

North Bay at Lake Woodmoor

RESIDENTIAL SUBDIVISION CONSTRUCTION DRAWINGS

Prepared for Lake Woodmoor Holdings, LLC

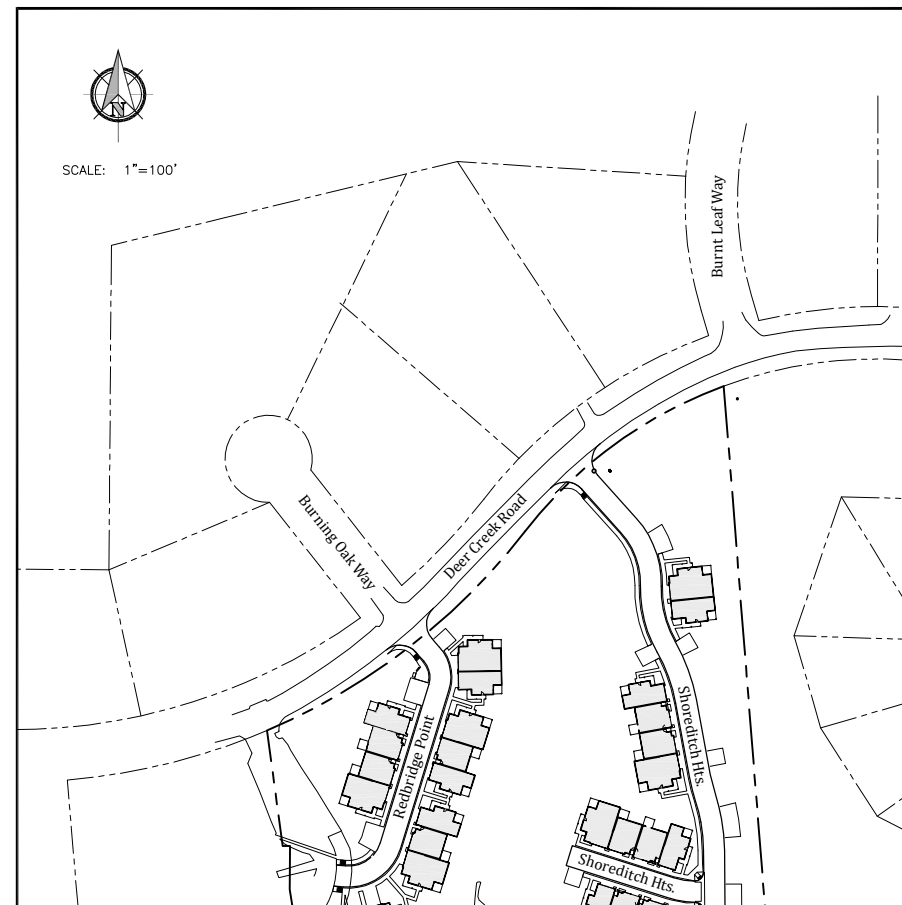
EL PASO COUNTY STANDARD NOTES

- All drainage and roadway construction shall meet the standards and specifications of the City of Colorado Springs/El Paso County Drainage Criteria Manual, Volumes 1 and 2, and the El Paso County Engineering Criteria Manual.
- Contractor shall be responsible for the notification and field notification of all existing utilities, whether shown on the plans or not, before beginning construction. Location of existing utilities shall be verified by the contractor prior to construction. Call 811 to contact the Utility Notification Center of Colorado (UNCC).
- Contractor shall keep a copy of these approved plans, the Grading and Erosion Control Plan, the Stormwater Management Plan (SWMP), the soils and geotechnical report, and the appropriate design and construction standards and specifications at the job site at all times, including the following:
 - El Paso County Engineering Criteria Manual (ECM)
 - City of Colorado Springs/El Paso County Drainage Criteria Manual, Volumes 1 and 2
 - Colorado Department of Transportation (CDOT) Standard Specifications for Road and Bridge Construction
 - CDOT M & S Standards
- Notwithstanding anything depicted in these plans in words or graphic representation, all design and construction related to roads, storm drainage and erosion control shall conform to the standards and requirements of the most recent version of the relevant adopted El Paso County standards, including the Land Development Code, the Engineering Criteria Manual, the Drainage Criteria Manual, and the Drainage Criteria Manual Volume 2. Any deviations from regulations and standards must be requested, and approved, in writing. Any modifications necessary to meet criteria after-the-fact will be entirely the developer's responsibility to rectify.
- It is the design engineer's responsibility to accurately show existing conditions, both onsite and offsite, on the construction plans. Any modifications necessary due to conflicts, omissions, or changed conditions will be entirely the developer's responsibility to rectify.
- Contractor shall schedule a pre-construction meeting with El Paso County Development Services Department (DSD) - Inspections, prior to starting construction.
- It is the contractor's responsibility to understand the requirements of all jurisdictional agencies and to obtain all required permits, including but not limited to El Paso County Erosion and Stormwater Quality Control Permit (ESQCP), Regional Building Floodplain Development Permit, U.S. Army Corps of Engineers-issued 401 and/or 404 permits, and county and state fugitive dust permits.
- Contractor shall not deviate from the plans without first obtaining written approval from the design engineer and DSD. Contractor shall notify the design engineer immediately upon discovery of any errors or inconsistencies.
- All storm drain pipe shall be Class III RCP unless otherwise noted and approved by DSD.
- Contractor shall coordinate geotechnical testing per ECM standards. Pavement design shall be approved by El Paso County DSD prior to placement of curb and gutter and pavement.
- All construction traffic must enter/exit the site at approved construction access points.
- Sight visibility triangles as identified in the plans shall be provided at all intersections. Obstructions greater than 18 inches above flowline are not allowed within sight triangles.
- Signing and striping shall comply with El Paso County DOT and MUTCD criteria. [If applicable, additional signing and striping notes will be provided.]
- Contractor shall obtain any permits required by El Paso County DOT, including Work Within the Right-of-Way and Special Transport permits.
- The limits of construction shall remain within the property line unless otherwise noted. The owner/developer shall obtain written permission and easements, where required, from adjoining property owner(s) prior to any off-site disturbance, grading, or construction.

GENERAL NOTES

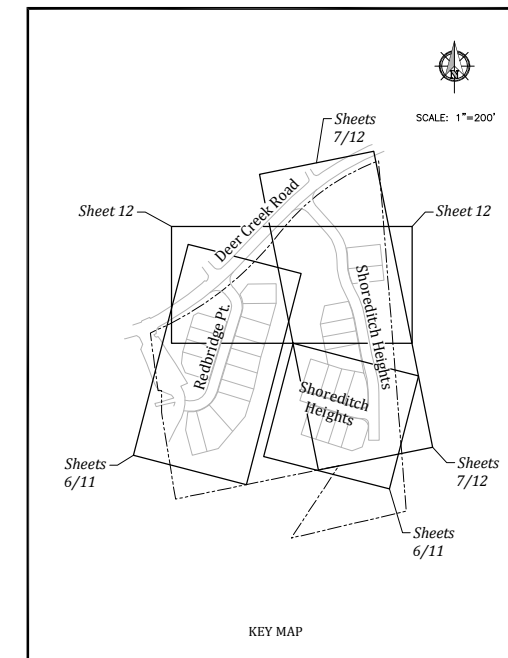
- All new construction to conform to the specifications of the El Paso County Development Services Department. Any asphalt to be removed is to be replaced to meet the specifications of the El Paso County Development Services Department.
- A Pre-Construction meeting shall be held with the El Paso County Development Services Department and Woodmoor Water and Sanitation District prior to any construction.
- Approved plans, County Engineering Criteria Manual, etc. is required to be on-site at all times.
- All necessary permits, such as a Stormwater Discharge Permit and associated Stormwater Management Plan, Fugitive Dust, Access, etc. shall be obtained prior to construction.
- Profile design lines and horizontal stationing are based on centerline, as shown, unless otherwise noted.
- Pavement design to be based on resistance value 'R' derived from Hveem tests and are approved by the El Paso County Development Services Department.
- The locations of existing utilities have been shown according to the best available information. The contractor is responsible for field locate existing utilities prior to beginning work. If it appears that there could be a conflict with any utilities, whether indicated on the plans or not the engineer and owner immediately. The contractor is responsible for the protection and repair (if necessary) of all utilities.
- Where appropriate, neatly sawcut all existing concrete and asphalt. Repair/replace all disturbed existing items with like materials and this work shall be approved by the El Paso County Development Services Department.
- All disturbed areas shall be revegetated with native grasses within 30 days of excavation per Erosion Control Plan.
- The prepared Erosion/Sediment Control Plan is to be considered a part of these plans and its requirements adhered to during the construction.
- All storm and sanitary sewer pipe lengths and slopes are figured from center of manhole or bend. Culvert pipe lengths are determined from center to center. Pipe lengths given as a horizontal length.
- All storm sewer bedding to be per CDOT Standards.
- All storm sewer pipe class and type is called out on the plan and profile sheets.
- Concrete pipe joint fasteners are required on the first two pipe joints from the downstream flared end section of a drainage pipe.
- All wyes and bends used in construction of stormwater facilities shall be factory fabricated, unless approved by the El Paso County Development Services Department.
- Construction and materials used in all storm and sanitary sewer manholes shall be per specification.
- Water and sanitary sewer service provided by Woodmoor Water and Sanitation District. Telephone service provided by US West Communications. Electric service provided by Blackhills Energy. Electric service provided by Mountain View Electric.
- All easements located outside of the platted area shall be secured by Owner prior to final approval by El Paso County Development Services Department.
- The horizontal control is the state plane coordinate system, Colorado Central Zone (NAD 83). Coordinates of the two temporary benchmarks are noted below and on the plan.

Benchmarks: NGS Benchmark "T 395" -- Elevation = 7111.32 (NAVD 1988)
 TBM# 1 Northwest Property Corner (N22,611.42, E49,719.36) Elevation=7133.64
 TBM# 2 Northeast Property Corner (N23,006.10, E50,252.56) Elevation=7134.40



ABBREVIATIONS

ASSY	=	ASSEMBLY
BNDY	=	BOUNDARY
BOP	=	BOTTOM OF PIPE
CL	=	CENTERLINE
CRA	=	CONCRETE REVERSE ANCHOR
CTRB	=	CONCRETE THRUST BLOCK
CR	=	POINT OF CURB RETURN
DIP	=	DUCTILE IRON PIPE
EL	=	ELEVATION
ESMT	=	EASEMENT
EX	=	EXISTING
FC	=	FACE OF CURB
FES	=	FLARED END SECTION
FLG	=	FLANGE
FL	=	FLOWLINE
GB	=	GRADE BREAK
GEC	=	GRADING & EROSION CONTROL
HP	=	HIGH POINT
HORIZ	=	HORIZONTAL
HYD	=	HYDRANT
ID	=	INSIDE DIAMETER
LT	=	LEFT
LF	=	LINEAR FEET
LP	=	LOW POINT
MAX	=	MAXIMUM
MH	=	MANHOLE
MN	=	MINIMUM
NTS	=	NOT TO SCALE
OD	=	OUTSIDE DIAMETER
PC	=	POINT OF HORIZONTAL CURVATURE
PP	=	PROPOSED
PT	=	POINT OF HORIZONTAL TANGENCY
PVC	=	POLY VINYL CHLORIDE PIPE
PVC	=	POINT OF VERTICAL CURVATURE
PVI	=	POINT OF VERTICAL INTERSECTION
PVT	=	POINT OF VERTICAL TANGENCY
RCB	=	REINFORCED CONCRETE BOX
RCP	=	REINFORCED CONCRETE PIPE
ROW	=	RIGHT OF WAY
RT	=	RIGHT
SHT	=	SHEET
SS	=	SANITARY SEWER
STA	=	STATION
STD	=	STANDARD
TA	=	TOP OF ASPHALT
TC	=	TOP OF CURB
TOP	=	TOP OF PIPE
TYP	=	TYPICAL
VC	=	VERTICAL CURVE
VERT	=	VERTICAL



STATEMENTS

Design Engineer's Statement:

These detailed plans and specifications were prepared under my direction and supervision. Said plans and specifications have been prepared according to the criteria established by the County for detailed roadway, drainage, grading and erosion control plans and specifications, and said plans and specifications are in conformity with applicable master drainage plans and master transportation plans. Said plans and specifications meet the purposes for which the particular roadway and drainage facilities are designed and are correct to the best of my knowledge and belief. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparation of these detailed plans and specifications.

Andrew W. McCord, P.E. #25057 Date _____
 For and on behalf of Kiowa Engineering Corp.

Owner/Developer's Statement:

I, the owner/developer have read and will comply with all of the requirements specified in these detailed plans and specifications.

Thomas Taylor, Director of Development Services Date _____
 Lake Woodmoor Holdings, LLC
 1755 Telstar Drive Suite 211
 Colorado Springs, Colorado 80920

El Paso County:

County plan review is provided only for general conformance with County Design Criteria. The County is not responsible for the accuracy and adequacy of the design, dimensions, and/or elevations which shall be confirmed at the job site. The County through the approval of this document assumes no responsibility for completeness and/or accuracy of this document.

Filed in accordance with the requirements of the El Paso County Land Development Code, Drainage Criteria Manual, and Engineering Criteria Manual as amended.

Jennifer Irvine, P.E. Date _____
 County Engineer / ECM Administrator

Tri-Lakes Monument Fire Protection District:

The number of fire hydrants and hydrant locations as shown on the Utility System Plan are correct and adequate to satisfy the fire protection requirements as specified by the Tri-Lakes Monument Fire Protection District.

Date: _____ By: _____

Woodmoor Water and Sanitation District No. 1 Approved for Construction

These plans have been reviewed only for general conformance with District Rules and Regulations and System Specifications. Review and construction approval by the District does not relieve the Developer/Owner and/or Contractor from responsibility for compliance with any Rules, Regulations, or Specifications required by the District.

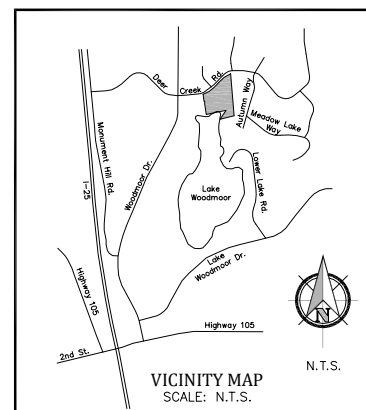
Add as a 3rd paragraph:
 In accordance with ECM Section 1.12, these construction documents will be valid for construction for a period of 2 years from the date signed by the El Paso County Engineer. If construction has not started within those 2 years, the plans will need to be resubmitted for approval, including payment of review fees at the Planning and Community Development Directors discretion.

LEGEND

—	STREET R.O.W.	—	CURB & GUTTER (CURB SECTION AS SHOWN ON PLANS)
—	STREET CENTER LINE	—	EXISTING FORCE MAIN
—	PROPOSED WATER	—	EXISTING WATER
⊕	PROPOSED WATER HYDRANT	⊕	EXISTING WATER HYDRANT
⊕	PROPOSED WATER VALVE	⊕	EXISTING WATER VALVE
⊕	PROPOSED SANITARY MH	⊕	EXISTING SANITARY MH
⊕	PROPOSED SANITARY SEWER	⊕	EXISTING SANITARY SEWER
⊕	PROPOSED STORM SEWER	⊕	EXISTING STORM SEWER
⊕	PROPOSED STORM INLET	⊕	EXISTING STORM INLET
⊕	PROPOSED STORM MH	⊕	EXISTING STORM MH
⊕	PROPOSED STORM FES	⊕	EXISTING STORM FES
⊕	PROPOSED BOXBASE MH	⊕	EXISTING STORM FES

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3	Grading and Erosion Control Details
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5	Grading and Erosion Control Details
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7	Plan and Profile - Shoreditch Heights
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10	Utility Services Plan
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13	Lake Fork Dirty Woman Creek Plan and Profile
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17	Shoreditch Heights Crossing Details
18	Check Structure Details
19	Sand Filter Details
20	Signing and Striping Plan
21	Miscellaneous Civil Details



CONTACT LIST

El Paso County Planning and Community Development	Nina Ruiz	719-520-6313
Lake Woodmoor Holdings, LLC	Thomas Taylor	719-867-2250
N.E.S., Inc.	Ron Bevans	719-471-0073
Kiowa Engineering Corp.	Andy McCord	719-630-7342
Woodmoor Water & Sanitation District		719-488-2525
Mountain View Electric Assoc.		719-495-2283
Tri-Lakes Monument Fire Protection District		719-484-0911

Kiowa Project No. 15073
 December 1, 2017

DEVELOPER:

Lake Woodmoor Holdings, LLC
 1755 Telstar Drive Suite 211
 Colorado Springs, CO 80920

PREPARED BY:

Kiowa
 Engineering Corporation

1604 South 21st Street
 Colorado Springs, Colorado 80904
 (719) 533-7342



Know what's below.
 Call before you dig.

GRADING AND EROSION CONTROL NOTES

- Construction may not commence until a Construction Permit is obtained from Development Services and a Preconstruction Conference is held with Development Services Inspectors.
- Stormwater discharges from construction sites shall not cause or threaten to cause pollution, contamination, or degradation of State Waters. All work and earth disturbance shall be done in a manner that minimizes pollution of any on-site or off-site waters, including wetlands.
- Notwithstanding anything depicted in these plans in words or graphic representation, all design and construction related to roads, storm drainage and erosion control shall conform to the standards and requirements of the most recent version of the relevant adopted El Paso County standards, including the Land Development Code, the Engineering Criteria Manual, the Drainage Criteria Manual, and the Drainage Criteria Manual Volume 2. Any deviations to regulations and standards must be requested, and approved, in writing.
- A separate Stormwater Management Plan (SWMP) for this project shall be completed and an Erosion and Stormwater Quality Control Permit (ESQCP) issued prior to commencing construction. During construction the SWMP is the responsibility of the designated Stormwater Manager, shall be located on site at all times and shall be kept up to date with work progress and changes in the field. Once the ESQCP has been issued, the contractor may install the initial stage erosion and sediment control BMPs as indicated on the Grading & Erosion Control Plan. A preconstruction meeting between the contractor, engineer, and El Paso County will be held prior to any construction. It is the responsibility of the applicant to coordinate the meeting time and place with County DSD Inspections staff.
- Soil erosion control measures for all slopes, channels, ditches, or any disturbed land area shall be completed within 21 calendar days after final grading, or final earth disturbance, has been completed. Disturbed areas and stockpiles which are not at final grade but will remain dormant for longer than 30 days shall also be mulched within 21 days after interim grading. An area that is going to remain in an interim state for more than 60 days shall also be seeded. All temporary soil erosion control measures and BMPs shall be maintained until permanent soil erosion control measures are implemented and established.
- Temporary soil erosion control facilities shall be removed and earth disturbance areas graded and stabilized with permanent soil erosion control measures pursuant to standards and specification prescribed in the *Drainage Criteria Manual DCM Volume II* and the *Engineering Criteria Manual (ECM) Appendix I*.
- All persons engaged in earth disturbance shall implement and maintain acceptable erosion and sediment control measures including BMPs in conformance with the erosion control technical standards of the *DCM Volume II* and in accordance with the Stormwater Management Plan (SWMP).
- All temporary erosion control facilities including BMPs and all permanent facilities intended to control erosion of any earth disturbance operations, shall be installed as defined in the approved plans, the SWMP and the DCM Volume II and maintained throughout the duration of the earth disturbance operation.
- Any earth disturbance shall be conducted in such a manner so as to effectively reduce accelerated soil erosion and resulting sedimentation. All disturbances shall be designed, constructed, and completed so that the exposed area of any disturbed land shall be limited to the shortest practical period of time.
- Any temporary or permanent facility designed and constructed for the conveyance of stormwater around, through, or from the earth disturbance area shall be designed to limit the discharge to a non-erosive velocity.
- Concrete wash water shall be contained and disposed of in accordance with the SWMP. No wash water shall be discharged to or allowed to runoff to State Waters, including any surface or subsurface storm drainage system or facilities.
- Erosion control blanketing is to be used on slopes steeper than 3:1.
- Building, construction, excavation, or other waste materials shall not be temporarily placed or stored in the street, alley, or other public way, unless in accordance with an approved Traffic Control Plan. BMPs may be required by El Paso County Engineering if deemed necessary, based on specific conditions and circumstances.
- Vehicle tracking of soils and construction debris off-site shall be minimized. Materials tracked off-site shall be cleaned up and properly disposed of immediately.
- Contractor shall be responsible for the removal of all wastes from the construction site for disposal in accordance with local and State regulatory requirements. No construction debris, tree slash, building material wastes or unused building materials shall be buried, dumped, or discharged at the site.
- The owner, site developer, contractor, and/or their authorized agents shall be responsible for the removal of all construction debris, dirt, trash, rock, sediment, and sand that may accumulate in the storm sewer or other drainage conveyance system and stormwater apertures as a result of site development.
- The quantity of materials stored on the project site shall be limited, as much as practical, to that quantity required to perform the work in an orderly sequence. All materials stored on-site shall be stored in a neat, orderly manner, in their original containers, with original manufacturer's labels.
- No chemicals are to be used by the contractor, which have the potential to be released in stormwater unless permission for the use of a specific chemical is granted in writing by the ECM Administrator. In granting the use of such chemicals, special conditions and monitoring may be required.
- Bulk storage structures for petroleum products and other chemicals shall have adequate protection so as to contain all spills and prevent any spilled material from entering State Waters, including any surface or subsurface storm drainage system or facilities. No person shall cause the impediment of stormwater flow in the flow line of the curb and gutter or in the ditchline.
- Individuals shall comply with the "Colorado Water Quality Control Act" (Title 25, Article 8, CRS), and the "Clean Water Act" (33 USC 1344), in addition to the requirements included in the *DCM Volume II* and the *ECM Appendix I*. All appropriate permits must be obtained by the contractor prior to construction (NPDES, Floodplain, 404, fugitive dust, etc.). In the event of conflicts between these requirements and laws, rules, or regulations of other Federal, State, or County agencies, the more restrictive laws, rules, or regulations shall apply.
- All construction traffic must enter/exit the site at approved construction access points.
- Prior to actual construction the permittee shall verify the location of existing utilities.
- A water source shall be available on site during earthwork operations and utilized as required to minimize dust from earthwork equipment and wind.
- The soils report for this site has been prepared by CTL Thompson, Inc. and shall be considered a part of these plans.
- At least ten days prior to the anticipated start of construction, for projects that will disturb 1 acre or more, the owner or operator of construction activity shall submit a permit application for stormwater discharge to the Colorado Department of Public Health and Environment, Water Quality Division. The application contains certification of completion of a stormwater management plan (SWMP), of which this grading and erosion control plan may be a part. For information or application materials contact:

Colorado Department of Public Health and Environment
Water Quality Control Division
WQCD - Permits
4300 Cherry Creek Drive South
Denver, CO 80246-1530
Attn: Permits Unit



Know what's below.
Call before you dig.

LEGEND:

- ELECTRICAL BOX
- ELECTRIC METER
- TELEPHONE PEDESTAL
- SANITARY SEWER MANHOLE
- CLEAN OUT
- GAS METER
- FIRE HYDRANT
- WATER VALVE
- WELL HEAD
- PINE TREE
- GRAVEL DRIVEWAY
- CONCRETE
- SIGN
- EDGE OF ASPHALT
- EDGE OF GRAVEL
- FENCE LINE
- EXSTG. UNDERGROUND
- EXSTG. UNDERGROUND WATER LINE
- EXSTG. WASTEWATER
- PROPOSED STORMSEWER
- PROPOSED WATER LINE

EROSION CONTROL LEGEND	
	Silt Fence (SF)
	Vehicle Tracking Control (VTC)
	Sediment Control Log (SCL)
	Erosion Control Blanket (ECB)
	Inlet Protection (IP)
	Concrete Wash Area (CWA)

PROJECT SPECIFIC GRADING AND EROSION CONTROL NOTES

- All earthwork required of this construction shall be completed in accordance with all applicable sections of the Project Specifications and Soil Investigation Report (Geotechnical Report).
- Rubbish including timber, concrete rubble, trees, brush, and asphalt shall not be backfilled adjacent to any of the structures or be in the placement of any unclassified fill. The Contractor shall be responsible for the removal and hauling of such materials to a suitable spoil area. Costs associated with the removal of such materials shall be paid for as documented in the Project Specifications.
- Excess excavation shall become the property of the Contractor and shall be disposed of at the Contractor's expense. The cost of haulage and spoiling of excess excavated materials shall be paid for as documented in the Project Specifications.
- Water shall be used as a dust palliative as required and shall be included in the cost for earthwork item(s). No separate payment will be made for dust control associated with the site construction.
- The road grades shall be cleared of vegetation and the topsoil stockpiled for later use.
- All grading shall be in conformance with the Geotechnical Report for the area.
- Placement of fill for roadway embankments shall be completed in conformance with the Geotechnical Report.
- Grading contours shown on this plan are to final grade.
- Compaction under filled areas, including roadway and detention basin embankments, shall be 95 percent of the maximum Standard Proctor Density (ASTM D698) at two (2) percent of optimum moisture content.
- No rubble or debris shall be placed in the backfill under any of the proposed buildings, streets, curb & gutter, sidewalks and drainage structures or within five (5) feet of a building footprint. Properly graded rubble may be used in some locations as specified and verified by the Geotechnical Engineer.
- Contractor is responsible for reviewing the site prior to bidding to verify site conditions.
- Contractor is responsible for providing erosion control measures as approved by the El Paso County DSD Engineering Division and as may be required by the El Paso County Inspector.
- All slopes equal to or greater than 3:1 shall require anchored soil retention blanket (SRB), Geocel 700 or equal.
- The Developer is responsible for maintaining erosion control measures until a mature stage of vegetation is established.
- All soils used for fill must be approved by a representative of the Geotechnical Engineer.
- All natural ground to receive fill must be properly scarified, watered and compacted prior to placing fill.
- The Contractor is solely responsible for the design, maintenance and operation of any required dewatering system. The Contractor shall perform such independent investigation as he deems necessary to satisfy himself as to the subsurface groundwater conditions and unstable soil conditions to be encountered throughout the construction. Contractor shall coordinate the dewatering system with El Paso County when associated with public facilities.
- No fill shall be placed, spread or rolled while it is frozen, thawing or during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until a representative of the Geotechnical Engineer indicates that the moisture content and density of the previously placed fill are as specified. Fill surfaces may be scarified and recompacted after rainfall if necessary, to obtain proper moisture density relation.
- Additional erosion control structures and/or grading may be required at the time of construction.
- Sediment removal for erosion control facilities shall be performed continuously for proper function.
- Base mapping was provided by Rampart Surveys, Inc.
- Proposed Construction Schedule:
Begin Construction: Winter 2016
End Construction: Winter 2017
Total Site Area = 7.23 Acres
- Area to be disturbed = 4.6 Acres (est.)
Existing 100-year runoff coefficient = 0.53
Proposed 100-year runoff coefficient = 0.57
Existing Hydrological Soil Group: B & D
(Pring course sandy loam, and Alamosa loam)
- Site is currently undeveloped and covered with native grasses on gentle slopes (2%-8%).
- Site is located in the Dirty Women Creek Drainage Basin.

OWNER'S STATEMENT
THE OWNER WILL COMPLY WITH THE REQUIREMENTS OF THE GRADING AND EROSION CONTROL PLAN.

BY: _____ DATE _____
ADDRESS: LAKE WOODMOOR HOLDINGS, LLC
1755 TELSTAR DRIVE, SUITE 211
COLORADO SPRINGS, COLORADO 80920

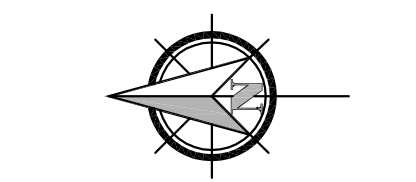
ENGINEER'S STATEMENT
THIS GRADING AND EROSION CONTROL PLAN WAS PREPARED UNDER MY DIRECTION AND SUPERVISION AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. SAID PLAN HAS BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE COUNTY FOR GRADING AND EROSION CONTROL PLANS. I ACCEPT RESPONSIBILITY FOR ANY LIABILITY CAUSED BY ANY NEGLIGENT ACTS, ERRORS OR OMISSIONS ON MY PART IN PREPARING THIS PLAN.

ANDREW W. McCORD P.E. 25057
FOR AND ON BEHALF OF KIOWA ENGINEERING CORPORATION

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

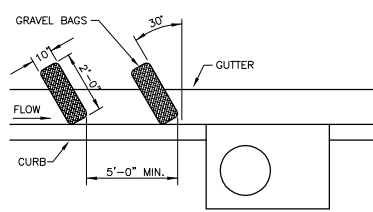
FILED IN ACCORDANCE WITH THE REQUIREMENTS OF THE EL PASO COUNTY LAND DEVELOPMENT CODE, DRAINAGE CRITERIA AND ENGINEERING CRITERIA MANUAL, AS AMENDED.

JENNIFER IRVINE, P.E.
COUNTY ENGINEER/ECM ADMINISTRATOR



0 40' 80'
SCALE: 1"=40'

Remove signature block. The signature block in the cover sheet is sufficient.



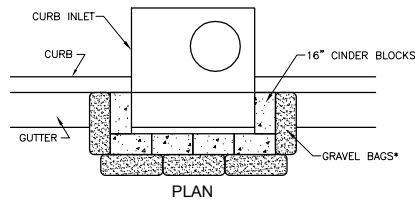
INSTALLATION REQUIREMENTS

1. INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY AFTER CONSTRUCTION OF INLET.
2. BAGS ARE TO BE MADE OF 1/4" WIRE MESH (USED WITH GRAVEL ONLY) OR GEOTEXTILE.
3. WASHED SAND OR GRAVEL 3/4 INCH TO 4 INCHES IN DIAMETER IS PLACED INSIDE THE SOCK.
4. PLACEMENT OF THE SOCK IS TO BE 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.
5. AT LEAST 2 CURB SOCKS IN SERIES IS REQUIRED.

MAINTENANCE REQUIREMENTS

1. CONTRACTOR SHALL INSPECT INLET PROTECTION IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS OF NO RAINFALL.
2. DAMAGED OR INEFFECTIVE INLET PROTECTION SHALL PROMPTLY BE REPAIRED OR REPLACED.
3. SEDIMENT SHALL BE REMOVED WHEN GUTTER WIDTH IS FILLED.
4. INLET PROTECTION SHALL BE REMOVED WHEN ADEQUATE VEGETATIVE COVER IS ATTAINED WITHIN THE DRAINAGE AREA AS APPROVED BY THE COUNTY.

CURB SOCK INLET PROTECTION (IP-4)
NTS



INSTALLATION REQUIREMENTS

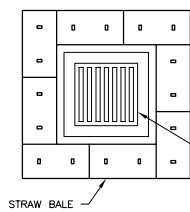
1. INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY AFTER CONSTRUCTION OF INLET.
2. CONCRETE BLOCKS ARE TO BE LAID AROUND THE INLET IN A SINGLE ROW ON THEIR SIDES, ABUTTING ONE ANOTHER WITH THE OPEN ENDS OF THE BLOCK FACING OUTWARD.
3. GRAVEL BAGS ARE TO BE PLACED AROUND THE CONCRETE BLOCKS CLOSELY ABUTTING ONE ANOTHER SO THERE ARE NO GAPS.
4. GRAVEL BAGS ARE TO CONTAIN WASHED SAND OR GRAVEL APPROXIMATELY 3/4" IN DIAMETER.
5. BAGS ARE TO BE MADE OF 1/4" WIRE MESH (USED WITH GRAVEL ONLY) OR GEOTEXTILE.

MAINTENANCE REQUIREMENTS

1. CONTRACTOR SHALL INSPECT INLET PROTECTION IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS OF NO RAINFALL.
2. DAMAGED OR INEFFECTIVE INLET PROTECTION SHALL PROMPTLY BE REPAIRED OR REPLACED.
3. SEDIMENT SHALL BE REMOVED WHEN SEDIMENT HAS ACCUMULATED TO APPROXIMATELY 1/2 THE DESIGN DEPTH OF THE TRAP.
4. INLET PROTECTION SHALL BE REMOVED WHEN ADEQUATE VEGETATIVE COVER IS ATTAINED WITHIN THE DRAINAGE AREA AS APPROVED BY THE COUNTY.

*NOTE: AN ALTERNATE 3/4" TO 1" GRAVEL FILTER OVER A WIRE SCREEN MAY BE USED IN PLACE OF GRAVEL BAGS. THE WIRE MESH SHALL EXTEND ABOVE THE TOP OF THE CONCRETE BLOCKS AND THE GRAVEL PLACED OVER THE WIRE SCREEN TO THE TOP OF THE CONCRETE BLOCKS.

BLOCK AND GRAVEL BAG INLET PROTECTION (IP-3)
NTS



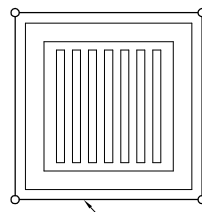
INSTALLATION REQUIREMENTS

1. INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY AFTER CONSTRUCTION OF INLET.
2. BALES ARE TO BE PLACED IN A SINGLE ROW AROUND THE INLET WITH THE END OF THE BALES TIGHTLY ABUTTING ONE ANOTHER.
3. SEE STRAW BALE BARRIER DETAILS AND NOTES FOR INSTALLATION REQUIREMENTS.

MAINTENANCE REQUIREMENTS

1. CONTRACTOR SHALL INSPECT STRAW BALE INLET PROTECTION IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS OF NO RAINFALL.
2. DAMAGED OR INEFFECTIVE INLET PROTECTION SHALL PROMPTLY BE REPAIRED OR REPLACING BALES IF NECESSARY, AND UNTRENCHED BALES NEED TO BE REPAIRED WITH COMPACTED BACKFILL MATERIAL.
3. SEDIMENT SHALL BE REMOVED FROM BEHIND STRAW BALES WHEN IT ACCUMULATES TO APPROXIMATELY 1/3 THE HEIGHT OF THE BARRIER.
4. INLET PROTECTION SHALL BE REMOVED WHEN ADEQUATE VEGETATIVE COVER IS ATTAINED WITHIN THE DRAINAGE AREA AS APPROVED BY THE COUNTY.

STRAW BALE INLET PROTECTION (IP-2)
NTS



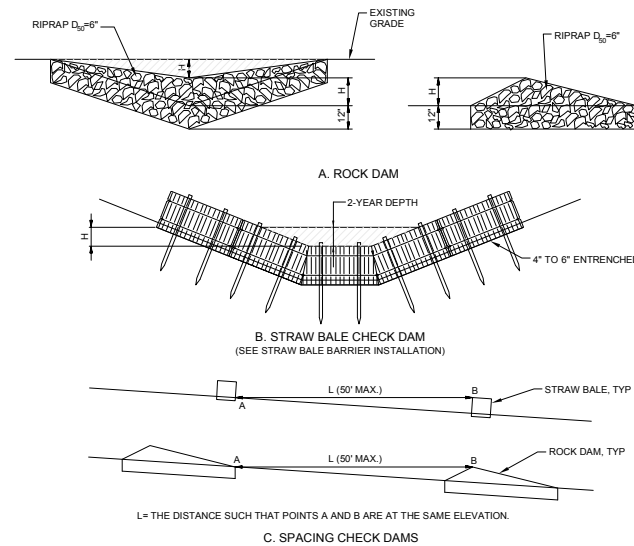
INSTALLATION REQUIREMENTS

1. INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY AFTER CONSTRUCTION OF INLET.
2. SEE SILT FENCE DETAILS AND NOTES FOR INSTALLATION REQUIREMENTS.
3. POSTS ARE TO BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.

MAINTENANCE REQUIREMENTS

1. CONTRACTOR SHALL INSPECT STRAW BALE INLET PROTECTION IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS OF NO RAINFALL.
2. DAMAGED, COLLAPSED, UNTRENCHED OR INEFFECTIVE INLET PROTECTION SHALL BE PROMPTLY REPAIRED OR REPLACED.
3. SEDIMENT SHALL BE REMOVED FROM BEHIND FILTER FABRIC WHEN IT ACCUMULATES TO HALF THE EXPOSED GEOTEXTILE HEIGHT.
4. FILTER FABRIC PROTECTION SHALL BE REMOVED WHEN ADEQUATE VEGETATIVE COVER IS ATTAINED IN THE DRAINAGE AREA AS APPROVED BY THE COUNTY.

FILTER FABRIC INLET PROTECTION (IP-1)
NTS



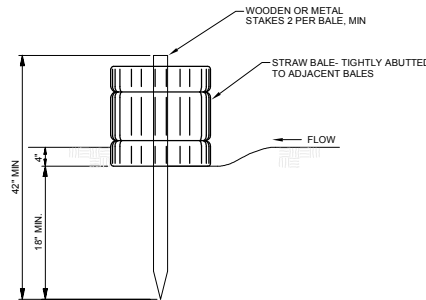
INSTALLATION REQUIREMENTS

1. STRAW BALES USED AS CHECK DAMS ARE TO MEET THE REQUIREMENTS STATED IN THE STRAW BALE BARRIER DETAILS AND NOTES.
2. THE "H" DIMENSION SHALL BE SELECTED TO PROVIDE WEIR FLOW CONVEYANCE FOR 2-YEAR FLOW OR GREATER.
3. STRAW BALE CHECKS TO BE INSTALLED AT 50-FOOT MAXIMUM INTERVALS ALONG TEMPORARY OR PERMANENT GRASSLINED SWALES.

MAINTENANCE REQUIREMENTS

1. REGULAR INSPECTIONS ARE TO BE MADE OF ALL CHECK DAMS, ESPECIALLY AFTER STORM EVENTS.
2. REPLACE STONE AS NECESSARY TO MAINTAIN THE CORRECT HEIGHT OF THE DAM.
3. ACCUMULATED SEDIMENT AND DEBRIS IS TO BE REMOVED FROM BEHIND THE DAMS AFTER EACH STORM OR WHEN HALF OF THE ORIGINAL HEIGHT OF THE DAM IS REACHED.
4. CHECK DAMS ARE TO REMAIN IN PLACE AND OPERATIONAL UNTIL THE DRAINAGE AREA AND CHANNEL ARE PERMANENTLY STABILIZED.
5. WHEN CHECK DAMS ARE REMOVED THE CHANNEL LINING OR VEGETATION IS TO BE RESTORED.

CHECK DAM (CD-A, CD-B)
NTS



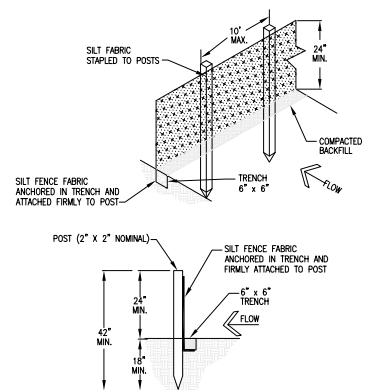
INSTALLATION REQUIREMENTS

1. STRAW BALE BARRIERS SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
2. BALES SHALL CONSIST OF APPROXIMATELY 5 CUBIC FEET OF CERTIFIED WEED FREE HAY OR STRAW AND WEIGH NOT LESS THAN 35 POUNDS.
3. BALES ARE TO BE PLACED IN A SINGLE ROW WITH THE END OF THE BALES TIGHTLY ABUTTING ONE ANOTHER.
4. EACH BALE IS TO BE SECURELY ANCHORED WITH AT LEAST TWO STAKES AND THE FIRST STAKE IS TO BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER.
5. STAKES ARE TO BE A MINIMUM OF 42 INCHES LONG. METAL STAKES SHALL BE STANDARD "T" OR "U" TYPE WITH MINIMUM WEIGHT OF 1.33 POUNDS PER LINEAR FOOT. WOOD STAKES SHALL HAVE A MINIMUM DIAMETER OR CROSS SECTION DIMENSION OF 2 INCHES.
6. BALES ARE TO BE BOUND WITH EITHER WIRE OR STRING AND ORIENTED SUCH THAT THE BINDINGS ARE AROUND THE SIDES AND NOT ALONG THE TOPS AND BOTTOMS OF THE BALE.
7. GAPS BETWEEN BALES ARE TO BE CHINKED (FILLED BY WEDGING) WITH STRAW OR THE SAME MATERIAL OF THE BALE.
8. END BALES ARE TO EXTEND UPSLOPE SO THE TRAPPED RUNOFF CANNOT FLOW AROUND THE ENDS OF THE BARRIER.

MAINTENANCE REQUIREMENTS

1. CONTRACTOR SHALL INSPECT STRAW BALE BARRIERS IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS OF NO RAINFALL.
2. DAMAGED OR INEFFECTIVE BARRIERS SHALL PROMPTLY BE REPAIRED, REPLACING BALES IF NECESSARY, AND UNTRENCHED BALES NEED TO BE REPAIRED WITH COMPACTED BACKFILL MATERIAL.
3. SEDIMENT SHALL BE REMOVED FROM BEHIND STRAW BALE BARRIERS WHEN IT ACCUMULATES TO APPROXIMATELY 1/2 THE HEIGHT OF THE BARRIER.
4. STRAW BALE BARRIERS SHALL BE REMOVED WHEN ADEQUATE VEGETATIVE COVER IS ATTAINED AS APPROVED BY THE COUNTY.

