

CITY OF GALLUP, NEW MEXICO

NAVAJO GALLUP WATER SUPPLY PROJECT

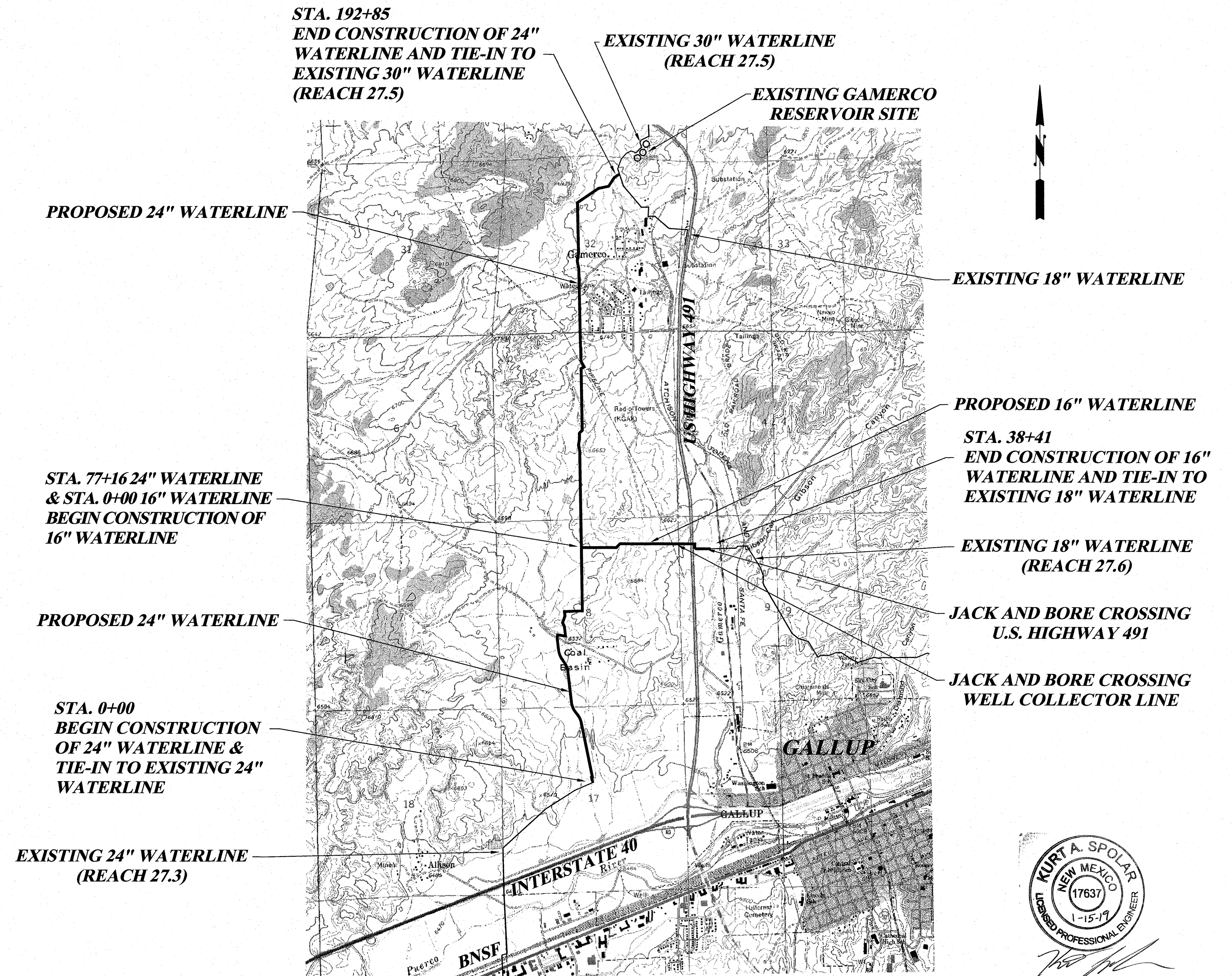
REACH 27.9

**F UNDED BY: THE WATER TRUST BOARD THROUGH THE NEW MEXICO FINANCE AUTHORITY, WPF #4338
AND U.S. BUREAU OF RECLAMATION COOPERATIVE AGREEMENT NO. R11AC40002 AND THE CITY OF GALLUP**

FORMAL BID NO. 1903

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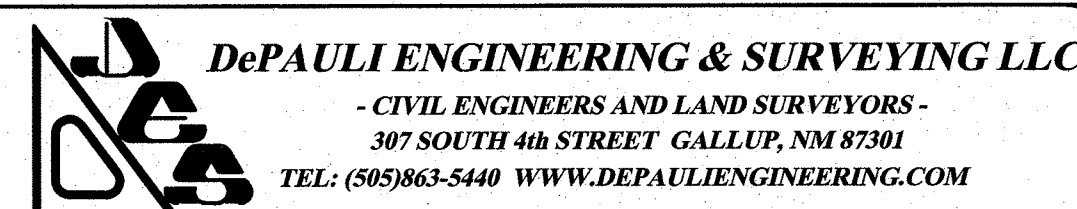
NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 27.9 - 24" & 16" WATERLINES

SCALE: 1"=2000'
APPROXIMATE

CAUTION
CALL NEW MEXICO ONE CALL
811
BEFORE YOU DIG!



NOTICE OF EXTENDED PAYMENT PROVISION:
THIS CONTRACT ALLOWS THE OWNER TO MAKE PAYMENT WITHIN 45
DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.



for the
CITY OF GALLUP
McKINLEY COUNTY, NEW MEXICO

NO.	BY	DATE

CITY OF GALLUP
NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 27.9
FORMAL BID NO. 1903

TITLE SHEET

SCALE:	SHOWN
DATE:	JAN. 2019
DRAWN BY:	KAS
CHECKED BY:	MDP DT

SHEET
1-1

- WORKMANSHIP AND MATERIALS FOR ITEMS CONTAINED HEREIN SHALL CONFORM TO THE SPECIFICATIONS HEREIN AND IN THE CONTRACT DOCUMENTS. WORKMANSHIP AND MATERIALS SHALL ALSO CONFORM TO THE LATEST EDITION OF THE CITY OF GALLUP STANDARDS AND NMDOT SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION.
2. REMOVAL OF STRUCTURES AND OBSTRUCTIONS INCLUDING ASPHALT PAVEMENT, CONCRETE PAVEMENT, CULVERTS, TREES, SHRUBS, SIDEWALK, CURB & GUTTER, ROCK AND OTHER MISC. ITEMS THAT NEED TO BE REMOVED OR DISPOSED OF SHALL BE TAKEN TO DESIGNATED AREAS AND/OR AN APPROVED LANDFILL IN ACCORDANCE WITH PROVISIONS OF THE NEW MEXICO SOLID WASTE ACT PROVIDED HOWEVER, THAT RECYCLABLE MATERIAL MAY BE TAKEN TO APPROPRIATE COMPANIES.
3. WATER FOR PIPELINE EARTHWORK CONSTRUCTION SHALL BE TAKEN FROM THE CITY OF GALLUP EAST PUMP STATION LOCATED IMMEDIATELY NORTH OF INTERSTATE 40 AND APPROX. 1/2 MILE EAST OF FORD DRIVE IN THE CITY OF GALLUP. WATER FOR FILLING, PRESSURE TESTING AND BACTERIOLOGICAL TESTING OF WATERLINE MAY BE TAKEN FROM AN APPROVED CONNECTION TO THE EXISTING CITY SYSTEM UTILIZING STATIC OR PUMPED HEAD AVAILABLE PROVIDED PROPER APPARATUS FOR CROSS-CONNECTION PREVENTION AND METERING IS IN PLACE. WATER FOR WATERLINE TESTING MAY ALSO BE TAKEN FROM A FIRE HYDRANT DESIGNATED BY THE CITY WATER DEPT. CONTRACTOR TO USE WATER FLUSHED FROM NEW LINE TO THE EXTENT POSSIBLE FOR PIPELINE CONSTRUCTION. WATER HAULING SHALL BE IN CLEAN, POTABLE WATER TANKERS. CONTRACTOR TO COORDINATE WITH CITY WATER DEPARTMENT AS REQUIRED TO OBTAIN WATER AND ACCESS WATER FACILITIES. CONTRACTOR TO PROVIDE ALL MATERIALS, FITTINGS AND EQUIPMENT REQUIRED TO FACILITATE PIPELINE TESTING.
4. QUALITY CONTROL TESTING FOR PROJECT MATERIALS SHALL BE PERFORMED BY AN INDEPENDENT TESTING LAB AS HIRED BY THE CONTRACTOR. THE CONTRACTOR SHALL NOTIFY THE ENGINEER 24 HOURS IN ADVANCE WHEN CONCRETE PLACEMENTS ARE SCHEDULED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE TESTING LAB WHEN COMPACTION TESTS ARE NEEDED AND WHEN CONCRETE PLACEMENTS ARE GOING TO BE MADE. THE CONTRACTOR SHALL PROVIDE THE TESTING LAB ACCESS AT ANY TIME FOR TESTING AT THE CONSTRUCTION SITE. THE CONTRACTOR SHALL ASSIST THE TESTING LAB AS REQUIRED TO OBTAIN MATERIAL SAMPLES.
5. CONCRETE FOR THIS PROJECT SHALL BE 4500 PSI (28 DAY) CONCRETE WITH 4 1/2 - 7 1/2% ENTRAINED AIR. CONCRETE TO BE PLACED WITH NO MORE THAN 4" SLUMP WITH LIMITED WATER TO BE USED TO FACILITATE FINISHING. ALL REINFORCEMENT FOR CAST IN PLACE CONCRETE SHALL BE GRADE 40 OR 60 DEFORMED BARS AS SPECIFIED PER ASTM A615. CEMENT TO BE TYPE II. SEE THE CONTRACT DOCUMENTS FOR ADDITIONAL CONCRETE REQUIREMENTS.
6. THE CONTRACTOR SHOULD BE AWARE THAT NO CONSTRUCTION SHALL COMMENCE UNTIL ALL UTILITY LOCATIONS ARE MARKED. THE CONTRACTOR SHOULD EXPECT THAT SOME SHIFTS IN ALIGNMENT WILL BE MADE TO AVOID EXISTING UTILITIES AND MEET PROXIMITY REQUIREMENTS. THE CONTRACTOR SHALL PROVIDE EXPLORATORY EXCAVATION AT LOCATIONS SHOWN ON THE PROJECT DRAWINGS OR AS REQUIRED FOR ALIGNMENT CHANGES.
7. CONSTRUCTION STAKING: THE ENGINEER WILL PROVIDE THE FOLLOWING CONSTRUCTION STAKING:
 - A. WATERLINES - CENTERLINE OR OFFSET STAKES AT APPROX. 200 FT., P.I.S AND APPURTENANCES, CONTROL FOR GRADE STAKES WHERE GRADE IS CALLED FOR.
 - B. SITE GRADING - STAKES FOR MAJOR STRUCTURES W/ CUTS AND FILLS. BASIC SITE CONTROL AND BENCH MARK.

OCCASIONAL STAKE REPLACEMENT REQUIRED WHEN STAKES ARE UNAVOIDABLE LOST DUE TO CONSTRUCTION WILL BE REPLACED BY THE ENGINEER, PROVIDED HOWEVER, THAT THE COST OF STAKE REPLACEMENT DUE TO CARELESSNESS OR INATTENTIVE CONSTRUCTION AROUND SURVEY CONTROL WILL BE DEDUCTED FROM PAYMENT TO THE CONTRACTOR. RANDOM BENCH MARKS WILL BE ESTABLISHED FOR USE BY THE CONTRACTOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR BLUETOP STAKING FOR SUBGRADE AND BASE COURSE. DETAILED MEASUREMENTS AND ELEVATIONS FOR STRUCTURES, DRAINAGE FLOW LINES AND PIPELINES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR WITH OCCASIONAL CHECKS BY THE ENGINEER. MEASUREMENT FOR DETERMINATION OF QUANTITIES SHALL BE ACCOMPLISHED MUTUALLY BY THE ENGINEER AND CONTRACTOR.

8. BASE COURSE FOR STREET CONSTRUCTION SHALL BE NMDOT TYPE I GRAVEL (BASE COURSE) FOR DETOURS OR GRAVEL SURFACED ROADS AND DRIVEWAYS TO BE TYPE I OR TYPE II.
9. ALL ABANDONED LINES SHALL BE PLUGGED W/ CONCRETE (OR OTHER CEMENT BASED PRODUCTS) OR M.J. CAPS AT TIE-IN LOCATIONS UNLESS OTHERWISE NOTED. REMOVE OLD VALVES WHERE CALLED FOR, OTHERWISE REMOVE VALVE CANS & COMPACT BACKFILL OR INSTALL FLOWABLE FILL WITH OLD VALVE TO BE CLOSED AND REMAIN IN PLACE. PROVIDE 10' MINIMUM HORIZONTAL SEPARATION OF WATER AND SEWER LINES.
10. SUBMITTALS ARE REQUIRED FOR ALL MATERIALS AND EQUIPMENT PROPOSED FOR THE PROJECT WITH APPROVAL REQUIRED BY THE CITY. SCHEDULES FOR MANHOLE BARRELS, CONES AND RIMS SHALL BE PROVIDED.
11. ARCHEOLOGICAL FENCING SHALL BE PROVIDED, AS SHOWN ON THE DRAWINGS, IN AREAS CROSSING THROUGH OR ADJACENT TO ARCHEOLOGICAL OR CULTURAL SITES. ARCHEOLOGICAL MONITORING DURING CONSTRUCTION IS REQUIRED IN ALL AREAS BETWEEN OR ADJACENT TO THE ARCHEOLOGICAL FENCES. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF ANY CULTURAL ARTIFACTS OR REMNANTS ENCOUNTERED (SEE CONTRACT DOCUMENTS).
12. EXISTING UTILITIES: EXISTING UTILITIES SHOWN ARE FROM UTILITY COMPANY MAPS, EVIDENCE ON THE GROUND AND CONVERSATION WITH UTILITY COMPANY OFFICIALS. THE EXACT LOCATION, DEPTH AND SIZE OF SOME OF THE LINES ARE UNKNOWN. CONTRACTOR TO VERIFY THE EXISTENCE AND LOCATION OF ALL UTILITIES PRIOR TO TRENCHING. UTILITIES THAT ARE DAMAGED OR CUT SHALL BE REPAIRED BY THE CONTRACTOR AT HIS COST. THE CONTRACTOR SHALL CALL 811 FOR "LOCATES" ON ALL UTILITIES PRIOR TO CONSTRUCTION.
13. WATERLINE PIPE TO BE INSTALLED WITH A MINIMUM COVER OF 4.0' UNLESS OTHERWISE DESIGNATED. THE WATERLINE GRADES AND ELEVATIONS SHOWN ON THE PROJECT PROFILES ARE INTENDED TO GIVE THE CONTRACTOR A GENERAL IDEA OF SLOPES THAT WILL BE ENCOUNTERED IN THE INSTALLATION OF THE PIPE. THE DEPTHS SHOWN ON THE PROFILES SHOULD BE CONSIDERED AS MINIMUMS ESPECIALLY UNDER DRAINAGE DITCHES AND ARROYOS. WATERLINE AT AIR RELEASE SHALL BE INSTALLED WITH 5' OF MINIMUM COVER TO PROVIDE ADEQUATE CLEARANCE FOR AIR RELEASE VALVE, PIPING, AND APPURTENANCES. IN FLAT TERRAIN (LESS THAN 1% SLOPE) THE CONTRACTOR WILL BE EXPECTED TO MAINTAIN GRADES NEAR TO THOSE SHOWN ON THE PROJECT DRAWINGS. DEVIATIONS FROM THE GRADES DEPICTED COULD RESULT IN AIR POCKETS OR INADEQUATE PIPE COVER. PIPE IS TO GRADE UPHILL IN ALL LOCATIONS TO EITHER AN AIR RELEASE VALVE OR A RESERVOIR.

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14. THE CONTRACTOR SHALL NOT EXCEED THE PIPE MANUFACTURERS RECOMMENDED MAXIMUM JOINT DEFLECTION, HORIZONTALLY OR VERTICALLY. THE CONTRACTOR SHALL DEVISE AND DEMONSTRATE A METHOD TO DETERMINE PIPE DEFLECTION AT A JOINT. PIPE SUBMITTALS ARE TO INCLUDE THE MANUFACTURERS MAX. RECOMMENDED JOINT DEFLECTION

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PIPE INSTALLED ON HORIZONTAL CURVES SHALL BE WITHIN RECOMMENDED MAXIMUM JOINT DEFLECTION TOLERANCES. SHORTER PIPE JOINTS, ADDITIONAL SOLID SLEEVES OR ADDITIONAL FITTINGS SHALL BE USED TO MAINTAIN ALIGNMENT ALONG CURVE AND MEET DEFLECTION REQUIREMENTS.

16. PROPOSED REVISIONS BY THE CONTRACTOR OF VERTICAL PIPELINE ALIGNMENT IN SPECIFIC AREAS WILL REQUIRE A LAYING SCHEDULE FOR APPROVAL OF THAT AREA, LAYING SCHEDULE TO INCLUDE PLAN & PROFILE, WITH STATIONS, ELEVATIONS, GRADES, DEFLECTIONS, JOINT RESTRAINT AND OTHER INFORMATION REQUIRED TO DETERMINE HOW PIPELINE DESIGN IS TO BE IMPLEMENTED.
16. ALL PIPE BEDDING SHALL BE AN IMPORTED GRANULAR MATERIAL COMPACTED TO 95% S.P. TRENCH BACKFILL ABOVE BEDDING SHALL BE GRANULAR MATERIAL IN SPECIAL LOCATIONS WHERE CALLED FOR IN PROJECT DOCUMENTS. GRANULAR MATERIAL MAY BE TAKEN FROM ANY SUITABLE SOURCE. THE MATERIAL SHALL BE SANDY IN NATURE, FRIABLE WITH NO CLODS OR CLAY BALLS AND EXHIBIT MINIMAL "PUMPING" CHARACTERISTICS WHEN COMPACTED AT MOISTURE CONTENT SLIGHTLY BELOW OPTIMUM. IN ADDITION, MATERIAL SHALL MEET THE FOLLOWING REQUIREMENTS:
- | SIZE SIZE | PERCENT PASSING | ACCEPTABLE SOURCES ON PAST PROJECTS INCLUDE THE FOLLOWING: |
|-----------|-----------------|---|
| 1" | 100 | 1. CRUSHER FINES FROM LOCAL AGGREGATE COMPANIES. |
| NO. 4 | 40 - 100 | 2. PUERCO RIVER, FROM LOCATIONS APPROVED BY THE CITY PUBLIC WORKS DIRECTOR. |
| NO. 200 | LESS THAN 35 | 3. LOCAL QUARRY OR STOCKPILE. |
| PI < 12 | | |
17. THE USE OF "WATER FLOODING" OR "WATER JETTING" TO ACHIEVE COMPACTION OF PIPE BEDDING OR BACKFILL WILL NOT BE PERMITTED. BACKFILL TO BE COMPLETED WITHIN 100' OF THE END OF PIPE DURING LINE CONSTRUCTION AT ALL TIMES AND TO END OF COMPLETED PIPE AT THE COMPLETION OF EACH WORKDAY.
18. FITTINGS TO BE MJ TYPE W/ RESTRAINING GLANDS UNLESS OTHERWISE NOTED. JOINT RESTRAINT SHALL BE PROVIDED ON 3 OR MORE JOINTS FOR A TOTAL LENGTH OF 36' UPSTREAM AND DOWNSTREAM, OR AS CALLED FOR, OF ALL VERTICAL BENDS. THIS WILL REQUIRE RESTAINED JOINT PIPE WITH INTERNAL LOCKING SEGMENTS AS SPECIFIED OR MJ SLEEVES W/ RESTRAINING GLANDS. MAX. VERTICAL DEFLECTION ELLS THIS PROJECT TO BE 22.5". ALL BOLTED FITTINGS, GLANDS, FLANGES & DUCTILE IRON PIPE TO BE WRAPPED OR SLEEVED WITH 2 PROTECTIVE LAYERS CONSISTING OF 8 MIL AWWA C105 POLYETHYLENE & B-VIO W/ STAGGERED JOINTS. THE POTENTIAL PUNCTURING OF WRAP BY RESTRAINING BOLTS AND GLANDS TO BE MITIGATED BY INSTALLING STYROFOAM OR OTHER MATERIAL ADJACENT TO BOLTS, TAPED IN PLACE, PRIOR TO INSTALLING PROTECTIVE WRAP. CONTRACTOR TO USE CAUTION WHEN POURING THRUST BLOCKS TO INSURE THAT MJ BOLTS ARE NOT COVERED WITH CONCRETE. WRAPPED PIPE TO BE CAREFULLY LIFTED INTO PLACE W/ SLINGS THAT WILL NOT DAMAGE THE WRAP (CHAINS NOT PERMITTED). LATERAL COMPACTION SHALL PROCEED IN A CAREFUL, CONTROLLED MANNER WHILE PROTECTING THE WRAP. WRAP TO BE HELD REASONABLY TIGHT AGAINST THE PIPE W/ TAPE OR OTHER APPROVED MEANS.
19. GATE VALVES TO BE AWWA RESILIENT WEDGE TYPE WITH EPOXY COATING INSIDE AND OUT. 16" GATE VALVES AND LARGER TO BE THE "HORIZONTAL" (LAY-DOWN) TYPE OR AS CALLED FOR. GATE VALVES 18" AND LARGER TO HAVE VALVED BYPASSES. CHECK VALVES AND AIR RELEASE VALVES TO BE AS CALLED FOR IN THE SPECIFICATIONS AND DRAWINGS.
20. PIPELINE MEASUREMENT AND BASIS OF PAYMENT - ITEMS OF WORK CONSIST OF FURNISHING ALL MATERIALS, PLANT, EQUIPMENT AND LABOR IN INSTALLING PIPE OF THE DIAMETER AND MATERIAL SPECIFIED, COMPLETE WITH MAIN LINE FITTINGS CALLED FOR, APPURTENANCES AND TRENCHING, BEDDING AND BACKFILL. THE ITEMS DO NOT INCLUDE PAYMENT REMOVAL AND REPLACEMENT OR ROCK EXCAVATION. VERTICAL 11 1/2' ELLS THAT ARE NOT CALLED FOR ON PROJECT DRAWINGS BUT MAY BE REQUIRED TO FACILITATE CONSTRUCTION WILL BE PAID FOR AT THE UNIT PRICE BID EACH. MEASUREMENT WILL BE BY THE LINEAR FOOT ALONG THE CENTERLINE OF THE PIPE THROUGH VALVES, MANHOLES AND FITTINGS WITHOUT CORRECTION FOR SLOPE. PAYMENT WILL BE FOR THE ACTUAL LINEAR FEET OF PIPE INSTALLED, COMPLETE AND IN PLACE, AT THE CONTRACT UNIT PRICE BID FOR THE ITEM.
21. CONTRACTOR SHALL PROVIDE AND MAINTAIN TRAFFIC CONTROL DEVICES AS DESCRIBED IN USDOT/FHWA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES ON ALL PARTS OF THE PROJECT UNDER CONSTRUCTION. THE DEVICES SHALL INCLUDE, BUT NOT BE LIMITED TO, TYPE 1 BARRICADES TYPE 2 BARRICADES, CONES, DRUMS, WARNING SIGNS, DETOUR SIGNS, NIGHT TIME FLASHERS AND PORTABLE FLASHERS. THE DEVICES SHALL BE MAINTAINED, IN ACCORDANCE WITH THE TRAFFIC CONTROL PLAN AND PROJECT DOCUMENTS. SEVEN (7) DAYS A WEEK FOR THE DURATION OF THE PROJECT. CONTRACTOR SHALL MAKE ADJUSTMENTS TO THE TRAFFIC CONTROL PLAN DURING THE PROGRESSION OF WORK, TO ENSURE THAT LIFE AND PROPERTY ARE PROTECTED AT ALL TIMES.
22. PROPERTY CORNERS, BENCHMARKS AND CONTROL POINTS TO BE PROTECTED AT ALL TIMES. LOST OR DAMAGED POINTS DUE TO NEGLIGENCE SHALL BE REPLACED AT THE CONTRACTORS EXPENSE.
23. WATERLINE TIE-INS TO BE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND THE PROJECT DRAWINGS AND SHALL INCLUDE ALL PIPE, SLEEVES, SPECIALS AND APPURTENANCES EXCEPT VALVES REQUIRED TO COMPLETE THE TIE-IN. FITTINGS AND PIPE INTERIORS TO BE WIPED DOWN WITH CHLORINE SOLUTION (50 PPM) AT WATER TIE-INS.
24. DUCTILE IRON PIPE WATERLINES SHALL BE PRESSURE TESTED AT 250 PSI AT THE LOW END OF TEST SEGMENTS FOR PIPELINES. TEST PRESSURE FOR PVC TO BE 200 PSI. THE LINE SEGMENT BEING TESTED MAY EXTEND UPHILL UNTIL RESULTING TEST PRESSURE IS NO LESS THAN 125 PSI. THE MAXIMUM LENGTH FOR A PRESSURE SEGMENT IS 4000 FT.
25. ALL PIPING SHALL BE SEALED AT WORK DAYS END TO PREVENT THE ENTRANCE OF INSECTS, MAMMALS AND REPTILES. CLOSURE SHALL ALSO BE SUCH AS TO PREVENT VANDALISM AND FLOOD DAMAGE. CLOSURE TO BE COVERED WITH EXCAVATED MATERIAL SO THAT THE END OF PIPE AND METHOD OF CLOSURE IS NOT VISIBLE. ADDITIONAL CLOSURE EFFORTS TO BE TAKEN, AS REQUIRED OR DIRECTED, ON WEEK ENDS AND OTHER PERIODS WHILE PIPELINE WORK IS SUSPENDED.
26. CONTRACTOR SHALL TAKE PRECAUTIONS AS REQUIRED TO PREVENT DAMAGE TO THE ENVIRONMENT ADJACENT TO CONSTRUCTION. CONTRACTOR TO REMOVE ONLY THE TREES, SHRUBS, GROUND COVER AND ROCK AS ABSOLUTELY NECESSARY TO COMPLETE THE PROJECT. TREES, EXCESS ROCK AND SPOIL SHALL BE REMOVED AND PROPERLY DISPOSED OF, PROVIDED HOWEVER, THAT EXCAVATED ROCK MAY BE USED AS EROSION CONTROL AS DIRECTED. STAGING AREAS TO BE LIMITED TO AREAS WHERE CONSTRUCTION IS PLANNED, CONSTRUCTION R/Ws OR AREAS PROPERLY SECURED FROM LANDOWNERS. ALL AREAS AFFECTED BY CONSTRUCTION TO BE PROPERLY CLEANED, GRADED AND DRESSED UPON COMPLETION. RE-SEEDING WILL BE REQUIRED IN SOME AREAS AS DIRECTED. CONTOUR BERMS WILL BE REQUIRED AS DIRECTED TO PREVENT RUNOFF FROM TRAVELING ALONG PIPELINE TRENCH.
27. CONTRACTOR SHALL DEVELOPE, SECURE APPROVAL OF, IMPLEMENT AND MAINTAIN A STORM WATER POLLUTION PREVENTION PLAN (SWPPP).
28. CONTRACTOR SHALL OBTAIN A WORK PERMIT FOR ACTIVITIES WITHIN NMDOT RIGHT OF WAY. THE WORK PERMIT INCLUDES THE FOLLOWING:
1. CONTRACTOR PROVIDE INSURANCE CERTIFICATE NAMING THE NMDOT AS INSURED IN THE OF \$1,000,000 PER OCCURANCE FOR WORK WITHIN NMDOT RIGHT OF WAY.
 2. CONTRACTOR SHALL DEVELOPE, SECURE APPROVAL OF, IMPLEMENT AND MAINTAIN A TRAFFIC CONTROL PLAN FOR WORK WITHIN NMDOT RIGHT OF WAY
- ### SURVEY NOTES:
1. COORDINATES SHOWN ARE REFERENCED TO CITY OF GALLUP CONTROL SYSTEM WHICH IS BASED ON NMSP NAD 83, WEST ZONE GROUND COORDS. WITH A COMBINED FACTOR OF 0.99968672.
 2. BEARINGS SHOWN ARE GRID.
 3. ELEVATIONS ARE BASED 1929 NGVD (VERTICAL DATUM)
 4. CITY OF GALLUP GROUND COORDINATES CONVERSION TO NGWSP GRID COORDINATES IS:
NORTHING: (FEET) (COG x 0.99968672) + 0.6 = NGWSP
EASTING: (FEET) (COG x 0.99968672) +0.1 = NGWSP
 5. WATER PRESSURE ZONE HIGH WATER ELEVATION
COUNTRY CLUB (EXISTING.) 6794'
GAMERCO (EXISTING) 6905'
TRADE MART 6733'

SURVEY NOTES:

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5. WATER PRESSURE ZONE HIGH WATER ELEVATION
 COUNTRY CLUB (EXISTING.) 6794'
 GAMERCO (EXISTING) 6905'
 TRADE MART 6733'

1. INCIDENTAL CONSTRUCTION STAKING BY CONTRACTOR - BLUE TOP STAKING FOR SUBGRADE AND BASE COURSE. CONTROL STAKES AS REQUIRED TO PLACE SAW CUTS IN CONCRETE PAVEMENT. MISC. STAKES AND MEASUREMENT FOR DETAILED CONSTRUCTION OF STRUCTURES AND APPURTENANCES.
2. STORM WATER POLLUTION PREVENTION - PERMITS, NOTICES, PLANS, IMPLEMENTATION AND MAINTENANCE OF PLANS UTILIZING EROSION AND SEDIMENT CONTROL DEVICES PROVIDED SHALL BE CARRIED OUT FOR ALL PORTIONS OF THIS PROJECT.
3. LANDSCAPE - REPLACE SHRUBS, TREES, RAILROAD TIES, DECORATIVE GRAVEL AND PLAYGROUND EQUIP. AS REQUIRED.
4. TRAFFIC CONTROL - IMPLEMENTATION AND MAINTENANCE OF TRAFFIC CONTROL PLAN.
5. BASE COURSE RAISED TO PAVEMENT LEVEL IN DRIVEWAYS AND STREETS FOR PUBLIC TRAVEL PRIOR TO PLACEMENT OF FINAL SURFACING
6. LOCAL STANDBY PERSONNEL TO HANDLE 24 HOUR (INCLUDING WEEKENDS) EMERGENCIES.
7. PROPER DISPOSAL OF ALL TRASH, DEBRIS, AND WASTE INCLUDING HAULS TO DISPOSAL SITES AND GRADING.
8. ROCK & OTHER EXCAVATION & LATERAL BACKFILL FOR REINFORCED CONCRETE STRUCTURES.
9. MINOR GRADING, DIKES AND SWALES CALLED FOR ALONG WATER LINE INCLUDING DRESSING AND CLEANUP.
10. PRESSURE TESTING, DISINFECTION, BACTERIOLOGICAL TESTING, FLUSHING, COORDINATION WITH THE CITY NOTIFICATION OF THE PUBLIC FOR WATER LINE WORK. MEANS OF FLUSHING OTHER THAN APPARATUS AND LOCATIONS CALLED FOR.
11. WATER HAULING AS REQUIRED FOR CONSTRUCTION AND DUST CONTROL.
12. EXCAVATION AND POTHOLING INCLUDING BACKFILLING FOR UTILITIES & STRUCTURES FOR LOCATION & GRADE CHECKS AT PROPOSED WATER LINE CROSSINGS AS SHOWN ON PROJECT DRAWINGS AND AS MARKED BY UTILITY COMPANIES.
13. PROTECTION & MAINTENANCE OF PRIVATE & PUBLIC PROPERTY DURING STORMS & RUNOFF THAT MAY BE MORE VULNERABLE TO DAMAGE BECAUSE OF CONSTRUCTION.
14. MEASUREMENTS FOR PAY QUANTITIES.
15. REMOVE AND RE-INSTALL EXISTING TRAFFIC SIGNS, GUARD RAILS AND MAIL BOXES..
16. PIPELINE ALIGNMENT ADJUSTMENTS DUE TO EXISTING UTILITIES AND STRUCTURES OR TO MAINTAIN POSITIVE SLOPE WITH MINIMUM BURY DEPTH.
17. PROTECTION OF HORIZONTAL AND VERTICAL SURVEY CONTROL MONUMENTS.
18. MOBILIZATION FOR ALL PROJECT LOTS UNLESS OTHERWISE NOTED.
19. HAULING FOR PIPE BEDDING AND BACKFILL.
20. EXISTING FENCE REMOVAL AND REPLACEMENT.
21. THE MAINTENANCE OF PROXIMITY REQUIREMENTS & THE REQUIRED CUTTING OF PIPE TO PROVIDE REQUIRED JOINT DISTANCE FROM SEWER LINES AS SHOWN ON MISC. DETAIL SHEETS.
22. BARRIER WALLS AT THE HEAD OF STEEP SLOPES.
23. NMDOT GENERAL, LIABILITY, ETC. INSURANCE REQUIREMENTS FOR WORK WITHIN NMDOT RIGHTS OF WAY.
24. PROJECT SCHEDULE, SUBMITTALS, SHOP DRAWINGS, "LAYING SCHEDULES" AND CUT SHEETS.
25. REMOVAL AND REPLACEMENT OF EXISTING CULVERTS (CMP AND RCP)
26. SHORTER PIPE JOINTS, ADDITIONAL SOLID SLEEVES OR ADDITIONAL FITTINGS USED TO MAINTAIN ALIGNMENT ALONG HORIZONTAL CURVES AND MEET DEFLECTION REQUIREMENTS.
27. COORDINATION WITH OWNERS FOR REMOVAL OF CARS AND OTHER MATERIAL FROM RIGHT OF WAY AS REQUIRED.

PVC	POLYVINYLCHLORIDE PLASTIC PIPE	R/W, ROW	RIGHTS-OF-WAY
G.R.P.	GLASS REINFORCED PLASTIC	CL	PIPE PRESSURE CLASS
D.I.P.	DUCTILE IRON PIPE	RR	RAILROAD
G.V.	GATE VALVE	PI	POINT-OF-INTERSECTION
MH	MANHOLE	PVI	POINT-OF-VERTICAL-INTERSECTION
FH	FIRE HYDRANT	ARV	AIR RELEASE VALVE
S.P.	STANDARD PROCTOR	HOR	HORIZONTAL
GALV. G.I.	GALVANIZED MATERIAL	FLG	FLANGE
ARS	AIR RELEASE STATION (TYPE 1 OR 2)	NTS	NOT TO SCALE
BF	BUTTERFLY VALVE	F.G., P.G.	FINISH GRADE, PROFILE GRADE
MJ	MECHANICAL JOINT	S.H.	SACRED HEART
NTS	NOT TO SCALE	COG	CITY OF GALLUP

NO.	DESCRIPTION	NORTHING	EASTING	ELEV.
1	½" ROD W/ 13606 ALUM. CAP	1650379.77	2445687.21	6488.21
2	½" ROD W/ 13606 ALUM. CAP	1650390.61	2445746.26	6486.86
3	½" ROD W/ 13606 ALUM. CAP	1652105.66	2445432.10	6500.35
4	½" ROD W/ 13606 ALUM. CAP	1654630.92	2444780.95	6502.49
5	½" REBAR	1652684.72	2445163.79	6505.92
6	½" ROD W/ 4329 YELLOW CAP	1681605.69	2443714.79	6531.96
7	¾" REBAR	1655269.93	2445579.03	6600.95
8	½" ROD W/ 13606 ALUM. CAP	1657104.05	2445568.87	6567.26
9	3" 1931 G.L.O. BRASS CAP	1658039.39	2445593.81	6635.00
10	¾" REBAR	1662867.37	2445684.52	6705.14
11	½" ROD W/ 4329 YELLOW CAP	1663387.26	2445613.83	6738.56
12	BID NAIL	1665037.58	2445665.10	6785.75
13	½" IRON PIPE	1665505.51	2445666.83	6774.98
14*	HWY R.O.W. T-RAIL	1657094.53	2448447.33	6592.50

* NOT SHOWN ON PROJECT DRAWINGS

NOTICE OF EXTENDED PAYMENT PROVISION:
THIS CONTRACT ALLOWS THE OWNER TO MAKE PAYMENT WITHIN 45 DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.

CAUTION
CALL NEW MEXICO ONE CALL
811
BEFORE YOU DIG!

