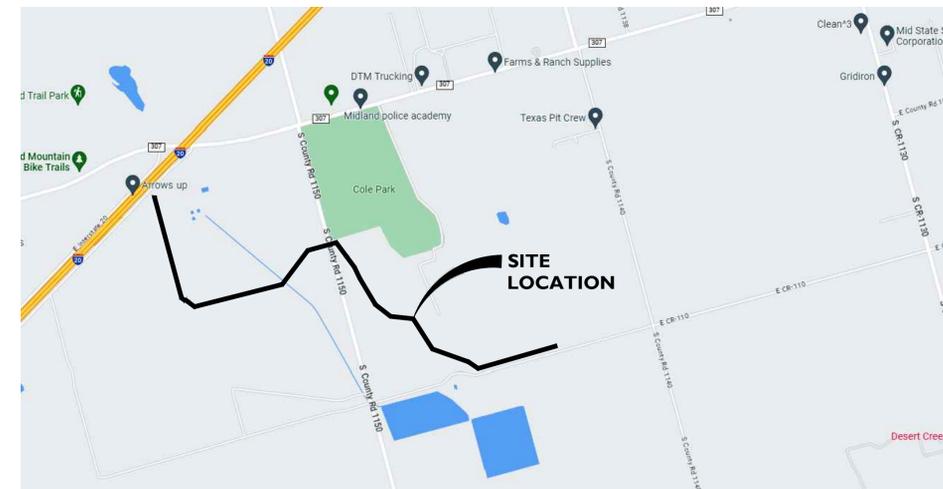


# REGIONAL SOUTHEAST WASTE WATER LIFT STATION AND FORCE MAIN CONNECTION

BEING 324.97 ACRE TRACT OF LAND OUT AND AND PART OF SECTION 4, BLOCK 38, T-2-S  
CITY OF MIDLAND, MIDLAND COUNTY, TEXAS

## UTILITY CONSTRUCTION PLANS



VICINITY MAP  
N.T.S.

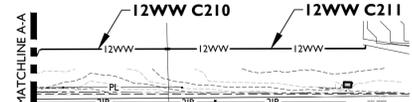
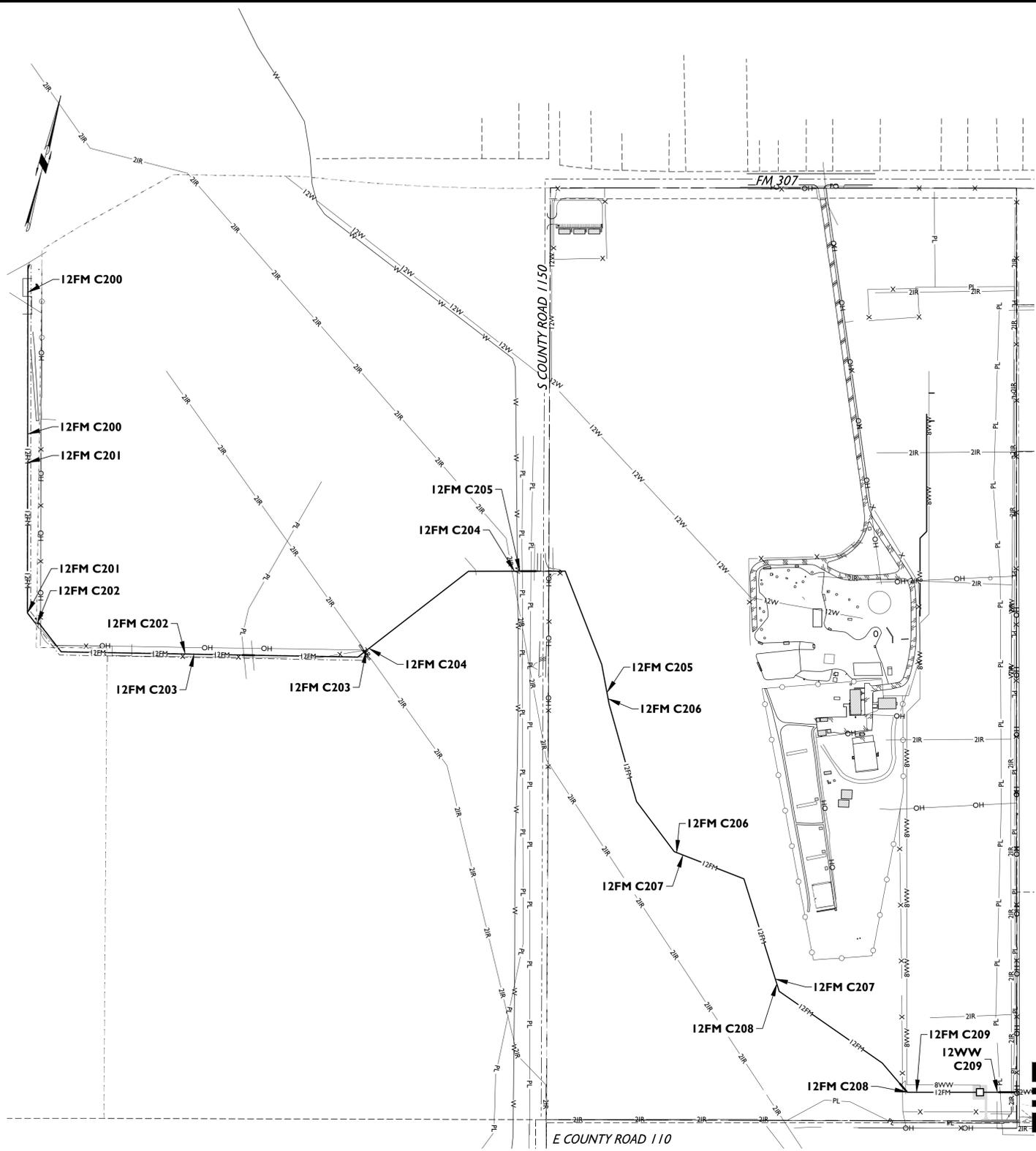
### ENGINEER'S NOTES

- CONTRACTOR TO VERIFY ALL EXISTING UTILITY TIE-IN CONNECTIONS AND VERIFY LOCATION AND ELEVATION PRIOR TO CONSTRUCTION OR EQUIPMENT MOBILIZATION.
- CONTRACTOR TO BUILD SEWER FROM TIE-IN POINT (A.K.A. DOWNHILL) AND PROCEED UPHILL.
- CITY OF MIDLAND TO BE NOTIFIED 48 HOURS BEFORE ANY CONSTRUCTION BEGINS.
- PIPE DEFLECTION IS TO BE PER MANUFACTURER'S RECOMMENDATIONS OR PER CITY REQUIREMENTS, WHICHEVER ALLOWS THE LESSER AMOUNT OF DEFLECTION.
- ALL UTILITIES TO BE INSTALLED PER TEXAS ADMINISTRATIVE CODE (TAC) STANDARD SEPARATION SPECIFICATIONS.
- A TWO (2) FOOT MINIMUM VERTICAL SEPARATION IS TO BE PROVIDED BETWEEN ANY SEWER MAIN/LINE CROSSING A WATER MAIN/LINE.
- EXCEPTIONS OR DEVIATIONS FROM THE ABOVE MINIMUM CLEARANCES MUST BE APPROVED AND SHOWN ON THE APPROVED WATER AND SEWER PLANS. WHEN UTILITY CONFLICTS ARE FOUND DURING CONSTRUCTION, ALL CHANGES AND REVISIONS MUST BE PRECEDED BY AN APPROVED PLAN REVISION.
- ANY AND ALL MORE STRINGENT REQUIREMENTS REQUIRED BY FEDERAL, STATE, COUNTY OR LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
- ALL CONSTRUCTION IN THE RIGHT OF WAY IS TO CONFORM TO THE CITY OF MIDLAND STANDARDS.
- ALL CONSTRUCTION ON SITE IS TO CONFORM TO MAVERICK ENGINEERING NOTES AND DETAIL SHEETS.
- CONCRETE OR ASPHALT DAMAGED DURING THE COURSE OF CONSTRUCTION IS TO BE REMOVED AND REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE ENGINEER OR THE CITY OF MIDLAND PRIOR TO FINAL INSPECTION.
- SANITARY SEWER IS TO BE PVC-SDR-35 UNLESS NOTED OTHERWISE.
- WATER IS TO BE C-900 PVC PIPE UNLESS NOTED OTHERWISE.
- THE CONTRACTOR IS TO PROVIDE ALL THRUST BLOCKING AT ALL FITTINGS AND BENDS AS REQUIRED, COMPLY WITH DETAILS IN THE CITY OF MIDLAND'S DESIGN & CONSTRUCTION STANDARDS.
- THE CONTRACTOR IS TO KEEP ALL EXISTING WATER AND SEWER MAINS IN SERVICE DURING CONSTRUCTION.
- ANY PROPOSED GAS LINES SHOWN ARE FOR SCHEMATIC PLANNING PURPOSES ONLY. ACTUAL GAS LINE ROUTES ARE TO BE NEGOTIATED BETWEEN THE CONTRACTOR AND THE GAS UTILITY PROVIDER. MAVERICK ENGINEERING DOES NOT ENGAGE IN GAS LINE DESIGN. PLEASE CONSULT WITH YOUR M.E.P. PLAN PROVIDER AND GAS UTILITY PROVIDER FOR GAS LINE DESIGN.
- CONTRACTORS PERFORMING ANY WORK ON, EXTENSIONS OF, OR CONNECTIONS TO ANY PUBLIC WATER, WASTEWATER, OR UNDERGROUND STORM DRAIN SYSTEM MUST FIRST PROVIDE DOCUMENTATION TO THE CITY OF MIDLAND SHOWING THAT THE CONTRACTOR POSSESSES ACTIVE LICENSES THAT ARE EQUIVALENT TO, OR HIGHER THAN:
  - A "WATER OPERATOR D" LICENSE AND
  - EITHER A "WASTEWATER D" LICENSE OR A "CLASS I COLLECTIONS" LICENSE

BOTH OF THESE LICENSES MUST BE ACTIVE AND MAINTAINED WHILE THE CONTRACTOR PERFORMS ANY WORK RELATED TO PUBLIC UTILITY CONNECTIONS. IF A CONTRACTOR ALLOWS EITHER, OR BOTH, OF THE REQUIRED LICENSES TO LAPSE AT ANY TIME DURING THE COURSE OF THE PROJECT WORK DESCRIBED IN THIS NOTE, THEN ALL WORK UNDER THE PROJECT IS TO BE HALTED. WORK IS NOT TO RESUME UNTIL ADEQUATE DOCUMENTATION OF THE RENEWED LICENSES (OR NEW, PROPERLY LICENSED CONTRACTOR) ARE PROVIDED TO THE CITY OF MIDLAND.

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### BENCHMARK:

SURVEY PERFORMED BY MAVERICK ENGINEERING. CONTACT MAVERICK ENGINEERING, PRIOR TO CONSTRUCTION TO SET UP A PROJECT BENCHMARK OR CONTROL STAKING 432-262-0999

### ENGINEER

ANDREW L. MELLEN P.E.  
MAVERICK ENGINEERING  
1909 WEST WALL STREET, STE. K  
MIDLAND, TX 79701  
TELEPHONE: (432) 262-0999

### DEVELOPER / OWNER



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Tel: (432) 262-0999 Fax: (432) 262-0989  
ENGINEER FIRM #: E-15089  
SURVEY FIRM #: 10194452  
www.Maverick-Eng.com



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APPR.	
BY	
REVISIONS	

DRAWN BY: GJA	CHECKED BY: CLB
APPROVED BY: CLB	DATE: 11/12/2024
JOB: 240024	

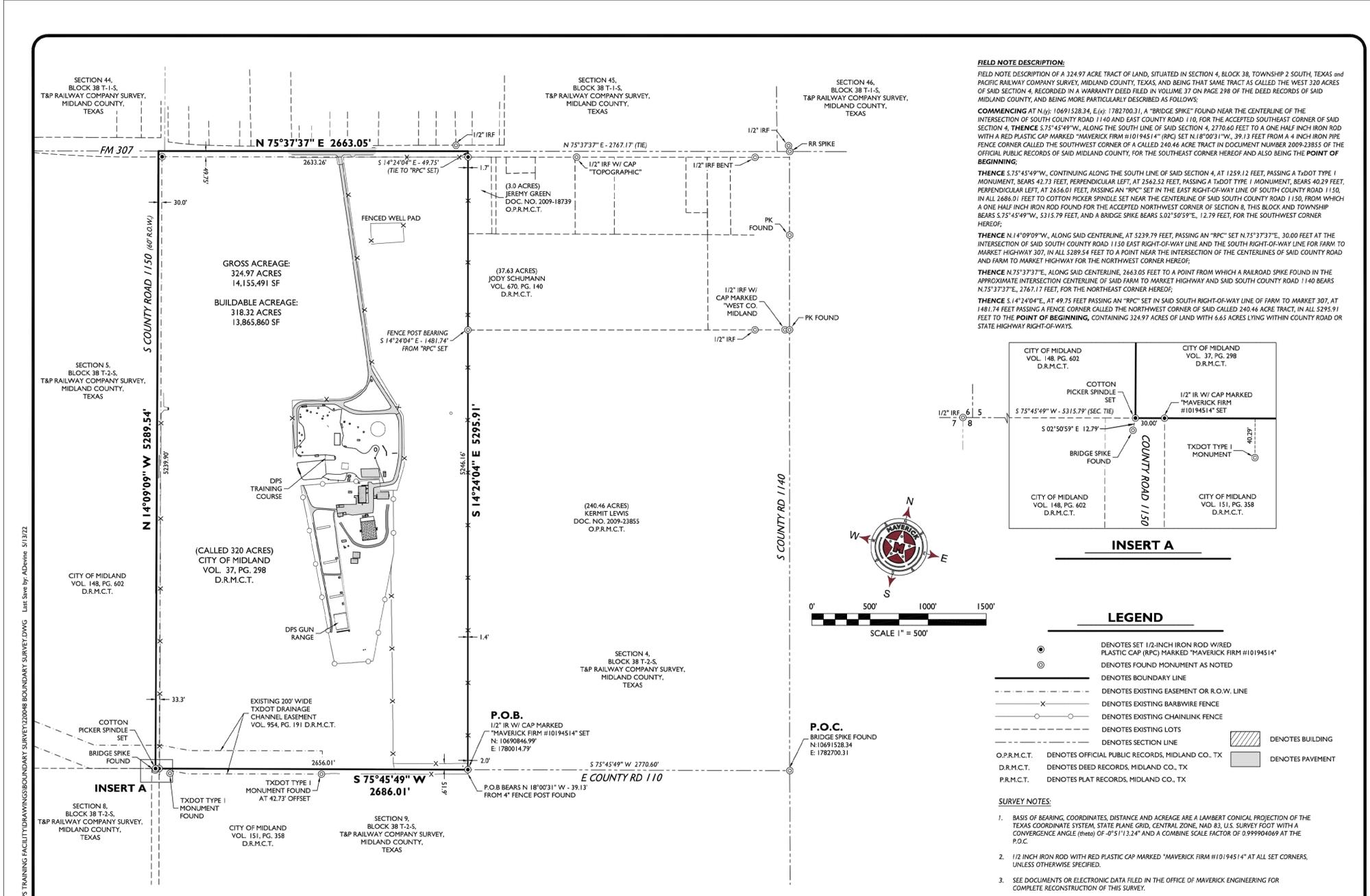


Know what's below.  
Call before you dig.

**COVER SHEET**  
UTILITY CONSTRUCTION PLANS  
REGIONAL SE WASTE WATER LIFT  
STATION AND FORCE MAIN CONNECTION  
BEING 324.97 ACRE TRACT OF LAND OUT  
OF AND PART OF SECTION 4, BLOCK 38, T-2-S  
CITY OF MIDLAND, MIDLAND COUNTY, TEXAS



F:\2023\130046-MANDALL COTT ARCHITECTS\DRS MASTER PLAN PHASE I\DRAWINGS\CIVIL CONSTRUCTION PLANS\FORCED MAIN LINE\3060 C100 COVER.DWG  
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**FIELD NOTE DESCRIPTION:**  
FIELD NOTE DESCRIPTION OF A 324.97 ACRE TRACT OF LAND, SITUATED IN SECTION 4, BLOCK 38, TOWNSHIP 2 SOUTH, TEXAS and PACIFIC RAILWAY COMPANY SURVEY, MIDLAND COUNTY, TEXAS, AND BEING THAT SAME TRACT AS CALLED THE WEST 320 ACRES OF SAID SECTION 4, RECORDED IN A WARRANTY DEED FILED IN VOLUME 37 ON PAGE 298 OF THE DEED RECORDS OF SAID MIDLAND COUNTY, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

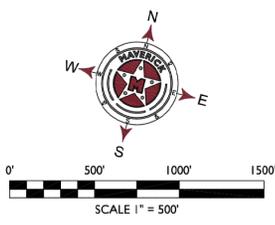
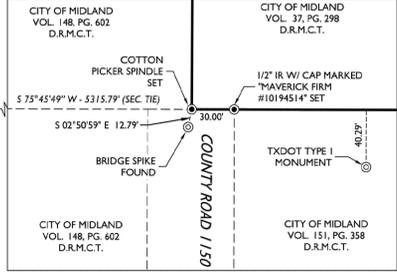
**COMMENCING** AT N 18°03'11" W - 39.13 FEET FROM A 4 INCH IRON PIPE WITH A RED PLASTIC CAP MARKED "MAVERICK FIRM #10194514" (RPC) SET N 18°03'11" W - 39.13 FEET FROM A 4 INCH IRON PIPE FENCE CORNER CALLED THE SOUTHWEST CORNER OF A CALLED 240.46 ACRE TRACT IN DOCUMENT NUMBER 2009-23855 OF THE OFFICIAL PUBLIC RECORDS OF SAID MIDLAND COUNTY, FOR THE SOUTHWEST CORNER HEREOF AND ALSO BEING THE POINT OF BEGINNING;

**THENCE** S 75°45'49"W, CONTINUING ALONG THE SOUTH LINE OF SAID SECTION 4, AT 1259.12 FEET, PASSING A TxDOT TYPE 1 MONUMENT, BEARS 42.73 FEET, PERPENDICULAR LEFT, AT 2562.52 FEET, PASSING AN "RPC" SET N 75°37'37"E, 30.00 FEET AT THE INTERSECTION OF SAID SOUTH COUNTY ROAD 1150 EAST RIGHT-OF-WAY LINE AND THE SOUTH RIGHT-OF-WAY LINE FOR FARM TO MARKET HIGHWAY 307, IN ALL 5289.54 FEET TO A POINT NEAR THE INTERSECTION OF THE CENTERLINES OF SAID COUNTY ROAD AND FARM TO MARKET HIGHWAY FOR THE NORTHWEST CORNER HEREOF;

**THENCE** N 14°09'09"W, ALONG SAID CENTERLINE, AT 5239.79 FEET, PASSING AN "RPC" SET N 75°37'37"E, 30.00 FEET AT THE INTERSECTION OF SAID SOUTH COUNTY ROAD 1150 EAST RIGHT-OF-WAY LINE AND THE SOUTH RIGHT-OF-WAY LINE FOR FARM TO MARKET HIGHWAY 307, IN ALL 5289.54 FEET TO A POINT NEAR THE INTERSECTION OF THE CENTERLINES OF SAID COUNTY ROAD AND FARM TO MARKET HIGHWAY FOR THE NORTHWEST CORNER HEREOF;

**THENCE** N 75°37'37"E, ALONG SAID CENTERLINE, 2463.05 FEET TO A POINT FROM WHICH A RAILROAD SPIKE FOUND IN THE APPROXIMATE INTERSECTION CENTERLINE OF SAID FARM TO MARKET HIGHWAY AND SAID SOUTH COUNTY ROAD 1140 BEARS N 75°37'37"E, 2767.17 FEET, FOR THE NORTHEAST CORNER HEREOF;

**THENCE** S 14°24'04"E, AT 49.75 FEET PASSING AN "RPC" SET IN SAID SOUTH RIGHT-OF-WAY LINE OF FARM TO MARKET 307, AT 1481.74 FEET PASSING A FENCE CORNER CALLED THE NORTHWEST CORNER OF SAID CALLED 240.46 ACRE TRACT, IN ALL 5295.91 FEET TO THE POINT OF BEGINNING, CONTAINING 324.97 ACRES OF LAND WITH 6.65 ACRES LYING WITHIN COUNTY ROAD OR STATE HIGHWAY RIGHT-OF-WAYS.