STRAW BALE BARRIER (SBB)
NTS



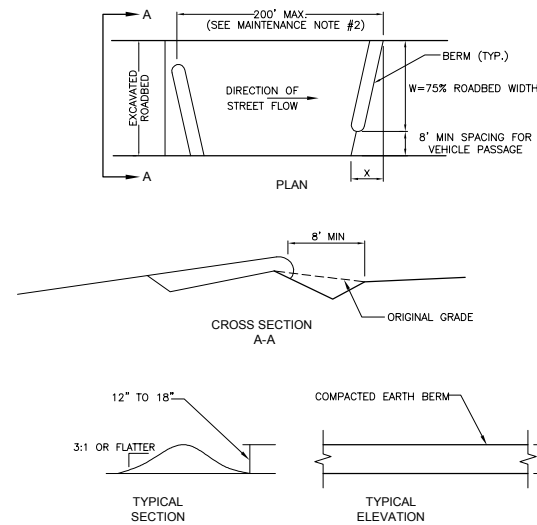
INSTALLATION REQUIREMENTS

1. SILT FENCES SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES AT THE LOCATIONS SHOWN ON THE GRADING AND EROSION CONTROL PLAN (GEC).
2. WHEN JOINTS ARE NECESSARY, SILT FENCE GEOTEXTILE SHALL BE SPLICED TOGETHER ONLY AT SUPPORT POSTS AND SECURELY SEALED.
3. METAL POSTS SHALL BE "STUDDED TEE" OR "U" TYPE WITH MINIMUM WEIGHT OF 1.33 POUNDS PER LINEAR FOOT. WOOD POSTS SHALL HAVE A MINIMUM DIAMETER OR CROSS SECTION DIMENSION OF 2 INCHES.
4. THE FILTER MATERIAL SHALL BE FASTENED SECURELY TO METAL OR WOOD POSTS USING WIRE TIES, OR TO WOOD POSTS WITH 3/4" LONG #9 HEAVY-DUTY STAPLES. THE SILT FENCE GEOTEXTILE SHALL NOT BE STAPLED TO EXISTING TREES.
5. WHILE NOT REQUIRED, WIRE MESH FENCE MAY BE USED TO SUPPORT THE GEOTEXTILE. WIRE FENCE SHALL BE FASTENED SECURELY TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY-DUTY WIRE STAPLES AT LEAST 3/4" LONG. THE WIRES OR HOOK RINGS, THE WIRE SHALL EXTEND INTO THE TRENCH A MINIMUM OF 6" AND SHALL NOT EXTEND MORE THAN 3" ABOVE THE ORIGINAL GROUND SURFACE.
6. ALONG THE TOE OF FILLS, INSTALL THE SILT FENCE ALONG A LEVEL CONTOUR AND PROVIDE AN AREA BEHIND THE FENCE FOR RUNOFF TO POND AND SEDIMENT TO SETTLE. A MINIMUM DISTANCE OF 5 FEET FROM THE TOE OF THE FILL IS RECOMMENDED.
7. THE HEIGHT OF THE SILT FENCE FROM THE GROUND SURFACE SHALL BE MINIMUM OF 24 INCHES AND SHALL NOT EXCEED 36 INCHES; HIGHER FENCES MAY IMPOUND VOLUMES OF WATER SUFFICIENT TO CAUSE FAILURE OF THE STRUCTURE.

MAINTENANCE REQUIREMENTS

1. CONTRACTOR SHALL INSPECT SILT FENCES IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS OF NO RAINFALL. DAMAGED, COLLAPSED, UNTRENCHED OR INEFFECTIVE SILT FENCES SHALL BE PROMPTLY REPAIRED OR REPLACED.
2. SEDIMENT SHALL BE REMOVED FROM BEHIND SILT FENCE WHEN IT ACCUMULATES TO HALF THE EXPOSED GEOTEXTILE HEIGHT.
3. SILT FENCES SHALL BE REMOVED WHEN ADEQUATE VEGETATIVE COVER IS ATTAINED AS APPROVED BY THE COUNTY.

SILT FENCE DETAIL (SF)
NTS



INSTALLATION REQUIREMENTS

1. TEMPORARY SOIL BERMS SHALL BE GRADED ALONG BOTH SIDES OF A ROUGH CUT STREET TO DIVERT SEDIMENT-LOADED RUNOFF & SLOW THE VELOCITY OF STORM RUNOFF.
2. ALTERNATE MATERIALS SUCH AS CURB SOCKS OR SILT FENCES MAY BE USED WHERE LARGE FLOWS ARE NOT EXPECTED.
3. REQUIREMENTS FOR AND SPACINGS OF VELOCITY REDUCERS FOR STREETS WITH GRADES OF LESS THAN 4% SHALL BE AS SHOWN ON THE EROSION CONTROL PLAN.

MAINTENANCE REQUIREMENTS

1. CONTRACTOR SHALL INSPECT BERMS AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS OF NO RAINFALL.
2. BERMS SHALL BE ROUTINELY CLEARED OF ANY DEBRIS OR ACCUMULATION OF SEDIMENT.
3. ERODED BERMS SHALL IMMEDIATELY BE REPAIRED.
4. TEMPORARY BERMS SHALL REMAIN OPERATIONAL AND PROPERLY MAINTAINED UNTIL THE SITE AREA IS PERMANENTLY STABILIZED WITH ADEQUATE VEGETATIVE COVER AND/OR OTHER PERMANENT STRUCTURE AS APPROVED BY THE COUNTY.

W	X
20' - 30'	5'
31' - 40'	7'
41' - 50'	9'
51' - 60'	10.5'
61' - 70'	12'

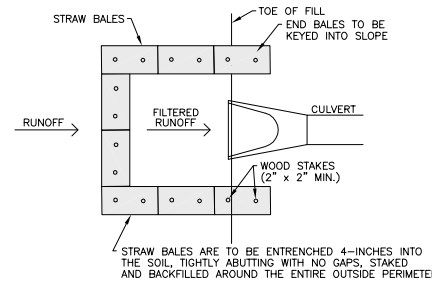
ROUGH-CUT STREET CONTROL (RCS)
NTS FOR STREET SLOPES > 4%

DEFINITION

A SEDIMENT FILTER OR AN EXCAVATED IMPOUNDING AREA AROUND A STORM DRAIN CULVERT INLET.

PURPOSES

TO PREVENT SEDIMENT FROM ENTERING STORM DRAINAGE SYSTEMS PRIOR TO PERMANENT STABILIZATION OF THE DISTURBED AREA.



INSTALLATION REQUIREMENTS

1. INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY AFTER CONSTRUCTION OF INLET.
2. BALES ARE TO BE PLACED IN A SINGLE ROW AROUND THE INLET WITH THE END OF THE BALES TIGHTLY ABUTTING ONE ANOTHER.
3. SEE STRAW BALE BARRIER DETAILS AND NOTES FOR INSTALLATION REQUIREMENTS.

MAINTENANCE REQUIREMENTS

1. CONTRACTOR SHALL INSPECT STRAW BALE INLET PROTECTION IMMEDIATELY AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS OF NO RAINFALL.
2. DAMAGED OR INEFFECTIVE INLET PROTECTION SHALL PROMPTLY BE REPAIRED OR REPLACING BALES IF NECESSARY, AND UNTRENCHED BALES NEED TO BE REPAIRED WITH COMPACTED BACKFILL MATERIAL.
3. SEDIMENT SHALL BE REMOVED FROM BEHIND STRAW BALES WHEN IT ACCUMULATES TO APPROXIMATELY 1/3 THE HEIGHT OF THE BARRIER.
4. INLET PROTECTION SHALL BE REMOVED WHEN ADEQUATE VEGETATIVE COVER IS ATTAINED WITHIN THE DRAINAGE AREA AS APPROVED BY THE COUNTY.

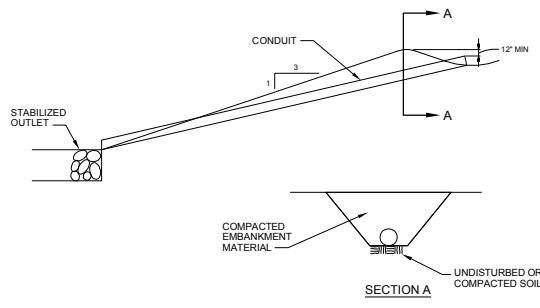
CULVERT INLET PROTECTION (CIP)
NTS

NOTE:

DETAILS SHOWN MAY NOT BE REQUIRED FOR THIS PROJECT. REFER TO GRADING AND EROSION CONTROL PLAN. ANY CHANGES SHALL BE COORDINATED WITH EL PASO COUNTY ENGINEERING DIVISION INSPECTIONS

Project No:	15073
Date:	December 1, 2017
Design:	NRK
Drawn:	CAD
Check:	AWMc
Revisions:	

SHEET



INSTALLATION REQUIREMENTS

1. THE SLOPE DRAIN IS TO BE DESIGNED TO CONVEY THE PEAK RUNOFF FOR THE 2-YEAR STORM.
2. PIPE MATERIAL MAY INCLUDE CORRUGATED METAL, OR RIGID OR FLEXIBLE PLASTIC.
3. EMBANKMENT MATERIAL SHALL CONSIST OF SOIL WITH A MINIMUM OF 15% PASSING A #200 SIEVE. EXCAVATED SOIL CAN BE USED IF IT MEETS THIS REQUIREMENT.
4. EMBANKMENT IS TO BE COMPACTED TO AT LEAST 90% OF MAXIMUM DENSITY AND WITHIN 2% OF OPTIMUM MOISTURE CONTENT ACCORDING TO ASTM D 698.
5. SLOPE DRAIN SECTIONS ARE TO BE SECURELY FASTENED TOGETHER AND HAVE WATERTIGHT FITTINGS.
6. THE OUTLET IS TO BE STABILIZED AND, UNLESS THE DRAIN DISCHARGES DIRECTLY TO A SEDIMENT BASIN, A TEMPORARY SURFACE IS TO BE PROVIDED TO CONVEY FLOWS DOWNSTREAM.
7. IMMEDIATELY STABILIZE ALL AREAS DISTURBED BY INSTALLATION OR REMOVAL OF THE PIPE SLOPE DRAIN.

MAINTENANCE REQUIREMENTS

1. INLET AND OUTLET POINTS ARE TO BE CHECKED REGULARLY, AND AFTER HEAVY STORMS FOR CLOGGING AND OVERCHARGING. ANY BREAKS IN THE PIPE ARE TO BE PROMPTLY REPAIRED, AND CLOGS REMOVED AS NEEDED.
2. WATER IS NOT TO BYPASS OR UNDERCUT THE INLET OR PIPE. IF THESE PROBLEMS DO EXIST, THE HEADWALL NEEDS TO BE REINFORCED WITH COMPACT EARTH OR SANDBAGS.
3. THE OUTLET POINT IS TO BE FREE OF EROSION, AND, IF NECESSARY, ADDITIONAL OUTLET PROTECTION SHOULD BE INSTALLED.
4. CONSTRUCTION TRAFFIC IS NOT TO CROSS THE SLOPE DRAIN AND MATERIALS ARE NOT TO BE PLACED ON IT.
5. THE SLOPE DRAIN IS TO REMAIN IN PLACE UNTIL THE SLOPE HAS BEEN COMPLETELY STABILIZED OR UP TO 30 DAYS AFTER PERMANENT SLOPE STABILIZATION.

TEMPORARY SLOPE DRAIN (TSD) NTS

EROSION CONTROL BLANKET INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
 - LOCATION OF ECB.
 - TYPE OF ECB (STRAW, STRAW-COCONUT, COCONUT, OR EXCELSIOR).
 - AREA, A, IN SQUARE YARDS OF EACH TYPE OF ECB.
2. 100% NATURAL AND BIODEGRADABLE MATERIALS ARE PREFERRED FOR RECPs, ALTHOUGH SOME JURISDICTIONS MAY ALLOW OTHER MATERIALS IN SOME APPLICATIONS.
3. 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.
4. PERIMETER ANCHOR TRENCH SHALL BE USED ALONG THE OUTSIDE PERIMETER OF ALL BLANKET AREAS.
5. 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.
6. INTERMEDIATE ANCHOR TRENCH SHALL BE USED AT SPACING OF ONE-HALF ROLL LENGTH FOR COCONUT AND EXCELSIOR ECBs.
7. OVERLAPPING JOINT DETAIL SHALL BE USED TO JOIN ROLLS OF ECBs TOGETHER FOR ECBs ON SLOPES.
8. MATERIAL SPECIFICATIONS OF ECBs SHALL CONFORM TO TABLE ECB-1.
9. ANY AREAS OF SEEDING AND MULCHING DISTURBED IN THE PROCESS OF INSTALLING ECBs SHALL BE RESEEDED AND MULCHED.
10. DETAILS ON DESIGN PLANS FOR MAJOR DRAINAGEWAY STABILIZATION WILL GOVERN IF DIFFERENT FROM THOSE SHOWN HERE.

TABLE ECB-1. ECB MATERIAL SPECIFICATIONS

TYPE	COCONUT CONTENT	STRAW CONTENT	EXCELSIOR CONTENT	RECOMMENDED NETTING**
STRAW*	-	100%	-	DOUBLE/NATURAL
STRAW-COCONUT	30% MIN	70% MAX	-	DOUBLE/NATURAL
COCONUT	100%	-	-	DOUBLE/NATURAL
EXCELSIOR	-	-	100%	DOUBLE/NATURAL

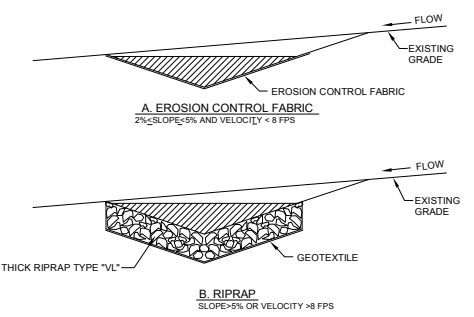
*STRAW ECBs MAY ONLY BE USED OUTSIDE OF STREAMS AND DRAINAGE CHANNELS.
**ALTERNATE NETTING MAY BE ACCEPTABLE IN SOME JURISDICTIONS.

EROSION CONTROL BLANKET MAINTENANCE NOTES

1. 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.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. ECBs SHALL BE LEFT IN PLACE TO EVENTUALLY BIODEGRADE, UNLESS REQUESTED TO BE REMOVED BY THE LOCAL JURISDICTION.
5. 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.

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

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



SWALE LINING (SLA) (SLB) NTS

INSTALLATION REQUIREMENTS

1. REFER TO THE MANUFACTURER'S INSTALLATION SPECIFICATIONS FOR PROPER INSTALLATION OF EROSION CONTROL FABRIC LININGS.
2. SWALES WITH EASILY ERODIBLE SOILS AND SLOPES LESS THAN 2% SHALL BE LINED WITH EROSION CONTROL FABRIC.
3. VELOCITIES FOR EROSION CONTROL FABRICS SHALL NOT EXCEED 8 FPS. SWALES WITH VELOCITIES GREATER THAN 8 FPS SHALL BE LINED WITH RIP RAP.

MAINTENANCE REQUIREMENTS

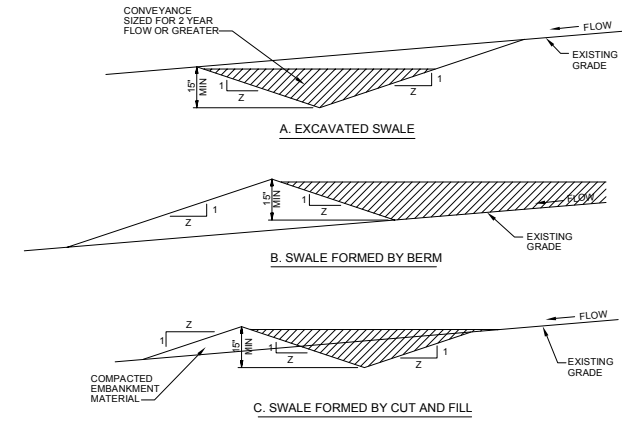
1. CONTRACTOR SHALL INSPECT SWALE LININGS AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL AND WEEKLY DURING PERIODS OF NO RAINFALL.
2. DAMAGED LININGS SHALL IMMEDIATELY BE REPAIRED.
3. REFER TO THE EROSION CONTROL BLANKETS FACTSHEET FOR PROPER MAINTENANCE.
4. DISPLACED RIPRAP OR COARSE AGGREGATE IS TO BE REPLACED AS SOON AS POSSIBLE.
5. SWALE LININGS ARE TO REMAIN IN PLACE AND BE PROPERLY MAINTAINED UNTIL THE TEMPORARY SWALE IS REMOVED.

MAINTENANCE REQUIREMENTS

1. CONTRACTOR SHALL INSPECT SWALES AFTER EACH RAINFALL, AT LEAST DAILY DURING PROLONGED RAINFALL, AND WEEKLY DURING PERIODS OF NO RAINFALL.
2. SWALES SHALL BE ROUTINELY CLEARED OF ANY DEBRIS OR ACCUMULATION OF SEDIMENT.
3. ERODED SLOPES OR DAMAGED LININGS SHALL IMMEDIATELY BE REPAIRED.
4. TEMPORARY SWALES SHALL REMAIN OPERATIONAL AND PROPERLY MAINTAINED UNTIL THE SITE AREA IS PERMANENTLY STABILIZED WITH ADEQUATE VEGETATIVE COVER AND/OR OTHER PERMANENT STRUCTURE AS APPROVED BY THE COUNTY.

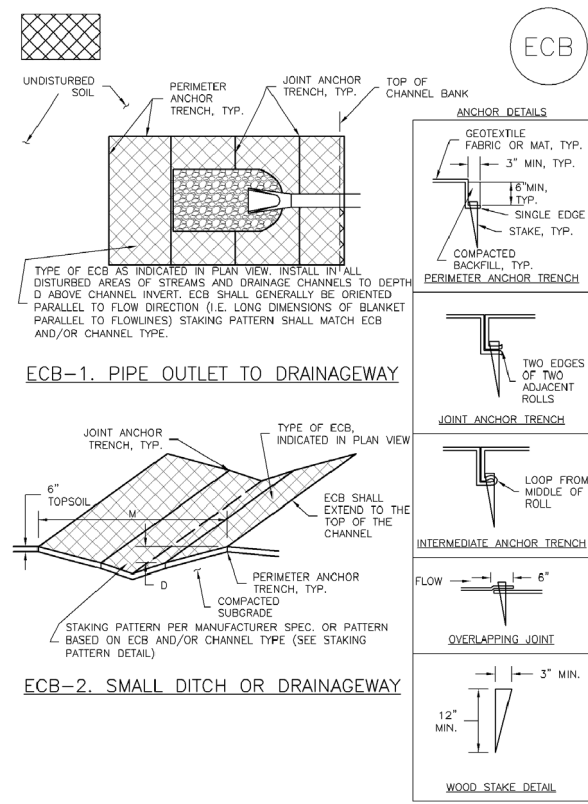
INSTALLATION REQUIREMENTS

1. TEMPORARY SWALES SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
2. THE AREA UNDER WHICH THE EMBANKMENT IS TO BE INSTALLED SHALL BE CLEARED, CRIBBED, AND STRIPPED OF ALL VEGETATION AND ROOT MAT.
3. EMBANKMENT MATERIAL SHALL CONSIST OF SOIL WITH A MINIMUM OF 15% PASSING A #200 SIEVE. EXCAVATED SOIL CAN BE USED IF IT MEETS THIS REQUIREMENT.
4. EMBANKMENT IS TO BE COMPACTED TO AT LEAST 90% OF MAXIMUM DENSITY AND WITHIN 2% OF OPTIMUM MOISTURE CONTENT ACCORDING TO ASTM D 698.
5. SWALES WITH SLOPE > 2% SHALL BE LINED. SEE FIGURE TSW-3.
6. SWALES ARE TO DRAIN INTO A SEDIMENT BASIN OR OTHER STABILIZED OUTLET.
7. Z SHALL BE 3 OR GREATER.

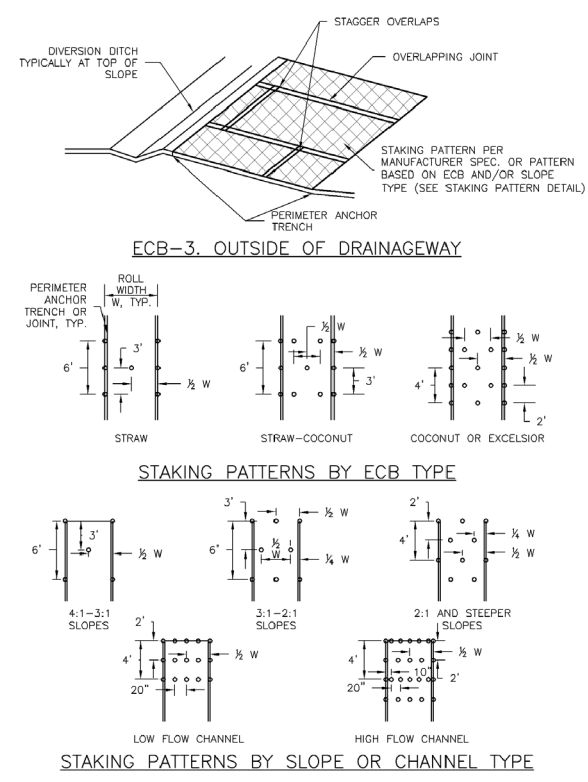


TEMPORARY SWALE (TS) NTS

NOTE:
DETAILS SHOWN MAY NOT BE REQUIRED FOR THIS PROJECT. REFER TO GRADING AND EROSION CONTROL PLAN. ANY CHANGES SHALL BE COORDINATED WITH EL PASO COUNTY ENGINEERING DIVISION INSPECTIONS



EROSION CONTROL BLANKET (ECB) NTS



STAKING PATTERNS BY SLOPE OR CHANNEL TYPE

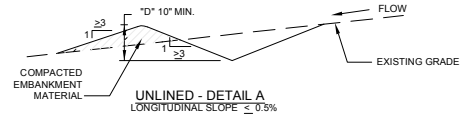
Project No:	15073
Date:	December 1, 2017
Design:	NRK
Drawn:	CAD
Check:	AWMc
Revisions:	

INSTALLATION REQUIREMENTS

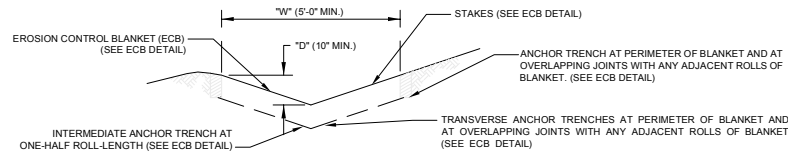
- SEE GEC FOR:
 - LOCATION OF DIVERSION DITCH.
 - TYPE OF DITCH (UNLINED, ECB LINED, PLASTIC LINED OR RIPRAP LINED).
 - DEPTH, "D", AND WIDTH, "W" DIMENSIONS.
 - FOR ECB LINED DITCH, EROSION CONTROL BLANKET TYPE (SEE ECB DETAIL).
 - FOR RIPRAP LINED DITCH, SIZE OF RIPRAP, "D₅₀".
- SEE DRAINAGE PLANS FOR DETAILS OF ANY PERMANENT CONVEYANCE FACILITIES OR DIVERSION DITCHES EXCEEDING A 2-YEAR FLOW RATE OF 10 CFS.
- DIVERSION DITCHES INDICATED ON INITIAL SWMP PLAN SHALL BE INSTALLED PRIOR TO ANY LAND-DISTURBING ACTIVITIES.
- FOR ECB LINED DITCHES, INSTALLATION OF EROSION CONTROL BLANKET SHALL CONFORM TO THE REQUIREMENTS OF THE ECB DETAIL.
- IN LOCATIONS WHERE CONSTRUCTION TRAFFIC MUST CROSS A DIVERSION DITCH, THE PERMITTEES SHALL INSTALL A TEMPORARY CULVERT WITH A MINIMUM DIAMETER OF 12-INCHES.

MAINTENANCE REQUIREMENTS

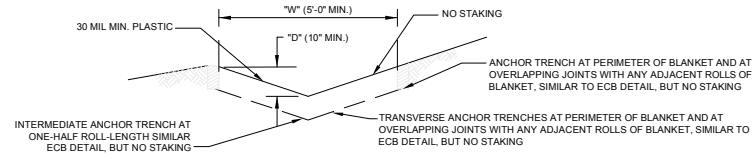
- THE SWMP MANAGER SHALL INSPECT DIVERSION DITCHES WEEKLY AND DURING AND AFTER ANY STORM. MAKE REPAIRS AS NECESSARY.
- DIVERSION DITCHES ARE TO REMAIN IN PLACE UNTIL THE END OF CONSTRUCTION, OR IF APPROVED BY LOCAL JURISDICTION MAY BE LEFT IN PLACE.
- IF DIVERSION DITCHES ARE REMOVED, DISTURBED AREA SHALL BE COVERED WITH TOPSOIL, DRILL SEEDED, HAY CRIMPED MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.



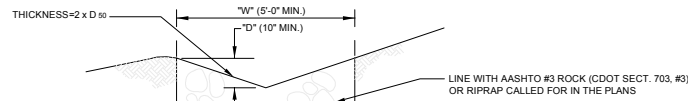
UNLINED - DETAIL A
LONGITUDINAL SLOPE ≤ 0.5%



EROSION CONTROL BLANKET (ECB) LINED - DETAIL B
LONGITUDINAL SLOPE 0.5% TO 3%



PLASTIC LINED - DETAIL C
LONGITUDINAL SLOPE 3% TO 33%



RIPRAP LINED - DETAIL D
LONGITUDINAL SLOPE 3% TO 33%

TEMPORARY DIVERSION DIKE

NTS

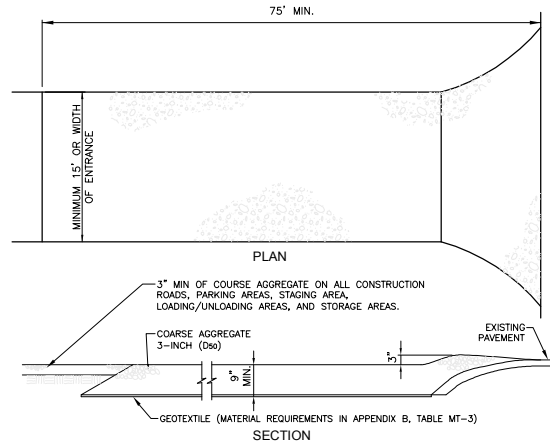


INSTALLATION REQUIREMENTS

- ALL ENTRANCES TO THE CONSTRUCTION SITE ARE TO BE STABILIZED PRIOR TO CONSTRUCTION BEGINNING.
- CONSTRUCTION ENTRANCES ARE TO BE BUILT WITH AN APRON TO ALLOW FOR TURNING TRAFFIC, BUT SHOULD NOT BE BUILT OVER EXISTING PAVEMENT EXCEPT FOR A SLIGHT OVERLAP.
- AREAS TO BE STABILIZED ARE TO BE PROPERLY GRADED AND COMPACTED PRIOR TO LAYING DOWN GEOTEXTILE AND STONE.
- CONSTRUCTION ROADS, PARKING AREAS, LOADING/UNLOADING ZONES, STORAGE AREAS, AND STAGING AREAS ARE TO BE STABILIZED.
- CONSTRUCTION ROADS ARE TO BE BUILT TO CONFORM TO SITE GRADES, BUT SHOULD NOT HAVE SIDE SLOPES OR ROAD GRADES THAT ARE EXCESSIVELY STEEP.

MAINTENANCE REQUIREMENTS

- REGULAR INSPECTIONS ARE TO BE MADE OF ALL STABILIZED AREAS, ESPECIALLY AFTER STORM EVENTS.
- STONES ARE TO BE REAPPLIED PERIODICALLY AND WHEN REPAIR IS NECESSARY.
- SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED DAILY BY SHOVELING OR SWEEPING. SEDIMENT IS NOT TO BE WASHED DOWN STORM SEWER DRAINS.
- STORM SEWER INLET PROTECTION IS TO BE IN PLACE, INSPECTED, AND CLEANED IF NECESSARY.
- OTHER ASSOCIATED SEDIMENT CONTROL MEASURES ARE TO BE INSPECTED TO ENSURE GOOD WORKING CONDITION.



VEHICLE TRACKING CONTROL

NTS

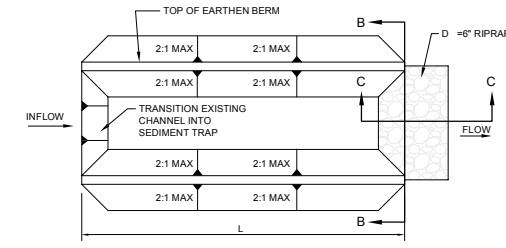


INSTALLATION REQUIREMENTS

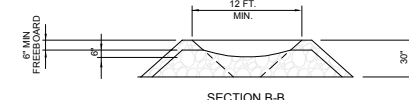
- SEE GEC FOR:
 - LOCATION, LENGTH AND WIDTH OF SEDIMENT TRAP.
- SEDIMENT TRAPS INDICATED ON INITIAL GESC PLAN SHALL BE INSTALLED PRIOR TO ANY LAND-DISTURBING ACTIVITIES.
- SEDIMENT TRAP BERM SHALL BE CONSTRUCTED FROM MATERIAL FROM EXCAVATION. THE BERM SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D698.
- RIPRAP OUTLET SHALL BE CONSTRUCTED WITH D₅₀=12" RIPRAP WITH A MINIMUM OVERFLOW OF 6".
- THE TOP OF THE EARTHEN BERM SHALL BE A MINIMUM OF 6" HIGHER THAN THE TOP OF THE RIPRAP OUTLET STRUCTURE.
- THE ENDS OF THE RIPRAP OUTLET STRUCTURE SHALL BE A MINIMUM OF 6" HIGHER THAN THE CENTER OF THE OUTLET STRUCTURE.

MAINTENANCE REQUIREMENTS

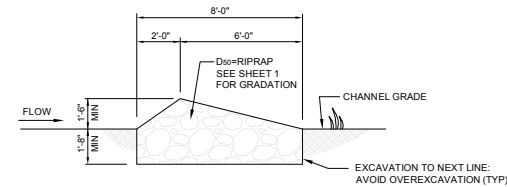
- THE GESC MANAGER SHALL INSPECT THE SEDIMENT TRAPS WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
- SEDIMENT ACCUMULATED UPSTREAM OF RIPRAP SHALL BE REMOVED WHEN THE UPSTREAM SEDIMENT DEPTH IS WITHIN HALF THE HEIGHT OF THE RIPRAP OUTLET STRUCTURE.
- SEDIMENT TRAPS SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVERAGE IS APPROVED BY THE COUNTY.
- WHEN SEDIMENT TRAPS ARE REMOVED THE DISTURBED AREA SHALL BE DRILLED, SEEDED AND CRIMP MULCHED OR STABILIZED IN A MANNER APPROVED BY THE COUNTY.



PLAN VIEW



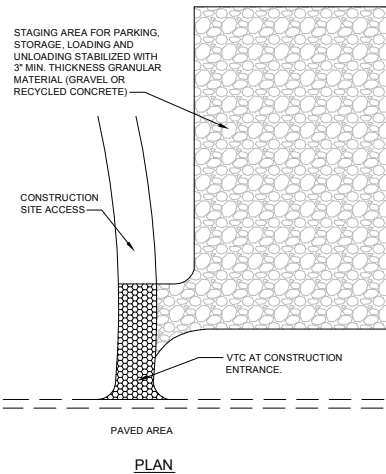
SECTION B-B



SECTION C-C

SEDIMENT TRAP

NTS



PLAN

STABILIZED STAGING AREA

NTS

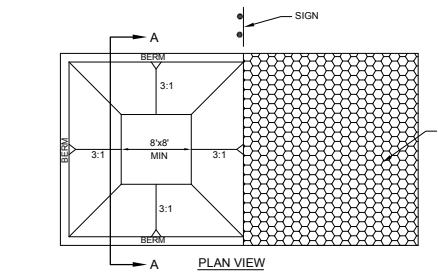


INSTALLATION REQUIREMENTS

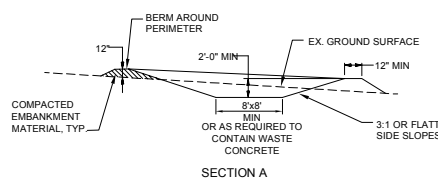
- SEE GEC FOR GENERAL LOCATION OF STAGING AREA. CONTRACTOR MAY MODIFY LOCATION AND SIZE OF STABILIZED STAGING AREA WITH COUNTY APPROVAL.
- STABILIZED STAGING AREA SHALL BE LARGE ENOUGH TO FULLY CONTAIN PARKING, STORAGE, AND UNLOADING AND LOADING OPERATIONS.
- IF REQUIRED BY THE COUNTY, SITE ACCESS ROADS SHALL BE STABILIZED IN THE SAME MANNER AS THE STAGING AREA.
- STAGING AREA SHALL BE STABILIZED PRIOR TO ANY OTHER OPERATIONS ON THE SITE.
- THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM OF 3" OF GRANULAR MATERIAL (GRAVEL OR RECYCLED CONCRETE).

MAINTENANCE REQUIREMENTS

- THE GESC MANAGER SHALL INSPECT THE STABILIZED STAGING AREA WEEKLY, DURING AND AFTER ANY STORM EVENT AND MAKE REPAIRS OR CLEAN OUT UPSTREAM SEDIMENT AS NECESSARY.
- GESC MANAGER SHALL PROVIDE ADDITIONAL THICKNESS OF GRANULAR MATERIAL IF ANY RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.
- STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING AND LOADING OPERATIONS.
- ANY ACCUMULATED DIRT OR MUD SHALL BE REMOVED FROM THE SURFACE OF THE STABILIZED STAGING AREA.
- THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE COUNTY, USED ON SITE, AND THE AREA TOPSOILED, DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE STABILIZED.



PLAN VIEW



SECTION A

CONCRETE WASHOUT AREA

NTS

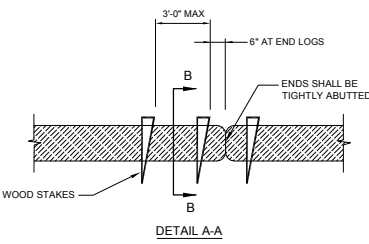


INSTALLATION REQUIREMENTS

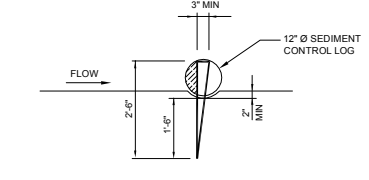
- SEE GEC FOR LOCATIONS OF CONCRETE WASHOUT AREA.
- THE CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT SITE.
- VEHICLE TRACKING CONTROL IS REQUIRED AT THE ACCESS POINT.
- SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT AREA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
- EXCAVATED MATERIAL SHALL BE UTILIZED IN PERIMETER BERM CONSTRUCTION.

MAINTENANCE REQUIREMENTS

- THE CONCRETE WASHOUT AREA SHALL BE REPAIRED AND ENLARGED OR CLEANED OUT AS NECESSARY TO MAINTAIN CAPACITY FOR WASTED CONCRETE.
- AT THE END OF CONSTRUCTION, ALL CONCRETE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT AN APPROVED WASTE SITE.
- WHEN THE CONCRETE WASHOUT AREA IS REMOVED, COVER THE DISTURBED AREA WITH TOPSOIL, DRILL SEED AND CRIMP MULCH OR OTHERWISE STABILIZE IN A MANNER APPROVED BY THE LOCAL JURISDICTION.
- INSPECT WEEKLY, AND DURING AND AFTER ANY STORM EVENT.



DETAIL A-A



SECTION B-B

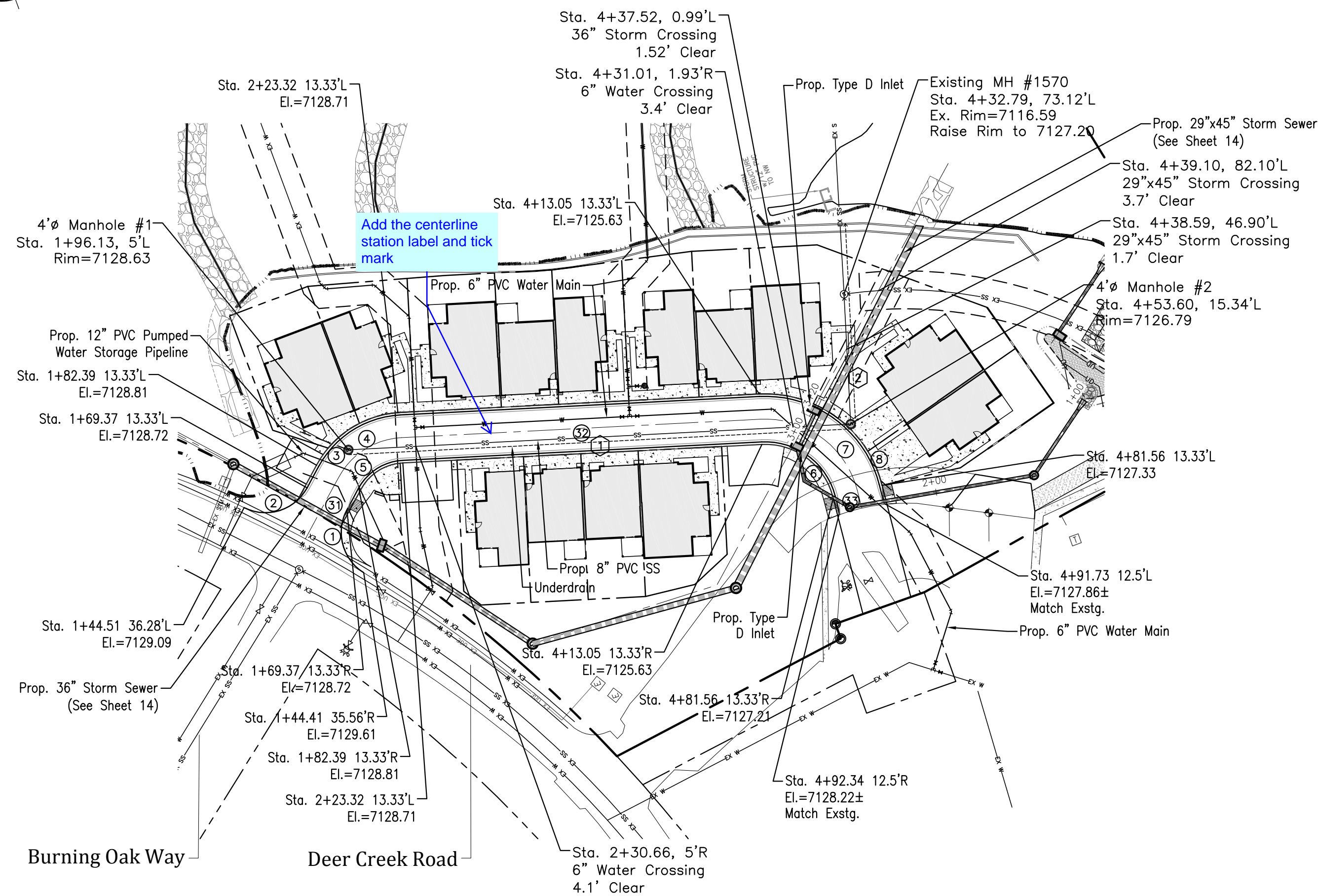
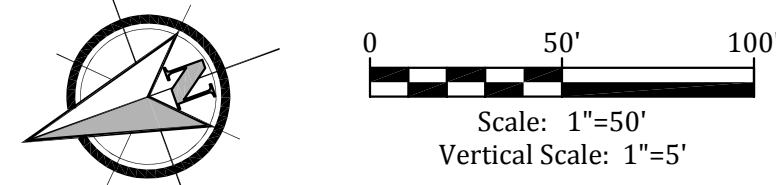
SEDIMENT CONTROL LOG

NTS



NOTE:

DETAILS SHOWN MAY NOT BE REQUIRED FOR THIS PROJECT. REFER TO GRADING AND EROSION CONTROL PLAN. ANY CHANGES SHALL BE COORDINATED WITH EL PASO COUNTY ENGINEERING DIVISION INSPECTIONS

