

# CITY OF BRYAN, TEXAS

## PLANS FOR

# TABOR - 16TH ST. & N. TEXAS GW STORAGE TANKS

## (1 MG SITE)

CITY OF BRYAN PROJECT NO. 611-D6-0833  
RFB# ENG 12-11

MAYOR  
JASON BIENSKI

CITY COUNCIL  
RICHARD M. CORTEZ, SR.  
PAUL MADISON, SR.  
CHUCK KONDERLA  
ANN M. HORTON  
ART HUGHES  
MIKE SOUTHERLAND

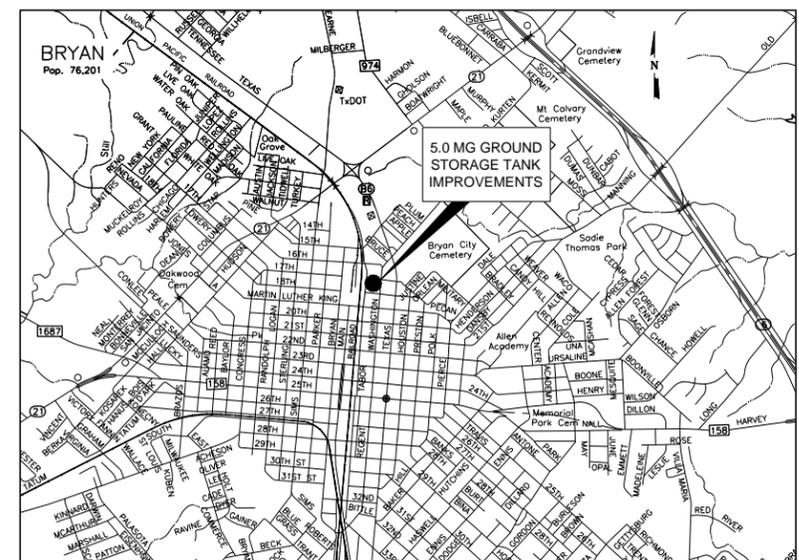
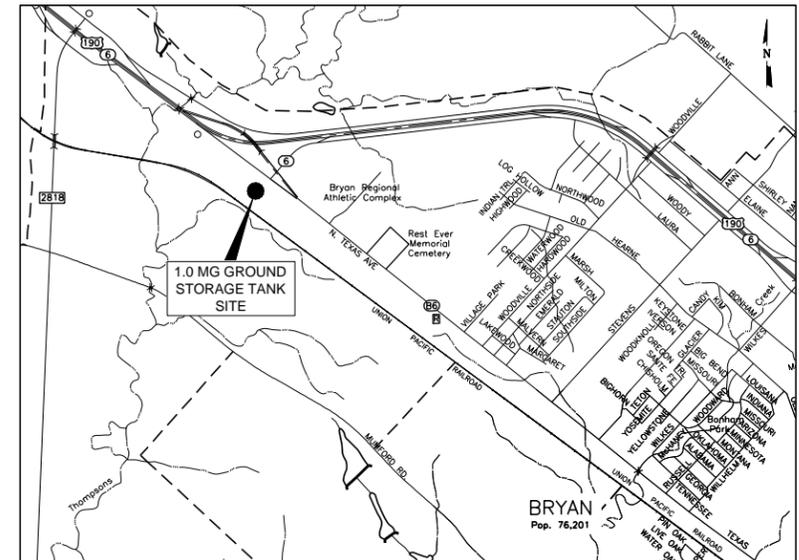
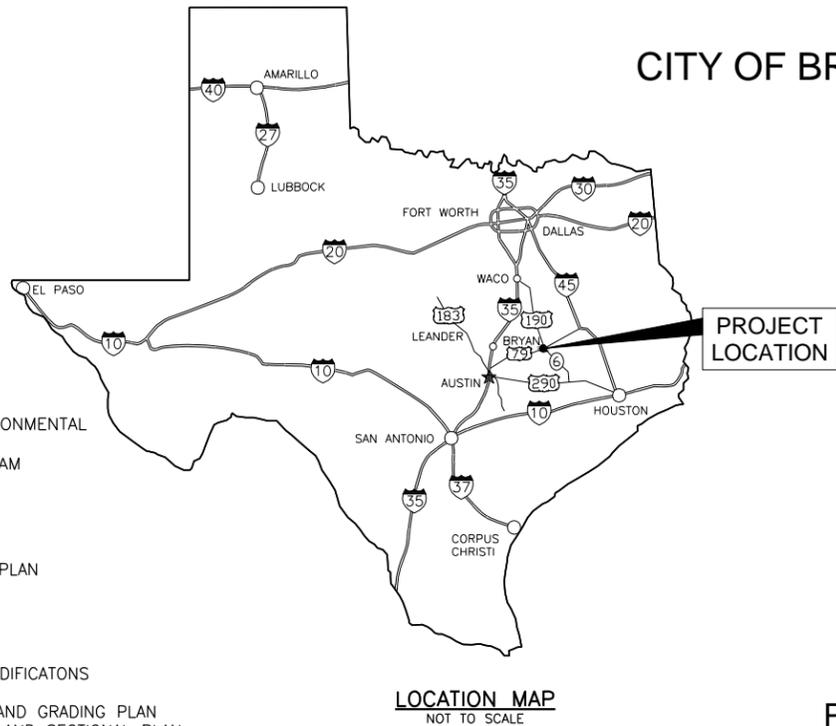
CITY MANAGER  
KEAN REGISTER

DEPUTY CITY MANAGER  
HUGH R. WALKER  
JOSEPH A. DUNN

PUBLIC WORKS DIRECTOR  
JAYSON BARFKNECHT

CITY ENGINEER  
W. PAUL KASPAR

ASSISTANT CITY ENGINEER  
BARNEY WILLIAMS  
BRETT McCULLY



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

# SEPTEMBER 2012

## ISSUED FOR BID



CITY OF BRYAN, TEXAS  
300 SOUTH TEXAS AVE.  
BRYAN, TEXAS 77803  
(979) 209-5030



10814 Jollyville Road Building IV, Suite 100  
Austin, Texas 78759  
Phone - (512) 617-3100  
Fax - (512) 617-3101

**BRY09116 / 1.0MG**

**GENERAL NOTES**

- IN THE ABSENCE OF DETAILS OR SPECIFICATIONS IN THESE CONTRACT DOCUMENTS APPLICABLE DESIGN AND DETAILS SHALL CONFORM TO GENERAL CONTRACT DOCUMENTS AND SPECIFICATIONS FOR CITY OF BRYAN ENGINEERING DEPARTMENT WITH LATEST REVISIONS. IF ANY CONFLICTS EXIST BETWEEN THESE CONTRACT DOCUMENTS, THE CITY OF BRYAN REQUIREMENTS, AND THE TCEQ REQUIREMENTS, THE STRICTEST REQUIREMENT SHALL BE USED.
- ALL EXISTING STRUCTURES, UTILITIES AND PIPING ARE SHOWN AS PER AVAILABLE RECORDS. PRIOR TO THE BEGINNING OF CONSTRUCTION, THE EXACT LOCATION OF UTILITIES SHALL BE VERIFIED ON THE GROUND BY THE CONTRACTOR. CONTRACTOR SHALL COORDINATE WITH ENGINEER IF ANY CONFLICTS ARE FOUND PRIOR TO CONSTRUCTION. NO SEPARATE PAY.
- THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF EXISTING UNDERGROUND AND OTHER UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATIONS AS TO THE TYPE AND LOCATION OF ALL UNDERGROUND AND OTHER UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. ANY DAMAGE TO EXISTING STRUCTURES, UTILITIES AND PIPING SHALL BE RESTORED AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL CONTACT THE FOLLOWING AT LEAST 72 HOURS PRIOR TO EXCAVATION:
 

TEXAS ONE CALL	1-800-245-4545
AT&T	1-800-252-1133
SPRINT	1-800-443-1876
SOUTHWESTERN BELL	1-800-669-8344
VERIZON	1-800-344-8377
SOUTHWESTERN GAS PIPELINE	1-936-878-2482
BRYAN WOODBINE GATHERING	1-979-778-8046 OR 1-979-776-0285
BWOC	1-979-778-0069 OR 1-979-776-0121
EXXON PIPELINE COMPANY	1-713-656-3315 OR 1-979-272-8171
ENGERY TRANSFER	1-800-375-5702 OR 1-210-403-7300
ATMOS GAS	1-800-460-3030
SUDDENLINK CABLEVISION	1-979-846-2229
WICKSON CRK. SPEC. UTILITY DISTRICT	1-979-589-3030
- EXISTING IMPROVEMENTS INCLUDING, BUT NOT LIMITED TO FENCES, DRIVEWAYS, SIDEWALKS, PAVEMENT, CURBS, UTILITY PIPELINES, AND DRAINAGE STRUCTURES WHICH ARE DAMAGED, REMOVED OR ALTERED TO PERMIT INSTALLATION OF THE WORK SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR, AT THE CONTRACTOR'S EXPENSE, IN THE SAME LOCATION AND IN CONDITION AS GOOD AS OR BETTER THAN THEY WERE PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION OF ALL EXISTING PIPING AND UTILITIES IN THE CONSTRUCTION AREA. PRIOR TO FABRICATION OF NEW PIPING, INCLUDING SPECIAL FITTINGS AND EXCAVATION FOR NEW STRUCTURES, ELECTRICAL CONDUIT AND/OR OTHER PROPOSED UTILITIES, AT TIE-IN CONNECTION LOCATIONS, VERIFY EXISTING PIPING BEFORE FABRICATION OF NEW PIPING. THE CONTRACTOR SHALL INCLUDE COST IN HIS BID FOR TEMPORARILY RELOCATING AND REINSTALLING EXISTING UTILITIES AS REQUIRED FOR CONSTRUCTION OF PROPOSED ITEMS.
- UNLESS SPECIFICALLY STATED ON THESE DRAWINGS, THE CONTRACTOR SHALL NOT REMOVE, CUT OR DAMAGE TREES OR LIMBS WITHOUT WRITTEN APPROVAL BY THE CITY OF BRYAN.
- THE CONTRACTOR SHALL REMOVE FROM THE PROJECT AREA ALL SURPLUS MATERIAL. THIS SHALL BE INCIDENTAL AND NOT A SEPARATE PAY ITEM. SURPLUS MATERIALS FROM EXCAVATION INCLUDING DIRT, TRASH, ETC. SHALL BE PROPERLY DISPOSED OF AT A SITE ACCEPTABLE TO THE CITY'S FLOOD PLAIN ADMINISTRATOR IF WITHIN THE CITY LIMITS. IF THE LOCATION IS NOT WITHIN THE CITY LIMITS, THE CONTRACTOR SHALL PROVIDE A LETTER STATING SO. NO EXCESS EXCAVATED MATERIAL SHALL BE DEPOSITED IN LOW AREAS OR ALONG NATURAL DRAINAGE WAY WITHOUT WRITTEN PERMISSION FROM THE AFFECTED PROPERTY OWNER AND THE CITY'S FLOOD PLAIN ADMINISTRATOR. IF THE CONTRACTOR PLACES EXCESS MATERIAL IN THE AREAS WITHOUT PERMISSION, HE WILL BE RESPONSIBLE FOR ALL DAMAGE RESULTING FROM SUCH FILL AND HE SHALL REMOVE MATERIAL AT HIS OWN COST.
- THE INSPECTION AND MAINTENANCE OF THE EROSION PREVENTION MEASURES SHALL BE THE CONTRACTOR'S RESPONSIBILITY THROUGHOUT ALL PHASES OF CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH THE EPA'S NPDES REGULATIONS 40-CFR-122, 123, 124 CONCERNING EROSION AND SEDIMENT CONTROL. THE CONTRACTOR WILL BE RESPONSIBLE FOR SUBMITTING A NOTICE OF INTENT "NOI" TO EPA 72 HOURS PRIOR TO BEGINNING CONSTRUCTION AND NOTICE OF TERMINATION "NOT" TO EPA UPON COMPLETION OF THE PROJECT.
- ALL TRENCH EXCAVATION SHALL BE IN ACCORDANCE WITH THE U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATOR'S STANDARDS. CONTRACTOR IS RESPONSIBLE FOR ALL TRENCH SAFETY. THE CONTRACTOR SHALL CONSTRUCT THE PROPOSED WORK UTILIZING A TRENCH SAFETY PLAN, PREPARED BY A PROFESSIONAL ENGINEER FOR THIS PROJECT. A TRENCH SAFETY PLAN SHALL BE SUBMITTED AT THE PRE-CONSTRUCTION MEETING.
- ALL TRENCH BACKFILL IN UNPAVED AREAS SHALL BE PLACED TO EXISTING GRADE PLUS THREE INCHES TO ALLOW FOR SETTLEMENT. HOWEVER, DRAINAGE SHALL BE MAINTAINED AT ALL TIMES, PER GRADING PLAN. REDIRECTION OF FLOW IS NOT PERMITTED.
- CONTRACTOR SHALL MAINTAIN SUITABLE CONSTRUCTION ACCESS FOR THE ENGINEER AND THE CITY OF BRYAN AT ALL TIMES DURING CONSTRUCTION, INCLUDING ACCESS FOR 18-WHEELER VEHICLES.
- PROVIDE RESTRAINED JOINTS AND THRUST BLOCKING AT ALL FITTINGS AND INTEGRAL PIPE JOINTS IN ACCORDANCE WITH THE STANDARD/TYPICAL DETAILS AND SPECIFICATIONS. PROVIDE RESTRAINED JOINTS OR VERTICAL BLOCKING AT ALL VERTICAL BENDS. BLOCKING SHALL BE TIE-DOWN BLOCKING. PROTECT MJ HARDWARE FROM BEING ENCASED OR COVERED WITH CONCRETE ENCASEMENT DURING INSTALLATION OF CONCRETE THRUST BLOCKS.
- ALL PIPELINES 12" AND LARGER SHALL HAVE A MINIMUM COVER OF 48"; AND PIPE SMALLER THAN 12" SHALL HAVE A MINIMUM COVER OF 36" (UNLESS NOTED OTHERWISE). PIPES SHALL BE ROUTED AS SHOWN UNLESS MINOR REVISIONS ARE NECESSARY TO AVOID EXISTING PIPES, STRUCTURES, ETC. CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING ALL FITTINGS AND ADAPTERS REQUIRED TO MAKE THE ROUTING CHANGES. CONTRACTOR SHALL INCLUDE COST FOR THIS IN THE BID.
- CONTRACTOR SHALL INSTALL STANDARD BENDS AT LOCATIONS SHOWN. ALL NON-STANDARD VERTICAL AND HORIZONTAL BENDS SHALL BE INSTALLED USING STANDARD BENDS AND 75% OF THE MAXIMUM ALLOWABLE JOINT DEFLECTIONS AND MINIMUM RADIUS AS RECOMMENDED BY THE PIPE MANUFACTURER.
- CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING ALL EXISTING UTILITIES IN SERVICE DURING CONSTRUCTION.
- WATERLINE MATERIAL SHALL BE DUCTILE IRON UNLESS OTHERWISE NOTED IN THESE PLANS OR SPECIFICATIONS.
- THE CONTRACTOR SHALL REMOVE ALL FENCES, LOCATED WITHIN EASEMENTS, INTERFERING WITH CONSTRUCTION OPERATION AND PROVIDE TEMPORARY FENCING DURING CONSTRUCTION. REMOVED FENCES SHALL BE REPLACED WITH A NEW FENCE OR UNDAMAGED ORIGINAL FENCING. ALL AFFECTED PROPERTY OWNERS SHALL BE NOTIFIED PRIOR TO CONSTRUCTION. REMOVAL AND REPLACEMENT OF EXISTING AND TEMPORARY FENCES SHALL BE CONSIDERED SUBSIDIARY TO THE PROJECT COST.

- CONTRACTOR SHALL PROVIDE CLOSURE PIECES FOR PIPELINE AS REQUIRED TO CONSTRUCT THE PROJECT, INCLUDING THOSE REQUIRED FOR SPECIAL CONSTRUCTION PROCEDURES REQUIRED TO COORDINATE OWNER'S CHANGES TO THE SEQUENCE OF CONSTRUCTION. ALL CLOSURE PIECES SHALL BE CONSIDERED A SUBSIDIARY COST TO THE PROJECT AND WILL BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER.
- THE CONTRACTOR SHALL DISTRIBUTE LETTERS TO ALL AFFECTED PROPERTY OWNERS PRIOR TO BEGINNING WORK ON EACH PROPERTY. THIS LETTER SHALL INCLUDE NAMES AND TELEPHONE NUMBERS OF CONTRACTOR CONTACTS, A DESCRIPTION OF WORK TO BE DONE, AND THE TIME FRAME FOR DOING THE WORK. COPIES OF THE LETTER SHALL BE FORWARDED TO THE CITY INSPECTOR. THE CONTRACTOR SHALL NOTIFY RESIDENTS 48 HOURS IN ADVANCE OF PERFORMING ANY WORK ON PRIVATE PROPERTY. DISTRIBUTION OF LETTERS SHALL BE CONSIDERED AS SUBSIDIARY TO THE COST OF PROJECT AND NO ADDITIONAL COMPENSATION WILL BE ALLOWED.
- THE CONTRACTOR IS RESPONSIBLE FOR KEEPING STREETS AND SIDEWALKS ADJACENT TO PROJECT FREE OF MUD AND DEBRIS FROM THE CONSTRUCTION.
- ALL IN-LINE VALVES SHALL HAVE RESTRAINED JOINT AT EACH SIDE, MEGALUG OR APPROVED EQUAL
- THE CONTRACTOR SHALL COORDINATE WITH THE ELECTRIC UTILITY COMPANY TO PROVIDE SUPPORT OF POWER POLES DURING CONSTRUCTION, AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL TAKE SPECIAL PRECAUTIONS IN THE VICINITY OF ANY OVERHEAD ELECTRIC LINES. CONTRACTOR SHALL ABIDE BY NATIONAL ELECTRIC CODE AND ANY REQUIREMENT BY OWNER OF ELECTRIC LINES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTAINMENT AND PROPER DISPOSAL OF ALL LIQUID AND SOLID WASTE ASSOCIATED WITH THIS PROJECT. THE CONTRACTOR SHALL USE ALL MEANS NECESSARY TO PREVENT THE OCCURRENCE OF WIND BLOWN LITTER FROM THE PROJECT SITE.
- DEMOLITION/CONSTRUCTION WASTE - CONTRACTOR IS REQUIRED TO PROVIDE CONTAINMENT FOR WASTE PRIOR TO AND DURING DEMOLITION/CONSTRUCTION. SOLID WASTE ROLL OFF BOXES AND/OR METAL DUMPSTER'S SHALL BE SUPPLIED BY CITY OR CITY PERMITTED CONTRACTOR(S) ONLY.
- PIPES DESIGNATED TO BE DEMOLISHED SHALL BE COMPLETELY REMOVED, UNLESS OTHERWISE APPROVED BY THE ENGINEER. PIPES ABANDONED IN PLACE SHALL BE CAPPED WITH EITHER CONCRETE, BLIND FLANGE OR M.J. PLUG.
- CONTRACTOR SHALL VERIFY THAT PIPING SHOWN TO BE ABANDONED OR AS ABANDONED PREVIOUSLY IS NO LONGER IN SERVICE. LINES IN SERVICE SHALL BE MAINTAINED UNTIL NO LONGER REQUIRED BY THE OWNER.
- CONTRACTOR SHALL REROUTE THE EXISTING PIPING IF REQUIRED TO AVOID PROPOSED STRUCTURES. THE EXISTING PIPE SHALL REMAIN IN SERVICE UNTIL NEW PIPING IS READY TO BE PLACED INTO SERVICE. DOWNTIME SHALL BE AS SPECIFIED IN THE CONTRACT DOCUMENTS. ALL REMAINING PIPING, WHETHER IN SERVICE OR ABANDONED, SHALL BE NOTED ON THE AS-BUILT DRAWINGS.
- EXISTING VALVES, GATES, AND CONSTRUCTION EXPANSION JOINTS MAY LEAK TO A CERTAIN EXTENT WHEN IN A CLOSED POSITION. CONTRACTOR SHALL PROVIDE MEANS AND EQUIPMENT NECESSARY TO CONTROL LEAKING WATER AS NEEDED TO PERMIT CONSTRUCTION.
- ALL DEMOLISHED STRUCTURES AND NON-SALVAGED EQUIPMENT AS WELL AS EXCESS EXCAVATED SOILS SHALL BE REMOVED AND DISPOSED OF AS SOON AS POSSIBLE IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL LAWS, REGULATIONS AND OTHER ORDINANCES AT NO ADDITIONAL COST TO OWNER. FURNISH WRITTEN VERIFICATION FROM THE OWNER OF THE DISPOSAL SITE AUTHORIZING THE CONTRACTOR TO DISPOSE OF MATERIALS AT THAT LOCATION AND WRITTEN VERIFICATION FROM THE OWNER OF THE DISPOSAL SITE AFTER PLACEMENT THAT IT IS ACCEPTABLE.
- EXISTING CONCRETE THRUST BLOCKING THAT CONFLICTS WITH NEW CONSTRUCTION OR MODIFICATIONS SHALL BE REMOVED BY THE CONTRACTOR. WHEN REMOVED, THE CONTRACTOR SHALL PROVIDE TEMPORARY THRUST RESTRAINT TO THE EXISTING PIPING SYSTEM, FITTINGS, AND/OR STRUCTURES. TO MAINTAIN CONTINUOUS OPERATION, ONCE CONSTRUCTION IS COMPLETE, THE CONTRACTOR SHALL RESTORE THE PREVIOUSLY EXISTING THRUST BLOCKING TO ITS ORIGINAL CONDITION (UNDISTURBED EARTH). THE ORIGINAL CONDITION SHALL INCLUDE PROPER THRUST RESTRAINT AND COMPACTED BACKFILL AS DESCRIBED IN THE CONTRACT DOCUMENTS.
- NEW YARD PIPING INSTALLATIONS AND EXISTING YARD PIPING MODIFICATIONS OCCUR IN AREAS WHERE DENSE UNDERGROUND UTILITIES CURRENTLY EXIST. IN ADDITION, THE SOILS IN THESE AREAS HAVE BEEN REMOVED AND REPLACED SEVERAL TIMES AND MAY REQUIRE ADDITIONAL SHORING BEYOND THAT WHICH MIGHT BE EXPECTED IN UNDISTURBED SOILS. CONTRACTOR SHALL PROVIDE TEMPORARY SHORING AND SUPPORT FOR ALL EXISTING UTILITIES REGARDLESS OF NUMBER, SIZE AND PROXIMITY TO THE NEW PIPING INSTALLATION AT NO ADDITIONAL COST TO THE OWNER.
- IN LIEU OF CONTRACTOR PROVIDING SUPPORT FOR EXISTING UTILITIES, CONTRACTOR MAY TEMPORARILY RELOCATE THEM AWAY FROM THE WORK AREA AND THEN REINSTALL THEM ONCE NEW PIPING CONSTRUCTION IS COMPLETE. CONTRACTOR SHALL SUBMIT A PLAN TO THE ENGINEER FOR REVIEW AND APPROVAL OF ANY PROPOSED TEMPORARY UTILITY RELOCATION. TEMPORARY UTILITY RELOCATIONS SHALL BE ACCOMPLISHED AT NO ADDITIONAL COST TO THE OWNER AND ASSOCIATED REQUIRED SHUTDOWNS SHALL ADHERE TO SPECIFIED MAXIMUM ALLOWABLE DURATIONS.
- CONTRACTOR MAY SHIFT PIPE FROM ITS ORIGINAL ALIGNMENT TO AVOID ENCOUNTERED UTILITY CONFLICTS. IF CHANGE IN ALIGNMENT IS MORE THAN TWO FEET OFF THE ORIGINAL CENTER LINE. CONTRACTOR MUST NOTIFY ENGINEER PRIOR TO PROCEEDING WITH INSTALLATION. ALL ALIGNMENT CHANGES SHALL BE PROPERLY DOCUMENTED AS DESCRIBED IN SPECIFICATIONS.
- ALL AREAS WHERE EXISTING VEGETATION AND GRASS COVER HAVE BEEN BARED BY CONSTRUCTION SHALL BE ADEQUATELY BLOCK SODDED OR HYDROMULCHED AND WATERED UNTIL GROWTH IS ESTABLISHED. IN DEVELOPED AREAS WHERE GRASS IS PRESENT, BLOCK SOD WILL BE REQUIRED. BARED AREAS SHALL BE SEED OR SODDED WITHIN 14 CALENDAR DAYS OF LAST DISTURBANCE. ESTABLISHMENT OF VEGETATION IS A WARRANTY ITEM.
- CONTRACTOR SHALL PROVIDE TEMPORARY THRUST BLOCKING AND/OR RESTRAINT OR PROPOSED AND EXISTING PIPING AS REQUIRED BY CONSTRUCTION PHASING.
- CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL REQUIRED APPARATUS FOR FLUSHING, DISINFECTION AND TESTING OF WATERLINES. NO TAPPING SLEEVES OR SADDLES WILL BE ALLOWED ON PIPING FOR TESTING PURPOSES. CONTRACTOR MAY INSTALL WELDED-ON OUTLETS AS REQUIRED. FOR FLUSHING AND DISINFECTION PROVIDE LOCATIONS OF OUTLETS ON AS-BUILT DRAWINGS.
- CONTRACTOR SHALL MAINTAIN ACCESS TO ALL FACILITIES, INCLUDING 18-WHEELER ACCESS TO CHLORINE BUILDING.

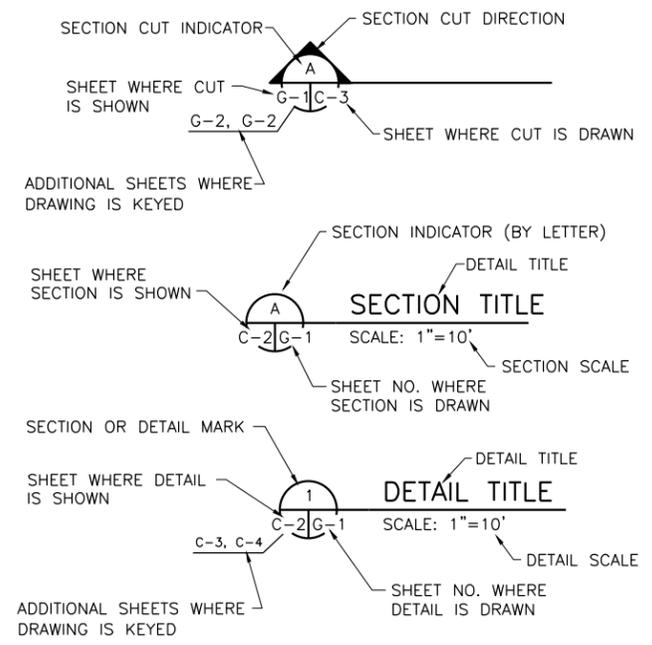
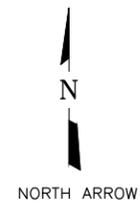
- THERE IS EXISTING CONCRETE STEEL CYLINDER (CSC) PIPE. SOME TIE-INS MAY REQUIRE EXISTING CSC PIPE TO BE REMOVED BACK TO EXISTING JOINT. CONTRACTOR IS RESPONSIBLE FOR ALL FITTINGS AND/OR CLOSURE TO MAKE ALL PROPOSED CONNECTIONS. ALL STEEL FITTINGS REQUIRED FOR CONNECTION SHALL BE NSF61 EPOXY COATED AND LINED AND MANUFACTURED PER AWWA C200 MIN. WALL THICKNESS 1/2" MIN.
- ALL MATERIALS IN CONTACT WITH WATER INCLUDING BUT NOT LIMITED TO PIPE, LINING, COATINGS, VALVES, GASKETS, ETC. SHALL BE APPROVED FOR CONTINUOUS USE WITH WATER TEMPERATURES OF 150°F MINIMUM.

**LEGEND**

	EXIST. WATERLINE		REDUCER
	PROP. FORCE MAIN		TBM MON.
	CREEK		GPS MON.
	OVERHEAD ELECTRIC		CONTROL POINT
	FENCE (CHAIN LINK)		BOREHOLE
	FENCE (BARBED WIRE)		COMBINATION AIR RELEASE AND VACUUM VALVE
	R.O.W.		VALVE
	EXIST. ROADWAY		FIRE HYDRANT
	TEMP. EASEMENT		REDUCER
	PERMANENT EASEMENT		EXISTING
	EXIST. TELEPHONE		PROPOSED
	EXISTING SANITARY SEWER MANHOLE		CENTER LINE
	EXISTING SANITARY SEWER LINE		RIGHT OF WAY
	CULVERT		TEMPORARY BENCH MARK
	GUY ANCHOR		FORCE MAIN
	TELEPHONE BOX		WASTEWATER
	WATER SERVICE CONNECTION		COMBINATION AIR/VACUUM VALVE
	MAIL BOX		AIR RELEASE VALVE
	POWER POLE		TOP OF PIPE
	WATER VALVE		NATURAL GROUND
	TREE TRUNK		MAN HOLE
	TREE CANOPY		CITY OF BRYAN
	PLUG		
	SIGN		

**NOTE:**

WHERE THE WORD "PROPOSED" OR "PROP." IS UTILIZED IN THIS SET OF DOCUMENTS, IT SHALL MEAN "NEW CONSTRUCTION TO BE PERFORMED AS PART OF THIS CONTRACT."



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

5/16/12

**FREES & NICHOLS**  
10814 Whipple Road Building 1, Suite 100  
Austin, Texas 78759-3100  
Phone - (512) 617-3100  
Fax - (512) 617-3101

CITY OF BRYAN  
**TABOR - 16TH ST. & N. TEXAS GW STORAGE TANKS (1 MG SITE)**  
CIVIL

NO.	ISSUE	DATE	BY	FILE NAME
				GN-ALL-NOTES.dwg
F&N JOB NO.		BRY03116		
DATE		5/16/2012		
DESIGNED	CAK			
DRAWN	DDH			
REVISION				
CHECKED				
VERIFY SCALE: Bar is one inch on original drawing; if not one inch on this sheet, adjust scale.				
SHEET <b>G-1</b>				
SEC.				

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY  
GROUND STORAGE TANK  
GROUND STORAGE TANK GENERAL CONSTRUCTION NOTES

1. THESE WATER STORAGE FACILITIES MUST BE CONSTRUCTED IN ACCORDANCE WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS 30 TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 290 SUBCHAPTER D.
2. ALL FACILITIES FOR POTABLE WATER STORAGE SHALL BE COVERED AND DESIGNED, FABRICATED, ERECTED, TESTED AND DISINFECTED IN STRICT ACCORDANCE WITH CURRENT AMERICAN WATER WORKS ASSOCIATION (AWWA) STANDARDS AND SHALL BE PROVIDED WITH THE MINIMUM NUMBER, SIZE AND TYPE OF ROOF VENTS, MANWAYS, DRAINS, SAMPLE CONNECTIONS, ACCESS LADDERS, OVERFLOWS, LIQUID LEVEL INDICATORS AND OTHER APPURTENANCES AS SPECIFIED IN THESE RULES.
3. ROOF VENTS SHALL BE INSTALLED IN STRICT ACCORDANCE WITH CURRENT AWWA STANDARDS AND SHALL BE EQUIPPED WITH APPROVED SCREENS TO PREVENT ENTRY OF ANIMALS, BIRDS, INSECTS AND HEAVY AIR CONTAMINANTS. SCREENS SHALL BE FABRICATED OF CORROSION-RESISTANT MATERIAL AND SHALL BE 16-MESH OR FINER. SCREENS SHALL BE SECURELY CLAMPED IN PLACE WITH STAINLESS BANDS OR WIRES AND SHALL BE DESIGNED TO WITHSTAND WINDS OF NOT LESS THAN TANK DESIGN CRITERIA (UNLESS SPECIFIED OTHERWISE BY THE ENGINEER).
4. ALL ROOF OPENINGS SHALL BE DESIGNED IN ACCORDANCE WITH CURRENT AWWA STANDARDS. EACH ACCESS OPENING SHALL HAVE A RAISED CURBING AT LEAST FOUR INCHES IN HEIGHT WITH A LOCKABLE COVER THAT OVERLAPS THE CURBING AT LEAST TWO INCHES IN A DOWNWARD DIRECTION. WHERE NECESSARY, A GASKET SHALL BE USED TO MAKE A POSITIVE SEAL WHEN THE HATCH IS CLOSED. ALL HATCHES SHALL REMAIN LOCKED EXCEPT DURING INSPECTIONS AND MAINTENANCE.
5. OVERFLOWS SHALL BE DESIGNED IN STRICT ACCORDANCE WITH CURRENT AWWA STANDARDS AND SHALL TERMINATE WITH A GRAVITY HINGED AND WEIGHTED COVER. THE COVER SHALL FIT TIGHTLY WITH NO GAP OVER 1/16 INCH. IF THE OVERFLOW TERMINATES AT ANY POINT OTHER THAN THE GROUND LEVEL, IT SHALL BE LOCATED NEAR ENOUGH AND AT A POSITION ACCESSIBLE FROM A LADDER OR THE BALCONY FOR INSPECTION PURPOSES. THE OVERFLOW(S) SHALL BE SIZED TO HANDLE THE MAXIMUM POSSIBLE FILL RATE WITHOUT EXCEEDING THE CAPACITY OF THE OVERFLOW(S). THE DISCHARGE OPENING OF THE OVERFLOW(S) SHALL BE ABOVE THE SURFACE OF THE GROUND AND SHALL NOT BE SUBJECT TO SUBMERGENCE.
6. ALL CLEARWELLS AND WATER STORAGE TANKS SHALL HAVE A LIQUID LEVEL INDICATOR LOCATED AT THE TANK SITE. THE INDICATOR SHALL BE AN PRESSURE TRANSDUCER / LEVEL INDICATOR CALIBRATED IN FEET OF WATER. PRESSURE GAUGES MUST NOT BE LESS THAN THREE INCHES IN DIAMETER AND CALIBRATED AT NOT MORE THAN TWO-FOOT INTERVALS. REMOTE READING GAUGES AT THE OWNER'S TREATMENT PLANT OR PUMPING STATION WILL NOT ELIMINATE THE REQUIREMENT FOR A GAUGE AT THE TANK SITE UNLESS THE TANK IS LOCATED AT THE PLANT OR STATION.
7. EACH CLEARWELL OR POTABLE WATER STORAGE TANK SHALL BE PROVIDED WITH A MEANS OF REMOVING ACCUMULATED SILT AND DEPOSITS AT ALL LOW POINTS IN THE BOTTOM OF THE TANK. DRAINS SHALL NOT BE CONNECTED TO ANY WASTE OR SEWAGE DISPOSAL SYSTEM AND SHALL BE CONSTRUCTED SO THAT THEY ARE NOT A POTENTIAL AGENT IN THE CONTAMINATION OF THE STORED WATER.
8. ALL CLEAR WELLS, GROUND STORAGE TANKS, STANDPIPES, AND ELEVATED TANKS SHALL BE PAINTED, DISINFECTED, AND MAINTAINED IN STRICT ACCORDANCE WITH CURRENT AWWA STANDARDS. HOWEVER, NO TEMPORARY COATINGS, WAX GREASE COATINGS, OR COATING MATERIALS CONTAINING LEAD WILL BE ALLOWED. NO OTHER COATINGS WILL BE ALLOWED WHICH ARE NOT APPROVED FOR USE (AS A CONTACT SURFACE WITH POTABLE WATER) BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA), NATIONAL SANITATION FOUNDATION (NSF), OR THE UNITED STATES FOOD AND DRUG ADMINISTRATION (FDA). ALL NEWLY INSTALLED COATINGS MUST CONFORM TO ANSI/NSF STANDARD 61 AND MUST BE CERTIFIED BY AN ORGANIZATION ACCREDITED BY ANSI.
9. NO TANKS OR CONTAINERS SHALL BE USED TO STORE POTABLE WATER THAT HAVE PREVIOUSLY BEEN USED FOR ANY NON-POTABLE PURPOSE. WHERE A USED TANK IS PROPOSED FOR USE, A LETTER FROM THE PREVIOUS OWNER OR OWNERS MUST BE SUBMITTED TO THE COMMISSION WHICH STATES THE USE OF THE TANK.
10. ACCESS MANWAYS IN THE RISER PIPE, SHELL AREA, ACCESS TUBE, BOWL AREA OR ANY OTHER LOCATION OPENING DIRECTLY INTO THE WATER COMPARTMENT SHALL BE LOCATED IN STRICT ACCORDANCE WITH CURRENT AWWA STANDARDS. WHERE NECESSARY, FOR ANY ACCESS MANWAY WHICH ALLOWS DIRECT ACCESS TO THE WATER COMPARTMENT, A GASKET SHALL BE USED TO MAKE A POSITIVE SEAL WHEN THE ACCESS MANWAY IS CLOSED.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY  
WATER DISTRIBUTION SYSTEM  
WATERLINE GENERAL CONSTRUCTION NOTES

