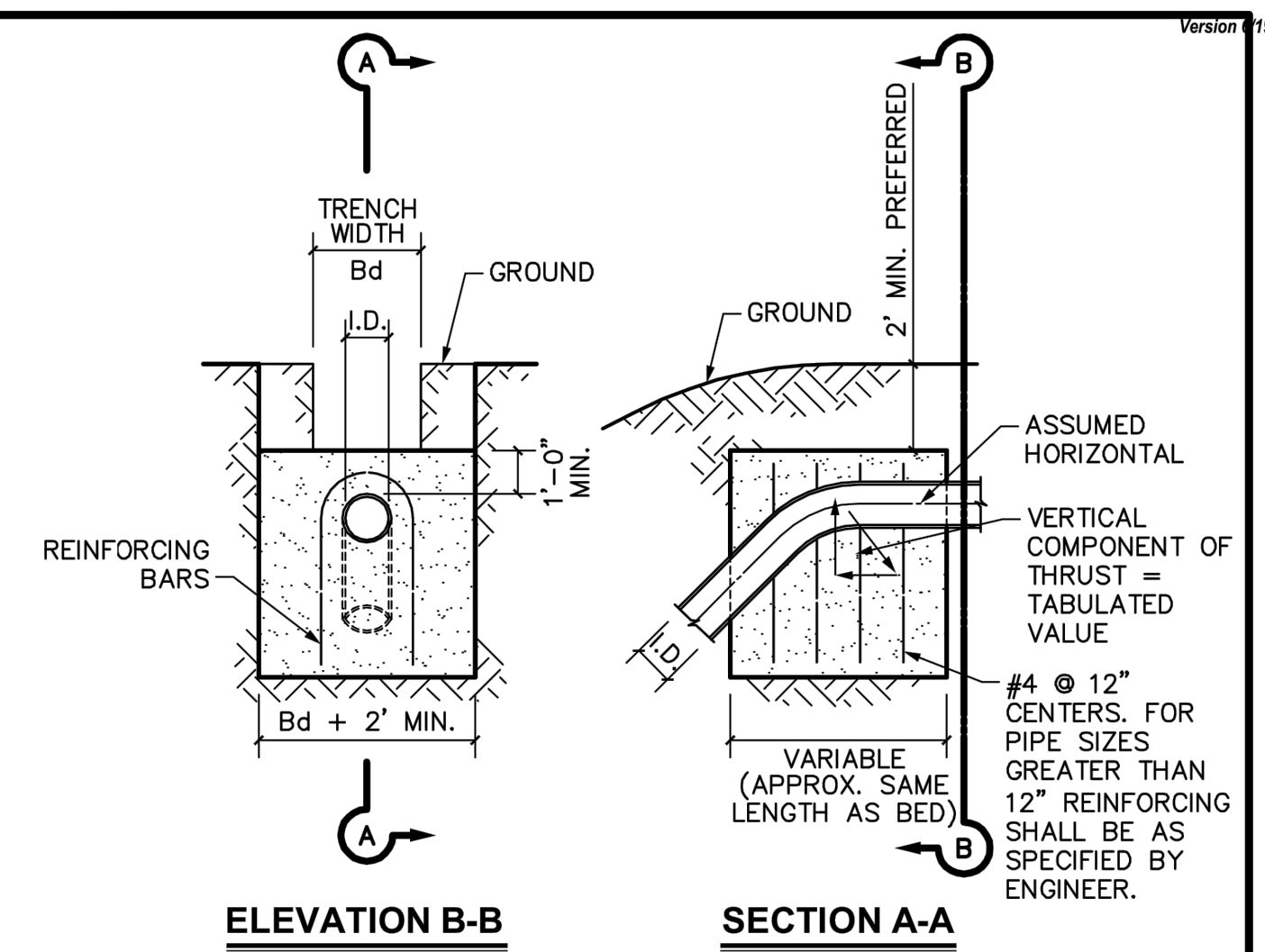
| I.D. (IN.) | G (VOL. (C.Y.)) | THRUST (TONS) | A (FT.) | B (FT.) | THRUST (TONS) | A (FT.) | B (FT.) | THRUST (TONS) | A (FT.) | B (FT.) | THRUST (TONS) | A (FT.) | B (FT.) |
|------------|-----------------|---------------|---------|---------|---------------|---------|---------|---------------|---------|---------|---------------|---------|---------|
| 4.6,8 | 0.8 | 2.0 | 1.5 | 1.5 | 0.1 | 1.0 | 1.0 | 0.1 | 1.0 | 1.0 | 0.1 | 1.0 | 1.0 |
| 10,12 | 1.1 | 4.4 | 2.0 | 2.5 | 0.3 | 1.5 | 1.5 | 0.1 | 1.0 | 1.5 | 0.1 | 1.0 | 1.5 |
| 16,18 | 1.6 | 9.9 | 3.0 | 3.5 | 0.6 | 2.0 | 2.5 | 0.3 | 2.0 | 2.5 | 0.3 | 2.0 | 2.5 |
| 20 | 1.8 | 12.3 | 3.5 | 3.5 | 0.7 | 2.0 | 3.0 | 0.4 | 2.4 | 2.7 | 0.4 | 1.5 | 3.0 |
| 24 | 2.2 | 17.7 | 4.0 | 4.5 | 1.0 | 3.0 | 3.5 | 0.5 | 2.8 | 2.7 | 0.4 | 1.5 | 3.0 |
| 30 | 2.7 | 20.7 | 5.0 | 4.5 | 1.5 | 3.0 | 4.0 | 0.8 | 3.6 | 3.3 | 0.9 | 2.0 | 4.0 |
| 36 | 3.3 | 29.8 | 5.5 | 5.5 | 2.3 | 4.0 | 4.0 | 1.3 | 4.2 | 3.8 | 1.0 | 2.5 | 4.0 |