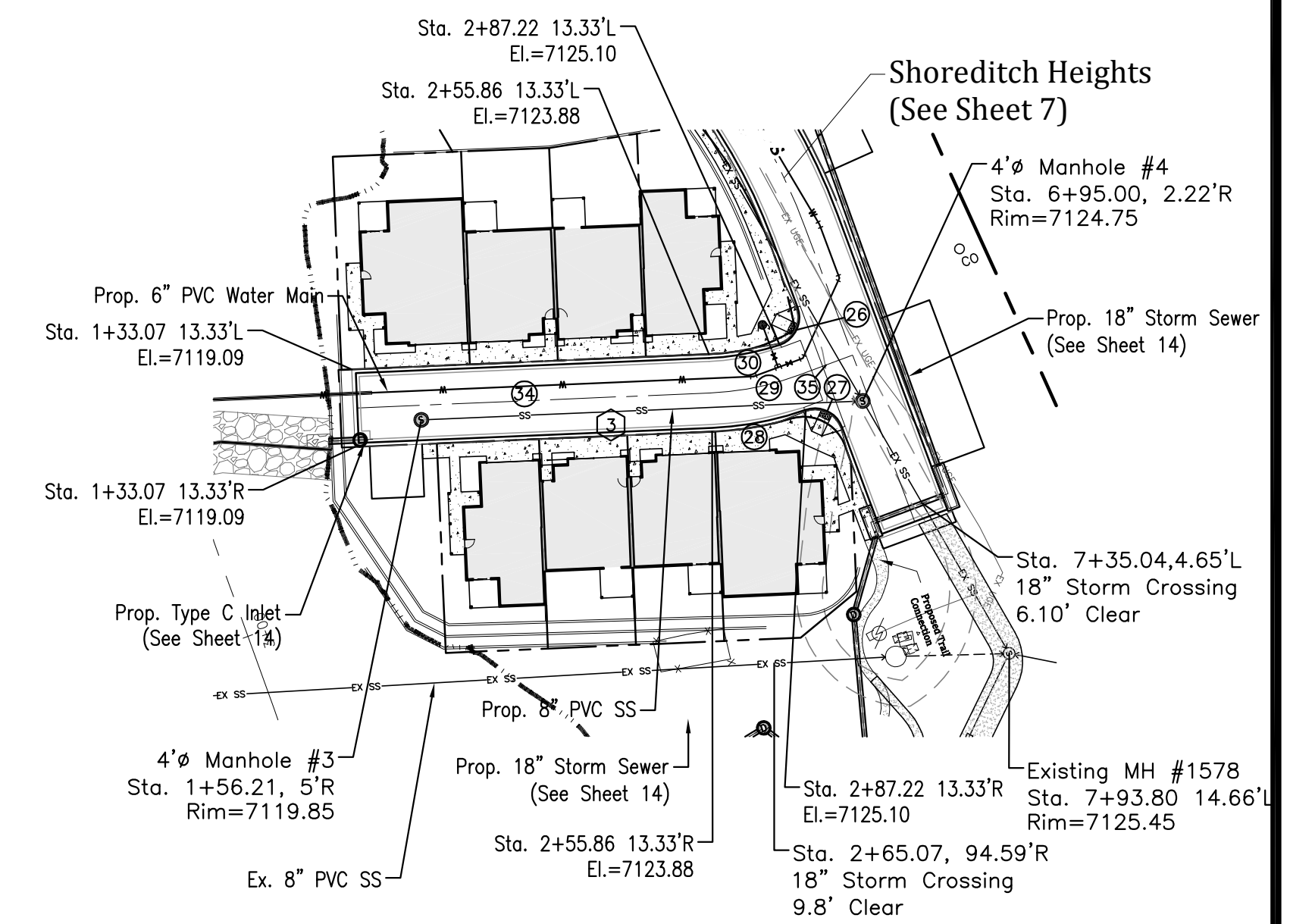
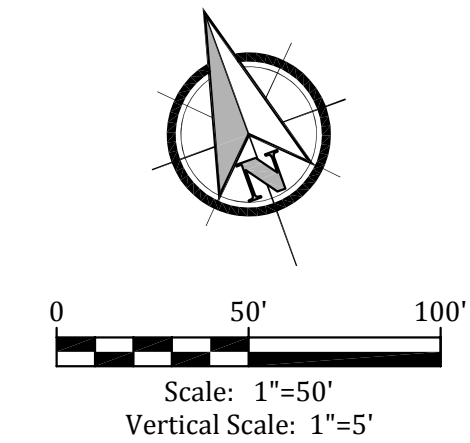


Redbridge Point (Private Road)

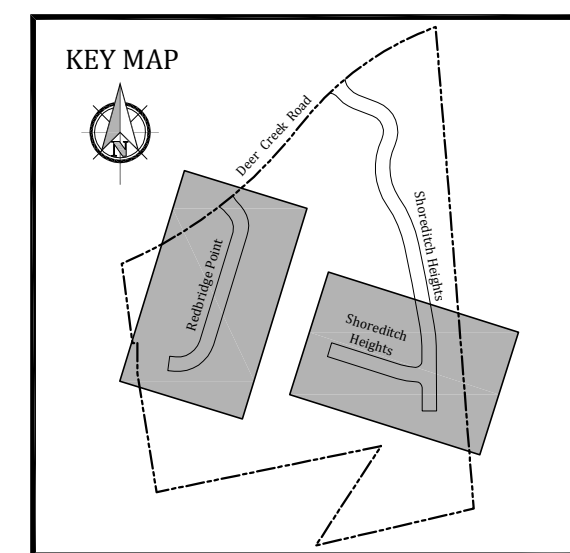
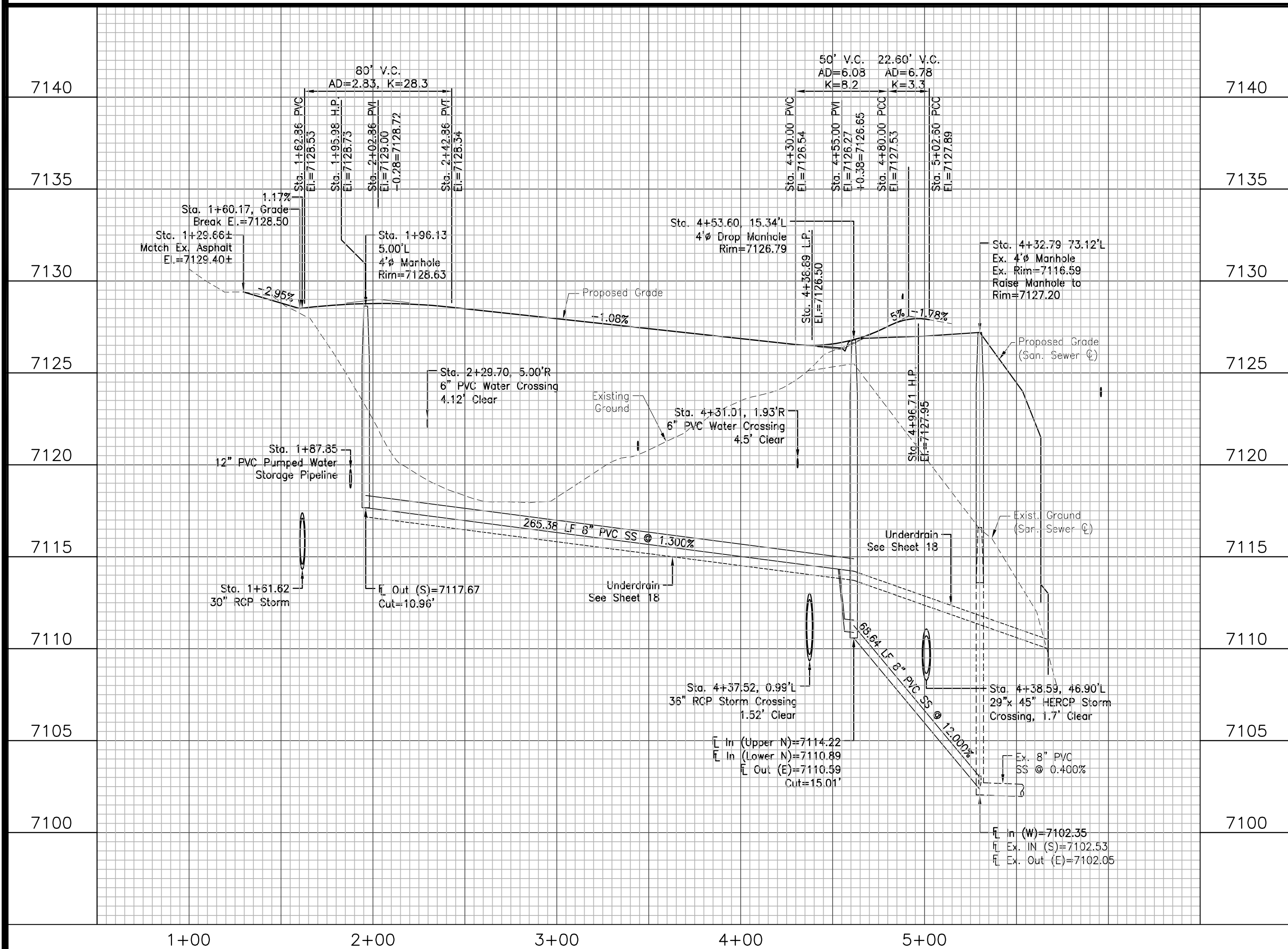
SANITARY SEWER LINE DATA	
Bearing	Distance
① S1703°30'W	265.38'
② S72°56'30"E	68.64'
③ S72°26'54"E	151.79'

ROAD LINE DATA	
① S41°33'41"E L=36.95'	④ S72°26'54"E L=121.46'
② S1703°30'W L=189.73'	⑤ N89°34'52"E L=19.42'
③ N84°26'01"W L=9.78'	

ROAD CURVE DATA	
① Δ=86°41'40" R=25.00' L=37.83'	⑧ Δ=78°30'28" R=62.00' L=84.95'
② Δ=88°21'38" R=25.00' L=38.55'	⑨ Δ=91°53'45" R=10.00' L=16.04'
③ Δ=58°37'11" R=52.00' L=53.20'	⑩ Δ=88°47'17" R=10.00' L=15.50'
④ Δ=58°37'11" R=40.00' L=40.92'	⑪ Δ=16°45'31" R=112.00' L=32.76'
⑤ Δ=58°37'11" R=28.00' L=28.65'	⑫ Δ=175°8'14" R=100.00' L=31.36'
⑥ Δ=78°30'28" R=38.00' L=52.07'	⑬ Δ=16°04'29" R=88.00' L=24.69'
⑦ Δ=78°30'28" R=50.00' L=68.51'	



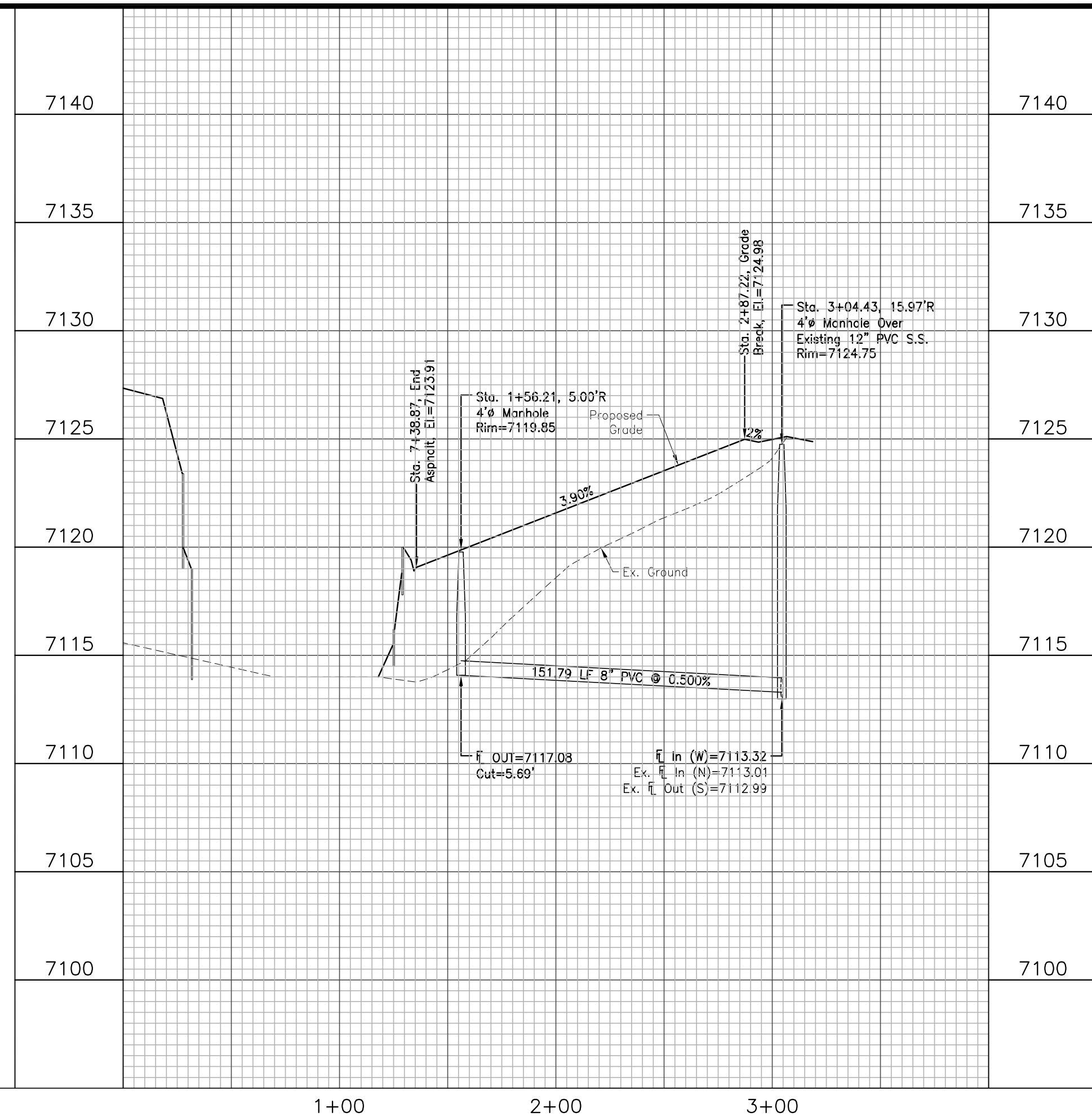
Shoreditch Heights (Private Road)



WOODMOOR WATER & SANITATION DISTRICT NO. 1
 APPROVED FOR CONSTRUCTION

Date: _____ By: _____

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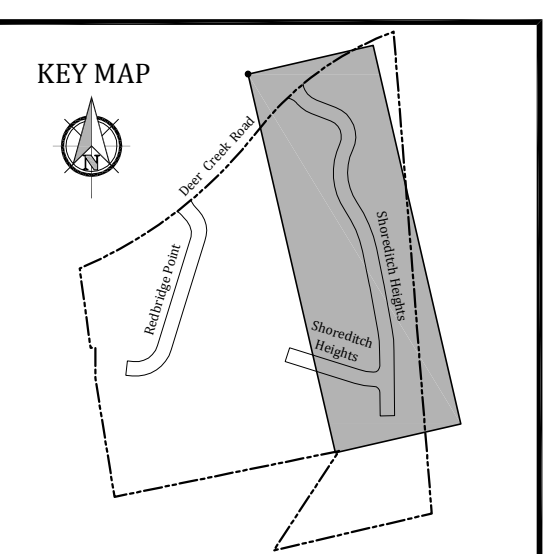
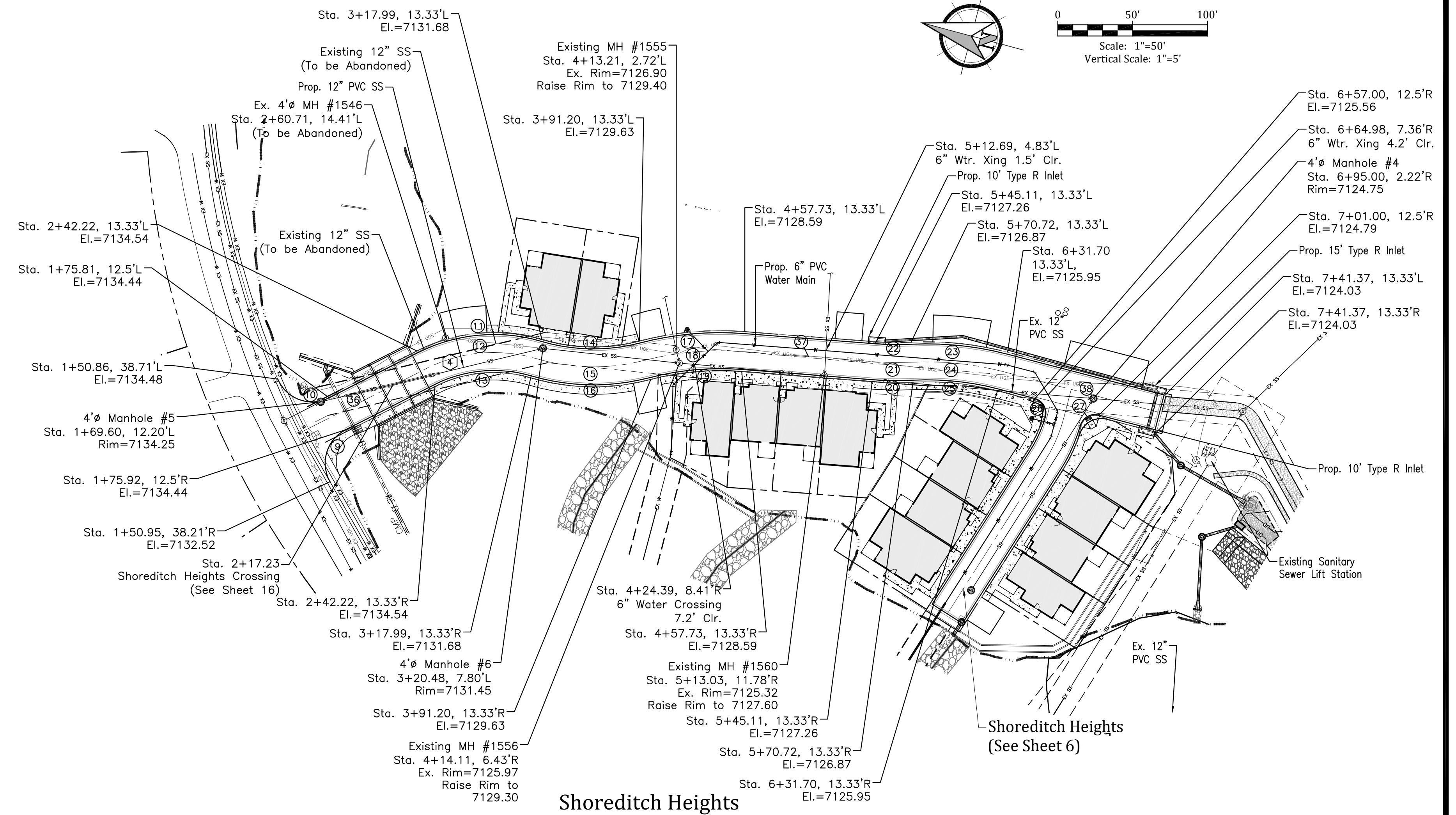
North Bay at Lake Woodmoor
 Redbridge Point -- Plan and Profile
 Shoreditch Heights -- Plan and Profile
 El Paso County, Colorado

Project No.:	15073
Date:	December 1, 2017
Design:	NRK
Drawn:	CAD
Check:	AWMc
Revisions:	

SANITARY SEWER LINE DATA	
Bearing	Distance
S28°30'20"E	152.61'

ROAD LINE DATA	
S41°57'04"E L=92.68'	S00°25'08"E L=108.34'
S10°33'12"E L=87.37'	

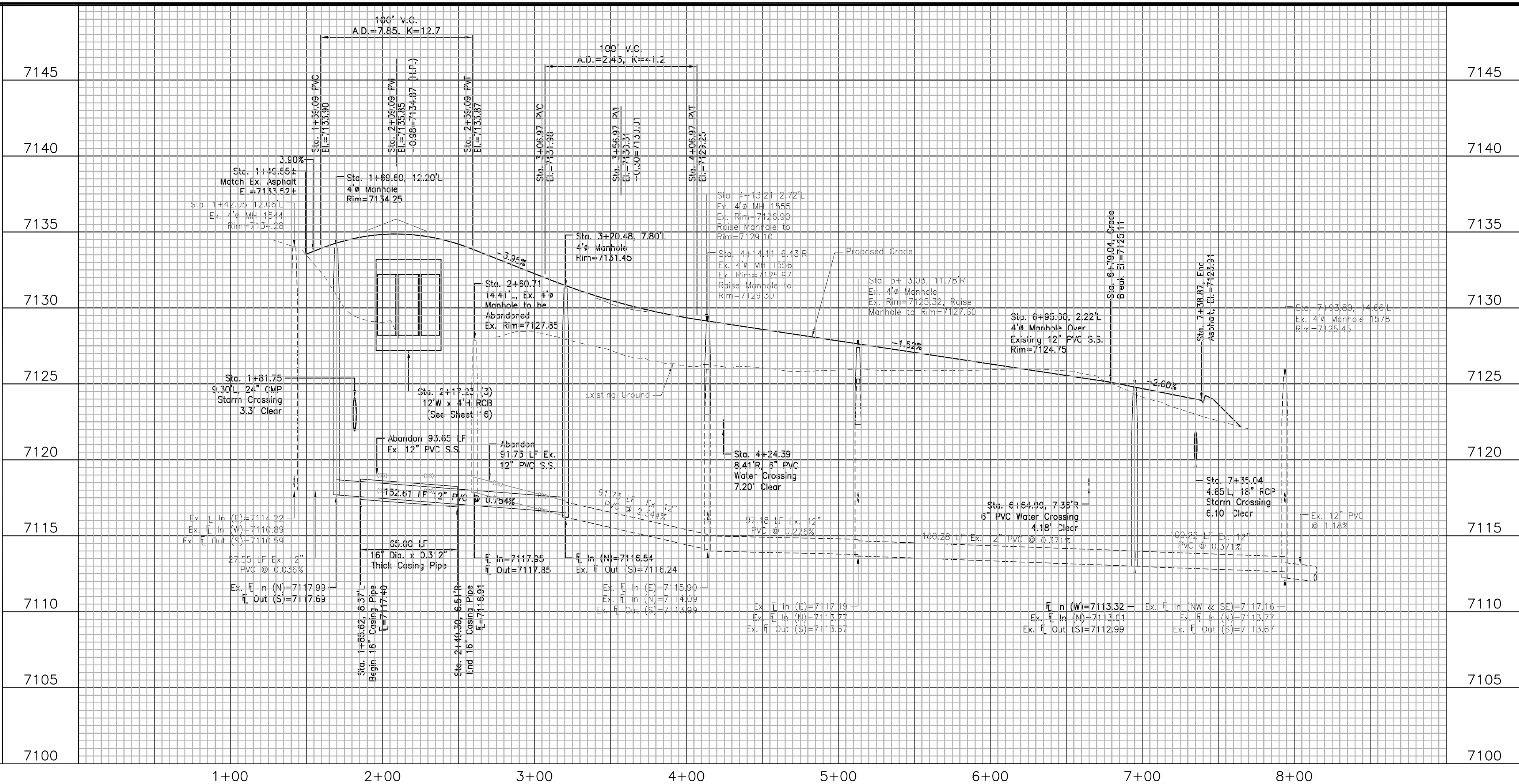
ROAD CURVE DATA	
⑨ Δ=92°46'21" R=25.00' L=40.48'	⑲ Δ=19°03'33" R=188.00' L=62.54'
⑩ Δ=93°54'53" R=25.00' L=40.98'	⑳ Δ=72°0'13" R=212.00' L=27.15'
⑪ Δ=43°24'40" R=112.00' L=84.86'	㉑ Δ=72°0'13" R=200.00' L=25.61'
⑫ Δ=43°24'40" R=100.00' L=75.77'	㉒ Δ=72°0'13" R=188.00' L=24.07'
⑬ Δ=43°24'40" R=88.00' L=66.67'	㉓ Δ=172°8'17" R=212.00' L=64.65'
⑭ Δ=34°04'21" R=123.00' L=66.70'	㉔ Δ=172°8'17" R=200.00' L=60.99'
⑮ Δ=34°04'21" R=135.00' L=73.21'	㉕ Δ=172°8'17" R=188.00' L=57.33'
⑯ Δ=34°04'21" R=147.00' L=79.72'	㉖ Δ=91°53'45" R=10.00' L=16.04'
⑰ Δ=19°03'33" R=212.00' L=70.52'	㉗ Δ=88°47'17" R=10.00' L=15.50'
⑱ Δ=19°03'33" R=200.00' L=66.53'	



WOODMOOR WATER & SANITATION DISTRICT NO. 1
APPROVED FOR CONSTRUCTION

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North Bay at Lake Woodmoor
Shoreditch Heights -- Plan and Profile
El Paso County, Colorado

Project No.:	15073
Date:	December 1, 2017
Design:	NRK
Drawn:	CAD
Check:	AWMc
Revisions:	

SHEET
7
7 of 21 Sheets

Kiowa
Engineering Corporation

1604 South 21st Street
Colorado Springs, Colorado 80904
(719) 630-7342

North Bay at Lake Woodmoor

EL PASO COUNTY, COLORADO

PUBLIC WATER SYSTEM PLAN AND PROFILES

INCLUDING UTILITY SERVICES

December 1, 2017

GENERAL NOTES:

1. All materials and installation procedures will be in compliance with the System Specifications and the Rules and Regulations of the District.
2. Developer/Owner or Contractor shall be responsible for determining and obtaining any and all permits required to perform the work from all applicable regulatory agencies or entities having jurisdiction, and will perform the work in accordance with any and all applicable ordinances, regulations, laws and permits issued by such entities or agencies.
3. Contractor shall pothole and field verify elevations, pipe size, type, alignment, etc. of existing water lines at all noted connection points to the District's system.
4. In case of conflict between these plans and the system specifications, consult the District prior to commencing work.
5. Contractor shall notify the District a minimum of 2 working days prior to performing scheduled tests for observation by District personnel.
6. Bypass pumping of existing sewer flows is required when connecting to the District's existing sewer system. Contractor shall provide 100% redundant pumping capacity with continuous supervision during pumping operations. Contractor shall coordinate timing, location, etc. of bypass pumping operations with the District prior to commencing pumping operations.
7. The horizontal control is the state plane coordinate system, Colorado Central Zone (NAD 83). Coordinates of the two temporary benchmarks are noted below and on the plan.
8. Benchmarks: NGS Benchmark "T 395" -- Elevation = 7111.32 (NAVD 1988)
 TBM#1 Northwest Property Corner (N1,462,260.00, E3,181,465.66)
 Elevation=7101.48
 TBM#2 Southeast Property Corner (N1,460,800.42, E3,181,738.69)
 Elevation=7049.84



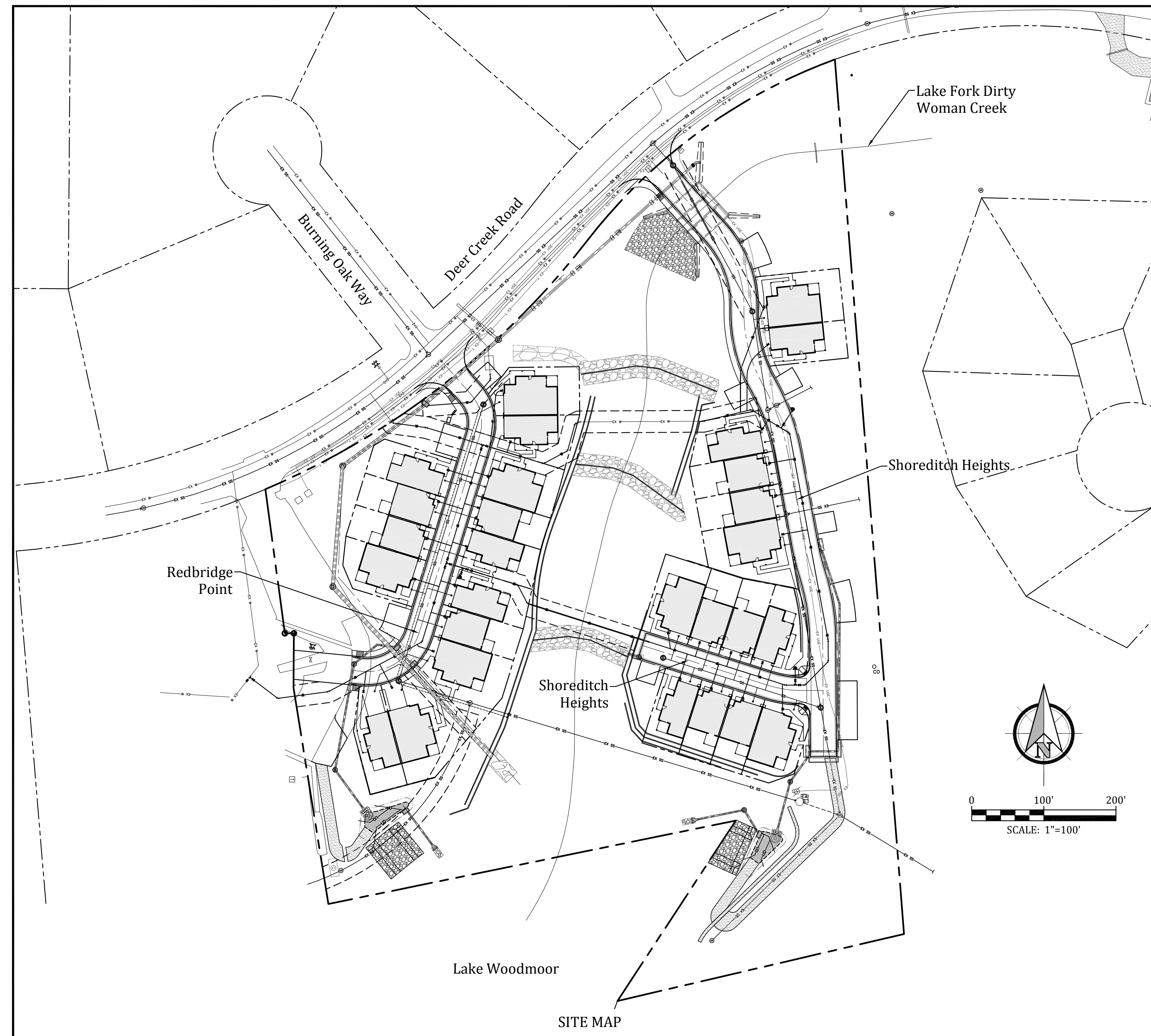
Know what's below.
Call before you dig.

PRE-EXCAVATION CHECKLIST

- Gas and other utility lines of record shown on the plans.
- Utilities Central Locating called at least 2 business days ahead. (1-800-922-1987)
- Utilities located and marked.
- Employees briefed on marking and color codes.*
- Employees trained on excavation and safety procedures for natural gas lines.
- When excavation approaches gas lines, employees expose lines by careful probing and hand digging.

***A.G.A./A.P.W.A. STANDARD UTILITY MARKING COLOR CODE**

Natural Gas	Yellow
Electric	Red
Water	Blue
Wastewater	Green



WATER AND SEWER SERVICE LINE NOTES:

1. Sewer service tap connections will be located a minimum of five (5) feet away from any manhole and be installed at the main with a gasket wye or tee fitting for new installations of sewer main. For service tap connections to existing sewer mains a sewer service saddle tap may be installed.
2. Sewer service lines/stubs will be installed such that a sewer service clean out is located 5 feet into the property or centered in the front lot easement, whichever is less and be located a minimum of 10 feet away from any side lot line. Tracer wire from the sewer tap at the main to the clean out at the property line shall be installed and a metal tee post will be installed next to the clean out for protection and ease of location.
3. A minimum of 10 feet of horizontal separation must be maintained between water service lines and sewer service lines
4. Water service lines/stubs will be 3/4-inch in diameter unless otherwise noted and installed such that the curb stop is located 5 feet into the property or centered in the front lot easement, whichever is less and a minimum of 10 feet from any sewer service line/sewer clean out.
5. Curb stops and boxes shall be buried such that 6-feet (+/- 0") of cover exists as measured from finished grade to the top of the service line. A metal tee post will be installed at the curb stop box for protection and ease of location.
6. Water service taps will not be located on a fire hydrant lateral or within 30" from a pipe bell, valve or mechanical joint connection. Water taps will maintain minimum five (5) foot spacing from other taps on the water main.
7. Direct tapping of water service line corporation stops (i.e. no saddle) will not be permitted.

INDEX OF SHEETS

8	Public Water System Plan & Profiles--Cover Sheet
9	Utility Plan
10	Utility Services Plan
11	Water Plan and Profile - Redbridge Pt. and Shoreditch Hts.
12	Water Plan and Profile - Redbridge Pt. and Shoreditch Hts.

WOODMOOR WATER & SANITATION DISTRICT NO. 1
APPROVED FOR CONSTRUCTION

Date: _____ By: _____

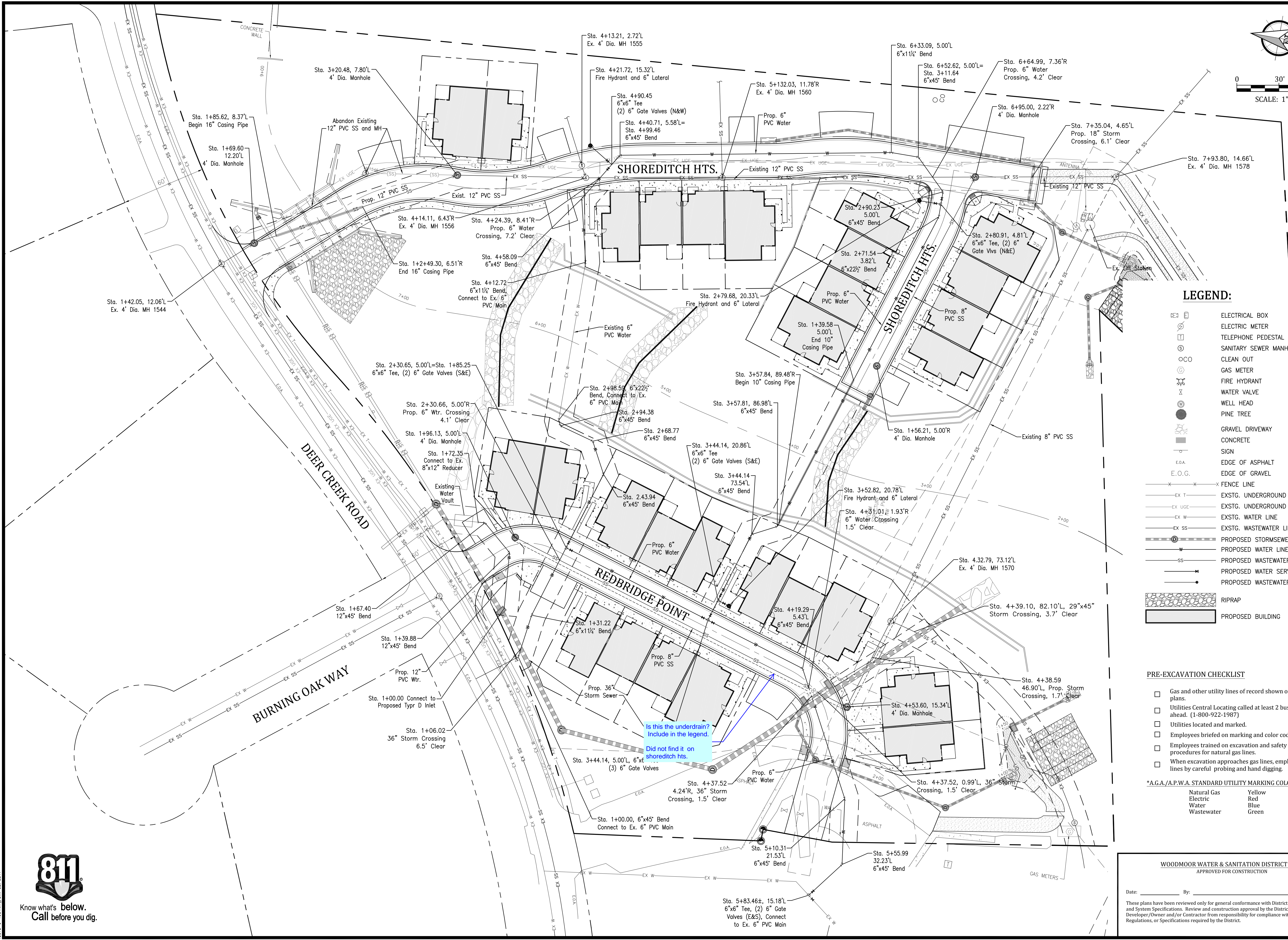
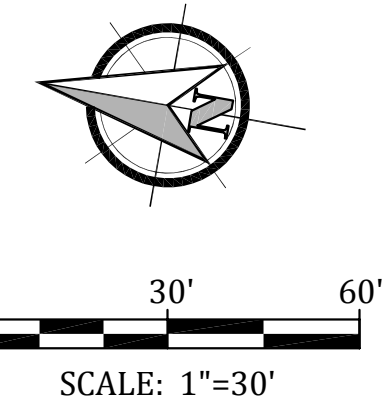
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North Bay at Lake Woodmoor
 Utility Plan Cover Sheet
 El Paso County, Colorado

Project No.:	15073
Date:	December 1, 2017
Design:	NRK
Drawn:	CAD
Check:	AWMc
Revisions:	

SHEET

8



LEGEND:

- ELECTRICAL BOX
- ELECTRIC METER
- TELEPHONE PEDESTAL
- SANITARY SEWER MANHOLE
- CLEAN OUT
- GAS METER
- FIRE HYDRANT
- WATER VALVE
- WELL HEAD
- PINE TREE
- GRAVEL DRIVEWAY
- CONCRETE
- SIGN
- E.O.A. EDGE OF ASPHALT
- E.O.G. EDGE OF GRAVEL
- FENCE LINE
- EX T EXSTG. UNDERGROUND TELEPHONE
- EX UGE EXSTG. UNDERGROUND ELECTRIC
- EX W EXSTG. WATER LINE
- EX SS EXSTG. WASTEWATER LINE
- PROPOSED STORMSEWER
- PROPOSED WATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WATER SERVICE
- PROPOSED WASTEWATER SERVICE
- RIPRAP
- PROPOSED BUILDING

PRE-EXCAVATION CHECKLIST

- Gas and other utility lines of record shown on the plans.
- Utilities Central Locating called at least 2 business days ahead. (1-800-922-1987)
- Utilities located and marked.
- Employees briefed on marking and color codes.*
- Employees trained on excavation and safety procedures for natural gas lines.
- When excavation approaches gas lines, employees expose lines by careful probing and hand digging.

***A.G.A./A.P.W.A. STANDARD UTILITY MARKING COLOR CODE**

Natural Gas	Yellow
Electric	Red
Water	Blue
Wastewater	Green

WOODMOOR WATER & SANITATION DISTRICT NO. 1
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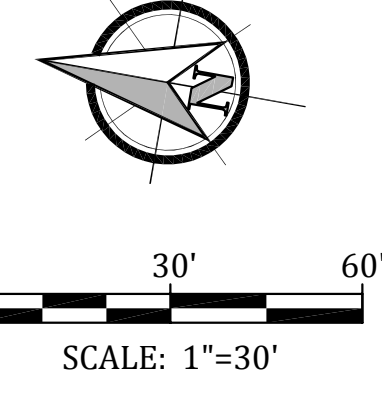
Is this the underdrain?
Include in the legend.
Did not find it on
shoreditch hts.

North Bay at Lake Woodmoor
Utility System Plan
El Paso County, Colorado

Project No.:	15073
Date:	December 1, 2017
Design:	NRK
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Revisions:	

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9
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LEGEND:

- ELECTRICAL BOX
- ELECTRIC METER
- TELEPHONE PEDESTAL
- SANITARY SEWER MANHOLE
- CLEAN OUT
- GAS METER
- FIRE HYDRANT
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- PROPOSED STORMSEWER
- PROPOSED WATER LINE
- PROPOSED WASTEWATER LINE
- PROPOSED WATER SERVICE
- PROPOSED WASTEWATER SERVICE
- RIPRAP
- PROPOSED BUILDING

PRE-EXCAVATION CHECKLIST

- Gas and other utility lines of record shown on the plans.
- Utilities Central Locating called at least 2 business days ahead. (1-800-922-1987)
- Utilities located and marked.
- Employees briefed on marking and color codes.*
- Employees trained on excavation and safety procedures for natural gas lines.
- When excavation approaches gas lines, employees expose lines by careful probing and hand digging.

***A.G.A./A.P.W.A. STANDARD UTILITY MARKING COLOR CODE**

Natural Gas	Yellow
Electric	Red
Water	Blue
Wastewater	Green

- Notes:
1. Install water and wastewater service per Details G-5, G-6, G-7, and G-8 of the Woodmoor Water and Sanitation District No. 1 Systems Specifications.
 2. Provide metal T-post at curb stop when construction of the water service stubout is completed.
 3. Provide metal T-post at cleanout when construction of the wastewater service stubout is completed.

