

SITE DEVELOPMENT PLAN

TO: El Paso County
FROM: Element Engineering
DATE: March 25, 2023
SUBJECT: Town of Ramah Wastewater System Improvements Site Development Plan

OWNER

Town of Ramah,
113 S. Commercial Street
Ramah, CO 80832
719-541-2163
townoframah@gmail.com

Please remove pages 1-4 and include any omitted information in the Letter of Intent.

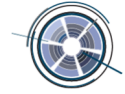
APPLICANT/CONSULTANT

Alice Arsenault, P.E.
Element Engineering, LLC
12687 W. Cedar Drive, Suite 300
Lakewood, CO 80228

The information contained in this letter shall be included on the actual plan set in a summary table, as applicable. Information that is not applicable to this type of project is not required to be included.

1.1 PROPERTY ADDRESS

The service area is located in Section 1, Township 11S, Range 61W, 6th Principal Meridian. The existing wastewater lagoon is located on 2 town-owned parcels to the northeast of the Ramah service area. The site is accessed from a dirt access road off Pikes Peak Ave. The proposed lift station location is within the town right-of-way (ROW) on Pikes Peak Ave in Ramah, CO. The adjacent street address to the row location is 13 Pikes Peak Ave, Ramah, CO 80832. There is no parcel or lot number for this location because it is part of the town right of way. The proposed location of the evaporative ponds are located on East Ramah Road, at the address of 0 E Ramah Rd, Ramah, CO 80832.



1.2 PROPERTY TAX SCHEDULE

The property tax schedule number for the proposed evaporation ponds site lot is 100000088. The property tax schedule for the existing wastewater lagoon is 1101107001 and 1101112001. There is no property tax schedule for the proposed lift station site because it is located within the town right-of-way (ROW).

1.3 LEGAL DESCRIPTION

The legal description for the proposed evaporation ponds is "SW4SW4 W/MR SEC 06-11-60". The legal description is for the existing lagoon pond is "THAT PART OF BLK 22 RAMAH ADD 1 LY IN NW4NE4 SEC 1-11-61" for Parcel 1 and "ALL BLK 21 EX LOT 9 RAMAH ADD 1" for Parcel 2. There is not legal description for the proposed lift station location because it is located within the town right-of-way.

1.4 LOT/PARCEL SIZE

The lot/parcel size for the existing wastewater pond is 1.84 acres for the first lot and 2.37 acres for the second lot. The lot/parcel size for the proposed evaporation ponds is 38.22 acres. There is no legal lot or parcel for the proposed lift station location because it is to be located within the town right-of-way. The total approximate area for the proposed lift station is 1,800 square feet,

1.5 LOT AREA COVERAGE

The existing wastewater pond does not contain any buildings or structures aside from the influent manhole and the pond itself. The pond coverage for parcel 1 is 0.785 acres out of 1.84 for a total coverage of 0.43 or 43 percent. The pond coverage for parcel 2 is 0.1 acres out of 2.37 for a total coverage 0.04 or 4 percent.

There are no proposed structures or buildings for the evaporation ponds site with the exception of the influent bar screen and influent manhole. Those are to total less than 150 square feet in total. The proposed evaporation ponds total surface area will be approximately 8.5 acres with a total 10.3 acres including the berms slopes. The total pond coverage for the proposed evaporation ponds is 10.3 acres out of 38.22 for a total area coverage of 0.27 or 27 percent.

The only proposed structure for the lift station site are the lift station vault, meter and valve vault and the overflow tank access riser hatch. The total square footage of all three of those structures will be approximately 10 square feet. The area coverage for the proposed lift station vault will be less than one percent.

1.6 EXISTING & PROPOSED LAND USE

The current land use for the existing wastewater ponds in Ramah is zoned as agricultural and is used as municipal land for the wastewater ponds. After the ponds are decommissioned, there will be no new land uses for the property. The town will either retain the property or put it into conversation because of its location within the jurisdictional floodplain.



The current land for the proposed evaporative ponds site is zoned as agricultural and has previously been used for agriculture, mainly hay production. The proposed use will be municipal for the evaporation ponds. The current land for the proposed lift station is zoned as rural residential. The land use in the area will mainly stay the same with the proposed lift station aside for the small, 1,800 square foot area for the lift station that will be in municipal use for the lift station.

1.7 TOTAL GROSS BUILDING FOOTAGE

No buildings are proposed for the lift station or evaporation ponds. The only structures for the proposed project include the new sewer manhole on Pikes Peak Ave, the lift station vault, the meter vault, the influent bar screen, and the influent manhole for the evaporation ponds. The total square footage of these structures equals approximately 200 square feet.

1.8 SURFACE TYPE PERCENTAGE

The current surface type for the existing wastewater pond in Ramah is all undeveloped, grass surface with the exception of the wastewater pond itself. There is no impervious surface in this area.

The current surface type for the proposed lift station is majority undeveloped, grass surface. A small portion is gravel road shoulder surface, but the percentage given the total square footage of the lift station area is negligible. There is no impervious surface at the lift station area.

The current surface type for the proposed evaporation ponds area is all undeveloped, grass surface. The surface type for the area is not anticipated to change after the project with the exception of the evaporation pond areas themselves. There is no existing or proposed impervious surface at the evaporation ponds.

1.9 DENSITY AND DWELLING UNITS

The total number of dwelling units in the Ramah service area is 65 and with a total population of approximately 130 people. With a total service area of approximately 0.25 square miles, the dwelling unit density is 260 per square mile and the population density is 520 per square mile. The unincorporated areas surrounding Ramah are not part of the service area and are much less densely inhabited than the town limits.

1.10 PARKING COMPUTATIONS

Parking at the proposed lift station location will be limited to a single town maintenance staff vehicle. Maintenance and operations visits required for the lift station will be infrequent and average 1-2 visits per week.

Parking at the proposed evaporation ponds site will be limited to a single town maintenance staff vehicle. Maintenance and operations visits required for the evaporation's ponds will be infrequent and average 1-2 visits per week.



1.11 GENERAL INFORMATION

The proposed lift station in the project will be located along the town right-of-way on Pikes Peak Ave in Ramah, CO in the Southwest $\frac{1}{4}$ of the Northeast $\frac{1}{4}$ of Section 1, Township 11 South, Range 61 West of the 6th Principle Meridian, El Paso County, Colorado.

The proposed lift station will only take up a small portion of the town right-of-way outside of the roadway on Pikes Peak Ave, approximately 1,800 square feet in total area of the site. The area in the incorporated parts of Ramah including the right-of-way is zoned as incorporated rural residential (RR-5). The lift station will be located across from the entrance to the access road to the existing wastewater pond. The existing site for the lift station is undeveloped right-of-way.

The existing wastewater facility includes an influent septic tank and wastewater lagoon located just outside of the incorporated town limits. The proposed project also includes the new evaporative ponds facility that will replace the existing wastewater lagoon. The proposed evaporative ponds are to be located at a separate location at 0 East Ramah Road south of the town limits in lot 7 Section 6, Township 11 South, Range 60 West of the 6th Principal Meridian. Approximately 4,700 feet of 3-inch HDPE force main will be installed to convey the collection system flows diverted to the lift station to the proposed evaporative ponds.

The proposed evaporation ponds facility will include an influent bar screen constructed in a concrete channel with a bypass channel. It will also include an 8-foot diameter concrete flow diversion structure that will split flow equally to the three evaporative ponds. The ponds will be graded to have total depth of 5 feet. The only above grade structures at the ponds will be top of the buried influent bar screen and splitter structure.

The proposed lift station will include the buried wet well structure, influent manhole, meter and valve vault and buried overflow tank. The only above grade infrastructure will be access hatches and electrical/control equipment. Additionally, approximately 4,700 feet of buried pressure pipe will be installed to convey the wastewater from the lift station to the new evaporative ponds.

EPC STORMWATER REVIEW COMMENTS
IN ORANGE BOXES WITH BLACK TEXT

SITE DEVELOPMENT PLAN

TOWN OF RAMAH

WASTEWATER SYSTEM IMPROVEMENTS

0.015 MGD WASTEWATER TREATMENT PLANT

See CD's for Stormwater Comments

SECTION 1, TOWNSHIP 11S, RANGE 61W, 6TH PRINCIPAL MERIDIAN AND SECTION 1, TOWNSHIP 11S, RANGE 61W, 6TH P.M.

WWTP SITE APPROVAL NO. 06505

LIFT STATION SITE APPROVAL NO. 06507

Please include property parcel numbers. If parcel numbers are not available please add a note to the cover sheet stating that.

Please remove all CD and GEC Plan sheets from the site development plan. You can submit the GEC Plan separately or together with the CD set. Recommend submitting with CD set.

PREPARED FOR

TOWN OF RAMAH
CINDY TOMPKINS, TOWN ADMINISTRATOR
719.541.2163
113 S. COMMERCIAL STREET
RAMAH, CO 80832

EMERGENCY CONTACT

CINDY TOMPKINS, TOWN ADMINISTRATOR
719.541.2163

CIVIL ENGINEERING

ALICE M. ARSENAULT, P.E.
P.E. NO. 53350
ELEMENT ENGINEERING, LLC
12687 W. CEDAR DR., SUITE 300
LAKEWOOD, CO 80228
303.981.0453

ELECTRICAL ENGINEERING

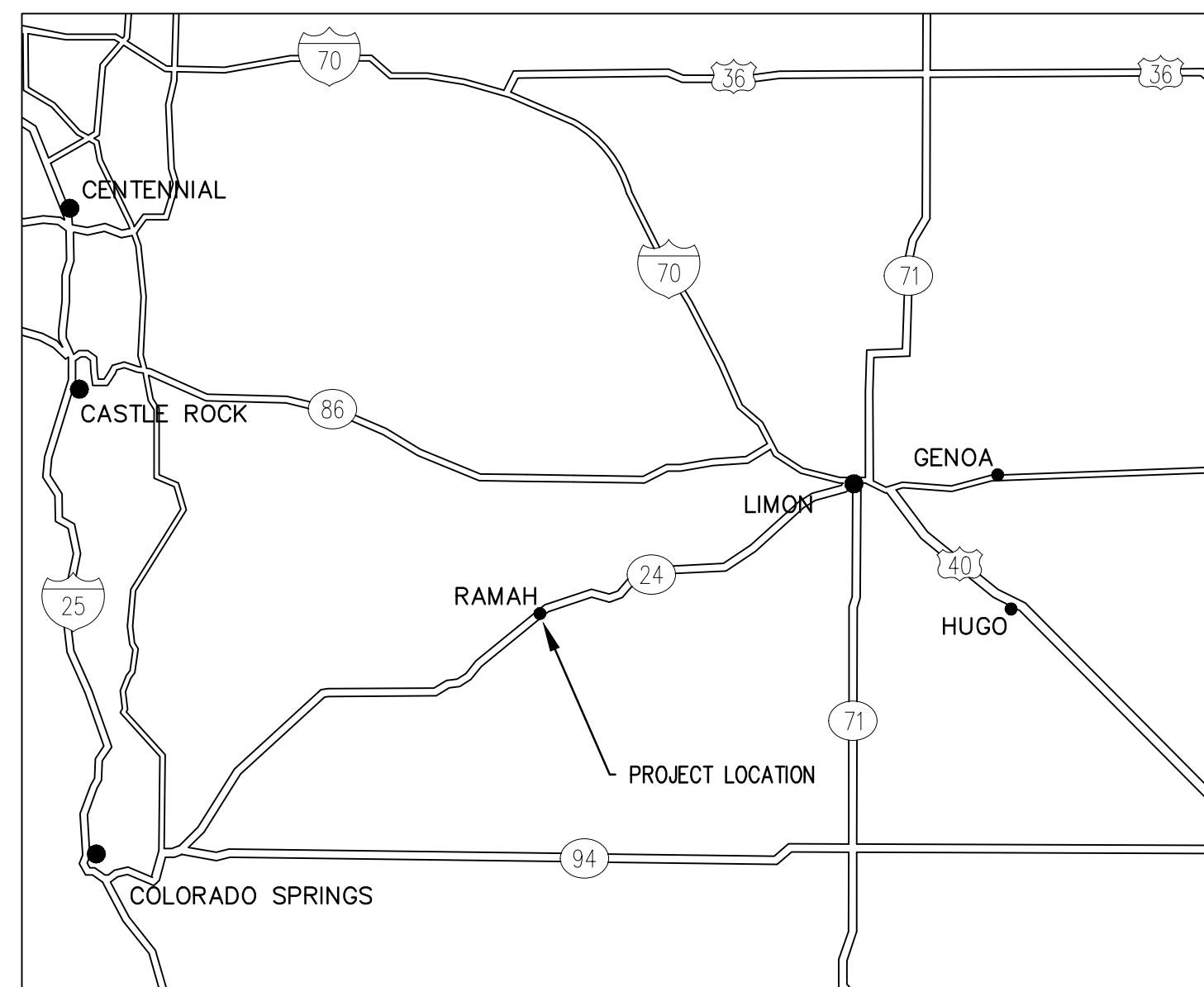
CRAIG TURNER, P.E.
P.E. NO. 45462
EV STUDIO
5335 W 48TH AVE, STE 300
DENVER, CO 80212
303.670.7242

STRUCTURAL ENGINEERING

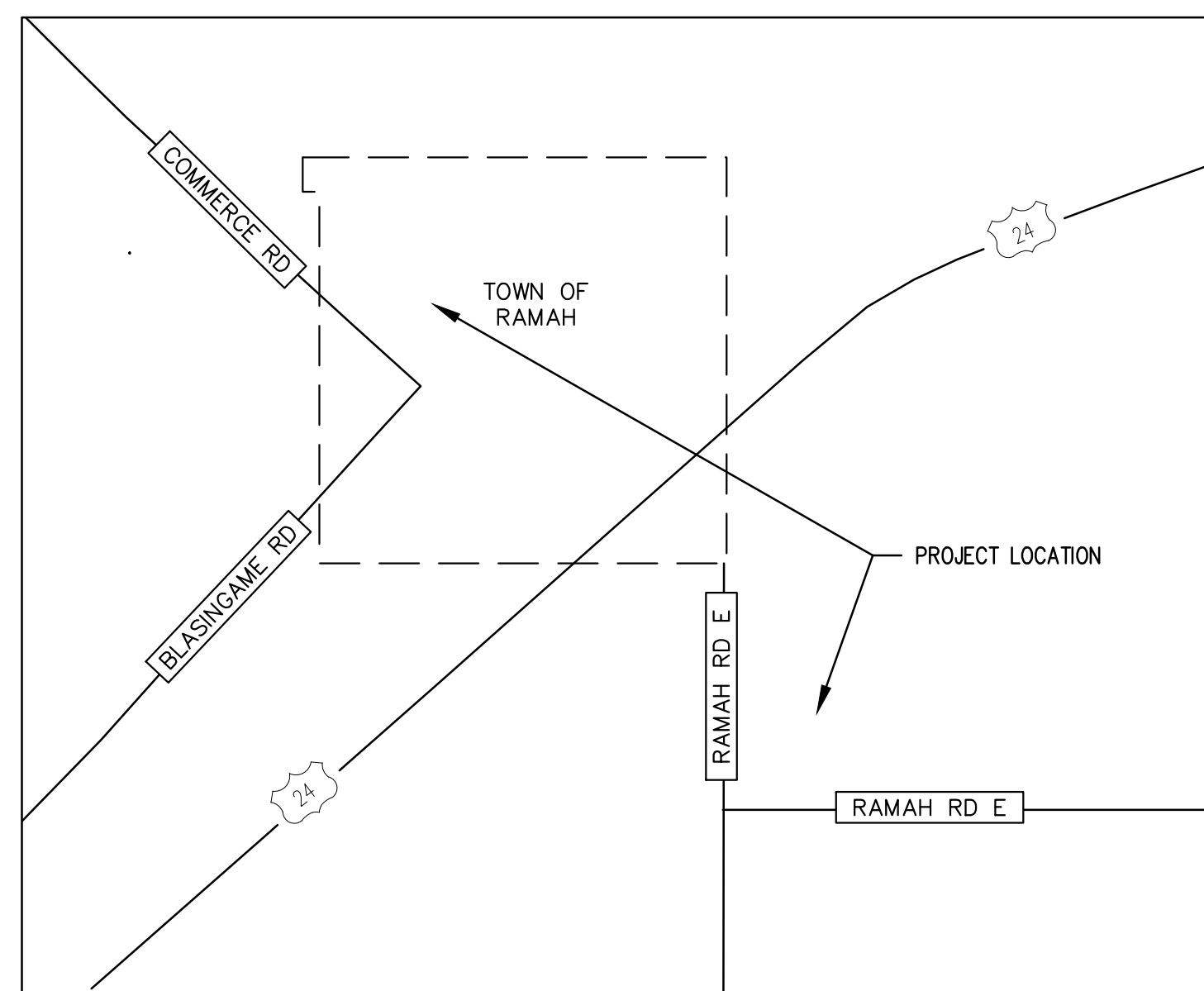
KATELYN WAGER, P.E.
P.E. NO. 54327
EV STUDIO
5335 W 48TH AVE, STE 300
DENVER, CO 80212
303.670.7242

UTILITIES

MOUNTAIN VIEW ELECTRIC COMPANY – ELECTRIC
11140 E. WOODMEN AVE.
FALCON, CO 80831
719-495-2283



LOCATION MAP
NTS



VICINITY MAP
NTS

SHEET INDEX

- CIVIL
- C1 COVER
- C2 GENERAL NOTES
- C3 GENERAL NOTES
- C4 PROCESS FLOW DIAGRAM & HYDRAULIC PROFILE
- C5 TOPOGRAPHIC SURVEY
- C6 TOPOGRAPHIC SURVEY
- C7 PROPOSED IMPROVEMENTS, CONSTRUCTION PHASING, AND DECOMMISSIONING
- C8 LIFT STATION YARD PIPING
- C9 LIFT STATION SITE PLAN
- C10 LIFT STATION DETAILS
- C11 LIFT STATION NOTES & BALLASTING
- C12 OVERFLOW DETAILS
- C13 FORCE MAIN PLAN & PROFILE 0+00 – 6+00
- C14 FORCE MAIN PLAN & PROFILE 6+00 – 16+00
- C15 FORCE MAIN PLAN & PROFILE 16+00 – 27+00
- C16 FORCE MAIN PLAN & PROFILE 27+00 – 38+00
- C17 FORCE MAIN PLAN & PROFILE 38+00 –46+75
- C18 INFLUENT SCREEN DETAILS
- C19 SPLITTER BOX & POND OVERFLOW PIPING
- C20 HORIZONTAL CONTROL & GRADING
- C21 POND GRADING PROFILES
- C22 CUT & FILL PLAN
- C23 POND DETAILS
- C24 DRAINAGE SWALE PLAN & PROFILE
- C25 GENERAL DETAILS
- C26 GENERAL DETAILS
- C27 GENERAL DETAILS
- C28 EROSION CONTROL DETAILS
- C29 EROSION CONTROL DETAILS

The following note should be added to all site development plans or non-residential site plans, as applicable, prior to PCD approval:
The parties responsible for this plan have familiarized themselves with all current accessibility criteria and specifications and the proposed plan reflects all site elements required by the applicable ADA design standards and guidelines as published by the United States Department of Justice. Approval of this plan by El Paso County does not assure compliance with the ADA or any regulations or guidelines enacted or promulgated under or with respect to such laws.

EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT DIRECTOR _____ DATE _____



NO.	REVISIONS DESCRIPTION	DATE	BY

WASTEWATER TREATMENT PLANT
SITE DEVELOPMENT PLAN
TOWN OF RAMAH
113 S. COMMERCIAL STREET
RAMAH, CO 80832

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF
ELEMENT ENGINEERING, LLC
DATE
OCTOBER 2022
JOB NUMBER
0043.0001
SCALE
NTS
EDITION

PERMITTING

SHEET
C1 OF C29

Please add "PPR2325" to the bottom right-hand corner of every sheet.

GENERAL NOTES

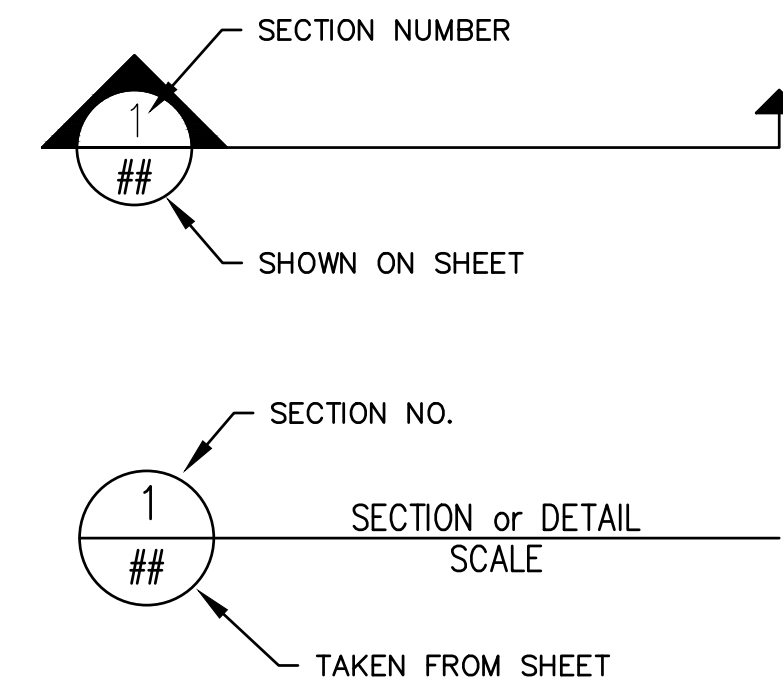
- ALL WORK TO BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
- THE CONTRACTOR IS TO PROVIDE A DETAILED CONSTRUCTION SCHEDULE DELINEATING CONSTRUCTION MILESTONES AND THE NATURE OF WORK BEING PERFORMED. THE SCHEDULE SHALL DETAIL ACTIVITIES FROM THE START OF CONSTRUCTION THROUGH STARTUP. THIS SCHEDULE SHALL BE PROVIDED TO THE ENGINEER TWO (2) WEEKS PRIOR TO CONSTRUCTION AND UPDATED WEEKLY.
- THE CONTRACTOR SHALL PERFORM ALL WORK NECESSARY TO COMPLETE THE PROJECT IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DRAWINGS INCLUDING SUCH INCIDENTALS AS MAY BE NECESSARY TO MEET APPLICABLE AGENCY REQUIREMENTS AND PROVIDE A COMPLETED PROJECT.
- THE CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOR AND EQUIPMENT AND PERFORM WORK SHOWN OR IMPLIED AS NECESSARY FOR THE COMPLETED LIFT STATION, PIPING, AND EVAPORATION PONDS, READY FOR USE.
- THE ENGINEER HAS ATTEMPTED TO LOCATE EXISTING SUBSURFACE UTILITIES. HOWEVER, SOME MAY EXIST THAT ARE NOT SHOWN. THE CONTRACTOR SHALL POTHOLE AS NECESSARY AND EXERCISE CARE IN HIS WORK SO AS TO AVOID DAMAGE TO ANY UTILITIES. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING. ALL DIMENSIONS, ELEVATIONS, AND LOCATIONS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO BEGINNING THE WORK.
- ANY SUBSURFACE CONDITIONS ENCOUNTERED THAT ARE UNUSUAL OR DIFFERENT THAN THOSE INDICATED BY THE ENGINEER SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.
- CONTRACTOR SHALL OBTAIN, AT HIS OWN EXPENSE, ALL PERMITS REQUIRED OF THIS WORK AND SHALL FAITHFULLY ADHERE TO THE ALL PERMIT REQUIREMENTS.
- TEMPORARY AND PERMANENT EROSION CONTROL STRUCTURE METHODS SHALL BE IN ACCORDANCE WITH COUNTY REGULATIONS AND ARE TO BE UTILIZED DURING CONSTRUCTION.
- ALL EROSION CONTROL STRUCTURES SHOWN OR AS REQUIRED DURING CONSTRUCTION SHALL BE CONTINUOUSLY MAINTAINED THROUGH WARRANTY PERIOD AND UNTIL RE-VEGETATION TAKES HOLD.
- CONTRACTOR SHALL CLEAN UP, SEED, AND RESTORE DISTURBED AREAS IMMEDIATELY UPON COMPLETION OF THE WORK IN THE AFFECTED AREA.
- ALL EXISTING FACILITIES SHALL BE MAINTAINED IN-PLACE BY THE CONTRACTOR UNLESS OTHERWISE SHOWN OR DIRECTED. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO SUPPORT, MAINTAIN, OR OTHERWISE PROTECT EXISTING UTILITIES AND OTHER FACILITIES AT ALL TIMES DURING CONSTRUCTION. CONTRACTOR TO LEAVE EXISTING FACILITIES IN AN EQUAL OR BETTER-THAN-ORIGINAL CONDITION.
- THE CONTRACTOR SHALL ERECT AND MAINTAIN BARRICADES, WARNING SIGNS, CONES IN ACCORDANCE WITH STATE, LOCAL AND FEDERAL GUIDELINES TO ENSURE THE SAFETY OF WORKERS AND THE PUBLIC. ALL BARRICADES, SIGNS SHALL BE IN PLACE PRIOR TO THE BEGINNING OF ANY CONSTRUCTION ACTIVITY.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN APPROVAL FOR A TRAFFIC CONTROL PLAN. THE TRAFFIC CONTROL PLAN MUST BE SUBMITTED AND APPROVED BY COUNTY AND THE OWNER'S REPRESENTATIVE.
- UNLESS OTHERWISE GRANTED PERMISSION BY THE OWNER IN WRITING, THE CONTRACTOR MUST ALLOW ACCESS TO ALL PROPERTIES FOR BOTH RESIDENTS AND EMERGENCY VEHICLES.
- THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE CLEANLINESS AND SAFETY OF ALL ROADWAYS ADJACENT TO THE PROJECT SITE. IF AT ANY TIME, THESE ROADWAYS ARE FOUND TO BE DANGEROUS OR NOT PASSABLE DUE TO DEBRIS OR MUD, THE COUNTY MAY SHUT THE PROJECT DOWN.
- IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE ENGINEER OF ANY PROBLEM IN CONFORMING TO THE APPROVED PLANS FOR ANY ELEMENT OF THE PROPOSED IMPROVEMENTS PRIOR TO ITS CONSTRUCTION.
- BLUE STAKES - THE CONTRACTOR SHALL CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO AND THE FACILITY OPERATOR FOR LOCATION OF UNDERGROUND UTILITIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION, AS WELL AS ANY INDEPENDENT LOCATOR FOR PRIVATE LINES.
- THE CONTRACTOR SHALL NOTIFY THE INSPECTOR AT LEAST 48 HOURS PRIOR TO ANY DESIRED INSPECTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER 48 HOURS PRIOR TO THE START OF CONSTRUCTION.
- SURVEY MONUMENTS MUST BE SET WITHIN 60 DAYS OF COMPLETION OF THE PROJECT.
- SERVICE TRENCHES AND UTILITY MAIN TRENCHES SHALL BE COMPACTED THROUGHOUT THE DEPTH OF THE TRENCH PER THE SPECIFICATIONS.
- THE CONTRACTOR SHALL MAINTAIN ONE COMPLETE SET OF APPROVED DRAWINGS ON THE CONSTRUCTION SITE AT ALL TIMES WHEREON HE WILL RECORD ANY APPROVED DEVIATIONS IN THE CONSTRUCTION FROM THE APPROVED DRAWINGS AS WELL AS THE LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES. THESE FIELD RECORD DRAWINGS SHALL BE KEPT UP TO DATE AT ALL TIMES AND SHALL BE AVAILABLE FOR INSPECTION BY THE OWNER'S REPRESENTATIVE UPON REQUEST.
- UPON COMPLETION OF CONSTRUCTION AND PRIOR TO INITIAL ACCEPTANCE OF THE WORK, THE CONTRACTOR SHALL SUBMIT A CLEAN SET OF FIELD RECORD DRAWINGS CONTAINING ALL AS-BUILT INFORMATION TO THE ENGINEER. ALL INFORMATION SHOWN ON THE CONTRACTOR'S FIELD RECORD DRAWINGS SHALL BE SUBJECT TO VERIFICATION BY THE ENGINEER. IF SIGNIFICANT ERRORS OR DEVIATIONS ARE NOTED BY THE ENGINEER, AN AS-BUILT SURVEY PREPARED AND STAMPED BY A REGISTERED PROFESSIONAL LAND SURVEYOR SHALL BE COMPLETED AT THE CONTRACTOR'S EXPENSE.

- ALL SUBMITTAL RECORDS ARE TO BE KEPT ONSITE AS WELL AS ALL DAILY INSPECTION REPORTS, INCLUDING, BUT NOT LIMITED TO, COMPACTION TESTS, CONCRETE TESTS, ETC.
- MEGALUGS AND CONCRETE THRUST BLOCKS WILL BE REQUIRED FOR ALL MAIN LINES.
- TRACER WIRE IS REQUIRED ON ALL PIPES. TRACER WIRE SHALL BE 10 GAUGE DIRECT BURY SOLID SINGLE STRAND COPPER WIRE WITH TEST STATIONS AS SHOWN ON THE PLANS.
- ALL BOLTS FOR ABOVE GRADE FITTINGS SHALL BE ASTM 316 STAINLESS STEEL.
- CONTRACTOR SHALL HAUL OFF AND DISPOSE OF ANY EXCESS SPOIL MATERIAL, ANY MISCELLANEOUS DEBRIS, AND ANY STRUCTURES, PIPING OR OTHER DEBRIS CALLED OUT TO BE DEMOLISHED AT HIS OWN EXPENSE. ALL MATERIAL MUST BE DISPOSED OF IN AN APPROVED OFFSITE LOCATION.
- PIPE, FITTINGS, AND ACCESSORIES SHALL BE HANDLED IN SUCH A MANNER THAT WILL ENSURE INSTALLATION IN SOUND, UNDAMAGED CONDITION. EQUIPMENT, TOOLS, AND METHODS USED IN HANDLING AND INSTALLING PIPE AND FITTINGS SHALL NOT DAMAGE THE PIPE AND FITTINGS.
- PRECAUTIONS SHALL BE TAKEN TO PREVENT FOREIGN MATERIAL FROM ENTERING THE PIPE DURING INSTALLATION. DEBRIS, TOOLS, CLOTHING, OR OTHER OBJECTS SHALL NOT BE PLACED IN OR ALLOWED TO ENTER THE PIPE. END OF LINES TO BE PLUGGED TO PREVENT DEBRIS OR ANIMALS FROM ENTERING PIPE.
- CUTTING SHALL BE DONE IN A NEAT MANNER, WITHOUT DAMAGE TO THE PIPE OR THE LINING. CUTS SHALL BE SMOOTH, STRAIGHT, AND AT RIGHT ANGLES TO THE PIPE AXIS. AFTER CUTTING, THE ENDS OF THE PIPE SHALL BE DRESSED WITH A FILE OR POWER GRINDER TO REMOVE ALL ROUGHNESS AND SHARP EDGES. THE CUT ENDS OF PUSH-ON JOINT PIPE SHALL BE SUITABLY BEVELED.
- NO DEFLECTION SHALL BE PERMITTED ON INTERIOR PIPE AND FITTINGS.
- DIAMETRICALLY OPPOSITE NUTS SHALL BE TIGHTENED PROGRESSIVELY AND EVENLY. FINAL TIGHTENING SHALL BE DONE WITH A TORQUE LIMITING WRENCH SET FOR THE TORQUE RECOMMENDED BY THE MANUFACTURER FOR ALL FITTINGS AND SERVICE SADDLES.
- BEFORE THE JOINT IS ASSEMBLED, THE FLANGE FACES SHALL BE THOROUGHLY CLEANED OF ALL FOREIGN MATERIAL WITH A POWER WIRE BRUSH. THE GASKET SHALL BE CENTERED AND THE CONNECTING FLANGES DRAWN UP WATERTIGHT WITHOUT UNNECESSARY STRESSING OF THE FLANGES. ALL BOLTS SHALL BE TIGHTENED IN A PROGRESSIVE DIAMETRICALLY OPPOSITE SEQUENCE USING TORQUE WRENCHES AT SETTINGS RECOMMENDED BY THE MANUFACTURER. WHERE DISSIMILAR FLANGES ARE CONNECTED, AN INSULATING CONNECTION SHALL BE PROVIDED.
- ALL JOINTS SHALL BE WATERTIGHT AND FREE FROM LEAKS. EACH LEAK WHICH IS DISCOVERED WITHIN THE CORRECTION PERIOD STIPULATED IN THE GENERAL PROVISIONS SHALL BE REPAIRED BY AND AT THE EXPENSE OF THE CONTRACTOR.
- ALL CONTRACTOR INSTALLED PIPE, FITTINGS, VALVES, PIPE JOINTS, AND OTHER MATERIALS WHICH ARE FOUND TO BE DEFECTIVE SHALL BE REMOVED AND REPLACED WITH NEW AND ACCEPTABLE MATERIALS, AND THE AFFECTED PORTION OF THE PIPING RETESTED BY AND AT THE EXPENSE OF THE CONTRACTOR.
- FLEXIBLE COUPLINGS AND FLANGE ADAPTERS SHALL BE DESIGNED TO RELIEVE STRESS IN PIPELINES DUE TO THERMAL EXPANSION/CONTRACTION, DIFFERENTIAL SETTLEMENT OR MISALIGNMENT AND MECHANICAL VIBRATION. FLEXIBLE COUPLINGS SHALL CONSIST OF A SLEEVE WHICH SHALL FIT OVER THE ENDS OF THE TWO PIPE SECTIONS TO BE JOINED. THE COUPLING SHALL FORM A WATER TIGHT SEAL BY COMPRESSING RESILIENT WEDGE-SHAPED GASKETS BETWEEN THE ENDS OF THE SLEEVE AND THE PIPE SECTIONS. THE GASKETS SHALL BE COMPRESSED BY TWO RETAINER RINGS BOLTED TO ONE ANOTHER ON THE OUTSIDE OF THE COUPLING SLEEVE. FLANGE ADAPTERS SHALL BE EQUIVALENT TO FLEXIBLE COUPLINGS EXCEPT THAT ONE RETAINER RING AND GASKET SHALL BE REPLACED WITH A FLANGED CONNECTION ON THE COUPLING SLEEVE.
- ALL VALVES SHALL HAVE THE MANUFACTURER AND SIZE OF THE VALVE VISIBLY CAST ON THE BODY OR ON A PLATE ATTACHED TO THE BODY OF THE VALVE. VALVES AND REQUIRED OPERATING APPURTENANCES SHALL BE THE PRODUCT OF THE SAME MANUFACTURER. VALVE SEALS SHALL BE ABLE TO PROVIDE TIGHT CLOSURE AND PREVENT METAL-TO-METAL CONTACT. VALVES SHALL OPEN RIGHT.
- VALVE COMPONENTS SHALL WITHSTAND THE ENVIRONMENTAL CONDITIONS AND PROVIDE CONTINUOUS TROUBLE-FREE SERVICE.
- ALL MATERIALS AND WORKMANSHIP FOR SANITARY SEWER CONSTRUCTION SHALL CONFORM TO THE LATEST LINCOLN COUNTY STANDARDS AND SANITARY SEWER CONSTRUCTION DETAILS AND TECHNICAL SPECIFICATIONS, CDPHE AND ALL OTHER APPLICABLE AGENCIES.
- ALL DIRECT BURY SEWER MAINS SHALL BE PVC, ASTM D-3034, SDR35 OR APPROVED EQUAL, UNLESS OTHERWISE NOTED.
- SEWER LINES SHALL BE 10 FEET FROM WATER LINES EXCEPT WHEN CROSSING EACH OTHER. FOR SEWER LINES THAT CROSS LESS THAN 1 1/2 FEET VERTICALLY FROM WATER LINES, THE CLOSEST SANITARY SEWER JOINT SHALL BE A MINIMUM OF 6 FEET FROM THE CROSSING.
- ALL MANHOLES SHALL BE WATER TIGHT PRECAST CONCRETE, A MINIMUM OF 48 INCH IN DIAMETER WITH CONCENTRIC CONE, 24 INCH CAST IRON RING (8" DEPTH) AND COVER, UNLESS OTHERWISE SPECIFIED. CONCRETE ADJUSTMENT RINGS SHALL BE USED FOR ADJUSTMENT TO MATCH FINAL SURFACE ELEVATIONS AND SET IN MASTIC TO OBTAIN A WATER TIGHT SEAL. CONCRETE ADJUSTMENT RINGS SHALL BE 4" MINIMUM IN DEPTH TO ELIMINATE MULTIPLE JOINTS.
- SEWER RIM ELEVATIONS AND INVERTS SHOWN ARE APPROXIMATE ONLY AND ARE NOT TO BE TAKEN AS FINAL ELEVATIONS.
- THE CONTRACTOR TO VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL TIE IN POINTS AND INVERTS PRIOR TO CONSTRUCTION AND PROVIDE THE DATA TO THE TOWN ENGINEER.
- PIPE BEDDING SHALL BE CLASS "B" AND SHALL CONFORM TO ASTM C-33 OR

- D-448 GRADATION NO. 6 OR NO. 67. SQUEEGEE BEDDING IS PREFERRED. BEDDING DEPTH SHALL BE 6" UNDER AND AROUND THE SIDES OF THE PIPE AND 12" OVER THE PIPE. CONSOLIDATION IN PIPE ZONE SHALL BE BY HAND TAMPING.
- AT LEAST 5 DAYS PRIOR TO THE START OF CONSTRUCTION, A PRE-CONSTRUCTION MEETING WILL BE HELD AT THE TOWN'S OFFICE AND ATTENDED BY THE CONTRACTOR AND REPRESENTATIVES OF THE OTHER APPROVING AGENCIES. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE TOWN ENGINEER TO SCHEDULE THIS MEETING.
- THE CONTRACTOR WILL IDENTIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR WILL REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY AND PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL MAINTAIN ONE COMPLETE SET OF APPROVED DRAWINGS ON THE CONSTRUCTION SITE AT ALL TIMES WHEREON HE WILL RECORD ANY APPROVED DEVIATIONS IN THE CONSTRUCTION FROM THE APPROVED DRAWINGS AS WELL AS THE LOCATIONS AND DEPTHS OF ALL EXISTING UTILITIES. THESE FIELD RECORD DRAWINGS SHALL BE KEPT UP TO DATE AT ALL TIMES AND SHALL BE AVAILABLE FOR INSPECTION BY THE OWNER'S REPRESENTATIVE UPON REQUEST.
- ALL MANHOLES SHALL HAVE SHAPED INVERTS.
- ALL SEWER LINES SHALL BE TESTED IN ACCORDANCE WITH THE TECHNICAL SPECIFICATIONS PRIOR TO INITIAL ACCEPTANCE OR ANY CONNECTION TO AN EXISTING SEWER LINE. THE MAXIMUM "BELLY" ON LOW SPOTS IN THE NEW SEWER MAIN SHALL NOT EXCEED 3/8 INCHES.
- ALUMINUM FOIL WARNING TAPE SHALL BE USED FOR ALL NEW DIRECT BURY SEWER MAINS. THE TAPE WILL BE INSTALLED 2' BELOW FINISHED GRADE. TAPE MUST BE GREEN IN COLOR.
- FERNCO STRONGBACK RC SERIES PIPE COUPLINGS WILL BE REQUIRED FOR PIPE AND LATERAL SERVICES.
- ALL BARREL SECTIONS OF MANHOLES SHALL BE GROUTED INSIDE AT JOINTS.
- SHOULD TRENCH DE-WATERING BECOME NECESSARY, THE CONTRACTOR WILL OBTAIN ALL REQUIRED PERMITS AND SUPPLY THE PUMPS REQUIRED AT NO ADDITIONAL COST TO THE OWNER.
- THE OPENING OR CHANNEL IN THE MANHOLE MUST BE NO LESS THAN THE DIAMETER OF THE PIPE, AND NO LESS THAN THE MANHOLE DIAMETER MINUS 4 INCHES IN LENGTH TO ACCOMMODATE EQUIPMENT NECESSARY TO MAINTAIN THE SEWER LINE.
- ALL MANHOLE AND SANITARY SEWER MAIN TESTING SHALL BE WITNESSED BY A REPRESENTATIVE OF THE TOWN. A MINIMUM OF 24 HOURS ADVANCED NOTICE IS REQUIRED PRIOR TO TESTING.
- ALL MANHOLE/VAULT EXTERIOR JOINTS SHALL BE WRAPPED IN 12-INCH WIDE CONSEAL CS 212 OR APPROVED EQUIVALENT.
- MANHOLE/VAULT BARREL SECTIONS WILL REQUIRE AN EXTERIOR COATING OF TNEC SERIES 46-46S OR APPROVED EQUIVALENT.
- ALL PRECAST CONCRETE SHALL BE 4,000 PSI MINIMUM STRENGTH.
- ALL EXISTING PIPING INTO EXISTING MANHOLES MUST BE RECONNECTED IN NEW MANHOLES.
- WHERE FILL IS REQUIRED BY THE DRAWINGS, THE EXISTING VEGETATION AND TOPSOIL SHALL BE FULLY REMOVED AND THE SURFACE SCARIFIED PER THE SPECIFICATIONS TO PROVIDE FOR ADEQUATE BONDING OF THE FILL.
- FILL SHALL BE PLACED TO MATCH THE CONTOURS SHOWN ON THE DRAWINGS. ALL BERM CONSTRUCTION AND OVERLOT GRADING SHALL BE UNDERTAKEN SUCH THAT THE CORNERS ARE ROUNDED AND BLENDED INTO THE EXISTING TOPOGRAPHY. NEW ELEVATION CONTOURS INDICATE FINAL SURFACE ELEVATIONS.
- GRADING OF THE WASTEWATER TREATMENT PLANT SITE TOGETHER WITH THE GRADING AROUND MANHOLES AND STRUCTURES THAT HAVE THEIR RINGS AND COVERS INSTALLED ABOVE GRADE SHALL BE FINALIZED SUCH THAT ALL AREAS DRAIN FREELY AWAY FROM THE TREATMENT CELLS AND STRUCTURES. COORDINATE WITH THE ENGINEER AND OWNER TO ENSURE THAT THIS CONDITION IS MET.
- ALL EQUIPMENT AND MATERIAL IS TO BE INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS. ALL EQUIPMENT STARTUP SHALL BE PROVIDED BY A MANUFACTURER APPROVED FIELD REPRESENTATIVE. MANUFACTURER FIELD TRAINING FOR THE OPERATIONS STAFF SHALL ALSO BE PROVIDED AT EITHER THE TIME OF STARTUP OR AT ANOTHER TIME AS APPROVED BY THE OPERATOR.
- THE CONTRACTOR SHALL FURNISH AND INSTALL 12" X 24" SIGNS AS DIRECTED BY THE ENGINEER ON THE PERIMETER FENCING. THE GENERAL SPACING IS 200-FT CENTERS. THE SIGNS SHALL BE MADE FROM 20 GAUGE ALUMINUM SHEET METAL WITH A PAINTED WHITE BACKGROUND AND RED LETTERING. THE SIGNS SHALL READ AS FOLLOWS:

**ANGER -- KEEP OUT
WASTEWATER TREATMENT FACILITY**
- THE BASE BID ON THE PROJECT INCLUDES A BID ITEM CALLING FOR FURNISHING AND INSTALLING 6-INCHES OF SAND OVER THE BOTTOM OF THE NEW CELLS. THE SAND IS BEING INSTALLED TO MAINTAIN THE INTEGRITY OF THE LINER WHEN MINIMAL TO NO WATER IS CONTAINED WITHIN THE CELL. THE CONTRACTOR WILL NEED TO USE **EXTREME CARE** IN THE PLACEMENT OF THE MATERIAL TO MAINTAIN THE INTEGRITY OF THE NEW LINER. ANY TEARS OR DAMAGE TO THE LINER SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

CIVIL/ARCHITECTURAL/PROCESS SYMBOLS LIBRARY



ABBREVIATIONS

ARVB	AIR RELIEF VACU BREAKER VALVE	MH	MANHOLE
BEG	BELOW EXISTING GRADE	N	NORTH
BFV	BUTTERFLY VALVE	NE	NORTHEAST
CL	CENTERLINE	NW	NORTHWEST
CMP	CORRUGATED METAL PIPE	OH	OVERHEAD
DIA. OR Ø	DIAMETER	PVC	POLYVINYL CHLORIDE
E	EAST	RAD OR R	RADIUS
EA	EACH	RPP	REINFORCED POLYPROPYLENE
ELEC	ELECTRICAL LINE	S	SOUTH
EOA	EDGE OF ASPHALT	SE	SOUTHEAST
EXIST. OR EX.	EXISTING	SW	SOUTHWEST
INV	INVERT	T.O.P.	TOP OF PIPE
L.P.	LOW POINT	UON	UNLESS OTHERWISE NOTED
FM	FORCE MAIN		

NO.	DESCRIPTION	DATE	BY
1	DESCRIPTION NO. 1	07/17	XXX

WASTEWATER TREATMENT PLANT
GENERAL NOTES
 TOWN OF RAMAH
 113 S. COMMERCIAL STREET
 RAMAH, CO 80832

PREPARED UNDER THE DIRECT SUPERVISION OF

DATE	OCTOBER 2022
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SEWER BYPASS PUMPING

1. IF SEWAGE BYPASS PUMPING IS NECESSARY, THE CONTRACTOR WILL SUPPLY AND MONITOR THE PUMP DURING THE ENTIRE PUMPING PERIOD. A BACK-UP PUMP WILL BE ONSITE FOR USE IF NECESSARY. BYPASS HOSE SHALL BE PROTECTED FROM TRAFFIC DAMAGE USING APPROVED APPARATUS. FOR ALL SEWAGE BYPASS PUMPING, THE CONTRACTOR WILL HAVE CONTINUOUS ON SITE MONITORING OF PUMPING OPERATIONS.
2. FURNISH ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS REQUIRED TO MAINTAIN CONTINUOUS AND RELIABLE WASTEWATER SERVICE IN ALL WASTEWATER LINES DURING CONSTRUCTION.
3. DURING VARIOUS PHASES OF THE WORK, IT WILL BE NECESSARY TO CONSTRUCT AND MAINTAIN TEMPORARY BYPASS SEWERS TO MAINTAIN CONTINUOUS AND RELIABLE WASTEWATER FLOW IN ALL PIPES, INCLUDING INDIVIDUAL SERVICE CONNECTIONS. VARIOUS PHASES OF THE WORK THAT SHALL REQUIRE THE IMPLEMENTATION OF TEMPORARY BYPASS SEWERS INCLUDING, BUT ARE NOT LIMITED TO, SEWER MAIN AND MANHOLE REPLACEMENT, TRENCHLESS REHABILITATION OF EXISTING SEWERS, AND PIPELINE INSPECTION.
4. CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL TEMPORARY BYPASS SEWERS AND BE RESPONSIBLE FOR ALL BYPASS PUMPING OF SEWAGE THAT MAY BE REQUIRED TO PREVENT BACKING UP OF SEWAGE AND ALLOW APPROPRIATE CONDITIONS FOR PROPER INSPECTION, REHABILITATION, REPLACEMENT OR RECONNECTIONS TO EXISTING SEWERS. THE CONTRACTOR SHALL IMMEDIATELY REMOVE AND DISPOSE OF ALL OFFENSIVE MATTER SPILLED DURING THE BYPASS PUMPING AT HIS OWN EXPENSE. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR PAYING ANY FINES IMPOSED AS A RESULT OF SPILLS OR OVERFLOWS THAT OCCUR AS A RESULT OF THE BYPASS PUMPING OPERATIONS.
5. CONTRACTOR SHALL PROVIDE A REDUNDANT BYPASS PUMP, INTAKE AND DISCHARGE CONDUIT, AND OTHER EQUIPMENT NECESSARY TO PROVIDE CONTINUOUS WASTEWATER FLOW AND PREVENT THE BACKING UP OF SEWAGE IN THE CASE OF EMERGENCIES AT ALL TIMES.
6. WHERE NO ALTERNATE SANITARY SEWER ROUTE IS AVAILABLE OR WHEN TWENTY-FOUR HOURS OF STORAGE IS NOT FEASIBLE, REDUNDANT BYPASS PUMPING SHALL BE INSTALLED.
7. PRIMARY BYPASS PUMPS SHALL BE CRITICALLY SILENCED WHEN USED IN RESIDENTIAL SETTINGS OR AREAS WHERE EXCESSIVE NOISE LEVELS WOULD CREATE A DISTURBANCE. REDUNDANT BYPASS PUMPING DOES NOT HAVE TO BE CRITICALLY SILENCED.
8. THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER A SCHEDULE TO COMPLETE THE WORK. IT WILL INCLUDE THE SEQUENCING AND COORDINATION OF CONNECTIONS TO EXISTING SEWERS, PIPELINE INSPECTION, TRENCHLESS REHABILITATION AND TESTING OF EXISTING SEWERS, AND THE HANDLING OF WASTEWATER FLOW DURING CONSTRUCTION. THE SCHEDULE OF WORK SHALL ALSO BE REVIEWED AND APPROVED BY THE OPERATOR IN RESPONSIBLE CHARGE (ORC).
9. THE DESIGN, INSTALLATION, AND OPERATION OF THE TEMPORARY PUMPING SYSTEM SHALL BE THE CONTRACTOR'S RESPONSIBILITY. THE CONTRACTOR SHALL EITHER DEMONSTRATE, OR EMPLOY THE SERVICES OF A SUBCONTRACTOR WHO CAN DEMONSTRATE, TO THE ENGINEER AND ORC THAT HE SPECIALIZES IN THE DESIGN AND OPERATION OF TEMPORARY BYPASS PUMPING SYSTEMS.
10. THE CONTRACTOR SHALL PREPARE A SPECIFIC, DETAILED DESCRIPTION OF THE PROPOSED PUMPING SYSTEM (BYPASS PUMPING PLAN). THE BYPASS PUMPING PLAN SHALL BE SUBMITTED AND APPROVED PRIOR TO THE MOBILIZATION OF ANY OF THE EQUIPMENT INCLUDED IN THE BYPASS PUMPING PLAN. THE BYPASS PUMPING PLAN SHALL OUTLINE ALL PROVISIONS AND PRECAUTIONS TO BE TAKEN BY THE CONTRACTOR REGARDING HANDLING OF EXISTING WASTEWATER FLOWS. THIS BYPASS PUMPING PLAN MUST BE SPECIFIC AND COMPLETE, INCLUDING SUCH ITEMS AS SCHEDULES, LOCATIONS, CAPACITIES OF EQUIPMENT, MATERIALS, AND ALL OTHER INCIDENTAL ITEMS NECESSARY AND/OR REQUIRED TO ENSURE PROPER PROTECTION OF THE FACILITIES, INCLUDING PROTECTION OF THE ACCESS AND BYPASS PUMPING LOCATIONS FOR DAMAGE DUE TO THE DISCHARGE FLOWS, AND COMPLIANCE WITH THE REQUIREMENTS AND PERMIT CONDITIONS SPECIFIED HEREIN. NO CONSTRUCTION SHALL BEGIN UNTIL ALL PROVISIONS AND REQUIREMENTS HAVE BEEN REVIEWED AND ACCEPTED BY THE ENGINEER AND ORC. THE PLAN SHALL INCLUDE BUT NOT LIMITED TO THE FOLLOWING DETAILS:
 - A. SEWER PLUGGING METHOD AND TYPES OF PLUGS.
 - B. SIZE OF SUCTION AND DISCHARGE HOSE OR PIPING.
 - C. BYPASS PUMP SIZES (ONE STANDBY PUMP WILL BE REQUIRED AT EACH LOCATION IN CASE OF A PUMP FAILURE), CAPACITIES, AND NUMBER OF EACH SIZE TO BE PROVIDED ON-SITE INCLUDING ALL PRIMARY, SECONDARY, AND SPARE PUMPING UNITS.
 - D. METHOD OF PROTECTING DISCHARGE MANHOLES OR STRUCTURES FROM EROSION AND DAMAGE.
 - E. SECTIONS SHOWING SUCTION AND DISCHARGE PIPE DEPTH, EMBEDMENT, SELECT FILL AND SPECIAL BACKFILL, IF COVER IS NECESSARY.
 - F. METHOD OF NOISE CONTROL FOR EACH PUMP AND ANY ADDITIONAL EQUIPMENT THAT IS INCLUDED IN THE BYPASS PUMPING PLAN.
 - G. SCHEDULE FOR INSTALLATION OF AND MAINTENANCE OF BYPASS PUMPING LINES.
 - H. PLAN INDICATING LOCATION OF BYPASS PUMPING PIPE LOCATIONS.
 - I. CONTRACTORS PLAN FOR PROVIDING CONTINUOUS MONITORING OF THE BYPASS PUMPING OPERATION AS WELL AS THE MONITORING PERSONS' QUALIFICATIONS.