1. THIS WATER DISTRIBUTION SYSTEM MUST BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT TEXAS COMMISSION ON ENVIRONMENTAL QUALITY (TCEQ) RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS 30 TEXAS ADMINISTRATIVE CODE (TAC) CHAPTER 290 SUBCHAPTER D.
2. ALL NEWLY INSTALLED PIPES AND RELATED PRODUCTS MUST CONFORM TO AMERICAN NATIONAL STANDARDS INSTITUTE/NATIONAL SANITATION FOUNDATION (ANSI/NSF) STANDARD 61 AND MUST BE CERTIFIED BY AN ORGANIZATION ACCREDITED BY ANSI.
3. PLASTIC PIPE FOR USE IN PUBLIC WATER SYSTEMS MUST BEAR THE NATIONAL SANITATION FOUNDATION SEAL OF APPROVAL (NSF-PW) AND HAVE AN ASTM DESIGN PRESSURE RATING OF AT LEAST 235 PSI OR A STANDARD DIMENSION RATIO OF 26 OR LESS.
4. NO PIPE WHICH HAS BEEN USED FOR ANY PURPOSE OTHER THAN THE CONVEYANCE OF DRINKING WATER SHALL BE ACCEPTED OR RELOCATED FOR USE IN ANY PUBLIC DRINKING WATER SUPPLY.
5. WATER TRANSMISSION AND DISTRIBUTION LINES MUST BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. HOWEVER, THE TOP OF THE WATER LINE MUST BE LOCATED BELOW THE FROST LINE AND IN NO CASE SHALL THE TOP OF THE WATER LINE BE LESS THAN 42 INCHES BELOW GROUND SURFACE.
6. THE HYDROSTATIC LEAKAGE RATE SHALL NOT EXCEED THE AMOUNT ALLOWED OR RECOMMENDED BY AWWA FORMULA FOR PVC PIPE:  $L = (N)(D)(/P)/7,400$ . THE FORMULA FOR DUCTILE OR CAST IRON PIPE IS  $L = (S)(D)(/P)/133,200$ .
7. THE USE OF PIPES AND PIPE FITTINGS THAT CONTAIN MORE THAN 8.0% LEAD OR SOLDERS AND FLUX THAT CONTAINS MORE THAN 0.2% LEAD IS PROHIBITED IN THE FOLLOWING CIRCUMSTANCES FOR INSTALLATION OR REPAIR OF ANY PUBLIC WATER SUPPLY AND FOR INSTALLATION OR REPAIR OF ANY PLUMBING IN A RESIDENTIAL OR NONRESIDENTIAL FACILITY PROVIDING WATER FOR HUMAN CONSUMPTION AND CONNECTED TO A PUBLIC DRINKING WATER SUPPLY SYSTEM.
8. THE CONTRACTOR SHALL INSTALL APPROPRIATE AIR RELEASE DEVICES IN THE DISTRIBUTION SYSTEM AT ALL POINTS WHERE TOPOGRAPHY OR OTHER FACTORS MAY CREATE AIR LOCKS IN THE LINES. ALL VENT OPENINGS TO THE ATMOSPHERE SHALL BE COVERED WITH 16-MESH OR FINER, CORROSION RESISTANT SCREENING MATERIAL OR AN ACCEPTABLE EQUIVALENT.
9. THE SYSTEM SHALL BE DESIGNED TO AFFORD EFFECTIVE CIRCULATION OF WATER WITH A MINIMUM OF DEAD ENDS. ALL DEAD-END MAINS SHALL BE PROVIDED WITH ACCEPTABLE FLUSH VALVES AND DISCHARGE PIPING. ALL DEAD-END LINES LESS THAN TWO INCHES IN DIAMETER WILL NOT REQUIRE FLUSH VALVES IF THEY END AT A CUSTOMER SERVICE. WHERE DEAD ENDS ARE NECESSARY AS A STAGE IN THE GROWTH OF THE SYSTEM, THEY SHALL BE LOCATED AND ARRANGED TO ULTIMATELY CONNECT THE ENDS TO PROVIDE CIRCULATION.
10. THE CONTRACTOR SHALL MAINTAIN A MINIMUM SEPARATION DISTANCE IN ALL DIRECTIONS OF NINE FEET BETWEEN THE PROPOSED WATERLINE AND WASTEWATER COLLECTION FACILITIES INCLUDING MANHOLES AND SEPTIC TANK DRAINFIELDS. IF THIS DISTANCE CANNOT BE MAINTAINED, THE CONTRACTOR MUST IMMEDIATELY NOTIFY THE PROJECT ENGINEER FOR FURTHER DIRECTION. SEPARATION DISTANCES, INSTALLATION METHODS, AND MATERIALS UTILIZED MUST MEET §290.44(E) OF THE CURRENT RULES.
11. THE CONTRACTOR SHALL NOT PLACE THE PIPE IN WATER OR WHERE IT CAN BE FLOODED WITH WATER OR SEWAGE DURING ITS STORAGE OR INSTALLATION.
12. THE CONTRACTOR SHALL DISINFECT THE NEW WATER MAINS IN ACCORDANCE WITH AWWA STANDARD C651 AND THEN FLUSH AND SAMPLE THE LINES BEFORE BEING PLACED INTO SERVICE. SAMPLES SHALL BE COLLECTED FOR MICROBIOLOGICAL ANALYSIS TO CHECK THE EFFECTIVENESS OF THE DISINFECTION PROCEDURE WHICH SHALL BE REPEATED IF CONTAMINATION PERSISTS. A MINIMUM OF ONE SAMPLE FOR EACH 1,000 FEET OF COMPLETED WATER LINE WILL BE REQUIRED OR AT THE NEXT AVAILABLE SAMPLING POINT BEYOND 1,000 FEET AS DESIGNATED BY THE DESIGN ENGINEER.

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

5/16/12



10814 Whipple Road Building 10, Suite 100  
Austin, Texas 78759-3100  
Phone - (512) 617-3100  
Fax - (512) 617-3101

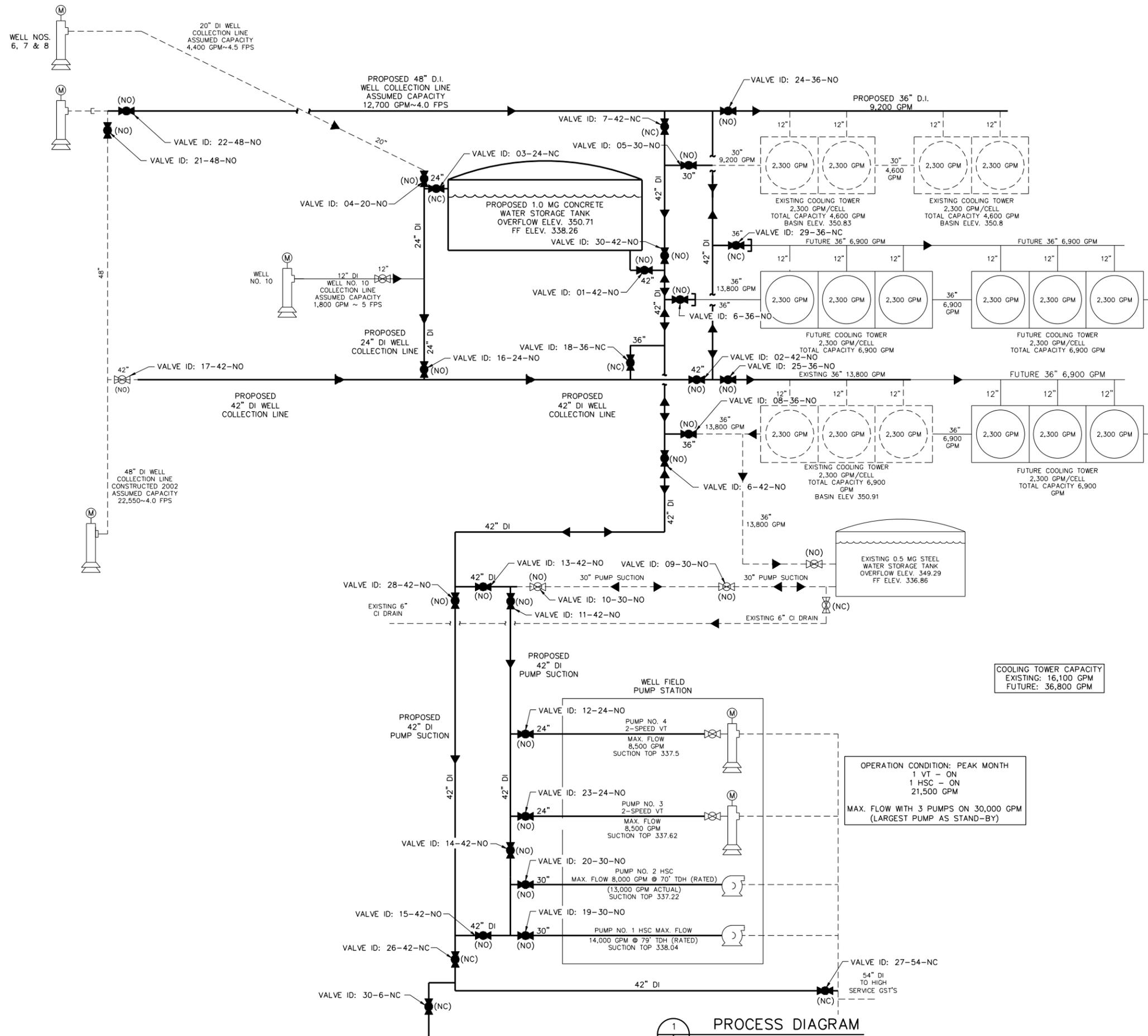
CITY OF BRYAN  
TABOR - 16TH ST. & N. TEXAS GW  
STORAGE TANKS (1 MG SITE)

CIVIL  
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY  
GENERAL NOTES

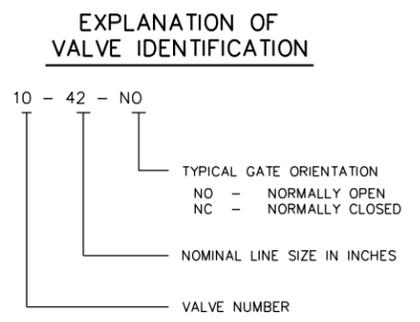
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F&N JOB NO.		BRY09116		
DATE		5/16/2012		
DESIGNED	CAK			
DRAWN	DDH			
REVISION				
CHECKED				

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

SHEET  
G-2  
SEC.



- LEGEND:**
- PROPOSED WATERLINE
  - - - EXISTING WATERLINE
  - FUTURE WATERLINE
  - ⊗ PROPOSED VALVE
  - ⊗ FUTURE VALVE
  - ⊗ EXISTING VALVE
  - Ⓜ EXISTING VERTICAL TURBINE (VT) PUMP
  - Ⓜ EXISTING HORIZONTAL SPLIT CASE (HSC) PUMP
  - (NO) NORMALLY OPEN VALVE
  - (NC) NORMALLY CLOSED VALVE



COOLING TOWER CAPACITY  
 EXISTING: 16,100 GPM  
 FUTURE: 36,800 GPM

OPERATION CONDITION: PEAK MONTH  
 1 VT - ON  
 1 HSC - ON  
 21,500 GPM  
 MAX. FLOW WITH 3 PUMPS ON 30,000 GPM  
 (LARGEST PUMP AS STAND-BY)

**1**  
 G-3-G-3 PROCESS DIAGRAM  
 NOT TO SCALE

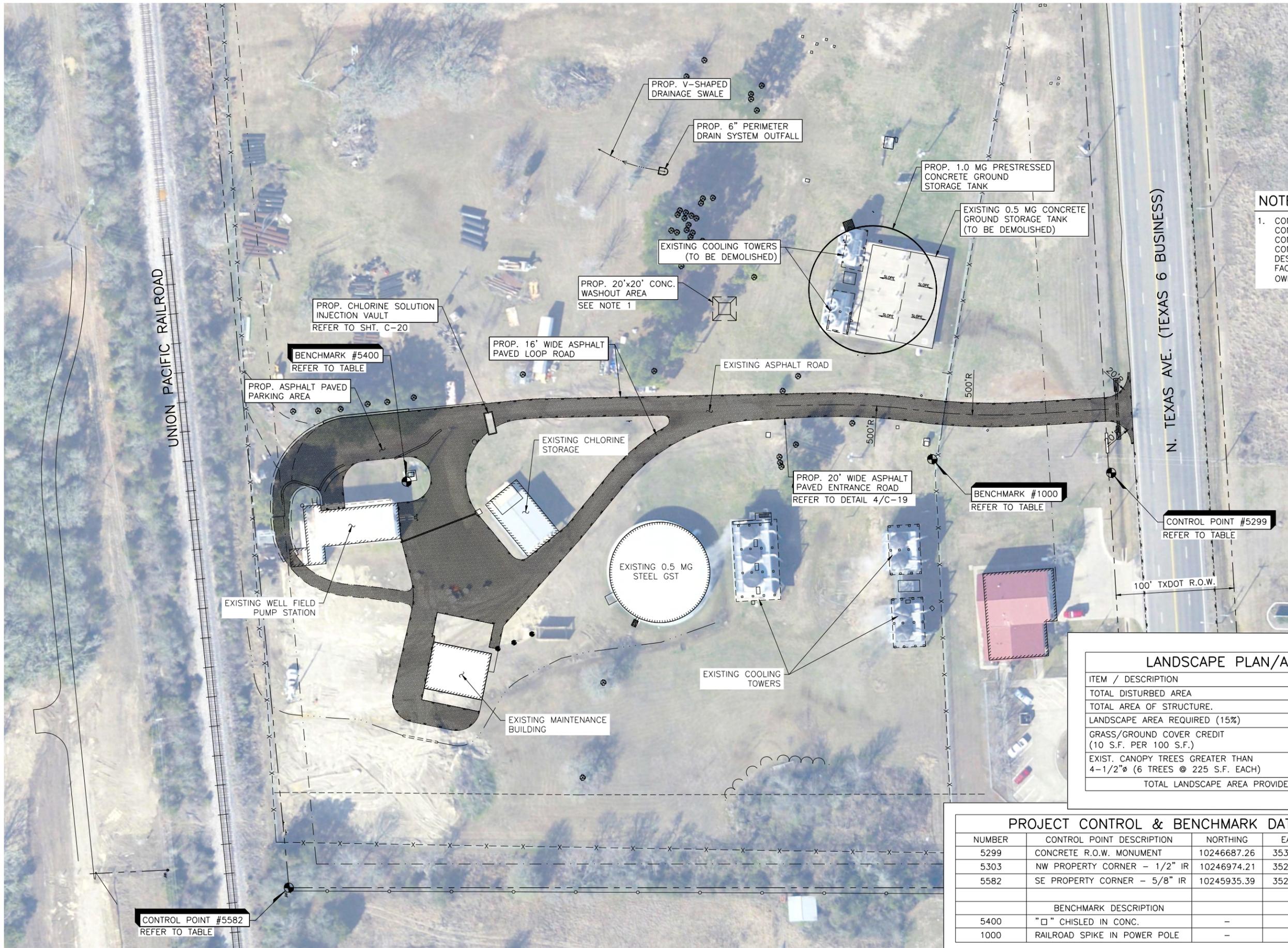


Freese and Nichols, Inc.  
 Texas Registered Engineering Firm F-2144  
 10814 Whipple Road Building 10, Suite 100  
 Austin, Texas 78759  
 Phone - (512) 617-3100  
 Fax - (512) 617-3101

CITY OF BRYAN  
 TABOR - 16TH ST. & N. TEXAS GW  
 STORAGE TANKS (1 MG SITE)  
 CIVIL  
 1.0 MG SITE  
 PROCESS DIAGRAM

NO.	ISSUE	DATE	BY	FILE NAME
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NO.	DATE	DESIGNED	CHECKED	FILE NAME
				CV-BRY-DG-1MG.dwg
NO.	DATE	DRAWN	REVIEWED	FILE NAME
				CV-BRY-DG-1MG.dwg

SHEET **G-3**  
 SEQ.



**NOTE:**  
 1. CONTRACTOR SHALL USE CONCRETE WASHOUT BIN OR CONTAINMENT SYSTEM. CONTRACTOR MAY RELOCATE DESIGNATED WASHOUT AREA TO FACILITATE CONSTRUCTION WITH OWNER'S APPROVAL.

Freese and Nichols, Inc.  
 Texas Registered Engineering Firm F-2144  
 9/19/2012  
 CHARLES A. KUCHERKA  
 98368  
 PROFESSIONAL ENGINEER  
 Austin, Texas 78759-3100  
 Phone - (512) 617-3100  
 Fax - (512) 617-3101

**FREES & NICHOLS**  
 10814 Whipple Road Building 10, Suite 100  
 Austin, Texas 78759-3100  
 Phone - (512) 617-3100  
 Fax - (512) 617-3101

CITY OF BRYAN  
**TABOR - 16TH ST. & N. TEXAS GW STORAGE TANKS (1 MG SITE)**  
 CIVIL  
**OVERALL SITE PLAN**

LANDSCAPE PLAN/ANALYSIS		
ITEM / DESCRIPTION	QUANTITY	UNIT
TOTAL DISTURBED AREA	25,417	S.F.
TOTAL AREA OF STRUCTURE.	9,232	S.F.
LANDSCAPE AREA REQUIRED (15%)	1,385	S.F.
GRASS/GROUND COVER CREDIT (10 S.F. PER 100 S.F.)	207	S.F.
EXIST. CANOPY TREES GREATER THAN 4-1/2"Ø (6 TREES @ 225 S.F. EACH)	1,350	S.F.
<b>TOTAL LANDSCAPE AREA PROVIDED</b>	<b>1,557</b>	<b>S.F.</b>

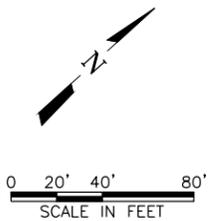
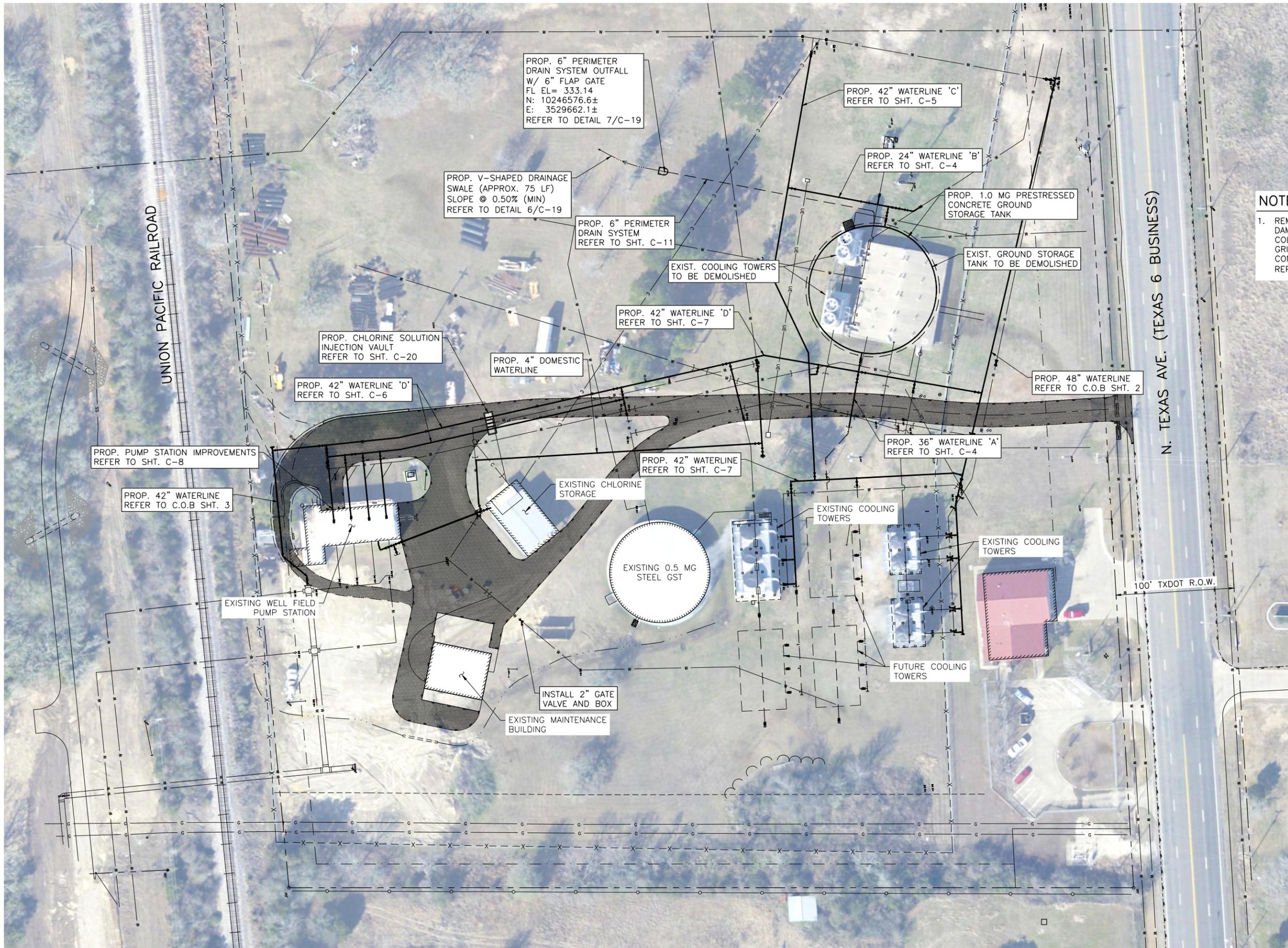
PROJECT CONTROL & BENCHMARK DATA TABLE				
NUMBER	CONTROL POINT DESCRIPTION	NORTHING	EASTING	ELEVATION
5299	CONCRETE R.O.W. MONUMENT	10246687.26	3530104.28	-
5303	NW PROPERTY CORNER - 1/2" IR	10246974.21	3529741.00	-
5582	SE PROPERTY CORNER - 5/8" IR	10245935.39	3529898.93	-
BENCHMARK DESCRIPTION				
5400	"□" CHISLED IN CONC.	-	-	334.29'
1000	RAILROAD SPIKE IN POWER POLE	-	-	340.23'

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

SHEET **C-1**

SEC.



**NOTE:**  
 1. REMOVE AND REPLACE ANY DAMAGED EXISTING VALVE BOX COLLARS. CONTRACTOR SHALL GRIND VALVE I.D. INTO EXISTING CONCRETE COLLARS NOT REPLACED. REF: 3/C-17

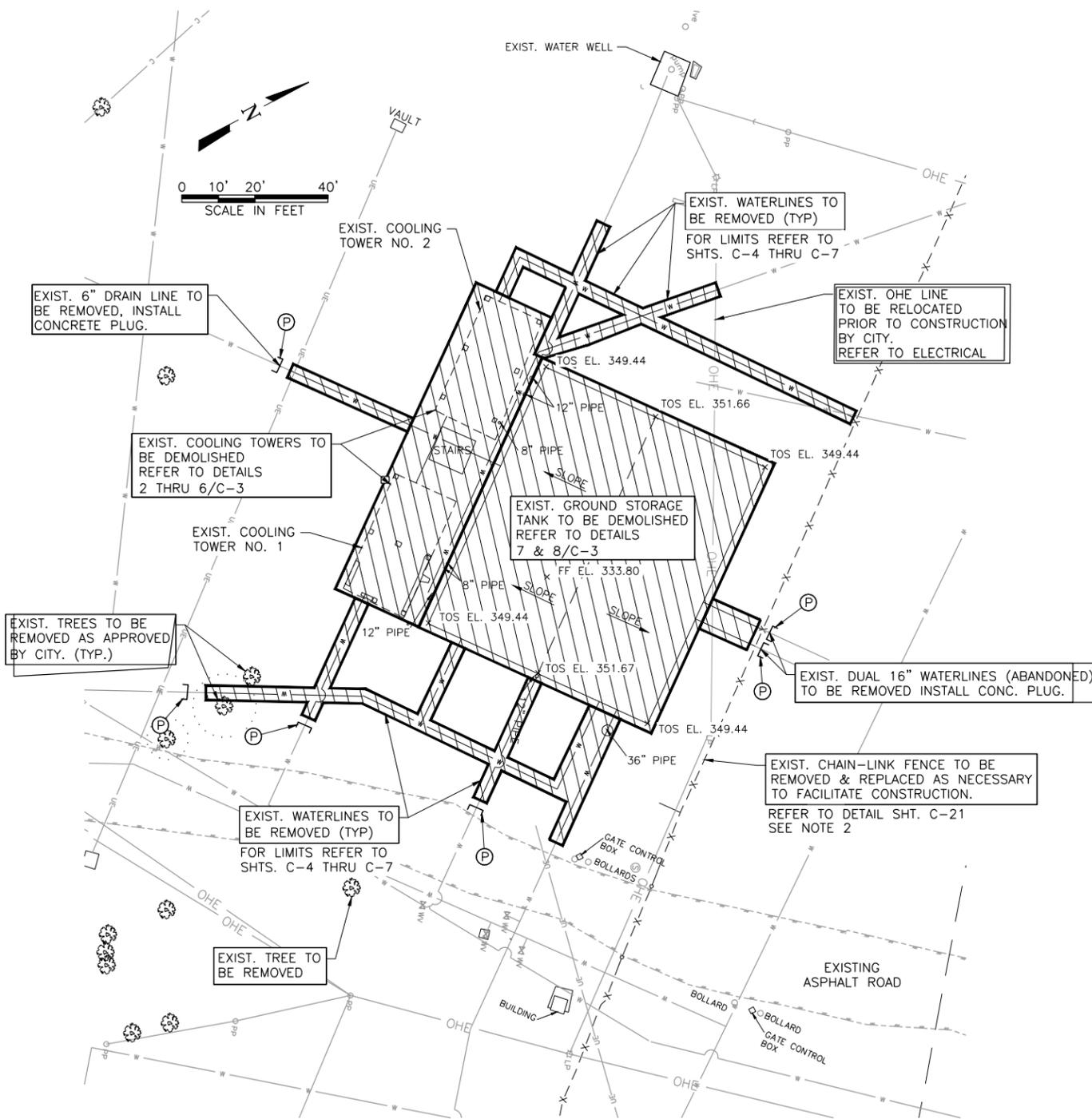


**FREESSE NICHOLS**  
 10814 Whipple Road Building 10, Suite 100  
 Austin, Texas 78759-3100  
 Phone - (512) 617-3100  
 Fax - (512) 617-3101

CITY OF BRYAN  
**TABOR - 16TH ST. & N. TEXAS GW STORAGE TANKS (1 MG SITE)**  
 CIVIL  
**OVERALL YARD PIPING PLAN**

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SHEET **C-2**  
 SEQ.



1 SITE DEMOLITION PLAN  
C-3|C-3 1"=20'

**NOTES:**

- EXIST. STRUCTURES SHOWN TO BE DEMOLISHED SHALL BE REMOVED TO A DEPTH OF 5' BELOW NATURAL GROUND OR AS REQUIRED FOR CONSTRUCTION OF PROPOSED GROUND STORAGE TANK.
- CONTRACTOR SHALL MAINTAIN ACCESS TO THE SITE AND PROTECT GATE CONTROLS DURING CONSTRUCTION.
- AT NO TIME SHALL THE SITE BE LEFT UNATTENDED BY THE CONTRACTOR WITHOUT EXISTING, PROPOSED, OR TEMPORARY FENCE IN PLACE. ALL TEMPORARY AND PERMANENT FENCING SHALL MEET TCEQ REQUIREMENTS.
- PROPOSED AND EXISTING PIPING LOCATIONS ARE APPROXIMATE. REMOVAL OF EXISTING AND ABANDONED PIPE MAY BE REQUIRED FOR CONSTRUCTION. CONTRACTOR SHALL PROVIDE ADDITIONAL PIPING AS REQUIRED TO CONNECT TO EXISTING PIPING AS INDICATED, OR AS APPROVED BY THE ENGINEER (NO SEPARATE PAY).
- CITY DEMOLITION PERMIT WILL BE REQUIRED AND FEE WILL BE WAIVED.

**LEGEND:**

LIMITS OF ITEMS TO BE DEMOLISHED

PROPOSED CONCRETE PLUG



2 COOLING TOWERS 1 & 2  
C-3|C-3



6 COOLING TOWER 2  
C-3|C-3



3 COOLING TOWER 1  
C-3|C-3



7 GROUND STORAGE TANK  
C-3|C-3



4 COOLING TOWER 1  
C-3|C-3



8 GROUND STORAGE TANK  
C-3|C-3



5 STAIR CASE FOR COOLING TOWERS  
C-3|C-3

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Texas Registered Engineering Firm F-2144

9/19/2012

CHARLES A. KUCHERKA  
98368  
PROFESSIONAL ENGINEER

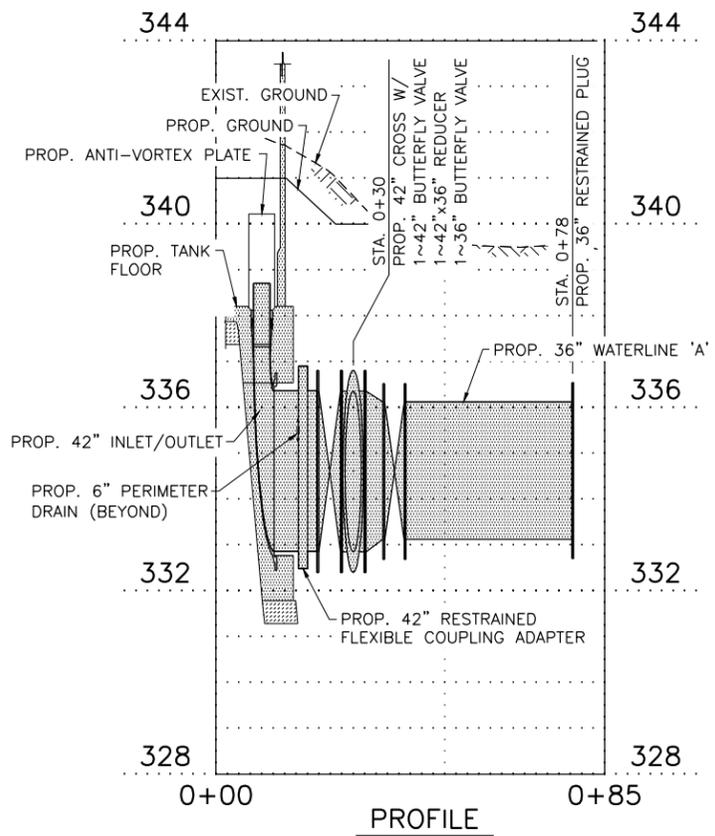
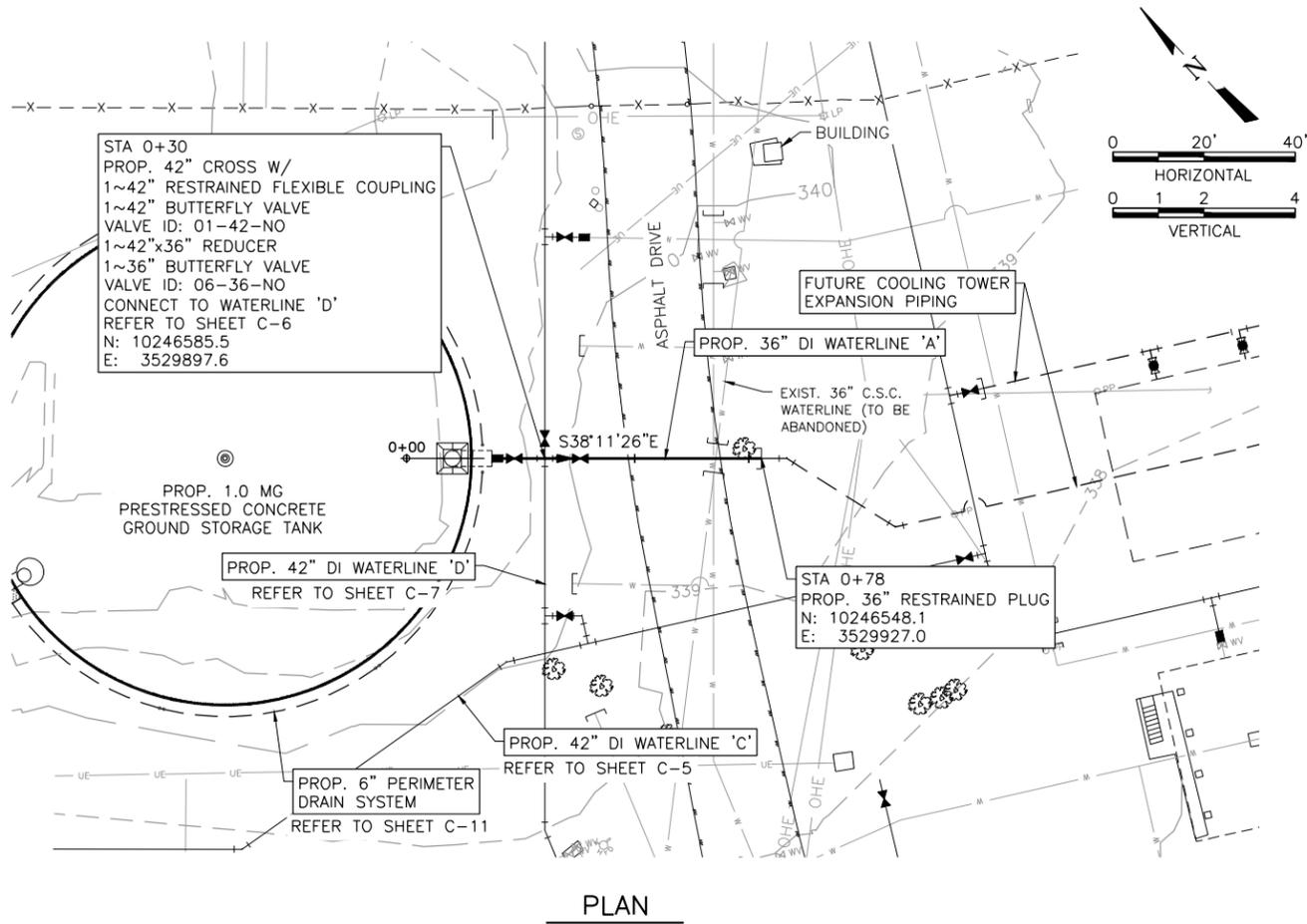
**FREESE NICHOLS**

10814 Whipple Road Building 10, Suite 100  
Austin, Texas 78759-3100  
Phone - (512) 617-3100  
Fax - (512) 617-3101

CITY OF BRYAN  
TABOR - 16TH ST. & N. TEXAS GW  
STORAGE TANKS (1 MG SITE)  
CIVIL  
0.5 MG GST  
SITE DEMOLITION PLAN

NO.	ISSUE	DATE	BY	FILE NAME
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F&N JOB NO.	DATE	DESIGNED	DRAWN	CHECKED
BRY09116	9/11/2012	CAK	DDH	
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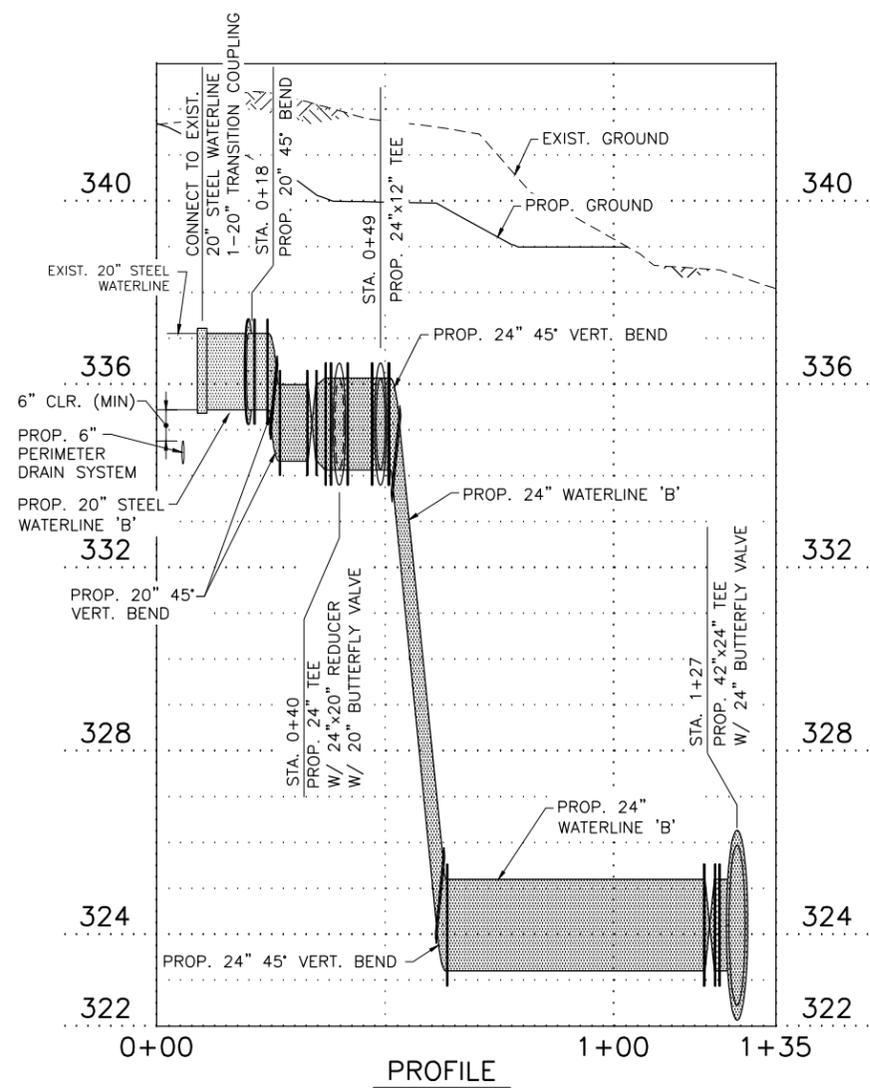
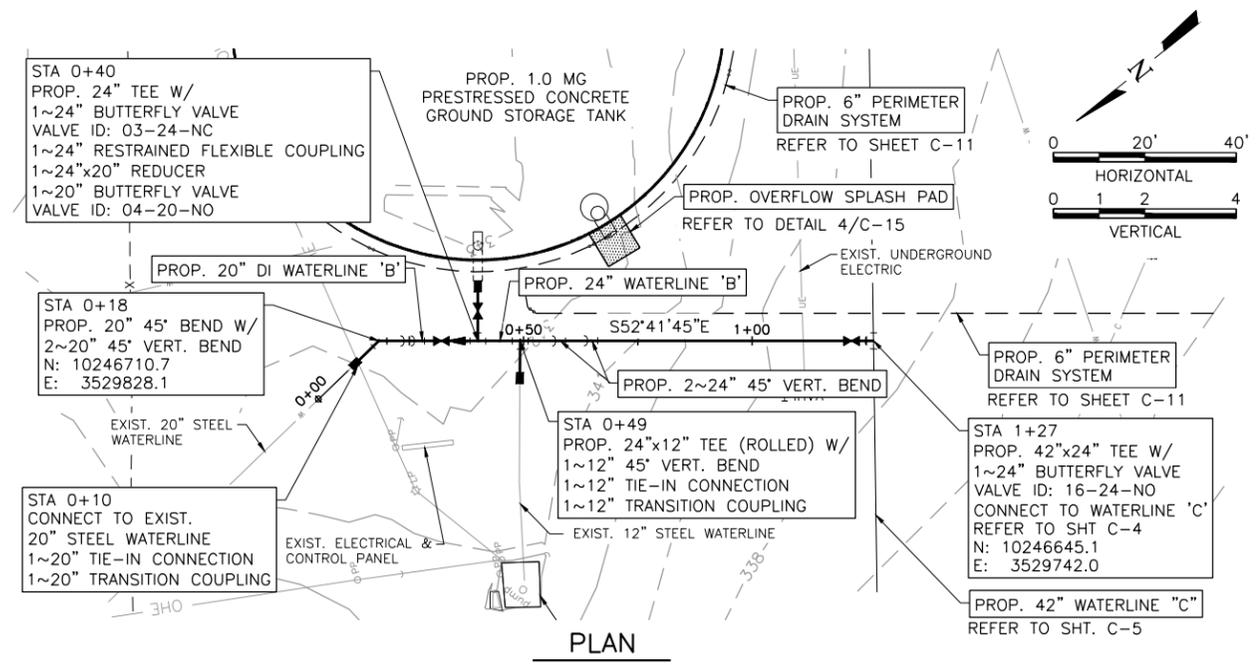
SHEET C-3



1 WATERLINE 'A'  
C-4|C-8 SCALE: 1"=20' HORZ.  
SCALE: 1"= 2' VERT.

**NOTES:**

1. ALL FITTINGS SHALL BE MECHANICALLY RESTRAINED.
2. ALL DUCTILE IRON PIPE SHALL HAVE INTEGRALLY RESTRAINED JOINTS.
3. CONTRACTOR SHALL REMOVE TREES IN CONFLICT WITH ALIGNMENT AS APPROVED BY THE CITY.