WOODMOOR WATER & SANITATION DISTRICT NO. 1
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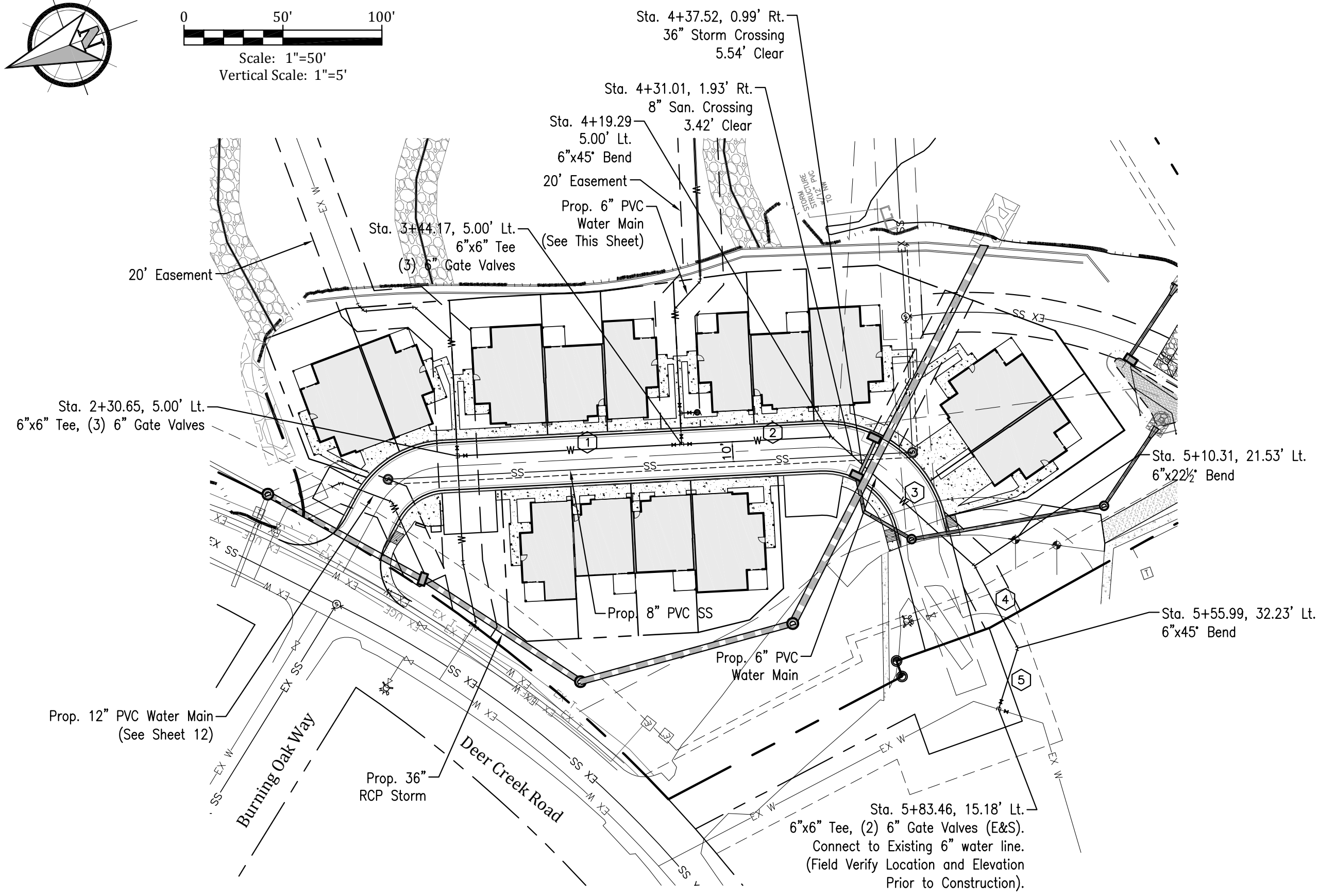
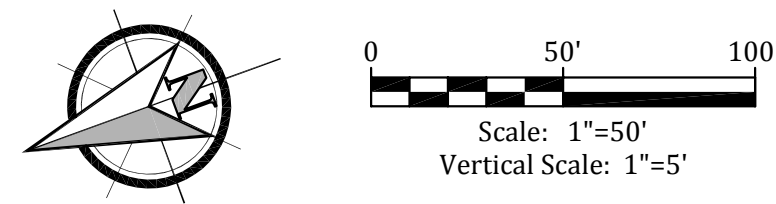
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North Bay at Lake Woodmoor
Utility Services Plan
El Paso County, Colorado

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Check:	AWMc
Revisions:	

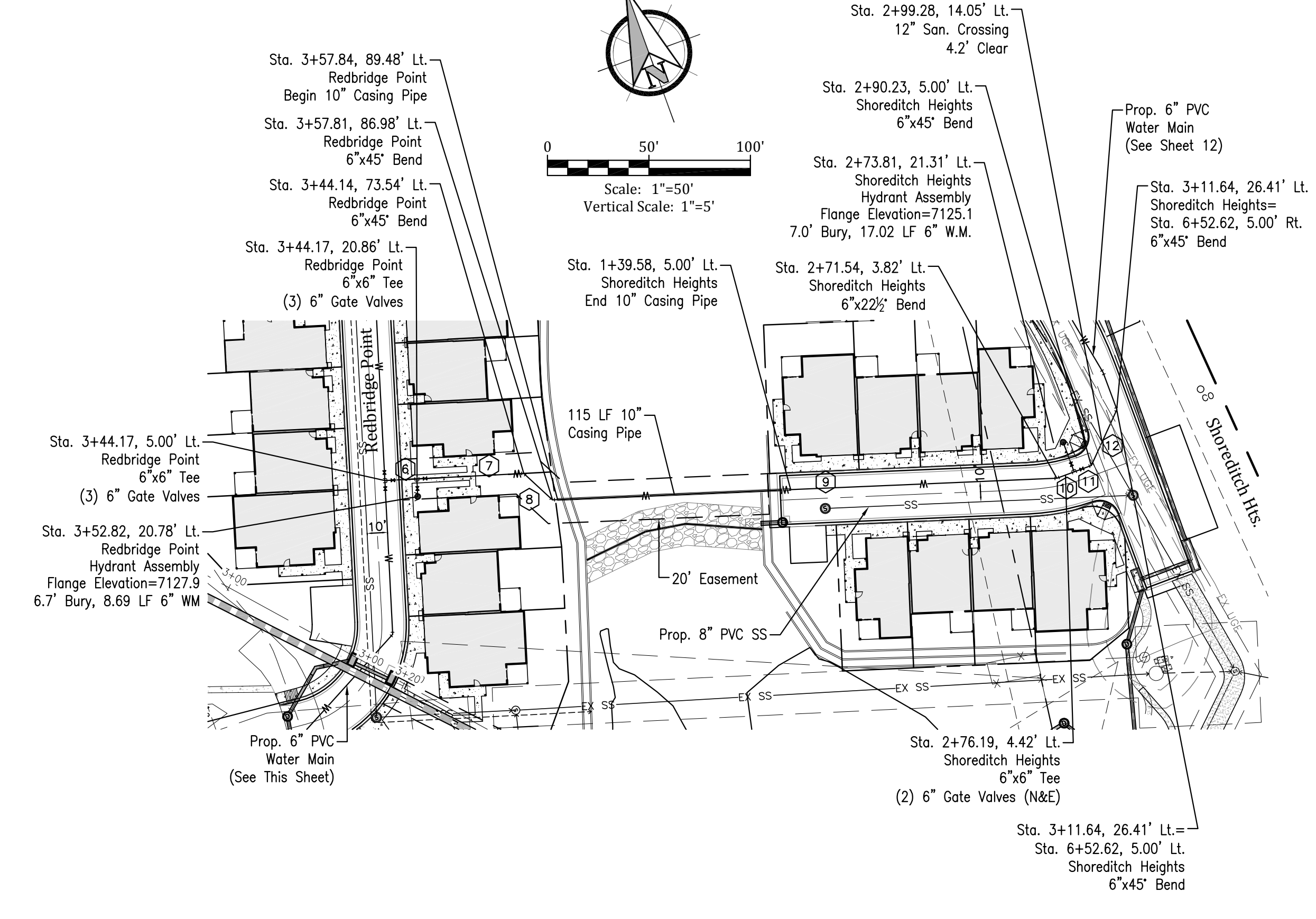
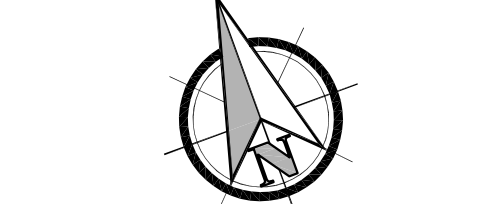
SHEET
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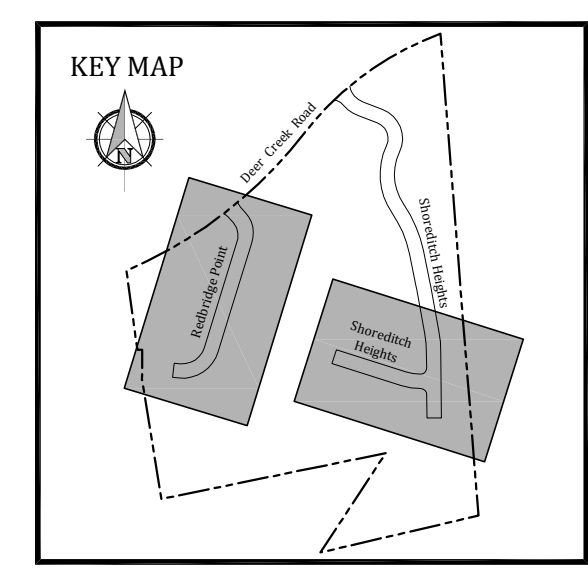
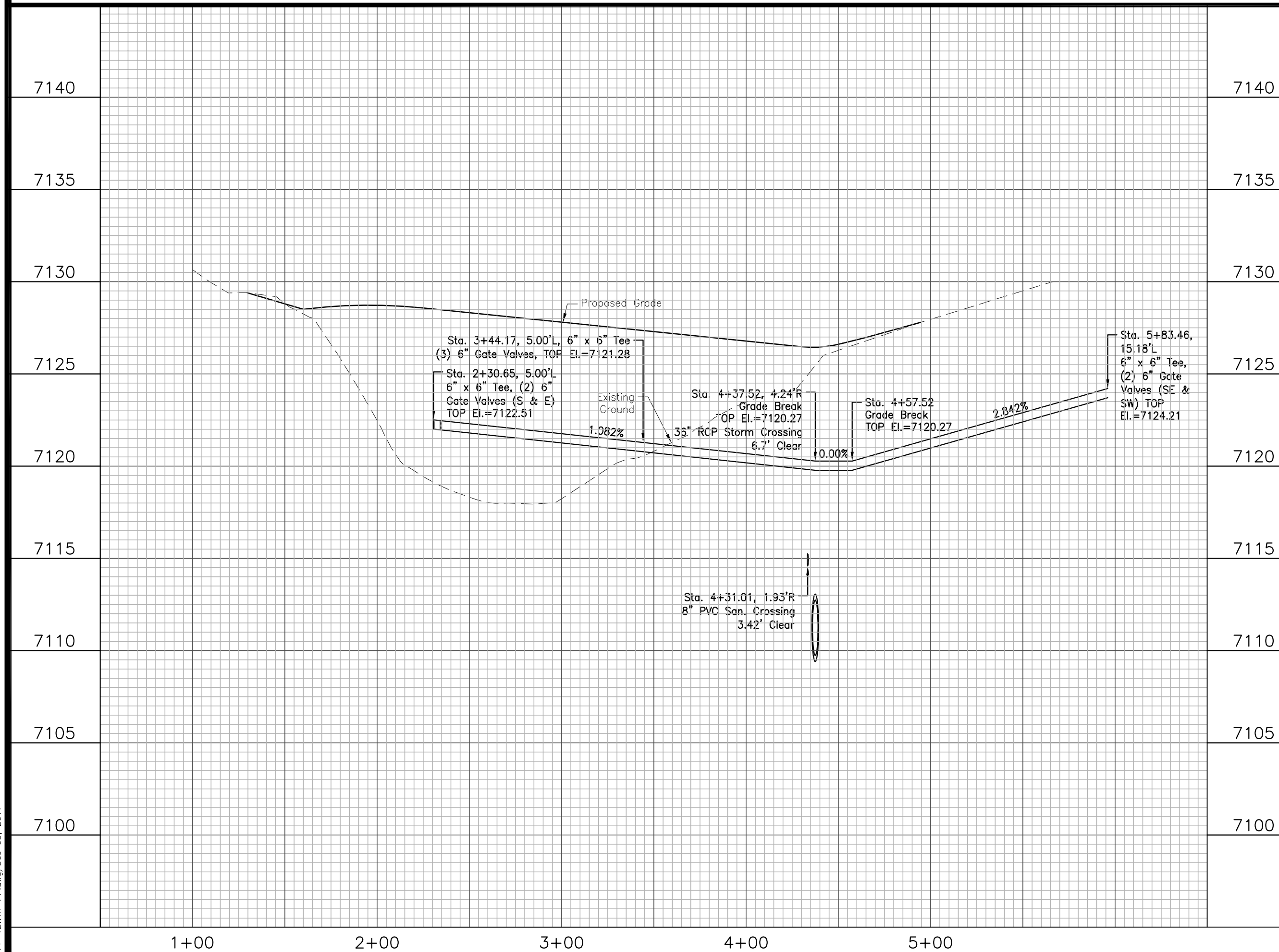


Redbridge Point (Private Road)

WATER LINE DATA		
Bearing	Distance	
① S17°03'30"W	113.48'	
② S17°03'30"W	75.81'	
③ S62°03'30"W	97.47'	
④ S82°23'00"W	46.92'	
⑤ N52°37'00"W	32.33'	
⑥ S72°56'30"E	15.86'	
⑦ S72°56'30"E	52.68'	
⑧ S27°26'54"E	19.18'	
⑨ S72°26'54"E	248.80'	
⑩ S89°34'52"E	4.50'	
⑪ S89°34'52"E	13.52'	
⑫ N44°34'52"E	30.29'	



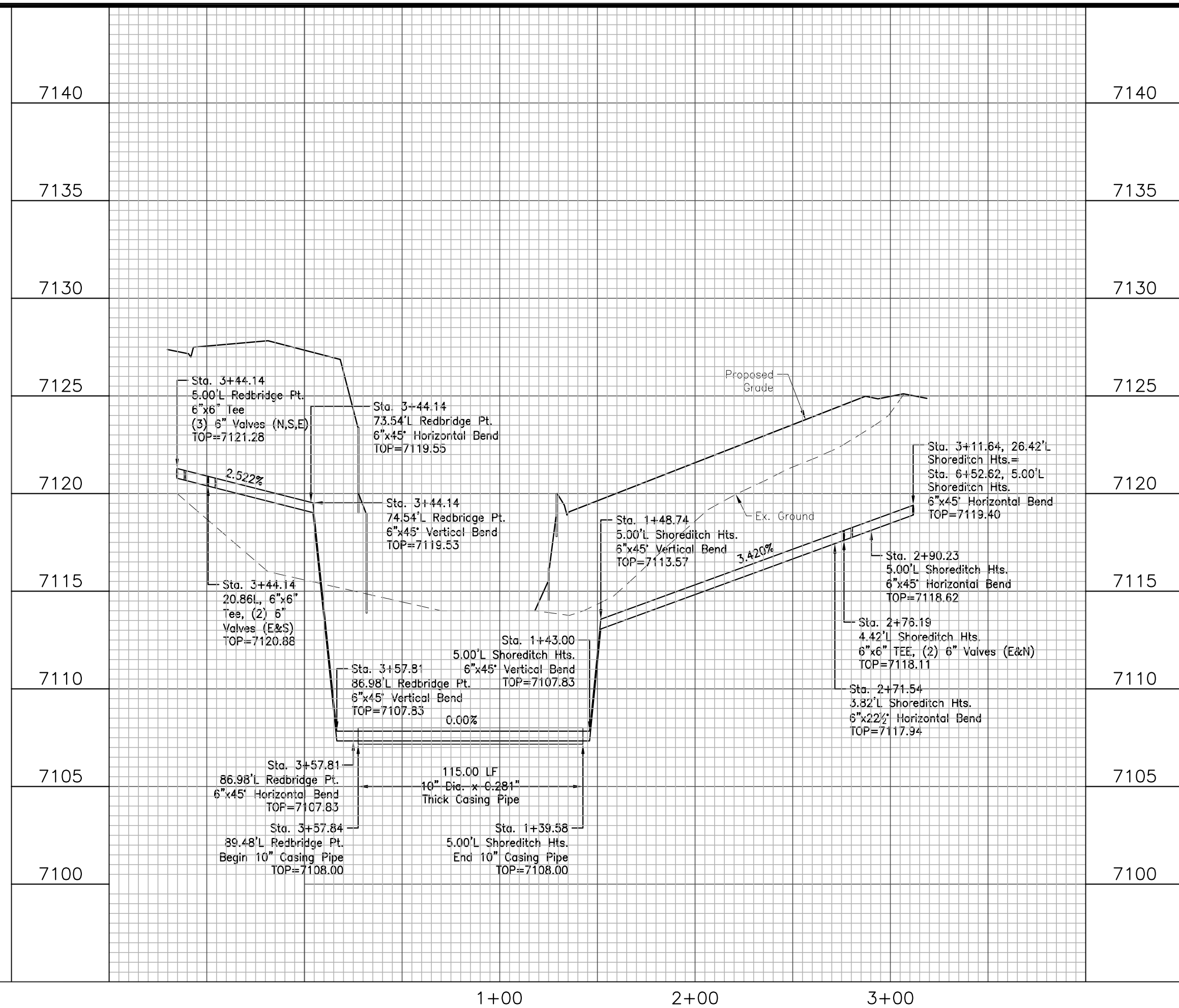
Shoreditch Heights (Private Road)



WOODMOOR WATER & SANITATION DISTRICT NO. 1
 APPROVED FOR CONSTRUCTION

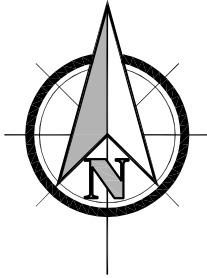
Date: _____ By: _____

These plans have been reviewed only for general conformance with District Rules and Regulations and System Specifications. Review and construction approval by the District does not relieve the Developer/Owner and/or Contractor from responsibility for compliance with any Rules, Regulations, or Specifications required by the District.



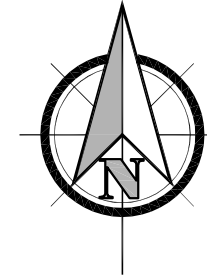
North Bay at Lake Woodmoor
 Redbridge Point -- 6" Water Plan and Profile
 Shoreditch Heights -- 6" Water Plan and Profile
 El Paso County, Colorado

Project No.: 15073
 Date: December 1, 2017
 Design: NRR
 Drawn: CAD
 Check: AWMc
 Revisions:

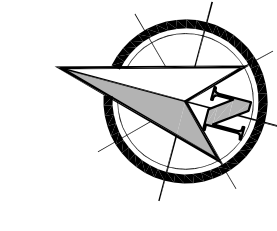


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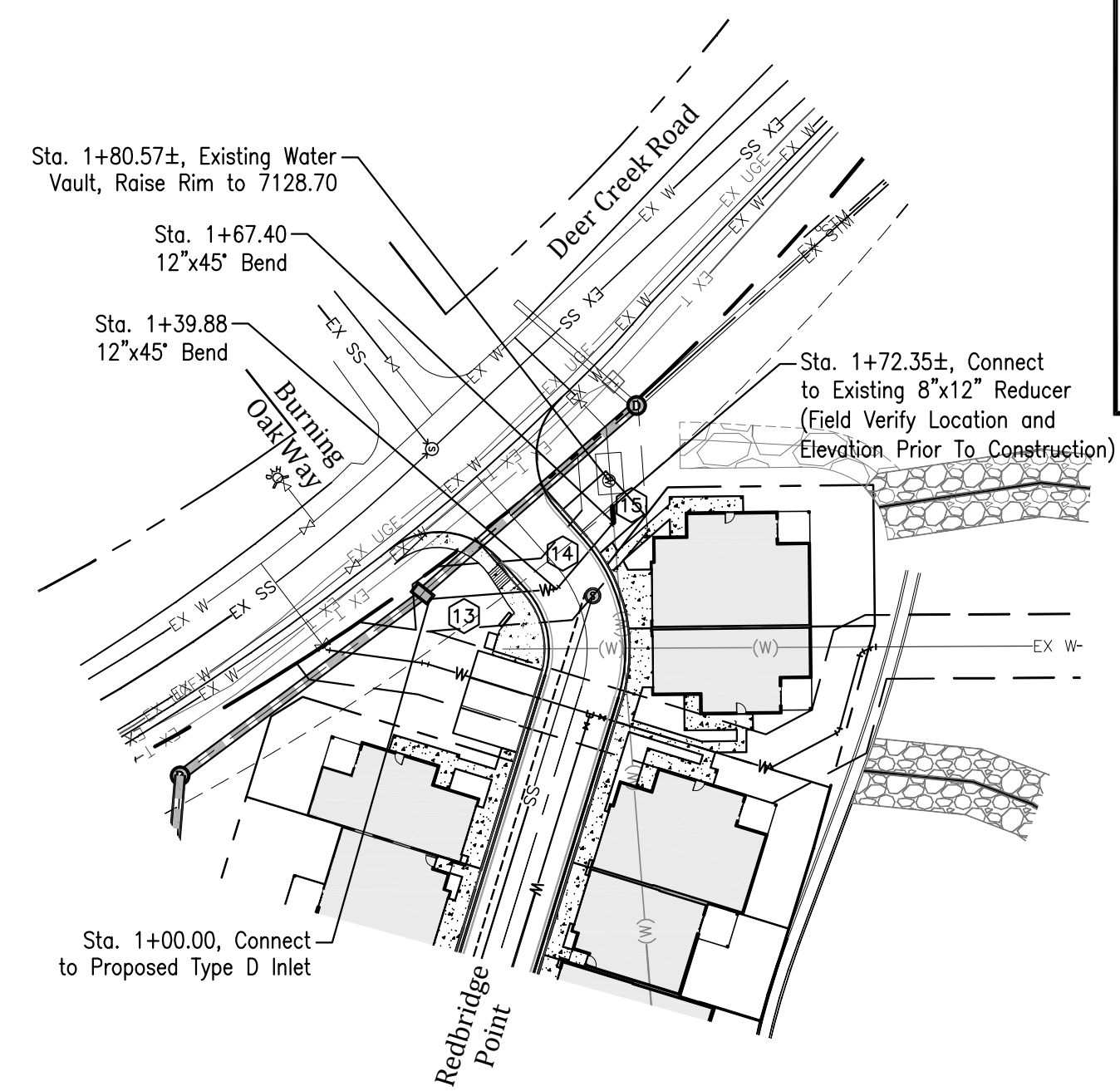
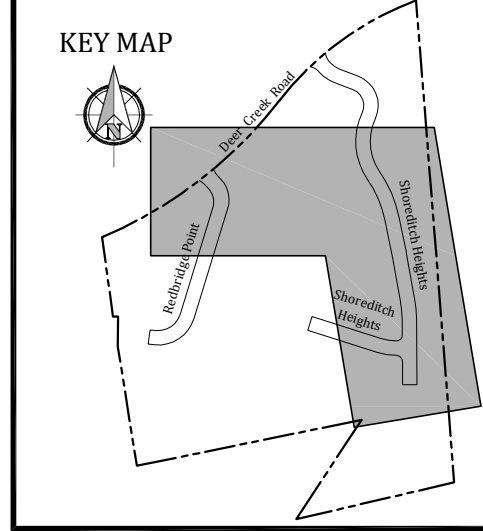
Bearing	Distance
13 N85°32'16"E	39.88'
14 N40°32'18"E	27.52'
15 N42°27'42"W	4.95'
16 S37°13'35"E	33.97'
17 S82°13'35"E	31.22'
18 S72°57'41"E	54.03'
19 S72°57'41"E	58.69'
20 N62°02'19"E	24.83'
21 N15°14'46"E	25.61'
22 N6°14'46"E	4.21'
23 N89°41'28"E	114.13'
24 N76°27'23"E	45.38'
25 S58°32'37"E	32.36'
26 S58°32'37"E	8.91'
27 S10°33'12"E	193.36'
28 S0°25'08"E	19.54'



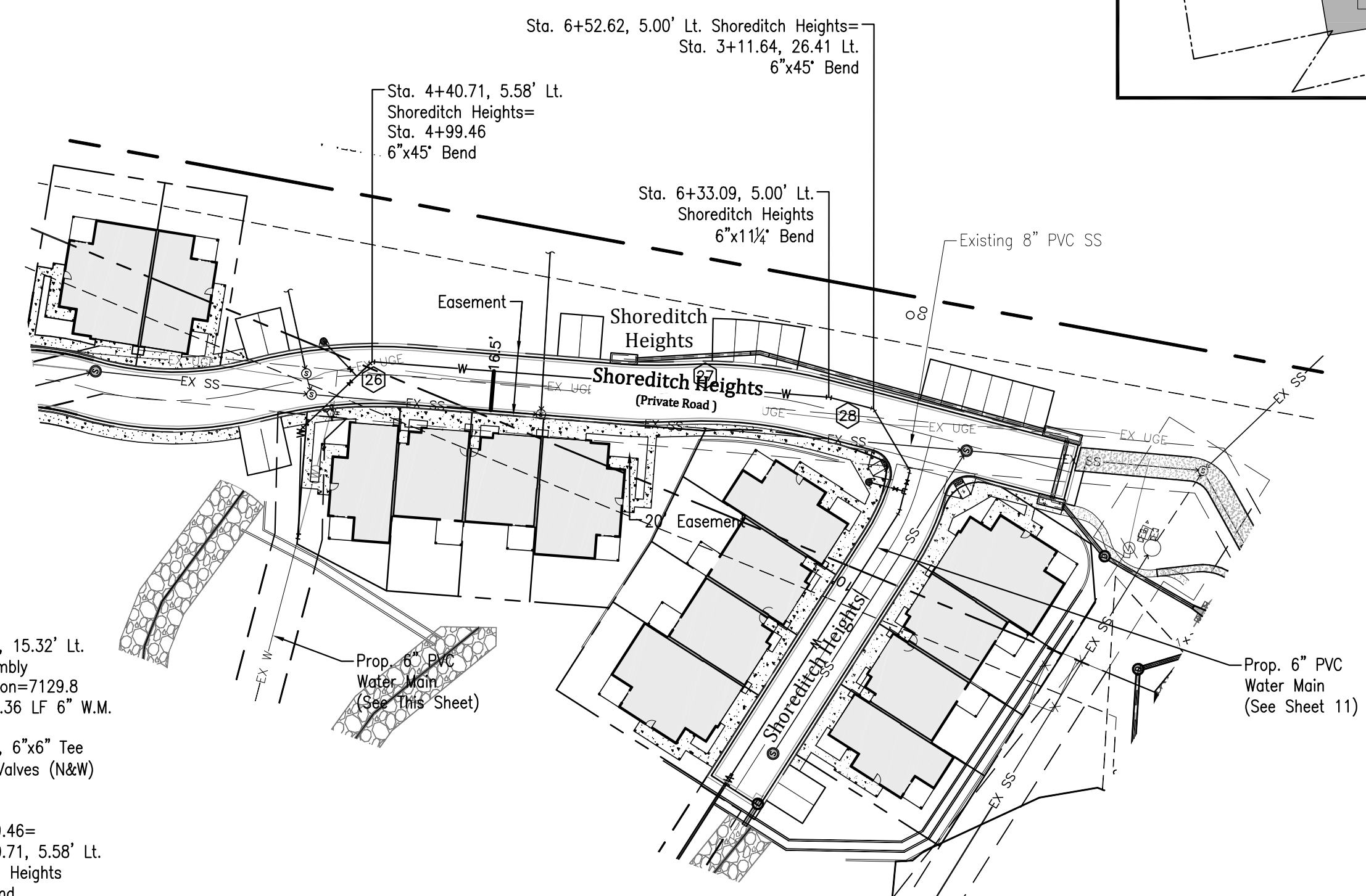
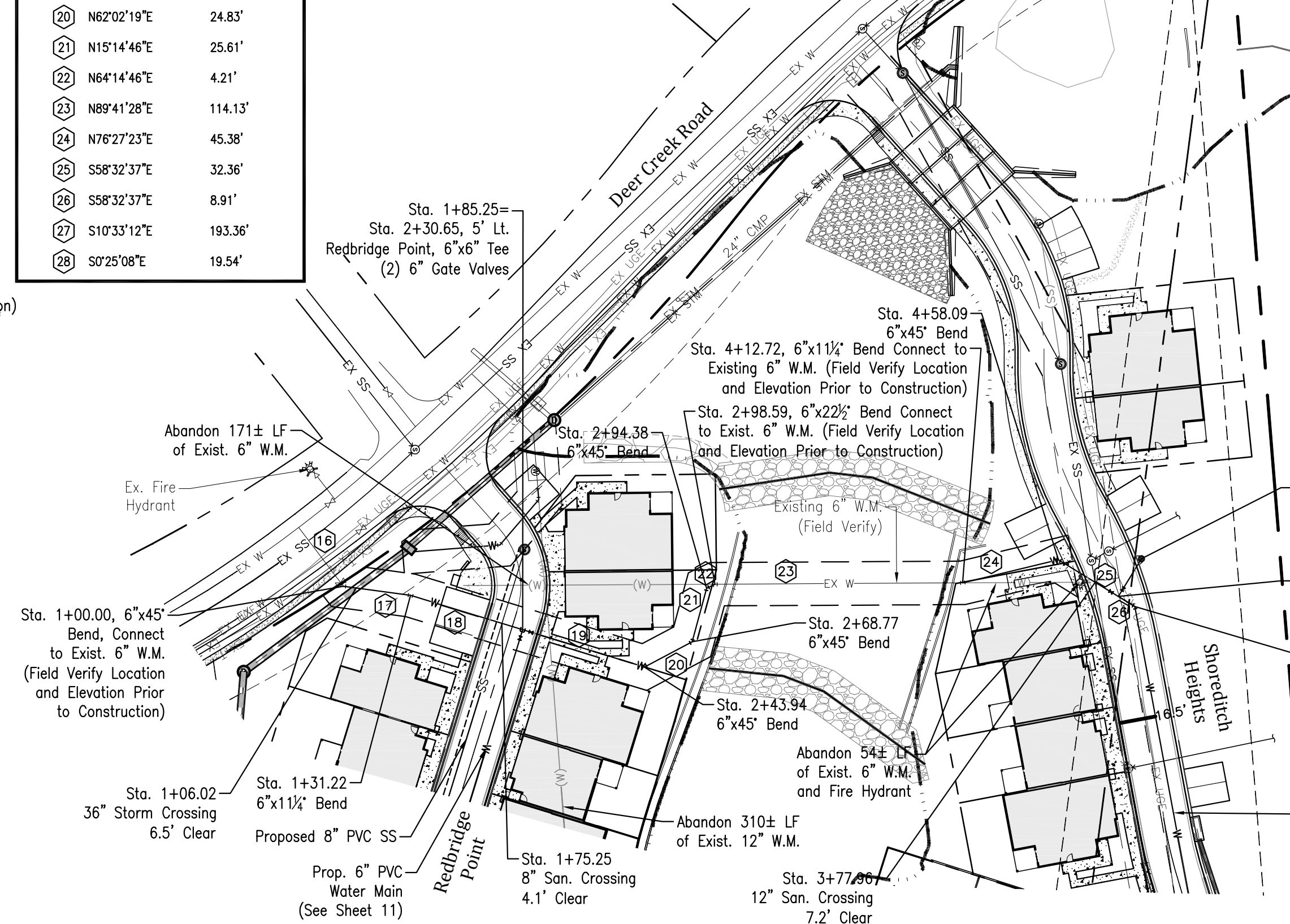
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Scale: 1"=50'
Vertical Scale: 1"=5'



Pumped Water Storage Pipeline

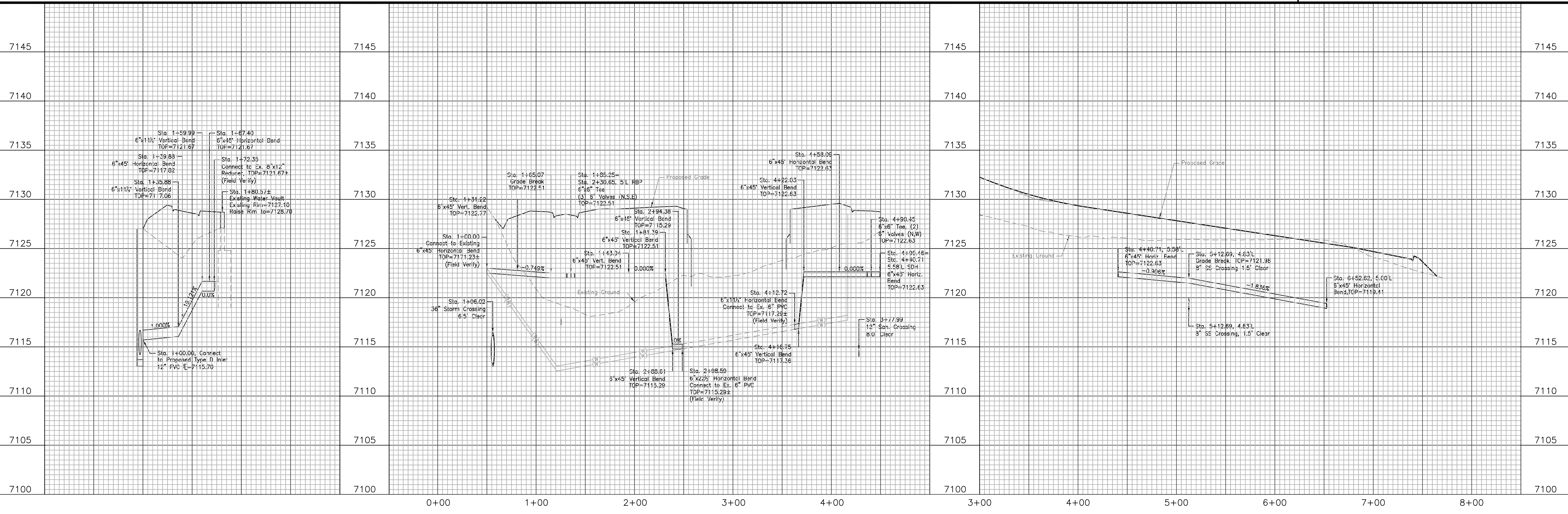


Shoreditch Heights

WOODMOOR WATER & SANITATION DISTRICT NO. 1
APPROVED FOR CONSTRUCTION

Date: _____ By: _____

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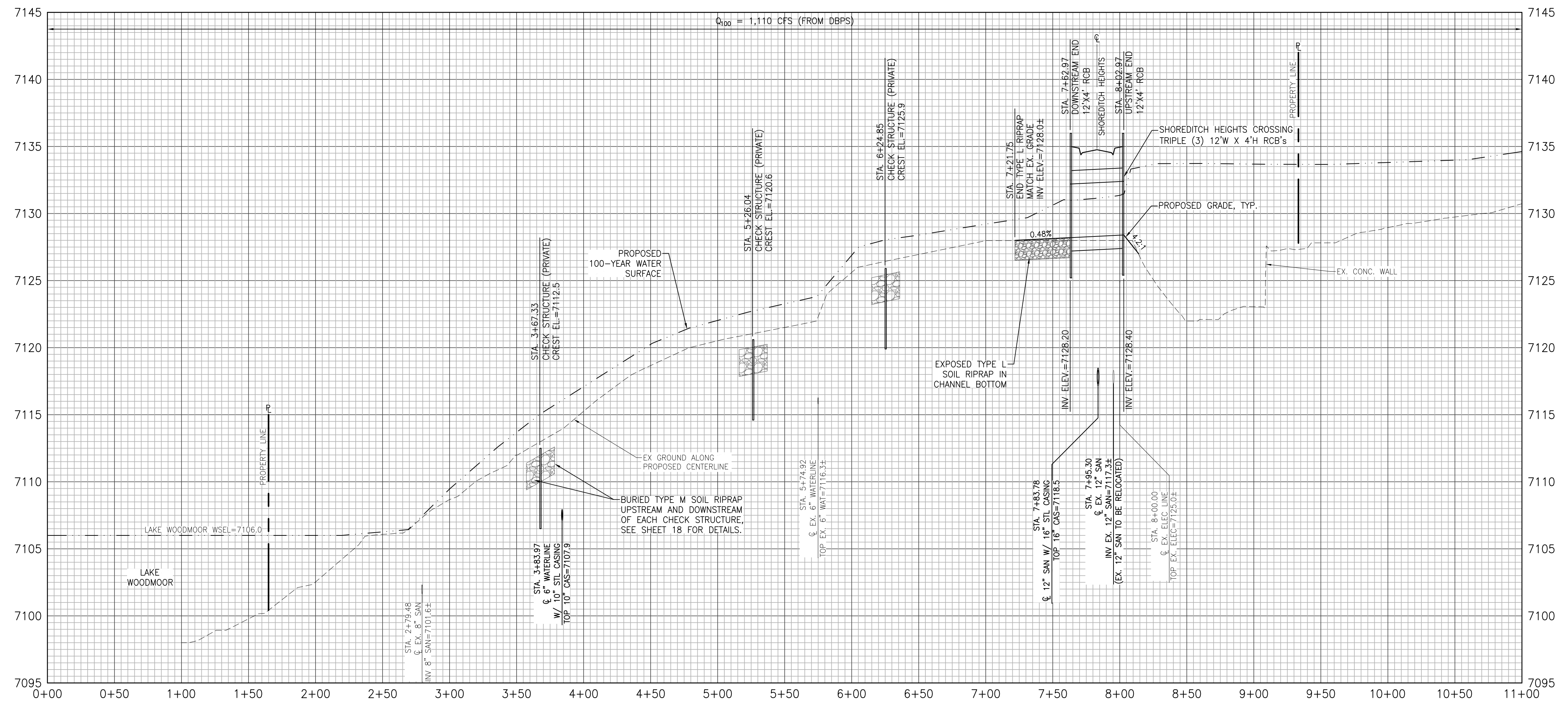
North Bay at Lake Woodmoor
12" Water Storage Pipeline Plan and Profile
Shoreditch Heights -- 6" Watermain Plan and Profile
 El Paso County, Colorado

Project No.:	15073
Date:	December 1, 2017
Design:	NRK
Drawn:	CAD
Check:	AWMc
Revisions:	

SHEET
12
 of 21 Sheets

LEGEND

- EXISTING FIRE HYDRANT
- EXISTING WATER VALVE
- EXISTING SANITARY SEWER MANHOLE
- EXISTING WATER LINE
- EX. WATER LINE TO BE REMOVED OR RELOCATED
- EXISTING SANITARY SEWER
- EX. SANITARY SEWER TO BE REMOVED OR RELOCATED
- EXISTING STORM SEWER
- EXISTING STORM SEWER TO BE REMOVED OR RELOCATED
- EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING UNDERGROUND TELEPHONE LINE
- PROPOSED WATER LINE OR SERVICE AND VALVE
- PROPOSED SANITARY SEWER AND MANHOLE
- PROPOSED STORM SEWER PIPE
- PROPOSED STORM SEWER MANHOLE
- PROPOSED STORM CURB INLET
- PROPOSED STORM GRATED INLET
- EXISTING CONTOURS
- PROPOSED CONTOURS
- PROPOSED CONDITION 100-YEAR FLOODPLAIN
- EXISTING CONDITION 100-YEAR FLOODPLAIN
- EXISTING 100-YEAR FEMA FLOODPLAIN (FIS)
- PROPOSED 100-YEAR FLOODWAY
- EXISTING 100-YEAR FEMA FLOODWAY (FIS)
- PROPOSED PROPERTY BOUNDARY
- PROPOSED LOT LINE
- EXISTING R.O.W./PROPERTY BOUNDARY
- EXISTING EASEMENT
- PROPOSED EASEMENT
- EXISTING WETLANDS AREA
- EXPOSED TYPE L SOIL RIPRAP
- EXPOSED TYPE M SOIL RIPRAP
- EXPOSED TYPE H SOIL RIPRAP
- BURIED TYPE M SOIL RIPRAP
- BURIED TYPE H SOIL RIPRAP
- GRAVEL

