GENERAL NOTES

1. ALL NC DAM SAFETY PERMITS SHALL BE OBTAINED BY THE OWNER PRIOR TO BEGINNING CONSTRUCTION. A JURISDICTIONAL DETERMINATION/HAZARD CLASSIFICATION REQUEST WILL BE SUBMITTED TO NORTH CAROLINA DAM SAFETY FOLLOWING CONSTRUCTION AND AS-BUILT SURVEY. IT IS ASSUMED NC DAM SAFETY WILL CLASSIFY THE PROPOSED DAM AS A HIGH HAZARD JURISDICTIONAL FACILITY.
2. ALL NECESSARY PERMITS WILL BE OBTAINED FROM THE US ARMY CORPS OF ENGINEERS, NC DIVISION OF WATER QUALITY, AND WAKE COUNTY PRIOR TO DISTURBANCE OF ANY JURISDICTIONAL WETLAND/STREAM.
3. NO TREES/SHRUBS OF ANY TYPE MAY BE PLANTED ON THE PROPOSED DAM EMBANKMENT (FILL AREAS).
4. THE CONTRACTOR SHALL FURNISH, INSTALL, OPERATE, AND MAINTAIN ANY PUMPING OR DEWATERING EQUIPMENT, ETC. NEEDED FOR REMOVAL OF WATER FROM VARIOUS PARTS OF THE PROJECT CONSTRUCTION AREA (CUT SLOPES, FOUNDATION, ETC.). IT IS POSSIBLE THAT PUMPING WILL BE NECESSARY THROUGHOUT CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE WITH THE ON-SITE GEOTECHNICAL ENGINEER FOR PUMPING AND DEWATERING ACTIVITIES TO ENSURE STABILITY OF ALL AREAS. ANY REQUIRED PUMPING AND DISCHARGE SHALL BE DONE IN A MANNER TO AVOID OFF-SITE SEDIMENT AND WITHIN THE PERMIT REQUIREMENTS OF THE APPROVED SEDIMENT AND EROSION CONTROL PLAN.
5. IN SOME INSTANCES, NAME BRANDS OR SPECIFIC PRODUCTS SHOWN IN THE DESIGN DOCUMENTS CAN BE SUBSTITUTED WITH AN ENGINEER-APPROVED EQUAL. SHOP DRAWINGS, DESIGNS, CUT SHEETS, OR ANY OTHER AVAILABLE INFORMATION FOR ANY SUBSTITUTIONS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO ANY CHANGES.
6. THE CONTRACTOR AND OWNER SHALL FOLLOW ALL CURRENT OSHA GUIDELINES FOR ENTRY INTO CONFINED SPACES.
7. THE OWNER SHALL OBTAIN ALL APPLICABLE PERMITS FROM ALL APPROPRIATE REGULATORY AUTHORITIES PRIOR TO CONSTRUCTION.
8. INSTALL ALL SEDIMENT AND EROSION CONTROL MEASURES PER THE APPROVED SEDIMENT & EROSION CONTROL PLAN. THE CONTRACTOR SHALL MAINTAIN ALL APPROVED SEDIMENT AND EROSION CONTROL MEASURES THROUGHOUT THE ENTIRE PROJECT, AS REQUIRED, THE CONTRACTOR SHALL RECEIVE APPROVAL FROM THE EROSION CONTROL INSPECTOR, AS REQUIRED BY GOVERNING AGENCIES, PRIOR TO ANY CLEARING. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR ALL MONITORING AND REPORTING AS REQUIRED BY WAKE COUNTY FOR THE SEDIMENT AND EROSION CONTROL PLAN.
9. CLEAR AND GRUB AREA WITHIN THE LIMITS OF THE PROPOSED RESERVOIR CONSTRUCTION PER THE APPROVED SEDIMENT AND EROSION CONTROL PLAN. ALL TREES AND THEIR ENTIRE ROOT SYSTEMS MUST BE REMOVED FROM THE RESERVOIR FOOTPRINT AREA AND BACKFILLED WITH SUITABLE SOIL MATERIAL PER THE ON-SITE GEOTECHNICAL ENGINEER. THE BACKFILLED AREAS SHALL BE COMPACTED TO THE SAME STANDARDS AS THE DAM EMBANKMENT. THE REMAINING AREA OF THE EMBANKMENT SHALL BE STRIPPED TO A SUITABLE DEPTH AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER. ANY RESIDUAL SOILS TO BE LEFT IN PLACE MUST BE WELL SCARIFIED TO PROMOTE BONDING OF THE NEW EMBANKMENT FILL. THE JOINT BETWEEN EXISTING AND PROPOSED FILL SHALL BE PREPARED PER RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER. NO EMBANKMENT MATERIAL SHALL BE PLACED FOR THE DAM OR FOUNDATION AREA UNTIL APPROVAL OF THE RESERVOIR SUBGRADE / KEY TRENCH IS OBTAINED FROM THE ON-SITE GEOTECHNICAL ENGINEER.
10. EXCAVATE THE FOUNDATION AREA FOR THE DAM EMBANKMENT UNDER DIRECTION AND OBSERVATION OF THE ON-SITE GEOTECHNICAL ENGINEER. THE DEPTH AND QUANTITIES OF FOUNDATION MATERIAL TO BE REMOVED AND REPLACED ARE TO BE DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER. ALL MATERIALS USED TO REPLACE UNSUITABLE FOUNDATION MATERIALS SHALL BE COMPACTED TO THE SAME STANDARDS AS THE DAM EMBANKMENT AS OUTLINED IN THE GEOTECHNICAL REPORTS. THE CONTRACTOR AND GEOTECHNICAL ENGINEER SHALL RETAIN DOCUMENTATION OF ALL FOUNDATION REMEDIATION ACTIVITIES FOR THE FINAL AS-BUILT CERTIFICATION TO NC DAM SAFETY AND WAKE COUNTY UPON COMPLETION OF CONSTRUCTION.
11. PRIOR TO INSTALLATION, SUBGRADE CONDITIONS ALONG ANY CONDUIT THROUGH THE DAM EMBANKMENT SHALL BE EVALUATED BY THE ON-SITE GEOTECHNICAL ENGINEER TO ASSESS WHETHER SUITABLE BEARING CONDITIONS EXIST AT THE SUBGRADE LEVEL. SHOULD SOFT OR OTHERWISE UNSUITABLE CONDITIONS BE ENCOUNTERED ALONG THE PIPE ALIGNMENTS, THESE MATERIALS SHOULD BE UNDERCUT AS DIRECTED BY THE GEOTECHNICAL ENGINEER. THE UNDERCUT MATERIALS SHALL BE REPLACED WITH ADEQUATELY COMPACTED STRUCTURAL FILL, LEAN CONCRETE, OR FLOWABLE FILL AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER.
12. THE FOUNDATION FOR THE RISER STRUCTURE AND ANTI-FLOTATION BLOCK SHALL BE EXTENSIVELY EVALUATED BY THE ON-SITE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT AND CONSTRUCTION OF THE RISER STRUCTURE AND ANTI-FLOATATION BLOCK. THE TOTAL WEIGHT OF THE STRUCTURE SHALL BE CONSIDERED IN EVALUATING THE FOUNDATION AND BEARING CAPACITY OF THE AREA UNDER THE RISER STRUCTURE AND ANTI-FLOATATION BLOCK TO PREVENT DIFFERENTIAL SETTLEMENT.
13. BEGIN CONSTRUCTION OF THE NEW EMBANKMENT. FILL MATERIALS SHALL BE PLACED IN LIFTS TO THE SPECIFICATIONS PROVIDED IN THE GEOTECHNICAL REPORTS PRIOR TO COMPACTION, UNLESS DIRECTED OTHERWISE BY THE ON-SITE GEOTECHNICAL ENGINEER. FILL LIFTS SHALL BE CONTINUOUS OVER THE ENTIRE LENGTH OF FILL. IF IT IS NECESSARY, THE EMBANKMENT FILL MATERIAL WILL BE OVER BUILT IN HORIZONTAL LIFTS AND CUT BACK TO FINAL GRADE IN ORDER TO ACHIEVE PROPER COMPACTION.
14. INSTALL SPILLWAY AND DRAIN SYSTEMS. THE BOTTOM DRAIN VALVE FOR THE RESERVOIR SHALL BE KEPT OPEN UNTIL AN AS-BUILT CERTIFICATION HAS BEEN COMPLETED BY THE ENGINEER AND AN APPROVAL TO IMPOUND HAS BEEN ISSUED BY ALL APPLICABLE AGENCIES.
15. INSTALL DRAINAGE DIAPHRAGM ALONG EMBANKMENT CONDUITS AS SHOWN AND PER DIRECTION OF THE ON-SITE GEOTECHNICAL ENGINEER. MATERIAL USED FOR FILTER MEDIA SHALL BE PROVIDED TO AND APPROVED BY ON-SITE GEOTECHNICAL ENGINEER.
16. CONSTRUCT EMBANKMENT AND RESERVOIR AREA PER SPECIFICATIONS IN THE GEOTECHNICAL REPORTS AND REQUIREMENTS OF THE ON-SITE GEOTECHNICAL ENGINEER. ALL CHARACTERISTICS OF THE EMBANKMENT FILL MATERIAL SHALL MEET THE STANDARDS SET FORTH IN THE GEOTECHNICAL REPORTS AND GEOTECHNICAL SPECIFICATIONS, INCLUDING COMPACTION AND MOISTURE REQUIREMENTS. IF NECESSARY TO ACHIEVE PROPER COMPACTION, THE EMBANKMENT FILL MATERIAL WILL BE OVER BUILT IN HORIZONTAL LIFTS AND CUT BACK TO PROPER FINAL GRADE. ANY HAND COMPACTION ACTIVITIES AROUND SPILLWAY OR DRAIN STRUCTURES SHALL BE CONDUCTED IN SMALL LOOSE LIFTS AS SPECIFIED BY THE ON-SITE GEOTECHNICAL ENGINEER AND BE TO THE SAME COMPACTION AND MOISTURE REQUIREMENTS AS THE ENTIRE EMBANKMENT. ALL COMPACTION AND MOISTURE TESTING SHALL BE CARRIED OUT AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER AND AS LISTED IN THE GEOTECHNICAL REPORTS, SPECIFICATIONS, AND GEOTECHINCAL INFORMATION NOTES ON THIS SHEET.
17. SCHEDULE A FINAL AS-BUILT INSPECTION AND AS-BUILT SURVEY WITH THE ENGINEER. AN AS-BUILT INSPECTION SHOULD BE SCHEDULED A MINIMUM OF 60 DAYS BEFORE THE SUBMITTAL OF THE CERTIFICATION PACKAGES ARE REQUIRED. ANY COMMENTS OR DEFICIENCIES IN THE DAM CONSTRUCTION MUST BE CORRECTED TO THE SATISFACTION OF THE ENGINEER AND OWNER BEFORE CERTIFICATION SHALL BE GRANTED. UPON FINAL APPROVAL FROM THE NC DAM SAFETY, CLOSE THE BOTTOM DRAIN VALVE AND BEGIN IMPOUNDING WATER. NO WATER SHALL BE IMPOUNDED BEFORE AN APPROVAL TO IMPOUND IS ISSUED FROM BOTH NC DAM SAFETY AND THE ENGINEER.
18. ONCE CONSTRUCTION IS COMPLETE, A FINAL CERTIFICATION PACKAGE TO NC DAM SAFETY, INCLUDING AN OPERATION AND MAINTENANCE MANUAL AND AN EMERGENCY ACTION PLAN, WILL BE SUBMITTED FOR APPROVAL. THE FINAL AS-BUILT SURVEY FOR THIS CERTIFICATION SHALL OCCUR NO SOONER THAN 60 DAYS PRIOR TO THE CERTIFICATION SUBMITTAL. PLEASE NOTE THAT ANY DEFICIENCIES OR MODIFICATIONS TO BRING THE FACILITY INTO CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
19. THE FINAL CERTIFICATION FOR THE RESERVOIR PROJECT TO NC DAM SAFETY WILL INCLUDE A CERTIFICATION BY THE ON-SITE GEOTECHNICAL ENGINEER THAT THE PROJECT WAS CONSTRUCTED PER THE PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE ON-SITE GEOTECHNICAL ENGINEER FOR OBSERVATION AND TESTING SUCH THAT THE ON-SITE GEOTECHNICAL ENGINEER CAN CERTIFY THE CONSTRUCTION.
20. THE CONTRACTOR SHALL RETAIN DOCUMENTATION OF ALL MATERIAL AND ACTIVITY COSTS ASSOCIATED WITH CONSTRUCTION FOR THE FINAL NC DAM SAFETY FEE.