CITY OF GALLUP SANITATION & WATER
ERNEST THOMPSON
P.O. BOX 1270 (505-863-1209)
GALLUP, NEW MEXICO 87305

CITY OF GALLUP ELECTRIC
MARITA JOE
P.O. BOX 1270 (505-863-1289)
GALLUP, NEW MEXICO 87305

CITY OF GALLUP STREET AND DRAINAGE
STAN HENDERSON
P.O. BOX 1270 (505-863-1240)
GALLUP, NEW MEXICO 87305

NM GAS COMPANY
IRMA BUSTAMANTE
P.O. BOX 1369 (505-863-3857
GALLUP, NEW MEXICO 87305

CENTURY LINK
DANNY STOKES
1205 HWY 53 (505-728-5464)
ZUNI, NEW MEXICO 87327

COMCAST CABLEVISION OF GALLUP
JOHN ORTIZ
201 S. FIRST STREET (505-879-3184)
GALLUP, NEW MEXICO 87301

NMDOT, DISTRICT 6
TRAFFIC ENGINEER
1919 PINON DR. (505-285-3200)
MILAN, NEW MEXICO 87021

TRANSWESTERN PIPELINE
PAT TRANCOSO (870-9419)
21 SPEEDWAY DR.
GALLUP, NM 87301

EXISTING		PROPOSED
	CONTOURS	
	DRAINAGE FLOW LINE	
	CULVERT AND END FLARE	
	TREE	
	CONTROL POINT/ BENCH MARK	
	PROPERTY CORNER OR R/W MARKER	
	WATERLINE	
	WATERLINE GATE VALVE	
	WATER METER	
	WATERLINE PLUG/CROSS/TEE	
	AIR RELEASE VALVE	
	FORCE MAIN	
	INDIAN HEALTH SERVICE LINE (BY OTHERS)	
	SEWER LINE	
	LIFT STATION	
	MANHOLE	
	STORM DRAIN	
	POWER POLE	
	DOWN GUY	
	OVERHEAD ELECTRIC LINE	
	UNDERGROUND ELECTRIC	
	STREET LIGHT	
	YARD LIGHT	
	GAS LINE	
	TELEPHONE RISER	
	UNDERGROUND TELEPHONE	
	WIRE FENCING	
	CHAIN LINK FENCING	
	SIGN	
	MAIL BOX	
	SOIL RESISTIVITY TEST LOCATION	
	SOIL TEST PIT LOCATION	



PROFESSIONAL

Kas

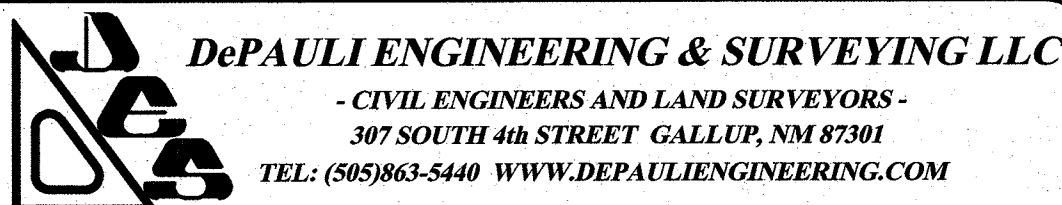
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DATE: *JAN. 2019*

DRAWN BY: *KAS*

CHECKED BY: *MDP DT*

SHEET
1 - 2



for the
CITY OF GALLUP
McKINLEY COUNTY, NEW MEXICO

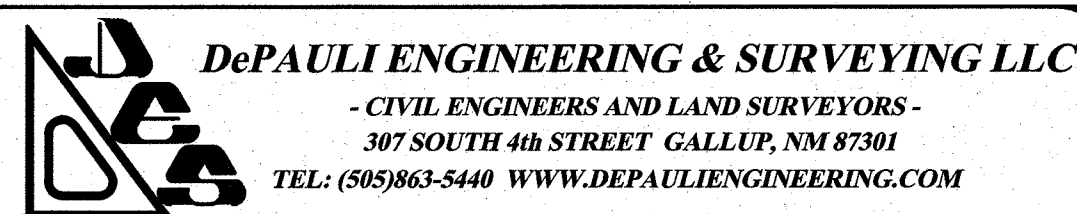
NO.		BY	DATE

CITY OF GALLUP
NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 27.9
FORMAL BID NO. 1903

GENERAL NOTES

CAUTION
CALL NEW MEXICO ONE CALL
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BEFORE YOU DIG!

NOTICE OF EXTENDED PAYMENT PROVISION:
THIS CONTRACT ALLOWS THE OWNER TO MAKE PAYMENT WITHIN 45
DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.



for the
CITY OF GALLUP
McKINLEY COUNTY, NEW MEXICO

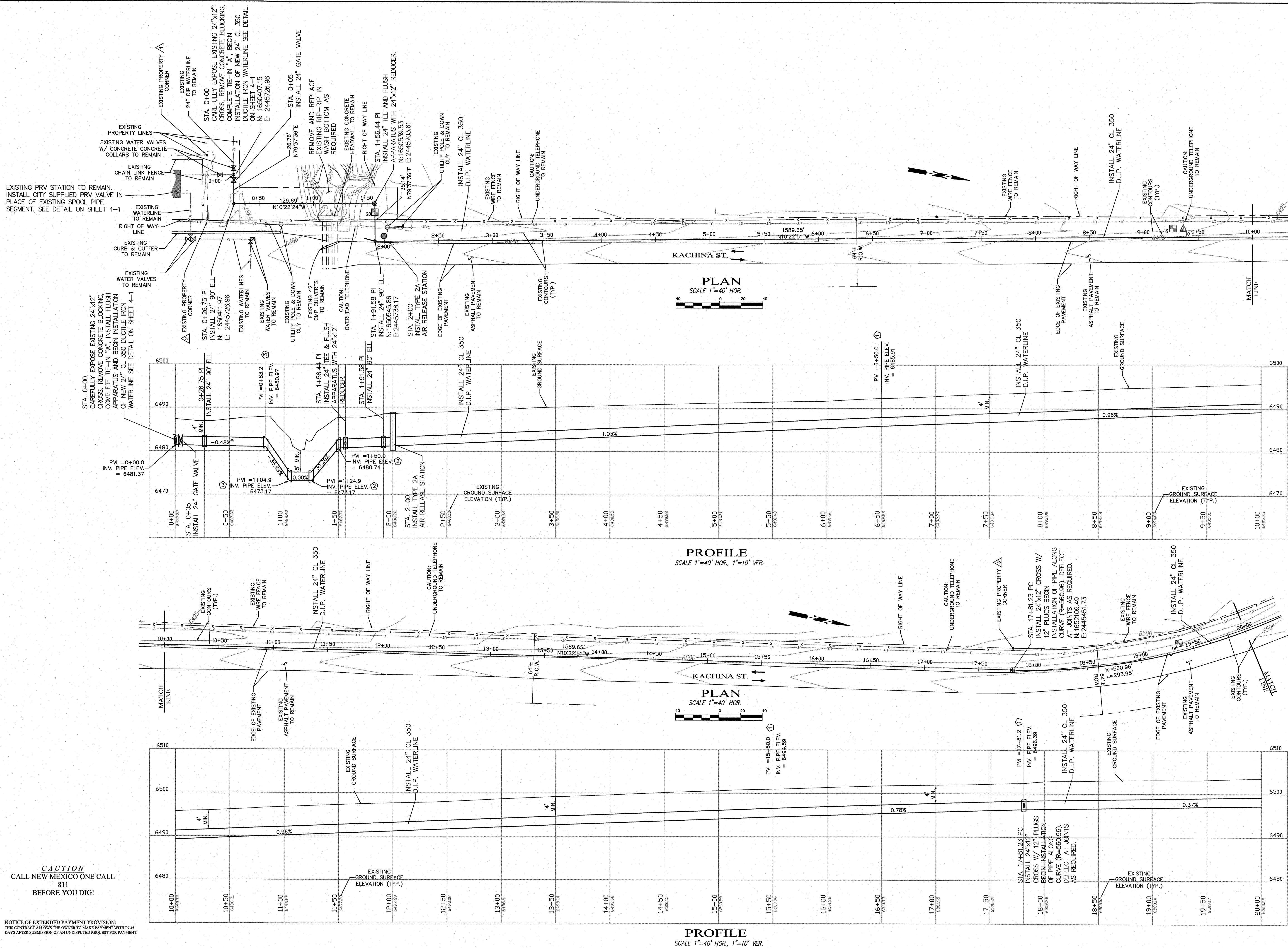
NO.	BY	DATE

CITY OF GALLUP
NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 27.9
FORMAL BID NO. 1903

24" PLAN & PROFILE
STA 0+00 TO STA 20+00

SCALE: SHOWN
DATE: JAN. 2019
DRAWN BY: KAS
CHECKED BY: MDP DT

SHEET
2 - 1



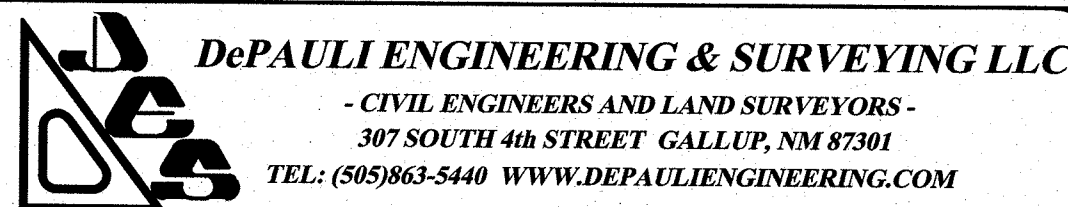
PROFILE KEYED NOTES:
① MAKE VERTICAL DEFLECTION @ STANDARD PIPE JOINTS WITHIN MANUFACTURERS RECOMMENDED LIMITS
② INSTALL 24" 11.25' ELL AND VERTICALLY DEFLECT FITTING AND PIPE JOINTS WITHIN MANUFACTURERS RECOMMENDED LIMITS AS REQUIRED FOR GRADE CHANGE.
③ INSTALL 24" 22.5' ELL AND VERTICALLY DEFLECT FITTING AND PIPE JOINTS WITHIN MANUFACTURERS RECOMMENDED LIMITS AS REQUIRED FOR GRADE CHANGE.
* POSSIBLE GRADE/ELEVATION CHANGE DEPENDING ON ACTUAL EXISTING UTILITY DEPTHS



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for the
CITY OF GALLUP
McKinley County, New Mexico

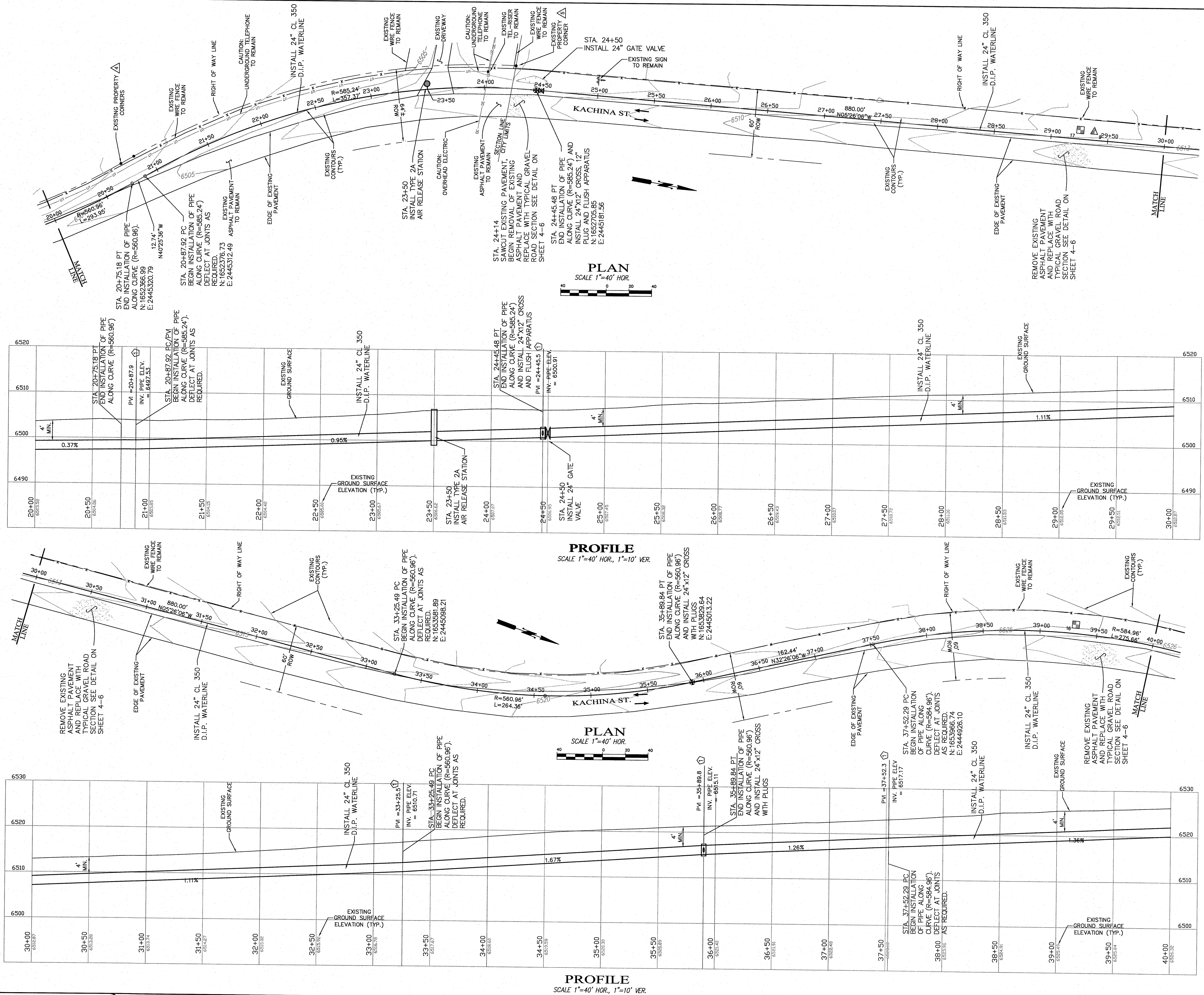
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CITY OF GALLUP
NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 27.9
FORMAL BID NO. 1903

24" PLAN & PROFILE
STA 20+00 TO STA 40+00

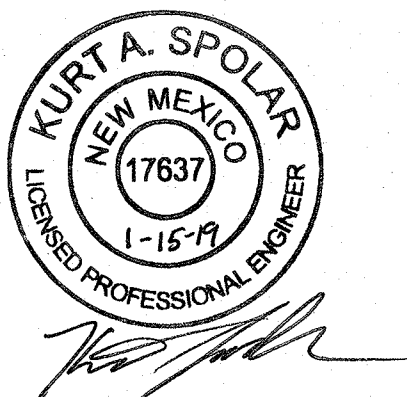
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DATE: JAN. 2019
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CHECKED BY: MDP, DT

SHEET
2 - 2



KEYED NOTES:
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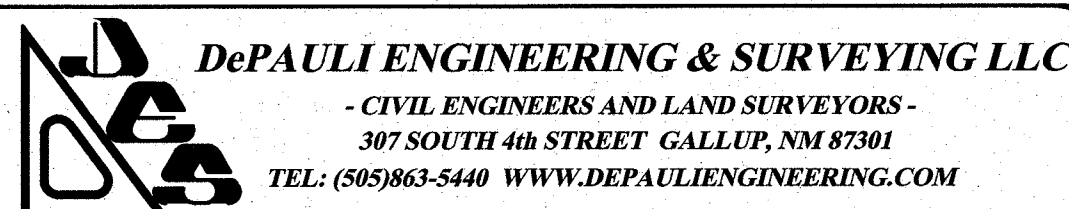


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2 - 3

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for the
CITY OF GALLUP
McKINLEY COUNTY, NEW MEXICO

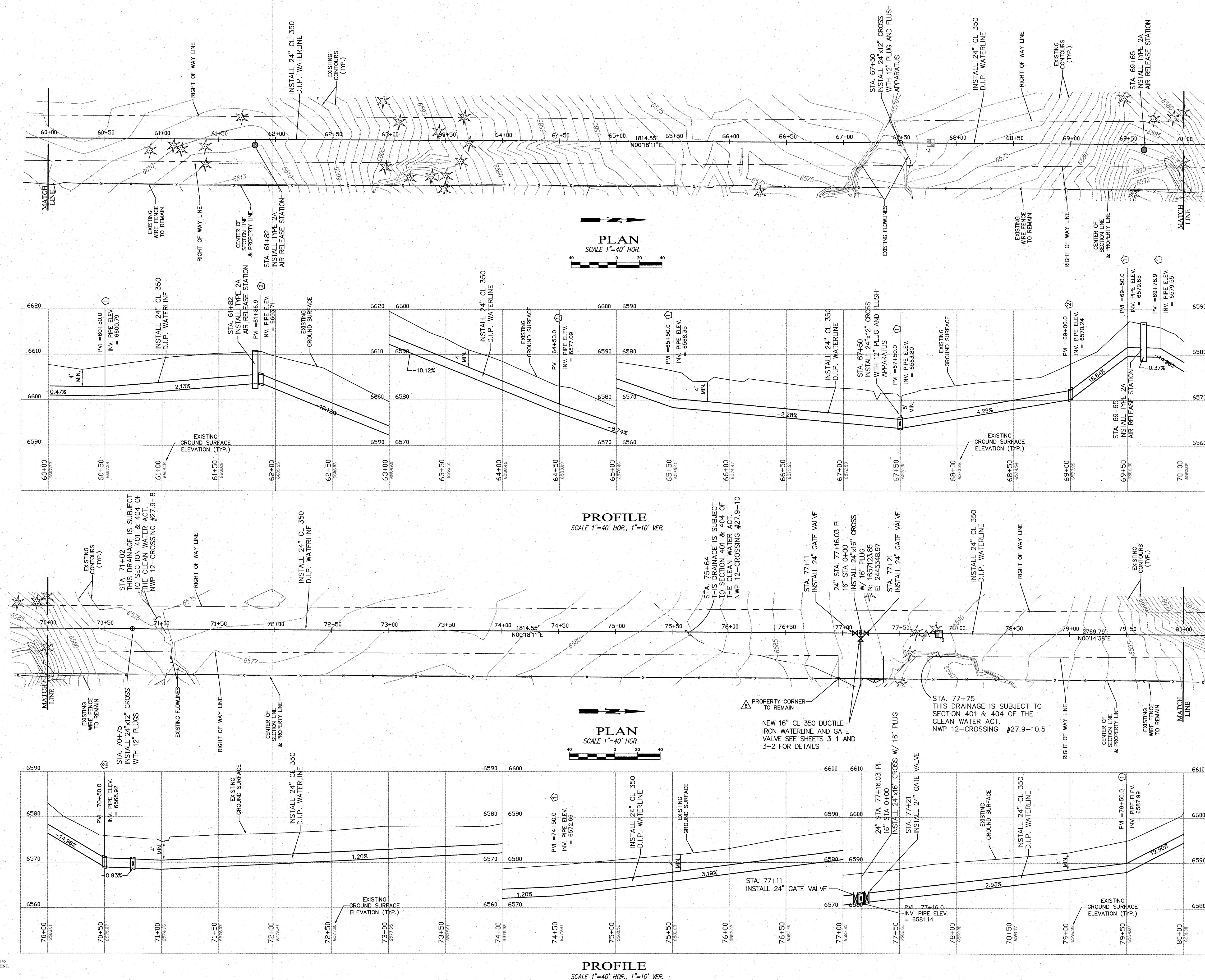
NO.	BY	DATE

CITY OF GALLUP
NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 27.9
FORMAL BID NO. 1903

24" PLAN & PROFILE
STA 60+00 TO STA 80+00

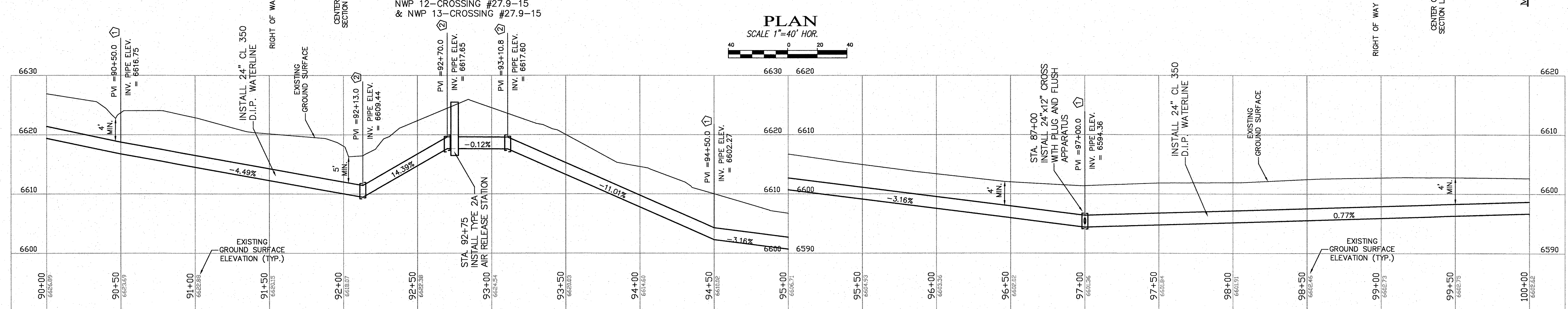
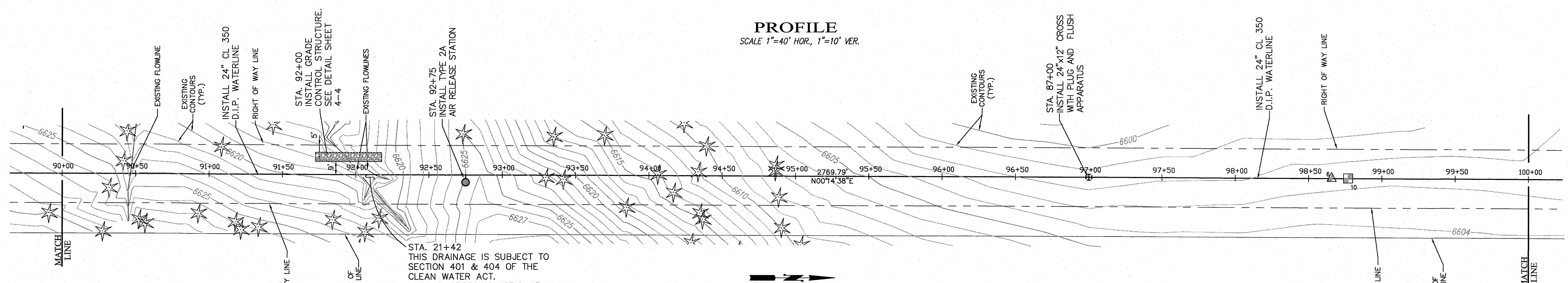
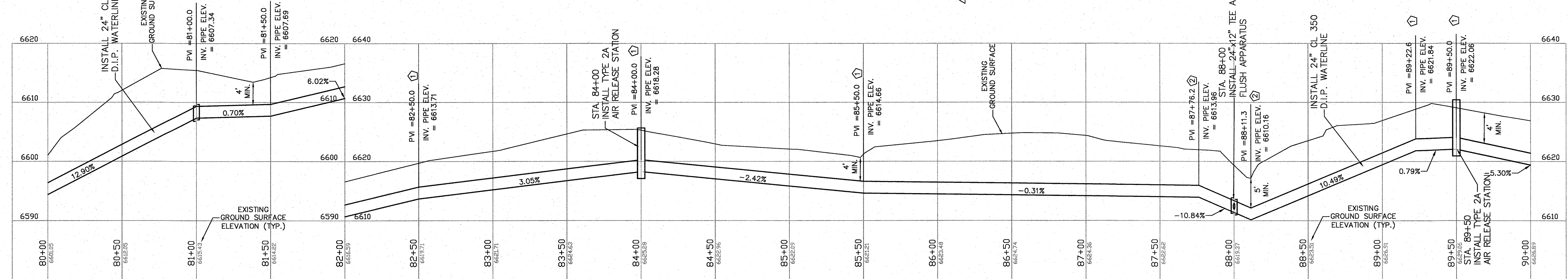
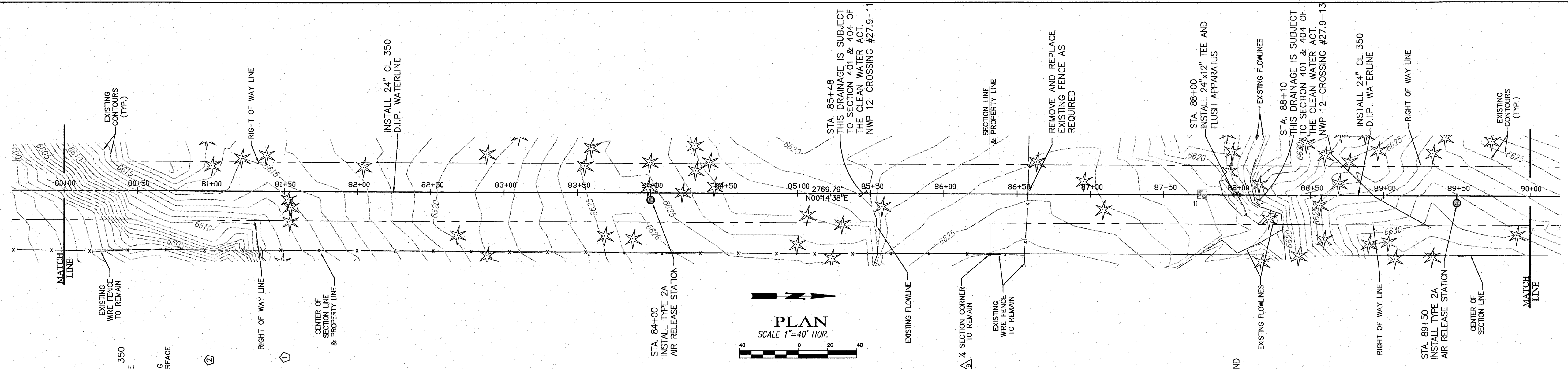
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DATE: JAN. 2019
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SHEET
2 - 4



- KEYED NOTES:
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CAUTION
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BEFORE YOU DIG!

NOTICE OF EXTENDED PAYMENT PROVISION:
THIS CONTRACT ALLOWS THE OWNER TO MAKE PAYMENT WITHIN 45
DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.

DePAULI ENGINEERING & SURVEYING LLC
- CIVIL ENGINEERS AND LAND SURVEYORS -
307 SOUTH 4th STREET GALLUP, NM 87301
TEL: (505) 863-5440 WWW.DEPAULIENGINEERING.COM



for the
CITY OF GALLUP
McKINLEY COUNTY, NEW MEXICO

NO.	BY	DATE

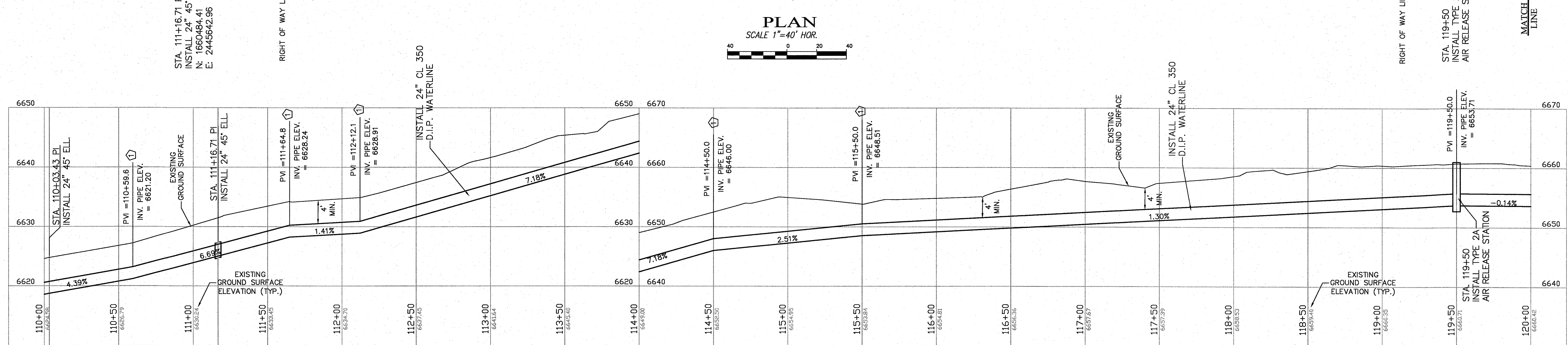
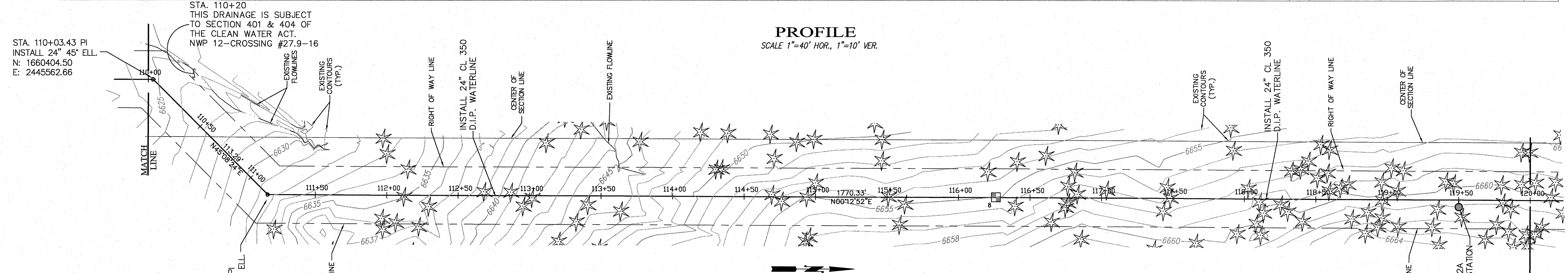
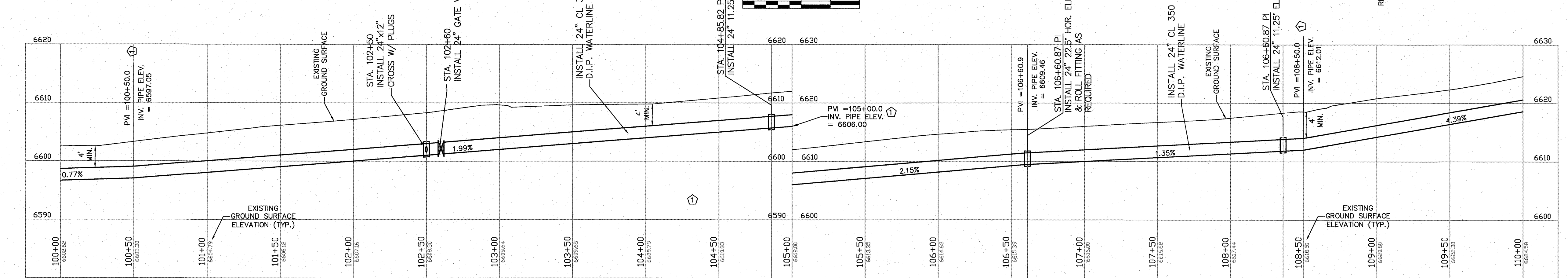
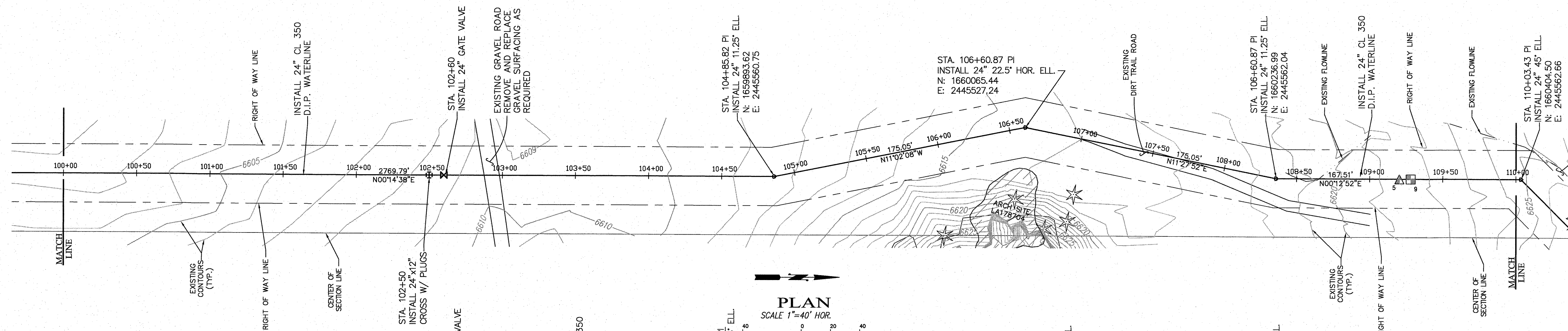
CITY OF GALLUP
NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 27.9
FORMAL BID NO. 1903

24" PLAN & PROFILE
STA 80+00 TO STA 100+00

SCALE: SHOWN
DATE: JAN. 2019
DRAWN BY: KAS
CHECKED BY: MDP/DT

SHEET
2 - 5





- KEYED NOTES:
- 1. MAKE VERTICAL DEFLECTION @ STANDARD PIPE JOINTS WITHIN MANUFACTURERS RECOMMENDED LIMITS
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TEL: (505) 863-5440 WWW.DEPAULIENGINEERING.COM

for the
CITY OF GALLUP
McKinley County, New Mexico

NO.	BY	DATE

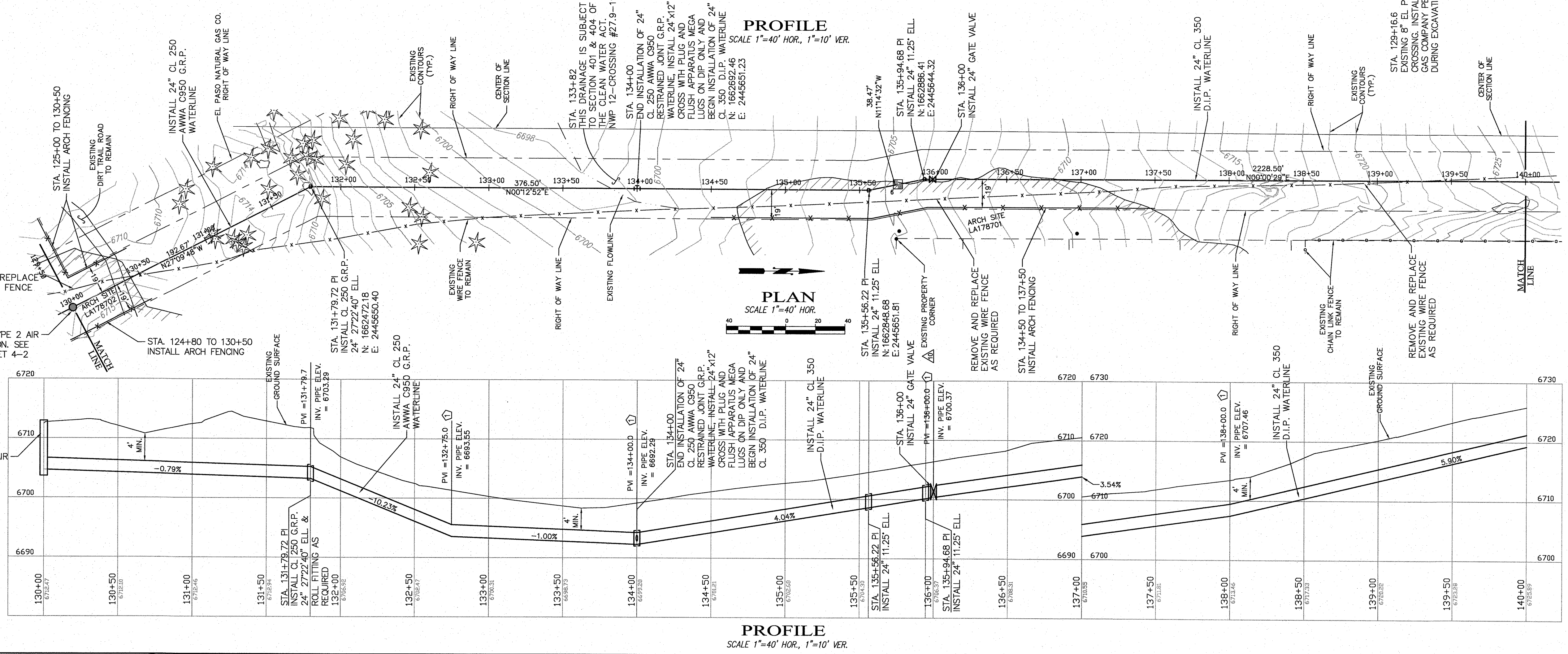
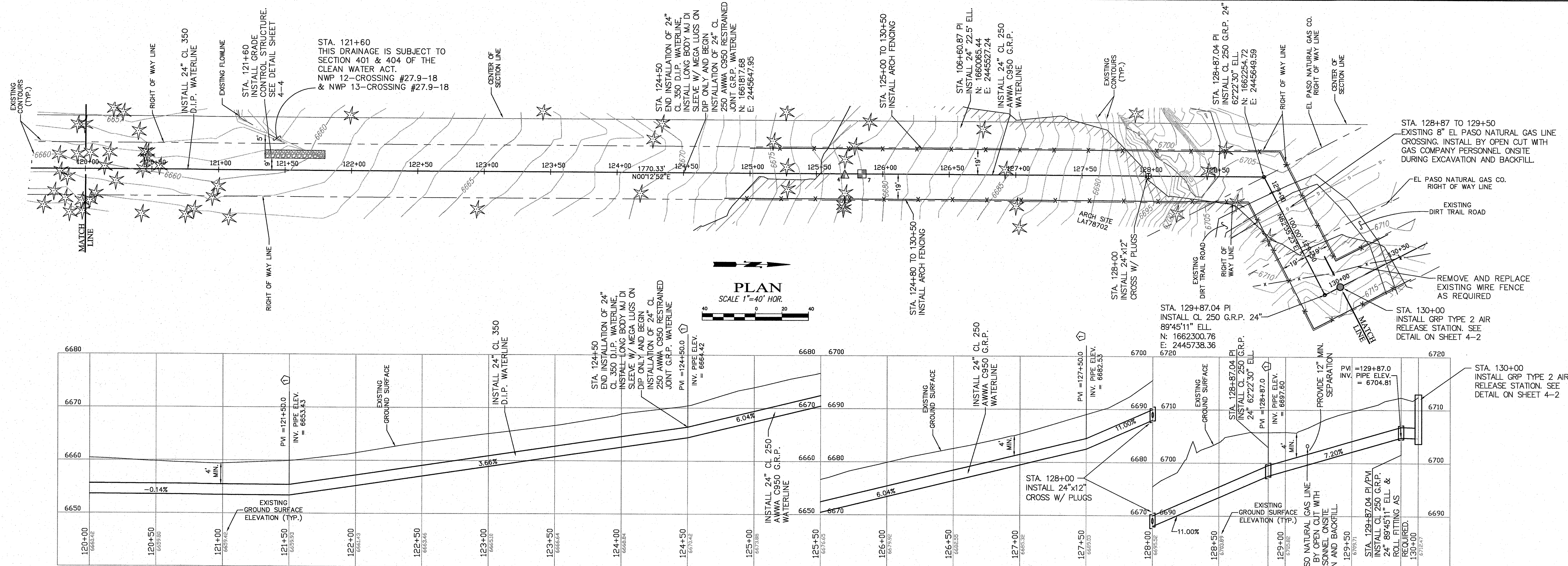
CITY OF GALLUP
NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 27.9
FORMAL BID NO. 1903

24" PLAN & PROFILE
STA 100+00 TO STA 120+00

SCALE: SHOWN
DATE: JAN. 2019
DRAWN BY: KAS
CHECKED BY: MDP DT



SHEET
2 - 6



- KEYED NOTES:**
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CAUTION
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- CIVIL ENGINEERS AND LAND SURVEYORS -
307 SOUTH 4th STREET GALLUP, NM 87301
TEL: (505) 863-5440 WWW.DEPAULIENGINEERING.COM

for the
CITY OF GALLUP
McKINLEY COUNTY, NEW MEXICO

NO.	BY	DATE

CITY OF GALLUP
NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 27.9
FORMAL BID NO. 1903

24" PLAN & PROFILE
STA 120+00 TO STA 140+00

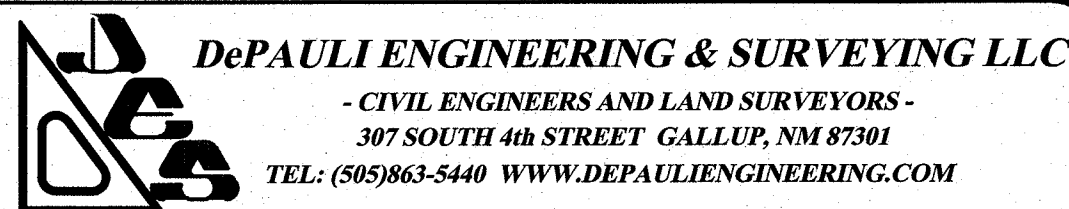
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SCALE: SHOWN
DATE: JAN. 2019
DRAWN BY: KAS
CHECKED BY: MDP/DT

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CAUTION
CALL NEW MEXICO ONE CALL
811
BEFORE YOU DIG!