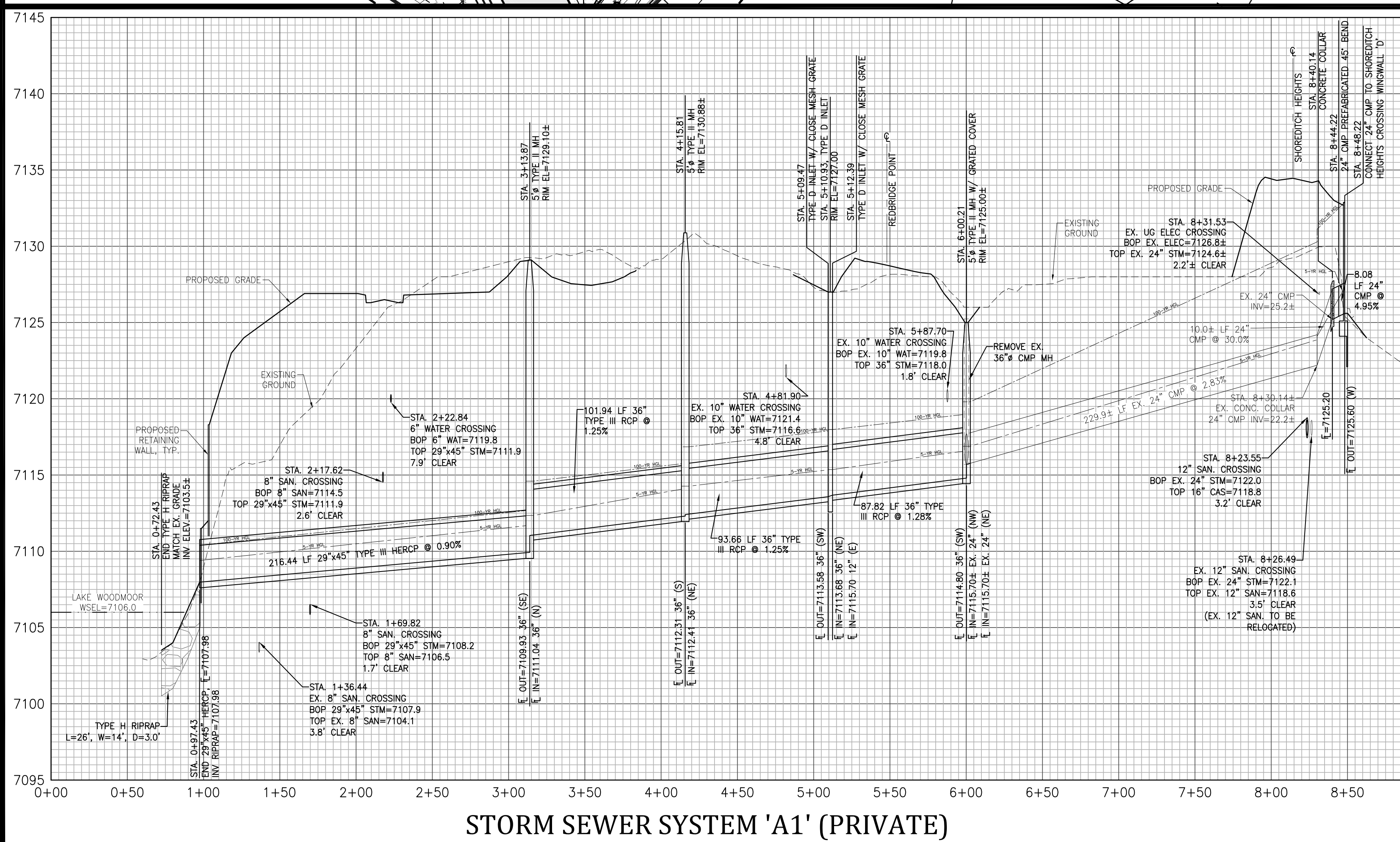
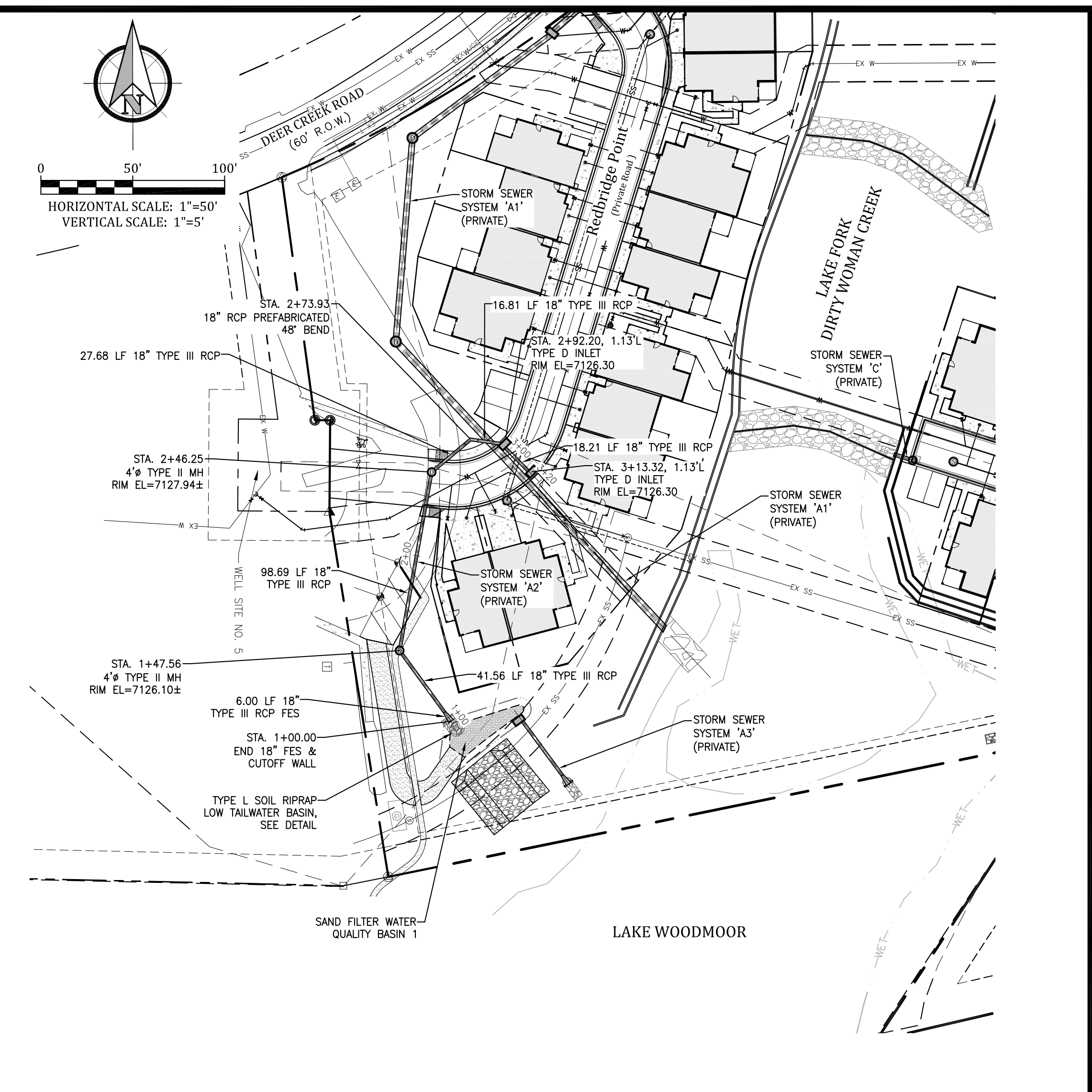
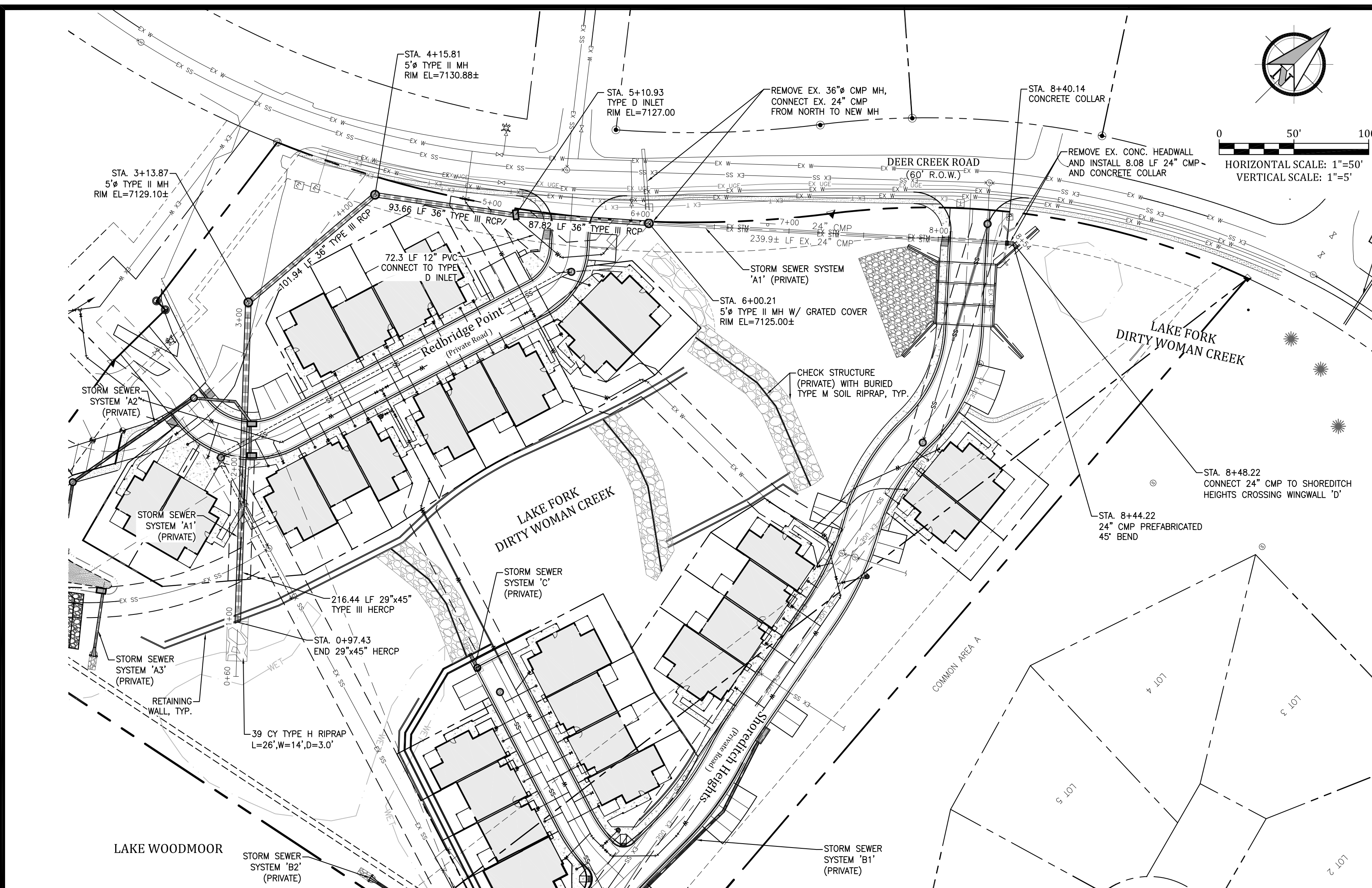


Kiowa
Engineering Corporation
1604 South 21st Street
Colorado Springs, Colorado 80904
(719) 630-7342

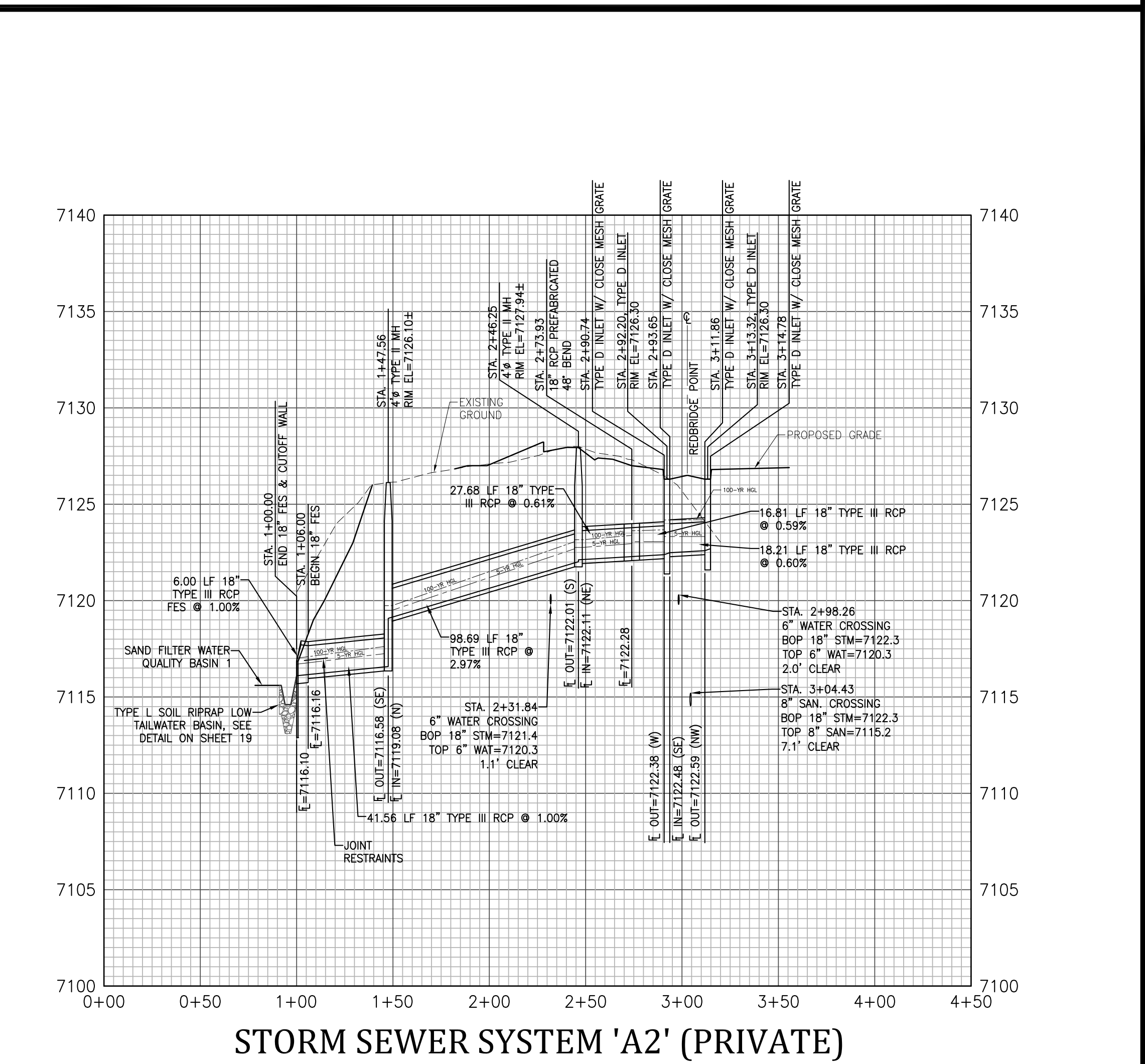
North Bay at Lake Woodmoor
Lake Fork Dirty Woman Creek
Plan and Profile Sta. 1+00 to Sta. 9+50
El Paso County, Colorado

Project No.:	15073
Date:	December 1, 2017
Design:	CJC
Drawn:	CJC
Check:	AWMc
Revisions:	

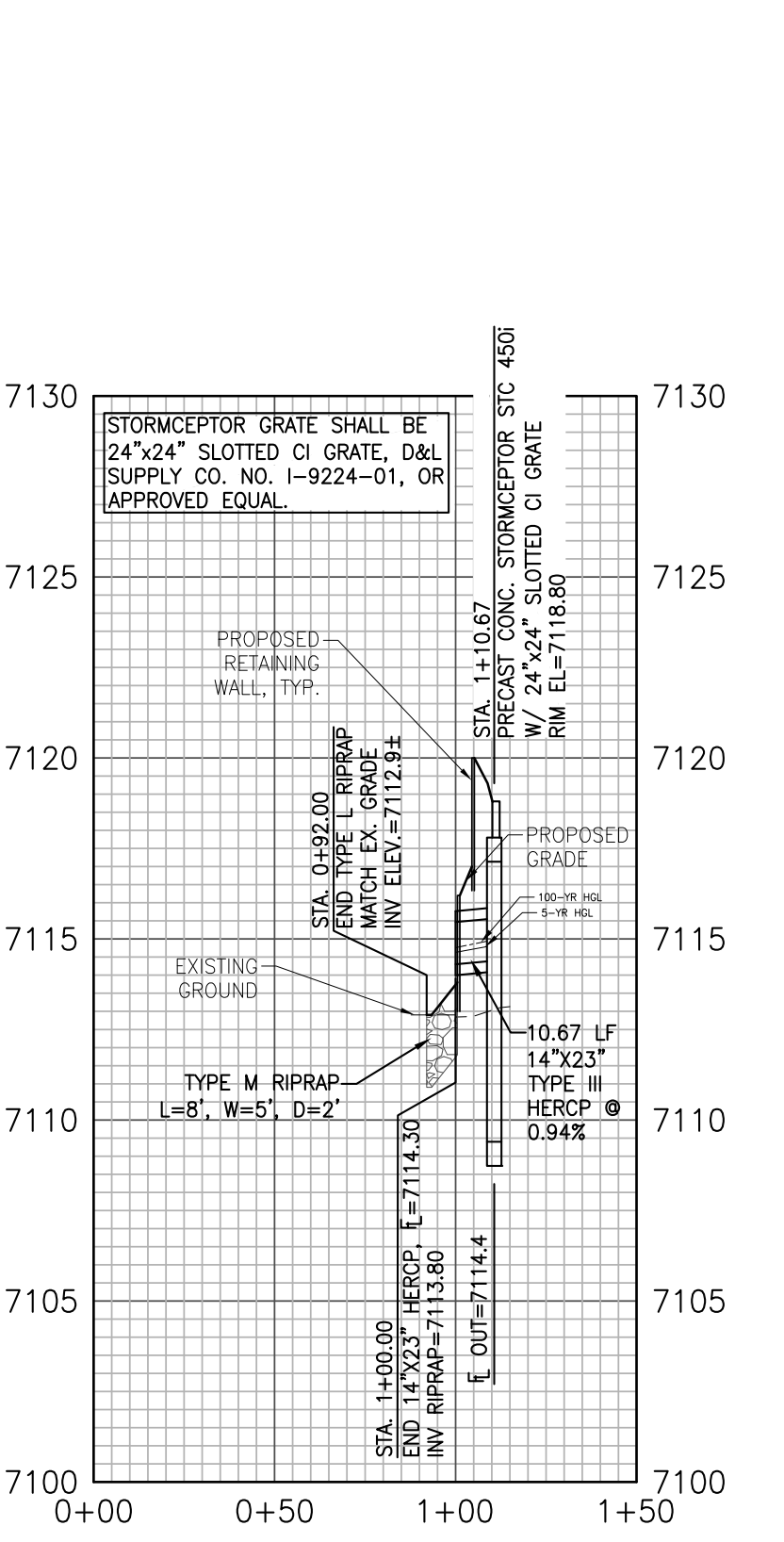
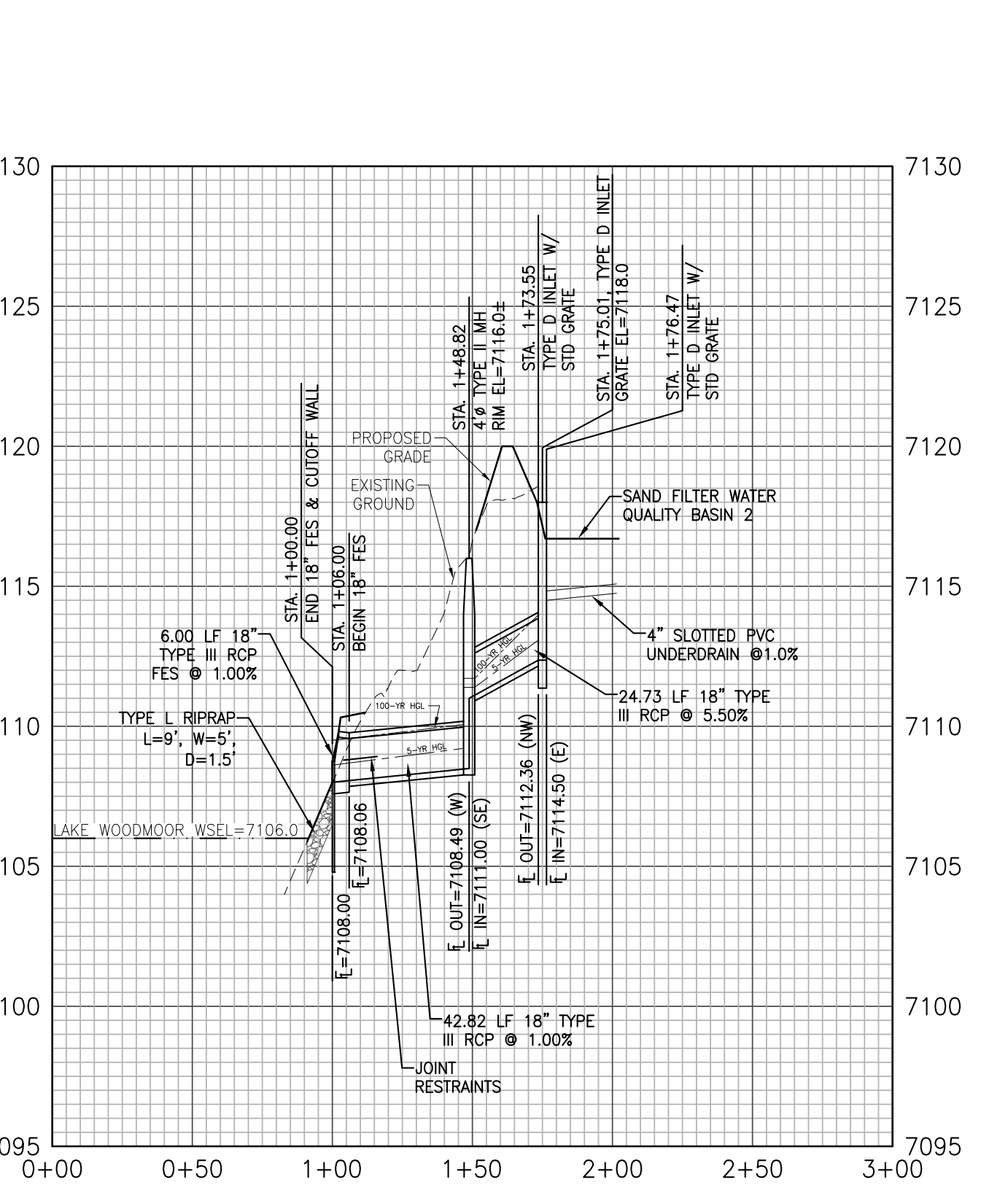
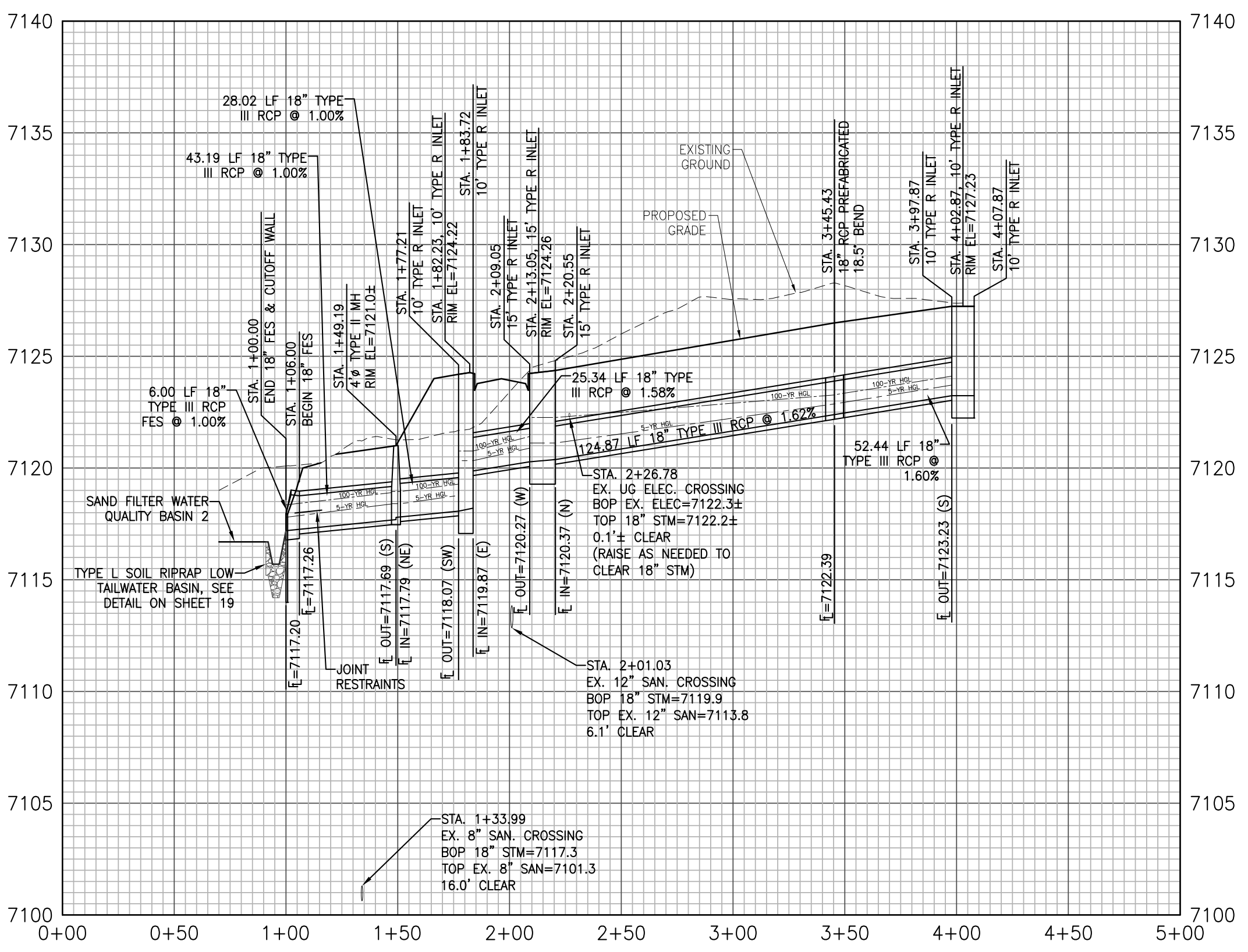
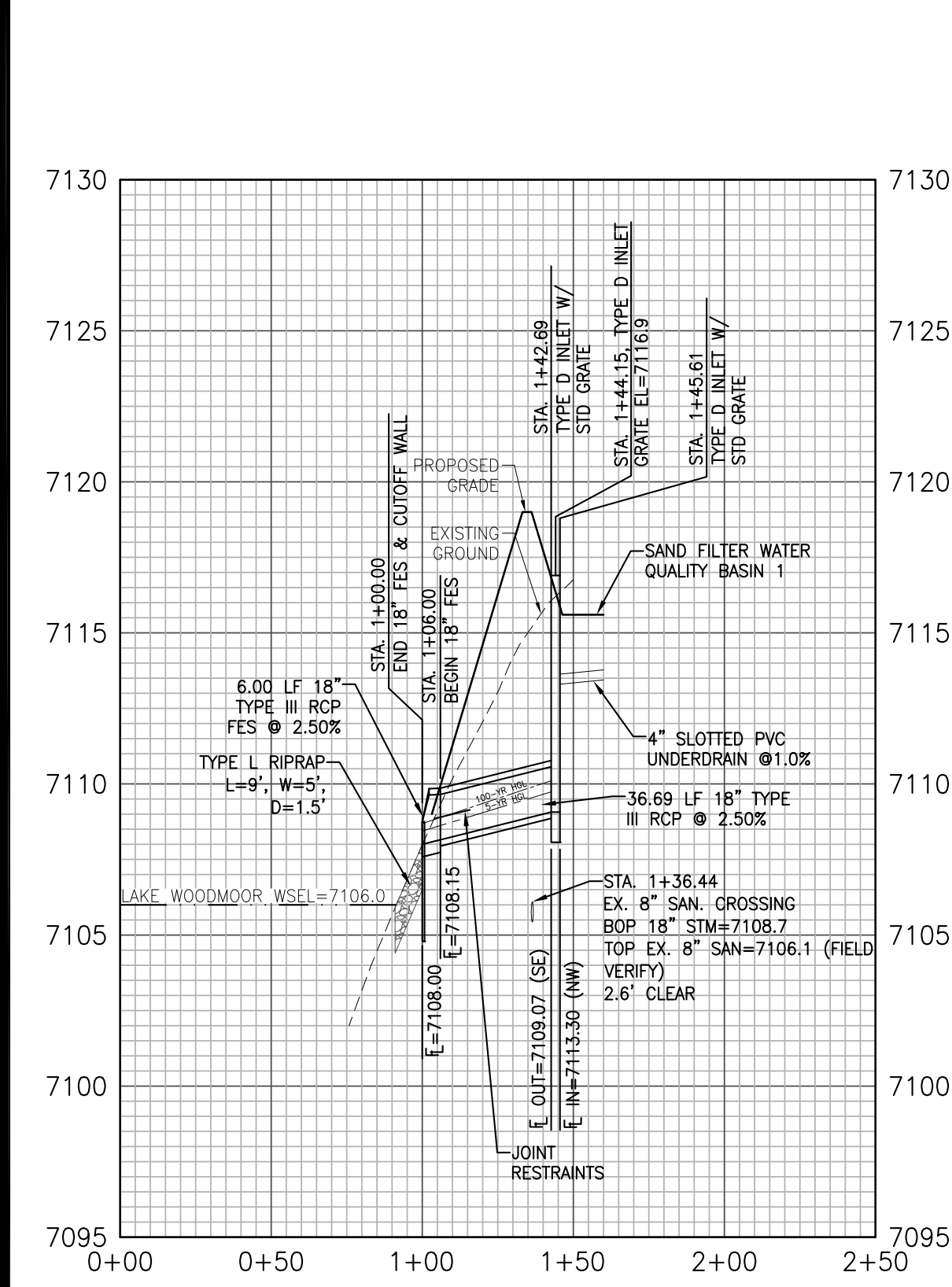
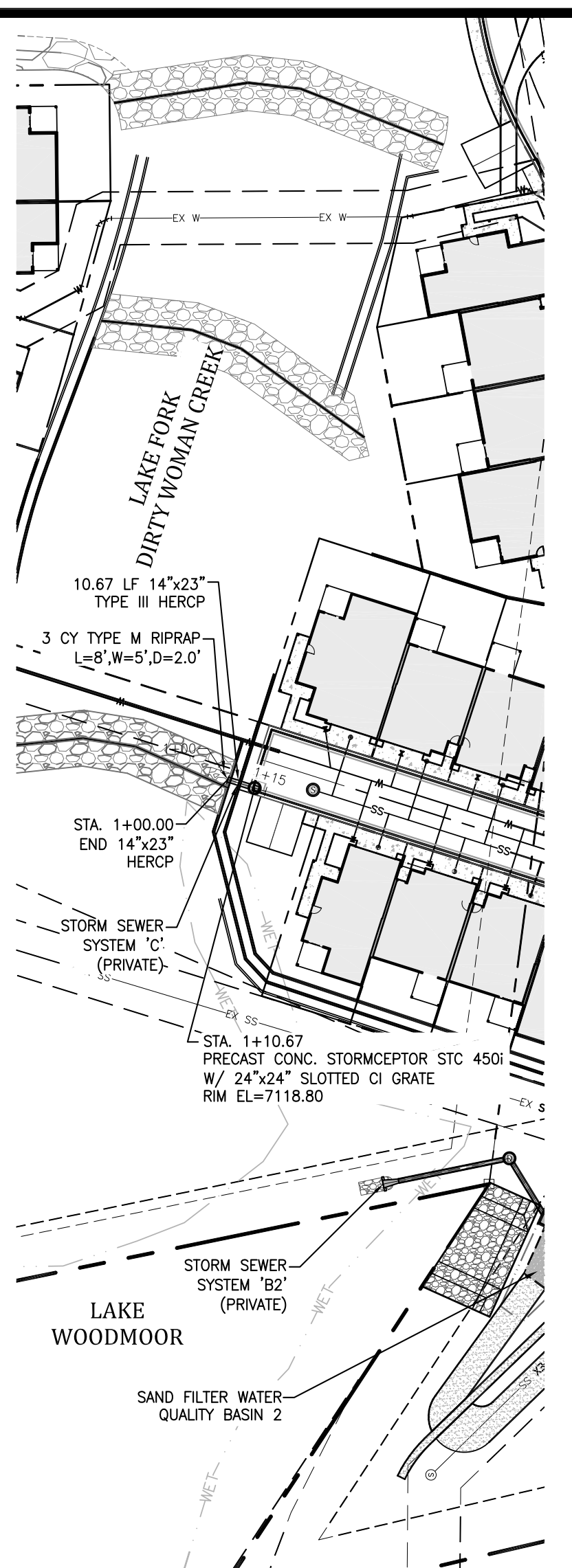
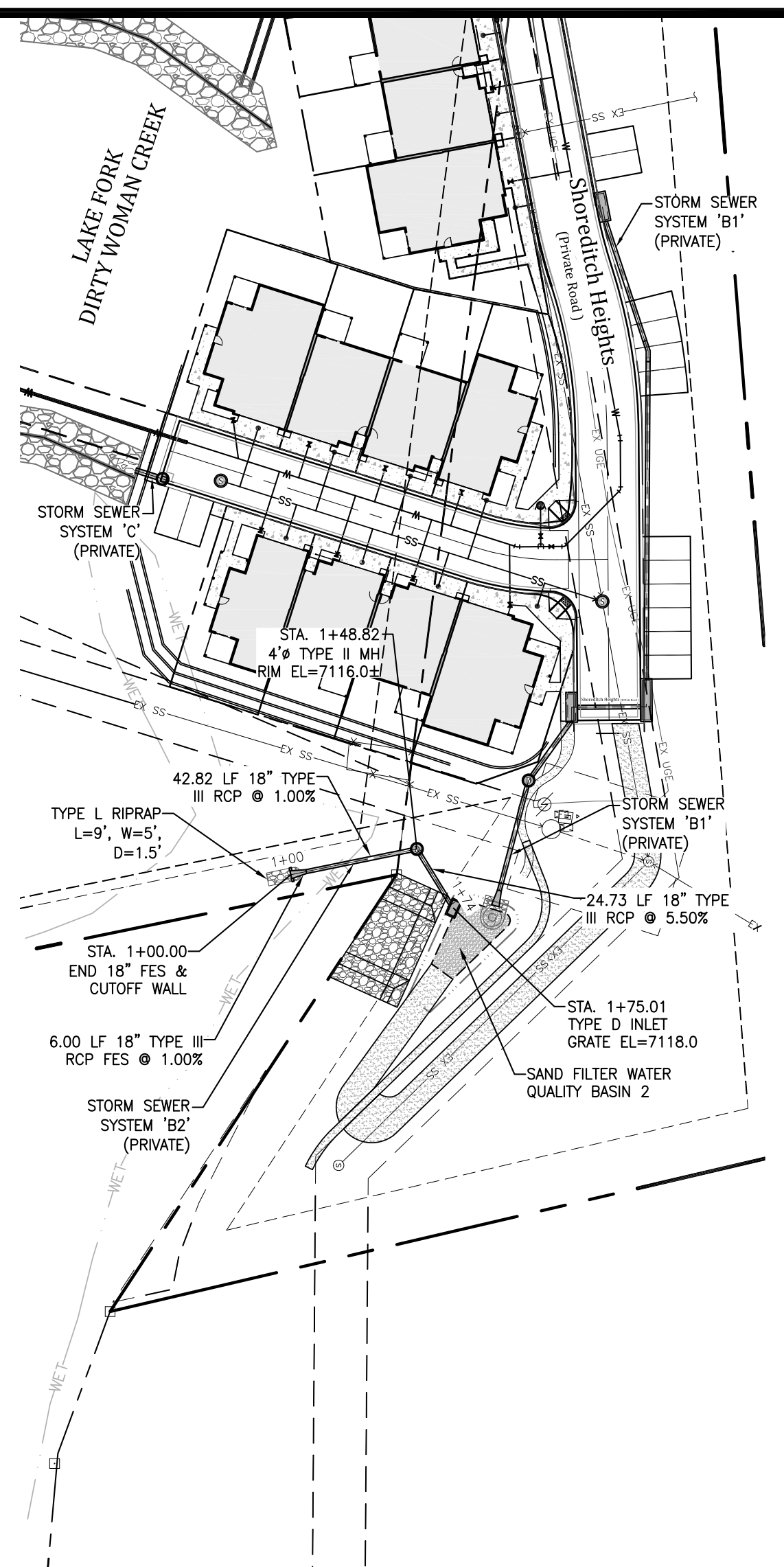
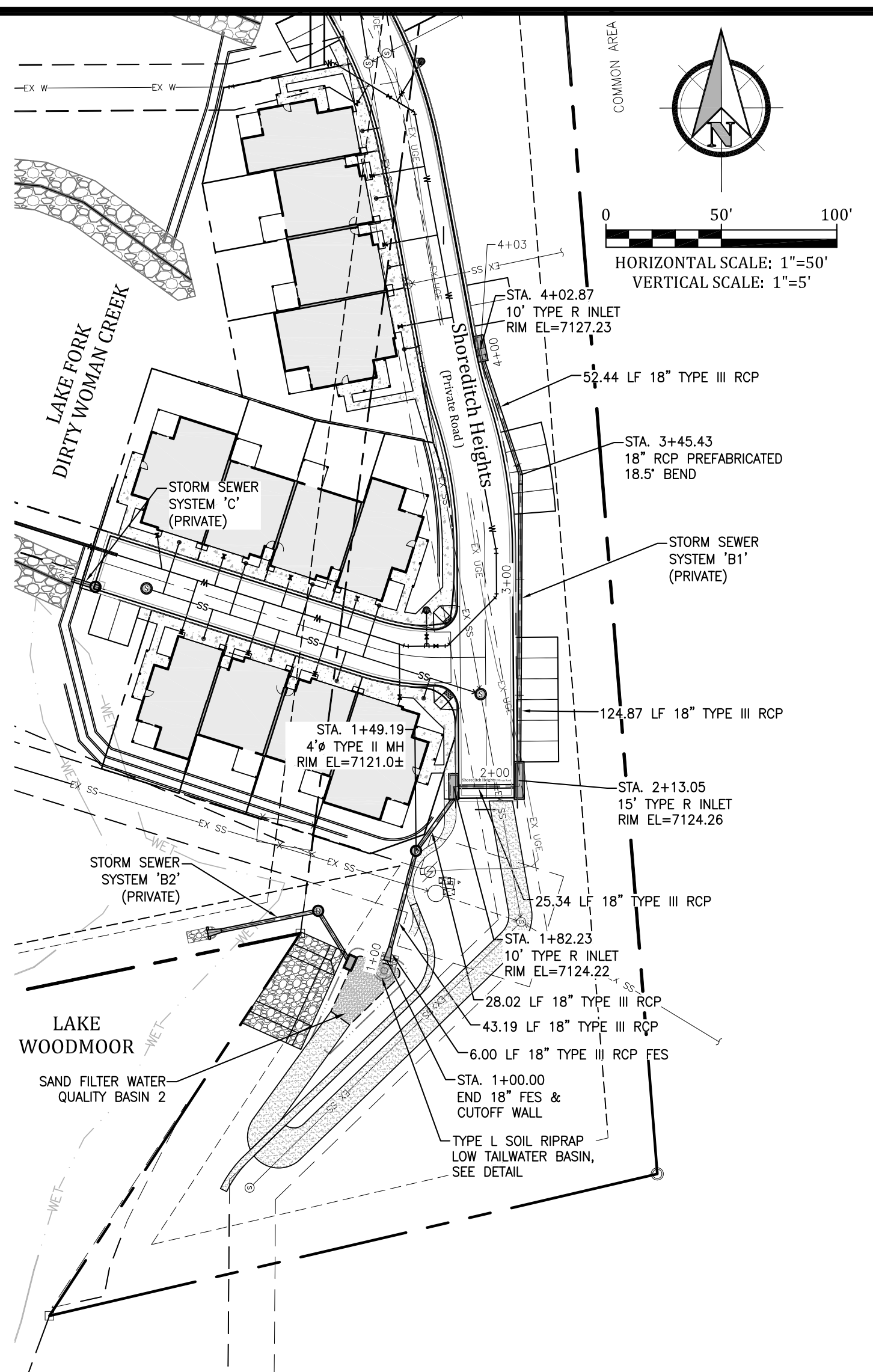
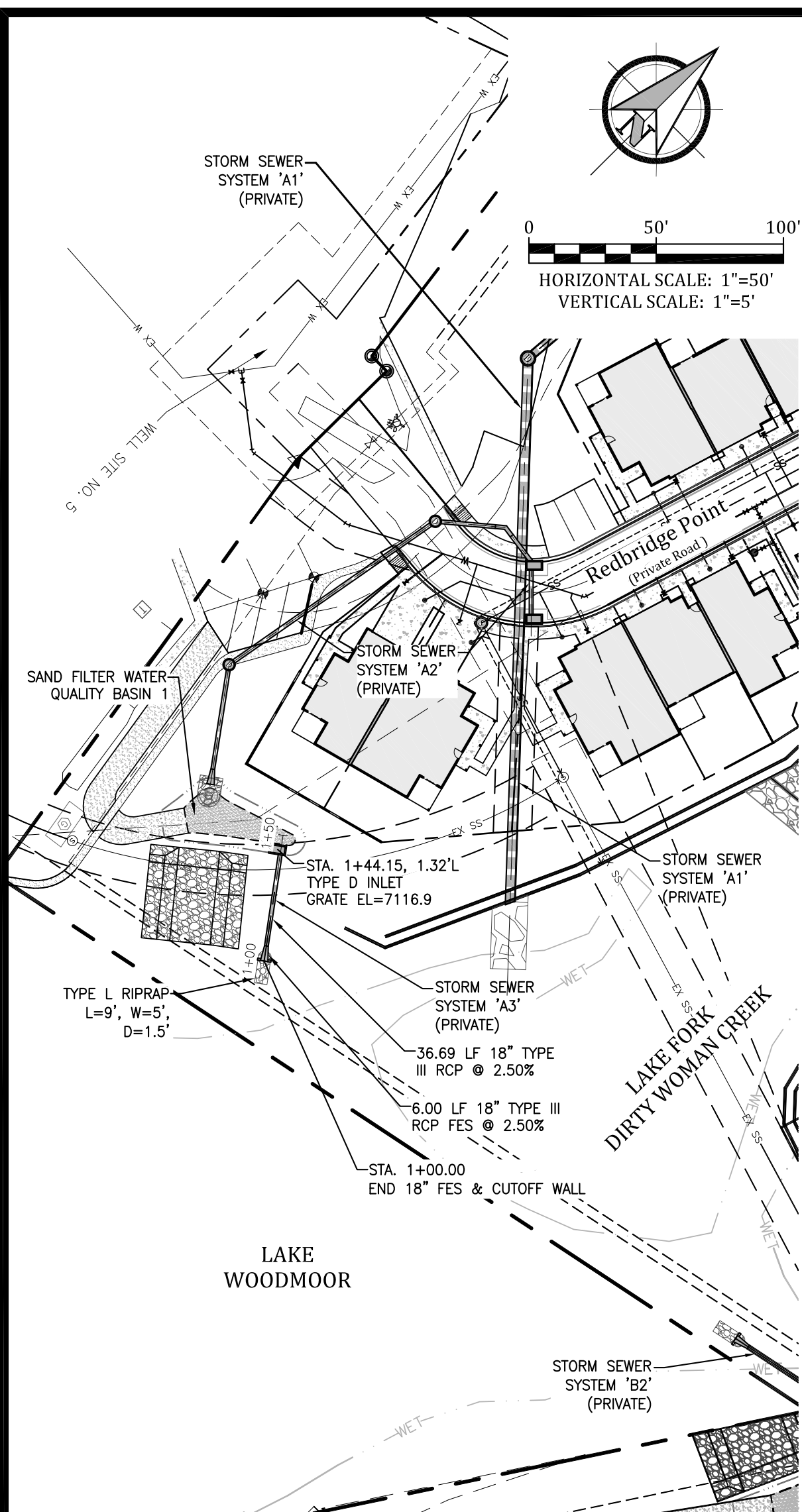
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STORM SEWER SYSTEM 'A1' (PRIVATE)



STORM SEWER SYSTEM 'A2' (PRIVATE)



STORM SEWER SYSTEM 'A3' (PRIVATE)

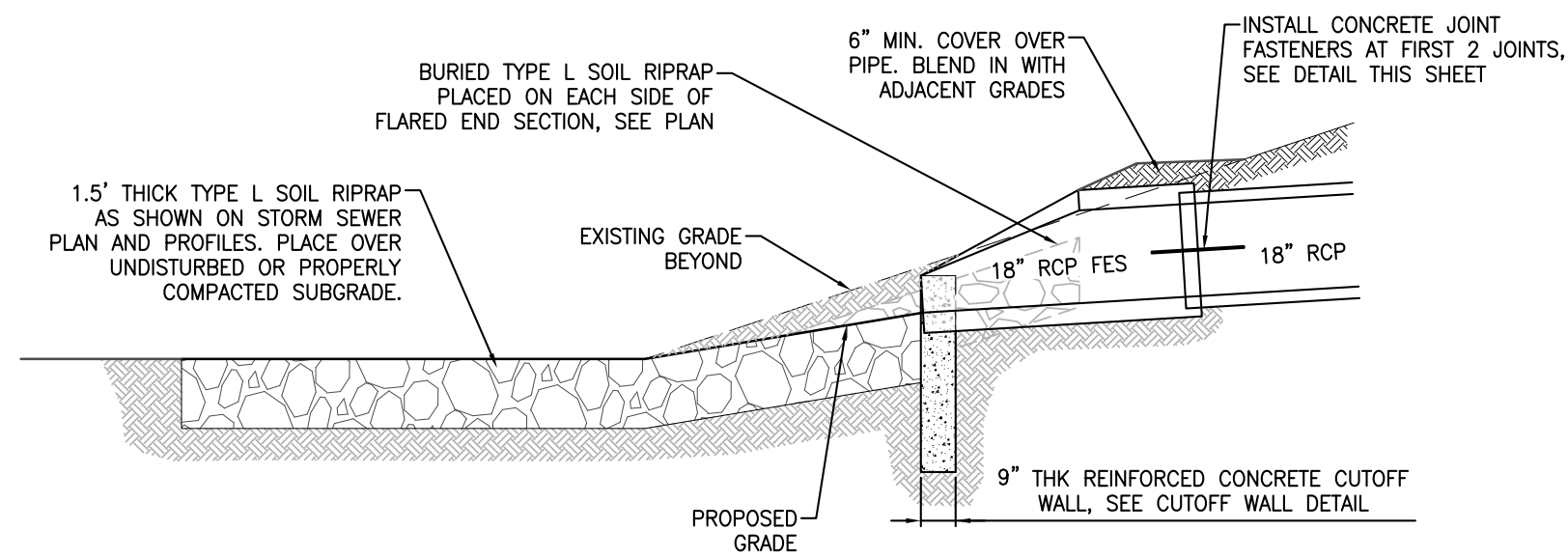
STORM SEWER SYSTEM 'B1' (PRIVATE)

STORM SEWER SYSTEM 'B2' (PRIVATE)

STORM SEWER SYSTEM 'C' (PRIVATE)

Project No.:	15073
Date:	December 1, 2017
Design:	CJC
Drawn:	CJC
Check:	AWMc
Revisions:	

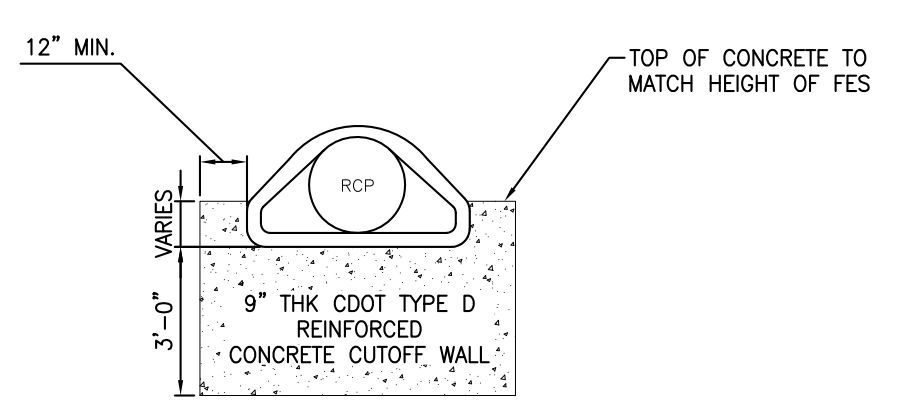
NOTE:
1. PIPE OUTLET TO BE RECESSED INTO THE BANK TO MINIMIZE THE PIPE PROTRUDING INTO THE CREEK SECTION.



