

STERLING RANCH  
LIFT STATION AND FORCE MAIN  
EL PASO COUNTY, COLORADO

APRIL 24, 2017

CONTACTS

OWNER: SR SEWER, LLC  
20 BOULDER CRESCENT, SUITE 201  
COLORADO SPRINGS, CO 80903  
JIM MORLEY 719-471-1742

CIVIL ENGINEER: LAMP RYNEARSON COMPANIES  
TZA WATER  
12596 W. BAYAUD AVE. SUITE 330  
LAKEWOOD, CO 80228  
BRAD SIMONS, 303-971-0077

LARKIN LAMP RYNEARSON  
9001 STATE LINE ROAD, SUITE 200  
KANSAS CITY, MO 64114  
ISAAC CRABTREE, 816-361-0440

LAMP RYNEARSON & ASSOCIATES, INC.  
4715 INNOVATION DR., SUITE 100  
FORT COLLINS, CO 80525  
SHAR SHADOWEN, 970-226-0342

LAMP RYNEARSON & ASSOCIATES, INC.  
14710 W. DODGE ROAD, #100  
OMAHA, NE 68154  
JOHN HILL, 402-748-2498

PROJECT MANAGER: MMI WATER ENGINEERS, LLC  
7262 S. GARRISON COURT  
LITTLETON, CO 80128  
BRADLEY A. SIMONS, P.E., 720-234-8398

TRAFFIC ENGINEERING: EL PASO COUNTY PUBLIC SERVICES & TRANSPORTATION DEPARTMENT  
3275 AKERS DRIVE  
COLORADO SPRINGS, CO 80922  
ANDRE BRACKIN, P.E. 719-668-8769

GAS: CITY OF COLORADO SPRINGS

GAS: COLORADO INTERSTATE GAS

GAS: MAGELLAN MIDSTREAM

FORCE MAIN & SEWER: STERLING RANCH METROPOLITAN DISTRICT NO. 1

ELECTRIC: MOUNTAIN VIEW ELECTRIC

SANITARY SEWER SERVICE PROVIDER: MERIDIAN SERVICE METROPOLITAN DISTRICT  
11886 STAPLETON DRIVE  
FALCON, CO 80831  
BRADEN MCCRORY 719-495-6567

EROSION CONTROL STATEMENT:

ENGINEER'S STATEMENT:

THIS EROSION AND STORMWATER QUALITY CONTROL/GRADING PLAN WAS PREPARED UNDER MY DIRECTION AND SUPERVISION AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. IF SUCH WORK IS PERFORMED IN ACCORDANCE WITH THE GRADING AND EROSION CONTROL PLAN, THE WORK WILL NOT BECOME A HAZARD TO LIFE AND LIMB, ENDANGER PROPERTY, OR ADVERSELY AFFECT THE SAFETY, USE OR STABILITY OF A PUBLIC WAY, DRAINAGE CHANNEL OR OTHER PROPERTY.

ENGINEER, COLORADO P.E. # \_\_\_\_\_

PROJECT CONTROL

HORIZONTAL CONTROL:

N 1/4 CORNER, SEC 3, T13S, R65W  
NORTHING: 410191.1110  
EASTING: 241732.9390  
ELEVATION: 7010.07  
DESCRIPTION: 2 1/2" ALUM CAP W/ 2" ALUM PIPE, LS 11624

NW CORNER, SEC 3, T13S, R65W  
NORTHING: 410154.8270  
EASTING: 239010.5240  
ELEVATION: 7028.15  
DESCRIPTION: 2 1/2" ALUM CAP W/ 3/4" REBAR, LS 11624

VERTICAL DATUM:

STERLING RANCH DEVELOPMENT BENCHMARK  
NORTHING: 413533.64  
EASTING: 235994.01  
ELEVATION: 7076.93  
DESCRIPTION: 3/4" REBAR WITH 1" PLASTIC CAP

FORCE MAIN & SEWER MAIN EXTENSIONS

ANY CHANGE OR ALTERATIONS AFFECTING THE GRADING, ALIGNMENT, ELEVATION AND/OR DEPTH OF COVER OF ANY FORCE MAIN, SEWER MAINS OR OTHER APPURTENANCES SHOWN ON THIS DRAWING SHALL BE THE RESPONSIBILITY OF THE OWNER/DEVELOPER. THE OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR ALL OPERATION DAMAGE AND DEFECTS IN INSTALLATION AND MATERIAL FOR MAINS AND SERVICES FROM THE DATE OF APPROVAL UNTIL FINAL ACCEPTANCE IS ISSUED.

SIGNED: \_\_\_\_\_ DATE: \_\_\_\_\_  
OWNER/DEVELOPER

PRINT NAME: JAMES F. MORLEY

DBA: SR SEWER LLC

ADDRESS: 20 BOULDER CRESCENT #200  
COLORADO SPRINGS, COLORADO 80903

DISTRICT APPROVAL

THE STERLING RANCH METROPOLITAN DISTRICT RECOGNIZED THE DESIGN ENGINEER AS HAVING RESPONSIBILITY FOR THE DESIGN AND HAS LIMITED ITS SCOPE OF REVIEW ACCORDINGLY.

STERLING RANCH METROPOLITAN DISTRICT  
WASTEWATER DESIGN APPROVAL

SIGNED: \_\_\_\_\_ DATE: \_\_\_\_\_  
DISTRICT ENGINEER

PROJECT NO. \_\_\_\_\_

DEVELOPER'S STATEMENT -- EROSION CONTROL

THE OWNER WILL COMPLY WITH THE REQUIREMENTS OF THE EROSION AND STORMWATER QUALITY CONTROL PLAN INCLUDING TEMPORARY BMP INSPECTION REQUIREMENTS AND FINAL STABILIZATION REQUIREMENTS. ACKNOWLEDGE THE RESPONSIBILITY TO DETERMINE WHETHER THE CONSTRUCTION ACTIVITIES ON THIS PLAN REQUIRE COLORADO DISCHARGE PERMIT SYSTEM (CDPS) PERMITTING FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY.

BY: JAMES F. MORLEY

DBA: SR SEWER LLC

TITLE: PRESIDENT

ADDRESS: 20 BOULDER CRESCENT #200  
COLORADO SPRINGS, COLORADO 80903

MERIDIAN SERVICE METROPOLITAN DISTRICT APPROVAL

THE MERIDIAN SERVICE METROPOLITAN DISTRICT HAS REVIEWED THESE PLANS PREPARED BY LAMP RYNEARSON & ASSOCIATES AND AMENDED BY MMI WATER ENGINEERS, LLC.

SIGNED: THOMAS A. KERBY, P.E. - DISTRICT ENGINEER DATE: \_\_\_\_\_

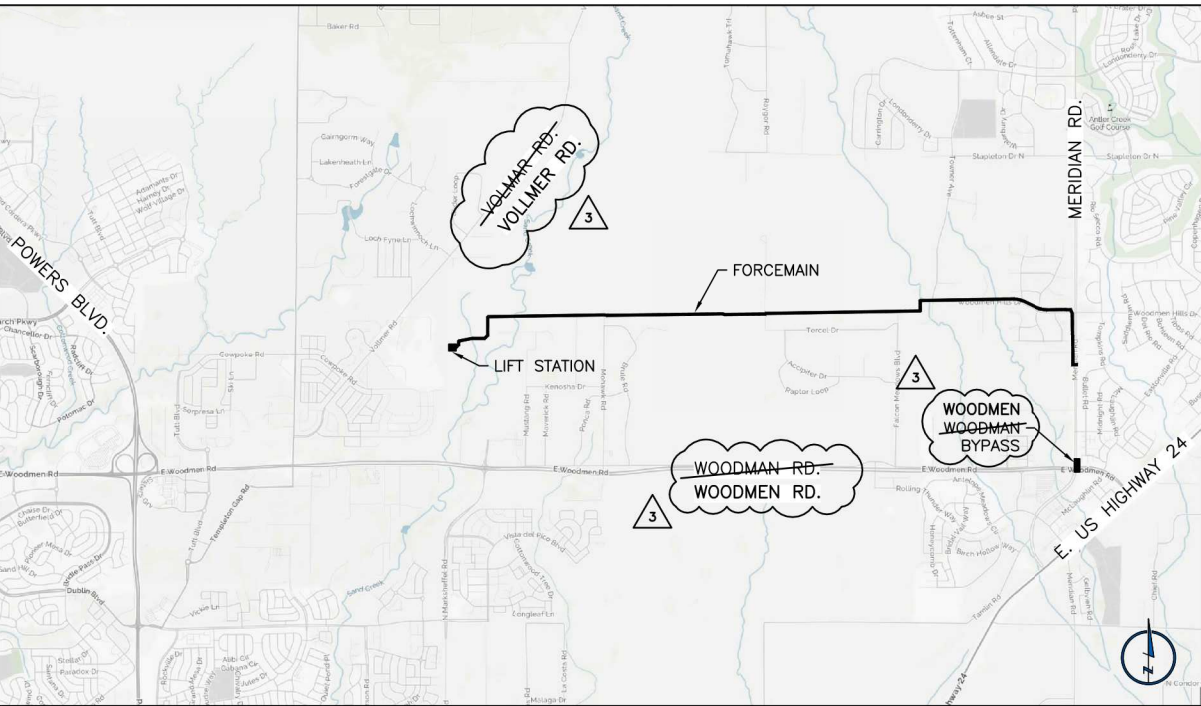
EL PASO COUNTY STANDARD CD SIGNATURE BLOCK:

COUNTY PLAN REVIEW IS PROVIDED ONLY FOR GENERAL CONFORMANCE WITH COUNTY DESIGN CRITERIA. THE COUNTY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, AND/OR ELEVATIONS WHICH SHALL BE CONFIRMED AT THE JOB SITE. THE COUNTY THROUGH THE APPROVAL OF THIS DOCUMENT ASSUMES NO RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT.

FILED IN ACCORDANCE WITH THE REQUIREMENTS OF THE EL PASO COUNTY LAND DEVELOPMENT CODE, DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2, AND ENGINEERING CRITERIA MANUAL AS AMENDED.

IN ACCORDANCE WITH ECM SECTION 1.12, THESE CONSTRUCTION DOCUMENTS WILL BE VALID FOR CONSTRUCTION FOR A PERIOD OF 2 YEARS FROM THE DATE SIGNED BY THE EL PASO COUNTY ENGINEER. IF CONSTRUCTION HAS NOT STARTED WITHIN THOSE 2 YEARS, THE PLANS WILL NEED TO BE RESUBMITTED FOR APPROVAL INCLUDING PAYMENT OF REVIEW FEES AT THE PLANNING AND COMMUNITY DEVELOPMENT DIRECTORS DISCRETION.

JENNIFER IRVINE, P.E. DATE \_\_\_\_\_  
COUNTY ENGINEER / ECM ADMINISTRATOR



LOCATION MAP  
N.T.S.

INDEX OF SHEETS

SHEET NUMBER	SHEET TITLE	SHEET NUMBER	SHEET TITLE
<b>GENERAL</b>		<b>FORCE MAIN</b>	
G0.1	COVER SHEET	FM1.1	STA. 10+00 TO STA. 20+00
G0.2	GENERAL NOTES	FM1.2	STA. 20+00 TO STA. 30+00
G0.3	GENERAL NOTES	FM1.3	STA. 30+00 TO STA. 40+00
G0.4	OVERALL PLAN & PROJECT CONTROL	FM1.4	STA. 40+00 TO STA. 50+00
<b>LIFT STATION</b>		FM1.5	STA. 50+00 TO STA. 60+00
C1.1	LIFT STATION SITE PLAN	FM1.6	STA. 60+00 TO STA. 70+00
C1.2	LIFT STATION SITE DETAILS	FM1.7	STA. 70+00 TO STA. 80+00
T1.1	LIFT STATION PLAN SECTIONS	FM1.8	STA. 80+00 TO STA. 90+00
T1.2	LIFT STATION PLAN SECTIONS	FM1.9	STA. 90+00 TO STA. 100+00
T1.3	LIFT STATION PLAN	FM1.10	STA. 100+00 TO STA. 110+00
T1.4	LIFT STATION SECTIONS	FM1.11	STA. 110+00 TO STA. 120+00
T1.5	LIFT STATION SECTIONS	FM1.12	STA. 120+00 TO STA. 130+00
T1.6	LIFT STATION MISCELLANEOUS DETAILS	FM1.13	STA. 130+00 TO STA. 140+00
T2.1	CHEMICAL AND ELECTRICAL BUILDING PLAN AND ELEVATIONS	FM1.14	STA. 140+00 TO STA. 150+00
T2.2	CHEMICAL AND ELECTRICAL BUILDING SECTIONS AND DETAILS	FM1.15	STA. 150+00 TO STA. 160+00
S1.1	LIFT STATION SECTION AND PLAN	FM1.16	STA. 160+00 TO STA. 170+00
S1.2	LIFT STATION PLAN SECTIONS	FM1.17	STA. 170+00 TO STA. 180+00
S1.3	LIFT STATION FLOOR AND SLAB REINFORCING	FM1.18	STA. 180+00 TO STA. 190+00
S1.4	LIFT STATION WALL REINFORCING & DETAILS	FM1.19	STA. 190+00 TO STA. 200+00
S2.1	CHEMICAL AND ELECTRICAL BUILDING SLAB AND FOUNDATION DETAILS	FM1.20	STA. 190+00 TO STA. 200+01
E0.1	LEGEND AND GENERAL NOTES	FM1.21	STA. 210+00 TO STA. 220+00
E1.1	ELECTRICAL SITE PLAN	FM1.22	STA. 220+00 TO STA. 230+00
E1.2	POWER AND SIGNAL PLAN	FM1.23	STA. 230+00 TO STA. 240+00
E1.3	LIGHTING PLAN	FM1.24	STA. 240+00 TO STA. 249+00
E1.4	NOT USED	FM1.25	STA. 249+00 TO STA. 251+81.43
E1.5	METERING MANHOLE AND POWER RISER	FM1.26	WOODMEN BYPASS
E2.1	POWER RISER AND SCHEDULES	FM2.1	CONST RUCT ION DETAILS
E3.1	ELECTRICAL DETAILS	FM2.2	CONST RUCT ION DETAILS
E3.2	ELECTRICAL DETAILS	FM2.3	CONST RUCT ION DETAILS
		FM2.4	EROSION CONTROL DETAILS



LAMP RYNEARSON  
& ASSOCIATES

12596 West Bayaud Avenue, Suite 330  
Lakewood, Colorado 80228  
LRA-Inc.com / tza4water.com

303.971.0030 | P  
303.971.0077 | F



STANDARD NOTES:

- CONSTRUCTION MAY NOT COMMENCE UNTIL A CONSTRUCTION PERMIT IS OBTAINED FROM PLANNING AND COMMUNITY DEVELOPMENT (PCD) AND A PRECONSTRUCTION CONFERENCE IS HELD WITH PCD INSPECTIONS.
- STORMWATER DISCHARGES FROM CONSTRUCTION SITES SHALL NOT CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS. ALL WORK AND EARTH DISTURBANCE SHALL BE DONE IN A MANNER THAT MINIMIZES POLLUTION OF ANY ON-SITE OR OFF SITE WATERS, INCLUDING WETLANDS.
- NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPTED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS FROM REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING.
- A SEPARATE STORMWATER MANAGEMENT PLAN (SWMP) FOR THIS PROJECT SHALL BE COMPLETED AND AN EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP) ISSUED PRIOR TO COMMENCING CONSTRUCTION. DURING CONSTRUCTION THE SWMP IS THE RESPONSIBILITY OF THE DESIGNATED STORMWATER MANAGER, SHALL BE LOCATED ON SITE AT ALL TIMES AND SHALL BE KEPT UP TO DATE WITH WORK PROGRESS AND CHANGES IN THE FIELD.
- ONCE THE ESQCP HAS BEEN ISSUED, THE CONTRACTOR MAY INSTALL THE INITIAL STAGE EROSION AND SEDIMENT CONTROL BMPs AS INDICATED ON THE GEC. A PRECONSTRUCTION MEETING BETWEEN THE CONTRACTOR, ENGINEER, AND EL PASO COUNTY WILL BE HELD PRIOR TO ANY CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE APPLICANT TO COORDINATE THE MEETING TIME AND PLACE WITH COUNTY PCD INSPECTIONS STAFF.
- SOIL EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 21 CALENDAR DAYS AFTER FINAL GRADING, OR FINAL EARTH DISTURBANCE HAS BEEN COMPLETED. DISTURBED AREAS AND STOCKPILES WHICH ARE NOT AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS SHALL ALSO BE MULCHED WITHIN 21 DAYS AFTER INTERIM GRADING. AN AREA THAT IS GOING TO REMAIN IN AN INTERIM STATE FOR MORE THAN 60 DAYS SHALL ALSO BE SEEDED. ALL TEMPORARY SOIL EROSION CONTROL MEASURES AND BMPs SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND ESTABLISHED.
- TEMPORARY SOIL EROSION CONTROL FACILITIES SHALL BE REMOVED AND EARTH DISTURBANCE AREAS GRADED AND STABILIZED WITH PERMANENT SOIL EROSION CONTROL MEASURES PURSUANT TO STANDARDS AND SPECIFICATION PRESCRIBED IN THE DCM VOLUME II AND THE ENGINEERING CRITERIA MANUAL (ECM) APPENDIX I.
- ALL PERSONS ENGAGED IN EARTH DISTURBANCE SHALL IMPLEMENT AND MAINTAIN ACCEPTABLE SOIL EROSION AND SEDIMENT CONTROL MEASURES INCLUDING BMPs IN CONFORMANCE WITH THE EROSION CONTROL TECHNICAL STANDARDS OF THE DRAINAGE CRITERIA MANUAL (DCM) VOLUME II AND IN ACCORDANCE WITH THE STORMWATER MANAGEMENT PLAN (SWMP).
- ALL TEMPORARY EROSION CONTROL FACILITIES INCLUDING BMPs AND ALL PERMANENT FACILITIES INTENDED TO CONTROL EROSION OF ANY EARTH DISTURBANCE OPERATIONS SHALL BE INSTALLED AS DEFINED IN THE APPROVED PLANS, THE SWMP AND THE DCM VOLUME II AND MAINTAINED THROUGHOUT THE DURATION OF THE EARTH DISTURBANCE OPERATION.
- ANY EARTH DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY REDUCE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION. ALL DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST PRACTICAL PERIOD OF TIME.
- ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER AROUND, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE DESIGNED TO LIMIT THE DISCHARGE TO A NON-EROSIVE VELOCITY.
- CONCRETE WASH WATER SHALL BE CONTAINED AND DISPOSED OF IN ACCORDANCE WITH THE SWMP. NO WASH WATER SHALL BE DISCHARGED TO OR ALLOWED TO RUNOFF TO STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.
- EROSION CONTROL BLANKETING SHALL BE USED ON SLOPES STEEPER THAN 3:1.
- BUILDING, CONSTRUCTION, EXCAVATION, OR OTHER WASTE MATERIALS SHALL NOT BE TEMPORARILY PLACED OR STORED IN THE STREET, ALLEY, OR OTHER PUBLIC WAY, UNLESS IN ACCORDANCE WITH AN APPROVED TRAFFIC CONTROL PLAN. BMP'S MAY BE REQUIRED BY EL PASO COUNTY ENGINEERING IF DEEMED NECESSARY, BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES.
- VEHICLE TRACKING OF SOILS AND CONSTRUCTION DEBRIS OFF-SITE SHALL BE MINIMIZED. MATERIALS TRACKED OFFSITE SHALL BE CLEANED UP AND PROPERLY DISPOSED OF IMMEDIATELY.
- CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL WASTES FROM THE CONSTRUCTION SITE FOR DISPOSAL IN ACCORDANCE WITH LOCAL AND STATE REGULATORY REQUIREMENTS. NO CONSTRUCTION DEBRIS, TREE SLASH, BUILDING MATERIAL WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, OR DISCHARGED AT THE SITE.
- THE OWNER, SITE DEVELOPER, CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, AND SAND THAT MAY ACCUMULATE IN THE STORM SEWER OR OTHER DRAINAGE CONVEYANCE SYSTEM AND STORMWATER APPURTENANCES AS A RESULT OF SITE DEVELOPMENT.
- THE QUANTITY OF MATERIALS STORED ON THE PROJECT SITE SHALL BE LIMITED, AS MUCH AS PRACTICAL, TO THAT QUANTITY REQUIRED TO PERFORM THE WORK IN AN ORDERLY SEQUENCE. ALL MATERIALS STORED ON-SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER, IN THEIR ORIGINAL CONTAINERS, WITH ORIGINAL MANUFACTURER'S LABELS.
- NO CHEMICALS ARE TO BE USED BY THE CONTRACTOR, WHICH HAVE THE POTENTIAL TO BE RELEASED IN STORMWATER UNLESS PERMISSION FOR THE USE OF A SPECIFIC CHEMICAL IS GRANTED IN WRITING BY THE ECM ADMINISTRATOR. IN GRANTING THE USE OF SUCH CHEMICALS, SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.
- BULK STORAGE STRUCTURES FOR PETROLEUM PRODUCTS AND OTHER CHEMICALS SHALL HAVE ADEQUATE PROTECTION SO AS TO CONTAIN ALL SPILLS AND PREVENT ANY SPILLED MATERIAL FROM ENTERING STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.
- NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE FLOW LINE OF THE CURB AND GUTTER OR IN THE DITCH LINE.
- INDIVIDUALS SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 8, CRS), AND THE "CLEAN WATER ACT" (33 USC 1344), IN ADDITION TO THE REQUIREMENTS INCLUDED IN THE DCM VOLUME II AND THE ECM APPENDIX I. ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (NPDES, FLOODPLAIN, 404, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, OR COUNTY AGENCIES, THE MORE RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.
- ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.
- PRIOR TO ACTUAL CONSTRUCTION THE PERMITEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.
- A WATER SOURCE SHALL BE AVAILABLE ON SITE DURING EARTHWORK OPERATIONS AND UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.
- THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY \_\_\_\_\_ AND SHALL BE CONSIDERED A PART OF THESE PLANS.
- AT LEAST TEN DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB 1 ACRE OR MORE, THE OWNER OR OPERATOR OF CONSTRUCTION ACTIVITY SHALL SUBMIT A PERMIT APPLICATION FOR STORMWATER DISCHARGE TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY DIVISION. THE APPLICATION CONTAINS CERTIFICATION OF COMPLETION OF A STORMWATER MANAGEMENT PLAN (SWMP), OF WHICH THIS GRADING AND EROSION CONTROL PLAN MAY BE A PART. FOR INFORMATION OR APPLICATION MATERIALS CONTACT:

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT  
WATER QUALITY CONTROL DIVISION  
WOOD - PERMITS  
4300 CHERRY CREEK DRIVE SOUTH  
DENVER, CO 80246-1530  
ATTN: PERMITS UNIT

EROSION CONTROL NOTES:

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- BULK STORAGE STRUCTURES FOR PETROLEUM PRODUCTS AND OTHER CHEMICALS SHALL HAVE ADEQUATE PROTECTION SO AS TO CONTAIN ALL SPILLS AND PREVENT ANY SPILLED MATERIAL FROM ENTERING STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.
- NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE FLOW LINE OF THE CURB AND GUTTER OR IN THE DITCHLINE.
- INDIVIDUALS SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 8, CRS), AND THE "CLEAN WATER ACT" (33 USC 1344), IN ADDITION TO THE REQUIREMENTS INCLUDED IN THE DCM VOLUME II AND THE ECM APPENDIX I. ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (NPDES, FLOODPLAIN, 404, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, OR COUNTY AGENCIES, THE MORE RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.
- ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.
- PRIOR TO ACTUAL CONSTRUCTION THE PERMITEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.
- A WATER SOURCE SHALL BE AVAILABLE ON SITE DURING EARTHWORK OPERATIONS AND UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.
- THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY ENTECH ENGINEERING, INC. AND SHALL BE CONSIDERED A PART OF THESE PLANS.
- AT LEAST TEN DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB 1 ACRE OR MORE, THE OWNER OR OPERATOR OF CONSTRUCTION ACTIVITY SHALL SUBMIT A PERMIT APPLICATION FOR STORMWATER DISCHARGE TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY DIVISION. THE APPLICATION CONTAINS CERTIFICATION OF COMPLETION OF A STORMWATER MANAGEMENT PLAN (SWMP), OF WHICH THIS GRADING AND EROSION CONTROL PLAN MAY BE A PART. FOR INFORMATION OR APPLICATION MATERIALS CONTACT:

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT  
WATER QUALITY CONTROL DIVISION  
WOOD - PERMITS  
4300 CHERRY CREEK DRIVE SOUTH  
DENVER, CO 80246-1530  
ATTN: PERMITS UNIT

GENERAL NOTES:

- ALL STATIONING IS CENTER LINE UNLESS OTHERWISE NOTED. ALL ELEVATIONS ARE CENTER LINE UNLESS OTHERWISE NOTED.
  - ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE DISTRICT. THE DISTRICT RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO ITS STANDARDS AND SPECIFICATIONS.
  - COMPACTION TESTS SHALL BE 95% STANDARD PROCTOR AS DETERMINED BY ASTM D698, UNLESS OTHERWISE APPROVED BY THE DISTRICT OR HIGHER STANDARD AS IMPOSED BY OTHER AGENCIES HAVING RIGHT-OF-WAY JURISDICTION. THIS SHALL INCLUDE ALL VALVES, FIRE HYDRANT RUNS, WATER & SEWER SERVICE LINES AND MANHOLES. ALL REPORTS SHALL BE SUBMITTED TO THE DISTRICT FOR REVIEW AND APPROVAL. MOISTURE CONTENT SHALL BE AS OUTLINED IN THE GEOTECHNICAL REPORT.
  - THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY. THE LOCATION OF ALL UTILITIES SHALL BE FIELD VERIFIED PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. THE DISTRICT SHALL BE NOTIFIED OF ANY DEVIATIONS TO THE LINE AND/OR GRADE AS DEPICTED ON THE PLANS. CONTRACTOR SHALL SUBMIT TO THE DISTRICT AND THE ENGINEER OF RECORD A REPORT OF THE FIELD VERIFIED INFORMATION PRIOR TO THE START OF CONSTRUCTION.
  - ALL PIPELINES, BENDS, AIR RELEASES, MANHOLES, TEST STATIONS, STRUCTURES, FENCES AND OTHER PERTINENT DESIGN COMPONENTS SHALL BE FIELD STAKED PRIOR TO THE START OF CONSTRUCTION.
  - BENDS, DEFLECTION & CUT PIPE LENGTHS SHALL BE USED TO HOLD HORIZONTAL ALIGNMENT OF SEWER AND WATER LINES TO NO MORE THAN 0.5' FROM THE DESIGNED ALIGNMENT. CONSTRUCTION STAKES TO BE AT 25' INTERVALS ALONG CURVES TO ASSURE LOCATION OF PIPE LINE CONSTRUCTION.
  - ALL UNUSED SALVAGED UTILITY MATERIAL SHALL BE RETURNED TO THE TOWN OF KEENESBURG AS REQUESTED.
  - AT THE CONTRACTOR'S EXPENSE, ALL UTILITY MAINS SHALL BE SUPPORTED AND PROTECTED SUCH THAT THEY SHALL FUNCTION CONTINUOUSLY DURING CONSTRUCTION OPERATIONS. SHOULD A UTILITY MAIN FAIL AS A RESULT OF THE CONTRACTOR'S OPERATION, IT SHALL BE REPLACED IMMEDIATELY BY THE CONTRACTOR OR BY THE DISTRICT AT FULL COST OF LABOR AND MATERIALS TO THE CONTRACTOR.
  - PUMPING OR BYPASS OPERATIONS SHALL BE REVIEWED AND APPROVED BY BOTH THE DISTRICT AND THE DISTRICT ENGINEER PRIOR TO EXECUTION.
  - THE CONTRACTOR SHALL REPLACE OR REPAIR DAMAGE TO ALL SURFACE IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO FENCES, LANDSCAPING, CURB AND GUTTER AND/OR ASPHALT THAT MAY BE CAUSED DURING CONSTRUCTION.
  - ALL CONTRACTORS WORKING ON OR NEAR A WATER OR SEWER FACILITY (TO INCLUDE SERVICE LINES) SHALL HAVE LIABILITY INSURANCE NAMING THE DISTRICT AS AN ADDITIONAL INSURED AND SHALL PROVIDE A CURRENT COPY OF WORKERS COMPENSATION INSURANCE ON FILE WITH THE DISTRICT. NO WORK CAN PROCEED WITHOUT CURRENT CERTIFICATES ON FILE AT THE DISTRICT'S OFFICE.
  - THE CONTRACTOR SHALL NOTIFY THE DISTRICT AND ALL AFFECTED UTILITY COMPANIES ADJACENT TO THE PROPOSED UTILITY CONSTRUCTION A MINIMUM OF 48 HOURS AND A MAXIMUM OF 96 HOURS PRIOR TO THE START OF CONSTRUCTION. A WEEKLY CONSTRUCTION MEETING SHALL BE REQUIRED WITH THE CONTRACTOR, DISTRICT ENGINEER AND ALL OTHER PARTIES AS DEEMED NECESSARY BY THE DISTRICT.
  - THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS FROM ALL JURISDICTIONS REQUIRED FOR THIS PROJECT.
- TESTING OF FACILITIES:
- THE CONTRACTOR SHALL NOTIFY THE DISTRICT A MINIMUM OF 48 HOURS AND A MAXIMUM OF 96 HOURS PRIOR TO THE START OF ANY TESTING.
  - ALL SECTIONS OF FORCE MAIN ARE TO MEET THE FOLLOWING PRESSURE TESTING REQUIREMENTS:
    - TEST 100% OF ALL LINES
    - MUST PASS PRESSURE TEST TO 200 PSI FOR TWO HOURS (UNLESS OTHERWISE APPROVED ON THE PLANS).
  - ALL SANITARY SEWER FACILITIES ARE TO MEET THE FOLLOWING TESTING REQUIREMENTS:
    - ALL LINES SHALL BE JET CLEANED PRIOR TO VACUUM OR PRESSURE TESTING.
    - ALL MANHOLES SHALL BE VACUUM TESTED WITH DISTRICT STAFF PRESENT PRIOR TO CCTV INSPECTION.
    - SEWER MAINS TO BE PRESSURE TEST PRIOR TO CCTV INSPECTION.
    - ALL LINES SHALL BE CCTV INSPECTED AND VIDEO SHALL TO BE SUBMITTED TO THE DISTRICT FOR REVIEW AND APPROVAL.
- ACCEPTANCE:
- PRELIMINARY ACCEPTANCE SHALL BE DEFINED AS THE POINT IN TIME THAT THE DISTRICT ACCEPTS THE FACILITY FOR USE. ALL SURFACE IMPROVEMENTS AND RESTORATION SHALL BE COMPLETED WITHIN 30 DAYS OF COMMENCEMENT. SHOULD THE CONTRACTOR FAIL TO COMPLETE ALL SURFACE IMPROVEMENTS AND RESTORATION WITHIN 30 DAYS OF COMMENCEMENT OF SERVICE, THE DISTRICT, AT THEIR DISCRETION, MAY ELECT TO COMPLETE THE IMPROVEMENTS AT THE CONTRACTORS COST.
  - ALL FORCE MAINS AND SEWER MAINS, INCLUDING SERVICE LINES, SHALL HAVE "AS-BUILT" DRAWINGS PREPARED AND APPROVED PRIOR TO PRELIMINARY ACCEPTANCE BY THE DISTRICT.

FORCE MAIN SYSTEM INSTALLATION NOTES:

- ALL TEST STATIONS AND ASSOCIATED APPURTENCES WITH THE FORCE MAIN SYSTEM SHALL BE MARKED WITH CARSONITE MARKERS AS APPLICABLE.
- ANY REQUIRED REALIGNMENT (HORIZONTAL OR VERTICAL) SHALL BE REVIEWED AND APPROVED BY THE DISTRICT.
- ALL MAIN LINES (PVC, HDPE & DUCTILE IRON) SHALL BE INSTALLED WITH COATED #12 TRACER WIRE WITH TEST STATIONS AT INTERVALS NO GREATER THAN 1,000 FEET OR AS SHOWN (VALVE BOXES CAN BE USED AT INTERSECTIONS AND SERVICE STUBS).
- NO WATER OR FORCE MAIN FACILITY SHALL BE PLACED IN SERVICE UNTIL AFTER THE COMPLETION OF ALL PRESSURE TESTING, FLUSHING, BAC-T TESTING, COMPACTION TESTING, AND AS-BUILT DRAWINGS ARE SUBMITTED AND APPROVED BY THE DISTRICT.
- NO FORCE MAIN FACILITY SHALL BE PLACED IN SERVICE UNTIL ALL SURFACE IMPROVEMENTS ARE COMPLETED.
- ALL EASEMENTS (PLATTED OR DEEDED) ARE DEDICATED, EXECUTED BY THE DISTRICT, AND RECORDED.

SANITARY SEWER SYSTEM INSTALLATION NOTES:

- SANITARY SEWER LENGTHS ARE MH CENTER-MH CENTER. ALL SANITARY SEWER PIPES SHALL BE SDR 35 PVC OR EQUAL. SEWER LINES MAY NOT EXCEED 7% GRADE FOR ANY SIZE WITHOUT PRIOR APPROVAL OF THE TOWN OF KEENESBURG.
- ALL SANITARY SEWER MANHOLES SHALL BE WRAPPED WITH RU116 RUBR-NEK JOINT WRAP OR EQUIVALENT AND COATED.
- NO SANITARY SEWER FACILITY SHALL BE PLACED IN SERVICE UNTIL THE COMPLETION OF ALL JET CLEANING, PRESSURE TESTING, VACUUM TESTING, CCTV INSPECTION, COMPACTION TESTING, AND AS-BUILT DRAWINGS ARE SUBMITTED AND APPROVED BY THE DISTRICT.
- NO SANITARY SEWER FACILITY SHALL BE PLACED IN SERVICE UNTIL ALL SURFACE IMPROVEMENTS ARE COMPLETED.
- ALL NECESSARY EASEMENTS (PLATTED OR DEEDED) ARE DEDICATED, EXECUTED BY THE DISTRICT, AND RECORDED.