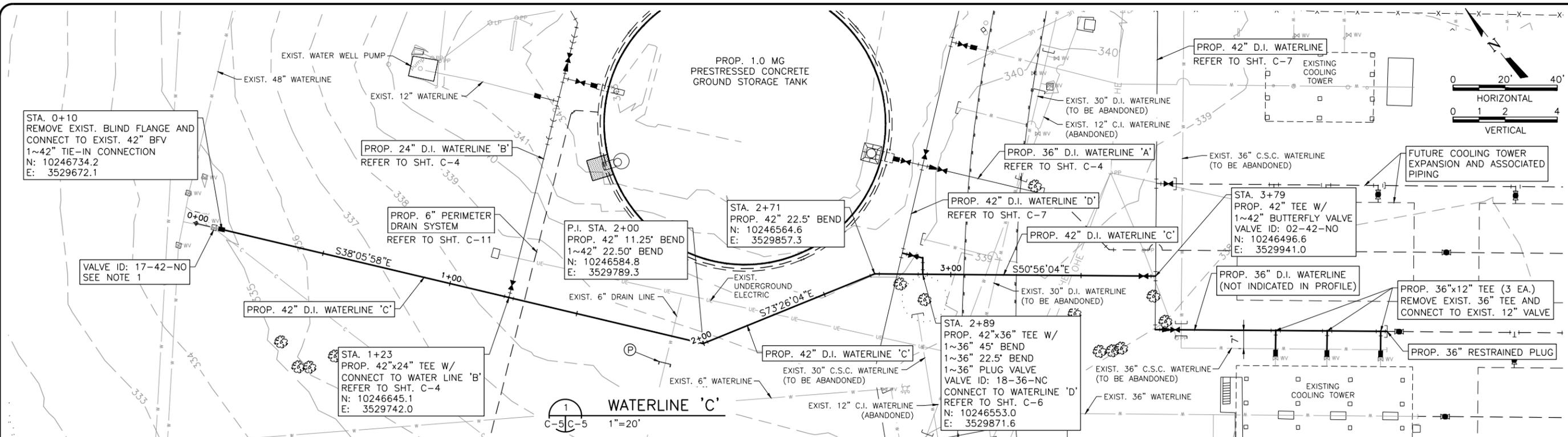
2 WATERLINE 'B'  
C-4|C-8 SCALE: 1"=20' HORZ.  
SCALE: 1"= 2' VERT.



**FRESE & NICHOLS**  
10814 Whipple Road Building 12, Suite 100  
Austin, Texas 78759-3100  
Phone - (512) 617-3100  
Fax - (512) 617-3101

CITY OF BRYAN  
**TABOR - 16TH ST. & N. TEXAS GW  
STORAGE TANKS (1 MG SITE)**  
CIVIL  
WATERLINES 'A' AND 'B'

NO.	ISSUE	BY	DATE	REVISED	FILE NAME
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BRY09116		9/11/2012		CAK	DDH
SHEET		C-4		REVISED	CHECKED
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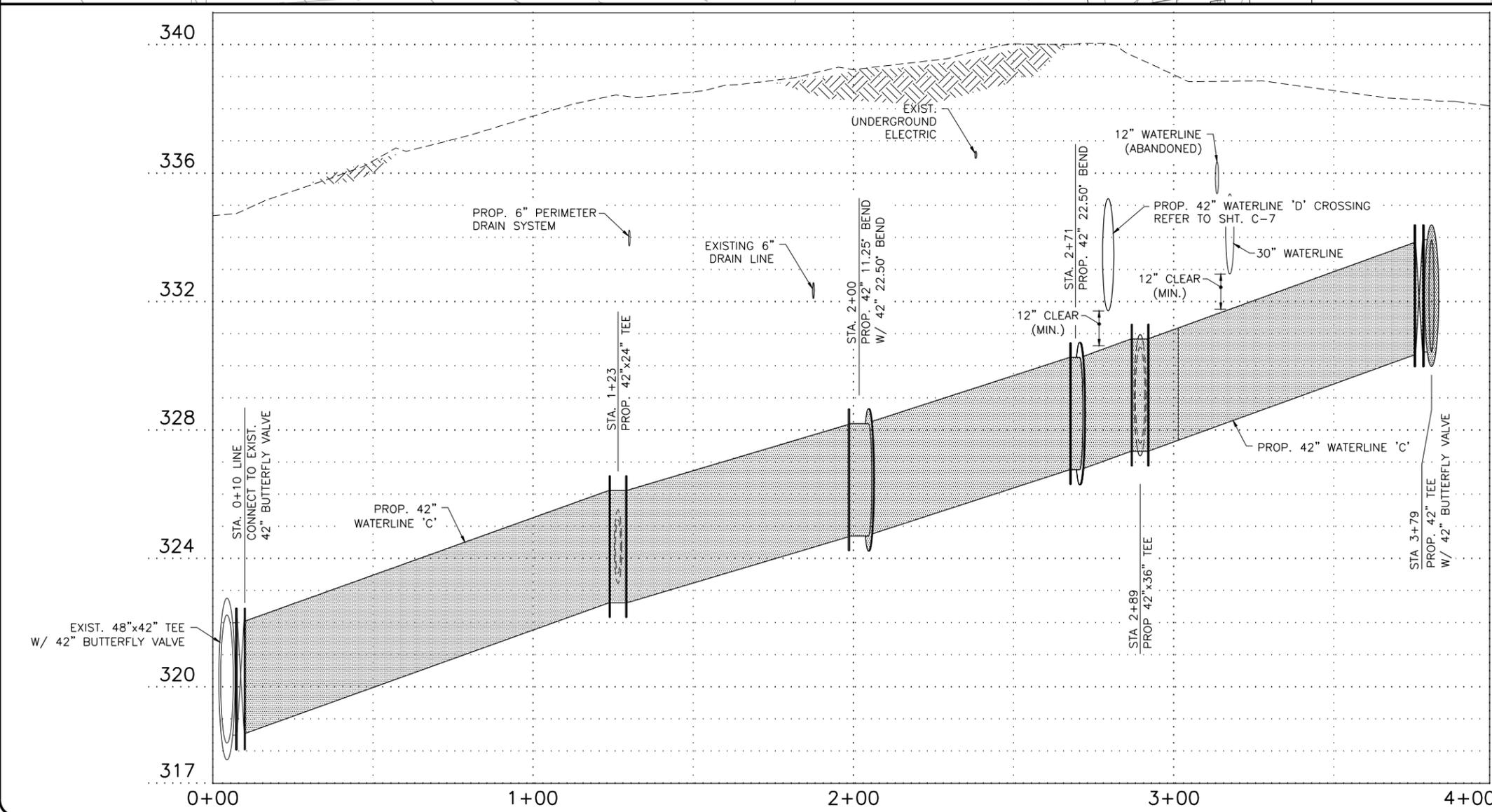
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CHARLES A. KUCHERKA  
98368  
PROFESSIONAL ENGINEER

**FRESE AND NICHOLS**

10814 Whipple Road Building 12, Suite 100  
Austin, Texas 78759-3100  
Phone - (512) 617-3100  
Fax - (512) 617-3101

CITY OF BRYAN  
**TABOR - 16TH ST. & N. TEXAS GW STORAGE TANKS (1 MG SITE)**  
CIVIL  
**WATERLINE 'C'**



**NOTES:**

1. ALL FITTINGS SHALL BE MECHANICALLY RESTRAINED.
2. ALL DUCTILE IRON PIPE SHALL HAVE INTEGRALLY RESTRAINED JOINTS.
3. CONTRACTOR SHALL REMOVE TREES IN CONFLICT WITH ALIGNMENT AS APPROVED BY THE CITY.

**LEGEND**

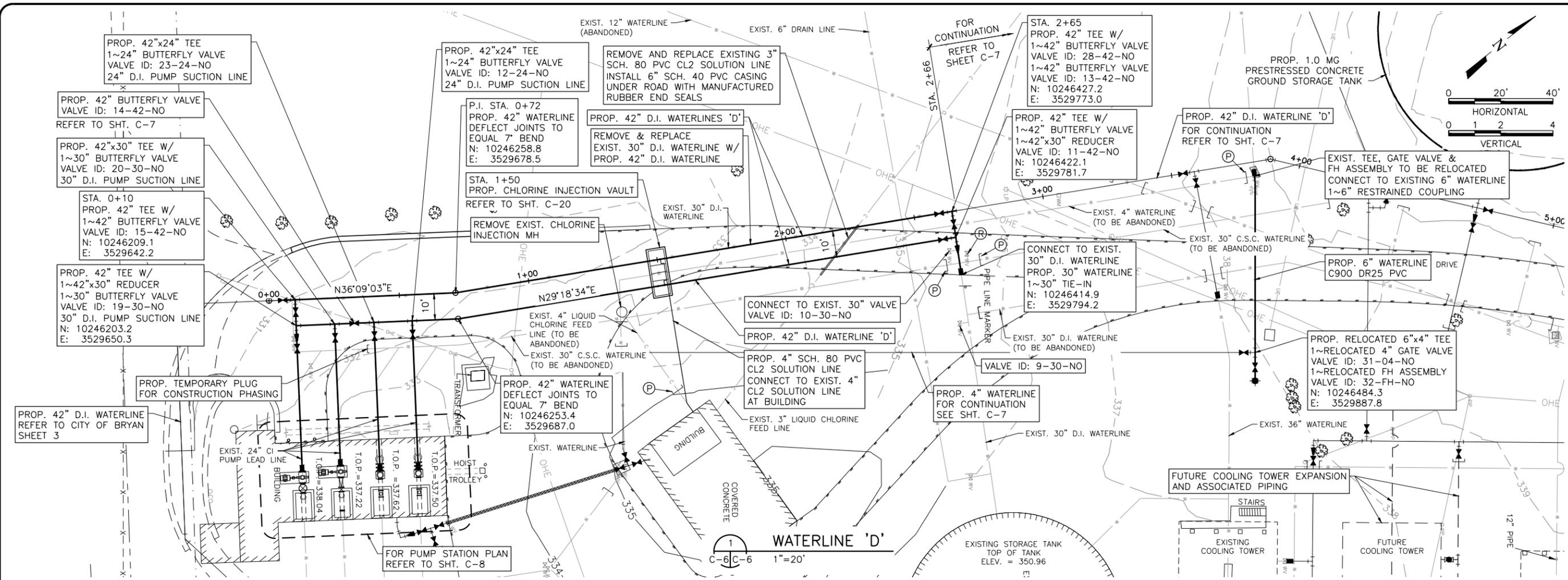
- (P) PROPOSED CONCRETE PLUG
- (R) REMOVE EXISTING VALVE

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	DATE 9/11/2012				

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SHEET **C-5**

SEC.



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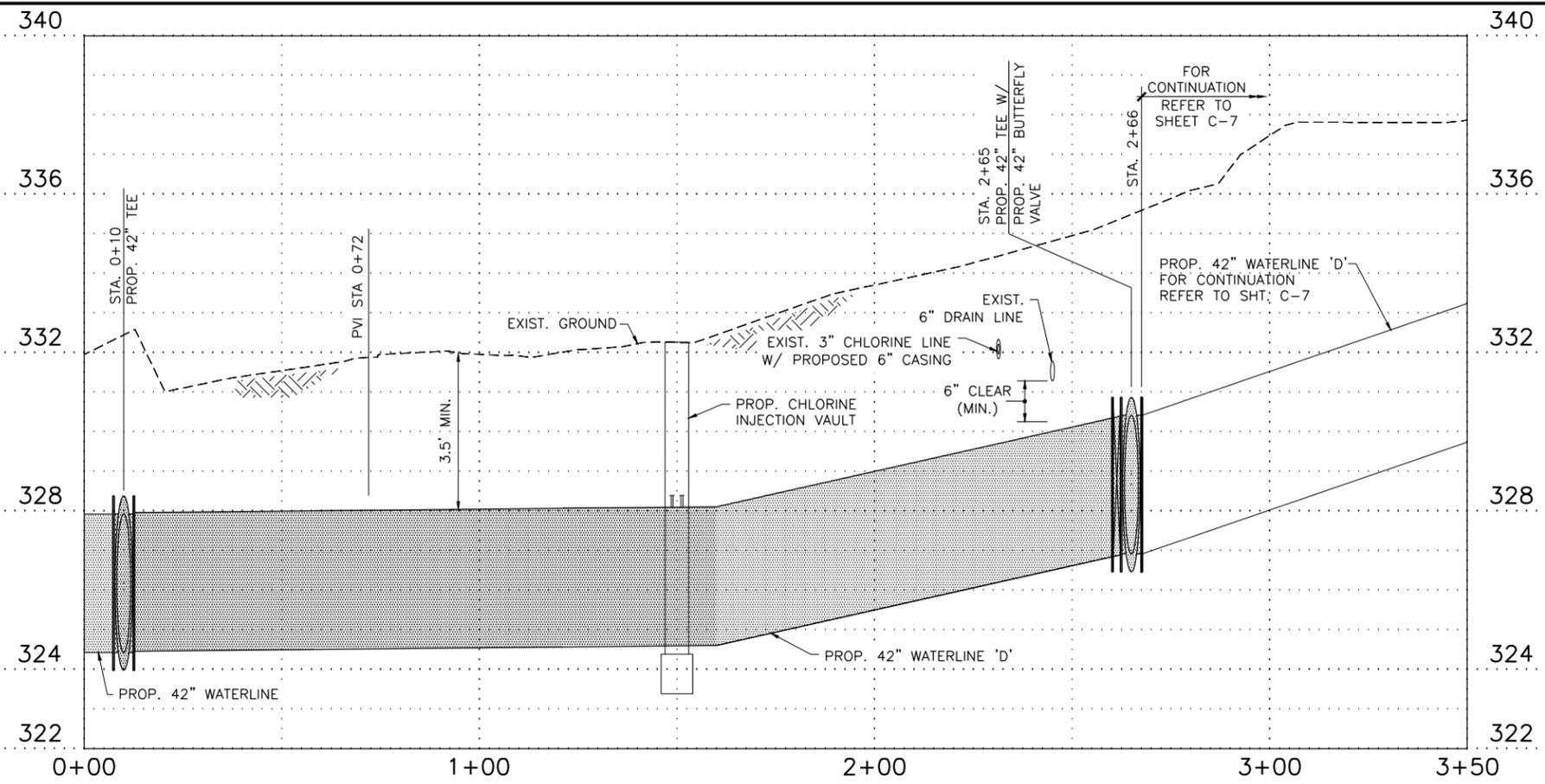
5/16/12

CHARLES A. KUCHENKA  
98368  
PROFESSIONAL ENGINEER

**FRESE & NICHOLS**

10814 Whipple Road Building 10, Suite 100  
Austin, Texas 78759-3100  
Phone - (512) 617-3100  
Fax - (512) 617-3101

CITY OF BRYAN  
**TABOR - 16TH ST. & N. TEXAS GW STORAGE TANKS (1 MG SITE)**  
CIVIL  
WATERLINE 'D'



**NOTES:**

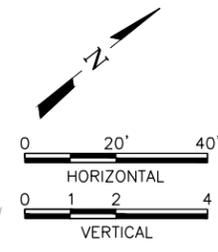
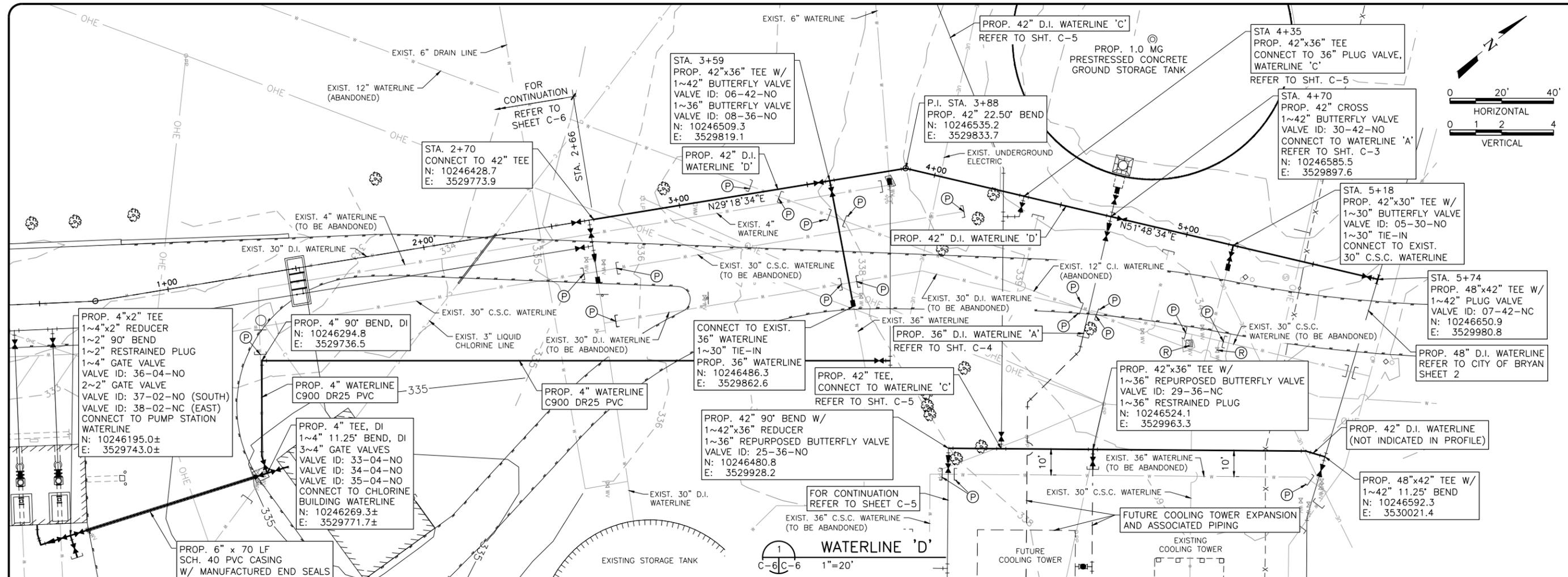
1. ALL FITTINGS SHALL BE MECHANICALLY RESTRAINED.
2. 6" DOMESTIC WATER SUPPLY LINE SHALL STAY IN SERVICE THROUGHOUT CONSTRUCTION PER SECTION 01 35 00 'SPECIAL PROCEDURES'.
3. ALL DUCTILE IRON PIPE SHALL HAVE INTEGRALLY RESTRAINED JOINTS.
4. CONTRACTOR SHALL REMOVE TREES IN CONFLICT WITH ALIGNMENT AS APPROVED BY THE CITY.
5. ALL SCH. 80 CL2 SOLUTION LINES SHALL BE SOLVENT WELDED (TYP.)
6. INSTALL NEW AND RELOCATED GATE VALVES PER DETAIL W1-00/W-1.
7. INSTALL 2" DIAMETER BALL VALVE IN C.I. TRAFFIC RATED VALVE BOXES.
8. PROVIDE NEW GASKETS AND HARDWARE FOR ALL REPURPOSED FITTINGS, VALVES, AND HYDRANTS.

**LEGEND:**

- (P) PROPOSED CONCRETE PLUG
- (R) REMOVE EXISTING VALVE

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SHEET			C-6				
SEQ.							

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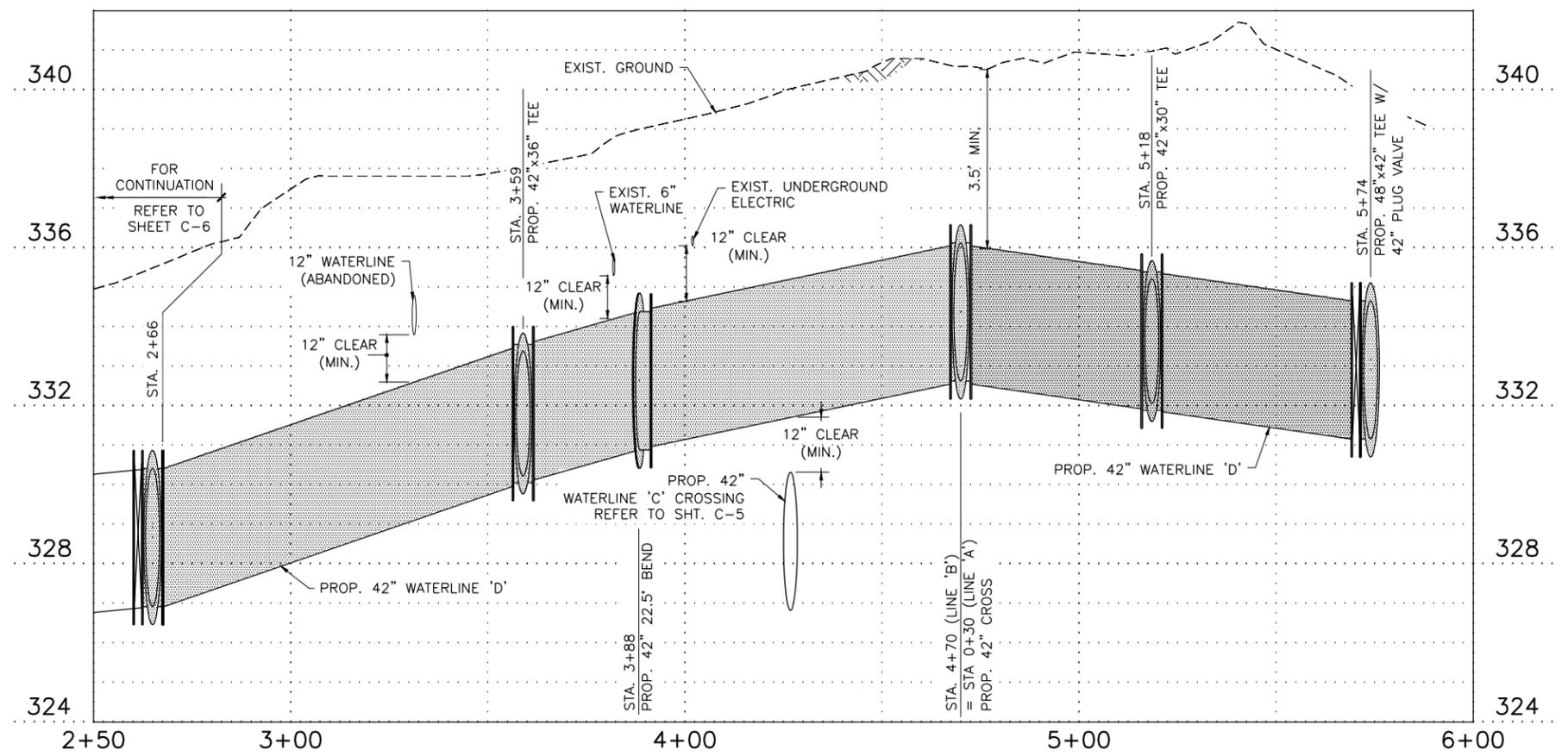


Freese and Nichols, Inc.  
 Texas Registered Engineering Firm F-2144  
 10814 Whipple Road Building 10, Suite 100  
 Austin, Texas 78759-3100  
 Phone - (512) 617-3100  
 Fax - (512) 617-3101

CITY OF BRYAN  
**TABOR - 16TH ST. & N. TEXAS GW STORAGE TANKS (1 MG SITE)**  
 CIVIL  
**WATERLINE 'D'**

- NOTES:**
1. ALL FITTINGS SHALL BE MECHANICALLY RESTRAINED.
  2. WATER SUPPLY LINE SHALL STAY IN SERVICE THROUGHOUT CONSTRUCTION PER SECTION 01 35 00 'SPECIAL PROCEDURES'.
  3. ALL DUCTILE IRON PIPE SHALL HAVE INTEGRALLY RESTRAINED JOINTS.
  4. CONTRACTOR SHALL REMOVE TREES IN CONFLICT WITH ALIGNMENT AS APPROVED BY THE CITY.
  5. PROVIDE MIN. 24" COVER FOR ALL 2"/4" DOMESTIC WATERLINES, INCLUDING CASING.
  6. DOMESTIC WATERLINE SHALL BE SCH. 40 PVC.
  7. INSTALL 2" DIAMETER BALL VALVE IN C.I. TRAFFIC RATED VALVE BOXES.

- LEGEND:**
- (P) PROPOSED CONCRETE PLUG
  - (R) REMOVE EXISTING VALVE



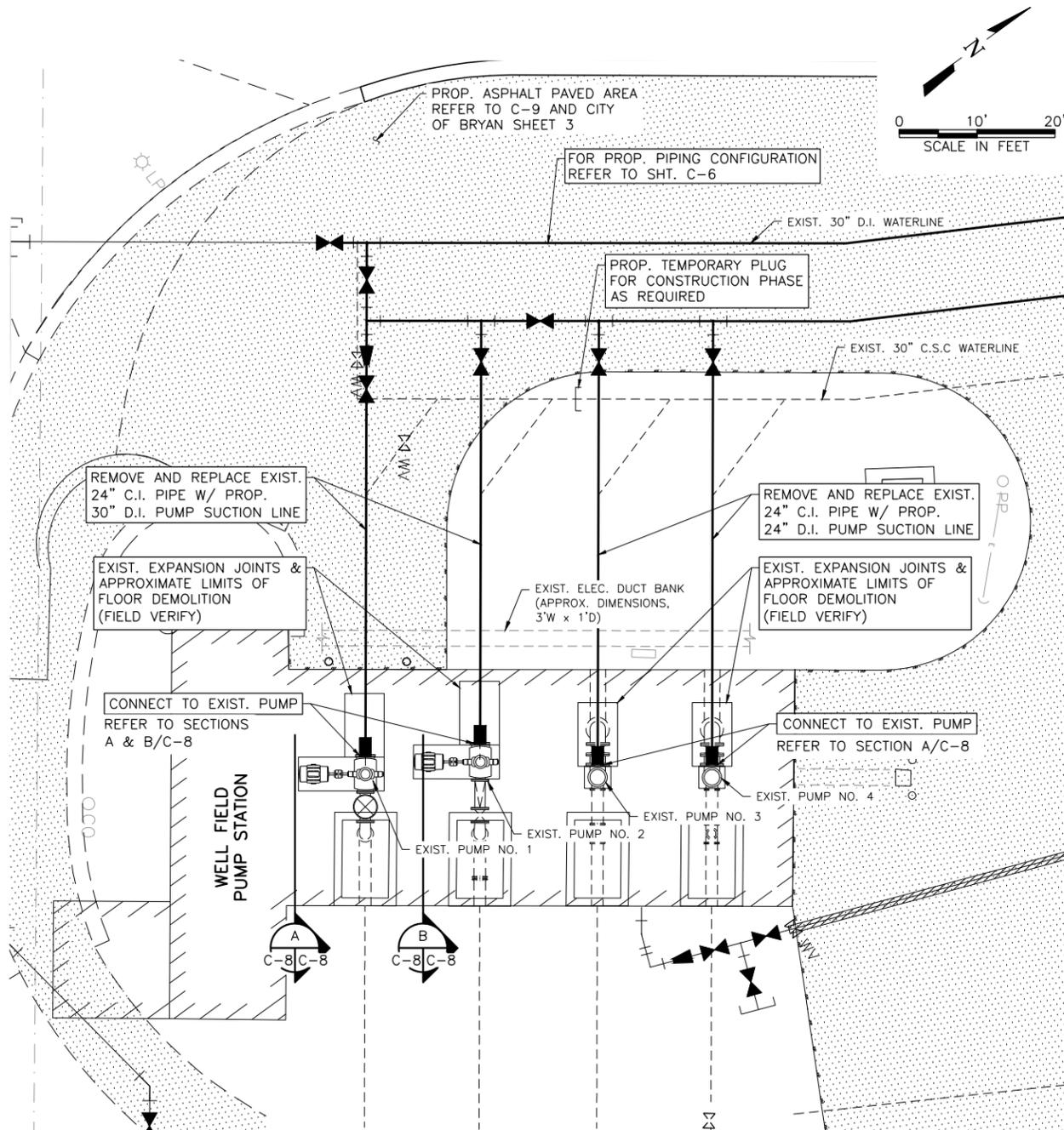
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DATE	DESIGNED	DRAWN	CHECKED
5/16/2012	CAK	DDH	

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

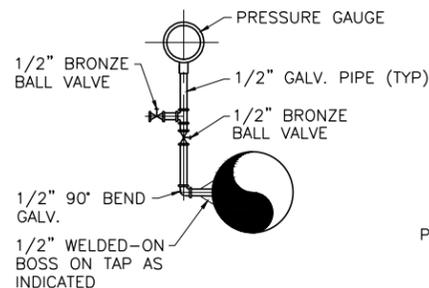
SHEET **C-7**



1  
C-8/C-8  
PUMP STATION PLAN  
1"=10'

**NOTES:**

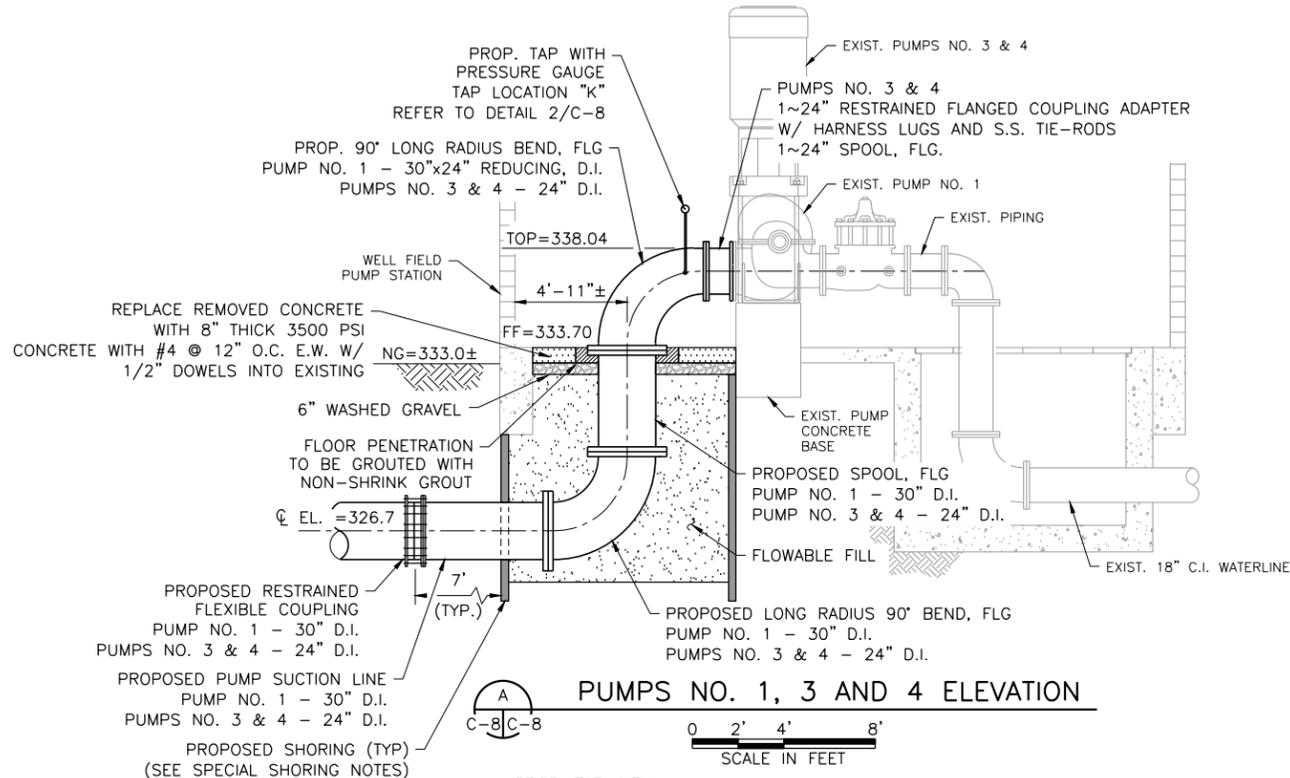
1. CONTRACTOR SHALL FIELD VERIFY DIMENSIONS OF ALL FITTINGS, VALVES AND APPURTENANCES PRIOR TO INSTALLATION.
2. CONTRACTOR SHALL REMOVE WELL FIELD PUMP STATION CONCRETE FLOOR FROM EXPANSION JOINT TO EXPANSION JOINT.
3. BACKFILL ALL EXCAVATED AREAS WITHIN THE PUMP STATION WITH FLOWABLE FILL.
4. CONTRACTOR SHALL BRACE AND SHORE FOUNDATION UNTIL EXCAVATION AND BACKFILL ARE COMPLETE.
5. CONTRACTOR SHALL COMPLETE ONE SUCTION LINE AT A TIME INCLUDING FLOWABLE FILL CURE TIME PRIOR TO BEGINNING EXCAVATION FOR SUBSEQUENT SUCTION LINES.
6. ALL FITTINGS SHALL BE MECHANICALLY RESTRAINED.
7. CONTRACTOR IS RESPONSIBLE FOR REPLACEMENT OF EXISTING SIDEWALKS AND CONCRETE AS REQUIRED. MATCH EXISTING SIDEWALKS AND CONCRETE FLAT WORK.
8. CONTRACTOR TO COMPLETE CRITICAL TIE-INS PER SPECIFICATION SECTION 01 35 00 'SPECIAL PROCEDURES'.
9. ALL DUCTILE IRON PIPE SHALL HAVE INTEGRALLY RESTRAINED JOINTS.