GENERAL NOTES (CONT.)

27. ANY DISCREPANCIES IN THE PLANS, REPORTS, NOTES, SPECIFICATIONS, ETC. SHALL BE BROUGHT TO THE DESIGN ENGINEER'S ATTENTION PRIOR TO CONSTRUCTION. IF THE CONTRACTOR, IN THE COURSE OF WORK, FINDS ANY DISCREPANCIES IN THE PLANS OR NOTES GIVEN BY THE PROJECT ENGINEER, IT SHALL BE THEIR DUTY TO IMMEDIATELY INFORM THE PROJECT ENGINEER IN WRITING. ANY WORK DONE AFTER SUCH A DISCOVERY, UNTIL AUTHORIZED, WILL BE AT THE CONTRACTOR'S RISK.
28. A SPECIFICATIONS MANUAL IS PROVIDED AS A SUPPLEMENT TO THE CONSTRUCTION DRAWINGS. SHOULD ANY CONFLICTS EXIST BETWEEN THE TWO, THE CONSTRUCTION DRAWINGS WILL SUPERCEDE THE SPECIFICATIONS.
29. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY LICENSES AND PERMITS REQUIRED TO COMPLETE THE WORK INCLUDED IN THE CONTRACT DOCUMENTS AT THE CONTRACTOR'S EXPENSE.
30. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THAT THEY AND THEIR SUBCONTRACTORS HAVE THE CORRECT AND MOST UP-TO-DATE PLANS AVAILABLE.
31. THE PROJECT WILL BE CONSTRUCTED AND CERTIFIED TO THE NORTH CAROLINA DAM SAFETY PROGRAM REQUIREMENTS. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THIS PROGRAM, ALL INSPECTION AND CERTIFICATION REQUIREMENTS, AND COORDINATE DIRECTLY WITH THE CERTIFYING ENGINEER AND GEOTECHNICAL ENGINEER SUCH THAT ALL INSPECTION AND CERTIFICATION REQUIREMENTS WILL BE MET AT THE END OF THE PROJECT.
32. THE DESIGN ENGINEER OR THEIR REPRESENTATIVE SHALL BE ON SITE FOR THE INSTALLATION OF ESSENTIAL ELEMENTS OF THE EMERGENCY SPILLWAY INCLUDING, BUT NOT LIMITED TO, THE ANTI-FLOAT BLOCK, RISER, CONCRETE COLLAR, CONCRETE CRADLE, OUTLET BARREL, DRAINAGE DIAPHRAGM, AND ARTICULATING CONCRETE BLOCK. THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER 72 HOURS PRIOR TO INSTALLATION OF THESE ITEMS TO ENSURE THAT A REPRESENTATIVE CAN BE ON-SITE. PHOTOGRAPHS OF THESE ITEMS MUST BE TAKEN PRIOR TO BACKFILLING FOR USE IN THE AS-BUILT PHASE. IF THE CONTRACTOR INSTALLS THESE WITHOUT THE ENGINEER OR ENGINEER'S REPRESENTATIVE ON-SITE, THEN THE ELEMENTS SHALL BE UNCOVERED FOR INSPECTION AT THE CONTRACTOR'S EXPENSE.
33. THE FINAL CERTIFICATION FOR THE RESERVOIR PROJECT TO NC DAM SAFETY WILL INCLUDE A CERTIFICATION BY THE ON-SITE GEOTECHNICAL ENGINEER THAT THE PROJECT WAS CONSTRUCTED PER THE PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE ON-SITE GEOTECHNICAL ENGINEER FOR OBSERVATION AND TESTING SUCH THAT THE ON-SITE GEOTECHNICAL ENGINEER CAN CERTIFY THE CONSTRUCTION.
34. ALL CONSTRUCTION ACTIVITY RELATED TO THE PROPOSED STORMWATER CONTROL MEASURE SHALL BE PER THE DETAILS AND SPECIFICATIONS SHOWN IN THESE DRAWINGS. SOILS, COMPACTION, AND OTHER MISCELLANEOUS DETAILS AND SPECIFICATIONS MAY BE MODIFIED PER THE RECOMMENDATIONS OF THE ON-SITE GEOTECHNICAL ENGINEER. HOWEVER, PRIOR TO IMPLEMENTATION, THE DESIGN ENGINEER SHALL BE NOTIFIED OF ANY DEVIATION FROM THESE DESIGN DRAWINGS, INCLUDING SHOP DRAWINGS FOR ANY PROPOSED MODIFICATION.
35. ALL OSHA REQUIREMENTS FOR EXCAVATIONS (SHORING, DEPTH, ETC.) ARE THE RESPONSIBILITY OF THE CONTRACTOR. IF REQUIRED, THE CONTRACTOR SHALL PROVIDE AN EXCAVATION PLAN TO BE SEALED BY A NC P.E. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE IF AN EXCAVATION PLAN IS REQUIRED. THE JOHN R. MCADAMS COMPANY ASSUMES NO RESPONSIBILITY FOR ANY EXCAVATION DESIGN RELATED TO SAFETY OR OSHA REQUIREMENTS.
36. THE CONTRACTOR SHALL FURNISH, INSTALL, OPERATE, AND MAINTAIN ANY PUMPING OR DEWATERING EQUIPMENT, ETC. NEEDED FOR REMOVAL OF WATER FROM VARIOUS PARTS OF THE PROJECT CONSTRUCTION AREA (CUT SLOPES, FOUNDATION, ETC.). IT IS POSSIBLE THAT PUMPING WILL BE NECESSARY THROUGHOUT CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE WITH THE ON-SITE GEOTECHNICAL ENGINEER FOR PUMPING AND DEWATERING ACTIVITIES TO ENSURE STABILITY OF ALL AREAS. ANY REQUIRED PUMPING AND DISCHARGE SHALL BE DONE IN A MANNER TO AVOID OFF-SITE SEDIMENT AND WITHIN THE PERMIT REQUIREMENTS OF THE APPROVED SEDIMENT AND EROSION CONTROL PLAN.
37. REMOVED TOPSOIL SHALL BE STOCKPILED FOR USE IN PLANTING (SEEDING) THE DAM EMBANKMENT ONCE FINAL GRADES HAVE BEEN ESTABLISHED WITH COMPACTED FILL. PRIOR TO TOPSOIL INSTALLATION, THE CONTRACTOR SHALL SCARIFY THE TOP 2-3" OF THE BERM SECTION TO PROMOTE BONDING OF THE TOPSOIL WITH THE COMPACTED FILL. THE TOPSOIL DEPTH SHALL RANGE FROM 3-4" ON THE DAM EMBANKMENT AND AQUATIC SHELF.