DESIGNED BY	DESIGNED BY	DATE	JOB NUMBER-TASK#	BOOK AND PAGE
3 - PER EPC COMMENTS - 06/01/2019	30303971.00300 IF	APRIL 24, 2017	0410011	
30303971.00771 IF				



LAMP RYNEARSON & ASSOCIATES

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STERLING RANCH LIFT STATION AND FORCE MAIN  
STERLING RANCH METROPOLITAN DISTRICT NO. 1

FORCE MAIN  
GENERAL NOTES

LAMP RYNEARSON - ENGINEERS

PRELIMINARY

BRADLEY A. SIMONS  
34705  
SHEET

GO.2





EXISTING LINE LEGEND

-----	ADJACENT LOT LINE	---E---E---E---	EXISTING ELECTRIC	---ST---ST---	EXISTING STORM SEWER
-----	EDGE PAVEMENT OR GRAVEL	---FO---FO---	EXISTING FIBER OPTIC	---T---T---	EXISTING TELEPHONE
=====	PROPERTY LINE	-----	EXISTING FLOWLINE	---W---W---	EXISTING WATER
-----	SECTION LINE	---G---G---	EXISTING GAS	---X---X---	EXISTING WIRE FENCE
---CATV---CATV---	EXISTING CABLE TELEVISION	---OHP---OHP---	EXISTING OVERHEAD POWER		
-----	EXISTING EASEMENT	---SS---SS---	EXISTING SANITARY SEWER		

EXISTING SYMBOL LEGEND & CODE ABBREVIATIONS

SYMBOL	DESCRIPTION	CODE ABBREVIATIONS	SYMBOL	DESCRIPTION	CODE ABBREVIATIONS	SYMBOL	DESCRIPTION	CODE ABBREVIATIONS
	BUILDING, A/C	BAC		STRIPING, HANDICAP	STHC		UTILITY, UNIDENTIFIED, PULLBOX	UUPB
	BUILDING, ROOF DRAIN	BRD		STRIPING, ONLY	STO		UTILITY, WATER, CURB STOP	UWCS
	BRIDGE, LOW CHORD	BRLC		TRAFFIC CONTROL, CABINET	TCC		UTILITY, WATER, FIRE HYDRANT	UWFH
	DRAINAGE, AREA INLET, ROUND	DAIR		TRAFFIC CONTROL, PEDESTRIAN CROSSING	TCPC		UTILITY, WATER, MANHOLE	UWMH
	DRAINAGE, AREA INLET, SQUARE	DAIS		TRAFFIC CONTROL, POLE WITH MAST	TCPM		UTILITY, WATER, METER	UWM
	DRAINAGE, MANHOLE	DMH		TRAFFIC CONTROL, PULLBOX	TCPB		UTILITY, WATER, POST INDICATOR VALVE	UWPV
	DRAINAGE, STORM, FES	DSF		UTILITY, CABLE, PEDESTAL	UCP		UTILITY, WATER, VALVE	UWV
	DRAINAGE, STORM, PIPE	DSP		UTILITY, CABLE, PULLBOX	UCPB		UTILITY, WATER, WARNING SIGN	UWWS
	GROUND, BORE HOLE	GBH		UTILITY, CABLE, WARNING SIGN	UCWS		UTILITY, WATER, YARD HYDRANT	UWYH
	LANDSCAPE, BENCH	LBE		UTILITY, ELECTRIC, MANHOLE	UEMH			
	LANDSCAPE, BOLLARD	LB		UTILITY, ELECTRIC, METER	UEM			
	LANDSCAPE, BOULDER	LBR		UTILITY, ELECTRIC, POLE	UEP			
	LANDSCAPE, BUSH	LBU		UTILITY, ELECTRIC, PULLBOX	UEPB			
	LANDSCAPE, FLAGPOLE	LFP		UTILITY, ELECTRIC, TRANSFORMER	UET			
	LANDSCAPE, GROUND LIGHT	LGL		UTILITY, ELECTRIC, VAULT	UEV			
	LANDSCAPE, MAILBOX	LMB		UTILITY, ELECTRIC, WARNING SIGN	UEWS			
	LANDSCAPE, MISCELLANEOUS POINT	LMP		UTILITY, FIBER OPTIC, PEDESTAL	UFP			
	LANDSCAPE, TREE, CONIFEROUS	LTC		UTILITY, FIBER OPTIC, PULLBOX	UFPB			
	LANDSCAPE, TREE, DECIDUOUS	LTD		UTILITY, FIBER OPTIC, VAULT	UFV			
	MONUMENT, BENCHMARK	MB		UTILITY, FIBER OPTIC, WARNING SIGN	UFWS			
	MONUMENT, CONTROL	MC		UTILITY, GAS, MANHOLE	UGMH			
	MONUMENT, FOUND	MF		UTILITY, GAS, METER	UGM			
	MONUMENT, FOUND, OFFSET	MFO		UTILITY, GAS, VALVE	UGV			
	MONUMENT, SET	MS		UTILITY, GAS, WARNING SIGN	UGWS			
	MONUMENT, RIGHT-OF-WAY	MROW		UTILITY, IRRIGATION, CONTROL VALVE	UICV			
	MONUMENT, SECTION CORNER	MSC		UTILITY, IRRIGATION, SPRINKLER HEAD	UISH			
	MONUMENT, SECTION CORNER, CALCULATED	MSCC		UTILITY, POLE, H-STRUCTURE	UPH			
	MONUMENT, SECTION CORNER, REFERENCE	MSCR		UTILITY, POLE, PEDESTRIAN LIGHT	UPPL			
	MONUMENT, SECTION CORNER, TIE	MSCT		UTILITY, POLE, STEEL	UPS			
	MONUMENT, SECTION CORNER, WITNESS	MSCW		UTILITY, POLE, STREET LIGHT	UPSL			
	RAILROAD, CROSSBUCK	RRCB		UTILITY, POLE, WOOD	UPW			
	RAILROAD, SIGN, CROSSING	RRSC		UTILITY, POLE, WOOD WITH LIGHT	UPWL			
	SIGNS, BILLBOARD	SBLB		UTILITY, SEWER, CLEANOUT	USCO			
	SIGNS, DELINEATOR	SD		UTILITY, SEWER, MANHOLE	USMH			
	SIGNS, INFORMATION	SI		UTILITY, SEWER, WARNING SIGN	USWS			
	SIGNS, MONUMENT	SM		UTILITY, TELEPHONE, MANHOLE	UTMH			
	SIGNS, REGULATORY	SR		UTILITY, TELEPHONE, POLE	UTP			
	STRIPING, ARROW, LEFT	STAL		UTILITY, TELEPHONE, PULLBOX	UTPB			
	STRIPING, ARROW, RIGHT	STAR		UTILITY, TELEPHONE, WARNING SIGN	UTWS			
	STRIPING, ARROW, STRAIGHT	STAS		UTILITY, UNIDENTIFIED, MANHOLE	UUMH			
	STRIPING, BICYCLE	STBC		UTILITY, UNIDENTIFIED, PEDESTAL	UUP			

REMOVALS

	BUILDING TO BE REMOVED
	SIDEWALK TO BE REMOVED
	REMOVAL UTILITY
	REMOVE OBJECT

EROSION & SEDIMENT CONTROL (EC) LEGEND

	SILT FENCE
	WATTLE
	VEHICLE TRACKING CONTROL
	TEMPORARY SEEDING
	STRAW HAY BALE
	SLOPE PROTECTION
	PERMANENT SEEDING
	INLET PROTECTION
	CONCRETE WASHOUT PIT
	CHECK DAM
	CONSTRUCTION ROAD STABILIZATION
	CURB SOCK INLET PROTECTION
	DIVERSION DITCH AND DIKE, TEMPORARY
	DIVERSION CHANNEL, TEMPORARY
	EROSION CONTROL BLANKET
	MULCHING
	RIPRAP
	SEDIMENT BASIN
	SEDIMENT CONTROL LOG
	SURFACE ROUGHENING
	STABILIZED STAGING AREA
	TERRACING
	TEMPORARY STREAM CROSSING
	(COMPACTED) EARTH BERM

GRADING

	PROPOSED CONTOUR
	FUTURE CONTOUR
	EXISTING CONTOUR
	PROPOSED SWALE
	GRADE BREAK
	WETLANDS AREA NOT TO BE DISTURBED
	SPOT ELEVATION
	SPOT ELEVATION WITH DESCRIPTION SEE ABBREVIATIONS THIS SHEET

UTILITIES

	PROPOSED STORM SEWER
	PROPOSED SANITARY SEWER
	PROPOSED SANITARY SEWER SERVICE
	PROPOSED SLOTTED UNDER DRAIN
	PROPOSED UNDERGROUND POWER
	PROPOSED WATER LINE
	PROPOSED GAS
	PROPOSED TELEPHONE
	PROPOSED AIR TAP
	PROPOSED WATER SERVICE
	PROPOSED MANHOLE
	PROPOSED F.E.S.
	PROPOSED F.E.S. WITH ROCK APRON
	PROPOSED CURB INLET
	PROPOSED AREA INLET
	PROPOSED PIPE PLUG
	PROPOSED CLEANOUT
	PROPOSED VALVE
	PROPOSED FIRE HYDRANT ASSEMBLY
	PROPOSED REDUCER
	PROPOSED TEE WITH THRUST BLOCK
	PROPOSED BEND WITH THRUST BLOCK
	PROPOSED CROSS
	PROPOSED METER PIT AND METER VAULT

PAVING

	PROPOSED CURB AND GUTTER
	PROPOSED FLOWLINE
	PROPOSED RETAINING WALL
	PROPOSED X" CONCRETE SIDEWALK
	PROPOSED X" CONCRETE DECORATIVE
	PROPOSED ASPHALT PAVEMENT
	PROPOSED BARRICADE
	PROPOSED SIGN
	PROPOSED BUILDING
	PROPOSED FENCE
	PROPOSED PARKING STALL COUNT
	PROPOSED PAVEMENT MARKINGS
	SAWED TRANSVERSE CONTRACTION JOINT
	SAWED LONGITUDINAL JOINT
	KEYED LONGITUDINAL
	EXPANSION JOINT
	PROPOSED HANDY CAP PARKING

DRAINAGE (DR) LEGEND

	DRAINAGE BASIN ID
	DRAINAGE AREA (AC)
	MINOR STORM RUNOFF COEFFICIENT
	MAJOR STORM RUNOFF COEFFICIENT
	PROPOSED DRAINAGE BASIN BOUNDARY
	PROPOSED DRAINAGE SUB BASIN BOUNDARY
	EXISTING DRAINAGE BASIN BOUNDARY
	EXISTING DRAINAGE SUB BASIN BOUNDARY
	DRAINAGE FLOW PATH
	DESIGN POINT
	CHANNEL FLOW ARROW
	OVERLAND FLOW ARROW

GENERAL ABBREVIATIONS

AC	ACRES
A.D.	GRADE CHANGE
ADA	AMERICANS WITH DISABILITIES ACT
BLDG	BUILDING
BOC	BACK OF CURB
BOSW	BACK OF WALK
BOP	BOTTOM OF PIPE
BOW	BOTTOM OF WALL AT FINISHED GRADE
CATV	CABLE TELEVISION
CF	CUBIC FOOT
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CP	CONTROL POINT
CY	CUBIC YARD
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
E	EAST
EOA	EDGE OF ASPHALT
EOB	EDGE OF BOX
ELEV.	ELEVATION
EOG	EDGE OF GRAVEL
FES	FLARED END SECTION
FFE	FINISH FLOOR ELEVATION
FH	FIRE HYDRANT
FL	FLOWLINE
G	GAS
G.B.	GRADE BREAK
HP	HIGH POINT
HORIZ	HORIZONTAL
I.E.	INVERT ELEVATION
L	LEGAL DIMENSIONS
LF	LINEAR FEET
LP	LOW POINT
M	MEASURED
MH	MANHOLE
ME	MATCH EXISTING
MOE	MINIMUM OPENING ELEVATION
N	NORTH
N.T.S.	NOT TO SCALE
P	PLAT DIMENSIONS
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
PL	PROPERTY LINE
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
P.V.C.	POINT OF VERTICAL CURVE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
R	RECORD DIMENSIONS
RAD	RADIUS
RB	REBAR
RCP	REINFORCED CONCRETE PIPE
ROW	RIGHT OF WAY
S	SOUTH
SF	SQUARE FEET
SS	SANITARY SEWER
ST	STORM
STA	STATION
STD	STANDARD
T	TELEPHONE
TOC	TOP OF CURB
TOF	TOP OF FOUNDATION
TOG	TOP OF GRADE
TOI	TOP OF ISLAND
TOP	TOP OF PAVEMENT
TOW	TOP OF WALL
TYP.	TYPICAL
VERT	VERTICAL
W/	WITH
W	WEST
WQCV	WATER QUALITY CAPTURE VOLUME

DRAWN BY  
JPM

DESIGNED BY  
JPM

DATE  
APRIL 24, 2017

JOB NUMBER-TASK  
0416011-250

BOOK AND PAGE  
0416011

12596 West Bayaud Avenue, Suite 330  
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**LAMP RYNEARSON & ASSOCIATES**

**FORCE MAIN  
LEGEND**

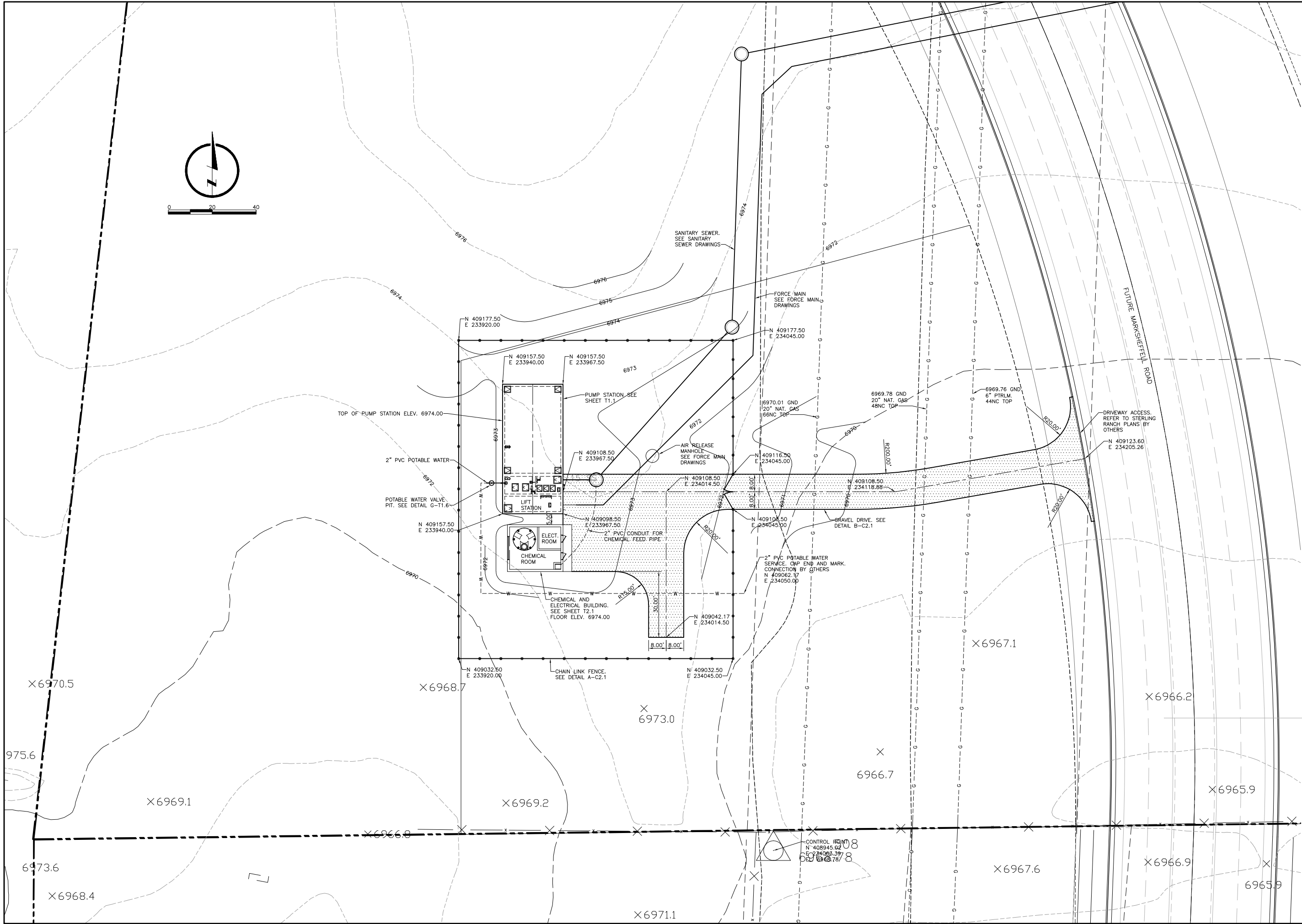
LAMP RYNEARSON - ENGINEERS

BRADLEY A. SIMONS  
34705

**SHEET**

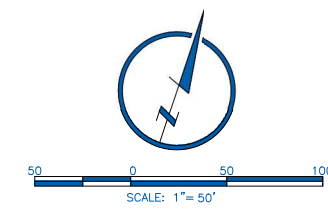
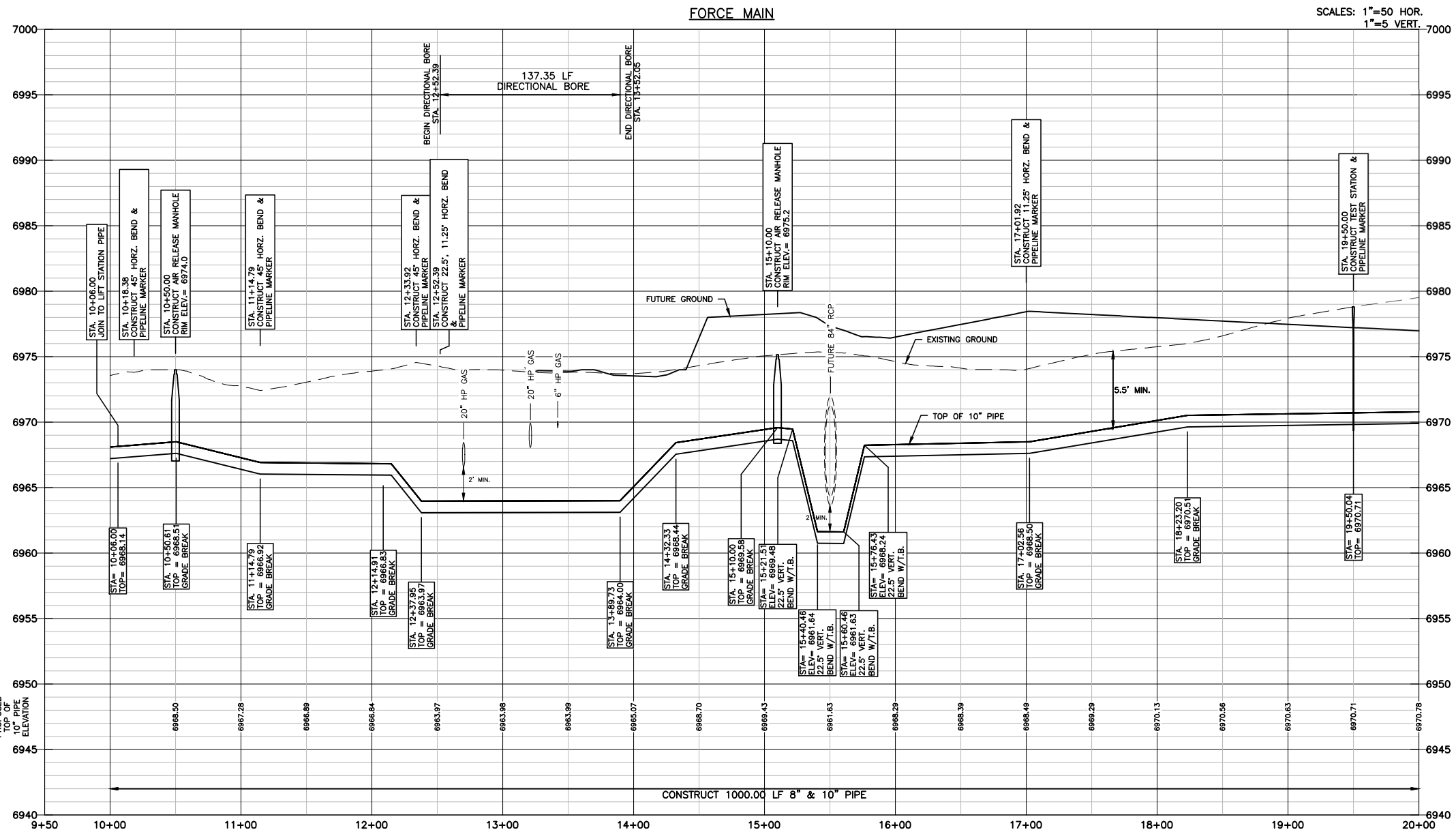
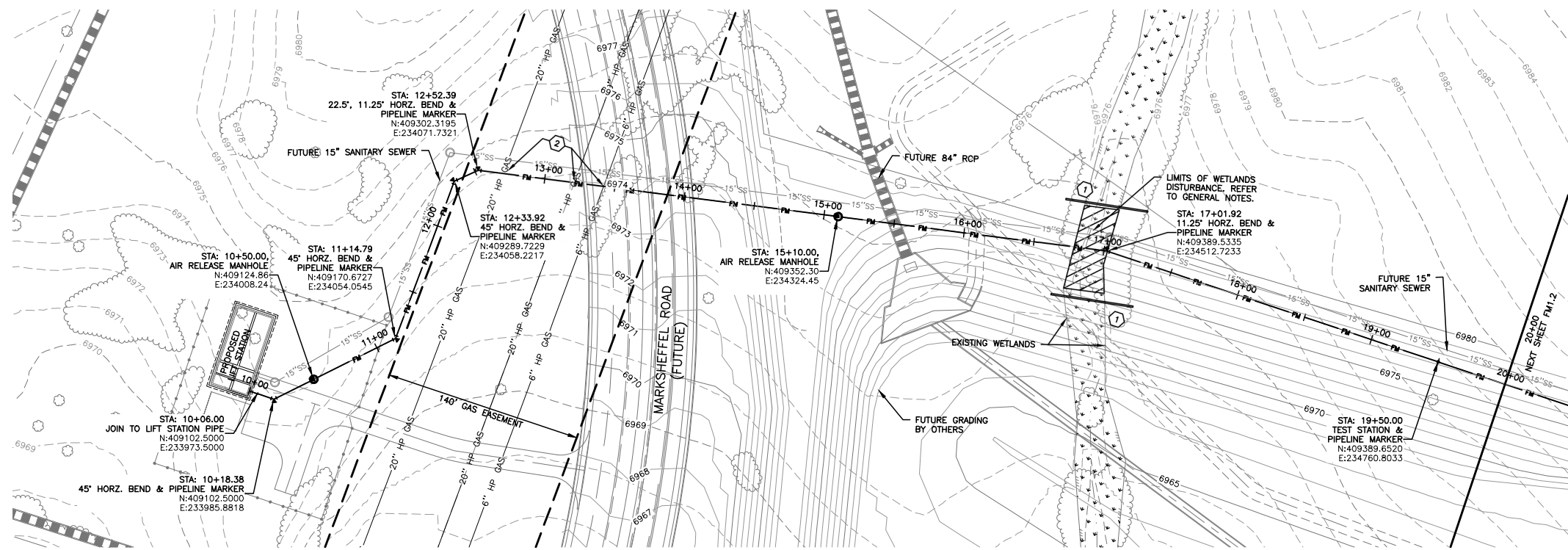
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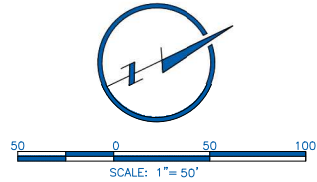
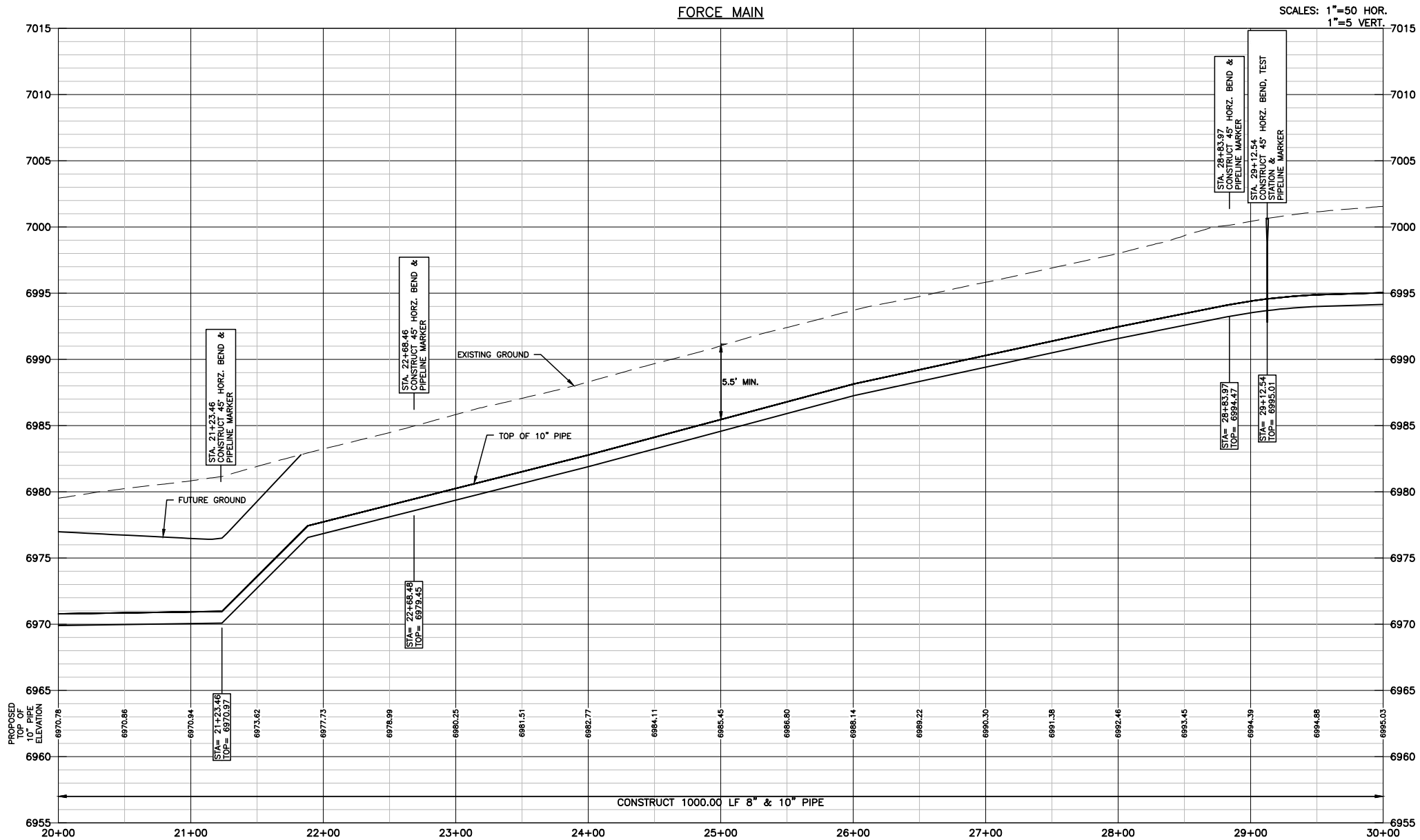
<div>DRAWN BY TWB</div> <div>DESIGNED BY JTC</div> <div>DATE 04-20-2017</div> <div>JOB NUMBER-TASKS 041601.01</div> <div>BOOK AND PAGE</div>		<div>REVISIONS</div>		<div>12596 West Bayaud Avenue, Suite 330 303.971.0030   P Lakewood, Colorado 80228 303.971.0077   F LRA-Inc.com / lza4water.com</div>		<div><div>LAMP RYNEARSON &amp; ASSOCIATES</div></div>		<div>STERLING RANCH LIFT STATION &amp; FORCE MAIN STERLING RANCH METROPOLITAN DISTRICT NO. 1</div>			
<div>LIFT STATION SITE PLAN</div>		<div>LAMP RYNEARSON - ENGINEERS</div>		<div></div>		<div>BRADLEY A. SIMONS 34705</div>		<div>SHEET</div>		<div>C1.1</div>	





<p><b>FORCE MAIN PLAN &amp; PROFILE</b> <b>STA. 10+00 TO STA. 20+00</b></p>		<p><b>REVISIONS</b></p>	
<p><b>LAMP RYNEARSON &amp; ASSOCIATES</b></p> <p>12536 West Bayaud Avenue, Suite 330 Lakewood, Colorado 80228 LRA-Inc.com / tza4water.com</p>		<p><b>DRAWN BY</b> JPM</p> <p><b>DESIGNED BY</b> JPM</p> <p><b>DATE</b> APRIL 24, 2017</p> <p><b>JOB NUMBER-TASK#</b> 0416011</p> <p><b>BOOK AND PAGE</b></p>	
<p><b>STERLING RANCH LIFT STATION AND FORCE MAIN</b> <b>STERLING RANCH METROPOLITAN DISTRICT NO. 1</b></p>			
<p>LAMP RYNEARSON - ENGINEERS</p>			
<p>BRADLEY A. SIMONS</p> <p>34705</p>			
<p><b>SHEET</b></p> <p><b>FM1.1</b></p>			

P:\\_Engineering\0416011 Sterling Ranch Lift Station Drawings\CONSTRUCTION DRAWINGS\0416011-SRM-001.dwg, 4/21/2017 2:06:38 PM, JASON MCNEIL, LAMP RYNEARSON & ASSOCIATES