| 42 | 3.8 | 40.5 | 7.0 | 6.0 | 3.9 | 4.5 | 5.0 | 2.1 | 4.8 | 4.4 | 1.2 | 3.0 | 4.0 |
| 48 | 4.4 | 52.9 | 8.0 | 7.0 | 5.7 | 4.5 | 6.0 | 2.8 | 5.4 | 4.9 | 1.4 | 3.0 | 4.0 |
| 54 | 4.9 | 67.0 | 9.0 | 8.0 | 8.0 | 6.0 | 6.0 | 4.1 | 6.0 | 5.5 | 1.6 | 3.0 | 4.0 |
| 60 | 5.5 | 82.7 | 9.5 | 9.0 | 10.6 | 6.0 | 7.0 | 5.3 | 6.6 | 6.0 | 1.8 | 3.0 | 4.0 |
| 66 | 6.0 | 100.1 | 10.5 | 10.0 | 14.1 | 6.5 | 8.0 | 7.2 | 7.2 | 6.6 | 1.9 | 3.0 | 4.0 |
| 72 | 6.6 | 115.1 | 11.0 | 11.0 | 17.8 | 7.5 | 8.0 | 9.1 | 7.8 | 7.1 | 2.0 | 3.0 | 4.0 |
| 78 | 7.1 | 138.8 | 12.0 | 12.0 | 22.5 | 8.0 | 9.0 | 11.7 | 8.4 | 7.5 | 2.1 | 3.0 | 4.0 |
| 84 | 7.6 | 162.1 | 13.0 | 12.5 | 27.2 | 8.5 | 10.0 | 14.8 | 9.0 | 8.2 | 2.2 | 3.0 | 4.0 |
| 90 | 8.2 | 186.1 | 14.0 | 13.5 | 33.7 | 9.5 | 10.0 | 17.7 | 9.6 | 8.7 | 2.3 | 3.0 | 4.0 |
| 96 | 8.7 | 211.7 | 15.0 | 14.5 | 41.2 | 10.0 | 11.0 | 21.8 | 10.0 | 9.0 | 2.4 | 3.0 | 4.0 |

FRISCO STANDARD CONSTRUCTION DETAIL
HORIZONTAL THRUST BLOCK AT PIPE BEND
 SHEET 2 OF 3
 SCALE: N.T.S.
