

# WATER & SANITARY SEWER IMPROVEMENTS SHOAL LOOP, GALE CIRCLE, & 34TH AVENUE SE PROJECT 2015-12

CITY OF MANDAN, NORTH DAKOTA

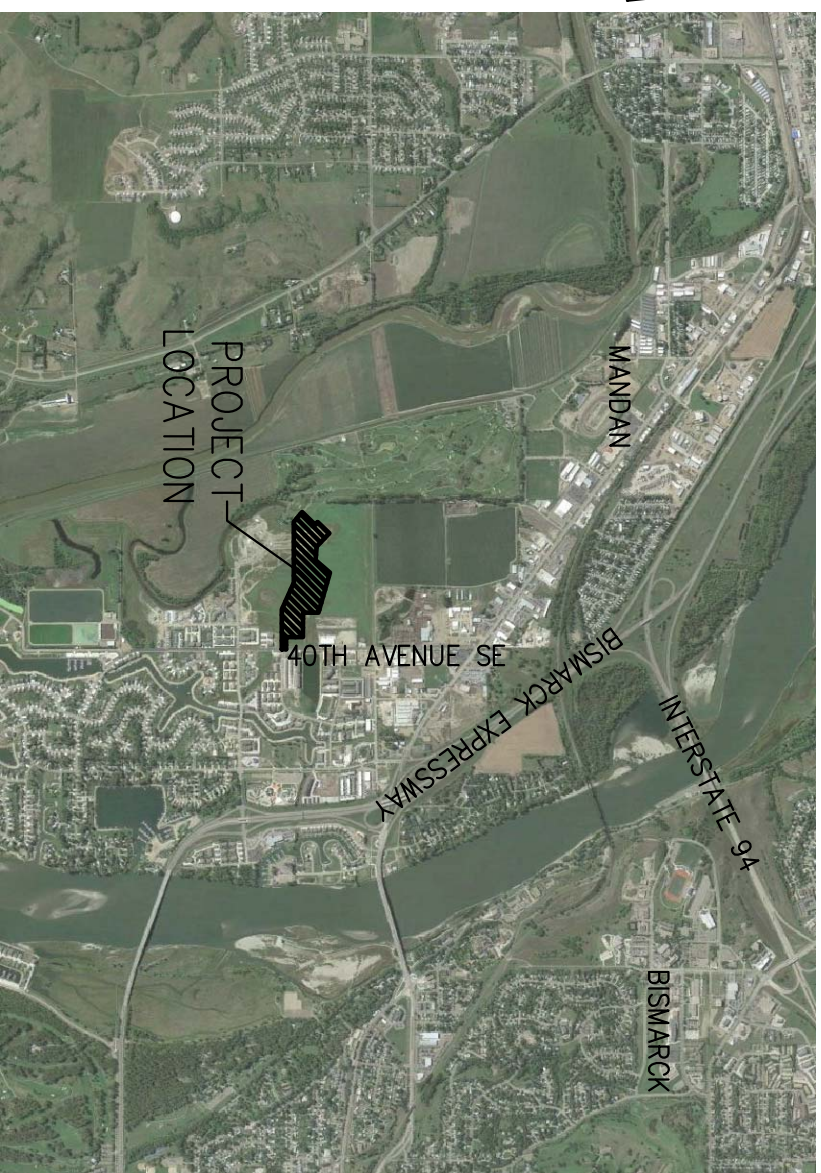
MANDAN CITY COMMISSION

MAYOR: **ARLYN VAN BEEK**

COMMISSIONERS: **MIKE BRAUN**  
**SHAUNA LABER**  
**DENNIS ROHR**  
**SANDRA TIBKE**

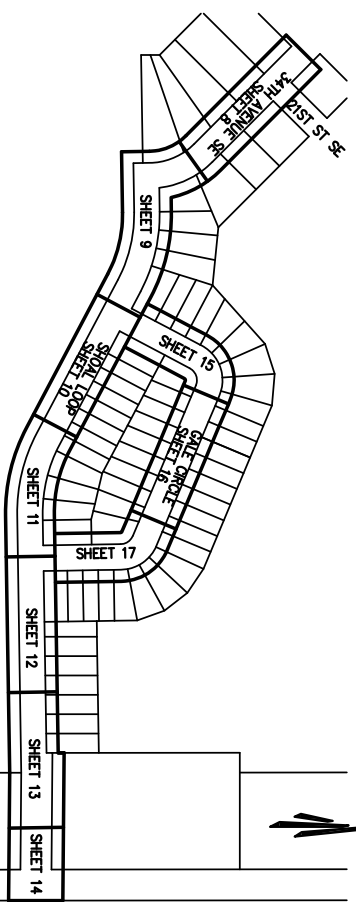
UTILITIES

<p>GAS: MONTANA-DAKOTA UTILITIES CO. 308 1ST STREET NW MANDAN, ND 58554 PH: 701-663-8713</p> <p>GAS: WILLISTON BASIN PIPELINE 1250 WEST CENTURY AVENUE BISMARCK, ND 58503 PH: 406-359-7223</p> <p>KEITH SEIFERT ELECTRIC: MOR-GRAN-SOU ELECTRIC COOP. INC. 2816 367TH ST. NW MANDAN, ND 58554 PH: 701-663-0297</p>	<p>STORM/SANITARY/WATER: CITY OF MANDAN PUBLIC WORKS DEPARTMENT 411 6TH AVENUE SW MANDAN, ND 58554 PH: 701-667-3240</p> <p>JEFF WRIGHT PHONE: CENTURYLINK 1101 16TH STREET NE MANDAN, ND 58554 PH: 701-222-6820</p> <p>CABLE: MIDCONTINENT COMMUNICATIONS 719 MEMORIAL HIGHWAY BISMARCK, ND 58501 PH: 1-800-888-1300</p>
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VICINITY MAP

N.T.S.



KEY MAP

SCALE: 1"=500'

ENGINEERS NOTE TO CONTRACTOR:

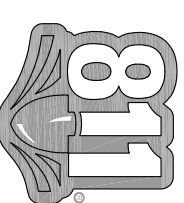
THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITIES, PIPES, AND/OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. THERE MAYBE EXISTING UTILITIES NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL ASCERTAIN THE TRUE VERTICAL AND HORIZONTAL LOCATION OF THOSE UNDERGROUND UTILITIES TO BE USED PRIOR TO CONSTRUCTION AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN HEREON.

UNAUTHORIZED CHANGES & USES:

THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES OF THESE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS PRIOR TO CONSTRUCTION. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL.

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- 9 SHOAL LOOP WATER & SANITARY PLAN & PROFILE 0+50-3+50
- 10 SHOAL LOOP WATER & SANITARY PLAN & PROFILE 3+50-7+00
- 11 SHOAL LOOP WATER & SANITARY PLAN & PROFILE 7+00-10+50
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- 14 SHOAL LOOP WATER & SANITARY PLAN & PROFILE 17+50-18+98
- 15 GALE CIRCLE WATER & SANITARY PLAN & PROFILE 0+00-3+50
- 16 GALE CIRCLE WATER & SANITARY PLAN & PROFILE 3+50-7+00
- 17 GALE CIRCLE WATER & SANITARY PLAN & PROFILE 7+00+10+71



**Know what's below.  
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BASIS OF BEARINGS:  
BEARINGS BASED ON THE EAST LINE OF SECTION 1, TOWNSHIP 138 NORTH, RANGE 81 WEST OF THE 5TH PRINCIPAL MERIDIAN AS SOUTH 00°03'48" EAST ACCORDING TO THE PLAT OF LAKEWOOD SIXTH ADDITION, BETWEEN MONUMENTS SHOWN HEREON.

BENCH MARK:  
NGS BENCHMARK C16 RESET, A DISK SET IN TOP OF ABUTMENT FOR BRIDGE OVER MISSOURI RIVER LAT: 46°49'03" LONG: 100°49'47", NGVD 29 ELEVATION 1693.67 FEET.

This document originally issued and sealed by James Martin, Registration Number PE-2610, on 07/14/15 and the original document is stored at the City of Mandan Administrative Office.

PREPARED UNDER THE SUPERVISION OF  
**TAIT & ASSOCIATES, INC.**

COVER SHEET

LAKWOOD 8TH ADDITION  
AXIEN ENGINEERING  
MORTON COUNTY  
MANDAN, NORTH DAKOTA



2911 N 14th Street, Suite 301,  
Bismarck, ND 58501  
p: 701/258/6397 f: 701/353/5798  
www.tait.com  
Los Angeles Rancho Cucamonga Sacramento Seattle Boise Dallas Denver North Dakota

GALE LOOP TO GALE CIRCLE	RM	07/14/15
NO.	DESCRIPTION	REVISIONS
BY	DATE	

DRAWN: JN  
DATE: 05/03/2015  
CHECKED: JM  
DATE: 06/04/2015  
REVISION #: 1  
DATE: 06/04/2015  
JOB NO: ND10090

**SITE LEGEND:**

	PROPERTY/LOT LINE
	RIGHT-OF-WAY LINE
	EXISTING UTILITY EASEMENT
	PROPOSED UTILITY EASEMENT
	SLOPE/FLOW DIRECTION
	EXISTING STORM DRAIN
	PROPOSED STORM DRAIN
	PROPOSED STORM DRAIN INLET
	EXISTING STORM DRAIN MANHOLE
	PROPOSED STORM DRAIN MANHOLE
	EXISTING SANITARY SEWER
	PROPOSED SANITARY SEWER LATERAL PER PLAN
	PROPOSED 8" SANITARY SEWER
	EXISTING SANITARY SEWER MANHOLE
	PROPOSED SANITARY SEWER MANHOLE
	EXISTING WATER
	PROPOSED WATER SERVICE PER PLAN
	PROPOSED 8" WATER
	EXISTING WATER VALVE
	PROPOSED WATER VALVE
	PROPOSED WATER BEND OR TEE WITH THRUST BLOCK
	EXISTING FIRE HYDRANT
	PROPOSED FIRE HYDRANT
	EXISTING COMMUNICATIONS VAULT

**ABBREVIATIONS:**

BOSD	BOTTOM OF STORM DRAIN
BOW	BOTTOM OF WATER
BV	BLOW-OFF VALVE
CL	CENTERLINE
EA	EACH
ELEC/E	ELECTRIC TRENCH
EX	EXISTING
FH	FIRE HYDRANT
FS	FINISHED SURFACE
GAS/G	GAS TRENCH
GV	GATE VALVE
H	HEIGHT
INV	INVERT
L	LENGTH
LF	LINEAL FEET
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
R	RADIUS
R/W	RIGHT OF WAY
S/SS	SANITARY SEWER
SD	STORM DRAIN
SMH	SANITARY SEWER MANHOLE
STA	STATION
TB	THRUST BLOCK
TOSS	TOP OF SANITARY SEWER
TOW	TOP OF WATER
TYP	TYPICAL
W/WTR	WATER
WS	WATER SERVICE

**QUANTITIES:**

<b>WATER MAIN:</b>	
6" PVC WATER MAIN	173LF
8" PVC WATER MAIN	3169LF
6" HYDRANT	7EA
6" GATE VALVE & BOX	7EA
8" GATE VALVE & BOX	5EA
1" WATER SERVICE	1995LF
1" CURB STOP & BOX	64EA
1" WATER SERVICE CONNECTION	64EA
DEWATERING	1EA
SUBCUT GRAVEL	300TON
<b>SANITARY SEWER:</b>	
48" ECCENTRIC MANHOLE	12EA
8" PVC SANITARY MAIN	3118LF
6" PVC SANITARY LATERAL	31LF
4" PVC SANITARY LATERAL	2062LF
8"x4" PVC WYE	64EA
TELEWISE SANITARY MAIN	1EA
DEWATERING	1EA
SUBCUT GRAVEL	300TON

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NO.	DESCRIPTION	REVISIONS	BY	DATE

**GENERAL NOTES:**

1. ALL CONSTRUCTION SHALL MEET THE REQUIREMENTS OF THE APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. THE CITY OF MANDAN STANDARD SPECIFICATIONS AND DETAILS; AND THE CONSTRUCTION DOCUMENTS TITLED WATER AND SANITARY SEWER IMPROVEMENTS: SHOAL LOOP, GALE CIRCLE, & 34TH AVENUE SE, DISTRICT 202 PROJECT 2015-12, MANDAN, NORTH DAKOTA. CITY OF MANDAN SPECIFICATIONS AND DETAILS CAN BE FOUND AT <http://www.cityofmandan.com>. (HOME> CITY DEPARTMENTS> ENGINEERING & PLANNING> ENGINEERING> PROJECTS> CONSTRUCTION SPECIFICATIONS)
2. THESE NOTES APPLY TO THE ENTIRE PROJECT EXCEPT AS INDICATED OTHERWISE. CONTRACTOR SHOULD NOTE THAT ADDITIONAL CONSTRUCTION NOTES ARE INCLUDED ON INDIVIDUAL DRAWINGS.
3. THESE NOTES ARE FOR GENERAL REFERENCE IN CONJUNCTION WITH AND AS A SUPPLEMENT TO THE WRITTEN SPECIFICATIONS, DETAILS, ADDENDA AND CHANGE ORDERS ASSOCIATED WITH THE CONTRACT DOCUMENTS.
4. REQUESTS BY THE CONTRACTOR OR OWNER SHALL BE APPROVED IN WRITING BY THE ENGINEER AND CITY PRIOR TO IMPLEMENTATION.
5. ANY ERRORS OR OMISSIONS DISCOVERED BY THE CONTRACTOR IN THE PLAN SET SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER WHEN DISCOVERED. THE CONTRACTOR SHALL ALLOW TIME FOR CLARIFICATION.
6. ITEMS NOT INCLUDED IN THE PLANS AS A PAY ITEM BUT INCLUDED ELSEWHERE IN THE PLANS SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER AND SHALL BE CONSIDERED INCIDENTAL ITEMS.
7. THIS PLAN SET HAS A LIST OF GENERAL ABBREVIATIONS AND SYMBOLS AND MATERIAL LEGENDS LISTED ON IT. SOME SYMBOLS, MATERIALS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT.
8. THE CONTRACTOR SHALL PROVIDE A ONE (1) WEEK NOTICE TO THE ENGINEER AND THE CITY OF MANDAN PRIOR TO BEGINNING ANY CONSTRUCTION.
9. THE ENGINEER AND/OR CITY SHALL HAVE THE RIGHT TO REQUIRE ADDITIONAL WORK NOT SHOWN HEREIN BUT REQUIRED FOR SUCCESSFUL COMPLETION OF THE PROJECT.
10. ALL EQUIPMENT NECESSARY AND REQUIRED FOR THE PROPER CONSTRUCTION OF PROJECT ITEMS AND TASKS SHALL BE ON THE PROJECT IN FIRST-CLASS WORKING CONDITION AND BEFORE CONSTRUCTION IS PERMITTED TO START.
11. 300 TONS OF 'SUBCUT GRAVEL' HAS BEEN INCLUDED IN PLAN QUANTITIES FOR SANITARY AND WATER EACH. 'SUBCUT GRAVEL' MAY OR MAY NOT BE USED DEPENDING ON SITE SOIL CONDITIONS.
12. THE CONTRACTOR IS TO PROVIDE AND MAINTAIN ADEQUATE DEWATERING EQUIPMENT TO REMOVE AND DISPOSE OF ANY SURFACE AND GROUNDWATER ENTERING TRENCHING. ALL COSTS ASSOCIATED WITH WELLPOINT DEWATERING, AND OTHER PUMP SYSTEMS, SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT. PERMITS REQUIRED FOR DEWATERING SHALL BE OBTAINED BY THE CONTRACTOR.
13. THE LOCATION OF EXISTING UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR IT'S REPRESENTATIVES. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. UNDERGROUND LOCATES MAY BE MADE USING THE "ONE CALL" NUMBER, 811 OR 1-800-795-0555. LOCATION OF EXISTING UTILITIES AND COORDINATION WITH UTILITY COMPANIES ARE INCIDENTAL TO OTHER BID ITEMS.
14. WHERE EXISTING UTILITY WIRES (TELEPHONE, ELECTRIC) ARE LOCATED ADJACENT TO OR ABOVE THE PROPOSED IMPROVEMENTS, THE CONTRACTOR SHALL TEMPORARILY SUPPORT EXISTING WIRES AND INSTALL IMPROVEMENTS UNDER EXISTING WIRES. ANY DECISION TO HAVE THE EXISTING UTILITIES MOVED WILL BE AT THE CONTRACTORS EXPENSE.
15. THE CONTRACTOR SHALL PROTECT ALL SURVEY MONUMENTS. MONUMENTS DISTURBED OR DESTROYED SHALL BE REPLACED BY THE OWNER'S REPRESENTATIVE AT THE CONTRACTORS EXPENSE.
16. MISCELLANEOUS ITEMS SUCH AS AND NOT LIMITED TO: MAILBOXES, STREET LIGHTS, TRAFFIC LIGHTS, SIGNS, FENCES, POLES, ETC. SHALL BE PROTECTED OR REMOVED AND REINSTALLED BY THE CONTRACTOR WITH THE OWNERS' AND PROPERTY OWNER'S PERMISSION, AND THIS WORK SHALL BE INCIDENTAL TO THE CONTRACT.
17. ANY EXISTING STRUCTURES DISTURBED BY CONSTRUCTION ARE TO BE RESTORED TO THEIR ORIGINAL LOCATION AND CONDITION. ALL STRUCTURES SUCH AS CURB AND GUTTER, CONCRETE AND BITUMINOUS SIDEWALKS, PAVING BRICKS, FENCING, RETAINING WALLS, ETC., CROSSED BY THE PROPOSED WATER, SEWER, CULVERTS AND ROADWAYS MAY NOT BE INDICATED.
18. EXCESS EXCAVATED MATERIAL INCLUDING PIPE, STUMPS, ROOTS, SOIL MATERIALS AND ANY OTHER ITEMS THE OWNER DOES NOT WISH TO SALVAGE SHALL BECOME THE CONTRACTORS PROPERTY AND SHALL BE REMOVED FROM THE SITE AND DISPOSED OF PROPERLY, INCIDENTAL TO THE CONTRACT. ASPHALT AND CONCRETE SHALL BE DISPOSED OF OFFSITE AT A LICENSED LANDFILL INCIDENTAL TO THE CONTRACT.
19. CONTRACTOR SHALL FULL DEPTH SAW CUT ALL CURB AND GUTTER, SIDEWALK, AND PAVEMENT PRIOR TO REMOVAL.