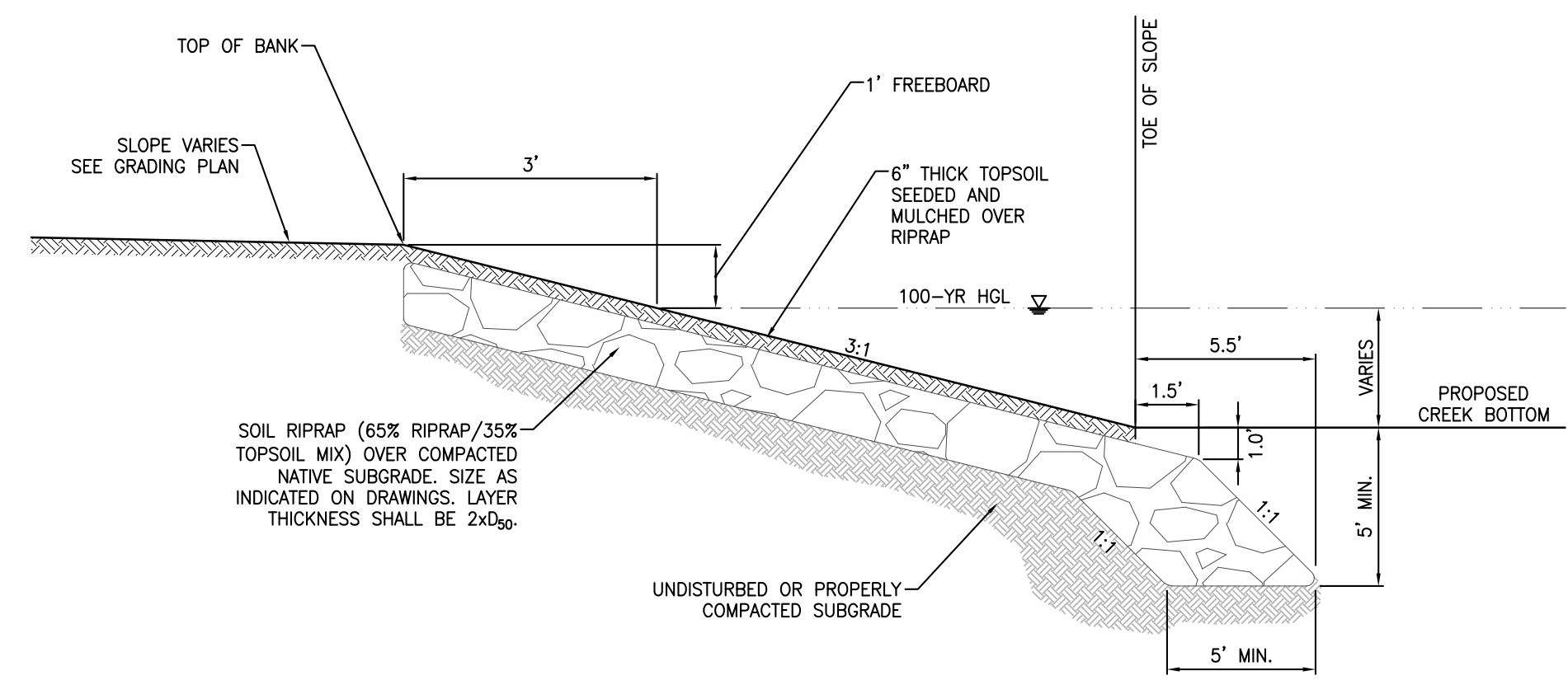
ELEVATION VIEW

18" RCP FES PIPE OUTLET w/CONCRETE CUTOFF WALL AND JOINT RESTRAINTS
SCALE: NTS

NOTE:
1. STEEL REINFORCEMENT FOR CUTOFF WALL SHALL BE #4 BARS AT 12" O.C. EACH WAY. STEEL REINFORCEMENT CLEARANCES SHALL BE 2" TO FORMED SURFACES AND FES, AND 3" TO SOIL.



CUTOFF WALL DETAIL



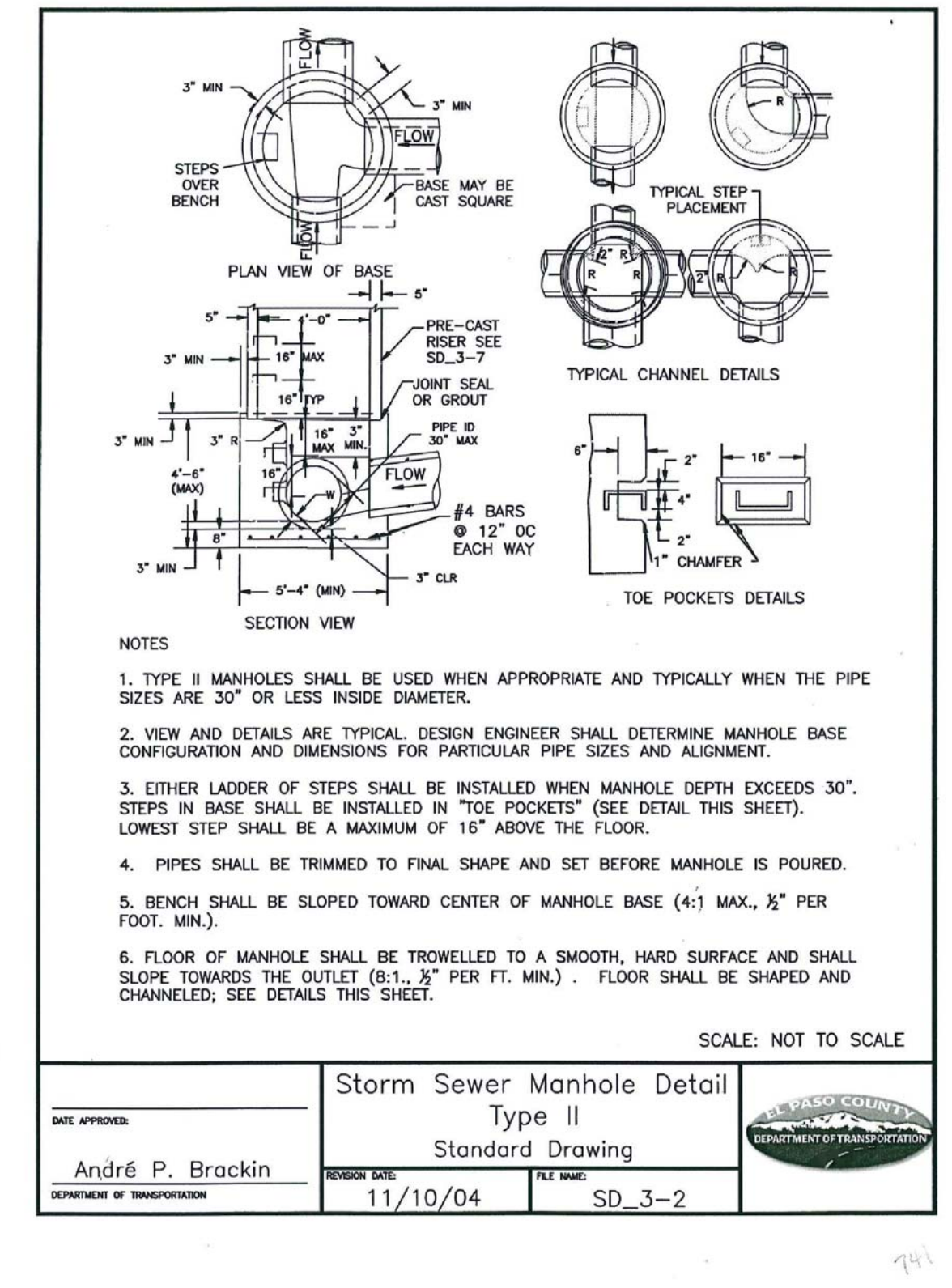
TYPICAL RIPRAP BANK LINING WITH TOE PROTECTION DETAIL
SCALE: NTS

CLASSIFICATION AND GRADATION OF RIPRAP			
RIPRAP DESIGNATION	% SMALLER THAN GIVEN SIZE BY WEIGHT	INTERMEDIATE ROCK DIMENSION (INCHES)	d50* (INCHES)
TYPE VL	70-100	12	6**
	50-70	9	
	35-50	6	
TYPE L	70-100	15	9**
	50-70	12	
	35-50	9	
TYPE M	70-100	21	12**
	50-70	18	
	35-50	12	
TYPE H	100	30	18
	50-70	24	
	35-50	18	
TYPE VH	100	42	24
	50-70	33	
	35-50	24	

* d50=MEAN PARTICLE SIZE (INTERMEDIATE DIMENSION) BY WEIGHT.
** MIX VL, L AND M RIPRAP WITH 35% TOPSOIL (BY VOLUME) AND BURY WITH 4-6 INCHES OF TOPSOIL, ALL VIBRATION COMPACTED & REVEGETATE. (TABLE MD-7: CLASSIFICATION AND GRADATION OF ORDINARY RIPRAP. UDFCD, DRAINAGE CRITERIA MANUAL, VOL. 1)

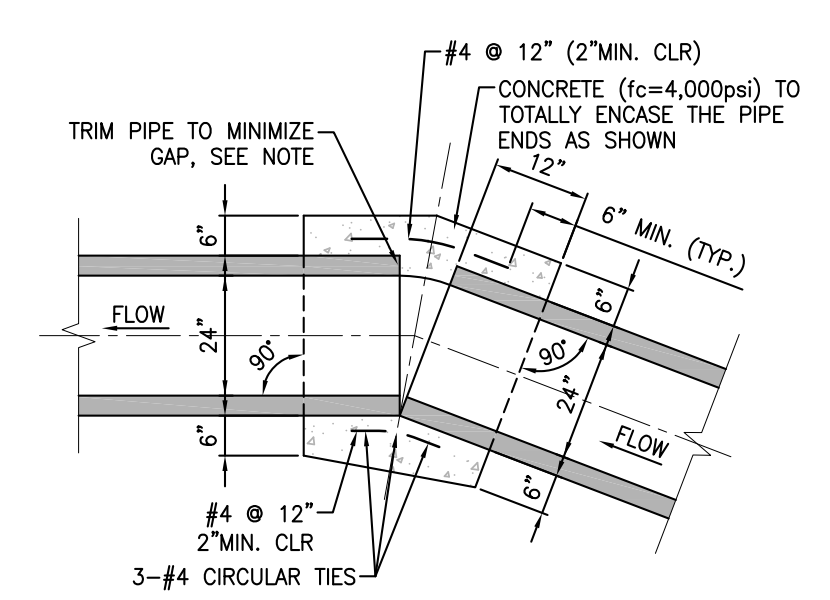
SOIL RIPRAP
1. THE SOIL MATERIAL SHALL BE NATIVE OR TOPSOIL AND MIXED WITH SIXTY FIVE PERCENT (65%) RIPRAP AND THIRTY FIVE PERCENT (35%) SOIL BY VOLUME. SOIL RIPRAP SHALL CONSIST OF A UNIFORM MIXTURE OF SOIL AND RIPRAP WITHOUT VOIDS.
2. CONTRACTOR SHALL COOPERATE WITH ENGINEER IN OBTAINING AND PROVIDING SAMPLES OF ALL SPECIFIED MATERIALS.
3. CONTRACTOR SHALL SUBMIT CERTIFIED LABORATORY TEST CERTIFICATES FOR ALL ITEMS REQUIRED FOR SOIL RIPRAP.
4. RIPRAP USED SHALL BE THE TYPE DESIGNATED ON THE DRAWINGS AND SHALL CONFORM TO TABLE SHOWN.
5. THE RIPRAP DESIGNATION AND TOTAL THICKNESS OF RIPRAP SHALL BE AS SHOWN ON THE DRAWINGS. THE MAXIMUM STONE SIZE SHALL NOT BE LARGER THAN THE THICKNESS OF THE RIPRAP.
6. NEITHER WIDTH NOR THICKNESS OF A SINGLE STONE OF RIPRAP SHALL BE LESS THAN ONE-THIRD (1/3) OF ITS LENGTH.
7. THE SPECIFIC GRAVITY OF THE RIPRAP SHALL BE TWO AND ONE-HALF (2.5) OR GREATER.
8. MINIMUM DENSITY FOR ACCEPTABLE RIPRAP SHALL BE ONE HUNDRED AND SIXTY FIVE (165) POUNDS PER CUBIC FOOT.
9. RIPRAP SPECIFIC GRAVITY SHALL BE ACCORDING TO THE BULK-SATURATED, SURFACE-DRY BASIS, IN ACCORDANCE WITH AASHTO T85.
10. THE RIPRAP SHALL HAVE A PERCENTAGE LOSS OF NOT MORE THAN FORTY PERCENT (40%) AFTER FIVE HUNDRED (500) REVOLUTIONS WHEN TESTED IN ACCORDANCE WITH AASHTO T96.
11. THE RIPRAP SHALL HAVE A PERCENTAGE LOSS OF NOT MORE THAN TEN (10%) AFTER FIVE (5) CYCLES WHEN TESTED IN ACCORDANCE WITH AASHTO T104 FOR LEDGE ROCK USING SODIUM SULFATE.
12. THE RIPRAP SHALL HAVE A PERCENTAGE LOSS OF NOT MORE THAN TEN PERCENT (10%) AFTER TWELVE (12) CYCLES OF FREEZING AND THAWING WHEN TESTED IN ACCORDANCE WITH AASHTO T103 FOR LEDGE ROCK, PROCEDURE A. ROCK SHALL BE FREE FROM CALCITE INTRUSIONS.
13. RUBBLE FOR USE AS SOIL/RIPRAP SHALL BE GRADED TO MEET THE EQUIVALENT ROCK RIPRAP GRADATION. RUBBLE PROPOSED FOR USE IN PLACE OF ROCK RIPRAP SHALL BE STOCKPILED FOR OBSERVATION BY THE ENGINEER PRIOR TO THE COMMENCEMENT OF THE WORK. ROUNDED RIPRAP (RIVER ROCK) IS NOT ACCEPTABLE, UNLESS SPECIFICALLY DESIGNATED ON THE DRAWINGS.
14. GRADATION: EACH LOAD OF RIPRAP SHALL BE REASONABLY WELL GRADED FROM THE SMALLEST TO THE LARGEST SIZE SPECIFIED.
14.1. STONES SMALLER THAN THE TWO TO TEN PERCENT (2%-10%) SIZE WILL NOT BE PERMITTED IN AN AMOUNT EXCEEDING TEN PERCENT (10%) BY WEIGHT OF EACH LOAD.
14.2. CONTROL OF GRADATION SHALL BE BY VISUAL INSPECTION. HOWEVER IN THE EVENT THE ENGINEER DETERMINES THE RIPRAP TO BE UNACCEPTABLE, THE ENGINEER SHALL PICK TWO (2) RANDOM TRUCKLOADS TO BE DUMPED AND CHECKED FOR GRADATION. MECHANICAL EQUIPMENT AND LABOR NEEDED TO ASSIST IN CHECKING GRADATION SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST.

Remove note 13.
Rubble is not permitted.



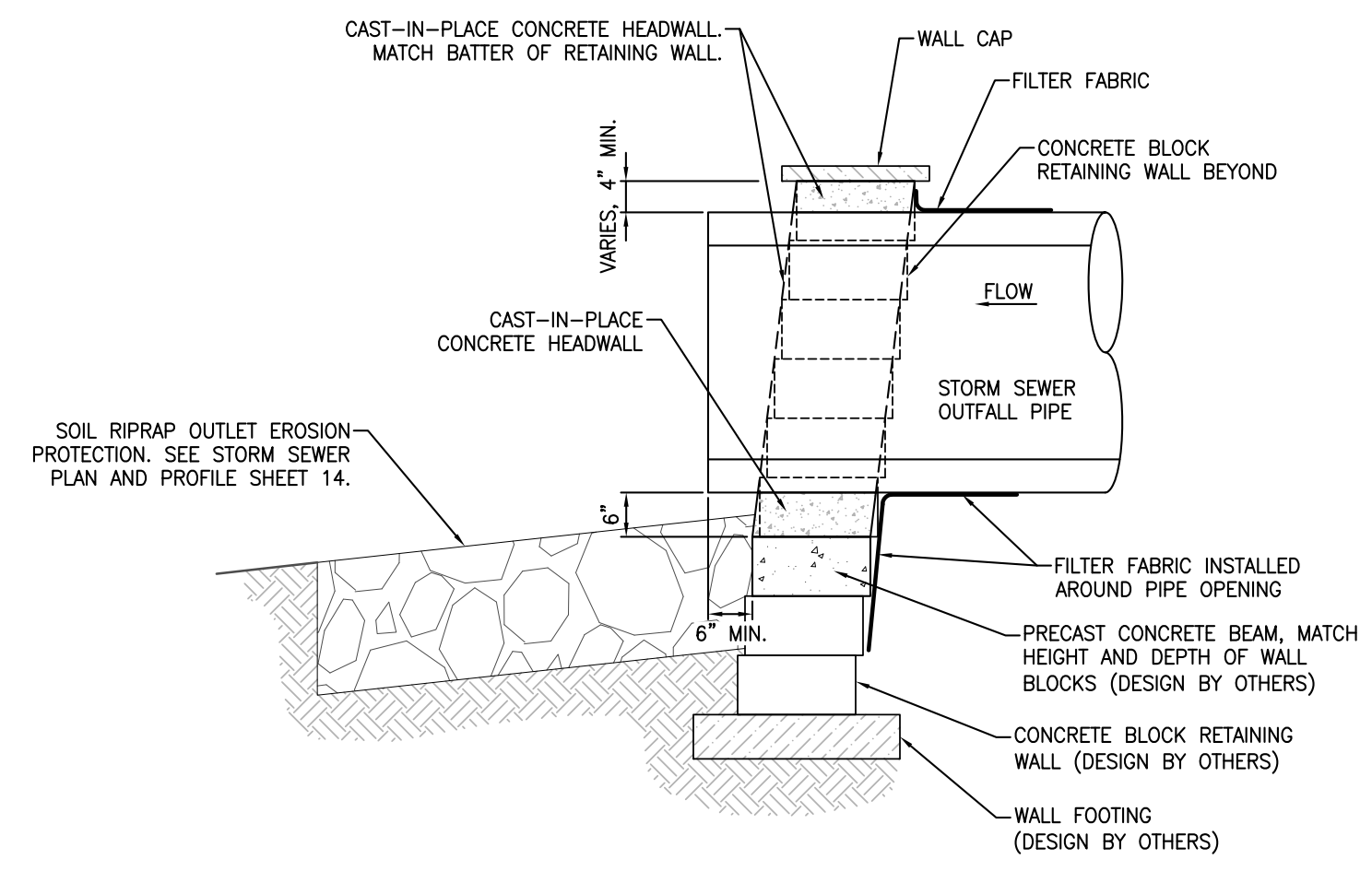
Storm Sewer Manhole Detail Type II Standard Drawing
SCALE: NOT TO SCALE

NOTES:
1. PIPE ENDS (ENTIRE END) SHALL BE CUT AT ANGLE TO MINIMIZE GAP BETWEEN PIPES.
2. AN INTERIOR FORM SHALL BE USED TO PROVIDE A SMOOTH INTERIOR JOINT. THE FORM MUST BE REMOVED AFTER CONSTRUCTION.



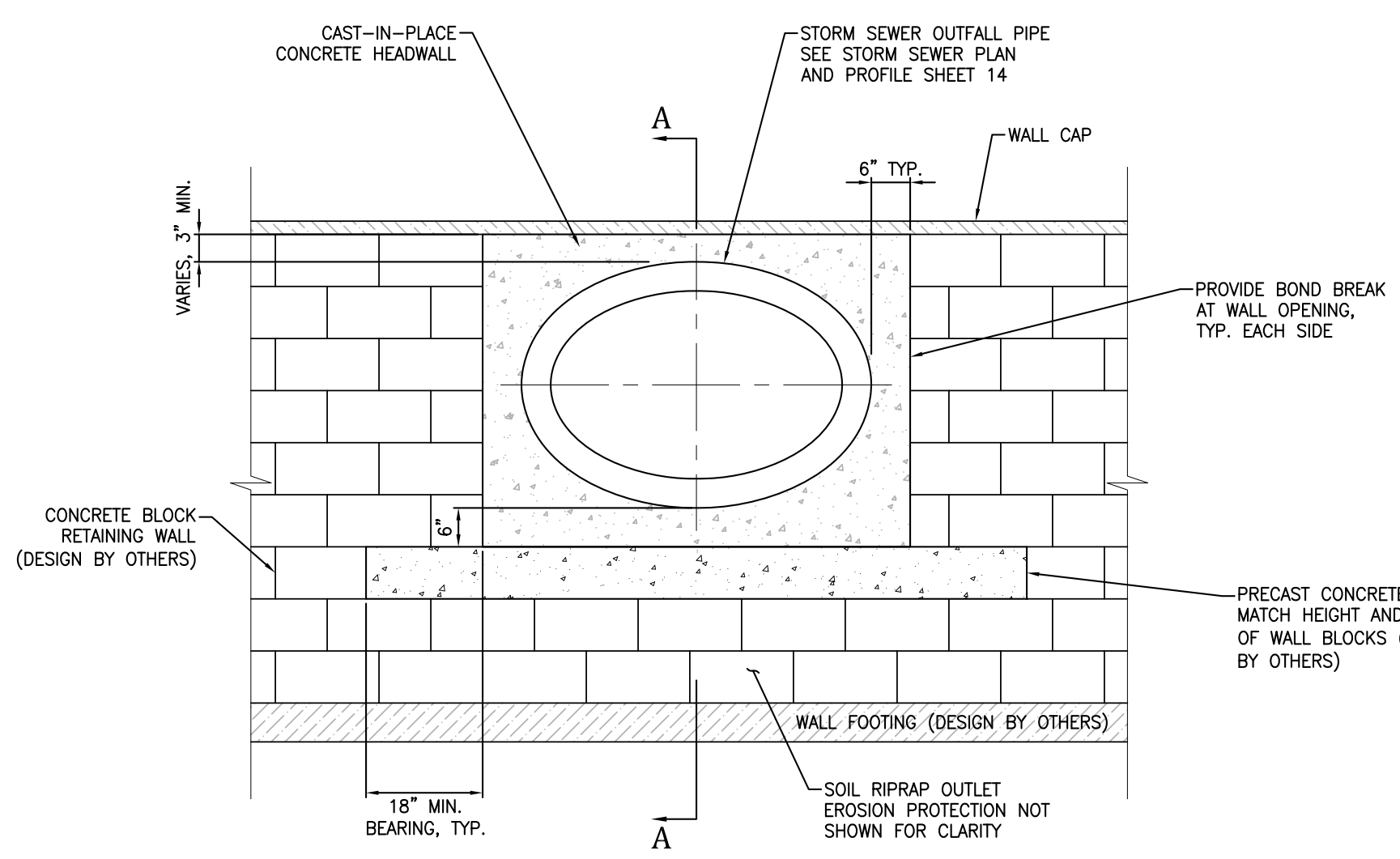
STORM SEWER CONCRETE COLLAR
SCALE: NTS

NOTES:
1. WALL DESIGN AND INSTALLATION REQUIREMENTS, INCLUDING BUT NOT LIMITED TO EXCAVATION, WALL FOOTING, WALL DRAINAGE, GEGRID MATERIAL PLACEMENT, BACKFILL AND COMPACTION TO BE COMPLETED BY OTHERS. THE PIPE PENETRATION DETAIL INCLUDED HEREIN SHALL BE CONSIDERED AND INCORPORATED INTO THE WALL DESIGN.
2. PRIOR TO CONSTRUCTION, CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR THE BEAMS AND HEADWALLS.
3. GRADE 60 REINFORCING STEEL REQUIRED. SEE TABLE FOR THE MINIMUM LAP SPlice LENGTH FOR REINFORCING BARS. ALL REINFORCING STEEL SHALL HAVE 2-INCH MINIMUM CLEARANCE FROM EDGE OF CONCRETE AND 3-INCH MIN CLEARANCE TO EDGE OF CONCRETE PLACED AGAINST SOIL, UNLESS OTHERWISE NOTED.
MIN. SPlice LENGTH: #4: 1'-3", #5: 1'-7", #6: 2'-0"
4. STEEL REINFORCEMENT FOR HEADWALLS SHALL BE TWO MATS OF #4 BARS AT 8" O.C. EACH WAY, WITH CLEARANCES AS SPECIFIED IN NOTE 3.
5. CONCRETE FOR THE BEAMS AND HEADWALLS SHALL BE CDOT CLASS D CONCRETE.
6. FINAL SIZE, REINFORCEMENT AND CONFIGURATION OF PRECAST BEAMS SHALL BE APPROVED BY THE WALL DESIGNER. PRECAST BEAMS SHALL BE DELIVERED TO SITE WITH A MINIMUM FULL SEVEN DAY CONCRETE STRENGTH.
7. BACKFILLING AGAINST BEAMS OR HEADWALLS SHALL NOT COMMENCE UNTIL CONCRETE HAS OBTAINED ITS FULL SEVEN DAY STRENGTH.
8. OUTFALL PIPES SHALL BE INSTALLED PRIOR TO CONSTRUCTION OF THE RETAINING WALLS.

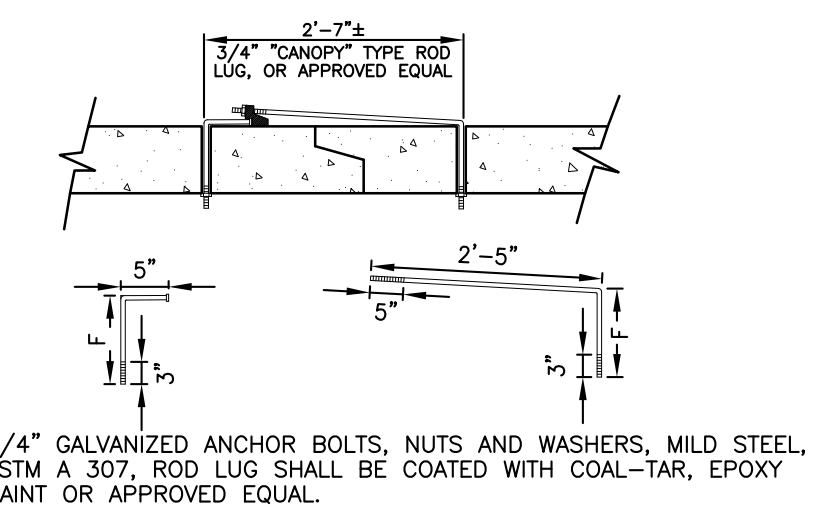


SECTION A-A

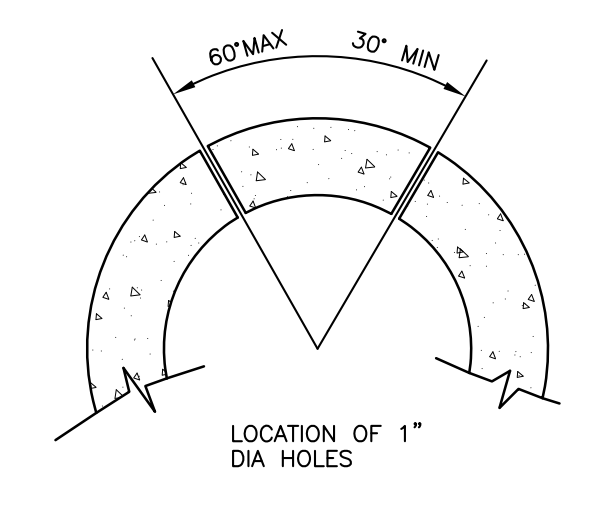
RETAINING WALL PIPE PENETRATION
SCALE: NTS



ELEVATION VIEW

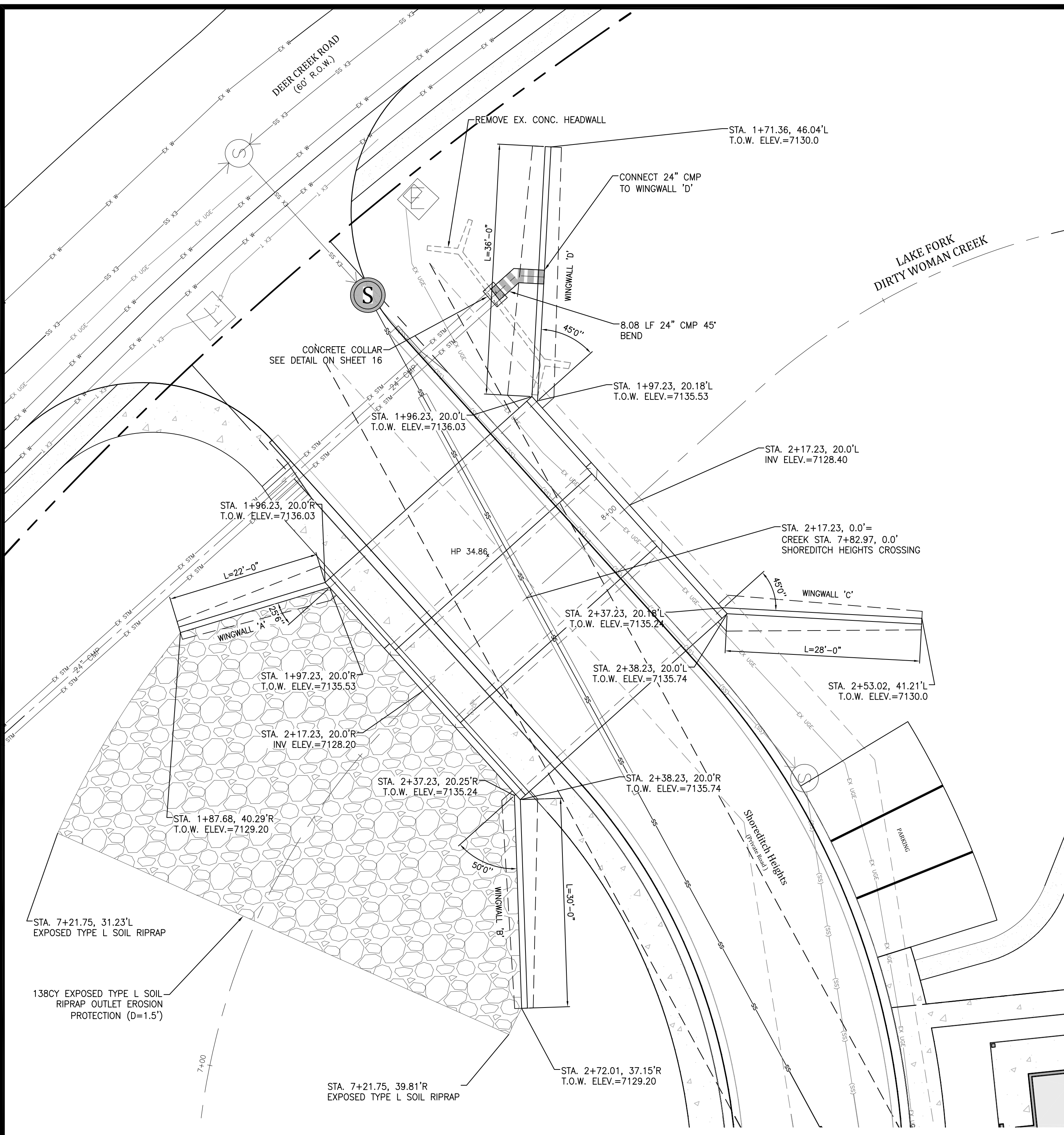


CONCRETE PIPE JOINT FASTENER
SCALE: NTS

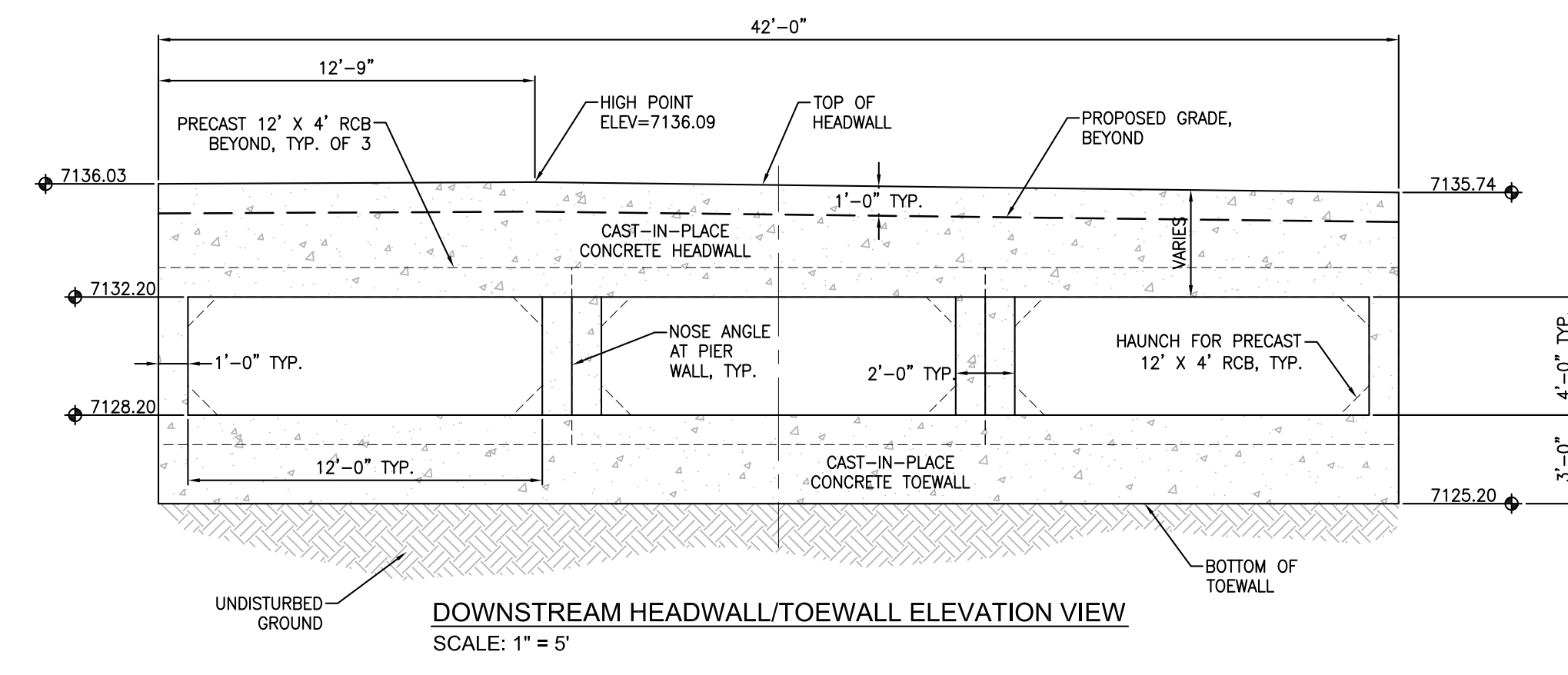


NOTE:
CONCRETE JOINT FASTENERS REQUIRED ON THE FIRST TWO PIPE JOINTS FROM A FLARED END SECTION.