 REVISED: MAR 2012
 W02

| I.D. (IN.) | G (VOL. (C.Y.)) | THRUST (TONS) | Δ = 30° | | | | Δ = 45° | | | | | | | | | | |
|------------|-----------------|---------------|---------|---------|---------------|-------------|---------|---------|---------------|-------------|-------|------|------|------|------|------|------|
| | | | A (FT.) | B (FT.) | THRUST (TONS) | VOL. (C.Y.) | A (FT.) | B (FT.) | THRUST (TONS) | VOL. (C.Y.) | | | | | | | |
| 4.6,8 | 1.0 | 2.6 | 2.0 | 1.5 | 0.2 | 1.0 | 1.5 | 0.1 | 4.6,8 | 1.5 | 3.9 | 2.0 | 2.0 | 0.2 | 1.5 | 0.1 | |
| 10,12 | 1.5 | 5.9 | 2.5 | 2.5 | 0.3 | 2.0 | 1.5 | 0.2 | 10,12 | 2.2 | 8.7 | 3.5 | 2.5 | 0.5 | 2.0 | 2.5 | 0.3 |
| 16,18 | 2.2 | 13.2 | 3.5 | 4.0 | 0.8 | 2.5 | 3.0 | 0.4 | 16,18 | 3.2 | 19.5 | 4.5 | 4.5 | 1.2 | 3.0 | 3.5 | 0.6 |
| 20 | 2.4 | 16.3 | 4.5 | 4.0 | 1.0 | 3.0 | 3.0 | 0.5 | 20 | 3.6 | 24.1 | 5.5 | 4.5 | 1.4 | 3.5 | 3.5 | 0.7 |
| 24 | 2.9 | 23.4 | 6.0 | 4.0 | 1.4 | 3.5 | 3.5 | 0.7 | 24 | 4.3 | 34.8 | 8.0 | 4.5 | 2.3 | 4.5 | 4.0 | 1.1 |
| 30 | 3.6 | 27.5 | 6.5 | 5.0 | 1.9 | 3.5 | 4.0 | 0.9 | 30 | 5.4 | 40.8 | 8.5 | 5.0 | 3.2 | 5.5 | 4.0 | 1.6 |
| 36 | 4.4 | 39.5 | 7.0 | 6.0 | 3.4 | 4.5 | 4.5 | 1.6 | 36 | 6.5 | 58.5 | 10.0 | 6.0 | 5.3 | 6.5 | 4.5 | 2.6 |
| 42 | 5.1 | 53.8 | 8.0 | 7.0 | 5.1 | 5.5 | 5.0 | 2.5 | 42 | 7.5 | 79.6 | 11.5 | 7.0 | 8.1 | 8.0 | 5.0 | 4.2 |
| 48 | 5.8 | 70.3 | 9.0 | 8.0 | 7.4 | 6.0 | 6.0 | 3.7 | 48 | 8.6 | 104.0 | 13.0 | 8.0 | 11.9 | 9.0 | 6.0 | 6.3 |
| 54 | 6.5 | 89.0 | 10.0 | 9.0 | 10.3 | 7.0 | 6.5 | 5.3 | 54 | 9.7 | 131.5 | 15.0 | 9.0 | 17.1 | 10.5 | 6.5 | 8.9 |
| 60 | 7.3 | 110.0 | 11.0 | 10.0 | 13.9 | 7.5 | 7.5 | 7.3 | 60 | 10.7 | 162.4 | 16.5 | 10.0 | 23.1 | 11.0 | 7.5 | 12.0 |
| 66 | 8.0 | 132.9 | 12.5 | 11.0 | 18.9 | 8.5 | 8.0 | 9.6 | 66 | 11.8 | 196.5 | 18.0 | 11.0 | 30.1 | 12.0 | 8.5 | 16.2 |
| 72 | 8.7 | 158.6 | 13.5 | 12.0 | 24.0 | 9.0 | 9.0 | 12.3 | 72 | 12.9 | 233.9 | 19.5 | 12.0 | 38.6 | 14.0 | 8.5 | 20.7 |
| 78 | 9.4 | 185.6 | 14.5 | 13.0 | 30.0 | 10.0 | 9.5 | 15.6 | 78 | 13.9 | 274.5 | 21.5 | 13.0 | 49.8 | 14.5 | 9.5 | 25.9 |
| 84 | 10.1 | 215.3 | 15.5 | 14.0 | 37.1 | 10.5 | 10.5 | 19.5 | 84 | 15.0 | 318.4 | 23.0 | 14.0 | 61.2 | 15.5 | 10.5 | 32.8 |
| 90 | 10.9 | 247.1 | 16.5 | 15.0 | 45.0 | 11.5 | 11.0 | 23.9 | 90 | 16.1 | 365.5 | 24.5 | 15.0 | 74.5 | 17.5 | 10.5 | 39.8 |
| 96 | 11.6 | 281.2 | 18.0 | 16.0 | 55.5 | 12.5 | 11.5 | 28.9 | 96 | 17.1 | 415.6 | 26.0 | 16.0 | 89.5 | 18.5 | 11.5 | 48.5 |

| I.D. (IN.) | G (VOL. (C.Y.)) | THRUST (TONS) | Δ = 67.50° | | | | Δ = 90° | | | | | | | | | | |