NOTICE OF EXTENDED PAYMENT PROVISION:
THIS CONTRACT ALLOWS THE OWNER TO MAKE PAYMENT WITHIN 60
DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.



for the
CITY OF GALLUP
McKINLEY COUNTY, NEW MEXICO

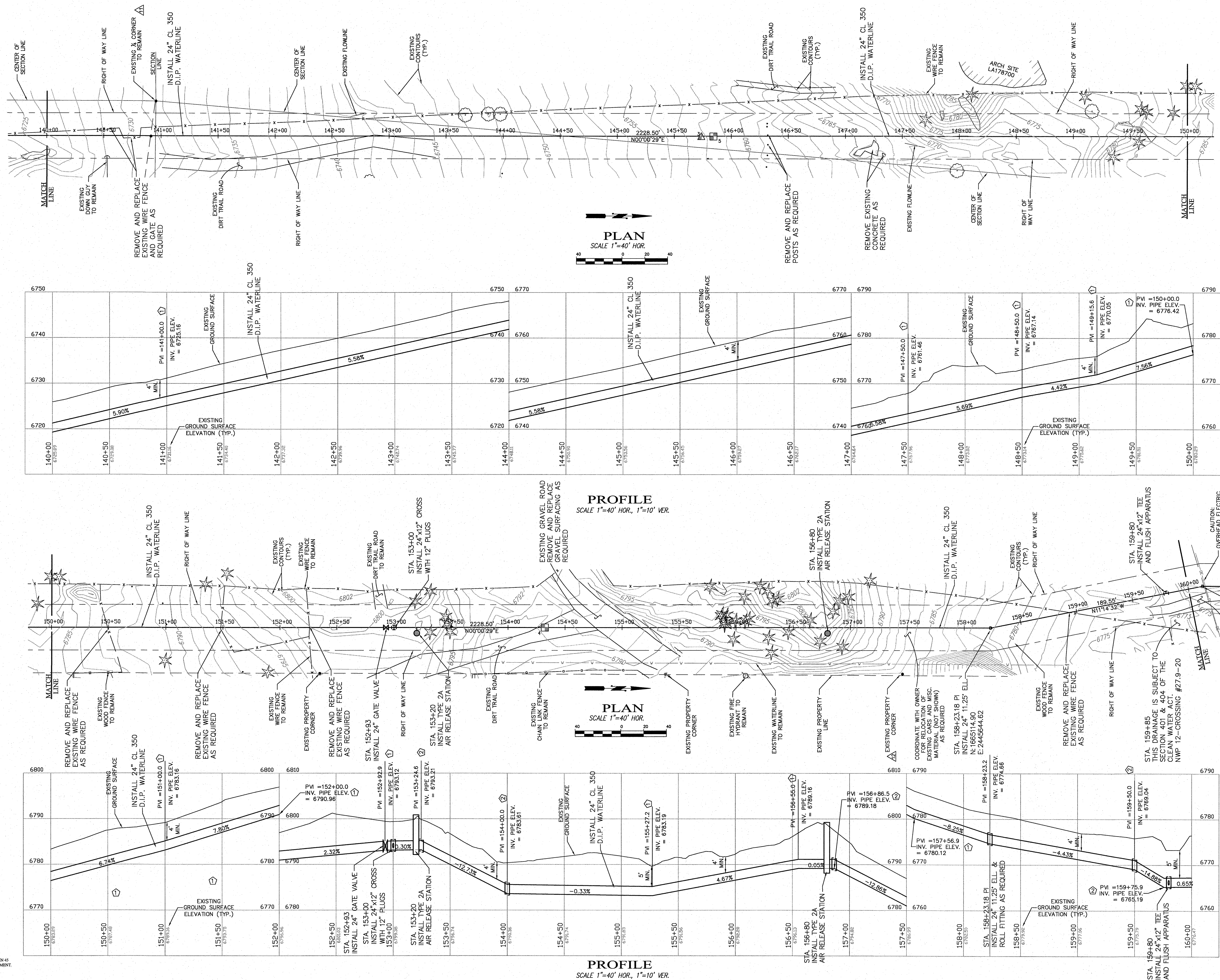
NO.	BY	DATE

CITY OF GALLUP
NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 27.9
FORMAL BID NO. 1903

24" PLAN & PROFILE
STA 140+00 TO STA 160+00

SCALE: SHOWN
DATE: JAN. 2019
DRAWN BY: KAS
CHECKED BY: MDP DT

SHEET
2 - 8



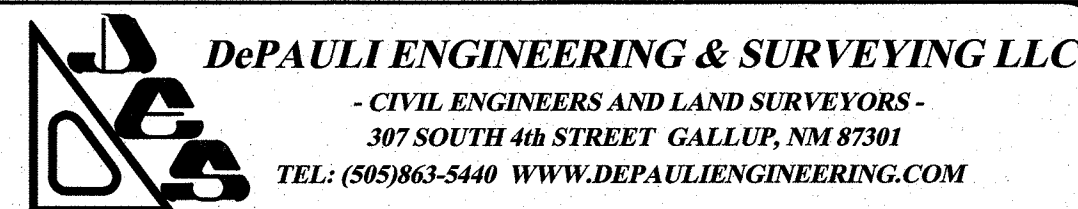
KEYED NOTES:
1 MAKE VERTICAL DEFLECTION @ STANDARD PIPE JOINTS WITHIN MANUFACTURERS RECOMMENDED LIMITS
2 INSTALL 24\" 11.25\" ELL AND VERTICALLY DEFLECT FITTING AND PIPE JOINTS WITHIN MANUFACTURERS RECOMMENDED LIMITS AS REQUIRED FOR GRADE CHANGE.
3 INSTALL 24\" 22.5\" ELL AND VERTICALLY DEFLECT FITTING AND PIPE JOINTS WITHIN MANUFACTURERS RECOMMENDED LIMITS AS REQUIRED FOR GRADE CHANGE.
* POSSIBLE GRADE/ELEVATION CHANGE DEPENDING ON ACTUAL EXISTING UTILITY DEPTHS



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CAUTION
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NOTICE OF EXTENDED PAYMENT PROVISION:
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DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.



for the
CITY OF GALLUP
McKinley County, New Mexico

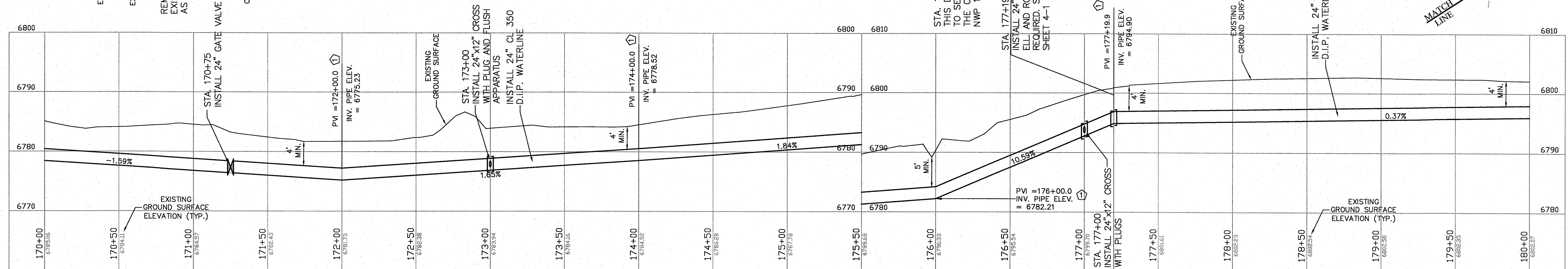
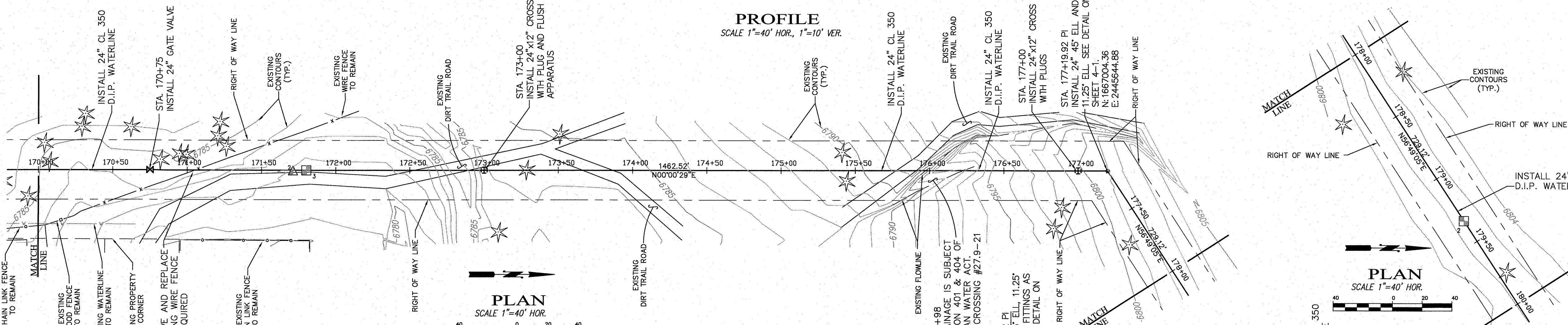
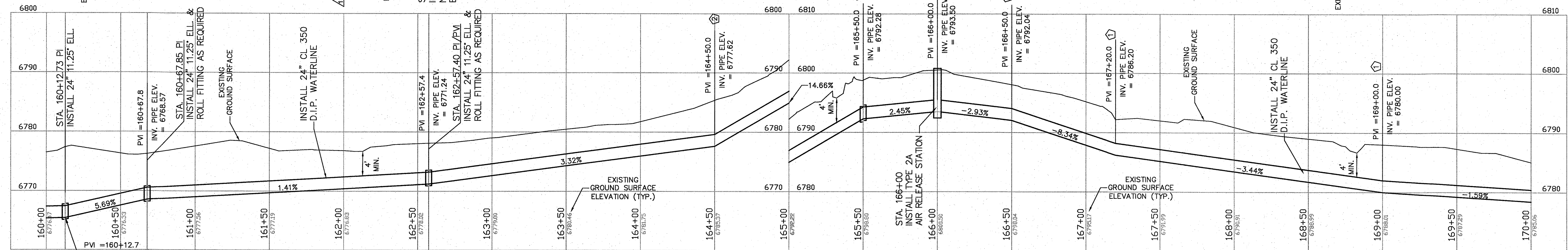
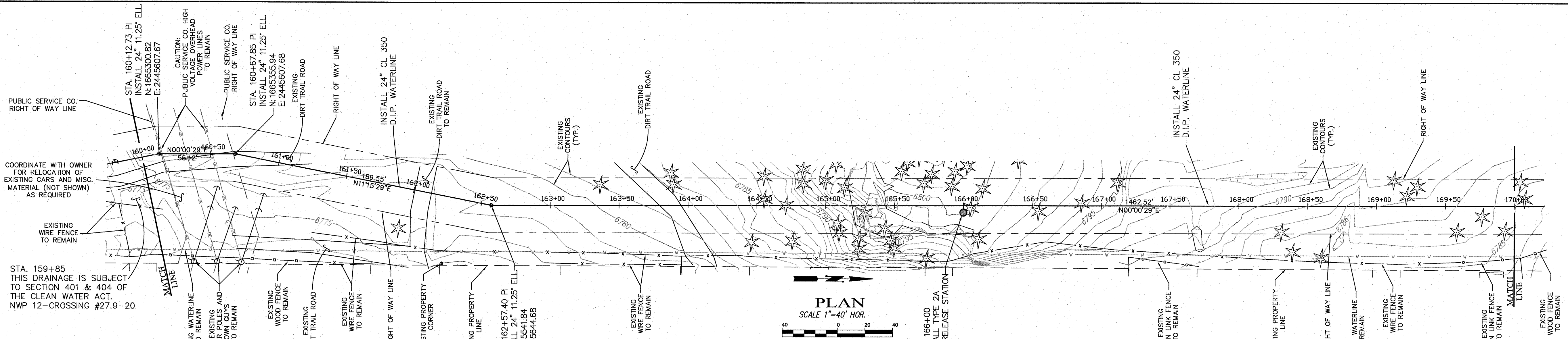
NO.	BY	DATE

CITY OF GALLUP
NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 27.9
FORMAL BID NO. 1903

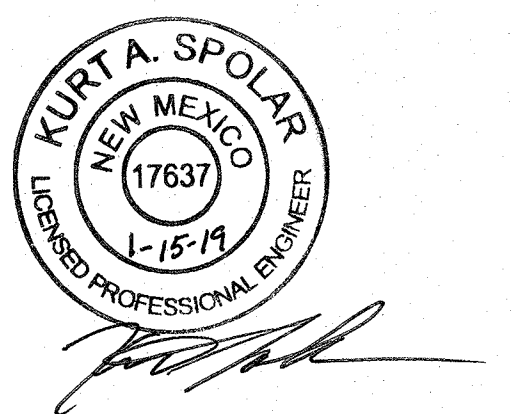
24" PLAN & PROFILE
STA 160+00 TO STA 180+00

SCALE: SHOWN
DATE: JAN. 2019
DRAWN BY: KAS
CHECKED BY: MDP/DT

SHEET
2-9

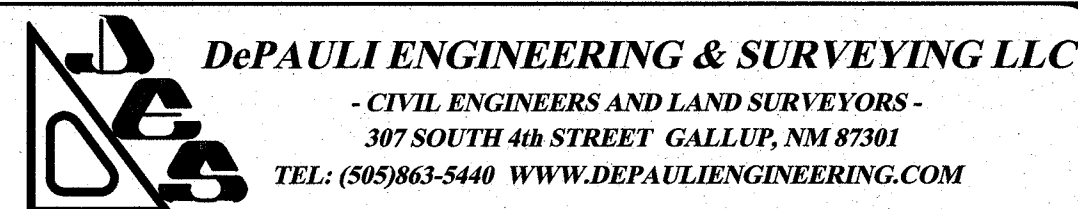


- KEYED NOTES:
- 1. MAKE VERTICAL DEFLECTION @ STANDARD PIPE JOINTS WITHIN MANUFACTURERS RECOMMENDED LIMITS
 - 2. INSTALL 24" 11.25' ELL AND VERTICALLY DEFLECT FITTING AND PIPE JOINTS WITHIN MANUFACTURERS RECOMMENDED LIMITS AS REQUIRED FOR GRADE CHANGE.
 - 3. INSTALL 24" 22.5' ELL AND VERTICALLY DEFLECT FITTING AND PIPE JOINTS WITHIN MANUFACTURERS RECOMMENDED LIMITS AS REQUIRED FOR GRADE CHANGE.
- * POSSIBLE GRADE/ELEVATION CHANGE DEPENDING ON ACTUAL EXISTING UTILITY DEPTHS



CAUTION
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NOTICE OF EXTENDED PAYMENT PROVISION:
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DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.



for the
CITY OF GALLUP
McKINLEY COUNTY, NEW MEXICO

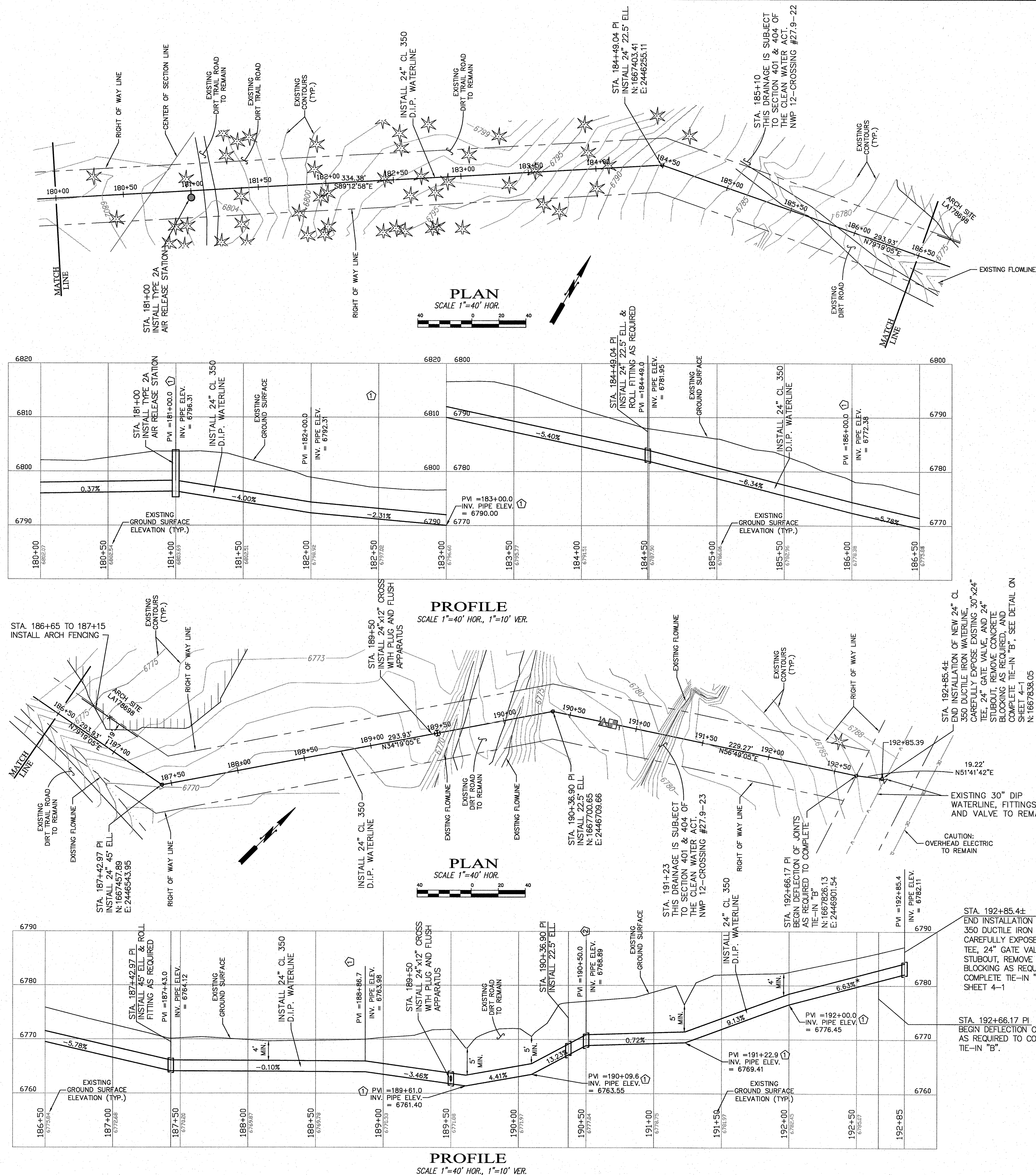
NO.	BY	DATE

CITY OF GALLUP
NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 27.9
FORMAL BID NO. 1903

24" PLAN & PROFILE
STA 180+00 TO STA 192+85

SCALE:	SHOWN
DATE:	JAN. 2019
DRAWN BY:	KAS
CHECKED BY:	MDP DT

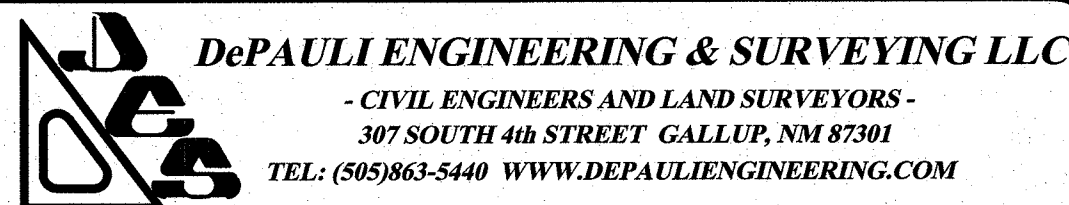
SHEET
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CAUTION
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811
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NOTICE OF EXTENDED PAYMENT PROVISION:
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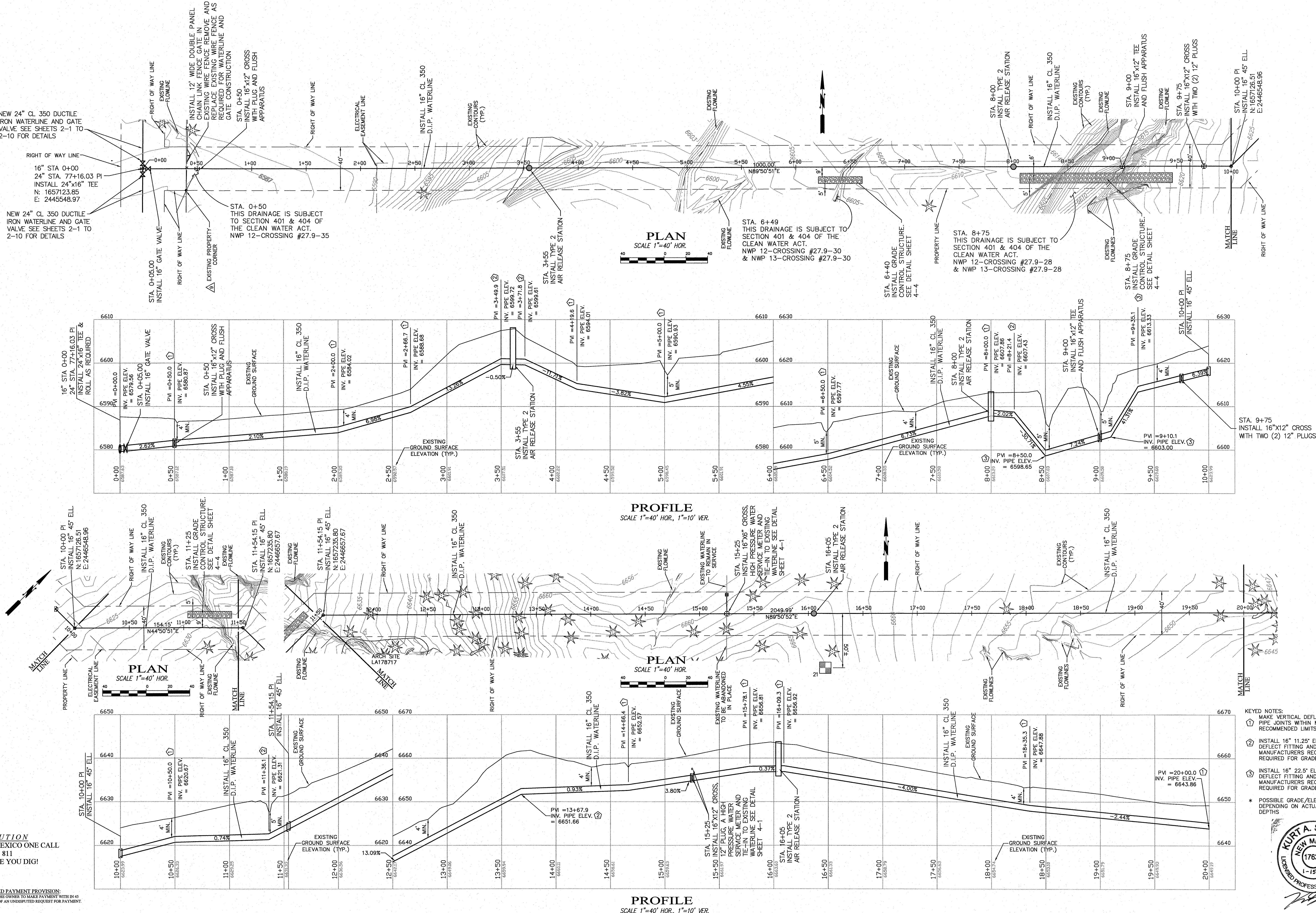
for the
CITY OF GALLUP
McKINLEY COUNTY, NEW MEXICO

NO.	BY	DATE

CITY OF GALLUP
NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 27.9
FORMAL BID NO. 1903

16" PLAN & PROFILE
STA 0+00 TO STA 20+00

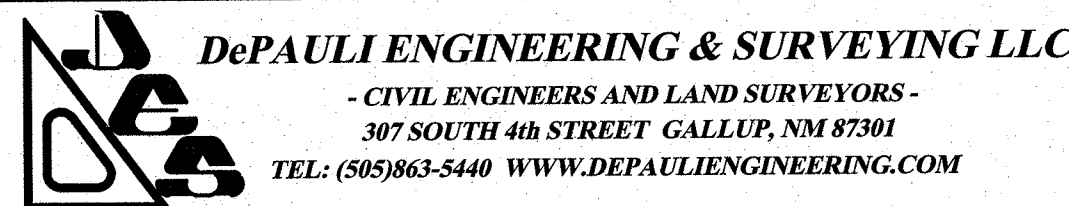
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DATE:	JAN. 2019	
DRAWN BY:	KAS	
CHECKED BY:	MDP DT	



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CAUTION
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NOTICE OF EXTENDED PAYMENT PROVISION:
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DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.



for the
CITY OF GALLUP
McKinley County, New Mexico

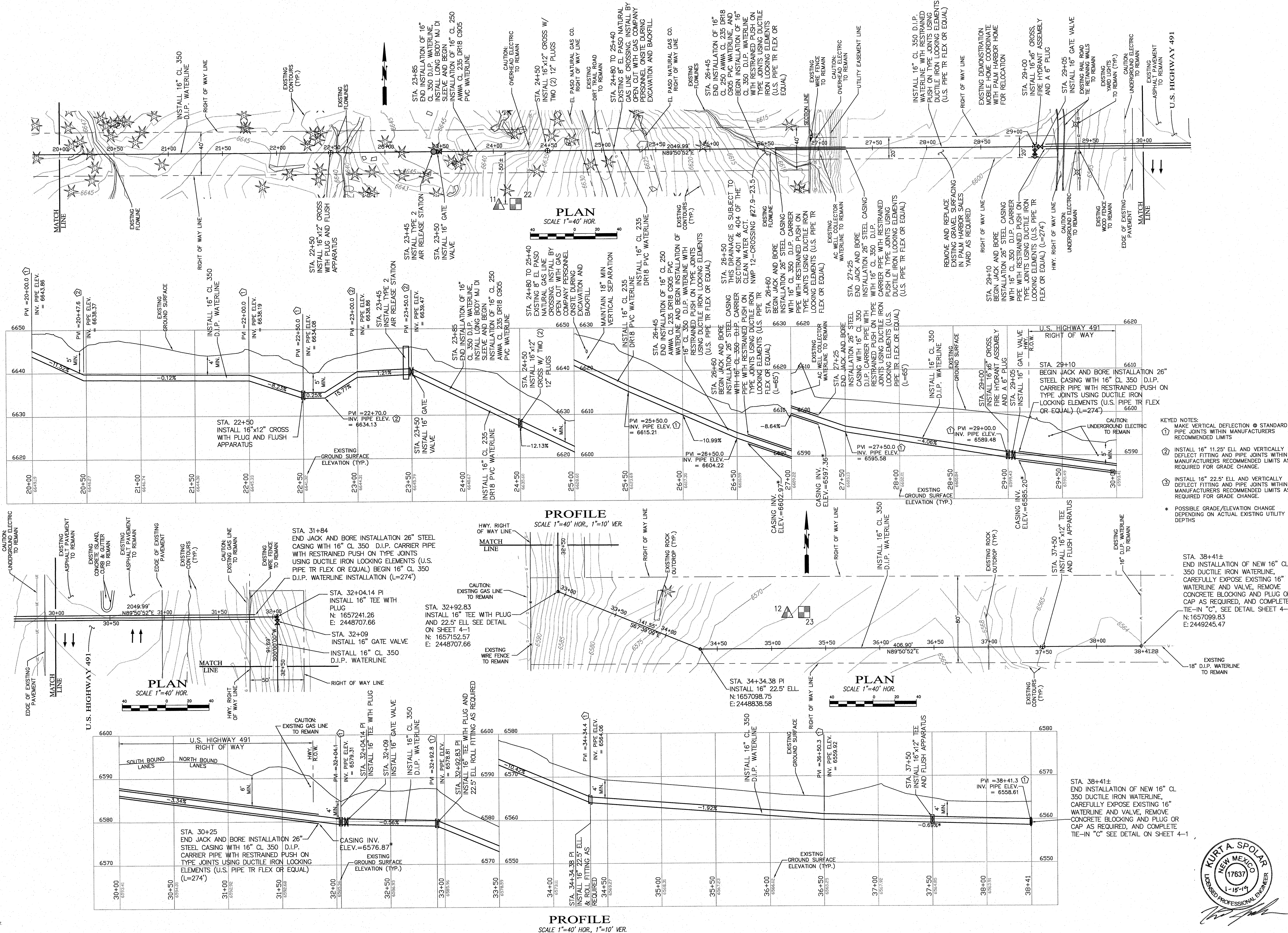
NO.	BY	DATE

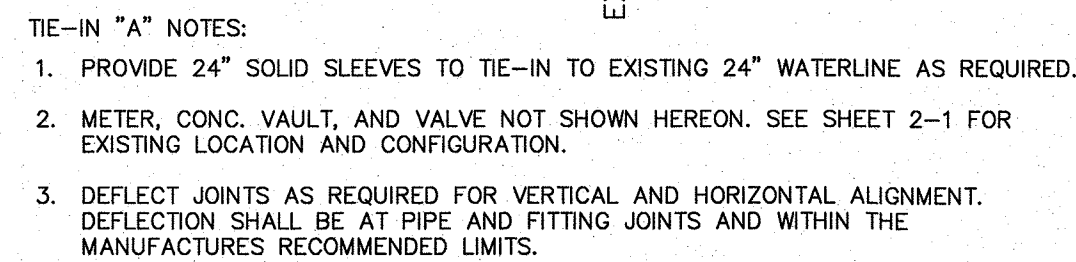
CITY OF GALLUP
NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 27.9
FORMAL BID NO. 1903

16" PLAN & PROFILE
STA 20+00 TO STA 38+41

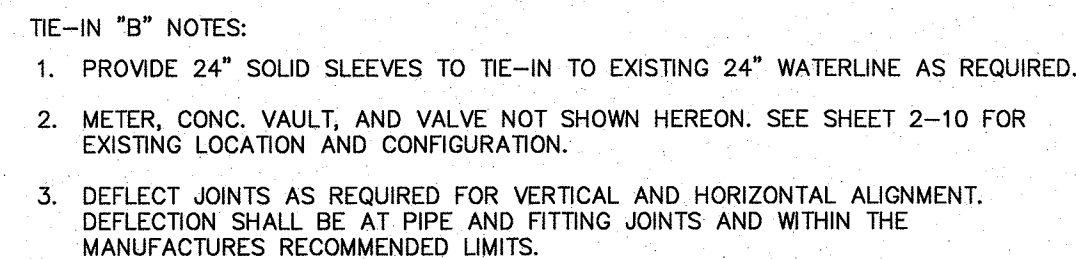
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DATE: JAN. 2019
DRAWN BY: KAS
CHECKED BY: MDP DT

SHEET
3 - 2





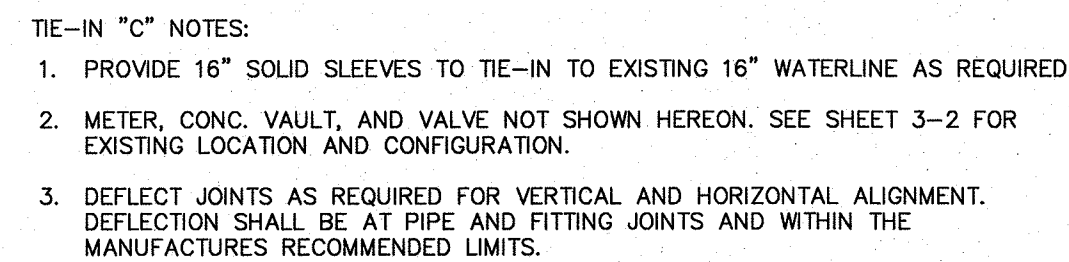
TIE-IN "A"
24" WATERLINE STA. 0+00



TIE-IN "B"
24" WATERLINE STA. 192+85

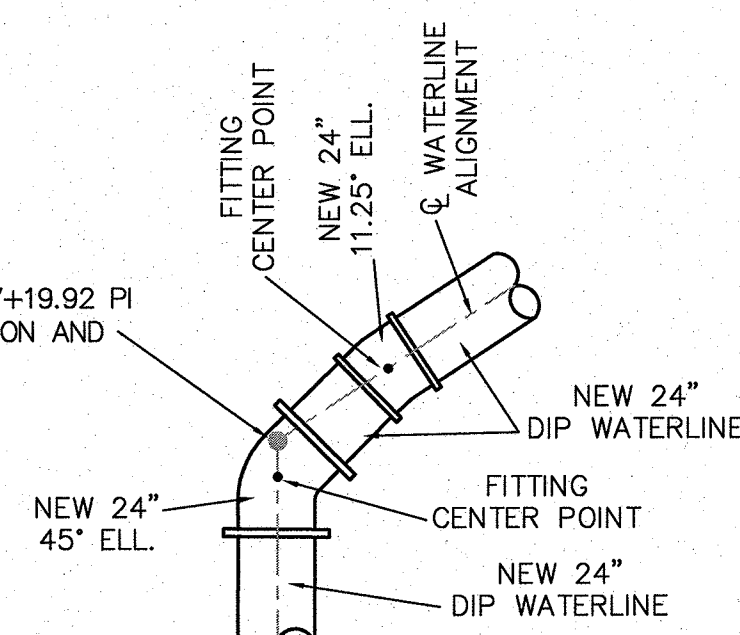
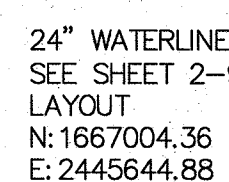
GENERAL TIE-IN NOTES:

1. EXISTING CONFIGURATIONS AT TIE-INS ARE BASED ON CONSTRUCTION DRAWINGS, ASBUILT DRAWINGS, AND SURFACE INFORMATION.
2. CONTRACTOR SHALL CAREFULLY EXPOSE AND VERIFY EXISTING LINES SIZE, LOCATION (VERTICAL AND HORIZONTAL), AND MATERIAL AS REQUIRED. PRIOR TO WATERLINE CONSTRUCTION.
3. ACTUAL FIELD LOCATION OF EXISTING WATERLINES MAY REQUIRE ALTERATIONS TO PROPOSED WATERLINE ALIGNMENT AND/OR GRADE. ADDITIONAL OR ALTERNATIVE FITTINGS SHALL BE PROVIDED AS REQUIRED.