OUTLET STRUCTURE MATERIAL SPECIFICATIONS

1. THE 36"Ø RCP OUTLET BARREL SHALL BE CLASS III RCP, MODIFIED BELL AND SPIGOT, MEETING THE REQUIREMENTS OF ASTM C76-LATEST. THE PIPES SHALL HAVE SINGLE OFFSET JOINTS MEETING ASTM C-443-LATEST.
2. THE STRUCTURAL DESIGN FOR THE 5' X 5' (INTERNAL DIMENSIONS) RISER BOX WITH EXTENDED BASE SHALL BE BY OTHERS. PRIOR TO ORDERING THE STRUCTURES, THE CONTRACTOR SHALL PROVIDE, TO THE DESIGN ENGINEER FOR REVIEW, SHOP DRAWINGS AND SUPPORTING STRUCTURAL CALCULATIONS SEALED BY A P.E. REGISTERED IN NORTH CAROLINA DEMONSTRATING THE PERTINENT VERTICAL LOADS ARE SUPPORTED BY THE CONCRETE RISER STRUCTURE.
3. THE RISER BOX OUTLET STRUCTURE SHALL BE PROVIDED WITH STEPS 16" ON CENTER. STEPS SHALL BE PROVIDED ON THE INNER WALL OF THE RISER BOX. STEPS SHALL BE IN ACCORDANCE WITH NCDOT STD. 840.66. PLEASE REFER TO SHEET C9.01 FOR LOCATION OF THE RISER STEPS. NOTE THE STEPS SHALL LINE UP WITH THE ACCESS HATCH OF THE TRASH RACK.
4. THE CONCRETE ANTI-FLOTATION BLOCK SHALL BE CAST-IN-PLACE. STEEL REINFORCEMENT AND CONNECTION TO THE RISER SHALL BE PROVIDED IN ACCORDANCE WITH THE DETAIL ON SHEET C9.02. THE CONTRACTOR SHALL ENSURE THE WEIGHT OF THE ENTIRE RISER STRUCTURE IS GREATER THAN OR EQUAL TO 14,278 LBS.
5. THE RISER BOX JOINTS SHALL BE SEALED USING BUTYL RUBBER SEALANT CONFORMING TO ASTM-C990-LATEST. IF NECESSARY, THE CONTRACTOR SHALL INCORPORATE A WATERSTOP INTO THE RISER BOX JOINT TO ENSURE A WATERTIGHT CONNECTION. THE CONTRACTOR SHALL PARGE JOINTS ON BOTH THE INSIDE AND OUTSIDE WITH NON-SHRINK GROUT AND INSTALL GALVANIZED STEEL STRAPS PER DETAIL ON SHEET C9.01. IT IS THE RESPONSIBILITY OF THE CONTRACT TO CONSTRUCT THE SPILLWAY STRUCTURE WATER-TIGHT.
6. PRIOR TO ORDERING, THE CONTRACTOR SHALL SUBMIT TRASH RACK SHOP DRAWINGS TO THE ENGINEER FOR REVIEW. CONTRACTOR SHALL ENSURE THAT AN ACCESS HATCH IS PROVIDED ON THE TRASH RACK (SEE DETAIL SHEET C9.02 FOR LOCATION) THAT WILL ALLOW FOR FUTURE MAINTENANCE ACCESS. NOTE THE ACCESS HATCH SHALL LINE UP WITH THE ACCESS STEPS AFTER INSTALLATION.
7. ALL POURED CONCRETE SHALL MEET THE FOLLOWING SPECIFICATIONS UNLESS OTHERWISE NOTED:

   -MINIMUM 3000 PSI (28 DAY)
   -SLUMP = 3" - 5"
   -ENTRAINED AIR = 5% - 7%

   PLEASE NOTE NO CONCRETE SHALL BE POURED WHEN THE AMBIENT AIR TEMPERATURES ARE EXPECTED TO BE ABOVE 85°F OR BELOW 40°F. CAST-IN-PLACE CONCRETE SHALL BE "WET CURED" AFTER FINISHING FOR A MINIMUM OF 48 HOURS.

   CAST-IN-PLACE CONCRETE TO BE VIBRATED AS NECESSARY.

   ON-SITE GEOTECHNICAL ENGINEER TO TEST AND CERTIFY ALL POURED CONCRETE MEETS THE ABOVE SPECIFICATIONS. CONCRETE CYLINDERS FOR TESTING TO BE OBTAINED AT TIME OF POURING OF CAST-IN-PLACE STRUCTURES.
8. GEOTEXTILE FABRIC FOR THE 36"Ø RCP OUTLET BARREL JOINTS SHALL BE MIRAFI 180N OR ENGINEER-APPROVED EQUIVALENT (NON-WOVEN FABRIC).
9. STORMWATER CONTROL MEASURE EMERGENCY DRAWDOWN IS VIA A 8"Ø PLUG VALVE. THE VALVE SHALL BE A M&H STYLE 1820 ECCENTRIC VALVE OR ENGINEER-APPROVED EQUIVALENT. THIS VALVE IS IN ACCORDANCE WITH AWWA C-517 AND SHALL BE OPERABLE FROM TOP OF OUTLET STRUCTURE VIA A HAND WHEEL (SEE DETAIL SHEET C9.01). THE CONTRACTOR SHALL PROVIDE A REMOVABLE VALVE WRENCH WITH A HAND WHEEL ON TOP FOR OPERATION OF THE 8"Ø PLUG VALVE.