|------------|-----------------|---------------|------------|---------|---------------|-------------|---------|---------|---------------|-------------|-------|------|------|-------|------|------|------|
| | | | A (FT.) | B (FT.) | THRUST (TONS) | VOL. (C.Y.) | A (FT.) | B (FT.) | THRUST (TONS) | VOL. (C.Y.) | | | | | | | |
| 4.6,8 | 2.1 | 5.6 | 3.0 | 2.0 | 0.3 | 2.0 | 1.5 | 0.2 | 4.6,8 | 2.7 | 7.1 | 5.0 | 1.5 | 0.4 | 2.0 | 2.0 | 0.2 |
| 10,12 | 3.1 | 12.8 | 5.5 | 2.5 | 0.8 | 3.5 | 2.0 | 0.4 | 10,12 | 4.0 | 16.0 | 6.5 | 2.5 | 1.0 | 3.5 | 2.5 | 0.5 |
| 16,18 | 4.7 | 28.3 | 7.5 | 4.0 | 1.5 | 5.5 | 3.0 | 0.9 | 16,18 | 6.0 | 36.0 | 9.0 | 4.0 | 2.4 | 4.5 | 4.0 | 1.0 |
| 20 | 5.2 | 34.9 | 9.0 | 4.0 | 2.3 | 5.5 | 3.5 | 1.2 | 20 | 6.6 | 44.4 | 10.0 | 4.5 | 3.1 | 6.0 | 4.0 | 1.5 |
| 24 | 6.2 | 50.3 | 11.5 | 4.5 | 3.5 | 6.5 | 4.0 | 1.6 | 24 | 7.9 | 64.0 | 14.5 | 4.5 | 5.0 | 8.0 | 4.0 | 2.1 |
| 30 | 7.8 | 58.9 | 12.0 | 5.0 | 4.8 | 7.5 | 4.0 | 2.2 | 30 | 9.9 | 75.0 | 15.0 | 5.0 | 6.7 | 10.0 | 4.0 | 3.3 |
| 36 | 9.4 | 84.9 | 14.5 | 6.0 | 8.2 | 8.5 | 4.5 | 3.8 | 36 | 11.9 | 108.0 | 18.0 | 6.0 | 11.4 | 12.0 | 5.5 | 5.3 |
| 42 | 10.9 | 115.5 | 17.0 | 7.0 | 12.8 | 11.0 | 5.5 | 6.3 | 42 | 13.9 | 147.0 | 21.0 | 7.0 | 17.8 | 14.0 | 5.5 | 8.7 |
| 48 | 12.5 | 150.9 | 19.0 | 8.0 | 18.4 | 13.0 | 6.0 | 9.2 | 48 | 15.9 | 192.0 | 24.0 | 8.0 | 26.2 | 16.0 | 6.0 | 12.4 |
| 54 | 14.0 | 191.0 | 21.5 | 9.0 | 26.0 | 15.0 | 6.5 | 12.9 | 54 | 17.9 | 243.0 | 27.0 | 9.0 | 36.9 | 18.0 | 7.0 | 18.1 |
| 60 | 15.6 | 235.8 | 24.0 | 10.0 | 35.6 | 16.0 | 7.5 | 17.6 | 60 | 19.9 | 299.8 | 30.0 | 10.0 | 50.3 | 20.0 | 7.5 | 24.0 |
| 66 | 17.1 | 285.3 | 26.0 | 11.0 | 46.0 | 18.0 | 8.0 | 23.0 | 66 | 21.8 | 362.8 | 33.0 | 11.0 | 66.2 | 22.0 | 8.5 | 32.5 |
| 72 | 18.7 | 339.5 | 28.5 | 12.0 | 57.8 | 19.0 | 9.0 | 28.4 | 72 | 23.8 | 431.8 | 36.0 | 12.0 | 85.6 | 24.0 | 9.0 | 41.0 |
| 78 | 20.2 | 398.5 | 31.0 | 13.0 | 70.7 | 21.0 | 9.5 | 37.4 | 78 | 25.7 | 506.7 | 39.0 | 13.0 | 108.2 | 26.0 | 10.0 | 53.2 |
| 84 | 21.8 | 462.1 | 33.5 | 14.0 | 84.7 | 22.0 | 10.5 | 46.5 | 84 | 27.7 | 587.7 | 42.0 | 14.0 | 134.4 | 28.0 | 10.5 | 64.8 |
| 90 | 23.3 | 530.5 | 35.5 | 15.0 | 114.4 | 24.5 | 11.0 | 58.2 | 90 | 29.0 | 674.6 | 45.0 | 15.0 | 164.9 | 30.0 | 11.5 | 81.2 |
| 96 | 24.9 | 603.6 | 38.0 | 16.0 | 138.9 | 26.5 | 12.0 | 70.0 | 96 | 31.6 | 787.5 | 48.0 | 16.0 | 199.0 | 32.0 | 12.0 | 95.1 |

FRISCO STANDARD CONSTRUCTION DETAIL
HORIZONTAL THRUST BLOCK AT PIPE BEND
 SHEET 3 OF 3
 SCALE: N.T.S.