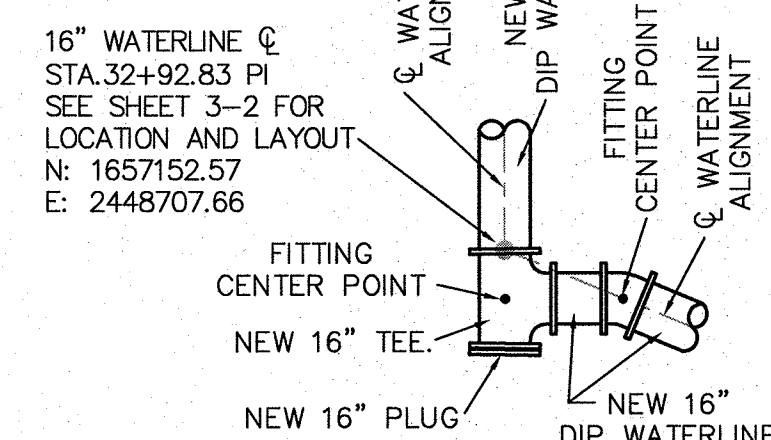


TIE-IN "C"
16" WATERLINE STA. 38+41

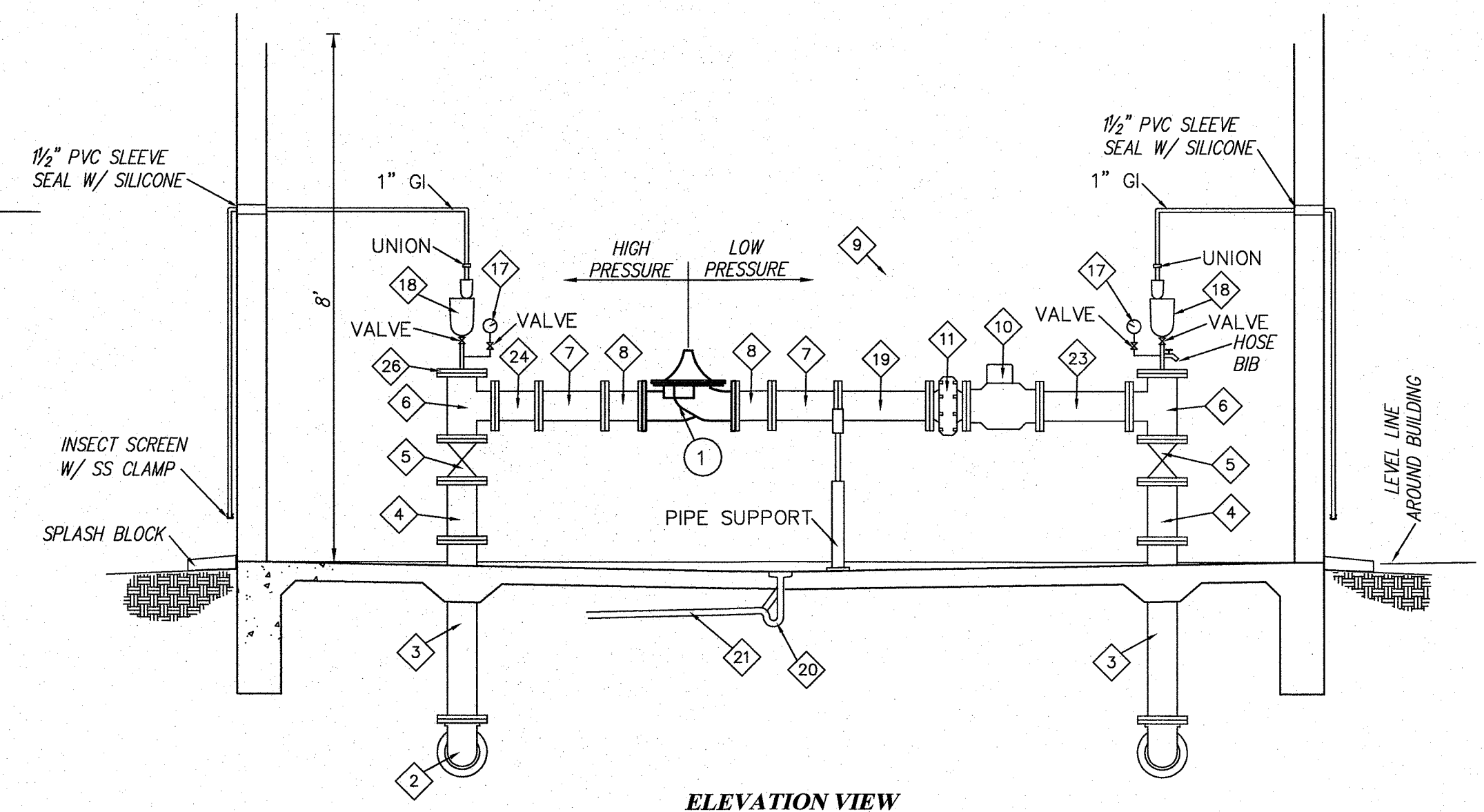
**FITTING @
24" WATERLINE STA. 46+69±**



**FITTING @
24" WATERLINE STA. 177+20±**



**FITTING @
16" WATERLINE STA. 32+93±**

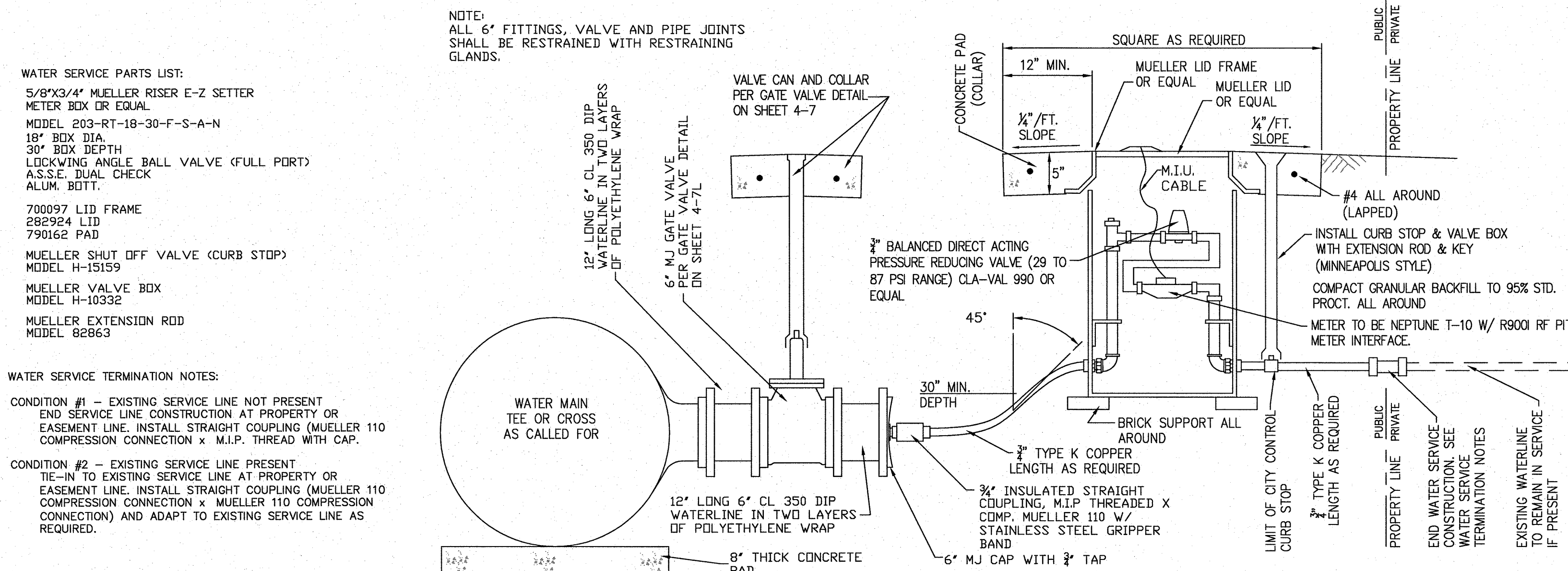


ELEVATION VIEW

PRESSURE REDUCING STATION KEYED NOTES:

PROPOSED PIPING REVISIONS		EXISTING FITTING AND PIPING	
①	REMOVE EXISTING 8" FLANGED SPOOL (NOT SHOWN) AND REPLACE WITH CITY SUPPLIED 8" FLG'D PRESSURE REDUCING VALVE CLA-VAL MODEL 90-01	①	8" CL. 350 D.I. PIPE (WRAP IN 8 MILL. POLYETHYLENE)
		②	8" 90° MJ ELL.
		③	8" FLG'D XPE CL. 350 D.I. SPOOL (WRAP IN 8 MILL. POLYETHYLENE)
		④	8" FLG'D SPOOL (1'-4" LONG)
NOTES:		⑤	8" FLG'D RESILIENT WEDGE GATE VALVE (MOUNTED IN VERTICAL RUN)
1. PROVIDE NEW GASKETS AT ALL EXISTING FLANGES OR JOINTS DISASSEMBLED FOR SPOOL REMOVAL AND PRV INSTALLATION.		⑥	8"x8" FLG'D TEE
2. DISINFECT CITY SUPPLIED VALVE AND EXISTING PIPE AND FITTINGS REMOVED FOR INSTALLATION WITH CHLORINE SOLUTION PRIOR TO INSTALLATION OR REINSTALLATION.		⑦	8"x4" FLG'D TEE
3. PROVIDE A CLA-VAL MANUFACTURERS REPRESENTATIVE FOR VALVE SET-UP AND CALIBRATION		⑧	8" FLG'D SPOOL (0'-10" LONG)
4. COORDINATE VALVE INSTALLATION WITH CITY STAFF FOR SYSTEM SET-UP AND VALVE CLOSURES.		⑩	8" FLG'D TURBINE WATER METER W/ REMOTE READING SYSTEM,
5. ALL EXISTING FITTINGS, VALVES, SPECIALS, & PIPING ARE RATED FOR A 250 PSI WORKING PRESSURE.		⑪	8" FLG'D NEPTUNE STRAINER OR EQUAL
		⑫	4" BLIND FLANGE TAPPED FOR 2" NPT
		⑬	2" FMLXFML NPT GALV. STEEL 90° ELL.
		⑭	2" FULL BORE THREADED END BALL VALVE. JAMESBURY VALVE-LINE OR EQUAL.
		⑮	2" NPT GALV. STEEL PIPE LENGTH AS REQUIRED
		⑯	2" NPT PRESSURE REDUCING VALVE, CLA-VAL MODEL 990
		⑰	LIQUID FILLED PRESSURE GAUGE
		⑱	1" DUAL BODY COMBINATION AIR VALVE
		⑲	8" FLG'D SPOOL (LENGTH AS REQUIRED)
		⑳	C.I. FLOOR DRAIN W/ TRAP FOR 2" PIPE
		㉑	2" SCH. 40 PVC DRAIN
		㉒	8" FLG'D SPOOL (2'-0" LONG)
		㉓	8" FLG'D SPOOL (1'-0" LONG)
		㉔	2" NPT GALV. STEEL COUPLING
		㉕	8" TAPPED BLIND FLANGE

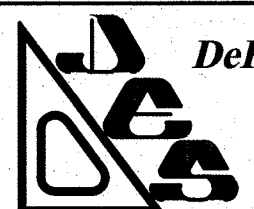
KACHINA PRV STATION VALVE INSTALLATION
SCALE: 1"=3'



HIGH PRESSURE WATER SERVICE METER DETAIL

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DePAULI ENGINEERING & SURVEYING LLC
- CIVIL ENGINEERS AND LAND SURVEYORS -
307 SOUTH 4th STREET GALLUP, NM 87301
TEL: (505)863-5440 WWW.DEPAULIENGINEERING.COM



for the
CITY OF GALLUP
McKINLEY COUNTY, NEW MEXICO

NO.	BY	DATE

CITY OF GALLUP
NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 27.9
FORMAL BID NO. 1903

TIE-IN AND FITTING DETAILS

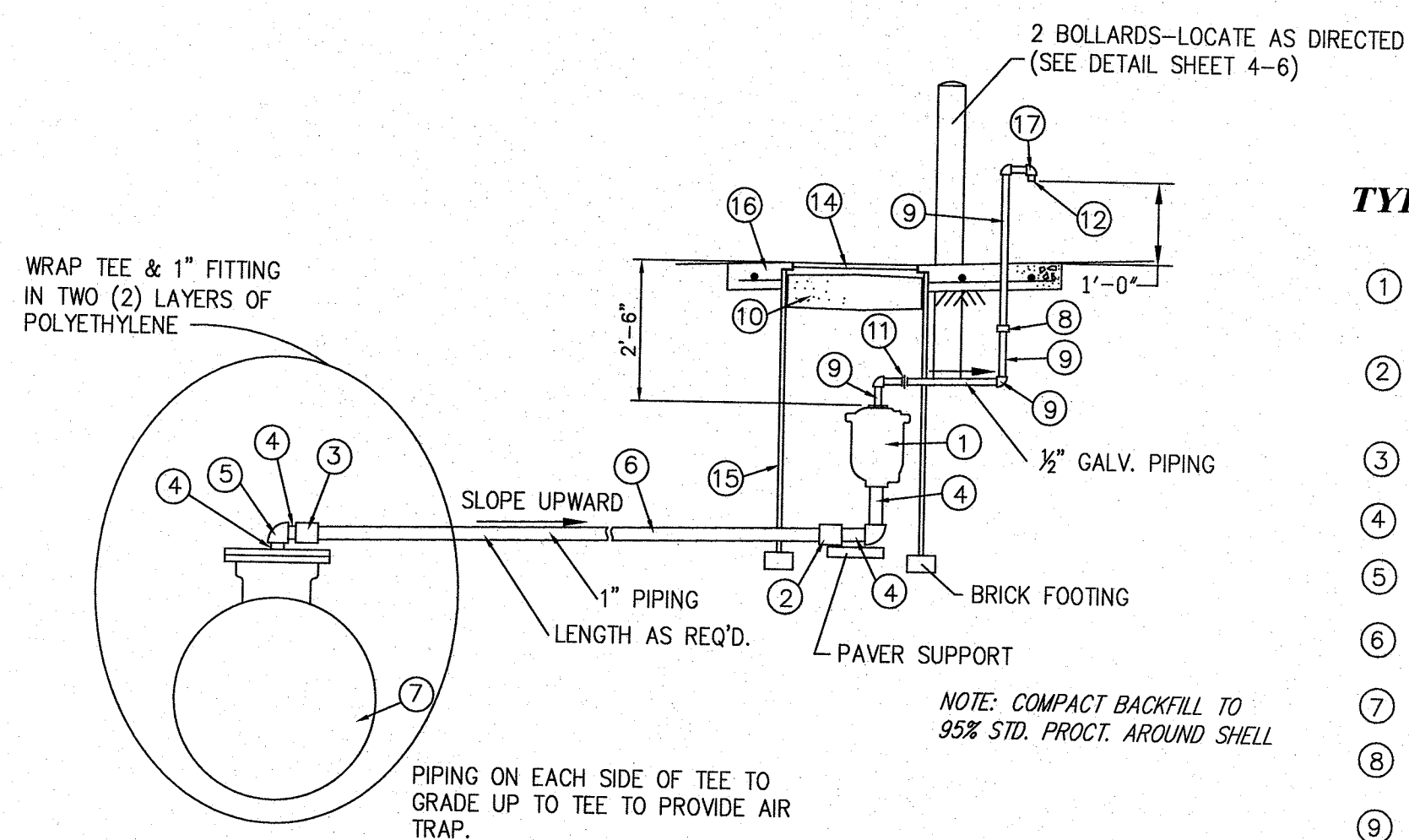
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DATE: JAN. 2019

DRAWN BY: KAS

CHECKED BY: MDP DT

SHEET
4-1

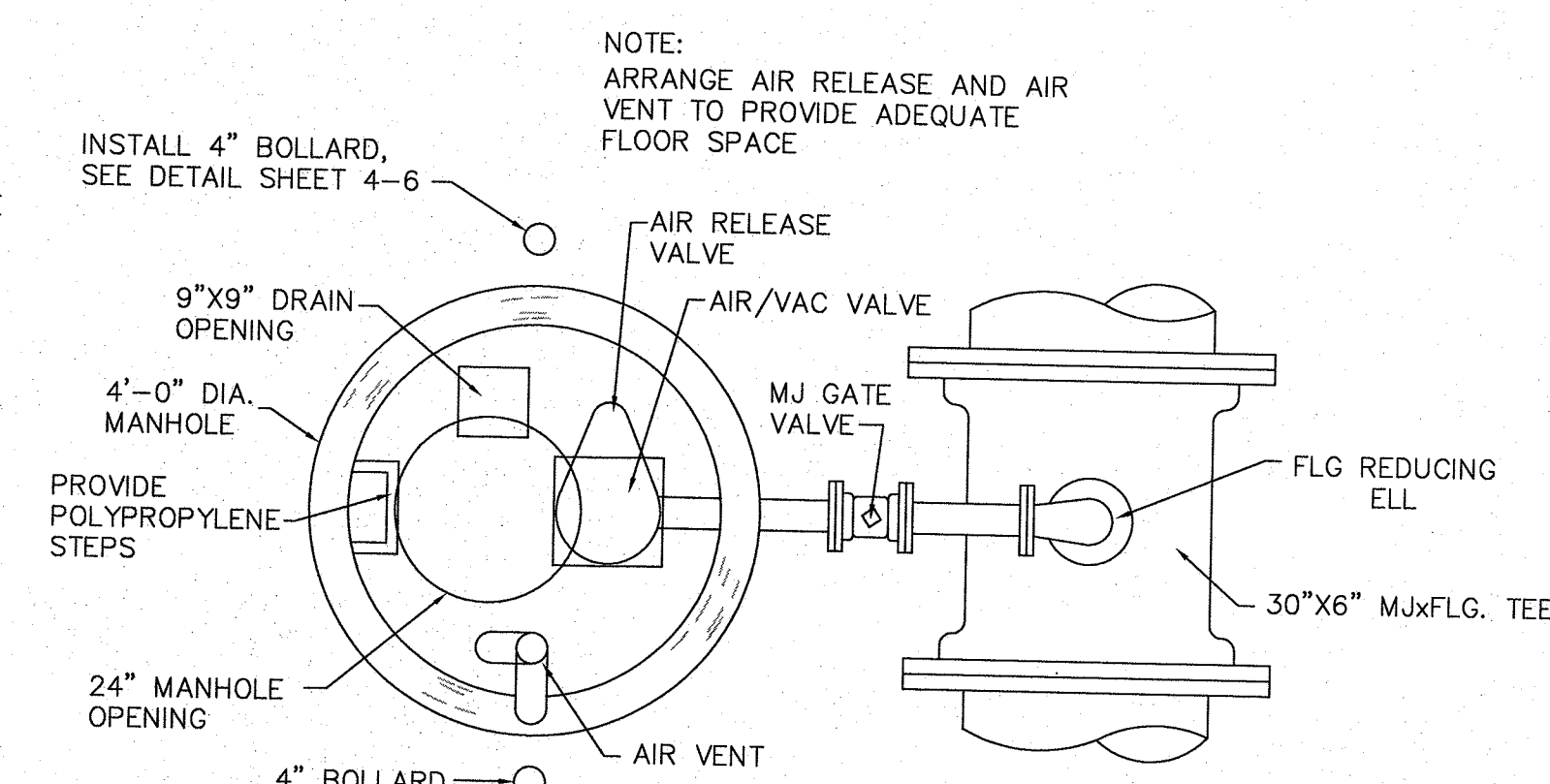


TYPE 1A AIR RELEASE DETAIL
NTS

- | | |
|---|---|
| <p>① 1" AIR RELEASE VALVE AS VAL-MATIC V-38, 150 PSI CWP OR EQUAL</p> <p>② 1" MUELLER 300 BALL CURB VALVE W/ IPS THRDS</p> <p>③ 1" MUELLER CORP. STOP W/ IPS THRDS</p> <p>④ THR'D. BRASS NIPPLE (L=3" MIN.)</p> <p>⑤ THR'D BRASS ELL</p> <p>⑥ 1" SCHD. 80 PVC IPS THR'D ENDS</p> <p>⑦ 12"X6" M.J. TEE W/ TAPPED PLUG</p> <p>⑧ COUPLING</p> <p>⑨ ½" GI PIPE AND FITTING WRAPPED W/ TAPECOAT BELOW GROUND</p> | <p>⑩ 4" FOAM INSULATING PAD AS MUELLER 790119 OR EQUAL</p> <p>⑪ ½" UNION FOR GALV. PIPE</p> <p>⑫ ½" NIPPLE W/ SS INSECT SCREEN</p> <p>⑬ 1" MUELLER CORP. STOP W/ IPS THRDS</p> <p>⑭ 18" FLAT LID W/ SIDE MOUNT PENTAGON LOCK NUT.</p> <p>⑮ 21"X42"X½" PVC SHELL AS MUELLER S02142 OR EQUAL</p> <p>⑯ 4" SLAB W/ #4 @ 8" EA WAY, PROVIDE CIRCULAR #4 W/ LAP AROUND SHELL, EXTEND SLAB MIN. 8" BEYOND SHELL & RISER</p> <p>⑰ 1" THR'D GI ELL</p> |
|---|---|

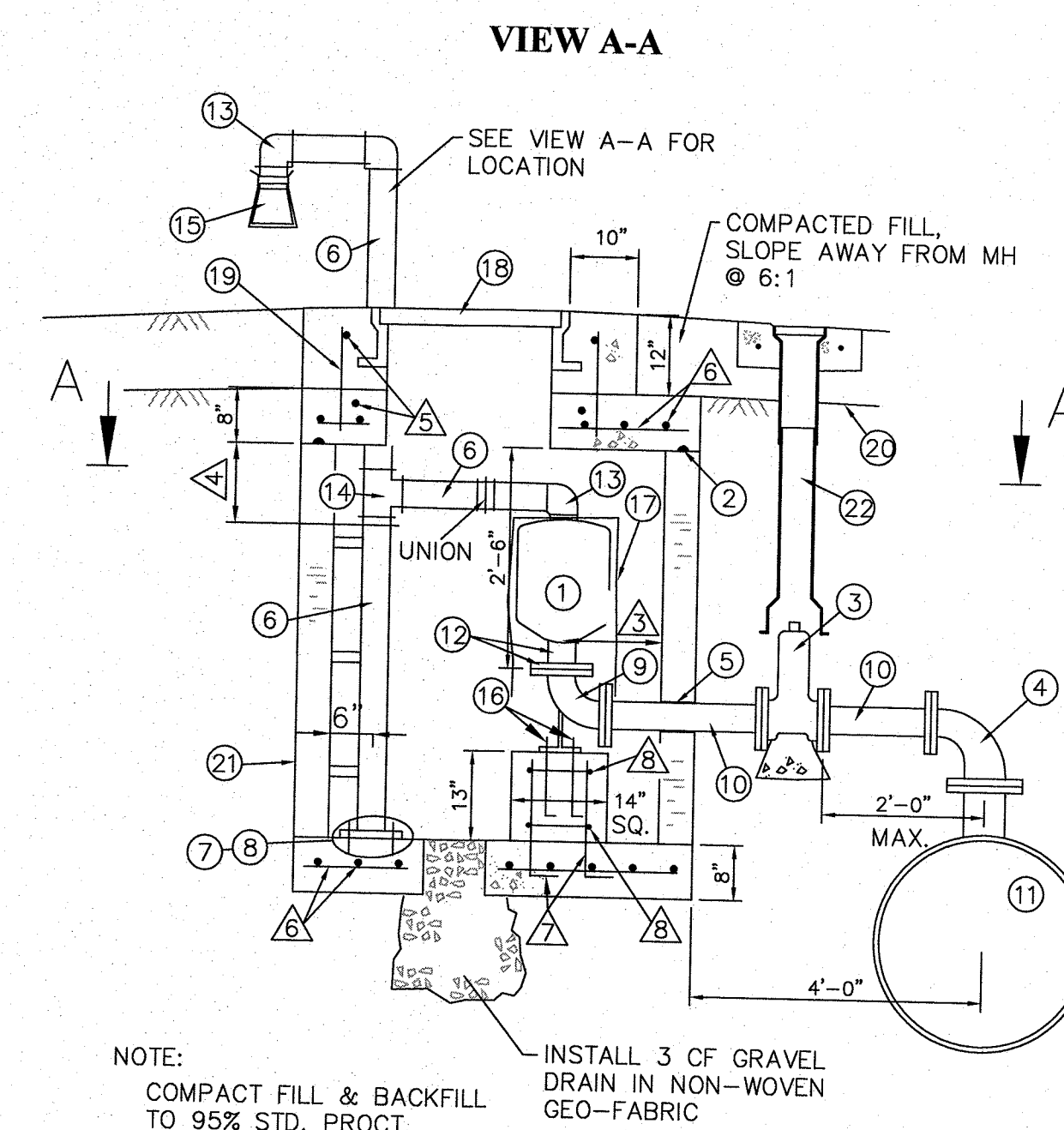
TYPE 2A KEYED ARV NOTES:

- ① PIPING ON EACH SIDE OF TEE TO GRADE. UP TO TEE TO PROVIDE AIR TRAP ON HILL TOPS. ARV TEES ON SLOPES MAY BE SLOPED UP TO 6°.
- ② EXTRA #5 ALL AROUND COVER OR PIPE W/ 12" LAP
- ③ MINIMIZE DISTANCE TO PROVIDE VAULT SPACE WITHOUT COMPROMISING ACCESS TO FLANGE BOLTS ETC.
- ④ MINIMIZE DISTANCE
- ⑤ #5 ALL AROUND W/ 12" LAP
- ⑥ #506" EACH WAY, CENTER IN SLAB
- ⑦ 4-#5 'L' SHAPED REBAR
- ⑧ 2-#4 HOOPS W/ LAP