2  
C-8/C-8  
PRESSURE GAUGE STANDARD DETAIL  
NOT TO SCALE

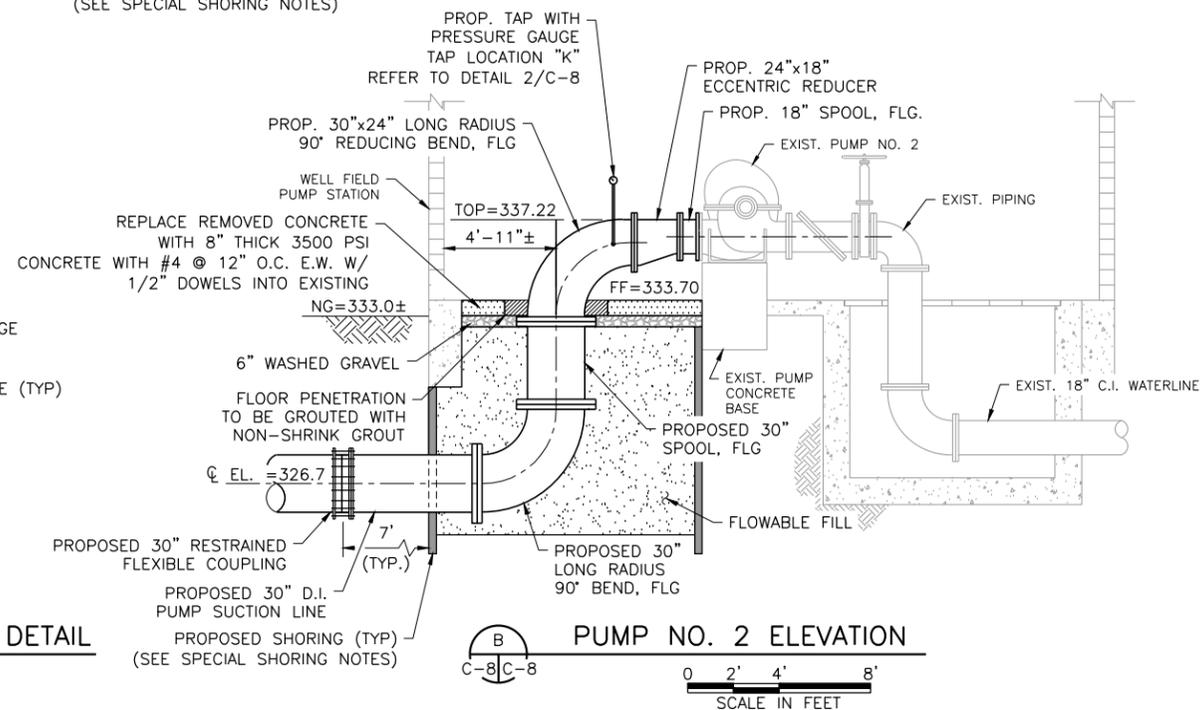
**SPECIAL SHORING NOTES:**

1. THE DESIGN AND INSTALLATION OF ALL SHORING ON ALL SIDES OF EXCAVATION AS REQUIRED TO PROTECT EXISTING STRUCTURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. SHORING MUST MEET THE CRITERIA DESCRIBED BELOW. EXCAVATION SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND NOTHING IN THESE NOTES SHOULD BE INTERPRETED AS PROVIDING PERSONNEL SAFETY RECOMMENDATIONS OR PRECLUDING FURTHER STEPS TO INSURE PERSONNEL SAFETY.
2. SHORING MUST BE PROVIDED TO PROTECT THE EXISTING PUMP STATION BUILDING FOUNDATION, AND OTHER EXISTING FOUNDATIONS IMPACTED BY THE REQUIRED EXCAVATION, INCLUDING, BUT NOT LIMITED TO THE EXISTING PUMP FOUNDATION BASES.
3. PRIOR TO EXCAVATION, THE PUMP BASE AND BUILDING FOUNDATIONS SHALL BE SURVEYED FOR PRE-EXISTING CONDITIONS AND KEY VERTICAL AND HORIZONTAL CONTROLS. THOSE VERTICAL AND HORIZONTAL CONTROL POINTS SHALL BE MONITORED DURING CONSTRUCTION. DO NOT ALLOW MOVEMENT OF EXISTING FOUNDATIONS.
4. SHORING SHALL PROVIDE:
  - A. ACTIVE LATERAL SOIL SUPPORT BY LATERALLY PRESTRESSING THE SOIL
  - B. VERTICAL AND LATERAL SUPPORT FOR THE BUILDING AND ITS FOUNDATION
5. THE SHORING SHALL BE DESIGNED TO PRESTRESS THE VERTICAL EXPOSED FACE OF THE SOIL TO A MINIMUM EQUIVALENT FLUID PRESSURE OF 100 POUNDS PER CUBIC FOOT. THIS PRESTRESS MUST BE PROVIDED BEFORE EXCAVATION OR ADVANCED WITH THE EXCAVATION. LIMIT OPEN EXCAVATION WITHOUT SHORING TO NOT MORE THAN 2 VERTICAL FEET AND NOT MORE THAN 8 HOURS.
6. SHORING DESIGN DRAWINGS AND CALCULATIONS MUST BE SEALED BY PROFESSIONAL ENGINEER LICENSED IN THE STATE OF TEXAS. DRAWINGS AND CALCULATIONS SHALL BE SUBMITTED FOR RECORD PURPOSES.
7. SHORING BELOW GRADE TO REMAIN.



PUMPS NO. 1, 3 AND 4 ELEVATION

SCALE IN FEET



PUMP NO. 2 ELEVATION

SCALE IN FEET



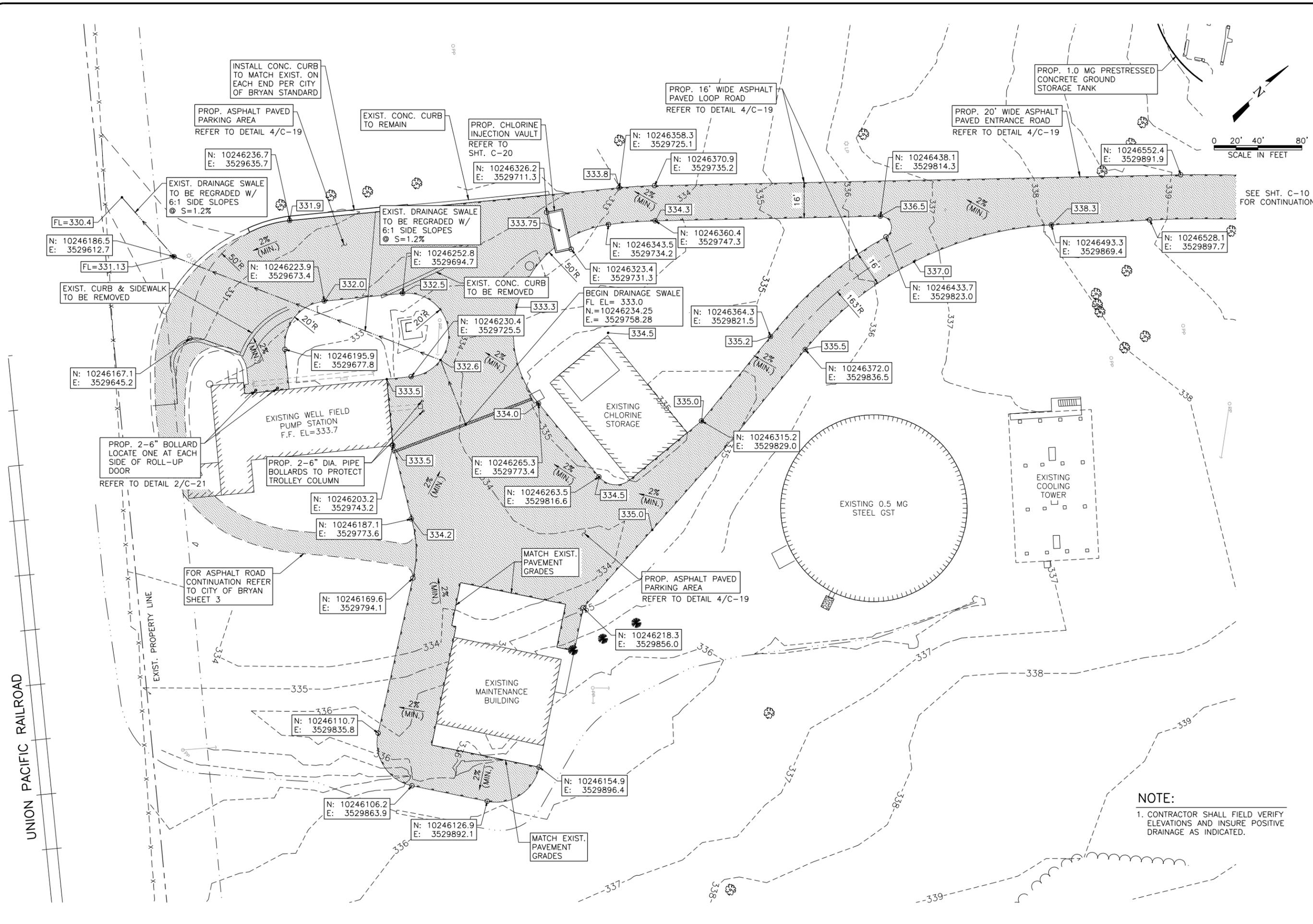
**FRESE AND NICHOLS**  
10814 Whipple Road Building 10, Suite 100  
Austin, Texas 78759-3100  
Phone - (512) 617-3100  
Fax - (512) 617-3101

CITY OF BRYAN  
**TABOR - 16TH ST. & N. TEXAS GW STORAGE TANKS (1 MG SITE)**  
CIVIL  
WELL FIELD PUMP STATION MODIFICATIONS

NO.	ISSUE	DATE	BY	FILE NAME
0	ISSUE			CV-BRY-PL-PUMP.dwg

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

SHEET **C-8**



SEE SHT. C-10 FOR CONTINUATION

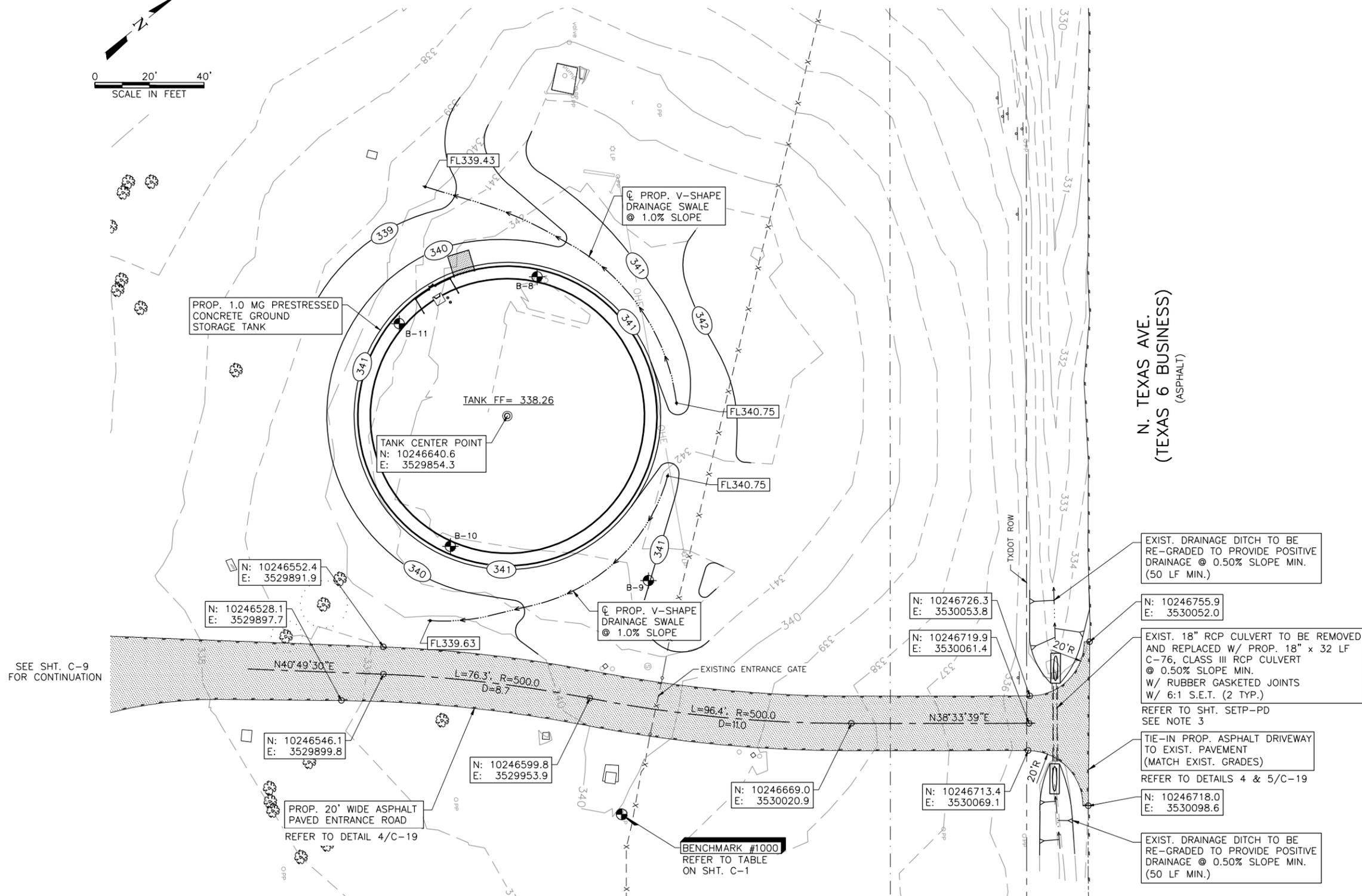
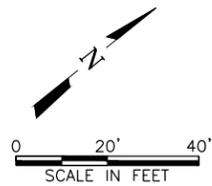
**NOTE:**  
 1. CONTRACTOR SHALL FIELD VERIFY ELEVATIONS AND INSURE POSITIVE DRAINAGE AS INDICATED.

Freese and Nichols, Inc.  
 Texas Registered Engineering Firm F-2144  
 5/16/12  
  
 Charles A. Kuchnerka  
 Professional Engineer

**FRESE & NICHOLS**  
 10814 Whipple Road Building 10, Suite 100  
 Austin, Texas 78759-3100  
 Phone - (512) 617-3100  
 Fax - (512) 617-3101

CITY OF BRYAN  
**TABOR - 16TH ST. & N. TEXAS GW STORAGE TANKS (1 MG SITE)**  
 CIVIL  
**ROADWAY STAKING & GRADING**

NO.	ISSUE	DATE	BY	FILE NAME
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F&N JOB NO.		BRY09116		
DATE		5/16/2012		
DESIGNED	CAK			
DRAWN	DDH			
CHECKED	CAK			
REVISED				
VERIFY SCALE: Bar is one inch on original drawing; if not one inch on this sheet, adjust scale.				
SHEET <b>C-9</b>				
SEC.				



SEE SH. C-9 FOR CONTINUATION

**NOTES:**

1. AT NO TIME SHALL THE SITE BE LEFT UNATTENDED BY THE CONTRACTOR WITHOUT EXISTING, PROPOSED, OR TEMPORARY FENCE IN PLACE. ALL TEMPORARY AND PERMANENT FENCING SHALL MEET TCEQ REQUIREMENTS.
2. HYDROMULCH SEED ALL DISTURBED AREAS WITHIN THE TXDOT R.O.W.
3. REFER TO TXDOT DRIVEWAY PERMIT FOR ADDITIONAL REQUIREMENTS.

**SITE GRADING PLAN**  
 C-10 | C-10 1"=20'

**LEGEND:**

- PROP. ASPHALT PAVING, REFER TO DETAIL 4/C-19
- B-2 SOIL TEST BORE LOCATION
- EXISTING TREE
- DITCH FLOWLINE
- TOP OF BANK

**N. TEXAS AVE.**  
**(TEXAS 6 BUSINESS)**  
 (ASPHALT)

- EXIST. DRAINAGE DITCH TO BE RE-GRADED TO PROVIDE POSITIVE DRAINAGE @ 0.50% SLOPE MIN. (50 LF MIN.)
- EXIST. 18" RCP CULVERT TO BE REMOVED AND REPLACED W/ PROP. 18" x 32 LF C-76, CLASS III RCP CULVERT @ 0.50% SLOPE MIN. W/ RUBBER GASKETED JOINTS W/ 6:1 S.E.T. (2 TYP.) REFER TO SH. SETP-PD SEE NOTE 3
- TIE-IN PROP. ASPHALT DRIVEWAY TO EXIST. PAVEMENT (MATCH EXIST. GRADES) REFER TO DETAILS 4 & 5/C-19
- EXIST. DRAINAGE DITCH TO BE RE-GRADED TO PROVIDE POSITIVE DRAINAGE @ 0.50% SLOPE MIN. (50 LF MIN.)

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Texas Registered Engineering Firm F-2144

9/19/2012

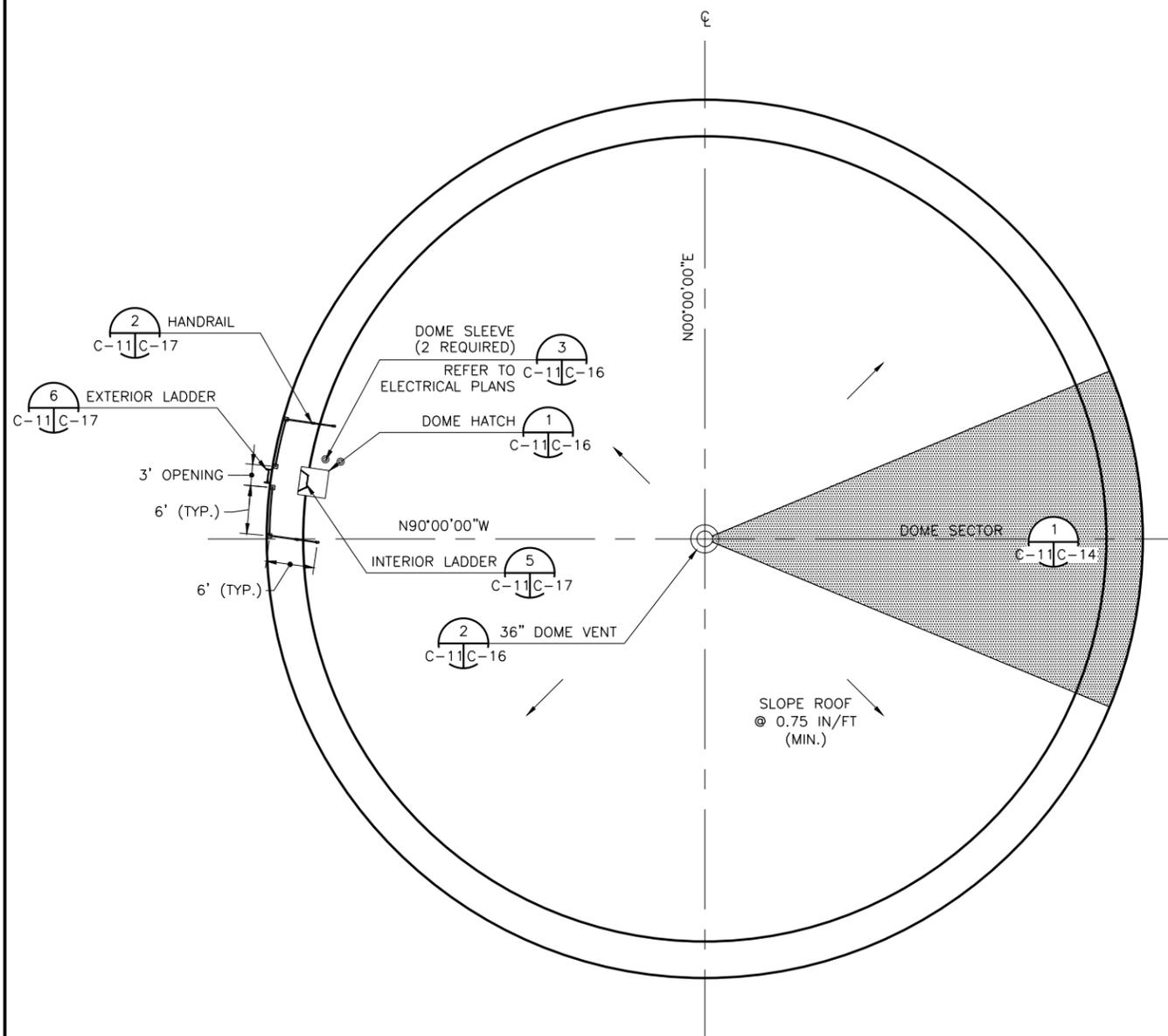
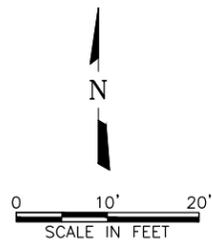
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Austin, Texas 78759-3100  
Phone - (512) 617-3100  
Fax - (512) 617-3101

CITY OF BRYAN  
**TABOR - 16TH ST. & N. TEXAS GW**  
**STORAGE TANKS (1 MG SITE)**  
 CIVIL  
**ROADWAY AND TANK STAKING AND GRADING PLAN**

NO.	ISSUE	DATE	BY	FILE NAME	CV-BRY-PL-SITE01.dwg

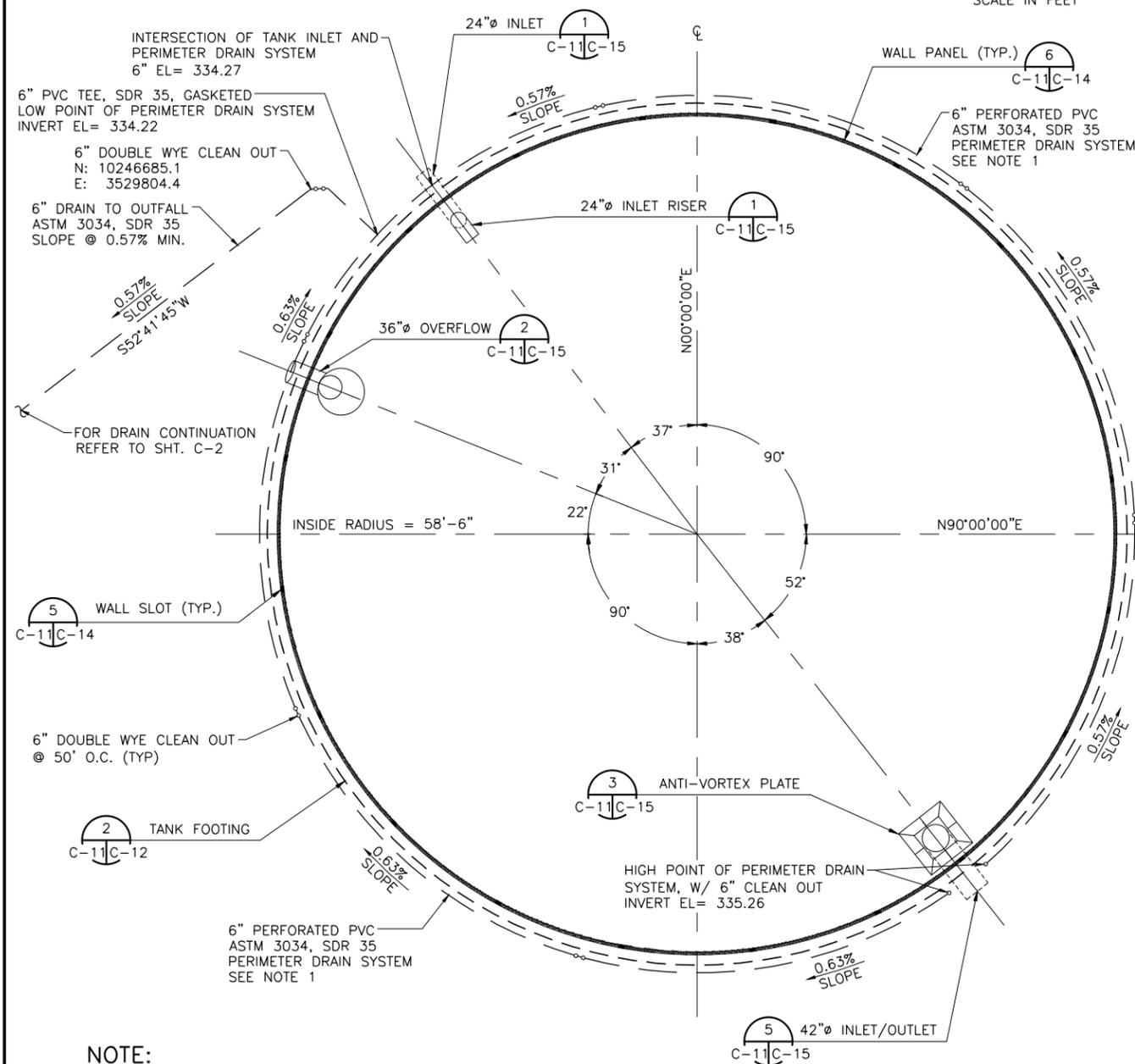
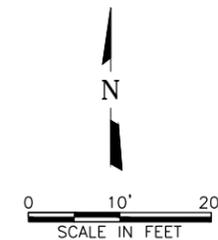
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 DATE 9/11/2012  
 DESIGNED CAK  
 DRAWN DDH  
 REVISIONS  
 CHECKED CAK  
 FILE NAME CV-BRY-PL-SITE01.dwg



**NOTES:**

1. ALL MATERIALS USED IN THE FABRICATION AND ERECTION OF THE TANK AND APPURTENANCES SHALL CONFORM TO AWWA D-110, TCEQ, AND OTHER APPLICABLE STANDARDS, UNLESS OTHERWISE SPECIFIED HERE IN.
2. PROPOSED 1.0 MG TANK SHALL BE AWWA D110, TYPE III, PRESTRESSED CONCRETE GROUND STORAGE TANK.

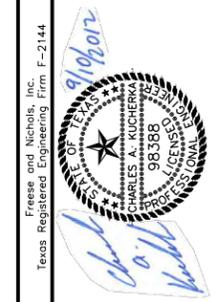
**1** GROUND STORAGE TANK ROOF PLAN  
C-11C-11 SCALE: 1"=10'



**NOTE:**

1. (2) 1/2" HOLES SHALL BE DRILLED 5" ON CENTER AT THE 6 O'CLOCK AND 12 O'CLOCK POSITIONS ALTERNATING TO THE 3 O'CLOCK AND 9' O'CLOCK POSITIONS.

**2** GROUND STORAGE TANK SECTIONAL PLAN  
C-11C-11 SCALE: 1"=10'



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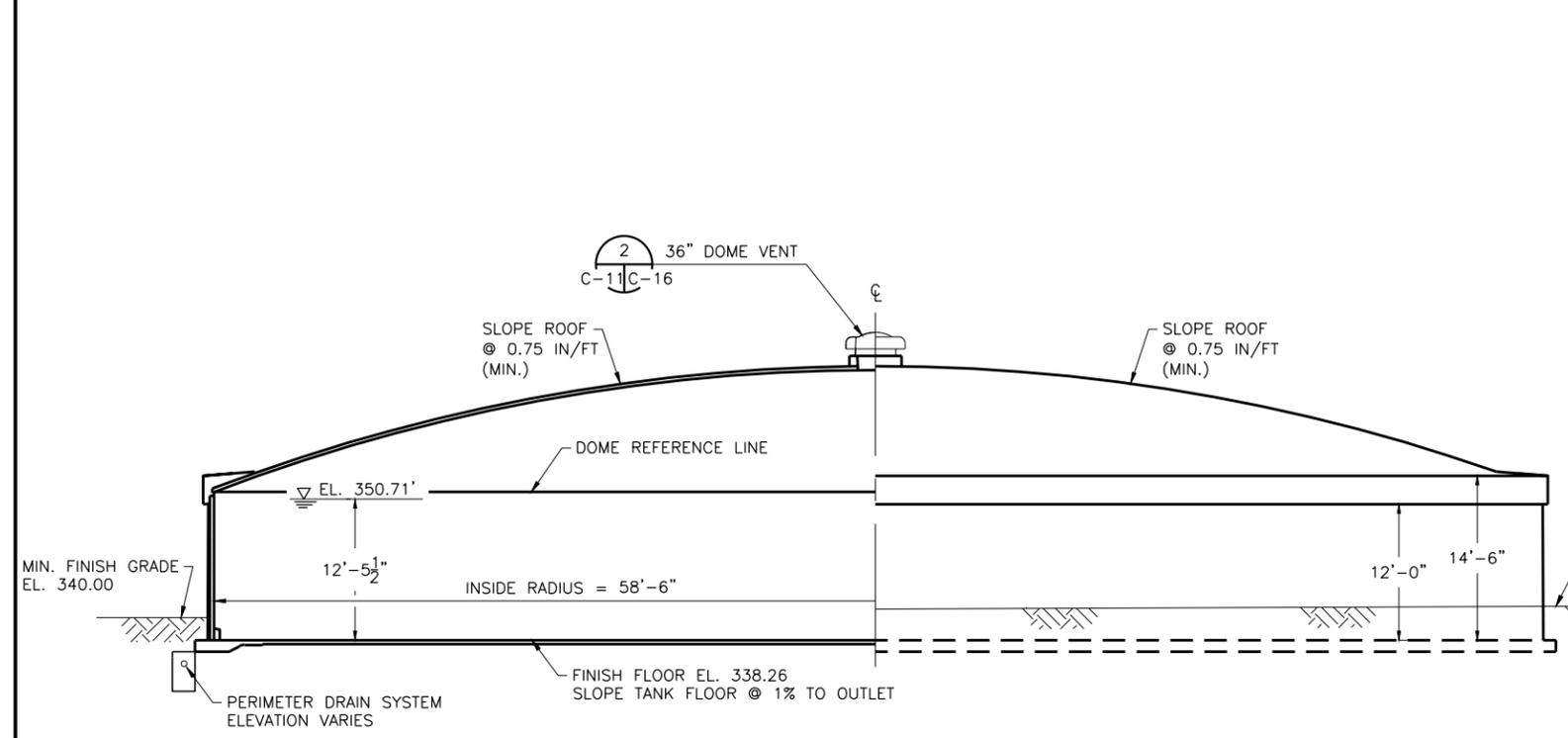
CITY OF BRYAN  
**TABOR - 16TH ST. & N. TEXAS GW STORAGE TANKS (1 MG SITE)**  
CIVIL  
**GROUND STORAGE TANK ROOF AND SECTIONAL PLAN**

NO.	ISSUE	DATE	BY	FILE NAME
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Bar is one inch on original drawing; if not one inch on this sheet, adjust scale.

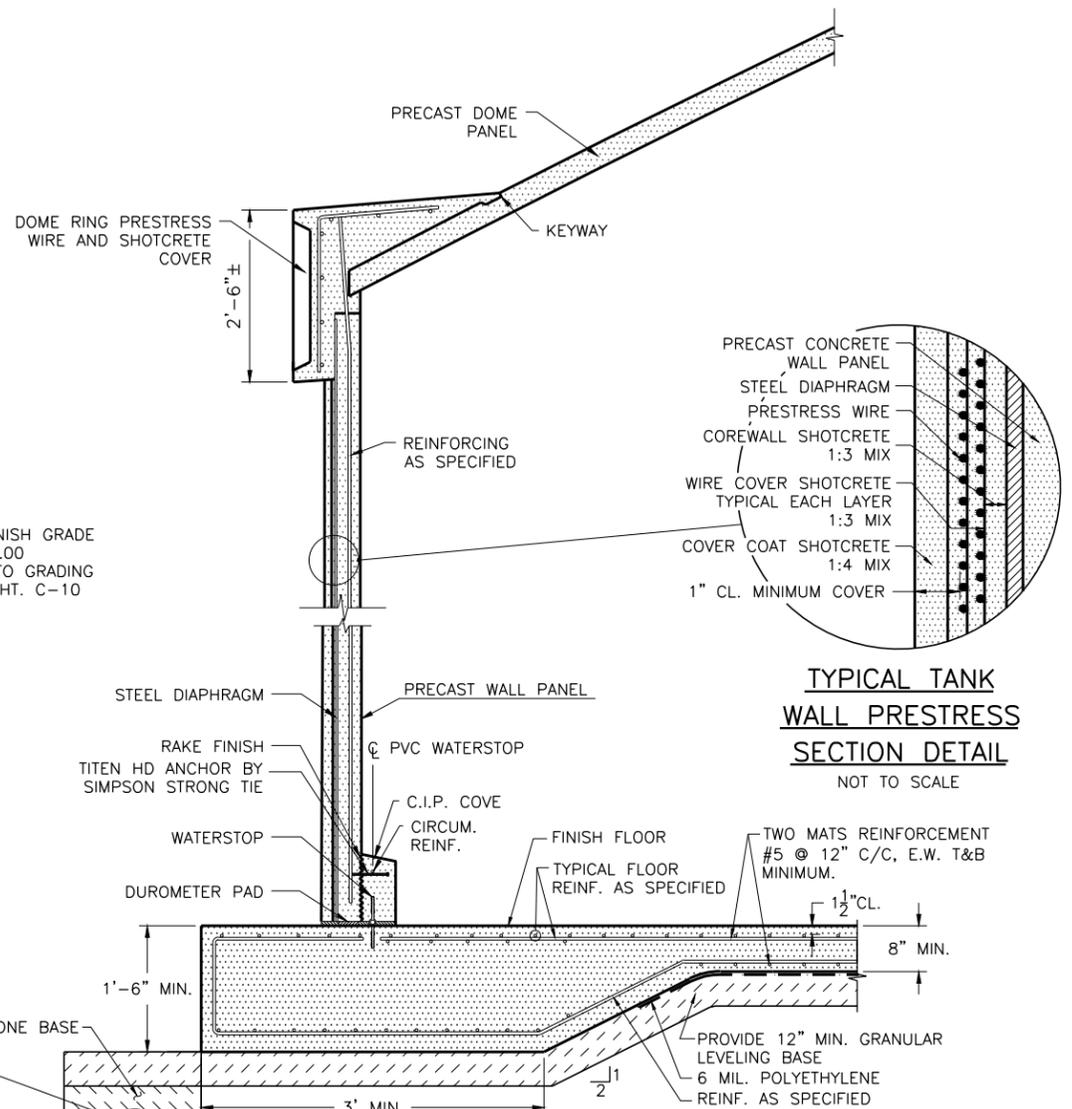
SHEET **C-11**

NO.	ISSUE	BY	DATE	FILE NAME
0				CV-BRY-PL-TANK_ELEV.dwg
1				



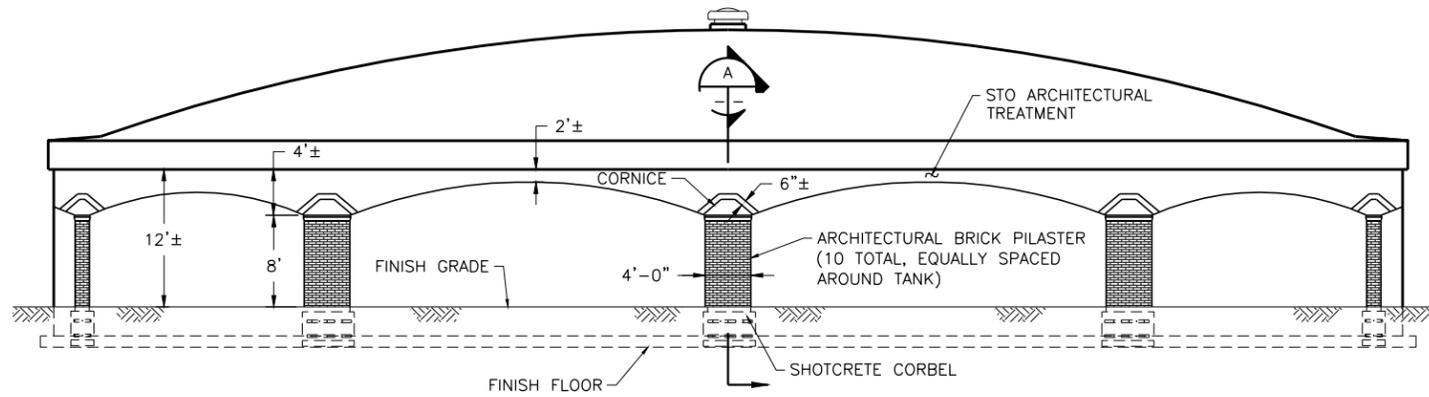
**NOTES:**  
1. CONTRACTOR SHALL BACKFILL A MINIMUM OF 5- FEET FROM THE TANK WITH CLAY SOIL WITH PI RANGE OF 19<PI<35. PROVIDE CERTIFIED TEST REPORTS FOR PROPOSED BACKFILL.