 REVISED: MAR 2012
 W03



ELEVATION B-B

SECTION A-A

| Δ | 11.25° | 22.50° | 30° | 45° | 67.50° | 90° | Δ |
|---------------|--------|--------|-------|------|--------|------|---------------|
| I.D. (IN.) | 4.6,8 | 10,12 | 16,18 | 20 | 24 | 30 | I.D. (IN.) |
| THRUST (TONS) | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 | THRUST (TONS) |
| VOL. (C.Y.) | 2.0 | 4.0 | 6.0 | 8.0 | 10.0 | 12.0 | VOL. (C.Y.) |
| THRUST (TONS) | 2.5 | 5.0 | 7.5 | 10.0 | 12.5 | | |

| RFID Marker Locations Lebanon Road Lift Station, Force Main, and Gravity Improvements Phase I* | | | | | | | | | | | | |
|--|----------|-----------------|-------------------------|----------------|--------------------|-------------|------------|----------|---------|-----------------------------------|------------------------|---|
| Sheet/LINE | # | STA | Marker Type | Utility | Owner ¹ | Description | Status | Material | Size | Approx. Depth to Top of Pipe (ft) | Marker Bury Depth (ft) | Approx. Depth from Marker to Top of Pipe (ft) |
| FM-1 | 1 | 2+62.73 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 14.91 | 4.0 | 10.91 |
| | 2 | 4+62.73 | Ball Wastewater | Wastewater | City of Frisco | Pathway | Active | PVC | 20" | 11.33 | 4.0 | 7.33 |
| | 3 | 4+84.59 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 11.72 | 4.0 | 7.72 |
| | 4 | 4+90.27 | Ball Wastewater | Wastewater | City of Frisco | Crossing | Abandoned | PVC | 30" | 23.54 | 4.0 | 19.54 |
| | 5 | 6+00.66 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 20" | 20.23 | 4.0 | 16.23 |
| | 6 | 6+16.12 | Ball Gas | Gas | CoServ | Crossing | Unknown | TBD | TBD | TBD | 4.0 | TBD |
| | 7 | 6+40.42 | Ball Gas | Gas | CoServ | Crossing | Unknown | TBD | TBD | TBD | 4.0 | TBD |
| | 8 | 6+77.97 | Ball Gas | Gas | CoServ | Crossing | Unknown | TBD | TBD | TBD | 4.0 | TBD |
| FM-2 | 9 | 7+01.16 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 20" | 12.55 | 4.0 | 8.55 |
| | 10 | 7+68.36 | Ball Reuse Water | Reuse Water | City of Frisco | Crossing | Active | PVC | 6" | 9.60 | 4.0 | 5.60 |
| | 11 | 7+72.42 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 11.31 | 4.0 | 7.31 |
| | 12 | 7+98.11 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 11.58 | 4.0 | 7.58 |
| | 13 | 8+10.00 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 20" | 11.36 | 4.0 | 7.36 |
| | 14 | 8+61.03 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 13.19 | 4.0 | 9.19 |
| | 15 | 8+85.69 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 14.07 | 4.0 | 10.07 |
| | 16 | 10+56.01 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 20" | 8.57 | 4.0 | 4.57 |
| | 17 | 10+65.54 | Ball Reuse Water | Reuse Water | City of Frisco | Crossing | Active | PVC | 12" | 12.50 | 4.0 | 8.50 |
| | 18 | 10+81.06 | Ball Wastewater | Wastewater | City of Frisco | Crossing | Active | PVC | 24" | 5.67 | 4.0 | 1.67 |
| | 19 | 10+88.06 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 10.23 | 4.0 | 6.23 |
| | 20 | 10+95.09 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 10.06 | 4.0 | 6.06 |
| | 21 | 11+16.12 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 10.45 | 4.0 | 6.45 |
| | 22 | 11+23.21 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 8.82 | 4.0 | 4.82 |
| | 23 | 11+85.00 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 20" | 7.95 | 4.0 | 3.95 |
| | 24 | 13+10.78 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 12.90 | 4.0 | 8.90 |
| | 25 | 13+26.08 | Ball Wastewater | Wastewater | City of Frisco | Crossing | Active | PVC | 24" | 8.65 | 4.0 | 4.65 |
| | 26 | 13+33.89 | Near Surface Gas | Gas | CoServ | Crossing | Active | Steel | 4" | 3.48 | 1.5 | 1.98 |
| | 27 | 13+41.84 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 20" | 12.15 | 4.0 | 8.15 |
| | 28 | 13+45.33 | Ball Wastewater | Wastewater | City of Frisco | Crossing | Active | PVC | 30" | 22.94 | 4.0 | 18.94 |