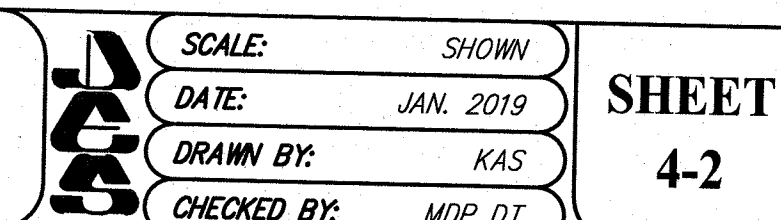


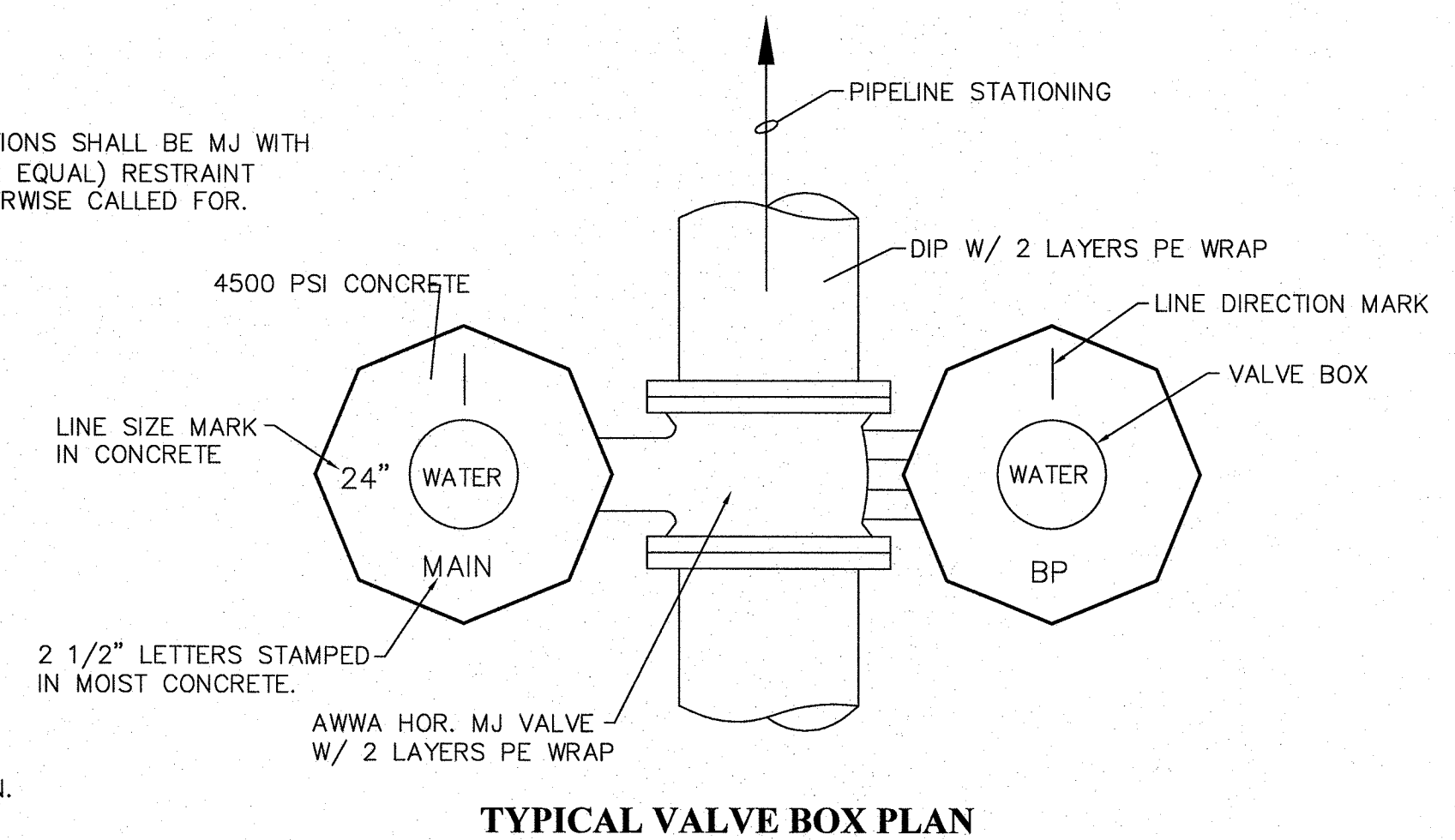
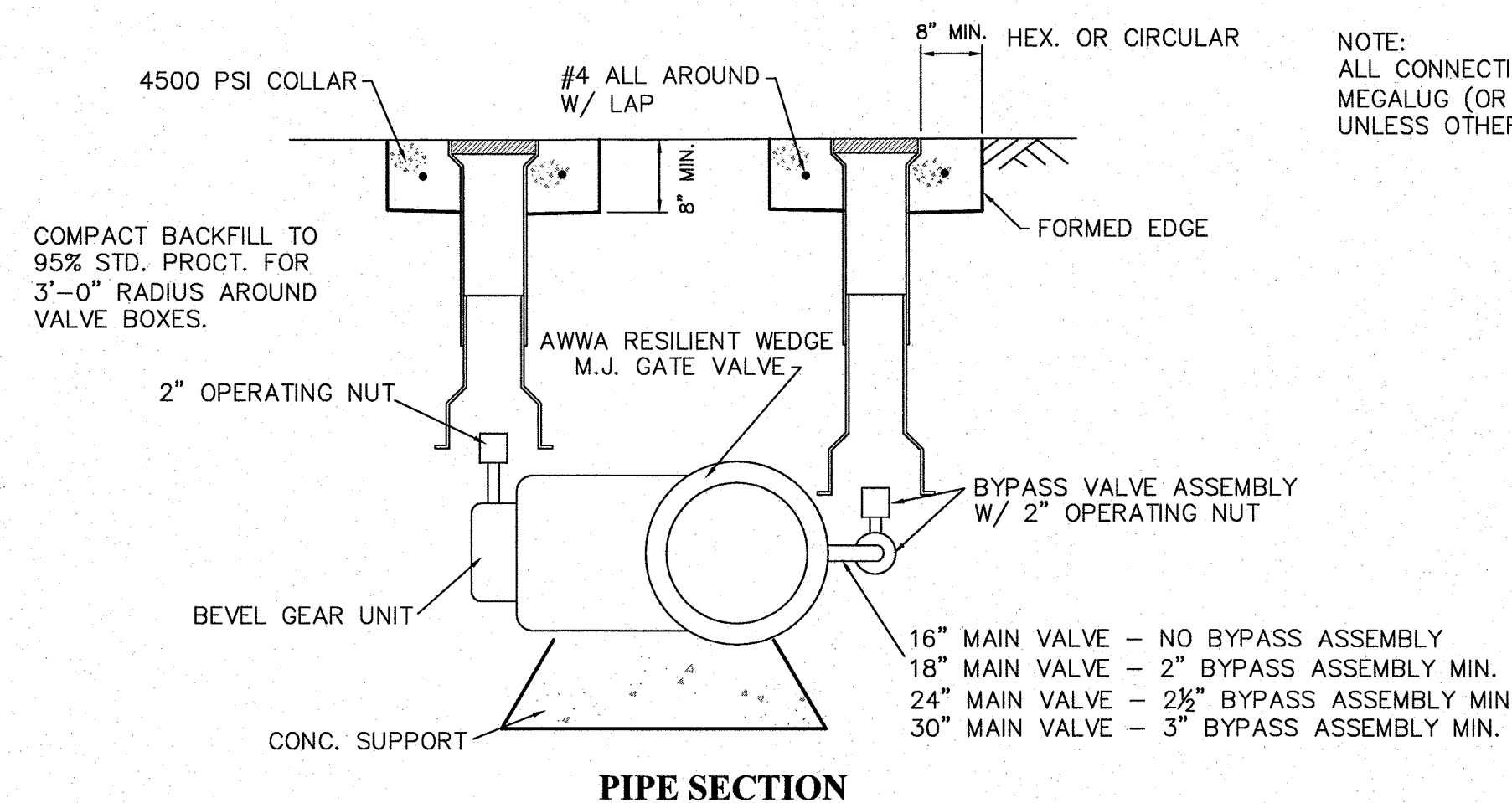
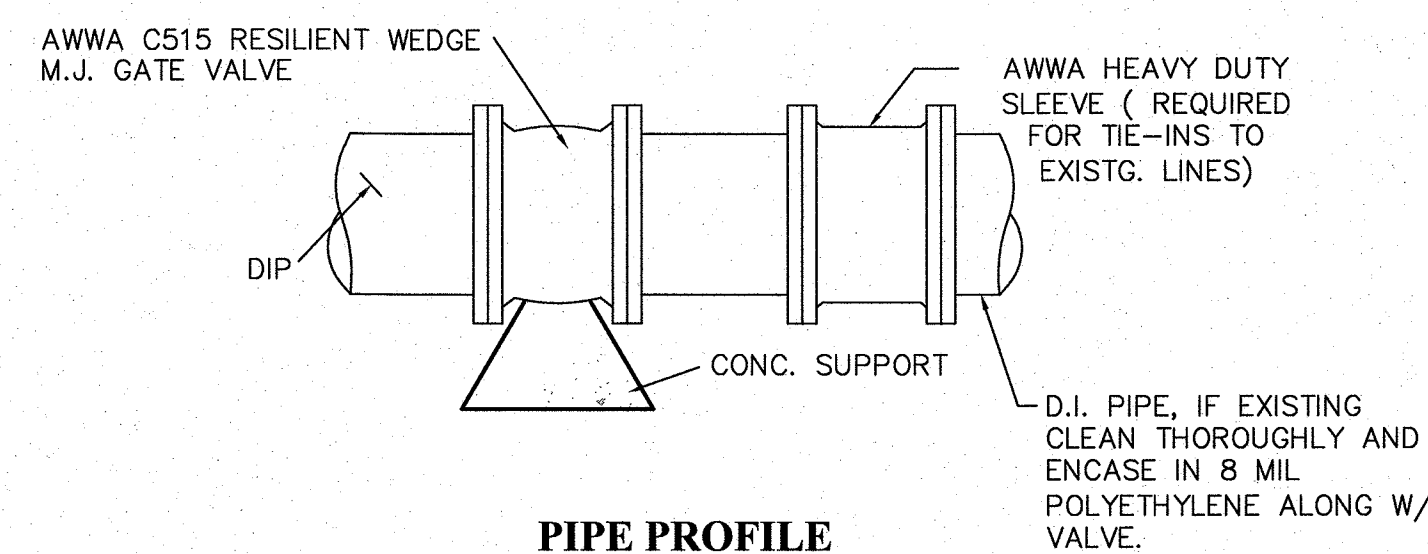
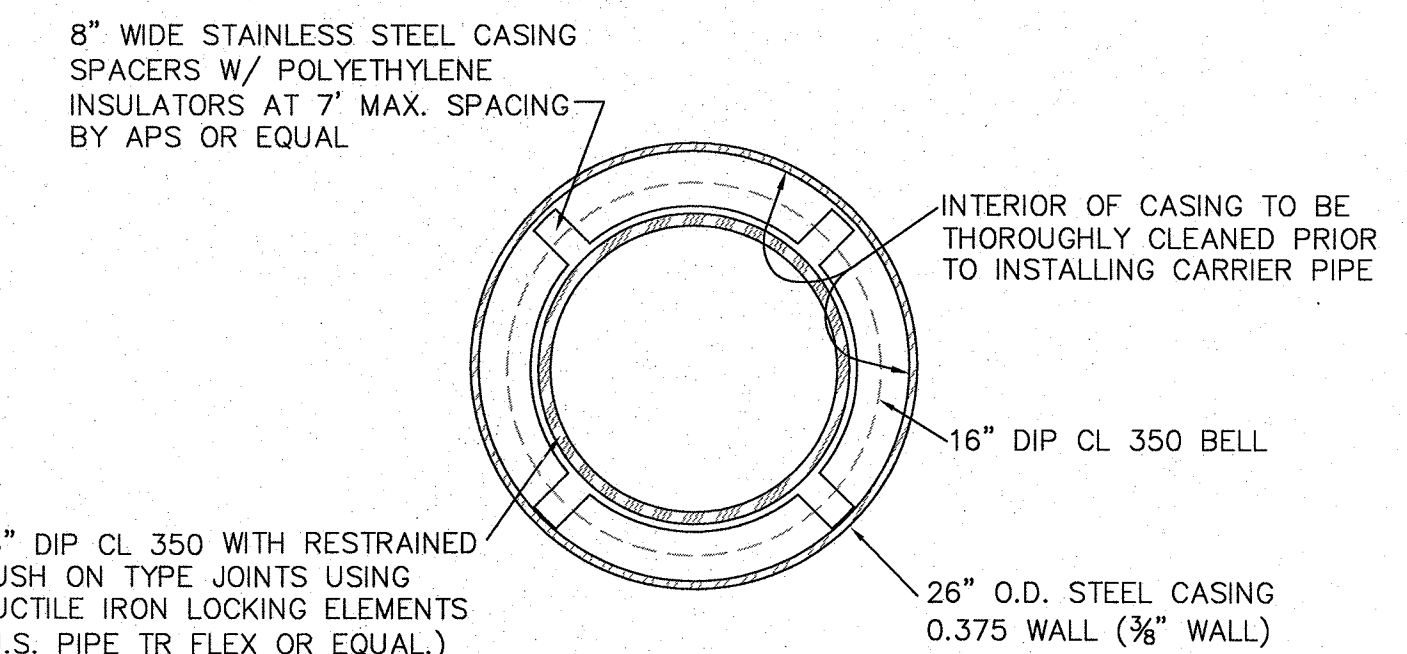
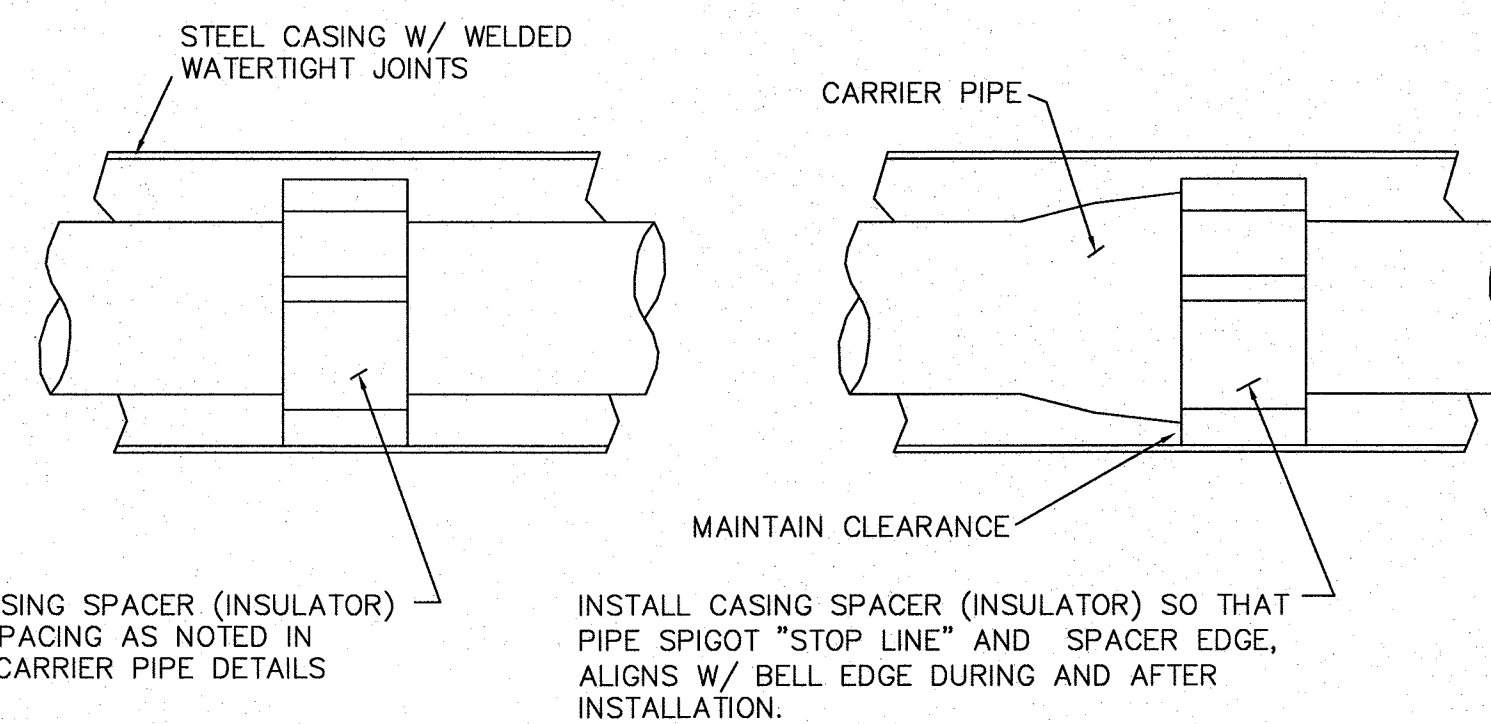
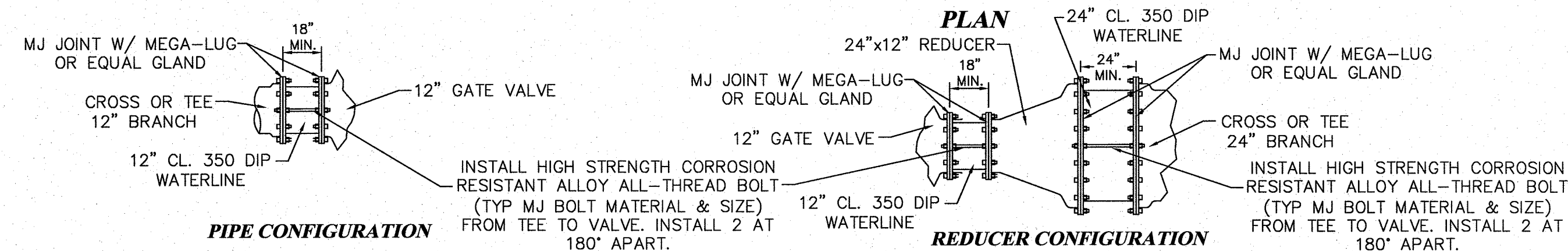
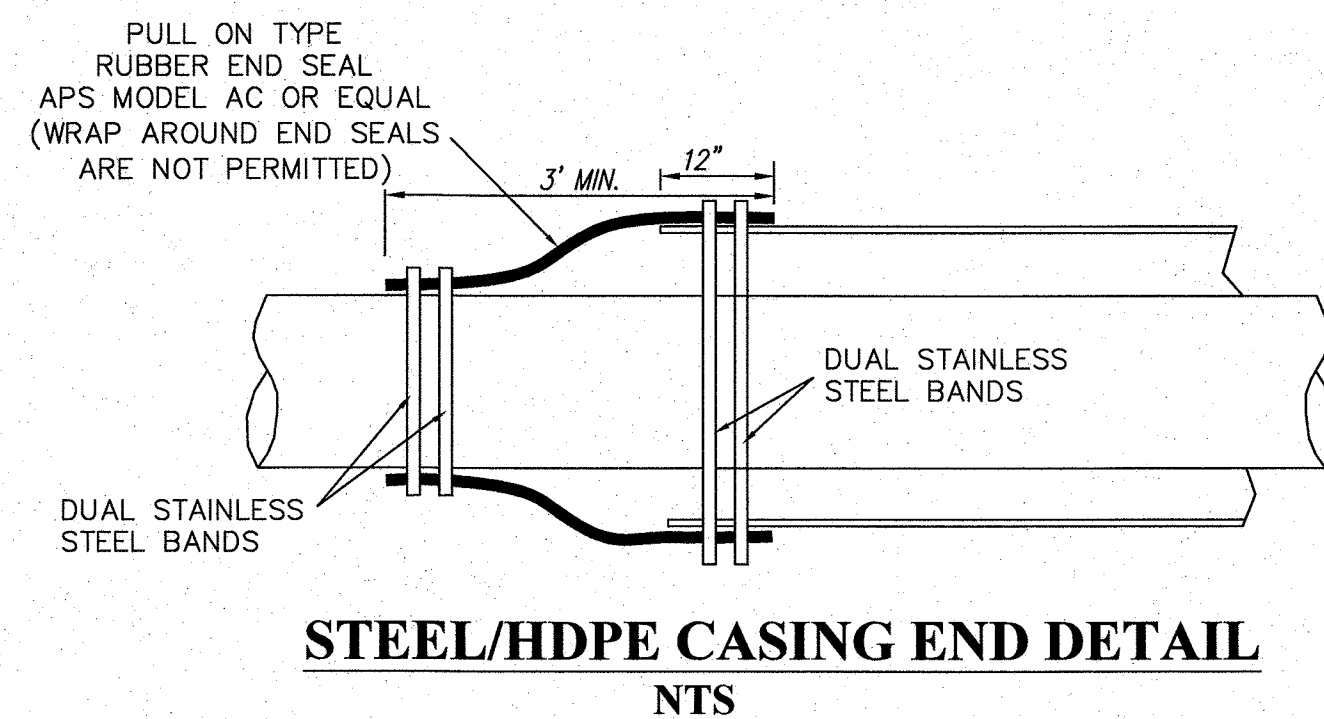
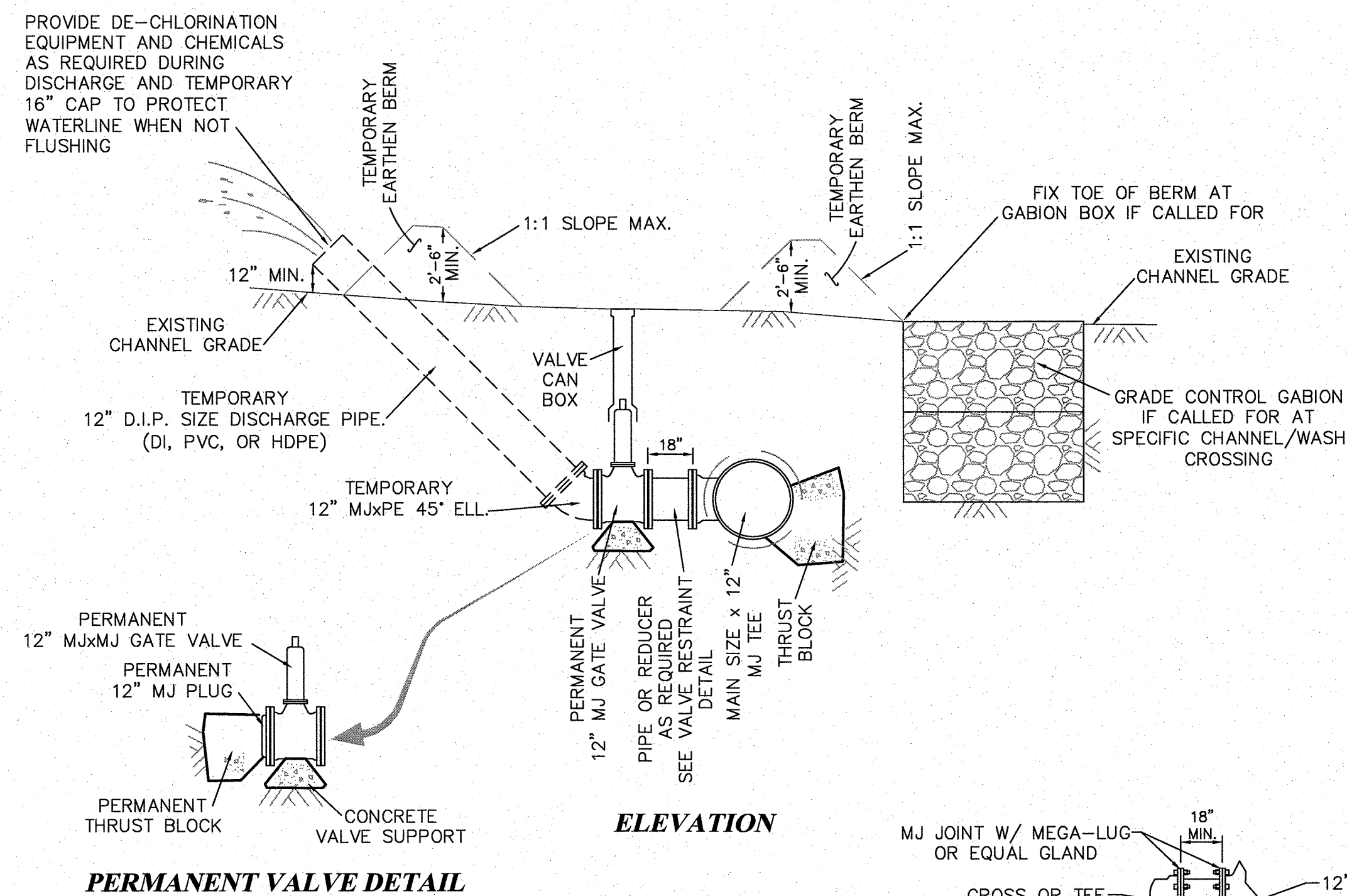
TYPE 2A ARV FITTING SCHEDULE:

- NOTICE OF EXTENDED PAYMENT PROVISION:**
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DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT



TYPE 2A AIR RELEASE STATION ON 30" MAIN
NTS





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16", 18", 24" & 30" HORIZONTAL VALVE INSTALLATION DETAILS

NTS

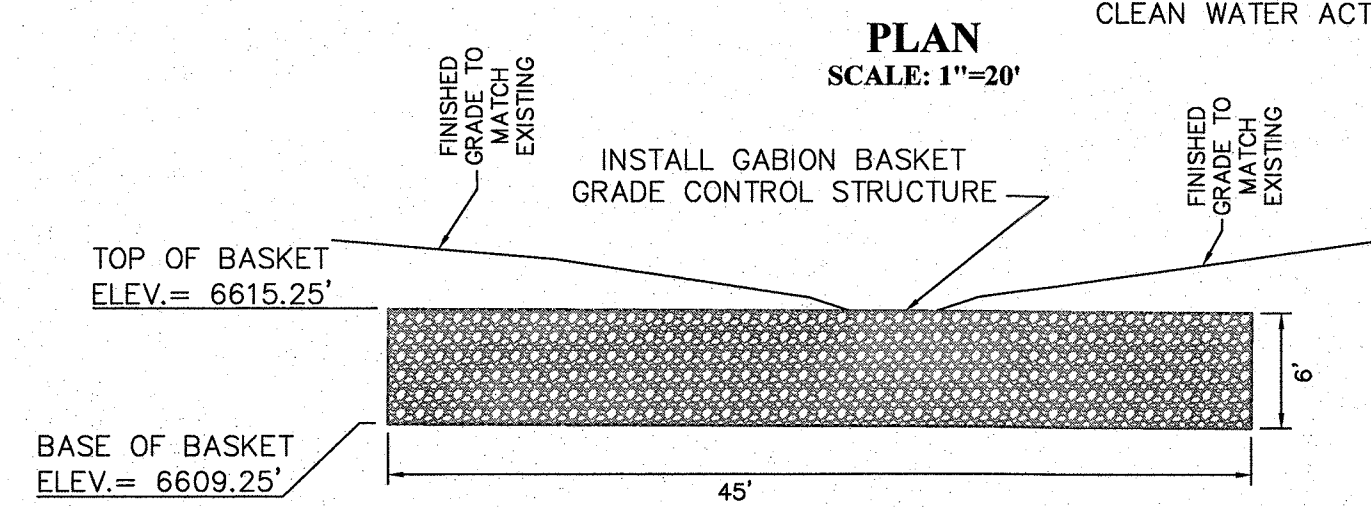
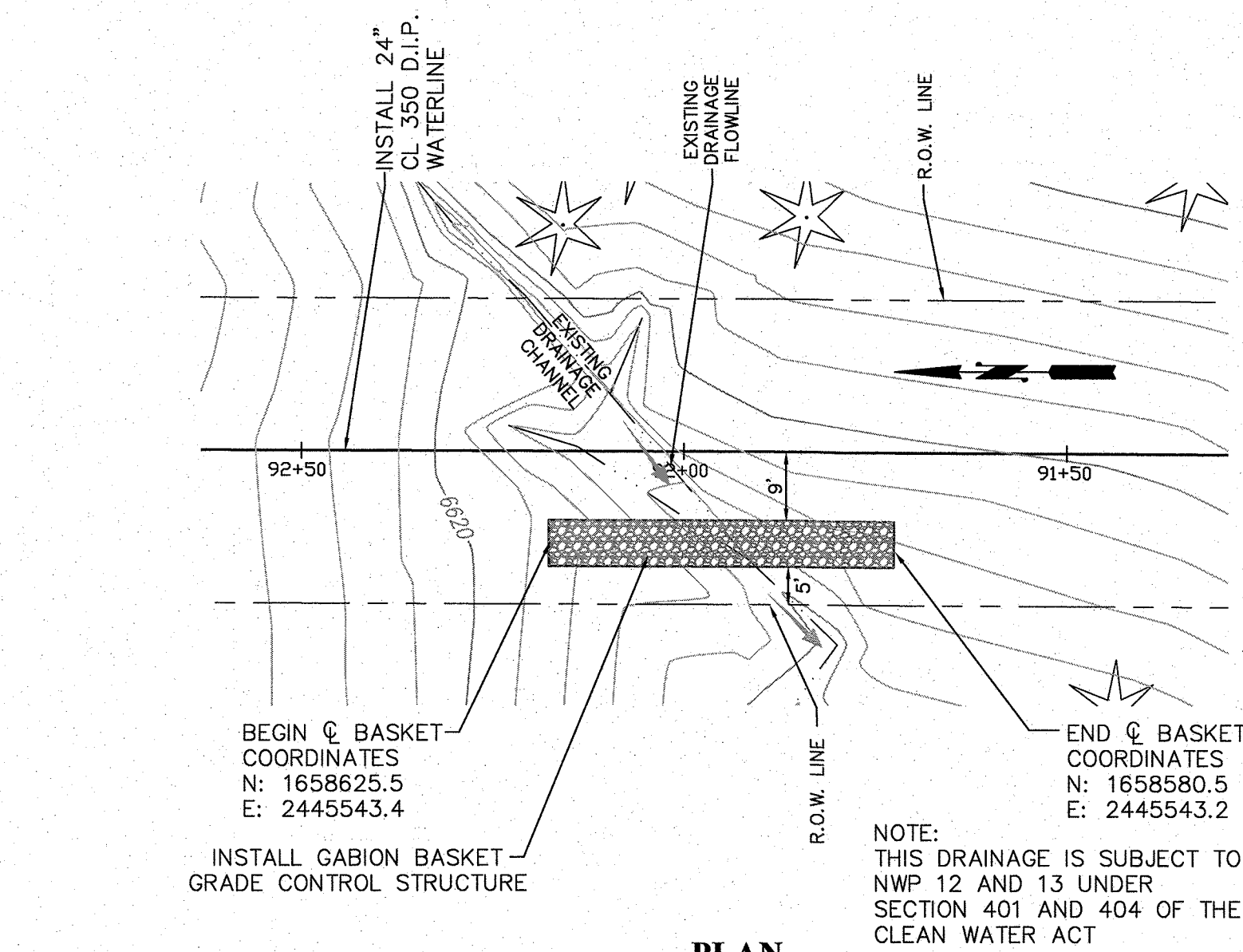
CITY OF GALLUP
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HORIZONTAL GATE VALVE, FLUSH PIPING, BORE CASING AND CARRIER PIPE DETAILS

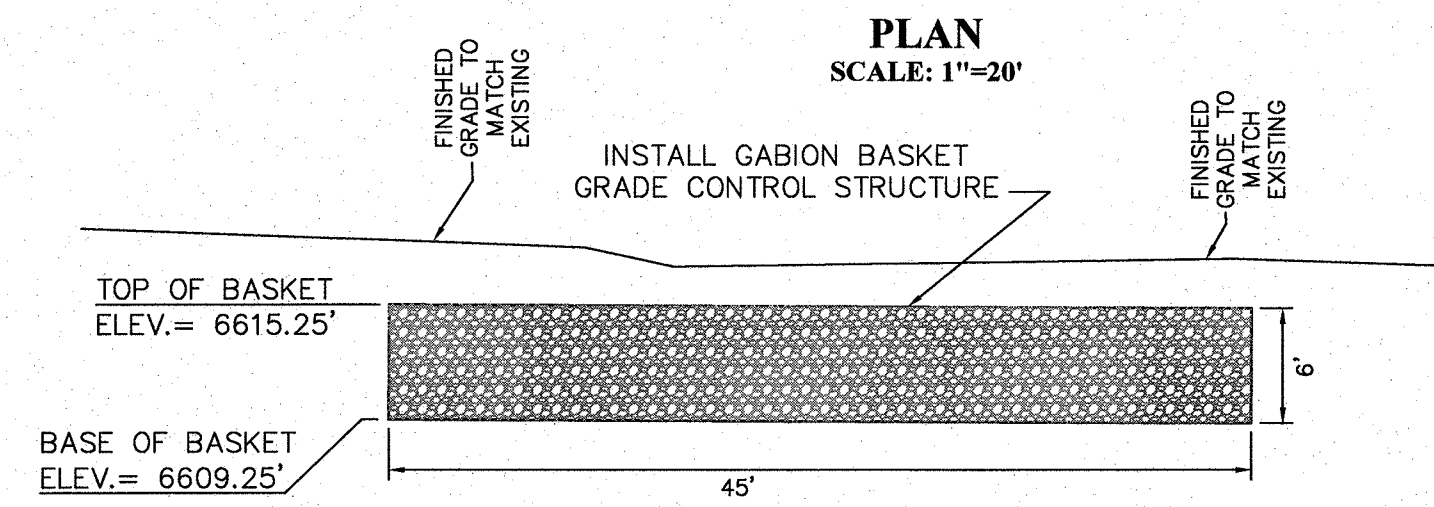
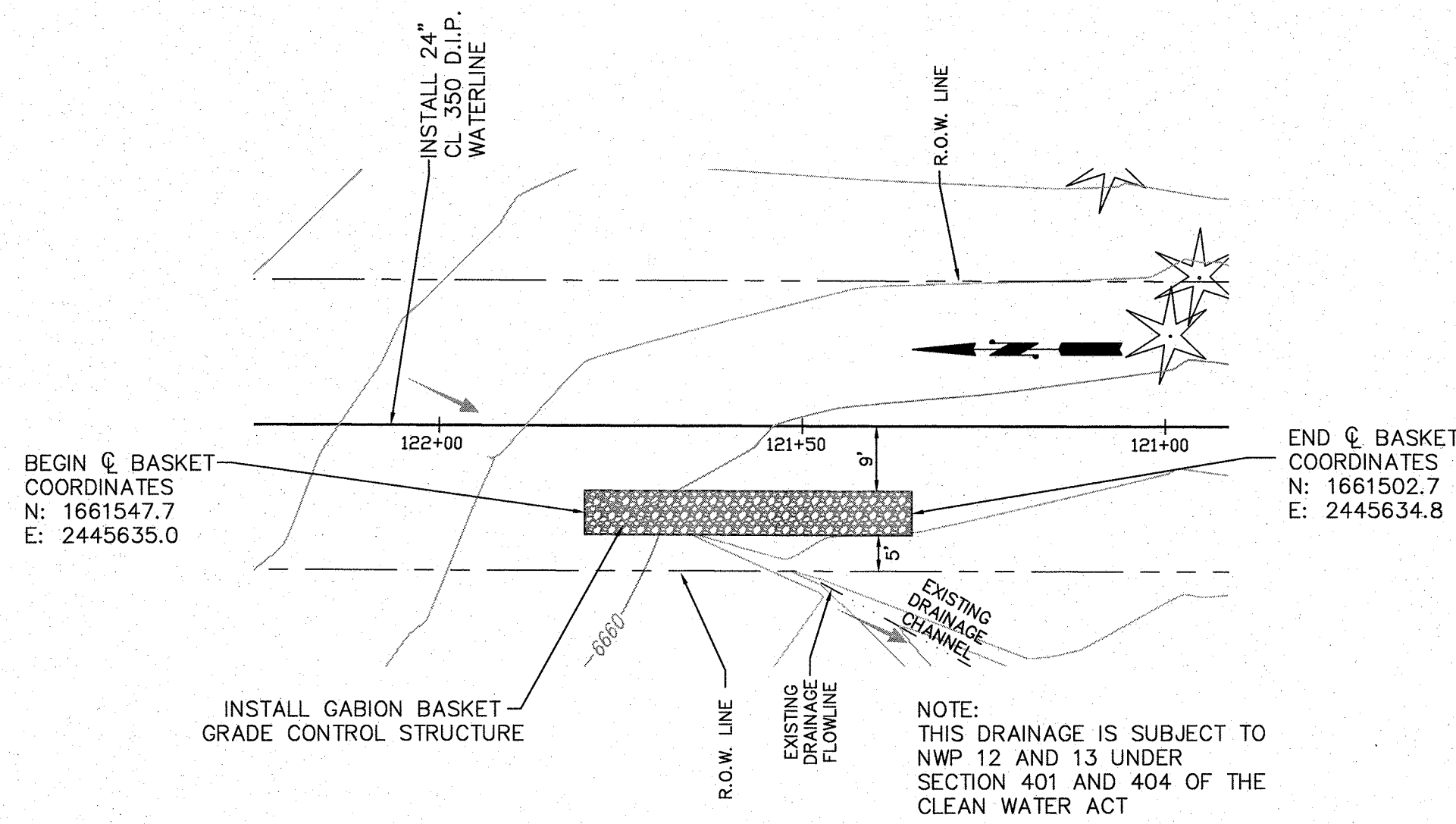
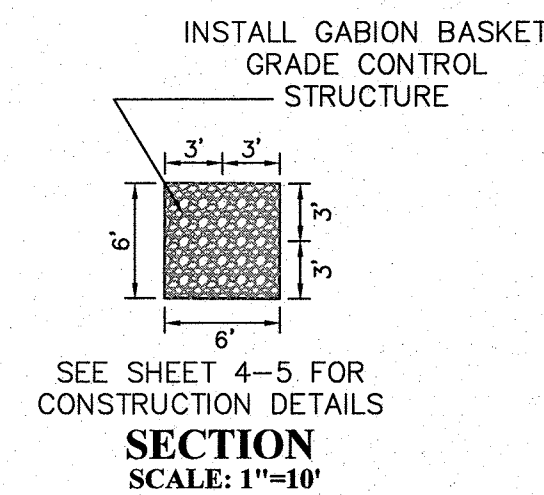
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DRAWN BY:	KAS
CHECKED BY:	MDP DT

HEET

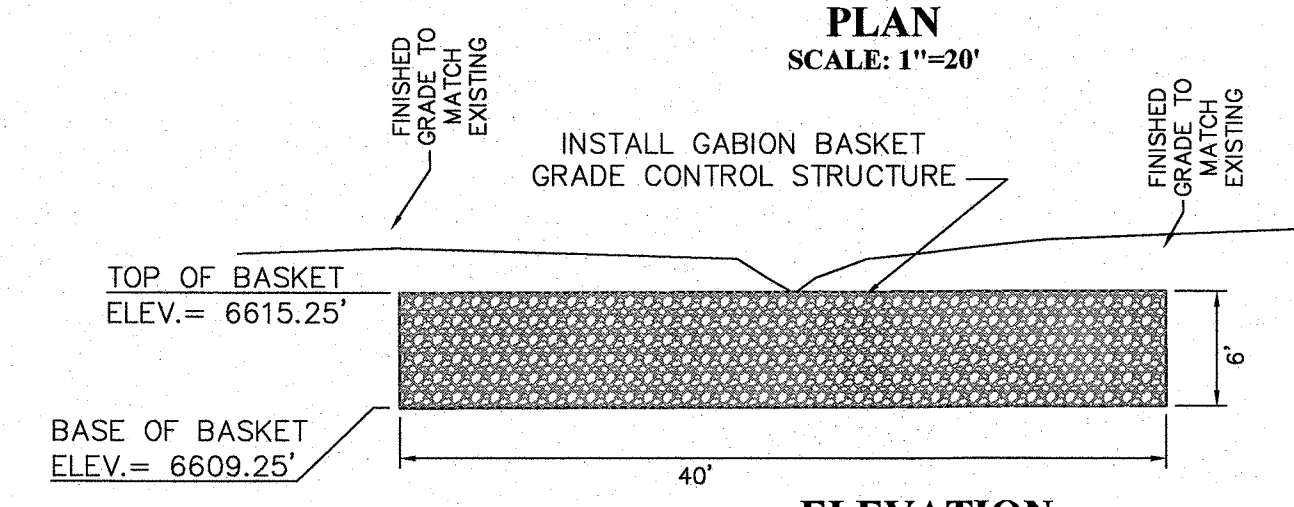
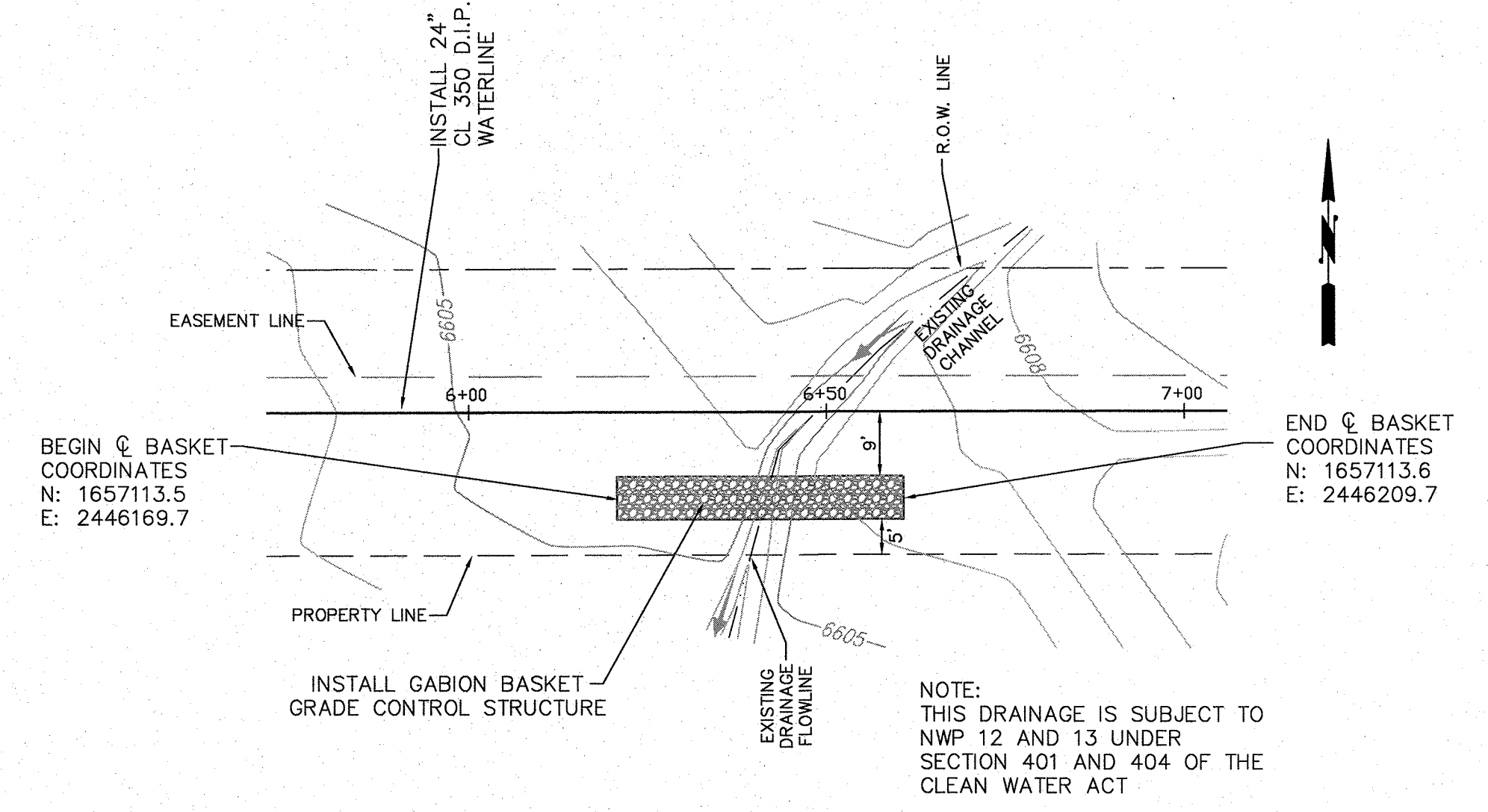
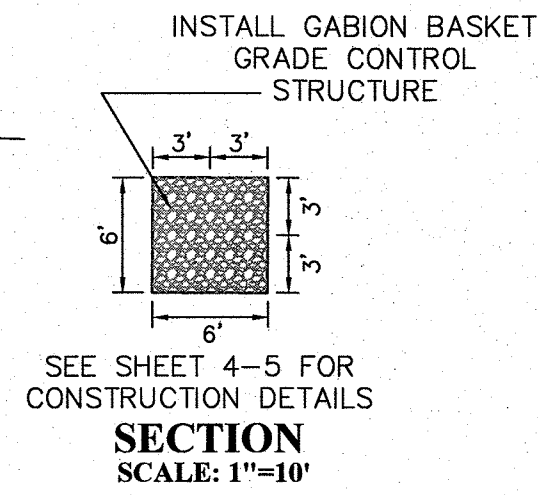
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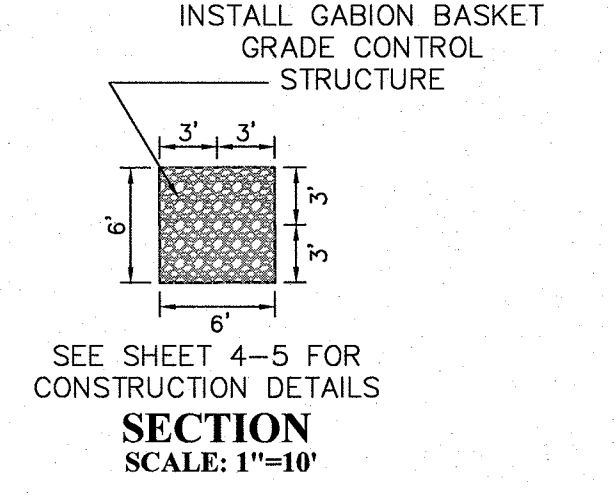
GRADE CONTROL STRUCTURE @ 24" WATERLINE STA. 92+00±