**FIELD GRADING NOTES:**

20. ALL UTILITY TRENCHES ARE TO BE BACKFILLED & COMPACTED TO THE PROPOSED SUBGRADE AS SHOWN ON THE PLANS.
21. ALL DISTURBED AREAS OUTSIDE OF THE RIGHT OF WAY AND WITHIN THE PROJECT BOUNDARY SHALL BE SEEDED AND MULCHED. SEEDING & MULCHING TO BE INCIDENTAL TO CONTRACT. SEED SHALL BE CLASS 1, AS DEFINED IN CITY OF MANDAN CONSTRUCTION SPECIFICATIONS -SECTION 1202--1, MULCHING SHALL BE HAY, AS DEFINED IN CITY OF MANDAN CONSTRUCTION SPECIFICATIONS-SECTION 1204-2. HAY MULCH SHALL BE ANCHORED MECHANICALLY.
22. THE CONTRACTOR SHALL PROVIDE METHODS AND MEANS TO OBTAIN THE REQUIRED COMPACTION OF PIPE BED AND THE BACKFILL, AS SPECIFIED.
23. EXCAVATION:
  - 23.1. EXCAVATION SHALL BE PERFORMED AS INDICATED ON THE CONTRACT PLANS TO THE LINES, GRADES, AND ELEVATION SHOWN OR AS DIRECTED BY THE ENGINEER, AND SHALL BE MADE SO THAT THE REQUIREMENTS FOR FORMATION OF EMBANKMENTS CAN BE FOLLOWED. NO EXCAVATION OR STRIPPING SHALL BE STARTED UNTIL THE ENGINEER HAS STAKED OUT THE PROPOSED WORK. ALL MATERIAL ENCOUNTERED WITHIN THE LIMITS INDICATED SHALL BE REMOVED AND DISPOSED OF AS DIRECTED. DURING THE PROCESS OF EXCAVATION, THE GRADE SHALL BE MAINTAINED SO THAT IT WILL BE WELL DRAINED AT ALL TIMES, WHEN DIRECTED. TEMPORARY DRAINS AND DRAINAGE DITCHES SHALL BE INSTALLED TO INTERCEPT OR DIVERT SURFACE WATER WHICH MAY AFFECT WORK.
  - 23.2. THE CONTRACTOR SHALL MAKE THE DISTRIBUTION AS INDICATED ON THE PLANS. WIDENING OR NARROWING OF THE SECTION AND RAISING OR LOWERING OF THE GRADE TO AVOID HAUL WILL NOT BE PERMITTED. THE ENGINEER RESERVES THE RIGHT TO MAKE MINOR ADJUSTMENTS OR REVISIONS IN LINES OR GRADES, IF FOUND NECESSARY, AS THE WORK PROGRESSES DUE TO DISCREPANCIES IN THE PLANS OR TO OBTAIN SATISFACTORY CONSTRUCTION.
  - 23.3. ALL VEGETATION SUCH AS BRUSH, HEAVY SODS, HEAVY GROWTH OF GRASS, DECAYED VEGETABLE MATTER, RUBBISH, AND ANY OTHER UNSUITABLE MATERIAL WITHIN THE AREA UPON WHICH EMBANKMENT IS TO BE PLACED SHALL BE STRIPPED OR OTHERWISE REMOVED BEFORE THE EMBANKMENT IS STARTED, AND IN NO CASE SHALL SUCH OBJECTIONABLE MATERIAL BE ALLOWED IN OR UNDER THE EMBANKMENT.
  - 23.4. EMBANKMENTS SHALL BE FORMED OF SATISFACTORY MATERIALS PLACED IN SUCCESSIVE HORIZONTAL LAYERS OF NOT MORE THAN 8 INCHES IN LOOSE DEPTH FOR THE FULL WIDTH OF THE CROSS SECTION.
  - 23.5. ALL MATERIALS PLACED IN THE EMBANKMENT SHALL BE REASONABLY FREE OF ORGANIC MATTER SUCH AS LEAVES, GRASS, ROOTS, AND OTHER OBJECTIONABLE MATERIAL.
24. WATER FOR COMPACTING SUBGRADE OR GRAVEL BASE SHALL BE INCIDENTAL TO OTHER BID ITEMS.
25. COMPACTION REQUIREMENT OF SUBGRADE SHALL COMPLY WITH SECTION 200 OF THE CITY OF MANDAN STANDARD CONSTRUCTION SPECIFICATIONS.
26. WATER MAIN TO BE 8"PVC C-900, PC235 (DR18) PIPE. MARKING TAPE SHALL BE INSTALLED 2' ABOVE THE MAIN IN ACCORDANCE WITH CITY OF MANDAN SPECIFICATIONS FOR WATER DISTRIBUTION.
27. WATER SERVICES TO BE 1" COPPER, TYPE-K PIPE OR HIGH-DENSITY POLYETHYLENE (HDPE) PER CITY OF MANDAN SPECS 1209-2.3 AND 1209-2.4 RESPECTIVELY AS NOTED ON PLANS. WATER SERVICES TO BE EXTENDED WITH APPROPRIATE FITTINGS TO R/W LINE AS SHOWN ON PLANS AND CAPPED AND MARKED WITH STAKE IN ACCORDANCE WITH CITY OF MANDAN STANDARD SPECIFICATIONS FOR WATER SERVICE CONNECTIONS.
  - 27.1. FOR ALL 1" WATER SERVICES INSTALL PER DETAIL ON SHEET 5.
28. CONTRACTOR TO ENSURE WATER MAIN MAINTAINS A MINIMUM OF 7.5' VERTICAL DEPTH BELOW PROPOSED FINISHED SURFACE AND MINIMUM 10' HORIZONTAL SEPARATION FROM OUTSIDE WALLS TO 8"PVC SANITARY SEWER MAIN. ENSURE WATER MAINTAINS MINIMUM 1.5' VERTICAL SEPARATION FROM ALL SANITARY SEWER LATERALS AT CROSSINGS.
29. ALL DIMENSIONS AND OFFSETS ARE FROM STREET CENTERLINE TO CENTERLINE OF WATER MAIN UNLESS OTHERWISE NOTED.
30. CONTRACTOR TO INSTALL 6" FIRE HYDRANTS PER DETAIL SHOWN HEREIN AND CITY OF MANDAN SPECIFICATIONS FOR WATER DISTRIBUTION. PROVIDE 8"X8"X6" TEE WITH 6" GATE VALVE FOR CONNECTION OF 6"PVC C-900, PC235 (DR18) FIRE HYDRANT LINE TO 8" PVC WATER MAIN.
31. ALL PIPE TRENCHING AND BEDDING SHALL CONFORM TO CITY OF MANDAN SPECIFICATIONS AND STANDARD DETAILS.
32. ALL BENDS, GATE VALVES, TEES, AND CONNECTIONS SHALL BE RESTRAINED AND BRACED ACCORDING TO CITY OF MANDAN SPECIFICATIONS FOR WATER DISTRIBUTION. ALL MUST BE SIZED ACCORDING TO PLAN.
33. GATE VALVES ARE TO BE INSTALLED 3'-5" FROM TEES AS SHOWN ON PLANS.
34. CONNECTION OF PROPOSED 8" PVC WATER MAIN TO EXISTING 8" PVC WATER MAIN WHERE STUB IS NOT PROVIDED SHALL BE CONNECTED WITH A TAPPING SLEEVE AND TAPPING VALVE IN ACCORDANCE WITH CITY OF MANDAN SPECIFICATIONS FOR WATER SERVICE CONNECTIONS.
35. HORIZONTAL AND VERTICAL DEFLECTIONS AS SHOWN ON PLANS ARE TO BE ACHIEVED WITH RADIAL DEFLECTION THROUGH THE LENGTH OF THE PIPE. PIPES SHALL BE DEFLECTED TO A MINIMUM RADIUS OF 200' AS NECESSARY. THERE SHALL BE NO DEFLECTION AT JOINTS/CONNECTIONS.

**SANITARY SEWER NOTES:**

36. SANITARY SEWER MAIN TO BE 8"PVC (SDR 35) PIPE. MARKING TAPE SHALL BE INSTALLED 2' ABOVE THE MAIN IN ACCORDANCE WITH CITY OF MANDAN SPECIFICATIONS FOR SEWERS.
37. SANITARY SEWER LATERALS ARE TO BE 4" PVC (SDR 35) PIPE UNLESS OTHERWISE NOTED ON THE PLANS. LATERALS ARE TO BE CONNECTED TO THE 8" SS MAIN WITH AN 8"X4" WYE UNLESS CONNECTED DIRECTLY INTO A MANHOLE STRUCTURE. REFER TO STANDARD DETAILS HEREIN. SANITARY LATERALS TO BE EXTENDED TO R/W LINE AS SHOWN ON PLANS AND CAPPED AND MARKED WITH POST IN ACCORDANCE WITH CITY OF MANDAN STANDARD SPECIFICATIONS FOR SANITARY SEWER CONNECTIONS.
38. ALL PIPE TRENCHING AND BEDDING SHALL CONFORM TO CITY OF MANDAN SPECIFICATIONS AND STANDARD DETAILS.
39. SANITARY SEWER MANHOLES ARE TO BE 48" Ø WITH ECCENTRIC CONES PER CITY OF MANDAN STANDARD DETAIL. STEPS SHALL NOT BE PROVIDED UNLESS SPECIFIED.
40. CONTRACTOR SHALL TELETYPE SANITARY SEWER MAINS PER CITY OF MANDAN SPEC 801-3.9.
41. CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO ENGINEER PRIOR TO BEGINNING WORK. COST FOR TRAFFIC CONTROL PLAN PREPARATION SHALL BE INCIDENTAL TO THE CONTRACT.
42. CONTRACTOR SHALL MAINTAIN INGRESS/EGRESS ACCESS TO INDIVIDUAL PROPERTY OWNERS AT ALL TIMES. CONTRACTOR SHALL COORDINATE DETOURS AND ANY TEMPORARY CLOSURES WITH EACH PROPERTY OWNER AND THE CITY OF MANDAN ENGINEERING DEPARTMENT. CONTRACTOR SHALL KEEP DURATION OF ALL CLOSURES AND DETOURS TO A MINIMUM.
43. CONTRACTOR SHALL MAINTAIN TEMPORARY DETOUR ROADS UNTIL DETOUR IS NO LONGER NECESSARY. MAINTENANCE COSTS SHALL BE INCIDENTAL TO THE CONTRACT.
44. CONTRACTOR SHALL FOLLOW THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) STANDARDS AND GUIDES FOR TRAFFIC CONTROL FOR STREET AND HIGHWAY CONSTRUCTION.
45. THE CONTRACTOR SHALL FOLLOW NORTH DAKOTA DEPARTMENT OF TRANSPORTATION STANDARD DRAWINGS WHEN SETTING UP THE TRAFFIC CONTROL DEVICES.
46. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A GENERAL PERMIT (NPDES) FROM THE NORTH DAKOTA DEPARTMENT OF HEALTH. AN APPLICATION PACKAGE WITH ALL RELATED AND SUBSEQUENT REQUIREMENTS MAY BE ACQUIRED BY CONTACTING THE NORTH DAKOTA DEPARTMENT OF HEALTH AT 701-328-5210. CONTRACTOR SHALL ABIDE BY ALL REQUIREMENTS OF THE NPDES PERMIT. MAINTENANCE OF EROSION CONTROL MEASURES AND INSTALLATION OF ADDITIONAL MEASURES SHALL BE INCIDENTAL TO THE WORK PERFORMED.
47. THE CONTRACTOR IS RESPONSIBLE FOR MINIMIZING TRACKING OF SOIL AND DEBRIS ONTO ADJACENT PROPERTIES AND ROADWAYS. TRACKING MUST BE REMOVED BY THE END OF EACH DAY.
48. THE CONTRACTOR SHALL BE REQUIRED TO CLEAN STREETS AND SIDEWALKS AND REPAIR TO THE CONDITION THEY WERE IN PRIOR TO THE START OF CONSTRUCTION BEFORE OPENING UP TO TRAFFIC.
49. THE CONTRACTOR SHALL INSTALL A CENTRAL CONCRETE WASHOUT LOCATION AND PROVIDE A SIGN TO IDENTIFY THE CONCRETE WASHOUT AREA. THE CONTRACTOR SHALL CONSTRUCT A PIT TO PREVENT WASHOUT WATER FROM FLOWING TO THE STORM WATER COLLECTION SYSTEM.
50. EROSION CONTROL PLAN AND BMP SELECTION:
  - 50.1. AREAS NOT BEING DEVELOPED OR PLANNED TO BE DEVELOPED FOR A PERIOD OF GREATER THAN 60 DAYS SHALL BE STABILIZED TO MINIMIZE WIND AND WATER EROSION. THIS INCLUDES THOSE MONTHS WHEN CONSTRUCTION IS PROHIBITIVE DUE TO THE WINTER SEASON. WIND EROSION PROTECTION SHOULD BE ACCOMPLISHED BY MULCHING/CRIMPING UNTIL 70% VEGETATION IS ESTABLISHED. PERMANENT EROSION CONTROL SHALL BE ACHIEVED BY PERMANENT SEEDING OF SLOPES, DISTURBED DITCH SECTIONS AND DISTURBED POND AREAS. THE SEED MIX SHALL BE A SUSTAINABLE PERENNIAL VARIETY. FURTHER, THE CONTRACTOR IS RESPONSIBLE FOR ALL CLEAN-UP RESULTING FROM SITE EROSION AND SOIL TRACKING. TRACKING MUST BE REMOVED BY THE END OF EACH WORK DAY.
  - 50.2. EROSION CONTROL STRUCTURES SHALL BE IN PLACE PRIOR TO ANY LAND-DISTURBING ACTIVITIES, AND WILL BE INSTALLED BY CONTRACTOR, HOWEVER ADDITIONAL EROSION CONTROL MEASURES MAY BE NECESSARY. ADDITIONAL EROSION CONTROL MEASURES TO BE INCIDENTAL TO THE CONTRACT. THE CONTRACTOR WILL NOTIFY THE ENGINEER AND THE CITY ENGINEERING DEPARTMENT, ONCE EROSION CONTROLS ARE INSTALLED, FOR REVIEW. MAINTAINING EROSION CONTROL STRUCTURES, SITE CLEAN-UP AND, RE-EVALUATION OF THE EROSION CONTROL PLAN SHALL BE DONE ON A REGULAR BASIS, PARTICULARLY AFTER ANY STORM WATER EVENT.
  - 50.3. SILT FENCE AND FIBER ROLLS SHALL BE REMOVED BY THE CONTRACTOR WHEN VEGETATION IS ESTABLISHED, IF INSTALLED UNDER THIS CONTRACT.