| 29 | 13+58.04 | Ball Wastewater | Wastewater | City of Frisco | Crossing | Active | Fiberglass | 42" | 22.50 | 4.0 | 18.50 | |
| FM-3 | 30 | 14+95.18 | Near Surface Gas | Gas | CoServ | Crossing | Active | Steel | 4" | 6.10 | 1.5 | 4.60 |
| | 31 | 15+02.75 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 20" | 9.55 | 4.0 | 5.55 |
| | 32 | 15+84.02 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 11.17 | 4.0 | 7.17 |
| | 33 | 15+91.36 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 11.23 | 4.0 | 7.23 |
| | 34 | 17+84.69 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 14.02 | 4.0 | 10.02 |
| | 35 | 19+75.00 | Ball Wastewater | Wastewater | City of Frisco | Pathway | Active | PVC | 20" | 13.94 | 4.0 | 9.94 |
| | 36 | 19+92.57 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 14.46 | 4.0 | 10.46 |
| | 37 | 19+97.58 | Ball Reuse Water | Reuse Water | City of Frisco | Crossing | Active | PVC | 12" | 11.31 | 4.0 | 7.31 |
| | 38 | 20+12.65 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 20" | 13.77 | 4.0 | 9.77 |
| | 39 | 20+40.99 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 20" | 8.30 | 4.0 | 4.30 |
| FM-4 | 40 | 21+11.62 | Ball Gas | Gas | Atmos | Crossing | Abandoned | Steel | 20" | 12.54 | 4.0 | 8.54 |
| | 41 | 21+61.03 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 8.43 | 4.0 | 4.43 |
| | 42 | 21+92.37 | Near Surface Telecom | Fiber | Unknown | Crossing | Active | Unknown | Unknown | 1.67 | 0.5 | 1.17 |
| | 43 | 22+51.03 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 8.28 | 4.0 | 4.28 |
| | 44 | 22+77.13 | Near Surface Telecom | Fiber | Unknown | Crossing | Active | Unknown | Unknown | 1.72 | 0.5 | 1.22 |
| | 45 | 22+80.68 | Near Surface Telecom | Fiber | Unknown | Crossing | Active | Unknown | Unknown | 1.74 | 0.5 | 1.24 |
| | 46 | 23+29.07 | Near Surface Electrical | Elec | Unknown | Crossing | Active | Unknown | Unknown | 2.79 | 0.5 | 2.29 |
| | 47 | 23+32.79 | Near Surface Electrical | Elec | Unknown | Crossing | Active | Unknown | Unknown | 2.81 | 0.5 | 2.31 |
| | 48 | 23+67.84 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 20" | 7.81 | 4.0 | 3.81 |
| | 49 | 24+03.56 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 20" | 14.71 | 4.0 | 10.71 |
| FM-5 | 50 | 26+44.99 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 20" | 11.26 | 4.0 | 7.26 |
| | 51 | 26+67.93 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 20" | 6.60 | 4.0 | 2.60 |
| | 52 | 28+67.93 | Ball Wastewater | Wastewater | City of Frisco | Pathway | Active | PVC | 20" | 6.14 | 4.0 | 2.14 |
| | 53 | 29+28.66 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 6.20 | 4.0 | 2.20 |
| | 54 | 30+18.65 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 5.92 | 4.0 | 1.92 |
| | 55 | 32+18.65 | Ball Wastewater | Wastewater | City of Frisco | Pathway | Active | PVC | 20" | 5.86 | 4.0 | 1.86 |
| FM-6 | 56 | 33+29.41 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 20" | 6.00 | 4.0 | 2.00 |
| | 57 | 33+53.04 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 20" | 10.63 | 4.0 | 6.63 |
| | 58 | 35+04.74 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 20" | 12.18 | 4.0 | 8.18 |
| | 59 | 35+17.39 | Near Surface Telecom | Fiber | Unknown | Crossing | Active | TBD | TBD | 2.69 | 1.5 | 1.19 |
| | 60 | 35+26.72 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 20" | 7.88 | 4.0 | 3.88 |
| | 61 | 36+79.52 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 8.37 | 4.0 | 4.37 |
| 62 | 37+69.42 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 8.58 | 4.0 | 4.58 | |

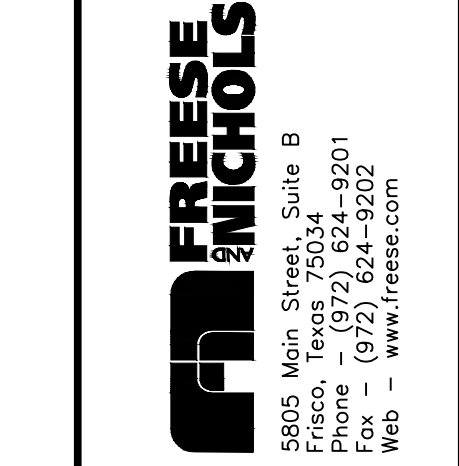
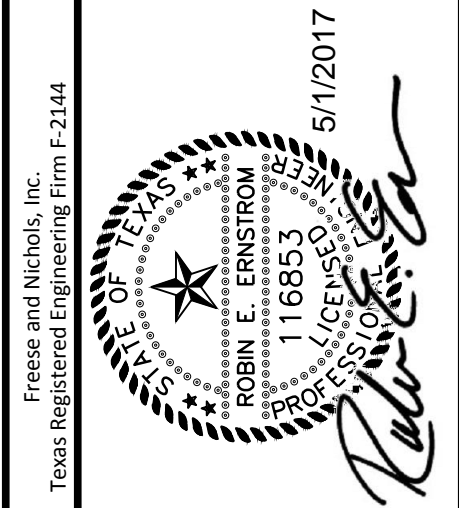
| RFID Marker Locations Lebanon Road Lift Station, Force Main, and Gravity Improvements Phase I* | | | | | | | | | | | | |