GRADE CONTROL STRUCTURE @ 24" WATERLINE STA. 121+60±

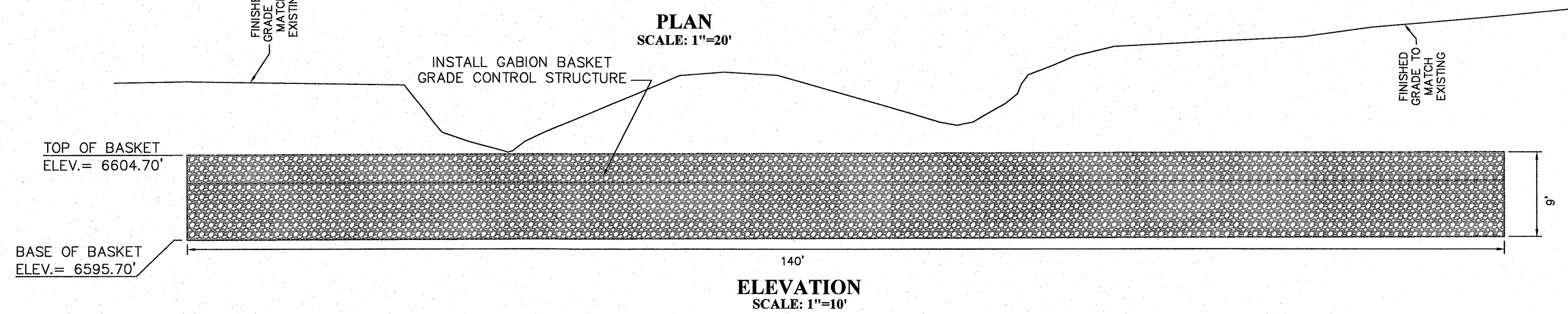
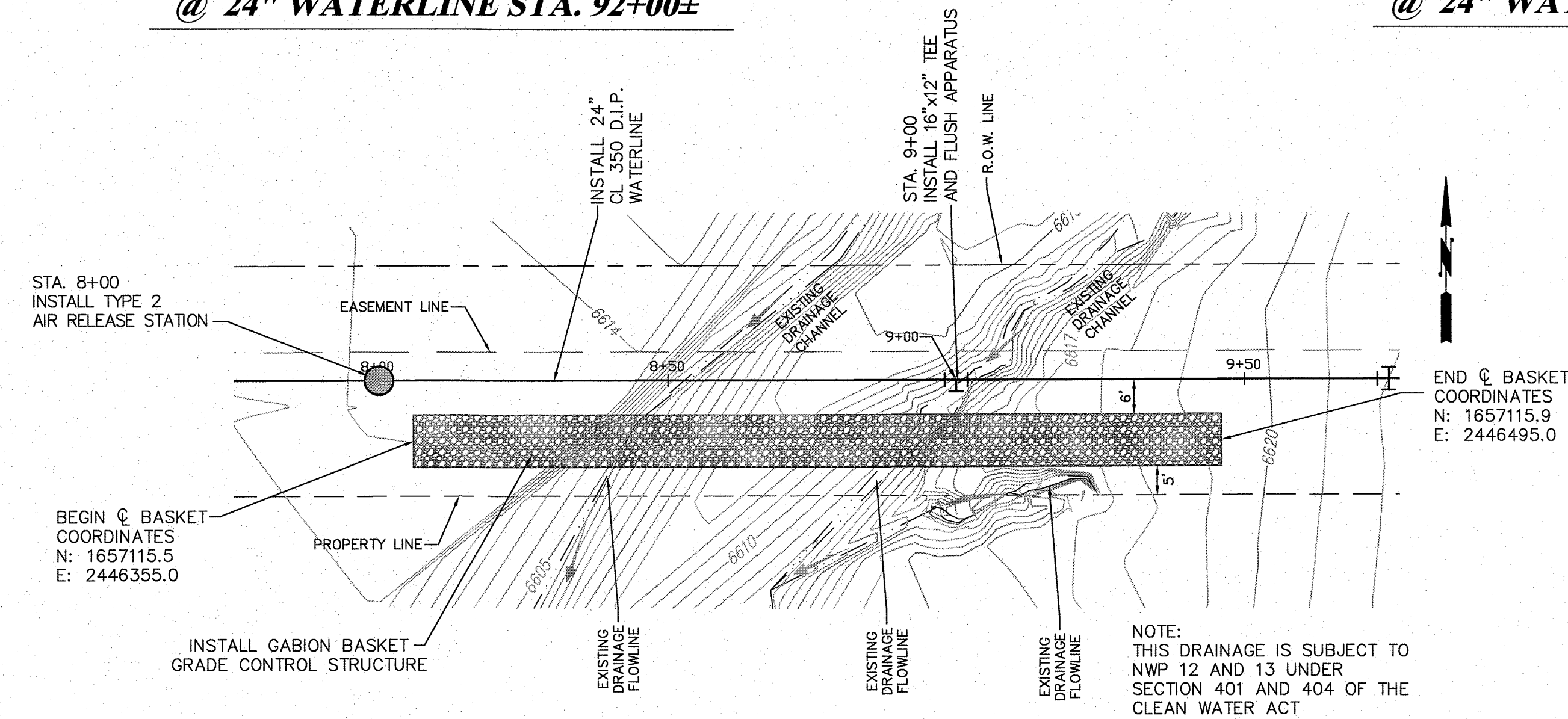


GRADE CONTROL STRUCTURE @ 16" WATERLINE STA. 6+40±

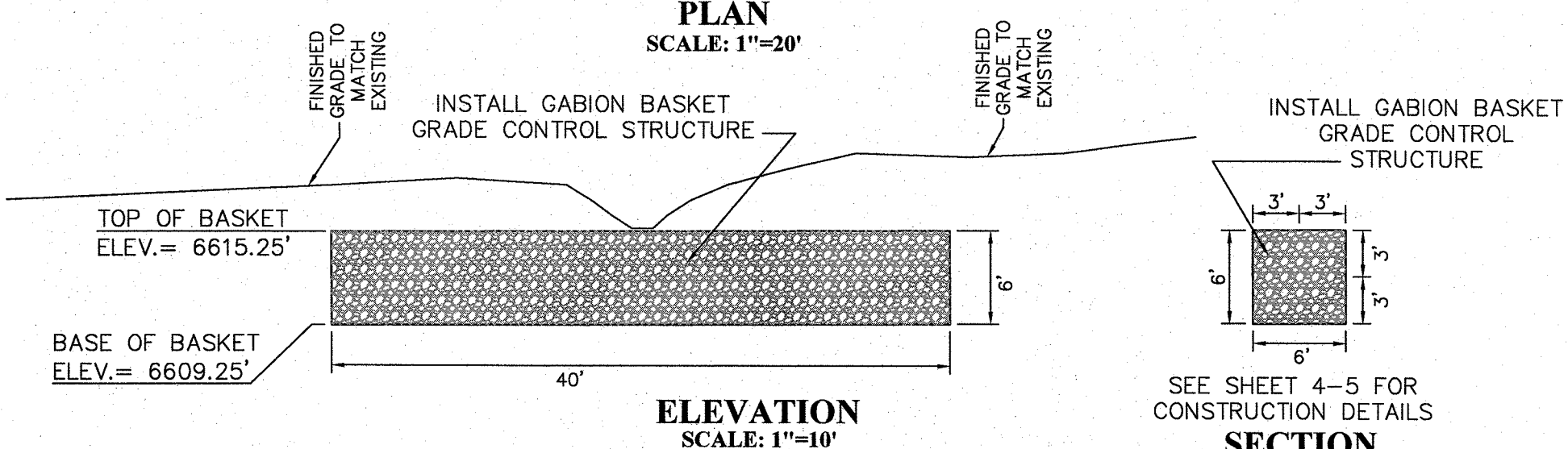
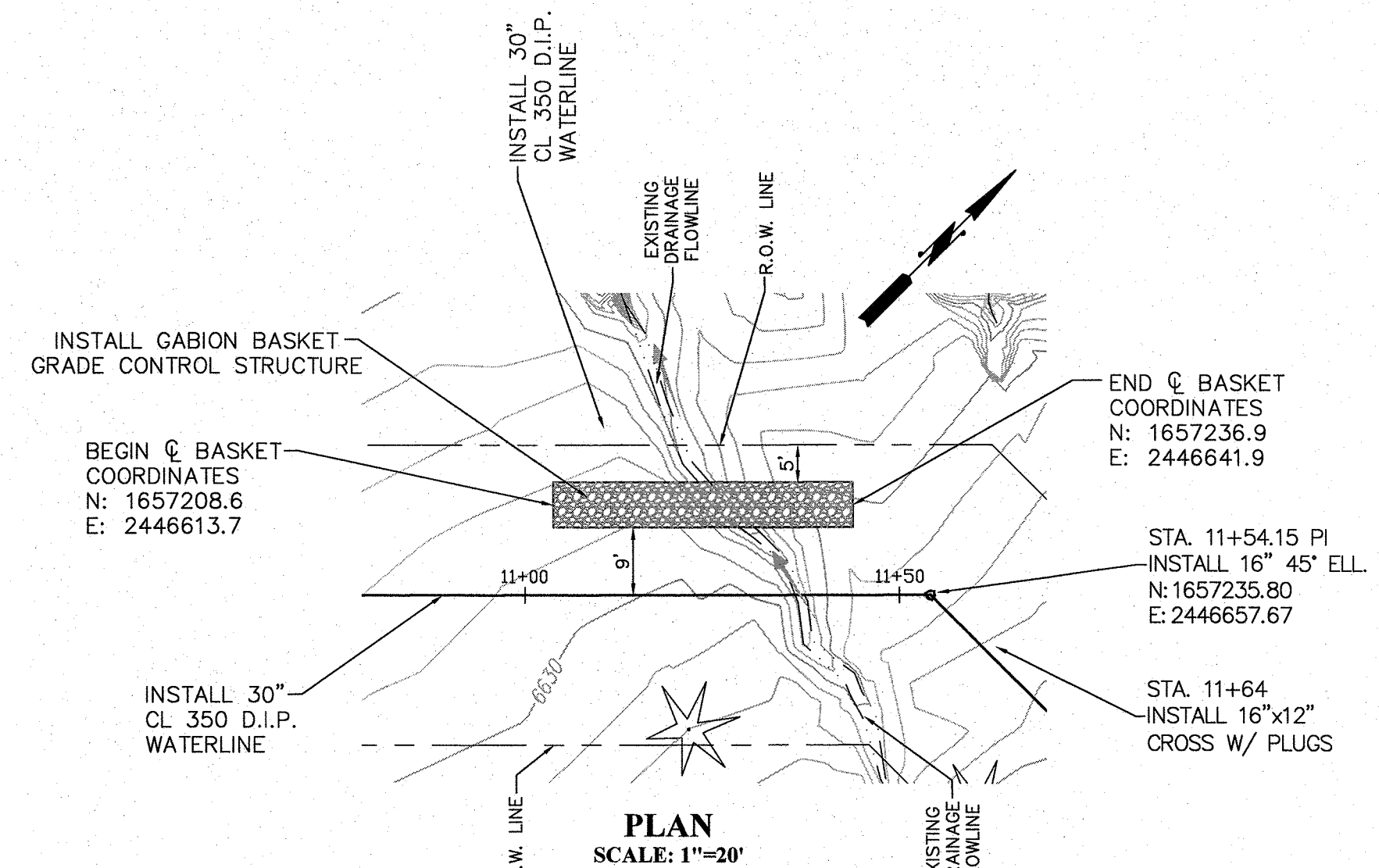
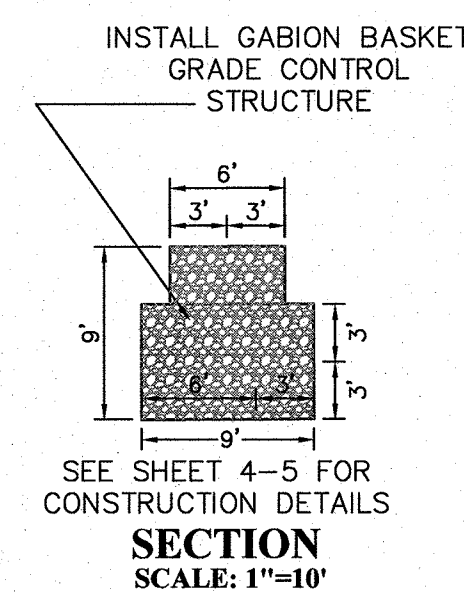


CAUTION
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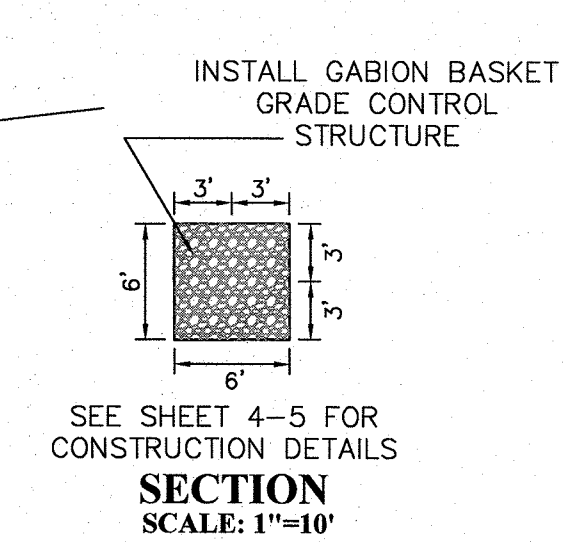
NOTICE OF EXTENDED PAYMENT PROVISION:
THIS CONTRACT ALLORS THE OWNER TO MAKE PAYMENT WITHIN 45 DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.

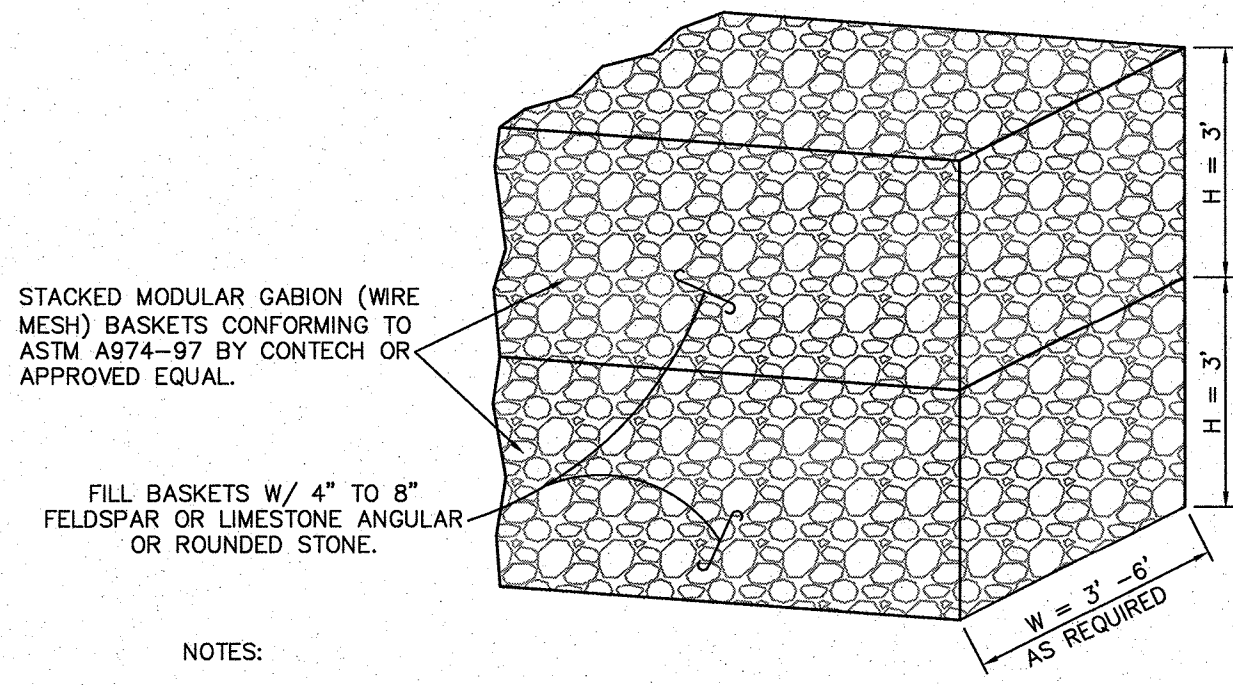


GRADE CONTROL STRUCTURE @ 16" WATERLINE STA. 8+75±



GRADE CONTROL STRUCTURE @ 16" WATERLINE STA. 11+24±

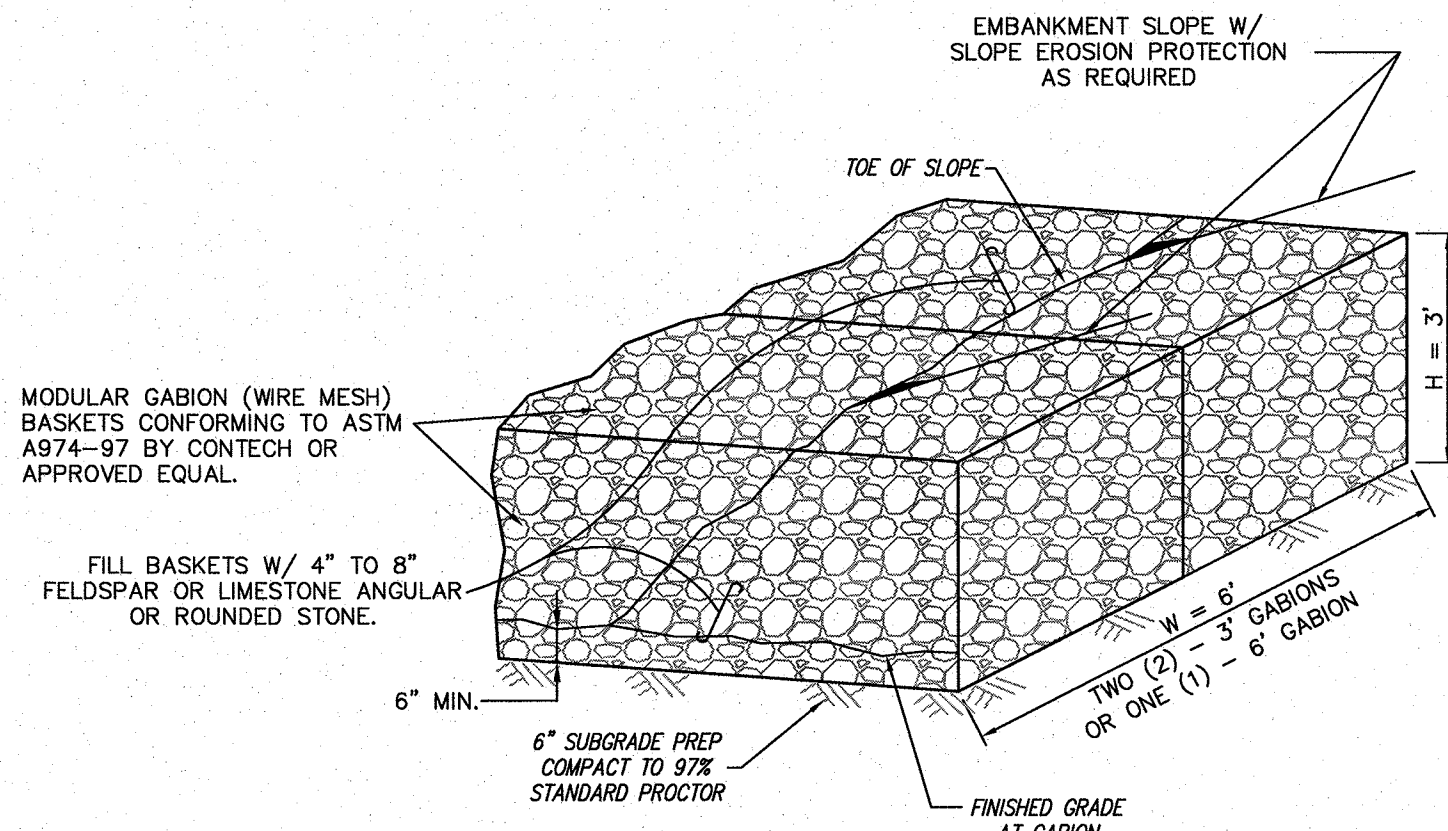




- NOTES:
1. ASSEMBLE AND INSTALL GABION BASKETS PER MANUFACTURES RECOMMENDATIONS INCLUDING SPIRALS, CROSS TIES, LACING AND OTHER APPURTENANCES AS REQUIRED.
 2. JOIN INDIVIDUAL BASKETS TO ONE ANOTHER PER MANUFACTURES RECOMMENDATIONS.
 3. GEOTEXTILE FABRIC IS NOT REQUIRED FOR THIS INSTALLATION.

STACKED GABION BASKET DETAIL

NTS



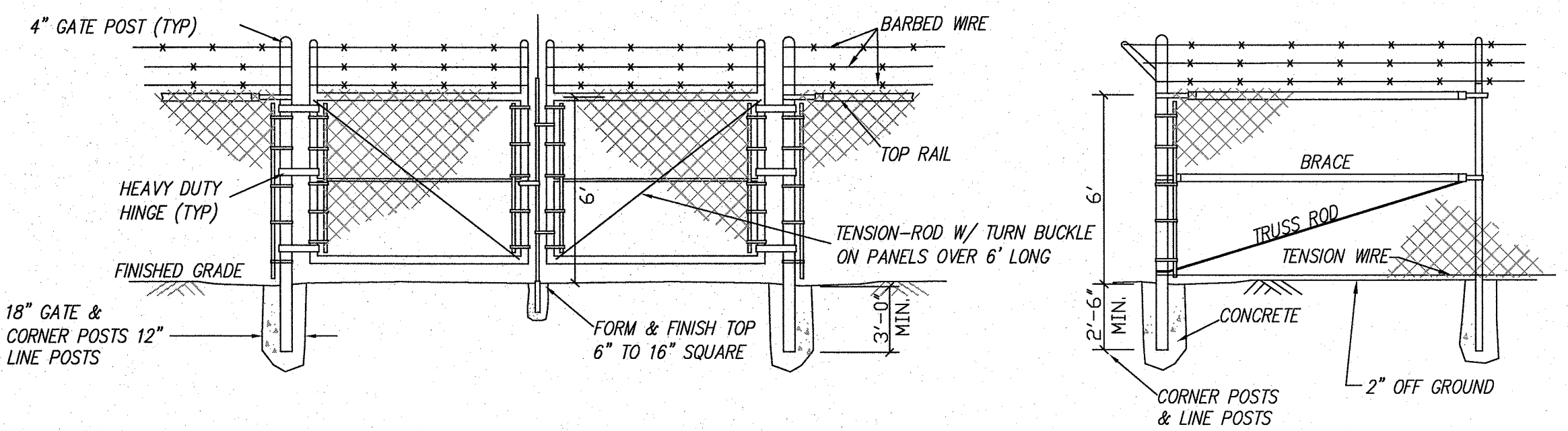
- NOTES:
1. ASSEMBLE AND INSTALL GABION BASKETS PER MANUFACTURES RECOMMENDATIONS INCLUDING SPIRALS, CROSS TIES, LACING AND OTHER APPURTENANCES AS REQUIRED.
 2. JOIN INDIVIDUAL BASKETS TO ONE ANOTHER PER MANUFACTURES RECOMMENDATIONS.
 3. GEOTEXTILE FABRIC IS NOT REQUIRED FOR THIS INSTALLATION.

2 CELL GABION BASKET DETAIL

NTS

CHAIN LINK FENCING NOTES:

1. ALL POST SHALL BE SCH. 40 GALVANIZED STEEL PIPE
2. INSTALL 1.9\"/>
3. CORNER POSTS TO BE 3\"/>
4. POSTS FOR 4\"/>
5. GATES FRAMES SHALL BE CONSTRUCTED WITH 1.9 O.D. TUBULAR MEMBERS WELDED AT ALL CORNERS OR ASSEMBLED WITH FITTINGS.
6. ALL WELDS SHALL BE GRIND SMOOTH, PRIMED, AND PAINTED WITH TWO (2) COATS OF ZINC RICH PAINT TO MATCH EXISTING METAL.
7. WIRE FABRIC TO BE HOT DIPPED GALVANIZED #9 GAUGE 2\"/>
8. INSTALL THREE (3) 12 1/2 GAUGE BARBED WIRE STRANDS ON TOP OF FABRIC AT 6\"/>
9. CONTRACTOR SHALL PROVIDE THE GATE HARDWARE AS FOLLOWS:
 - STRETCHER BARS AND STRETCHER BAR BANDS AND FASTENERS FOR CHAIN LINK FABRIC.
 - LOCKING HASP, LATCH
 - EXTRACTABLE LOCKING ROD AND SLEEVE.
 - TENSION RODS, TRUSS RODS, TURN BUCKLES.
 - MISC. GATE HARDWARE REQUIRED FOR INSTALLATION.

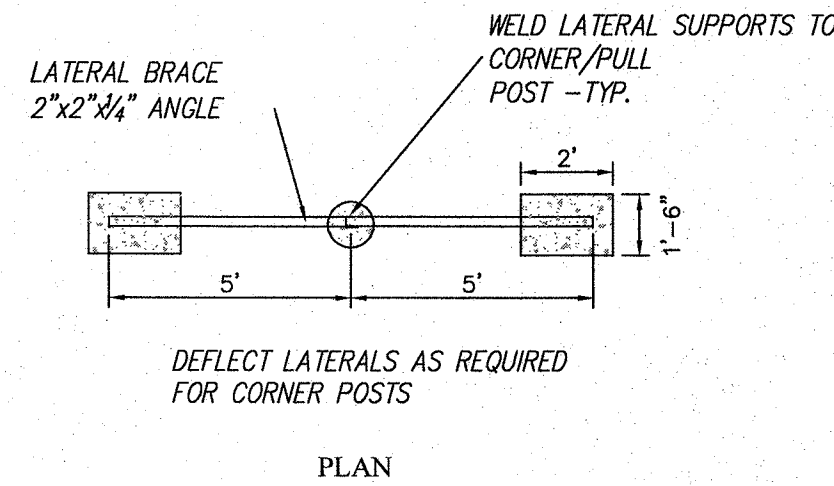


CHAIN LINK FENCE AND CHAIN LINK GATE DETAILS

NTS

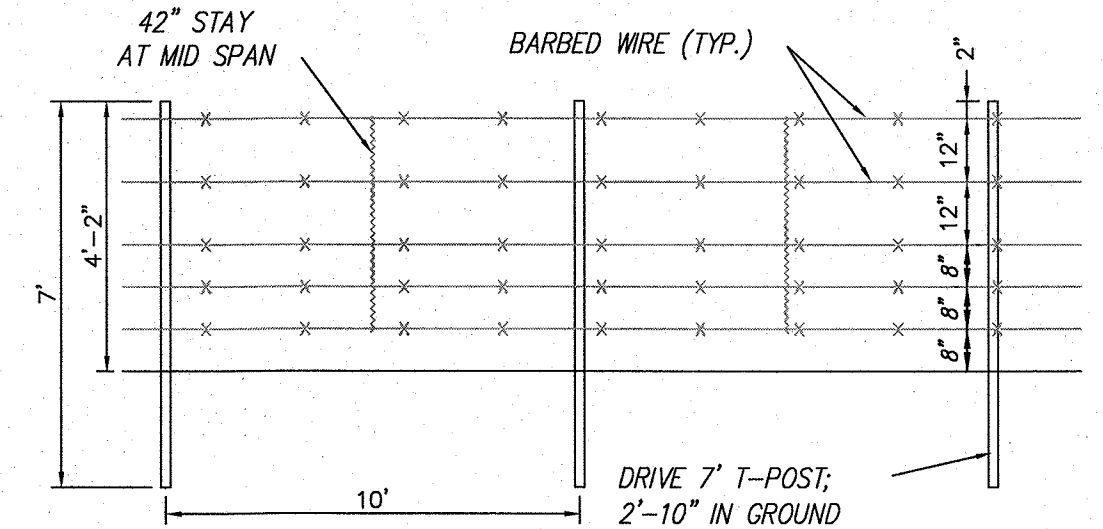
WIRE FENCING NOTES:

1. INSTALL NEW METAL POSTS AT 10' SPACING, PULL POSTS AT 350' MAX OR CHANGE OF DIRECTION AND CORNER POSTS AT ALL CORNERS.
2. ALL WELDS SHALL BE GRIND SMOOTH, PRIMED, AND PAINTED WITH TWO (2) COATS OF PAINT TO MATCH EXISTING METAL PAINT.
3. IN LIEU OF WELDING CONTRACTOR MAY AT HIS OPTION FASTEN LATERAL BRACE TO CORNER OF PULL POST WITH 1/2\"/>

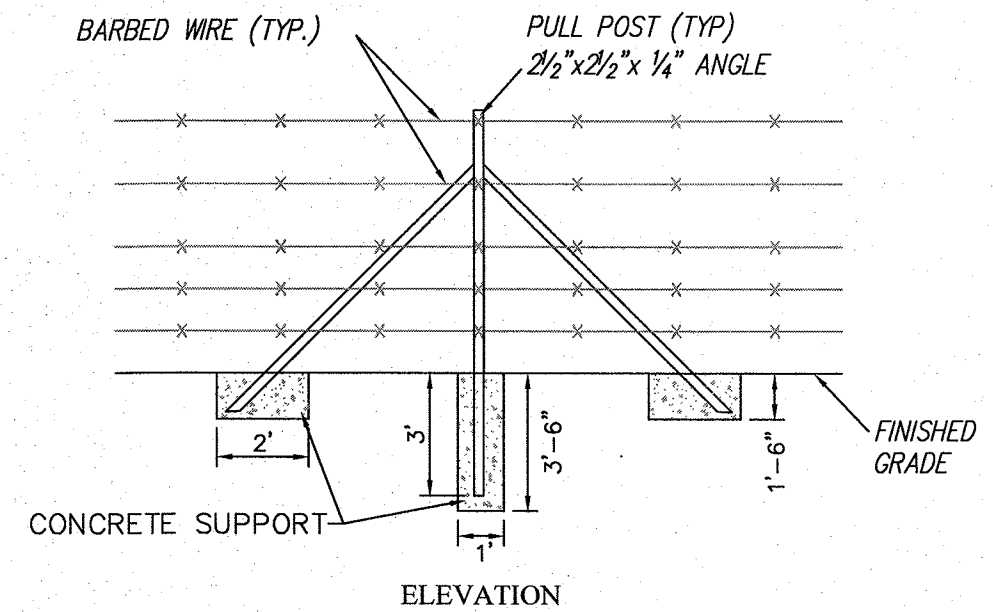


BARBED WIRE FENCE CORNER AND PULL POST DETAIL

NTS



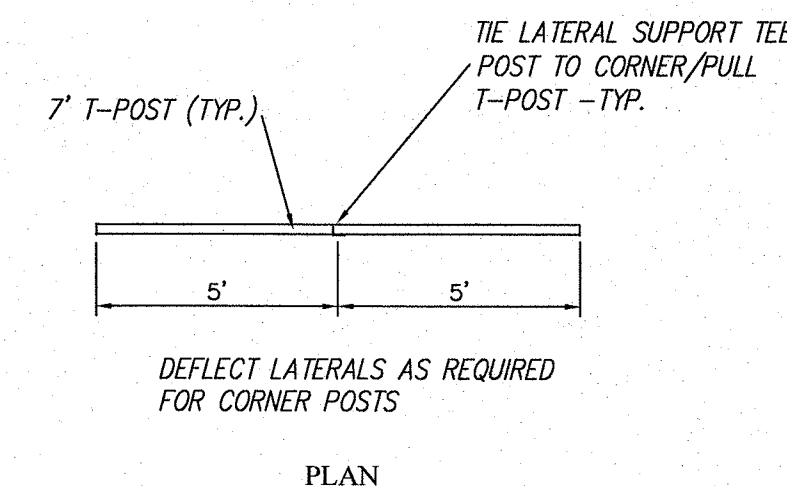
BARBED WIRE FENCE DETAIL



ARCHEOLOGICAL FENCING NOTES:

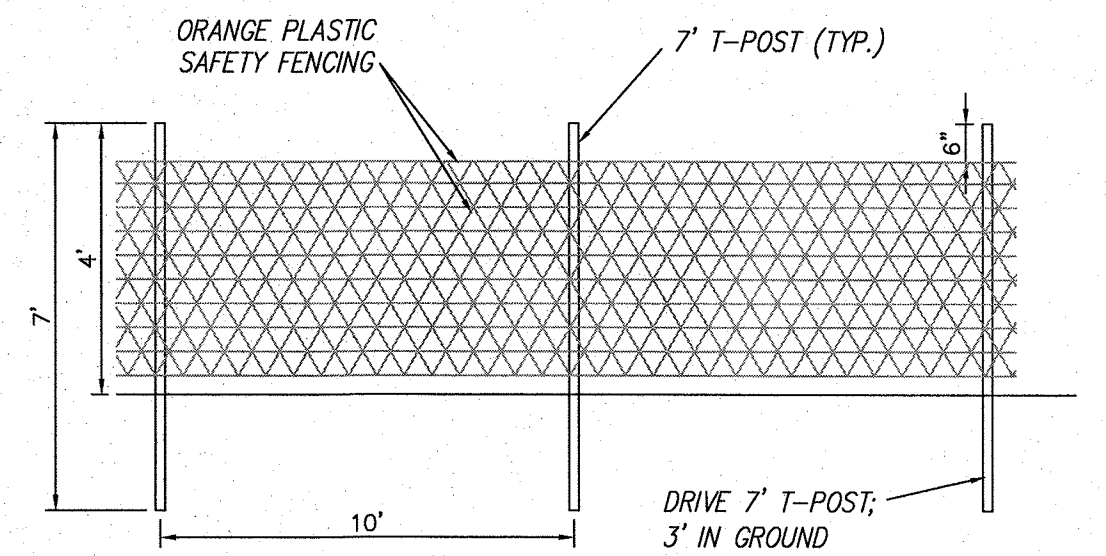
1. INSTALL NEW METAL POSTS AT 10' SPACING, PULL POSTS AT 350' MAX OR CHANGE OF DIRECTION AND CORNER POSTS AT ALL CORNERS.

LOCATION NOTE:
SEE PLAN AND PROFILE SHEETS FOR LOCATION AND LENGTHS

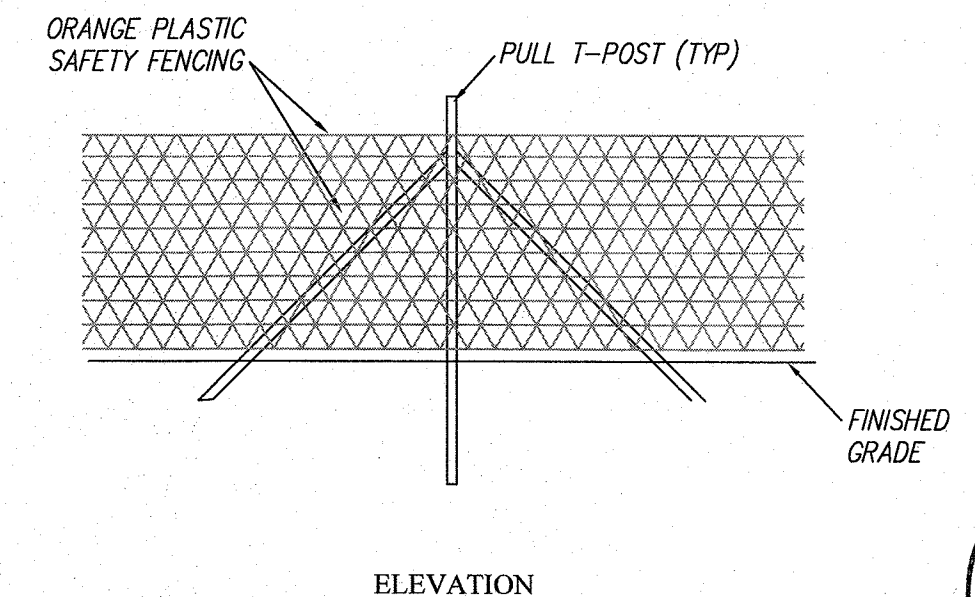


ARCHEOLOGICAL FENCE CORNER AND PULL POST DETAIL

NTS



WIRE (NON BARBED) FENCE DETAIL



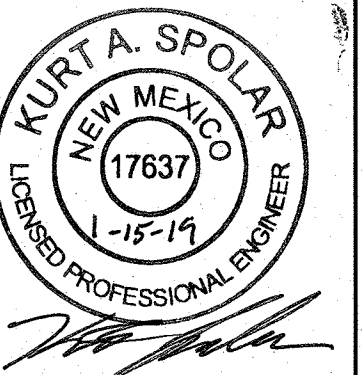
ELEVATION

CITY OF GALLUP
NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 27.9
FORMAL BID NO. 1903

**FENCING, GABION BOX
& RIP-RAP DETAILS**

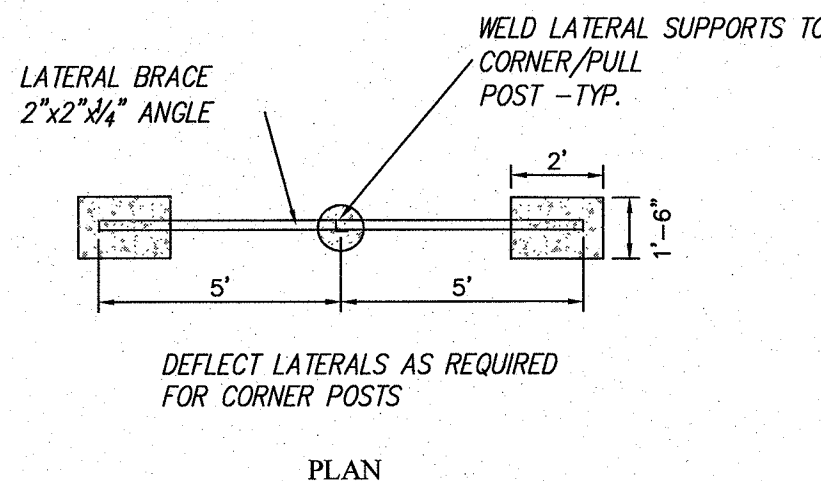
SCALE: SHOWN
DATE: JAN. 2019
DRAWN BY: KAS
CHECKED BY: MDP DT

SHEET
4-5



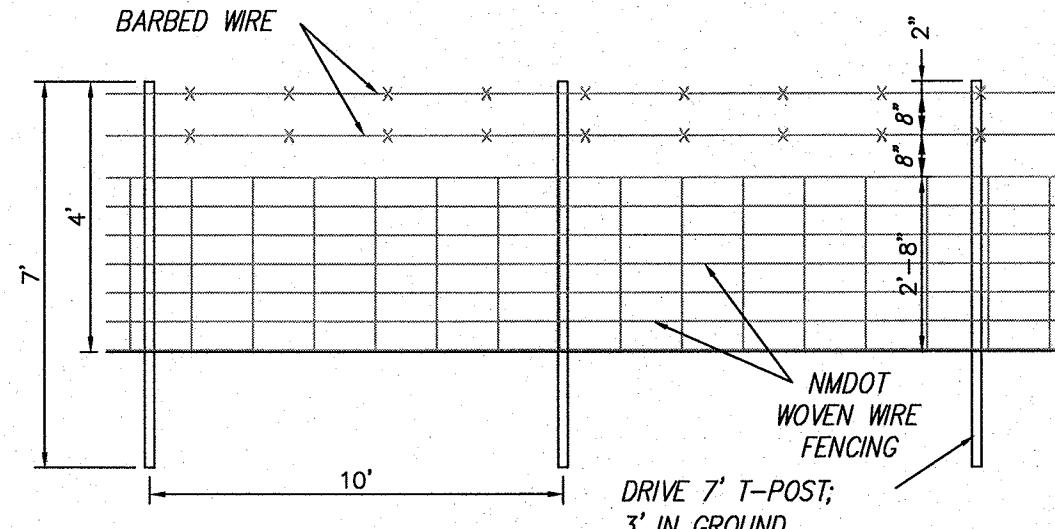
WIRE FENCING NOTES:

1. INSTALL NEW METAL POSTS AT 10' SPACING, PULL POSTS AT 350' MAX OR CHANGE OF DIRECTION AND CORNER POSTS AT ALL CORNERS.
2. ALL WELDS SHALL BE GRIND SMOOTH, PRIMED, AND PAINTED WITH TWO (2) COATS OF PAINT TO MATCH EXISTING METAL PAINT.
3. IN LIEU OF WELDING CONTRACTOR MAY AT HIS OPTION FASTEN LATERAL BRACE TO CORNER OF PULL POST WITH 1/2\"/>

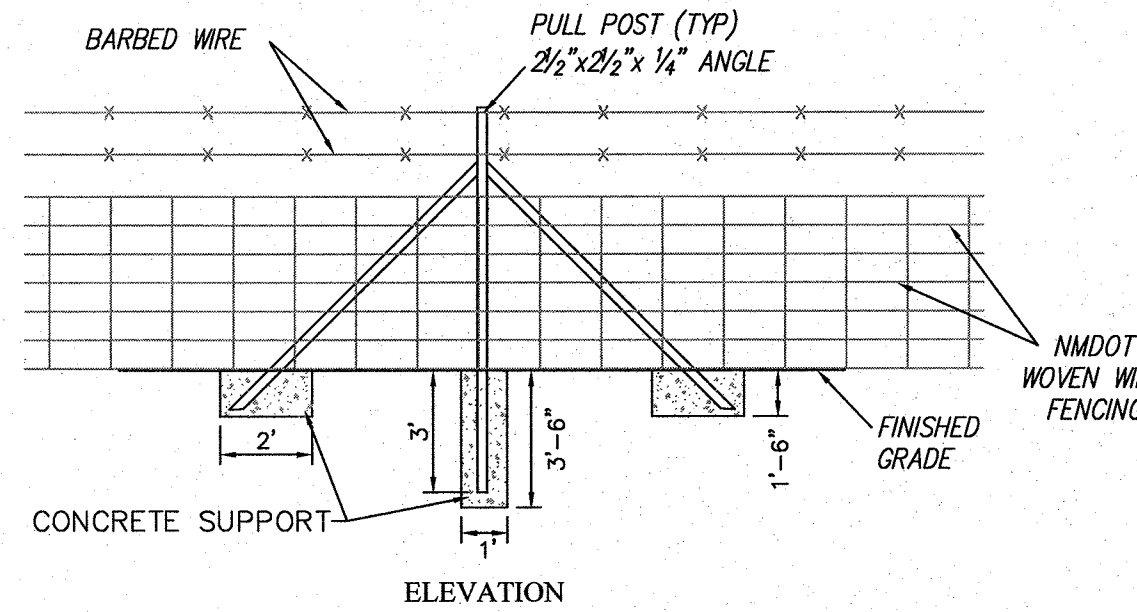


WOVEN WIRE FENCE CORNER AND PULL POST DETAIL

NTS

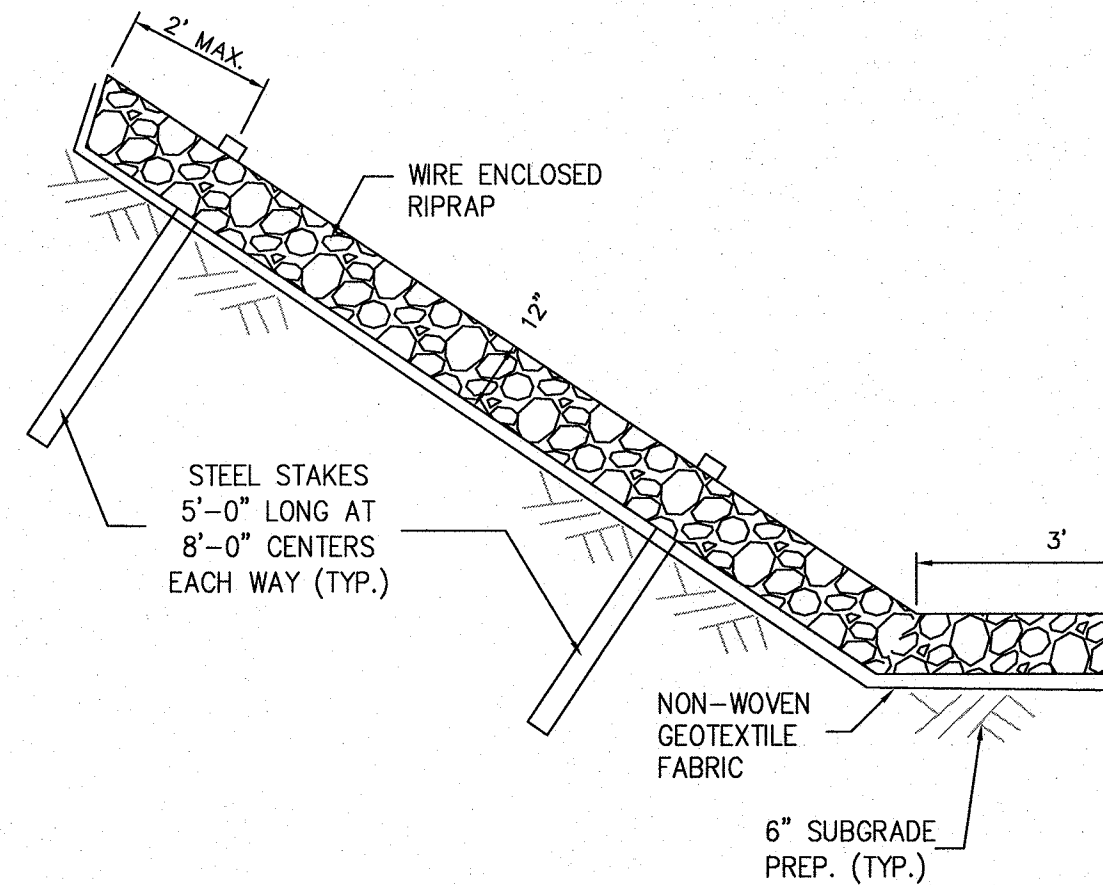


WOVEN WIRE FENCE DETAIL



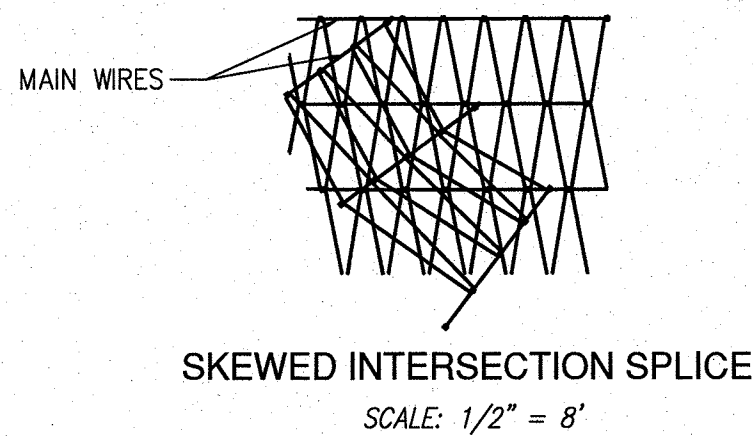
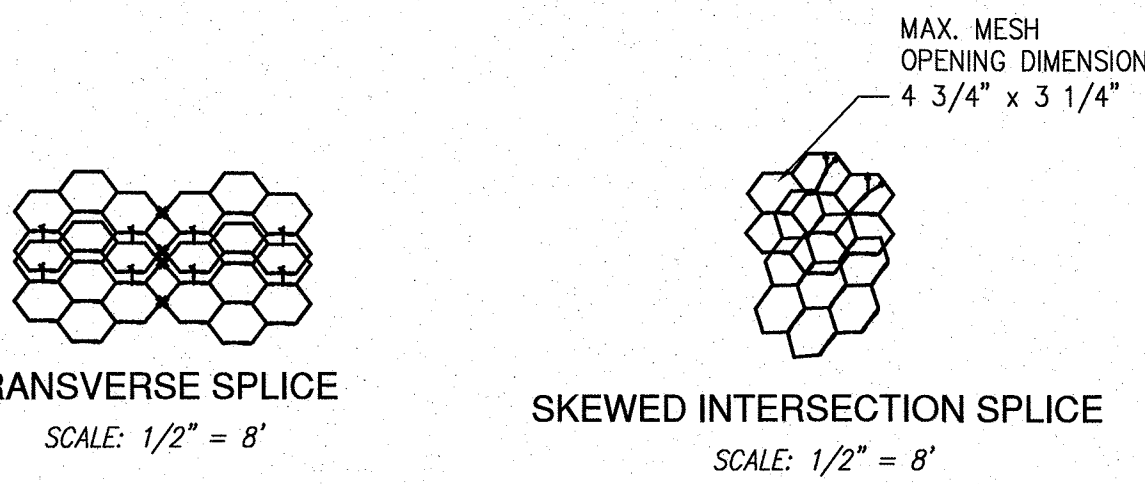
RIP-RAP NOTES:

1. WIRE FABRIC FOR RIPRAP SHALL BE "W" OR HEXAGONAL MESH MEETING THE REQUIREMENTS LISTED IN THE SPECIFICATIONS.
2. STEEL STAKES MAY BE RAILROAD RAILS, WEIGHING NOT LESS THAN 30LBS. PER YARD, 4" O.D. STANDARD STRENGTH GALVANIZED STEEL PIPE OR 4x4x3/8 STEEL ANGLES. STEEL STAKES SHALL PROJECT 3" ABOVE TOP OF RIPRAP. STEEL STAKES ARE CONSIDERED INCIDENTAL TO THE COMPLETION OF THE WORK AND NO DIRECT MEASUREMENT OR PAYMENT WILL BE MADE THEREFOR.
3. IF LENGTH OF SLOPE IS 15' OR LESS, ONLY ONE ROW OF STEEL STAKES 2' FROM THE TOP EDGE OF THE RIPRAP WILL BE REQUIRED UNLESS OTHERWISE NOTED ON PLANS.
4. T-12" UNLESS OTHERWISE SHOWN ON PLANS. T-18" AT BRIDGES.
5. LONGITUDINAL SPICES MAY BE MADE WITH ON LAP OF GALVANIZED 9 GAGE THE WIRE, 9 GAGE GALVANIZED HOG RINGS OR 11 1/2 INTERLOCKING WIRE CLIPS.
6. 10' WIDE SECTION SHALL HAVE A MIN. TWO (20) STEEL STAKES HORIZONTALLY @ 8' VERTICALLY.



WIRE ENCLOSED RIP-RAP DETAILS

NTS



WIRE SPlice FOR RIP-RAP

NTS

CAUTION
CALL NEW MEXICO ONE CALL
811
BEFORE YOU DIG!

NOTICE OF EXTENDED PAYMENT PROVISION:
THIS CONTRACT ALLOWS THE OWNER TO MAKE PAYMENT WITH IN 45
DAYS AFTER SUBMISSION OF AN UNDISPUTED REQUEST FOR PAYMENT.

DePAULI ENGINEERING & SURVEYING LLC
- CIVIL ENGINEERS AND LAND SURVEYORS -
307 SOUTH 4th STREET GALLUP, NM 87301
TEL: (505) 863-5440 WWW.DEPAULIENGINEERING.COM



for the
CITY OF GALLUP
McKINLEY COUNTY, NEW MEXICO

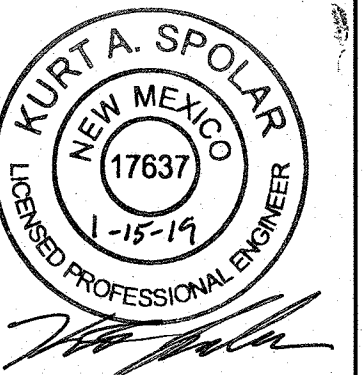
NO.	BY	DATE

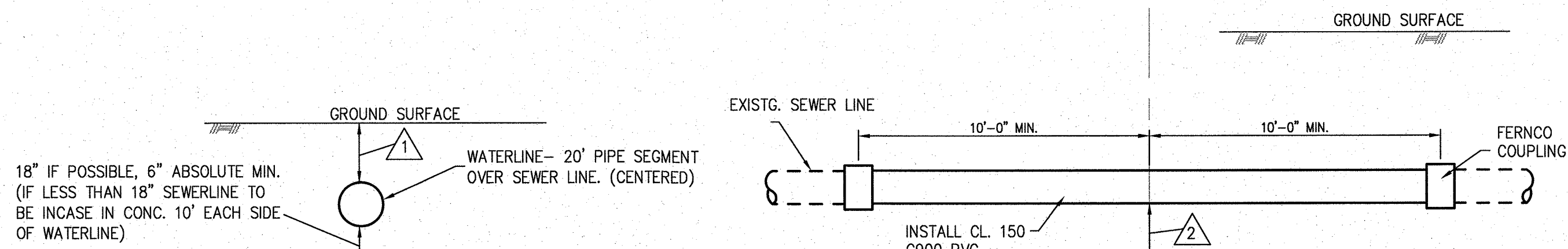
CITY OF GALLUP
NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 27.9
FORMAL BID NO. 1903

**FENCING, GABION BOX
& RIP-RAP DETAILS**

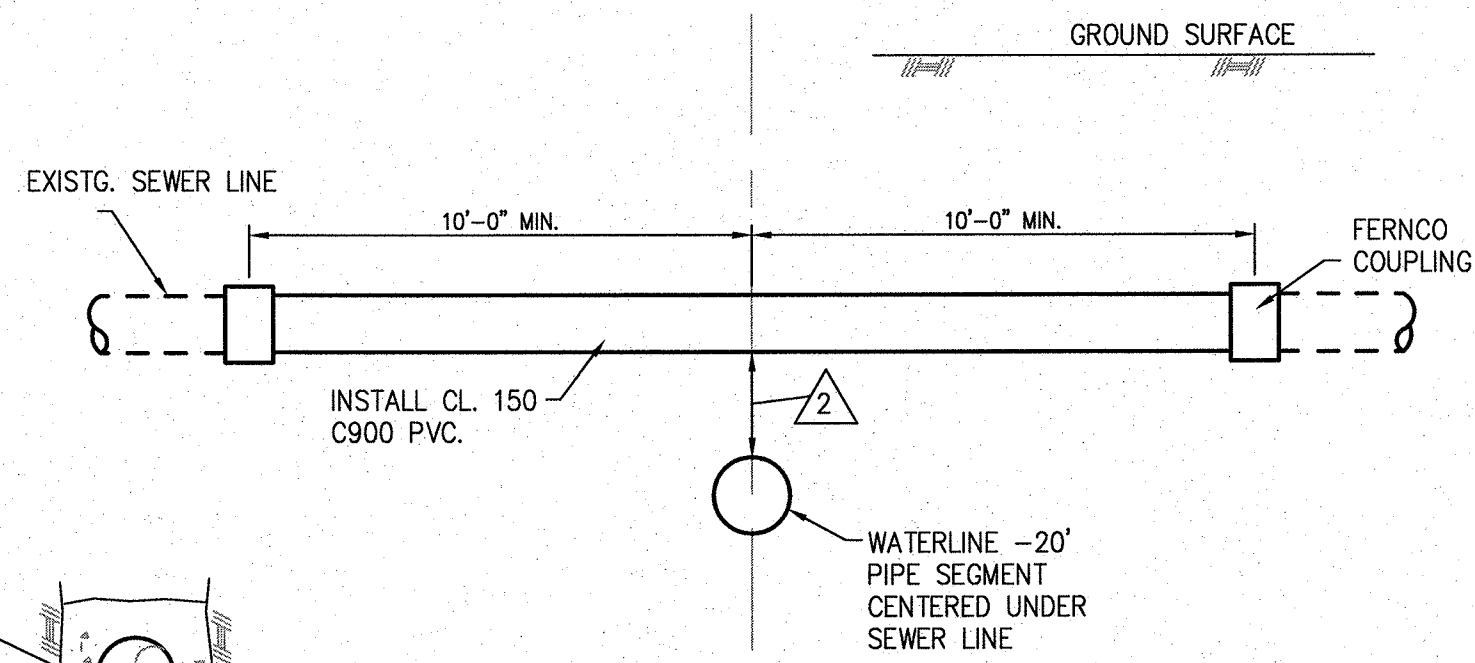
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DATE: JAN. 2019
DRAWN BY: KAS
CHECKED BY: MDP DT

SHEET
4-5

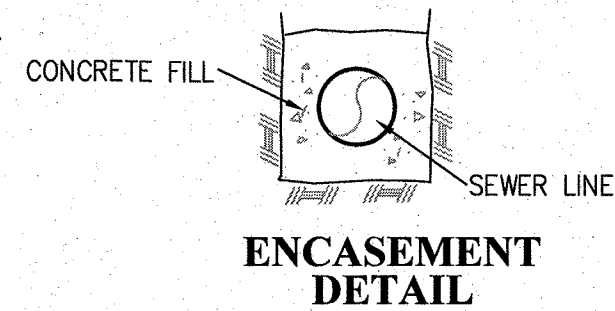




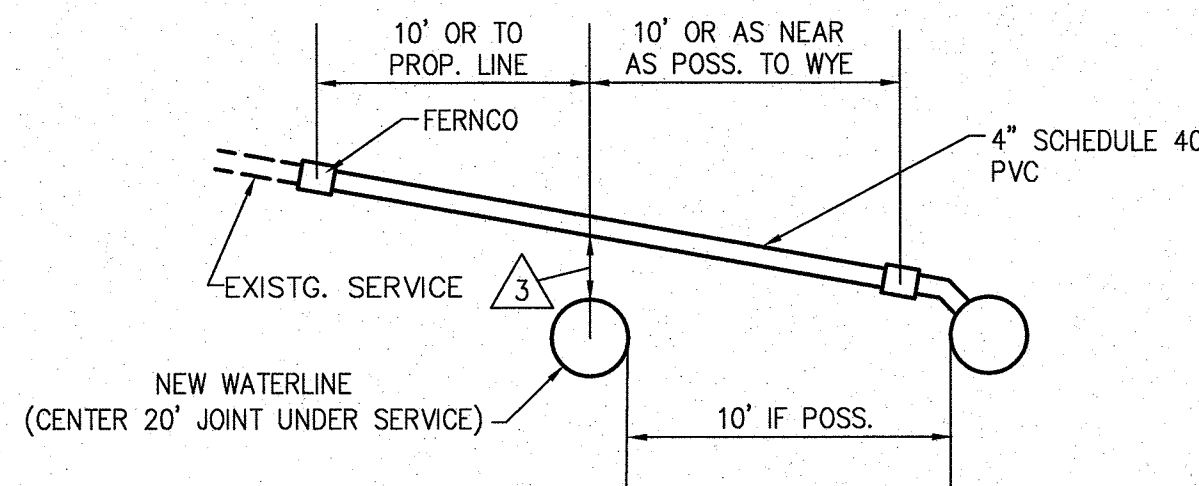
WATER MAIN OVER SEWER



WATER MAIN UNDER SEWER



ENCASEMENT DETAIL



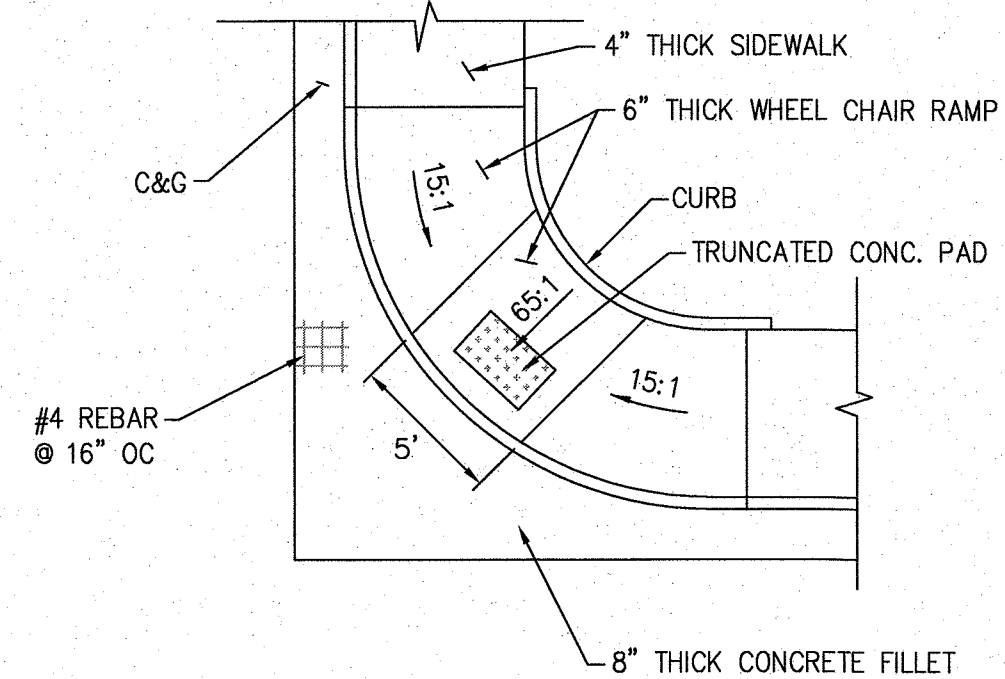
SEWER SERVICE CROSSING

- KEYED NOTES:
1. 36" MIN. IF POSSIBLE
 2. 30" MIN. IF APPROVED BY THE ENGINEER
 3. 1. 18" MIN. & ENCASE SEWER FAST COUPLINGS
 4. 1. 6" MIN.

PROXIMITY OF WATER AND SEWER LINES: WHENEVER POSSIBLE IT IS DESIRABLE TO LAY PARALLEL WATER AND SEWER MAINS AT LEAST 10 FEET APART HORIZONTALLY WITH THE WATERLINE AT A HIGHER ELEVATION THAN THE SEWER. WHEN WATER AND SEWER LINES CROSS EACH OTHER, THE WATERLINE SHALL BE AT LEAST 18" ABOVE THE SEWER, OTHERWISE THE CROSSINGS SHALL CONFORM TO DETAILS ABOVE. ALL WATER SERVICE LINES SHALL CROSS ABOVE SEWER MAINS.

WATER & SEWER CROSSING DETAILS

NTS

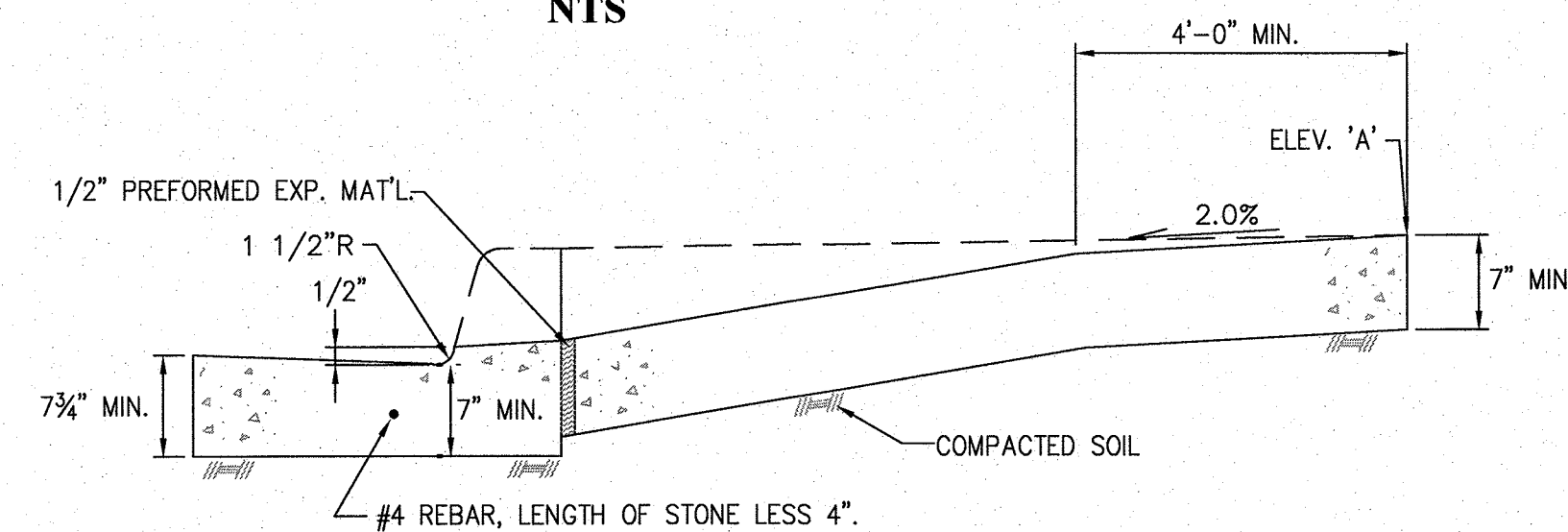


WHEEL CHAIR RAMP NOTES:

1. WHEEL CHAIR RAMPS SHALL CONFORM TO CITY OF GALLUP STANDARD DRAWINGS SERIES 2400. ADDITIONAL WHEEL CHAIR RAMP LAYOUTS, TYPES, DETAILS AND REQUIREMENTS ARE CONTAINED IN DRAWINGS 2416.0 THROUGH 2416.5 OF THE SERIES.

WHEEL CHAIR RAMP DETAILS

NTS

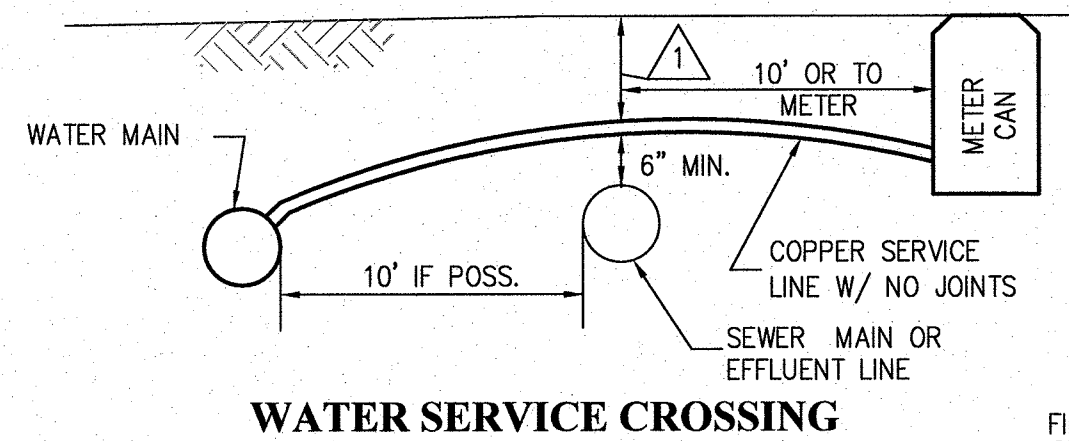


DRIVEPAD NOTES:

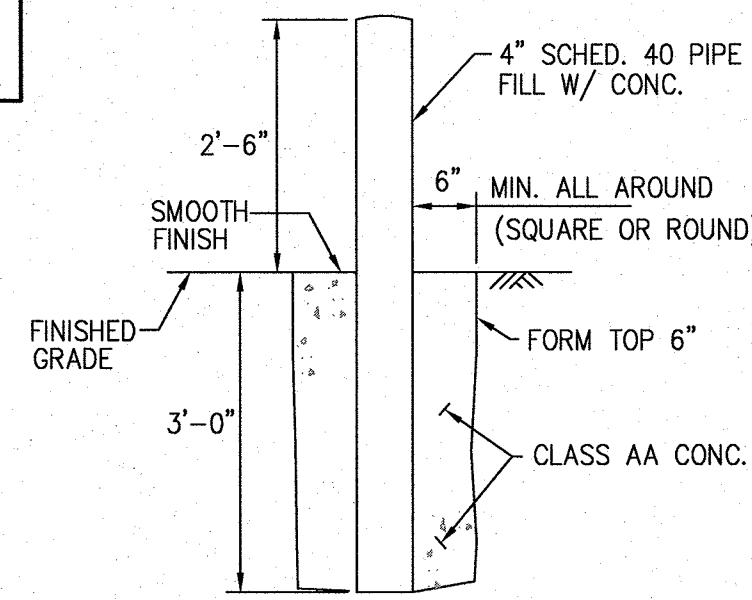
1. DRIVEPAD SHALL CONFORM TO CITY OF GALLUP STANDARD DRAWINGS SERIES 2400. ADDITIONAL DRIVEPAD DETAILS AND REQUIREMENTS ARE CONTAINED IN DRAWINGS 2410.0, 2410.1, AND 2410.2. OF THE SERIES.
2. ELEV. 'A' MUST BE NO LOWER THAN TOP OF CURB ELEVATION (NORMAL SITUATION).
3. SLOPE FROM UPPER PAD LEVEL TO SIDEWALK NOT TO EXCEED 10%.

DRIVEPAD SECTION

NTS

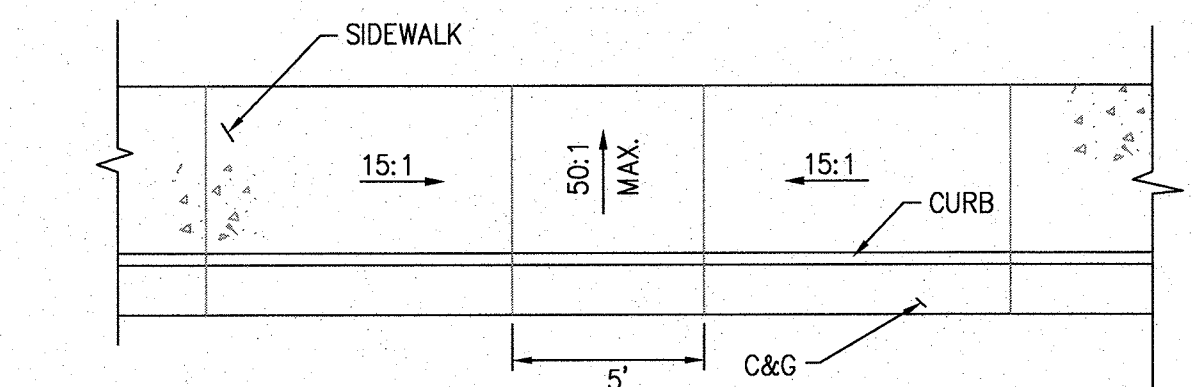


WATER SERVICE CROSSING



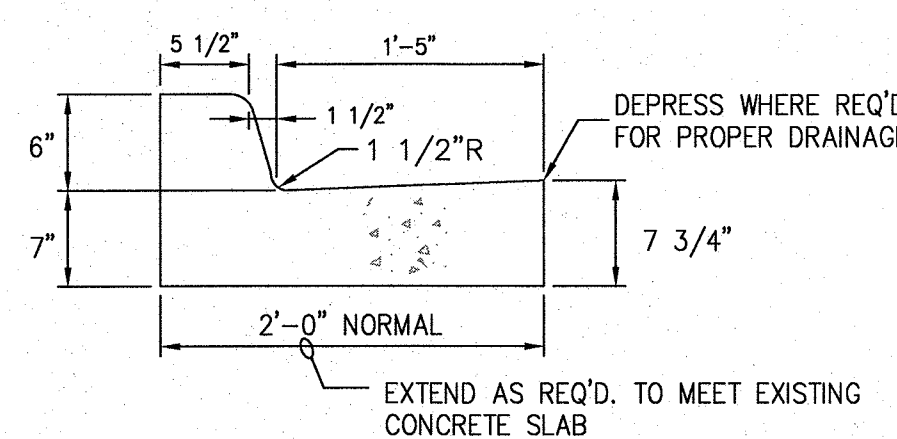
BOLLARD DETAIL

NTS



DEPRESSED SIDEWALK DRAIN

NTS



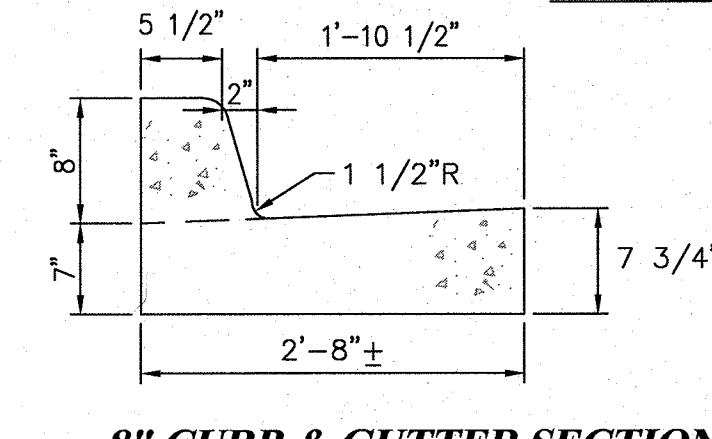
6" CURB AND GUTTER

CURB & GUTTER NOTES:

1. CURB AND GUTTER SHALL CONFORM TO CITY OF GALLUP STANDARD DRAWINGS SERIES 2400. ADDITIONAL CURB & GUTTER TYPES, DETAILS AND REQUIREMENTS ARE CONTAINED IN DRAWINGS 2415.0 AND 2415.1 OF THE SERIES.
2. CURB & GUTTER STONES SHALL HAVE MAX. 10' LENGTH WITH EXPANSION MATERIAL EVERY THIRD JOINT UNLESS OTHERWISE NOTED.
3. DIMENSIONS HEREON SHALL GOVERN UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

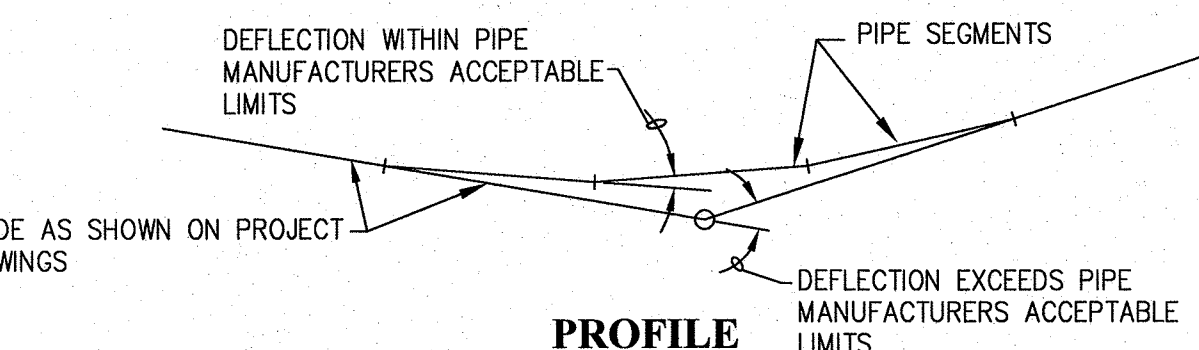
CURB & GUTTER SECTIONS

NTS

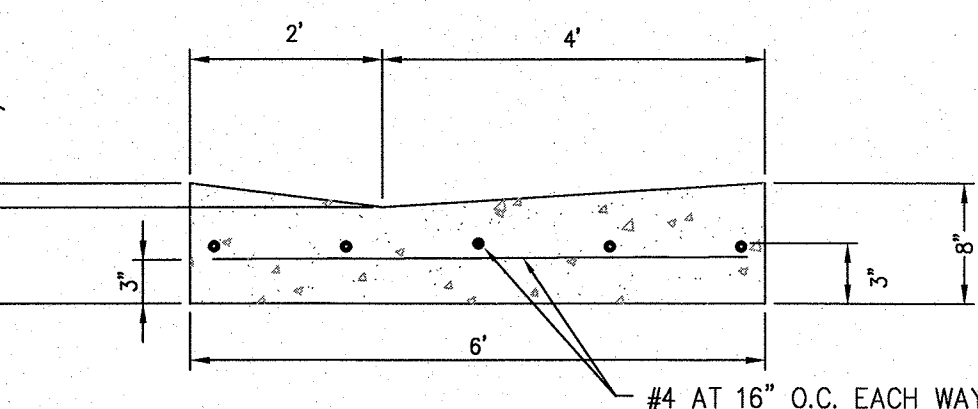


8" CURB & GUTTER SECTION

NTS



VERTICAL PIPE DEFLECTION (MULTIPLE JOINTS)

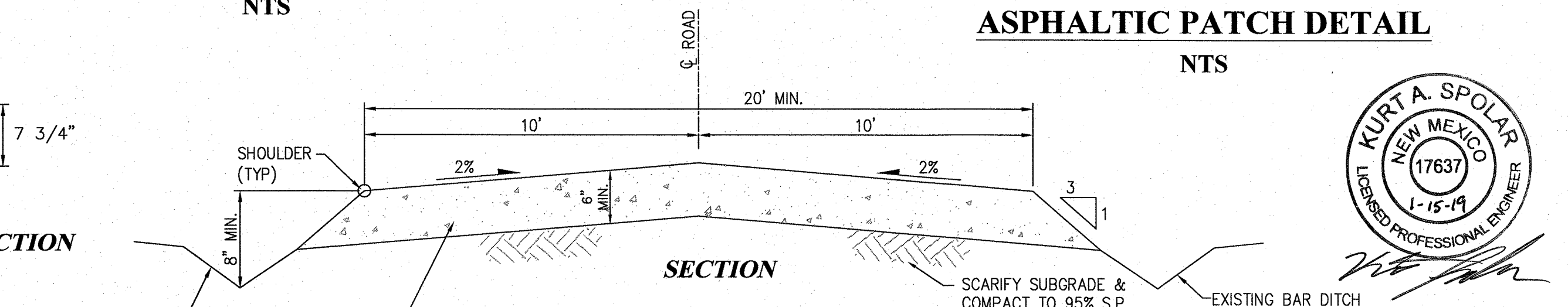


VALLEY GUTTER NOTES:

1. VALLEY GUTTER SHALL CONFORM TO CITY OF GALLUP STANDARD DRAWINGS SERIES 2400. ADDITIONAL VALLEY GUTTER INCLUDING FILLET LAYOUTS, TYPES, DETAILS AND REQUIREMENTS ARE CONTAINED IN DRAWINGS 2418.0 AND 2418.1 OF THE SERIES.