**LEGEND**

⊙	DENOTES SET 1/2-INCH IRON ROD W/ WIRE PLASTIC CAP (RPC) MARKED "MAVERICK FIRM #10194514"	▨	DENOTES BUILDING
⊙	DENOTES FOUND MONUMENT AS NOTED	▩	DENOTES PAVEMENT
---	DENOTES BOUNDARY LINE		
- - - -	DENOTES EXISTING EASEMENT OR R.O.W. LINE		
x	DENOTES EXISTING BARB WIRE FENCE		
- - - -	DENOTES EXISTING CHAINLINK FENCE		
- - - -	DENOTES EXISTING LOTS		
- - - -	DENOTES SECTION LINE		
O.P.R.M.C.T.	DENOTES OFFICIAL PUBLIC RECORDS, MIDLAND CO., TX		
D.R.M.C.T.	DENOTES DEED RECORDS, MIDLAND CO., TX		
P.R.M.C.T.	DENOTES PLAT RECORDS, MIDLAND CO., TX		

- SURVEY NOTES:**
1. BASIS OF BEARING, COORDINATES, DISTANCE AND ACREAGE ARE A LAMBERT CONICAL PROJECTION OF THE TEXAS COORDINATE SYSTEM, STATE PLANE GRID, CENTRAL ZONE, NAD 83, U.S. SURVEY FOOT WITH A CONVERGENCE ANGLE (theta) OF -0°51'13.24" AND A COMBINE SCALE FACTOR OF 0.999904069 AT THE P.O.C.
  2. 1/2 INCH IRON ROD WITH RED PLASTIC CAP MARKED "MAVERICK FIRM #10194514" AT ALL SET CORNERS, UNLESS OTHERWISE SPECIFIED.
  3. SEE DOCUMENTS OR ELECTRONIC DATA FILED IN THE OFFICE OF MAVERICK ENGINEERING FOR COMPLETE RECONSTRUCTION OF THIS SURVEY.

APPROVAL DATE: 5.13.2022	SURVEYOR: GS	SCALE: 1" = 500'
REV 1:	DRAWN BY: AD	JOB NO: 220048
REV 2:	APPROVED:	FIELD WORK DATE: 4.21.22 - 5.3.22

I, GREGORY W. SHOULTS, DO HEREBY CERTIFY THAT THE SURVEY INFORMATION FOUND ON THIS PLAN WAS DERIVED FROM FIELD NOTES AND/OR ELECTRONIC DATA OF AN ACTUAL ON-THE-GROUND SURVEY MADE BY ME OR UNDER MY SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A TITLE COMMITMENT AND NO WARRANTY IS MADE OR INTENDED FOR THE LOCATION OF ANY OR ALL EASEMENTS THAT MAY EXIST WITHIN THE BOUNDS OF THIS SURVEY.

*Gregory W. Shoults*  
GREGORY W. SHOULTS  
5356  
MAY 13, 2022

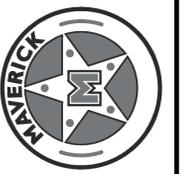


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www.Maverick-Eng.com



**CITY OF MIDLAND**  
**BOUNDARY SURVEY**  
OF A 324.97 ACRE TRACT OF LAND, SITUATED IN SECTION 4, BLOCK 38, TOWNSHIP 2 SOUTH, TEXAS and PACIFIC RAILWAY COMPANY SURVEY, MIDLAND COUNTY, TEXAS, AND BEING THAT SAME TRACT AS CALLED THE WEST 320 ACRES OF SAID SECTION 4, RECORDED IN A WARRANTY DEED FILED IN VOLUME 37 ON PAGE 298 OF THE DEED RECORDS OF SAID MIDLAND COUNTY, TEXAS.

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DRAWN BY: GJA	CLB
CHECKED BY: CLB	CLB
APPROVED BY: CLB	CLB
DATE: 11/12/2024	
JOB: 240024	

**811**  
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**BOUNDARY SURVEY**  
UTILITY CONSTRUCTION PLANS  
REGIONAL SE WASTE WATER LIFT  
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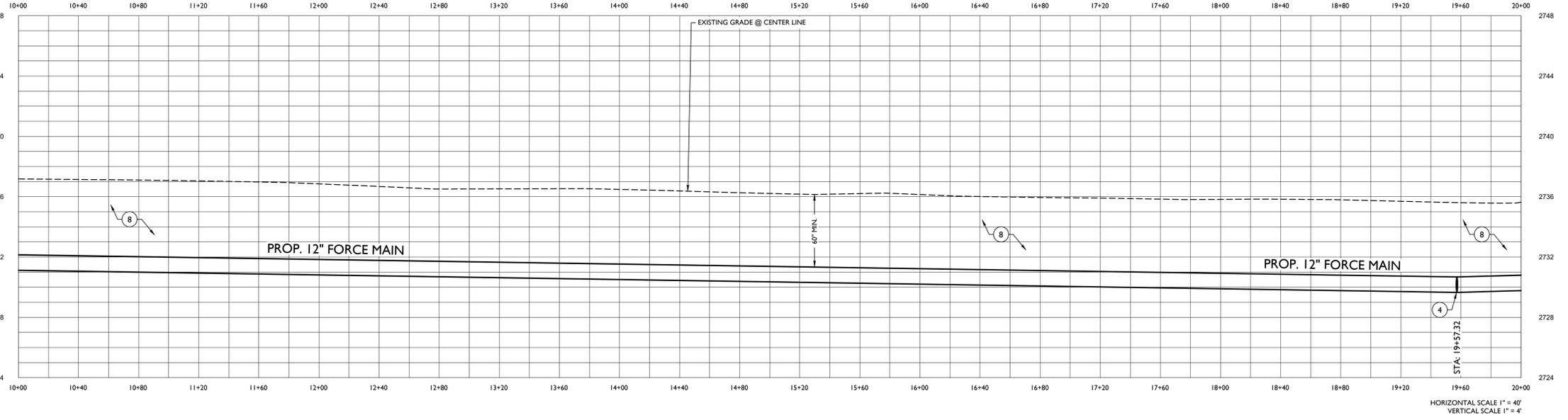
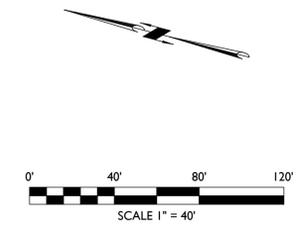
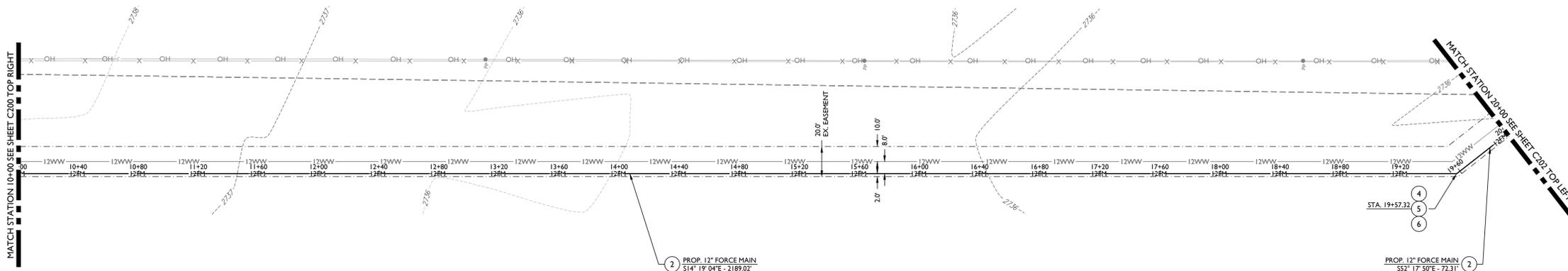
**SURVEY NOTE:**  
THE SURVEY SHOWN ON THIS SHEET IS INCLUDED FOR REFERENCE PURPOSES ONLY. THE SEALING PROFESSIONAL FOR THIS CONSTRUCTION DRAWING SET TAKES NO OWNERSHIP OF THIS SHEET OR THE INFORMATION PROVIDED THEREON, BUT DOES AUTHORIZE IT TO BE PART OF THIS CONSTRUCTION DRAWING SET.





F:\2023\310066-MANDALL LOT ARCHITECTS\DIS MASTER PLAN PHASE 1\DRAWINGS\CIVIL CONSTRUCTION\PLANS\FORCED MAIN LINE\310066\_C201\_P1-1\_RP.DWG

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**LEGEND**

	DENOTES FOUND MONUMENT AS NOTED
	DENOTES EXISTING FIBER OPTIC PEDISTAL
	DENOTES EXISTING KEY PAD
	DENOTES EXISTING LIGHT POLE
	DENOTES EXISTING FLAG POLE
	DENOTES EXISTING A/C PAD
	DENOTES EXISTING ELECTRICAL BOX
	DENOTES EXISTING SEPTIC LID
	DENOTES EXISTING CLEAN OUT
	DENOTES EXISTING LIFT STATION / PAD
	DENOTES EXISTING WATER METER
	DENOTES EXISTING WATER VALVE
	DENOTES EXISTING WATER WELL
	DENOTES EXISTING UTILITY MARKER
	DENOTES EXISTING SPRINKLER CONNECTION
	DENOTES EXISTING PIPELINE MARKER
	DENOTES EXISTING TESTING STATION
	DENOTES EXISTING POWER POLE
	DENOTES EXISTING GUY WIRE
	DENOTES EXISTING SIGN
	DENOTES EXISTING CONTOUR
	DENOTES EXISTING BOUNDARY LINE
	DENOTES EXISTING LOT LINE
	DENOTES EXISTING EASEMENT LINE
	DENOTES EDGE OF ASPHALT
	DENOTES EXISTING FENCE
	DENOTES EXISTING IRRIGATION LINE
	DENOTES EXISTING SALT WATER LINE
	DENOTES EXISTING GAS LINE
	DENOTES EXISTING PIPELINE
	DENOTES EXISTING OVERHEAD ELECTRIC LINE
	DENOTES EXISTING 12" WASTEWATER MAIN
	DENOTES EXISTING 12" WATER MAIN
	DENOTES EXISTING 12" FORCE MAIN LINE
	DENOTES EXISTING 12" WASTEWATER MAIN LINE
	DENOTES EXISTING WASTEWATER MAIN PLUG
	DENOTES PROPOSED MANHOLE

**ENGINEER'S UTILITY NOTES:**

- CONTRACTOR TO VERIFY ALL EXISTING UTILITY TIE-IN CONNECTIONS AND VERIFY LOCATION AND ELEVATION PRIOR TO CONSTRUCTION.
- CONTRACTOR TO BUILD SEWER FROM TIE-IN POINT (A.K.A. DOWNHILL) AND PROCEED UPHILL.
- CITY OF MIDLAND TO BE NOTIFIED 48 HOURS BEFORE ANY CONSTRUCTION BEGINS.
- PIPE DEFLECTION IS TO BE PER MANUFACTURER'S RECOMMENDATIONS OR PER CITY REQUIREMENTS, WHICHEVER ALLOWS THE LESSER AMOUNT OF DEFLECTION.
- ALL UTILITIES TO BE INSTALLED PER TEXAS ADMINISTRATIVE CODE (TAC) STANDARD SEPARATION SPECIFICATIONS.
- IF THE WASTEWATER IS SDR26 D2241 WITH A MINIMUM SEPARATION OF 2' THAN ENCASEMENT IS NOT REQUIRED. IF THERE IS LESS THAN 2' VERTICAL SEPARATION THAN THE WASTEWATER LINE NEEDS TO BE SDR26 D3034 AND ENCASED.
- EXCEPTIONS OR DEVIATIONS FROM THE ABOVE MINIMUM CLEARANCES MUST BE APPROVED AND SHOWN ON THE APPROVED WATER AND WASTEWATER PLANS. WHEN UTILITY CONFLICTS ARE FOUND DURING CONSTRUCTION, ALL CHANGES AND REVISIONS MUST BE PRECEDED BY AN APPROVED PLAN REVISION.
- ANY AND ALL MORE STRINGENT REQUIREMENTS REQUIRED BY FEDERAL, STATE, COUNTY OR LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
- ALL CONSTRUCTION IN THE RIGHT OF WAY IS TO CONFORM TO THE CITY OF MIDLAND STANDARDS.
- ALL CONSTRUCTION ON SITE IS TO CONFORM TO MAVERICK ENGINEERING NOTES AND DETAIL SHEETS.
- CONCRETE OR ASPHALT DAMAGED DURING THE COURSE OF CONSTRUCTION IS TO BE REMOVED AND REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE ENGINEER OR THE CITY OF MIDLAND PRIOR TO FINAL INSPECTION.
- WASTEWATER IS TO BE PVC-SDR-35 UNLESS NOTED OTHERWISE.
- WATER MAIN IS TO BE C-900 PVC PIPE UNLESS NOTED OTHERWISE.
- THE CONTRACTOR IS TO PROVIDE ALL THRUST BLOCKING AT ALL FITTINGS AND BENDS AS REQUIRED. COMPLY WITH DETAILS IN THE CITY OF MIDLAND'S DESIGN & CONSTRUCTION STANDARDS.
- THE CONTRACTOR IS TO KEEP ALL EXISTING WATER AND WASTEWATER MAINS IN SERVICE DURING CONSTRUCTION.
- ANY PROPOSED GAS LINES SHOWN ARE FOR SCHEMATIC PLANNING PURPOSES ONLY. ACTUAL GAS LINE ROUTES ARE TO BE NEGOTIATED BETWEEN THE CONTRACTOR AND THE GAS UTILITY PROVIDER. MAVERICK ENGINEERING DOES NOT ENGAGE IN GAS LINE DESIGN. PLEASE CONSULT WITH YOUR M.E.P. PLAN PROVIDER AND GAS UTILITY PROVIDER FOR GAS LINE DESIGN.
- CONTRACTORS PERFORMING ANY WORK ON, EXTENSIONS OF, OR CONNECTIONS TO ANY PUBLIC WATER, WASTEWATER, OR UNDERGROUND STORM DRAIN SYSTEM MUST FIRST PROVIDE DOCUMENTATION TO THE CITY OF MIDLAND SHOWING THAT THE CONTRACTOR POSSESSES ACTIVE LICENSES THAT ARE EQUIVALENT TO, OR HIGHER THAN:
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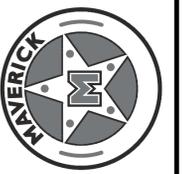
BOTH OF THESE LICENSES MUST BE ACTIVE AND MAINTAINED WHILE THE CONTRACTOR PERFORMS ANY WORK RELATED TO PUBLIC UTILITY CONNECTIONS. IF A CONTRACTOR ALLOWS EITHER, OR BOTH, OF THE REQUIRED LICENSES TO LAPSE AT ANY TIME DURING THE COURSE OF THE PROJECT DESCRIBED IN THIS NOTE, THEN ALL WORK UNDER THE PROJECT IS TO BE HALTED. WORK IS NOT TO RESUME UNTIL ADEQUATE DOCUMENTATION OF THE RENEWED LICENSES (OR NEW, PROPERLY LICENSED CONTRACTOR) ARE PROVIDED TO THE CITY OF MIDLAND.

**FORCE MAIN AND WASTEWATER CONSTRUCTION NOTES:**

- CAUTION: CONTRACTOR TO VERIFY UTILITY SIZE, LOCATION, ELEVATION AND TYPE PRIOR TO CONSTRUCTION AND INFORM ENGINEER OF CONFLICTS.
- INSTALL 12" DIAMETER PVC C900 DR18 FORCE MAIN LINE WITH TCEQ TRACER TAPE. FORCE MAIN LINE BEDDING SHALL CONFORM TO THE CITY OF MIDLAND DESIGN AND CONSTRUCTION STANDARDS DETAIL No. 310(A) AND 310(B) SEE SHEET C301. ALL SANITARY SEWER FORCE MAINS ARE TO BE GREEN IN COLOR.
- FUSIBLE PVC PIPE IS RECOMMENDED. IF C900 BELL PIPE IS TO BE USED EBAA SERIES 1600 BELL RESTRAINT HARNESS OR APPROVED EQUAL ARE REQUIRED AT ALL JOINT CONNECTIONS.
- TIE-IN FORCE MAIN LINE TO EXISTING MAN HOLE. CONTRACTOR TO RESTRAIN THE DISCHARGE END TO PREVENT MOVEMENT DISCHARGE TO BE REGULATED TO NON-TURBULENT FLOW.
- BEGIN / END FORCE MAIN PIPE DEFLECTION. DEFLECT LINE A MAXIMUM OF 5" PER FITTINGS OR 1" PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
- INSTALL 12" 22 1/2" BEND MjxMj WITH Mj RESTRAINED JOINTS PER CITY OF MIDLAND DETAIL No. 616 SEE SHEET C301. DEFLECT LINE A MAXIMUM OF 5" PER FITTINGS OR 1" PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
- INSTALL 12" 11 1/4" BEND MjxMj WITH Mj RESTRAINED JOINTS PER CITY OF MIDLAND DETAIL No. 616 SEE SHEET C301. DEFLECT LINE A MAXIMUM OF 5" PER FITTINGS OR 1" PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
- INSTALL 12" 45" BEND MjxMj WITH Mj RESTRAINED JOINTS PER CITY OF MIDLAND DETAIL No. 616 SEE SHEET C301. DEFLECT LINE A MAXIMUM OF 5" PER FITTINGS OR 1" PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
- INSTALL TRENCH PROTECTION FOR EXCAVATIONS GREATER THAN 5 FEET. ALL FITTINGS WILL BE RESTRAINED WITH EBAA JOINT, MEGA LUG SERIES 2000 OR APPROVED EQUAL AND THRUST BLOCK AS PER CITY OF MIDLAND DETAILS. ALL DUCTILE IRON FITTINGS MUST HAVE CONCRETE MORTAR LINING OR GLASS LINING. A DETECTABLE UNDERGROUND WARNING TAPE MUST BE LAID IN THE SAME TRENCH AS A FORCE MAIN PIPE. THE DETECTABLE UNDERGROUND WARNING TAPE MUST BE PLACED ABOVE AND PARALLEL TO THE FORCE MAIN. THE DETECTABLE UNDERGROUND TAPE MUST BEAR THE LABEL "PRESSURIZED WASTEWATER" CONTINUOUSLY REPEATED IN AT LEAST 1.5 INCH TALL LETTERS IN ACCORDANCE WITH TCEQ §217.66 IDENTIFICATION OF FORCE MAIN PIPES.
- INSTALL FORCE MAIN LINE UNDER EXISTING PIPELINE PER CITY OF MIDLAND DETAIL No. 309 SEE SHEET C300. CONTRACTOR TO COORDINATE W/ PIPELINE COMPANY PRIOR TO INSTALLATION.
- INSTALL 2" STEEL CASING, 0.25" MINIMUM WALL THICKNESS PER CITY OF MIDLAND DETAIL 805 ON SHEET C300, AND DETAIL C308 ON SHEET C300.
- INSTALL FORCE MAIN RELIEF VALVE PER CITY OF MIDLAND DETAIL No. 506 SEE SHEET C302. DEFLECT LINE A MAXIMUM OF 5" PER FITTINGS OR 1" PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
- INSTALL SDR35 OR ASTM D2241 SDR26 SPECIFIED PER PLANS, WASTEWATER MAIN LINE. (SIZE AND SLOPE PER PLAN). WASTEWATER MAIN LINE BEDDING SHALL CONFORM TO THE CITY OF MIDLAND DESIGN AND CONSTRUCTION STANDARDS DETAIL No. 310(A) AND 310(B) SEE SHEET C301.
- INSTALL WASTEWATER MANHOLE PER CITY OF MIDLAND DETAIL No. 313(A), 313(B) AND 314 SEE SHEET C302. TYPICAL WASTEWATER MANHOLE COVER PER CITY OF MIDLAND DETAIL No. 503 SEE SHEET C301.
- CONTRACTOR TO ADJUST MANHOLE FRAME AND COVER TO FINAL GRADE PER CITY OF MIDLAND DETAIL No. 316 AND 318 SEE SHEET C302.
- INSTALL 12" PLUG PER CITY OF MIDLAND DETAIL No. 315 SEE SHEET C300.