11. THE CONTRACTOR SHALL SUPPLY PUMPS, CONDUITS, POWER, AND OTHER EQUIPMENT TO DIVERT THE FLOW OF SEWAGE AROUND THE SECTION IN WHICH WORK IS TO BE PERFORMED. THE BYPASS SYSTEM SHALL BE OF SUFFICIENT CAPACITY TO HANDLE THE WASTEWATER FLOWS. IT IS THE INTENT OF THESE SPECIFICATIONS TO REQUIRE THE CONTRACTOR TO ESTABLISH ADEQUATE BYPASS PUMPING AS REQUIRED REGARDLESS OF THE FLOW CONDITION.
12. THE CONTRACTOR SHALL PERFORM LEAKAGE AND PRESSURE TESTS OF THE BYPASS PUMPING DISCHARGE PIPING USING CLEAN WATER PRIOR TO THE ACTUAL OPERATION. THE PRESSURE AND LEAKAGE TEST SHALL BE CONDUCTED AT ONE-AND-A-HALF TIMES THE MAXIMUM PRESSURE THE SYSTEM WILL EXPERIENCE BASED ON THE APPROVED BYPASS PUMPING PLAN FOR A PERIOD OF TWO HOURS. NO LEAKAGE IS PERMITTED DURING THIS TEST. THE ENGINEER WILL BE GIVEN 24 HOURS NOTICE PRIOR TO TESTING. IN ADDITION, THE CONTRACTOR SHALL DEMONSTRATE THAT THE PUMPING SYSTEM IS IN GOOD WORKING ORDER AND IS SUFFICIENTLY SIZED TO SUCCESSFULLY HANDLE FLOWS BY PERFORMING A TEST RUN FOR A PERIOD OF 24 HOURS PRIOR TO BEGINNING THE WORK.
13. THE CONTRACTOR SHALL BE REQUIRED TO REPAIR, AT HIS OWN EXPENSE, ANY DAMAGE TO PUBLIC OR PRIVATE PROPERTY CAUSED BY HIS OPERATIONS.
14. SHOULD DAMAGE OF ANY KIND OCCUR TO THE EXISTING SEWERS, THE CONTRACTOR SHALL, AT HIS OWN EXPENSE MAKE REPAIRS TO THE SATISFACTION OF THE ENGINEER AND THE ORC.
15. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE AUTHORITY SHOULD A SANITARY SEWER OVERFLOW (SSO) OCCUR AND TAKE THE NECESSARY ACTION TO CLEAN UP AND DISINFECT THE SPILLAGE TO THE SATISFACTION OF THE AUTHORITY AND/OR OTHER GOVERNMENTAL AGENCY. IF SEWAGE IS SPILLED ONTO PUBLIC OR PRIVATE PROPERTY, THE CONTRACTOR SHALL WASH DOWN, CLEAN UP, AND DISINFECT THE SPILLAGE TO THE SATISFACTION OF THE PROPERTY OWNER, AUTHORITY, AND/OR OTHER GOVERNMENTAL AGENCY.
16. THE CONTRACTOR SHALL NOT BE PERMITTED TO OVERFLOW, BYPASS, PUMP OR BY ANY OTHER MEANS CONVEY DRAINAGE TO ANY LAND, STREET, STORM DRAIN OR WATER COURSE.
17. THE CONTRACTOR SHALL CEASE BYPASS PUMPING OPERATIONS AND RETURN FLOWS TO THE NEW AND/OR EXISTING SEWER WHEN DIRECTED BY THE OWNER. DURING BYPASSING, NO WASTEWATER SHALL BE LEAKED, DUMPED, OR SPILLED IN OR ONTO ANY AREA OUTSIDE THE EXISTING WASTEWATER SYSTEM. WHEN BYPASS OPERATIONS ARE COMPLETE, ALL BYPASS PIPING SHALL BE FLUSHED WITH FRESH WATER AND DRAINED INTO THE WASTEWATER SYSTEM PRIOR TO DISASSEMBLY.
18. CONTRACTOR MUST TAKE CARE TO PREVENT DAMAGE TO EXISTING STRUCTURES. DISCHARGE PIPING TO GRAVITY SEWER SYSTEMS SHALL BE DESIGNED IN SUCH A MANNER AS TO PREVENT DISCHARGE FROM CONTACTING MANHOLE WALLS OR BENCHING AND FULL DISCHARGE SHALL GO INTO DOWNSTREAM PIPE WITH AS MINIMAL TURBULENCE AS POSSIBLE. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO MANHOLES. IT MAY BE NECESSARY TO REMOVE THE MANHOLE CONE TO PROVIDE SUFFICIENT SPACE FOR THE BYPASS PIPING. IF THIS IS REQUIRED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING MANHOLE COMPONENTS.
19. THE 24-HOUR MONITORING PERSON SHALL BE PROPERLY TRAINED, EXPERIENCED, AND MECHANICALLY QUALIFIED SUCH THAT THEY CAN QUICKLY AND EFFECTIVELY ADDRESS ANY POTENTIAL EMERGENCY AND NON-EMERGENCY SITUATIONS ASSOCIATED WITH THE PUMPS AND BYPASS PUMPING SYSTEM THAT MUST REMAIN IN OPERATION FOR AN EXTENDED PERIOD.

BACKFILLING GENERAL

- A. ALL TRENCHES SHALL BE BACKFILLED AFTER PIPES, FITTINGS AND APPURTENANCES HAVE BEEN INSTALLED, INSPECTED AND APPROVED BY THE TOWN ENGINEER.
- B. WHENEVER A COMPACTION REQUIREMENT VALUE IS SPECIFIED HEREIN, THE OPTIMUM MOISTURE CONTENT AND STANDARD PROCTOR DENSITY SHALL BE DETERMINED IN ACCORDANCE WITH AASHTO T-99 FOR NINETY-FIVE PERCENT (95%).

DENSITY REQUIREMENTS IN TRENCH

THE CONTRACTOR SHALL OBTAIN A STANDARD PROCTOR DENSITY OF NINETY-FIVE (95%) STANDARD PROCTOR FOR THE TOTAL DEPTH OF ALL TRENCHES IN OPEN FIELDS AND IN DEDICATED ROWS. BACKFILLING SHALL BE DONE WITH GOOD SOUND EARTH, SAND OR GRAVEL, AND NO BITUMINOUS PAVEMENT, CONCRETE, ROCK OR OTHER LUMPY MATERIAL SHALL BE USED IN THE BACKFILL UNLESS THESE MATERIALS ARE SCATTERED AND DO NOT EXCEED SIX INCHES (6") IN ANY DIMENSION AND ARE NOT PLACED WITHIN ONE FOOT OF THE 2-1/2' LIMIT. MATERIAL OF PERISHABLE, SPONGY OR OTHERWISE IMPROPER NATURE SHALL NOT BE USED IN BACKFILLING AND NO MATERIAL GREATER THAN FOUR INCHES (4") IN ANY DIMENSION SHALL BE PLACED WITHIN ONE FOOT (1') OF ANY PIPE, MANHOLE OR STRUCTURE. BACKFILLING SHALL BE ACCOMPLISHED IN THE ZONE IN LAYERS NOT TO EXCEED TWO FEET (2') OR AS RECOMMENDED BY TESTER. ALL BACKFILL MATERIAL SHALL BE SUBJECT TO THE APPROVAL OF THE TOWN ENGINEER.

COMPACTED FILL

COMPACTION SHALL BE DONE BY USE OF VIBRATORY EQUIPMENT, TAMPING ROLLERS, PNEUMATIC TIRE ROLLERS OR OTHER MECHANICAL TAMPERS OF THE TYPE AND SIZE APPROVED BY THE TOWN ENGINEER. HAND TAMPERS SHALL BE USED AROUND ALL MANHOLES, VALVE BOXES, AND ANY SURFACE STRUCTURE. THE BACKFILL SHALL BE PLACED IN HORIZONTAL LAYERS OF SUCH DEPTHS AS ARE CONSIDERED PROPER FOR THE TYPE OF COMPACTING EQUIPMENT BEING USED IN RELATION TO THE BACKFILL MATERIAL BEING PLACED. EACH LAYER SHALL BE EVENLY SPREAD, PROPERLY MOISTENED AND COMPACTED. ANY DAMAGE TO THE PIPE AS A RESULT OF CONTRACTOR'S OPERATION SHALL BE REPAIRED AND/OR REPLACED.

COMPACTION TESTS

COMPACTION TESTS WILL BE TAKEN BY AN APPROVED TESTING LABORATORY AT LOCATIONS DESIGNATED BY THE TOWN ENGINEER. ALL EXPENSES INVOLVED IN THESE TESTS WILL BE BORNE BY THE CONTRACTOR. RESULTS OF THE TESTS WILL BE MADE AVAILABLE TO THE TOWN ENGINEER IMMEDIATELY AND COPIES OF TEST RESULTS WILL BE SUPPLIED TO THE TOWN ENGINEER ONCE PER WEEK, A FINAL TYPED BOUND COPY OF FINAL TEST RESULTS MUST BE SUBMITTED TO THE TOWN ENGINEER AT THE END OF THE PROJECT. IN ALL CASES WHERE THE TESTS INDICATE COMPACTION LESS THAN THAT REQUIRED IN THESE STANDARDS, ADDITIONAL COMPACTION AND TESTS WILL BE REQUIRED UNTIL THESE SPECIFICATIONS ARE MET. PROBATIONARY ACCEPTANCE OF THE LINES BY THE TOWN WILL BE CONTINGENT UPON SATISFACTORY COMPACTION RESULTS. NO HYDROSTATIC TESTING OF THE WATER MAIN WILL BE ALLOWED UNTIL SATISFACTORY COMPACTION IS OBTAINED. FREQUENCY OF TESTING WILL BE AS FOLLOWS:

- A. ONE (1) TEST AT EVERY ABOVE GROUND APPURTENANCE (I.E. VALVE BOX, MANHOLE) AT TWO-FOOT (2.0') VERTICAL INCREMENTS.
- B. ONE (1) TEST EVERY FOUR HUNDRED (400) LF OF MAINLINE FORCEMAIN TRENCH AT TWO-FOOT (2.0') VERTICAL INCREMENTS BEGINNING TWO FEET (2') ABOVE PIPE TO FINAL GRADE AND ONE TEST AT FINAL GRADE.
- C. SEE TECHNICAL SECTION 02200 FOR EMBANKMENT TESTING REQUIREMENTS.



12687 W. CEDAR DRIVE, SUITE 300
LAKEWOOD, CO 80228
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		DATE	BY

WASTEWATER TREATMENT PLANT
GENERAL NOTES
TOWN OF RAMAH
113 S. COMMERCIAL STREET
RAMAH, CO 80832

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF
ELEMENT ENGINEERING, LLC

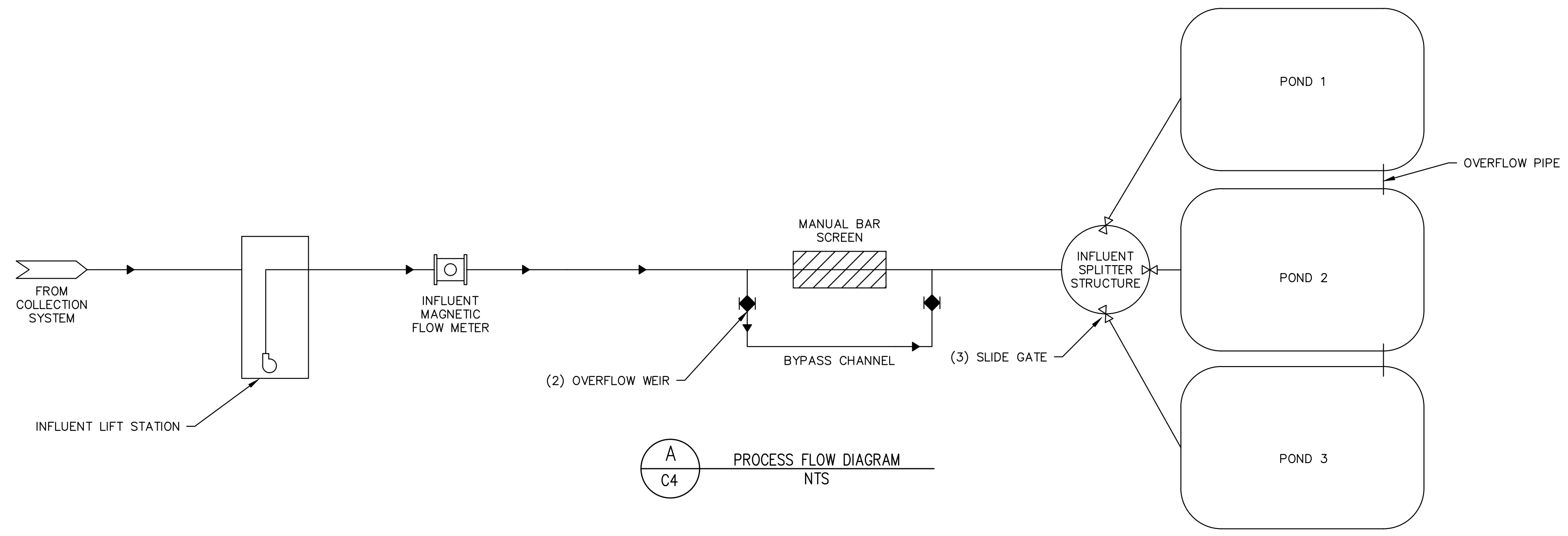
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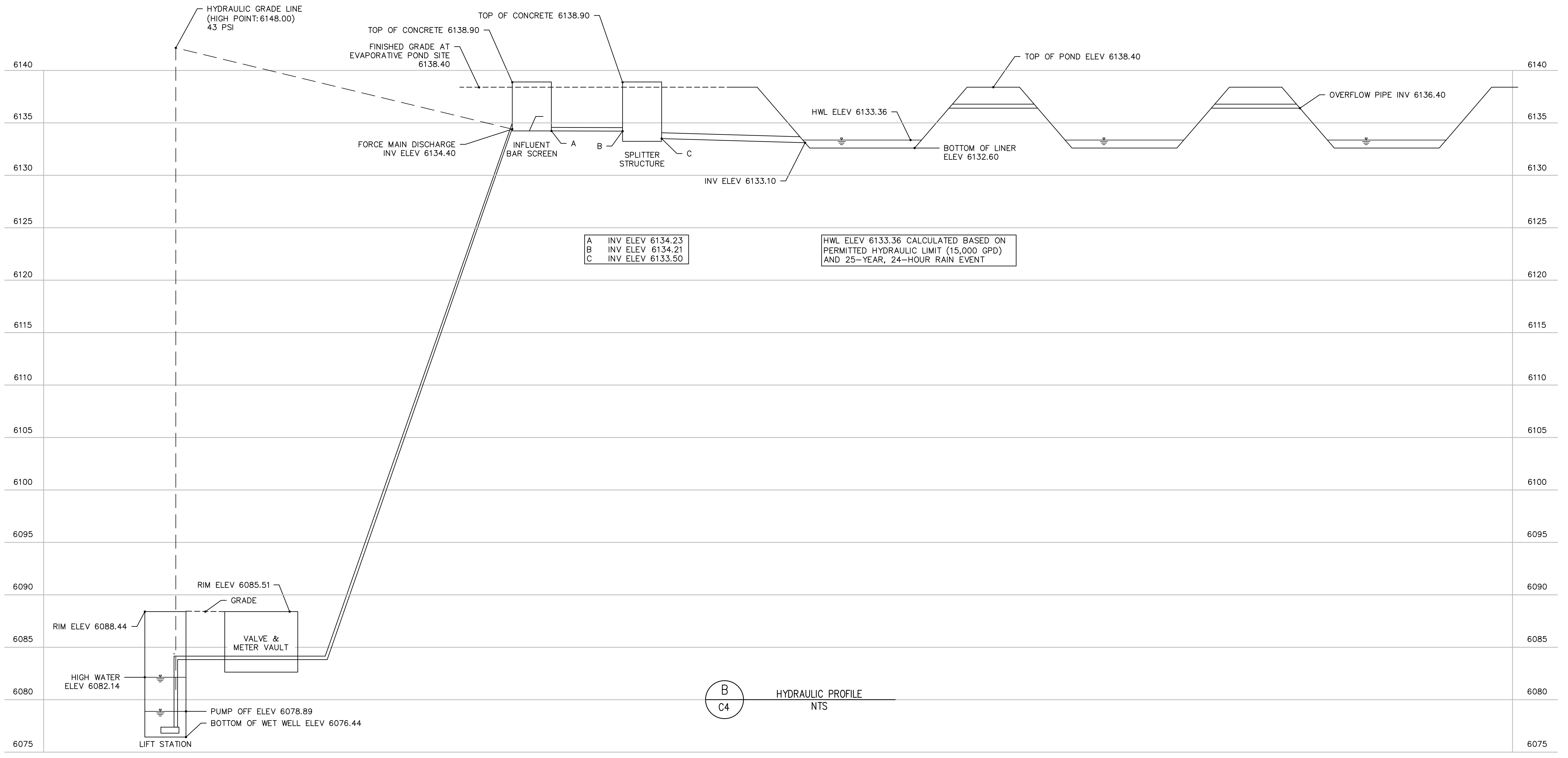
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SHEET
C3 OF C29



DESIGN SUMMARY		
PERMITTED DESIGN FLOW	0.015	MGD
PERMITTED ORGANIC LOADING	32	LBS/DAY
EXISTING AVERAGE DAY FLOW (APPROX)	0.011	MGD
PEAK DAY FLOW (APPROX)	0.022	MGD
PEAK HOUR FLOW	0.060	MGD
LIFT STATION PERMITTED FLOW	42	GPM
TOTAL BOTTOM OF POND AREA	310,000	SF
TOTAL TOP OF POND AREA	372,049	SF



NO.	REVISIONS	DESCRIPTION	DATE	BY

WASTEWATER TREATMENT PLANT
 PROCESS FLOW DIAGRAM
 & HYDRAULIC PROFILE
 TOWN OF RAMAH
 113 S. COMMERCIAL STREET
 RAMAH, CO 80832

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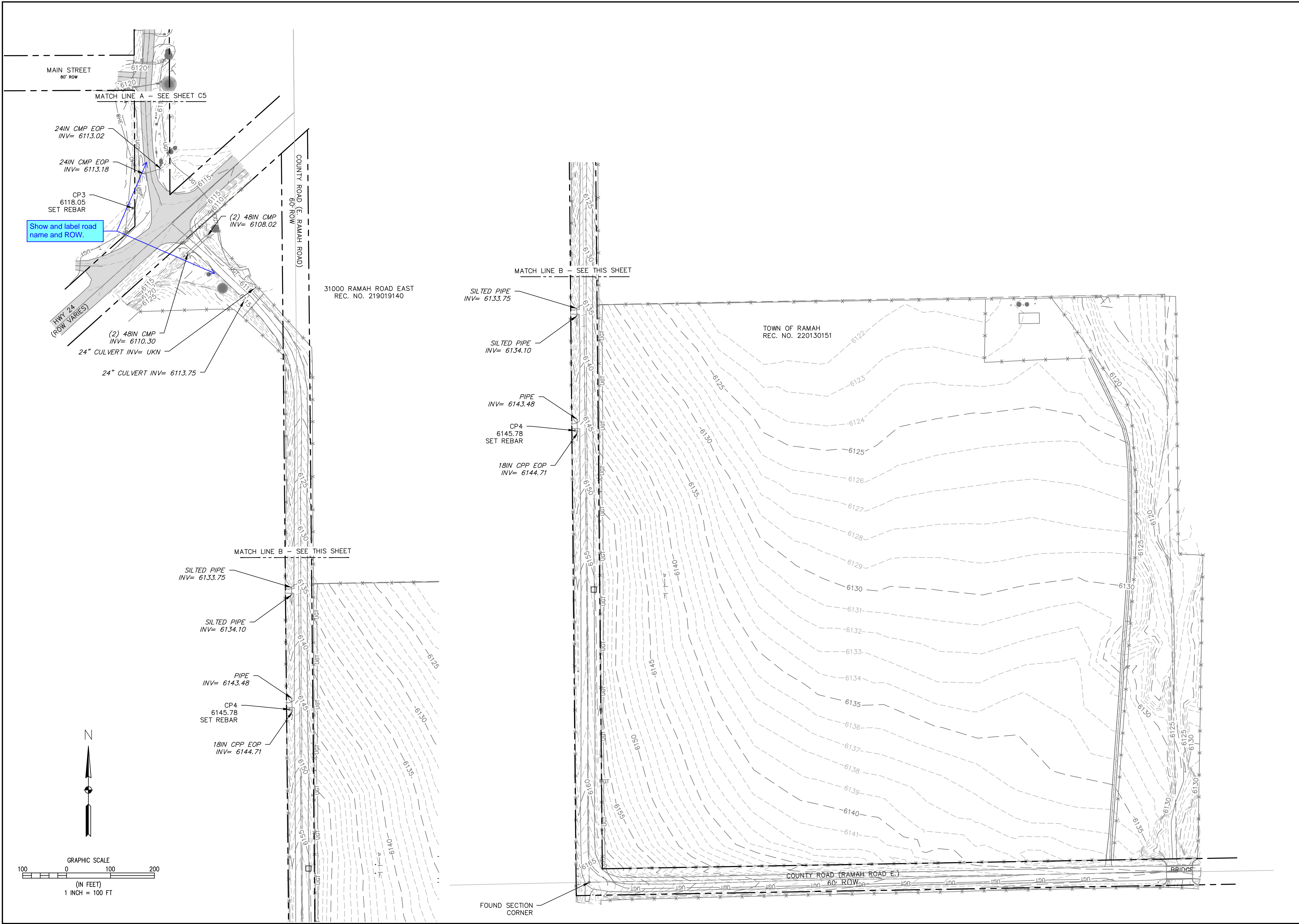
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WASTEWATER TREATMENT PLANT
TOPOGRAPHIC SURVEY
 TOWN OF RAMAH
 113 S. COMMERCIAL STREET
 RAMAH, CO 80832

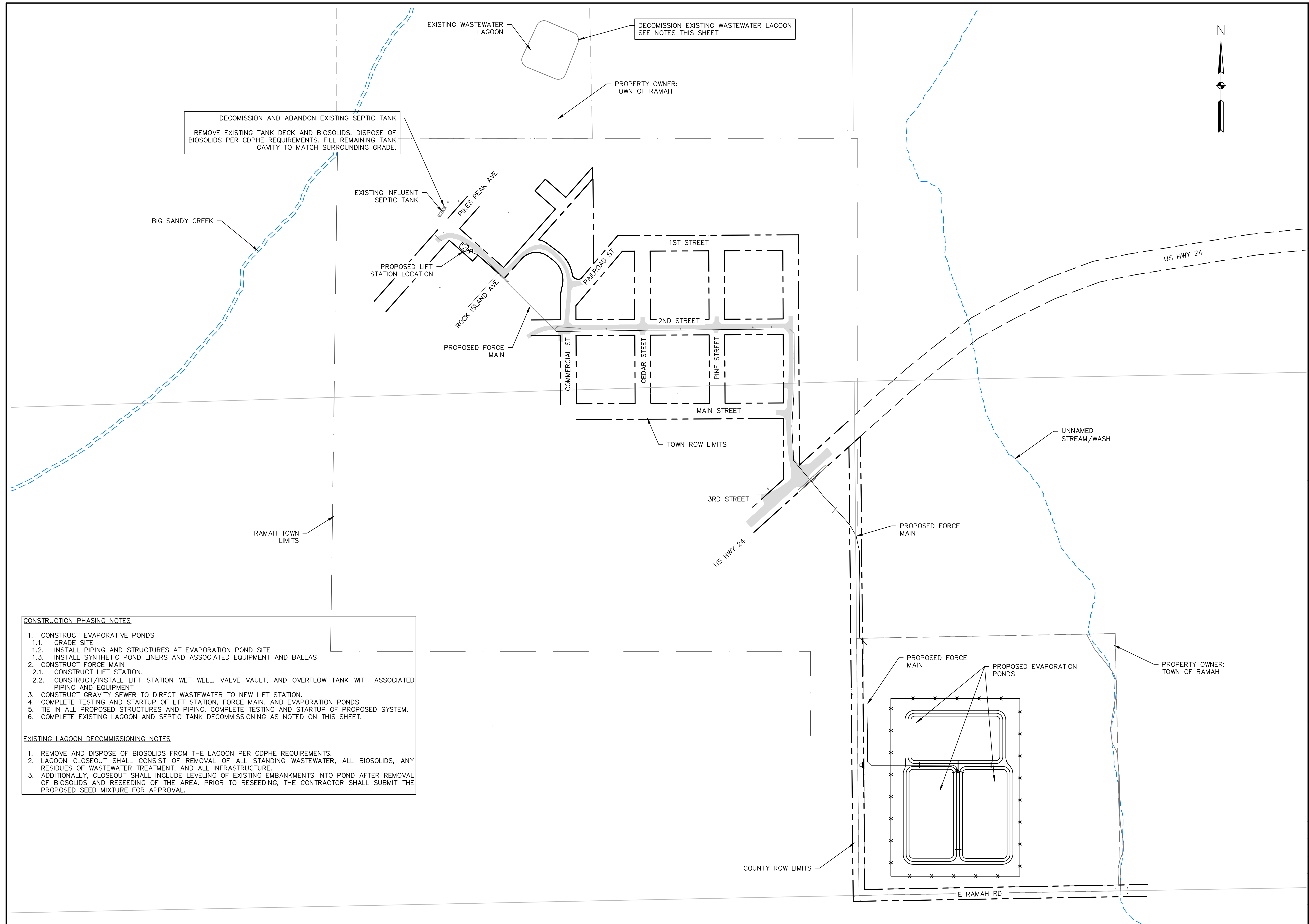
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WASTEWATER TREATMENT PLANT
PROPOSED IMPROVEMENTS,
CONST. PHASING, AND DEMO
TOWN OF RAMAH
113 S. COMMERCIAL STREET
RAMAH, CO 80832

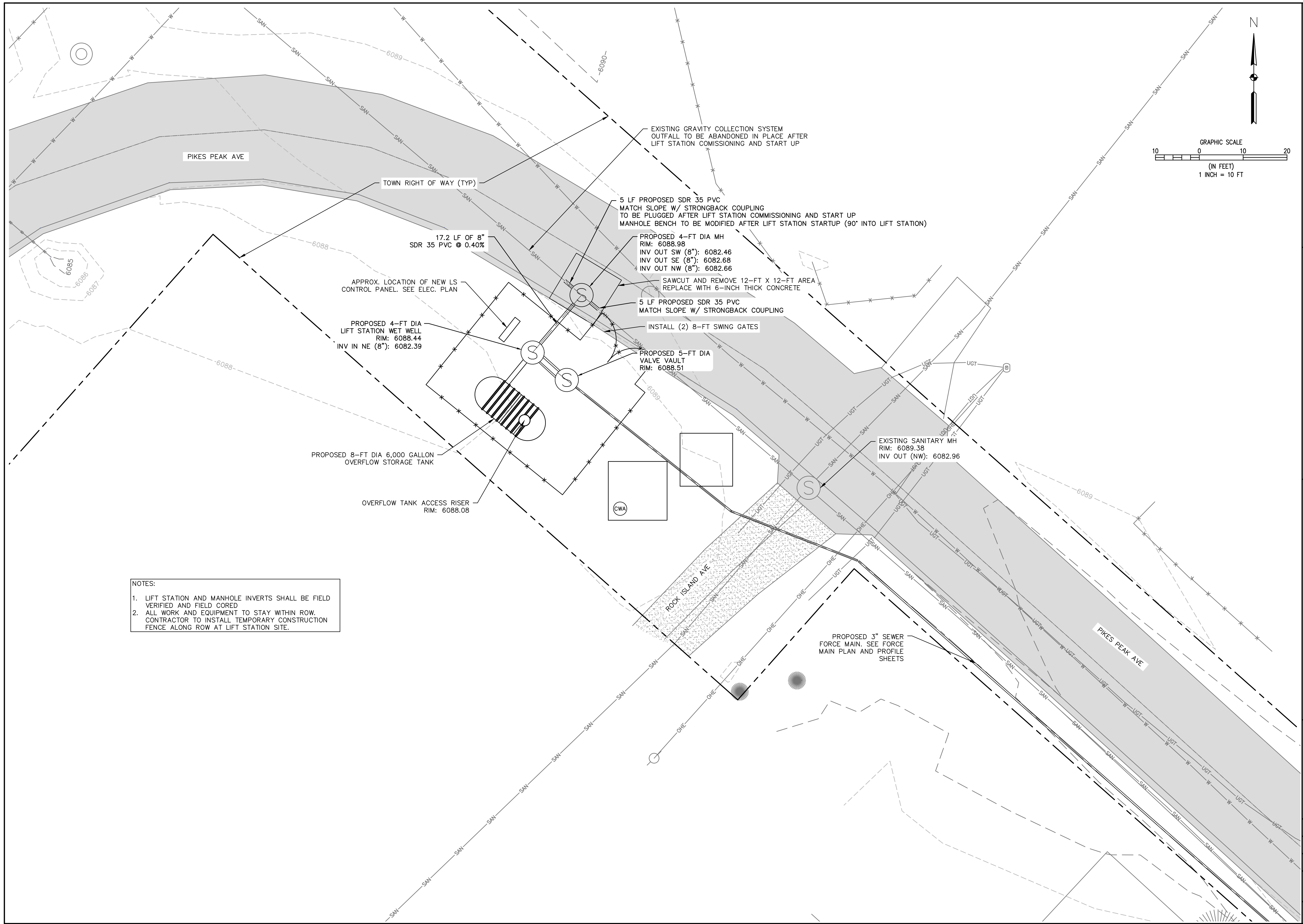
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DECOMMISSION AND ABANDON EXISTING SEPTIC TANK
REMOVE EXISTING TANK DECK AND BIOSOLIDS. DISPOSE OF BIOSOLIDS PER CDPHE REQUIREMENTS. FILL REMAINING TANK CAVITY TO MATCH SURROUNDING GRADE.

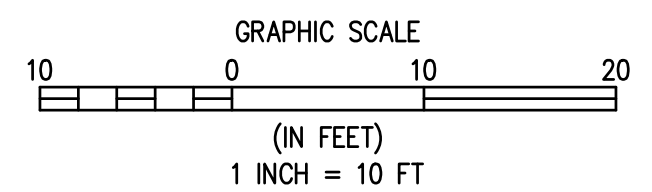
DECOMMISSION EXISTING WASTEWATER LAGOON
SEE NOTES THIS SHEET

- CONSTRUCTION PHASING NOTES**
- CONSTRUCT EVAPORATIVE PONDS
 - GRADE SITE
 - INSTALL PIPING AND STRUCTURES AT EVAPORATION POND SITE
 - INSTALL SYNTHETIC POND LINERS AND ASSOCIATED EQUIPMENT AND BALLAST
 - CONSTRUCT FORCE MAIN
 - CONSTRUCT LIFT STATION
 - CONSTRUCT/INSTALL LIFT STATION WET WELL, VALVE VAULT, AND OVERFLOW TANK WITH ASSOCIATED PIPING AND EQUIPMENT
 - CONSTRUCT GRAVITY SEWER TO DIRECT WASTEWATER TO NEW LIFT STATION.
 - COMPLETE TESTING AND STARTUP OF LIFT STATION, FORCE MAIN, AND EVAPORATION PONDS.
 - TIE IN ALL PROPOSED STRUCTURES AND PIPING. COMPLETE TESTING AND STARTUP OF PROPOSED SYSTEM.
 - COMPLETE EXISTING LAGOON AND SEPTIC TANK DECOMMISSIONING AS NOTED ON THIS SHEET.
- EXISTING LAGOON DECOMMISSIONING NOTES**
- REMOVE AND DISPOSE OF BIOSOLIDS FROM THE LAGOON PER CDPHE REQUIREMENTS.
 - LAGOON CLOSEOUT SHALL CONSIST OF REMOVAL OF ALL STANDING WASTEWATER, ALL BIOSOLIDS, ANY RESIDUES OF WASTEWATER TREATMENT, AND ALL INFRASTRUCTURE.
 - ADDITIONALLY, CLOSEOUT SHALL INCLUDE LEVELING OF EXISTING EMBANKMENTS INTO POND AFTER REMOVAL OF BIOSOLIDS AND RESEEDING OF THE AREA. PRIOR TO RESEEDING, THE CONTRACTOR SHALL SUBMIT THE PROPOSED SEED MIXTURE FOR APPROVAL.



NOTES:

- LIFT STATION AND MANHOLE INVERTS SHALL BE FIELD VERIFIED AND FIELD CORED
- ALL WORK AND EQUIPMENT TO STAY WITHIN ROW. CONTRACTOR TO INSTALL TEMPORARY CONSTRUCTION FENCE ALONG ROW AT LIFT STATION SITE.



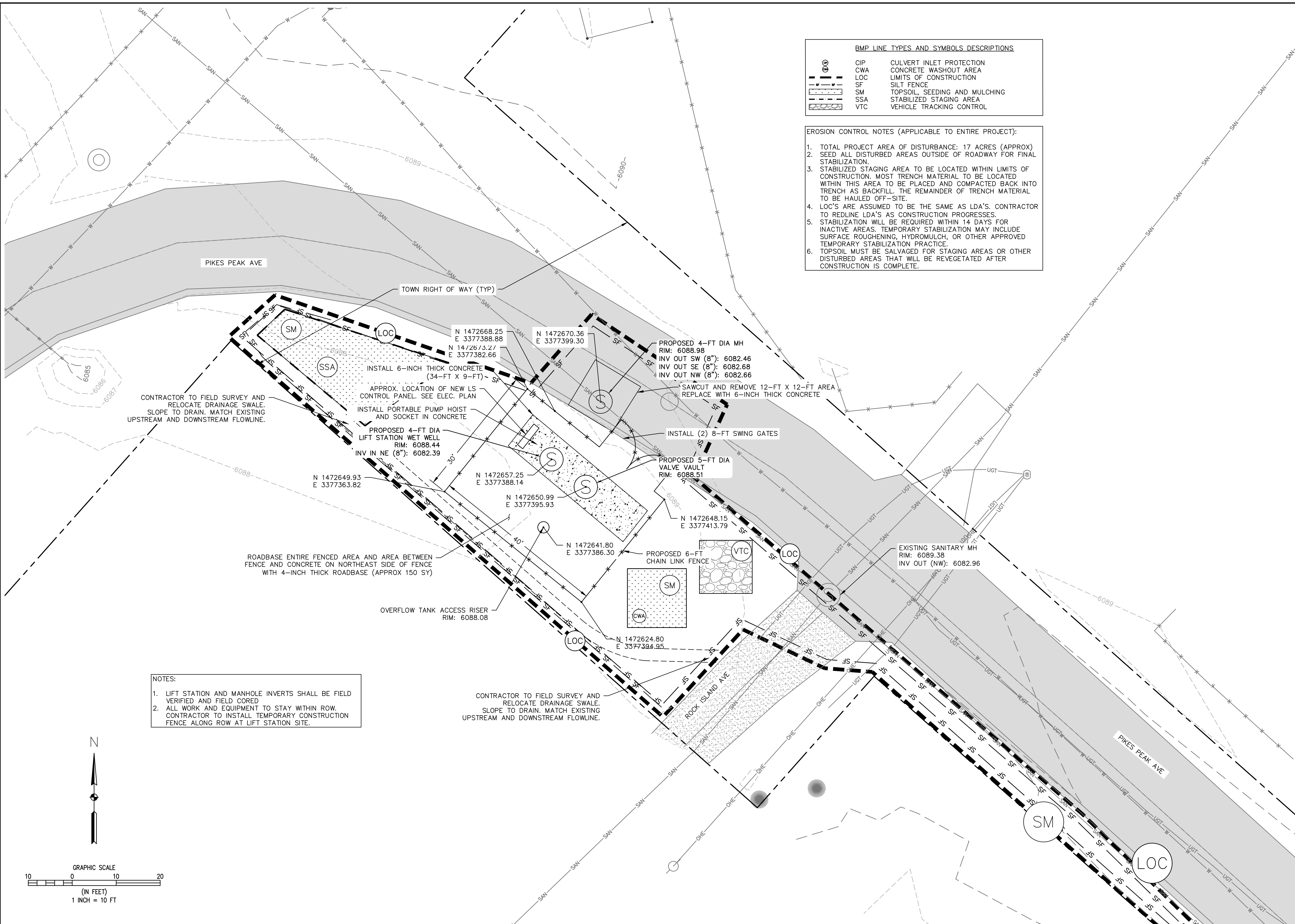
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 12687 W. CEDAR DRIVE, SUITE 300
 LAKEWOOD, CO 80226
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WASTEWATER TREATMENT PLANT
LIFT STATION YARD PIPING
 TOWN OF RAMAH
 113 S. COMMERCIAL STREET
 RAMAH, CO 80832

PREPARED UNDER THE DIRECT SUPERVISION OF

DATE	OCTOBER 2022
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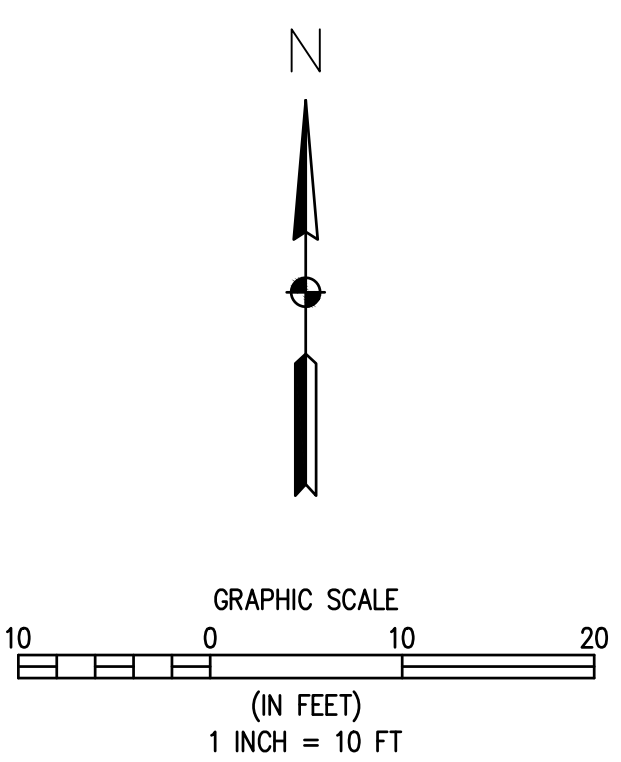


BMP LINE TYPES AND SYMBOLS DESCRIPTIONS

	CIP	CULVERT INLET PROTECTION
	CWA	CONCRETE WASHOUT AREA
	LOC	LIMITS OF CONSTRUCTION
	SF	SILT FENCE
	SM	TOPSOIL, SEEDING AND MULCHING
	SSA	STABILIZED STAGING AREA
	VTC	VEHICLE TRACKING CONTROL

- EROSION CONTROL NOTES (APPLICABLE TO ENTIRE PROJECT):**
- TOTAL PROJECT AREA OF DISTURBANCE: 17 ACRES (APPROX)
 - SEED ALL DISTURBED AREAS OUTSIDE OF ROADWAY FOR FINAL STABILIZATION.
 - STABILIZED STAGING AREA TO BE LOCATED WITHIN LIMITS OF CONSTRUCTION. MOST TRENCH MATERIAL TO BE LOCATED WITHIN THIS AREA TO BE PLACED AND COMPACTED BACK INTO TRENCH AS BACKFILL. THE REMAINDER OF TRENCH MATERIAL TO BE HAULED OFF-SITE.
 - LOC'S ARE ASSUMED TO BE THE SAME AS LDA'S. CONTRACTOR TO REDLINE LDA'S AS CONSTRUCTION PROGRESSES.
 - STABILIZATION WILL BE REQUIRED WITHIN 14 DAYS FOR INACTIVE AREAS. TEMPORARY STABILIZATION MAY INCLUDE SURFACE ROUGHENING, HYDROMULCH, OR OTHER APPROVED TEMPORARY STABILIZATION PRACTICE.
 - TOPSOIL MUST BE SALVAGED FOR STAGING AREAS OR OTHER DISTURBED AREAS THAT WILL BE REVEGETATED AFTER CONSTRUCTION IS COMPLETE.

- NOTES:**
- LIFT STATION AND MANHOLE INVERTS SHALL BE FIELD VERIFIED AND FIELD CORED
 - ALL WORK AND EQUIPMENT TO STAY WITHIN ROW. CONTRACTOR TO INSTALL TEMPORARY CONSTRUCTION FENCE ALONG ROW AT LIFT STATION SITE.