PREPARED UNDER THE SUPERVISION OF  
**TAIT & ASSOCIATES, INC.**

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NO.	DESCRIPTION	BY	DATE
	GALE LOOP TO GALE CIRCLE	RM	07/14/15
REVISIONS			

2911 N 14th Street, Suite 301,  
Bismarck, ND 58501

p: 701/258/6397  
www.tait.com

f: 701/353/5798

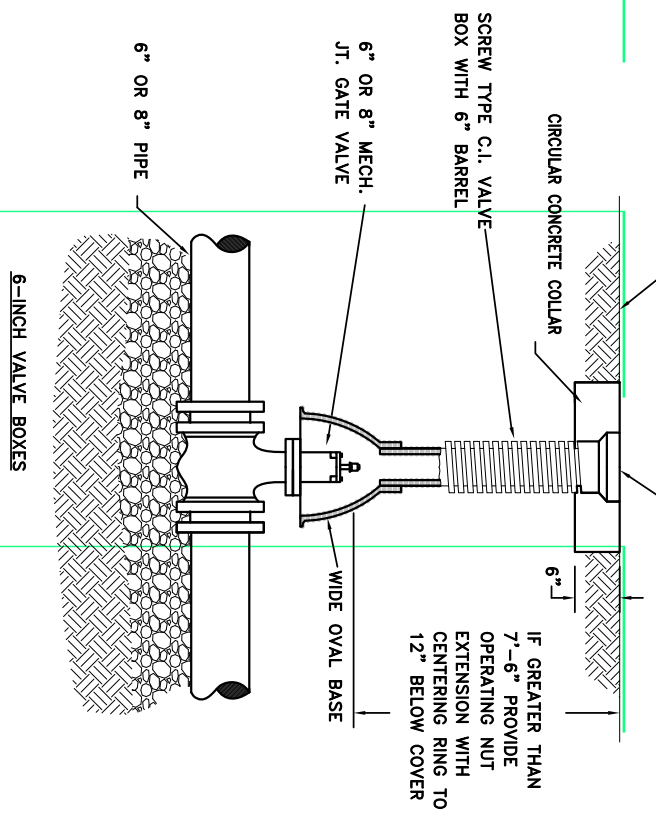
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Boise  
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North Dakota

**TAIT**  
Since 1964

**GENERAL NOTES**  
**LAKWOOD 8TH ADDITION**  
**AXIEN ENGINEERING**  
**MORTON COUNTY**  
**MANDAN, NORTH DAKOTA**

APPROX. GROUND LINE  
WORD "WATER" ON COVER



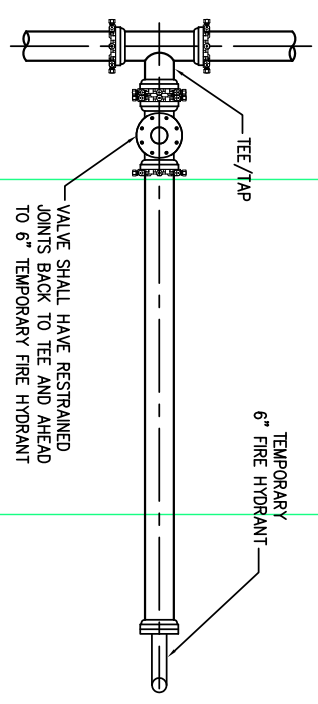
**MATERIALS:**  
VALVE BOX PARTS SHALL BE MADE FROM GRAY CAST IRON, ASTM A48 CLASS 20A.  
USE OF AN ALUMINUM ALLOY AS A CASTING MATERIAL IS NOT ACCEPTABLE.

**APPROVED PATTERNS:**  
VALVE BOXES SHALL BE THE THREE-PIECE ADJUSTABLE SCREW TYPE AND THE FOLLOWING TWO PATTERNS ARE ACCEPTABLE.

1. TYLER SCREW-TYPE 6-INCH CAST IRON VALVE BOX ASSEMBLY SERIES 6860 WITH NO. 160 LARGE OVAL BASE.
2. CLAY AND BAILEY SCREW-TYPE 6-INCH CAST IRON VALVE BOX ASSEMBLY NO. P-108 WITH NO. 160 LARGE OVAL BASE.

- NOTES:**
1. ALL C.I. SHALL BE WRAPPED WITH 8 MIL. MIN. THICKNESS POLYETHYLENE.
  2. VALVE NUT SHALL BE CENTERED.
  3. VALVE BOX SHALL BE PLUMB.

**VALVE BOX DETAIL**



VALVE SHALL HAVE RESTRAINED JOINTS BACK TO TEE AND AHEAD TO 6" TEMPORARY FIRE HYDRANT

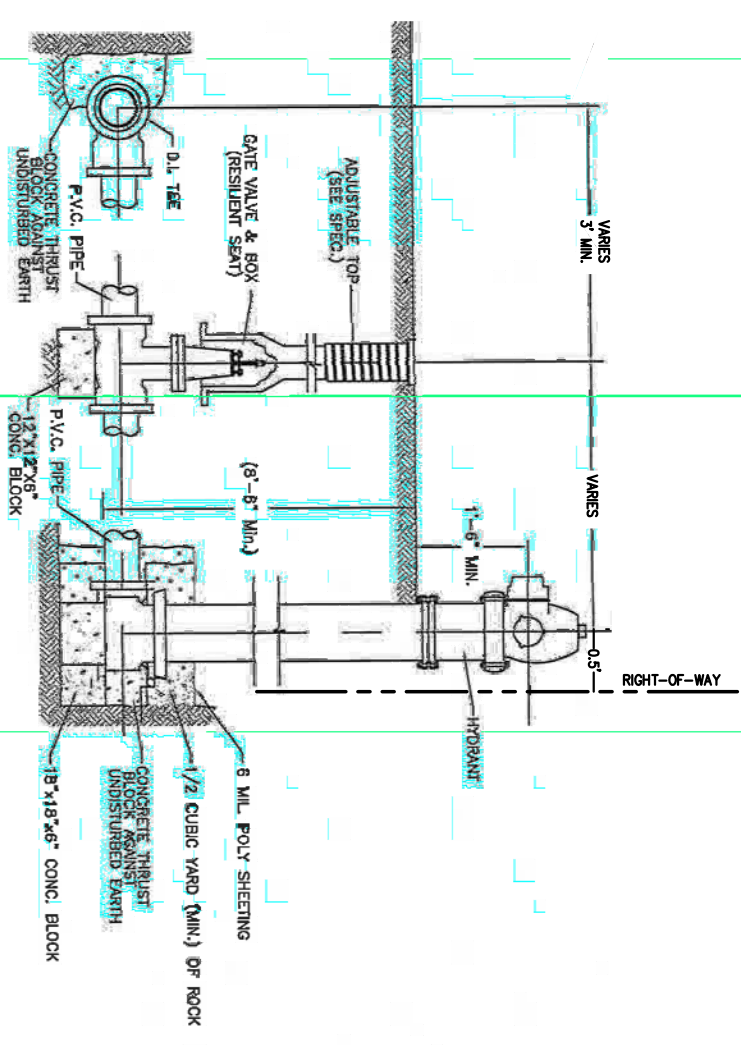
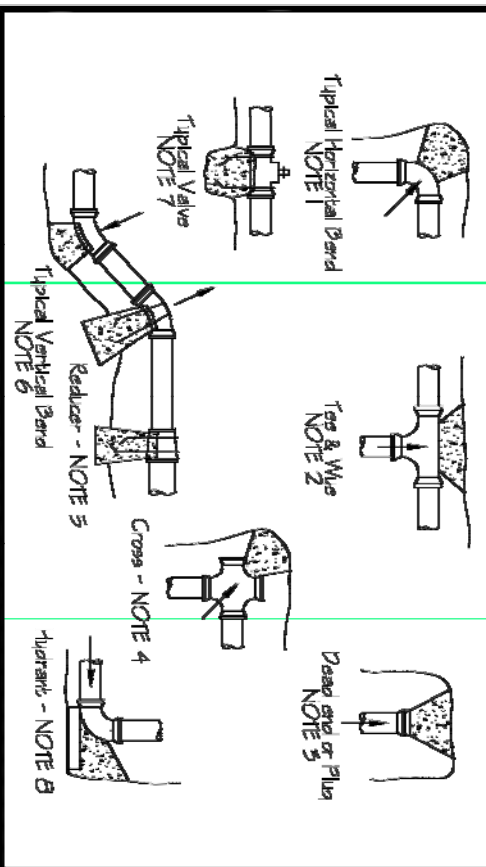
STUB-OUT CONFIGURATIONS FOR FUTURE MAIN EXTENSIONS

**Concrete Thrust Blocking Detail**

INDEX OF MANDAN

1326

- NOTE 1:** Blocking of typical horizontal band will require all bands 11/4" (1/2") to 9" (1/4").
- NOTE 2:** Block has an offset. In the event that one side of watermain is blocked, two thrust blocks will be required.
- NOTE 3:** Blocking of plan is to include allowed between the flag and concrete.
- NOTE 4:** Blocking of cross with two plugs is as shown. With only one plug provide same as two.
- NOTE 5:** Install concrete under and tie downs as per table unless if size is reduced two pipe sizes or more.
- NOTE 6:** All vertical bands to be blocked and tied down as shown.
- NOTE 7:** All valves in Mandan are on horizontal lines, gate valves, butterfly or teapans, will be tied down as shown. Care will be taken to keep concrete off of valve and leads to prevent future maintenance.
- NOTE 8:** All hydrants to be blocked as shown. Keep concrete away from water holes.
- NOTE 9:** The end area of concrete thrust blocks will be determined from the start or standard detail 1325 of the standard specifications.



**TYPICAL HYDRANT & GATE VALVE DETAIL**

NO SCALE

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NO.	DESCRIPTION	REVISIONS	BY	DATE

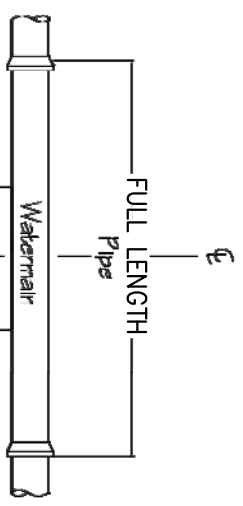


# Watermain & Sewermain Crossing

1325A

CITY OF MANDAN

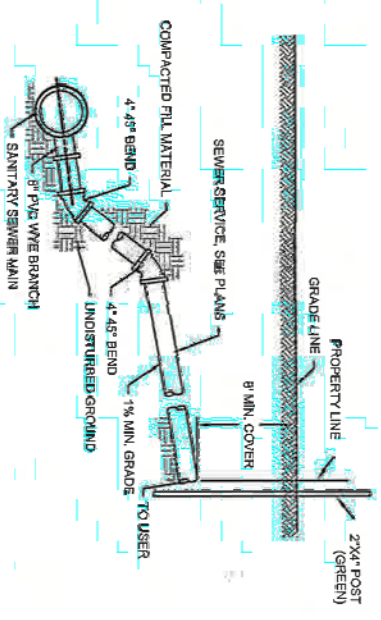
Not to Scale



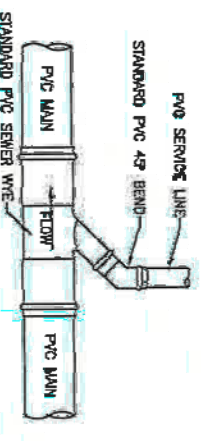
NOTE 1 - FULL length of pipe centered over sewer.

NOTE 2 - FULL length of pipe centered over sewer, plus any sewer joint with 10' of crossing shall be able to withstand 25 p.s.i. internal pressure.

NOTE 3 - When Watermain crosses UNDER the sewer, in all cases refer to NOTE 2.



**SANITARY SEWER SERVICE CONNECTION**  
NO SCALE



**SANITARY SEWER CONNECTION**  
NO SCALE

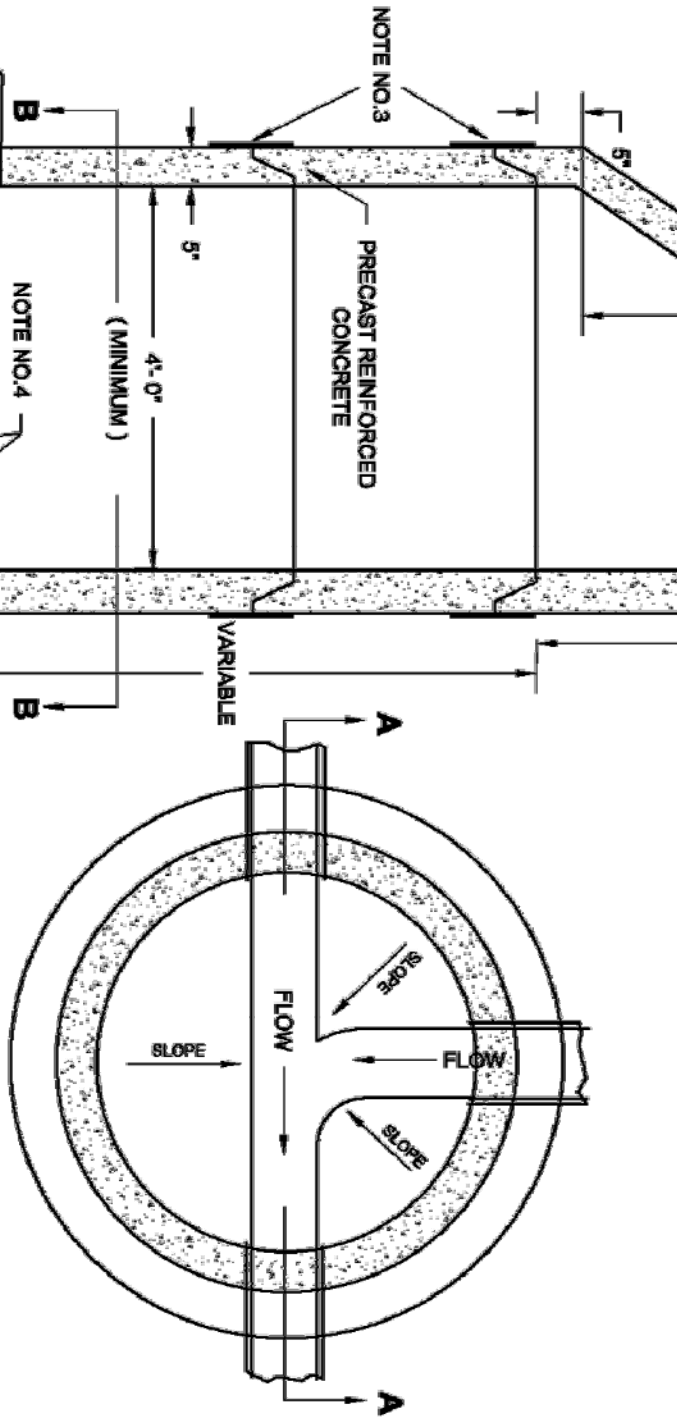
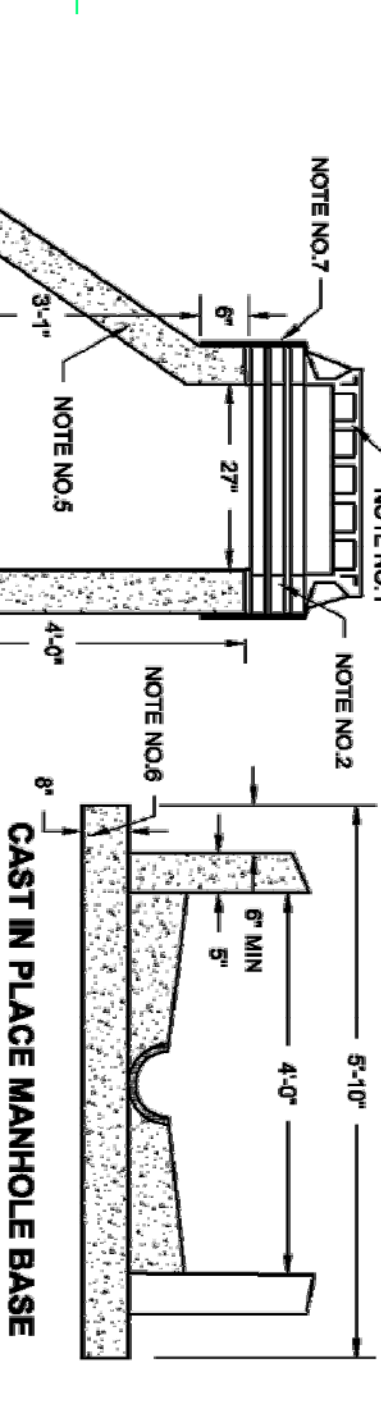
# Sanitary Sewer Manhole Detail

1308A

CITY OF MANDAN

Not to Scale

- NOTE NO.1 - MANHOLE CASTING AND COVER SHALL BE AS DEFINED IN SECTION 1205-2.8
- NOTE NO.2 - ALLOWANCE FOR ADJUSTMENT - 0" TO 6" - SEE STANDARD DETAIL NO. 1314 .
- NOTE NO.3 - CRETEX P2 GASKETED JOINT FOR 48" MANHOLES, CRETEX CX-4 JOINT FOR ALL OTHER SIZES OF MANHOLES OR EXTERIOR SEAL BY PRESS-SEAL GASKET CORP. EZ WRAP AND EZ STIK NO. 4 PRIMER, CRETEX SPECIALTY PRODUCTS "MAC WRAP", OR AN APPROVED EQUAL.
- NOTE NO.4 - IF PRECAST MANHOLE BASE IS USED, FLOOR SHALL BE GROUTED AND SLOPED, AS SHOWN, FROM 1/2 THE DIAMETER OF THE PIPE. SEE SECTION 1205-2.9 FOR PRECAST MANHOLE BASE REINFORCEMENT.
- NOTE NO.5 - MANHOLE TOP SECTION SHALL BE ECCENTRIC FOR 48" MANHOLES.
- NOTE NO.6 - CAST IN PLACE MANHOLE BASES SHALL BE DIMENSIONED AS SHOWN UNLESS OTHERWISE INDICATED. BASES SHALL BE REINFORCED WITH NO.4 REBAR SPACED 16" ON CENTER BOTH WAYS.
- NOTE NO.7 - EXTERNAL MANHOLE CHIMNEY SEAL AS MANUFACTURED BY CRETEX OR AN APPROVED EQUAL, IF SPECIFIED.
- NOTE NO.8 - STEPS SHALL NOT BE PLACED IN SANITARY SEWER, STORM SEWER OR AIR RELEASE MANHOLES OR INLETS UNLESS SPECIFIED. IF SPECIFIED, THE MANHOLE STEPS SHALL BE DELTA SUREFOOT OR APPROVED EQUAL. STEPS SHALL BE SPACED 16" ON CENTER.