BERM AND SOIL COMPACTION SPECIFICATIONS

1. PRIOR TO CONSTRUCTION, THE ON-SITE GEOTECHNICAL ENGINEER SHALL IDENTIFY BORROW / FILL AREAS AND VERIFY THEIR SUITABILITY FOR USE WITHIN THE DAM EMBANKMENT. ALSO, THE ON-SITE GEOTECHNICAL ENGINEER SHALL PERFORM STANDARD PROCTORS ON THE PROPOSED BORROW MATERIAL TO ENSURE THAT OPTIMUM MOISTURE CONTENT AND COMPACTION CAN BE ACHIEVED / CONTROLLED DURING CONSTRUCTION.
2. THE ON-SITE GEOTECHNICAL ENGINEER SHALL EVALUATE ALL ASPECTS OF THE FOUNDATION, BORROW SOURCE, AND RESERVOIR AREA BEFORE AND DURING CONSTRUCTION. BEFORE PLACEMENT OF FILL FOR THE BERM SECTION, ALL UNSUITABLE MATERIAL SHALL BE REMOVED AND THE SURFACE PROPERLY PREPARED FOR FILL PLACEMENT. THE TOTAL DEPTH AND QUANTITIES OF FOUNDATION MATERIAL TO BE REMOVED, REPLACED, OR REMEDIATED WILL BE DETERMINED BY THE ON-SITE GEOTECHNICAL ENGINEER DURING CONSTRUCTION.
3. ALL FILL MATERIALS TO BE USED FOR THE DAM EMBANKMENT SHALL BE TAKEN FROM BORROW AREAS APPROVED BY THE ON-SITE GEOTECHNICAL ENGINEER. THE FILL MATERIAL SHALL BE FREE FROM ROOTS, STUMPS, WOOD, STONES GREATER THAN 6", AND FROZEN OR OTHER OBJECTIONABLE MATERIAL. THE FOLLOWING SOIL TYPES ARE SUITABLE FOR USE AS FILL WITHIN THE DAM EMBANKMENT AND KEY TRENCH: CL, CL-CH, ML, AND MH. ALL FILL MATERIALS SHALL BE APPROVED BY THE ONSITE GEOTECHNICAL ENGINEER FOR THE INTENDED USE.
4. FILL FOR THE EMBANKMENT / KEY TRENCH SHALL BE PLACED IN LIFTS TO THE SPECIFICATIONS PROVIDED IN THE GEOTECHNICAL REPORT (PRIOR TO COMPACTION), UNLESS DIRECTED OTHERWISE BY THE ON-SITE GEOTECHNICAL ENGINEER. FILL LIFTS SHALL BE CONTINUOUS FOR THE ENTIRE LENGTH OF FILL. IF IT IS NECESSARY, THE EMBANKMENT FILL MATERIAL WILL BE OVER BUILT IN HORIZONTAL LIFTS AND CUT BACK TO FINAL GRADE IN ORDER TO ACHIEVE PROPER COMPACTION. ANY HAND COMPACTION ACTIVITIES AROUND SPILLWAY OR DRAINAGE STRUCTURES SHALL BE CONDUCTED IN SMALL LOOSE LIFTS AS SPECIFIED BY THE ON-SITE GEOTECHNICAL ENGINEER AND BE TO THE SAME COMPACTION AND MOISTURE REQUIREMENTS AS THE ENTIRE EMBANKMENT. IN ORDER TO PREVENT DAMAGE TO THE PIPE, NO COMPACTION EQUIPMENT SHALL CROSS ANY PIPE UNTIL MINIMUM COVER IS ESTABLISHED ALONG THE PIPE.
5. ALL FILL SOILS USED IN THE EMBANKMENT / KEY TRENCH CONSTRUCTION SHALL BE COMPACTED TO SPECIFICATIONS PROVIDED IN THE GEOTECHNICAL REPORT AND SPECIFICATIONS PROVIDED BY THE GEOTECHNICAL ENGINEER. THE FILL SOILS SHALL BE COMPACTED AT A MOISTURE CONTENT AS SPECIFIED IN THE GEOTECHNICAL REPORT AND SPECIFICATIONS PROVIDED BY THE GEOTECHNICAL ENGINEER. COMPACTION TESTS SHALL BE PERFORMED BY THE ON-SITE GEOTECHNICAL ENGINEER DURING CONSTRUCTION TO VERIFY THAT THE PROPER COMPACTION LEVEL HAS BEEN REACHED. ONE DENSITY TEST SHALL BE PERFORMED FOR EVERY 2,500 SQUARE FEET OF AREA FOR EVERY LIFT OF FILL OR AS RECOMMENDED BY THE ON-SITE GEOTECHNICAL ENGINEER.
6. TESTING WILL BE REQUIRED ALONG THE 36"Ø RCP OUTLET BARREL AT A FREQUENCY OF ONE TEST PER 25 LF OF PIPE PER VERTICAL FOOT OF FILL OR AS DIRECTED BY THE ON-SITE GEOTECHNICAL ENGINEER.
7. THE DESIGN ENGINEER SHALL BE PROVIDED WITH REPORTS AND CERTIFICATION BY THE ON-SITE GEOTECHNICAL ENGINEER THAT THE GEOTECHNICAL ASPECTS OF THE FACILITY HAVE BEEN CONSTRUCTED PER PLAN. THIS CERTIFICATION MUST ADDRESS THE TESTING FOR MATERIALS AND COMPACTION OF THE DAM EMBANKMENT AND SPILLWAY. THESE REPORTS AND CERTIFICATION WILL BE NEEDED DURING THE AS-BUILT CERTIFICATION PROCESS FOR THIS IMPOUNDMENT. THEREFORE, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE TESTING AND OBSERVATION WITH THE ON-SITE GEOTECHNICAL ENGINEER.

SURFACE ARMORING SPECIFICATIONS

1. THE UPSTREAM SIDE OF THE DAM EMBANKMENT WILL BE ARMORED WITH CLASS 'B' RIP RAP WITH A FINAL SLOPE NO STEEPER THAN 3(H):1(V). A FILTER BLANKET IS TO BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION. THE FILTER BLANKET WILL CONSIST OF A MINIMUM 9" THICK LAYER OF STONE (NCDOT #57) UNDERLAIN WITH MIRAFI FILTER WEAVE 700 OR ENGINEER-APPROVED EQUIVALENT. SEE DETAIL ON C9.01.
2. THE EMERGENCY SPILLWAY WILL BE ARMORED WITH PYRAMAT 25 PERMANENT TURF REINFORCEMENT MAT OR ENGINEER-APPROVED EQUIVALENT, AS SHOWN ON SHEET C9.02.THIS PRODUCT SHALL BE INSTALLED PER THE MANUFACTURER'S SPECIFICATIONS.

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CLIENT

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REVISIONS

NO.	DATE

PLAN INFORMATION

PROJECT NO.	DRH-22004
FILENAME	DRH22004-CD-HHD
CHECKED BY	JKW
DRAWN BY	MMJ
SCALE	N.T.S.
DATE	02. 19. 2024

SHEET

CHAMBLEE LAKE DAM GENERAL NOTES

C0.00

CHAMBLEE LAKE
CONSTRUCTION DRAWINGS
1509 CHAMBLEE ROAD
ZEBULON, NORTH CAROLINA

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

M:\Projects\DRH\DRH22004\04-Production\Water Resources\Construction Drawings\DRH22004-CD-HHD.dwg, 2/23/2024 10:49:33 AM, Mirabelle Jawillana

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

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CHAMBLEE LAKE
CONSTRUCTION DRAWINGS
1509 CHAMBLEE ROAD
ZEBULON, NORTH CAROLINA

REVISIONS

NO. DATE

PLAN INFORMATION

PROJECT NO.	DRH-22004
FILENAME	DRH22004-CD-HHD
CHECKED BY	JKW
DRAWN BY	MMJ
SCALE	1"= 20'
DATE	02. 19. 2024

SHEET

CHAMBLEE LAKE DAM
PLAN VIEW
C9.00

M:\Projects\DRH\DRH22004\04-Production\Water Resources\Construction Drawing\[DRH22004-CD-HHD.dwg, 7/23/2024 10:50:54 AM, Mirabelle Javellana

TOP OF DAM EL. = 311.00

1/3 PMP STORM EL. = 308.71

100-YR STORM EL. = 308.25

25-YR STORM EL. = 307.98

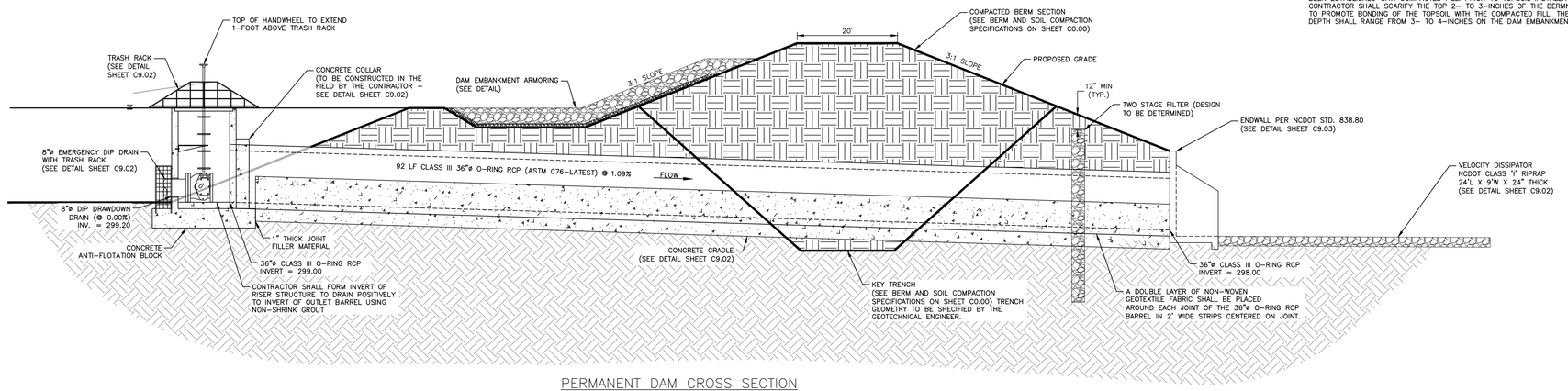
1-YR STORM EL. = 307.30

NORMAL WATER SURFACE EL. = 307.00

36"ø O-RING RCP INVERT EL. = 299.00

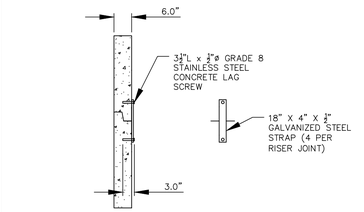
NOTE:

1. REMOVED TOPSOIL SHALL BE STOCKPILED FOR USE IN PLANTING (SEEDING) THE DAM EMBANKMENT ONCE FINAL GRADES (AS SHOWN ON THE GRADING PLAN) HAVE BEEN ESTABLISHED WITH COMPACTED FILL. PRIOR TO TOPSOIL INSTALLATION, THE CONTRACTOR SHALL SCARIFY THE TOP 2- TO 3-INCHES OF THE BERMIN SECTION TO PROMOTE BONDING OF THE TOPSOIL WITH THE COMPACTED FILL. THE TOPSOIL DEPTH SHALL RANGE FROM 3- TO 4-INCHES ON THE DAM EMBANKMENT.