**NOTES:**

- SEE SHEET G0.2 FOR GENERAL NOTES.
- STATIONING IS BASED ON THE CENTERLINE BETWEEN THE 8" AND 10" FORCE MAINS.
- CONTRACTOR SHALL INSTALL THRUST BLOCKS AT ALL HORIZONTAL AND VERTICAL BENDS PER DETAIL.
- CONTRACTOR IS RESPONSIBLE FOR CONFIRMING THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES WITHIN THE AREA OF WORK 7 DAYS PRIOR TO THE START OF INSTALLATION OF THE PIPELINE. THE CONTRACTOR SHALL NOTIFY OWNER AND ENGINEER OF ANY CONFLICTS THAT ARISE AND REQUIRE REDESIGN OF ANY PORTION OF THE PROJECT. REFER TO GENERAL NOTES FOR FURTHER INFORMATION.
- CONTRACTOR SHALL BE REQUIRED TO STAY WITHIN THE CONSTRUCTION EASEMENTS AND/OR ROAD RIGHT OF WAY WHEN CONSTRUCTING THE PIPELINE. TRAFFIC CONTROL MEASURES SHALL BE IN PLACE DURING CONSTRUCTION PER EL PASO COUNTY REQUIREMENTS.
- CONTRACTOR SHALL PROVIDE A MINIMUM 1' OF CLEARANCE BETWEEN ALL UTILITIES UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL PLACE SEDIMENT CONTROL LOGS UPSTREAM OF ALL STORM DRAIN PIPES WITHIN THE PROJECT AREA.
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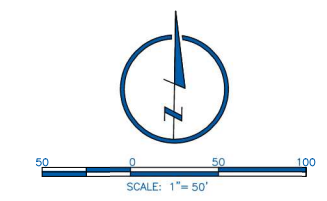
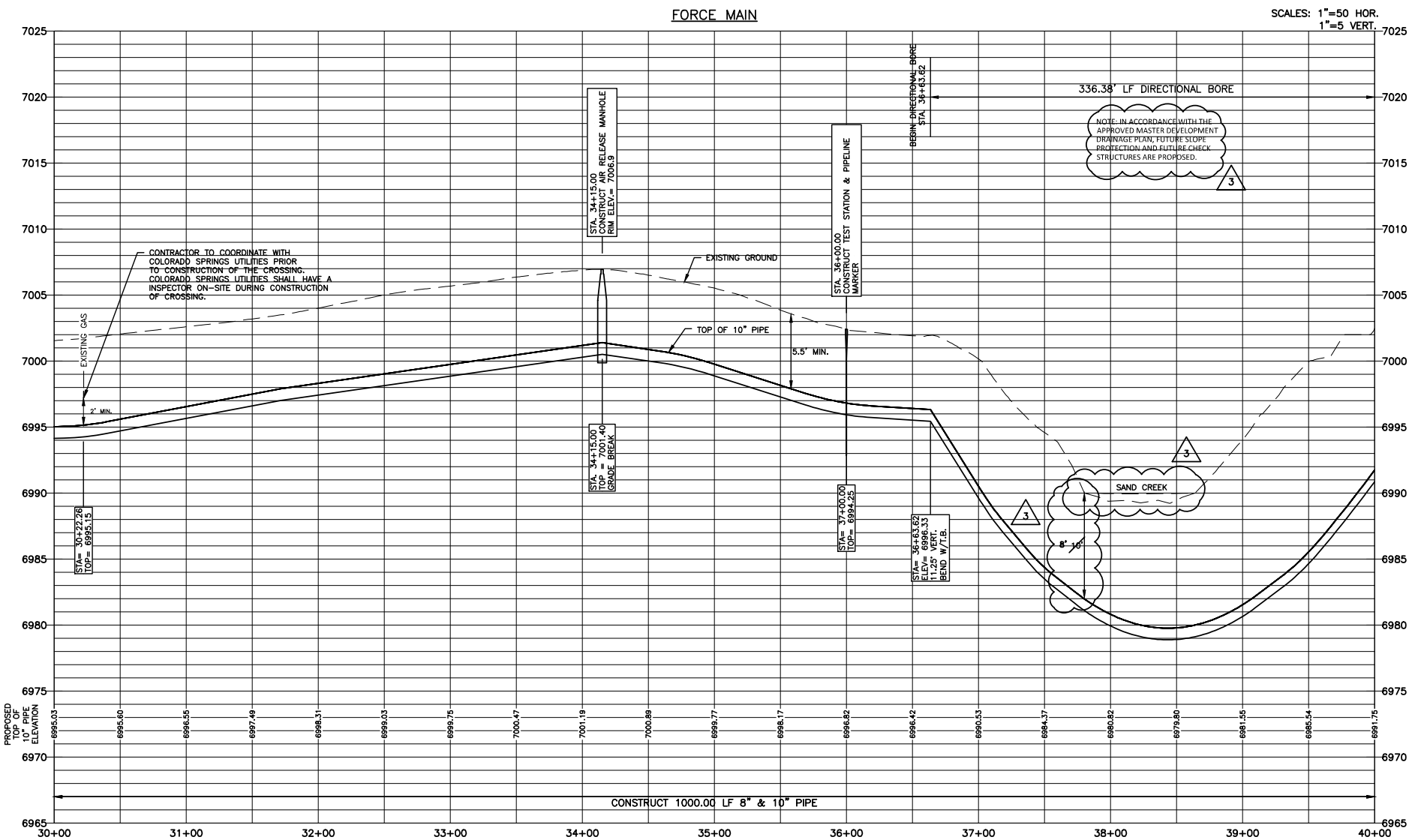
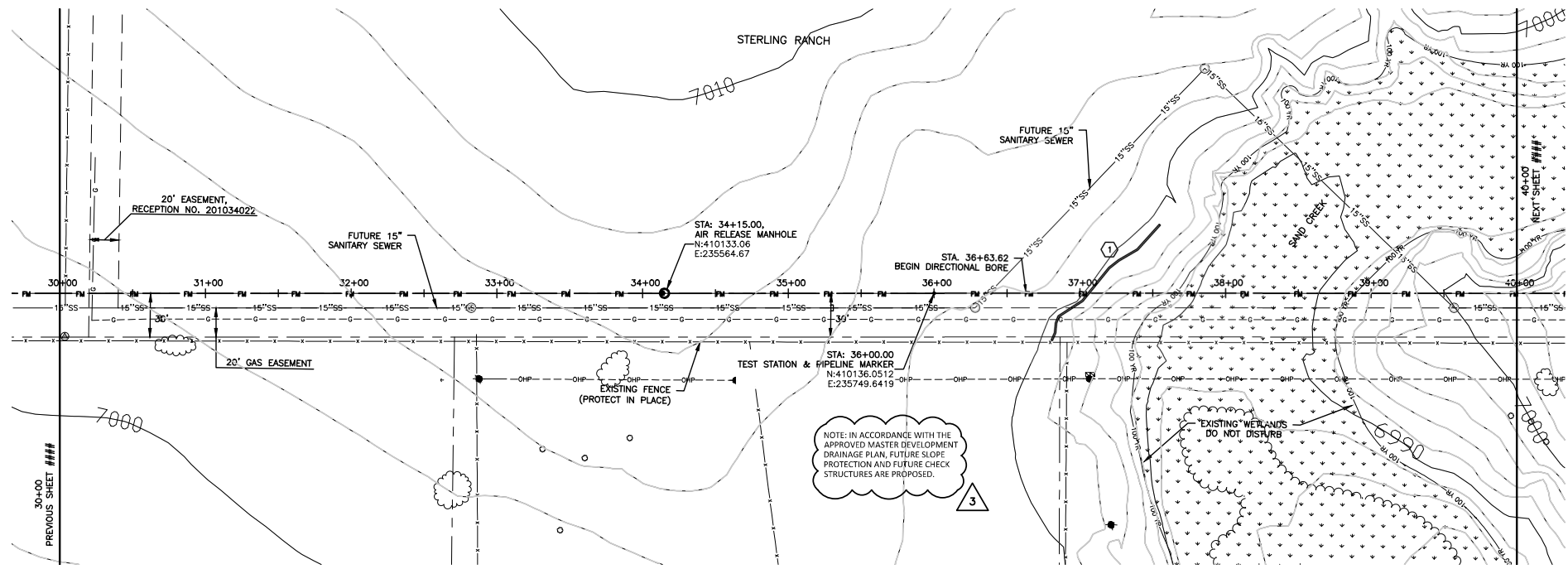
**KEYNOTE:**

- ① REMOVE AND RE-INSTALL 50 LF OF EXISTING FENCE

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12596 West Bayaud Avenue, Suite 330 303.971.0030 P Lakewood, Colorado 80228 303.971.0071 F LRA-Inc.com / lza4water.com				
STERLING RANCH LIFT STATION AND FORCE MAIN STERLING RANCH METROPOLITAN DISTRICT NO. 1				
FORCE MAIN PLAN & PROFILE STA. 20+00 TO STA. 30+00				
LAMP RYNEARSON - ENGINEERS				
BRADLEY A. SIMONS 34705				
SHEET				
FM1.2				



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**NOTES:**

1. SEE SHEET G0.2 FOR GENERAL NOTES.
2. STATIONING IS BASED ON THE CENTERLINE BETWEEN THE 8" AND 10" FORCE MAINS.
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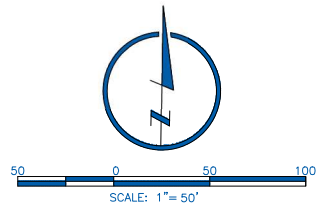
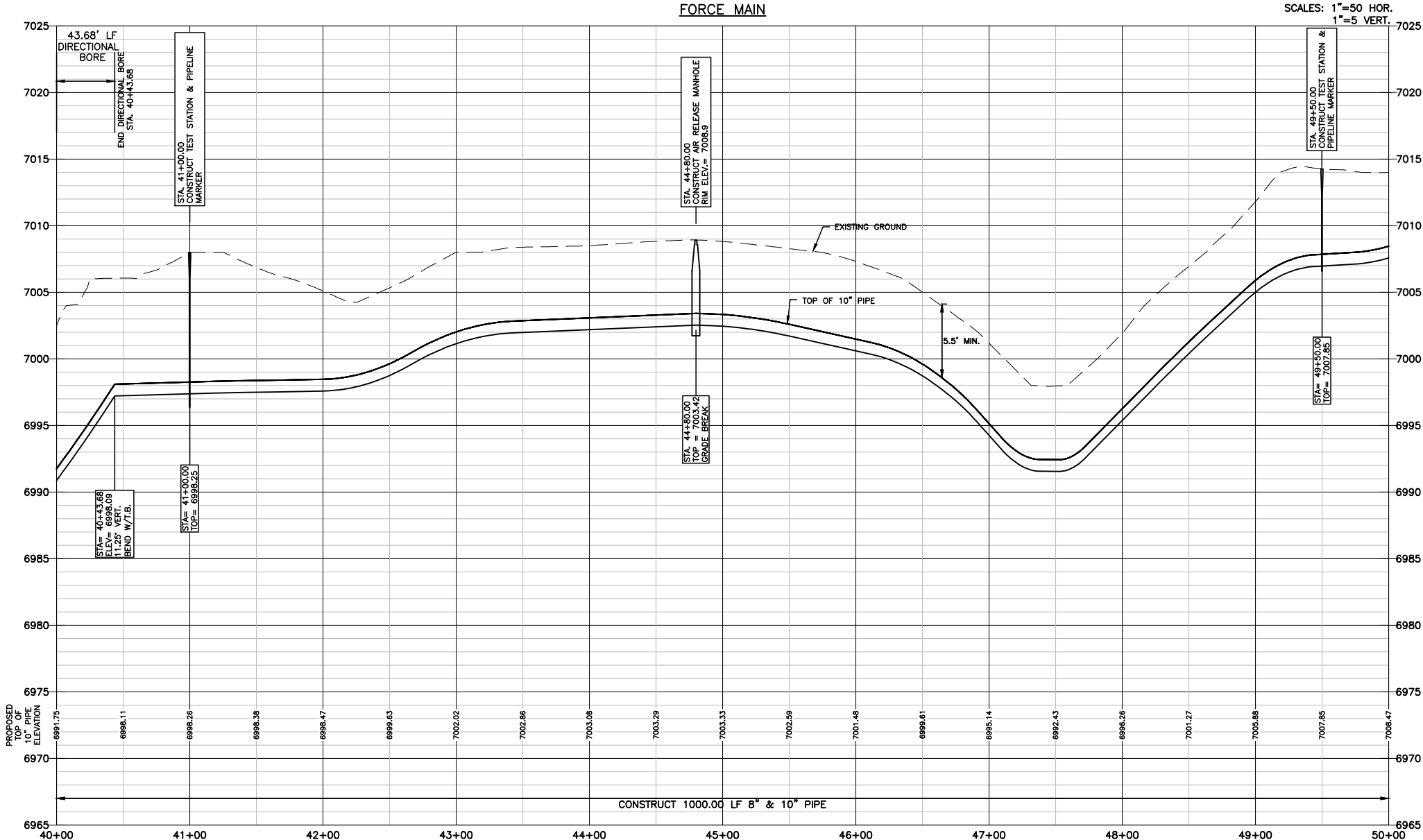
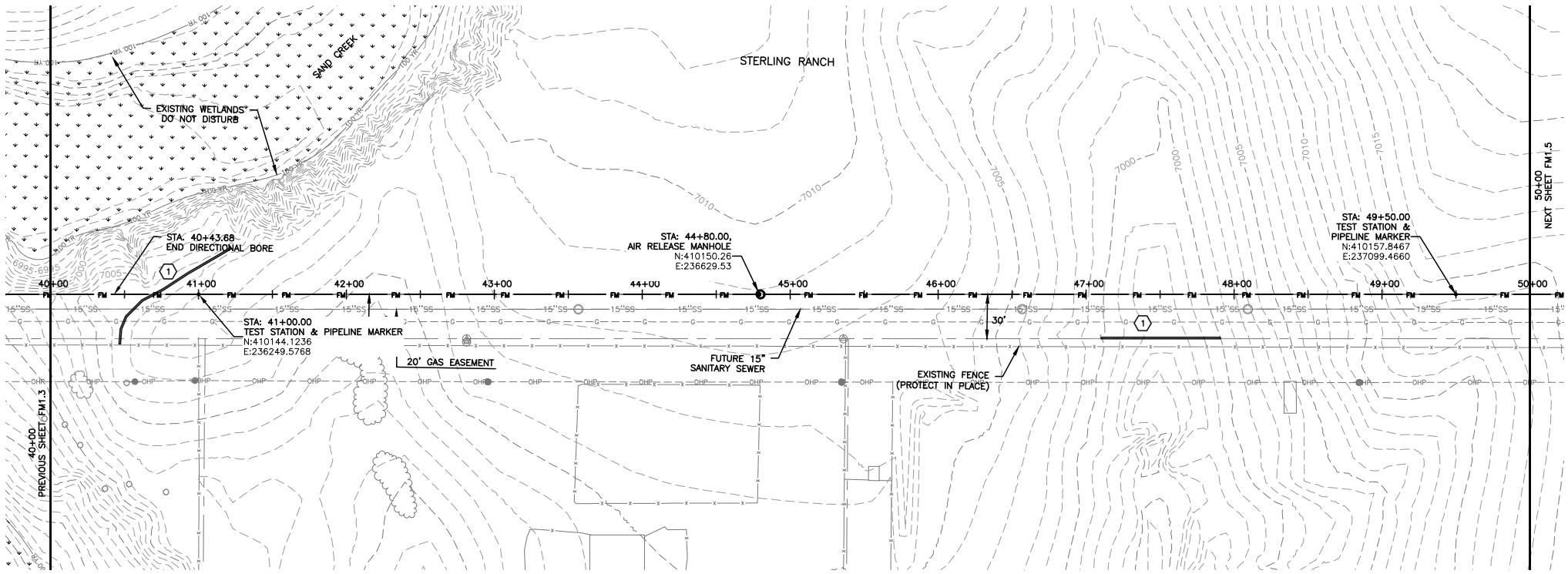
**KEYNOTE:**

- ① SEDIMENT CONTROL LOG PER DETAIL SHEET FM2.4

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REVISIONS 3 - PER EIC COMMENTS - 05/31/2019 303.971.0030 I/P 303.971.0077 I/P				
12598 West Bayaud Avenue, Suite 330 Lakewood, Colorado 80228 L&A Inc.com / lza4water.com				
LAMP RYNEARSON & ASSOCIATES				
STERLING RANCH LIFT STATION AND FORCE MAIN STERLING RANCH METROPOLITAN DISTRICT NO. 1				
FORCE MAIN PLAN & PROFILE STA. 30+00 TO STA. 40+00				
LAMP RYNEARSON - ENGINEERS				
PRELIMINARY				
BRADLEY A. SIMONS 34765				
SHEET				
FM1.3				



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**NOTES:**

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**KEYNOTE:**

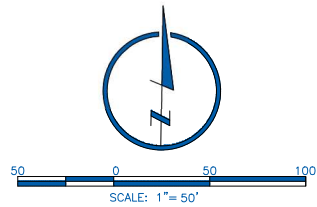
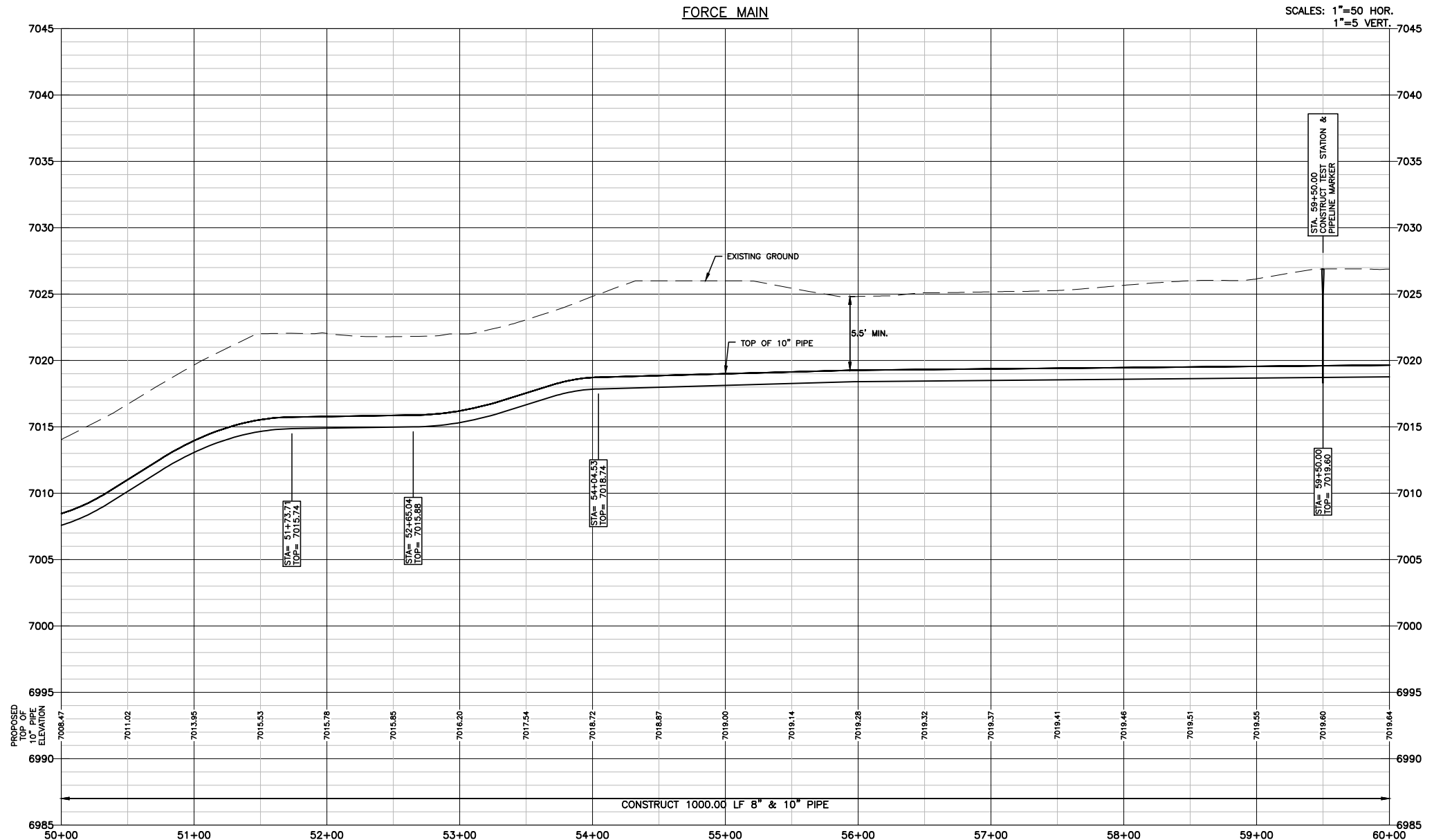
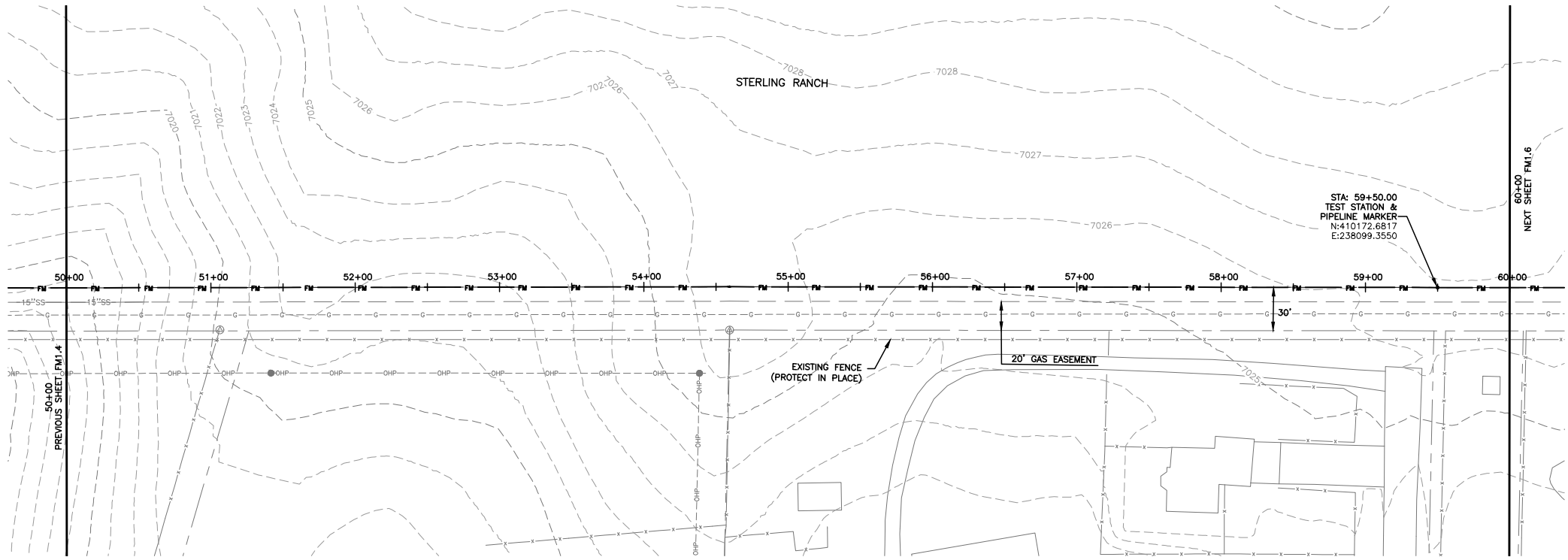
- ① SEDIMENT CONTROL LOG PER DETAIL SHEET FM2.4

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<b>REVISIONS</b>				
12596 West Bayaud Avenue, Suite 330 303.971.0030 P Lakewood, Colorado 80228 303.971.0071 F LRA-Inc.com / tza4water.com				
<b>FORCE MAIN PLAN &amp; PROFILE</b> STA. 40+00 TO STA. 50+00				
LAMP RYNEARSON & ASSOCIATES				
STERLING RANCH LIFT STATION AND FORCE MAIN STERLING RANCH METROPOLITAN DISTRICT NO. 1				
LAMP RYNEARSON - ENGINEERS				
BRADLEY A. SIMONS 34705				
SHEET				
FM1.4				





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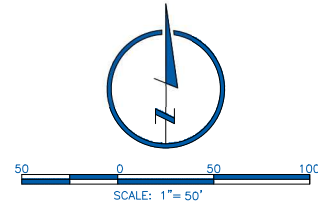
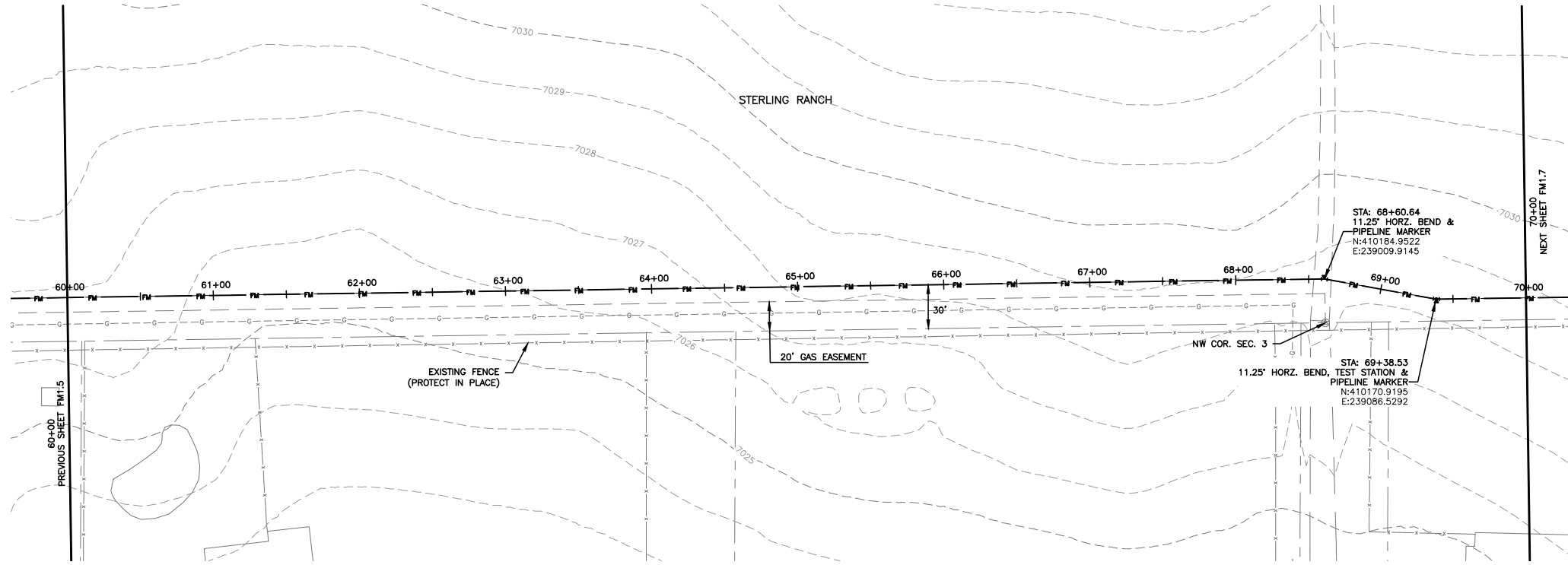
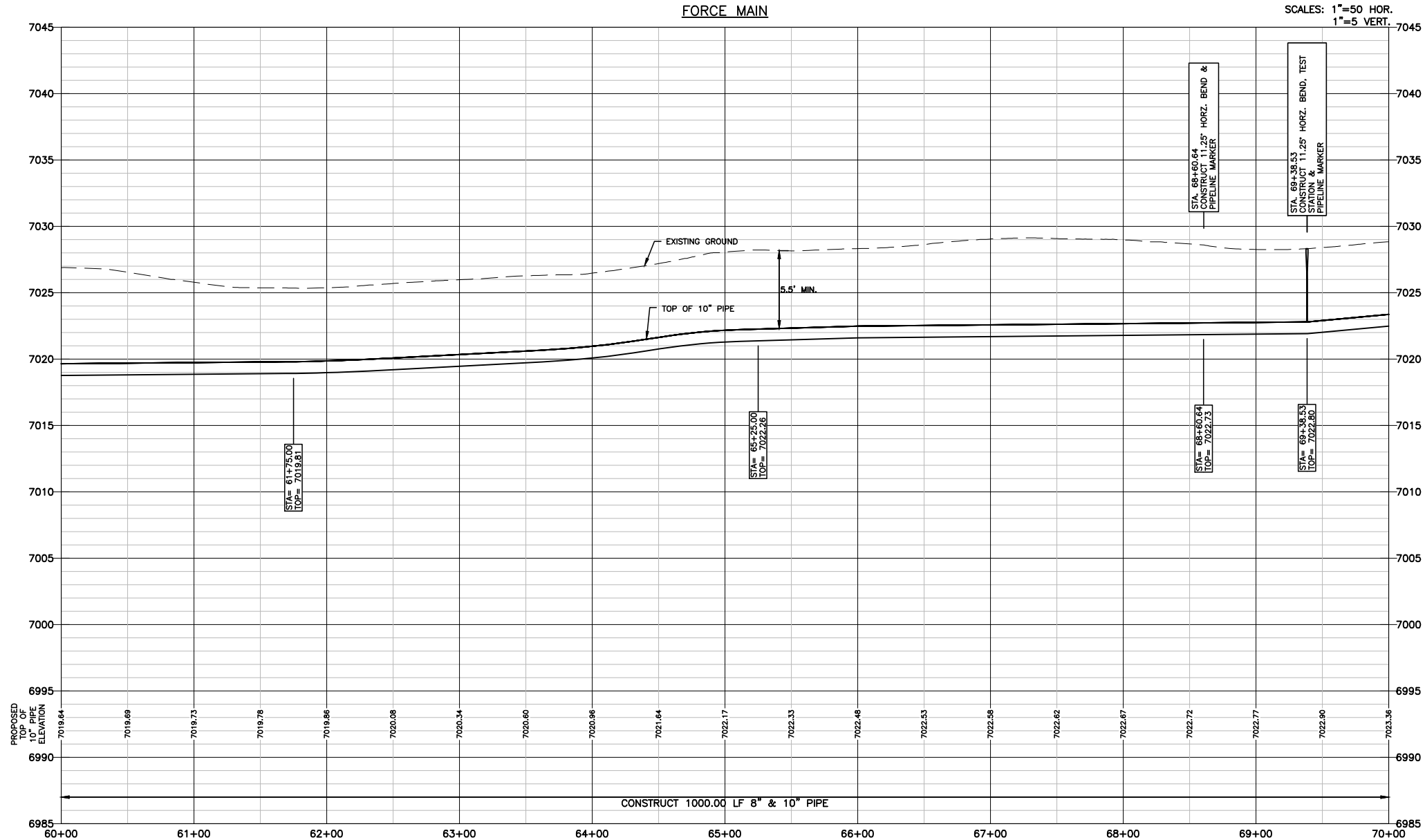
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12596 West Bayaud Avenue, Suite 330 303.971.0030 P Lakewood, Colorado 80228 303.971.0071 F LRA-Inc.com / lza4water.com			
LAMP RYNEARSON & ASSOCIATES			
FORCE MAIN PLAN & PROFILE STA. 50+00 TO STA. 60+00			
STERLING RANCH LIFT STATION AND FORCE MAIN STERLING RANCH METROPOLITAN DISTRICT NO. 1			
LAMP RYNEARSON - ENGINEERS			
BRADLEY A. SIMONS 34705			
SHEET			
FM1.5			



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**FORCE MAIN PLAN & PROFILE**  
STA. 60+00 TO STA. 70+00

LAMP RYNEARSON - ENGINEERS



BRADLEY A. SIMONS

34705

**SHEET**

**FM1.6**

**LAMP RYNEARSON**  
& ASSOCIATES

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Lakewood, Colorado 80228  
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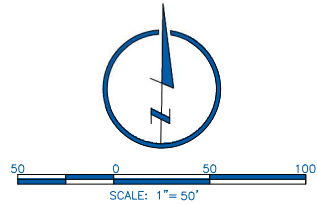
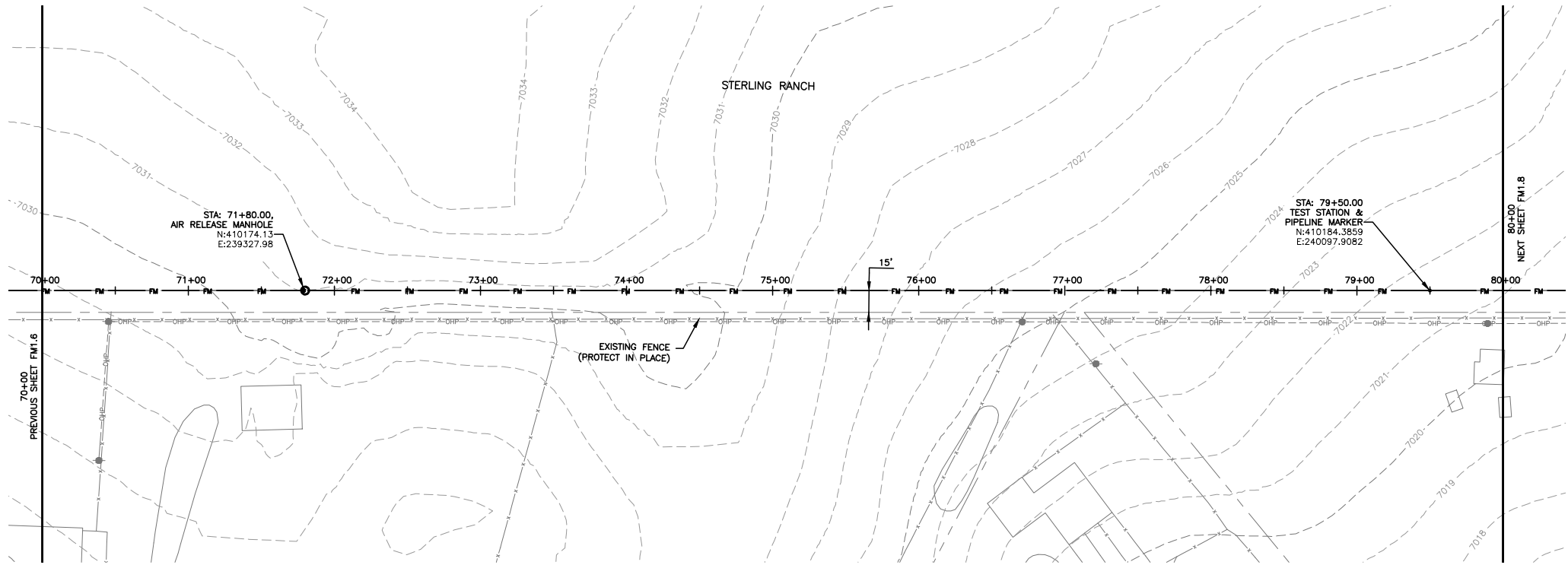
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DESIGNED BY JPM  
DRAWN BY JPM  
DATE APRIL 24, 2017  
JOB NUMBER-TASKS 0416011  
BOOK AND PAGE