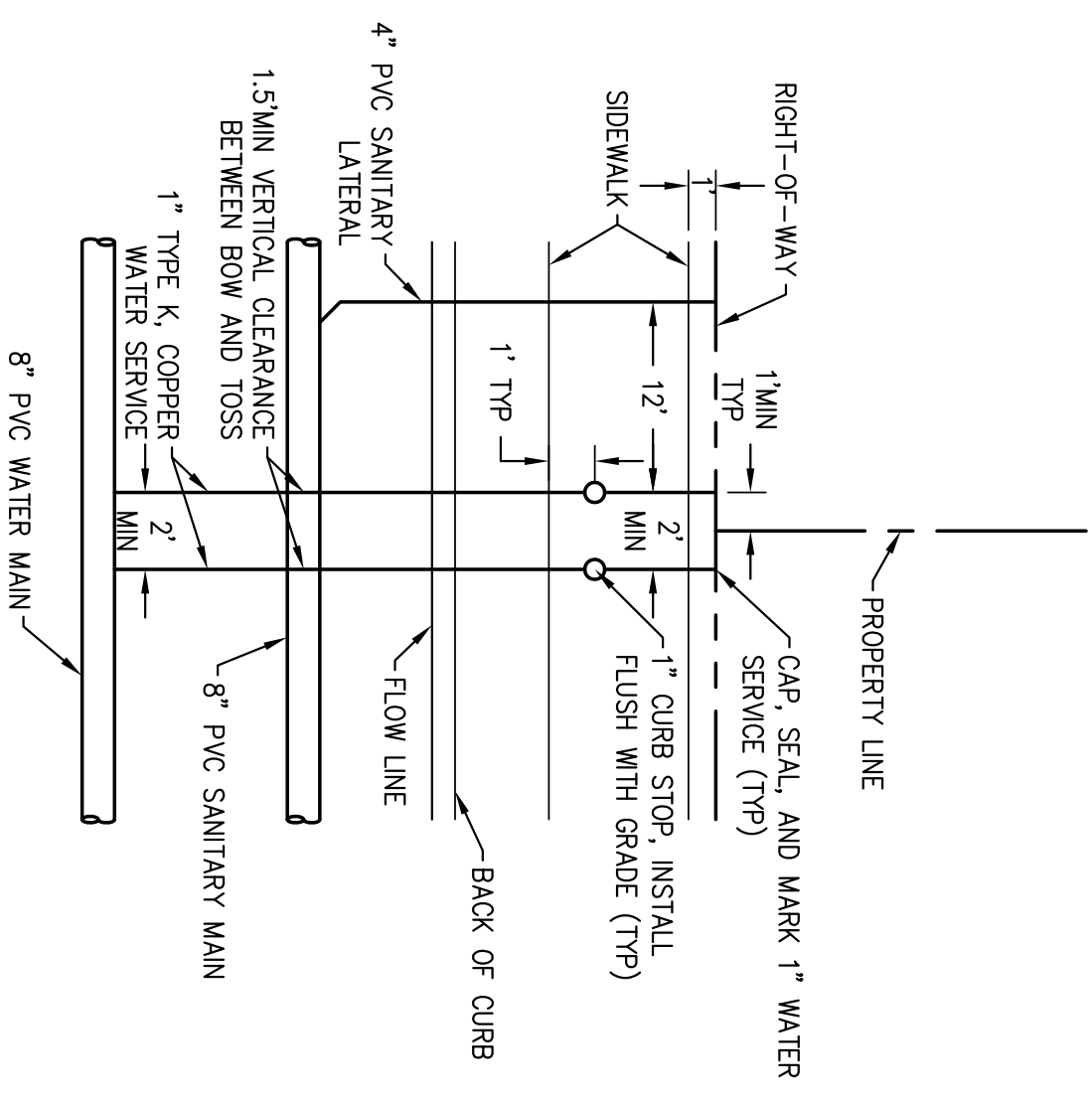


(or as Noted in Section 1205-2.9)  
**SECTION A-A**

**SECTION B-B**

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NOTE: MINIMUM DISTANCES SHOWN HEREON TO BE MAINTAINED.  
 PROPOSED ALIGNMENT OF WATER SERVICES VARIES PER PLAN.  
 STATIONING PER PLAN BASED ON CONNECTION OF 1" WATER  
 SERVICE AT 8" WATER MAIN.

2-1" WATER SERVICE DETAIL  
 NTS

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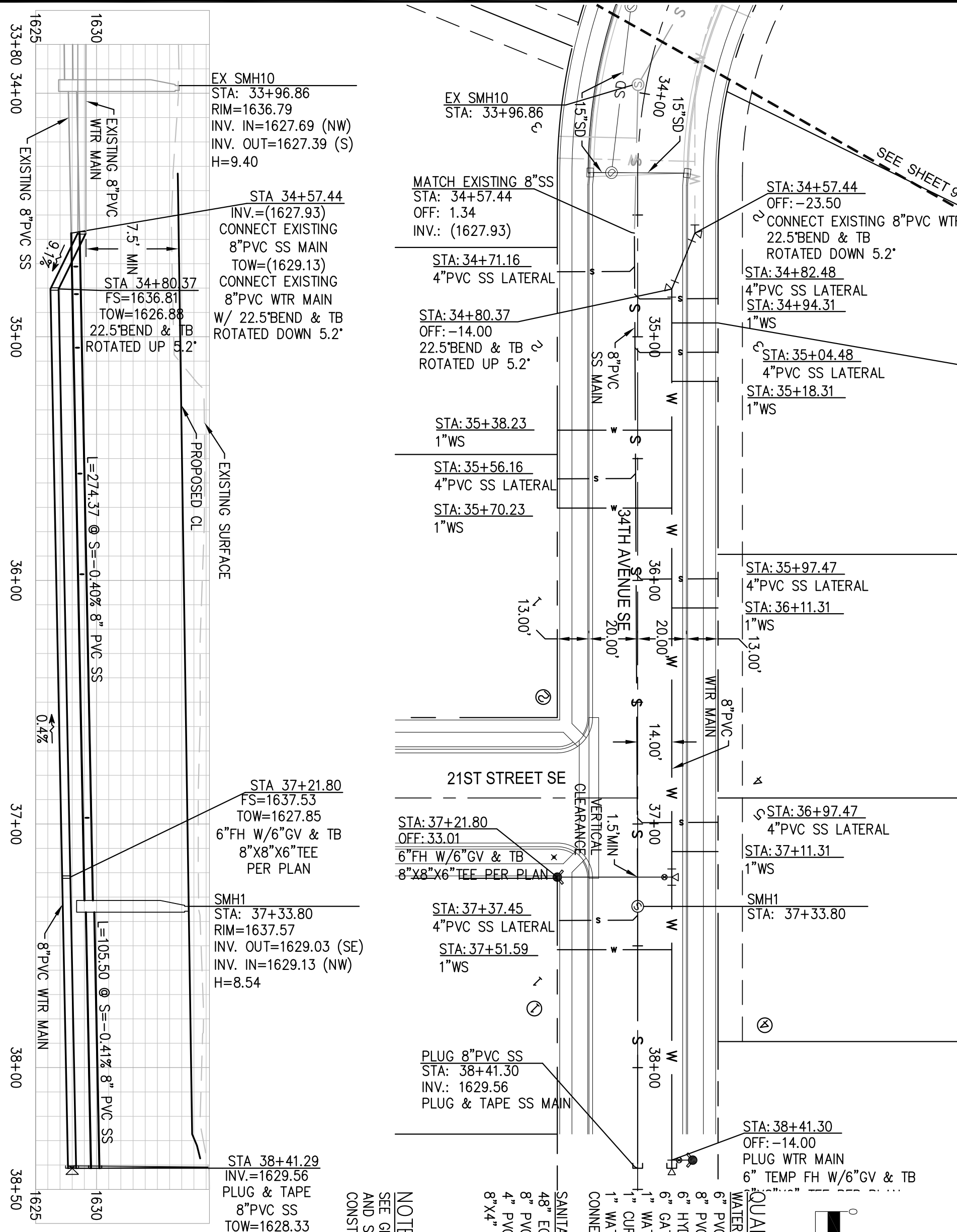
WATER & SANITARY SEWER DETAILS  
 LAKEWOOD 8TH ADDITION  
 AXIEN ENGINEERING  
 MORTON COUNTY  
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 DATE: 06/04/2015  
 REVISION #: 1  
 DATE: 06/04/2015  
 JOB NO: ND10090



EX SMH10  
 STA: 33+96.86  
 RIM=1636.79  
 INV. IN=1627.69 (NW)  
 INV. OUT=1627.39 (S)  
 H=9.40

STA 34+57.44  
 INV.=(1627.93)  
 CONNECT EXISTING  
 8\"/>

STA 34+80.37  
 FS=1636.81  
 TOW=1626.88  
 22.5\"/>

PROPOSED CL  
 EXISTING SURFACE  
 L=274.37 @ S=-0.40% 8\"/>

STA 37+21.80  
 FS=1637.53  
 TOW=1627.85  
 6\"/>

SMH1  
 STA: 37+33.80  
 RIM=1637.57  
 INV. OUT=1629.03 (SE)  
 INV. IN=1629.13 (NW)  
 H=8.54

STA 38+41.29  
 INV.=1629.56  
 PLUG & TAPE  
 8\"/>

EX SMH10  
 STA: 33+96.86

MATCH EXISTING 8\"/>

STA: 34+71.16  
 4\"/>

STA: 34+80.37  
 OFF: -14.00  
 22.5\"/>

STA: 35+38.23  
 1\"/>

STA: 35+56.16  
 4\"/>

STA: 35+70.23  
 1\"/>

STA: 37+21.80  
 OFF: 33.01  
 6\"/>

STA: 37+37.45  
 4\"/>

STA: 37+51.59  
 1\"/>

PLUG 8\"/>

STA: 34+57.44  
 OFF: -23.50  
 CONNECT EXISTING 8\"/>

STA: 34+82.48  
 4\"/>

STA: 35+04.48  
 4\"/>

STA: 35+97.47  
 4\"/>

STA: 36+11.31  
 1\"/>

STA: 36+97.47  
 4\"/>

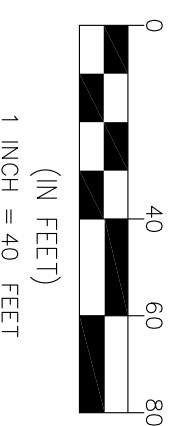
STA: 37+11.31  
 1\"/>

SMH1  
 STA: 37+33.80

STA: 38+41.30  
 OFF: -14.00  
 PLUG WTR MAIN  
 6\"/>

NOTE:  
 SEE GENERAL NOTES FOR WATER  
 AND SANITARY SEWER  
 CONSTRUCTION ON SHEET 3.

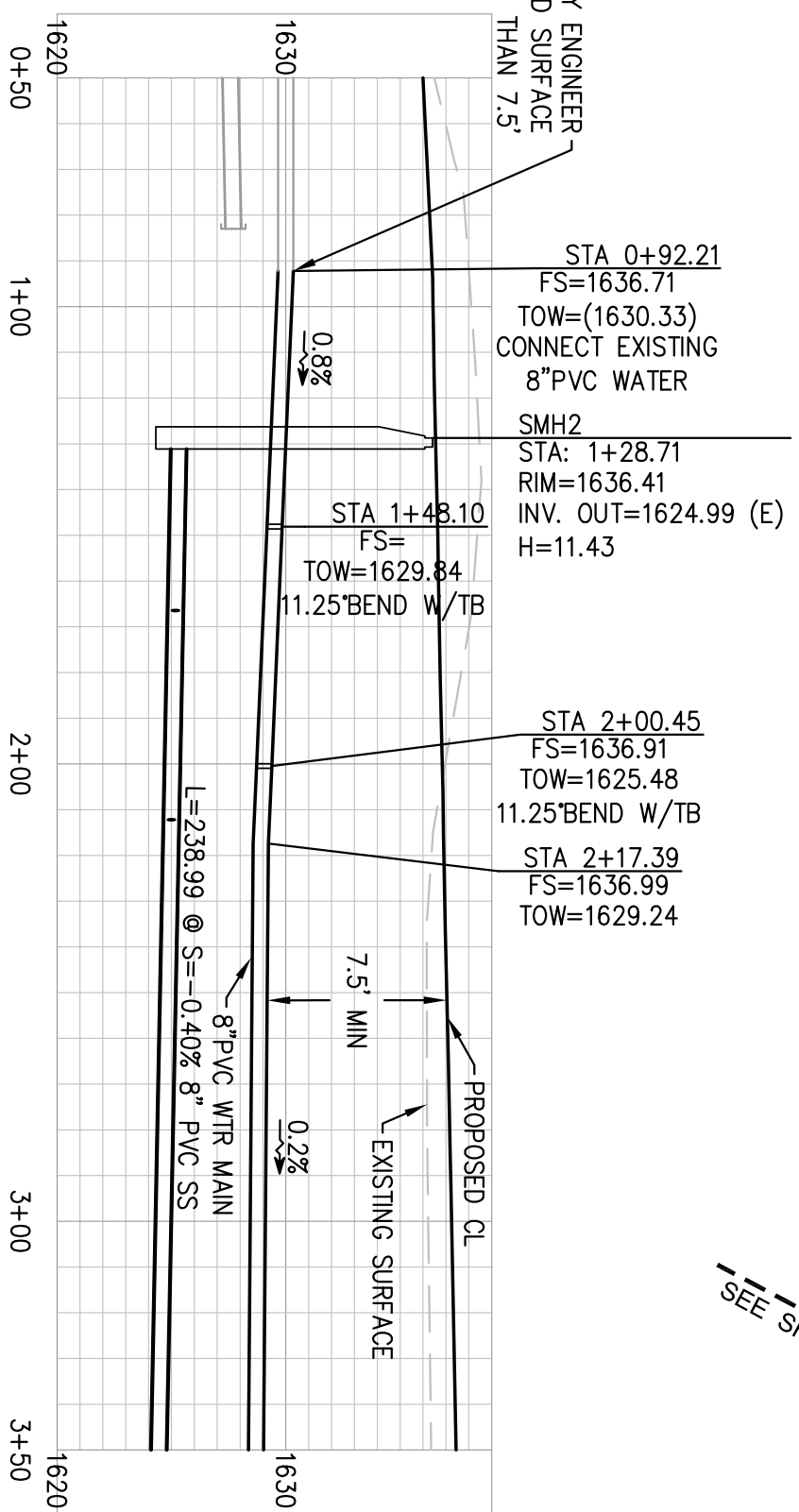
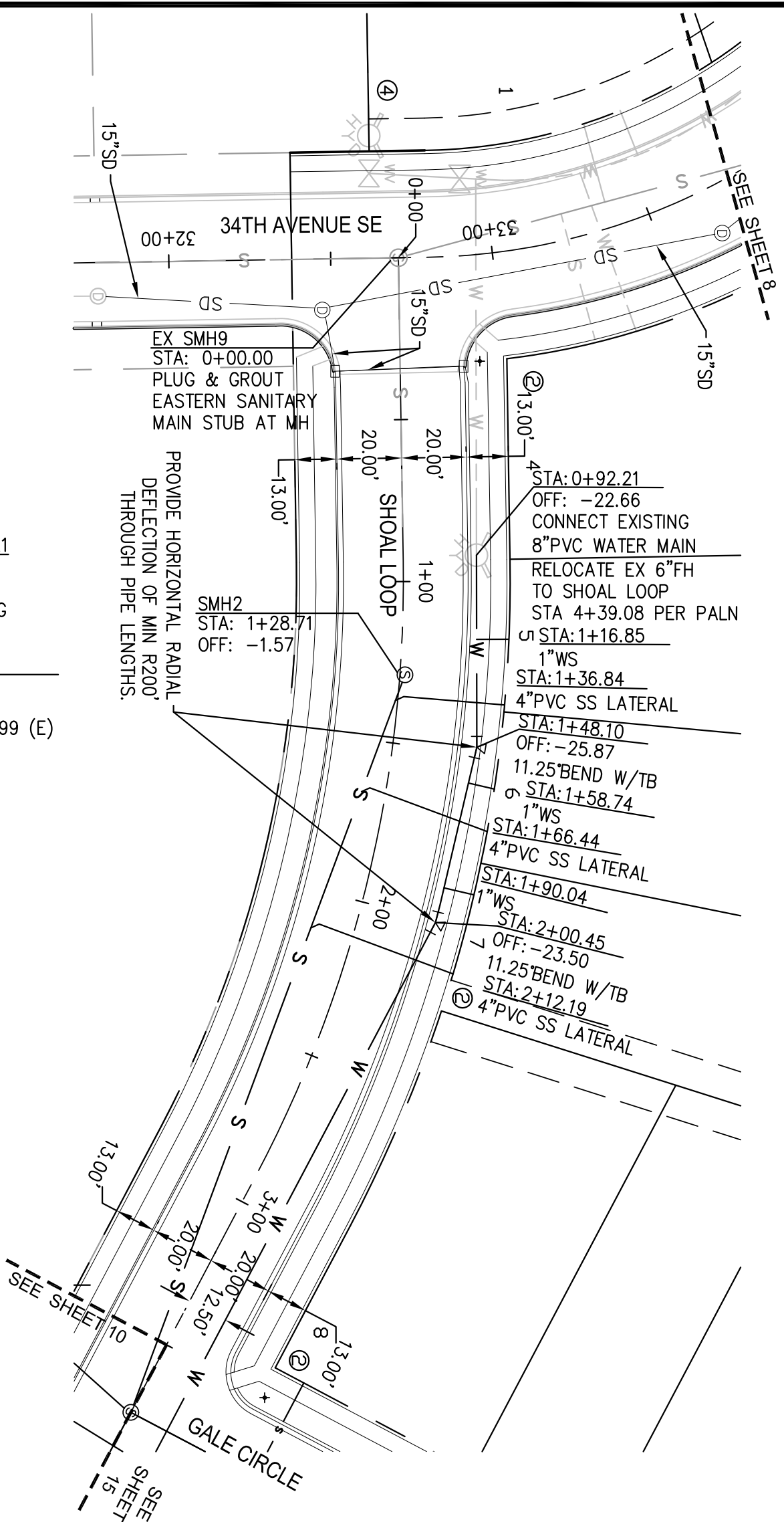
- QUANTITIES THIS SHEET:
- WATER MAIN:
    - 6\"/>
  - SANITARY SEWER:
    - 48\"/>
  - 1\"/>