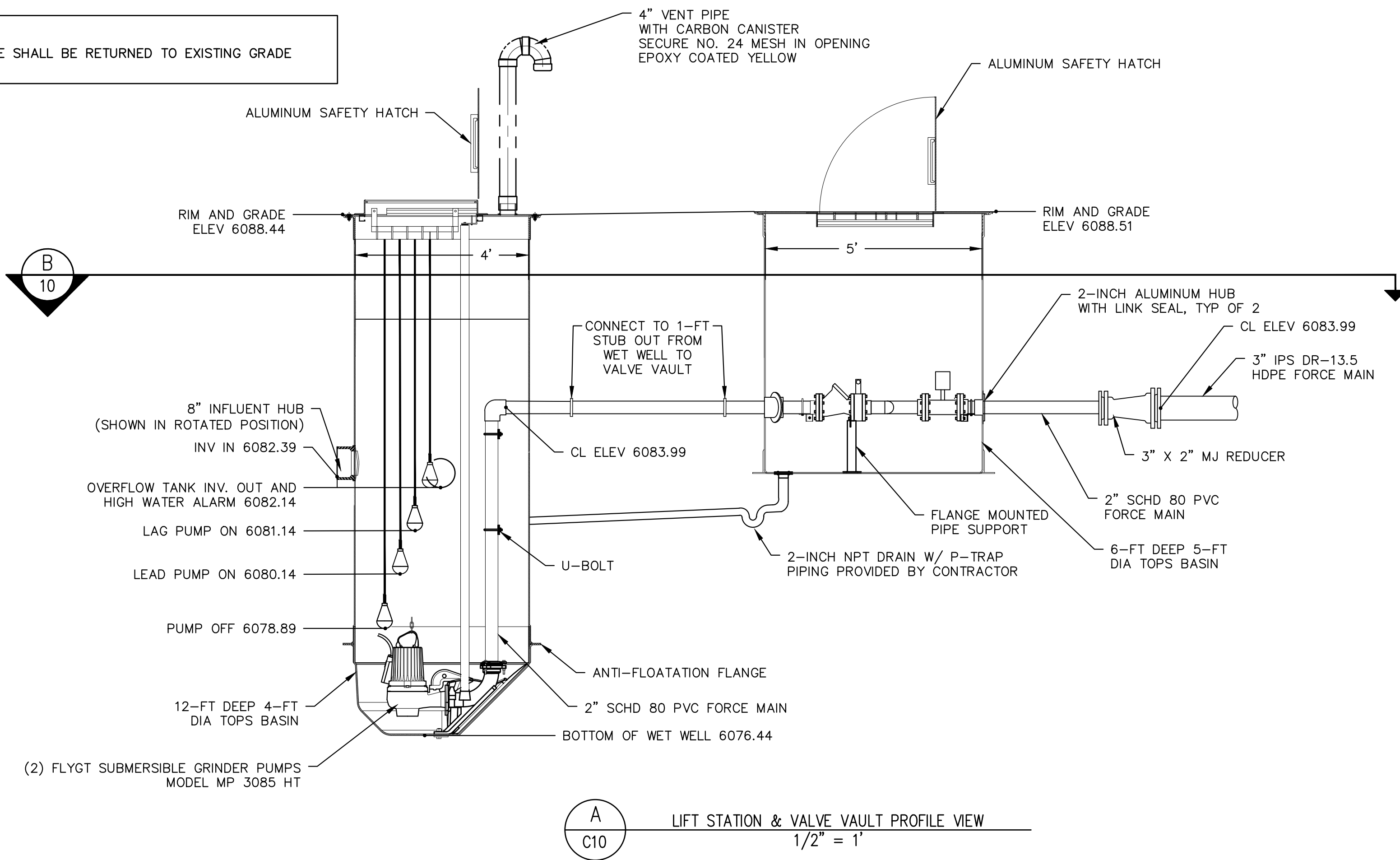
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WASTEWATER TREATMENT PLANT
LIFT STATION SITE PLAN
 TOWN OF RAMA
 113 S. COMMERCIAL STREET
 RAMA, CO 80832

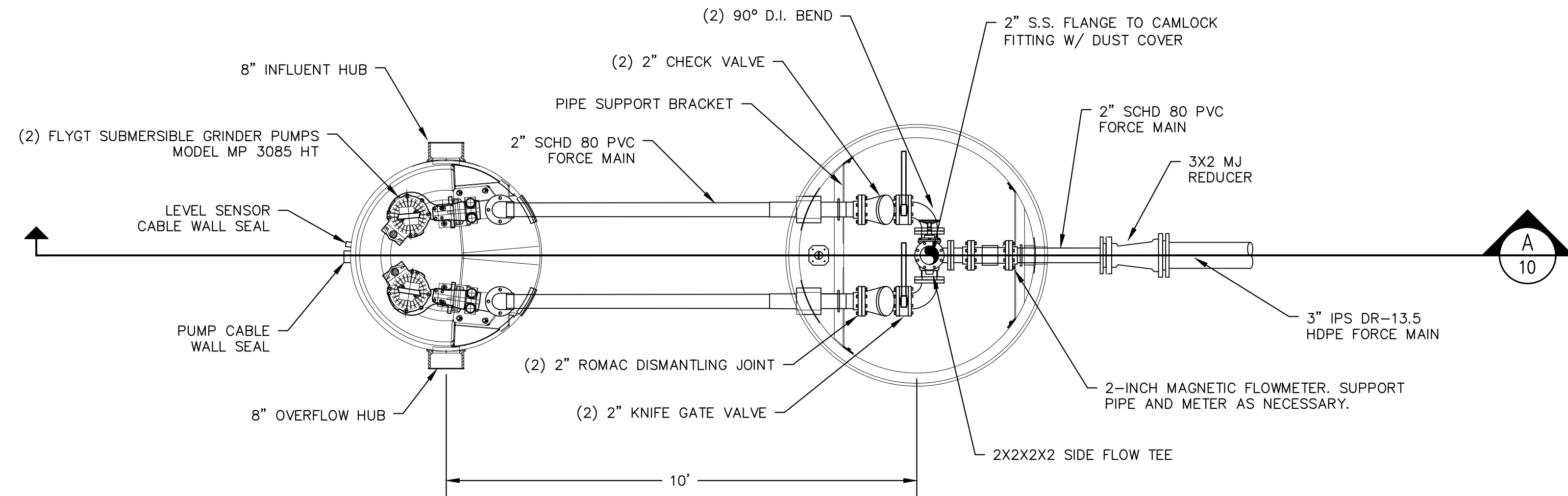
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GRADE NOTES:
 1. FINAL GRADE SHALL BE RETURNED TO EXISTING GRADE ELEVATION



A
 C10 LIFT STATION & VALVE VAULT PROFILE VIEW
 1/2" = 1'



B
 C10 LIFT STATION & VALVE VAULT PLAN VIEW
 1/2" = 1'

LIFT STATION DESIGN POINT: 42 GPM
 ADJUST KNIFE GATE TO CREATE ARTIFICIAL SYSTEM HEAD TO ALLOW DESIGN POINT OPERATION (APPROX 99 FT TDH)

INFLUENT PUMP & MOTOR INFORMATION	
PUMP MAKE	FLYGT SUBMERSIBLE GRINDER
PUMP MODEL	MP 3085 HT
DISCHARGE DIAMETER	2 IN
IMPELLER DIAMETER	150 MM
RATED POWER	4 HP
FREQUENCY	60 HZ
RATED VOLTAGE	230 V
NO. POLES	2
RATED CURRENT	9.9 AMP
STARTING CURRENT	62.0 AMP
RATED SPEED	3445 RPM

PUMP CURVE	
FLOW (GPM)	TDH (FT) 60 HZ
0	124
5	121
10	118
15	115
20	113
25	110
30	107
35	104
40	100
42	99
45	96
50	92
55	87
60	81
65	73

LIFT STATION NOTES:
 1. DISCHARGE CL MUST BE AT LEAST 18" FROM BOTTOM OF VALVE VAULT
 2. DISCHARGE CL OF VAULT MUST EQUAL DISCHARGE CL OF ORDERED STATION
 3. ALL BOLT PENETRATIONS THRU WALLS MUST BE SEALED WITH SILICONE SEALANT
 4. ALL 2-INCH FORCE MAIN PIPING SHALL BE SCHD 80 PVC
 5. ALL 3-INCH FORCE MAIN PIPING SHALL BE IPSS DR-13.5 HDPE
 6. ALL 8-INCH GRAVITY PIPING SHALL BE SDR 35 PVC
 7. PIPE COATING/COLORING AND LABELING PER SPECIFICATIONS
 8. PIPE AND STRUCTURE PRESSURE TESTING PER SPECIFICATIONS
 9. PIPE FITTINGS SHALL MATCH PIPE REQUIREMENTS INCLUDING INTERIOR COATING
 10. FLOATS SHALL BE PLACED AS FAR AWAY FROM THE INFLUENT INVERT AS ALLOWABLE BASED ON THE GEOMETRY OF THE BASIN. THE PUMP OFF FLOAT SHALL BE LOCATED AT THE FURTHEST ALLOWABLE POSITION. FLOATS SHALL BE LOCATED IN INCREASING HEIGHT AS THEY GET CLOSER TO THE INVERT. FLOAT LOCATIONS SHOWN ON THESE PLANS ARE FOR ILLUSTRATIVE PURPOSES ONLY.

NO.	REVISIONS	DESCRIPTION	DATE	BY

WASTEWATER TREATMENT PLANT
 LIFT STATION DETAILS
 TOWN OF RAMAH
 113 S. COMMERCIAL STREET
 RAMAH, CO 80832

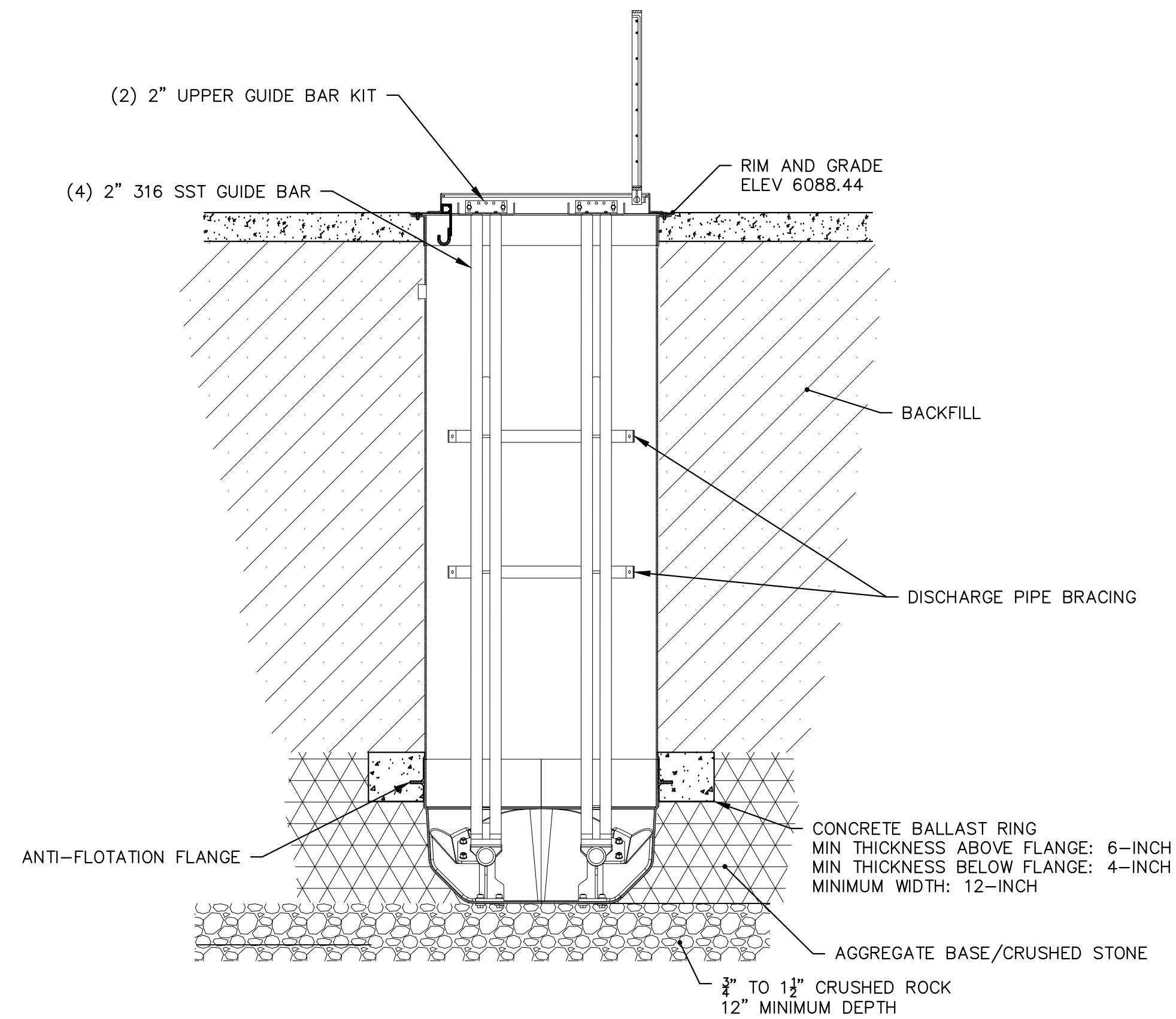
FOR AND ON BEHALF OF
 ELEMENT ENGINEERING, LLC
 DATE
 OCTOBER 2022
 JOB NUMBER
 0043.0001
 SCALE
 AS SHOWN
 EDITION
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 SHEET
 C10 OF C29

LIFT STATION CONSTRUCTION NOTES:

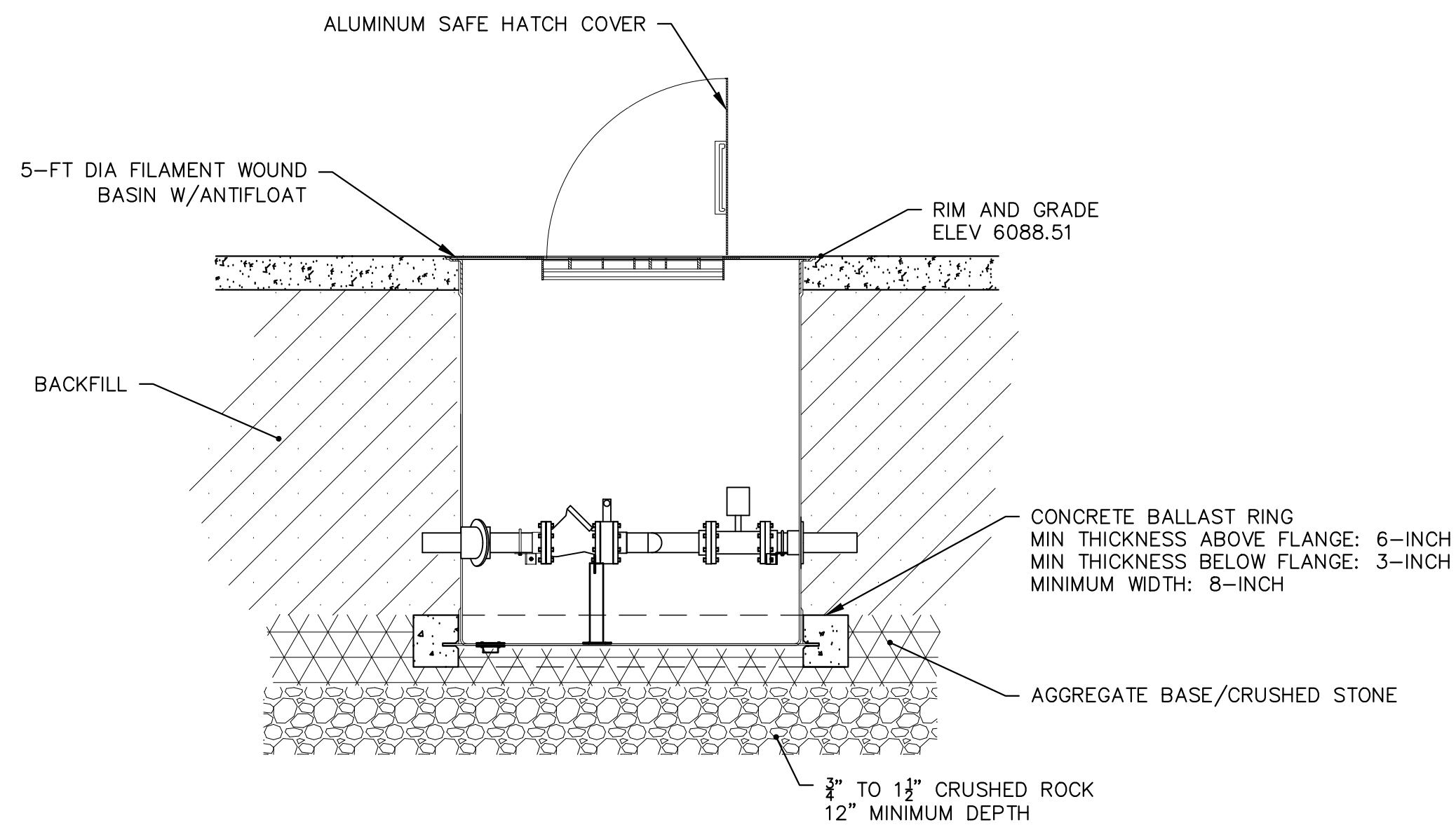
1. CONTRACTOR TO SUBMIT A CONSTRUCTION PHASING PLAN TO ENGINEER FOR APPROVAL PRIOR TO BEGINNING CONSTRUCTION. AN EXAMPLE CONSTRUCTION PHASING PLAN IS AS FOLLOWS:
 - 1.1. CONSTRUCT THE PROPOSED LIFT STATION INCLUDING INSTALLING ALL PUMPS, RAILS, PANELS, ETC.
 - 1.2. CONSTRUCT ALL YARD PIPING UP TO THE PROPOSED TIE IN LOCATIONS.
 - 1.3. TEST THE PROPOSED LIFT STATION PUMPS AND EQUIPMENT.
 - 1.4. INSTALL PROPOSED SANITARY SEWER MANHOLE.
 - 1.5. COMPLETE CONSTRUCTION OF ALL YARD PIPING. FINALIZE GRADING AND INSTALLATION OF ALL REQUIRED CONCRETE, BOLLARDS, ETC.
2. BYPASS PUMPING WILL BE REQUIRED DURING CONSTRUCTION. THE CONTRACTOR MUST SUBMIT A BYPASS PUMPING PLAN TO THE ENGINEER FOUR (4) WORKING DAYS PRIOR TO BEGINNING BYPASS PUMPING. NO BYPASS PUMPING SHALL BE ALLOWED UNTIL THE BYPASS PUMPING PLAN IS APPROVED BY THE ENGINEER IN WRITING. THE BYPASS PUMPING PLAN SHALL INCLUDE THE FOLLOWING ITEMS AT A MINIMUM:
 - 2.1. NUMBER OF PUMPS PROVIDED
 - 2.2. BASIC LAYOUT OF BYPASS PUMPS AND PIPE
 - 2.3. BYPASS PUMPING STAFFING PLAN
 - 2.4. EMERGENCY RESPONSE PLAN INCLUDING EMERGENCY CONTACT NUMBERS SHOULD A SANITARY SEWER OVERFLOW (SSO) OCCUR. NOTE THAT ANY REPORTING AND FINES RELATING TO A SSO SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. CONTRACTOR TO LOCATE ALL PROPOSED TIE IN LOCATIONS TO VERIFY DEPTH AND LOCATION. CONTRACTOR TO PROVIDE ANY MATERIALS, FITTINGS, BENDS AND PIPE NECESSARY TO TIE INTO EXISTING PIPES AND STRUCTURES. ANY DISCREPANCIES IN TIE IN LOCATIONS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER.
4. PUMPS, RAILS, FLOATS, VALVES AND ALL ANCILLARY EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER RECOMMENDATIONS AND SPECIFICATIONS.
6. AN ADDITIONAL 5 FEET OF WIRE FROM THE CONTROL BOX TO THE FLOATS SHALL BE ASSUMED TO ENSURE SLACK IN THE WIRE.
7. VENT PIPING SHALL BE 4-INCH DUCTILE IRON COATED YELLOW WITH EXTERIOR RATED EPOXY COATING PRODUCT. SECURE NO. 24 MESH IN OPENING. INSTALL CARBON CANISTER FOR ODOR CONTROL.
8. ALL CONCRETE STRUCTURES SHALL BE PRE-CAST. ALL HATCHES SHALL BE CAST INTO THE MANHOLE TOP.
9. PUMP STARTUP AND TRAINING TO BE COMPLETED BY A MANUFACTURER TRAINED AND APPROVED REPRESENTATIVE.
10. PUMP TESTING SHALL BE COMPLETED WITH CLEAN WATER WHICH MAY BE OBTAINED FROM THE TOWN. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY CONSTRUCTION WATER DISCHARGE PERMITS NECESSARY.
11. FOUR (4) HOURS OF OPERATOR TRAINING SHALL BE INCLUDED DURING PUMP STARTUP AND AUTO-DIALER STARTUP. ALL STARTUP AND TRAINING COSTS SHALL BE AT THE CONTRACTOR'S EXPENSE.
12. CONTRACTOR IS RESPONSIBLE FOR PROTECTING EXISTING EQUIPMENT AND STRUCTURES FROM DAMAGE. ANY DAMAGE WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE IN A MANNER ACCEPTABLE TO THE TOWN.
13. ALL MANHOLE CORES AND PENETRATIONS SHALL BE FIELD CORED AFTER VERIFYING EXISTING UTILITY INFORMATION.
14. CONTRACTOR TO POTHOLE ALL UTILITY CROSSINGS PRIOR TO CONSTRUCTION.

LIFT STATION EXCAVATION AND BALLASTING NOTES:

1. PRE-PACKAGED LIFT STATION:
 - 1.1. EXCAVATION AREA SHALL PROVIDE ADEQUATE WORKING ROOM AROUND THE PUMP STATION. SEE PUMP STATION INSTALLATION, CARE AND MAINTENANCE MANUAL FOR HANDLING, INSTALLATION, AND BALLASTING INSTRUCTIONS.
 - 1.2. CONCRETE BALLAST DESIGN SHALL BE SUFFICIENT TO RESIST HEAD PRESSURE AND SOIL LOADING WITH PUMP STATION COMPLETELY EMPTY AND WATER TO GRADE. THE DETAIL SHOWN HEREIN SATISFIES THIS CONDITION.
 - 1.3. DO NOT LET CONCRETE FREE FALL TO BOTTOM OF HOLE MORE THAN 3 TO 4 FEET. PLACE CONCRETE USING A TREMMY CHUTE TO HELP PRECLUDE SEGREGATION OF AGGREGATE FROM THE MATRIX. ENSURE THAT CONCRETE FLOWS UNDER THE FIBERGLASS ANTI-FLOTATION FLANGE. CONSOLIDATE CONCRETE WITH PROPER VIBRATION PER THE RECOMMENDED PRACTICE OF ACI 318-05 SECTION 5.10.
 - 1.4. BACKFILL AND COMPACTION SHALL MEET OR EXCEED THE REQUIREMENTS SET FORTH IN THE INSTALLATION, CARE, AND MAINTENANCE MANUAL FOR THE PACKAGE PUMP STATION.
 - 1.5. SLINGING, INSTALLATION, AND HANDLING SHALL FOLLOW ALL MANUFACTURERS REQUIREMENTS.



1
C11 LIFT STATION BALLAST AND BACKFILL DETAILS
1/2" = 1'



2
C11 VALVE VAULT BALLAST AND BACKFILL DETAILS
1/2" = 1'

GRADE NOTES:

1. FINAL GRADE SHALL BE RETURNED TO EXISTING GRADE ELEVATION

NO.	REVISIONS	DESCRIPTION	DATE	BY

WASTEWATER TREATMENT PLANT
 LIFT STATION NOTES &
 BALLASTING
 TOWN OF RAMAH
 113 S. COMMERCIAL STREET
 RAMAH, CO 80832

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF
 ELEMENT ENGINEERING, LLC

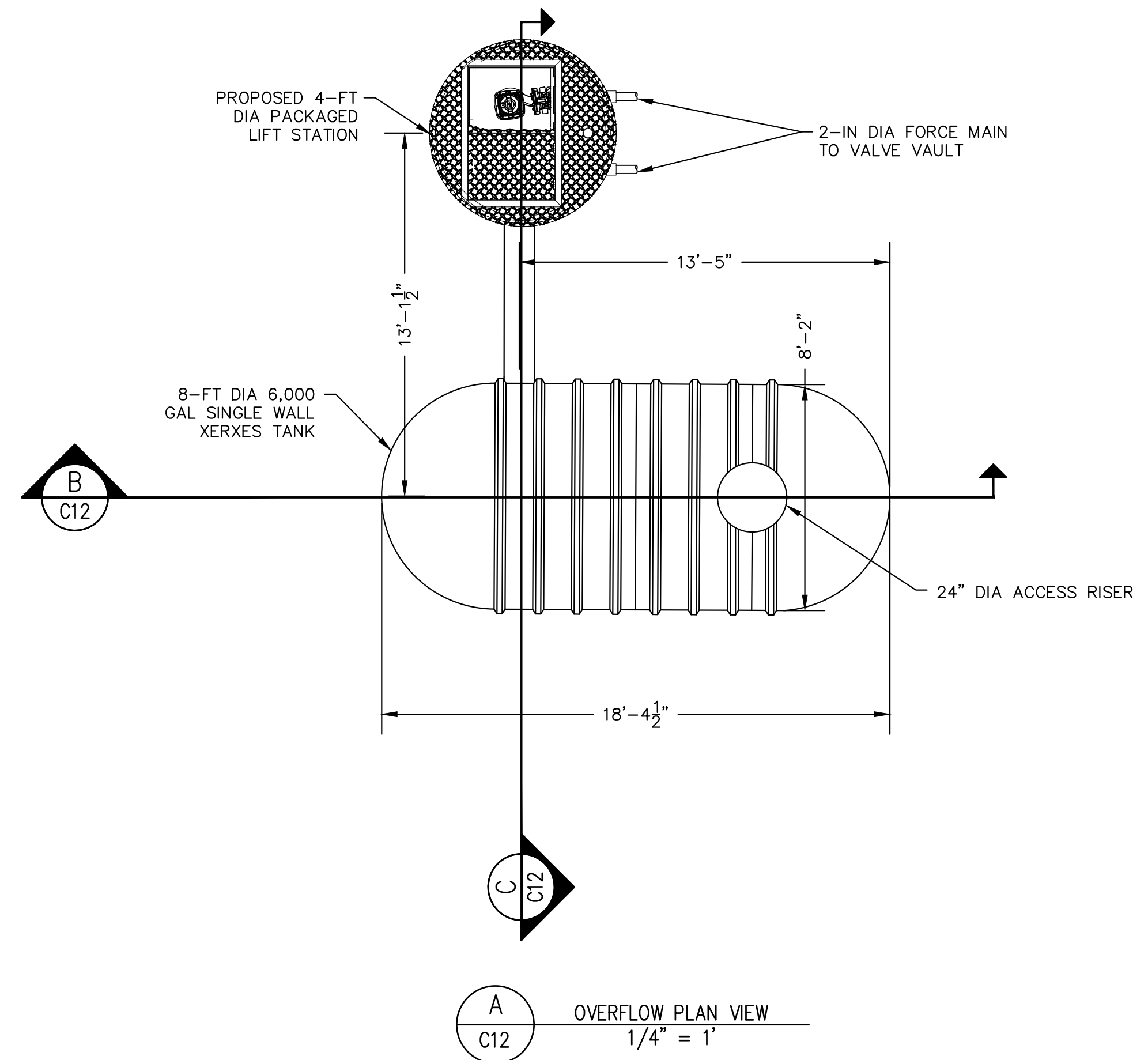
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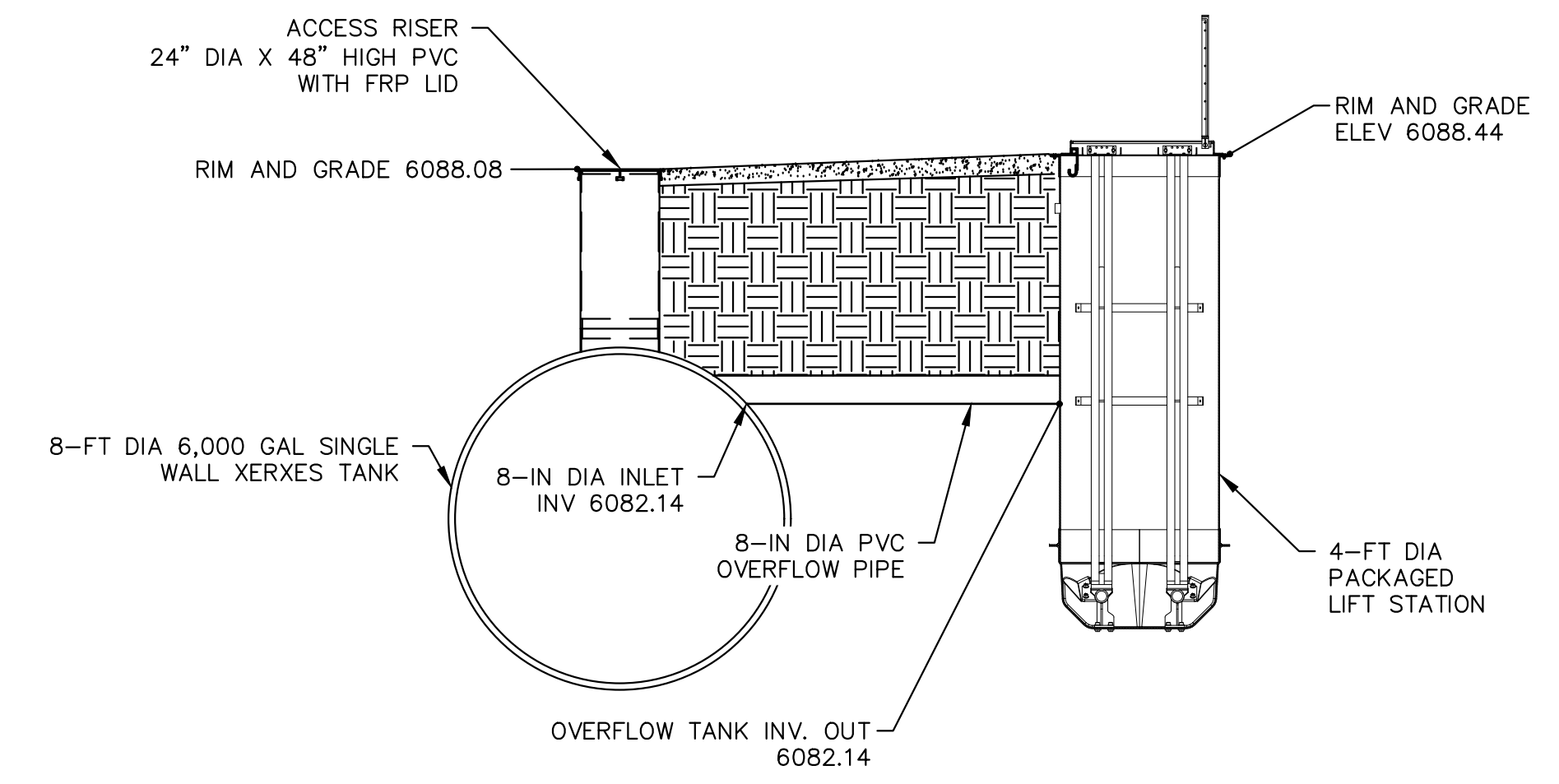
SCALE
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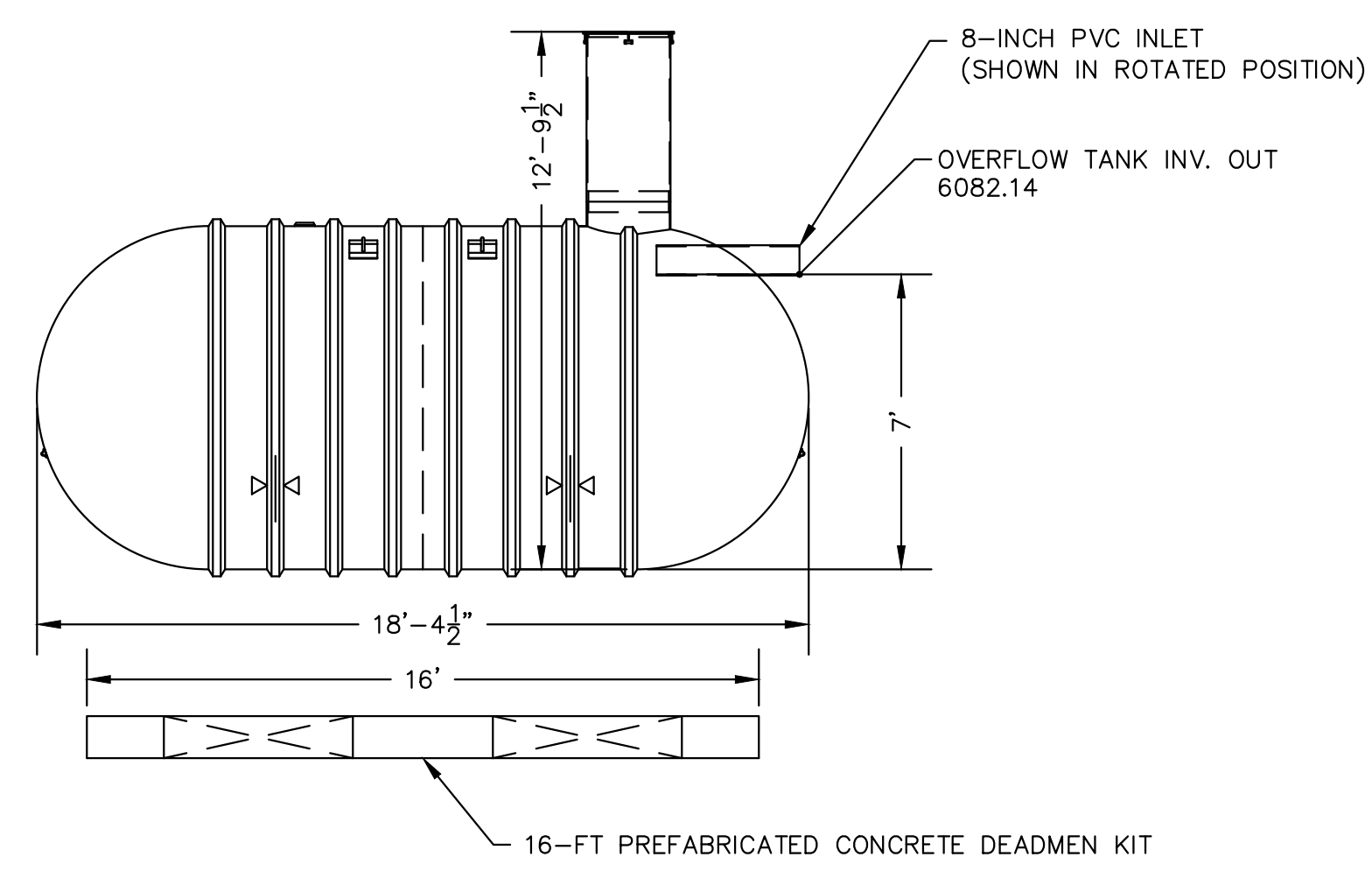
SHEET
 C11 OF C29



A
C12 OVERFLOW PLAN VIEW
1/4" = 1'



C
C12 OVERFLOW SIDE VIEW
1/4" = 1'



B
C12 OVERFLOW PROFILE VIEW
1/4" = 1'

NOTE: ALL EQUIPMENT SHOWN IN OVERFLOW PROFILE VIEW PROVIDED BY MANUFACTURER

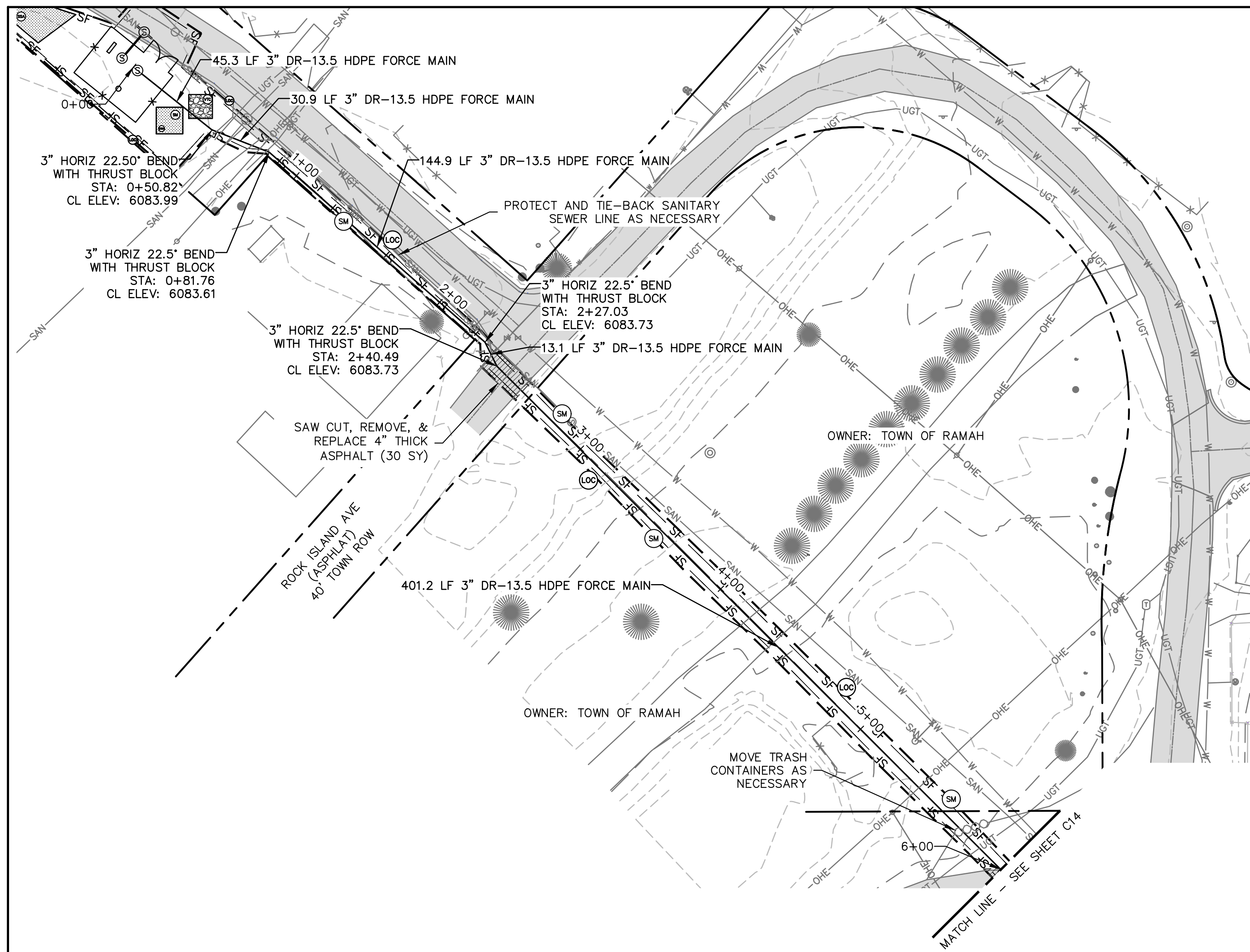
8-FT DIAMETER 6,000 GALLON TANK	
QTY	DESCRIPTION
1	4" NPT SERVICE FITTING
1	8" DIA PVC INLET HORIZONTAL PIPE
1	23 1/2" IS FIBERGLASS ACCESS OPENING WITH 23 1/2" OD ALIGNMENT RING
1	24" DIA X 48" HIGH PVC RISER WITH FRP LID WITH GASKET
2	LIFTING LUG (10" X 8") 25", 25"
2	16-FT PREFABRICATED CONCRETE DEADMENT
2	HOLD DOWN STRAP

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WASTEWATER TREATMENT PLANT
OVERFLOW DETAILS
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PREPARED UNDER THE DIRECT SUPERVISION OF

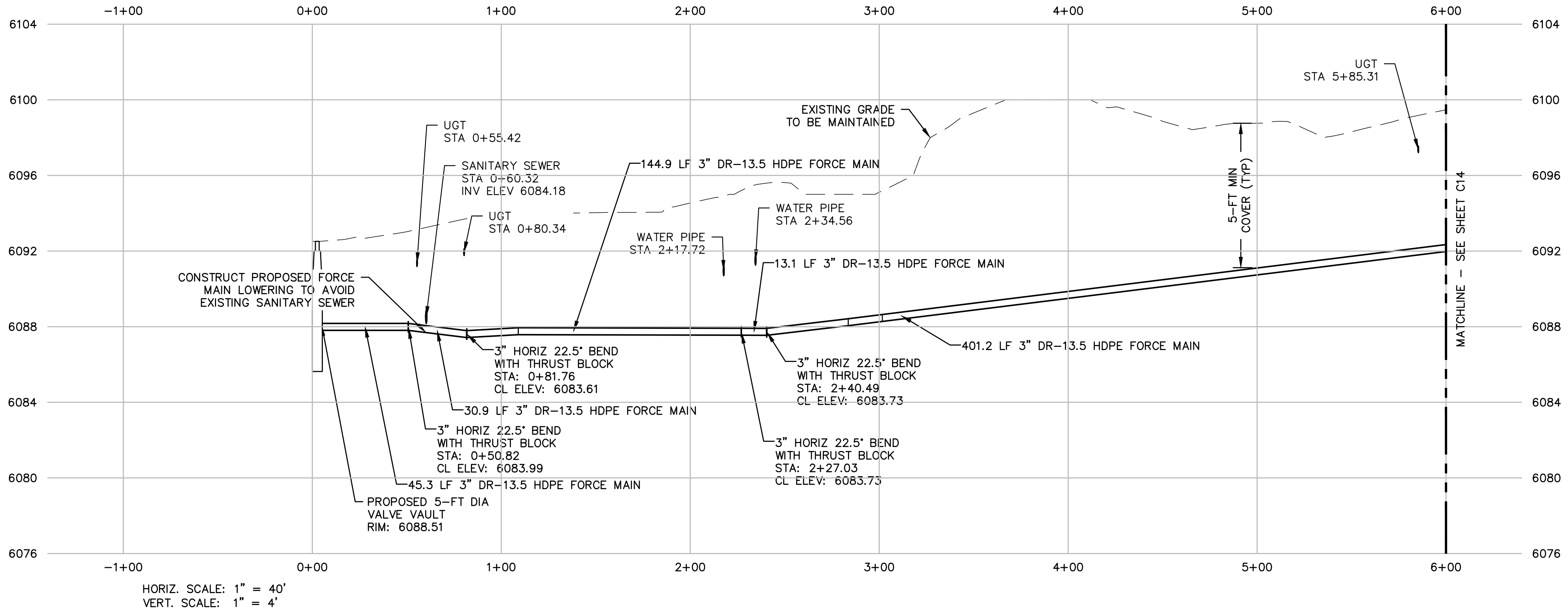
DATE	OCTOBER 2022
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SCALE	AS SHOWN
EDITION	PERMITTING
SHEET	C12 OF C29



BMP LINE TYPES AND SYMBOLS DESCRIPTIONS	
	CIP CULVERT INLET PROTECTION
	CWA CONCRETE WASHOUT AREA
	LOC LIMITS OF CONSTRUCTION
	SF SILT FENCE
	SM TOPSOIL SEEDING AND MULCHING
	SSA STABILIZED STAGING AREA
	VTC VEHICLE TRACKING CONTROL

- EROSION CONTROL NOTES (APPLICABLE TO ENTIRE PROJECT):
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 - SEED ALL DISTURBED AREAS OUTSIDE OF ROADWAY FOR FINAL STABILIZATION.
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- NOTES:
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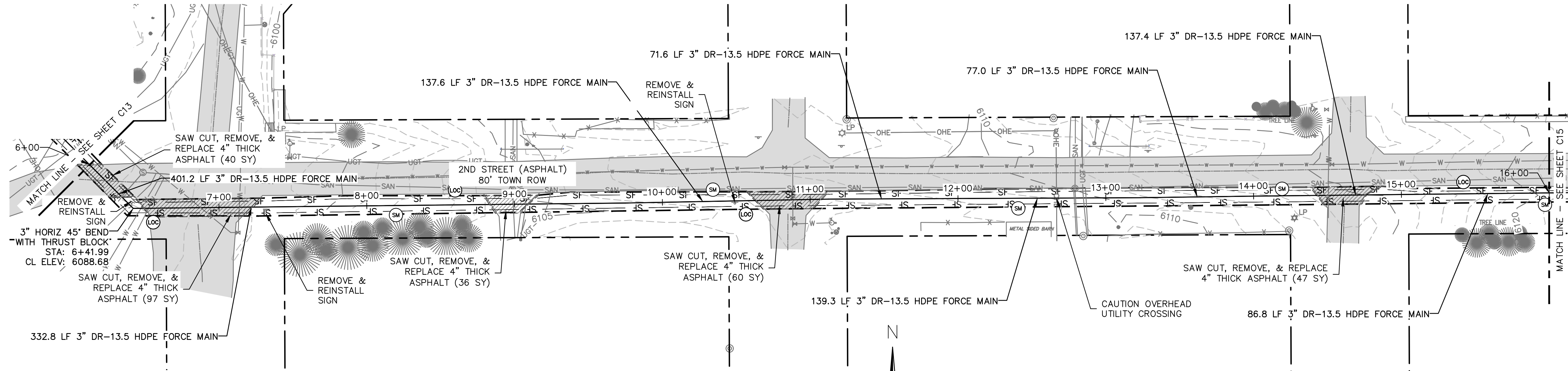
HORIZ. SCALE: 1" = 40'
VERT. SCALE: 1" = 4'

NO.	REVISIONS	DESCRIPTION	DATE	BY

WASTEWATER TREATMENT PLANT
FORCE MAIN PLAN &
PROFILE 0+00 - 6+00
TOWN OF RAMAH
113 S. COMMERCIAL STREET
RAMAH, CO 80832

PREPARED UNDER THE DIRECT SUPERVISION OF

DATE	OCTOBER 2022
JOB NUMBER	0043.0001
SCALE	1" = 40'
EDITION	
PERMITTING	
SHEET	C13 OF C29

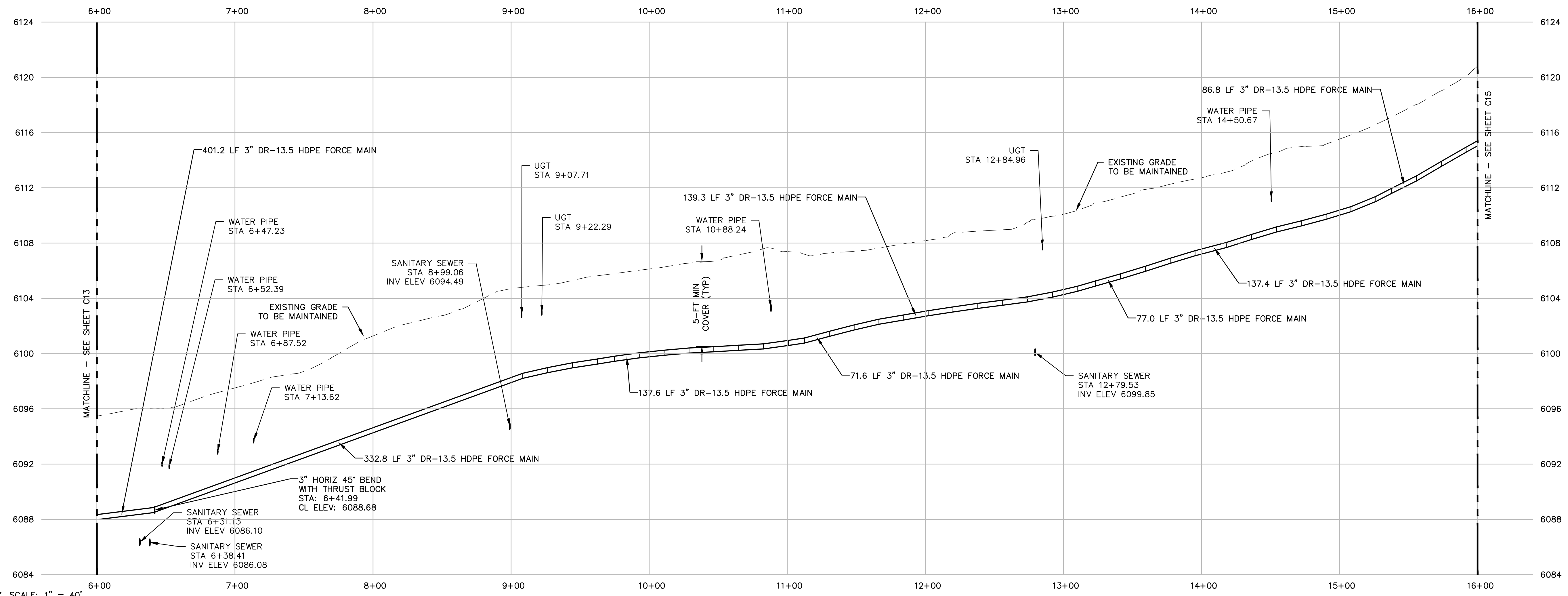
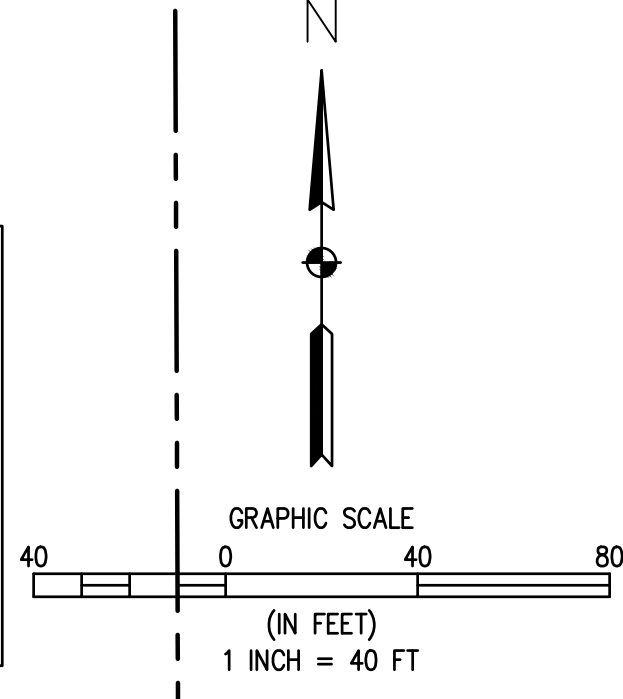