|--|-----|-----------|------------------------------|-------------|--------------------|-------------|--------|----------|------|-----------------------------------|------------------------|---|
| Sheet/LINE | # | STA | Marker Type | Utility | Owner ¹ | Description | Status | Material | Size | Approx. Depth to Top of Pipe (ft) | Marker Bury Depth (ft) | Approx. Depth from Marker to Top of Pipe (ft) |
| FM-7 | 63 | 39+50.00 | Ball Wastewater | Wastewater | City of Frisco | Pathway | Active | PVC | 20" | 8.74 | 4.0 | 4.74 |
| | 64 | 39+75.72 | Near Surface General Purpose | Storm Water | City of Frisco | Crossing | Active | RCP | 18" | 2.47 | 1.5 | 0.97 |
| | 65 | 41+75.72 | Ball Wastewater | Wastewater | City of Frisco | Pathway | Active | PVC | 20" | 9.62 | 4.0 | 5.62 |
| FM-16 | 66 | 42+72.45 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 20" | 9.86 | 4.0 | 5.86 |
| | 67 | 103+40.10 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 20" | 9.29 | 4.0 | 5.29 |
| | 68 | 103+65.84 | Near Surface Gas | Gas | Atmos | Crossing | Active | TBD | 8" | 3.71 | 1.5 | 2.21 |
| | 69 | 103+97.22 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 20" | 10.24 | 4.0 | 6.24 |
| FM-17 | 70 | 104+76.77 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 18" | 10.29 | 4.0 | 6.29 |
| | 71 | 105+72.13 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 18" | 6.02 | 4.0 | 2.02 |
| | 72 | 105+86.41 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 18" | 6.34 | 4.0 | 2.34 |
| | 73 | 107+86.41 | Ball Wastewater | Wastewater | City of Frisco | Pathway | Active | PVC | 18" | 7.94 | 4.0 | 3.94 |
| | 74 | 109+86.41 | Ball Wastewater | Wastewater | City of Frisco | Pathway | Active | PVC | 18" | 9.92 | 4.0 | 5.92 |
| FM-18 | 75 | 110+03.46 | Ball General Purpose | Storm Water | City of Frisco | Crossing | Active | RCP | 18" | 6.16 | 4.0 | 2.16 |
| | 76 | 111+54.79 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 18" | 6.10 | 4.0 | 2.10 |
| | 77 | 113+54.79 | Ball Wastewater | Wastewater | City of Frisco | Pathway | Active | PVC | 18" | 6.70 | 4.0 | 2.70 |
| FM-19 | 78 | 115+54.79 | Ball Wastewater | Wastewater | City of Frisco | Pathway | Active | PVC | 18" | 7.45 | 4.0 | 3.45 |
| | 79 | 117+50.00 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 18" | 7.12 | 4.0 | 3.12 |
| FM-20 | 80 | 119+50.00 | Ball Wastewater | Wastewater | City of Frisco | Pathway | Active | PVC | 18" | 6.57 | 4.0 | 2.57 |
| | 81 | 120+91.03 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 18" | 6.01 | 4.0 | 2.01 |
| | 82 | 122+91.03 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 18" | 6.15 | 4.0 | 2.15 |
| | 83 | 123+00.00 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 18" | 6.02 | 4.0 | 2.02 |
| | 84 | 125+00.00 | Ball Wastewater | Wastewater | City of Frisco | Pathway | Active | PVC | 18" | 6.08 | 4.0 | 2.08 |
| | 85 | 125+05.76 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 18" | 6.03 | 4.0 | 2.03 |
| | 86 | 125+36.21 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 18" | 18.69 | 4.0 | 14.69 |
| | 87 | 125+43.28 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 18" | 18.69 | 4.0 | 14.69 |
| | 88 | 127+43.28 | Ball Wastewater | Wastewater | City of Frisco | Pathway | Active | PVC | 18" | 18.76 | 4.0 | 14.76 |
| | 89 | 127+68.52 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 18" | 16.54 | 4.0 | 12.54 |
| | 90 | 127+75.59 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 18" | 16.50 | 4.0 | 12.50 |
| | 91 | 129+10.49 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 18" | 16.30 | 4.0 | 12.30 |
| FM-21 | 92 | 129+69.73 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 18" | 6.98 | 4.0 | 2.98 |
| | 93 | 130+70.23 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 18" | 6.15 | 4.0 | 2.15 |