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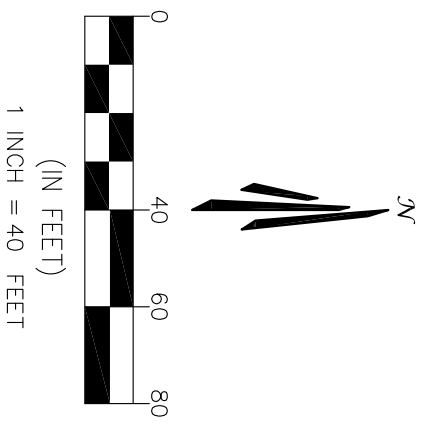


CONTRACTOR TO NOTIFY ENGINEER  
IF DEPTH FROM FINISHED SURFACE  
IS LESS THAN 7.5'

**QUANTITIES THIS SHEET:**

- WATER MAIN:**
- 8" PVC WATER MAIN 269LF
  - 1" WATER SERVICE 28LF
  - 1" CURB STOP & BOX 3EA
  - 1" WATER SERVICE 3EA
- SANITARY SEWER:**
- 48" ECCENTRIC MANHOLE 1EA
  - 8" PVC SANITARY MAIN 239LF
  - 4" PVC SANITARY LATERAL 116LF
  - 8"X4" PVC WYE 3EA

**NOTE:**  
SEE GENERAL NOTES FOR WATER  
AND SANITARY SEWER  
CONSTRUCTION ON SHEET 3.



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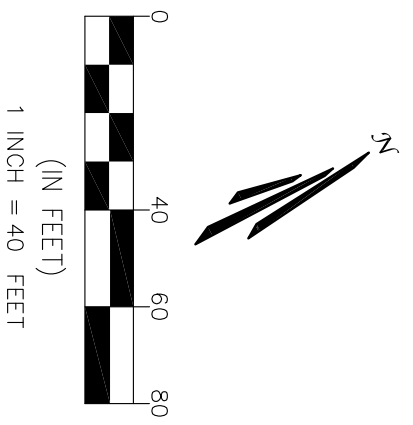
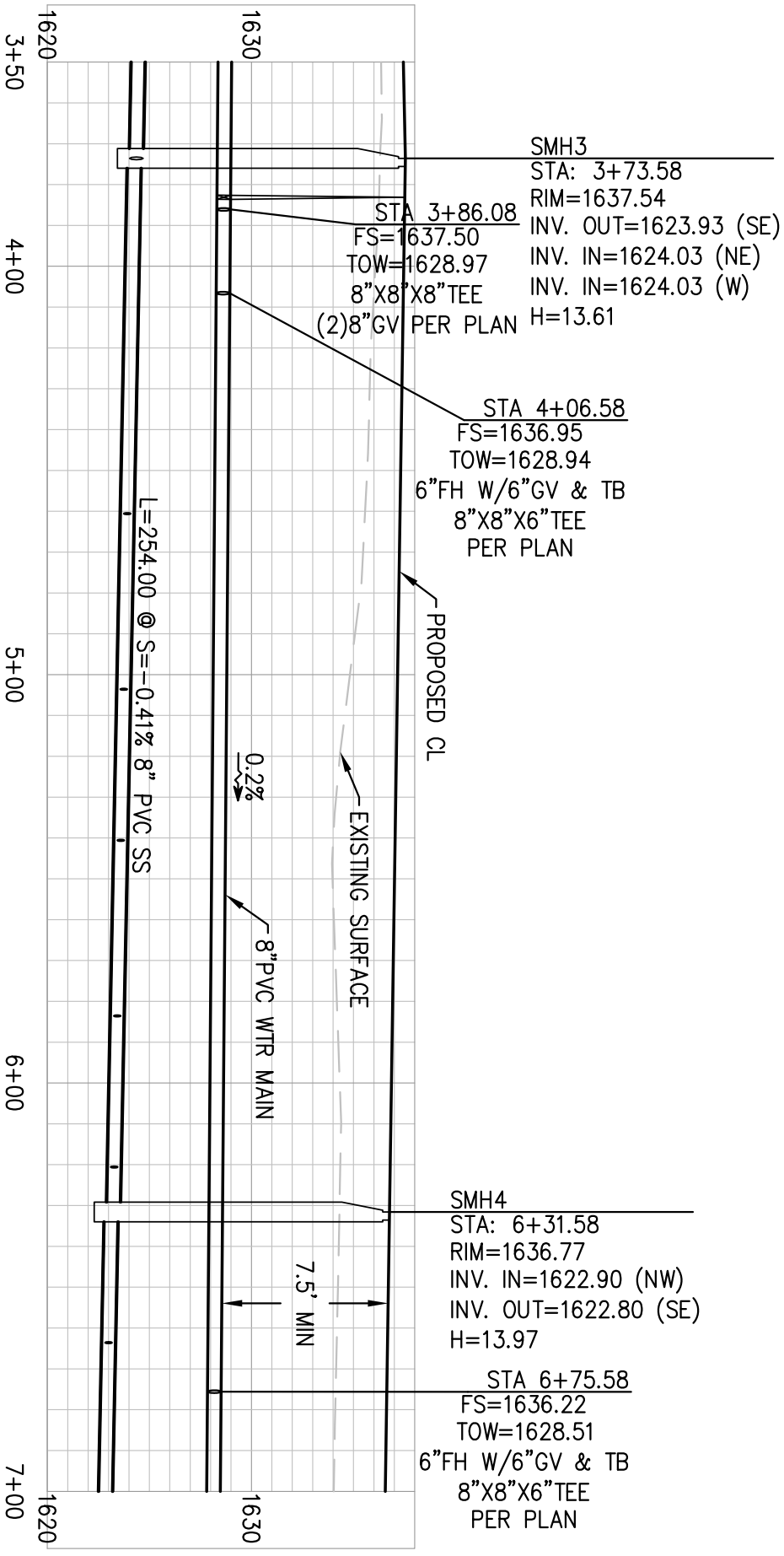
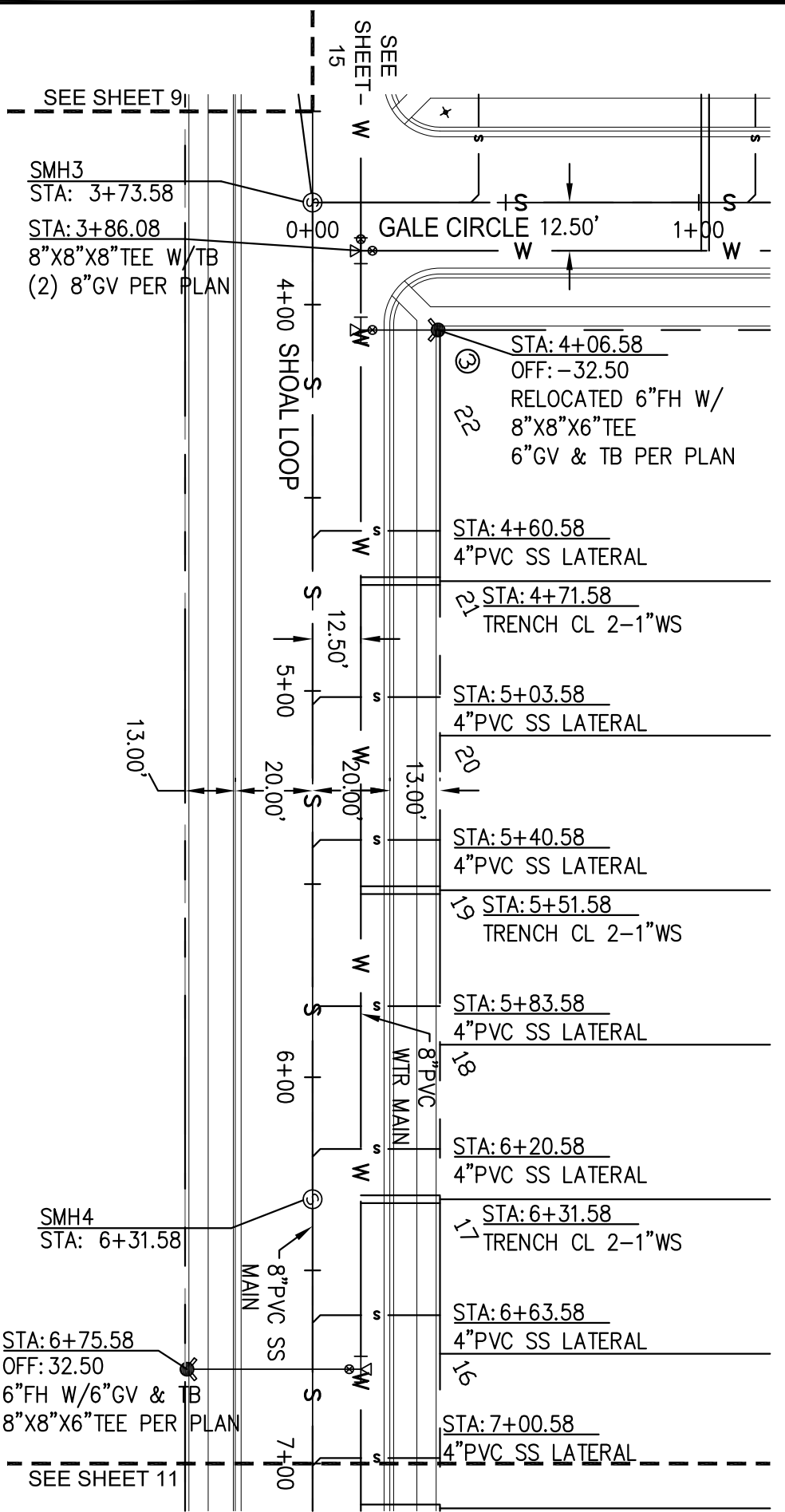
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DRAWN: TU  
DATE: 4/28/2015  
CHECKED: JM  
DATE: 06/04/2015  
REVISION #: 1  
DATE: 06/04/2015  
JOB NO: ND10090

SHOAL LOOP WATER & SANITARY PLAN & PROFILE 0+50-3+50  
LAKEWOOD 8TH ADDITION  
AXIEN ENGINEERING  
MORTON COUNTY  
MANDAN, NORTH DAKOTA

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NO.	DESCRIPTION	REVISIONS	BY	DATE
	GALE LOOP TO GALE CIRCLE		RM	07/14/15



**QUANTITIES THIS SHEET:**

WATER MAIN:	QUANTITY
6" PVC WATER MAIN	65LF
8" PVC WATER MAIN	350LF
6" HYDRANT	2EA
6" GATE VALVE & BOX	2EA
8" GATE VALVE & BOX	2EA
1" WATER SERVICE	124LF
1" CURB STOP & BOX	6EA
1" WATER SERVICE CONNECTION	6EA
SANITARY SEWER:	QUANTITY
48" ECCENTRIC MANHOLE	2EA
8" PVC SANITARY MAIN	341LF
4" PVC SANITARY LATERAL	198LF
8" X 4" PVC WYE	7EA

**NOTE:**  
SEE GENERAL NOTES FOR WATER AND SANITARY SEWER CONSTRUCTION ON SHEET 3.

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**SHOAL LOOP WATER & SANITARY PLAN & PROFILE 3+50-7+00**

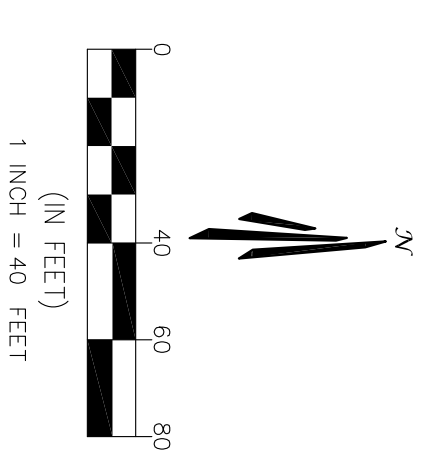
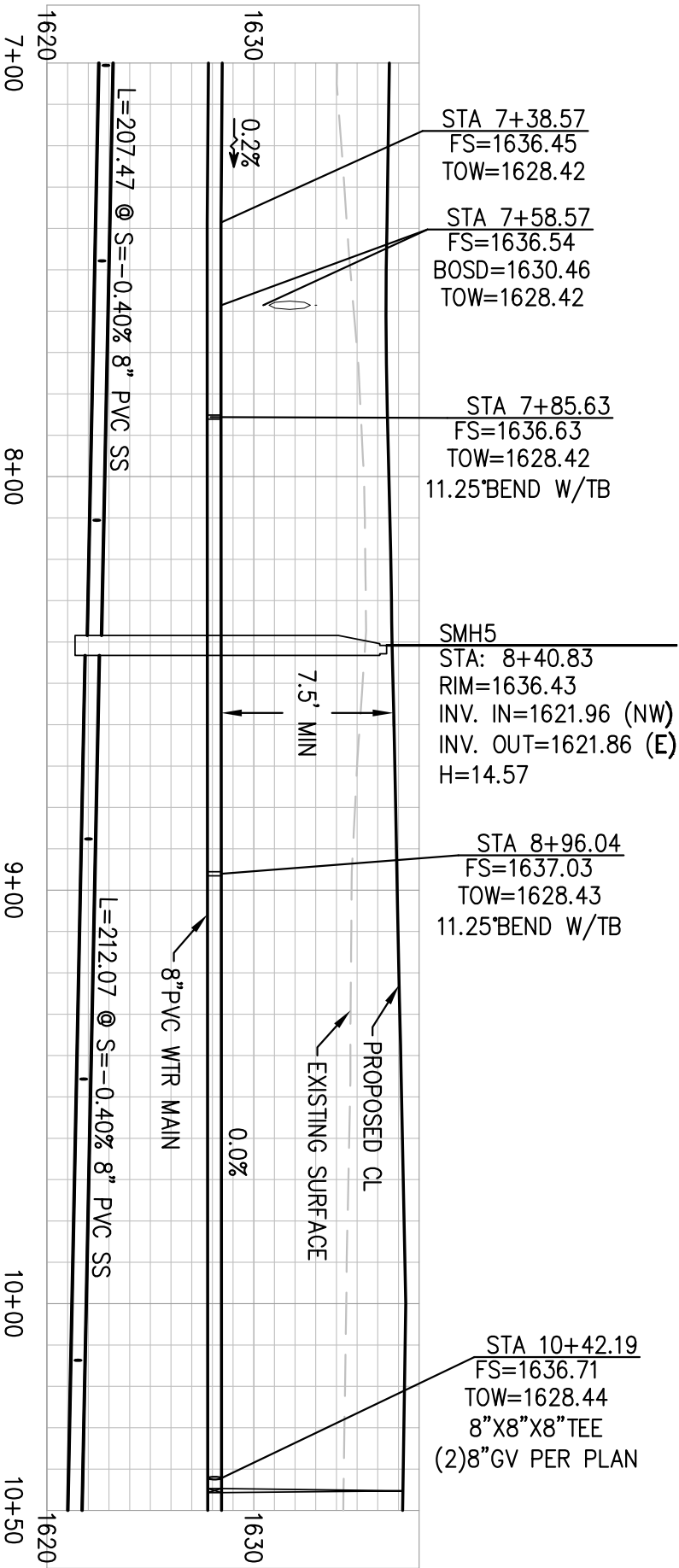
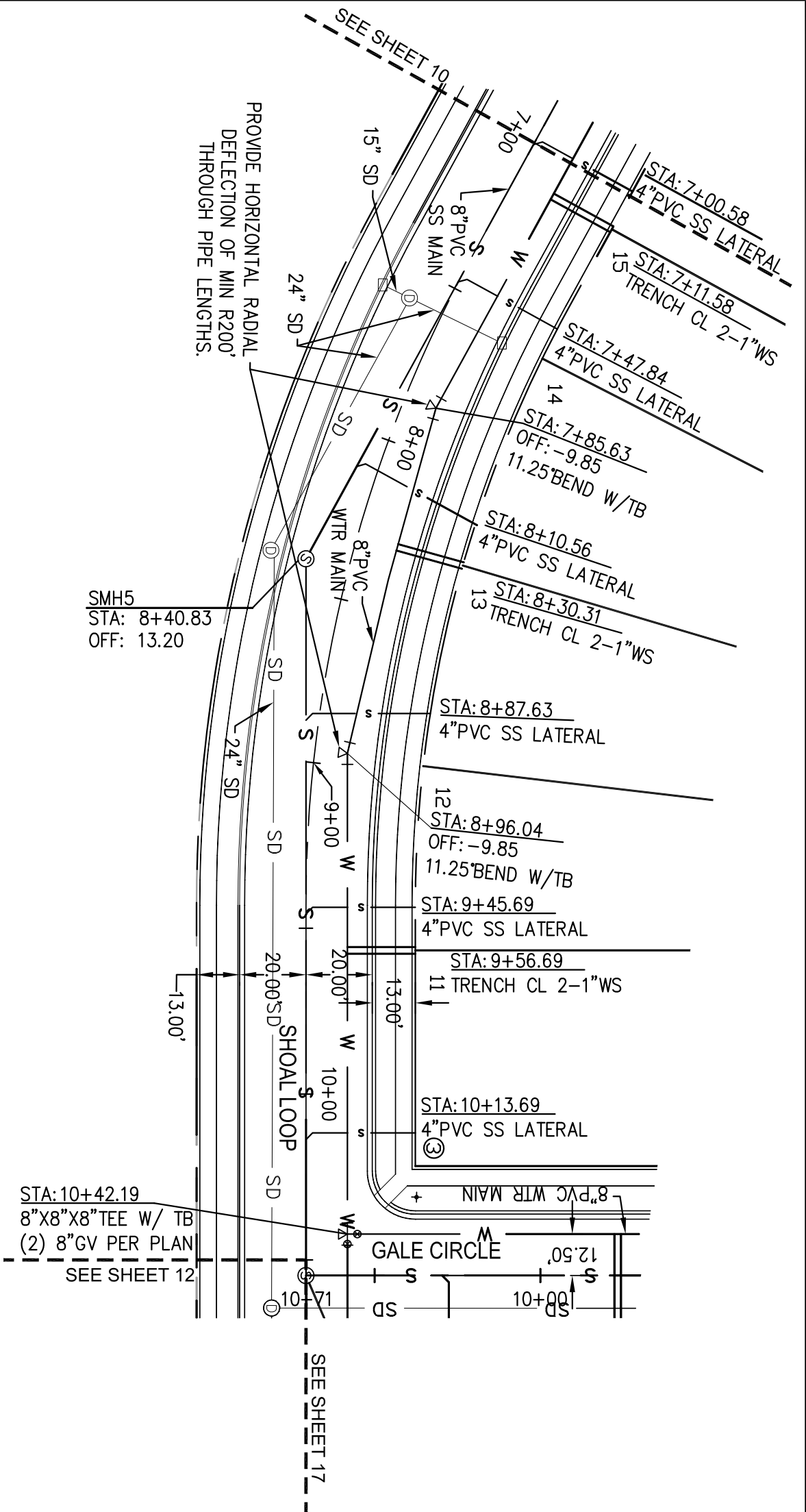
LAKWOOD 8TH ADDITION  
AXIEN ENGINEERING  
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NO.	DESCRIPTION	BY	DATE
1	GALE LOOP TO GALE CIRCLE	RM	07/14/15