TYPICAL VALLEY GUTTER DETAIL

NTS

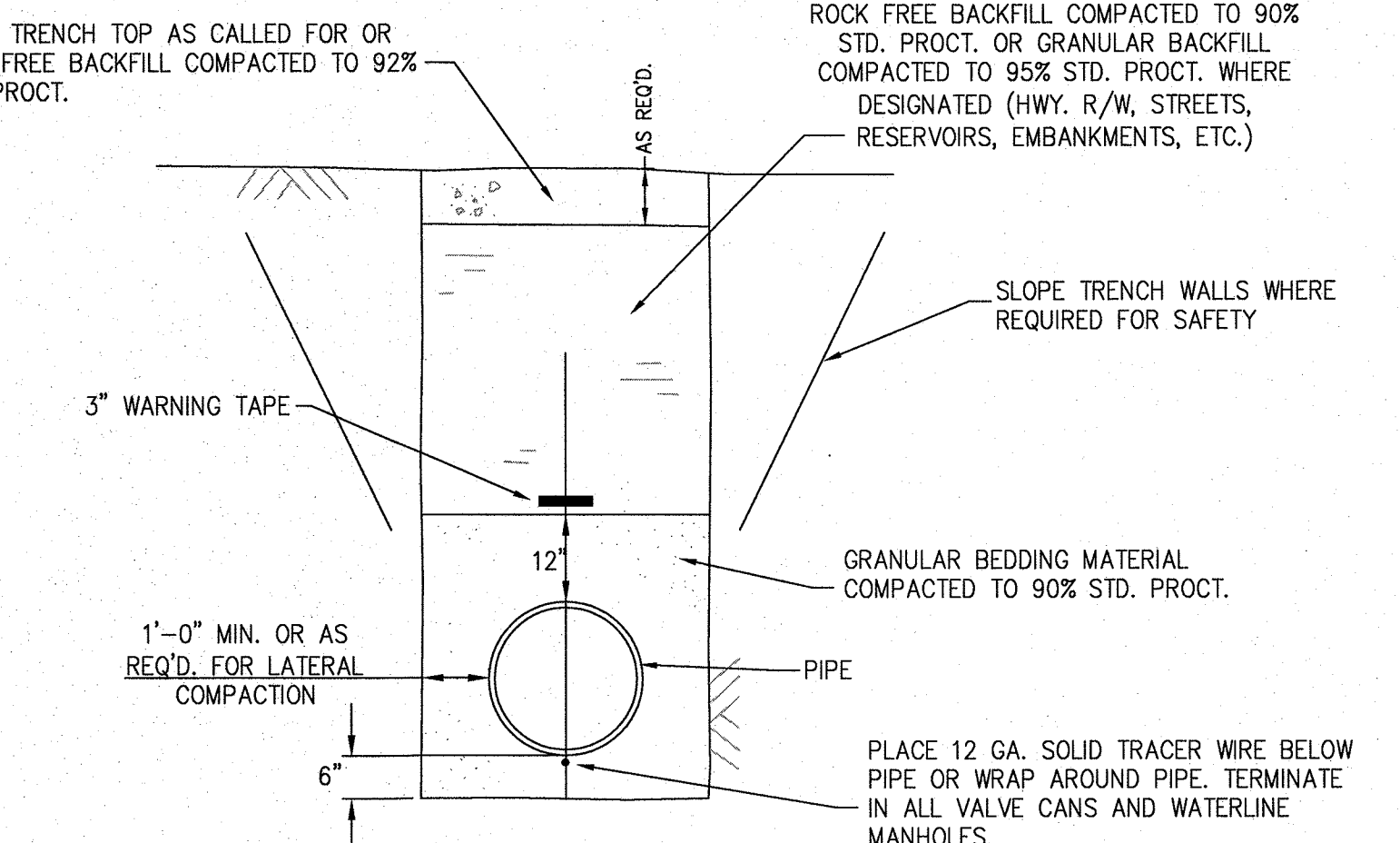


GRAVEL ROAD NOTES:

1. GRAVEL ROAD SHALL BE A MINIMUM OF 20' WIDE.
2. BASE COURSE SHALL BE COMPACTED TO 96% MODIFIED PROCTOR.
3. FINISHED GRADE OF ROAD AT SHOULDERS SHALL MATCH THE FINISHED GRADE OF EXISTING GRAVEL OR PAVED ROAD.

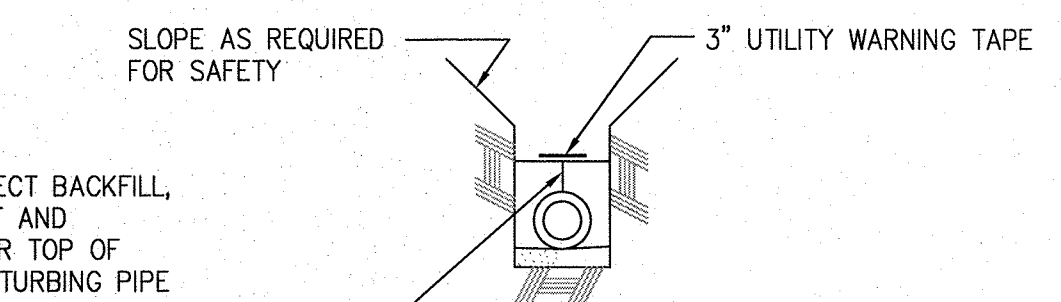
TYPICAL GRAVEL ROAD SECTION

NTS



TYPICAL TRENCH DETAIL

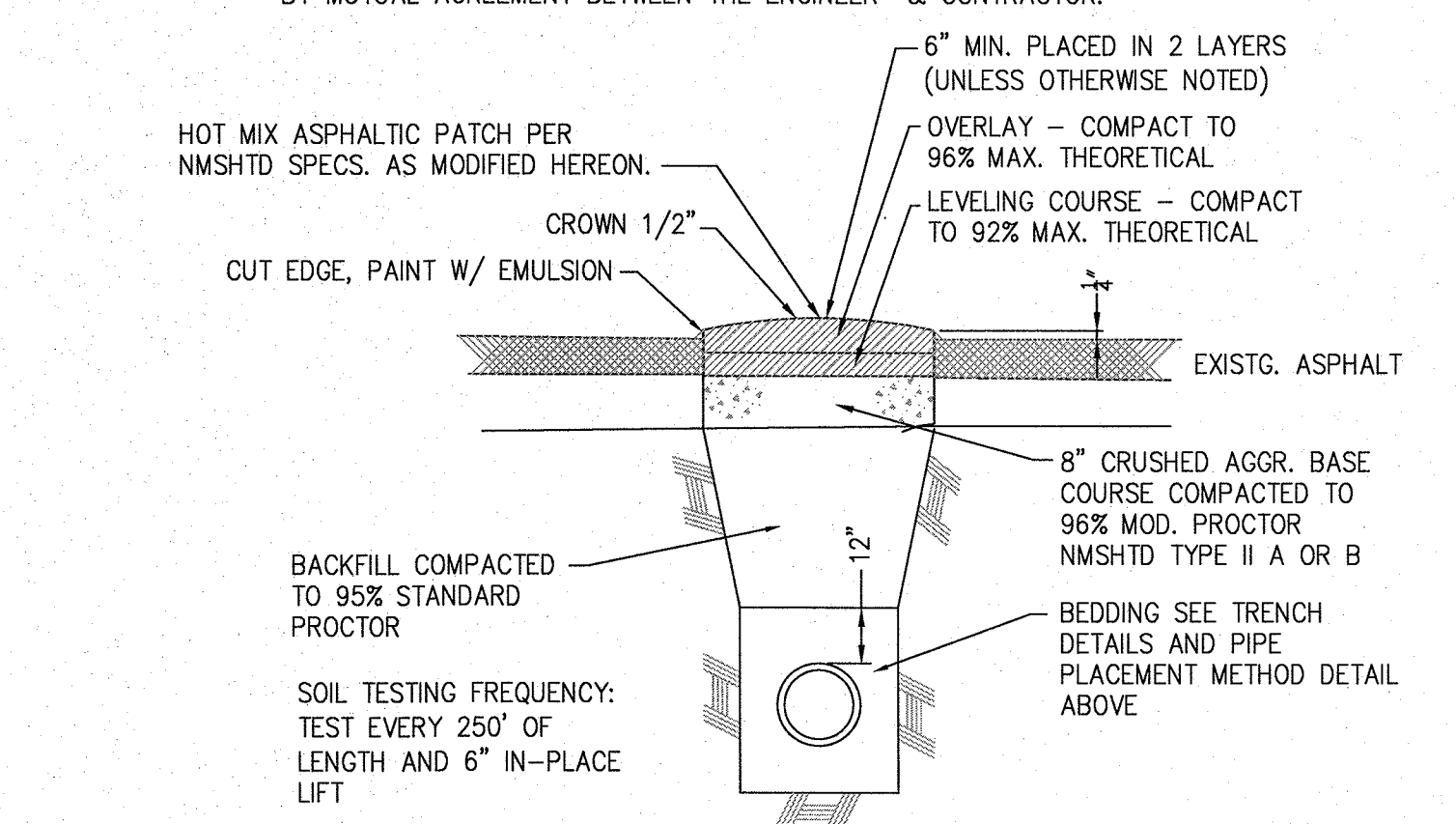
NTS



PLACEMENT STEP 3

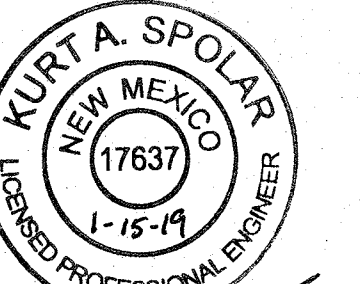
CAUTION
CALL NEW MEXICO ONE CALL
811
BEFORE YOU DIG!

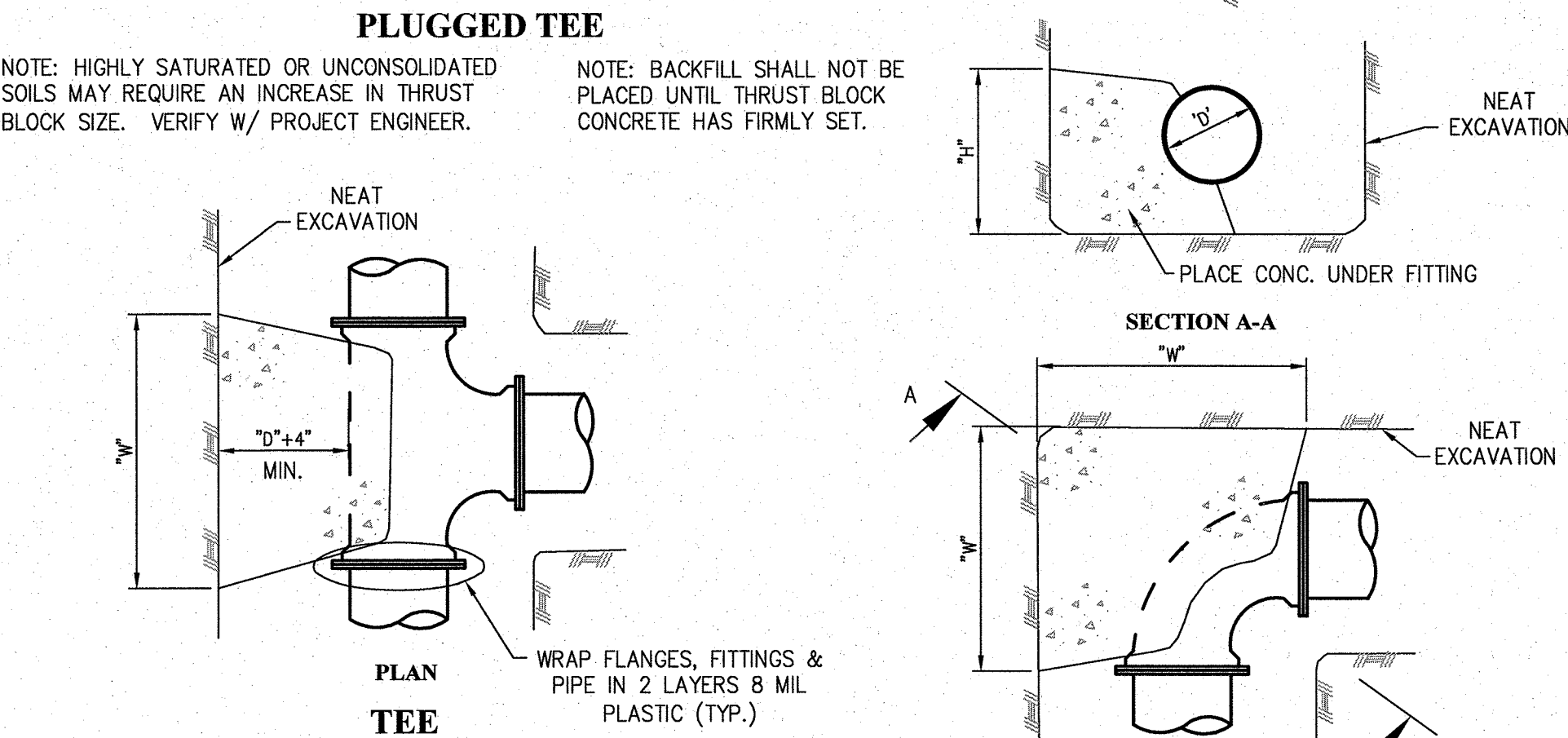
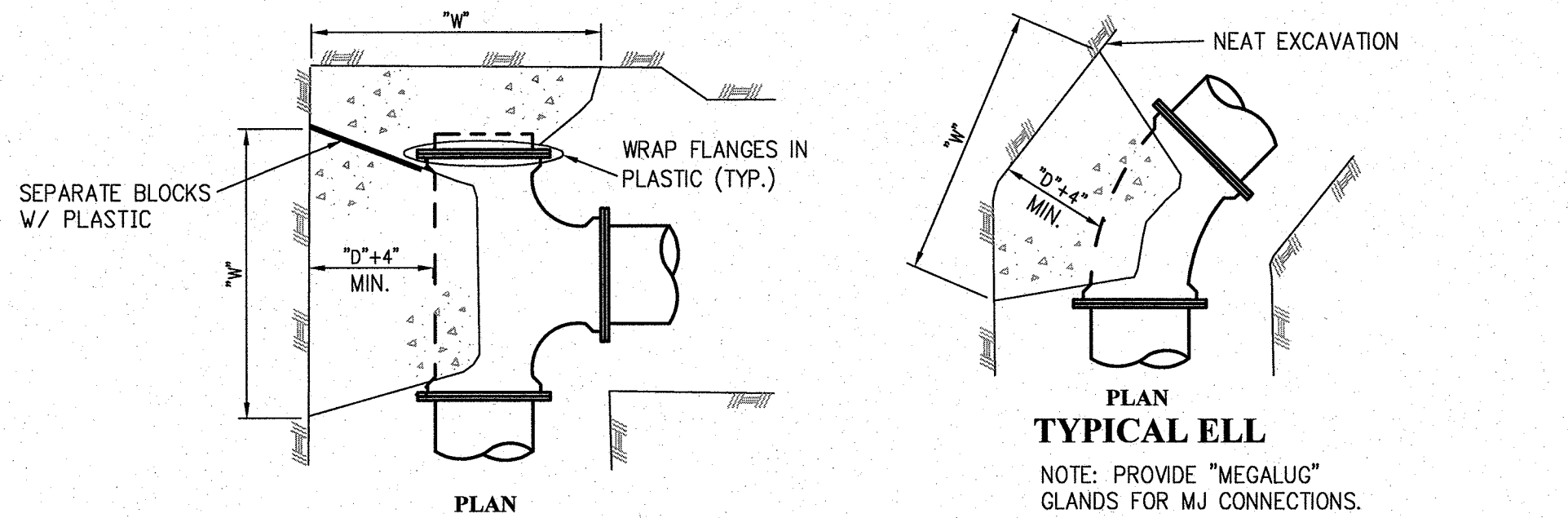
HOT MIX ASPHALTIC MATERIAL TO CONFORM NMSHTD SPECIFICATIONS PROVIDED HOWEVER THAT MIX SHALL CONTAIN ADDITIONAL FINES & ASPHALTIC CEMENT BY MUTUAL AGREEMENT BETWEEN THE ENGINEER & CONTRACTOR.



ASPHALTIC PATCH DETAIL

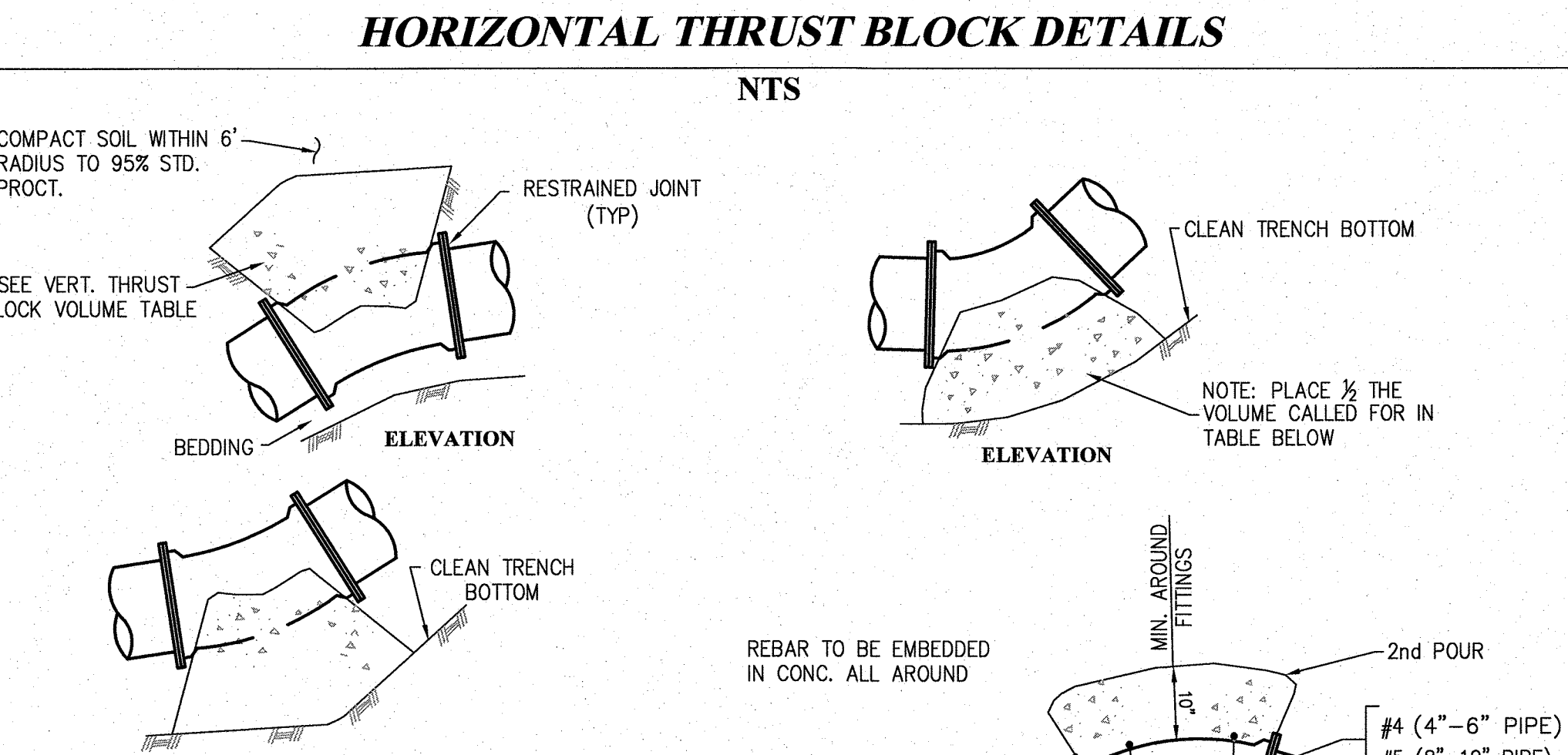
NTS





MINIMUM THRUST BLOCK DIMENSIONS FOR HORIZONTAL FITTINGS

PIPE	TEE	90° ELL	45° ELL	22 1/2° - 11 1/4° ELL
"D"	"W" "H"	"W" "H"	"W" "H"	"W" "H"
4"	14" 10"	14" 10"	12" 10"	12" 10"
6"	18" 14"	18" 14"	16" 12"	14" 10"
8"	24" 16"	22" 16"	18" 16"	16" 14"
10"	30" 30"	30" 30"	24" 16"	18" 12"
12"	32" 32"	32" 30"	18" 18"	20" 14"
14"	36" 36"	36" 32"	24" 16"	24" 16"
16"	48" 36"	48" 36"	26" 30"	18" 18"
18"	50" 38"	50" 38"	28" 32"	20" 18"
24"	58" 40"	58" 40"	30" 36"	26" 26"
30"	66" 46"	66" 46"	34" 44"	34" 34"

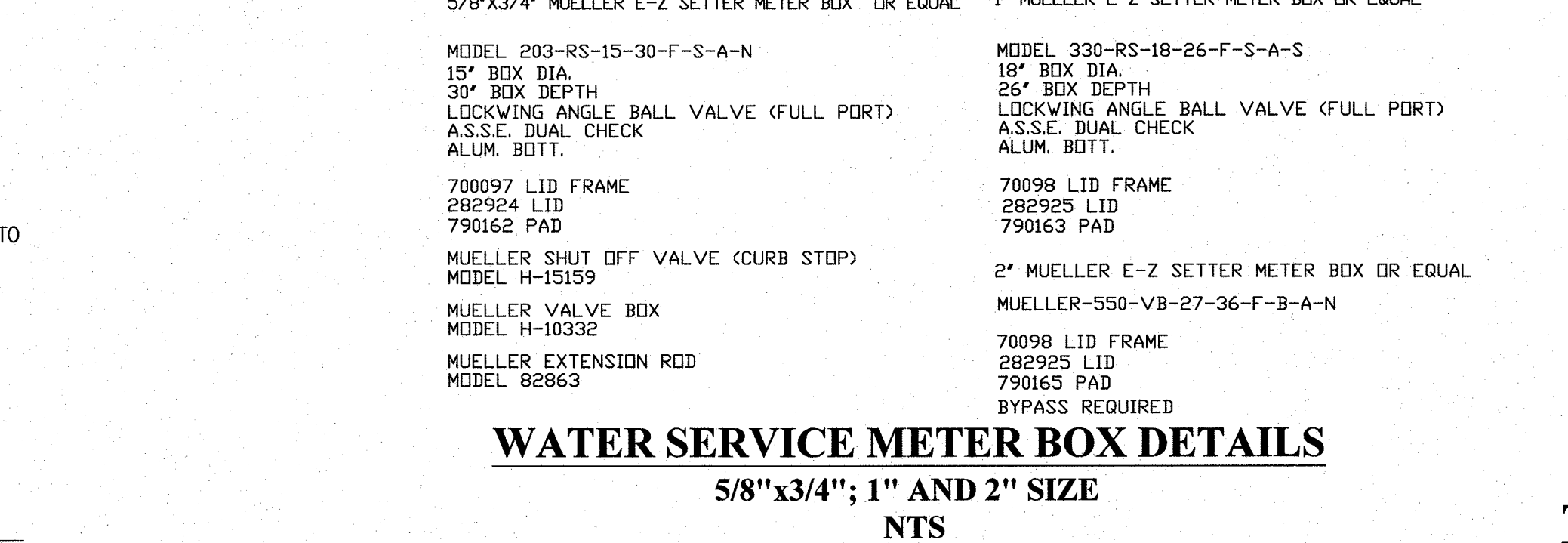
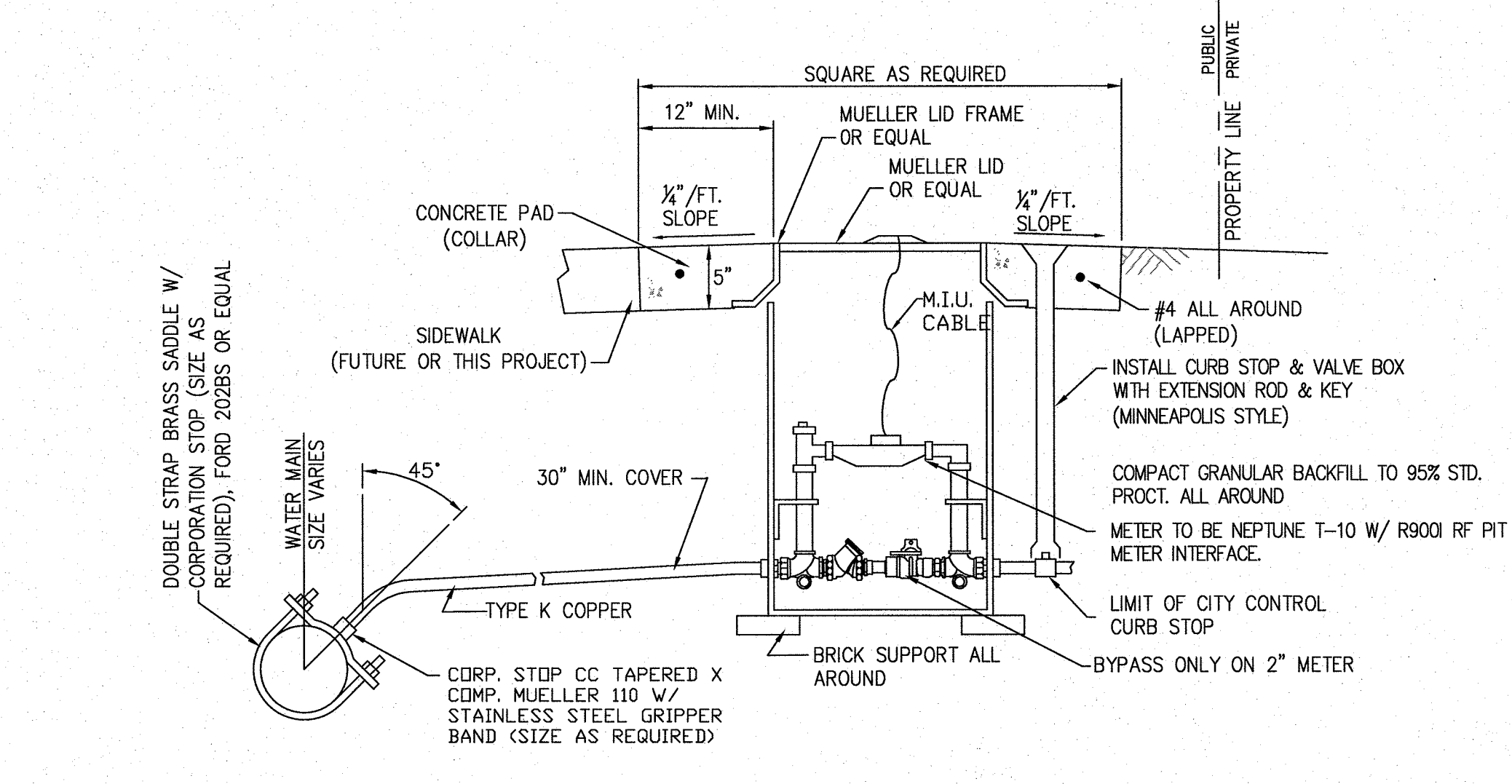
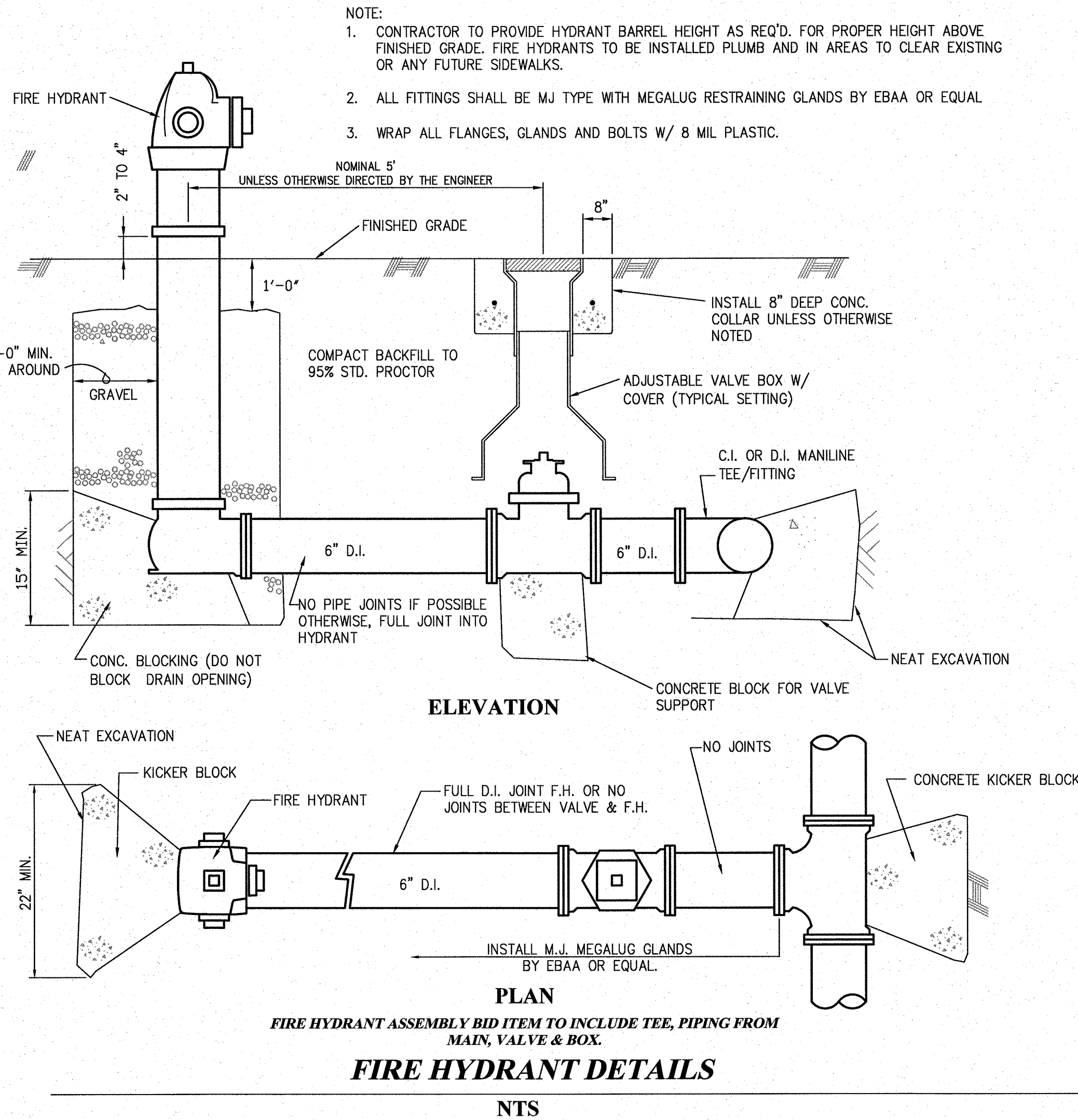


VERTICAL THRUST BLOCK -11 1/4° ELLS

VERTICAL THRUST BLOCK VOLUMES (FT)³

PIPE SIZE	45° ELL	22 1/2° ELL	11 1/4° ELL
4"	8	4	-
6"	14	8	-
8"	25	13	-
10"	40	21	10
12"	60	31	17
14"	85	45	26
16"	115	58	33
18"	125	64	39
24"	150	76	45
30"	180	89	55

VERTICAL THRUST BLOCK DETAILS



WATER SERVICE METER BOX DETAILS

5/8"x3/4"; 1" AND 2" SIZE

NTS

CITY OF GALLUP
NAVAJO GALLUP WATER SUPPLY PROJECT
REACH 27.9
FORMAL BID NO. 1903

NO.	BY	DATE

- WATER SPECIFICATIONS**
- NOTE: REFERENCES TO PUBLISHED SPECIFICATIONS ARE FOR LATEST REVISION THEREOF.
- A. **WATERLINES AND APPURTENANCES FOR POTABLE WATER**
- Ductile Iron:** Ductile iron for waterlines shall be of the size and class specified, cement lined and shall conform to AWWA C104 and C151. Joints for ductile iron pipe shall be rubber ring "push-on" or as specified on the drawings. Ductile iron pipe shall be wrapped 8 mil polyethylene per AWWA C105.
 - PVC:** PVC Waterlines shall conform to requirements of AWWA specification C900 with O.D. equivalent to cast iron with rubber ring "push-on" type gaskets.
 - Fittings and Specials:** Fittings and specials shall be ductile iron cement lined mechanical joint ductile iron conforming to AWWA C104 and C110 with retainer glands. Fittings and specials shall be wrapped in two layers of 8 mil. polyethylene
 - Gate Valves:** Gate valves 2" and larger shall be epoxy coated, iron body, resilient wedge, non-rising stem valves rated for 250 psi and shall conform to AWWA C-509 or C515. Valves less than 2" in diameter shall be high quality all brass ball valves. Valve boxes shall be ductile iron, adjustable length type. Connections for 2" and larger gate valves shall be mechanical joint with stainless steel trim unless otherwise noted.
 - Fire Hydrants:** Fire hydrants shall have a 6" diameter inlet with 5 1/4" valve opening and shall be rated for 150 psi working pressure. Connections for fire hydrants shall be mechanical joint and shall conform to AWWA C502. Fire hydrants shall be Mueller Centurion A 423.
 - Testing and Disinfection of Waterlines and Appurtenances**
 - Testing of Waterlines:** All Waterlines shall be tested after installation in accordance with AWWA Specification C600, provided allowable line leakage shall not be more than $NDP^{0.75}/7400$ gallons per hour where N = number of joints, D = pipe diameter in inches and P = test pressure in psi.

Average Test Pressure (psi)	Allowable Leakage per 100 Joints (gallons/hr.)						
	Pipe Dimension						
	4"	6"	8"	10"	12"	14"	16"
200	0.76	1.15	1.53	1.91	2.29	2.68	3.06

- Disinfection of Waterlines:** Completed lines shall be treated with chlorine solution of not less than 50 parts per million kept in contact for at least 24 hours. After the 24 hour period, the line shall be flushed until the residual chlorine has been reduced to City of Gallup system residual. Water in the new line shall be sampled by the contractor for biological testing after a period of 48 hrs. Required tests shall be the responsibility of the contractor. Tests to indicate compliance with NMED Standards prior to tying-in.
- Disinfection procedures shall be in accordance w/ AWWA C651 specifications and as modified hereon.
- Chlorine solution shall normally be introduced at the lowest elevation of the water line. The solution shall be pumped into the line in such a manner as to prevent trapping air. Contractor shall provide filling, sampling and air release taps as required.
- Liquid chlorine concentrate or gas shall be used for chlorine solution. Powder chlorine concentrate will not be permitted. (See Water Line Filling and Flushing Methods)

- Waterline Filling and Flushing Methods:** lines shall be filled w/ chlorine solution, pressure tested, flushed to lower residual and then tested for biological conformance prior to any tie-ins by either of the following methods, contractor to be responsible for apparatus required including methods of pipe & fitting restraint under pressure.
- Method 1: Fill the line with pre-mixed chlorine solution from clean water tanker. NOTE: chlorine concentrate may be introduced while pumping water into line, if continued disbursement is assured. After pressure test and 24 hour contact period, replace chlorinated water with low residual water by pumping from clean water tanker. Complete biological sampling and testing after 48 hrs. Tie-in to city system when test results are acceptable. flush lines with city pressure.
- Method 2: Connect to new main and existing city main with a line equipped with 2 check valves and a manual valve or with a standard commercial backflow preventor. NOTE: The connecting line and accessories are usually of a smaller size than the mains. Fill the new main through the connecting line while introducing a separate chlorine concentrate feed. Close the valve and disconnect the connecting line. Complete pressure testing and 24 hour contact period. Reconnect the line and flush to acceptable residual from the city main. Close the valve and disconnect the connecting line. Conduct biological sampling for testing after 48 hrs. Tie-in to city main when test results are acceptable. Flush lines to achieve scouring velocity with city pressure.

- Water Service Lines:**
 - Corp. Stop - cc tapered inlet by compression fitting as Mueller 110 with stainless steel gripper band.
 - Service Line - Type "K" soft drawn copper 3/4" min.
 - 1/8th or 1/4 Bends - Compression or to corp stop. (w/ ss gripper band)
 - Couplings - Compression by Compression. (w/ ss gripper band)
 - Saddles to be brass, double stop as FORD 202BS or equal. Maintain 2' min. between pipe end and tap.