| | 94 | 131+55.39 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 18" | 6.24 | 4.0 | 2.24 |
| | 95 | 132+40.98 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 18" | 6.48 | 4.0 | 2.48 |
| | 96 | 133+39.34 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 18" | 6.86 | 4.0 | 2.86 |
| | 97 | 133+85.78 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 18" | 7.03 | 4.0 | 3.03 |
| | 98 | 134+32.22 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 18" | 7.03 | 4.0 | 3.03 |
| | 99 | 134+56.99 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 18" | 7.23 | 4.0 | 3.23 |
| | 100 | 134+81.76 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 18" | 8.10 | 4.0 | 4.10 |
| | 101 | 134+93.35 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 18" | 8.57 | 4.0 | 4.57 |
| FM-22 | 102 | 135+00.42 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 18" | 8.79 | 4.0 | 4.79 |
| | 103 | 136+71.54 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 18" | 6.34 | 4.0 | 2.34 |
| | 104 | 137+15.29 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 18" | 6.75 | 4.0 | 2.75 |
| | 105 | 137+57.58 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 18" | 6.38 | 4.0 | 2.38 |
| | 106 | 137+89.84 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 18" | 6.05 | 4.0 | 2.05 |
| | 107 | 139+46.70 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 18" | 7.18 | 4.0 | 3.18 |
| | 108 | 140+00.00 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 18" | 6.05 | 4.0 | 2.05 |
| | 109 | 140+75.00 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 18" | 11.23 | 4.0 | 7.23 |
| | 110 | 141+78.90 | Near Surface Water | Water | City of Frisco | Crossing | Active | TBD | 12" | 3.95 | 1.5 | 2.45 |
| | 111 | 142+57.79 | Ball Wastewater | Wastewater | City of Frisco | Bend | Active | PVC | 18" | 7.28 | 4.0 | 3.28 |
| FM-23 | 112 | 142+91.71 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 18" | 6.25 | 4.0 | 2.25 |
| | 113 | 143+60.19 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 18" | 11.47 | 4.0 | 7.47 |
| | 114 | 144+07.07 | Ball Wastewater | Wastewater | City of Frisco | PVI | Active | PVC | 18" | 10.69 | 4.0 | 6.69 |
| | 115 | 144+18.48 | | | | | | | | | | |

RFID Marker Table Lebanon Road Lift Station, Force Main, and Gravity Improvements Phase I

| # | STA | Latitude | Longitude | Serial No. | Marker Type | Utility | Question 1 | Question 2 | Question 3 | Question 4 | Question 5 | Question 6 | |
|----|-----|----------|-----------|------------|-------------|---------|------------|-------------|------------|------------|------------|-----------------------------------|------------------------|
| | | | | | | | Owner | Description | Status | Material | Size | Approx. Depth to Top of Pipe (ft) | Marker Bury Depth (ft) |
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RFID Marker Table Lebanon Road Lift Station, Force Main, and Gravity Improvements Phase I

| # | STA | Latitude | Longitude | Serial No. | Marker Type | Utility | Question 1 | Question 2 | Question 3 | Question 4 | Question 5 | Question 6 | |
|-----|-----|----------|-----------|------------|-------------|---------|------------|-------------|------------|------------|------------|-----------------------------------|------------------------|
| | | | | | | | Owner | Description | Status | Material | Size | Approx. Depth to Top of Pipe (ft) | Marker Bury Depth (ft) |
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CITY OF FRISCO, TEXAS
**LEBANON ROAD IMPROVEMENTS
 AND FORCE MAIN**
 CIVIL
RFID TABLES

| | | | | | |
|-----|--------------|----|------|-------------|-------------|
| NO. | ISSUE | BY | DATE | F&N JOB NO. | FRCL5624 |
| 0 | VERIFY SCALE | | | DATE | APR. 2017 |
| | | | | DESIGNED | REE |
| | | | | DRAWN | LMR |
| | | | | REVISED | |
| | | | | CHECKED | CCB |
| | | | | FILE NAME | CV-ALL-RFID |