**GROUND STORAGE TANK SECTION**  
SCALE: 1/8" = 1'-0"



**NOTES:**  
1. THE TANK FLOOR SLAB SHALL RECEIVE A BULLFLOAT AND/OR A FRESNO FINISH.  
2. THE TOP OF THE DOME RING AND DOME SLOTS SHALL RECEIVE A LIGHT BROOM FINISH.  
3. FOUNDATION AND FLOOR CONCRETE, f'c = 3,500 psi.  
DOME, COVE AND WALL CONCRETE, f'c = 4,000 psi.  
COREWALL AND WIRE COVER SHOTCRETE, f'c = 4,500 psi, 1:3 MIX.  
COVERCOAT SHOTCRETE, f'c = 4,500 psi, 1:4 MIX.  
ALL REINFORCING SHALL BE GRADE 60.  
4. RELATIVELY IMPERMEABLE GROUND COVER TO SERVE AS HORIZONTAL MOISTURE BARRIER AND MINIMIZE PRECIPITATION RUNOFF FROM ENTERING FILL. HORIZONTAL MOISTURE BARRIER MAY CONSIST OF CONCRETE (SIDEWALKS, PATIOS, ETC.), OR OF MEDIUM PLASTICITY CALYS (19<PI<35).

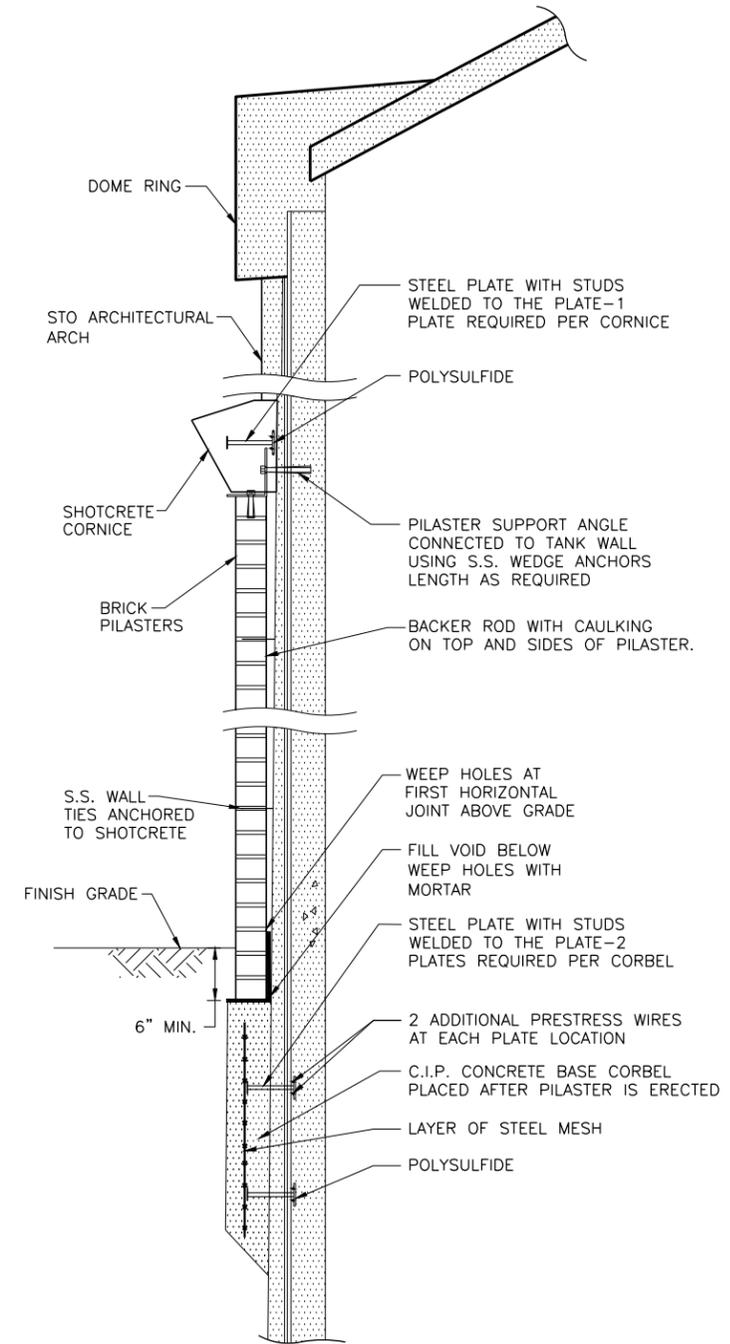
**TYP. STRUCTURAL WALL SECTION**  
NOT TO SCALE



**NOTES:**

1. TANK & ARCHITECTURAL FEATURE COLORS TO BE SELECTED BY OWNER DURING CONSTRUCTION.
2. TANK, CORNICE, AND OTHER FEATURES MAY HAVE VARYING COLORS.

**TANK ELEVATION**  
SCALE: 1/8" = 1'-0"



**SECTION A  
BRICK PILASTER**  
NOT TO SCALE

Freese and Nichols, Inc.  
Texas Registered Engineering Firm F-2144  
5/16/12  
Charles A. Kuchera  
Professional Engineer  
98368

**FREESE NICHOLS**  
10814 Whipple Road Building 12, Suite 100  
Austin, Texas 78759-3100  
Phone - (512) 617-3100  
Fax - (512) 617-3101

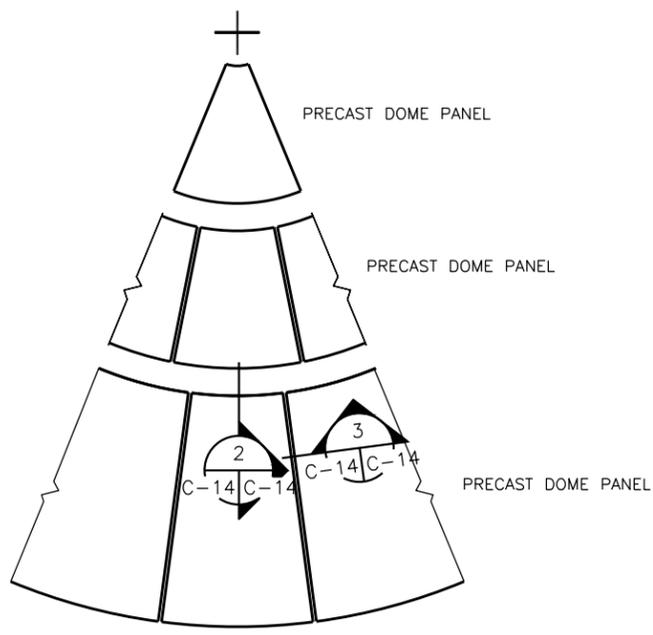
CITY OF BRYAN  
**TABOR - 16TH ST. & N. TEXAS GW  
STORAGE TANKS (1 MG SITE)**  
CIVIL  
**GROUND STORAGE TANK  
ARCHITECTURAL IMPROVEMENTS**

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2	DRAWN		CJE	
3	REVIEWED		CJE	
4	CHECKED		CAK	

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

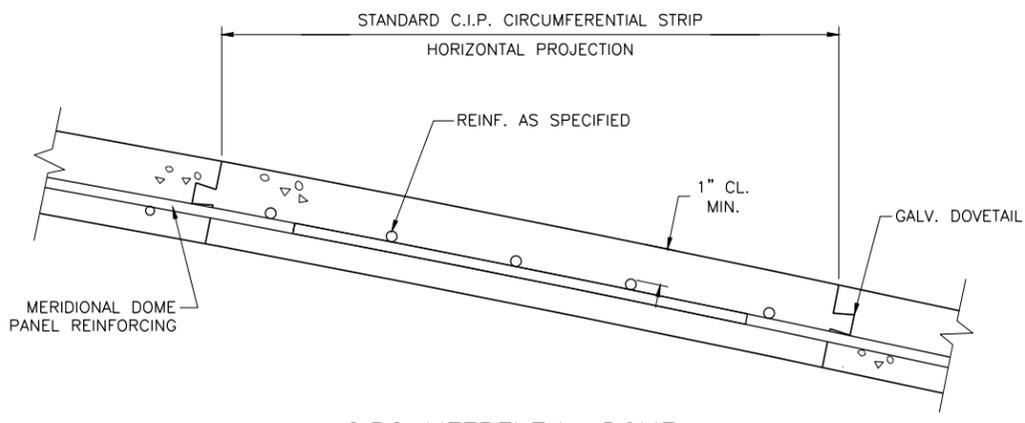
SHEET  
**C-13**  
SEC.

DATE	BRY091116	DESIGNED	CAK	DRAWN	CJE	CHECKED	CAK	FILE NAME	CV-BRY-DT-TANK03.dwg
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NO. ISSUE									

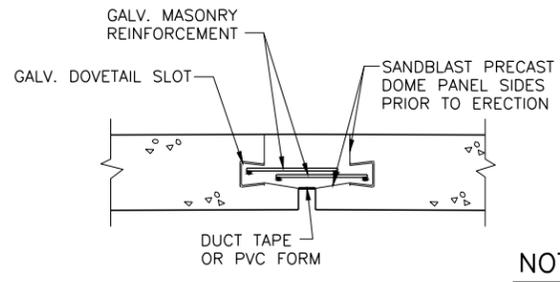


- NOTES:**
1. SPLICE CIRCUMFERENTIAL JOINT REINFORCING BETWEEN RADIAL JOINTS.
  2. RADIAL DIMENSIONS ARE HORIZONTAL PROJECTIONS.
  3. DOME PANELS, DOME RINGS, AND DOME SLOTS SHALL RECEIVE A LIGHT BROOM FINISH.

**1**  
C-11 | C-14 NOT TO SCALE  
**DOME SECTOR**

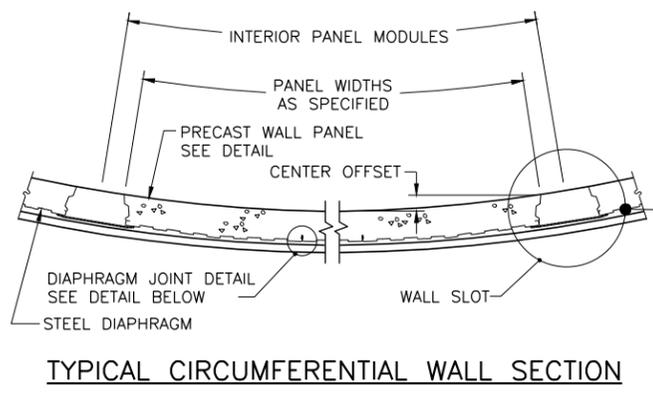


**2**  
C-14 | C-14 SCALE: NTS  
**CIRCUMFERENTIAL DOME  
JOINT REINFORCING DETAIL**

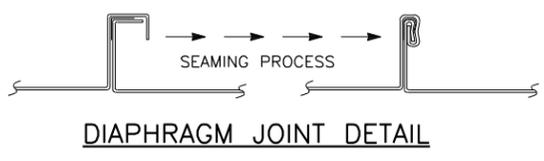


**3**  
C-14 | C-14 SCALE: NTS  
**RADIAL DOME JOINT  
REINFORCING DETAIL**

**NOTE:**  
JOINT SHALL BE FILLED TO FULL PRECAST PANEL THICKNESS.

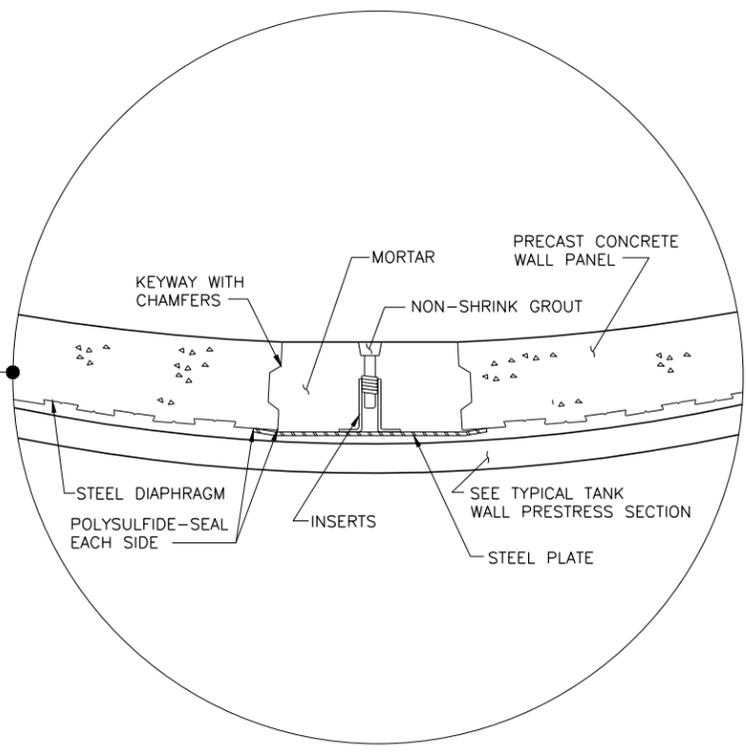


**TYPICAL CIRCUMFERENTIAL WALL SECTION**

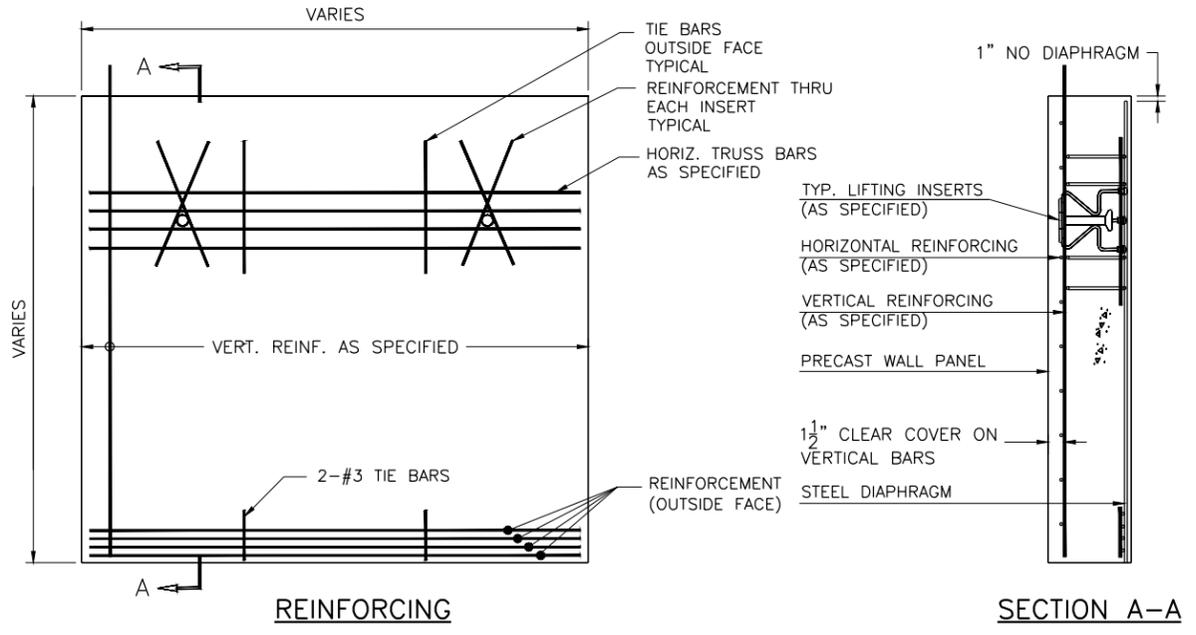


**DIAPHRAGM JOINT DETAIL**

**4**  
C-11 | C-14 SCALE: NTS  
**WALL PANEL AND JOINT**



**5**  
C-11 | C-14 SCALE: NTS  
**WALL SLOT DETAIL**

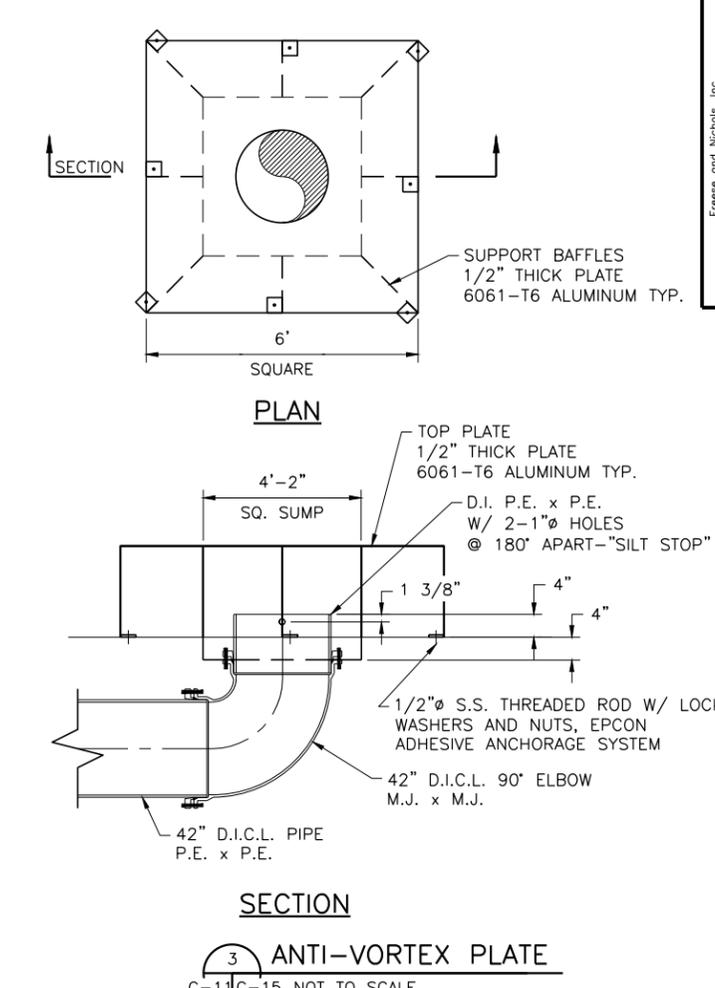
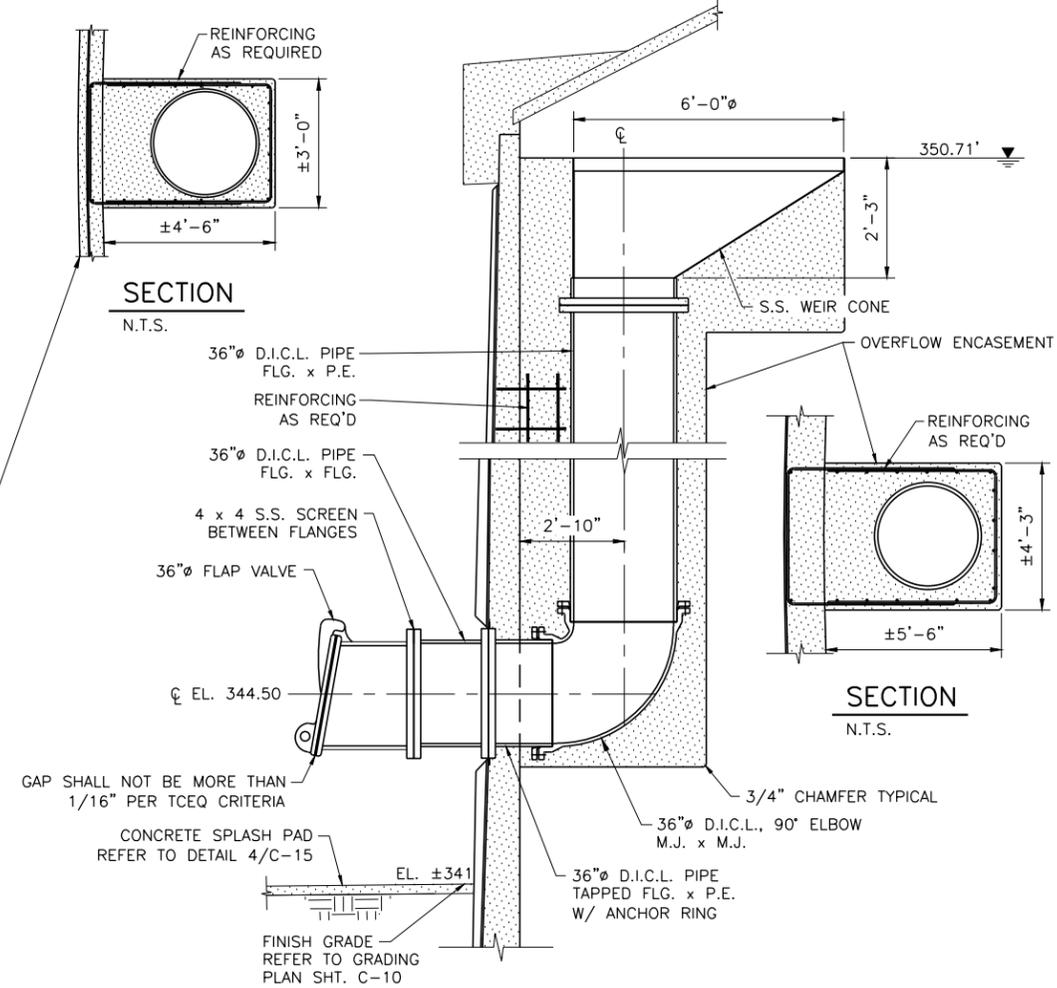
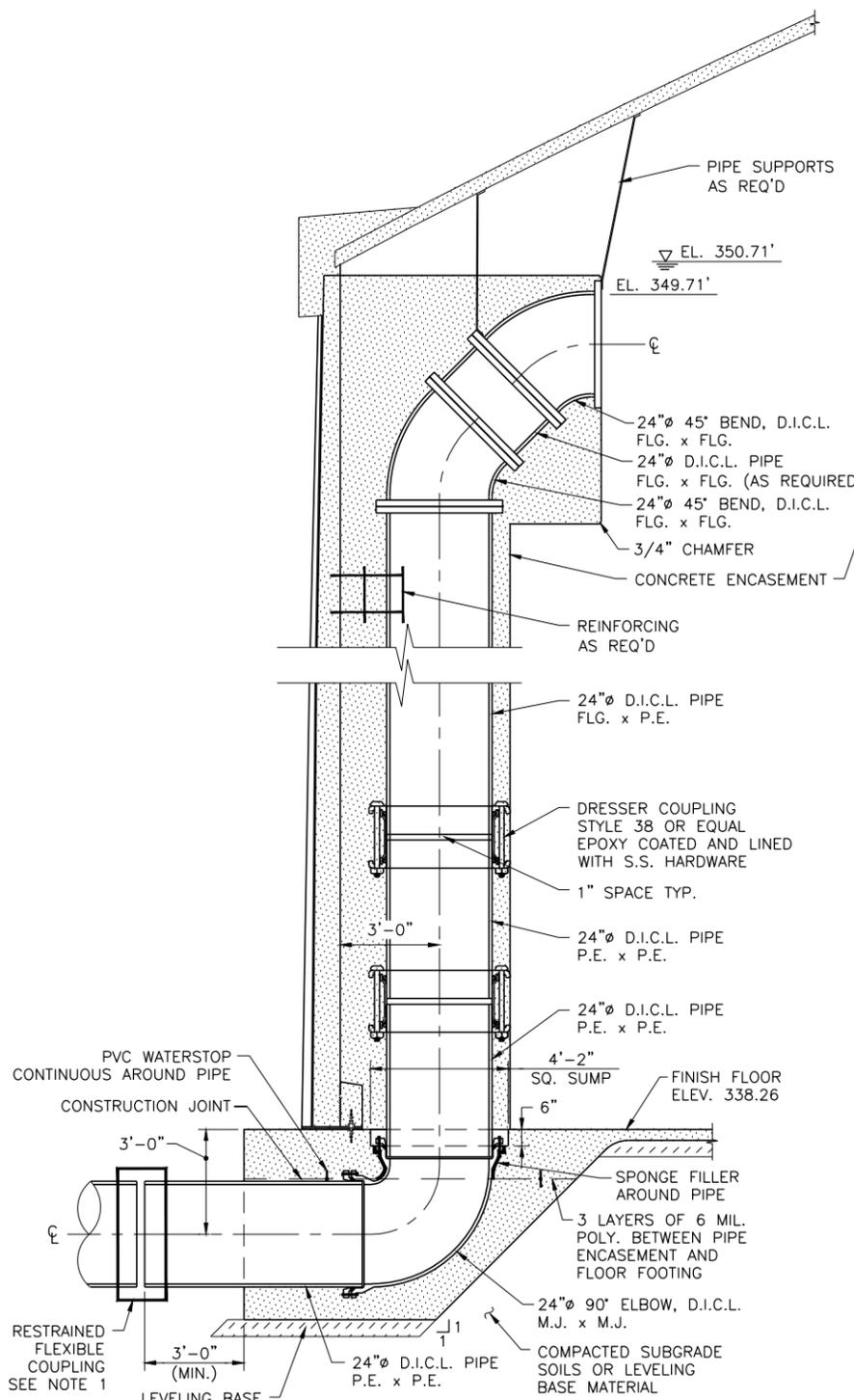


**REINFORCING**

**SECTION A-A**

**NOTE:**  
WALL PANELS SHALL RECEIVE A HORIZONTAL RAKE FINISH FOR THE BOTTOM 1'-2 1/4" OF THE PANEL AND A HORIZONTAL LIGHT BROOM FINISH FOR THE REST OF THE PANEL.

**6**  
C-11 | C-14 NOT TO SCALE  
**PRECAST WALL PANEL**



**NOTES:**

1. ALL PIPING AND FITTINGS WITHIN THE TANK AND UNDER THE SLAB SHALL BE CONCRETE LINED.
2. ALL FLANGE HARDWARE SHALL BE STAINLESS STEEL.
3. ALL EXPOSED PIPING SHALL BE CONCRETE ENCASED, UNLESS STAINLESS STEEL.

**NOTES:**

1. COUPLINGS SHALL BE VICTAULIC DEPEND-O-LOK FxF MODIFIED TYPE 2 UNLESS INDICATED OTHERWISE. COUPLINGS SHALL BE EPOXY COATED AND LINED WITH S.S. HARDWARE.
2. ALL FLANGE HARDWARE SHALL BE STAINLESS STEEL.
3. ALL EXPOSED PIPING SHALL BE CONCRETE ENCASED, UNLESS STAINLESS STEEL.

**NOTES:**

1. COUPLINGS SHALL BE VICTAULIC DEPEND-O-LOK FxF MODIFIED TYPE 2 UNLESS INDICATED OTHERWISE. COUPLINGS SHALL BE EPOXY COATED AND LINED WITH S.S. HARDWARE.



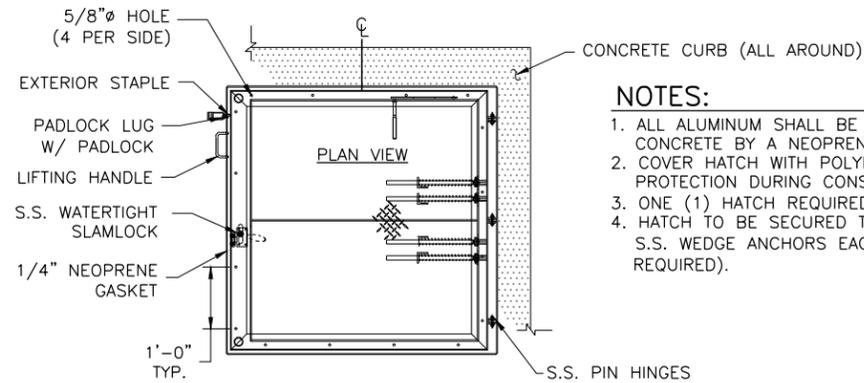
**PRESE NICHOLS**  
 10814 Whipple Road Building 10, Suite 100  
 Austin, Texas 78759-3100  
 Phone - (512) 617-3100  
 Fax - (512) 617-3101

CITY OF BRYAN  
**TABOR - 16TH ST. & N. TEXAS GW**  
**STORAGE TANKS (1 MG SITE)**  
 CIVIL  
**GROUND STORAGE TANK**  
**INLET-OUTLET AND OVERFLOW DETAILS**

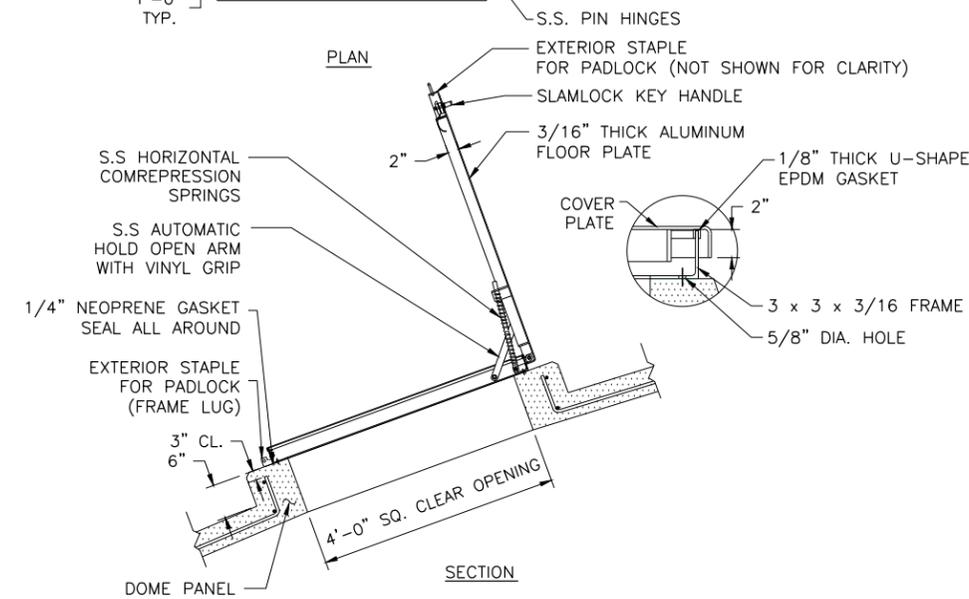
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REVISD	CJE			

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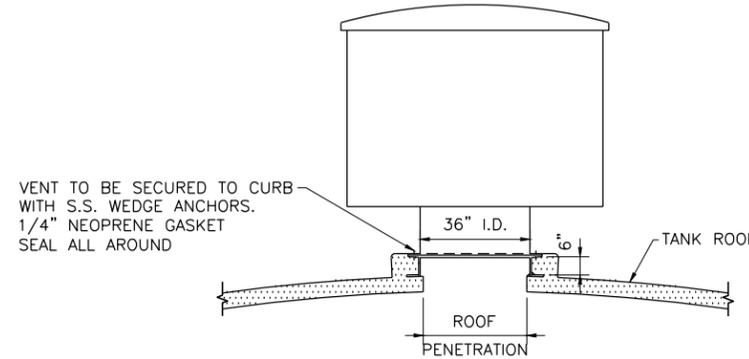
SHEET **C-15**



- NOTES:**
1. ALL ALUMINUM SHALL BE ISOLATED FROM CONCRETE BY A NEOPRENE GASKET.
  2. COVER HATCH WITH POLYETHYLENE FOR PROTECTION DURING CONSTRUCTION.
  3. ONE (1) HATCH REQUIRED.
  4. HATCH TO BE SECURED TO CURB WITH S.S. WEDGE ANCHORS EACH SIDE (16 REQUIRED).

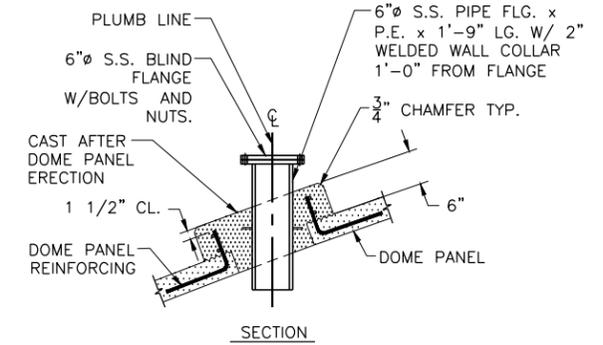


1 DOME HATCH  
C-11|C-16 NOT TO SCALE



- NOTES:**
1. VENT DESIGN AND CONSTRUCTION SHALL BE AST MODEL VENT BY ADVANCE TANK AND CONSTRUCTION CO.
  2. VENT SHALL BE ALUMINUM WITH S.S. HARDWARE.
  3. VENT SHALL HAVE LOCKING MECHANISM TO PREVENT ACCESS TO TANK.
  4. VENT SHALL BE SCREENED WITH #16 S.S. MESH.

2 DOME VENT  
C-11|C-16 NOT TO SCALE



- NOTES:**
1. TWO (2) REQUIRED THIS TYPE.
  2. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL DETAILS.