PERMANENT DAM CROSS SECTION

N.T.S.



RISER JOINT CONNECTION DETAIL

N.T.S.

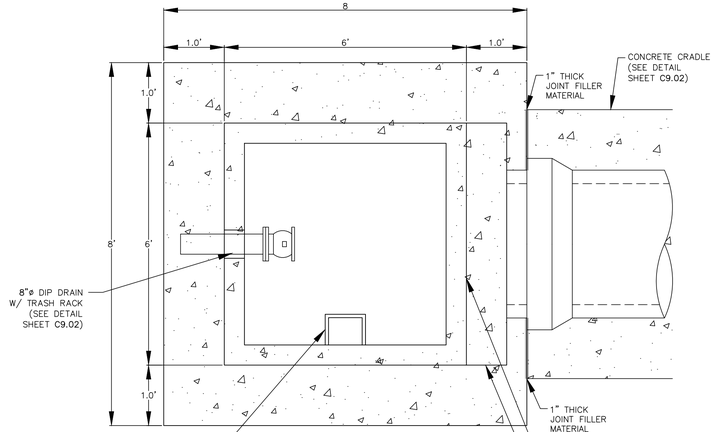
NOTES:

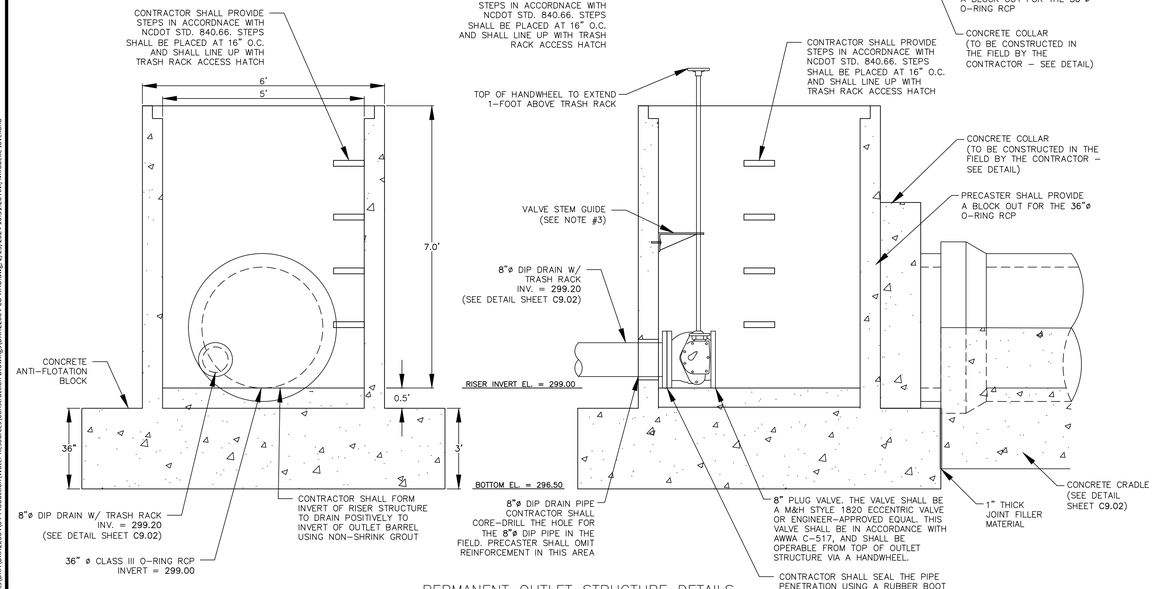
1. CONCRETE ANTI-FLOTATION BLOCK TO BE PROVIDED WITH MINIMUM TEMPERATURE AND SHRINKAGE STEEL REINFORCEMENT.

2. TRASH RACKS NOT SHOWN FOR CLARITY.

3. THE NUMBER OF GUIDES FOR THE VALVE STEM SHALL BE DETERMINED IN THE FIELD BY THE CONTRACTOR. THE VALVE STEM MUST BE OPERABLE FROM THE TOP OF THE RISER VIA THE HANDWHEEL WITH AN INSIGNIFICANT AMOUNT OF PLAY IN THE VALVE STEM.

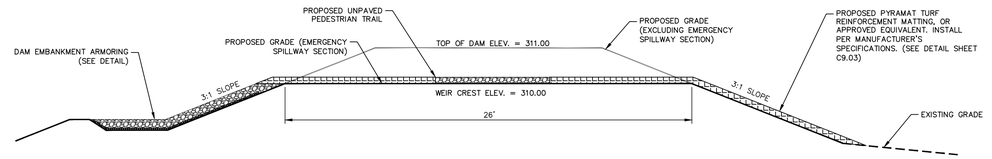
4. CONTRACTOR SHALL PROVIDE A JOINT IN THE OUTLET BARREL NO MORE THAN 5-FT FROM THE RISER.





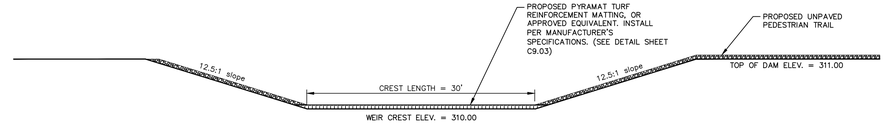
PERMANENT OUTLET STRUCTURE DETAILS

N.T.S.



EMERGENCY SPILLWAY PROFILE

N.T.S.



EMERGENCY SPILLWAY CROSS SECTION

N.T.S.

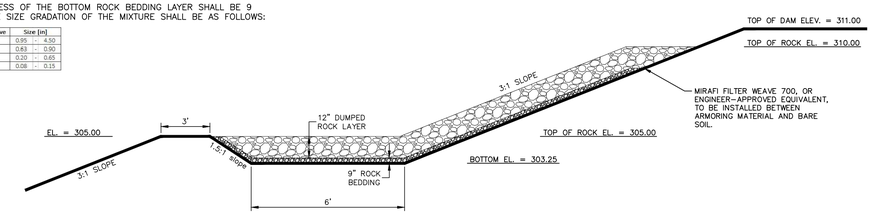
NOTES:

1. THE THICKNESS OF THE TOP DUMPED ROCK LAYER SHALL BE 12 INCHES MINIMUM. THE SIZE GRADATION OF THE MIXTURE SHALL BE AS FOLLOWS:

Rock Passing Sieve	Size [m]**		
100%	8	-	11
85%	7	-	10
50%	6	-	8
15%	1	-	3

2. THE THICKNESS OF THE BOTTOM ROCK BEDDING LAYER SHALL BE 9 INCHES. THE SIZE GRADATION OF THE MIXTURE SHALL BE AS FOLLOWS:

Rock Passing Sieve	Size [m]		
100%	0.95	-	4.50
85%	0.63	-	0.90
50%	0.20	-	0.65
15%	0.08	-	0.15



DAM EMBANKMENT ARMORING

N.T.S.

FINAL DRAWING - NOT RELEASED FOR CONSTRUCTION

McADAMS

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PHONE: 919. 809. 4207

CHAMBLEE LAKE
CONSTRUCTION DRAWINGS
1509 CHAMBLEE ROAD
ZEBULON, NORTH CAROLINA

REVISIONS

NO. DATE

PLAN INFORMATION

PROJECT NO.	DRH-22004
FILENAME	DRH22004-CD-HHD
CHECKED BY	JKW
DRAWN BY	MMJ
SCALE	N.T.S.
DATE	02. 19. 2024

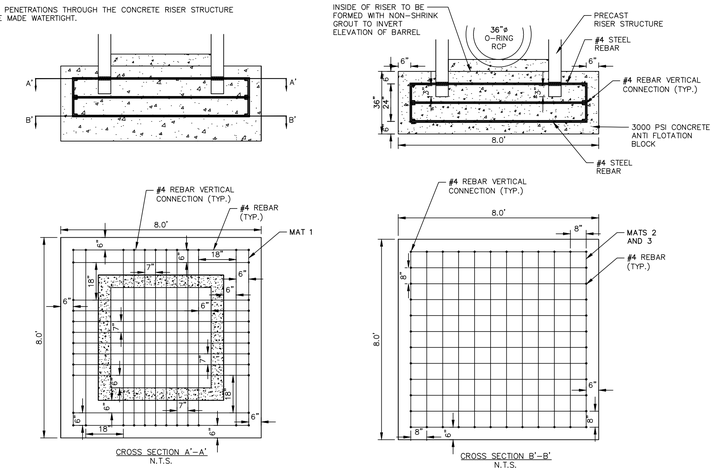
SHEET

CHAMBLEE LAKE DAM DETAILS

C9.01

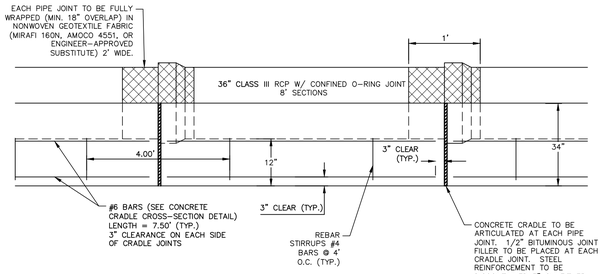
NOTES:

1. ALL REINFORCING STEEL IN RISER ANTI–FLOTATION BLOCK TO BE GRADE 60 #4 BARS FOR HORIZONTAL CROSSING AND GRADE 60 #4 BARS FOR VERTICAL CONNECTIONS.
2. INSIDE OF RISER BOTTOM TO BE FORMED WITH NON–SHRINK GROUT TO INVERT ELEVATION OF BARREL.
3. ALL PIPE PENETRATIONS THROUGH THE CONCRETE RISER STRUCTURE SHALL BE MADE WATERTIGHT.



RISER/ANTI–FLOTATION BLOCK CONNECTION
N.T.S.

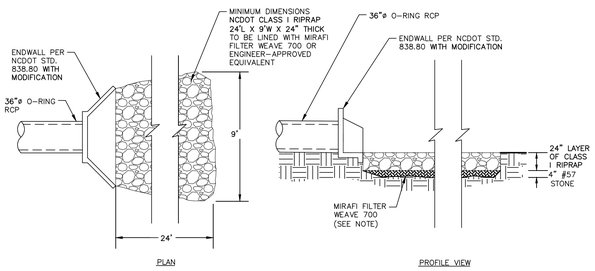
NOTE: BARREL PIPE PROFILE DETAIL ASSUMES A 8' RCP PIPE SECTION. IF A 4' SECTION OR OTHER IS USED, DIMENSIONS OF CONCRETE CRADLE AND REINFORCEMENT WILL NEED TO BE ADJUSTED.



ARTICULATED CONCRETE CRADLE
N.T.S.

NOTES:

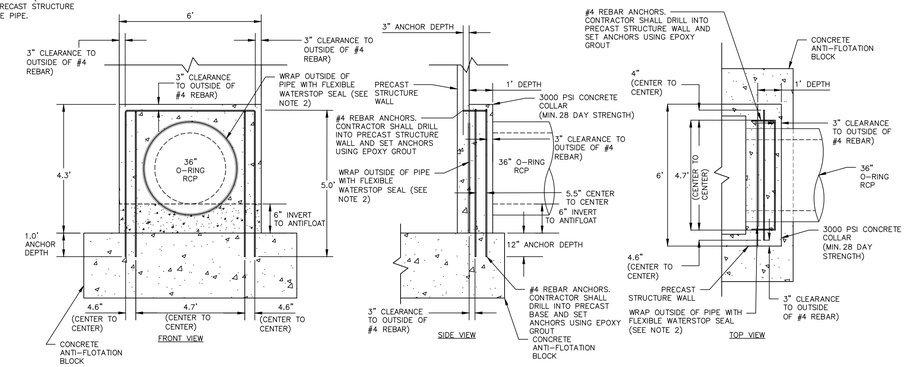
1. A FILTER BLANKET IS TO BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION. THE FILTER BLANKET WILL CONSIST OF A MINIMUM 4" THICK LAYER OF STONE (NCDOT #57) UNDERLAIN WITH MIRAFI FILTER WEAVE 700 OR ENGINEER–APPROVED EQUIVALENT.



OUTLET BARREL VELOCITY DISSIPATER
N.T.S.

NOTES:

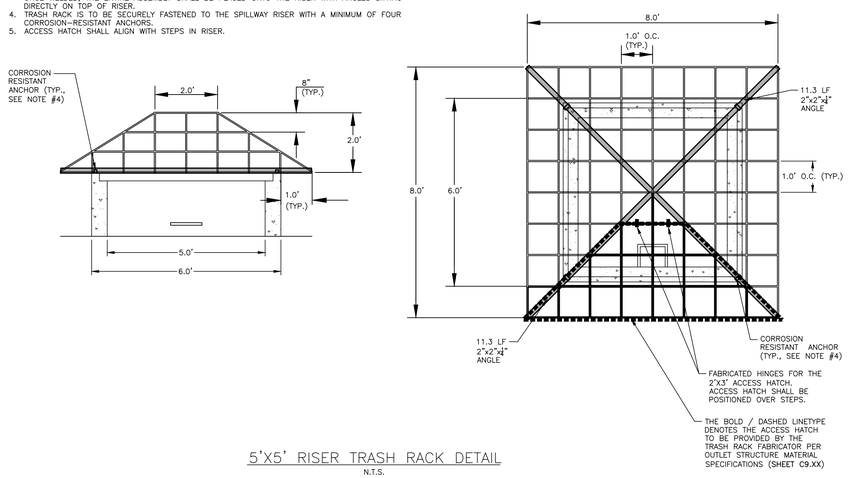
1. ALL REBAR TO BE #4 REBAR.
2. WRAP OUTSIDE OF PIPE WITH VOLCLAY WATERSTOP–RX® 101 (OR PRE–APPROVED EQUIVALENT) AT THE FACE OF THE PRECAST STRUCTURE WALL. PROVIDE 6" OVER LAP ON THE BOTTOM OF THE PIPE.



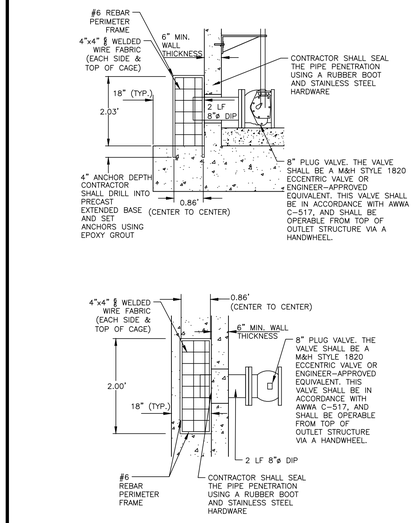
36"ø CONCRETE COLLAR DETAIL
N.T.S.

NOTES:

1. ALL REBAR AND ANGLES TO BE HOT–DIPPED GALVANIZED AND BE PROVIDED WITH AN EPOXY COATING.
2. THE HOT–DIPPED, GALVANIZED 2"x2"x1/4" ANGLES SHALL BE WELDED TO THE REBAR TRASH RACK. ONCE WELDED, THE ENTIRE ASSEMBLY SHALL BE PLACED ONTO THE RISER WITH ANGLES SITTING DIRECTLY ON TOP OF RISER.
3. TRASH RACK IS TO BE SECURELY FASTENED TO THE SPILLWAY RISER WITH A MINIMUM OF FOUR CORROSION–RESISTANT ANCHORS.
4. ACCESS HATCH SHALL ALIGN WITH STEPS IN RISER.



5'X5' RISER TRASH RACK DETAIL
N.T.S.



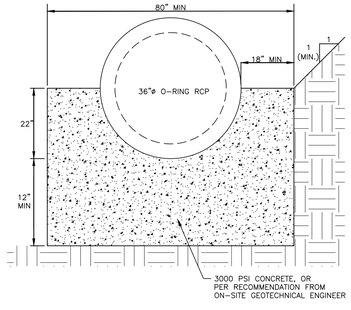
8"ø EMERGENCY DIP DRAIN TRASH RACK DETAILS
N.T.S.

NOTE:

1. CONTRACTOR SHALL PROVIDE A JOINT IN THE OUTLET BARREL NO MORE THAN 5–FT FROM THE RISER.

BARREL PIPE CONCRETE CRADLE CONSTRUCTION SEQUENCE

1. BRING GRADE OF DAM EMBANKMENT TO SPRINGLINE OF PIPE ELEVATION.
2. EXCAVATE TRENCH FOR CRADLE AND BARREL PER DIMENSIONS ON DRAWINGS.
3. PLACE BARREL PIPE ON CONCRETE BLOCKS TO GRADE. AT THIS STEP, CONTRACTOR SHALL WRAP A DOUBLE LAYER OF NON–WOVEN GEOTEXTILE FABRIC AROUND EACH JOINT OF THE 36"ø O–RING RCP BARREL IN 2' WIDE STRIPS CENTERED ON JOINT.
4. PLACE CONCRETE FOR CRADLE FOR EACH SECTION FROM ONE SIDE OF THE TRENCH. ALLOW CONCRETE TO FILL ENTIRE AREA UNDER PIPE AND PIPE HAUNCHES AS TO LEAVE NO VOIDS UNDER THE PIPE BEFORE PLACING CONCRETE ON THE OPPOSITE SIDE OF THE TRENCH. PLACE ENTIRE CRADLE AS ONE LIFT (VERTICALLY) PER DRAWINGS.
5. ALLOW CRADLE TO CURE FOR A MINIMUM OF 7 DAYS BEFORE ANY VIBRATING COMPACTION EQUIPMENT IS USED IN THE VICINITY OF THE BARREL PIPE.
6. TRENCH TO BE BACKFILLED IN 5" LIFTS WHEN COMPACTION IS BY HAND. BACKFILL IS IN 8" LIFTS WHEN CONDUCTED BY MACHINE. MINIMUM OF 2 FEET COVER MUST BE PRESENT ON 36"ø RCP BEFORE DRIVING OVER WITH HEAVY EQUIPMENT.