**STERLING RANCH LIFT STATION AND FORCE MAIN**  
**STERLING RANCH METROPOLITAN DISTRICT NO. 1**

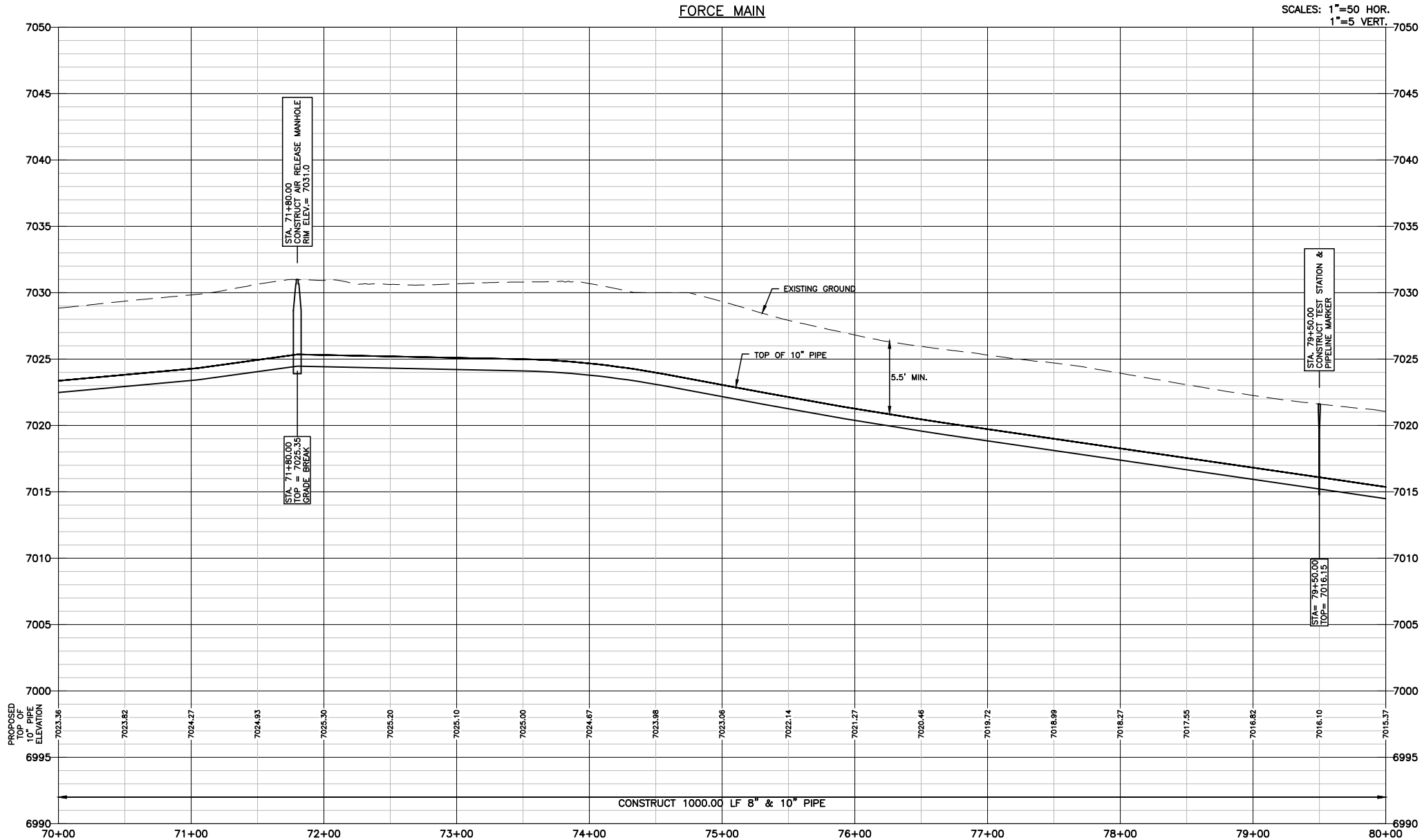


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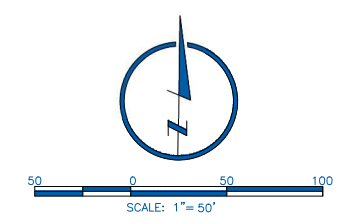
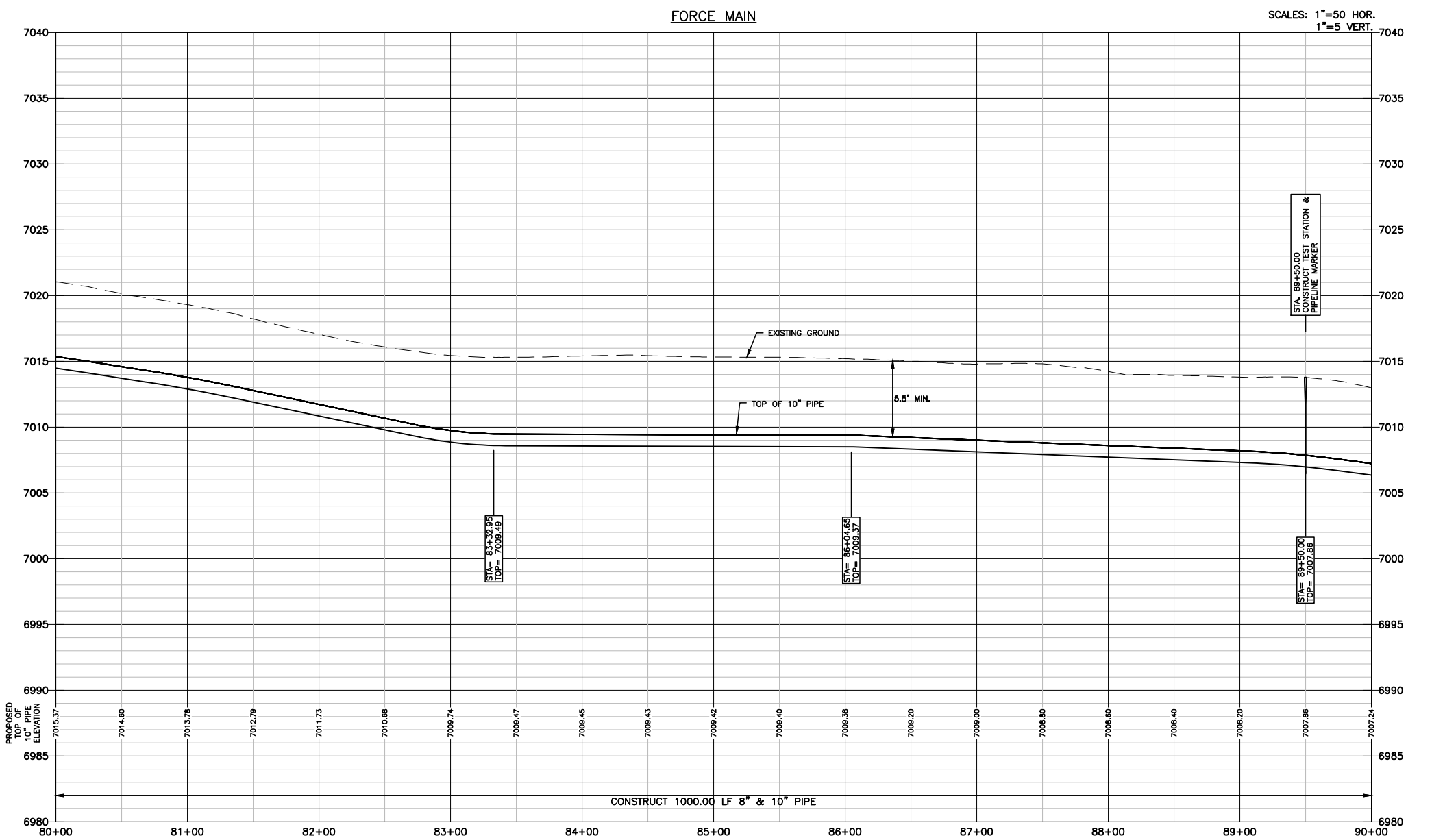
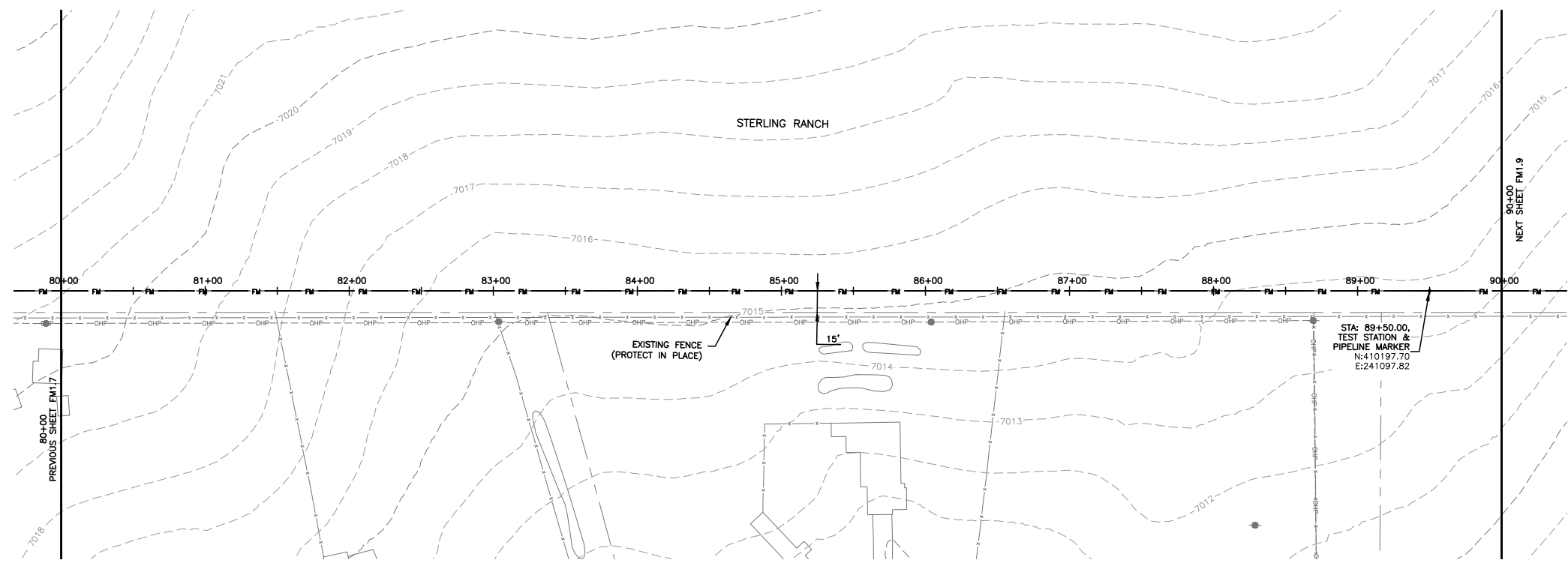
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DESIGNED BY JPM	DATE APRIL 24, 2017	JOB NUMBER-TASKS 0416011	BOOK AND PAGE
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CHECKED BY JPM			
APPROVED BY BRADLEY A. SIMONS 34705			
LAMP RYNEARSON & ASSOCIATES 12596 West Bayaud Avenue, Suite 330 Lakewood, Colorado 80228 LRA-Inc.com / lza4water.com			
FORCE MAIN PLAN & PROFILE STA. 70+00 TO STA. 80+00			
STERLING RANCH LIFT STATION AND FORCE MAIN STERLING RANCH METROPOLITAN DISTRICT NO. 1			
FM1.7			

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- NOTES:**
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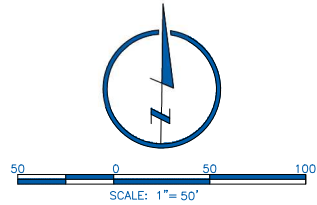
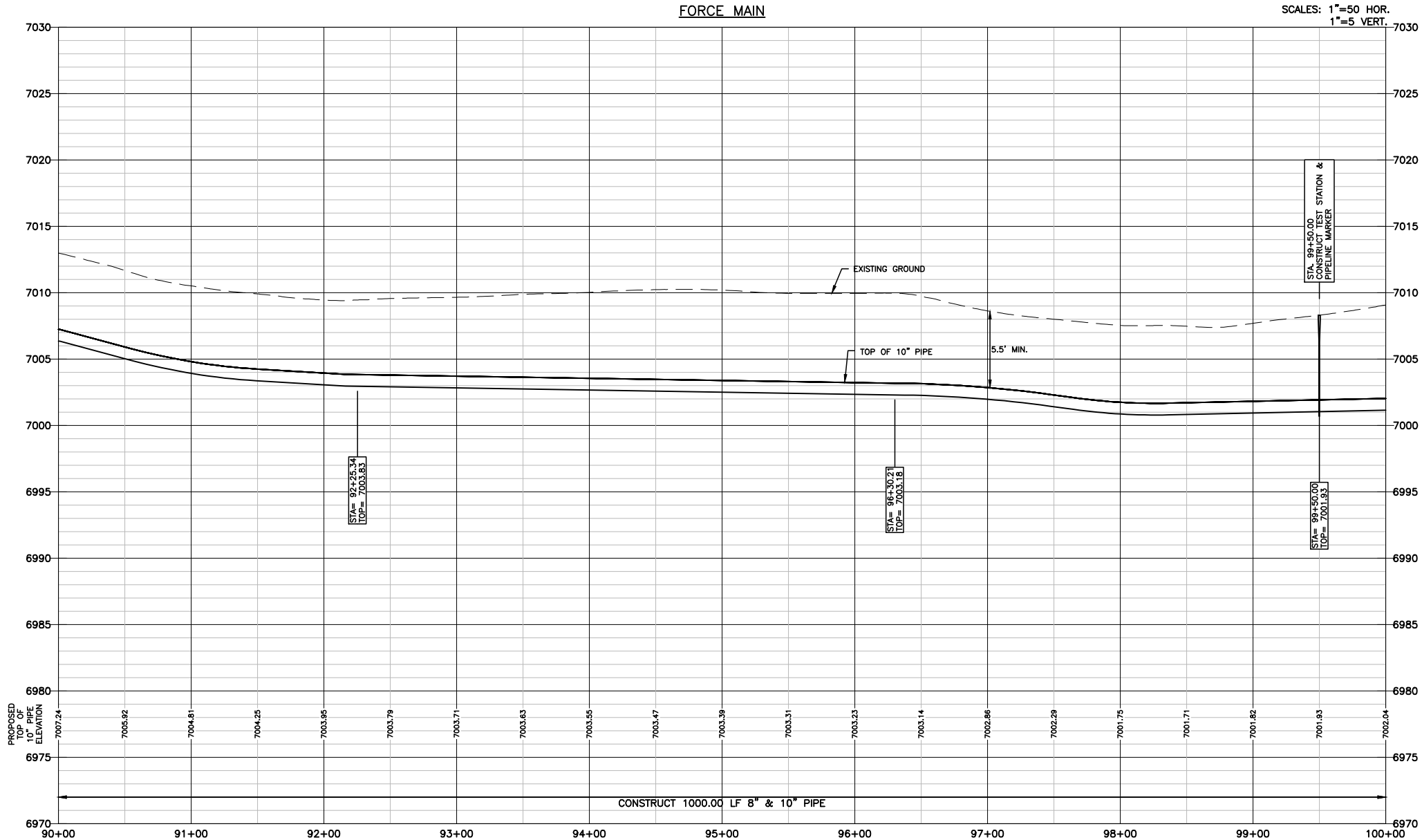
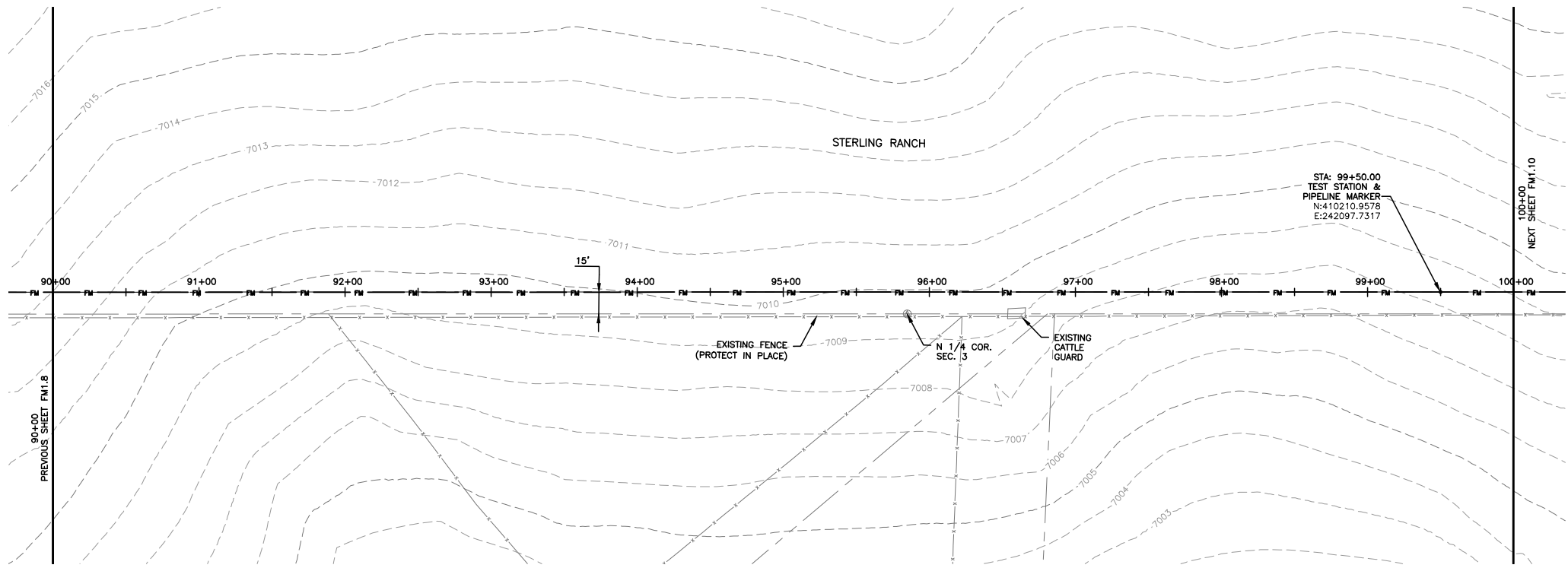
<b>DRAWN BY</b> JPM	<b>DESIGNED BY</b> JPM	<b>DATE</b> APRIL 24, 2017	<b>JOB NUMBER-TASKS</b> 0416011	<b>BOOK AND PAGE</b>
<b>REVISIONS</b>				
12596 West Bayaud Avenue, Suite 330 303.971.0030 P Lakewood, Colorado 80228 303.971.0071 F LRA-Inc.com / lza4water.com				
<b>LAMP RYNEARSON &amp; ASSOCIATES</b>				
<b>FORCE MAIN PLAN &amp; PROFILE</b> <b>STA. 80+00 TO STA. 90+00</b>				
<b>STERLING RANCH LIFT STATION AND FORCE MAIN</b> <b>STERLING RANCH METROPOLITAN DISTRICT NO. 1</b>				
<b>FM1.8</b>				

**COLORADO 811**  
KNOW WHAT'S BELOW. CALL BEFORE YOU DIG.

**BRADLEY A. SIMONS**  
34705  
**SHEET**

**LAMP RYNEARSON - ENGINEERS**

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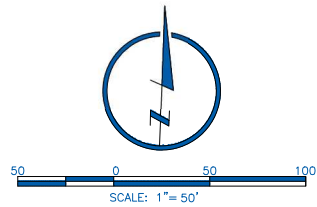
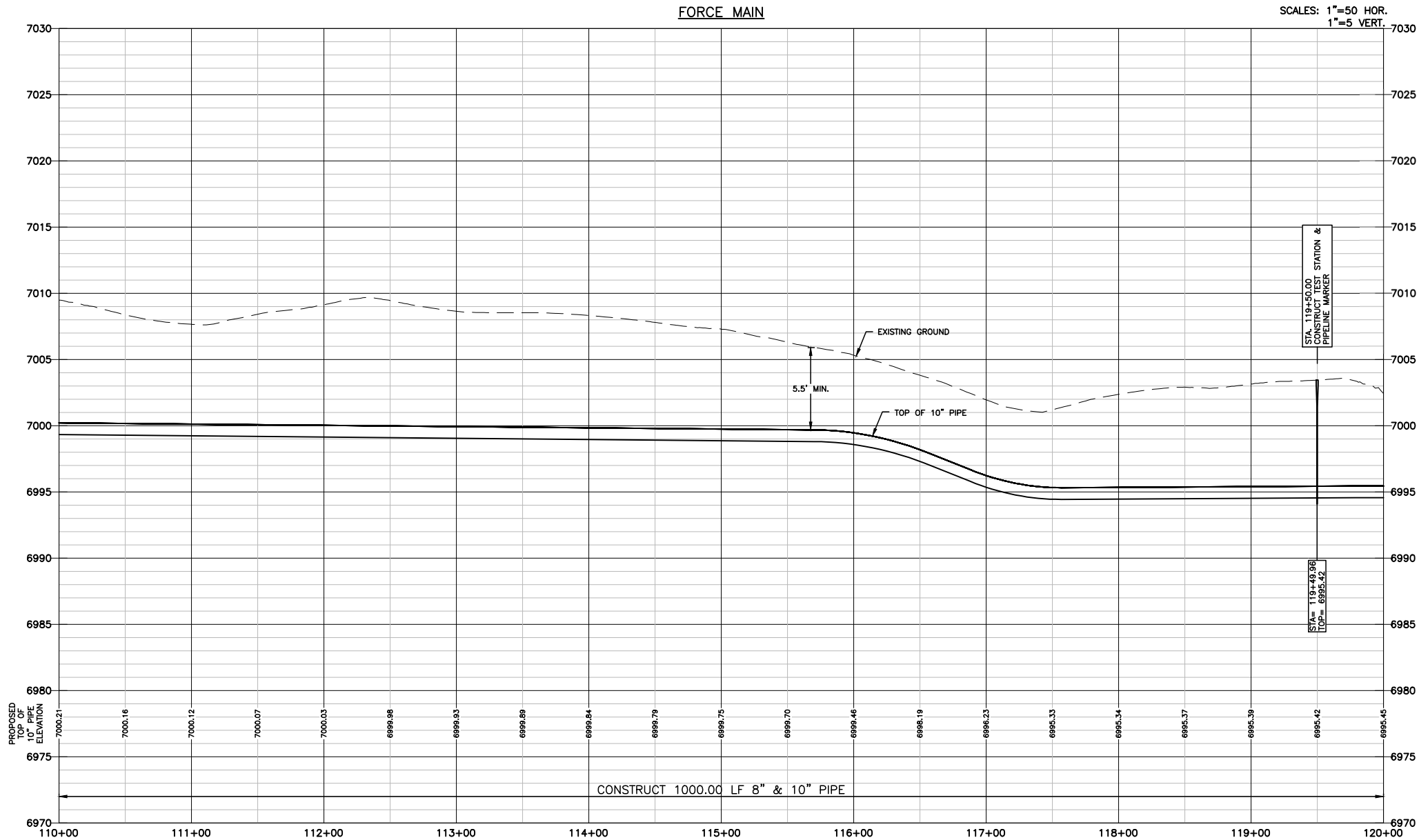
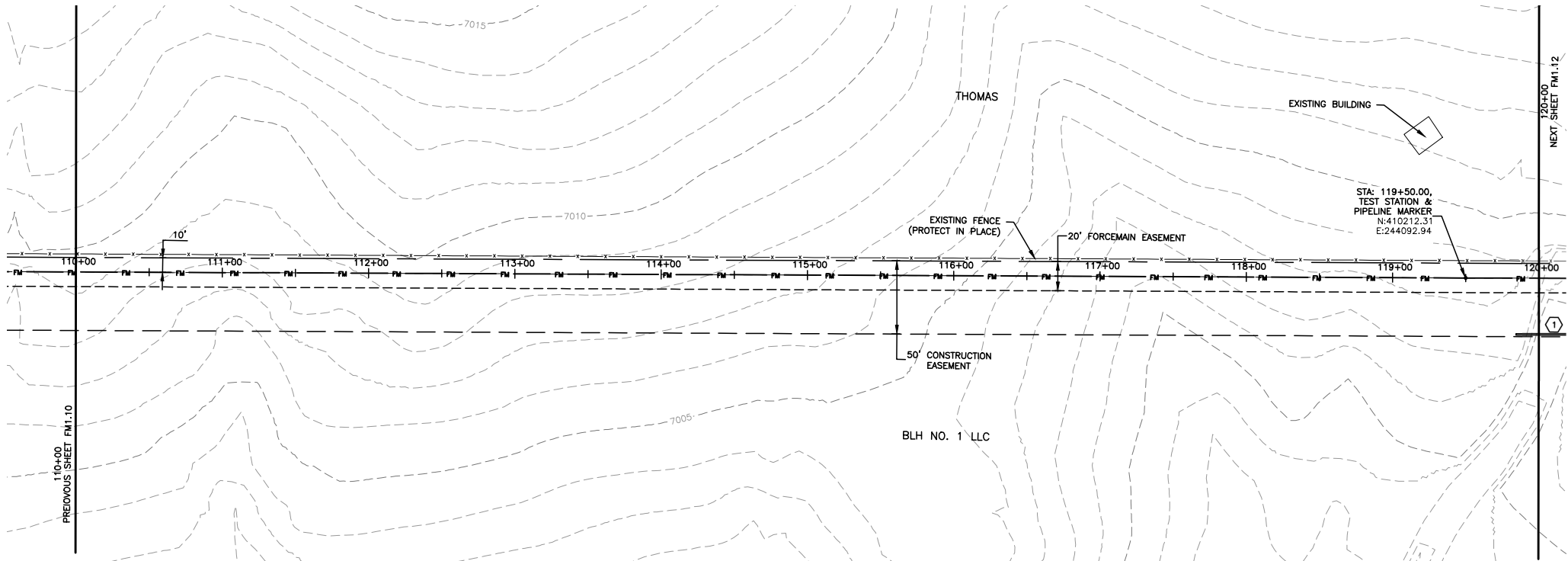
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REVISIONS				
12596 West Bayaud Avenue, Suite 330 303.971.0030 P Lakewood, Colorado 80228 303.971.0071 F LRA-Inc.com / lza4water.com				
LAMP RYNEARSON & ASSOCIATES				
FORCE MAIN PLAN & PROFILE STA. 90+00 TO STA. 100+00				
STERLING RANCH LIFT STATION AND FORCE MAIN STERLING RANCH METROPOLITAN DISTRICT NO. 1				
LAMP RYNEARSON - ENGINEERS				
BRADLEY A. SIMONS 34705				
SHEET				
FM1.9				







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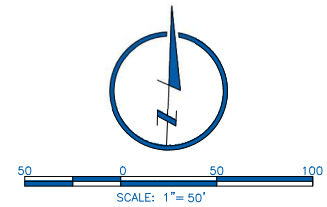
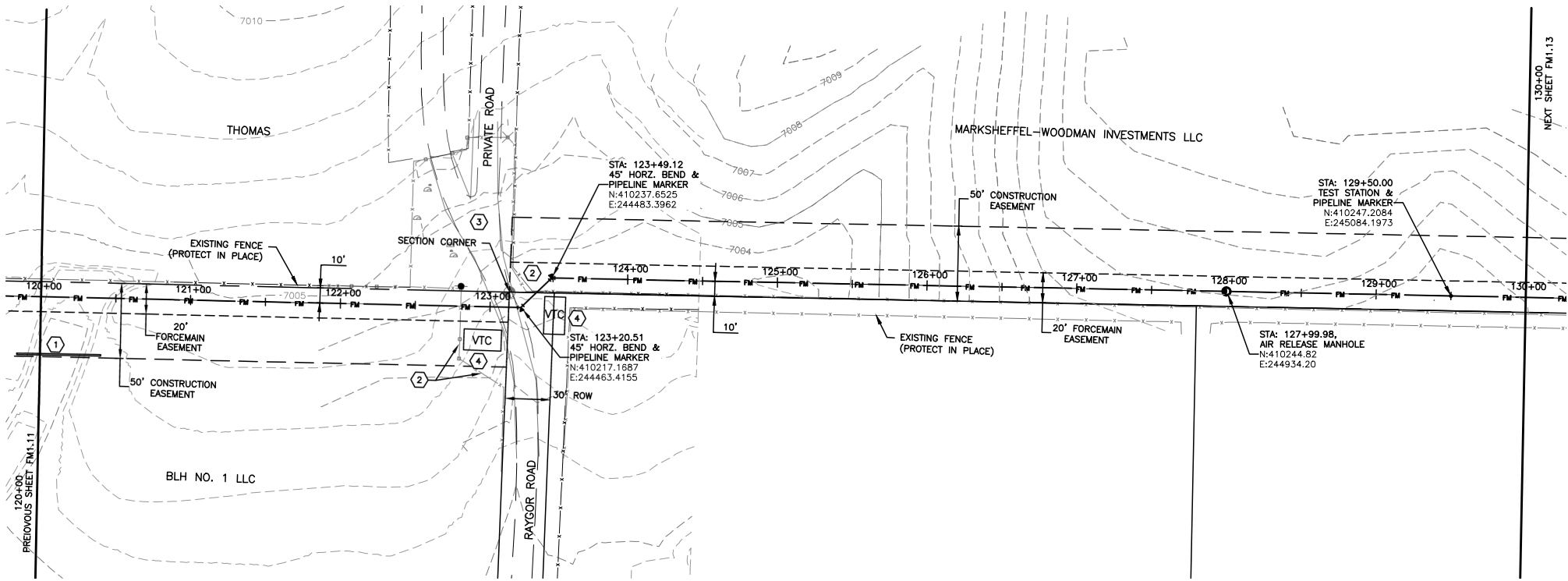
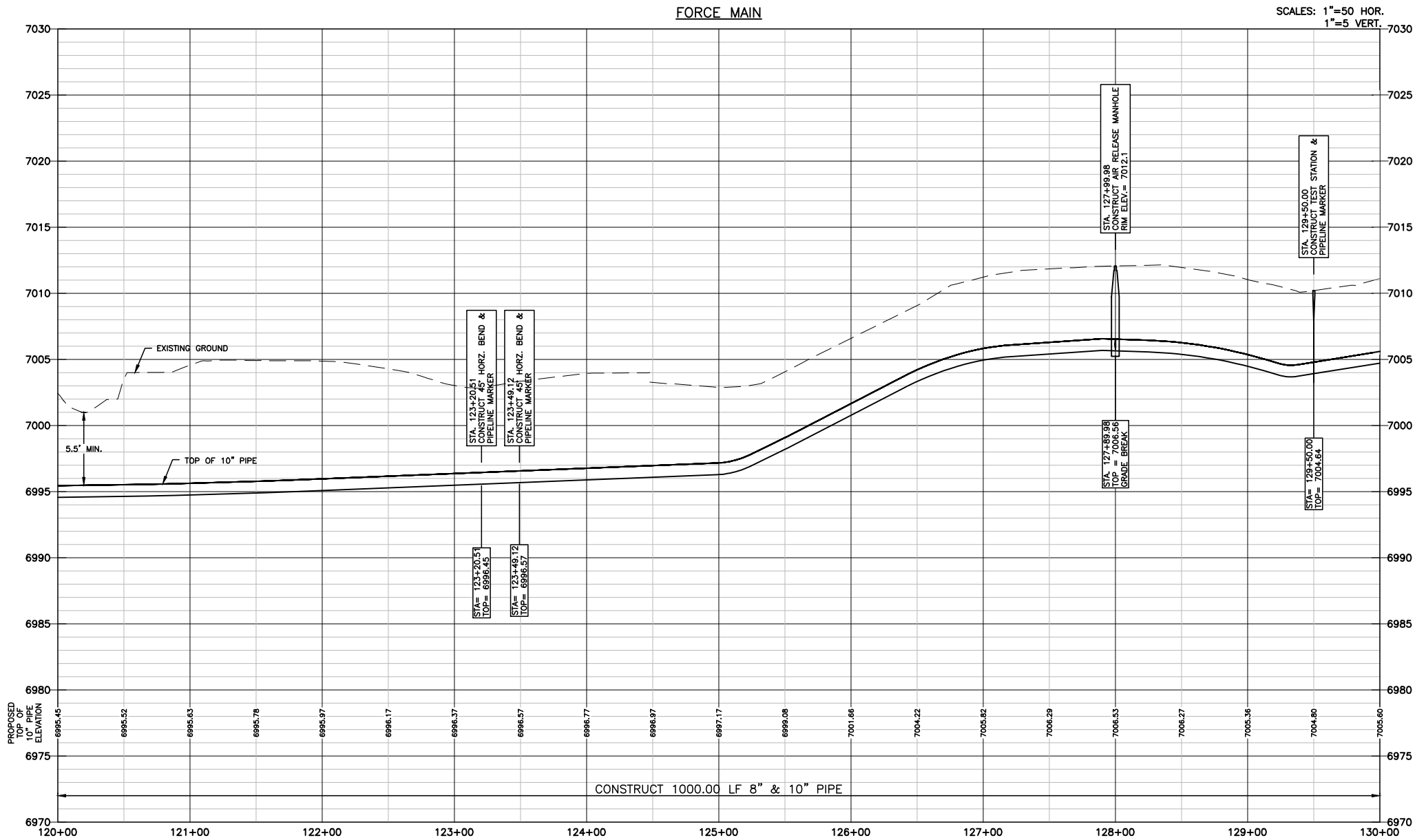
KEYNOTES:

- ① SEDIMENT CONTROL LOG PER DETAIL SHEET FM2.4

DRAWN BY JPM	DESIGNED BY JPM	DATE APRIL 24, 2017	JOB NUMBER-TASKS 0416011	BOOK AND PAGE
12596 West Bayaud Avenue, Suite 330 303.971.0030 P Lakewood, Colorado 80228 303.971.0071 F LRA-Inc.com / lza4water.com				
STERLING RANCH LIFT STATION AND FORCE MAIN STERLING RANCH METROPOLITAN DISTRICT NO. 1				
FORCE MAIN PLAN & PROFILE STA. 110+00 TO STA. 120+00				
LAMP RYNEARSON - ENGINEERS				
BRADLEY A. SIMONS 34705				
SHEET				
FM1.11				



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**NOTES:**

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- CONTRACTOR SHALL PROTECT IN PLACE OR REMOVE AND REPLACE ANY SIGNS, MAILBOXES, LANDSCAPING, OR OTHER OBSTRUCTIONS DISTURBED DURING CONSTRUCTION.