3 DOME SLEEVE  
C-11|C-16 SCALE: 3/4"=1'-0"

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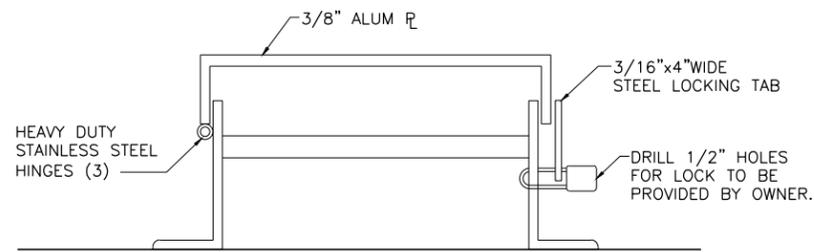
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Austin, Texas 78759-3100  
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CITY OF BRYAN  
TABOR - 16TH ST. & N. TEXAS GW  
STORAGE TANKS (1 MG SITE)

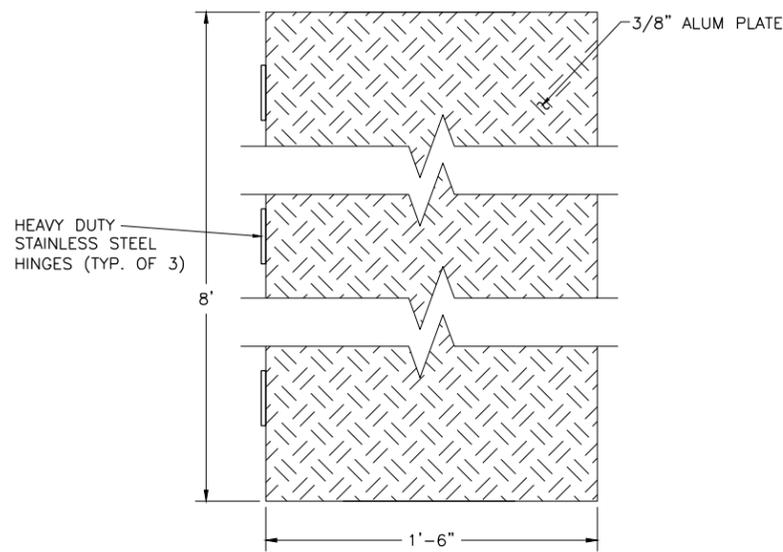
CIVIL  
GROUND STORAGE TANK  
APPURTENANCES

NO.	ISSUE	BY	DATE	F&N JOB NO.	DATE	DESIGNED	DRAWN	REVISED	CHECKED	FILE NAME
				BRY09116	5/16/2012	CAK	CJE		CAK	CV-BRY-DT-TANK01.dwg

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

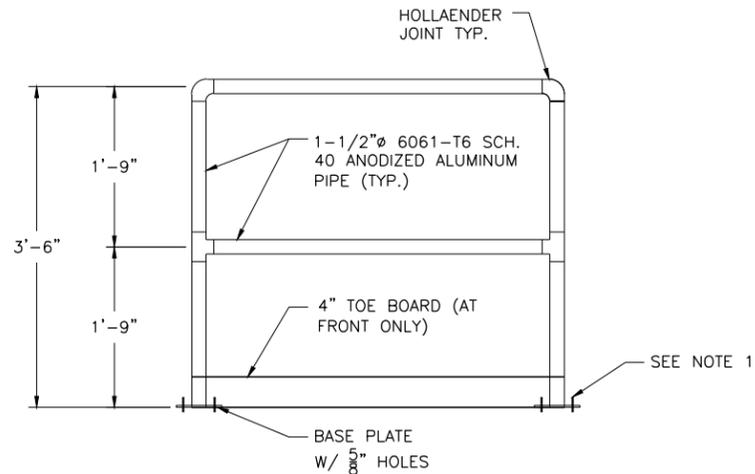


PLAN



ELEVATION

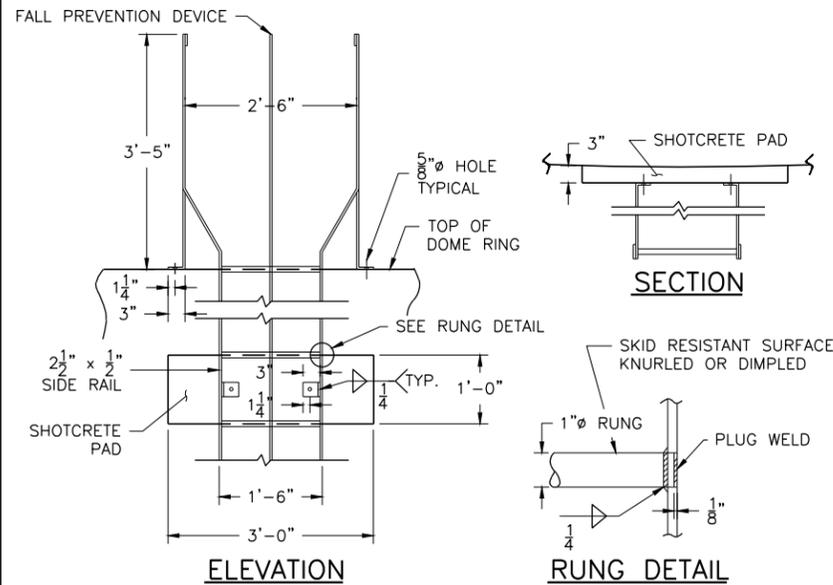
1 LADDER GATE DETAIL  
C-11|C-17 NOT TO SCALE



NOTES:

1. BASE PLATES TO BE ANCHORED TO TANK USING S.S. WEDGE ANCHORS.
2. ALL ALUMINUM TO BE ISOLATED FROM CONCRETE USING NEOPRENE GASKETS.
3. 4-INCH TOE BOARD TO BE PROVIDED ON FRONT CIRCUMFERENTIAL HANDRAIL.
4. PROVIDE CHAIN GUARD WITH S.S. HARDWARE ACROSS OPENING IN HANDRAIL. 13 LINK PER FOOT WROUGHT ALUMINUM CHAIN WITH 1/4" STAINLESS STEEL EYE BOLT AND HARNESS SNAP.
5. HANDRAIL SHALL MEET OSHA REQUIREMENTS.

2 HANDRAIL DETAIL  
C-11|C-17 NOT TO SCALE



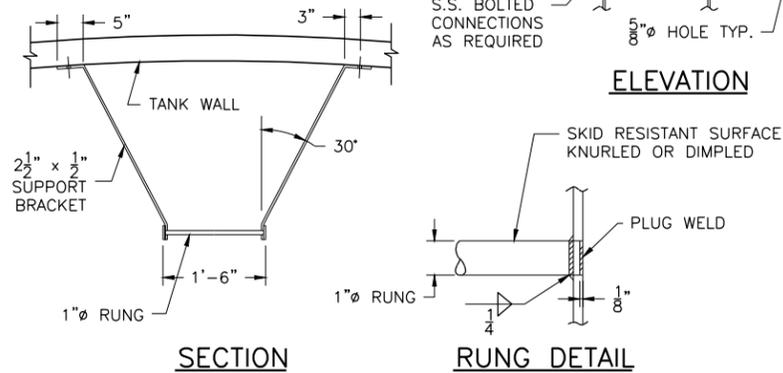
ELEVATION

RUNG DETAIL

NOTES:

1. LADDER SHALL BE 6061-T6 ALUMINUM.
2. ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE SHALL RECEIVE A PVC SHIM.
3. LADDERS SHALL BE CONNECTED TO TANK USING STAINLESS STEEL WEDGE ANCHORS.
4. BASE OF LADDER TO BE EQUIPPED WITH LADDER GATE.
5. ISOLATE DISSIMILAR METALS WITH ISOLATING KIT.

3 EXTERIOR LADDER  
C-11|C-17 NOT TO SCALE



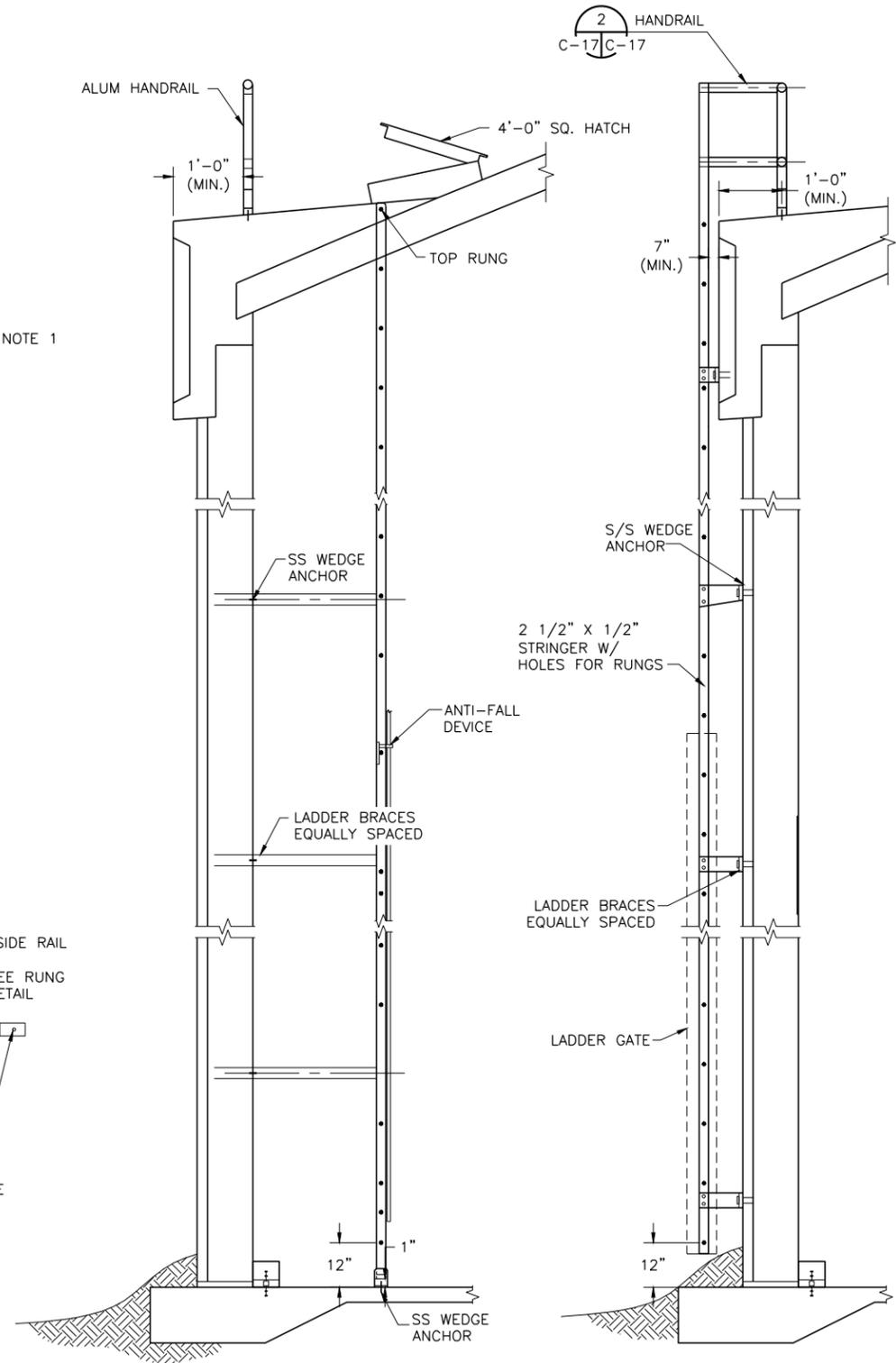
SECTION

RUNG DETAIL

NOTES:

1. LADDER SHALL BE 6061-T6 ALUMINUM.
2. ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE SHALL RECEIVE A PVC SHIM.
3. LADDERS SHALL BE CONNECTED TO TANK USING STAINLESS STEEL WEDGE ANCHORS.
4. ISOLATE DISSIMILAR METALS WITH ISOLATING KIT.

4 INTERIOR LADDER  
C-11|C-17 NOT TO SCALE



NOTE:

1. LADDERS SHALL MEET OSHA REQUIREMENTS.

5 INTERIOR LADDER ELEVATION  
C-11|C-17 NOT TO SCALE

NOTE:

1. LADDERS SHALL MEET OSHA REQUIREMENTS.
2. NO ELECTRICAL CONDUITS OR OTHER OBSTRUCTIONS SHALL BE CONSTRUCTED WITHIN 7-INCHES PARALLEL TO LADDER SIDE RAILS.

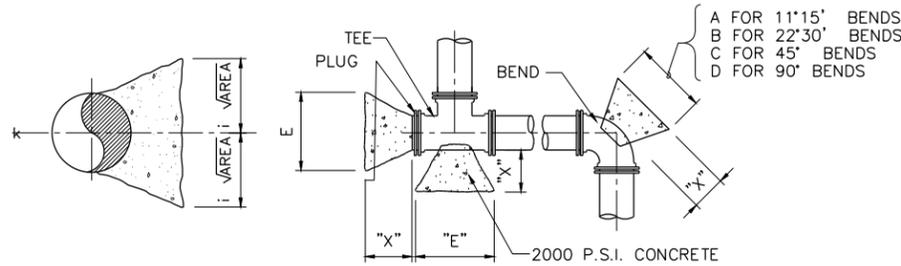
6 EXTERIOR LADDER ELEVATION  
C-11|C-17 NOT TO SCALE



Freese and Nichols, Inc.  
Texas Registered Engineering Firm F-2144  
5/16/12  
10814 Whipple Road Building 10, Suite 100  
Austin, Texas 78759-3100  
Phone - (512) 617-3100  
Fax - (512) 617-3101

CITY OF BRYAN  
TABOR - 16TH ST. & N. TEXAS GW  
STORAGE TANKS (1 MG SITE)  
CIVIL  
GROUND STORAGE TANK  
LADDER AND HANDRAIL DETAILS

NO.	ISSUE	BY	DATE	DESIGNED	CAD	DRAWN	DDH	CHECKED	CAK	FILE NAME
				DATE 5/16/2012	CAK					CV-BRY-DT-LDDR01.dwg
VERIFY SCALE: Bar is one inch on original drawing; if not one inch on this sheet, adjust scale.										
C-17										



**CONCRETE HORIZONTAL**

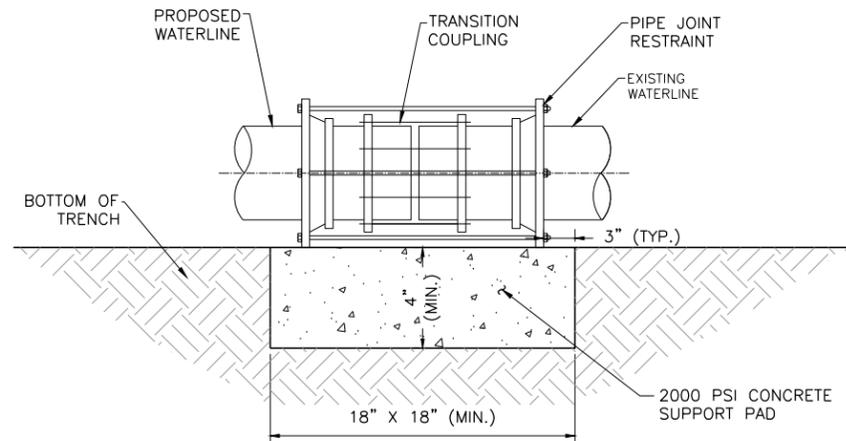
**HORIZONTAL BLOCKING TABLE**

PIPE SIZE	"X" FT.	11'15"		22'30"		45'		90'		TEE & PLUG	
		"A" IN.	MIN. AREA, FT. <sup>2</sup>	"B" IN.	MIN. AREA, FT. <sup>2</sup>	"C" IN.	MIN. AREA, FT. <sup>2</sup>	"D" IN.	MIN. AREA, FT. <sup>2</sup>	"E" IN.	MIN. AREA, FT. <sup>2</sup>
6"	1.0	9	1.04	13	2.07	18	4.05	24	7.49	20	10.59
8"	1.0	12	1.85	17	3.67	24	7.20	32	13.31	27	18.82
10"	1.0	15	2.88	21	5.74	29	11.25	40	20.79	34	29.41
12"	1.25	18	4.15	25	8.26	35	16.20	48	29.94	40	42.34
16"	1.5	24	7.38	34	14.68	47	28.81	64	53.23	54	75.28
20"	2.0	36	16.60	50	33.04	71	64.82	96	119.77	81	169.38
24"	2.0	36	16.60	50	33.04	71	64.82	96	119.77	81	169.38
30"	2.25	-	25.94	-	51.63	-	101.28	-	187.14	-	264.65
36"	2.75	-	37.36	-	74.35	-	145.83	-	269.47	-	381.09
42"	3.0	-	50.84	-	101.20	-	198.50	-	366.78	-	518.71

**NOTES:**

- THRUST AT BENDS, TEES, PLUGS, OR OTHER FITTINGS SHALL BE RESISTED BY RESTRAINED JOINTS. IF THRUST CANNOT BE ACCOMMODATED USING RESTRAINED JOINTS, THRUST BLOCKING OR CONCRETE ANCHORS TO RESTRAIN THRUST MAY BE USED ON A CASE-BY-CASE BASIS WHEN APPROVED BY THE ENGINEER.
- CONTRACTOR SHALL VERIFY ALL SOIL BEARING STRENGTHS.
- BEARING AREAS SHOWN ARE BASED ON 150 P.S.I. TEST AND 2,000 P.S.F. SOIL BEARING VALUE.
- THE EARTH BEARING SURFACE SHALL BE UNDISTURBED MATERIAL. KEEP ALL FITTINGS FREE FROM CONCRETE. THRUST BLOCKS ARE TO BE CONSTRUCTED OF 2,000 P.S.I. (28 DAY) CONCRETE AND PLACED AS SHOWN ON TYPICAL THRUST BLOCKING DETAIL.
- ALL VALUES ARE MINIMUM. IF SOIL BEARING VALUE IS LESS THAN 2000 P.S.F., CONTRACTOR SHALL HAVE A TEXAS REGISTERED PROFESSIONAL ENGINEER DESIGN THE NECESSARY THRUST BLOCKING.
- VERTICAL DIMENSION OF BLOCKING SHALL BE IDENTICAL TO THE APPLICABLE HORIZONTAL (A,B,D,C,E) DIMENSION AS LISTED IN TABLE, OR GREATER.
- DIMENSION "X" MAY VARY IF NECESSARY TO PROVIDE BEARING AGAINST UNDISTURBED TRENCH WALL.

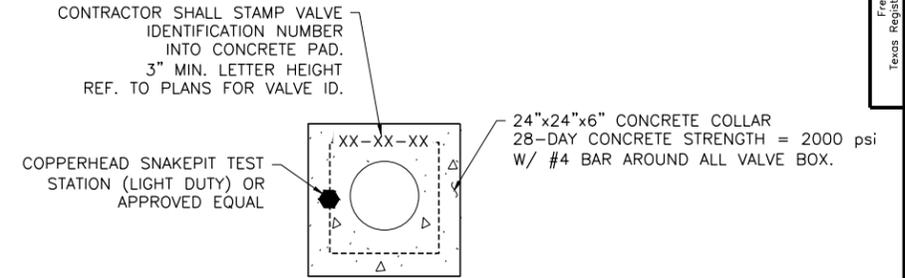
**1 HORIZONTAL BLOCKING DETAIL**  
C-18|C-18 NOT TO SCALE



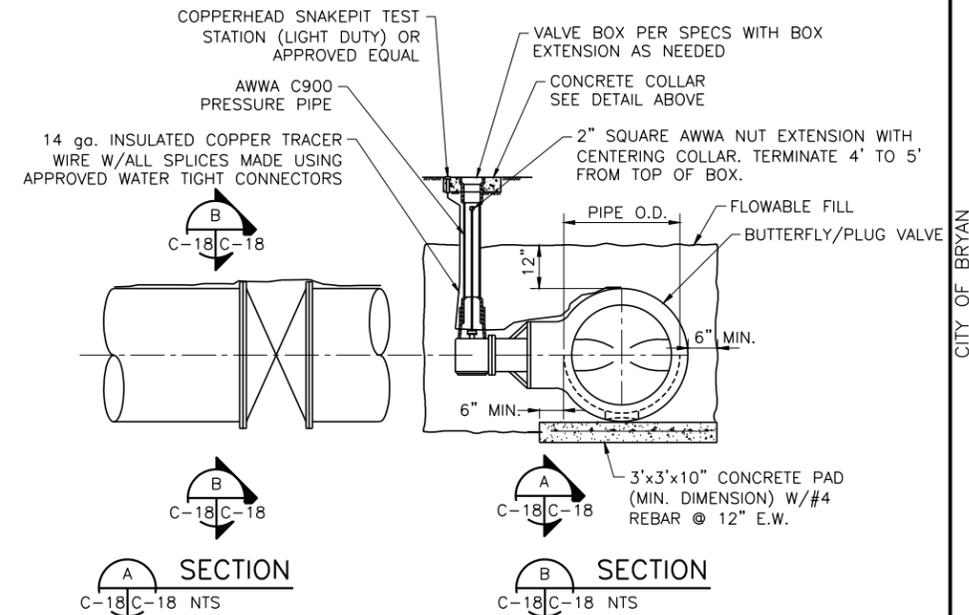
**NOTES:**

- ADDITIONAL REDUCERS, BENDS, AND FITTINGS MAY BE REQUIRED. SUBSIDIARY TO WATERLINE.
- CONTRACTOR TO POT HOLE AND VERIFY EXISTING WATERLINE MATERIAL BEFORE ATTEMPTING EACH CONNECTION. SPECIAL TRANSITION GASKETS AND FITTINGS MAY BE REQUIRED. SUBSIDIARY TO WATERLINE.
- CONNECT PROPOSED PIPE TO EXISTING PIPE WITH FLEXIBLE JOINT AND TRANSITION COUPLINGS (LONG TYPE). ALL COUPLINGS TO BE FUSION BONDED EPOXY COATED (AWWA AND NSF61 APPROVED) USE JOINT RESTRAINT ASSEMBLY OR MEGALUG RESTRAINING SYSTEM AT EACH COUPLING.
- SUPPORT ALL COUPLINGS AS SHOWN.
- CONNECTING RODS SHALL BE STAINLESS STEEL.

**2 COUPLING SUPPORT DETAIL**  
C-21|C-18 NOT TO SCALE



**CONCRETE COLLAR**



**NOTES:**

- ENCASE MANUAL OPERATED BUTTERFLY/PLUG VALVES AND FITTINGS WITH FLOWABLE FILL.
- FLOWABLE FILL SHALL EXTEND 5' ALONG THE PIPE ON EACH SIDE OF THE VALVE. INSTALL FLOWABLE FILL IN MAX. 12" LIFTS.
- ALL VALVES SHALL HAVE MEGALUG RESTRAINTS ON EACH SIDE.
- VALVE EXTENSION TO BE USED ONLY WHEN TOP OF GATE VALVE IN DEEPER THEN 5 FEET FROM FINISHED GRADE.
- ALL VALVE OPERATING NUT EXTENSIONS ARE TO BE MADE OF STEEL, SIZED AS NOTED AND PAINTED WITH TWO (2) COATS OF METAL PAINT.
- EXTENSIONS SHALL BE A MINIMUM OF ONE (1) FOOT LONG.

**3 MANUAL OPERATED BUTTERFLY/PLUG VALVE DETAIL**  
C-18|C-18 NOT TO SCALE

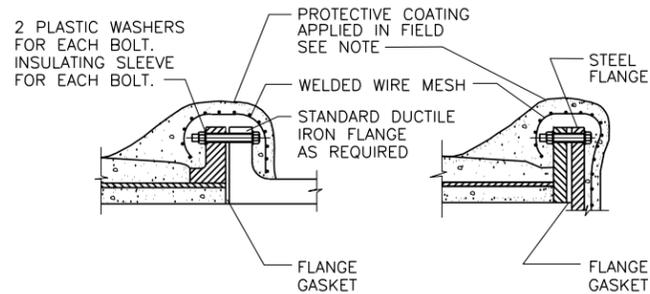
Freese and Nichols, Inc.  
Texas Registered Engineering Firm F-2144  
5/16/12  
Professional Engineer  
CHARLES A. KUCHERKA  
98368  
Austin, Texas 78759-3100  
Phone - (512) 617-3100  
Fax - (512) 617-3101

**FREESE NICHOLS**  
10814 Whipple Road Building 10, Suite 100  
Austin, Texas 78759-3100  
Phone - (512) 617-3100  
Fax - (512) 617-3101

CITY OF BRYAN  
**TABOR - 16TH ST. & N. TEXAS GW STORAGE TANKS (1 MG SITE)**  
CIVIL

**WATERLINE DETAILS**

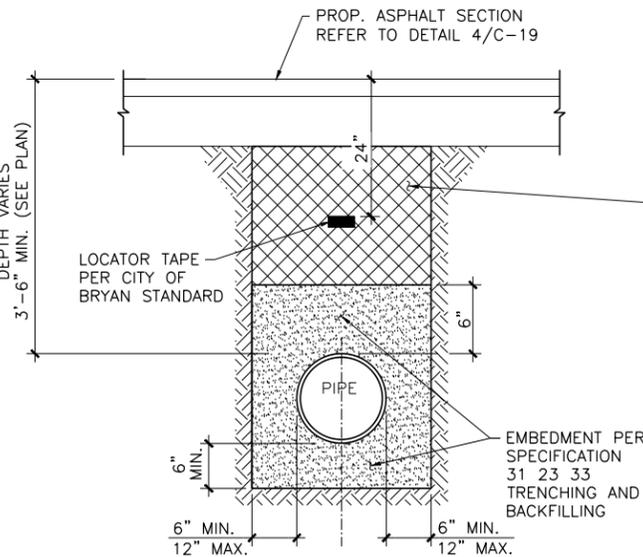
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			5/16/2012					
VERIFY SCALE: Bar is one inch on original drawing; if not one inch on this sheet, adjust scale.								
SHEET <b>C-18</b>								
SEC.								



**NOTES:**

1. PROVIDE 1" MINIMUM THICKNESS OF CEMENT MORTAR COATING IN THE FIELD FOR THE PROTECTION OF ALL EXPOSED STEEL SUCH AS FLANGES THREADED OUTLETS, CLOSURES, ETC. THE CEMENT MORTAR USED SHALL CONSIST OF ONE PART PORTLAND CEMENT TO TWO AND ONE HALF PARTS OF FINE, SHARP (PLASTER) SAND. WHERE SHOWN, COATING IS TO BE REINFORCED WITH WIRE MESH.
2. WHERE DIRECTED BY THE ENGINEER, TWO COATS OF AN APPROVED COAL TAR BASE COATING SHALL BE USED IN LIEU OF CEMENT MORTAR.
3. SURFACES RECEIVING A CEMENT MORTAR COATING SHALL BE THOROUGHLY CLEAN AND WETTED WITH WATER JUST PRIOR TO PLACING THE CEMENT MORTAR COATING. AFTER PLACEMENT, CARE SHALL BE TAKEN TO PREVENT CEMENT MORTAR COATING FROM DRYING TOO RAPIDLY. CEMENT MORTAR COATING SHALL NOT BE APPLIED DURING FREEZING WEATHER.
4. COAL TAR BASED COATINGS SHALL BE APPLIED COLD IN A THICK CONSISTENCY ON A WELL CLEANED SURFACE, IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

**1** FLANGED CONNECTIONS  
C-19/C-19 NOT TO SCALE

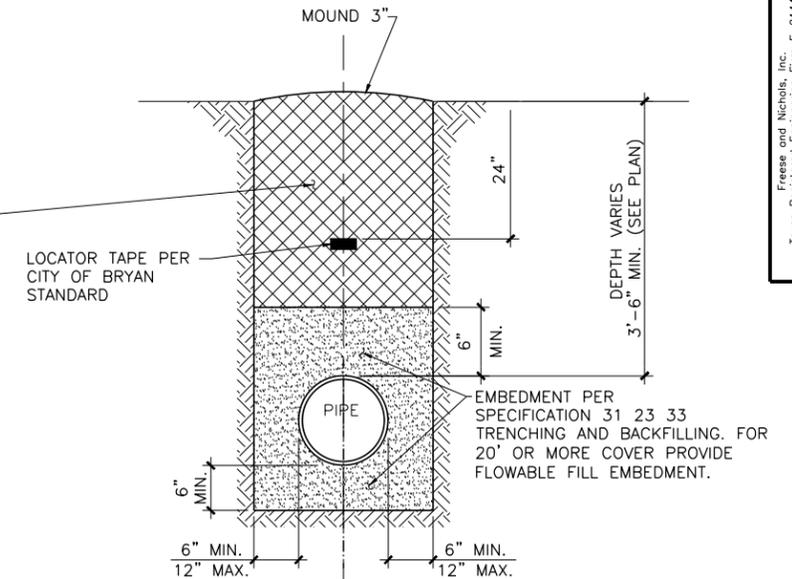


**NOTES:**

1. EVERY 100 FEET PROVIDE A WATER STOP BLOCK COMPOSED OF CEMENT SAND OR NATIVE MATERIAL DEPENDING ON EMBEDMENT. BLOCK SHALL BE 6 FEET IN LENGTH, NO BEDDING IN THIS AREA.

**2** PIPE EMBEDMENT WITHIN PAVED AREAS  
C-19/C-19 NOT TO SCALE

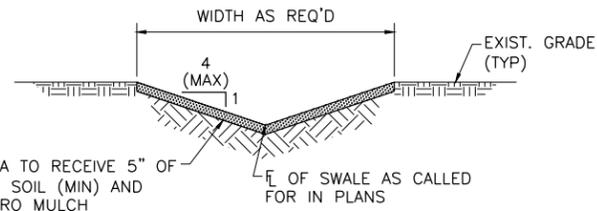
SELECT FILL MATERIAL EXCAVATED FROM THE DITCH, (WHICH IS FREE OF ROCKS, LUMPS, CLODS OR DEBRIS LARGER THAN TWO (2) INCHES IN THE LARGEST DIMENSION), COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D698 (STANDARD) AT A MOISTURE CONTENT WITHIN OPTIMUM TO +4% OF OPTIMUM UNDER NON-STRUCTURAL AREAS (IE...YARDS, PASTURES, EASEMENTS) AND TO A MINIMUM OF 98% OF MAXIMUM DENSITY AS DETERMINED BY ASTM D698 (STANDARD) AT A MOISTURE CONTENT WITHIN OPTIMUM TO +4% OF OPTIMUM UNDER NEW STREET AND PAVEMENT AREAS.



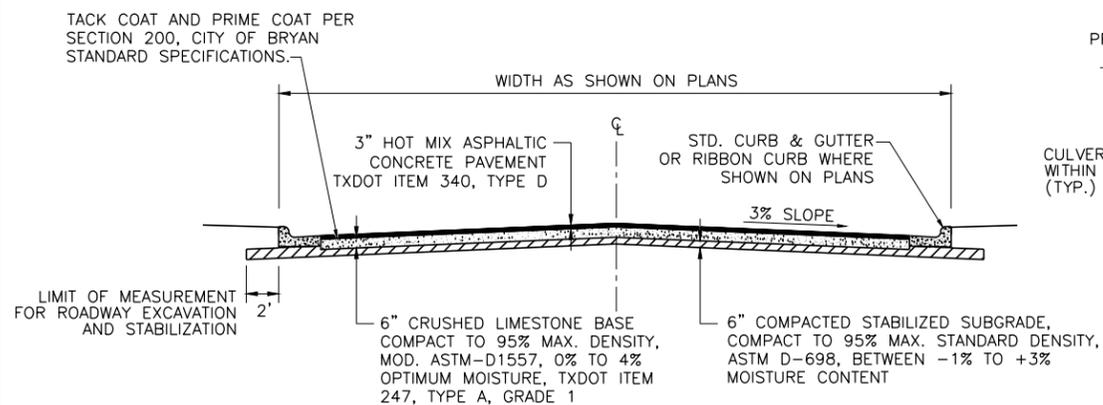
**NOTES:**

1. EVERY 100 FEET PROVIDE A WATER STOP BLOCK COMPOSED OF CEMENT SAND OR NATIVE MATERIAL DEPENDING ON EMBEDMENT. BLOCK SHALL BE 6 FEET IN LENGTH, NO BEDDING IN THIS AREA.

**3** PIPE EMBEDMENT OUTSIDE OF PAVED AREA  
C-19/C-19 NOT TO SCALE



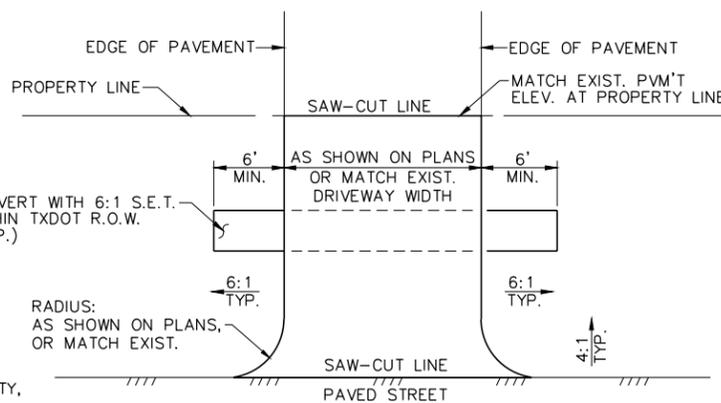
**6** TYPICAL SECTION V-SHAPED DRAINAGE DITCH  
C-19/C-19 NOT TO SCALE



**NOTES:**

1. ALL SUBGRADES SHALL BE STABILIZED.
2. SUBGRADE SHALL BE STABILIZED WITH 3% TYPE 'A' HYDRATED LIME AND 3% CLASS 'C' FLY ASH.

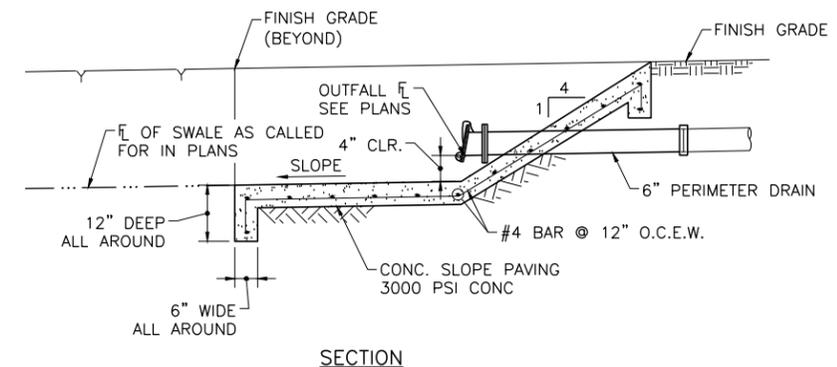
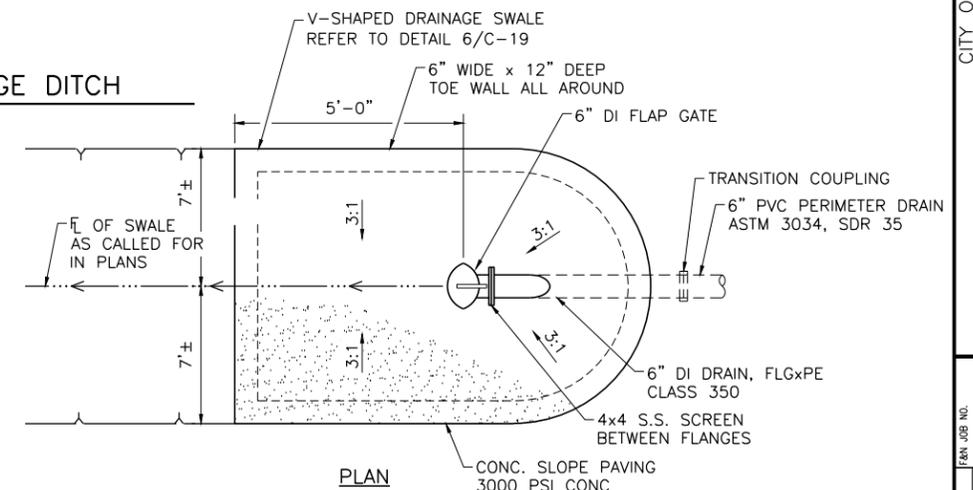
**4** TYPICAL ROAD SECTION  
C-19/C-19 NOT TO SCALE



**NOTES:**

1. USED ONLY WHEN CONNECTING TO AN ASPHALT ROADWAY.
2. GRADE FROM EDGE OF PAVEMENT TO DITCH FLOW-LINE AT A 4:1 MAX SLOPE.
3. CONTRACTOR SHALL MATCH EXIST. CURB RADII. IF THE EXISTING DRIVEWAY DOES NOT HAVE A RADII OR IF THE RADII IS LESS THAN THE MINIMUM INDICATED IN THIS DETAIL, CONTRACTOR SHALL CONSTRUCT RADII PER MINIMUM REQUIREMENTS ABOVE.