DRAWN: TU  
DATE: 4/28/2015  
CHECKED: JM  
DATE: 06/04/2015  
REVISION #: 1  
DATE: 06/04/2015  
JOB NO: ND10090

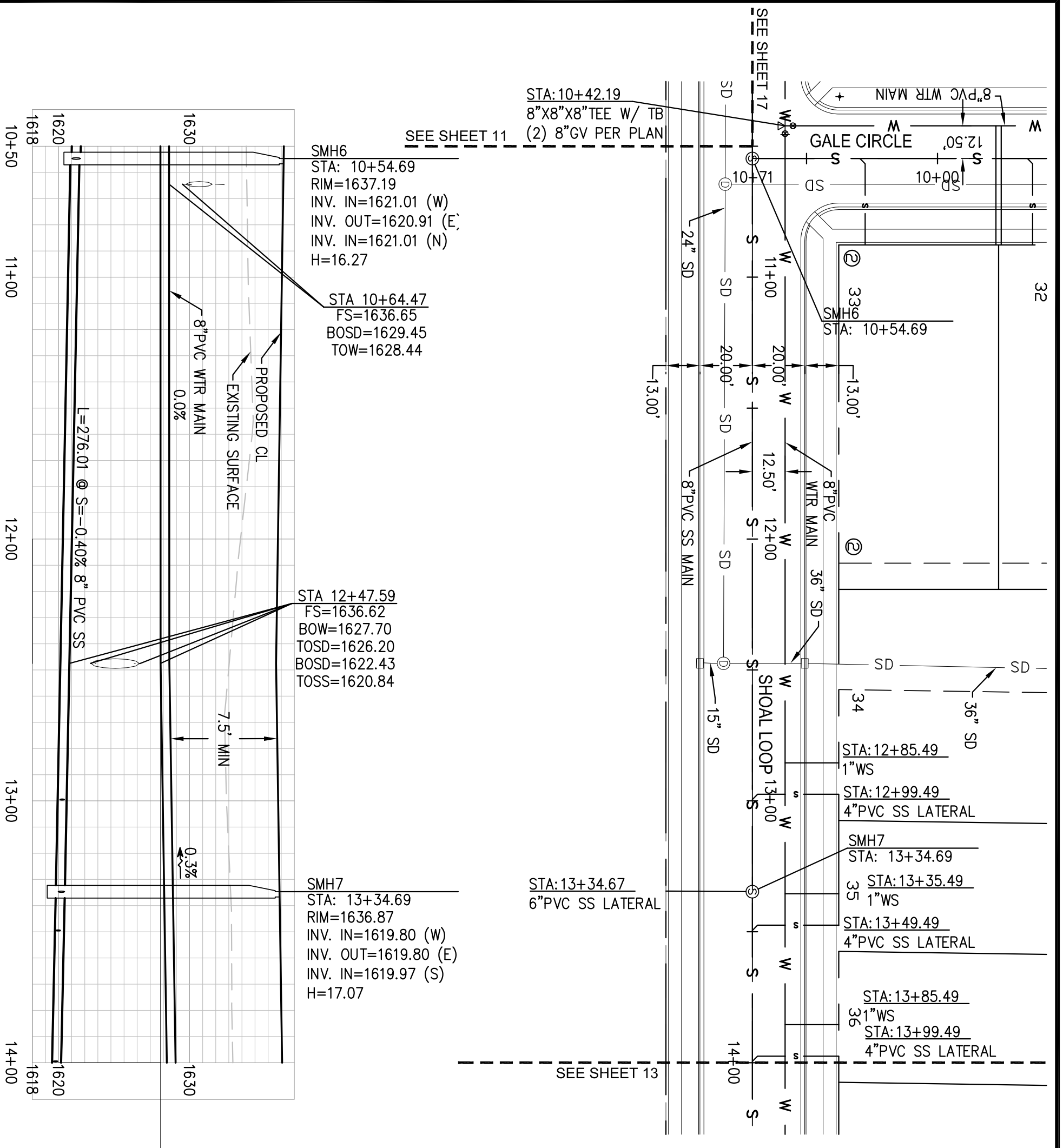


**QUANTITIES THIS SHEET:**

<b>WATER MAIN:</b>	
8" PVC WATER MAIN	344LF
8" GATE VALVE & BOX	1EA
1" WATER SERVICE	124LF
1" CURB STOP & BOX	6EA
1" WATER SERVICE CONNECTION	6EA
<b>SANITARY SEWER:</b>	
48" ECCENTRIC MANHOLE	1EA
8" PVC SANITARY MAIN	338LF
4" PVC SANITARY LATERAL	210LF
8"x4" PVC WYE	5EA

**NOTE:**  
SEE GENERAL NOTES FOR WATER AND SANITARY SEWER CONSTRUCTION ON SHEET 3.

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STA: 10+42.19  
 8"X8"X8" TEE W/ TB  
 (2) 8"GV PER PLAN  
 SEE SHEET 11

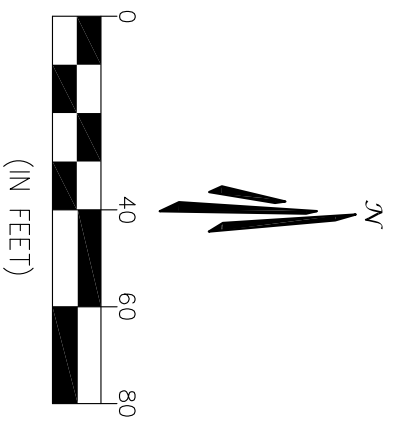
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 STA: 10+54.69  
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 INV. OUT=1620.91 (E)  
 INV. IN=1621.01 (N)  
 H=16.27

STA 10+64.47  
 FS=1636.65  
 BOSD=1629.45  
 TOW=1628.44

STA 12+47.59  
 FS=1636.62  
 BOW=1627.70  
 TOSD=1626.20  
 BOSD=1622.43  
 TOSS=1620.84

SMH7  
 STA: 13+34.69  
 RIM=1636.87  
 INV. IN=1619.80 (W)  
 INV. OUT=1619.80 (E)  
 INV. IN=1619.97 (S)  
 H=17.07

STA: 13+34.67  
 6" PVC SS LATERAL  
 SEE SHEET 13



**QUANTITIES THIS SHEET:**

- WATER MAIN:**  
 8" PVC WATER MAIN 350LF  
 1" WATER SERVICE 62LF  
 1" CURB STOP & BOX 3EA  
 1" WATER SERVICE CONNECTION 3EA

- SANITARY SEWER:**  
 48" ECCENTRIC MANHOLE 2EA  
 8" PVC SANITARY MAIN 341LF  
 6" PVC SANITARY LATERAL 31LF  
 4" PVC SANITARY LATERAL 99LF  
 8"X4" PVC WYE 3EA

**NOTE:**  
 SEE GENERAL NOTES FOR WATER AND SANITARY SEWER CONSTRUCTION ON SHEET 3.

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**SHOAL LOOP WATER & SANITARY PLAN & PROFILE 10+50-14+00**

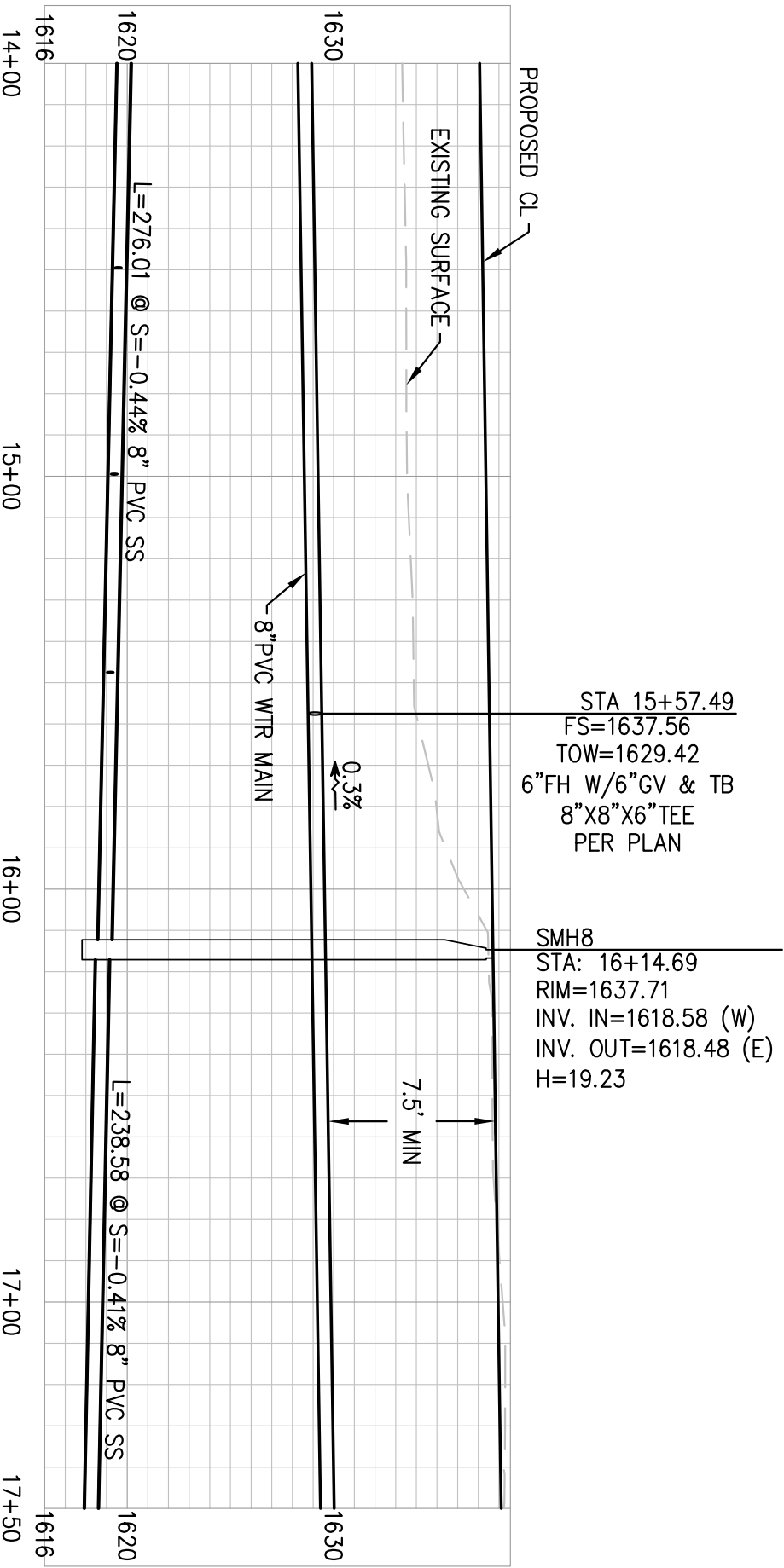
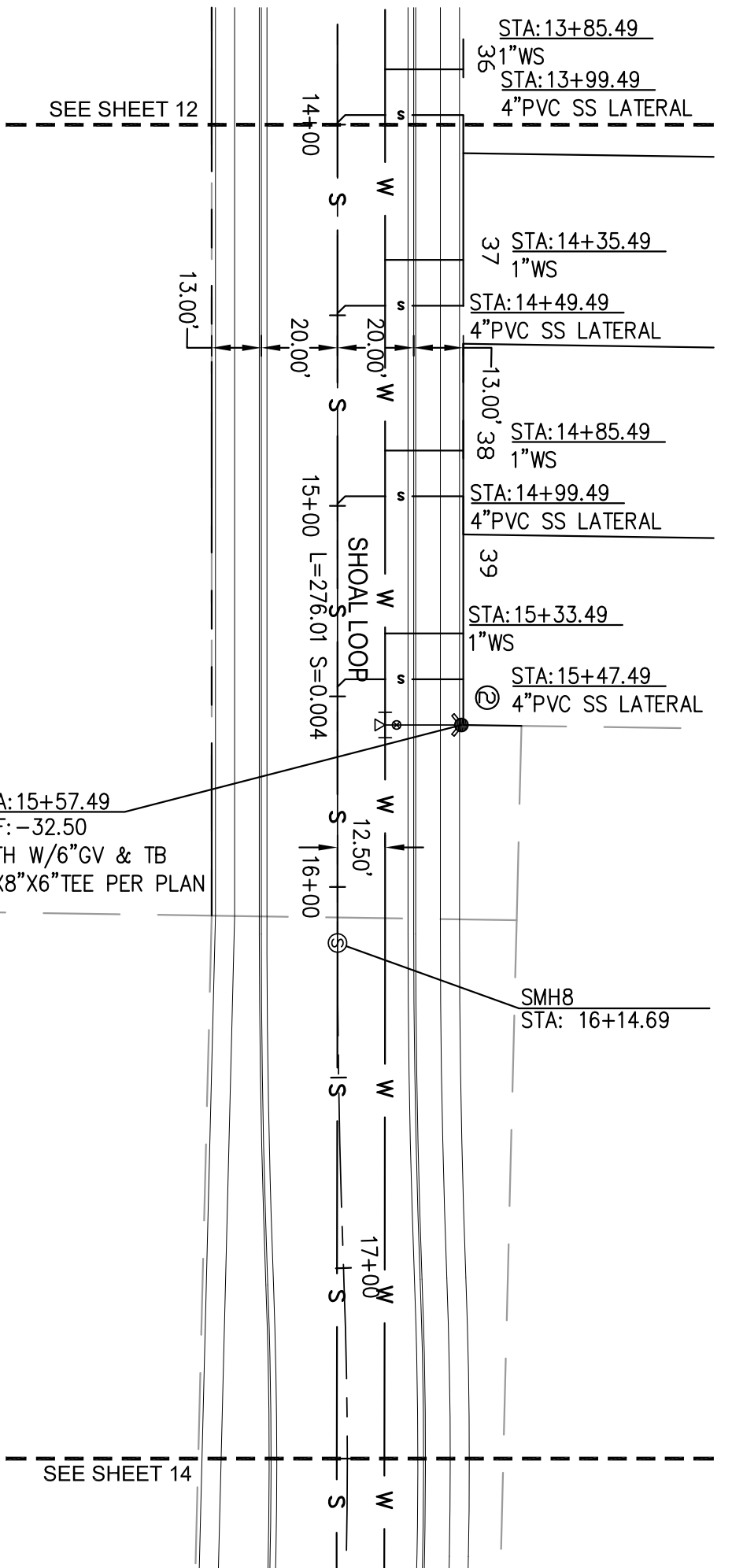
LAKEWOOD 8TH ADDITION  
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NO.	DESCRIPTION	BY	DATE
1	GALE LOOP TO GALE CIRCLE	RM	07/14/15
REVISIONS			