**KEYNOTES:**

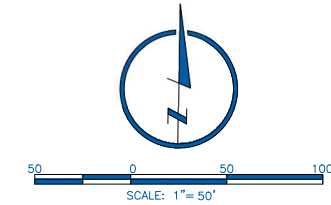
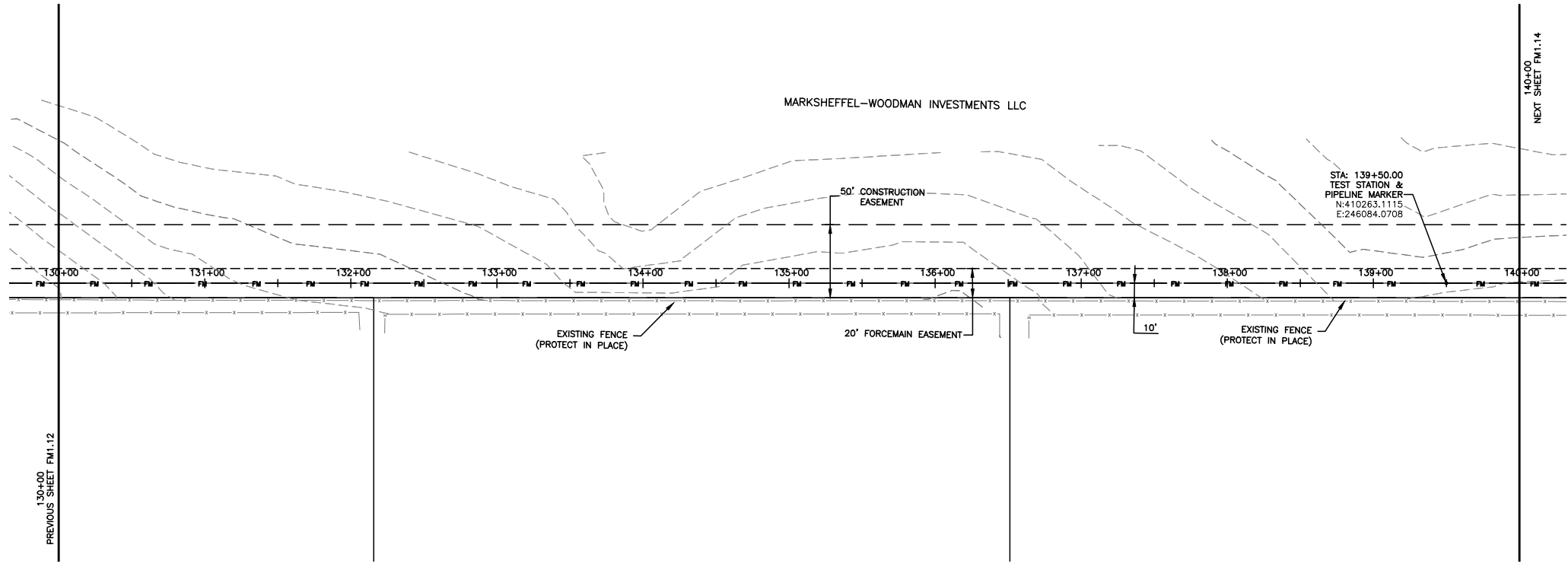
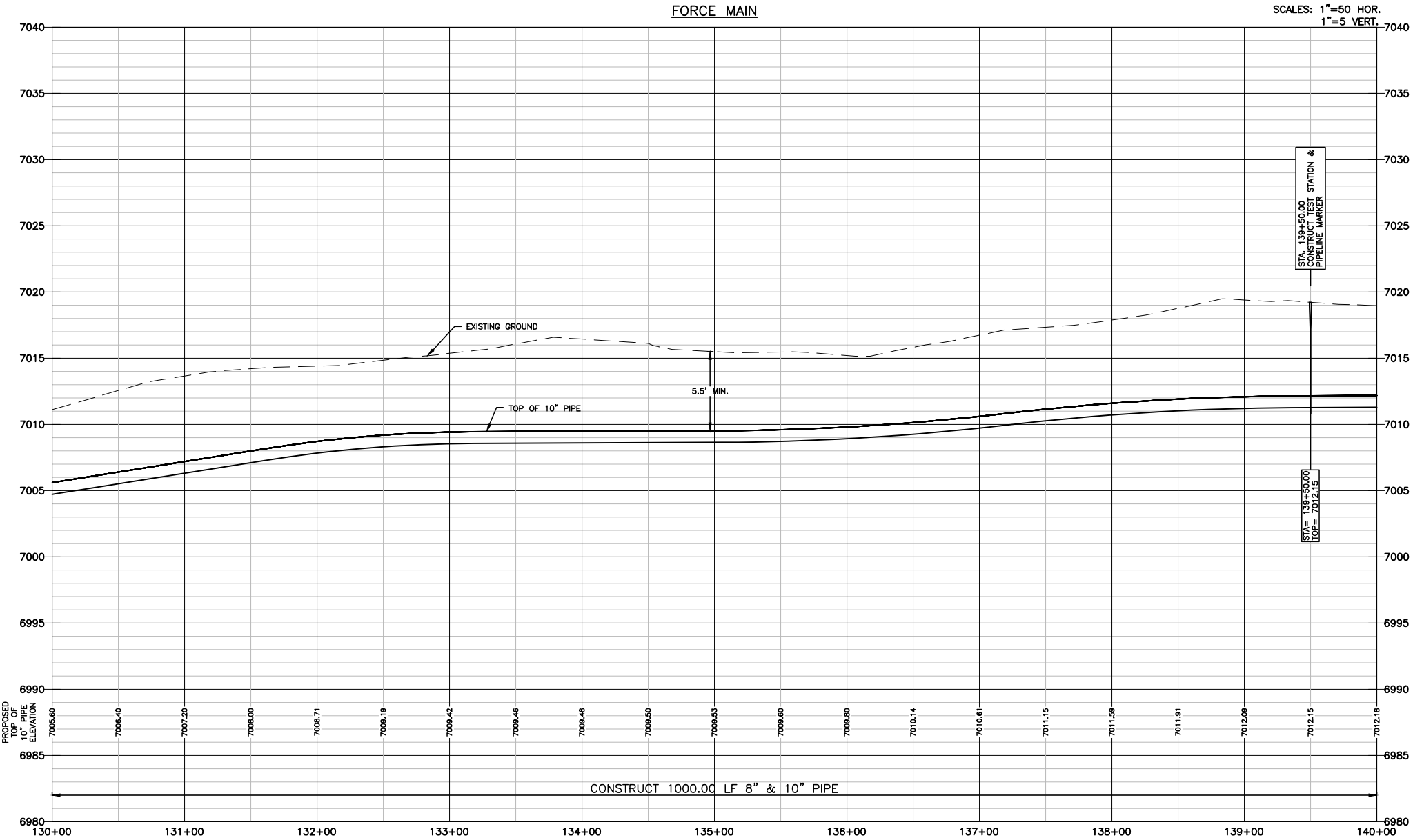
- SEDIMENT CONTROL LOG PER DETAIL SHEET FM2.4
- REMOVE AND RE-INSTALL 115 LF OF EXISTING FENCE.
- CONTRACTOR SHALL KEEP ACCESS OPEN TO ALL RESIDENTIAL LOTS AT ALL TIMES. CONTRACTOR SHALL NOTIFY AND COORDINATE ACCESS WITH ALL PROPERTY OWNERS.
- VEHICLE TRACKING CONTROL PER SHEET FM2.4

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<b>REVISIONS</b>				
12596 West Bayaud Avenue, Suite 330 303.971.0030 P Lakewood, Colorado 80228 303.971.0071 F LRA-Inc.com / lza4water.com				
<b>LAMP RYNEARSON &amp; ASSOCIATES</b>				
<b>FORCE MAIN PLAN &amp; PROFILE</b> STA. 120+00 TO STA. 130+00				
<b>STERLING RANCH LIFT STATION AND FORCE MAIN</b> STERLING RANCH METROPOLITAN DISTRICT NO. 1				
<b>LAMP RYNEARSON - ENGINEERS</b>				
<b>BRADLEY A. SIMONS</b> 34705				
<b>SHEET</b>				
<b>FM1.12</b>				





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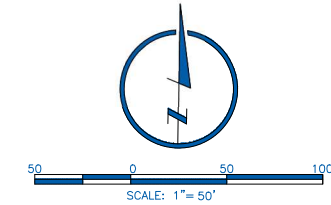
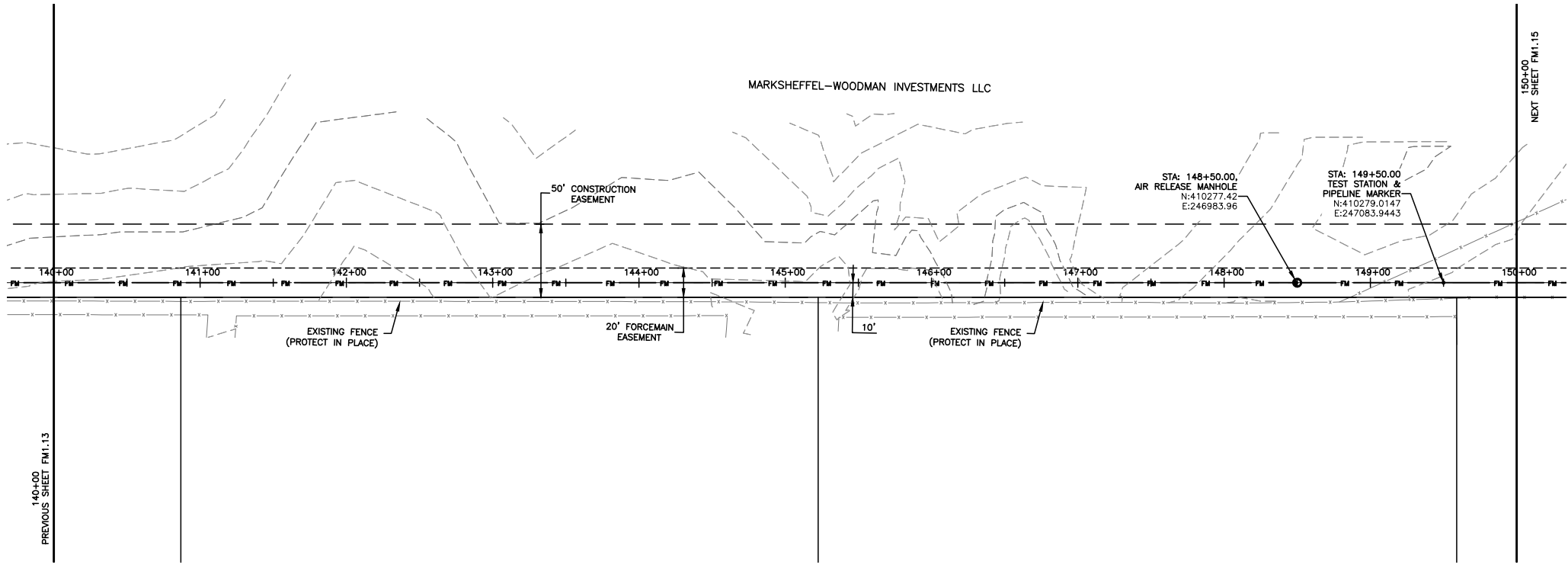
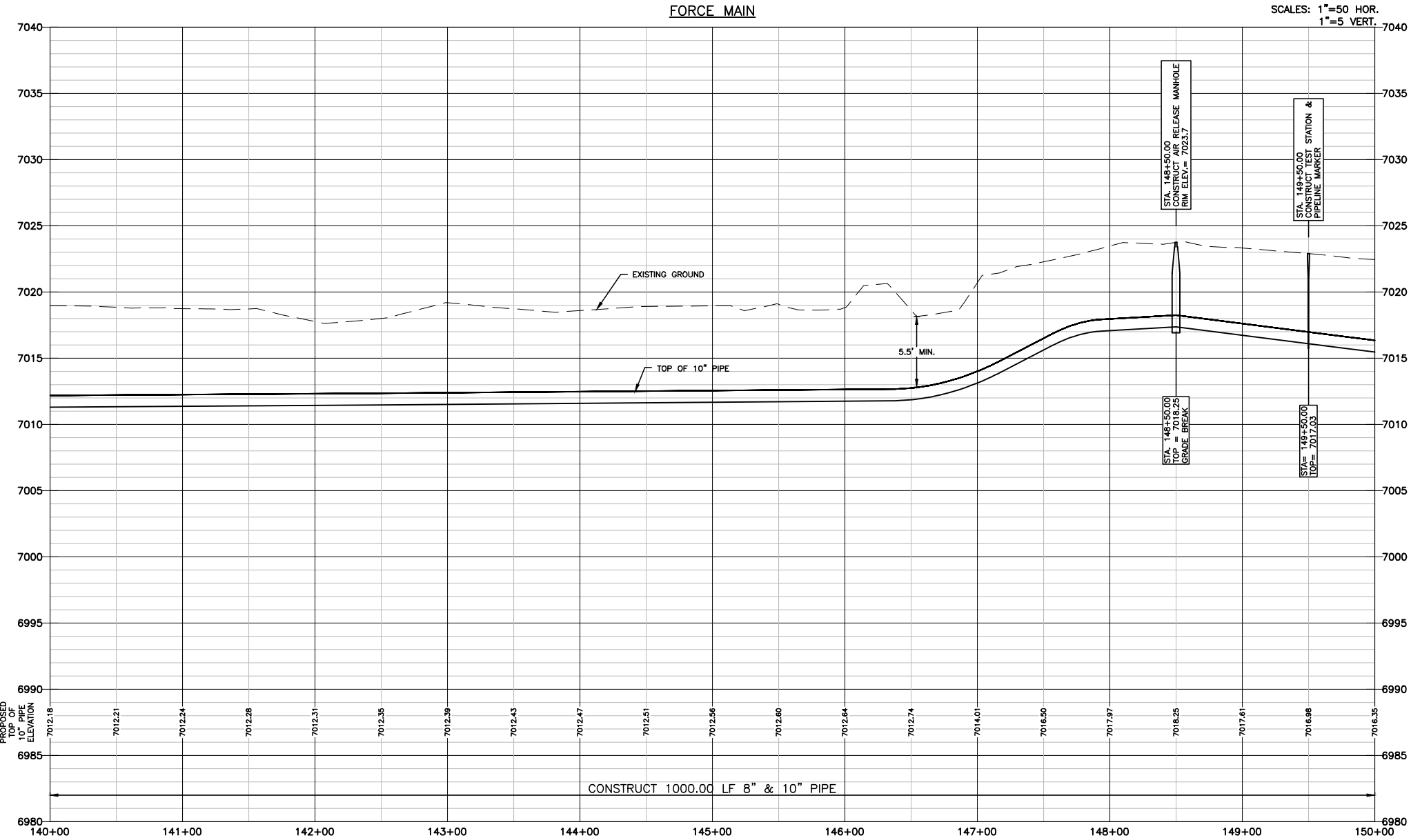
**NOTES:**

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<b>DRAWN BY</b> JPM	<b>DESIGNED BY</b> JPM	<b>DATE</b> APRIL 24, 2017	<b>JOB NUMBER-TASKS</b> 0416011	<b>BOOK AND PAGE</b>
<b>REVISIONS</b>				
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<b>LAMP RYNEARSON &amp; ASSOCIATES</b>				
<b>FORCE MAIN PLAN &amp; PROFILE</b> STA. 130+00 TO STA. 140+00				
<b>STERLING RANCH LIFT STATION AND FORCE MAIN</b> STERLING RANCH METROPOLITAN DISTRICT NO. 1				
<b>LAMP RYNEARSON - ENGINEERS</b>				
<b>BRADLEY A. SIMONS</b> 34705				
<b>SHEET</b>				
<b>FM1.13</b>				



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**FORCE MAIN PLAN & PROFILE**  
STA. 140+00 TO STA. 150+00

LAMP RYNEARSON - ENGINEERS



BRADLEY A. SIMONS  
34705

**SHEET**

**FM1.14**

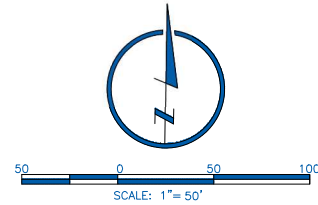
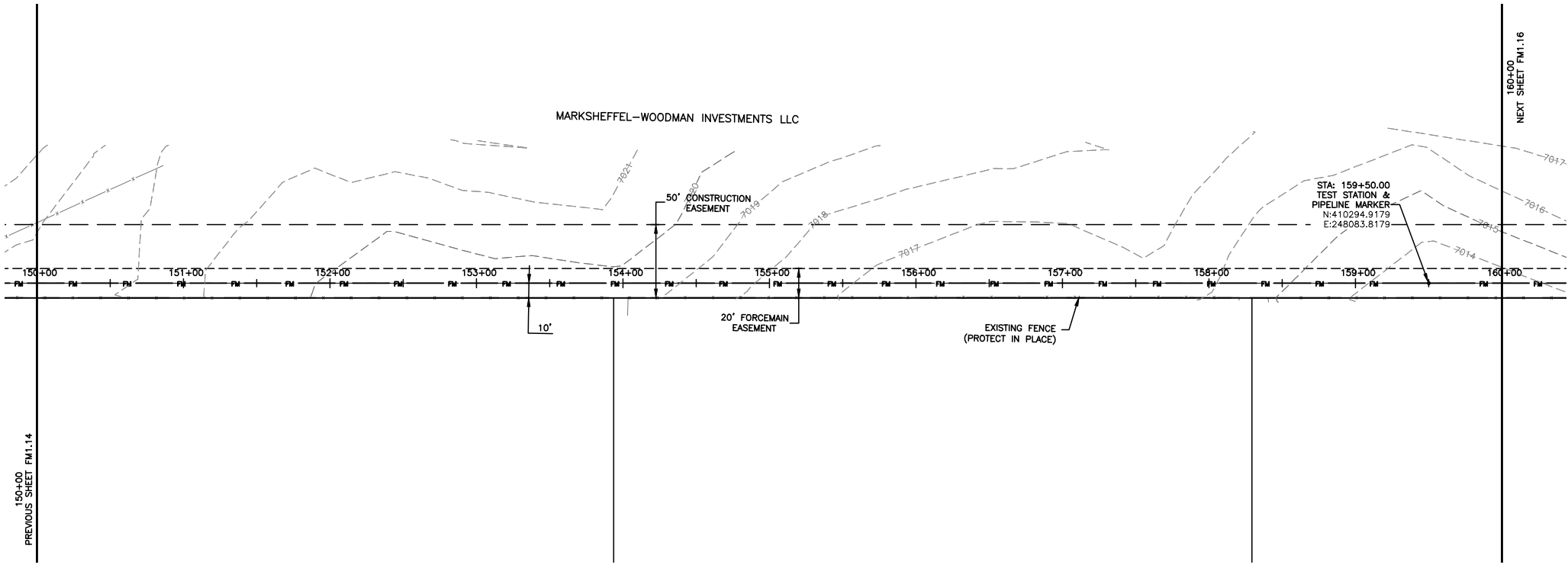
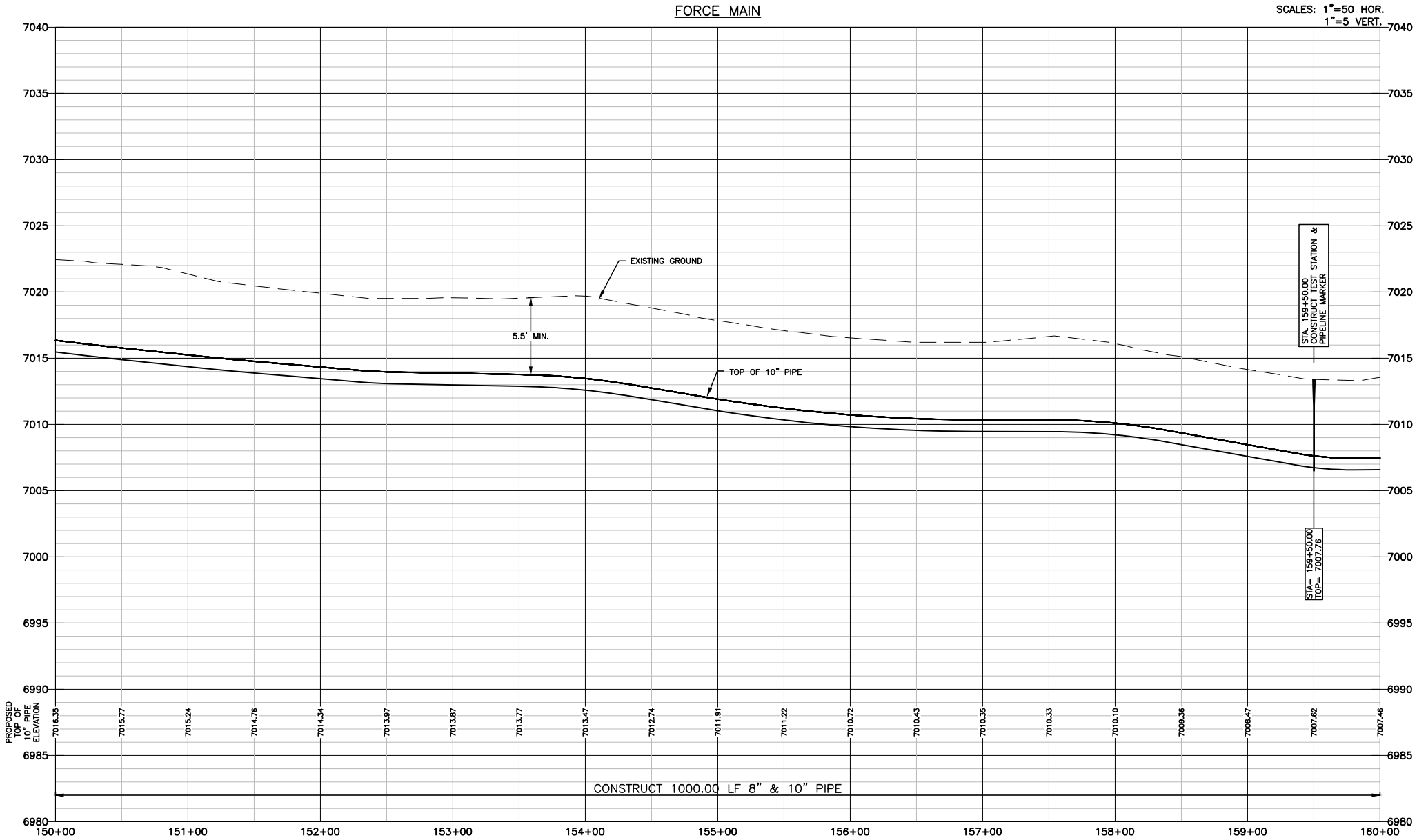


**LAMP RYNEARSON & ASSOCIATES**  
12596 West Bayaud Avenue, Suite 330 303.971.0030 P  
Lakewood, Colorado 80228 303.971.0071 F  
LRA-Inc.com / lza4water.com

**STERLING RANCH LIFT STATION AND FORCE MAIN**  
**STERLING RANCH METROPOLITAN DISTRICT NO. 1**

<b>DRAWN BY</b>	JPM
<b>DESIGNED BY</b>	JPM
<b>DATE</b>	APRIL 24, 2017
<b>JOB NUMBER-TASKS</b>	0416011
<b>BOOK AND PAGE</b>	

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**NOTES:**

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**FORCE MAIN PLAN & PROFILE**  
**STA. 150+00 TO STA. 160+00**

LAMP RYNEARSON - ENGINEERS



BRADLEY A. SIMONS  
34705

**SHEET**

**FM1.15**

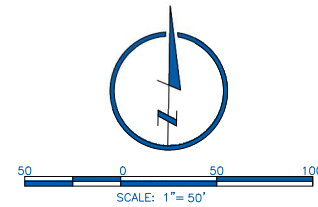
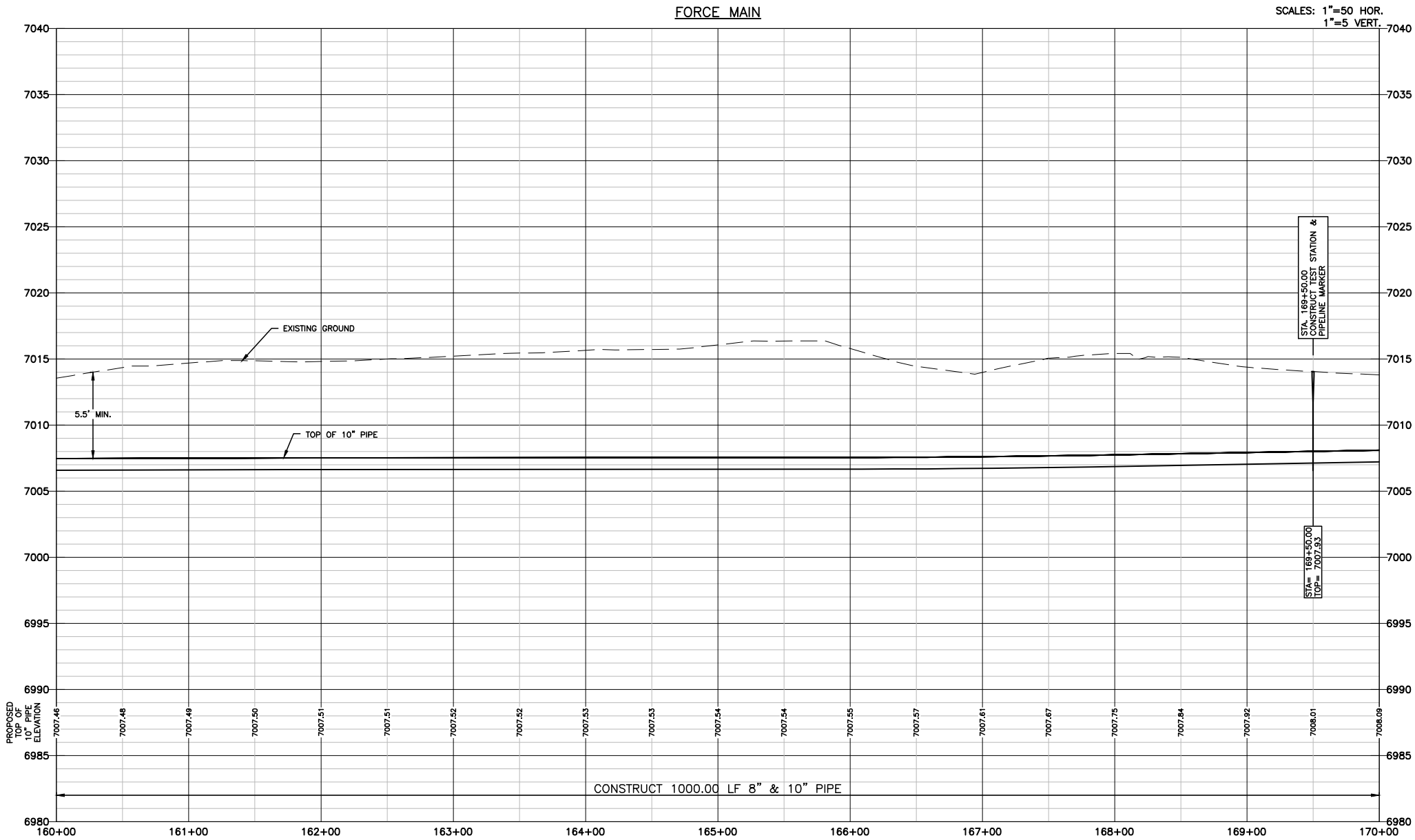
**LAMP RYNEARSON & ASSOCIATES**  
12596 West Bayaud Avenue, Suite 330 303.971.0030 | P  
Lakewood, Colorado 80228 303.971.0071 | F  
LRA-Inc.com / lza4water.com

**STERLING RANCH LIFT STATION AND FORCE MAIN**  
**STERLING RANCH METROPOLITAN DISTRICT NO. 1**

DRAWN BY	JPM
DESIGNED BY	JPM
DATE	APRIL 24, 2017
JOB NUMBER-TASK	0416011
BOOK AND PAGE	



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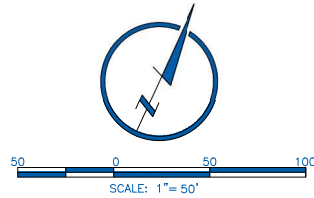
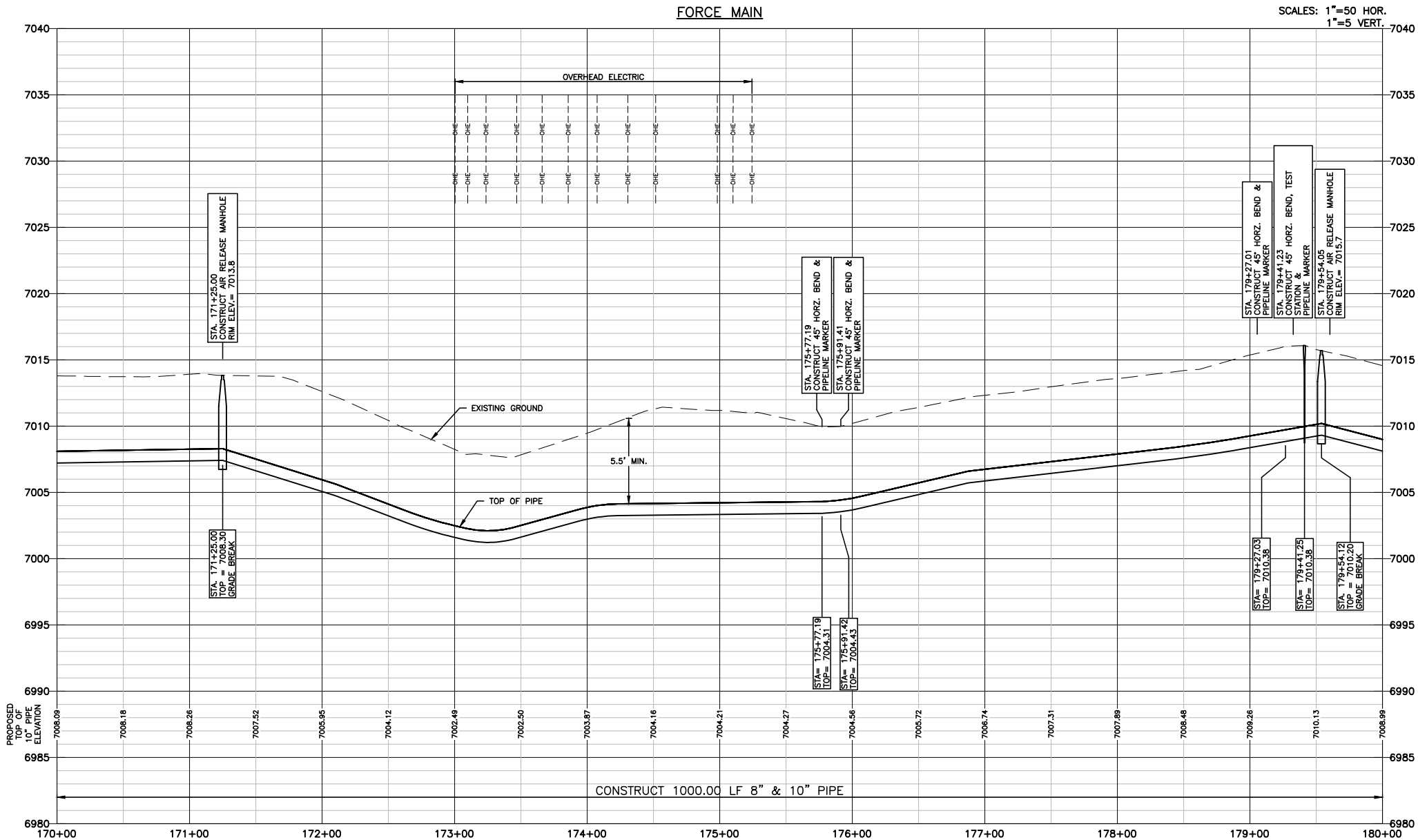
**KEYNOTES:**

- ① VEHICLE TRACKING CONTROL PER SHEET FM2.4

<b>DRAWN BY</b> JPM	<b>DESIGNED BY</b> JPM	<b>DATE</b> APRIL 24, 2017	<b>JOB NUMBER-TASKS</b> 0416011	<b>BOOK AND PAGE</b>
<b>REVISIONS</b>				
12596 West Bayaud Avenue, Suite 330 303.971.0030 / P Lakewood, Colorado 80228 303.971.0077 / F LRA-Inc.com / lza4water.com				
<b>LAMP RYNEARSON &amp; ASSOCIATES</b>				
<b>FORCE MAIN PLAN &amp; PROFILE</b> <b>STA. 160+00 TO STA. 170+00</b>				
<b>STERLING RANCH LIFT STATION AND FORCE MAIN</b> <b>STERLING RANCH METROPOLITAN DISTRICT NO. 1</b>				
<b>LAMP RYNEARSON - ENGINEERS</b>				
<b>BRADLEY A. SIMONS</b> 34705				
<b>SHEET</b>				
<b>FM1.16</b>				



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**NOTES:**

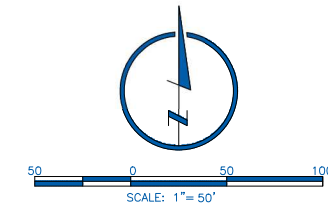
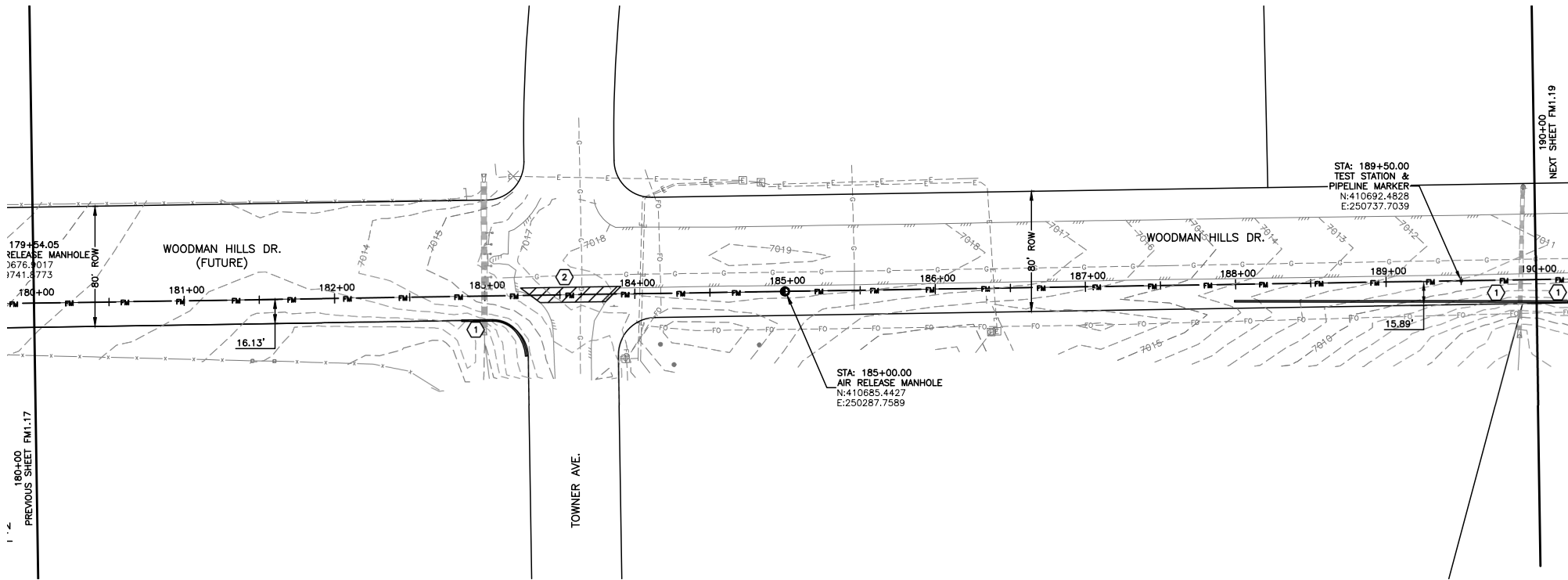
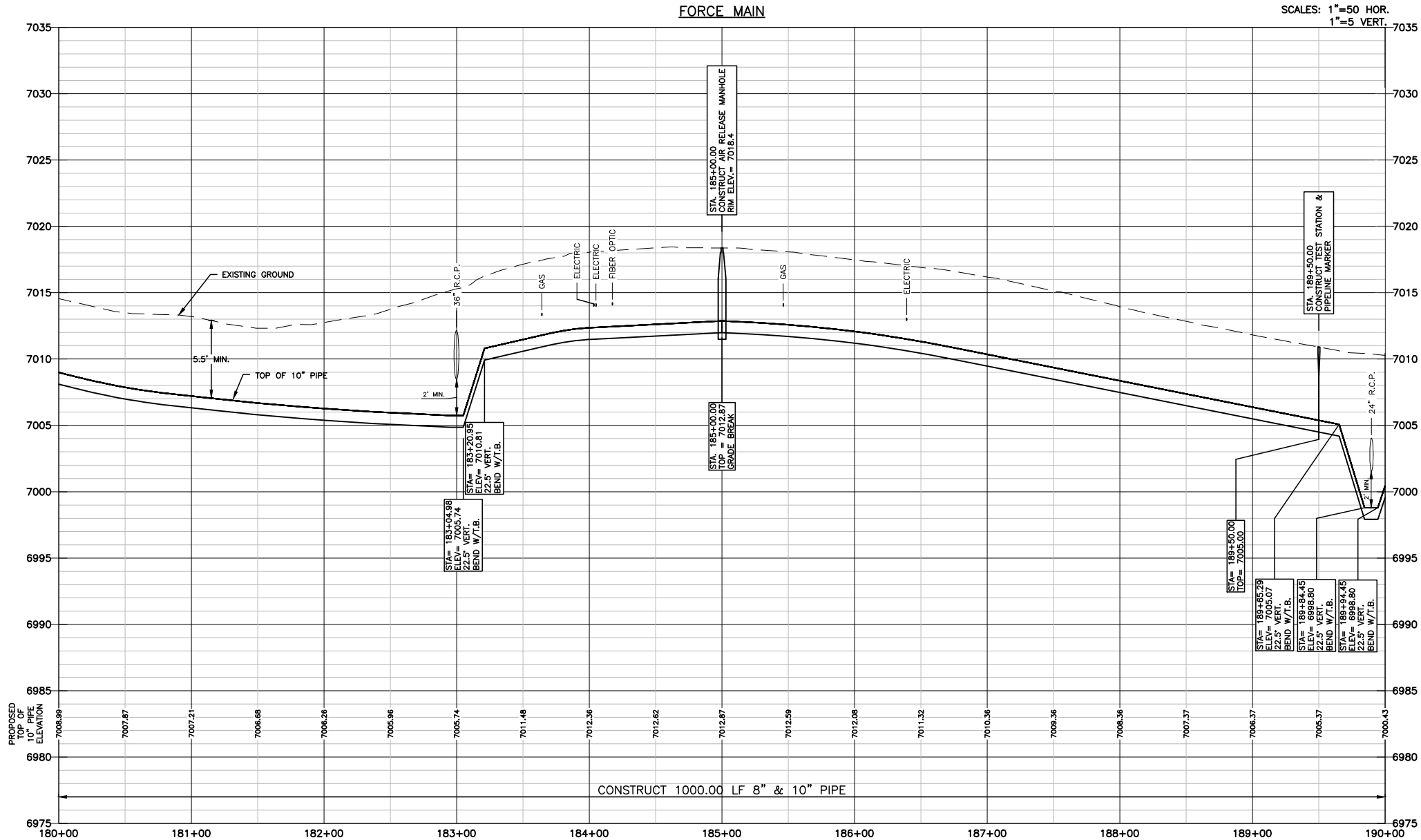
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**KEYNOTES:**

- ① REMOVE & RE-INSTALL 50 LF OF EXISTING FENCING.