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SURVEY FIRM #: 10194452  
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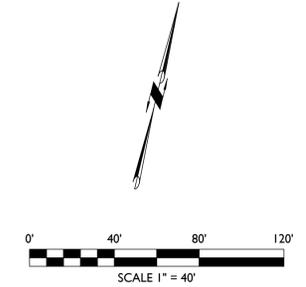
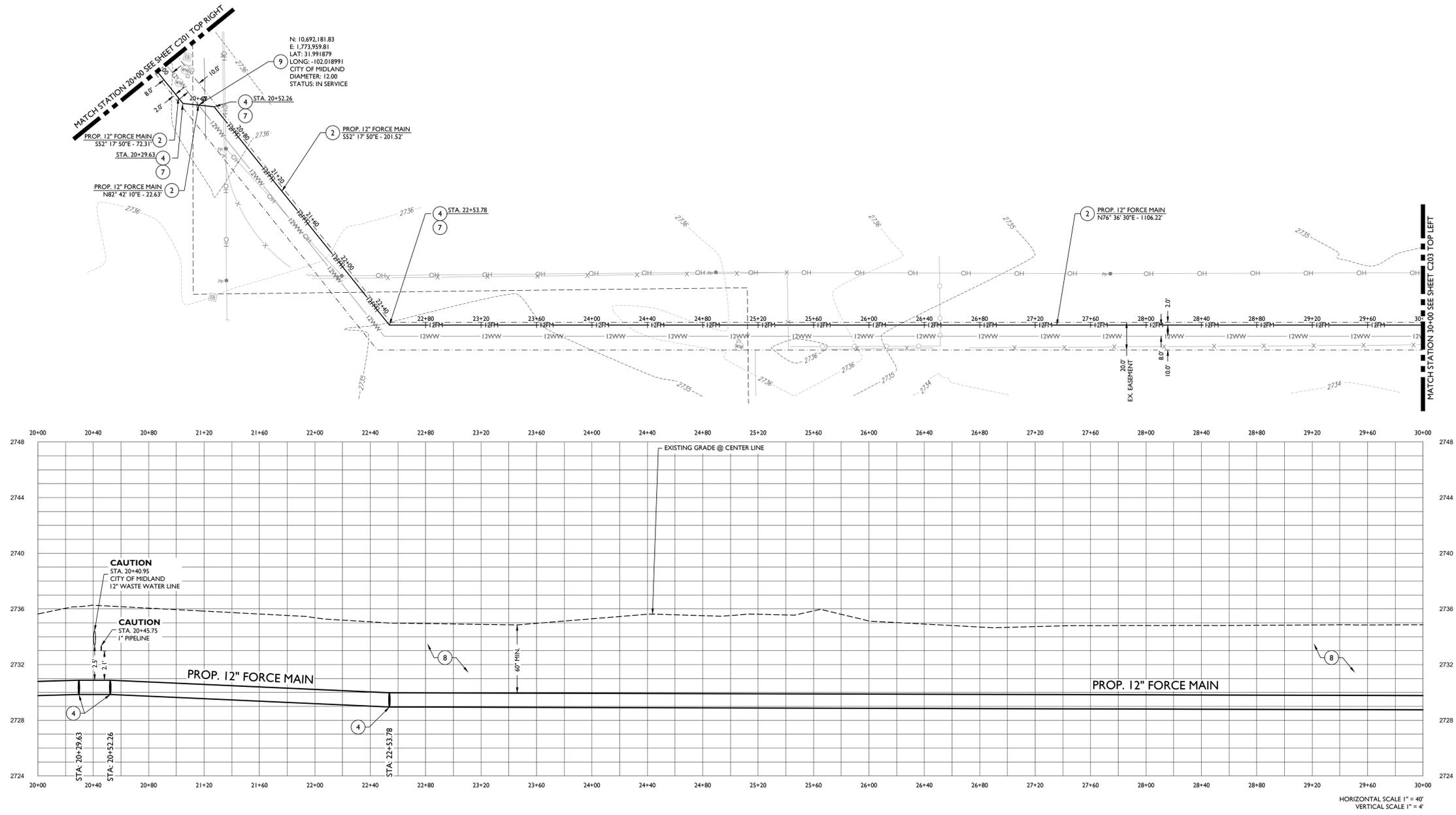


**PFM 12FM P&P**  
UTILITY CONSTRUCTION PLANS  
REGIONAL SE WASTE WATER LIFT  
STATION AND FORCE MAIN CONNECTION  
BEING 324.97 ACRE TRACT OF LAND OUT  
OF AND PART OF SECTION 4, BLOCK 38, T-2-S  
CITY OF MIDLAND, MIDLAND COUNTY, TEXAS

11/12/2024  
C201 of 23

F:\2023\302066-MANDALL LOTT ARCHITECTS\DIS MASTER PLAN PHASE 1\DRAWINGS\CIVIL CONSTRUCTION\PLANS\FORCED MAIN LINE\C202 PH1 - RFP.DWG

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**LEGEND**

	DENOTES FOUND MONUMENT AS NOTED
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	DENOTES EXISTING 12" FORCE MAIN LINE
	DENOTES PROPOSED 12" WASTEWATER MAIN LINE
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**ENGINEER'S UTILITY NOTES:**

- CONTRACTOR TO VERIFY ALL EXISTING UTILITY TIE-IN CONNECTIONS AND VERIFY LOCATION AND ELEVATION PRIOR TO CONSTRUCTION.
- CONTRACTOR TO BUILD SEWER FROM TIE-IN POINT (A.K.A. DOWNHILL) AND PROCEED UPHILL.
- CITY OF MIDLAND TO BE NOTIFIED 48 HOURS BEFORE ANY CONSTRUCTION BEGINS.
- PIPE DEFLECTION IS TO BE PER MANUFACTURER'S RECOMMENDATIONS OR PER CITY REQUIREMENTS, WHICHEVER ALLOWS THE LESSER AMOUNT OF DEFLECTION.
- ALL UTILITIES TO BE INSTALLED PER TEXAS ADMINISTRATIVE CODE (TAC) STANDARD SEPARATION SPECIFICATIONS.
- IF THE WASTEWATER IS SDR26 D2241 WITH A MINIMUM SEPARATION OF 2' THAN ENCASEMENT IS NOT REQUIRED. IF THERE IS LESS THAN 2' VERTICAL SEPARATION THAN THE WASTEWATER LINE NEEDS TO BE SDR26 D3024 AND ENCASED.
- EXCEPTIONS OR DEVIATIONS FROM THE ABOVE MINIMUM CLEARANCES MUST BE APPROVED AND SHOWN ON THE APPROVED WATER AND WASTEWATER PLANS. WHEN UTILITY CONFLICTS ARE FOUND DURING CONSTRUCTION, ALL CHANGES AND REVISIONS MUST BE PRECEDED BY AN APPROVED PLAN REVISION.
- ANY AND ALL MORE STRINGENT REQUIREMENTS REQUIRED BY FEDERAL, STATE, COUNTY OR LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
- ALL CONSTRUCTION IN THE RIGHT OF WAY IS TO CONFORM TO THE CITY OF MIDLAND STANDARDS.
- ALL CONSTRUCTION ON SITE IS TO CONFORM TO MAVERICK ENGINEERING NOTES AND DETAIL SHEETS.
- CONCRETE OR ASPHALT DAMAGED DURING THE COURSE OF CONSTRUCTION IS TO BE REMOVED AND REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE ENGINEER OR THE CITY OF MIDLAND PRIOR TO FINAL INSPECTION.
- WASTEWATER IS TO BE PVC-SDR-35 UNLESS NOTED OTHERWISE.
- WATER MAIN IS TO BE C-900 PVC PIPE UNLESS NOTED OTHERWISE.
- THE CONTRACTOR IS TO PROVIDE ALL THRUST BLOCKING AT ALL FITTINGS AND BENDS AS REQUIRED. COMPLY WITH DETAILS IN THE CITY OF MIDLAND'S DESIGN & CONSTRUCTION STANDARDS.
- THE CONTRACTOR IS TO KEEP ALL EXISTING WATER AND WASTEWATER MAINS IN SERVICE DURING CONSTRUCTION.
- ANY PROPOSED GAS LINES SHOWN ARE FOR SCHEMATIC PLANNING PURPOSES ONLY. ACTUAL GAS LINE ROUTES ARE TO BE NEGOTIATED BETWEEN THE CONTRACTOR AND THE GAS UTILITY PROVIDER. MAVERICK ENGINEERING DOES NOT ENGAGE IN GAS LINE DESIGN. PLEASE CONSULT WITH YOUR M.E.P. PLAN PROVIDER AND GAS UTILITY PROVIDER FOR GAS LINE DESIGN.
- CONTRACTORS PERFORMING ANY WORK ON, EXTENSIONS OF, OR CONNECTIONS TO ANY PUBLIC WATER, WASTEWATER, OR UNDERGROUND STORM DRAIN SYSTEM MUST FIRST PROVIDE DOCUMENTATION TO THE CITY OF MIDLAND SHOWING THAT THE CONTRACTOR POSSESSES ACTIVE LICENSES THAT ARE EQUIVALENT TO, OR HIGHER THAN,
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  - EITHER A "WASTEWATER D" LICENSE OR A "CLASS 1 COLLECTIONS" LICENSE

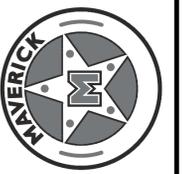
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**FORCE MAIN AND WASTEWATER CONSTRUCTION NOTES:**

- CAUTION: CONTRACTOR TO VERIFY UTILITY SIZE, LOCATION, ELEVATION AND TYPE PRIOR TO CONSTRUCTION AND INFORM ENGINEER OF CONFLICTS.
- INSTALL 12" DIAMETER PVC C900 DR18 FORCE MAIN LINE WITH TCEQ TRACER TAPE. FORCE MAIN LINE BEDDING SHALL CONFORM TO THE CITY OF MIDLAND DESIGN AND CONSTRUCTION STANDARDS DETAIL No. 310(A) AND 310(B) SEE SHEET C301. ALL SANITARY SEWER FORCE MAINS ARE TO BE GREEN IN COLOR. FUSIBLE PVC PIPE IS RECOMMENDED. IF C900 BELL PIPE IS TO BE USED EBAA SERIES 1600 BELL RESTRAINT HARNESS OR APPROVED EQUAL ARE REQUIRED AT ALL JOINT CONNECTIONS.
- TIE-IN FORCE MAIN LINE TO EXISTING MAN HOLE. CONTRACTOR TO RESTRAIN THE DISCHARGE END TO PREVENT MOVEMENT DISCHARGE TO BE REGULATED TO NON-TURBULENT FLOW.
- BEGIN / END FORCE MAIN PIPE DEFLECTION. DEFLECT LINE A MAXIMUM OF 5" PER FITTINGS OR 1" PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
- INSTALL 12" 22 1/2" BEND MjxMj WITH Mj RESTRAINED JOINTS PER CITY OF MIDLAND DETAIL No. 616 SEE SHEET C301. DEFLECT LINE A MAXIMUM OF 5" PER FITTINGS OR 1" PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
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- INSTALL FORCE MAIN LINE UNDER EXISTING PIPELINE PER CITY OF MIDLAND DETAIL No. 309 SEE SHEET C300. CONTRACTOR TO COORDINATE W/ PIPELINE COMPANY PRIOR TO INSTALLATION.
- INSTALL 24" STEEL CASING, 0.25" MINIMUM WALL THICKNESS PER CITY OF MIDLAND DETAIL 805 ON SHEET C300, AND DETAIL C308 ON SHEET C300.
- INSTALL FORCE MAIN RELIEF VALVE PER CITY OF MIDLAND DETAIL No. 506 SEE SHEET C302. DEFLECT LINE A MAXIMUM OF 5" PER FITTINGS OR 1" PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
- INSTALL SDR35 OR ASTM D2241 SDR26 SPECIFIED PER PLANS, WASTEWATER MAIN LINE (SIZE AND SLOPE PER PLAN), WASTEWATER MAIN LINE BEDDING SHALL CONFORM TO THE CITY OF MIDLAND DESIGN AND CONSTRUCTION STANDARDS DETAIL No. 310(A) AND 310(B) SEE SHEET C301.
- INSTALL WASTEWATER MANHOLE PER CITY OF MIDLAND DETAIL No. 313(A), 313(B) AND 314 SEE SHEET C302. TYPICAL WASTEWATER MANHOLE COVER PER CITY OF MIDLAND DETAIL No. 503 SEE SHEET C301.
- CONTRACTOR TO ADJUST MANHOLE FRAME AND COVER TO FINAL GRADE PER CITY OF MIDLAND DETAIL No. 316 AND 318 SEE SHEET C302.
- INSTALL 12" PLUG PER CITY OF MIDLAND DETAIL No. 315 SEE SHEET C300.



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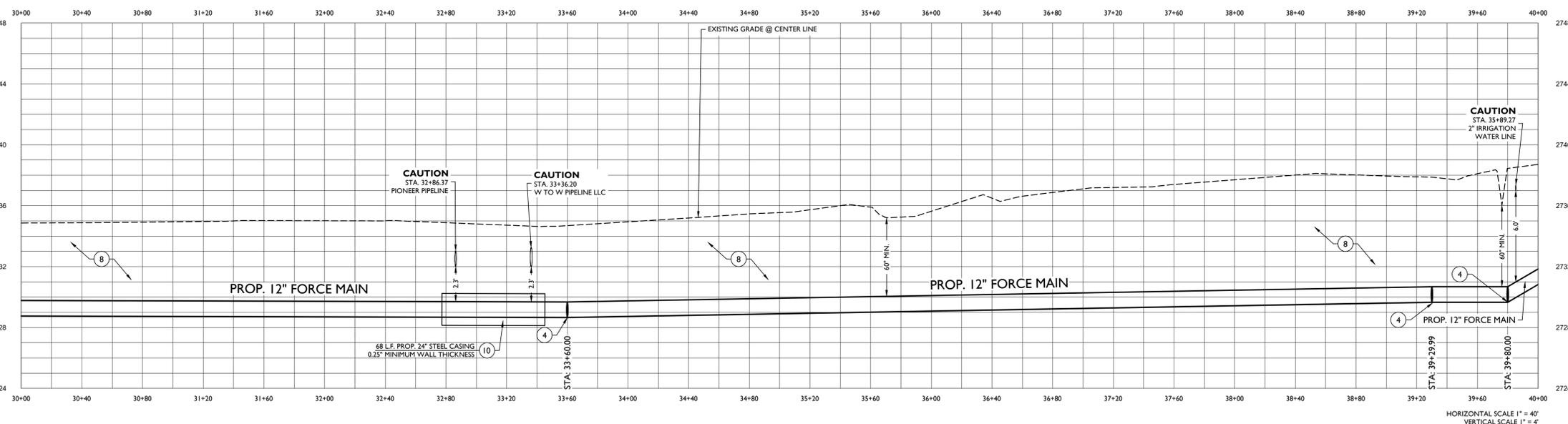
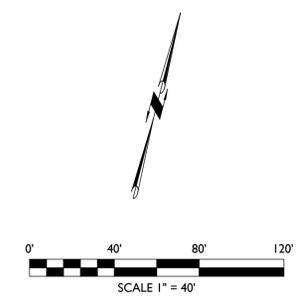
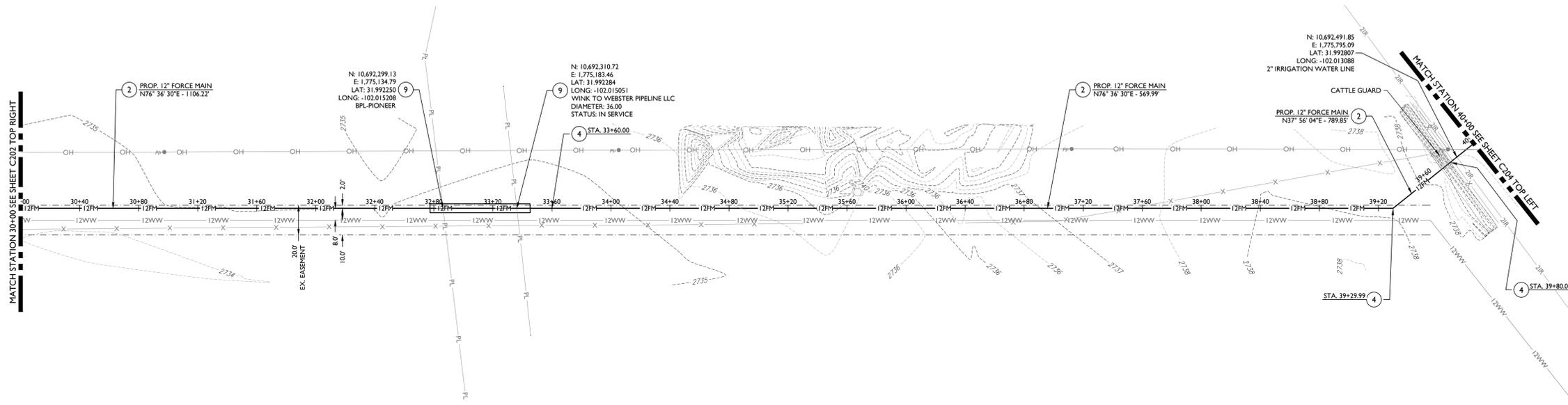


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**811**  
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 Call before you dig.