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BMP LINE TYPES AND SYMBOLS DESCRIPTIONS

	CIP	CULVERT INLET PROTECTION
	CWA	CONCRETE WASHOUT AREA
	LOC	LIMITS OF CONSTRUCTION
	SF	SILT FENCE
	SM	TOPSOIL, SEEDING AND MULCHING
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HORIZ. SCALE: 1" = 40'
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WASTEWATER TREATMENT PLANT
FORCE MAIN PLAN & PROFILE 6+00 - 16+00
TOWN OF RAMAH
113 S. COMMERCIAL STREET
RAMAH, CO 80832

PREPARED UNDER THE DIRECT SUPERVISION OF
FOR AND ON BEHALF OF
ELEMENT ENGINEERING, LLC
DATE
OCTOBER 2022
JOB NUMBER
0043.0001
SCALE
1" = 40'
EDITION
PERMITTING
SHEET
C14 OF C29



NO.	REVISIONS	DESCRIPTION	DATE	BY

WASTEWATER TREATMENT PLANT
FORCE MAIN PLAN & PROFILE
16+00 - 27+00
TOWN OF RAMAH
113 S. COMMERCIAL STREET
RAMAH, CO 80832

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF
ELEMENT ENGINEERING, LLC

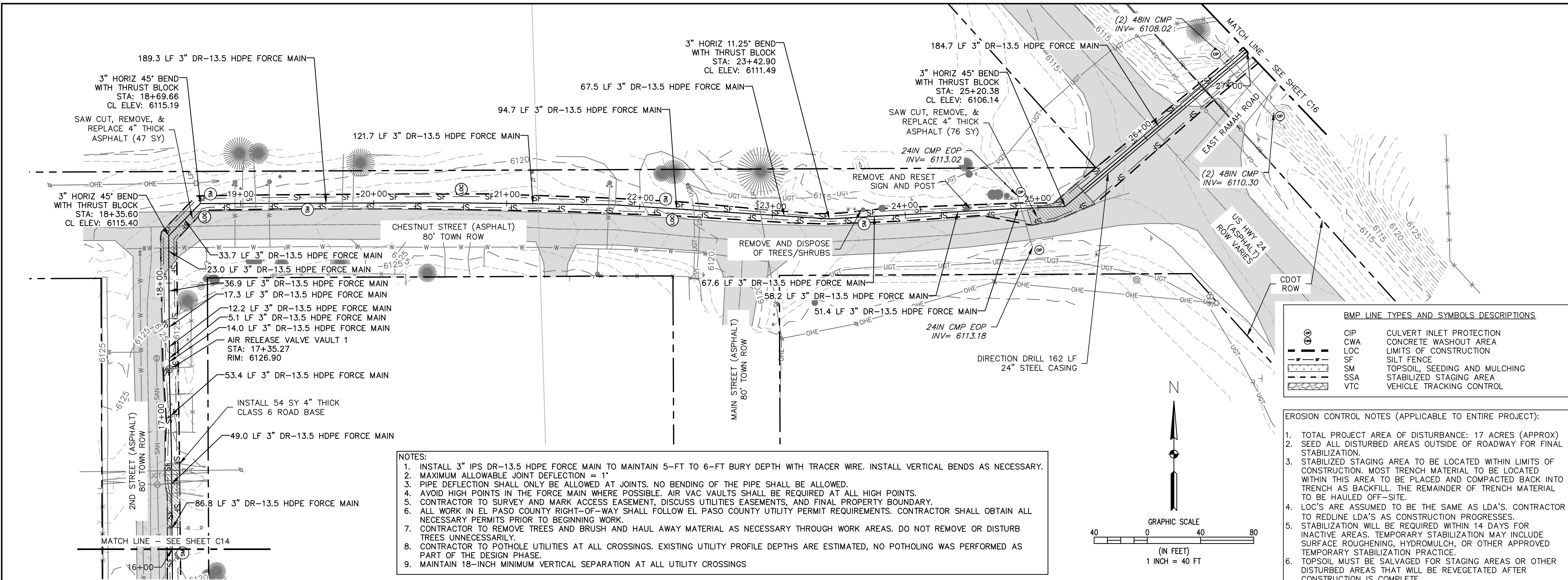
DATE
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SHEET
C15 OF C29

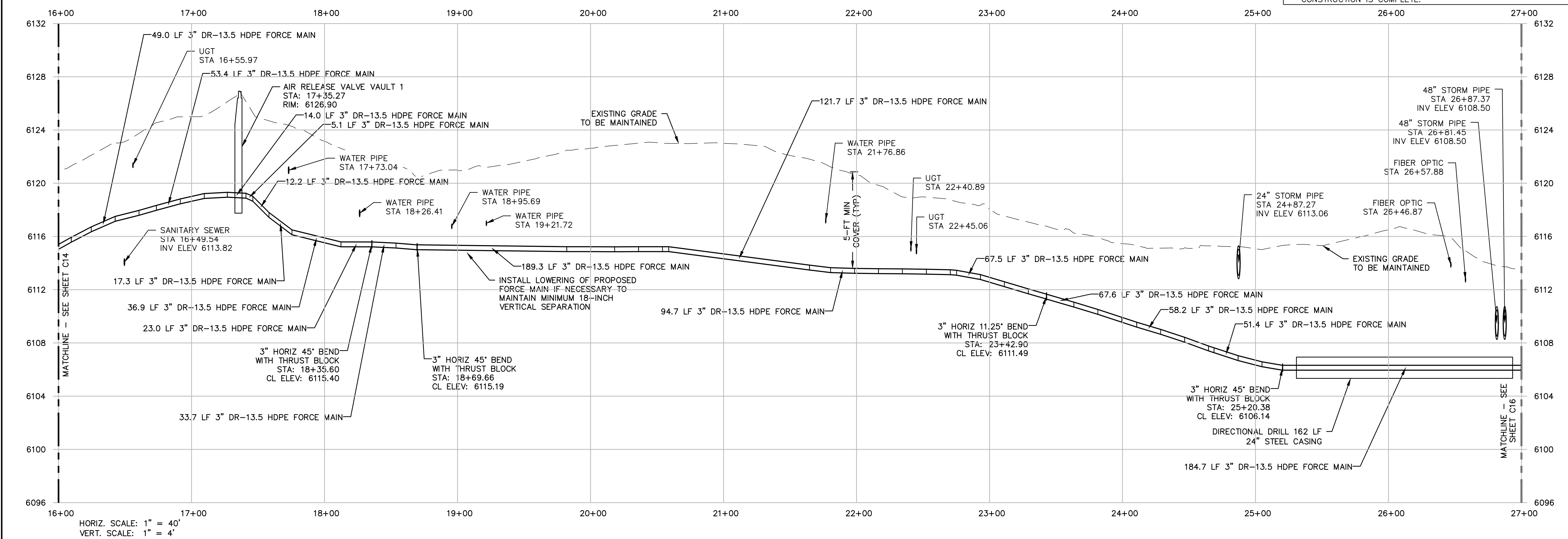
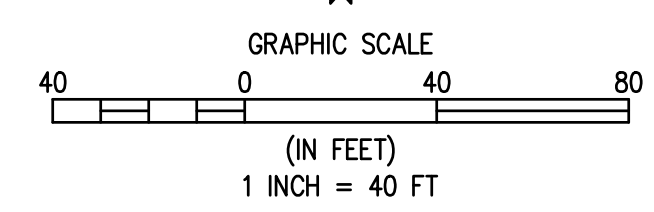


- NOTES:
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BMP LINE TYPES AND SYMBOLS DESCRIPTIONS

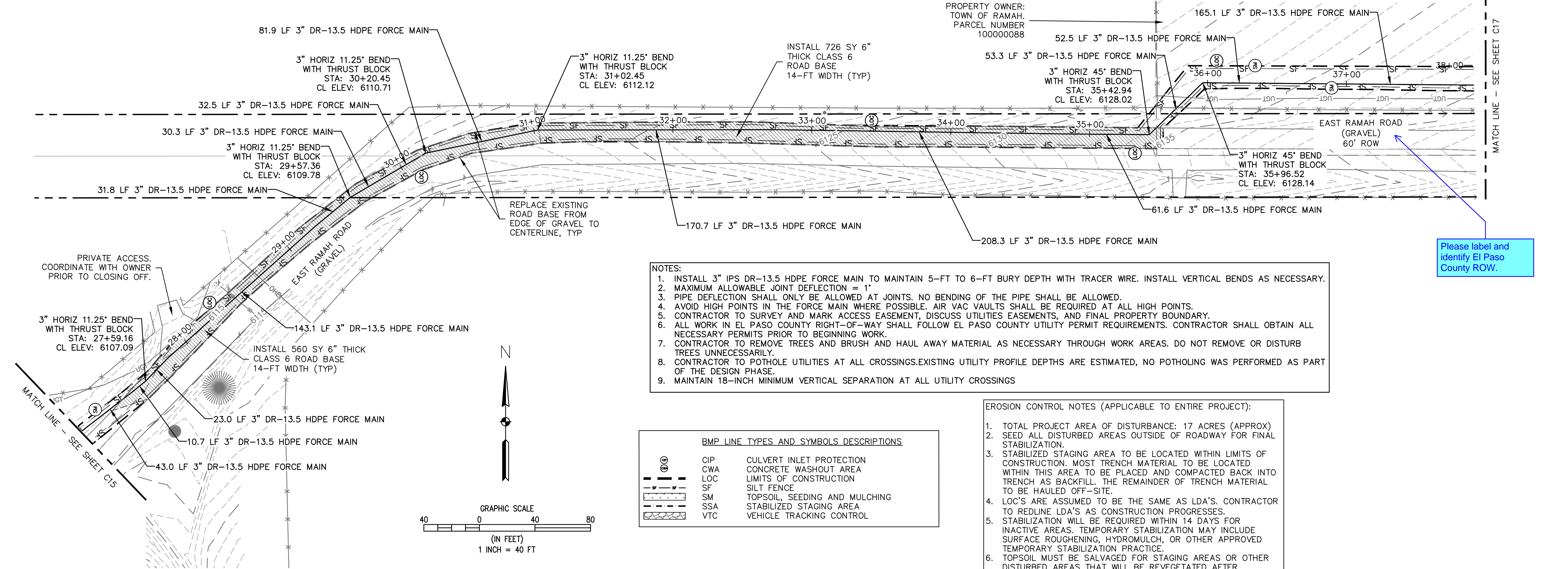
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PROPERTY OWNER:
TOWN OF RAMAH,
PARCEL NUMBER
10000088

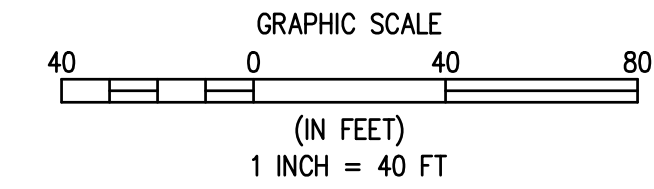


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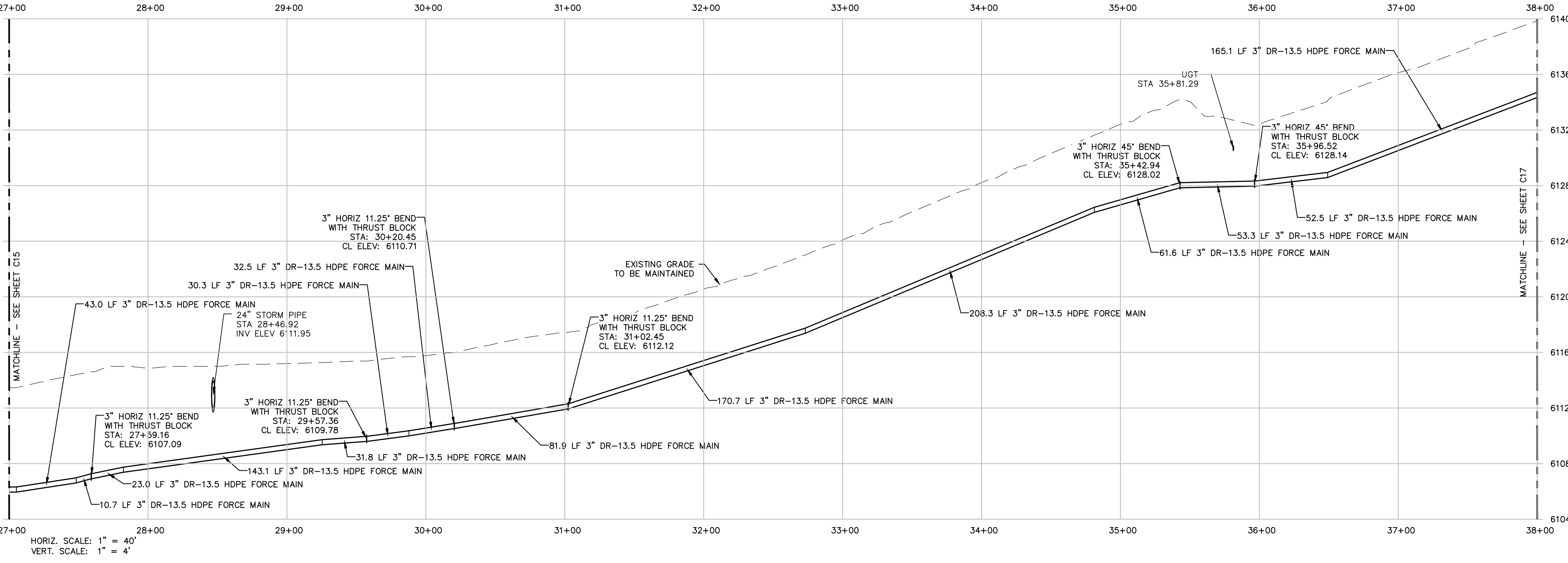
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Please label and identify El Paso County ROW.



NO.	REVISIONS	DESCRIPTION	DATE	BY

WASTEWATER TREATMENT PLANT
FORCE MAIN PLAN & PROFILE 27+00 - 38+00
 TOWN OF RAMAH
 113 S. COMMERCIAL STREET
 RAMAH, CO 80832

PERMITTED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF
 ELEMENT ENGINEERING, LLC

DATE
 OCTOBER 2022

JOB NUMBER
 0043.0001

SCALE
 1" = 40'

EDITION
 PERMITTING

SHEET
 C16 OF C29

NO.	DATE	BY	DESCRIPTION

WASTEWATER TREATMENT PLANT
**FORCE MAIN PLAN &
 PROFILE 38+00 - 46+75**
 TOWN OF RAMAH
 113 S. COMMERCIAL STREET
 RAMAH, CO 80832

PREPARED UNDER THE DIRECT SUPERVISION OF

FOR AND ON BEHALF OF
 ELEMENT ENGINEERING, LLC

DATE
 OCTOBER 2022

JOB NUMBER
 0043.0001

SCALE
 1" = 40'

EDITION
 PERMITTING

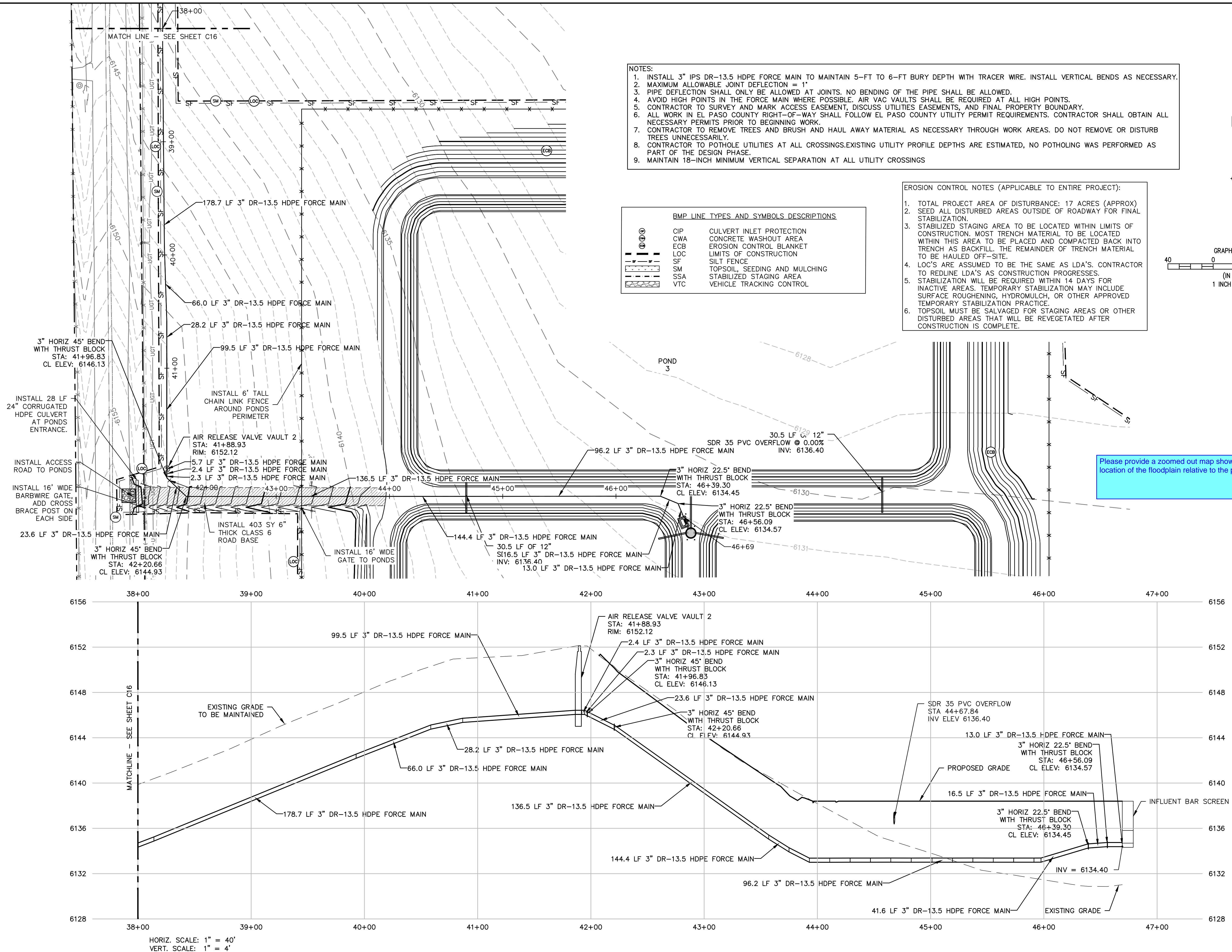
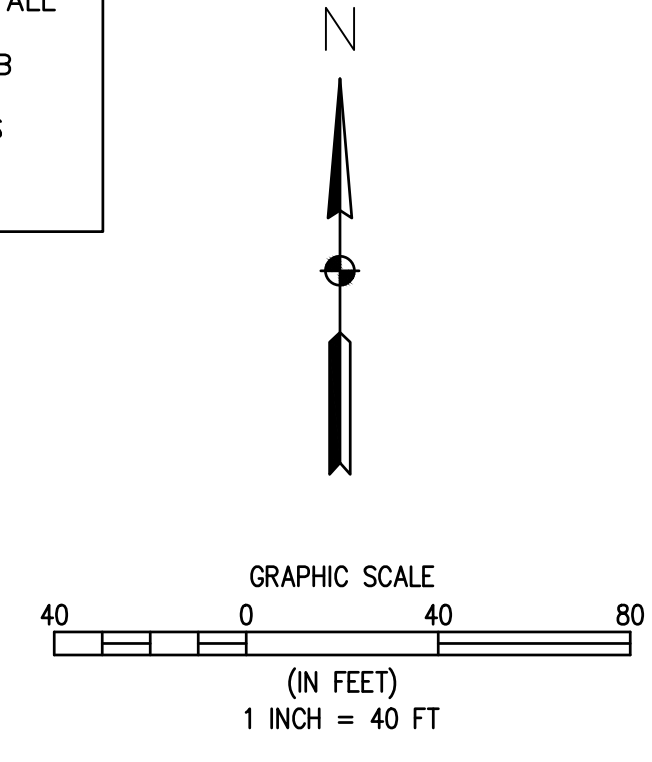
SHEET
 C17 OF C29

- NOTES:**
1. INSTALL 3" IPS DR-13.5 HDPE FORCE MAIN TO MAINTAIN 5-FT TO 6-FT BURY DEPTH WITH TRACER WIRE. INSTALL VERTICAL BENDS AS NECESSARY.
 2. MAXIMUM ALLOWABLE JOINT DEFLECTION = 1"
 3. PIPE DEFLECTION SHALL ONLY BE ALLOWED AT JOINTS. NO BENDING OF THE PIPE SHALL BE ALLOWED.
 4. AVOID HIGH POINTS IN THE FORCE MAIN WHERE POSSIBLE. AIR VAC VAULTS SHALL BE REQUIRED AT ALL HIGH POINTS.
 5. CONTRACTOR TO SURVEY AND MARK ACCESS EASEMENT, DISCUSS UTILITIES EASEMENTS, AND FINAL PROPERTY BOUNDARY.
 6. ALL WORK IN EL PASO COUNTY RIGHT-OF-WAY SHALL FOLLOW EL PASO COUNTY UTILITY PERMIT REQUIREMENTS. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS PRIOR TO BEGINNING WORK.
 7. CONTRACTOR TO REMOVE TREES AND BRUSH AND HAUL AWAY MATERIAL AS NECESSARY THROUGH WORK AREAS. DO NOT REMOVE OR DISTURB TREES UNNECESSARILY.
 8. CONTRACTOR TO POTHOLE UTILITIES AT ALL CROSSINGS. EXISTING UTILITY PROFILE DEPTHS ARE ESTIMATED, NO POTHOLES WERE PERFORMED AS PART OF THE DESIGN PHASE.
 9. MAINTAIN 18-INCH MINIMUM VERTICAL SEPARATION AT ALL UTILITY CROSSINGS

- EROSION CONTROL NOTES (APPLICABLE TO ENTIRE PROJECT):**
1. TOTAL PROJECT AREA OF DISTURBANCE: 17 ACRES (APPROX)
 2. SEED ALL DISTURBED AREAS OUTSIDE OF ROADWAY FOR FINAL STABILIZATION.
 3. STABILIZED STAGING AREA TO BE LOCATED WITHIN LIMITS OF CONSTRUCTION. MOST TRENCH MATERIAL TO BE LOCATED WITHIN THIS AREA TO BE PLACED AND COMPACTED BACK INTO TRENCH AS BACKFILL. THE REMAINDER OF TRENCH MATERIAL TO BE HAULED OFF-SITE.
 4. LOC'S ARE ASSUMED TO BE THE SAME AS LDA'S. CONTRACTOR TO REDLINE LDA'S AS CONSTRUCTION PROGRESSES.
 5. STABILIZATION WILL BE REQUIRED WITHIN 14 DAYS FOR INACTIVE AREAS. TEMPORARY STABILIZATION MAY INCLUDE SURFACE ROUGHENING, HYDROMULCH, OR OTHER APPROVED TEMPORARY STABILIZATION PRACTICE.
 6. TOPSOIL MUST BE SALVAGED FOR STAGING AREAS OR OTHER DISTURBED AREAS THAT WILL BE REVEGETATED AFTER CONSTRUCTION IS COMPLETE.

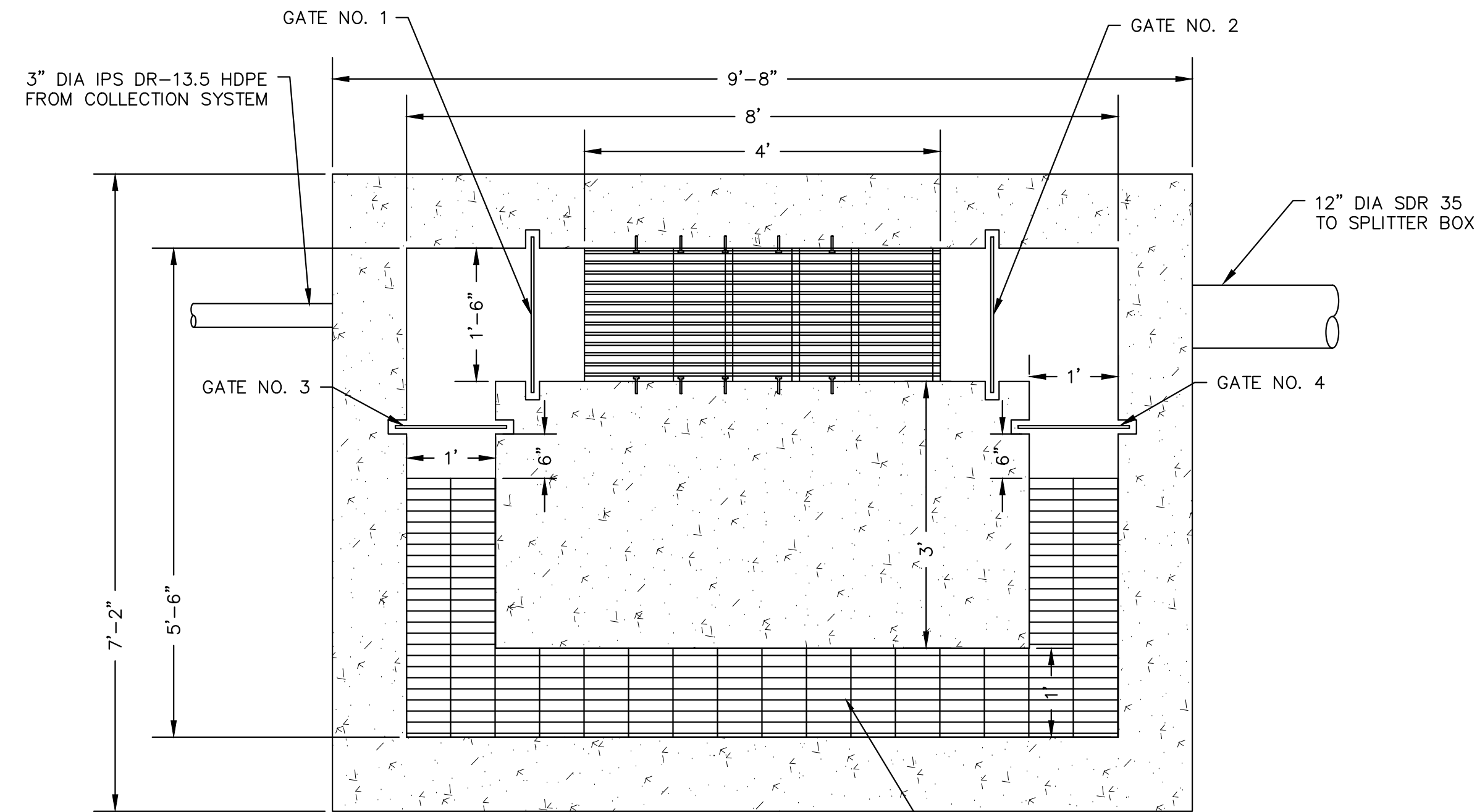
BMP LINE TYPES AND SYMBOLS DESCRIPTIONS

(Symbol)	CIP	CULVERT INLET PROTECTION
(Symbol)	CWA	CONCRETE WASHOUT AREA
(Symbol)	ECB	EROSION CONTROL BLANKET
(Symbol)	LOC	LIMITS OF CONSTRUCTION
(Symbol)	SF	SILT FENCE
(Symbol)	SM	TOPSOIL, SEEDING AND MULCHING
(Symbol)	SSA	STABILIZED STAGING AREA
(Symbol)	VTC	VEHICLE TRACKING CONTROL

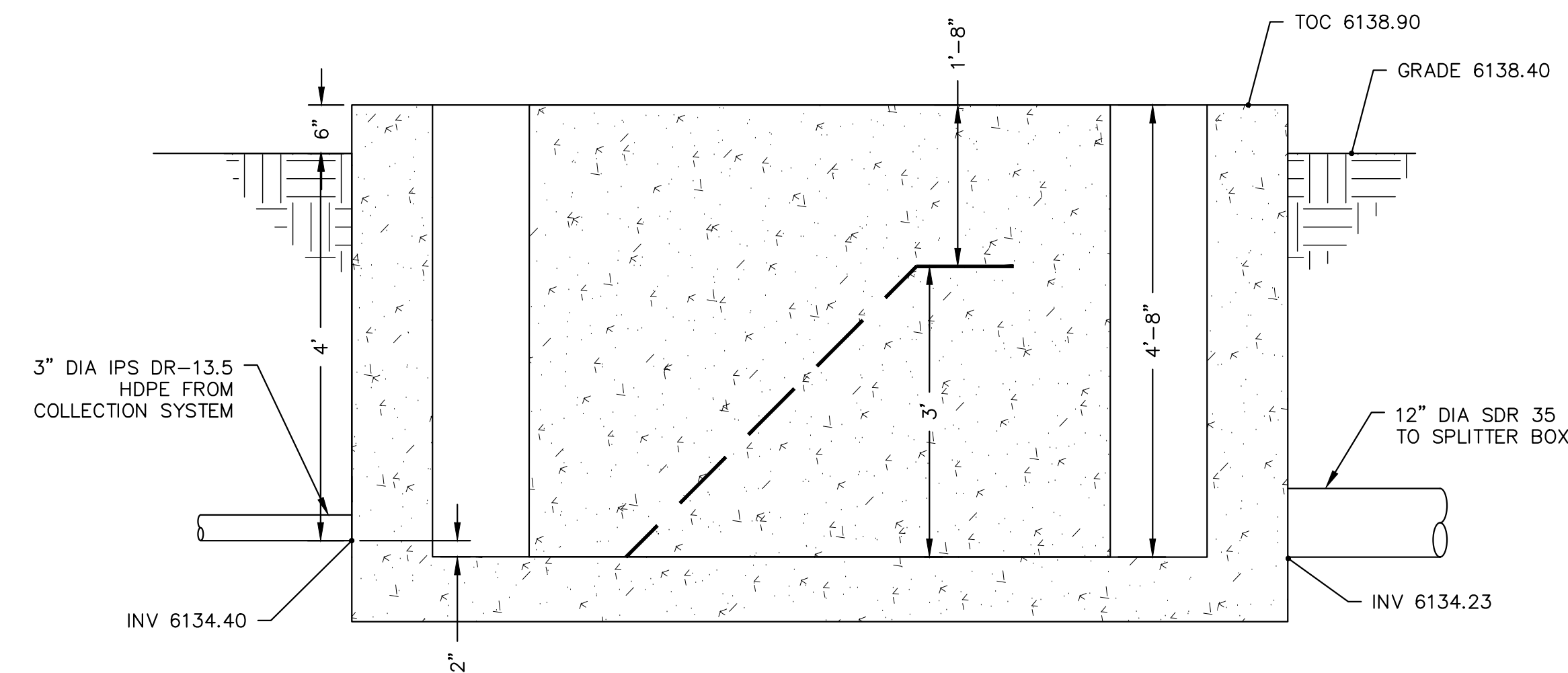


Please provide a zoomed out map showing the location of the floodplain relative to the ponds.

HORIZ. SCALE: 1" = 40'
 VERT. SCALE: 1" = 4'



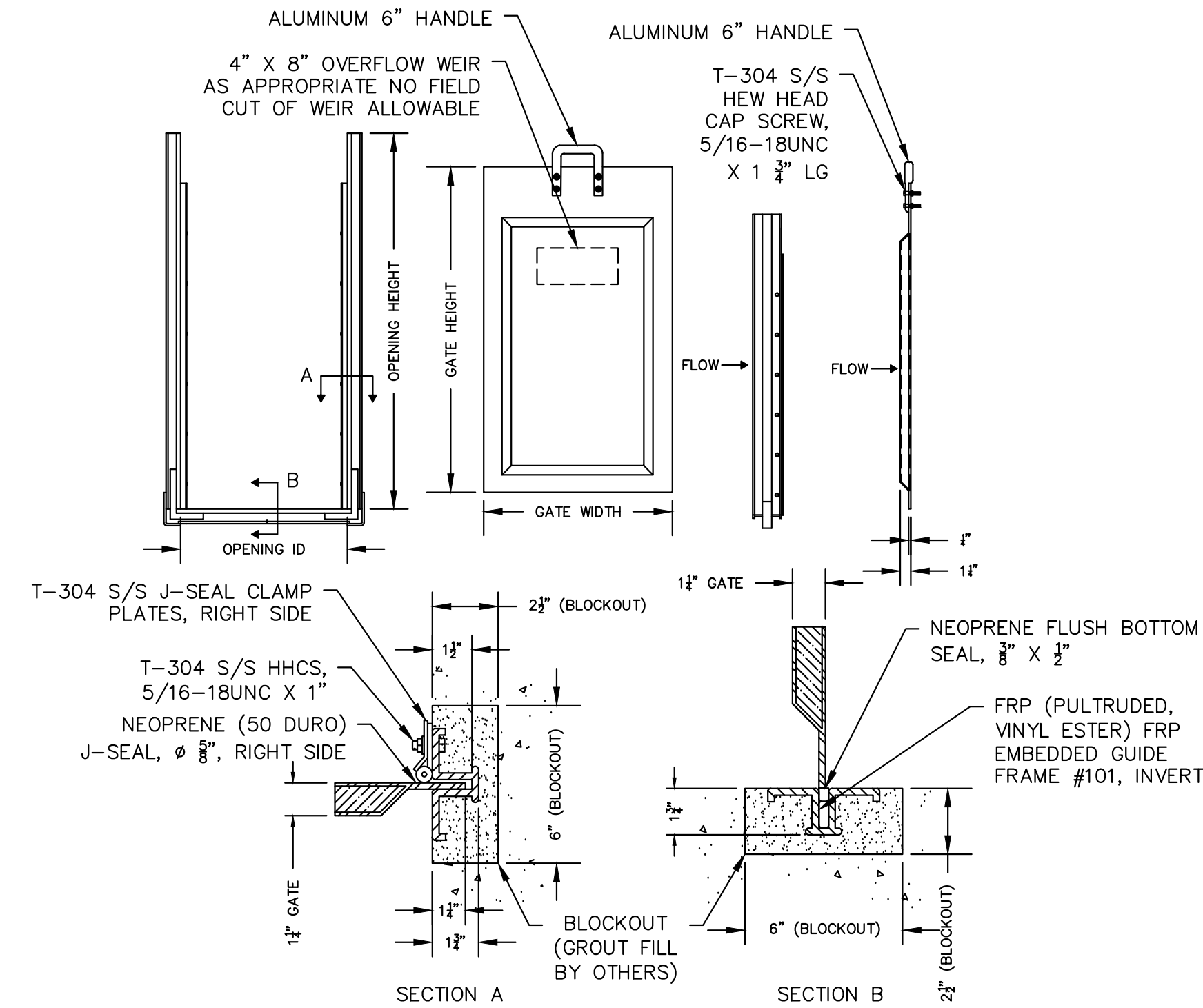
A
18 INFLUENT BAR SCREEN PLAN
3/4" = 1'



B
18 INFLUENT BAR SCREEN PROFILE
3/4" = 1'

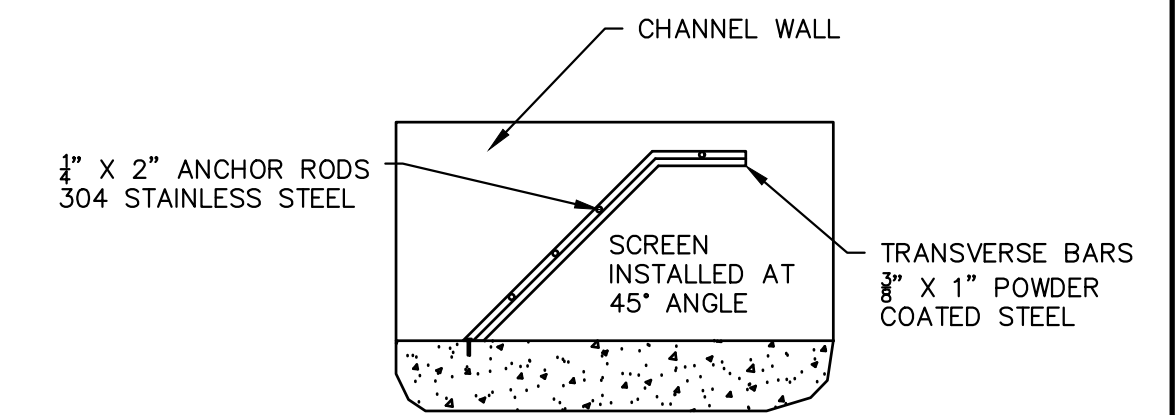
GATE TABLE				
GATE NUMBER	GATE TYPE	MOUNTING TYPE	CHANNEL DIMENSIONS (H' X W')	NOTES
1	MANUAL STOP GATE	FE	3'-6" X 1'-6"	
2	MANUAL STOP GATE	FE	3'-6" X 1'-6"	
3	MANUAL STOP GATE	FE	3'-6" X 1'	EMERGENCY OVERFLOW WEIR
4	MANUAL STOP GATE	FE	3'-6" X 1'	EMERGENCY OVERFLOW WEIR

FE FRAME EMBEDDED INSIDE CHANNEL
H HEIGHT
W WIDTH

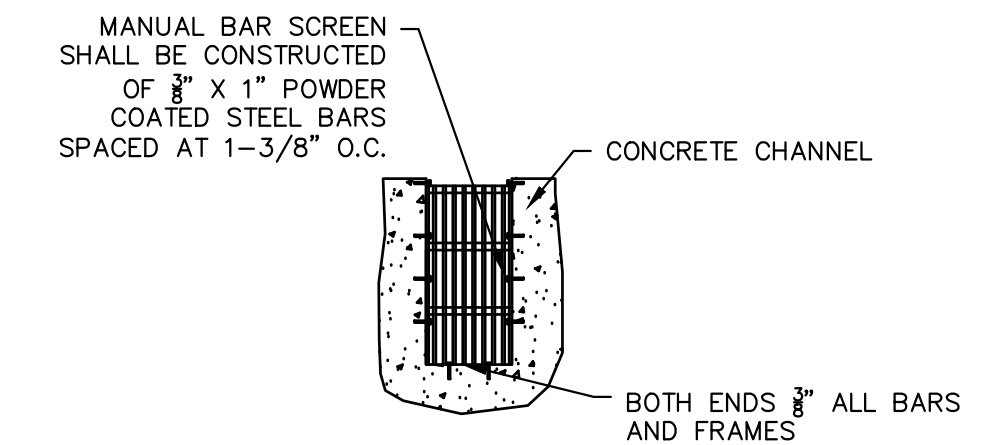


- NOTES:
1. STOP GATES TO BE MANUFACTURED BY PLASTI-FAB OR ENGINEER APPROVED EQUAL
 2. SEE PLANS FOR OPENING AND GATE DIMENSIONS
 3. STOP GATE IS SANDWICH CONSTRUCTION W/ FRP SKINS, FOAM CORE, AND INTERNAL STRUCTURAL STEEL
 4. STOP GATE COLOR IS GREY
 5. RESIN: MCWHORTER 712-3765
 6. GUIDE FRAME IS PULTRUDED FRP (VINYL-ESTER)
 7. ALL JOINTS ARE BONDED WITH PLEXUS MA-300
 8. ALL HARDWARE MATERIAL IS T-304 S/S
 9. APPROXIMATE WEIGHT OF GATE ALONE IS 14 LBS