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<b>REVISIONS</b>				
12596 West Bayaud Avenue, Suite 330 303.971.0030   P Lakewood, Colorado 80228 303.971.0071   F LRA-Inc.com / lza4water.com				
<b>LAMP RYNEARSON &amp; ASSOCIATES</b>				
<b>FORCE MAIN PLAN &amp; PROFILE</b> <b>STA. 170+00 TO STA. 180+00</b>				
<b>STERLING RANCH LIFT STATION AND FORCE MAIN</b> <b>STERLING RANCH METROPOLITAN DISTRICT NO. 1</b>				
<b>FM1.17</b>				

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**KEYNOTES:**

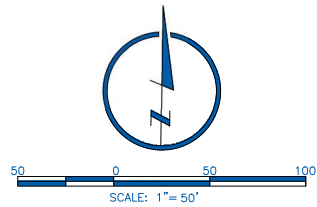
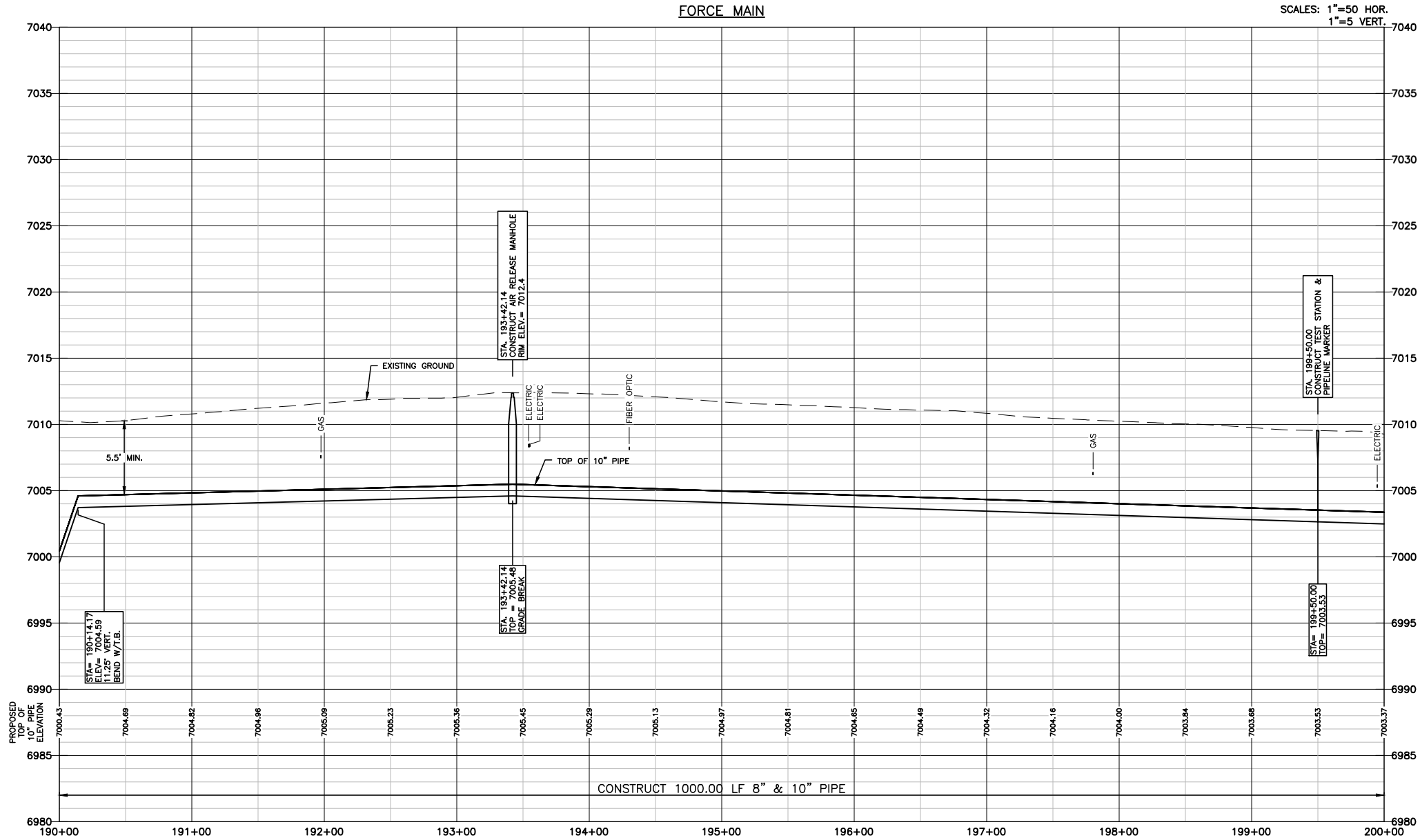
- SEDIMENT CONTROL LOG PER DETAIL SHEET FM2.4
- CONTRACTOR SHALL SAW CUT, REMOVE & REPLACE EXISTING PAVEMENT PER EL PASO COUNTY SPECIFICATIONS.

<b>DRAWN BY</b> JPM	<b>DESIGNED BY</b> JPM	<b>DATE</b> APRIL 24, 2017	<b>JOB NUMBER-TASKS</b> 0416011	<b>BOOK AND PAGE</b>
<b>REVISIONS</b>				
12596 West Bayaud Avenue, Suite 330 303.971.0030 P Lakewood, Colorado 80228 303.971.0071 F LRA-Inc.com / lza4water.com				
<b>LAMP RYNEARSON &amp; ASSOCIATES</b>				
<b>FORCE MAIN PLAN &amp; PROFILE</b> <b>STA. 180+00 TO STA. 190+00</b>				
<b>STERLING RANCH LIFT STATION AND FORCE MAIN</b> <b>STERLING RANCH METROPOLITAN DISTRICT NO. 1</b>				
<b>LAMP RYNEARSON - ENGINEERS</b>				
<b>BRADLEY A. SIMONS</b> 34705				
<b>SHEET</b>				
<b>FM1.18</b>				





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**NOTES:**

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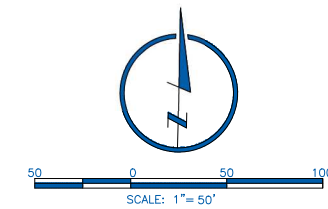
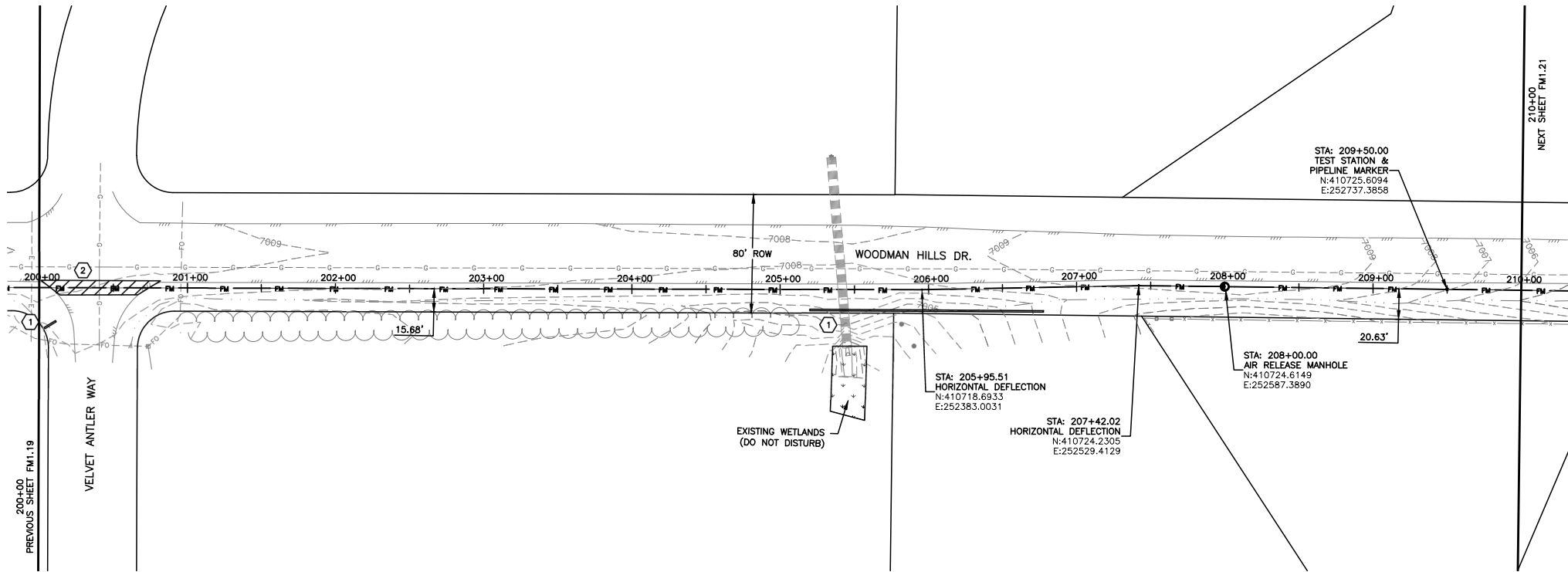
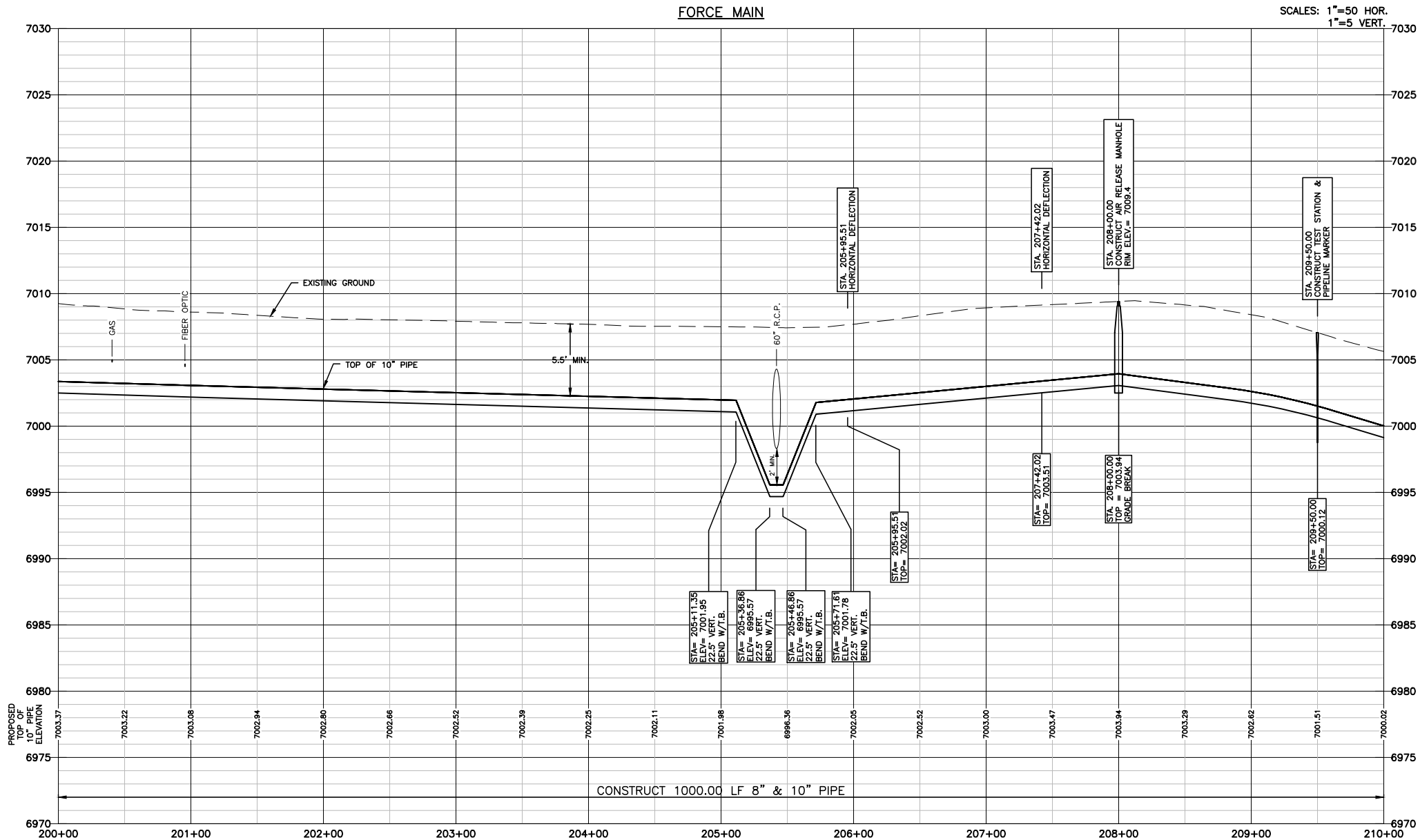
**KEYNOTES:**

- ① SEDIMENT CONTROL LOG PER DETAIL SHEET FM2.4

<b>DRAWN BY</b> JPM	<b>DESIGNED BY</b> JPM	<b>DATE</b> APRIL 24, 2017	<b>JOB NUMBER-TASKS</b> 0416011	<b>BOOK AND PAGE</b>
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<b>LAMP RYNEARSON &amp; ASSOCIATES</b>				
<b>FORCE MAIN PLAN &amp; PROFILE</b> STA. 190+00 TO STA. 200+00				
<b>STERLING RANCH LIFT STATION AND FORCE MAIN</b> STERLING RANCH METROPOLITAN DISTRICT NO. 1				
<b>LAMP RYNEARSON - ENGINEERS</b>				
<b>BRADLEY A. SIMONS</b> 34705				
<b>SHEET</b>				
<b>FM1.19</b>				



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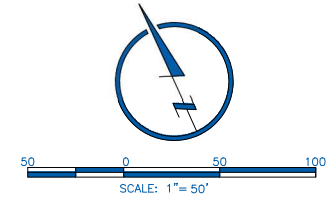
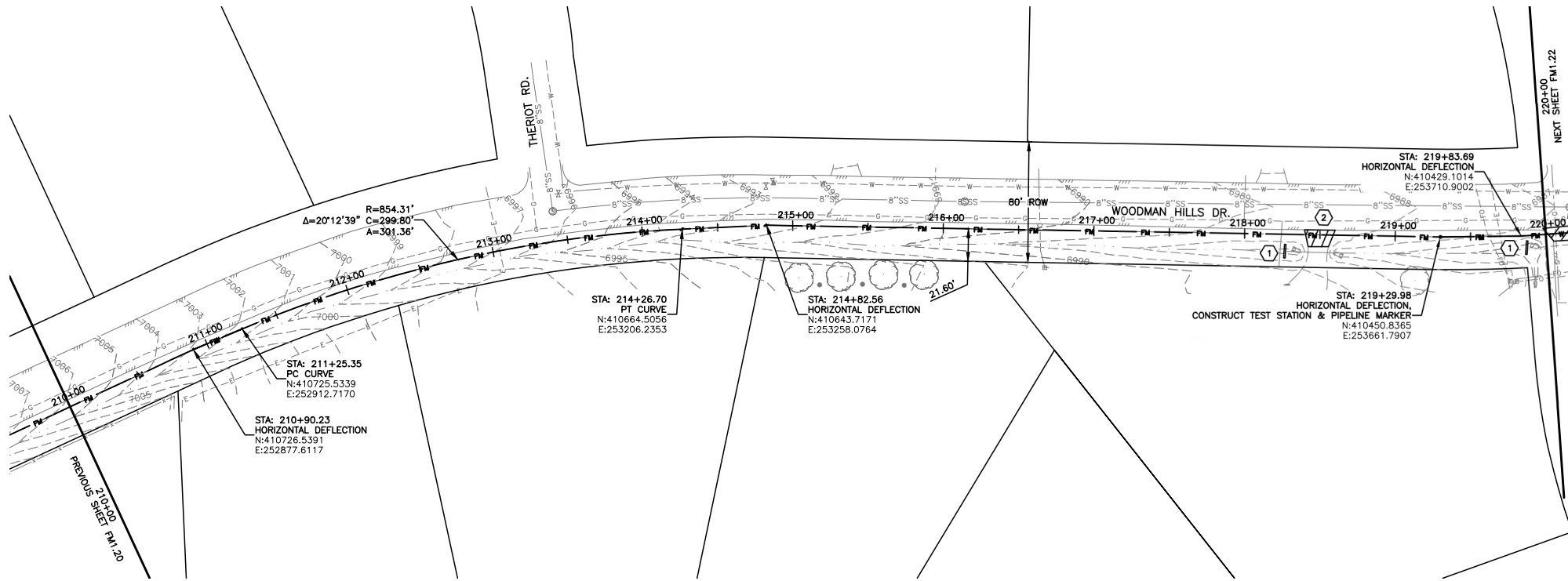
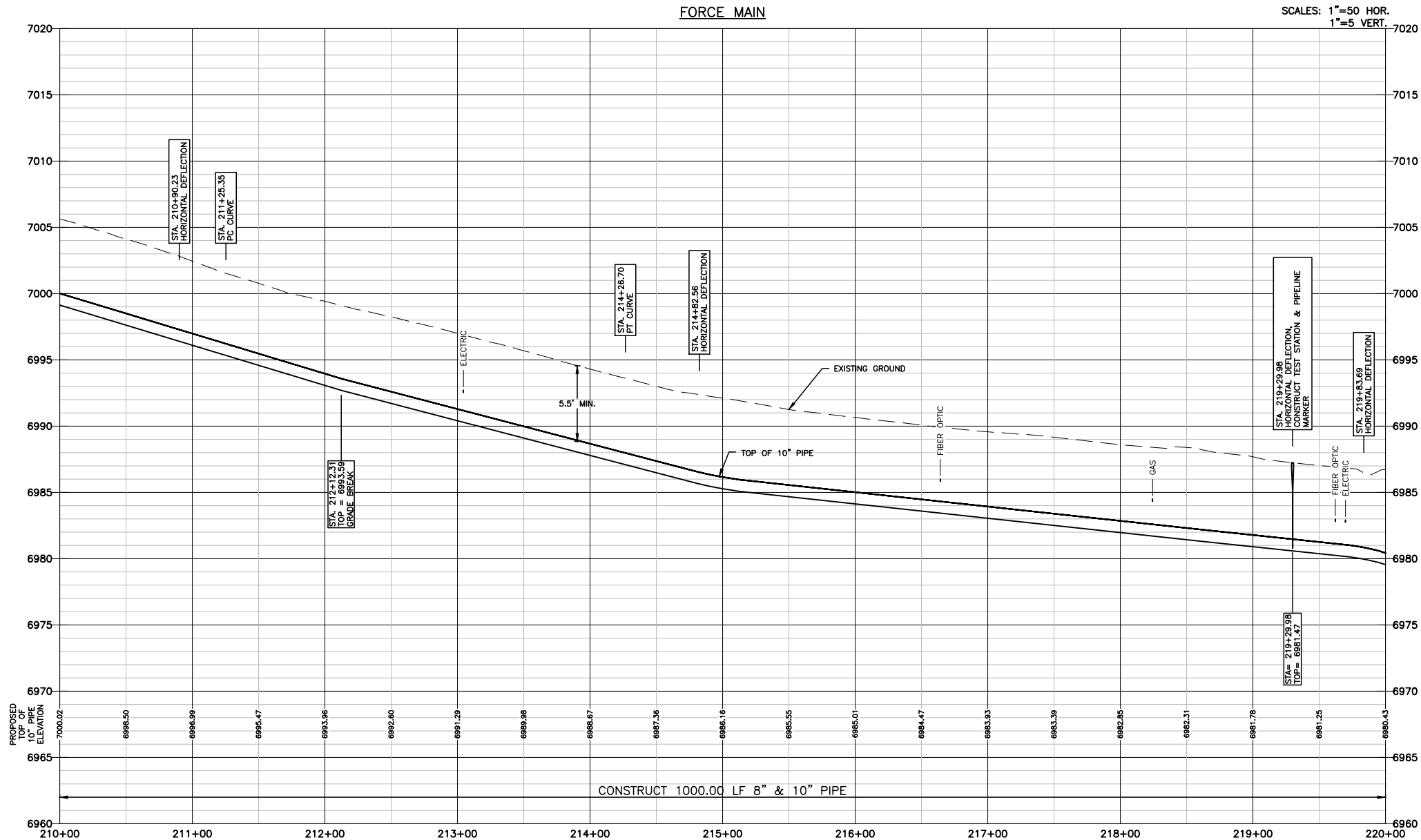
**KEYNOTES:**

- SEDIMENT CONTROL LOG PER DETAIL SHEET FM2.4
- CONTRACTOR SHALL SAW CUT, REMOVE & REPLACE EXISTING PAVEMENT PER EL PASO COUNTY SPECIFICATIONS.

<b>DRAWN BY</b> JPM	<b>DESIGNED BY</b> JPM	<b>DATE</b> APRIL 24, 2017	<b>JOB NUMBER-TASKS</b> 0416011	<b>BOOK AND PAGE</b>
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<b>FORCE MAIN PLAN &amp; PROFILE</b> <b>STA. 200+00 TO STA. 210+00</b>				
<b>STERLING RANCH LIFT STATION AND FORCE MAIN</b> <b>STERLING RANCH METROPOLITAN DISTRICT NO. 1</b>				
<b>LAMP RYNEARSON - ENGINEERS</b>				
<b>BRADLEY A. SIMONS</b> 34705				
<b>SHEET</b>				
<b>FM1.20</b>				



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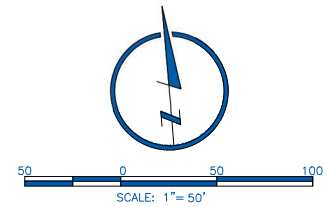
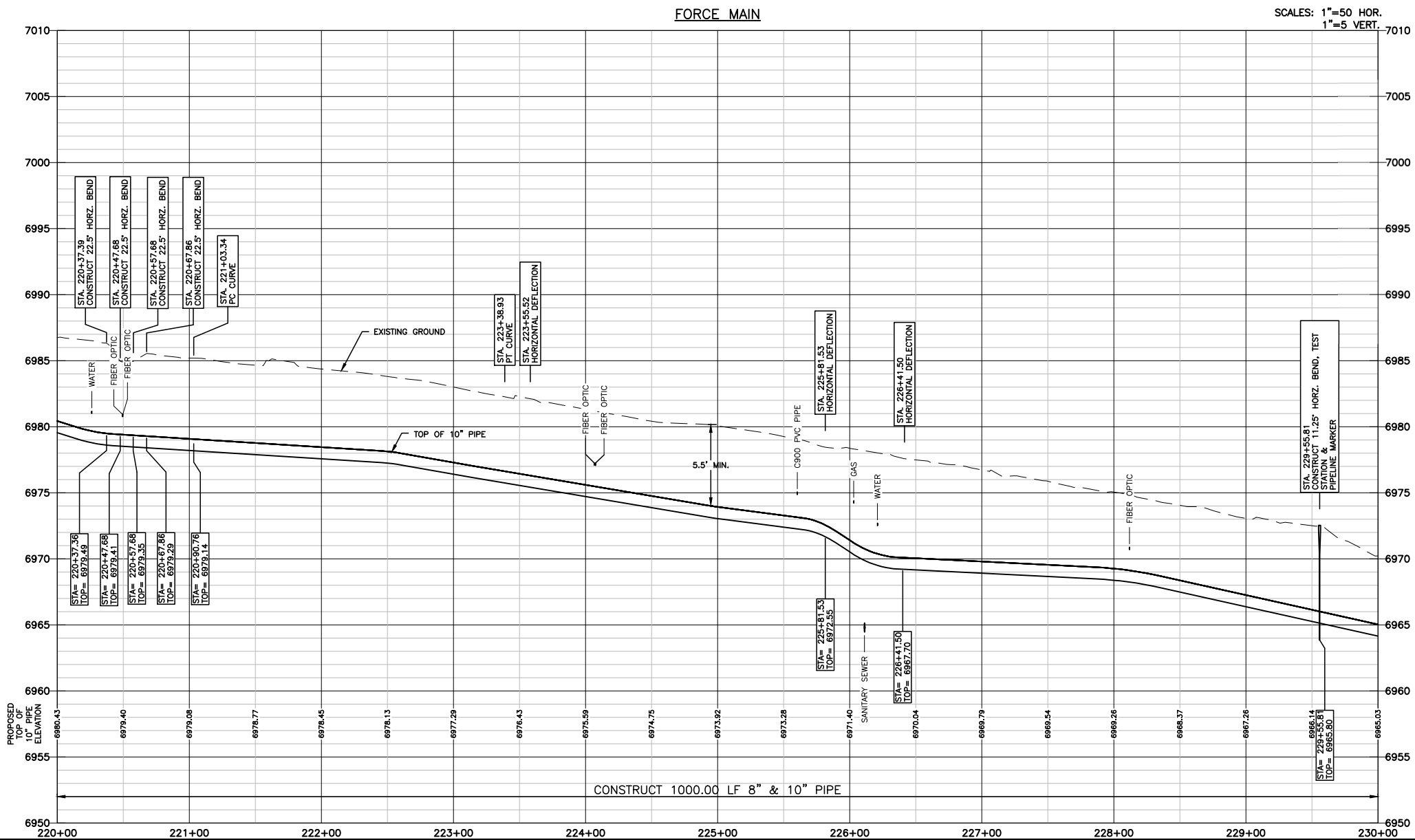
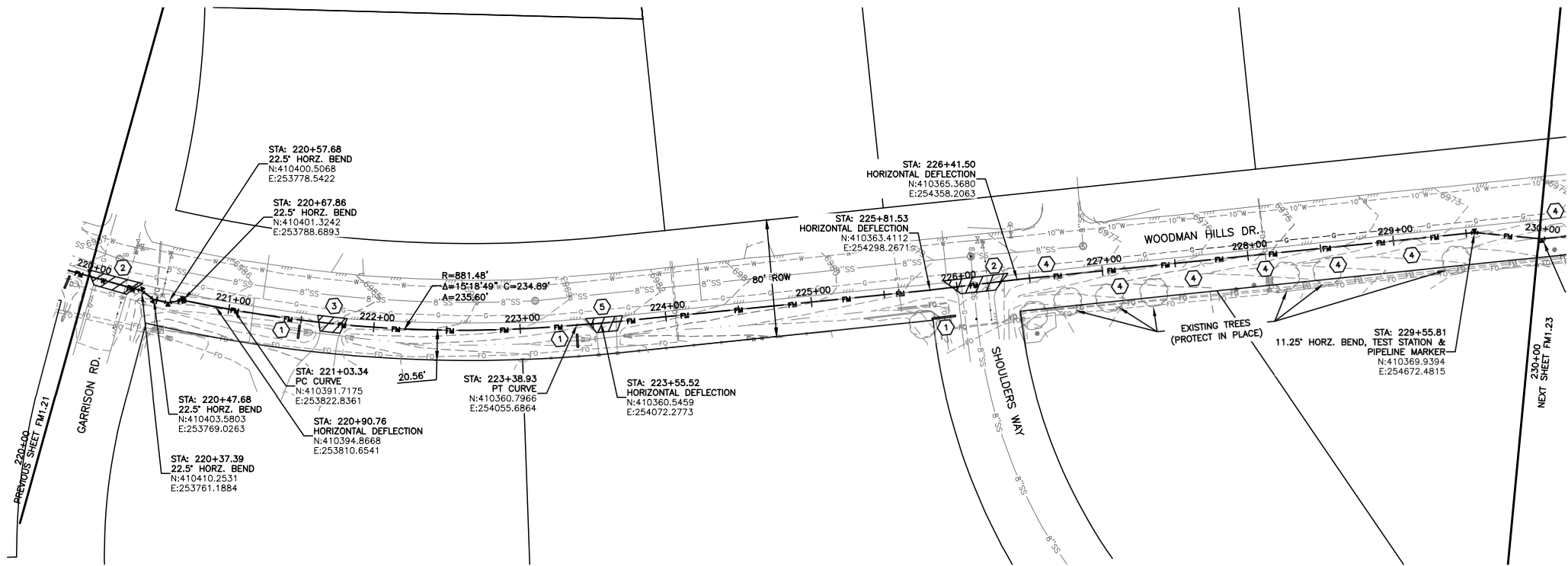
**KEYNOTES:**

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- CONTRACTOR SHALL SAW CUT, REMOVE AND REPLACE EXISTING CONCRETE DRIVEWAY.

DESIGNED BY JPM	DATE APRIL 24, 2017	JOB NUMBER-TASKS 0416011	BOOK AND PAGE
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CHECKED BY JPM			
APPROVED BY JPM			
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FORCE MAIN PLAN & PROFILE STA. 210+00 TO STA. 220+00			
STERLING RANCH LIFT STATION AND FORCE MAIN STERLING RANCH METROPOLITAN DISTRICT NO. 1			
LAMP RYNEARSON - ENGINEERS			
BRADLEY A. SIMONS 34705			
SHEET			
FM1.21			



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- CONTRACTOR SHALL SAW CUT, REMOVE AND REPLACE EXISTING CONCRETE DRIVEWAY.
- CONTRACTOR SHALL REMOVE AND REPLACE EXISTING DECORATIVE FENCE.
- CONTRACTOR SHALL REMOVE AND REPLACE EXISTING GRAVEL DRIVEWAY.

DRAWN BYJPMDESIGNED BYJPMDATEAPRIL 24, 2017JOB NUMBER-TASK80416011BOOK AND PAGE

REVISIONS

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Lakewood, Colorado 80228  
LRA-Inc.com / lza4water.com

LAMP RYNEARSON & ASSOCIATES

STERLING RANCH LIFT STATION AND FORCE MAIN  
STERLING RANCH METROPOLITAN DISTRICT NO. 1

FORCE MAIN PLAN & PROFILE  
STA. 220+00 TO STA. 230+00

LAMP RYNEARSON - ENGINEERS

COLORADO  
811  
KNOW WHAT'S BELOW.  
CALL BEFORE YOU DIG.