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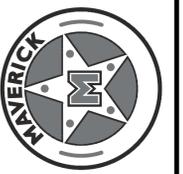
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4. BEGIN / END FORCE MAIN PIPE DEFLECTION. DEFLECT LINE A MAXIMUM OF 5" PER FITTINGS OR 1" PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
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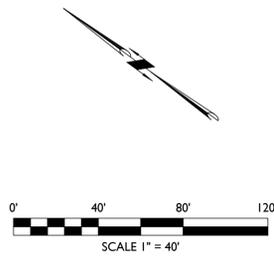
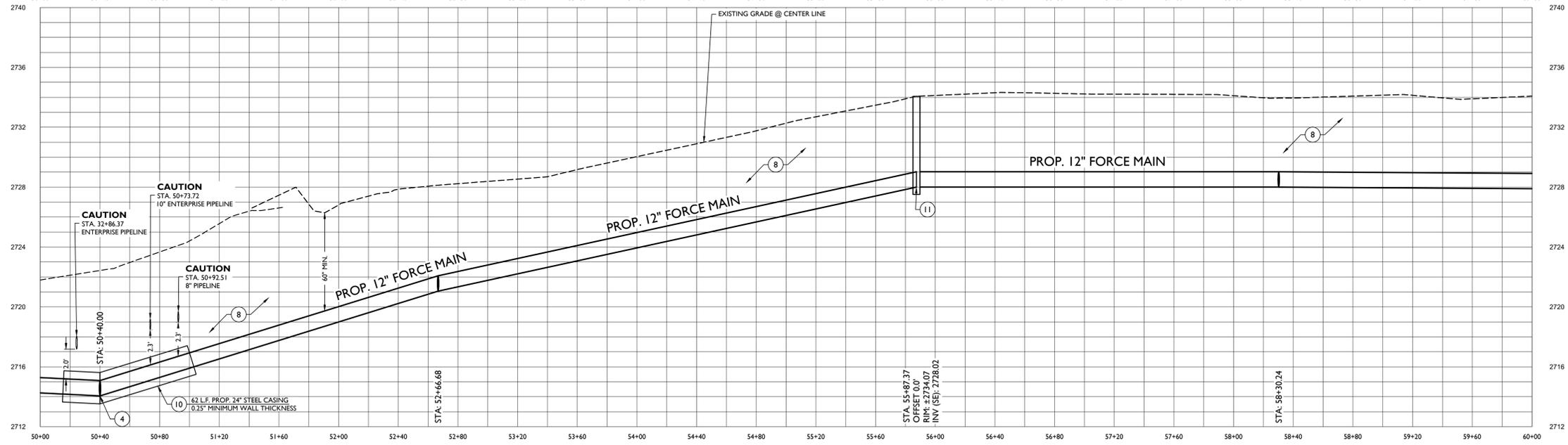
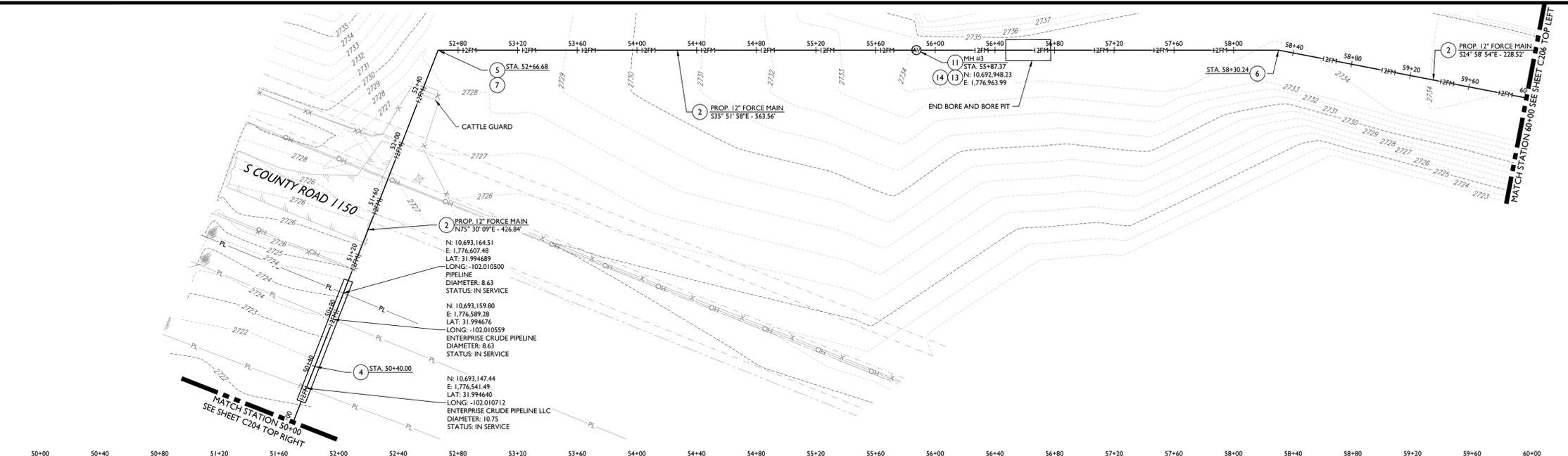
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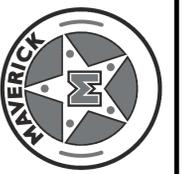
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  - PIPE DEFLECTION IS TO BE PER MANUFACTURER'S RECOMMENDATIONS OR PER CITY REQUIREMENTS, WHICHEVER ALLOWS THE LESSER AMOUNT OF DEFLECTION.
  - ALL UTILITIES TO BE INSTALLED PER TEXAS ADMINISTRATIVE CODE (TAC) STANDARD SEPARATION SPECIFICATIONS.
  - IF THE WASTEWATER IS SDR26 D2241 WITH A MINIMUM SEPARATION OF 2' THAN ENCASEMENT IS NOT REQUIRED. IF THERE IS LESS THAN 2' VERTICAL SEPARATION THAN THE WASTEWATER LINE NEEDS TO BE SDR26 D3034 AND ENCASED.
  - EXCEPTIONS OR DEVIATIONS FROM THE ABOVE MINIMUM CLEARANCES MUST BE APPROVED AND SHOWN ON THE APPROVED WATER AND WASTEWATER PLANS. WHEN UTILITY CONFLICTS ARE FOUND DURING CONSTRUCTION, ALL CHANGES AND REVISIONS MUST BE PRECEDED BY AN APPROVED PLAN REVISION.
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  - WASTEWATER IS TO BE PVC-SDR-35 UNLESS NOTED OTHERWISE.
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- FORCE MAIN AND WASTEWATER CONSTRUCTION NOTES:**
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  - INSTALL FORCE MAIN LINE UNDER EXISTING PIPELINE PER CITY OF MIDLAND DETAIL No. 309 SEE SHEET C300. CONTRACTOR TO COORDINATE W/ PIPELINE COMPANY PRIOR TO INSTALLATION.
  - INSTALL 24" STEEL CASING, 0.25" MINIMUM WALL THICKNESS PER CITY OF MIDLAND DETAIL 805 ON SHEET C300, AND DETAIL C308 ON SHEET C300.
  - INSTALL FORCE MAIN RELIEF VALVE PER CITY OF MIDLAND DETAIL No. 506 SEE SHEET C302. DEFLECT LINE A MAXIMUM OF 5' PER FITTINGS OR 1' PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
  - INSTALL SDR33 OR ASTM D241 SDR26 SPECIFIED PER PLANS, WASTEWATER MAIN LINE (SIZE AND SLOPE PER PLAN), WASTEWATER MAIN LINE BEDDING SHALL CONFORM TO THE CITY OF MIDLAND DESIGN AND CONSTRUCTION STANDARDS DETAIL No. 310(A) AND 310(B) SEE SHEET C301.
  - INSTALL WASTEWATER MANHOLE PER CITY OF MIDLAND DETAIL No. 313(A), 313(B) AND 314 SEE SHEET C302. TYPICAL WASTEWATER MANHOLE COVER PER CITY OF MIDLAND DETAIL No. 503 SEE SHEET C301.
  - CONTRACTOR TO ADJUST MANHOLE FRAME AND COVER TO FINAL GRADE PER CITY OF MIDLAND DETAIL No. 316 AND 318 SEE SHEET C302.
  - INSTALL 12" PLUG PER CITY OF MIDLAND DETAIL No. 315 SEE SHEET C300.



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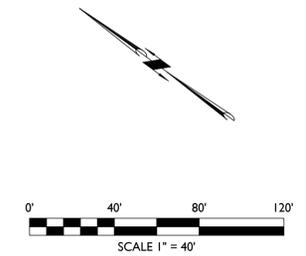
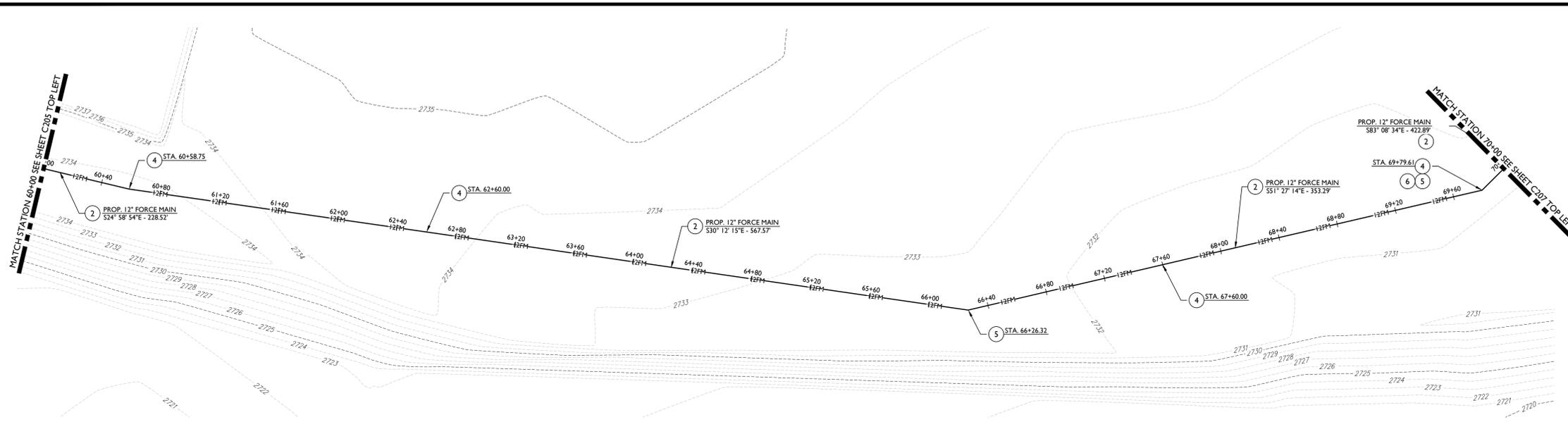


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DRAWN BY: GJA	CHECKED BY: CLB
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**PFM 12FM - P & P**  
 UTILITY CONSTRUCTION PLANS  
 REGIONAL SE WASTE WATER LIFT  
 STATION AND FORCE MAIN CONNECTION  
 BEING 324.97 ACRE TRACT OF LAND OUT  
 OF AND PART OF SECTION 4, BLOCK 38, T-2-S  
 CITY OF MIDLAND, MIDLAND COUNTY, TEXAS





**LEGEND**

	DENOTES FOUND MONUMENT AS NOTED
	DENOTES EXISTING FIBER OPTIC PEDISTAL
	DENOTES EXISTING KEY PAD
	DENOTES EXISTING LIGHT POLE
	DENOTES EXISTING FLAG POLE
	DENOTES EXISTING A/C PAD
	DENOTES EXISTING ELECTRICAL BOX
	DENOTES EXISTING SEPTIC LID
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	DENOTES EXISTING TESTING STATION
	DENOTES EXISTING POWER POLE
	DENOTES EXISTING GUY WIRE
	DENOTES EXISTING SIGN
	DENOTES BOUNDARY LINE
	DENOTES EXISTING LOT LINE
	DENOTES EXISTING EASEMENT LINE
	DENOTES EDGE OF ASPHALT
	DENOTES EXISTING FENCE
	DENOTES EXISTING IRRIGATION LINE
	DENOTES EXISTING SALT WATER LINE
	DENOTES EXISTING GAS LINE
	DENOTES EXISTING PIPELINE
	DENOTES EXISTING OVERHEAD ELECTRIC LINE
	DENOTES EXISTING 12" WASTEWATER MAIN
	DENOTES EXISTING 12" WATER MAIN
	DENOTES PROPOSED 12" FORCE MAIN LINE
	DENOTES PROPOSED 12" WASTEWATER MAIN LINE
	DENOTES PROPOSED WASTEWATER MAIN PLUG
	DENOTES PROPOSED MANHOLE

**ENGINEER'S UTILITY NOTES:**

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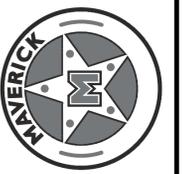
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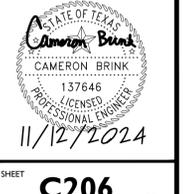
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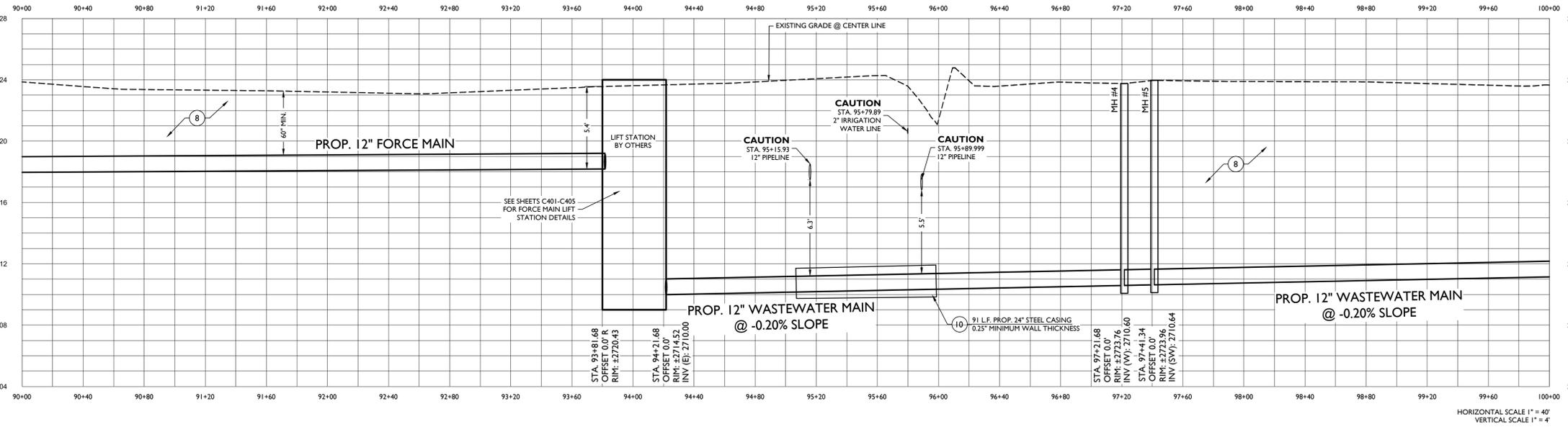
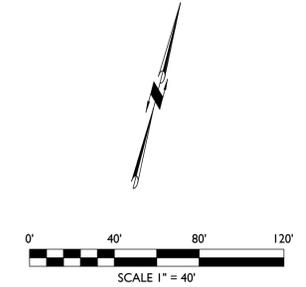
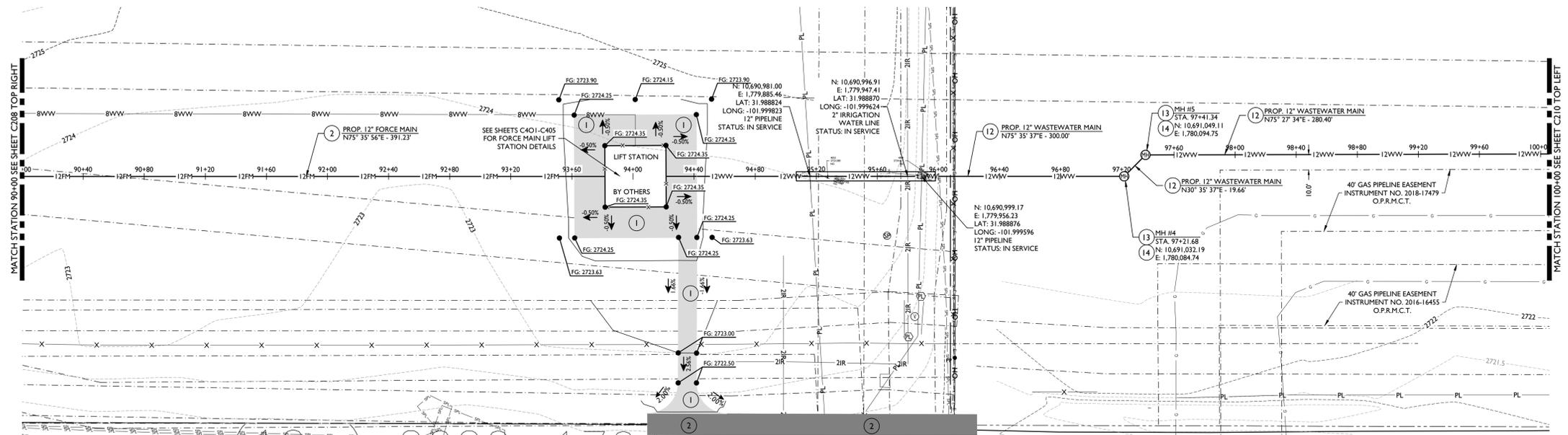
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CITY OF MIDLAND, MIDLAND COUNTY, TEXAS



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**LEGEND**

	DENOTES FOUND MONUMENT AS NOTED
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	DENOTES EXISTING POWER POLE
	DENOTES EXISTING GUY WIRE
	DENOTES EXISTING SIGN
	DENOTES EXISTING SIGN
	DENOTES EXISTING CONTOUR
	DENOTES EXISTING BOUNDARY LINE
	DENOTES EXISTING LOT LINE
	DENOTES EXISTING EASEMENT LINE
	DENOTES EXISTING EDGE OF ASPHALT
	DENOTES EXISTING FENCE
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	DENOTES EXISTING SALT WATER LINE
	DENOTES EXISTING GAS LINE
	DENOTES EXISTING PIPELINE
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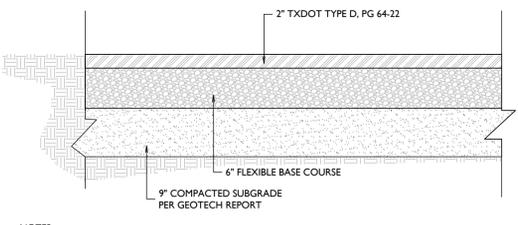
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- BEGIN / END FORCE MAIN PIPE DEFLECTION: DEFLECT LINE A MAXIMUM OF 5" PER FITTINGS OR 1" PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
- INSTALL 12" 22 1/2" BEND MxM WITH M RESTRAINED JOINTS PER CITY OF MIDLAND DETAIL No. 616 SEE SHEET C301. DEFLECT LINE A MAXIMUM OF 5" PER FITTINGS OR 1" PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
- INSTALL 12" 11 1/4" BEND MxM WITH M RESTRAINED JOINTS PER CITY OF MIDLAND DETAIL No. 616 SEE SHEET C301. DEFLECT LINE A MAXIMUM OF 5" PER FITTINGS OR 1" PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
- INSTALL 12" 45" BEND MxM WITH M RESTRAINED JOINTS PER CITY OF MIDLAND DETAIL No. 616 SEE SHEET C301. DEFLECT LINE A MAXIMUM OF 5" PER FITTINGS OR 1" PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
- INSTALL TRENCH PROTECTION FOR EXCAVATIONS GREATER THAN 5 FEET. ALL FITTINGS WILL BE RESTRAINED WITH EBAE JUNIT, MEGA LUG SERIES 2000 OR APPROVED EQUAL AND THRUST BLOCK AS PER CITY OF MIDLAND DETAILS. ALL DUCTILE IRON FITTINGS MUST HAVE CONCRETE MORTAR LINING OR GLASS LINING. A DETECTABLE UNDERGROUND WARNING TAPE MUST BE LAID IN THE SAME TRENCH AS A FORCE MAIN PIPE. THE DETECTABLE UNDERGROUND WARNING TAPE MUST BE PLACED ABOVE AND PARALLEL TO THE FORCE MAIN. THE DETECTABLE UNDERGROUND TAPE MUST BEAR THE LABEL "PRESSURIZED WASTEWATER" CONTINUOUSLY REPEATED IN AT LEAST 1.5 INCH TALL LETTERS IN ACCORDANCE WITH TCEQ §217.66 IDENTIFICATION OF FORCE MAIN PIPES.
- INSTALL FORCE MAIN LINE UNDER EXISTING PIPELINE PER CITY OF MIDLAND DETAIL No. 309 SEE SHEET C300. CONTRACTOR TO COORDINATE W/ PIPELINE COMPANY PRIOR TO INSTALLATION.
- INSTALL 24" STEEL CASING, 0.25" MINIMUM WALL THICKNESS PER CITY OF MIDLAND DETAIL 805 ON SHEET C300, AND DETAIL C308 ON SHEET C300.
- INSTALL FORCE MAIN RELIEF VALVE PER CITY OF MIDLAND DETAIL No. 506 SEE SHEET C302. DEFLECT LINE A MAXIMUM OF 5" PER FITTINGS OR 1" PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
- INSTALL SDR35 OR ASTM D2241 SDR26 SPECIFIED PER PLANS, WASTEWATER MAIN LINE (SIZE AND SLOPE PER PLAN), WASTEWATER MAIN LINE BEDDING SHALL CONFORM TO THE CITY OF MIDLAND DESIGN AND CONSTRUCTION STANDARDS DETAIL No. 310(A) AND 310(B) SEE SHEET C301.
- INSTALL WASTEWATER MANHOLE PER CITY OF MIDLAND DETAIL No. 313(A), 313(B) AND 314 SEE SHEET C302. TYPICAL WASTEWATER MANHOLE COVER PER CITY OF MIDLAND DETAIL No. 503 SEE SHEET C301.
- CONTRACTOR TO ADJUST MANHOLE FRAME AND COVER TO FINAL GRADE PER CITY OF MIDLAND DETAIL No. 316 AND 318 SEE SHEET C302.
- INSTALL 12" PLUG PER CITY OF MIDLAND DETAIL No. 315 SEE SHEET C300.

**PAVING NOTES:**

- INSTALL MEDIUM DUTY ASPHALT PAVEMENT, SEE DETAILS 01 ON THIS SHEET.
- FUTURE ROAD AND DRIVEWAY LOCATION TO BE INSTALLED PER DUNAWAY COUNTY ROAD 110 PLANS.



- NOTES:
- INSTALL TXDOT ITEM 340(34) TYPE "D" HOT MIX ASPHALTIC CONCRETE WITH A MINIMUM PERFORMANCE GRADE BINDER OF PG64-22. SUBSTITUTE PG BINDERS MUST BE APPROVED BY THE ENGINEER.
  - ASPHALT IS TO BE COMPACTED TO AT LEAST 98% PER ASTM D1557.
  - FLEXIBLE BASE COURSE TO BE TX-DOT TYPE "A" (CRUSHED STONE, NO GRAVEL), GRADE I-2.
  - FLEXIBLE BASE COURSE TO BE COMPACTED TO AT LEAST 100% OF THE MAXIMUM DRY UNIT DENSITY PER TEX-113-E.
  - SUBGRADE COMPACTED PER GEOTECH REPORT. IF GEOTECH IS NOT AVAILABLE, SPECIFY 6" 4ND COMPACT TO AT LEAST 100% OF THE MAXIMUM DRY UNIT DENSITY PER TEX-113-E.

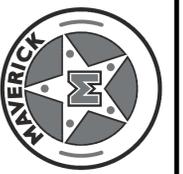
**ASPHALT PAVEMENT - MEDIUM DUTY**  
N.T.S.

**PAVEMENT SECTION NOTE:**

THE INCLUDED PAVEMENT SECTIONS ARE BASED ON THE MIDLAND PUBLIC SAFETY TRAINING CENTER REPORT PROJECT NO. CT230945 FROM BEYOND ENGINEERING. CONTRACTOR TO VERIFY ALL PAVEMENT SECTIONS AND RELATED ITEMS FROM THE PROVIDED GEOTECH REPORT.