DRAWN: TU  
 DATE: 4/28/2015  
 CHECKED: JM  
 DATE: 06/04/2015  
 REVISION #: 1  
 DATE: 06/04/2015  
 JOB NO: ND10090



**QUANTITIES THIS SHEET:**

- WATER MAIN:**
- 6" PVC WATER MAIN 20LF
  - 8" PVC WATER MAIN 350LF
  - 6" HYDRANT 1EA
  - 6" GATE VALVE & BOX 1EA
  - 1" WATER SERVICE 62LF
  - 1" CURB STOP & BOX 3EA
  - 1" WATER SERVICE CONNECTION 3EA
- SANITARY SEWER:**
- 48" ECCENTRIC MANHOLE 1EA
  - 8" PVC SANITARY MAIN 346LF
  - 4" PVC SANITARY LATERAL 99LF
  - 8"X4" PVC WYE 3EA

**NOTE:**  
SEE GENERAL NOTES FOR WATER AND SANITARY SEWER CONSTRUCTION ON SHEET 3.

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**SHOAL LOOP WATER & SANITARY PLAN & PROFILE 14+00-17+50**

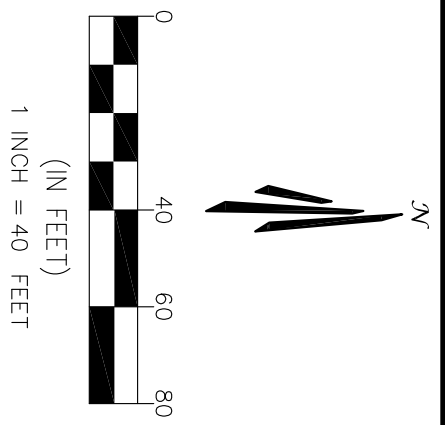
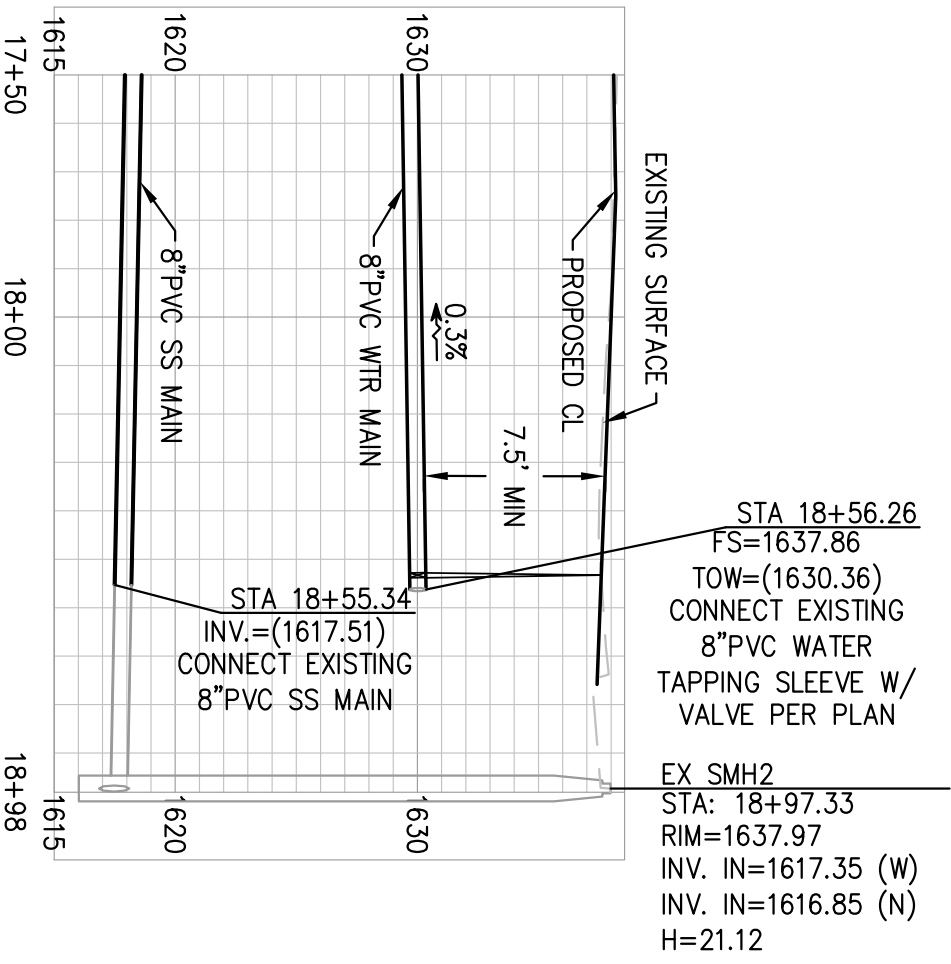
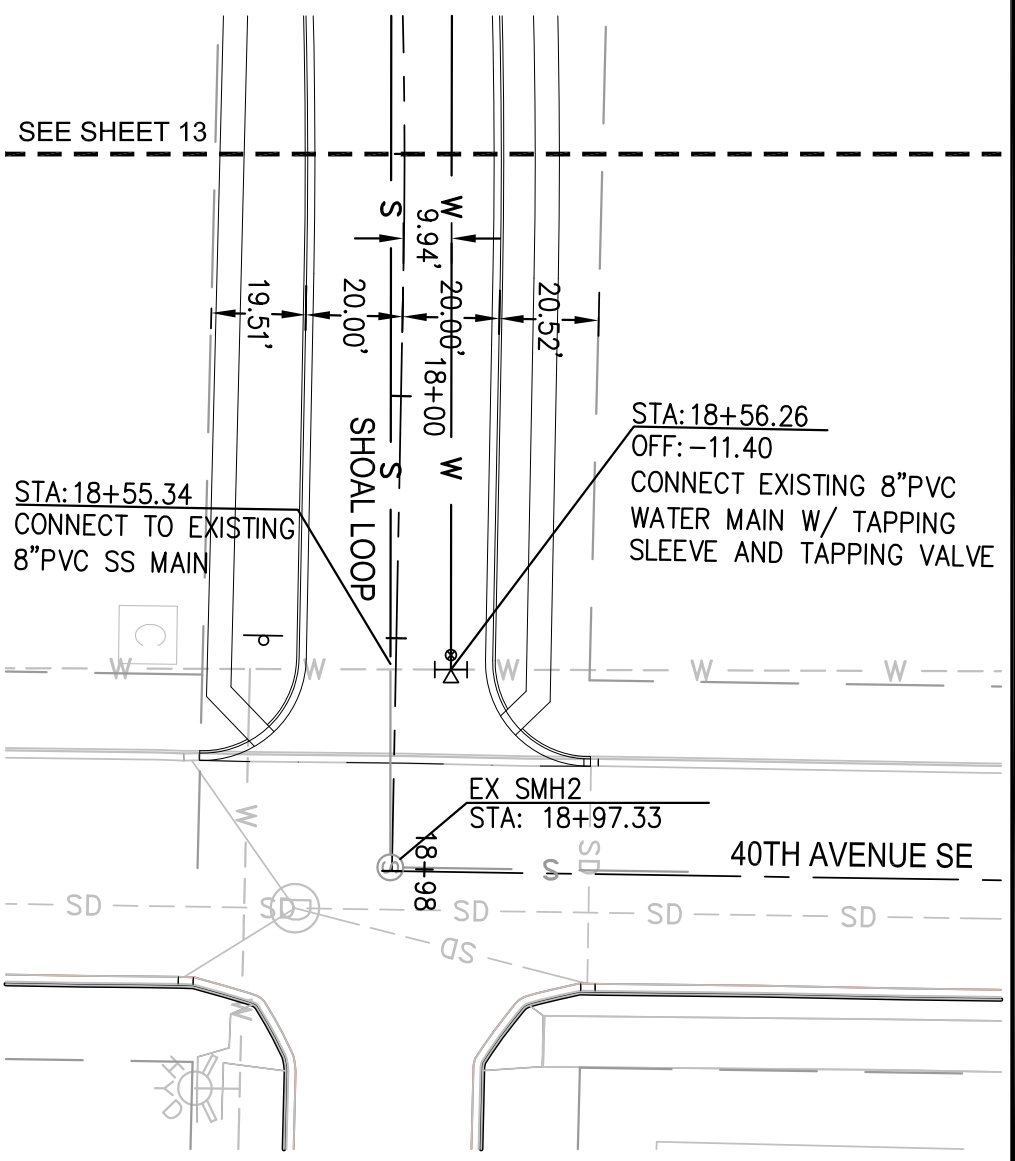
LAKWOOD 8TH ADDITION  
AXIEN ENGINEERING  
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CHECKED: JM  
DATE: 06/04/2015  
REVISION #: 1  
DATE: 06/04/2015  
JOB NO: ND10090



**QUANTITIES THIS SHEET:**

**WATER MAIN:**

8" PVC WATER MAIN 107LF

8" GATE VALVE & BOX 1EA

**SANITARY SEWER:**

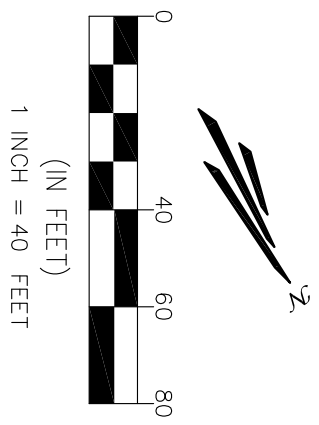
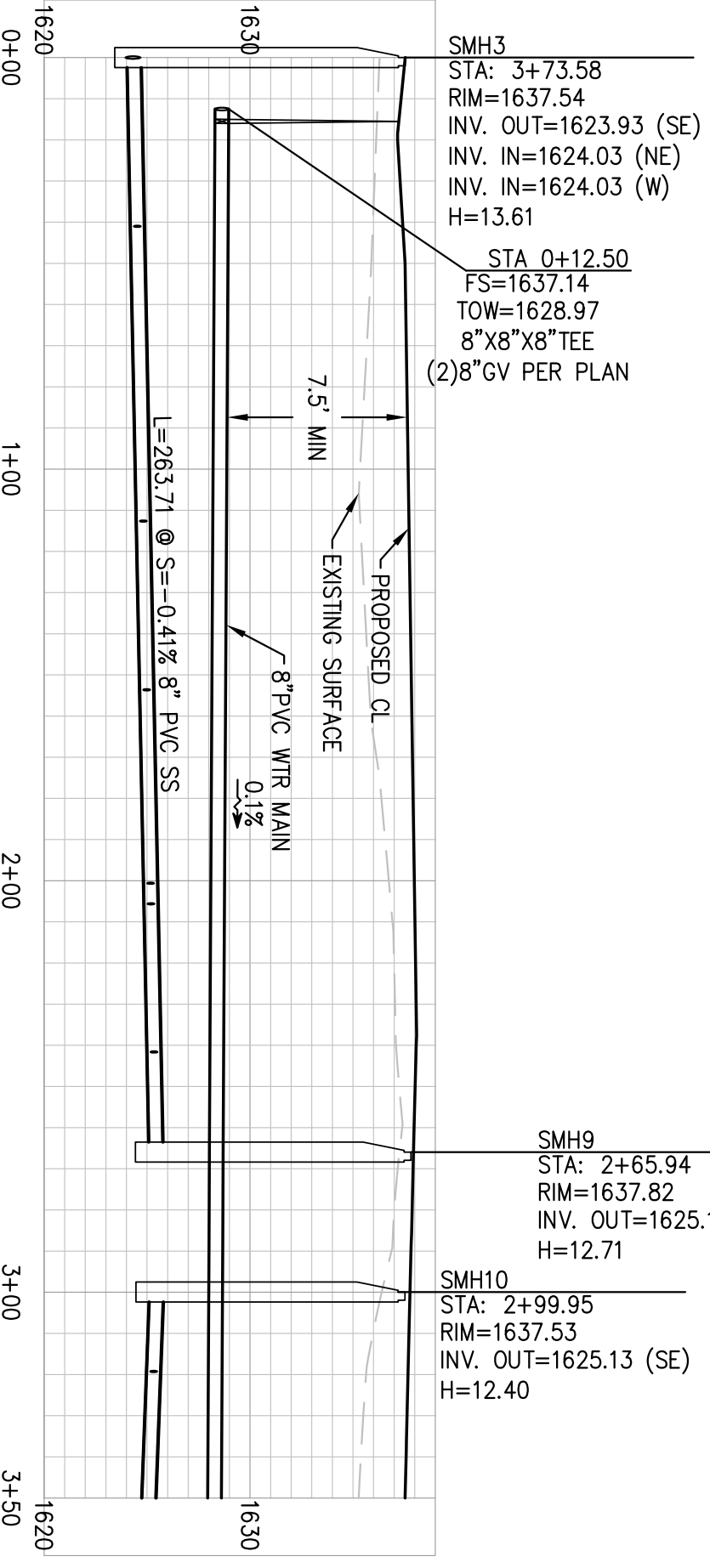
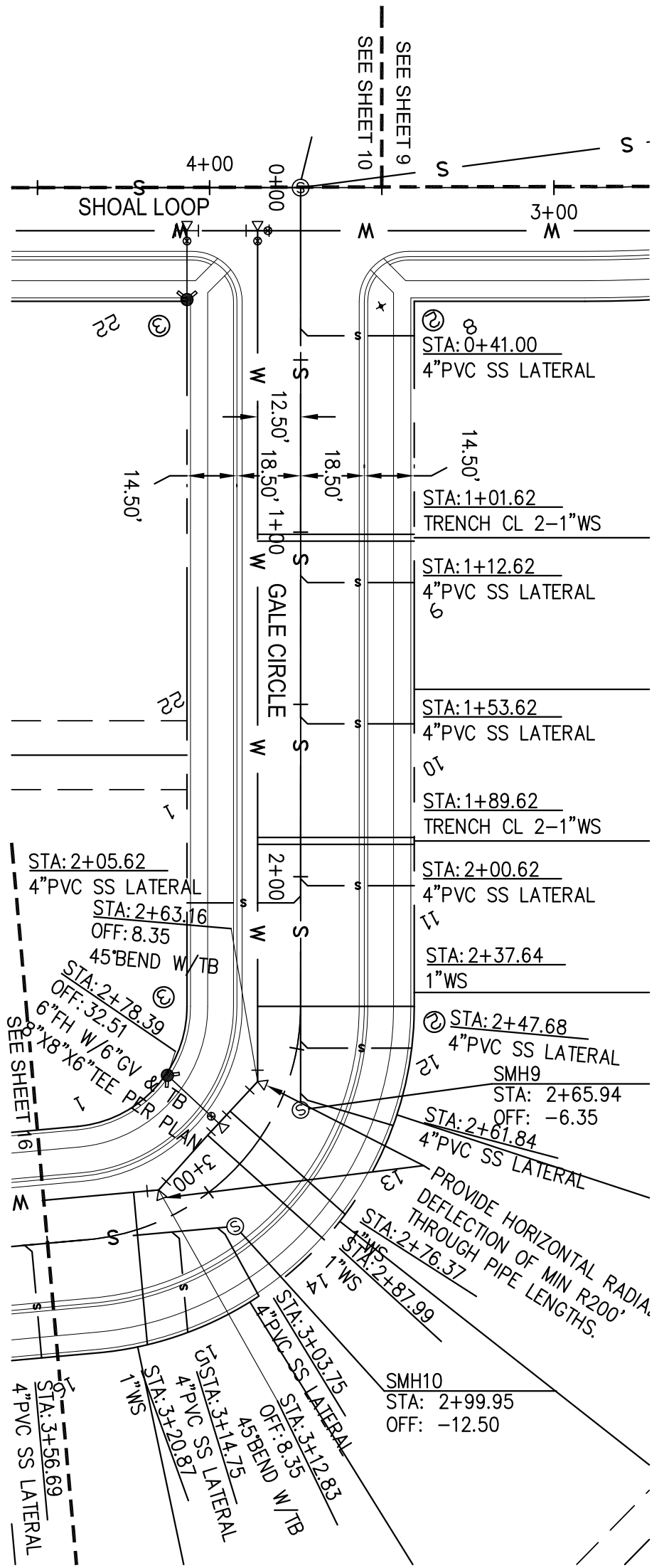
8" PVC SANITARY MAIN 106LF

**NOTE:**

SEE GENERAL NOTES FOR WATER AND SANITARY SEWER CONSTRUCTION ON SHEET 3.

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**TAIT & ASSOCIATES, INC.**

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**QUANTITIES THIS SHEET:**

<b>WATER MAIN:</b>	
6" PVC WATER MAIN	21LF
8" PVC WATER MAIN	324LF
6" HYDRANT	1EA
6" GATE VALVE & BOX	1EA
1" WATER SERVICE	356LF
1" CURB STOP & BOX	8EA
1" WATER SERVICE CONNECTION	8EA
<b>SANITARY SEWER:</b>	
48" ECCENTRIC MANHOLE	2EA
8" PVC SANITARY MAIN	316LF
4" PVC SANITARY LATERAL	271LF
8" X4" PVC WYE	9EA

**NOTE:**  
SEE GENERAL NOTES FOR WATER AND SANITARY SEWER CONSTRUCTION ON SHEET 3.

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TAIT & ASSOCIATES, INC.