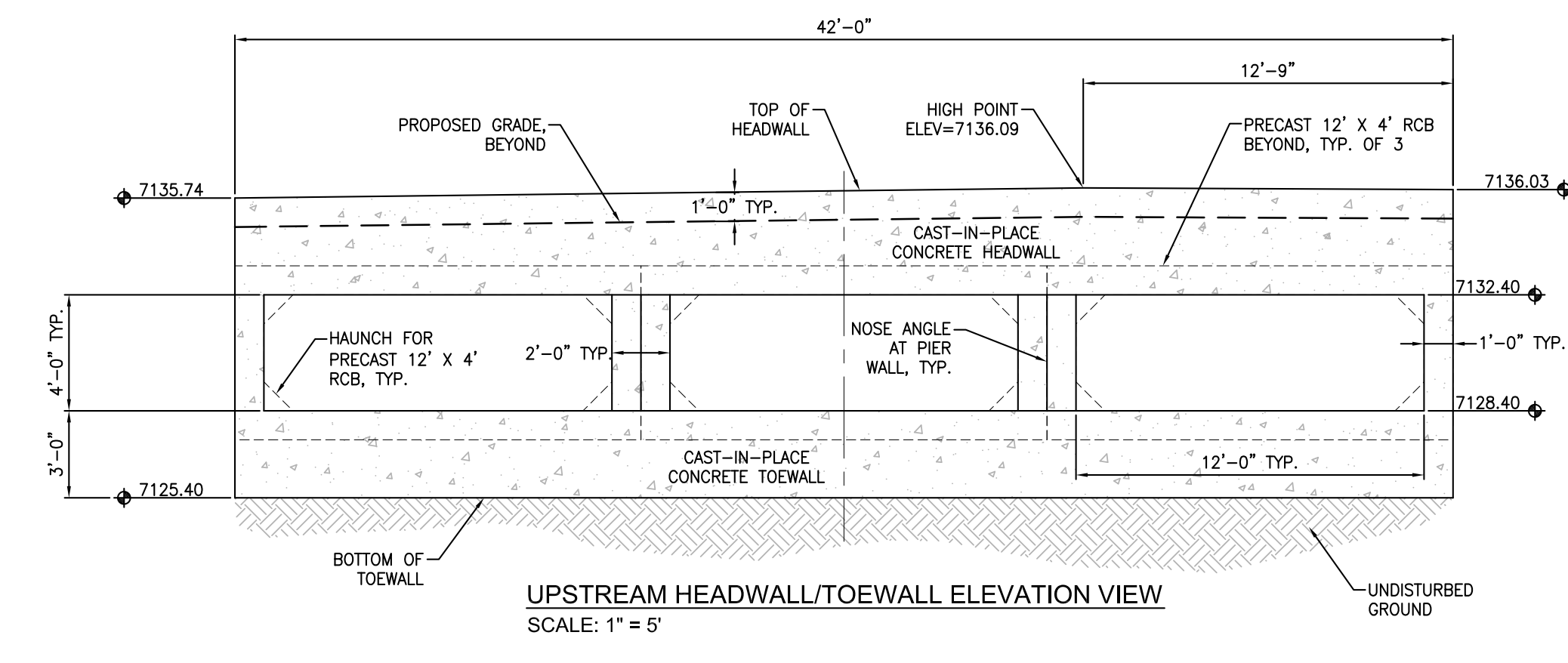
PIPE DIAMETER	F
18"-30"	5"
36"-42"	6"
48"-60"	7"
72"-84"	9"



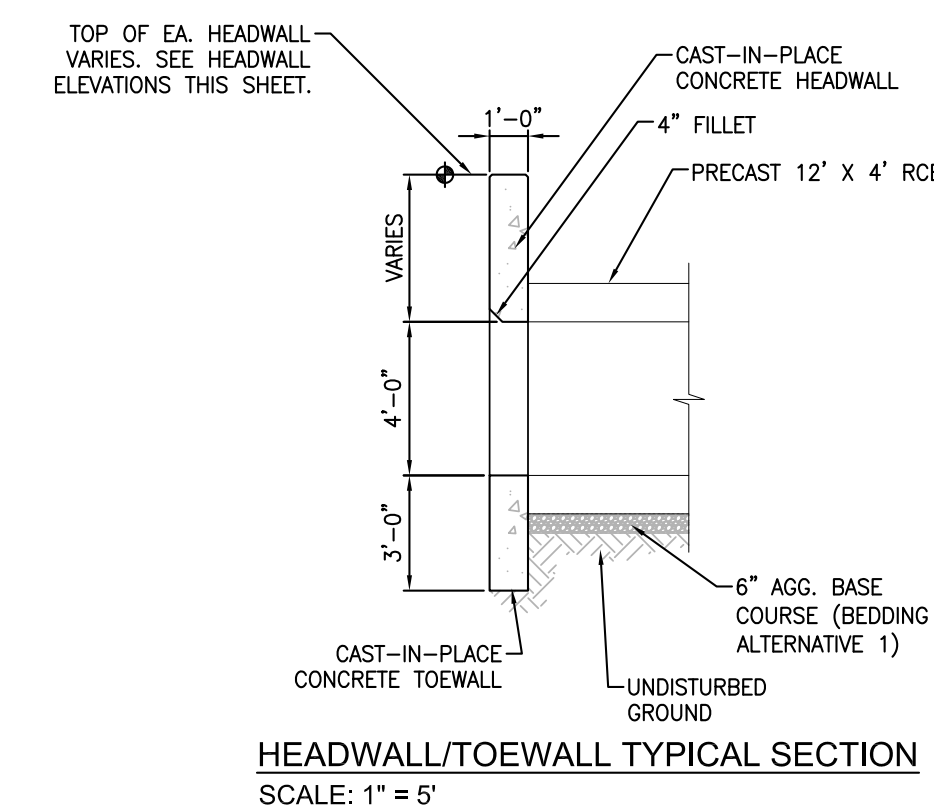
SHOREDITCH HEIGHTS CROSSING PLAN
SCALE: 1" = 10'



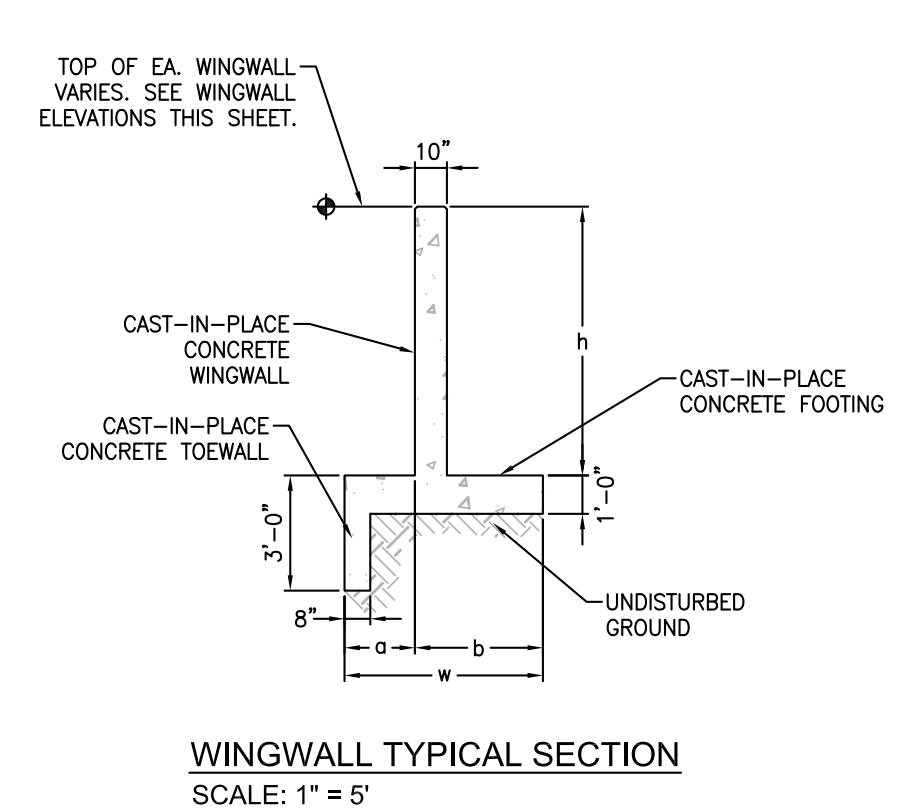
DOWNSTREAM HEADWALL/TOEWALL ELEVATION VIEW
SCALE: 1" = 5'



UPSTREAM HEADWALL/TOEWALL ELEVATION VIEW
SCALE: 1" = 5'

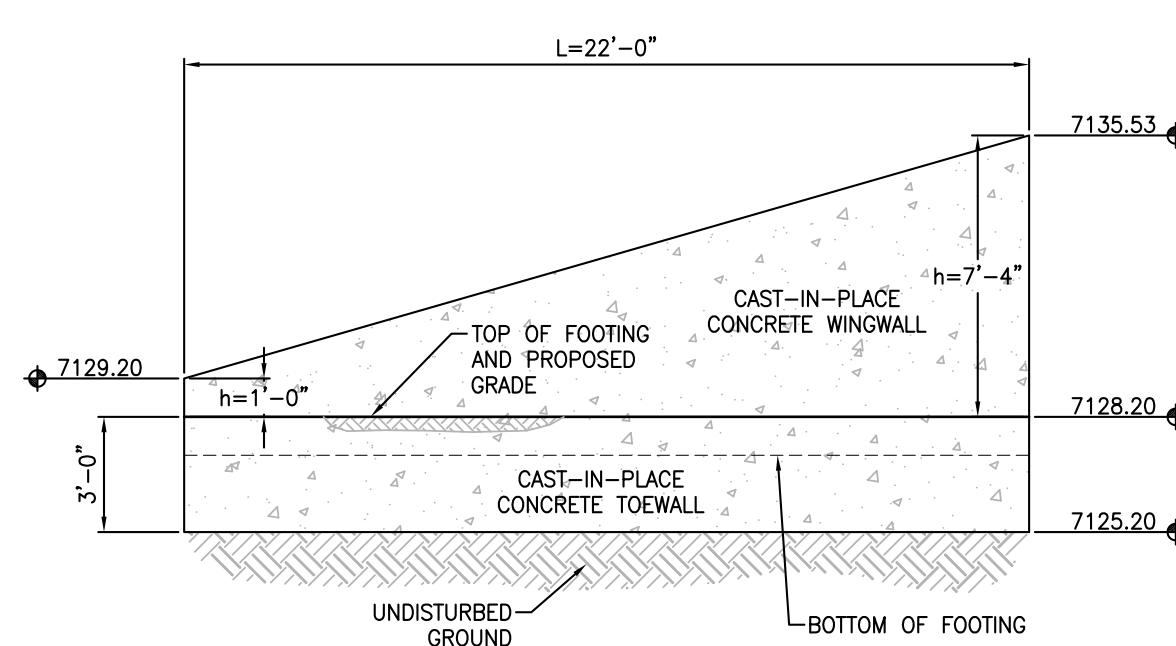


HEADWALL/TOEWALL TYPICAL SECTION
SCALE: 1" = 5'

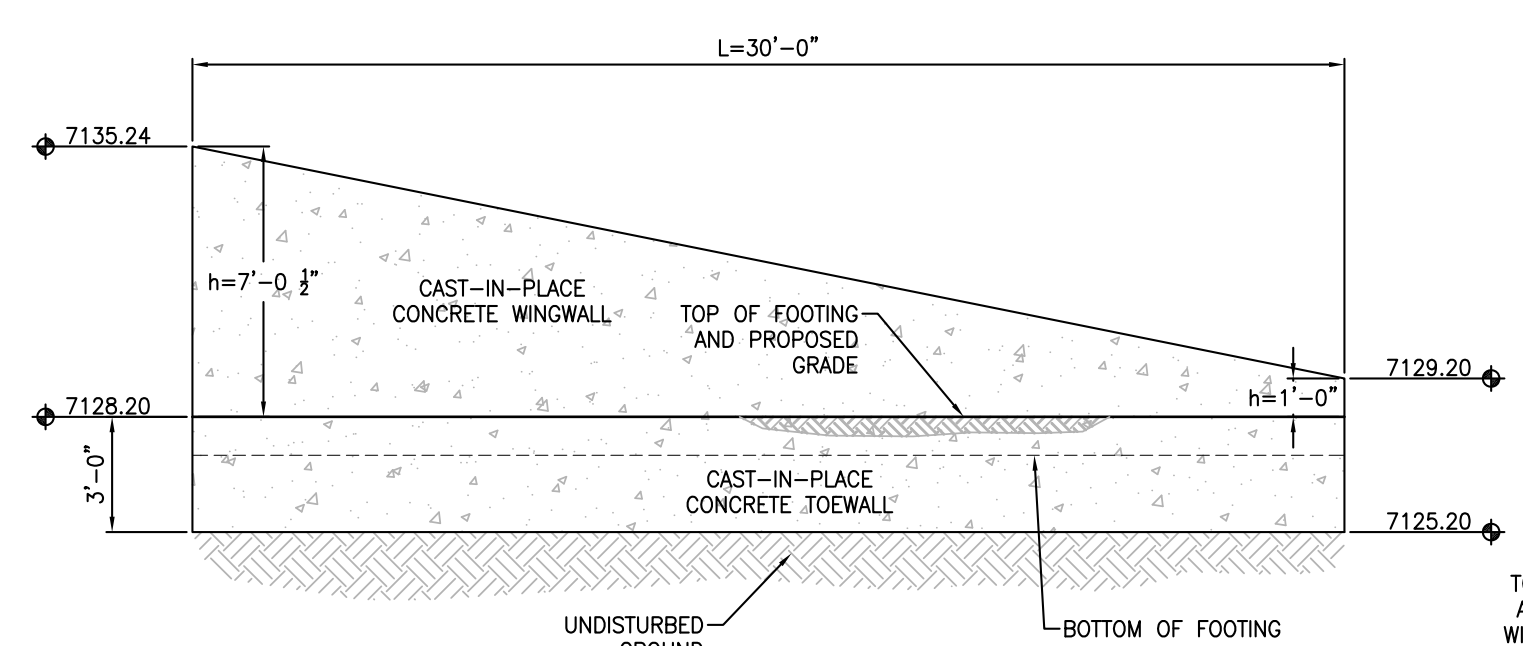


WINGWALL TYPICAL SECTION
SCALE: 1" = 5'

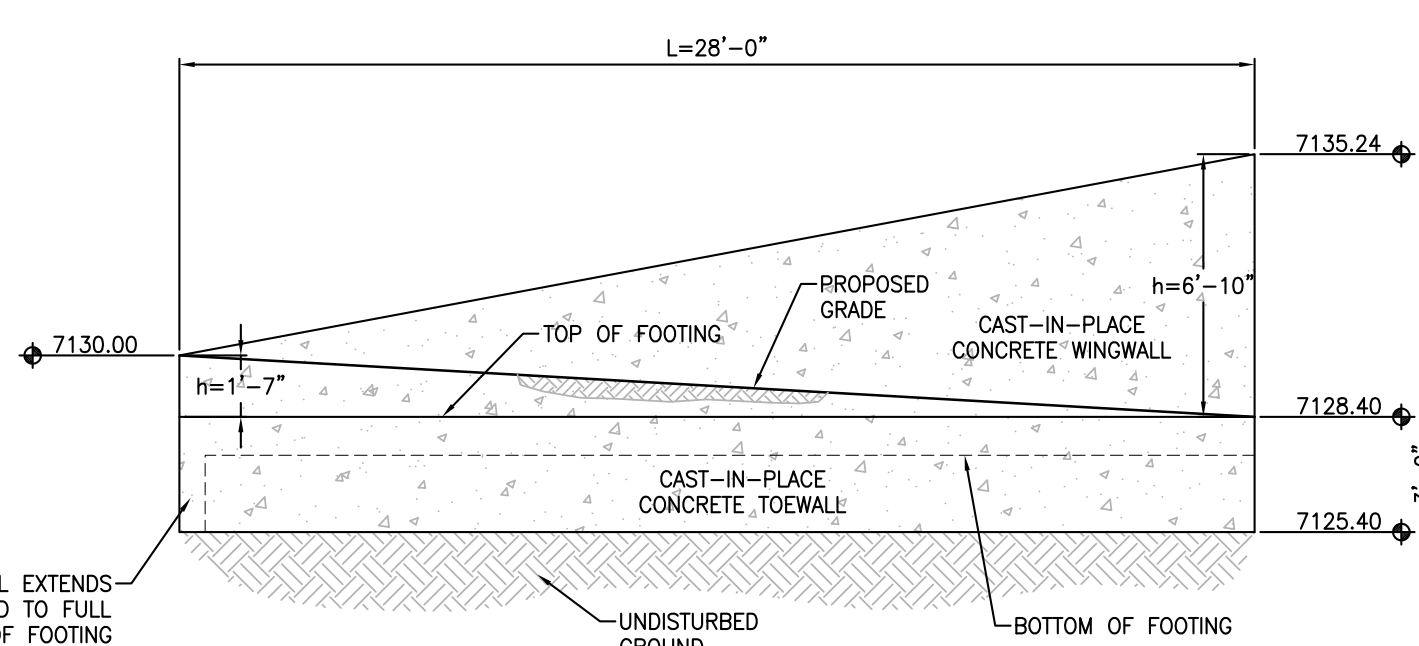
- STRUCTURE NOTES:**
1. PRECAST CONCRETE BOX CULVERT MATERIAL AND INSTALLATION SHALL BE IN ACCORDANCE WITH CDOT STANDARD PLAN NO. M-603-3, WITH BEDDING ALTERNATIVE 1.
 2. CAST-IN-PLACE CONCRETE HEADWALLS WITH TOEWALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CDOT STANDARD PLANS NO. M-601-3, M-601-20 AND M-603-3.
 3. CAST-IN-PLACE CONCRETE WINGWALLS WITH TOEWALLS, AND THEIR CONNECTION TO THE PRECAST BOX CULVERT, SHALL BE CONSTRUCTED IN ACCORDANCE WITH CDOT STANDARD PLAN NO. M-601-20. FOR WALL HEIGHTS LESS THAN 2'-0" USE DESIGN FOR h=2'.
 4. CAST-IN-PLACE NOSE ANGLES FOR PIER WALLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH CDOT STANDARD PLAN NO. M-6013 AND M-603-3.
 5. REINFORCING STEEL AND MINIMUM SPLICE LENGTHS SHALL BE AS SPECIFIED ON CDOT STANDARD PLAN NO. M-601-20.
 6. ALL REINFORCING STEEL SHALL HAVE 2-INCH MINIMUM CLEARANCE FROM EDGE OF CONCRETE AND 3-INCH MIN CLEARANCE TO EDGE OF CONCRETE PLACED AGAINST SOIL, UNLESS OTHERWISE NOTED.
 7. CONCRETE FOR SHOREDITCH HEIGHTS CROSSING STRUCTURE SHALL BE CDOT CLASS D CONCRETE.
 8. BACKFILLING AGAINST WALLS SHALL NOT COMMENCE UNTIL CONCRETE HAS OBTAINED ITS FULL SEVEN DAY STRENGTH.
 9. BACKFILL MATERIAL SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY PER ASTM M998.



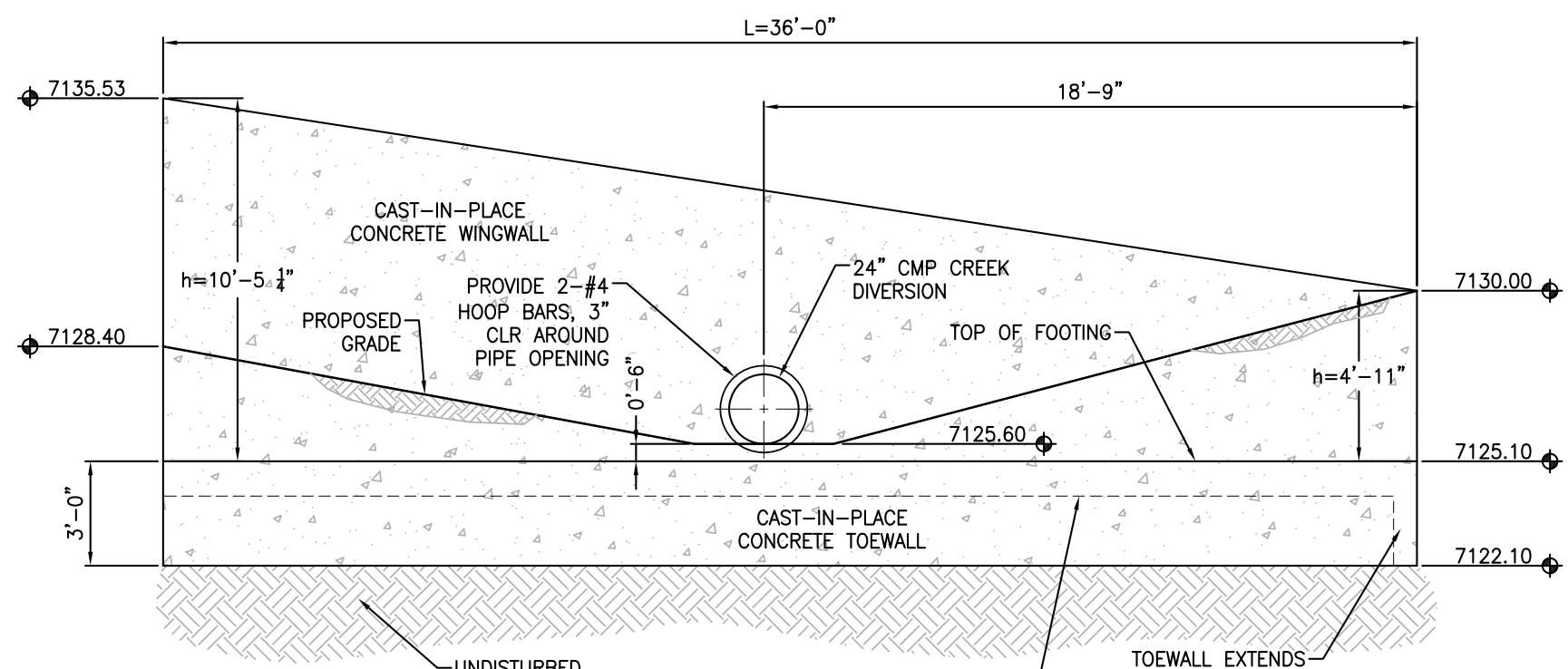
WINGWALL 'A' ELEVATION VIEW
SCALE: 1" = 5'



WINGWALL 'B' ELEVATION VIEW
SCALE: 1" = 5'

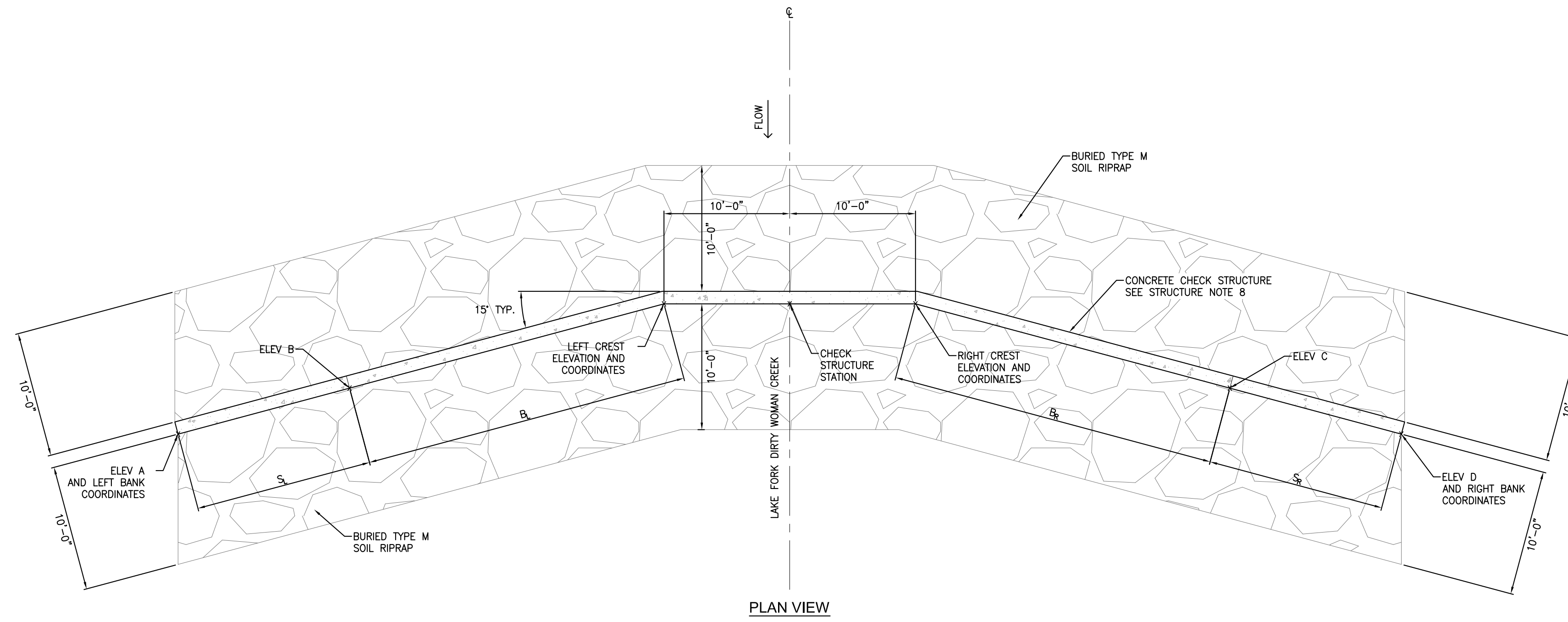


WINGWALL 'C' ELEVATION VIEW
SCALE: 1" = 5'

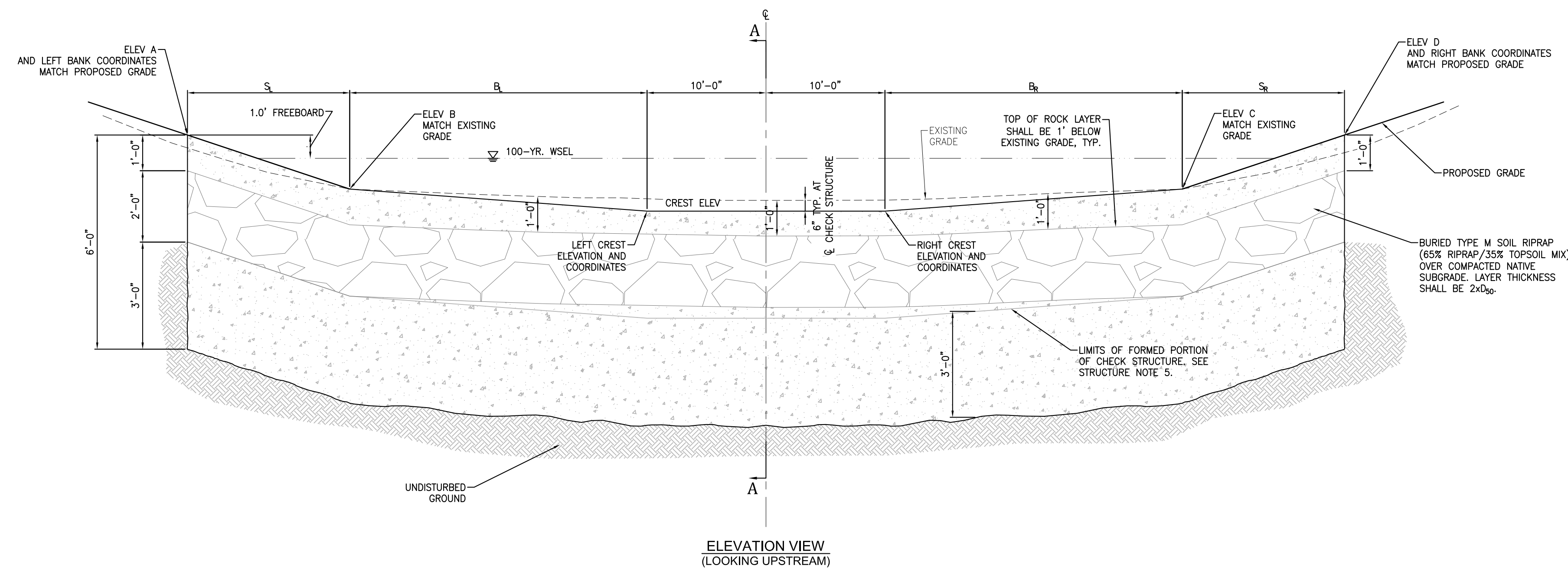


WINGWALL 'D' ELEVATION VIEW
SCALE: 1" = 5'

Project No.:	15073
Date:	December 1, 2017
Design:	CJC
Drawn:	CJC
Check:	AWMc
Revisions:	



PLAN VIEW

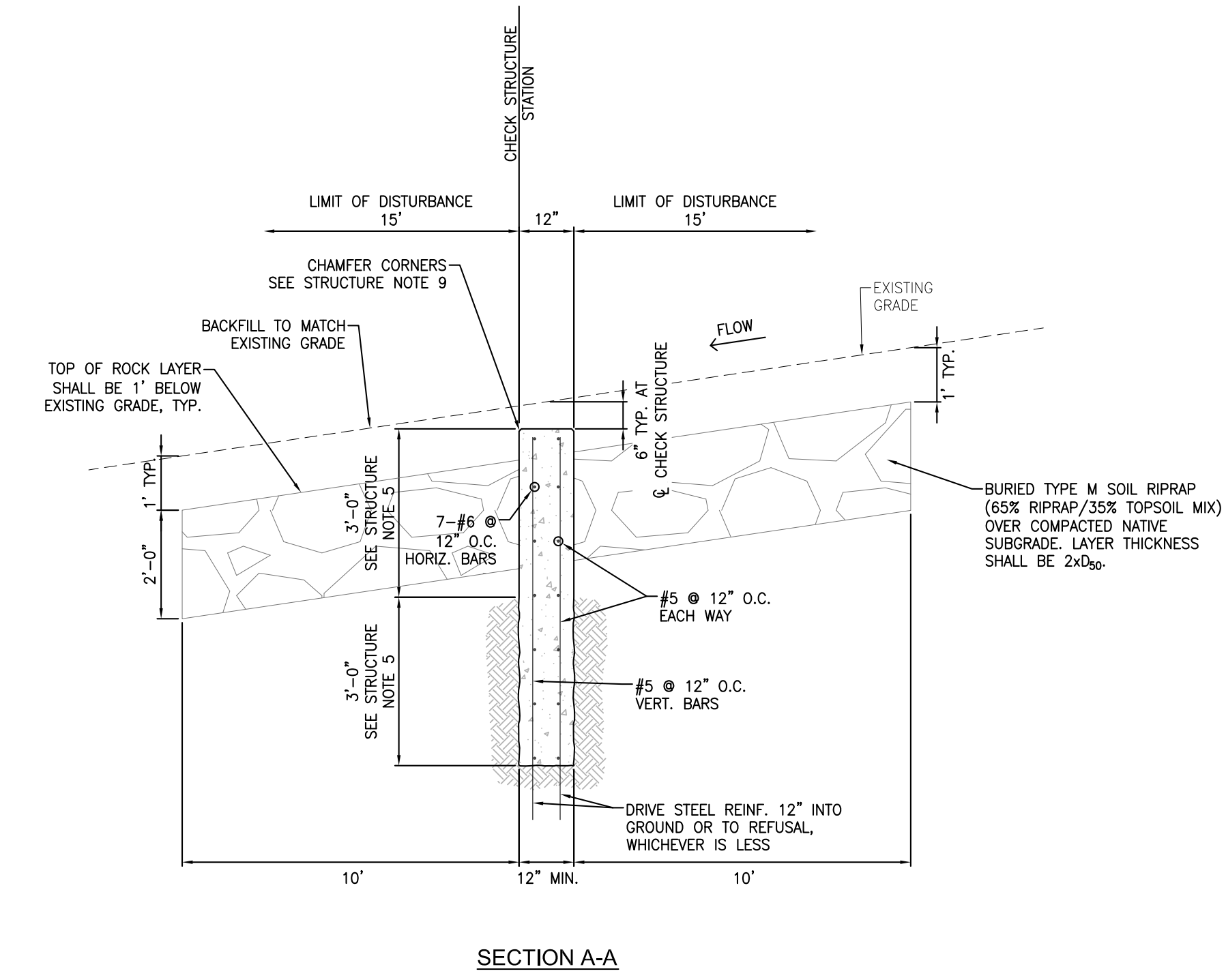


ELEVATION VIEW
(LOOKING UPSTREAM)

CHECK STRUCTURE LAYOUT TABLE
(ALL DIMENSIONS IN FEET U.N.O.)

CHECK STRUCTURE STATION	LEFT CREST COORDINATES	RIGHT CREST COORDINATES	LEFT BANK COORDINATES	RIGHT BANK COORDINATES	B _L	B _R	S _L	S _R	CREST ELEV (LEFT/RIGHT)	ELEV A	ELEV B	ELEV C	ELEV D
STA. 3+67.33	N 22476.23 E 49997.75	N 22473.09 E 50017.50	N 22472.88 E 49965.65	N 22457.64 E 50052.14	26.6	30.6	5.7	7.3	7112.5	7114.0	7113.8	7112.7	7113.8
STA. 5+26.04	N 22630.92 E 50038.95	N 22623.82 E 50057.65	N 22634.40 E 50004.76	N 22590.16 E 50104.31	34.4	37.6	---	19.9	7120.6	---	7120.9	7120.9	7123.6
STA. 6+24.85	N 22724.61 E 50060.19	N 22722.37 E 50080.06	N 22716.96 E 50009.39	N 22701.08 E 50134.29	44.3	42.8	7.1	15.4	7125.9	7128.5	7126.2	7126.2	7128.5

- STRUCTURE NOTES:**
- TOP OF CHECK STRUCTURES SHALL MATCH PROPOSED GRADE ON THE SIDE SLOPES.
 - BACKFILL TO MATCH EXISTING GRADE FOR CHANNEL BOTTOM AND BENCHES.
 - BACKFILLING AGAINST WALLS SHALL NOT COMMENCE UNTIL CONCRETE HAS OBTAINED ITS FULL SEVEN DAY STRENGTH.
 - BACKFILL MATERIAL SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY PER ASTM M698.
 - THE TOP 3 FEET MINIMUM OF EACH CHECK STRUCTURE SHALL BE FORMED CONCRETE, AND THE BOTTOM 3 FEET CAN BE PLACED AGAINST UNDISTURBED SOIL.
 - LIMIT OF DISTURBANCE REPRESENTS THE MAXIMUM ALLOWABLE LIMIT OF DISTURBANCE TO THE NATURAL CHANNEL BOTH UPSTREAM AND DOWNSTREAM OF EACH CHECK STRUCTURE. DISTURBED AREAS SHALL BE SEEDED WITH A NATIVE GRASS MIX.
 - GRADE 60 REINFORCING STEEL REQUIRED. SEE TABLE FOR THE MINIMUM LAP SPLICE LENGTH FOR REINFORCING BARS. ALL REINFORCING STEEL SHALL HAVE 2-INCH MINIMUM CLEARANCE FROM EDGE OF CONCRETE AND 3-INCH MIN CLEARANCE TO EDGE OF CONCRETE PLACED AGAINST SOIL, UNLESS OTHERWISE NOTED.
- | BAR SIZE | #4 | #5 | #6 |
|--------------------|-------|-------|-------|
| MIN. SPLICE LENGTH | 1'-3" | 1'-7" | 2'-0" |
- CONCRETE FOR CHECK STRUCTURES SHALL BE COOT CLASS B CONCRETE.
 - ALL EXPOSED CONCRETE CORNERS SHALL HAVE A 3/4-INCH CHAMFER UNLESS OTHERWISE NOTED.

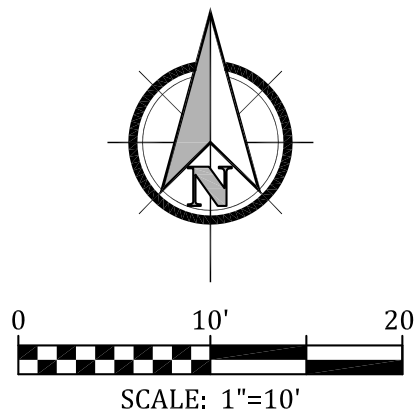
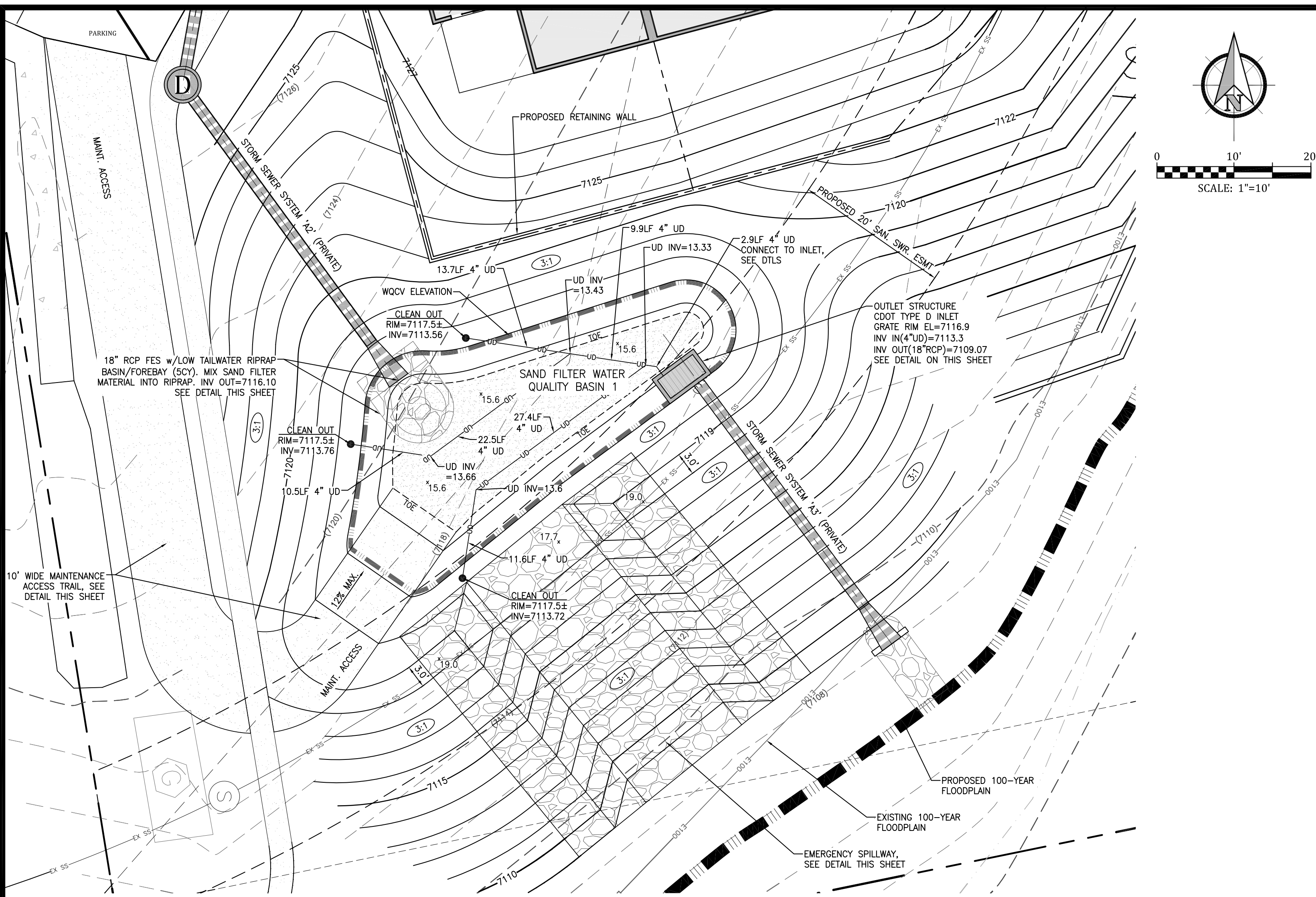


SECTION A-A

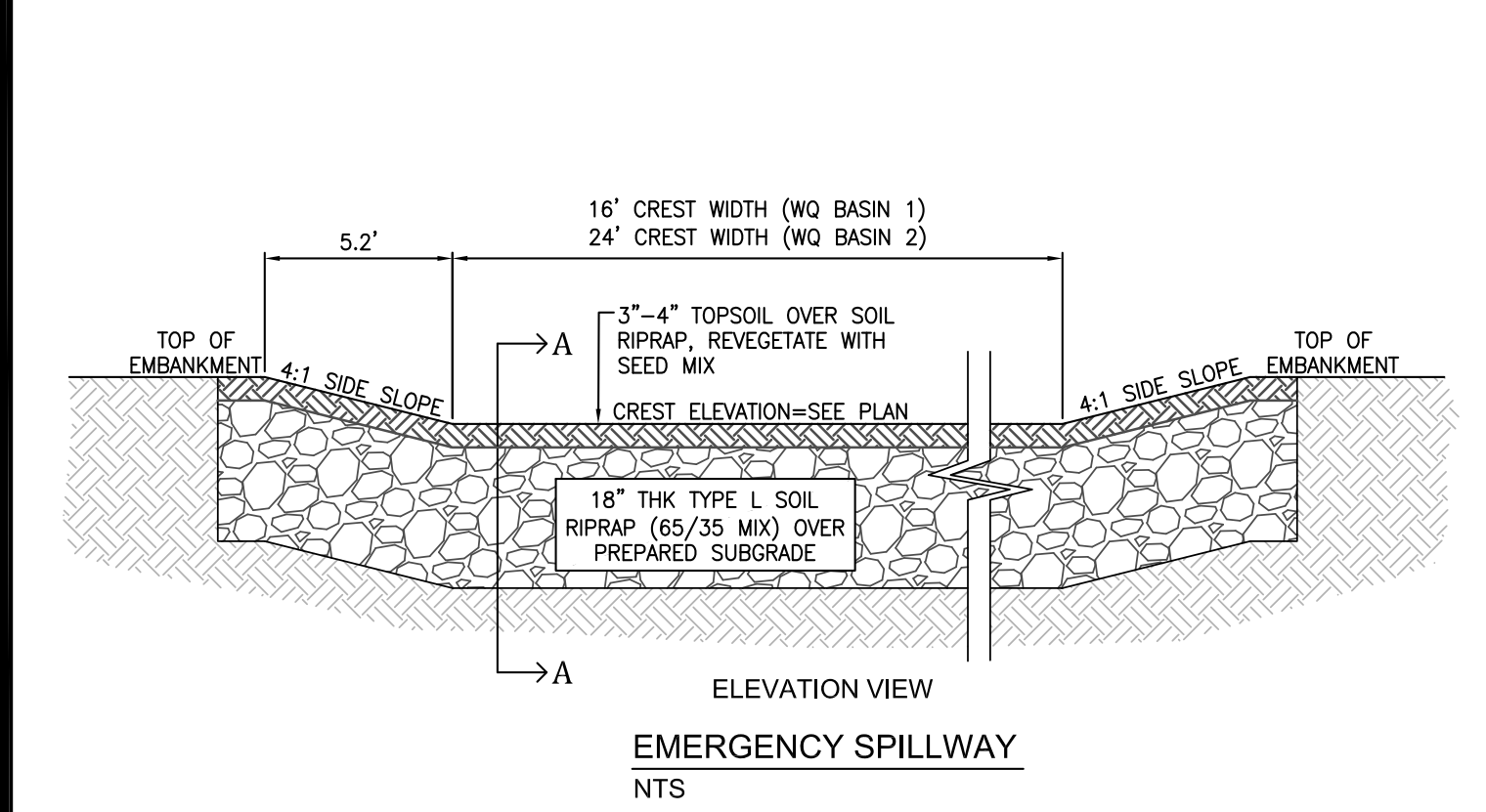
CHECK STRUCTURE DETAILS (PRIVATE)
NTS

North Bay at Lake Woodmoor
Check Structure Details
El Paso County, Colorado

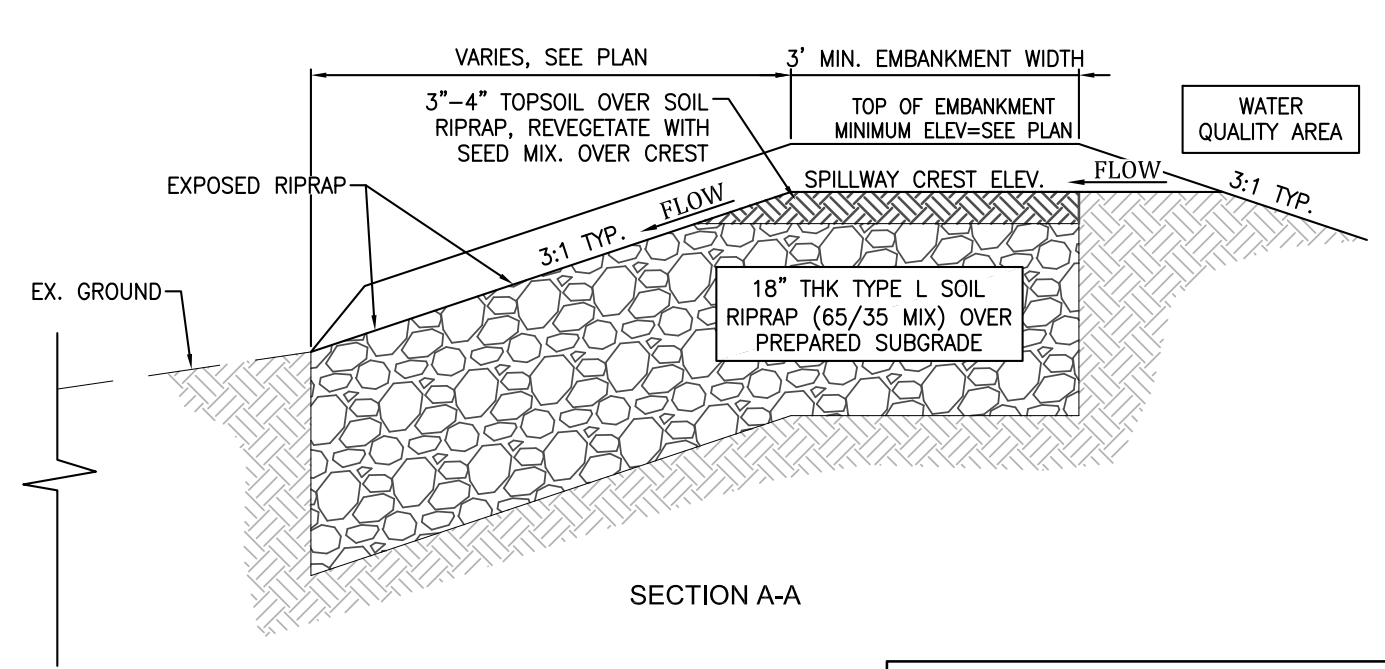
Project No.:	15073
Date:	December 1, 2017
Design:	CJC
Drawn:	CJC
Check:	AWMc
Revisions:	



SAND FILTER WATER QUALITY BASIN 1
SCALE: 1"=10'



EMERGENCY SPILLWAY
NTS



SECTION A-A

GRADATION SPECIFICATIONS FOR CDOT CLASS B OR C FILTER MATERIAL

SIEVE SIZE	MASS % PASSING SQUARE MESH SIEVES CLASS B	MASS % PASSING SQUARE MESH SIEVES CLASS C
37.5mm (1.5")	100	100
19.0mm (3/4")	100	100
4.75mm (No. 4)	20-60	60-100
1.18mm (No. 16)	10-30	10-30
300um (No. 50)	0-10	0-10
150um (No. 100)	0-3	0-3
75um (No. 200)	0-3	0-3

DIMENSIONS FOR SLOTTED PIPE

PIPE DIAMETER	SLOT LENGTH	MAX. SLOT WIDTH	SLOT CENTERS	OPEN AREA (PER FOOT)
4"	1-1/16"	0.032"	0.413"	1.90 in ²
6"	1-3/8"	0.032"	0.516"	1.98 in ²

NOTES:
1. CONTECH A-2000 SLOTTED PIPE OR EQUAL. SOME VARIATION IN THESE VALUES IS ACCEPTABLE. BE AWARE THAT BOTH INCREASED SLOT LENGTH AND DECREASED SLOT CENTERS WILL BE BENEFICIAL TO HYDRAULICS BUT DETRIMENTAL TO THE STRUCTURE OF THE PIPE.
2. PIPE MUST CONFORM TO REQUIREMENTS OF ASTM F949. THERE SHALL BE NO EVIDENCE OF SPLITTING, CRACKING OR BREAKING WHEN PIPE IS TESTED PER ASTM D2412 IN ACCORDANCE WITH F949 SECTION 7.5 AND ASTM F794 SECTION 8.5.