**5** ASPHALT DRIVEWAY PLAN  
C-19/C-19 NOT TO SCALE



**7** PERIMETER DRAIN OUTFALL  
C-19/C-19 NOT TO SCALE



**FRESE NICHOLS**  
10814 Whipple Road Building 10, Suite 100  
Austin, Texas 78759-3100  
Phone - (512) 617-3100  
Fax - (512) 617-3101

CITY OF BRYAN  
**TABOR - 16TH ST. & N. TEXAS GW STORAGE TANKS (1 MG SITE)**  
CIVIL  
WATERLINE AND SITE DETAILS

NO.	ISSUE	DATE	BY	FILE NAME
				CV-BRY-DT-WTRLO2.dwg
DESIGNED	CAK	DATE 9/11/2012		
DRAWN	CAK			
CHECKED	CUE			
REVISION	GAL			
SCALE	CAK			
VERIFY SCALE: Bar is one inch on original drawing; if not one inch on this sheet, adjust scale.				
SHEET <b>C-19</b>				



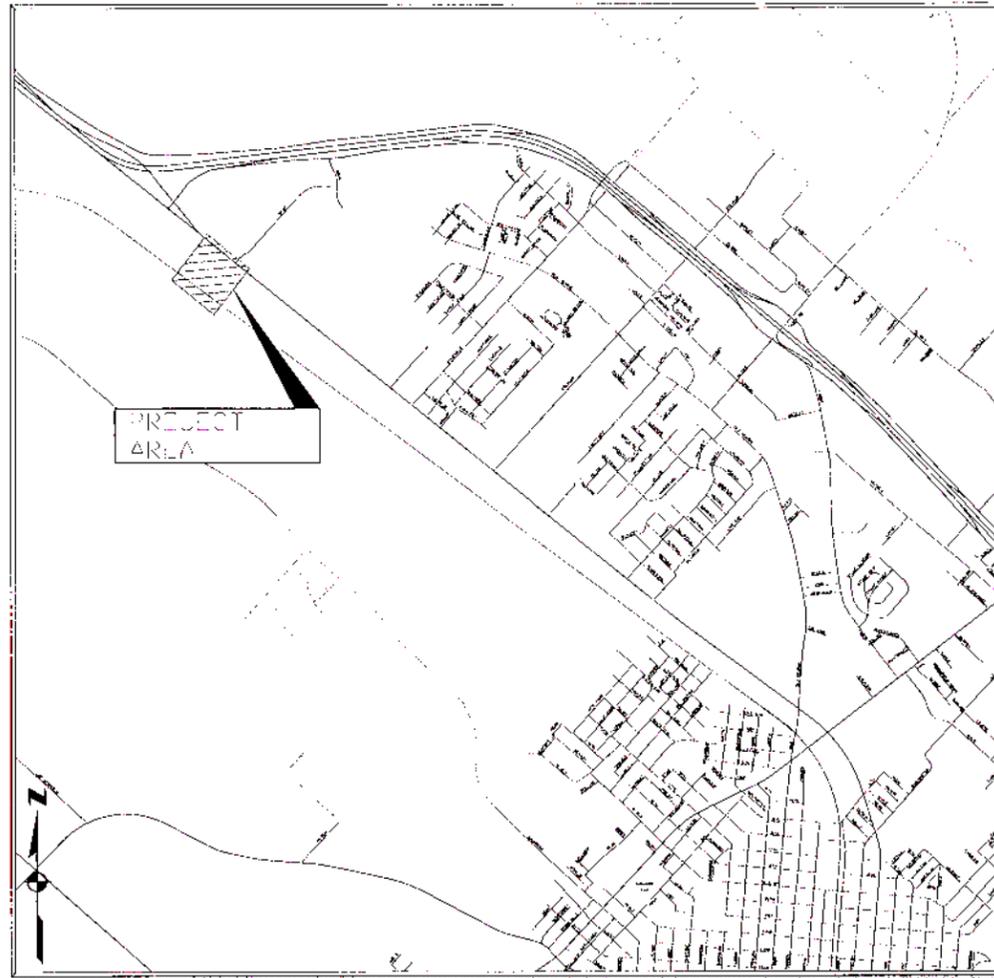


# ADDITIONAL D.I.P IMPROVEMENTS CIP NO. 611-D6-0833

CITY OF BRYAN  
CITY COUNCIL

JASON BIENSKI -MAYOR  
 RICHARD M. CORTEZ, SR. -SINGL. MEMBER DISTRICT 1  
 PAUL MADISON, SR. -SINGLE MEMBER DISTRICT 2  
 CHUCK KONDERLA -SINGLE MEMBER DISTRICT 3  
 ANN M. HORTON -SINGLE MEMBER DISTRICT 4  
 ART HUGHES SINGLE MEMBER DISTRICT 5  
 MIKE SLOUTHERLAND -PLACE 6 - AT LARGE

PAUL KASPAR, P.E. -CITY ENGINEER  
 BARNEY WILLIAMS, P.E. -PROJECT ENGINEER



LOCATION MAP  
N.T.S.

**GENERAL NOTES:**

1. PAVEMENT REPAIR QUANTITIES SHOWN ARE MAXIMUM CITY WILL PAY. ANY ADDITIONAL REPAIRS ARE AT THE CONTRACTOR'S EXPENSE.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXACT DEPTH AND LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING ANY WORK. ALL UTILITIES SHOWN ARE APPROXIMATE LOCATIONS ONLY.
3. CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES AT LEAST TWO (2) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION--INCLUDING:  
 WATER SERVICES & WASTEWATER SERVICES: 209 5900  
 ELECTRICAL SERVICES (BTRW): 821-5830  
 ATMOS GAS: 775 1624  
 DIG TRESS: 1-800-344 8377  
 SUDENAK: 776 7786
4. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHIELDING, SHORING, BRACING, ETC. WHERE TRENCH DEPTH EXCEEDS 5 FEET.
5. TRENCH SAFETY SHALL BE IN ACCORDANCE WITH OSHA STANDARD 29 CFR PART 1926 P.
6. TRENCHING AND BACKFILL IN ALL STRUCTURAL AND NON-STRUCTURAL AREAS SHALL BE IN ACCORDANCE WITH THE TYPICAL TRENCH DETAILS FOUND IN THE CONSTRUCTION STANDARD DETAILS STRUCTURAL BACKFILL SHALL BE PLACED IN ALL ROAD AND DRIVE EXCAVATIONS.
7. A TRAFFIC CONTROL PLAN (TCP) SHALL BE DEVELOPED AND MAINTAINED BY THE CONTRACTOR WHILE WORKING AROUND TRAFFIC AREAS. THE TCP SHALL BE UNIQUE TO THE SITE AND APPROVED BY THE PROJECT ENGINEERING PRIOR TO THE START OF CONSTRUCTION.
8. ALL OBSTRUCTIONS, INCLUDING BUT NOT LIMITED TO FENCES, CURBS AND SIGNS SHALL BE REPLACED TO ORIGINAL CONDITION OR IMPROVED AS DIRECTED BY THE ENGINEER. COST IS SUBSIDIARY TO ALL BID ITEMS.
9. CONTRACTOR WILL PROVIDE ADEQUATE CONTROL MEASURES SUCH AS SILT FENCING AND BAY BARRIERS AROUND STORM SEWER INLETS AND MAINTAIN APPROPRIATE SWEEP PLANS ONSITE IN ACCORDANCE WITH TCEQ REQUIREMENTS.
10. CONTRACTOR IS RESPONSIBLE FOR KEEPING STREETS FREE OF MUD, SILT, ETC. AT ALL TIMES DURING CONSTRUCTION.
11. THE ATTACHED DRAWINGS ARE AN INTEGRAL PART OF THE CONTRACT. ALL DRAWING NOTES OR CONTRACT SPECIFICATIONS APPLY TO ALL DRAWINGS IN THE SET.

## DRAWING INDEX

SHEET	DESCRIPTION
1	COVER SHEET
2	48" D.I.P. NORTH EAST SECTION
3	42" D.I.P. SOUTH WEST SECTION
ST	STREET DETAILS
W1	WATER DETAILS
W2	WATER DETAILS

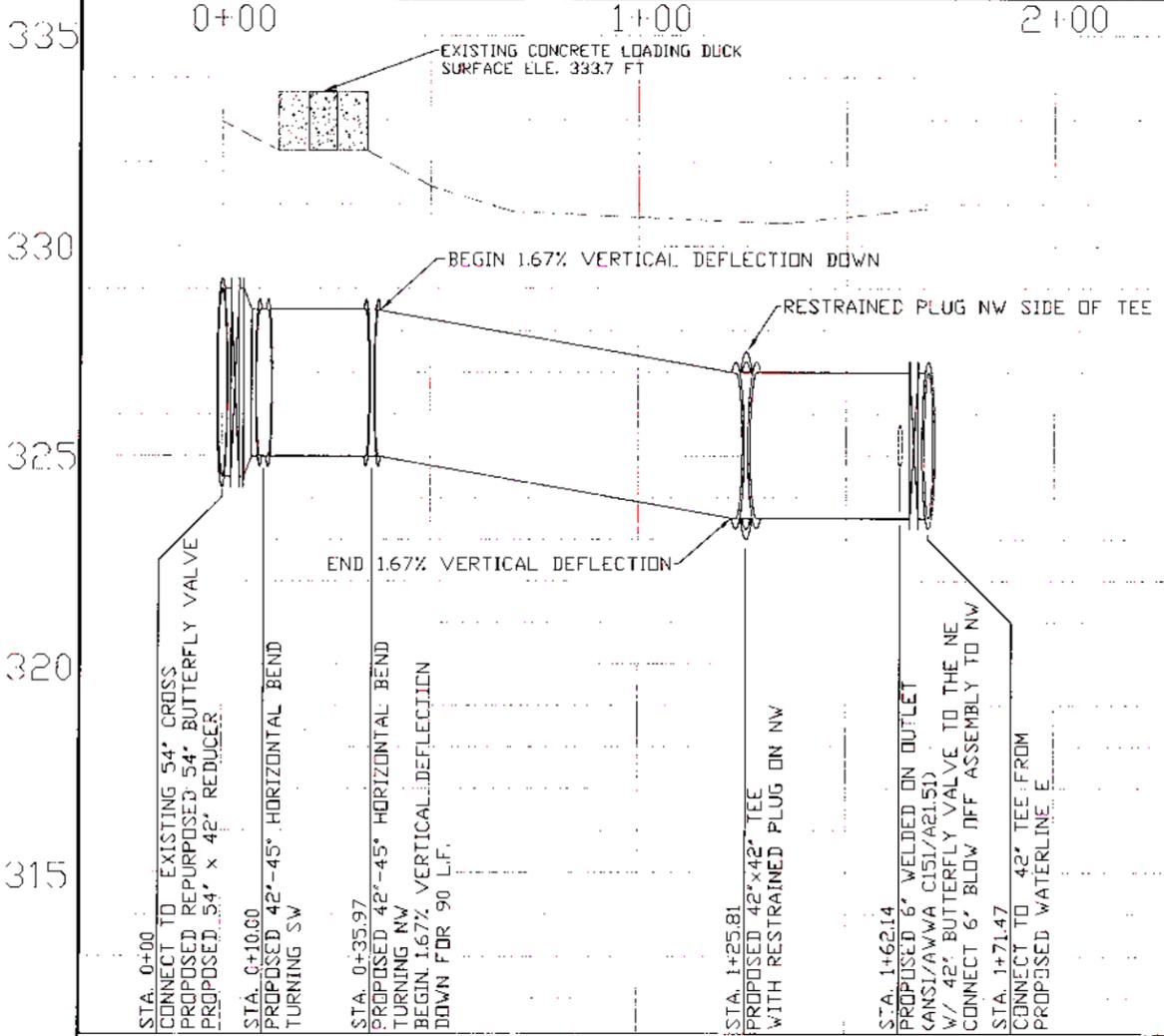
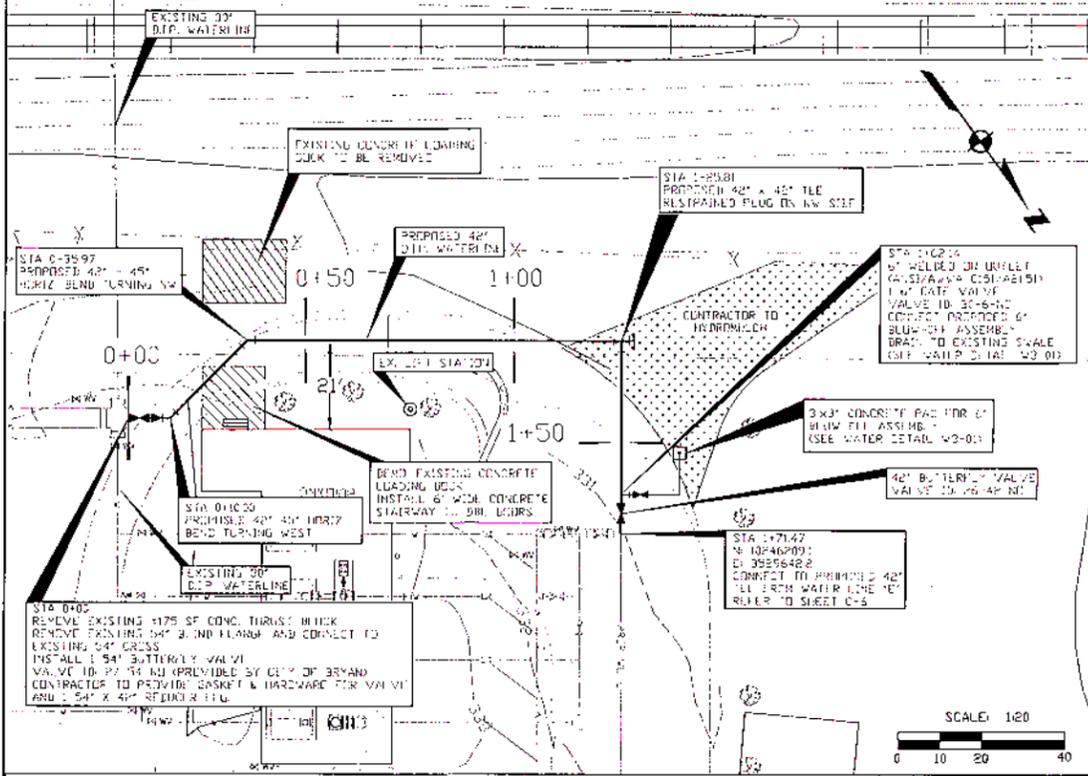


MAY 2012

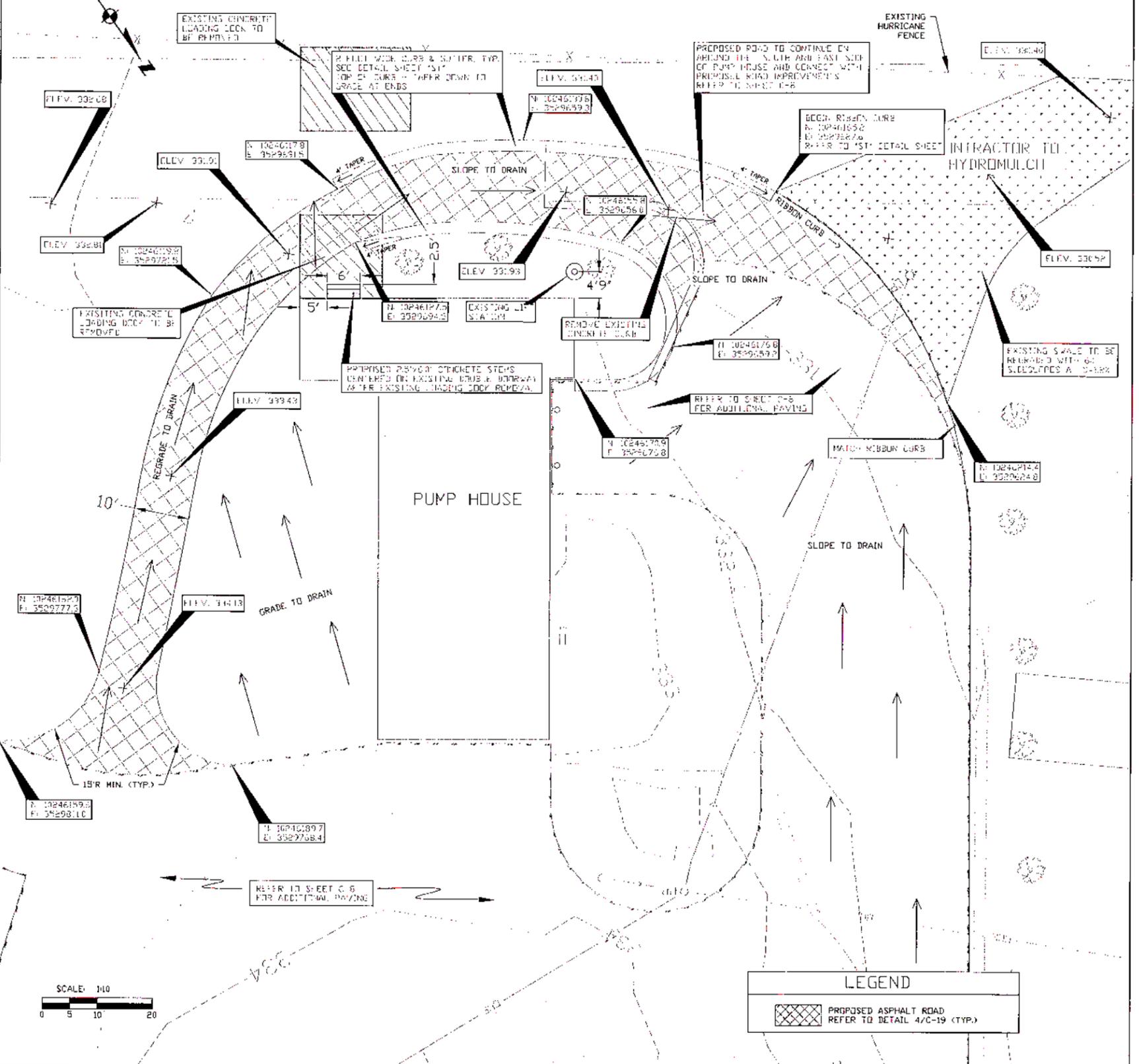
		ADDITIONAL DIP IMPROVEMENTS	
DRAWN BY:	D.G.H.	DATE:	MAY 2012
APPR BY:	B.S.W.	SCALE:	N.T.S.
PROJECT NO:	611-D6-0833	SHEET:	1
REV	DATE	DESCRIPTION	OF 3



# PLAN & PROFILE: 42" WATER LINE AROUND PUMP HOUSE



# ASPHALT ROAD AROUND PUMP HOUSE



**NOTES:**

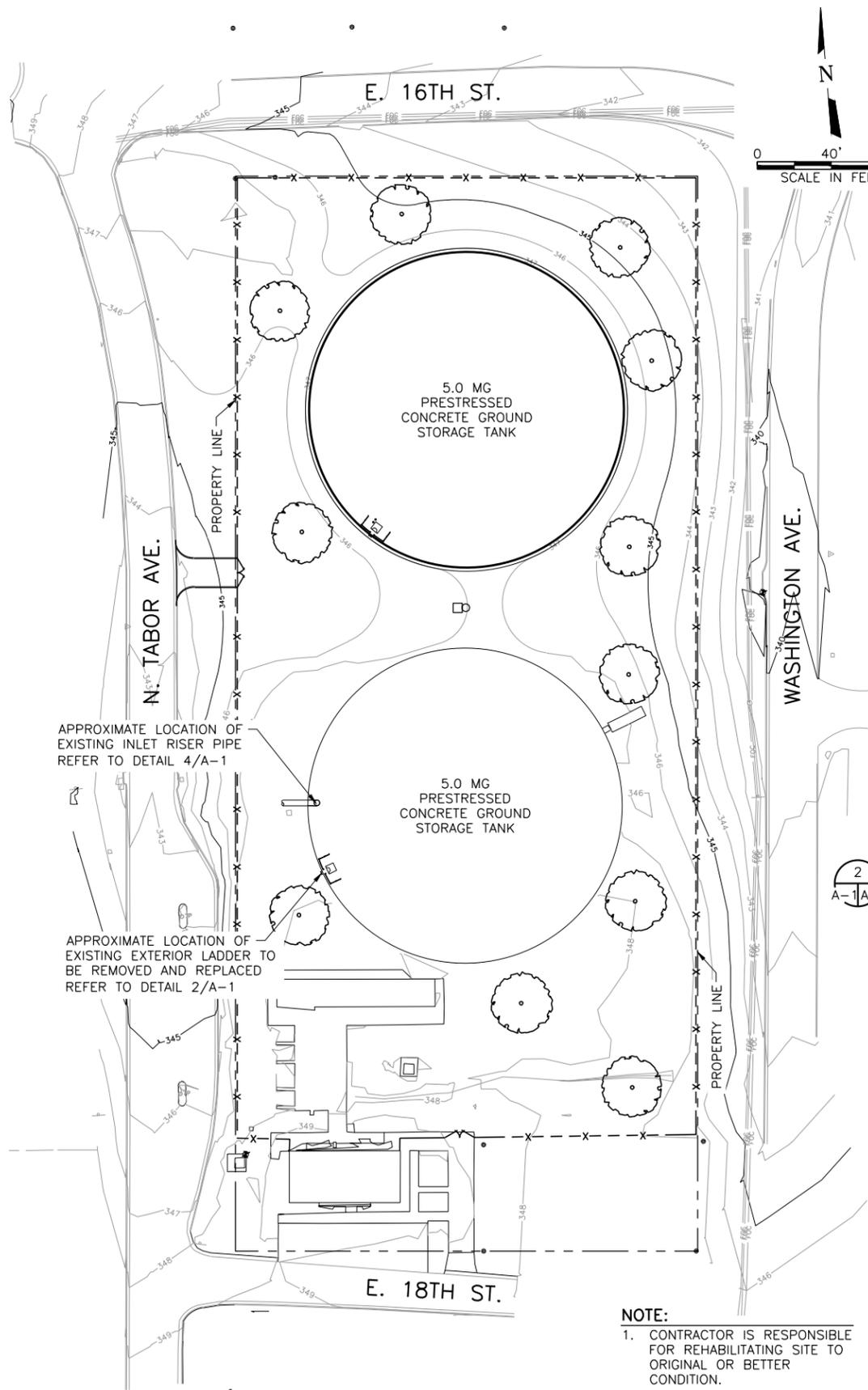
1. ALL DUCTILE IRON PIPE SHALL HAVE INTEGRAL RESTRAINED JOINTS.
2. FITTINGS SHALL BE MECHANICAL RESTRAINTS.
3. CONNECTION TO EXISTING 54" SHALL BE COMPLETED PER SECTION '01 35 00' "SPECIAL PROCEDURES."

**LEGEND**

PROPOSED ASPHALT ROAD REFER TO DETAIL 4/C-19 (TYP.)

**STATE OF TEXAS**  
**BARNEY S. WILLIAMS**  
 LICENSED PROFESSIONAL ENGINEER  
 NO. 10160  
 EXPIRES 05/31/2012

**ADDITIONAL DIP IMPROVEMENTS**  
 42" D.I.P. SW SECTION  
 DRAWN BY: B.S.W.  
 DATE: MAY 2012  
 APPR BY: B.S.W.  
 SCALE: HORIZ. AS SHOWN  
 PROJECT NO. 611-16-0815  
 SHEET 3 OF 3



1  
A-1/A-1  
**5.0 MG TANK SITE PLAN**

**NOTE:**  
1. CONTRACTOR IS RESPONSIBLE FOR REHABILITATING SITE TO ORIGINAL OR BETTER CONDITION.

**NOTE:**  
1. EXISTING TANK MODIFICATIONS SHALL BE PERFORMED ONLY BY THE PREQUALIFIED TANK CONTRACTOR.

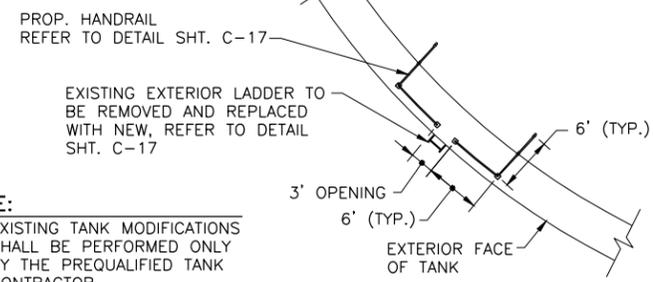
2  
A-1/A-1  
EXISTING EXTERIOR LADDER TO BE REMOVED AND REPLACED WITH NEW. MAINTAIN 7" (MIN.) CLEARANCE TO EXISTING ELECTRICAL EQUIPMENT



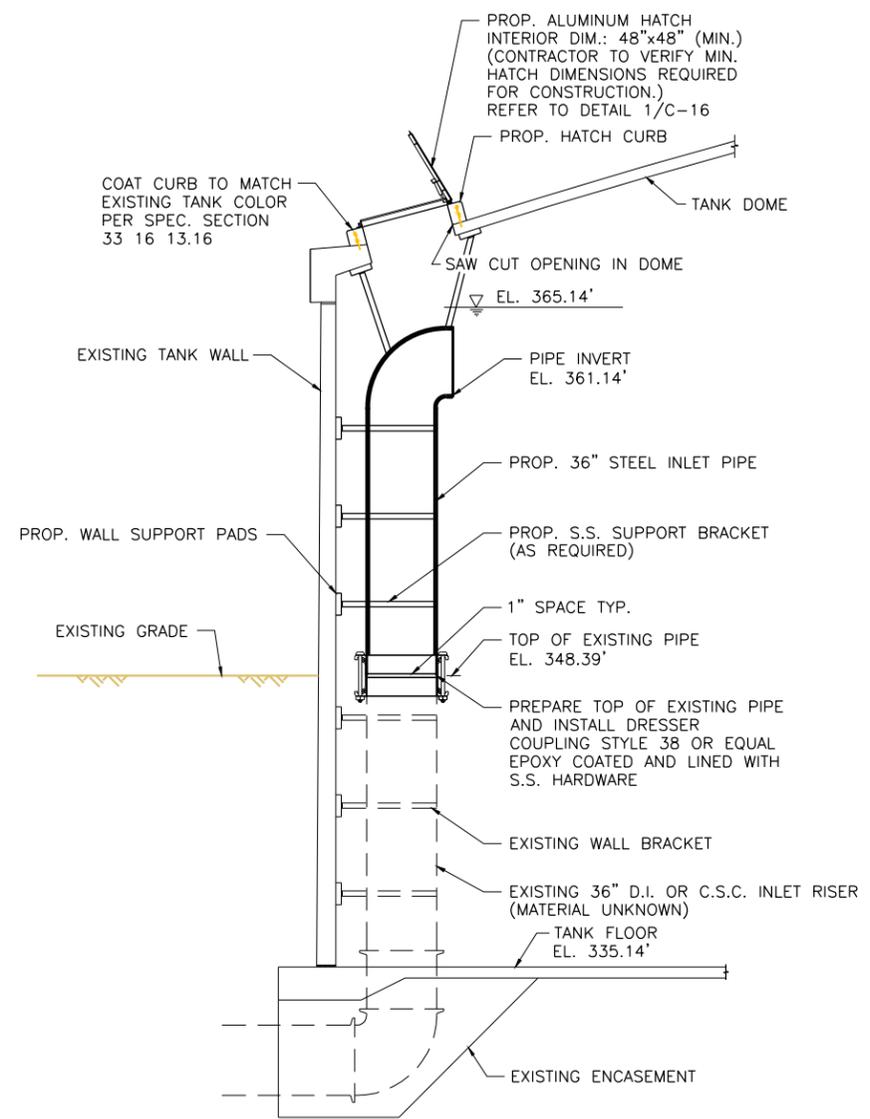
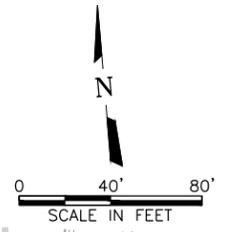
3  
A-1/A-1  
**EXISTING ACCESS LADDER**  
N.T.S.

**NOTE:**  
1. EXISTING TANK MODIFICATIONS SHALL BE PERFORMED ONLY BY THE PREQUALIFIED TANK CONTRACTOR.

EXISTING EXTERIOR LADDER TO BE REMOVED AND REPLACED WITH NEW, REFER TO DETAIL SHT. C-17



2  
A-1/A-1  
**ACCESS LADDER HAND RAIL LAYOUT**  
SCALE: 1"=10'



**NOTES:**  
1. EXISTING TANK MODIFICATIONS SHALL BE PERFORMED ONLY BY THE PREQUALIFIED TANK CONTRACTOR.  
2. 1 HATCH REQUIRED THIS LAYOUT.  
3. ALL ALUMINUM SHALL BE ISOLATED FROM CONCRETE BY A NEOPRENE GASKET.  
4. HATCH AND CURB LOCATIONS TO BE DETERMINED IN THE FIELD.  
5. SEE CONTRACT DOCUMENTS FOR PIPE SPECIFICATIONS.  
6. EXISTING TANK ELEVATIONS ARE APPROXIMATE. SURVEY AND FIELD VERIFY PRIOR TO CONSTRUCTION.  
7. TANK RECORD DRAWINGS ARE PROVIDED ON SHEETS A-2 THRU A-4 FOR INFORMATION ONLY. THE DATA PRESENTED CANNOT BE RELIED UPON. FIELD VERIFY.

4  
A-1/A-1  
**5.0 MG TANK INLET PIPING IMPROVEMENTS**  
N.T.S.

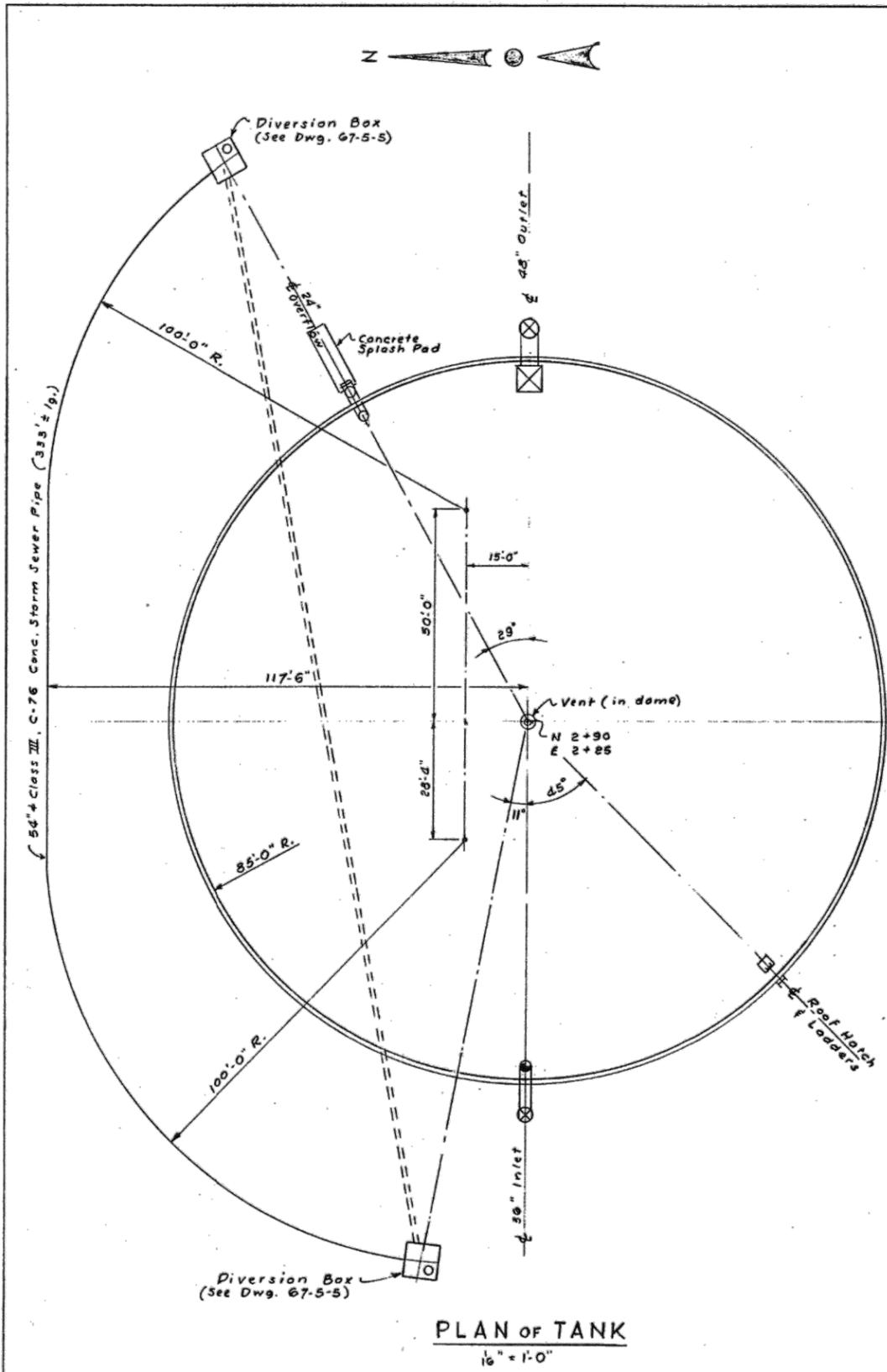
Freese and Nichols, Inc.  
Texas Registered Engineering Firm F-2144  
5/16/12  
CHARLES A. KUCHERKA  
98368  
PROFESSIONAL

**FREES & NICHOLS**  
10814 Whipple Road Building 10, Suite 100  
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Phone - (512) 617-3100  
Fax - (512) 617-3101

CITY OF BRYAN  
**TABOR - 16TH ST. & N. TEXAS GW STORAGE TANKS (1 MG SITE)**  
CIVIL  
**ALTERNATE ITEM A-1**  
**TABOR AVE. 5.0 MG TANK IMPROVEMENTS**

NO.	ISSUE	DATE	BY	DESIGNED	DRAWN	REVISION	CHECKED	FILE NAME
				CAK	DDH			CV-BRY-DT-TANK02.dwg

SHEET  
**A-1**  
SEC.



**PLAN OF TANK**  
1/16" = 1'-0"

**NOTE**  
Water Level Pipe to be located in Field.

**FOR INFORMATION ONLY**

**NOTES:**

- TANK RECORD DRAWINGS ARE PROVIDED ON SHEETS A-2 THRU A-4 FOR INFORMATION ONLY. THE DATA PRESENTED CANNOT BE RELIED UPON. FIELD VERIFY.
- EXISTING TANK ELEVATIONS ARE APPROXIMATE. SURVEY AND FIELD VERIFY PRIOR TO CONSTRUCTION.

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**ONE 5MG WATER RESERVOIR**  
**CITY OF BRYAN, TEXAS**

**TANK PLAN**

**PRELOAD**

839 STEWART AVENUE • GARDEN CITY, NEW YORK 11530

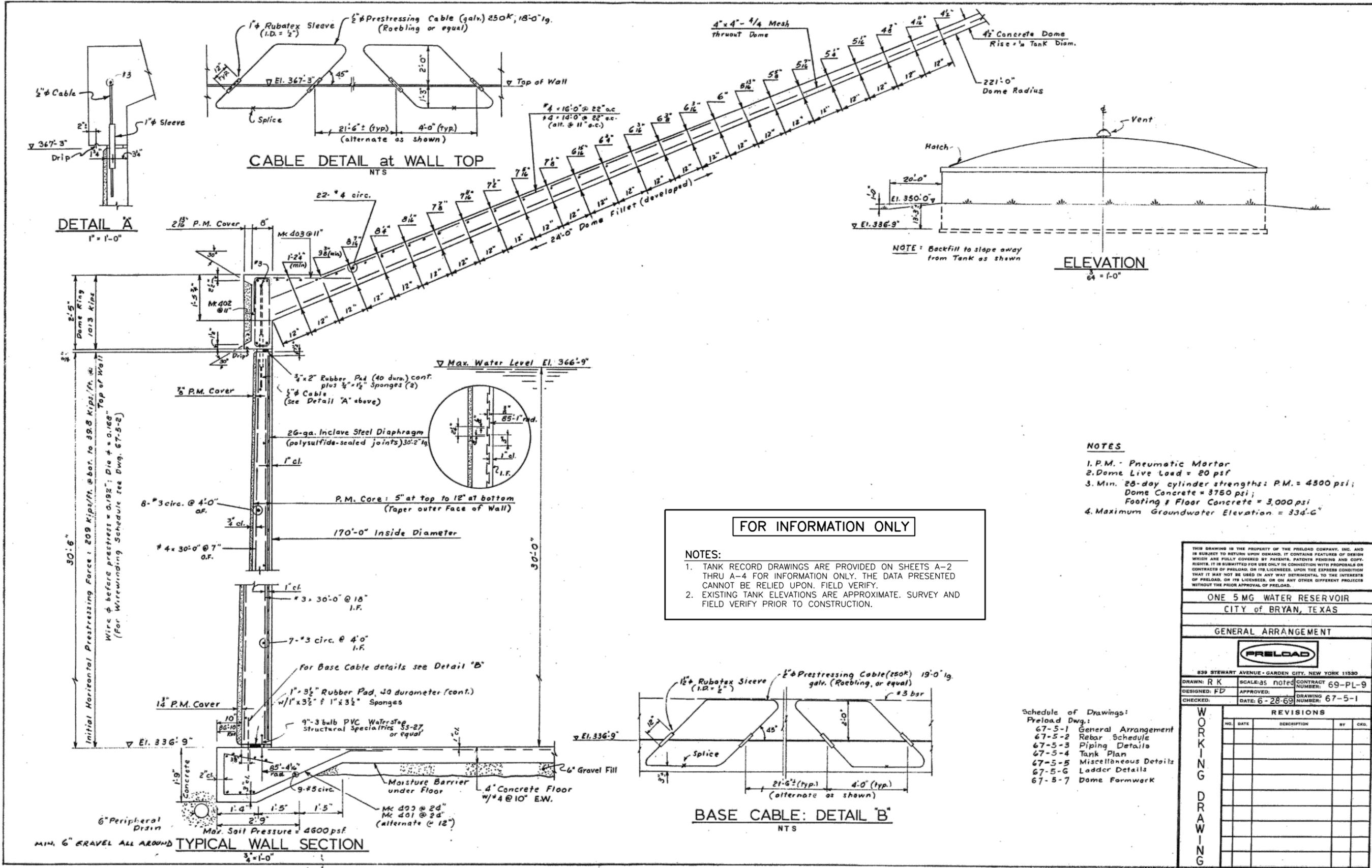
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CHECKED: —	APPROVED:	DRAWING NUMBER: 67-5-4
DATE: 8-22-69		

REVISIONS				
NO.	DATE	DESCRIPTION	BY	CHK.