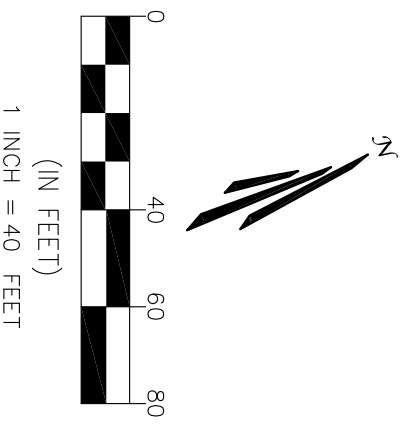
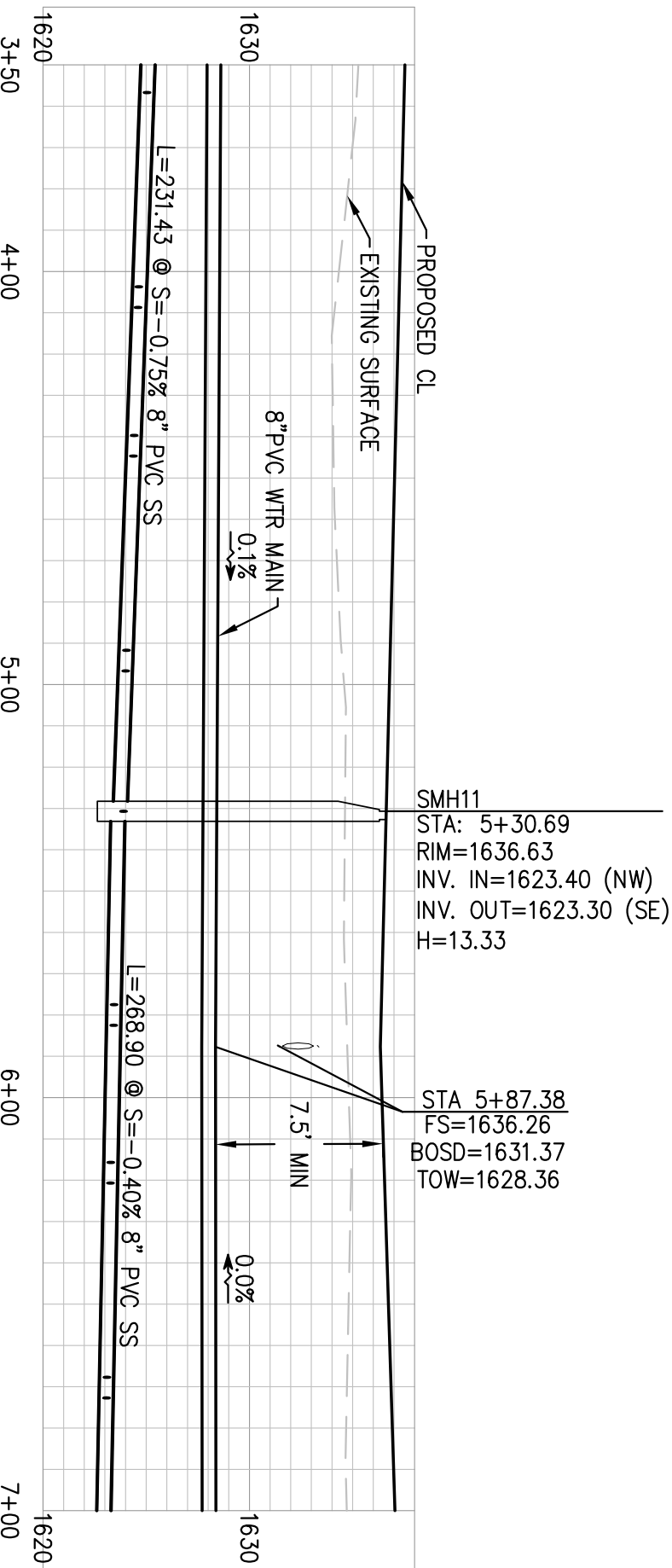
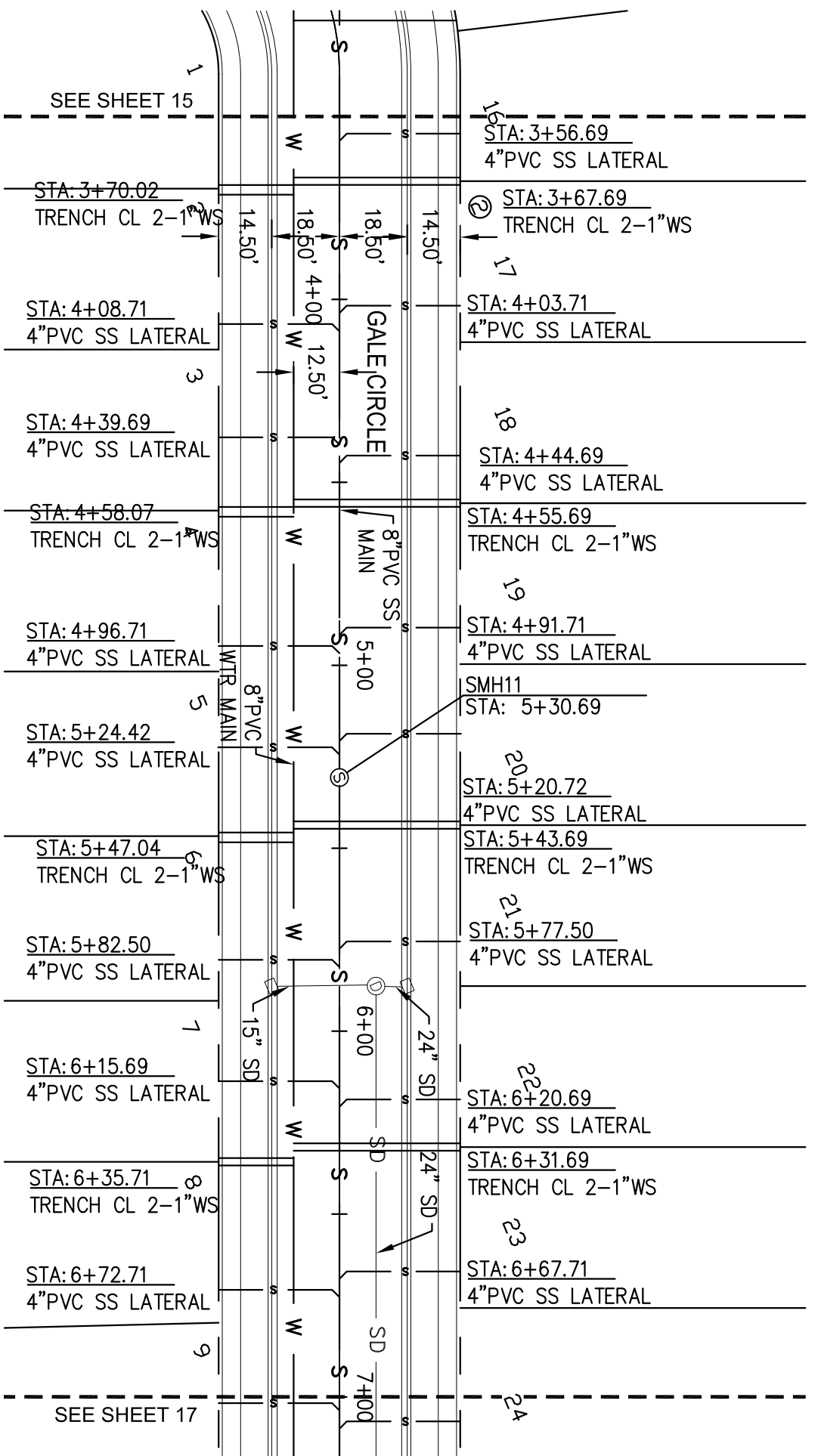
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GALE LOOP TO GALE CIRCLE	RM	07/14/15
NO.	DESCRIPTION	REVISIONS
BY	DATE	

2911 N 14th Street, Suite 301, Bismarck, ND 58501  
 p: 701/258/6397 www.tait.com f: 701/353/5798  
 Los Angeles Rancho Cucamonga Sacramento Seattle Boise Dallas Denver North Dakota

GALE CIRCLE WATER & SANITARY PLAN & PROFILE 0+00-3+50  
 LAKEWOOD 8TH ADDITION  
 AXIEN ENGINEERING  
 MORTON COUNTY  
 MANDAN, NORTH DAKOTA

DRAWN: TU  
 DATE: 4/28/2015  
 CHECKED: JM  
 DATE: 06/04/2015  
 REVISION #: 1  
 DATE: 06/04/2015  
 JOB NO: ND10090



**QUANTITIES THIS SHEET:**

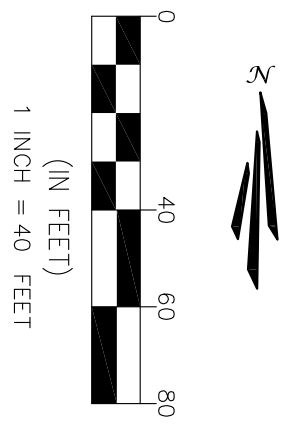
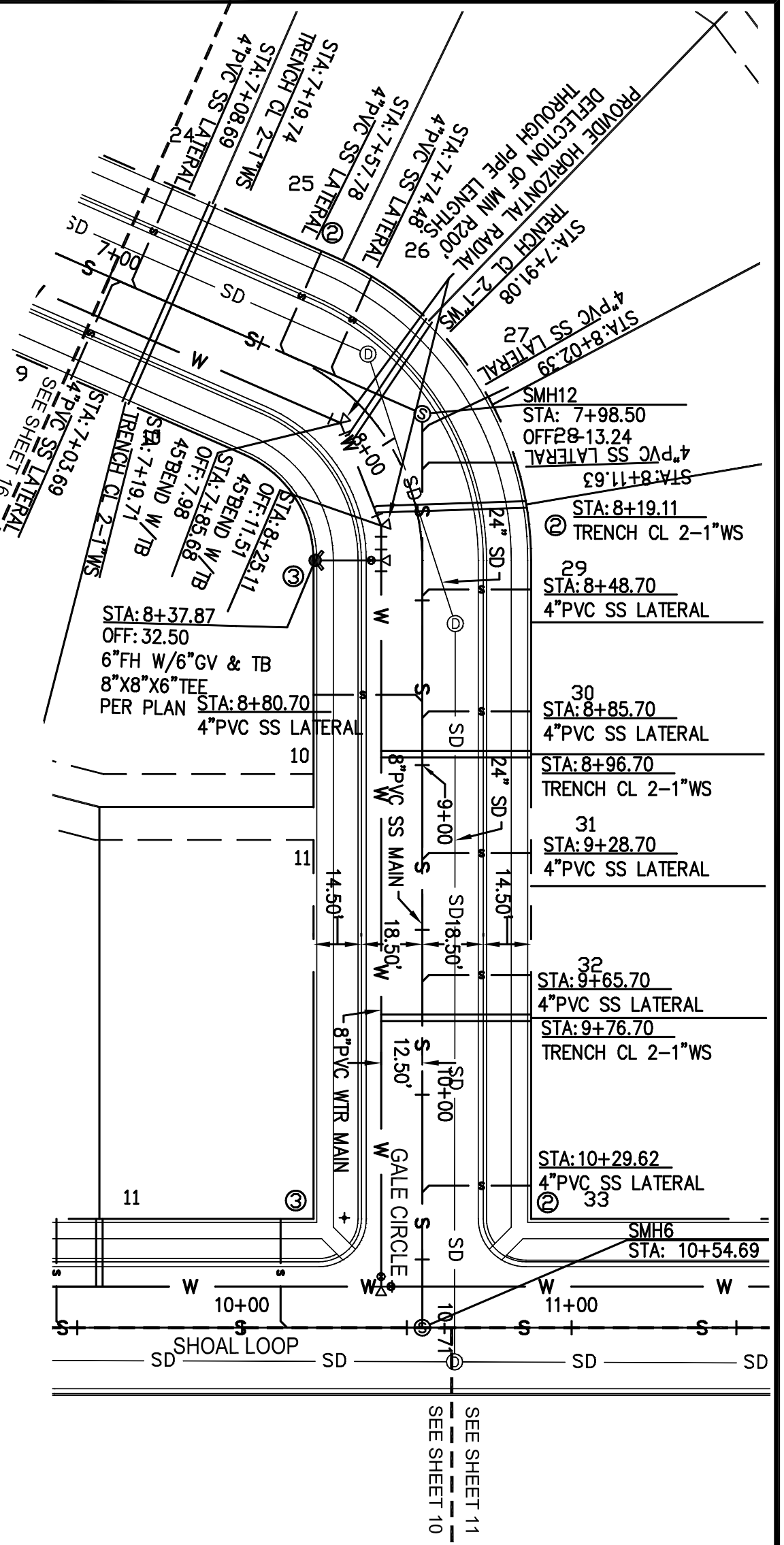
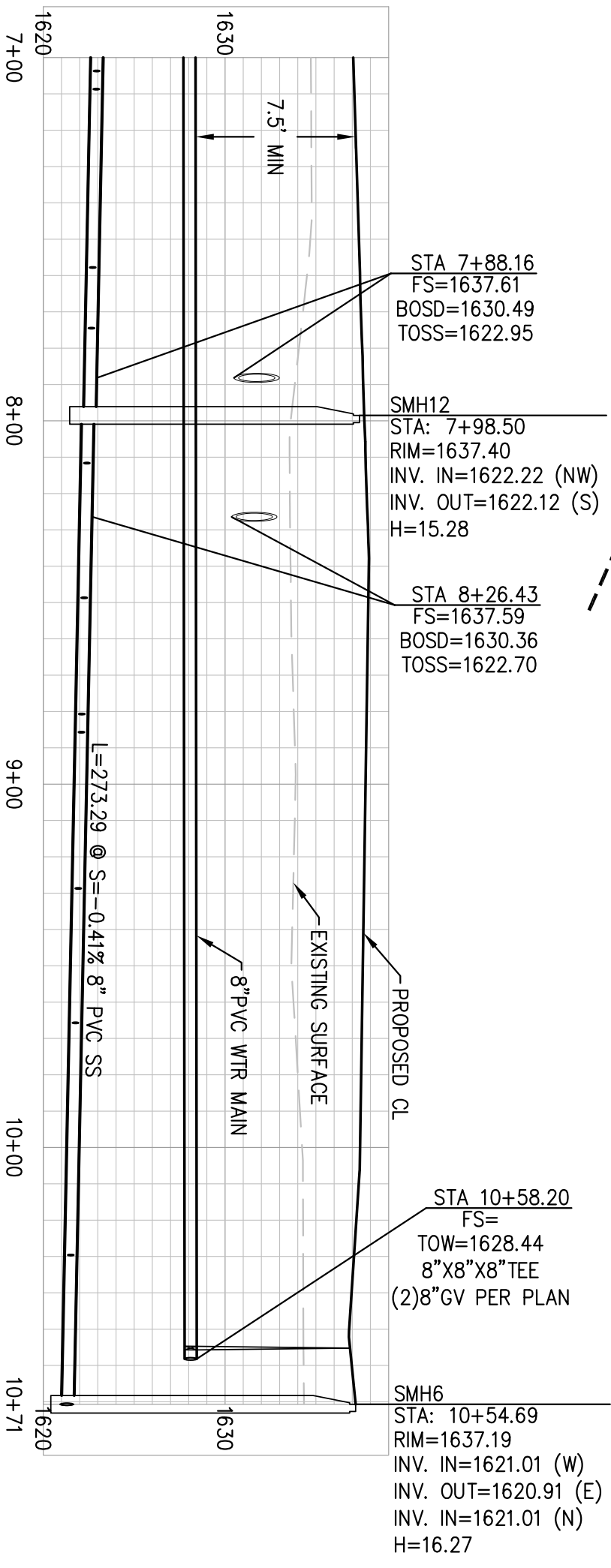
- WATER MAIN:**
- 8" PVC WATER MAIN 350LF
  - 1" WATER SERVICE 529LF
  - 1" CURB STOP & BOX 16EA
  - 1" WATER SERVICE 16EA
  - CONNECTION 16EA
- SANITARY SEWER:**
- 48" ECCENTRIC MANHOLE 1EA
  - 8" PVC SANITARY MAIN 346LF
  - 4" PVC SANITARY LATERAL 495LF
  - 8"X4" PVC WYE 15EA

**NOTE:**  
 SEE GENERAL NOTES FOR WATER AND SANITARY SEWER CONSTRUCTION ON SHEET 3.

PREPARED UNDER THE SUPERVISION OF  
**TAIT & ASSOCIATES, INC.**

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**QUANTITIES THIS SHEET:**

- WATER MAIN:**
- 6" PVC WATER MAIN 20LF
  - 8" GATE VALVE & BOX 1EA
  - 8" PVC WATER MAIN 339LF
  - 6" HYDRANT 1EA
  - 6" GATE VALVE & BOX 1EA
  - 1" WATER SERVICE 493LF
  - 1" CURB STOP & BOX 12EA
  - 1" WATER SERVICE CONNECTION 12EA
- SANITARY SEWER:**
- 48" ECCENTRIC MANHOLE 1EA
  - 8" PVC SANITARY MAIN 365LF
  - 4" PVC SANITARY LATERAL 341LF
  - 8" X4" PVC WYE 12EA

**NOTE:**  
SEE GENERAL NOTES FOR WATER AND SANITARY SEWER CONSTRUCTION ON SHEET 3.

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GALE CIRCLE WATER & SANITARY PLAN & PROFILE 7+00+10+71  
LAKWOOD 8TH ADDITION  
AXIEN ENGINEERING  
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