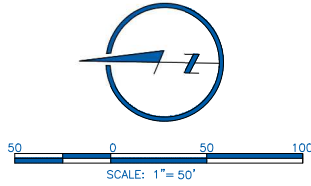
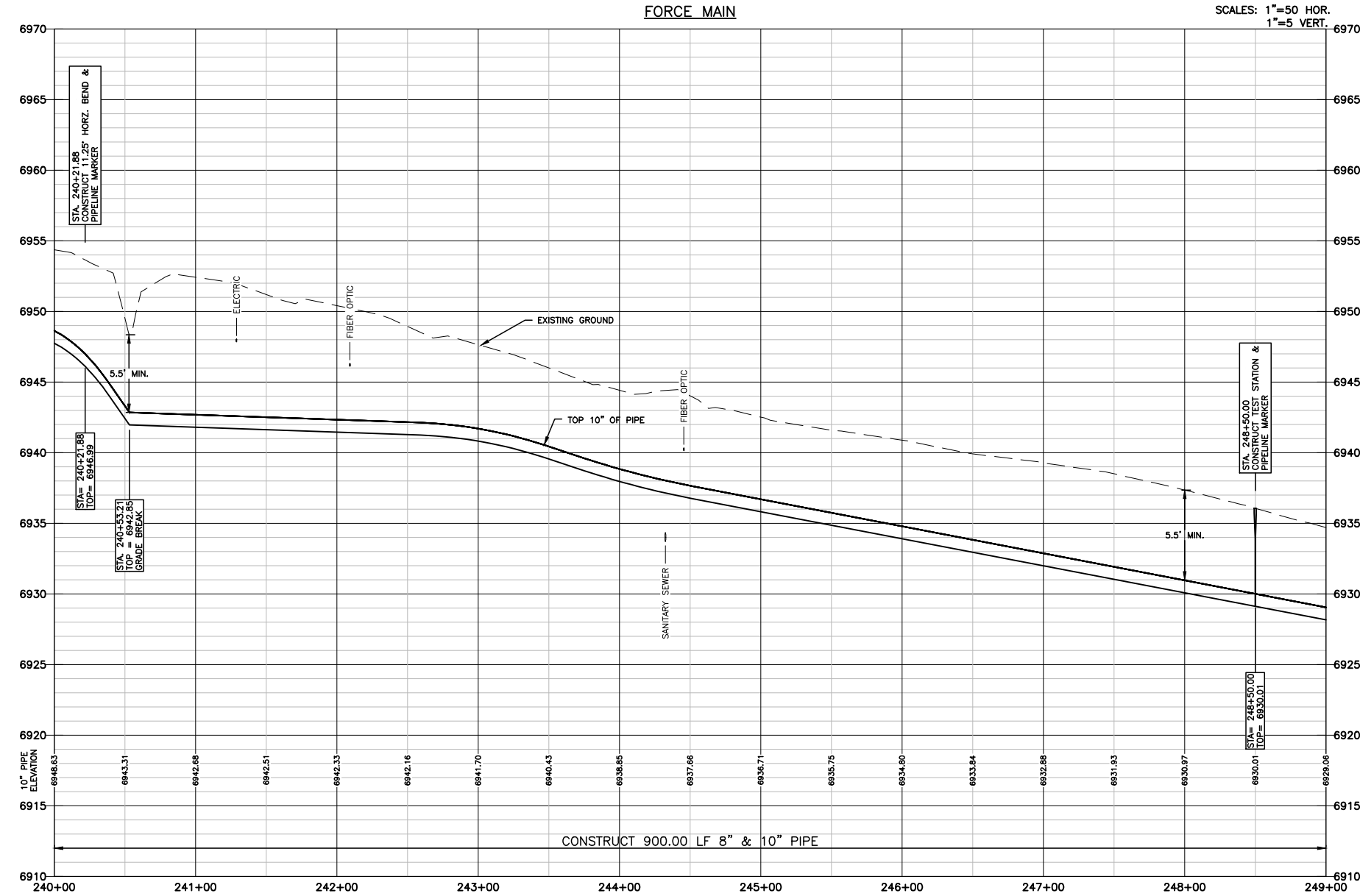
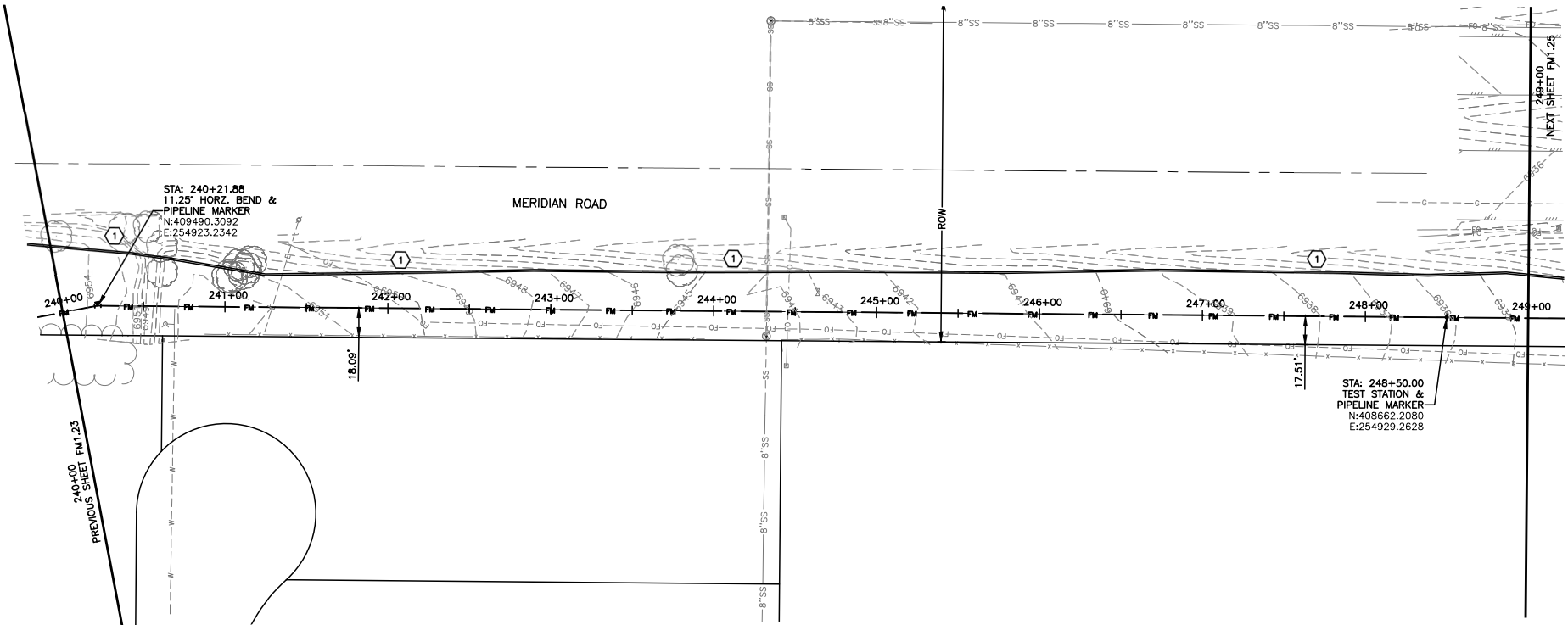
BRADLEY A. SIMONS  
34705

SHEET

FM1.22



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NOTES:

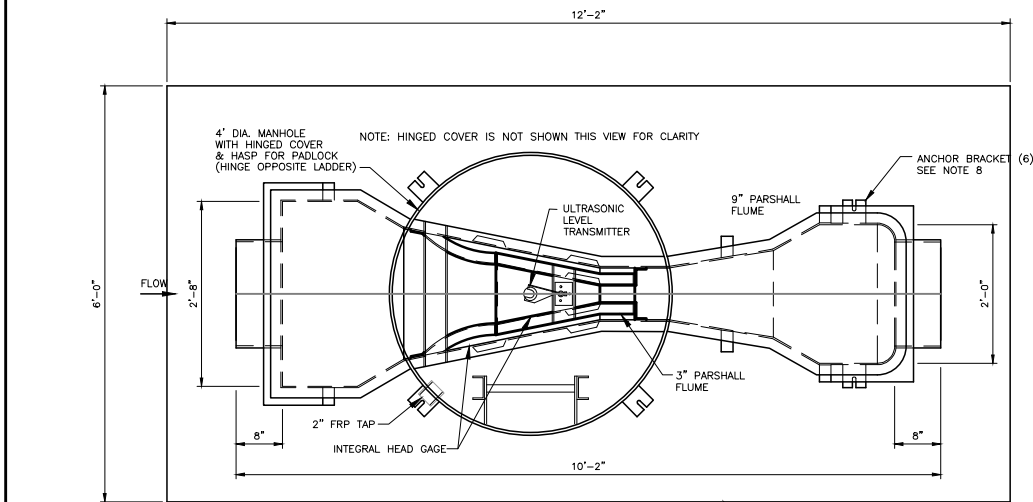
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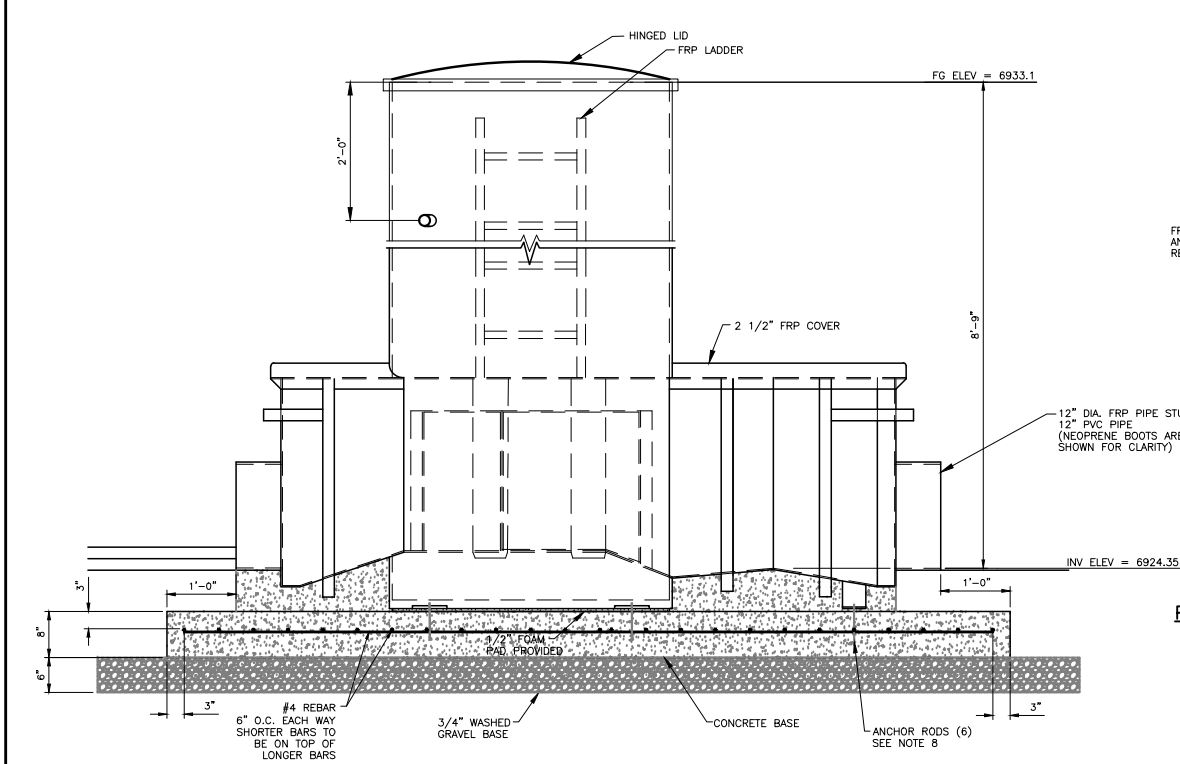
- ① SEDIMENT CONTROL LOG PER DETAIL SHEET FM2.4

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CHECKED BY JPM			
APPROVED BY BRADLEY A. SIMONS 34705			
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FORCE MAIN PLAN & PROFILE STA. 240+00 TO STA. 250+00			
STERLING RANCH LIFT STATION AND FORCE MAIN STERLING RANCH METROPOLITAN DISTRICT NO. 1			
FM1.24			





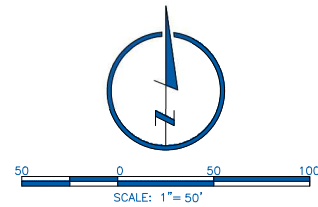
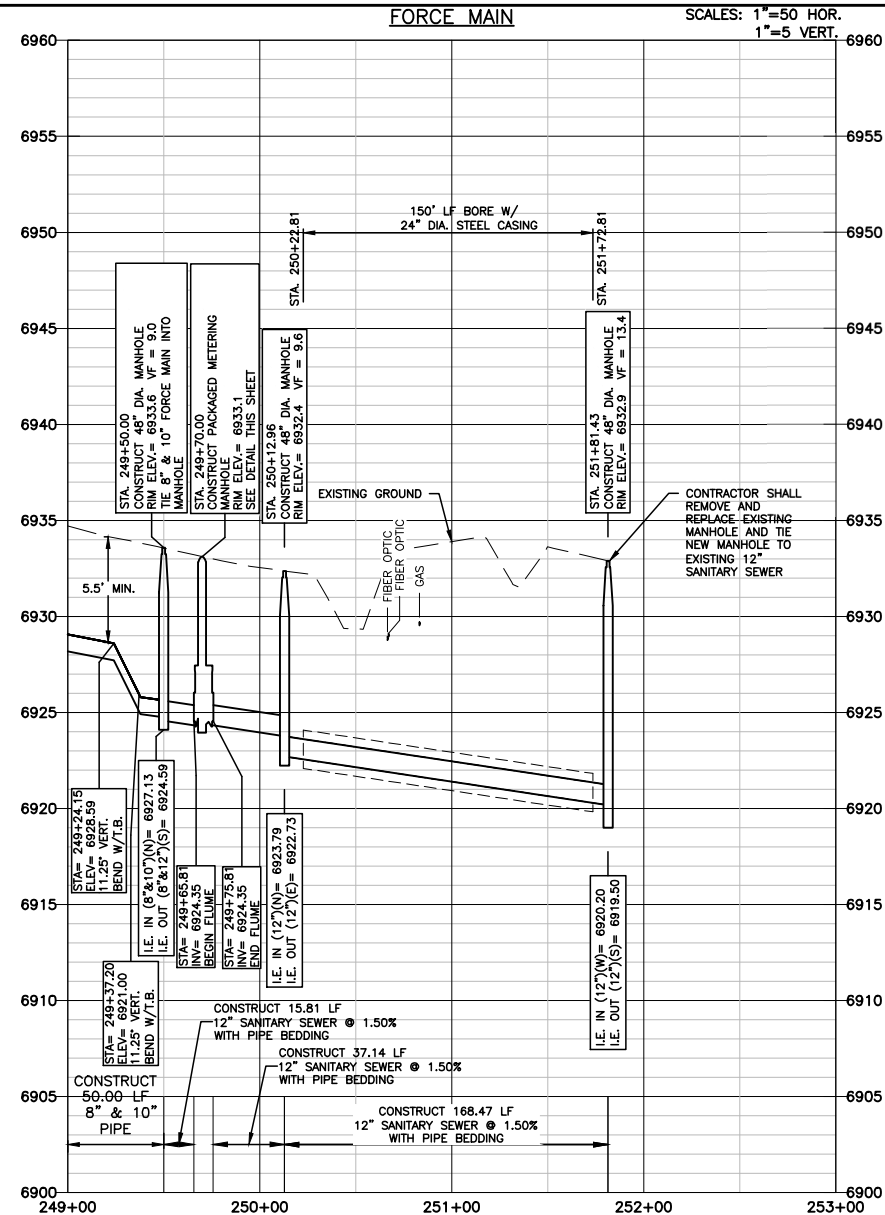
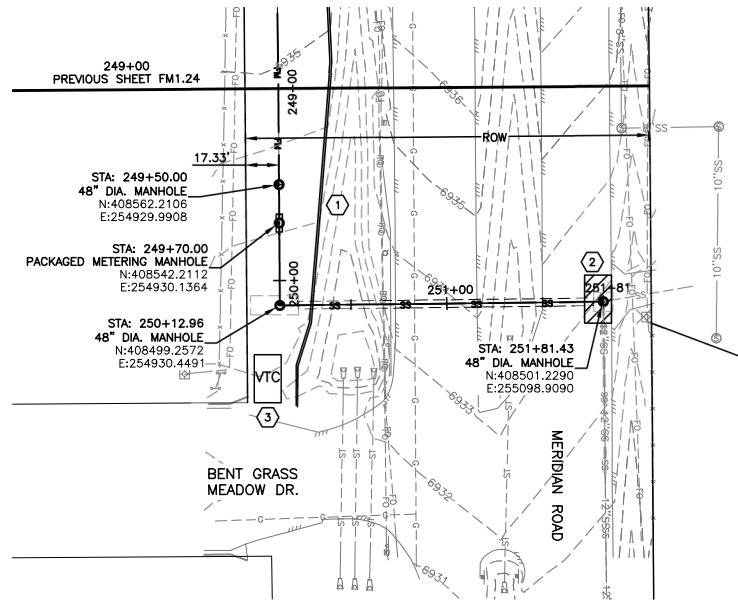
PLAN VIEW  
N.T.S.



SECTION VIEW  
N.T.S.

PACKAGED METERING MANHOLE  
3" X 9" PARSHALL FLUME  
N.T.S.

- NOTES:
1. PACKAGED METERING MANHOLE SHALL BE PLASTI-FAB OR APPROVED EQUAL.
  2. MATERIAL IS FRP (FIBERGLASS REINFORCED POLYESTER).
  3. NEOPRENE BOOTS ARE SECURED WITH STAINLESS STEEL BANDS.
  4. THE MINIMUM MANHOLE BARREL THICKNESS IS 1/2" FRP.
  5. HINGE, HASP, ANCHOR BRACKET & BOLTS ARE TYPE 304 S/S.
  6. A 3" PARSHALL FLUME SHALL BE INSTALLED INSIDE THE 9" PARSHALL FLUME PER MANUFACTURER'S RECOMMENDATIONS.
  7. CONTRACTOR SHALL FILL MANHOLE WITH CONCRETE TO THE TOP OF THE FLUME.
  8. HAS-R 304 SS OR HAS-R 316 SS ANCHOR RODS, 1/2" DIA. WITH 5" EMBEDMENT INTO CONCRETE WITH HILTI HIT-RE 500 V3 EPOXY OR APPROVED EQUAL.



NOTES:

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2. CONTRACTOR SHALL SAW CUT, REMOVE & REPLACE EXISTING PAVEMENT PER EL PASO COUNTY SPECIFICATIONS.
3. VEHICLE TRACKING CONTROL PER SHEET FM2.4.

FORCE MAIN PLAN & PROFILE  
STA. 249+00 TO STA. 251+83.43  
AND  
PACKAGED METERING MANHOLE

LAMP RYNEARSON - ENGINEERS



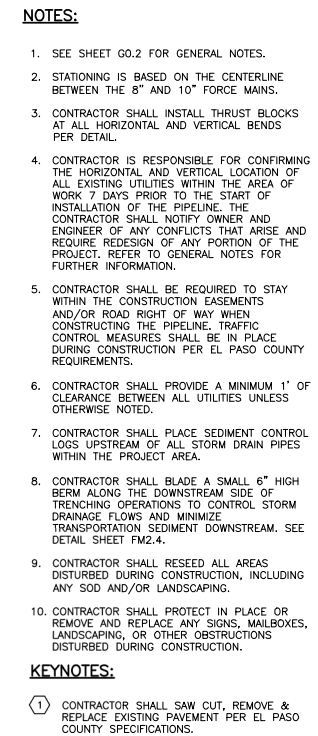
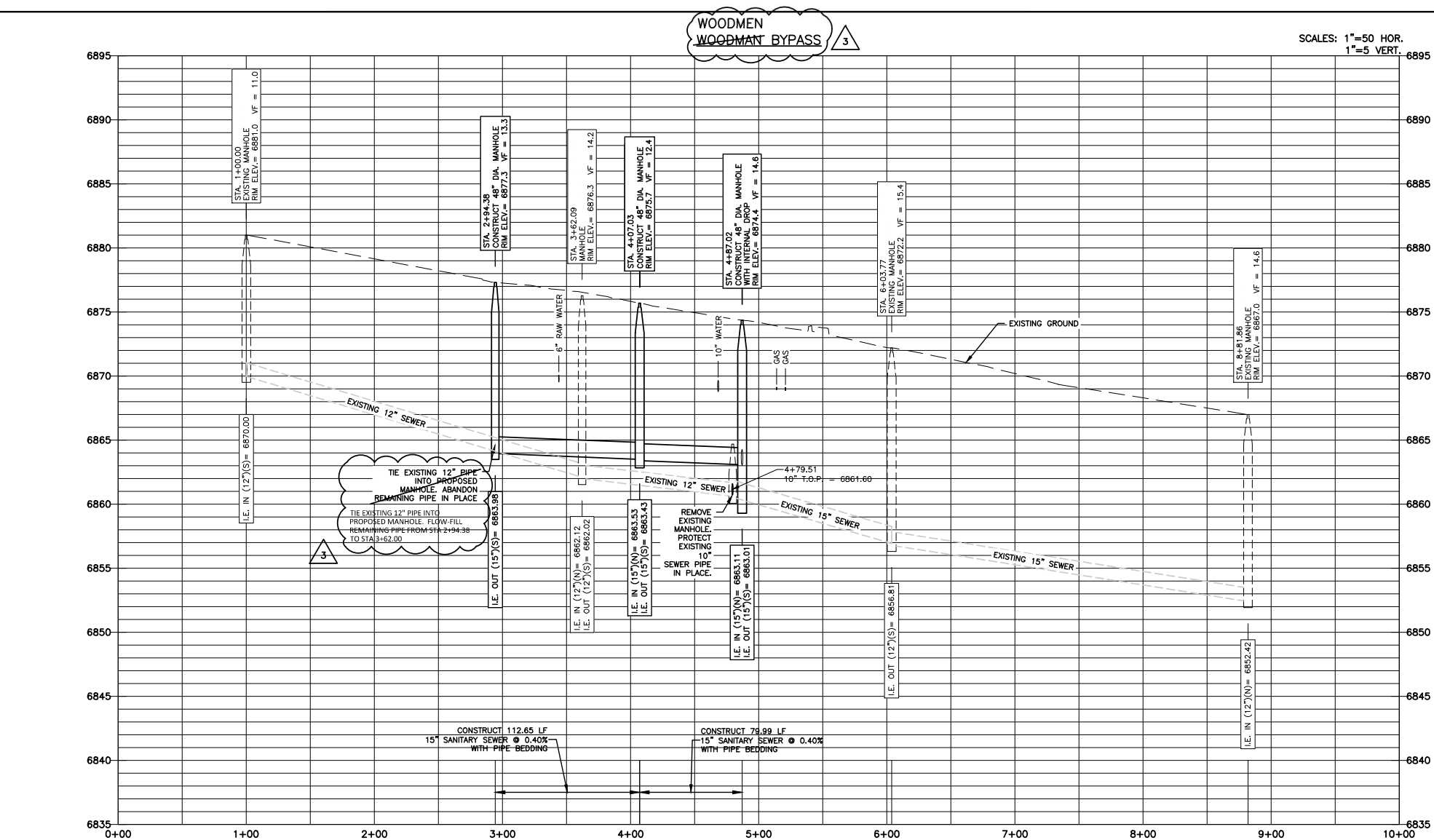
BRADLEY A. SIMONS  
34705

SHEET

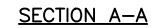
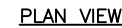
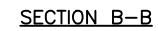
FM1.25



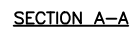




<div>SANITARY SEWER PLAN &amp; PROFILE WOODMAN BYPASS</div>		<div><div><div>LAMP RYNEARSON &amp; ASSOCIATES</div></div><div>12596 West Bayview Avenue, Suite 300 Lakewood, Colorado 80228 LRA-inc.com / lra@water.com</div></div>		<div>REVISIONS</div> <div><div>1</div><div>PER EPC COMMENTS - 05/31/2019</div><div>JPM</div></div> <div><div></div><div></div><div>JPM</div></div> <div><div></div><div></div><div>DATE</div></div> <div><div></div><div>APRIL 24, 2017</div><div></div></div> <div><div></div><div>JOB NUMBER-TAB39</div><div></div></div> <div><div></div><div>04-16011</div><div></div></div> <div><div></div><div>BOOK AND PAGE</div><div></div></div>	
<div>PRELIMINARY</div>					
<div>-----</div>					
<div>BRADLEY A. SIMONS</div>					
<div>34705</div>					
<div>SHEET</div>					
<div>FM1.26</div>					



HORIZONTAL THRUST BLOCK DETAIL  
N.T.S



NOTES:

AIR RELEASE MANHOLE  
N.T.S.



VERTICAL THRUST BLOCK DETAIL  
N.T.S



FIELD INSTALLATION OF POLYETHYLENE TUBING FOR DIP PIPE AND FITTINGS

STEP 1:

PLACE TUBE OF POLYETHYLENE MATERIAL ON PIPE PRIOR TO LOWERING IT INTO TRENCH.

TABLE 1 SUITABLE CONDUCTOR SIZES FOR JOINT BONDING OF DUCTILE IRON PIPE		
PIPE SIZE (IN)	QUANTITY - SIZE OF BOND	SIZE OF CHARGE (G)
8 TO 14	2 - #8 STRANDED OR SOLID	25
16 TO 36	2 - #4 STRANDED OR SOLID	32
	4 - #8 STRANDED OR SOLID	25
	1 - BONDING STRAP	15
42 TO 64	2 - #2 STRANDED OR SOLID	32
	4 - #4 STRANDED OR SOLID	32

STEP 2:

INSTALL BONDING STRAP OR WIRE AT EVERY JOINT OF PIPE PRIOR TO WRAPPING. PULL TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO END AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH TAPE TO HOLD THE PLASTIC TUBE IN PLACE.

STEP 3:

OVERLAP FIRST TUBE WITH ADJACENT TUBE AND SECURE WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE ADJACENT SPIGOT END AND WRAP WITH TAPE TO HOLD THE PLASTIC TUBE IN PLACE.

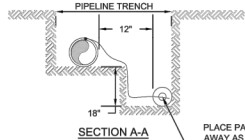
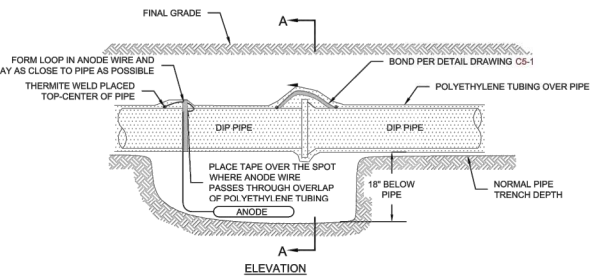
NOTES:

- ANY TEARS OR HOLES SHALL BE REPAIRED WITH POLYETHYLENE TUBING AND TAPE.
- WHEN WORKING AROUND EXISTING POLY WRAPPED PIPE, ANY TEARS AS A RESULT OF CONSTRUCTION SHALL BE REPAIRED.
- WHEN WORKING AROUND EXISTING BONDED PIPE, ANY BROKEN BONDS AS A RESULT OF CONSTRUCTION, SHALL BE REPAIRED.



POLYETHYLENE TUBING

C5-1  
DATED 9/2015



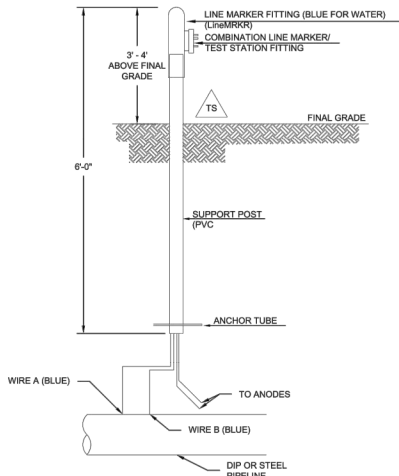
NOTES:

- THERMITE WELD ANODE TO PIPE WITH A 15 GRAM CHARGE. INSTALL A COPPER SLEEVE WHEN WIRE IS #10 AWG OR SMALLER.
- THERMITE WELD CONNECTIONS AND ANY BARE METAL SHALL BE COVERED WITH PRIMERLESS HANDICAP OR CORROSION TAPE.
- PACKED ANODE SHOULD BE COVERED WITH FINE SOIL CONTAINING NO ROCKS OR DIRT CLUMPS AND SHALL BE HAND TAMPED TO THE BOTTOM OF THE PIPE FOR COMPACTION.
- ANODE WITH BROKEN BAGS SHALL NOT BE USED.
- ANODES SHALL BE REMOVED FROM PLASTIC PACKAGING.
- IT IS NOT NECESSARY TO WET THE ANODES.
- DIP PIPE SHALL BE ENCASED IN POLYETHYLENE TUBING PER DETAIL DRAWING C5-1.



BONDING JOINT AND ANODE INSTALLATION

C5-2  
DATED 9/2015



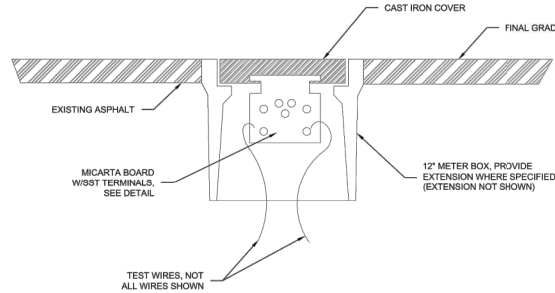
NOTES:

- THE CONTRACTOR SHALL COORDINATE WITH COLORADO SPRINGS UTILITIES TO WIRE TERMINAL BOARD.
- THERMITE WELD WIRES TO PIPE WITH A 15 GRAM CHARGE. INSTALL A COPPER SLEEVE WHEN WIRE IS #10 AWG OR SMALLER.
- THERMITE WELD CONNECTIONS AND ANY BARE METAL SHALL BE COVERED WITH PRIMERLESS HANDICAP OR CORROSION TAPE.
- THE CONTRACTOR SHALL VERIFY CONTINUITY OF ALL WIRES TO TERMINAL BOARD PRIOR TO FINAL ACCEPTANCE.
- COLOR CODE WIRE INSULATION AS SHOWN IN APPLICABLE TEST STATION DETAILS. CONNECT EACH TEST WIRE TO SEPARATE TERMINAL.
- WIRE CONFIGURATION FOR FLUSH MOUNT STYLE TEST STATIONS SIMILAR TO POST MOUNT STYLE TEST STATIONS.
- PROVIDE 18 INCHES SLACK IN TEST WIRES, MINIMUM.



INSTALLATION OF POST MOUNT TEST STATION IN UNIMPROVED AREAS

A8-11  
DATED 09/2015



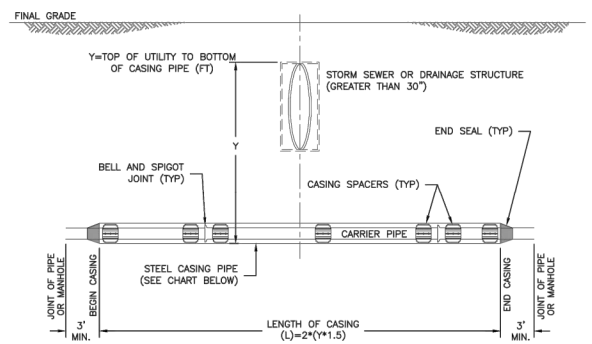
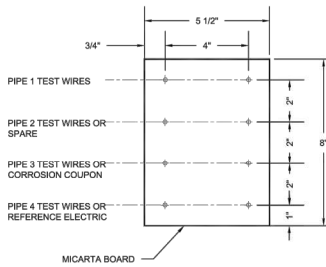
NOTES:

- THE CONTRACTOR SHALL COORDINATE WITH COLORADO SPRINGS UTILITIES TO WIRE TERMINAL BOARD.
- THERMITE WELD WIRES TO PIPE WITH A 15 GRAM CHARGE. INSTALL A COPPER SLEEVE WHEN WIRE IS #10 AWG OR SMALLER.
- THERMITE WELD CONNECTIONS AND ANY BARE METAL SHALL BE COVERED WITH PRIMERLESS HANDICAP OR CORROSION TAPE.
- THE CONTRACTOR SHALL VERIFY CONTINUITY OF ALL WIRES TO TERMINAL BOARD PRIOR TO FINAL ACCEPTANCE.
- COLOR CODE WIRE INSULATION AS SHOWN IN APPLICABLE TEST STATION DETAILS. CONNECT EACH TEST WIRE TO SEPARATE TERMINAL.
- WIRE CONFIGURATION FOR FLUSH MOUNT STYLE TEST STATIONS SIMILAR TO POST MOUNT STYLE TEST STATIONS.
- PROVIDE 18 INCHES SLACK IN TEST WIRES, MINIMUM.



TEST STATION FLUSH MOUNT

A8-9  
DATED 09/2014



CARRIER PIPE SIZE (INCH)	MIN. CASING PIPE SIZE (INCH)	MIN. CASING WALL THICKNESS (INCH)
8	12	0.250
12	16	0.312
18	22	0.375
20 & 21	24	0.500
24	30	0.500
30	36	0.625
36	42	0.625

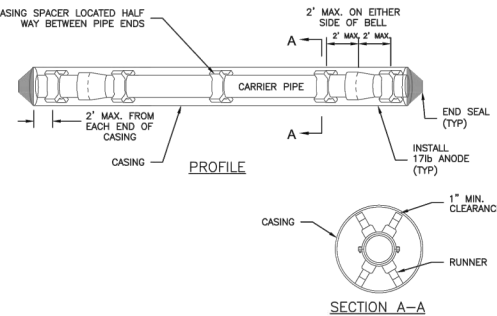
NOTES:

- THE DESIGN ENGINEER SHALL VERIFY THAT THE SIZE OF THE CASING PIPE WILL MEET THE NEEDS OF THE PROJECT.
- CASING WALL THICKNESS BASED ON E80 LOADING.
- CASING SHALL BE STEEL PIPE WITH A MINIMUM YIELD STRENGTH OF 35,000 PSI.
- SEE DETAIL DRAWING C2-3 FOR CASING SPACER DETAILS.
- WHERE THE WASTEWATER MAIN CROSSES ABOVE A WATER MAIN, SEE SECTION 2.5.F.3.
- WHERE THE WASTEWATER MAIN CROSSES UNDER A RAILWAY OR MAJOR ROADWAY, THE LENGTH OF CASING AND ITS PROPERTIES SHALL BE DETERMINED BY THE AUTHORITY HAVING JURISDICTION.