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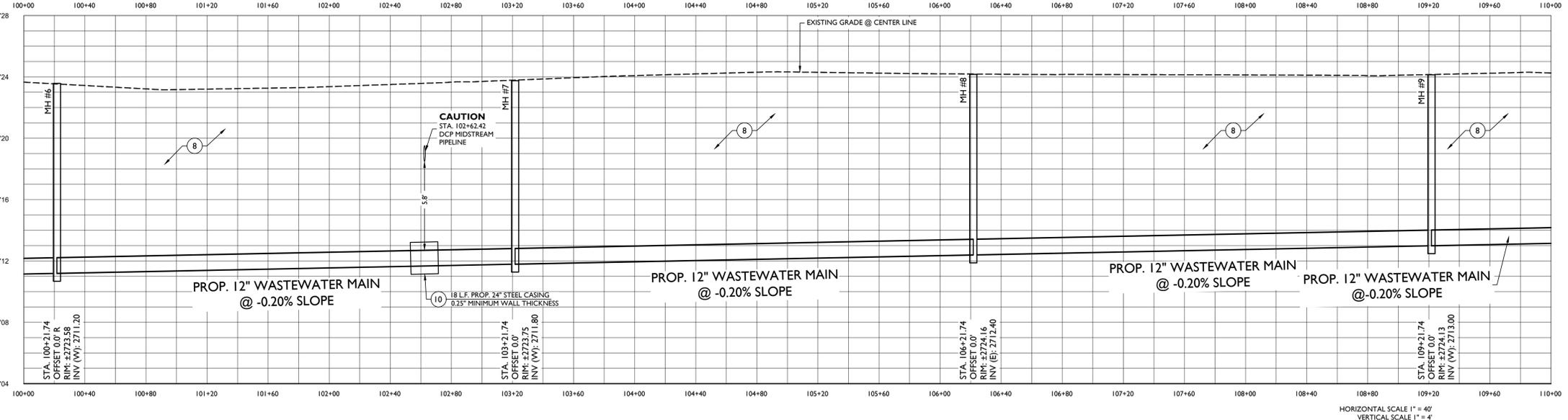
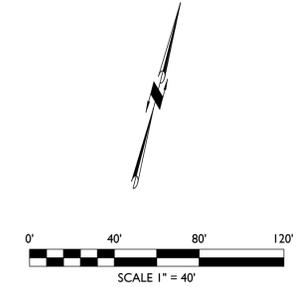
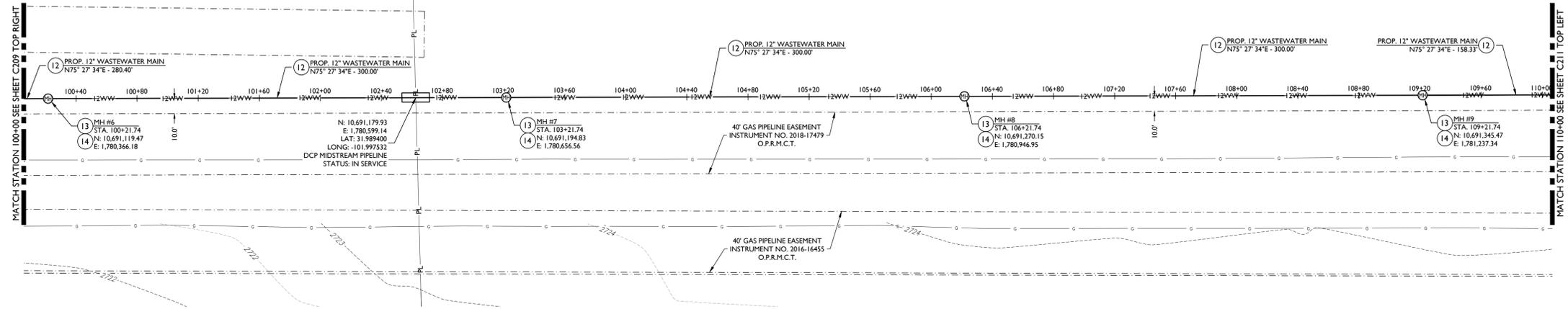


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**PFM 12FM & 12WW P&P**  
UTILITY CONSTRUCTION PLANS  
REGIONAL SE WASTE WATER LIFT  
STATION AND FORCE MAIN CONNECTION  
BEING 324.97 ACRE TRACT OF LAND OUT  
OF AND PART OF SECTION 4, BLOCK 38, T-2-S  
CITY OF MIDLAND, MIDLAND COUNTY, TEXAS

STATE OF TEXAS  
CAMERON BRINK  
157646  
PROFESSIONAL ENGINEER  
11/12/2024  
SHEET **C209** OF 23



**LEGEND**

	DENOTES FOUND MONUMENT AS NOTED
	DENOTES EXISTING FIBER OPTIC PEDISTAL
	DENOTES EXISTING KEY PAD
	DENOTES EXISTING LIGHT POLE
	DENOTES EXISTING FLAG POLE
	DENOTES EXISTING A/C PAD
	DENOTES EXISTING ELECTRICAL BOX
	DENOTES EXISTING SEPTIC LID
	DENOTES EXISTING CLEAN OUT
	DENOTES EXISTING LIFT STATION / PAD
	DENOTES EXISTING WATER METER
	DENOTES EXISTING WATER VALVE
	DENOTES EXISTING WATER WELL
	DENOTES EXISTING UTILITY MARKER
	DENOTES EXISTING SPRINKLER CONNECTION
	DENOTES EXISTING PIPELINE MARKER
	DENOTES EXISTING TESTING STATION
	DENOTES EXISTING POWER POLE
	DENOTES EXISTING GUY WIRE
	DENOTES EXISTING SIGN
	DENOTES EXISTING CONTOUR
	DENOTES BOUNDARY LINE
	DENOTES EXISTING LOT LINE
	DENOTES EXISTING EASEMENT LINE
	DENOTES EDGE OF ASPHALT
	DENOTES EXISTING FENCE
	DENOTES EXISTING IRRIGATION LINE
	DENOTES EXISTING SALT WATER LINE
	DENOTES EXISTING GAS LINE
	DENOTES EXISTING PIPELINE
	DENOTES EXISTING OVERHEAD ELECTRIC LINE
	DENOTES EXISTING 12" WASTEWATER MAIN
	DENOTES EXISTING 12" WATER MAIN
	DENOTES EXISTING 12" FORCE MAIN LINE
	DENOTES PROPOSED 12" WASTEWATER MAIN LINE
	DENOTES PROPOSED WASTEWATER MAIN PLUG
	DENOTES PROPOSED MANHOLE

**ENGINEER'S UTILITY NOTES:**

- CONTRACTOR TO VERIFY ALL EXISTING UTILITY TIE-IN CONNECTIONS AND VERIFY LOCATION AND ELEVATION PRIOR TO CONSTRUCTION.
- CONTRACTOR TO BUILD SEWER FROM TIE-IN POINT (A.K.A. DOWNHILL) AND PROCEED UPHILL.
- CITY OF MIDLAND TO BE NOTIFIED 48 HOURS BEFORE ANY CONSTRUCTION BEGINS.
- PIPE DEFLECTION IS TO BE PER MANUFACTURER'S RECOMMENDATIONS OR PER CITY REQUIREMENTS, WHICHEVER ALLOWS THE LESSER AMOUNT OF DEFLECTION.
- ALL UTILITIES TO BE INSTALLED PER TEXAS ADMINISTRATIVE CODE (TAC) STANDARD SEPARATION SPECIFICATIONS.
- IF THE WASTEWATER IS SDR26 D2241 WITH A MINIMUM SEPARATION OF 2' THAN ENCASMENT IS NOT REQUIRED. IF THERE IS LESS THAN 2' VERTICAL SEPARATION THAN THE WASTEWATER LINE NEEDS TO BE SDR26 D3034 AND ENCASED.
- EXCEPTIONS OR DEVIATIONS FROM THE ABOVE MINIMUM CLEARANCES MUST BE APPROVED AND SHOWN ON THE APPROVED WATER AND WASTEWATER PLANS. WHEN UTILITY CONFLICTS ARE FOUND DURING CONSTRUCTION, ALL CHANGES AND REVISIONS MUST BE PRECEDED BY AN APPROVED PLAN REVISION.
- ANY AND ALL MORE STRINGENT REQUIREMENTS REQUIRED BY FEDERAL, STATE, COUNTY OR LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
- ALL CONSTRUCTION IN THE RIGHT OF WAY IS TO CONFORM TO THE CITY OF MIDLAND STANDARDS.
- ALL CONSTRUCTION ON SITE IS TO CONFORM TO MAVERICK ENGINEERING NOTES AND DETAIL SHEETS.
- CONCRETE OR ASPHALT DAMAGED DURING THE COURSE OF CONSTRUCTION IS TO BE REMOVED AND REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE ENGINEER OR THE CITY OF MIDLAND PRIOR TO FINAL INSPECTION.
- WASTEWATER IS TO BE PVC-SDR-35 UNLESS NOTED OTHERWISE.
- WATER MAIN IS TO BE C-900 PVC PIPE UNLESS NOTED OTHERWISE.
- THE CONTRACTOR IS TO PROVIDE ALL THRUST BLOCKING AT ALL FITTINGS AND BENDS AS REQUIRED. COMPLY WITH DETAILS IN THE CITY OF MIDLAND'S DESIGN & CONSTRUCTION STANDARDS.
- THE CONTRACTOR IS TO KEEP ALL EXISTING WATER AND WASTEWATER MAINS IN SERVICE DURING CONSTRUCTION.
- ANY PROPOSED GAS LINES SHOWN ARE FOR SCHEMATIC PLANNING PURPOSES ONLY. ACTUAL GAS LINE ROUTES ARE TO BE NEGOTIATED BETWEEN THE CONTRACTOR AND THE GAS UTILITY PROVIDER. MAVERICK ENGINEERING DOES NOT ENGAGE IN GAS LINE DESIGN. PLEASE CONSULT WITH YOUR M.E.P. PLAN PROVIDER AND GAS UTILITY PROVIDER FOR GAS LINE DESIGN.
- CONTRACTORS PERFORMING ANY WORK ON, EXTENSIONS OF, OR CONNECTIONS TO ANY PUBLIC WATER, WASTEWATER, OR UNDERGROUND STORM DRAIN SYSTEM MUST FIRST PROVIDE DOCUMENTATION TO THE CITY OF MIDLAND SHOWING THAT THE CONTRACTOR POSSESSES ACTIVE LICENSES THAT ARE EQUIVALENT TO, OR HIGHER THAN:
  - "WATER OPERATOR D" LICENSE AND
  - EITHER A "WASTEWATER D" LICENSE OR A "CLASS I COLLECTIONS" LICENSE

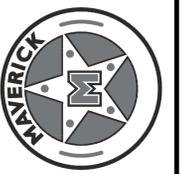
BOTH OF THESE LICENSES MUST BE ACTIVE AND MAINTAINED WHILE THE CONTRACTOR PERFORMS ANY WORK RELATED TO PUBLIC UTILITY CONNECTIONS. IF A CONTRACTOR ALLOWS EITHER, OR BOTH, OF THE REQUIRED LICENSES TO LAPSE AT ANY TIME DURING THE COURSE OF THE PROJECT WORK DESCRIBED IN THIS NOTE, THEN ALL WORK UNDER THE PROJECT IS TO BE HALTED. WORK IS NOT TO RESUME UNTIL ADEQUATE DOCUMENTATION OF THE RENEWED LICENSES (OR NEW, PROPERLY LICENSED CONTRACTOR) ARE PROVIDED TO THE CITY OF MIDLAND.

**FORCE MAIN AND WASTEWATER CONSTRUCTION NOTES:**

- CAUTION: CONTRACTOR TO VERIFY UTILITY SIZE, LOCATION, ELEVATION AND TYPE PRIOR TO CONSTRUCTION AND INFORM ENGINEER OF CONFLICTS.
- INSTALL 12" DIAMETER PVC C900 DR18 FORCE MAIN LINE WITH TCEQ TRACER TAPE. FORCE MAIN LINE BEDDING SHALL CONFORM TO THE CITY OF MIDLAND DESIGN AND CONSTRUCTION STANDARDS DETAIL No. 310(A) AND 310(B) SEE SHEET C301. ALL SANITARY SEWER FORCE MAINS ARE TO BE GREEN IN COLOR. FUSIBLE PVC PIPE IS RECOMMENDED. IF C900 BELL PIPE IS TO BE USED EBAA SERIES 1600 BELL RESTRAINT HARNESS OR APPROVED EQUAL ARE REQUIRED AT ALL JOINT CONNECTIONS.
- TIE-IN FORCE MAIN LINE TO EXISTING MAN HOLE. CONTRACTOR TO RESTRAIN THE DISCHARGE END TO PREVENT MOVEMENT DISCHARGE TO BE REGULATED TO NON-TURBULENT FLOW.
- BEGIN / END FORCE MAIN PIPE DEFLECTION. DEFLECT LINE A MAXIMUM OF 5" PER FITTINGS OR 1" PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
- INSTALL 12" 22 1/2' BEND MjxMj WITH Mj RESTRAINED JOINTS PER CITY OF MIDLAND DETAIL No. 616 SEE SHEET C301. DEFLECT LINE A MAXIMUM OF 5" PER FITTINGS OR 1" PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
- INSTALL 12" 11/4' BEND MjxMj WITH Mj RESTRAINED JOINTS PER CITY OF MIDLAND DETAIL No. 616 SEE SHEET C301. DEFLECT LINE A MAXIMUM OF 5" PER FITTINGS OR 1" PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
- INSTALL 12" 45' BEND MjxMj WITH Mj RESTRAINED JOINTS PER CITY OF MIDLAND DETAIL No. 616 SEE SHEET C301. DEFLECT LINE A MAXIMUM OF 5" PER FITTINGS OR 1" PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
- INSTALL TRENCH PROTECTION FOR EXCAVATIONS GREATER THAN 5 FEET. ALL FITTINGS WILL BE RESTRAINED WITH EBAA JOINT, MEGA LUG SERIES 2000 OR APPROVED EQUAL AND THRUST BLOCK AS PER CITY OF MIDLAND DETAILS. ALL DUCTILE IRON FITTINGS MUST HAVE CONCRETE MORTAR LINING OR GLASS LINING. A DETECTABLE UNDERGROUND WARNING TAPE MUST BE LAID IN THE SAME TRENCH AS A FORCE MAIN PIPE. THE DETECTABLE UNDERGROUND WARNING TAPE MUST BE PLACED ABOVE AND PARALLEL TO THE FORCE MAIN. THE DETECTABLE UNDERGROUND TAPE MUST BEAR THE LABEL "PRESSURIZED WASTEWATER" CONTINUOUSLY REPEATED IN AT LEAST 1.5 INCH TALL LETTERS IN ACCORDANCE WITH TCEQ §217.66 IDENTIFICATION OF FORCE MAIN PIPES.
- INSTALL FORCE MAIN LINE UNDER EXISTING PIPELINE PER CITY OF MIDLAND DETAIL No. 309 SEE SHEET C300. CONTRACTOR TO COORDINATE W/ PIPELINE COMPANY PRIOR TO INSTALLATION.
- INSTALL 24" STEEL CASING, 0.25" MINIMUM WALL THICKNESS PER CITY OF MIDLAND DETAIL 805 ON SHEET C300, AND DETAIL C308 ON SHEET C300.
- INSTALL FORCE MAIN RELIEF VALVE PER CITY OF MIDLAND DETAIL No. 506 SEE SHEET C302. DEFLECT LINE A MAXIMUM OF 5" PER FITTINGS OR 1" PER JOINTS TO ADJUST FOR HORIZONTAL AND/OR VERTICAL ALIGNMENT.
- INSTALL SDR33 OR ASTM D2241 SDR26 SPECIFIED PER PLANS, WASTEWATER MAIN LINE (SIZE AND SLOPE PER PLAN). WASTEWATER MAIN LINE BEDDING SHALL CONFORM TO THE CITY OF MIDLAND DESIGN AND CONSTRUCTION STANDARDS DETAIL No. 310(A) AND 310(B) SEE SHEET C301.
- INSTALL WASTEWATER MANHOLE PER CITY OF MIDLAND DETAIL No. 313(A), 313(B) AND 314 SEE SHEET C302. TYPICAL WASTEWATER MANHOLE COVER PER CITY OF MIDLAND DETAIL No. 503 SEE SHEET C301.
- CONTRACTOR TO ADJUST MANHOLE FRAME AND COVER TO FINAL GRADE PER CITY OF MIDLAND DETAIL No. 316 AND 318 SEE SHEET C302.
- INSTALL 12" PLUG PER CITY OF MIDLAND DETAIL No. 315 SEE SHEET C300.