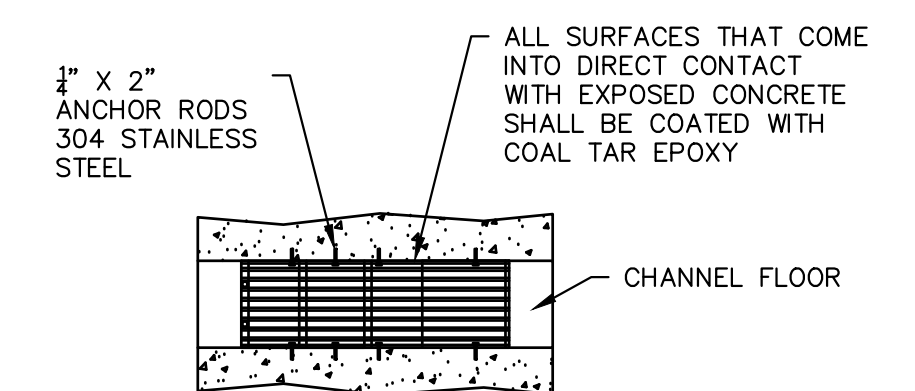
1
18 STOP GATE DETAIL
NTS



2
18 MANUAL BAR SCREEN SECTION
NTS



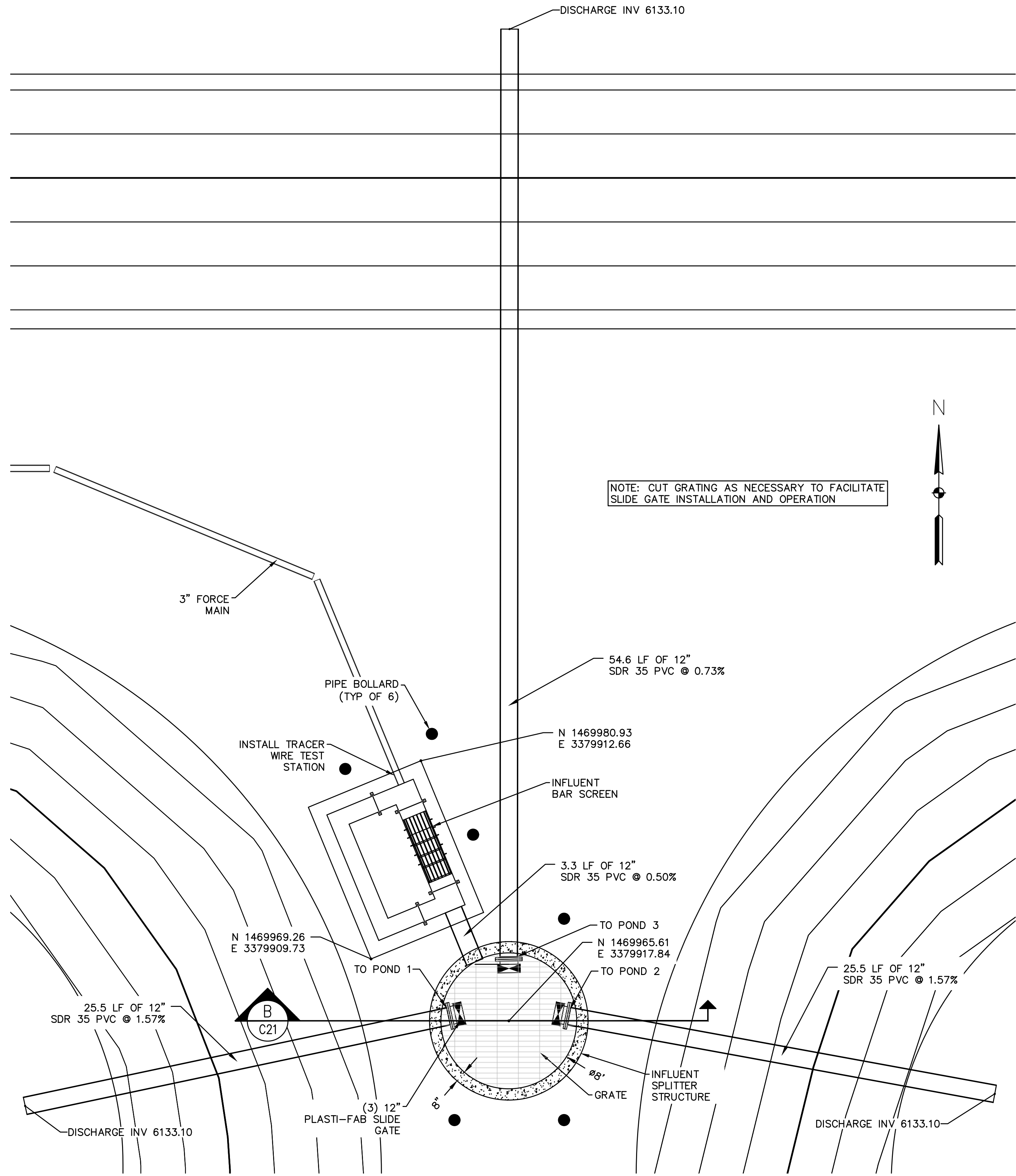
3
18 MANUAL BAR SCREEN FRONT VIEW
NTS



4
18 MANUAL BAR SCREEN TOP VIEW
NTS

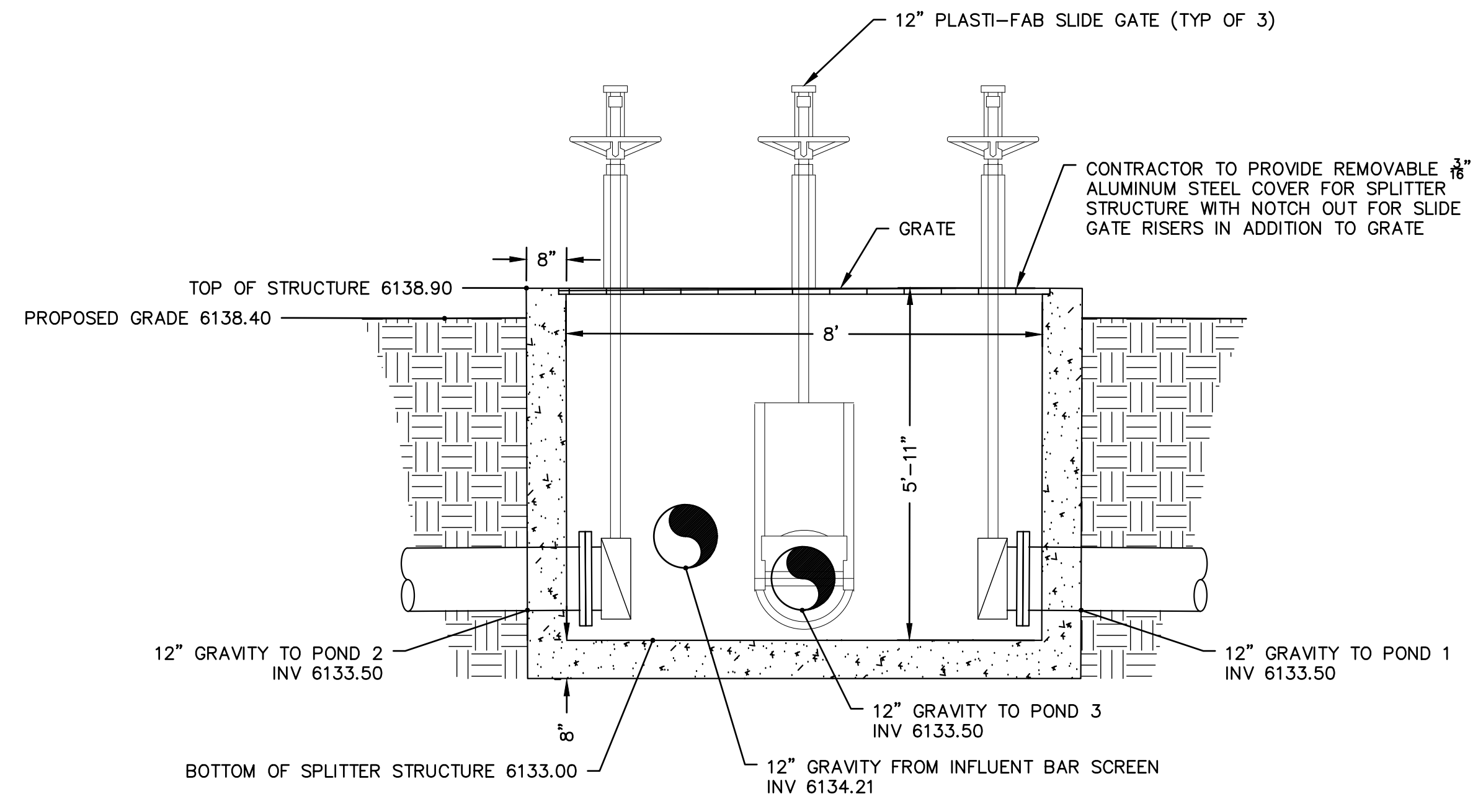
NO.	REVISIONS	DESCRIPTION	DATE	BY

WASTEWATER TREATMENT PLANT
INFLUENT SCREEN DETAILS
TOWN OF RAMAH
113 S. COMMERCIAL STREET
RAMAH, CO 80832

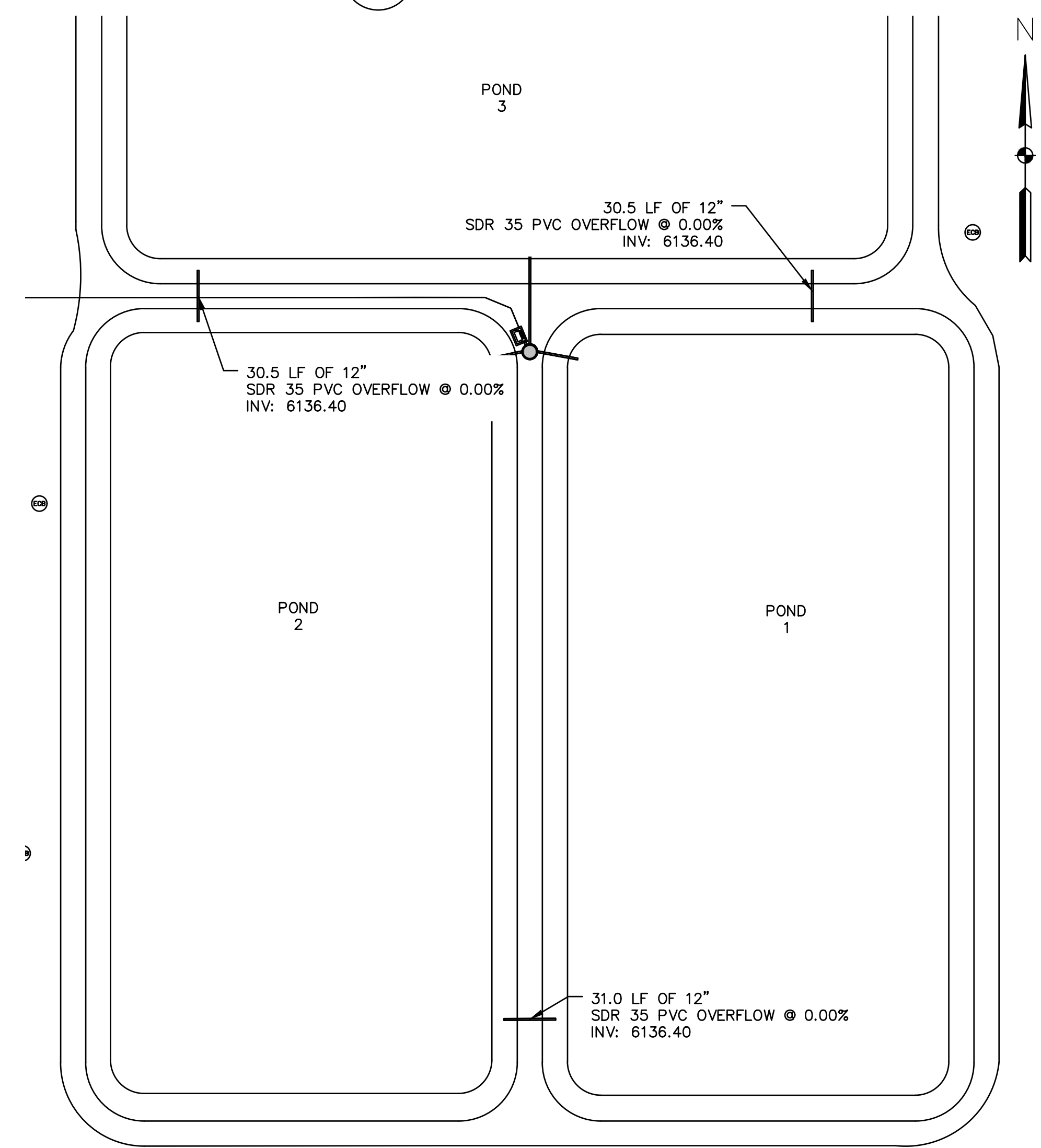


A INFLUENT SPLITTER STRUCTURE AND INFLEUNT PIPING PLAN
C21 1/4" = 1'

NOTE: CUT GRATING AS NECESSARY TO FACILITATE SLIDE GATE INSTALLATION AND OPERATION



B INFLUENT SPLITTER STRUCTURE PROFILE
C21 1/2" = 1'



C OVERFLOW PIPING
C21 1" = 60'

REVISIONS	DATE	DESCRIPTION

WASTEWATER TREATMENT PLANT
SPLITTER BOX & POND OVERFLOW PIPING
TOWN OF RAMAH
113 S. COMMERCIAL STREET
RAMAH, CO 80832

PREPARED UNDER THE DIRECT SUPERVISION OF
FOR AND ON BEHALF OF
ELEMENT ENGINEERING, LLC
DATE
OCTOBER 2022
JOB NUMBER
0043.0001
SCALE
AS SHOWN
EDITION
PERMITTING
SHEET
C19 OF C29

NOTES:
 1. CONTRACTOR TO STRIP TOP 6" OF EXISTING MATERIAL AND VEGETATION AND DISPOSE OF OFF-SITE.

CURVE TABLE					
CURVE	LENGTH	RADIUS	DELTA	CHORD BEARING	CHORD
C1	65.97'	42.00'	90°00'00"	N43°52'52"E	59.50'
C2	65.97'	42.00'	90°00'00"	S46°07'08"E	59.50'
C3	49.59'	56.00'	50°44'10"	S25°22'05"E	47.98'
C4	66.76'	42.50'	90°00'00"	S45°00'00"E	60.10'
C5	65.97'	42.00'	90°00'00"	S43°52'52"W	59.50'
C6	65.97'	42.00'	90°00'00"	S46°07'08"W	59.50'
C7	65.97'	42.00'	90°00'00"	S43°52'52"W	59.50'
C8	65.97'	42.00'	90°00'00"	S46°07'08"W	59.50'
C9	65.97'	42.00'	90°00'00"	S46°07'08"W	59.50'

ESTIMATED CUT/FILL QUANTITIES
 CUT (EST): 49,781 CY
 FILL (EST): 38,341 CY (1.15 COMPACTION FACTOR)
 TOP SOIL REMOVAL (EST): 9,916 CY

ESTIMATED POND LINER
 POND LINER (EST): 402,446 SF

NOTE: CUT, FILL, AND POND LINER ARE BID AS LUMP SUM. LINER LUMP SUM TO INCLUDE ANCHOR TRENCH, ETC. CONTRACTOR TO VERIFY QUANTITIES FROM CAD FILES PRIOR TO BIDDING.

28 LF 24" CORRUGATED HDPE CULVERT AT PONDS ENTRANCE.

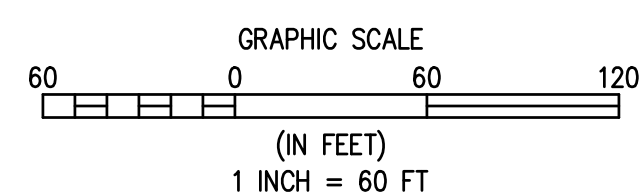
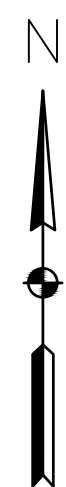
15' WIDE ACCESS ROAD TO PONDS

INSTALL 16' WIDE BARBIRE GATE, ADD CROSS BRACE POST ON EACH SIDE

START OF DRAINAGE SWALE (DS) SLOPE 1% TO SOUTH

INFLUENT STRUCTURE SEE SHEET C21

END OF DRAINAGE SWALE (DS) SLOPE 1% TO THE EAST

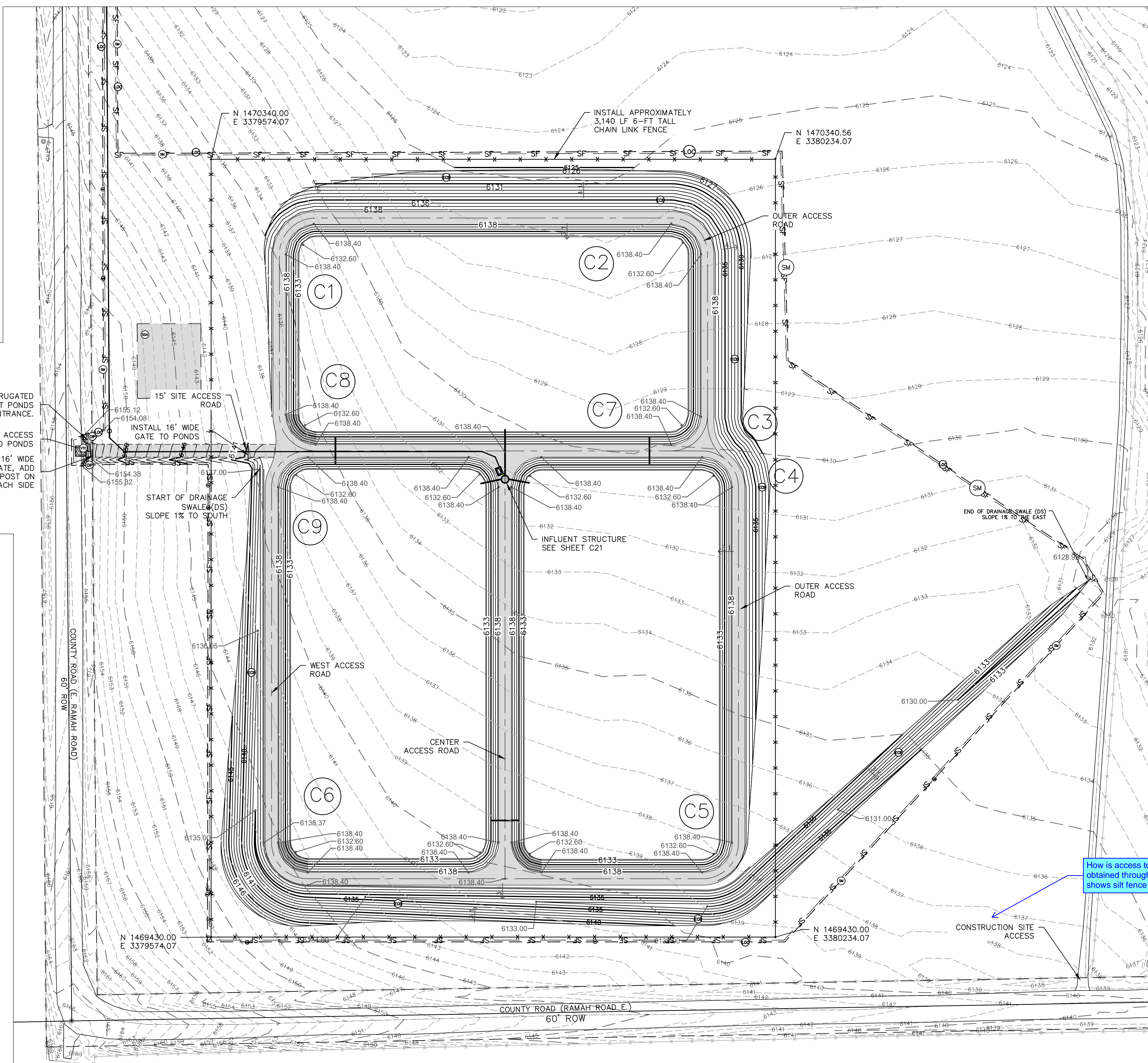


BMP LINE TYPES AND SYMBOLS DESCRIPTIONS

	CIP	CULVERT INLET PROTECTION
	CWA	CONCRETE WASHOUT AREA
	LOC	LIMITS OF CONSTRUCTION
	SF	SILT FENCE
	SM	TOPSOIL, SEEDING AND MULCHING
	SSA	STABILIZED STAGING AREA
	VTC	VEHICLE TRACKING CONTROL

EROSION CONTROL NOTES (APPLICABLE TO ENTIRE PROJECT):

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- LOC'S ARE ASSUMED TO BE THE SAME AS LDA'S. CONTRACTOR TO REDLINE LDA'S AS CONSTRUCTION PROGRESSES.
- STABILIZATION WILL BE REQUIRED WITHIN 14 DAYS FOR INACTIVE AREAS. TEMPORARY STABILIZATION MAY INCLUDE SURFACE ROUGHENING, HYDROMULCH, OR OTHER APPROVED TEMPORARY STABILIZATION PRACTICE.
- TOPSOIL MUST BE SALVAGED FOR STAGING AREAS OR OTHER DISTURBED AREAS THAT WILL BE REVEGETATED AFTER CONSTRUCTION IS COMPLETE.
- EROSION CONTROL BLANKETS TO BE USED ON ALL SLOPES 3:1 OR GREATER



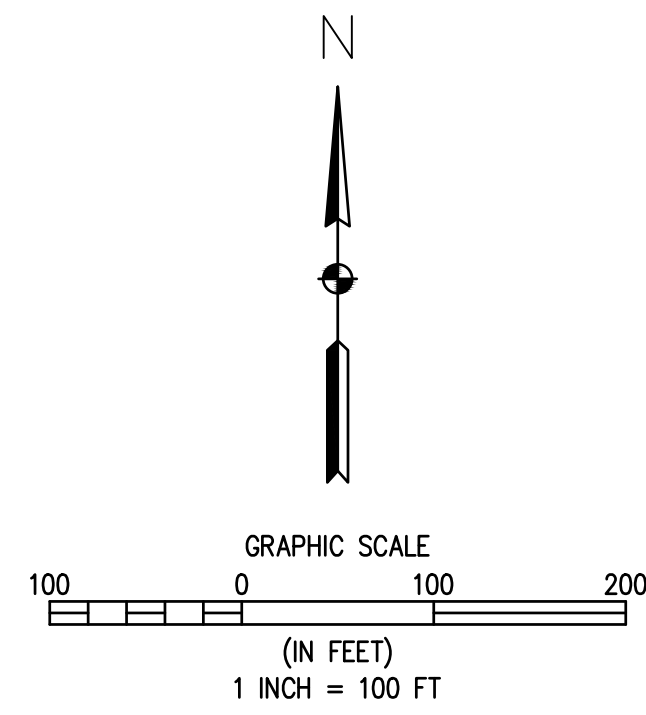
How is access to the construction site obtained through this driveway if the plan shows silt fence surrounding the property.

NO.	DATE	DESCRIPTION

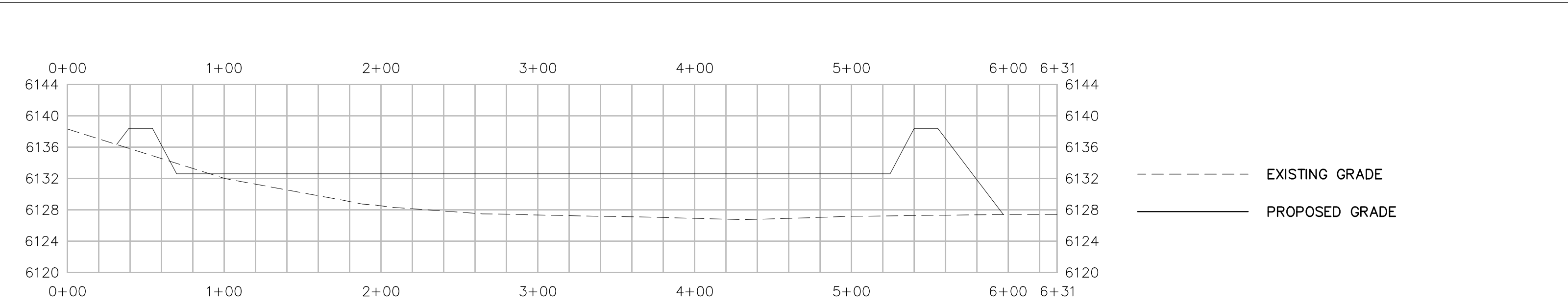
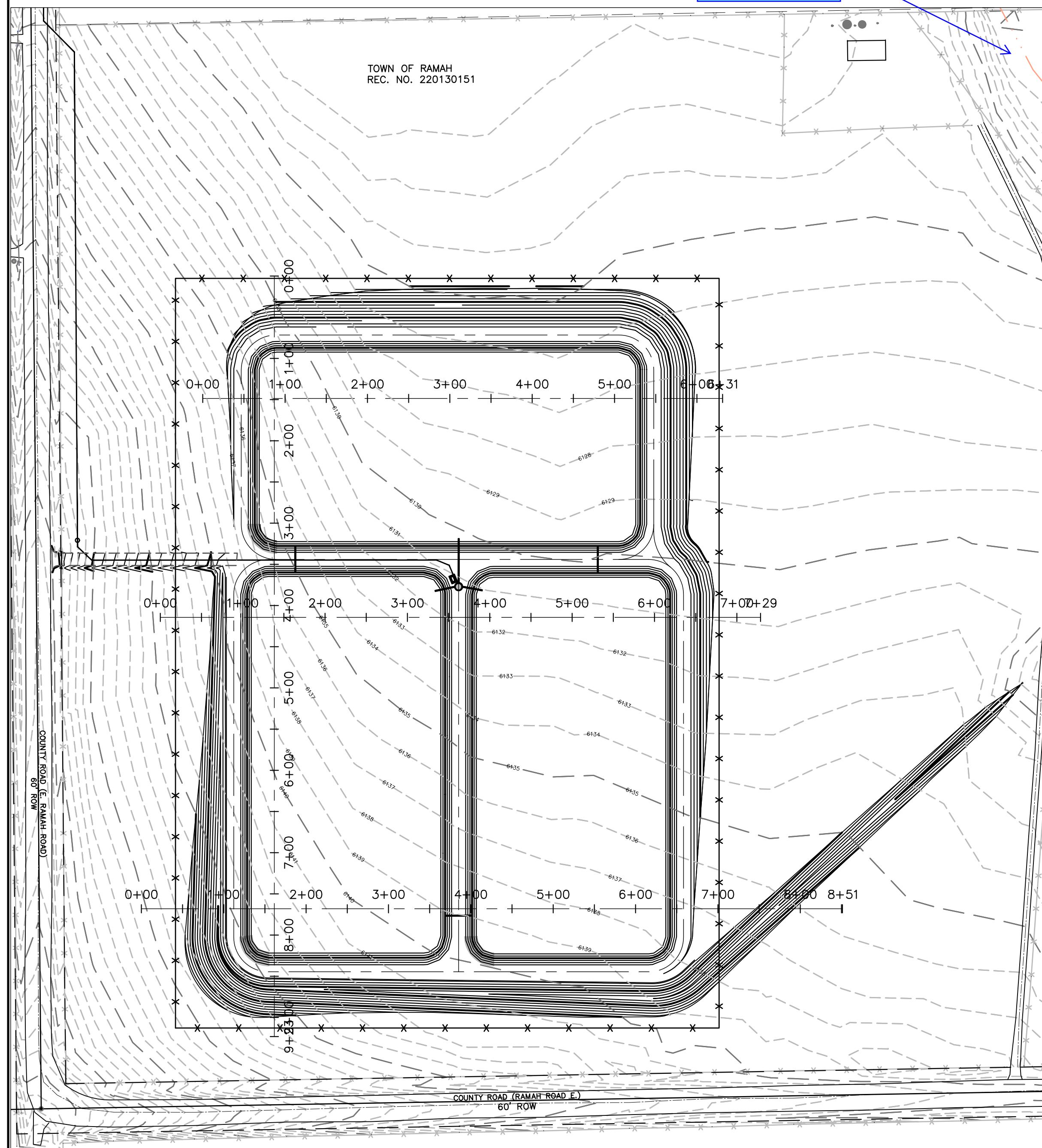
WASTEWATER TREATMENT PLANT
 HORIZONTAL CONTROL &
 GRADING
 TOWN OF RAMAH
 113 S. COMMERCIAL STREET
 RAMAH, CO 80832

PREPARED UNDER THE DIRECT SUPERVISION OF

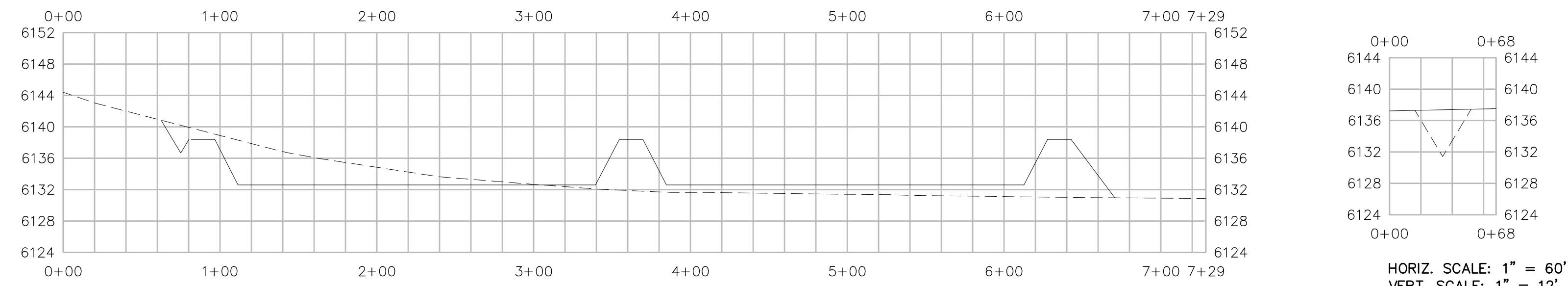
DATE	OCTOBER 2022
JOB NUMBER	0043.0001
SCALE	1" = 60'
EDITION	PERMITTING
SHEET	C20 OF C29



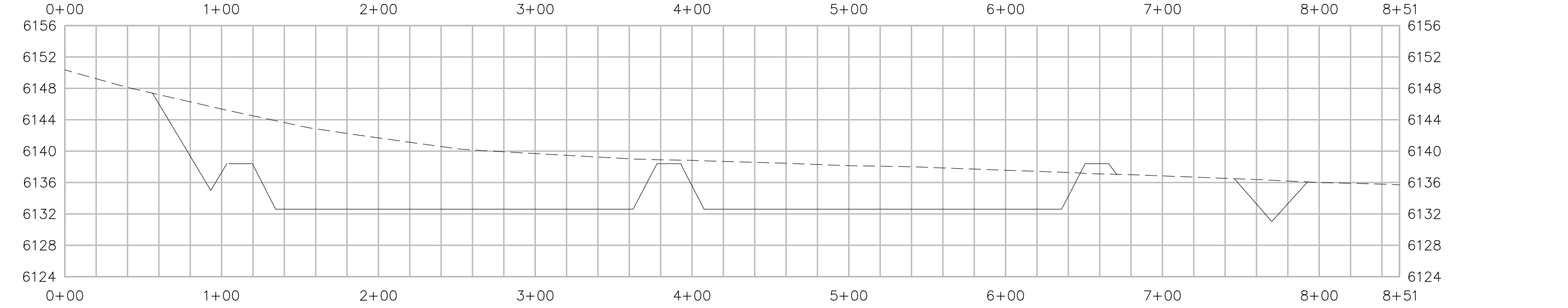
Identify floodplain boundary.



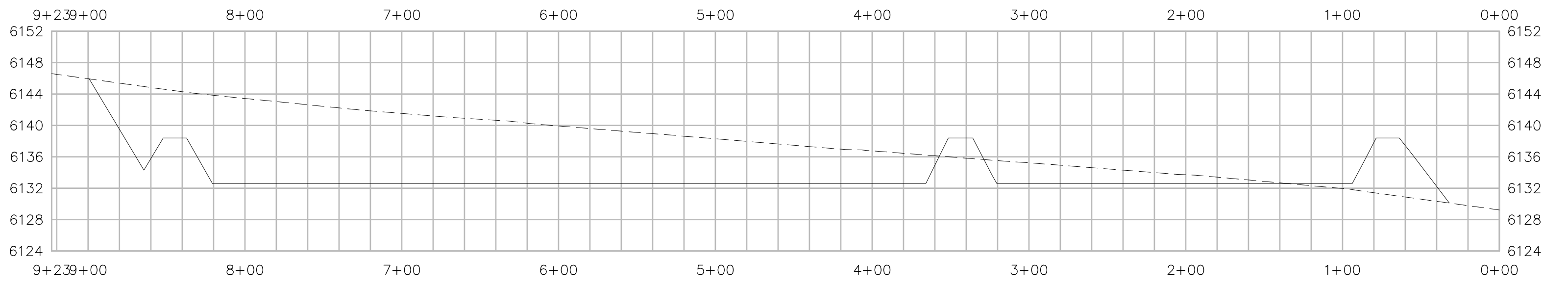
HORIZ. SCALE: 1" = 60'
VERT. SCALE: 1" = 12'



HORIZ. SCALE: 1" = 60'
VERT. SCALE: 1" = 12'



HORIZ. SCALE: 1" = 60'
VERT. SCALE: 1" = 12'



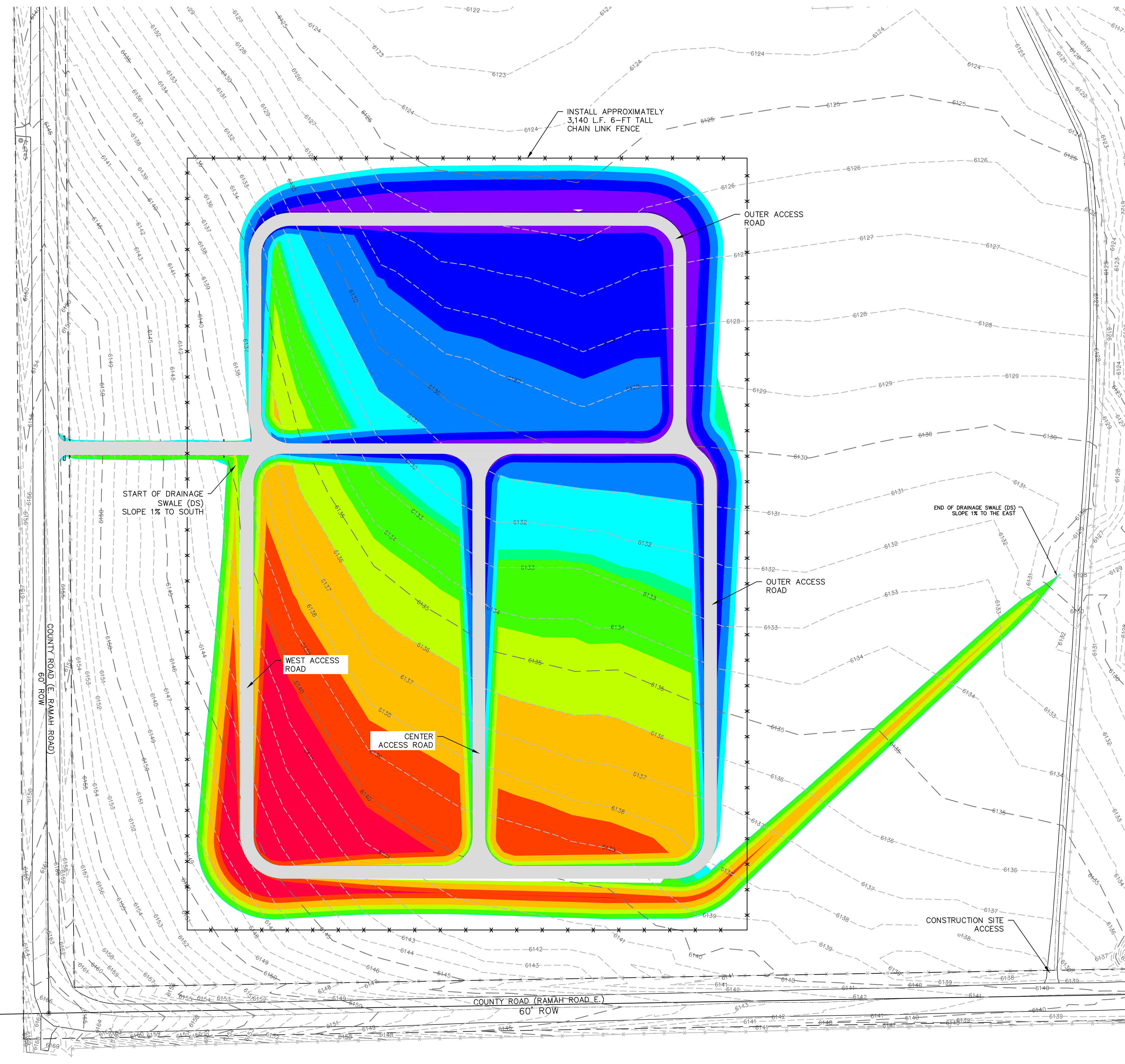
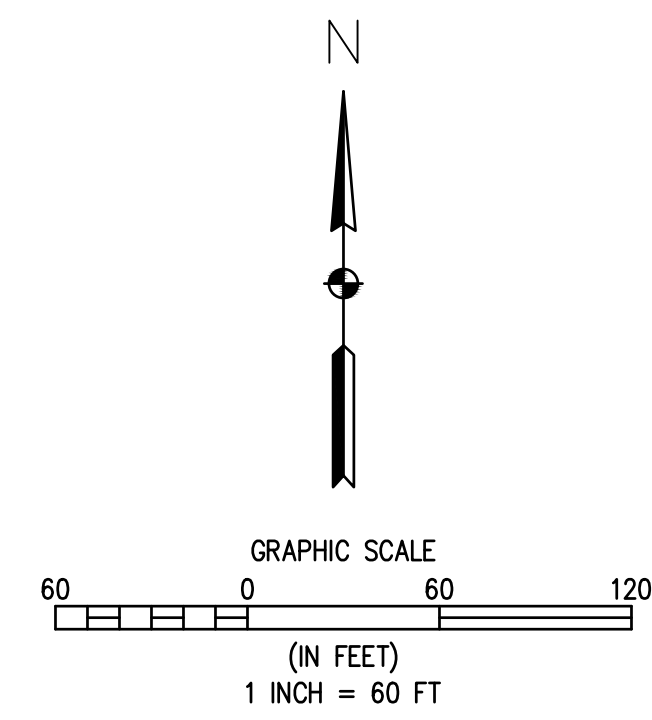
HORIZ. SCALE: 1" = 60'
VERT. SCALE: 1" = 12'

NO.	REVISIONS	DESCRIPTION	DATE	BY

WASTEWATER TREATMENT PLANT
POND GRADING PROFILES
TOWN OF RAMAH
113 S. COMMERCIAL STREET
RAMAH, CO 80832

FOR AND ON BEHALF OF
ELEMENT ENGINEERING, LLC
DATE
OCTOBER 2022
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SCALE
1" = 100'
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SHEET
C21 OF C29

ELEVATIONS TABLE			
NUMBER	MINIMUM ELEVATION	MAXIMUM ELEVATION	COLOR
1	-11.98	-7.62	Red
2	-7.62	-5.76	Orange
3	-5.76	-3.40	Yellow
4	-3.40	-1.76	Light Green
5	-1.76	-0.23	Green
6	-0.23	0.00	Cyan
7	0.00	1.64	Blue
8	1.64	4.11	Dark Blue
9	4.11	7.28	Dark Purple
10	7.28	12.90	Light Purple



NO.	REVISIONS	DESCRIPTION	DATE	BY

WASTEWATER TREATMENT PLANT
CUT & FILL PLAN
 TOWN OF RAMAH
 113 S. COMMERCIAL STREET
 RAMAH, CO 80852

FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC
DATE OCTOBER 2022
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SHEET C22 OF C29

LINER AND VENT INFORMATION

LINER MATERIAL: 45-MIL FPP-R (FLEXIBLE REINFORCED POLYPROPYLENE) OR 45-MIL LLDPE-R (LINEAR LOW DENSITY REINFORCED POLYETHYLENE)

AIR/GAS VENT STRIP: DIMPLED STRIP AT 45-FT ON CENTER BOTH DIRECTIONS (SEE DETAIL)

AIR/GAS VENTS: ON SIDE SLOPE WITH EACH VENT STRIP (SEE DETAIL)

SPECIFICATIONS: SEE TECHNICAL SPECIFICATIONS FOR SPECIFIC MATERIAL PROPERTIES AND REQUIREMENTS.

- NOTES:
- CONTRACTOR TO REMOVE ANY DIRT AND DEBRIS WHICH MAY DAMAGE LINER SYSTEM. ANY DEBRIS GREATER THAN 3/8" DIAMETER TO BE REMOVED PRIOR TO INSTALLATION.
 - CONTRACTOR RESPONSIBLE FOR LOCATION AND PROTECTION OF ALL UTILITIES PRIOR TO AND DURING CONSTRUCTION.
 - AIR/GAS VENTING STRIP TO BE INSTALLED AFTER SUBGRADE IS COMPACTED AND AT FINAL GRADE.
 - CONTRACTOR TO FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS FOR HAULING, STOCKPILING, STAGING, UNLOADING, AND INSTALLATION OF LINER SYSTEM.
 - PROTECT EXISTING ASPHALT, STRUCTURES, AND CURB AND GUTTER FROM DAMAGE. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY DAMAGE TO EXISTING INFRASTRUCTURE.
 - PRIOR TO INSTALLATION OF LINER, ENGINEER'S REPRESENTATIVE SHALL APPROVE THE INSTALLATION OF AIR/GAS VENTING STRIPS.
 - PRIOR TO INSTALLATION OF BALLAST, ENGINEER'S REPRESENTATIVE SHALL APPROVE THE LINER AND AIR/GAS VENT.
 - AIR/GAS VENTING STRIP TO MEET THE FOLLOWING SPECIFICATIONS:
 - STRUCTURE: SIMPLED STRIP
 - POLYMER: PS
 - THICKNESS: 1-INCH
 - THRU-FLOW: YES
 - COMPRESSIVE STRENGTH (ASTM D 1621): 9,500 PSF
 - FLOW (ASTM D 4716): 30 GPM/FT
 - FABRIC/BACKING: CORE ENCAPSULATED W/ 4 OZ NW
 - WIDTH: 12-INCH
 - INSTALL AIR/GAS VENT 6-INCHES BELOW CREST OF LINER ABOVE EACH AIR/GAS VENTING STRIP. SEE DETAILS FOR INSTALLATION INFORMATION.
 - ENGINEER AND LINER MANUFACTURER REPRESENTATIVE TO APPROVE SUBGRADE PREPARATION PRIOR TO LINER INSTALLATION.
 - LINER AND MESH UNDER-LINER TO BE INSTALLED BY MANUFACTURER CERTIFIED INSTALLATION TECHNICIANS.
 - RESTORE AND RE-SEED SITE PER SPECIFICATIONS.
 - BALLAST INSTALLATION REQUIREMENTS (PER POND)

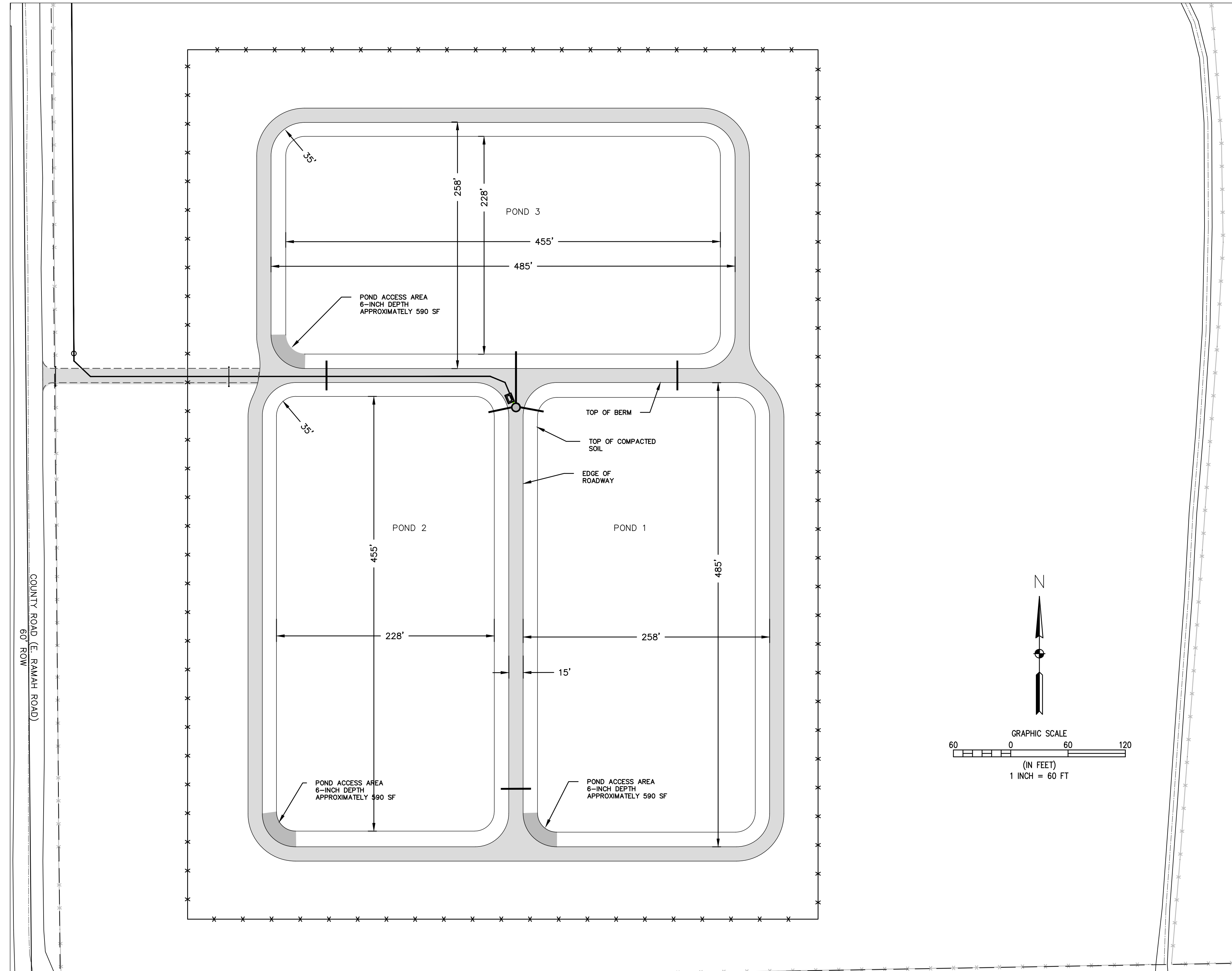
TOE OF SLOPE WILL REQUIRE PERMANENT TOE BALLAST IN THE FORM OF UV RESISTANT SAND TUBES. TOE BALLAST MINIMUM REQUIREMENTS ARE ONE 45 KG SAND TUBE SPACED 5.2 M CENTER TO CENTER ALONG THE TOE OR APPROXIMATELY 80 BALLAST TUBES ALONG THE TOE. IN ADDITION, ALL SLOPE AREAS OF THE CONTAINMENT SHOULD BE BALLASTED ON THE SLOPE WITH A MINIMUM OF 3 SAND TUBES PER CABLE SUPPORTED STRING WITH RESTRAINING CABLE TIE-OFF AT THE TOP OF SLOPE WITHIN THE ANCHOR TRENCH. SPACING OF BALLAST TUBE STRINGS SHOULD BE AT 10.2 M (33.5 FT) INTERVALS ALONG THE INSIDE SLOPE WHICH RESULTS IN APPROXIMATELY 40 BALLAST STRINGS AND 120 BALLAST TUBES. FOR THE BOTTOM OPEN AREA, THE TUBES SHALL BE PLACED IN OFFSET STRINGS PARALLEL TO THE POND LONG DIMENSION OR WIDTH DIMENSION IN SO FAR AS PRACTICAL BUT POSITIONED TO APPROXIMATE ONE TUBE PER 16.4 SQM (176 SF) OR A TOTAL OF 430 BOTTOM SAND TUBES. TOTAL NUMBER OF SAND TUBES PER POND IS ESTIMATED TO BE 630.