TYPICAL STEEL CASING INSTALLATION

C2-4  
DATED 5/2015



CARRIER PIPE:

- CARRIER PIPE SHALL BE CENTERED WITHIN CASING BY USE OF APPROVED CASING SPACERS. (SEE CHAPTER 4)

PLACEMENT OF SPACERS ON CARRIER PIPE:

- CASING SPACERS SHALL BE PLACED MAX. 2' FROM EACH END OF CASING AND ON EITHER SIDE OF EACH BELL. WHEN CARRIER PIPE IS PVC, CASING SPACER SHALL BE PLACED AT THE HOME MARK TO PREVENT OVER-BELLING. SPACERS SHALL ALSO BE PLACED HALF WAY BETWEEN PIPE ENDS, OR IN ACCORDANCE WITH PIPE MANUFACTURERS RECOMMENDATIONS.

END SEALS:

- END SEALS SHALL BE USED TO ENSURE A WATER TIGHT SEAL ON EITHER END OF THE CASING.

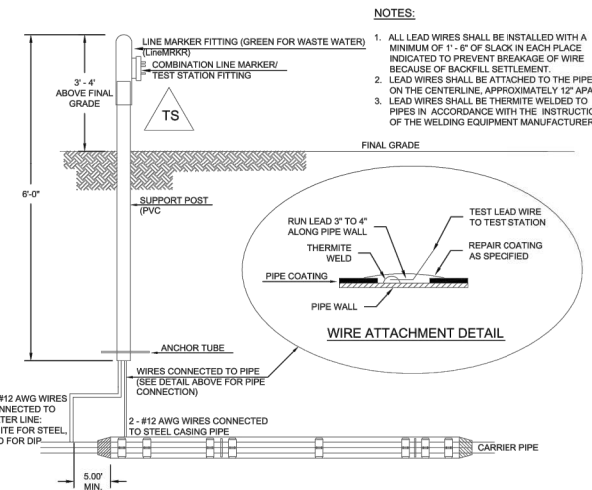
CATHODIC PROTECTION:

- CASING SHALL BE CATHODICALLY PROTECTED USING A 17 LB HIGH POTENTIAL ANODE AND AN APPROVED COATING. SEE SECTION 2.5.G.



TYPICAL STEEL CASING INSTALLATION (CONTINUED)

C2-5  
DATED 5/2015



NOTES:

- ALL LEAD WIRES SHALL BE INSTALLED WITH A MINIMUM OF 1' - 6" OF SLACK IN EACH PLACE INDICATED TO PREVENT BREAKAGE OF WIRE BECAUSE OF BACKFILL SETTLEMENT.
- LEAD WIRES SHALL BE ATTACHED TO THE PIPE ON THE CENTERLINE, APPROXIMATELY 12" APART.
- LEAD WIRES SHALL BE THERMITE WELDED TO PIPES IN ACCORDANCE WITH THE INSTRUCTIONS OF THE WELDING EQUIPMENT MANUFACTURER.

NOTES:

- THE CASING SHALL BE CATHODICALLY PROTECTED UNDER THE DIRECTION OF THE COLORADO SPRINGS UTILITIES INSPECTOR. SEE SECTION 2.5.G.
- EXAMPLE CAN VARY DUE TO SITE CONDITIONS AND COLORADO SPRINGS UTILITIES INSPECTORS' DIRECTION.
- SEE STANDARD DETAIL DRAWING C2-4 - STEEL CASING INSTALLATION.
- CONTRACTOR TO COORDINATE W/ COLORADO SPRINGS UTILITIES TO WIRE TERMINAL BOARD.
- THERMITE WELD WIRES TO PIPE W/ 15 GRAM CHARGE. INSTALL COPPER SLEEVE WHEN WIRE IS #10 AWG OR SMALLER.
- THERMITE WELD CONNECTIONS AND ANY BARE METAL SHALL BE COVERED WITH PRIMERLESS HANDICAP OR CORROSION TAPE.
- CONTRACTOR TO VERIFY CONTINUITY OF ALL WIRES TO TERMINAL BOARD PRIOR TO FINAL ACCEPTANCE.



INSTALLATION OF CATHODIC PROTECTION TEST STATION AT A CASING PIPE

C5-5  
DATED 9/2015

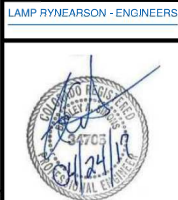
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DESIGNED BY	SAS
DATE	APRIL 24, 2017
JOB NUMBER-TASK	0416011
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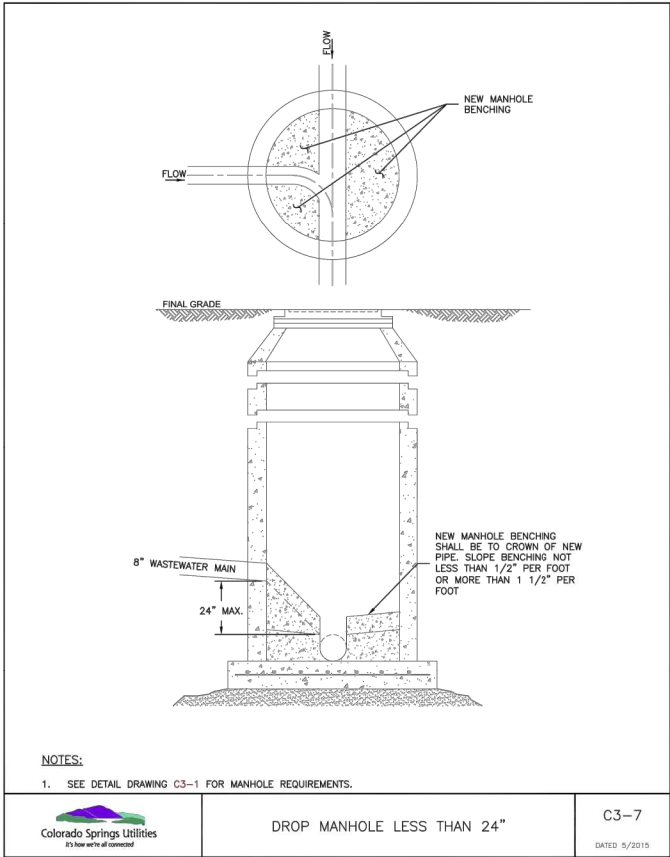
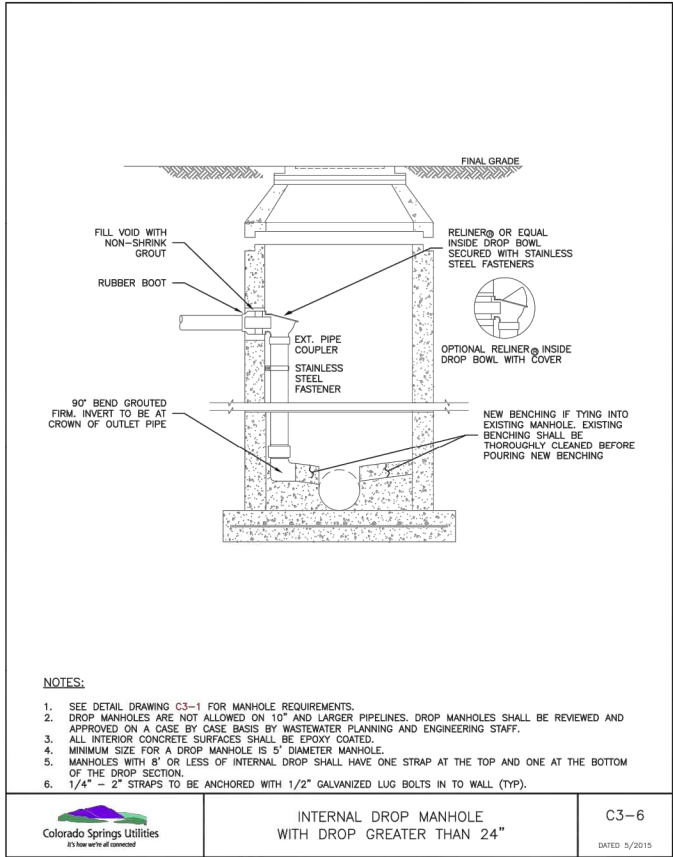
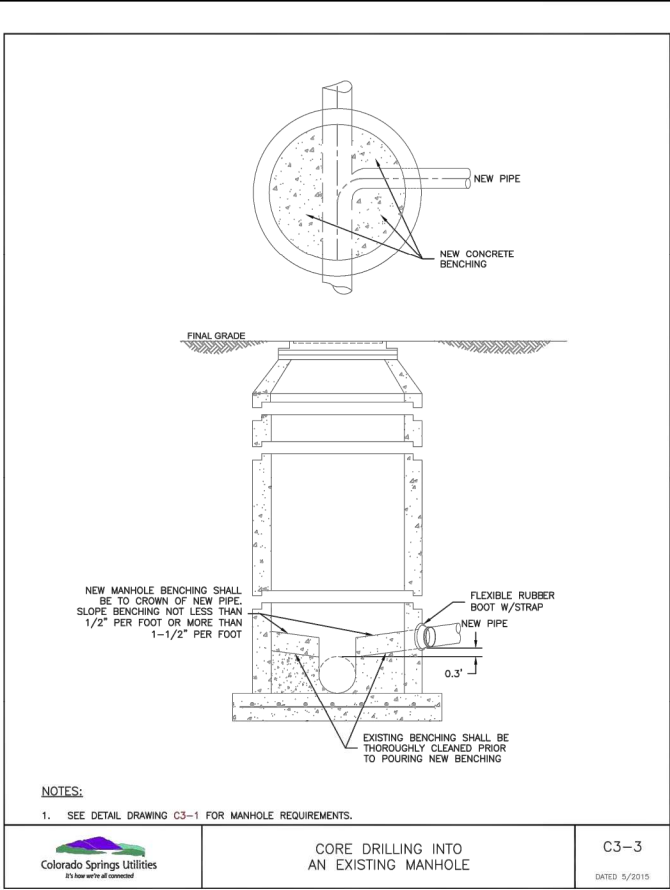
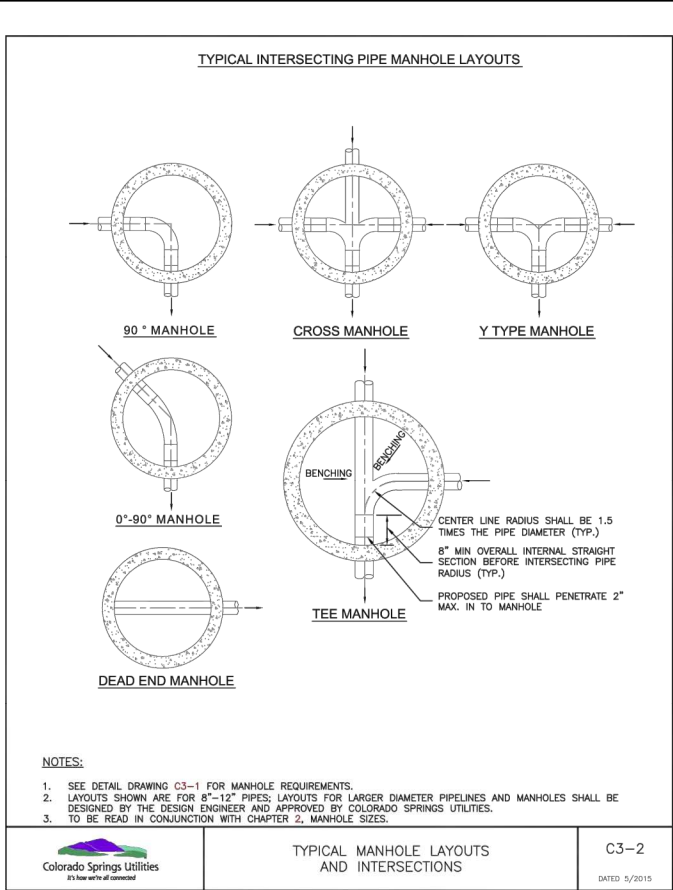
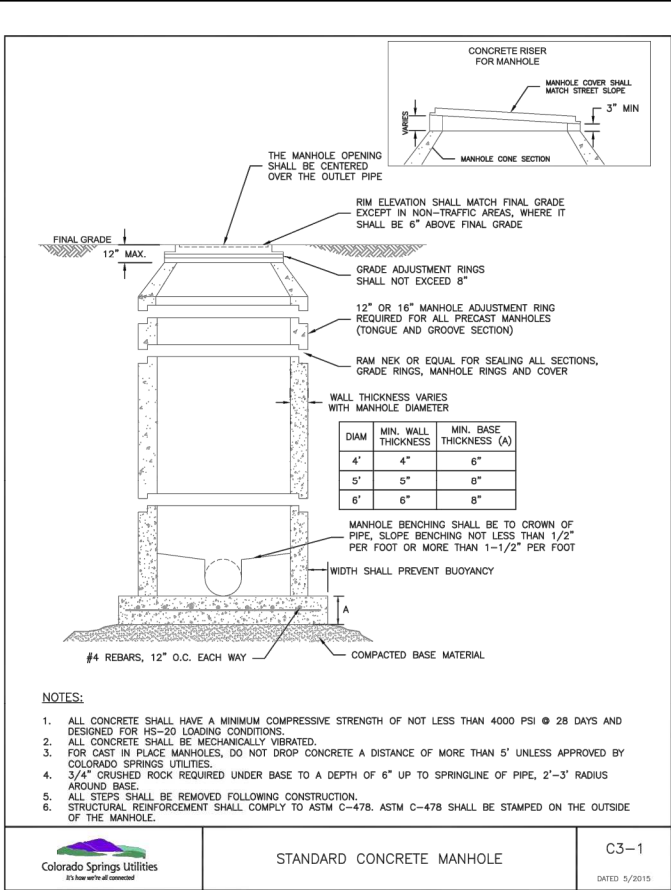
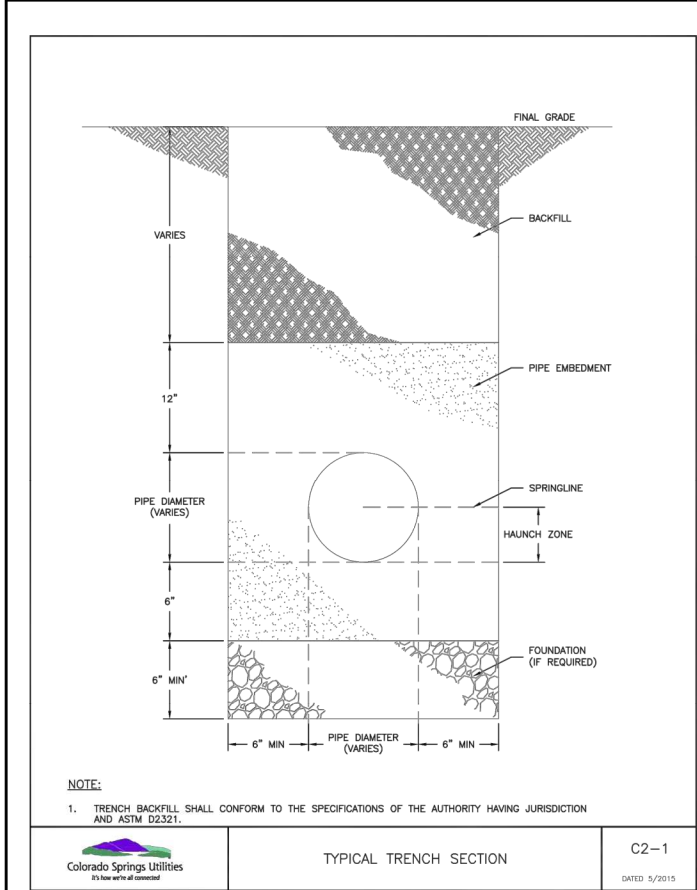
FORCE MAIN  
CONSTRUCTION DETAILS

LAMP RYNEARSON - ENGINEERS



BRADLEY A. SIMONS
34705
FM2.2

P:\\_Engineering\0416011 Sterling Ranch Lift Station Drawings\CONSTRUCTION DRAWINGS\0416011-DET.dwg, 4/27/2017, 3:51:05 PM, JASON MCNEILL, LAMP RYNEARSON & ASSOCIATES



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<b>VERSIONS</b>									
12596 West Bayaud Avenue, Suite 330 303.971.0030   P Lakewood, Colorado 80228 303.971.0071   F LRA-Inc.com / lra4water.com									
<b>LAMP RYNEARSON &amp; ASSOCIATES</b>									
STERLING RANCH LIFT STATION AND FORCE MAIN STERLING RANCH METROPOLITAN DISTRICT NO. 1									
<b>FORCE MAIN CONSTRUCTION DETAILS</b>									
LAMP RYNEARSON - ENGINEERS									
BRADLEY A. SIMONS 34705									
SHEET									
FM2.3									



Temporary and Permanent Seeding (TS/PS) EC-2

Seeding dates for the highest success probability of perennial species along the Front Range are generally in the spring from April through early May and in the fall after the first of September until the ground freezes. If the area is irrigated, seeding may occur in summer months, as well. See Table TS/PS-3 for appropriate seeding dates.

Table TS/PS-1. Minimum Drill Seeding Rates for Various Temporary Annual Grasses

Species* (Common name)	Growth Season <sup>a</sup>	Pounds of Pure Live Seed (PLS)/acre <sup>c</sup>	Planting Depth (inches)
1. Oats	Cool	35 - 50	1 - 2
2. Spring wheat	Cool	25 - 35	1 - 2
3. Spring barley	Cool	25 - 35	1 - 2
4. Annual ryegrass	Cool	10 - 15	½
5. Millet	Warm	3 - 15	½ - ¾
6. Sudangrass	Warm	5-10	½ - ¾
7. Sorghum	Warm	5-10	½ - ¾
8. Winter wheat	Cool	20-35	1 - 2
9. Winter barley	Cool	20-35	1 - 2
10. Winter rye	Cool	20-35	1 - 2
11. Triticale	Cool	25-40	1 - 2

<sup>a</sup> Successful seeding of annual grass resulting in adequate plant growth will usually produce enough dead-plant residue to provide protection from wind and water erosion for an additional year. This assumes that the cover is not disturbed or mowed closer than 8 inches.

Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1 or where access limitations exist. When hydraulic seeding is used, hydraulic mulching should be applied as a separate operation, when practical, to prevent the seeds from being encapsulated in the mulch.

<sup>b</sup> See Table TS/PS-3 for seeding dates. Irrigation, if consistently applied, may extend the use of cool season species during the summer months.

<sup>c</sup> Seeding rates should be doubled if seed is broadcast, or increased by 50 percent if done using a Brillion Drill or by hydraulic seeding.

EC-2 Temporary and Permanent Seeding (TS/PS)

Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses

Common <sup>a</sup> Name	Botanical Name	Growth Season <sup>b</sup>	Growth Form	Seeds/ Pound	Pounds of PLS/acre
<b>Alkali Soil Seed Mix</b>					
Alkali sacaton	<i>Sporobolus airoides</i>	Cool	Bunch	1,750,000	0.25
Basin wildrye	<i>Elymus cinereus</i>	Cool	Bunch	165,000	2.5
Sodar streambank wheatgrass	<i>Agropyron riparium 'Sodar'</i>	Cool	Sod	170,000	2.5
Jose tall wheatgrass	<i>Agropyron elongatum 'Jose'</i>	Cool	Bunch	79,000	7.0
Arriba western wheatgrass	<i>Agropyron smithii 'Arriba'</i>	Cool	Sod	110,000	5.5
<b>Total</b>					<b>17.75</b>
<b>Fertile Loamy Soil Seed Mix</b>					
Ephriam crested wheatgrass	<i>Agropyron cristatum 'Ephriam'</i>	Cool	Sod	175,000	2.0
Dural hard fescue	<i>Festuca ovina 'duriuscula'</i>	Cool	Bunch	565,000	1.0
Lincoln smooth brome	<i>Bromus inermis leys 'Lincoln'</i>	Cool	Sod	130,000	3.0
Sodar streambank wheatgrass	<i>Agropyron riparium 'Sodar'</i>	Cool	Sod	170,000	2.5
Arriba western wheatgrass	<i>Agropyron smithii 'Arriba'</i>	Cool	Sod	110,000	7.0
<b>Total</b>					<b>15.5</b>
<b>High Water Table Soil Seed Mix</b>					
Meadow foxtail	<i>Alopecurus pratensis</i>	Cool	Sod	900,000	0.5
Redtop	<i>Agrostis alba</i>	Warm	Open sod	5,000,000	0.25
Reed canarygrass	<i>Phalaris arundinacea</i>	Cool	Sod	68,000	0.5
Lincoln smooth brome	<i>Bromus inermis leys 'Lincoln'</i>	Cool	Sod	130,000	3.0
Pathfinder switchgrass	<i>Panicum virgatum 'Pathfinder'</i>	Warm	Sod	389,000	1.0
Alkar tall wheatgrass	<i>Agropyron elongatum 'Alkar'</i>	Cool	Bunch	79,000	5.5
<b>Total</b>					<b>10.75</b>
<b>Transition Turf Seed Mix<sup>c</sup></b>					
Ruebens Canadian bluegrass	<i>Poa compressa 'Ruebens'</i>	Cool	Sod	2,500,000	0.5
Dural hard fescue	<i>Festuca ovina 'duriuscula'</i>	Cool	Bunch	565,000	1.0
Citation perennial ryegrass	<i>Lolium perenne 'Citation'</i>	Cool	Sod	247,000	3.0
Lincoln smooth brome	<i>Bromus inermis leys 'Lincoln'</i>	Cool	Sod	130,000	3.0
<b>Total</b>					<b>7.5</b>

Temporary and Permanent Seeding (TS/PS) EC-2

Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses (cont.)

Common Name	Botanical Name	Growth Season <sup>a</sup>	Growth Form	Seeds/ Pound	Pounds of PLS/acre
<b>Sandy Soil Seed Mix</b>					
Blue grama	<i>Bouteloua gracilis</i>	Warm	Sod-forming bunchgrass	825,000	0.5
Camper little bluestem	<i>Schizachyrium scoparium 'Camper'</i>	Warm	Bunch	240,000	1.0
Prairie sandreed	<i>Calamovilfa longifolia</i>	Warm	Open sod	274,000	1.0
Sand dropseed	<i>Sporobolus cryptandrus</i>	Cool	Bunch	5,298,000	0.25
Vaughn sidecoats grama	<i>Bouteloua curtipendula 'Vaughn'</i>	Warm	Sod	191,000	2.0
Arriba western wheatgrass	<i>Agropyron smithii 'Arriba'</i>	Cool	Sod	110,000	5.5
<b>Total</b>					<b>10.25</b>
<b>Heavy Clay, Rocky Foothill Seed Mix</b>					
Ephriam crested wheatgrass <sup>d</sup>	<i>Agropyron cristatum 'Ephriam'</i>	Cool	Sod	175,000	1.5
Oahe intermediate wheatgrass	<i>Agropyron intermedium 'Oahe'</i>	Cool	Sod	115,000	5.5
Vaughn sidecoats grama <sup>e</sup>	<i>Bouteloua curtipendula 'Vaughn'</i>	Warm	Sod	191,000	2.0
Lincoln smooth brome	<i>Bromus inermis leys 'Lincoln'</i>	Cool	Sod	130,000	3.0
Arriba western wheatgrass	<i>Agropyron smithii 'Arriba'</i>	Cool	Sod	110,000	5.5
<b>Total</b>					<b>17.5</b>

<sup>a</sup> All of the above seeding mixes and rates are based on drill seeding followed by crimped straw mulch. These rates should be doubled if seed is broadcast and should be increased by 50 percent if the seeding is done using a Brillion Drill or is applied through hydraulic seeding. Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1. If hydraulic seeding is used, hydraulic mulching should be done as a separate operation.

<sup>b</sup> See Table TS/PS-3 for seeding dates.

<sup>c</sup> If site is to be irrigated, the transition turf seed rates should be doubled.

<sup>d</sup> Crested wheatgrass should not be used on slopes steeper than 6H to 1V.

<sup>e</sup> Can substitute 0.5 lbs PLS of blue grama for the 2.0 lbs PLS of Vaughn sidecoats grama.

EC-2 Temporary and Permanent Seeding (TS/PS)

Table TS/PS-3. Seeding Dates for Annual and Perennial Grasses

Seeding Dates	Annual Grasses (Numbers in table reference species in Table TS/PS-1)		Perennial Grasses	
	Warm	Cool	Warm	Cool
January 1–March 15			✓	✓
March 16–April 30	4	1,2,3	✓	✓
May 1–May 15	4		✓	
May 16–June 30	4,5,6,7			
July 1–July 15	5,6,7			
July 16–August 31				
September 1–September 30		8,9,10,11		
October 1–December 31			✓	✓

Mulch

Cover seeded areas with mulch or an appropriate rolled erosion control product to promote establishment of vegetation. Anchor mulch by crimping, netting or use of a non-toxic tackifier. See the Mulching BMP Fact Sheet for additional guidance.

Maintenance and Removal

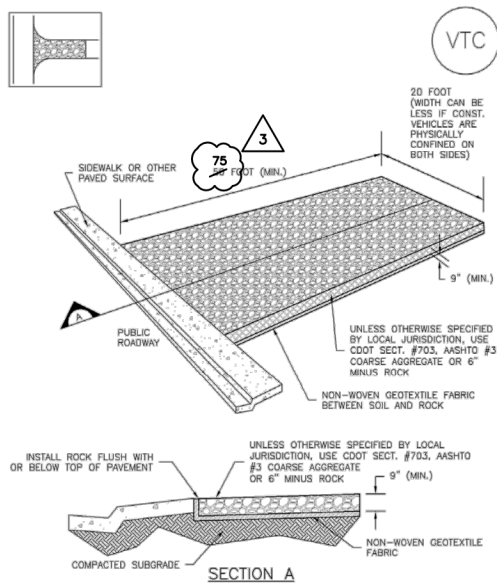
Monitor and observe seeded areas to identify areas of poor growth or areas that fail to germinate. Reseed and mulch these areas, as needed.

An area that has been permanently seeded should have a good stand of vegetation within one growing season if irrigated and within three growing seasons without irrigation in Colorado. Reseed portions of the site that fail to germinate or remain bare after the first growing season.

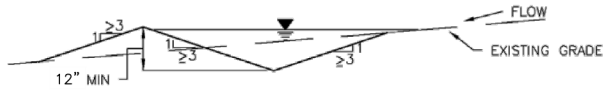
Seeded areas may require irrigation, particularly during extended dry periods. Targeted weed control may also be necessary.

Protect seeded areas from construction equipment and vehicle access.

Vehicle Tracking Control (VTC) SM-4



VTC-1. AGGREGATE VEHICLE TRACKING CONTROL



EARTH DIKE AND DRAINAGE SWALE INSTALLATION NOTES

- SEE SITE PLAN FOR:
  - LOCATION OF DIVERSION SWALE
  - TYPE OF SWALE (UNLINED, COMPACTED AND/OR LINED).
  - LENGTH OF EACH SWALE
  - DEPTH, D, AND WIDTH, W DIMENSIONS.
  - FOR ECB/TRM LINED DITCH, SEE ECB DETAIL.
  - FOR RIPRAP LINED DITCH, SIZE OF RIPRAP, D60.
- SEE DRAINAGE PLANS FOR DETAILS OF PERMANENT CONVEYANCE FACILITIES AND/OR DIVERSION SWALES EXCEEDING 2-YEAR FLOW RATE OR 10 CFS.
- EARTH DIKES AND SWALES INDICATED ON SWMP PLAN SHALL BE INSTALLED PRIOR TO LAND-DISTURBING ACTIVITIES IN PROXIMITY.
- EMBANKMENT IS TO BE COMPACTED TO 90% OF MAXIMUM DENSITY AND WITHIN 2% OF OPTIMUM MOISTURE CONTENT ACCORDING TO ASTM D698.
- SWALES ARE TO DRAIN TO A SEDIMENT CONTROL BMP.
- FOR LINED DITCHES, INSTALLATION OF ECB/TRM SHALL CONFORM TO THE REQUIREMENTS OF THE ECB DETAIL.
- WHEN CONSTRUCTION TRAFFIC MUST CROSS A DIVERSION SWALE, INSTALL A TEMPORARY CULVERT WITH A MINIMUM DIAMETER OF 12 INCHES.

EARTH DIKE AND DRAINAGE SWALE MAINTENANCE NOTES

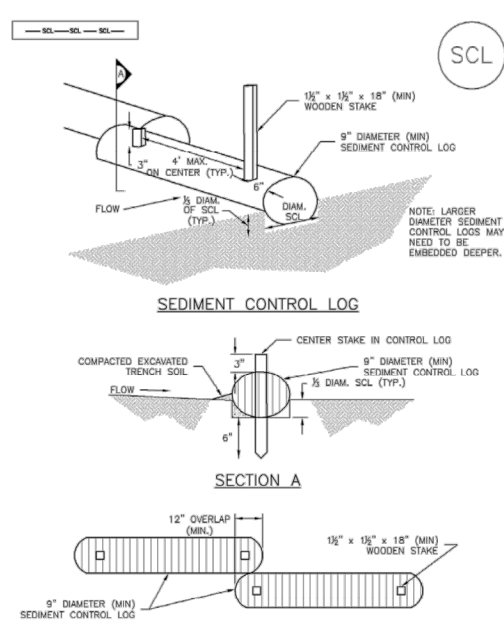
- INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- SWALES SHALL REMAIN IN PLACE UNTIL THE END OF CONSTRUCTION; IF APPROVED BY LOCAL JURISDICTION, SWALES MAY BE LEFT IN PLACE.
- WHEN A SWALE IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF COLORADO SPRINGS, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

GRADED BERM  
N.T.S

Sediment Control Log (SCL) SC-2



SEDIMENT CONTROL LOG JOINTS

SCL-1. SEDIMENT CONTROL LOG

Sediment Control Log (SCL) SC-2

SEDIMENT CONTROL LOG INSTALLATION NOTES

- SEE PLAN VIEW FOR LOCATION AND LENGTH OF SEDIMENT CONTROL LOGS.
- SEDIMENT CONTROL LOGS THAT ACT AS A PERIMETER CONTROL SHALL BE INSTALLED PRIOR TO ANY UPGRADIENT LAND-DISTURBING ACTIVITIES.
- SEDIMENT CONTROL LOGS SHALL CONSIST OF STRAW, COMPOST, EXCELISOR OR COCONUT FIBER, AND SHALL BE FREE OF ANY NOXIOUS WEED SEEDS OR DEFECTS INCLUDING RIPS, HOLES AND OBVIOUS WEAR.
- SEDIMENT CONTROL LOGS MAY BE USED AS SMALL CHECK DAMS IN DITCHES AND SWALES. HOWEVER, THEY SHOULD NOT BE USED IN PERENNIAL STREAMS OR HIGH VELOCITY DRAINAGE WAYS.
- IT IS RECOMMENDED THAT SEDIMENT CONTROL LOGS BE TRENCHED INTO THE GROUND TO A DEPTH OF APPROXIMATELY 1/3 OF THE DIAMETER OF THE LOG. IF TRENCHING TO THIS DEPTH IS NOT FEASIBLE AND/OR DESIRABLE (SHORT TERM INSTALLATION WITH DESIRE NOT TO DAMAGE LANDSCAPE) A LESSER TRENCHING DEPTH MAY BE ACCEPTABLE WITH MORE ROBUST STAKING.
- THE UPHILL SIDE OF THE SEDIMENT CONTROL LOG SHALL BE BACKFILLED WITH SOIL THAT IS FREE OF ROCKS AND DEBRIS. THE SOIL SHALL BE TIGHTLY COMPACTED INTO THE SHAPE OF A RIGHT TRIANGLE USING A SHOVEL OR WEIGHTED LAWN ROLLER.
- FOLLOW MANUFACTURERS' GUIDANCE FOR STAKING. IF MANUFACTURERS' INSTRUCTIONS DO NOT SPECIFY SPACING, STAKES SHALL BE PLACED ON 4' CENTERS AND EMBEDDED A MINIMUM OF 6" INTO THE GROUND. 3" OF THE STAKE SHALL PROTRUDE FROM THE TOP OF THE LOG. STAKES THAT ARE BROKEN PRIOR TO INSTALLATION SHALL BE REPLACED.

SEDIMENT CONTROL LOG MAINTENANCE NOTES

- INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
- FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
- WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
- SEDIMENT ACCUMULATED UPSTREAM OF SEDIMENT CONTROL LOG SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP. TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 1/2 OF THE HEIGHT OF THE SEDIMENT CONTROL LOG.
- SEDIMENT CONTROL LOG SHALL BE REMOVED AT THE END OF CONSTRUCTION, IF DISTURBED AREAS EXIST AFTER REMOVAL, THEY SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO, JEFFERSON COUNTY, COLORADO, DOUGLAS COUNTY, COLORADO, AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

DRAWN BY  
SAS  
3 - PER. EPC. COMMENTS - 06/31/2019

DESIGNED BY  
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DATE  
APRIL 24, 2017

JOB NUMBER-TASK  
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STERLING RANCH LIFT STATION AND FORCE MAIN  
STERLING RANCH METROPOLITAN DISTRICT NO. 1

LAMP RYNEARSON & ASSOCIATES

FORCE MAIN  
EROSION CONTROL DETAILS

LAMP RYNEARSON - ENGINEERS

PRELIMINARY

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