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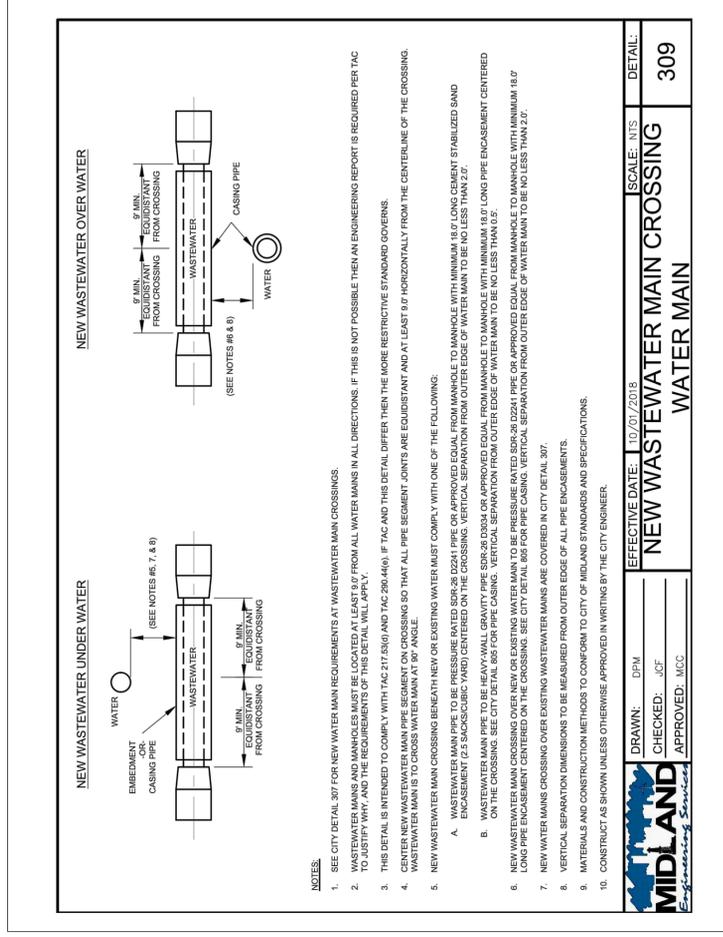
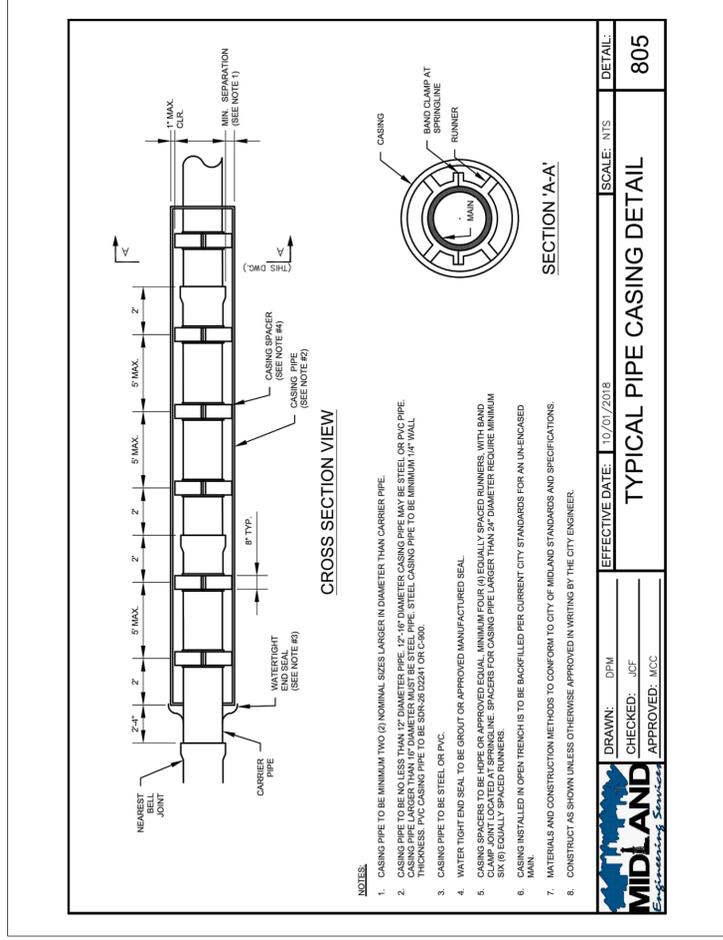
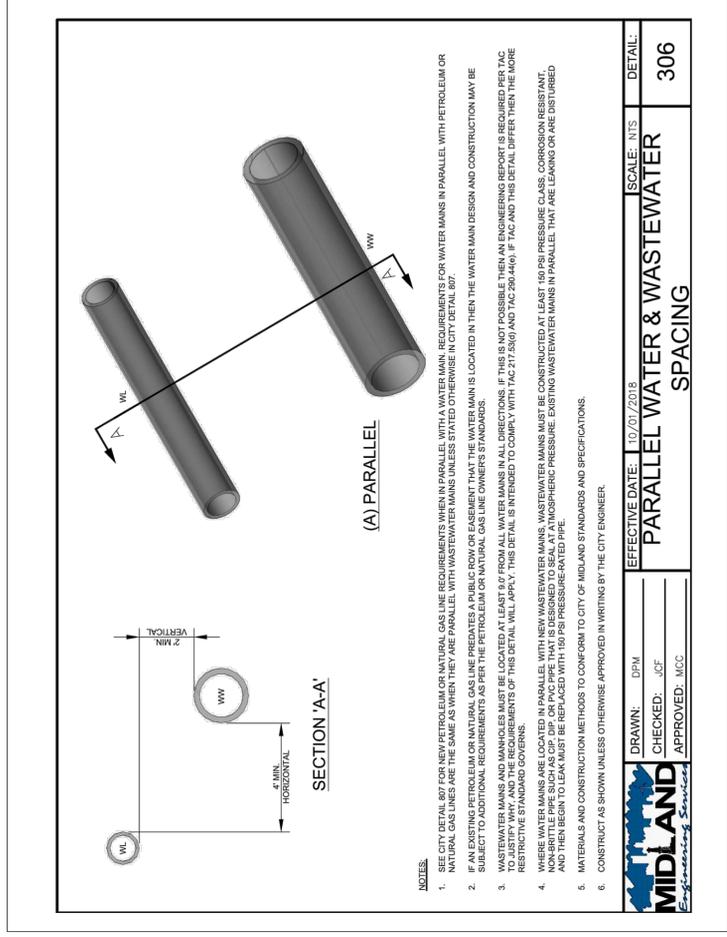
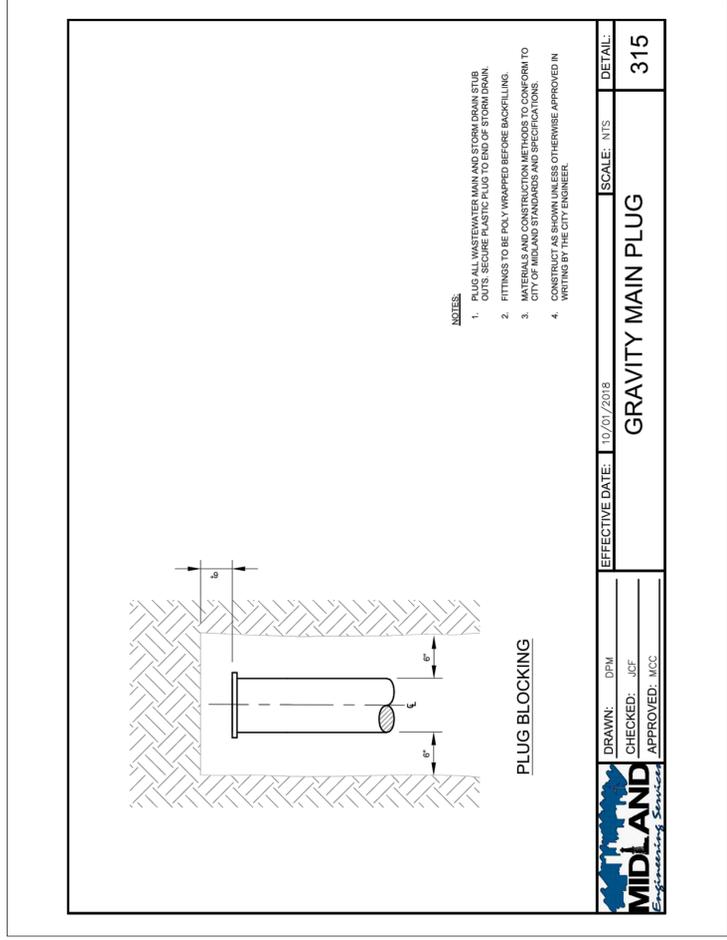
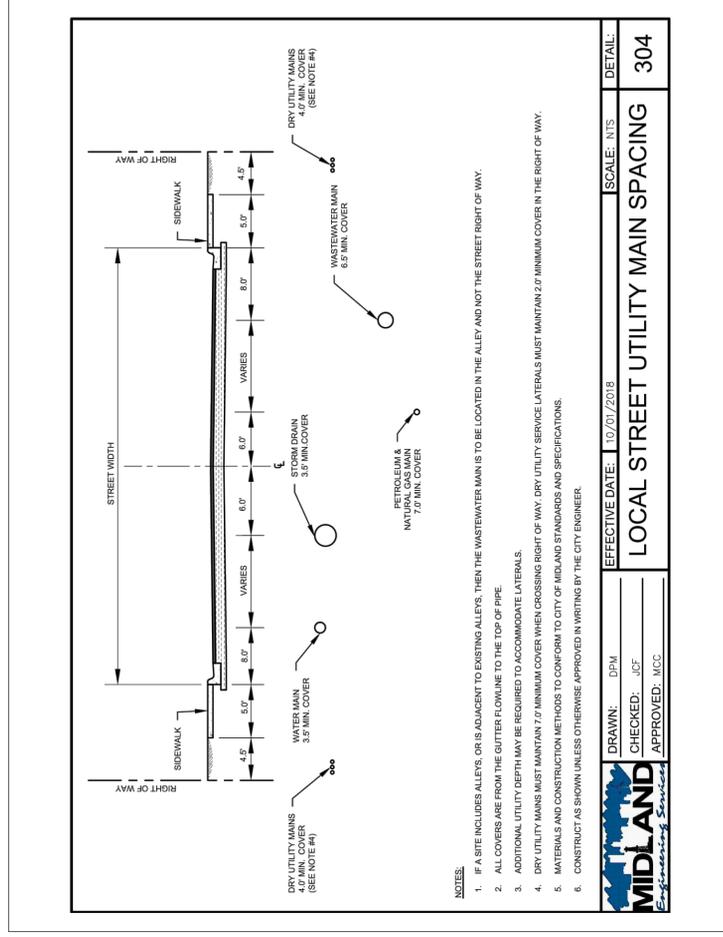


**I2WW P&P**  
UTILITY CONSTRUCTION PLANS  
REGIONAL SE WASTE WATER LIFT  
STATION AND FORCE MAIN CONNECTION  
BEING 324.97 ACRE TRACT OF LAND OUT  
OF AND PART OF SECTION 4, BLOCK 38, T-2-S  
CITY OF MIDLAND, MIDLAND COUNTY, TEXAS

11/12/2024

**C210** OF 23





**WATER MAIN VERTICAL OFFSET**

SCALE: NTS

EFFECTIVE DATE: 10/01/2018

DRAWN: DPM  
CHECKED: JCF  
APPROVED: MCC

DETAIL: 612

NOTES:

- FORM ALL CONCRETE THRUST BLOCKING. DO NOT PLACE UN-FORMED THRUST BLOCKING.
- ALL THRUST BLOCKING TO BE CLASS "K" CONCRETE, 3000 PSI, AND TO BE PLACED AGAINST UNDISTURBED EARTH. USE FIBER REINFORCEMENT THROUGHOUT.
- FITTINGS TO BE POLY WRAPPED BEFORE BLOCKING IS PLACED.
- MATERIALS AND CONSTRUCTION METHODS TO CONFORM TO CITY OF MIDLAND STANDARDS AND SPECIFICATIONS.
- CONSTRUCT AS SHOWN UNLESS OTHERWISE APPROVED IN WRITING BY THE CITY ENGINEER.

**BLOCKING FOR VERTICAL BEND**

SCALE: NTS

EFFECTIVE DATE: 10/01/2018

DRAWN: DPM  
CHECKED: JCF  
APPROVED: MCC

DETAIL: 613

DIAL OF PIPE	22.1/2"		45°		90°	
	VOLUME BLOCK	REBAR NO. SIZE	VOLUME BLOCK	REBAR NO. SIZE	VOLUME BLOCK	REBAR NO. SIZE
4"	3 C.F.	2-#3	8 C.F.	2-#3	12 C.F.	22 C.F.
6"	7 C.F.	2-#3	13 C.F.	2-#3	20 C.F.	2-#4
8"	12 C.F.	2-#3	24 C.F.	2-#3	30 C.F.	2-#4
10"	19 C.F.	2-#3	35 C.F.	2-#4	45 C.F.	2-#4
12"	30 C.F.	2-#3	45 C.F.	2-#4	60 C.F.	2-#4
14"	45 C.F.	2-#4	65 C.F.	2-#4	85 C.F.	2-#4
18"	75 C.F.	2-#4	105 C.F.	2-#4	135 C.F.	2-#4

NOTES:

- FORM ALL CONCRETE THRUST BLOCKING. DO NOT PLACE UN-FORMED THRUST BLOCKING.
- ALL THRUST BLOCKING TO BE CLASS "K" CONCRETE, 3000 PSI, AND TO BE PLACED AGAINST UNDISTURBED EARTH. USE FIBER REINFORCEMENT THROUGHOUT.
- FITTINGS TO BE POLY WRAPPED BEFORE BLOCKING IS PLACED.
- MATERIALS AND CONSTRUCTION METHODS TO CONFORM TO CITY OF MIDLAND STANDARDS AND SPECIFICATIONS.
- CONSTRUCT AS SHOWN UNLESS OTHERWISE APPROVED IN WRITING BY THE CITY ENGINEER.

**BLOCKING FOR HORIZONTAL BENDS**

SCALE: NTS

EFFECTIVE DATE: 10/01/2018

DRAWN: DPM  
CHECKED: JCF  
APPROVED: MCC

DETAIL: 616

DIAL OF PIPE	11.1/4"		22.1/2"		45°		90°	
	A	B	A	B	A	B	A	B
4"	0'-4"	1'-0"	0'-5"	1'-0"	0'-6"	0'-11"	1'-0"	1'-3"
6"	0'-7"	1'-0"	0'-7"	1'-0"	0'-8"	1'-0"	1'-1"	1'-11"
8"	0'-8"	0'-10"	0'-9"	1'-0"	1'-4"	0'-10"	1'-0"	2'-0"
10"	0'-10"	1'-0"	1'-2"	1'-0"	1'-4"	1'-10"	1'-0"	2'-0"
12"	1'-0"	1'-0"	1'-11"	1'-1"	2'-0"	2'-0"	2'-0"	3'-10"
14"	0'-11"	1'-0"	1'-11"	1'-1"	2'-4"	2'-4"	3'-3"	3'-10"
18"	1'-11"	1'-0"	2'-2"	1'-2"	2'-8"	2'-8"	3'-9"	3'-9"

NOTES:

- FORM ALL CONCRETE THRUST BLOCKING. DO NOT PLACE UN-FORMED THRUST BLOCKING.
- ALL THRUST BLOCKING TO BE CLASS "K" CONCRETE, 3000 PSI, AND TO BE PLACED AGAINST UNDISTURBED EARTH. USE FIBER REINFORCEMENT THROUGHOUT.
- FITTINGS TO BE POLY WRAPPED BEFORE BLOCKING IS PLACED.
- MATERIALS AND CONSTRUCTION METHODS TO CONFORM TO CITY OF MIDLAND STANDARDS AND SPECIFICATIONS.
- CONSTRUCT AS SHOWN UNLESS OTHERWISE APPROVED IN WRITING BY THE CITY ENGINEER.

**TRENCHING AND BEDDING**

SCALE: NTS

EFFECTIVE DATE: 10/01/2018

DRAWN: DPM  
CHECKED: JCF  
APPROVED: MCC

DETAIL: 310(A)

TRENCH BACKFILL NOTES:

- APPLIES TO ALL PIPE TYPES. (DUCTILE IRON, PVC, ETC.)
- UTILIZE SELECT FILL BACKFILL BENEATH ALL PAVED SURFACES. NATIVE MATERIAL BACKFILL CAN ONLY BE USED FOR UNPAVED TRENCH CONDITIONS IF BACKFILL MATERIAL IS 3' SOIL AND 5' 15' F)
- NATIVE MATERIAL TO BE EXISTING EXCAVATED SOIL FROM TRENCH WITH ALL MATERIAL BROKEN DOWN ≤ 2".
- MOISTURE CONDITION ALL BACKFILL MATERIAL PRIOR TO PLACING IN TRENCH.
- PLACE TRENCH BACKFILL MATERIAL IN MAXIMUM 12" LOOSE LIFTS AND COMPACT TO MAXIMUM 8" COMPACTED LIFTS.
- REFER TO CITY DETAILS 311 AND 312 FOR TRENCH PAVEMENT REPLACEMENT REQUIREMENTS.
- PLACE LAYERS B, C, AND E FOUND ON CITY DETAIL 310(B) AS SEPARATE LAYERS.
- MATERIALS AND CONSTRUCTION METHODS TO CONFORM TO CITY OF MIDLAND STANDARDS AND SPECIFICATIONS.
- CONSTRUCT AS SHOWN UNLESS OTHERWISE APPROVED IN WRITING BY THE CITY ENGINEER.

**TRENCHING AND BEDDING**

SCALE: NTS

EFFECTIVE DATE: 10/01/2018

DRAWN: DPM  
CHECKED: JCF  
APPROVED: MCC

DETAIL: 310(B)

TRENCH ZONES:

- ZONE A: TRENCH BACKFILL
- ZONE B: PIPE BACKFILL
- ZONE C: HAUNCHING
- ZONE D: PIPE EMBEDMENT
- ZONE E: BEDDING

**TYPICAL WASTEWATER MANHOLE COVER**

SCALE: NTS

EFFECTIVE DATE: 10/01/2018

DRAWN: DPM  
CHECKED: JCF  
APPROVED: MCC

DETAIL: 503

NOTES:

- MANHOLE COVERS TO BE CAST WITH THE FOLLOWING:
  - CITY OF MIDLAND LOGO
  - "WASTEWATER"
- MATERIALS AND CONSTRUCTION METHODS TO CONFORM TO CITY OF MIDLAND STANDARDS AND SPECIFICATIONS.
- CONSTRUCT AS SHOWN UNLESS OTHERWISE APPROVED IN WRITING BY THE CITY ENGINEER.

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**811**  
Know what's below.  
Call before you dig.

**UTILITY DETAILS**  
UTILITY CONSTRUCTION PLANS  
REGIONAL SE WASTE WATER LIFT  
STATION AND FORCE MAIN CONNECTION  
BEING 324.97 ACRE TRACT OF LAND OUT  
OF AND PART OF SECTION 4, BLOCK 38, T-2-S  
CITY OF MIDLAND, MIDLAND COUNTY, TEXAS

**AMERICAN BRINK**  
CAMERON BRINK  
157646  
PROFESSIONAL ENGINEER  
11/12/2024

**C301** OF 23







TABLE 1: REQUIRED VOLUME CALCULATIONS  
(PER TCEQ 30 TAC 217.60(b)(7))

NOTE:  
IN ACCORDANCE WITH 30 TAC 217.60(b)(7), THE REQUIRED VOLUME AT 1000 GPM IS AS FOLLOWS:

$$V_a = (T \times Q) / (4 \times 7.48) \quad \text{Eq. c.4, TAC 217.60(b)(7)}$$

$$= (6 \times 1000) / (4 \times 7.48)$$

$$= 200.53 \text{ cf}$$

WHERE:

$V_a$  = 200.53 CF (ACTIVE VOLUME REQUIRED)  
 $Q$  = 1000 GPM (PUMP CAPACITY)  
 $T$  = 6 MIN (MIN ALLOW CYCLE TIME)  
 $C_f$  = 7.48 GAL/CF

NOW:

$$V = (D^2 \pi / 4) \times H$$

$$= (6^2 \pi / 4) \times 7.1$$

$$= 200.75 \text{ CF} > 200.53 \text{ CF o.k.}$$

WHERE:

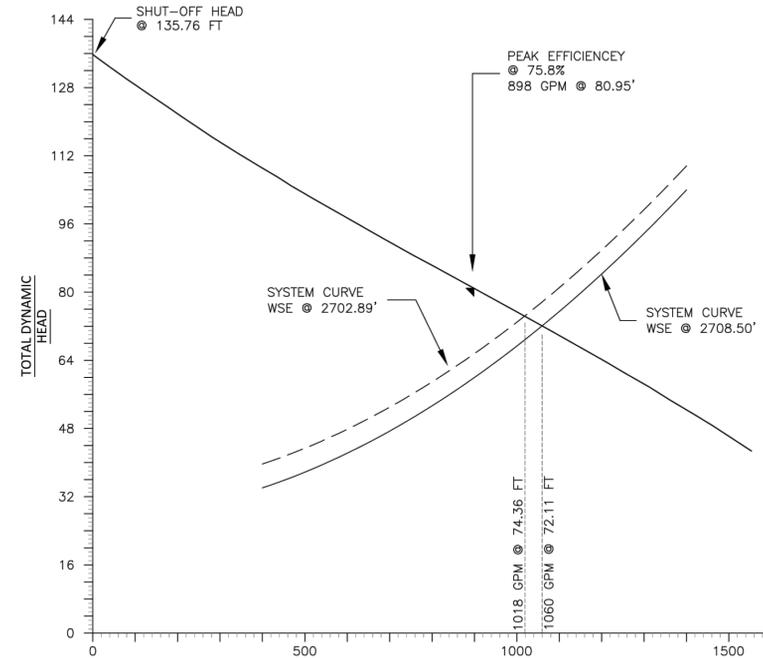
$V$  = VOLUME PROVIDED  
 $D$  = DIAMETER OF WET WELL (i.e., 6 ft)  
 $H$  = DEPTH OF WATER AT NORMAL CYCLE (i.e., H=2710.00-2702.90, or 7.1 ft)

TABLE 2: PIPE LENGTHS

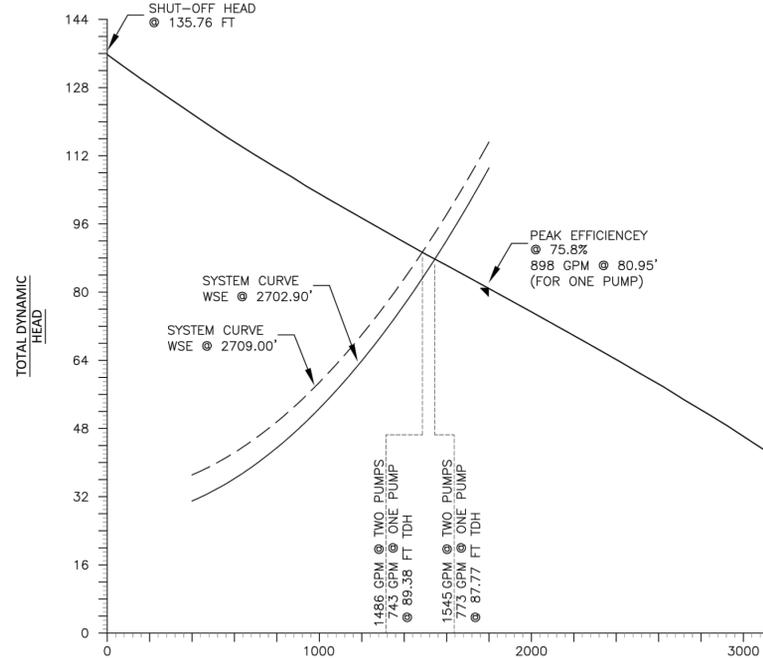
	LENGTH L	EQUIVALENT LENGTH @ D=12" Le
6" DUCTILE IRON	34.00	994.57
12" HDPE	9386.93	9386.93
TOTAL	--	10381.50