SUMMARY BALLAST TUBES PER POND

3H:1V SLOPES	120 (40 BALLAST STRINGS WITH 3 EACH)
TOE OF SLOPE	80 (2 BALLAST TUBES BETWEEN SLOPE TUBES)
BOTTOM	430 (1 BALLAST TUBE PER 16.4 SQM)
TOTAL	630

POND DIMENSION INFORMATION

POND BOTTOM SURFACE AREA (PER POND):	103,333 SF (2.37 ACRES)	RADIUS OF CORNER AT BOTTOM:	20-FT
POND TOP SURFACE AREA (PER POND):	124,016 SF (2.85 ACRES)	RADIUS OF CORNER AT TOP:	35-FT
ASSUMED SLUDGE DEPTH:	6-INCHES	WIDTH OF POND AT BOTTOM:	228-FT
MAX OPERATING WATER LEVEL:	3-FEET	LENGTH OF POND AT BOTTOM:	455-FT
FREEBOARD:	2-FEET	WIDTH OF POND AT TOP:	258-FT
SIDE SLOPE RATIO:	3:1	LENGTH OF POND AT TOP:	485-FT
POND LENGTH TO WIDTH RATIO:	2:1	ROADWAY WIDTH:	15-FT
NO. PONDS	3		

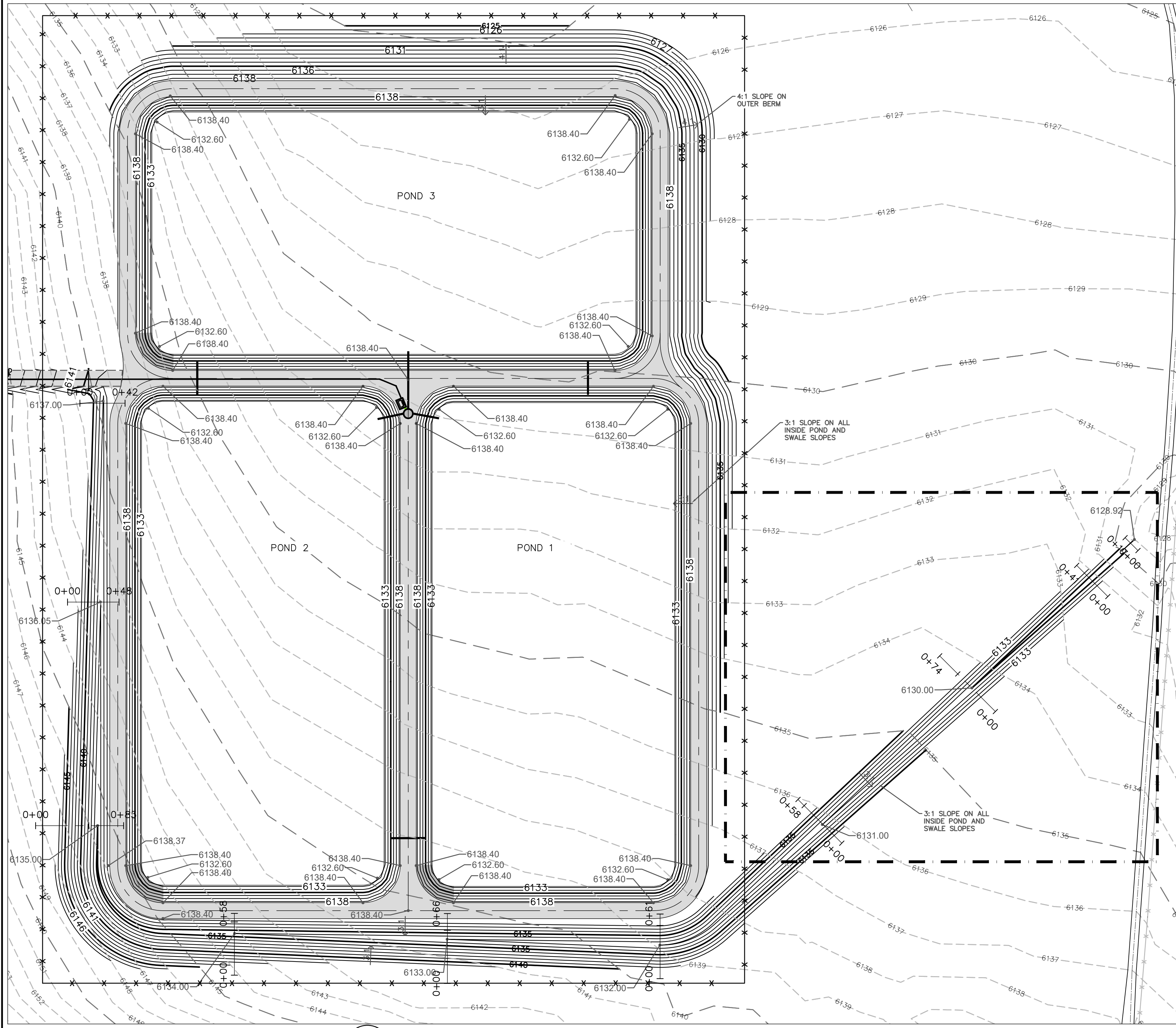
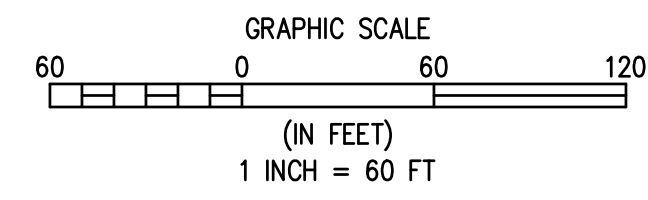


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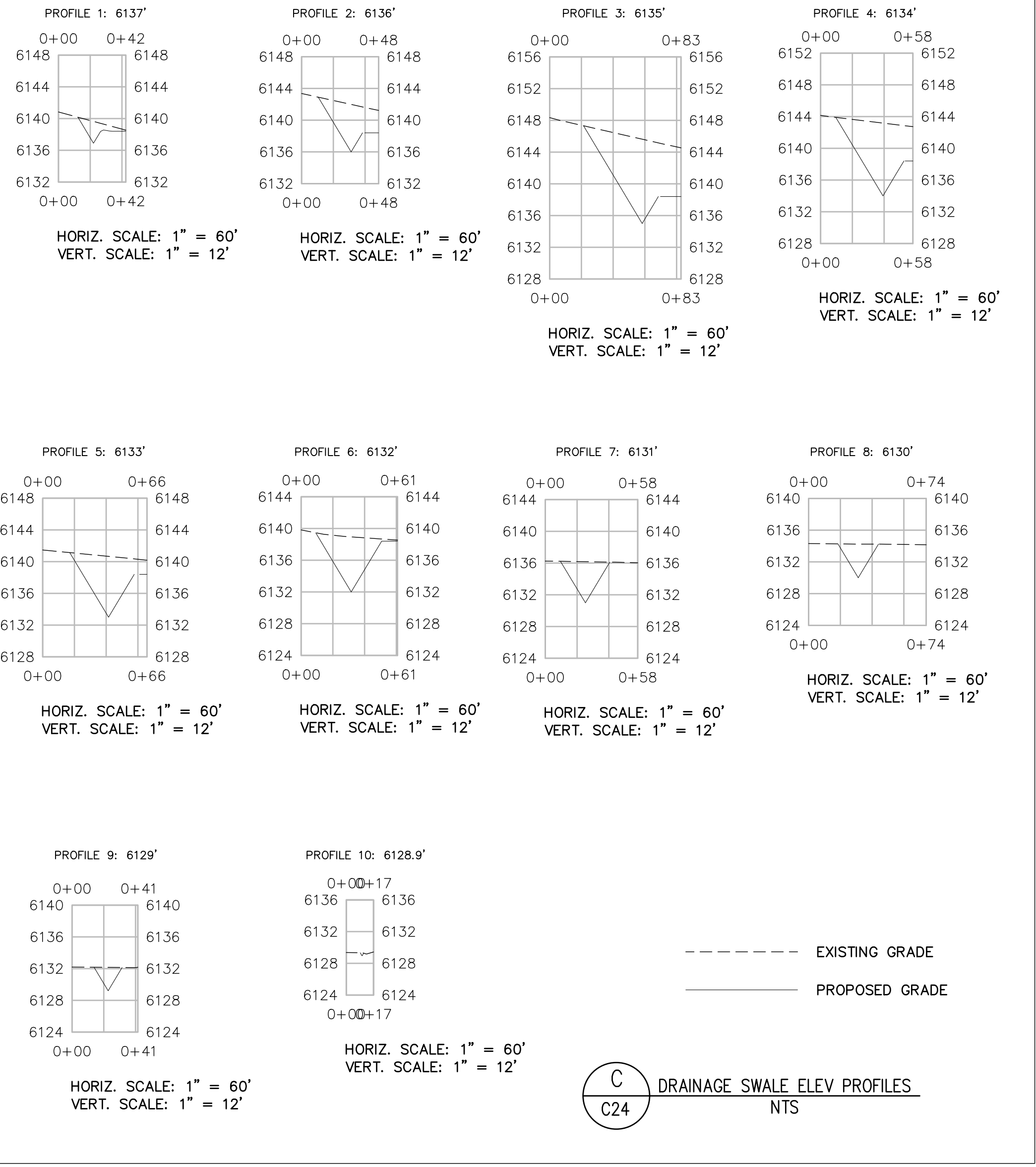
WASTEWATER TREATMENT PLANT
POND DETAILS
 TOWN OF RAMAH
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 RAMAH, CO 80832

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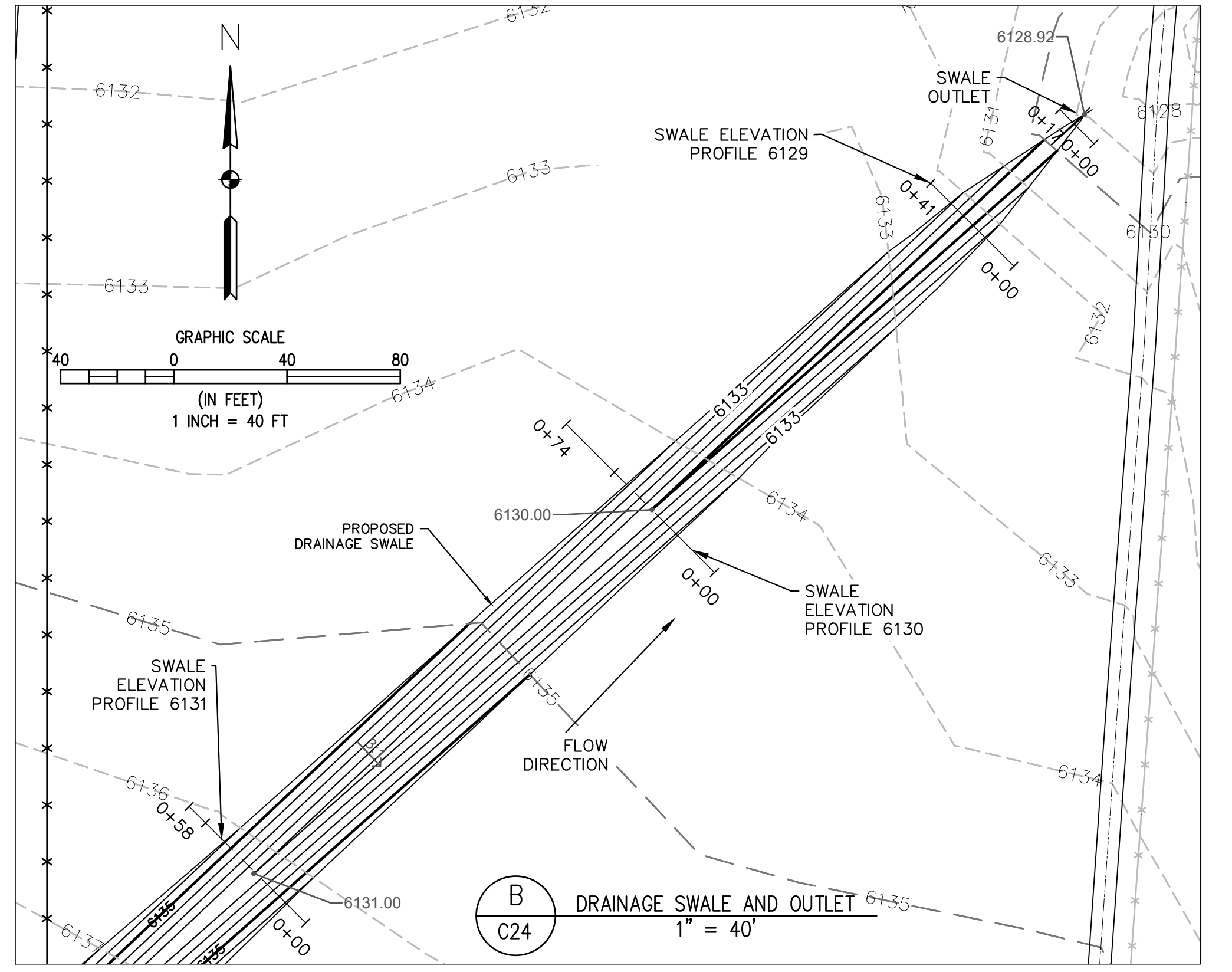


A
C24 EVAPORATIVE PONDS DRAINAGE PLAN
1" = 60'



--- EXISTING GRADE
--- PROPOSED GRADE

C
C24 DRAINAGE SWALE ELEV PROFILES
NTS

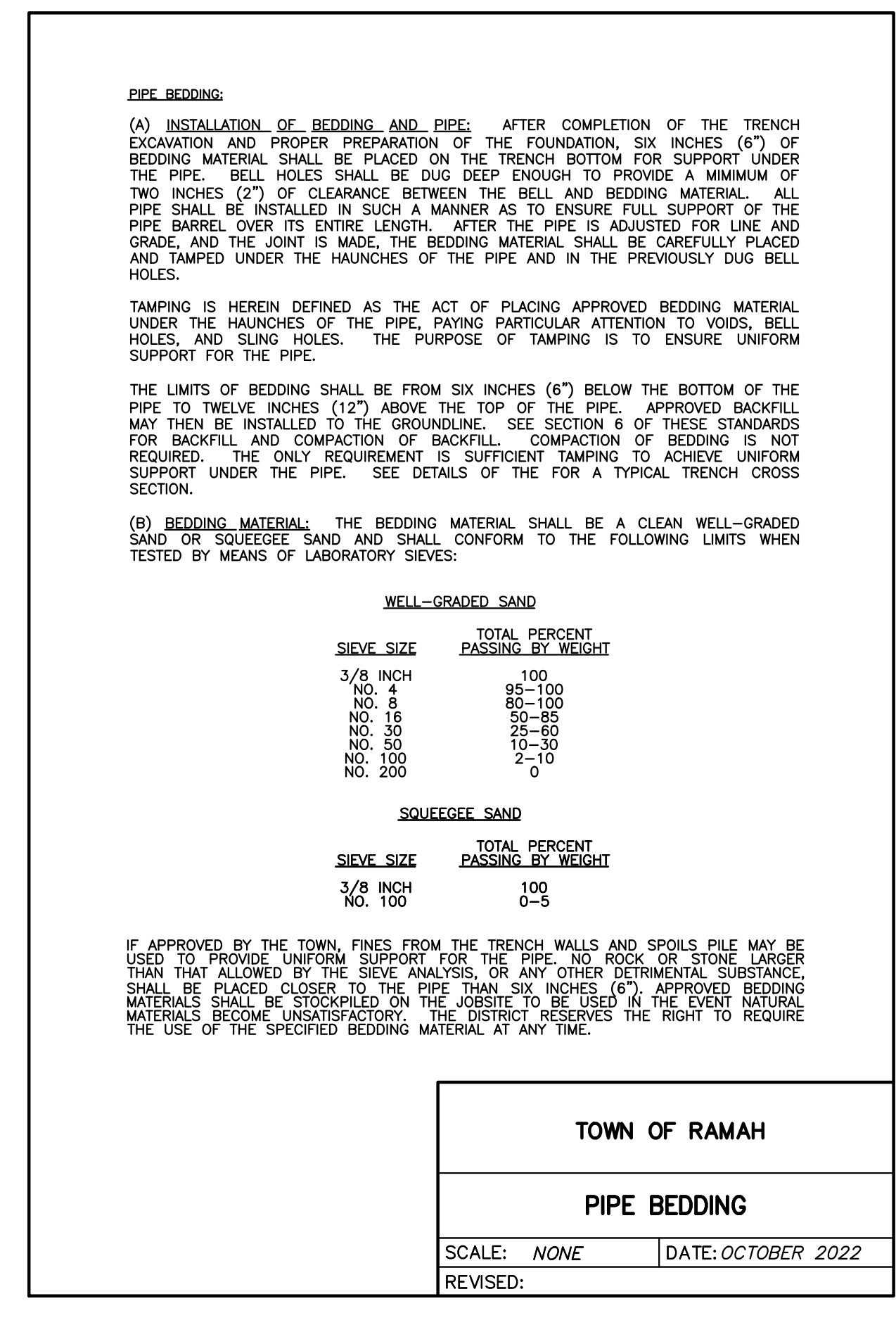
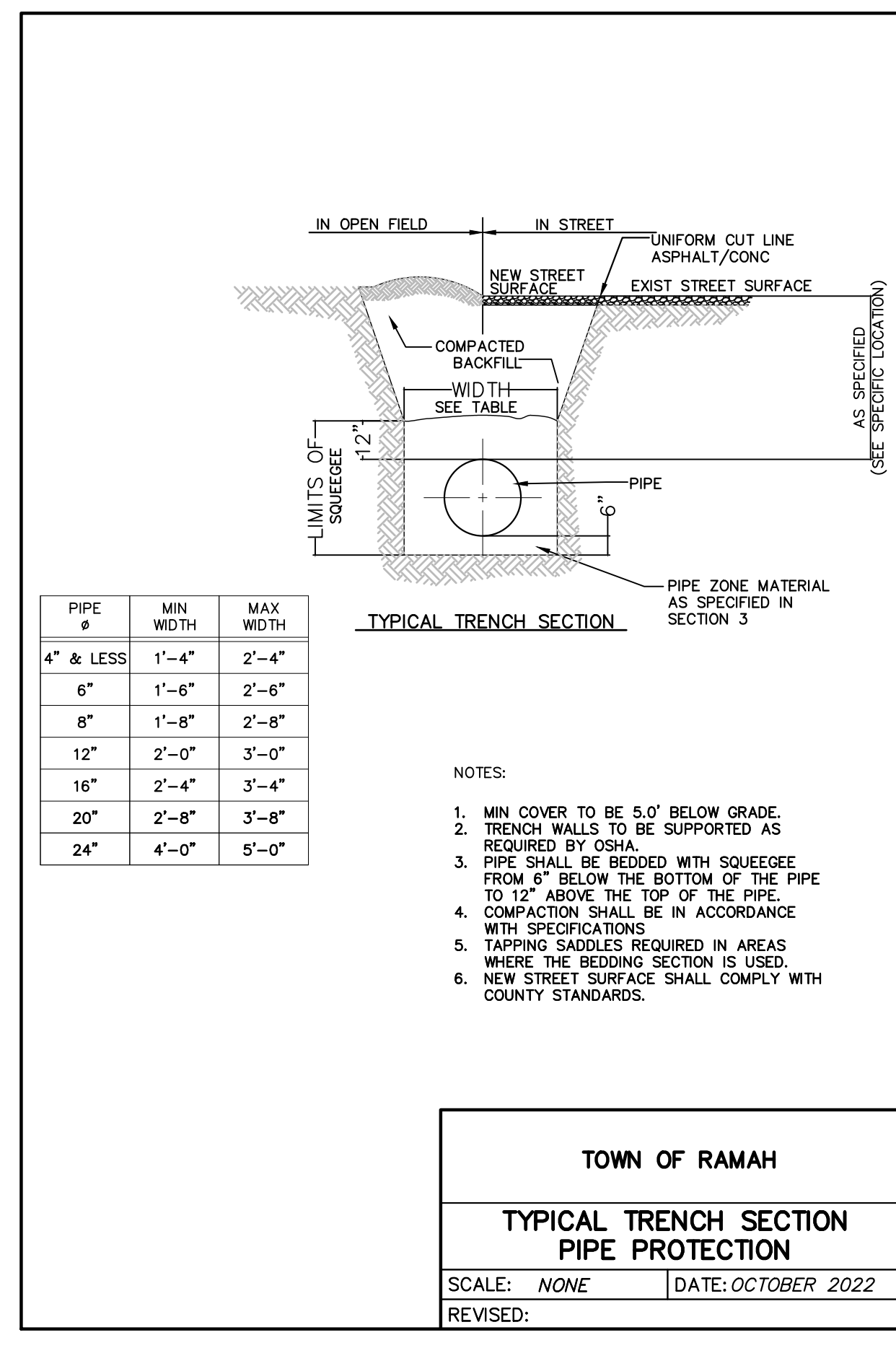
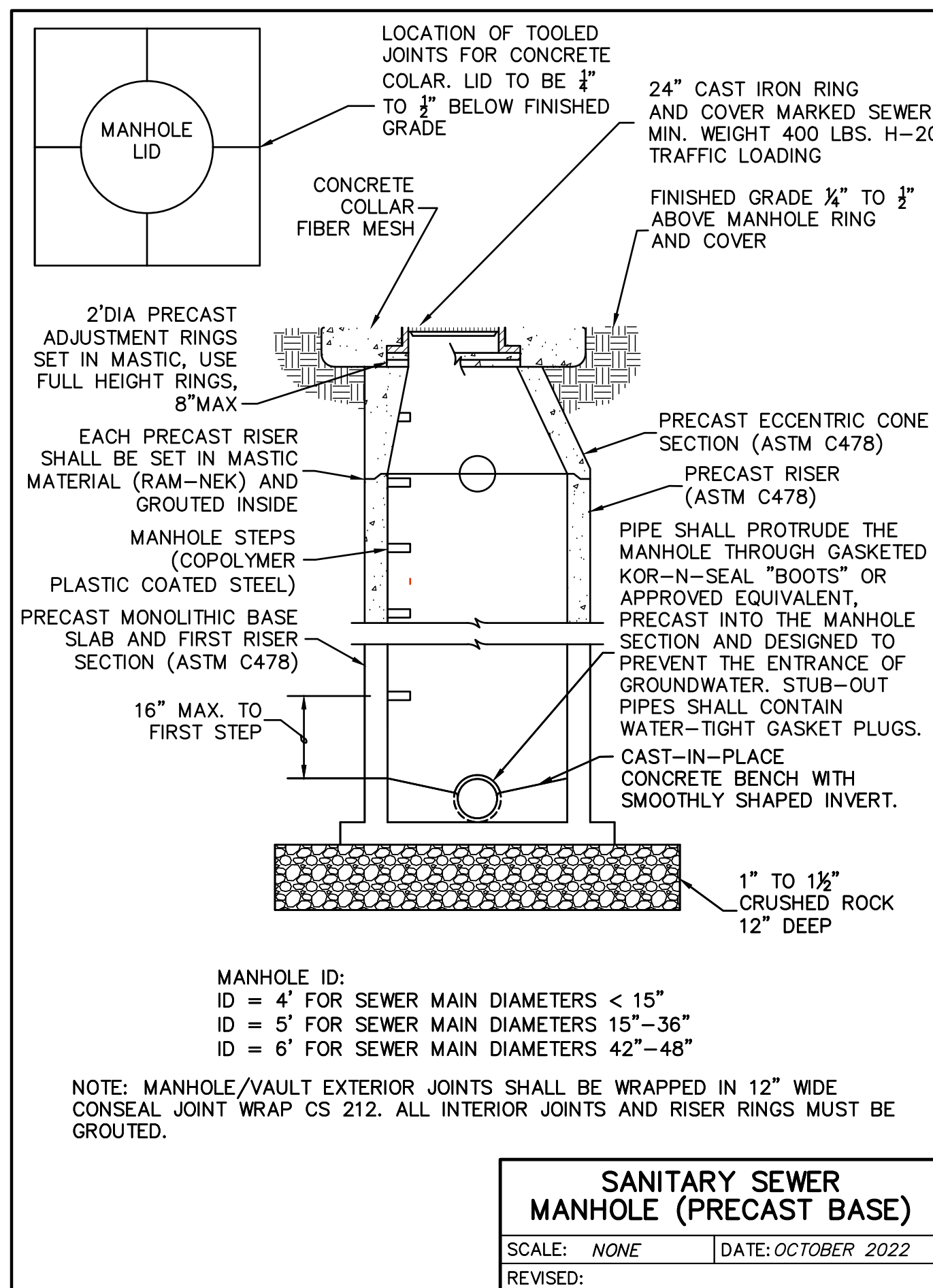
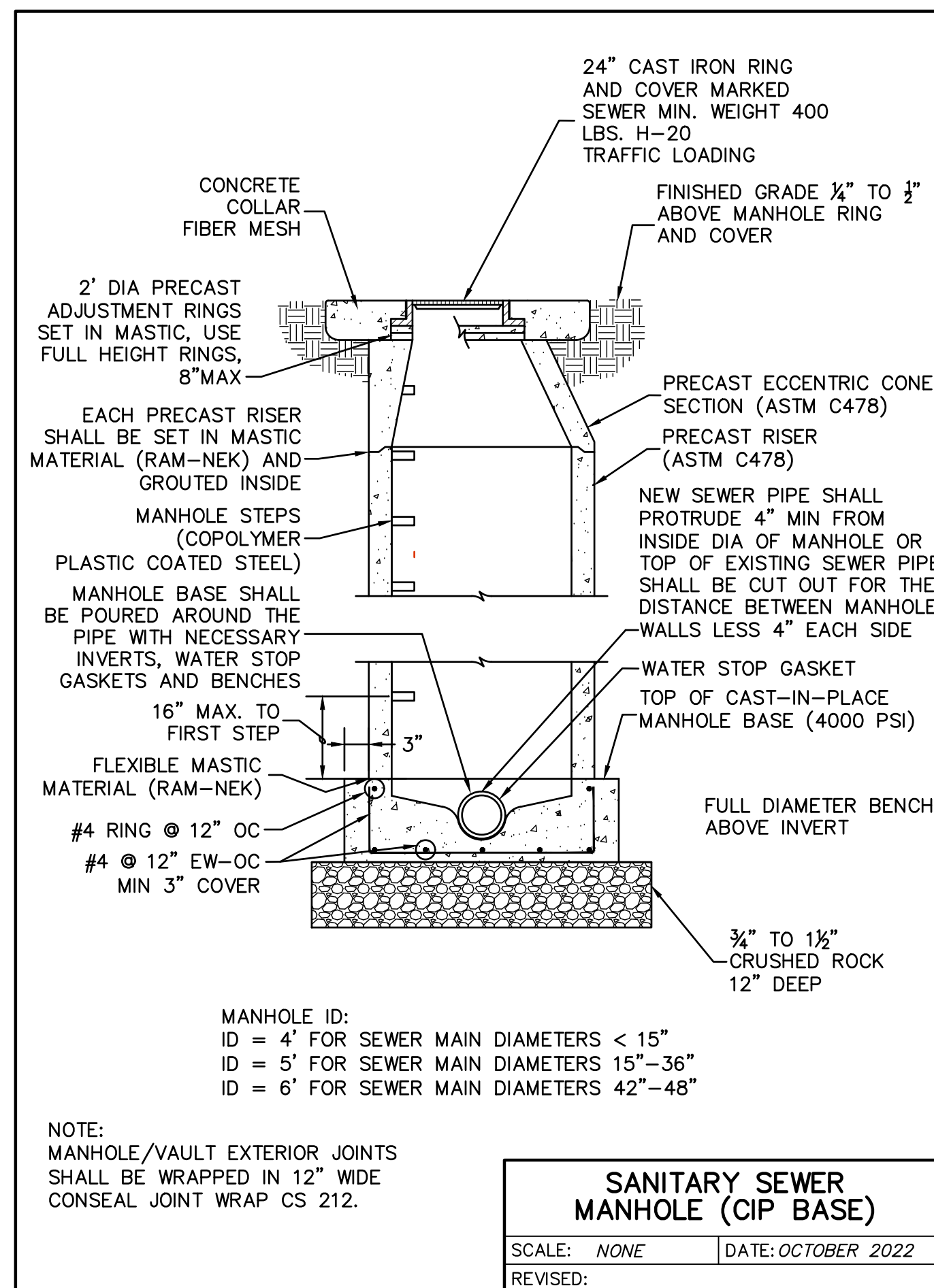


B
C24 DRAINAGE SWALE AND OUTLET
1" = 40'

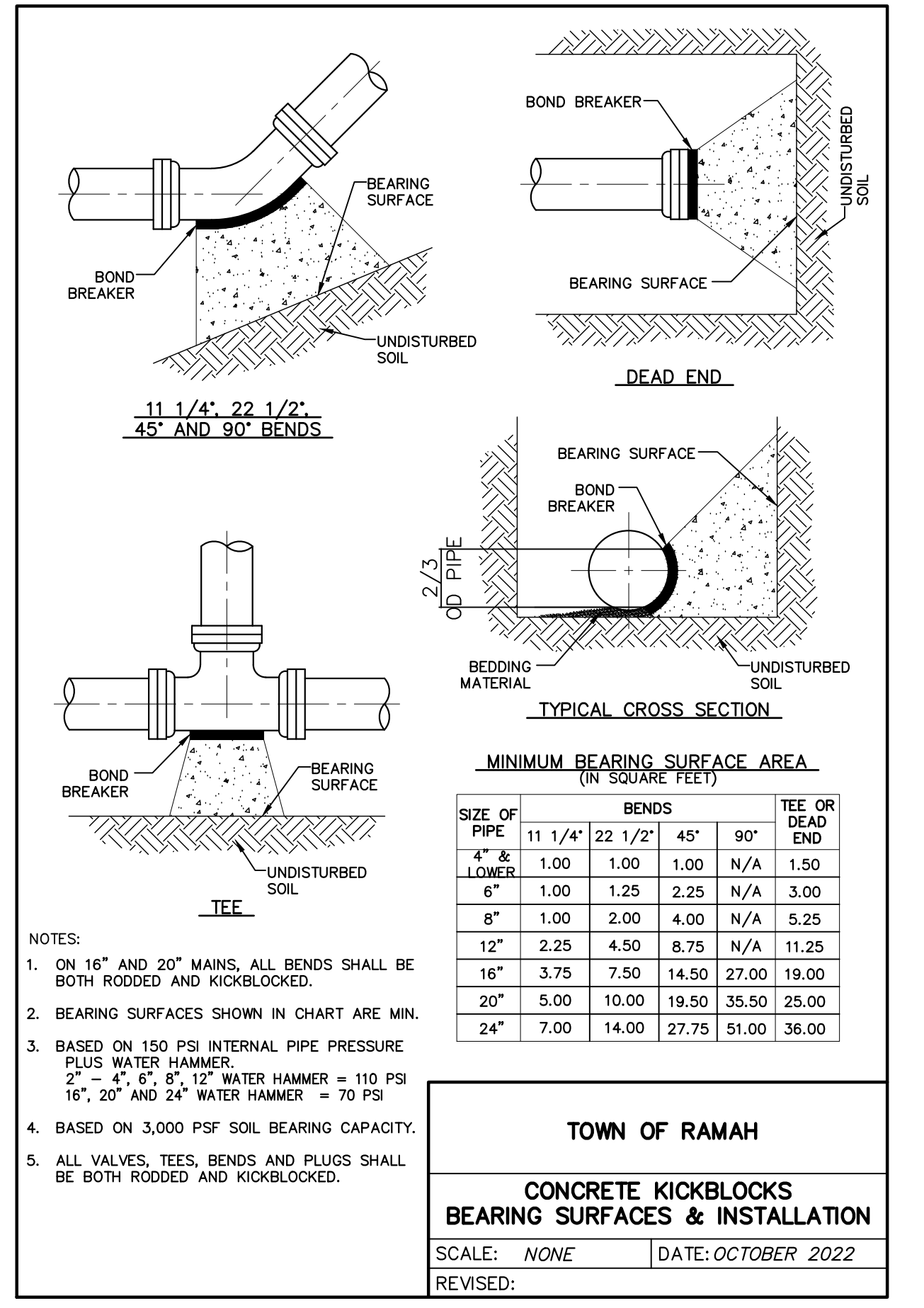
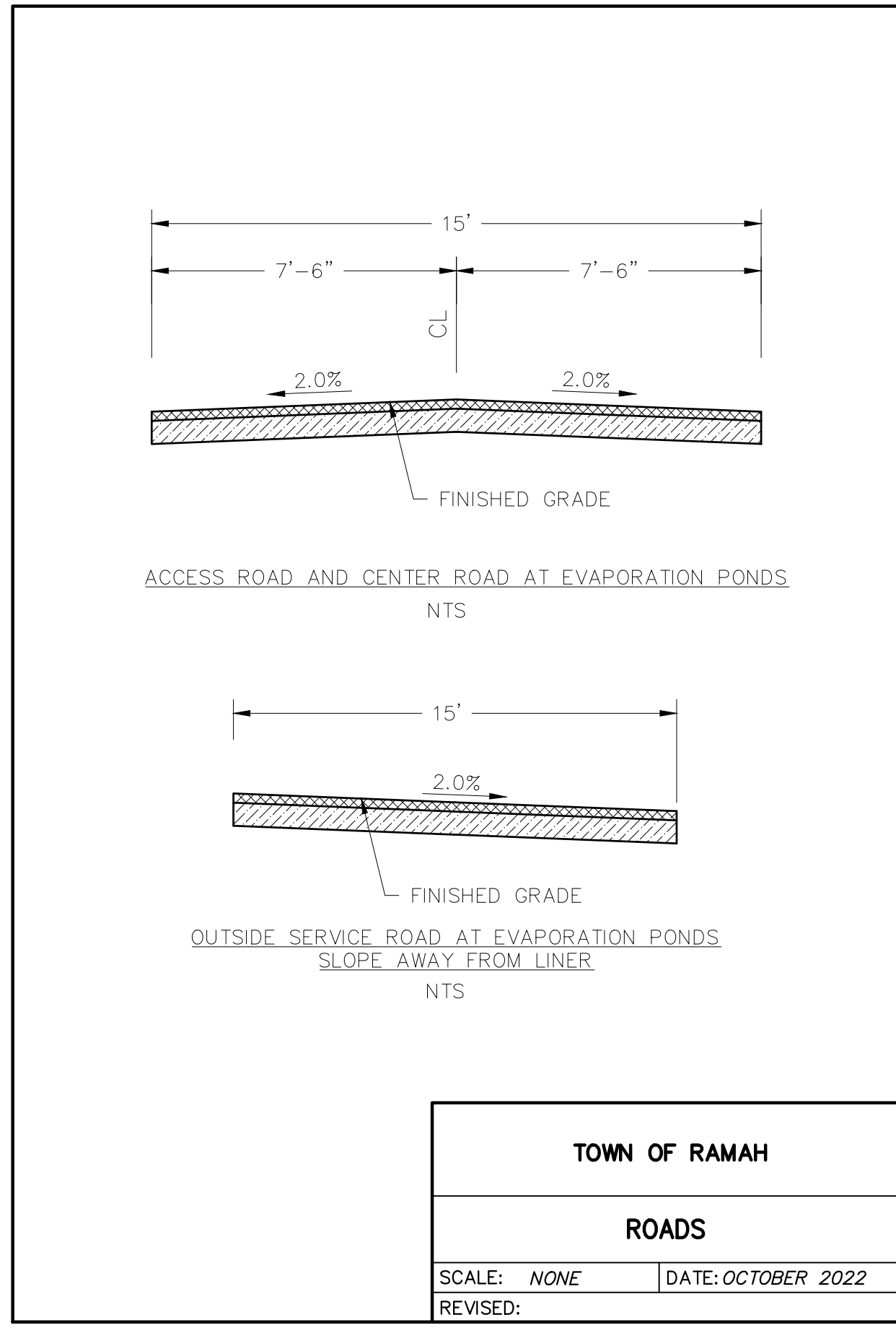
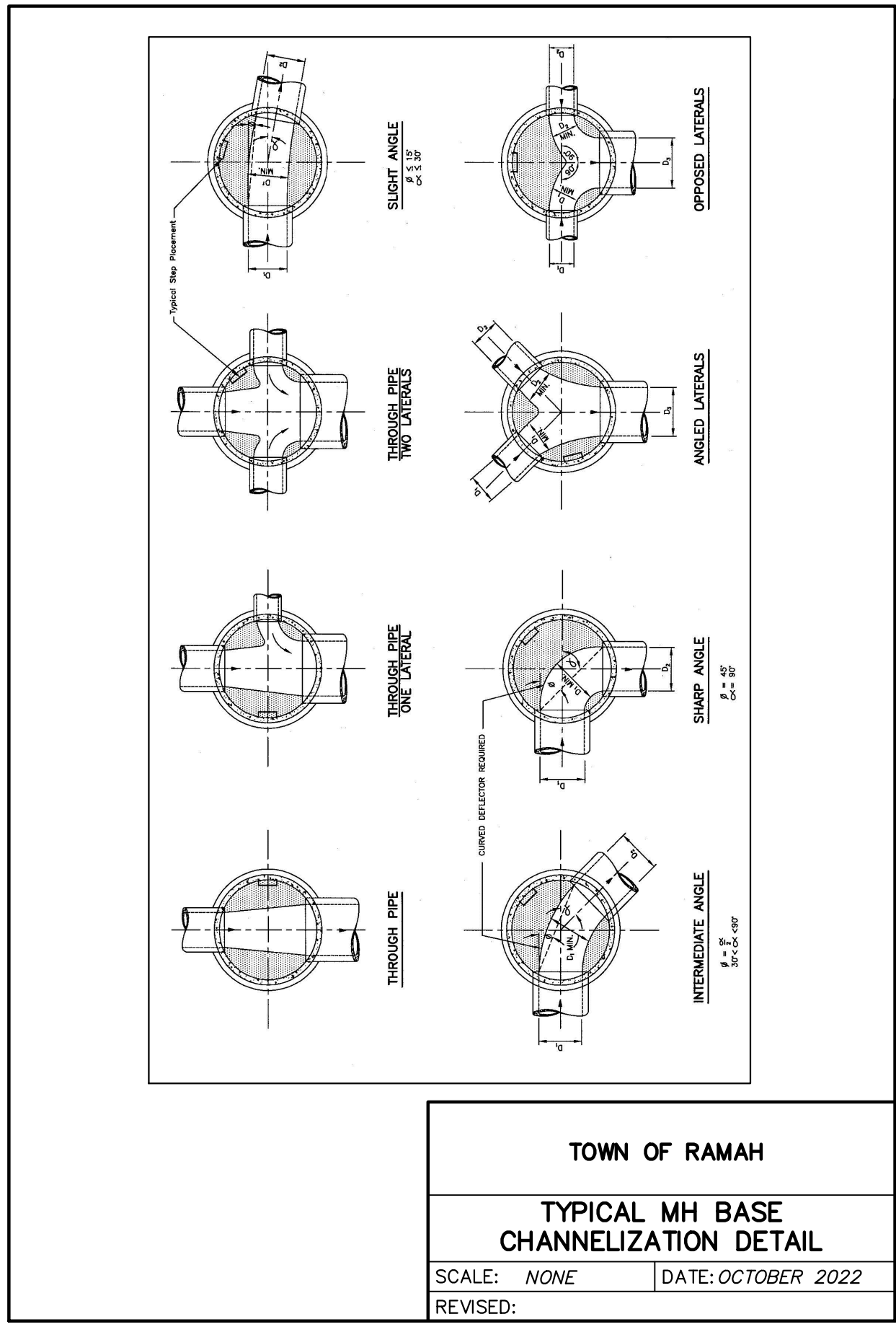
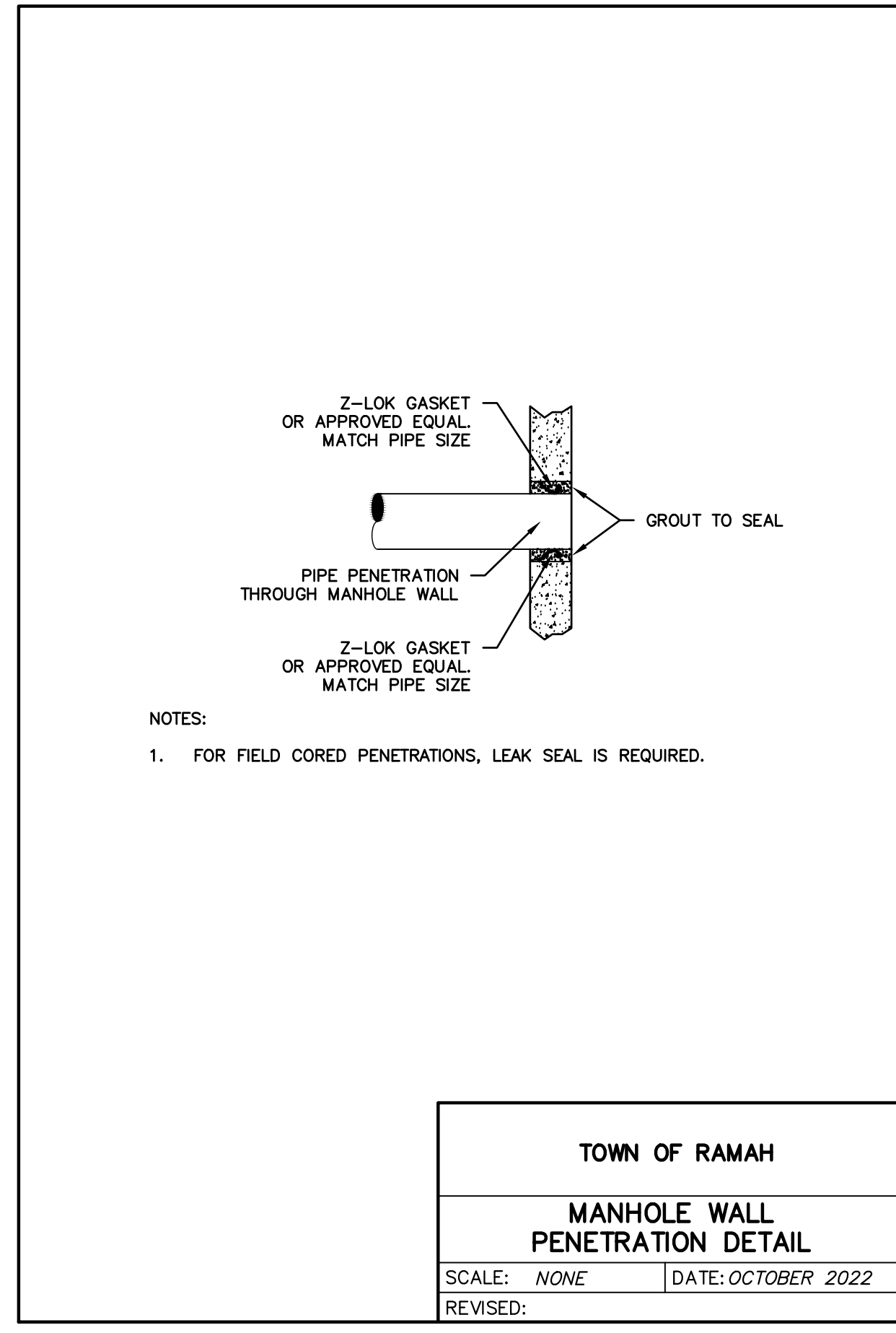
NO.	REVISIONS	DESCRIPTION	DATE	BY

WASTEWATER TREATMENT PLANT
DRAINAGE SWALE PLAN &
PROFILE

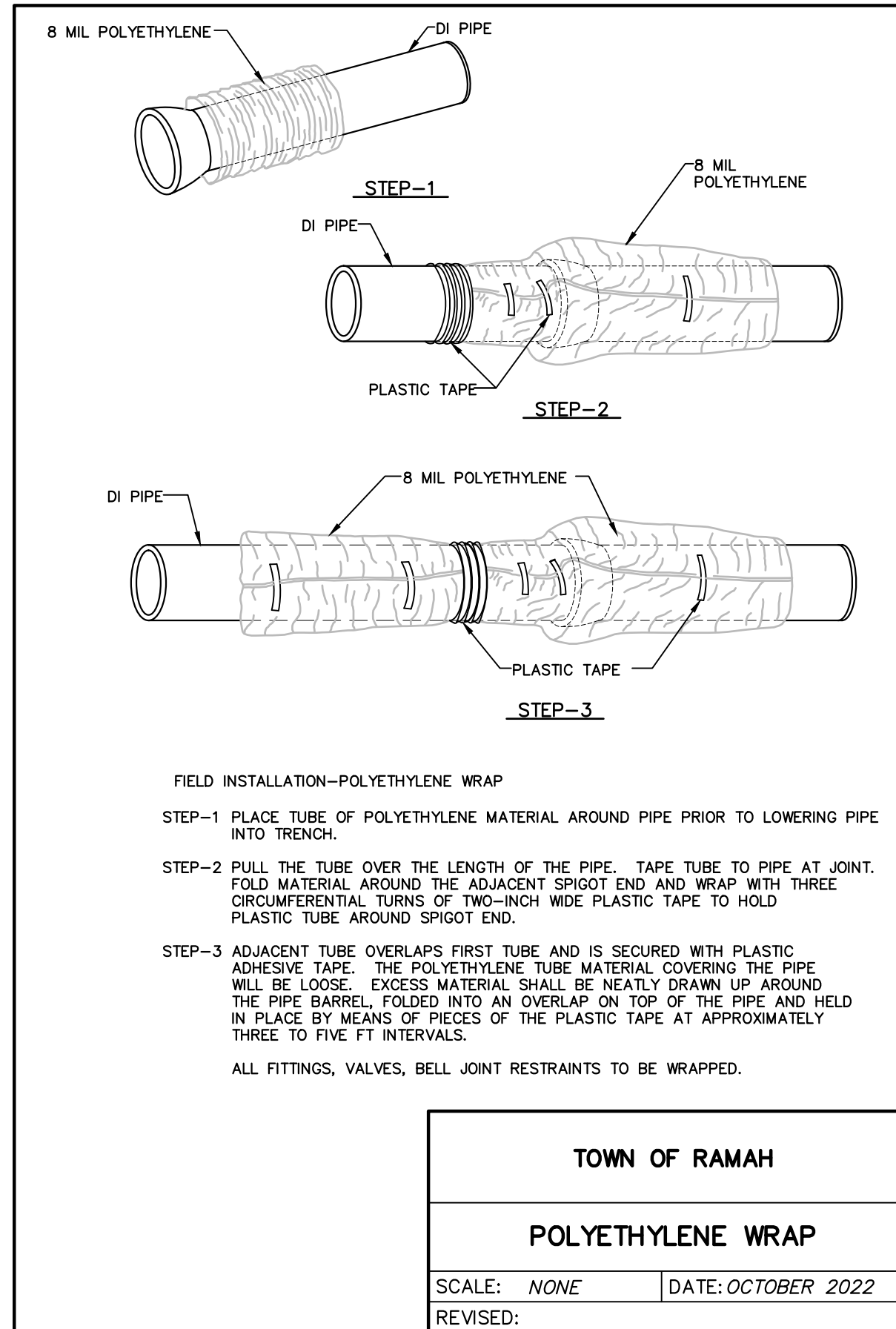
TOWN OF RAMAH 113 S. COMMERCIAL STREET RAMAH, CO 80832	
PREPARED UNDER THE DIRECT SUPERVISION OF	
FOR AND ON BEHALF OF ELEMENT ENGINEERING, LLC	
DATE	OCTOBER 2022
JOB NUMBER	0043.0001
SCALE	AS SHOWN
EDITION	PERMITTING
SHEET	C24 OF C29



NOTE: MANHOLE/VAULT BARREL SECTIONS WILL REQUIRE AN EXTERIOR COATING OF TNEMC SERIES 46-465 OR APPROVED EQUIVALENT IF GROUNDWATER IS ENCOUNTERED IN THE TRENCH.