**WORKING DRAWING**

NO. ISSUE:      DATE:      BY:      DATE:      DESIGNED: CAK      DRAWN: DDH      REVISIONS:      CHECKED:      FILE NAME: CV-BRY-5MG-ASBUILT01.dwg

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



- NOTES**
1. P.M. - Pneumatic Mortar
  2. Dome Live Load = 20 psf
  3. Min. 28-day cylinder strengths: P.M. = 4500 psi; Dome Concrete = 3750 psi; Footing & Floor Concrete = 3,000 psi
  4. Maximum Groundwater Elevation = 334'-6"

**FOR INFORMATION ONLY**

**NOTES:**

1. TANK RECORD DRAWINGS ARE PROVIDED ON SHEETS A-2 THRU A-4 FOR INFORMATION ONLY. THE DATA PRESENTED CANNOT BE RELIED UPON. FIELD VERIFY.
2. EXISTING TANK ELEVATIONS ARE APPROXIMATE. SURVEY AND FIELD VERIFY PRIOR TO CONSTRUCTION.

Schedule of Drawings:  
Preload Dwg.:

67-5-1	General Arrangement
67-5-2	Rebar Schedule
67-5-3	Piping Details
67-5-4	Tank Plan
67-5-5	Miscellaneous Details
67-5-6	Ladder Details
67-5-7	Dome Formwork

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**ONE 5 MG WATER RESERVOIR**  
CITY OF BRYAN, TEXAS

**GENERAL ARRANGEMENT**

**PRELOAD**  
839 STEWART AVENUE • GARDEN CITY, NEW YORK 11530

DRAWN: RK	SCALE: AS NOTED	CONTRACT NUMBER: 69-PL-9
DESIGNED: FD	APPROVED:	
CHECKED:	DATE: 6-28-69	DRAWING NUMBER: 67-5-1

REVISIONS			
NO.	DATE	DESCRIPTION	BY

**WORKING DRAWING**

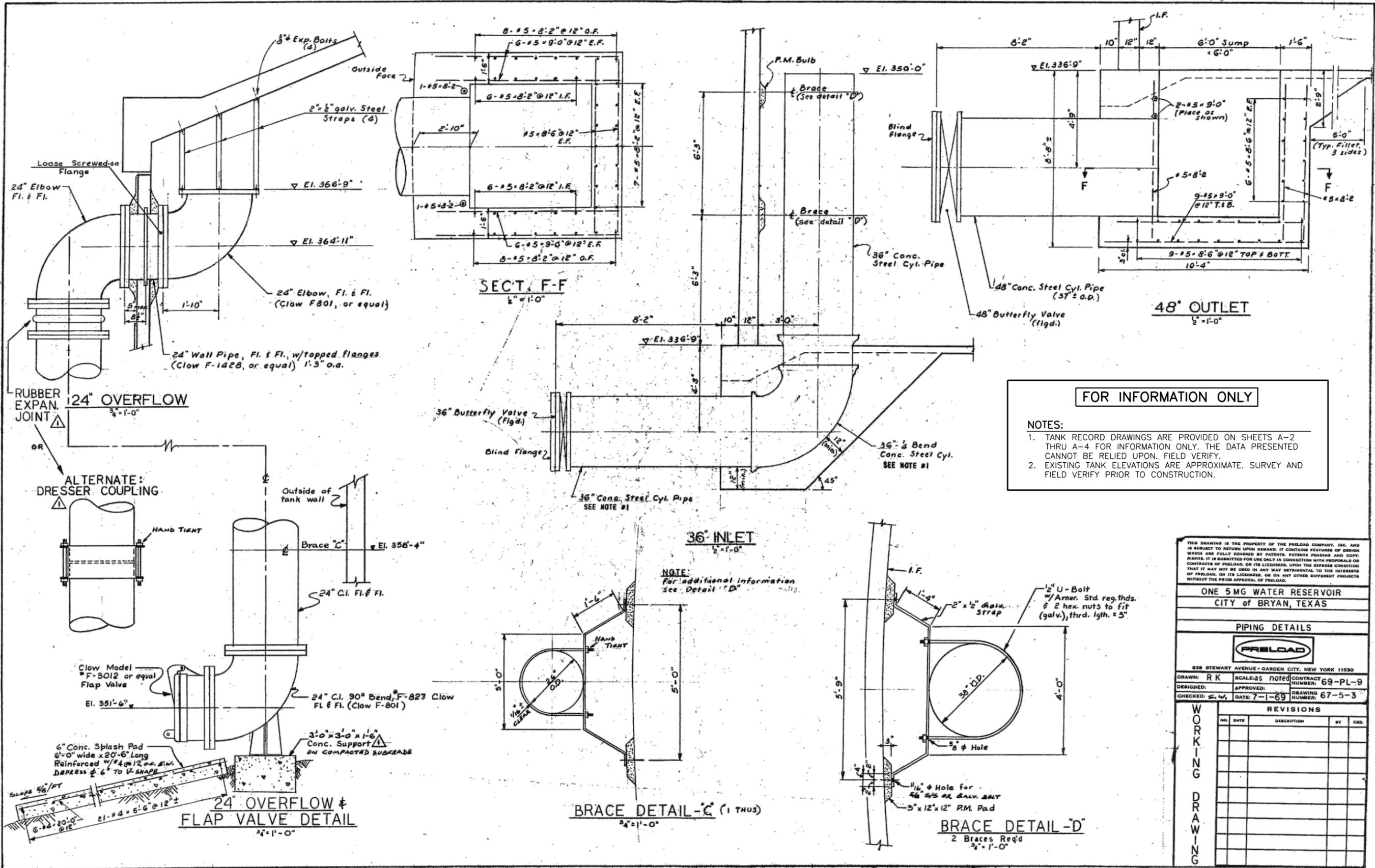
NO. ISSUE: \_\_\_\_\_

DATE: \_\_\_\_\_

BY: \_\_\_\_\_

FILE NAME: CV-BRY-5MG-ASBUILT01.dwg

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



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ONE 5 MG WATER RESERVOIR  
CITY OF BRYAN, TEXAS

PIPING DETAILS

**PRELOAD**

639 STEWART AVENUE • GARDEN CITY, NEW YORK 11530

DRAWN: R K SCALE: AS NOTED CONTRACT NUMBER: 69-PL-9  
DESIGNED: APPROVED: DRAWING NUMBER: 67-5-3  
CHECKED: DATE: 7-1-69

REVISIONS				
NO.	DATE	DESCRIPTION	BY	CHK.

WORKING DRAWING

A AMPERE  
 AFF ABOVE FINISHED FLOOR OR GRADE  
 AIC AMPERES INTERRUPTING CAPACITY  
 AL ALUMINUM  
 AMPS AMPERES  
 ATS AUTOMATIC TRANSFER SWITCH  
 C CONDUIT  
 CB CIRCUIT BREAKER  
 CKT CIRCUIT  
 CPT CONTROL POWER TRANSFORMER  
 CS COMBINATION STARTER  
 CT CURRENT TRANSFORMER  
 CTC OR C/C CENTER TO CENTER  
 CU COPPER  
 DP DIFFERENTIAL PRESSURE  
 EXIST. EXISTING  
 FO FIBER OPTIC  
 FT FEET  
 FVNR FULL VOLTAGE NON REVERSING  
 GFI GROUND FAULT INTERRUPTER  
 GFS GROUND FAULT SENSING  
 GA GAUGE  
 G GROUND  
 HOA HAND-OFF-AUTO SELECTOR SWITCH  
 HP HORSEPOWER  
 HTR HEATER  
 HZ HERTZ  
 ID INTERNAL DIAMETER  
 IRP INTERPOSING RELAY PANEL  
 JB JUNCTION BOX  
 KVA KILOVOLT-AMPERE  
 KW KILOWATT  
 LED LIGHT EMITTING DIODE  
 LTG LIGHTING  
 MBFV MOTOR OPERATED BUTTERFLY VALVE  
 MCB MAIN CIRCUIT BREAKER  
 MCC MOTOR CONTROL CENTER  
 MCP MOTOR CIRCUIT PROTECTOR  
 MFR'S MANUFACTURER'S  
 MH MANHOLE  
 MLO MAIN LUGS ONLY  
 MPR MOTOR PROTECTION RELAY  
 N/F NON-FUSED  
 OD OUTSIDE DIAMETER  
 OHE OVERHEAD ELECTRIC  
 P POLE  
 PB PULL BOX  
 PC PHOTOCELL  
 Ø OR PH PHASE  
 PL PLATE  
 PLC PROGRAMMABLE LOGIC CONTROLLER  
 PR PAIR CABLE  
 PVC POLYVINYLCHLORIDE CONDUIT  
 RC REMOTE CONTROL  
 REC. CIRCUIT RECLOSURE  
 REOD. REQUIRED  
 RTD RESISTANCE TEMPERATURE DETECTOR  
 RTU REMOTE TERMINAL UNIT  
 S/N SOLID NEUTRAL  
 SHLD. SHIELD  
 SHT. SHEET  
 SPD SURGE PROTECTION DEVICES  
 S.S. STAINLESS STEEL  
 SSRVS SOLID-STATE REDUCED VOLTAGE STARTER  
 STA. STATION  
 STC SIGNAL TERMINATION CABINET  
 SW. SWITCH  
 TC TRAY CABLE OR TERMINATION CABINET  
 TR. TRIAD  
 (TYP.) TYPICAL  
 UPS UNINTERRUPTIBLE POWER SUPPLY  
 UTP UNSHIELDED TWISTED PAIR CABLE  
 VAR. VARIABLE  
 V VOLT  
 VFD VARIABLE FREQUENCY DRIVE  
 W WITH, WIRE OR WATT  
 WP WEATHERPROOF  
 WR WEATHER RESISTANT  
 XFMR TRANSFORMER  
 XMTR TRANSMITTER

(CR) A.C. INDUSTRIAL CONTROL RELAY  
 (PC) PHOTOCELL  
 (PB) PULL BOX  
 (MH) MANHOLE  
 —|— NORMALLY OPEN CONTACT  
 —|/— NORMALLY CLOSED CONTACT  
 OL OVERLOAD CONTACT  
 —|/— OVERLOAD CONTACT  
 —|/— LIMIT SWITCH, N.O.  
 —|/— LIMIT SWITCH, N.O. (HELD CLOSED)  
 —|/— LIMIT SWITCH, N.C.  
 —|/— LIMIT SWITCH, N.C. (HELD OPEN)  
 —|/— PRESSURE/VACUUM SWITCH, N.O.  
 —|/— PRESSURE/VACUUM SWITCH, N.C.  
 —|/— PUSHBUTTON, N.O.  
 —|/— PUSHBUTTON, N.C.  
 —|/— CIRCUIT BREAKER  
 A=AMP TRIP, P=POLES  
 —|/— MCP MOTOR CIRCUIT PROTECTOR  
 —|/— FUSED SWITCH  
 —|/— SWITCH  
 —|/— POTENTIAL TRANSFORMER  
 —|/— CURRENT TRANSFORMER  
 —|/— CONTROL TRANSFORMER  
 —|/— TRANSFORMER  
 —|/— CPT CONTROL POWER TRANSFORMER  
 —|/— PANEL  
 \$ SINGLE POLE SWITCH  
 \$3 THREE WAY SWITCH  
 \$4 FOUR WAY SWITCH  
 WP,GFI DUPLEX RECEPTACLE, GROUNDED TYPE  
 WP=WEATHERPROOF  
 GFI=GROUND FAULT INTERRUPTER  
 —|/— HORN  
 —|/— COMBINATION STROBE/HORN  
 —|/— JUNCTION BOX  
 —|/— GROUND ROD WELL  
 —|/— FUSE  
 —|/— TERMINAL  
 —|/— NODE  
 —|/— GROUND  
 —|/— INDICATING LAMP, COLOR INDICATED  
 R=RED, G=GREEN, W=WHITE, A=AMBER, B=BLUE  
 PTT=PUSH TO TEST

X Y Z  
 XDO  
 YDO  
 ZDO  
 OXO  
 LA-2 HOMERUN, PANELBOARD CIRCUIT AS INDICATED  
 — CONDUIT TURNED UP  
 — CONDUIT TURNED DOWN  
 — EMERGENCY BATTERY PACK LIGHT FIXTURE  
 LIGHTING FIXTURE  
 A=FIXTURE TYPE  
 b=SWITCH NUMBER  
 DEVICE LOCATED IN FIELD  
 (LIT-XX) INSTRUMENT W/TAG  
 (MC1-XX) CABLE TAG  
 FOUR #14 CONTROL OR POWER CONDUCTORS,  
 ONE #14 GROUND CONDUCTOR. ALL CONDUCTORS  
 IN A 3/4" CONDUIT. TWO OF THE FOUR #14  
 CONTROL OR POWER CONDUCTORS ARE SPARE.  
 FLEXIBLE CONDUIT  
 HEAT TRACE  
 WIRING IN CONDUIT EXPOSED  
 UNDERGROUND WIRING OR  
 WIRING IN CONDUIT CONCEALED  
 OVERHEAD ELECTRIC LINE  
 UNDERGROUND ELECTRIC LINE

IDENTIFIER  
 X-XX  
 PIPE MATERIAL  
 DI=DUCTILE IRON  
 PIPE DIAMETER  
 NUMBER  
 SHEET NUMBER  
 WHERE TAKEN  
 SHEET NUMBER  
 WHERE DRAWN

**LINE SYMBOLS**

(1) INSTRUMENT SUPPLY OR SOLENOID OPERATED VALVE (1)  
 (2) UNDEFINED SIGNAL  
 (3) PNEUMATIC SIGNAL (2)  
 (4) ELECTRIC SIGNAL  
 (5) HYDRAULIC SIGNAL  
 (6) CAPILLARY TUBE  
 (7) ELECTROMAGNETIC OR SONIC SIGNAL (GUIDED) (3)  
 (8) ELECTROMAGNETIC OR SONIC SIGNAL (NOT GUIDED) (3)  
 (9) INTERNAL SYSTEM LINK (SOFTWARE OR DATA LINK)  
 (10) MECHANICAL LINK  
 (11) PNEUMATIC BINARY SIGNAL (ON-OFF)  
 (12) ELECTRIC BINARY SIGNAL (ON-OFF)  
 (13) ELECTRIC ANALOG SIGNAL  
 — CONNECTING LINES  
 — NON-CONNECTING LINES

**GENERAL NOTES**

(1) THE FOLLOWING ABBREVIATIONS ARE SUGGESTED TO DENOTE THE TYPES OF POWER SUPPLY. THESE DESIGNATIONS MAY ALSO BE APPLIED TO PURGE FLUID SUPPLIES.  
 AS - AIR SUPPLY  
 IA - INSTRUMENT AIR } OPTIONS  
 PA - PLANT AIR  
 ES - ELECTRIC SUPPLY  
 GS - GAS SUPPLY  
 HS - HYDRAULIC SUPPLY  
 NS - NITROGEN SUPPLY  
 SS - STEAM SUPPLY  
 WS - WATER SUPPLY  
 THE SUPPLY LEVEL MAY BE ADDED TO THE INSTRUMENT SUPPLY LINE, E.G. AS-100, 100-PSIG AIR SUPPLY; ES-24DC, A 24-VOLT DIRECT CURRENT POWER SUPPLY.  
 (2) THE PNEUMATIC SIGNAL SYMBOL APPLIES TO A SIGNAL USING ANY GAS AS THE SIGNAL MEDIUM. IF A GAS OTHER THAN AIR IS USED, THE GAS MAY BE IDENTIFIED BY A NOTE ON THE SIGNAL SYMBOL OR OTHERWISE.  
 ELECTROMAGNETIC PHENOMENA INCLUDE HEAT, RADIO WAVES, NUCLEAR RADIATION AND LIGHT.

**EXAMPLE SYMBOLS**

FIRST LETTER  
 SUCCEEDING LETTERS  
 THE TOTAL NUMBER OF UNITS PER SET (Y VARIES FROM 1 TO A)  
 UNIT NUMBER (USED WHEN THERE ARE MULTIPLE UNITS WITH THE SAME WXX DESIGNATIONS)  
 LOOP NUMBER (XX)  
 AREA NUMBER (W)  
 DIGITAL SYSTEM I/O INTERFACE. DIRECTION OF TRIANGLE DENOTES WHETHER INPUT OR OUTPUT.  
 LETTER DENOTES SIGNAL TYPE. THE LETTER "A" DENOTES AN ANALOG SIGNAL. THE LETTER "D" DENOTES A DISCRETE SIGNAL. THE LETTER "FO" DENOTES FIBER OPTIC CONNECTION.

**INSTRUMENT SOCIETY OF AMERICA TABLE**

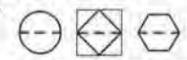
LETTER	FIRST LETTER (S)		SUCCEEDING LETTERS		
	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS (+)		ALARM		
B	BURNER, COMBUSTION		USERS CHOICE (+)	USERS CHOICE (+)	USERS CHOICE (+)
C	USER'S CHOICE (+)			CONTROL	
D	USER'S CHOICE (+)	DIFFERENTIAL			
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE (+)		GLASS, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		
M	MOTOR	MOMENTARY			
N	USERS CHOICE (+)		USERS CHOICE (+)	USERS CHOICE (+)	USERS CHOICE (+)
O	USERS CHOICE (+)		ORIFICE, RESTRICTION		
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION (+)
V	VIBRATION MECH. ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED (+)	X AXIS	UNCLASSIFIED	UNCLASSIFIED (+)	UNCLASSIFIED (+)
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

(+) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL. SEE ABBREVIATIONS AND LETTER SYMBOLS.

**INSTRUMENT IDENTIFICATION**

	PRIMARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR (2)	FIELD MOUNTED	AUXILIARY LOCATION NORMALLY ACCESSIBLE TO OPERATOR (2)
DISCRETE INSTRUMENTS	○	○	○
SHARED DISPLAY SHARED CONTROL	◻	◻	◻
COMPUTER FUNCTION	◻	◻	◻
PROGRAMMABLE LOGIC CONTROL	◻	◻	◻
		○ INSTRUMENT WITH LONG TAG NUMBERS	○ INSTRUMENTS SHARING COMMON HOUSING
	○ PILOT LIGHT	◻ PANEL MOUNTED PATCHBOARD POINT 12	◻ PURGE OR FLUSING DEVICE
	◻ RESET FOR LATCH-TYPE ACTUATOR	◻ DIAPHRAGM SEAL	◻ UNDEFINED INTERLOCK LOGIC

(1) ABBREVIATIONS OF THE USER'S CHOICE SUCH AS IP1 (INSTRUMENT PANEL #1), IC2 (INSTRUMENT CONSOLE #2), CC3 (COMPUTER CONSOLE #3), ETC., MAY BE USED WHEN IT IS NECESSARY TO SPECIFY INSTRUMENT OR FUNCTION LOCATION.  
 (2) NORMALLY INACCESSIBLE OR BEHIND-THE-PANEL DEVICES OR FUNCTIONS MAY BE DEPICTED BY USING THE SAME SYMBOLS BUT WITH DASHED HORIZONTAL BARS, I.E.



**NOTE:**  
 THIS IS A STANDARD LEGEND. THEREFORE, NOT ALL OF THIS INFORMATION MAY BE USED ON THIS PROJECT.



**FRESE & NICHOLS**  
 1014 Jayville Road Building B, Suite 100  
 Austin, Texas 78757-3100  
 Phone - (512) 817-3101

CITY OF BRYAN  
 TABOR - 16TH ST. & N. TEXAS GW  
 STORAGE TANKS (1 MG SITE)  
 ELECTRICAL  
 LEGEND

DATE	REVISED	BY	FILE NAME
BRY091116	5/15/2012	RS	EL-1MG-GN-LGND.dwg
DESIGNER	CHKD	APPV	
	JAF/PPM		
	CHKD	JNH	
SHEET	E-1		
SEQ:			

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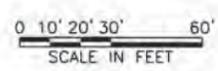
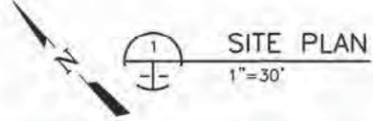


**GENERAL NOTES:**

1. BRYAN TEXAS UTILITIES (BTU) CONTACT: ALLEN KRISTOF (979) 821-5730. ALL WORK ASSOCIATED WITH THE DEMOLITION AND INSTALLATION OF ELECTRICAL SERVICE, METERS, POWER POLES, ETC. SHALL BE COORDINATED WITH THE UTILITY PROVIDER (BTU). THE CONTRACTOR SHALL INCLUDE ALL COSTS AND FEES ASSOCIATED WITH THE ELECTRIC UTILITY COMPANY AND THE ELECTRIC UTILITY CONNECTION IN THE BASE BID.
2. EXISTING CONDUIT ROUTING SHOWN IS APPROXIMATE. THE CONTRACTOR SHALL FIELD VERIFY CONDUIT ROUTING AND TERMINATION LOCATIONS PRIOR TO REMOVING CONDUIT AND RELATED CONDUCTORS.
3. THE CONTRACTOR SHALL PROVIDE AND SIZE JUNCTION BOXES, PULL BOXES AND MANHOLES PER THE NATIONAL ELECTRICAL CODE.
4. POWER, DISCRETE SIGNAL, ANALOG AND COMMUNICATION CONDUCTORS SHALL BE ROUTED IN SEPARATE CONDUITS.
5. ALL EQUIPMENT SHOWN DARK SHALL BE REMOVED AS INDICATED OR PROVIDED UNDER THIS CONTRACT. ALL EQUIPMENT SHOWN LIGHT IS EXISTING AS INDICATED.
6. COORDINATE EXACT LOCATION OF FLANGE FOR LEVEL SENSOR AND HATCH FOR INTRUSION ALARM SWITCH WITH TANK MANUFACTURER.

**NOTES BY SYMBOL "◯"**

1. EXISTING SCADA CONTROL PANEL "RIO-1". PROVIDE 2 #12, #12G., 1"C. FROM EXISTING LIGHTING PANELBOARD TO SCADA CONTROL PANEL "RIO-1".
2. RE: 4/E-4 FOR LEVEL SENSOR MOUNTING DETAIL.
3. ROUTE CABLE IN RIGID STEEL CONDUIT IN CONCRETE ENCASED DUCT BANK.
4. EXISTING ELECTRICAL EQUIPMENT RACK WITH SCADA CONTROL PANEL.
5. EXISTING SCADA CONTROL PANEL "PLC-3".
6. EXISTING ELECTRICAL MANHOLE.
7. EXISTING DUCT BANK.
8. EXISTING PUMP STATION BUILDING SERVICE ENTRANCE DISCONNECT.
9. EXISTING 750KVA UTILITY PAD MOUNTED TRANSFORMER.
10. EXISTING ELECTRICAL EQUIPMENT RACK WITH UTILITY METER, SERVICE ENTRANCE DISCONNECT AND COMBINATION MOTOR STARTER FOR WELL NO.10 TO REMAIN.
11. EXISTING OVERHEAD POWER LINE TO BE RELOCATED BY UTILITY. RE: NOTE BY SYMBOL NO.15 FOR ADDITIONAL INFORMATION.
12. RE: 5/E-4 FOR LEVEL DISPLAY MOUNTING DETAIL. LEVEL DISPLAY SHALL FACE NORTH.
13. REMOVE UTILITY METER, SERVICE ENTRANCE DISCONNECT, COMBINATION MOTOR STARTERS (TYP. OF 4) AND ASSOCIATED CABLE AND CONDUIT BACK TO THE SOURCE. THE METER SHALL REMAIN PROPERTY OF BTU. RE: NOTE BY SYMBOL NO.20 FOR ADDITIONAL INFORMATION.
14. REPLACE EQUIPMENT RACK FOR EXISTING SCADA CONTROL PANEL "RIO-1". RE: 6/E-4 FOR MOUNTING DETAIL.
15. NEW POWER POLE AND OVERHEAD POWER LINE TO BE PROVIDED AND INSTALLED BY BTU AFTER CONSTRUCTION OF TANK IS COMPLETE.
16. EXISTING SERVICE LIGHT POLE AND OVERHEAD LINE TO BE TEMPORARILY REMOVED BY BTU PRIOR TO CONSTRUCTION OF TANK. BTU WILL REINSTALL A NEW SERVICE LIGHT POLE AND OVERHEAD LINE AFTER CONSTRUCTION OF TANK IS COMPLETE.
17. EXISTING SERVICE LIGHT POLE TO REMAIN.
18. RE: 2/E-3 FOR TANK ACCESS HATCH SECURITY SCHEMATIC.
19. EXISTING 3-100KVA POLE MOUNTED UTILITY TRANSFORMERS.
20. EXISTING OVERHEAD LINE FROM THE POLE MOUNTED TRANSFORMERS TO THE SERVICE DROP TO BE REMOVED BY BTU.
21. EXISTING MCC AND LIGHTING PANELBOARD.



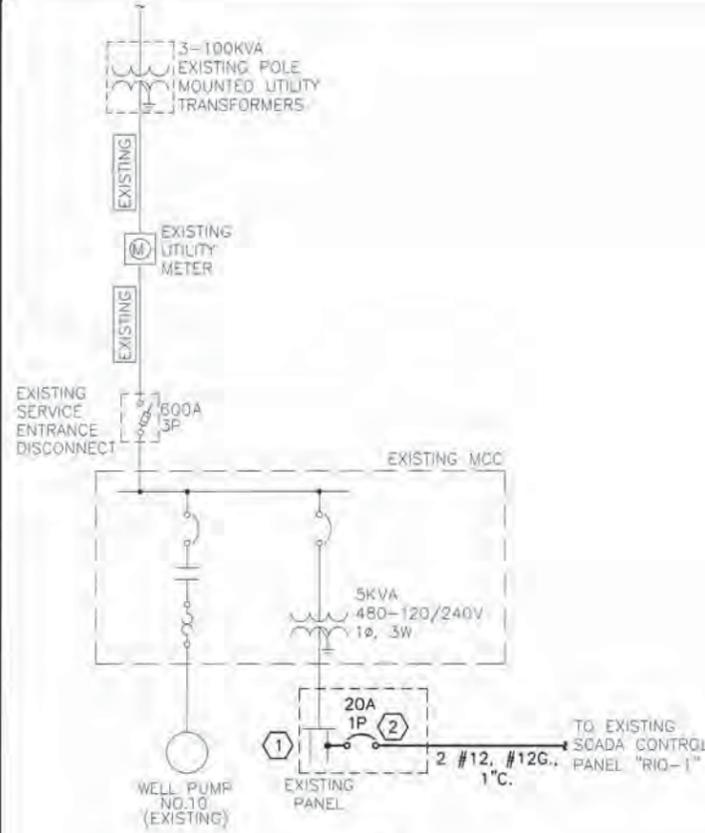
**FREES & NICHOLS**  
 10814 Jollyville Road Building 02, Suite 100  
 Austin, Texas 78758  
 Phone - (512) 637-3100  
 Fax - (512) 617-3101

CITY OF BRYAN  
**TABOR - 16TH ST. & N. TEXAS GW STORAGE TANKS (1 MG SITE)**  
 ELECTRICAL  
**SITE PLAN**

REV	DATE	BY	CHKD	APP'D	FILE NAME
0	5/15/2012	JAF	JAF	JNH	EL-1MG-PL-SITE.dwg
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SHEET	E-2				
SEQ.					

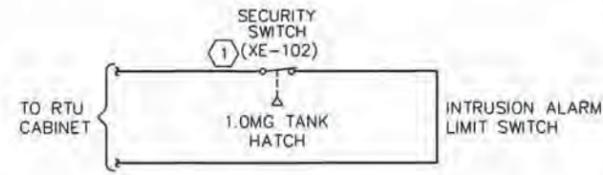
**GENERAL NOTES:**

- ALL EQUIPMENT SHOWN DARK SHALL BE PROVIDED UNDER THIS CONTRACT.  
ALL EQUIPMENT SHOWN LIGHT IS EXISTING AS INDICATED.



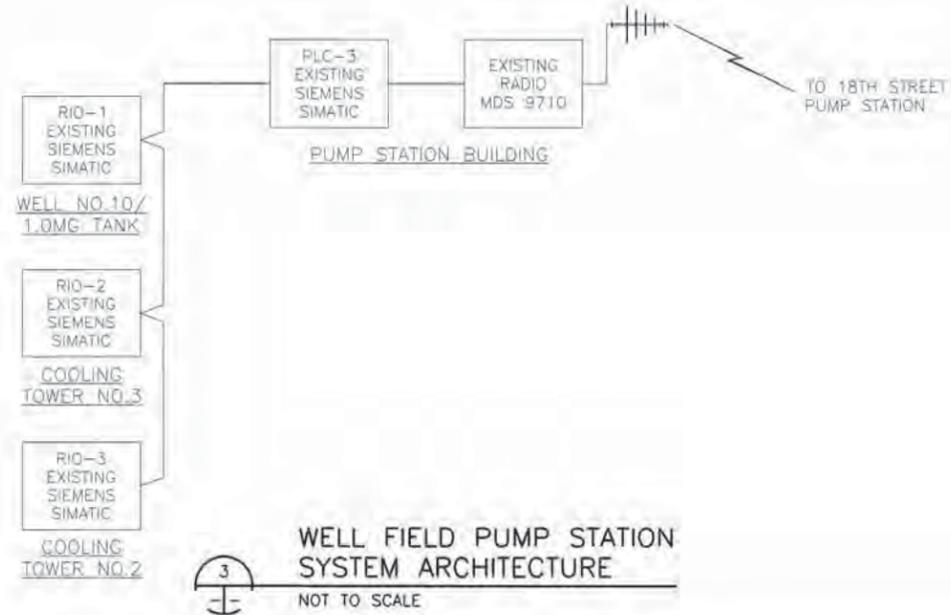
- NO.1 NOTES BY SYMBOL**
- EXISTING 120/240V, 1Ø, 100A, NEMA 3R PANELBOARD, SQUARE D MODEL NO. Q0612L100RB. CONTRACTOR SHALL PROVIDE TYPE WRITTEN UPDATED PANELBOARD SCHEDULE IN EXISTING PANEL.
  - PROVIDE 20A, 1P BREAKER IN PANELBOARD. AIC RATING OF BREAKER SHALL MATCH THAT OF EXISTING PANELBOARD. MODIFY PANEL AS REQUIRED.

**WELL PUMP NO.10 ONE-LINE DIAGRAM**  
NOT TO SCALE



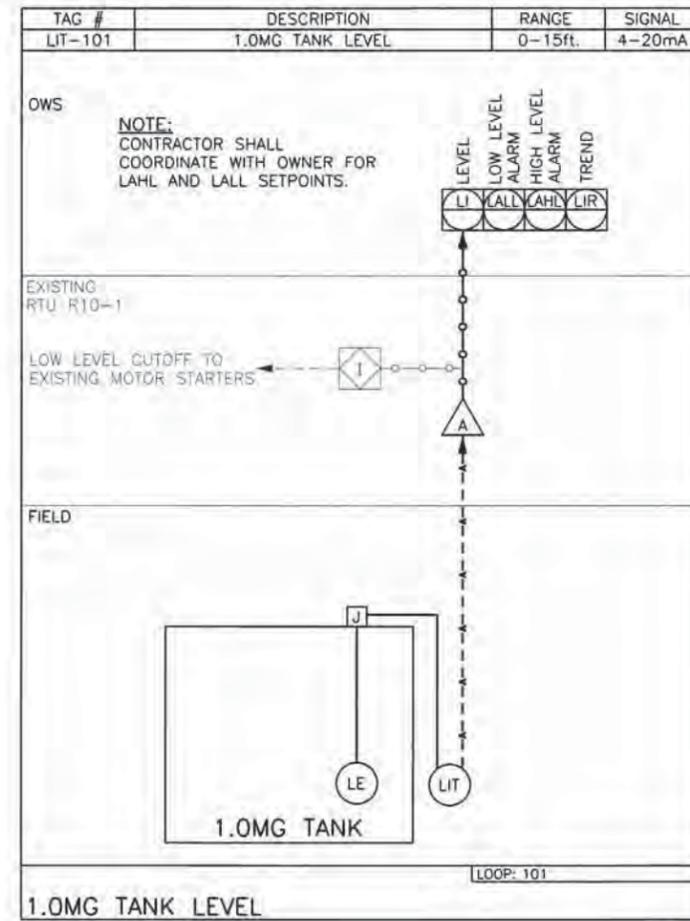
- NO.2 NOTES BY SYMBOL**
- SECURITY SWITCH OPENS WHEN HATCH ON TOP OF 1.0MG TANK OPENS. OPEN CONTACT SIGNALS RTU THAT HATCH IS OPEN. ADJUST SWITCH TO OPERATE WHEN HATCH IS 1' OPEN. COORDINATE SWITCH LOCATION WITH TANK MANUFACTURER.

**1.0MG TANK ACCESS HATCH SECURITY SCHEMATIC**  
NOT TO SCALE (TYP. XE-102)

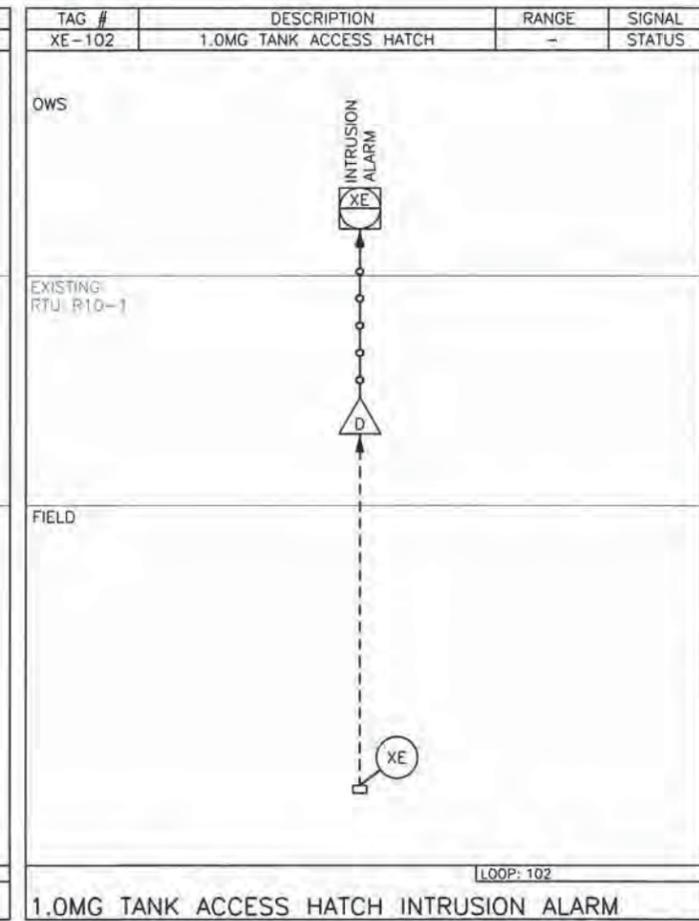


**WELL FIELD PUMP STATION SYSTEM ARCHITECTURE**  
NOT TO SCALE

INTERCONNECTION DIAGRAM			
LOOP	EQUIPMENT DESCRIPTION	FIELD DEVICE/FIELD WIRING	
101	1.0MG TANK LEVEL	LE-101	MFR'S SUPPLIED SUBMERSIBLE CABLE → LE-101A (MFR'S SUPPLIED SUBMERSIBLE CABLE, 1½" C.) → LIT-101 (LEVEL DISPLAY) → LIT-101A (2PR. #18 SHLD., 1" C. (1PR. SPARE))
102	1.0MG TANK ACCESS HATCH INTRUSION ALARM	XE-102	XE-102C (2 #12, #12G., 1" C.)



**1.0MG TANK LEVEL**  
LOOP: 101



**1.0MG TANK ACCESS HATCH INTRUSION ALARM**  
LOOP: 102



CITY OF BRYAN  
TABOR - 16TH ST. & N. TEXAS GW  
STORAGE TANKS (1 MG SITE)  
ELECTRICAL

DIAGRAMS & CONTROL SCHEMATICS

DATE	DATE	DATE	DATE	DATE
BY	BY	BY	BY	BY
FILE NAME				
EL-1MG-DG-MISC.dwg	EL-1MG-DG-MISC.dwg	EL-1MG-DG-MISC.dwg	EL-1MG-DG-MISC.dwg	EL-1MG-DG-MISC.dwg

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

SHEET: **E-3**

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