TABLE 3: MINOR LOSS COEFFICIENT

FITTING/MINOR LOSS	NO. OF ITEMS	K	$\Sigma K$
<b>@ LIFT STATION</b>			
INLET	1	0.10	0.10
6" 90° BEND	3	0.90	2.70
6" CHECK VALVE	1	4.00	4.00
6" PLUG VALVE	1	0.20	0.20
6" TEE, BRANCH	1	1.80	1.80
6x12" REDUCER	1	0.57	0.57
TOTAL			9.37
		$K_e = 149.92$	(@ D=12")
12" 90° BEND	3	0.90	2.70
12" 45° BEND	8	0.42	3.36
12" 22½° BEND	8	0.21	1.68
12" 1½" BEND	8	0.10	0.80
12" PLUG VALVE	5	0.20	1.00
12" OUTLET/EXIT	1	1.00	1.00
TOTAL			10.54
		$K_e = 160.46$	(@ D=12")



FLYGH 3171 - PERFORMANCE CURVE  
WITH SINGLE PUMP OPERATION



FLYGH 3171 - PERFORMANCE CURVE  
DUPLX PUMP OPERATION

GENERAL NOTES

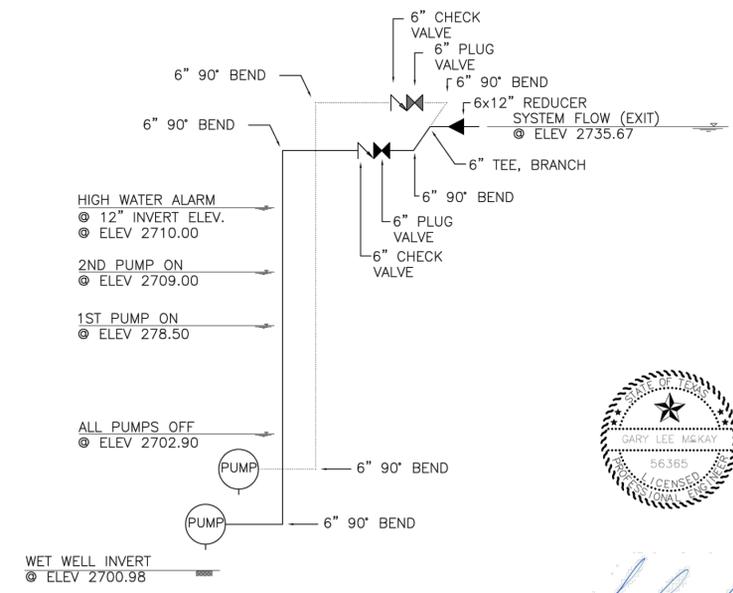
- UNLESS OTHERWISE STATED, THE LIFT STATION AND FORCE MAIN SHALL MEET THE REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) §217.60-68.
- INSTALL DUPLEX LIFT STATION AS SHOWN IN THE DRAWINGS WITH SUBMERSIBLE FLYGH NP3171 HT, 3Ø, 454, 6" NON-CLOG SEWAGE PUMPS OR APPROVED EQUAL. THE PUMPS SHALL BE CAPABLE OF DELIVERING 1018 gpm AT A 74.4 ft OF TOTAL DYNAMIC HEAD.
- THE WET WELL SHALL BE 72" DIAMETER BY 23.62' AND, SHALL BE FABRICATED 3" TOP FLANGE & BOTTOM ANTI-FLOTATION FLANGE.
- THE WET WELL TO BE EQUIPPED WITH LIFTING LUGS AND SLEEVES AS SHOWN ON THE DRAWINGS.
- THE CHECK VALVE, GATE VALVE, AND NECESSARY FITTINGS AS SHOWN SHALL BE ENTIRELY WITHIN THE 72" FIBERGLASS VALVE BOX AS SHOWN.
- THE LIFT STATION WET WELL IS TO BE EQUIPPED WITH A HALLIDAY PRODUCTS SERIES C2R ACCESS DOOR AND COVER. THE COVER SHALL BE ¼" THICK DIAMOND PATTERN ALUMINUM COVER. THE COVER TO BE EQUIPPED WITH A 32x48" ACCESS HOLE ON THE WET WELL AND A 30x30" ACCESS ON THE VALVE VAULT.
- THE LIFT STATION ACCESS COVER SHALL BE EQUIPPED WITH A RIGID ALUMINUM SAFETY GRATE UNDER THE ACCESS COVER.
- THE CONTRACTOR SHALL INSTALL THE POWER POLE AND METER LOOP FOR A THREE PHASE ELECTRICAL CIRCUIT. THE METER AND CONNECTION SHALL BE INSTALLED AS PER THE MANUFACTURE'S RECOMMENDATIONS.
- UNLESS OTHERWISE APPROVED ALL HARDWARE WITHIN THE LIFT STATION AND VALVE VAULT SHALL BE STAINLESS STEEL 317SS.
- THE CONTRACTOR SHALL INSTALL A CONTROL PANEL, COMPLETE AND INPLACE, AS MANUFACTURED BY STACON AND SUPPLIED BY THE PUMP MANUFACTURER CONTAINING ALL OF THE MECHANICAL AND ELECTRICAL EQUIPMENT NECESSARY TO PROVIDE FOR THE COMPLETE OPERATION OF THE SUBMERSIBLE PUMPS.
- THE CONTROL PANEL ENCLOSURE SHALL BE RATED NEMA 4X AND SHALL BE CONSTRUCTED OF 304 STAINLESS STEEL. A SINGLE, THREE POINT LOCKABLE EXTERIOR LATCH SHALL BE INCLUDED TO ALLOW ENTRY TO THE PANEL. MULTIPLE, SCREW TYPE FASTENERS ARE NOT ALLOWABLE. A POLISHED INNER DOOR SHALL BE MOUNTED ON A CONTINUOUS ALUMINUM AIRCRAFT TYPE HINGE AND SHALL CONTAIN CUTOUTS FOR THE PROTRUSION OF THE CIRCUIT BREAKERS AND PROVIDE PROTECTION OF THE PERSONNEL FROM INTERNAL LIVE VOLTAGES. ALL CONTROL SWITCHES, PILOT INDICATORS, ELAPSED TIME METERS AND OTHER DEVICES SHALL BE MOUNTED ON THE EXTERNAL SURFACE OF THE DEAD FRONT. THE DEAD FRONT DOOR SHALL OPEN A MINIMUM OF 150 DEGREES TO ALLOW FOR ACCESS TO THE EQUIPMENT FOR MAINTENANCE. A ¾" BREAK SHALL BE FORMED AROUND THE PERIMETER OF THE DEAD FRONT TO PROVIDE RIGIDITY. A BACK PLATE SHALL BE MANUFACTURED FROM 12 GAUGE SHEET STEEL AND BE FINISHED WITH A PRIMER COAT AND TWO COATS OF BAKED ON WHITE ENAMEL. ALL HARDWARE SHALL BE MOUNTED USING STAINLESS STEEL MACHINE THREAD SCREWS. SHEET METAL SCREWS SHALL NOT BE ACCEPTABLE. ALL INSTALLED DEVICES WILL BE PERMANENTLY IDENTIFIED WITH ENGRAVED LEGENDS.
- THE PANEL POWER DISTRIBUTION SHALL INCLUDE ALL NECESSARY COMPONENTS AND BE WIRED WITH STRANDED COPPER CONDUCTORS RATED AT 90 DEGREES "C". CONDUCTOR TERMINALS SHALL BE AS RECOMMENDED BY THE DEVICE MANUFACTURER.
- THE POWER SYSTEM SHALL CONTAIN INCOMING POWER TERMINALS, MOTOR CIRCUIT BREAKERS AND CONTROL CIRCUIT BREAKER. ALL CIRCUIT BREAKERS SHALL BE HEAVY DUTY THERMAL MAGNETIC, SIMILAR OR EQUAL TO SQUARE D TYPE FAL. EACH BREAKER SHALL BE SIZED TO ADEQUATELY MEET THE OPERATING CONDITIONS OF THE LOAD AND HAVE A MINIMUM INTERRUPTING CAPACITY OF 10,000 AMPS AT 230 V AND 18,000 AT 460 V. BREAKERS SHALL BE INDICATING TYPE, PROVIDING AN "ON-OFF-TRIPPED" POSITIONS OF THE HANDLE. THEY SHALL BE QUICK MAKE-QUICK BREAK ON MANUAL AND AUTOMATIC OPERATION AND HAVE INVERSE TIME CHARACTERISTICS. BREAKERS SHALL BE DESIGNED SO THAT TRIPPING OF ONE POLE AUTOMATICALLY TRIPS ALL POLES.
- MOTOR STARTERS SHALL BE OPEN FRAME, ACROSS THE LINE, NEMA RATED WITH INDIVIDUAL OVERLOAD PROTECTION IN EACH PHASE. MOTOR STARTER CONTACTS AND COIL SHALL BE REPLACEABLE FROM THE FRONT OF THE STARTER WITHOUT REMOVAL OF THE STARTER FROM ITS MOUNTED POSITION. OVERLOAD HEATERS SHALL BE BLOCK TYPE, UTILIZING MELTING ALLOY SPINDLES, SIZED FOR THE FULL LOAD AMPERAGE OF THE LOAD. DEFINITE PURPOSE CONTACTORS, FRACTIONAL SIZE STARTERS AND HORSEPOWER RATED CONTACTORS OR RELAYS SHALL NOT BE USED.
- A LIGHTNING-TRANSIENT PROTECTOR SHALL BE PROVIDED. THE DEVICE SHALL BE A SOLID-STATE DEVICES WITH A RESPONSE TIME OF LESS THAN 5 NANO-SECONDS WITH A WITHSTANDING SURGE CAPACITY OF 6500 AMPERES. ALL UNITS SHALL BE INSTANT RECOVERY, LONG LIFE AND HAVE NO HOLDOVER CURRENTS.
- THE PANEL POWER DISTRIBUTION SYSTEM SHALL INCLUDE THE FOLLOWING COMPONENTS AND SHALL BE SUPPLIED AS STANDARD EQUIPMENT:
  - 50-WATT CONDENSATION HEATER WITH THERMOSTAT
  - CONTROL WIRING TO BE 18AWG COPPER TINNED RATED AT 105 DEGREES C.
  - EACH WIRE SHALL BE NUMBERED CORRESPONDING TO THE WIRING DIAGRAM
  - ALARM SILENCE SWITCH TO MUTE ALARM HORN
  - A 15 AMP, GFCI DUPLEX CONVENIENCE OUTLET LOCATED IN INNER DOOR
  - A INTERIOR WORK LIGHT WITH SWITCH ON INNER DOOR
- A LEVEL CONTROL SYSTEM SHALL BE PROVIDED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS. THE LEVEL CONTROL SYSTEM SHALL CONSIST OF A MULTITRODE MSM3PC MULTISMART LEVEL CONTROLLER AND FOGROD LEVEL INDICATOR. ALL LOGIC FUNCTIONS INCLUDING ALTERNATION, PUMP START/STOP, HIGH/LOW LEVEL ALARMS AND PUMP MONITORING SHALL BE ACCOMPLISHED BY THE PUMP CONTROLLER. MOTOR PROTECTION FEATURES, INCLUDING MOTOR INSULATION RESISTANCE TESTING, CURRENT MEASUREMENT AND VOLTAGE MEASUREMENT SHALL BE INCLUDED. ALARMING ON HIGH, LOW AND/OR IMBALANCE SHALL BE FIELD PROGRAMMABLE.
- A BAR GRAPH LEVEL READOUT LEVEL CONTROLLER SHALL BE PROVIDED TO INDICATE LEVEL IN THE WET WELL. THE CONTROLLER SHALL CONTROL THE PUMPS AND MONITOR UP TO FOUR ALARM POINTS. THE UNIT SHALL HAVE MAXIMUM RUN TIME, MAXIMUM OFF TIME AND SUMP CLEAN OUT FEATURES. THE CONTROLLER SHALL PROVIDE LCD DISPLAY SCREEN TO INDICATE PUMP OPERATION, PUMP FAULTS, ALTERNATION SEQUENCE AND ALARM CONDITIONS. A KEYBOARD MOUNTED ONTO THE DEAD FRONT DOOR THAT WILL PROGRAM, AS A MINIMUM, BUT NOT LIMITED TO, THE FOLLOWING:
  - PUMP ACTIVATION AND DEACTIVATION POINTS
  - ALTERNATION SEQUENCE
  - TIME DELAYS FOR EACH ALARM AND PUMP ON AND OFF POINT
  - MONITOR PUMP SEAL AND TEMPERATURE FAILURES
  - MONITOR CRITICAL AND NON-CRITICAL FAILURES
  - SIMULATION MODE FOR TESTING OF OUTPUTS RELATIVE TO WET WELL LEVEL
- UNIT SHALL BE UP-GRADABLE AND TO BE CAPABLE OF DIRECTLY INTERFACING INTO A SCADA NETWORK VIA LAN CONNECTION AND ALSO OFFER OPTIONAL UPGRADES OF MOTOR PROTECTION (CURRENT MEASUREMENT AND MOTOR INSULATION). OPTIONAL UPGRADE OF REMOTE ALARMING AND MONITOR VIA CELL PHONE CONNECTION SHALL BE AVAILABLE. A COMPACT FLASH CARD READER SHALL BE PROVIDED TO ENABLE STORAGE OF CURRENT PROGRAM PARAMETERS AS WELL AS DOWNLOAD OF SOFTWARE UPGRADES AND OPERATING PARAMETERS.
- MONITOR, DISPLAY AND FAULT INDICATIONS OF THE MOTOR THERMISTORS AND FLS LEAK DETECTION SYSTEM SHALL BE PROVIDED BY SEPARATE MINICAS RELAYS WITH DIGITAL INPUTS INTO THE MULTISMART CONTROLLER.
- THE PANEL SHALL BE EQUIPPED WITH A LIGHT AND HORN TO GIVE INDICATION OF A HIGH-LEVEL CONDITION IN THE WET WELL. THE HORN SHALL PROVIDE A SIGNAL OF NOT LESS THAN 90 DB AT 10 FEET AND SHALL BE MOUNTED TO THE SIDE OF THE ENCLOSURE.
- ALL CONTROL PANELS SHALL BE LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY AND APPLY THE CERTIFICATION NECESSARY TO INDICATE THE NRTL APPROVAL. TO INSURE SINGLE SOURCE RESPONSIBILITY, THE PUMP, PUMP MOTOR AND CONTROL SYSTEM SHALL BE MANUFACTURED BY A SINGLE SOURCE.
- ALL EQUIPMENT SHALL BE GUARANTEED FOR A PERIOD OF THREE (3) YEARS FROM THE DATE OF SHIPMENT. THE GUARANTEE IS EFFECTIVE AGAINST ALL DEFECTS IN WORKMANSHIP AND / OR DEFECTIVE COMPONENTS. THE WARRANTY IS LIMITED TO THE REPLACEMENT OR REPAIR OF THE DEFECTIVE EQUIPMENT.
- PANEL SHALL INCLUDE A MOUNTED SCADA RTU BY CATTRON, MODEL MESSENGER W. AT A MINIMUM, THE FOLLOWING INPUTS SHALL BE PROVIDED:
 

INPUTS:

HIGH LEVEL ALARM (AS NO)  
 PHASE LOSS/POWER FAILURE (AS NC)  
 GENERAL ALARM; ANY OTHER FAULT (AS NO)

OUTPUTS:

SILENCE LOCAL AUDIO ALARM (NO)
- PANEL SHALL INCLUDE A ADR1034 CONNECTOR, GENERATOR BREAKER AND WALKING BEAM MECHANICAL CONNECTION TO PROVIDE LINE ISOLATION WHEN GENERATOR IS CONNECTED.



FLYGH 3171 - SCHEMATIC



NOVEMBER 4, 2024  
FIRM NUMBER F-19868

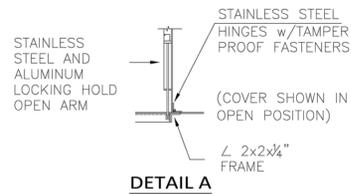
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**LIFT STATION / GENERAL NOTES**  
**RANDALL SCOTT DPS**  
**PHASE I**  
MIDLAND, MIDLAND COUNTY, TEXAS



- 1 3" VENT w/STAINLESS STEEL SCREEN
- 2 8" SCH. 40 SLEEVE CONTRACTOR TO INSTALL WATER TIGHT SEAL AROUND DISCHARGE PIPE AS PER MANUFACTURER'S RECOMMENDATION
- 3 6" FABRICATED DISCHARGE/BEND CONTRACTOR TO INSTALL AS PER MANUFACTURER'S RECOMMENDATIONS

**TABLE 1: GENERAL NOTES**

1. UNLESS OTHERWISE STATED, THE LIFT STATION AND FORCE MAIN SHALL MEET THE REQUIREMENTS OF THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) §217.60-68.
2. INSTALL DUPLEX LIFT STATION AS SHOWN IN THE DRAWINGS WITH SUBMERSIBLE FLYGHT NP3171-454 HT, 3A 6" NON-CLOG SEWAGE PUMPS OR APPROVED EQUAL. THE PUMPS SHALL BE CAPABLE OF DELIVERING 1018 GPM AT 74.4 FT OF TOTAL DYNAMIC HEAD.
3. THE WET WELL SHALL BE 72" DIAMETER BY 23.00' AND, SHALL BE FABRICATED WITH A 3" TOP FLANGE & BOTTOM ANTI-FLOTATION FLANGE.
4. THE WET WELL TO BE EQUIPPED WITH LIFTING LUGS AND SLEEVES AS SHOWN ON THE DRAWINGS.
5. THE CHECK VALVE, GATE VALVE, AND NECESSARY FITTINGS AS SHOWN SHALL BE ENTIRELY WITHIN THE 72" FIBERGLASS VALVE BOX AS SHOWN.
6. THE LIFT STATION WET WELL IS TO BE EQUIPPED WITH A HALLIDAY PRODUCTS SERIES C2R ACCESS DOOR AND COVER. THE COVER SHALL BE 1/4" THICK DIAMOND PATTERN ALUMINUM COVER. THE COVER TO BE EQUIPPED WITH A 32x48" ACCESS HOLE ON THE WET WELL AND A 32x48" ACCESS ON THE VALVE VAULT.
7. THE LIFT STATION ACCESS COVER SHALL BE EQUIPPED WITH A RIGID ALUMINUM SAFETY GRATE UNDER THE ACCESS COVER.
8. THE CONTRACTOR SHALL INSTALL THE POWER POLE AND METER LOOP FOR A THREE-PHASE ELECTRICAL CIRCUIT. THE METER AND CONNECTION SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.
9. THE CONTROL PANEL TO BE INSTALL AS PER THE MANUFACTURER'S RECOMMENDATIONS. THE CONTRACTOR SHALL ENSURE THE PANEL WILL BE OPERATIONAL AND COMPATIBLE WITH THE CITY'S SYSTEM.