36" CONCRETE CRADLE DETAIL
N.T.S.

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CHAMBLEE LAKE
CONSTRUCTION DRAWINGS
1509 CHAMBLEE ROAD
ZEBULON, NORTH CAROLINA

REVISIONS

NO.	DATE

PLAN INFORMATION

PROJECT NO.	DRH-22004
FILENAME	DRH22004-CD-HHD
CHECKED BY	JKW
DRAWN BY	MMJ
SCALE	N.T.S.
DATE	02. 19. 2024

SHEET

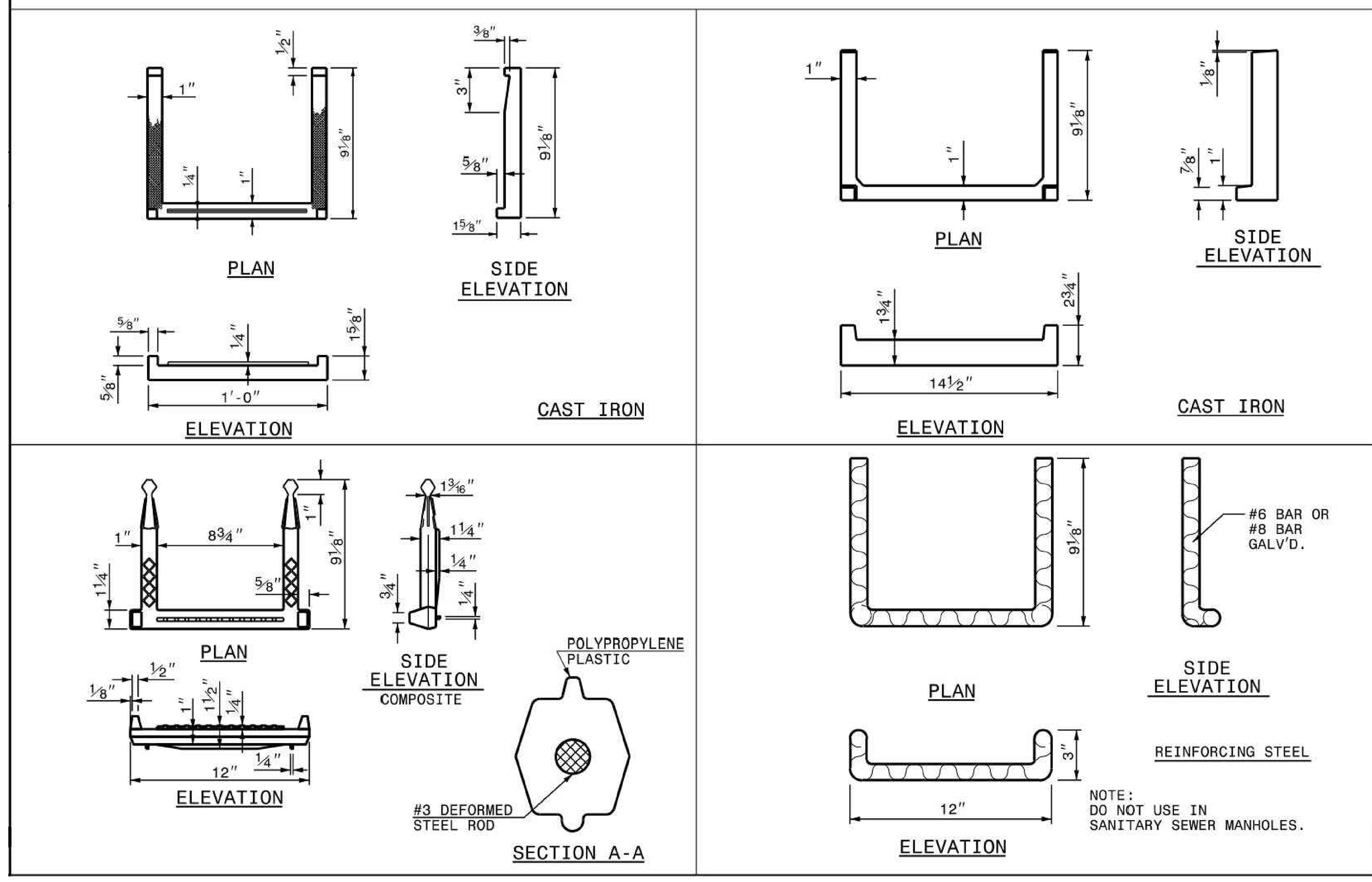
CHAMBLEE LAKE DAM DETAILS

C9.02

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION

M:\Projects\DRH\DRH22004\04-Production\Water Resources\Construction Drawings\DRH22004-CD-HHD.dwg, 2/21/2024 9:56:32 AM, Mirabelle Javellana

NOTES:
INSTALL ALL STEPS PROTRUDING 4" FROM INSIDE FACE OF STRUCTURE WALL.
STEPS DIFFERING IN DIMENSIONS, CONFIGURATION, OR MATERIALS FROM THOSE SHOWN MAY ALSO BE USED PROVIDED THE CONTRACTOR HAS FURNISHED THE ENGINEER WITH DETAILS OF THE PROPOSED STEPS AND HAS RECEIVED WRITTEN APPROVAL FROM THE ENGINEER FOR THE USE OF SUCH STEPS.

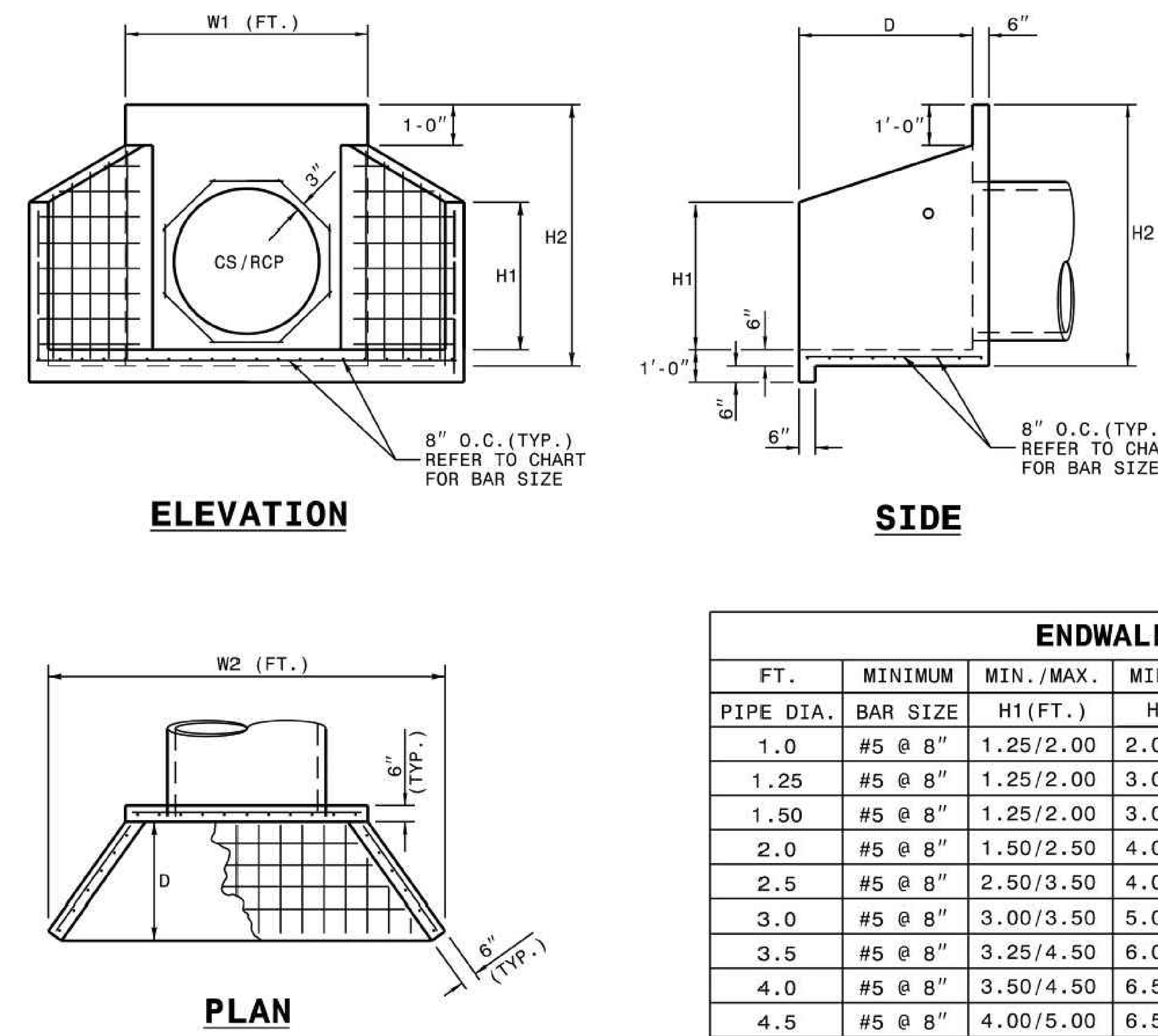


STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
DRAINAGE STRUCTURE STEPS

SHEET 1 OF 1
840.66



NOTES:

* THIS PRECAST ENDWALL MAY BE USED FOR THE FOLLOWING STANDARDS: 838.01, 838.11, 838.21, 838.27, 838.33, 838.39, 838.51, 838.57, 838.63 AND 838.69.
* INSTALL PRECAST ENDWALLS WITH WINGS AND PAY FOR IN ACCORDANCE WITH SPECIFICATION SECTION 838.
* USE 4000 PSI CONCRETE.
* PROVIDE ALL REINFORCING STEEL WHICH MEETS ASTM A615 FOR GRADE 60 AND WELDED WIRE FABRIC CONFORMING TO ASTM A185 WITH 2" MIN. CLEARANCE.
* PLACE LIFT HOLES OR PINS IN ACCORDANCE WITH OSHA STANDARD 1926.704.
* PIPE TO BE GROUTED INTO HEADWALL AT JOB SITE BY CONTRACTOR
* ALL ELEMENTS PRECAST TO MEET ASTM C913.
* WELDED WIRE FABRIC MAY BE SUBSTITUTED FOR REBAR AS LONG AS THE SAME AREA OF STEEL IS PROVIDED.
* CHAMFER ALL CORNERS 1" OR HAVE A RADIUS OF 1".

NOTE: THE MINIMUM BAR SIZE SHALL BE #5 BARS AT 8" CTS.THE CONTRACTOR WILL HAVE THE OPTION TO INCREASE THIS BAR SIZE AS NEEDED.

ENDWALL DIMENSIONS

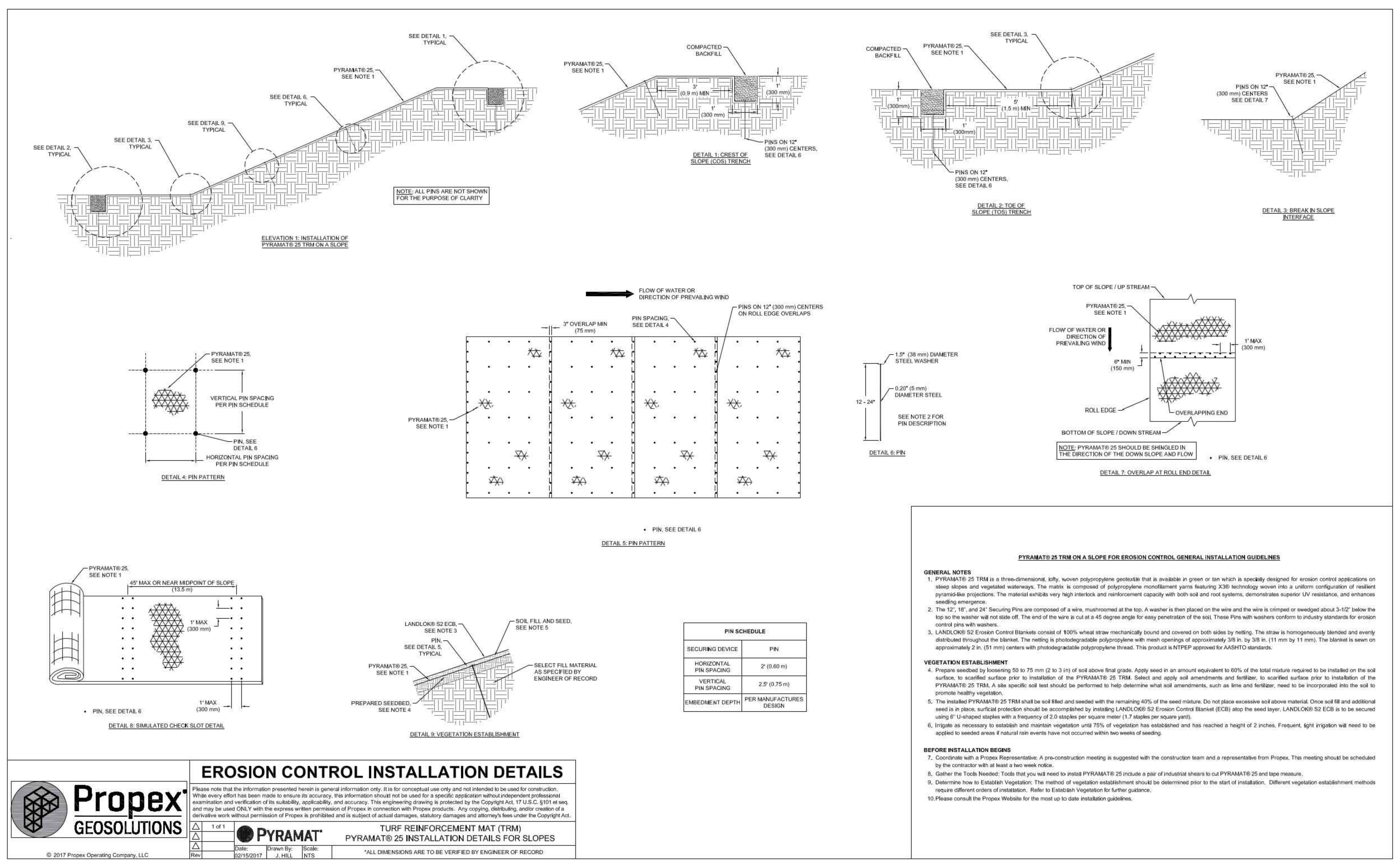
FT.	MINIMUM	MIN./MAX.	MIN./MAX.	MIN./MAX.	MIN./MAX.	MIN./MAX.
PIPE DIA.	BAR SIZE	H1(FT.)	H2(FT.)	D (FT.)	W1	W2
1.0	#5 @ 8"	1.25/2.00	2.00/3.75	1.25/1.75	3.00/3.75	5.50/6.00
1.25	#5 @ 8"	1.25/2.00	3.00/3.75	1.25/2.00	3.50/3.75	6.50/6.75
1.50	#5 @ 8"	1.25/2.00	3.00/4.25	1.50/2.50	3.50/3.75	6.50/6.75
2.0	#5 @ 8"	1.50/2.50	4.00/4.75	1.75/2.50	4.00/4.25	7.50/8.25
2.5	#5 @ 8"	2.50/3.50	4.00/6.00	2.00/3.00	4.50/5.50	10.00/11.50
3.0	#5 @ 8"	3.00/3.50	5.00/6.00	2.75/3.50	5.25/5.75	11.50/11.75
3.5	#5 @ 8"	3.25/4.50	6.00/6.75	3.25/3.50	6.00/6.75	12.00/13.25
4.0	#5 @ 8"	3.50/4.50	6.50/7.00	3.25/3.50	6.50/6.75	13.00/13.25
4.5	#5 @ 8"	4.00/5.00	6.50/8.50	3.25/4.00	7.00/9.25	13.50/15.75
5.0	#5 @ 8"	4.50/5.00	7.00/8.50	3.25/4.00	7.25/9.25	13.75/15.75
5.5	#5 @ 8"	4.50/5.00	7.50/8.50	3.25/4.00	7.25/9.25	14.00/15.75
6.0	#5 @ 8"	4.50/5.00	7.50/8.50	3.25/4.00	7.75/9.25	14.75/16.75

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

1-18

ROADWAY STANDARD DRAWING FOR
PRECAST CONCRETE ENDWALL
FOR SINGLE 12" THRU 72" PIPE - 90° SKEW

SHEET 1 OF 1
838.80



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REVISIONS

NO. DATE

PLAN INFORMATION

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FILENAME	DRH22004-CD-HHD
CHECKED BY	JKW
DRAWN BY	MMJ
SCALE	N.T.S.
DATE	02. 19. 2024

SHEET

CHAMBLEE LAKE DAM DETAILS

C9.03

PRELIMINARY DRAWING - NOT RELEASED FOR CONSTRUCTION