CDOT CLASS B GEOTEXTILE FABRIC REQUIREMENTS

PROPERTY	ELONGATION <50%	ELONGATION >50%	TEST METHOD
GRAB STRENGTH, N(lbs)	800(180)	510(115)	ASTM D4632
PUNCTURE RESISTANCE, N(lbs)	310(70)	180(40)	ASTM D4833
TRAPEZOIDAL TEAR STRENGTH, N(lbs)	310(70)	180(40)	ASTM D4533
APPARENT OPENING SIZE, mm (US SIEVE SIZE)	AOS<0.3mm (US SIEVE SIZE #50)		ASTM D4751
PERMITTIVITY, sec ⁻¹	0.02, DEFAULT VALUE (ALSO GREATER THAN SOIL)		ASTM D4491
PERMEABILITY, cm/sec	K FABRIC<K SOIL FOR ALL CLASSES		ASTM D4491
ULTRAVIOLET DEGRADATION AT 500 HOURS	50% STRENGTH RETAINED FOR ALL CLASSES		ASTM D4355

1 STRENGTH VALUES ARE IN THE WEAKER PRINCIPLE DIRECTION
2 AS MEASURED IN ACCORDANCE WITH ASTM D4632

WATER QUALITY BASIN 1

WATER SURFACE ELEV. (FT)	REQUIRED STORAGE VOLUME	DRAIN TIME
7116.9	1,011 CF	12-HR

SAND FILTER FINISH GRADE ELEVATION: 7115.6
SPILLWAY CREST ELEVATION: 7117.7
TOP OF EMBANKMENT MINIMUM ELEVATION: 7119.0

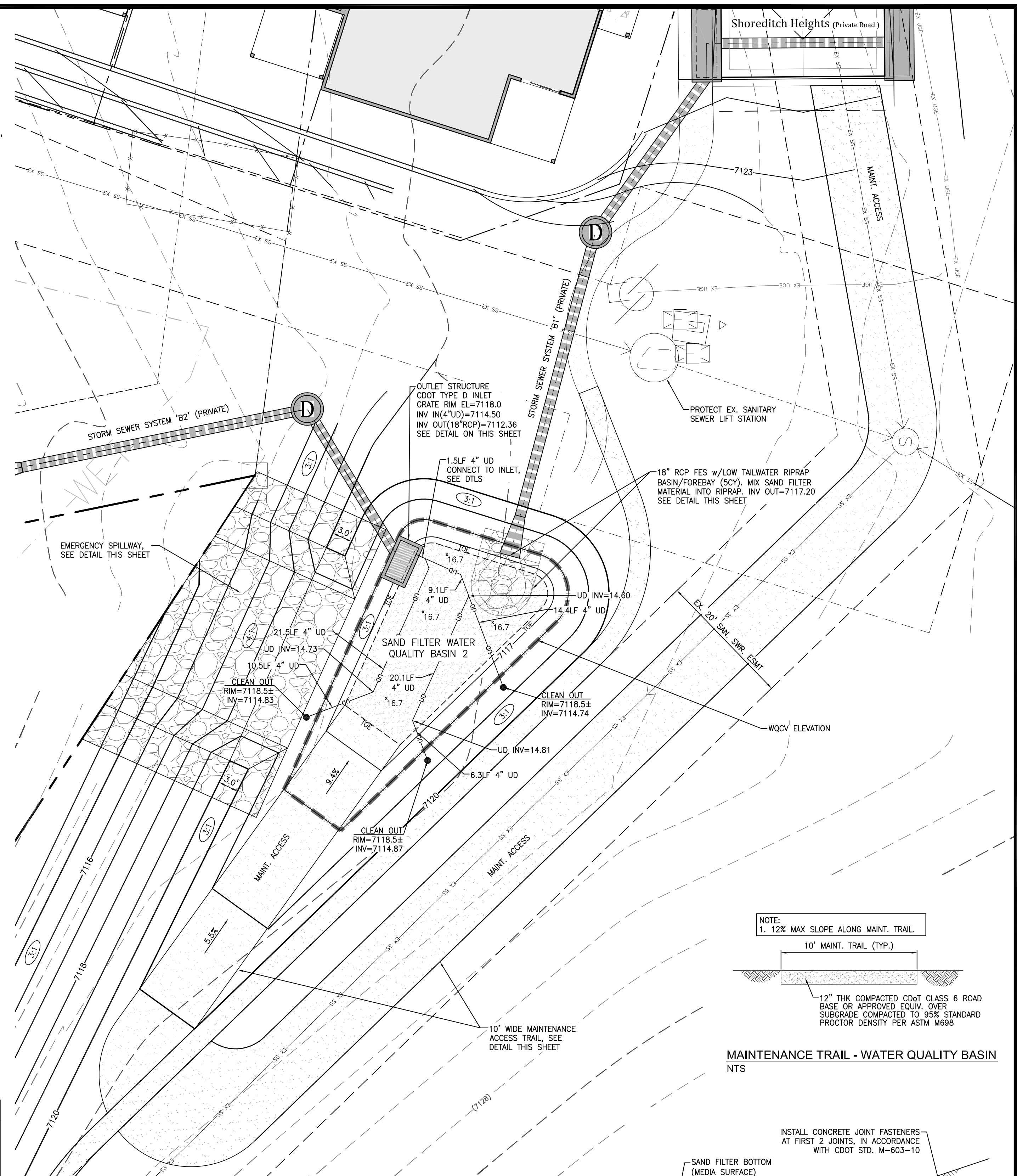
NOTE: AS-BUILT SURVEY AND VOLUME CERTIFICATION REQUIRED BY A LICENSED PROFESSIONAL LAND SURVEYOR, SEE NOTES. AT A MINIMUM, THE SURVEY SHALL INCLUDE THE OUTLET STRUCTURE INVERTS, TOP OF OUTLET STRUCTURE/GRATE ELEV.; SPILLWAY ELEVATION AND WIDTH, TOP OF EMBANKMENT ELEVATION AROUND STORMWATER QUALITY AREA AND WIDTH; TOE OF SLOPE AT BOTTOM AND A SUFFICIENT AMOUNT OF GROUND ELEVATIONS WITHIN THE AREA TO DETERMINE THE AS-BUILT VOLUME.

WATER QUALITY BASIN 2

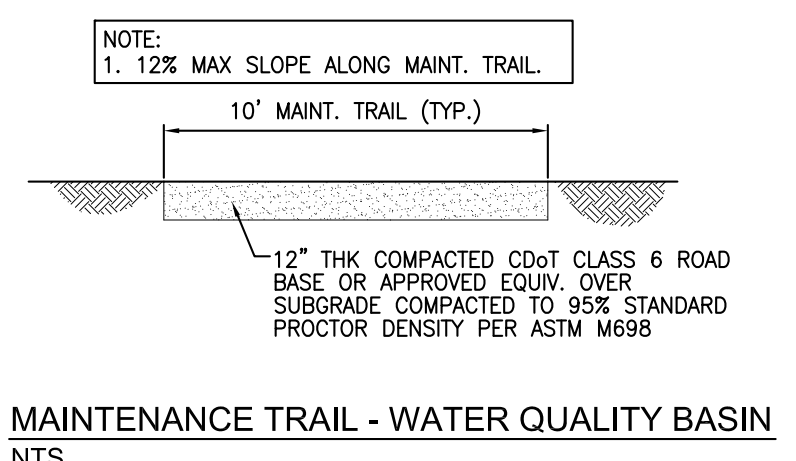
WATER SURFACE ELEV. (FT)	REQUIRED STORAGE VOLUME	DRAIN TIME
7118.0	887 CF	12-HR

SAND FILTER FINISH GRADE ELEVATION: 7116.7
SPILLWAY CREST ELEVATION: 7118.7
TOP OF EMBANKMENT MINIMUM ELEVATION: 7120.0

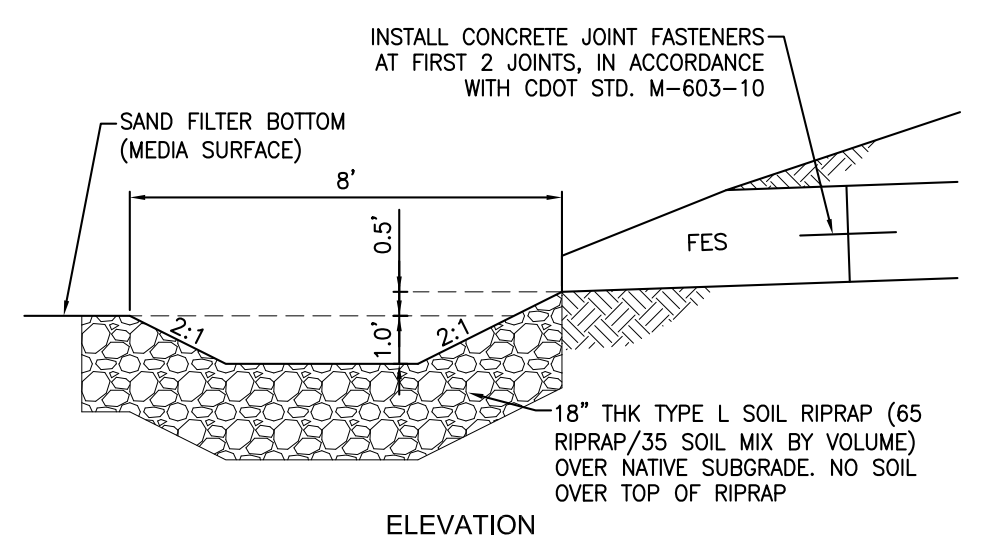
NOTE: AS-BUILT SURVEY AND VOLUME CERTIFICATION REQUIRED BY A LICENSED PROFESSIONAL LAND SURVEYOR, SEE NOTES. AT A MINIMUM, THE SURVEY SHALL INCLUDE THE OUTLET STRUCTURE INVERTS, TOP OF OUTLET STRUCTURE/GRATE ELEV.; SPILLWAY ELEVATION AND WIDTH, TOP OF EMBANKMENT ELEVATION AROUND STORMWATER QUALITY AREA AND WIDTH; TOE OF SLOPE AT BOTTOM AND A SUFFICIENT AMOUNT OF GROUND ELEVATIONS WITHIN THE AREA TO DETERMINE THE AS-BUILT VOLUME.



SAND FILTER WATER QUALITY BASIN 2
SCALE: 1"=10'

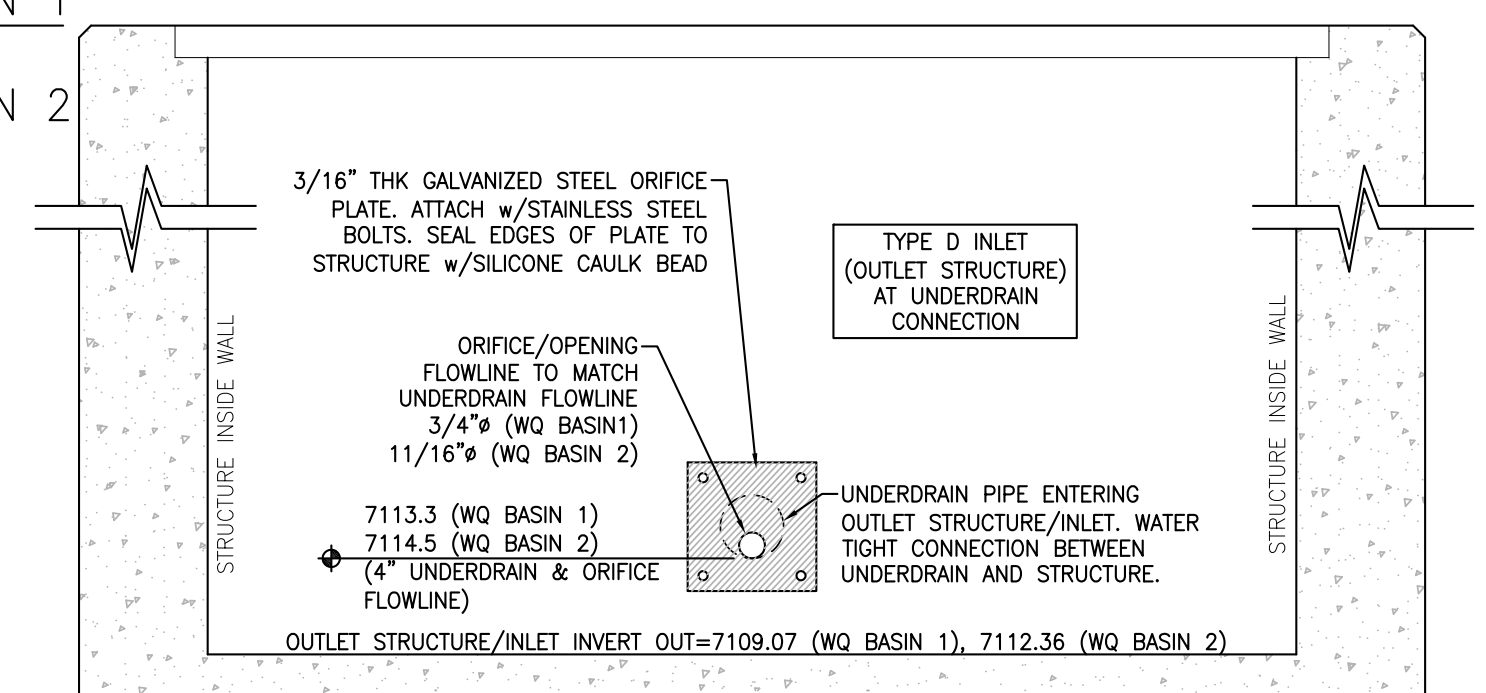


MAINTENANCE TRAIL - WATER QUALITY BASIN
NTS

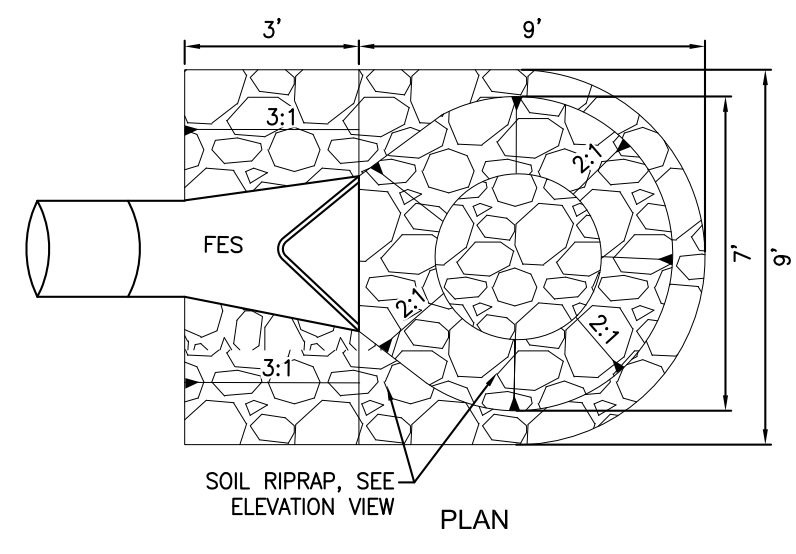


ELEVATION

7116.9
WQ BASIN 1
7118.0
WQ BASIN 2



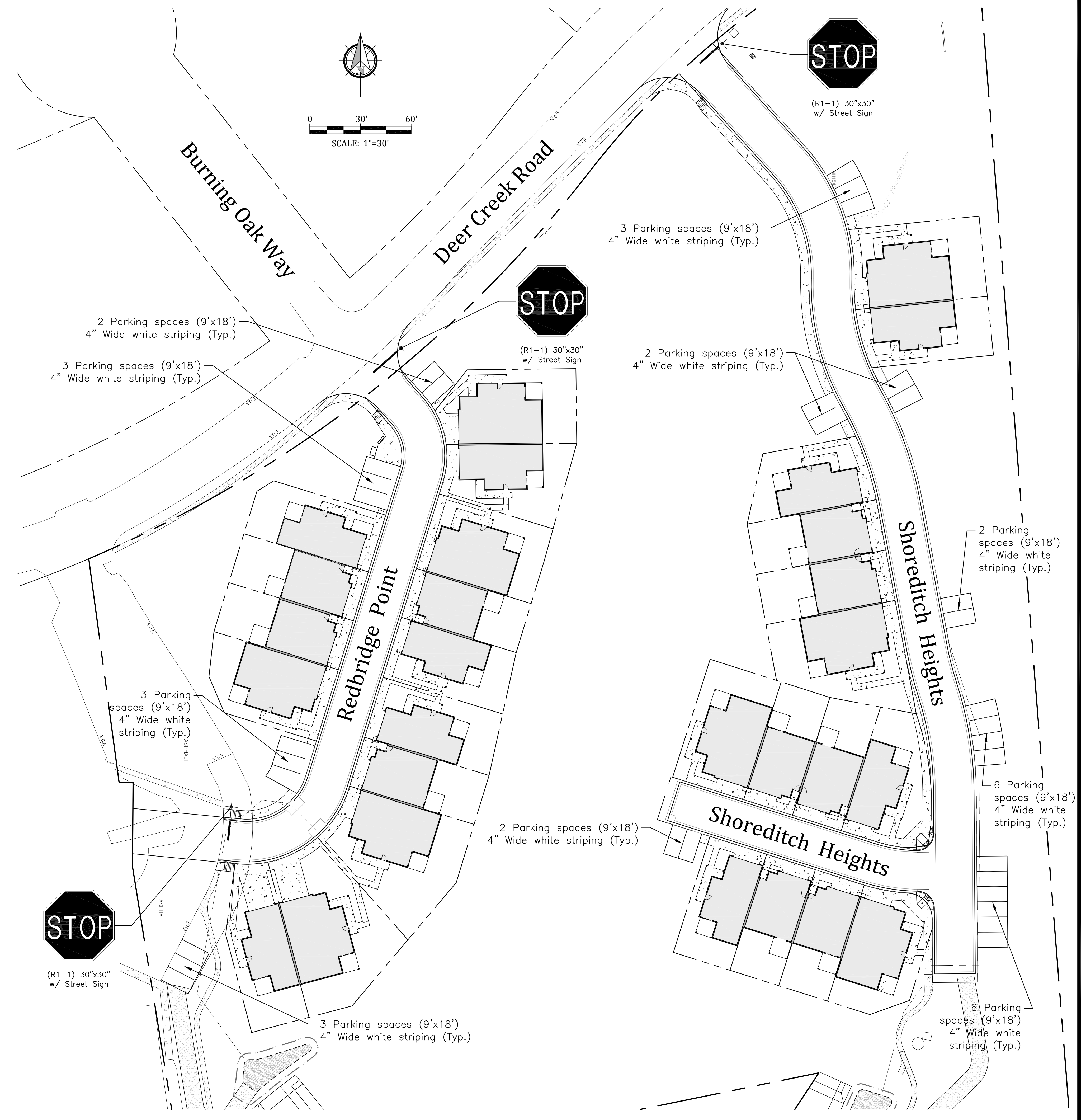
ORIFICE PLATE - OUTLET STRUCTURE
NTS



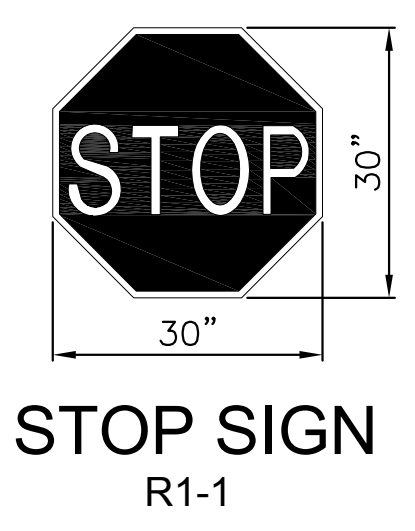
LOW TAILWATER RIPRAP BASIN
NTS

Project No.: 15073
Date: December 1, 2017
Design: CJC
Drawn: CJC
Check: AWMc
Revisions:

Project No.:	15073
Date:	March 23, 2017
Design:	NRK
Drawn:	CAD
Check:	AWMc
Revisions:	



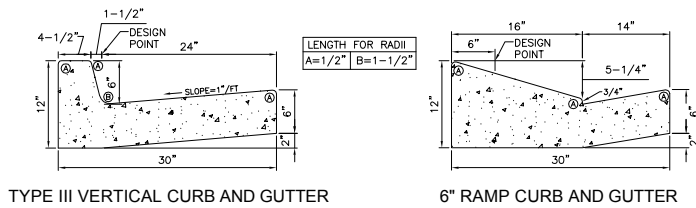
NOTE:
1. STOP SIGN PLACEMENT LOCATIONS SHALL BE PER SECTION 2B-9 OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION AND CDOT S-614-1.



SIGN DETAILS
SCALE: 1/4" = 1'-0"

EL PASO COUNTY STANDARD SIGNING AND STRIPING NOTES:

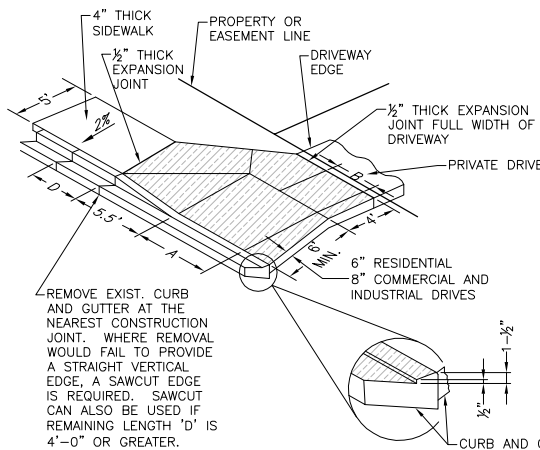
- All signs and pavement markings shall be in compliance with the current Manual on Uniform Traffic Control Devices (MUTCD).
- Removal of existing pavement markings shall be accomplished by a method that does not materially damage the pavement. The pavement markings shall be removed to the extent that they will not be visible under day or night conditions. At no time will it be acceptable to paint over existing pavement markings.
- Any deviation from the striping and signing plan shall be approved by El Paso County Planning and Community Development.
- All signs shown on the signing and striping plan shall be new signs. Existing signs may remain or be reused if they meet current El Paso County and MUTCD standards.
- Street name and regulatory stop signs shall be on the same post at intersections.
- All removed signs shall be disposed of in a proper manner by the contractor.
- All street name signs shall have "D" series letters, with local roadway signs being 4" upper-lower case lettering on 8" blank and non-local roadway signs being 6" lettering, upper-lower case on 12" blank, with a white border that is not recessed. Multi-lane roadways with speed limits of 40 mph or higher shall have 8" upper-lower case lettering on 18" blank with a white border that is not recessed. The width of the non-recessed white borders shall match page 255 of the 2012 MUTCD "Standard Highway Signs".
- All traffic signs shall have a minimum High Intensity Prismatic grade sheeting.
- All local residential street signs shall be mounted on a 1.75" x 1.75" square tube sign post and stub post base. For other applications, refer to the CDOT Standard S-614-8 regarding use of the P2 tubular steel post slipbase design.
- All signs shall be single sheet aluminum with 0.100" minimum thickness.
- All limit lines/stop lines, crosswalk lines, pavement legends, and arrows shall be a minimum 125 mil thickness preformed thermoplastic pavement markings with tapered leading edges per CDOT Standard S-627-1. Word and symbol markings shall be the narrow type. Stop bars shall be 24" in width. Crosswalk lines shall be 12" wide and 8' long per CDOT S-627-1.
- All longitudinal lines shall be a minimum 15mil thickness epoxy paint. All non-local residential roadways shall include both right and left edge line striping and any additional striping as required by CDOT S-627-1.
- The contractor shall notify El Paso County Planning and Community Development (719) 520-6819 prior to and upon completion of signing and striping.
- The contractor shall obtain a work in the right of way permit from the El Paso County Department of Public Works (DPW) prior to any signage or striping work within an existing El Paso County roadway.



TYPE III VERTICAL CURB AND GUTTER
6\"/>

CURB & GUTTER DETAILS

EPC STD. SD. 2-20
NOT TO SCALE

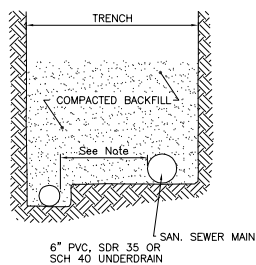


- NOTES:
1. PROVIDE CENTERLINE CONSTRUCTION OR TOOL JOINT WHEN DRIVEWAY WIDTH (EDGE TO EDGE) IS 14\"/>
 - 2. ALL TOOL JOINTS SHALL BE A MINIMUM OF 1-3/8\"/>
 - 3. WHEN REPLACING EXISTING CURB AND GUTTER WITH NEW DRIVEWAY, ENTIRE CURB AND GUTTER SECTION SHALL BE REMOVED AND REPLACED WITH CURB AND GUTTER (VARIABLE-CURB-HEIGHT) AS SHOWN. DO NOT BREAK CURB FROM GUTTER SECTION.
 - 4. FLARED PORTION OF DRIVEWAY SHALL BE POURED MONOLITHIC WITH MAIN RECTANGULAR PORTION OF DRIVEWAY.
 - 5. WHERE THERE IS MORE THAN ONE DRIVEWAY ON A LOT, THE SPACING OF THE DRIVEWAYS SHALL MEET REQUIREMENTS IN EDCM.
 - 6. WHERE AN EXISTING SIDEWALK IS IN PLACE, AND ITS THICKNESS IS LESS THAN 6\"/>
 - 7. WHEN A DRIVEWAY IS TO BE TAKEN OUT OF SERVICE, THE ENTIRE LENGTH OF CURB AND GUTTER SHALL BE REMOVED AND REPLACED WITH NEW CURB AND GUTTER MATCHING THE ADJUTING SECTIONS.
 - 8. ALL PROVISIONS IN THE LAND DEVELOPMENT CODE SHALL BE MET, WITH REGARD TO MINIMUM SETBACK FROM INTERSECTION AND SIDE PROPERTY LINES, MINIMUM SPACING, MAXIMUM WIDTH, ETC.

DRIVEWAY WIDTH	TOOL JOINT SPACING	
	A	B
12'	6'	3'
14'	7'	3'-6"
18'	8'	4'
18'	9'	4'-6"
20'	10'	5'-0"
22'	11'	5'-6"
24'	8'	4'
26'	8'-8"	4'-4"
28'	9'-4"	4'-8"
30'	10'	5'

DRIVEWAY DETAIL WITH ATTACHED SIDEWALK

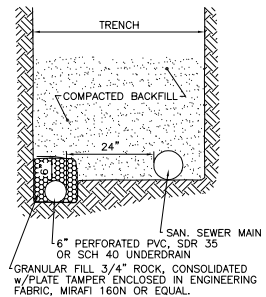
EPC STD. SD. 2-24
NOT TO SCALE



PASSIVE UNDERDRAIN DETAIL
SCALE: N.T.S.

UNDERDRAIN NOTES

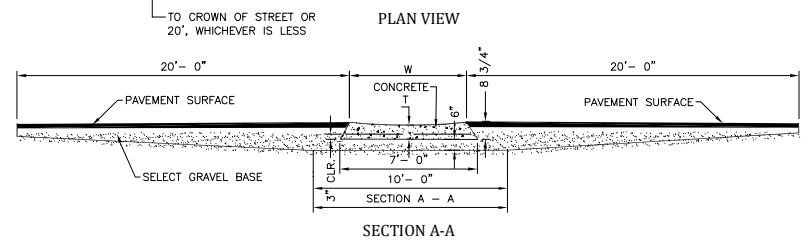
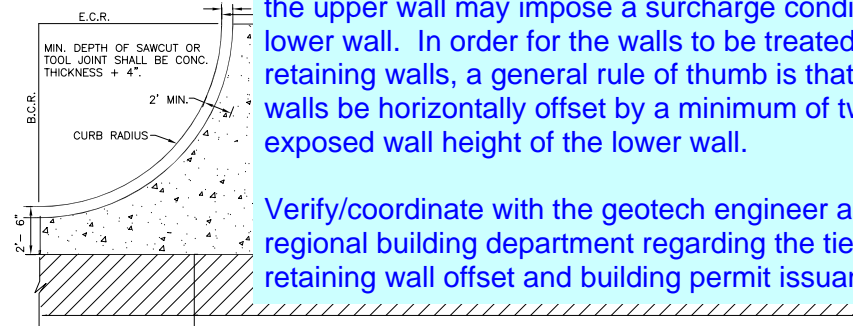
1. UNDERDRAIN TO BE CONSTRUCTED WHERE INDICATED BY A DASHED LINE (---).
2. SOLID DRAIN PIPE WILL BE USED IN AREAS AS SHOWN ON THE PLANS AND AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
3. ALL UNDERDRAIN CONSTRUCTION SHALL CONFORM WITH THE LATEST COLORADO SPRINGS UTILITIES STANDARDS.
4. ENGINEERING FABRIC TO HAVE A MINIMUM 12-INCH OVERLAP ABOVE UNDERDRAIN GRANULAR FILL.
5. UNDERDRAIN PIPE TO BE CONSTRUCTED WITH THE TOP OF PIPE EQUAL TO OR BELOW THE BOTTOM OF THE SANITARY SEWER PIPE.
6. GEOTECHNICAL ENGINEER TO DETERMINE EXTENT OF ACTIVE/PASSIVE UNDERDRAIN DEPENDING UPON CONDITIONS ENCOUNTERED DURING CONSTRUCTION.
7. THE CONNECTION BETWEEN THE ACTIVE AND PASSIVE PORTIONS OF THE UNDERDRAIN SYSTEM IS TO BE CONSTRUCTED WITH A NON-PERMEABLE BARRIER SO THAT ALL COLLECTED GROUNDWATER IS DIRECTED INTO THE PASSIVE PIPE SECTION.
8. HORIZONTAL SEPARATION BETWEEN SANITARY SEWER MAIN AND UNDERDRAIN SHALL BE 24\"/>
- 9. UNDERDRAIN LATERALS SHALL BE INSTALLED DOWNHILL OF THE SANITARY SEWER SERVICE (OPPOSITE SIDE OF THE WATER SERVICE).
- 10. PIPE BEDDING WITHIN THE TRENCH SHALL BE PER WWSO SPECIFICATIONS.



ACTIVE UNDERDRAIN DETAIL
SCALE: N.T.S.

When tiered walls are not properly offset from each other, the upper wall may impose a surcharge condition on the lower wall. In order for the walls to be treated as separate retaining walls, a general rule of thumb is that the tiered walls be horizontally offset by a minimum of two times the exposed wall height of the lower wall.

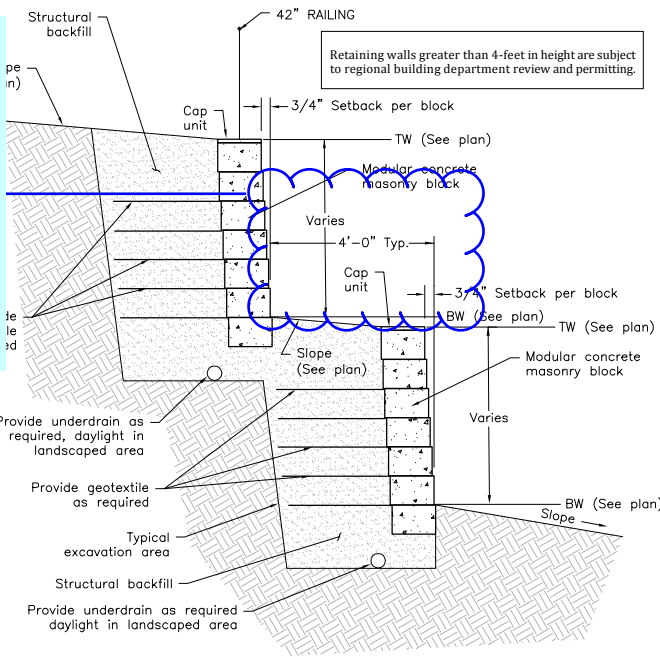
Verify/coordinate with the geotech engineer and/or regional building department regarding the tiered retaining wall offset and building permit issuance.



- NOTES:
1. W - WIDTH SHALL BE 6\"/>
 - 2. T - SQUARED-OFF RETURN TO BE POURED MONOLITHIC 8\"/>
 - 3. = 3\"/> MINIMUM ASPHALT DEPTH (2 LIFTS).
 - 4. DESIGN TO SPECIFY ELEVATIONS AT PI AND PCR

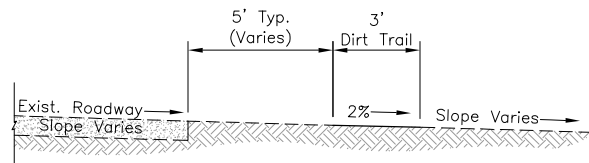
CROSS PAN DETAIL

CS Std. SD. 2-26
NOT TO SCALE



MODULAR BLOCK RETAINING WALL DETAIL

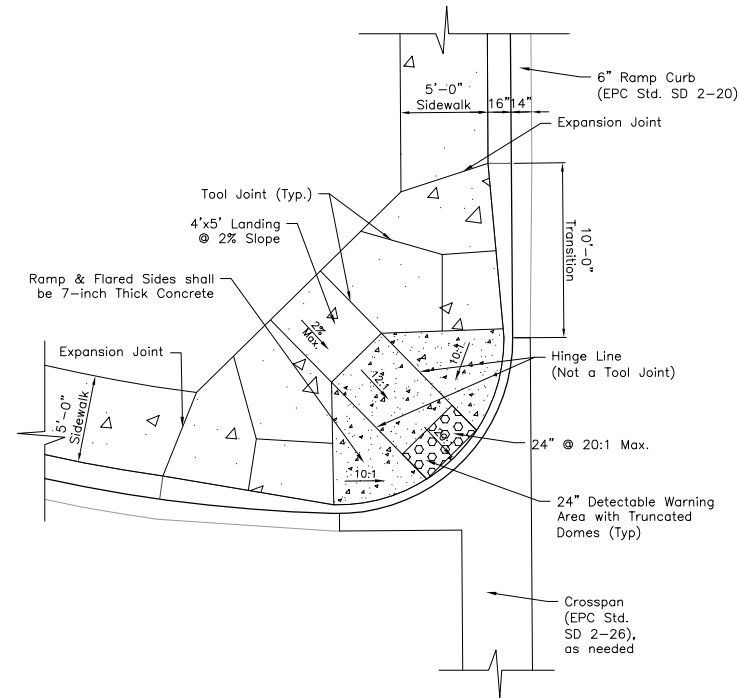
NOT TO SCALE



DIRT TRAIL CROSS-SECTION (TYP.)

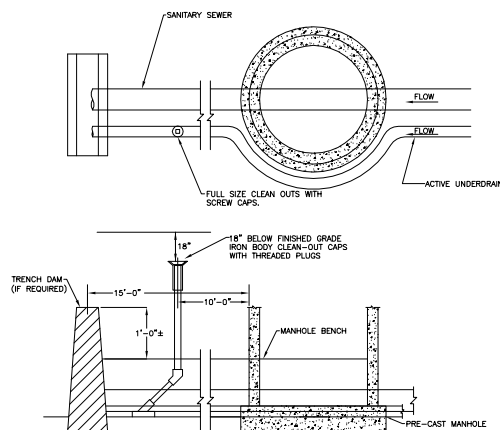
NOT TO SCALE

NOTE: Trail to be maintained by HOA



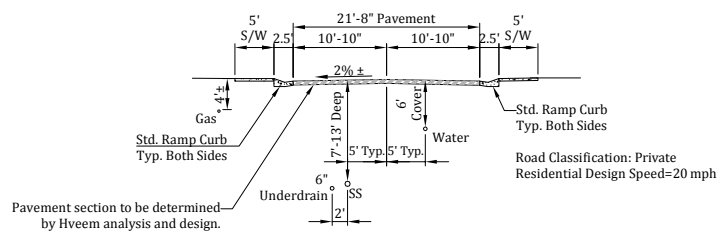
RADIAL PEDESTRIAN RAMP DETAIL

CS Std. D-8H (Modified)
NOT TO SCALE



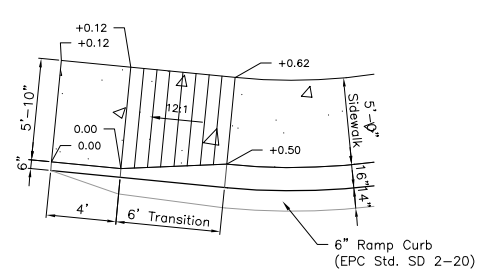
GROUNDWATER UNDERDRAIN CLEANOUT LOCATIONS OUTSIDE MANHOLE

NOT TO SCALE



TYPICAL STREET SECTION REDBRIDGE POINT & SHOREDITCH HEIGHTS

NOT TO SCALE



CURB TERMINATION WITH RAMP DETAIL

Scale: 1" = 5'-0"

Project No.:	15073
Date:	December 1, 2017
Design:	NRK
Drawn:	CAD
Check:	AWMc
Revisions:	

WOODMOOR WATER & SANITATION DISTRICT NO. 1
APPROVED FOR CONSTRUCTION

Date: _____ By: _____

These plans have been reviewed only for general conformance with District Rules and Regulations and System Specifications. Review and construction approval by the District does not relieve the Developer/Owner and/or Contractor from responsibility for compliance with any Rules, Regulations, or Specifications required by the District.