**TABLE 2: REQUIRED VOLUME CALCULATIONS (PER TCEQ 30 TAC 217.60(b)(7))**

NOTE:  
 IN ACCORDANCE WITH 30 TAC 217.60(b)(7), THE REQUIRED VOLUME AT 1000 GPM IS AS FOLLOWS:

$$V_a = (T \times Q) / (4 \times 7.48) \quad \text{Eq c.4, TAC 217.60(b)(7)}$$

$$= 6 \times 1000 / (4 \times 7.48)$$

$$= 200.53 \text{ cf}$$

WHERE:

$V_a = 200.53 \text{ CF}$  (ACTIVE VOLUME REQUIRED)  
 $Q = 1000 \text{ GPM}$  (PUMP CAPACITY)  
 $T = 6 \text{ MIN}$  (MIN ALLOW CYCLE TIME)  
 $C_f = 7.48 \text{ GAL/CF}$

NOW:

$$V = (D^2 \pi / 4) \times H$$

$$= (6^2 \pi / 4) \times 7.6$$

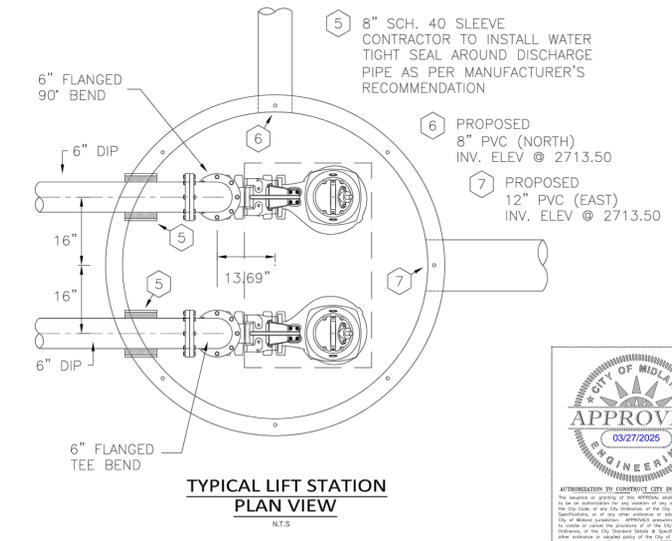
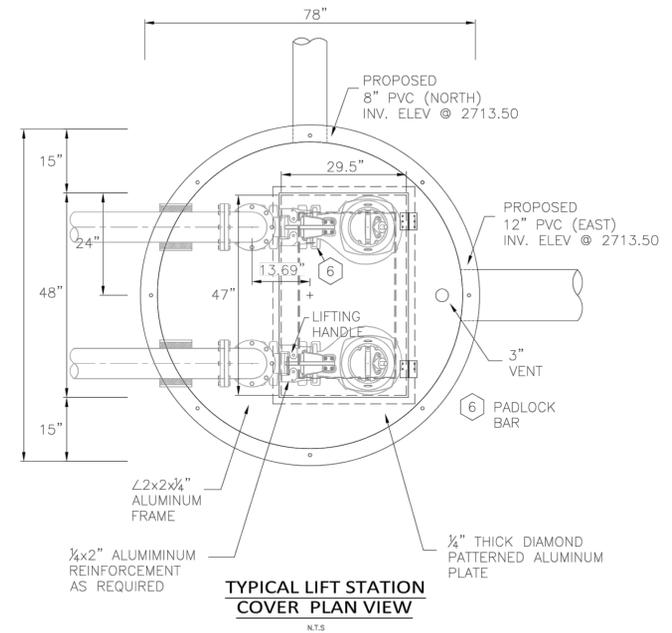
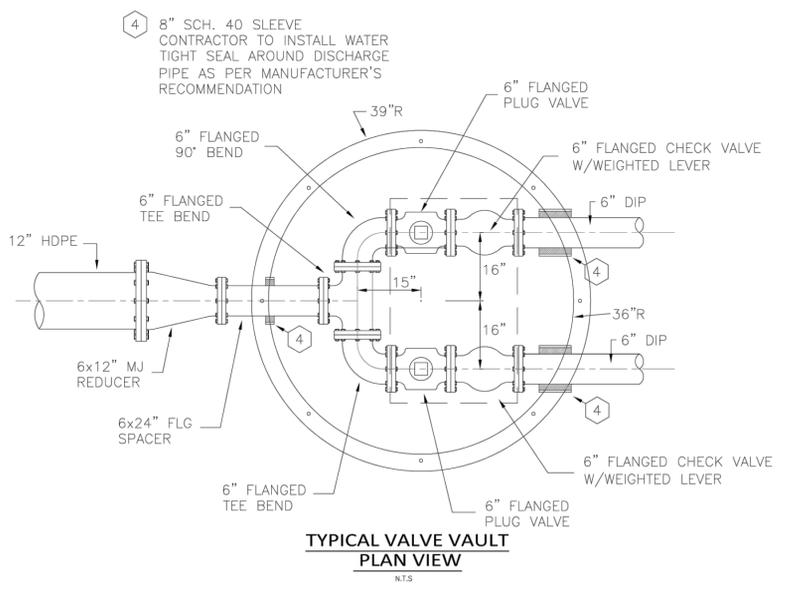
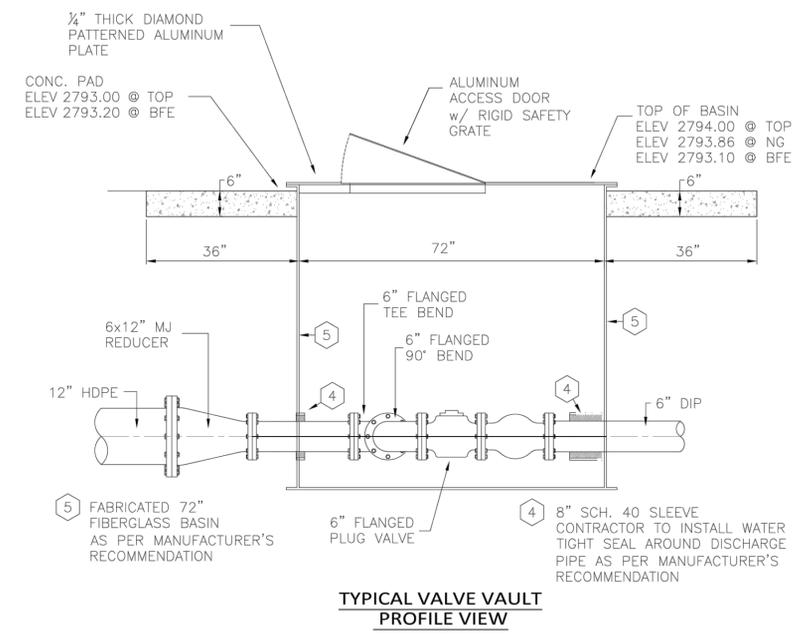
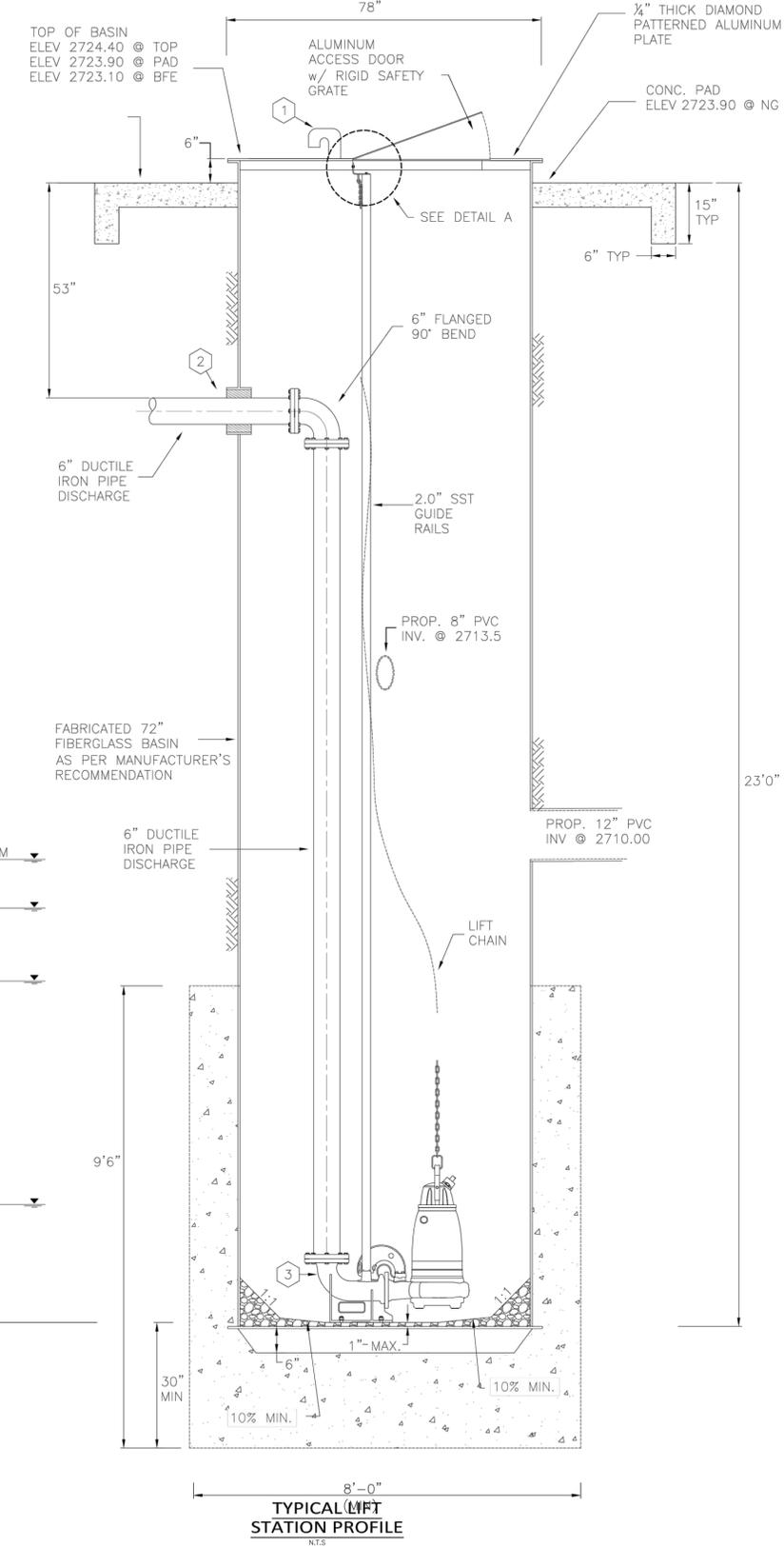
$$= 200.75 \text{ CF} > 200.53 \text{ CF o.k.}$$

WHERE:

$V =$  VOLUME PROVIDED  
 $D =$  DIAMETER OF WET WELL (i.e., 6 ft)  
 $H =$  DEPTH OF WATER AT NORMAL CYCLE (i.e., H=2710.00-2702.90, or 7.1 ft)



*Shry Lee Wicker*  
 NOVEMBER 7, 2024  
 FIRM NUMBER F-19868



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**LIFT STATION PLAN VIEW**  
**RANDALL SCOTT DPS**  
**PHASE I**  
 MIDLAND, MIDLAND COUNTY, TEXAS

**C403**



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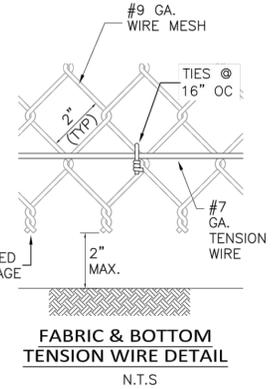
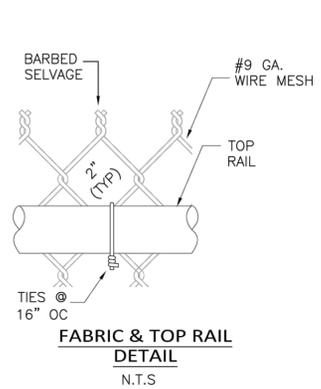
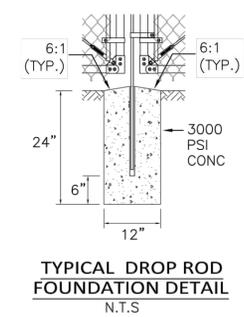
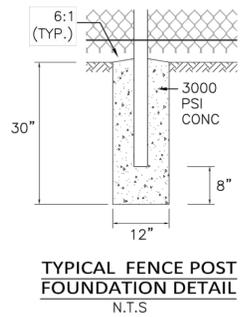
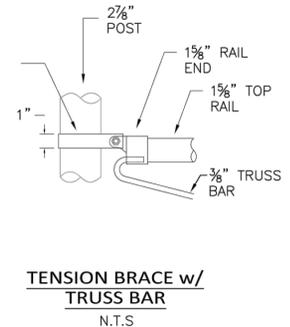
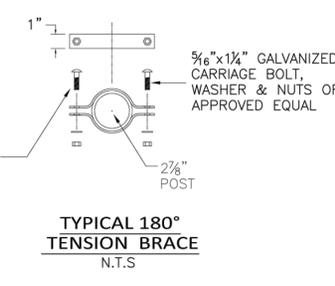
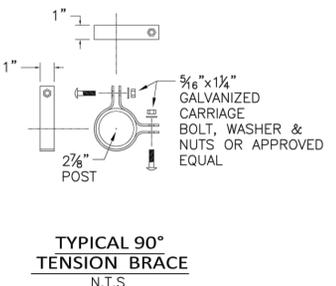
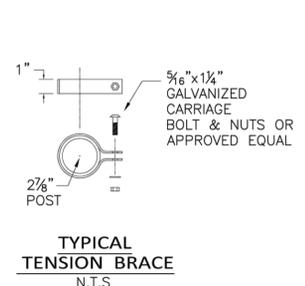
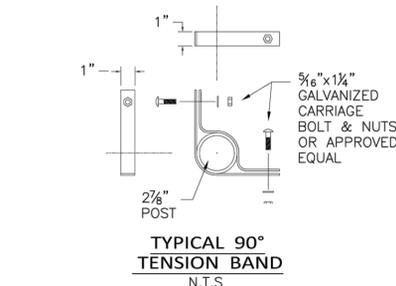
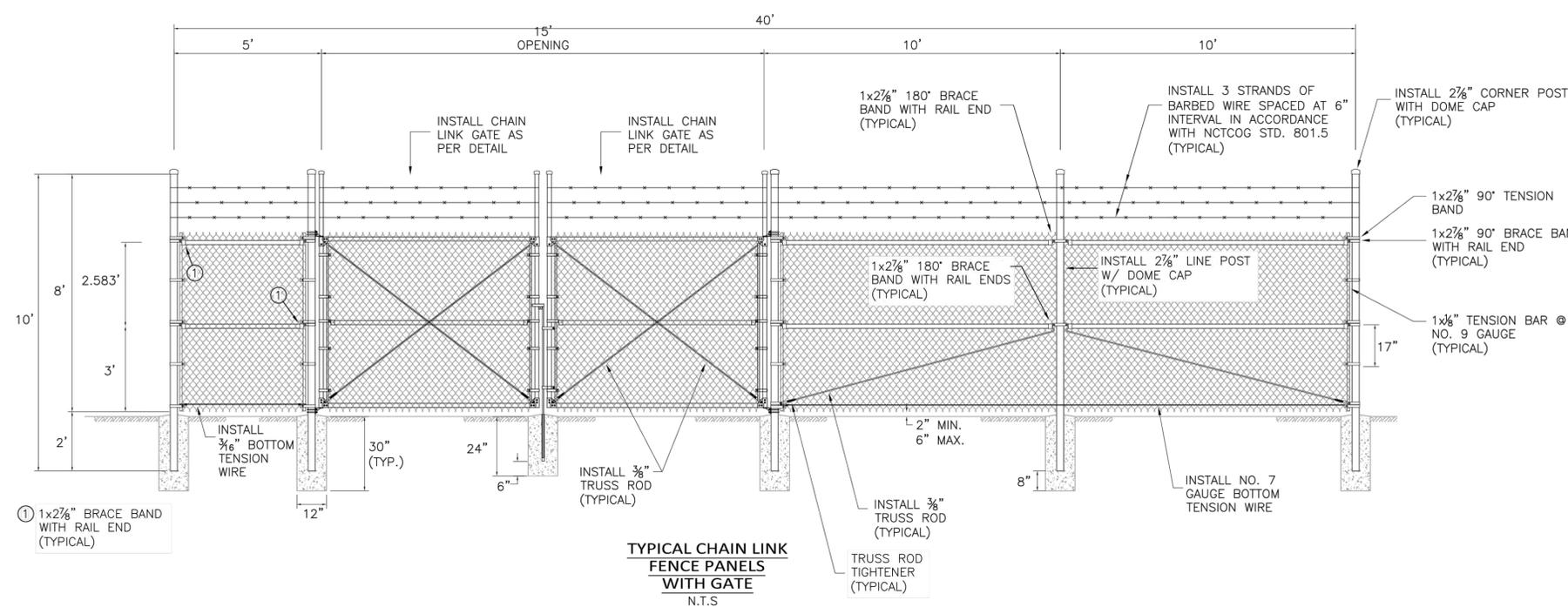
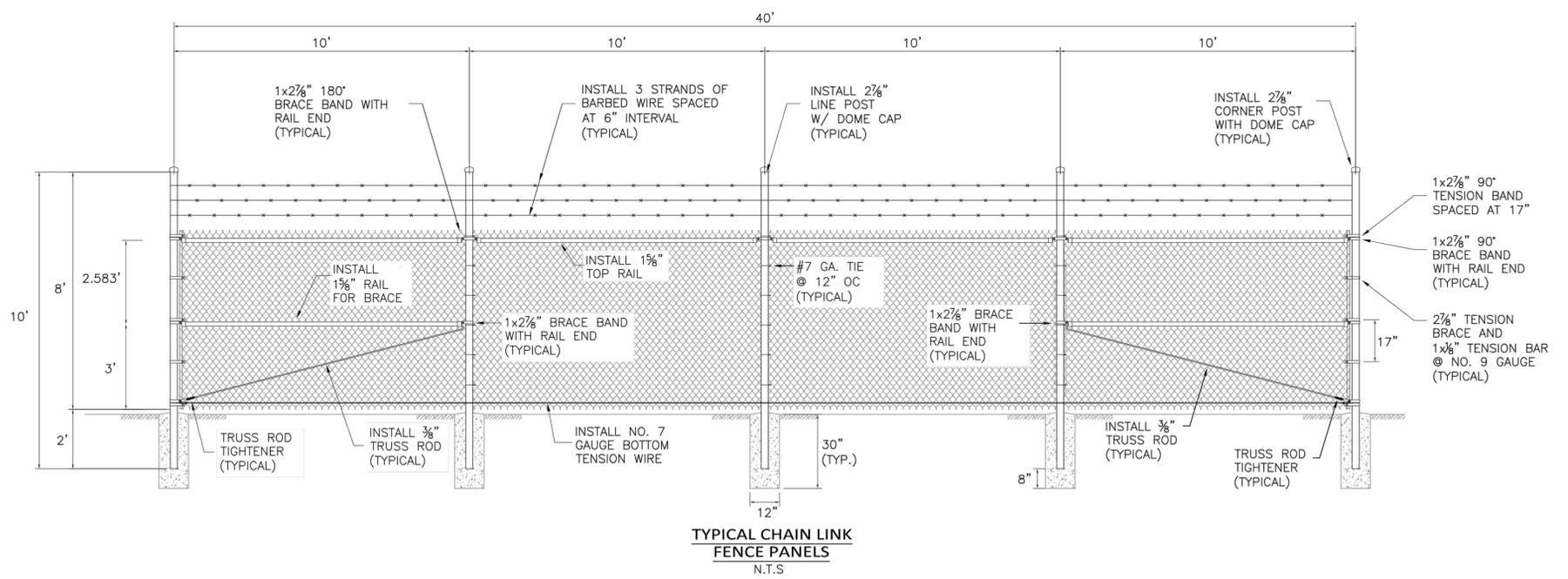
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**LIFT STATION / GENERAL NOTES**  
**RANDALL SCOTT DPS**  
**PHASE I**  
MIDLAND, MIDLAND COUNTY, TEXAS

SHEET **C404**



**GENERAL NOTES**

- BARBED WIRE SHALL COMPLY WITH NCTCOG STANDARD SPECIFICATION 801.5.2, AND SHALL BE TWO STRAND TWISTED 12 1/2 AWS GAUGE GALVANIZED STEEL WIRE WITH FOUR POINT BARBS OF NO. 14 AWS GAUGE GALVANIZED STEEL WIRE CONFORMING WITH CLASS 1 ASTM 121.
- UNLESS OTHERWISE SHOWN ON THE DRAWINGS, THE LINE AND CORNER POSTS SHALL BE SCHEDULE 40 AND WITH A 2-7/8" NOMINAL DIAMETER, (I.E. AN O.D. OF 2.875") AND SHALL WEIGH A MIN. OF 5.793 LB/FT. THE PIPE SHALL BE SCHEDULE 40 AND SHALL MEET THE REQUIREMENTS OF ASTM 1043.
- CHAIN LINK FABRIC SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH NCTCOG STANDARD SPECIFICATION 801.4 AND SHALL BE ZINC COATED IN ACCORDANCE WITH ASTM A392. THE WIRE FABRIC SHALL BE GAUGE NO. 9 AND SHALL BE BARBED ON THE TOP AND BOTTOM AS SHOWN IN THE DRAWING.
- ALL FITTINGS SHALL CONFORM WITH NCTCOG STANDARD SPECIFICATIONS 801.4, "CHAIN LINK FENCE" AND SHALL BE ZINC COATED IN ACCORDANCE WITH ASTM A392 AND NCTCOG STANDARD SPECIFICATIONS 801.5.
- TYPICAL INSTALLATION MAY VARY AS SHOWN ON ELSEWHERE IN THE PLANS OR AS DIRECTED BY THE ENGINEER. THE LAYOUT AND LOCATION OF THE GATES ARE AS SHOWN ELSEWHERE IN THE PLANS.
- GATE FRAMES MEMBERS SHALL BE BOLTED AT THE FRAME CORNERS TO JOINT FITTINGS WITH 4 (FOUR) 1/2" BOLTS PER JOINT.
- CONCRETE FOR EACH FOUNDATION SHALL BE CLASS B AND HAVE A MINIMUM STRENGTH OF 3000 PSI AND SHALL BE IN ACCORDANCE WITH THE APPROPRIATE NCTCOG STANDARD SPECIFICATION 702.

D:\WORK\PROJECTS\24-004\01 - MIDLAND DPS - MLDN(RP201) - FENCE.DWG  
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*Gary Lee Macky*  
AUGUST 14, 2024  
FIRM NUMBER F-19868