NO.	REVISIONS	DESCRIPTION	DATE	BY



ROD DIAMETER, GRADE & LENGTH OF RESTRAINED PIPE

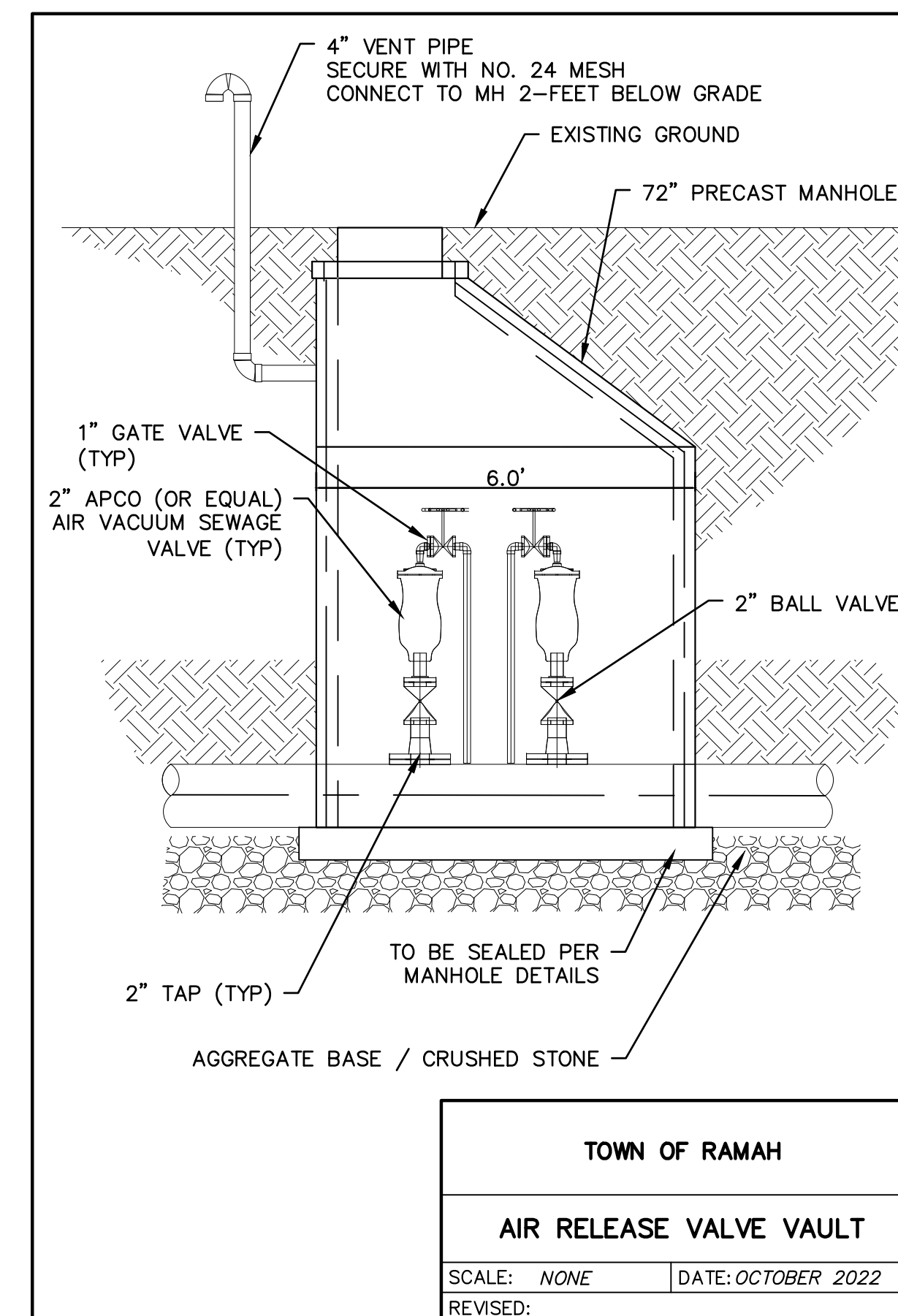
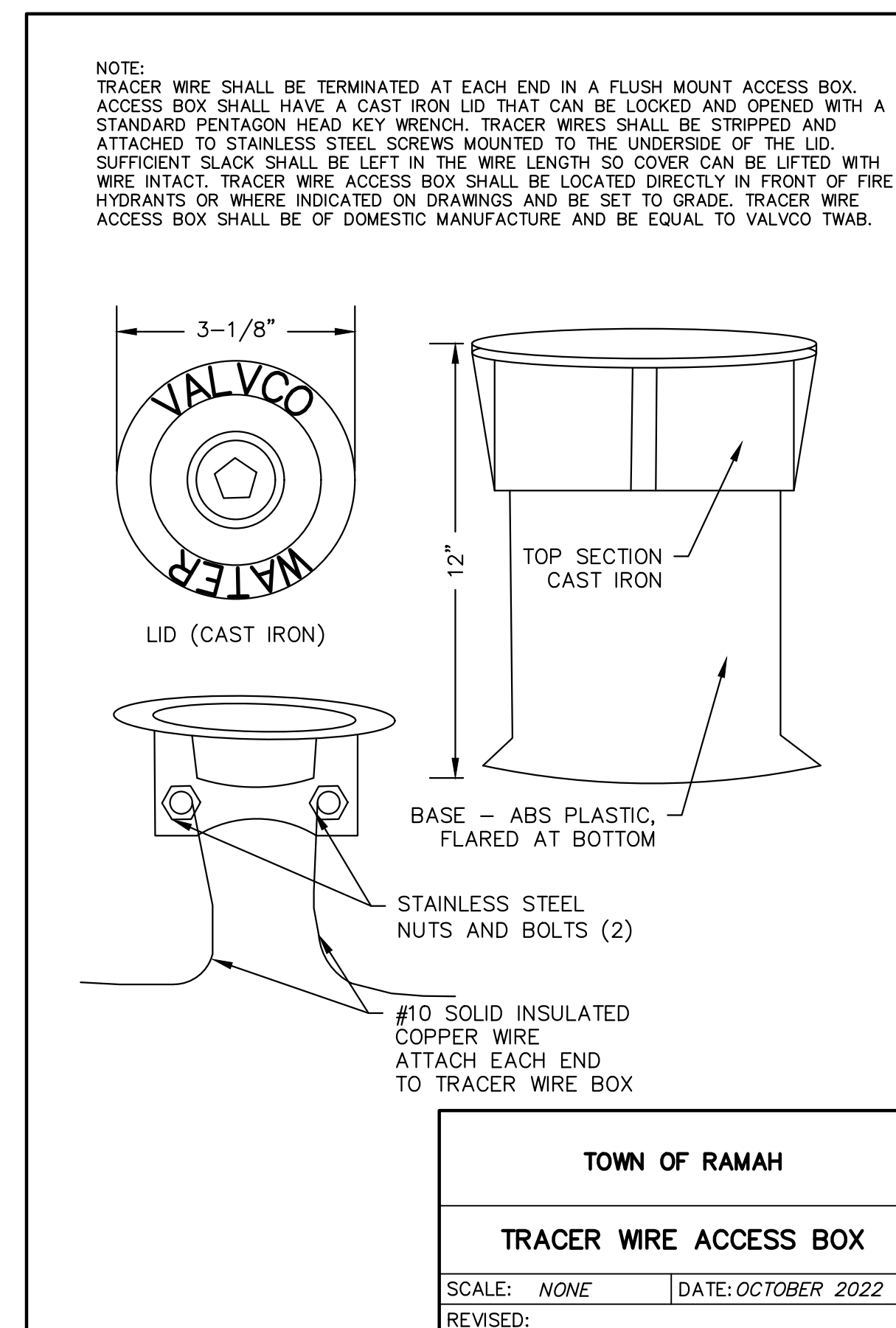
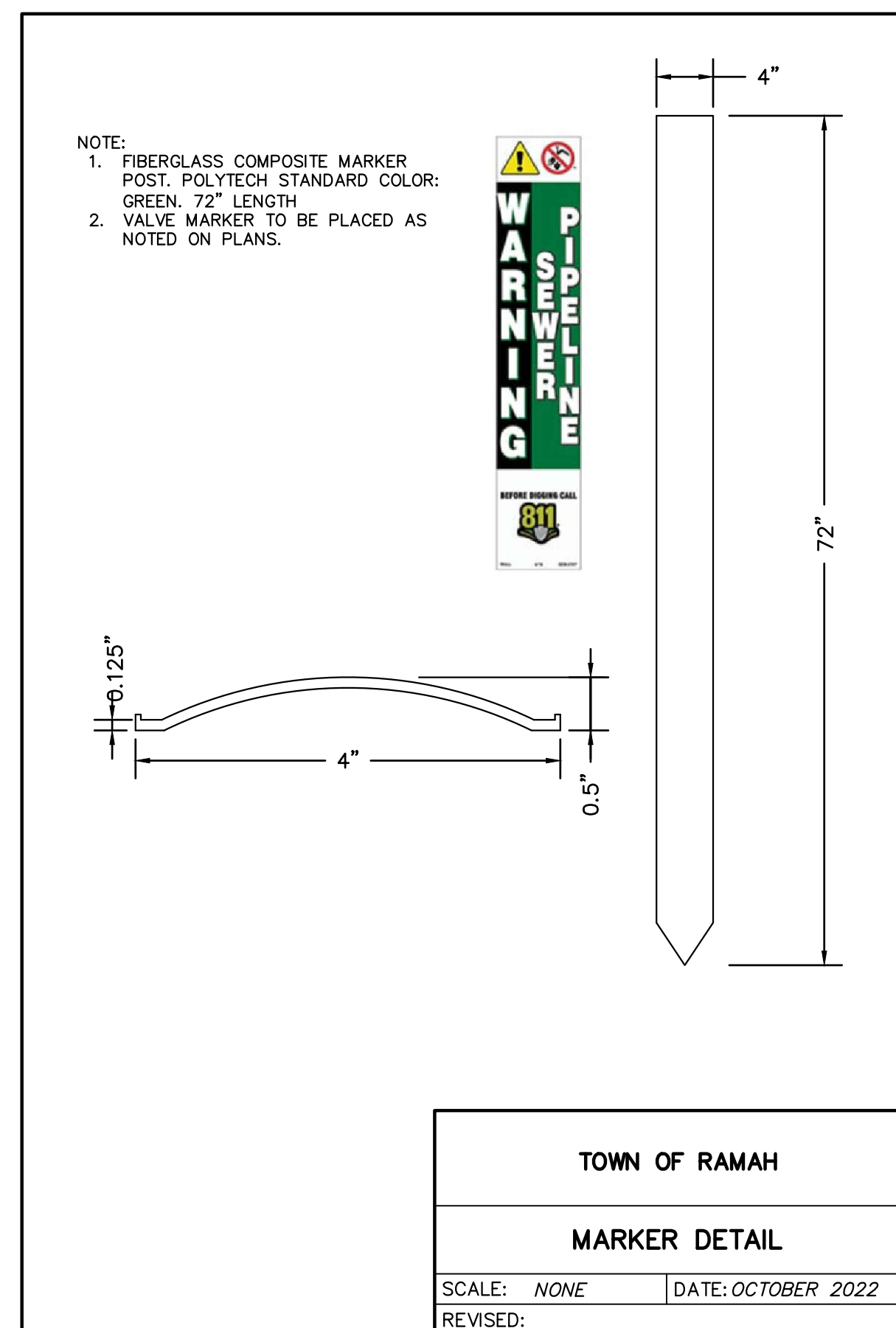
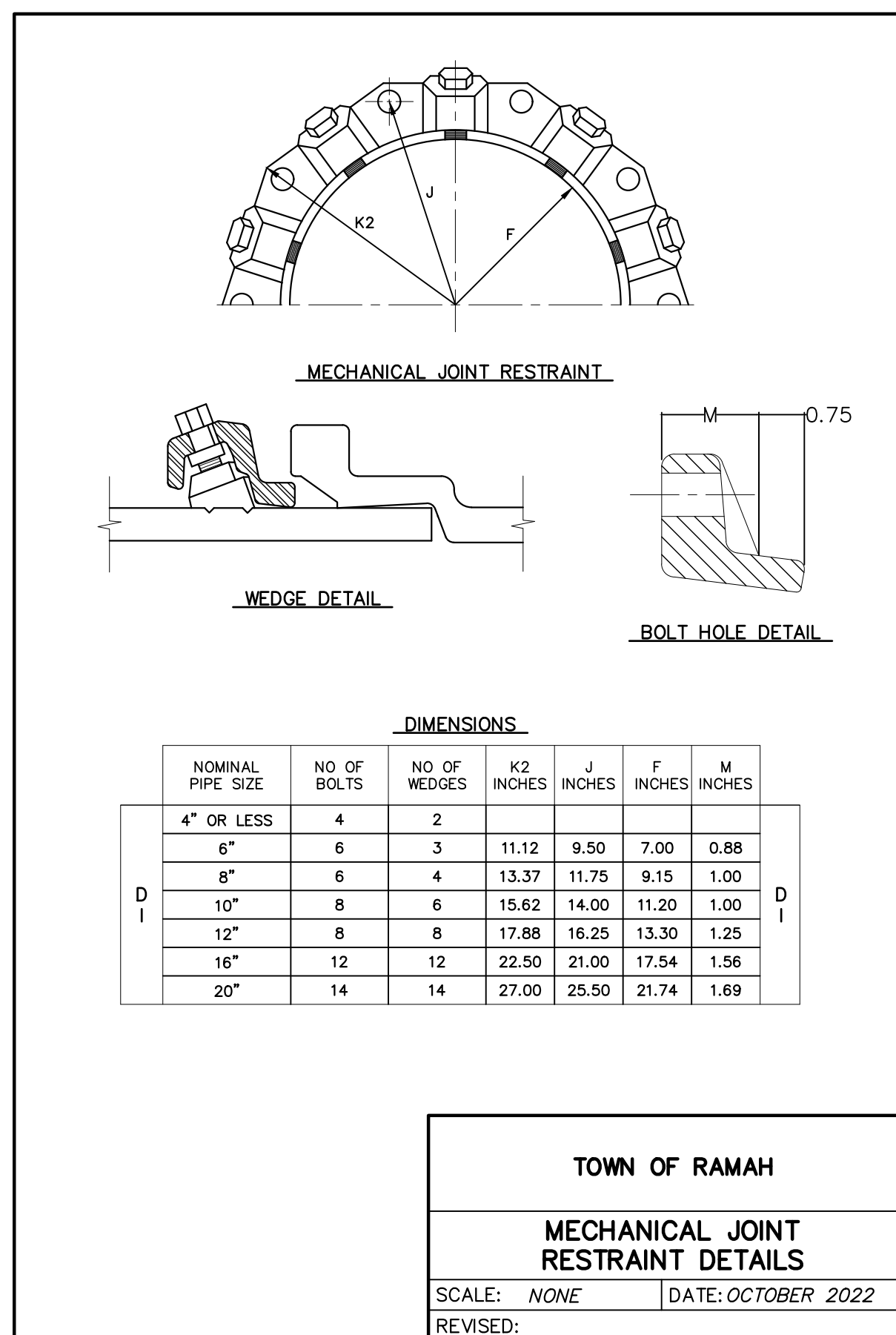
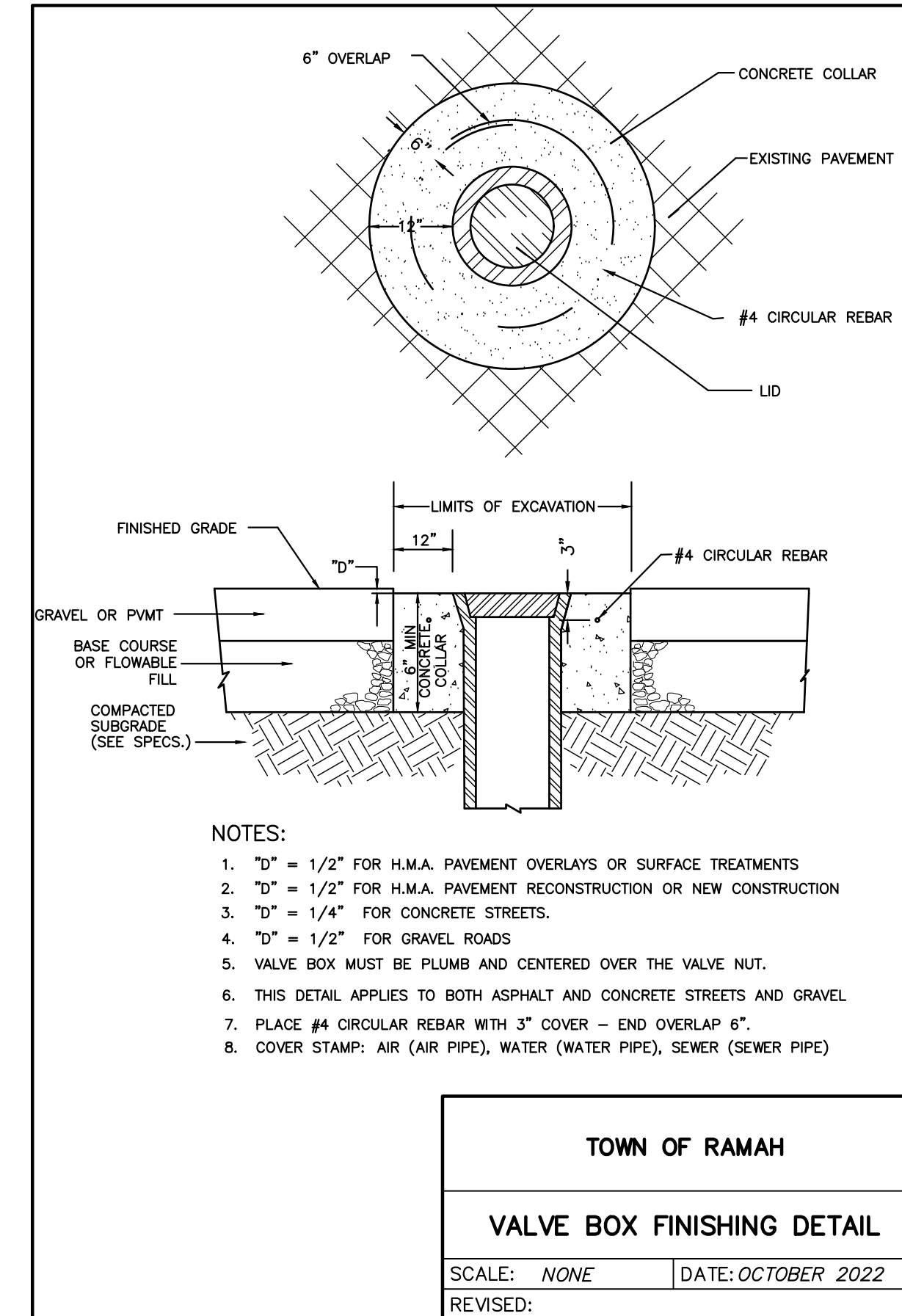
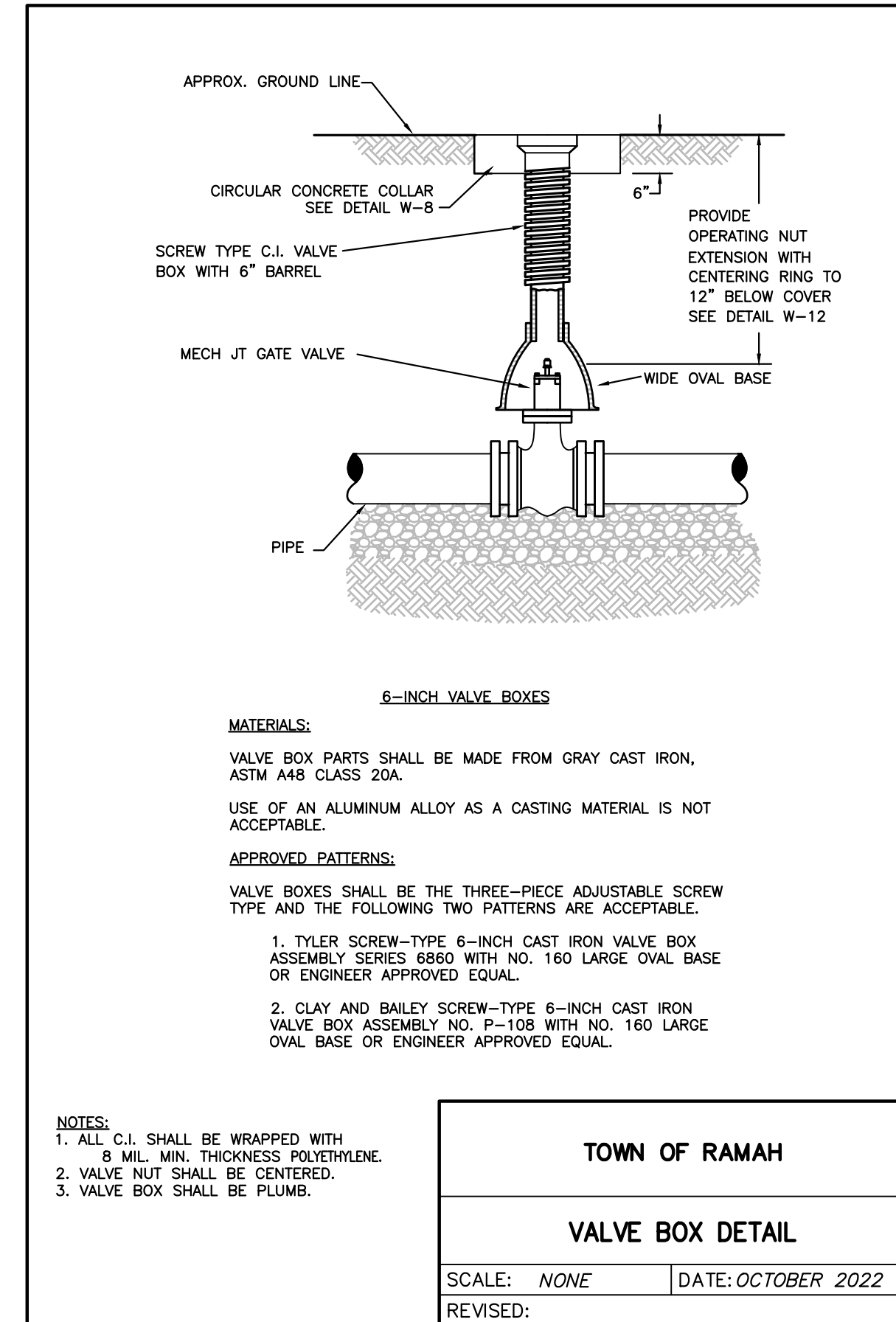
PIPE SIZE 4" AND LESS	6"	8"	12"	16"	20"	24"
FITTING	D L G D L G D L G D L G D L G D L G	D L G D L G D L G D L G D L G D L G	D L G D L G D L G D L G D L G D L G D L G	D L G D L G D L G D L G D L G D L G D L G	D L G D L G D L G D L G D L G D L G D L G	D L G D L G D L G D L G D L G D L G D L G
90° BEND, TEE, PLUG, VALVE	MS 3/4" 50'	MS 3/4" 71'	MS 3/4" 94'	MS 3/4" 104'	MS 1" 173'	MS 1 1/2" 212'
45° BEND	MS 3/4" 25'	MS 3/4" 35'	MS 3/4" 46'	MS 3/4" 66'	MS 1" 104'	MS 1 1/2" 122'
22 1/2° BEND	MS 3/4" 12'	MS 3/4" 17'	MS 3/4" 23'	MS 3/4" 32'	MS 1" 41'	MS 1 1/2" 50'
11 1/4° BEND	-	-	MS 3/4" 7'	MS 3/4" 10'	MS 1" 13'	MS 1 1/2" 15'

TOWN OF RAMAH

LENGTH OF RESTRAINED PIPE

SCALE: NONE DATE: OCTOBER 2022

REVISED:



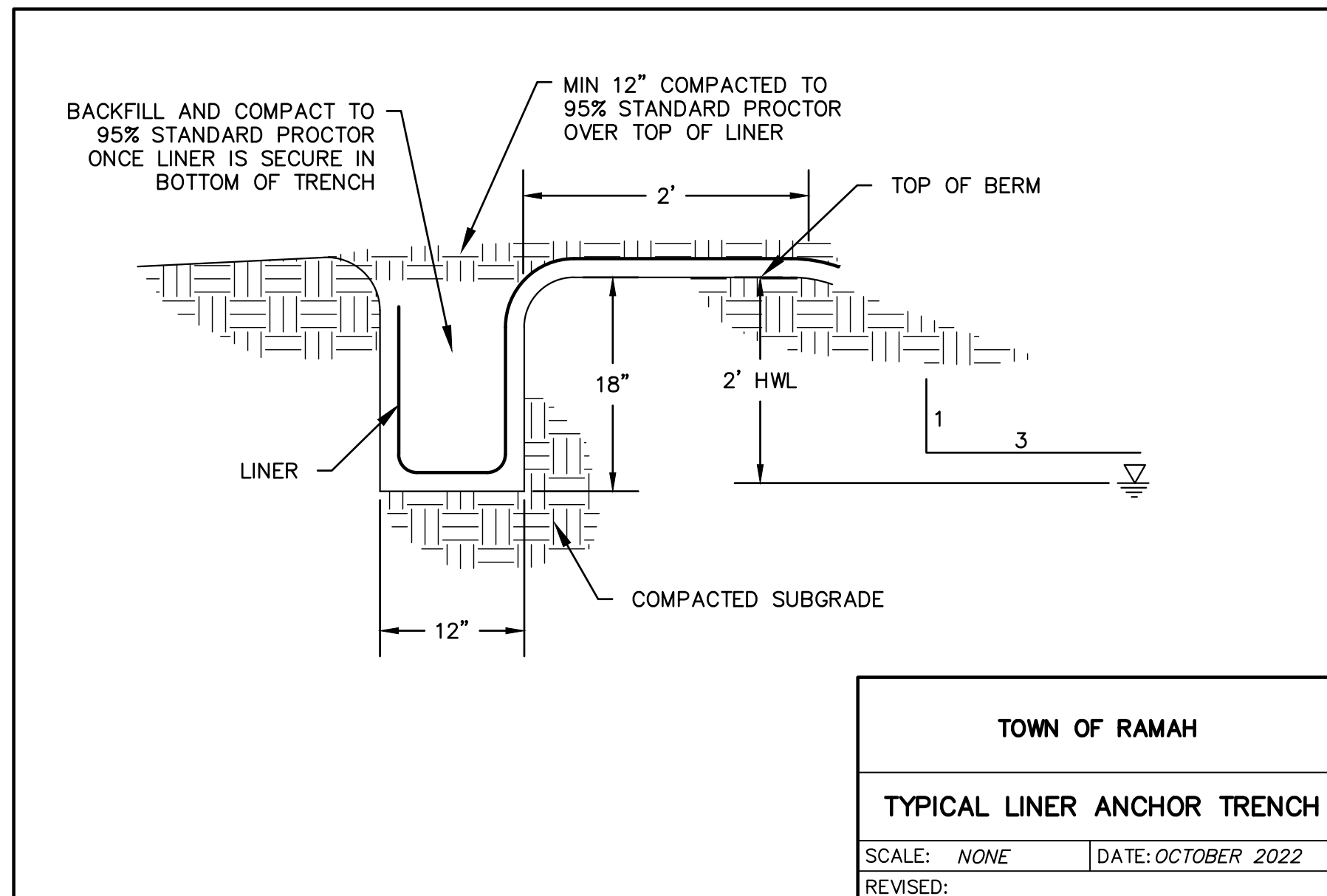
ELEMENT ENGINEERING LLC
 12687 W. CEDAR DRIVE, SUITE 300
 LAKEWOOD, CO 80228
 720.749.4165
 WWW.ELEMENTENGINEERING.NET

NO.	REVISIONS	DESCRIPTION	DATE	BY

FOR AND ON BEHALF OF
 ELEMENT ENGINEERING, LLC

DATE: OCTOBER 2022
 JOB NUMBER: 0043.0001
 SCALE: NTS
 EDITION: PERMITTING

SHEET: C26 OF C29

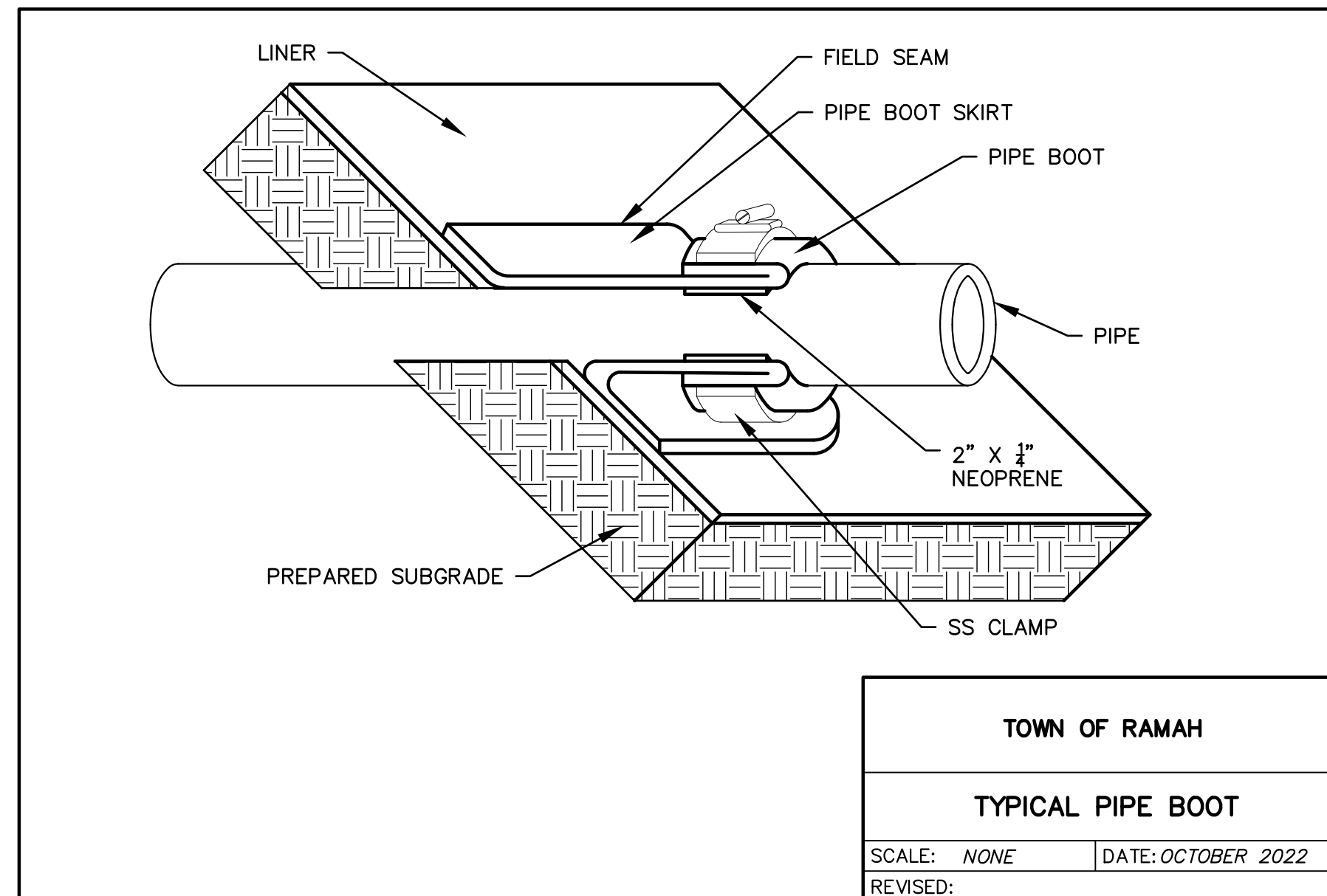


TOWN OF RAMAH

TYPICAL LINER ANCHOR TRENCH

SCALE: NONE DATE: OCTOBER 2022

REVISED:

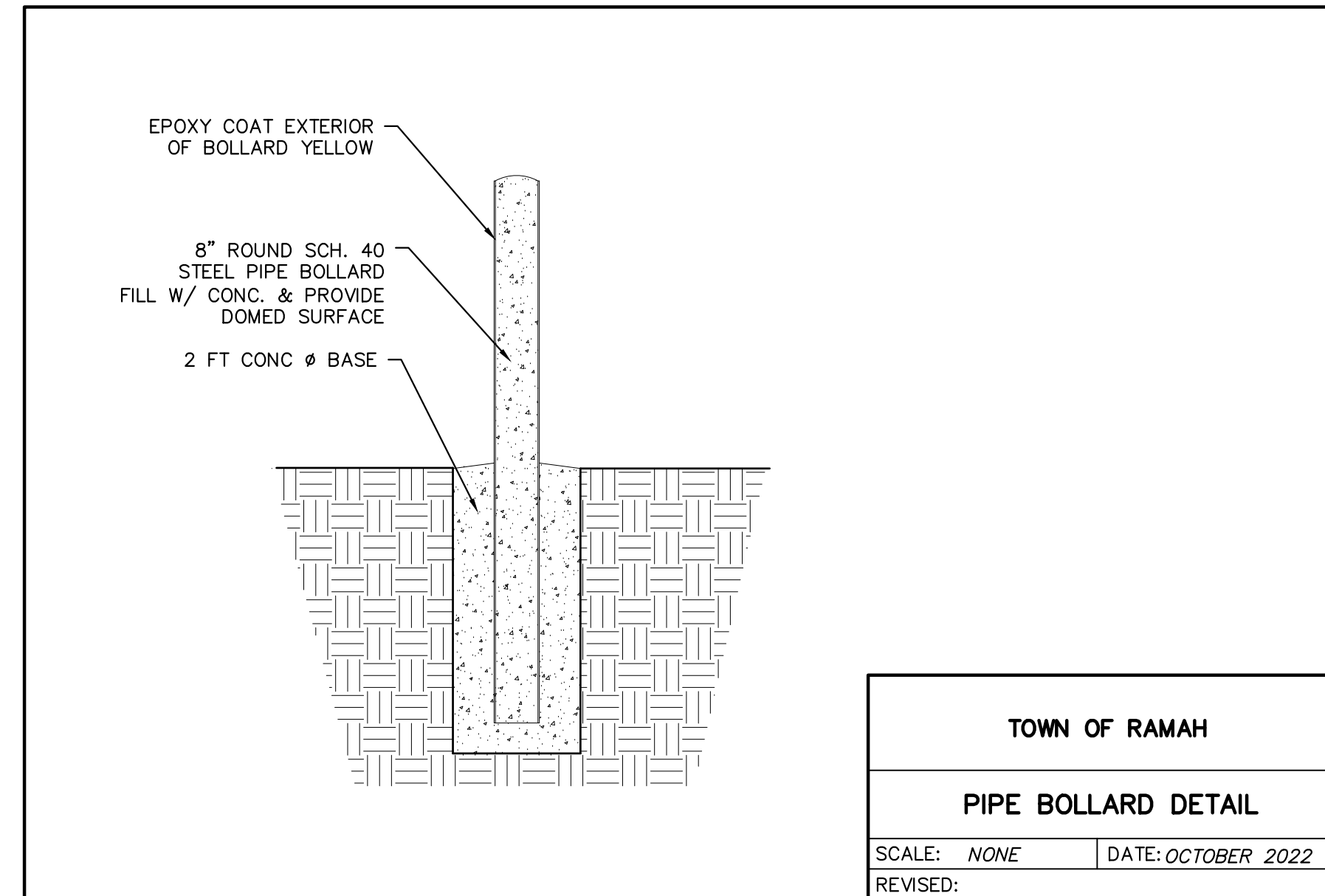


TOWN OF RAMAH

TYPICAL PIPE BOOT

SCALE: NONE DATE: OCTOBER 2022

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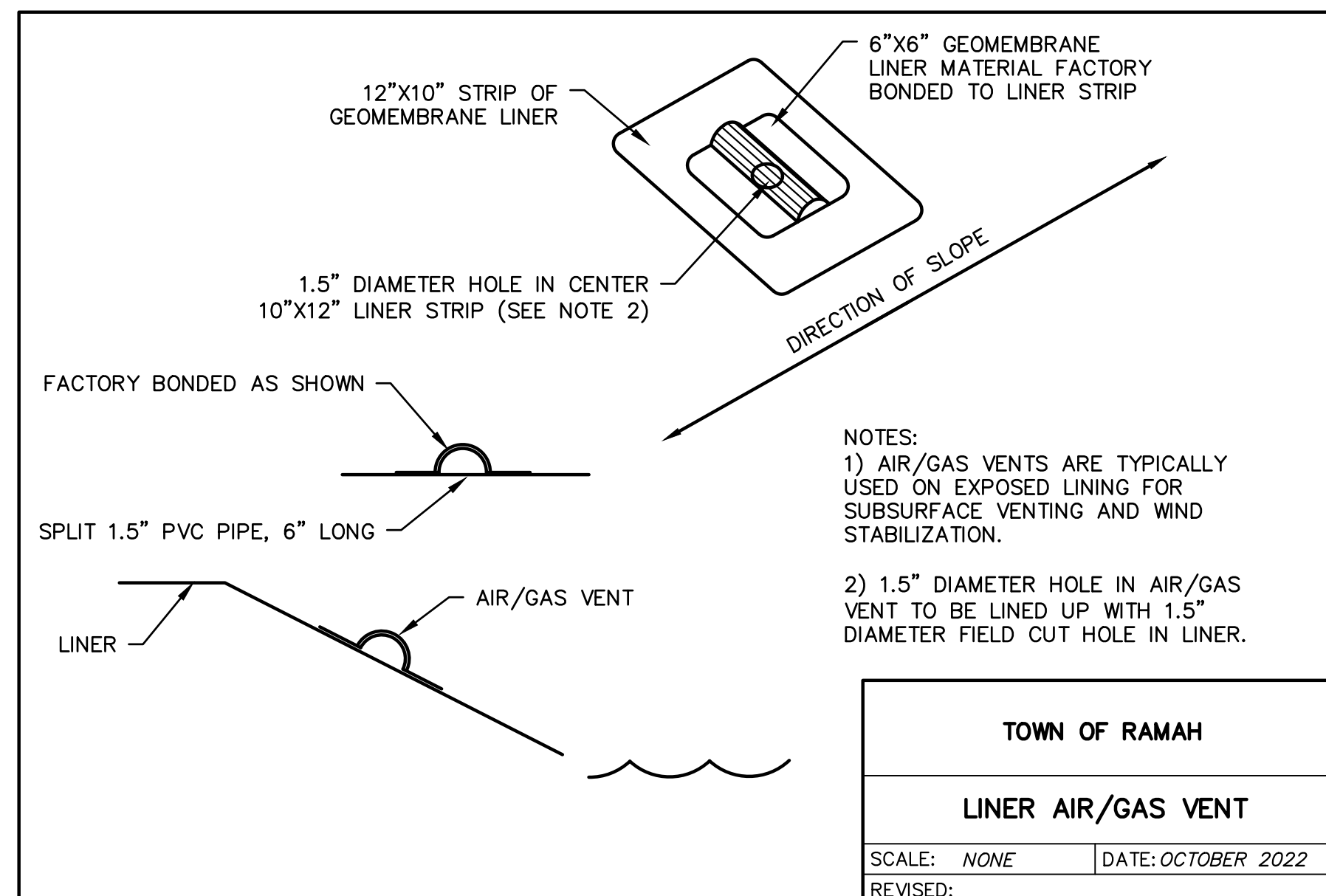


TOWN OF RAMAH

PIPE BOLLARD DETAIL

SCALE: NONE DATE: OCTOBER 2022

REVISED:

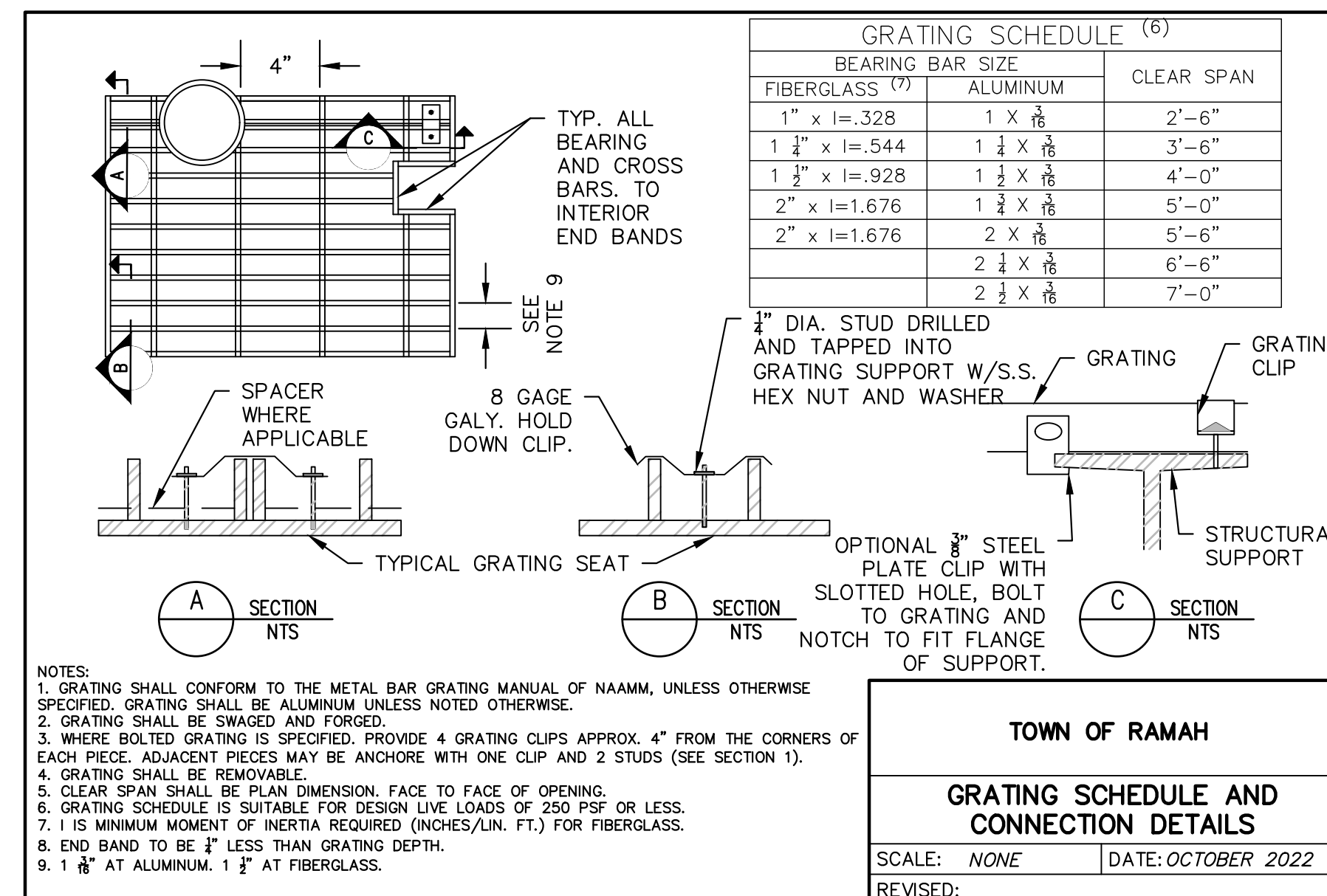


TOWN OF RAMAH

LINER AIR/GAS VENT

SCALE: NONE DATE: OCTOBER 2022

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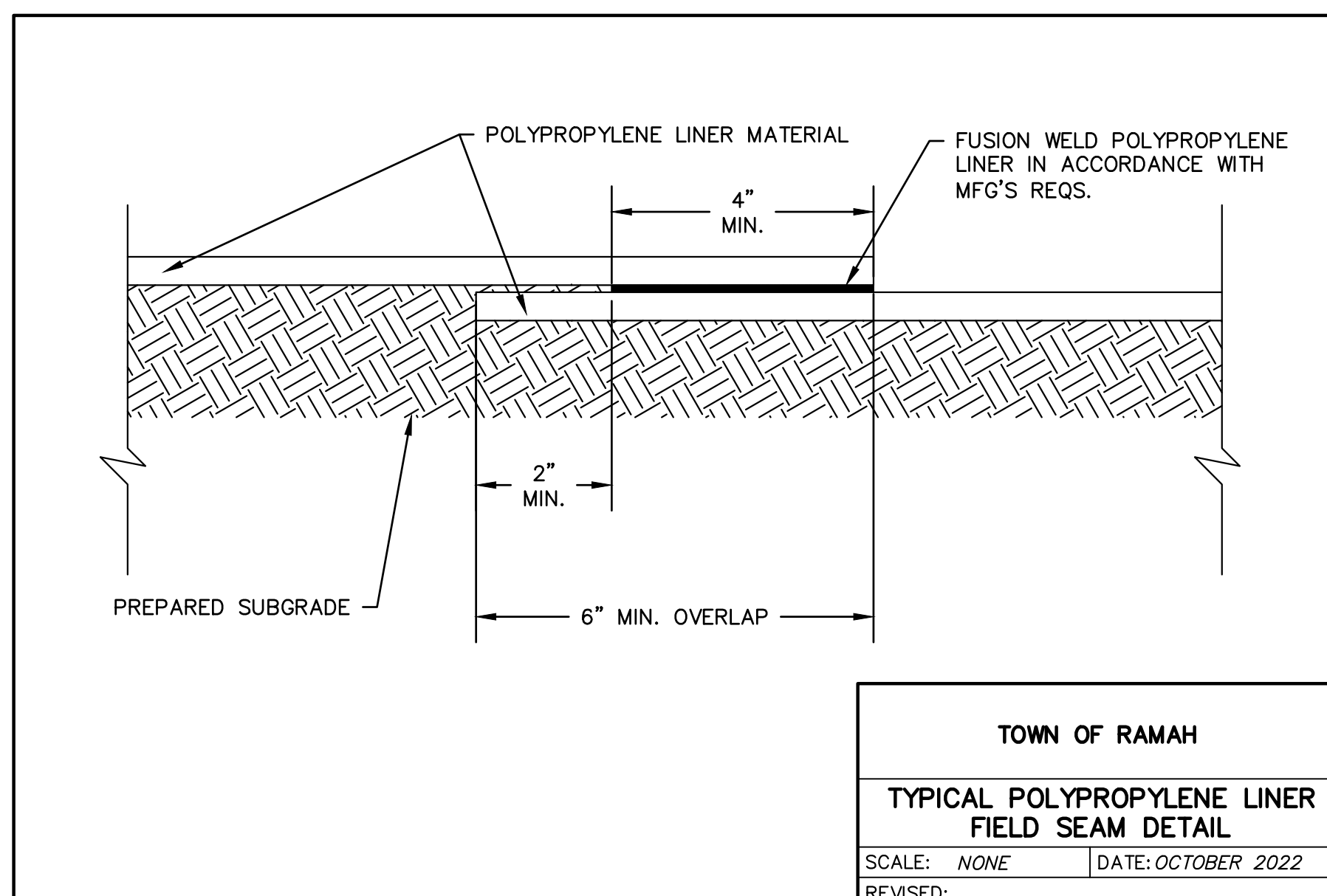


TOWN OF RAMAH

GRATING SCHEDULE AND CONNECTION DETAILS

SCALE: NONE DATE: OCTOBER 2022

REVISED:

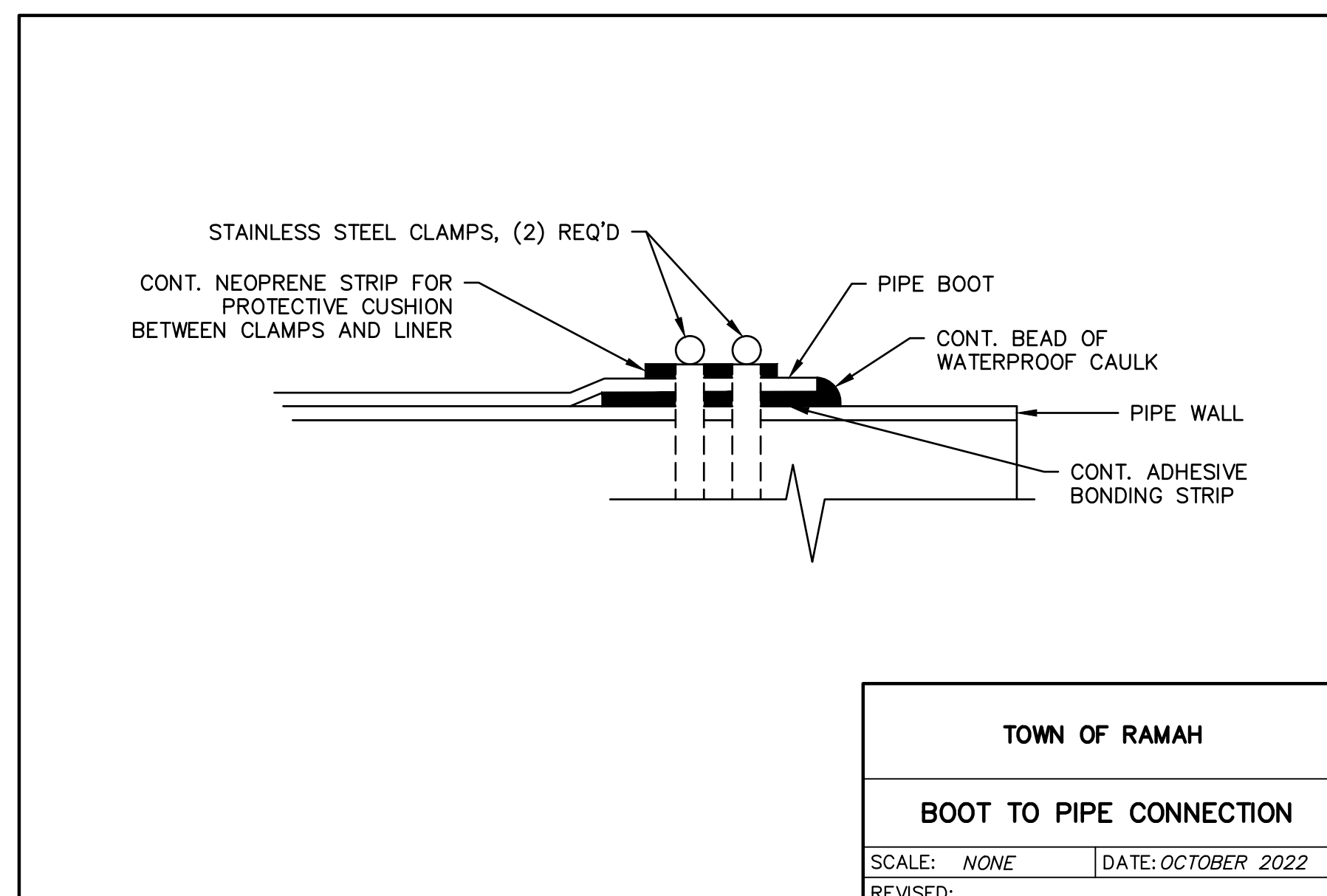


TOWN OF RAMAH

TYPICAL POLYPROPYLENE LINER FIELD SEAM DETAIL

SCALE: NONE DATE: OCTOBER 2022

REVISED:

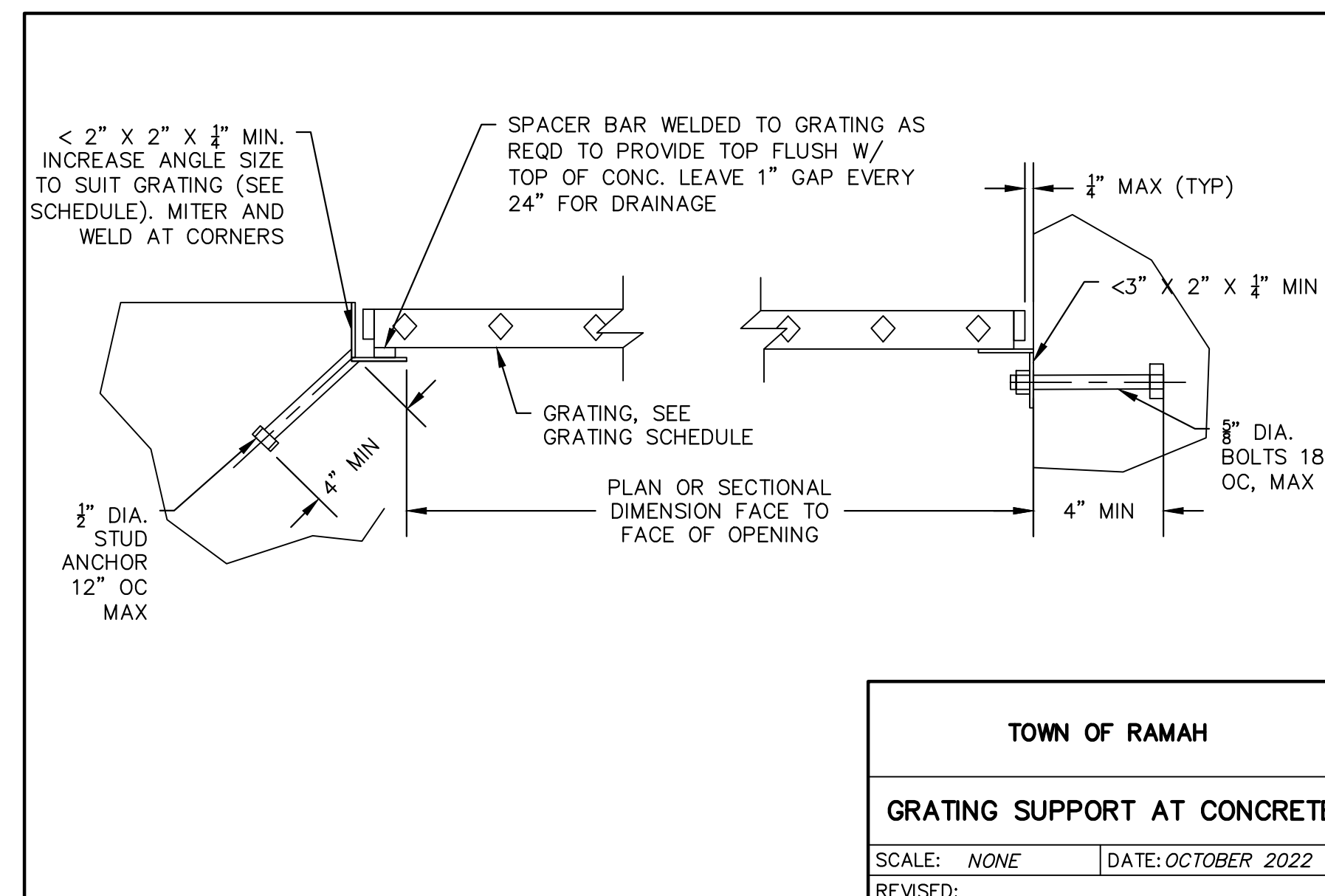


TOWN OF RAMAH

BOOT TO PIPE CONNECTION

SCALE: NONE DATE: OCTOBER 2022

REVISED:



TOWN OF RAMAH

GRATING SUPPORT AT CONCRETE

SCALE: NONE DATE: OCTOBER 2022

REVISED:

NO.	REVISIONS	DESCRIPTION	DATE	BY

WASTEWATER TREATMENT PLANT

GENERAL DETAILS

TOWN OF RAMAH
113 S. COMMERCIAL STREET
RAMAH, CO 80832

FOR AND ON BEHALF OF
ELEMENT ENGINEERING, LLC

DATE
OCTOBER 2022

JOB NUMBER
0043.0001

SCALE
NTS

EDITION
PERMITTING

SHEET
C27 OF C29

STANDARD EROSION AND SEDIMENT CONTROL PLAN NOTES

GENERAL NOTES

- THE APPROVED EROSION CONTROL PLAN SHALL BE MAINTAINED FOR THE ENTIRE DURATION OF THIS PROJECT.
- THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING EROSION AND SEDIMENT CONTROL MEASURES AT ALL TIMES DURING CONSTRUCTION.
- A THOROUGH INSPECTION OF THE STORMWATER MANAGEMENT PLAN BEST MANAGEMENT PRACTICES (BMPs) IS RECOMMENDED EVERY FOURTEEN (14) DAYS AND AFTER ANY PRECIPITATION OR SNOW MELT EVENT.
- PERIODIC INSPECTIONS SHALL ALSO INCLUDE INSPECTING EQUIPMENT FOR LEAKS AND REVIEWING EQUIPMENT MAINTENANCE PRACTICE. ALL INSPECTIONS AND MAINTENANCE SHALL BE DOCUMENTED BY THE PROJECT EROSION CONTROL SUPERVISOR AND MADE AVAILABLE TO THE OWNER AND CDPHE UPON REQUEST. ANY EROSION CONTROL BMP THAT HAS BEEN COMPROMISED OR HAS BEEN DISTURBED SHALL BE REPLACED OR RECONSTRUCTED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE ALL EROSION CONTROL BMPs IN PLACE AND EFFECTIVE PRIOR TO A STORM EVENT.
- THE STORMWATER MANAGEMENT PLAN LOG BOOK SHALL BE UPDATED EVERY FOURTEEN (14) DAYS. THIS LOG SHALL REMAIN ON SITE AVAILABLE FOR REVIEW BY SAGUACHE COUNTY AND CDPHE UPON REQUEST UNTIL AN INACTIVATION NOTICE FOR CONSTRUCTION STORMWATER DISCHARGE GENERAL PERMIT CERTIFICATION HAS BEEN OBTAINED. MAINTENANCE ACTIVITIES TO CORRECT PROBLEMS NOTED DURING INSPECTIONS MUST BE DOCUMENTED AND KEPT IN THE STORMWATER MANAGEMENT PLAN LOG BOOK.
- ALL STREETS WITHIN AND IMMEDIATELY SURROUNDING A CONSTRUCTION SITE SHALL BE CLEANED OF DIRT AND DEBRIS ON A WEEKLY BASIS. STREETS SHALL BE CLEANED BY SCRAPING AND SWEEPING THE DIRT OFF THE ROADWAYS. SCRAPED OR SWEEPED MATERIAL SHALL NOT BE DEPOSITED IN THE STORM SEWER SYSTEM. DIRT TRACKED ONTO ROADWAYS AND OTHER PAVED SURFACES SHALL BE CLEANED UP BY THE END OF THE WORKDAY.
- ALL CONSTRUCTION SITE OPERATORS SHALL CONTROL WASTE SUCH AS DISCARDED BUILDING MATERIALS, CONCRETE TRUCK WASHOUT, HAZARDOUS CHEMICALS (TO INCLUDE BUT NOT LIMITED TO HEAVY EQUIPMENT MAINTENANCE FLUIDS, MOTOR OIL, ANTIFREEZE AND VEHICLE FUEL), LITTER, AND SANITARY WASTE AT THE CONSTRUCTION SITE THAT MAY CAUSE ADVERSE IMPACTS TO STORMWATER QUALITY.
- ALL POTENTIAL POLLUTION SOURCES ON-SITE SHALL BE IDENTIFIED AND CONTROL MEASURES INSTALLED AND PRACTICED TO MINIMIZE THE LIKELIHOOD OF A RELEASE. REFER TO THE SPILL PREVENTION, CONTROL, AND COUNTERMEASURE (SPCC) PLAN FOR MEASURES TO RESPOND TO ANY SPILLS, LEAKS OR OTHER RELEASES.
- ALL PORTABLE TOILET FACILITIES SHALL BE LOCATED AWAY FROM GUTTERS, INLETS DITCHES, DRAINAGEWAYS, RECEIVING WATERS AND AREAS SUSCEPTIBLE TO FLOODING OR DAMAGE BY CONSTRUCTION EQUIPMENT.
- ALL PORTABLE TOILET FACILITIES SHALL BE SECURED IN PLACE BY STAKES INTO THE GROUND TO PREVENT TIPPING.
- STOCKPILES INCLUDING LANDSCAPING MATERIALS, EARTH MATERIALS AND DIRT FROM GRADING OR EXCAVATION SHALL NOT BE LOCATED ADJACENT TO WATERWAYS; SHALL BE STABILIZED WITHIN FOURTEEN (14) DAYS OF ESTABLISHMENT BY SURFACE ROUGHENING, SEEDING, AND MULCHING; AND SHALL NOT EXCEED TEN FEET IN HEIGHT.
- SLOPES 3:1 OR STEEPER SHALL BE PROTECTED WITH BIODEGRADABLE EROSION CONTROL BLANKETS.
- ALL MATERIAL IMPORTED TO OR EXPORTED FROM THE SITE SHALL BE PROPERLY COVERED TO PREVENT THE LOSS OF MATERIAL DURING TRANSPORT. HAUL ROUTES MUST BE PRE-APPROVED BY THE COUNTY. NO MATERIAL SHALL BE TRANSPORTED TO ANOTHER SITE WITHOUT FIRST OBTAINING A HAULING PERMIT FROM THE OWNER.
- THE CONCRETE WASHOUT CONTAINMENT STRUCTURE SHALL CONTAIN ALL WASHOUT WATER. STORMWATER SHALL NOT CARRY WASTES FROM WASHOUT LOCATION.
- THE CONCRETE WASHOUT CONTAINMENT STRUCTURE SHALL BE LOCATED A MINIMUM OF FIFTY (50) FEET HORIZONTAL FROM WATERS OF THE STATE. THE CONCRETE WASHOUT CONTAINMENT STRUCTURE SHALL BE SIGNED AS - CONCRETE WASHOUT.
- PERMANENT SOIL STABILIZATION MEASURES SHALL BE APPLIED WITHIN FOURTEEN (14) DAYS TO DISTURBED AREAS IN WHICH FINAL GRADE IS COMPLETED.

BMP MAINTENANCE NOTES

- IT IS ANTICIPATED THAT THE BMPs IMPLEMENTED AT THE SITE WILL HAVE TO BE MODIFIED TO ADAPT TO CHANGING CONDITIONS OR TO ENSURE THAT POTENTIAL POLLUTANTS ARE BEING PROPERLY MANAGED AT THE SITE.
- ALL INLET/OUTLET PROTECTIONS WILL BE CHECKED FOR MAINTENANCE AND FAILURE. SEDIMENT SHALL BE REMOVED AND PROPERLY DISPOSED OF ONCE IT HAS ACCUMULATED TO HALF THE DESIGN OF THE TRAP.
- ALL SPILLS SHALL BE CLEANED UP IMMEDIATELY AFTER DISCOVERY OR CONTAINED UNTIL APPROPRIATE CLEANUP METHODS CAN BE EMPLOYED. MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEANUP SHALL BE FOLLOWED, ALONG WITH PROPER DISPOSAL METHODS.
- EACH CONCRETE TRUCK OPERATOR SHALL BE AWARE OF THE DESIGNATED CONCRETE WASHOUT AREA.
- THE CONTRACTOR SHALL CHECK THE CAPACITY FOR ALL CONCRETE WASHOUT AREAS. WASTE MATERIALS MUST BE REMOVED BY THE CONTRACTOR AND LEGALLY DISPOSED OF WHEN ACCUMULATIONS AMOUNT TO TWO-THIRDS OF THE WET STORAGE CAPACITY OF THE STRUCTURE.
- ALL CONCRETE WASHOUT AREAS SHALL BE CLEARLY MARKED. THE CONCRETE WASHOUT CONTAINMENT DETAIL WILL INCLUDE ORANGE PLASTIC CONSTRUCTION FENCING OR EQUIVALENT AROUND THE WASHOUT STRUCTURE AND A SIGN POSTED WITH THE WORDS "CONCRETE WASHOUT".
- THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND/OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.
- AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED OF AT AN APPROVED WASTE SITE.
- ALL SEDIMENT SHALL BE REMOVED UPON INITIAL ACCEPTANCE FROM TEMPORARY SEDIMENT BASINS AND STORM SEWER FACILITIES, I.E., PIPES, OUTLETS AND INLETS. THIS SEDIMENT SHALL NOT BE FLUSHED OFF-SITE, BUT SHALL BE CAPTURED ON-SITE AND DISPOSED OF AT AN APPROVED LOCATION.
- 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.

CHECK DAM INSTALLATION NOTES

- SEE PLAN VIEW FOR:
 - LOCATION OF CHECK DAMS
 - CHECK DAM TYPE (CHECK DAM OR REINFORCED CHECK DAM)
 - LENGTH (L), CREST LENGTH (CL), AND DEPTH (D)
- CHECK DAMS INDICATED ON INITIAL SWMP SHALL BE INSTALLED AFTER CONSTRUCTION FENCE, BUT PRIOR TO ANY UPSTREAM LAND DISTURBING ACTIVITIES.
- RIPRAP UTILIZED FOR CHECK DAMS SHOULD BE OF APPROPRIATE SIZE FOR THE APPLICATION. TYPICAL TYPES OF RIPRAP USED FOR CHECK DAMS ARE TYPE M (D50 12") OR TYPE L (D50 9").
- RIPRAP PAD SHALL BE TRENCHED INTO THE GROUND A MINIMUM OF 1".
- THE ENDS OF THE CHECK DAM SHALL BE A MINIMUM OF 1'-6" HIGHER THAN THE CENTER OF THE CHECK DAM.

CHECK DAM MAINTENANCE NOTES

- SEDIMENT ACCUMULATED UPSTREAM OF THE CHECK DAMS SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS WITHIN 1/2 OF THE HEIGHT OF THE CREST.
- CHECK DAMS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
- WHEN CHECK DAMS ARE REMOVED, EXCAVATIONS SHALL BE FILLED WITH SUITABLE COMPACTED BACKFILL. DISTURBED AREA SHALL BE SEEDED AND MULCHED AND COVERED WITH GEOTEXTILE OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

CULVERT INLET PROTECTION INSTALLATION NOTES

- SEE PLAN VIEW FOR LOCATION OF CULVERT INLET PROTECTION
- SEE ROCK SOCK DESIGN DETAIL FOR ROCK GRADATION REQUIREMENTS AND JOINTING DETAIL.

CULVERT INLET PROTECTION MAINTENANCE NOTES

- SEDIMENT ACCUMULATED UPSTREAM OF THE CULVERT SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS 1/2 THE HEIGHT OF THE ROCK SOCK.
- CULVERT INLET PROTECTION SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

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, D50
- 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 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

- 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.

EROSION CONTROL BLANKET INSTALLATION NOTES

- SEE PLAN VIEW FOR:
 - LOCATION OF ECB
 - TYPE OF ECB (STRAW, STRAW-COCONUT, COCONUT, OR ECESLOR)
 - AREA, A, IN SQUARE YARDS OF EACH TYPE OF ECB
- 100% NATURAL AND BIODEGRADABLE MATERIALS ARE PREFERRED FOR RECPS, ALTHOUGH SOME JURISDICTIONS MAY ALLOW OTHER MATERIALS IN SOME APPLICATIONS.
- IN AREAS WHERE ECBs ARE SHOWN ON THE PLANS, THE PERMITTEE SHALL PLACE TOPSOIL AND PERFORM FINAL GRADING, SURFACE PREPARATION, AND SEEDING AND MULCHING. SUBGRADE SHALL BE SMOOTH AND MOIST PRIOR TO ECB INSTALLATION AND THE ECB SHALL BE IN FULL CONTACT WITH SUBGRADE. NO GAPS OR VOIDS SHALL EXIST UNDER THE BLANKET.
- PERIMETER ANCHOR TRENCH SHALL BE USED ALONG THE OUTSIDE PERIMETER OF ALL BLANKET AREAS.
- JOINT ANCHOR TRENCH SHALL BE USED TO JOIN ROLLS OF ECBs TOGETHER (LONGITUDINALLY AND TRANSVERSELY) FOR ALL ECBs EXCEPT STRAW WHICH MAY USE AN OVERLAPPING JOINT.
- INTERMEDIATE ANCHOR TRENCH SHALL BE USED AT SPACING OF ONE-HALF ROLL LENGTH FOR COCONUT AND ECESLOR ECBs.
- OVERLAPPING JOINT DETAIL SHALL BE USED TO JOIN ROLLS OF ECBs TOGETHER FOR ECBs ON SLOPES.
- MATERIAL SPECIFICATIONS OF ECBs SHALL CONFORM TO TABLE ECB-1.
- ANY AREAS OF SEEDING AND MULCHING DISTURBED IN THE PROCESS OF INSTALLING ECBs SHALL BE RESEEDED AND MULCHED.
- DETAILS ON DESIGN PLANS FOR MAJOR DRAINAGEWAY STABILIZATION WILL GOVERN IF DIFFERENT FROM THOSE SHOWN HERE.

EROSION CONTROL BLANKET MAINTENANCE NOTES

- ECBS SHALL BE LEFT IN PLACE TO EVENTUALLY BIODEGRADE, UNLESS REQUESTED TO BE REMOVED BY THE LOCAL JURISDICTION.
- ANY ECB PULLED OUT, TORN, OR OTHERWISE DAMAGED SHALL BE REPAIRED OR REINSTALLED. ANY SUBGRADE AREAS BELOW THE GEOTEXTILE THAT HAVE ERODED TO CREATE A VOID UNDER THE BLANKET, OR THAT REMAIN DEVOID OF GRASS SHALL BE REPAIRED, RESEEDED, AND MULCHED AND THE ECB REINSTALLED.

SILT FENCE INSTALLATION NOTES

- SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2-5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.
- A UNIFORM 6" X 4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.
- COMPACT ANCHOR TRENCH BY HAND WITH A "JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.
- SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.
- SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.
- AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J-HOOK". THE "J-HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' - 20').
- SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

SILT FENCE MAINTENANCE NOTES

- SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 6".
- REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.
- SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.
- WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED, AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

STABILIZED STAGING AREA INSTALLATION NOTES

- SEE PLAN VIEW FOR:
 - LOCATION OF STAGING AREA(S)
 - CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION
- STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.
- STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.
- THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THINK GRANULAR MATERIAL.
- UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.
- ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

STABILIZED STAGING AREA MAINTENANCE NOTES

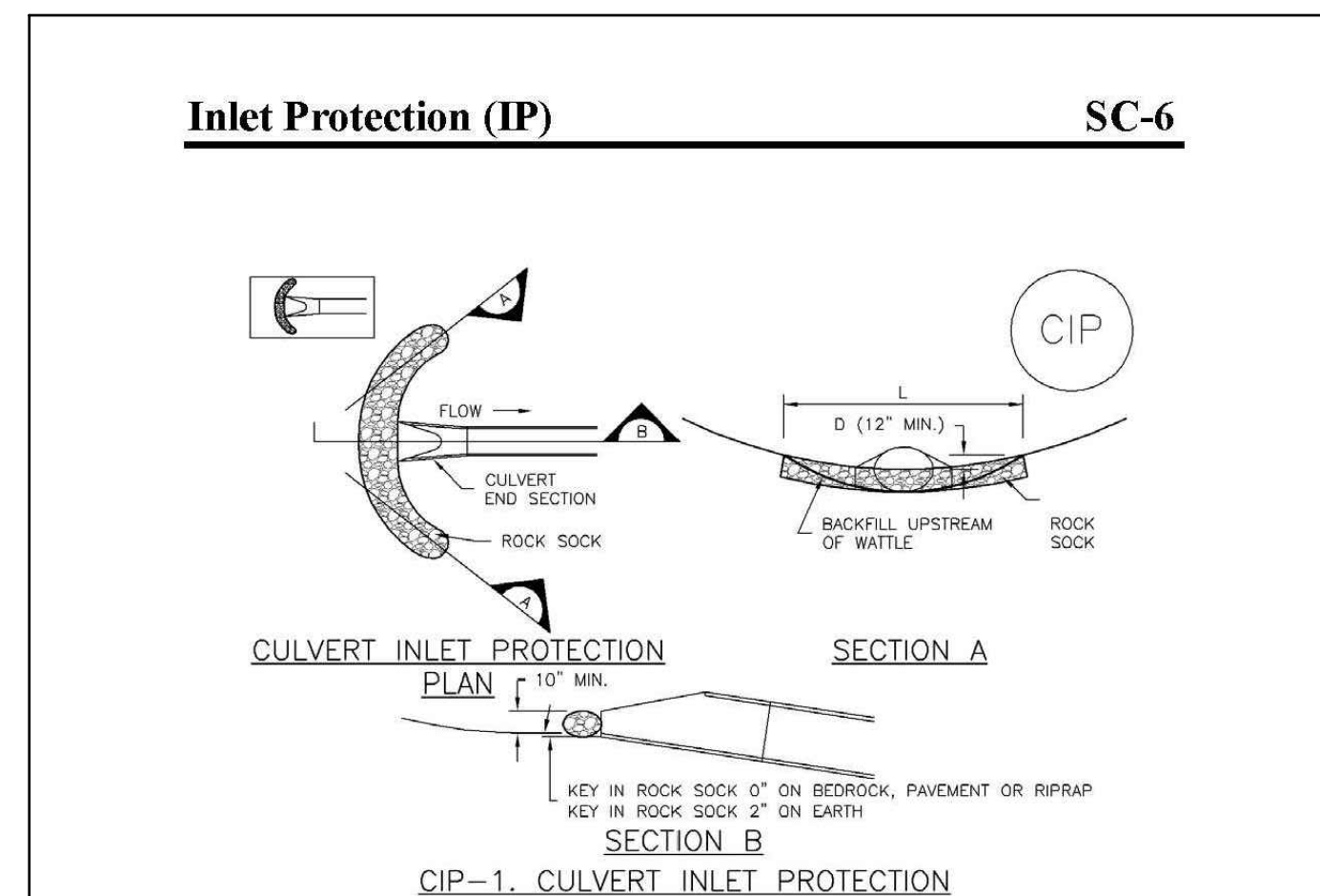
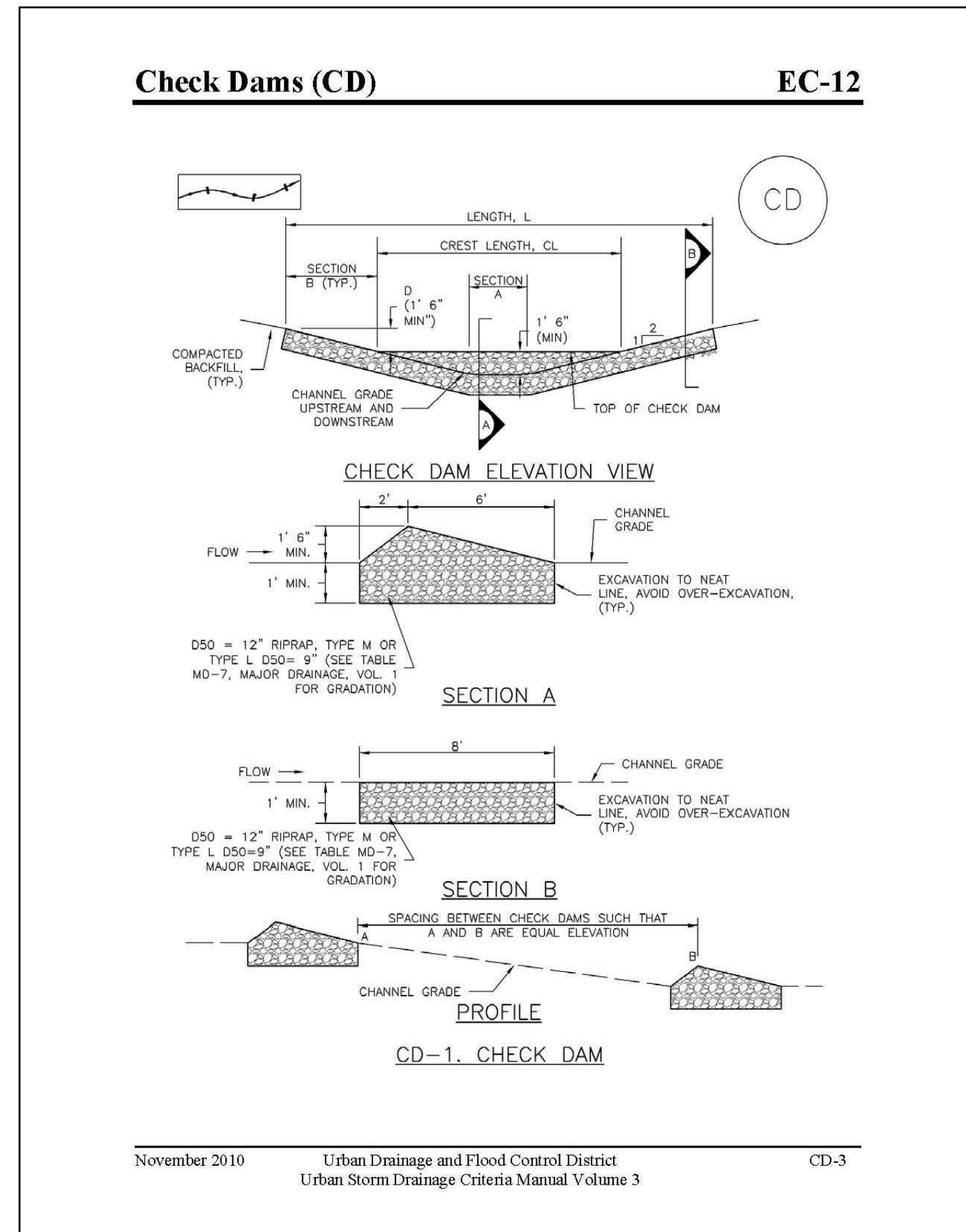
- ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.
- STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.
- THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE, AND THE AREA COVERED WITH TOPSOIL, SEEDED, AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.
- NOTE: MANY MUNICIPALITIES PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS DUE TO DIFFICULTIES WITH RE-ESTABLISHMENT OF VEGETATION IN AREAS WHERE RECYCLED CONCRETE WAS PLACED.

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

- SEE PLAN VIEW FOR:
 - LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S)
 - TYPE OF CONSTRUCTION ENTRANCE(S)/EXIT(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM)
- CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.
- A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT-OF-WAYS.
- STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
- A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.
- UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

STABILIZED CONSTRUCTION ENTRANCE/EXIT MAINTENANCE NOTES

- ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.
- SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.



NO.	REVISIONS	DESCRIPTION	DATE	BY

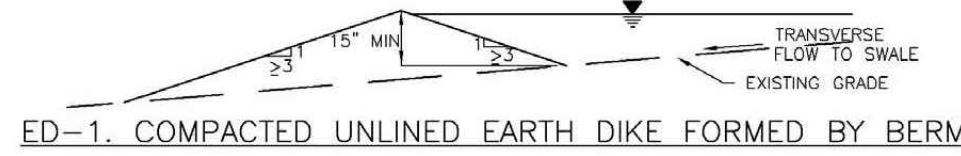
WASTEWATER TREATMENT PLANT
EROSION CONTROL DETAILS
TOWN OF RAMAH
113 S. COMMERCIAL STREET
RAMAH, CO 80832

PREPARED UNDER THE DIRECT SUPERVISION OF

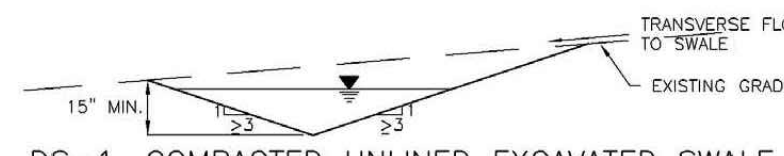
DATE	OCTOBER 2022
JOB NUMBER	0043.0001
SCALE	NTS
EDITION	PERMITTING
SHEET	C28 OF C29

FOR AND ON BEHALF OF
ELEMENT ENGINEERING, LLC

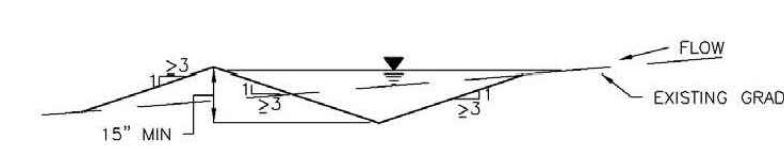
Earth Dikes and Drainage Swales (ED/DS) EC-10



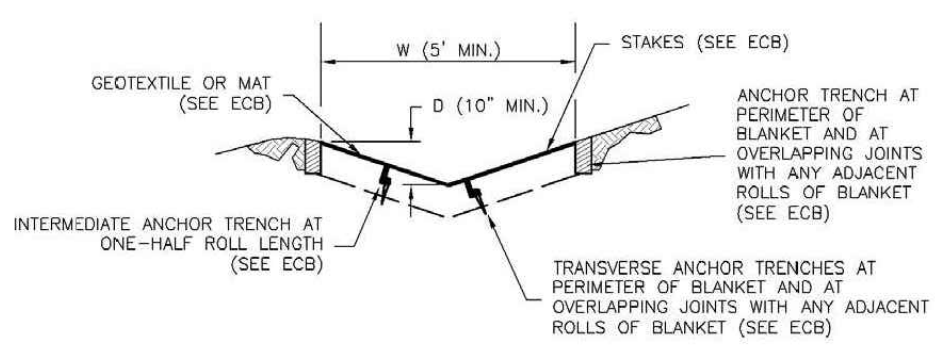
ED-1. COMPACTED UNLINED EARTH DIKE FORMED BY BERM



DS-1. COMPACTED UNLINED EXCAVATED SWALE

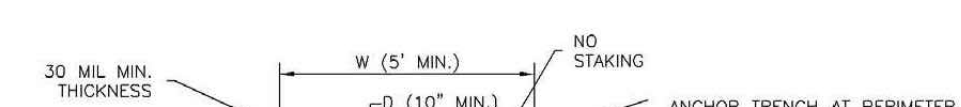


DS-2. COMPACTED UNLINED SWALE FORMED BY CUT AND FILL

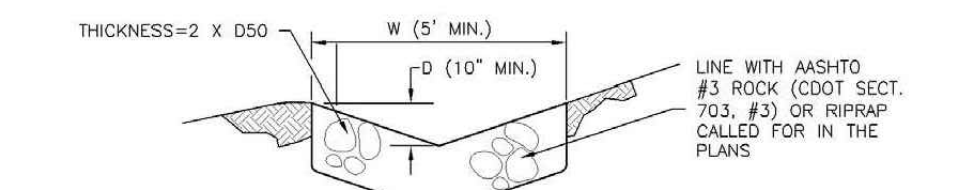


DS-3. ECB LINED SWALE (CUT AND FILL OR BERM)

EC-10 Earth Dikes and Drainage Swales (ED/DS)



DS-4. SYNTHETIC LINED SWALE



DS-5. RIPRAP LINED SWALE

Stabilized Staging Area (SSA) SM-6

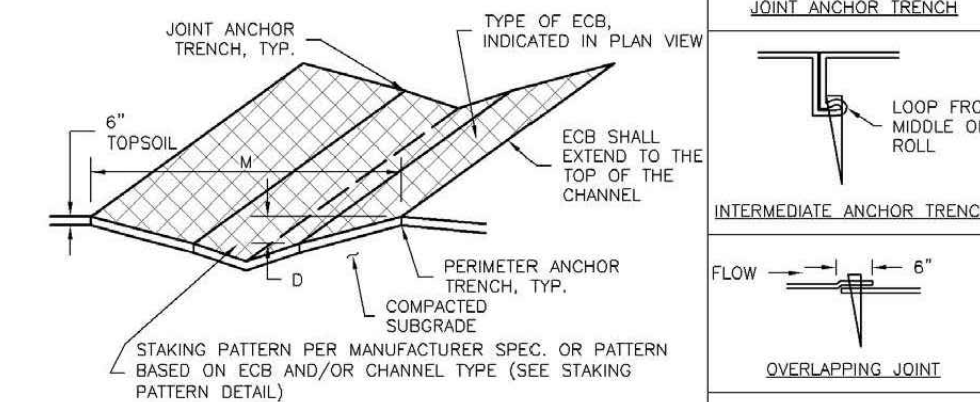


SSA-1. STABILIZED STAGING AREA

EC-6 Rolled Erosion Control Products (RECP)



ECB-1. PIPE OUTLET TO DRAINAGE WAY

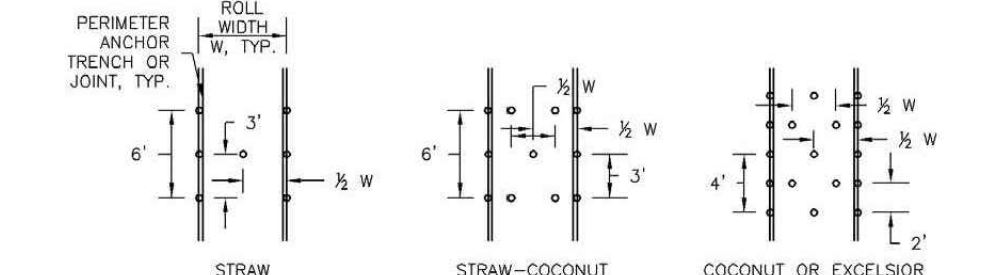


ECB-2. SMALL DITCH OR DRAINAGE WAY

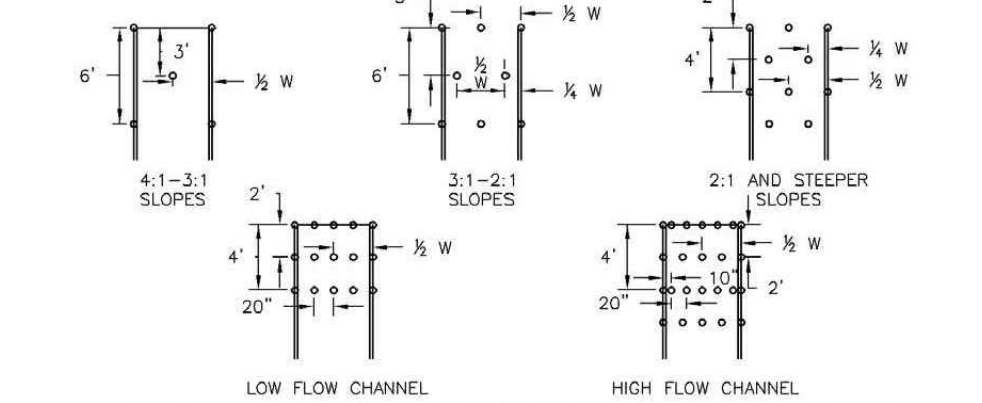
Rolled Erosion Control Products (RECP) EC-6



ECB-3. OUTSIDE OF DRAINAGE WAY

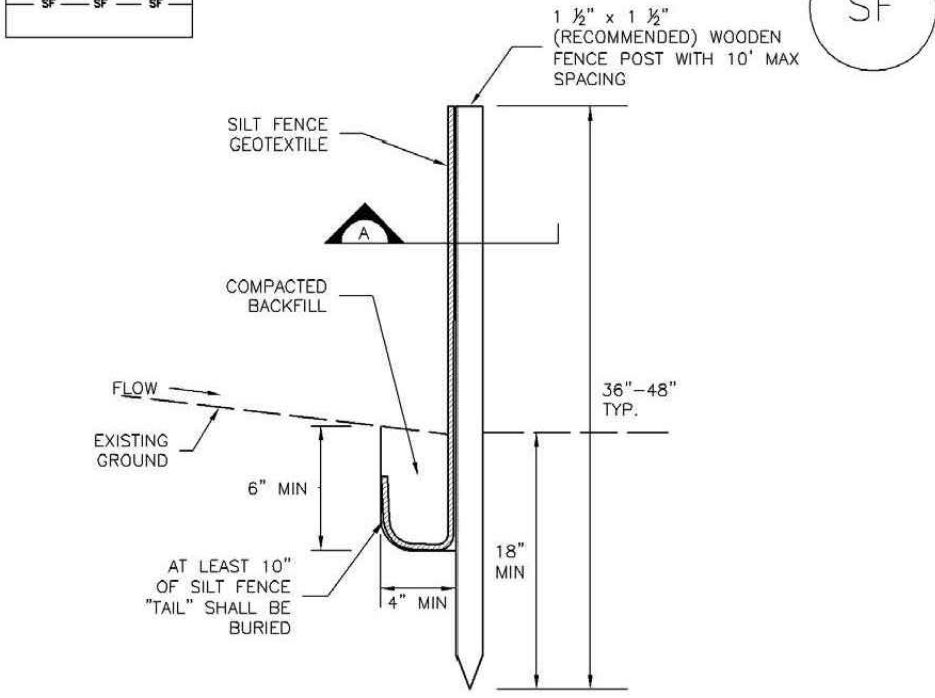


STAKING PATTERNS BY ECB TYPE

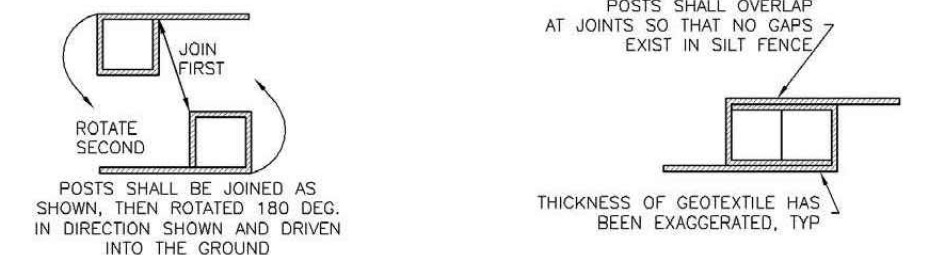


STAKING PATTERNS BY SLOPE OR CHANNEL TYPE

Silt Fence (SF) SC-1



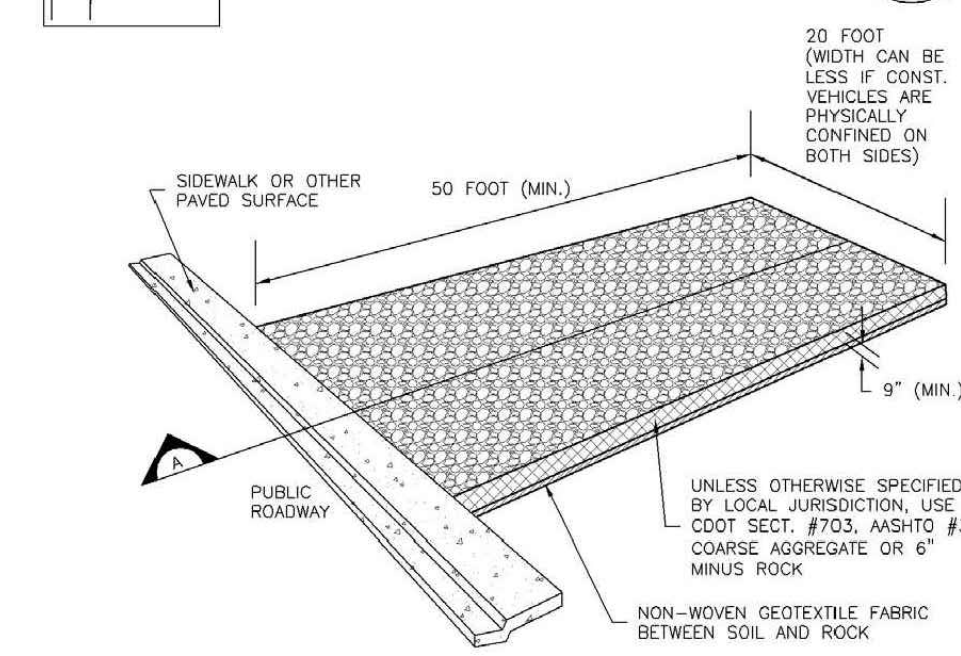
SILT FENCE



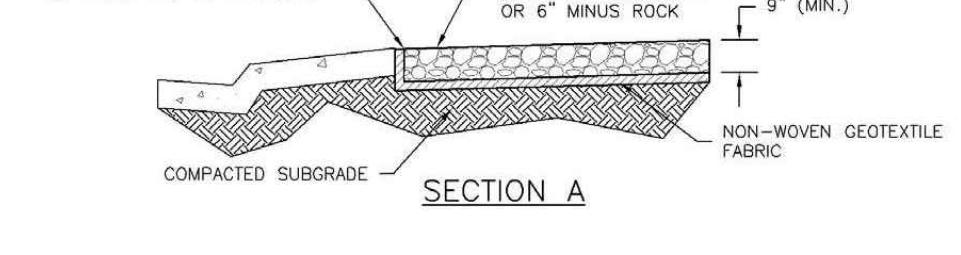
SECTION A

SF-1. SILT FENCE

Vehicle Tracking Control (VTC) SM-4



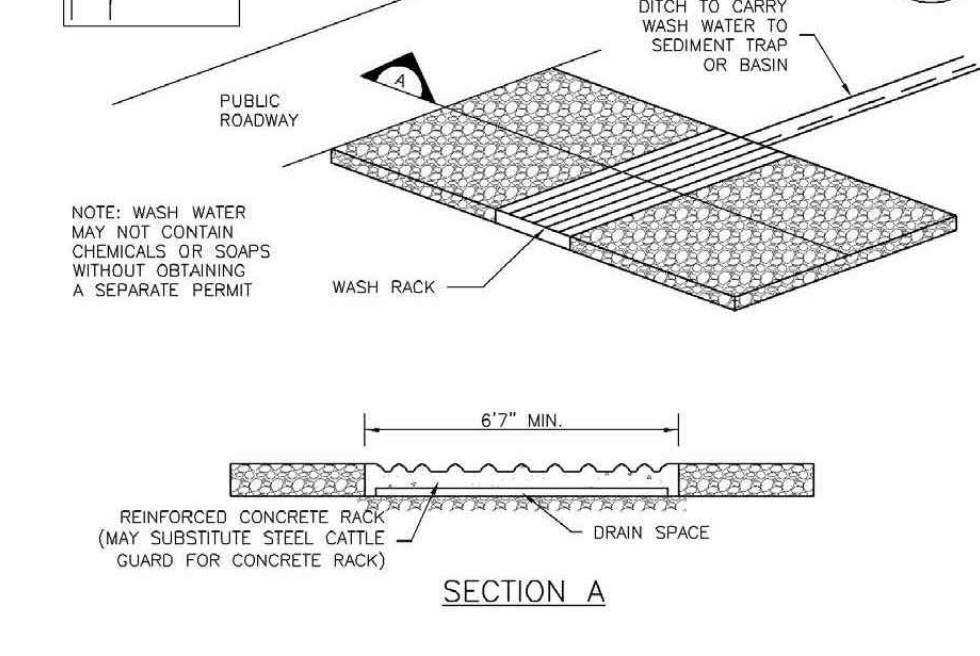
VTC-1. AGGREGATE VEHICLE TRACKING CONTROL



SECTION A

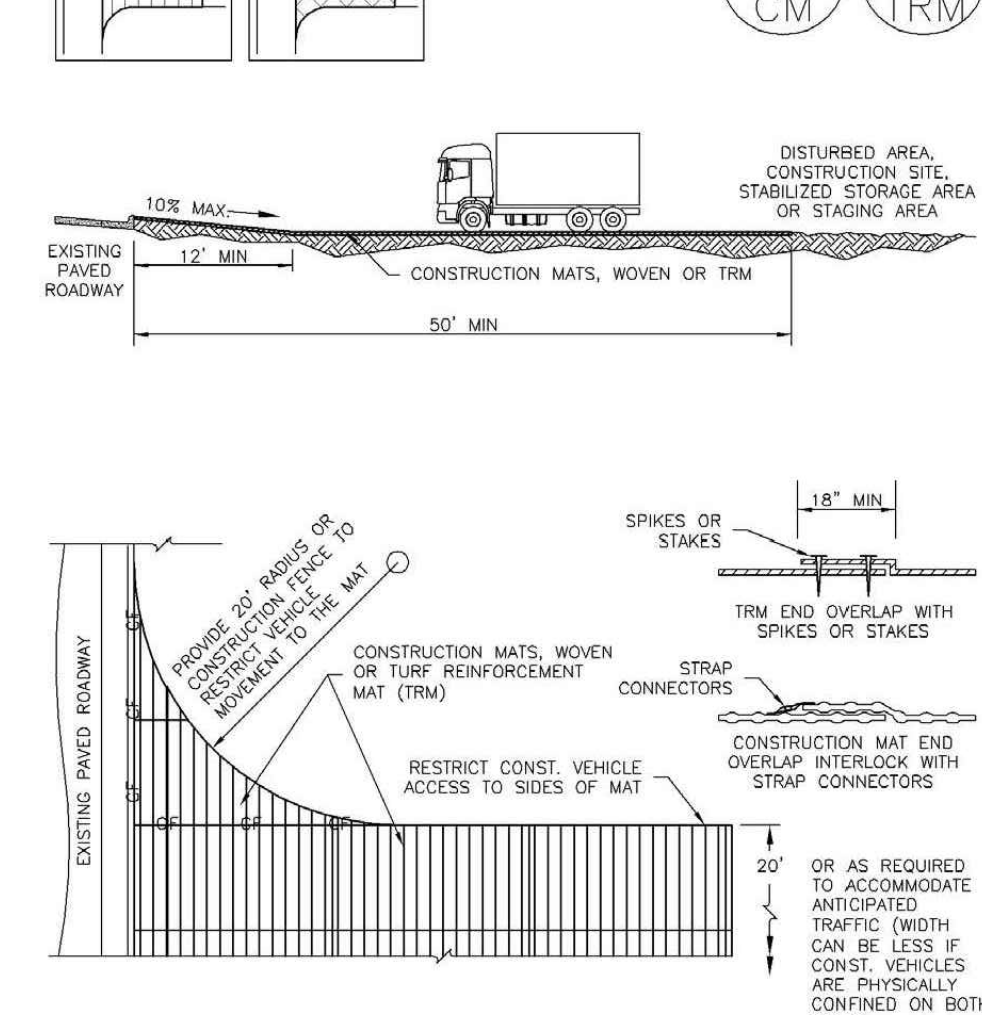
VTC-1. AGGREGATE VEHICLE TRACKING CONTROL

SM-4 Vehicle Tracking Control (VTC)



VTC-2. AGGREGATE VEHICLE TRACKING CONTROL WITH WASH RACK

Vehicle Tracking Control (VTC) SM-4



VTC-3. VEHICLE TRACKING CONTROL W/ CONSTRUCTION MAT OR TURF REINFORCEMENT MAT (TRM)

NO.	REVISIONS	DESCRIPTION	DATE	BY